

LINE	BEARING	DISTANCE
L1	S29°38'55"W	221.93
L2	N35°55'07"E	60.70
L3	N19°26'00"E	59.28
L4	N02°56'06"E	27.12
L5	S84°06'28"E	46.78
L6	N48°44'48"W	40.43
L7	N48°54'12"W	60.69
L8	N40°43'55"W	52.20
L9	N62°11'54"W	101.69
L10	S46°27'01"E	69.55
L11	N34°48'13"W	69.11
L12	N12°18'04"W	66.48
L13	N14°08'56"W	112.25
L14	S07°50'41"E	50.25
L15	N83°41'51"W	53.69
L16	N88°44'11"E	54.64
L17	S78°01'44"W	46.11
L18	N76°26'39"E	57.78
L19	N54°39'57"E	56.14
L20	N65°08'07"E	50.99
L21	N87°45'16"E	50.99
L22	N76°26'42"E	100.00
L23	N82°09'42"E	50.25
L24	N76°26'16"E	50.00
L25	S87°45'20"W	50.99
L26	N76°26'40"E	100.00
L27	N70°44'02"E	50.25
L28	N65°08'07"E	50.99
L29	N76°26'42"E	50.00
L30	N68°09'03"E	50.99
L31	N82°09'20"E	50.25
L32	N76°26'43"E	50.00
L33	N82°09'15"E	50.99
L34	N76°26'41"E	50.00
L35	S70°44'03"W	50.25
L36	N65°08'07"E	50.99
L37	N81°52'51"E	61.27
L38	S79°57'56"E	74.96
L39	S88°31'08"E	36.43
L40	S87°20'38"E	50.99
L41	N80°15'22"E	58.32
L42	N62°34'27"E	57.80
L43	N59°42'10"E	50.99
L44	N51°52'51"E	37.83
L45	N53°56'15"E	56.81
L46	N51°03'55"E	56.56
L47	S44°04'14"W	26.04
L48	N32°26'39"E	23.08
L49	N30°26'52"E	58.49
L50	S32°14'11"W	56.14
L51	N44°44'08"E	53.73

NOTE: EITHER TEMPORARY OR PERMANENT SEEDING AND STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR WITHIN THE TIME FRAMES PROVIDED BY THE STANDARD NOTES WHICHEVER IS MORE RESTRICTIVE.

LOT #	N-1: ROOFTOP DISCONNECTION	N-2: NON-ROOFTOP DISCONNECTION	M-3: LANDSCAPE INFILTRATION	M-8: SWALES
1	YES	YES	1	0
2	NO	YES	1	0
3	NO	YES	1	0
4	NO	YES	1	0
5	NO	YES	1	0
6	NO	YES	1	0
7	NO	YES	1	0
PARCELA	NO	YES	1	1

THIS AREA DESIGNATES A PRIVATE SEWERAGE EASEMENT OF AT LEAST 10,000 SQUARE FEET AS REQUIRED BY MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWERAGE DISPOSAL.

IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWERAGE IS AVAILABLE. THESE EASEMENTS SHALL REMAIN IN FULL FORCE UPON CONNECTION TO PUBLIC SEWERAGE SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS. RECONSTRUCTION OF A MODIFIED SEWERAGE EASEMENT SHALL NOT BE NECESSARY.

LIMITS OF DISTURBANCE: LOD

SILT FENCE: SF

(PASSED) PERCOLATION TEST SITE: [Symbol]

(FAILED) PERCOLATION TEST SITE: [Symbol]

DISTINGUISHED WELL: [Symbol]

PROPOSED HOUSE SITE: [Symbol]

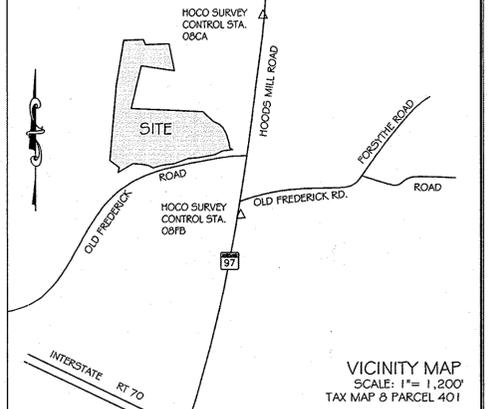
15% - 25% SLOPES: [Symbol]

25% OR GREATER SLOPES: [Symbol]

STREAM BUFFER: SB

WETLAND BUFFER: WLB

WETLANDS: WL



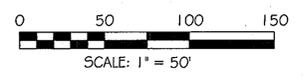
GROSS TRACT AREA =	35.1564 AC. ±
AREA OF FLOODPLAIN =	0.0000 AC. ±
AREA OF 25% OR GREATER SLOPE (OUTSIDE OF FLOODPLAIN) =	2.1000 AC. ±
NET TRACT AREA (GROSS AREA - FLOODPLAIN - AREA - STEEP SLOPE AREA) =	33.0564 AC. ±
ALLOWED DEVELOPMENT RIGHTS (GROSS TRACT AREA x 1 d.u./A, 25 ACRES) =	8.26
NUMBER OF BUILDABLE LOTS AND PARCELS =	8

- GENERAL NOTES:
- OWNER: QUARTZ HILL III, LLC
  - DEED REFERENCE: LIBER 9301 FOLIO 502 & LIBER 11072 FOLIO 664
  - DATE: DECEMBER 23, 2005 & FEBRUARY 1, 2007
  - GRANTOR: MARYLAND STATE HIGHWAY ADMINISTRATION & QUARTZ HILL III, LLC
  - TAX MAP: 8 GRID: 11 PARCEL: 401
  - NEAREST POTABLE WATER SUPPLY: SYLVESVILLE DISTANCE: 3.0 MILES ±
  - THE SUBJECT PROPERTY IS LOCATED IN ZONE C (AREA OF MINIMAL FLOODING AS PLOTTED BY SCALE ON NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP, COMMUNITY FLOOD INSURANCE PLAN NO. 240044 0000B, DATED 12/16/06).
  - TOPOGRAPHY: FROM AERIAL PHOTOGRAMMETRY COMPILED BY POTOMAC AERIAL SURVEYS IN JANUARY 2001. CONTOUR INTERVAL IS 2 FEET. VERTICAL DATUM IS NGVD29.
  - THE BASIS OF BEARINGS FOR THIS PLAN IS THE MARYLAND COORDINATE SYSTEM (NAD83) PER HOWARD COUNTY SURVEY CONTROL STATIONS 08FB & 08CA.
  - THERE ARE NO WELLS OR SEPTIC SYSTEMS WITHIN 100' OF THE PROPERTY BOUNDARY UNLESS OTHERWISE SHOWN HEREON.
  - THE EXISTING WELLS SHOWN ON THIS PLAN HAVE BEEN FIELD LOCATED BY VANMAR ASSOCIATES AND ACCURATELY SHOWN.
  - SOIL TYPES: BAILE (BA), COBORUS & HATBORO (Co), GLENVIEW (GgB, GgC), GLENVIEW (GgD), GLENVIEW-BAILE (GgB), MANOR (MgB, MgC, MgD), MANOR-BROWLOW (MgB), HOWARD COUNTY SOILS MAP GRID NO. 270 & 271.
  - ZONING DISTRICT: RC-DEO
  - ALL WELLS TO BE DRILLED PRIOR TO FINAL PLAT SIGNATURE. IT IS THE DEVELOPER'S RESPONSIBILITY TO SCHEDULE THE WELL DRILLING PRIOR TO THE FINAL PLAT SIGNATURE. IT WILL NOT BE CONSIDERED A DEFERRED ACTION IF THE WELL DRILLING HOLDS UP THE HEALTH DEPARTMENT SIGNATURE OF THE RECORD PLAT.
  - THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP WIDTH AND LOT AREAS REQUIRED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
  - ANY CHANGES TO A PRIVATE SEPTIC AREA WILL REQUIRE A REVISED PERCOLATION CERTIFICATION PLAN.
  - THIS PLAN IS IN COMPLIANCE WITH THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS PER COUNCIL BILL 15-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL 75-2003. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REQUIREMENTS IN EFFECT FOR QUARTZ HILL ESTATES III AT THE TIME OF SUBMISSION OF THE SUBDIVISION PLAN, THE WAIVER PETITION APPLICATION OR BUILDING GRADING PERMIT.
  - THIS SUBDIVISION ADJUTS A MAJOR COLLECTOR ROADWAY AND IS NOT SUBJECT TO THE 65-DBA NOISE LINE PER CHAPTER 5 OF THE HOWARD COUNTY ROADS DESIGN MANUAL.
  - WP-07-033 WAS APPROVED ON FEBRUARY 2, 2007. THIS IS A WAIVER TO SECTION 16.1202(d)(1) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS TO NOT HAVE MINUTE LOT FRONTS ON APPROVED STREETS WITHIN A PUBLIC RIGHT-OF-WAY, AND SECTION 16.147 TO ALLOW PARCELS TO BE CREATED BY DEED RATHER THAN BY PLAT. APPROVAL WAS SUBJECT TO THE CONDITION THAT THE ACCESS TO THE SUBJECT PARCELS (PROPOSED LOTS) FROM THE MAJOR COLLECTOR ROADWAY SHALL BE DETERMINED ADEQUATE BY THE SUBDIVISION REVIEW COMMITTEE. THE PENDING PRELIMINARY PLAN FOR QUARTZ HILL ESTATES III SHALL REFLECT THE FRONTAGE ACCESS AS DETERMINED BY THE SAC.
  - THIS PLAN IS GRANDFATHERED TO SB-236 AND IS LOCATED WITHIN THE GROWTH TIER IV BECAUSE OF THE PERC APPLICATION WAS SUBMITTED TO THE HEALTH DEPARTMENT.
  - THE ACCESS TO LOTS 1, 4, 5, AND 7 AND BUILDABLE PRESERVATION PARCEL A DO NOT COINCIDE WITH THEIR ROAD FRONTAGE; HOWEVER, DPZ HAS DETERMINED THAT THE LOTS MEET THE INTENT OF THE REGULATIONS BECAUSE OLD FREDERICK ROAD IS CLASSIFIED AS MAJOR COLLECTOR HIGHWAY AND ALL LOTS/SPARC WILL BE SERVED BY SHARED DRIVEWAYS.
  - THE ARTICLES OF INCORPORATION FOR THE HOA AND PROTECTIVE COVENANTS WERE ACCEPTED BY THE STATE DEPARTMENT OF ASSESSMENT AND TAXATION ON NOVEMBER 15, 2013.
  - PRESERVATION PARCEL 'A' IS PRIVATELY OWNED AND IS ENCLUMBERED BY AN EASEMENT AGREEMENT WITH QUARTZ HILL III, LLC AND HOWARD COUNTY. THIS AGREEMENT PROHIBITS FURTHER SUBDIVISION OF THE PARCEL, OUTLINES THE MAINTENANCE RESPONSIBILITIES OF ITS OWNER AND ENUMERATES THE USES PERMITTED ON THE PROPERTY.
  - THE PURPOSE OF BUILDABLE PRESERVATION PARCEL 'A' IS TO SUPPORT ONE DWELLING AND FOREST CONSERVATION EASEMENT.
  - THE PRESERVATION PARCEL HAS NO FURTHER SUBDIVISION POTENTIAL.
  - FOREST OBLIGATION OF THIS SUBDIVISION IN ACCORDANCE WITH SECTION 16.1204 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, FOREST CONSERVATION OBLIGATION FOR THIS SUBDIVISION IS 14.03 ACRES. ACREAGE AVAILABLE FOR FOREST MITIGATION BANK IS 10.31 ACRES. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.1204 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. REQUIRED LANDSCAPING HAS BEEN SATISFIED WITH THE RETENTION OF EXISTING VEGETATION.
  - THE BASIS OF BEARINGS FOR THIS PLAN IS THE MARYLAND COORDINATE SYSTEM (NAD83) PER HOWARD COUNTY SURVEY CONTROL STATIONS 08FB & 08CA.
  - THE FOREST STAND DELINEATION FOR THIS SUBDIVISION WAS PREPARED BY VANMAR ASSOCIATES, INC., AND APPROVED AS PART OF ECP APPROVAL ON OCTOBER 11, 2012.
  - THERE ARE NO FLOODPLAINS ON THIS SITE.
  - THERE ARE NO WETLANDS ON LOTS 1-7 AND THE BUILDABLE AREA OF PRESERVATION PARCEL A.
  - A TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY LENHART TRAFFIC CONSULTING, INC., DATED AUGUST 31, 2013 AND WAS APPROVED ON 10/3/2013. STORMWATER MANAGEMENT REQUIREMENTS HAVE BEEN ADDRESSED IN ACCORDANCE WITH THE 2009 REVISIONS OF THE 2000 MARYLAND STORMWATER MANAGEMENT MANUAL.
  - THE PROPERTY IS NOT LOCATED IN THE METROPOLITAN DISTRICT.
  - EXISTING UTILITIES ARE BASED ON FIELD INVESTIGATION AND AERIAL TOPOGRAPHY.
  - PREVIOUS D.F.Z. FILE NO. ECP-12-066.
  - 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 TO FOLLOWING MINIMUM REQUIREMENTS:
    - Width - 12' (16' following more than one residence).
    - Surface - 6" of compacted crushed rock base with tar and chip coating (1 1/2" min.).
    - Geometry - Maximum 1.5% grade, maximum 1.0% grade change and minimum 45-foot turning radius.
    - Structures (curbs/retardments) - Capable of supporting 25 gross tons (125 loading).
    - Drainage Elements - Capable of safely passing 100-year flood with no more than 1 foot depth over driveway surface.
    - Structure clearances - minimum 12 feet.
    - Maintenance - sufficient to ensure all weather use.



APPROVED  
 HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 Katherine L. ... 2-16-14  
 Chief, Division of Land Development  
 Chad ... 2-17-14  
 Chief, Development Engineering Division

OLD FREDERICK ROAD  
 MAJOR COUNTY COLLECTOR  
 (RM VARIES)  
 SHA PLAT No. 56161



THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.  
 Wm. C. Roberts  
 HOWARD COUNTY SOIL CONSERVATION DISTRICT  
 DATE: 12/17/13

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. 18417, EXPIRATION DATE: 9-18-15.

DATE: 12/17/13  
 REVISIONS:  
 [Signature]

SUPPLEMENTAL PLAN  
 SOILS/TOPOGRAPHY/STORMWATER MANAGEMENT  
 LOTS 1-7, BUILDABLE PRESERVATION PARCEL A & QUARTZ HILL III FOREST MITIGATION BANK  
 QUARTZ HILL III

TAX MAP: 8  
 GRID: 11  
 PARCEL NO: 401

ELECTION DISTRICT: No. 4  
 HOWARD COUNTY, MARYLAND  
 EX. ZONING: RC-DEO

SCALE: 1"=50'  
 DATE: NOVEMBER, 2013  
 SHEET 1 OF 4

VANMAR ASSOCIATES, INC.  
 Engineers & Surveyors Planners  
 310 South Main Street P.O. Box 328 Mount Airy, Maryland 21771  
 (301) 829-2890 (301) 851-9015 (410) 549-2751

F-13-070

0:\Users\kline\My Documents\11-25-2013\11-25-2013\278-08 Plan.dwg  
 11/25/2013 2:28:08 PM  
 Quartz Hill III Forest Mitigation Bank.dwg

**Specifications for Micro-Bioretenation, Rain Gardens, Landscape Infiltration & Infiltration Berms**

**1. Material Specifications**

The allowable materials to be used in these practices are detailed in Table B.4.1.

**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 micro-bioretenation practices 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:

Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)  
 Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).  
 Clay Content - Media shall have a clay content of less than 5%.  
 pH Range - Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

**Compaction**

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, 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 composition zone. Substitute methods must be approved by the engineer. Rototillers typically 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 before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base. When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

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.

**Plant Installation**

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only acceptable mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock 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 grade 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 equally spaced on the outside of the tree ball.

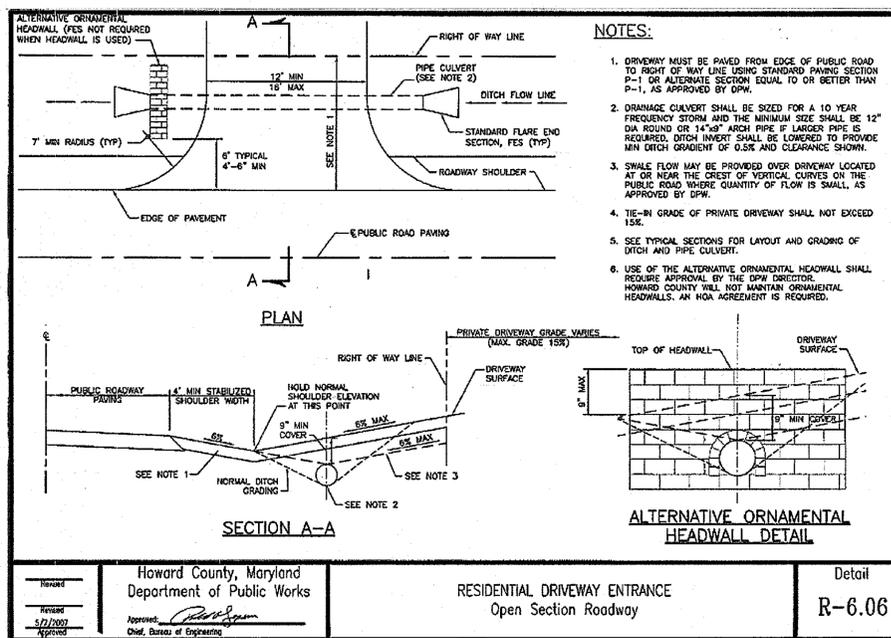
Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

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, detritus, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

**MAINTENANCE CRITERIA**

- The following items should be addressed to ensure proper maintenance and long-term performance of landscape infiltration:
- Privately owned practices shall have a maintenance plan and shall be protected by easement, deed restriction, ordinance, or other legal measures preventing its neglect, adverse alteration, and removal.
- During the first year of operation, inspection frequency should be after every major storm and poorly established areas revegetated.
- Sediment accumulation on the surface of the facility should be removed and the top two to three inches of surface layer replaced as needed.
- The top few inches of the planting soil should be removed and replaced when water ponds for more than 48 hours or there is algal growth on the surface of the facility.
- If standing water persists after filter media has been maintained, the gravel, soil, and sand may need to be cleaned and/or replaced.
- Occasional pruning and replacement of dead vegetation is necessary. If specific plants are not surviving, more appropriate species should be used. Watering may be required during prolonged dry periods.

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4 SWM Design Manual	n/a	plantings are site-specific
Planting soil (2' to 4' deep)	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile			
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underdrain pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; F <sub>c</sub> = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	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 350.R/89; vertical loading (H-10 or H-20); also wable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Gaystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand



**Non-Rooftop Disconnection Construction Criteria:**

The following should be addressed during construction of projects with non-rooftop disconnections:

**Erosion and Sediment Control:** Erosion and sediment control practices (e.g., sediment traps) shall not be located in areas designated for non-rooftop disconnections.

**Site Disturbance:** To minimize disturbance and compaction, construction vehicles and equipment should avoid areas receiving disconnected runoff. Should areas receiving disconnected runoff become compacted, scarifying the surface or rototilling the soil to a depth of four to six inches shall be performed to ensure permeability. Additionally, amendments may be needed for tight, clayey soils.

**Inspection:** A final inspection shall be conducted before use and occupancy approval to ensure that adequate treatment areas and permanent stabilization has been established.

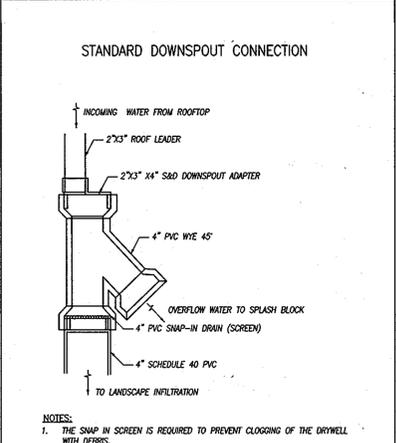
**Rooftop Disconnection Construction Criteria:**

The following items should be addressed during the construction of projects with planned rooftop disconnections:

**Erosion and Sediment Control:** Erosion and sediment control practices (e.g., sediment traps) shall not be located in vegetated areas receiving disconnected runoff.

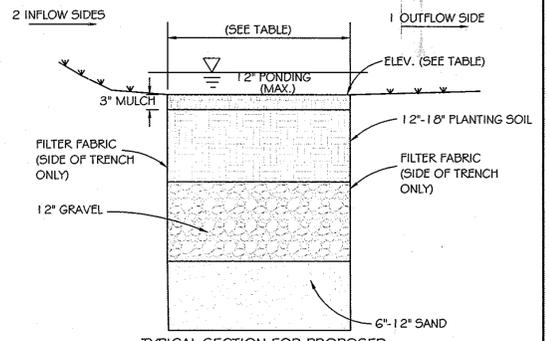
**Site Disturbance:** Construction vehicles and equipment should avoid areas receiving disconnected runoff to minimize disturbance and compaction. Should areas receiving disconnected runoff become compacted, scarifying the surface or rototilling the soil to a depth of four to six inches shall be performed to ensure permeability. Additionally, amendments may be needed for tight, clayey soils.

**Inspection:** A final inspection shall be conducted before use and occupancy approval to ensure that sizing for treatment areas have been met and permanent stabilization has been established.



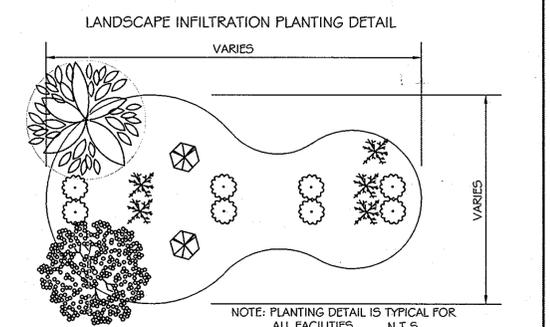
**OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3)**

- 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 of 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.



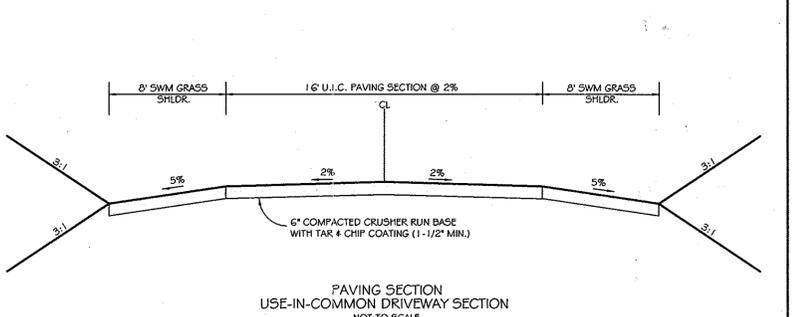
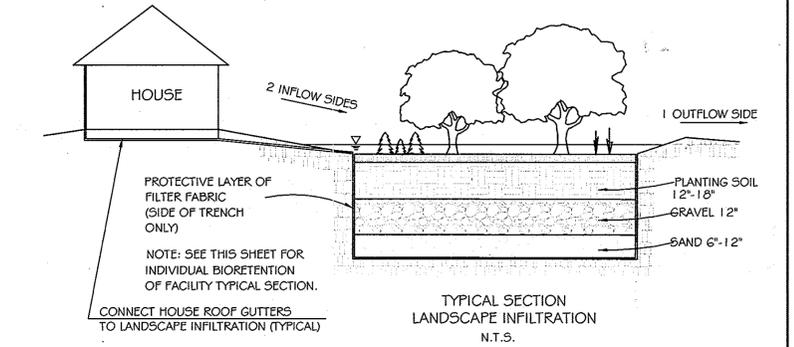
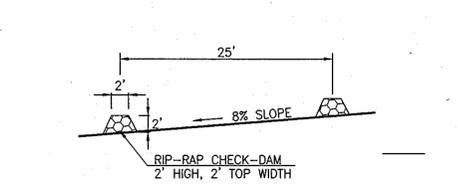
**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1) DISCONNECTION OF NON-ROOFTOP (N-2)**

MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LAWN OR LANDSCAPED AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.



Practice	Area Treated	Methodology	Volume (ESDv)
<b>Lot 1</b>			
N-1: Rooftop	481.3	ESDv=P*V*DA/12	30 cft
N-2: Non-Rooftop	1,090	ESDv=PE*RV*DA/12	81 cft
M-3: Landscape Infiltration	6,530	Compute remaining ESDv & Minimum surface Area	390 cft
<b>Total</b>			<b>502 cft</b>
<b>Lot 2</b>			
N-1: Rooftop	481.3	ESDv=P*V*DA/12	15 cft
N-2: Non-Rooftop	1,000	ESDv=PE*RV*DA/12	79 cft
M-3: Landscape Infiltration	4,236	Compute remaining ESDv & Minimum surface Area	220 cft
<b>Total</b>			<b>314 cft</b>
<b>Lot 3</b>			
N-2: Non-Rooftop	1,392	ESDv=PE*RV*DA/12	110 cft
M-3: Landscape Infiltration	7,043	Compute remaining ESDv & Minimum surface Area	380 cft
<b>Total</b>			<b>490 cft</b>
<b>Lot 4</b>			
N-2: Non-Rooftop	820	ESDv=PE*RV*DA/12	65 cft
M-3: Landscape Infiltration	11,729	Compute remaining ESDv & Minimum surface Area	350 cft
<b>Total</b>			<b>415 cft</b>
<b>Lot 5</b>			
N-2: Non-Rooftop	970	ESDv=PE*RV*DA/12	77 cft
M-3: Landscape Infiltration	6,084	Compute remaining ESDv & Minimum surface Area	310 cft
<b>Total</b>			<b>387 cft</b>
<b>Lot 6</b>			
N-2: Non-Rooftop	-	ESDv=PE*RV*DA/12	0 cft
M-3: Landscape Infiltration	5,523	Compute remaining ESDv & Minimum surface Area	456 cft
<b>Total</b>			<b>456 cft</b>
<b>Lot 7</b>			
N-2: Non-Rooftop	790	ESDv=PE*RV*DA/12	63 cft
M-3: Landscape Infiltration	4,767	Compute remaining ESDv & Minimum surface Area	310 cft
<b>Total</b>			<b>373 cft</b>
<b>Lot 8</b>			
N-2: Non-Rooftop	-	ESDv=PE*RV*DA/12	0 cft
M-3: Landscape Infiltration	3,850	Compute remaining ESDv & Minimum surface Area	310 cft
<b>Total</b>			<b>310 cft</b>
<b>M-8: Grass Swale</b>	3,474	Eq. 5.3	275 cft
<b>Total</b>			<b>585 cft</b>
<b>Use-In-Common Drives</b>	7,425	ESDv=PE*RV*DA/12	588 cft
<b>Total ESDv Provided =</b>			<b>4,109 cft</b>
<b>ESDv Required =</b>			<b>4,104 cft</b>

SWM-1	M-3 LANDSCAPED INFILTRATION	26' x 15' -12" PONDING
SWM-2	M-3 LANDSCAPED INFILTRATION	22' x 10' -12" PONDING
SWM-3	M-3 LANDSCAPED INFILTRATION	380 SF -12" PONDING
SWM-4	M-3 LANDSCAPED INFILTRATION	350 SF -12" PONDING
SWM-5	M-3 LANDSCAPED INFILTRATION	20' x 15.5' -12" PONDING
SWM-6	M-3 LANDSCAPED INFILTRATION	38' x 12' -12" PONDING
SWM-7	M-3 LANDSCAPED INFILTRATION	31' x 10' -12" PONDING
SWM-8	M-3 LANDSCAPED INFILTRATION	31' x 10' -12" PONDING



**PROFESSIONAL CERTIFICATION**

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENCED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. J28417, EXPIRATION DATE: 9-10-15.

OWNER:  
 QUARTZ HILL III, LLC  
 4003 JENNINGS CHAPEL ROAD  
 BROOKVILLE, MD 20833  
 410-489-4630

**SUPPLEMENTAL PLAN**  
 STORMWATER MANAGEMENT/CONSTRUCTION NOTES AND DETAILS  
 LOTS 1-7, BUILDABLE PRESERVATION PARCEL A & QUARTZ HILL III FOREST MITIGATION BANK  
 QUARTZ HILL III

TAX MAP: B  
 GRID: I 1  
 PARCEL NO: 401

ELECTION DISTRICT: No. 4  
 HOWARD COUNTY, MARYLAND  
 EX. ZONING: RC-DEO

SCALE: AS SHOWN  
 DATE: NOVEMBER, 2013  
 SHEET 2 OF 4

**VANMAR ASSOCIATES, INC.**  
 Engineers Surveyors Planners  
 810 South Main Street P.O. Box 328 Mount Airy, Maryland 21771  
 (301) 829-2890 (301)831-5015 (410) 549-2751

F-13-070

APPROVED

HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Keith Landwehr* 2-10-14  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Chad Edwards* 2-7-14  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

SEQUENCE OF CONSTRUCTION

- OBTAIN ALL REQUIRED GRADING, MDE PERMITS, APPROVALS AND LICENSES FROM APPROPRIATE AGENCIES.
- NOTIFY SEDIMENT CONTROL INSPECTOR AT LEAST THREE (3) WORKING DAYS PRIOR TO STARTING WORK.
- INSTALL STABILIZED CONSTRUCTION ENTRANCES. INSTALL SILT FENCE AND OTHER SEDIMENT CONTROL DEVICES AS SHOWN IN THE SEDIMENT CONTROL PLAN.
- STABILIZE ALL THE GRADED AREAS UP TO 20' OUTSIDE OF THE LIMIT OF GRADING AS PER PERMANENT SEEDING NOTES.
- COMPLETE UIC DRIVEWAY GRADING AFTER INSTALLATION OF UIC DRIVEWAY ENTRANCE CULVERTS.
- UPON APPROVAL OF SEDIMENT CONTROL INSPECTOR, REMOVE ALL TEMPORARY SEDIMENT CONTROL DEVICES FOR UIC DRIVEWAYS. FILL ALL DISTURBED AREAS AND STABILIZE AREAS IN ACCORDANCE WITH THE MARYLAND 2011 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- NOTIFY INSPECTOR FOR FINAL INSPECTION OF COMPLETED UIC DRIVEWAYS.
- INSTALL SEDIMENT CONTROL DEVICES INCLUDING STABILIZED CONSTRUCTION ENTRANCES AND SILT/SUPER SILT FENCES FOR EACH LOT/PRESERVATION PARCEL AS REQUIRED BEFORE HOUSE CONSTRUCTION BEGINS ON THE LOT.
- ONCE THE SEDIMENT CONTROL DEVICES ARE INSTALLED THE PERMITTEE MUST OBTAIN APPROVAL FROM THE INSPECTOR BEFORE PROCEEDING WITH ADDITIONAL CLEARING, GRUBBING OR GRADING.
- GRADE LOT/PRESERVATION PARCEL PER APPROVED PLAN AND BEGIN HOUSE CONSTRUCTION.
- ANY AREAS THAT CAN BE TEMPORARILY SEEDING-DURING HOUSE CONSTRUCTION MUST BE TEMPORARILY STABILIZED PER SEEDING NOTES.
- COMPLETE HOUSE CONSTRUCTION.
- UPON COMPLETION OF HOUSE CONSTRUCTION AND STABILIZATION OF DISTURBED AREAS, CONSTRUCT LANDSCAPE INFILTRATION FACILITY ON HOUSE LOT/PRESERVATION PARCEL.
- UPON APPROVAL OF SEDIMENT CONTROL INSPECTOR, REMOVE ALL TEMPORARY SEDIMENT CONTROL DEVICES FOR HOUSE CONSTRUCTION. FILL ALL DISTURBED AREAS AND STABILIZE AREAS IN ACCORDANCE WITH THE MARYLAND 2011 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- NOTIFY INSPECTOR FOR FINAL INSPECTION OF COMPLETED HOUSE CONSTRUCTION.

DUST CONTROL

DUST CONTROL METHOD FOR THIS SITE TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES: CALCIUM CHLORIDE SHALL BE APPLIED TO EXPOSED SURFACES AT A RATE THAT WILL KEEP SURFACE MOIST UNTIL SOIL IS STABILIZED ACCORDING TO VEGETATIVE SPECS. FOR THIS SITE AND AREAS TO BE PAVED ARE COMPLETED.

SOD SPECIFICATIONS / NOTES

- To provide quick cover on disturbed areas (2:1 grade or flatter).
- General Specifications:**
- Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
  - Sod must be machine cut at a uniform soil thickness of 1/4 inch, plus or minus 1/4 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
  - Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
  - Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect survival.
  - Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.
- Sod Installation:**
- During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
  - Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
  - Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
  - Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
- Sod Maintenance:**
- In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
  - After the first week, sod watering is required as necessary to maintain adequate moisture content.
  - Do not mow until the sod is firmly rooted. No more than 7 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

TEMPORARY SEEDING NOTES

Scope: Planting short term (no more than 6 months) vegetation to temporarily stabilize any areas where soil disturbance has occurred, until the area can be permanently stabilized with vegetative or non-vegetative practices.

Standards: The following notes shall conform to Section B-4 of the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL published jointly by the Maryland Department of Environment - Water Management Administration, the National Resource Conservation Service and the Maryland Association of Soil Conservation Districts

The seed bed shall be prepared by loosening the soil to a depth of 3 to 5 inches and incorporating the lime and fertilizer into this loosened layer of soil. See section B-4-2

For temporary stabilization, fertilizer shall consist of a mixture of 10-20-20 and be applied at a rate of 450 lb. per acre (10 lb. per 1000 sq. ft.) and will meet the requirements in section B-4-2. Lime shall be applied at a rate of 2 tons per acre (90 lb. per sq. ft.) and shall meet the requirements in section B-4-2 and B-4-4

Seed type and application shall meet the requirements in section B-4-3. Seed tags shall be made available to the inspector to verify the type and rate of seed used.

Mulch type and its application will meet the requirements in section B-4-3 a, b and c and will be applied along with the seed or immediately after seeding.

Seeding mixtures shall be selected from or will be equal to those on Table B.1 (page B.20).

Temporary Seeding Summary  
The seeding chart below will need to be placed on and filled in on the sediment control plan

Hardiness Zone (from Figure B.3):		Seed Mixture (from Table B.1):		Fertilizer Rate (10-20-20)	Lime Rate (10-20-20)
No.	Species	Application Rate (lb/ac)	Seeding Dates		
				450 lb/ac (10 lb/1000 sq ft)	2 tons/ac (90 lb/1000 sq ft)

VEGETATIVE SPECIFICATIONS AND NOTES

- DISTURB AS SMALL AN AREA OF THE PRESENT COVER AS POSSIBLE WHILE PERFORMING GRADING.
- LIMIT DURATION OF EXPOSURE OF BARE EARTH FROM GRADING OPERATION TO 7 DAYS BY THE ESTABLISHMENT OF TEMPORARY VEGETATION (OR MULCHING IF APPROPRIATE) OR BY COMPLETING PERMANENT SEEDING WITHIN 14 DAYS.
- ESTABLISH PERMANENT VEGETATIVE COVER IMMEDIATELY AFTER FINAL GRADING IS COMPLETED. (THIS INCLUDES ALL GRADING ON OR OFF THIS SITE THAT IS AFFECTED BY THIS CONSTRUCTION). IF FINAL GRADING IS COMPLETED AT A TIME OTHER THAN THE SEEDING SEASON, A TEMPORARY GROUND COVER SUCH AS MULCHING WILL BE USED TO STABILIZE THE BARE SOIL.
- RECOMMENDED TEMPORARY SEED MIXTURE:  
SEED: BALDRA RYE AT 150 LBS. PER ACRE  
LIME: 2 TONS GROUND LIMESTONE PER ACRE  
FERTILIZER: 10-10-10 AT 1,000 LBS. PER ACRE  
MULCH: STRAW AT 1.5 TONS PER ACRE  
ASPHALT: SS-1 OR EQUIVALENT AT 200 GAL. PER ACRE
- RECOMMENDED PERMANENT SEED MIXTURE:  
SEED: KY-31 FESCUE AT 60 LBS. PER ACRE  
LIME: 2 TONS GROUND LIMESTONE PER ACRE  
FERTILIZER: 10-10-10 AT 1,000 LBS. PER ACRE  
MULCH: STRAW AT 1.5 TONS PER ACRE  
ASPHALT: SS-1 OR EQUIVALENT AT 200 GAL. PER ACRE
- ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED BY 50 FT. (LINEAR) OF CRUSHED STONE TO PREVENT TRACKING OF MUD ON PUBLIC ROADS.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION (SPECIFIED ON PLANS) SHALL BE COMPLETED WITHIN SEVEN CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROL DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND FOURTEEN DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER CONTROL DIKES AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS WILL NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL IS OBTAINED. APPROVAL SHALL BE REQUESTED UPON FINAL STABILIZATION OF ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES BEFORE REMOVAL OF SEDIMENT CONTROLS.

The seed bed shall be prepared by loosening the soil to a depth of 3 to 5 inches and incorporating the lime and fertilizer into this loosened layer of soil. See section B-4-2.

For sites over 5 ac. soil tests will be performed. Soil tests will be conducted by the University of Maryland or a recognized commercial laboratory. Minimum soil conditions shall meet the requirements of section B-4-2-A-1-2-a, otherwise soil amendments or topsoil will be applied. Topsoiling may occur when soil conditions meet the minimum requirements as stated in section B-4-2-B. Soil amendments must meet the requirements as set forth in section B-4-2-C and must be applied as indicated by the soils tests.

For sites of 5 ac. or less of disturbance, the following fertilizer and lime rates shall apply. Fertilizer shall consist of a mixture of 10-20-20 and be applied at the following rate: N = 45 lb. per acre (1 lb. per 1000 sq.ft.) P205 = 90 lb. per acre (2 lb. per 1000 sq.ft.) K20 = 90 lb. per acre (2 lb. per 1000 sq.ft.) Lime shall be applied at a rate of 2 tons per acre (90 lb. per 1000 sq.ft.)

Seed type, turfgrass or sod application shall meet the requirements in section B-4-3. Seed tags shall be made available to the inspector to verify the type and application rate of seed used. Mulch type and its application will meet the requirements in section B-4-3 a, b and c, and will be applied along with seed or immediately after seeding.

Seeding mixtures shall be selected from or will be equal to those on Table B-3. The seeding chart below will need to be placed on and filled in on the sediment control plan

Hardiness Zone (from Figure B.3):		Seed Mixture (from Table B.1):		Fertilizer Rate (10-20-20)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates		
				45 pounds (10 lb/1000 sq ft)	2 tons/ac (90 lb/1000 sq ft)

NOTE:

EARTHWORK CUT AND FILL QUANTITIES AND AREA OF DISTURBANCE INDICATED ON THIS PLAN ARE SHOWN FOR PURPOSE OF OBTAINING SEDIMENT CONTROL PLAN APPROVAL AND ARE NOT TO BE USED FOR CONTRACTUAL OBLIGATION.

TABLE - STONE SIZE

NUMBER	SIZE RANGE	D50	D100	AASHTO	WEIGHT
57*	3/8"-1 1/2"	1/2"	1 1/2"	M-43	N/A
1	2" - 3"	2 1/2"	3"	M-43	N/A
RIP-RAP**	4" - 7"	2 1/2"	7"	N/A	N/A
CLASS I	N/A	9 1/2"	15"	N/A	150 LB MAX
CLASS II	N/A	16"	24"	N/A	700 LB MAX
CLASS III	N/A	23"	34"	N/A	2000 LB MAX

\* THIS CLASSIFICATION IS TO BE USED ON THE INSIDE FACE OF STONE OUTLETS AND CHECK DAMS.

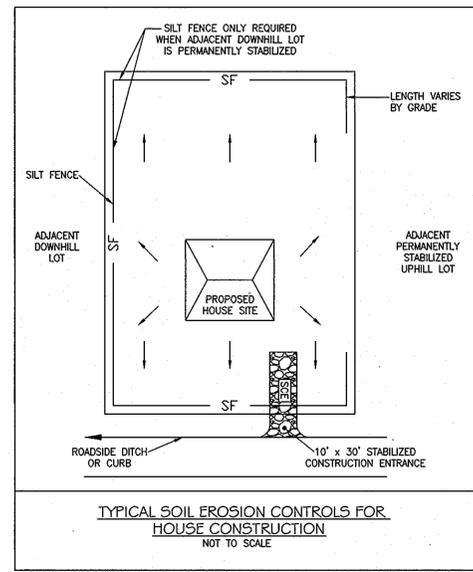
\*\* THIS CLASSIFICATION IS TO BE USED WHENEVER SMALL RIP-RAP IS REQUIRED. THE STATE HIGHWAY ADMINISTRATION DESIGNATION FOR THIS STONE IS STONE FOR GABIONS ( 905.01 .04)

SILT FENCE: CLASS F GEOTEXTILE FABRICS FOR SILT FENCE SHALL HAVE A 50 LB/LN. MINIMUM TENSILE STRENGTH AND A 20 LB/LN. MINIMUM TENSILE MODULUS WHEN TESTED IN ACCORDANCE WITH MSMT 605. THE MATERIAL SHALL ALSO HAVE A 0.3 GAL/FT2/MIN. FLOW RATE AND SEVENTY-FIVE PERCENT (75%) MINIMUM FILTERING EFFICIENCY WHEN TESTED IN ACCORDANCE WITH MSMT 322.

GEOTEXTILE FABRICS USED IN THE CONSTRUCTION OF SILT FENCE SHALL RESIST DEGRADATION FROM ULTRAVIOLET EXPOSURE. THE FABRIC SHALL CONTAIN SUFFICIENT AMOUNTS OF ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF 12 MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT A TEMPERATURE RANGE OF 0 TO 120 DEGREES F.

STONE FOR GABION BASKETS

BASKET THICKNESS	SIZE OF INDIVIDUAL STONES
INCHES <td>MM</td>	MM
6	150
9	225
12	300
18	450
36	910

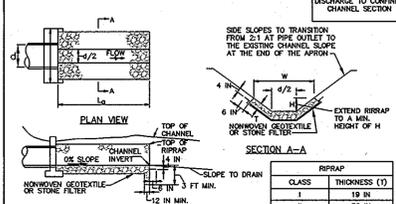
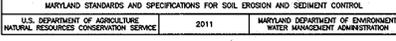
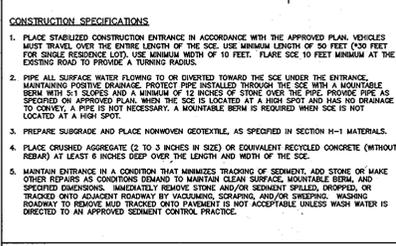
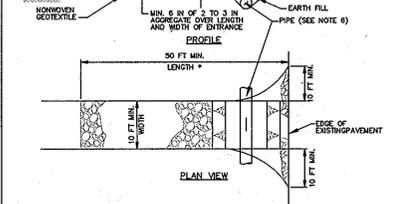
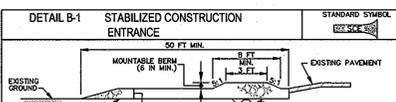


SOIL LEGEND

MAP SYMBOL	MAPPING UNIT	HYDROLOGIC SOIL GROUP	HYDRIC COMPONENTS	Kw	SLOPE
BaA	BAILE silt loam	D/C	YES	.43/32	0-8%
Co	CODORUS & HATBORO silt loam	C/D	YES	.37	0-3%
GgB, GgC	GLENELG loam	B	NO	.28	3-15%
GnB	GLENVILLE silt loam	C	NO	.32	3-8%
GnB	GLENVILLE-BAILE silt loam	C/D	YES	.32/49	3-8%
MoB, MoC, MoD	MANOR loam	B	NO	.28	3-25%
MkF	MANOR-BRINKLOW complex	B,C/D	NO	.28/24	25-65%

TEMPORARY STOCKPILE NOTE

SITE EARTHWORK HAS BEEN BALANCED SUCH THAT A TEMPORARY STOCKPILE SHOULD NOT BE NECESSARY. SHOULD CONTRACTOR DECIDE TO USE STOCKPILE, CONTRACTOR SHALL PLACE STOCKPILE ON SUITABLE AREA OF THE SITE AND FOLLOW TEMPORARY STABILIZATION NOTES.



CONSTRUCTION SPECIFICATIONS

- PREPARE SWALES IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS DESCRIBED IN SECTION C-2, STANDARDS AND SPECIFICATIONS FOR TEMPORARY SWALE, OR AS SPECIFIED ON PLAN.
- PLACE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND SIDES OF THE DAM PRIOR TO PLACEMENT OF STONE. CONSTRUCT THE CHECK DAM WITH MINIMUM 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) WITH SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM TOP WIDTH OF 12 INCHES. PLACE THE STONE SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL AND CHANNEL BANKS FROM THE TOP OF THE OUTLET PIPE TO THE STONE FILTER BLANKET OR GEOTEXTILE FILTER BLANKET. THE STONE SHALL COVER THE DAM WITH A 1 FOOT THICK LAYER OF WASHED AGGREGATE (3/4 TO 1 1/2 INCH).
- SET THE HEIGHT FOR THE WEIR GREST EQUAL TO ONE-HALF THE DEPTH OF THE CHANNEL OR DITCH. TO AVOID SCOUR AT THE MAXIMUM HEIGHT OF THE WEIR GREST MUST NOT EXCEED 18 INCHES.
- REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF THE HEIGHT OF THE WEIR GREST. MAINTAIN LINE, GRADE, AND CROSS SECTION.

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 redisturbance, 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-4-4), 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 unless permission for their removal has been obtained from the Howard County Sediment Control Inspector.
- Site Analysis:  
Total Area of Site: 35.20 Acres.  
Area Disturbed: 5.43 Acres.  
Area to be roofed or paved: 1.00 Acres.  
Area to be vegetatively stabilized: 4.43 Acres.  
Total Cut: Cu. Yds.  
Total Fill: Cu. Yds.  
Offsite waste/borrow area location N/A.  
Location must have active grading permit and as approved by inspector.
- 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 installation 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 can be back-filled and stabilized within one working 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.
- A 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 enforcement authority, no more than 30 acres cumulatively may be disturbed at a given time.
- Double row of "Super Silt Fence" is to be provided at the direction of the Sediment Control Inspector.

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:  
A. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND  
B. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE. NOT UNDER ACTIVE GRADING.

DEVELOPER'S CERTIFICATE:

"WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THE PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, 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 ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT."

*Ronald E. Thompson* 11/26/13  
DEVELOPER DATE

ENGINEER'S CERTIFICATE:

"I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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 AND THE 2011 MARYLAND STANDARDS & SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL."

*Ronald E. Thompson* 11/26/13  
RONALD E. THOMPSON, P.E. DATE

SUPPLEMENTAL PLAN

SEDIMENT AND EROSION CONTROL NOTES & DETAILS  
LOTS 1-7, BUILDABLE PRESERVATION PARCEL A & QUARTZ HILL III FOREST MITIGATION BANK  
QUARTZ HILL III

TAX MAP: B  
GRID: 11  
PARCEL NO: 401

ELECTION DISTRICT: No. 4  
HOWARD COUNTY, MARYLAND  
EX. ZONING: RC-DEO

SCALE: AS SHOWN  
DATE: NOVEMBER, 2013  
SHEET 3 OF 4

F-13-070

VANMAR ASSOCIATES, INC.  
310 South Main Street P.O. Box 328 Mount Airy, Maryland 21771  
(301) 829-2890 (301)831-5015 (410) 649-2751

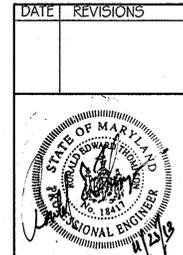
APPROVED  
HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Karl Schindler* 2-10-14  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*And E. Edman* 2-7-14  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*John R. Roberts* 12/16/13  
HOWARD SOIL CONSERVATION DISTRICT DATE



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. 12417, EXPIRATION DATE 9-18-15.

OWNER:  
QUARTZ HILL III, LLC  
4003 JENNINGS CHAPEL ROAD  
BROOKVILLE, MD 20633  
410-489-4630

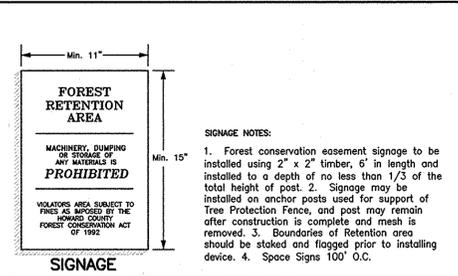
FOREST MITIGATION EASEMENT #	LINE	BEARING	DISTANCE	FOREST MITIGATION EASEMENT #	LINE	BEARING	DISTANCE	FOREST MITIGATION EASEMENT #	LINE	BEARING	DISTANCE
F1	1	N89°01'16"E	273.57'	F1	1	N89°01'16"E	273.57'	F1	1	N89°01'16"E	273.57'
F1	2	S89°01'16"W	273.57'	F1	2	S89°01'16"W	273.57'	F1	2	S89°01'16"W	273.57'
F1	3	N89°01'16"E	273.57'	F1	3	N89°01'16"E	273.57'	F1	3	N89°01'16"E	273.57'
F1	4	S89°01'16"W	273.57'	F1	4	S89°01'16"W	273.57'	F1	4	S89°01'16"W	273.57'
F1	5	N89°01'16"E	273.57'	F1	5	N89°01'16"E	273.57'	F1	5	N89°01'16"E	273.57'
F1	6	S89°01'16"W	273.57'	F1	6	S89°01'16"W	273.57'	F1	6	S89°01'16"W	273.57'
F1	7	N89°01'16"E	273.57'	F1	7	N89°01'16"E	273.57'	F1	7	N89°01'16"E	273.57'
F1	8	S89°01'16"W	273.57'	F1	8	S89°01'16"W	273.57'	F1	8	S89°01'16"W	273.57'
F1	9	N89°01'16"E	273.57'	F1	9	N89°01'16"E	273.57'	F1	9	N89°01'16"E	273.57'
F1	10	S89°01'16"W	273.57'	F1	10	S89°01'16"W	273.57'	F1	10	S89°01'16"W	273.57'



### SOIL LEGEND

MAP SYMBOL	MAPPING UNIT	HYDROLOGIC SOIL GROUP	HYDRO? COMPONENTS	Kw	SLOPE
Ba	BAILE silt loam	D,C	YES	.43/32	0-8%
Co	CODORUS & HATBORO silt loam	C,D	YES	.37	0-3%
GgB, GgC	GLENELG loam	B	NO	.28	3-15%
GmB	GLENVILLE silt loam	C	NO	.32	3-8%
GmB	GLENVILLE-BAILE silt loam	C,D	YES	.32/49	3-8%
MaB, MaC, MaD	MANOR loam	B	NO		3-25%
MkF	MANOR-BRINKLOW complex	B,C/D	NO	.28/24	25-65%

HOWARD COUNTY SOILS MAP GRID NO. 270 & 271.



### EXHIBIT 3-2 FOREST STAND ANALYSIS TABLE

Applicant: Quartz Hill III LLC  
Project Name: Quartz Hill III  
Submission No.:

KEY	A. TYPE OF COMMUNITY	B. AREA	C. SOIL INFORMATION			D. EXISTING VEGETATION (Dominant Species and Approx. %)	E. STAND CHARACTERISTICS			F. FOREST AREA IN SENSITIVE ENVIRONMENTS (Acres)	G. HABITAT VALUE
			1. Soil Types	2. Typical forest cover for soil type	3. Woodland Suitability Index		1. Size (Diam)	2. Age	3. General Conditions		
F-1	CHESTNUT OAK	4.42 ac	MaC	Hardwood	58	Oak 75%	8-12"	10-15 yrs	Good	5%	Good
F-2	TULIP POPLAR	2.74 ac	MaB	Hardwood	58	Tulip Poplar 60%	8-12"	10-15 yrs	Good	30%	Fair
F-3	TULIP POPLAR	5.90 ac	GmC	Hardwood	58	Tulip Poplar 60%	12-18"	15-20 yrs	Good	15%	Good
F-4	TULIP POPLAR	5.21 ac	MaD	Hardwood	58	Red Maple	8-16"	10-15 yrs	Good	less than 0.1 ac	Fair
F-5	TULIP POPLAR	2.66 ac	MaD	Hardwood	58	Tulip Poplar	12-18"	15-20 yrs	Good	0.0 ac	Fair
F-6	CHESTNUT OAK	11.60 ac	MaD	Hardwood	58	Oak 90%	12-18"	15-20 yrs	Good	20%	Good
F-7	TULIP POPLAR	2.39 ac	MkF	Hardwood	58	Tulip Poplar 40%	18-24"	20-30 yrs.	Good	30%	Good

**ON-SITE FOREST CONSERVATION EASEMENT NOTE:**  
THE FOREST CONSERVATION EASEMENTS SHOWN HEREON WERE ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.120 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, FOREST CONSERVATION ACT, NO CLEARING, GRUBBING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS. ANY UNAUTHORIZED ACTIVITIES THAT RESULT IN ADDITIONAL CLEARING, OR THAT AFFECT PROPOSED PLANTING/RETENTION AREAS SHOWN ON THE FOREST CONSERVATION PLAN MAY RESULT IN A REQUEST FOR RECALCULATION OF FOREST CONSERVATION REQUIREMENTS AND DESIGNATION OF ADDITIONAL PLANTING/RETENTION AREAS IF NEEDED TO MEET THE OBLIGATIONS OF THE FOREST CONSERVATION PROGRAM. ANY FUTURE RESUBMISSION, DEVELOPMENT, OR CHANGE IN LAND USE MAY BE SUBJECT TO ADDITIONAL REQUIREMENTS OF THE HOWARD COUNTY FOREST CONSERVATION PROGRAM.

- FOREST CONSERVATION NOTES:**
- AREA OF FLOOD PLAIN: 0.0 AC±
  - NO 100 YEAR FLOOD PLAIN IS SHOWN ON THE FEMA MAPPING OF THE SITE. SEE GENERAL NOTE #4, SHEET 1.
  - STEEP SLOPES WITHIN THE NET TRACT: 2.1 AC±
  - NO RARE, THREATENED, OR ENDANGERED SPECIES WERE OBSERVED WITHIN THE NET TRACT. A CONFIRMATORY LETTER HAS BEEN REQUESTED FROM MARYLAND DEPARTMENT OF NATURAL RESOURCES.
  - WATERSHED: SOUTH BRANCH PATAPSCO, #02130908.

### TOTAL TRACT AREA

Lot 1	1.15
Lot 2	1.15
Lot 3	1.15
Lot 4	1.15
Lot 5	1.15
Lot 6	1.15
Lot 7	1.15
Buildable Preservation Parcel A	27.16
total tract area	35.20

### TOTAL TRACT FOREST STAND SUMMARY

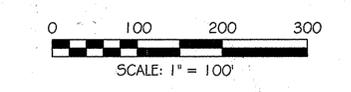
Forest Stand	sf	acres
F-1	192523	4.42
F-2	119249	2.74
F-3	257144	5.90
F-4	226947	5.21
F-5	115864	2.66
F-6	505258	11.60
F-7	104107	2.39
total tract forest	1521092	34.92

### TOTAL EASEMENT SUMMARY

Total Tract Forest	34.92
Clearing	10.58
Total Area of Forest to be Retained	24.34
Mitigation Esmt #1	3.2817
Mitigation Esmt #2	10.7483
Bank	10.3121
Total Forest Easement	24.3421

### WETLAND DELINEATION CURVE DATA

CURVE	RADIUS	ARC LENGTH	DELTA ANGLE	CHORD BEARING	CHORD LENGTH	TANGENT
WC1	30.00	34.17	47°13'29"	N38°40'36"W	72.79	35.34
WC2	60.00	61.17	56°08'03"	N38°40'36"W	72.79	44.47
WC3	22.00	35.56	93°39'34"	N20°51'57"W	32.09	23.45
WC4	12.50	33.86	114°13'32"	N74°11'53"W	33.36	20.45
WC5	25.00	25.93	59°25'21"	S71°49'20"W	24.78	14.27
WC6	25.00	19.19	43°59'16"	N62°59'16"W	16.72	10.09
WC7	6.00	20.63	191°17'58"	S87°17'58"W	11.34	60.63
WC8	30.00	41.67	79°35'11"	N43°51'51"W	35.40	24.93
WC9	20.00	12.92	37°00'50"	N27°25'18"W	12.70	6.69
WC10	30.00	34.47	62°50'05"	N13°29'53"W	32.61	13.42
WC11	112.50	32.20	147°55'45"	N48°57'17"W	43.02	43.02
WC12	35.00	9.47	15°29'57"	S76°18'50"W	9.44	4.76
WC13	18.00	17.60	56°01'33"	N79°14'04"E	16.91	9.58
WC14	19.75	56.20	163°21'13"	S47°13'04"E	59.16	150.39
WC15	6.00	19.66	140°49'07"	S33°09'13"E	15.07	22.40
WC16	22.50	56.62	148°16'29"	S30°59'32"E	43.39	61.89
WC17	9.00	13.85	133°19'26"E	S33°19'26"E	13.34	13.30
WC18	25.00	30.06	62°53'01"	S53°53'04"E	28.28	17.14



**LANDSCAPE NOTES**

- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- THE REQUIRED PERIMETER PLANTINGS IN ACCORDANCE WITH SECTION 16.124 OF THE LANDSCAPE MANUAL SHALL BE PROVIDED AS SHOWN ON THE LANDSCAPE PLAN. SURETY WILL BE PROVIDED WITH EITHER THE GRADING PERMIT OR A DEVELOPER'S AGREEMENT AT THE FINAL PLAN STAGE.

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed Landscape Architect under the laws of the State of Maryland, License No. 569, Expiration Date: 08-16-2015.



DATE	REVISIONS
4/30/14	Reduce Forest Conservation Bank

- FOREST CONSERVATION NOTES:**
- The number of trees in the existing woods exceeds the 100 stem per acre threshold as defined in the Forest Conservation Manual.
  - These perpetual forest easements are established in accordance with the Howard County Forest Conservation Manual (FCM), as specifically set forth in the terms of the recorded FCM easement.
  - Super Silt Fence protective fencing and signage to be installed at the perimeter of forest preservation areas as shown. This protective fencing is to remain in place and in good repair during the period of construction.
  - Tree protection signs @ 100' o.c., with Super Silt Fence adjacent to 100 year flood plain, drainage and utility easement shall be installed as shown on plan and inspected prior to any grading or disturbance activities on-site.
  - A forest conservation easement will be placed around each forest preservation area and a deed of easement will be recorded specifying long-term protection for the area.
  - The contractors performing work on the site are responsible for protecting existing native & noninvasive plantings during construction.
  - For tree pruning and care methods please refer to the National Arborist Standards, latest edition.
  - Previous DPZ File Numbers.
  - Forest Conservation Obligations.
    - In accordance with Section 16.1202 of the Forest Conservation Manual, the Forest Conservation Obligation for the subdivision, being the amount of forest that must be retained so that mitigation is not required, is 14.03 ac±.
    - The resulting acreage available on the Buildable Preservation Parcel for the Forest Mitigation Bank is 10.3121 ac±.
    - Total Forest Conservation Easement area: 24.3421 ac±.

### SUMMARY QUARTZ HILL III FOREST MITIGATION BANK

FILE #	NAME	AC USED	AC BALANCE
F-13-070	QUARTZ HILL III BANK	0	10.3121
F-13-115	HARRY N. SHIPE PROP	0.95	9.3621
SDD-07-076	QUARTZ HILL HOTELS	0.6916	8.6645
F-03-158	G. ROSOFF PROPERTY	2.540	6.1245
F-15-051	HARVEY S. REED, LOTS 12 & 13	0.58	5.5445

### QUARTZ HILL TOTAL TRACT AREA NET OF PRESERVATION PARCELS

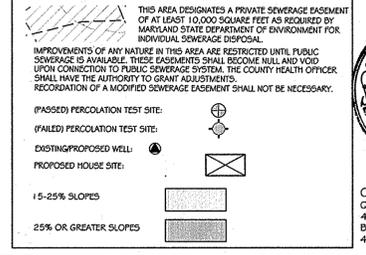
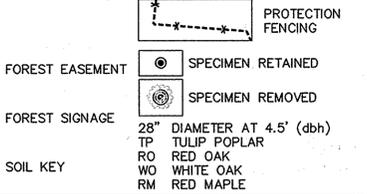
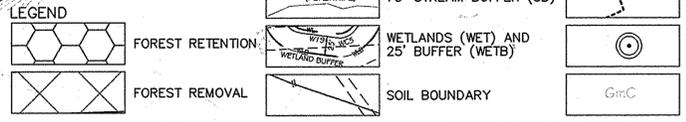
Forest Conservation Worksheet 2.1

Note: Use 0 for all negative numbers that result from the calculations

Category	Value	Value
Net Tract Area		
A. Total Tract Area	Am	35.20
B. Deductions (Critical Area, area restricted by local ordinance or program)	Bn	0.00
C. Net Tract Area (Net Tract Area = Total Tract (A) - Deductions (B))	Cn	35.20
Land Use Category:	AG	
D. Afforestation Threshold (Net Tract Area (C) * 20 %)	Dn	7.04
E. Conservation Threshold (Net Tract Area (C) * 25 %)	En	8.80
Existing Forest Cover	Fm	34.92
F. Existing Forest Cover within the Net Tract Area	Fm	34.92
G. Area of Forest Above Conservation Threshold	Gm	26.12
H. Breakeven Point (Amount of forest that must be retained so that no mitigation is required)	Hm	14.02
I. Forest Clearing Permitted Without Mitigation	Ia	20.90
J. Total Area of Forest to be Cleared	Ja	10.58
K. Total Area of Forest to be Retained	Ka	24.34
L. Reforestation for Clearing Above the Conservation Threshold	Lm	0.00
M. Reforestation for Clearing Below the Conservation Threshold	Mm	0.00
N. Total Reforestation Required	Nm	0.00
O. Total Afforestation Required	Om	0.00
P. Total Planting Requirement	Pm	0.00
Q. Total Afforestation Required	Qm	0.00
R. Total Planting Requirement	Rm	0.00

APPROVED  
HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
K. J. Schuchman  
CHIEF, DIVISION OF LAND DEVELOPMENT  
2-10-14  
DATE

APPROVED  
HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
C. J. Schuchman  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
2-3-14  
DATE



**SUPPLEMENTAL PLAN**  
FINAL FOREST CONSERVATION & LANDSCAPE PLAN  
LOTS 1-7, BUILDABLE PRESERVATION PARCEL A & QUARTZ HILL III FOREST MITIGATION BANK  
QUARTZ HILL III

TAX MAP: 8  
GRID: 11  
PARCEL NO: 401

ELECTION DISTRICT: No. 4  
HOWARD COUNTY, MARYLAND  
EX. ZONING: RC-DEO

1" = 100'  
DATE: NOVEMBER, 2013  
SHEET 4 OF 4

F-13-070

**VANMAR ASSOCIATES, INC.**  
Engineers Surveyors Planners  
310 South Main Street P.O. Box 328 Mount Airy, Maryland 21771  
(301) 829-2890 (301) 851-5015 (410) 549-2751