BRIGHTON MILL

ROAD, GRADING, STORM DRAIN, LANDSCAPE AND STORMWATER MANAGEMENT CONSTRUCTION PLANS

GENERAL NOTES

1.) ALL ASPECTS OF THIS PROJECT SHALL BE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVER(S) HAVE BEEN APPROVED.

2.) PRIVATE WATER AND SEWER SYSTEMS SHALL BE PROVIDED FOR THIS DEVELOPMENT. WELLS SHALL BE DRILLED PRIOR TO FINAL PLAT RECORDATION.

3.) TRACT BOUNDARY ESTABLISHED BY A BOUNDARY SURVEY PERFORMED BY BENCHMARK ENGINEERING, INC., DATED 12/2002..

4.) THE EXISTING TOPOGRAPHY SHOWN IS TAKEN FROM AN AERIAL SURVEY WITH TWO-FOOT CONTOUR INTERVALS PREPARED BY WINGS INC. DATED DECEMBER, 2002.

5.) HORIZONTAL AND VERTICAL DATUMS FOR THIS PLAN ARE BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM NAD83 AS PROJECTED FROM HOWARD COUNTY CONTROL POINTS 28HA AND 34AA.

6.) WETLAND DELINEATION PERFORMED BY ECO-SCIENCE PROFESSIONALS, INC., DATED FEBRUARY 2003 IN THE AREAS OF ANY POTENTIAL DISTRURBANCES. AREAS NOT NEAR POTENTIAL DISTURBANCES WERE NOT DELINEATED IN ACCORDANCE WITH SECTION 16.116(A)(4) OF THE HOWARD COUNTY SUBDIVISION REGULATIONS.

7.) TRAFFIC STUDY PREPARED BY TRAFFIC CONCEPTS, INC. IN FEBRUARY, 2003 AND WAS APPROVED UNDER SP-03-13 ON 8/28/03.

8.) FOREST STAND DELINEATION IS NOT PROVIDED BECAUSE ECO-SCIENCE PROFESSIONALS, INC. DETERMINED THAT THERE ARE NO FOREST RESOURCES ON SITE. FOREST CONSERVATION PLAN PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED FEBRUARY, 2003. THE FOREST CONSERVATION OBLIGATIONS WILL BE MET BY ON-SITE AFFORESTATION AND OFF-SITE RETENTION.

9.) NOISE MITIGATION IS NOT REQUIRED FOR THIS PROJECT.

10.) A SIGHT DISTANCE ANALYSIS FOR THE INTERSECTION OF BROCCOLINO WAY AND TRIADELPHIA MILL ROAD HAS BEEN COMPLETED BY BENCHMARK ENGINEERING, INC. DATED FEBRUARY, 2003 AND WAS SUBMITTED AS PART OF SP-03-013. A DESIGN MANUAL WAIVER WAS APPROVED BY D.E.D. LETTER DATED APRIL 3, 2003 TO USE STOPPING SIGHT DISTANCE IN LIEU OF INTERSECTION SIGHT DISTANCE AND TO ALLOW THE USE OF A 25 MPH DESIGN SPEED FOR THE COMPUTATION OF VERTICAL CURVES.

11.) MINIMUM BUILDABLE LOT SIZE SHALL BE 40,000 SQUARE FEET. MAXIMUM BUILDABLE LOT SIZE SHALL BE 50,000 SQUARE FEET.

12.) THIS PROPERTY IS NOT WITHIN THE METROPOLITAN DISTRICT.

13.) STORMWATER MANAGEMENT SHALL BE PROVIDED BY THE USE OF NON-STRUCTURAL METHODS FOR MEETING GROUND WATER RECHARGE VOLUMES, SHALLOW WETLAND, POCKET POND AND MICROPOOL ED FACILITIES SHALL BE CONSTRUCTED TO MEET THE WATER QUALITY AND CHANNEL PROTECTON REQUIREMENTS. ALL FACILITIES TO BE CLASS 'A' STRUCTURES. THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION.

14.) TO THE BEST OF OUR KNOWLEDGE THERE ARE NO CEMETERY LOCATIONS ON-SITE.

15.) SEDIMENT CONTROL SHALL BE PROVIDED FOR THIS PROJECT. SEPTIC EASEMENT AREAS SHALL BE PROTECTED FROM ROAD CONSTRUCTION GRADING OPERATIONS.

16.) THERE ARE EXISTING STRUCTURES LOCATED ON THIS PROPERTY, NONE OF WHICH ARE TO REMAIN.

17.) ALL LANDSCAPING REQUIREMENTS AS SET FORTH IN THE LANDSCAPE MANUAL SHALL BE COMPLIED WITH.

18.) FOR FLAG OR PIPE STEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPE STEM AND ROAD RIGHT OF WAY LINE AND NOT THE FLAG OR PIPE STEM LOT DRIVEWAY.

19.) DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:

a) WIDTH – 12' (14' SERVING MORE THAN ONE RESIDENCE).
b) SURFACE – 6" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN.)
c) GEOMETRY – MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM 45' TURNING RADIUS.
d) STRUCTURES (CULVERTS/BRIDGES) – CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING).
e) DRAINAGE ELEMENTS – CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
f) STRUCTURE CLEARANCES – MINIMUM 12 FEET.
g) MAINTENANCE – SUFFICIENT TO INSURE ALL WEATHER USE.

20.) THIS PLAN IS SUBJECT TO THE FOLLOWING DEPARTMENT OF PLANNING AND ZONING FILE NUMBERS: WP-03-093, SP-03-013, RE-06-01, WP-06-102

21.) ▨ THIS AREA DESIGNATES A PRIVATE SEWAGE EASEMENT OF AT LEAST 10,000 SF AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT FOR INDIVIDUAL SEWAGE DISPOSAL. IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWER IS AVAILABLE. THIS EASEMENT SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWER SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWAGE EASEMENT. RECORDATION OF A MODIFIED SEWAGE EASEMENT PLAT SHALL NOT BE REQUIRED.

22.) THERE ARE NO CONTIGUOUS AREAS OF STEEP SLOPES (25% OR GREATER) OF 20,000 S.F. OR GREATER ON THIS SITE. GRADING OF STEEP SLOPE AREAS LESS THAN 20,000 S.F. IS PERMITTED UNDER SECTION 16.116(b)(i) OF THE SUBDIVISION REGULATIONS.

23.) EXISTING WELLS AND/OR SEWERAGE EASEMENTS WITHIN 100' OF THE PROPERTY HAVE BEEN SHOWN FROM THE BEST AVAILABLE INFORMATION.

24.) THE PRINCIPAL USES OF PRESERVATION PARCEL 'A' ARE TO BE STORMWATER MANAGEMENT AND ENVIRONMENTAL CONSERVATION. THIS PARCEL SHALL BUFFER THE PROPOSED LOTS FROM EXISTING PROPERTIES TO THE WEST. THIS WILL LESSEN THE VISUAL IMPACTS THAT THE PROPOSED DEVELOPMENT WILL HAVE ON THE EXISTING LOTS. PRESERVATION PARCEL 'A' WILL BE PRIVATELY OWNED AND IS BUILDABLE.

25.) THE PRINCIPAL USES OF PRESERVATION PARCELS 'B' THROUGH 'D' ARE TO BE GREENSPACE CONSERVATION. THESE PARCELS SHALL BUFFER THE PROPOSED LOTS FROM EXISTING PROPERTIES TO THE WEST. THIS WILL LESSEN THE VISUAL IMPACTS THAT THE PROPOSED DEVELOPMENT WILL HAVE ON THE EXISTING LOTS. PRESERVATION PARCELS 'B' THROUGH 'D' WILL BE PRIVATELY OWNED AND ARE NON-BUILDABLE.

26.) THE SUBJECT PROPERTY IS ZONED RR-DEO PER THE 2/2/04 COMPRENENSIVE ZONING PLAN. AND THE COMP LITE ZONING REGULATION AMEBDMENTS EFFECTIVE ON JULY 28, 2006.

27.) WAIVER PETITION WP-03-93 WAS APPROVED BY THE DIRECTOR OF THE DEPARTMENT OF PLANNING AND ZONING ON JULY 10, 2003. WP-03-93 WAIVES SECTIONS 16.116(a)(1) & (2), PROTECTION OF WETLANDS & STREAMS; 16.147 FINAL SUBDIVISION PLAN AND FINAL PLAT FOR THE ADJOINING TRANSFER; AND 16.115(a) AND (c), FLOODPLAIN PRESERVATION, OF THE SUBDIVISION REGULATIONS. TO ALLOW THE TWO PUBLIC ROAD CROSSINGS, THE USE-IN-COMMON DRIVEWAY CROSSING FOR LOTS 11 THRU 15 AND THE DIRECTIONAL BORE FOR THE PRESSURE SEWER LINE FOR PRESERVATION PARCEL A DISTURBANCES WITHIN THE ENVIRONMENTAL FEATURES AND THE REQUIRED WETLAND AND STREAM BUFFERS, AND TO ALLOW RECONFIGURATION OF THE PROPERTY BOUNDARY USING THE ADJOINING DEED CONVEYANCE PROCESS.

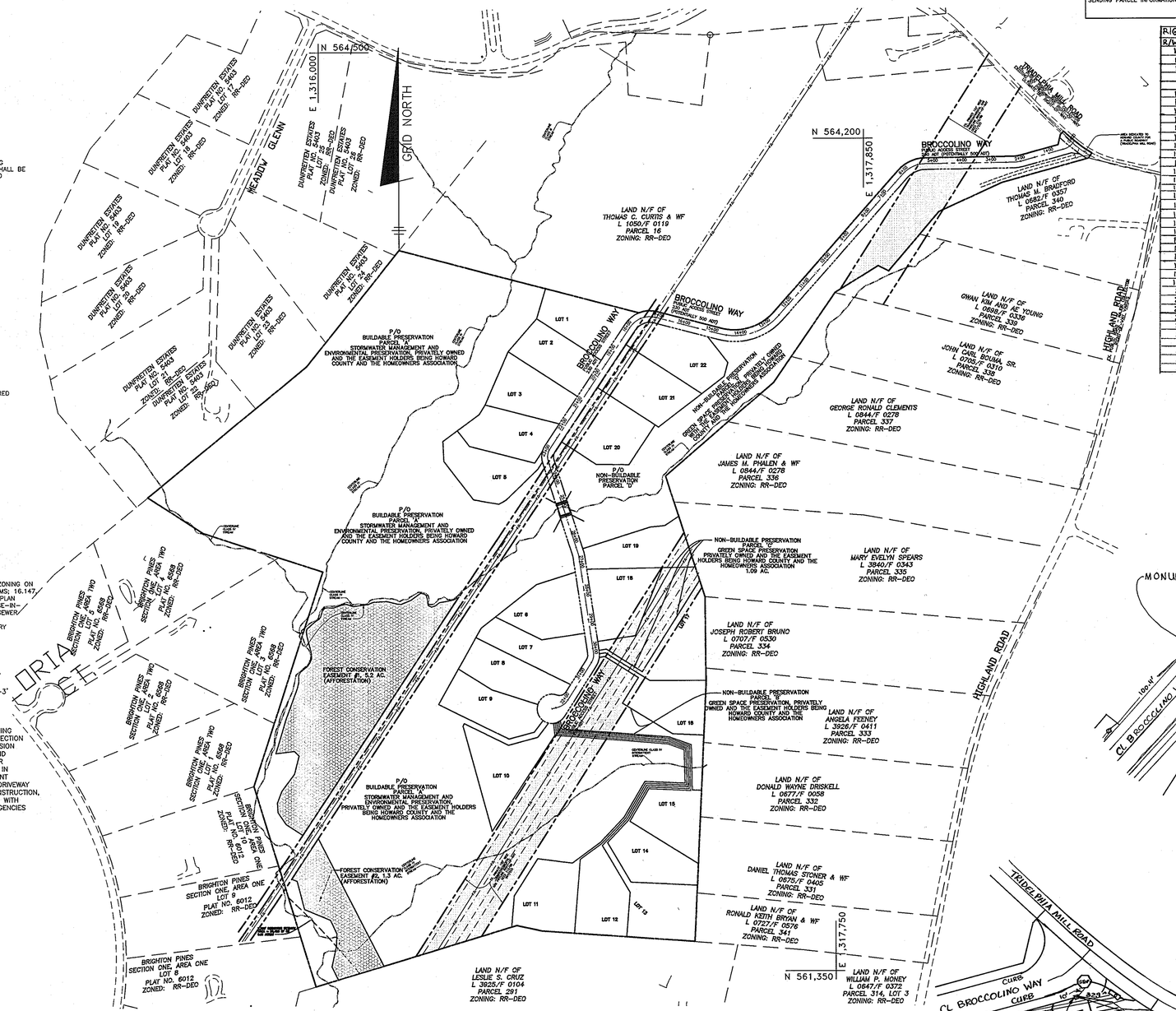
28.) A DESIGN MANUAL WAIVER WAS GRANTED BY THE DIRECTOR OF THE DEVELOPMENT ENGINEERING DIVISION ON JULY 17, 2003, GRANTING THE USE OF A USE-IN-COMMON DRIVEWAY TO ACCESS FIVE LOTS.

29.) ALL SIGNS POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) -3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

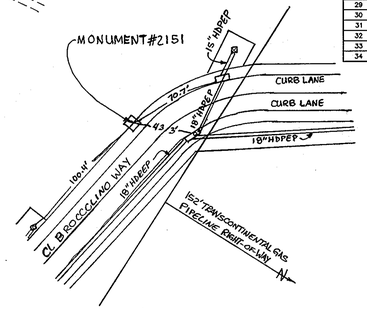
30.) THE 100 YEAR FLOODPLAIN STUDY AND THE APFO STUDY WERE FOR THIS PROJECT WAS PREPARED BY BENCHMARK ENGINEERING, INC. APPROVED BY HOWARD COUNTY ON 5/28/03.

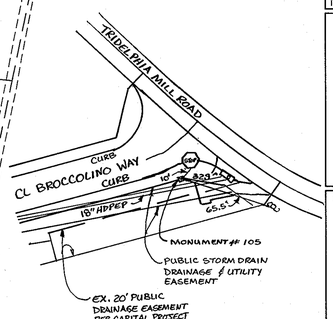
31.) WAIVER PETITION WP-08-102 WAS APPROVED BY THE DIRECTOR OF THE DEPARTMENT OF PLANNING AND ZONING ON JANUARY 12, 2007. WP-06-102 WAIVES SECTIONS 16.116(a)(1) & (2), PROTECTION OF WETLANDS & STREAMS AND 16.115(a) AND (c), FLOODPLAIN PRESERVATION, OF THE SUBDIVISION REGULATIONS. APPROVAL CONDITIONS ARE THE ALL NECESSARY WATER QUALITY CERTIFICATES AND NON-TIDAL WETLANDS PERMITS FROM THE MARYLAND DEPARTMENT OF THE ENVIRONMENT AND/OR THE ARMY CORPS OF ENGINEERS SHALL BE OBTAINED, DISTURBANCES SHALL BE MINIMIZED AND IN ACCORDANCE WITH THE SEDIMENT AND EROSION CONTROL PLANS AND PERMITS, BEST MANAGEMENT PRACTICES SHALL BE USED BY ALL CONTRACTORS WHEN CONSTRUCTING THE USE-IN-COMMON DRIVEWAY CROSSING, STABILIZATION SHALL BE INITIATED IMMEDIATELY UPON COMPLETION OF THE ROAD CONSTRUCTION, COMPLIANCE WITH THE REMOVAL OF THE ROAD/DITCH REMOVAL THROUGHOUT PLAN, COMPLIANCE WITH THE CONDITIONS OF APPROVAL OF WAIVER PETITION WP-03-093, AND COMPLIANCE WITH SRC AGENCIES COMMENTS ISSUED FOR FINAL PLAN, F-06-067.

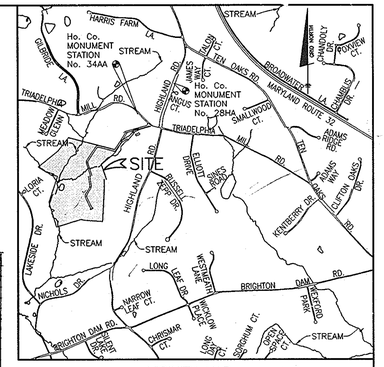
32.) THE STATE OF MARYLAND, DEPARTMENT OF THE ENVIRONMENT, NON-TIDAL WETLANDS & WATERWAYS DIVISION HAS ISSUED A LETTER OF AUTHORIZATION, NUMBER 200661209/05-NT-3288, EFFECTIVE 8 SEPTEMBER 2006. THE LETTER OF AUTHORIZATION WILL NEED TO BE REVISED TO EXPAND THE LIMITS OF DISTURBANCES BASED ON COMMENTS FROM HOWARD COUNTY SUBDIVISION REVIEW COMMITTEE MEMBERS.



PLAN
SCALE: 1" = 200'







VICINITY MAP
SCALE: 1" = 2000'

DENSITY EXCHANGE CHART

RECEIVING PARCEL INFORMATION	CURTIS PROPERTY, TAX MAP NO. 34 BLOCK NO. 2, PARCEL NO. 2, PLAT No. 18065
TOTAL AREA OF SUBDIVISION	80.75 AC± (PARCEL No. 2 WAS ENLARGED TO 80.75 ACRES BY ADJOINER TRANSFER RECORDED AT LIBER 9857 FOLIO 157, SEE WAIVER PETITION WP-03-93)
DWELLING UNITS ALLOWED BY RIGHT	19 UNITS
GROSS ACREAGE OF SUBDIVISION	80.75 AC±
ACREAGE OF FLOODPLAIN	8.3 AC±
ACREAGE OF STEEP SLOPES OUTSIDE FLOODPLAIN	0.54 AC±
NET ACREAGE OF SUBDIVISION	71.91 AC±
MAXIMUM DWELLING UNITS ALLOWED	35 UNITS
DWELLING UNITS PROPOSED	23 UNITS
NUMBER OF DEO UNIT REQUIRED	4 UNITS
SENDING PARCEL INFORMATION	MATTINGLY PROPERTY TAX MAP No. 14, GRID No. 1, PARCEL No. 112 RE-06-01, PLAT NUMBER 18064

RIGHT OF WAY ELEVATION CHART NAD83

R/W PT. NO.	DISCRIPTION	ELEVATION
100	REBAR & CAP	558.94
103	REBAR & CAP	559.86
104	REBAR & CAP	558.35
105	CONCRETE MONUMENT	559.24
106	REBAR & CAP	552.07
107	REBAR & CAP	551.01
108	REBAR & CAP	547.67
109	REBAR & CAP	533.10
110	REBAR & CAP	508.63
111	REBAR & CAP	506.26
112	REBAR & CAP	502.42
113	REBAR & CAP	499.04
114	REBAR & CAP	470.77
115	REBAR & CAP	469.50
116	REBAR & CAP	472.44
117	REBAR & CAP	473.17
118	MAGNAIL	485.68
119	REBAR & CAP	486.27
120	REBAR & CAP	479.96
121	REBAR & CAP	481.25
122	REBAR & CAP	482.92
123	REBAR & CAP	489.31
124	REBAR & CAP	496.44
125	REBAR & CAP	478.88
126	REBAR & CAP	472.71
127	MAGNAIL	460.88
128	REBAR & CAP	470.44
129	REBAR & CAP	439.24
2147	REBAR & CAP	500.82
2148	REBAR & CAP	502.64
2149	REBAR & CAP	506.01
2150	REBAR & CAP	508.71
2151	CONCRETE MONUMENT	533.05
2152	REBAR & CAP	537.40
2153	REBAR & CAP	551.67
2154	REBAR & CAP	552.56
2155	REBAR & CAP	558.90
2156	REBAR & CAP	560.80

BENCHMARK INFORMATION NAD83

Ho. Co. STATION 28HA
STAMPED DISC SET ON TOP OF CONCRETE COLUMN 14.2' EAST OF THE EDGE OF PAVING OF HIGHLAND ROAD AND 29.0' NORTH OF BG&E POLE No. 334368
NORTHING: 565347.937'
EASTING: 1319266.269'
ELEVATION: 588.708'

Ho. Co. STATION 34AA
STAMPED DISC SET ON TOP OF CONCRETE COLUMN 7.4' SOUTH OF THE EDGE OF PAVING FOR TRIADELPHIA MILL ROAD AND 57.2' EAST OF C&P POLE NUMBER 32.
NORTHING: 564468.943'
EASTING: 1318257.375'
ELEVATION: 561.105'

SHEET INDEX

NO.	TITLE
1	TITLE SHEET
2	ROAD PLAN
3	ROAD PLAN
4	ROAD PLAN
5	ROAD PROFILES
6	ROAD PROFILES
7	ROAD PROFILES
8	SIGHT DISTANCE ANALYSIS AND TRIADELPHIA MILL ROAD IMPROVEMENT PLAN
9	NORTH STRUCTURE DETAIL
10	NORTH STRUCTURE DETAIL
11	NORTH STRUCTURE DETAIL
12	NORTH STRUCTURE DETAIL
13	NORTH STRUCTURE DETAIL
14	NORTH STRUCTURE DETAIL
15	NORTH STRUCTURE DETAIL
16	NORTH STRUCTURE DETAIL
17	NORTH STRUCTURE DETAIL
18	STORM DRAIN DRAINAGE AREA MAP
19	STORM DRAIN DRAINAGE AREA MAP
20	STORM DRAIN PROFILES
21	STORM DRAIN PROFILES
22	STORM DRAIN PROFILES
23	GRADING, SEDIMENT AND EROSION CONTROL PLAN
24	GRADING, SEDIMENT AND EROSION CONTROL PLAN
25	GRADING, SEDIMENT AND EROSION CONTROL PLAN
26	SEDIMENT & EROSION CONTROL NOTES & DETAILS
27	LANDSCAPE PLAN
28	LANDSCAPE PLAN
29	FOREST CONSERVATION PLAN
30	FOREST CONSERVATION PLAN
31	OFF-SITE FOREST CONSERVATION PLAN AT MATTINGLY PROPERTY
32	STORMWATER MANAGEMENT FACILITY #1 PROFILES AND DETAILS
33	STORMWATER MANAGEMENT FACILITY #2 PROFILES AND DETAILS
34	SWM NOTES AND BORING LOGS

SITE DATA TABULATION

1) GENERAL SITE DATA

a. PRESENT ZONING: RR-DEO
b. APPLICABLE DPZ FILE REFERENCES: WP-06-102, WP-03-93, SP-03-013, RE-06-01
c. DEED REF.: 9857/170
d. PROPOSED USE OF SITE: 22 BUILDABLE LOTS, 1 BUILDABLE PRESERVATION PARCEL AND 3 NON-BUILDABLE PRESERVATION PARCELS
e. PROPOSED WATER AND SEWER SYSTEMS: PRIVATE

2) AREA TABULATION

a. TOTAL AREA OF SITE..... 80.75 AC.±
b. AREA OF 100 YEAR FLOODPLAIN (APPROX.)..... 8.3 AC.±
c. AREA OF STEEP SLOPES (25% OR GREATER)..... 0.67 AC.±
AREA OF STEEP SLOPES NOT IN THE FLOODPLAIN..... 0.54 AC.±
d. NET AREA OF SITE..... 71.91 AC.±
e. AREA OF THIS PLAN SUBMISSION..... 80.75 AC.±
f. AREA OF PROPOSED BUILDABLE LOTS..... 22.69 AC.±
g. AREA OF PROPOSED PRESERVATION PARCELS..... 54.89 AC.±
h. AREA OF PROPOSED PUBLIC ROAD R/W..... 3.17 AC.±

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

STATE OF MARYLAND — DONALD LEE MAAS — No. 21348 — PROFESSIONAL ENGINEER

AS-BUILT 1-13-10

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
website: http://www.bei-civilengineering.com

STATE OF MARYLAND — DONALD LEE MAAS — No. 21348 — PROFESSIONAL ENGINEER — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2 PARCEL 2 5th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

TITLE: TITLE SHEET

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC — Draft: LAB — Check: DAM — SCALE: 1"=200' — DRAWING 1 OF 34

F-06-67

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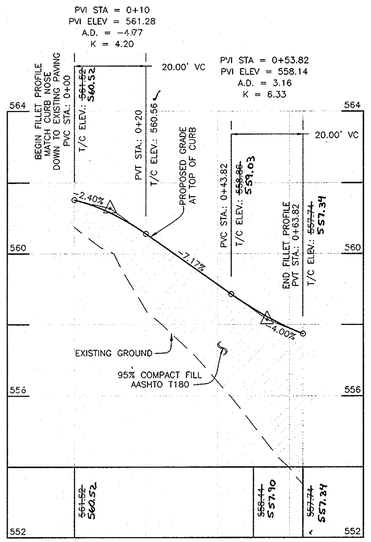
TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION



FILLET PROFILE – WEST FILLET

VERTICAL SCALE: 1" = 2'
HORIZONTAL SCALE: 1" = 20'

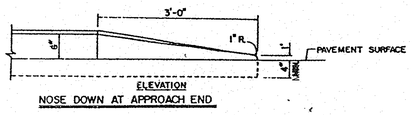
FILLET PROFILE – EAST FILLET

VERTICAL SCALE: 1" = 2'
HORIZONTAL SCALE: 1" = 20'

FLAGGING OPERATION / 2-LANE,2-WAY GREATER THAN 40 MPH

104 8-20-03 9-23-03

MD 104.02-09



NOSE DOWN AT APPROACH END

STREET LIGHT SCHEDULE			
ROAD	STATION	OFFSET	DESCRIPTION
BROCCOLINO WAY	0+45	30' RIGHT	150 WATT HPS VAPOR PREMIER POST-TOP MOUNTED ON A 14' BLACK FIBERGLASS POLE

CENTERLINE CONTROL DATA				
STREET NAME	STATION	NORTH	EAST
BROCCOLINO WAY	BEGIN=0+00.00	564187.7273	1318566.9734
	PC=0+13.95	564176.8984	1318558.1746
	PT=0+44.64	564160.3032	1318532.9315
	PC=1+97.76	564118.7724	1318385.5578
	PT=2+22.63	564115.2189	1318360.0137
	PC=2+44.64	564111.3500	1318060.7245
	PT=6+10.94	564075.5770	1317983.1225
	PC=12+55.45	563590.9423	1317558.2513
	PT=14+72.23	563531.0782	1317361.3638
	PC=16+97.29	563589.0826	1317143.9084
	PT=17+97.24	563555.7661	1317056.4642
	PC=22+94.52	563140.3745	1316783.0776
	PT=23+39.01	563097.7459	1316777.1912
	PC=26+72.60	562779.8116	1316878.2082
	PT=26+80.61	562772.0193	1316880.0128
	PC=30+15.06	562441.2038	1316929.1654
	PT=30+50.60	562407.1507	1316921.9795
	PC=31+99.20	562281.5235	1316842.6147
	PT=32+44.87	562255.3788	1316806.5137
	END=32+64.36	562250.6283	1316787.6115

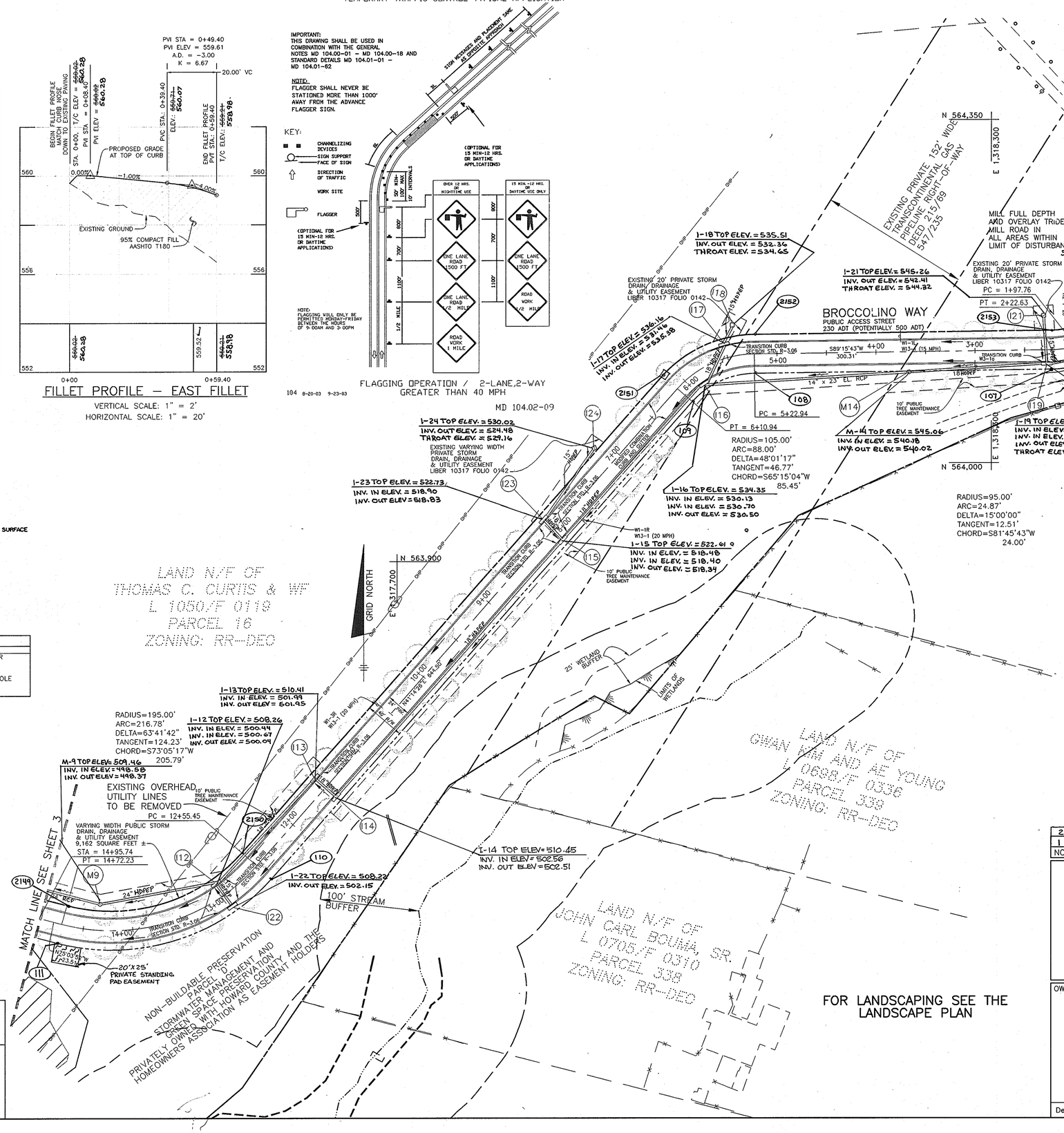
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/6/07



AS-BUILT 1-13-10

NO.	DATE	REVISION
2	12-5-08	MOVE STANDING PAD EASEMENT FROM LOT 3 TO PARCEL 'D'
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cals.com

5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2 PARCEL 2 5th ELECTION DISTRICT HOWARD COUNTY, MARYLAND

TITLE: ROAD PLAN

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM | SCALE: 1"=50' | DRAWING 2 OF 34

F-06-67

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS	
CHIEF, BUREAU OF HIGHWAYS	6-6-07 DATE
APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING	
CHIEF, DIVISION OF LAND DEVELOPMENT	6-11-07 DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION	6/8/07 DATE

NO.	DATE	REVISION
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ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cais.com

5/2/07

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LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: ROAD PLAN

DATE: MAY, 2007	PROJECT NO. 1513
SCALE: 1"=50'	DRAWING 3 OF 34

Design: JMC | Draft: LAB | Check: DAM

F-06-67

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P/O BUILDABLE PRESERVATION PARCEL 'A' STORMWATER MANAGEMENT AND ENVIRONMENTAL PRESERVATION, PRIVATELY OWNED WITH HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION AS EASEMENT HOLDERS

20' PUBLIC STORM DRAIN, DRAINAGE & UTILITY EASEMENT AND 20' PRIVATE STORMWATER MANAGEMENT ACCESS & UTILITY EASEMENT

M-1 TOP ELEV.= 443.34
INV. IN ELEV. = 437.90
INV. OUT ELEV. = 437.78

EXISTING OVERHEAD UTILITY LINES TO BE REMOVED

MATCH LINE SEE SHEET 3

RADIUS=50.00'
ARC=8.01'
DELTA=9°10'31"
TANGENT=4.01'
CHORD=S13°02'20"E
8.00'

RADIUS=50.00'
ARC=35.55'
DELTA=40°44'02"
TANGENT=18.56'
CHORD=S11°54'57"W
34.80'

LOT 6

LOT 19

LOT 18

LOT 9

LOT 8

LOT 7

LOT 10

LOT 11

LOT 12

LOT 13

LOT 14

LOT 15

LOT 16

LOT 17

M-3 TOP ELEV.= 470.95
INV. IN ELEV.= 467.09
INV. OUT ELEV.= 467.09

I-1 TOP ELEV. = 477.88
INV. OUT ELEV. = 470.80

M-11 TOP ELEV. = 433.13
INV. IN ELEV. = 428.40
INV. OUT ELEV.= 424.23

M-10 TOP ELEV. = 437.54
INV. IN ELEV. = 423.59
INV. OUT ELEV. = 423.43

20' PRIVATE STORMWATER MANAGEMENT ACCESS & UTILITY EASEMENT
RADIUS=60.00'
ARC=45.67'
DELTA=43°36'36"
TANGENT=24.00'
CHORD=S54°05'15"W
44.57'

BROCCOLINO WAY
PUBLIC ACCESS STREET
230 ADT
14' PAV.

END OF ROADWAY CONSTRUCTION

24' PRIVATE USE-IN-COMMON ACCESS & UTILITY EASEMENT FOR LOTS 11 THRU 15

24' PRIVATE USE-IN-COMMON ACCESS & UTILITY EASEMENT FOR LOTS 16 & 17 AND UTILITY EASEMENT FOR LOTS 11-15

EXISTING PRIVATE 152' WIDE TRANSCONTINENTAL GAS PIPELINE RIGHT-OF-WAY DEED 215/69 547/235

NON-BUILDABLE PRESERVATION PARCEL 'B'

NON-BUILDABLE PRESERVATION PARCEL 'C'
GREEN SPACE PRESERVATION PRIVATELY OWNED WITH HOWARD COUNTY AND THE HOMEOWNERS ASSOCIATION AS EASEMENT HOLDERS

50' STREAM BUFFER

CENTERLINE CLASS IV INTERMITTENT STREAM

I-2A TOP ELEV. = 445.59
INV. IN ELEV. = 440.69
INV. OUT ELEV. = 440.49

M-12 TOP ELEV. = 449.29
INV. IN ELEV. = 444.29
INV. OUT ELEV. = 444.19

I-2 TOP ELEV. = 465.84
INV. IN ELEV. = 453.78
INV. IN ELEV. = 453.80
INV. OUT ELEV. = 453.54

I-3 TOP ELEV. = 468.12
INV. OUT ELEV. = 458.12

I-4 TOP ELEV. = 466.53
INV. IN ELEV. = 463.49
INV. OUT ELEV. = 463.19

I-5 TOP ELEV. = 480.80
INV. IN ELEV. = 471.03

NOTE: CONTRACTOR SHALL TEST PIT THE EXISTING GAS LINE AND FIBER OPTIC LINE AT EACH CROSSING PRIOR TO CONSTRUCTION.

FOR LANDSCAPING SEE THE LANDSCAPE PLAN

LAND N/F OF DONALD WAYNE DRISKELL L. 0677/F. 0058 PARCEL 332 ZONING: RR-DEO

LAND N/F OF MARY ELLEN SHOLAR L. PARCEL 336 ZONING: RR-DEO

LAND N/F OF JOSEPH ROBERT BRUNO L. 0707/F. 0331 PARCEL 333 ZONING: RR-DEO

LAND N/F OF ANGELA RENEE L. 0388/F. 0611 PARCEL 334 ZONING: RR-DEO

LAND N/F OF LESLIE S. CRUZ L. 0387/F. 0102 PARCEL 331 ZONING: RR-DEO

EX. WELL HOUSE TO BE ABANDONED

EX. R-701 TO BE REMOVED

EX. BUILDING TO BE REMOVED

EX. GAS LINE
EX. FIBER OPTIC LINE
F.O.
OHP

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
PROFESSIONAL ENGINEER
AS-BUILT 1-18-10

NO.	DATE	REVISION
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cois.com

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
REGISTERED
PROFESSIONAL ENGINEER
5/1/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: ROAD PLAN

DATE: MAY, 2007 | PROJECT NO. 1513

Design: JMC | Droft: LAB | Check: DAM | SCALE: 1"=50' | DRAWING 4 OF 34

F-06-67

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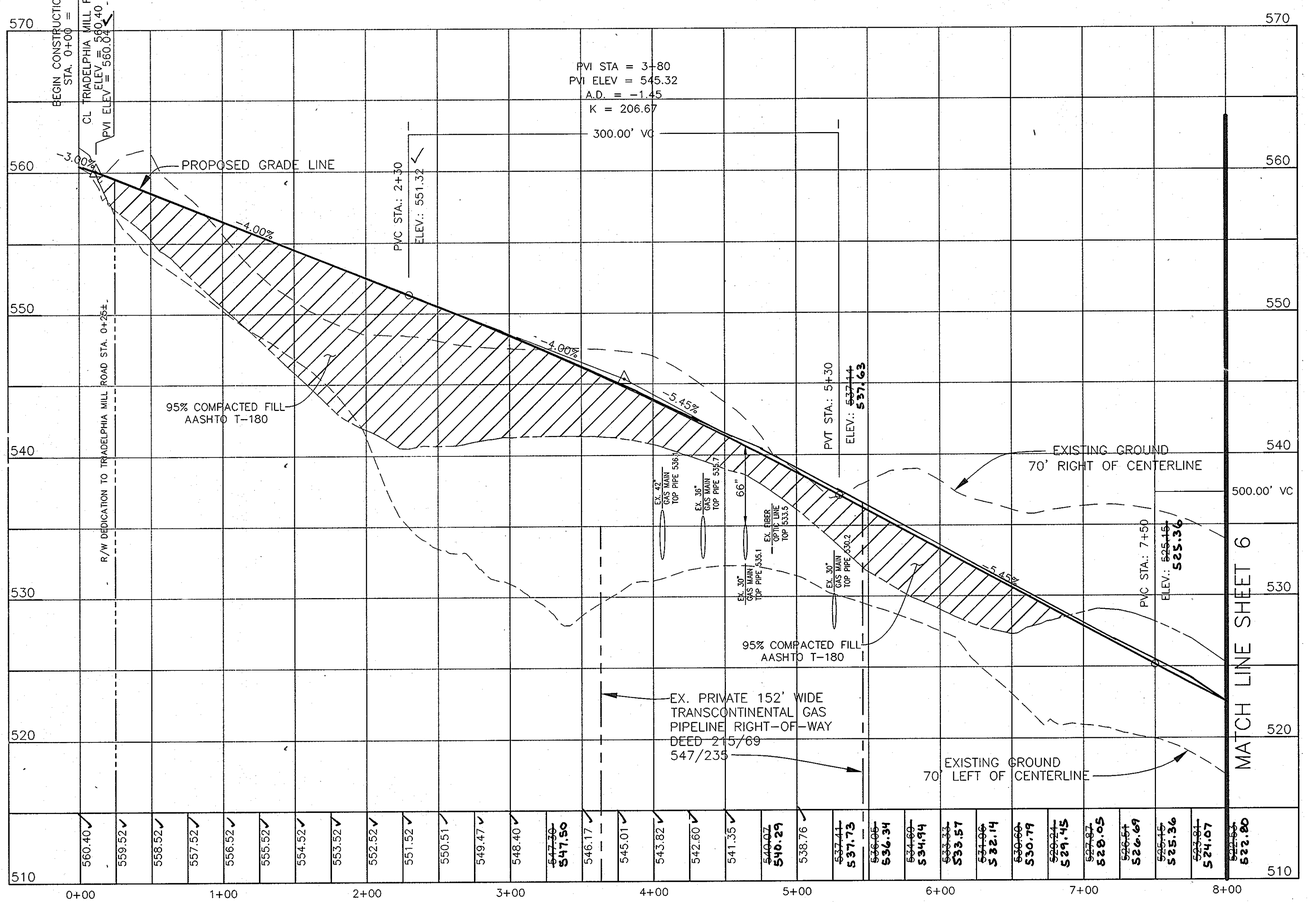


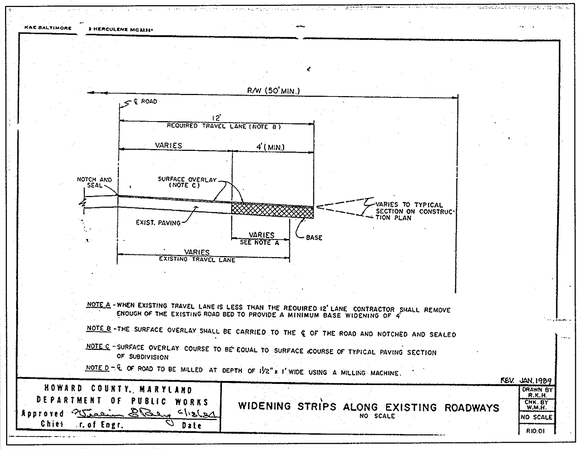
PROFILE – BROCCOLINO WAY

PUBLIC ACCESS PLACE – 40' R/W

230 ADT (500 ADT POTENTIAL)

VERTICAL SCALE: 1" = 5'

HORIZONTAL SCALE: 1" = 50'



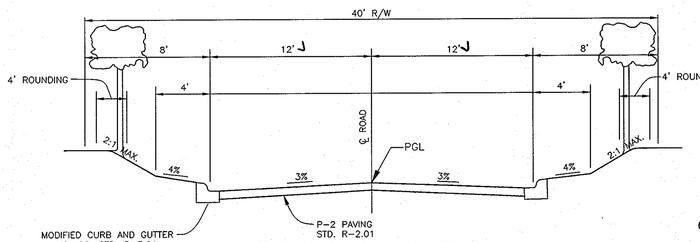
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07



TYPICAL ROADWAY SECTION

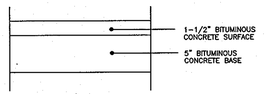
BROCCOLINO WAY

(PUBLIC ACCESS STREET – 500 ADT OR LESS)

DESIGN SPEED: 30 MPH

STA. 0+12 TO STA. 31+76.52

NOT TO SCALE



TYPICAL PAVEMENT SECTION

P-2 PAVING SECTION

NOT TO SCALE

USE ONLY THE TYPICAL SECTION SHOWN IN THE AREA OF THE GAS MAIN EASEMENTS. THE ALTERNATIVE IS NOT ACCEPTABLE IN THESE AREAS DUE TO DEPTH TO THE VARIOUS GAS MAINS. THE ALTERNATIVE PAVING SECTION INCLUDED IN DETAIL R-2.01 IS ACCEPTABLE OUTSIDE OF THE GAS MAIN EASEMENT AREAS. PROVIDE 1 FOOT FULL DEPTH SAWCUT ONTO TRIADELPHIA MILL ROAD BEFORE ROAD WIDENING

PROVIDE 1 FOOT FULL DEPTH SAWCUT ONTO TRIADELPHIA MILL ROAD BEFORE ROAD WIDENING

WILLIAMS GAS PIPELINE – TRANSCO ENCROACHMENT SPECIFICATIONS

The following Williams Gas Pipeline (WGP) specifications are minimum requirements for most proposed encroachments to avoid conflicts with regulations and existing right-of-way agreements. It is not WGP's intent to convey that these are the only types of activities permitted. Additional requirements may be imposed depending upon the scope of the proposed encroachment.

PIPELINE FACILITIES AND LEGISLATION

WGP owns and operates a 15,000-mile high-pressure natural gas pipeline system. WGP's pipelines have diameters ranging from (22) inches to (48) inches on the main line and (6) inches to (24) inches on laterals. In addition to pipelines, WGP has storage facilities, compressor stations, meter stations, cathodic protection equipment, valve settings and other facilities located within the limits of its right-of-ways and fee properties.

WGP is regulated by the Department of Transportation, Office of Pipeline Safety. The pipeline safety regulations are set forth in Title 49, Code of Federal Regulations, Part 192 "Transportation of Natural and Other Gas by Pipeline – Minimum Federal Standards".

ENCROACHMENTS

It is WGP's philosophy to prevent encroachments by working with agencies and developers to design projects outside the pipeline right-of-way. Many of WGP's right-of-way agreements prohibit encroachments, and you should be aware that WGP will enforce applicable provisions in its right-of-way agreements where it believes the continued safe operation and maintenance of the pipeline facilities could be threatened.

NOTIFICATION AND CONSTRUCTION SAFETY REQUIREMENTS

1. In order to prevent unnecessary delays, WGP encourages close communication with our representative throughout your entire project. A WGP representative should participate in all pre-construction meetings. In addition, WGP can conduct a safety/informational presentation to any interested parties, including contractors, local governmental maintenance crews and developers.
2. "One Call" systems require (48)-(72) hours notice prior to any excavation activities or equipment use on or in close proximity to WGP's pipeline facilities. No equipment use or excavation shall occur in the vicinity of WGP's facilities until notification to "One Call" has been made. A WGP representative must be on site prior to any equipment use or excavation activities. Any crossings made without a WGP representative on site will have to be re-excavated at the excavator's expense to provide WGP an opportunity to inspect all affected pipeline facilities.
3. Excavations must be barricaded to protect WGP's pipelines from exposure to vehicular traffic and to ensure public safety. WGP representatives must be provided safe access to all open excavations. Excavations must be properly sloped or shored in accordance with OSHA regulations.

PLAN DESIGN AND REVIEW REQUIREMENTS

1. Residential and/or commercial developments shall be laid out such that the right-of-way is designated as "open" or "common" space. Maintaining an open right-of-way reduces public exposure and minimizes disruptions during pipeline maintenance and construction. Lot divisions shall be established on either side of the right-of-way designating the actual right-of-way as "open" or "common" areas.
2. In most cases, WGP will require submittal of plan and profile drawings for prior review and approval by WGP. All drawings must show, in detail, all of WGP's facilities and other features that will allow WGP to determine the effects of the proposed construction or maintenance activity on its facilities. Encroachment plans shall include a scope of work, description, and a location map depicting the project site area, including sufficient geographical references such as legal property lines, roads, and appropriate deed information for the properties involved.
3. In order to ensure that all proposed Improvements are designed in accordance with WGP's Encroachment Specifications, WGP requires a minimum of (30) business days lead-time to review proposed encroachments. Encroachments involving road crossings will require additional review time. Any proposed road which requires pipeline modifications or a dedicated right-of-way will require significant lead-time.

WGP EASEMENT, PERMITS AND AGREEMENTS

1. At a minimum, a Foreign Line Permit will be required for any proposed construction or maintenance within WGP's right-of-way. This permit, prepared by WGP, will outline the responsibilities, conditions, and liabilities of each party. This permit must be executed by the encroaching party and in WGP's possession prior to any work being performed on the right-of-way.
2. WGP will determine if a recorded Encroachment Agreement will be required for any proposed construction or maintenance within WGP's right-of-way. This agreement, prepared by WGP, will outline the responsibilities, conditions, and liabilities of each party. This agreement will be fully executed and in WGP's possession prior to any work being performed on the right-of-way.
3. WGP will determine if a Reimbursement Agreement will be required for any construction or maintenance within WGP's right-of-way. This agreement, prepared by WGP, will outline the reimbursement procedure for necessary and appropriate preliminary engineering and actual field inspection work. This fully executed agreement, including a check made payable to: "Transcontinental Gas Pipe Line Corporation" for the estimated cost of WGP's services, will be in WGP's possession prior to any work being performed on the right-of-way.

GENERAL REQUIREMENTS

1. No above ground structures or appurtenances are to be located within the WGP right-of-way. The structures include, but are not limited to: utility poles, towers, foundations, guy wires, satellite dishes, manholes, catch basins, utility pedestals, transformers, fire hydrants, etc..
2. An authorized WGP representative must be on site prior to and during any surface-disturbing work performed within the right-of-way. WGP's representative will assist in determining the location of the pipeline, the right-of-way width and existing cover over the pipeline.
3. No cut or fill on the WGP right-of-way is permitted without WGP approval.
4. WGP will request evidence of general liability (minimum of $1,000,000 coverage) and other appropriate and usual insurance prior to any activity and/or construction on or near WGP's right-of-way. In the event of excavation under WGP pipelines, WGP must be named as additional Insured. Any rights of subrogation or recovery will be waived in favor of WGP. The insurance limits, terms and conditions that may be required will be dependent on the specific facilities potentially impacted and what would be usually and prudently obtained in similar industry situations.
5. All foreign lines shall cross WGP's right-of-way at an angle as near to 90 degrees as possible. All foreign lines shall cross either over or under all of WGP's pipeline facilities. No horizontal or vertical bends are permitted within WGP's right-of-way. Parallel occupancy of WGP's right-of-way shall not be permitted.
6. WGP facilities are electrically protected against corrosion. Each metallic foreign line that enters or crosses WGP's right-of-way must have a test lead installed. In addition, the utility contractor installing the metallic foreign line must excavate and expose one or more of WGP's existing pipelines to provide for the installation of test leads by WGP personnel. All necessary measures (coatings, electrical bonds, etc.) shall be taken to ensure that the proposed pipe or utility is adequately protected from potential interference effects. Requests for cooperative testing shall be directed to WGP's Division Office, "Attn.: Pipeline Integrity Team Lead".
7. All foreign lines crossing WGP's pipeline or related facilities shall be installed with a minimum of (24) inches of clearance between the existing WGP facilities and the proposed foreign line. The foreign line shall be installed at a uniform depth across the full width of the WGP right-of-way. WGP may require that all foreign lines be installed under its existing pipeline(s) and related facilities.
8. WGP may require that foreign lines be identified with permanent aboveground markers where the lines enter and exit WGP right-of-way. It is the line owner's responsibility to obtain any rights to install the markers, and to maintain the markers. A direct burial warning tape should be placed (12)-(18) inches above the foreign line and extend across the entire width of WGP's right-of-way.
9. Foreign lines crossing WGP's facilities shall be installed in accordance with all applicable codes and requirements governing such installations.
10. Stockpiling brush, trash, or other debris on the right-of-way is prohibited, as it may conceal pipeline markers and hinder pipeline inspections or routine maintenance.
11. In some cases, there is a significant delay between the review of the developer's plans and the actual construction. If delays occur, all construction and maintenance activities are subject to WGP's requirements in effect at the time the work actually takes place.

FENCES

1. Fence posts must be kept a minimum of (4) feet from the edge of any WGP pipeline or related pipeline facility. Posts installed within the right-of-way must be hand dug.
2. WGP shall have the free right of ingress and egress. WGP may require that new fences have a (12) foot wide gate installed within the right-of-way at a location approved by WGP. This gate shall be installed so to minimize vehicular and equipment travel over the existing WGP facilities.

LANDSCAPE GUIDELINES

1. No trees or large deep-rooted shrubs are permitted on WGP's right-of-way. Shrubbery shall be limited to low-growing, shallow-rooted plantings with a maximum mature height of less than (5) feet.
2. With prior approval from WGP, some types of shrubs may be permitted on the right of way. All shrubs must be located at least (5) feet from the edge any pipeline or related facility. Under no circumstances will mechanical equipment be used in the planting of shrubs.
3. WGP reserves the right to cut and/or remove plantings as required in the operation, inspection and maintenance of its pipeline facilities; further, WGP assumes no responsibility for any cost involved in the replacement of said cut and/or removed landscape plantings.
4. All sprinkler or irrigation systems will require review by a WGP representative. Sprinkler heads will not be permitted within (10) feet of any pipeline or related facility. All crossings of the WGP pipeline(s) or related facilities with feeder lines shall be hand dug.
5. WGP may require that a recorded Encroachment Agreement be executed prior to any landscaping.

STREETS, ROADS AND DRIVEWAYS

1. WGP must complete a preliminary engineering evaluation for all roads, streets, driveways, etc., proposed on WGP's right-of-way. Any pipe casing, concrete slabs, or other protection required by WGP shall be installed at no expense to WGP. WGP may require a pipeline inspection prior to construction.
2. The recommended minimum total cover over WGP existing pipelines is (60) inches at all driveways, highways, roads, streets, etc. The recommended minimum total cover over WGP existing pipelines in adjacent drainage ditches is (48) inches.
3. Vibratory equipment is prohibited within the limits of the WGP right-of-way. Vibratory equipment is not permitted to be used for achieving applicable compaction requirements.
4. Driveways, highways, roads, streets, etc. crossing over WGP pipeline facilities shall cross at an angle as near to 90 degrees as possible. All crossings must be over straight pipe and at locations free of any crossovers. Parallel occupancy of the right-of-way shall not be permitted.
5. WGP will retain the right to cut all present and proposed driveways, highways, roads, streets, etc. and will have no responsibility for restoration, loss of use or access, or any other costs.
6. Access to the earth above each pipeline for leak detection (flame ionization) and cathodic protection surveys must be maintained.

EQUIPMENT USE IN CLOSE PROXIMITY TO THE PIPELINES

1. To protect WGP's pipeline(s) from external loading, WGP must perform an engineering evaluation to determine the effects of any proposed equipment use. Mats, timber bridges, or other protective materials deemed necessary by WGP shall be placed over WGP facilities for the duration of any loading. Protective materials shall be purchased, placed, and removed at no cost to WGP. The right-of-way must be returned to its original condition.
2. WGP may require temporary markings to identify areas where equipment use is authorized.
3. No vibratory equipment is permitted within the limits of, or in close proximity to, the WGP right-of-way.

DRAINAGE, IMPOUNDMENT OF WATER AND EROSION CONTROL

1. WGP may conduct preliminary engineering studies for any proposed drainage channels or ditches within the right-of-way. Drainage channels or ditches must be adequately protected from erosion and provide a minimum of (48) inches of cover over the pipeline(s). Altering (clearing, re-grading or changing alignment of) an existing drainage channel or ditch requires approval from WGP.
2. Impoundment of water on WGP's right-of-way is not permitted. Soil erosion control measures shall not be installed within the WGP right-of-way without prior WGP approval.

EXCAVATIONS AND BLASTING

1. Plans for excavation on the right-of-way require prior approval by WGP. No machine excavation shall be performed within (24) inches of WGP's pipeline(s) or related facilities. WGP's onsite representative may require hand digging at a distance greater than (24) inches.
2. When a machine excavation is used, the bucket teeth should be curled under each time the bucket is brought back into the ditch to reduce the chance of the teeth contacting the pipeline. Side cutters must be removed from all buckets. At the discretion of WGP's onsite representative, a bar may have to be welded across the bucket teeth.
3. Prior to any plowing or ripping of soil on the right-of-way, particularly in association with agricultural activities, plans should be reviewed with your local WGP representative to ensure proper cover exists. No vibratory plows are permitted to be used on the WGP right-of-way.
4. A detailed blasting plan must be submitted for review and authorization prior to any proposed blasting within (200) feet of WGP's pipeline facilities. In order to provide for necessary and appropriate analysis by WGP, each licensed blasting contractor must also complete and submit a WGP's Blasting Data Sheet. The blasting plan and data sheet(s) must be submitted a minimum of (10) business days prior to the proposed blasting. Blasting contractors shall perform seismic monitoring on all blasting within 200 feet of WGP's pipeline facilities.

BURIED COMMUNICATION (TELEPHONE, TV, DATA TRANSMISSION, FIBER OPTIC) AND BURIED POWER LINE CROSSINGS

1. All buried communications (other than single residential telephone and TV) crossing WGP facilities shall be installed in rigid steel casing (minimum of Schedule 40) for the full width of WGP's right-of-way.
2. All buried electric cables, except (24) volt DC power (including single residential service drops), crossing WGP facilities shall be installed in rigid steel casing (minimum of Schedule 40) for the full width of WGP's right-of-way.

3. All buried coaxial cable, solid or stranded wire single residential telephone; TV and (24) volt DC power shall be encased in plastic conduit for the full width of WGP's right-of-way.
4. All fiber optic cable crossings, including single drops, shall be installed in rigid steel casing (minimum of Schedule 40) for the full width of WGP's right-of-way.
5. WGP may require additional protection including concrete encasement or concrete caps.

SANITARY SEWER AND WATER CROSSINGS

All sewer and water lines shall be either (1) ductile iron or steel pipe (adequately protected from WGP's cathodic protection system) or (2) plastic pipe installed in rigid steel casing (minimum of Schedule 40) for the full width of WGP's right-of-way. No piping connections will be allowed within (5) feet of any WGP pipeline. All ductile iron utility crossings shall include restrained joints for the full width of WGP's right-of-way.

COMBUSTIBLE MATERIAL LINES

1. All plastic combustible material lines shall be installed in rigid steel casing (minimum of Schedule 40) for the full width of WGP's right-of-way.
2. WGP may require that steel combustible material lines (adequately protected from WGP cathodic protection system) be installed under the existing WGP pipeline facilities. In addition, WGP may require additional protection for steel combustible material lines including concrete encasement or concrete caps.

BORED CROSSINGS

1. WGP existing pipeline facilities shall be test pitted to verify the horizontal and vertical location of all facilities prior to any proposed boring operations. Once all required test pits have been performed, both plan view and profile drawings shall be submitted to WGP. Plan and profile drawings are required for all proposed boring operations.
2. All proposed bores shall include the installation of rigid steel casing (minimum of Schedule 40) for the full width of WGP's right-of-way.
3. Prior to any boring, inspection holes will be excavated to verify the depth of the bore as it approaches each pipeline. Inspection holes must be excavated to allow WGP's on site representative to visually see the boring head prior to the point where it travels beneath each pipeline. The contractor must provide and maintain instrumentation to accurately locate the boring head.

OVERHEAD LINE CROSSINGS

1. Overhead line crossings shall be installed with a minimum of (30) feet of vertical clearance above the WGP right-of-way to provide adequate equipment clearance. No poles or appurtenances shall be located on the WGP right-of-way.
2. Overhead line crossings shall not be installed within (25) feet (measured horizontally) of any gas vent (e.g. relief valve, blowdown vent).
3. Overhead lines shall cross WGP's facilities at an angle as near to 90 degrees as possible. Parallel occupancy of the WGP right-of-way will not be permitted.

DISPOSAL SYSTEMS

No septic tanks, liquid disposal systems, or hazardous waste disposal systems will be allowed on the right-of-way or within (25) feet of WGP's facilities. This prohibition includes, but is not limited to, facilities that have the potential of discharging effluent from sewage disposal systems, the discharge of any hydrocarbon substance, the discharge or disposal of any regulated waste, or any other discharge that may prove damaging or corrosive to WGP facilities.

STATEMENT REGARDING RIGHTS

1. Nothing contained herein shall be construed to convey, waive, or subordinate any of WGP's existing rights whatsoever.
2. WGP shall be fully and completely compensated for any damages to its facilities resulting from the acts of third parties who are working in the vicinity of WGP's facilities with or without WGP's consent.

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 1-13-10

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cals.com

STATE OF MARYLAND — CHARLES EDWARD SCHMIDT — No. 21443 — PROFESSIONAL ENGINEER

5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: ROAD PROFILE AND DETAILS

DATE: MAY, 2007 PROJECT NO. 1513

Design: JMC Draft: LAB Check: DAM SCALE: AS SHOWN DRAWING 5 OF 34

F-06-67

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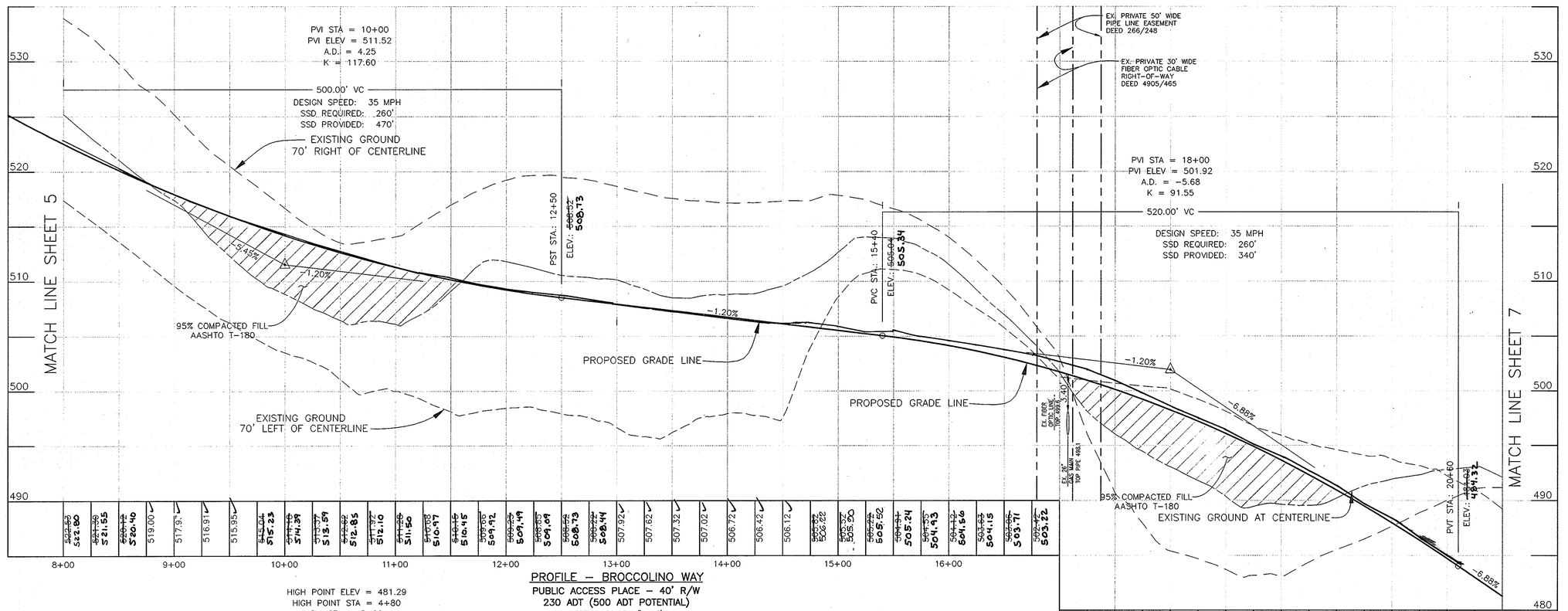

PROFILE – BROCCOLINO WAY

PUBLIC ACCESS PLACE – 40' R/W
230 ADT (500 ADT POTENTIAL)
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'

PROFILE – DRIVEWAY LOTS 11–15

PRIVATE USE IN COMMON DRIVEWAY
50 ADT, DESIGN SPEED 15 MPH
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

DONALD ALAN MASON — STATE OF MARYLAND — No. 21443 — PROFESSIONAL ENGINEER — As-Built 1-13-10

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
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ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cais.com

STATE OF MARYLAND — KEVIN L. BROWN — No. 21362 — PROFESSIONAL ENGINEER — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: ROAD PROFILE

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM | SCALE: AS SHOWN | DRAWING 6 OF 34

F-06-67

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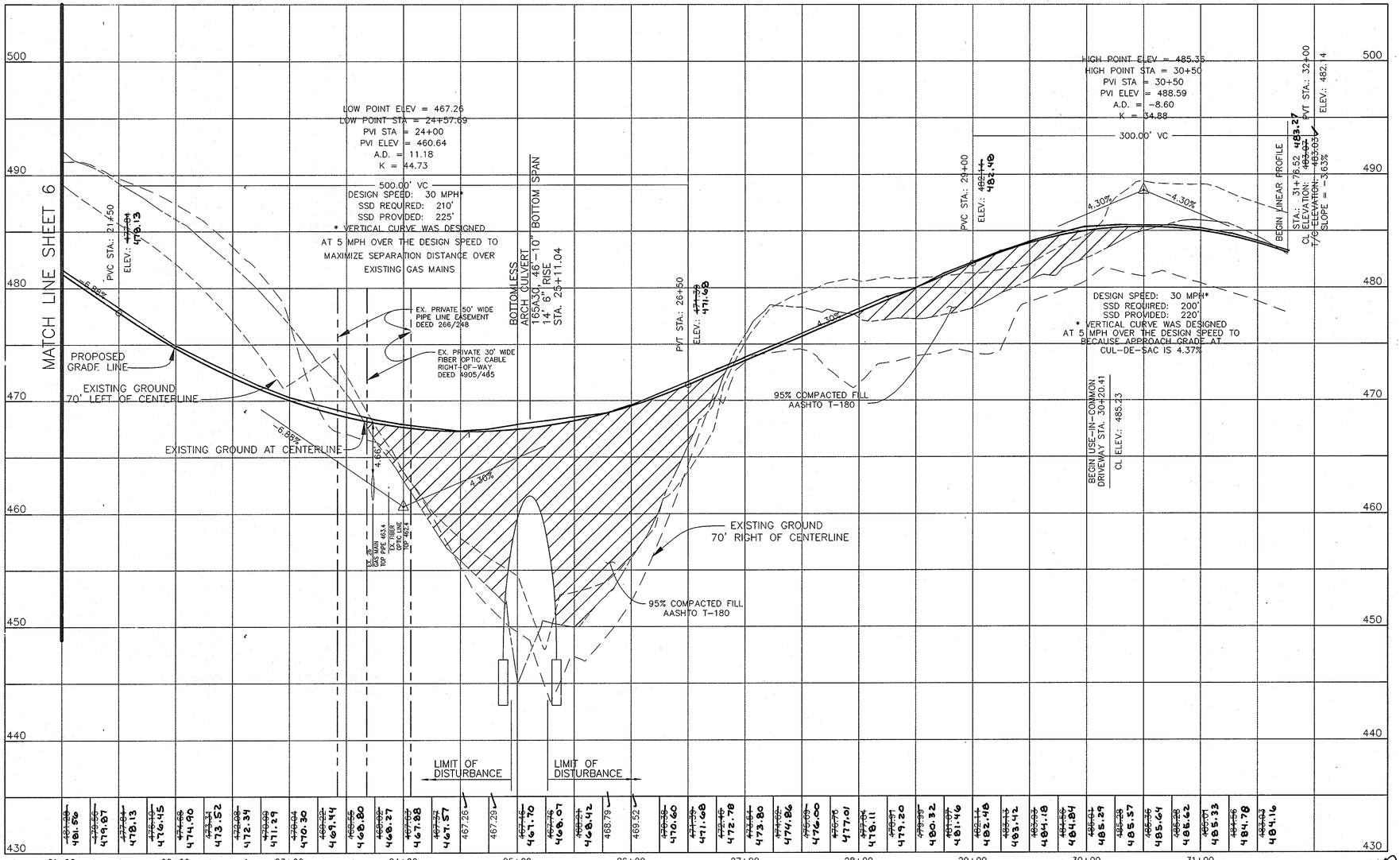
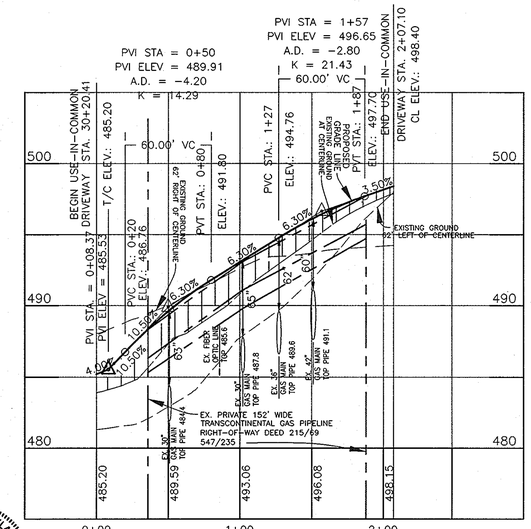
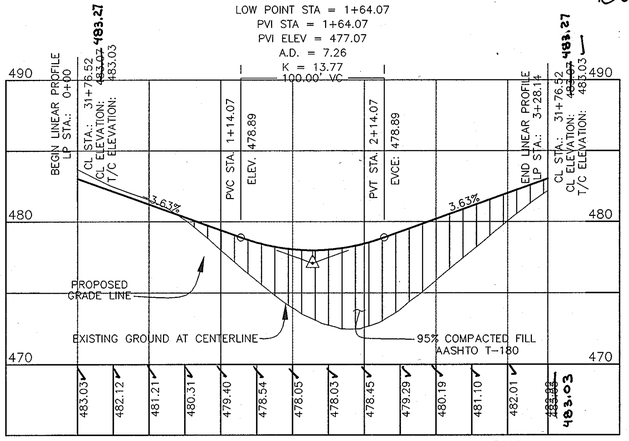


PROFILE – BROCCOLINO WAY
PUBLIC ACCESS PLACE – 40' R/W
230 ADT (500 ADT POTENTIAL)
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



PROFILE – DRIVEWAY LOTS 16–17
PRIVATE USE IN COMMON DRIVEWAY
20 ADT, DESIGN SPEED 15 MPH
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'



LINEAR PROFILE – BROCCOLINO WAY
PUBLIC ACCESS PLACE – CUL-DE-SAC
230 ADT (500 ADT POTENTIAL)
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

DONALD ALAN MANN — STATE OF MARYLAND — No. 21443 — PROFESSIONAL ENGINEER

AS-BUILT 1-13-10

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cois.com

DONALD ALAN MANN — STATE OF MARYLAND — No. 21443 — REGISTERED PROFESSIONAL ENGINEER — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: ROAD PROFILE

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM | SCALE: AS SHOWN | DRAWING 7 OF 34

F-06-67

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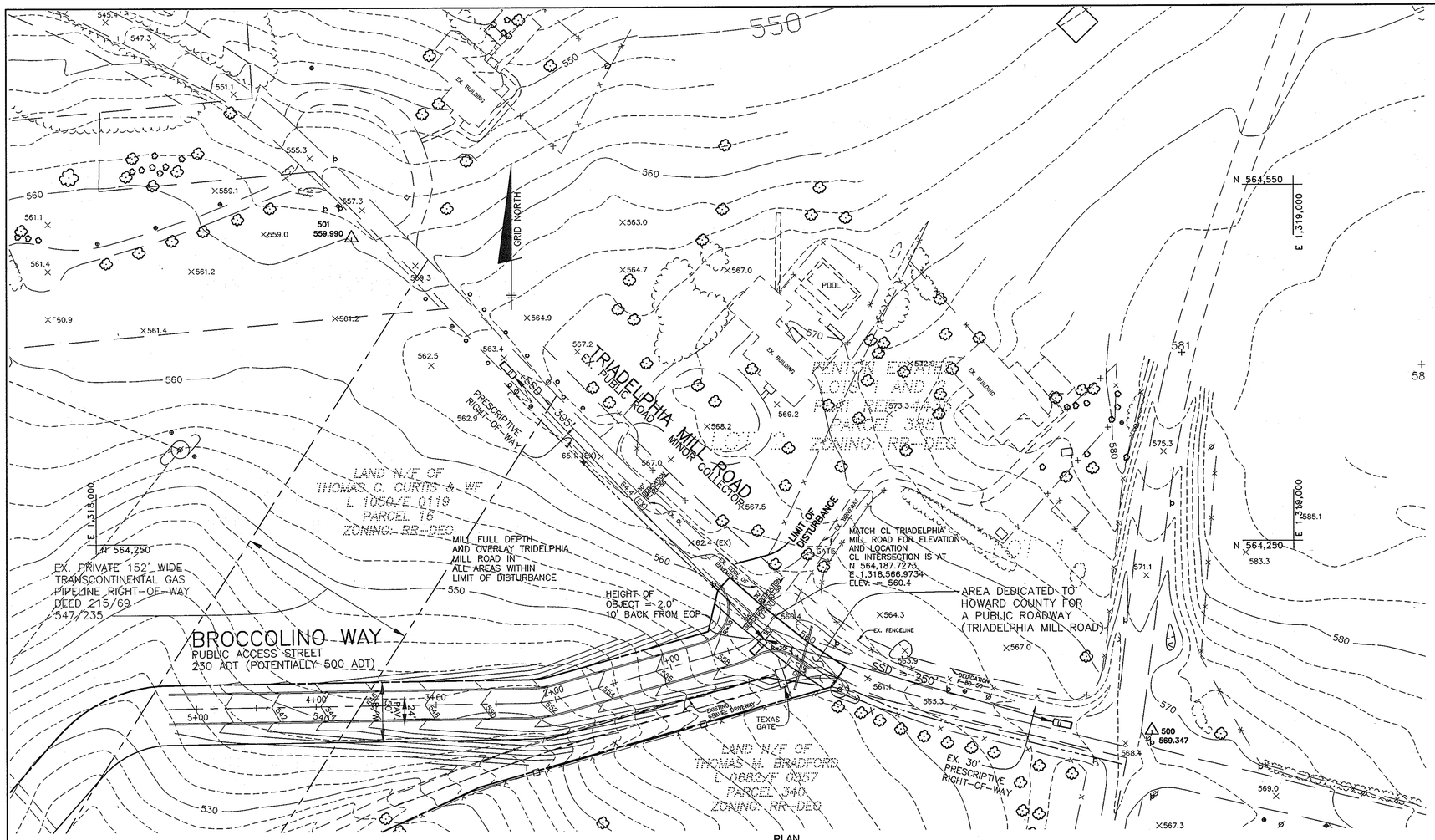


PLAN
SCALE: 1" = 50'

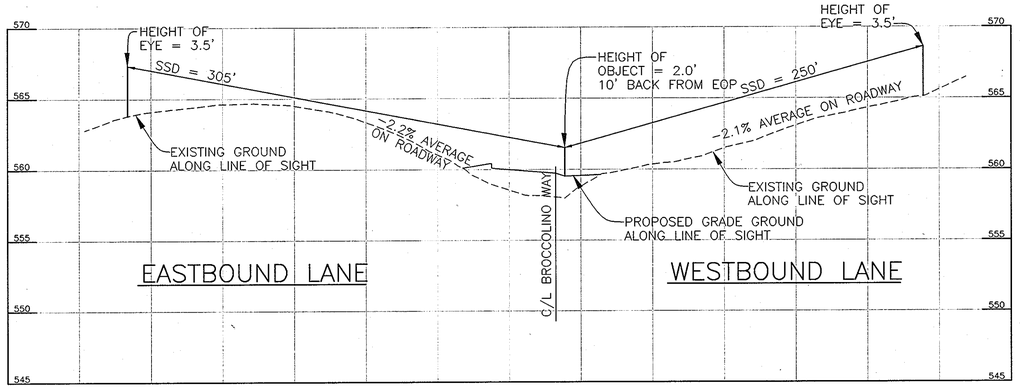
OPERATING SPEED = 40 MPH EASTBOUND
= 35 MPH WESTBOUND
BASED ON 85TH PERCENTILE AS DETERMINED BY TRAFFIC CONCEPTS, INC.

THIS INTERSECTION LOCATION DOES NOT PROVIDE ADEQUATE INTERSECTION SIGHT DISTANCE FOR A STOP CONTROLED, AT AT-GRADE INTERSECTION (CASE B1 AND B2) ACCORDING TO "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 2004."

*THERE IS APPROXIMATELY 280' TO THE INTERSECTION OF TRIADELPHIA MILL ROAD AND HIGHLAND ROAD ON THE EAST SIDE OF THE ENTRANCE.

BASED ON EXHIBIT 3-1 – STOPPING SIGHT DISTANCE IN "A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS, 2004" THIS ROADWAY WOULD REQUIRE 305' OF STOPPING SIGHT DISTANCE IN THE EASTBOUND LANE AND 250' OF STOPPING SIGHT DISTANCE IN THE WESTBOUND LANE. BASED ON AN EYE HEIGHT OF 3.5' AND AN OBJECT HEIGHT OF 2.0'. THE EYE IS SET IN THE TRAVEL LANE AND OBJECT IS SET BACK 10' FROM THE EDGE OF PAVING.

SINCE THE EXISTING ROAD (TRIADELPHIA MILL ROAD) HAS A SLOPE OF 2% TO 3% GRADE, NO GRADE ADJUSTMENT FACTORS WERE USED.



AASHTO STOPPING SIGHT DISTANCE
TRIADELPHIA MILL ROAD
SCALE: VERT. 1" = 5'
HOR. 1" = 50'

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cals.com

STATE OF MARYLAND
JAMES M. CROSS
No. 21562
REGISTERED
PROFESSIONAL ENGINEER
6/7/07

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: AASHTO STOPPING SIGHT DISTANCE ANALYSIS FOR TRIADELPHIA MILL ROAD

DATE: FEBRUARY, 2007
MAY, 2007

PROJECT NO. 1513

Design: JMC | Draft: JMC | Check: DAM

SCALE: AS SHOWN

DRAWING 8 OF 34

F-06-067

P:\1513\dwg\7032B1.dwg, ROAD PLAN PACKAGE, 5/7/2007 2:33:33 PM, odd

CROSSING ENLARGEMENT
1" = 10'

LEGEND

SOILS CLASSIFICATION SOILS DELINEATION	ChB2
EXISTING CONTOURS (AERIAL 12/02)	480 / 470
LIMIT OF WETLANDS	
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
EXISTING STRUCTURE	
EXISTING SEPTIC FIELD	
PROPOSED SEPTIC FIELD	
SLOPES 15% TO 24.9%	
SLOPES 25% OR GREATER	
EX. 100 YEAR FLOODPLAIN	
PROPOSED FOREST CONSERVATION EASEMENT	
SUPER SILT FENCE	SSF
SILT FENCE	SF
EARTH DIKE	
STABILIZED CONSTRUCTION ENTRANCE	
SEDIMENT CONTROL DRAINAGE DIVIDE	
EROSION CONTROL MATTING	
LIMIT OF DISTURBANCE	

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.

PE NO. 21443

DONALD A. MASON — 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 BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

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."

Richard J. Weinmiller — 5-9-07
DEVELOPER — DATE

BY THE ENGINEER:

"I/WE CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE 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 NOTIFIED 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."

Donald Mason — 5/7/07
ENGINEER – DONALD A. MASON, P.E. # 21443 — DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL.

Jim Myers for — 5/24/07
NATURAL RESOURCES CONSERVATION SERVICE — DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

5/31/07
HOWARD SOIL CONSERVATION DISTRICT — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 6-6-07 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

T. Krista - Marchant for C. Hamilton — 6-11-07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

6/6/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NOTES:
#1 STREAM CLOSURE SHALL BE BETWEEN MARCH 1ST AND MAY 31ST.
#2 ALL SWALES AND DITCHES SHALL BE LINED WITH EROSION CONTROL MATTING.
#3 CONTRACTOR SHALL CURL ALL ENDS OF SF/SSF UPHILL BY 2' IN ELEVATION AND CLOSE OVER ENDWALLS WHERE SHOWN AND AS DIRECTED BY THE COUNTY INSPECTOR.
#4 CONTRACTOR SHALL MAINTAIN POSITIVE FLOW FROM ROAD GRADES AND SUMPS TO BASINS BY EARTH DIKE AND STORM DRAINS.
#5 CONTRACTOR SHALL REMOVE FARM ROAD AND ASSOCIATED DITCH AND GRADE TO PROVIDE A SMOOTH OVERLAND FLOW, PER THE CONTOURS SHOWN.
#6 CONTRACTOR TO USE MDE SEED MIX IN DISTRUBED STREAM AREAS.

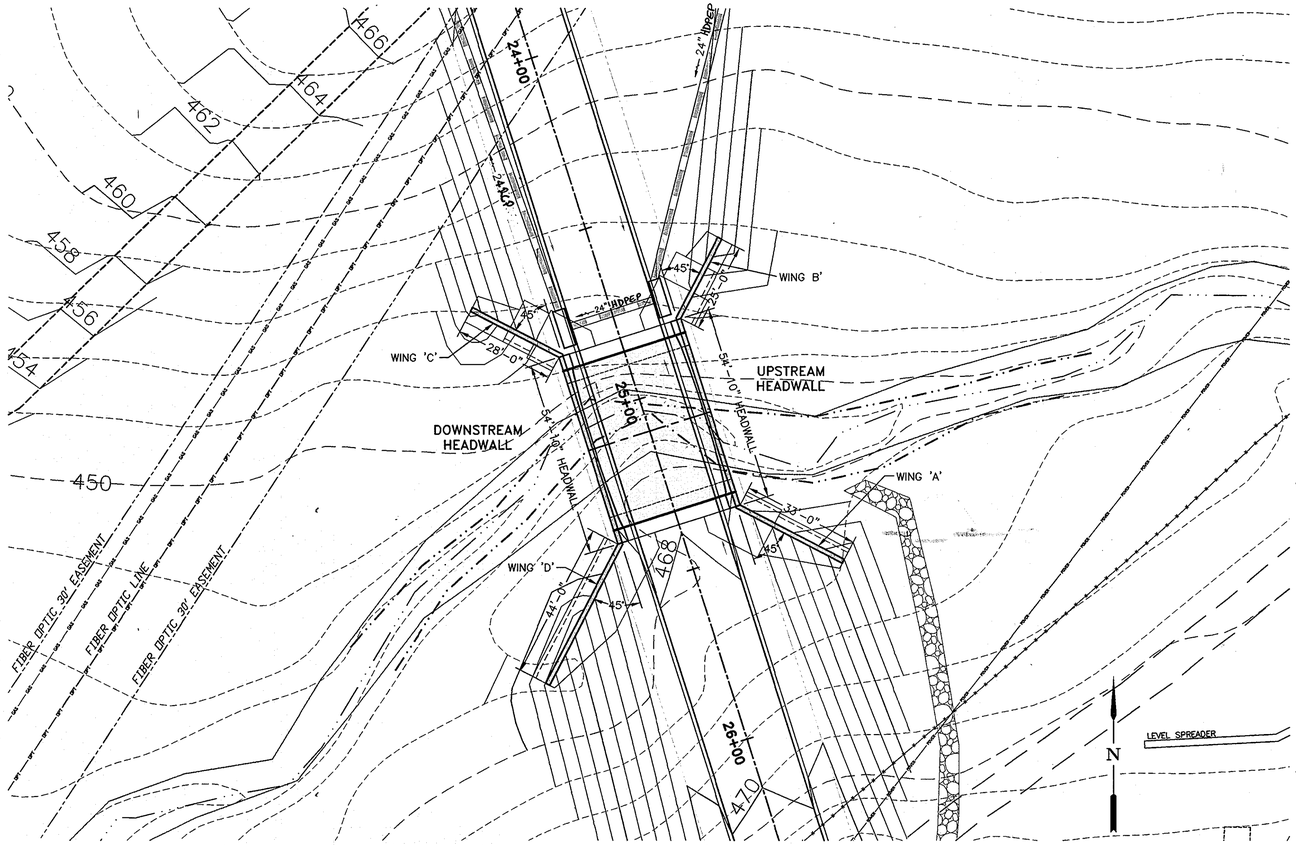
BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 & fax: 410-465-6644
email: Benchmrk@cais.com

STATE OF MARYLAND — DONALD ALEXANDER MASON — No. 21443 — PROFESSIONAL ENGINEER
Donald Mason 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'
LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
TITLE: NORTH STRUCTURE DETAIL
DATE: MAY, 2007 — PROJECT NO. 1513
Design: -- Draft: -- Check: --
SCALE: AS SHOWN — DRAWING 9 OF 34

F-06-67

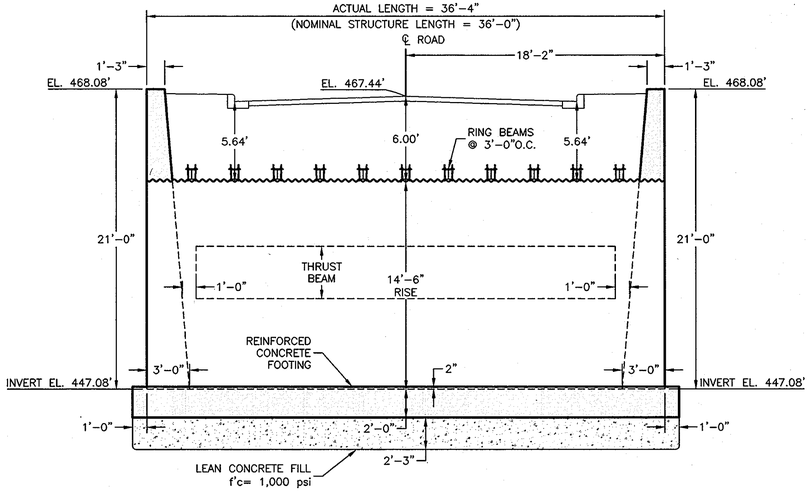


PLAN VIEW

GRAPHIC SCALE

20' 10' 0 20' 40'

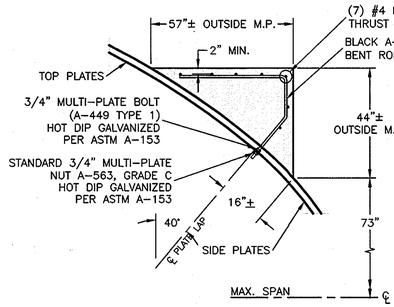
CONTOUR INTERVAL = 2'



PROFILE THROUGH CENTERLINE OF STRUCTURE

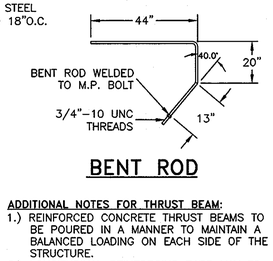
GRAPHIC SCALE

5' 2.5' 0 5' 10'



DETAIL OF THRUST BEAM

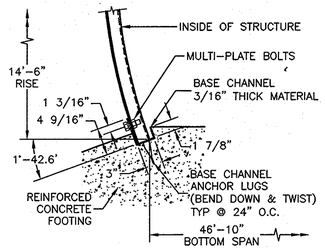
NOT TO SCALE



BENT ROD

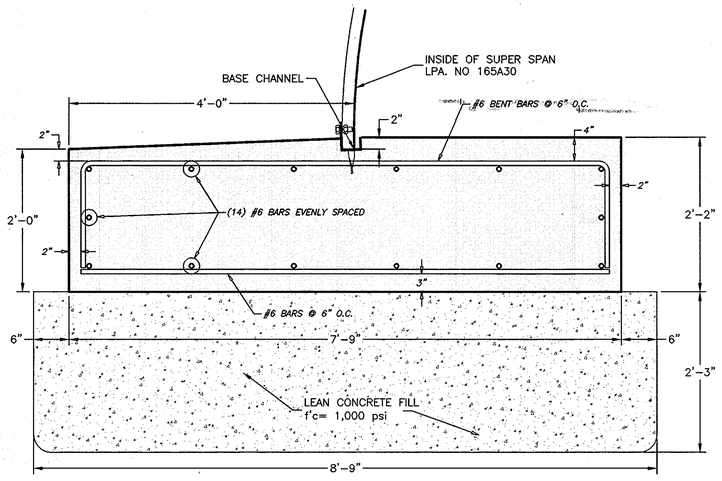
ADDITIONAL NOTES FOR THRUST BEAM:

1.) REINFORCED CONCRETE THRUST BEAMS TO BE POURED IN A MANNER TO MAINTAIN A BALANCED LOADING ON EACH SIDE OF THE STRUCTURE.
2.) LONGITUDINAL REINFORCING BARS MAY BE PLACED ON EITHER SIDE OF BENT ROD.
3.) CONCRETE MAY BE f'c = 2,400 psi.
4.) REINFORCEMENT SHALL BE ASTM A-615 GRADE 40.



BASE CHANNEL DETAIL

NOT TO SCALE

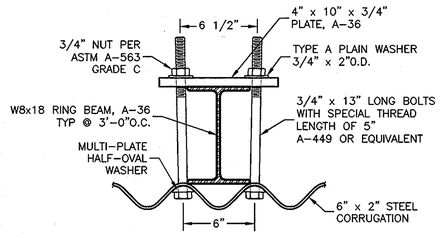


FOOTING SECTION

GRAPHIC SCALE

1' 0.5' 0 1' 2'

NOTE:
1.) CONCRETE SHALL BE f'c = 4,000 psi
2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
3.) FOOTING IS DESIGNED FOR A 4,600 psf ALLOWABLE BEARING CAPACITY ON UNDERCUT MAT & 3,000 psf ALLOWABLE BEARING CAPACITY ON NATIVE SOIL TO BE FIELD VERIFIED.



RING BEAM CONNECTION

GRAPHIC SCALE

0.5' 0.25' 0 0.5' 1'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/6/07

CBC ENGINEERS
DAYTON, OHIO
CBC Project No. 8045

PROFESSIONAL ENGINEER 22779 CHRISTOPHER B. CONROY STATE OF MARYLAND

NO.	DATE	REVISION
3	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES
2	3/27/07	ADDED LEAN CONCRETE FILL TO VIEWS SHEET 11
1	2/16/07	NEW STRUCTURE SIZE, ADDED CONCRETE WINGS

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

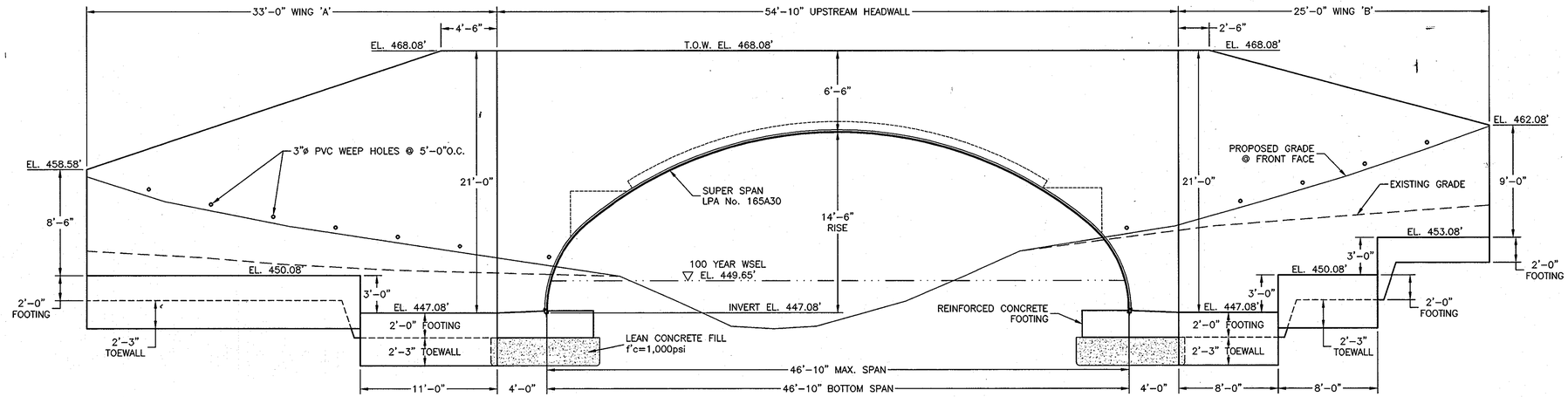
TITLE: NORTH STRUCTURE DETAIL
PLAN, PROFILE & DETAILS

DATE: FEBRUARY, 2007 — PROJECT NO. 1513

Design: -- Draft: -- Check: --

SCALE: AS SHOWN — DRAWING 10 OF 34

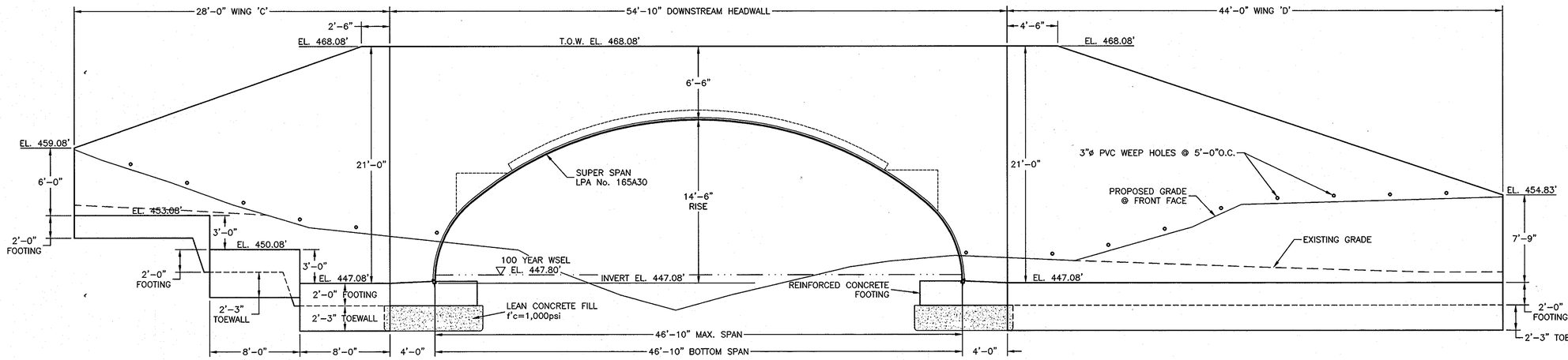
F-06-67



UPSTREAM END ELEVATION VIEW

GRAPHIC SCALE

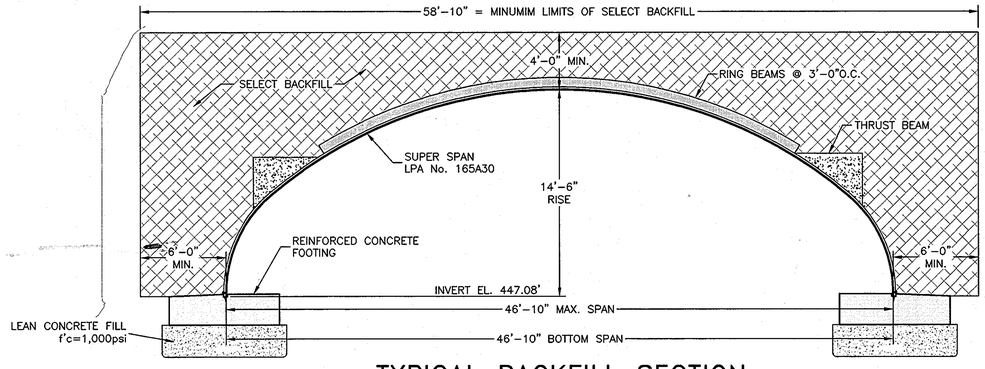
5' 2.5' 0 5' 10'



DOWNSTREAM END ELEVATION VIEW

GRAPHIC SCALE

5' 2.5' 0 5' 10'



TYPICAL BACKFILL SECTION

GRAPHIC SCALE

5' 2.5' 0 5' 10'

NOTE:
1.) CONCRETE SHALL BE f'c = 4,000 psi
2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
3.) FOOTING IS DESIGNED FOR A 4,600 psf ALLOWABLE BEARING CAPACITY ON UNDERCUT MAT & 3,000 psf ALLOWABLE BEARING CAPACITY ON NATIVE SOIL TO BE FIELD VERIFIED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/6/07

CBC ENGINEERS
DAYTON, OHIO

CBC Project No. 8045

NO.	DATE	REVISION
2	3/27/07	ADDED LEAN CONCRETE FILL TO VIEWS SHEET 11
1	2/16/07	NEW STRUCTURE SIZE, ADDED CONCRETE WINGS

BENCHMARK
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OWNER\DEVELOPER:
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410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

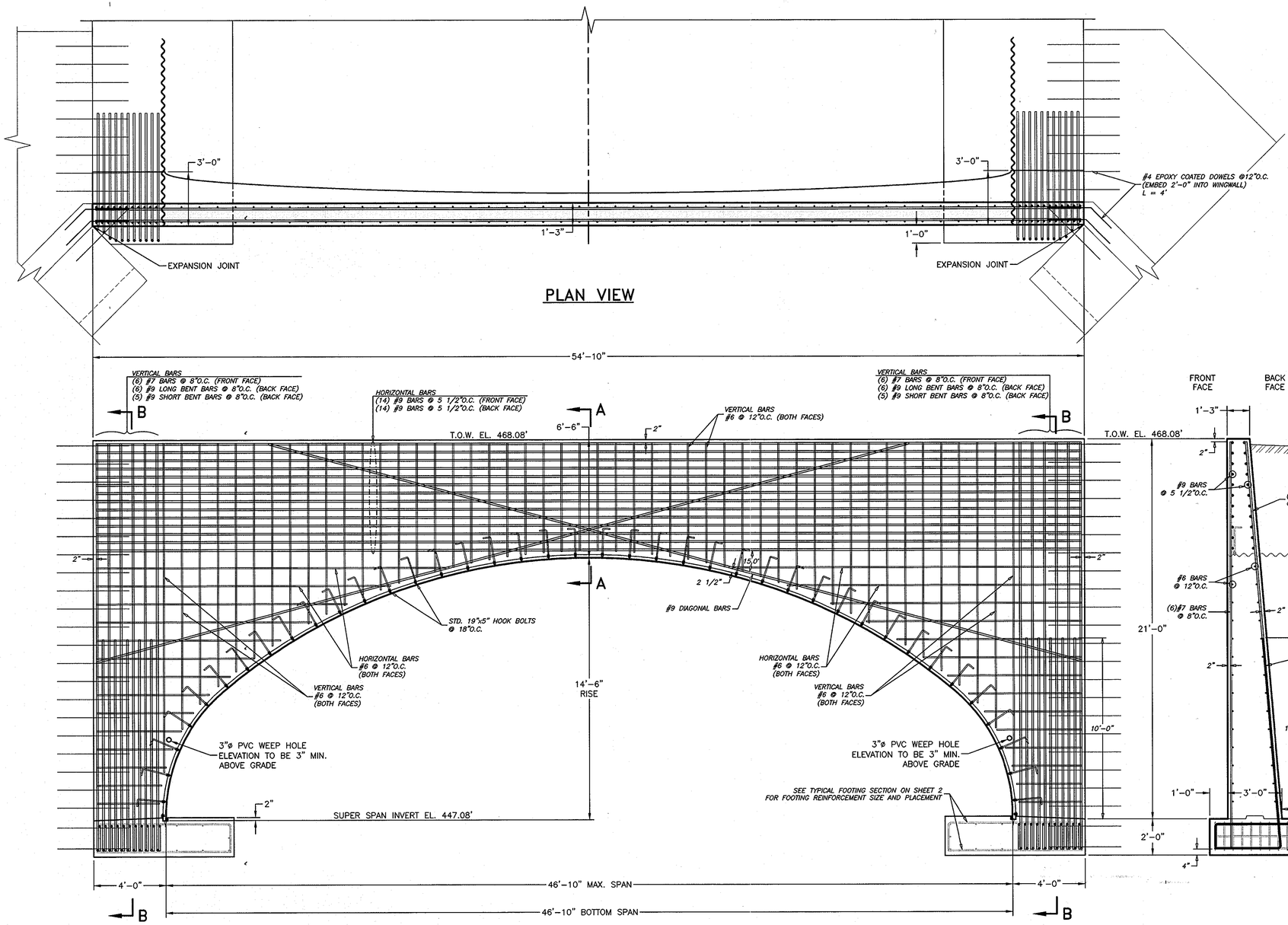
LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: NORTH STRUCTURE DETAIL
BACKFILL SECTION & END VIEWS

DATE: FEBRUARY, 2007 — PROJECT NO. 1513

Design: -- Draft: -- Check: -- — SCALE: AS SHOWN — DRAWING 11 OF 34

F-06-67



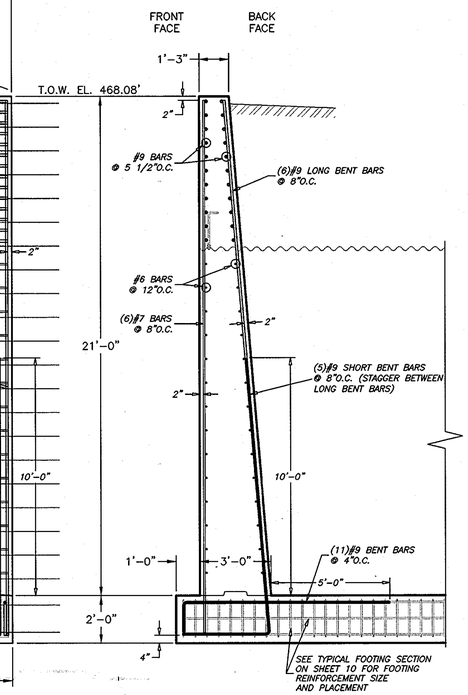
PLAN VIEW

ELEVATION VIEW

HEADWALL DESIGN

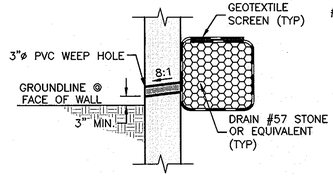
GRAPHIC SCALE

3' 1.5' 0 3' 6'



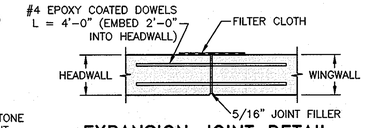
SIDE VIEW

NOTE:
1.) CONCRETE SHALL BE f'c = 4,000 psi
2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
3.) FOOTING IS DESIGNED FOR A 4,600 psf ALLOWABLE BEARING CAPACITY ON UNDERCUT MAT & 3,000 psf ALLOWABLE BEARING CAPACITY ON NATIVE SOIL TO BE FIELD VERIFIED.



WEEP HOLE DETAIL

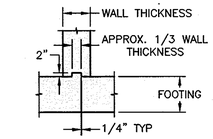
NOT TO SCALE



EXPANSION JOINT DETAIL

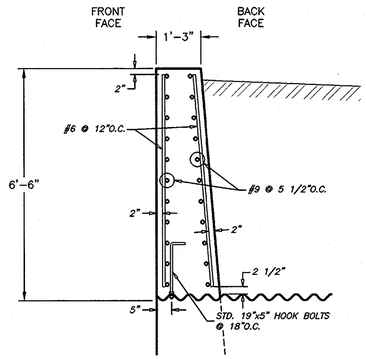
NOT TO SCALE

NOTES FOR EXPANSION JOINT:
A FILTER CLOTH THREE FEET IN WIDTH AND DOUBLE THICKNESS SHALL BE APPLIED TO ALL TRANSVERSE JOINTS IN THE FOOTING AND WALLS. THE MATERIAL SHALL BE CENTERED ON THE JOINT AND THE EDGES SEALED WITH A MASTIC OR WITH TWO SIDED TAPE. THE FILTER CLOTH SHALL BE A GEOTEXTILE MEETING THE APPROVAL OF THE ENGINEER.



KEYED CONSTRUCTION JOINT DETAIL

NOT TO SCALE



SECTION 'A-A'

GRAPHIC SCALE

2' 1' 0 2' 4'

CBC ENGINEERS
DAYTON, OHIO
CBC Project No. 8045

PROFESSIONAL ENGINEER 22779 DISTRIBUTION COMMAND STATE OF MARYLAND

NO.	DATE	REVISION
2	3/27/07	ADDED LEAN CONCRETE FILL TO VIEWS SHEET 11
1	2/16/07	NEW STRUCTURE SIZE, ADDED CONCRETE WINGS

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cais.com

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

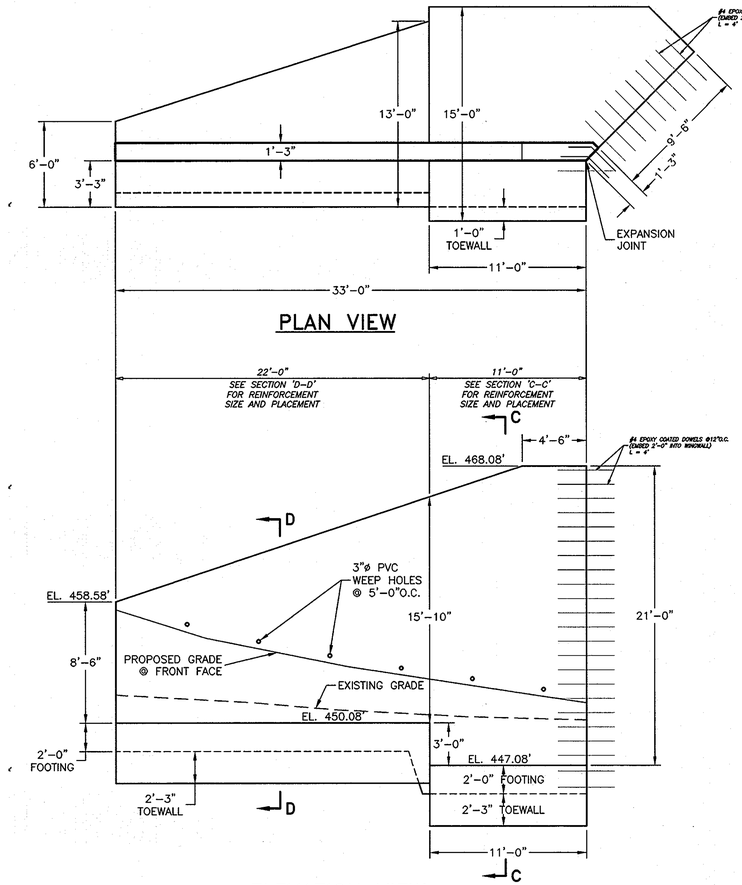
LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: NORTH STRUCTURE DETAIL
HEADWALL DESIGN

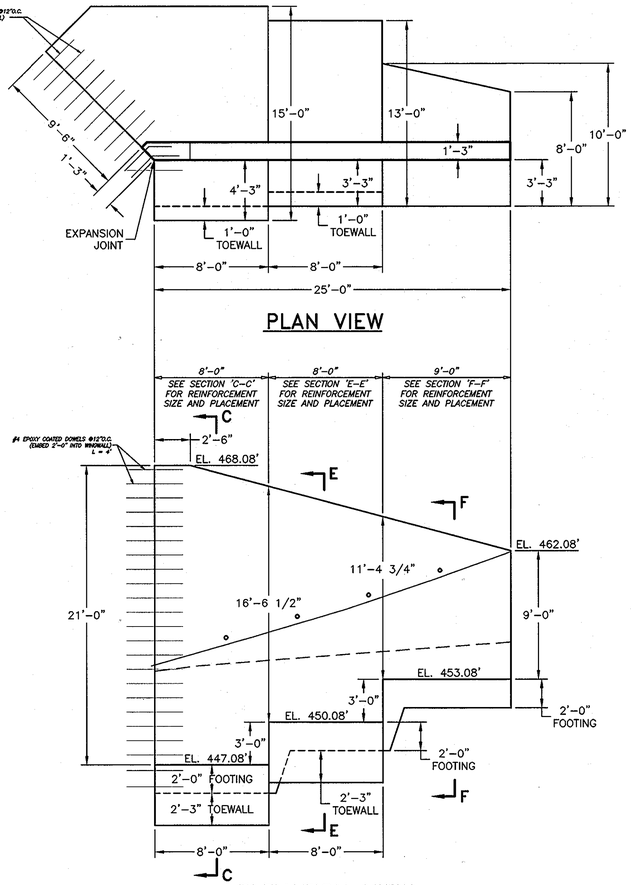
DATE: FEBRUARY, 2007 — PROJECT NO. 1513

Design: -- Draft: -- Check: -- — SCALE: AS SHOWN — DRAWING 12 OF 34

F-06-67



PLAN VIEW



PLAN VIEW

ELEVATION VIEW
WINGWALL 'A'

ELEVATION VIEW
WINGWALL 'B'

UPSTREAM WINGWALLS

GRAPHIC SCALE

5' 2.5' 0 5' 10'

SECTION VIEWS CAN BE FOUND ON SHEET 15

NOTE:
1.) CONCRETE SHALL BE f'c = 4,000 psi
2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
3.) FOOTING IS DESIGNED FOR A 4,600 psf ALLOWABLE BEARING CAPACITY ON UNDERCUT MAT & 3,000 psf ALLOWABLE BEARING CAPACITY ON NATIVE SOIL TO BE FIELD VERIFIED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

PROFESSIONAL ENGINEER 22779 REGISTERED PROFESSIONAL STATE OF MARYLAND

CBC ENGINEERS
DAYTON, OHIO

CBC Project No. 8045

NO.	DATE	REVISION
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1	2/16/07	NEW STRUCTURE SIZE, ADDED CONCRETE WINGS

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

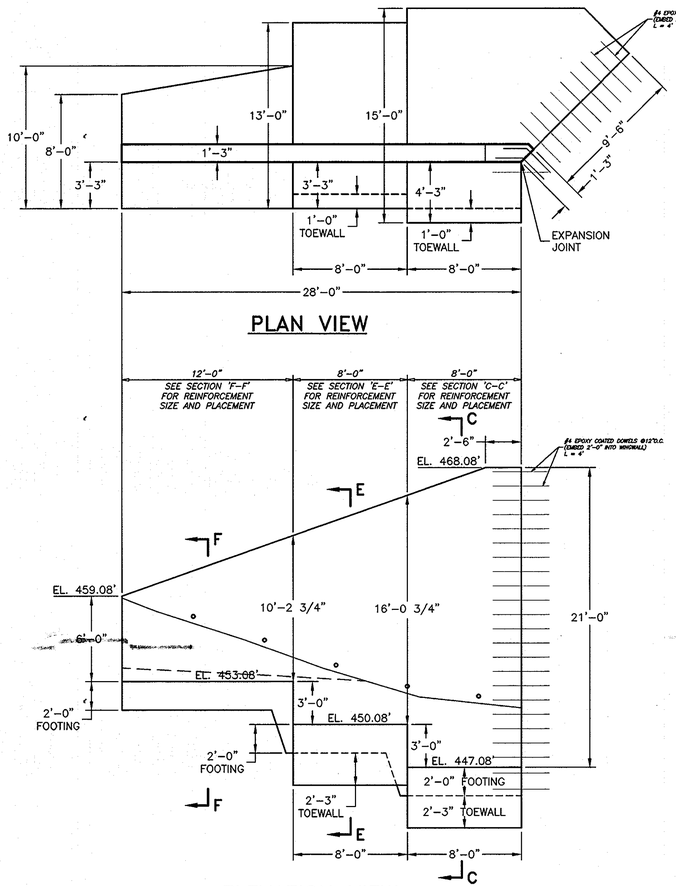
LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: NORTH STRUCTURE DETAIL
UPSTREAM WINGWALLS

DATE: FEBRUARY, 2007 — PROJECT NO. 1513

Design: -- Draft: -- Check: -- — SCALE: AS SHOWN — DRAWING 13 OF 34

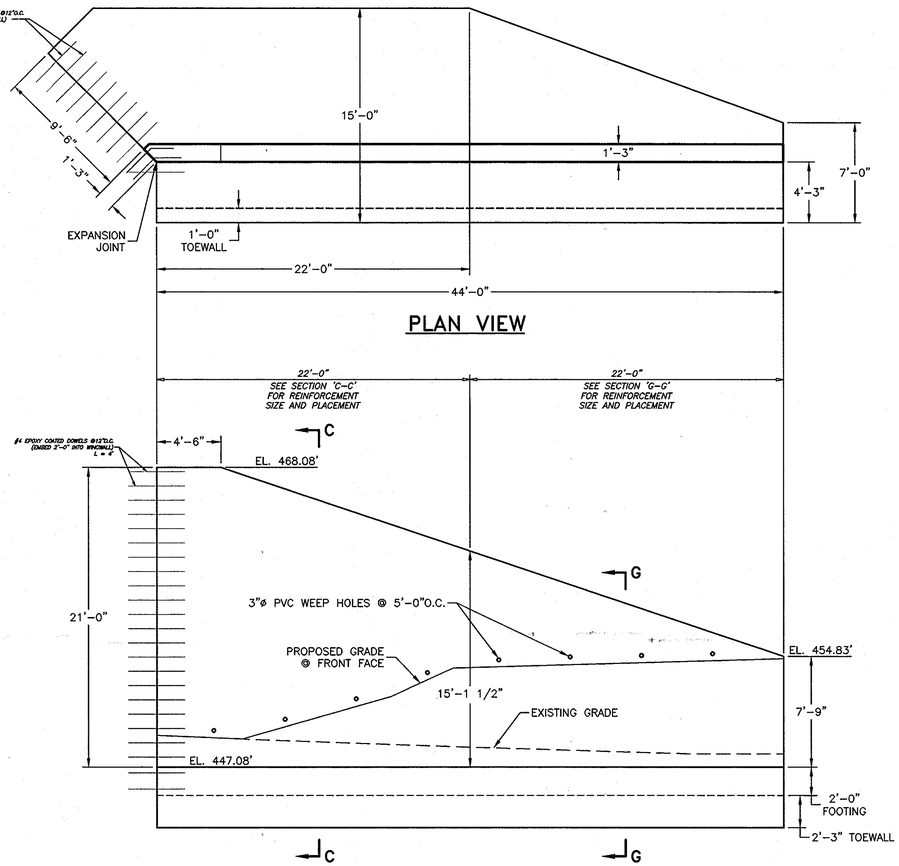
F-06-67



PLAN VIEW

ELEVATION VIEW

WINGWALL 'C'



PLAN VIEW

ELEVATION VIEW

WINGWALL 'D'

DOWNSTREAM WINGWALLS

GRAPHIC SCALE

5' 2.5' 0 5' 10'

SECTION VIEWS CAN BE FOUND ON SHEET 15

NOTE:
1.) CONCRETE SHALL BE f'c = 4,000 psi
2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
3.) FOOTING IS DESIGNED FOR A 4,600 psf ALLOWABLE BEARING CAPACITY ON UNDERCUT MAT & 3,000 psf ALLOWABLE BEARING CAPACITY ON NATIVE SOIL TO BE FIELD VERIFIED.

CBC ENGINEERS
DAYTON, OHIO
CBC Project No. 8045

NO.	DATE	REVISION
2	3/27/07	ADDED LEAN CONCRETE FILL TO VIEWS SHEET 11
1	2/16/07	NEW STRUCTURE SIZE, ADDED CONCRETE WINGS

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P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

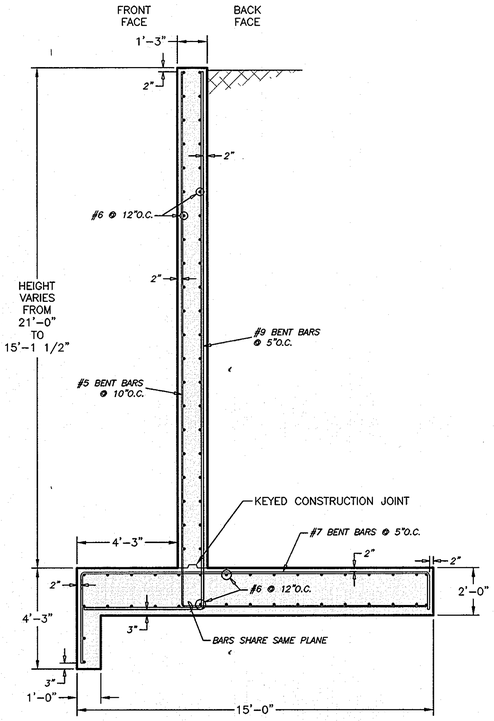
TITLE: NORTH STRUCTURE DETAIL
DOWNSTREAM WINGWALLS

DATE: FEBRUARY, 2007 | PROJECT NO. 1513
Design: -- | Draft: -- | Check: -- | SCALE: AS SHOWN | DRAWING 14 OF 34

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
T. Krista-Moerhindl for C. Hamilton — CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

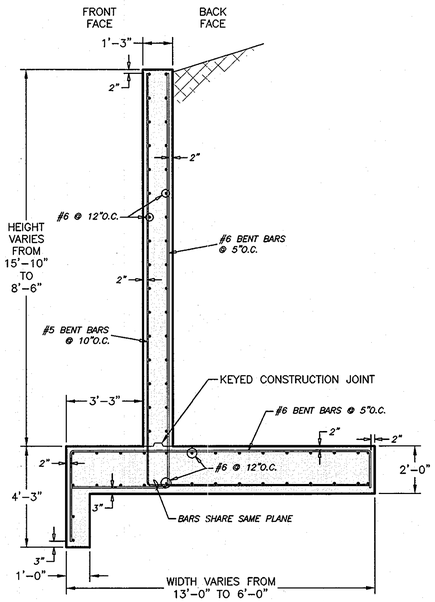
F-06-67



SECTION 'C-C'

GRAPHIC SCALE

3' 1.5' 0 3' 6'



SECTION 'D-D'

GRAPHIC SCALE

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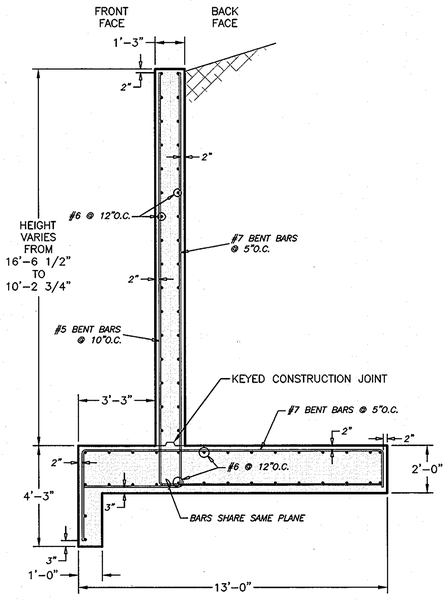
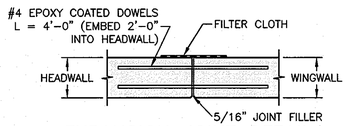


SECTION 'E-E'

GRAPHIC SCALE

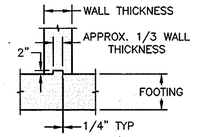
3' 1.5' 0 3' 6'



EXPANSION JOINT DETAIL

NOT TO SCALE

NOTES FOR EXPANSION JOINT:
A FILTER CLOTH THREE FEET IN WIDTH AND DOUBLE THICKNESS SHALL BE APPLIED TO ALL TRANSVERSE JOINTS IN THE FOOTING AND WALLS. THE MATERIAL SHALL BE CENTERED ON THE JOINT AND THE EDGES SEALED WITH A MASTIC OR WITH TWO SIDED TAPE. THE FILTER CLOTH SHALL BE A GEOTEXTILE MEETING THE APPROVAL OF THE ENGINEER.



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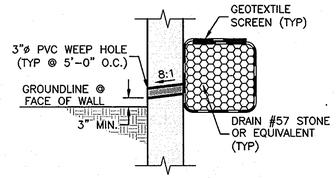
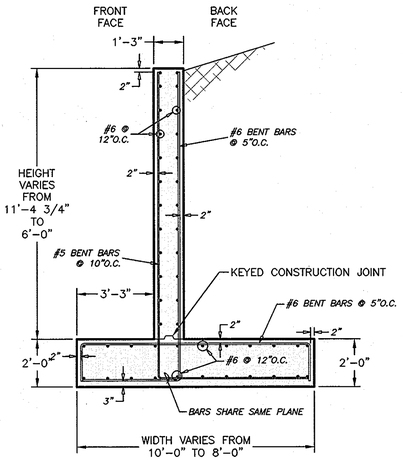


WEEP HOLE DETAIL

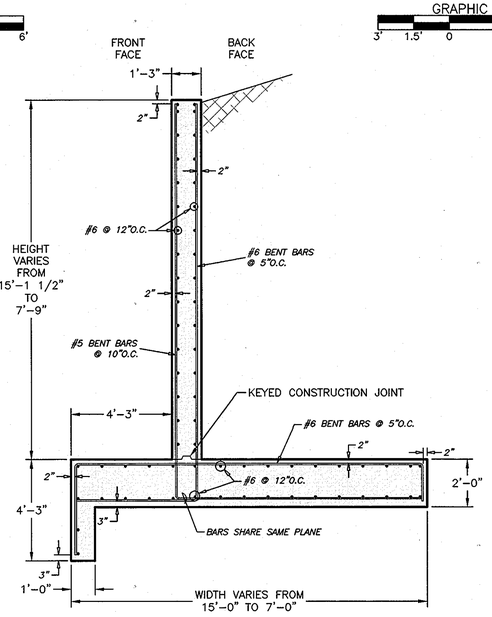
NOT TO SCALE



SECTION 'F-F'

GRAPHIC SCALE

3' 1.5' 0 3' 6'



SECTION 'G-G'

GRAPHIC SCALE

3' 1.5' 0 3' 6'

NOTE:
1.) CONCRETE SHALL BE f'c = 4,000 psi
2.) ALL REINFORCEMENT SHALL BE ASTM A-615, GRADE 60
3.) FOOTING IS DESIGNED FOR A 4,600 psf ALLOWABLE BEARING CAPACITY ON UNDERCUT MAT & 3,000 psf ALLOWABLE BEARING CAPACITY ON NATIVE SOIL TO BE FIELD VERIFIED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

CBC ENGINEERS
DAYTON, OHIO
CBC Project No. 8045

PROFESSIONAL ENGINEER 22779 TED CARLTON CONRAD STATE OF MARYLAND

NO.	DATE	REVISION
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1	2/16/07	NEW STRUCTURE SIZE, ADDED CONCRETE WINGS

BENCHMARK
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email: Benchmrk@cals.com

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: NORTH STRUCTURE DETAIL
WINGWALL SECTIONS & DETAILS

DATE: FEBRUARY, 2007 — PROJECT NO. 1513

Design: -- Draft: -- Check: --

SCALE: AS SHOWN — DRAWING 15 OF 34

F-06-67

I – GENERAL

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to latest edition unless otherwise noted.

1.1.1 ASTM D-698-70 (Method C) "Standard Test Methods for Moisture. Density Relations of Soils and Soil Aggregate Mixtures Using 5.5-lb (2.5 kg.) Rammer and 12-inch (305-mm) Drop".

1.1.2 ASTM D-2922 "Standard Test Method for Density of Soil and Soil Aggregate in Place by Nuclear methods (Shallow Depth)".

1.1.3 ASTM D-1556 "Standard Test Method for Density of Soil in place by the Sand-Cone Method".

1.2 DEFINITIONS

1.2.1 Owner - In these specifications the word "Owner" shall mean Highland Development Corporation, Clarksville, Maryland.

1.2.2 Engineer - In these specifications the word "Engineer" shall mean the Owner designated engineer.

1.2.3 Design Engineer - In these specifications the words "Design Engineer" shall mean CBC Engineers and Associates, Ltd.

1.2.4 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any work under the terms of these specifications.

1.2.5 Approved - In these specifications the word "approved" shall refer to the approval of the Engineer or his designated representative.

1.2.6 As Directed - In these specifications the words "as directed" shall refer to the directions to the Contractor from the Owner or his designated representative.

2.0 GENERAL CONDITIONS

2.1 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein.
This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications.

This work is to be accomplished under the observation of the Owner or his designated representative.

2.2 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including, without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site; and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner should be notified immediately. The material which the Contractor believes to be a changed condition should not be disturbed so that the owner can investigate the condition.

2.3 The construction shall be performed under the direction of an experienced engineer who is familiar with the design plan.

II - SUPER-SPAN STRUCTURE

1.0 GENERAL

1.1 This work shall consist of furnishing, fabricating, and installation of a long-span SUPER-SPAN arch culvert in conformance with these specifications, the manufacturer provisions, and the details shown on the plans.

1.2 The contractor shall verify the actual location of all utilities in the field before beginning any work that could be impacted by these utilities.

1.3 Contractor must notify/contact all utility companies to determine exact locations of existing utilities prior to commending any work on this contract.

1.4 Contractor shall coordinate construction with work done by others adjacent to or within the contract limits.

2.0 DIMENSIONS

2.1 The proposed structure shall be SUPER-SPAN arch with the following dimensions:

Span: 46'-10"
Rise: 14'-6"
Contech Structure #165A30
6" x 2" plate corrugation, Gage 1

2.2 All plan dimensions on the contract drawings are measured in a true horizontal plan unless otherwise noted.

2.3 All dimensions, locations, and elevations of existing structures shown on the contract drawings shall be verified by the contractor in the field.

3.0 DESIGN CRITERIA

All design, except where noted, conforms to the applicable sections of the 1996 AASHTO standard specifications for highway bridges.

4.0 WORKMANSHIP AND INSPECTIONS

All metal piping materials shall conform to the workmanship and inspection requirements of AASHTO M36 and M167.

5.0 MATERIALS AND DIMENSIONS

5.1 Steel structural plate for the pipe shall conform to the requirements of AASHTO M167.

5.2 Bolts and nuts shall meet the provisions of ASTM A-449 and ASTM A-563, Grade C, respectively, and shall be galvanized in accordance with the requirements of ASTM A-153, Class C.

6.0 INSTALLATION

ASSEMBLY. The Structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloaded and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

The Structure shall be placed in the footing starting at the downstream end. Structures with circumferential seams shall be installed with their inside circumferential sheet laps pointing downstream.

III - FOOTINGS

1.0 GENERAL

1.1 The footings are designed for an allowable bearing capacity of 3,000 psf on the native soil material and 4,600 psf on the lean concrete mat. These values shall be field verified by a geotechnical engineer prior to foundation construction.

1.2 The SUPER-SPAN structure shall be placed on reinforced concrete footings with the dimensions, lines and grades shown on the construction drawings.

1.3 The specifications for concrete and reinforcing are contained in Chapter VIII.

1.4 The reinforced concrete footing shall be placed on a lean concrete mat as shown on the print.

2.0 EXCAVATION FOR FOOTINGS

2.1 Footing excavation shall consist of the removal of all material, of whatever nature, necessary for the construction of foundations for culverts. The excavation beneath footings shall be to 2'-3" below the bottom of the footings as shown on the construction drawings.

2.2 It shall be the responsibility of the contractor to identify and relocate all existing utilities which conflict with the proposed footing locations shown on the plan. The Contractor must call the appropriate utility company at least 48 hours before any excavation to request exact field location of utilities, and coordinate removal and installation of all utilities with the respective utility company.

2.3 The side of all excavations shall be cut to prevent sliding or caving of the material above the footings.

2.4 Excavated material shall be disposed in accordance with the plan established by the Engineer.

2.5 When water is encountered, provisions shall be made outside the footing to drain, collect and remove water.

3.0 LEAN CONCRETE MATS

3.1 The structure footings, shall be supported on lean concrete mat of 2'-3" thickness consisting of minimum 1000-psi concrete.

3.2 The dimensions of the mats shall be as shown on the construction drawings.

3.3 The excavations shall be pumped free of water before any compacted backfill is placed.

4.0 CONCRETE FOOTING DIMENSIONS

4.1 The footings shall be reinforced according to the construction drawings.

4.2 All of the footings shall have a standard base channel in the footing to receive the corrugated steel plates. After structural plate installation the channel shall be filled with non-shrink grout on both sides of the arch plates.

4.3 Non-shrink, non-metallic grout shall be placed in the channel after the structure has been placed. The grout shall conform to ASTM C 881, Type IV, Grade 3, Class A, B, or C; or the following:

4.3.1 The grout can consist of a two-component resin system as follows:
- Component A - Polyester, vinylester or epoxy resin.
- Component B - Hardening agent.

Aggregate shall be added when recommended by the resin manufacturer. The proportions of the grout components shall be in accordance with the manufacturer's instructions.

4.3.2 The grout can be a mix formulation accepted by certification. The prequalification will be based on evaluation of certified test data, showing compliance with the following requirements:

- Compressive strength, ASTM C579, 7 days, minimum - 5,000 p.s.i.
- Tensile strength, ASTM C 307, 7 days, minimum - 1,300 p.s.i.
- Modulus of elasticity, ASTM C 580, 7 days, + 10% - 500,000 p.s.i.
- Bond Strength, ASTM C 882, 2 days, minimum - 1,800 p.s.i.
- Water absorption, ASTM C 413, maximum - 1.5%

IV – THRUST BEAMS

1.0 LONGITUDINAL STRUCTURAL STIFFENERS/REINFORCED CONCRETE THRUST BEAM

1.1 Reinforced concrete thrust beams shall be located astride the longitudinal bolted seam connecting the structure's top and side (or corner) arcs. The thrust beams shall consist of reinforced concrete conforming to the requirements of AASHTO Standard Specifications for Highway Bridges, Division II - Construction, Section 8, "Concrete Structures", for Class A concrete, having a minimum compressive strength of 2400 psi. Reinforcing steel shall meet or exceed the requirements of ASTM A615 Grade 40, having a minimum yield strength of 40,000 psi. The actual dimensions and location of the thrust beam and the size and number of reinforcing bars shall be as shown on the project plans.

1.2 Thrust beams shall be formed and poured conforming to the plan dimensions when the backfill reaches the bottom elevation of the thrust beams.

1.3 Thrust beams are to be typically cured a minimum of 36 hours (24 hours in the case of high early strength concrete), unless otherwise approved or stipulated by the project engineer, prior to resuming backfill placement and compaction.

1.4 There are no other special finishing, forming or curing requirements for thrust beams. Rough finish surface texture is satisfactory for their intended use. However, for structures used under roadways in areas subject to use of deicing salts, it is suggested that a slight drainage slope be provided to the top surface of thrust beams to drain water permeating through the backfill away from the structure.

V – SELECT BACKFILL SPECIFICATIONS

1.0 GENERAL CONDITIONS

1.1 The contractor shall furnish all labor, materials, and equipment, and perform all work and services necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction and grading as shown on the plans and as described therein.

1.2 This work shall consist of all clearing and grading, removal of existing structures unless otherwise stated, preparation of the land to be filled, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications.

1.3 This work is to be accomplished under the constant and continuous supervision of the Owner or his designated representative.

2.0 SUBSURFACE CONDITIONS

2.1 The Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including, without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site; and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

2.2 If conditions other than those indicated are discovered by the Contractor, the Owner should be notified immediately. The material which the Contractor believes to be a changed condition should not be disturbed so that the Owner can investigate the condition.

3.0 SITE PREPARATION

3.1 Within the specified areas, all debris, existing stockpile material, and structures scheduled for demolition shall be removed and disposed of.

3.2 Any rubbish, organic and other objectionable soils, and other deleterious material, shall be disposed of off the site, or as directed by the Owner or his designated representative if on site disposal is provided. In no case shall such objectionable material be allowed in, or under the fill.

3.3 Prior to the addition of fill, the undercuts specified in Section III shall be made and the original ground shall be compacted to the project specifications as outlined below. Special attention shall be given to the proposed fill area at this time. If wet spots, spongy conditions, or ground water seepage is found, corrective measures must be taken before the placement of fill.

4.0 FORMATION OF FILL AREAS

4.1 SELECT BACKFILL

4.1.1 Select backfill shall be placed to a minimum distance of 6 feet horizontally, as measured from the springline of the structure, and to a distance of 4 feet above the crown of the structure as shown on the construction drawings.

5.0 MINIMUM BACKFILL REQUIREMENTS FOR SUPER-SPAN AND LONG SPAN STRUCTURES

5.1 MATERIAL

A granular type of material shall be used around and over the structure. This select structural backfill material shall conform to AASHTO Specification M-145: A-1-a meeting the following criteria:

TABLE V-1
BACKFILL REQUIREMENTS

AASHTO M-145 - TABLE 2 (MODIFIED)*	
GROUP CLASSIFICATION	A-1 A-1-a
Sieve Analysis, Percent Passing	
No. 10 (2.00 mm)	50 max.
No. 40 (0.425 mm)	30 max.
No. 100 (.150 mm)	--
No. 200 (0.075 mm)	15 max.
CHARACTERISTICS OF FRACTION PASSING NO. 40 (0.425 mm)	
Liquid Limit	--
Plasticity Index	6 max.
USUAL TYPES OF SIGNIFICANT CONSTITUENT MATERIALS	Stone Fragments, Gravel and Sand

*Modified to be more select than M-145.

Additional Backfill Material Requirements:
1. Backfill must be dense-graded material. Open-graded or gap-graded materials are not allowed.
2. Fine beach sands, windblown sands, stream deposited sands exhibiting fine, rounded particles and typically classified by AASHTO M-145 as A-3 materials are not allowed.
3. On-site mixing or blending to achieve specified gradation is not allowed.
4. Maximum particle size shall not exceed 3 inches.
5. The stone particles shall be angular and not rounded. The backfill should have a Los Angeles Abrasion Test Loss no greater than 50%.

Other backfill materials which provide equivalent long term structural properties in the environmental conditions expected (saturation, freeze-thaw, etc.) may be used. Such materials shall be approved only after thorough investigation and testing by a soils engineer.

5.2 BACKFILL LIMITS

The required width of the structural backfill shall be 6 feet minimum outside the springline and to 4 feet over the top of the structure.

5.3 BACKFILL PLACEMENT

Before backfilling, the erected structure shall meet the tolerance and symmetry requirements of AASHTO and Contech.

Approved backfill material shall be placed in horizontal, uniform layers not exceeding 8" in thickness, before compaction, and shall be brought up uniformly on both sides of the structure. Each layer of backfill shall be compacted to a relative density of not less than 90%, modified Proctor per AASHTO Test Method No. T-180. Field density tests of compacted backfill shall be made at regular intervals during backfill.

SUPER-SPAN and long span structures, due to their size and shape, are sensitive to the types and weights of equipment used to place and compact the select backfill material. This is especially critical in the areas immediately adjacent to and above the structure. Therefore, equipment types will be restricted in those critical zones. Compaction equipment or methods that produce horizontal or vertical earth pressures which cause excessive distortion or damage to these structures shall not be used.

Contractors should plan to have a D4 (approximately 20,000 lbs.) or similar weight tracked dozer to place and grade backfill immediately alongside and above the structure until minimum cover level is reached. Lightweight vibratory plate or roller type compaction equipment must be used to compact the backfill in these zones. Use of heavier equipment and/or rubber tired equipment such as scrapers, graders and front end loaders are prohibited inside the select fill envelope zone until appropriate minimum cover height has been obtained.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

CBC ENGINEERS
DAYTON, OHIO

CBC Project No. 8045

PROFESSIONAL ENGINEER 22779 CHRISTOPHER B. CORTON REGISTERED STATE OF MARYLAND

NO.	DATE	REVISION
2	3/27/07	ADDED LEAN CONCRETE FILL TO VIEWS SHEET 11
1	2/16/07	NEW STRUCTURE SIZE, ADDED CONCRETE WINGS

BENCHMARK
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CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: NORTH STRUCTURE DETAIL
SPECIFICATIONS

DATE: FEBRUARY, 2007 — PROJECT NO. 1513

Design: -- | Draft: -- | Check: --

SCALE: AS SHOWN — DRAWING 16 OF 34

F-06-67

5.4 CONSTRUCTION OBSERVATION

Contech shall provide a Shape Control Technician who is a qualified representative of a professional soils engineering firm, or other qualified organization, to monitor the installation and backfilling of the structure. The Shape Control Technician shall monitor the structure shape during the placement of structural backfill to the minimum cover height over the structure. The Shape Control Technician shall take initial measurements of the erected structure before backfilling, monitor all backfill materials, their placement and their compaction. He shall record all density readings and ensure they meet the requirements of the plans and specifications. However, in no case shall the relative densities be less than 90% per AASHTO T-180. **No structural backfill shall be placed without the Contech Shape Control Technician on site.**

The Contech Shape Control Technician shall;

- monitor the structure's shape throughout the backfilling operation and report shape change rates to the contractor.
- contact the Contech Regional Engineer immediately if there are problems in meeting the established tolerances.
- have full authority to stop backfill work if necessary.

It is the Project Engineer's responsibility to insure that the requirements of AASHTO and Contech have been met relative to the installation and backfilling of the structure. The Project Engineer shall also provide field density tests of the compacted backfill as directed by the Contech Shape Control Technician.

The Contech Shape Control Technician is not directly responsible for additional project control matters. However, the Shape Control inspector is expected to make observations and notify the Engineer of Record, Contractor, Project Engineer and Contech Region Engineer of any apparent problems or site condition charges which, in his judgment, may affect the quality or performance of the finished installation. Such conditions may include, but are not limited to:

- Observed soft or weak spots in the foundation, trench wall, embankment, or area within the controlled backfill zone.
- Apparent improper or changing backfill material quality. Specific details of the backfill material approved for the job will be provided by the Contech Region Engineer. Any changes in the backfill requirements must be approved in writing by the Contech Region Engineer.
- Use of improper compaction methods and/or lift thicknesses.
- Structural backfill limits that are less than those required by the plans and specifications.
- Adverse reaction of the SUPER-SPAN or long span to backfill placement or compaction methods.
- All items discussed and outlined in the Installation and Inspection Practices included in the Inspection Plan.

6.0 SLOPE RATIO AND STORM WATER RUN-OFF

Protected slopes shall not be greater than 2.0 (horizontal) to one (1) (vertical) in both cut and fill, and storm water shall not be drained over the slopes.

7.0 GRADING

The Contractor shall furnish, operate, and maintain such equipment as is necessary to construct uniform layers, and control smoothness of grade for maximum compaction and drainage.

8.0 COMPACTING

8.1 The compaction equipment shall be approved equipment of such design, weight, and quantity to obtain the required density in accordance with these specifications, without distorting the structure.

8.2 During backfill, only small tracked vehicles (D-4 or smaller) shall be near the structure as fill progresses above the crown and to finished grade. The contractor is cautioned that the minimum cover may need to be increased to handle temporary construction vehicle loads (larger than a D-4).

9.0 TOP LOADING

9.1 If the structure rises, and chord dimensions have become distorted by more than ±2% of plan, top loading or bracing may be necessary.

9.2 The structure can carry legal highway loads once the backfill is placed and compacted to a minimum cover of 4 feet. For heavier construction loads in the unpaved conditions the Contractor shall consult the Engineer.

10.0 TESTING AND INSPECTION SERVICES

10.1 Testing and inspection services will be provided by the Owner. No structural backfill shall be placed without the Contech Shape Control Technician on site.

10.2 Regular inspection during erection and backfilling is required to achieve a structure with proper shape and backfill compacted to the specified density. The structure's shape shall be monitored at all times during installation, and soil materials and compaction methods must be verified by testing.

11.0 SPECIFICS OF SHAPE MONITORING

11.1 The shape of the structure shall be monitored during construction.

11.2 Monitoring points other than the shape control hooks shall be identified with permanent paint. These points shall be monitored periodically throughout the placement of the backfill to determine if the shape of the structure has changed and to determine the rate of change. Typically the rise and chord dimensions should be maintained to less than ±2% of design values.

11.3 A set of measurements shall be made for each 12 to 16 inches of fill placed or one time each day, whichever is greater. The structure measurements should continue throughout the backfilling operation until all of the select material has been placed and compacted. After placement of soil over the select fill and completion of the final grade and roadway surfacing, the structure's shape should be documented by preparing an as-built shape of the structure.

11.4 Additional measurements shall be made to provide a record of the shape of the structure for comparison during future inspections. Corrugated metal structures can deflect and distort during erection and backfilling and also under subsequent loading. Although these distortions are not generally serious, the initial shape of the structure shall be documented for comparison with future inspections.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/6/07

VI – CONCRETE HEADWALLS/WINGWALLS

1.0 END TREATMENTS

1.1 The headwalls/wingwalls shall consist of reinforced concrete conforming to Chapter VII of these specifications and to Division II, Section 8, of the AASHTO Standard Specifications for highway bridges having a minimum compression strength of 4,000 psi.

1.2 Reinforcing steel shall conform to ASTM A-615, Grade 60, having a minimum yield strength of 60,000 psi.

1.3 The headwalls shall be anchored to the SUPER-SPAN arch in the manner shown on the plans and shall be formed and poured in accordance with the plan dimensions.

1.4 Round weep holes spaced not over 5 feet on center shall be placed in the walls as shown on the construction drawings. A granular envelope, consisting of #57 stone or equivalent, shall be placed behind each weep hole for a distance of approximately 1 foot from all edges of the weep hole. A free-draining geotextile screen shall be placed between the weep hole and the stone to prevent erosion of the stone.

VII –CONCRETE

1.0 CODES AND STANDARDS

1.1 Reinforced concrete shall conform to the requirements of AASHTO Standard Specifications for Highway Bridges, Division II - Construction, Section 8, "Concrete Structures", for Class A concrete, having a minimum compressive strength of 4,000 psi.

2.0 STANDARDS FOR MATERIALS

2.1 Portland Cement - Conforming to ASTM Specification C-150, Type I or II.

2.2 Water - The water shall be drinkable, clean free from injurious amounts of oils, acids, alkalis, organic materials, or deleterious substances.

2.3 Aggregates - Fine and coarse aggregates shall conform to current ASTM Specification C-33 "Specification for Concrete Aggregates" except that local aggregates which have been shown by tests and by actual service to produce satisfactory qualities may be used when approved by the Engineer.

2.4 Submittals - Test data and/or certifications to the Owner shall be furnished upon request.

3.0 PROPORTIONING OF CONCRETE

3.1 COMPOSITION

3.1.1 The concrete shall be composed of cement, fine aggregate, coarse aggregate and water.

3.1.2 The concrete shall be homogeneous, readily placeable and uniformly workable and shall be proportioned in accordance with ACI-211.1.

3.1.3 Proportions shall be established on the basis of field experience with the materials to be employed. The mount of water used shall not exceed the maximum 0.49 water/cement ratio, and shall be reduced as necessary to produce concrete of the specified consistency at the time of placement.

3.1.4 An air-entraining admixture, conforming to the requirements of ASTM C260, shall be used in all concrete furnished under this contract. The quantity of admixture shall be such as to produce an air content in the freshly mixed concrete of 6 percent plus or minus 1 percent as determined in accordance with ASTM C231 or C173.

3.2 Qualities Required - As indicated in the table below:

TABLE VII-1
QUALITIES REQUIRED

ITEM	QUALITY REQUIRED
Class	A
Type of Cement	I or II
Compressive Strength f'_c @ 28 days	4,000 psi
Compressive Strength f'_c @ 28 days for thrust beams	2,400 psi
Slump, inches	2 - 4 in.

3.3 Maximum Size of Coarse Aggregates - Maximum size of coarse aggregates shall not be larger than 38 mm (1 ½ inches).

3.4 Rate of Hardening of Concrete - Concrete mix shall be adjusted to produce the required rate of hardening for varied climatic conditions:

Under 40°F Ambient Temperature - Accelerate calcium chloride at 2% is acceptable when used within the recommendations of ACI-306R "Cold Weather Concreting." Admixtures containing chloride ion in excess of 1% by weight of admixture shall not be used in reinforced concrete.

4.0 MIXING AND PLACING

4.1 Equipment - Ready Mix Concrete shall be used and shall conform to the "Specifications for Ready-Mix Concrete," ASTM C-94. Approval is required prior to using job mixed concrete.

4.2 Preparation - All work shall be in accordance with ACI-304, "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete." All construction debris and extraneous matter shall be removed from within the forms. Concrete shall be placed on clean surfaces, free from water. Concrete that has to be dropped four (4) feet or more shall be placed through a tremie.

4.3 All concrete shall be consolidated by internal mechanical vibration immediately after placement. Vibrators shall be of a size appropriate for the work, capable of transmitting vibration to concrete at frequencies of not less than 4,500 impulses per minute.

5.0 FORM WORK

5.1 Forms shall be of wood, steel or other approved material and shall be set and held true to the dimensions, lines and grades of the structure (footings) prior to and during the placement of concrete.

5.2 Forms shall not be removed until the concrete has sufficient strength to prevent concrete drainage.

6.0 CURING

6.1 Fresh concrete shall be protected from rains, flowing water and mechanical injury for a period of four (4) days.

7.0 REINFORCING STEEL

7.1 MATERIAL

7.1.1 All reinforcing bars shall be deformed bars (ASTM-A615) Grade 60.

7.2 BENDING AND SPLICING

7.2.1 Bar reinforcement shall be cut and bent to the shapes shown on the plans. Fabrication tolerances shall be in accordance with ACI 315. All bars shall be bent cold, unless otherwise permitted.

7.2.2 All reinforcement shall be furnished in the full lengths indicated on the plans unless otherwise permitted. Except for splices shown on the plans and splices for No. 5 or smaller bars, splicing of bars will not be permitted without written approval. Splices shall be staggered as far as possible.

7.2.3 In lapped splices, the bars shall be placed and wired in such a manner as to maintain the minimum distance to the surface of the concrete shown on the plans.

7.2.4 Substitution of different size bars will be permitted only when authorized by the engineer. The substituted bars shall have an area equivalent to the design area, or larger.

7.3 PLACING AND FASTENING

7.3.1 Steel reinforcement shall be accurately placed as shown on the plans and firmly held in position during the placing and setting of concrete. Bars shall be tied at all intersections around the perimeter of each mat and at not less than 2 foot centers or at every intersection, whichever is greater, elsewhere. Welding of cross bars (tack welding) will not be permitted for assembly of reinforcement.

7.3.2 Reinforcing steel shall be supported in its proper position by use of mortar blocks, wire bar supports, supplementary bars or other approved devices. Such devices shall be of such height and placed at sufficiently frequent intervals so as to maintain the distance between the reinforcing and the formed surface or the top surface within 1/4 inch of that indicated on the plans.

VIII – FILTER FABRIC (GEOTEXTILE SCREEN)

1.0 Geotextile (filter fabric) shall be placed over the #57 drainage stone at all weepholes. The filter fabric shall be placed between weepholes, #57 drainage stone and the granular backfill material. Filter fabric shall be placed at all locations shown on the construction drawings.

2.0 Filter fabric cloth shall conform to Contech specification for C60-NW or equivalent and shall meet the following ASTM tests:

2.1 ASTM D4751 - Apparent opening size equal to #70 U.S. Standard Sieve Size.

2.2 ASTM D4632 (Grab Tensile Test) - Minimum Strength = 160 pounds.

2.3 ASTM D4632 (Grab Elongation) - 30-70%.

2.4 ASTM D4533 (Trapezoidal Tear) - Minimum Strength = 60 pounds.

2.5 ASTM D4355 (Stabilized for Heat and Ultra-Violet Degradation) - 70% strength retained.

3.0 The minimum fabric coefficient of permeability (ASTM D4491) shall be 0.24 cm/sec.

4.0 The fabric shall be non-woven with a minimum thickness (ASTM D5199) of 60 mils.

5.0 Fabric shall not be placed over sharp or angular rocks that could tear or puncture it.

6.0 Care should be exercised to prevent any puncturing or rupture of the filter fabric. Should such rupture occur the damaged area should be covered with a patch of filter fabric using an overlap minimum of one (1) foot.

CBC ENGINEERS
DAYTON, OHIO

CBC Project No. 8045

NO.	DATE	REVISION
2	3/27/07	ADDED LEAN CONCRETE FILL TO VIEWS SHEET 11
1	2/16/07	NEW STRUCTURE SIZE, ADDED CONCRETE WINGS

BENCHMARK
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OWNER\DEVELOPER:
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CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: NORTH STRUCTURE DETAIL
SPECIFICATIONS CONT'D

DATE: FEBRUARY, 2007 | PROJECT NO. 1513

Design: -- | Draft: -- | Check: -- | SCALE: AS SHOWN | DRAWING 17 OF 34

F-06-67

PLAN
SCALE: 1" = 100'

LEGEND

SOILS CLASSIFICATION	ChB2
SOILS DELINEATION	
EXISTING CONTOURS (AERIAL 12/02)	480 / 478
PROPOSED CONTOURS	999
LIMIT OF WETLANDS	
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
EXISTING STRUCTURE	
PROPOSED STRUCTURE	
PROPOSED WELL	EX. WELL
EXISTING SEPTIC FIELD	
PROPOSED SEPTIC FIELD	
EX. 100 YEAR FLOODPLAIN (B.E.I. 3/03)	
DRAINAGE AREA	

FLOODPLAIN CHART

REACH	CROSS-SECTION NO.	EX. 100 YR. Q	PROP. 100 YR. Q	100 YR. EX. W.S.	100 YR. PROP. W.S.
A	2000	835	823	448.1	448.0
A	1900	835	823	445.1	445.1
A	1800	835	823	441.3	441.2
A	1700	835	823	438.3	438.3
A	1600	835	823	435.4	435.4
A	1500	835	823	431.8	431.7
A	1400	835	823	430.4	430.4
A	1300	835	823	424.1	424.0
A	1200	835	823	423.6	423.5
A	1100	1315	1315	421.0	421.0
A	1000	1315	1315	419.9	419.9
A	900	1315	1315	417.7	417.7
A	800	1315	1315	415.0	415.0
A	700	1315	1315	412.7	412.7
A	600	1315	1315	410.9	410.9
A	500	1315	1315	407.0	407.0
A	400	1315	1315	407.3	407.3
A	300	1315	1315	405.6	405.6
A	200	1315	1315	405.5	405.5
A	100	1315	1315	404.7	404.7
B	11	181	181	450.7	450.7
B	9	181	181	444.1	444.1
B	7	181	181	438.3	438.3
B	5	181	181	432.9	432.9
B	3	181	181	427.5	427.5
B	1	181	181	420.7	420.7
C	30	254	203	489.2	489.0
C	28	254	203	482.1	482.1
C	26	254	203	477.4	477.2
C	24	254	203	472.5	472.5
C	22	254	203	465.5	465.4
C	20	254	203	460.5	460.4
C	18	254	203	451.2	451.0
C	16	254	203	449.7	449.0
C	15	254	203	448.4	N/A
C	14	280	293	446.5	447.2
C	12	280	293	446.4	446.5
C	10	280	293	441.0	441.1
C	8	280	293	436.7	436.7
C	6	280	293	430.8	430.8
C	4	280	293	426.9	427.0
C	2	280	293	420.9	420.9

AREA AND "C" FACTOR TABULATION

PROJECT	BRIGHTON MILL		PROJECT 1513	DATE:	05/03/07	JC
PHASE	INLET #	ZONING (Z)	SUBAREA (B)	AREA (Ac) (A)	"C" FACTOR (C)	% IMPERVIOUS (P)
NA	I - 1	RR		1.0	0.48	42
NA	I - 2	RR		1.1	0.26	19
NA	I - 2A	RR		0.3	0.25	17
NA	I - 3	RR		3.0	0.26	20
NA	I - 4	RR		2.3	0.26	20
NA	I - 5	RR		1.0	0.32	28
NA	I - 6	RR		0.7	0.60	66
NA	I - 7	RR		2.7	0.33	25
NA	I - 8	RR		1.9	0.26	18
NA	I - 9	RR		1.1	0.26	19
NA	I - 10	RR		0.2	0.86	100
NA	I - 11	RR		0.3	0.71	77
NA	I - 12	RR		1.0	0.33	18
NA	I - 13	RR		2.3	0.25	7
NA	I - 14	RR		0.2	0.86	100
NA	I - 15	RR		0.1	0.86	100
NA	I - 16	RR		0.2	0.86	100
NA	I - 17	RR		0.5	0.60	65
NA	I - 18	RR		2.3	0.21	0
NA	I - 19	RR		0.11	0.86	100
NA	I - 20	RR		0.01	0.86	100
NA	I - 21	RR		1.32	0.32	21
NA	I - 22	RR		0.17	0.86	100
NA	I - 23	RR		0.32	0.44	36
NA	I - 24	RR		1.16	0.21	0
NA	E - 8	RR		12.80	0.26	20
NA	EX 15"	RR		1.62	0.30	25

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] 6-6-07
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

J. Krista- Maenhardt for C. Hamilton 6-11-07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 6/8/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
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STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER
[signature] 5/7/07

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CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOTS 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN DRAINAGE AREA MAP

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC — Draft: JMC/MCR — Check: DAM — SCALE: AS SHOWN — DRAWING 18 OF 34

F-06-67

PLAN

SCALE: 1" = 100'

FLOODPLAIN CHART					
REACH	CROSS-SECTION NO.	EX. 100 YR. Q	PROP. 100 YR. Q	100 YR. EX. W.S.	100 YR. PROP. W.S.
A	2000	835	823	448.1	448.0
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A	1300	835	823	424.1	424.0
A	1200	835	823	423.6	423.5
A	1100	1315	1315	421.0	421.0
A	1000	1315	1315	419.9	419.9
A	900	1315	1315	417.7	417.7
A	800	1315	1315	415.0	415.0
A	700	1315	1315	412.7	412.7
A	600	1315	1315	410.9	410.9
A	500	1315	1315	407.0	407.0
A	400	1315	1315	407.3	407.3
A	300	1315	1315	405.6	405.6
A	200	1315	1315	405.5	405.5
A	100	1315	1315	404.7	404.7
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B	5	181	181	432.9	432.9
B	3	181	181	427.5	427.5
B	1	181	181	420.7	420.7
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C	26	254	203	477.4	477.2
C	24	254	203	472.5	472.5
C	22	254	203	465.5	465.4
C	20	254	203	460.5	460.4
C	18	254	203	451.2	451.0
C	16	254	203	449.7	449.0
C	15	254	203	448.4	N/A
C	14	280	293	446.5	447.2
C	12	280	293	446.4	446.5
C	10	280	293	441.0	441.1
C	8	280	293	436.7	436.7
C	6	280	293	430.8	430.8
C	4	280	293	426.9	427.0
C	2	280	293	420.9	420.9

AREA AND "C" FACTOR TABULATION						
PROJECT	BRIGHTON MILL		PROJECT 1513	DATE:	05/03/07	JC
PHASE	INLET #	ZONING (Z)	SUBAREA (B)	AREA (Ac) (A)	"C" FACTOR (C)	% IMPERVIOUS (P)
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NA	I - 3	RR		3.0	0.26	20
NA	I - 4	RR		2.3	0.26	20
NA	I - 5	RR		1.0	0.32	28
NA	I - 6	RR		0.7	0.60	66
NA	I - 7	RR		2.7	0.33	25
NA	I - 8	RR		1.9	0.26	18
NA	I - 9	RR		1.1	0.26	19
NA	I - 10	RR		0.2	0.86	100
NA	I - 11	RR		0.3	0.71	77
NA	I - 12	RR		1.0	0.33	18
NA	I - 13	RR		2.3	0.25	7
NA	I - 14	RR		0.2	0.86	100
NA	I - 15	RR		0.1	0.86	100
NA	I - 16	RR		0.2	0.86	100
NA	I - 17	RR		0.5	0.60	65
NA	I - 18	RR		2.3	0.21	0
NA	I - 19	RR		0.11	0.86	100
NA	I - 20	RR		0.01	0.86	100
NA	I - 21	RR		1.32	0.32	21
NA	I - 22	RR		0.17	0.86	100
NA	I - 23	RR		0.32	0.44	36
NA	I - 24	RR		1.16	0.21	0
NA	E - 8	RR		12.80	0.26	20
NA	EX 15"	RR		1.62	0.30	25

NO.	DATE	REVISION
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cais.com

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER

5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOTS 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN
DRAINAGE AREA MAP

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC — Draft: JMC/MCR — Check: DAM — SCALE: AS SHOWN — DRAWING 19 OF 34

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

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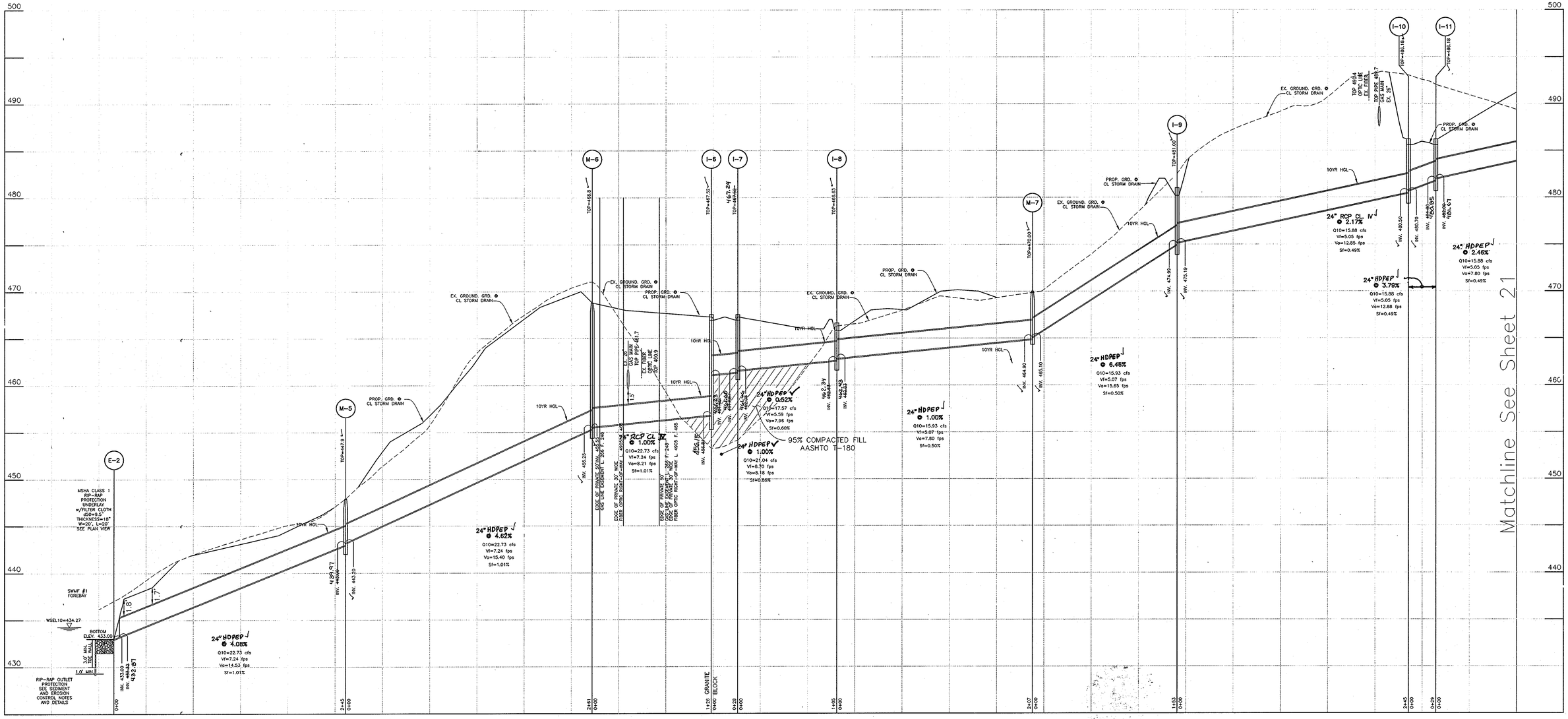

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

STATE OF MARYLAND — DONALD ALAN MASON — No. 21449 — PROFESSIONAL ENGINEER

As-Built 1-13-10

NO.	DATE	REVISION
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
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PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cals.com

STATE OF MARYLAND — DONALD ALAN MASON — No. 21449 — PROFESSIONAL ENGINEER

5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN PROFILES

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM | SCALE: AS SHOWN | DRAWING 20 OF 34

F-06-67

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PIPE SCHEDULE

RUN	LENGTH	DIAMETER	MATERIAL	NOTES
E-2 TO M-5	237	24"	HDPEP	PUBLIC
M-5 TO M-6	258	24"	HDPEP	PUBLIC
M-6 TO I-6	119	24"	RCP CL. IV	PUBLIC
I-6 TO I-7	25	24"	HDPEP	PUBLIC
I-7 TO I-8	100	24"	HDPEP	PUBLIC
I-8 TO M-7	203	24"	HDPEP	PUBLIC
M-7 TO I-9	149	24"	HDPEP	PUBLIC
I-9 TO I-10	243	24"	RCP CL. IV	PUBLIC
I-10 TO I-11	25	24"	HDPEP	PUBLIC
I-11 TO M-8	312	24"	HDPEP	PUBLIC
M-8 TO M-9	316	24"	RCP CL. IV	PUBLIC
M-9 TO I-12	114	24"	HDPEP	PUBLIC
I-12 TO I-13	136	18"	HDPEP	PUBLIC
I-13 TO I-14	25	18"	HDPEP	PUBLIC
I-14 TO I-15	337	18"	HDPEP	PUBLIC
I-15 TO I-16	203	18"	HDPEP	PUBLIC
I-16 TO I-17	39	18"	HDPEP	PUBLIC
I-17 TO I-18	18	15"	HDPEP	PRIVATE
I-2 TO M-12	150	18"	HDPEP	PRIVATE
M-12 TO I-2A	117	18"	HDPEP	PRIVATE
I-2 TO I-3	222	15"	HDPEP	PRIVATE
I-2 TO I-4	309	18"	HDPEP	PRIVATE
I-4 TO M-13	144	18"	HDPEP	PRIVATE
M-13 TO I-5	152	15"	HDPEP	PRIVATE
E-4 TO M-1	229	18"	HDPEP	PUBLIC
M-1 TO M-2	171	18"	HDPEP	PUBLIC
M-2 TO M-3	122	18"	HDPEP	PUBLIC
M-3 TO I-1	29	15"	HDPEP	PUBLIC
I-16 TO M-14	208	14"x23"	RCP CL. IV	PUBLIC
M-14 TO I-19	137	18"	HDPEP	PUBLIC
I-19 TO I-20	231	15"	HDPEP	PUBLIC
I-19 TO I-21	46	15"	HDPEP	PRIVATE
I-15 TO I-23	25	18"	HDPEP	PUBLIC
I-23 TO I-24	82	15"	HDPEP	PRIVATE
I-12 TO I-22	25	15"	HDPEP	PUBLIC
E-7 TO E-8	32	24"	HDPEP	PRIVATE
I-2A TO M-11	172	14"x23"	RCP CL. IV	PRIVATE
M-11 TO M-10	100	24"	HDPEP	PRIVATE
M-10 TO E-5	95	24"	HDPEP	PRIVATE

18"	HDPEP	1424	PUBLIC
24"	HDPEP	1423	PUBLIC

MATERIAL SCHEDULE

DIAMETER	MATERIAL	LENGTH	OWNERSHIP
15"	HDPEP	285'	PUBLIC
18"	RCP CL.IV	0	PUBLIC
24"	RCP CL.IV	678	PUBLIC
14"x23"	RCP CL.IV	208'	PUBLIC
24"	HDPEP	227'	PRIVATE
18"	HDPEP	720'	PRIVATE
15"	HDPEP	520'	PRIVATE
14"x23"	RCP CL.IV	172'	PRIVATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] 6-6-07
CHIEF, BUREAU OF HIGHWAYS HZ — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

J. Kriota-Murchardt for C. Hamilton 6-11-07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 6/8/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

AS-BUILT 1-13-10

STRUCTURE SCHEDULE

NO.	TYPE	LOCATION	INV. IN	INV. OUT	TOP ELEV.	HO. CO. STD.	OWNERSHIP
E-1	30" CONC. END SECT.	N 561997.42 E 1316392.65	--	426.00	--	SD - 5.52	PUBLIC
E-2	24" CONC. END SECT.	N 562949.25 E 1316368.80	432.87 ~~433.32~~	433.00	--	SD - 5.52	PUBLIC
E-3	30" CONC. END SECT.	N 561888.41 E 1316268.70	--	421.00	--	SD - 5.52	PRIVATE
E-4	18" CONC. END SECT.	N 562770.92 E 1316206.87	427.69 ~~428.13~~	426.00	--	SD - 5.52	PRIVATE
E-5	24" CONC. END SECT.	N 561870.11 E 1316474.31	--	422.80	--	SD - 5.52	PRIVATE
E-7	24" CONC. END SECT.	N 562052.13 E 1317218.29	472.60 ~~471.39~~	~~470.5~~ 471.43	--	SD - 5.52	PRIVATE
E-8	24" CONC. END SECT.	N 562045.54 E 1317266.13	475.75	474.86	-- 477.88	SD - 5.52	PRIVATE
I-1	A-10 INLET	LP STA. 1+64.07 OFFS. 0.43' LEFT	--	470.80	~~478.24~~	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-2	'D' INLET	N 561709.20 E 1316880.24	453.89/453.79	453.59	465.83	SD - 4.11 OR 4.39 OPEN 4 SIDES	PRIVATE
I-2A	'D' INLET	N 561649.78 E 1316670.71	440.83	440.63	445.47	SD - 4.11 OR 4.39 OPEN 4 SIDES	PRIVATE
I-3	'D' INLET	N 561528.25 E 1316865.70	--	455.10	458.23	SD - 4.11 OR 4.39 OPEN 4 SIDES	PRIVATE
I-4	'D' INLET	N 561980.00 E 1317088.27	463.49 ~~464.33~~	463.19 ~~464.13~~	466.5 ~~466.30~~	SD - 4.39 OPEN 4 SIDES	PRIVATE
I-5	'D' INLET	N 562137.89 E 1317233.97	--	471.05	480.83	SD - 4.11 OR 4.39 OPEN 4 SIDES	PRIVATE
I-6	A-10 INLET	CL STA. 24+74.78 OFFS. 12.43' RIGHT	461.23 ~~461.60~~	456.15 ~~460.81~~	467.52	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-7	A-10 INLET	CL STA. 24+74.78 OFFS. 12.43' LEFT	461.66 ~~462.08~~	461.60 ~~461.88~~	467.24 ~~467.52~~	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-8	'D' INLET	N 563077.12 E 1316854.77	462.43 ~~462.83~~	462.34 ~~462.63~~	466.63	SD - 4.11 OR 4.39 OPEN 4 SIDES	PUBLIC
I-9	'D' INLET	N 563216.55 E 1317145.44	475.19	474.99	481.00	SD - 4.11 OR 4.39 OPEN 4 SIDES	PUBLIC
I-10	A-10 INLET	CL STA. 20+31.68 OFFS. 12.43 LEFT	480.70	480.50	486.18	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-11	A-10 INLET	CL STA. 20+31.68 OFFS. 12.43' RIGHT	481.67 ~~482.00~~	480.85 ~~481.80~~	486.18	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-12	A-10 INLET	CL STA. 13+00 OFFS. 12.43' RIGHT	500.78/500.53	500.03	508.16	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-13	A-10 INLET	CL STA. 11+50.00 OFFS. 12.43' RIGHT	502.16	501.96	510.39	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-14	A-10 INLET	CL STA. 11+50.00 OFFS. 12.43' LEFT	502.56 ~~502.92~~	502.51 ~~502.72~~	510.39	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-15	A-10 INLET	CL STA. 8+02.67 OFFS. 12.43' LEFT	518.48/518.40 ~~518.61/518.61~~	518.41	522.64	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-16	A-10 INLET	CL STA. 5+85.67 OFFS. 12.50' LEFT	530.13 ~~530.60/530.93~~	530.40	534.35	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-17	A-10 INLET	CL STA. 5+50 OFFS. 12.43' RIGHT	530.70 531.46 ~~531.81~~	531.56	536.29	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-18	'D' INLET	CL STA. 5+41.30 OFFS. 30' RIGHT		532.36 ~~532.68~~	535.51 ~~535.83~~	SD - 4.11 OR 4.39 OPEN 4 SIDES	PRIVATE
I-19	A-10 INLET	CL STA. 2+27.96 OFFS. 12.43' LEFT	542.12/~~547.74~~ 547.06	541.87	~~551.64~~ 551.26	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-20	A-10 INLET	CL STA. 0+15.11 OFFS. 41.63' LEFT	556.23 ~~556.53~~	555.89 ~~556.28~~	560.24	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-21	'D' INLET	CL STA. 2+30.28 OFFS. 35.12' RIGHT	--	542.61	545.46	SD - 4.11 OR 4.39 OPEN 4 SIDES	PRIVATE
I-22	A-10 INLET	CL STA. 13+00.00 OFFS. 12.43' LEFT		502.18	508.16	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-23	A-10 INLET	CL STA. 8+00.00 OFFS. 12.43' RIGHT	518.90 ~~519.33~~	518.83 ~~519.08~~	522.77	SD - 4.02 OR 4.41 2.5' WIDTH	PUBLIC
I-24	'D' INLET	CL STA. 7+11.50 OFFS. 23.44' RIGHT	--	524.48 ~~524.64~~	530.02 ~~530.23~~	SD - 4.11 OR 4.39 OPEN 4 SIDES	PRIVATE
M-1	4'-0" MANHOLE	N 562215.30 E 1316484.72	437.98	437.78	~~443.8~~ 443.34	G - 5.12	PUBLIC
M-2	4'-0" MANHOLE	N 562136.92 E 1316640.69	454.74 ~~455.00~~	454.80	~~461.2~~ 460.79	G - 5.12	PUBLIC
M-3	4'-0" MANHOLE	N 562189.76 E 1316754.20	469.89 ~~470.14~~	469.89	~~476.37~~ 475.95	G - 5.12	PUBLIC
M-5	4'-0" MANHOLE	N 563149.41 E 1316509.87	443.20	439.97 ~~443.00~~	447.9	G - 5.12	PUBLIC
M-6	4'-0" MANHOLE	CL STA. 23+48.47 OFFS. 18.09' RIGHT	455.55	455.25	468.8	G - 5.12	PUBLIC
M-7	4'-0" MANHOLE	N 563088.69 E 1317061.29	465.10	464.90	470.00	G - 5.12	PUBLIC
M-8	4'-0" MANHOLE	CL STA. 17+38.65 OFFS. 46.54' RIGHT	489.32	489.12	494.00	G - 5.12	PUBLIC
M-9	4'-0" MANHOLE	CL STA. 14+34.88 OFFS. 26.93' RIGHT	498.58 ~~498.80~~	498.37 ~~498.60~~	~~510.00~~ 509.46	G - 5.12	PUBLIC
M-10	4'-0" MANHOLE	N 561800.35 E 1316539.35	423.67	423.47	~~437.79~~ 437.54	G - 5.12	PRIVATE
M-11	4'-0" MANHOLE	N 561749.14 E 1316733.39	428.40 ~~428.66~~	424.32	~~433.46~~ 433.13	G - 5.12	PRIVATE
M-12	4'-0" MANHOLE	N 561803.65 E 1316801.35	444.29 ~~444.65~~	444.19 ~~444.45~~	~~449.67~~ 449.29	G - 5.12	PRIVATE
M-13	4'-0" MANHOLE	N 561982.66 E 1317236.15	469.21 ~~469.50~~	469.10 ~~469.30~~	477.80	G - 5.12	PRIVATE
M-14	4'-0" MANHOLE	CL STA. 3+67.02 OFFS. 20.87' LEFT	540.18 ~~540.48~~	540.02 ~~540.28~~	~~544.50~~ 545.06	G - 5.12	PUBLIC
S-1	SEE DETAIL	N 562804.29 E 1316253.59	--	--	--	SEE SWM DETAILS	PRIVATE
S-2	SEE DETAIL	N 561888.55 E 1316350.11	--	--	--	SEE SWM DETAILS	PRIVATE
S-3	SEE DETAIL	N 561788.37 E 1316827.05	--	--	--	SEE SWM DETAILS	PRIVATE
HW-1	NORTH STR. WEST WALL	CL STA. 25+09.45 OFFS. 18.00' RIGHT	--	445.86	462.53	SEE MANUFACT. SPECS.	PUBLIC
HW-2	NORTH STR. EAST WALL	CL STA. 25+09.45 OFFS. 18.00' LEFT	445.86	--	462.53	SEE MANUFACT. SPECS.	PUBLIC

1) STRUCTURE ELEVATION AND LOCATION FOR MANHOLES IS AT THE TOP AND CENTER OF RIM.
2) STRUCTURE ELEVATION AND LOCATION FOR INLETS IS AT THE TOP OF CURB AT MIDPOINT OF THE INLET OR AT THE CENTER OF SLAB FOR "D" INLETS.
3) STRUCTURE ELEVATION AND LOCATION FOR ENDSECTIONS IS AT CENTERLINE OF THE END OF THE END SECTION.
4) PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.
5) ALL STORM DRAINS SHALL BE SMOOTH CORE HIGH DENSITY POLYETHYLENE PIPE.

NO.	DATE	REVISION
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
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PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cais.com

5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2, PARCEL 2, 5th ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN PROFILES

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM | SCALE: AS SHOWN | DRAWING 21 OF 34

F-06-67

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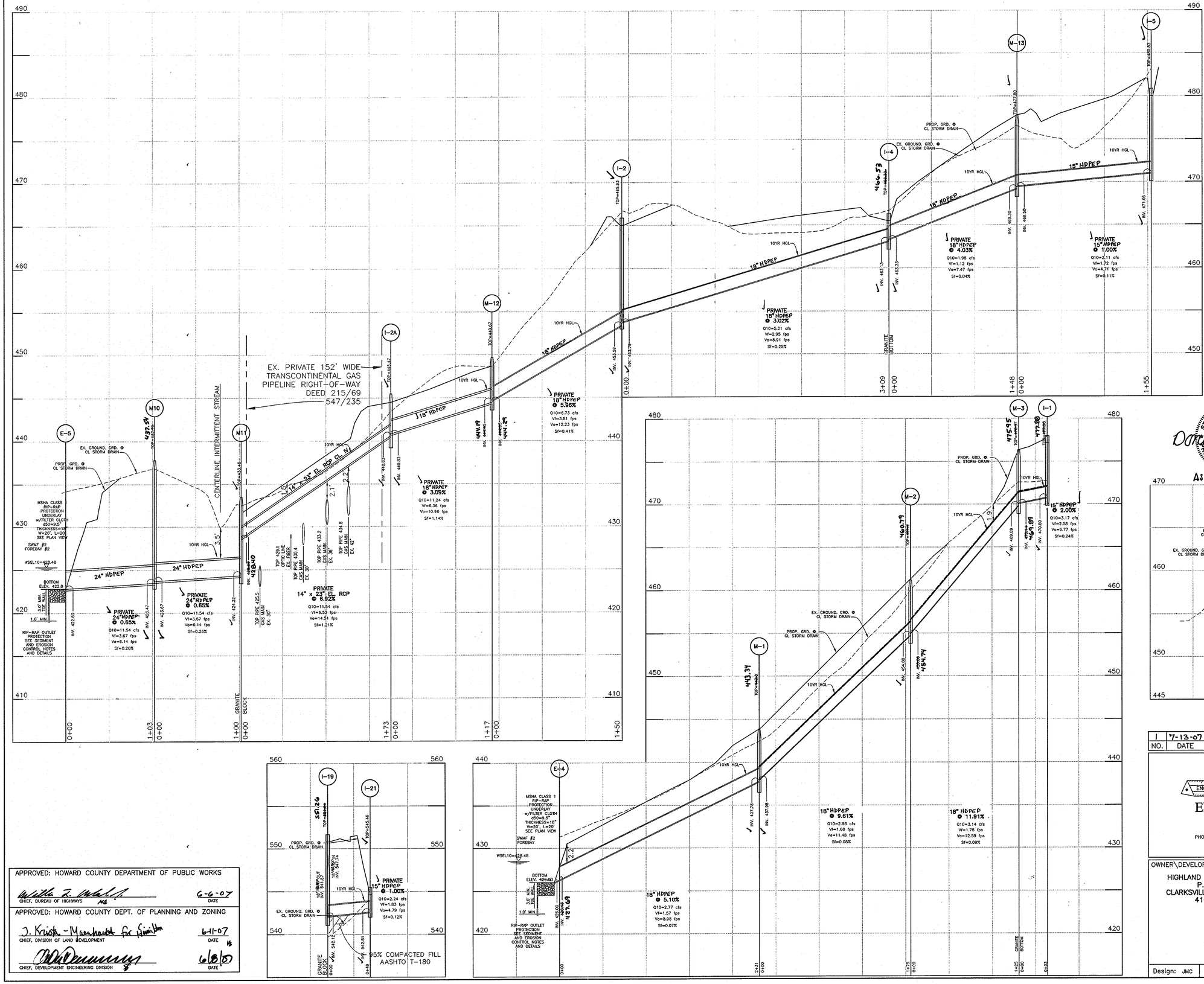

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-1-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
PROFESSIONAL ENGINEER
AS-BUILT 11/3/10

NO.	DATE	REVISION
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
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STATE OF MARYLAND
EDWARD JOSEPH STEVENS
No. 21431
REGISTERED PROFESSIONAL ENGINEER
5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN PROFILES

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM | SCALE: AS SHOWN | DRAWING 22 OF 34

F-06-67

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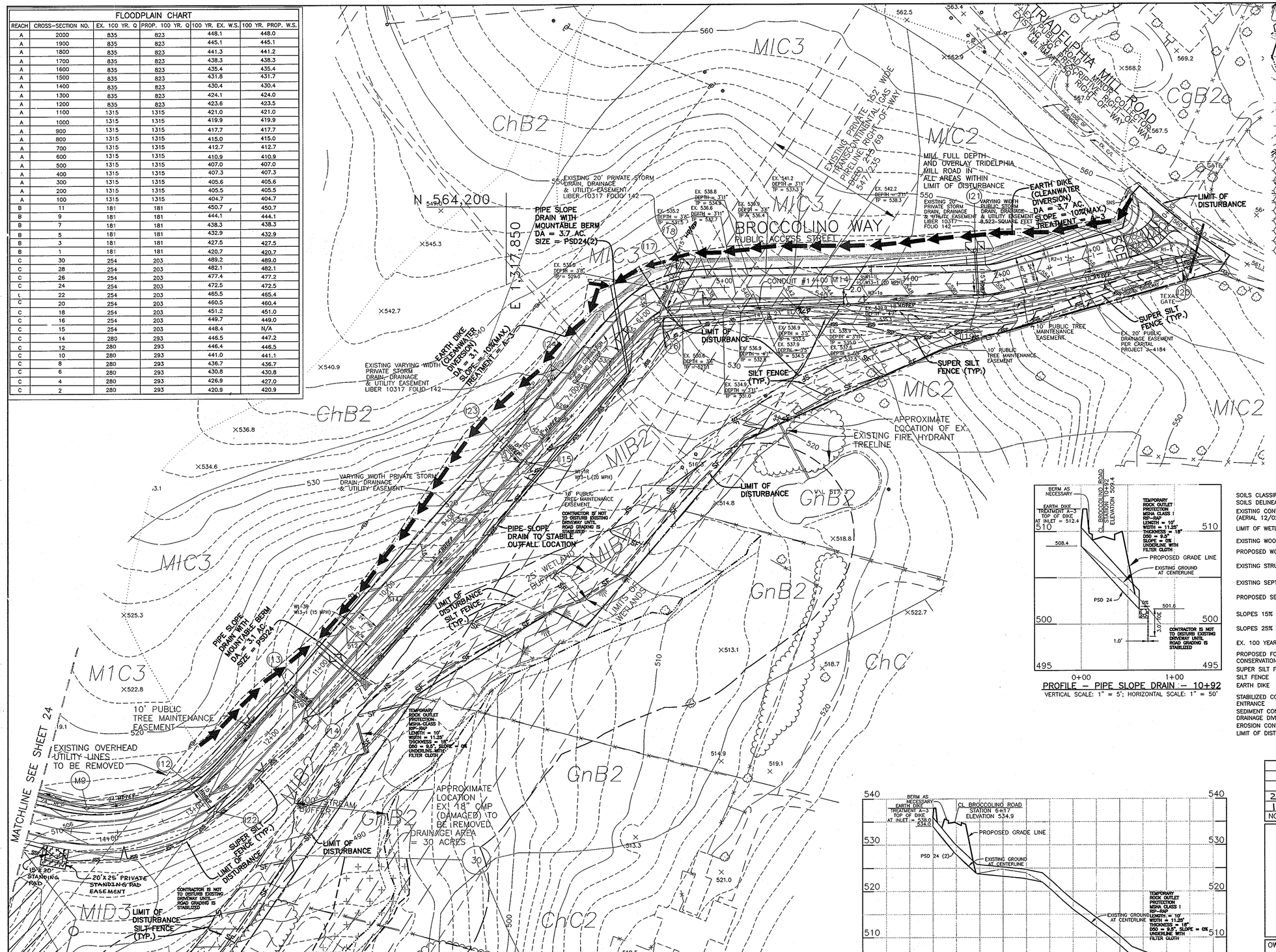
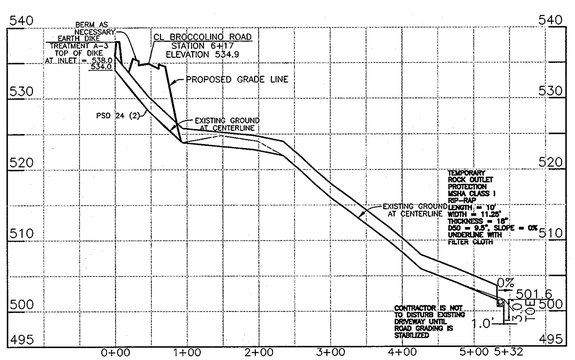
FLOODPLAIN CHART					
REACH	CROSS-SECTION NO.	EX. 100 YR. Q	PROP. 100 YR. Q	100 YR. EX. W.S.	100 YR. PROP. W.S.
A	2000	835	823	448.1	448.0
A	1900	835	823	445.1	445.1
A	1800	835	823	441.3	441.2
A	1700	835	823	438.3	438.3
A	1600	835	823	435.4	435.4
A	1500	835	823	431.8	431.7
A	1400	835	823	430.4	430.4
A	1300	835	823	424.1	424.0
A	1200	835	823	423.6	423.5
A	1100	1315	1315	421.0	421.0
A	1000	1315	1315	419.9	419.9
A	900	1315	1315	417.7	417.7
A	800	1315	1315	415.0	415.0
A	700	1315	1315	412.7	412.7
A	600	1315	1315	410.9	410.9
A	500	1315	1315	407.0	407.0
A	400	1315	1315	407.3	407.3
A	300	1315	1315	405.6	405.6
A	200	1315	1315	405.5	405.5
A	100	1315	1315	404.7	404.7
B	11	181	181	450.7	450.7
B	9	181	181	444.1	444.1
B	7	181	181	438.3	438.3
B	5	181	181	432.9	432.9
B	3	181	181	427.5	427.5
B	1	181	181	420.7	420.7
C	30	254	203	489.2	489.0
C	28	254	203	482.1	482.1
C	26	254	203	477.4	477.2
C	24	254	203	472.5	472.5
C	22	254	203	465.5	465.4
C	20	254	203	460.5	460.4
C	18	254	203	451.2	451.0
C	16	254	203	449.7	449.0
C	15	254	203	448.4	N/A
C	14	280	293	446.5	447.2
C	12	280	293	446.4	446.5
C	10	280	293	441.0	441.1
C	8	280	293	436.7	436.7
C	6	280	293	430.8	430.8
C	4	280	293	426.9	427.0
C	2	280	293	420.9	420.9



POND REMOVAL
1" = 50'

PROFILE – PIPE SLOPE DRAIN – 10+92
VERTICAL SCALE: 1" = 5'; HORIZONTAL SCALE: 1" = 50'



PROFILE – PIPE SLOPE DRAIN – 6+17
VERTICAL SCALE: 1" = 10'; HORIZONTAL SCALE: 1" = 100'

LEGEND

- SOILS CLASSIFICATION / SOILS DELINEATION — ChB2
- EXISTING CONTOURS (AERIAL 12/02)
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- EXISTING SEPTIC FIELD
- PROPOSED SEPTIC FIELD
- SLOPES 15% TO 24.9%
- SLOPES 25% OR GREATER
- EX. 100 YEAR FLOODPLAIN
- PROPOSED FOREST CONSERVATION EASEMENT
- SUPER SILT FENCE — SSF —
- SILT FENCE — SF —
- EARTH DIKE
- STABILIZED CONSTRUCTION ENTRANCE
- SEDIMENT CONTROL DRAINAGE DIVIDE
- EROSION CONTROL MATTING
- LIMIT OF DISTURBANCE

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.

DONALD A. MASON — PE NO. 21443 — 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 BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

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."

DEVELOPER — DATE 5-9-07

BY THE ENGINEER:

"I/WE CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE 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 NOTIFIED 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."

ENGINEER – DONALD A. MASON, P.E. # 21443 — DATE 5/7/07

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL.

NATURAL RESOURCES CONSERVATION SERVICE — DATE 5/31/07

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/31/07

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NOTES:
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#2 ALL SWALES AND DITCHES SHALL BE LINED WITH EROSION CONTROL MATTING.
#3 CONTRACTOR SHALL CURL ALL ENDS OF SF/SSF UPHILL BY 2' IN ELEVATION AND CLOSE OVER ENDWALLS WHERE SHOWN AND AS DIRECTED BY THE COUNTY INSPECTOR.
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#6 CONTRACTOR TO USE MDE SEED MIX IN DISTRUBED STREAM AREAS.

NO.	DATE	REVISION
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1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
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ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cais.com

STATE OF MARYLAND — DONALD ALLEN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2, PARCEL 2, 5th ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE: GRADING, SEDIMENT AND EROSION CONTROL PLAN

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM

SCALE: 1" = 50' — DRAWING 23 OF 34

F-06-67

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P/O BUILDABLE PRESERVATION PARCEL 'A'
STORMWATER MANAGEMENT AND
ENVIRONMENTAL PRESERVATION, PRIVATELY OWNED
WITH HOWARD COUNTY AND THE
HOMEOWNERS ASSOCIATION AS EASEMENT HOLDERS

100 YEAR FLOODPLAIN LIMITS

GRID NORTH

LIMITS OF WETLANDS

EXISTING TREELINE

CENTERLINE CLASS IV STREAM

100' BUFFER

25' WETLAND BUFFER

SLOPES 25% OR GREATER 67,881 S.F.

SLOPES 25% OR GREATER 750 S.F.

PUBLIC 100-YEAR FLOODPLAIN, DRAINAGE & UTILITY EASEMENT

SILT FENCE (TYP.)

SUPER SILT FENCE (TYP.)

LOT 1

LOT 2

LOT 3

LOT 4

LOT 5

LOT 20

LOT 21

LOT 22

SWALE #9

SWALE #1

SWALE #2

TEMPORARY STOCKPILE

LIMIT OF DISTURBANCE

BROCCOLINO WAY
PUBLIC ACCESS STREET
20' PUBLIC STORM DRAIN, DRAINAGE & UTILITY EASEMENT

EXISTING PRIVATE 50' WIDE PIPE LINE EASEMENT DEED 266/248

EXISTING PRIVATE 30' WIDE FIBER OPTIC CABLE RIGHT-OF-WAY DEED 4905/465

EXISTING OVERHEAD UTILITY LINES TO BE REMOVED

MATCHLINE SEE SHEET 23

MATCHLINE SEE SHEET 25

P/O NON-BUILDABLE PRESERVATION PARCEL 'D'

20' PUBLIC STORM DRAIN, DRAINAGE & UTILITY EASEMENT
PUBLIC 100-YEAR FLOODPLAIN, DRAINAGE, & UTILITY EASEMENT

EXISTING 100 YEAR FLOODPLAIN LIMITS

TSWM BASIN #1
EXISTING D.A. = 1.52 AC.
PROPOSED D.A. = 13.24 AC.
STORAGE REQ'D & PROVIDED: 47,664 CF
WET = 23,832 C.F. (ELEV. 432.66)
DRY = 23,832 C.F. (ELEV. 433.40)
DRY STORAGE STARTS AT TOP OF WET STORAGE (432.66)
EMBANKMENT ELEV. = 436.50
RISER CREST ELEV. = 433.90 (BLOCKED)
Q1 EXIST. = 0.29 CFS
Q1 PROP. = 0.24 CFS
Q1 ULT. = 0.65 CFS
CLEANOUT ELEV. = 431.20
BOTTOM ELEV. = 428.00
BOTTOM DIMS. = 11' x 72'

EARTH DIKE
DA = 0.9 AC.
SLOPE = 8.3% (MAX.)
TREATMENT = A-2

MOUNTABLE BERM WITH 5' CURB CUTS

POND ELEVATIONS	
1 YEAR	433.51
2 YEAR	433.91
10 YEAR	434.46
100 YEAR	435.16
10 YEAR CLOGGED	434.56
100 YEAR CLOGGED	435.26

EX. POND TO BE REMOVED SEE SHEET NUMBER 23

PRIVATE STORMWATER MANAGEMENT, ACCESS, MAINTENANCE & UTILITY EASEMENT

STORMWATER MANAGEMENT FACILITY #1
SHALLOW WETLAND W-2
HAZARD CLASS 'A'

TMP SWM BASIN #4

EMERGENCY SPILLWAY

OUTLET PROTECTION MSHA CLASS RIP-RAP
LENGTH = 40'
WIDTH = 14.50'
THICKNESS = 18"
Q = 5.00 = 9.2 CFS
UNDERLAIN WITH FILTER CLOTH

15' NO WOODY VEGETATION ZONE

ACCESS 10% MAX.

TEMPORARY ACCESS BRIDGE
PUMP-AROUND PRACTICE
MDWC DETAIL 1.2

EX. 24 CMP (DAMAGED TO BE REMOVED)

40' PUBLIC STORM DRAIN, DRAINAGE & UTILITY EASEMENT

25' WETLAND BUFFER
BOTTOMLESS MULTI-PLATE ARCH CULVERT
SEE MANUFACTURE'S SPECS.

LIMITS OF WETLANDS

SUPER SILT FENCE (TYP.)

CROSSING ENLARGEMENT
1" = 30'

NOTES:
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#6 CONTRACTOR TO USE MDE SEED MIX IN DISTRUBED STREAM AREAS.

LEGEND

SOILS CLASSIFICATION / SOILS DELINEATION	ChB2
EXISTING CONTOURS (AERIAL 12/02)	480 / 478
LIMIT OF WETLANDS	
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
EXISTING STRUCTURE	
EXISTING SEPTIC FIELD	
PROPOSED SEPTIC FIELD	
SLOPES 15% TO 24.9%	
SLOPES 25% OR GREATER	
EX. 100 YEAR FLOODPLAIN	
PROPOSED FOREST CONSERVATION EASEMENT	
SUPER SILT FENCE	SSF SSF
SILT FENCE	SF SF
EARTH DIKE	
STABILIZED CONSTRUCTION ENTRANCE	SCE
SEDIMENT CONTROL DRAINAGE DIVIDE	
EROSION CONTROL MATTING	
LIMIT OF DISTURBANCE	

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 DESIGN SPECIFICATIONS.

Donald Mason — DONALD A. MASON — NO. 21443 — DATE 1-13-10

CERTIFY MEANS TO STATE OR DECLARE 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 BY ENGINEER'S ACCEPTED ENGINEERING STANDARDS. CERTIFICATION 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.

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DEVELOPER — DATE 5-9-07

BY THE ENGINEER:

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NATURAL RESOURCES CONSERVATION SERVICE — DATE 5/31/07

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/31/07

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

J. Kreuter - Manhardt for Diane Ibm — CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION
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ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cois.com

STATE OF MARYLAND — DONALD ALAN MASON — REGISTERED PROFESSIONAL ENGINEER — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2, PARCEL 2, 5th ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE: GRADING, SEDIMENT AND EROSION CONTROL PLAN

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM | SCALE: 1" = 50' | DRAWING 24 OF 34

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MATCHLINE SEE THIS SHEET

MATCHLINE SEE SHEET 24

MATCHLINE SEE THIS SHEET

LEGEND

- SOILS CLASSIFICATION / SOILS DELINEATION — ChB2
- EXISTING CONTOURS (AERIAL 12/02)
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
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- SEDIMENT CONTROL DRAINAGE DIVIDE
- EROSION CONTROL MATTING
- LIMIT OF DISTURBANCE

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DONALD A. MASON — No. 21443 — 21443 — 1-12-10

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DEVELOPER — DATE 5-9-07

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ENGINEER – DONALD A. MASON, P.E. # 21443 — DATE 5/7/07

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL.

NATURAL RESOURCES CONSERVATION SERVICE — DATE 5/31/07

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HOWARD SOIL CONSERVATION DISTRICT — DATE 5/31/07

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

NO.	DATE	REVISION
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STATE OF MARYLAND — DONALD A. MASON — No. 21443 — PROFESSIONAL ENGINEER — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: GRADING, SEDIMENT AND EROSION CONTROL PLAN

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM | SCALE: 1" = 50' | DRAWING 25 OF 34

F-06-67

NOTES:
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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

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SEDIMENT CONTROL NOTES

1. A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1850).
2. 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 SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL", REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. 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 SEEDINGS (SEC. 51) SOD (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.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS:

TOTAL AREA OF SITE	80.75	ACRES
AREA DISTURBED	14.31	ACRES
AREA TO BE ROOFED OR PAVED	1.93	ACRES
AREA TO BE VEGETATIVELY STABILIZED	12.38	ACRES
TOTAL CUT	17,000	CY
TOTAL FILL	1,800	CY
OFFSITE WASTE/BORROW AREA LOCATION	SEE NOTE #12	

8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
11. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
12. WASTE WILL BE HAULED TO AN APPROVED WASTE DISPOSAL SITE, WITH A ACTIVE GRADING PERMIT.

TOPSOIL SPECIFICATIONS

I. Topsoil salvaged from the existing site may be used provided that it meets that standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station.

II. Topsoil Specifications — Soil to be used as topsoil must meet the following:

- i. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting texture subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1-1/2" in diameter.
- ii. Topsoil must be free of plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nutsedge, poison ivy, thistle, or others as specified.
- iii. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

III. For sites having disturbed areas under 5 acres:

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

IV. For sites having disturbed areas over 5 acres:

- i. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
  - a. 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.
  - b. Organic content or topsoil shall be not less than 1.5 percent by weight.
  - c. Topsoil having soluble salt content greater than 500 parts per million shall not be used.
  - d. No sod or seed 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 phyto-toxic 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.

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

V. Topsoil Application

- i. When topsoiling, maintain needed erosion and sediment control practices such as diversions, grade stabilization structures, earth dikes, slope silt fence and sediment traps and basins.
- ii. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
- iii. 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 sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets.
- iv. 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.

VI. 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:

- i. Composted Sludge Material for use as a soil conditioner for sites having distributed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:
  - a. 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.
  - b. 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.
  - c. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
- iv. 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: Guidelines Specifications, Soil Preparation and Sodding. MD-VA, Pub. #1, Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes, Revised 1973.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

DETAIL 22 - SILT FENCE

CONSTRUCTION NOTES FOR FABRICATED SILT FENCE

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) cut, or 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighing not less than 1.00 pond per linear foot.
2. Geotextile 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	50 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

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.
4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reached 50% of the fabric height.

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DETAIL 1 - EARTH DIKE

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

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

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 objectional 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.

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DETAIL 5 - RIP-RAP INFLOW PROTECTION

CONSTRUCTION SPECIFICATIONS

1. All lined inflow channels shall be 1' in depth, have a trapezoidal cross section with 2:1 or flatter side slopes and 3' (min.) bottom width. The channel shall be lined with 4" to 12" rip-rap to a depth of 18".
2. Filter cloth shall be installed under all rip-rap. Filter cloth shall be Geotextile Class C.
3. Entrance and exit sections shall be installed as shown on the detail section.
4. Rip-Rap used for the lining may be recycled for permanent outlet protection if the basin is to be converted to a stormwater management facility.
5. Gabion Inflow Protection may be used in lieu of Rip-Rap Inflow Protection.
6. Rip-Rap should blend into existing ground.
7. Rip-Rap Inflow Protection shall be used where the slope is between 4:1 and 10:1, for slopes flatter than 10:1 use Earth Dike or Temporary Swale lining criteria.

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DETAIL 6 - GABION INFLOW PROTECTION

CONSTRUCTION SPECIFICATIONS

1. Gabion inflow protection shall be constructed of 9' x 3' x 9" gabion baskets forming a trapezoidal 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.

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DETAIL 18 - SEDIMENT BASIN BAFFLES

BASIN	D	A	We	Le	We/Le
			BAFFLE DESIGN		
1	107'	14405 SF	134'	276'	2.1
2	79'	7712 SF	98'	200'	2.0

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DETAIL 33 - SUPER SILT FENCE

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SUPER SILT FENCE

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	50 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

SUPER SILT FENCE DESIGN CRITERIA

Slope	Slope Steepness	Slope Length (maximum)	Silt Fence Length (maximum)
0 - 10%	0 - 10:1	Unlimited	Unlimited
10 - 20%	10:1 - 5:1	200 feet	1,500 feet
20 - 33%	5:1 - 3:1	100 feet	1,000 feet
33 - 50%	3:1 - 2:1	100 feet	500 feet
50% +	2:1 +	50 feet	250 feet

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DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

Construction Specifications

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 residence 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 mounted berg with 5:1 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.

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DETAIL 20A - 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" slits 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.

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TREE PROTECTION FENCE

NOTES:

1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICES.
4. AVOID ROOT DAMAGE WHEN PLACING ANCHOR POSTS.
5. DEVICE SHOULD BE PROPERLY MAINTAINED DURING CONSTRUCTION
6. PROTECTIVE SIGNAGE IS ALSO REQUIRED.

CONSTRUCTION SPECIFICATIONS

1. KEY-IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A NARROW TRENCH, 6" IN DEPTH. BACKFILL THE TRENCH AND TAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS-SECTION. SECURE WITH A ROW OF STAPLES ABOUT 4" DOWN SLOPE FROM THE TRENCH. SPACING BETWEEN STAPLES IS 6".
2. STAPLE THE 4" OVERLAP IN THE CHANNEL CENTER USING AN 18" SPACING BETWEEN STAPLES.
3. BEFORE STAPLING THE OUTER EDGES OF THE MATTING, MAKE SURE THE MATTING IS SMOOTH AND IN FIRM CONTACT WITH THE SOIL.
4. STAPLES SHALL BE PLACED 2' APART WITH 4 ROWS FOR EACH STRIP, 2 OUTER ROWS, AND 2 ALTERNATING ROWS DOWN THE CENTER.
5. WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4", SHIPLAP FASHION. REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6" APART IN A STAGGERED PATTERN ON EITHER SIDE.
6. THE DISCHARGE END OF THE MATTING LINER SHOULD BE SIMILARLY SECURED WITH 2 DOUBLE ROWS OF STAPLES.

NOTE: IF FLOW WILL ENTER FROM THE EDGE OF THE MATTING THEN THE AREA EFFECTED BY THE FLOW MUST BE KEYED-IN.

SOIL STABILIZATION MATTING - (ECM)

NOT TO SCALE

DETAIL 4 - PIPE SLOPE DRAIN

Table 6 Design Criteria for Pipe Slope Drain

Size	Pipe/Tubing Diameter (D) In	Maximum Drainage Area (Acres)
PSD-12	12	0.5
PSD-18	18	1.5
PSD-21	21	2.5
PSD-24	24	3.5
PSD-24 (2)	24	5.0

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PIPE SLOPE DRAIN

Construction Specifications - Pipe Slope Drain

1. The Pipe Slope Drain (PSD) shall have a slope of 3 percent or steeper.
2. The top of the earth dike over the inlet pipe shall be at least 2 times the pipe diameter measured at the invert of the pipe.
3. Flexible tubing is preferred. However, corrugated metal pipe or equivalent PVC pipe can be used. All connections shall be watertight. pipe.
4. A flared end section shall be attached to the inlet end of pipe with a watertight connection. Filter cloth shall be placed under the inlet of the pipe slope drain and shall extend out 5' from the inlet. The filter cloth shall be "keyed in" on all sides. pipe.
5. The Pipe Slope Drain shall be securely anchored to the slope by staking at the grommets provided. Spacing for anchors shall be as provided by manufacturer's specification. In no case shall less than two (2) anchors be provided, equally spaced along the length of pipe. These details should be provided by pipe suppliers. pipe.
6. The soil around and under the pipe and end section shall be hand tamped in 4 inch lifts to the top of the earth dike.
7. All pipe connections shall be watertight.
8. Whenever possible where a PSD drains an unstabilized area, it shall outlet into a sediment trap or basin. If this is not possible then the slope drain will discharge into a stable conveyance that leads to a sediment trap or basin. When discharging into a trap or basin the PSD shall discharge at the same elevation as the wet pool elevation. The discharge from the PSD must be as far away from the sediment control outlet as possible.
9. When the drainage area is stabilized, the PSD shall discharge onto a stabilized area at a non-erosive velocity.
10. Inspection and any required maintenance shall be performed periodically and after each rain event.
11. The inlet must be kept open at all times.

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Maryland's Guidelines To Waterway Construction
DETAIL 4.8: TEMPORARY ACCESS BRIDGE

SKETCH

STREAM CROSSINGS | PAGE 4.8 - 3 | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

MGWC 4.8: TEMPORARY ACCESS BRIDGE

Temporary stream crossing intended for minimum corridor disturbance

DESCRIPTION

A temporary access bridge is a stream crossing made of wood, metal, or other materials designed to limit the amount of disturbance to the stream banks and bed.

EFFECTIVE USES & LIMITATIONS

Temporary access bridges are the preferred method of waterway crossing since they typically cause the least disturbance to the waterway bed and banks, pose the least chance for interference with fish migration, and can be quickly removed and reused.

MATERIAL SPECIFICATIONS

- *Stringers*: Stringers should either be logs, sawn timber, prestressed concrete beams, metal beams, or other approved materials.
- *Deck Materials*: Deck materials should be of sufficient strength to support the anticipated load.

CONSTRUCTION SEQUENCE

All erosion and sediment control devices, including stream diversions, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Dewatering basins should be built as needed and swales or ditches should be used to prevent surface drainage from entering the stream via the bridge crossing. (See the *1994 Maryland Standards and Specifications for Soil Erosion and Sediment Control*.) The proposed construction, maintenance, and removal sequence is as follows:

1. Abutments should be placed parallel to, and on, stable banks such that the structure is at or above bankfull depth to prevent the entrapment of floating materials and debris.
2. Temporary access bridges should be constructed to span the entire channel. If the bankfull channel width exceeds 8 feet (2.5 meters), then a footing, pier, or other bridge support may be constructed within the waterway. No support will be permitted within the channel for waterways less than 8 feet wide. One additional bridge support will be permitted for each additional 8-foot width of the channel.
3. All decking members should be placed perpendicularly to the stringers, butted tightly, and securely fastened to the stringers. Decking materials must be butted tightly to prevent any soil material tracked onto the bridge from falling into the waterway.
4. Although run planks are optional, they may be necessary to properly distribute loads. One run plank should be provided for each track of the equipment wheels and should be securely fastened to the length of the span.
5. Curbs or fenders may be installed along the outer sides of the deck to provide additional safety.
6. Bridges should be securely anchored at one end using steel cable or chain to prevent the bridge from floating downstream and possibly causing an obstruction to the flow. Anchoring at only one end will prevent channel obstruction in the event that flood waters float the bridge. Acceptable anchors are large trees, boulders, or driven steel anchors.
7. All areas disturbed during installation should be stabilized within 14 calendar days in accordance with a revegetation plan approved by the WMA.
8. Periodic inspection should be performed by the user to ensure that the bridge, streambed, and stream banks are maintained and not damaged.
9. Maintenance should be performed as needed to ensure that the structure complies with all standards and specifications. This should include the removal of trapped sediment and debris which should then be disposed of and stabilized outside the floodplain.
10. When the temporary bridge is no longer needed, all structures including abutments and other bridging materials should be removed within 14 calendar days. In all cases, the bridge materials should be removed within 1 year of installation. Removal of the bridge and clean-up of the area, including protection and stabilization of disturbed stream banks, should be accomplished without the use of construction equipment in the waterway.

OUTLET AND INFLOW PROTECTION DETAIL

NOT TO SCALE

SEQUENCE OF CONSTRUCTION

DAY 1	NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF CONSTRUCTION OBTAIN GRADING PERMIT. A LETTER OF AUTHORIZATION FROM MDE MUST BE OBTAINED PRIOR TO DISTURBANCE OF THE STREAM OR WETLANDS FOR THE ROAD AND/OR UTILITY CROSSING. STREAM CLOSURE SHALL BE BETWEEN MARCH 1st AND JUNE 15th. CONTRACTOR TO ADHERE TO THE DUST CONTROL SPECIFICATIONS AS SHOWN ON THIS SHEET.
DAY 2-12	INSTALL STABILIZED CONSTRUCTION ENTRANCES, TREE PROTECTION FENCES, SUPER SILT FENCE, TEMPORARY SWALE,TEMPORARY DIVERSION PIPES, TEMPORARY ACCESS BRIDGES AND TEMPORARY CLEANWATER DIVERSION DIKES.
DAY 13-30	CONSTRUCT BOTTOMLESS ARC CULVERTS PER CBC ENGINEERS AND ASSOCIATES CONTRACT DRAWINGS. COVER ARCHES WITH ADEQUATE FILL TO PREVENT DRAINAGE TO CULVERTS BEFORE MASS GRADING OF SITE. LOD FOR CULVERT CONSTRUCTION IS 70' EACH SIDE OF STREAM AND 45' EACH SIDE SIDE OF THE ROAD CENTERLINE.
DAY 31-65	INSTALL SEDIMENT BASINS.
DAY 66-70	INSTALL ANY REMAINING SEDIMENT CONTROL DEVICES.
DAY 71-99	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, INSTALL STORM DRAIN RUNS DO NOT INSTALL GRASSED SWALES 1 AND 4 AT THIS TIME. STORM DRAINS MUST BE COMPLETE AND OPEN TO RECEIVE GUTTER FLOW TOWARDS BASINS BEFORE ROAD GRADING STARTS AND CONCENTRATED FLOW IS CREATED.
DAY 99-123	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, BRING ROAD BEDS TO SUBGRADE AND STABILIZE SLOPES IN ACCORDANCE WITH TEMPORARY SEEDBED NOTES. STORM DRAINS DRAINING SUMPS ARE TO BE INSTALLED TO THE BASINS PRIOR TO STARTING ROAD GRADING.
DAY 124-145	INSTALL THE CURB AND GUTTER AND PAVING.
DAY 146-153	COMPLETE GRADING OF SITE AND STABILIZE DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDBED NOTES.
DAY 154-165	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, CONVERT SEDIMENT BASINS TO STORMWATER MANAGEMENT FACILITIES. SHAPE FACILITIES PER FINAL GRADES SHOWN ON THE PLANS AND STABILIZE DISTURBED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDBED NOTES. CONTRACTOR SHALL REMOVE ALL OLD AND NEW TRASH, JUNK AND DEBRIS FROM ALL BUFFER AND FLOODPLAIN AREAS. EXISTING CULVERTS AND DRIVEWAY TO BE REMOVED SHALL BE REMOVED AT THIS TIME AND BANKS SHALL BE STABILIZED.
DAY 166-168	UPON APPROVAL OF THE HOWARD COUNTY SEDIIMENT CONTROL INSPECTOR, REMOVE TEMPORARY DIVERSION PIPES , INSTALL GRASSED SWALES 1 AND 4 AND STABLIIZE DISTURBANCES.
DAY 169-190	UPON APPROVAL OF THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE REMAINING SEDIMENT CONTROL DEVICES, AND STABILIZED DISTURBE AREAS IN ACCORDANCE WITH THE PERMANENT SEEDBED NOTES.

PERMANENT SEEDBED PREPARATIONS

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ON OF THE FOLLOWING SCHEDULES:

1. PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0- UREAFORM FERTILIZER (9 LBS/1000 SQ FT).
2. ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

SEEDING: FOR THE PERIODS MARCH 1 THROUGH APRIL 30 AND AUGUST 1 THROUGH OCTOBER 15, SEED WITH 60 LBS PER ACRE (1.4 LBS/1000 SQ FT) OF KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS PER ACRE (.05 LBS/1000 SQ FT) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY: OPTION (1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOD. OPTION (3) SEED WITH 60 LBS PER ACRE OF KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS PER ACRE OF WELL ANCHORED STRAW.

MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ FT) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDED AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

30.0 Dust Control

Definition

Controlling dust blowing and movement on construction sites and roads.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.

Conditions Where Practice Applies

This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Specifications

Temporary Methods

1. Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tracked to prevent blowing.
2. Vegetative Cover - See standards for temporary vegetative cover.
3. Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12" apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.
4. Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.
5. Barriers - Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
6. Calcium Chloride - Apply at rates that will keep surface moist. May need retreatment.

Permanent Methods

1. Permanent Vegetation - See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.
2. Topsoiling - Covering with less erosive soil materials. See standards for topsoiling.
3. Stone - Cover surface with crushed stone or coarse gravel.

References

1. Agriculture Handbook 346. Wind Erosion Forces in the United States and Their Use in Predicting Soil Loss.
2. Agriculture Information Bulletin 354. How to Control Wind Erosion, USDA-ARS.

TEMPORARY SEEDBED PREPARATIONS

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: APPLY 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ FT).

SEEDING: FOR PERIOD MARCH 1 THROUGH APRIL 30 AND FROM AUGUST 15 THROUGH NOVEMBER 15, SEED WITH 2-1/2 BUSHELS PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ FT). FOR THE PERIOD MAY 1 THROUGH AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS (.07 LBS/1000 SQ FT). FOR THE PERIOD NOVEMBER 16 THROUGH FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING: APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ FT) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES, 8 FT. OR HIGHER, USE 348 GALLONS PER ACRE (8 GAL/1000 SQ FT) FOR ANCHORING.

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT COVERED.

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.

PE NO. 21443

DONALD A. MASON — 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 BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

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] 5-9-07
DEVELOPER — DATE

BY THE ENGINEER:

"I/WE CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE 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 NOTIFIED 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."

Donald Mason 5/7/07
ENGINEER - DONALD A. MASON, P.E. # 21443 — DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL.

[signature] 5/31/07
NATURAL RESOURCES CONSERVATION SERVICE — DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[signature] 5/31/07
HOWARD SOIL CONSERVATION DISTRICT — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] 6-6-07
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

T. Kriota - Muenhardt for Hamilton 6-11-07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 6/8/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

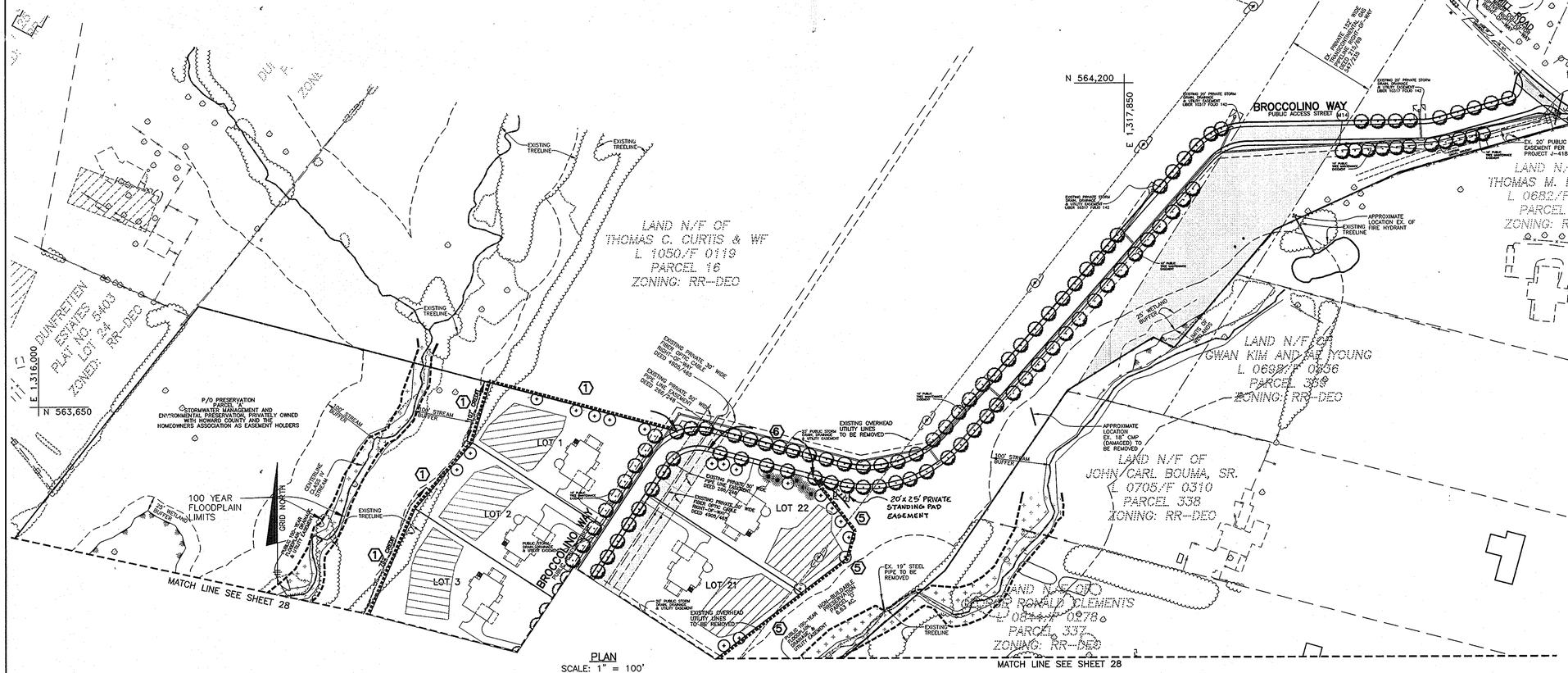
NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
phone: 410-465-6105 ▲ fax: 410-465-6644
email: Benchmrk@cois.com

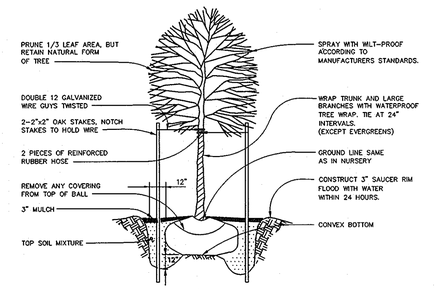
5/7/07

OWNER\DEVELOPER: HIGHLAND DEVELOPMENT CORP, P.O. BOX 228, CLARKSVILLE, MARYLAND 21029, 410-531-5539	PROJECT: BRIGHTON MILL — LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'
	LOCATION: TAX MAP No. 34, GRID No. 2, PARCEL 2, 5th ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
	TITLE: SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
	DATE: MAY, 2007 — PROJECT NO. 1513
Design: JMC — Draft: LAB — Check: DAM	SCALE: AS SHOWN — DRAWING 26 OF 34

F-06-67



PLAN
SCALE: 1" = 100'



TREE PLANTING DETAIL
NOT TO SCALE

LANDSCAPE NOTES:

1. TREES SHOULD BE PLANTED A MINIMUM OF 6 FEET FROM THE EDGE OF PAVING 5 FEET FROM ANY STORM DRAIN, 20 FEET FROM A STREET LIGHT AND OUSTIDE OF THE 6' PUBLIC STORM DRAIN AND UTILITY EASEMENT THAT RUNS PARALLEL TO THE RIGHT-OF-WAY.
2. TREES MUST BE PLANTED A MINIMUM OF 5 FEET FROM AN OPEN SPACE ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.
3. SEE TREE PLANTING DETAIL – THIS SHEET.
4. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
5. THE DEVELOPER SHALL BE RESPONSIBLE FOR STREET TREES, STORMWATER MANAGEMENT FACILITY PERIMETER PLANTING AND PRESERVATION OF THE PERIMETER VEGETATION AS SHOWN ON THESE PLANS.
6. ALL VEGETATION IS TO BE REMOVED WITHIN 15' OF THE TOE OF THE SLOPE OF THE PROPOSED EMBANKMENT.
7. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF $47,700.00. ($40,500.00 FOR 135 SHADE TREES, $7,200.00 FOR 48 EVERGREENS)
8. AT THE TIME OF PLANT INSTALLATION, ALL SHADE AND EVERGREEN TREES LISTED AND APPROVED ON THE LANDSCAPE PLANS, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLANS MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/ OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.
9. THE OWNERS, TENANTS AND / OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANTS MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.

LEGEND

- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING SEPTIC FIELD
- PROPOSED SEPTIC FIELD
- EX. 100 YEAR FLOODPLAIN
- FOREST CONSERVATION EASEMENT
- LANDSCAPE PERIMETER DESIGNATION (5)

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF 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.

Richard J. DeMmitt — 5-9-07
RICHARD J. DEMMITT, PRESIDENT, HIGHLAND DEVELOPMENT CORP — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJ. TO PERIMETER PROPERTY ①	ADJ. TO PERIMETER PROPERTY ②	ADJ. TO PERIMETER PROPERTY ③	ADJ. TO PERIMETER PROPERTY ④	ADJ. TO PERIMETER PROPERTY ⑤	ADJ. TO ROAD ⑥	TOTALS
LANDSCAPE TYPE	A	A	A	A	A	B	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	1504'	1607'	2100'	1519'	872'	187'	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES 606'* 253'**	YES 124'* 264'**	YES 602'*	NO	NO	NO	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	NO	NO	
NUMBER OF PLANTS REQUIRED	645'	1219'	1498'	1519'	872'	187'	
SHADE TREES	11	20	25	26	15	4	101
EVERGREEN TREES	–	–	–	–	–	5	5
OTHER TREES (2:1 SUBSTITUTE)	–	–	–	–	–	–	–
SHRUBS (10:1 SUBSTITUTE)	–	–	–	–	–	–	–
NUMBER OF PLANTS PROVIDED	645'	1219'	1498'	1519'	872'	187'	
SHADE TREES	11	20	25	26	15	4	101
EVERGREEN TREES	–	–	–	–	–	5	5
OTHER TREES (2:1 SUBSTITUTE)	–	–	–	–	–	–	–
SHRUBS (10:1 SUBSTITUTE)	–	–	–	–	–	–	–

*EXISTING WOODS 20' OR GREATER IN WIDTH.
**PROPOSED SWM LANDSCAPING

SCHEDULE D
SWM PERIMETER LANDSCAPING

	SWMF 1	SWMF 2		TOTALS
LINEAR FEET OF PERIMETER	964'	984'		
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	NO	YES 22% (220')		
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO	NO		
LINEAR FEET OF REQUIRED PLANTING	964'	764'		
BUFFER TYPE	"B"	"B"		
NUMBER OF TREES REQUIRED				
SHADE TREES	19	15		34
EVERGREEN TREES	24	19		43
NUMBER OF TREES PROVIDED				
SHADE TREES	19	15		34
EVERGREEN TREES	24	19		43

STREET TREE SCHEDULE

ROAD NAME	PERIMETER	TREES REQ.	TREES PROV.
BROCCOLINO WAY (LARGE TREES)	6401'	160	160
BROCCOLINO WAY (SMALL TREES)	260'	9	9
TOTALS		169	169

PUBLIC STREET TREE PLANTING LIST – BROCCOLINO WAY

SYMBOL	QUANTITY	NAME	REMARKS	
	160	ACER SACCHARUM 'Green Mountain' (Green Mountain Sugar Maple)	2 1/2" MIN. CAL. B&B FULL HEAD	STREET TREES TO BE PROVIDED BY THE DEVELOPER
	9	PRUNUS SERRULATA 'KWANZAN' (Kwanzan Cherry)	1 1/2" MIN. CAL. B&B FULL HEAD	STREET TREES TO BE PROVIDED BY THE DEVELOPER

LANDSCAPE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
+	101	QUERCUS RUBRA (Red Oak)	2-1/2" – 3"cal.	SHADE TREES ALONG PERIMETER TO BE PROVIDED BY THE DEVELOPER
	48	PINUS STROBUS (Eastern White Pine)	6' – 8' ht.	EVERGREEN TREES ALONG SWM FACILITIES TO BE PROVIDED BY THE DEVELOPER
	34	TILIA CORDATA 'GREENSPIRE' (Greenspire Littleleaf Linden)	2-1/2" – 3"cal.	SHADE TREES ALONG SWM FACILITIES TO BE PROVIDED BY THE DEVELOPER

NO.	DATE	REVISION
1	12-5-08	REMOVE STANDING PAD EASEMENT FROM LOT 3 TO PARCEL 'D'

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cols.com

STATE OF MARYLAND — DONALD M. MORGAN — REGISTERED PROFESSIONAL ENGINEER — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: LANDSCAPE AND STREET TREE PLAN, NOTES AND DETAILS

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM | SCALE: 1"=100' | DRAWING 27 OF 34

F-06-67

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PLAN
SCALE: 1" = 100'

LEGEND

LIMIT OF WETLANDS	
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
EXISTING SEPTIC FIELD	
PROPOSED SEPTIC FIELD	
EX. 100 YEAR FLOODPLAIN	
FOREST CONSERVATION EASEMENT	
LANDSCAPE PERIMETER DESIGNATION	5

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[signature] 6-6-07
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

T. Kruta - Marenhand for C. Hamilton 6-11-07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 6/8/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cais.com

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER No. 21443 — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: LANDSCAPE AND STREET TREE PLAN

DATE: MAY, 2007 — PROJECT NO. 1513
Design: JMC — Draft: LAB — Check: DAM — SCALE: AS SHOWN — DRAWING 28 OF 34

F-06-67

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PLAN
SCALE: 1" = 100'

MATCH LINE SEE SHEET 30

LEGEND

- SOILS CLASSIFICATION — ChB2
- SOILS DELINEATION
- EXISTING CONTOURS (AERIAL 12/02)
- PROPOSED CONTOURS — 999
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- EXISTING WELL — EX. WELL
- EXISTING SEPTIC FIELD
- PROPOSED SEPTIC FIELD
- PROPOSED WELL
- SLOPES 15% TO 24.9%
- SLOPES 25% OR GREATER
- EX. 100 YEAR FLOODPLAIN
- PROPOSED FOREST CONSERVATION EASEMENT
- TREE PROTECTION FENCE
- FCE PERMANENT SIGNAGE

THIS PLAN IS FOR FOREST CONSERVATION ONLY

SEQUENCE OF CONSTRUCTION

1. SEDIMENT CONTROL AND TREE PROTECTION DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH GENERAL CONSTRUCTION PLAN FOR SITE. SITE SHALL BE GRADED IN ACCORDANCE WITH THE GENERAL CONSTRUCTION PLANS.
2. REMOVE HAZARDOUS TREES (DEAD, DISEASED OR THOSE SUBJECT TO WIND THROWS) ALONG THE EDGE OF THE FOREST RETENTION AREAS AS WELL AS WITHIN OTHER TREE SAVE AREAS.
3. SIGNAGE SHALL BE INSTALLED AS PER THE FOREST PROTECTION DEVICES SHOWN ON THE FOREST CONSERVATION PLAN.

NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICES.
4. AVOID ROOT DAMAGE WHEN PLACING ANCHOR POSTS.
5. DEVICE SHOULD BE PROPERLY MAINTAINED DURING CONSTRUCTION
6. PROTECTIVE SIGNAGE IS ALSO REQUIRED.

TEMPORARY TREE PROTECTION FENCE
SCALE: NTS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 6-6-07
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
J. Krista Mannhold For C. Hamilton 6-11-07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 6/8/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

SITE DATA

GROSS AREA (INCL. ALL PROP. LOTS).	.80.8 AC.±
PRES. PARCELS, TRANS. LINE R/W & FLOODPLAIN.	.18.8 AC.±
NET TRACT AREA (NTA).	.62.0 AC.±
EXISTING FOREST (NTA).	.0.0 AC.±
AFFORESTATION THRESHOLD.	.12.5 AC.±
AFFORESTATION PROPOSED.	.6.5 AC.±
OFF-SITE RETENTION ON SENDING PARCEL.	.12.0 AC.±

FOREST CONSERVATION TABULATION

DESIGNATION:	TYPE:	ACREAGE:
1	AFFORESTATION	5.2 AC.±
2	AFFORESTATION	1.3 AC.±
	TOTAL:	6.5 AC.±

Forest Conservation Area

AFFORESTATION PROJECT

Trees for Your Future

MIN. 15" — MIN. 11"

TYP. PERM. SIGN. DETAIL
NOT TO SCALE

ACRES OF AFFORESTATION
(APPENDIX E) FOREST CONSERVATION WORKSHEET

I. BASIC SITE DATA

GROSS SITE AREA (INCLUSIVE OF ALL PROPOSED LOTS).	.80.8 AC.±
AREA WITHIN 100 YEAR FLOOD PLAIN.	.8.3 AC.± (PRES. PARCEL)
AREA WITHIN AGRICULTURAL USE OR PRESERVATION PARCEL.	.3.5 AC.±
AREA WITHIN UNDERGROUND TRANSMISSION LINES.	.6.5 AC.±
NET TRACT AREA.	.62.5 AC.±
LAND USE CATEGORY (R-RLD, R-RMD, R-S, C/I/O, I).	.RR-DEO

II. INFORMATION FOR CALCULATIONS

(A) NET TRACT AREA.	.62.5 AC.±
(B) REFORESTATION THRESHOLD (25% x NTA).	.15.6 AC.±
(C) AFFORESTATION MINIMUM (20% x NTA).	.12.5 AC.±
(D) EXISTING FOREST ON NET TRACT AREA.	.0 AC.±
(E) EXISTING FOREST ABOVE CONSERVATION THRESHOLLD.	.–
(F) BREAK EVEN POINT (IF APPLICABLE).	.–
(G) FOREST AREAS TO BE CLEARED.	.–
(H) FOREST AREAS TO BE RETAINED (RETENTION).	.0 AC.±

III. DETERMINING REQUIREMENTS: AFFORESTATION OR REFORESTATION

1. Reforestation
If existing forest areas equal or exceed the afforestation minimum (if D equals or is more than C), and clearing of forest areas is proposed, reforestation requirements may apply.
GO TO SECTION IV
if existing forest areas equal or exceed the afforestation minimum (if D equals or is more than C), and no clearing of existing forest resources is proposed, no reforestation is required. No further calculations are needed.

2. Afforestation
If existing forest areas are less than the afforestation minimum (if D is less than C), afforestation requirements apply.

SELECT THE ALTERNATE THAT APPLIES:

1. No clearing below the minimum

If existing forests are less than the afforestation minimum (if D is less than C) and no clearing is proposed, the following calculations apply:

Total afforestation required C − D — 12.5 AC±

Afforestation must make total forest area equal the minimum required.

2. Clearing below the minimum

If existing forest area less than the afforestation minimum (if D is less than C) and clearing is proposed, the following calculations apply:

Afforestation for unforested areas below minimum C − D — –
Afforestation for Clearing below Minimum E x 2 — –
TOTAL AFFORESTATION REQUIRED (C − D) + (E x 2) — –

Afforestaion required the total forest area be equal to the minimum and it requires compensation for clearing

GO TO SECTION V

V. AFFORESTATION CALCULATIONS

	ACRES (1/10 acre)
A. NET TRACT AREA.	.62.5 AC±
B. AFFORESTATION MINIMUM (20% x A)	.12.5 AC±
D. EXISTING FOREST ON NET TRACT AREA.	.0
E. FOREST AREAS TO BE CLEARED.	.0
F. FOREST AREAS TO BE RETAINED.	.0

FCP NOTES:

1. ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
2. FORESTED AREAS OCCURRING OUTSIDE OF THE FCE SHALL NOT BE CONSIDERED PART OF THE FCE AND SHALL NOT BE SUBJECT TO PROTECTIVE LAND COVENANTS.
3. LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.
4. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.
5. NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
6. TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. THE FENCING SHALL BE PLACED ALONG ALL FCE BOUNDARIES WHICH OCCUR WITHIN 25 FEET OF THE PROPOSED LIMITS.
7. PERMANENT SIGNAGE SHALL BE PLACED 50–100' APART ALONG THE BOUNDARIES OF ALL AREAS INCLUDED IN FOREST CONSERVATION EASEMENTS. SIGNS SHALL BE MOUNTED ON A PERMANENT WOOD POST OR METAL STAKE. FCE SIGNS SHALL NOT BE ATTACHED TO TREES.
8. THE FOREST CONSERVATION OBLIGATION FOR THIS SUBDIVISION WILL BE FULFILLED BY 6.5 ACRES OF ONSITE AFFORESTATION IN AND ADJACENT TO STREAM BUFFERS AND FLOODPLAIN AND 12.0 ACRES OF CREDITED FOREST CONSERVATION EASEMENT ON THE MATTINGLY PROPERTY WITHIN A 26.51 ACRES FOREST CONSERVATION EASEMENT. THIS RETENTION OF FOREST IS PROVIDED ON THE SENDING PARCEL FOR THIS SUBDIVISION AT 2 TO 1. THE TOTAL FOREST CONSERVATION OBLIGATION FOR THIS SUBDIVISION IS 12.5 ACRES OF AFFORESTATION. SEE MATTINGLY PROPERTY, RE-06-01.
9. THE FOREST CONSERVATION OBLIGATION CALCULATIONS FOR THIS SUBDIVISION ARE IN ACCORDANCE WITH D.P.Z. POLICY MEMORANDUM DATED AUGUST 14, 2002 AND APPENDIX "L" OF THE FOREST CONSERVATION MANUAL. OPTION "C" OF THE POLICY MEMORANDUM WAS USED.
10. FINANCIAL SURETY WILL BE REQUIRED FOR FOREST CONSERVATION IN THE AMOUNT OF $141,570.00 FOR THE 6.5 ACRES OF ON-SITE AFFORESTATION AND $104,555.71 FOR THE 12.0 ACRES OF OFF-SITE RETENTION. A TOTAL SURETY AMOUNT OF $246,125.71 SHALL BE PAID AS PART OF THE DEVELOPER'S AGREEMENT.
11. THE FCE BOUNDARY IS SHOWN ON THE FINAL RECORD PLAT WITH BEARING AND DISTANCE DESCRIPTION FOR THIS PROJECT.

SITE DATA TABULATION

1) GENERAL SITE DATA
a. PRESENT ZONING: RR-DEO
b. APPLICABLE DPZ FILE REFERENCES: WP-03-093
c. DEED REF.: 2644/140
d. PROPOSED USE OF SITE: 22 BUILDABLE LOTS, 1 BUILDABLE PRESERVATION PARCEL AND 3 NON-BUILDABLE PRESERVATION PARCELS
e. PROPOSED WATER AND SEWER SYSTEMS: PRIVATE

2) AREA TABULATION
a. TOTAL AREA OF SITE.......... 80.75 AC.±
b. AREA OF 100 YEAR FLOODPLAIN (APPROX.).......... 8.3 AC.±
c. AREA OF STEEP SLOPES (25% OR GREATER).......... 0.67 AC.±
AREA OF STEEP SLOPES NOT IN THE FLOODPLAIN.......... 0.54 AC.±
d. NET AREA OF SITE.......... 71.91 AC.±
e. AREA OF THIS PLAN SUBMISSION.......... 80.75 AC.±
f. AREA OF PROPOSED BUILDABLE LOTS.......... 22.58 AC.±
g. AREA OF PROPOSED PRESERVATION PARCELS.......... 54.97 AC.±
h. AREA OF PROPOSED PUBLIC ROAD R/W.......... 3.20 AC.±

SOILS LEGEND

MAP SYMBOL	SOIL GROUP	SOIL TYPE
CgB2	B	CHESTER GRAVELLY SILT LOAM, 3 TO 8% SLOPES, MODERATELY ERODED
ChA	B	CHESTER SILT LOAM, 0 TO 3% SLOPES
ChB2	B	CHESTER SILT LOAM, 3 TO 8% SLOPES, MODERATELY ERODED.
ChC2	B	CHESTER SILT LOAM, 8 TO 15% SLOPES, MODERATELY ERODED.
Co *	C	CODORUS SILT LOAM
CuB	B	COMUS SILT LOAM, LOCAL ALLUVIUM, 3 TO 8% SLOPES
GlB2	B	GLENELG LOAM, 3 TO 8% SLOPES, MODERATELY ERODED
GlC2	B	GLENELG LOAM, 8 TO 15% SLOPES, MODERATELY ERODED
GlC3	B	GLENELG LOAM, 8 TO 15% SLOPES, SEVERELY ERODED
GlD3	B	GLENELG LOAM, 15 TO 25% SLOPES, SEVERELY ERODED
GnA *	C	GLENVILLE SILT LOAM, 0 TO 3% SLOPES
GnB2 *	C	GLENVILLE SILT LOAM, 3 TO 8% SLOPES, MODERATELY ERODED
GnC2 *	C	GLENVILLE SILT LOAM, 8 TO 15% SLOPES, MODERATELY ERODED
Ha *	D	HATBORO SILT LOAM
MlA	B	MANOR LOAM, 0 TO 3% SLOPES
MlB2	B	MANOR LOAM, 3 TO 8% SLOPES, MODERATELY ERODED
MlC2	B	MANOR LOAM, 8 TO 15% SLOPES, MODERATELY ERODED
MlC3	B	MANOR LOAM, 8 TO 15% SLOPES, SEVERELY ERODED
MlD3	B	MANOR LOAM, 15 TO 25% SLOPES, SEVERELY ERODED
MnD	B	MANOR VERY STONY LOAM, 3 TO 25% SLOPES

* INDICATES HYDRIC SOILS
TAKEN FROM SOILS SURVEY, ISSUED JULY 1968, MAP NO. 22.

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752

MD DNR Qualified Professional
USACOE Wetland Delineator
Certification #WDCP93MD0610044B2
[signature] 5/16/07
John P. Canoles

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cais.com

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER
[signature] 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: **BRIGHTON MILL**
LOTS 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: FOREST CONSERVATION PLAN, NOTES AND DETAILS

DATE: MAY, 2007		PROJECT NO. 1513	
Design: JMC	Draft: LAB	Check: DAM	
SCALE: AS SHOWN		DRAWING 29 OF 34	

F-06-67

PLAN

SCALE: 1" = 100'

MULTIFLORA ROSE CONTROL NOTE

MULTIFLORA ROSE IS PREVALENT IN CERTAIN AREAS TO BE REFORESTED. PRIOR TO PLANTING ALL MULTIFLORA ROSE SHOULD BE REMOVED. REMOVAL OF THE ROSE MAY BE PERFORMED WITH MOWING AND HERBICIDE TREATMENTS. PHYSICAL REMOVAL OF ALL TOP GROWTH FOLLOWED BY A PERIODIC HERBICIDE TREATMENT OF STUMP SPROUTS IS RECOMMENDED. NATIVE TREE AND SHRUB SPECIES OCCURRING WITHIN THE ROSE THICKETS SHOULD GE RETAINED WHEREVER POSSIBLE. HERBICIDE TREATMENTS SHALL OCCUR ON 2 MONTH INTERVALS DURING THE FIRST GROWING SEASON AND ONCE EACH IN THE SPRING AND FALL FOR SUBSEQUENT YEARS. HERBICIDE USED SHALL BE MADE SPECIFICALLY TO ADDRESS WOODY PLANT MATERIAL AND SHALL BE APPLIED AS PER MANUFACTURES SPECIFICATIONS. CARE SHOULD BE TAKEN NOT TO SPRAY PLANTED TREES OR NATURALLY OCCURRING NATIVE TREE/SHRUB SEEDLINGS. IT IS RECOMMENDED THAT INITIATION OF ROSE REMOVAL BEGIN AT LEAST SIX MONTHS PRIOR TO PLANTING.

PLANTING SCHEDULE

FOREST CONSERVATION EASEMENT #1 (5.2 AC.±) 1825 TOTAL PLANTING UNITS

QTY.	SPECIES	SIZE	SPACING
175	Acer rubrum – RED MAPLE	2-3' WHIP	**
85	Cornus florida – FLOWERING DOGWOOD	2-3' WHIP	** Δ
250	Fraxinus pennsylvanica– GREEN ASH	2-3' WHIP	** Δ
110	Juniperus virginiana – RED CEDAR	2-3' WHIP	** Δ
250	Liriodendron tulipifera – POPLAR	2-3' WHIP	**
125	Nyssa sylvatica – BLACK GUM	2-3' WHIP	**
125	Platanus occidentalis – SYCAMORE	2-3' WHIP	**
210	Prunus serotina – BLACK CHERRY	2-3' WHIP	** Δ
175	Quercus alba – WHITE OAK	2-3' WHIP	** Δ
85	Quercus rubra – RED OAK	2-3' WHIP	** Δ
110	Sassafras albidum – SASSAFRAS	2-3' WHIP	** Δ
125	Viburnum prunifolium – BLACKHAW	2-3' WHIP	** Δ

KEY:

** PLANTINGS TO BE SPACED 11 FOOT CENTERS – PLANTINGS SHOULD BE INSTALLED IN ROWS TO FACILITATE FUTURE MAINTENANCE. WHERE POSSIBLE, ROWS SHOULD BE MADE ALONG CONTOUR. PER COUNTY REQUIREMENTS, TREE SHELTERS SHOULD BE USED. PLANTING IS BASED ON 350 TREES PER ACRE.

Δ – PLANT THESE SPECIES IN UPLAND AREAS ONLY

PLANTING SCHEDULE

FOREST CONSERVATION EASEMENT #2 (1.3 AC.±) 455 TOTAL PLANTING UNITS

QTY.	SPECIES	SIZE	SPACING
45	Acer rubrum – RED MAPLE	2-3' WHIP	**
20	Cornus florida – FLOWERING DOGWOOD	2-3' WHIP	** Δ
60	Fraxinus pennsylvanica– GREEN ASH	2-3' WHIP	** Δ
30	Juniperus virginiana – RED CEDAR	2-3' WHIP	** Δ
60	Liriodendron tulipifera – POPLAR	2-3' WHIP	**
30	Nyssa sylvatica – BLACK GUM	2-3' WHIP	**
35	Platanus occidentalis – SYCAMORE	2-3' WHIP	**
55	Prunus serotina – BLACK CHERRY	2-3' WHIP	** Δ
40	Quercus alba – WHITE OAK	2-3' WHIP	** Δ
20	Quercus rubra – RED OAK	2-3' WHIP	** Δ
30	Sassafras albidum – SASSAFRAS	2-3' WHIP	** Δ
30	Viburnum prunifolium – BLACKHAW	2-3' WHIP	** Δ

KEY:

** PLANTINGS TO BE SPACED 11 FOOT CENTERS – PLANTINGS SHOULD BE INSTALLED IN ROWS TO FACILITATE FUTURE MAINTENANCE. WHERE POSSIBLE, ROWS SHOULD BE MADE ALONG CONTOUR. PER COUNTY REQUIREMENTS, TREE SHELTERS SHOULD BE USED. PLANTING IS BASED ON 350 TREES PER ACRE.

Δ – PLANT THESE SPECIES IN UPLAND AREAS ONLY

LEGEND

SOILS CLASSIFICATION	ChB2
SOILS DELINEATION	
EXISTING CONTOURS (AERIAL 12/02)	480 / 478
PROPOSED CONTOURS	999
LIMIT OF WETLANDS	
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
EXISTING STRUCTURE	
PROPOSED STRUCTURE	
EXISTING WELL	EX. WELL
EXISTING SEPTIC FIELD	
PROPOSED SEPTIC FIELD	
PROPOSED WELL	W
SLOPES 15% TO 24.9%	
SLOPES 25% OR GREATER	
EX. 100 YEAR FLOODPLAIN	
PROPOSED FOREST CONSERVATION EASEMENT	

PLANTING NOTES:

1. MULTIFLORA ROSE CONTROL MAY BE REQUIRED AS PART OF THIS PLANTING PLAN.
2. BAREROOT PLANT MATERIAL MAY BE USED TO OFFSET THE COST OF MULTIFLORA ROSE REMOVAL AND MAINTENANCE IF BAREROOT MATERIAL IS USED IT MUST BE PLANTED IN MARCH – APRIL AND AN ANTI-DESICCANT GEL SHOULD BE UTILIZED TO PROTECT ROOT SYSTEMS. CONTAINER GROWN STOCK IS RECOMMENDED.
3. PLANTS SHOULD BE FLAGGED TO AID ON LOCATION DURING MAINTENANCE. PLANTINGS SHOULD ALSO BE PLANTED IN ROWS ALONG CONTOUR TO FACILITATE MAINTENANCE AND REMOVAL OF INVASIVE AND EXOTIC SPECIES.

PLANTING/SOIL SPECIFICATIONS

1. PLANTING OF NURSERY STOCK SHALL TAKE PLACE BETWEEN MARCH 15TH AND APRIL 30TH. CONTAINER STOCK MAY BE PLANTED BETWEEN SEPTEMBER 1ST AND OCTOBER 30TH.
2. A TWELVE (12) INCH LAYER OF TOPSOIL SHALL BE SPREAD OVER ALL REFORESTATION AREAS IMPACTED BY SITE GRADING TO ASSURE A SUITABLE PLANTING AREA. 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. ALL BAREROOT PLANTING STOCK SHALL HAVE THEIR ROOT SYSTEMS DIPPED INTO AN ANTI-DESICCANT GEL PRIOR TO PLANTING.
4. PLANTS SHALL BE INSTALLED SO THAT THE TOP OF ROOT MASS IS LEVEL WITH THE TOP OF EXISTING GRADE. BACKFILL IN THE PLANTING PITS SHALL CONSIST OF 3 PARTS EXISTING SOIL TO 1 PART PINE FINES OR EQUIVALENT.
5. FERTILIZER SHALL CONSIST OF AGRIFORM 22-8-2, OR EQUIVALENT, APPLIED AS PER MANUFACTURER'S SPECIFICATIONS.
6. A TWO (2) INCH LAYER OF HARDWOOD MULCH SHALL BE PLACED OVER THE ROOT AREA OF ALL PLANTINGS.
7. PLANT MATERIAL SHALL BE TRANSPORTED TO THE SITE IN A TARPED OR COVERED TRUCK. PLANTS SHALL BE KEPT MOIST PRIOR TO PLANTING.
8. ALL NON-ORGANIC DEBRIS ASSOCIATED WITH THE PLANTING OPERATION SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

SEQUENCE OF CONSTRUCTION

1. PLANTS SHALL BE INSTALLED AS PER PLANT SCHEDULE AND PLANTING/SOIL SPECIFICATIONS FOR THE PROJECT.
2. UPON COMPLETION OF THE PLANTING, SIGNAGE SHALL BE INSTALLED AS PER THE FOREST RETENTION AREA PROTECTION DEVICES SHOWN ON THE FOREST CONSERVATION PLAN.
3. PLANTINGS SHALL BE MAINTAINED AND GUARANTEED IN ACCORDANCE WITH THE MAINTENANCE AND GUARANTEE REQUIREMENTS FOR PROJECT.

MAINTENANCE OF PLANTINGS

1. MAINTENANCE OF ALL PLANTINGS SHALL LAST FOR A PERIOD OF 24 MONTHS.
2. ALL PLANT MATERIAL SHALL BE WATERED TWICE A MONTH DURING THE 1ST GROWING SEASON, ONCE A MONTH DURING MAY-SEPTEMBER, IF NEEDED.
3. INVASIVE EXOTICS AND NOXIOUS WEEDS WILL BE REMOVED FROM REFORESTATION AREAS. OLD FIELD SUCCESSIONAL SPECIES WILL BE RETAINED.
4. PLANTS WILL BE EXAMINED A MINIMUM OF 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

1. AFTER ONE GROWING SEASON, PLANT MATERIAL SHALL BE MAINTAINED AT 90% SURVIVAL THRESHOLD. A 75 PERCENT SURVIVAL RATE OF FORESTATION PLANTINGS WILL BE REQUIRED AT THE END OF THE 24 MONTH MAINTENANCE PERIOD. ALL PLANT MATERIAL BELOW THE 75 PERCENT THRESHOLD WILL BE REPLACED AT THE BEGINNING OF THE NEXT GROWING SEASON.
2. THE CONTRACTOR WILL NOT BE LIABLE FOR PLANT LOSS DUE TO THEFT OR VANDALISM.

SURETY FOR REFORESTATION

1. THE DEVELOPER SHALL POST A SURETY (BOND, LETTER OF CREDIT) TO ENSURE THAT REFORESTATION PLANTINGS ARE COMPLETED. UPON ACCEPTANCE OF THE PLANTINGS BY THE COUNTY, THE BOND SHALL BE RELEASED.

FLOODPLAIN NOTE:

PORTIONS OF THE SITE OCCURRING WITHIN THE 100-YEAR FLOODPLAIN ARE NOT INCLUDED AS PART OF THE NET TRACT AREA OF THE SITE. AREAS OF FLOODPLAIN AFFORESTATION OCCURRING WITHIN THE LIMITS OF A FOREST CONSERVATION EASEMENT WILL BE PROTECTED BY THE EASEMENT RESTRICTIONS

Seeding and Whip Planting Specification

Mulching newly planted seedlings is suggested as it helps the soil retain moisture and it protects the seedling from compaction and stem injury.

Planting Specifications:
Container Grown and Balled and Burlapped Stock

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752

MD DNR Qualified Professional
USACOE Wetland Delineator
Certification #WDCP93MD0610044B2
[signature] 5/16/07
John P. Canoles

THIS PLAN IS FOR FOREST CONSERVATION ONLY

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 6-6-07
CHIEF, BUREAU OF HIGHWAYS — DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING
T. Kresto-Marchand for Hamilton 6-11-07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

[signature] 6/8/07
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

NO.	DATE	REVISION
1	7-13-07	REVISED STORM DRAIN MATERIAL OF SOME PIPES

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
E-MAIL: benchmrk@cais.com

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER
[signature] 5/7/07

OWNER:
THOMAS C. CURTIS
AND BETTY JEAN CURTIS, H/W
13471 TRIADELPHIA MILL ROAD
CLARKSVILLE, MD 21029-1026

CONTRACT PURCHASER\DEVELOPER:
HIGHLAND DEVELOPMENT CORPORATION
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: CURTIS PROPERTY
LOTS 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A
AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: FOREST CONSERVATION PLAN, NOTES AND DETAILS

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC — Draft: LAB — Check: DAM — SCALE: AS SHOWN — DRAWING 30 OF 34

F-06-67

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 6-6-07 DATE

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

T. Kriota - Maenhaut for C. Hamilton — CHIEF, DIVISION OF LAND DEVELOPMENT — 6-11-07 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 6/8/07 DATE

FP NOTES:

1. ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
2. FORESTED AREAS OCCURRING OUTSIDE OF THE FCE SHALL NOT BE CONSIDERED PART OF THE FCE AND SHALL NOT BE SUBJECT TO PROTECTIVE LAND COVENANTS.
3. LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY FROM BRIGHTON MILL, F-06-67, OR WHICHEVER IS GREATER.
4. THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.
5. NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.
6. TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. FENCING SHALL BE INSTALLED ALONG LIMITS OF DISTURBANCE OCCURRING WITHIN 50 FEET OF THE PROPOSED FCE LIMITS. PERMANENT SIGNAGE WILL BE POSTED AT 50-100 FOOT INTERVALS ALONG ALL FCE LIMITS.
7. THE TOTAL FOREST CONSERVATION OBLIGATION FOR BRIGHTON MILL (SP-03-09), AND (F-06-67) 6.0 ACRES, WILL BE MET THROUGH THE RETENTION ON THE MATTINGLY PROPERTY, RE-06-01, OF 12.0 ACRES OF NET TRACT AREA FOREST WITHIN THE LIMITS OF A FOREST CONSERVATION EASEMENT. SURETY IN THE AMOUNT OF $104,555.71 SHALL BE REQUIRED FOR THIS PROJECT.

VICINITY MAP

SCALE: 1" = 2000'

FOREST RETENTION AREA

MACHINERY, DUMPING OR STORAGE OF ANY MATERIALS IS

PROHIBITED

VIOLATORS ARE SUBJECT TO FINES AS IMPOSED BY THE HOWARD COUNTY FOREST CONSERVATION ACT OF 1992

MIN. 15"

MIN. 11"

SIGNAGE

NOT TO SCALE

NOTES:

1. THERE ARE STREAMS, STREAM BUFFERS AND FLOODPLAINS LOCATED ON THIS SITE.
2. THIS OFF-SITE PLANTING WILL BE REQUIRED TO SATSIFY THE FOREST CONSERVATION REQUIREMENTS FOR THE CURTIS PROPERTY (SP-03-013) SUBDIVISION.
3. SURETY REQUIRED FOR THE OFF-SITE RETENTION IN THE AMOUNT OF $104,555.71 SHALL BE REQUIRED FOR THE FINAL PLAN SUBMISSION OF THE BRIGHTON MILL (F-06-067).
4. THE OBLIGATION OF 6.0 ACRES OF AFFORESTATION FOR THE BRIGHTON MILL (F-06-067) WILL BE PROVIDED ON THE MATTINGLY PROPERTY, RE-06-01.
5. 12.00 ACRES OF RETENTION ARE REQUIRED FOR THE BRIGHTON MILL SUBDIVISION AND 12.01 ACRES IS PROVIDED.

FCE ACREAGE CHART

EASEMENT	RETENTION (NTA)	REFORESTATION
FCE#1	12.01 AC.**	N/A
TOTALS	12.01 AC.*	N/A

* 12.00 ACRES NTA ARE REQUIRED FOR THE CURTIS PROPERTY SUBDIVISION (SP-03-009).
** FCE #1 IS 26.52 ACRES IN TOTAL AREA BUT 14.51 ACRES ARE NON-CREDITED FCE DUE TO BEING WITHIN THE LIMITS OF THE 100 YEAR FLOODPLAIN.

LEGEND

EXISTING CONTOUR	528
EX. TREE LINE	
EX. SEPTIC RESERVE AREA	
FOREST CONSERVATION SIGN	●

SOILS LEGEND

MAP SYMBOL	SOIL TYPE	MAPPING UNIT
EkB2	C	ELIOAK SILT LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
EkC2	C	ELIOAK SILT LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
EID3	C	ELIOAK SILTY CLAY LOAM, 15 TO 25 PERCENT SLOPES, SEVERELY ERODED
GIB2	B	GLENELG LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
GIC2	B	GLENELG LOAM, 8 TO 15 PERCENT SLOPES, MODERATELY ERODED
GIC3	B	GLENELG LOAM, 8 TO 15 PERCENT SLOPES, SEVERELY ERODED
GnA	C	GLENVILLE SILT LOAM, 3 TO 3 PERCENT SLOPES
MnD	B	MANOR VERY STONY LOAM, 3 TO 25 PERCENT SLOPES
MnF	B	MANOR VERY STONY LOAM, 25 TO 60 PERCENT SLOPES
MtB2	A	MOUNT AIRY CHANNERY LOAM, 3 TO 8 PERCENT SLOPES, MODERATELY ERODED
MtD2	A	MOUNT AIRY CHANNERY LOAM, 15 TO 25 PERCENT SLOPES, MOERATELY ERODED
MtE	A	MOUNT AIRY CHANNERY LOAM, 25 TO 45 PERCENT SLOPES
SOILS MAP No. 6		

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
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ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 ▲ FAX: 410-465-6644
EMAIL: benchmrk@cais.com

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER — Donald Mason 5/21/07

OWNER:
BRIAN AND CONNIE MATTINGLY
21020 BROOK KNOLLS ROAD
LAYTONSVILLE, MARYLAND 20882
301-785-8006

DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: MATTINGLY PROPERTY

LOCATION: TAX MAP No. 14, GRID No. 1, PARCEL No. 112
4th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: FOREST STAND DELINEATION FOR MATTINGLY PROPERTY AND OFF-SITE FOREST CONSERVATION PLAN FOR BRIGHTON MILL (F-06-067)

DATE:	MAY, 2007	PROJECT NO.	1673
DESIGN: JMC	DRAFT: JMC	SCALE: 1" = 100'	DRAWING 31 OF 34

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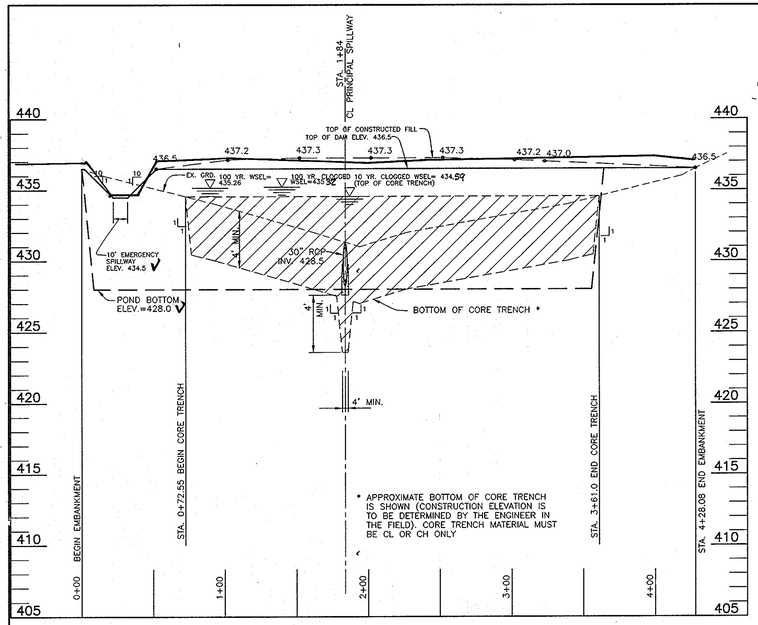
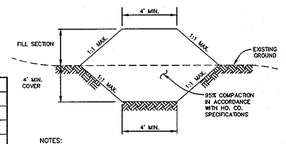
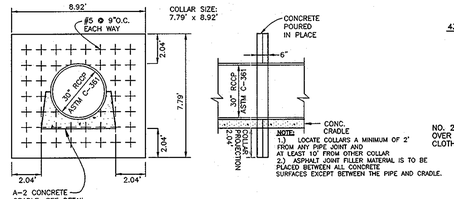


PROFILE ALONG CL OF EMBANKMENT
POND #1
SCALE: 1"=50' HORIZ., 1"=5' VERT.

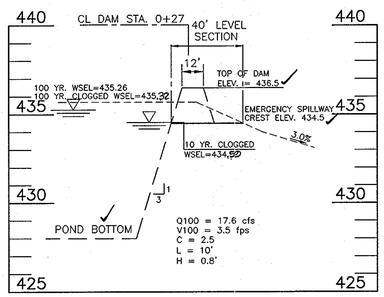


NOTES:
1. IF WATER IS ENCOUNTERED DURING THE CONSTRUCTION OF THE CORE TRENCH, IT IS TO BE REMOVED BY PUMPING.
2. CORE TRENCH SHALL CONSIST OF IMPERVIOUS MATERIAL (GC, SC, CL, CH) AS DIRECTED BY A GEOTECHNICAL ENGINEER ONSITE AND MAY REQUIRE TO BE HAULED FROM AN OFFSITE LOCATION.

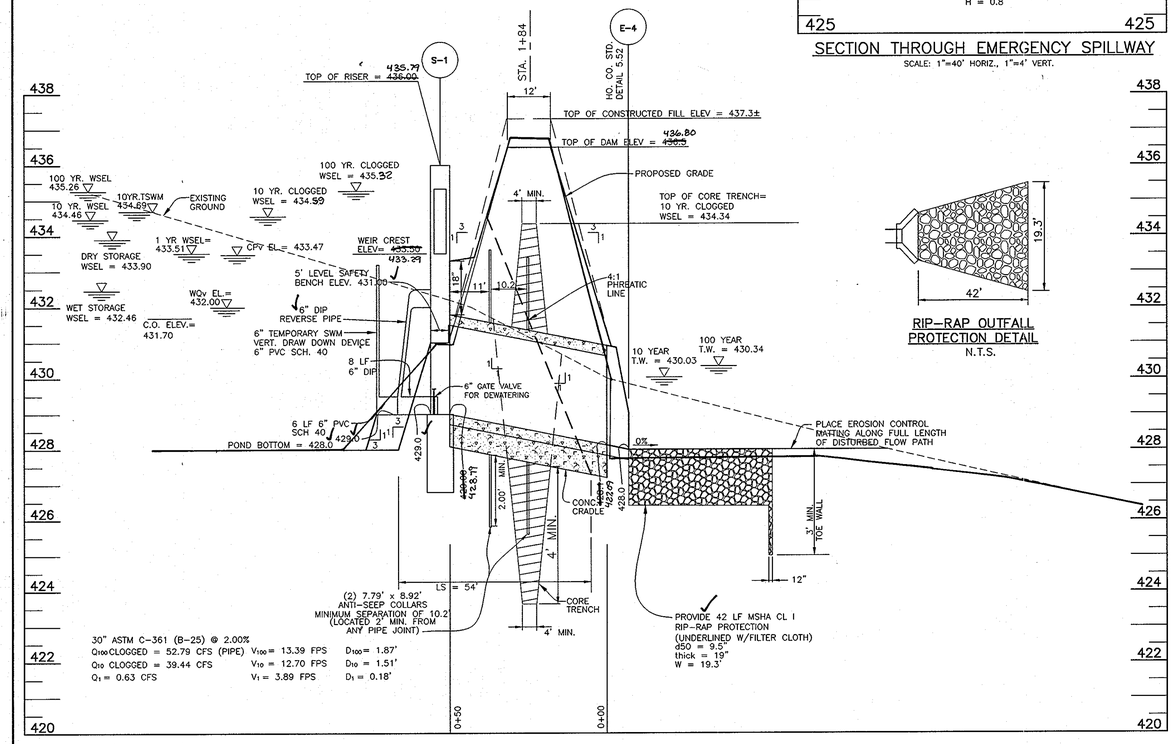
CORE TRENCH SECTION
NOT TO SCALE



ANTI-SEEP COLLAR - POND #1
NOT TO SCALE

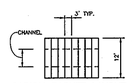


SECTION THROUGH EMERGENCY SPILLWAY
SCALE: 1"=40' HORIZ., 1"=4' VERT.

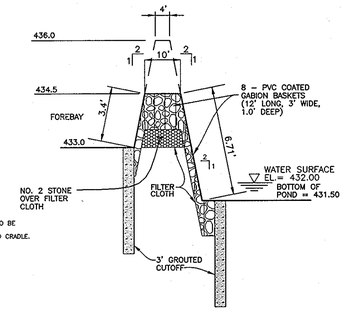


SECTION THRU PRINCIPAL SPILLWAY
POND #1
SCALE: 1"=20' HORIZ., 1"=2' VERT.

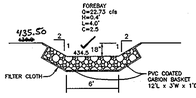
RIP-RAP OUTFALL PROTECTION DETAIL
N.T.S.



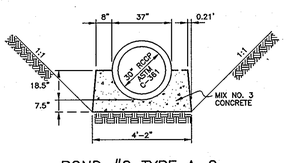
GABION BASKET LAYOUT
NOT TO SCALE



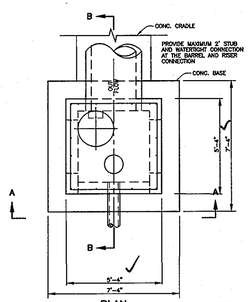
TYPICAL SECTION OF GABION WEIR AT FOREBAY
NOT TO SCALE



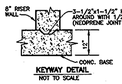
PROFILE THROUGH FOREBAY WEIR
NOT TO SCALE



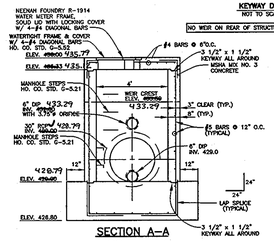
POND #2 TYPE A-2 CONCRETE CRADLE
NOT TO SCALE



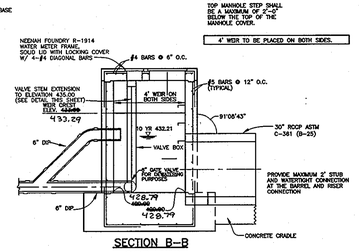
PLAN



KEYWAY DETAIL
NOT TO SCALE

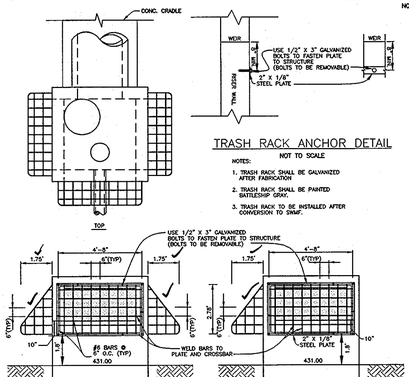


SECTION A-A
FRONT VIEW



SECTION B-B
SIDE VIEW

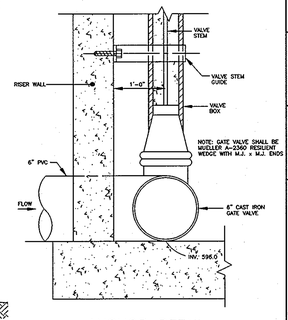
CONTROL STRUCTURE - POND #1
SCALE: 1" = 4'



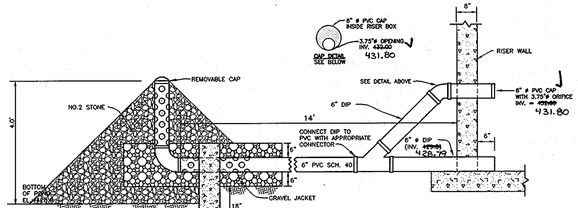
TRASH RACK ANCHOR DETAIL
NOT TO SCALE

NOTES:
1. TRASH RACK SHALL BE GALVANIZED AFTER FABRICATION
2. TRASH RACK SHALL BE PAINTED BATTLESHIP GRAY.
3. TRASH RACK TO BE INSTALLED AFTER CONVERSION TO SWM.

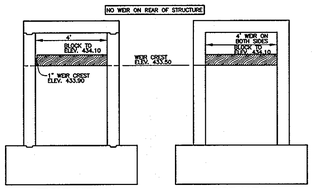
TRASH RACK DETAIL - POND #1
SCALE: 1" = 4'



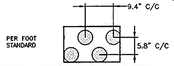
ANCHOR DETAIL
NOT TO SCALE



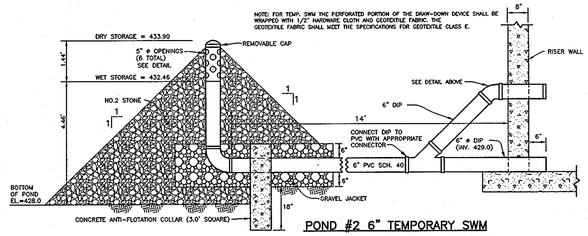
6" PIPE DETAIL AND LOW FLOW CONTROL ORIFICE
NOT TO SCALE



TEMPORARY STORMWATER MANAGEMENT BLOCKING DETAIL - POND #1
SCALE: 1" = 4'



TSWM PERFORATION DETAIL
NOT TO SCALE



POND #2 6" TEMPORARY SWM VERTICAL DRAW-DOWN DEVICE
NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED W-1 SHALLOW WETLAND

ROUTINE MAINTENANCE:

1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE:

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENTS SHALL BE REMOVED FROM THE POND, AND FOREBAY, NO LATER THAN WHEN THE CAPACITY OF THE POND, OR FOREBAY, IS HALF FULL OF SEDIMENT, OR, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

AS-BUILT CERTIFICATION

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

STATE OF MARYLAND — DONALD ALAN MASON — 21443 — REGISTERED PROFESSIONAL ENGINEER

Donald Mason — 21443
DONALD A. MASON
1-13-10

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

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."

Richard DeMmitt — 5-9-07
DEVELOPER RICHARD DEMMITT — DATE

BY THE ENGINEER:

"I/WE CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE 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 NOTIFIED 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."

Donald Mason — 01/07
ENGINEER - DONALD A. MASON, P.E. # 21443 — DATE

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL.

USDA - NATURAL RESOURCES CONSERVATION SERVICE — 5/21/07 DATE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — 5/31/07 DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — 6-6-07 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

T. Kristen - Meinhardt for C. Hamilton — 6-11-07
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION — 6/8/07 DATE

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
website: http://www.bei-civilengineering.com

STATE OF MARYLAND — DONALD ALAN MASON — 21443 — REGISTERED PROFESSIONAL ENGINEER

Donald Mason — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORMWATER MANAGEMENT FACILITY #1 PROFILES AND DETAILS

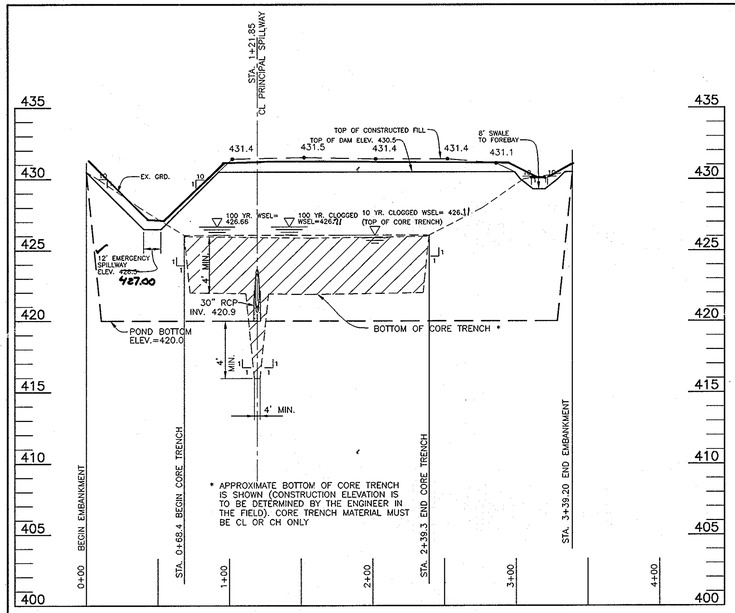
DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC | Draft: LAB | Check: DAM

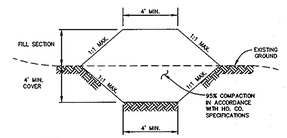
SCALE: AS SHOWN — DRAWING 32 OF 34

F-06-67

P:\1513\dwg\2704F2v2.dwg, pond 1, 5/7/2007 3:09:02 PM, edd

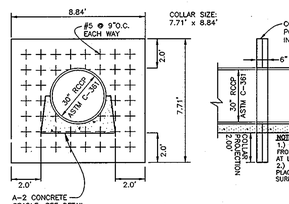


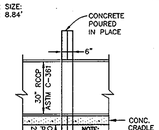
PROFILE ALONG CL OF EMBANKMENT
POND #2
SCALE: 1"=50' HORIZ., 1"=5' VERT.



NOTES:
1. IF WATER IS ENCOUNTERED DURING THE CONSTRUCTION OF THE CORE TRENCH, IT IS TO BE REMOVED BY PUMPING.
2. CORE TRENCH SHALL CONSIST OF IMPERVIOUS MATERIAL (GC, SC, CL, CH) AS DIRECTED BY A GEOTECHNICAL ENGINEER ONSITE AND MAY REQUIRE TO BE HAULED FROM AN OFFSITE LOCATION.

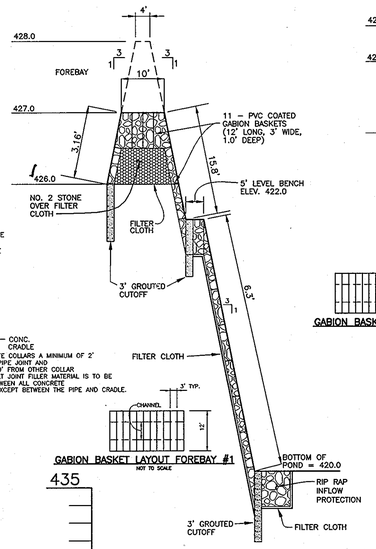
CORE TRENCH SECTION
NOT TO SCALE





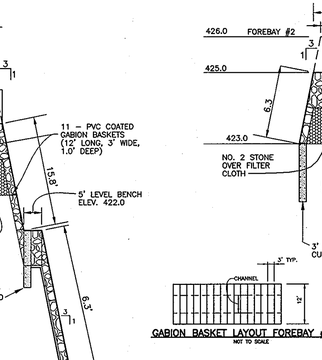
NOTE:
1.) LOCATE COLLARS A MINIMUM OF 2' FROM ANY PIPE JOINT AND AT LEAST 10' FROM OTHER COLLAR
2.) ASPHALT JOINT FILLER MATERIAL IS TO BE PLACED BETWEEN ALL CONCRETE SURFACES EXCEPT BETWEEN THE PIPE AND CRADLE.

ANTI-SEEP COLLAR - POND #2
NOT TO SCALE



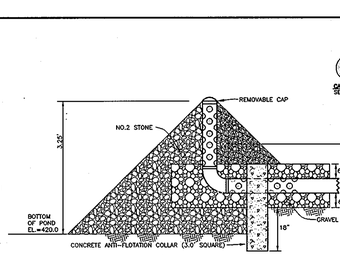
GABION BASKET LAYOUT FOREBAY #1
NOT TO SCALE

TYPICAL SECTION OF GABION WEIR AT FOREBAY #1
NOT TO SCALE

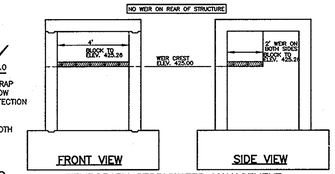


GABION BASKET LAYOUT FOREBAY #2
NOT TO SCALE

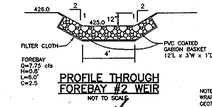
TYPICAL SECTION OF GABION WEIR AT FOREBAY #2
NOT TO SCALE



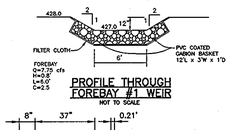
6" PIPE DETAIL AND
LOW FLOW CONTROL ORIFICE
NOT TO SCALE



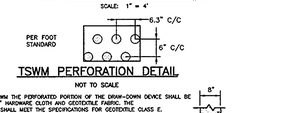
TEMPORARY STORMWATER MANAGEMENT
BLOCKING DETAIL - POND #2
SCALE: 1" = 4'



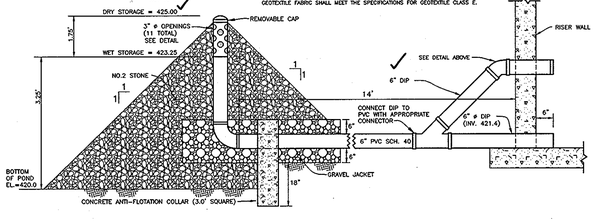
PROFILE THROUGH
FOREBAY #2 WEIR
NOT TO SCALE



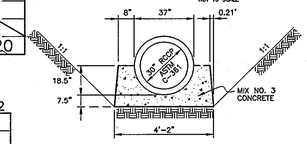
PROFILE THROUGH
FOREBAY #1 WEIR
NOT TO SCALE



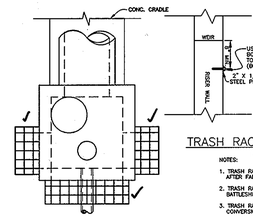
TSWM PERFORATION DETAIL
NOT TO SCALE



POND #2 6" TEMPORARY SWM
VERTICAL DRAW-DOWN DEVICE
NOT TO SCALE

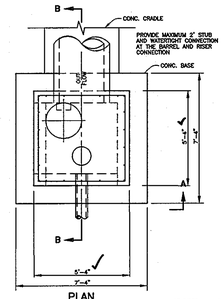


POND #2 TYPE A-2
CONCRETE CRADLE
NOT TO SCALE

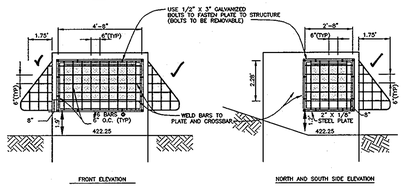


TRASH RACK ANCHOR DETAIL
NOT TO SCALE

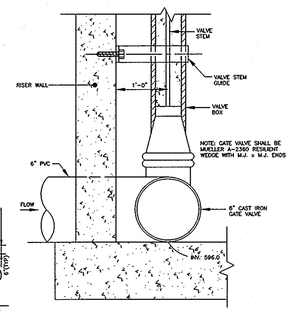
NOTES:
1. TRASH RACK SHALL BE GALVANIZED AFTER FABRICATION
2. TRASH RACK SHALL BE PAINTED BATTLESHIP GRAY.
3. TRASH RACK TO BE INSTALLED AFTER CONVERSION TO SWM.



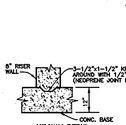
PLAN



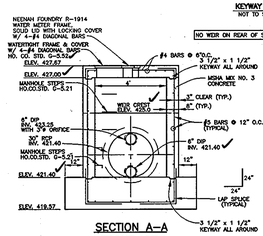
TRASH RACK DETAIL - POND #2
SCALE: 1" = 4'



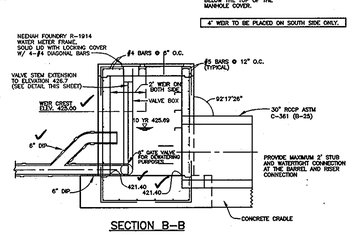
ANCHOR DETAIL
NOT TO SCALE



KEYWAY DETAIL
NOT TO SCALE



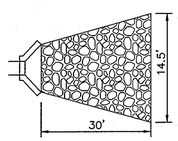
SECTION A-A
FRONT VIEW



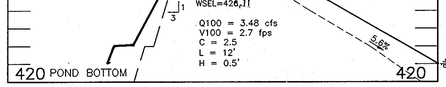
SECTION B-B
SIDE VIEW

CONTROL STRUCTURE - POND #2
SCALE: 1" = 4'

SECTION THRU PRINCIPAL SPILLWAY
POND #2
SCALE: 1"=20' HORIZ., 1"=2' VERT.



RIP-RAP OUTFALL
PROTECTION DETAIL
N.T.S.



SECTION THROUGH EMERGENCY SPILLWAY
SCALE: 1"=40' HORIZ., 1"=4' VERT.

AS-BUILT CERTIFICATION

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

DONALD A. MASON — NO. 21443 — DATE 1-18-10

CERTIFY MEANS TO STATE OR DECLARE BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED UNDER MY SUPERVISION. THE ONSITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS NECESSARY AND SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS AND PRACTICES. THIS 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.

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."

DEVELOPER RICHARD DEMMITT — DATE 5-9-07

BY THE ENGINEER:

"I/WE CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE 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 NOTIFIED 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."

ENGINEER - DONALD A. MASON, P.E. # 21443 — DATE 5/7/07

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL.

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE 5/31/07

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION, AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 5/31/07

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/6/07

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED P-1 MICROPOOL EXTENDED DETENTION

ROUTINE MAINTENANCE:

1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE POND IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
3. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS THE RIP-RAP OR GABION OUTLET AREA SHALL BE REPAIRED AS SOON AS IT IS NOTICED.

NON-ROUTINE MAINTENANCE:

1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENTS SHALL BE REMOVED FROM THE POND, AND FOREBAY, NO LATER THAN WHEN THE CAPACITY OF THE POND, OR FOREBAY, IS HALF FULL OF SEDIMENT, OR, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, UPON APPROVAL FROM THE DEPARTMENT OF PUBLIC WORKS.

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410-465-6105 FAX: 410-465-6644
website: http://www.bei-civilengineering.com

STATE OF MARYLAND — DONALD ALAN MASON — 21443 — REGISTERED PROFESSIONAL ENGINEER — 6/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410-531-5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON-BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2
PARCEL 2
5th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORMWATER MANAGEMENT FACILITY #2 PROFILES AND DETAILS

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC — Draft: LAB — Check: DAM — SCALE: AS SHOWN — DRAWING 33 OF 34

F-06-67

P:\1513\dwg\2004F2vd.dwg, pond 2, 5/7/2007 3:43:23 PM, edd

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Page 1 of 1

Project Name: Curtis Property SWM
Location: Howard County, Maryland
Boring Number: 03071A
Job #: B-4

SAMPLER
Datum: ___ Hammer Wt. 140 Lbs. Hole Diameter ___ Foreman: J. Malecki
Surf. Elev. 433.2 Hammer Drop 30 Inches Rock Core Dia. ___ Inspector: ___
Date Started 3/1/2003 Pipe Size 2.0 Inches OD Boring Method HAS Completed 3/1/2003

ELEV.	SOIL DESCRIPTION Color,Moisture,Density,Size,Proportion	STRA DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
	SURFACE		0.0					
	Tan and gray moist stiff silty clay trace to little fine sand trace gravel trace mica (CL)				8-6-7	1	18"	5" Topsoil Caved in at 7.3 ft at completion
			5.0		4-5-8	2	9"	
		8.0			4-6-9	3	18"	
	Tan and gray moist medium dense clayey fine sand trace silt trace mica (SC)		10.0		4-7-9	4	16"	
		15.0	15.0		4-5-6	5	13"	
	Bottom of test hole @ 15.0'		20.0					

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED.
PT-PRESSED SHELBY TUBE
CA-CONTINUOUS FLIGHT AUGER
RC-ROCK CORE

SAMPLE CONDITIONS
D-DISINTEGRATED
I-INTACT
U-UNDISTURBED
L-LOST

GROUND WATER DEPTH
AT COMPLETION Dry FT.
AFTER 24 hrs ___ FT.
AFTER ___ FT.

BORING METHOD
HSA-HOLLOW STEM AUGERS
CFA-CONT. FLIGHT AUGERS
DC-DRIVING CASING
MD-MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30":COUNT MADE AT 6" INTERVALS

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Page 1 of 1

Project Name: Curtis Property SWM
Location: Howard County, Maryland
Boring Number: 03071A
Job #: B-5

SAMPLER
Datum: ___ Hammer Wt. 140 Lbs. Hole Diameter ___ Foreman: J. Malecki
Surf. Elev. 433.6 Hammer Drop 30 Inches Rock Core Dia. ___ Inspector: ___
Date Started 3/1/2003 Pipe Size 2.0 Inches OD Boring Method HAS Completed 3/1/2003

ELEV.	SOIL DESCRIPTION Color,Moisture,Density,Size,Proportion	STRA DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
	SURFACE		0.0					
	Tan and gray moist stiff silty clay trace fine sand trace gravel trace mica (CL)				3-4-8	1	18"	5" Topsoil Caved in at 6.2 ft at completion
			5.0		5-6-7	2	18"	
					4-8-9	3	10"	
		9.0						
	Tan moist medium dense silty clayey fine sand trace gravel trace mica (SC)		10.0		4-5-13	4	16"	
		15.0	15.0		6-6-7	5	15"	
	Bottom of test hole @ 15.0'		20.0					

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED.
PT-PRESSED SHELBY TUBE
CA-CONTINUOUS FLIGHT AUGER
RC-ROCK CORE

SAMPLE CONDITIONS
D-DISINTEGRATED
I-INTACT
U-UNDISTURBED
L-LOST

GROUND WATER DEPTH
AT COMPLETION Dry FT.
AFTER 24 hrs 7.7 FT.
AFTER ___ FT.

BORING METHOD
HSA-HOLLOW STEM AUGERS
CFA-CONT. FLIGHT AUGERS
DC-DRIVING CASING
MD-MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30":COUNT MADE AT 6" INTERVALS

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Page 1 of 1

Project Name: Curtis Property SWM
Location: Howard County, Maryland
Boring Number: 03071A
Job #: B-6

SAMPLER
Datum: ___ Hammer Wt. 140 Lbs. Hole Diameter ___ Foreman: J. Malecki
Surf. Elev. 432 Hammer Drop 30 Inches Rock Core Dia. ___ Inspector: ___
Date Started 3/1/2003 Pipe Size 2.0 Inches OD Boring Method HAS Completed 3/1/2003

ELEV.	SOIL DESCRIPTION Color,Moisture,Density,Size,Proportion	STRA DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
	SURFACE		0.0					
	Tan and gray moist stiff silty clay trace to little fine sand trace gravel trace mica (CL)				4-7-8	1	8"	4" Topsoil Caved in at 4.6 ft at completion
			5.0		4-10-15	2	12"	
		6.0						
	Tan and white wet medium dense gravel-sized quartz fragments trace clay trace fine sand (GP)				7-13-15	3	1"	
		8.5						
	Brown moist loose clayey sand little silt trace gravel (SC)		10.0		3-4-5	4	4"	
		12.0						
	Gray and tan moist soft silty micaceous clay trace fine sand (CL)	15.0	15.0		3-3-3	5	18"	
	Bottom of test hole @ 15.0'		20.0					

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED.
PT-PRESSED SHELBY TUBE
CA-CONTINUOUS FLIGHT AUGER
RC-ROCK CORE

SAMPLE CONDITIONS
D-DISINTEGRATED
I-INTACT
U-UNDISTURBED
L-LOST

GROUND WATER DEPTH
AT COMPLETION Dry FT.
AFTER 24 hrs ___ FT.
AFTER ___ FT.

BORING METHOD
HSA-HOLLOW STEM AUGERS
CFA-CONT. FLIGHT AUGERS
DC-DRIVING CASING
MD-MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30":COUNT MADE AT 6" INTERVALS

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Page 1 of 1

Project Name: Curtis Property SWM
Location: Howard County, Maryland
Boring Number: 03071A
Job #: B-7

SAMPLER
Datum: ___ Hammer Wt. 140 Lbs. Hole Diameter ___ Foreman: J. Malecki
Surf. Elev. 427 Hammer Drop 30 Inches Rock Core Dia. ___ Inspector: ___
Date Started 2/28/2003 Pipe Size ___ Inches OD Boring Method HAS Completed 2/28/2003

ELEV.	SOIL DESCRIPTION Color,Moisture,Density,Size,Proportion	STRA DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
	SURFACE		0.0					
	Brown moist soft to stiff silty clay trace to little fine sand trace mica (CL)				2-3-3	1	12"	6" Topsoil Caved in at 5.9 ft at completion
			5.0		3-6-6	2	10"	
					4-6-7	3	15"	
			10.0		3-5-5	4	10"	
		15.0	15.0		1-2-2	5	18"	
	Bottom of test hole @ 15.0'		20.0					

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED.
PT-PRESSED SHELBY TUBE
CA-CONTINUOUS FLIGHT AUGER
RC-ROCK CORE

SAMPLE CONDITIONS
D-DISINTEGRATED
I-INTACT
U-UNDISTURBED
L-LOST

GROUND WATER DEPTH
AT COMPLETION Dry FT.
AFTER 24 hrs Dry FT.
AFTER ___ FT.

BORING METHOD
HSA-HOLLOW STEM AUGERS
CFA-CONT. FLIGHT AUGERS
DC-DRIVING CASING
MD-MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30":COUNT MADE AT 6" INTERVALS

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Page 1 of 1

Project Name: Curtis Property SWM
Location: Howard County, Maryland
Boring Number: 03071A
Job #: B-8

SAMPLER
Datum: ___ Hammer Wt. 140 Lbs. Hole Diameter ___ Foreman: J. Malecki
Surf. Elev. 430.8 Hammer Drop 30 Inches Rock Core Dia. ___ Inspector: ___
Date Started 2/28/2003 Pipe Size 2.0 Inches OD Boring Method HAS Completed 2/28/2003

ELEV.	SOIL DESCRIPTION Color,Moisture,Density,Size,Proportion	STRA DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
	SURFACE		0.0					
	Brown moist medium stiff to stiff silty clay trace to little fine sand trace mica (CL)				3-3-4	1	12"	6" Topsoil Caved in at 5.4 ft at completion
			5.0		6-6-8	2	10"	
					4-6-7	3	6"	
			10.0		4-4-5	4	9"	
		15.0	15.0		2-3-3	5	3"	
	Bottom of test hole @ 15.0'		20.0					

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED.
PT-PRESSED SHELBY TUBE
CA-CONTINUOUS FLIGHT AUGER
RC-ROCK CORE

SAMPLE CONDITIONS
D-DISINTEGRATED
I-INTACT
U-UNDISTURBED
L-LOST

GROUND WATER DEPTH
AT COMPLETION Dry FT.
AFTER 24 hrs Dry FT.
AFTER ___ FT.

BORING METHOD
HSA-HOLLOW STEM AUGERS
CFA-CONT. FLIGHT AUGERS
DC-DRIVING CASING
MD-MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30":COUNT MADE AT 6" INTERVALS

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.

RECORD OF SOIL EXPLORATION

Page 1 of 1

Project Name: Curtis Property SWM
Location: Howard County, Maryland
Boring Number: 03071A
Job #: B-9

SAMPLER
Datum: ___ Hammer Wt. 140 Lbs. Hole Diameter ___ Foreman: J. Malecki
Surf. Elev. 424.8 Hammer Drop 30 Inches Rock Core Dia. ___ Inspector: ___
Date Started 2/28/2003 Pipe Size 2.0 Inches OD Boring Method HAS Completed 2/28/2003

ELEV.	SOIL DESCRIPTION Color,Moisture,Density,Size,Proportion	STRA DEPTH	DEPTH SCALE	CON	SAMPLE BLOWS 6"	NO.	REC.	BORING & SAMPLING NOTES
	SURFACE		0.0					
	Brown moist very soft to stiff silty clay trace to little fine sand trace mica (CL)				3-3-4	1	9"	3" Topsoil Caved in at 7.2 ft at completion
			5.0		4-5-7	2	17"	
					3-5-5	3	18"	
			10.0		2-2-2	4	18"	
		13.0						
	Brown wet loose clayey fine sand (SC)	15.0	15.0		3-3-3	5	9"	
	Bottom of test hole @ 15.0'		20.0					

SAMPLER TYPE
DRIVEN SPLIT SPOON UNLESS OTHERWISE NOTED.
PT-PRESSED SHELBY TUBE
CA-CONTINUOUS FLIGHT AUGER
RC-ROCK CORE

SAMPLE CONDITIONS
D-DISINTEGRATED
I-INTACT
U-UNDISTURBED
L-LOST

GROUND WATER DEPTH
AT COMPLETION 6 FT.
AFTER 24 hrs 5.8 FT.
AFTER ___ FT.

BORING METHOD
HSA-HOLLOW STEM AUGERS
CFA-CONT. FLIGHT AUGERS
DC-DRIVING CASING
MD-MUD DRILLING

STANDARD PENETRATION TEST-DRIVING 2" OD SAMPLER 1' WITH 140# HAMMER FALLING 30":COUNT MADE AT 6" INTERVALS

HILLIS–CARNES GEOTECHNICAL ENGINEERING RECOMMENDATIONS:

EMBANKMENT AND CUT–OFF TRENCH CONSTRUCTION

THE AREA OF THE PROPOSED SWM FACILITIES SHOULD BE STRIPPED OF TOP SOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OR STURCTURE AREAS IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROOFROLLED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE. FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK, THE EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROOFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE–ESTABLISHED BY BACKFILLING WITH SUITABLE FIRM SOIL.

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT–OFF TRENCH. IN ACCORDANCE WITH NRCS–MD CODE No. 378, SOILS CONSIDERED SUITABLE FOR THE CENTER OF EMBANKMENT AND CUT–OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE.

IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE A FINE–GRAINED SOIL, INCLUDING SILT (ML) WITH A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH NRCS–MD CODE No. 378 SPECIFICATIONS.

CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD–378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped to topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25–foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material – The fill material shall be taken from approved designated borrow areas. If shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable material. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement – Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction – the movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with teh equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within ± 2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T–99 (Standard Proctor).

Cut Off Trench – The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be a least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

Embankment Core – The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the cores shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100–200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistively of 2,000 ohm–cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sided of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24' or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section

Corrugated Metal Pipe – all of the following criteria shall apply for corrugated metal pipe:

1. Materials – (Polymer Coated steel pipe) – Steel pipes with polymeric coatings shall bave a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M–245 & M–246 with watertight coupling bands or flanges.

Maerials – (Aluminum Coated Steel Pipe) – This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M–274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M–190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials – (Aluminum Pipe) – This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M–196 or M–211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M–190 Type A. Aluminum surfaces that are to be contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling bands, anti–seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

3. Connections – All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti–seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connection shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re–rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, prepunched to the flange bolt circle, sandwiched between adjacent flanges; a 12–inch wide standard lap type band with 12–inch wide by 3/8–inch thick closed cell circular neoprene gasket; and a 12–inch wide hugger type band with o–ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24–inch wide by 3/8–inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable.

Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

4. Bedding – The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

5. Backfilling shall conform to "Structure Backfill".

6. Other details (anti–seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe – All of the following criteria shall apply for reinforced concrete pipe:

1. Materials – Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C–361.

2. Bedding – Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used a described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

3. Laying pipe – Bell and spigot pipe shall be places with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation form the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.

4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti–seep collars, valves, etc.) shall be shown on the drawings.

Plastic Pipe – The following criteria shall apply for plastic pipe:

1. Materials – PVC pipe shall be PVC–1120 or PVC–1220 conforming to ASTM D–1785 or ASTM D–2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4' – 10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.

2. Joints and connections to anti–seep collars shall be completely watertight.

3. Bedding – The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to "Structure Backfill".

5. Other details (anti–seep collars, valves, etc.) shall be as shown on the drawings.

Drainage Diaphragms – When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the evacuations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the location being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

Stabilization

All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD–342) or as shown on the accompanying drawings.

Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

STONE TRENCH LEVEL SPREADER DETAIL
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS — DATE 6-6-07

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6-11-07

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/8/07

NO.	DATE	REVISION

BENCHMARK
ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE ▲ SUITE 418
ELLICOTT CITY, MARYLAND 21043
PHONE: 410–465–6105 FAX: 410–465–6644
website: http://www.bei–civilengineering.com

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — REGISTERED PROFESSIONAL ENGINEER — 5/7/07

OWNER\DEVELOPER:
HIGHLAND DEVELOPMENT CORP
P.O. BOX 228
CLARKSVILLE, MARYLAND 21029
410–531–5539

PROJECT: BRIGHTON MILL
LOT 1 THROUGH 22, BUILDABLE PRESERVATION PARCEL 'A' AND NON–BUILDABLE PRESERVATION PARCELS 'B' THROUGH 'D'

LOCATION: TAX MAP No. 34, GRID No. 2, PARCEL 2, 5th ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE: STORMWATER MANAGEMENT NOTES AND BORING LOGS

DATE: MAY, 2007 — PROJECT NO. 1513

Design: JMC — Draft: LAB — Check: DAM — SCALE: NA — DRAWING 34 OF 34

F–06–67