

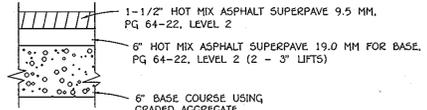
PLAN
SCALE: 1" = 50'

LEGEND

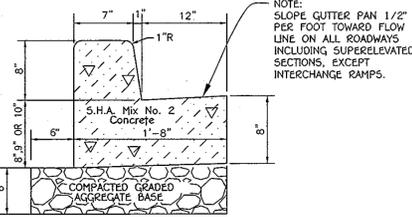
- DENOTES S.H.A. TYPE 'D' PAVING
- DENOTES PAVING OVERLAY
- 10' TREE MAINTENANCE EASEMENT

NOTE:
ALL HANDICAP RAMPS SHALL HAVE DETECTABLE WARNING TRUNCATED DOMES (SEE DETAIL, SHEET 5)

NOTE:
SEE SHEET 5 FOR RAMP CONSTRUCTION DETAIL.



S.H.A. PAVING SECTION
NO SCALE



S.H.A. TYPE 'A' COMB. CONC. CURB AND GUTTER
NO SCALE

NOTE:
SEE STRIPING PLAN, SHEET 3 FOR ALL STRIPING (EXISTING AND PROPOSED) WITHIN MARYLAND ROUTE 99

NO.	DESCRIPTION	DATE
1	Revised F.C.E., S.H.A. widening, Sidewalk Ramps, Storm Drain and Curb & gutter, Lots	10/21/10

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Vest Shearwater 4/26/10
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

W. J. Marshall 4/22/10
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

W. J. Marshall 4-7-10
CHIEF, BUREAU OF HIGHWAYS DATE

WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
PARCEL Nos. 207 AND 224
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

OLD FREDERICK ROAD
PLAN AND PROFILE

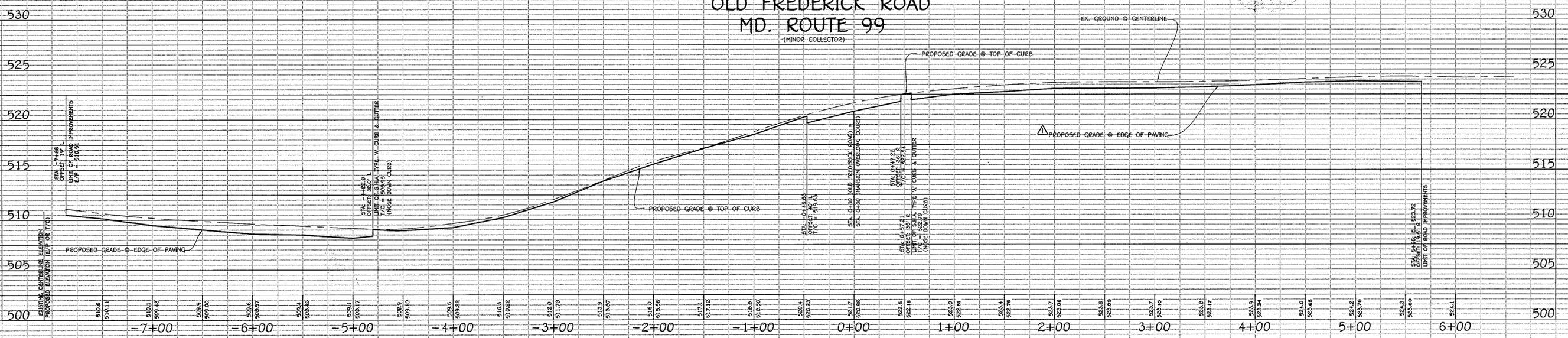
OWNER AND DEVELOPER
MOSSBERGERS, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLCOTT CITY, MARYLAND 21042
410-357-0422

SCALE: AS SHOWN DATE: MARCH 4, 2010 DWG. NO. 2 OF 22
DES. A.M.V. DEN. J.C.L. CHK. A.M.V.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21042
(410) 461-2895



OLD FREDERICK ROAD
MD. ROUTE 99
(MINOR COLLECTOR)

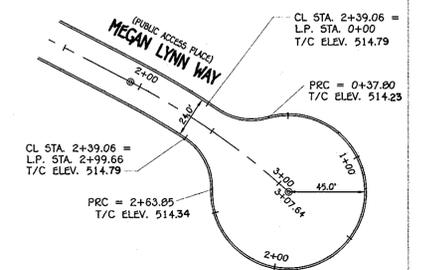


PROFILE
SCALE: HOR. 1" = 50'
VER. 1" = 5'

NOTE:
 ANY DAMAGE TO THE EXISTING ROAD FOR THE PURPOSE OF THE FIRE HYDRANT EXTENSIONS SHALL BE SAW CUT AND REPLACED WITH FULL DEPTH PAVING SECTIONS.

NOTE:
 SEE SHEET 2 FOR CONTINUATION OF OLD FREDERICK ROAD IMPROVEMENTS.

NOTE:
 ALL HANDICAP RAMPS SHALL HAVE DETECTABLE WARNING TRUNCATED DOMES (SEE DETAIL SHEET 5)



DETAIL
 SCALE: 1" = 50'

LEGEND

- 10' WIDE PRIVATE ENTRANCE FEATURE EASEMENT
- DENOTES S.H.A. TYPE 'D' PAVING
- DENOTES PAVING OVERLAY
- RECREATIONAL AREA
- 10' TREE MAINTENANCE EASEMENT
- DENOTES 10' CURB TRANSITION SEE DETAIL SHEET 5

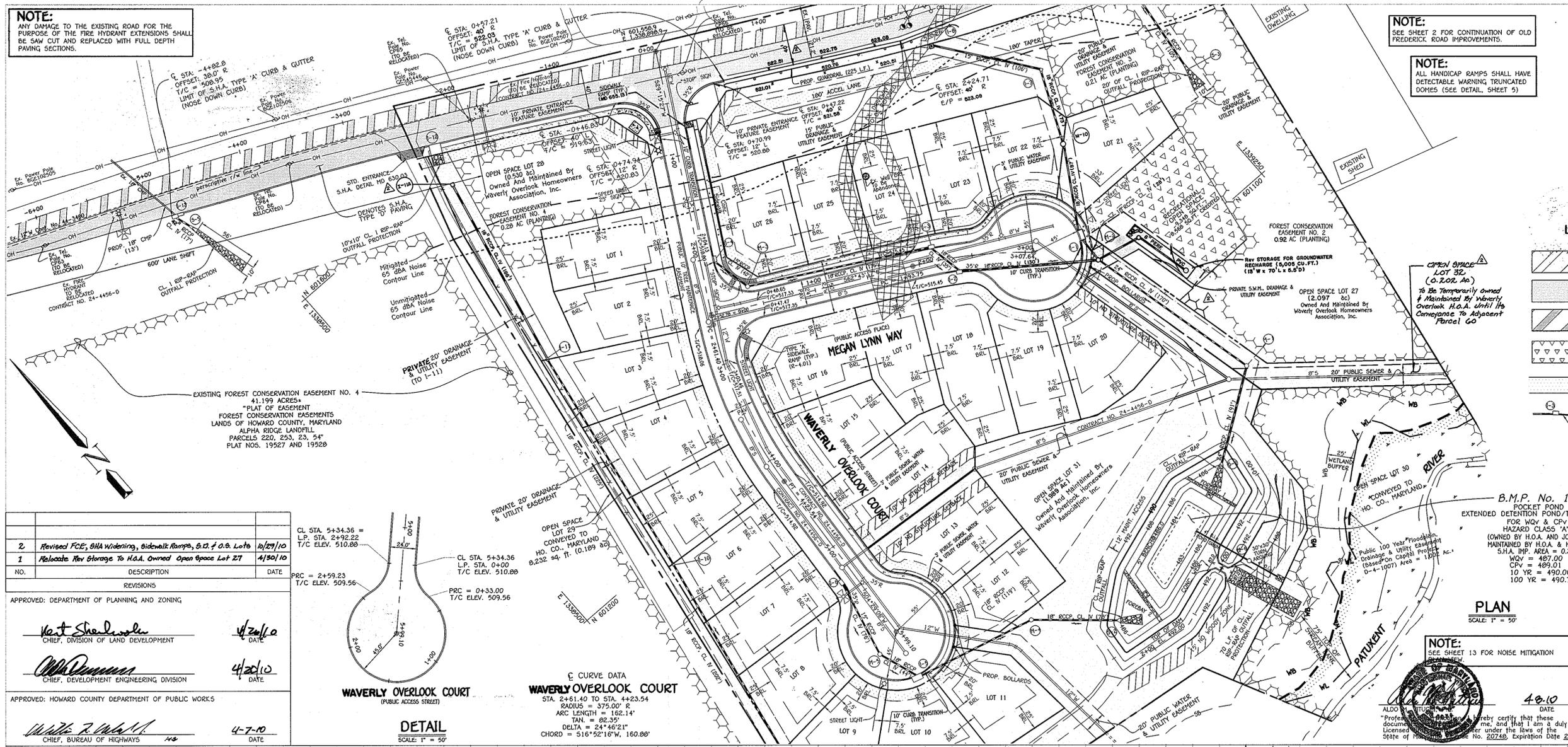
MEGAN LYNN WAY
 STA. 1+93.75 TO STA. 3+07.64
 RADIUS = 439.00' R
 ARC LENGTH = 113.89'
 TAN. = 57.25'
 DELTA = 14°51'50"
 CHORD = 555°17'22"E, 113.57'

WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 4
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

OWNER AND DEVELOPER
 HOESBERGER, LLC
 C/O LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLETTT CITY, MARYLAND 21042
 443-367-0415

DESIGNED BY: DRN. J.C.L.
CHECKED BY: CHK. A.M.V.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10732 BALDWIN NATIONAL PIKE
 ELLETTT CITY, MARYLAND 21042
 (410) 461-2225



NO.	DESCRIPTION	DATE
2	Revised FCE, S.H.A. Widening, Sidewalk Ramps, S.D. of O.S. Lots	10/27/10
1	Relocate Rev Storage To H.A.A. Owned Open Space Lot 27	4/30/10

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Neil Shadlow
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 4/26/10

Chris Dorman
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 4/26/10

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

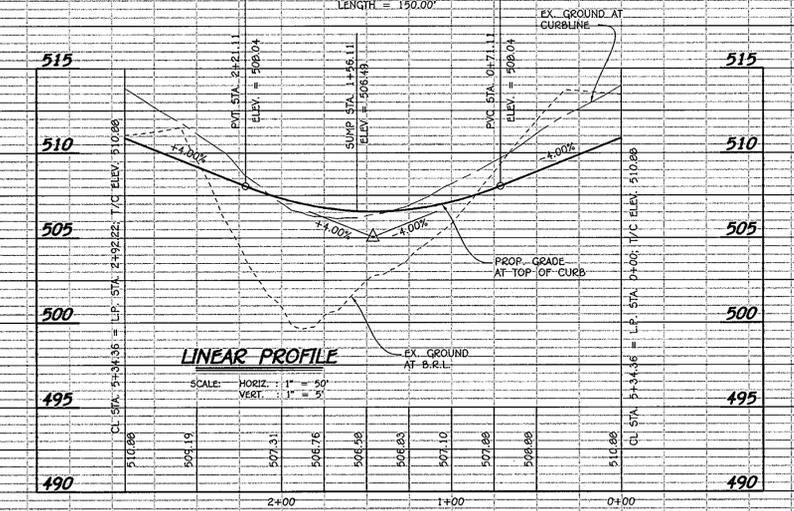
Walter R. White
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 4-7-10

WAVERLY OVERLOOK COURT
 (PUBLIC ACCESS STREET)
 SCALE: 1" = 50'

WAVERLY OVERLOOK COURT
 STA. 2+61.40 TO STA. 4+23.54
 RADIUS = 375.00' R
 ARC LENGTH = 162.14'
 TAN. = 82.35'
 DELTA = 24°45'21"
 CHORD = 516°52'18"W, 160.80'

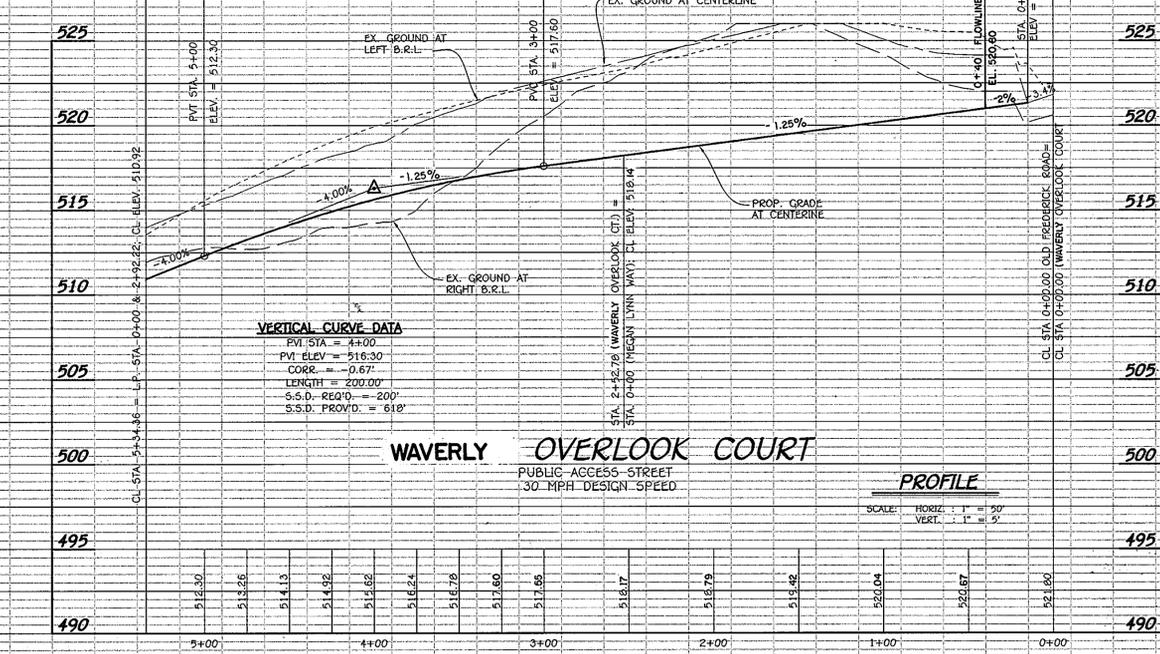
WAVERLY OVERLOOK COURT

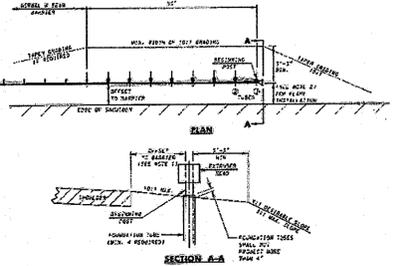
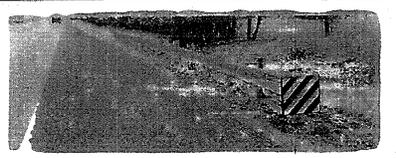
VERTICAL CURVE DATA
 PVI STA = 1+46.11
 PVI ELEV = 509.04
 CORR = +1.50'
 LENGTH = 150.00'



WAVERLY OVERLOOK COURT

VERTICAL CURVE DATA
 PVI STA = 4+00
 PVI ELEV = 518.30
 CORR = -0.67'
 LENGTH = 200.00'
 S.S.D. REQ'D. = 200'
 S.S.D. PROVIDED = 610'

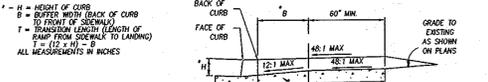
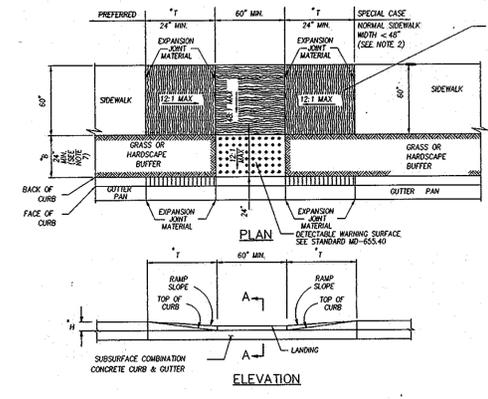




NOTES:
 1. ALL DIMENSIONS IN ALL SECTIONS SHALL BE MEASURED TO THE FACE OF THE CURB UNLESS OTHERWISE NOTED.
 2. THE TRAFFIC BUFFER SHALL BE PLACED AT LEAST 18" FROM THE FACE OF THE CURB UNLESS OTHERWISE NOTED.
 3. BUFFER SHALL BE AT LEAST 24" WIDE.

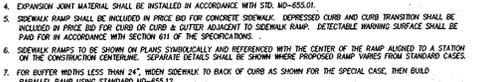
REVISION NO.	DESCRIPTION	DATE
1	Revised Roadway Details & Road Profiles	10/20/10

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

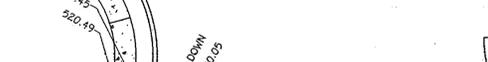


NOTES:
 1. TO BE USED WHERE AT LEAST 7'-0" EXISTS BETWEEN THE BACK OF CURB AND THE BACK OF SIDEWALK. THIS STANDARD MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.
 2. WHERE 60" SIDEWALK CAN NOT BE PROVIDED, A DESIGN BUFFER MUST BE REQUESTED.
 3. NO BUFFER SHALL BE PROVIDED ON THE RAMP OR SIDEWALK SHALL EXCEED 12:1 IN THE DIRECTION OF PEDESTRIAN TRAVEL OR 48:1 PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL.
 4. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.
 5. SIDEWALK RAMP SHALL BE INCLUDED IN PRICE BID FOR CONCRETE SIDEWALK. DETECTABLE CURB AND CURB TRANSITION SHALL BE INCLUDED IN PRICE BID FOR CURB & GUTTER ADJACENT TO SIDEWALK RAMP. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
 6. SIDEWALK RAMP SHALL BE SHOWN ON PLANS SUBSEQUENTLY AND REFERENCED WITH THE CENTER OF THE RAMP ALLOWED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED RAMP VARIES FROM STANDARD CASES.
 7. FOR BUFFER WIDTHS LESS THAN 24", WIDE SIDEWALK TO BACK OF CURB AS SHOWN FOR THE SPECIAL CASE, THEN BUILD PARALLEL RAMP USING STANDARD MD-655.12.

SECTION A-A
 NO SCALE MD-655.13



PLACEMENT GUIDELINES
 WHERE ISLANDS OR MEDIAN ARE LESS THAN 6 FEET WIDE, THE DETECTABLE WARNING SURFACE EXTENDS ACROSS THE FULL LENGTH OF THE CUT THROUGH THE ISLAND OR MEDIAN.

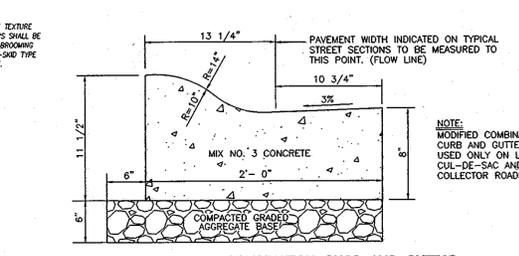


NOTES:
 1. THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 TO 8 INCHES FROM THE FACE OF CURB.
 2. FOR SKEWED APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF CURB ARE NO LESS THAN 0.5' AND NO MORE THAN 3.0' FROM THE BACK OF CURB. TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY.
 3. DETECTABLE WARNING SURFACE SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 611 OF THE SPECIFICATIONS.
 4. DETECTABLE WARNING SURFACES ARE REQUIRED AT STREET CROSSING & SIGNALIZED INTERSECTIONS.

DETECTABLE WARNING SURFACE
 STD. DETAIL NO. 655-10



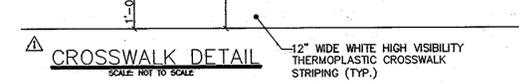
CONCRETE CURB & GUTTER TRANSITION
 NO SCALE



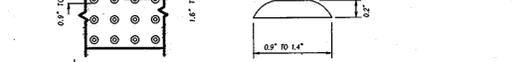
MODIFIED COMBINATION CURB AND GUTTER
 NO SCALE



CROSSWALK DETAIL
 SCALE: NOT TO SCALE



DOMES PLACING
 0.5' TO 1.4'



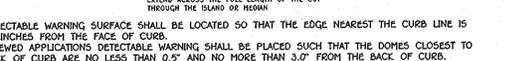
DOMES PLACING
 0.5' TO 1.4'



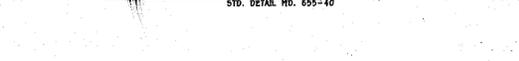
DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



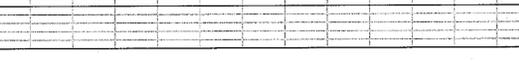
DOMES PLACING
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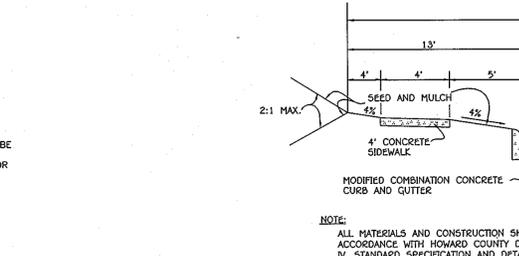
DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



TYPICAL ROADWAY SECTION
 NO SCALE

ROAD NAME	CLASSIFICATION	DESIGN SPEED	ZONING	STATION LIMITS	PAVING SECTION
MANSION OVERLOOK COURT	PUBLIC ACCESS STREET	30 M.P.H.	R-ED	0+00 TO 2+99.10	P-2
MEGAN LYNN WAY	PUBLIC ACCESS PLACE	25 M.P.H.	R-ED	0+00 TO 2+99.66	P-2

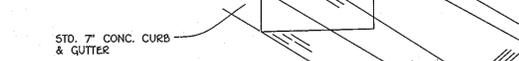
SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	MIN HMA WITH GAB	HMA WITH CONSTANT GAB
P-2	PARKING DRIVE ANULES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SACS: RESIDENTIAL	3 TO <5	1.5	1.5
		5 TO <8	2.0	2.0
		8.0	3.5	4.0



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



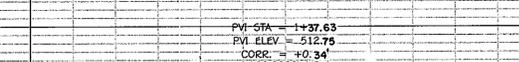
DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



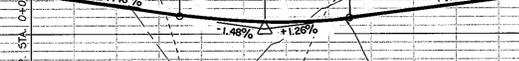
DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



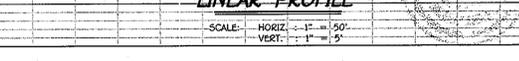
DOMES PLACING
 0.5' TO 1.4'



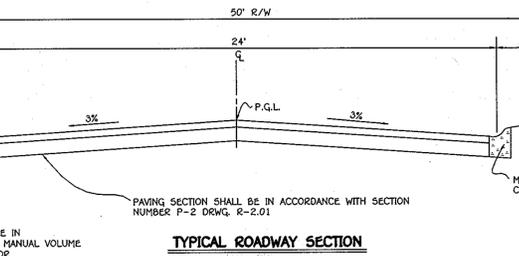
DOMES PLACING
 0.5' TO 1.4'



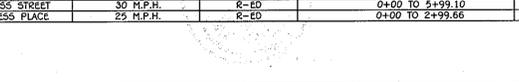
DOMES PLACING
 0.5' TO 1.4'



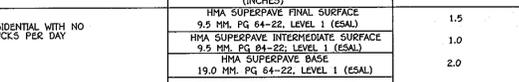
DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



DOMES PLACING
 0.5' TO 1.4'



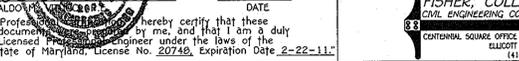
DOMES PLACING
 0.5' TO 1.4'



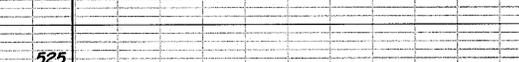
DOMES PLACING
 0.5' TO 1.4'



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 0.5' TO 1.4'



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 0.5' TO 1.4'



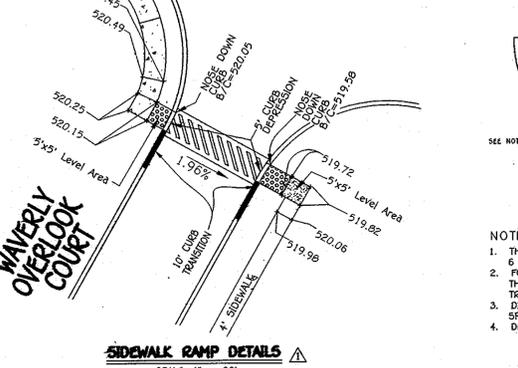
DOMES PLACING
 0.5' TO 1.4'



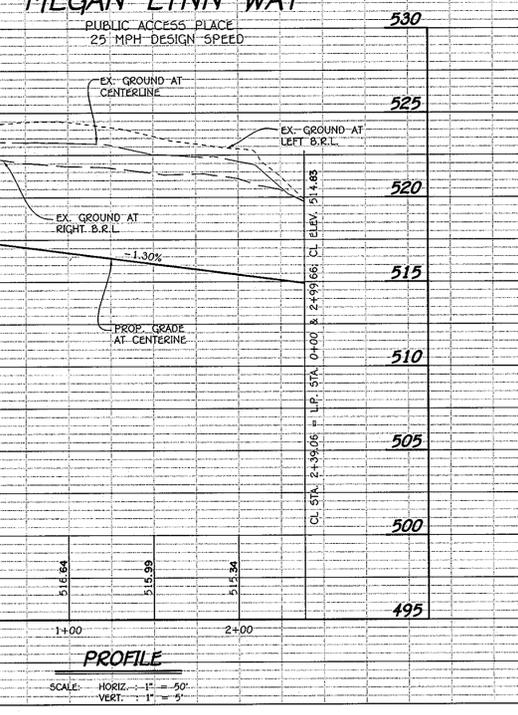
DOMES PLACING
 0.5' TO 1.4'

NO.	DESCRIPTION	DATE
1	Revised Roadway Details & Road Profiles	10/20/10

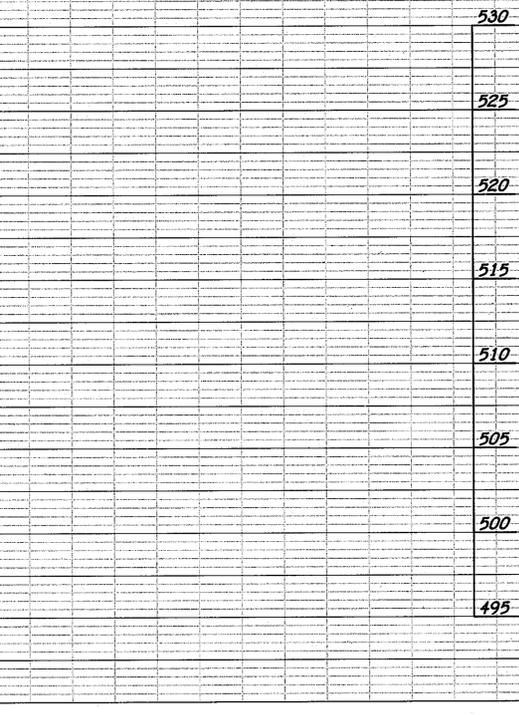
APPROVED: DEPARTMENT OF PLANNING AND ZONING
 APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS



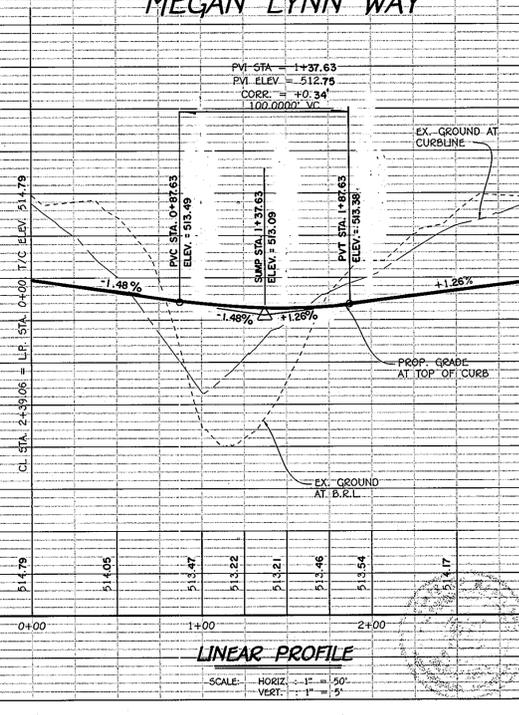
SIDWALK RAMP TRANSITION
 SCALE: 1" = 20'



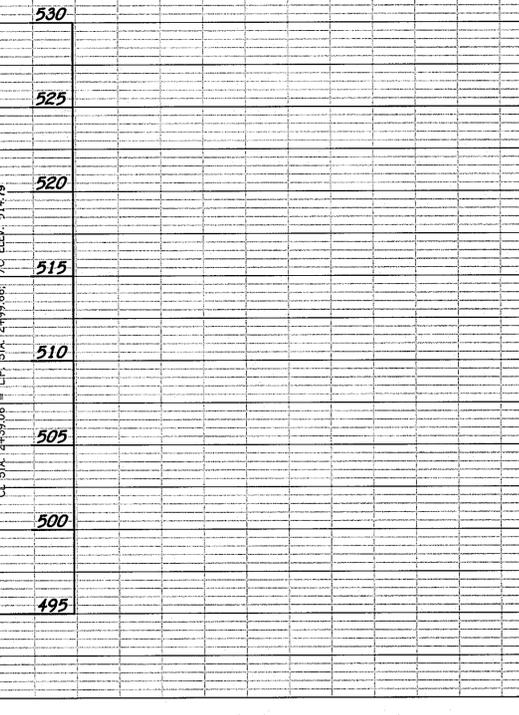
MEGAN LYNN WAY
 PUBLIC ACCESS PLACE
 25 MPH DESIGN SPEED
 SCALE: HORIZ. 1" = 50'
 VERT. 1" = 5'



MEGAN LYNN WAY
 PUBLIC ACCESS PLACE
 25 MPH DESIGN SPEED
 SCALE: HORIZ. 1" = 50'
 VERT. 1" = 5'



MEGAN LYNN WAY
 PUBLIC ACCESS PLACE
 25 MPH DESIGN SPEED
 SCALE: HORIZ. 1" = 50'
 VERT. 1" = 5'



MEGAN LYNN WAY
 PUBLIC ACCESS PLACE
 25 MPH DESIGN SPEED
 SCALE: HORIZ. 1" = 50'
 VERT. 1" = 5'

WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 4
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

MEGAN LYNN WAY ROADWAY DETAILS
 PROFILE

OWNER AND DEVELOPER
 MORSEBERGER, LLC
 C/O LAND DESIGN & DEVELOPMENT, INC.
 9300 DORSETT HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 443-367-0415

SCALE: AS SHOWN DATE: MARCH 4, 2010 DWG. NO. 5 OF 22
 DES. AM.V. DRN. J.C.L. CHK. AM.V.

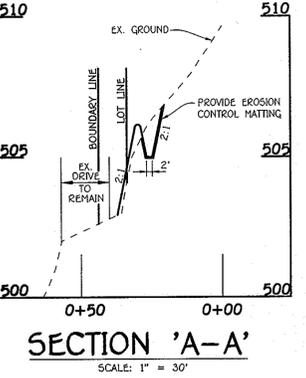
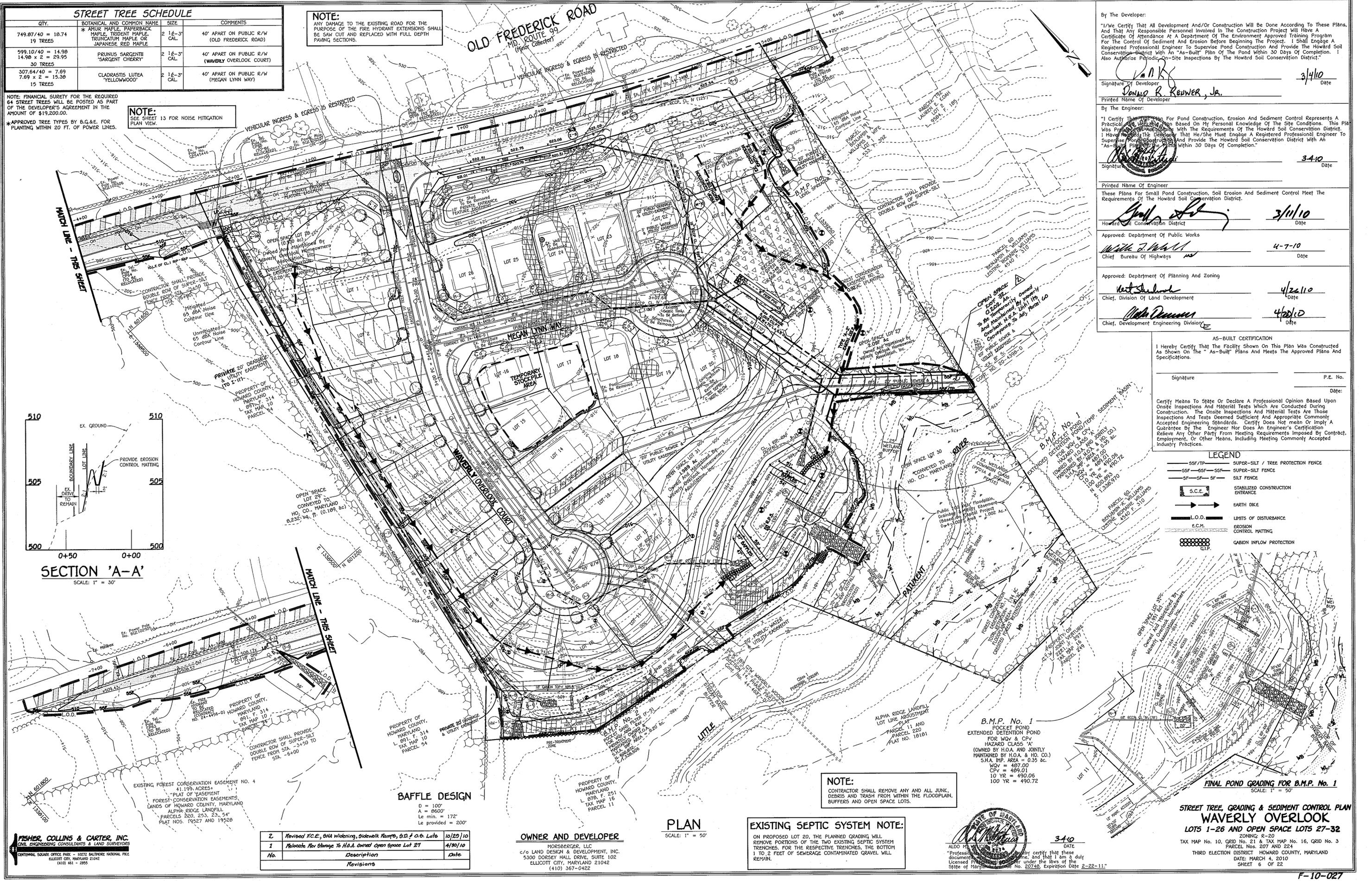
FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 10772 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2899

STREET TREE SCHEDULE			
QTY.	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
749.87/40 = 18.74 19 TREES	* AMUR MAPLE, PAPERBACK MAPLE, TRIDENT MAPLE, TRUNCATUM MAPLE OR JAPANESE RED MAPLE	2 1/2" CAL.	40' APART ON PUBLIC R/W (OLD FREDERICK ROAD)
599.10/40 = 14.98 14.98 x 2 = 29.95 30 TREES	PRUNUS SARGENTII 'SARGENT CHERRY'	2 1/2" CAL.	40' APART ON PUBLIC R/W (WAVERLY OVERLOOK COURT)
307.64/40 = 7.69 7.69 x 2 = 15.38 15 TREES	CLADRASTIS LUTEA 'YELLOWWOOD'	2 1/2" CAL.	40' APART ON PUBLIC R/W (MEGAN LYNN WAY)

NOTE:
ANY DAMAGE TO THE EXISTING ROAD FOR THE PURPOSE OF THE FIRE HYDRANT EXTENSIONS SHALL BE SAW CUT AND REPLACED WITH FULL DEPTH PAVING SECTIONS.

NOTE:
SEE SHEET 13 FOR NOISE MITIGATION PLAN VIEW.

NOTE: FINANCIAL SURETY FOR THE REQUIRED 64 STREET TREES WILL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$19,200.00.
*APPROVED TREE TYPES BY B.G.&E. FOR PLANTING WITHIN 20 FT. OF POWER LINES.



FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CORPORATE OFFICE: 10722 WILMOTHE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21042
(410) 461-2895

No.	Description	Date
2	Revised P.C.E., 5th Widening, Sidewalk Ramp, & D.F. of C.B. Lots	10/29/10
1	Relocate Sewerage to H.O.A. Owned Open Space Lot 27	4/30/10

OWNER AND DEVELOPER
MORSBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLCOTT CITY, MARYLAND 21042
(410) 357-0422

PLAN
SCALE: 1" = 50'

EXISTING SEPTIC SYSTEM NOTE:
ON PROPOSED LOT 20, THE PLANNED GRADING WILL REMOVE PORTIONS OF THE TWO EXISTING SEPTIC SYSTEM TRENCHES. FOR THE RESPECTIVE TRENCHES, THE BOTTOM 1 TO 2 FEET OF SEWERAGE CONTAMINATED GRAVEL WILL REMAIN.



3410
DATE

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

Signature of Developer: *Donald B. Reuver, Jr.* 3/4/10
Date

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

Signature of Engineer: *Donald B. Reuver, Jr.* 3/4/10
Date

Printed Name Of Engineer: *Donald B. Reuver, Jr.* 3/1/10
Date

Approved: Department Of Public Works
William J. ... 4-7-10
Date

Approved: Department Of Planning And Zoning
Neil ... 4/22/10
Date

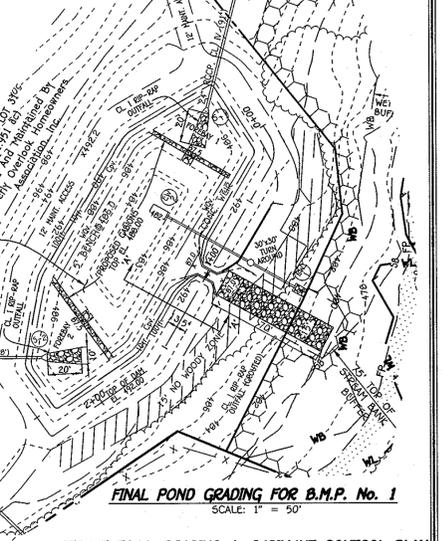
AS-BUILT CERTIFICATION
I hereby certify that the facility shown on this plan was constructed as shown on the "As-Built" Plans and meets the approved plans and specifications.

Signature: _____ P.E. No. _____
Date: _____

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

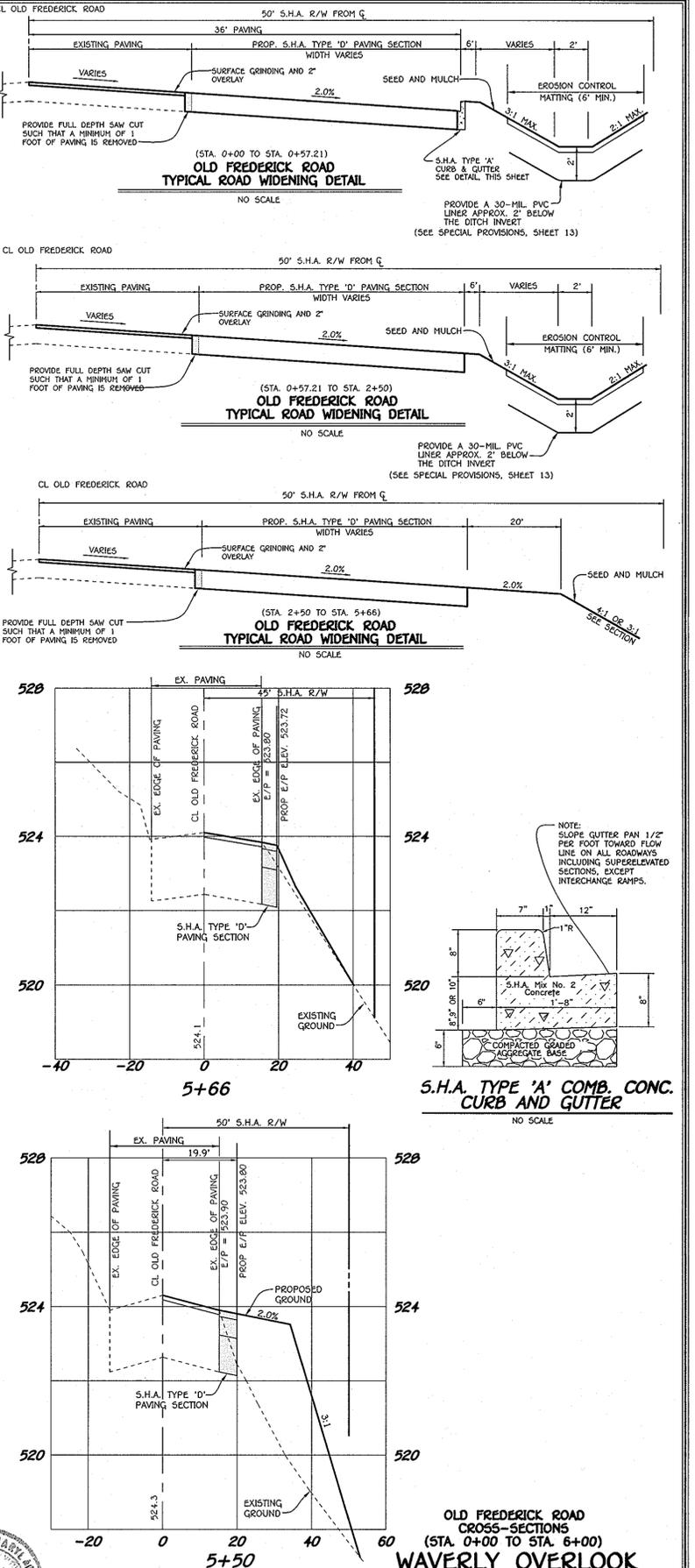
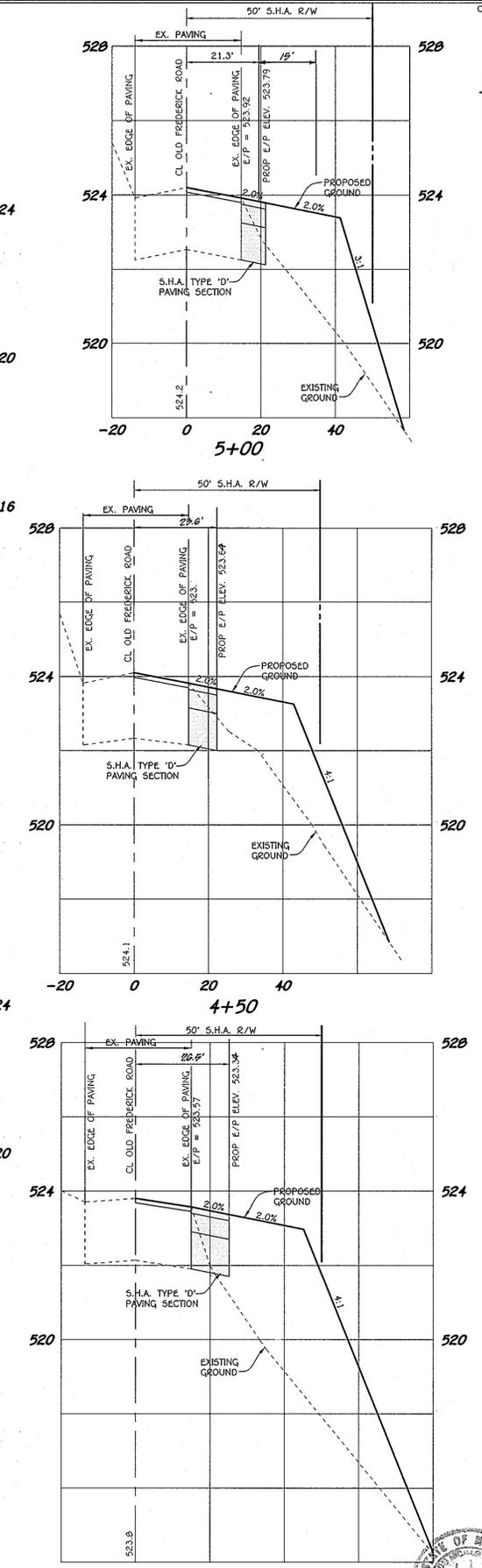
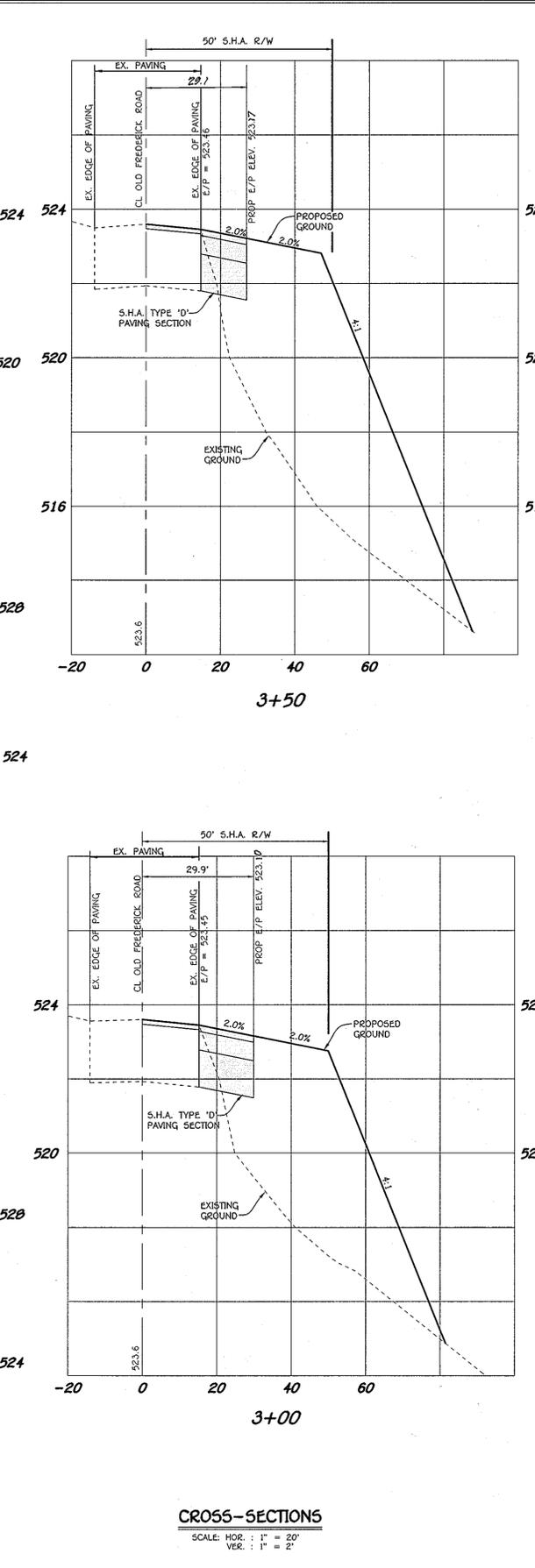
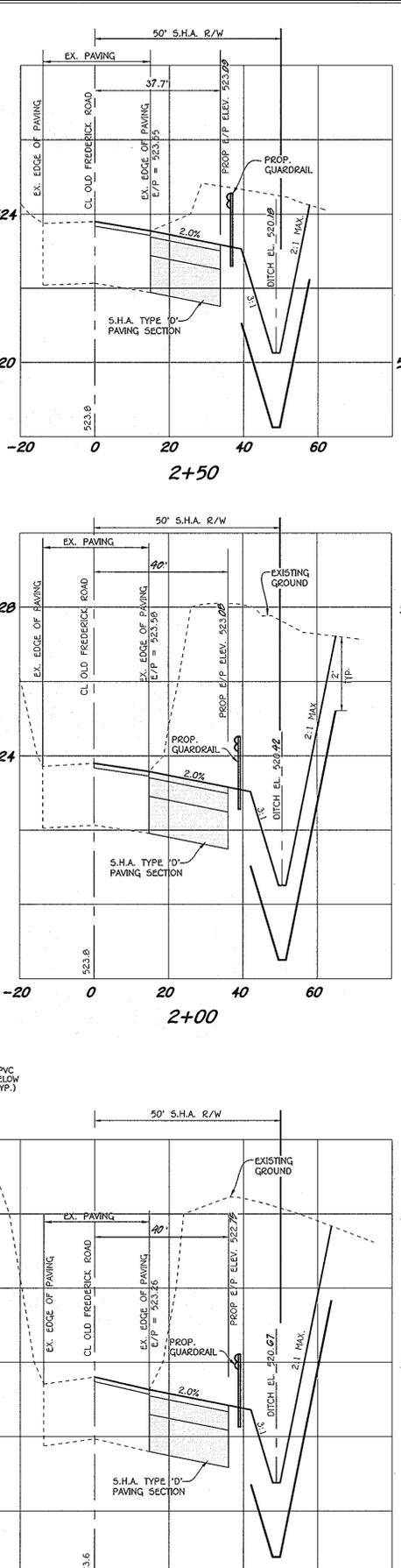
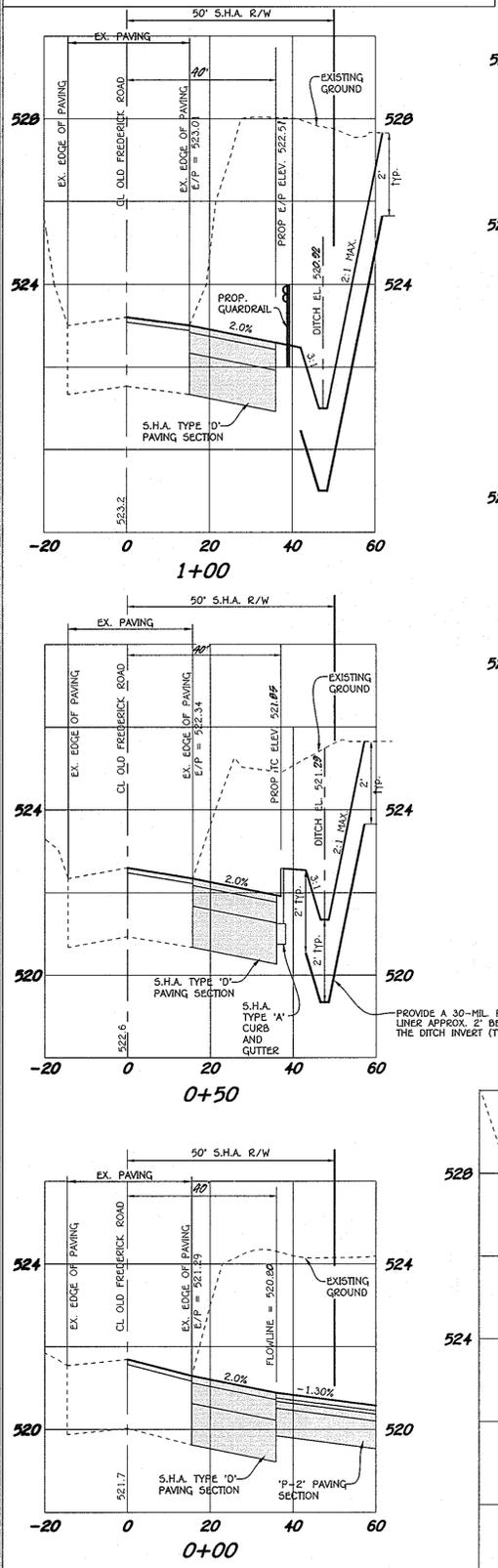
LEGEND

— SSF/TP —	SUPER-SILT / TREE PROTECTION FENCE
— SSF — SSF —	SUPER-SILT FENCE
— SF — SF — SF —	SILT FENCE
[Symbol]	STABILIZED CONSTRUCTION ENTRANCE
[Symbol]	EARTH DIKE
[Symbol]	LIMITS OF DISTURBANCE
[Symbol]	EROSION CONTROL MATTING
[Symbol]	GABION INFLOW PROTECTION



STREET TREE, GRADING & SEDIMENT CONTROL PLAN
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
TAX MAP NO. 10, GRID NO. 21 & TAX MAP NO. 16, GRID NO. 3
PARCEL NOS. 207 AND 224
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 6 OF 22

APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 4-7-10
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DATE: 4/21/10
 CHIEF, DIVISION OF LAND DEVELOPMENT
 APPROVED: DEPARTMENT OF ENGINEERING
 DATE: 4/21/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 12200 WOODBURN DRIVE, SUITE 100
 ELICOTT CITY, MARYLAND 21042
 (410) 461-2999

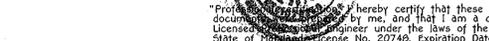
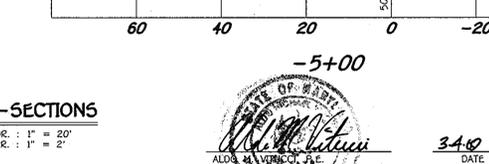
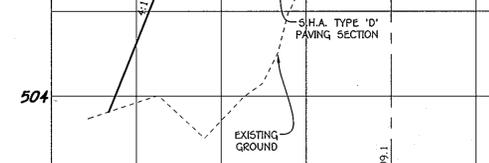
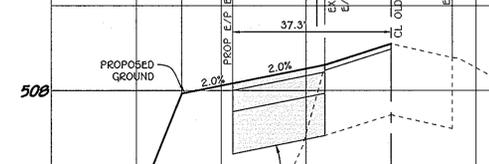
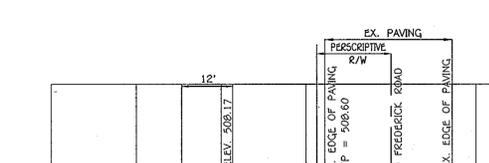
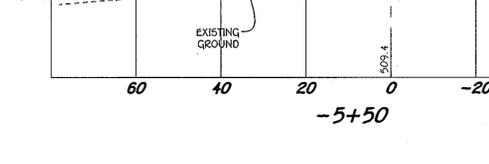
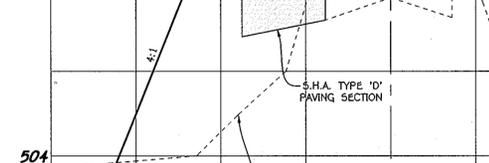
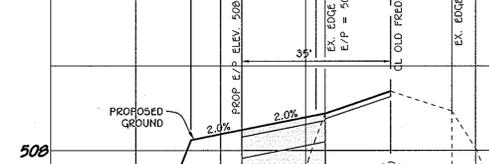
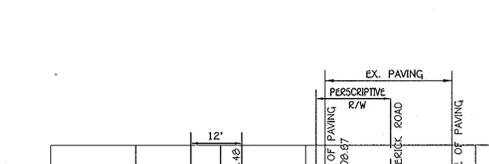
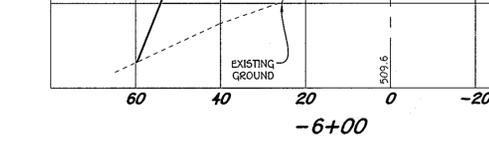
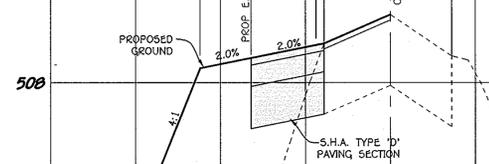
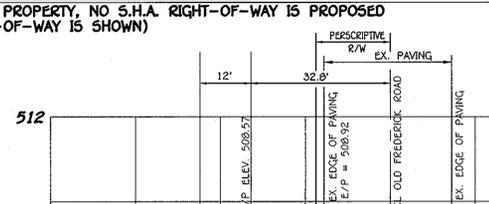
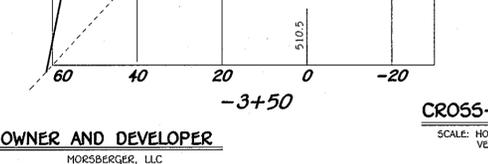
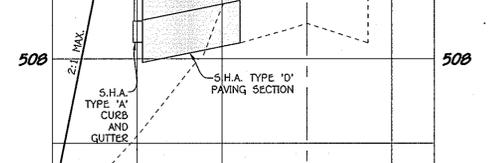
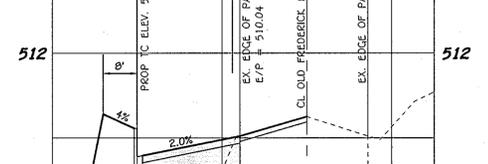
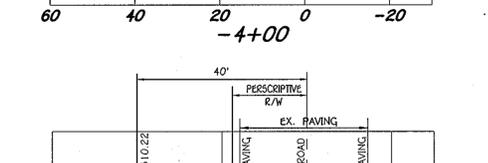
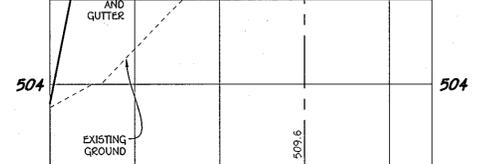
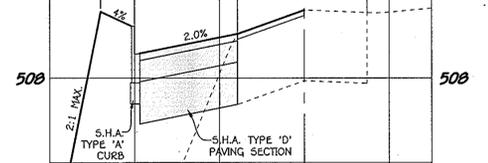
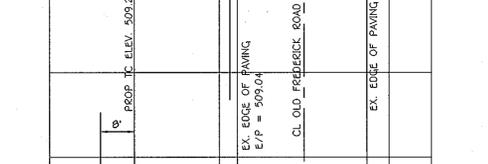
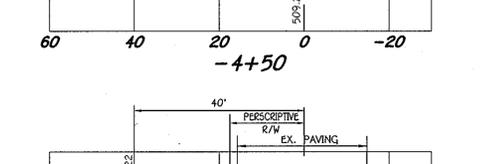
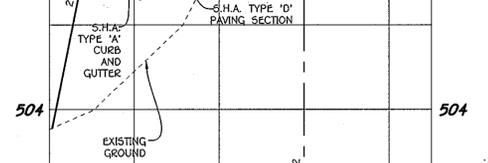
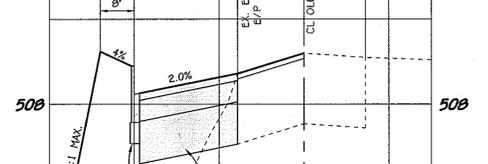
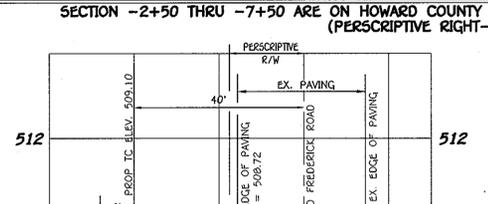
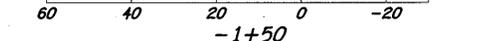
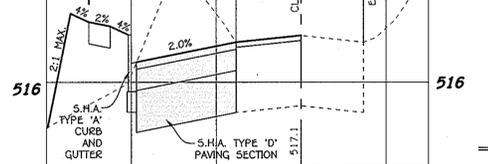
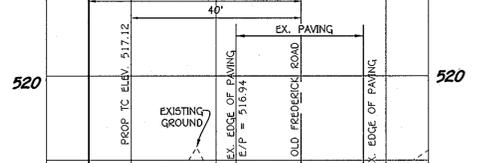
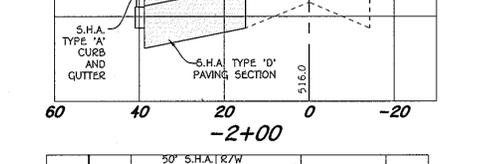
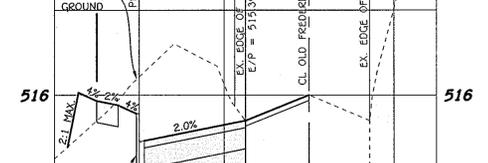
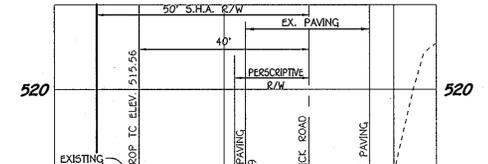
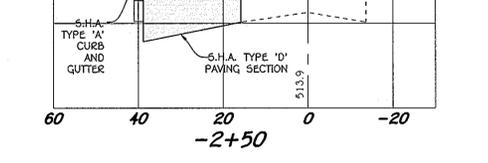
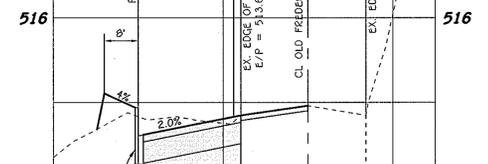
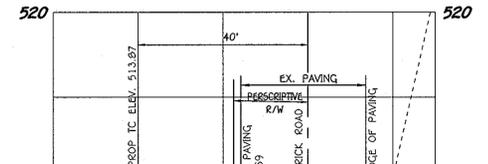
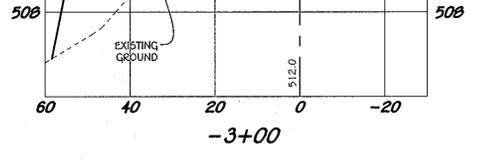
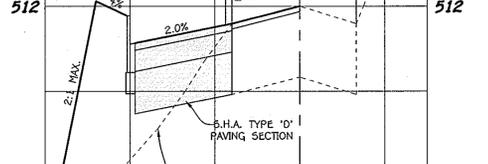
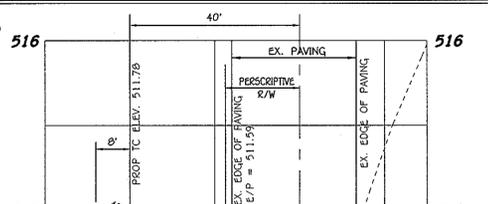
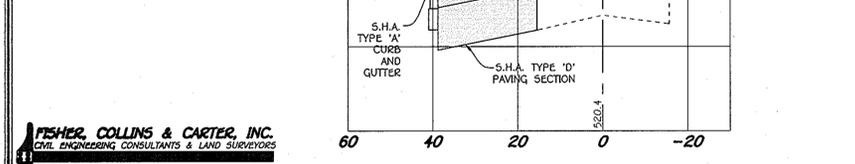
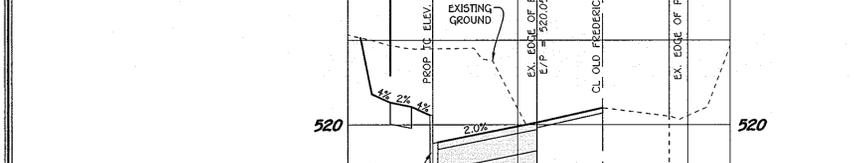
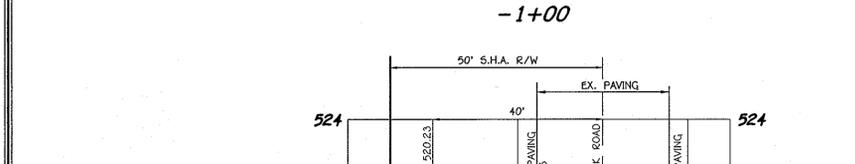
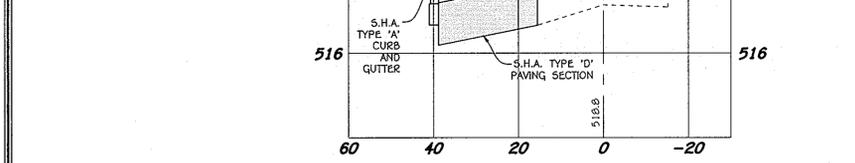
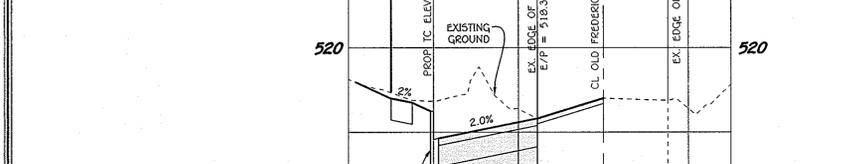
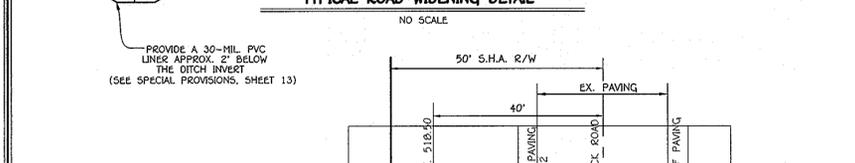
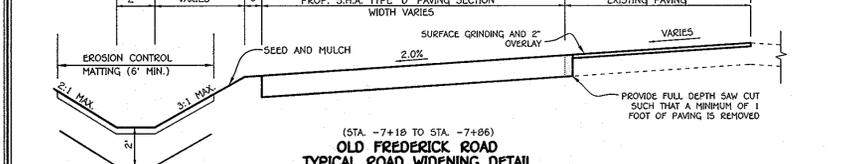
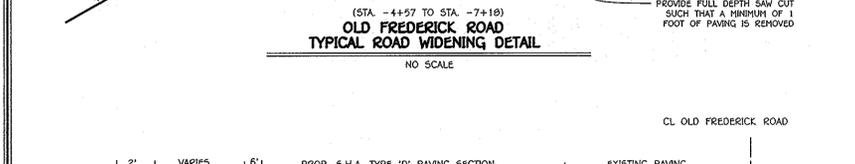
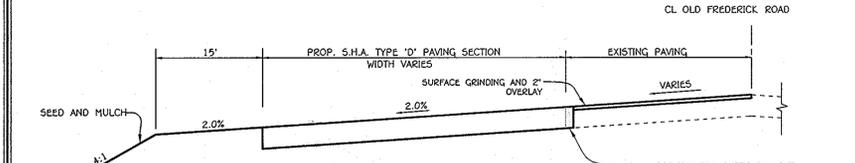
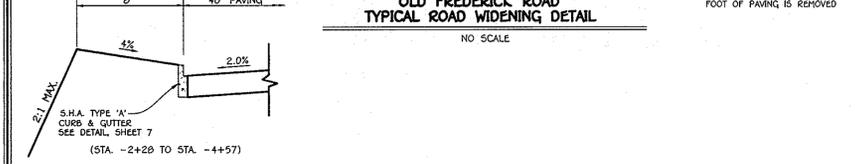
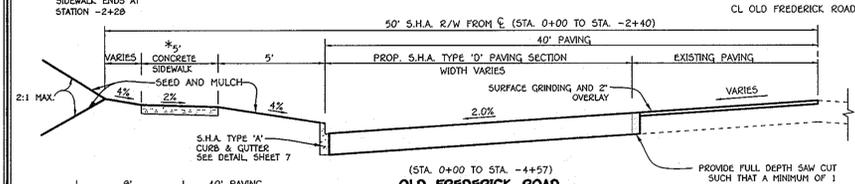
CROSS-SECTIONS
 SCALE: HOR. : 1" = 20'
 VER. : 1" = 2'

OWNER AND DEVELOPER
 MORSEBERGER, LLC
 C/O LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELICOTT CITY, MARYLAND 21042
 410-367-0422

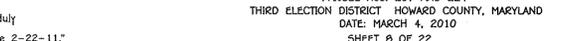
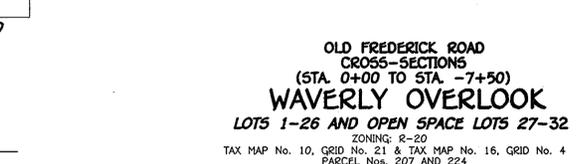
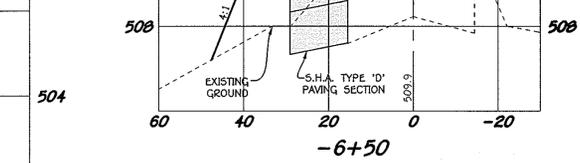
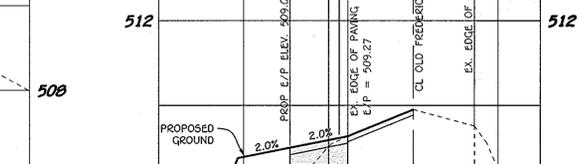
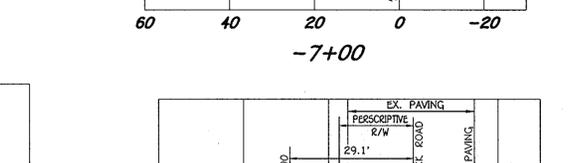
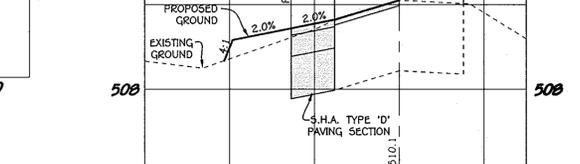
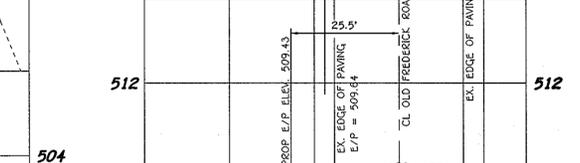
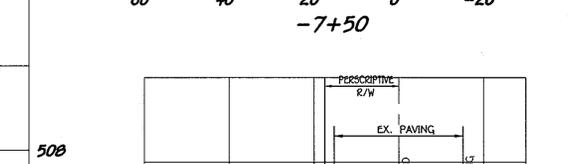
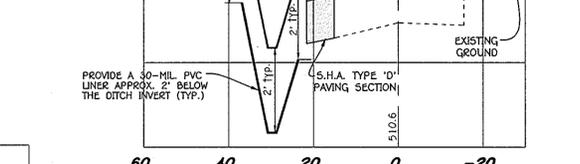
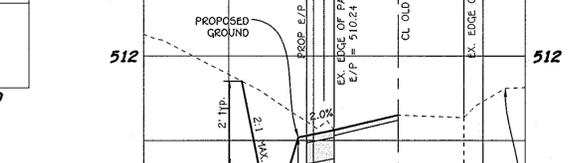
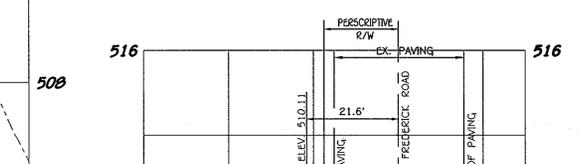
No.	Description	Date
1	Revised 50' widening	10/20/10

OLD FREDERICK ROAD
 CROSS-SECTIONS
 (STA. 0+00 TO STA. 6+00)
 WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 4
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 7 OF 22

* NOTE: 5" CONCRETE SIDEWALK ENDS AT STATION -2+20



APPROVED: DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 Chief, Division of Land Development
 Chief, Development Engineering Division



SECTION -2+50 THRU -7+50 ARE ON HOWARD COUNTY PROPERTY, NO S.H.A. RIGHT-OF-WAY IS PROPOSED (PERSPECTIVE RIGHT-OF-WAY IS SHOWN)

OWNER AND DEVELOPER
 MORSBERGER, LLC
 C/O LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 410-367-0422

CROSS-SECTIONS
 SCALE: HOR. : 1" = 20'
 VER. : 1" = 2'



DATE: 3-4-10

OLD FREDERICK ROAD
 CROSS-SECTIONS
 (STA. 0+00 TO STA. -7+50)
 WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-2-B
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 4
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 8 OF 22

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 10000 SQUARE OFFICE PARK - 10732 BALTIMORE NATIONAL FEE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2895

1:2004/04/15/09/09/CURRENT FINAL R-20/04/15 SHEET 7-8 CROSS-SECTIONS.dwg, 3/8/2010, 1:54:25 PM, James

APPROVED: DEPARTMENT OF PUBLIC WORKS
William Z. Marshall 4-7-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Robert D. Duda 4/24/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

William Z. Marshall 4/20/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DRAINAGE AREA DATA					
STRUCTURE NO.	DRAINAGE AREA	AREA	"C"	ZONED	IMPERVIOUS AREA %
I-1	A	0.70 AC.	0.63	R-20	0.42 54%
I-2	B	0.33 AC.	0.59	R-20	0.16 48%
I-3	C	0.51 AC.	0.54	R-20	0.21 41%
I-4	D	0.34 AC.	0.52	R-20	0.13 38%
I-5	E	1.15 AC.	0.64	R-20	0.64 56%
I-6	F	0.77 AC.	0.55	R-20	0.33 43%
I-7	Q	0.27 AC.	0.41	R-20	0.06 22%
I-8	H	0.31 AC.	0.59	R-20	0.15 48%
I-9	I	0.36 AC.	0.37	R-20	0.06 17%
I-10	J	0.40 AC.	0.37	R-20	0.08 18%
I-11	K	0.60 AC.	0.29	R-20	0.03 5%
I-12	L	0.27 AC.	0.77	R-20	0.20 74%
I-13	M	0.24 AC.	0.83	R-20	0.20 83%
EX. INLET	N	3.90 AC.	0.27	R-20	0.13 3%
EX. 18" CMP	O	33.30 AC.	0.27	R-20	1.66 5%



PLAN
 SCALE: 1" = 100'

PLAN
 SCALE: 1" = 100'

▨ DENOTES 15% - 24.9% SLOPES

NOTE: THERE ARE NO SLOPES 25% OR GREATER ON-SITE AS DEFINED IN HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.

Note: This Plan is For Drainage Area Information Only.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10735 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 451-2095

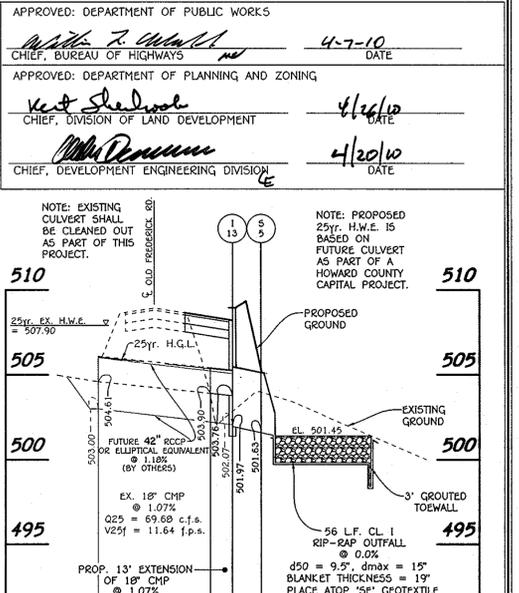
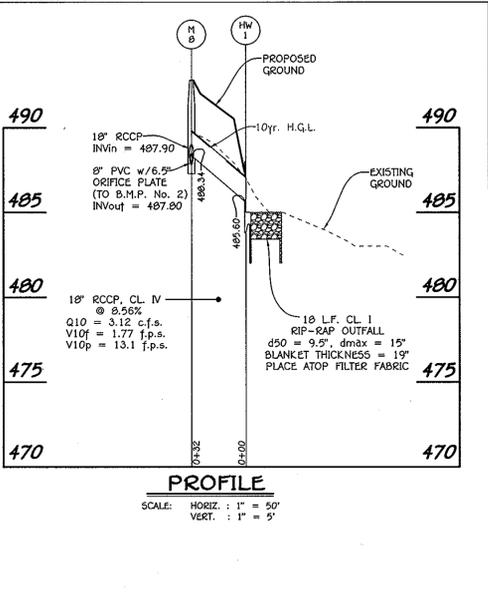
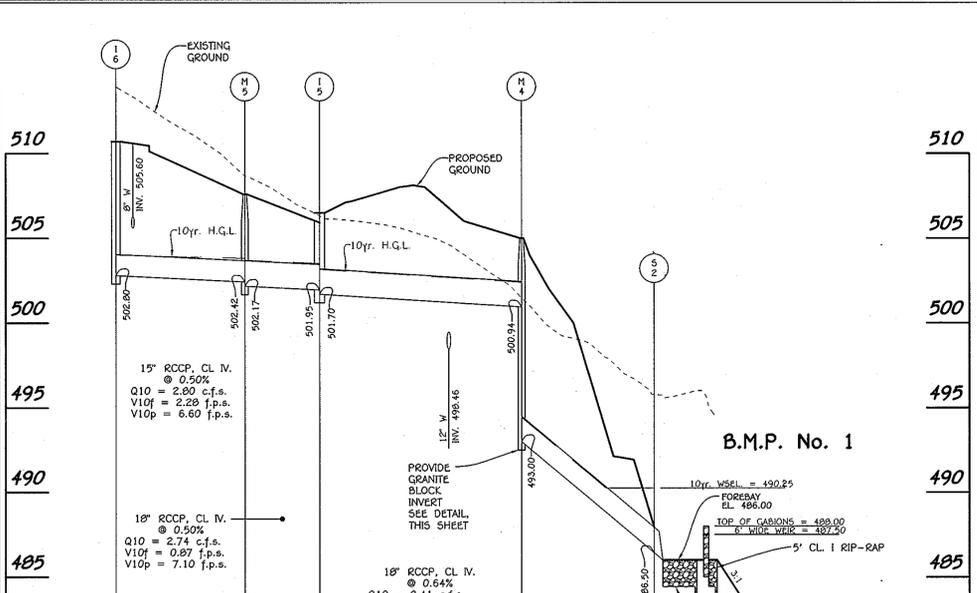
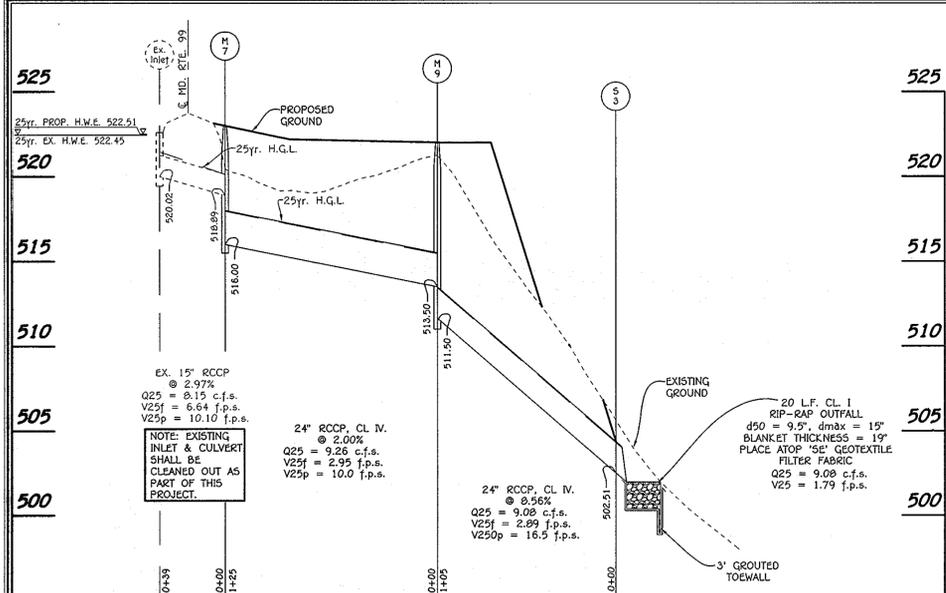
OWNER AND DEVELOPER
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 (410) 367-0422

No.	Description	Date
2	Revised Storm Drain & Open Space Lots	10/29/10
1	Relocate Rev Storage To H.O.A. Owned Open Space Lot 27	4/30/10
Revisions		

ALDO M. VITUCIO
 PROFESSIONAL ENGINEER
 LICENSE NO. 20748, EXPIRATION DATE 2-22-11

4810

STORM DRAIN DRAINAGE AREA MAP
WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 9 OF 22



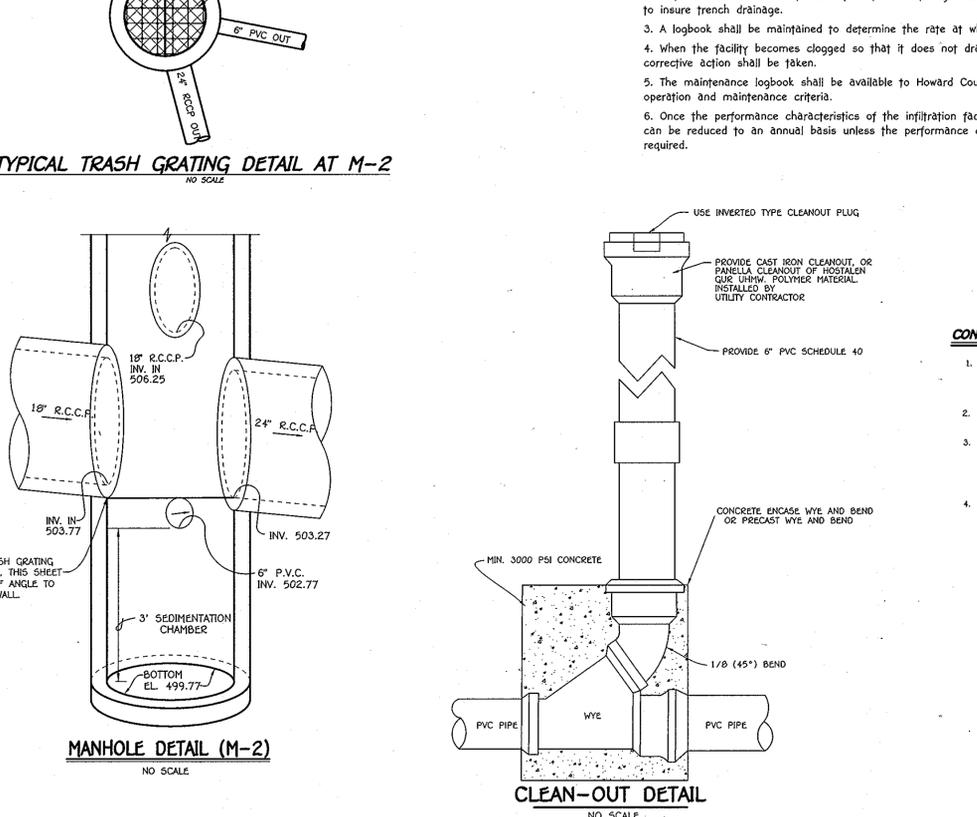
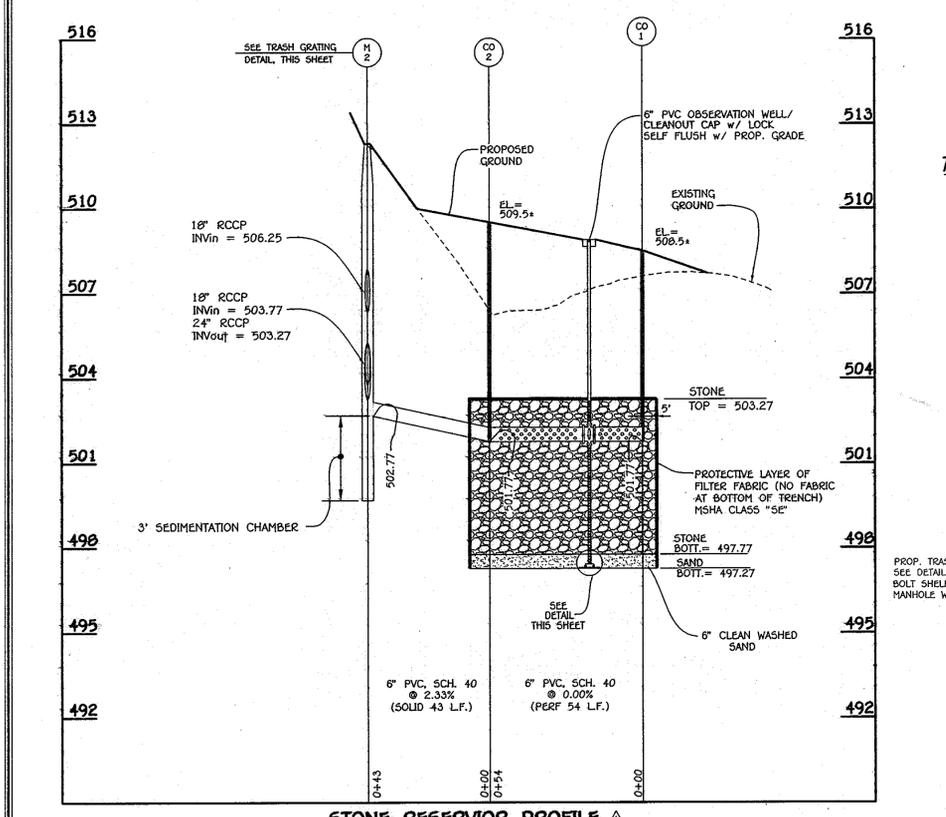
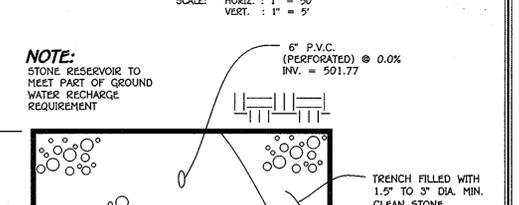
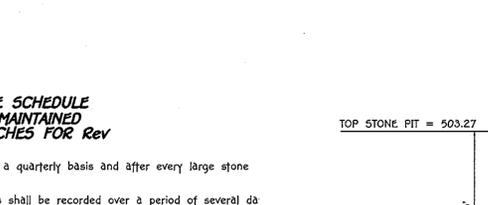
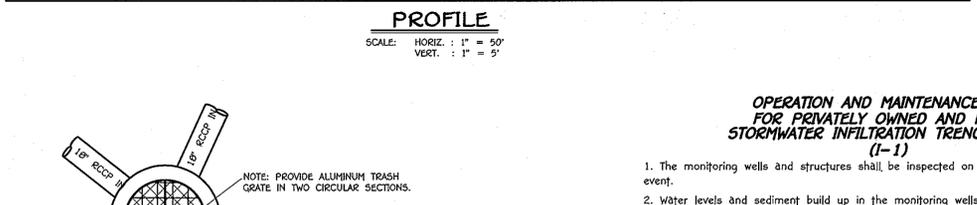
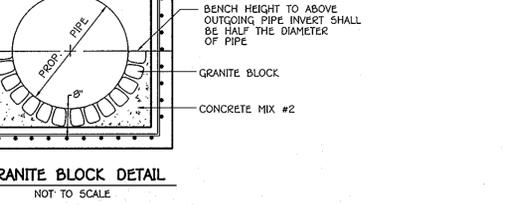
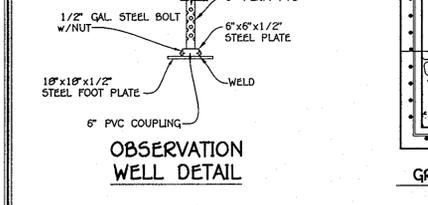
APPROVED: DEPARTMENT OF PUBLIC WORKS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 APPROVED: DEPARTMENT OF LAND DEVELOPMENT
 APPROVED: DEPARTMENT OF ENGINEERING DIVISION

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

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

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

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



CONSTRUCTION SPECIFICATIONS FOR RIP-RAP OUTFALLS

- The subgrade for the filter, riprap or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
- The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.
- Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.
- Stone for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for riprap or gabion outlets shall be delivered and placed in a manner that will insure that it is reasonably homogeneous with the smaller stones and walls filling the voids between the larger stones. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

RIP-RAP CHANNEL DESIGN DATA													
STRUCTURE	AREA (S.F.)	WETTED PERIMETER	R	R ^{2/3}	S	S ^{1/2}	W	d	n	(f.p.s.)	Q	BLANKET THICKNESS	PIPE SIZE
S-1	4.67	11.92	0.3918	0.5338	0.005	0.0707	10.0'	0.43	0.04	1.41	6.34	9.5'	19"
S-2	4.83	8.95	0.5397	0.6590	0.005	0.0707	6.0'	0.66	0.04	1.74	8.41	9.5'	19"
S-3	5.09	9.09	0.5599	0.6780	0.005	0.0707	6.0'	0.69	0.04	1.79	9.08	9.5'	19"
S-4	1.01	6.72	0.1503	0.2809	0.005	0.0707	6.0'	0.16	0.04	0.74	0.75	9.5'	19"
S-5	*26.55	*16.91	*1.5701	*1.353	0.005	0.0707	6.0'	*2.44	0.04	*3.55	*93.49	9.5'	19"
	**21.42	**15.39	**1.3918	**1.2480				**2.10		**3.27	**69.68		26"

* DENOTES 100YR
 ** DENOTES 25YR

NO.	DESCRIPTION	REVISIONS	DATE
2	Revised S.O. Profile I-13 to S-5		10/29/10
1	REVISED STONE RESERVOIR PROFILE AND SECTION		4/30/10

OWNER AND DEVELOPER
 HORSBERGER, LLC
 c/o LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

STATE OF MARYLAND
 I, ALDO J. WILSON, hereby certify that these documents were prepared by me and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-11.

STORM DRAIN PROFILES & DETAILS
WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 11 OF 22

OLD FREDERICK ROAD
MD. ROUTE 99
(Minor Collector)

APPROVED: DEPARTMENT OF PUBLIC WORKS
Walter Z. ... 4-7-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Neil S. ... 4/21/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Will ... 4/20/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

SCHEDULE A - PERIMETER LANDSCAPING

PERIMETER	CATEGORY (PROPERTIES/ROADWAYS)	LANDSCAPE BUFFER TYPE	LINEAR FEET OF ROADWAY FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED		
						SHADE TREES	EVERGREEN TREES	SHRUBS
P-1	ADJACENT TO ROADWAY	B	227.1'	NO	NO	5	6	-
P-2	ADJACENT TO PERIMETER	A	677.6'	NO	NO	11	-	-
P-3	ADJACENT TO PERIMETER	A	128.2'	NO	NO	2	-	-
P-4	ADJACENT TO PERIMETER	A	758.6'	YES 100% (F.C.E. RETENTION)	NO	0	-	-
P-5	ADJACENT TO PERIMETER	A	463.5'	NO	NO	8	-	-
P-6	ADJACENT TO ROADWAY	B	499.2'	NO	NO	10	12	-

NOTES:
 1. INTERNAL LANDSCAPING SHALL BE PROVIDED AT THE SITE DEVELOPMENT PLAN STAGE AND IS THE RESPONSIBILITY OF THE BUILDER.

SCHEDULE D STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF TYPE 'B' PERIMETER	D-1 : 625'	D-2 : 478'
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	YES 265' (F.C.E. RETENTION)	NO
NUMBER OF TREES REQUIRED:		
SHADE TREES	7	10
EVERGREEN TREES	9	12

PLANT LIST

SYMBOL	QTY.	BOTANICAL AND COMMON NAME	SIZE
	17	* ACER RUBRUM OCTOBER GLORY RED MAPLE	2 1/2"-3" CAL.
	36	* QUERCUS ACUTISSIMA SAWTOOTH OAK	2 1/2"-3" CAL.
	18	* ILEX OPACA AMERICAN HOLLY	5' - 6' HT.
	21	CHINESE JUNIPER ROBUSTA	5' - 6' HT.

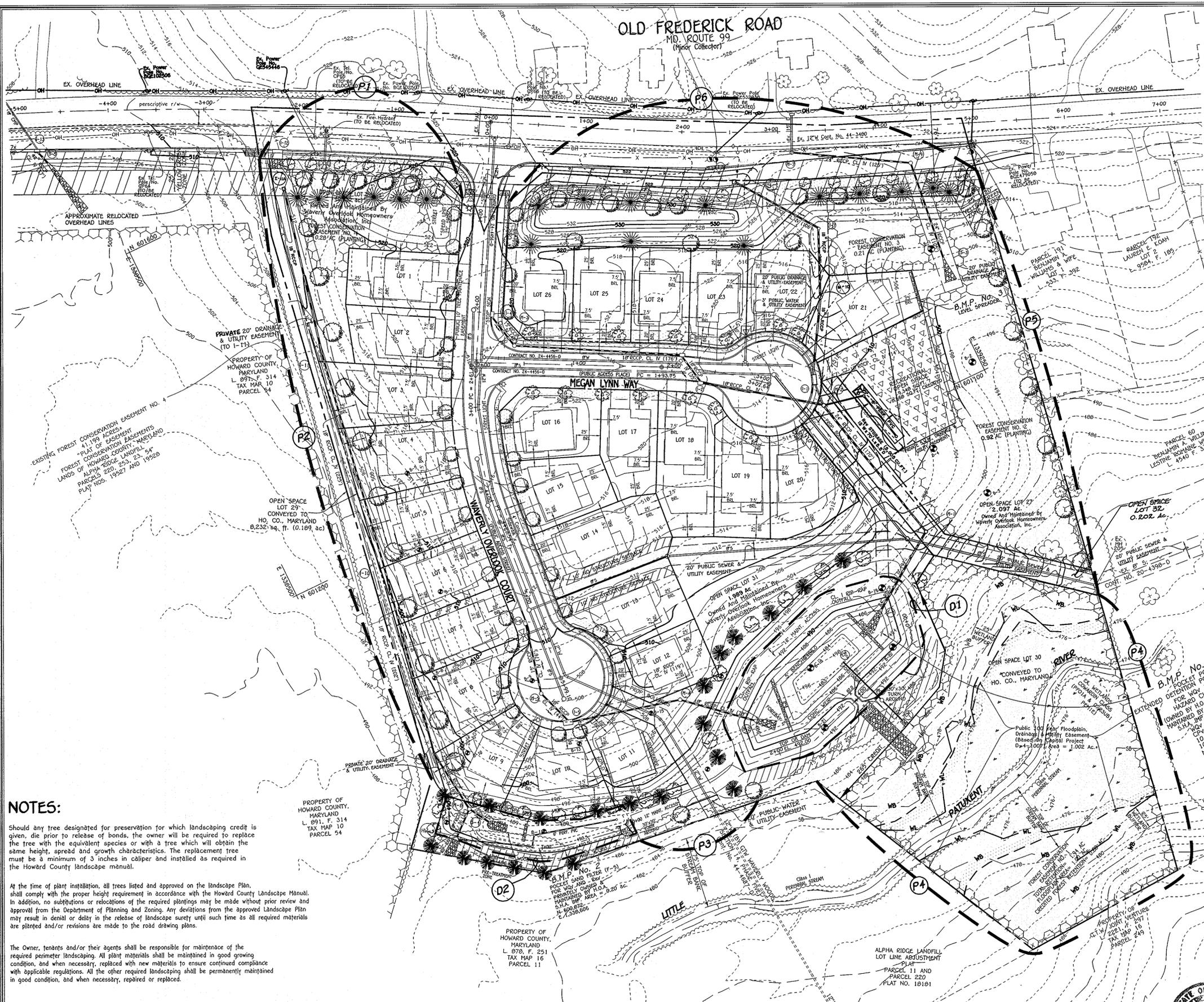
*THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED 53 SHADE & 39 EVERGREEN TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$21,750.00

* APPROVED TREE TYPE TO BE PLANTED WITHIN 20 - 45 FEET (YELLOW ZONE) OF POWER LINES PER B.G.E. PLANTING GUIDE.

LANDSCAPE DEVELOPER'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 letter of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Will ... Name
 4-8-10 Date



NOTES:

Should any tree designated for preservation for which landscaping credit is given, die prior to release of bonds, the owner will be required to replace the tree with the equivalent species or with a tree which will obtain the same height, spread and growth characteristics. The replacement tree must be a minimum of 3 inches in caliper and installed as required in the Howard County landscape manual.

At the time of plant installation, all 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 deviations 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 road drawing plans.

The Owner, tenants and/or their agents shall be responsible for maintenance of the required perimeter landscaping. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All the other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced.

No.	Description	Date
2	Revised BHA Watering, Sidewalk Ramps, F.C.E., 6.12 of O.S. Lots	10/20/10
1	Relocate Rev Storage to H.O.A. Owned Open Space Lot 27	4/30/10
No.	Description	Date

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 HORSBERGER, LLC
 c/o LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

PLAN
 SCALE: 1" = 50'



LANDSCAPE PLAN
WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
 ZONING: R-20
 TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
 PARCEL Nos. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 12 OF 22

PVC LINED DITCHES

DESCRIPTION: This work shall consist of furnishing, placing, and anchoring of a 30 mil PVC liner along designated ditch areas as shown in the Contract Documents and as directed by the Engineer.

MATERIALS:

Permeable Topsoil	520
Type B Soil Stabilization Meeting	520
Slipage	520

PVC Liner Material: The 30 mil PVC Liner shall conform to the following minimum physical properties:

PROPERTY	TEST METHOD	REQUIREMENT
Thickness	D 159	44-54
Specific Gravity (min)	D 292	1.30
100% Modulus (psi, min)	D 882	1000
50% Modulus (psi, min)	D 882	500
Tensile (psi, min)	D 882	2500
50% Elongation (psi, min)	D 882	49
100% Elongation (psi, min)	D 882	323
Charter Tear (psi, min)	D 1004	323
50% Elongation (psi, min)	D 1004	5
Resistance to Soil Burial (psi, min)	D 5833	1
(1) Burial Depth (ft)	OSF Method	20
(2) Elongation At Break (%)	OSF Method	20
(3) Modulus at 100% Elongation	OSF Method	20
Impact Cold Crack (FT)	D 1790	25

PROPERTY	TEST METHOD	REQUIREMENT
Dimensional Stability (in change)	D 129	5
Change in Volume (in, max)	ASTM D 1535	-0.32
Volume Loss (in, max)	D 1535	0.30
Permeability (in, min)	D 571	0.5

PVC Liner Certification:

The Contractor shall certify that the PVC liner material conforms to the physical properties. The PVC Liner Certification shall also include:

- Polymer and composition of the PVC Liner, including additive composition of any coating materials.
- Manufacturer's Quality Control plan including properties, test methods, frequency of testing, tolerances and method of resolution for out-of-specification material.
- Laboratory test results documenting the physical properties.

Storage and Handling:

The PVC liner shall remain stored in its original container in a dry area and protected from puncture, dirt, grease, water, and mechanical damage, excessive heat, extreme cold or other damage. On-site handling of the PVC liner is the responsibility of the Contractor.

Any damage to the PVC liner shall be documented. If the damaged PVC liner cannot be repaired to comply with the specification it shall be removed and replaced at no additional cost to the Administration.

CONSTRUCTION: Construction shall be in conformance with the details shown on the Plans or as directed by the Engineer and the following:

Area Subgrade Preparation:

Surface to be lined shall be smooth and free of all rocks, stones, sticks, sharp objects, or debris of any kind. The surface shall provide a firm, unyielding foundation for the liner with no sudden, sharp, or abrupt changes or breaks in grade. No standing water, mud, snow, excessive moisture will be allowed. The liner shall not be deployed in the presence of mud, snow, or frozen subgrade conditions. No liner material shall be placed on a subgrade that has become softened by water or overly dried until it has been properly reconditioned and recompacted.

Special care shall be taken to maintain the prepared soil surfaces. The soil surface will be observed daily by the Engineer to evaluate the surface condition. Any damage to the surface caused by weather conditions shall be repaired by the Contractor.

Anchor Trench:

The anchor trench shall be excavated to the firm, grade, and width shown on the construction drawings, prior to liner placement.

If the anchor trench is located in clay susceptible to desiccation, no more than the amount of trench required for the liner to be anchored in one day shall be excavated to minimize desiccation of the anchor trench soil.

Slightly rounded corners shall be provided in the trench where the liner adjoins the trench so as to avoid sharp bends in the liner. No loose soil or rocks shall be allowed to undercut the liner in the anchor trench. Leading edges of the anchor trench shall be smooth and even.

Placement of Liner:

- The liner shall be placed down gradient (upstream to downstream) to facilitate over lapping and prevent run off from entering under the placed liner.
- The method used to place the liner panels shall minimize wrinkles (especially differential wrinkles between adjacent panels). Minimum wrinkles shall be allowed to insure the liner is installed in a relaxed condition. Excessive wrinkles which overlap themselves shall not be allowed. Stretching of the liner is not allowed.
- All panels may be repositioned after deployment to conform to the overlap requirements, however, deployment and repositioning requires any climatic dragging or snagging the PVC liner panels.
- The seam overlap shall be a minimum of 3 ft. and a maximum of 4 ft.
- Adequate ballast (e.g., cover soil, or similar materials that will not damage the liner) shall be placed to prevent uplift by wind. In case of high winds, continuous ballast is recommended along edges of panels to minimize risk of wind flow under the panels.
- Only equipment necessary for installation and testing of the liner shall be permitted to remain in contact with the liner. This equipment shall be roller lined with a ground pressure not exceeding 5 psi, and a total weight not exceeding 750 lb.

Weather Conditions:

PVC liner deployment shall proceed when ambient temperature and material sheet temperature is between 60 and 105 F. Sheet temperature shall be measured on the liner surface by an infrared thermometer or surface contact thermometer.

Liner placement shall not be done during any precipitation, in the presence of excessive moisture, (e.g., snow, fog, rain, dew, mist) in the presence of excessive winds, as determined by the Engineer.

If liner placement is required at ambient temperatures below 60 F, a means of storing the liner in an area that maintains the liner temperature above 60 F shall be provided. This liner temperature shall be maintained until the time of deployment.

Unspiking the Panels:

The Contractor shall notify the Engineer, before the liner is unspiked. Damaged or suspect areas shall be marked for testing and repair. Liner that is damaged during deployment (i.e. that cannot be adequately repaired) shall be replaced at no additional cost to the Administration.

Backfilling of the Anchor Trench:

The anchor trench shall be backfilled and compacted by the Contractor to the satisfaction of the Engineer. Trench backfill material shall be placed in 8 in. thick loose lifts and compacted by wheel rolling with light, rubber-tired or other light compaction equipment.

Care shall be taken when backfilling the trenches to prevent any damage to the PVC liner. At no time shall construction equipment come into direct contact with the liner. If damage occurs, it shall be repaired at no additional cost to the Administration.

Backfilling of PVC Liner:

The liner shall be covered with a 2 ft. layer of soil; the first 1.8 ft. shall conform to Common Broom specifications and the top 4 in. shall be a layer of permeable topsoil. The backfill shall be tamped in place. Permanent type B Soil Stabilization Meeting shall be placed over the topsoil.

At no time shall construction equipment come into direct contact with the liner or traverse the backfilled trench. When damage occurs, it shall be repaired by the Contractor at no additional cost to the Administration. Compensation shall be to the satisfaction of the Engineer.

MEASUREMENT AND PAYMENT: Measurement and Payment for PVC Ditch Liner will be measured and paid for at the Contract unit price per square yard accepted in place. The payment will be full compensation for all excavation, PVC liner, furnished topsoil, backfill, and for all material, labor, equipment, tools and incidentals necessary to complete the work. PVC liner overlap shall not be measured and paid for as a separate item. All PVC liner overlap shall be incidental to the cost of PVC liner installation.

Retention will be measured and paid for at the Contract unit price per cubic yard for Case 2 Excavation for Incidental Construction.

PLANTING SPECIFICATIONS

Plants, related material, and operations shall meet the detailed description as given on the plans and as described herein. All plant material, unless otherwise specified, shall be nursery grown, uniformly branched, have a vigorous root system, and shall conform to the species, size, root and shape shown on the plant list and the American Association of Nurserymen (AAN) Standards. Plant material shall be healthy, vigorous, free from defects, decay, disfiguring roots, sun scald injuries, abrasions of the bark, plant disease, insect pest eggs, borers and all forms of insect infestations or objectionable disfigurements. Plant material that is weak or which has been cut back from larger growth to meet specified requirements will be rejected. Trees with forked leaders will not be accepted. All plants shall be freshly dug no longer than 10 days from cold storage will be accepted. Unless otherwise specified, all general conditions, planting operations, details and planting specifications shall conform to "Landscape Specification Guidelines for Baltimore-Washington Metropolitan Area", (hereinafter "Landscape Guidelines") approved by the Landscape Contractors Association of Metropolitan Washington and the Potomac Chapter of the American Society of Landscape Architects, latest edition, including all updates.

Contractor shall be responsible for notifying utility companies, utility contractors and "Miss Utility" a minimum of 48 hours prior to beginning any work. Contractor may make minor adjustments in spacing and location of plant material to avoid conflicts with utilities. Damage to existing structure and utilities shall be repaired at the expense of the Contractor.

Protection of existing vegetation to remain shall be accomplished by the temporary installation of 4 foot high snow fence or blaze orange safety fence at Contractor's expense for installing all material in the proper planting season for each plant type. All planting is to be completed within the growing season of completion of site construction.

Bid shall be based on actual site conditions. No extra payment shall be made for work arising from site conditions differing from those indicated on drawings and specifications.

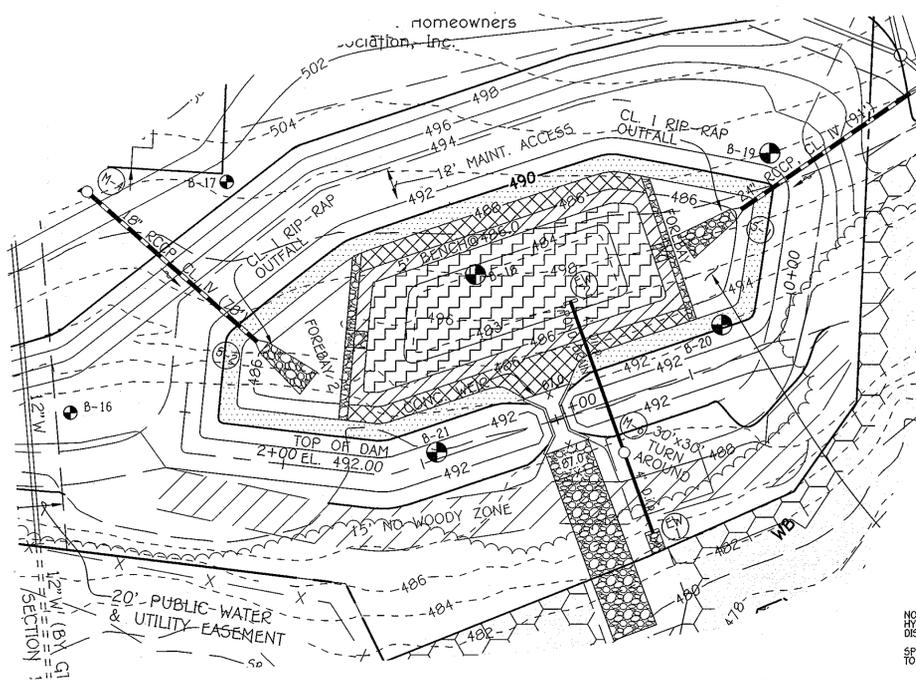
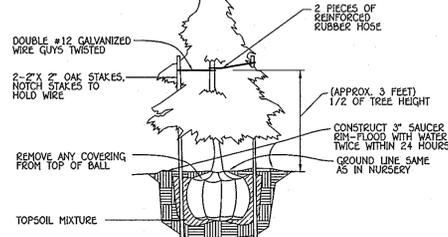
Plant quantities are provided for the convenience of the contractor only. If discrepancies exist between quantities shown on plan and those shown on the plant list, the quantities on the plan take precedence.

All shrubs shall be planted in continuous trenches or prepared planting beds and mulched with composted hardwood mulch as details and specified except where noted on plans.

Planting mix shall be as follows: Backhoes Plants - Two parts topsoil, one part well-rotted cow or horse manure. Add 3 lbs. of standard fertilizer per cubic yard of planting mix. Evergreen Plants - Two parts topsoil, one part humus or other approved organic material. Add 3 lbs. of evergreen fertilizer per cubic yard of planting mix. Topsoil shall conform to the Landscape Guidelines.

Weed Control: Incorporate a pre-emergent herbicide into the planting bed following recommended rates on the label. Caution: Be sure to carefully check the chemical used to assure its compatibility to the specific ground cover to be treated.

All areas within contract limits disturbed during or prior to construction not designated to receive plants and mulch shall be fine graded and seeded. This plan is intended for landscape use only. See other plan sheets for more information on grading, sediment control, layout, etc.



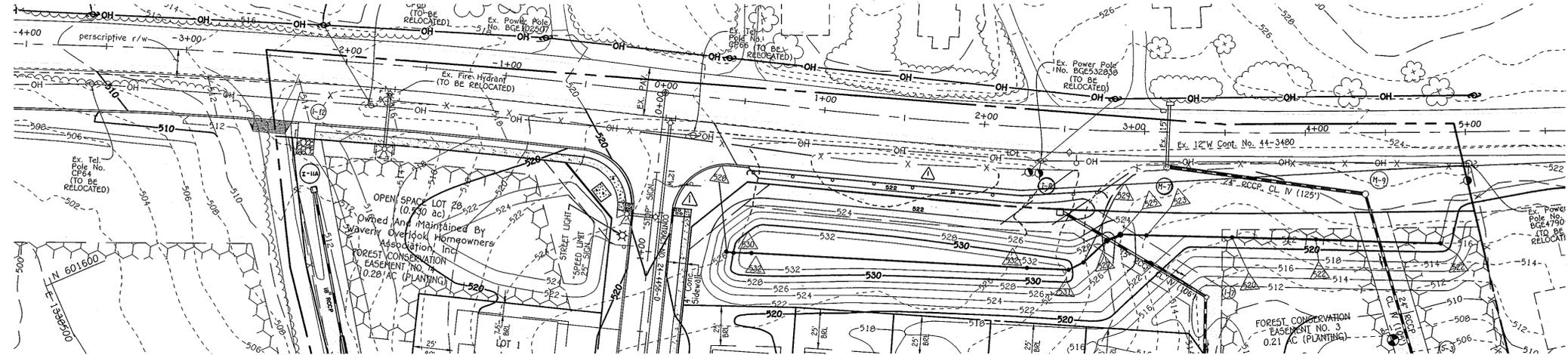
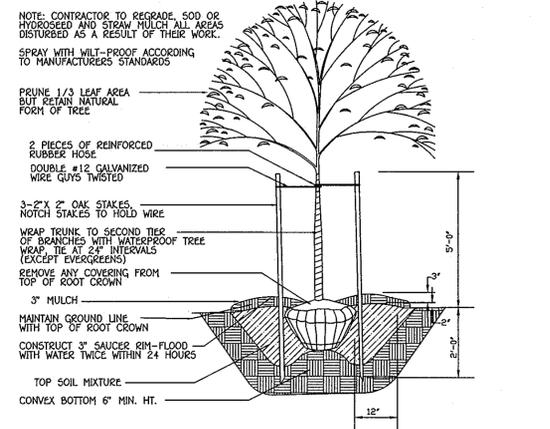
APPROVED: DEPARTMENT OF PUBLIC WORKS
 With 2 Changes 4-7-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 4/20/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 4/20/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

INTERNAL POND PLANT LIST

ZONE	FLOORPLAN TERRACE	PLANT AREA W/ SWITCH GRASS	QUANTITY	SPACING
ZONE 5	1' - 4' ELEVATION ABOVE NORMAL POOL ELEVATION - (486.00 TO 490.00)	PLANT AREA W/ SWITCH GRASS	QUANTITY - N/A	SPACING - N/A
ZONE 3	SHORELINE FRINGE	0' - 12' ELEVATION ABOVE NORMAL POOL ELEVATION - (486.00 TO 488.00)	PLANT AREA W/ BURNING BUSH, WITCH HAZEL & WINTERBERRY	QUANTITY - 6 EACH SPACING - 12' MAX.
ZONE 2	SHALLOW WATER BENCH	0' - 12' ELEVATION BELOW NORMAL POOL ELEVATION - (5' BENCH)	QUANTITY - N/A	SPACING - N/A
ZONE 1	DEEP WATER POOL	1' - 3' ELEVATION BELOW NORMAL POOL ELEVATION - (483.00 TO 486.00)	PLANT AREA W/ WEDGEGRASS	QUANTITY - N/A SPACING - N/A



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELICOTT CITY, MARYLAND 21042
 (410) 461 - 2955

OWNER AND DEVELOPER
 NOESBERGER, LLC
 c/o LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-0422

No.	Description	Date
1	Revised SHA widening, sidewalk ramps, etc. & grading	10/22/10

ALDO M. [Signature]
 PROFESSIONAL ENGINEER
 LICENSE NO. 20746
 EXPIRES 2-22-11

DATE: 4-9-10
 TIME: 9:20
 PARCEL NOS. 207 AND 224
 TAX MAP NO. 10, GRID NO. 21 & TAX MAP NO. 16, GRID NO. 3
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 13 OF 22

LANDSCAPE NOTES & DETAILS
WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32
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 SHEET 13 OF 22

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 vegetative 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

- This practice is limited to areas having 2:1 or flatter slopes where:
 - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
 - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuous supplies of moisture and plant nutrients.
 - The original soil to be vegetated contains material toxic to plant growth.
 - The soil is so acidic that treatment with limestone is not feasible.

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

- 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 Experiment Station.

Topsoil Specifications - Soil to be used as topsoil must meet the following:

- Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or 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 treatments, gravel, roots, trash, or other materials larger than 1 1/2" in diameter.
- Topsoil must be free of plants or plant parts such as bermuda grass, quackgrass, Johnson grass, roadside, poison ivy, thistle, or others as specified.
- 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.

For sites having disturbed areas under 5 acres:

- Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.

For sites having disturbed areas over 5 acres:

- On soil meeting topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
 - pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
 - Organic content of topsoil shall be not less than 1.5 percent by weight.
 - Topsoil having soluble salt content greater than 500 parts per million shall not be used.
 - No seed or seedling shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.

Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section 1 - Vegetative Stabilization Methods and Materials.

Topsoil Application

- When top soil is applied, maintain needed erosion and sediment control practices such as diversions, grade stabilization structures, earth dikes, slope silt fence and sediment traps and basins.
- Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
- Topsoil shall be uniformly distributed in a 4" - 8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that seeding or sodding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoil or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
- Topsoil shall not be placed while the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:

- Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas over 5 acres shall conform to the following requirements:
 - Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
 - Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a pH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate constituents must be added to meet the requirements prior to use.
 - Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
- Composted sludge shall be amended with a potassium fertilizer applied at the rate of 4 lb/1,000 square feet, and 1/3 the normal lime application rate.

References: Guideline Specifications, Soil Preparation and Sodding, MD-VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institute. Revised 1972.

20.0 STANDARDS AND SPECIFICATIONS

VEGETATIVE STABILIZATION DEFINITION

Using vegetation as cover for barren soil to protect it from forces that cause erosion.

Vegetative stabilization specifications are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and run-off to downstream areas, and improving watershed resources.

CONDITIONS WHERE PRACTICE APPLIES

This practice shall be used on denuded areas as specified on the plans and may be used on highly erodible or critically eroding areas. This specification is divided into three sections, to quickly establish vegetative cover for short duration (0 up to 1 year), and Permanent Seeding, for long term vegetative cover. Examples of applicable areas for Temporary Seeding are temporary Soil Stockpiles, cleared areas being left idle between construction phases, earth dikes, etc. and for Permanent Seeding are lawns, dams, cut and fill slopes and other areas at final grade, former stockpiles and staging areas, etc.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Vegetation, over time, will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth. Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone. Sediment control devices must remain in place during grading, seeded preparation, seeding, mulching and vegetative establishment to prevent large quantities of sediment and associated chemicals and nutrients from washing into surface waters.

SECTION 1 - VEGETATIVE STABILIZATION METHODS AND MATERIALS

- Site Preparation
 - Install erosion and sediment control structures (either temporary or permanent) such as diversions, grade stabilization structures, berm waterways, or sediment control basins.
 - Perform all grading operations at right angles to the slope. Final grading and shaping is not usually necessary for temporary seeding.
 - Schedule required soil tests to determine soil amendment composition and application rates for sites having disturbed areas over 5 acres.
- Soil Amendments (Fertilizer and Lime Specifications)
 - Soil tests must be performed to determine the exact rates and application rates for both lime and fertilizer on sites having disturbed areas over 5 acres. Soil analysis may be performed by the University of Maryland or a recognized commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
 - Fertilizers shall be uniform in composition, free flowing and suitable for accurate application by approved equipment for fertilizer with prior calibration. Fertilizers shall all be delivered to the site fully labeled according to the applicable state fertilizer laws and shall bear the name, trade name or trademark and warranty of the producer.
 - Lime materials shall be ground limestone (hydrated or burnt lime) may be substituted, which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Limestone shall be ground to such fineness that at least 50% will pass through a #20 mesh sieve.
 - Hydrated lime and fertilizer into the top 3-5" of soil by disk or other suitable means.
- Seeded Preparation
 - Temporary Seeding
 - Seeded preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or ripers mounted on construction equipment. After the soil is loosened, the surface shall be rolled or dragged smooth, but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.
 - Apply fertilizer and lime as prescribed on the plans.
 - Incorporate lime and fertilizer into the top 3-5" of soil by disk or other suitable means.
 - Permanent Seeding
 - Minimum soil conditions required for permanent vegetative establishment:
 - Soil pH shall be between 6.0 and 7.5.
 - Soluble salts shall be less than 500 parts per million (ppm).
 - The soil shall be sufficiently moist, but enough fine grained material (>30% silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception is if loess or silt loess is used, in which case 30-50% will pass through a #20 mesh sieve would be acceptable.
 - Soil shall contain 1.5% minimum organic matter by weight.
 - Soil must contain sufficient pore space to permit adequate root penetration.
 - If these conditions cannot be met by soils on site, adding topsoil is required.
 - In accordance with Section 21 Standards and Specifications for Permanent Seeding, areas previously graded in conformance with the drawings shall be maintained in a true and even grade, then scarified or otherwise loosened to a depth of 3-5" to permit bonding of the topsoil to the surface area and to create horizontal erosion check slots to prevent topsoil from sliding down a slope.
 - Apply soil amendments as per soil test or as included on the plans.
 - Mix soil amendments into the top 3-5" of topsoil by disk or other suitable means. Lawn areas should be rolled to smooth the surface, remove large objects like stones and branches, and ready the area for seed application, where site conditions will not permit normal seeded preparation, loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface. Steep slopes (steeper than 3:1) should be tracked by a dozer leaving the top 1-3" of soil in an irregular condition with ridges running parallel to the contour of the slope. The top 1-3" of soil should be loose and friable. Seeded loosening may not be necessary on newly disturbed areas.

Seeded preparation shall consist of loosening soil to a depth of 3" to 5" by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or ripers mounted on construction equipment. After the soil is loosened, the surface shall be rolled or dragged smooth, but left in the roughened condition. Sloped areas (greater than 3:1) should be tracked leaving the surface in an irregular condition with ridges running parallel to the contour of the slope.

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Apply fertilizer and lime as prescribed on the plans. Incorporate lime and fertilizer into the top 3-5" of soil by disk or other suitable means.

- Wood cellulose fiber may be used for anchoring straw. The fiber binder shall be applied at a net dry weight of 750 pounds/acre. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
- Application of liquid binders should be heavier at the edges where wind catches much, such as in valleys and crest of berms. The binders should be applied uniform after binder application. Synthetic binders - such as Acrylic DLR (Ago-Tack), DCA-70 ProPrest, Terra Tex II, Terra Tack II or other approved equal may be used at rates recommended by the manufacturer to anchor mulch.
- Lightweight plastic netting may be applied over the mulch according to manufacturer's recommendations. Netting is usually available in rolls 4' to 15' feet wide and 300 to 3,000 feet long.

Incremental Stabilization - Cut Slopes

- All cut slopes shall be dressed, prepared, seeded and mulched as the work progresses. Slopes shall be excavated and stabilized in equal increments not to exceed 15'.

Construction sequence (Refer to Figure 3 below):

- Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
- Perform Phase 1 excavation, dress and stabilize. Overseed Phase 1 areas as necessary.
- Perform final phase excavation, dress and stabilize. Overseed previously seeded areas as necessary.

Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation of completing the operation of the seeding season will necessitate the application of temporary stabilization.

Incremental Stabilization of Embankments - Fill Slopes

- Embankments shall be constructed in lifts as prescribed on the plans.
- Slopes shall be stabilized immediately when the vertical height of the multiple lifts reaches the grade stabilization structures, berm waterways, or sediment control basins.
- At the end of each day, temporary berms and slope slope drains should be constructed along the top edge of the embankment to intercept surface runoff and convey it down the slope in a non-erosive manner to a sediment trapping device.

Construction sequence (Refer to Figure 4 below):

- Excavate and stabilize all temporary swales, side ditches, or berms that will be used to convey runoff from the excavation.
- Perform Phase 1 excavation, dress and stabilize. Overseed Phase 1 areas as shown in Figure 5, unless other methods shown on the plans address this area.
- Place Phase 2 embankment, dress and stabilize.
- Place final phase embankment, dress and stabilize. Overseed previously seeded areas as necessary.

Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation of the seeding season will necessitate the application of temporary stabilization.

SECTION 2 - TEMPORARY SEEDING

Vegetation - annual grasses or grain used to provide cover on disturbed areas for up to 12 months. For longer duration of vegetative cover, Permanent Seeding is required.

Seed mixtures - Temporary Seeding

- Select one or more of the species or mixtures listed in Table 26 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Temporary Seeding summary below, along with application rates, seeding dates, and seeding depths. This summary is not put on the plans and completed, then Table 26 must be put on the plans.

For sites having soil tests performed, the rates shown on this table shall be deleted and the rates recommended by the testing agency shall be written in. Soil tests are not required for Temporary Seeding.

Seed Mixture (Hardiness Zone - 6b -)	Application Rate (lb/acre)	Seeding Dates	Seeding Depth	Fertilizer Rate (10-10-10)	Lime Rate
1. MALEY OR JOE PLUS	150	3/1 - 4/30	1"	600 lb/acre (15 lb/1000)	2 tons/acre (100 lb/1000)
2. FERTAL MULCH	150	8/15 - 10/15	1"	600 lb/acre (15 lb/1000)	2 tons/acre (100 lb/1000)

SECTION 3 - PERMANENT SEEDING

Seeding grasses and legumes to establish ground cover for a minimum of one year on disturbed areas generally receiving low maintenance.

Seed mixtures - Permanent Seeding

- Select one or more of the species or mixtures listed in Table 25 for the appropriate Plant Hardiness Zone (from Figure 5) and enter them in the Permanent Seeding summary below, along with application rates and seeding dates. Seeding depths can be estimated using Table 26. If this summary is not put on the construction plans and completed, then Table 25 must be put on the plans. Additional planting specifications for exceptional sites such as shorelines, streambanks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in COMAR-26.04.06, Field Office Site, Section 342 - Critical Area Planning. For special low maintenance areas, see Sections IV and V Turfgrass.

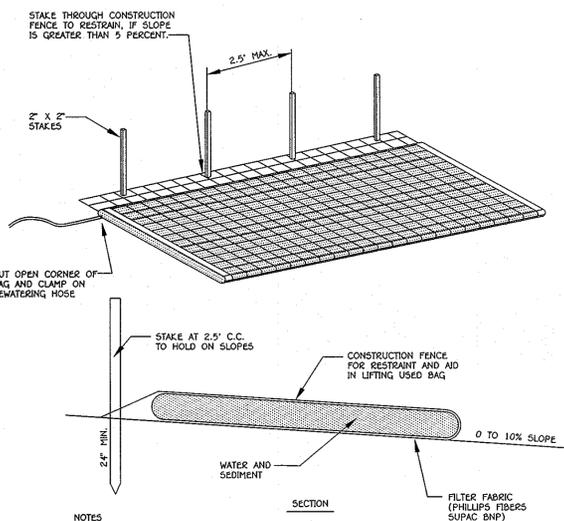
For sites having disturbed area over 5 acres, the rates shown on this table shall be deleted and the rates recommended by the soil testing agency shall be written in.

For areas receiving low maintenance, apply amendment fertilizer (4-0-0) at 1 1/2 lbs/1,000 sq. ft. (150 lbs/acre), in addition to the above soil amendments shown in the table below, to be performed at the time of seeding.

Seed Mixture (Hardiness Zone - 6b -)	Application Rate (lb/acre)	Seeding Dates	Seeding Depth	N	P205	K20	Lime Rate
3. TALL FESCUE (H83)	150	3/1 - 5/15	1"	100 lb/acre (25 lb/1000)	175 lb/acre (44 lb/1000)	175 lb/acre (44 lb/1000)	2 tons/acre (100 lb/1000)
4. FESCUE (H83) PLUS CRABGRASS (H28)	150	3/1 - 5/15	1"	100 lb/acre (25 lb/1000)	175 lb/acre (44 lb/1000)	175 lb/acre (44 lb/1000)	2 tons/acre (100 lb/1000)
5. TALL FESCUE (H83) PLUS WHEATGRASS (H28) PLUS KIPPER (H28)	150	3/1 - 5/15	1"	100 lb/acre (25 lb/1000)	175 lb/acre (44 lb/1000)	175 lb/acre (44 lb/1000)	2 tons/acre (100 lb/1000)
6. TALL FESCUE (H83) PLUS WHEATGRASS (H28) PLUS KIPPER (H28) PLUS CRABGRASS (H28)	150	3/1 - 5/15	1"	100 lb/acre (25 lb/1000)	175 lb/acre (44 lb/1000)	175 lb/acre (44 lb/1000)	2 tons/acre (100 lb/1000)

SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THE CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3:1. (b) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51), SOO (SEC. 54), TEMPORARY SEEDING (SEC. 50), AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:
 - TOTAL AREA OF SITE: 13,504 ACRES
 - AREA TO BE ROOPED OR PAVED: 11.30 ACRES
 - AREA TO BE VEGETATIVELY STABILIZED: 9.0 ACRES
 - TOTAL CUT: 25,500 CU.YDS.
 - OFFSITE WASTE/BORROW AREA LOCATION



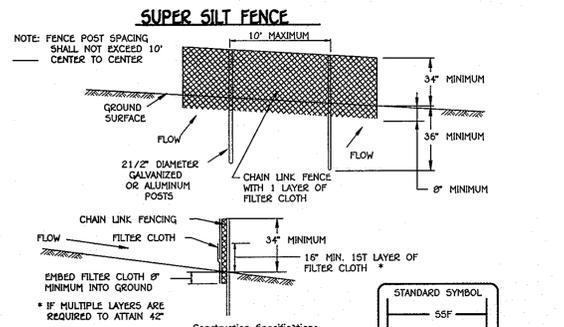
NOTES

1. FILTER BAG SHALL BE PLACED ON A SLOPING OR LEVEL, WELL GRADED VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM DEVICE AND ANY WORK AREAS.
2. WIDTH AND LENGTH SHALL BE AS SHOWN IN THE TABLE.
3. THE FILTER BAG MUST BE STAKED IN PLACE AND SECURED TO THE PUMP DISCHARGE LINE.
4. FILTER BAG SHALL NOT BE USED FOR DISCHARGE FLOWS GREATER THAN 300 GPM.
5. DEVICE SHALL BE REMOVED AND DISPOSED OF AFTER BAG IS FILLED WITH SEDIMENT.
6. SEDIMENT FROM BAG SHALL BE SPREAD IN AN UPLAND AREA.

AVAILABLE FROM:

INDIAN VALLEY INDUSTRIES, INC. P.O. BOX 210 JOHNSON CITY, NEW YORK 13790 (800) 659-5111	OR	A.C.F. ENVIRONMENTAL 1001-A WILLS ROAD RICHMOND, VIRGINIA 23237 TOLL FREE 1-800-448-3636	OR	PRICE AND COMPANY, INC. 422 SOUTH STREET WYOMING, MI 49548 (616) 530-8230
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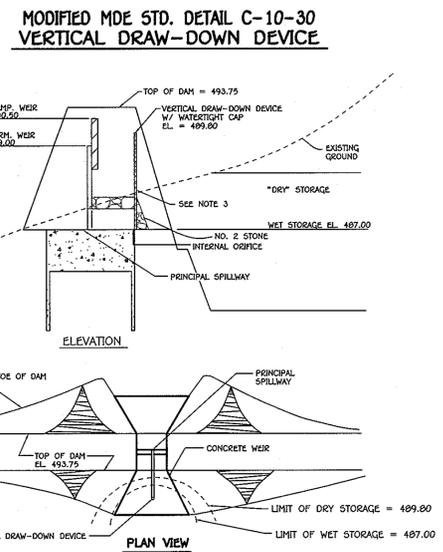
FILTER BAG DETAIL
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

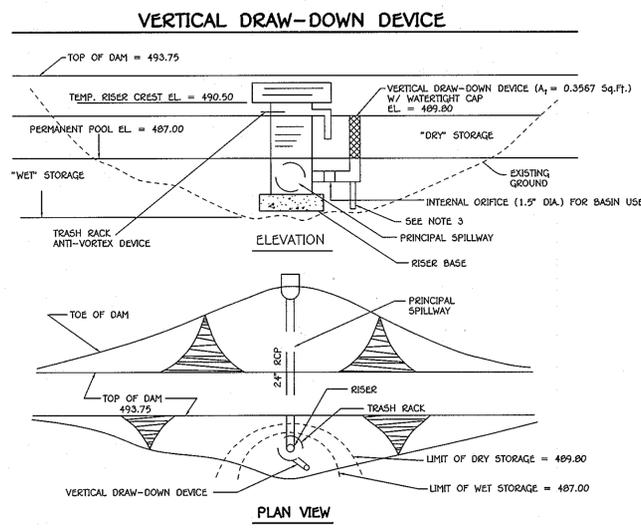
1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
4. Filter cloth shall be embedded a minimum of 8' into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height.
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F.

Tensile Strength	90 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft / minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322



CONSTRUCTION SPECIFICATIONS

1. PERFORATIONS IN THE DRAW-DOWN DEVICE MAY NOT EXTEND INTO THE WET STORAGE.
2. THE TOTAL AREA OF THE PERFORATIONS MUST BE GREATER THAN 2 TIMES THE AREA OF THE INTERNAL ORIFICE.
3. THE PERFORATED PORTION OF THE DRAW-DOWN DEVICE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH AND GEOTEXTILE FABRIC. THE GEOTEXTILE FABRIC SHALL MEET THE SPECIFICATIONS FOR GEOTEXTILE CLASS E.
4. PROVIDE SUPPORT OF DRAW-DOWN DEVICE TO PREVENT SAGGING AND FLOATION. AN ACCEPTABLE PREVENTATIVE MEASURE IS TO STAKE BOTH SIDES OF DRAW-DOWN DEVICE WITH 1" STEEL ANGLE OR 1" BY 4" SQUARE OR 2" ROUND WOODEN POSTS SET 3' MINIMUM INTO THE GROUND THEN JOINING THEM TO THE DEVICE BY WRAPPING WITH 12 GAUGE MINIMUM WIRE.



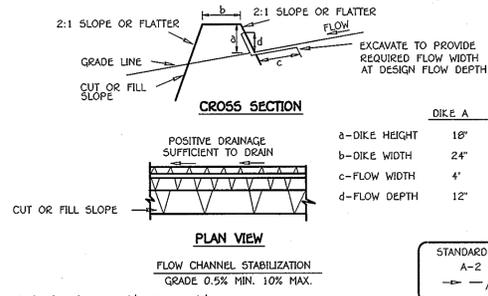
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OWNER AND DEVELOPER
MORSBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLCOTT CITY, MARYLAND 21042
(410) 367-0422

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTRAL SQUARE OFFICE PARK - 10725 BALTIMORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21042
(410) 461-2295

EARTH DIKE
NOT TO SCALE



CROSS SECTION

DIKE A	DIKE B
a-DIKE HEIGHT	18" 30"
b-DIKE WIDTH	24" 36"
c-FLOW WIDTH	4' 6'
d-FLOW DEPTH	12" 24"

PLAN VIEW

FLOW CHANNEL STABILIZATION
GRADE 0.5% MIN. 10% MAX.

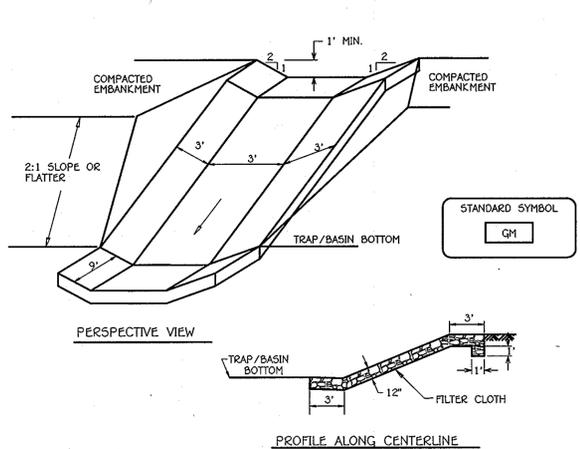
CONSTRUCTION SPECIFICATIONS

1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or line with sod.
3. 4" - 7" stone or recycled concrete equivalent pressed into the soil 7" minimum.

CONSTRUCTION SPECIFICATIONS

1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot elevations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill shall be compacted by earth moving equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

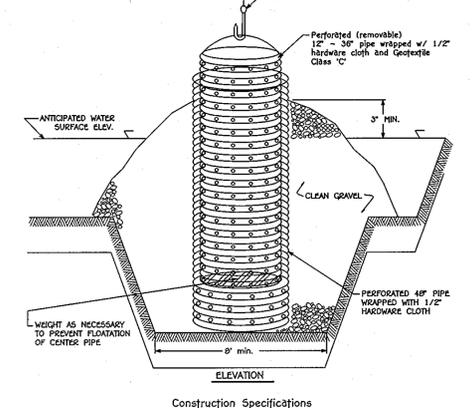
GABION INFLOW PROTECTION
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. Gabion inflow protection shall be constructed of 9' x 3' x 9' gabion baskets forming a triangular cross section 1' deep, with 2:1 side slopes, and a 3' bottom width.
2. Geotextile Class C shall be installed under all gabion baskets.
3. The stone used to fill the gabion baskets shall be 4" - 7".
4. Gabions shall be installed in accordance with manufacturers recommendations.
5. Gabion Inflow Protection shall be used where concentrated flow is present on slopes steeper than 4:1.

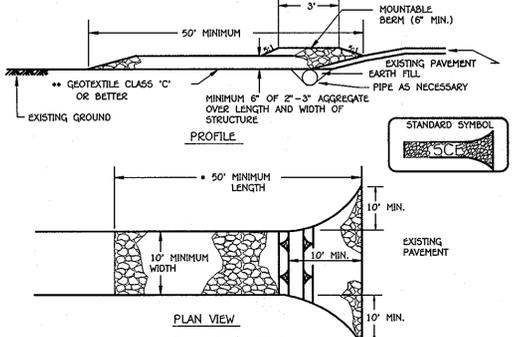
REMOVABLE PUMPING STATION



CONSTRUCTION SPECIFICATIONS

1. The outer pipe should be 48" dia. or shall, in any case, be at least 4" greater in diameter than the center pipe. The outer pipe shall be wrapped with 1/2" hardware cloth to prevent backfill material from entering the perforations.
2. After installing the outer pipe, backfill around outer pipe with 2" aggregate or clean gravel.
3. The inside stand pipe (center pipe) should be constructed by perforating a corrugated or PVC pipe between 12" and 36" in diameter. The perforations shall be 1/2" x 6" slots or 1" diameter holes 6" on center. The center pipe shall be wrapped with 1/2" hardware cloth first, then wrapped again with Geotextile Class C.
4. The center pipe should extend 12" to 18" above the anticipated water surface elevation or riser crest elevation when dewatering a basin.

STABILIZED CONSTRUCTION ENTRANCE



CONSTRUCTION SPECIFICATION

1. Length - minimum of 50' (+30' for single residence lot).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.
3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. The plan approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a mountable berm with 2:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SCE is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP No. 10, GRID No. 21 & TAX MAP No. 16, GRID No. 3
PARCEL Nos. 207 AND 224
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 17 OF 22

ENGINEER'S CERTIFICATE
I, the undersigned, have prepared this Plan for Erosion and Sediment Control for the project described herein. I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20745, Expiration Date 2-22-11.
Signature: [Signature]
Date: 3-4-10

DEVELOPER'S CERTIFICATE
I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And 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 Natural Resources 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 Or Their Authorized Agent, As Are Deemed Necessary.
Signature Of Developer: [Signature]
Date: 3/4/10

Approved: This Development Is Approved For Erosion And Sediment Control By
Howard Soil Conservation District.

Signature: [Signature]
Date: 3/11/10

Approved: Department Of Planning And Zoning

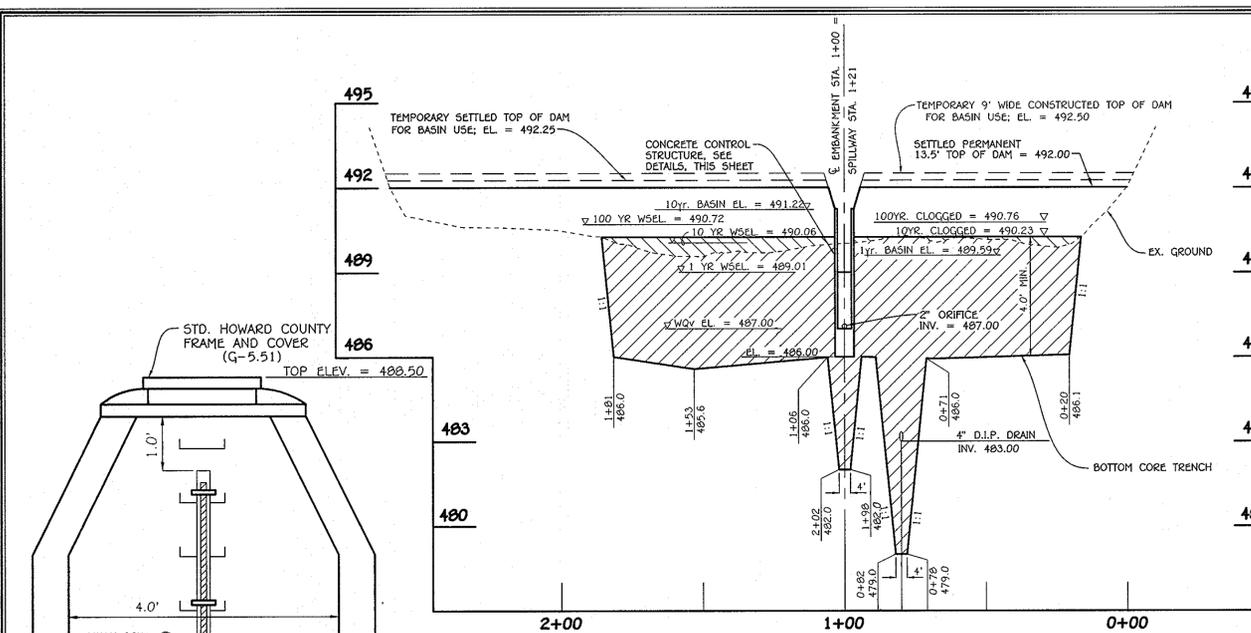
Signature: [Signature]
Date: 4/26/10

Approved: Howard County Department Of Public Works

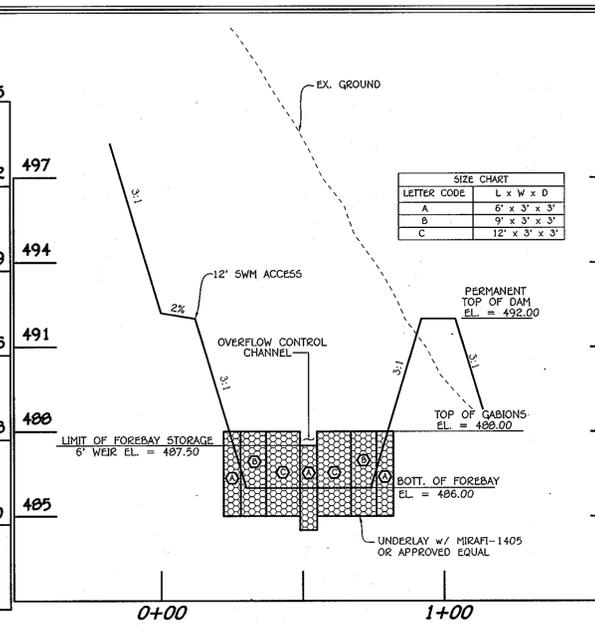
Signature: [Signature]
Date: 4-7-10



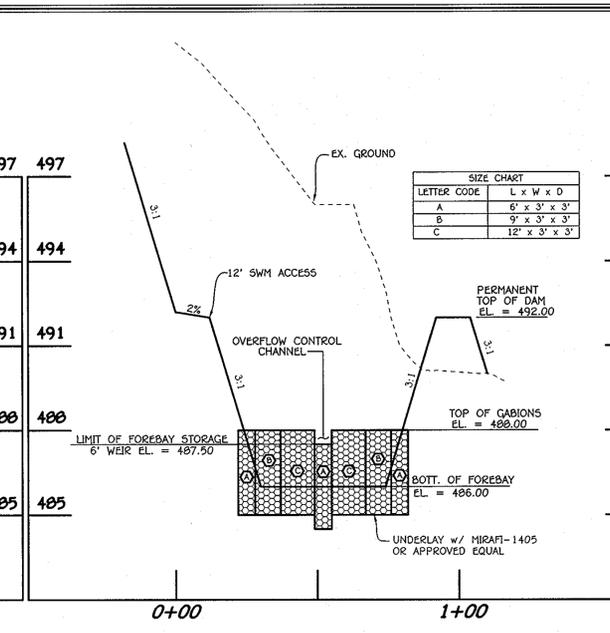
3-4-10



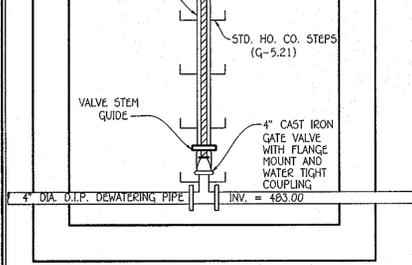
PROFILE ALONG ϕ EMBANKMENT
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



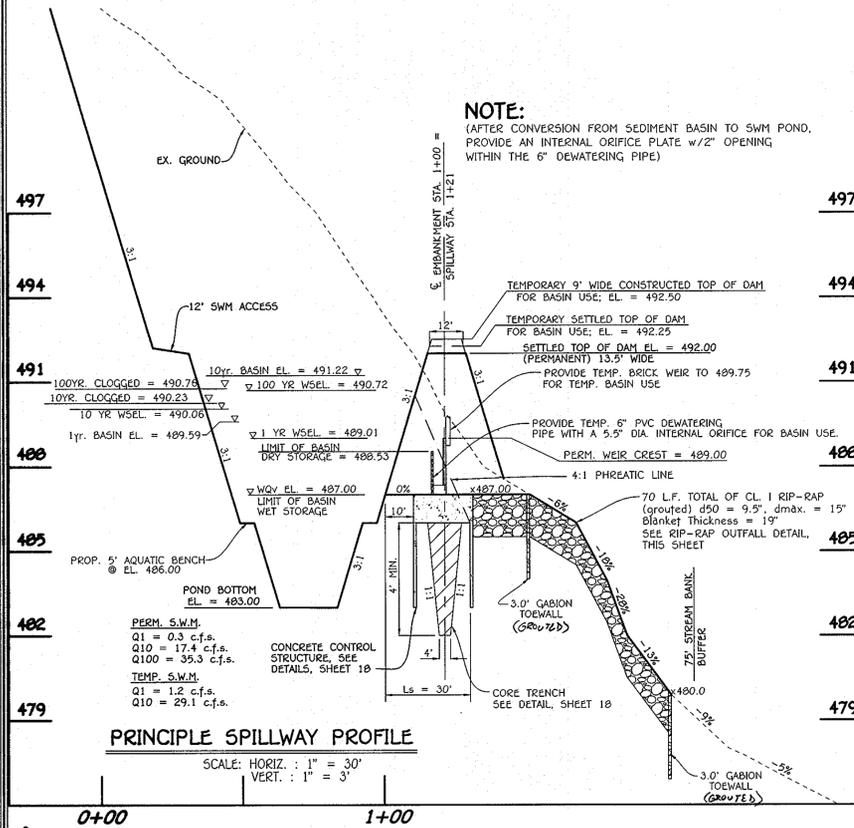
GABION FOREBAY NO. 1 PROFILE
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



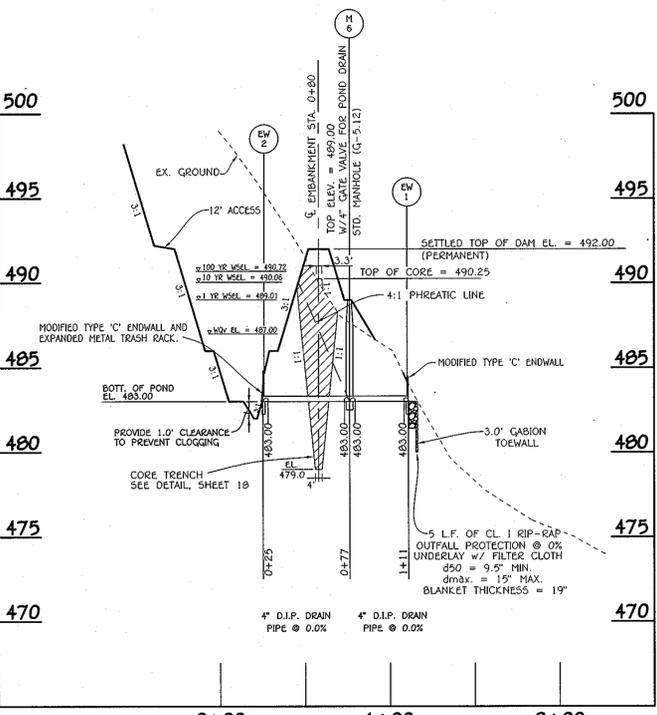
GABION FOREBAY NO. 2 PROFILE
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



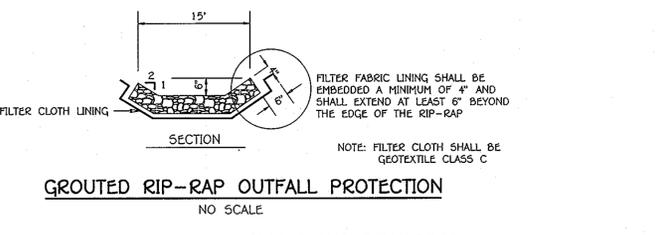
MANHOLE w/GATE VALVE
NO SCALE



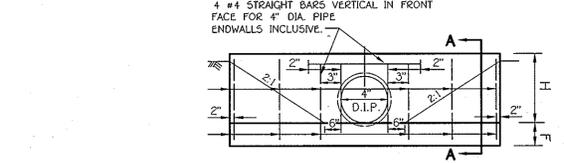
PRINCIPLE SPILLWAY PROFILE
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



S.W.M. FACILITY B.M.P. NO. 1 POND DRAIN PROFILE
SCALE: HORIZ. 1" = 50'
VERT. 1" = 5'



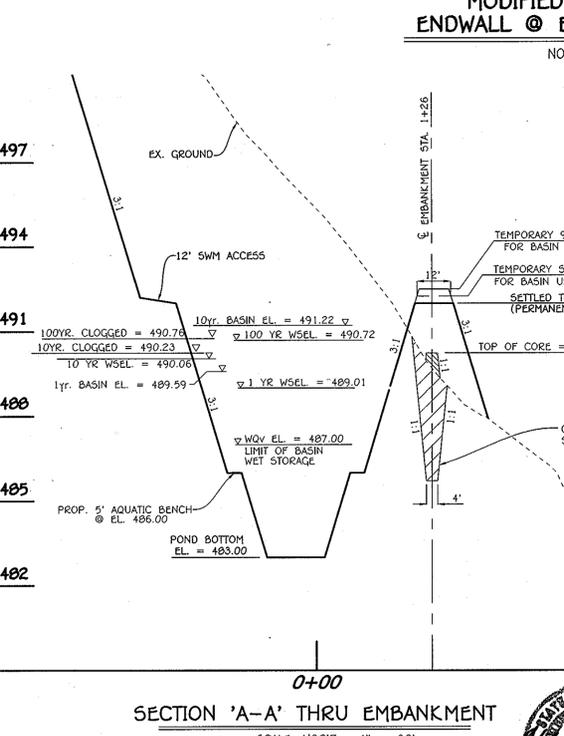
GROUTED RIP-RAP OFFFALL PROTECTION
NO SCALE



ELEVATION
PLAN

OPENINGS	DIMENSIONS								VOLUME CONC. C.Y.	STEEL LBS.
	D	A	B	C	E	F	H	L		
4"	0.79	9"	6"	6"	1'-9"	9"	1'-6"	5'-5"	0.61	38

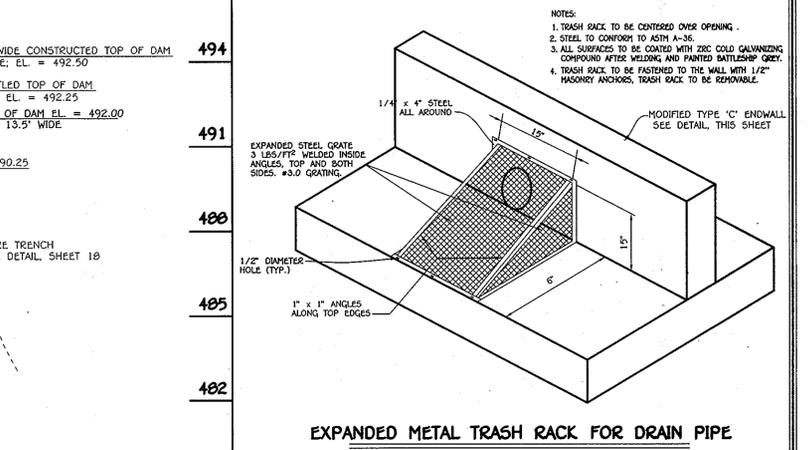
REINFORCING: DEFORMED STEEL BARS (1/2" DIA.)
CHAMFER: ALL EXPOSED EDGES 1" x 1" OR AS DIRECTED.
CONC. SHALL BE S.H.A. A MIX NO. 2.



SECTION 'A-A' THRU EMBANKMENT
SCALE: HORIZ. 1" = 30'
VERT. 1" = 3'



DISPOSITION OF BARS - DETAIL



EXPANDED METAL TRASH RACK FOR DRAIN PIPE
NOT TO SCALE

By The Developer:
I/We Certify That Development And/Or Construction Will Be Done According To These Plans, And That Any Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance As A Department Of The Government Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Shall Engage A Registered Professional Engineer To Supervise Pond Construction And Provide The Hazard Soil Conservation District With A "As-Built" Plan Of The Pond Within 30 Days Of Completion. I Also Authorize Payment Of Assessments By The Hazard Soil Conservation District.

Signature of Developer: *John R. Rauzer, Jr.* Date: 3/4/10
Printed Name of Developer: John R. Rauzer, Jr.
Signature of Engineer: *John R. Rauzer, Jr.* Date: 3/4/10
Printed Name of Engineer: John R. Rauzer, Jr.
Signature of District Engineer: *John R. Rauzer, Jr.* Date: 3/4/10
Printed Name of District Engineer: John R. Rauzer, Jr.
Signature of Department of Public Works: *John R. Rauzer, Jr.* Date: 4-7-10
Printed Name of Department of Public Works: John R. Rauzer, Jr.
Signature of Department of Planning and Zoning: *John R. Rauzer, Jr.* Date: 4/20/10
Printed Name of Department of Planning and Zoning: John R. Rauzer, Jr.
Signature of Chief, Division of Land Development: *John R. Rauzer, Jr.* Date: 4/20/10
Printed Name of Chief, Division of Land Development: John R. Rauzer, Jr.
Signature of Chief, Development Engineering Division: *John R. Rauzer, Jr.* Date: 4/20/10
Printed Name of Chief, Development Engineering Division: John R. Rauzer, 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.

Signature: _____ P.E. No.: _____ Date: _____

CERTIFICATION TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON VISUAL INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE COMMONLY ACCEPTED ENGINEERING PRACTICES. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, STATUTE, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.



STORMWATER MANAGEMENT NOTES AND DETAILS
(B.M.P. NO. 1)
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP NO. 10, GRID NO. 21 & TAX MAP NO. 16, GRID NO. 3
PARCEL NOS. 207 AND 224
THIRD ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 19 OF 22

1:2004(04135)03(CURRENT FINAL R-20)04135 SHEET 18-19 B.M.P. 1 SWM DETAILS.dwg, 3/2/2010 2:36:02 PM, (kmf)

NET TRACT AREA		Acres	
A. Total tract area		13.5	
B. Area within 100 Year Floodplain		1.0	
C. Area to remain in agricultural production		0	
D. Net Tract Area		12.5	
LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)			
ARA	MDR	IDA	MPD CIA
X			
E. Afforestation Threshold (percentage)	0.15	1.9	
F. Conservation Threshold (percentage)	0.20	2.5	
EXISTING FOREST COVER:			
G. Existing forest cover (excluding floodplain)		1.3	
H. Area of forest above afforestation threshold		0	
I. Area of forest above conservation threshold		0	
BREAK EVEN POINT:			
J. Forest retention above threshold with no mitigation	Break-even Point		
K. Clearing permitted without mitigation		0	
PROPOSED FOREST CLEARING			
L. Total area of forest to be cleared or Retained Outside FCE		0.4	
M. Total area of forest to be Retained in FCE		0.9	
PLANTING REQUIREMENTS			
N. Reforestation for clearing above conservation threshold		0	
P. Reforestation for clearing below conservation threshold		0.8	
Q. Credit for retention above conservation threshold		0	
R. Total reforestation required		0.8	
S. Total afforestation required		0.6	
T. Total reforestation and afforestation required		1.4	

ON-SITE FOREST STAND DATA					
KEY	COMMUNITY TYPE	ACREAGE	DOMINANT VEGETATION	GENERAL CONDITION	PRIORITY
F1	POPLAR	1.3	Liriodendron Tulipifera, Acer Rubrum, Fraxinus Pennsylvanica, Quercus Alba, Linderä Benzoin	GOOD	1.3 + BUFFERS

ON-SITE WETLAND DATA			
WETLAND SYSTEM	COWARDIN CLASSIFICATION	DOMINANT VEGETATION	ACREAGE
A	PFO1A/R3UB1	Acer Rubrum, Fraxinus Pennsylvanica, Linderä Benzoin, Impatiens Capensis, Boehmeria Cylindrica, Symplocarpus Foetidus	0.6±

SOILS LEGEND		
SOIL	NAME	CLASS
EkC2	Elioak silt loam, 0 to 15 percent slopes, moderately eroded	B
EkB2	Elioak silt loam, 3 to 0 percent slopes, moderately eroded	B
ChB2	Chester silt loam, 3 to 0 percent slopes, moderately eroded	B
GIC2	Glenelg loam, 0 to 15 percent slopes, moderately eroded	B
GIC3	Glenelg loam, 0 to 15 percent slopes, severely eroded	B
GnA	Glenville silt loam, 0 to 3 percent slopes	C
MI02	Manor loam, 15 to 25 percent slopes, moderately eroded	B
Hs	Hatboro silt loam	D

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

LITTLE PATUXENT WATERSHED #2131105

NOTE:
 CONTRACTOR SHALL REMOVE ANY AND ALL JUNK, DEBRIS AND TRASH FROM WITHIN THE FOREST CONSERVATION EASEMENTS. THESE EASEMENTS MUST BE DEVOID OF TRASH, DEBRIS, STRUCTURES, FENCING, ETC. IN ADDITION, IT IS THE DEVELOPER'S RESPONSIBILITY (NOT THE COUNTY'S) TO KEEP THESE AREAS CLEAN OF DEBRIS AND ENCROACHMENT FOR THE ENTIRE 2-YEAR MAINTENANCE PERIOD.

NOTES:
 1. ACCORDING TO THE "WETLAND DELINEATION, FOREST STAND DELINEATION AND FOREST CONSERVATION PLAN REPORT" PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., THEY DID NOT DETECT THE PRESENCE OF CRITICAL HABITATS OR TREES, SHRUBS AND PLANTS OF ANY RARE, THREATENED OR ENDANGERED SPECIES ON THIS SITE.
 2. IN ADDITION, SEVERAL SPECIMEN TREES WERE IDENTIFIED WITHIN THE EXISTING FOREST; HOWEVER, THEY WERE NOT SPECIFICALLY IDENTIFIED BECAUSE THERE WILL BE NO PROPOSED DISTURBANCES WITHIN THE EXISTING FOREST.
 3. 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. THE FOREST CONSERVATION ACT REQUIREMENTS FOR THIS PROJECT WILL BE MET THROUGH THE RETENTION OF 0.9 ACRES OF EXISTING FOREST ON-SITE AND 1.4 ACRES OF ON-SITE REFORESTATION. THE FOREST CONSERVATION SURETY IN THE AMOUNT OF \$38,332.80 (0.9 ACRES x \$43,560 SQ.FT./ACRE x \$0.20 + 1.40 ACRES x \$43,560 SQ.FT./ACRE x \$0.50) SHALL BE POSTED WITH THE FINAL PLAT DEVELOPER'S AGREEMENT.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTRAL OFFICE: 10272 BALDORNE NATIONAL PIKE
 ELKLOTT CITY, MARYLAND 21042
 (410) 461-1295

Eco-Science Professionals, Inc.
 CONSULTING ECOLOGISTS

MD DNR Qualified Professional
 USACE Wetland Delineator
 Certification # WDCP93H006100448
 4-8-10
 JOHN P. CANOLES

OWNER AND DEVELOPER
 HORSBERGER, LLC
 c/o LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DRIVE, SUITE 102
 ELLICOTT CITY, MARYLAND 21042
 (410) 367-9422

No.	Description	Date
2	Revised BVA Widening, Sidewalk Ramps, FCE: + Open Space Lots	10/20/10
1	Relocate Rev Storage To H.O.A. Owned Open Space Lot 27	4/30/10

W.M. WATKINS
 4-10
 ALDRIN WATKINS, P.E.
 I, the undersigned, hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 202248, Expiration Date 2-22-11.

**FOREST CONSERVATION PLAN
 WAVERLY OVERLOOK
 LOTS 1-26 AND OPEN SPACE LOTS 27-32**
 ZONING: R-20
 TAX MAP NO. 10, GRID NO. 21 & TAX MAP NO. 16, GRID NO. 3
 PARCEL NOS. 207 AND 224
 THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 DATE: MARCH 4, 2010
 SHEET 20 OF 22



APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 4-7-10
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 4/26/10
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 4/28/10
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

E:\2010\04135\dwg\CURRENT_FINAL_R-20\04135_SHEET_20-21_FOREST_CONSERVATION.dwg, 4/6/2010 11:49:21 AM, James

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 approved forest conservation plan or requesting modifications of previously approved requirements concerning planting techniques, species or maintenance needs. Those responsible for implementation of the approved forest conservation plan during the construction period shall conform to the professional qualifications cited in Chapter VI of this manual.

PROTECTING AND MANAGING FOREST RETENTION AREAS

Forest retention areas 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 few fundamental horticultural principles are the basis of the protection guidelines and requirements cited in this manual:

- A tree's root system can be large, extending well beyond the drip line of the crown. Typically, root system are very shallow, in the 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.
- Tree roots need a balance of water and air in the soil. Air only penetrates 12" - 18" into the soil. Stress and decline in tree health results when soil is piled on top of existing roots or roots are suddenly forced to sit in waterlogged soil or overly dry soils due to topography changes during construction.
- Tree roots need a balance of 1.7 grams/cubic centimeters or greater cannot support root growth. Existing roots in heavily compacted soils usually die.
- Trees growing in disturbed or filled soils usually die back in proportion to the root area disturbed. Even minor disturbances such as filling within the root zone for lawn installation will cause harm.
- Trees, especially large trees, may take a long time to show the effects of construction damage. Trees may die 5 or even 10 years after being weakened by construction activity. Secondary stresses such as insects, disease, or drought may kill weakened trees while the same stress would not have affected a healthy tree.

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. Nevertheless, the need to define the soil protection zone (critical root area) for forest areas is the one factor common to all retention efforts.

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 5:1) for trees growing in the interior of forest stands. Furthermore, the minimum requirement for root protection varies from species and from soil type to soil type. For open grown trees, it is generally accepted that protecting the soil within the drip line of the tree is adequate to save the tree in most cases. For trees that have been part of forest communities, however, the soil protection zone may have to be modified to reflect a more complex relationship between crown spread and root growth.

Techniques for management of the soil protection zone are described in detail in Appendix G.

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. The required construction period management program must therefore specify how construction activities will be managed to protect forest retention areas. The following should be depicted on site construction documents and/or forest conservation plans; they shall also be itemized in the developers agreement.

- 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 area for these activities or other intrusion 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 sediment 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 enable forest plantings to survive and thrive. Reforestation and afforestation plantings may also require a great deal of management once they are installed. Appendix H provides guideline specifications for proper planting, including techniques for site preparation and management. The following issues are of particular concern.

- 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 such as organic mulch or leaf mold compost are preferred.
- 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. The following are guidelines for any work within a riparian zone.
 - Correct any erosion problems
 - Minimize or eliminate any chemical use
 - Maintain an undisturbed leaf layer and understory
 - Eliminate exotics
- 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. Until the roots become established, however, there may still be erosion problems. Monitoring the stability of the soil will be important to the survival of the trees.
- Post-planting Considerations: For areas of large-scale disturbance, soils must be stabilized using a non-furf 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 fenced.

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 post-construction period have been put in place. Appendix J contains a sample format for such certification. Planting must occur before June 30th to be credited toward the current growing season.

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

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). The responsibility to meet the survival standards requires adequate watering, replanting, thinning or other appropriate measures. Also, inappropriate uses or intrusions must not occur. A responsibility that requires the knowledge and cooperation of the new occupants of the development.

FCE Planting Area (F.C.E. #2) - 0.91 acres

Planting required: (350 WHIPS PER ACRE) = 0.91 x 350 = 319 WHIPS
Planting provided: (275 whips and 25 - 1" trees)

Qty	Species	Size	Spacing
10	Acer rubrum - Red maple	1" cal.	15' o.c.
15	Quercus alba - White oak	1" cal.	15' o.c.
25 Total 1" caliper trees			
50	Acer rubrum - Red maple	2-3" whip	11' o.c.
50	Cercis canadensis - Red bud	2-3" whip	11' o.c.
30	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.
30	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.
30	Prunus serotina - Black cherry	2-3" whip	11' o.c.
30	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.
30	Quercus alba - White oak	2-3" whip	11' o.c.
25	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.
275 Total whip plantings			

1" CAL TREES = 200/ACRE (25 TREES/200) = 0.125 AC.
WHIPS w/shelters = 350/ACRE = (350 x 0.785 AC. (0.91 - 0.125)) = 275 WHIPS

FCE Planting Area (F.C.E. #3) - 0.21 acres

Planting required: (350 WHIPS PER ACRE) = 0.21 x 350 = 74 WHIPS
Planting provided: (46 whips and 15 - 1" trees)

Qty	Species	Size	Spacing
5	Acer rubrum - Red maple	1" cal.	15' o.c.
10	Quercus alba - White oak	1" cal.	15' o.c.
15 Total 1" caliper trees			
6	Acer rubrum - Red maple	2-3" whip	11' o.c.
6	Cercis canadensis - Red bud	2-3" whip	11' o.c.
6	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.
6	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.
6	Prunus serotina - Black cherry	2-3" whip	11' o.c.
6	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.
5	Quercus alba - White oak	2-3" whip	11' o.c.
6	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.
46 Total whip plantings			

1" CAL TREES = 200/ACRE (15 TREES/200) = 0.08 AC.
WHIPS w/shelters = 350/ACRE = (350 x 0.13 AC. (0.21 - 0.08)) = 46 WHIPS

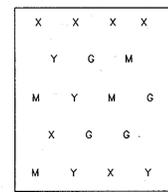
FCE Planting Area (F.C.E. #4) - 0.28 acres

Planting required: (350 WHIPS PER ACRE) = 0.28 x 350 = 98 WHIPS
Planting provided: (70 whips and 15 - 1" trees)

Qty	Species	Size	Spacing
5	Acer rubrum - Red maple	1" cal.	15' o.c.
10	Quercus alba - White oak	1" cal.	15' o.c.
15 Total 1" caliper trees			
10	Acer rubrum - Red maple	2-3" whip	11' o.c.
10	Cercis canadensis - Red bud	2-3" whip	11' o.c.
10	Cornus florida - Flowering dogwood	2-3" whip	11' o.c.
10	Liriodendron tulipifera - Tulip poplar	2-3" whip	11' o.c.
10	Prunus serotina - Black cherry	2-3" whip	11' o.c.
7	Robinia pseudo-acacia - Black locust	2-3" whip	11' o.c.
7	Quercus alba - White oak	2-3" whip	11' o.c.
6	Viburnum prunifolium - Blackhaw	2-3" whip	11' o.c.
70 Total whip plantings			

1" CAL TREES = 200/ACRE (15 TREES/200) = 0.08 AC.
WHIPS w/shelters = 350/ACRE = (350 x 0.2 AC. (0.28 - 0.08)) = 70 WHIPS

Plant Spacing Diagram



Key: X = 2' or 1" caliper trees along perimeter of required spacing, random species placement
Y/G/M = whip species planted randomly within planting area at required spacing.

Tree Shelters - Installation Specifications

After planting the tree in accordance with proper tree planting directions, pound or press the stake into the ground at a distance from the tree equal to about one-half the diameter of the protector. The stake should be on the side of the tree toward the prevailing wind; e.g. if the prevailing wind is from the west, the stake should be on the west side of the tree.

Tree Pro

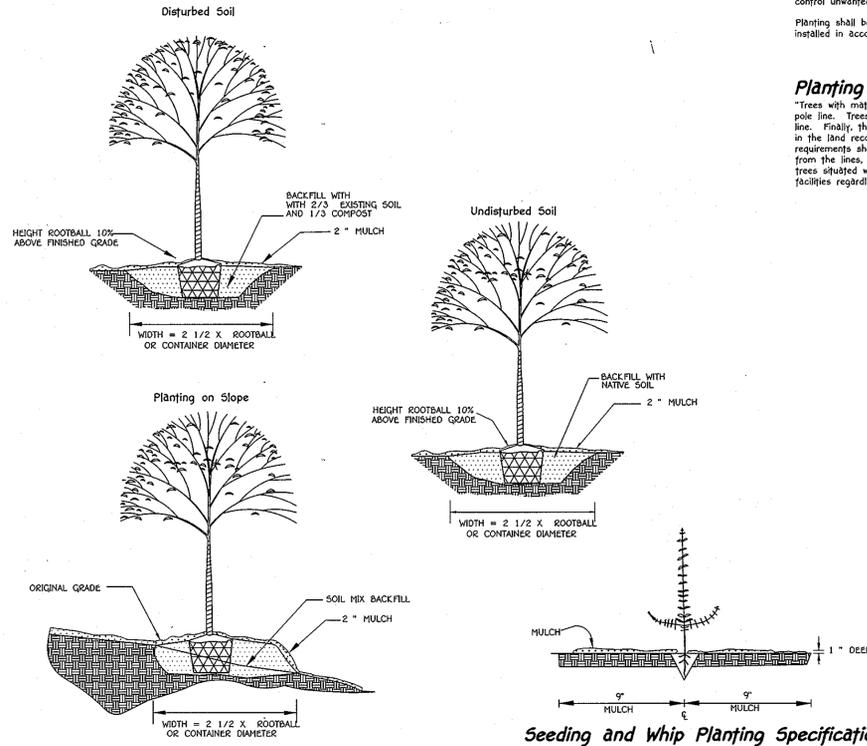
1. Fold the collar back over the outside of the protector, with the smooth side of the protector on the inside. The purpose of the collar is to provide a soft rim so the tree's bark won't be damaged.
2. With the holes lined up, slide the lockets through both holes in each side wall and lock the tie two or three clicks to keep it from jiggling out. See table below for the number of lockets.
3. Carefully slide the protector down over the top of the tree and the loose down over the stake. PLEASE NOTE: If the trees have branches, carefully gather them together with their tips facing up before lowering the protector.
4. Make sure the bottom of the protector is in good contact with the ground. PLEASE NOTE: Proper protector installation does not require the protector to be pressed down into the ground because doing so can sometimes cause rodent problems. Pests, voles and other animals often build nests inside protectors that are too firmly planted in the ground.
5. Tighten ties.

PROTECTOR SIZE	NUMBER OF TIES	MINIMUM STAKE SIZE
12"	1	1 1/2"
18"	2	2"
24"	2	2 1/2"
30"	3	3"
36"	3	3 1/2"
42"	4	4"
48"	4	4 1/2"
60"	PRE-INSERTED	6"
72"	PRE-INSERTED	7 1/2"

BIRD NETS

Net is provided for 40", 60" and 72" protectors only. They are usually not necessary for smaller sizes. Installing protectors without Bird Nets is hazardous to bluebirds and other insect-eating birds. Installation is fast, simple and the responsible thing to do. Simply slide the net over the top of the protector.

Without bird nets, birds trapped inside protectors will not only die, they can also destroy the tree as they try to escape. Please inspect your trees periodically to make sure the net is in place. The mesh must be removed before the tree emerges from the protector, otherwise, they can deform the tree.



Seeding and Whip Planting Specification

APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] CHIEF, BUREAU OF HIGHWAYS 4-7-10 DATE
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] CHIEF, DIVISION OF LAND DEVELOPMENT 4/26/10 DATE
 [Signature] CHIEF, DEVELOPMENT ENGINEERING DIVISION 4/20/10 DATE

Planting/Soil Specifications

1. Installation of bareroot plant stock shall take place between March 15 - April 20; b&b/container stock March 15 - May 30 or September 15 - November 15. Fall planting of 0&0 stock is not recommended.
2. Disturbed areas shall be seeded and stabilized as per general construction plan for project. Planting areas not impacted by site grading shall have no additional topsoil installed.
3. Bareroot plants shall be installed so that the top of root mass is level with the top of existing grade. Roots shall be dipped in an anti-desiccant gel prior to planting. Backfill in the planting pits shall consist of 3 parts existing soil to 1 part pine fines or equivalent.
4. Fertilizer shall consist of Agriform 22-0-2, or equivalent, applied as per manufacturer's specifications, for woody plants. Herbaceous plants shall be fertilized with Osmocote 6-6-12.
5. Plant material shall be transported to the site in a tarped or covered truck. Plants shall be kept moist prior to planting.
6. All non-organic debris associated with the planting operation shall be removed from the site by the contractor.

Sequence of Construction

1. Sediment control shall be installed in accordance with general construction plan for site.
2. Plants shall be installed as per Plant Schedule and the Planting/Soil Specifications for the project.
3. Upon completion of the planting, signage shall be installed as shown.
4. Plantings shall be maintained and guaranteed in accordance with the Maintenance and Guarantee requirements for project.

Maintenance of Plantings

1. Maintenance of plantings shall last for a period of 2 years.
2. Plantings must receive 2 gallons of water, either through precipitation or watering, weekly during the 1st growing season, as needed. During second growing season, once a month during May-September, if needed.
3. Invasive exotics and noxious weeds will be removed, as required, from planting areas mechanically and/or with limited herbicide application (see grower/care note where appropriate). Old field successional species will be retained.
4. Plants will be examined a minimum two times during the growing season for serious plant pests and diseases. Serious problems will be treated with the appropriate agent.
5. Dead branches will be pruned from plantings.

Guarantee Requirements

A 75 percent survival rate of forestation plantings will be required at the end of 2 growing seasons. All plant material below the 75 percent threshold will be replaced at the beginning of the next growing season. Wild trees arising from natural regeneration may be counted up to 50 percent towards the total survival number if they are healthy, native species at least 12 inches tall.

Surety for Forestation

The developer shall post a surety (bond, letter of credit) to ensure that forestation plantings are completed. See general note no. 22, sheet 1.

Planting Notes

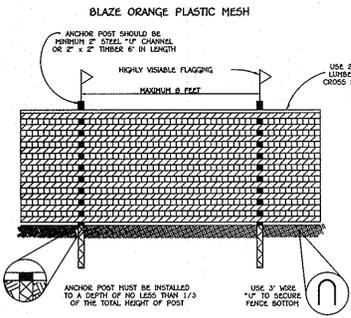
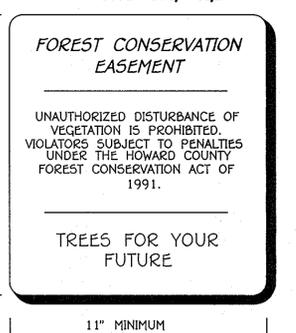
When possible, plants shall be installed within 24 hours of delivery. If installation cannot be performed within this time frame, plant stock shall be watered and protected from desiccation. Application of herbicide, Round-up or equivalent, may be used to reduce plant competition from old field successional growth at the time of installation. Mowing, re-application of herbicide, or a combination thereof, may be used to control unwanted, competing vegetation.

Planting shall be installed within one year or two growing seasons of subdivision approval. Plantings shall be installed in accordance with the time schedule included in Note 1 of the planting /seeding specifications.

Planting Note per B.G.&E.

"Trees with mature heights greater than 20' shall not be planted within 20' of either side of the utility pole line. Trees with mature heights greater than 40' shall not be planted within 40' of the utility pole line. Finally, the recorded plat/drawing and Associated Forest Conservation easement documents recorded in the land records of Howard County shall note that trees retained or planted to comply with FCA requirements shall meet the conditions prescribed above for mature tree heights and planting distances from the lines, and that BGE shall have the right without mitigation requirements to remove or prune any trees situated within the Forest Conservation area that BGE deems to pose a hazard to the overhead facilities regardless of the distance of the tree or trees from the overhead lines."

ON-SITE SIGNAGE



TREE PROTECTION DETAIL
NOT TO SCALE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
NATIONAL SOURCE OFFICE: 1977 BALTIMORE NATIONAL PLACE
BLOOMING CITY, MARYLAND 21142
(410) 461 - 2855

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS

MD DNR Qualified Professional
USACOE Wetland Delineator
Certification # WDCP93ND0610044B
[Signature] 3/5/10
JOHN P. CANOLES

OWNER AND DEVELOPER
HORSBERGER, LLC
c/o LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DRIVE, SUITE 102
ELLICOTT CITY, MARYLAND 21142
(410) 367-9422

STATE OF MARYLAND
[Signature]
ALL RIGHTS RESERVED

3-4-10 DATE

"I hereby certify that these documents were prepared by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20746, Expiration Date 2-22-11."

FOREST CONSERVATION NOTES & DETAILS
WAVERLY OVERLOOK
LOTS 1-26 AND OPEN SPACE LOTS 27-32
ZONING: R-20
TAX MAP NO. 10, GRID NO. 21 & TAX MAP NO. 15, GRID NO. 3
PARCEL NOS. 207 AND 224
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DATE: MARCH 4, 2010
SHEET 21 OF 22

