

Cindy Hanes 7/3/15
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

William R. Kalyniuk 7/2/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

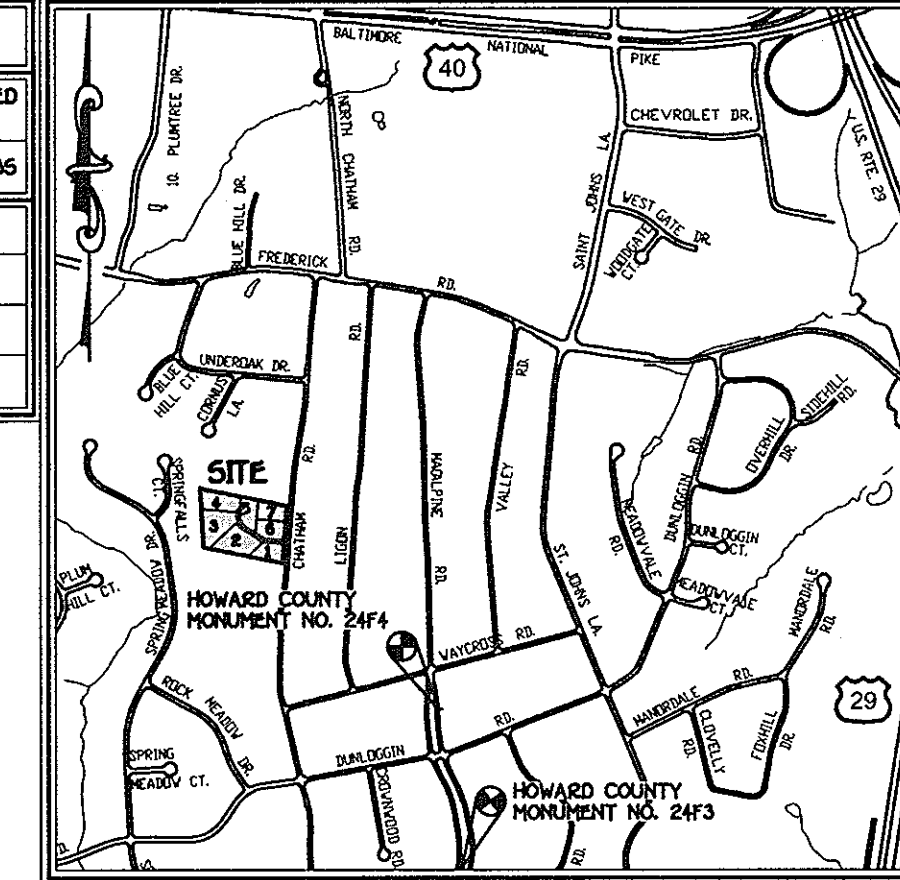
STREET TREE SCHEDULE				
SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
	9	ACER GINNALA AMUR MAPLE	2 1/2"-3" CAL.	24' Private Use-In-Common Access Easement Across Lots 2 Thru 5, 8 And Non-Buildable Bulk Parcel 'A' For The Use And Benefit Of Lots 1 Thru 5, 8 And Non-Buildable Bulk Parcel 'A' Maintenance Agreement Recorded Among The Land Records Of Howard County Maryland Simultaneously With This Plat.

NOTE: STREET TREE TYPES ARE ONLY A RECOMMENDATION AND MAY BE SUBSTITUTED WITH A COUNTY ACCEPTED EQUIVALENT FROM THE HOWARD COUNTY LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE 9 REQUIRED STREET TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$2,700.00.

PLANT LIST				
SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE	
	13	ACER RUBICUNDUM OCTOBER GLORY RED MAPLE	2 1/2"-3" CAL.	

THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.24 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE 13 REQUIRED LANDSCAPE TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$3,900.00.

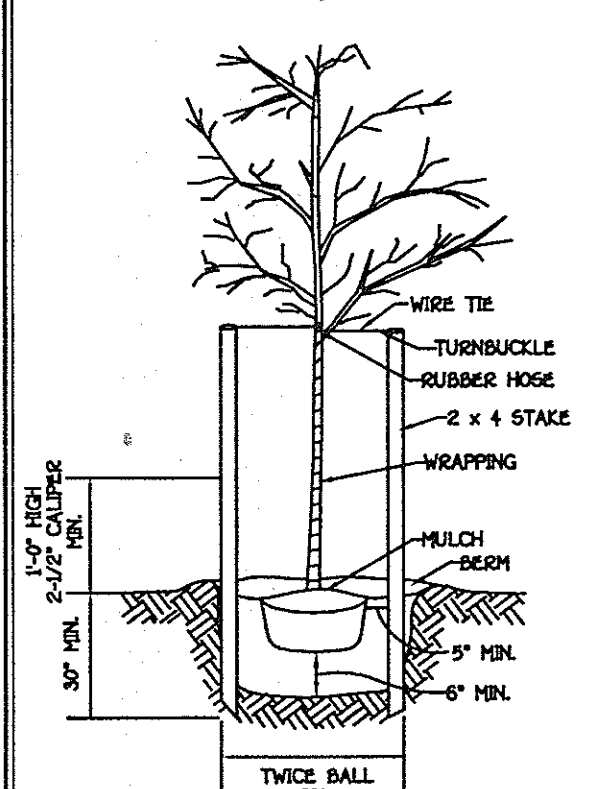
SCHEDULE A PERIMETER LANDSCAPE EDGE						
PERIMETER	CATEGORY	LANDSCAPE TYPE	LINEAR FEET OF ROADWAY FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED AND PROVIDED
P-1	FRONT TO ROADWAY	N/A	360.71'	NO	NO	0 0
P-2	ADJACENT TO PERIMETER	A	555.95'	YES (207')	NO	6 - -
P-3	ADJACENT TO PERIMETER	A	370.20'	YES (000')	NO	0 - -
P-4	ADJACENT TO PERIMETER	A	506.43'	YES (78')	NO	7 - -



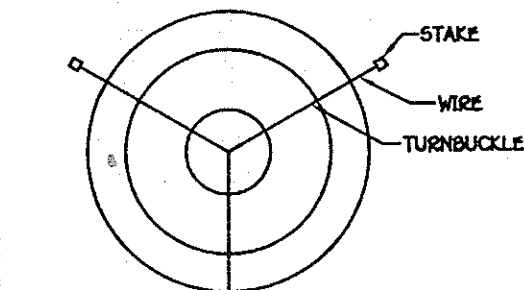
DEVELOPER'S/BUILDER'S CERTIFICATE

I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.24 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a certification of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

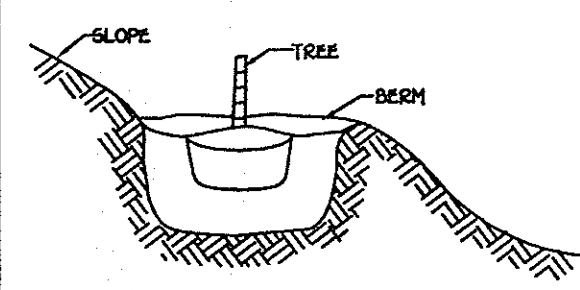
R. Kalyniuk 6/9/08
 Name Date



TREE PLANTING
NOT TO SCALE



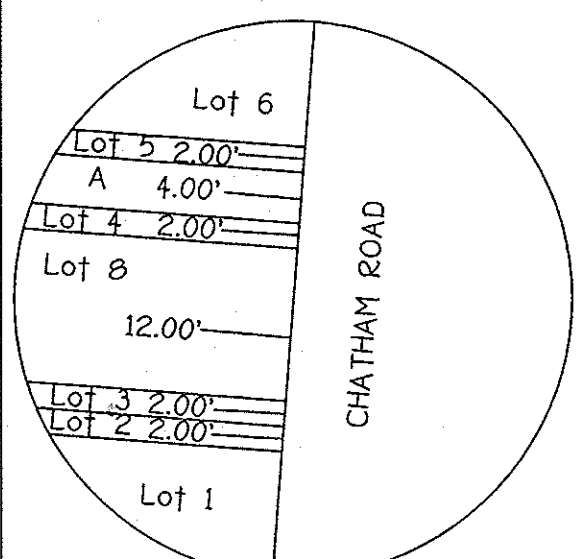
STAKING DETAIL
NOT TO SCALE



GRADING FOR PLANTING ON SLOPES
NOT TO SCALE

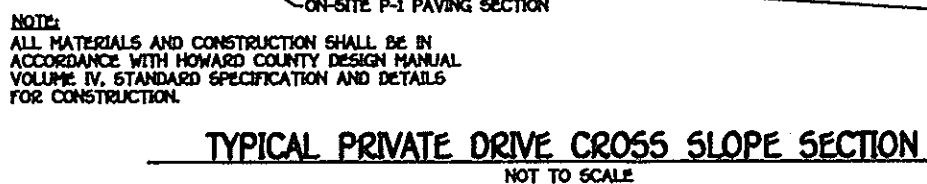
LEGEND

- 25% Or Greater Steep Slopes
- Forest Conservation Easement



DETAIL
NOT TO SCALE

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL PIKE
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2855



GENERAL NOTES

- THIS SUBDIVISION PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE 2004 ZONING REGULATIONS PER COUNCIL BILL NO. 45-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL NO. 75-2003. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS OR PARCELS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION - A BUILDING OR GRADING PERMIT APPLICATION.
- SUBJECT PROPERTY ZONED R-20 PER THE 2004 ZONING REGULATIONS.
 - GROSS AREA OF TRACT = 4,389 AC.
 - AREA OF 25% OR GREATER SLOPES = 0.49 AC.
 - NET AREA OF TRACT = 4,389 AC.
 - AREA OF PROPOSED BUILDABLE LOTS = 3.63 AC.
- NUMBER OF LOTS PROPOSED:
 - BUILDABLE = 7; 6 PROPOSED AND 1 EX. DWELLING TO REMAIN.
 - OPEN SPACE LOTS = 1.
 - NON-BUILDABLE BULK PARCELS = 1.
- PUBLIC WATER AND SEWER SHALL BE UTILIZED WITHIN THIS DEVELOPMENT.
- SOILS INFORMATION TAKEN FROM SOIL MAP NO. 15, SOIL SURVEY, HOWARD COUNTY, MARYLAND, JULY, 1968 ISSUE.
- BOUNDARY OUTLINE BASED ON FIELD RUN SURVEY PERFORMED BY FISHER, COLLINS & CARTER, INC. DATED SEPTEMBER 20, 2005.
- TOPOGRAPHIC CONTOURS BASED ON FIELD RUN SURVEY BY FISHER COLLINS AND CARTER INC DATED OCTOBER 3, 2005.
- AREA OF STEEP SLOPES (25% OR GREATER) LOCATED ON THIS PROPERTY AS DEFINED BY THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, SECTION 16.16(b), IS 0.49 ACRES.
- STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH THE CRITERIA CONTAINED IN THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES 1 & II, CHAPTER 5 "STORMWATER CREDITS FOR INNOVATIVE DESIGN". MAY AND SEW WILL BE PROVIDED AND MAINTAINED BY UTILIZING THE CREDITS FOUND IN SECTION 5.2 "DISCONNECTION OF ROOFTOP RUNOFF CREDIT", SECTION 5.3 "DISCONNECTION OF NON ROOFTOP RUNOFF CREDIT" ALONG WITH THE CRITERIA FOUND IN APPENDIX C.2 SECTION C.2.41 "RETENTION SYSTEM". CRY WAS NOT REQUIRED BECAUSE THE 1 YEAR STORM IS LESS THAN THE 2.0% MANDATED BY THE AFORMENTIONED MANUAL.
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY HANS GROUP, DATED AUGUST 2006.
- THE FOREST STAND DELINEATION AND WETLAND DELINEATION FOR THIS PROJECT WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. DATED SEPTEMBER 6, 2006.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND THE ROAD R/W LINE AND NOT THE PIPESTEM LOT DRIVEWAY.
- THE EXISTING DWELLING LOCATED ON LOT 2 IS TO REMAIN. DWELLING IS A TWO STORY FRAME.
- NO CONSERVEMENTS EXIST WITHIN THIS SUBDIVISION.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY HORIZONTAL AND VERTICAL CONTROL DATUM IS BASED ON HOWARD COUNTY GEODETIC CONTROL STATIONS:

HOWARD COUNTY MONUMENT NO. 24F3	N 581299.8456	ELEV. = 365.409
	E 1360.713282	
HOWARD COUNTY MONUMENT NO. 24F4	N 582298.6885	ELEV. = 366.187
	E 1362.970983	
- NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE WETLANDS, STREAM OR THEIR REQUIRED BUFFERS.
- The Forest Conservation Requirements of Section 16.200 of the Howard County Code and Forest Conservation Act requiring 0.85 For This Subdivision Will be Fulfilled by Providing 0.53 Acres of On-Site Retention and a Fee-In-Lieu Payment of \$10,154.40 Based On 0.32 Ac. x \$3,500 \$qft./Ac. x \$0.75/\$qft. The Surety Amount \$4,817.35 For On-Site Retention Obligation is 0.53 Ac. x \$3,500 \$qft./Ac. x \$0.20/\$qft.
- THE LANDSCAPE SURETY IN THE AMOUNT OF \$3,900.00 FOR PERIMETER LANDSCAPE REQUIREMENTS (13 SHADE TREES) OF SECTION 16.24 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL IS POSTED WITH THE DEVELOPER'S AGREEMENT FOR THIS SUBDIVISION.
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THERE IS NO FLOODPLAIN ON THIS SITE.
- NO NOISE STUDY IS REQUIRED FOR THIS PROJECT PER HOWARD COUNTY DESIGN MANUAL, VOL. III, SECTION 5.2.9.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
 - WIDTH - 12 FEET (5 FEET SERVING MORE THAN ONE RESIDENCE)
 - SURFACE - SIX (6) INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING.
 - GEOMETRY - MAXIMUM 14% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 45 FOOT TURNING RADIUS.
 - STRUCTURES (CULVERTS/BRIDGES) CAPABLE OF SUPPORTING 25 GROSS TONS (RS) LOADING.
 - DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
 - STRUCTURE CLEANANCES - MINIMUM 12 FEET.
 - MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- PLAN SUBJECT TO PRIOR DEPARTMENT OF PLANNING ZONING FILE NOS: SP-07-003 AND WP-08-104.
- PLAN SUBJECT TO WP-08-104 WHICH THE PLANNING DIRECTOR ON JUNE 5, 2008 APPROVED A REQUEST TO WAIVE SECTION 16.132 (A)(2)(A)(b), 16.134 (A)(b)(d) AND 16.135 (b) OF THE SUBDIVISION REGULATIONS SUBJECT TO THE FOLLOWING CONDITIONS:
 - OWNER/DEVELOPER SHALL SUBMIT CONCURRENT WITH THE SUBMISSION OF THE ORIGINAL PLAT FOR SIGNATURE PAYMENT OF FEE-IN-LIEU OF SIDWALK CONSTRUCTION.
 - OWNER/DEVELOPER SHALL CITE THIS WAIVER FILE NUMBER AND DECISION OF THIS WAIVER ON ALL RELEVANT PLANS.

SUPPLEMENTAL PLAN, LANDSCAPE, TOPOGRAPHIC & SOILS
KALYNIUK PROPERTY
 Lots 1 Thru 7 Open Space Lot 8
 And Non-Buildable Bulk Parcel 'A'
 A Resubdivision of Anton Koberber Property,
 Lots 7-9, Plat Book 4, Folio 63

PLAN
SCALE: 1" = 30'

OWNER
 Kalyniuk Family LLC
 3714 Chatham Road
 Ellicott City, Maryland 21042-5106
 410-465-7987

DEVELOPER
 Land Design And Development, Inc.
 5300 Dorsey Hill Drive
 Suite 102
 Ellicott City, Maryland 21042
 443-367-0422

ZONED: R-20
 TAX MAP No. 24 GRID No. 10 PARCEL No. 412 AND 413
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: JUNE 9, 2008
 SHEET 1 OF 4

7/2/08 DATE

7/2/08 DATE

ON-SITE SIGNAGE

FOREST CONSERVATION EASEMENT

UNAUTHORIZED DISTURBANCE OF VEGETATION IS PROHIBITED. VIOLATORS SUBJECT TO PENALTIES UNDER THE HOWARD COUNTY FOREST CONSERVATION ACT OF 1991.

TREES FOR YOUR FUTURE

1" MINIMUM

STANDARD SYMBOL

FCP NOTES:

- 1. Any Forest Conservation Easement (FCE) area shown hereon is subject to protective covenants which may be found in the Land Records of Howard County which restrict the disturbance and use of these areas.
2. Forested areas occurring outside of the FCE shall not be considered part of the FCE and shall not be subject to protective land covenants.
3. Limits of disturbance shall be restricted to areas outside the limit of temporary fencing or the FCE boundary, whichever is greater.
4. There shall be no clearing, grading, construction or disturbance of vegetation in the Forest Conservation Easement, except as permitted by Howard County DPZ.
5. No stockpiles, parking areas, equipment cleaning areas, etc. shall occur within areas designated as Forest Conservation Easements.
6. Temporary fencing shall be used to protect the specimen trees during construction. Fencing shall be installed along limits of disturbance occurring within 60 feet of the specimen trees to be retained. Permanent signage will be posted at 50-100 foot intervals along all FCE limits.
7. The Forest Conservation Requirements of Section 16.1200 of The Howard County Code and Forest Conservation Act Requiring 0.85 For This Subdivision Will be Fulfilled by Providing 0.53 Acres Of On-Site Retention And 1 Fee-In-Lieu Payment of \$10,454.40 Based On 0.32 Ac. x \$3,560 Sq.Ft./Acre x \$0.75/Sq.Ft. The Surety Amount \$4,617.36 For On-Site Retention Obligation Is 0.53 Ac. x \$3,560 Sq.Ft./Acre x \$0.20/Sq.Ft.

FOREST CONSERVATION WORKSHEET

Version 1.0

Table with columns: NET TRACT AREA, LAND USE CATEGORY, EXISTING FOREST COVER, BREAK EVEN POINT, PROPOSED FOREST CLEARING, PLANTING REQUIREMENTS. Rows include A. Total tract area (4.4), B. Area within 100 Year Floodplain (0), C. Area to remain in agricultural production (.9), D. Net Tract Area (3.5), E. Afforestation Threshold (0.5), F. Conservation Threshold (0.7), G. Existing forest cover (0.8), H. Area of forest above afforestation threshold (0.3), I. Area of forest above conservation threshold (0.1), J. Forest retention above threshold with no mitigation (0.02), K. Clearing permitted without mitigation (0.08), L. Total area of forest to be Cleared or Retained Outside FCE (0.27), M. Total area of forest to be Retained in FCE (0.53), N. Reforestation for clearing above Conservation Threshold (0.025), P. Reforestation for clearing below Conservation Threshold (0.32), Q. Credit for retention above conservation threshold (0), R. Total reforestation required (0.32), S. Total afforestation required (0), T. Total reforestation and afforestation required (0.32).

LEGEND

- 25% Or Greater Steep Slopes
Forest Conservation Easement

Forest Stand Data

Table with columns: Key, Community Type, Acreage, Dominant Vegetation, General Condition, Priority Acreage. Row 1: F1 Mixed successional, 0.8, Acer rubrum, Fraxinus americana, Allanthus altissima, Prunus serotina, Carya glabra, Lindora benzoin, Fair, 0.8± slopes.

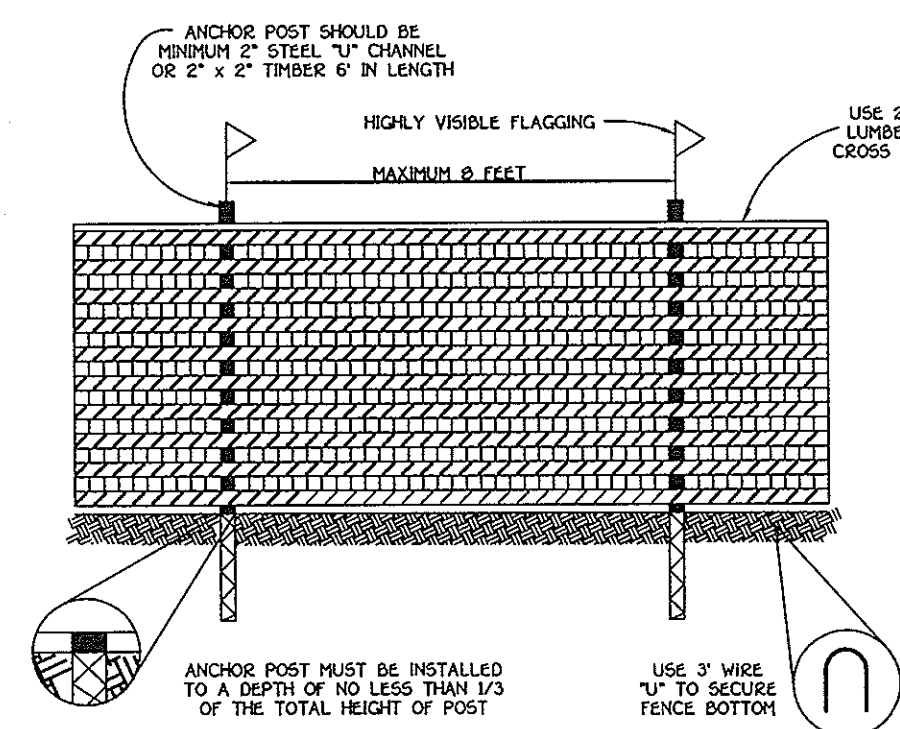
FSD NOTES:

- 1. No rare, threatened or endangered species were observed on the property.
2. Surrounding land use is primarily medium density residential.
3. Since no forest clearing is proposed a Simplified Forest Stand Delineation has been prepared.
4. No wetlands, streams or buffer are present on subject property.

Specimen Tree Data

Table with columns: Key, Species, size (dbh), Comments, To Be Retained/Cleared. Rows include A. Catalpa, 48", B. White Oak, 48", C. Silver Maple, 40", D. Chestnut Oak, 36", E. White Oak, 37", F. White Oak, 37", G. Tulip Poplar, 42", H. White Oak, 44", I. Tulip Poplar, 48", J. Red Oak, 48", K. Black Gum, 36", L. Black Gum, 37", M. White Oak, 36", N. White Oak, 30", O. White Oak, 30", P. White Oak, 48", Q. White Oak, 31", R. White Oak, 30", S. White Oak, 36", T. White Oak, 36", U. White Oak, 38", V. White Oak, 36".

BLAZE ORANGE PLASTIC MESH



- NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION DETAIL

NOT TO SCALE

PLAN

SCALE: 1" = 30'

OWNER

Kalyniuk Family LLC
3714 Chatham Road
Ellicott City, Maryland 21042-5106
410-465-7907

DEVELOPER

Land Design And Development, Inc.
5300 Dorsey Hall Drive
Suite 102
Ellicott City, Maryland 21042
443-367-0422



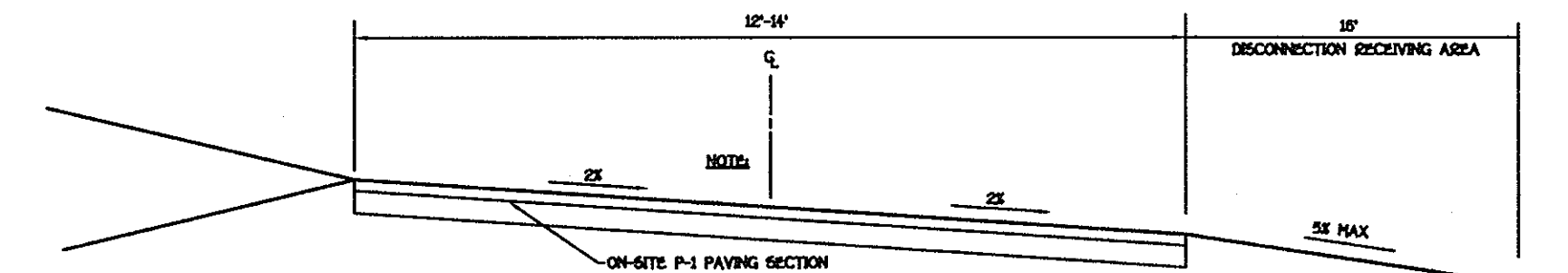
SUPPLEMENTAL PLAN FOREST CONSERVATION KALYNIUK PROPERTY

Lots 1 Thru 7 Open Space Lot 8 And Non-Buildable Bulk Parcel 'A'
A Resubdivision of Anton Koerber Property, Lots 7-9, Plat Book 4, Folio 63

ZONED: R-20
TAX MAP NO. 24 GRID NO. 10 PARCEL NO. 412 AND 413
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: JUNE 9, 2008
SHEET 2 OF 4

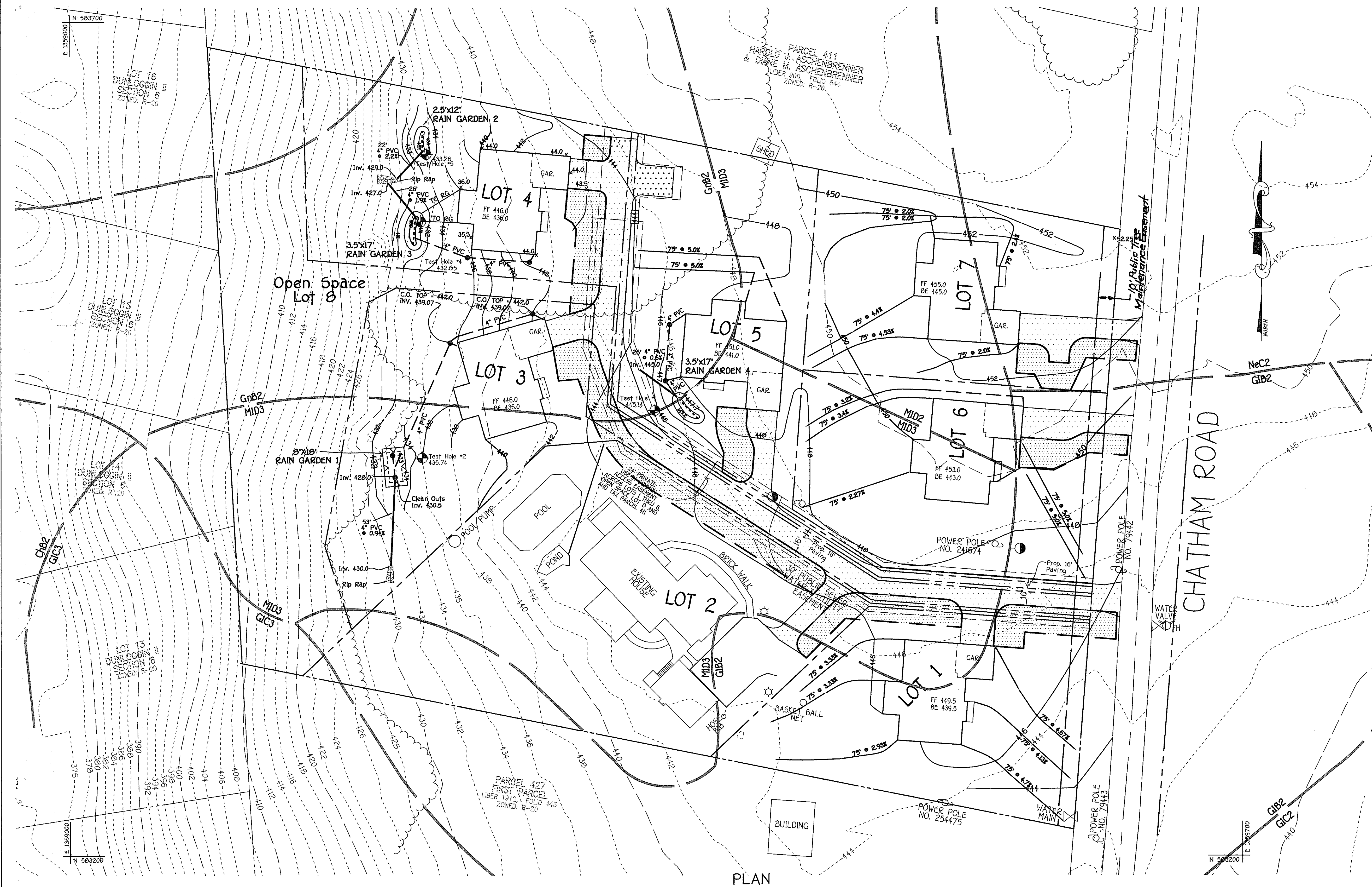
F-08-135

APPROVED- DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS _____ DATE _____
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* 7/1/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 7/2/08



ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME II, STANDARD SPECIFICATION AND DETAILS FOR CONSTRUCTION.

TYPICAL PRIVATE DRIVE CROSS SLOPE SECTION
 NOT TO SCALE



SOILS LEGEND		
SOIL	NAME	CLASS
GIB2	Glenelg loam, 3 to 8 percent slopes, moderately eroded	B
* GIB2	Glenville silt loam, 3 to 8 percent slopes, moderately eroded	C
MID2	Manor loam, 15 to 25 percent slopes, moderately eroded	B
MID3	Manor loam, 15 to 25 percent slopes, severely eroded	B
Nec2	Neshaminy silt loam, 8 to 15 percent slopes, moderately eroded	B

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

LEGEND

- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- PROPOSED CONTOUR
- ROOF LEADER
- ROOFTOP DISCONNECT FLOW PATH
0.39 ACRES DISCONNECTED
- DISCONNECTED IMPERVIOUS AREA
0.17 ACRES DISCONNECTED
- DISCONNECTION RECEIVING AREA

NOTE: UNIT SIZE SHOWN REFLECT MAXIMUM BUILDING SIZE AND IS SUBJECT TO FINAL ARCHITECTURE. FINAL DOWNSPOUT LOCATIONS SUBJECT TO FINAL ARCHITECTURE.

PLAN
 1"=30'

STORMWATER MANAGEMENT DISCONNECTION EXHIBIT
KALYNIUK PROPERTY
 LOTS 1 THRU 7, OPEN SPACE LOT 8 AND NON-BUILDABLE BULK PARCEL 'A'
 A Resubdivision of Anton Koerber Property, Lots 7-9, Plat Book 4, Folio 63

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELICOTT CITY, MARYLAND 21042
 410-461-2255

APPLIED STORMWATER
 TIA T. E. SCOTT & ASSOCIATES, INC.
 128 COCKEYVILLE ROAD, SUITE 300
 HIGHT WALKER, MARYLAND 21042
 410-438-2051
 410-438-2056
 410-438-2058

OWNER
 Kalyniuk Family LLC
 3714 Chatham Road
 Ellicott City, Maryland 21042-5106
 410-465-7987

DEVELOPER
 Land Design And Development, Inc.
 5300 Dorsey Hall Drive
 Suite 102
 Ellicott City, Maryland 21042
 443-367-0422

ZONED: R-20
 TAX MAP No. 24 GRID No. 10 PARCEL No. 412 AND 413
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATES: JUNE 9, 2008
 SHEET 3 OF 4

SPECIFICATIONS

SOIL TEXTURE AND STRUCTURE
Soil shall have a sandy loam, loamy sand, or loam texture per USDA textural triangle. Maximum clay content shall be 6%. Soil mixture shall be 50-60% sand, 20-30% leaf compost and 20-30% topsoil. 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 facility that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil must be free of plant or seed material of non-native, invasive species, or noxious weeds.

SOIL TESTING
Planting soil for bioretention areas must be tested prior to installation for PH and organic matter. The soil should meet the following criteria (Landscape Contractors Association 1986).
PH Range: 5.5 - 6.5
Organic Matter: 1.5 - 4.0%
Sieve Analysis, PH and organic matter tests shall be performed for each bioretention area.

SOIL PREPARATION
Soil preparation can be performed onsite or offsite and transported to the facility location when ready for installation. Prior to transport, the soil mix should be certified as meeting the criteria established for the soil medium and approved by the site inspector.

Soil preparation can be accomplished by thoroughly mixing soil components, amendments and additives, as needed utilizing a backhoe or front-end loader.

SOIL PLACEMENT
Placement of the planting soil in the bioretention area should be after scarifying the invert area of the proposed facility and installing the underdrain and/or rip-rap area (if applicable), in lifts of 12 to 18 inches and lightly compacted. Minimal compaction effort can be applied to the soil by tamping with a bucket from a dozer or backhoe. Lifts are not to be compacted but are performed in order to reduce the possibility of excessive settlement. Installation of soils must be done in a manner that will ensure adequate filtration.

SOIL COMPACTION
Avoid over compaction by allowing time for natural compaction and settlement. No additional manual compaction of soil is necessary. Rate soil material as needed to level out. Overfill above the proposed surface invert to accommodate natural settlement to proper grade. Depending upon the soil material, up to 20% natural compaction may occur. For facilities designed with a liner, no scarification of the invert area is required.

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use excavation hoses to remove original soil. If bioretention areas are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf-type tires.

SOIL COMPACTION (cont)
Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reducing infiltration rates and storage volumes 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. Substitute methods must be approved by the engineer. Rototillers typically do not fill 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 before back filling the facility and placement of underdrain. Pump any ponded water before preparing (rototilling) base.

When back filling the bioretention facility, 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.

SOIL PRESOAK
In order to speed up the natural compaction process, presoaking the placed soil may be performed. Significant settlement can occur after the first presoak, and additional settlement may occur subsequent to the initial wetting. If time and construction scheduling permits, it is preferable to allow natural settlement to occur with the help of rain events to presoak the soil medium.

MULCH
Areas should be mulched once trees and shrubs have been planted. Any ground cover specified as plugs may be installed once mulch has been applied.

The mulch layer shall consist of either a standard landscape fine shredded hardwood mulch (preferred) or hardwood chips. The mulch may be either aged or fresh to maximize nitrogen and metal uptake by the facility. Mulch shall be free of weed seeds, soil, roots, or any other substance not consisting of either sole or branch wood and bark. The mulch should be uniformly applied approximately 2 to 3 inches in depth. Mulch applied any deeper than three inches reduces proper oxygen and carbon dioxide cycling between the soil and the atmosphere, and keeps plant roots from making good contact with the soil.

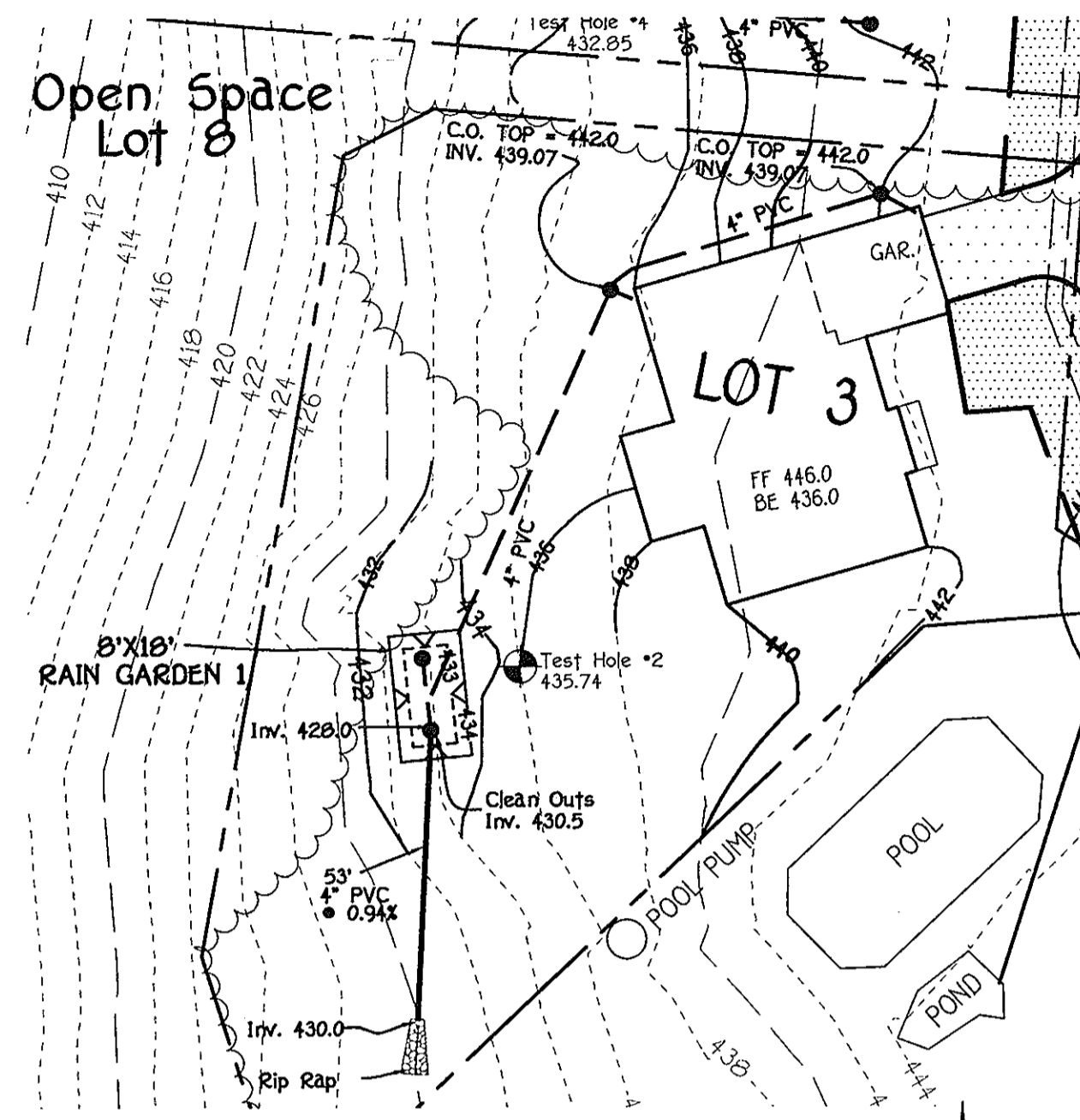
SAND
Sand shall be clean and free of deleterious materials, meeting AASHTO M-6 or ASTM C-33 with grain size of 0.075 - 0.04". MDSHA C-33 sand is acceptable.

GEOTEXTILE
Geotextile fabric should meet ASTM D-751 (puncture strength - 125 LB), ASTM D-1117 (tensile burst strength - 400 PSF), and ASTM B-1802 (tensile strength - 300 LB). Fabric should have 0.09" thick E.O.S. of #80 sieve, and maintain 125 GPM per sq. ft. flow rate.

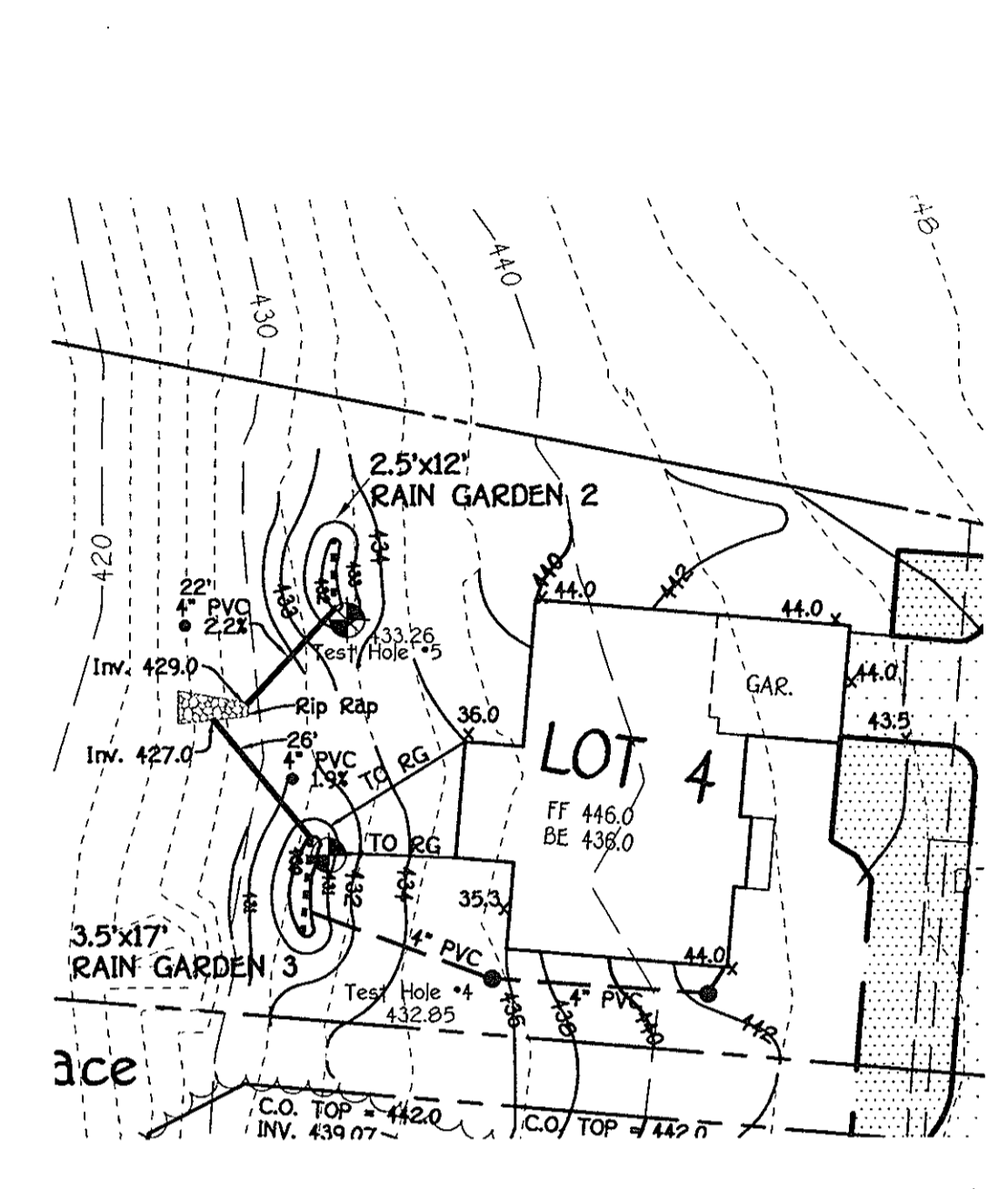
Structure Backfill
Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe. Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials, Section 303 as modified. The mixture shall have a 100-200 psi 28 day unconfined compressive strength.

The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and on the sides of the pipe. If only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to the specified for the core of the embankment or other embankment materials.

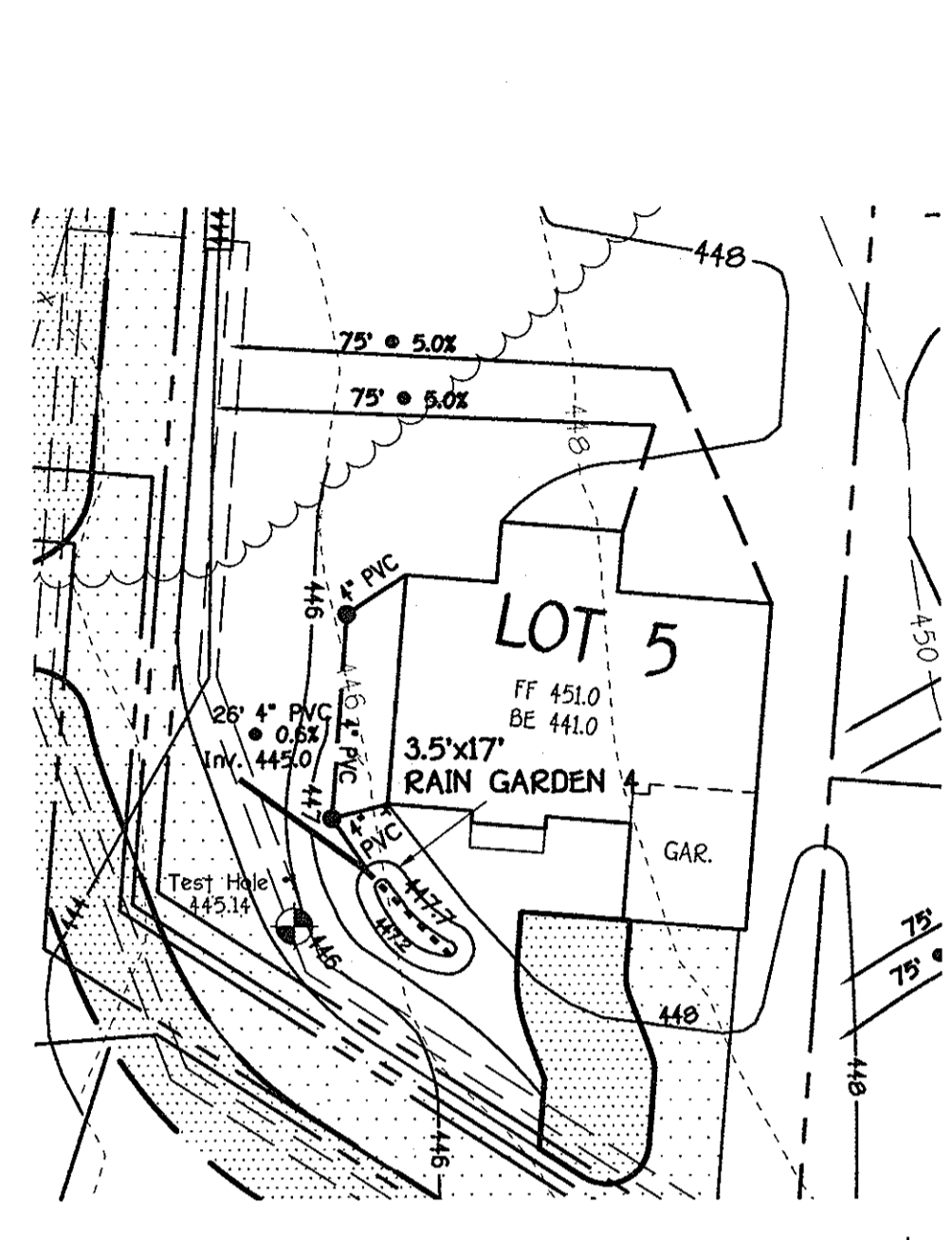
Plastic Pipe
The following criteria shall apply for plastic pipe:
1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following 4" - 10" inch pipe shall meet the requirement of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirement of AASHTO M294 Type S.
2. Joints and connections to anti-seep collars shall be completely watertight.
3. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
4. Backfilling shall conform to "Structure Backfill".



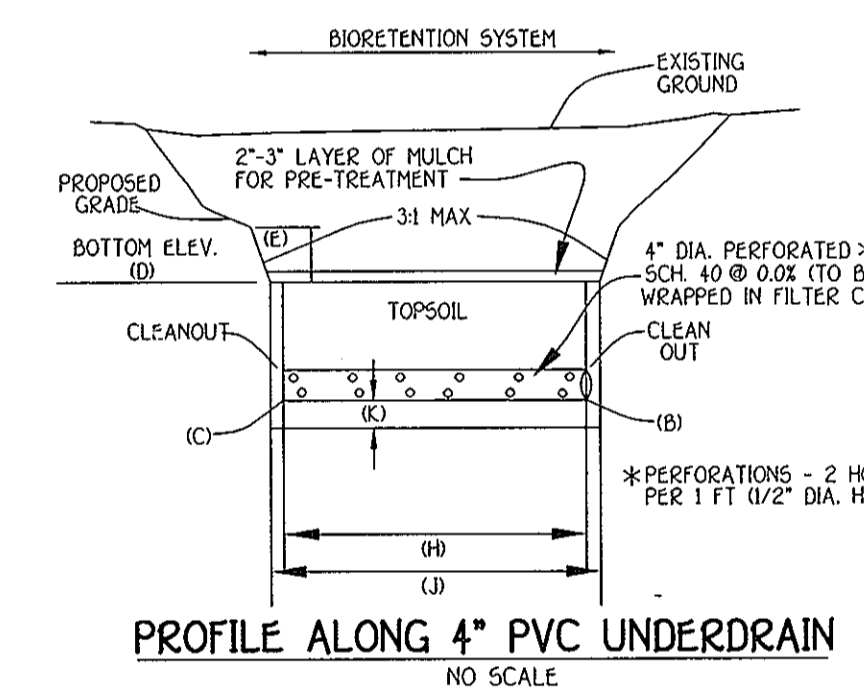
LOT #3 RAIN GARDEN PLAN
1"=30'



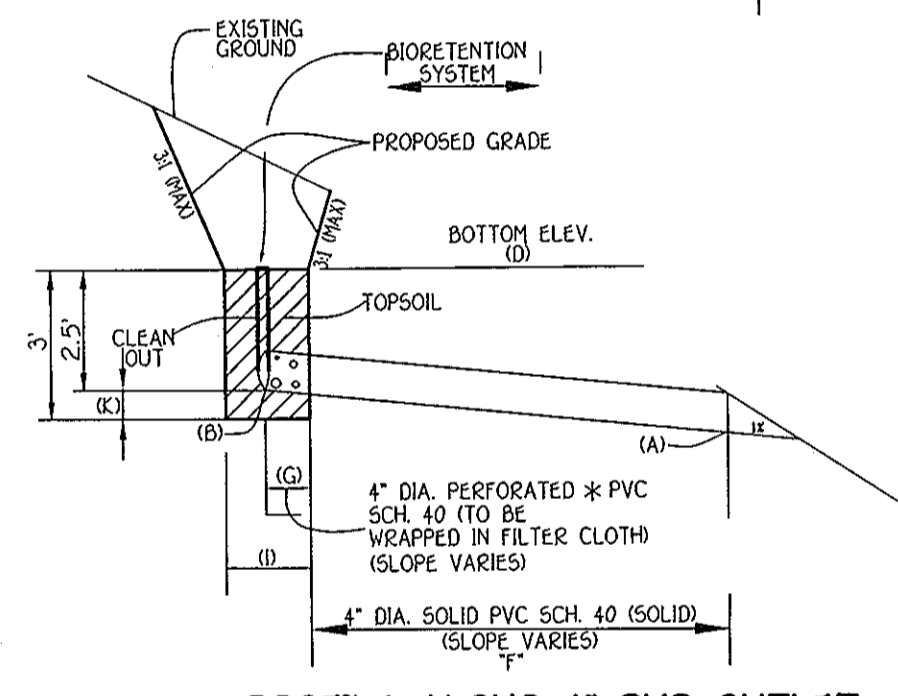
LOT #4 RAIN GARDEN PLAN
1"=30'



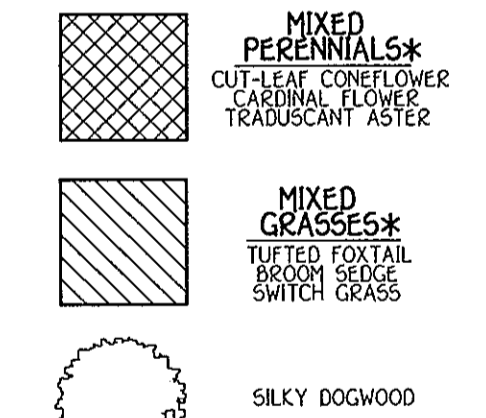
LOT #5 RAIN GARDEN PLAN
1"=30'



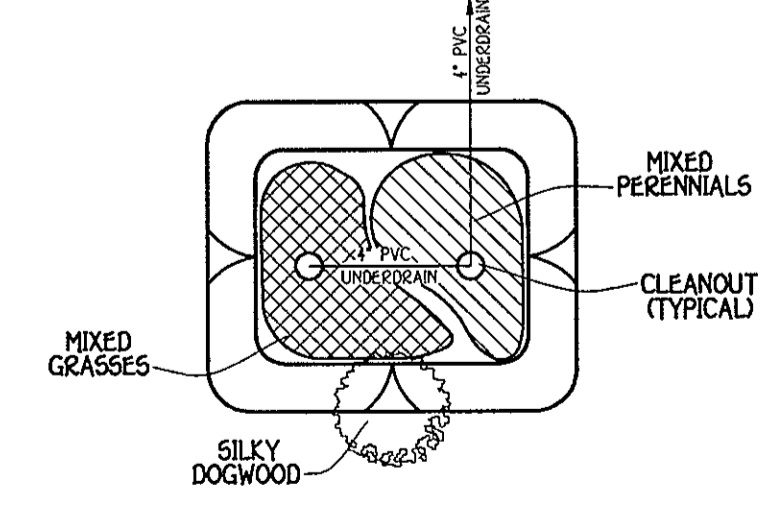
PROFILE ALONG 4" PVC UNDERDRAIN
NO SCALE



PROFILE ALONG 4" PVC OUTLET
NO SCALE



NOTES:
*SEE PLANT MATERIAL CHARTS FOR QUANTITIES AND SPACING.
PLANT MATERIAL MUST COVER AT LEAST 50% OF THE SURFACE AREA OF THE RAINGARDEN



RAIN GARDEN FILTER PLANTING DETAIL
NOT TO SCALE

RAIN GARDEN FILTER PLANT MATERIAL		
QUANTITY	NAME	MAXIMUM SPACING (FT.)
45	MIXED PERENNIALS	1 FT.
45	MIXED GRASSES	1 FT.
1	SILKY DOGWOOD	PLANT AWAY FROM INFLOW LOCATION

RAIN GARDEN FILTER DATA												
RAIN GARDEN FILTER	A	B	C	D	E	F	G	H	I	J	K	
1	430.0	430.5	430.5	433.0	434.0	53'	4.0'	12'	8'	10'	10'	
2	429.0	429.5	429.5	432.0	433.0	22'	1.25'	8'	2.5'	12'	10'	
3	427.0	427.5	427.5	430.0	431.0	26'	1.75'	13'	3.5'	17'	10'	
4	445.0	445.5	445.5	447.75	447.75	30'	1.75'	13'	3.5'	17'	10'	

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED RAIN GARDENS

- 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. Maintenance will also address dead material and pruning.
- 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, minimum once a month and after heavy storm events.

ENGINEER'S CERTIFICATE
I Certify That This Plan For Pond Construction, Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions. This Plan Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District. I Have Notified The Developer That He/She Must Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion.

Paul A. Dahn 6/9/08
Signature Of Engineer Date

DEVELOPER'S CERTIFICATE
I/We Certify That All Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of The Environment Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Howard Soil Conservation District With An "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Periodic On-Site Inspections By The Howard Soil Conservation District.

R. Kalyniuk 6/9/08
Signature Of Developer Date

AS-BUILT CERTIFICATION
I Herby Certify That The Facility Shown On This Plan Was Constructed As Shown On The "As-Built" Plans And Meets The Approved Plans And Specifications.

Signature P.E. No.

Date:

Certify Means To State Or Declare A Professional Opinion Based Upon On-Site Inspections And Material Tests Which Are Conducted During Construction. The On-Site Inspections And Material Tests Are Those Inspections And Tests Deemed Sufficient And Appropriate Commonly Accepted Engineering Standards. Certify Does Not Mean Or Imply A Guarantee By The Engineer Nor Does An Engineer's Certification Relieve Any Other Party From Meeting Requirements Imposed By Contract, Employment, Or Other Means, Including Meeting Commonly Accepted Industry Practices.

OWNER
Kalyniuk Family LLC
3714 Chatham Road
Ellicott City, Maryland 21042-5106
410-465-7987

DEVELOPER
Land Design And Development, Inc.
5309 Dorsey Hill Drive
Suite 102
Ellicott City, Maryland 21042
443-367-0422

PRIVATE RAIN GARDEN FILTER OPERATION & MAINTENANCE SCHEDULE

- ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER 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.
- 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.

STORMWATER MANAGEMENT RAIN GARDEN PLANS AND DETAILS

KALYNIUK PROPERTY
LOTS 1 THRU 7, OPEN SPACE LOT 8 AND NON-BUILDABLE BULK PARCEL 'A'
A Resubdivision of Anton Koerber Property, Lots 7-9, Plat Book 4, Folio 63

ZONED R-20
TAX MAP No. 24 GRID No. 10 PARCEL No. 412 AND 413
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SCALE: 1"= 30' DATE: JUNE 9, 2008
SHEET 4 OF 4

F-08-135