

**GENERAL NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:
  - MISS UTILITY: 1-800-257-7777
  - VERIZON TELEPHONE COMPANY: 1-800-743-0033
  - HOWARD COUNTY BUREAU OF UTILITIES: 410-313-4900
  - STREET CABLE LOCATION DIVISION: 1-800-257-1133
  - B.G.&E. CO. CONTRACTOR SERVICES: 410-637-8713
  - B.G.&E. CO. UNDERGROUND DAMAGE CONTROL: 410-685-0123
  - STATE HIGHWAY ADMINISTRATION: 410-531-5533
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III(2006), SECTION 5.5A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- THE TOPOGRAPHY SHOWN HEREON IS BASED ON HOWARD COUNTY TOPOGRAPHY AND FIELD RUN TOPOGRAPHY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED AUGUST 2004.
- THE PROJECT BOUNDARY IS BASED ON THE RECORD PLAT FOR CANBURY WOODS, LOTS 137-170, SECTION 2, AREA 2, PLAT NO. 8086.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 38BA AND 38BB WERE USED FOR THIS PROJECT.
- WATER AND SEWER FOR THIS PROJECT WILL BE PUBLIC.
- STORMWATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT. WOV AND Cvy ARE TO BE PROVIDED BY MICROPOOL CLAY LINEAR EXTENDED DETENTION. THE SWM FACILITY WILL BE LOCATED ON OPEN SPACE LOT 4 AND WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOA.
- EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE.
- NO 100-YR FLOODPLAIN IS LOCATED ON-SITE.
- NO WETLANDS OR STREAMS ARE LOCATED ON-SITE.
- THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY MARS GROUP, DATED JUNE 2004 AND WAS APPROVED ON MAY 6, 2005.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
  - A) WIDTH - 12 FEET (16 FEET IF SERVING MORE THAN ONE RESIDENCE)
  - B) SURFACE - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING
  - C) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE, AND MINIMUM 45 FOOT TURNING RADIUS
  - D) STRUCTURES (CULVERTS/BRIDGES) - MUST SUPPORT 25 GROSS TON LOADING (H25 LOADING)
  - E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD EVENTS WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE
  - F) STRUCTURE CLEARANCES - MINIMUM 12 FEET
  - G) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
- DEED REFERENCE: L. 6595/F. 28
- FOREST STAND DELINEATION PLAN PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED AUGUST 2004. FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL SHALL BE COMPLIED WITH.
- THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
- TO THE BEST OF THE OWNER'S KNOWLEDGE, THERE ARE NO BURIAL/CEMETERY LOCATED ON-SITE.
- THERE ARE NO EXISTING STRUCTURES ON-SITE.
- STREET TREES ARE REQUIRED FOR THIS SUBDIVISION IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN STREET LIGHTS AND ANY TREE. A FINANCIAL SURETY IN THE AMOUNT OF \$8,100.00 TO BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR TOTAL REQUIRED 27 PUBLIC STREET TREES.
- THE OPEN SPACE - LOT 4 - SHOWN IS HEREON DEDICATED TO A PROPERTY OWNERS ASSOCIATION FOR THE RESIDENTS OF THIS SUBDIVISION AND RECORDING REFERENCES OF THE ARTICLES OF INCORPORATION AND RESTRICTIONS ARE SHOWN HEREON.
- A NOISE STUDY IS NOT REQUIRED FOR THIS SITE.
- THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION REGULATIONS AND TO THE APRIL 13, 2004 ZONING REGULATIONS.
- A DESIGN MANUAL WAIVER REQUEST, DATED DECEMBER 1, 2004, HAS BEEN SUBMITTED AND APPROVED WHICH WAIVES THE REQUIREMENT THAT A STANDARD CROSS SECTION FOR THE PROPOSED ROAD BE USED.
- REFERENCE WP-05-75, APPROVED MARCH 2, 2005 TO WAIVE SECTION 16.155(q)(2) OF THE REGULATIONS DATED MARCH 2, 2005, REQUIRING A SITE DEVELOPMENT PLAN FOR MASS GRADING A SITE INTENDED FOR FUTURE RESIDENTIAL CONSTRUCTION. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
  - SUBMIT THE REQUIRED DOCUMENTATION TO SOIL CONSERVATION DISTRICT DISTRICT FOR GRADING AND SEDIMENT AND EROSION CONTROL REVIEW.
  - SUBMIT A GRADING PERMIT APPLICATION ALONG WITH A FOREST CONSERVATION DECLARATION OF INTENT FOR CLEARING LESS THAN 40,000 S.F. OF FOREST ON A SINGLE LOT.
  - SECURE THE NECESSARY PERMITS FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT.
  - NO GRADING IS PERMITTED WITHIN THE FOREST ON STEEP SLOPES OR WITHIN THE STREAM BUFFER. MODIFY THE CONFIGURATION OF THE CELLS 16 AND 17 IN ORDER TO EXCLUDE THE STREAM BUFFER FROM THOSE CELLS. SHOW CLEAR LIMIT OF DISTURBANCE ON ALL APPLICATIONS.
  - RESTORE THE SITE TO GRADE AND STABILIZE THE SITE IMMEDIATELY AFTER OF THE DEBRIS
  - FULFILL ALL OBLIGATIONS OF THE FOREST CONSERVATION PROGRAM WITH THE SUBDIVISION OF THE PECORARO PROPERTY. IF SOME LIMITED CLEARING OF FOREST IS REQUIRED WITH THE MASS GRADING, INCLUDE THAT IN THE DOI AND ACCOUNT FOR IT ON FUTURE FOREST CONSERVATION PLAN FOR SUBDIVISION OF THE PECORARO PROPERTY.
- FUTURE LOTS 10, 11, 12, & 13 WILL UTILIZE USE-IN-COMMON DRIVEWAY. HOWARD COUNTY STANDARD DETAIL NO. R-8.06 WILL BE UTILIZED FOR THE ENTRANCE AT THE INTERSECTION OF THE PUBLIC ROAD AND EACH USE-IN-COMMON DRIVEWAY.
- REFUSE COLLECTION, SNOW REMOVAL, AND MAINTENANCE FOR FUTURE LOTS 10, 11, 12, & 13 SHALL BE PROVIDED AT THE JUNCTION OF PRIVATE USE-IN-COMMON ACCESS EASEMENT AND THE RIGHT-OF-WAY OF PROPOSED ROAD.
- TREE PROTECTION FENCING WILL BE PROVIDED AT THE LIMITS OF DISTURBANCE WHERE GRADING IS ADJACENT TO ENVIRONMENTAL AREAS AND RETENTION FOREST CONSERVATION AREAS.
- ALL SIGN POST USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE - 3' LONG). A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON THE TOP OF EACH POST.

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 [Signature] 8-3-2011  
 CHIEF, BUREAU OF HIGHWAYS

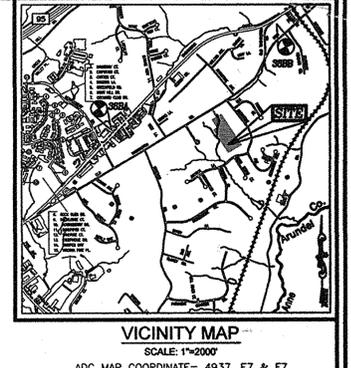
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 8-16-11  
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 8-5-11  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

# FINAL ROAD CONSTRUCTION PLAN PECORARO PROPERTY PHASE I LOTS 1-3, OPEN SPACE 4 AND NON-BUILDABLE BULK PARCELS A & B A RESUBDIVISION OF LOT 169, CANBURY WOODS SECTION 2, AREA 2

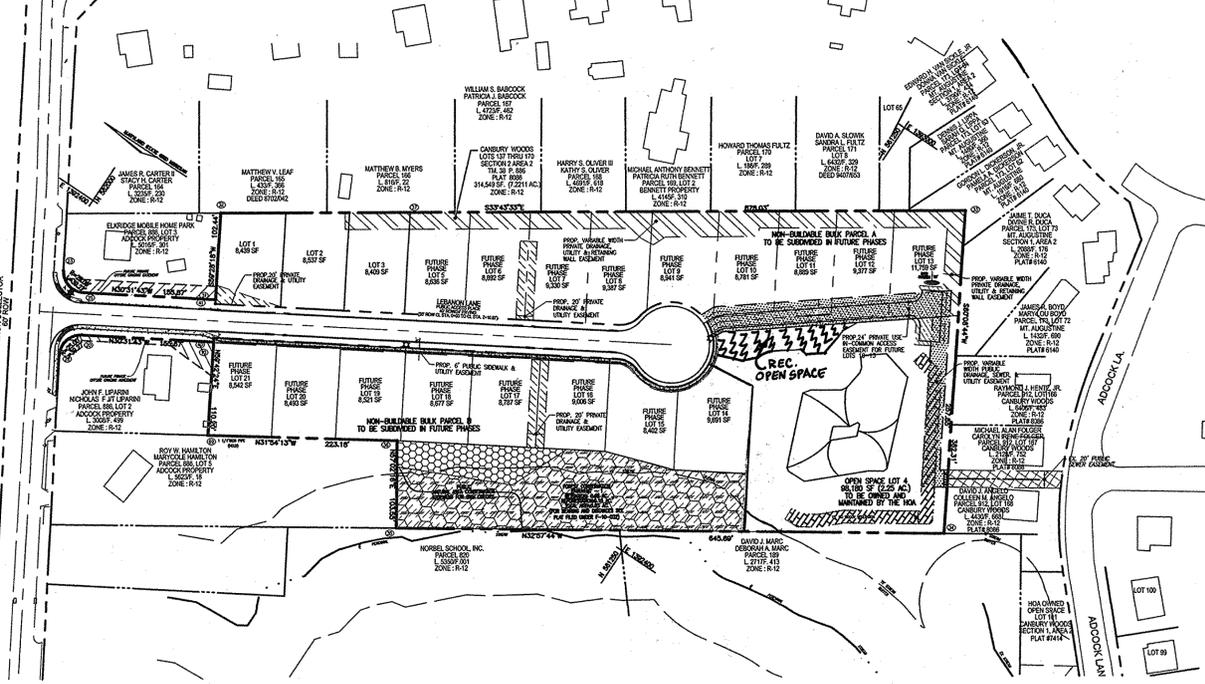
**BENCHMARKS**  
 COORDINATES BASED ON NAD '83, MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 38BA, 38BB  
 38BA N 562553.353' E 1,390967.866' ELEV. 166.124'  
 38BB N 564007.678' E 1,393649.835' ELEV. 63.607'

- LEGEND**
- EX. 20' PUBLIC SEWER EASEMENT
  - FUTURE OFFSITE GRADING EASEMENT
  - FUTURE OFFSITE GRADING AGREEMENT
  - PROP. PRIVATE DRAINAGE & UTILITY EASEMENT
  - PROP. PUBLIC 6' SIDEWALK & UTILITY EASEMENT
  - PROP. VARIABLE WIDTH PRIVATE DRAINAGE, UTILITY, & REMAINING WALL EASEMENT
  - PROP. VARIABLE WIDTH PUBLIC DRAINAGE, SEWER, WATER & UTILITY EASEMENT
  - PROP. 24' PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR FUTURE LOTS 10-13
  - PROP. 15' NO WOODY VEGETATION BUFFER
  - PROP. RECREATIONAL OPEN SPACE AREA
  - PROP. PUBLIC NATURAL AREA CONSERVATION EASEMENT FOR SIM CREDITS
  - PROP. FOREST CONSERVATION EASEMENT (RETENTION)
  - PROP. FOREST CONSERVATION EASEMENT (REFORESTATION)



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- THE DESIGN MANUAL WAIVER HAS BEEN APPROVED 12/01/04 FOR UTILIZING THE 20' ROAD SECTION ELIMINATING SIDEWALK ON ONE SIDE OF THE ROAD AND TO BE ADJACENT TO THE CURB, AND INCREASING THE SIDE SLOPES TO 1:1 UTILIZING GEOGRID. THE GEOGRID WOULD EXTEND FROM THE EDGE OF THE 1:1 SLOPE TO APPROXIMATELY 6' TO 8' WITHIN THE SLOPE. THE GUARDRAIL WILL BE LOCATED BEHIND THE SIDEWALK ON ONE SIDE AND BEHIND THE CURB. THE WAIVER ALSO WAVED STREET TREES ALONG THE 1:1 SLOPE AND THE SLOPE BE STABILIZED UTILIZING A GROUND COVER SUCH AS CROWN VETCH. THE ROAD RIGHT OF WAY THROUGH THIS NARROW SECTION OF THE PROPERTY BE 50' ENCOMPASS THE ENTIRE SLOPE.
- FOREST CONSERVATION EASEMENT HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1202 OF THE HOWARD COUNTY FOREST CONSERVATION MANUAL. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED. SEE THE FINAL RECORD PLAT FOR THE BEARING AND DISTANCES FOR THE EASEMENTS. TOTAL FOREST CONSERVATION OBLIGATION OF THE PROJECT, TO BE FULFILLED BY ON-SITE RETENTION OF 0.68 ACRES REFORESTATION OF 0.15 ACRES & REMAINING 1.92 ACRES AN OFF-SITE FOREST CONSERVATION EASEMENT LOCATED IN BRANTWOOD, SECTION 3 AREA 1, PRESERVATION PARCEL 'C', PLAT# 14874. FUTURE OFFSITE EASEMENT TO BE RECORDED CONCURRENTLY WITH THIS SUBDIVISION PLAT.
  - RETENTION - 0.68 AC. (29,620.80 x .20 = \$ 5,924.16)
  - REFORESTATION ON-SITE - 0.15 AC. (6,534 SF x .50 = \$3,267)
  - REFORESTATION OFFSITE - 1.92 AC. (83,635.20 SF x .50 = \$41,817.60)
- NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING PROVIDED PER THE LANDSCAPE MANUAL TO BE POSTED WITH THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$19,510.00 FOR THE REQUIRED 36 SHADE TREES, 18 EVERGREEN TREES, 95 SHRUBS AND 158 LINEAR FEET OF WALL. (THE UNIT PRICES TO BE USED FOR ESTABLISHING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE ADOPTED COUNTY FEE SCHEDULE WHICH IS \$300.00 PER SHADE TREE, \$150.00 PER EVERGREEN/ORNAMENTAL TREE, \$30.00 PER SHRUBS, AND \$20.00 PER LINEAR FEET OF WALL.)
- REFERENCE MANUAL WAIVER APPROVED 12-01-04 TO UTILIZE A 40' RIGHT-OF-WAY WITH A 20' PAVING AS APPROVED IN CONJUNCTION WITH S-05-005.
- STORMWATER MANAGEMENT FACILITY TO BE CONSTRUCTED IN CONJUNCTION WITH PHASE I.
- THE SITE HAS BEEN APPROVED BY THE MAA PER LETTER DATED JUNE 21, 2010.
- APPROVAL OF A SITE DEVELOPMENT PLAN IS REQUIRED FOR THE DEVELOPMENT OF ALL RESIDENTIAL LOTS WITHIN THIS SUBDIVISION PRIOR TO ISSUANCE OF ANY GRADING OR BUILDING PERMITS FOR NEW HOUSE CONSTRUCTION IN ACCORDANCE WITH SECTION 16.155 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- THIS PLAN IS SUBJECT TO WP-10-056 TO WAIVE SECTION 16.144(g) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WHICH STATES THAT IF THE SKETCH PLAN IS APPROVED, THE DEVELOPER SHALL SUBMIT TO THE DEPARTMENT OF PLANNING AND ZONING A PRELIMINARY PLAN IN ACCORDANCE WITH THE APPROVED SKETCH PLAN AND THE REQUIREMENTS OF SECTION 16.146 WITHIN THE SPECIFIC TIME PERIOD; AND SECTION 16.146, WHICH OUTLINES THE PRELIMINARY PLAN REQUIREMENTS SUBJECT TO THE FOLLOWING:
  - THE FINAL PLAN FOR PHASE II SUBMISSION SHALL OCCUR BETWEEN JANUARY 4, 2010 AND JUNE 30, 2010.
  - THE FINAL PLAN FOR PHASE III SHALL MEET THE SUBMISSION SCHEDULE OUTLINED UNDER S-05-005, WITH THE PHASE III FINAL PLAN SUBMISSION OCCURRING BETWEEN JULY 1, 2010 AND NOVEMBER 1, 2010.
- OFF-SITE GRADING WILL BE ALLOWED ON PARCEL 886, LOTS 2 AND 3 ONLY. THE PRIVATE EASEMENTS WILL BE RECORDED CONCURRENTLY WITH THE RECORD PLAT.

**COORDINATE LIST**

NO.	NORTHING	EASTING
10	561786.9416	1392339.2768
20	561923.0320	1392260.2015
22	561921.8672	1392225.9678
23	561982.8293	1392311.9965
25	561948.5956	1392303.1612
31	561814.3329	1392382.3381
32	561886.3687	1392470.5777
33	561136.1074	1392958.0785
34	560945.7944	1392626.5017
35	561487.5476	1392275.1912
36	561543.8877	1392362.0728
37	561680.3605	1392594.7508
38	561619.4495	1392491.4899
39	561599.2808	1392456.9463
40	561791.4542	1392343.5881
41	561811.7926	1392378.0315
42	561364.4612	1392641.9010
43	561347.7528	1392666.0988
44	561314.8777	1392610.3666
45	561344.1385	1392607.4483
69	561733.3538	1392244.1241

**PHASE NO. TENTATIVE ALLOCATION ALLOCATION YEAR PRELIMINARY PLAN SUBMISSION MILESTONES**

PHASE	NO.	TENTATIVE ALLOCATION	ALLOCATION YEAR	PRELIMINARY PLAN SUBMISSION MILESTONES
PHASE I	3		2011	BY DECEMBER 4, 2008
PHASE II	3		2012	BETWEEN JAN. 4, 2010 AND JUNE 30, 2010
PHASE III	14		2013	BETWEEN JULY 1, 2010 AND NOV. 1, 2010

- REVISED PHASING IS BASED ON CONDITIONS UNDER WP-10-056.

**SITE ANALYSIS DATA**  
 LOCATION: TAX MAP 38, BLOCK 9, P/O PARCEL 886  
 EXISTING ZONING: R-12  
 GROSS AREA OF PARCEL: 7.22 AC.  
 AREA OF PROPOSED RIGHT-OF-WAY: 0.89 AC.  
 AREA OF 100-YR FLOODPLAIN: N/A  
 AREA OF STEEP SLOPES: 0.60 AC. (26,269 SF)  
 NET AREA OF PROJECT: 6.62 AC.  
 NUMBER OF PROPOSED RESIDENTIAL LOTS: 3 (PHASE 1)  
 TOTAL NUMBER OF AVAILABLE RESIDENTIAL LOTS: 20  
 AREA OF PROPOSED RESIDENTIAL LOTS: 0.58 AC. (25,386 SF)  
 AREA OF SMALLEST BUILDABLE LOT PROPOSED: 8409 SF (LOT 3)  
 NUMBER OF PROPOSED OPEN SPACE LOTS: 1 (LOT 4)  
 OWNED & MAINTAINED BY HOME OWNER ASSOCIATION  
 OPEN SPACE REQUIRED 7.22 AC. x .30 = 2.16 AC.  
 OPEN SPACE PROVIDED 2.19 AC.  
 RECREATIONAL OPEN SPACE REQUIRED: 4000 SF (20 BUILDABLE LOTS x 200 SF)  
 RECREATIONAL OPEN SPACE REQUIRED FOR PHASE II: 600 SF (3 BUILDABLE LOTS x 200 SF)  
 RECREATIONAL OPEN SPACE PROVIDED: 3,700 SF AREA PLUS 2 BENCHES @ 200 SF/EACH = 4,100 SF TOTAL.  
 DEED REFERENCE: L. 9500/F. 668  
 APPLICABLE DPZ FILE REFERENCE: S-05-005, F-88-99, F-84-141, WP-05-75 AND GP-05-66, PLAT # 8083-8086, P-09-001, WP-10-056, GP-11-41.  
 PROPOSED USE OF SITE: SINGLE FAMILY DETACHED  
 PROPOSED WATER SYSTEM: PUBLIC  
 PROPOSED SEWER SYSTEM: PUBLIC

**LOT TABULATION: (PHASE 1)**  
 TOTAL NO. OF PROPOSED LOTS: 3  
 TOTAL NUMBER OF NON-BUILDABLE PARCELS: 3  
 TOTAL NO. OF OPEN SPACE LOTS: 1

FOR REVISIONS BY BEI  
 DATED 7-22-15 ONLY



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. 21443, Expiration Date: 12-31-16

NO.	REVISION	DATE
2	RELOCATE RECREATIONAL OPEN SPACE AREA, ADD 2 BENCHES & RELOCATE 50 MAOACES	7/22/15
1	REVISE PLANS DUE TO CHANGES IN LAYOUT AND GRADING.	06/23/2011

**FINAL ROAD CONSTRUCTION PLAN  
 PECORARO PROPERTY  
 COVER SHEET**

LOTS 1-3, OPEN SPACE LOT 4 & NON-BUILDABLE BULK PARCELS A & B - PHASE I A RESUBDIVISION OF LOT 169, CANBURY WOODS SECTION 2, AREA 2

TAX MAP 38 BLOCK 9 SECTION 2, AREA 2 PARCEL P/O '886'  
 1ST ELECTION DISTRICT REF.: WP-05-75 (APP. 3/1/05) HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERS & SURVEYORS • PLANNERS**  
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410-461-7666 FAX: 410-461-8961

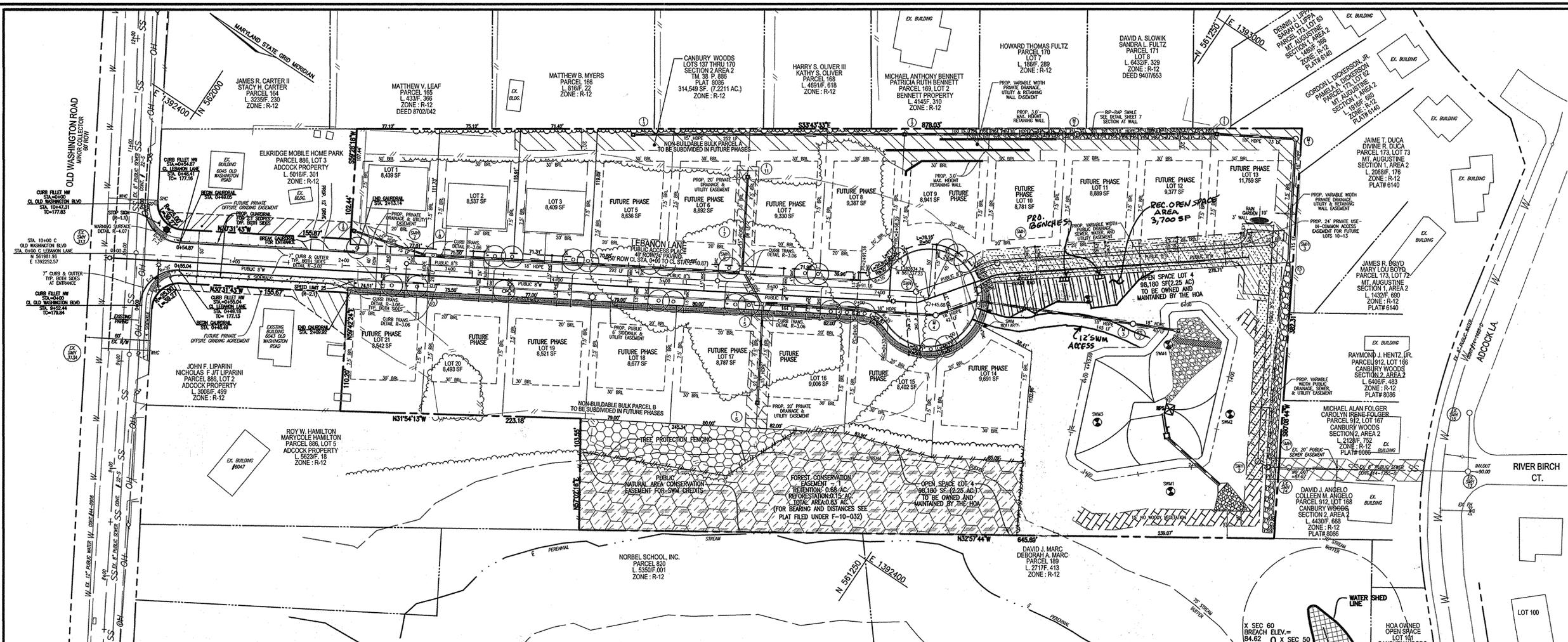
**OWNER**  
 EMILYS DELIGHT LLC, 7310 ESQUIRE COURT, SUITE 10 ELKBRIDGE, MARYLAND 21075 (410) 379-8681

**DEVELOPER**  
 EMILYS DELIGHT LLC, 7310 ESQUIRE COURT, SUITE 10 ELKBRIDGE, MARYLAND 21075 (410) 379-8681

**DESIGN BY:** JCO  
**DRAWN BY:** KG  
**CHECKED BY:** RHY  
**DATE:** NOVEMBER 2010  
**SCALE:** 1"=100'  
**W.O. NO.:** 04-19.00

**PROFESSIONAL CERTIFICATE**  
 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. 16193 EXPIRATION DATE: 09-27-2012

1 SHEET OF 13



**LEGEND**

- EX. 20' PUBLIC SEWER EASEMENT
- FUTURE OFFSITE GRADING EASEMENT
- FUTURE OFFSITE GRADING AGREEMENT
- PROP. PRIVATE DRAINAGE & UTILITY EASEMENT
- PROP. PUBLIC 6" SIDEWALK & UTILITY EASEMENT
- PROP. VARIABLE WIDTH PRIVATE DRAINAGE, UTILITY & RETAINING WALL EASEMENT
- PROP. VARIABLE WIDTH PUBLIC DRAINAGE, SEWER, WATER & UTILITY EASEMENT
- PROP. 24' PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR FUTURE LOTS 10-13
- PROP. 15' NO WOODY VEGETATION BUFFER
- PROP. RECREATIONAL OPEN SPACE AREA
- PROP. PUBLIC NATURAL AREA CONSERVATION EASEMENT FOR SWM CREDITS
- PROP. FOREST CONSERVATION EASEMENT (RETENTION)
- PROP. FOREST CONSERVATION EASEMENT (RESTORATION)
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- EXISTING TREES
- EXISTING FENCE
- CENTERLINE OF EXISTING STREAM
- PROPOSED STORMDRAIN
- PROPOSED STORMDRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED TREELINE
- PROPOSED CURB
- PROPOSED STREET LIGHT

**NOTE:**  
 THE DOUBLE YELLOW CENTERLINE ON OLD WASHINGTON ROAD AT THIS NEW INTERSECTION, SHALL BE REMOVED BY GRINDING. THE LIMITS OF THE REMOVAL SHALL BE DETERMINED BY THE HOWARD COUNTY TRAFFIC DIVISION (410-313-5752).

**LINE TABLE**

LINE	LENGTH	BEARING
L1	745.68'	S30°32'07"E



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. 21443, Expiration Date: 12-21-16

FOR REVISIONS BY BET  
 DATE 7-22-15 ONLY

**LIGHT LOCATIONS**

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
LEBANON LANE	CL STA. 0+35.50	24' LEFT (10' FROM CURB)	150 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE
LEBANON LANE	CL STA. 4+33	33' RIGHT (4' FROM CURB)	100 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE
LEBANON LANE	LP STA. 1+60 CUL-DE-SAC	4' FROM CURB	

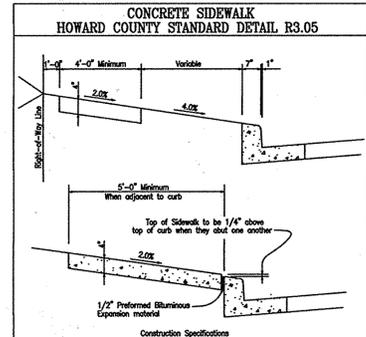
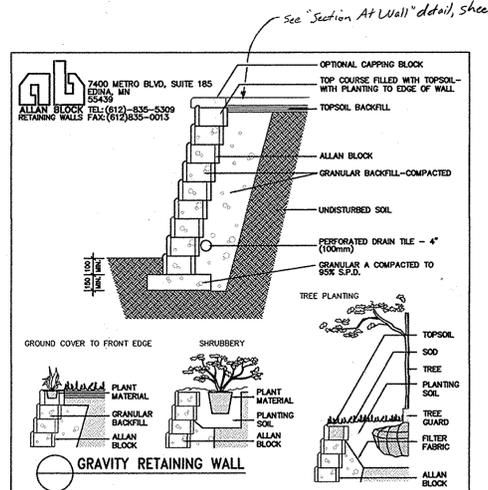
**SIGNAGE LOCATION CHART**

LEBANON LANE	R1-1 ("STOP") SIGN AT STA 0+28, 30 LEFT
LEBANON LANE	R2-1 ("SPEED LIMIT 25") SIGN AT STA 2+13, 16' RIGHT

**PUBLIC ACCESS PLACE STREET TREE SCHEDULE**

QUAN.	BOTANICAL NAME	SIZE	REM.
1,092 LF/40**	ACER RUBRUM 'AUTUMN FLAME'	2 1/2" - 3" CAL.	B & B
27 REQUIRED STREET TREES	AUTUMN FLAME RED MAPLE		

\*\* SEE GENERAL NOTE 32 FOR WAIVER ON COVER SHEET



**GRAVITY RETAINING WALL**

**SPECIFICATIONS:**

- Excavate area to line and grades as shown on construction drawings.
- Subgrade to be firm and undisturbed and compacted to 95% S.D.C.
- Base material shall be granular compacted to 95% S.D.C. and graded to provide level hard surface on which to place the first course of units. MIN. THICKNESS = 4" (150mm).
- Place first course a minimum of 4" (100mm) below finished grade, with the raised lip facing out and the front edges tight together. Fill cavities with sand or clean crushed stone and compact. Sweep clean and check the units for level and alignment. Backfill front and back of entire base row to firmly lock in place.
- Install subsequent courses in similar fashion providing a min. 3" (76mm) overlap of seams and a min. of 1/2" (12mm) granular backfill.
- Allan blocks come in 3 styles: standard block, angle block, and corner block as well as a standard coping stone. The blocks have a compressive strength of over 4000 psi (280 MPa).
- A wide variety of designs can be achieved including inside and outside corners, curves and steps. Blocks come in 9 standard colors: natural, buff, brown, earth, range, orange, red, and tan.
- Walls higher than 6' require geogrids or rebar and masonry construction-consult manu.

OR APPROVED EQUAL

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 8-3-2011

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 8-16-11

CHIEF, DEVELOPMENT ENGINEERING DIVISION J.P.  
 DATE: 8-5-11

**"AS-BUILT" CERTIFICATION**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. #16193  
 DATE: 8-5-11  
 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 INSPECTION AND TESTS DURING CONSTRUCTION ARE SUFFICIENT AND APPROPRIATE BY 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 COMMONLY ACCEPTED INDUSTRY PRACTICES.

NO.	REVISION	DATE
2	RELOCATE RECREATIONAL OPEN SPACE AREA, ADD 2 BENCHES & RELOCATE SWM ACCESS	7-21-15
1	REVISE PLANS DUE TO CHANGES IN LAYOUT AND GRADING.	06/23/2011

**FINAL ROAD CONSTRUCTION PLAN**  
**PECORARO PROPERTY**  
**ROAD PLAN AND DETAILS**  
**LOTS 1-3, OPEN SPACE LOT 4 & NON-BUILDABLE BULK PARCELS A & B - PHASE I A RESUBDIVISION OF LOT 169, CANBURY WOODS**  
 TAX MAP 38 BLOCK 9 SECTION 2, AREA 2 PARCEL P/O '886'  
 1ST ELECTION DISTRICT REF.: WP-05-75 (APP. 3/1/05) HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

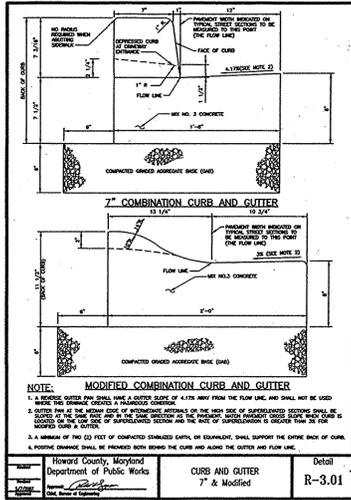
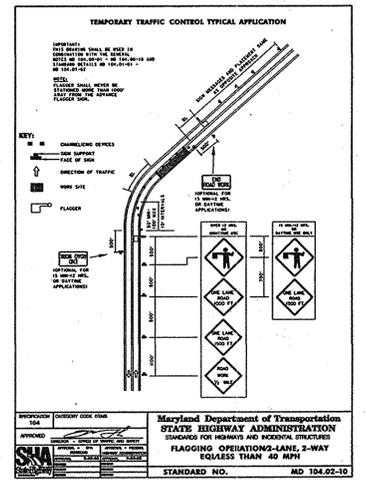
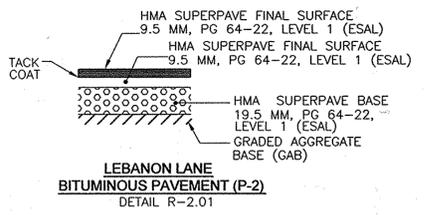
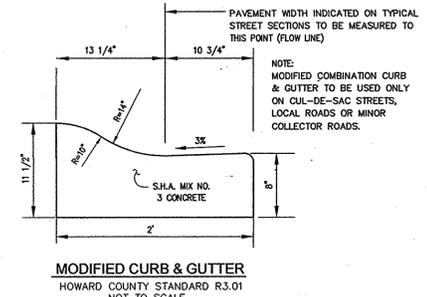
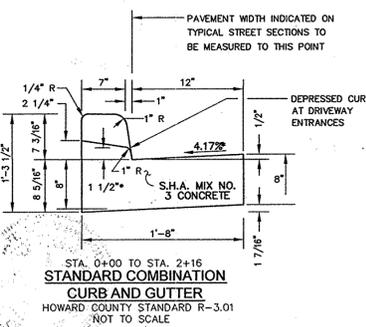
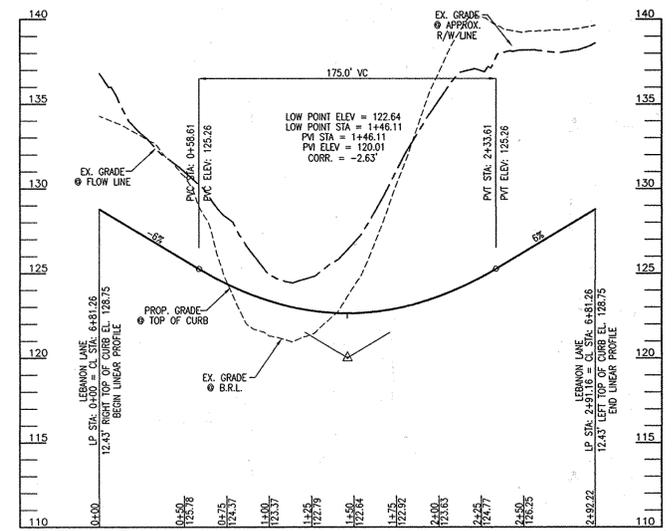
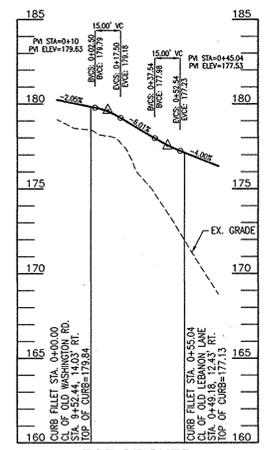
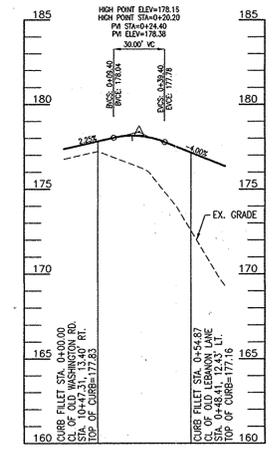
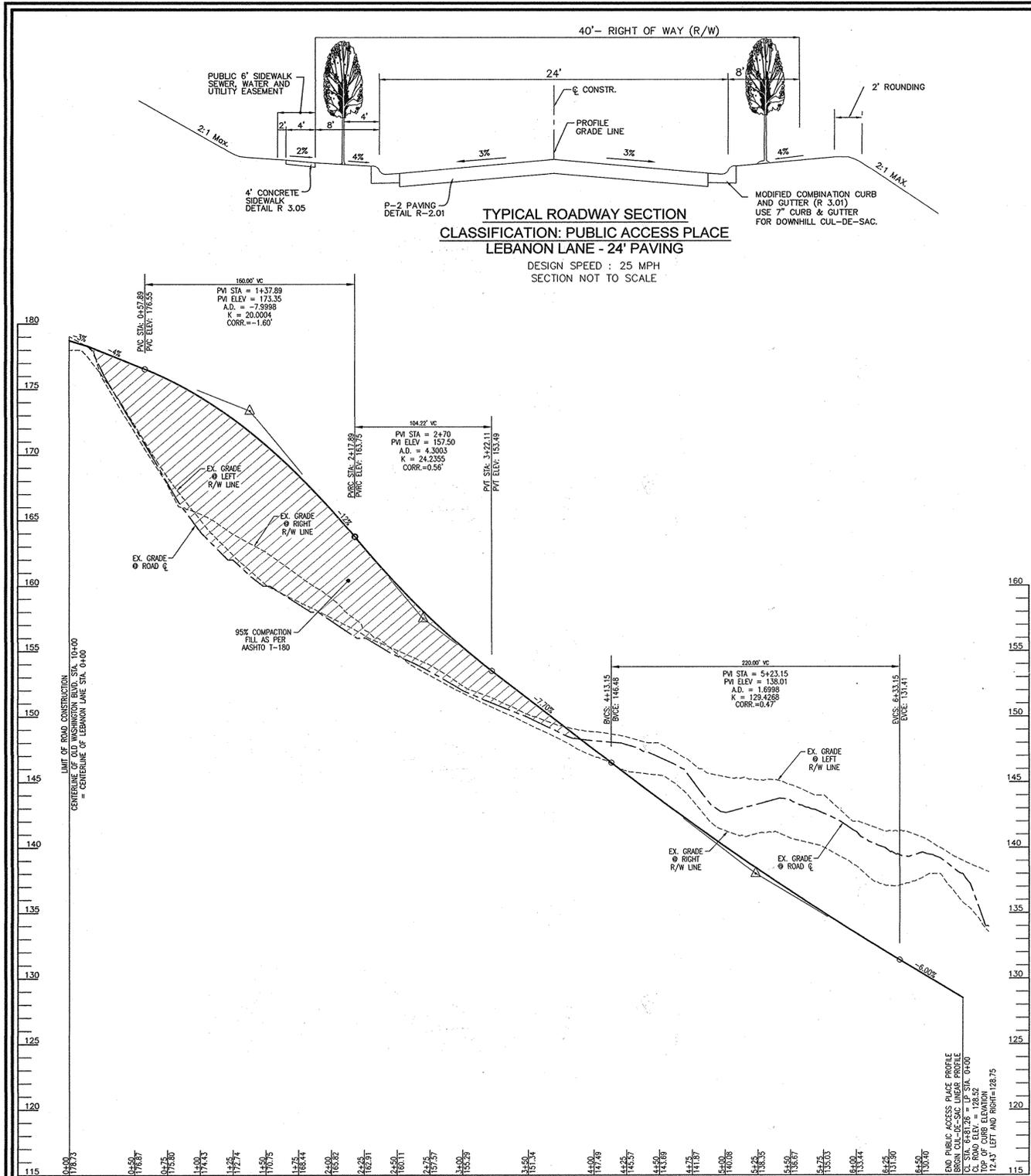
**OWNER**  
 EMILYS DELIGHT LLC.  
 7310 ESQUIRE COURT, SUITE 10 ELKRIEDE, MARYLAND 21075 (410) 379-8681

**DEVELOPER**  
 EMILYS DELIGHT LLC.  
 7310 ESQUIRE COURT, SUITE 10 ELKRIEDE, MARYLAND 21075 (410) 379-8681

**DESIGN BY:** JCO  
**DRAWN BY:** KG  
**CHECKED BY:** RHV  
**DATE:** NOVEMBER 2010  
**SCALE:** 1"=50'  
**W.O. NO.:** 04-19.00

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. 16193 EXPIRATION DATE: 09-27-2012

2 SHEET OF 13



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 [Signature] 8-3-2011  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 8-16-11  
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 8-5-11  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

**"AS-BUILT" CERTIFICATION**  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. #16193  
 DATE 8-16-11  
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M.O.T. DETAILS  
 N.T.S.

**OWNER**  
 EMILYS DELIGHT LLC  
 7310 ESQUIRE COURT, SUITE 10  
 ELKCRIDGE, MARYLAND 21075  
 (410) 379-8681

**DEVELOPER**  
 EMILYS DELIGHT LLC  
 7310 ESQUIRE COURT, SUITE 10  
 ELKCRIDGE, MARYLAND 21075  
 (410) 379-8681

1	REVISE PLANS DUE TO CHANGES IN LAYOUT AND GRADING.	06/23/2011
NO.	REVISION	DATE

**FINAL ROAD CONSTRUCTION PLAN**  
**PECORARO PROPERTY**  
 ROAD PROFILE, DETAILS AND M.O.T. DETAILS  
 LOTS 1-3, OPEN SPACE LOT 4 &  
 NON BUILDABLE BULK PARCELS A & B - PHASE I  
 A RESUBDIVISION OF LOT 169, CANBURY WOODS

TAX MAP 38 BLOCK 9 SECTION 2, AREA 2  
 1ST ELECTION DISTRICT  
 REF.: WP-05-75 (APP. 3/1/05)

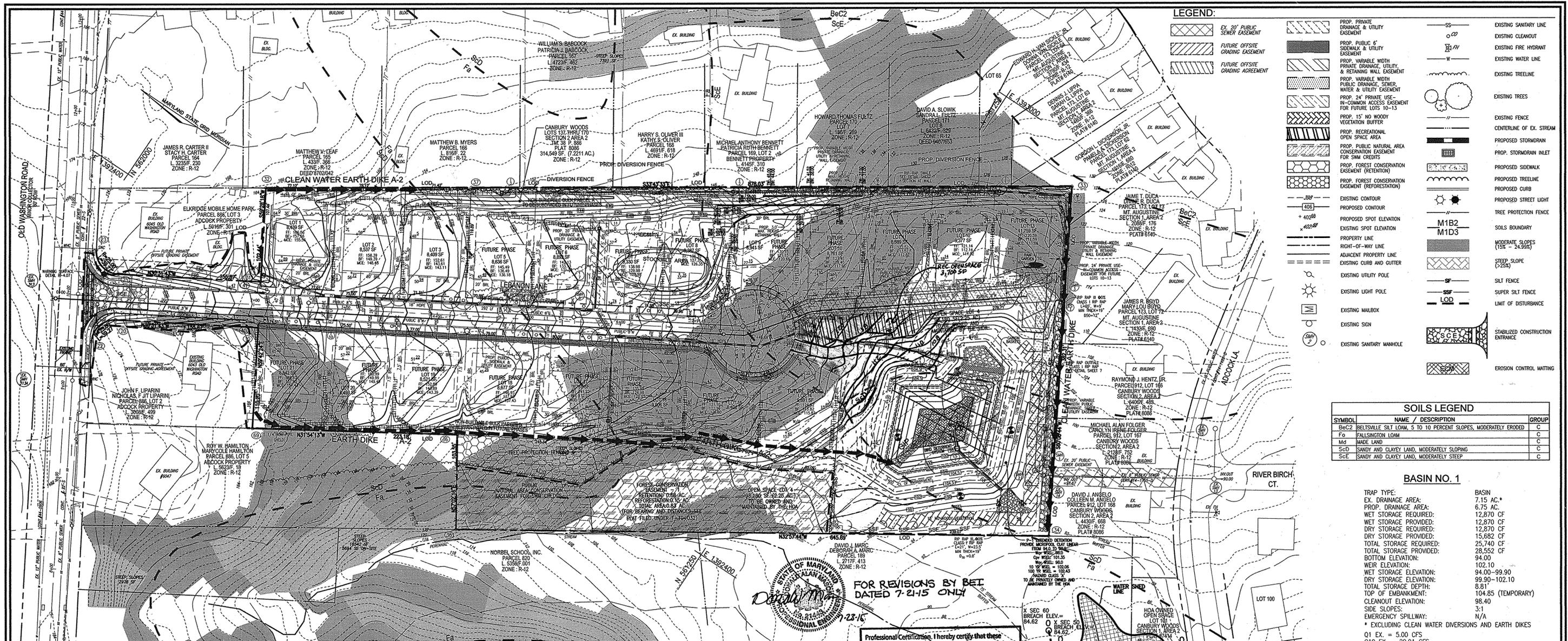
PARCEL P/O '886'  
 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL**  
**ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666  
 FAX: 410.461.8961

**PROFESSIONAL CERTIFICATE**  
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DESIGN BY: JCO  
 DRAWN BY: KG  
 CHECKED BY: RHW  
 DATE: NOVEMBER 2010  
 SCALE: AS SHOWN  
 W.O. NO.: 04-19.00

3 SHEET OF 13



**BASIN NO. 1**

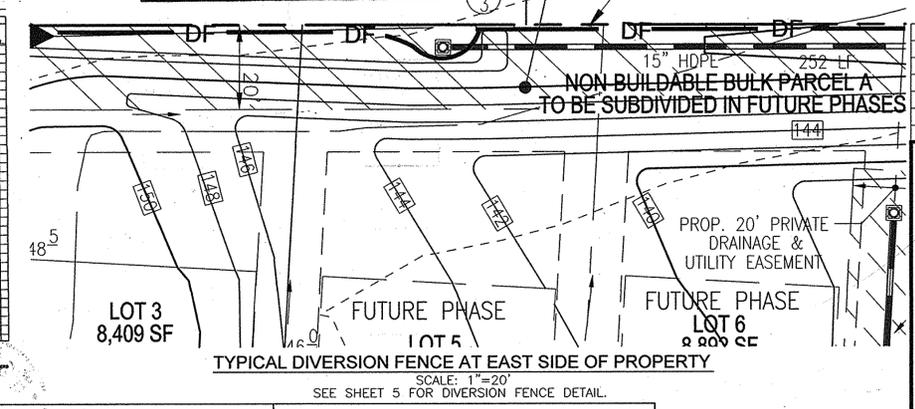
TRAP TYPE: \_\_\_\_\_  
 EX. DRAINAGE AREA: 7.15 AC.\*  
 PROP. DRAINAGE AREA: 6.75 AC.  
 WET STORAGE REQUIRED: 12,870 CF  
 WET STORAGE PROVIDED: 12,870 CF  
 DRY STORAGE REQUIRED: 15,682 CF  
 DRY STORAGE PROVIDED: 25,740 CF  
 TOTAL STORAGE REQUIRED: 28,552 CF  
 TOTAL STORAGE PROVIDED: 94.00  
 WEIR ELEVATION: 102.10  
 WET STORAGE ELEVATION: 94.00-99.90  
 DRY STORAGE ELEVATION: 99.90-102.10  
 TOTAL STORAGE DEPTH: 8.81  
 TOP OF EMBANKMENT: 104.85 (TEMPORARY)  
 CLEANOUT ELEVATION: 98.40  
 SIDE SLOPES: 3:1  
 EMERGENCY SPILLWAY: N/A  
 \* EXCLUDING CLEAN WATER DIVERSIONS AND EARTH DIKES

Q1 EX. = 5.00 CFS  
 Q10 EX. = 20.91 CFS  
 Q1 SED. = 4.81 CFS - WSEL 102.05  
 Q1 SED. = 31.01 CFS - WSEL 102.81  
 Q1 DEVELOPED = 0.16 CFS

FOR REVISIONS BY BET DATED 7-21-15 ONLY

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. 21443, Expiration Date: 12-21-16



NO.	REVISION	DATE
2	RELOCATE RECREATIONAL OPEN SPACE AREA ADD 2 BENCHES & RELOCATE SWM ACCESS	7-21-15
1	REVISE PLANS DUE TO CHANGES IN LAYOUT AND GRADING.	06/23/2011

NO.	REVISION	DATE
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1	REVISE PLANS DUE TO CHANGES IN LAYOUT AND GRADING.	06/23/2011

**FINAL ROAD CONSTRUCTION PLAN**  
 GRADING, SEDIMENT AND EROSION CONTROL PLAN AND SWM BORING DETAILS  
 LOTS 1-3, OPEN SPACE LOT 4 & NON-BUILDABLE BULK PARCELS A & B - PHASE I  
 A RESUBDIVISION OF LOT 169, CANBURY WOODS

TAX MAP 38 BLOCK 9 SECTION 2, AREA 2 PARCEL P/O 886'  
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
 REF.: WP-05-75 (APP. 3/1/05)

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 8407 MAIN STREET ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

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DESIGN BY: JCO  
 DRAWN BY: KG  
 CHECKED BY: RHV  
 DATE: NOVEMBER 2010  
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4 SHEET OF 13

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 8-3-2011

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 8-16-11

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 8-5-11

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ROBERT H. VOGEL, P.E. #16193  
 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 INSPECTION AND TESTS DETERMINE SUFFICIENT AND APPROPRIATE BY 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 COMMONLY ACCEPTED INDUSTRY PRACTICES.

BY THE DEVELOPER:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

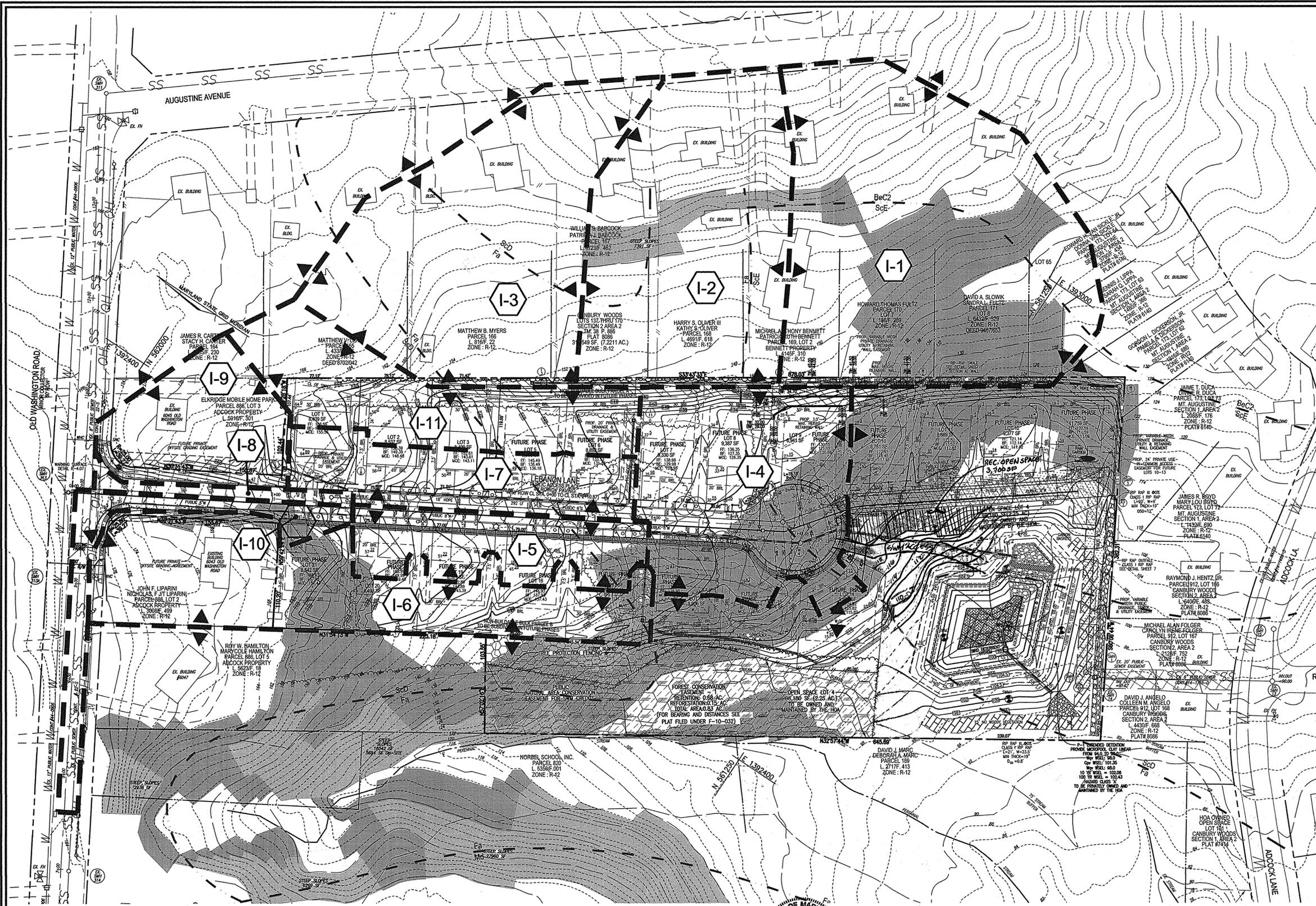
BY THE ENGINEER:  
 I HEREBY CERTIFY THAT THIS PLAN FOR SMALL POND CONSTRUCTION, SEDIMENT AND EROSION CONTROL, REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

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

**OWNER**  
 EMILYS DELIGHT LLC  
 7310 ESQUIRE COURT, SUITE 10  
 ELKDRIDGE, MARYLAND 21075  
 (410) 379-8681

**DEVELOPER**  
 EMILYS DELIGHT LLC  
 7310 ESQUIRE COURT, SUITE 10  
 ELKDRIDGE, MARYLAND 21075  
 (410) 379-8681





- LEGEND:**
- EX. 20' PUBLIC SEWER EASEMENT
  - FUTURE OFFSITE GRADING EASEMENT
  - FUTURE OFFSITE GRADING AGREEMENT
  - PROP. PRIVATE DRAINAGE & UTILITY EASEMENT
  - PROP. PUBLIC 6' SIDEWALK & UTILITY EASEMENT
  - PROP. VARIABLE WIDTH PRIVATE DRAINAGE, UTILITY, & RETAINING WALL EASEMENT
  - PROP. VARIABLE WIDTH PUBLIC DRAINAGE, SEWER, WATER & UTILITY EASEMENT
  - PROP. 24' PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR FUTURE LOTS 10-13
  - PROP. 15' NO WOODY VEGETATION BUFFER
  - PROP. RECREATIONAL OPEN SPACE AREA
  - PROP. PUBLIC NATURAL AREA CONSERVATION EASEMENT FOR SWM CREDITS
  - PROP. FOREST CONSERVATION EASEMENT (RETENTION)
  - PROP. FOREST CONSERVATION EASEMENT (REFORESTATION)
  - EXISTING CONTOUR
  - PROPOSED CONTOUR
  - PROPOSED SPOT ELEVATION
  - EXISTING SPOT ELEVATION
  - PROPERTY LINE
  - RIGHT-OF-WAY LINE
  - ADJACENT PROPERTY LINE
  - EXISTING CURB AND GUTTER
  - EXISTING UTILITY POLE
  - EXISTING LIGHT POLE
  - EXISTING MAILBOX
  - EXISTING SIGN
  - EXISTING SANITARY MANHOLE
  - EXISTING SANITARY LINE
  - EXISTING CLEANOUT
  - EXISTING FIRE HYDRANT
  - EXISTING WATER LINE
  - EXISTING TREE LINE
  - EXISTING TREES
  - EXISTING FENCE
  - CENTERLINE OF EX. STREAM
  - PROPOSED STORMDRAIN
  - PROP. STORMDRAIN INLET
  - PROPOSED SIDEWALK
  - PROPOSED TREE LINE
  - PROPOSED CURB
  - PROPOSED STREET LIGHT
  - TREE PROTECTION FENCE
  - SOILS BOUNDARY
  - MODERATE SLOPES (15% - 24.99%)
  - STEEP SLOPE (>25%)
  - DRAINAGE AREA DIVIDE

2	RELOCATE RECREATIONAL OPENSPACE AREA, ADD 2 BENCHES	7-21-15
1	RELOCATE SWM ACCESS	REV
1	REVISE PLANS DUE TO CHANGES IN LAYOUT AND GRADING.	06/23/2011
NO.	REVISION	DATE

**FINAL ROAD CONSTRUCTION PLAN  
PECORARO PROPERTY  
STORM DRAIN DRAINAGE AREA MAP  
LOTS 1-3, OPEN SPACE LOT 4 &  
NON-BUILDABLE BULK PARCELS A & B - PHASE I  
A RESUBDIVISION OF LOT 169, CANBURY WOODS**

TAX MAP 38 BLOCK 9 SECTION 2, AREA 2 PARCEL P/O '886'  
1ST ELECTION DISTRICT REF.: WP-05-75 (APP. 3/1/05) HOWARD COUNTY, MARYLAND

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**OWNER**  
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ELKDRIDGE, MARYLAND 21075  
(410) 379-8881

**DEVELOPER**  
EMILYS DELIGHT LLC  
7310 ESQUIRE COURT, SUITE 10  
ELKDRIDGE, MARYLAND 21075  
(410) 379-8881

**DESIGN BY:** JCO  
**DRAWN BY:** KG  
**CHECKED BY:** RHV  
**DATE:** NOVEMBER 2010  
**SCALE:** 1"=50'  
**W.O. NO.:** 04-19.00

**PROFESSIONAL CERTIFICATE**  
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**6** SHEET OF **13**

APPROVED: DEPARTMENT OF PUBLIC WORKS

*Walter R. Small* 8-3-2011  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*Vet. DeLuca* 8-16-11  
CHIEF, DIVISION OF LAND DEVELOPMENT

*Chad Edmund* 8-5-11  
CHIEF, DEVELOPMENT ENGINEERING DIVISION J.P.

**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP
BeC2	BELTSVILLE SILT LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	C
Fd	FALLSVILLE LOAM	C
Md	MUDE LAND	C
ScD	SANDY AND CLAYEY LAND, MODERATELY SLOPING	C
ScE	SANDY AND CLAYEY LAND, MODERATELY STEEP	C

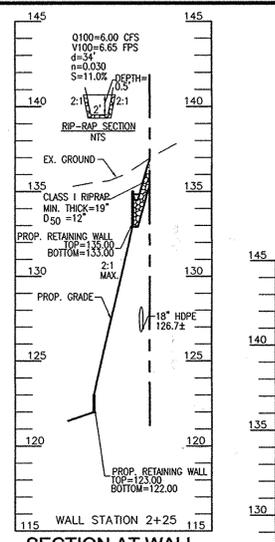
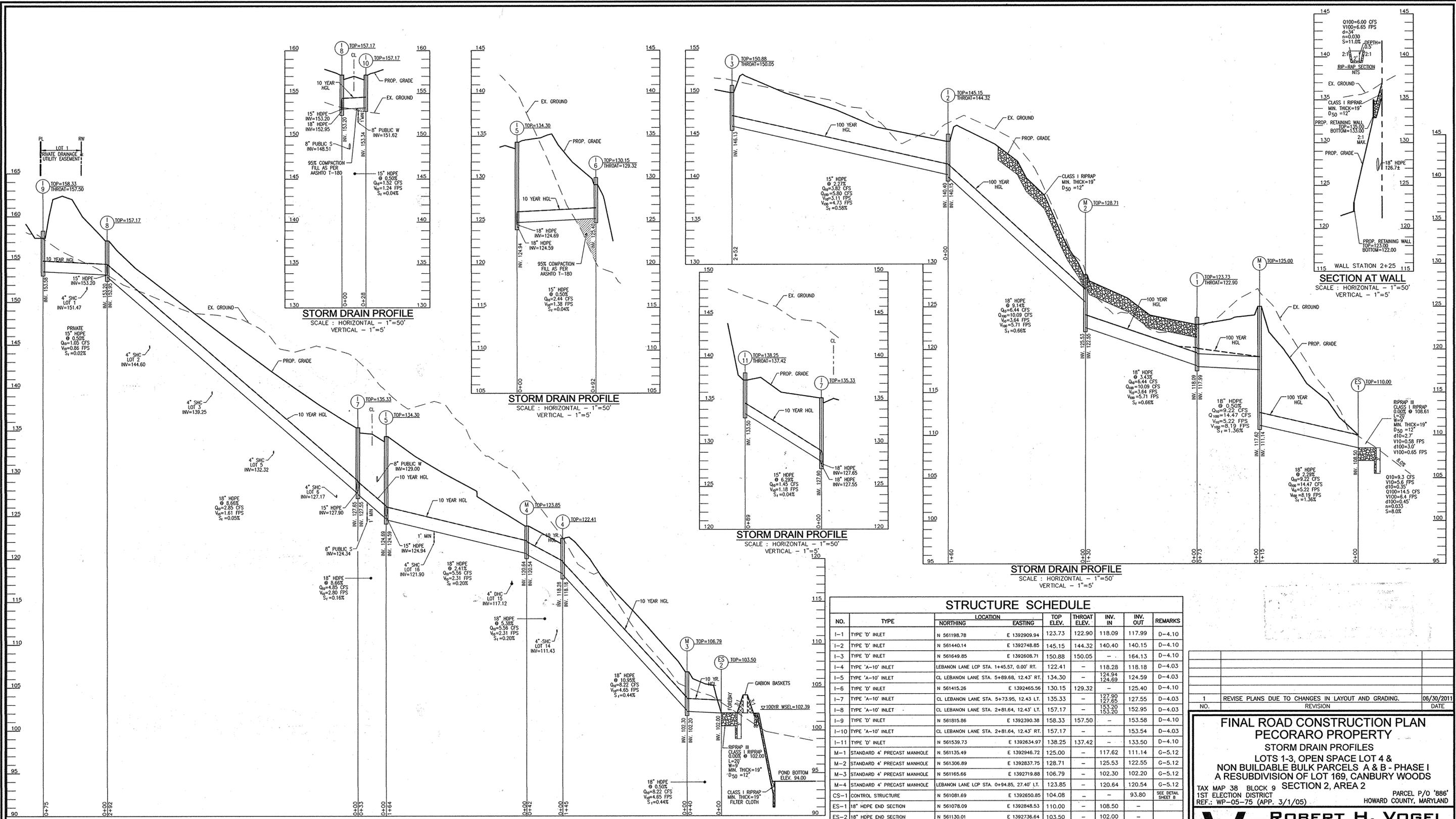


FOR REVISIONS BY BET DATED 7-21-15 ONLY

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. 21443 Expiration Date: 12-21-16

**DRAINAGE AREA TABULATIONS**

NO.	AREA AC.	% C	% IMP.	SOIL TYPE	ZONE
I-1	1.80 AC.	0.31	30%	C	R-12
I-2	1.50 AC.	0.31	30%	C	R-12
I-3	1.90 AC.	0.31	30%	C	R-12
I-4	1.33 AC.	0.41	17%	C	R-12
I-5	0.46 AC.	0.44	23%	C	R-12
I-6	1.19 AC.	0.31	0%	C	R-12
I-7	0.54 AC.	0.40	49%	C	R-12
I-8	0.08 AC.	0.86	100%	C	R-12
I-9	0.53 AC.	0.31	30%	C	R-12
I-10	0.28 AC.	0.81	92%	C	R-12
I-11	0.72 AC.	0.31	38%	C	R-12



### STRUCTURE SCHEDULE

NO.	TYPE	LOCATION	NORTHING	EASTING	TOP ELEV.	THROAT ELEV.	INV. IN	INV. OUT	REMARKS
I-1	TYPE 'D' INLET		N 561198.78	E 1392209.94	123.73	122.90	118.09	117.99	D-4.10
I-2	TYPE 'D' INLET		N 561440.14	E 1392748.85	145.15	144.32	140.40	140.15	D-4.10
I-3	TYPE 'D' INLET		N 561649.85	E 1392608.71	150.88	150.05	-	164.13	D-4.10
I-4	TYPE 'A-10' INLET	LEBANON LANE LCP STA. 1+45.57, 0.00' RT.			122.41	-	118.28	118.18	D-4.03
I-5	TYPE 'A-10' INLET	CL. LEBANON LANE STA. 5+89.68, 12.43' RT.			134.30	-	124.94	124.59	D-4.03
I-6	TYPE 'D' INLET		N 561415.26	E 1392465.56	130.15	129.32	-	125.40	D-4.10
I-7	TYPE 'A-10' INLET	CL. LEBANON LANE STA. 5+73.95, 12.43' LT.			135.33	-	127.90	127.55	D-4.03
I-8	TYPE 'A-10' INLET	CL. LEBANON LANE STA. 2+81.64, 12.43' LT.			157.17	-	153.20	152.95	D-4.03
I-9	TYPE 'D' INLET		N 561815.86	E 1392390.38	158.33	157.50	-	153.58	D-4.10
I-10	TYPE 'A-10' INLET	CL. LEBANON LANE STA. 2+81.64, 12.43' RT.			157.17	-	153.54	153.29	D-4.03
I-11	TYPE 'D' INLET		N 561539.73	E 1392634.97	138.25	137.42	-	133.50	D-4.10
M-1	STANDARD 4' PRECAST MANHOLE		N 561135.49	E 1392946.72	125.00	-	117.62	111.14	G-5.12
M-2	STANDARD 4' PRECAST MANHOLE		N 561306.89	E 1392837.75	128.71	-	125.53	122.55	G-5.12
M-3	STANDARD 4' PRECAST MANHOLE		N 561165.66	E 1392719.88	106.79	-	102.30	102.20	G-5.12
M-4	STANDARD 4' PRECAST MANHOLE	LEBANON LANE LCP STA. 0+94.85, 27.40' LT.			123.85	-	120.64	120.54	G-5.12
CS-1	CONTROL STRUCTURE		N 561081.69	E 1392650.85	104.08	-	-	93.80	SEE DETAIL SHEET 8
ES-1	18" HDPE END SECTION		N 561078.09	E 1392848.53	110.00	-	-	108.50	-
ES-2	18" HDPE END SECTION		N 561130.01	E 1392736.64	103.50	-	-	102.00	-
ES-3	30" RCP STM C-361		N 561015.72	E 1392639.86	95.50	-	-	93.00	-

TOP ELEVATION FOR TYPE 'A' INLETS IS TOP OF CURB. TOP ELEVATION FOR TYPE 'D' INLETS IS TOP OF SLAB.

### PIPE SCHEDULE

PIPE SIZE	TYPE	TOTAL LENGTH
15"	HDPE	536 LF
18"	HDPE	1,194 LF
30"	RCP	68 LF

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*W. A. Wall* 8-3-2011  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Robert H. Vogel* 8-16-11  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
*Clayton Edwards* 8-5-11  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION JR.

**"AS-BUILT" CERTIFICATION**  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.  
 ROBERT H. VOGEL, P.E. #16193  
 I HEREBY CERTIFY THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2012.

## FINAL ROAD CONSTRUCTION PLAN PECORARO PROPERTY

### STORM DRAIN PROFILES

#### LOTS 1-3, OPEN SPACE LOT 4 & NON BUILDABLE BULK PARCELS A & B - PHASE I A RESUBDIVISION OF LOT 169, CANBURY WOODS

TAX MAP 38 BLOCK 9 SECTION 2, AREA 2  
 1ST ELECTION DISTRICT  
 REF.: WP-05-75 (APP. 3/1/05)  
 PARCEL P/O '886'  
 HOWARD COUNTY, MARYLAND

## ROBERT H. VOGEL ENGINEERING, INC.

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 W.O. NO.: 04-19.00

PROFESSIONAL CERTIFICATE  
 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. 16193, EXPIRATION DATE: 09-27-2012.

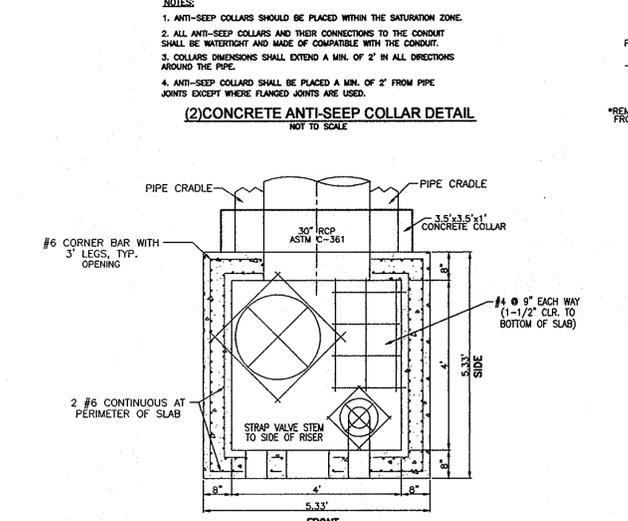
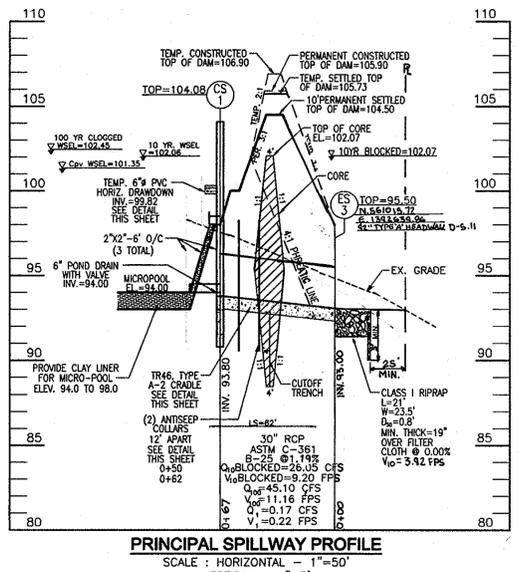
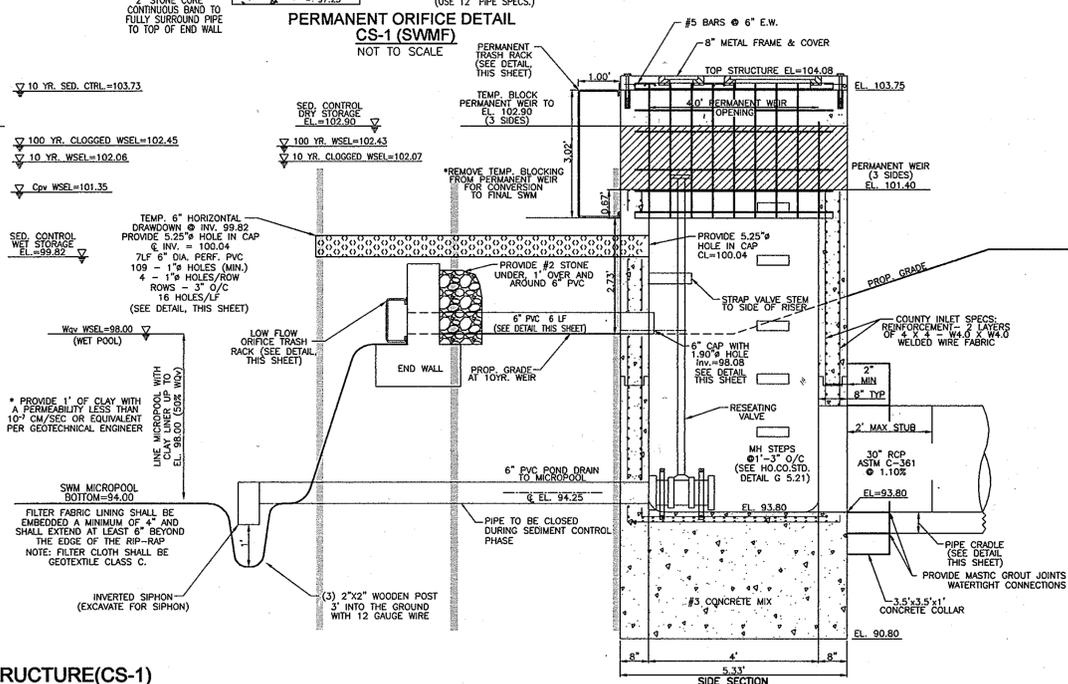
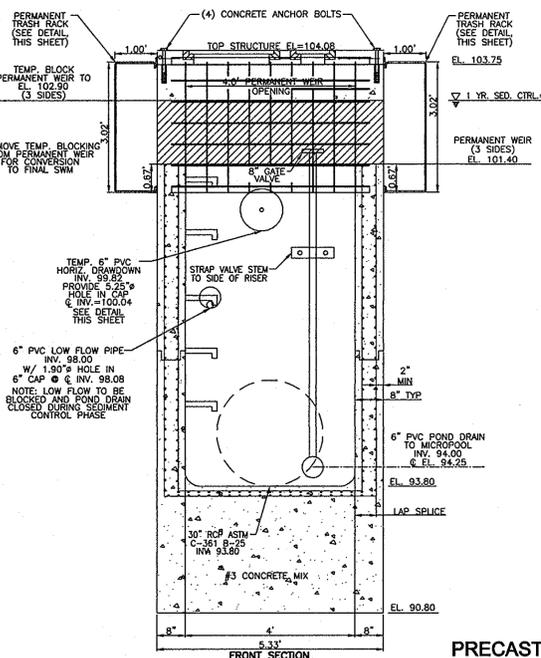
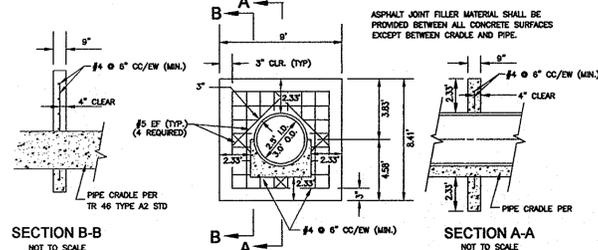
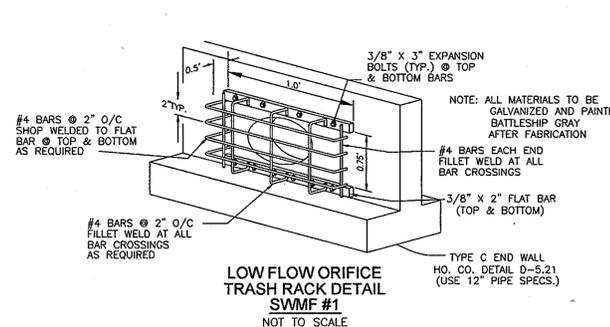
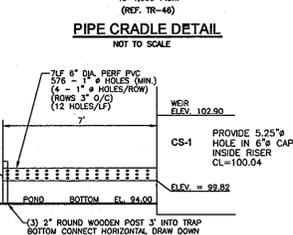
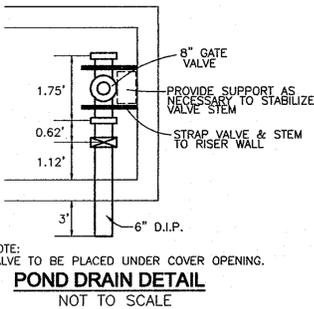
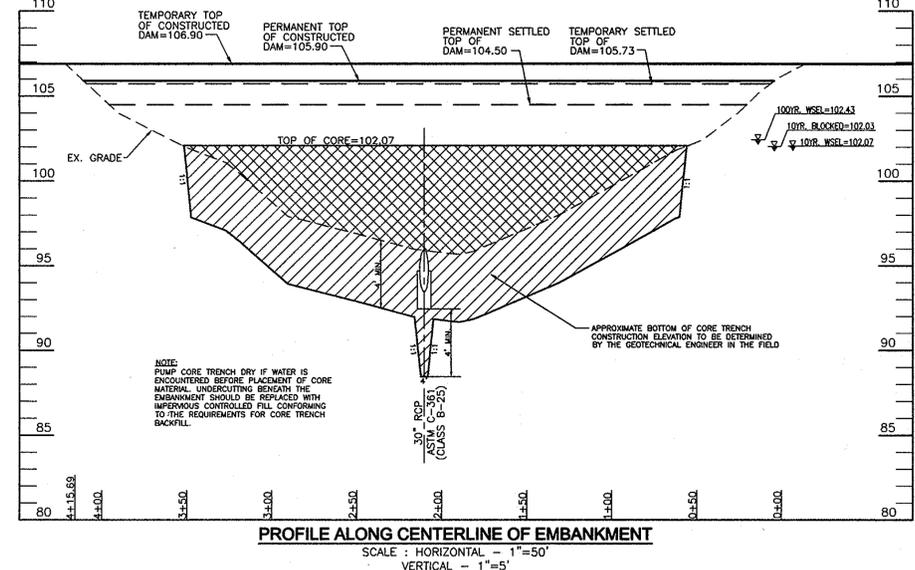
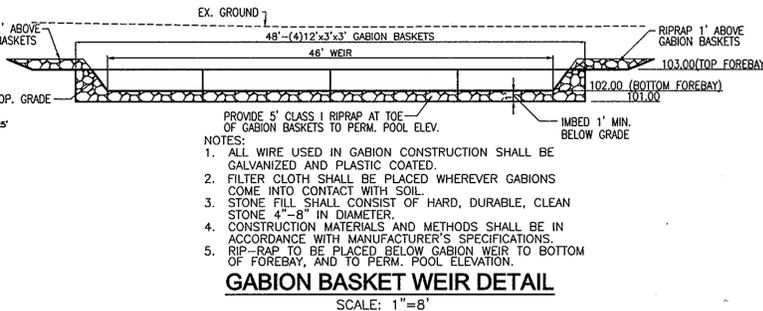
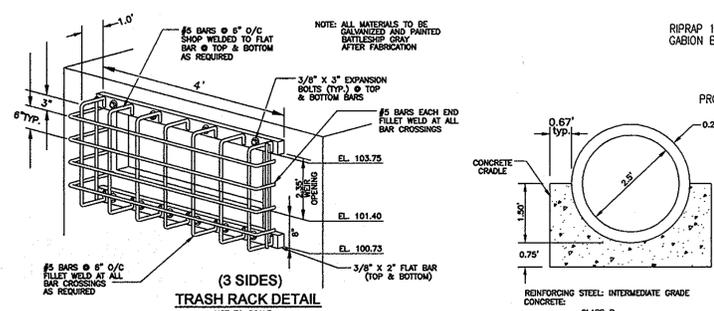
7  
OF  
13

**OPERATION, MAINTENANCE AND INSPECTION**

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA SCS STANDARDS AND SPECIFICATIONS FOR PONDS (40-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATORS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

**OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT FACILITY**

- STORMWATER MANAGEMENT FACILITY  
ROUTINE MAINTENANCE BY HOA
1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WEATHER TO DETERMINE IF FUNCTIONING PROPERLY.
  2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
  3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
  4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.



APPROVED: DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 12-1-10  
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 12/09/10  
CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 12/2/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

**"AS-BUILT" CERTIFICATION**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

ROBERT H. VOGEL, P.E. #16193 DATE 12/09/10  
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 INSPECTION AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY 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 COMMONLY ACCEPTED INDUSTRY PRACTICES.

BY THE DEVELOPER:

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 12/1/10  
SIGNATURE OF DEVELOPER DATE

BY THE ENGINEER:

I HEREBY CERTIFY THAT THIS PLAN FOR SMALL POND CONSTRUCTION, SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 12/1/10  
SIGNATURE OF ENGINEER DATE

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

*[Signature]* 11/16/10  
HOWARD S.C.D. DATE

**OWNER**  
EMILY'S DELIGHT LLC,  
7310 ESQUIRE COURT, SUITE 10  
ELK RIDGE, MARYLAND 21075  
(410) 378-8681

**DEVELOPER**  
EMILY'S DELIGHT LLC,  
7310 ESQUIRE COURT, SUITE 10  
ELK RIDGE, MARYLAND 21075  
(410) 378-8681

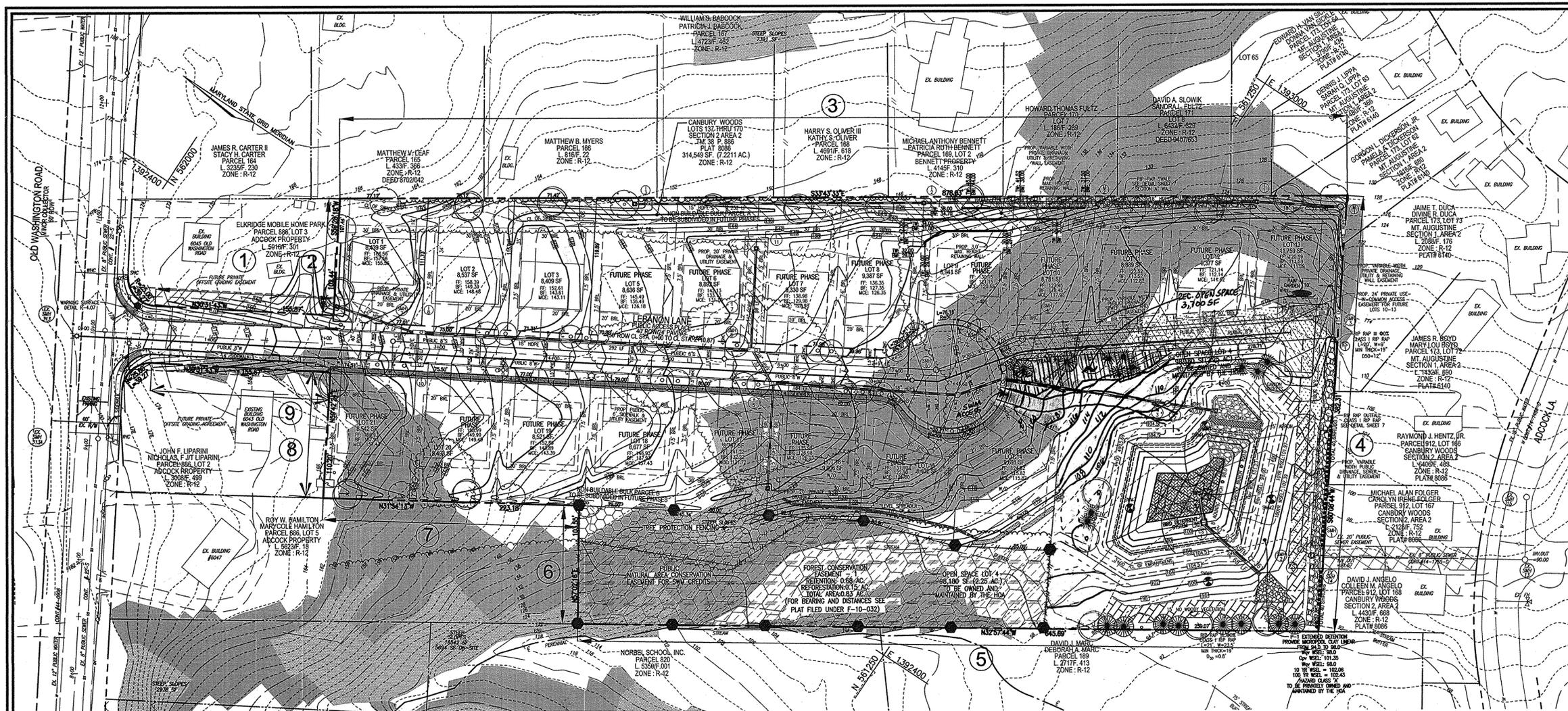
**FINAL ROAD CONSTRUCTION PLAN**  
**PECORARO PROPERTY**  
**STORMWATER MANAGEMENT**  
**NOTES AND DETAILS**  
LOTS 1-3, OPEN SPACE LOT 4 &  
NON BUILDABLE BULK PARCELS A & B - PHASE I  
A RESUBDIVISION OF LOT 169, CANBY WOODS  
TAX MAP 38 BLOCK 9 SECTION 2, AREA 2 PARCEL P/O '886'  
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND  
REF: WF-05-75 (APP. 3/1/05)

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET TEL: 410.481.7666  
ELLSWORTH CITY, MD 21043 FAX: 410.481.1891

DESIGN BY: JCO  
DRAWN BY: RHV  
CHECKED BY: KHG  
DATE: OCTOBER 2010  
SCALE: AS SHOWN  
W.O. NO.: 04-19-00

PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193  
EXPIRATION DATE: 09-27-2012

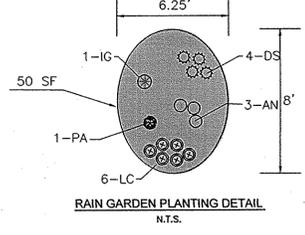
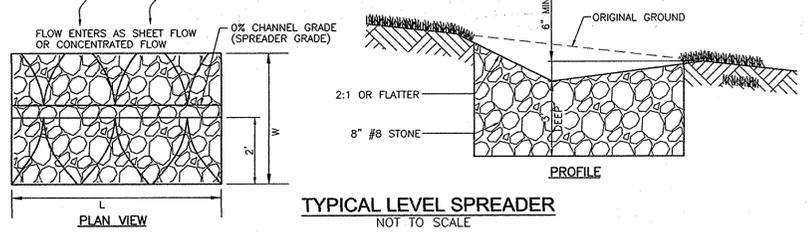
8 SHEET OF 13



**LEGEND:**

	EX. 20' PUBLIC SEWER EASEMENT		EXISTING SANITARY LINE
	FUTURE OFFSITE GRADING EASEMENT		EXISTING CLEANOUT
	FUTURE OFFSITE GRADING AGREEMENT		EXISTING FIRE HYDRANT
	PROP. PRIVATE DRAINAGE & UTILITY EASEMENT		EXISTING WATER LINE
	PROP. VARIABLE WIDTH PRIVATE DRAINAGE, UTILITY, & RETAINING WALL EASEMENT		EXISTING TREE LINE
	PROP. VARIABLE WIDTH PUBLIC DRAINAGE, SEWER, WATER & UTILITY EASEMENT		EXISTING TREES
	PROP. 24' PRIVATE USE-IN-COMMON ACCESS EASEMENT FOR FUTURE LOTS 10-13		EXISTING FENCE
	PROP. RECREATIONAL OPEN SPACE AREA		CENTERLINE OF EX. STREAM
	PROP. PUBLIC NATURAL AREA CONSERVATION EASEMENT FOR SWM CREDITS		PROPOSED STORMDRAIN
	PROP. FOREST CONSERVATION EASEMENT (RETENTION)		PROP. STORMDRAIN INLET
	PROP. FOREST CONSERVATION EASEMENT (REFORESTATION)		PROPOSED SIDEWALK
	EXISTING CONTOUR		PROPOSED TREE LINE
	PROPOSED CONTOUR		PROPOSED CURB
	PROPOSED SPOT ELEVATION		PROPOSED STREET LIGHT
	EXISTING SPOT ELEVATION		TREE PROTECTION FENCE
	PROPERTY LINE		SOILS BOUNDARY
	RIGHT-OF-WAY LINE		MODERATE SLOPES (1% - 24.9%)
	ADJACENT PROPERTY LINE		STEEP SLOPE (>25%)
	EXISTING CURB AND GUTTER		PROPOSED SHADE TREE
	EXISTING UTILITY POLE		PROPOSED EVERGREEN TREE
	EXISTING LIGHT POLE		LANDSCAPE PERIMETER
	EXISTING MAILBOX		FOREST STAND DELINEATION
	EXISTING SIGN		
	EXISTING SANITARY MANHOLE		

NOTE: SEE SHEET 10 FOR LANDSCAPING LEGEND

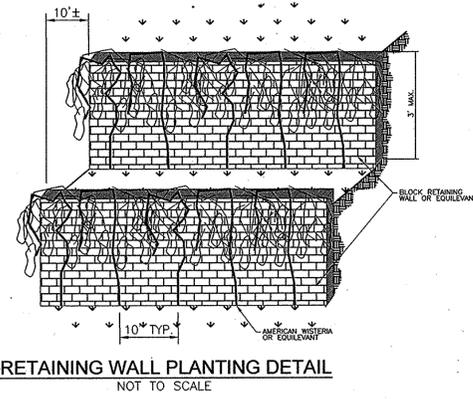


**OPERATION AND MAINTENANCE SCHEDULE FOR RAIN GARDEN AREAS**

- ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS 50% MATERIAL.
- SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT 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 WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

**RAINGARDEN PLANT LIST**

QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
1	PLATANUS X ACERIFOLIA	LONDON PLANE TREE	2 1/2" - 3" Cal.
1	RILEX GLABRA	INK BERRY	2 - 3" HT.
4	LOBELIA CARDINALIS	CARDINAL FLOWER LOBELIA	1 GAL. CONTAINER
6	DRYOPTERIS SP.	WOOD FERN	1 GAL. CONTAINER
3	ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	1 GAL. CONTAINER



**TRASH PAD LANDSCAPING**

SYM.	QTY.	DESCRIPTION	SIZE	REM.
	5	DWARF JAPANESE YEW	3'-4' HT	B & B

**PUBLIC ACCESS PLACE STREET TREE SCHEDULE**

QUAN.	BOTANICAL NAME	SIZE	REM.
1,092 LF/40**	ACER RUBRUM 'AUTUMN FLAME'	2 1/2" - 3" CAL.	B & B
27 REQUIRED STREET TREES	AUTUMN FLAME RED MAPLE		

\*\* SEE GENERAL NOTE 32 FOR WAIVER ON COVER SHEET



FOR REVISIONS BY BEI DATED 7-21-15 ONLY

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. 21443, Expiration Date: 12-21-16

NO.	REVISION	DATE
2	RELOCATE RECREATIONAL OPEN SPACE AREA & RELOCATE SWM ACCESS.	7-21-15
1	REVISE PLANS DUE TO CHANGES IN LAYOUT AND GRADING.	06/23/2011

**FINAL ROAD CONSTRUCTION PLAN**  
**PECORARO PROPERTY**  
**LANDSCAPE AND FOREST CONSERVATION PLAN AND DETAILS**  
LOTS 1-3, OPEN SPACE LOT 4 & NON BUILDABLE BULK PARCELS A & B - PHASE I  
A RESUBDIVISION OF LOT 169, CANBURY WOODS  
TAX MAP 38 BLOCK 9 SECTION 2, AREA 2 PARCEL P/O '886'  
1ST ELECTION DISTRICT REF.: WP-05-75 (APP. 3/1/05) HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

**DESIGN BY:** JCO  
**DRAWN BY:** KG  
**CHECKED BY:** RHV  
**DATE:** NOVEMBER 2010  
**SCALE:** 1"=50'  
**W.O. NO.:** 04-19.00

**OWNER:** EMILYS DELIGHT LLC, 7310 ESQUIRE COURT, SUITE 10 ELKRIE, MARYLAND 21075 (410) 379-8681  
**DEVELOPER:** EMILYS DELIGHT LLC, 7310 ESQUIRE COURT, SUITE 10 ELKRIE, MARYLAND 21075 (410) 379-8681

**PROFESSIONAL CERTIFICATE:** 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. 18193, EXPIRATION DATE: 09-27-2012

**9 SHEET OF 13**

**APPROVED: DEPARTMENT OF PUBLIC WORKS**  
DATE: 8-3-2011  
CHIEF, BUREAU OF HIGHWAYS

**APPROVED: DEPARTMENT OF PLANNING AND ZONING**  
DATE: 8-16-11  
CHIEF, DIVISION OF LAND DEVELOPMENT

DATE: 8-5-11  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

**DEVELOPER'S/BUILDER'S CERTIFICATE**

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER: [Signature]  
DATE: [Date]

FOR INTERNAL LANDSCAPING FOR STORMWATER MANAGEMENT SEE SHEET 10

SCHEDULE A: PERIMETER LANDSCAPE EDGE										
CATEGORY	ADJACENT TO PERIMETER PROPERTIES									
	1	2	3	4	5	6	7	8	9	TOTAL
PERIMETER/FRONTAGE DESIGNATION LANDSCAPE TYPE	N/A*	102'	878'	382'	646'	104'	223'	110'	N/A*	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	N/A*	-	-	-	YES 407'	YES 73'	-	-	N/A*	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	N/A*	-	158'	-	-	-	-	-	-	
NUMBER OF PLANTS REQUIRED (LF REMAINING) SHADE TREES EVERGREEN TREES SHRUBS	N/A*	102'	720'	382'	239'	31'	223'	110'	N/A*	31
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) (DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	N/A*	02	12	01**	04	01	04	02	N/A*	26

\* SEE NOTE FOR WAIVER ON COVER SHEET.  
\*\* 5 OF THE REQUIRED SHADE TREES FOR PERIMETER 4 HAVE BEEN RELOCATED WITHIN THE SWM AREA LANDSCAPING.  
\*\*\* 4 OF THE REQUIRED EVERGREEN TREES HAVE BEEN RELOCATED FROM THE SWM AREA TO PERIMETER 4 AND SUBSTITUTED FOR 40 SHRUBS (10:1).  
NOTE: PERIMETERS 1 & 8 AND STREET TREES OBLIGATION WAS WAIVED ON 12/01/04 UNDER THE APPROVED WAIVER (SEE NOTE FOR WAIVER ON COVER SHEET)

LANDSCAPE SCHEDULE				
SYMBOL	QUAN.	BOTANICAL NAME	SIZE	REM.
⊗	16	ACER RUBRUM RED MAPLE (SHADE TREE)	2"-3" Cal.	B & B
⊙	16	GLENDITSIA TRIACANTHOS VAR. INERMIS YOUNG THORNLESS HONEY LOCUST (SHADE TREE)	2-1/2"-3" CAL.	B & B
☀	9	PINUS STROBUS EASTERN WHITE PINE (EVERGREEN TREES) SWM PERIMETER	6'-8' Ht.	B & B
☀	9	PICEA ABIES NORWAY SPRUCE (EVERGREEN TREES) SWM PERIMETER	6'-8' Ht.	B & B
⊕	16	WISTERIA FRUTESCENS (L) POIR AMERICAN WISTERIA (VINE) WALL (INCLUDED IN WALL SURETY)	50' Ht.	B & B
⊕	40	THUJA OCCIDENTALIS 'SMARAGD' EMERALD GREEN ARBORVITAE	6'-8' Ht.	B & B

SCHEDULE D: STORMWATER MANAGEMENT AREA LANDSCAPING-TYPE 'B' BUFFER	
CATEGORY	SWMF 1
LINEAR FEET OF PERIMETER	948'
CREDIT FOR EXISTING VEGETATION (YES, NO, AND LINEAR FEET)	YES 68'
CREDIT FOR OTHER LANDSCAPING (YES, NO, AND %)	8% SHADE TREES FROM PERIMETER 4 & 5 LANDSCAPING
NUMBER OF TREES REQUIRED SHADE TREES 1:50 EVERGREEN TREES 1:40	880' 18-8" 22
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES SHRUBS	10*** 18*** 50****

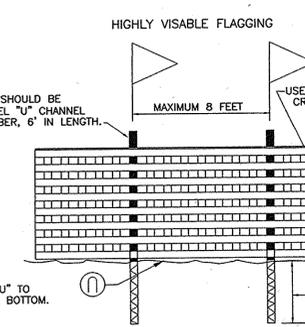
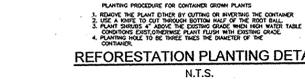
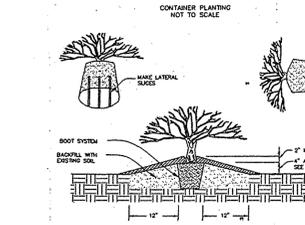
\* EXISTING WOODS TO REMAIN  
\*\* 4 EVERGREEN TREES HAVE BEEN RELOCATED TO PERIMETER 4 AND SUBSTITUTED @ 10:1 SHRUBS.  
\*\*\* 5 SHADE TREES RELOCATED FROM PERIMETER 4.  
\*\*\*\* 50 SHRUBS HAVE BEEN SUBSTITUTED FOR 5 SHADE TREES @ 10:1.  
STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$8,100.00 TO BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR TOTAL REQUIRED 27 PUBLIC STREET TREES. SEE STREET TREE SCHEDULE FOR STREET ON PUBLIC ACCESS PLACE, SEE SHEET 2.

FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING PROVIDED PER THE LANDSCAPE MANUAL TO BE POSTED WITH THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$19,510.00 FOR THE REQUIRED 36 SHADE TREES, 18 EVERGREEN TREES, 95 SHRUBS AND 158 LF OF WALL. (THE UNIT PRICES TO BE USED FOR ESTABLISHING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE ADOPTED COUNTY FEE SCHEDULE WHICH IS \$300.00 PER SHADE TREE, \$150.00 PER EVERGREEN/ORNAMENTAL TREE, \$30.00 PER SHRUB AND \$20.00 PER LINEAR FOOT OF WALL).

PLANT SCHEDULE FOR ONSITE REFORESTATION				
QUAN.	BOTANICAL NAME	CONTAINER GROWN SIZE	APPROXIMATE SPACE SPACING(Feet ON LENTER)	
08	Acer rubrum Red Maple	1" caliper B & B	15 x 15	
08	Platanus occidentalis Sycamore	1" caliper B & B	15 x 15	
07	Quercus coccinea Scarlet Oak	1" caliper. B & B	15 x 15	
07	American sweetgum Liquidambar styraciflua	1" caliper B & B	15 x 15	

REFORESTATION PROVIDED - FCE1  
0.15 ACRES OR 6534 SF  
1" CALIPER TREES  
30 TREES @ 200 TREES PER ACRE

**LANDSCAPE NOTES**  
AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.  
ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.  
NO LANDSCAPING TO BE INSTALLED WITHIN ANY PUBLIC EASEMENT FOR WATER, SEWER OR STORM DRAIN.



Size	Number Required per Acre	Approximate Spacing feet on center	Survivability Requirement At the end of the second growing season
Bare Root Seedlings or Whips	700	8 x 8	65% 385
Container Grown Seedling Tubes (Minimum Canopy Width 1.5')	450	10 x 10	65% 290
Container Grown 1, 2, 3 Gallon	350	12 x 12	75% 260
Container Grown 5, 7 Gallon or 1" Caliper B & B	200	15 x 15	85% 170
Container Grown 15, 20 Gallon or 1.5-2" Caliper B & B	100	20 x 20	100% 100

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	GROUP
BeC2	BELTSVILLE SILT LOAM, 5 TO 10 PERCENT SLOPES, MODERATELY ERODED	C
Fg	FALLSINGTON LOAM	C
Md	MADE LAND	C
ScD	SANDY AND CLAYEY LAND, MODERATELY SLOPING	C
ScE	SANDY AND CLAYEY LAND, MODERATELY STEEP	C

PAGE 26 OF THE HOWARD COUNTY SOIL SURVEY

HOWARD COUNTY FOREST CONSERVATION WORKSHEET

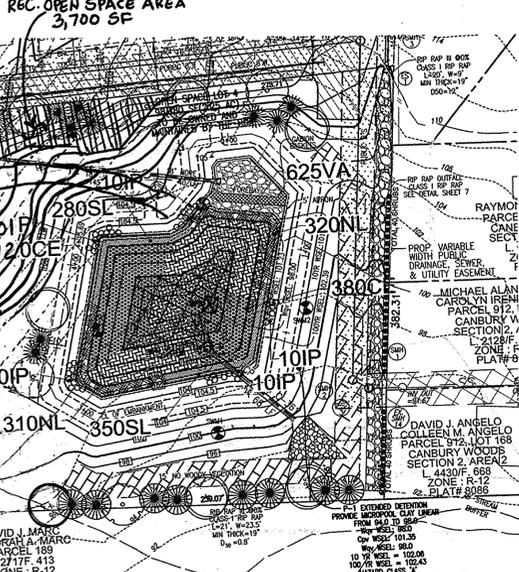
ZONED R-ED  
NET TRACT AREA:  
A. TOTAL TRACT AREA 7.22 AC  
B. AREA WITHIN 100 YEAR FLOODPLAIN 2.53 AC  
C. NET TRACT AREA 7.22 AC

LAND USE CATEGORY  
INPUT THE NUMBER "1" UNDER THE APPROPRIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY. ZONED R-12.  
ARA MDR IDA HDR MPD CIA  
0 0 0 1 0 0

E. AFFOREST THRESHOLD 15% X D = 1.08 AC  
F. CONSERVATION THRESHOLD 20% X D = 1.44 AC  
EXISTING FOREST COVER:  
G. EXISTING FOREST COVER 3.61 AC  
H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD 1.73 AC  
I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD 2.71 AC  
BREAK EVEN POINT:  
J. BREAK EVEN POINT 1.88 AC  
K. CLEARING PERMITTED WITHOUT MITIGATION PROPOSED FOREST CLEARING 1.73 AC  
L. TOTAL AREA OF FOREST TO BE CLEARED 2.93 AC  
M. TOTAL AREA OF FOREST TO BE RETAINED 0.68 AC  
PLANTING REQUIREMENTS:  
N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD 0.54 AC  
O. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD 0.00 AC  
P. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD 2.07 AC  
R. TOTAL REFORESTATION REQUIRED (N+P-Q) 2.07 AC  
S. TOTAL AFFORESTATION REQUIRED 0.00 AC  
T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED 2.07 AC

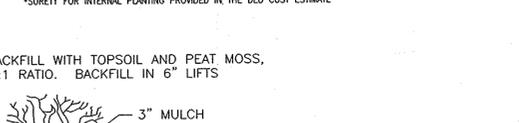
FOREST CONSERVATION EASEMENT HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY FOREST CONSERVATION MANUAL. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

TOTAL FOREST CONSERVATION OBLIGATION OF THE PROJECT, TO BE FULFILLED BY ON SITE RETENTION OF 0.68 ACRES, REFORESTATION OF 0.15 ACRES & REMAINING 1.92 ACRES BY OFFSITE FOREST CONSERVATION EASEMENT IN BRANTWOOD, SECTION 3, AREA 1, PRESERVATION PARCEL "C", PLAT # 14874. FUTURE OFFSITE EASEMENT TO BE RECORDED CONCURRENTLY WITH THIS SUBDIVISION PLAT.  
RETENTION - 0.68 AC. (29,620.80 X .20 = \$ 5,924.16)  
REFORESTATION ONSITE - 0.15 AC. (6534 SF X .50 = \$ 3,267)  
REFORESTATION OFFSITE - 1.92 AC. (83,635.20 SF X .50 = \$ 41,817.60)  
FINANCIAL SURETY FOR ON SITE FOREST OBLIGATION IN THE AMOUNT OF \$51,009.00 WILL BE POSTED WITH THE DEVELOPER'S AGREEMENT.  
NOTE: THE FULL FSD PLAN CAN BE FOUND UNDER S-05-05.



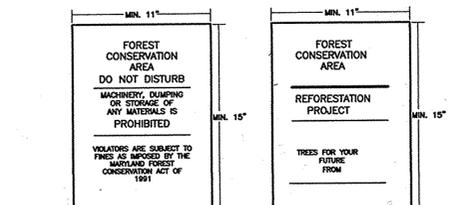
SWMF 1 - POCKET POND HAZARD CLASS 'A' HERBACEOUS LANDSCAPE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
IP	50	IRIS PSEUDOCORIS YELLOW WATER IRIS	PLUG 1.5" OC	
NL	630	NIPHAR LUTEUM SPATTERDOCK	PLUG 1.5" OC	
SL	630	SAGITTARIA LATIFOLIA BUCK POTAM (DO NOT PLANT TUBERS)	PLUG 4" OC	
VA	625	VALLISNERIA AMERICANA WILD CELERY	PLUG 2" OC	
CE	420	CYPERUS ESQUOLENTUS BELOW NUT SEDGE	PLUG 2" OC	

\*SURETY FOR INTERNAL PLANTING PROVIDED IN THE DEED COST ESTIMATE

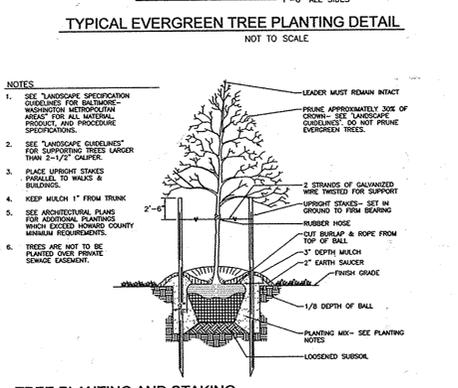
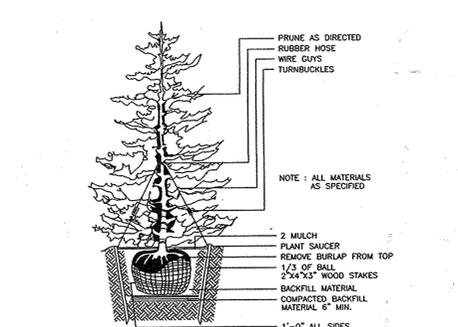


**OWNER**  
EMILY'S DELIGHT LLC.  
7310 ESQUIRE COURT, SUITE 10  
ELKDRIDGE, MARYLAND 21075  
(410) 379-8681

**DEVELOPER**  
EMILY'S DELIGHT LLC.  
7310 ESQUIRE COURT, SUITE 10  
ELKDRIDGE, MARYLAND 21075  
(410) 379-8681



NOTE:  
1. BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.  
2. SIGNS TO BE PLACED AT A MAXIMUM SPACING OF 50-100 FEET.  
CONDITIONS ON-SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART.  
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.



J. CHRIS OGLE  
DNR QUALIFIED FOREST PROFESSIONAL

NO.	REVISION	DATE
2	RELOCATE RECREATIONAL OPEN SPACE AREA, ADD 2 BENCHES & RELOCATE SWM ACCESS	7-21-15
1	REVISE PLANS DUE TO CHANGES IN LAYOUT AND GRADING.	06/23/2011

**FINAL ROAD CONSTRUCTION PLAN**  
**PECORARO PROPERTY**  
LANDSCAPE AND FOREST CONSERVATION DETAILS  
LOTS 1-3, OPEN SPACE LOT 4 & NON BUILDABLE BULK PARCELS A & B - PHASE I  
A RESUBDIVISION OF LOT 169, CANBURY WOODS  
TAX MAP 38 BLOCK 9 SECTION 2, AREA 2  
1ST ELECTION DISTRICT  
REF.: WP-05-75 (APP. 3/1/05)  
PARCEL P/O '886'  
HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET  
ELICOTT CITY, MD 21043  
TEL: 410.461.7666  
FAX: 410.461.8961

**PROFESSIONAL CERTIFICATE**  
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. 16193, EXPIRATION DATE: 09-27-2012.

DESIGN BY: JCO  
DRAWN BY: KG  
CHECKED BY: RRV  
DATE: NOVEMBER 2010  
SCALE: 1"=100'  
W.O. NO.: 04-19.00

10 SHEET OF 13

SUPPLEMENTAL INFORMATION

GROSS SITE AREA 7.22 ACRES  
ZONED RESIDENTIAL  
EXISTING USE RESIDENTIAL DEVELOPMENT  
PROPOSED USE R-12

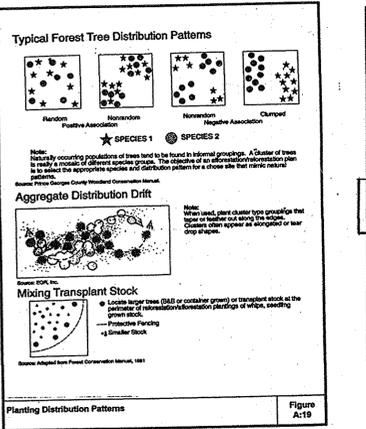
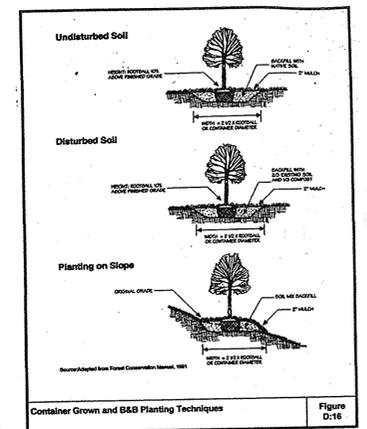
FOREST STAND TOTALS

STAND L-1 3.32 ACRES  
STAND T-1 0.29 ACRES  
STAND F-1 3.61 ACRES  
TOTAL 7.22 ACRES

FOREST STAND ANALYSIS TABLE

KEY	A. TYPE OF COMMUNITY	B. AREA	C. SOILS INFORMATION				D. EXISTING VEGETATION	E. STAND CHARACTERISTICS			F. FOREST AREA IN SEN. ENV
			1. SOILS TYPES	2. TYPICAL FOREST COVER FOR SOILS TYPE	3. WOODLAND SUITABILITY INDEX	4. HABITAT		1. SIZE (DIA)	2. AGE (YRS)	3. GENERAL CONDITION	
L-1	MAINTAINED LAWN AND OPEN FIELD	3.32 Ac	Fg ScD ScE	BIRCH, HOLLY, WETLAND OAKS, WETLAND MAPLES	1 16 2 2	1 2 2	MAINTAINED LAWN	N/A	N/A	N/A	0.00 Ac
T-1	TREE GROUP	0.29 Ac	Fg ScD	BIRCH, HOLLY, WETLAND OAKS, WETLAND MAPLES	1 16 1 2	1 2	GREEN ASH, RED MAPLE, HICKORY, WHITE OAK, CHESTNUT OAK, TULIP POPLAR	12-27"	20±	FAIR	0.00 Ac
F-1	TULIP POPLAR FOREST ASSOCIATION	3.61 Ac	Fg ScD ScE	BIRCH, HOLLY, WETLAND OAKS, WETLAND MAPLES	1 16 2 2	1 2 2	GREEN ASH, RED MAPLE, HICKORY, WHITE OAK, CHESTNUT OAK, TULIP POPLAR	12-27"	20±	FAIR	0.57 Ac STEEP SLOPES

SEE SHEET 9 FOR STAND LOCATIONS



Size	Number Required per Acre	Approximate Spacing feet on center	Survivability Requirement At the end of the second growing season
Bare Root Seedlings or Whips	700	8 x 8	65% 385
Container Grown Seedling Tubes (Minimum Canopy Width 1.5')	450	10 x 10	65% 290
Container Grown 1, 2, 3 Gallon	350	12 x 12	75% 260
Container Grown 5, 7 Gallon or 1" Caliper B & B	200	15 x 15	85% 170
Container Grown 15, 20 Gallon or 1.5-2" Caliper B & B	100	20 x 20	100% 100

APPROVED: DEPARTMENT OF PUBLIC WORKS  
W. Z. ... 8-3-2011  
CHIEF, BUREAU OF HIGHWAYS  
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
K. ... 8-16-11  
CHIEF, DIVISION OF LAND DEVELOPMENT  
C. ... 8-5-11  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S/BUILDER'S CERTIFICATE  
I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.  
DATE: 7/21/15

FOR REVISIONS BY BEST  
DATED 7-21-15 ONLY

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. 21443, Expiration Date: 12-21-16

# AASCD/MAA VEGETATIVE ESTABLISHMENT DETAILS AND SPECIFICATIONS FOR THE PROJECT WITHIN 4 MILES OF BWI AIRPORT

### SEEDING

**903-1.1 GENERAL.** This item provides specifications for seeding of areas as designated on plans or directed by the MAA Engineer. The species, mixture, and methods of application provided in this item may be used to establish vegetation. All activities associated with seeding including soil preparation, seed application, fertilization, and maintenance shall also conform to these approved standards.

**903-1.2 SEEDS.** All seed shall comply with the Maryland Seed Law (Agricultural Code of the Annotated Code of Maryland). Only MAA-approved species, mixtures, and rates of application provided in this item may be used to establish vegetation. Seed will be sampled and tested by an inspector from the Turf and Seed Section, Maryland Department of Agriculture (MDA), Annapolis, Maryland. All lawn and turf seed and mixtures shall be free from the following state-listed restricted noxious weeds:

- oak scab (Agrostomyces sphaero), brome grass (Agrostis spp.), wild onion (Allium canadense), wild garlic (Allium vineosum), blackfoot (Colletotrichum), dandelion (Taraxacum officinale), bermuda grass (Cynodon dactylon), centipedegrass (Eriogonum fasciculatum), all fescue (Festuca arvensis), meadow fescue (Festuca pratensis), velvetgrass (Holcus lanatus), annual ryegrass (Lolium perenne), rough bluegrass (Poa trivialis), timothy (Phleum pratense), and Johnsongrass (Sorghum holcus).

Restricted noxious-weed seed may not exceed 0.5 percent by weight of any seed mixture. In addition, all seeds sold in Maryland shall be free from the following listed prohibited conditions as described in Paragraph 903-2.1.3.

**903-2.1.3.1** This species may be included as a listed component of a mixture when such is present in excess of the percent of the mixture by weight.

### SEEDING

Seed shall be furnished in standard containers with the seed name, lot number, net weight, percentage of purity, germination rate and test, and percentage of maximum seed count clearly marked. All seed containers shall be tagged with a MAA approved mix program and seed rate.

**903-2.1.1 APPROVED SPECIES AND APPLICATION RATES.** Only seed mixtures and application rates described in this item may be used unless otherwise approved by the MAA Engineer. Seed mixtures shall meet criteria detailed in Paragraph 903-2.1.2. Seed mixtures have been formulated to maintain a minimum of 90 percent purity to allow for common landscape scenarios. The appropriate seed mixture for application will be designated based on environmental conditions and may vary from site to site. All planting rates listed are in pounds of Pure Live Seed (PLS) per acre.

Seed mixtures, application scenarios, and rates for permanent cool-season grasses are as follows:

MAA SEED MIXTURES	Purity %	Minimum % Germination	Pure Live Seed PLS/Acre
Certified Turf-Type Tall Fescue (Festuca arvensis)	90	90	1.13
Certified Kentucky Bluegrass (Poa pratensis)	90	80	1.39
Hard Fescue (Festuca duriuscula)	90	90	1.13
Creeping Red Fescue (Festuca rubra)	90	90	1.13
Annual Ryegrass (Lolium perenne)	90	85	1.24
Perennial Ryegrass (Lolium perenne)	90	80	1.39
Soft Meadow Grass (Poa annua)	90	80	1.39
Less Bluegrass (Poa annua)	90	80	1.39
Annual Ryegrass (Lolium perenne)	90	80	1.39

**903-2.1.2 PURITY.** All seed shall be free of all state-designated noxious weeds listed in Paragraph 2.1.1 and conform to MAA specifications. To ensure conformance, MAA requires sampling and testing of seed by the Turf and Seed Section, Maryland Department of Agriculture (MDA). The contractor shall furnish the MAA Engineer with duplicate signed copies of a statement by the Turf and Seed Section certifying that each lot of seed has been laboratory tested within six months of date of delivery. This statement shall include the following information:

- name and address of laboratory,
- date of test,
- lot number,
- the results of tests as to, percentage of purity and germination,
- percentage of weed content for the seed furnished,
- seed, in the case of a mixture, the proportions of each kind of seed.

### SEEDING

Seed Mixture No. 2: Sloped areas not subject to regular mowing (Application rate = 115 lbs PLS/Acre)

Seed	Rate of Application (lbs PLS/Acre)
75% Hard Fescue	85
20% Creeping Fescue	23
5% Kentucky Bluegrass	7

Supplemental Seed: 3

Seed Mixture No. 3: Wetland areas and their associated buffer zones (Application rate = 131 lbs PLS/Acre)

Seed	Rate of Application (lbs PLS/Acre)
60% Fowl Meadow Grass	83
30% Creeping Fescue	34
10% Perennial Ryegrass	14

Supplemental Seed: 3

**903-2.1.4 BEDDING SEASONS.** Application of seed and seed mixtures shall occur within a specified seeding season unless otherwise approved by the MAA Engineer. No seed or seed mixtures are to be applied on frozen ground or when the temperature is at or below 35 degrees Fahrenheit (7.2 degrees Celsius). Under these conditions, a layer of earth shall be applied in accordance with Item 905. Mulching, to stabilize the site, and permanent seeding shall occur in the subsequent seeding season. Seed application may occur during the seeding season dates listed below. Seeding performed after October 20 should be a temporary cover of annual ryegrass and following by overseeding of the appropriate seed mixture during the spring seeding season.

### SEEDING

Seeding seasons are based on typical years and are subject to variation, which may be modified by the MAA Engineer based on seasonal trends.

If the time required to complete any of the operations necessary under this item, within the specified planting season or any authorized extension thereof, extends beyond the Contract period, then such time will be charged against the Contract time, and liquidated damages will be assessed with respect to the portion of work.

**903-2.2 LIMB.** Lanes shall consist of ground limestone and contain at least 85 percent total carbonates. Lanes shall be ground to a fineness so that at least 90 percent will pass through a No. 20 mesh sieve and 50 percent will pass through a No. 100 mesh sieve. Limestone lime or a high magnesia lime shall contain at least 10 percent magnesium oxide. Lanes shall be applied by approved methods detailed in Section 903-3.3 of this item. The rate of application will be based on results of soil tests.

**903-2.3 FERTILIZER.** Fertilizer shall be standard commercial fertilizer (applied separately or in mixture) and meet the requirements of applicable state and federal laws (CFR-204) as well as standards of the Association of Official Agricultural Chemists. Nitrogen-Phosphorus-Potassium (N-P-K) concentrations shall be determined from analysis of soil samples (approved fertilizer rates of 1.0-1.0-1.0 per 1,000 square feet). Methods of fertilizer application shall conform to standards described in Section 903-3.3 of this item. Fertilizer shall be furnished in standard containers that are clearly labeled with name, weight, and guaranteed analysis of the contents (percentage of total nitrogen, available phosphorus acid, and water-soluble potash). Fertilizers shall not contain any hydrated lime or cyanamide compounds. Fertilizers failing to meet the specified analysis may be approved by the MAA Engineer, providing sufficient materials are applied to conform with the specified contents per unit of measure without additional cost to the MAA.

The fertilizers may be applied in the following forms:

- A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;
- A finely ground fertilizer suitable in water, suitable for application by power sprayer or

### SOIL TESTS

- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall be completed within seven calendar days for the surface of all permanent roads, drive, ramps, ditches, perimeter slopes, and all slope greater than 3:1 horizontal to 1:1 vertical (D:1) and fourteen days for all other disturbed or graded areas on the project site.
- Assessment of soil salinity (expressed black color) will require covering with a minimum of 12 inches of clean soil with a minimum minimum topsoil of top soil. No uncultivated material is allowed. If needed, soil tests should be done before and after a seven-day incubation period to allow oxidation of sulfides.
- The minimum soil conditions required for permanent vegetative establishment are:
  - Soil pH shall be between 6.0 and 7.0.
  - Soil salinity shall be less than 200 ppm per sulfate (ppm).
  - The soil shall contain less than 40% clay but enough fine grained material (2-30% silt plus clay) to provide the capacity to hold a moderate amount of moisture.
  - Soil shall contain 1.5% minimum organic matter by weight.
  - Soil must contain enough pore space to permit adequate root penetration.
  - If these conditions cannot be met by site soils, adding topsoil is required in accordance with Item 905 or amendments made as recommended by a certified agronomist.

A general or pellet form suitable for application by blower equipment.

The rate of application will be based on results of soil tests performed by the University of Maryland Soil Testing Laboratory. By June, previous applying fertilizer to bare-ground land shall follow the recommendations of the University of Maryland as set forth in the "Plant Nutrient Recommendations Based on Soil Tests for Turf Maintenance" and the "Plant Nutrient Recommendations Based on Soil Tests for Pasture Management" (see Appendix B). Application of the fertilizer shall be in a manner that is consistent with the recommendations of the University of Maryland Cooperative Extension.

### CONSTRUCTION METHODS AND EQUIPMENT

**903-3.1 GENERAL.** This section provides approved methods for the application of seed and fertilizer to seeded areas, including the equipment to be used during the process. Lanes and fertilizer shall be applied to seeded areas before the seed is spread. The mixture of seed will be determined for sites based on environmental conditions as described in Paragraph 903-2.1.3.

**903-3.2 ADVANCE PREPARATION.** Areas designated for seeding shall be properly prepared in advance of seed application. The area shall be tilled and graded prior to application of lime and fertilizer, and the surface area shall be cleared of any areas larger than 1 inch in diameter, sticks, stumps, and other debris that might interfere with seeding of seed, growth of grasses, or subsequent maintenance of grass-covered areas. Debris cannot be present or other debris that occurs after the completion of grading shall be removed prior to the application of fertilizer and lime. The Contractor will repair such damage, which may include filling potholes, smoothing irregularities, and replacing other incidental damage before beginning the application of fertilizer and ground limestone.

If an area to be seeded is sparsely seeded, overly barren and/or eroded, or packed and hard, all grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 2 inches (51 mm). Chisel shall be broken and the 3 inches (76 mm) of soil shall be broken to a depth of 1 inch (25 mm) by use of catclippers, rollers, drag, harrows, or other appropriate means.

An area to be seeded shall be considered a satisfactory seedbed (without tilling or additional preparation) if it has recently been thoroughly loosened and worked to a depth of not less than 2 inches; the top 2 inches of soil is loose, friable, and is reasonably free from large clods, rocks, large roots, or other undesirable matter; appropriate amounts of fertilizer and lime have been added, and, if it has been graded by the required grade immediately prior to seeding. For slope areas steeper than 2:1 (three horizontal to one vertical), the seedbed shall be loose to a depth of 1 inch.

After completion of tilling and grading, lime and fertilizer shall be applied within 48 hours according to the specified rate (Paragraphs 903-2.1.3 and 2.1.3) and methods.

### SEEDING

**903-3.3.1 DRY APPLICATION METHOD**

- Laying. If soil test results indicate that lime is needed, the following procedures will be used: following advance preparation of the seedbed, lime shall be applied prior to the application of any fertilizer or seed and only on seedbeds that have been prepared as described in Paragraph 903-3.2. The lime shall be uniformly spread and worked into the top 2 inches of soil, after which the seedbed shall be properly graded again.
- Fertilizing. Following advance preparation (and liming if necessary), fertilizer shall be spread uniformly at the specified rate to provide no less than the minimum quantity stated in Paragraph 903-2.1.3.
- Seeding. Seed mixtures shall be sown immediately after fertilization of the seedbed. The fertilizer and seed shall be lightly mixed to a depth of 1 inch for newly graded and disturbed areas.
- Rolling. After the seed has been properly covered, the seedbed shall be immediately compacted using a cultipacker or an approved leveler.

**903-3.3.2 WET APPLICATION METHOD/HYDROSEEDING**

- General. The Contractor may elect to apply seed and fertilizer as per Paragraphs 903-3.1 and 903-3.2 in the form of a suspension mixture by spraying over the previously prepared seedbed using methods and equipment approved by MAA. The rate of application shall be as specified in Paragraphs 903-2.1.3 and 903-2.2.
- Spraying Equipment. The spraying equipment shall have a container or meter tank equipped with a liquid level gauge capable of reading increments of 50 gallons or less over the entire range of the tank capacity. The liquid level gauge shall be mounted so as to be visible to the nozzle operator at all times. The container or tank shall be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until use.

The spraying equipment shall also include a pressure pump capable of delivering 100 gallons per minute at a pressure of 100 pounds per square inch. The pressure pump assembly shall be configured to allow the mixture to flow through the tank when not being sprayed from the nozzle. All pump gauges and pipelines shall be capable of providing clearance for 5/8-inch solids. The power unit for the pump and engine shall have controls mounted so as to be accessible to the nozzle operator. A pressure gauge shall be connected to and mounted immediately behind the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-setting, three-way control valve connecting the nozzle to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture to be applied so that mixtures may be properly sprayed over a distance ranging from 20 feet to 100 feet. One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For ease of removal and cleaning, all nozzles shall be connected to the nozzle pipe system by quick-connect couplings. In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet in length shall be provided to which the nozzles may be connected.

Mixtures shall be applied separately in the quantity specified, prior to the fertilizing and seeding operations. Lime should be added to and mixed with water at a concentration not to exceed 200 pounds of lime for every 100 gallons of water. After lime has been applied, the tank should be emptied and filled with fresh water. Seed and fertilizer shall be mixed together in the relative proportions specified, but the resulting concentration should not exceed 220 pounds of mixture per 100 gallons of water and should be applied within 30 minutes to prevent fertilizer burn of the seeds.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. Freshwater water shall not be used at any time. The Contractor shall identify all sources of water to the MAA Engineer at least two weeks prior to use. The Engineer may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the Engineer following this procedure.

**MULCHING**

All mixtures shall be consistently applied from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within 30 minutes from the time they were mixed or they shall be wasted and disposed of at a location acceptable to the Engineer.

Spraying. Lanes shall be sprayed upon previously prepared seedbeds in which, lime, if required, shall have been worked in already. The mixtures shall be applied using a high-pressure spray which shall always be directed upward into the air so that the mixture will fall to the ground in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner that might produce erosion or runoff. Particular care shall be exercised to ensure that the application is made uniformly, at the prescribed rate, and so ground against stones and overlapped areas. Predetermined quantities of the mixture shall be used in accordance with specifications to cover specified sections of known areas. To check the rate and uniformity of application, the applicator will observe the degree of wetting of the ground or distribute test sheets of paper or other material over the area at intervals and observe the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the MAA Engineer, seed and fertilizer applied by the spray method shall not be rolled into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

**903-3.4 MAINTENANCE OF SEEDING AREAS.** The contractor shall protect seeded areas against traffic or other use by wearing signs or barricades, as approved by the Engineer. Surface pulled or otherwise damaged following seeding shall be repaired and reseeded as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work performed out of season, the Contractor will be required to establish a good stand of grass of the uniform color and density to the satisfaction of the Engineer. If at the time when the contract has been otherwise completed it is not possible to make an adequate determination of the color, density, and uniformity of such stand of grass, payment for the unaccepted portions of the area seeded out of season will be withheld until such time as these requirements have been met.

### SEEDING

Seed Mixture No. 2: Sloped areas not subject to regular mowing (Application rate = 115 lbs PLS/Acre)

Seed	Rate of Application (lbs PLS/Acre)
75% Hard Fescue	85
20% Creeping Fescue	23
5% Kentucky Bluegrass	7

Supplemental Seed: 3

Seed Mixture No. 3: Wetland areas and their associated buffer zones (Application rate = 131 lbs PLS/Acre)

Seed	Rate of Application (lbs PLS/Acre)
60% Fowl Meadow Grass	83
30% Creeping Fescue	34
10% Perennial Ryegrass	14

Supplemental Seed: 3

**903-2.1.4 BEDDING SEASONS.** Application of seed and seed mixtures shall occur within a specified seeding season unless otherwise approved by the MAA Engineer. No seed or seed mixtures are to be applied on frozen ground or when the temperature is at or below 35 degrees Fahrenheit (7.2 degrees Celsius). Under these conditions, a layer of earth shall be applied in accordance with Item 905. Mulching, to stabilize the site, and permanent seeding shall occur in the subsequent seeding season. Seed application may occur during the seeding season dates listed below. Seeding performed after October 20 should be a temporary cover of annual ryegrass and following by overseeding of the appropriate seed mixture during the spring seeding season.

### SEEDING

Seeding seasons are based on typical years and are subject to variation, which may be modified by the MAA Engineer based on seasonal trends.

If the time required to complete any of the operations necessary under this item, within the specified planting season or any authorized extension thereof, extends beyond the Contract period, then such time will be charged against the Contract time, and liquidated damages will be assessed with respect to the portion of work.

**903-2.2 LIMB.** Lanes shall consist of ground limestone and contain at least 85 percent total carbonates. Lanes shall be ground to a fineness so that at least 90 percent will pass through a No. 20 mesh sieve and 50 percent will pass through a No. 100 mesh sieve. Limestone lime or a high magnesia lime shall contain at least 10 percent magnesium oxide. Lanes shall be applied by approved methods detailed in Section 903-3.3 of this item. The rate of application will be based on results of soil tests.

**903-2.3 FERTILIZER.** Fertilizer shall be standard commercial fertilizer (applied separately or in mixture) and meet the requirements of applicable state and federal laws (CFR-204) as well as standards of the Association of Official Agricultural Chemists. Nitrogen-Phosphorus-Potassium (N-P-K) concentrations shall be determined from analysis of soil samples (approved fertilizer rates of 1.0-1.0-1.0 per 1,000 square feet). Methods of fertilizer application shall conform to standards described in Section 903-3.3 of this item. Fertilizer shall be furnished in standard containers that are clearly labeled with name, weight, and guaranteed analysis of the contents (percentage of total nitrogen, available phosphorus acid, and water-soluble potash). Fertilizers shall not contain any hydrated lime or cyanamide compounds. Fertilizers failing to meet the specified analysis may be approved by the MAA Engineer, providing sufficient materials are applied to conform with the specified contents per unit of measure without additional cost to the MAA.

The fertilizers may be applied in the following forms:

- A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;
- A finely ground fertilizer suitable in water, suitable for application by power sprayer or

### WATERFOWL DETERRENT SYSTEM

There is a need to discourage ducks and other waterfowl from being attracted to sediment in sediment traps. This is necessary because waterfowl will interfere with the ductor landing pattern by installing a grid using lightweight wire above the surface of the trap. As they approach a water-filled trap, ducks, geese and other waterfowl will see the grid wire and not attempt to land. A perimeter fence consisting of two wire strands strung around the posts will keep birds from walking onto the traps.

Initial grid spacing will be five feet for short spans and ten feet for long spans. See the attached details for a typical layout. After monitoring the effectiveness of this system, MAA may require installation of additional long spans to decrease spacing to five feet. The ends of the grid wires will be strung from hooks placed on posts three feet above the ground. It is expected that the wires will sag two feet and will create a maximum line tension of thirty-five pounds.

Grid wire will be high-strength, lightweight synthetic material made from aramid fiber as manufactured by Phyllytan, Inc., Part No. P629 1x0.0460, or approved equal.

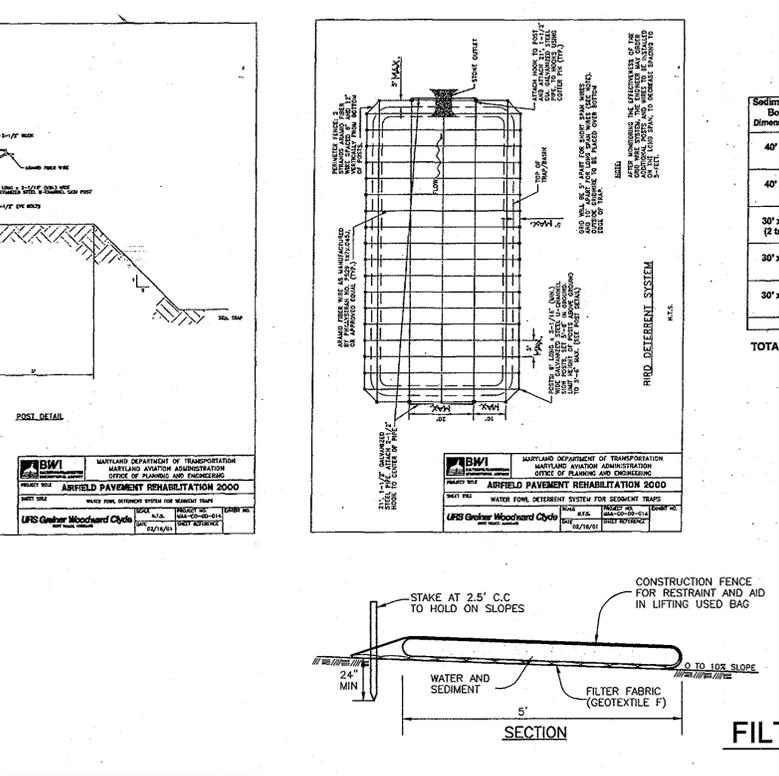
Posts will be nine-foot long galvanized steel U-channel pipe, driven five and one half feet into the ground. The height above ground shall be no more than three feet and no less than two feet. There shall be one post for every two feet and will hook and two 1-1/2 inch eye bolts.

An access gate will be installed on the short end opposite the outlet to facilitate trap cleaning. Each gate consists of a twenty-foot long, 4x2-inch diameter horizontal pipe placed three feet above ground and spanning two posts spaced twenty feet apart. When sediment is to be cleaned out from the trap, the long pipe is removed. An identical horizontal pipe will also span the storm outlet end of the traps and end of the trap. Each pipe will have a hook placed in the middle to attach grid wire.

### PROCEDURES FOR INSTALLING AND REMOVING GRID WIRE SYSTEM

After each sediment trap is constructed, posts are placed five feet outside of the top edge of the trap, spaced five feet on center on the long side of the trap and five feet on center on the short side, leaving one twenty-foot gap for the gate. After monitoring for effectiveness, installation of additional long spans may be ordered by MAA. Attach hooks to posts. Attach beams to posts extending outward and across gate. Grid wire will then be strung and attached to posts according to manufacturer's directions. Grid wires are then attached to posts starting with the long dimension first so that the longer wires will sag below the shorter strands. Wire lengths should be sized to allow them to be pulled tight with two feet in the middle of the spans. After the grid is in place, the two-strand perimeter fence can be installed.

When sediment needs to be cleaned out, disconnect and store the grid wires. This can be done with a two-man crew, one on either end of the wire. Each person disconnects the wire from the hook at the same time, walk beyond the trap, holding the wire taut, and place it into the ground. The cover then is placed over the trap and the procedure is repeated until all the wires have been removed. Next, the crew shall remove the perimeter fence strands of the access gates as well as the two-strand perimeter fence. Contractor's equipment can then enter the trap to remove sediment. After sediment removal, the crew shall re-install grid wire as described above.



### AASCD/MAA NOTES

THE PROPOSED PROJECT IS LOCATED IN HOWARD COUNTY, MARYLAND ON TAX MAP 38, BLOCK 9, PARCEL 889. THE PROPOSED PROJECT IS LOCATED NEAR THE BALTIMORE WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT (BWI), APPROXIMATELY 14,000 FEET NORTH OF RUNWAY 15R-33L.

- SEDIMENT BASINS AND TRAPS ARE PROPOSED FOR SEDIMENT AND EROSION CONTROL DURING CONSTRUCTION.
- SEDIMENT TRAPS AND BASINS MUST BE DRAINED COMPLETELY THROUGH A FILTERING DEVICE TO A CLEAR WATER OUTFALL WITHIN 24 HOURS FOLLOWING ANY RAINFALL EVENT.
- LANDSCAPING & STORM WATER POND LANDSCAPING ON SITE.

ANY DEVIATION TO PLANT SPECIES AND VEGETATION USED ON THESE PLANS NEED APPROVAL FROM AASCD/MAA. THE PLANT SPECIES USED ON THIS SITE ARE TO AVOID ITS POTENTIAL TO ATTRACT WILDLIFE THAT COULD POSE STRIKE HAZARD TO AIRCRAFT.

**BWI AIRPORT NOISE ZONE.**

THE SITE FOR THIS PROJECT IS LOCATED OUTSIDE THE BOUNDARIES OF THE AIRPORT NOISE ZONE.

- THE ALLOWABLE HEIGHT FOR ANY PERMANENT OR TEMPORARY STRUCTURES TALLER THAN 277 FEET ABOVE MEAN SEA LEVEL NEED OBSTRUCTION ANALYSIS REVIEW AND PERMIT FOR THE AIRPORT ZONE.
- THE STORM WATER MANAGEMENT FACILITIES WITHIN 10,000 FEET OF ACTIVE RUNWAYS OR WITHIN 5 MILES OF AN APPROACH SURFACE MUST DRAIN WITHIN 24 HOURS FOLLOWING THE 1 OR 2 YEAR STORM EVENTS AND WITHIN 48 HOURS FOLLOWING THE 10 OR 100 YEAR STORM

### FINAL ROAD CONSTRUCTION PLAN

#### PECORARO PROPERTY

#### AASCD/MAA NOTES & DETAILS

LOTS 1-3, OPEN SPACE LOT 4 & NON BUILDABLE BULK PARCELS A & B - PHASE I A RESUBDIVISION OF LOT 169, CANBURY WOODS

TAX MAP 38 BLOCK 9 SECTION 2, AREA 2 PARCEL P/O '886'  
1ST ELECTION DISTRICT  
REF: WP-05-75 (APP. 3/1/05) HOWARD COUNTY, MARYLAND

### ROBERT H. VOGEL ENGINEERING, INC.

ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET TEL: 410.461.7666  
ELKRIODE CITY, MD 21043 FAX: 410.461.6961

DESIGN BY: JCO  
DRAWN BY: KG  
CHECKED BY: RHV  
DATE: OCTOBER 2010  
SCALE: AS SHOWN  
W.O. NO.: 04-18-00

PROFESSIONAL CERTIFICATE: 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. 16193 EXPIRATION DATE: 08-27-2012

11 SHEET OF 13

APPROVED: DEPARTMENT OF PUBLIC WORKS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

DATE: 12-1-10

DATE: 12/09/10

DATE: 12/2/10



CONSTRUCTION PERIOD PRACTICES

The construction period extends from final approval of the development proposal until the release of all required guarantees specified for forest conservation requirements in the developers agreement.

Construction Period Supervision

As part of the construction period management and planting program, the developer shall designate an individual or firm to be fully responsible for implementing the requirements of the approved forest conservation plan or requesting modifications of previously approved requirements concerning planting techniques, species or maintenance needs.

Protecting and Managing Forest Retention Areas

Forest retention stands are extremely vulnerable to damage, long term decline, and death stemming from improper design and construction practices. Saving forests and specimen trees during the construction process requires site planning, engineering practices and construction methods that respect the biological needs of trees.

- A tree's root system can be large, extending well beyond the dripline of the crown. Typically, root systems are very shallow, in most cases being only 12" - 18" deep.
Trees generally do not have tap roots.
There are about as many roots as there are twigs and branches. If roots die, branches will die to keep the tree in balance.

Soil Protection Zone

The soil protection zone must be protected from construction activity and other stresses (e.g. flooding) to protect the forest stand from damage. The forest retention practices for a development must address the specific needs and stresses the proposal may cause.

The extent of the root system is quite large. The ratio of root expansion to crown spread can be 2:1 or larger on open grown specimen trees and can be significantly larger (up to 5:1) for trees growing in the interior of forest stands.

Best Management Practices During Construction

Many of the construction period measures cited in the manual are for areas that should not be disturbed. The desire to protect areas within the limit of disturbance can be easily nullified by poor construction site management.

- storage of equipment and materials
disposal of construction debris
washing of equipment, disposal of wastewater from concrete operations, etc.
employee parking
temporary structures such as trailers, sanitary facilities, etc.

Unless specifically exempted by the approved forest conservation plan, any use of forest retention areas for these activities or other intrusions shall be a violation of the approved forest conservation plan.

Because reforestation and afforestation typically may involve disturbances greater than 5,000 square feet, proper assessment and erosion controls may be required. Developers should refer to the Howard County Soil Conservation District for current standards, specifications and requirements. It may be necessary to protect forest retention areas from erosion and sedimentation caused by implementation of reforestation or afforestation plantings.

Construction Period Planting Procedures

The measures to protect forest retention areas emphasize isolating them from development impacts. Reforestation or afforestation, in contrast, will often occur on land already disturbed by development activities or may be located on land which will require substantial preparation to enable forest plantings to survive and thrive.

- General site preparation for planting: For undisturbed sites, disturbance of soils should be limited to the planting field for each plant. For disturbed areas, soils should be treated by incorporating natural mulch within the top 12 inches, or with needed amendments as determined by a soils analysis.

Stream buffer planting: Borders of streams and other waterways may have been damaged before reforestation and afforestation and therefore may need more extensive restoration work before reforestation or afforestation can be successful.

- Correct any erosion problems
Minimize or eliminate any chemical use
Maintain an undisturbed leaf layer and understorey
Eliminate exotics

Construction staging areas shall be outside of all 100 year floodplain, streams wetlands & their buffers and existing forest conservation easements.

Steep slope planting: In areas of steep slopes or erodible soils, the preferred method of reforestation or afforestation is the use of seedlings to minimize disturbance. Planting on open or disturbed steep slopes eventually will stabilize them.

Post-planting considerations: For areas of large-scale disturbance, soils must be stabilized using a non-turf-building ground cover or engineering fabric. To protect against intrusion and to prevent damage of planted areas, all reforestation and afforestation sites must be posted with appropriate signs and fences.

Certification of Completion

At the end of the construction period, the designated qualified professional shall convey to the Department of Planning and Zoning certification that all forest retention areas have been preserved, all reforestation and afforestation plantings have been installed as required by the forest conservation plan, and that all protection measures required for the postconstruction period have been put in place.

Upon review of the certification document for completeness and accuracy, the Department will notify the developer of the beginning of the post-construction management period.

POST-CONSTRUCTION MANAGEMENT PRACTICES

Remove any remaining temporary forest conservation fencing.

Many of the protection and management practices for the construction period must be continued for at least 2 growing seasons following official notification of completion of the development (or a specific phase of the overall development if phasing has been approved).

Minimum Two Growing Season Post-Construction Management Program

A post-construction management program must be approved as part of the original forest conservation plan and remain in effect for a minimum of two growing seasons. A longer period may be required for specific strategies (e.g. natural regeneration near high use areas where long-term viability may take longer to confirm).

Implementation of the post-construction management program must be supervised by a qualified professional who should inspect the status of all forest retention, reforestation and afforestation areas at specified times during the life of the post construction agreement and who must certify that the required survival rates have been achieved in accordance with the agreement prior to release of bonds.

There are five primary components of the post-construction program: inspection, management of retained trees, new plantings, replacement of dead or damaged material when necessary, education of new occupants of the development and final inspection and release of developer from additional responsibilities.

Inspection

Inspections should be carried out at the beginning and end of the growing season to pinpoint any problems, monitor survival rates, and specify remedial actions needed to correct existing problems. Appendix J has an example of an inspection report checklist.

Management of Forest Conservation Areas

Post construction management includes: maintenance of all fences, signs or other devices delineating forest conservation areas and other measures. Such other measures include: needed watering, removal of dead or damaged material and control of undesirable competing species, thinning or pruning to encourage proper growth, fertilizing, if necessary, and control of pests.

Newly planted trees, whether they are seedlings or 4" caliper transplants, have basic needs. Some of these needs can be met by nature alone; others may require human intervention. (The three most likely causes of death for newly planted trees are drought, competing vegetation and deer.)

- watering
fertilizing
control of competing vegetation
protection from pests, diseases and mechanical injury.

Replacement of Plant Material

An inspection shall take place at the end of year one or before the second growing season to evaluate survival rates with reference to the survival required at the end of the two year period. This is an opportunity to avoid the penalty for violating survival rate standards. This inspection should estimate survival potential based on the following:

- vigor and threat of competing vegetation (e.g. if seedlings are free to grow)
structure
growth rate
crown development
trunk health

If, after one year, the possibility exists that the original planting will not meet survival standards, the applicant may choose to establish reinforcement plantings. If plant mortality of reforestation or afforestation exceeds 10% of planted material at the end of the first growing season, such material should be replaced to bring the total number of trees to 90% of the original total.

Final Inspection and Release of Obligations

At the end of the post-construction management and protection period, the designated responsible professional shall convey to the Department of Planning and Zoning certification that all forest conservation areas have remained intact or have been restored to the appropriate condition, that the stipulated survival rates have been achieved, and that any permanent protection measures required by the plan are in place.

Upon review of the final certification document for completeness and accuracy, the County will notify the developer of release of surety and all future obligations. The developer's last official responsibility will be to transmit a copy of this notification to the owner(s) of the property(ies). Such transmittal will serve as official notice to owners of their assumption of full responsibility for all future forest conservation obligations.

LONG-TERM MANAGEMENT RESPONSIBILITIES

To maintain the integrity of forest conservation areas, the owners must refrain from any activities that would diminish the viability and environmental integrity of forest retention areas or hinder the growth and maturing of new forest plantings. When the site is occupied by tenants, the owner must insure that the tenants do not, willfully or out of ignorance, use the site in ways that violate forest conservation restrictions or damage protected forest resources.

In many developments a homeowners association, tenants association or other management organization will maintain the site. Such a group is well suited to assume explicit responsibility for protecting the integrity of forest conservation areas and performing any desired maintenance after the initial developer guarantees and obligations have expired.

PLANTING AND MAINTENANCE GUIDELINES

SITE PREPARATION FOR PLANTING

Undisturbed Sites
Soils disturbance should be limited to the planting field for each plant. Planting field is a new term that reflects a change in recommended planting specifications. Research has shown that root systems of trees planted in the traditional holes with amended soils are likely to remain confined to the amended soil area.

Disturbed Areas

Soils should be treated by incorporating natural mulch within the top 12 inches or by amendments as determined by a soils analysis. Soil amendments, by definition, include modifications of soils to improve such structural characteristics as bulk density or porosity. On development sites, the common use of fill materials may increase the need for such amendments.

When fill material is used at the planting site, it should be clean fill topped with 12 inches of native soil. Stockpiling of native top soils must be done in such a way that the height of the pile does not damage the seed bank.

Planting period

Planting windows are the time during the year when, depending on the size stock being used, planting windows differ. Recommended planting windows are shown in Exhibit H-1, Plant Material Storage
Planting should occur within 24 hours of delivery to the site. Plant materials left unplanted for more than 24 hours should be protected from direct sun and weather and kept moist.

On Site Inspection

Planting stock should be inspected prior to planting. Plants not conforming to standard nurseryman specifications for size, form, vigor, roots, trunk wounds, insects and disease should be replaced.

PLANT MATERIAL SIZE AND DENSITY

Plant Size
Nursery grown plant materials greater than 1" caliper should meet or exceed the requirements of American Association of Nurserymen specifications. I.e. should be typical of the species and variety, have a normal habit of growth, be first quality, sound, vigorous, well-branched, have healthy, well furnished root systems, and be free of disease, insect pests and mechanical injuries.

Planting stock less than 1" caliper should meet the following standards:
Seedlings/whips:
hardwoods: 1/4" to 1/2" caliper with roots no less than 8" long
conifers: 1/8" to 1/4" caliper with roots no less than 8" long and top height of 8" or more
Shrubs:
1/8" or larger caliper with 8" root system

Plant Density

The following densities are required for reforestation and afforestation plant materials:
2" caliper trees/acre (20' x 20' spacing)
200 1" caliper trees/acre (15' x 15' spacing)
350 hardwood seedlings or whips/acre with tree shelters (11' x 11' spacing)
700 seedlings/acre (8' x 8' spacing)

The spacings identified above are not meant to imply that trees must be planted in a grid pattern. A more natural appearance is desired.

PLANT INSTALLATION

Seedlings/Whips
Small stock, such as seedlings and whips, and ball and burlap stock up to 2" caliper, can be planted by manual methods of planting using shovels, planting or dibble bars, and mattocks (See Exhibit H-4). For large areas, planting machines are occasionally used but have the drawback of creating linear, plantation-type forests.

Extreme care should be taken to insure retained moisture of the roots. When planting seedlings and whips, a moist carrying container should be used to prevent desiccation (See Exhibit H-5). For greater protection, both these practices may separate the trunk from the root ball. Prior to planting, root balls should be kept moist. (See Exhibit H-7)

Container Grown Stock

Successful planting of container grQwn stock requires careful site preparation and inspection of the planting material (root ball). Caution when using plants grQwn in a soil medium differing from the soil on the planting site. The plant should be removed from the container and the roots gently loosened from the soil. If the roots encircle the root ball, substitution is strongly recommended. J-shaped or kinked root systems should also be noted, and the plants replaced if necessary.

Balled and Burlapped Trees

Balled and burlapped trees greater than 2" caliper and usually planted using tree spades. This technique is particularly when suited for transplanting on-site or with local plant materials. For trees larger than 6" caliper, specialized equipment is recommended. Balled and burlapped trees must be handled with care while planting. Trees should not be picked up by the trunk or dropped; both these practices may separate the trunk from the root ball. Prior to planting, root balls should be kept moist. (See Exhibit H-7)

Planting fields

The planting field should be prepared and native stockpiled soils should be used (Q backfill the planting field). Rake SQils evenly Over the planting field and cover with 2 to 4 inches QI mulch. Use watering to settle soil backfilled around Qwn trees. Amendments are not recommended in the planting field; studies have shown that roots will be encouraged to stay within the amended SQils.

Staking

Staking of larger trees is not recommended except in areas of high winds. Staking may be used for trees larger than 8 feet in height. Movement is necessary to strengthen the trunk of the planted tree. When stakes are used, the post-construction period management plan should specify their removal after the first growing season (See Exhibit H-8).

GENERAL GUIDANCE FOR MAINTENANCE OF PLANTED AREAS

Watering

A watering plan should only be implemented to compensate for deficient rainfall patterns. Trees can die from too much water as well as too little. Newly planted trees may need water as much as once a week for the entire first growing season. The next two years, in contrast, may require watering only a few times a year (one a month during July and August). After that, trees should only need water in severe droughts. Bare root drainage problems. Restricted downward penetration indicates the soil may have been compacted during construction and not aerated before planting, or there may be a clay hardpan.

Soil and Watering: Soil texture influences the downward flow of water. Soils with more clay tend to retain more water and can be watered less often; soils with more sand drain more quickly and need to be watered more often. For examples of on-site evaluation recommendations. If the soil was well prepared before planting, there should be few drainage problems. Restricted downward penetration indicates the soil may have been compacted during construction and not aerated before planting, or there may be a clay hardpan.

How to Water. The best way to water is deeply and slowly using a regular hose, a soaker hose, or drip irrigation. For larger trees, start by watering the root ball thoroughly. The watered area shall be enlarged to include the whole root zone as the trees become more established. Mulching around the base of newly transplanted trees prevents roots from drying too quickly while still providing air movement to the roots.

Fertilizing

Fertilizing is the chemical modification of soils to correct for a specific nutrient deficiency. The elements are most effectively identified in a laboratory soils analysis. Nothing should be added to the soil without first testing to determine any nutrient needs.

What Nutrients to Apply: Trees depend on three major nutrients, nitrogen, phosphorus, and potassium and a host of other minor ones (or micronutrients) such as calcium, magnesium and iron. In most soils, most of the micronutrients are available in abundance. Of the major nutrients, nitrogen is usually the limiting one.

When to Fertilize: Even when soils are deficient in nitrogen, fertilizing within the first growing season after planting is not recommended. Too much nitrogen may cause a sprout of canopy growth which the roots cannot support. It is, therefore, best to wait until after the end of the first growing season, either in the late fall or early spring.

What Type of Fertilizer: Organic fertilizers are preferred to synthetic fertilizers. Bone meal or seaweed based products are available commercially. Organic fertilizers have a slow-release effect that can supply nutrients to the plant as needed while minimizing the risk of excess nutrients entering the forest system and the water supply. Some synthetic fertilizers can mimic this slow-release action and may be appropriate for use.

Control of Competing Vegetation

Unfortunately, good sites for reforestation and afforestation are generally good sites for unwanted vegetation as well. Unwanted vegetation growing near newly planted trees can take over the site. The need to control this problem depends on the ability of the planted material to withstand the intrusion. Smaller trees may need more care, although some seedlings survive with the overgrowth and will shade it out as the trees grow. As a preventative measure, consider the potential for growth of invasive species while choosing a reforestation or afforestation area.

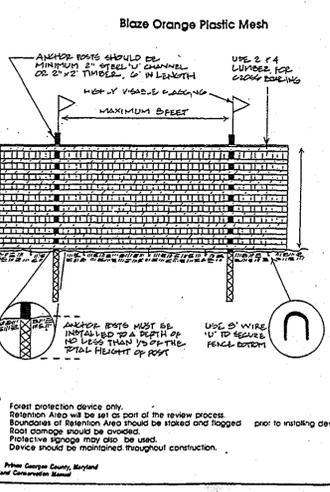
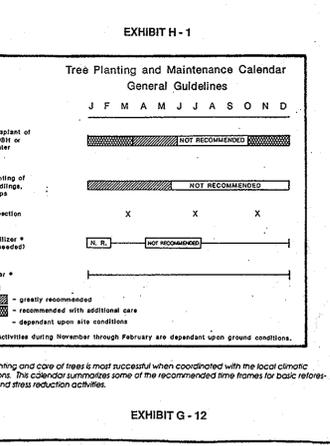
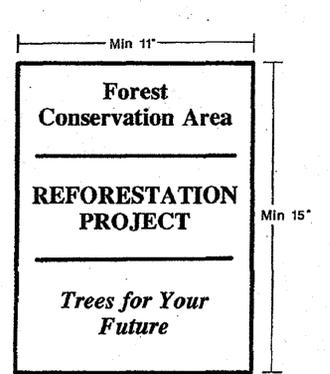
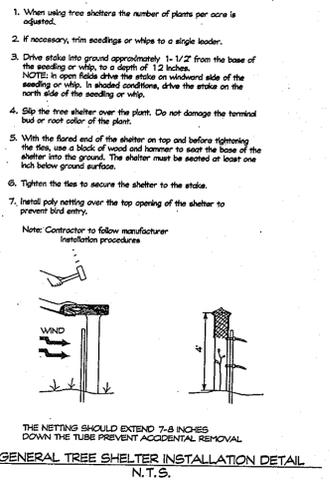
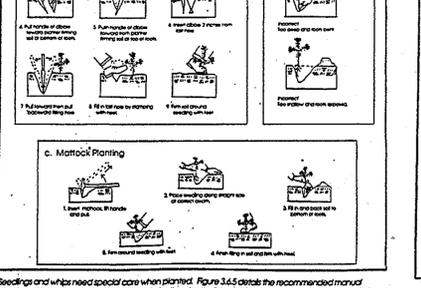
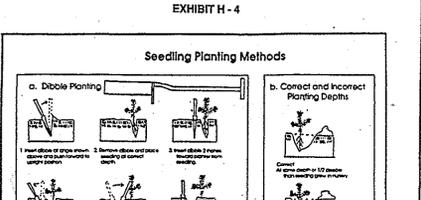
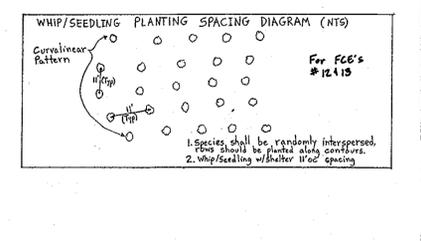
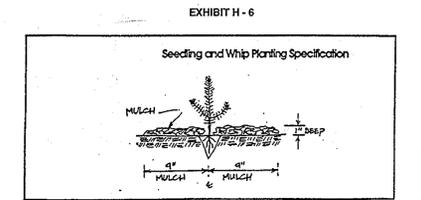
Mulch is one of the best weed deterrents. Spread a 2" to 4" layer of mulch over the root area of the newly planted trees avoiding direct contact with the trunk, a prime spot for fungal growth. (Mulch also helps maintain the soil moisture level and may provide a buffer for any equipment such as mowers that may be used to maintain the area.) Mulching and manual control of competing vegetation is more compatible with the long term forest health than the use of herbicides.

Protection: Pests, Diseases and Mechanical Injury.

Integrated Pest Management (IPM) is one of the most effective and safest approaches for maintaining a healthy forest. IPM basics include proper species selection for the site, good pruning, mulching and fertilizing practices, regular monitoring, and proper timing of necessary sprays. Good cultural practices will minimize the amount of spraying. Professional IPM programs have reduced pesticide use by 90%. Some aspects of a full IPM program include:

- 1) Elimination of some low vegetation before planting to help control the rodent population which thrives in brushy environments.
2) Use of tree shelters to protect the trunks of seedlings or whips from animal damage. The shelters act as mini-greenhouses to speed growth. (These trees need more water than those planted without tree shelters, however.)
3) Mulching around the trees to minimize trunk damage from mowers. Wounds provide an entry way for pests.
4) Pruning dead and diseased branches with a clean cut to prevent establishment or spreading of disease.

Sunscald is a problem for thin barked young trees. Tree wrap was commonly used to protect trees from sunscald but is no longer recommended due to the increased opportunities for insect infestation and disease. An alternative to wrapping is to allow small non-competitive branches, commonly pruned during or before planting, to grow on the sunny side of the trunk to help shade the trunk.



PROFESSIONAL CERTIFICATION: Steve Heiss, Qualified Professional, MDFA. Date: 8/25/10.

PLANTING SCHEDULE table with columns: KEY, NO., BOTANICAL / COMMON NAME, SIZE, NO. Trees per Easement, AREA (Ac). Rows include Acer rubrum, Red Maple, Quercus palustris, Pin Oak, American sycamore, Plantanus occidentalis, Fagus grandifolia, American Beech, Black Gum, Nysa syriatica, and Comus florida 'rubra'.

- Total 2" Caliper Stock = 39 Trees
Total whips w/ Shelters = 547 Trees
Total Number of Trees to be Planted = 586 Trees
Notes:
1. Total Planting Requirement: 1.92 Ac +/- 2" Caliper Stock: 100 trees / Ac. x 0.3582 Ac. (perimeter of FCE # 14) = 39 Whips w/ shelters: 350 trees / Ac. x 1.562 Ac. = 547 (All of FCE #12, #13 and a 0.2835 Ac. portion of FCE #14).
Total Number of Trees Required: 586 Trees
Total Number of Trees Provided: 586 Trees
Spacing: 2" Caliper stock: 20' x 20' whips w/ shelters: 11' x 21'
Planting Distribution: FCE #12 = 177 whips w/ shelters
FCE #13 = 171 whips w/ shelters
FCE #14 = 39, 2" Caliper Trees (perimeter / edge)
FCE #14 = 99 whips w/ shelters
All trees shall be planted in a random curvilinear pattern
All stock shall originate a minimum of 100 miles from the subject site.

- Planting Notes:
Planting density based spacing requirements: 2" caliper trees @ 20' on center, 1" caliper trees @ 15' on center, whips with shelter @ 11' on center.
These species should not be planted within the wetland limits.
1" caliper trees should be staggered along the outer perimeter of the planting area to serve as demarcation of the boundary. The trees should be no closer than 15 foot spacing.
Planting shall be made in a curvilinear fashion along contour. The planting should avoid a grid appearance but should be spaced to facilitate maintenance
Multiflora rose/heavy brush removal/control may be required prior to installation of planting.
All whips are required to be installed with tree shelters per Howard County FCA requirements.
Planting units defined by the spacing requirements established in the FCA Manual. One plant unit is defined as 1 seedling or whip without shelter. The manual states that 700 seedlings/whips without shelters are required per acre or 350 whips w/shelters, or 200 1" caliper trees, or 100 2" caliper trees. By conversion it has been determined that a seedling or whip without shelter = 1 unit, whip with shelter = 2 units, 1" caliper tree = 3.5 units and 2" caliper tree = 7 units. The use of plant units simplifies the plant density calculations when mixing stock size.
The Forest Conservation afforestation easement is being proposed to satisfy a portion of the obligation for the Pecora Property, F-10-032
The forest conservation easement has been established to fulfill the requirements of Section 16.1200 of the Howard County Code and the Forest Conservation Manual. No clearing, grading or construction is permitted within the forest conservation easement, however, forest management practices as defined in the Deed of Forest Conservation Easement are allowed.

OWNERS: Buildable Preservation Parcel C Brantwood - Section 3 - Area 1 Nicholas F. Liparini & Cynthia Y. Liparini 11363 Coltswood Spring Farm Lane Ellicott City, MD 21082

Professional Certification form for Steve Heiss, MDFA, dated 8/25/10. Includes fields for DESIGNED, DRAWN, CHECKED, DATE, and DEVELOPER. Also includes project details for Brantwood Section Three-Area One.

APPROVED: DEPARTMENT OF PLANNING AND ZONING. Includes signatures of Chief, Development Engineering Division and Chief, Division of Land Development, dated 12/21/10 and 12/09/10.