

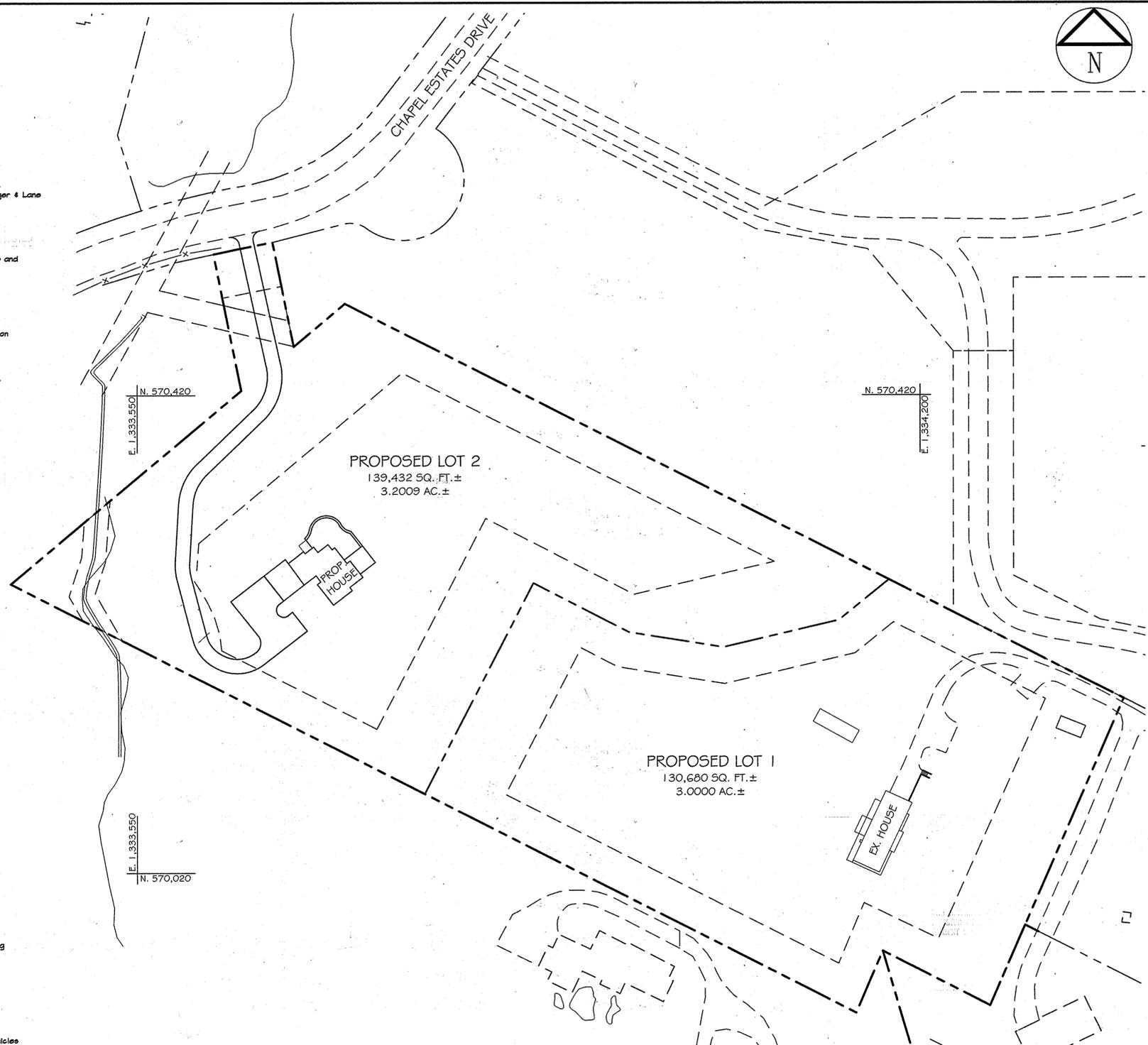
GENERAL NOTES

- 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) 913-1800 at least five (5) working days prior to the start of work.
 - The contractor shall notify "Gas Utility" at 1-800-257-TTTT at least 48 hours prior to any excavation work being done.
 - Traffic control devices, markings and signing shall be in accordance with the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD). All street and regulatory signs shall be in place prior to the placement of any asphalt.
 - The existing topography and boundary is taken from field run survey with maximum two foot contour intervals prepared by Shanberger & Lane June, 2012.
 - The coordinates shown hereon are based upon the Howard County Geodetic Control which is based upon the Maryland State Plane Coordinate System. Howard County Monument Nos. 296B and 296S were used for this project.
 - Site is located outside the metropolitan district.
 - Stormwater Management for this site is provided by environmental site design to the maximum extent practical consisting of rooftop and non-rooftop disconnection, and micro bioretention privately maintained.
 - Existing utilities are based on plans of record, field run topography.
 - No regulated floodplains exist onsite.
 - Vegetative Analysis and Wetlands report prepared by Eco Science Professionals Dated 10/30/13.
 - This project is exempt from Forest Conservation under Minor Subdivisions that create 1 additional lot and have no further subdivision potential based on current zoning.
 - The contractor shall test pit existing utilities at least five (5) days before starting work shown on these drawings to verify their location and elevation. The contractor shall notify the engineer immediately if location of utilities is other than shown.
 - Any damage caused by the Contractor to existing public right-of-way, existing paving, existing curbs, and gutter, existing utilities, etc. shall be repaired at the Contractor's expense.
 - All hydraulic data is for the 10-year storm unless otherwise noted.
 - All fill areas shall be compacted to a minimum of 95% of the maximum dry density as determined and verified in accordance with AASHTO T-180.
 - All plan dimensions are to edge of paving unless otherwise noted. Numerically written dimensions take precedence over scaled dimensions.
 - There are no known cemeteries or burial grounds or historical structures on this site.
 - No grading, removal of vegetative cover or trees, paving and new structures shall be permitted within the wetlands, streams and associated buffers except as allowed by NP 14-022.
 - All sign posts used for traffic control signs installed in the County right-of-way shall be mounted on a 2" galvanized steel, perforated, square tube post (14 gauge) inserted into a 2-1/2" galvanized steel perforated, square tube sleeve (12 gauge) - 5' long. A galvanized steel pole cap shall be mounted on top of each post.
 - The landscape plan has been prepared in accordance with Section 16.124 of the Howard County Code and the Howard County Landscape Manual. Landscaping for lots 1 and 2 is provided in accordance with a certified landscape plan as part of the supplemental drawings in accordance with section 16.124 of the Howard County Code and the landscape manual. Landscape Surety in the amount of \$1800 (6 shade trees) shall be posted with the grading permit application.
 - Signage at the street identifying the address is required.
 - See previous DPZ Files ECP 14-030, NP 14-022.
 - The property is zoned RC-DEO per the 10/06/13 comprehensive zoning plan.
 - This plan is subject to conditions of approval of NP-14-022 below:
The purpose of this letter is to inform you that the Director of the Department of Planning and Zoning considered your request for a waiver of Subsections 16.116(a)(1), 16.116(a)(3), 16.120(b)(4)(i), 16.120(b)(4)(ii)(b) and 16.120(c)(2) of the Howard County Subdivision and Land Development Regulations. A waiver of these regulations would: 1) allow for grading, removal of vegetative cover and trees, paving and new structures within 25 feet of a wetland; 2) allow wetlands, streams and their buffers to be located on residential lots rather than on required open space or a non-buildable preservation parcel; 3) allow for the design of residential lots having an irregular, non-rectangular shape; 4) allow wetlands, streams and their buffers to be located on residential lots less than 10 acres in size; and, 5) allow for creation of a single-family detached lot not having public road frontage, respectively.
- As of the date of this letter, the Planning Director approved your request to waive the aforementioned regulations as they apply to the proposed subdivision of the Balakirsky Property, subject to the following conditions.
- The petitioner shall obtain authorization of proposed activities in the existing public 20' drainage & utility easement from the applicable agency prior to the start of work.
 - The petitioner shall obtain State and federal authorizations of activities proposed in nontidal wetlands, the 25-foot nontidal wetland buffer and waters of the US.
 - The petitioner shall provide a culvert or similar structure as part of the proposed driveway to maintain hydrologic conveyance in the wetland area.
 - The petitioner shall submit a final subdivision plan application to the Department of Planning and Zoning for processing, approval in compliance with County and State requirements.
 - The petitioner shall delineate and label the existing recorded driveway access easement for Lot 1 on the final plat submission.
 - Approval of this waiver is solely for the wetlands and buffer disturbance located at Chapel Estates Drive for the new driveway. No clearing, grading or disturbance is approved for the wetlands, stream and buffer located at the western corner of Lot 2.
 - Both Lots 1 and 2 shall comply with the minimum 3-acre lot size requirement with the final plat submission.
- For flag or pipestem lots, refuse collection, recycling, snow removal, and road maintenance are provided to the junction of the flag or pipestem and road right-of-way line and not onto the pipestem lot driveway.
 - A Pre-Submission Community Meeting for this project was held February 12, 2014.
 - There are no regulated steep slopes on site.
 - Percolation Certification Plan prepared by Shanberger & Lane approved 4/5/13.
 - Sight Distance Analysis prepared by Shanberger & Lane dated 4/21/14.
 - Driveway(s) shall be provided prior to issuance of a use and occupancy permit to ensure safe access for fire and emergency vehicles per the following:
 - Width - 12 feet (16 feet if serving more than 1 residence)
 - Surface - six (6) inches of compacted "other run" base with tar and chip coating (1-1/2" min.)
 - Geometry - max. 15% grade, max 10% grade change and minimum 45' turning radius
 - Structures (culverts/bridges) - capable of supporting 25 gross tons (H25 loading)
 - Drainage elements - capable of safely passing 100-year flood with no more than 1-foot depth over driveway surface.
 - Maintenance - sufficient to ensure all weather use.
 - Joint Federal State Permit Tracking Number CEN4B-OP-RMN 2014-600B-MB6. Permit 14-NT-300B/2014600B0 was issued 7/15/14 by MDE.
 - Property is served by private water and sewer since it is not in the metropolitan district.
 - No traffic study or noise study is required for the project.

SUMMARY OF BMPS

LOT 2	MICRO BIO RETENTION	M-6
	NON ROOFTOP DISCONNECTION	N-2
	ROOFTOP DISCONNECTION	N-1

APPROVED: DEPARTMENT OF Planning & Zoning
 [Signature] 10/06/14
 Chief, Division of Land Development
 [Signature] 9-22-14
 Chief, Development Engineering Division NY Date



Scale: 1"=50'

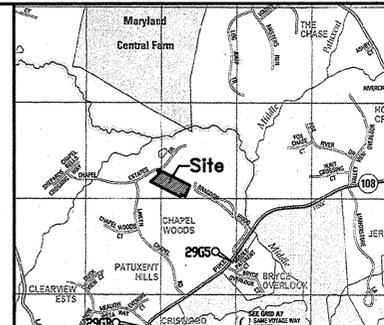
Cover Sheet

for

Balakirsky Property

Howard County, Maryland

LOTS 1 and 2



Vicinity Map - Scale: 1" = 2000'

MAP 25 E 5 & E 6
 ADC The Map People - Permitted Use # 20612205

BENCHMARK DESCRIPTIONS

The courses and coordinates shown hereon are based on the following Howard County monuments:

Point	Northing	Easting	Elevation
295B	N 566826.1708	E 1333265.8543	455.965
296S	N 568341.218	E 1335392.3757	387.358

SHEET INDEX

SHEET	DESCRIPTION
1	Cover Sheet
2	SEC & Driveway Plan
3	SEC Details & Notes
4	Landscape Plan
5	SWM Drainage Area Map
6	SWM Plan & Landscape Plan

OWNER
 Michael Balakirsky
 11755 Bragdon Wood
 Clarksville, MD 21029
 Phone: 410-340-7823

CONTACT
 Jeffrey L. Schwab
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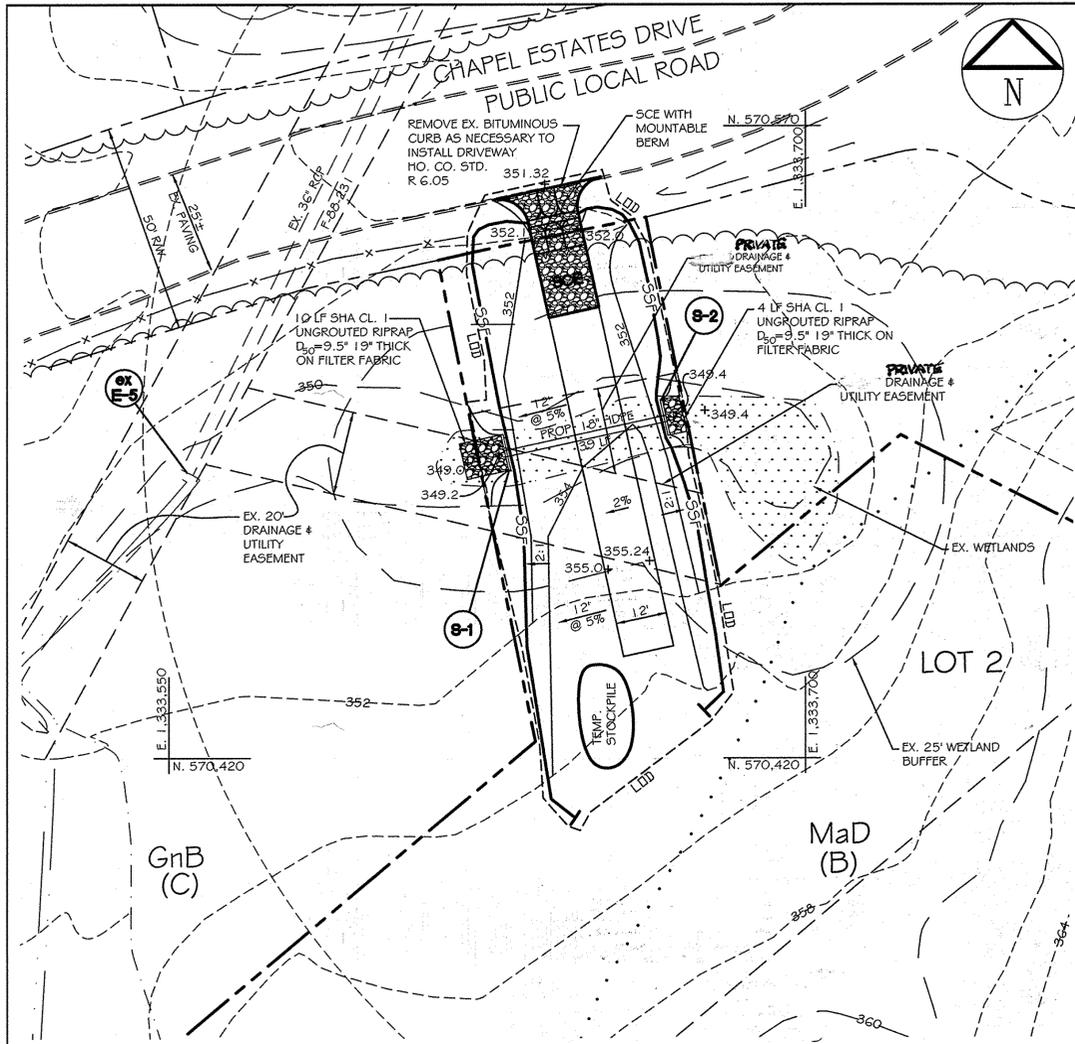


Cover Sheet
Balakirsky Property
 Howard County, Maryland

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/14.

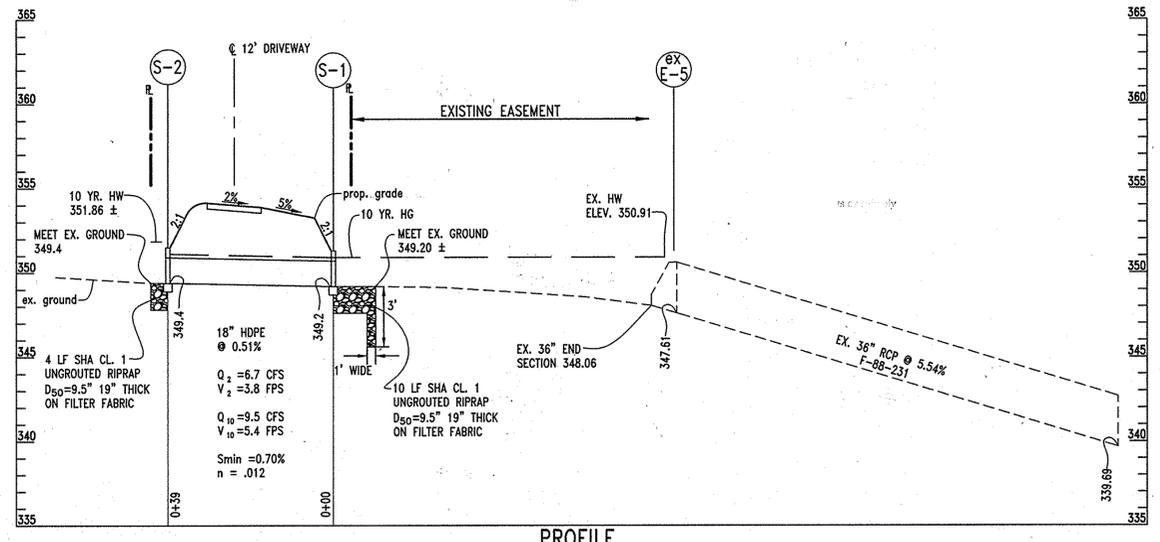
PROJECT:	42	DATE/ISSUE:	14885/154	PLANS:	N/A
GRID:	14	ZONE:	RC-DEO	DATE/ISSUE:	29
				CONTR. TRAC:	5

Date:	9/12/2014
Proj. #:	13012
Scale:	1" = 50'
1 of 6	
DESIGN: JLS	CHECKED: JLS



PLAN
SCALE: 1" = 20'

LIMIT OF DISTURBANCE: 6,558 SF. = 0.15 Ac.



PROFILE
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

PERMANENT SEEDING NOTES

Apply to graded or cleared areas not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules:

- Preferred** --- Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil. At time of seeding, apply 400 lbs/acre 30-0-0 ureamform fertilizer (9 lbs/1000 sq. ft.).
- Acceptable** --- Apply 2 tons/acre dolomitic limestone (92 lbs/1000 sq. ft.) and 1000 lbs/acre 10-10-10 fertilizer (23 lbs/1000 sq. ft.) before seeding. Harrow or disk into upper three inches of soil.

Seeding --- For the periods March 1 --- April 30, and August 1 --- October 15, seed with 60 lbs/acre (1.4 lbs/1000 sq. ft.) of Kentucky 31 Tall Fescue. For the period May 1 --- July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs/acre (.05 lbs/1000 sq. ft.) of weeping lovegrass. During the period of October 16 --- February 28, protect site by:

Option 1 --- Two tons per acre of well anchored straw mulch and seed as soon as possible in the spring.
Option 2 --- Use sod. Option 3 --- Sower with 60 lbs/acre Kentucky 30 Tall Fescue and mulch with 2 tons/acre well anchored straw.

Mulching --- Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq. ft.) of unrattled small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 ft. or higher, use 348 gal. per acre (8 gal/1000 sq. ft.) for anchoring.

Maintenance --- Inspect all seeding areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be re-disturbed where a short-term vegetative cover is needed.

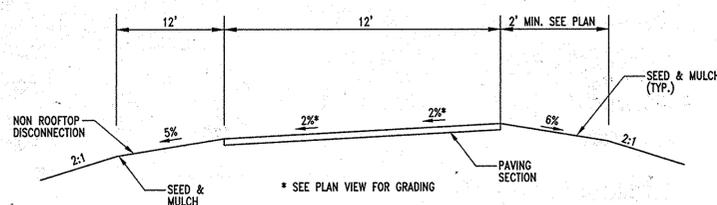
Seedbed preparation: --- Loosen upper three inches of soil by raking, disking or other acceptable means before seeding, if not previously loosened.

Soil Amendments: --- Apply 600 lbs/acre 10-10-10 fertilizer (14 lbs/1000 sq. ft.).

Seeding: --- For periods March 1 --- April 30 and from August 15 --- October 15, seed with 2-1/2 bushel per acre of annual ryegrass (5.2 lbs/1000 sq. ft.). For the period May 1 --- August 14, seed with 3 lbs/acre of weeping lovegrass (.07 lbs/1000 sq. ft.). For the period November 16 --- February 28, protect site by applying 2 tons/acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: --- Apply 1-1/2 to 2 tons/acre (70 to 90 lbs/1000 sq. ft.) of unrattled weed-free, small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal. per acre (5 gal/1000 sq. ft.) of emulsified asphalt on flat areas. On slope 8 ft. or higher, use 348 gal. per acre (8 gal/1000 sq. ft.) for anchoring.

Refer to the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for additional rates and methods not covered.



DRIVEWAY SECTION
NOT TO SCALE

Driveway Paving Section of 5'x7'
NOT TO SCALE

SEQUENCE OF CONSTRUCTION

- OBTAIN GRADING PERMIT AND JOINT FEDERAL STATE PERMIT AND REQUEST. PRECONSTRUCTION MEETING WITH SEDIMENT CONTROL INSPECTOR.
- CLEAR & GRUB FOR AND INSTALLATION OF SCE AND INSTALLATION OF 18" CULVERT AND INSTALL 18" CULVERT ENDWALLS AND RIPRAP. ONCE CULVERT IS INSTALLED, IMMEDIATELY INSTALL SSF SHOWN IN 50' WIDE AREA TO ACCESS LOT.
- WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR CLEAR AND GRUB REMAINING AREA WITHIN LOD.
- PLACE REMAINING FILL OVER CULVERT.
- CONSTRUCT DRIVEWAY TO LIMITS SHOWN.
- FINE GRADE AND STABILIZE SITE WITH SEED AND MULCH.
- UPON THE ESTABLISHMENT OF VEGETATIVE COVER WITHIN THE LOD AND WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT AND EROSION CONTROL MEASURES AND STABILIZE AREAS DISTURBED BY THIS PROCESS.

NO. OF DAYS

7
1
7
7
7
21
7

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.

John R. Kuntz 9/18/14
Howard SCD

ENGINEER'S CERTIFICATE

"I hereby certify that this plan for sediment and erosion control represents a practical 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."

John J. Schaub 9/18/14
Signature of Engineer (print name below signature) Date

DEVELOPER'S CERTIFICATE

"I/we certify that all development and construction will be done according to this plan of development for sediment and erosion control, and that all responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Environment Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic on-site inspections by the Howard Soil Conservation District."

Michael Balakirsky 9/12/14
Signature of Developer (print name below signature) Date

APPROVED: DEPARTMENT OF Planning & Zoning

Michael Balakirsky 10/20/14
Chief, Division of Land Development Date

Chad P. ... 9-22-14
Chief, Development Engineering Division NY Date

TEMPORARY SEEDING

No.	Species	Seed Mixture (For Hardiness Zone 6b) Application Rate (lb/acre)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)	Lime Rate
1	Foxtail Millet	30	5/16-7/31	0.5 in.	438 lb/acre (10lb/1000 sf)	2 tons/acre (90 lb/1000 sf)
2	Annual Ryegrass	40	3/1-5/15 8/1-10/15	0.5 in.		
3	Pearl Millet	20	5/16-7/31	0.5 in.		

Vegetation - annual grass or grain used to provide cover on disturbed areas for up to 6 months. For longer duration of vegetative cover, Permanent Seeding is required.

PERMANENT SEEDING

No.	Species	Application Rate (lb/acre)	Seeding Dates	Seeding Depth	N	P205	K20	Lime Rate
1	Creeping Red Fescue Chewings Fescue Kentucky Bluegrass	30 30 30	3/1-5/15 8/1-10/15	1/4"-1/2"	45 lb/acre (10 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)

* FOR SEEDING DATES 5/16 - 7/31, ADD 4.0 LBS PER ACRE OF FOXTAIL OR PEARL MILLET TO SEED MIXTURE NO. 11.

Seeding grass and legumes to establish ground cover for a minimum period of 6 months or more on disturbed areas generally receiving low maintenance.

LEGEND

- EXISTING
- Boundary
 - Setback Lines
 - Soils Lines
 - Contours
 - Tree Lines
 - Buildings
 - Road Edge
 - Well & 100' circle
 - Ex. Specimen Tree
- PROPOSED
- Contours
 - House
 - Road Edge
 - Septic Reserve Area
 - Limit of Disturbance
 - Storm drain
 - Spot Elevation
 - Super Silt Fence
 - Super Fence Diversion
 - Stabilized Construction Entrance w/ Mountable Berm
 - Ex. Steep Slopes ≥ 25.00%
 - Ex. Steep Slopes 15-24.99%

- HOWARD SOIL CONSERVATION DISTRICT
STANDARD SEDIMENT CONTROL NOTES
- A minimum of 48 hours notice must be given to the Howard County Department of Inspections, Licenses and Permits, Sediment Control Division prior to the start of any construction (313-1855).
 - All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the most current MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL and revisions thereto.
 - Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within: a) 3 calendar days for all perimeter sediment control structures, dikes, perimeter slopes and all slopes greater than 3:1, b) 7 days as to all other disturbed or graded areas on the project site.
 - All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be done when recommended seeding dates do not allow for proper germination and establishment of grasses.
 - All sediment control structures are to remain in place and are to be maintained in operative condition until permission for their removal has been obtained from the Howard County Sediment Control Inspector.
 - Site Analysis:
Total Area of Site: 6.20 Acres
Area Disturbed: 0.15 Acres
Area to be graded: 0.022 Acres
Area to be vegetatively stabilized: 0.118 Acres
Total Cut: 10 Cu. Yds.
Total Fill: 345 Cu. Yds.
Offsite waste/borrow area location: Unknown.
 - Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
 - Additional sediment control must be provided, if deemed necessary by the Howard County Sediment Control Inspector.
 - On all sites with disturbed areas in excess of 2 acres, approval of the inspection agency shall be requested upon completion of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made.
 - Trenches for the construction of utilities is limited to three pipe lengths or that which shall be back-filled and stabilized by the end of each work day, whichever is shorter.
 - Any changes or revisions to the sequence of construction must be reviewed and approved by the plan approval authority prior to proceeding with construction.
 - Project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the enforcement authority. Unless otherwise specified and approved by the approval authority, no more than 30 acres cumulatively may be disturbed at a given time.

OWNER: Michael Balakirsky
11755 Bragdon Wood
Clarksville, MD 21029
Phone: 410-340-7823

CONTACT: Jeffrey L. Schwab
401 Washington Ave. Suite 303
Towson, MD 21029
Phone: 410-321-7600

Tesseract
Tesseract Sites, Inc.
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Towson, Maryland, 21029
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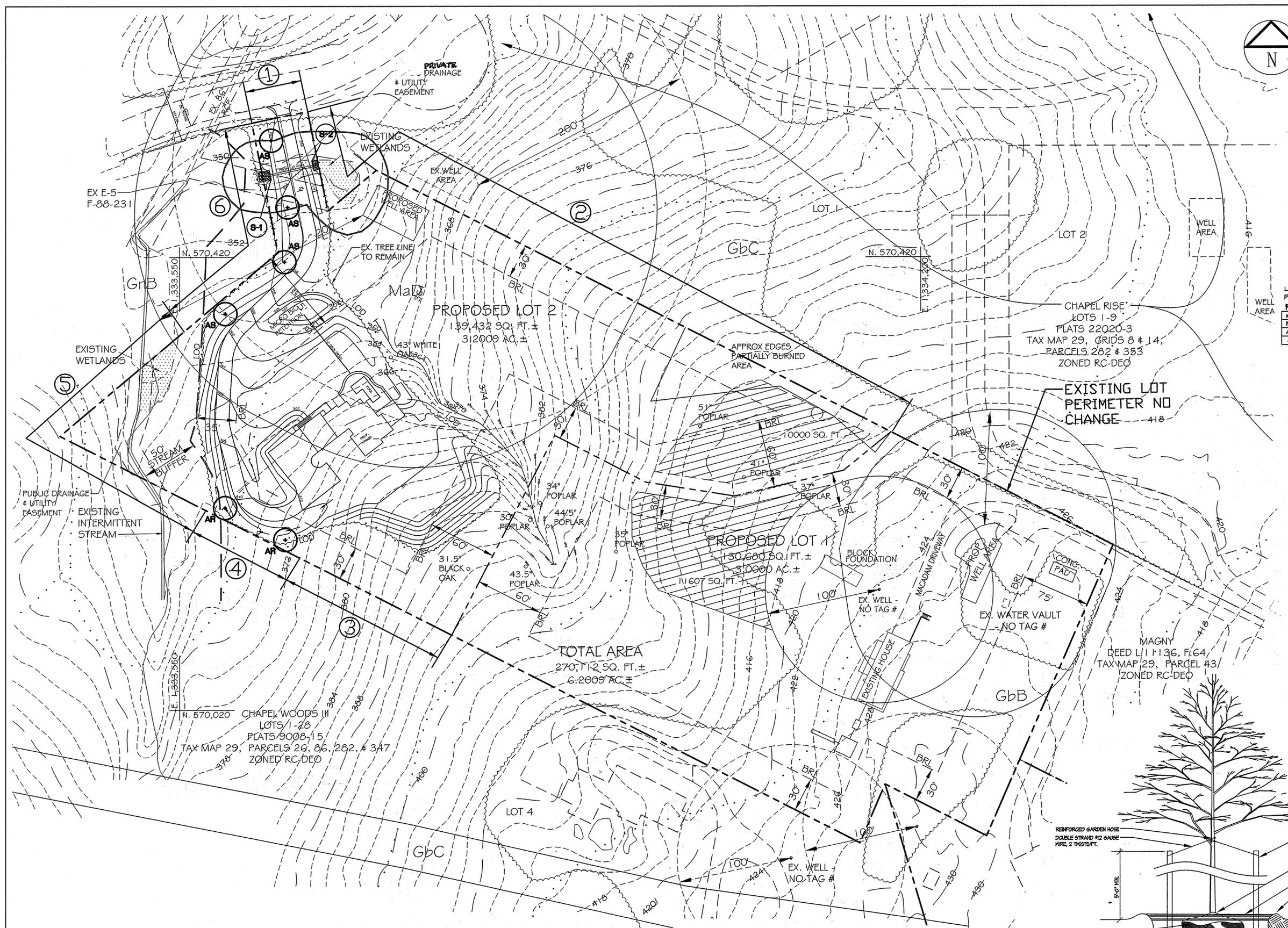
Driveway Plan
Balakirsky Property
Howard County, Maryland

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/14.

PROJECT: 42
DATE: 9/12/2014
JOB NO: 14885/154
PROJ. #: 13012
SCALE: 1" = 20'

2 of 6

DESIGN: JLS DRAWN: MAS CHECKED: JLS



SCHEDULE A - PERIMETER LANDSCAPING

Category	Adjacent to Roadways		Adjacent to Perimeter Properties			
	1	2	3	4	5	6
Perimeter	N/A	A	A	A	A	A
Landscape Type	N/A	65'	150'	90'	293'	240'
Linear Feet of Edge	N/A	65'	150'	90'	293'	240'
Credit for Existing Vegetation (Yes, No, Linear Feet) (Describe below if needed)	N/A	YES 65'	YES 150'	NO 90'	YES 293'	NO 240'
Credit for Wall, Fence or Berm (Yes, No, Linear Feet) (Describe below if needed)	N/A	NO	NO	NO	NO	NO
Number of Plants Required	N/A	0	0	2	0	4
Shade Trees	—	—	—	2	—	4
Evergreen Trees	—	—	—	—	—	—
Shrubs	—	—	—	—	—	—
Number of Plants Provided	N/A	0	0	2	0	4
Shade Trees	—	—	—	2	—	4
Evergreen Trees	—	—	—	—	—	—
Other Trees (2:1 substitution)	—	—	—	—	—	—
Shrubs (10:1 substitution)	—	—	—	—	—	—
(Describe plant substitution credits below if needed)	—	—	—	—	—	—

* THERE IS NO LANDSCAPE REQUIREMENT FOR FRONT OF SINGLE FAMILY DETACHED TO ROADWAY

Landscape Surely in the amount of \$1800 (6 shade trees) shall be posted with the grading permit application.

PLANT SCHEDULE (for mitigation planting required by removal of specimen trees)

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	COMMENTS
AR	ACER RUBRUM 'RED SUNSET'	RED SUNSET RED MAPLE	2 1/2" CAL	2	B4B
AS	ACER SACCHARUM 'GREEN MOUNTAIN'	GREEN MOUNTAIN SUGAR MAPLE	2 1/2" CAL	4	B4B

LEGEND

- EXISTING**
- PROPERTY LINE
 - [] BUILDINGS
 - ~ CONTOURS
 - 41" POPLAR EX. TREES
 - ROADS
 - TREE LINE
- PROPOSED**
- PROPERTY LINE
 - [] BUILDINGS
 - ~ CONTOURS
 - ROADS
 - MAJOR SHADE TREE
 - TREE LINE TO REMAIN

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CONTACT
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Phone: 410-321-7600



Landscape Plan
Balakirsky Property
Howard County, Maryland

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/14.

PARCEL: 42	LOT: 14885/154	PLAT: N/A
DATE: 9/12/2014	PROJECT: 13012	SCALE: 1" = 40'

DESIGN: JLS	DRAWN: MAS	CHECKED: JLS
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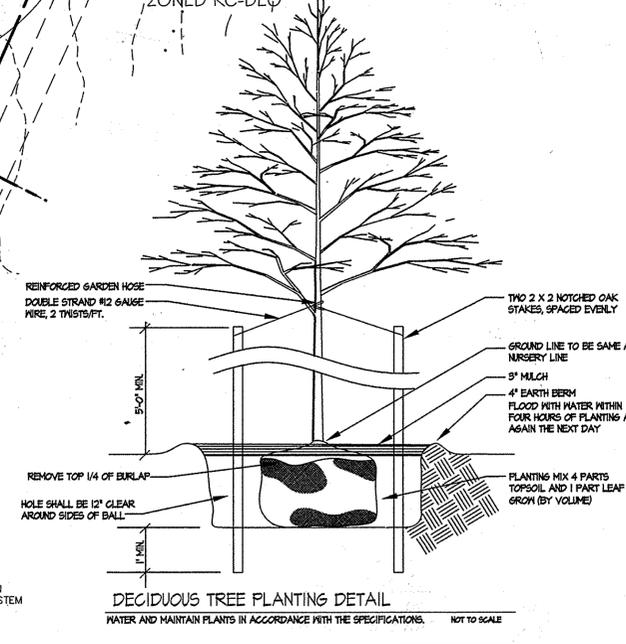
APPROVED: DEPARTMENT OF Planning & Zoning
Michael Balakirsky 10/26/14
 Chief, Division of Land Development
Chris Edell 9-29-14
 Chief, Development Engineering Division

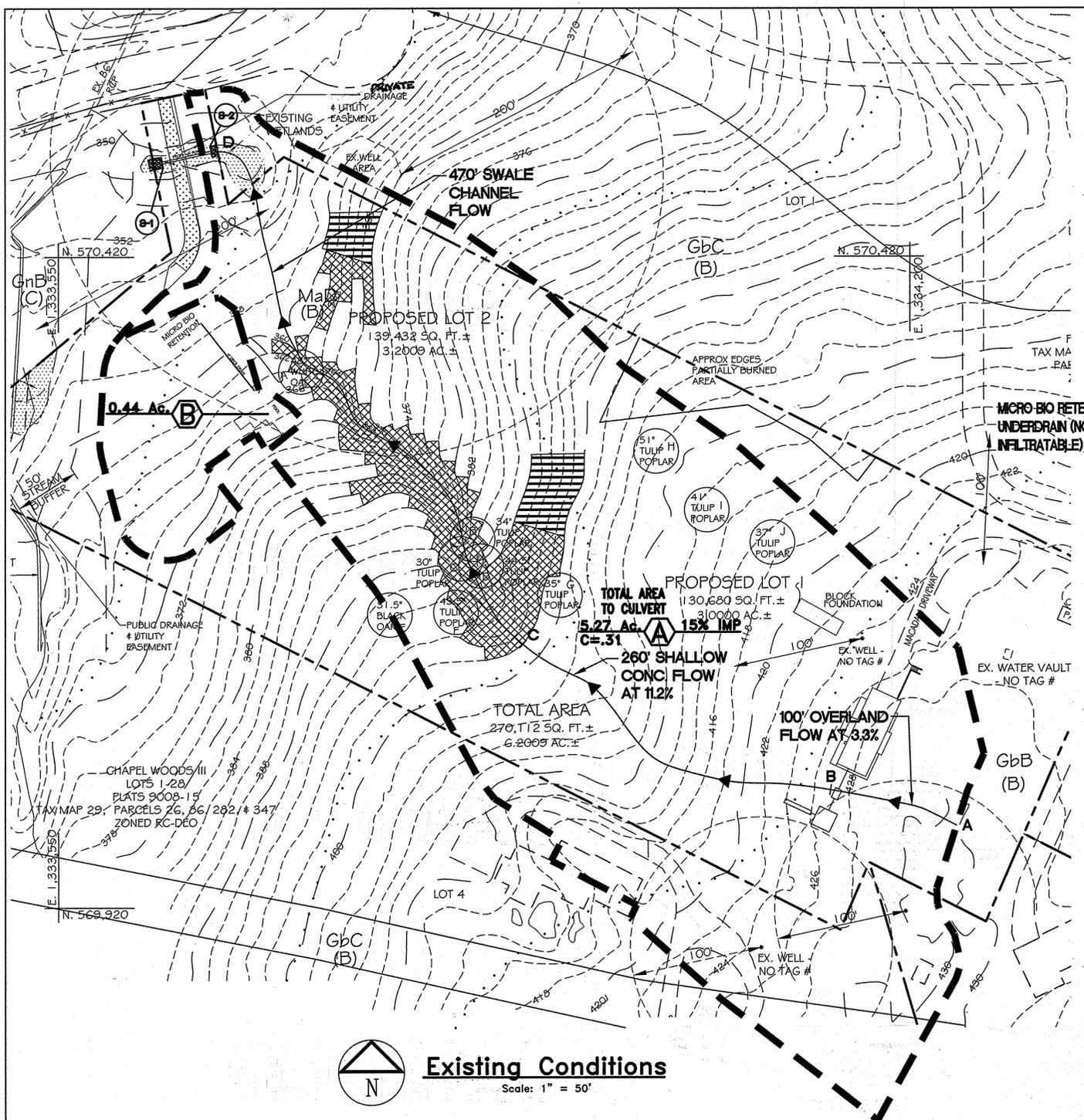
DEVELOPER'S / BUILDER'S CERTIFICATE

I / We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Subdivision and Land Development Regulations and the 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.

Name: *Michael Balakirsky* Date: *9/12/14*

NOTE: DESIGN AND DRAWING BASED ON THE MARYLAND COORDINATE SYSTEM
 HORIZONTAL -NAD 83/91,
 VERTICAL -NAVD 88





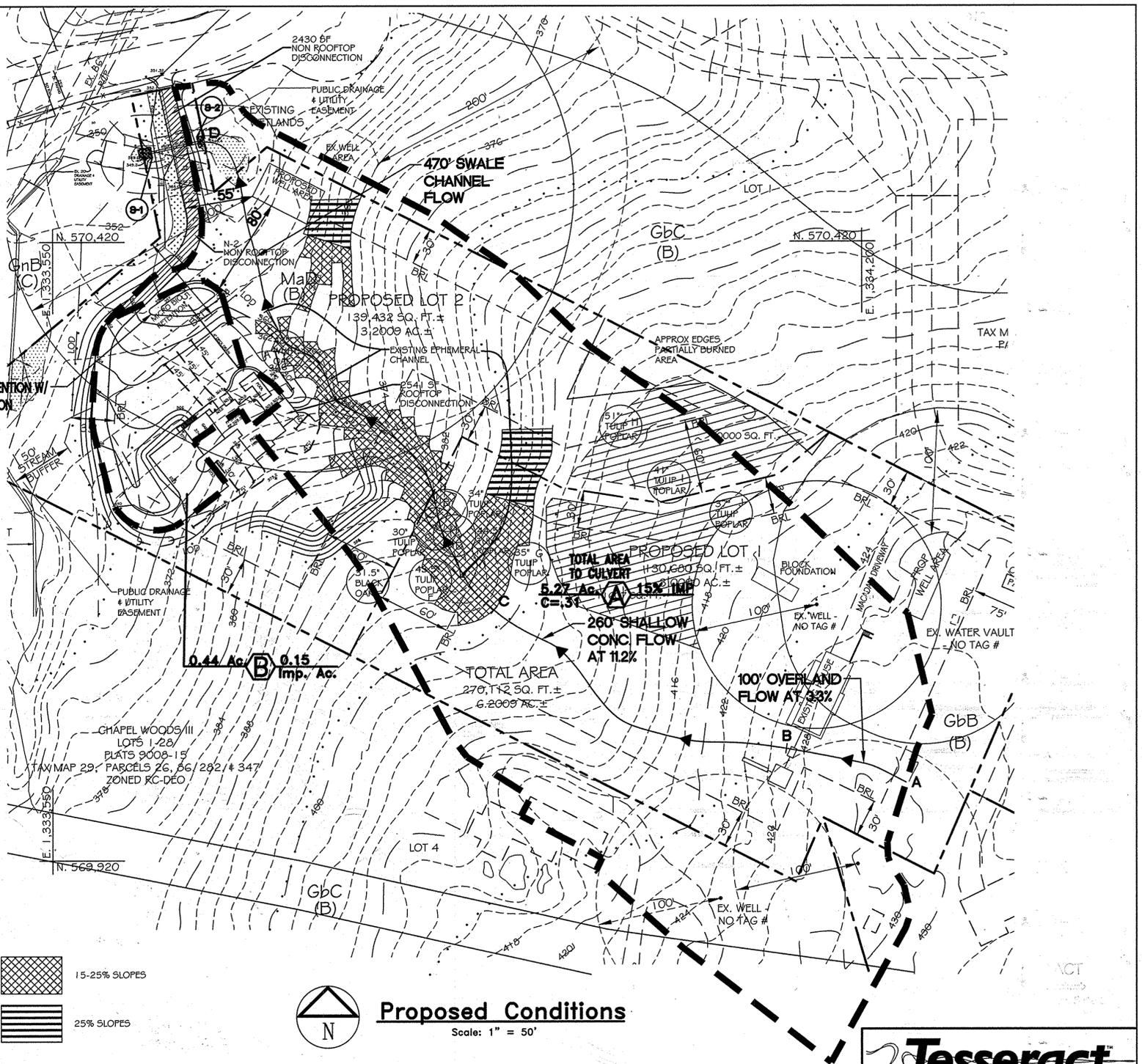
Existing Conditions
Scale: 1" = 50'

SUMMARY TABLE LOT 2

TYPE	ESDV PROVIDED
NON ROOFTOP DISCONNECTION N-2	202 CF
ROOFTOP DISCONNECTION N-1	102 CF
MICRO BIO RETENTION M-6	803 CF
TOTAL ESDV PROVIDED	1107 CF
ESDV REQUIRED	1089 CF
RECHARGE VOLUME REQUIRED % AREA	2208 SF
RECHARGE VOLUME PROVIDED % AREA	4971 SF

FACILITY SUMMARY MICRO BIO RETENTION M-6

BOTTOM ELEV.	ESDV ELEV.	DHW	P _e	ESDV, REQ.	ESDV, PROV.	TEMP. STORAGE PROV.	TEMP. STORAGE REQ'D.
357.0	357.8	357.96	1.07"	785 CF	803 CF	602 CF	589 CF



Proposed Conditions
Scale: 1" = 50'

LIMIT OF DISTURBANCE (SWM) = 51,026 SF = 1.17 Ac.

Specimen Tree Chart

Key	Species	Size (inches dbh)	CRZ Diameter (feet)	Condition
A	White oak	43	64.5	good
B	Tulip poplar	34	51	good
C	Tulip poplar	30	45	good
D	Tulip poplar	44.5	66.75	good
E	Tulip poplar	43.5	65.25	good
F	Black oak	31.5	47.25	good
G	Tulip poplar	35	52.5	good
H	Tulip poplar	51	76.5	good
I	Tulip poplar	41	61.5	good
J	Tulip poplar	37	55.5	good

APPROVED: DEPARTMENT OF Planning & Zoning
 Chief, Division of Land Development
 Date: 9-29-14

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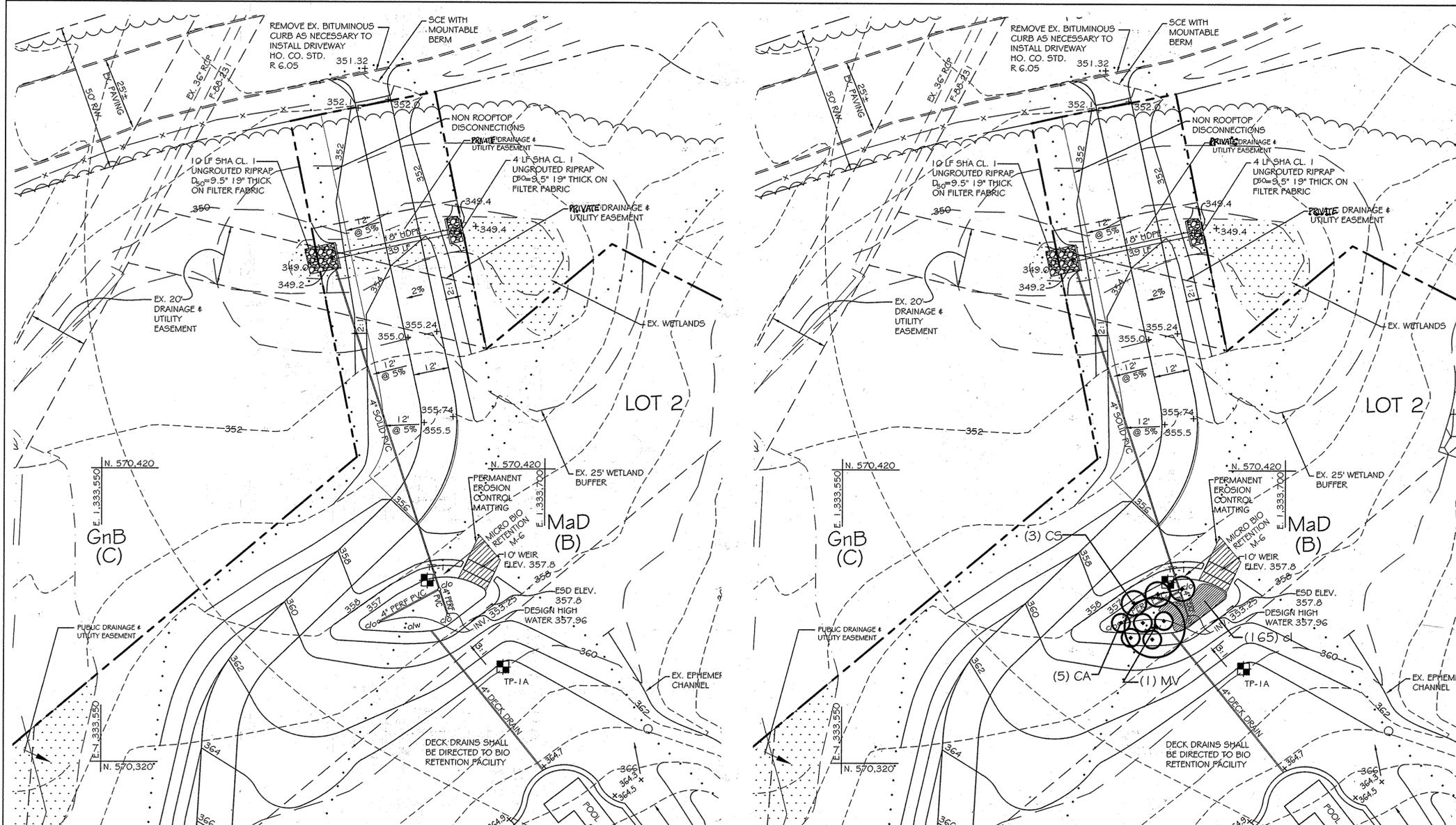
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 TESSERACT SITES, INC
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 Towson, Maryland, 21284
 P: 410-321-7600
 F: 410-321-7601

**Stormwater Management
 Drainage Area Map
 Balakirsky Property**
 Howard County, Maryland

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/14.

PROJECT:	14885/154	DATE:	N/A
JOB:	14	DATE:	9/12/2014
ZONE:	RC-DEO	PROJECT:	13012
DATE:	9/12/2014	SCALE:	1" = 50'
5 of 6			

DESIGN: JLS DRAWN: MAS CHECKED: JLS



Material	Specification	Size	Notes
Planting soil	see Appendix A, Table A.4	n/a	plantings are site-specific
planting soil (2.5' to 4' deep)	soil 60% - 60%, silt 30% - 40%, clay 10% - 15%, organic matter 3% - 4%	n/a	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood	n/a	aged 6 months, minimum
geotextile	Class "C" - apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-4633)	n/a	for use as necessary beneath underdrains only
underdrain gravel	ASTM M-43	0.375" to 0.75"	
underdrain piping	7.75" Type PS 28 or AASHTO M-278	4" to 5" rigid schedule 40 PVC or 3035	3/8" part. @ 6" on center, 4 holes per row, minimum of 3" of gravel over pipe; not necessary under mesh pipes
formed in place concrete (if required)	MHA Mix No. 3; f'c = 3500psi	n/a	on-site testing of poured-in-place concrete required; 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 308.2/89; vertical loading (H-10 or H-20); allowable horizontal loading (based on soil pressures); and analysis of potential cracking
sand (1' deep)	AASHTO M-6 or ASTM C-35	0.075" to 0.04"	Sand substitutions such as Silasand and Dynasand #10 are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

B.3.B Specifications for Micro Bioretention

1. Material Specifications
The allowable materials to be used in bioretention area detailed in Table B.3.2.

2. Planting Soil
The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bioretention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.
The planting soil shall be tested and shall meet the following criteria:
pH range 5.2 - 7.0
organic matter 1.5 - 4% (by weight)
magnesium 35lb./ac
phosphorus (phosphate - P2O5) 75 lb./ac
potassium (potash - K2O) 85 lb./ac
soluble salts not to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional tests of organic matter, and soluble salts. A textual analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the top soil was excavated. Since different labs calibrate their testing equipment differently, all testing results shall come from the same testing facility.
Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

3. Compaction
It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use excavation hoes to remove original soil. If bioretention rubber tires with large lugs or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.
Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to restructure the soil profile through the 12 inch compaction zone. Subsoiler methods do not till deep enough to reduce the effects of compaction from heavy equipment.
Rototill 2 to 3 inches of sand into the base of the bioretention facility backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.
When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material
Plant material shall be as indicated on the plans.

5. Plant Installation
Mulch should be placed to a uniform thickness of 2" to 3". Shredded hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention areas during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.
Root stock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grading surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.
Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be easily spaced on the outside of the tree ball.
Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.
The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers, deerats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend soil. Rototill urea fertilizer at a rate of 2 pounds per 100 square feet.

6. Underdrains
Underdrains are to be placed on a 3'-0" wide section of filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of underdrain pipes are not terminating in an observation well shall be capped.
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%.

7. Miscellaneous
The bioretention facility may not be constructed until all contributing drainage area has been stabilized.

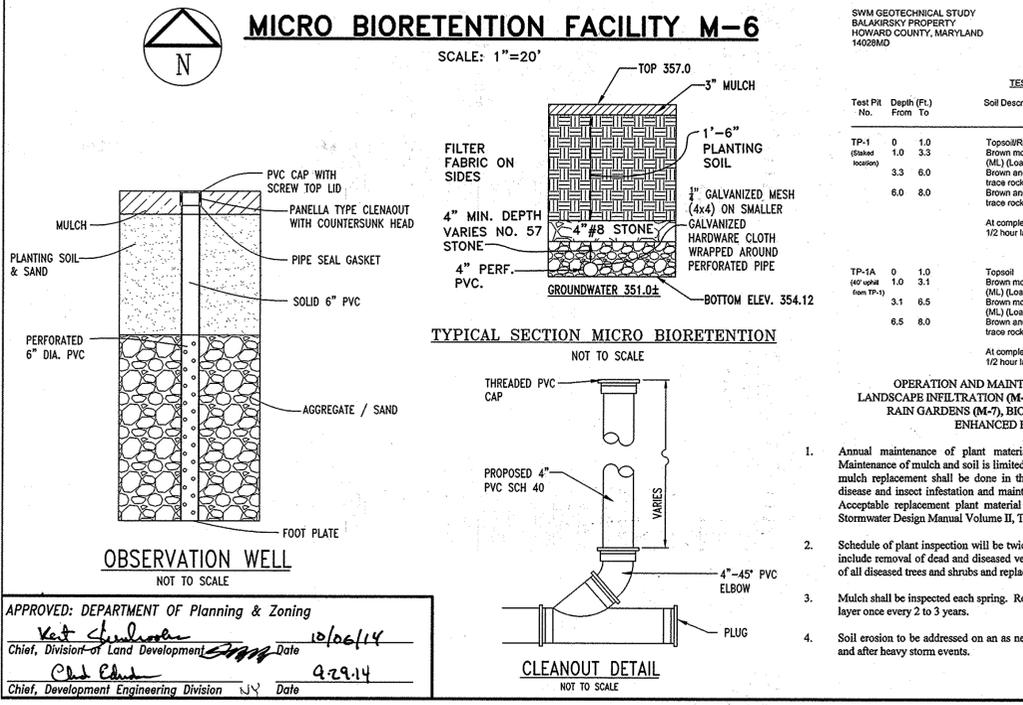
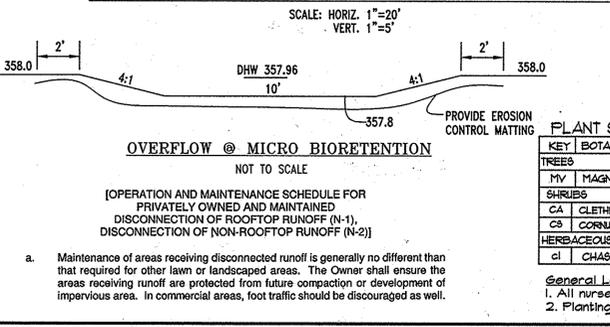
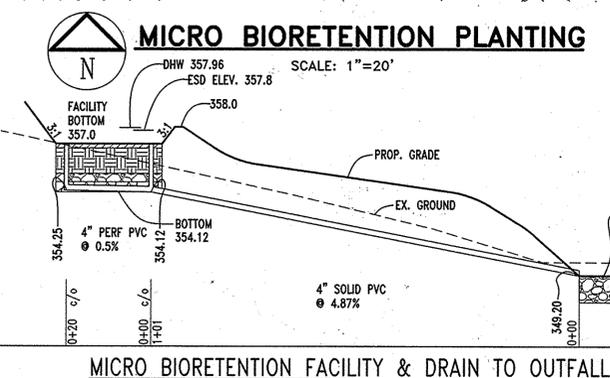


TABLE 1
TEST PIT DATA

Test Pit No.	Depth (Ft) From To	Soil Descriptions and Remarks
TP-1 (Stake location)	0 1.0 1.0 3.3 3.3 6.0 6.0 8.0	Topsoil/Rootmat Brown moist SILT & CLAY, some of sand, trace rock frags (ML) (loam) Brown and gray moist micaceous SILT, and of sand, trace rock frags (ML) (loam) Brown and gray moist micaceous SAND, and silt, trace rock frags. (SM) (Sandy Loam) At completion; water at 7.0', caving @ 7.5' 1/2 hour later; water @ 6.5', caved @ 7.5' ELEV. 352.8
TP-1A (6" depth from TP-1)	0 1.0 1.0 3.1 3.1 6.5 6.5 8.0	Topsoil Brown moist SILT & CLAY, and of sand, trace rock frags (ML) (loam) Brown moist micaceous SILT, and of sand, trace rock frags (ML) (loam) Brown and gray moist micaceous SAND, and silt, trace rock frags (SM) (Sandy Loam) At completion; hole dry and open to 6.0' 1/2 hour later; water @ 8.0', hole open to 8.0' ELEV. 352.0 USE 351.0 GW FOR DESIGN



OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3) MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), ENHANCED FILTERS (M-9)

- Annual maintenance of plant material, mulch layer and soil layer is required. 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.
- Schedule of plant inspection will be twice a year in spring and fall. This inspection will include removal of dead and diseased vegetation considered beyond treatment, treatment of all diseased trees and shrubs and replacement of all deficient stakes and wires.
- Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer once every 2 to 3 years.
- Soil erosion to be addressed on an as needed basis, with a minimum of once per month and after heavy storm events.

PLANT SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY	SPACING	ROOT 4 COMMENT
TREES						
MV	MAGNOLIA VIRGINIANA	SWEETBAY MAGNOLIA	1 1/2" CAL	1	-	B4B MULTI-STEMMED
SHRUBS						
CA	CLETHRA ALNFOLIA	SUMMERSWEET	3'-4" HT.	5	6'	B4B OR CONTAINER
CS	CORNUS SERICEA	REDOSMIR DOGWOOD	3'-4" HT.	3	8'	B4B OR CONTAINER
HERBACEOUS						
cl	CHASMANTHUM LATIFOLIUM	NORTHERN SEA OATS	QUART	165	18" O.C.	

General Landscape Notes:
1. All nursery stock shall be in accordance with the American Standard for Nursery Stock, latest edition.
2. Planting bed mulch and soil shall be in accordance with the approved stormwater management plans.

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Stormwater Management Plan & Landscape Plan
Balakirsky Property
Howard County, Maryland

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 14230, Expiration Date: 12/09/14.

DATE: 4/2/2014
LSE/RSK: 14885/154
PLS: N/A
SHEET: 14
ZONE: RC-DEO
ELECTRICITY: 29
CONCRETE: 5

Date: 9/12/2014
Proj. #: 13012
Scale: 1" = 20'

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