



**NARRATIVE / ENVIRONMENTAL SITE DESIGN**

1. THERE IS A STREAM, POSSIBLE WETLAND, FLOOD PLAINS AND FOREST LOCATED ON THE SUBJECT PROPERTY BASED UPON A FOREST DELINEATION REPORT PREPARED BY DRAGONFLY ENVIRONMENTAL LLC (KATRINA WRABEL) EXISTING SPECIMEN TREES LOCATED ON THE MAXIMUM EXTENT POSSIBLE. THE PROPOSED DWELLINGS ARE TO BE SERVED BY PUBLIC WATER AND SEWER. THE PROJECT IS DESIGNED TO BE A LOW IMPACT DEVELOPMENT. STORM WATER MANAGEMENT FOR WATER QUALITY IS PROVIDED BY NON-STRUCTURAL RUNOFF REDUCING PRACTICES. TO LIMIT THE IMPACT OF THE DEVELOPMENT ON NATURAL RESOURCES AND ADJOINING PROPERTIES.
2. GRADING ON SITE IS LIMITED TO ONLY THAT REQUIRED TO ACCOMPLISH DISCONNECTS FOR NON-ROOFTOP RUNOFF WHILE MAINTAINING NATURAL FLOW PATTERNS.
3. IMPERVIOUS AREA WAS HELD TO THE MINIMUM REQUIRED TO ACCOMPLISH THE WORK BY USING A USE-IN-COMMON DRIVEWAY FOR INGRESS AND EGRESS. EXISTING IMPERVIOUS AREA WAS ELIMINATED AND WHERE POSSIBLE RUNOFF FROM IMPERVIOUS PAVEMENT IS DIRECTED TO LAWNS TO ENHANCE WATER QUALITY. RAIN GARDENS ARE PROPOSED FOR ROOF TOP RUNOFF WHERE DISCONNECTS ARE NOT PRACTICAL.
4. TEMPORARY PERIMETER SEDIMENT CONTROL IN THE FORM OF SUPER SILT FENCE IS PROPOSED IN ORDER TO PROVIDE SWM BY RUNOFF REDUCTION DURING CONSTRUCTION. RUNOFF IS DIRECTED TO LOW LYING LOCATIONS TO AFFORD TEMPORARY RETENTION.
5. ENVIRONMENTAL SITE DESIGN HAS BEEN IMPLEMENTED TO THE MAXIMUM EXTENT POSSIBLE BY THE USE OF ROOFTOP AND NON-ROOFTOP DISCONNECTS. DISCONNECTS ARE ACCOMPLISHED BY CONSTRUCTION OF RUNOFF REDUCING RAIN GARDENS TO MANAGE ROOFTOP RUNOFF AND BY DIRECTING RUNOFF FROM THE IMPERVIOUS DRIVEWAYS TO THE LAWNS. IN ADDITION TO PERIMETER LANDSCAPING REQUIRED BY COUNTY REGULATIONS, LANDSCAPING HAS BEEN LOCATED IN STRATEGIC AREAS TO REDUCE RUNOFF AND FURTHER ENHANCE WATER QUALITY.
6. NO WAIVERS FROM THE SUBDIVISION REGULATIONS AND OR DESIGN MANUAL VOLUME I ARE REQUIRED TO SATISFY ESD FOR THE PROJECT AS SHOWN HEREON.

**SOILS LEGEND**

SYMBOL	NAME/DESCRIPTION	SOIL GROUP
GoB	Glennville-Codorus silt loams, 0 to 8 percent slopes	B
GC	Glennville-Libran land complex, 0 to 8 percent slopes	B
GC	Glennville-Libran land complex, 8 to 15 percent slopes	B
MgF	Manor-Barnetown sandy loams, 25 to 65 percent slopes	B

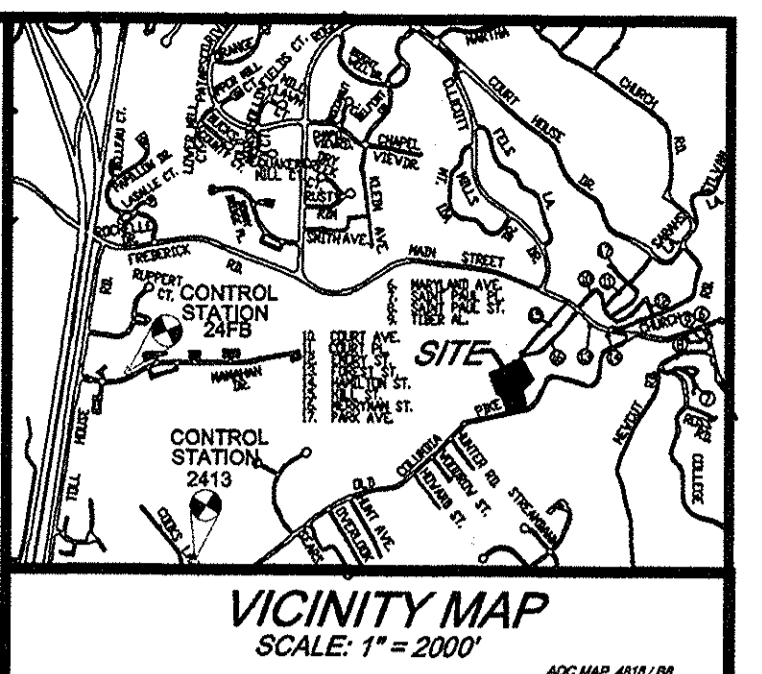
SOIL TYPES BASED ON HOWARD COUNTY SOIL SURVEY MAP # 14 OF 21 ELLICOTT CITY SE, MARYLAND

**LEGEND-SWM- MDE DESIGNATION**

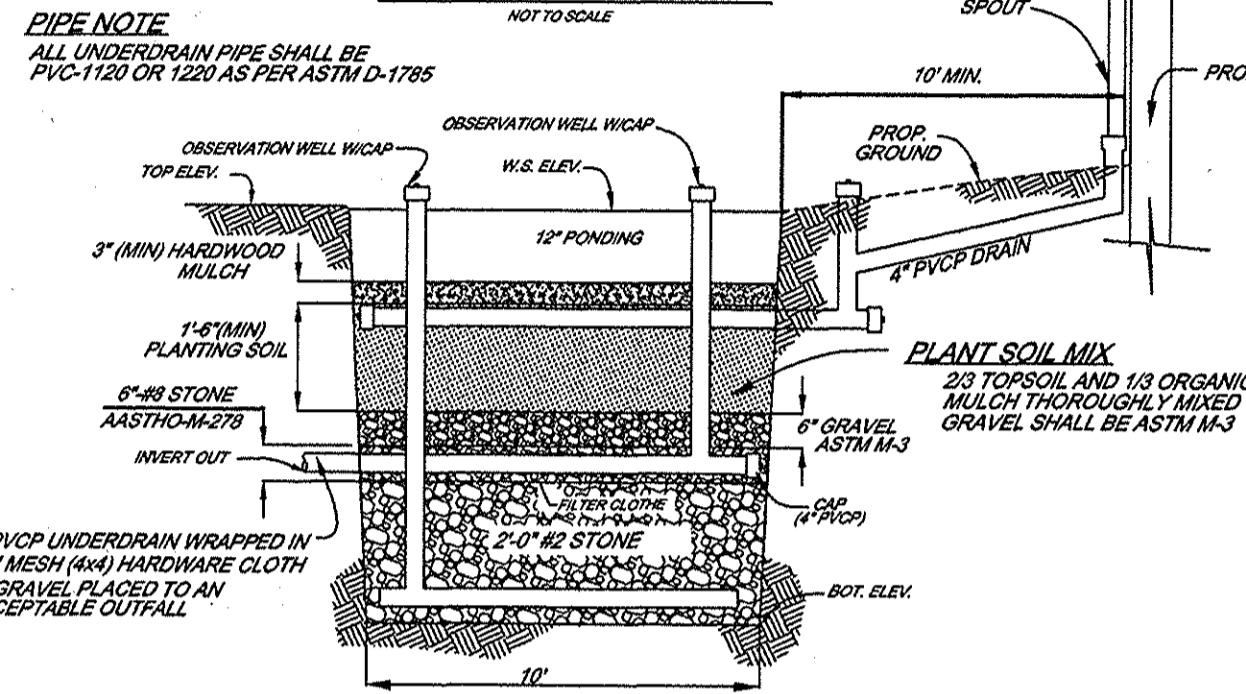
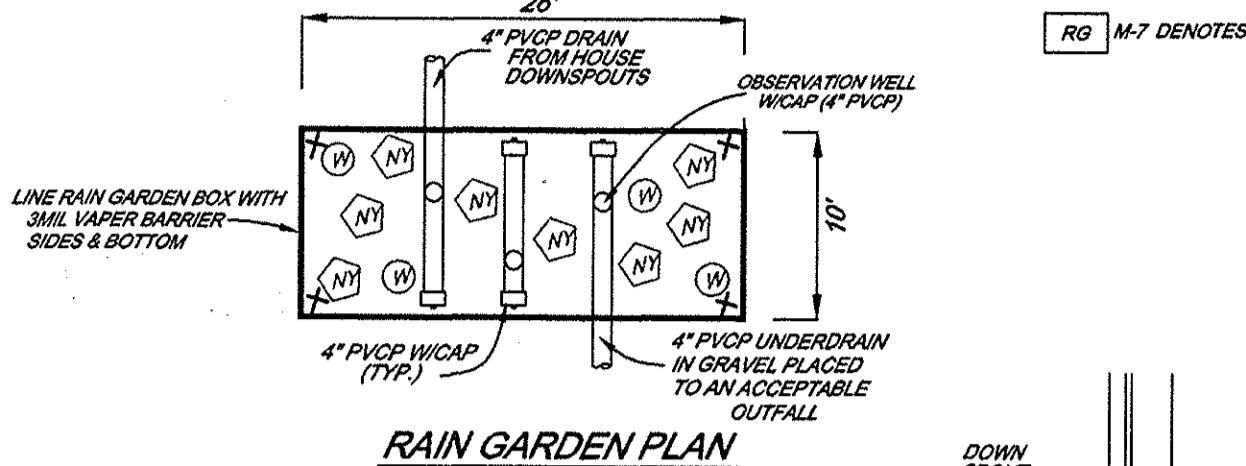
DOWN SLOPE M-1 DENOTES ROOF-TOP RUNOFF DISCONNECT

DOWN SLOPE M-2 DENOTES NON-ROOFTOP RUNOFF DISCONNECT (EXISTING DRIVEWAY PAVEMENT)

RO M-7 DENOTES RAIN GARDEN



- GENERAL NOTES:**
1. OWNER: ZHANG ZHANG  
DEED REFERENCE: LIBER 14183, FOLIO 0442  
DATE: 08/03/2012  
GRANTOR: RUSSELL J GRIMES
  2. TAX MAP 0251, GRID 0013, PARCEL 0262
  3. THE BOUNDARY SHOWN HEREON IS BASED UPON CURRENT TITLE DEED.
  4. SERVED BY PUBLIC WATER AND PUBLIC SEWER
  5. THERE IS A 100 YEAR FLOOD PLAN LOCATED ON THIS PROPERTY BASED ON FEMA INSURANCE RATE MAP COMMUNITY PANEL #2402700665, 11/05/13.
  6. TOPOGRAPHY SHOWN HEREON IS FROM HOWARD COUNTY GIS DATA, DATUM IS NAVD83 AND CONTOUR INTERVAL IS 2 FT. FIELD CHECKED BY CRC & ASSOC.
  7. THERE ARE NO WELLS OR SEPTIC SYSTEMS WITHIN 100 FT OF THE SUBJECT PROPERTY UNLESS OTHERWISE SHOWN HEREON.
  8. EXISTING UTILITIES SHOWN HEREON ARE PLOTTED FROM HOWARD COUNTY UTILITY DRAWINGS AND FIELD LOCATED WHERE POSSIBLE.
  9. THE SUBJECT PROPERTY IS ZONED R-ED. PER THE 10/1/13 COMPREHENSIVE ZONING PLAN
  10. THE SUBJECT PROPERTY SHOWN HEREON IS NOT SUBJECT TO ANY PRIOR ZONING CASES, VARIANCES OR SPECIAL EXCEPTIONS.
  11. STORMWATER MANAGEMENT FOR THE SUBJECT PROPERTY SHOWN HEREON HAS BEEN SATISFIED BY TAKING CREDIT FOR DISCONNECTED ROOF TOP AND NON-ROOF TOP RUNOFF IN ACCORDANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN STAGES. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.



**SWM DATA \* (SEE NOTE)**

AREA	EXIST. CONDITIONS				DEVELOPED CONDITIONS					
	TC	ROV	AREA	Q <sub>10</sub>	TC	ROV	AREA	Q <sub>10</sub>	ESDV	REV
SITE	-	-	-	-	0.10	69	0.88	0.38	2.05	3.87
FLOWSH	-	-	-	-	-	-	-	-	-	-

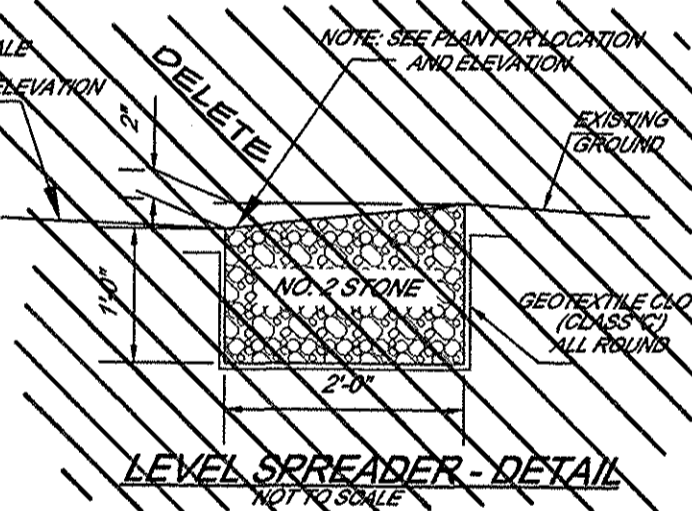
- \* DEVELOPED CONDITIONS Q<sub>10</sub> = 0.38 CFS CHANNEL PROTECTION NOT REQD. NO SIGNIFICANT INCREASE IN RUNOFF Q<sub>10</sub> AND Q<sub>100</sub> STORMS. STORM WATER MANAGEMENT NOT REQD.
- \* WATER QUALITY MANAGEMENT SATISFIED BY TAKING CREDIT FOR DISCONNECTED RUNOFF PER MDE 2000 VOL. II SEC. 6.2 & SEC. 6.3
- \* GROUNDWATER RECHARGE SATISFIED BY THE PERCENT AREA METHOD AS PER MDE 200 VOL. I, SEC. 2.2

**RAINGARDEN FACILITY SCHEDULE**

LOT NO.	DIMENSIONS	TOP ELEV.	80% ELEV.	INV. OUT	OUTFALL INV.
LOT 1	10'-0" x 12'-0"	272.0	268.25	269.33	269.0
LOT 2	10'-0" x 20'-0"	267.75	262.0	264.34	263.0
LOT 3	10'-0" x 28'-0"	265.75	260.0	262.34	261.0

**RAINGARDEN AREA PLANT LIST**

SYMBOL	QUANTITY	BOTANICAL / COMMON NAME	SIZE
⊙	3 EA	ALEX. VERTICILLATA - WHITEBERRY	1-GAL CONTAINER
⊙	6 EA	VERNONIA NOBILISSIMA - NEW YORK IRONWOOD	1-GAL CONTAINER



**SITE ANALYSIS**

TOTAL AREA SITE: 3.0224 ACRES

AREA OF WETLANDS AND THEIR BUFFERS: 0.1177 ACRES (6127 SF)

AREA OF STREAMS AND THEIR BUFFERS: 0.0510 ACRES (2822 SF)

AREA OF FLOODPLAIN AND THEIR BUFFERS: 0.0510 ACRES (2822 SF)

AREA OF STEEP SLOPES 20% TO 10%: 0.2704 ACRES (11778 SF)

AREA OF STEEP SLOPES 25% OR GREATER: 1.8291 ACRES (80457 SF)

AREA OF FOREST: 1.4541 ACRES (63,341 SF)

NET AREA OF SITE: 1.5204 ACRES (65780 SF)

AREA DISTURBED: 0.8638 ACRES (37,629 SF)

AREA TO BE REFORESTED: 0.8638 ACRES (37,629 SF)

AREA TO BE PAVED: 0.1676 ACRES (7,367 SF)

TOTAL IMPERVIOUS AREA: 0.2448 ACRES (10,685 SF)

AREA TO BE VEGETATIVELY STABILIZED: 0.6150 ACRES (26,964 SF)

TOTAL VOLUME FILL AND CUT: 440 CY

TOTAL VOLUME CUT: 440 CY

PROPOSED SITE USE - SINGLE DETACHED FAMILY HOMES

GREEN OPEN SPACE AREA - 1.5321 ACRES (LO74)

**LOT INFORMATION CHART**

LOT #	GROSS AREA SQ. FT.	PIPESTEM AREA	REMAINING LOT AREA SQ. FT.
1	27303 sq. ft.	913 sq. ft.	26390 sq. ft.
2	18331 sq. ft.	474 sq. ft.	17857 sq. ft.
3	18830 sq. ft.	N/A	18830 sq. ft.
4	67122 sq. ft.	N/A	67122 sq. ft.

**STORMWATER MANAGEMENT - ESD (SEE NOTES)**

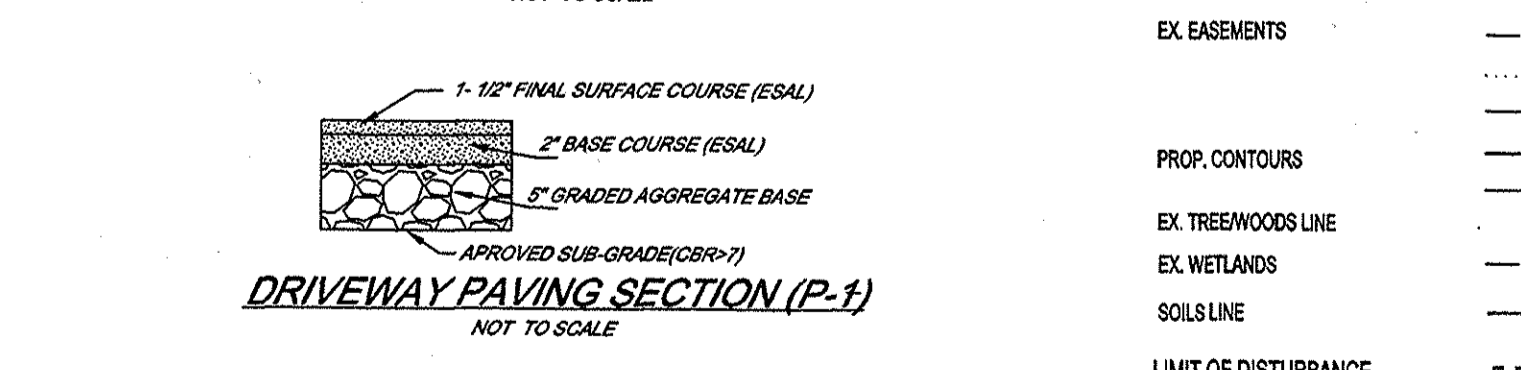
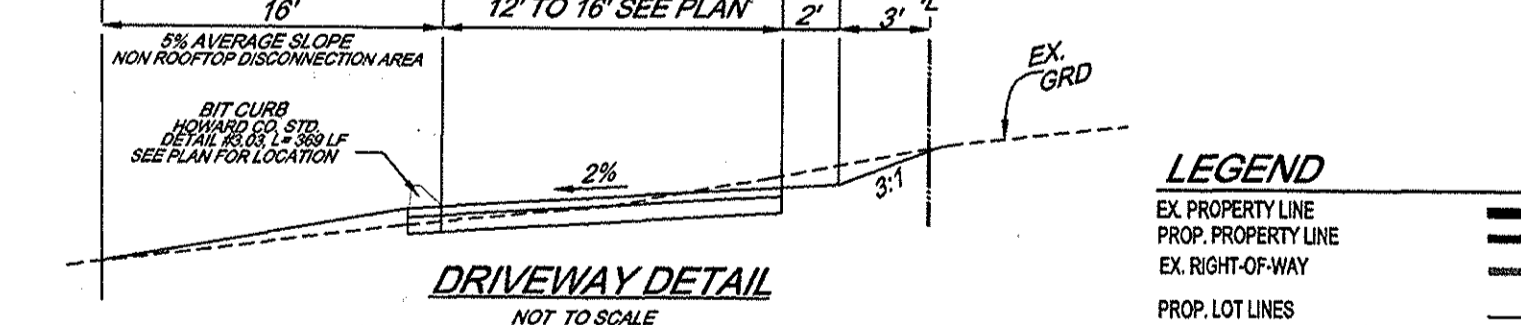
LOT NO.	AREA	IMPERV. AREA	% IMPERV.	R <sub>r</sub>	PFE INCHES	ESDV <sub>100</sub> CULLET	SWM PRACTICE (E.S.D.)
#1	9728.55	-	-	-	-	-	EXISTING DEVELOPMENT
#2	16338.97	8084	29%	1.6"	754	M-7=12,864#/ M-2=4,242#/	
#3	18029.01	3724	20%	1.6"	576	M-7=2054#/ M-2=1086#/	
TOTAL	44086.5357**	8809	22%	1.6"	1310	R <sub>r</sub> =0.248	

\*TOTAL DISTURBED AREA = 36912 SF

\*\*SWM - SITE DESIGN SATISFIED BY THE FOLLOWING "LOW IMPACT DEVICES"

(M-7) DENOTES ROOFTOP DISCONNECT = "RAIN GARDEN"

(M-2) DENOTES NON-ROOFTOP DISCONNECT = "TOWNY W/15 GRASS SLDGR."



**ZONING VARIANCE NOTE**

THE PLAN SHOWN HEREON IS SUBJECT TO A VARIANCE FROM THE HOWARD COUNTY ZONING REGULATIONS SECTION 107.D.4.b TO PERMIT A SETBACK OF 40 FEET FROM AN EXTERNAL PUBLIC STREET RIGHT-OF-WAY IN LIEU OF THE REQUIRED MINIMUM SETBACK OF 75 FEET FOR ALL STRUCTURES AND USES.

**DRIVEWAY WAIVER NOTE**

THE PLAN SHOWN HEREON IS SUBJECT TO A WAIVER FROM THE HOWARD COUNTY DESIGN MANUAL VOLUME II ROADS AND BRIDGES, SECTION 2.5 B.9, INTERSECTION SIGHT DISTANCE TO PERMIT USE OF STOPPING SIGHT DISTANCE OF 340 FEET IN LIEU OF THE REQUIRED INTERSECTION SIGHT DISTANCE OF 282 FEET FOR THE PROPOSED USE-IN-COMMON DRIVEWAY LOCATION.

**STORMWATER MANAGEMENT WAIVER**

THE PLAN SHOWN HEREON IS SUBJECT TO A WAIVER FROM THE HOWARD COUNTY DESIGN MANUAL VOLUME II SECTION 2.1.A REQUIRING MANAGEMENT OF THE RUNOFF FROM THE 10 YR AND 100 YR STORM TO POST DEVELOPMENT CONDITIONS

**LEGEND**

EX. PROPERTY LINE

PROP. PROPERTY LINE

EX. RIGHT-OF-WAY

PROP. LOT LINES

EX. EASEMENTS

PROP. CONTOURS

EX. TREES/WOODS LINE

EX. WETLANDS

SOILS LINE

LIMIT OF DISTURBANCE

DENOTES SLOPES 20% OR GREATER

DENOTES SLOPES 15-25%

STABILIZED CONSTRUCTION ENTRANCE

SUPER SILT FENCE

SILT FENCE

TREE PROTECTION FENCE

EXISTING SPECIMEN TREE

PROPOSE LANDSCAPING

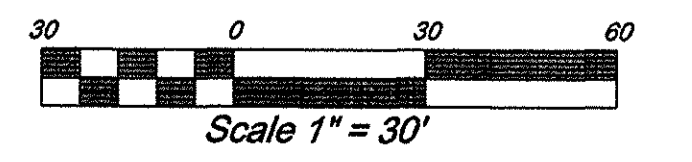
**SPECIMEN TREE CHART**

NO.	D.B.H.	COMMON NAME/SCIENTIFIC NAME	CONDITION
1	31"	NORWAY MAPLE/ ACER PLATANOIDES	POOR TO REMAIN
2	46"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	POOR TO REMAIN
3	50"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	POOR TO REMAIN
4	34"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	POOR TO REMAIN
5	31"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	FAIR TO REMAIN
6	31"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	GOOD TO REMAIN
7	33"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	POOR TO REMAIN
8	35"	BLACK WALNUT/ JUGLANS NIGRA	POOR TO REMAIN
9	30"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	POOR TO REMAIN
10	36"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	FAIR TO REMAIN
11	34"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	GOOD TO REMAIN
12	31"	BLACK WALNUT/ JUGLANS NIGRA	FAIR TO REMAIN
13	38"	TULIP POPLAR/ LIRIODENDRON TULIPIFERA	POOR TO REMAIN

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

Karl Schuler, CHIEF, DIVISION LAND DEVELOPMENT, 12/17/14

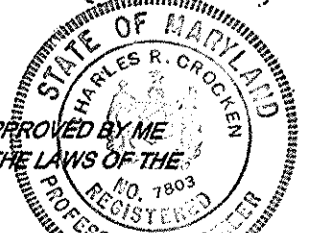
Paul Edwards, CHIEF, DEVELOPMENT ENGINEERING, 12-18-14



**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 LAND OF THE STATE OF MARYLAND. LICENSE NO. 7803 EXPIRATION DATE 4-22-2015

Charles R. Crocken, PE, MD, LICENSE REG. NO. 7803, 12-15-2014



**OWNER:**  
ZHANG ZHANG  
3832 OLD COLUMBIA PIKE  
ELLICOTT CITY, MARYLAND 21043

**DEVELOPER:**  
HONG TAO MA  
4268 MAISEL FARM LANE  
ELLICOTT CITY, MARYLAND 21042

**ENVIROMENTAL CONCEPT PLAN:**  
**OLD COLUMBIA CROSSING**  
3832 OLD COLUMBIA PIKE  
TAX MAP 0251, GRID 13, PARCEL 262  
2ND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

Prepared by: CHARLES R. CROCKEN AND ASSOCIATES, INC.  
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Tel. (410) 548-2108  
Fax. (410) 548-6083

TAX MAP: PARCEL 262, PROJECT NO. 12-15-2014  
DESIGNED BY: C.R.C., DATE: AUG, 2014  
DRAWN BY: [Signature], SCALE: 1" = 30'

DRAWING NO. 1 OF 1