

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	SUPPLEMENTAL TOPOGRAPHY & STORMWATER MANAGEMENT PLAN
3	SEDIMENT & EROSION CONTROL PLAN
4	DRAINAGE AREA MAP & SOILS MAP
5	STORMWATER MANAGEMENT DETAILS
6	STORM DRAIN PROFILES
7	SEDIMENT CONTROL NOTES & DETAILS AND FOREST CONSERVATION PLAN

SUPPLEMENTAL PLAN, LANDSCAPE, TOPOGRAPHY, AND STORMWATER MANAGEMENT PLAN NORMANDY OAKS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Vest Shulz 2/20/13
 CHIEF, DIVISION OF LAND DEVELOPMENT
Chad Edwards 2-19-13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

GENERAL NOTES

- All Construction Shall Be In Accordance With The Latest Standards And Specifications Of Howard County Plus Msha Standards And Specifications If Applicable.
- The Contractor Shall Notify The Department Of Public Works / Bureau Of Engineering / Construction Inspection Division At 410-313-1880 At Least (5) Working Days Prior To The Start Of Work.
- The Contractor Shall Notify "Miss Utility" At 1-800-257-7777 At Least 48 Hours Prior To Any Excavation Work Being Done.
- Traffic Control Devices, Markings And Signage Shall Be In Accordance With The Latest Edition Of The Manual Of Uniform Traffic Control Devices (muctd).
- Background Information:
 A. Subdivision Name: Normandy Oaks
 B. Tax Map No. 18
 C. Parcel No. 51
 D. Zoning R-20
 E. Election District: Second
 F. Gross Area Of Tract = 3.458 Ac.
 G. Number Of Buildable Lots: 6
 H. Number Of Open Space Lots: 0
 I. Area Of Buildable Lots: 3.458 Ac.
 J. Area Of Open Space Lots: 0.00 Ac.
 K. Area Of Roadway To Be Dedicated: 0.00 Ac.
 L. Previous File Numbers: SP-07-004, F-07-167, WP-11-023 AND WP-12-076
 M. Area Of Floodplain = 0.00 Ac.
 N. Area Of 25% Or Greater Slopes = 0.00 Ac.
 O. Subject Property Zoned R-20 Per 02/02/04 Comprehensive Zoning Plan And The "comp Lite" Zoning Amendments Effective 7/28/06.
 P. Coordinated Based On Nad '83, Maryland Coordinate System As Projected By Howard County Geodetic Control Stations No. 24 C2 And No. 19 G1.
 Station No. 24C2 North 588648.312 East 1,366,038.195 Elev. = 354.09
 Station No. 19G1 North 589984.951 East 1,367,750.255 Elev. = 407.81
 Q. A Fee-in-lieu Payment For Open Space For 6 Lots At \$1,500.00 Per Lot For A Total Of \$9,000.00 Will Be Paid To Department Of Recreation & Parks.
 R. No Cemeteries Exist On This Site Based On Both A Site Visit And An Examination Of The Howard County Cemetery Inventory Map.
- This Plan Is In Compliance With The Amended Fifth Edition Of The Subdivision And Land Development Regulations Per Council Bill 45-2003 And The Zoning Regulations As Amended By Council Bill 75-2003. Development Or Construction On These Lots Must Comply With Setback And Buffer Regulations In Effect At The Time Of Submission Of The Site Development Plan, Waiver Petition Application, Or Building/grading Permit And Per The Comp-lite Zoning Regulations Dated July, 28, 2006.
- Property Is Located In Metropolitan District And Is Served By Public Water And Public Sewer.
- Landscape For The Perimeter Landscape Requirement Of Section 16.124 Of The Howard County Code And The Landscape Manual In The Amount Of \$2,100.00 Will Be Posted With The Developer's Agreement.
- No Grading, Removal Of Vegetative Cover Or Trees, Paving And New Structure Shall Be Permitted Within The Limits Of Wetlands, Streams, Or Their Required Buffers, Floodplain And Forest Conservation Easement Areas Except Deemed As A Necessary Disturbance And approved With This Plan.
- For Flag Or Pipestem Lots, Refuse Collection, Snow Removal And Road Maintenance Are Provided To The Junction Of The Flag Or Pipestem And Road Right-of-way Line And Not Into The Pipestem Lot Driveway.
- Water And Sewer Service To Lots 2 Thru 7 Will Be Granted Under The Provisions Of Section 18.122.b Of The Howard County Code.
- Public Water And Sewage Allocation Will Be Granted At The Time Of Issuance Of The Building Permit If Capacity Is Available At That Time.
- No Noise Study Is Required For This Project.
- Soils Information Taken From Soil Survey, Howard County, Maryland.
- Topographic Contours Based On Field Run Survey Performed By Fisher, Collins And Carter, Inc. Dated October, 2006.
- There Are No Areas Of Steep Slopes Located On This Property As Defined By The Howard County Subdivision And Land Development Regulations, Section 16.116.b.
- Stormwater Management Will Be Provided In Accordance With Howard County And Maryland 378 Specifications. This Site Is Subject To 100 Year Management, Recharge Volume Will Be Provided Through The Use Of Bio-retention And Disconnection Credits. There Are Three Micro Bio-retention Facilities (lots 2, 3 & 4), Two Level Spreaders (lot 7), Four Drywells (Two on Lot 5 and Two on Lot 6), Rooftop Disconnection Is Used For Lot 7 And Non-rooftop Disconnection Is Used For Lots 2 Thru 7. These Private Facilities/Disconnection Credit Areas Will Be Owned And Maintained By The Homeowner And Will Require 100% Satisfaction. The underground retention facility at M-1 is privately owned and maintained by H.O.A.
 Note: Projects Currently Within The Review Process Meeting The State's Criteria For Preliminary Project Approval May Be Permitted To Use The State's 2000 Regulations For Stormwater Management. Projects Meeting This Requirement Will Be Considered Grandfathered To The 2000 Regulations By Submission And Approval Of An Administrative Waiver. Expiration Of Administrative Waivers For Grandfathering Shall Be May 4, 2013 If The Developer Does Not Receive Approval Signed By DPZ Prior To This Date So That A Grading Permit Could Be Obtained And The Project Continue To Construction Completion. The Grandfathering Administrative Waiver Is Also Conditioned That The Developer Will Make Timely Construction Progress And Completion By May 4, 2017.
- There Is No Floodplain Within The Site.
- The Appo Traffic Study For This Project Was Prepared By Mars Group, Inc. Dated Nov. 2006 And Approved Under SP-07-004.
- The Total Forest Conservation For Normandy Oaks, Lot 1 (Plat Nos. 21833 And 21834) And Normandy Oaks, Lot 2 Thru 7 Is 2.29 Acres. The Recording Of Lot 1 Provided A Fee-in-lieu Payment For 0.10 Acres Reforestation. The Remaining 2.19 Acres Of Forest Obligation Is Provided Off-Site On The Property Of Quartz Hill, LLC, Tax Map B, Parcel 401 By The Creation Of 4.38 Acres Retention On An Approved Forest Bank, SP-07-104. No Surety Is Required.
- The Geotechnical Report For This Project Was Prepared By Hills-Carnes Engineering Associates, Inc. Dated October, 2006 And Approved Under SP-07-004.
- Written Authorization Must Be Provided By BG&E Before This Project Can Receive Signature Approval Of Final Road Construction Drawings.
- Driveways Shall Be Provided Prior To Issuance Of A Use And Occupancy Permit For Any New Dwellings To Ensure Safe Access For Fire And Emergency Vehicles Per The Following Minimum Requirements:
 Width - 12' (16' Serving More Than One Residence);
 Surface - 6" Of Compacted Crusher Run Base W/1/4" And Chip Coating (1-1/2" Min.);
 Geometry - Max. 15% Grade, Max. 10% Grade Change And Min. 45' Turning Radius;
 Structures (culverts/bridges) - Capable Of Supporting 25 Trucks (42.5 Loading);
 Drainage Elements - Capable Of Safely Passing 100-year Flood With No More Than 1 Foot Depth Over Driveway Surface;
 Maintenance/sufficient To Insure All Weather Use.
 Structure Clearance - 12' Minimum
 For Driveway Entrance Details, Refer To The Howard County Design Manual, Volume IV, Standard Detail R-6.03.
- An Address Range Sign Shall Be Provided For Lots 2-7 At The Intersection Of Rosemar Drive And The Use-in-common Driveway. Each Number Shall Be A Minimum Of 3" Plain Block Lettering. In Addition, There Shall Be An Address Sign At The Point Where Each Individual Driveway Intersects With The Use-in-common Driveway.
- This Plan Is Based On Field Run Monumented Boundary Survey Performed On Or About February, 2006 By Fisher, Collins & Carter, Inc.
- There Are No Existing Dwelling/Structure(s) Located On This Site To Remain. No New Buildings, Extensions Or Additions To The Existing Dwellings(s) Are To Be Constructed At A Distance Less Than The Zoning Regulations Allow.
- Plan Subject To Waiver Petition WP-11-023 Which The Planning Director On November 5, 2010 Approved A Request To Waive Sections 16.144(r)(1)(ii) And 16.144(r)(6) Of The Howard County Code Subject To The Following Conditions:
 1. Petitioner Shall Submit A Final Plan For All Development Approved On Preliminary Equivalent Sketch Plan SP-07-004 Within One Year From The Date Of This Letter (On Or Before November 5, 2011).
 2. Petitioner Shall Submit Final Plat Originals And Address All Items Listed In The DPZ Letter Of August 28, 2007 Regarding Final Plan F-07-167 Within One Year From The Date Of This Letter (On Or Before November 5, 2011).
 3. Petitioner Shall Pay Applicable Fees In Accordance With Fee Schedules In Effect At Time Of Payment.
 32. Plan Subject To Waiver Petition WP-12-076 Which The Planning Director On December 6, 2011 Approved A Request To Waive Section 16.144(k)(3)(i) Of The Howard County Subdivision And Land Development Regulations, Subject To The Following Conditions:
 1. Petitioner Shall Submit A Final Plan For All Development Approved On Preliminary Equivalent Sketch Plan SP-07-004 Within One Year From The Date Of This Letter Notifying The Petitioner Of Waiver Approval (On Or Before December 6, 2012).
 2. Petitioner Shall Pay Applicable Fees In Accordance With Fee Schedules In Effect At Time Of Submission.
 33. The Use-in-Common Driveway Maintenance Agreement For Lots 2 Thru 7 Will Be Recorded In The Howard County Land Records Office Simultaneously With The Recording Of The Subdivision Plat.
 34. The Existing Home On Lot 1 Will Remain And Is Presently Served By Public Water House Connection From Rosemar Drive And By Private Sewer. The Existing Home Will Remain Served By Public Water. A Sewer House Connection Will Be Provided As Part Of This Development To Lot 1.

STORMWATER MANAGEMENT PRACTICES					
LOT No.	MICRO BIO-RETENTION (M-6) (No. of Facilities)	ROOFTOP DISCONNECTION (N-1) (Yes or No)	NON-ROOFTOP DISCONNECTION (N-2) (Yes or No)	LEVEL SPREADER (No. of Facilities)	DRYWELL (M-5) (No. of Facilities)
2	1	NO	YES	-	-
3	1	NO	YES	-	-
4	1	NO	YES	-	-
5	-	NO	YES	-	2
6	-	NO	YES	-	2
7	-	YES	YES	2	-

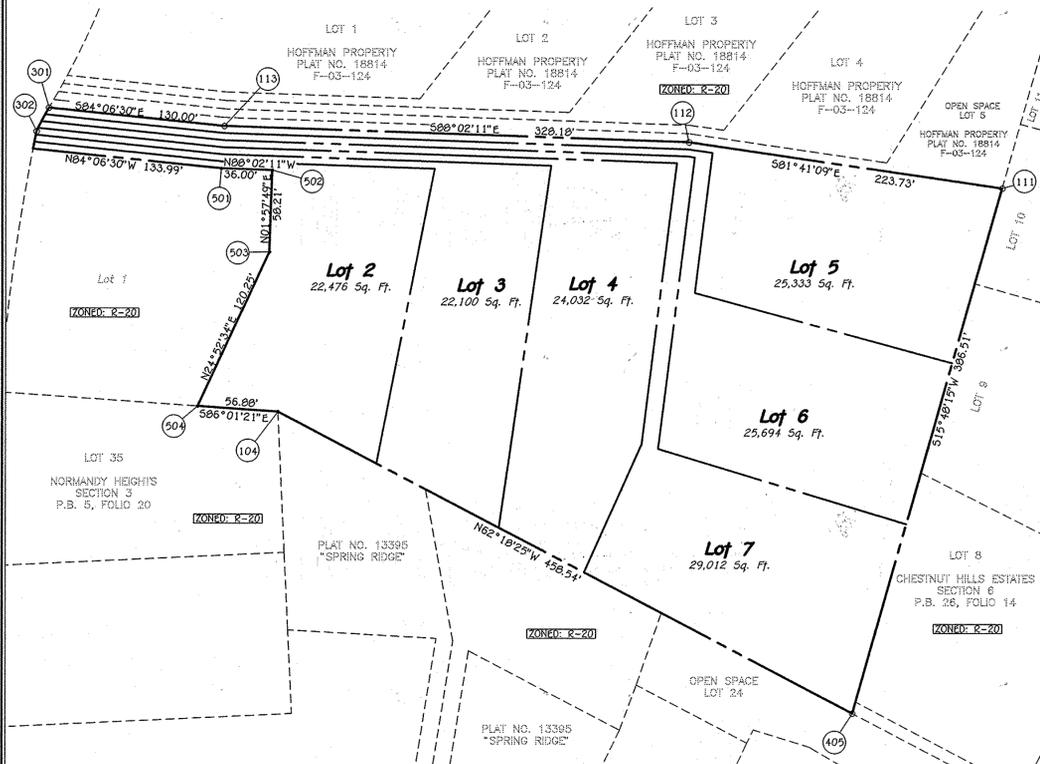
LOTS 2 THRU 7

**A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL 'A',
AS SHOWN ON PLATS ENTITLED "NORMANDY OAKS, LOT 1
AND NON-BUILDABLE BULK PARCEL 'A' RECORDED AMONG
THE LAND RECORDS OF HOWARD COUNTY, MARYLAND
AS PLAT Nos. 21833-21834**

ZONING: R-20

TAX MAP NO. 18 GRID No. 13 PARCEL No. 51

ROADWAY INFORMATION CHART			
ROAD NAME	CLASSIFICATION	DESIGN SPEED	EASEMENT WIDTH
USE-IN-COMMON	PRIVATE DRIVEWAY	15 M.P.H.	24'



LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	SILT FENCE
---	LIMIT OF DISTURBANCE
---	EXISTING TREELINE
---	PROPOSED TREELINE
---	WETLANDS BUFFER
---	WETLANDS LIMITS
---	STORM DRAIN
---	PERFORATED UNDERDRAIN
---	NON-ROOFTOP DISCONNECTION CREDIT AREA
---	LEVEL SPREADER
---	PROPOSED BORING LOCATION
---	DRAINAGE FLOW
---	EROSION CONTROL MATTING
---	NATURAL AREA CONSERVATION CREDIT

SITE MAP

SCALE: 1" = 60'

VICINITY MAP

SCALE: 1" = 2000'

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SOURCE OFFICE PARK - 10272 BALDOR NATIONAL PARK
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2955

OWNERS
 PAUL AND GEORGIA MILLER, TRUSTEES
 2895 ROSEHAR DRIVE
 ELICOTT CITY, MARYLAND 21043
 (410) 465-4761

DEVELOPER
 NORMANDY OAKS BAKES, LLC
 10751 FALLS ROAD, SUITE 405
 LUTHERVILLE, MARYLAND 21093
 (443) 250-3656
 ATTN: MR. MICHAEL J. MCCANN



Aldo M. Vitucci 11/27/12
 DATE
 "Professional certification, I hereby certify that these documents were prepared by me and that I am duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-13."

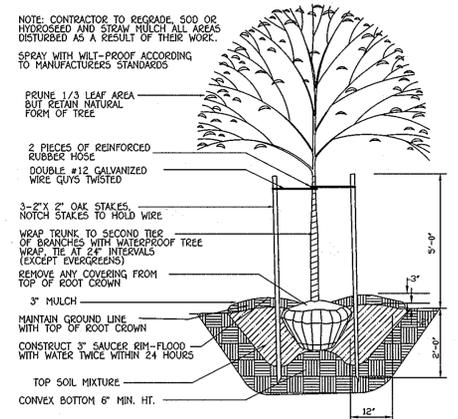
Supplemental Plan NORMANDY OAKS LOTS 2 THRU 7

A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL 'A', AS SHOWN ON PLATS ENTITLED "NORMANDY OAKS, LOT 1 AND NON-BUILDABLE BULK PARCEL 'A' RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND AS PLAT Nos. 21833-21834
 ZONED: R-20
 TAX MAP No. 18 GRID No. 13 PARCEL No. 51 -
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: NOVEMBER 28, 2012
 SHEET 1 OF 7

THERE IS NO AS-BUILT INFORMATION ON THIS SHEET

F-12-088

- Landscaping Notes:**
- The Owner, Tenant And/Or Their Agents Shall Be Responsible For Maintenance Of The Required Landscaping Including Both Plant Materials And Berms, Fences And Walls. All Plant Materials Shall Be Maintained In Good Growing Conditions, And When Necessary, Replaced With New Materials To Ensure Continued Compliance With Applicable Regulations. All Other Required Landscaping Shall Be Permanently Maintained In Good Condition, And When Necessary, Repaired Or Replaced.
 - No Clearing Of Existing Vegetation Is Permitted Within The Landscape Edge For Which Credit Is Being Taken. However, Landscape Maintenance Is Authorized.
 - At The Time Of Plant Installation All Shrubs And Trees Listed And Approved On The Landscaping Plan, Shall Comply With The Proper Height Requirement In Accordance With The Howard County Landscape Manual. In Addition, No Substitutions Or Relocations Of The Required Plantings May Be Made Without Prior Review And Approval From The Department Of Planning And Zoning. Any Deviation From The Approved Landscaping Plan May Result In Denial Or Delay In The Release Of Landscape Surety Until Such Time As All Required Materials Are Planted And/Or Revision Are Made To Applicable Plans Or Certificates.
 - Should One Or More Of The Existing Trees For Which Perimeter Landscape Credit Has Been Given, Die Or Is Removed, It Is The Owner's Responsibility To Replace That Tree To Ensure Continued Compliance With The Perimeter Landscape Regulations.



Shade Tree Planting Detail

Planting Specifications

Plants, related material, and operations shall meet the detailed description as given on the plans and as described herein.

All plant material, unless otherwise specified, shall be nursery grown, uniformly branched, have a vigorous root system, and shall conform to the species, size, root and shape shown on the plant list and the American Association of Nurserymen's Plant Standards.

Plant material shall be healthy, vigorous, free from defects, decay, disfiguring roots, sun scald injuries, abrasions of the bark, plant disease, insect pest eggs, borers and all forms of insect infestations or objectionable infestations.

Plant material that is weak or which has been cut back from larger grades to meet specified requirements will be rejected.

Trees with forked leaders will not be accepted.

All plants shall be freshly dug, no heated-in plants from cold storage will be accepted. Unless otherwise specified, all general conditions, planting operations, details and planting specifications shall conform to "Landscape Specification Guidelines for Baltimore-Washington Metropolitan Area", Overhatter "Landscape Guidelines" approved by the Landscape Contractors Association of Metropolitan Washington and the Potomac Chapter of the American Society of Landscape Architect, latest edition, including all addenda.

Contractor shall be required to guarantee all plant material for a period of one year after date of acceptance in accordance with the appropriate section of the Landscape Guidelines. Contractor's attention is directed to the maintenance requirements found within the one year specifications including watering and replacement of specified plant material.

Contractor shall be responsible for notifying utility companies, utility contractors and "Miss Utility" a minimum of 48 hours prior to beginning any work.

Contractor may make minor adjustments in spacing and location of plant material to avoid conflicts with utilities. Damage to existing structure and utilities shall be repaired at the expense of the Contractor.

Protection of existing vegetation to remain shall be accomplished by the temporary installation of a 4 foot high snow fence or blaze orange safety fence at Contractor is responsible for installing all material in the proper planting season for each plant type.

All planting is to be completed within the growing season of completion of site construction. Bid shall be based on actual site conditions.

No extra payment shall be made for work arising from site conditions differing from those indicated on drawings and specifications. Plant quantities are provided for the convenience of the contractor only. If discrepancies exist between quantities shown on plan and those shown on the plant list, the quantities on the plan take precedence. All shrubs shall be planted in continuous benches or prepared planting beds and mulched with composted hardwood mulch as details and specified except the drip line, where noted on plans.

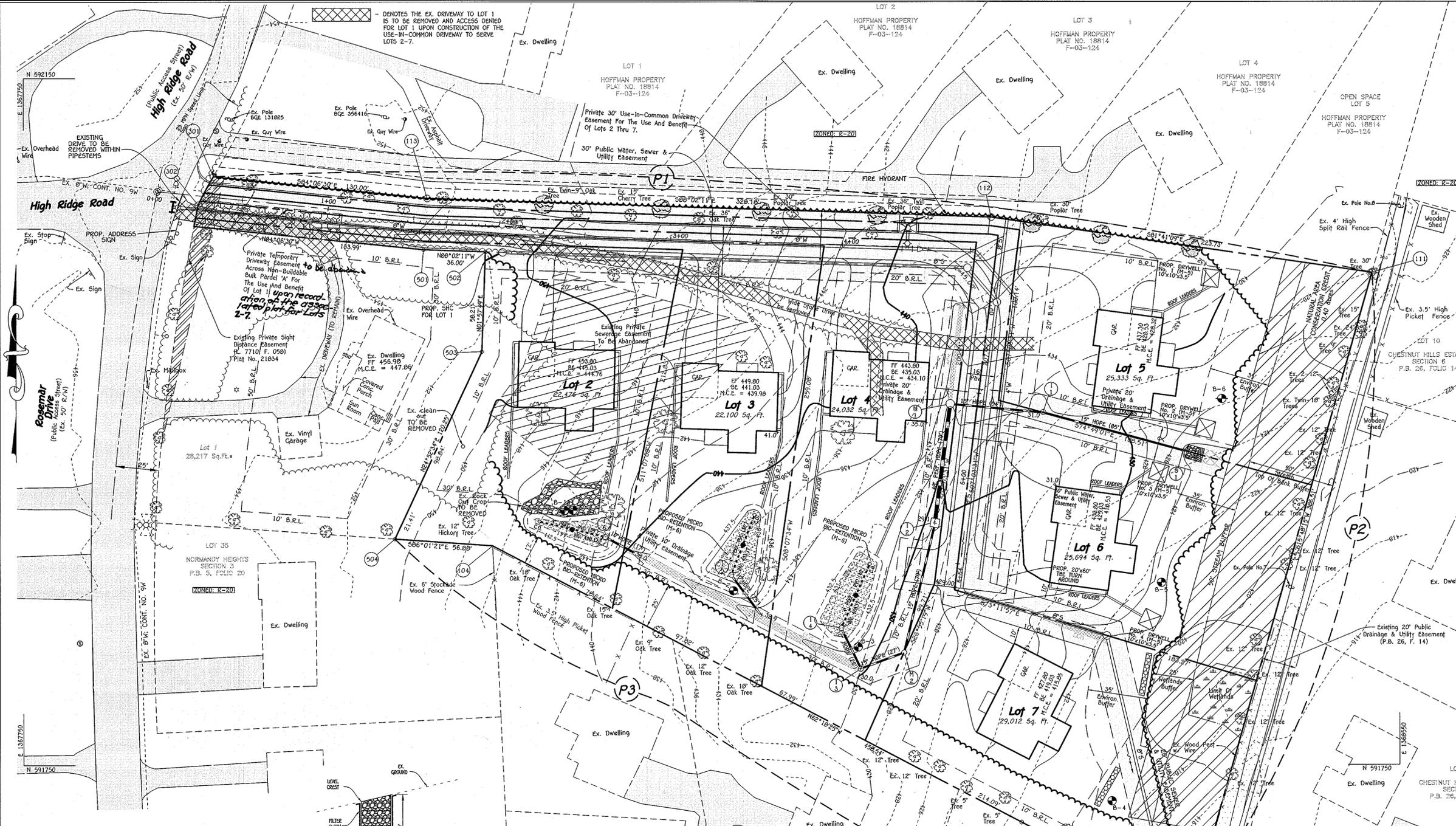
Positive drainage shall be maintained in planting beds 2 percent slope.

Planting mix shall be as follows: Deciduous Plants - Two parts topsoil, one part well-rotted cow or horse manure. Add 3 lbs. of standard fertilizer per cubic yard of planting mix.

Evergreen Plants - two parts topsoil, one part humus or other approved organic material. Add 3 lbs. of evergreen (acidic) fertilizer per cubic yard of planting mix.

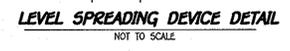
Topsoil shall conform to the Landscape Guidelines. Veed Control Incorporate a pre-emergent herbicide into the planting bed following recommended rates on the label.

Caution: Be sure to carefully check the chemical used to assure its adaptability to the specific ground cover to be treated. All areas within contract limits require to be treated prior to construction not designed to receive plants and mulch shall be fine graded and seeded. This plan is intended for landscape use only. See other plan sheets for more information on grading, sediment control, layout, etc.



PLANT LIST

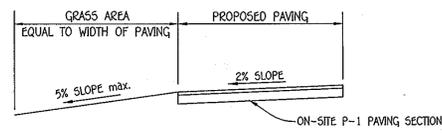
SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE
	7	ACER RUBRUM "OCTOBER GLORY" RED MAPLE	2 1/2"-3" CAL.



LEVEL SPREADING DEVICE DETAIL
NOT TO SCALE

SCHEDULE A - PERIMETER LANDSCAPING

PERIMETER	CATEGORY (PROPERTIES/ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF ROADWAY FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED & PROVIDED		
						SHADE TREES	EVERGREEN TREES	SHRUBS
P-1	ADJ. TO PERIMETER	A	676.62'	11 TREES REQUIRED 4 EXISTING TREES CREDIT	NO	7	-	-
P-2	ADJ. TO PERIMETER	A	386.51'	100% CREDIT	NO	0	-	-
P-3	ADJ. TO PERIMETER	A	515'	9 TREES REQUIRED 12 EXISTING TREES CREDIT	NO	0	-	-



TYPICAL DRIVEWAY SECTION FOR NON-ROOFTOP DISCONNECT CREDIT
NOT TO SCALE

OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED, DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

1. MAINTENANCE OF AREAS RECEIVING DISCONNECTION RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR UNIMPROVED AREAS. THE AREAS RECEIVING RUNOFF SHOULD BE PROTECTED FROM FUTURE CONSTRUCTION OR DEVELOPMENT OF IMPERVIOUS AREA IN CONNECTION WITH ANY FUTURE TRAFFIC SHOULD BE DISCOURAGED AS WELL.

LANDSCAPE DEVELOPER'S CERTIFICATE

I/we certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/we further certify that upon completion a letter of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SOURCE OFFICE PARK - 10272 BALDOR NATIONAL PARK
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2959

Name: **[Signature]**
 Date: **12-3-2012**

OWNERS
 PAUL AND GEORGIA MILLER, TRUSTEES
 2895 ROSEMARE DRIVE
 ELLICOTT CITY, MARYLAND 21043
 (410) 465-4761

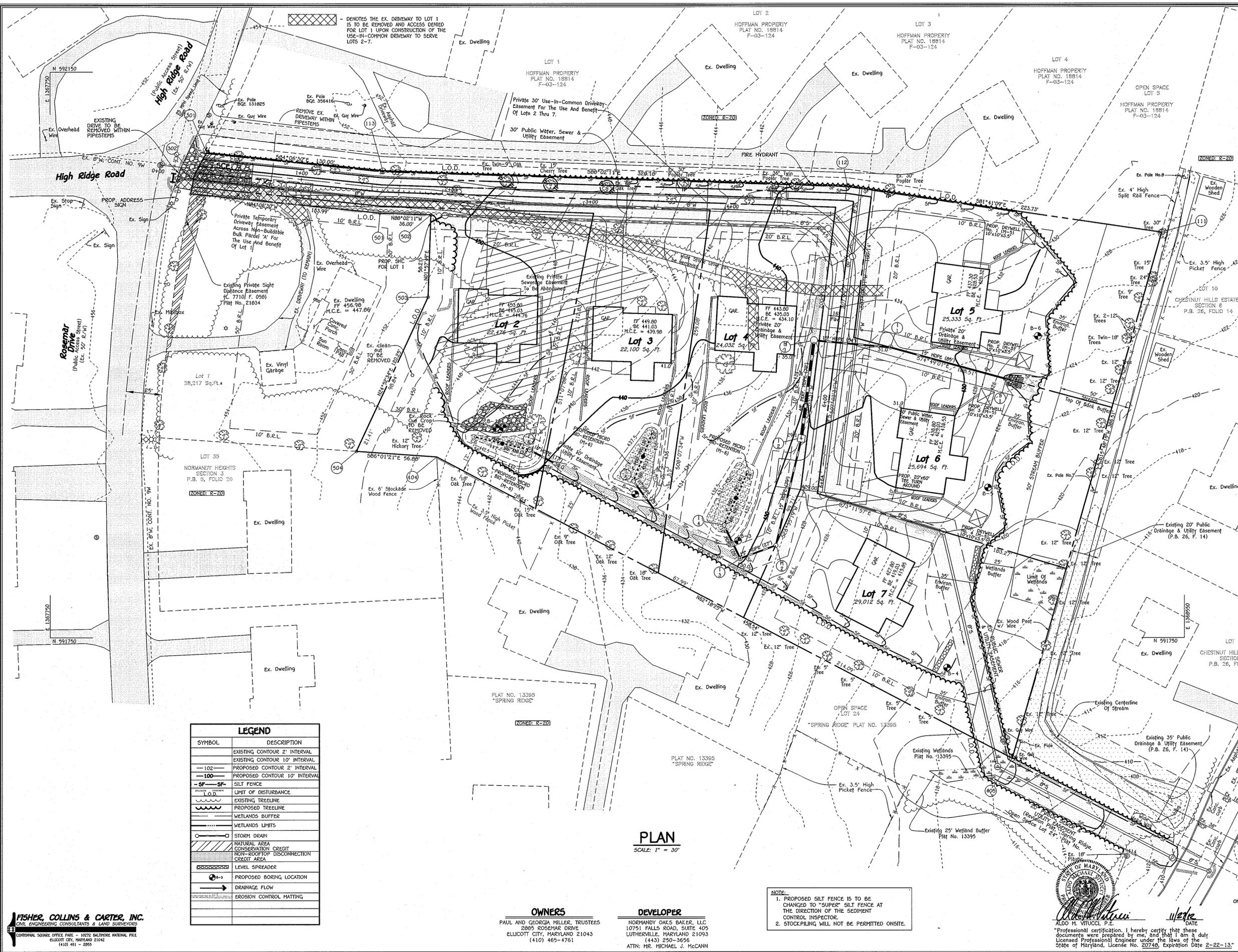
DEVELOPER
 NORMANDY OAKS, BAKER, LLC
 10751 FALLS ROAD, SUITE 405
 LUTHERVILLE, MARYLAND 21093
 (443) 250-3656
 ATTN: MR. MICHAEL J. MCCANN

PLAN
 SCALE: 1" = 30'



ALDO M. VITUCCI, P.E.
 I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, expiration Date 2-22-13.
 Date: **1/2/13**

Supplemental, Landscaping, Topography & Stormwater Management Plan
NORMANDY OAKS
LOTS 2 THRU 7
 A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL 'A', AS SHOWN ON PLATS ENTITLED "NORMANDY OAKS, LOT 1 AND NON-BUILDABLE BULK PARCEL 'A'" RECORDED AMONGS THE LAND RECORDS OF HOWARD COUNTY, MARYLAND AS PLAT NOS. 21833-21834.
 ZONED: R-20
 TAX MAP NO. 18 GRID NO. 13 PARCEL NO. 51
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: NOVEMBER 28, 2012
 SHEET 2 OF 7



- DENOTES THE EX. DRIVEWAY TO LOT 1 IS TO BE REMOVED AND ACCESS DENIED FOR LOT 1 UPON CONSTRUCTION OF THE USE-IN-COMMON DRIVEWAY TO SERVE LOTS 2-7.

Private 30' Use-In-Common Driveway Easement For The Use And Benefit Of Lots 2 Thru 7.
30' Public Water, Sewer & Utility Easement

LEGEND	
SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	EXISTING CONTOUR 10' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
	PROPOSED CONTOUR 10' INTERVAL
	SILT FENCE
	LIMIT OF DISTURBANCE
	EXISTING TREELINE
	PROPOSED TREELINE
	WETLANDS BUFFER
	WETLANDS LIMITS
	STORM DRAIN
	NATURAL AREA CONSERVATION CREDIT
	NON-ROOFTOP DISCONNECTION CREDIT AREA
	LEVEL SPREADER
	PROPOSED BORING LOCATION
	DRAINAGE FLOW
	EROSION CONTROL MATTING

PLAN
SCALE: 1" = 30'

NOTE:
1. PROPOSED SILT FENCE IS TO BE CHANGED TO "SUPER" SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
2. STOCKPILING WILL NOT BE PERMITTED ONSITE.

OWNERS
PAUL AND GEORGIA MILLER, TRUSTEES
2895 ROSEMAR DRIVE
ELLICOTT CITY, MARYLAND 21043
(410) 465-4761

DEVELOPER
NORMANDY OAKS BAKER, LLC
10791 FALLS ROAD, SUITE 409
LUTHERVILLE, MARYLAND 21093
(443) 250-3656
ATTN: MR. MICHAEL J. MCCANN

ENGINEER'S CERTIFICATE
I Herewith Certify This Plan For Erosion And Sediment Control Represents A Final And Workable Plan Based On My Personal Knowledge Of The Site Conditions And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.
Signature: *[Signature]* Date: 11/27/12

ENGINEER'S CERTIFICATE
I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Reasonable Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Deemed Necessary.
Signature of Developer: *[Signature]* Date: 12/3/2012

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.
Signature: *[Signature]* Date: 1/3/13
District Howard Soil Conservation Dist.

Approved: Department Of Planning And Zoning
Signature: *[Signature]* Date: 2/20/13
Chief, Division Of Land Development

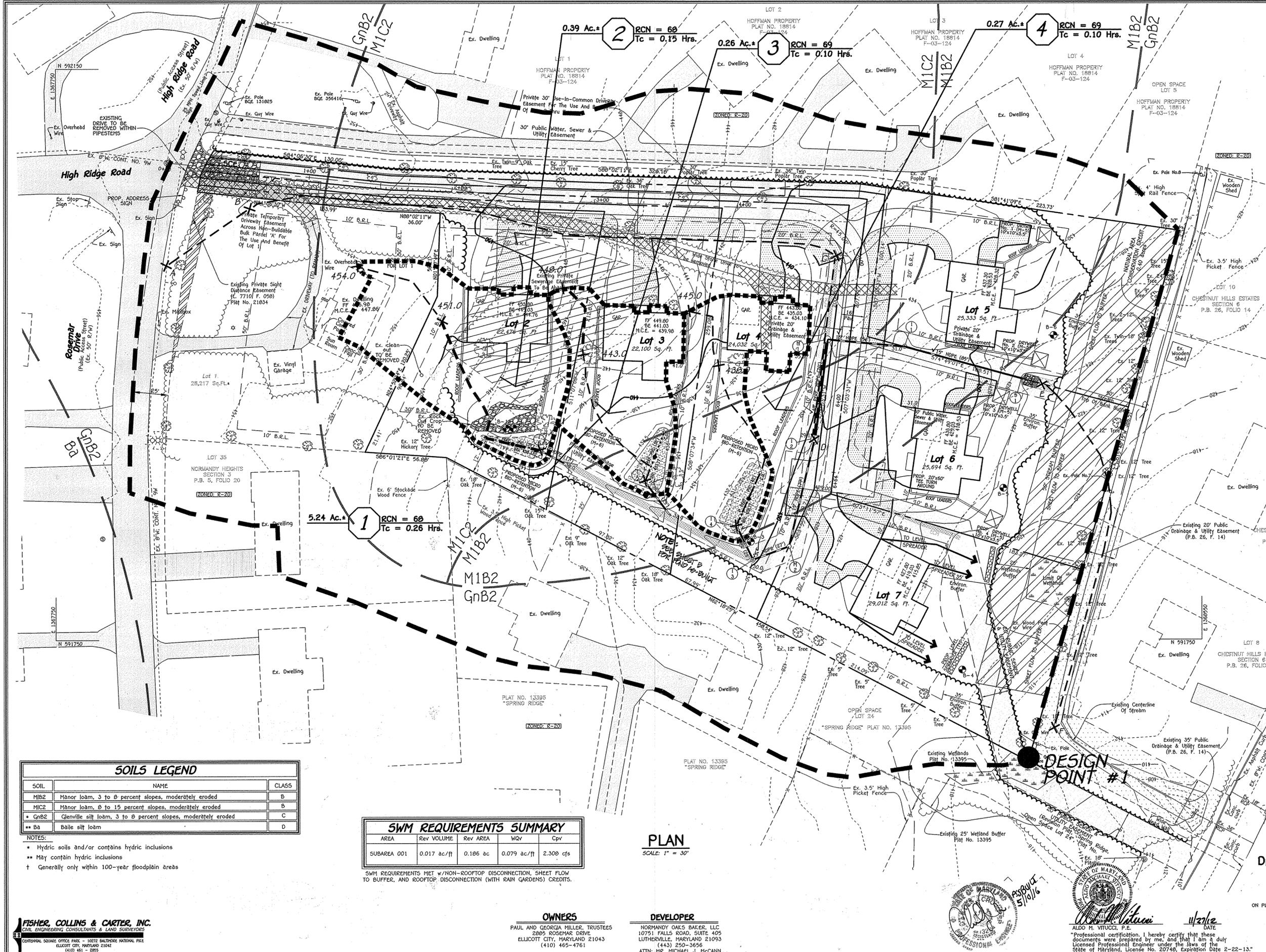
Signature: *[Signature]* Date: 2-19-13
Chief, Development Engineering Division

Sediment Control Plan
NORMANDY OAKS
LOTS 2 THRU 7
A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL 'A', AS SHOWN ON PLATS ENTITLED "NORMANDY OAKS, LOT 1 AND NON-BUILDABLE BULK PARCEL 'A'" RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND AS PLAT Nos. 21833-21834
ZONED: R-20
TAX MAP No. 18 GRID No. 13 PARCEL No. 51
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: NOVEMBER 28, 2012
SHEET 3 OF 7

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SQUARE OFFICE PARK - 10272 BALTOUR NATIONAL PLACE
ELLICOTT CITY, MARYLAND 21042
(410) 491-2899

ALDO M. VITUCCI, P.E.
DATE: 11/27/12
Professional certification, I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20740, Expiration Date 2-22-13.

Approved: Department of Planning and Zoning
 Chief, Division of Land Development
 Chief, Development Engineering Division
 Date: 2/20/13
 Date: 2-19-13



SOIL	NAME	CLASS
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MIC2	Manor loam, 8 to 15 percent slopes, moderately eroded	B
GnB2	Glenville silt loam, 3 to 8 percent slopes, moderately eroded	C
Ba	Baile silt loam	D

NOTES:
 * Hydric soils and/or contains hydric inclusions
 ** May contain hydric inclusions
 † Generally only within 100-year floodplain areas

SWM REQUIREMENTS SUMMARY				
AREA	Rev VOLUME	Rev AREA	WQv	Cpv
SUBAREA 001	0.017 ac/ft	0.186 ac	0.079 ac/ft	2.308 cfs

SWM REQUIREMENTS MET w/ NON-ROOFTOP DISCONNECTION, SHEET FLOW TO BUFFER, AND ROOFTOP DISCONNECTION (WITH RAIN GARDENS) CREDITS.

PLAN
 SCALE: 1" = 30'

DISCHARGE SUMMARY AT PI #1		
FREQUENCY	EXISTING (cfs)	PROPOSED (cfs)
1-YEAR	1.7	2.0
10-YEAR	12.4	11.9
100-YEAR	24.1	26.1

Drainage Area Map & Soils Map
 NORMANDY OAKS
 LOTS 2 THRU 7

A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "A", AS SHOWN ON PLATS ENTITLED "NORMANDY OAKS, LOT 1 AND NON-BUILDABLE BULK PARCEL "A" RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND AS PLAT Nos. 21833-21834
 ZONED: R-20
 TAX MAP No. 18 GRID No. 13 PARCEL No. 51
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: NOVEMBER 28, 2012
 SHEET 4 OF 7

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21104
 (410) 461-5995

OWNERS
 PAUL AND GEORGIA MILLER, TRUSTEES
 2895 ROSEMAR DRIVE
 ELLICOTT CITY, MARYLAND 211043
 (410) 465-4761

DEVELOPER
 NORMANDY OAKS BAKER, LLC
 10751 FALLS ROAD, SUITE 405
 LUTHERVILLE, MARYLAND 21093
 (443) 250-3656
 ATTN: MR. MICHAEL J. MCCANN



Professional certification, I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-13.

Infiltration and Filter System Construction Specifications

Infiltration and filter systems either take advantage of existing permeable soils or create a permeable medium such as sand for WC, and Re v. In some instances where permeability is great, these facilities may be used for Qp as well. The most common systems include infiltration trenches, infiltration basins, sand filters, and organic filters.

When properly planted, vegetation will thrive and enhance the functioning of these systems. For example, pre-treatment buffers will trap sediments that often are bound with phosphorus and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide arteries for stormwater to permeate soil for groundwater recharge. Finally, successful plantings provide aesthetic value and wildlife habitat making these facilities more desirable to the public.

Design Constraints:

- > Planting buffer strips of at least 20 feet will cause sediments to settle out before reaching the facility, thereby reducing the possibility of clogging.
- > Determine areas that will be saturated with water and water table depth so that appropriate plants may be selected (hydrology will be similar to bioretention facilities, see figure A.5 and Table A.4 for planting material guidance).
- > Plants known to send down deep taproots should be avoided in systems where filter fabric is used as part of facility design.
- > Test soil conditions to determine if soil amendments are necessary.
- > Plants shall be located so that access is possible for structure maintenance.
- > Stabilize heavy flow areas with erosion control mats or sod.
- > Temporarily divert flows from seeded areas until vegetation is established.
- > See Table A.5 for additional design considerations.

Bio-retention Soil Bed Characteristics

The characteristics of the soil for the bioretention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollutant uptake (nitrogen and phosphorus) is accomplished through absorption and microbial activity within the soil profile. Therefore, soils must balance their chemical and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume (Environmental Quality Resources (EQR), 1996; Engineering Technology, Inc. and Biohabitats, Inc. (ETAB), 1993). Soils should fall within the SM, ML, SC classifications of the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.5"/hr) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Brush or seeds from noxious weeds (e.g., Johnson Grass, Mugwort, Nutsedge, and Canada Thistle or other noxious weeds as specified under COMAR 15.08.01.05.) should not be present in the soils. Placement of the planting soil should be in 12 to 18 lifts that are loosely compacted (tamped lightly with a backhoe bucket or traversed by dozer tracks). The specific characteristics are presented in Table A.3.

Table A.3 Planting Soil Characteristics

Parameter	Value
pH range	5.2 to 7.00
Organic matter	1.5 to 4.0% (by weight)
Magnesium	35 lbs. per acre, minimum
Phosphorus (phosphate - P2O5)	75 lbs. per acre, minimum
Potassium (potash - K2O)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	10 to 25 %
Silt	30 to 55 %
Sand	35 to 60%

Mulch Layer

The mulch layer plays an important role in the performance of the bioretention system. The mulch layer helps maintain soil moisture and avoids surface sealing, which reduces permeability. Mulch helps prevent erosion, and provides a microenvironment suitable for soil biota at the mulch/soil interface. It also serves as a pretreatment layer, trapping the finer sediments, which remain suspended after the primary pretreatment.

The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (stockpiled or stored for at least 12 months), uniform in color, and free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to a maximum depth of three inches. Grass clippings should not be used as a mulch material.

Planting Guidance

Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bioretention simulates an upland-species ecosystem. The community should be dominated by trees, but have a distinct community of understory trees, shrubs and herbaceous materials. By creating a diverse, dense plant cover, a bioretention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure. The proper selection and installation of plant materials is key to a successful system. There are essentially three zones within a bioretention facility (Figure A.5). The lowest elevation supports plant species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge is the highest elevation and generally supports plants adapted to drier conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be flexible, but should follow the general principals described in Table A.5. The objective is to have a system, which resembles a random, and natural plant layout, while maintaining optimal conditions for plant establishment and growth. For a more extensive bioretention plan, consult ETAB, 1993 or Clayton and Schueler, 1997.

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO BIO-RETENTION AREAS (M-6)

- The owner shall maintain the plant material, mulch layer and soil layer annually, maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.
- The owner shall perform a plant in the spring and in the fall each year. During the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material. Treat diseased trees and shrubs and replace all deficient stakes and wires.
- The owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.
- The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.

NOTES:

UNDERDRAIN PIPE SHALL BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 750, TYPE P5 20 OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED 4" RIGID PIPE (E.G., PVC OR HOPE).

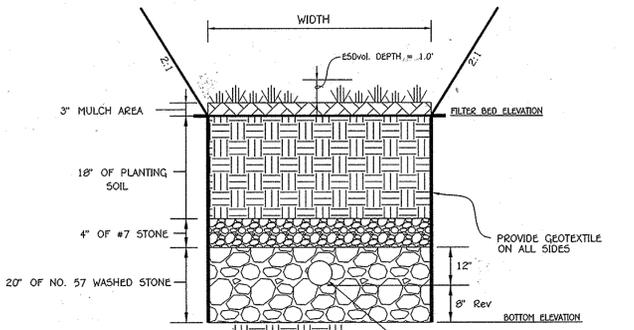
PERFORATIONS SHALL BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4 x 4) GALVANIZED HARDWARE CLOTH.

GRAVEL LAYER SHALL BE (NO. 57 STONE PREFERRED) AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.

THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.

A RIGID, NON PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQ.FT.) TO PROVIDE A CLEANOUT PORT AND MONITOR PERFORMANCE OF THE FILTER.

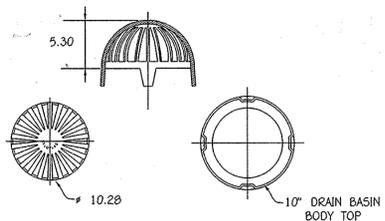
A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".



NOTE: PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW.

TYPICAL MICRO BIO-RETENTION (M-6) DETAIL
NO SCALE

MICRO BIO-RETENTION DATA								
LOT No.	FACILITY No.	LENGTH (ft) Max	WIDTH (ft) Max	FILTER BED ELEVATION	INLET ELEVATION OF DOME GRATE	BOTTOM ELEVATION	UNDERDRAIN INVERT	OUTFALL INVERT
2	1	44'	12.5'	441.0	442.0	437.5	438.17	438.0
3	2	45'	22'	436.0	437.0	432.5	433.17	432.9
4	3	50'	16'	431.0	432.0	427.5	428.17	427.90 @ 1-5



ALL DIMENSIONS IN INCHES UNLESS NOTED OTHERWISE
QUALITY: MATERIAL SHALL CONFORM TO ASTM A536 GRADE 70-50-05
PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT LOCKING DEVICE AVAILABLE UPON REQUEST
SEE DRAWING NO. 7001-110-126

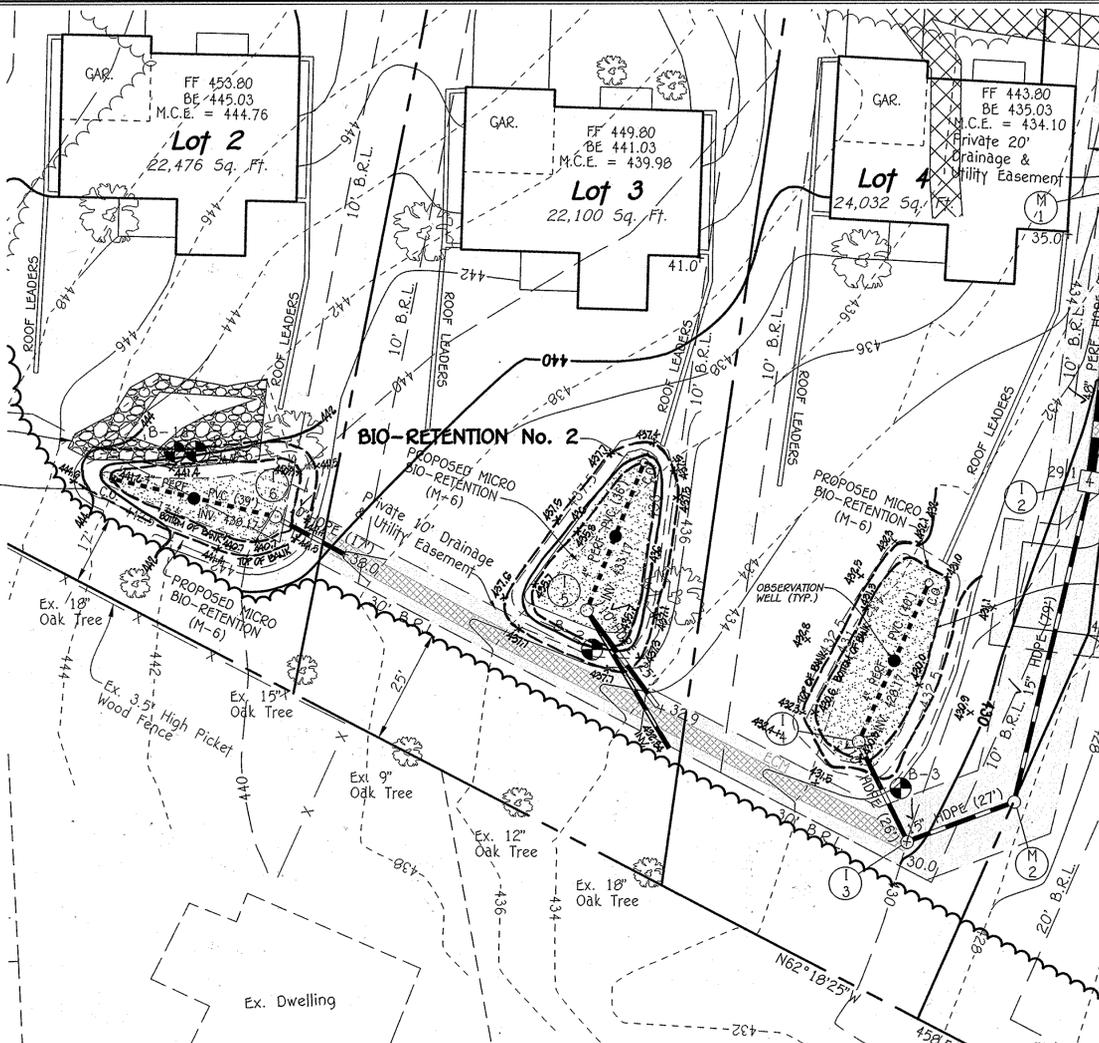
Nyloplast
3130 VERONA AVE
BUNFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

SCH40 PVC PERFORATED UNDERDRAIN PIPE DETAIL
NO SCALE

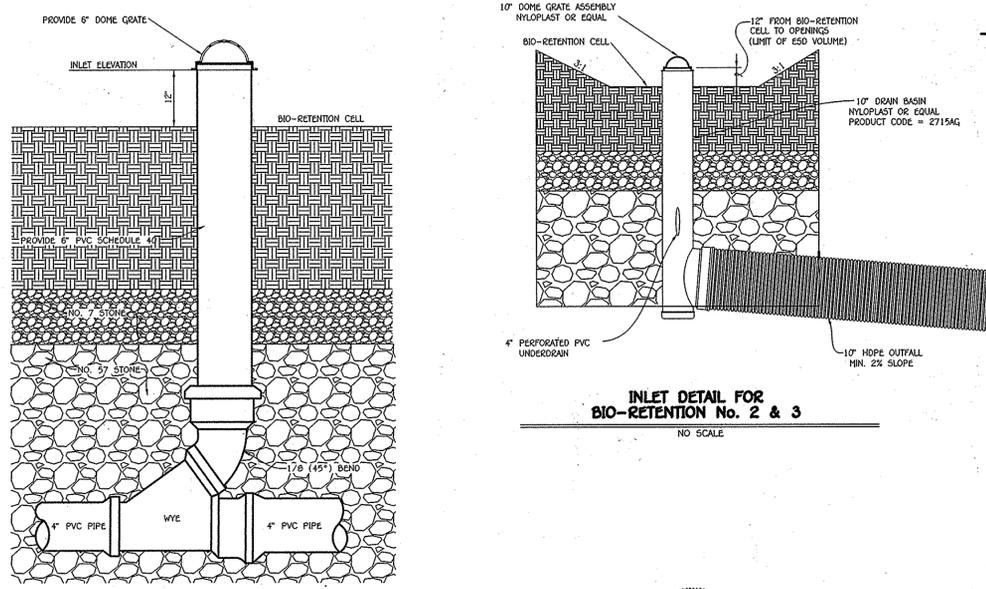
10" DOME GRATE ASSEMBLY
NYLOPLAST OR EQUAL

OWNERS
PAUL AND GEORGIA MILLER, TRUSTEES
2805 ROSEMAR DRIVE
ELLICOTT CITY, MARYLAND 21043
(410) 465-4761

DEVELOPER
NORMANDY OAKS BAKER, LLC
10751 FALLS ROAD, SUITE 405
LUTHERVILLE, MARYLAND 21093
(443) 250-3656
ATTN: MR. MICHAEL J. MCCANN



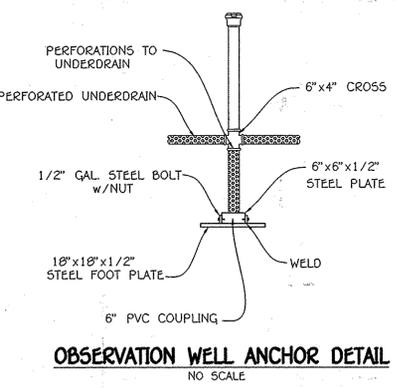
BIO-RETENTION PLAN
SCALE: 1" = 20'



TYPICAL CLEAN-OUT DETAIL
NO SCALE

INLET DETAIL FOR BIO-RETENTION No. 2 & 3
NO SCALE

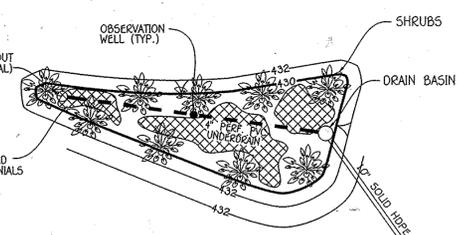
Approved: Department of Planning and Zoning
Wendy S. ... 2/20/13
Chief, Division of Land Development
Chris ... 2.19.13
Chief, Development Engineering Division
Date



OBSERVATION WELL ANCHOR DETAIL
NO SCALE

BIO-RETENTION No. 3 Bio-Retention plant and shrub species

- MIXED PERENNIALS**
CUT-LEAF CONEFLOWER
CARDINAL FLOWER
TRIDACNA ASTER
- SHRUBS**
BAYBERRY
ARROWWOOD
WINTERBERRY
DOGWOOD
WITCH HAZEL
BUTTERNUT
BUCKEYE
BOTTLEBRUSH
- ANY OF THE SHRUBS LISTED MAY BE USED



BIO-RETENTION FILTER PLANTING DETAIL
NO SCALE

PLANT MATERIAL-BIO-RETENTION No. 1		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
100	MIXED PERENNIALS	1 FT.
50	SHRUBS	2 FT.

PLANT MATERIAL-BIO-RETENTION No. 2		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
160	MIXED PERENNIALS	1 FT.
80	SHRUBS	2 FT.

PLANT MATERIAL-BIO-RETENTION No. 3		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
160	MIXED PERENNIALS	1 FT.
80	SHRUBS	2 FT.

Stormwater Management Details
NORMANDY OAKS
LOTS 2 THRU 7
A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL "A", AS SHOWN ON PLATS ENTITLED "NORMANDY OAKS, LOT 1 AND NON-BUILDABLE BULK PARCEL "A" RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND AS PLAT Nos. 21833-21834
ZONED: R-20
TAX MAP No. 18 GRID No. 13 PARCEL No. 51
SECOND ELECTION DISTRICT: HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: NOVEMBER 28, 2012
SHEET 5 OF 7



FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SOURCE OFFICE PARK - 10272 BALDWIN NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 451-2955

STRUCTURE SCHEDULE

STRUCTURE NO.	TOP ELEVATION	INV. IN	INV. OUT	LOCATION	COORDINATE	OFFSET	TYPE AND WIDTH	REMARKS
I-1	* 424.00 429.99	424.00 429.99	423.94 77	-----	N 29195 46.76 E 136642 89.37	-----	1/8" DRAIN BASIN ** 2810 AG 02D	W/DOME GRATE
I-2	* 429.18 9	426.58 0	423.78 0	-----	N 79190 99.84 E 136679 89.37	-----	08L" INLET D-4-23	W/DOME GRATE
I-3	* 426.00 429.99	427.94 47	427.26 1	-----	N 79190 99.84 E 136679 89.37	-----	1/8" DRAIN BASIN ** 2810 AG 02D	W/DOME GRATE
I-4	* 432.09 0	428.17 0	427.90 0	-----	N 79190 99.84 E 136679 89.37	-----	1/8" DRAIN BASIN ** 2810 AG 02D	W/DOME GRATE
I-5	* 437.00 0	434.47 0	434.00 0	-----	N 79190 99.84 E 136679 89.37	-----	1/8" DRAIN BASIN ** 2810 AG 02D	W/DOME GRATE
I-6	* 442.00 0	438.47 0	438.47 0	-----	N 79190 99.84 E 136679 89.37	-----	1/8" DRAIN BASIN ** 2810 AG 02D	W/DOME GRATE
M-1	432.18 0	423.48 0	424.48 0	-----	N 79190 99.84 E 136679 89.37	-----	6" dia. MANHOLE	W/SOLID GRATE
M-2	429.98 0	427.48 0	427.00 4	-----	N 79190 99.84 E 136679 89.37	-----	1/8" DRAIN BASIN ** 2810 AG 02D	W/SOLID GRATE
S-1		423.60 44		-----	N 59193 89.37 E 136642 89.37	-----	1/5" HOPE END SECTION	

* - DENOTES TOP OF BASIN ELEVATION

Nyloplast OR EQUAL
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2480
www.nyloplast-us.com

OPERATION AND MAINTENANCE SCHEDULE FOR H.O.A. OWNED AND MAINTAINED UNDERGROUND S.W.M. FACILITY

- A. H.O.A. ROUTINE MAINTENANCE RESPONSIBILITIES:
1. THE UNDERGROUND S.W.M. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.
 2. MAINTENANCE OF THE 48-INCH PIPE SHALL BE PERFORMED BY FLUSHING THE SYSTEM THROUGH I-2 AND BY VACUUMING AT MANHOLE M-1. THE DISCHARGE ORIFICE OF THE UNDERGROUND S.W.M. FACILITY SHALL BE TEMPORARILY BLOCKED DURING SAID MAINTENANCE OPERATION.
 3. DISPOSAL OF MATERIAL SHALL BE IN ACCORDANCE WITH SIMILAR B.M.P. THAT RANGE FROM DISPOSAL IN A SANITARY LANDFILL TO INCINERATION IN A LICENSED FACILITY. PETROLEUM WASTE PRODUCTS SHOULD BE REMOVED BY A LICENSED WASTE MANAGEMENT COMPANY.
- B. H.O.A. NON-ROUTINE MAINTENANCE:
1. STRUCTURAL COMPONENTS OF THE UNDERGROUND FACILITY SUCH AS THE MANHOLE, PIPE AND ORIFICE SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS. INSPECTION REPORTS SHALL BE KEPT UNTIL THE NEXT SUBSEQUENT INSPECTION.
 2. PROBLEMS IDENTIFIED DURING INSPECTION WILL BE PROMPTLY CORRECTED. MAJOR PROBLEMS SHALL ALSO BE BROUGHT TO THE ATTENTION OF THE HOWARD COUNTY DEPT. OF PUBLIC WORKS TO INSURE THAT PUBLIC SAFETY IS MAINTAINED. BLOCKED DURING SAID MAINTENANCE OPERATION.

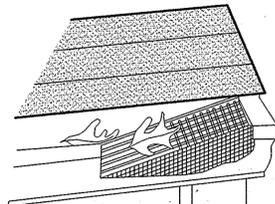
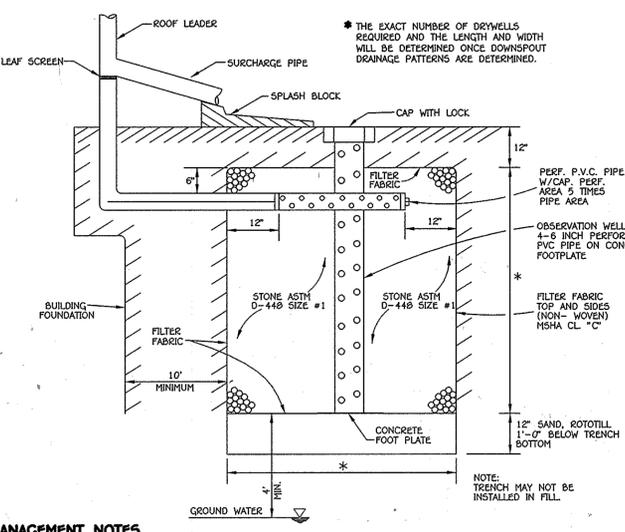
PIPE SCHEDULE

SIZE	CLASS	LENGTH
4"	PVC, SCH. 40 (PERFORATED)	115 L.F.
10"	HDPE	68 L.F.
15"	HDPE	245 L.F.
48"	PERFORATED HDPE	70 L.F.

STORMWATER MANAGEMENT NOTES

1. STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH THE 2000 HANDBOOK ON STORMWATER DESIGN MANUAL.
2. CREEKS ARE OPEN FOR DISCONNECTION OF IMPROVED COVERS.
3. MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNROOF SHALL BE LESS THAN 500 SQ. FT.
4. DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH OF DISCONNECTION IS LESS THAN 75' AT 5% SLOPE AND CONSTRUCTION OF THE DRYWELL SHALL BE IN ACCORDANCE WITH THE FIGURE 5.2 OF THE MANUAL AND THE DETAIL SHOWN ON THIS SHEET.
5. FINAL GRADING WILL BE SHOWN ON PLOT PLAN.

DRY WELL DETAIL (M-5)
NOT TO SCALE



GUTTER DRAIN FILTER DETAIL
NOT TO SCALE

- OPERATION AND MAINTENANCE SCHEDULE FOR DRYWELLS (M-5)**
1. The owner shall inspect the monitoring wells and structures on a quarterly basis and after every heavy storm event.
 2. The owner shall record the water levels and sediment build up in the monitoring wells over a period of several days to insure trench drainage.
 3. The owner shall maintain a log book to determine the rate at which the facility drains.
 4. When the facility becomes clogged so that it does not drain down within a seventy two (72) hour time period, corrective action shall be taken.
 5. The maintenance log book shall be available to Howard County for inspection to insure compliance with operation and maintenance criteria.
 6. Once the performance characteristics of the infiltration facility have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicates that a more frequent schedule is required.

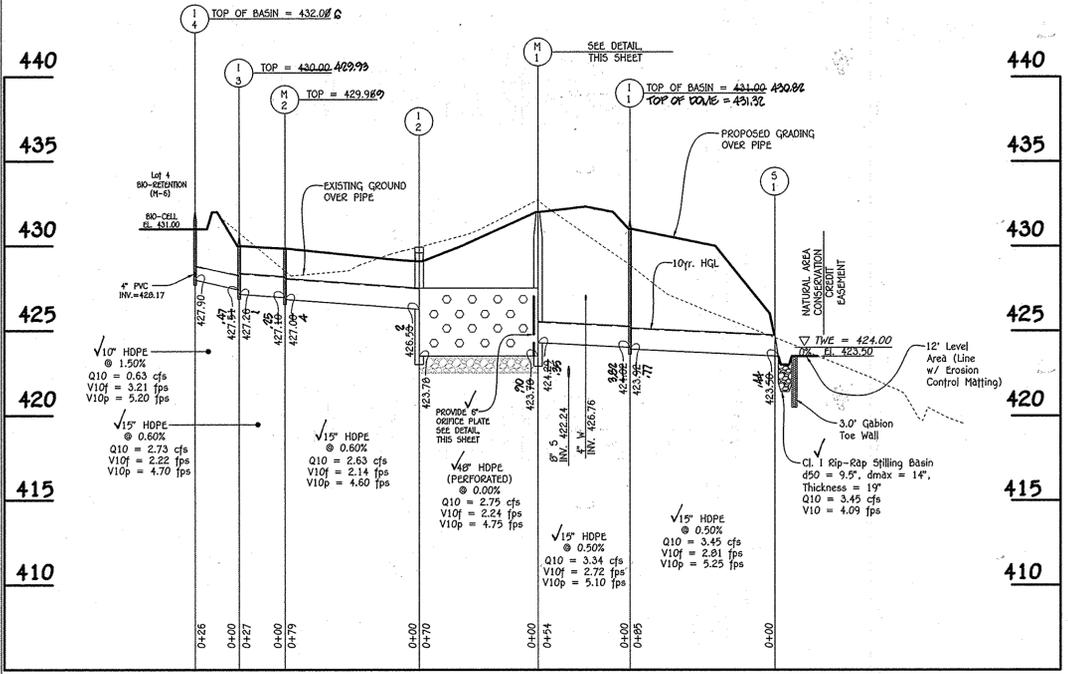
Approved: Department of Planning And Zoning
 [Signature] 2/20/13
 Chief, Division of Land Development
 [Signature] 2-19-13
 Chief, Development Engineering Division AW
 Date



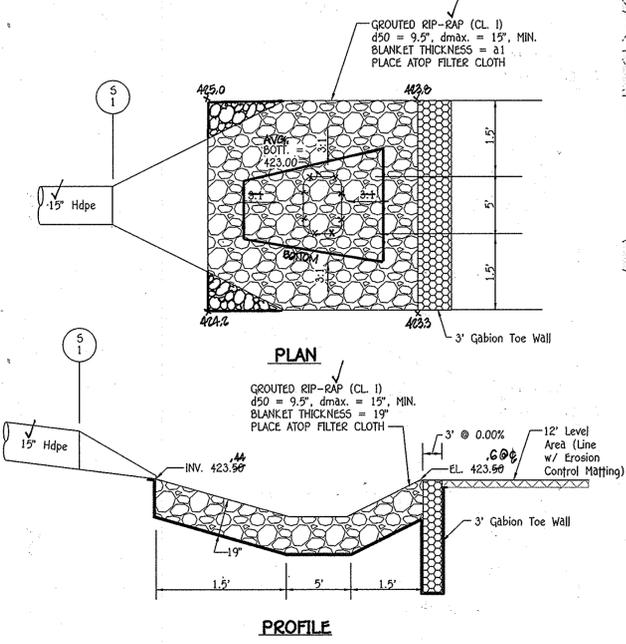
DRAINAGE AREA DATA

STRUCTURE NO.	DRAINAGE AREA	AREA	'C'	ZONED	% IMP.
I-1	I-1	0.21 AC.	0.23	R-20	0%
I-2	I-2	0.87 AC.	0.21	R-20	0%
I-3	I-3	0.85 AC.	0.43	R-20	6%

PLAN
SCALE: 1" = 50'



PROFILE
SCALE: HORIZ. : 1" = 50'
VERT. : 1" = 5'

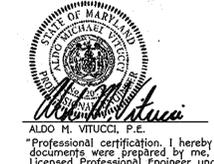


TYP. STILLING BASIN OUTFALL DETAIL
NO SCALE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SOURCE OFFICE PARK - 10272 BALDOR NATIONAL PIKE
ELICOTT CITY, MARYLAND 21042
(410) 461-3993

OWNERS
PAUL AND GEORGIA MILLER, TRUSTEES
2895 ROSEMAR DRIVE
ELICOTT CITY, MARYLAND 21043
(410) 465-4761

DEVELOPER
NORMANDY OAKS BAKER, LLC
10751 FALLS ROAD, SUITE 405
LUTHERVILLE, MARYLAND 21093
(443) 250-3656
ATTN: MR. MICHAEL J. MCCANN



Storm Drain Profiles & Storm Drain Drainage Area Map
NORMANDY OAKS
LOTS 2 THRU 7

A RESUBDIVISION OF NON-BUILDABLE BULK PARCEL 'A', AS SHOWN ON PLATS ENTITLED "NORMANDY OAKS, LOT 1 AND NON-BUILDABLE BULK PARCEL 'A'" RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY, MARYLAND AS PLAT NOS. 21833-21834 ZONED: R-20
TAX MAP NO. 18 GRID NO. 13 PARCEL NO. 51
SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: NOVEMBER 28, 2012
SHEET 6 OF 7

AS-BUILT 9/10/16 F-12-068

SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS (B-4-2)

- A. Soil Preparation**
- Temporary Stabilization
 - Seeded preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or other plows or rippers mounted on construction equipment. After the soil is loosened, it must be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
 - Permanent Stabilization
 - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
 - Soil pH between 6.0 and 7.0.
 - Soluble salts less than 500 parts per million (ppm).
 - Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if loess soils will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
 - Soil contains 1.5 percent minimum organic matter by weight.
 - Soil contains sufficient pore space to permit adequate root penetration.
 - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
 - Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
 - Mix soil amendments as specified on the approved plan or as indicated by the results of a soil test.
 - Apply soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seeded preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 2 inches of soil loose and friable. Seeded loosening may be unnecessary on newly disturbed areas.

- B. Topsoiling**
- Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
 - Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
 - Topsoiling is limited to areas having 2:1 or flatter slopes where:
 - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
 - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.
 - Areas having slopes steeper than 2:1 require special consideration and design.
 - Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
 - Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textures and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 inches in diameter.
 - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
 - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
 - Topsoil Application
 - Erosion and sediment control practices must be maintained when applying topsoil.
 - Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
 - Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seeded preparation.

- C. Soil Amendments (Fertilizer and Lime Specifications)**
- Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on areas having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
 - Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
 - Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydrossedging) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #200 mesh sieve.
 - Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.

PERMANENT SEEDING NOTES (B-4-2)

A. Seed Mixtures

1. General Use

2. Turfgrass Mixtures

3. Areas where turfgrasses may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

4. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixtures, application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.

5. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management, irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

6. Kentucky Bluegrass/Perennial Ryegrass: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

7. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixtures include: Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.

8. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding rate: 1 1/2 to 3 pounds per 1000 square feet.

Notes:
Select turfgrass varieties from those listed in the most current University of Maryland Publication, Approved Mixture #77, Turfgrass Cultivar Recommendations for Maryland.
Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

PERMANENT SEEDING NOTES (B-4-2)

- A. Seed Mixtures**
1. General Use
2. Turfgrass Mixtures
3. Areas where turfgrasses may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
4. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixtures, application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
5. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management, irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
6. Kentucky Bluegrass/Perennial Ryegrass: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
7. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixtures include: Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
8. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding rate: 1 1/2 to 3 pounds per 1000 square feet.
- Notes:
Select turfgrass varieties from those listed in the most current University of Maryland Publication, Approved Mixture #77, Turfgrass Cultivar Recommendations for Maryland.
Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

- B. Topsoiling**
- Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
 - Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
 - Topsoiling is limited to areas having 2:1 or flatter slopes where:
 - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
 - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.
 - Areas having slopes steeper than 2:1 require special consideration and design.
 - Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
 - Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textures and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 inches in diameter.
 - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
 - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
 - Topsoil Application
 - Erosion and sediment control practices must be maintained when applying topsoil.
 - Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
 - Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seeded preparation.

PERMANENT SEEDING SUMMARY

Hardness Zone (from Figure B.3):	Seeding Dates	Fertilizer Rate (10-20-20)	Lime Rate
5B	Mar. 1-May 15 Aug. 15-Oct. 15	45 lbs./ac (2 lb./1000 sq ft)	2 tons/ac (90 lb./1000 sq ft)

FOREST CONSERVATION WORKSHEET VERSION 1.0

BASIC SITE DATA:

A. TOTAL TRACT AREA: 4.09 (LOT 1 INCLUDED)

B. AREA WITHIN 100 YEAR FLOODPLAIN: 0.00

C. AREA TO REMAIN IN AGRICULTURAL PRODUCTION: 0.00

D. NET TRACT AREA: 4.09

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)

AREA MDR IOA HCR MFD CIA

INFORMATION FOR CALCULATIONS:

A. AFFORESTATION THRESHOLD: 15X x D = 0.62

F. FOREST CONSERVATION THRESHOLD: 20X x D = 0.82

G. EXISTING FOREST COVER: 3.40

H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD: 2.79

I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD: 2.50

J. FOREST RETENTION ABOVE THRESHOLD WITH NO MITIGATION: 1.34

K. CLEARING PERMITTED WITHOUT MITIGATION: 2.06

L. TOTAL AREA OF FOREST TO BE CLEARED: 3.40

M. TOTAL AREA OF FOREST TO BE RETAINED: 0.00

PLANTING REQUIREMENTS:

N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD: 0.65

O. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD: 1.64

P. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD: 0.00

R. TOTAL REFORESTATION REQUIRED: 2.29

S. TOTAL AFFORESTATION REQUIRED: 0.00

T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED: 2.29

TEMPORARY SEEDING NOTES (B-4-1)

Definition

To stabilize disturbed soils with vegetation for up to 6 months.

Purpose

To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

- Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardness Zone (from Figure B.3) and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
- For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for temporary seeding.
- When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

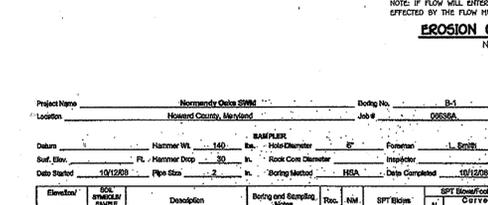
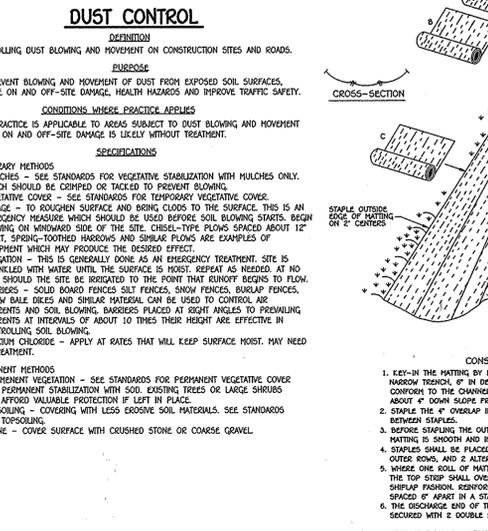
Hardness Zone (from Figure B.3):	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)	Lime Rate
5B	3/1 - 5/15 8/15 - 10/15	1"	436 lb./ac (10 lb./1000 sq ft)	2 tons/ac (90 lb./1000 sq ft)

FOREST CONSERVATION NOTES

1. THE FOREST CONSERVATION ACT OBLIGATION FOR THIS PROJECT IS 2.19 ACRES (2.29 ACRES - 0.10 ACRES). 0.10 ACRES WAS PROVIDED WITH NORTHWAY OAKS, LOT 1 AND NON-BUILDABLE BULK PARCEL 'A', PLAT NOS. 21833-21834.

2. THE TOTAL FOREST TO BE RETAINED FOR NORTHWAY OAKS, LOT 1 (PLAT NOS. 21833 AND 21834) AND NORTHWAY OAKS, LOT 2 THRU 7 IS 2.29 ACRES. THE RECORDING OF LOT 1 PROVIDED A FEE-IN-LIEU PAYMENT FOR 0.10 ACRES OF FORESTATION. THE REMAINING 2.19 ACRES OF FOREST OBLIGATION IS PROVIDED OFF-SITE ON THE PROPERTY OF QUARTER HILL, LLC, TAX MAP & TAX PARCEL 401 BY THE CREATION OF 4.38 ACRES RETENTION ON AN APPROVED FOREST BANK, 50P-10-104.

DUST CONTROL



SOIL TEST RESULTS

Depth	Soil Description	Moisture (%)	pH	Organic Matter (%)	Clay (%)	Silt (%)	Sand (%)
0-6"	Topsoil	15.2	5.8	4.5	12	35	48
6-12"	Subsoil	12.5	5.5	3.2	15	30	55
12-18"	Subsoil	10.8	5.2	2.8	18	25	57
18-24"	Subsoil	9.5	5.0	2.5	20	20	60
24-30"	Subsoil	8.2	4.8	2.2	22	15	63

SOIL TEST RESULTS

Depth	Soil Description	Moisture (%)	pH	Organic Matter (%)	Clay (%)	Silt (%)	Sand (%)
0-6"	Topsoil	15.2	5.8	4.5	12	35	48
6-12"	Subsoil	12.5	5.5	3.2	15	30	55
12-18"	Subsoil	10.8	5.2	2.8	18	25	57
18-24"	Subsoil	9.5	5.0	2.5	20	20	60
24-30"	Subsoil	8.2	4.8	2.2	22	15	63

SOIL TEST RESULTS

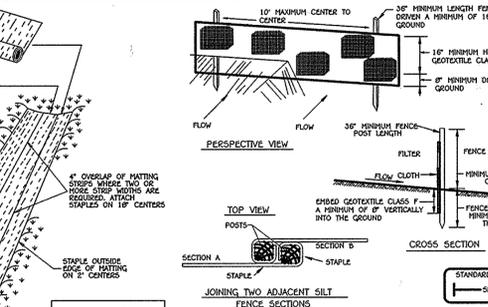
Depth	Soil Description	Moisture (%)	pH	Organic Matter (%)	Clay (%)	Silt (%)	Sand (%)
0-6"	Topsoil	15.2	5.8	4.5	12	35	48
6-12"	Subsoil	12.5	5.5	3.2	15	30	55
12-18"	Subsoil	10.8	5.2	2.8	18	25	57
18-24"	Subsoil	9.5	5.0	2.5	20	20	60
24-30"	Subsoil	8.2	4.8	2.2	22	15	63

SOIL TEST RESULTS

Depth	Soil Description	Moisture (%)	pH	Organic Matter (%)	Clay (%)	Silt (%)	Sand (%)
0-6"	Topsoil	15.2	5.8	4.5	12	35	48
6-12"	Subsoil	12.5	5.5	3.2	15	30	55
12-18"	Subsoil	10.8	5.2	2.8	18	25	57
18-24"	Subsoil	9.5	5.0	2.5	20	20	60
24-30"	Subsoil	8.2	4.8	2.2	22	15	63

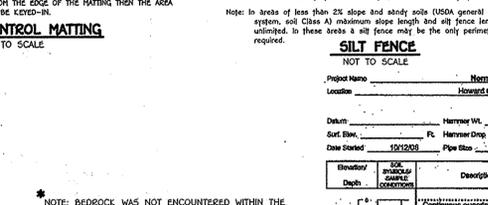
SOIL TEST RESULTS

Depth	Soil Description	Moisture (%)	pH	Organic Matter (%)	Clay (%)	Silt (%)	Sand (%)
0-6"	Topsoil	15.2	5.8	4.5	12	35	48
6-12"	Subsoil	12.5	5.5	3.2	15	30	55
12-18"	Subsoil	10.8	5.2	2.8	18	25	57
18-24"	Subsoil	9.5	5.0	2.5	20	20	60
24-30"	Subsoil	8.2	4.8	2.2	22	15	63



CONSTRUCTION SPECIFICATIONS

Tensile Strength	50 lbs/in (min.)	Test: HST 509
Tensile Modulus	20 lbs/in (min.) <td>Test: HST 509</td>	Test: HST 509
Flow Rate	0.3 gal (l) / minute (max.) <td>Test: HST 322</td>	Test: HST 322
Filtration Efficiency	75% (min.) <td>Test: HST 322</td>	Test: HST 322



SOIL TEST RESULTS

Depth	Soil Description	Moisture (%)	pH	Organic Matter (%)	Clay (%)	Silt (%)	Sand (%)
0-6"	Topsoil	15.2	5.8	4.5	12	35	48
6-12"	Subsoil	12.5	5.5	3.2	15	30	55
12-18"	Subsoil	10.8	5.2	2.8	18	25	57
18-24"	Subsoil	9.5	5.0	2.5	20	20	60
24-30"	Subsoil	8.2	4.8	2.2	22	15	63

SOIL TEST RESULTS

Depth	Soil Description	Moisture (%)	pH	Organic Matter (%)	Clay (%)	Silt (%)	Sand (%)
0-6"	Topsoil	15.2	5.8	4.5	12	35	48
6-12"	Subsoil	12.5	5.5	3.2	15	30	55
12-18"	Subsoil	10.8	5.2	2.8	18	25	57
18-24"	Subsoil	9.5	5.0	2.5	20	20	60
24-30"	Subsoil	8.2	4.8	2.2	22	15	63

SOIL TEST RESULTS

Depth	Soil Description	Moisture (%)	pH	Organic Matter (%)	Clay (%)	Silt (%)	Sand (%)
0-6"	Topsoil	15.2	5.8	4.5	12	35	48
6-12"	Subsoil	12.5</					