

FINAL ROAD CONSTRUCTION PLANS

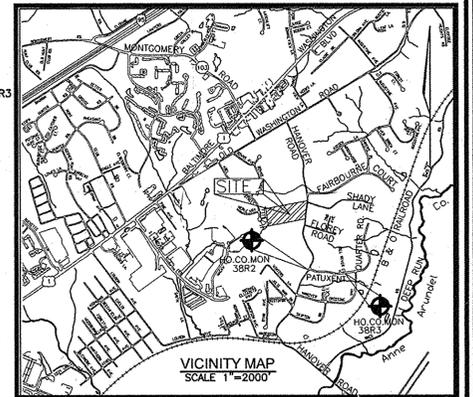
SHADY LANE CROSSING

LOTS 1 THRU 25

HOWARD COUNTY, MARYLAND

SITE DATA
 LOCATION: TAX MAP 38, PARCEL 235
 FIRST ELECTION DISTRICT
 EXISTING ZONING: R-12
 GROSS AREA OF PARCEL: 8.90212 ACRES
 PER LIBER 8846, FOLIO 244
 AREA OF 1871 ACCESS EASEMENT: 8072.43 SF (0.185 AC.)
 PER LIBER 3436, FOLIO 410
 AREA OF RIGHT OF WAY: 0.67845 ACRES
 AREA OF FLOODPLAIN: 0.16460 AC.
 AREA OF STEEP SLOPES: 0.059 AC.
 NET AREA OF PROJECT: 8.90212 AC. - 0.16460 AC. = 8.73752 AC.
 NUMBER OF PROPOSED RESIDENTIAL LOTS: 21
 AREA OF PROPOSED RESIDENTIAL LOTS: 4.9896 AC.
 AREA OF SMALLEST BUILDABLE LOT PROPOSED: 8402 SQ. FT (LOT 10)
 NUMBER OF PROPOSED OPEN SPACE LOTS: 5 (LOT 12, 13, 19, 24 & 25)
 AREA OF OPEN SPACE LOTS: 3.44 ACRES
 AREA OF OPEN SPACE REQUIRED: 30% OF GROSS AREA OF PARCEL (2.6706 AC.)
 TOTAL AREA OF CREDITED OPEN SPACE PROVIDED: 3.02 ACRES (LOTS 12, 13 AND 19)
 TOTAL AREA OF NON-CREDITED OPEN SPACE PROVIDED: 0.32 ACRES (LOTS 24 AND 25)
 AREA OF RECREATION OPEN SPACE REQUIRED: 4200 SF
 AREA OF RECREATION OPEN SPACE PROVIDED: 4366 SF ON LOT 19

BENCHMARK
 HOWARD COUNTY CONTROL STATION 38R2
 NORTH 557,500.663'
 EAST 1,391,227.052'
 ELEVATION 168.788' (NAVD 1988)
 HOWARD COUNTY CONTROL STATION 38R3
 NORTH 557,417.823'
 EAST 1,391,983.177'
 ELEVATION 124.653' (NAVD 1988)



SHEET INDEX

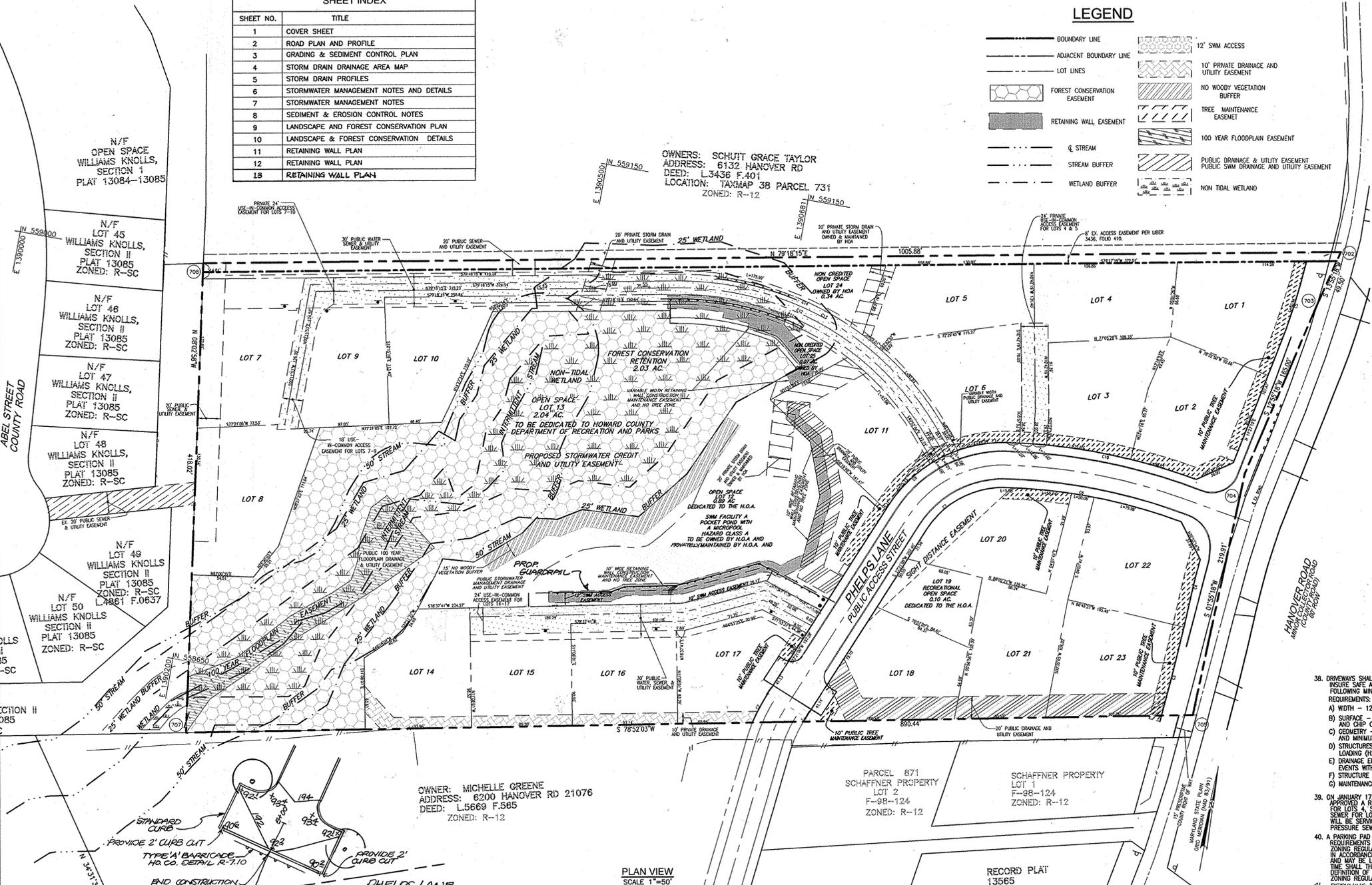
SHEET NO.	TITLE
1	COVER SHEET
2	ROAD PLAN AND PROFILE
3	GRADING & SEDIMENT CONTROL PLAN
4	STORM DRAIN DRAINAGE AREA MAP
5	STORM DRAIN PROFILES
6	STORMWATER MANAGEMENT NOTES AND DETAILS
7	STORMWATER MANAGEMENT NOTES
8	SEDIMENT & EROSION CONTROL NOTES
9	LANDSCAPE AND FOREST CONSERVATION PLAN
10	LANDSCAPE & FOREST CONSERVATION DETAILS
11	RETAINING WALL PLAN
12	RETAINING WALL PLAN
13	RETAINING WALL PLAN

LEGEND

- BOUNDARY LINE
- ADJACENT BOUNDARY LINE
- LOT LINES
- FOREST CONSERVATION EASEMENT
- RETAINING WALL EASEMENT
- Q STREAM
- STREAM BUFFER
- WETLAND BUFFER
- 12' SWM ACCESS
- 10' PRIVATE DRAINAGE AND UTILITY EASEMENT
- NO WOODY VEGETATION BUFFER
- TREE MAINTENANCE EASEMENT
- 100 YEAR FLOODPLAIN EASEMENT
- PUBLIC DRAINAGE & UTILITY EASEMENT
- NON TIDAL WETLAND

GENERAL NOTES

- ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS NOTED OTHERWISE.
- DEED REFERENCE: 505/285
- DENSITY: NUMBER OF DWELLING UNITS-OPTIONAL 8,400SF LOTS WITH 50% OPEN SPACE. NUMBER OF DWELLING UNITS PROPOSED: 21
- THE PROJECT BOUNDARIES ARE BASED ON A SURVEY PERFORMED BY FREDERICK WARD AND ASSOCIATES, DATED JANUARY 2002.
- THE TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SURVEY PERFORMED BY FREDERICK WARD ASSOCIATES, INC. DATED JANUARY 2002.
- DEVELOPER RESERVES UNTO ITSELF, ITS SUCCESSORS AND ASSIGNS, ALL EASEMENTS SHOWN ON THIS PLAN FOR WATER, SEWER, STORM DRAINAGE, AND OTHER PUBLIC UTILITIES AND FOREST CONSERVATION (FOREST CONSERVATION AREA) LOCATED IN, ON, OVER AND THROUGH LOTS 1 THROUGH 25. DEVELOPER SHALL EXECUTE AND DELIVER DEEDS FOR THE EASEMENTS HEREIN RESERVED TO HOWARD COUNTY WITH METES AND BOUNDS DESCRIPTION OF THE FOREST CONSERVATION AREA UPON COMPLETION OF THE PUBLIC UTILITIES AND THEIR ACCEPTANCE BY HOWARD COUNTY AND IN THE CASE OF THE FOREST CONSERVATION EASEMENTS, UPON COMPLETION OF THE DEVELOPER'S OBLIGATIONS UNDER THE FOREST CONSERVATION INSTALLATION AND MAINTENANCE AGREEMENT EXECUTED BY THE DEVELOPER AND THE COUNTY, AND THE RELEASE OF DEVELOPER'S SURETY POSTED WITH SAID AGREEMENT. THE COUNTY SHALL ACCEPT THE EASEMENTS AND RECORD THE DEED OF EASEMENT IN THE LAND RECORDS OF HOWARD COUNTY.
- STORMWATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT IN ACCORDANCE WITH 2000 MDE STORMWATER DESIGN MANUAL. THE FACILITY WILL BE LOCATED ON OPEN SPACE LOT 12. OPEN SPACE LOT 12 WILL BE OWNED BY THE H.O.A. WITH PUBLIC STORMWATER MANAGEMENT DRAINAGE TO BE MAINTAINED BY THE H.O.A.
- WETLAND SHOWN ON SITE ARE BASED ON A WETLAND DELINEATION PERFORMED BY ECO-SCIENCE PROFESSIONALS, INC., DATED FEBRUARY 2000.
- THERE ARE NO STEEP SLOPES ON SITE WITH A MIN. CONTIGUOUS AREA OF 20,000 SF.
- FLOODPLAIN STUDY PERFORMED BY ROBERT W. VOSEL ENGINEERING, INC. DATED NOVEMBER 2004.
- FOREST CONSERVATION PLAN PREPARED BY FREDERICK WARD AND ASSOCIATES, DATED JANUARY 2002. FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION WILL BE UTILIZED FOR THE RETENTION OF 1.87 AC. (61,857.1 x 80.29 = 816,291.14) OF FOREST IN A FOREST CONSERVATION EASEMENT PAYABLE BY DEVELOPER AS PART OF THE DEVELOPER'S AGREEMENT. A FEE-IN-LIEU PAYMENT FOR REMAINING 1.06 AC. (48,173.00 x 80.75 = \$4,500,200) IS REQUIRED, WHICH IS PAID TO THE FOREST CONSERVATION FUND. APPROXIMATE TRAFFIC STUDY PREPARED BY THE TRAFFIC GROUP, DATED FEBRUARY 2000.
- PLANNING AND ZONING FILE NUMBERS: S-02-19, WP-03-65, P-05-11.
- LANDSCAPING SURETY IN THE AMOUNT OF \$11,700.00 FOR 37 SHADE TREES AND 4 EVERGREEN TREES WILL BE PAID WITH THE DEVELOPER'S AGREEMENT.
- SEDIMENT AND EROSION CONTROL WILL BE PROVIDED FOR THIS SITE.
- THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL/CEMETERY LOCATIONS ON SITE.
- STREET TREES ARE REQUIRED FOR THIS SUBDIVISION IN ACCORDANCE WITH SECTION 16.1216(1) OF THE SUBDIVISION SURETY IN THE AMOUNT OF \$9,600.00 FOR 32 STREET TREES WILL BE PAID WITH THE DEVELOPER'S AGREEMENT.
- STREET LIGHTING IS PROVIDED FOR THIS SITE.
- A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- OPEN SPACE LOTS 24 & 25 - OPEN SPACE MAINTAINED BY HOA
- OPEN SPACE LOT 13 - FOREST CONSERVATION EASEMENT DEDICATED TO HOWARD COUNTY DEPARTMENT OF REC AND PARKS
- OPEN SPACE LOT 19 - RECREATIONAL OPEN SPACE MAINTAINED BY HOA
- LOTS 4 & 5, 7 THRU 10, LOTS 14 THRU 17, LOTS 19, 20, 21, 22, 23, 24, 25 WILL UTILIZE A USE-IN-COMMON DRIVEWAY. HOWARD COUNTY STANDARD NO. 10-R WILL BE UTILIZED AT THE INTERSECTION OF THE DRIVEWAY AND THE STREET.
- TREE PROTECTION FENCING WILL BE PROVIDED AT THE LIMITS OF DISTURBANCE WHERE GRADING IS ADJACENT TO FOREST CONSERVATION RETENTION AREAS AND SENSITIVE ENVIRONMENTAL AREAS, SUCH AS STREAM BUFFERS AND STEEP SLOPES.
- FOR FLAG OR PIPESTEEL LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEEL LOT AND ROAD RIGHT-OF-WAY AND NOT TO THE PIPESTEEL LOT DRIVEWAY.
- ON 2/7/02, DPW BUREAU OF ENGINEERING APPROVED 8 LOTS TO HAVE NO BASEMENT GRAVITY SEWER SERVICE. SAID LOTS HAVE BEEN IDENTIFIED AT PRELIMINARY PLAN PHASE AND AT FINAL PLAN STAGE.
- THIS PLAN IS SUBJECT TO A DESIGN WAGER TO DESIGN MANUAL, VOLUME III SECTION 2.5.2.H APPROVED APRIL 10, 2003. AS DUE TO THE FOLLOWING:
 - THE APPLICANT HAS SUBMITTED SUFFICIENT EVIDENCE THAT A SIGHT DISTANCE EASEMENT WAS REQUESTED FROM THE ADJACENT PROPERTY OWNER(S) AS A MINIMUM REQUIREMENT FOR APPROVING A WAGON TO THE CURRENT INTERSECTION SIGHT DISTANCE REQUIREMENTS.
 - THE PROPOSED INTERSECTIONS AS DESIGNED WILL MEET THE REQUIREMENTS FOR ADEQUATE STOPPING SIGHT DISTANCE.
- THIS PLAN IS SUBJECT TO WP-03-65 TO WAIVE SECTION 16.116(6) TO ALLOW DISTURBANCE OF WETLANDS, WETLANDS BUFFER AND STREAM BUFFER FOR THE CONSTRUCTION OF A USE-IN-COMMON DRIVEWAY TO SERVE 4 RESIDENTIAL LOTS. THE CROSSING FOR THE SEWER WAS APPROVED BY THE COUNTY DEPARTMENT OF PUBLIC WORKS AS FOLLOWS:
 - COMPLY WITH THE COMMENTS FROM THE DEVELOPMENT ENGINEERING DIVISION REGARDING CURVEY CAPACITY AND LIMITING DISTURBANCE TO THAT SHOWN ON THE EXHIBITS DATED 1-14-03 WHICH ACCOMPANIED THE REPAVED WAGON PERMIT.
 - COMPLY WITH THE COMMENTS FROM THE COUNTY DEPARTMENT OF PUBLIC WORKS REGARDING DIVERSION DESIGN DEVELOPMENT TO MINIMIZE THE IMPACT OF THE DESIGN AND CONSTRUCTION OF THE DRIVEWAY ON THE WETLANDS.
 - THE DEVELOPER MUST OBTAIN ALL NECESSARY STATE AND/OR COE PERMITS FOR THE PROPOSED ENVIRONMENTAL IMPACTS.
- A STOP SIGN IS REQUIRED AT THE INTERSECTION OF HANOVER ROAD.
- THIS SUBMISSION IS SUBJECT TO THE 5TH EDITION SUBDIVISION REGULATIONS, THE ZONING REGULATIONS, AND THE 1993 ZONING REGULATIONS AMENDED BY CB 50-2001, EFFECTIVE 1-08-02.
- 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 CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- PARKING IS PROHIBITED ON THE 60'X25' TEE TURNAROUND.
- NO WELLS OR SEPTIC SYSTEMS WERE FOUND ON SITE. IF WELLS AND/OR SEPTIC SYSTEMS ARE ENCOUNTERED DURING GRADING, GRADING CONTRACTOR TO CONTACT THE HEALTH DEPARTMENT FOR PROPER ABANDONMENT.
- ALL RETAINING WALLS LOCATED IN PRIVATE PROPERTY SHALL BE MAINTAINED BY HOMEOWNER'S ASSOCIATION (H.O.A.) ALL RETAINING WALLS LOCATED IN THE PUBLIC SWM FACILITY AND STORMWATER & UTILITY EASEMENTS SHALL BE MAINTAINED BY THE HOA.
- AT SITE DEVELOPMENT PLAN STAGE, THE BRL'S SHALL BE ESTABLISHED IN ACCORDANCE.
- THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. 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.
- WATER AND SEWER FOR THIS PROJECT WILL BE PROVIDED THROUGH CONTRACT NO. 648-S AND 650-S.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 DATE: 11-14-08
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 DATE: 11/20/08

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 DATE: 10/2/08

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.
 DATE: 9-26-08

BY THE ENGINEER:
 I/HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 DATE: 9/26/08

COORDINATE TABLE BOUNDARY POINTS

POINT	NORTHING	EASTING
702	559187.4866	1391152.9777
703	559139.4407	1391141.0682
704	558978.6191	1391104.1708
705	558758.8283	1391096.7964
707	559000.8020	1390164.5732
708	558586.9023	1390223.1079

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. 16193.
 EXPIRATION DATE: SEPTEMBER 27, 2008.

OWNER/DEVELOPER
 6168 INVESTMENT & RENTAL PROPERTIES, LLC
 5705 LANDING ROAD
 ELKTON, MARYLAND 21075
 (410) 796-1850

NO.	REVISION	DATE
4	SHIFT GUARDRAIL, SUBSTITUTE SWM PLANTINGS	6/6/16
2	REVISE STORM DRAIN TO ACCOMMODATE EXISTING CONDITIONS	5/24/14
1	REVISE T-TURNAROUND, AND REVISE POND TO AS-BUILT	
1	SHOW REVISED RETAINING WALL DESIGN AT THE POND, SUBSTITUTE SHEETS 11A, 11B AND NEW SHEETS 13	04/29/13

COVER SHEET
FINAL ROAD CONSTRUCTION PLANS
SHADY LANE CROSSING
LOTS 1 THRU 25
 6168 HANOVER ROAD
 LIBER 505 AND FOLIO 295
 TAX MAP #38 GRID 9
 1ST ELECTION DISTRICT
 PARCEL 235
 HOWARD COUNTY, MARYLAND

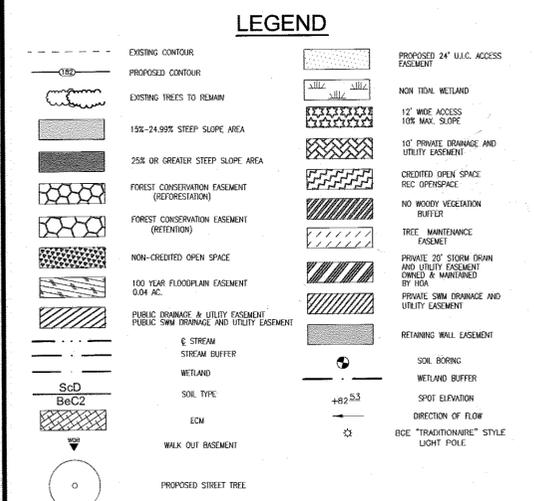
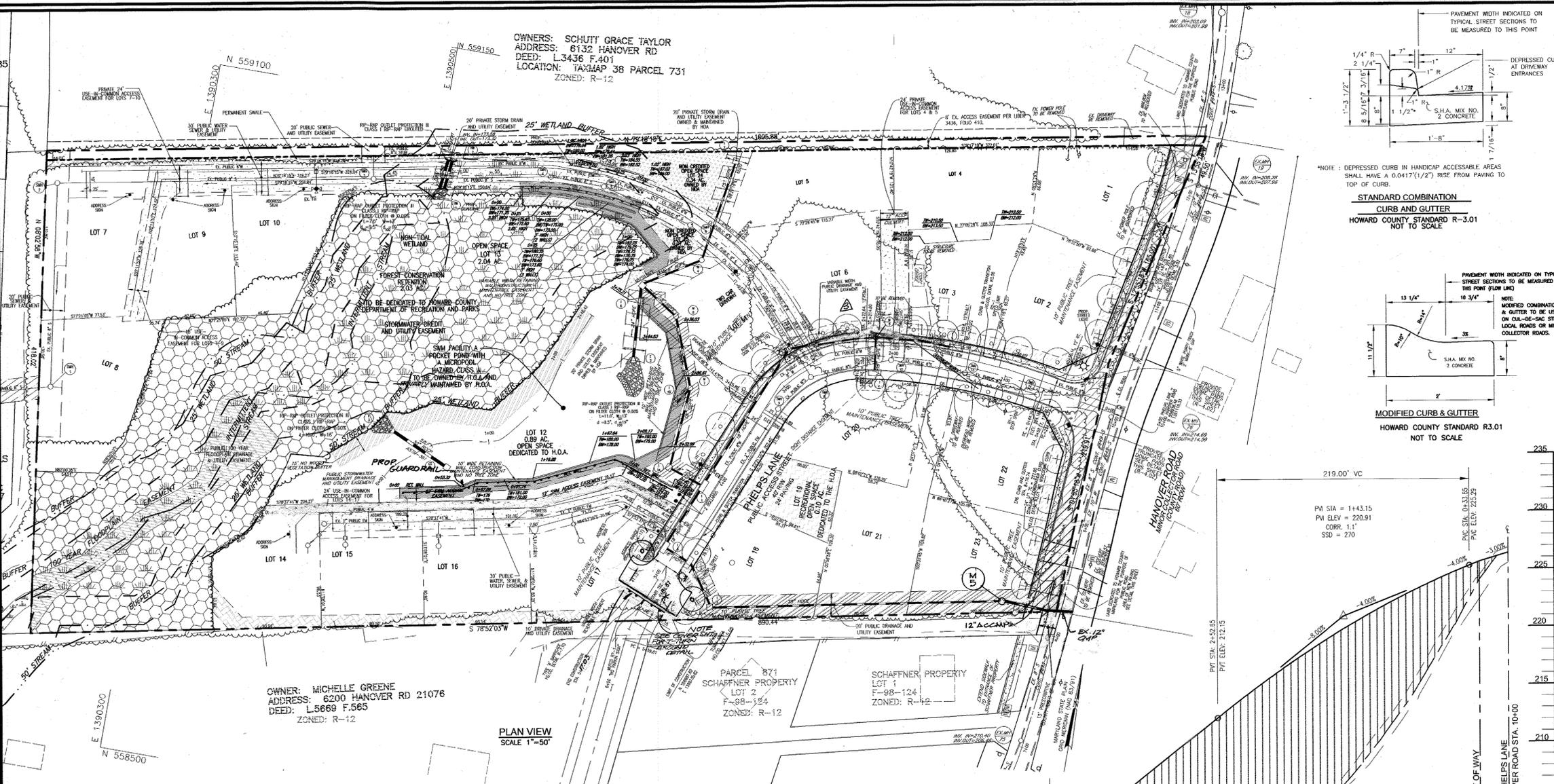
ROBERT H. VOGEL ENGINEERING, INC.
 ENGINEERS • SURVEYORS • PLANNERS
 8407 MAIN STREET
 ELLICOTT CITY, MD 21043
 TEL: 410.461.7666
 FAX: 410.461.8961

DESIGN BY: RJ/JCO
 DRAWN BY: RJ/JCO
 CHECKED BY: RHV
 DATE: SEPTEMBER, 2008
 SCALE: AS SHOWN
 W.O. NO.: 04-33-03

1 SHEET OF 13

OWNERS: SCHUTT GRACE TAYLOR
 ADDRESS: 6132 HANOVER RD
 DEED: L.3436 F.401
 LOCATION: TAXMAP 38 PARCEL 731
 ZONED: R-12

OWNER: MICHELLE GREENE
 ADDRESS: 6200 HANOVER RD 21076
 DEED: L.5669 F.565
 ZONED: R-12

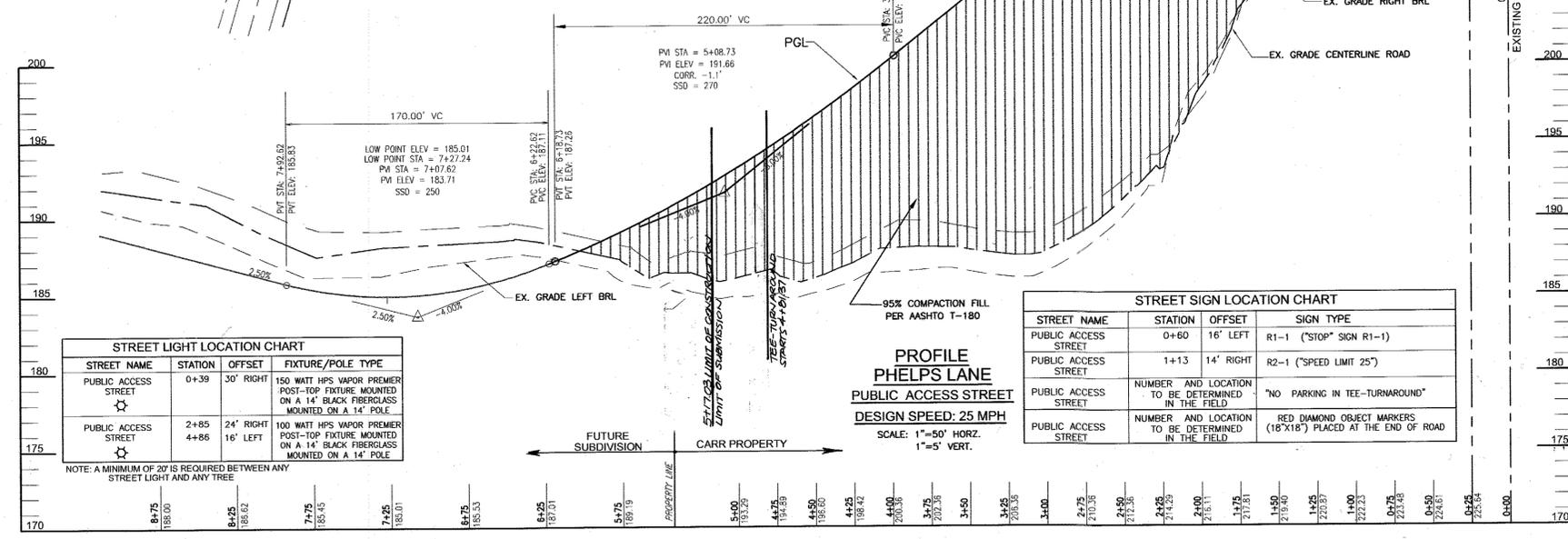


NOTE: ALL RETAINING WALLS LOCATED IN PRIVATE PROPERTY SHALL BE PRIVATELY OWNED AND MAINTAINED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 11-14-09
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 11/21/09
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: [Signature] 11/22/09
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



STREET LIGHT LOCATION CHART

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
PUBLIC ACCESS STREET	0+39	30' RIGHT	150 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK TIREGLASS MOUNTED ON A 14' POLE
PUBLIC ACCESS STREET	2+85	24' RIGHT	100 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK TIREGLASS MOUNTED ON A 14' POLE
PUBLIC ACCESS STREET	4+86	16' LEFT	100 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14' BLACK TIREGLASS MOUNTED ON A 14' POLE

STREET SIGN LOCATION CHART

STREET NAME	STATION	OFFSET	SIGN TYPE
PUBLIC ACCESS STREET	0+60	16' LEFT	R1-1 ("STOP" SIGN R1-1)
PUBLIC ACCESS STREET	1+13	14' RIGHT	R2-1 ("SPEED LIMIT 25")
PUBLIC ACCESS STREET	NUMBER AND LOCATION TO BE DETERMINED IN THE FIELD		"NO PARKING IN TEE-TURNAROUND"
PUBLIC ACCESS STREET	NUMBER AND LOCATION TO BE DETERMINED IN THE FIELD		RED DIAMOND OBJECT MARKERS (18"x18") PLACED AT THE END OF ROAD

LINE TABLE

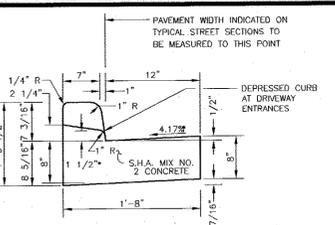
LINE	LENGTH	BEARING
L1	64.79	S80°24'49"E
L2	205.28	N22°20'28"E
L3	196.49	N06°02'01"E

CURVE TABLE

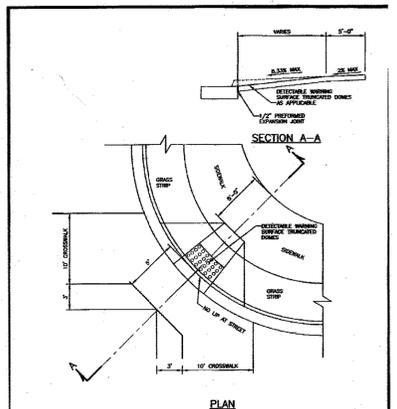
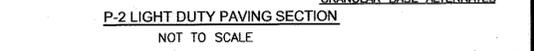
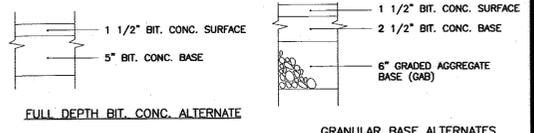
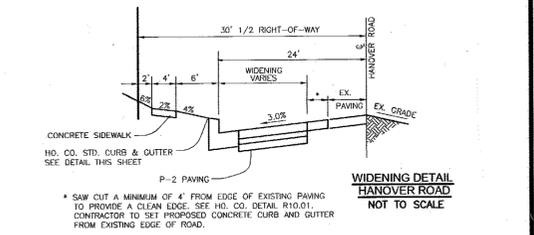
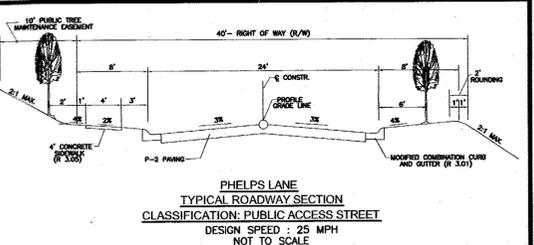
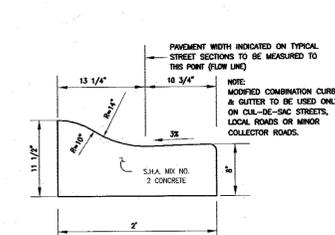
CURVE	LENGTH	RADIUS	DELTA ANGLE	TANGENT	CHORD DIRECTION	CHORD LENGTH
C1	157.85	500.00	79.59	N89°27'28"W	157.20	
C2	103.25	100.00	56.76	S51°55'10"W	98.72	
C3	28.46	100.00	14.33	S14°11'14"W	28.37	

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 ELKRODGE, MARYLAND 21075
 (410) 796-1850



NOTE: DEPRESSED CURB IN HANDICAP ACCESSIBLE AREAS SHALL HAVE A 0.0417(1/24) RISE FROM PAVING TO TOP OF CURB.



NOTES:

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS, 2008 EDITION, SECTION 201.01.
- UNLESS OTHERWISE SPECIFIED, ALL MATERIALS SHALL BE AS SHOWN.

Howard County, Maryland Department of Public Works	SIDEWALK RAMP Type Single Ramp	Detail R-4.02
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NO.	REVISION	DATE
5	REVISED TO PROVIDE AS-BUILT CONDITION OF STORM DRAIN PIPE	11/22/09
4	SHIFT GUARDRAIL; SUBSTITUTE SWIM PLANKINGS; SUBSTITUTE RETAINING WALL SHEETS	11/16/09
3	MOVE MH-3 FOUR FEET INTO PHELPS LANE RIGHT-OF-WAY	09/27/09
2	REVISE STORM DRAIN TO ACCOMMODATE EXISTING CONDITIONS	01/24/09
1	REVISE T-TURNAROUND AND REVISE POND TO AS-BUILT	

ROAD PLAN, STREET TREES, AND PROFILE
 FINAL ROAD CONSTRUCTION PLANS
 SHADY LANE CROSSING
 LOTS 1 THRU 25
 6168 HANOVER ROAD
 LIBER 505 AND FOLIO 295

TAX MAP #38 GRID 9
 1ST ELECTION DISTRICT

PARCEL 235
 HOWARD COUNTY, MARYLAND

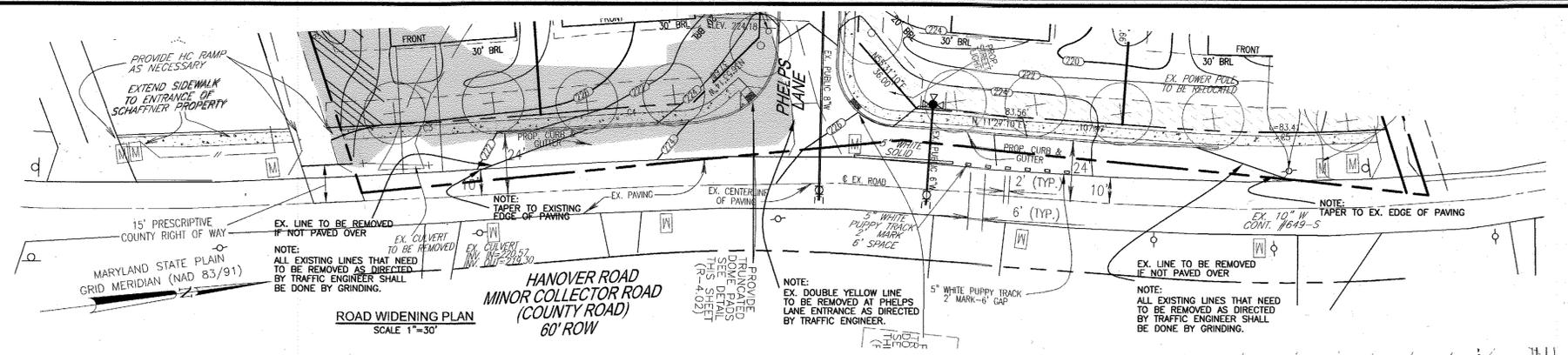
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 8407 MAIN STREET
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 TEL: 410.461.7666
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DESIGN BY: RJ/JCO
 DRAWN BY: RJ/JCO
 CHECKED BY: RHV
 DATE: SEPTEMBER, 2008
 SCALE: AS SHOWN
 W.O. NO.: 04-33.03

2 SHEET OF 13

LEGEND

	EXISTING CONTOUR		PROPOSED 24' U.I.C. ACCESS EASEMENT
	PROPOSED CONTOUR		NON-TIDAL WETLAND
	EXISTING TREES TO REMAIN		12' WIDE ACCESS
	15%-24.99% STEEP SLOPE AREA		10' PRIVATE DRAINAGE AND UTILITY EASEMENT
	25% OR GREATER STEEP SLOPE AREA		CREATED OPEN SPACE
	FOREST CONSERVATION EASEMENT (REFORESTATION)		NO WOODY VEGETATION
	FOREST CONSERVATION EASEMENT (RETENTION)		TREE MAINTENANCE EASEMENT
	NON-CREATED OPEN SPACE		PRIVATE 20' STORM DRAIN AND UTILITY EASEMENT
	100 YEAR FLOODPLAIN EASEMENT (0.64 AC)		PRIVATE 50' DRAINAGE AND UTILITY EASEMENT
	PUBLIC DRAINAGE & UTILITY EASEMENT		RETAINING WALL EASEMENT
	STREAM		SOIL BORING
	STREAM BUFFER		WETLAND BUFFER
	WETLAND		SPOT ELEVATION
	SOIL TYPE		DIRECTION OF FLOW
	SOIL TYPE		BOGE "TRANSITIONARE" STYLE LIGHT POLE
	ECM		
	WALK OUT BASEMENT		
	PROPOSED STREET TREE		

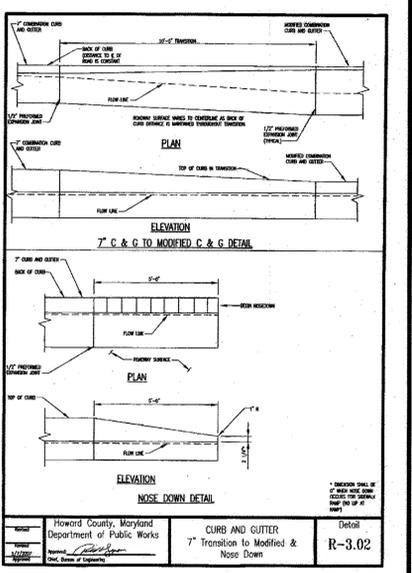
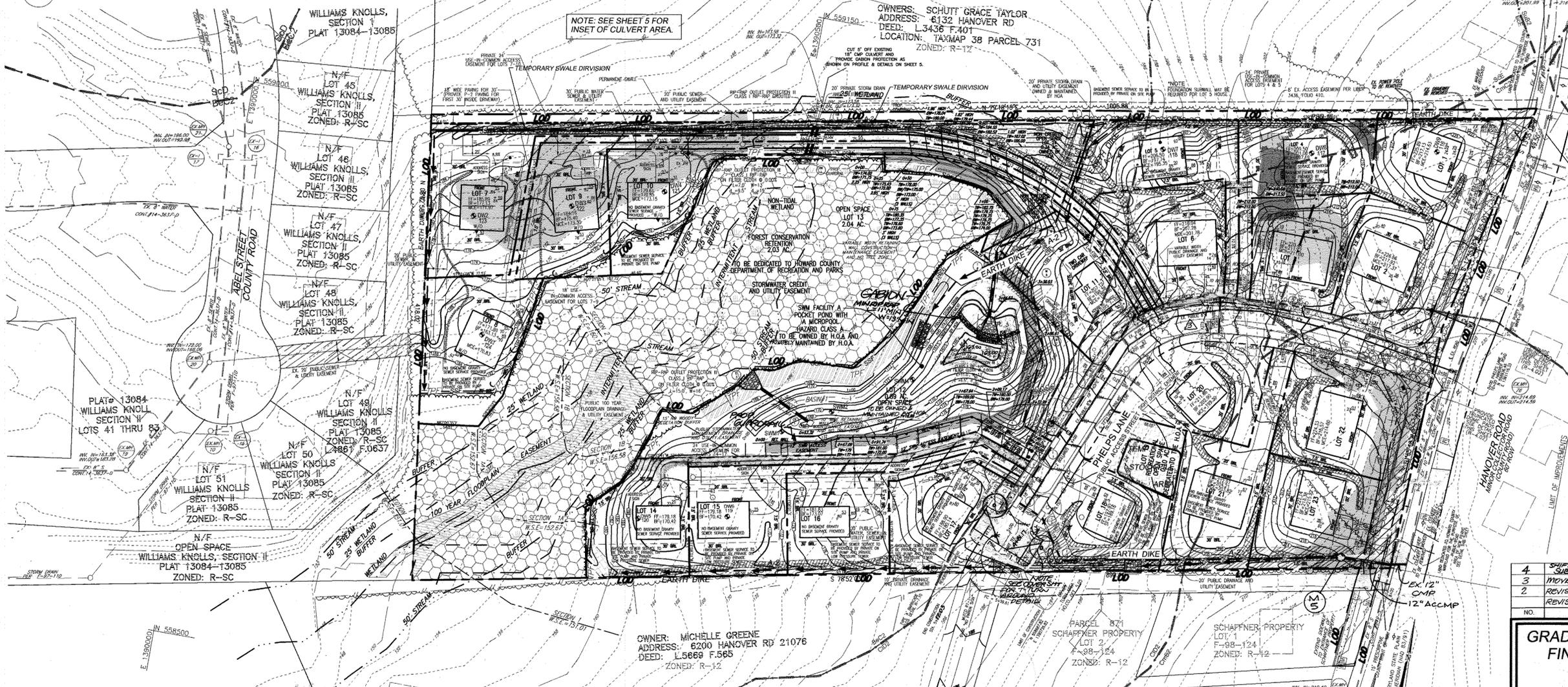


TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

KEY:

- CHANGELINE SIGN
- CONES
- WORK SITE
- CONES
- CONES

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARD NO. MD 104.02-02



BASIN #1
EX. DA=3.02 AC.
OV. DA=4.89 AC.
VOLUME REQUIRED=16884 CF
VOLUME PROVIDED=16884 CF
WET STORAGE=166.00-168.10(1.2)
DRY STORAGE=168.10-169.30(1.2)
TOTAL DEPTH=2.4'
CREST EL=169.30
BOTTOM EL=166.00
CLEANOUT EL=167.10
EX. Q₁=0.56 CFS
DEV. Q₁=16.03 CFS
TSWM Q₁=0.52 CFS

POCKET POND
PRIVATELY OWNED AND MAINTAINED BY HOA AND HOWARD COUNTY JOINTLY.
1 YR WSEL=168.48
10 YR WSEL=169.53
BOTTOM EL= 166.00
TOP WQV EL= 166.68

5	REVISE TO PROVIDE AS-BUILT CONDITIONS OF STORM DRAIN	11/22/10
NO.	REVISION	DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
With 7/1/11 11-14-09
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Quincy Homan 11/21/10
CHIEF, DIVISION OF LAND DEVELOPMENT

Michael P. ... 11/22/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION

NOTE: FINAL HOUSE SITE GRADES SHALL TIE TO PROPOSED GRADES AROUND FOUNDATIONS AS SHOWN ON THIS PLAN.

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.

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

HOWARD S.C.D. 10/1/08

BY THE DEVELOPER:

I HEREBY 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.

Michelle Greene 9.26.09
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE

PLAN VIEW SCALE 1"=50'

BY THE ENGINEER:

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

Robert H. Vogel 9/26/09
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: SEPTEMBER 27, 2008.

OWNER/DEVELOPER
6168 INVESTMENT & RENTAL PROPERTIES, LLC
5705 LANDINGS ROAD
ELKRIEVE, MARYLAND 21075
(410) 796-1850

4	SHIFT BLADDER, SUBSTITUTE SWM PLANTINGS, SUBSTITUTE RETAINING WALL SHEETS	6/6/10
3	MOVE MH3 FOUR FEET INTO PHELPS LANE RIGHT OF WAY	8/21/14
2	REVISE STORM DRAIN TO ACCOMMODATE EXISTING CONDITIONS, REVISE TEE-TURNAROUND AND REVISE POND TO AS-BUILT	6/24/14
NO.	REVISION	DATE

GRADING AND SEDIMENT CONTROL PLAN
FINAL ROAD CONSTRUCTION PLANS
SHADY LANE CROSSING
LOTS 1 THRU 25
6168 HANOVER ROAD
LIBER 505 AND FOLIO 295

TAX MAP #38 GRID 9 PARCEL 235
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

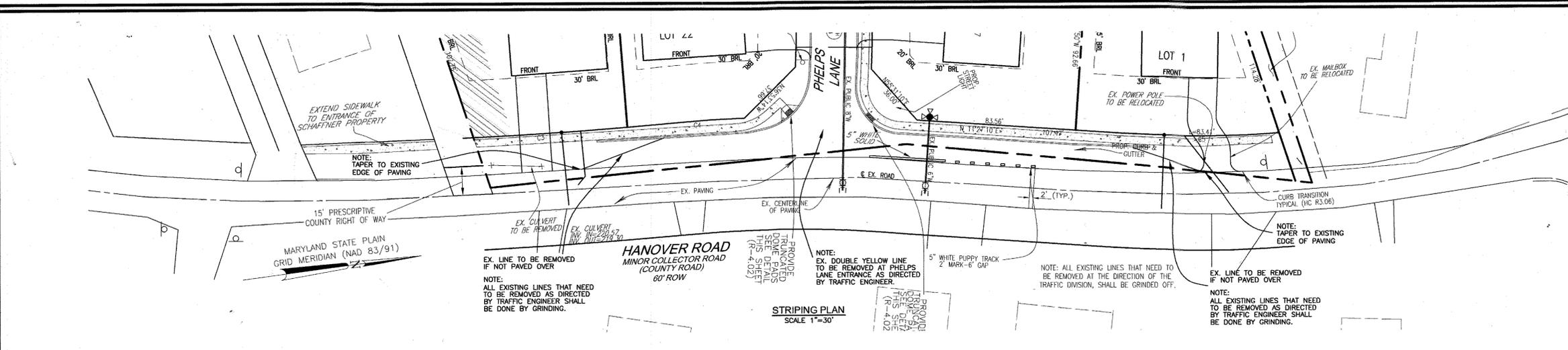
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: RJ/JCO
DRAWN BY: RJ/JCO
CHECKED BY: RHV
DATE: NOVEMBER, 2005
SCALE: AS SHOWN
W.O. NO.: 04-33.03

3 SHEET OF 13

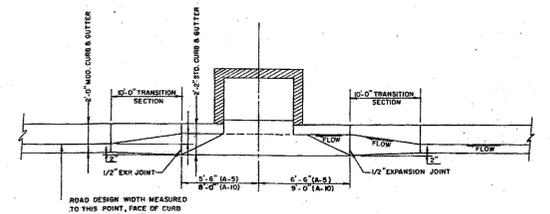
LEGEND

	EXISTING CONTOUR		PROPOSED 24' UTILITY EASEMENT
	PROPOSED CONTOUR		NON-TIDAL WETLAND
	EXISTING TREES TO REMAIN		12' WIDE ACCESS
	15% OR GREATER STEEP SLOPE AREA		10% PRIVATE DRAINAGE AND UTILITY EASEMENT
	25% OR GREATER STEEP SLOPE AREA		CREDITED OPEN SPACE
	FOREST CONSERVATION EASEMENT (RECREATION)		NO WOODY VEGETATION BUFFER
	FOREST CONSERVATION EASEMENT (RETENTION)		TREE MAINTENANCE EASEMENT
	NON-CREDITED OPEN SPACE		PRIVATE 20' STORM DRAIN AND UTILITY EASEMENT
	100 YEAR FLOODPLAIN EASEMENT		PRIVATE 500' DRAINAGE AND UTILITY EASEMENT
	PUBLIC DRAINAGE & UTILITY EASEMENT		RETAINING WALL EASEMENT
	STREAM STREAM BUFFER		SOIL BORING
	WETLAND		WETLAND BUFFER
	SOIL TYPE		SPOT ELEVATION
	LCM		DIRECTION OF FLOW
	WALK OUT EASEMENT		'TRADITIONAL' STYLE LIGHT POLE
	PROPOSED STREET TREE		



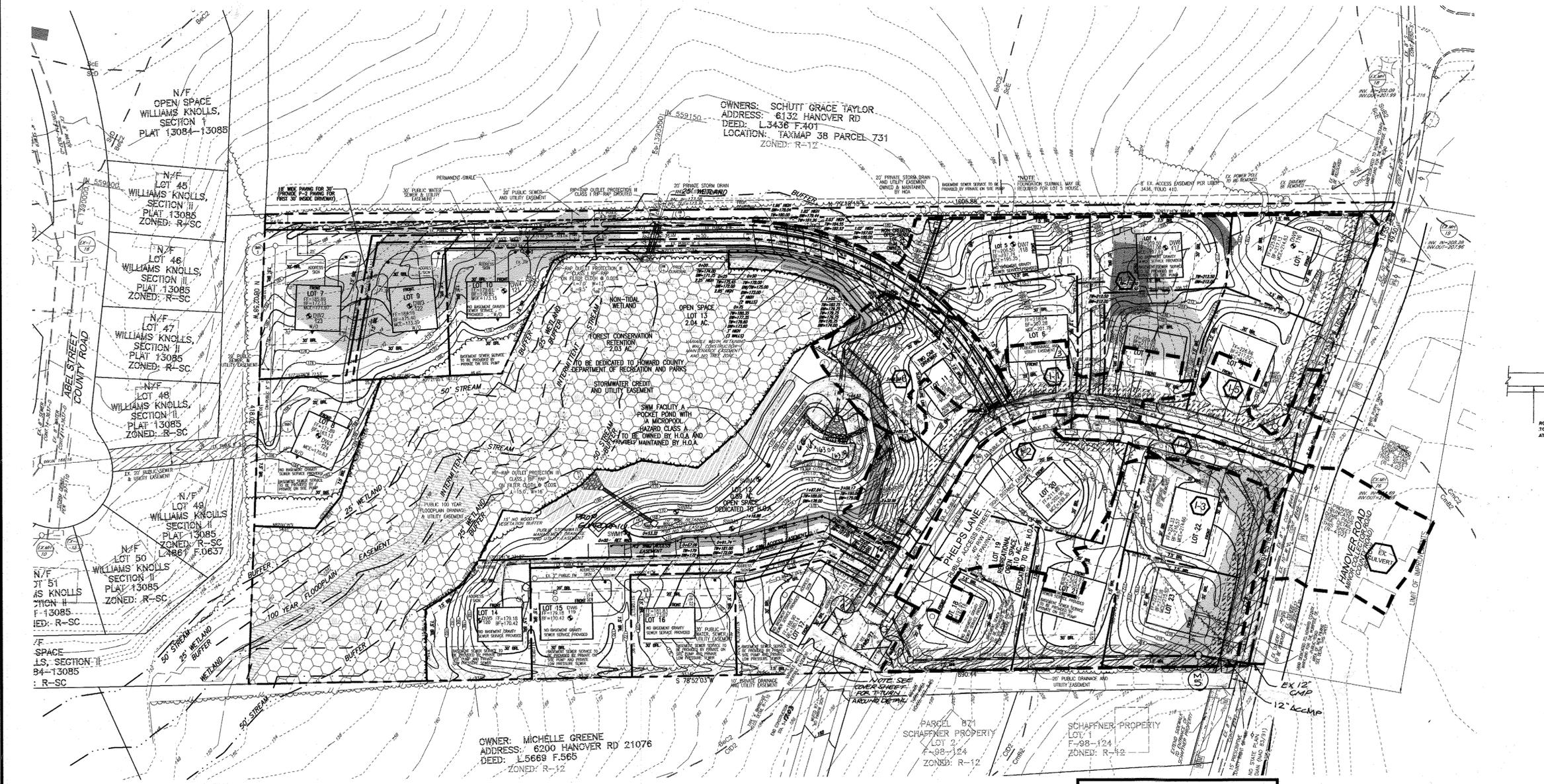
DRAINAGE AREA TABULATIONS

No.	Area	'C'	% Imp.	Soil Types	Zone
1-1	0.37 Ac.	0.43	52	B & C	R-12
1-2	0.49 Ac.	0.35	43	B	R-12
1-3	0.86 Ac.	0.29	38	B	R-12
1-4	0.10 Ac.	0.56	58	B	R-12
1-5	0.17 Ac.	0.46	54	B	R-12
1-6	0.29 Ac.	0.31	38	B & C	R-12
1-7	1.16 Ac.	0.29	38	B & C	R-12
EX. CULVERT	0.70 Ac.	0.29	38	B	R-12



REVISIONS

NO.	REVISION	DATE
5	REVISE TO PROVIDE AS-BUILT CONDITION OF STORM DRAIN PIPE	11/22/10
4	SHIFT STORM DRAIN, SUBSTITUTE SHIRT PIPES	6/10/10
3	SUBSTITUTE REPAIRING WALL SHEETS	8/27/14
2	MOVE 14" S FOUR FEET INTO PHELPS LANE RIGHT-OF-WAY	6/29/14
1	REVISE STORM DRAIN TO ACCOMMODATE EXISTING CONDITIONS	6/29/14
	REVISE T-TURNAROUND, AND REVISE PAVG TO AS-BUILT	



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
W. J. WALL
CHIEF, BUREAU OF HIGHWAYS
DATE: 11-14-08

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
C. H. HUNT
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 11/21/08

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
M. J. REYNOLDS
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 11/20/08

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL-EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD S.C.D. DATE: 9-26-08

BY THE DEVELOPER:
I HEREBY 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 OF DEVELOPER (PRINT NAME BELOW SIGNATURE): Michelle Greene
DATE: 9-26-08

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

SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE): [Signature]
DATE: 9-26-08

PROFESSIONAL CERTIFICATION
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: SEPTEMBER 27, 2008.

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT
DATE: _____

OWNER/DEVELOPER
6168 INVESTMENT & RENTAL PROPERTIES, LLC
8705 LANDING ROAD
ELKDRIDGE, MARYLAND 21075
(410) 796-1850

STORM DRAIN DRAINAGE AREA MAP
FINAL ROAD CONSTRUCTION PLANS
SHADY LANE CROSSING
LOTS 1 THRU 25
6168 HANOVER ROAD
LIBER 505 AND FOLIO 295

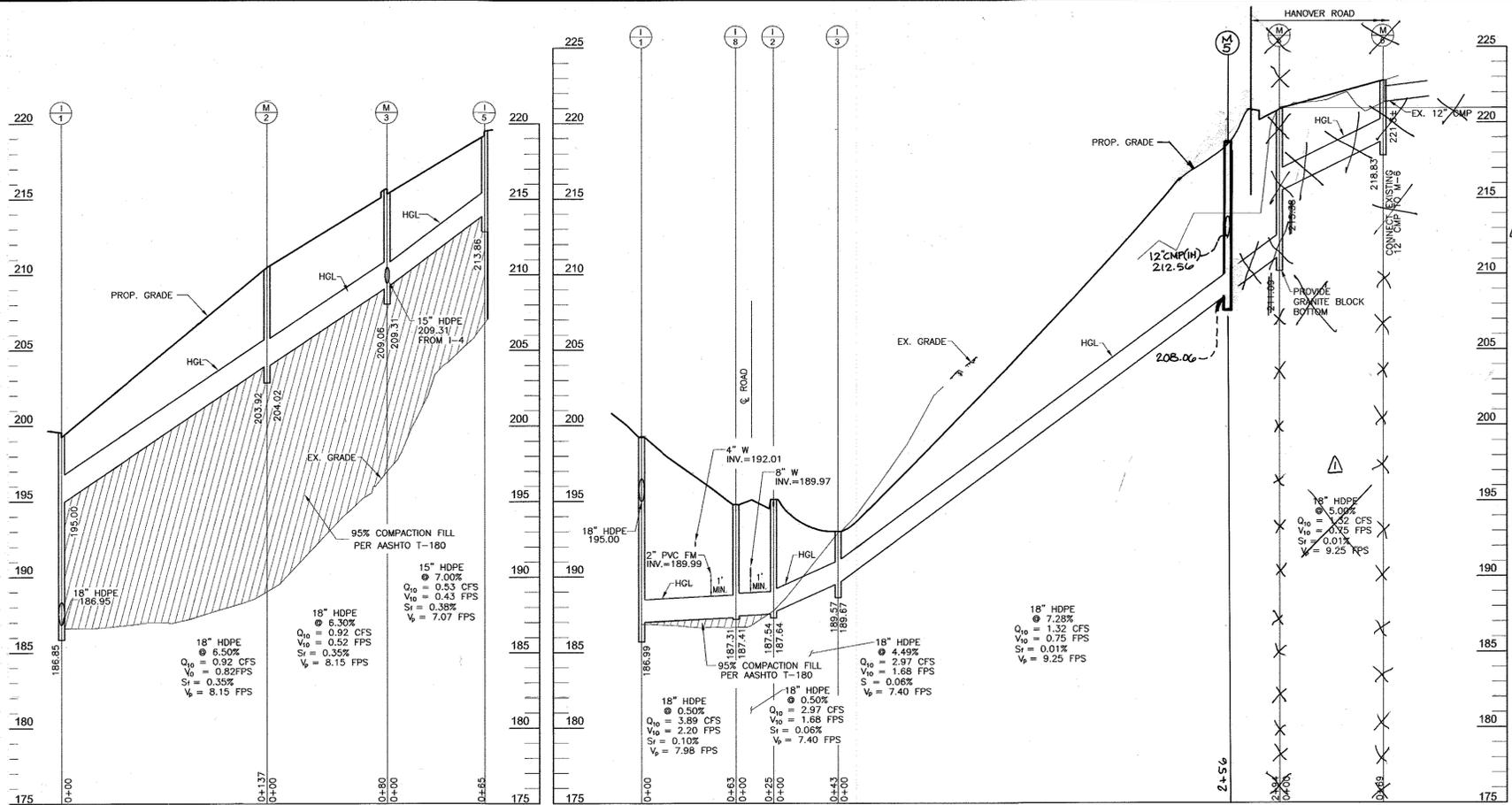
TAX MAP #38 GRID 9
1ST ELECTION DISTRICT

PARCEL 235
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

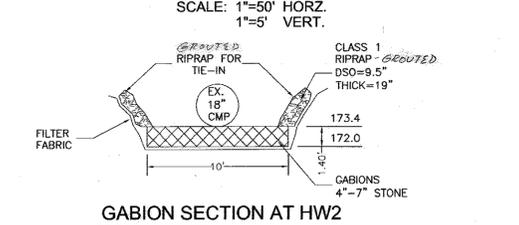
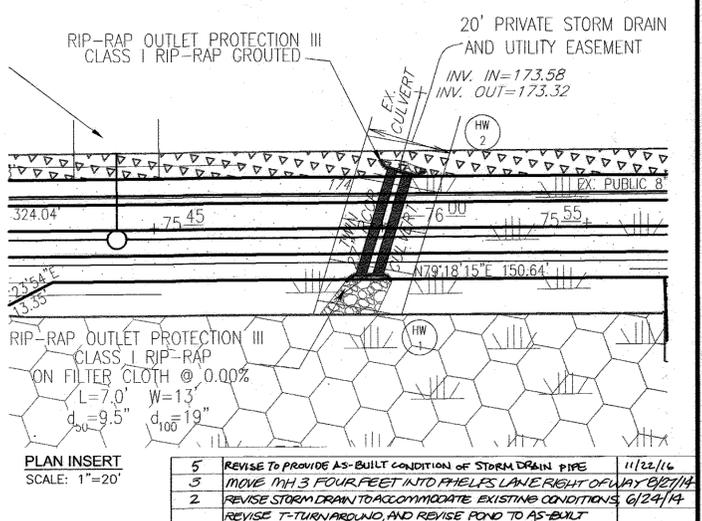
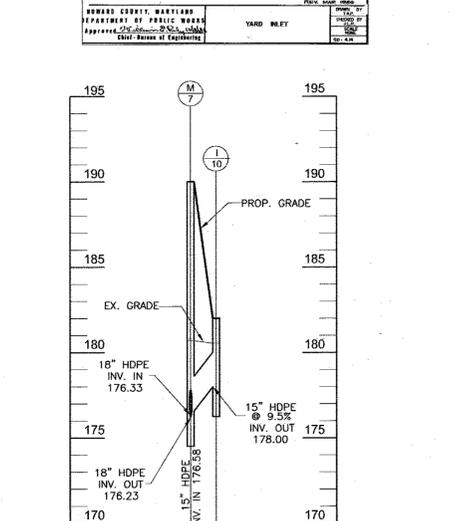
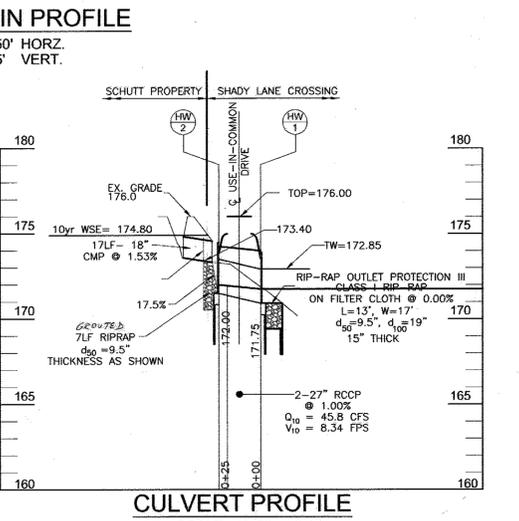
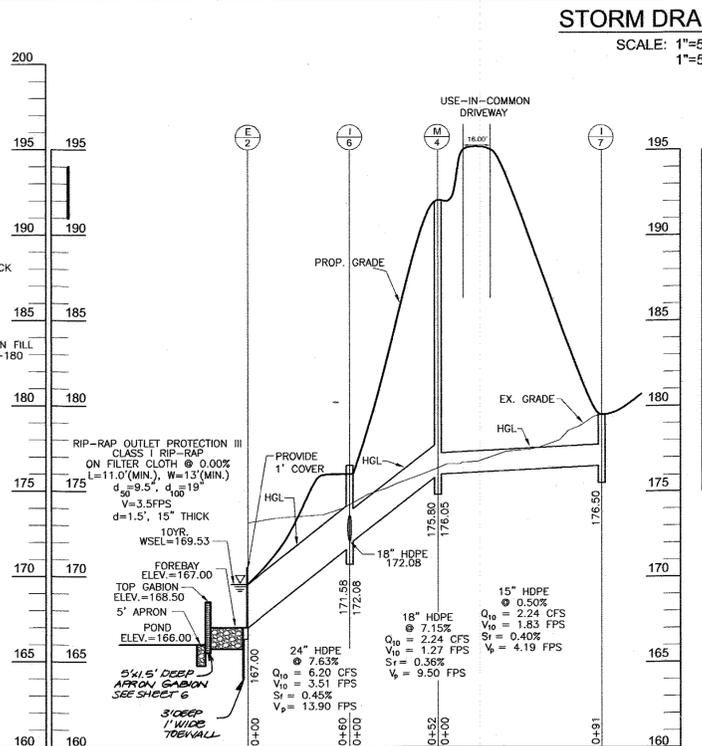
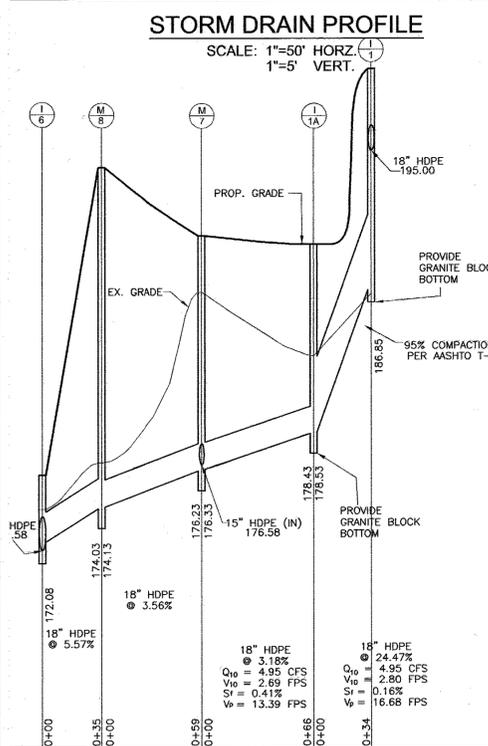
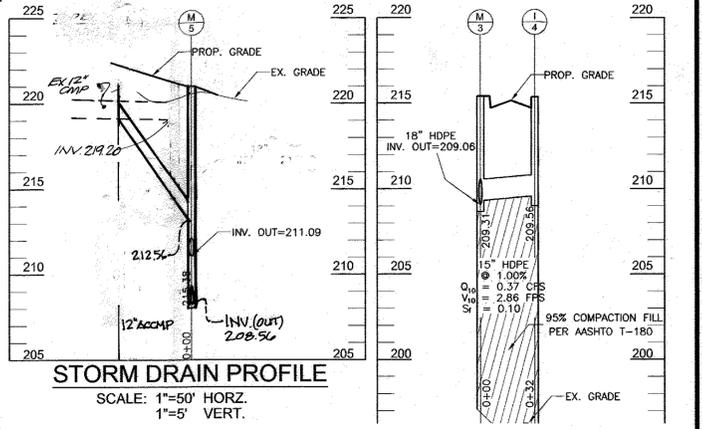
DESIGN BY: RJ/JCO
DRAWN BY: RJ/JCO
CHECKED BY: RHV
DATE: SEPTEMBER, 2008
SCALE: AS SHOWN
W.D. NO.: 04-33.03

4 SHEET OF 13



LEGEND

- NON-CREDITED OPEN SPACE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING TREES TO REMAIN
- NON-TIDAL WETLAND
- FOREST CONSERVATION EASEMENT (RETENTION)
- WETLAND
- SOIL TYPE
- WETLAND BUFFER



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 11-14-08
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 11/21/08
 CHIEF, DIVISION OF LAND DEVELOPMENT
 11/20/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.
 BY THE DEVELOPER:
 I HEREBY 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.
 9-26-08
 HOWARD S.C.D. DATE

BY THE ENGINEER:
 I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 9/26/08
 COUNTY HEALTH OFFICER
 HOWARD COUNTY HEALTH DEPARTMENT

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. 16193 EXPIRATION DATE: SEPTEMBER 27, 2008.
 OWNER/DEVELOPER
 6168 INVESTMENT & RENTAL PROPERTIES, LLC
 5705 LANDING ROAD
 ELKBRIDGE, MARYLAND 21075
 (410) 786-1850

**STORM DRAIN PROFILES
 FINAL ROAD CONSTRUCTION PLANS
 SHADY LANE CROSSING
 LOTS 1 THRU 25**
 6168 HANOVER ROAD
 LIBER 505 AND FOLIO 295

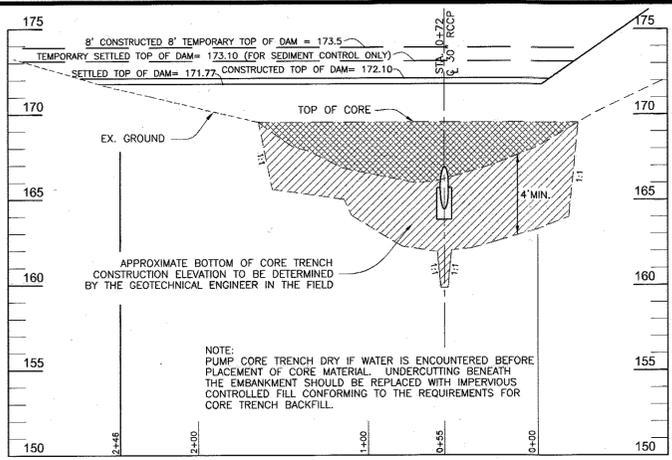
TAX MAP #38 GRID 9
 1ST ELECTION DISTRICT

PARCEL 235
 HOWARD COUNTY, MARYLAND

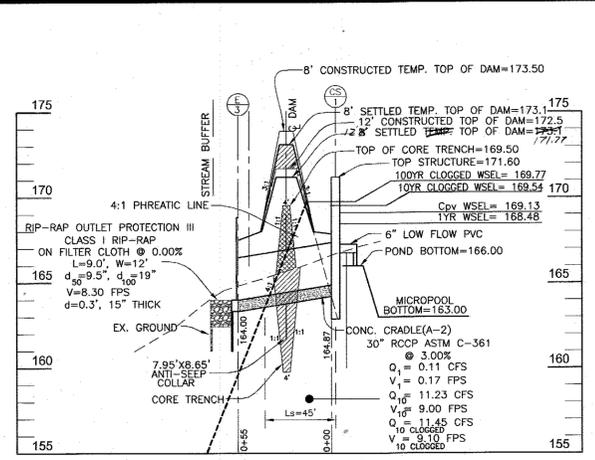
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 8407 MAIN STREET
 ELLICOTT CITY, MD 21043
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DESIGN BY: RJ/JCO
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 DATE: SEPTEMBER, 2008
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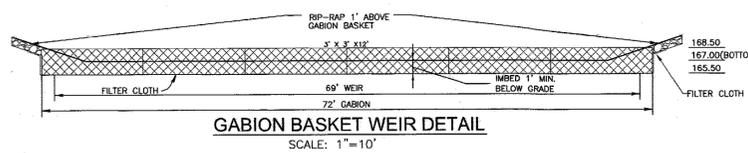
5 SHEET OF 13



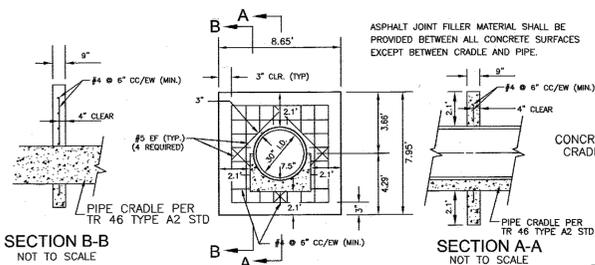
PROFILE ALONG CENTERLINE OF DAM
SCALE: 1"=50' HORIZ.
1"=5' VERT.



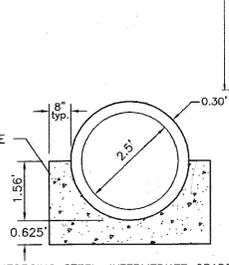
PRINCIPAL SPILLWAY PROFILE
SCALE: 1"=50' HORIZ.
1"=5' VERT.



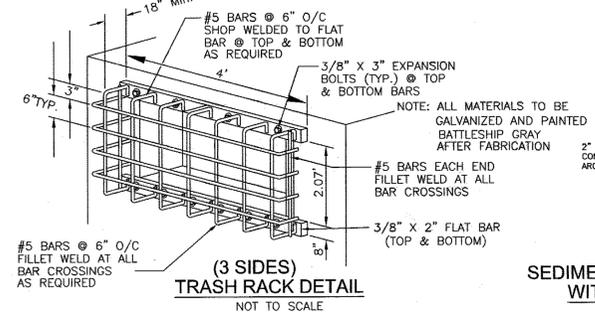
GABION BASKET WEIR DETAIL
SCALE: 1"=10'



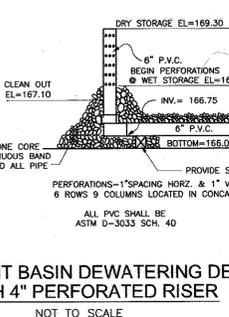
CONCRETE ANTI-SEEP COLLAR DETAIL
NOT TO SCALE



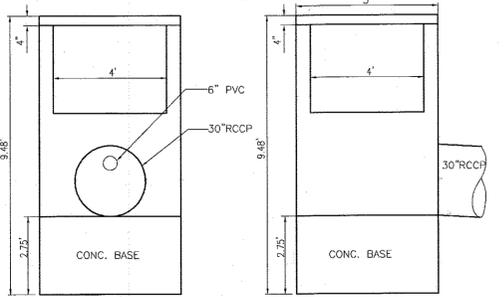
PIPE CRADLE DETAIL
NOT TO SCALE



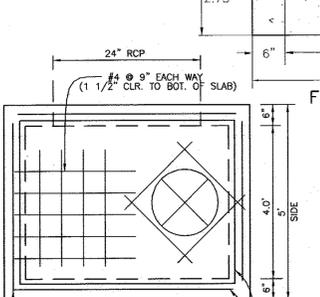
TRASH RACK DETAIL
NOT TO SCALE



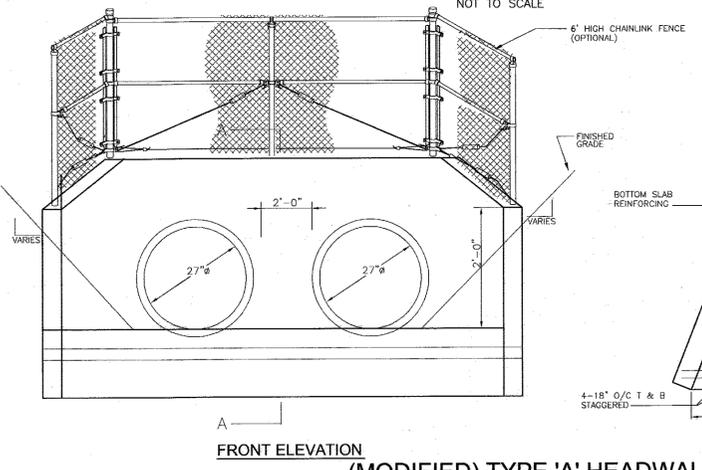
SEDIMENT BASIN DEWATERING DEVICE WITH 4\"/>



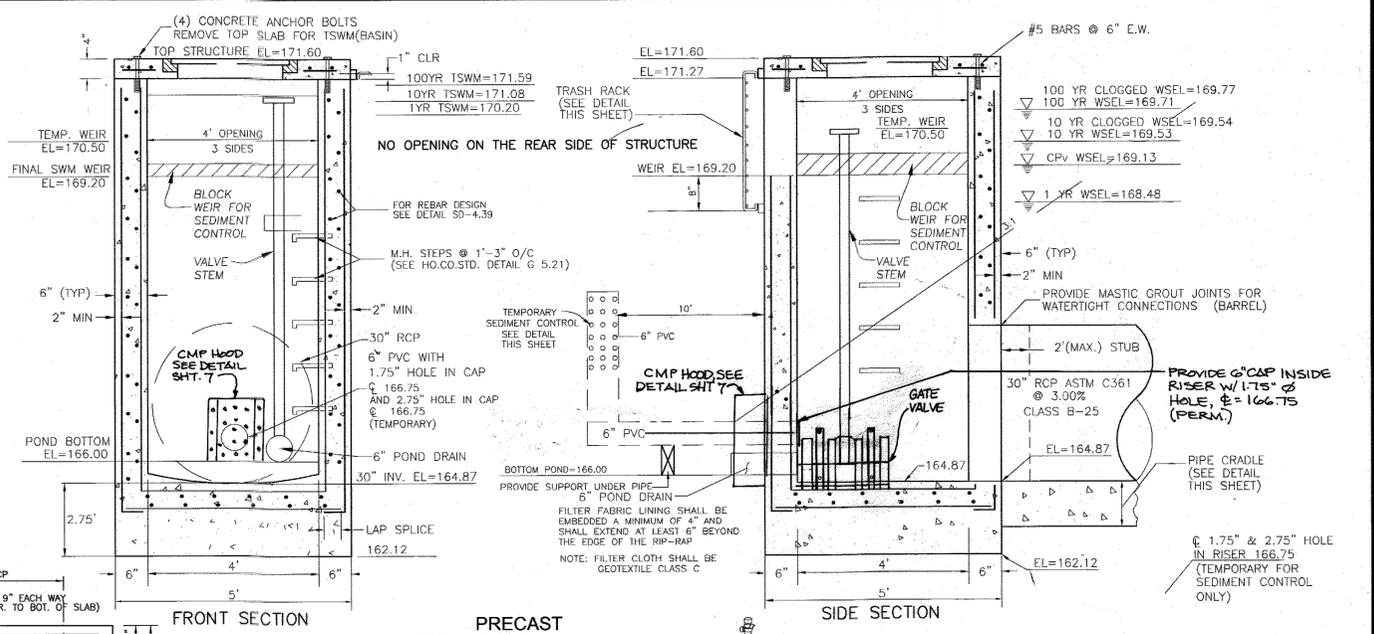
PRECAST STRUCTURE S-1
SCALE: 1"=3'
*SEE ABOVE FOR DETAIL



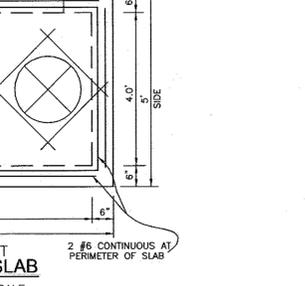
PRECAST STRUCTURE S-1 DETAIL
NOT TO SCALE



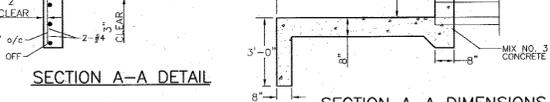
(MODIFIED) TYPE 'A' HEADWALL DETAIL (SD-5.11) FOR CULVERT @ USE-IN-COMMON DRIVE
NTS



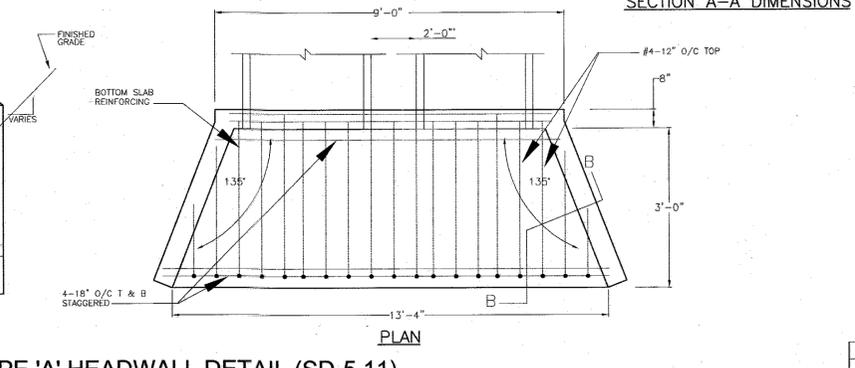
PRECAST STRUCTURE S-1 DETAIL
NOT TO SCALE



SECTION A-A DETAIL



SECTION A-A DIMENSIONS



PLAN

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT EXTENDED DETENTION FACILITY

STORMWATER MANAGEMENT FACILITY
ROUTINE MAINTENANCE BY Homeowner's association (H.O.A.)
1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED DURING WET WEATHER TO DETERMINE IS 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 SHALL 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.
NON-ROUTINE MAINTENANCE
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERE WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

POND #1 SUMMARY

	2 YEAR	10 YEAR	100 YEAR
FLOW INTO POND	4.06 c.f.s.	14.35 c.f.s.	24.06 c.f.s.
FLOW OUT OF POND	0.11 c.f.s.	11.23 c.f.s.	17.09 c.f.s.
W.S. ELEVATION	168.48	169.53	169.71
STORAGE VOLUME	0.04 AC FT	0.42 AC FT	0.46 AC FT
WQv	0.13 Ac.Ft.	0.18 Ac.Ft.	0.03 Ac.Ft.
Cpv			
Rev			

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" (MD-378). HOA IS RESPONSIBLE FOR ROUTINE MAINTENANCE. HOMEOWNER'S ASSOCIATION IS RESPONSIBLE FOR NON-ROUTINE MAINTENANCE. 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 INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

STORMWATER MANAGEMENT REQUIREMENTS - POND 1				
AREA	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	NOTES
1	WATER QUALITY VOLUME (WQv)	0.13 AC. FT.	---	SOIL IN GROUND WATER POCKET POND
2	RECHARGE VOLUME (REV)	0.31 AC. FT. 0.36 AC. FT.	0.39 AC. GRASS SWALE	0.00 AC. FT.
3	CHANNEL PROTECTION VOLUME (CPv)	0.19 AC. FT.	---	POCKET POND
4	OVERHEAD FLOOD PROTECTION (OvP)	---	---	---
5	EXTREME FLOOD VOLUME (OvP)	---	---	---

STORMWATER MANAGEMENT REQUIREMENTS - AREA 2				
AREA	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	NOTES
1	WATER QUALITY VOLUME (WQv)	0.03 AC. FT.	RANGARDENS	0.0 AC. FT.
2	RECHARGE VOLUME (REV)	0.005 AC. FT. 0.06 AC. FT.	RANGARDENS	0.0 AC. FT.
3	CHANNEL PROTECTION VOLUME (CPv)	N/A	---	1 YEAR LESS THAN 20FS
4	OVERHEAD FLOOD PROTECTION (OvP)	---	---	---
5	EXTREME FLOOD VOLUME (OvP)	---	---	---

STORMWATER MANAGEMENT REQUIREMENTS - AREA 3				
AREA	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	NOTES
1	WATER QUALITY VOLUME (WQv)	0.03 AC. FT.	RANGARDENS	0.0 AC. FT.
2	RECHARGE VOLUME (REV)	0.004 AC. FT. 0.05 AC. FT.	RANGARDENS	0.0 AC. FT.
3	CHANNEL PROTECTION VOLUME (CPv)	N/A	---	1 YEAR LESS THAN 20FS
4	OVERHEAD FLOOD PROTECTION (OvP)	---	---	---
5	EXTREME FLOOD VOLUME (OvP)	---	---	---

STORMWATER MANAGEMENT REQUIREMENTS - AREA 4				
AREA	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	NOTES
1	WATER QUALITY VOLUME (WQv)	0.08 AC. FT.	NON-ROOFTOP DISCONNECTS RANGARDENS	0.0 AC. FT.
2	RECHARGE VOLUME (REV)	0.012 AC. FT. 0.13 AC. FT.	NON-ROOFTOP DISCONNECTS RANGARDENS	0.0 AC. FT.
3	CHANNEL PROTECTION VOLUME (CPv)	N/A	---	1 YEAR LESS THAN 20FS
4	OVERHEAD FLOOD PROTECTION (OvP)	---	---	---
5	EXTREME FLOOD VOLUME (OvP)	---	---	---

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 With 2 modifications 11-14-08
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 11/21/08
 CHIEF, DIVISION OF LAND DEVELOPMENT
 APPROVED: 11/21/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 10/27/08
 HOWARD S.C.D.

BY THE DEVELOPER:
 I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR EROSION AND SEDIMENT 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.
 9.26.08
 SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE

BY THE ENGINEER:
 I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 9/26/08
 SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE

APPROVED FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
 COUNTY HEALTH OFFICER
 HOWARD COUNTY HEALTH DEPARTMENT

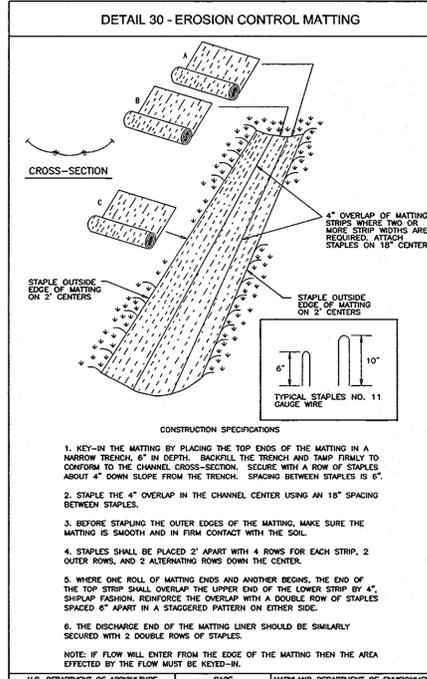
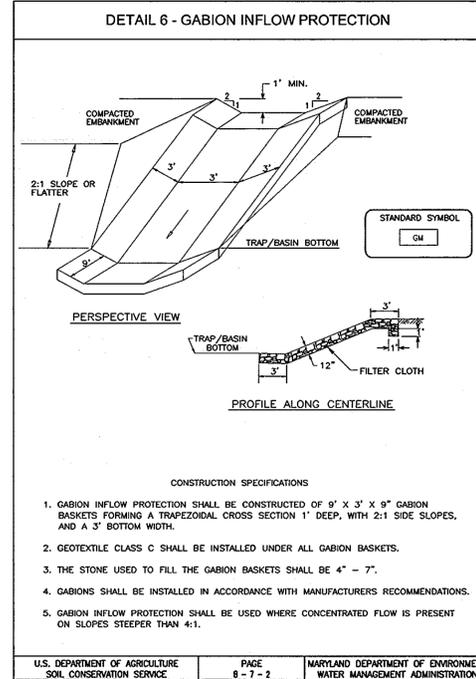
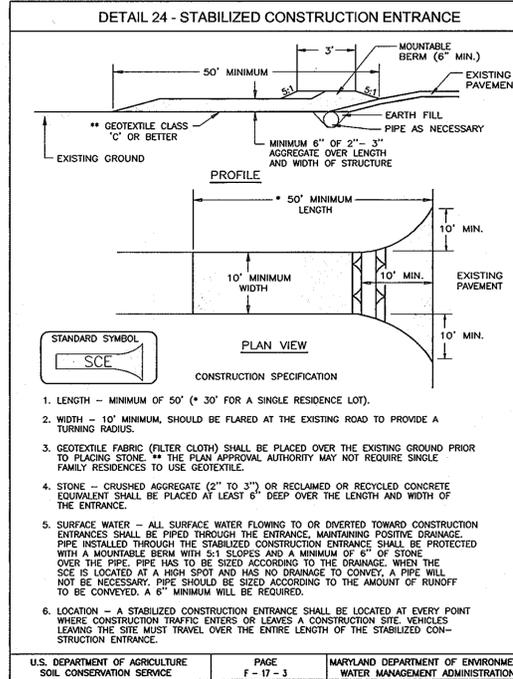
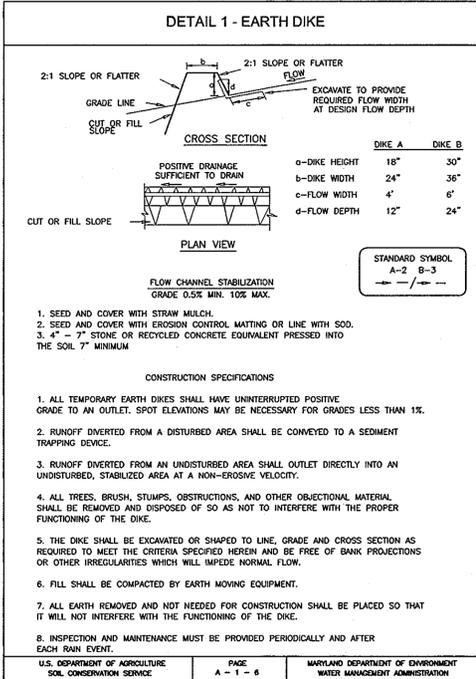
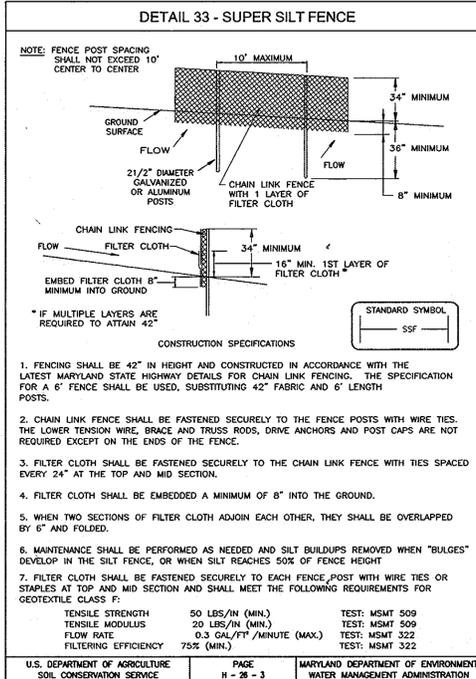
PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183
 EXPIRATION DATE: SEPTEMBER 27, 2008.
 OWNER/DEVELOPER
 6168 INVESTMENT & RENTAL PROPERTIES, LLC
 8705 LANING ROAD
 ELKDRIDGE, MARYLAND 21075
 (410) 796-1850

STORMWATER MANAGEMENT NOTES AND DETAILS
FINAL ROAD CONSTRUCTION PLANS
SHADY LANE CROSSING
LOTS 1 THRU 25
 6168 HANOVER ROAD
 LIBER 505 AND FOLIO 295
 TAX MAP #38 GRID 9
 1ST ELECTION DISTRICT
 PARCEL 235
 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: RJ/JCO
 DRAWN BY: RJ/JCO
 CHECKED BY: RHV
 DATE: SEPTEMBER, 2008
 SCALE: AS SHOWN
 W.D. NO.: 04-33.03

6 SHEET OF 13



21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

DEFINITION
PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

PURPOSE
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETABLE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

CONDITIONS WHERE PRACTICE APPLIES
I. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

II. FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

CONSTRUCTION AND MATERIAL SPECIFICATIONS
I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.
II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
I. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY A SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 AND 1/2" IN DIAMETER.
II. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEEDS, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
III. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.
II. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
I. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS.

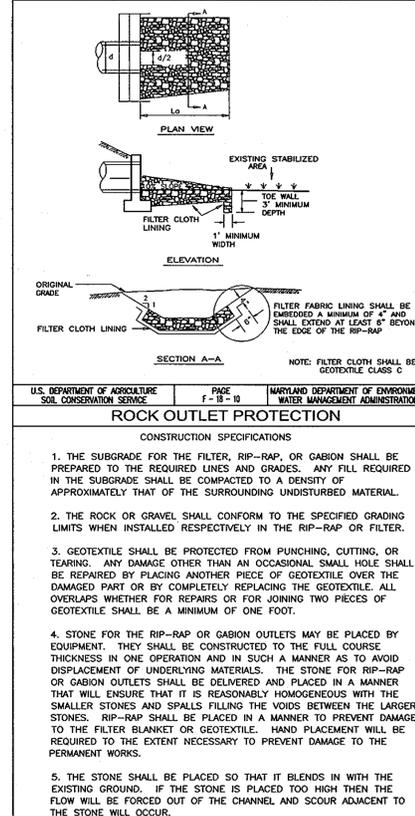
PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.
SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.
SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:
1) PREFERRED-APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SO.FT.) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SO.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT THE TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS./1000 SO.FT.)
2) ACCEPTABLE-APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SO.FT.) AND APPLY 600 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS./1000 SO.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.
SEEDING: FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS. PER ACRE (1.4 LBS./1000 SO.FT.) OF KENTUCKY 31 TALL FESCUE FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 60 LBS. KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS. PER ACRE (0.5 LBS./1000 SO.FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 28, PROTECT SITE BY: OPTION (1) 2 TONS PER ACRE WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOO. OPTION (3) SEED WITH 60 LBS./ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.
MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ. FT.) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL./1000 SO.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL./1000 SO.FT.) FOR ANCHORING.
MAINTENANCE: INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSE AND PERMITS SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1885).
2. ALL VEGETATION AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1984 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: (A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 2:1, (B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1984 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PERMANENT SEEDING, SOO, TEMPORARY SEEDING, AND MULCHING (SEC. G). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:
TOTAL AREA 8.90 AC.
AREA DISTURBED 6.65 AC.
AREA TO BE ROOFED OR PAVED 2.20 AC.
AREA TO BE VEGETATIVELY STABILIZED 4.65 AC.
TOTAL CUT 26.20 CY
TOTAL FILL 3700 CY
OFFSITE WASTE/BORROW AREA LOCATION *
8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
* TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR WITH AN APPROVED AND ACTIVE GRADING PERMIT.

DETAIL 27 - ROCK OUTLET PROTECTION III



SEQUENCE OF CONSTRUCTION

- OBTAIN GRADING PERMIT, AND ADE PERMIT
- NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.
- CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE
- INSTALL SUPER SILT FENCE
- INSTALL CLEANWATER EARTH DIKES
- CONSTRUCT STORMWATER MANAGEMENT FACILITY, CONSTRUCTING TOP OF DAM TO TEMPORARY ELEVATION (SEDIMENT BASIN) AND INSTALL EARTH DIKES.
- INSTALL TWIN 24" RCCP CULVERTS AND RIPRAP LOCATED NEAR THE NORTHERN PROPERTY LINE AND INSTALL DITCH AND ADJACENT SUPER SILT FENCE AND PUT DOWN EROSION CONTROL MATTING. PROVIDE COVER OVER CULVERT
- NOT TO BEGIN UNTIL PERMISSION IS GRANTED BY INSPECTOR.
- BRING ROAD ACCESSING LOTS 7-10 TO SUBBASE GRADE.
- AFTER OBTAINING PERMISSION FROM SEDIMENT CONTROL INSPECTOR TO PROCEED ROUGH GRADE SITE.
- BEGIN CONSTRUCTION OF SEWER, WATER & STORM DRAIN SYSTEMS.
- GRADE ROAD TO SUB-BASE
- WITH ROAD GRADED TO SUB-BASE AND INLETS ARE IN PLACE, BEGIN INSTALLATION OF CURB AND GUTTER.
- WITH CURB AND GUTTER IN PLACE PAVE ROAD AND INSTALL SIDEWALK
- FINE GRADE SITE IN CONFORMANCE WITH PLAN.
- WITH INSPECTOR APPROVAL AND FINAL ROAD PAVING COMPLETE STABILIZE ANY REMAINING DISTURBED AREAS
- BEGIN HOUSE CONSTRUCTION.
- CONVERT SEDIMENT BASIN TO FINAL STORMWATER MANAGEMENT FACILITY AND REMOVE SEDIMENT TRAPPING MEASURES. AFTER HOUSE CONSTRUCTION IS COMPLETE.
- REMOVE ALL JUNK, TRASH, AND DEBRIS FROM LOTS 13 AND 24, AND AS DIRECTED BY THE INSPECTOR.
- INSTALL STREET TREES AND ALL LANDSCAPING

DURATION

- | |
|---------|
| 1 DAY |
| 1 DAY |
| 2 DAYS |
| 3 WEEKS |
| 2 WEEKS |
| 1 WEEK |
| 5 DAYS |
| 1 WEEK |
| 1 WEEK |
| 2 DAYS |
| 3 DAYS |
| 1 WEEK |
| 3 DAYS |
| 5 DAYS |
| 1 DAY |
| 1 YEAR |
| 2 DAY |
| 1 DAY |
| 1 WEEK |

- NOTES
- DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL MEASURES SHOWN HEREON.
 - FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITH:
 - 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, SWALES, DITCH PERIMETER SLOPES, SLOPES AND ALL SLOPES GREATER THAN 3:1.
 - 14 CALENDAR DAYS FOR ALL OTHER DISTURBED AREAS.

NO.	REVISION	DATE

SEDIMENT & EROSION CONTROL NOTES
FINAL ROAD CONSTRUCTION PLANS
SHADY LANE CROSSING
LOTS 1 THRU 25
6168 HANOVER ROAD
LIBER 505 AND FOLIO 295

TAX MAP #38 GRID 9 PARCEL 235
1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET TEL: 410.461.7666
ELLIOTT CITY, MD 21043 FAX: 410.461.6961

DESIGN BY: RJ/JCO
DRAWN BY: RJ/JCO
CHECKED BY: RHV
DATE: SEPTEMBER, 2008
SCALE: AS SHOWN
W.O. NO.: 04.33.03

8 SHEET OF 12

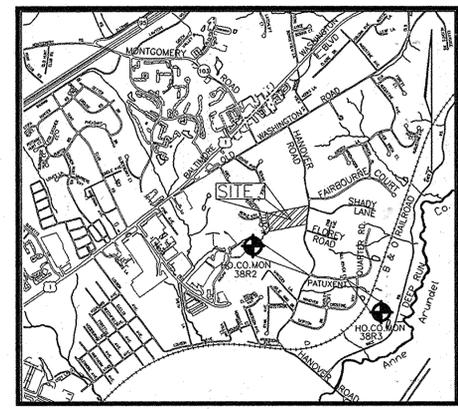
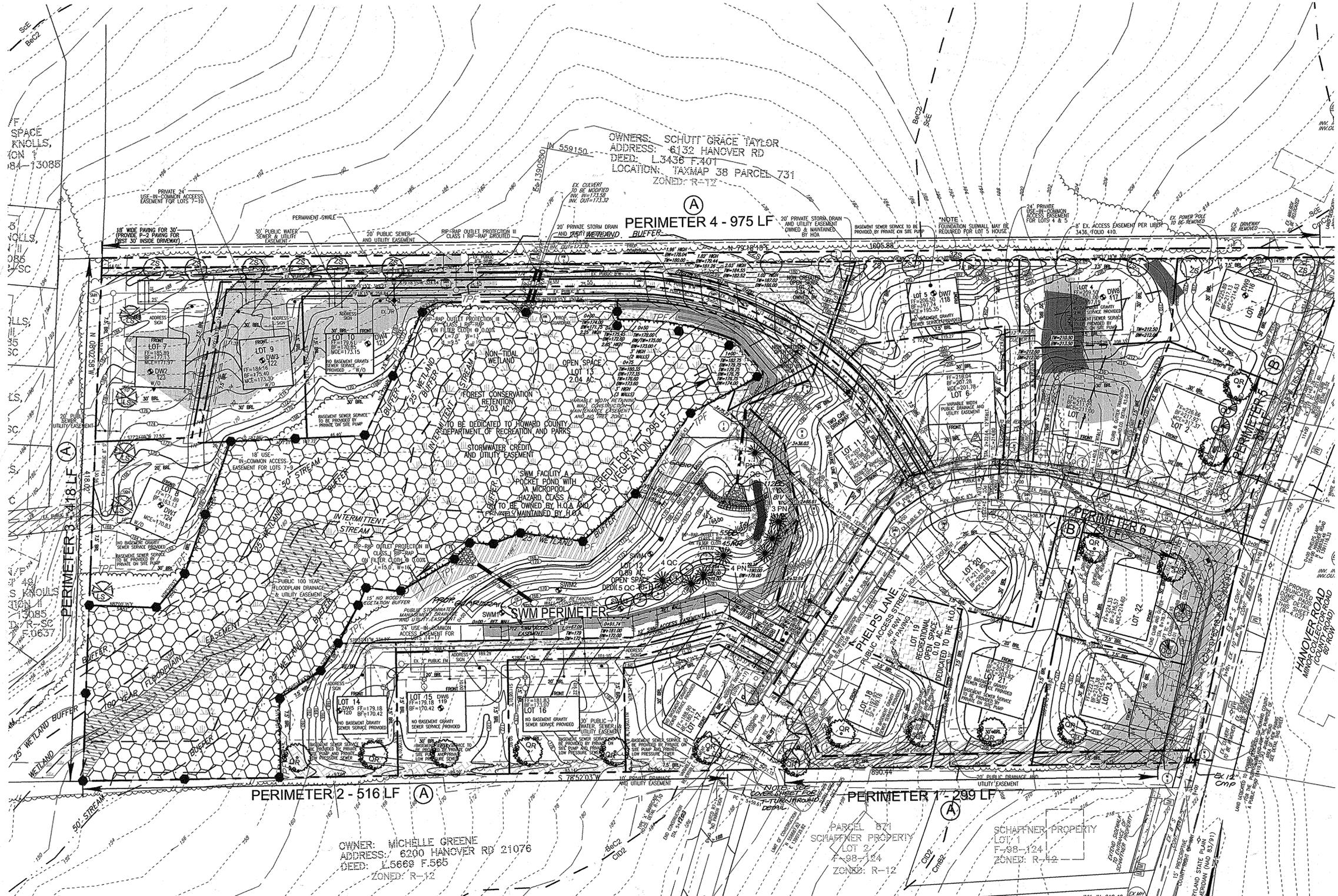
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Michelle J. Walsh 11-14-08
CHIEF, BUREAU OF HIGHWAYS
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Christina Hantz 11/24/08
CHIEF, DIVISION OF LAND DEVELOPMENT
Chris Robinson 11/26/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION

REVIEWED FOR HOWARD S.C.D. & MEETS TECHNICAL REQUIREMENTS.
BY THE DEVELOPER:
James S. Jones 11/26/08
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE

BY THE ENGINEER:
James S. Jones 11/26/08
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
James S. Jones 11/26/08
COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT

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. 16193, EXPIRATION DATE: SEPTEMBER 27, 2008.
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8705 LANDING ROAD
ELKRIOR, MARYLAND 21075
(410) 796-1850



VICINITY MAP
SCALE 1"=2000'

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING TREES TO REMAIN
- 15%-24.9% STEEP SLOPE AREA
- 25% OR GREATER STEEP SLOPE AREA
- FOREST CONSERVATION EASEMENT (REFORESTATION)
- FOREST CONSERVATION EASEMENT (RETENTION)
- NON-CREATED OPEN SPACE
- 100 YEAR FLOODPLAIN EASEMENT
- PUBLIC DRAINAGE & UTILITY EASEMENT
- 30' STREAM
- STREAM BUFFER
- WETLAND
- SOIL TYPE
- ECM
- WALK OUT EASEMENT
- PROPOSED STREET TREE
- PROPOSED 24' UIC. ACCESS EASEMENT
- NON TIDAL WETLAND
- 12' WIDE ACCESS 10% MAX. SLOPE
- 10' PRIVATE DRAINAGE AND UTILITY EASEMENT
- CREATED OPEN SPACE REC. OPENSPACE
- NO WOODY VEGETATION BUFFER
- TREE MAINTENANCE EASEMENT
- PRIVATE 20' STORM DRAIN AND UTILITY EASEMENT OWNED & MAINTAINED BY HOA
- PRIVATE SWM DRAINAGE AND UTILITY EASEMENT
- RETAINING WALL EASEMENT
- SOIL BORING
- WETLAND BUFFER
- SPOT ELEVATION
- DIRECTION OF FLOW
- BOE "TRADITIONAL" STYLE
- FOREST CONSERVATION AREA SIGN

FACILITY #1

STORMWATER POND PERIMETER LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
OC	8	Quercus coccinea, Scarlet Oak (shade tree)	2 1/2"-3" cu.	B&B
PN	10	Pinus Nigra Austrian Pine (Evergreen Tree)	6-8' ht	B&B

STORMWATER POND HERBACEOUS LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
BS	112	BOTTLEBRUSH SEDGE CAREX CUMMISO	2' OC	PLUG
IV	8	Iris versicolor Blue Flag (wear gloves)	1.5' OC	PLUG
RR	55	GREEN BULLRUSH SCIRPUS ATROVIRIDIS	2' OC	RHIZOME
RR	45	RIVERBANK WILD RYE ELYMUS RIPARIUS	2' OC	PLUG

4	SHIFT BOUNDARY, SUBSTITUTE SKIM PLANTINGS	01/16
3	SUBSTITUTE BOTTLEBRUSH SEDGE WITH BLUE FLAG	01/16
2	REVISE DM-3 FOUR FEET INTO PHELPS LANE RIGHT OF WAY	02/14
1	REVISE STORM DRAIN TO ACCOMMODATE EXISTING CONDITIONS	02/14
	REVISE T-TURNAROUND, AND REVISE POND TO AS-BUILT	
NO.	REVISION	DATE

LANDSCAPE AND FOREST CONSERVATION PLAN
FINAL ROAD CONSTRUCTION PLANS

SHADY LANE CROSSING
LOTS 1 THRU 25

6168 HANOVER ROAD
LIBER 505 AND FOLIO 295
TAX MAP #38 GRID 9
1ST ELECTION DISTRICT
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9 SHEET OF 13

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.

APPROVED: *Michelle Greene* 9.26.08
CHIEF, BUREAU OF HIGHWAYS
DATE: 11-14-08

APPROVED: *John Cancles* 9/28/08
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 11/21/08

APPROVED: *John Cancles* 9/28/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 11/21/08

SCHEDULE D: STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	POND #1 690 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	YES* 310'
CREDIT FOR OTHER LANDSCAPING (NO, YES AND #)	NO
NUMBER OF TREES REQUIRED (SHADE TREES (1:50) EVERGREEN TREES (1:40))	(380) 8 SHADE TREES 10 EVERGREEN TREES
NUMBER OF TREES PROVIDED (SHADE TREES EVERGREEN TREES SHRUBS)	8 SHADE TREES 10 EVERGREEN TREES

*EXISTING WOODS TO REMAIN

APPROVED: _____
FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

APPROVED: *John Cancles* 9/28/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 11/21/08

PLAN VIEW
SCALE 1"=40'

APPROVED: *John Cancles* 9/28/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 11/21/08

SCHEDULE A: PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO PERIMETER PROPERTIES				ADJACENT TO ROADWAYS	
	1	2	3	4	(LOT-2) 5	(LOT-22) 6
PERIMETER/FRONTAGE DESIGNATION	A	A	A	A	B	B
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	299	516	418	975	84	79
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	YES* 158	YES* 140	NO	NO	NO
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED (LF REMAINING)	299	358	278	975	84	79
SHADE TREES	1:60 5	1:60 6	1:60 5	1:60 17	1:50 2	1:50 2
EVERGREEN TREES	-	-	-	-	1:40 2	1:40 2
SHRUBS	-	-	-	-	-	-
NUMBER OF PLANTS PROVIDED	5	6	5	17	2	2
SHADE TREES	-	-	-	-	-	-
EVERGREEN TREES	-	-	-	-	-	-
OTHER TREES (2:1 SUBSTITUTION)	-	-	-	-	-	-
SHRUBS (10:1 SUBSTITUTION)	-	-	-	-	-	-
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED	-	-	-	-	-	-

* EXISTING WOODS TO REMAIN

PROFESSIONAL CERTIFICATION
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5705 LANDING ROAD
ELK RIDGE, MARYLAND 21075
(410) 796-1850

FOREST RETENTION AREAS AND NOTES

1. FORESTED STREAM BUFFERS ARE RETAINED IN OPEN SPACE LOTS.
2. NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THIS SITE.
3. THE WOODED STEEP SLOPES ARE SUBSTANTIALLY RETAINED IN OPEN SPACE LOTS.
4. FORESTED AREAS ADJACENT TO FLOODPLAINS AND STREAM BUFFERS ARE SUBSTANTIALLY RETAINED IN OPEN SPACE LOTS.
5. THERE ARE NO ISOLATED FOREST STANDS ON THIS SITE.
6. CHANGES IN GRADING AND RUNOFF WITHIN CONSTRUCTION/INSTALLATION AREAS WILL NOT ADVERSELY AFFECT THE SOILS WITHIN THE FOREST RETENTION AREA. SEDIMENT CONTROL MEASURES WILL REDIRECT CONCENTRATED FLOW RUNOFF TO STORMWATER MANAGEMENT FACILITIES, RETAIN SEDIMENT WITHIN THE CONSTRUCTION SITE, AND/OR REDIRECT CLEAN WATER AWAY FROM CONSTRUCTION AREAS.
7. FOREST CONSERVATION PLAN PREPARED BY FREDERICK WARD AND ASSOCIATES, DATED JANUARY 2002. FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION WILL BE FULFILLED BY THE RETENTION OF 1.87 AC. (81457.2 x \$0.20 = \$16292) OF FOREST IN A FOREST CONSERVATION EASEMENT PAYABLE BY DEVELOPER AS PART OF THE DEVELOPERS AGREEMENT. A FEE-IN-LIEU PAYMENT FOR REMAINING 1.06 AC. (46173.6 x \$0.75 = \$34,630.20) IS REQUIRED, WHICH IS PAID TO THE FOREST CONSERVATION FUND.
8. THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1202 OF THE HOWARD COUNTY CODE. 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.

FOREST PROTECTION NOTES

PRE-CONSTRUCTION ACTIVITIES

1. FOR RETENTION AREAS, INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
2. FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS.
3. A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNE TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.

CONSTRUCTION PHASE

1. NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.
2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES.
3. IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.

POST-CONSTRUCTION ACTIVITIES

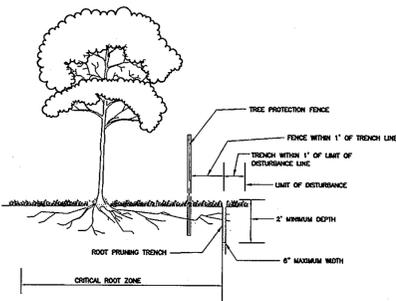
1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.
3. DO NOT REMOVE SIGNS.

COST ESTIMATE: (For bonding purposes, only)

RETENTION OF 1.87 AC.

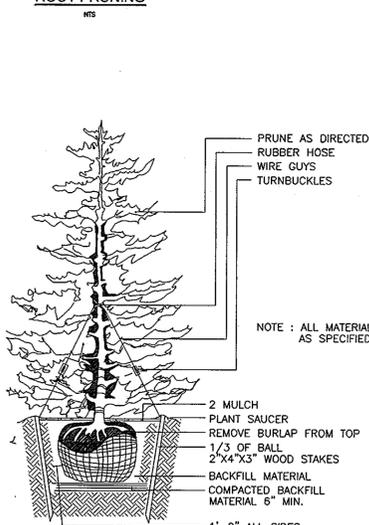
SURETY NOTE

1.87 ACRES OF RETENTION WILL BE RETAINED IN A FOREST CONSERVATION EASEMENT (0.2X81,467SF=\$16,291.40) AND FEE-IN-LIEU OF 1.06 ACRES (0.5X46,174SF=\$23,087.00). THE FEE IS TO BE PAID WITH THE DEVELOPERS AGREEMENT.



- NOTES:**
1. RETENTION AREAS TO BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
 2. BOUNDARIES OF RETENTION AREAS TO BE STAKED, FLAGGED AND/OR FENCED PRIOR TRENCHING.
 3. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.
 4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR ORGANIC SOIL.
 5. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.

ROOT PRUNING



TYPICAL EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

FOREST CONSERVATION WORKSHEET

NET TRACT AREA:

A. TOTAL TRACT AREA	8.90 AC
B. AREA WITHIN 100 YEAR FLOODPLAIN	0.16 AC
C. NET TRACT AREA	8.74 AC

LAND USE CATEGORY (FROM TABLE 3.2.1, PAGE 40, MANUAL)

INPUT THE NUMBER "1" UNDER THE APPROPRIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY.

ARA	MDR	IDA	HDR	MPD	CIA
0	0	0	1	0	0

D. AFFOREST THRESHOLD	15% X D = 1.31 AC
E. CONSERVATION THRESHOLD	20% X D = 1.75 AC

EXISTING FOREST COVER:

F. EXISTING FOREST COVER (EXCLUDING FLOODPLAIN)	= 6.59 AC
G. AREA OF FOREST ABOVE CONSERVATION THRESHOLD	= 4.84 AC

BREAK EVEN POINT:

H. BREAK EVEN POINT =	2.72 AC
I. CLEARING PERMITTED WITHOUT MITIGATION =	3.87 AC

PROPOSED FOREST CLEARING:

K. TOTAL AREA OF FOREST TO BE CLEARED =	4.72 AC
L. TOTAL AREA OF FOREST TO BE RETAINED =	1.87 AC

PLANTING REQUIREMENTS:

M. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD =	1.18 AC
N. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD =	0.00 AC
P. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD =	0.12 AC
Q. TOTAL REFORESTATION REQUIRED =	1.06 AC
R. TOTAL AFFORESTATION REQUIRED =	0.00 AC
S. TOTAL REFORESTATION AND AFFORESTATION REQUIRED =	1.06 AC

FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION WILL BE FULFILLED BY THE RETENTION OF 1.87 AC. (81457.2 x \$0.20 = \$16,291.44) OF FOREST IN A FOREST CONSERVATION EASEMENT PAYABLE BY DEVELOPER AS PART OF THE DEVELOPERS AGREEMENT. A FEE-IN-LIEU PAYMENT FOR REMAINING 1.06 AC. (46173.6 x \$0.75 = \$34,630.20) IS REQUIRED, WHICH IS PAID TO THE FOREST CONSERVATION FUND.

NOTE

1. THE TOPOGRAPHY SHOWN HEREIN IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY FREDERICK WARD ASSOCIATES IN JANUARY 2002.

GENERAL NOTES

A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

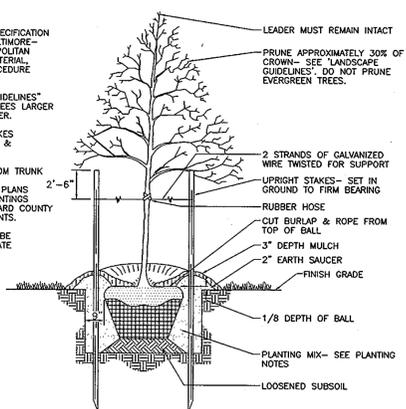
FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING WILL BE POSTED WITH THE DEVELOPER'S AGREEMENT AS PART OF THE FINAL PLAN

DEVELOPER'S AGREEMENT

FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING PROVIDED PER THE LANDSCAPE MANUAL TO BE POSTED WITH THE DEVELOPER'S AGREEMENT. THE AMOUNT WILL BE \$11,700 FOR 4 EVERGREEN TREES AND 37 SHADE TREES. THE AMOUNT FOR STREET TREES WILL BE \$9,600 FOR 32 SHADE TREES.

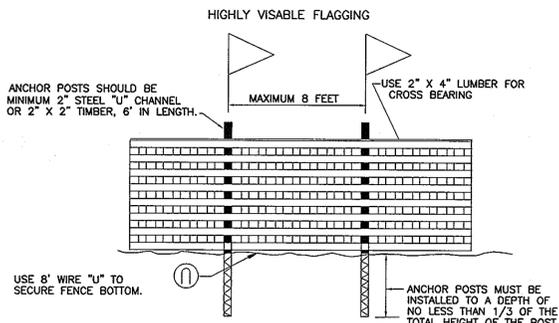
NOTES

1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK.
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.



TREE PLANTING AND STAKING

DECIDUOUS TREES UP TO 2-1/2" CALIPER
NOT TO SCALE

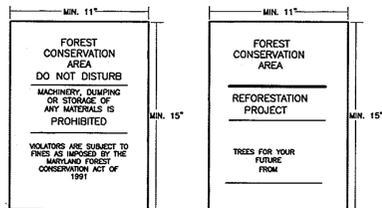


- NOTES:**
1. FOREST PROTECTION DEVICE ONLY.
 2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
 3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
 4. ROOF DAMAGE SHOULD BE AVOIDED.
 5. PROTECTION SIGNAGE SHOULD BE USED.
 6. DEVICE SHOULD BE MAINTAINED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

BLAZE ORANGE PLASTIC MESH

TYPICAL TREE PROTECTION FENCE DETAIL

NTS



NOTE:

1. BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
2. SIGNS TO BE PLACED APPROXIMATELY 100' FEET APART. CONDITIONS ON SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART.
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.

FOREST CONSERVATION AREA SIGN

NTS

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: *J. S. Doe* DATE: 9-26-08
 APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Signature: *W. J. Smith* DATE: 11-4-08
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Signature: *C. H. Jones* DATE: 11/21/08
 CHIEF, DIVISION OF LAND DEVELOPMENT
 Signature: *W. J. Doe* DATE: 11/21/08
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS
 Signature: _____ DATE: _____
 COUNTY HEALTH OFFICER
 HOWARD COUNTY HEALTH DEPARTMENT

Signature: *J. Ch.* DATE: 9/26/08
 JOHN CANOLES
 DNR QUALIFIED PROFESSIONAL

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. 16193, EXPIRATION DATE: SEPTEMBER 27, 2008."

OWNER/DEVELOPER
 6168 INVESTMENT & RENTAL PROPERTIES, LLC
 5705 LANDING ROAD
 ELKBRIDGE, MARYLAND 21075
 (410) 796-1850

LANDSCAPE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REM.
LS	5	LIQUIDAMBAR STYRACIFLUA AMERICAN SWEETGUM (SHADE)	2 1/2"-3" Cal.	B & B
QR	15	QUERCUS ROBUR 'FASTIGIATA' COLUMNAR ENGLISH OAK (SHADE)	2 1/2"-3" Cal.	B & B
ZS	17	ZELKOVA SERRATA 'VILLAGE GREEN' VILLAGE GREEN ZELKOVA (SHADE)	2 1/2"-3" Cal.	B & B
CO	4	CUPRESSOCYPARIS LEYLANDI LEYLAND CYPRESS (EVERGREEN)	5' - 6' HL.	B & B

STREET TREE CALCULATIONS			
STREET NAME	LINEAR FEET	REQUIRED TREES	PROVIDED TREES
PUBLIC ACCESS STREET-RW	93840	23	23
HANOVER RD-RW	33540	9	9

STREET TREE PLANT LIST				
SYMBOL	QTY	BOTANICAL NAME	SIZE	REMARKS
●	23	SHADE TREES ACER RUBRUM/ RED MAPLE	2 1/2"-3" Cal.	B & B
+	9	PRUNUS SARGENTII SARGENT CHERRY	2 1/2"-3" Cal.	B & B

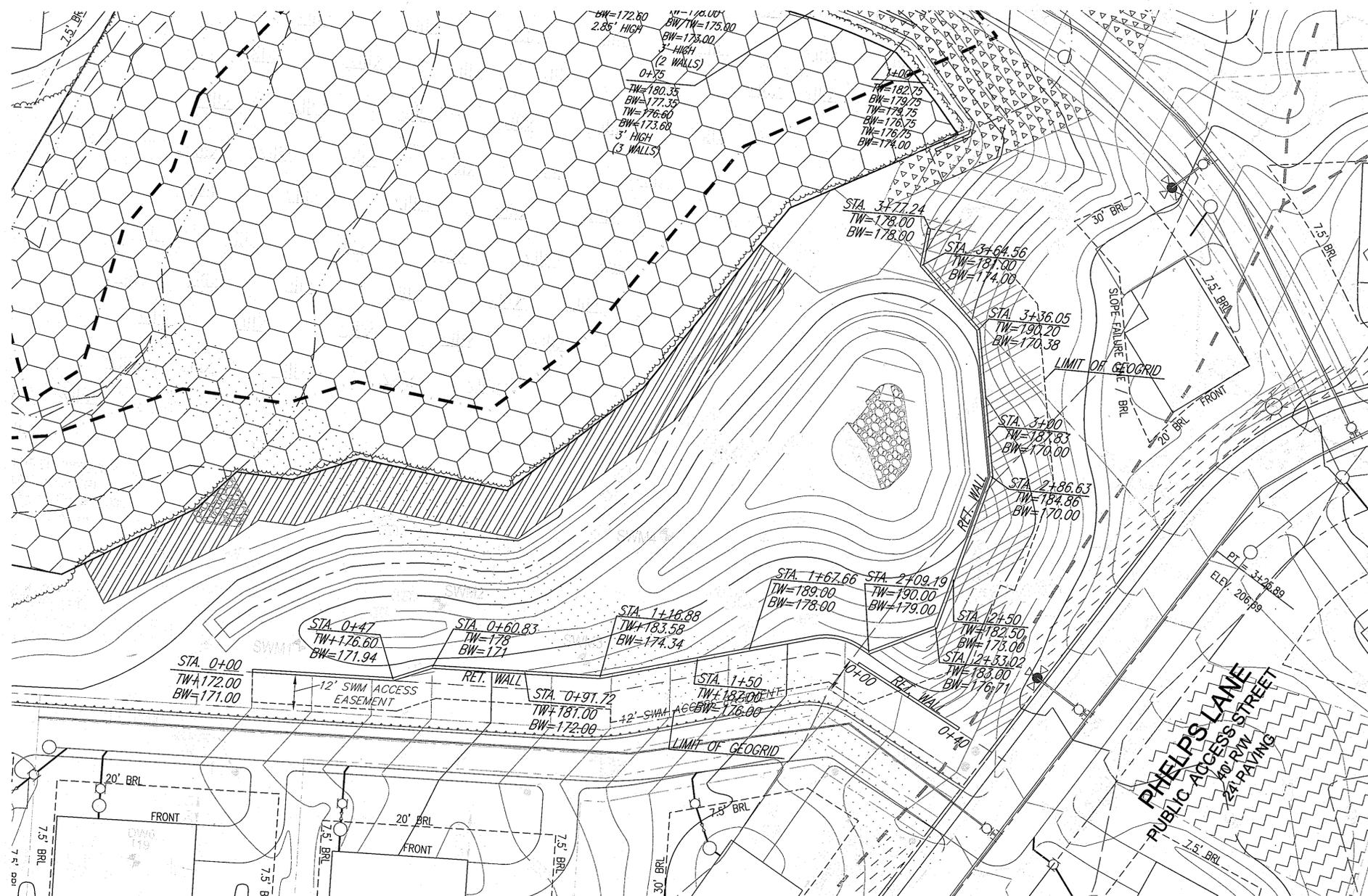
NO. _____ REVISION _____ DATE _____

LANDSCAPE AND FOREST CONSERVATION DETAILS
FINAL ROAD CONSTRUCTION PLANS
SHADY LANE CROSSING
LOTS 1 THRU 25
 6168 HANOVER ROAD
 LIBER 505 AND FOLIO 295
 TAX MAP #38 GRID 9 PARCEL 235
 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: RJ/JCO
 DRAWN BY: RJ/JCO
 CHECKED BY: RHW
 DATE: SEPTEMBER, 2008
 SCALE: AS SHOWN
 W.D. NO.: 04-33.03

10 SHEET OF 12



PLAN VIEW
1"=20'

OWNER/DEVELOPER
6168 INVESTMENT & RENTAL PROPERTIES, LLC
5705 LANDING ROAD
ELKRIE, MARYLAND 21075
(410) 796-1850

NO.	REVISIONS	DATE
1	REVISE RETAINING WALL	6/18/13

RETAINING WALL PLAN
SHADY LANE CROSSING
LOTS 1 THROUGH 24
HOWARD COUNTY, MARYLAND

MAIN ST. BUILDERS

DMA	HMA	12/05/12	3463-A	13 OF 13
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ECS MID-ATLANTIC, LLC
1340 CHARWOOD ROAD, SUITE A
HANOVER, MARYLAND 21076

OFFICE (410) 858-4300
FAX (410) 858-4324

"Setting The Standard For Service"



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

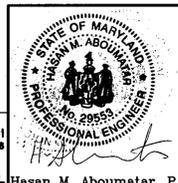
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 7/1/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 3/27/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 29553, Expiration Date: 12/31/2013



Hasan M. Aboumatar, P.E.