

GENERAL NOTES

- 1. THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
2. ZONING: SITE IS BEING DEVELOPED UNDER THE AMENDED 5TH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS FOR RA-15 (INCLUDING THE SUPPLEMENTARY REGULATIONS FOR TRADITIONAL RESIDENTIAL NEIGHBORHOODS), B-1, POR. THIS PLAN IS SUBJECT TO THE AMENDED ZONING REGULATIONS PER CB-75-2003.

- 1. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS / DIVISION OF CONSTRUCTION INSPECTION AT (410) 313-1880 AT LEAST (5) DAYS PRIOR TO THE START OF WORK.
2. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THE PLANS.

- 24. THE COORDINATES SHOWN HEREON ARE BASED UPON HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON MARYLAND STATE PLANE, NAD 83, MARYLAND-1900 U.S. SURVEY FT. COORDINATE SYSTEM. HOWARD COUNTY MONUMENT Nos. 316A AND 314A WERE USED FOR THIS PROJECT.
25. INFORMATION FOR THE 100-YEAR FLOODPLAIN TAKEN FROM THE FLOOD PLAIN STUDY PREPARED BY GUTSCHICK, LITTLE, AND WEBER, P.A. IN JULY, 2005.

- 29. TO FULFILL THE FOREST CONSERVATION REQUIREMENTS OF THIS SITE, AT LEAST 1.48 ACRES OF RETENTION AND 7.04 ACRES OF AFFORESTATION ARE REQUIRED. THIS REQUIREMENT IS ADDRESSED BY PROVIDING 1.48 ACRES OF NET TRACT FOREST RETENTION (ST) ACRES OF NON-CREDITED FOREST RETENTION WITHIN THE FLOODPLAIN AND 5.74 ACRES OF ON-SITE FOREST PLANTING.

- 30. THE REQUIRED IMPROVEMENTS TO MARYLAND ROUTE 106 (INCLUDING STREET TREES AND SIDEWALKS) SHALL BE PROCESSED, APPROVED AND BONDED THROUGH THE APPROPRIATE STATE AGENCIES IN ACCORDANCE WITH THE APPROVED PHASING INDICATED IN THE TRAFFIC IMPACT ANALYSIS AND THE REQUIRED SUBSEQUENT RESUBMISSION PLANS/PLATS.

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

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20886

- 31. EXECUTED SEWER, GRADING, STORM WATER MANAGEMENT, DIRECTIONAL BORING AND SIGNAGE EASEMENT AGREEMENT DATED 7/17/06 BETWEEN BA WATERLOO TOWNHOMES, LLC AND DEEP RUN PROPERTY MANAGEMENT, LLC.
32. FOREST CONSERVATION SURETY IN THE AMOUNT OF \$17410.96 FOR THE FIVE FOREST CONSERVATION EASEMENTS WILL BE POSTED AS A PART OF THE DEVELOPER'S AGREEMENTS.

- 33. LANDSCAPE SURETY IN THE AMOUNT OF \$18,450.00 WILL BE POSTED AS A PART OF THE DEVELOPER'S AGREEMENTS.

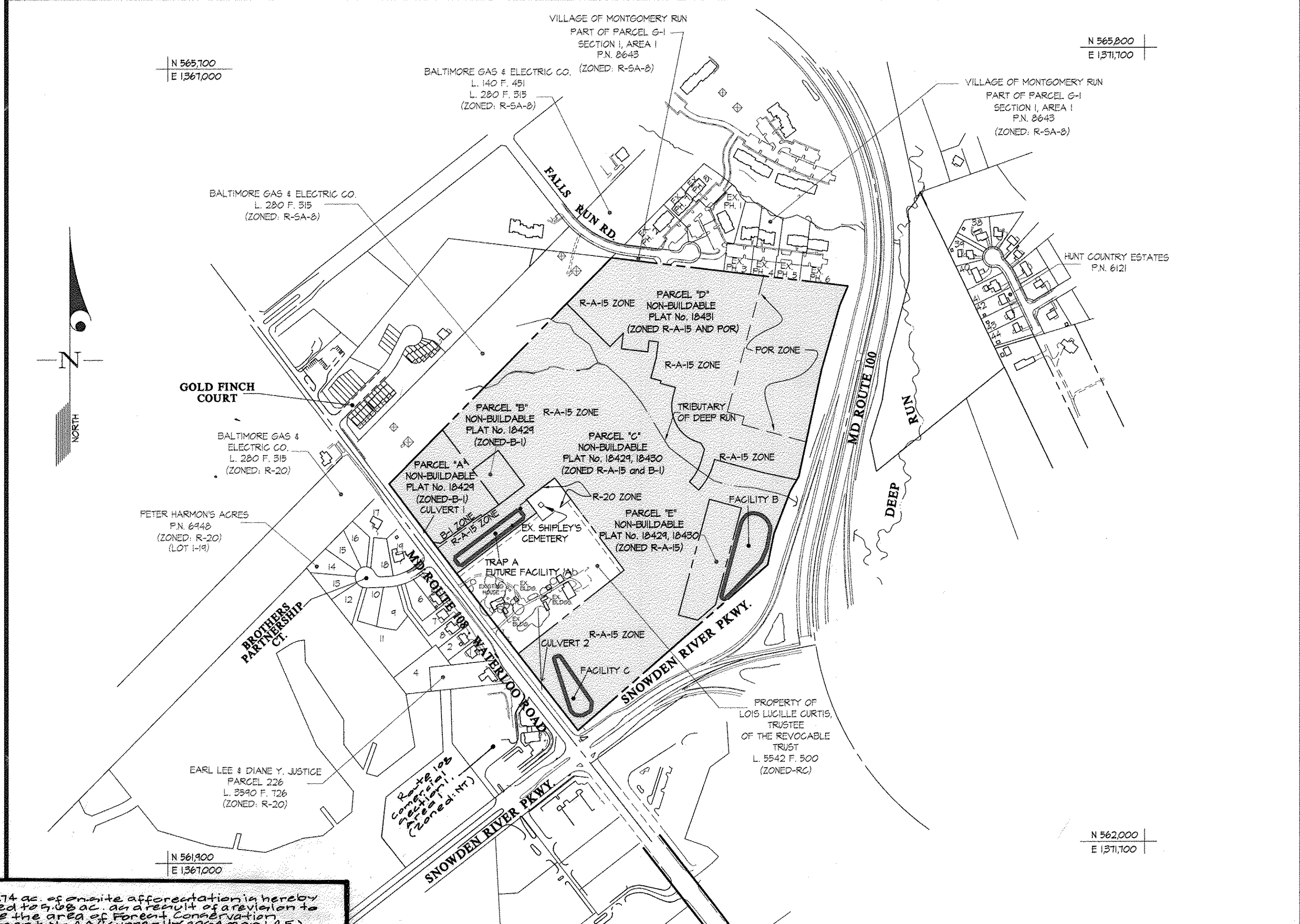
The 5.74 ac. of onsite afforestation is hereby reduced to 5.00 ac. as a result of a revision to reduce the area of Forest Conservation Easement No. 4 currently shown on the site plan. This reduction is the result of the abandonment of the 0.74 ac. of abandoned afforestation in the existing forest conservation easement. No abandonment fee was required for the 0.74 ac. of non-credited retention removed from easement No. 4. The abandonment fee of \$1,120.00 was paid with \$10,000 to the Howard County Forest Conservation Fund. The 5.00 ac. onsite afforestation is hereby reduced to 4.26 ac. as a result of a revision to reduce the area of forest conservation easement No. 4. An abandonment fee was required for the 0.74 ac. of abandoned afforestation in the existing forest conservation easement. The abandonment fee of \$1,120.00 was paid with \$10,000 to the Howard County Forest Conservation Fund. The 4.26 ac. onsite afforestation is hereby reduced to 3.52 ac. as a result of a revision to reduce the area of forest conservation easement No. 4. An abandonment fee was required for the 0.74 ac. of abandoned afforestation in the existing forest conservation easement. The abandonment fee of \$1,120.00 was paid with \$10,000 to the Howard County Forest Conservation Fund.

*ON JULY 14, 2004, WP 04-105, A WAIVER OF SECTION 16.120.C(4) WAS GRANTED WHICH REQUIRES SINGLE FAMILY ATTACHED LOTS TO HAVE AT LEAST 15' OF FRONTAGE ONTO A PUBLIC ROAD RIGHT-OF-WAY; SECTION 16.114.E(5), WHICH REQUIRES TRUNCATION OF PUBLIC ROAD RIGHT-OF-WAY BOUNDARIES WHERE PUBLIC ROADS INTERSECT (AT CORNER LOTS); AND SECTION 16.116.A.2.(1) WHICH PROHIBITS DISTURBANCE TO STREAMS AND STREAM BUFFERS, TO ALLOW CONSTRUCTION OF TWO PEDESTRIAN BRIDGES TO CROSS THE STREAMS. SUBJECT TO THE FOLLOWING 2 CONDITIONS IN THE APPROVAL LETTER:

1. THE DISTURBANCE TO THE STREAM AND STREAM BUFFER RELATED TO THE PEDESTRIAN BRIDGES SHALL BE MINIMIZED. THE PRELIMINARY PLAN SHALL SHOW THE LIMIT OF DISTURBANCE AND PROPOSED GRADING ASSOCIATED WITH THE BRIDGES, AND SHALL BE SUBJECT TO REVIEW AND APPROVAL BY THE SUBDIVISION REVIEW COMMITTEE.
2. IF IT IS DETERMINED BY THE DEED THAT SIGHT DISTANCE IS INADEQUATE AT THE INTERSECTIONS FOR WHICH TRUNCATION WAS NEEDED, THEN THE APPROPRIATE EASEMENTS MUST BE ADDED TO THE PLAN/PLAT.

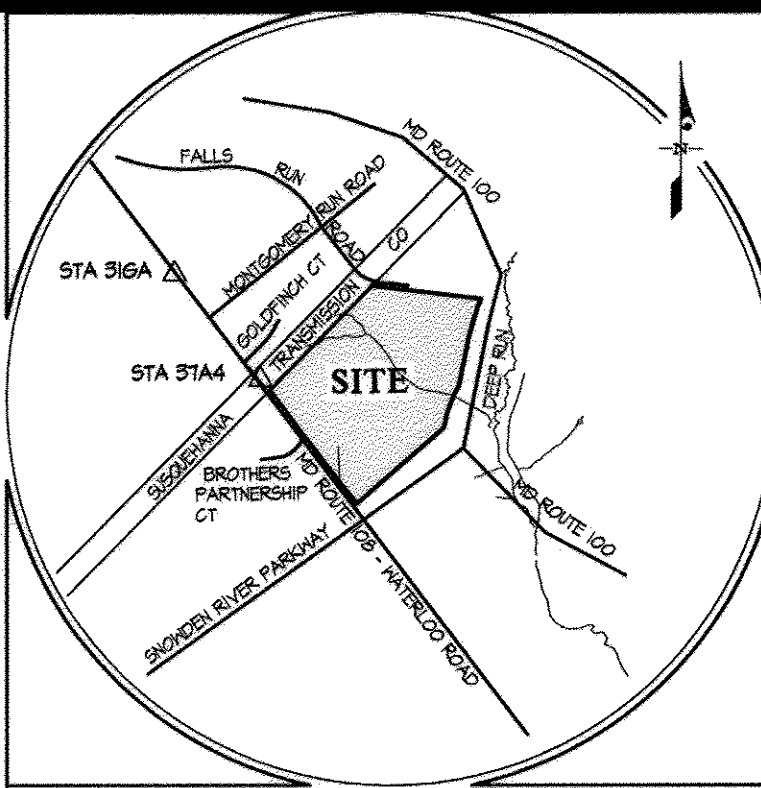
OWNER PARCELS B, D AND E
Deep Run Property Management, LLC
16 Miller Hollow Lane
Lake City, Tennessee 37164
Attn: Robert L. Curtis, Jr.
865-444-0016
OWNER PARCEL A
Shipley's Grant Office, LLC
c/o Bozzuto Properties Group, LLC
1966 Greenspring Drive
Lutherville Timonium, MD 21093
Attn: Rob Bozzuto
410-560-0300

FINAL PLAN FOR SHIPLEY'S GRANT Non-buildable Parcels "A" thru "E"



SITE OVERVIEW SCALE: 1" = 400'

HOWARD COUNTY CONTROL STATIONS
316A ELEV. = 511.65
STANDARD DISC ON CONCRETE MONUMENT
N 564,925.75, E 1361,067.65
314A ELEV. = 457.28
STANDARD DISC ON CONCRETE MONUMENT
N 565,835.91, E 1361,917.65

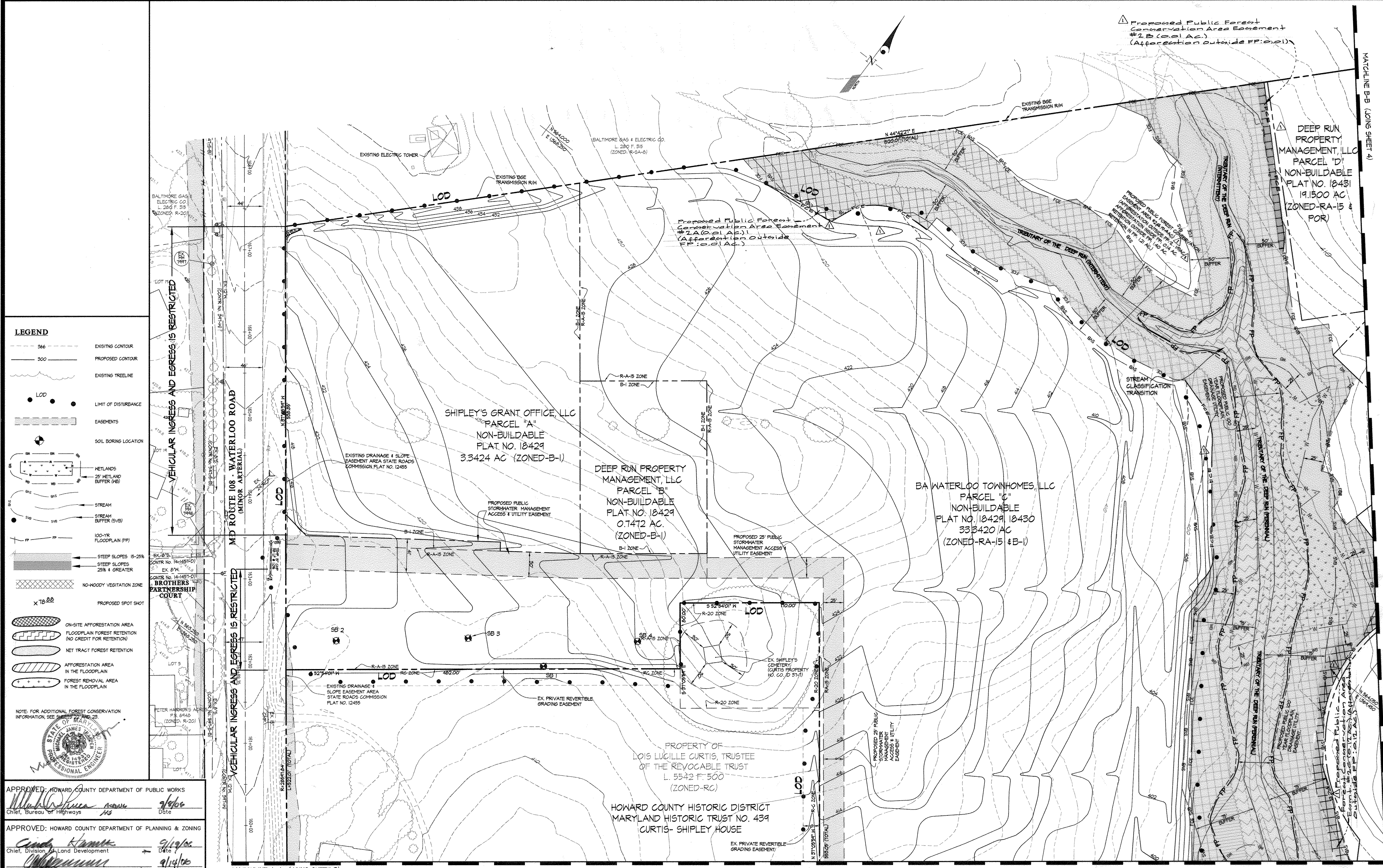


VICINITY MAP SCALE: 1" = 2,000'

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3. MASS GRADING PLAN
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7. SHALE STABILIZATION PLAN
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23. FOREST CONSERVATION NOTES, SCHEDULES, & DETAILS
24. LANDSCAPE PLAN FOR STORMWATER MANAGEMENT FACILITIES 'B' & 'C'
25. LANDSCAPE NOTES AND DETAILS

SITE ANALYSIS
1. GENERAL SITE DATA
ZONING: B-1, R-A-15 & POR PER THE 2-2-04 COMPREHENSIVE ZONING PLAN.
PROPOSED USE OF SITE: VACANT MEADOW
PROPOSED WATER AND SEWER SYSTEMS: N/A
APPLICABLE DPZ FILE REFERENCE: S 04-09, WP 04-105*, WP 06-045** and F 07-001.
PLAT REFERENCE: PLAT Nos. 18428 THROUGH 18431.
2. AREA TABULATION
GROSS AREA OF SITE = 59.6 ACRES.
GROSS AREA OF R-A-15 ZONE SITE = 47.8 ACRES.
AREA OF POR ZONE = 6.6 ACRES.
AREA OF B-1 ZONE PARCELS = 4.2 ACRES.
LIMIT OF DISTURBANCE = 30.92 ACRES.
TOTAL NUMBER OF LOTS AND PARCELS = 5
TOTAL NUMBER OF BUILDABLE LOTS = 0 ACRES.
TOTAL NUMBER OF NON-BUILDABLE PARCELS = 5
TOTAL AREA OF NON-BUILDABLE PARCELS = 59.6061 ACRES
TOTAL NUMBER OF BUILDABLE PARCEL = 0
TOTAL AREA OF BUILDABLE PARCEL = 0 ACRES
TOTAL AREA OF ROADWAYS = 5.8 ACRES
TOTAL AREA OF SUBDIVISION = 59.6061 ACRES
TOTAL AREA OF 100 YEAR FLOODPLAIN EASEMENT ON R-A-15 ZONED LAND = 1.93 ACRES.
TOTAL AREA OF STEEP SLOPES ON R-A-15 ZONED LAND = 0.4 ACRES (STEEP SLOPES ARE DEFINED IN THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SECTION 16.180(b)(32.1) AS THE GROSS AREA MINUS ALL STEEP SLOPES EXISTING AT THE TIME OF SUBDIVISION AND THE AREA WITHIN THE 100-YEAR FLOODPLAIN)

COVER SHEET SHIPLEY'S GRANT Non-buildable Parcels "A" thru "E" PLAT NUMBERS 18428 THROUGH 18431
SCALE: AS SHOWN
ZONING: R-A-15/B-1/POR
G. L. W. FILE NO.: 03006
DATE: JULY, 2006
TAX MAP - GRID: 37-1&2
SHEET: 1 OF 25



- LEGEND**
- 566 --- EXISTING CONTOUR
 - 300 --- PROPOSED CONTOUR
 - EXISTING TREELINE
 - LOD
 - LIMIT OF DISTURBANCE
 - EASEMENTS
 - SOIL BORING LOCATION
 - NETLANDS
 - 25' NETLAND BUFFER (NB)
 - STREAM
 - STREAM BUFFER (5/15)
 - 100-YR FLOODPLAIN (FP)
 - STEEP SLOPES 15-25%
 - STEEP SLOPES 25% & GREATER
 - NO-HOODY VEGETATION ZONE
 - x 10 20
 - PROPOSED SPOT SHOT
 - ON-SITE AFFORESTATION AREA
 - FLOODPLAIN FOREST RETENTION (NO CREDIT FOR RETENTION)
 - NET TRACT FOREST RETENTION
 - AFFORESTATION AREA IN THE FLOODPLAIN
 - FOREST REMOVAL AREA IN THE FLOODPLAIN



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Michael J. Gutschick 9/14/06
 Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Cindy Hammett 9/14/06
 Chief, Division of Land Development Date

[Signature] 9/14/06
 Chief, Development Engineering Division Date

MATCHLINE A-A (JOINS SHEET 3)

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE, SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20966
 TEL: 301-421-4024 BAL: 410-880-1820 DC/WA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.
2/10/06	Rev. FCE # 2 & Added FCE # 2A, 2B & 2C	WJL	MJT

DEVELOPER/OWNER PARCEL C
 BA Waterloo Townhomes, LLC
 c/o Bozzuto Homes, Inc.
 7850 Walker Drive, Suite 400
 Greenbelt, MD 20770-3203
 Attn: Duncan Sidel
 301-623-1525

MASS GRADING PLAN
SHIPLEY'S GRANT
 Non-buildable Parcels "A" thru "E"
 PLAT NUMBERS 18428 THROUGH 18431

NO ASBUILT INFORMATION
 09/08/2016
 HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE NO.
1"=50'	R-A-15/B-1/POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	2 OF 25

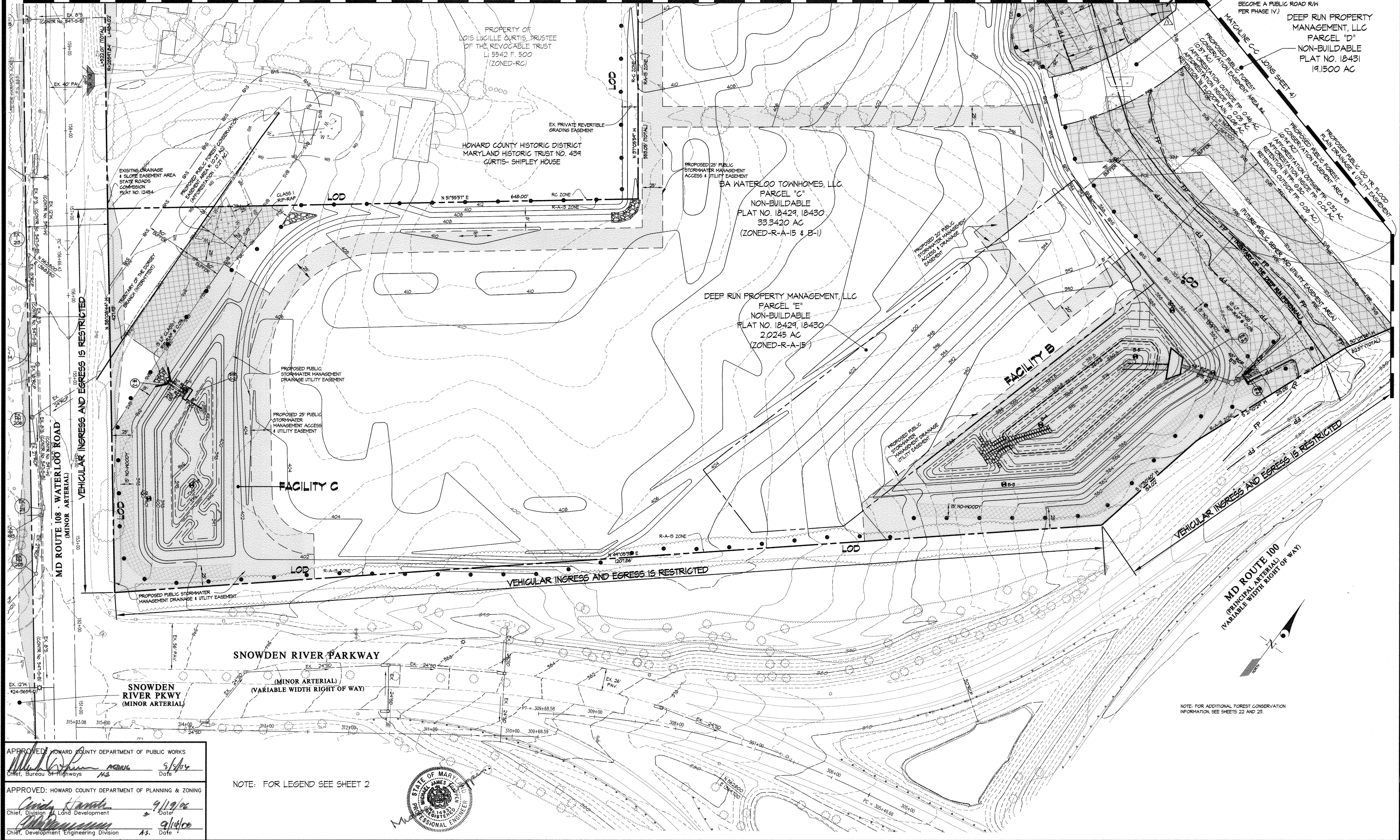
PROPOSED PUBLIC FOREST CONSERVATION EASEMENT AREA #2 (4.94 AC)
 (AFFORESTATION OUTSIDE THE FP: 1.19 AC)
 (AFFORESTATION INSIDE THE FP: 0.14 AC)
 RETENTION OUTSIDE THE FP: 1.40 AC
 RETENTION INSIDE THE FP: 1.21 AC

PROPOSED PUBLIC 100 YR. FLOOD PLAIN, DRAINAGE UTILITY EASEMENT

(THIS 60' WIDE AREA TO BECOME A PUBLIC ROAD R/W PER PHASE IV)

DEEP RUN PROPERTY MANAGEMENT, LLC
 PARCEL "D"
 NON-BUILDABLE
 PLAT NO. 18431
 19,1500 AC

MATCHLINE A-A (JOINS SHEET 2)



NOTE: FOR ADDITIONAL FOREST CONSERVATION INFORMATION, SEE SHEETS 22 AND 23.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 9/1/06
 Chief, Bureau of Highways
 Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[Signature] 9/19/06
 Chief, Division of Land Development
 Date

[Signature] 9/14/06
 Chief, Development Engineering Division
 Date

NOTE: FOR LEGEND SEE SHEET 2



GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20996
 TEL: 301-421-4024 BAL: 410-880-1820 DC/WA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.
2/16/06	REV FCB #2 TO ADDITION & ADD FCB #2	WJL	MJT

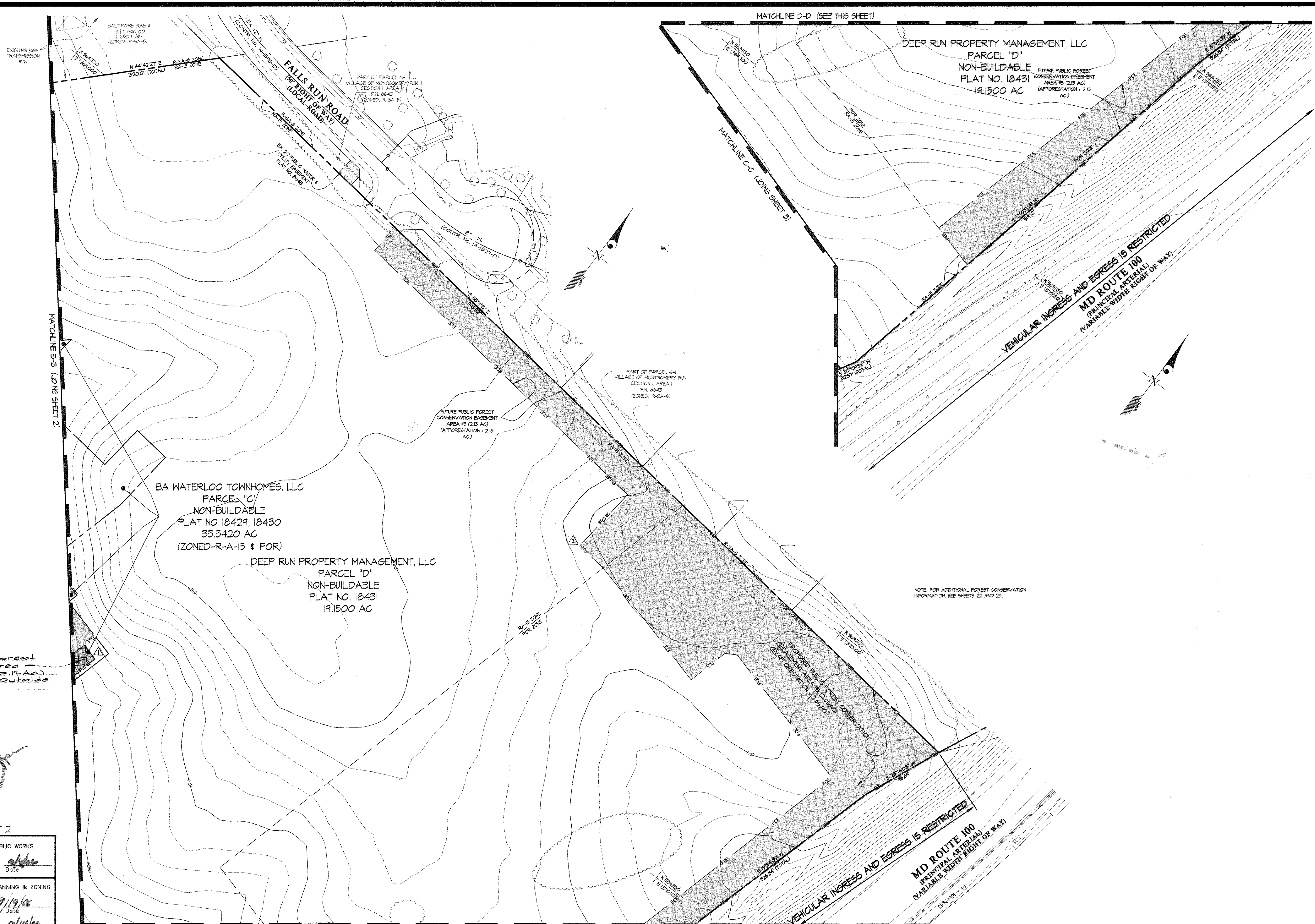
DEVELOPER/OWNER PARCEL C
 BA Waterloo Townhomes, LLC
 c/o Bozzuto Homes, Inc.
 7850 Walker Drive, Suite 400
 Greenbelt, MD 20770-3203
 Attn: Duncan Slidell
 301-623-1525

MASS GRADING PLAN
SHIPLEY'S GRANT
 Non-buildable Parcels "A" thru "E"
 PLAT NUMBERS 18428 THROUGH 18431

NO ASBUILT INFORMATION

ELECTION DISTRICT No. 1

SCALE	ZONING	G. L. W. FILE No.
1"=50'	R-A-15/B-1/ POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	3 OF 25



BALTIMORE GAS & ELECTRIC CO. 1280 F.S. (ZONED: R-SA-B)

N 44°42'21" E 1520.01' (TOTAL)

R-SA-B ZONE RA-B ZONE

FALLS RUN ROAD (RIGHT OF WAY)

CONTR. NO. 14-1827-D

RA-B ZONE

EXISTING EGE TRANSMISSION R/W

BY-10 PUBLIC WATER UTILITY EASEMENT PLAT NO. 8448

DEEP RUN PROPERTY MANAGEMENT, LLC
 PARCEL "D"
 NON-BUILDABLE
 PLAT NO. 18431
 19,1500 AC

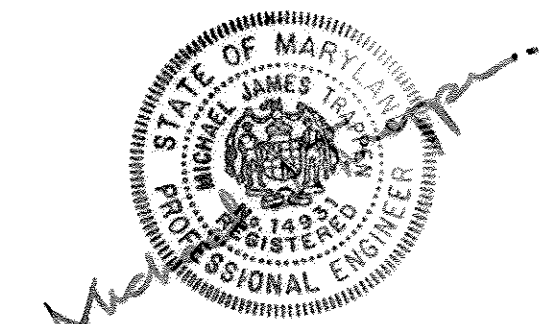
FUTURE PUBLIC FOREST CONSERVATION EASEMENT AREA #5 (2.15 AC) (AFFORESTATION: 2.15 AC)

BA WATERLOO TOWNHOMES, LLC
 PARCEL "C"
 NON-BUILDABLE
 PLAT NO 18429, 18430
 33,3420 AC
 (ZONED-R-A-15 & POR)

DEEP RUN PROPERTY MANAGEMENT, LLC
 PARCEL "D"
 NON-BUILDABLE
 PLAT NO. 18431
 19,1500 AC

Proposed Public Forest Conservation Area Easement # 2c (0.12 Ac.) (Afforestation Outside F.P.: 0.12 Ac.)

NOTE: FOR ADDITIONAL FOREST CONSERVATION INFORMATION, SEE SHEETS 22 AND 23.



NOTE: FOR LEGEND SEE SHEET 2

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 9/19/06

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 9/14/06

Chief, Development Engineering Division
 Date: 9/14/06

GLW GUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTNSVILLE OFFICE PARK
 BURTNSVILLE, MARYLAND 20996
 TEL: 301-421-4024 BAL: 410-980-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.
9-19-06	Revise FCE 5 Per abandonment approval letter A	WJL	MJT
2-0-06	Added FCE 2c Information	WJL	MJT

DEVELOPER/OWNER PARCEL C
 BA Waterloo Townhomes, LLC
 c/o Bozzuto Homes, Inc.
 7850 Walker Drive, Suite 400
 Greenbelt, MD 20770-3203
 Attn: Duncan Sidell
 301-623-1525

MASS GRADING PLAN
SHIPLEY'S GRANT
 Non-buildable Parcels "A" thru "E"
 PLAT NUMBERS 18428 THROUGH 18431

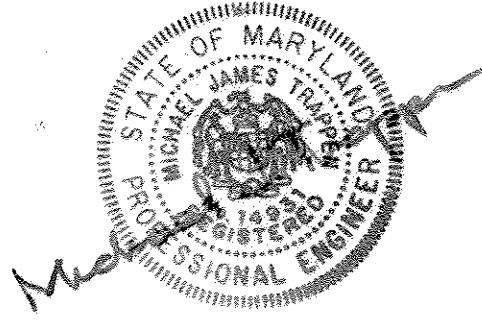
09/08/2016
 NO ASBUILT INFORMATION

ELECTION DISTRICT No. 1

SCALE 1"=50'	ZONING R-A-15/B-1/ POR	G. L. W. FILE No. 03006
DATE JULY, 2006	TAX MAP - GRID 37-1&2	SHEET 4 OF 25

SEDIMENT CONTROL LEGEND

- 566 --- EX CONTOUR
- 300 --- PROP CONTOUR
- LOD ● LIMIT OF DISTURBANCE
- SF --- PROPOSED SILT FENCE
- SSF --- PROPOSED SUPER SILT FENCE
- GM GABION MATTRESS INFLOW PROTECTION
- 3x3 C E 3x3 STABILIZED CONSTRUCTION ENTRANCE
- TEMPORARY DIKE / SHALE
- x 76 22 PROPOSED SPOT SHOT
- METLANDS --- METLANDS
- 25' METLAND BUFFER (MS) --- 25' METLAND BUFFER (MS)
- STREAM --- STREAM
- 50' BUFFER (S/B) --- 50' BUFFER (S/B)
- FCE --- FOREST CONSERVATION EASEMENT
- X --- HIGHLY VISIBLE FENCE



DEVELOPER'S/BUILDER'S CERTIFICATE

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 MARYLAND 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.

Robert C. Anderson 7/21/06
SIGNATURE OF DEVELOPER/BUILDER

ENGINEER'S CERTIFICATE

I 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.

Michael J. Troppan 7/21/06
ENGINEER'S SIGNATURE DATE

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

[Signature] 8/31/06
HOWARD SOIL CONSERVATION DISTRICT 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.

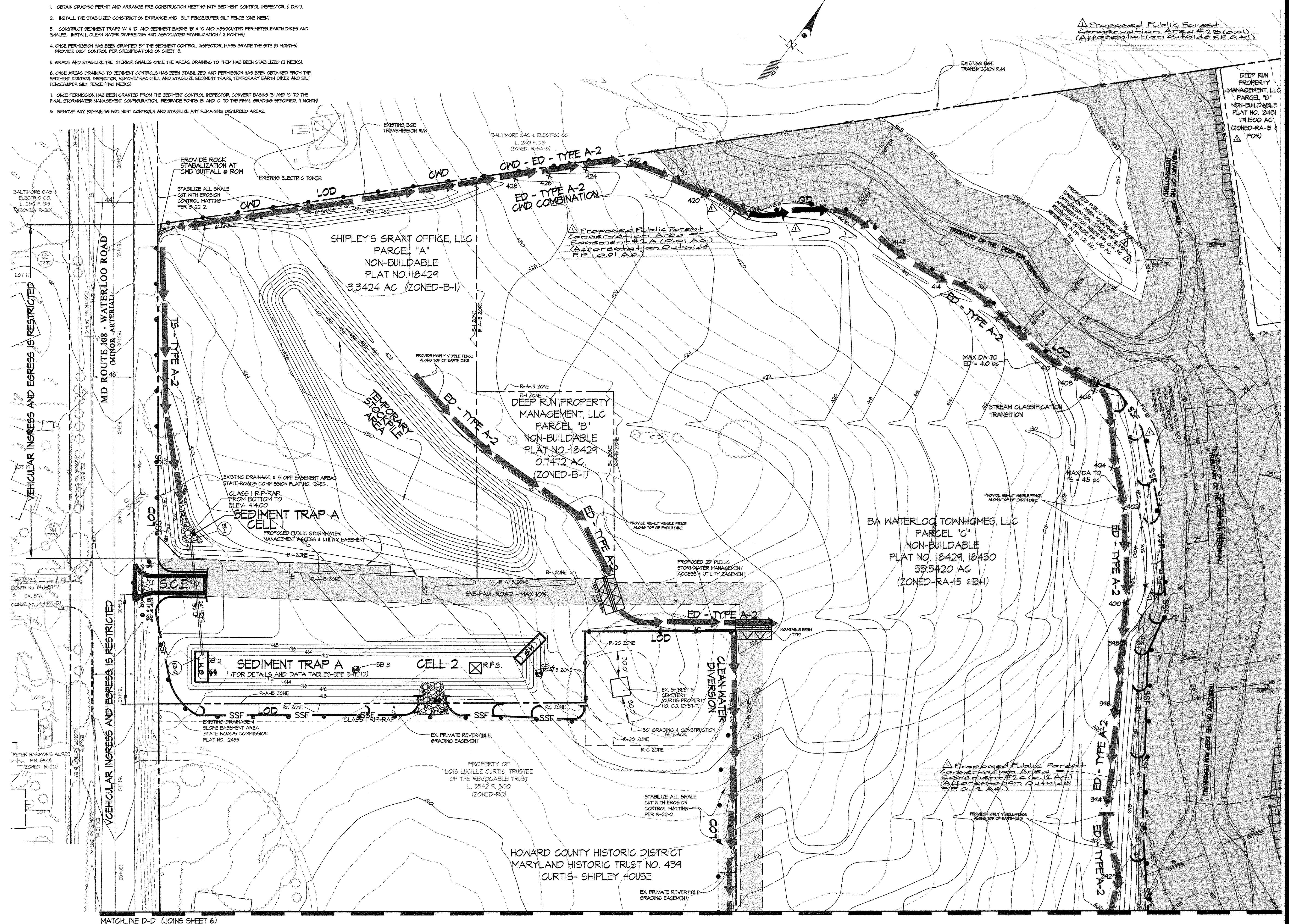
Jim Magrinos 8/31/06
USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 9/14/06
Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[Signature] 9/14/06
Chief, Division of Land Development Date
[Signature] 9/14/06
Chief, Development Engineering Division Date

SEDIMENT AND EROSION CONTROL SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT AND ARRANGE PRE-CONSTRUCTION MEETING WITH SEDIMENT CONTROL INSPECTOR. (1 DAY).
2. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AND SILT FENCE/SUPER SILT FENCE (ONE WEEK).
3. CONSTRUCT SEDIMENT TRAPS 'A' & 'C' AND ASSOCIATED PERIMETER EARTH DIKES AND SHALES. INSTALL CLEAN WATER DIVERSIONS AND ASSOCIATED STABILIZATION. (2 MONTHS).
4. ONCE PERMISSION HAS BEEN GRANTED BY THE SEDIMENT CONTROL INSPECTOR, MASS GRADE THE SITE (3 MONTHS). PROVIDE DUST CONTROL PER SPECIFICATIONS ON SHEET 15.
5. GRADE AND STABILIZE THE INTERIOR SWALES ONCE THE AREAS DRAINING TO THEM HAS BEEN STABILIZED (2 WEEKS).
6. ONCE AREAS DRAINING TO SEDIMENT CONTROLS HAS BEEN STABILIZED AND PERMISSION HAS BEEN OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE/BACKFILL AND STABILIZE SEDIMENT TRAPS, TEMPORARY EARTH DIKES AND SILT FENCE/SUPER SILT FENCE (TWO WEEKS).
7. ONCE PERMISSION HAS BEEN GRANTED FROM THE SEDIMENT CONTROL INSPECTOR, CONVERT BASINS 'B' AND 'C' TO THE FINAL STORMWATER MANAGEMENT CONFIGURATION. REGRADE PONDS 'B' AND 'C' TO THE FINAL GRADING SPECIFIED. (1 MONTH)
8. REMOVE ANY REMAINING SEDIMENT CONTROLS AND STABILIZE ANY REMAINING DISTURBED AREAS.



MATCHLINE D-D (JOINS SHEET 6)

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20886
TEL: 301-421-4024 BAL: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DEVELOPER/OWNER PARCEL C
BA Waterloo Townhomes, LLC
c/o Bozzuto Homes, Inc.
7850 Walker Drive, Suite 400
Greenbelt, MD 20770-3203
Attn: Duncan Sidel
301-623-1525

SEDIMENT CONTROL PLAN
SHIPLEY'S GRANT
Non-buildable Parcels "A" thru "E"
PLAT NUMBERS 18428 THROUGH 18431

09/08/2016
NO AS-BUILT INFORMATION

SCALE	ZONING	G. L. W. FILE No.
1"=50'	R-15/B-1/POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	5 OF 25

DATE	REVISION	BY	APP'R.
210608 REV. PCE 2, 4 ADD PCE 2A, 2B & 2C		WJL	MJT

ELECTION DISTRICT No. 1

Swale Section	height	Max Slope	Manning's n	MAX DA (acre)	Q10 (cfs)	V10 (fps)	Depth (ft)	Bottom Width(ft)	Width(ft)
1	1	0.11	0.030	0.67	1.15	4.42	0.29	0	6
2	1	0.04	0.030	2.53	4.33	4.22	0.59	0	6
3	1	0.03	0.030	0.92	1.97	2.94	0.42	0	6
4	1	0.05	0.030	1.71	2.92	4.16	0.49	0	6
5	1	0.05	0.030	1.56	2.67	4.06	0.47	0	6
6	1	0.03	0.030	3.09	5.28	3.98	0.67	0	6
7	1	0.03	0.030	4.81	8.23	4.44	0.79	0	6
8	1	0.03	0.030	6.11	10.45	4.72	0.86	0	6
9	1	0.06	0.030	0.68	1.16	3.54	0.33	0	6
10	1.5	0.01	0.030	8.80	11.83	3.21	1.1	0	9.00
11	1.5	0.01	0.030	7.89	13.49	3.67	1.11	0	9.00
12	1	0.08	0.030	0.76	1.30	4.04	0.33	0	6
13	1.5	0.03	0.030	8.64	14.77	5.14	0.98	0	9.00
14	1.5	0.02	0.030	9.49	16.23	4.52	1.09	0	9.00
15	1	0.04	0.030	2.25	3.85	4.09	0.56	0	6
16	1.5	0.02	0.030	11.73	20.98	4.77	1.19	0	9.00
17	1	0.02	0.030	2.45	4.18	3.22	0.66	0	6
18	1	0.03	0.030	4.33	7.40	4.33	0.75	0	6
19	1.5	0.04	0.030	16.36	27.88	5.94	0.57	6.5	15.50
20	1	0.07	0.030	0.91	1.56	4.02	0.35	0	6
21	1	0.05	0.030	2.28	3.90	4.46	0.54	0	6

NOTE:
FOR SWALE SPECIFICATIONS SEE CHART THIS SHEET
FOR SWALE DETAILS SEE SHEET NO. 13

SEDIMENT CONTROL LEGEND

- 366 --- EX. CONTOUR
- 300 --- PROP. CONTOUR
- LOD --- LIMIT OF DISTURBANCE
- x 75 @ 2' --- PROPOSED SPOT SHOT
- GRASS MATTING STABILIZATION PER 6-22-2 (SEE SHEET 10)



DEVELOPER'S/BUILDER'S CERTIFICATE
I HEREBY 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 MARYLAND 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.

Robert C. Cochran 7/21/06
SIGNATURE OF DEVELOPER/BUILDER DATE

ENGINEER'S CERTIFICATE
I 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.

Michael J. Troppa 7/21/06
ENGINEER'S SIGNATURE DATE

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

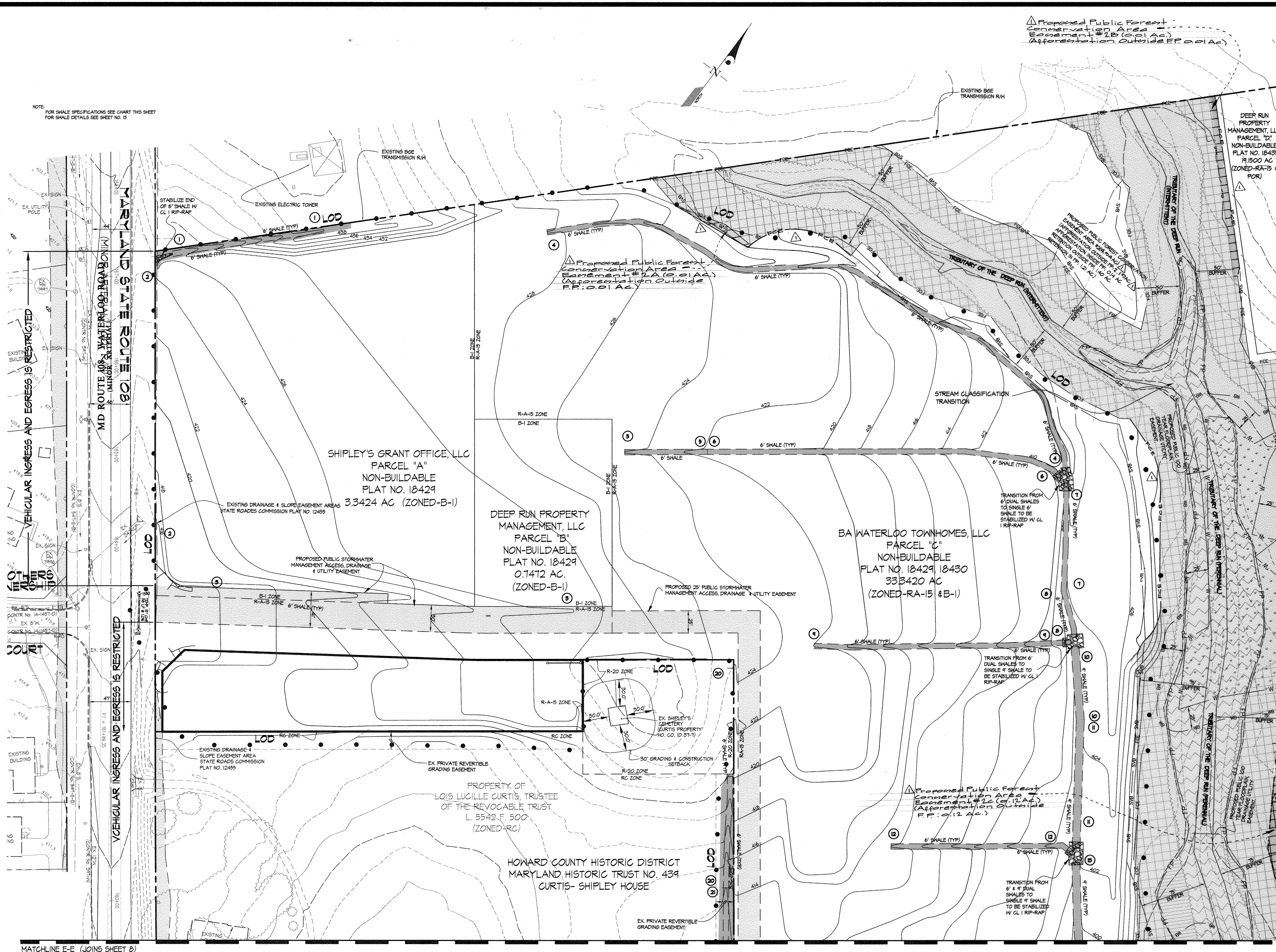
John S. Saly 8/31/06
HOWARD SOIL CONSERVATION DISTRICT DATE

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 Muzylas 8/31/06
UEDA NATURAL RESOURCES CONSERVATION SERVICE DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Michelle M. ... 9/19/06
Chief, Bureau of Highways DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Cindy Hamilton 9/19/06
Chief, Division of Land Development DATE
John ... 9/19/06
Chief, Development Engineering Division DATE



GLWGUTSCHICK LITTLE & WEBER, P.A. CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS 3909 NATIONAL DRIVE, SUITE 250 - BURTNSVILLE OFFICE PARK BURTNSVILLE, MARYLAND 20866 TEL: 301-421-4024 BAL: 410-880-1820 DC/VA: 301-985-2524 FAX: 301-421-4186		DEVELOPER/OWNER PARCEL C BA Waterloo Townhomes, LLC c/o Bozzuto Homes, Inc. 7850 Walker Drive, Suite 400 Greenbelt, MD 20770-3203 Attn: Duncan Sildell 301-623-1525		SWALE STABILIZATION PLAN SHIPLEY'S GRANT Non-buildable Parcels "A" thru "E" PLAT NUMBERS 18428 THROUGH 18431 HOWARD COUNTY, MARYLAND		SCALE 1"=50' DATE JULY, 2006	ZONING R-A-15/B-1/ POR TAX MAP - GRID 37-1&2	G. L. W. FILE NO. 03006 SHEET 7 OF 25
REVISION 2.10.06 Rev. FCE 2 & Added FCE 2A, 2B & 2C DATE BY APPR.		ELECTION DISTRICT No. 1		09/08/2016 NO AS-BUILT INFORMATION				

LEGEND

- SOILS DELINEATION LINE
- B' SOIL
- C' SOIL
- D' SOIL
- EXISTING DRAINAGE DIVIDE
- TC PATH
- DRAINAGE AREA LABEL

EXISTING DISCHARGE SUMMARY

	Q1 (cfs)	Q10 (cfs)
STUDY POINT 1 (TRAP A OUTFALL)	0.11	2.52
STUDY POINT 2	2.33	25.08
BASIN C OUTFALL	0.12	2.88
STUDY POINT 3 (BASIN B OUTFALL)	1.20	21.63
STUDY POINT 4 (BASIN D OUTFALL)	0.15	1.45

DEVELOPER'S/BUILDER'S CERTIFICATE

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 MARYLAND 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.

Robert C. Anderson 7/21/06
SIGNATURE OF DEVELOPER/BUILDER DATE

ENGINEER'S CERTIFICATE

I 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.

Michael J. Troppa 7/21/06
ENGINEER'S SIGNATURE 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 8/31/06
HOWARD SOIL CONSERVATION DISTRICT 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.

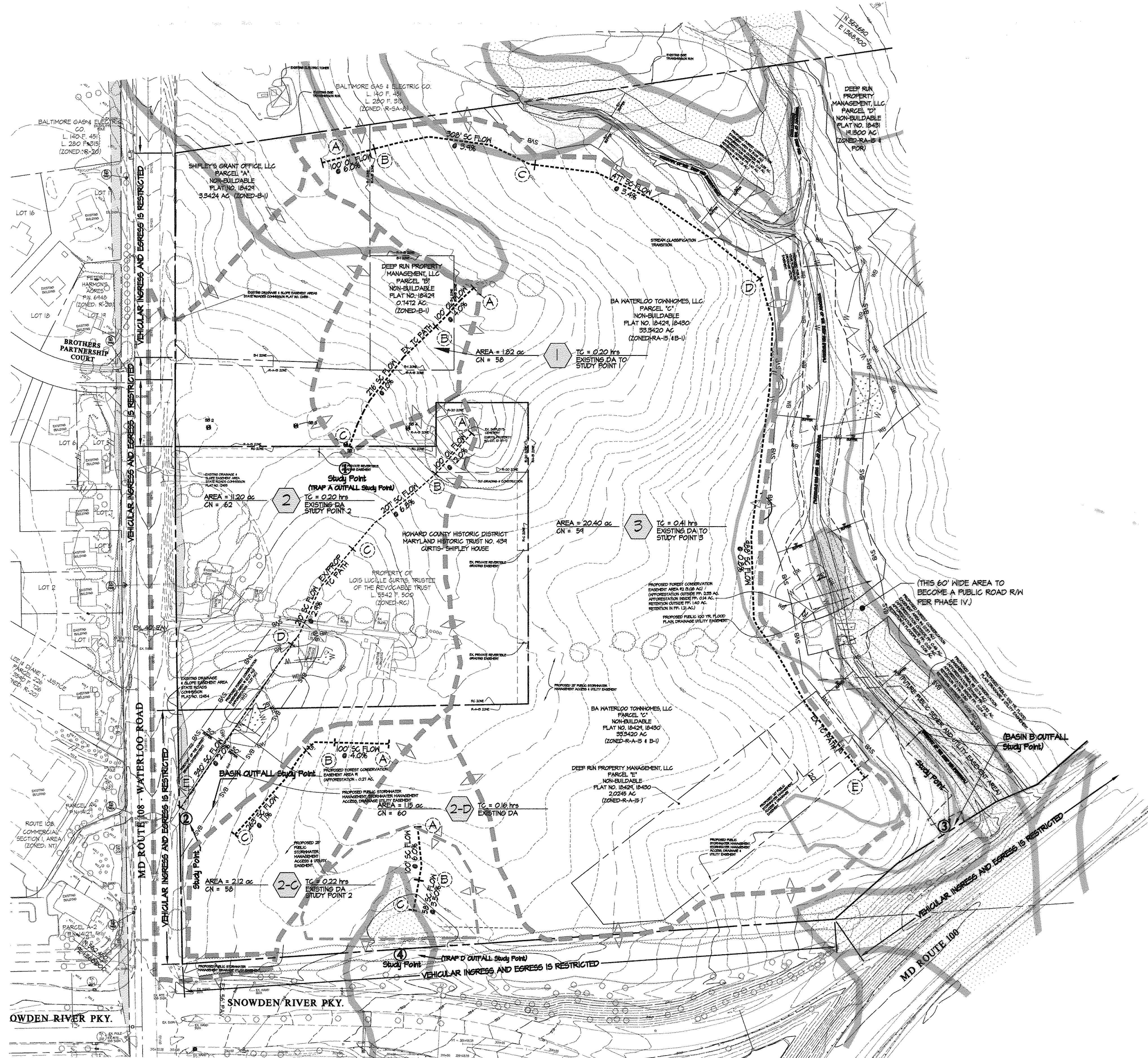
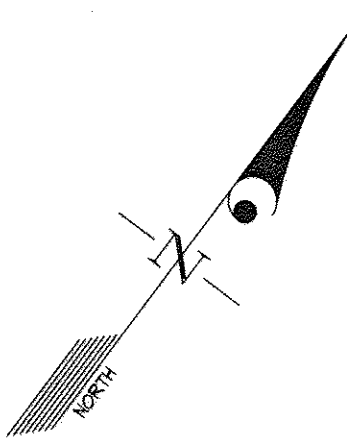
Jim Meyer 8/31/06
USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Michael J. P... 9/14/06
Chief, Bureau of Highways DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Andy Hamilton 9/19/06
Chief, Division of Land Development DATE
... 9/14/06
Chief, Development Engineering Division DATE



THIS PLAN IS FOR STORMWATER MANAGEMENT HYDRAULIC ANALYSIS AND DRAINAGE AREA INFORMATION ONLY
FOR PLAN INFORMATION, SEE SHEETS 2 THROUGH 4

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTNSVILLE OFFICE PARK
BURTNSVILLE, MARYLAND 20966
TEL: 301-421-4024 BALT: 410-880-1820 DC/WA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APPR.

DEVELOPER/OWNER PARCEL C
BA Waterloo Townhomes, LLC
c/o Bozzuto Homes, Inc.
7850 Walker Drive, Suite 400
Greenbelt, MD 20770-3203
Attn: Duncan Slidell
301-623-1525

EXISTING CONDITIONS SEDIMENT CONTROL DRAINAGE AREA MAP
SHIPLEY'S GRANT
Non-buildable Parcels "A" thru "E"
PLAT NUMBERS 18428 THROUGH 18431
NO ASBUILT INFORMATION
9/18/2016
HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE NO.
1"=100'	R-A-15/B-1/ POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	9 OF 25

LEGEND

- SOILS DELINEATION LINE
- B' SOIL
- C' SOIL
- D' SOIL
- INTERIM DRAINAGE DIVIDE
- TC PATH
- EXISTING DRAINAGE AREA LABEL
- INTERIM/MORST-CASE DRAINAGE AREA LABEL

PEAK DISCHARGE SUMMARY

		Q1 (cfs)	Q10 (cfs)
STUDY POINT 1 (TRAP A OUTFALL)	EX.	0.11	2.52
	PROP.	0.00	1.28
STUDY POINT 2	EX.	2.33	25.08
	PROP.	0.42	21.44
BASIN C OUTFALL	EX.	0.12	2.88
	PROP.	0.11	2.82
STUDY POINT 3 (BASIN B OUTFALL)	EX.	1.20	21.63
	PROP.	1.16	4.13
STUDY POINT 4 (BASIN D OUTFALL)	EX.	0.15	1.95
	PROP.	0.00	4.41

DEVELOPER'S/BUILDER'S CERTIFICATE

"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 MARYLAND 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."

Blair C. Anderson 7/21/06
SIGNATURE OF DEVELOPER/BUILDER

ENGINEER'S CERTIFICATE

"I 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."

Michael J. Tropp 7/21/06
ENGINEER'S SIGNATURE DATE

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

John J. Ly 8/31/06
HOWARD SOIL CONSERVATION DISTRICT 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.

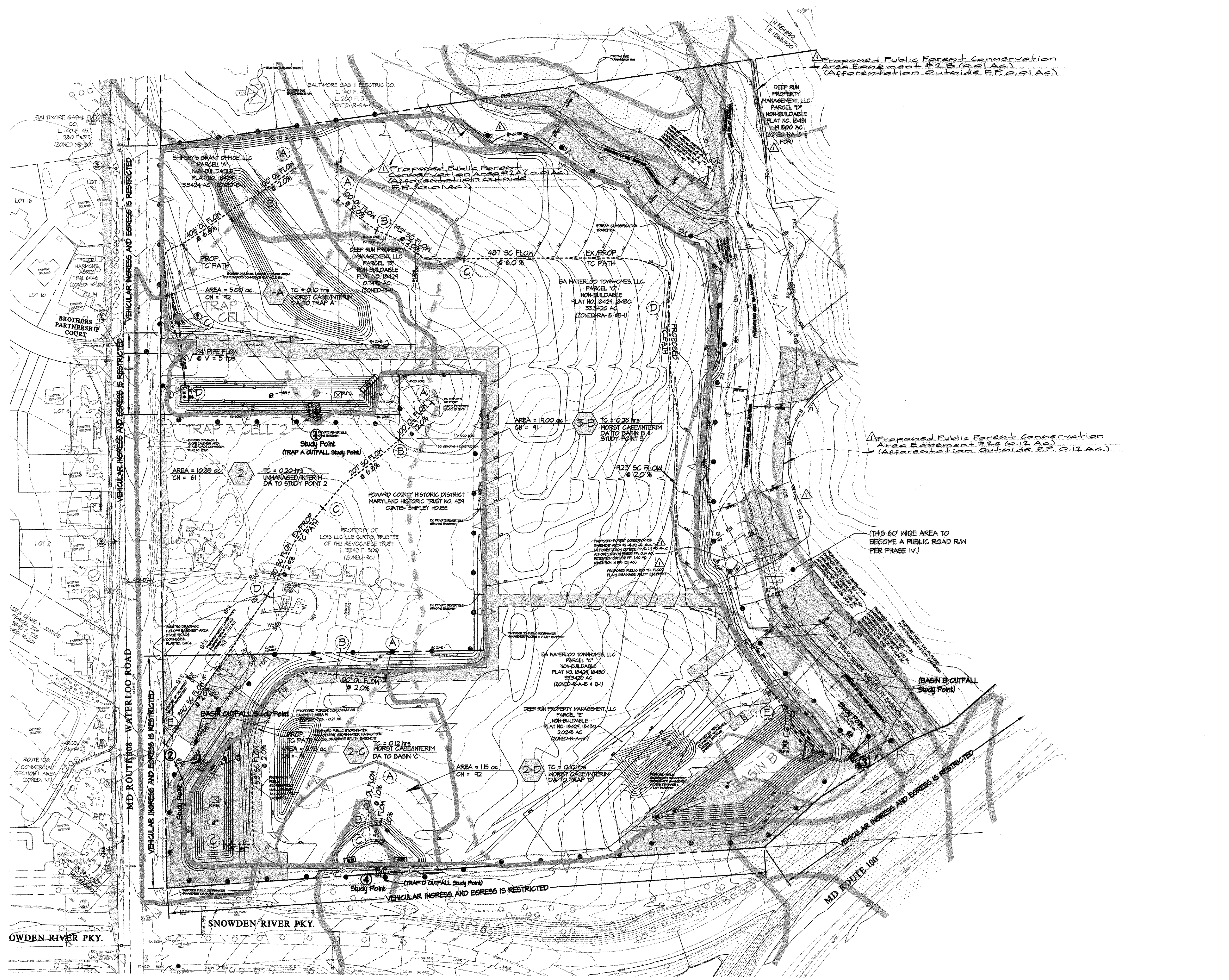
Jim Myers 8/31/06
USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Michael J. Tropp 9/4/06
Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Cheryl Hamilton 9/19/06
Chief, Division of Land Development Date
Michael J. Tropp 9/14/06
Chief, Development Engineering Division Date



**THIS PLAN IS FOR STORMWATER MANAGEMENT HYDRAULIC ANALYSIS AND DRAINAGE AREA INFORMATION ONLY
FOR PLAN INFORMATION, SEE SHEETS 2 THROUGH 4**

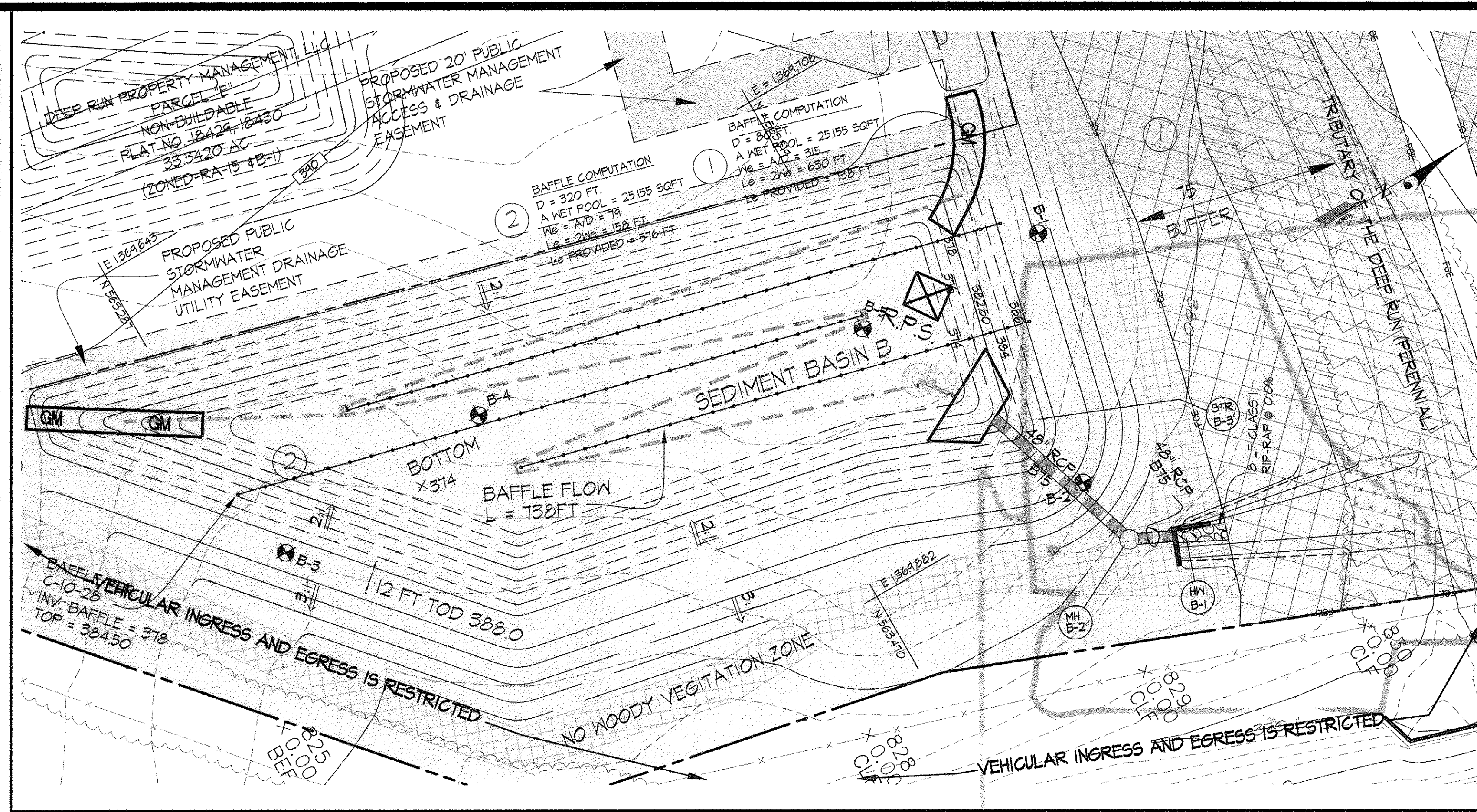
GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20996
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.
2/16/06	REV. FCE 2 & ADD FCE 2A, 2B & 2C	WJL	MIT

DEVELOPER/OWNER PARCEL C
BA Waterloo Townhomes, LLC
c/o Bozzuto Homes, Inc.
7850 Walker Drive, Suite 400
Greenbelt, MD 20770-3203
Attn: Duncan Slidell
301-623-1525

INTERIM CONDITION SEDIMENT CONTROL DRAINAGE AREA MAP
SHIPLEY'S GRANT
Non-buildable Parcels "A" thru "E"
PLAT NUMBERS 18428 THROUGH 18431
NO ASBUILT INFORMATION
09/08/2016

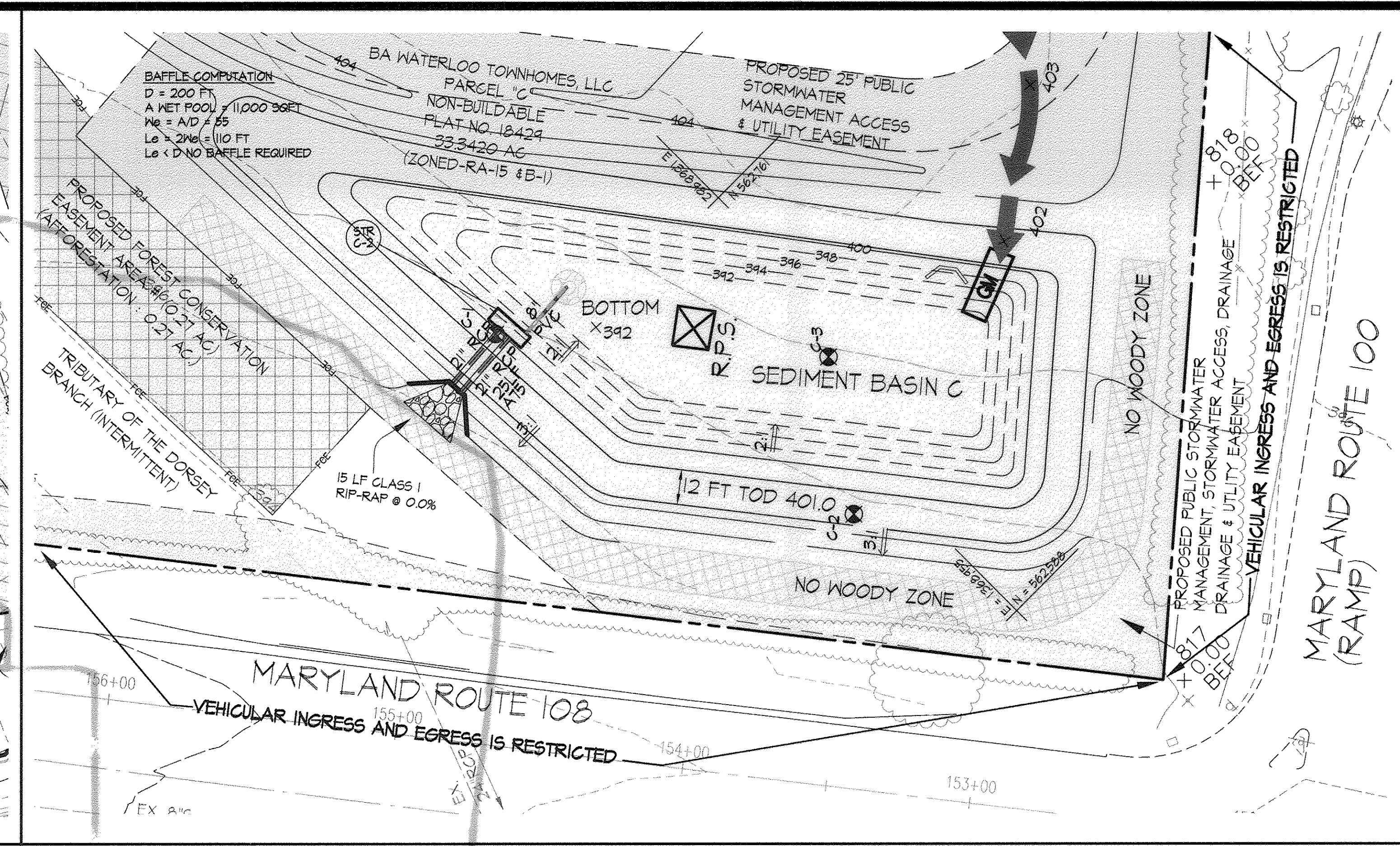
SCALE	ZONING	G. L. W. FILE No.
1"=100'	R-A-15/B-1/ POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	10 OF 25



This detail is for Basin B baffel design. For plan information, see sheet 3.

SEDIMENT BASIN 'B' ENLARGEMENT

SCALE: 1" = 30'



This detail is for Basin C baffel design. For plan information, see sheet 3.

SEDIMENT BASIN 'C' ENLARGEMENT

SCALE: 1" = 30'

DEVELOPERS/BUILDERS CERTIFICATE

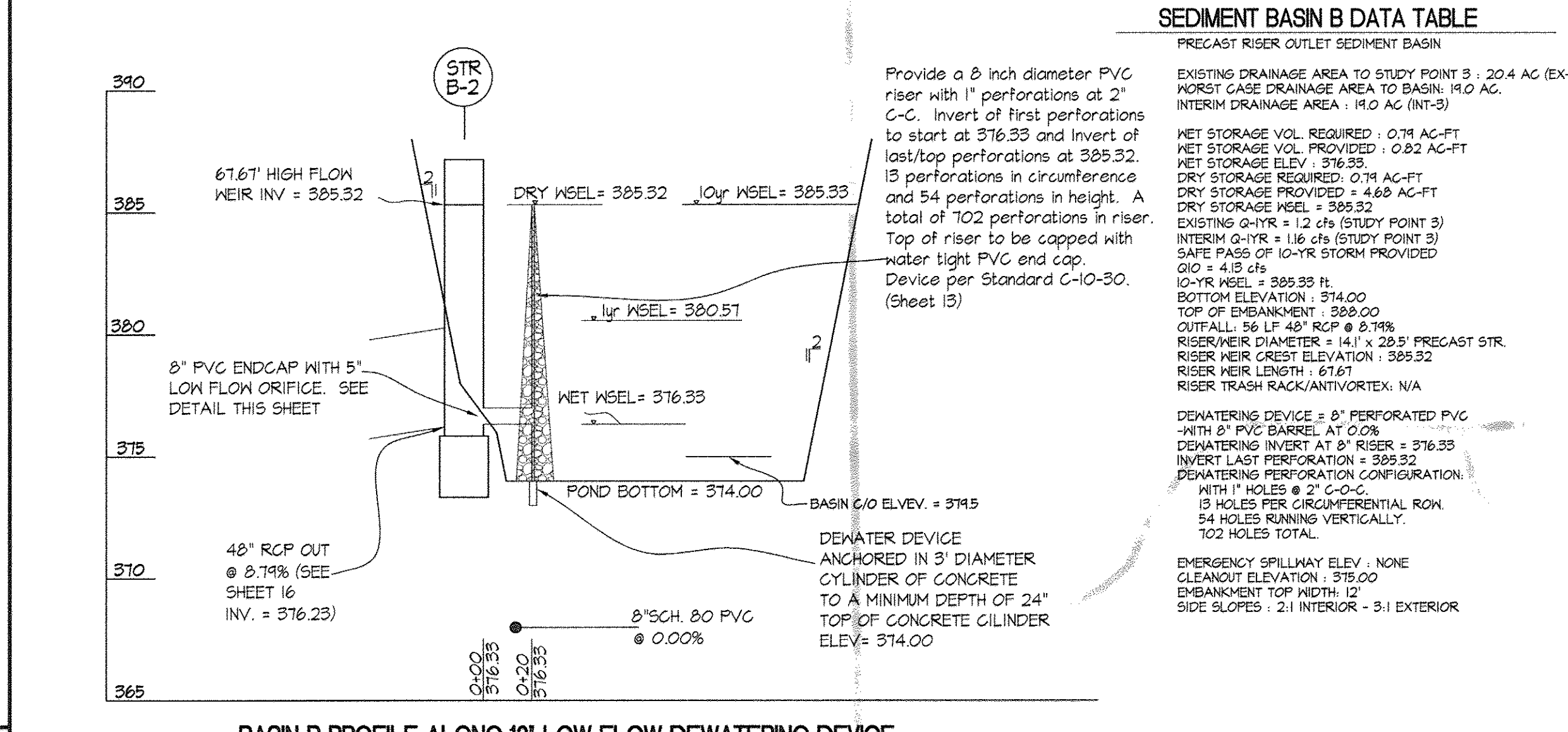
"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONS INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND 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."

Robert C. Anderson 7/21/06
SIGNATURE OF DEVELOPER/BUILDER DATE

ENGINEER'S CERTIFICATE

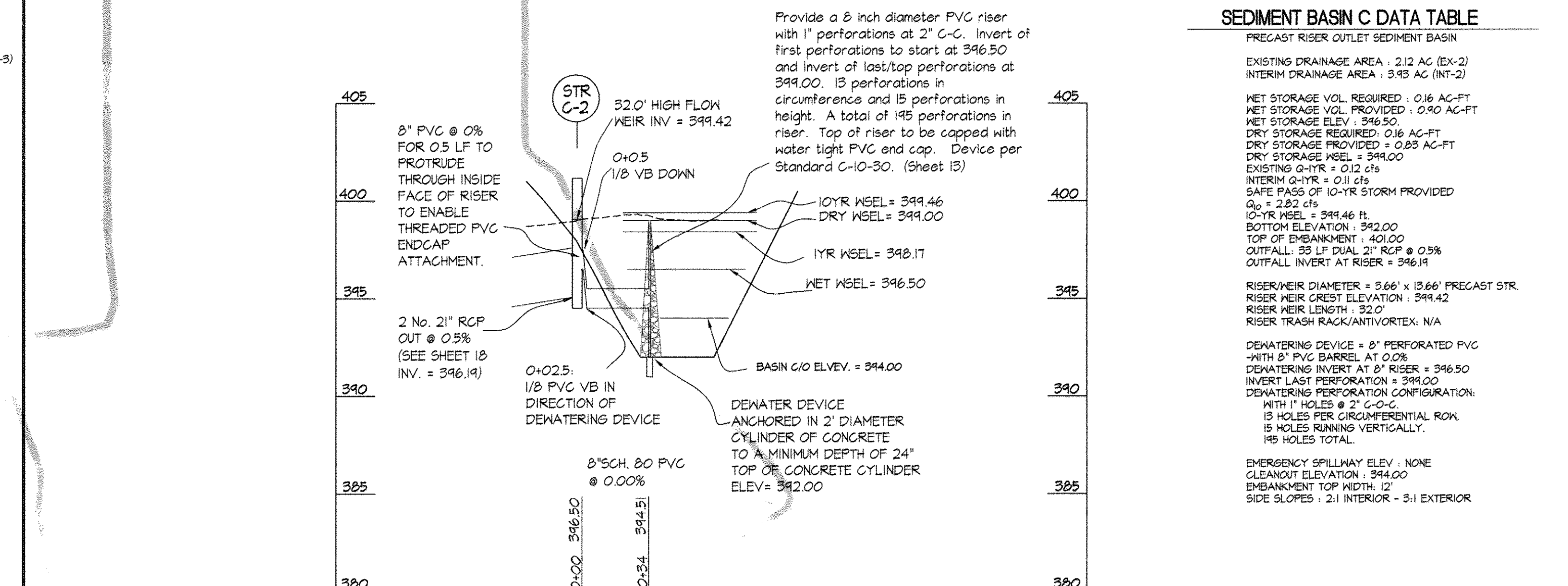
"I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER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

Michael J. Trapp 7/21/06
ENGINEER'S SIGNATURE DATE



BASIN B PROFILE ALONG 12" LOW FLOW DEWATERING DEVICE

SCALE: (H) 1" = 50' (V) 1" = 5'



BASIN C PROFILE ALONG 8" LOW FLOW DEWATERING DEVICE

SCALE: (H) 1" = 50' (V) 1" = 5'

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

Michael J. Trapp 8/31/06
HOWARD SOIL CONSERVATION DISTRICT DATE

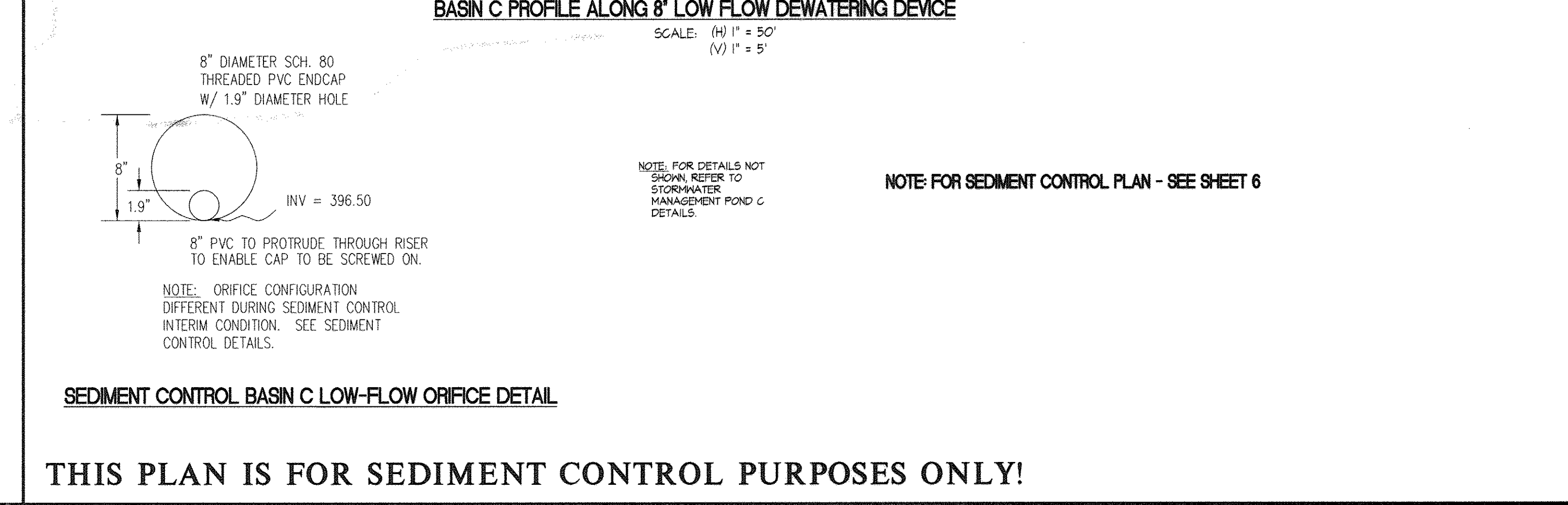
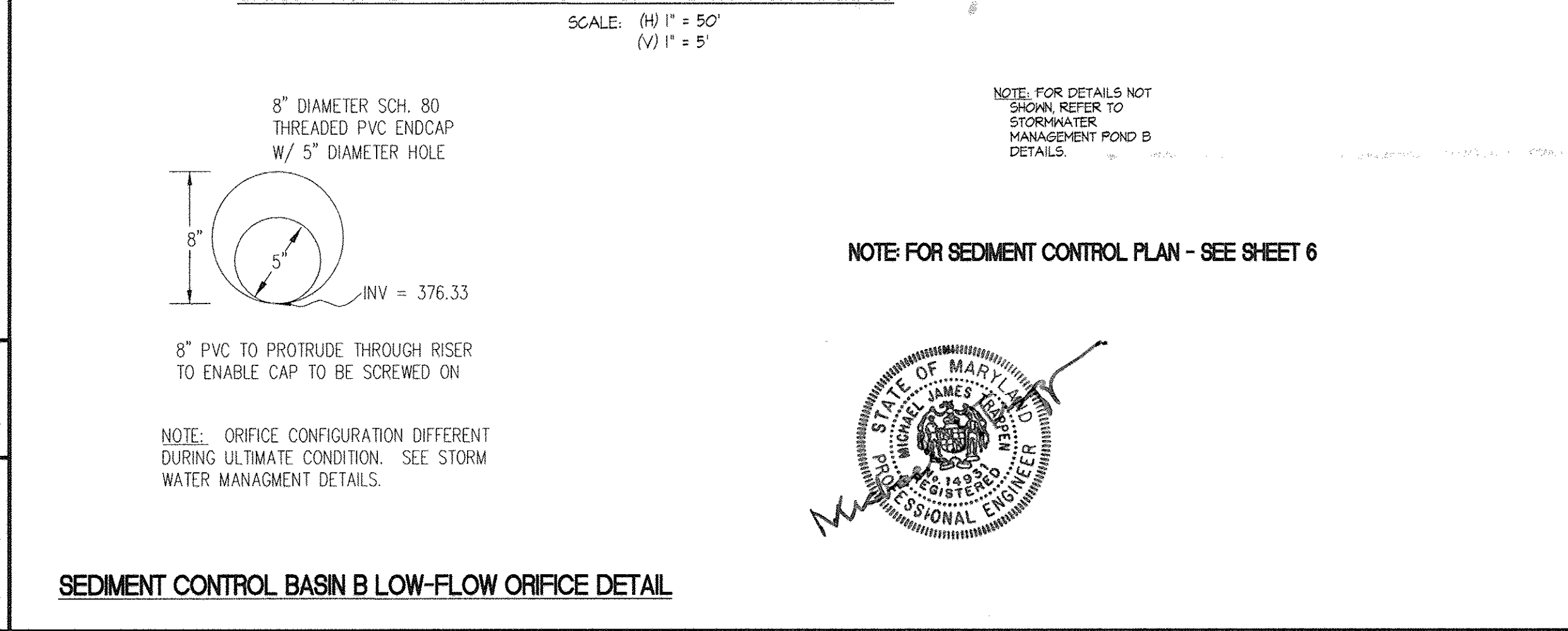
THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL REQUIREMENTS FOR SMALL POND CONSTRUCTION SOIL EROSION AND SEDIMENT CONTROL.

Jim Moya 8/31/06
USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Michael J. Trapp 8/31/06
Chief, Bureau of Highways Date

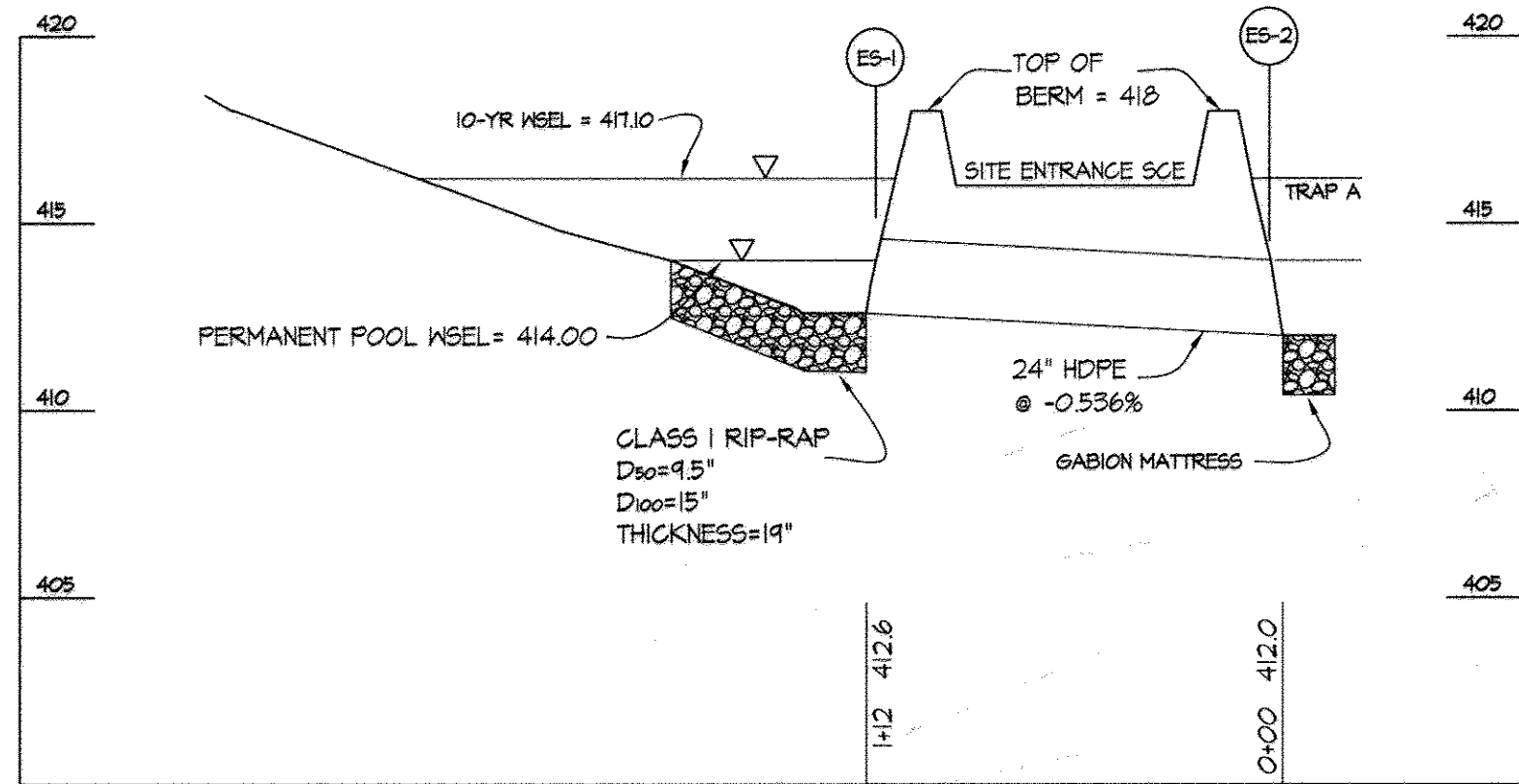
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Cathy Hanna 9/19/06
Chief, Division of Land Development Date

Michael J. Trapp 9/14/06
Chief, Development Engineering Division Date

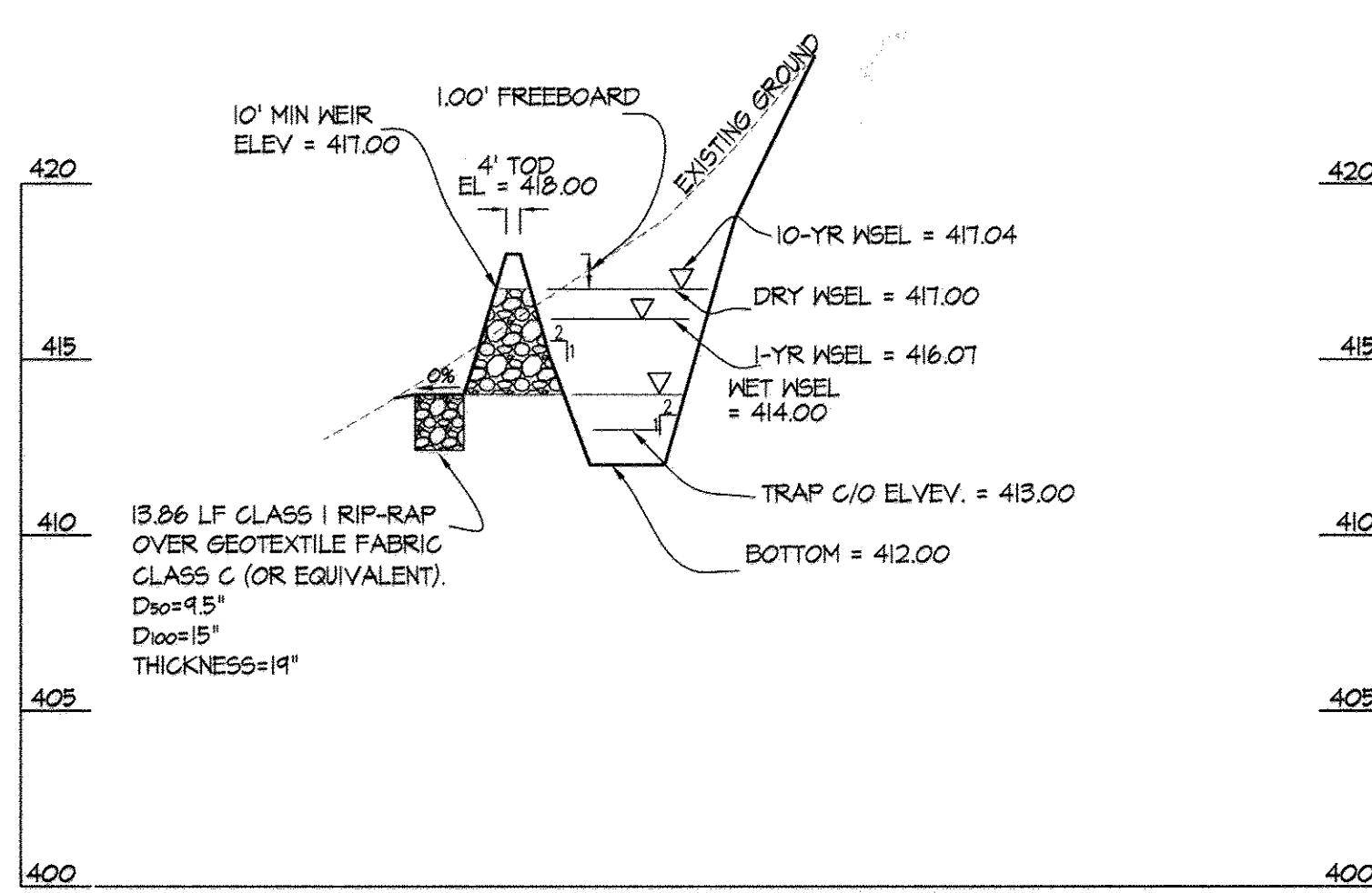


THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY!

GLWGUTSCHICK LITTLE & WEBER, P.A. CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS 3909 NATIONAL DRIVE - SUITE 250 - BURTOWNSVILLE OFFICE PARK BURTOWNSVILLE, MARYLAND 20886 TEL: 301-421-4024 BAL: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186		DEVELOPER/OWNER PARCEL C BA Waterloo Townhomes, LLC c/o Bozzuto Homes, Inc. 7850 Walker Drive, Suite 400 Greenbelt, MD 20770-3203 Attn: Duncan Siddell 301-623-1525		SEDIMENT CONTROL BASIN 'B' & 'C' DETAILS 09/08/2016 SHIPLEY'S GRANT Non-buildable Parcels "A" thru "E" PLAT NUMBERS 18428 THROUGH 18431 HOWARD COUNTY, MARYLAND		SCALE NO SCALE	ZONING R-A-15/B-1/ POR	G. L. W. FILE No. 03006
DATE: _____ REVISION: _____ BY: _____ APP'R: _____		ELECTION DISTRICT No. 1		DATE JULY, 2006	TAX MAP - GRID 37-1&2	SHEET 11 OF 25	F-06-019	



SEDIMENT TRAP A - PROFILE THROUGH ES-1 TO ES-2
SCALE: (H) 1" = 50'
(V) 1" = 5'



SEDIMENT TRAP A - PROFILE THROUGH PRINCIPLE SPILLWAY
SCALE: (H) 1" = 50'
(V) 1" = 5'

SEDIMENT TRAP A DATA TABLE

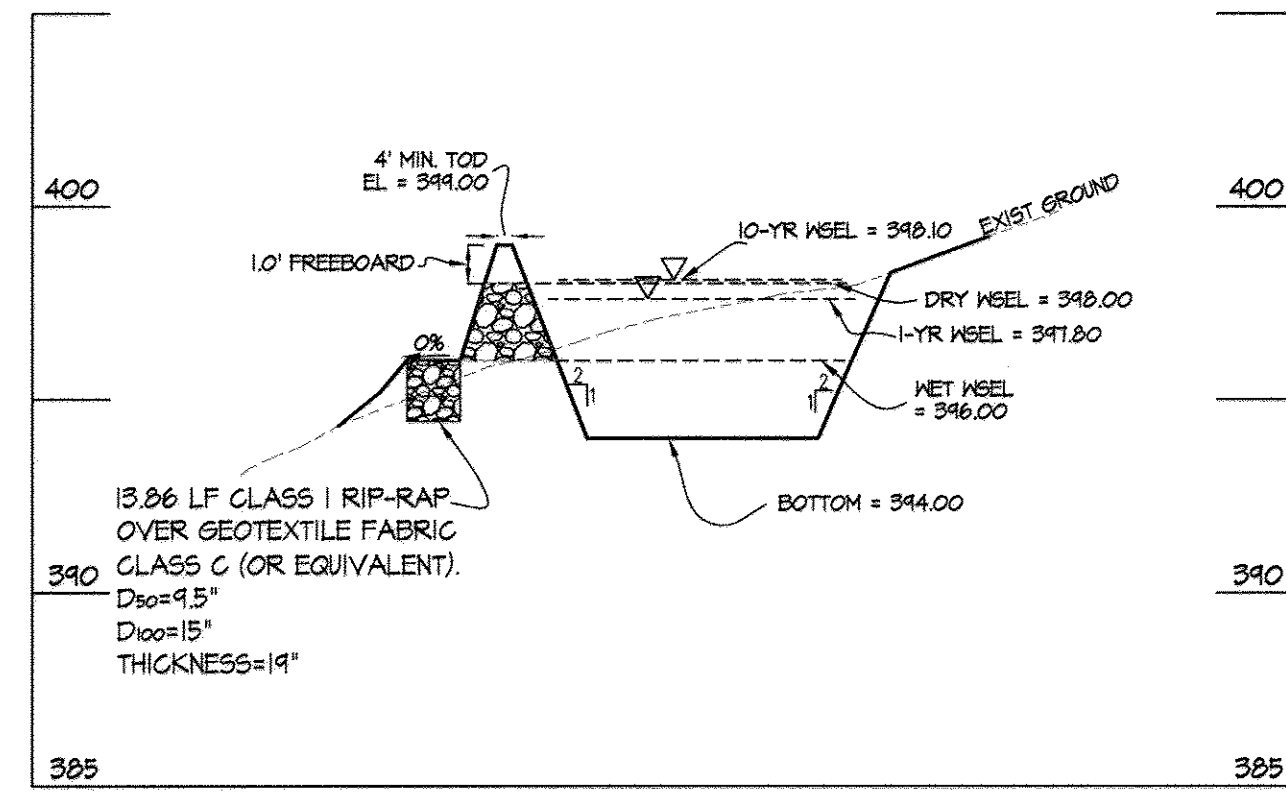
STONE OUTLET SEDIMENT TRAP

EXISTING DRAINAGE AREA : 1.82 AC (EX-I)
INTERIM DRAINAGE AREA : 5.00 AC (INT-I)

NET STORAGE VOL. REQUIRED : 0.21 AC-FT
NET STORAGE VOL. PROVIDED : 0.31 AC-FT
NET STORAGE ELEV. : 414.00
DRY STORAGE REQUIRED : 0.21 AC-FT
DRY STORAGE PROVIDED : 1.15 AC-FT
DRY STORAGE WSEL : 417.00
EXISTING Q-TYR : 0.11 cfs (STUDY POINT I)
INTERIM Q-TYR : 0.00 cfs (STUDY POINT I)
SAFE PASS OF 10-YR STORM PROVIDED
Q₀ = 1.28 cfs
10-YR WSEL = 417.10 FT
BOTTOM ELEVATION : 412.00
TOP OF EMBANKMENT : 418.00
WEIR CREST ELEVATION : 417.00
WEIR LENGTH : 20'

EMERGENCY SPILLWAY ELEV. : NONE
CLEANOUT ELEVATION : 415.00
EMBANKMENT TOP WIDTH : 8'
SIDE SLOPES : 2:1 INTERIOR - 3:1 EXTERIOR

SEDIMENT TRAP A DETAIL



SEDIMENT TRAP D - PROFILE THROUGH PRINCIPAL SPILLWAY
SCALE: (H) 1" = 50'
(V) 1" = 5'

SEDIMENT TRAP D DATA TABLE

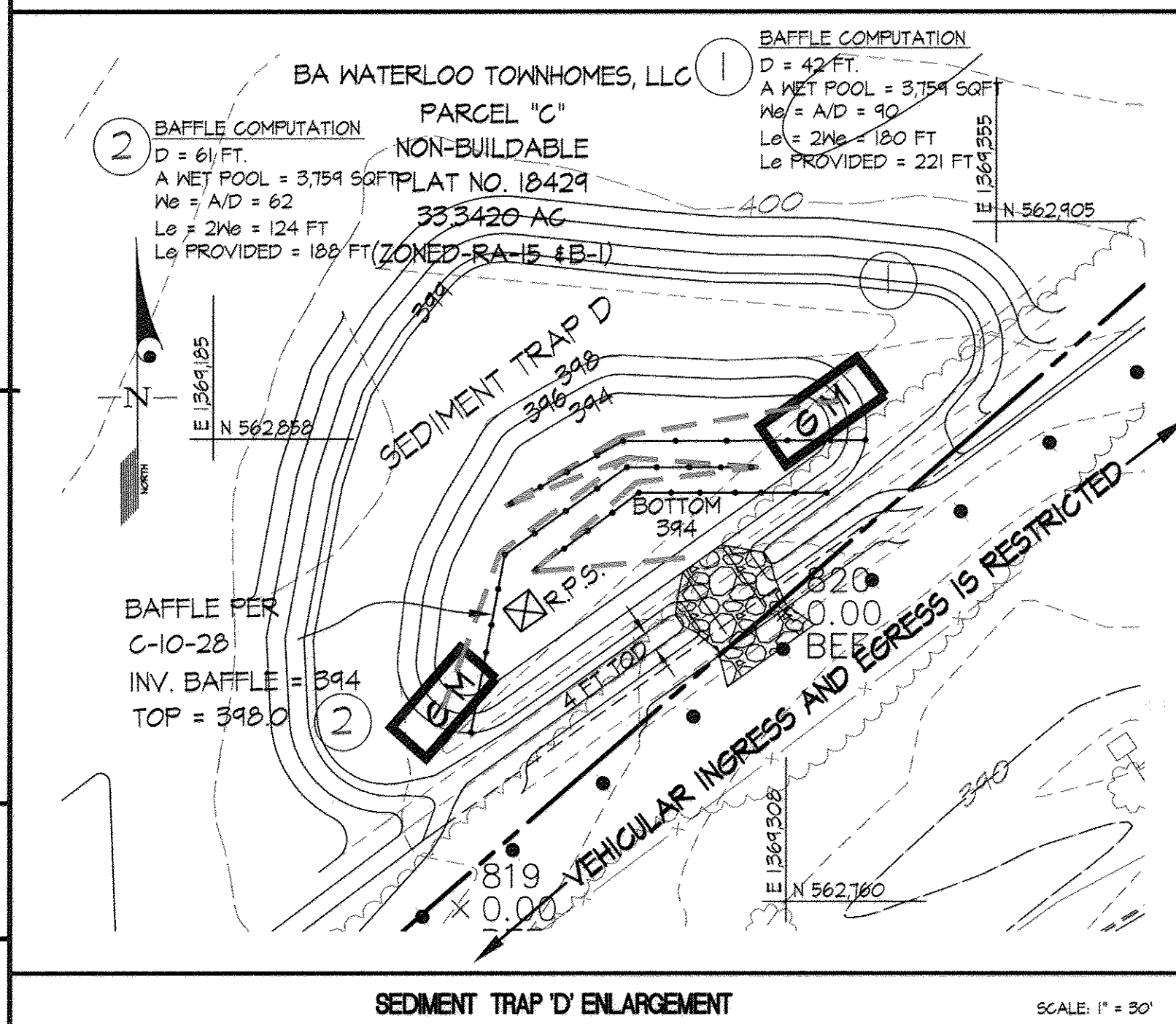
STONE OUTLET SEDIMENT TRAP

EXISTING DRAINAGE AREA : 1.15 AC
INTERIM DRAINAGE AREA : 1.15 AC

NET STORAGE VOL. REQUIRED : 0.05 AC-FT
NET STORAGE VOL. PROVIDED : 0.15 AC-FT
NET STORAGE ELEV. : 396.00
DRY STORAGE REQUIRED : 0.05 AC-FT
DRY STORAGE PROVIDED : 0.20 AC-FT
DRY STORAGE WSEL : 398.00
EXISTING Q-TYR : 2.92 cfs
INTERIM Q-TYR : 0 cfs
SAFE PASS OF 10-YR STORM PROVIDED
Q₀ = 4.41 cfs
10-YR WSEL = 398.10 FT
BOTTOM ELEVATION : 394.00
TOP OF EMBANKMENT : 398.00
WEIR CREST ELEVATION : 398.00
WEIR LENGTH : 5'

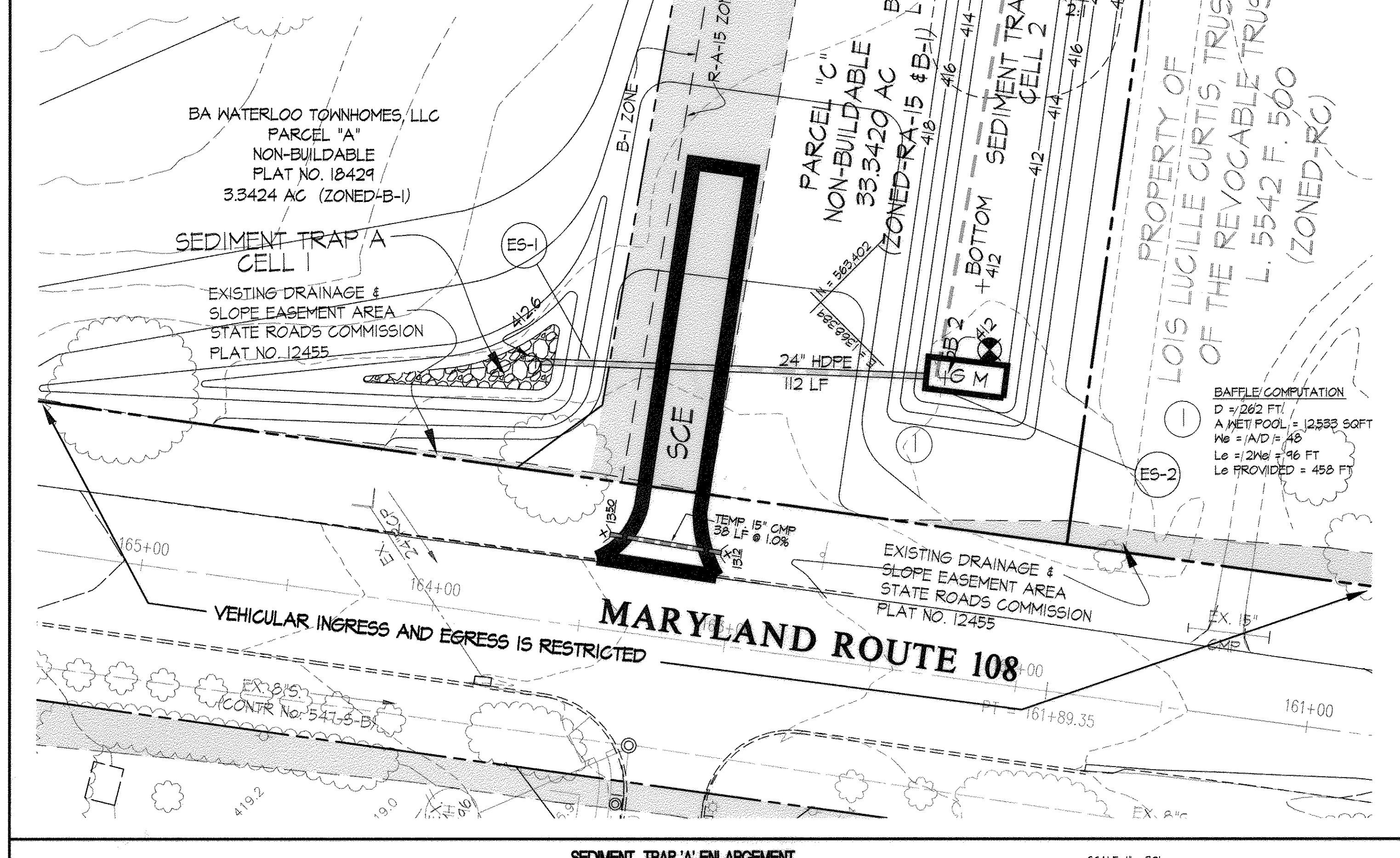
EMERGENCY SPILLWAY ELEV. : NONE
CLEANOUT ELEVATION : 398.00
EMBANKMENT TOP WIDTH : 4'
SIDE SLOPES : 2:1 INTERIOR - 3:1 EXTERIOR

NOTE: FOR SEDIMENT CONTROL PLAN - SEE SHEETS 5 AND 6



SEDIMENT TRAP D ENLARGEMENT

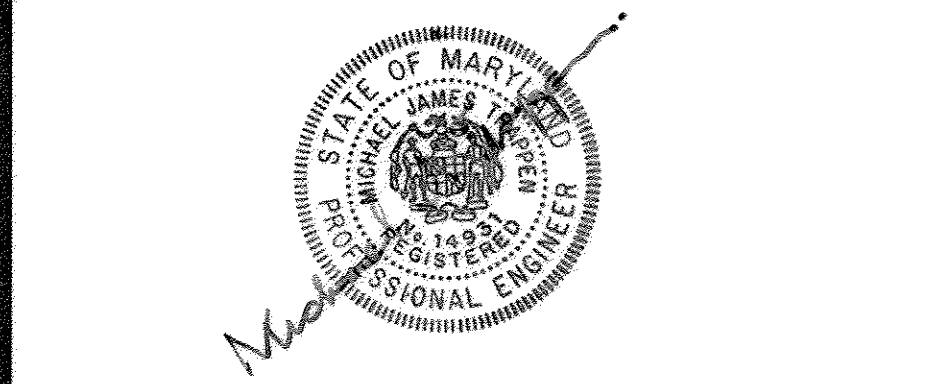
This detail is for Trap D baffle design. For plan information, see sheet 6.



SEDIMENT TRAP A ENLARGEMENT

This detail is for Trap A baffle design. For plan information, see sheet 5.

THIS PLAN IS FOR SEDIMENT CONTROL PURPOSES ONLY!



DEVELOPERS/BUILDERS CERTIFICATE

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 MARYLAND 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.

Blair C. Anderson 7/21/06
SIGNATURE OF DEVELOPER/BUILDER DATE

ENGINEERS CERTIFICATE

I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, SOIL 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.

Michael J. Tropp 7/21/06
ENGINEER'S SIGNATURE DATE

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

John S. [Signature] 8/31/06
HOWARD SOIL CONSERVATION DISTRICT 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 Mayo 8/31/06
USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[Signature] 8/31/06
Chief, Bureau of Highways DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[Signature] 9/19/06
Chief, Division of Land Development DATE

[Signature] 9/14/06
Chief, Development Engineering Division DATE

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTNSVILLE OFFICE PARK
BURTNSVILLE, MARYLAND 20866
TEL: 301-421-4024 BAL: 410-880-1820 DC/WA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.

DEVELOPER/OWNER PARCEL C
BA Waterloo Townhomes, LLC
c/o Bozzuto Homes, Inc.
7850 Walker Drive, Suite 400
Greenbelt, MD 20770-3203
Attn: Duncan Stiddell
301-623-1525

SEDIMENT CONTROL TRAP 'A' & 'D' DETAILS 09/08/2016

SHIPLEY'S GRANT
Non-buildable Parcels "A" thru "E"
PLAT NUMBERS 18428 THROUGH 18431

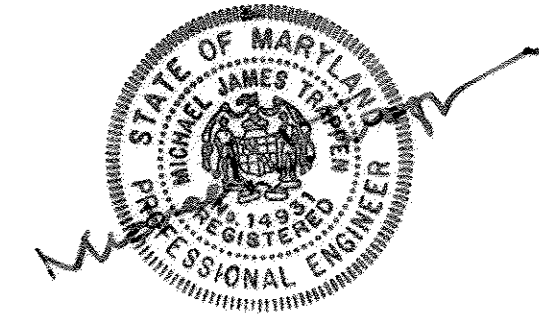
NO ASBUILT INFORMATION

ELECTION DISTRICT No. 1
HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
NO SCALE	R-A-15/B-1/ POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	12 OF 25

LEGEND

- SOILS DELINEATION LINE
- B' SOIL
- C' SOIL
- D' SOIL
- EXISTING DRAINAGE DIVIDE
- TC PATH
- DRAINAGE AREA LABEL



EXISTING DISCHARGE SUMMARY

	Q1 (cfs)	Q10 (cfs)	Q100 (cfs)
STUDY POINT 1	1.86	6.24	10.21
STUDY POINT 2	13.68	49.12	82.32
STUDY POINT 3	20.38	65.99	107.38

DEVELOPER/BUILDER'S CERTIFICATE

I HEREBY 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 MARYLAND 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.

Robert C. Anderson 7/21/06
SIGNATURE OF DEVELOPER/BUILDER DATE

ENGINEER'S CERTIFICATE

I 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.

Michael J. Tropp 7/21/06
ENGINEER'S SIGNATURE DATE

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

John S. [Signature] 8/31/06
HOWARD SOIL CONSERVATION DISTRICT 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 Meyer 8/31/06
VEDA - NATURAL RESOURCE CONSERVATION SERVICE DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[Signature] 9/1/06
Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[Signature] 9/1/06
Chief, Division of Land Development Date

[Signature] 9/14/06
Chief, Development Engineering Division Date

GLW Gutschick Little & Weber, P.A.

CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
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\\DRAWINGS\03006\SPMG\03006SWM-DAMex.dwg DES. BJM DRN. klp CHK. CKG

DATE	REVISION	BY	APP'R.

THIS PLAN IS FOR STORMWATER MANAGEMENT HYDRAULIC ANALYSIS AND DRAINAGE AREA INFORMATION ONLY FOR PLAN INFORMATION, SEE SHEETS 2 THROUGH 4

STORMWATER MANAGEMENT DRAINAGE AREA MAP - EXISTING CONDITIONS

SHIPLEY'S GRANT
Non-buildable Parcels "A" thru "E"
PLAT NUMBERS 18428 THROUGH 18431

NO AS-BUILT INFORMATION
09/08/2006

SCALE	ZONING	G. L. W. FILE No.
1"=100'	R-A-15/B-1/POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	14 OF 25

DEVELOPER/OWNER PARCEL C
BA Waterloo Townhomes, LLC
c/o Bozzuto Homes, Inc.
7850 Walker Drive, Suite 400
Greenbelt, MD 20770-3203
Attn: Duncan Sidel
301-623-1525

ELECTION DISTRICT No. 1

LEGEND

- SOILS DELINEATION LINE
- B' SOIL
- C' SOIL
- D' SOIL
- DRAINAGE DIVIDE
- TC PATH
- DRAINAGE AREA LABEL

NOTES:

- GRADING, ROADS AND BUILDING PADS SHOWN ARE BASED UPON THE PRELIMINARY CONCEPT DEVELOPED TO THIS POINT AND ARE NOT PROPOSED UNDER THIS PLAN. THESE IMPROVEMENTS HAVE BEEN SHOWN TO CLARIFY THE DRAINAGE AREA FACILITIES B & C HAVE BEEN DESIGNED TO.
- FACILITY A IS A SEDIMENT TRAP TYPE ST-IV AND WILL REMAIN AS SUCH UNTIL PHASE I OF THE SITES DEVELOPMENT. CELLS 1 & 2 ARE TO REMAIN IN PLACE FOLLOWING STABILIZATION AND UNTIL PHASE I.
- THE DRAINAGE AREA TO STUDY POINT 3 HAS BEEN TRUNCATED AT THE PROPERTY BOUNDARY FOR THE EXISTING AND PROPOSED CONDITION TO ENABLE AN EQUIVOCAL COMPARISON.
- TIME OF CONCENTRATION PATHS FOR THE PROPOSED CONDITION ARE BASED UPON AN ASSUMED STORM DRAIN LAYOUT.
- LOTS/BUILDINGS/ROADS SHOWN ARE BASED UPON THE FUTURE DEVELOPMENT OF THIS PROJECT, AND ARE SHOWN FOR DRAINAGE AREA AND CURVE NUMBER JUSTIFICATION ONLY. THE LAYOUT SHOWN IS NOT PROPOSED BY THIS PLAN.
- THE RECHARGE REQUIREMENT IS TO BE MET BY THE USE OF INFILTRATION TRENCHES PLACED THROUGHOUT THE FUTURE SITE. RECHARGE HAS BEEN ACCOUNTED FOR IN THE DESIGN OF PONDS B & C (DISCOUNTED FROM HQV). IT HAS ALSO BEEN ACCOUNTED FOR IN THE PRELIMINARY DESIGN OF POND A. THE CUMULATIVE RECHARGE REQUIREMENT FOR ALL DRAINAGE AREAS HAS THEN DIVIDED BY THE TOTAL AREA TO PONDS A, B AND C. THE RESULT YIELDS THE RECHARGE REQUIRED PER ACRE OF DEVELOPABLE PARCEL.

DA 1-A = 5.3 ACRES REV REQUIRED = 0.10 AC-FT
 DA 2-C = 5.6 ACRES REV REQUIRED = 0.04 AC-FT
 DA 3-B = 17.6 ACRES REV REQUIRED = 0.21 AC-FT
 TOTAL AREA = 28.5 ACRES TOTAL REV REQUIRED = 0.46 AC-FT

REV REQUIREMENT/ACRE OF DEVELOPABLE PARCEL = 0.46 AC-FT/28.5 ACRES = 0.016 AC-FT/ACRE = 103 CU-FIT/ACRE

PEAK DISCHARGE SUMMARY

	Q1 (cfs)	Q10 (cfs)	Q100 (cfs)
STUDY POINT 1			
EX.	1.86	6.24	10.27
PROP.	0.30	50.01	54.82
STUDY POINT 2			
EX.	13.68	49.12	82.52
PROP.	2.07	79.19	126.34
STUDY POINT 3			
EX.	20.38	65.99	107.38
PROP.	0.80	84.56	116.70

DEVELOPER'S/BUILDER'S CERTIFICATE

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 MARYLAND 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 90 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

Robert C. Anderson 7/21/06
 SIGNATURE OF DEVELOPER/BUILDER

ENGINEER'S CERTIFICATE

I 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 90 DAYS OF COMPLETION.

Michael J. Tropp 7/21/06
 ENGINEER'S SIGNATURE DATE

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

Mark S. Selig 8/3/06
 HOWARD SOIL CONSERVATION DISTRICT 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 Myer 8/3/06
 USDA NATURAL RESOURCES CONSERVATION SERVICE DATE

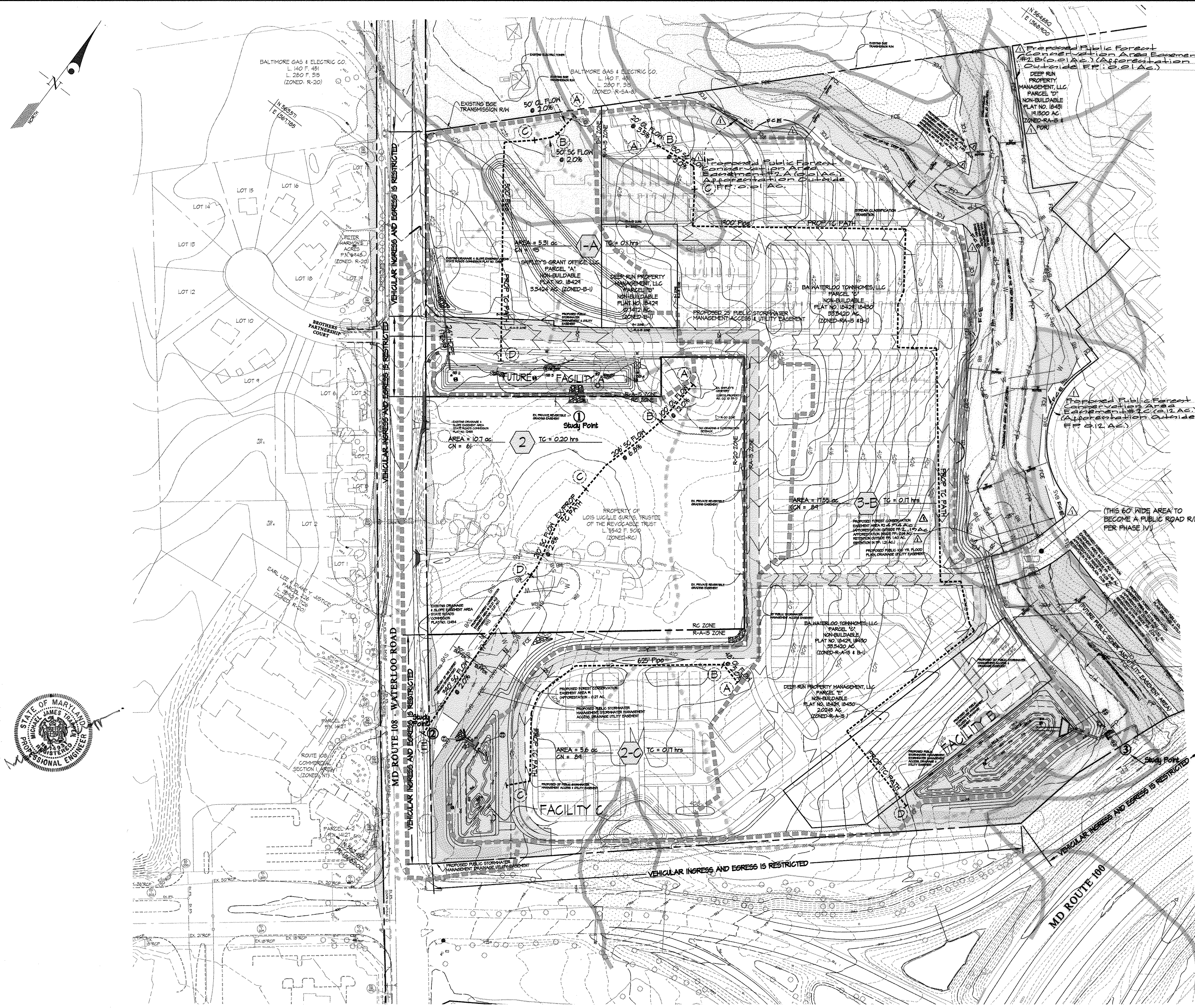
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[Signature] 7/3/06
 Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[Signature] 7/19/06
 Chief, Division of Land Development Date

[Signature] 9/14/06
 Chief, Development Engineering Division Date



STORMWATER MANAGEMENT POND C

Stormwater Management Pond C provides Quality Control (HQV) and quantity control for 5.6 acres of the proposed development. HQV is provided via a permanent pool. CPV is provided via Extended Detention. Safe passage of the 100-year design storm has been analyzed for the blocked condition and a minimum 1-foot of freeboard has been provided.

Types (per MDE) - Pickett Wetland (W4)
 Non-MD-37B Facility Justification:
 1. Storage = 100-YR WSEL = 34.84 cu-ft.
 40,000 cu-ft.
 2. Lowest Invert of Grade = 34.62
 Top of Dam = 40.00
 Embankment = 5.4 ft x 6.0 ft
 Total Drainage Area To Facility = 5.6 acres (Area 2-C)
 CN = 84
 Zoning: Townhouse, 16% impervious
 Tc = 0.10 hrs
 HQV Required = 0.25 ac-ft
 HQV Provided = 0.25 ac-ft
 HQV/Permanent Pool WSEL = 34.65
 CPV Required = .41
 CPV Provided = .41
 CPV WSEL = 34.65
 Rev Requirement = 103 cu-ft/acre*
 Rev To Be Provided By Infiltration Trenches (See Below)*
 1-YR (Op = 0.20 cfs) (WSEL = 34.47)
 10-YR (Op = 23.56 cfs) (WSEL = 34.47)
 100-YR (Op = 56.45 cfs) (WSEL = 34.47)
 100-YR Blocked Flow (WSEL = 34.47)
 Lag: 22.1 hours
 Aquatic Bench = 346.00
 Outfall: Precast Riser Structure to twin 24" RCP to Stream Valley
 T.O.D. = 401.00

* The recharge requirement for this drainage area (2-C) will be provided by infiltration trenches. These infiltration trenches will be designed under the subdivision plans for this development. See SWM narrative for further explanation.

* See Study Point 2 computations for non-lag related TR-20 computations.

STORMWATER MANAGEMENT POND B

Stormwater Management Pond B provides Quality Control (HQV) and quantity control for 17.6 acres of the proposed development. HQV is provided via a permanent pool. CPV is provided via Extended Detention. Safe passage of the 100-year design storm has been analyzed for the blocked condition and a minimum 1-foot of freeboard has been provided.

Types (per MDE) - Hat Extended Detention Pond (P5)
 MD-37B Hazard Class A Facility
 Total Drainage Area To Facility = 17.6 acres (Area 3-B)
 CN = 84
 Zoning: Townhouse, 14% impervious
 Tc = 0.10 hrs
 HQV Required = 0.8 ac-ft
 HQV Provided = 0.8 ac-ft
 HQV/Permanent Pool WSEL = 301.8
 CPV Required = 1.48
 CPV Provided = 1.48
 CPV WSEL = 305.8
 Rev Requirement = 103 cu-ft/acre*
 Rev To Be Provided By Infiltration Trenches (See Below)*
 1-YR (Op = 0.80 cfs) (WSEL = 305.82)
 10-YR (Op = 84.56 cfs) (WSEL = 305.82)
 100-YR (Op = 116.71 cfs) (WSEL = 305.82)
 100-YR Blocked Flow (WSEL = 305.82)
 Lag: 19.5 hours
 Aquatic Bench = 380.80
 Outfall: Precast Riser Structure to 48" RCP to Stream Valley
 T.O.D. = 388.00

* The recharge requirement for this drainage area (3-B) will be provided by infiltration trenches. These infiltration trenches will be designed under the subdivision plans for this development. See SWM narrative for further explanation.

* See Study Point 3 computations for non-lag related TR-20 computations.

TRAP A (FUTURE POND A)

This pond has been preliminary designed to handle the HQV and the CPV requirements. Larger storms will bypass this facility. Pond A outlets at Study Point 1. This pond will be designed to handle proposed drainage area 1-A. Under this plan, Pond A will be left in its temporary state. Its final design will come under the Phase I plans.

Total Drainage Area To Facility = 5.31 acres (Area 1-A)
 CN = 85
 Zoning: Commercial, 85% impervious
 Tc = 0.100 hrs
 HQV Required = 0.25 ac-ft
 HQV Provided = 0.25 ac-ft
 HQV/Permanent Pool WSEL = 5 feet relative to bottom of pool
 CPV Required = 0.80
 CPV Provided = 0.80
 CPV WSEL = 3.15 ft relative to invert of underground pipe manifold
 Rev Requirement = 103 cu-ft/acre*
 Rev To Be Provided By Infiltration Trenches (See Below)*
 1-YR (Op = 0.50 cfs) (WSEL = 3.42 ft relative to invert of pipe manifold)
 10-YR (Op = 50.01 cfs)
 100-YR (Op = 34.82 cfs)
 Lag: 18.0 hours

Design Parameters
 Underground Manifold System with above ground water feature.
 Manifold Diameter = 48 inch
 Total Manifold Length = 2460 ft.
 Total Volume = 0.11 ac-ft.
 Orifice Diameter = 2.5 inch
 High Flow events to be bypassed

* The recharge requirement for this drainage area (1-A) will be provided by infiltration trenches. These infiltration trenches will be designed under the subdivision plans for this development. See SWM narrative for further explanation.

* See Study Point 1 computations for non-lag related TR-20 computations.

THIS PLAN IS FOR STORMWATER MANAGEMENT HYDRAULIC ANALYSIS AND DRAINAGE AREA INFORMATION ONLY
 FOR PLAN INFORMATION, SEE SHEETS 2 THROUGH 4

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3609 NATIONAL DRIVE, SUITE 250 - BURTNSVILLE OFFICE PARK
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DATE	REVISION	BY	APPR.
2/10/06	Rev. Fee 2 & Added Fee 2A, 2B & 2C	WAL	MJT

DEVELOPER/OWNER PARCEL C
 BA Waterloo Townhomes, LLC
 c/o Bozzuto Homes, Inc.
 7850 Walker Drive, Suite 400
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 Attn: Duncan Sidell
 301-623-1525

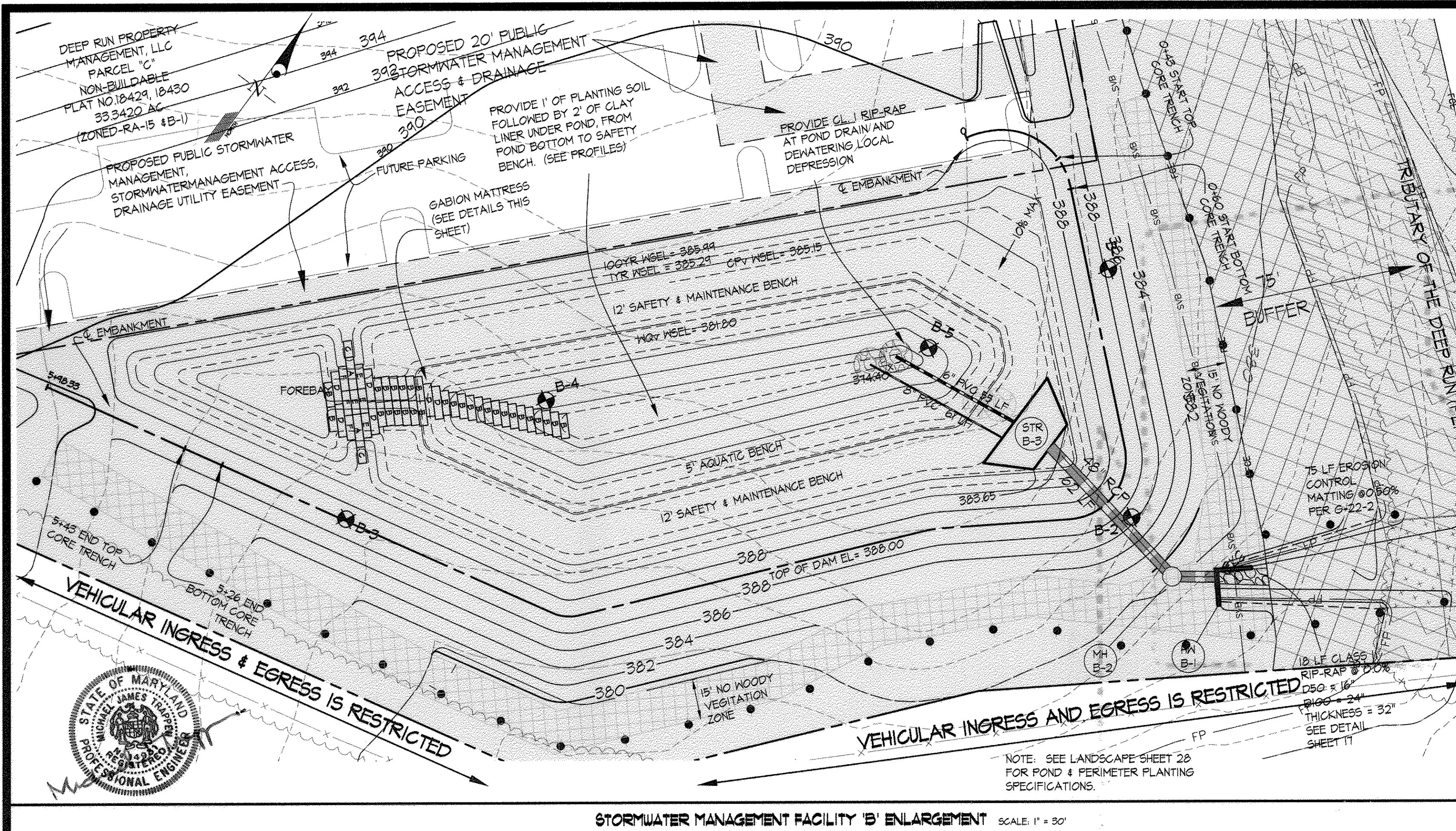
STORMWATER MANAGEMENT DRAINAGE AREA MAP - PROPOSED CONDITIONS

SHIPLEY'S GRANT
 Non-buildable Parcels "A" thru "E"
 PLAT NUMBERS 18428 THROUGH 18431

NO AS-BUILT INFORMATION
 09/08/2006

ELECTION DISTRICT No. 1

SCALE	ZONING	G. L. W. FILE NO.
1"=100'	R-A-15/B-1/ POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	15 OF 25



STORMWATER MANAGEMENT POND B

Stormwater Management Pond B provides Quality Control (WQV) and quantity control for 11.6 acres of the proposed development. WQV is provided via a permanent pool. CPV is provided via Extended Detention.

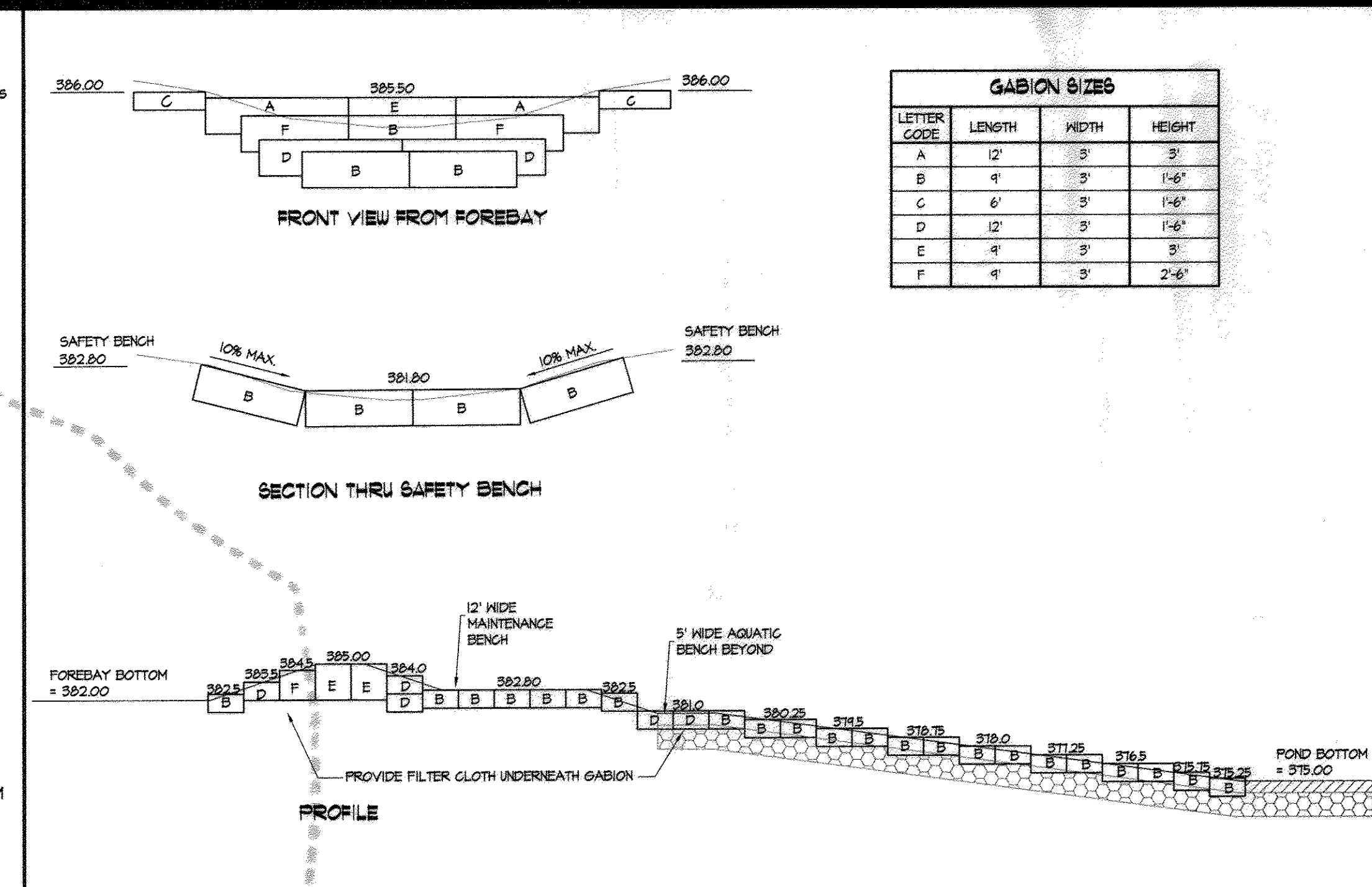
Safe passage of the 100-year design storm has been analyzed for the blocked condition and a minimum 2-feet of freeboard has been provided.

Type (per MDE) : Wet Extended Detention Pond (P3)
 MD-316 Hazardous Class A Facility
 Total Drainage Area To Facility = 11.60 acres (Area 3-B)
 CN = 24
 Zoning: Townhouse, 74% Impervious
 $T_c = 0.170$ hrs.
 WQV Required = 0.8 ac-ft
 WQV Provided = 0.8 ac-ft
 WQV/Permanent Pool WSEL = 381.8
 CPV Required = 1.48
 CPV Provided = 1.51
 CPV WSEL = 385.15
 Rev Requirement = 703 cu-ft/acre*

Rev To Be Provided By Infiltration Trenches (See Below)*
 1-YR (Op = 0.15 cfs) (WSEL = 385.24)
 10-YR (Op = 15.24 cfs) (WSEL = 385.15)
 100-YR Blocked Flow (WSEL = 385.11)
 100-YR (Op = 116.14 cfs) (WSEL = 385.94)
 100-YR Blocked Flow (WSEL = 385.94)
 Lag: 18.1 hours
 5 ft. Aquatic Bench = 380.80
 12 ft. Safety/Maintenance Bench = 382.80
 Outfalls: Precast Riser Structure to 48" RCP to Stream Valley
 T.O.D. = 385.00

*The recharge requirement for this drainage area (3-B) will be provided by infiltration trenches. These infiltration trenches will be designed under the subdivision plans for this development. See SHM narrative for further explanation.

*See Study Point 3 computations for non-lag related TR-20 computations.



STORMWATER MANAGEMENT FACILITY 'B' ENLARGEMENT SCALE: 1" = 30'

DEVELOPER'S/BUILDER'S CERTIFICATE

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Robert C. Anderson 7/21/06
 SIGNATURE OF DEVELOPER/BUILDER DATE

OPERATION AND MAINTENANCE SCHEDULE OF JOINT MAINTAINED STORMWATER MANAGEMENT FACILITY POND B

Routine Maintenance (by HOA)

- The Facility shall be inspected annually and after major storms. Inspections should be performed during wet weather to determine if the pond is functioning properly.
- Top and side slopes of the embankment shall be mowed a minimum of two (2) times a year, once in June and once in September. Other side slopes, the bottom of the pond, and maintenance access should be mowed as needed.
- Debris and litter next to the outlet structure shall be removed during regular mowing operations and as needed.
- Visible signs of erosion in the pond as well as riprap outlet area shall be repaired as soon as it is noticed.

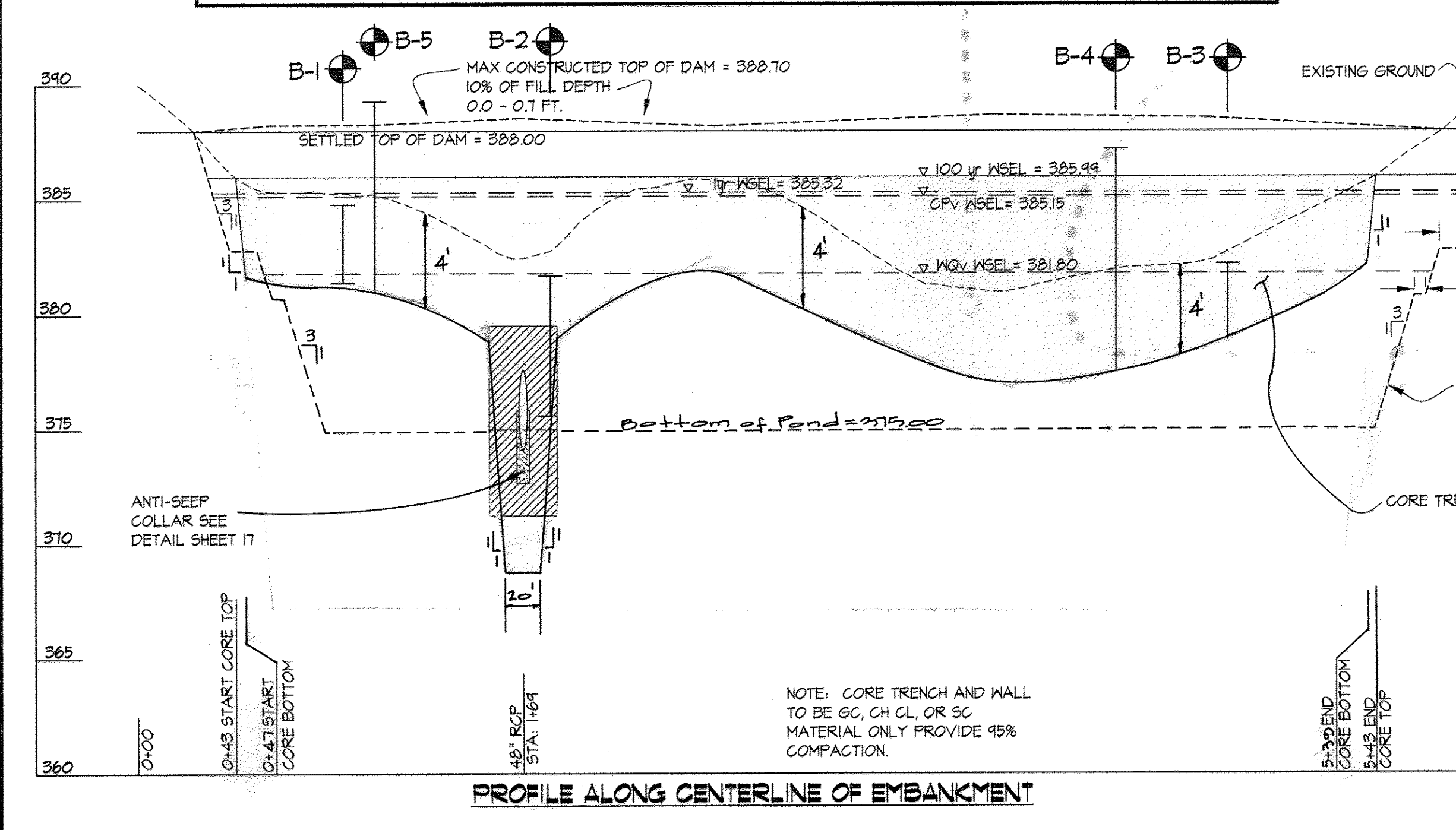
Non-Routine Maintenance (by Howard County)

- Structural Components of the pond such as the dam, the riser, and the pipes shall be repaired upon detection of any damage. The components should be inspected during routine maintenance operations.
- Sediment should be removed when its accumulation significantly reduces the design storage, interferes with the function of the riser, when deemed necessary for aesthetic reasons, or when deemed necessary by Howard County's Department of Public Works.

ENGINEER'S CERTIFICATE

I 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.

Michael J. Tropp 7/21/06
 ENGINEER'S SIGNATURE DATE



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

[Signature] 8/3/06
 HOWARD SOIL CONSERVATION DISTRICT 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.

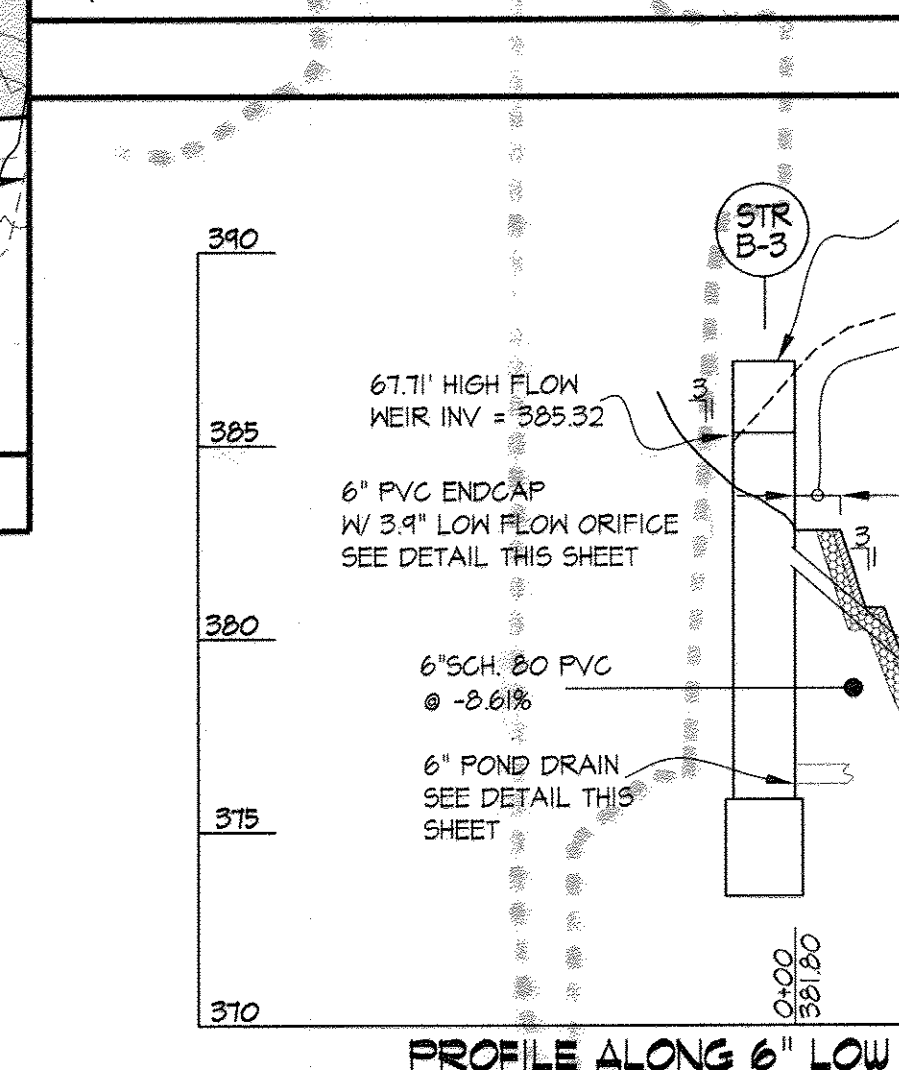
[Signature] 8/3/06
 USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

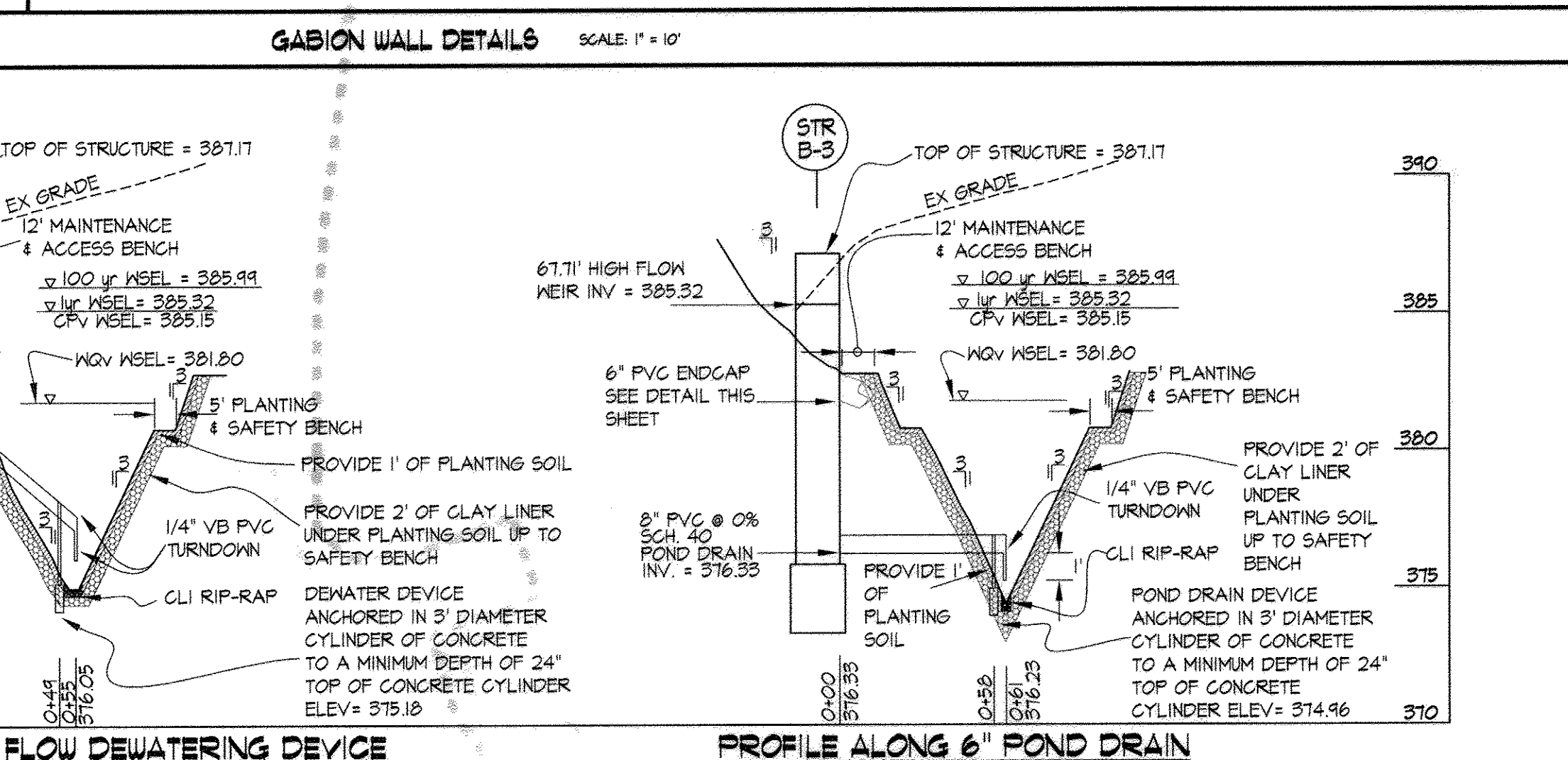
[Signature] 9/4/06
 Chief, Bureau of Highways DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

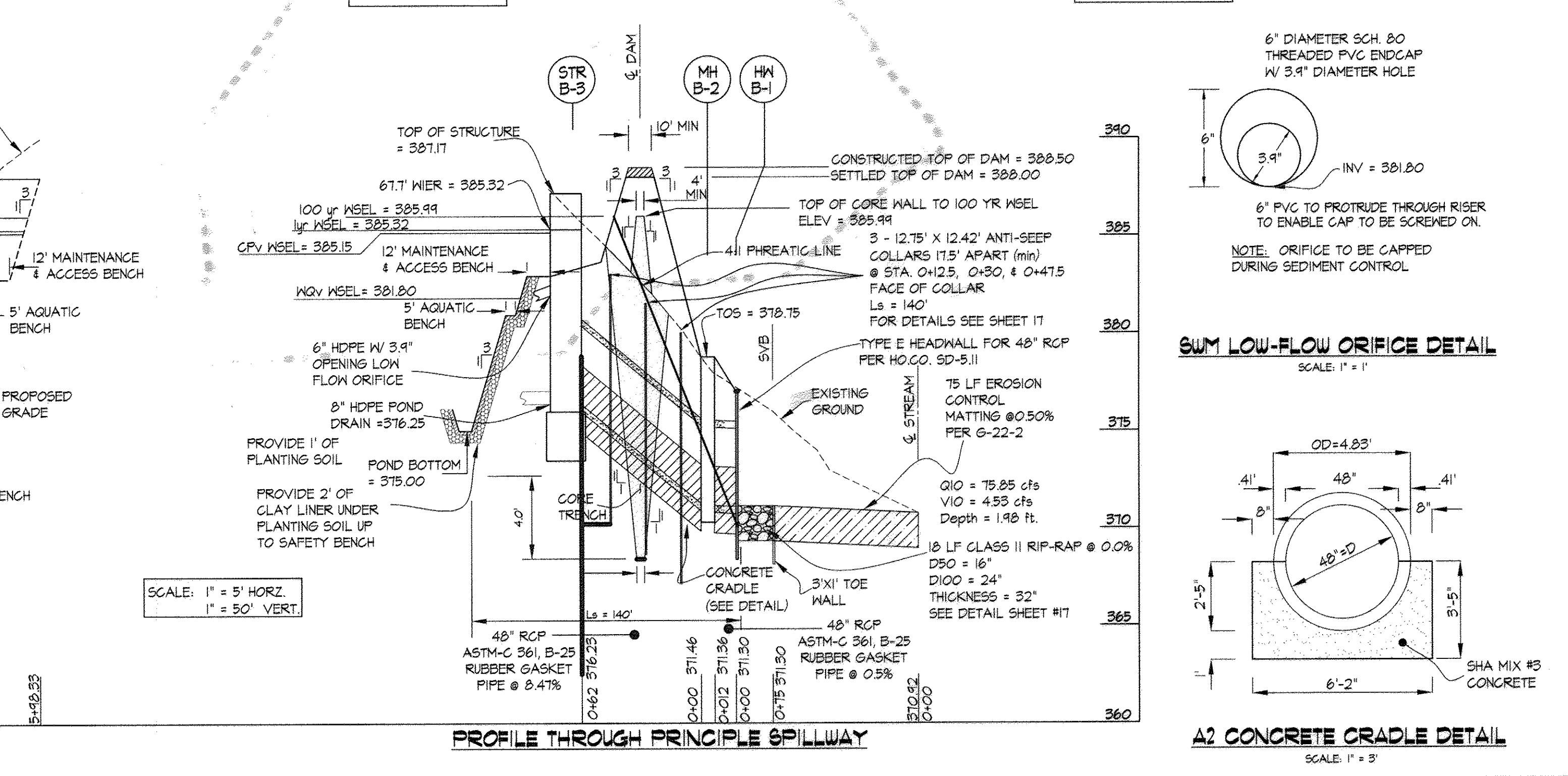
[Signature] 9/14/06
 Chief, Development Engineering Division DATE



PROFILE ALONG 6" LOW FLOW DEWATERING DEVICE SCALE: 1" = 5' HORIZ. 1" = 50' VERT.

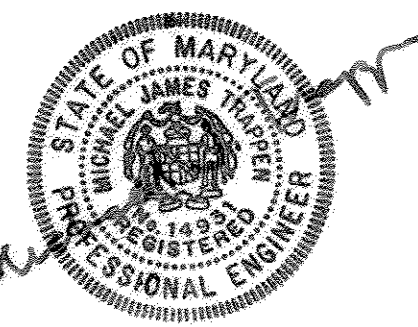
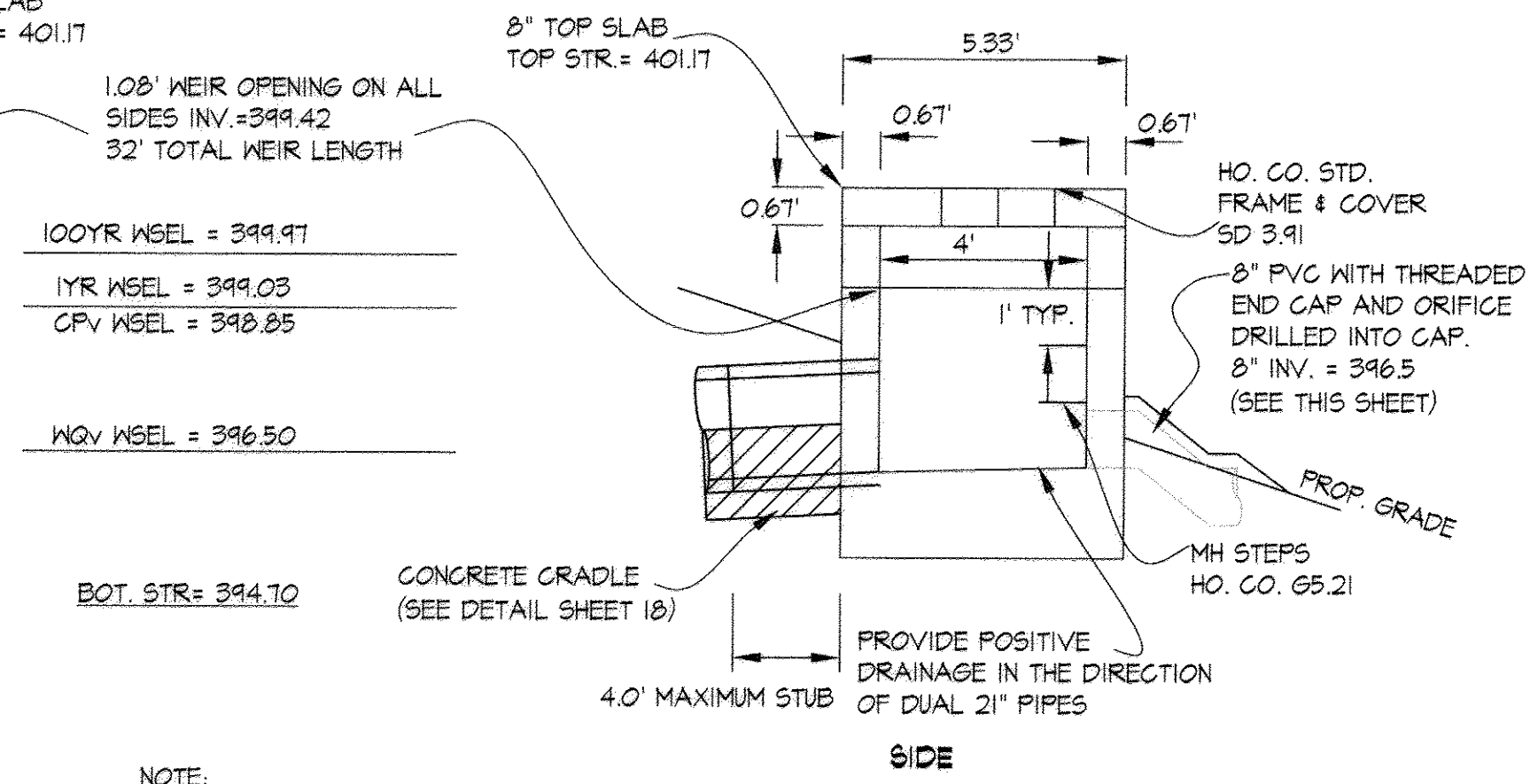
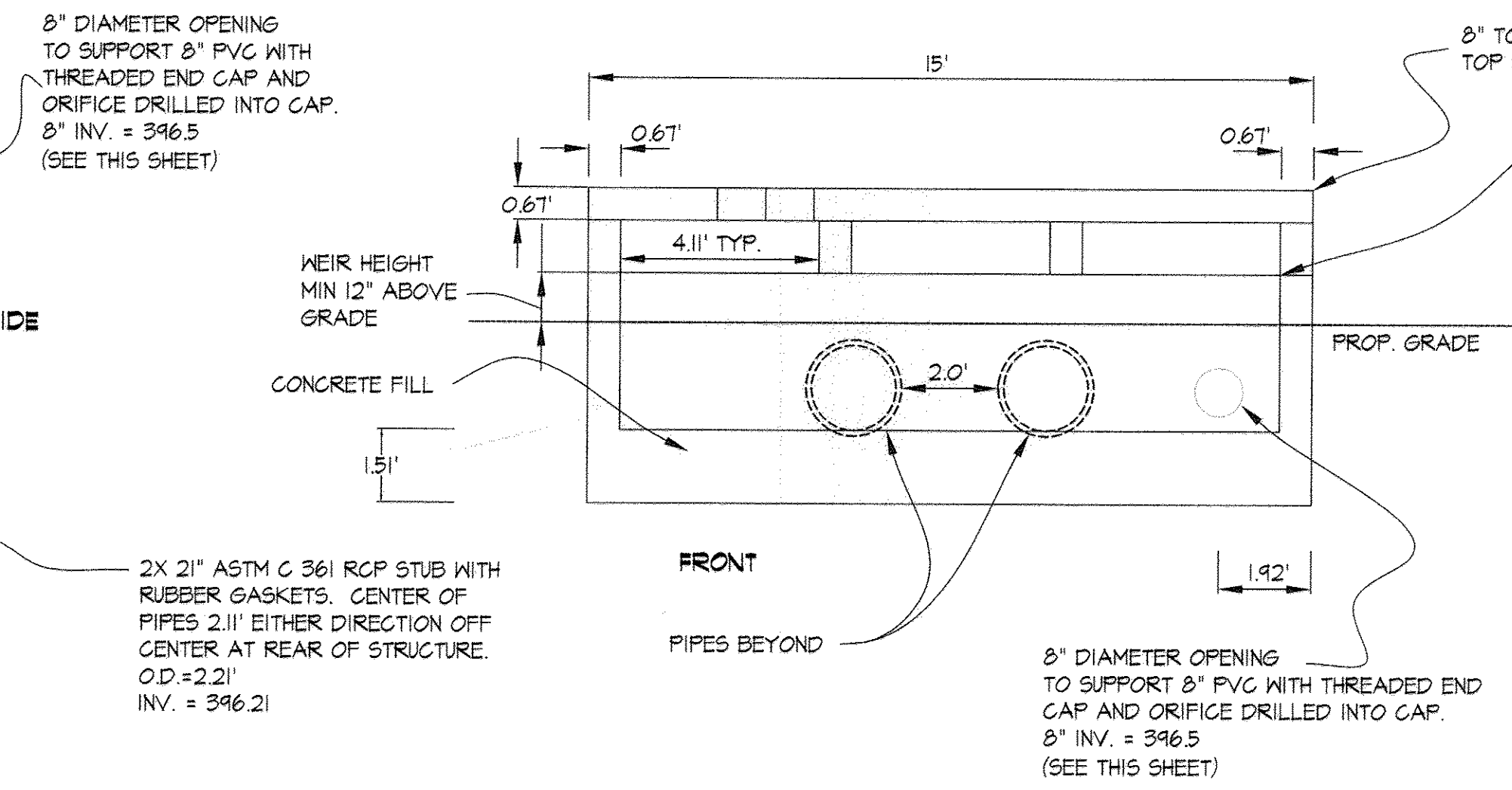
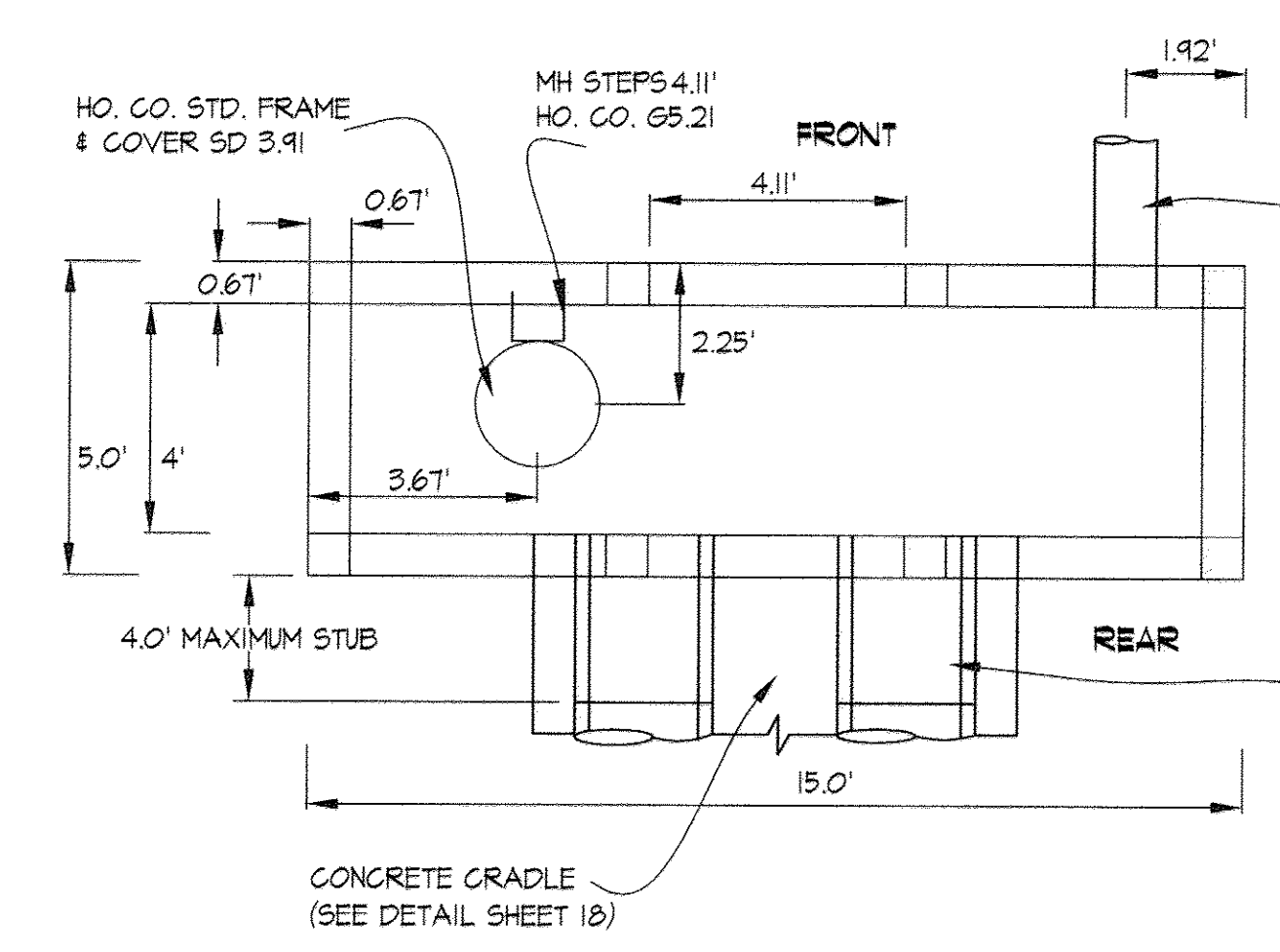
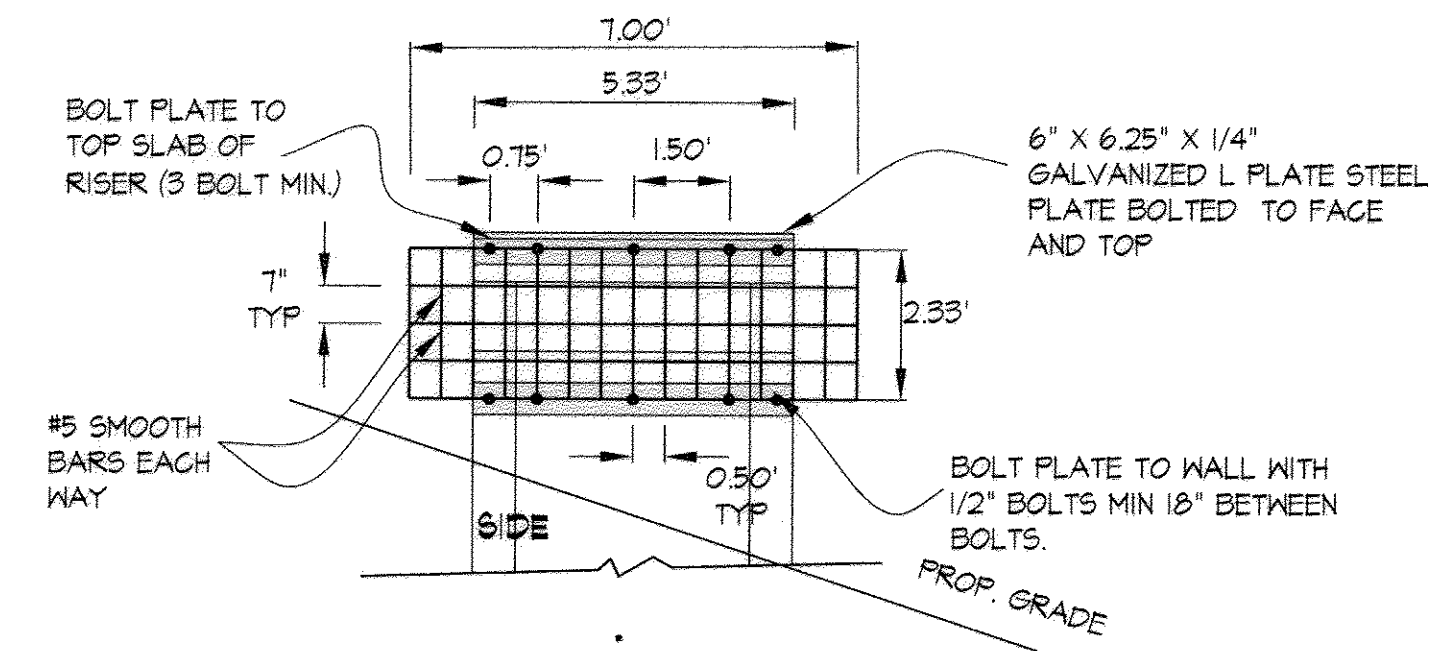
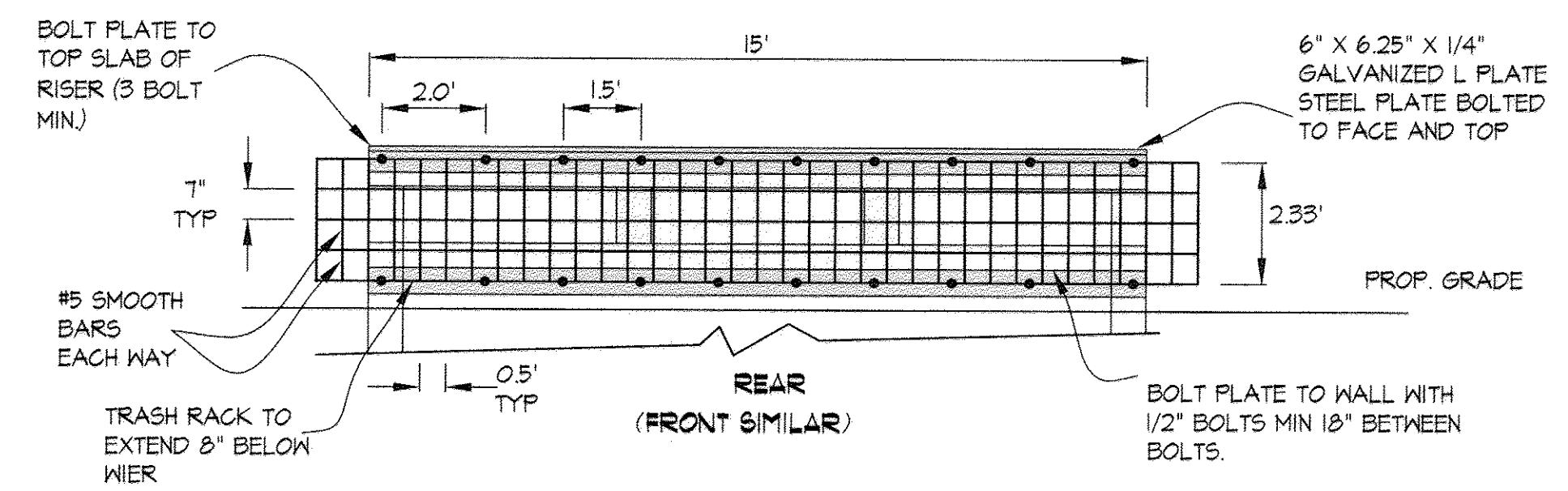
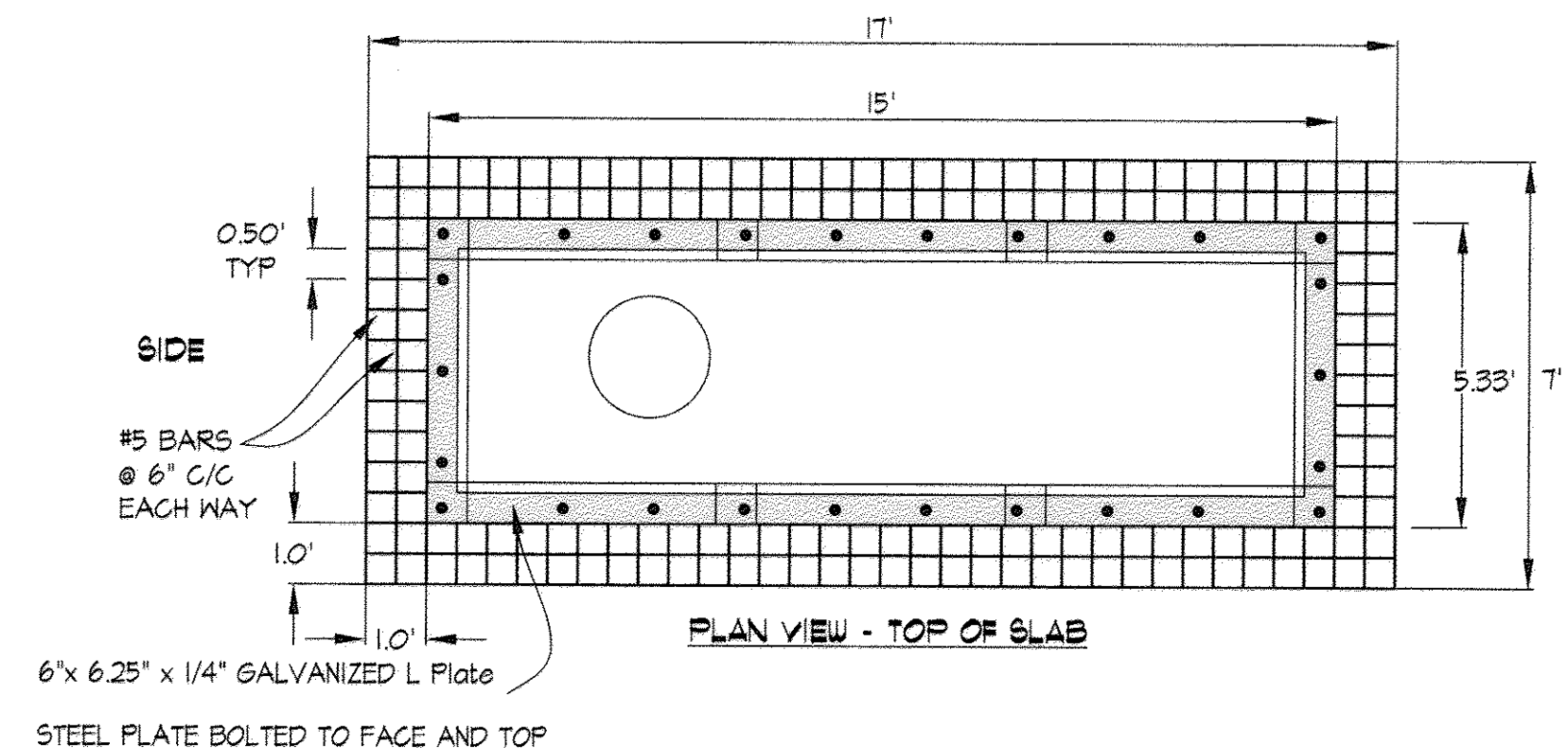


PROFILE ALONG 6" POND DRAIN SCALE: 1" = 5' HORIZ. 1" = 50' VERT.



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

GLWGUTSCHICK LITTLE & WEBER, P.A. CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS 3809 NATIONAL DRIVE - SUITE 250 - BURTOWNSVILLE OFFICE PARK BURTOWNSVILLE, MARYLAND 20866 TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186			DEVELOPER/OWNER PARCEL C BA Waterloo Townhomes, LLC c/o Bozuto Homes, Inc. 7850 Walker Drive, Suite 400 Greenbelt, MD 20770-3203 Attn: Duncan Sidel 301-623-1525			STORMWATER MANAGEMENT DETAILS - FACILITY B SHIPLEY'S GRANT Non-buildable Parcels "A" thru "E" PLAT NUMBERS 18428 THROUGH 18431 SEE ASBUILT SET 09/08/2010			SCALE AS SHOWN ZONING R-A-15/B-1/POR DATE TAX MAP - GRID SHEET JULY, 2006 37-1&2 16 OF 25			G. L. W. FILE No. 03006 SHEET 16 OF 25		
[Drawings\03006\SPMG\03006SWM-DET-B.dwg] DES. DDS DRN. DDS CHK. BJM			12-5-06 Rev. Core Trench to 4' Below Ex. Ground WSD			ELECTION DISTRICT No. 1			HOWARD COUNTY, MARYLAND					



DEVELOPER'S/BUILDER'S CERTIFICATE
 I HEREBY 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 MARYLAND 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: Robert C. Anderson
 Date: 7/21/06

ENGINEER'S CERTIFICATE
 I 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.

Signature: Michael J. Trapp
 Date: 7/21/06

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

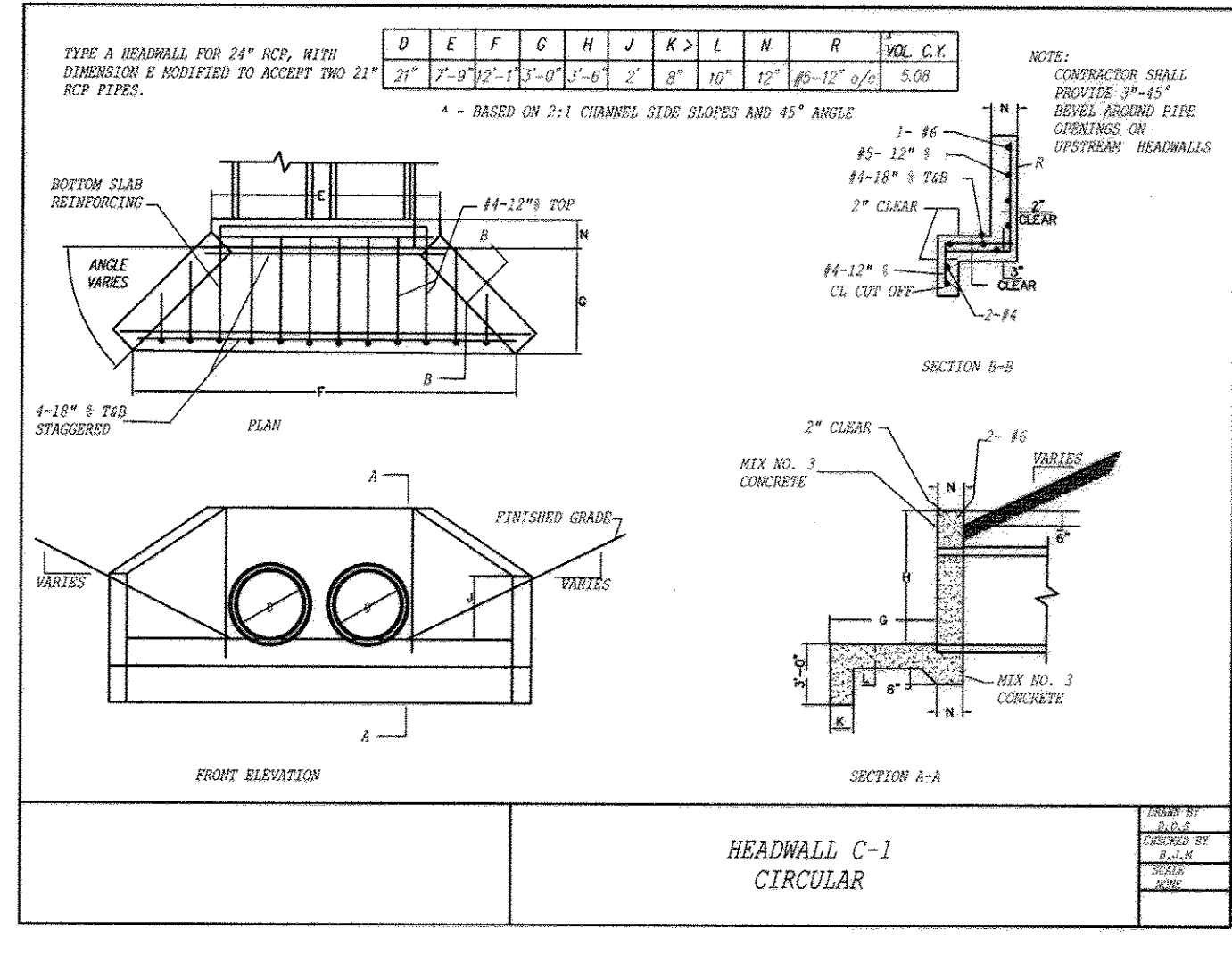
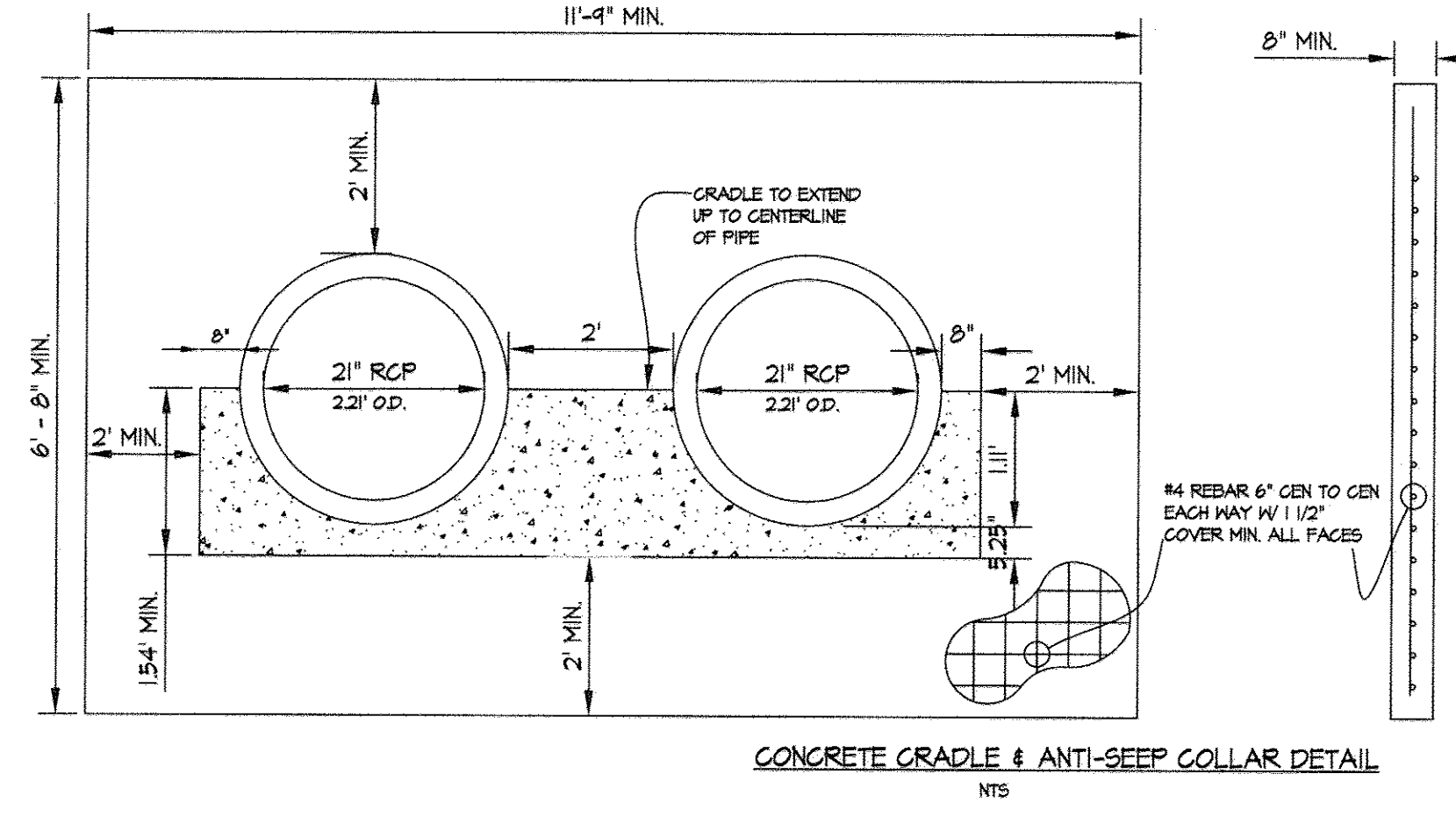
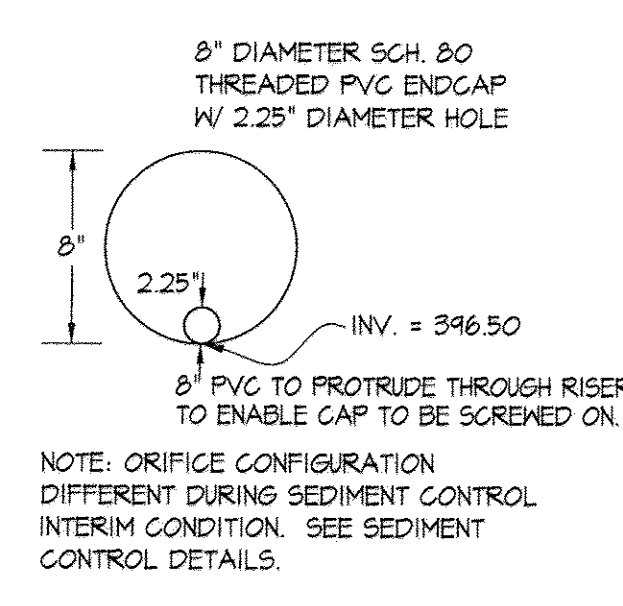
Signature: [Signature]
 Date: 8/1/06

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: Jim Mynlon
 Date: 8/1/06

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 9/18/06

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 9/19/06
 Chief, Development Engineering Division
 Date: 9/14/06



ROCK OUTLET PROTECTION I

Construction Specifications

- The subgrade for the filter, rip-rap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be composed to a density of approximately that of the surrounding undisturbed material.
- The rock or gravel shall conform to the specified grading limits when installed respectively in the rip-rap or filter.
- Geotextile shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.
- Stone for the rip-rap or gabion outlets may be placed by equipment. They shall be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The stone for rip-rap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogeneous with the smaller stones and spalls filling the voids between the larger stones. Rip-rap shall be placed in a manner to prevent damage to the filter blanket or geotextile. Hand placement will be required to the extent necessary to prevent damage to the permanent works.
- The stone shall be placed so that it blends in with the existing ground. If the stone is placed too high then the flow will be forced out of the channel and scour adjacent to the stone will occur.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE
 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3808 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20866
 TEL: 301-421-4024 BAL: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.

DEVELOPER/OWNER PARCEL C
 BA Waterloo Townhomes, LLC
 c/o Bozzuto Homes, Inc.
 7850 Walker Drive, Suite 400
 Greenbelt, MD 20770-3203
 Attn: Duncan Slidell
 301-623-1525

STORMWATER MANAGEMENT DETAILS - FACILITY C
SHIPLEY'S GRANT
 Non-buildable Parcels "A" thru "E" SET 09/08/2010
 PLAT NUMBERS 18428 THROUGH 18431
 ELECTION DISTRICT No. 1

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	R-A-15/B-1/POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	19 OF 25

SWM CONSTRUCTION SPECIFICATIONS

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE NO. 518. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

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 HAVE A MINIMUM COATING THICKNESS OF 0.010 INCH (0.10 MIL) ON BOTH SIDES OF THE PIPE. COATINGS SHALL BE FULLY BONDING TO THE SUBSTRATE. COATINGS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-249.4 M-246 WITH COUPLING BANDS OR FLANGES.
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 DISSEMBLAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.
3. CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATER-TIGHT. THE DRIP PIPES 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 WATER-TIGHT. DIMPLE BARS ARE NOT CONSIDERED TO BE WATER-TIGHT. ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.
4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPRONGY 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-266.
2. BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A COMPLETE BEDDING/CRADE FOR THEIR ENTIRE LENGTH. THIS BEDDING/CRADE SHALL CONSIST OF HIGH STRENGTH CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 30% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADE IS NOT PROVIDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.
3. LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END HORIZONTALLY TO ANY PART OF A STRUCTURE UNLESS OTHERWISE SPECIFIED. 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 FROM 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 AS SHOWN ON THE DRAWINGS.

PLASTIC PIPE

THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

1. MATERIALS - PVC PIPE SHALL BE PVC-120 OR PVC-1220 CONFORMING TO ASTM D-1885 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" - 10" HIGH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M282 TYPE 5, AND 12" THROUGH 24" HIGH SHALL MEET THE REQUIREMENTS OF AASHTO M282 TYPE 5.
2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATER-TIGHT.
3. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPRONGY 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.

CARE OF WATER DURING CONSTRUCTION

1. ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DICES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND OTHER MEASURES 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 EXCAVATIONS, 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 FILL 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 SURFACE 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 LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION. SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER PUMPS FROM WHICH THE WATER SHALL BE PUMPED.
2. SLIGHTLY prior to or in excess of a 24-hour time interval following the aforementioned fieldwork, infiltration testing was performed at the project site. The testing consisted of adding water to each infiltration pipe to ensure that a 3.0-ft. head was present at the start of the test. Subsequent to this, the water levels in the pipes were measured over a 4-hour time period and the associated time of the readings recorded in parallel.
3. Infiltration test results are presented in tabular format in Appendix G to this report. A review of the results will indicate that (residual) infiltration rates ranged from 0.67 inches per hour to approximately 11.68 inches per hour.
4. It is recommended that during construction of the infiltration structures, a geotechnical engineer examine the exposed subgrade soils during construction to verify that the soil conditions are consistent with the test boring results.
5. CLAY (CL, SC, CH, CG) soil types, suitable for use in a cut-off trench and embankment core of a SWM pond, were encountered in several of the test borings at the site. If clay soils from the site are not available, and are required for construction, the clay soils would have to be imported from off site.

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.

OPERATION AND MAINTENANCE

AN OPERATION AND MAINTENANCE PLAN IN ACCORDANCE WITH LOCAL OR STATE REGULATIONS WILL BE PREPARED FOR ALL PONDS. AS A MINIMUM, THE DAM INSPECTION CHECKLIST LOCATED IN APPENDIX A SHALL BE INCLUDED AS PART OF THE OPERATION AND MAINTENANCE PLAN AND PERFORMED AT LEAST ANNUALLY. WRITTEN RECORDS OF MAINTENANCE AND MAJOR REPAIRS NEED TO BE RETAINED IN A FILE. THE ISSUANCE OF A MAINTENANCE AND REPAIR PERMIT FOR ANY REPAIRS OR MAINTENANCE THAT INVOLVES THE MODIFICATION OF THE DAM OR SPILLWAY FROM ITS ORIGINAL DESIGN AND SPECIFICATIONS IS REQUIRED. A PERMIT IS ALSO REQUIRED FOR ANY REPAIRS OR RECONSTRUCTION THAT INVOLVE A SUBSTANTIAL PORTION OF THE STRUCTURE. ALL INDICATED REPAIRS ARE TO BE MADE AS SOON AS PRACTICAL.

NOTE

APPENDIX A (DAM SAFETY CHECKLIST) IS LOCATED WITHIN THE USDA NATURAL RESOURCES CONSERVATION SERVICE MARYLAND CONSERVATION PRACTICE STANDARD, CODE 318 OR THE "MARYLAND DAM SAFETY MANUAL," DEPT. OF NATURAL RESOURCES WATER RESOURCES ADMINISTRATION.

5.0 RECOMMENDATIONS

5.1 SITE PREPARATION AND EARTHWORK (BUILDING PADS AND PAVED AREAS)

The following recommendations are intended for the satisfactory performance of the earthwork that may be involved to attain the planned grades within the footprint area of the proposed buildings and paved areas:

- Areas to support the building pads, and paved areas should be stripped of trees and vegetation, topsoil and organics. The depth of this excavation is expected to be approximately 0.2 to 2.0 feet and is expected to differ at the other unexplored areas on the site.
- It will be important to maintain positive site drainage during construction. Storm water runoff should be diverted around the construction area. The site should be graded at all times such that water is not allowed to pond. If any surface soils become wet due to rains, they should be removed or allowed to dry prior to further site work operations and/or fill placement.

Within the building pads all encountered uncontrolled fills should be undercut in their entirety, and any moderately to highly plastic clays and elastic soils that are encountered, (LL>45 or PI>20, within 4.0 feet of the building finished floor elevation, and any loose to loose soil layers should be undercut (minimum of 2 feet), as determined by the Geotechnical Engineer of Record.

In the pavement areas, soft or loose soils, whenever encountered near the planned grades, and moderately to highly plastic clays and elastic soils with LL>45 or PI>20, if encountered, should be undercut to a suitable undisturbed subgrade as recommended by the Geotechnical Engineer of Record.

- Following the stripping and excavation of all unsuitable materials, grading operations may proceed. Prior to fill placement, the site should be observed by the Geotechnical Engineer of Record or his qualified representative for proper stripping and preparation for receiving the fill.
- The subgrade exposed after stripping should be profiled in the presence of the Geotechnical Engineer of Record or his qualified representative, with at least two (2) passes of a loaded dump truck that has a minimum axle load of 20 tons or similar equipment to identify any soft/loose pockets. Any observed loose and soft pockets should be excavated and replaced with fill satisfying the controlled fill requirements detailed later in this section of the report.
- Controlled fill placement required to achieve the planned grades within the building pad should extend laterally on all sides beyond the building footprint a minimum distance of 10 feet at the building pad subgrade elevation. The edge of the fill should be placed at a maximum slope of 1H:1V.
- The building pad should be prepared by excavation or by placing controlled fill to an elevation 8 inches below the floor level of slab-on-grade. The footings should be excavated after the building area has been properly prepared.
- Material satisfactory for controlled fill should include clean sand or bankrun sand and gravel (GW, GM, and SM). GC and SC materials may be used provided that the density and the liquid limit and plasticity index of the finer fraction of the material satisfy the following limitations:

Maximum Dry Density (PCF)	≥105
Liquid Limit (%)	<40
Plasticity Index	<20

CL and ML materials satisfying the above requirements and limitations may be used with approval of the Geotechnical Engineer of Record. Highly plastic or elastic soils (CH, MH) should not be used in engineered fill. The fill materials should be free from topsoil, organics and rock fragments having a major dimension greater than 3 inches.

- The on-site natural soils, except layers of moderately to highly plastic clays and elastic soils (LL>40 and PI>20), are suitable for use in controlled structural fill, monitored and that the contractor adjust the maximum dry density requirement specified above. Any existing man-placed fill soils excavated from the site, except layers of moderately to highly plastic clays and elastic soils (LL>40 and PI>20), may be used selectively, in controlled structural fill subject to moisture adjustments and approval of the Geotechnical Engineer of Record.

Weathered or blasted rock can be used in engineered fills for the parking areas and utility trenches subject to the following requirements. Rock fills must be carefully constructed with the large rock (maximum boulder size 1 foot in any dimension in parking areas and maximum 6" in utility trenches) placed in the bottom layer with sufficient space to place medium and finer rock and soil material. The medium and finer rock and soil material should be placed between the large rock and worked into the voids with the tracked construction equipment, or other approved equipment. The rock layer should be compacted with a large sheepsfoot roller until the layer is thoroughly compacted. In rock fills, due to the large amount of rock and the variability of the composition of the rock layer, compaction testing of the rock layer is usually very difficult and produces significant variation in test results. It is therefore considered essential that the rock fill construction be very closely monitored and that the contractor respond to any requests and recommendations made by the on-site inspector. The rock fill should be placed to a depth of 3 feet below the proposed finished subgrade elevation. This will allow for proper shallow excavations and grading. Rock fill is not suitable for use in building pads.

Perched water should be anticipated during the installation of underground utilities, especially if the work is carried out during wetter months or after prolonged periods of heavy precipitation. If groundwater/perched water is encountered, it is our opinion that conventional dewatering systems with the maximum boulder size 1 foot in any dimension in parking areas and maximum 6" in utility trenches should be used. Such measures prove inadequate. Specialized Engineering should be informed immediately to provide alternate recommendations.

The purpose of the *in-situ* infiltration testing was to define and evaluate the subsurface conditions in the areas of and to the depths of test borings A-1 thru A-4, B-1 thru B-5, and C-1 thru C-3 and conduct *in-situ* infiltration testing.

Stormwater management is required for the project site for water quality and water quantity control purposes. To accomplish this, underground holding tanks/pipes, bio-retention facilities, and excavated trenches or basins could be considered at various locations of the subject property. It is anticipated that each of the facilities may rely on infiltration to a certain degree.

To establish an approximation (generalization) of the subsurface conditions at the proposed stormwater management areas, a total of twelve (12) test borings were conducted to depths of 3.4 feet to 14.5 feet beneath existing grades. The test borings were drilled at the approximate locations shown on the Test Boring Location Plan attached in APPENDIX B of this report.

Records of Subsurface Exploration, detailing the results of the test borings, are included in APPENDIX C of this report. Descriptions of the subsurface soils encountered at the project site in the areas of and to the depths of the various test boring excavations in the stormwater management areas are included above in Section 3, Subsurface Conditions.

A summary of the results of the laboratory tests performed on representative soil samples from these strata is presented in APPENDIX F.

Groundwater was observed in nine (9) of the twelve (12) test borings during the fieldwork. Howard County and the State of Maryland require that the seasonably high water table and hard rock layers be at least 4 feet below the infiltration elevation. Of course, variations in the presence and the depth to the groundwater can readily occur due to seasonal fluctuations and such possibilities could occur at the project site. The following table lists the infiltration test boring elevations, groundwater elevations (at 24 hours), in-place infiltration rates, and the soil classifications as recorded during the testing operations:

Boring #	Surface Elevation	Bottom Elevation	Water Elevation	Infiltration Rate	U.S.D.A. Class
A-1	414.7	404.7	411.2	NA	Loamy Sand
A-2	418.1	408.1	410.1	11.68"/hr	Loamy Sand
A-3	417.8	408.8	411.1	7.63"/hr	Loamy Sand
A-4	422.2	408.2	412.3	1.64"/hr	Loam
B-1	384.8	381.4*	None	NA	Sandy Loam
B-2	381.7	375.6*	None	NA	Sandy Loam
B-3	382.2	387.7	380.2	NA	Sandy Loam
B-4	387.2	373.3	377.4	0.92"/hr	Loam
B-5	389.3	380.8	None	9.52"/hr	Sand
C-1	397.7	388.7	394.5	0.87"/hr	Loam
C-2	397.9	388.9	392.9	NA	Loam
C-3	399.9	393.9	393.6	8.40"/hr	Sandy Loam

*Hard rock layer encountered below proposed bottom of structure foundation.

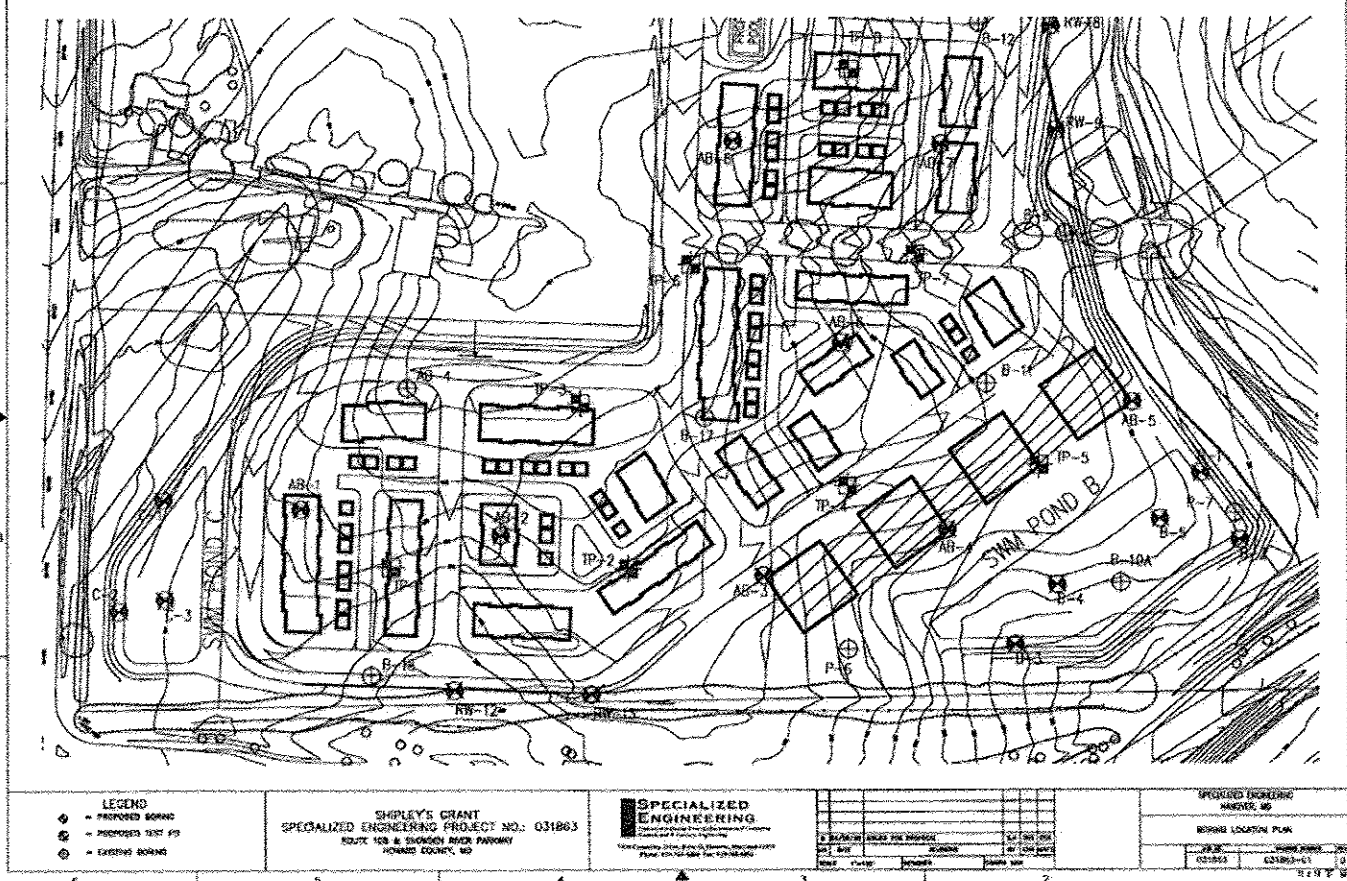
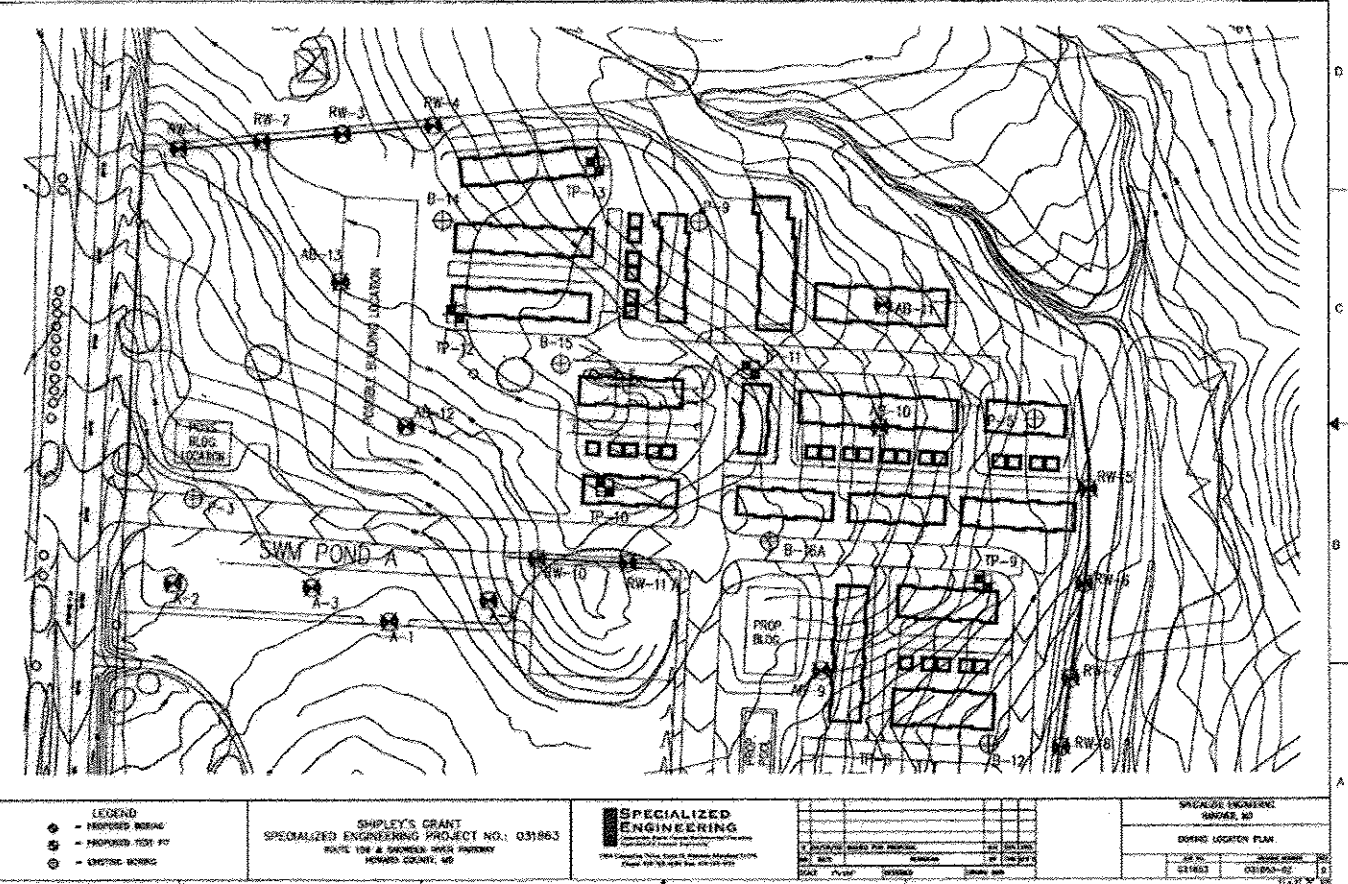
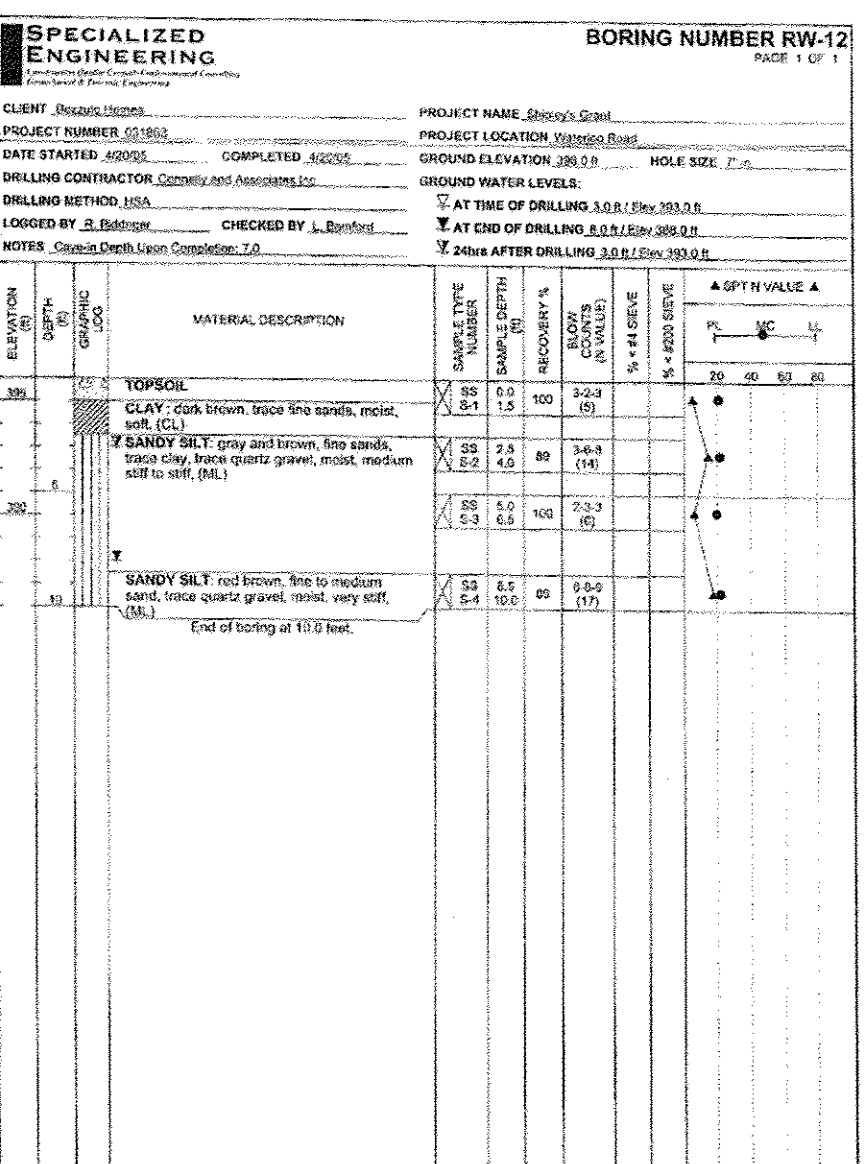
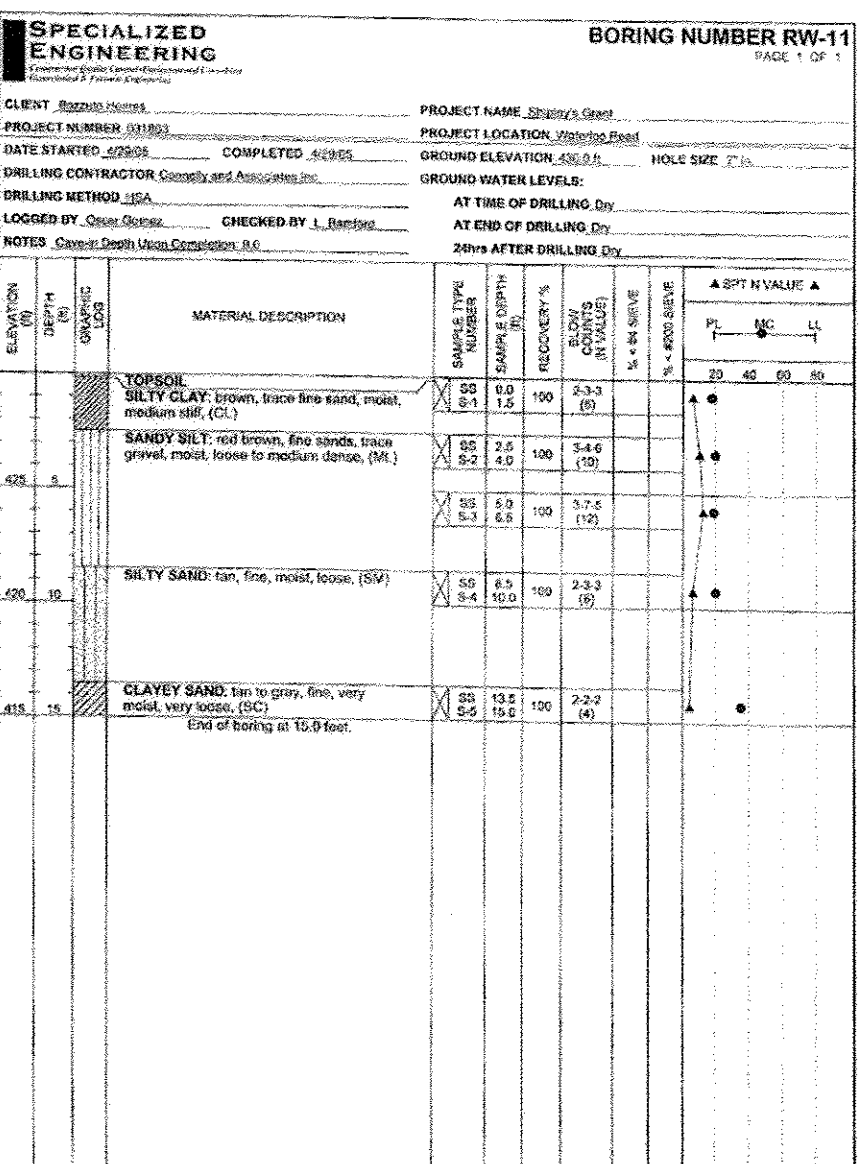
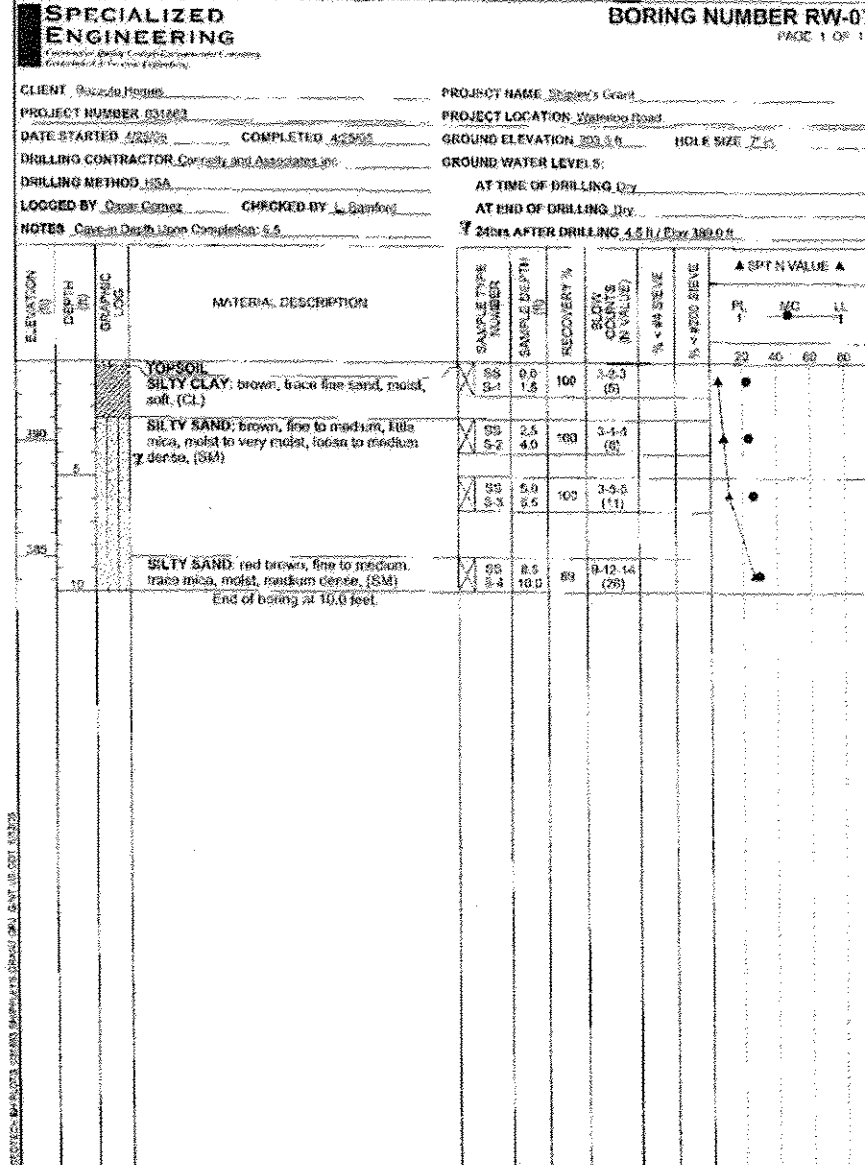
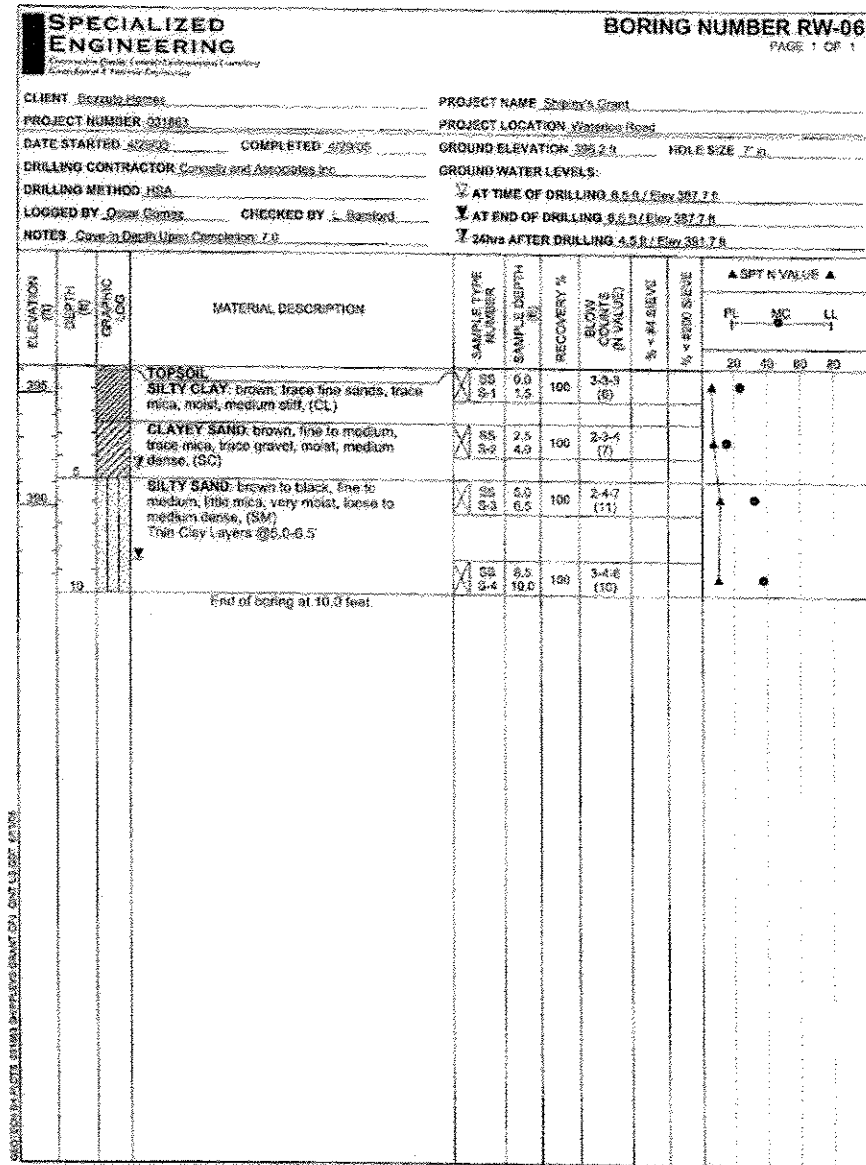
Subsequent to obtaining the termination depths of the test borings, a 2-inch diameter PVC pipe was installed to the base level of the test boring for infiltration testing purposes. Following the placement of the pipe, bentonite clay was placed around the pipe as a backfill material. Water was added to the pipe to a minimum height of 30 inches above the base of the pipe for pre-soak purposes.

Slightly prior to or in excess of a 24-hour time interval following the aforementioned fieldwork, infiltration testing was performed at the project site. The testing consisted of adding water to each infiltration pipe to ensure that a 3.0-ft. head was present at the start of the test. Subsequent to this, the water levels in the pipes were measured over a 4-hour time period and the associated time of the readings recorded in parallel.

Infiltration test results are presented in tabular format in Appendix G to this report. A review of the results will indicate that (residual) infiltration rates ranged from 0.67 inches per hour to approximately 11.68 inches per hour.

It is recommended that during construction of the infiltration structures, a geotechnical engineer examine the exposed subgrade soils during construction to verify that the soil conditions are consistent with the test boring results.

CLAY (CL, SC, CH, CG) soil types, suitable for use in a cut-off trench and embankment core of a SWM pond, were encountered in several of the test borings at the site. If clay soils from the site are not available, and are required for construction, the clay soils would have to be imported from off site.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 9/19/06

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 9/19/06

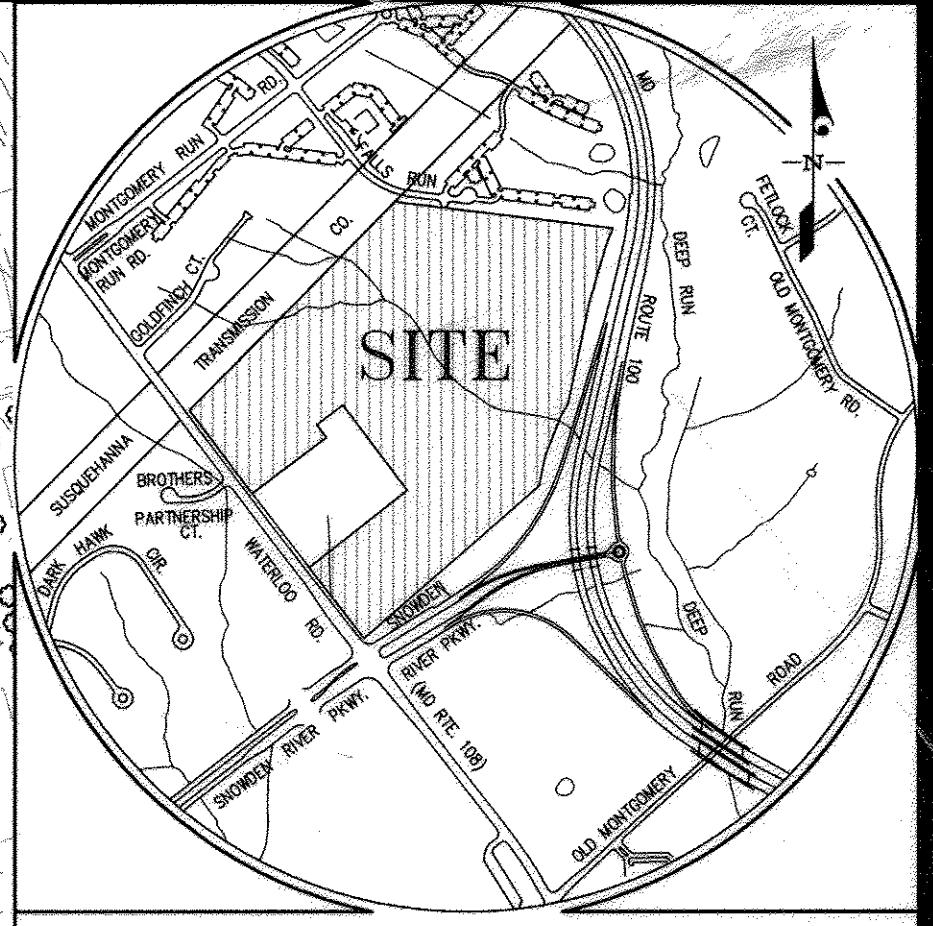
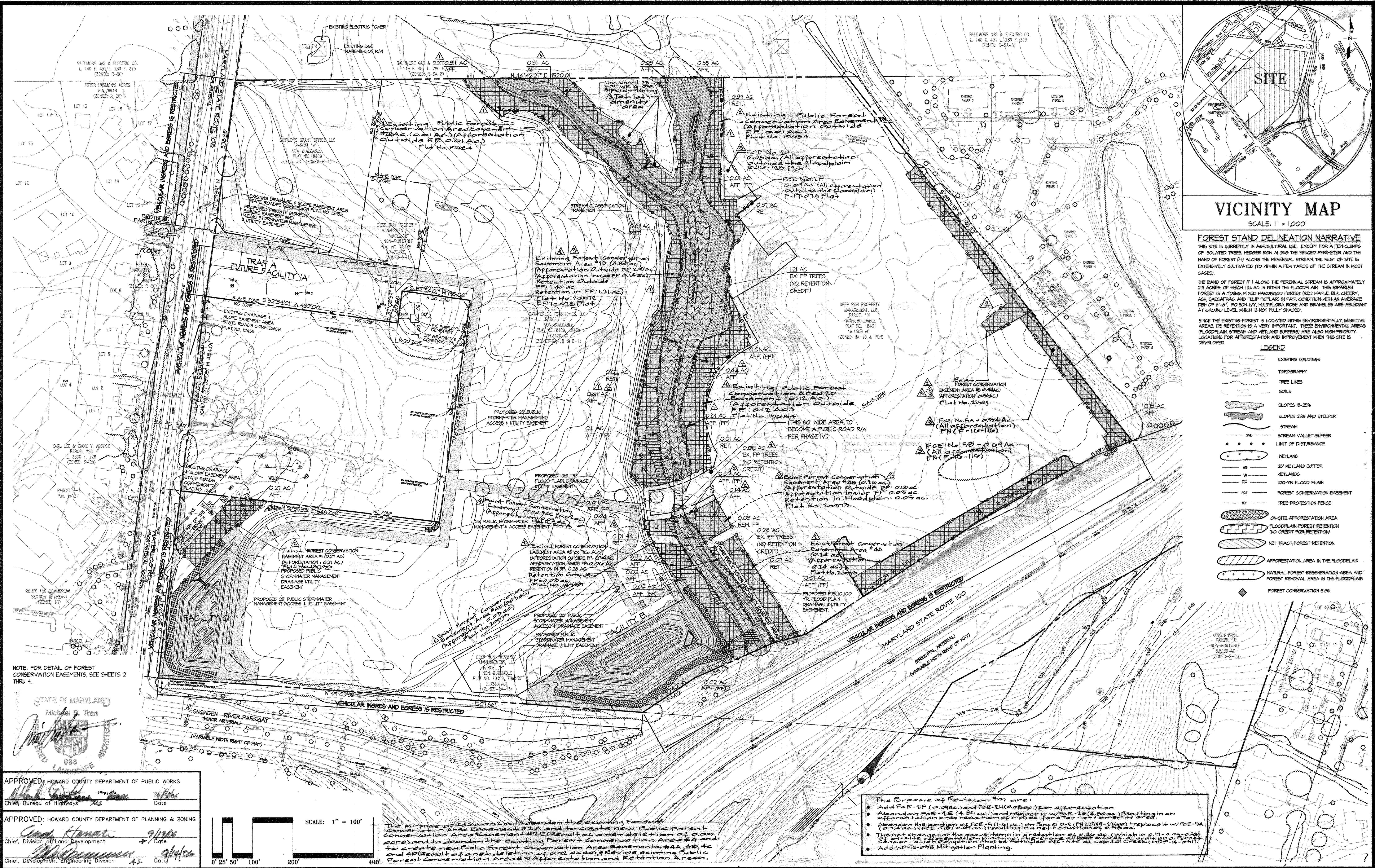
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 TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APPR.

DEVELOPER/OWNER PARCEL C
 BA Waterloo Townhomes, LLC
 c/o Bozzuto Homes, Inc.
 7850 Walker Drive, Suite 400
 Greenbelt, MD 20770-3203
 Attn: Duncan Sidell
 301-623-1525

SOIL BORING DETAILS 09/08/2016
SHIPLEY'S GRANT
 Non-buildable Parcels "A" thru "E"
 Tax Map 37, Grid I-2, Part of Parcel 4

SCALE	ZONING	G. L. W. FILE NO.
NO SCALE	R-A-15/B-1/POR	03006
DATE	TAX MAP - GRID	SHEET
JAN, 2006	37-1&2	20 OF 25



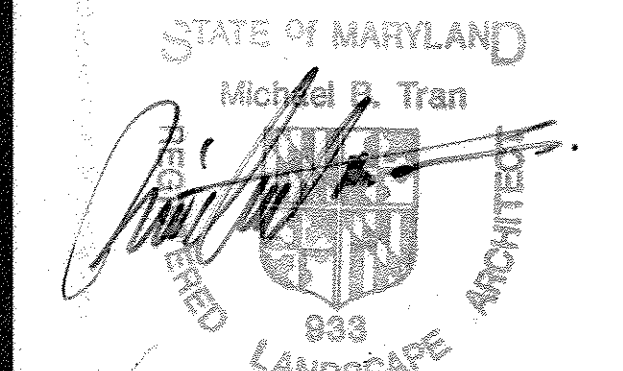
VICINITY MAP
SCALE: 1" = 1000'

FOREST STAND DELINEATION NARRATIVE
THIS SITE IS CURRENTLY IN AGRICULTURAL USE. EXCEPT FOR A FEW CLUMPS OF ISOLATED TREES, REDGUM ALONG THE FENCED PERMETER AND THE BAND OF FOREST (F) ALONG THE PERENNIAL STREAM, THE REST OF SITE IS EXTENSIVELY CULTIVATED (TO WITHIN A FEW YARDS OF THE STREAM IN MOST CASES).
THE BAND OF FOREST (F) ALONG THE PERENNIAL STREAM IS APPROXIMATELY 2.4 ACRES OF WHICH 1.31 AC IS WITHIN THE FLOODPLAIN. THIS RIPARIAN FOREST IS A YOUNG MIXED HARDWOOD FOREST (RED MAPLE, BLK CHERRY, ASH, SASSAPARILLA, AND TULIP FERN) IN FAIR CONDITION WITH AN AVERAGE DBH OF 6" - 8". POISON IVY, MULTIFLORA ROSE AND BRANBLES ARE ABUNDANT AT GROUND LEVEL WHICH IS NOT FULLY SHADED.

SINCE THE EXISTING FOREST IS LOCATED WITHIN ENVIRONMENTALLY SENSITIVE AREAS, ITS RETENTION IS A VERY IMPORTANT. THESE ENVIRONMENTAL AREAS (FLOODPLAIN, STREAM AND WETLAND BUFFERS) ARE ALSO HIGH PRIORITY LOCATIONS FOR AFFORESTATION AND IMPROVEMENT WHEN THIS SITE IS DEVELOPED.

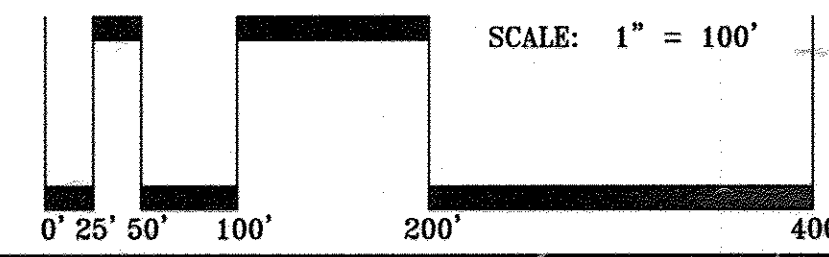
- LEGEND**
- EXISTING BUILDINGS
 - TOPOGRAPHY
 - TREE LINES
 - SOILS
 - SLOPES 15-25%
 - SLOPES 25% AND STEEPER
 - STREAM
 - STREAM VALLEY BUFFER
 - LIMIT OF DISTURBANCE
 - WETLAND
 - 25' WETLAND BUFFER
 - WETLANDS
 - 100-YR FLOOD PLAIN
 - FCE FOREST CONSERVATION EASEMENT
 - TF TREE PROTECTION FENCE
 - ON-SITE AFFORESTATION AREA
 - FLOODPLAIN FOREST RETENTION (NO CREDIT FOR RETENTION)
 - NET TRACT FOREST RETENTION
 - AFFORESTATION AREA IN THE FLOODPLAIN
 - NATURAL FOREST REGENERATION AREA AND FOREST REMOVAL AREA IN THE FLOODPLAIN
 - FOREST CONSERVATION SIGN

NOTE: FOR DETAIL OF FOREST CONSERVATION EASEMENTS, SEE SHEETS 2 THRU 4.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways
Date: 7/1/16

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development
Date: 9/14/16



The purpose of Revision 2 is to abandon the existing Forest Conservation Area Easement #12 and to create new Public Forest Conservation Area Easement #12 (Result of a net deletion of 0.09 acre) and to abandon the existing Forest Conservation Area #4 and to create new Public Forest Conservation Area Easements #4A, 4B, 4C and 4D (Result of a net deletion of 0.02 acre).
The purpose of Revision 2 is to abandon the existing Forest Conservation Area Easement #12 and to create new Public Forest Conservation Area Easement #12 (Result of a net deletion of 0.09 acre) and to abandon the existing Forest Conservation Area #4 and to create new Public Forest Conservation Area Easements #4A, 4B, 4C and 4D (Result of a net deletion of 0.02 acre).
The purpose of Revision 2 is to abandon the existing Forest Conservation Area Easement #12 and to create new Public Forest Conservation Area Easement #12 (Result of a net deletion of 0.09 acre) and to abandon the existing Forest Conservation Area #4 and to create new Public Forest Conservation Area Easements #4A, 4B, 4C and 4D (Result of a net deletion of 0.02 acre).

The Purpose of Revision #2 are:

- Add FCE 1F (0.09 ac) and FCE 2H (0.09 ac) for afforestation.
- Abandon FCE 1E (0.09 ac) and replace it with FCE 1G (0.09 ac). Resulting in an afforestation area reduction of 0.09 ac for a net 1.01 ac.
- Abandon the portion of FCE 5 (0.14 ac) on Parcel P-5 (PN 14589-12000) and replace it w/ FCE 5A (0.14 ac) on Parcel P-5 (PN 14589-12000) resulting in a net deletion of 0.02 ac.
- The net change for the above items is a reduction of 0.02 ac, which is 0.17 - 0.02 = 0.15 ac. If an on-site afforestation area is added to the site at a rate of 100% (100% of 0.15 ac = 0.15 ac).
- Add WP-16-028 Mitigation Planting.

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 230 - BURTNSVILLE OFFICE PARK
BURTNSVILLE, MARYLAND 20866
TEL: 301-421-4024 BAL: 410-880-1820 DC/VA: 301-589-2524 FAX: 301-421-4186

DATE	REVISION	BY	APPR.
4-7-2016	REV. FCE-1E, FCE-5: add FCE-2F, FCE-1G; FCE-1H described in the purpose note for revision #2	JL	WJ
11-12-16	REV. FCE-1E, FCE-5: add FCE-1G; FCE-1H described in the purpose note for revision #2	JL	WJ
1-5-17	REV. FCE 5 for abandonment approval letter	KLF	MIT
4/1/2016	Abandoned FCE 1A & 1A, added FCE 1E, 4A, 4B, 4C, 4D	WJ	WJ
2/10/16	REV. FCE 2 & added FCE 2A, 2B & 2C	JRS	MIT
1-12-2006	REVISED PER DPZ COMMENTS.	JRS	
10-27-2005	REVISED PER DPZ COMMENTS.	JRS	

DEVELOPER/OWNER PARCEL C
BA Waterloo Townhomes, LLC
c/o Bozzuto Homes, Inc.
7850 Walker Drive, Suite 400
Greenbelt, MD 20770-3203
Attn: Durcan Sidell
301-625-1525

FOREST CONSERVATION PLAN
SHIPLEY'S GRANT
Non-buildable Parcels "A" thru "E"
PLAT NUMBERS 18428 THROUGH 18431

09/08/2016
NO ASBUILT INFORMATION

SCALE	ZONING	G. L. W. FILE No.
1"=100'	R-A-15/B-1/POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	22 OF 25

FOREST CONSERVATION WORKSHEET
HDR (RESIDENTIAL ZONE)

NET TRACT AREA:
 A. Total tract area = 58.61
 B. Area within 100 year Floodplain = 1.82
 C. Area within MISC R/W or road R/W constructed by public fund = 0.00
 D. Net tract area = 56.79

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)
 Input the number "1" under the appropriate land use zoning, and limit to only one entry.

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

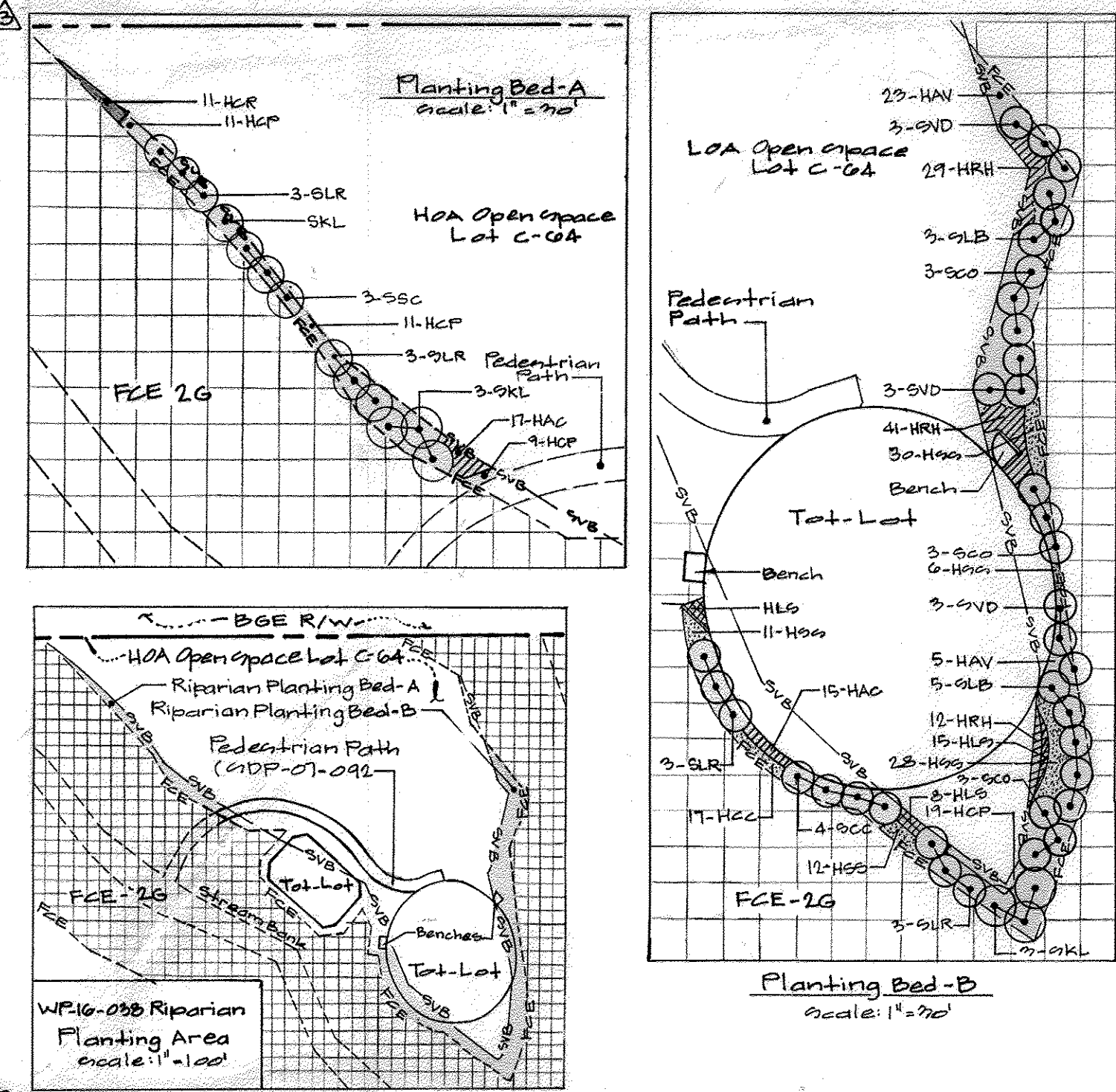
E. Afforestation Threshold: 15% x D = 8.52
 F. Conservation Threshold: 20% x D = 11.36

EXISTING FOREST COVER:
 G. Existing forest cover (excluding floodplain) = 1.48
 H. Area of forest above afforestation threshold = 0.00
 I. Area of forest above conservation threshold = 0.00

BREAK EVEN POINT:
 J. Forest retention above threshold with no mitigation = 0.00
 K. Clearing permitted without mitigation = 0.00

PROPOSED FOREST CLEARING:
 L. Total area of forest to be cleared = 0.00
 M. Total area of forest to be retained = 1.48

PLANTING REQUIREMENTS:
 N. Reforestation for clearing above conservation threshold = 0.00
 O. Reforestation for clearing below conservation threshold = 0.00
 P. Credit for retention above conservation threshold = 0.00
 Q. Total reforestation required = 0.00
 R. Total afforestation required = 1.94
 S. Total afforestation and reforestation required = 1.94
 T. Total afforestation proposed (on-site) = 5.14
 U. Proposed forest conservation banking = 1.90



FOREST CONSERVATION EASEMENT AREA TABULATION

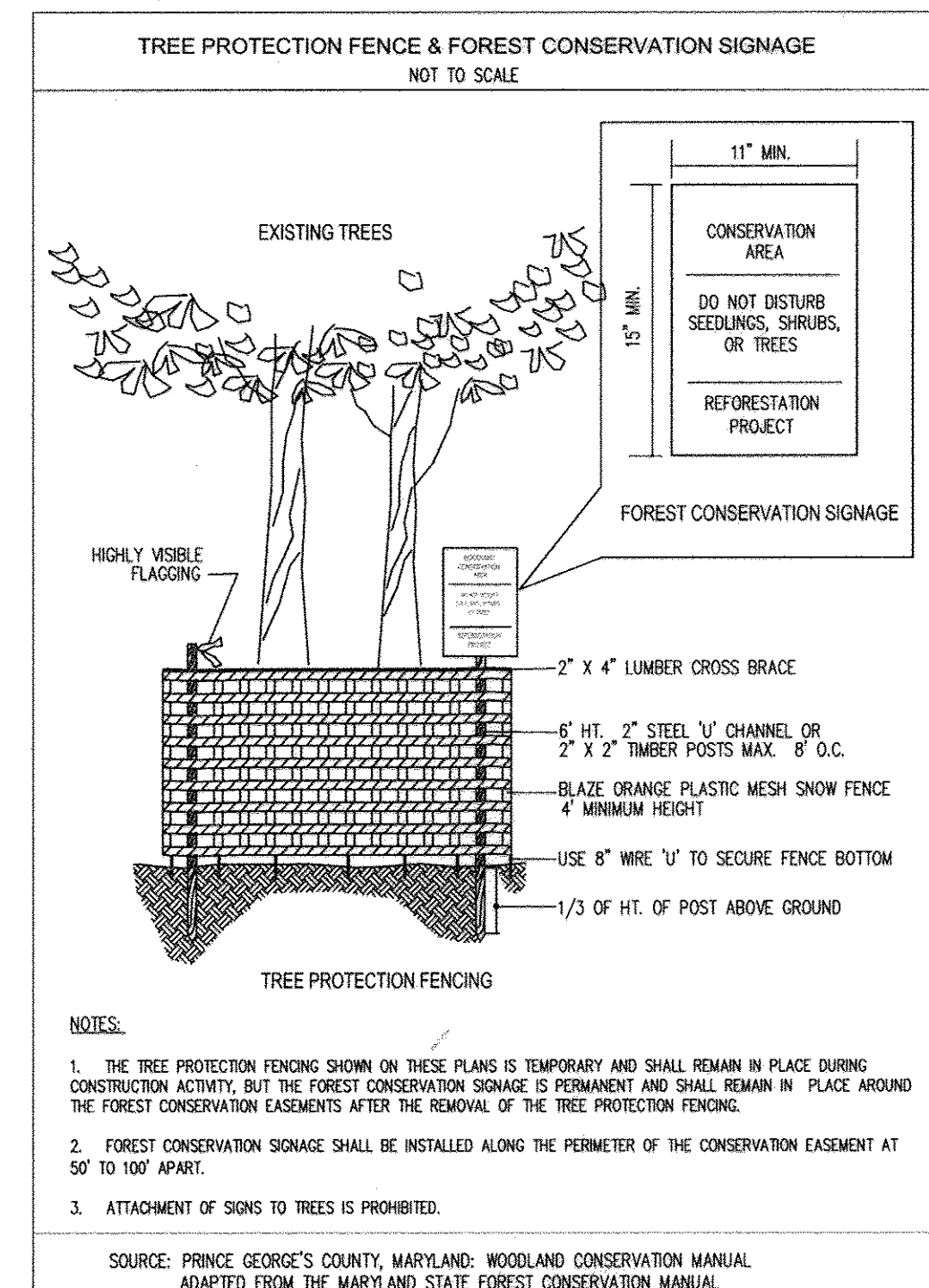
FOREST CONSERVATION EASEMENT (FCE) AREA	1	2	3	4A	4B	5A	5B	TOTAL
CREDITED FOREST RETENTION AREA ON NET TRACT (IN AC.)	N/A	1.40	0.08	N/A	N/A	N/A	N/A	1.48
NON-CREDITED FOREST RETENTION AREA IN FLOODPLAIN (IN AC.)	N/A	1.21	0.28	0.05	N/A	N/A	N/A	1.54
FOREST PLANTING AREA OUTSIDE THE FLOODPLAIN (IN AC.)	0.27	2.90	0.34	0.47	1.47	4.91		
FOREST PLANTING AREA WITHIN THE FLOODPLAIN (IN AC.)	N/A	0.14	0.00	0.03	N/A	0.23		
TOTAL ACREAGE OF AFFORESTATION PROVIDED (IN AC.)	0.27	2.50	0.40	0.50	1.47	5.14		
NATURAL REGENERATION AREA (IN AC.)	N/A	N/A	N/A	N/A	N/A	N/A		
MINIMUM TOTAL AREA IN CONSERVATION EASEMENT (IN AC.)	0.27	5.11	0.70	0.55	1.47	8.10		

FOREST CONSERVATION PLANTING QUANTITY SCHEDULE

FOREST CONSERVATION LOCATION	1	2	3	4A	4B	5A	5B	TOTAL
FOREST PLANTING AREA OUTSIDE THE FLOODPLAIN (IN AC.)	0.27	2.90	0.34	0.47	1.47	4.91		
FOREST PLANTING AREA WITHIN THE FLOODPLAIN (IN AC.)	N/A	0.14	0.00	0.03	N/A	0.23		
TOTAL ACREAGE OF AFFORESTATION PROVIDED (IN AC.)	0.27	2.50	0.40	0.50	1.47	5.14		
BASE QUANTITY OF 2" CAL. TREES REQUIRED (AT 100 TREES/AC.)	27	250	40	50	147	514		
REQUIRED QUANTITY OF 2" CAL. TREES TO BE PLANTED*	27	250	40	50	147	514		

* FOR PLANTING WITH 1" CAL. TREES, THE REQUIRED QUANTITY SHALL BE DOUBLED.

NOTE: THE QUANTITY SHOWN ABOVE IS FOR PLANTING WITH 2" CAL. TREES AT 20' X 20' SPACING.



TREE PLANTING AND MAINTENANCE CALENDAR

TASKS	MONTHS											
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
TRANSPLANT OF 2" DBH OR GREATER	[Bar chart showing activity from Feb to Oct]											
PLANTING SEEDLINGS, WHIPS	[Bar chart showing activity from Feb to Oct]											
MINIMUM MONITORING	*										*	*
FERTILIZER + (IF NEEDED)												
WATER ++												
PRUNING												

KEY:
 * ACTIVITIES DURING THESE MONTHS ARE DEPENDENT UPON GROUND CONDITIONS
 [Bar with diagonal lines] GREATLY RECOMMENDED
 [Bar with horizontal lines] RECOMMENDED WITH ADDITIONAL CARE
 [Bar with vertical lines] RECOMMENDED
 + DEPENDANT UPON SITE CONDITIONS
 ++ DEPENDANT UPON SITE CONDITIONS, WEEKLY WATERING IS GREATLY RECOMMENDED FROM MAY THROUGH OCTOBER UNLESS WEEKLY RAINFALL EQUALS 1"

NOTE:
 THE PLANTING AND CARE OF TREES IS MOST SUCCESSFUL WHEN COORDINATED WITH THE LOCAL CLIMATIC CONDITIONS. THIS CALENDAR SUMMARIZES SOME OF THE RECOMMENDED TIME FRAMES FOR BASIC REFORESTATION AND STRESS REDUCTION ACTIVITIES.

SOURCE: ADAPTED FROM THE MARYLAND STATE FOREST CONSERVATION MANUAL

FOREST CONSERVATION SURETY

FOREST RETENTION AT \$0.20/SF X (1.48 AC X 43,560 SF/AC) = \$12,893.76
 RE/AFFORESTATION AT \$0.50/SF X (5.66 AC X 43,560 SF/AC) = \$12,710.40
 TOTAL FOREST CONSERVATION SURETY = \$130,004.16

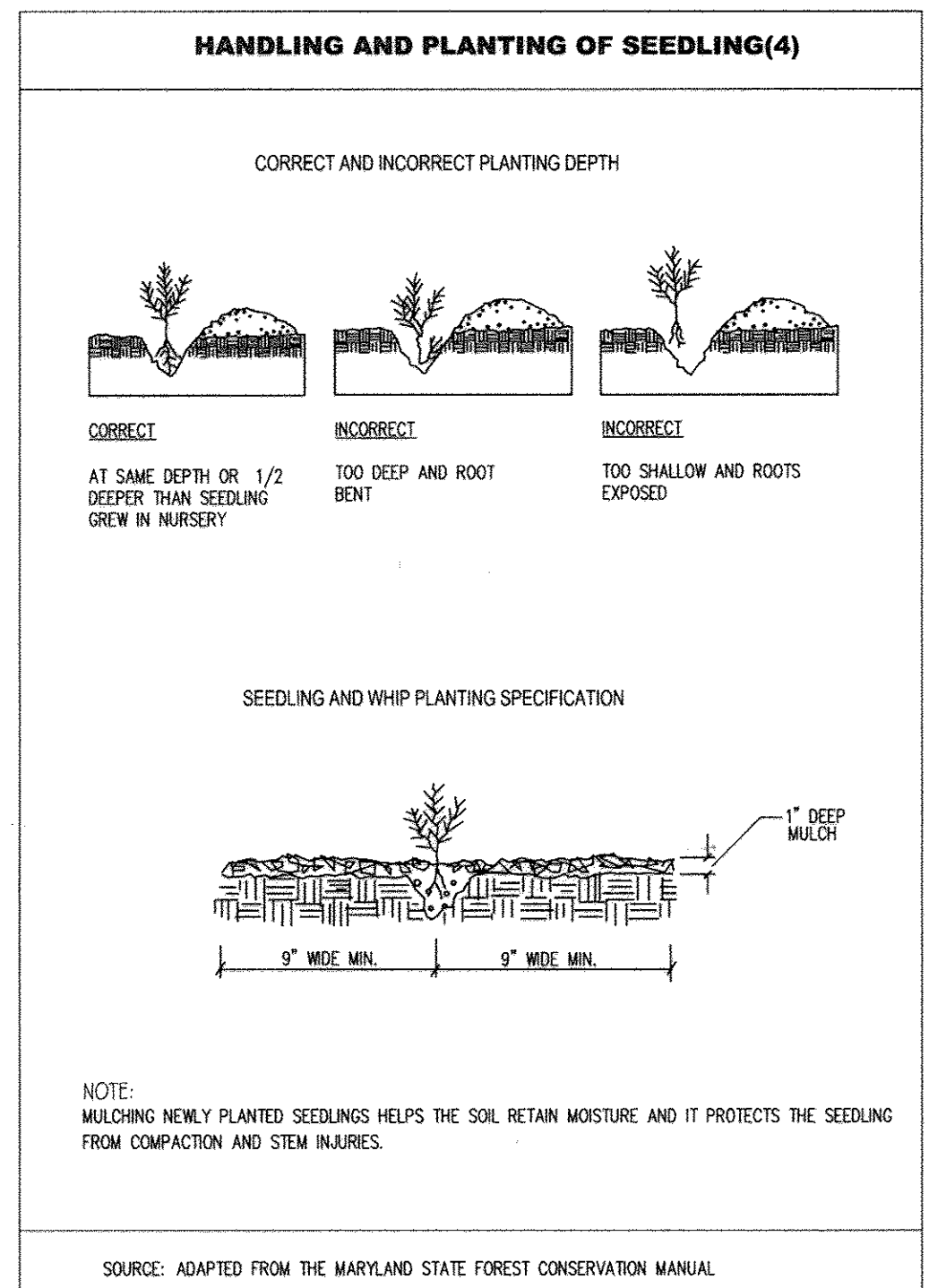
FOREST CONSERVATION PLANT LIST

Plant Name (Botanical/Common)	1	2	3	4A	4B	5A	5B	TOTAL
Acer Rubrum / Red Maple	6	60	8	10	0	0	0	104
Liquid Amber / Sycamore	6	50	3	10	0	0	0	109
Liriodendron Tulipifera	5	50	3	10	0	0	0	108
Quercus Palustris / Pin Oak	5	50	3	10	0	0	0	108
Quercus Rubrum / Red Oak	5	50	3	10	0	0	0	108
Total	27	250	40	50	147	514		

Forest Conservation Riparian Plant List
(for WFP-10-09B mitigation planting)

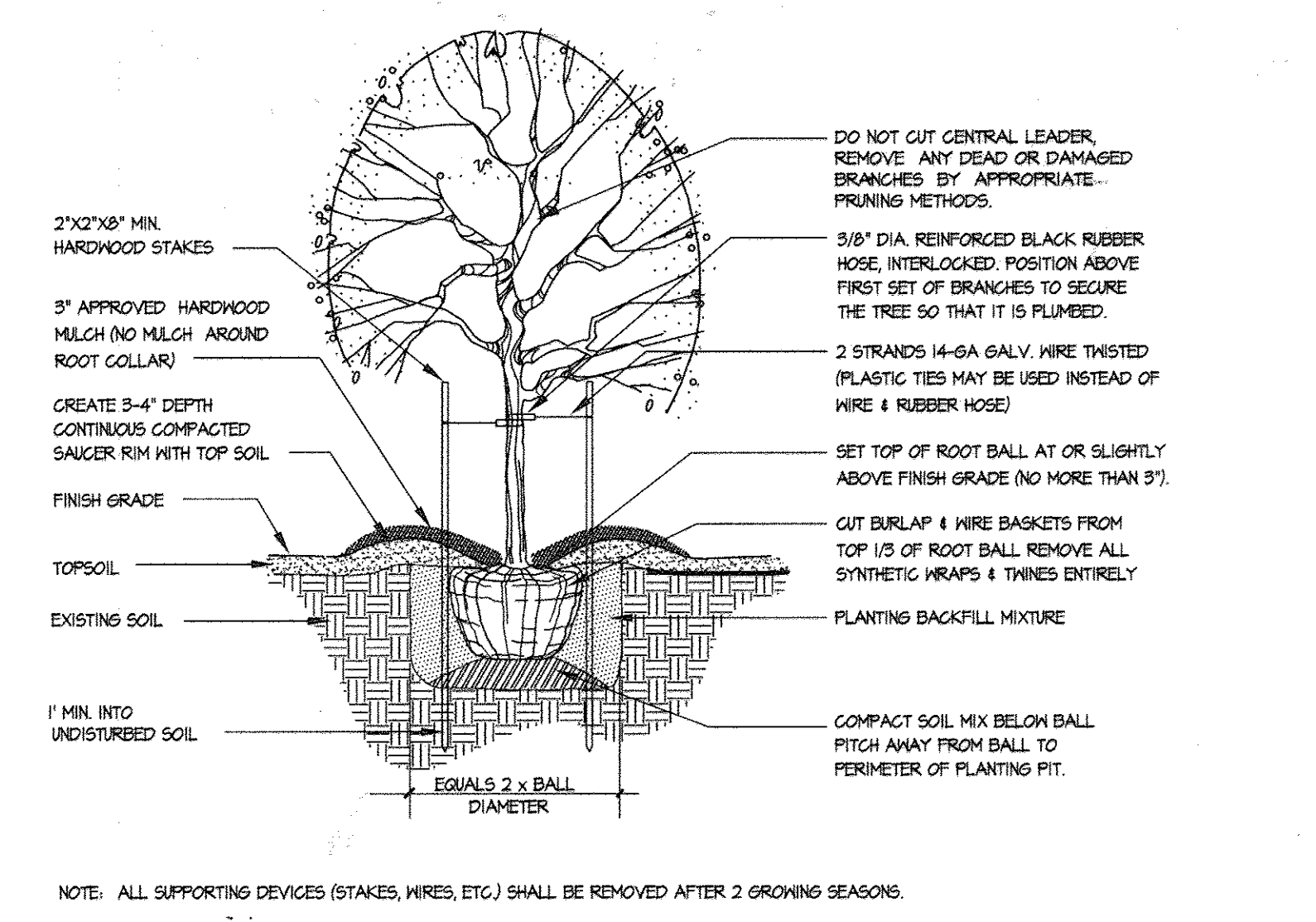
Plant Name (Botanical/Common)	Symbol	Size	Quantity Bed-A	Quantity Bed-B	Total
Shrubs					
Cephalanthus occidentalis/Butterbush	SCB		0	9	9
Kalmia latifolia/Mountain Laurel	SKL		4	3	7
Leucothoe racemosa/Fetterbush	SLR	24" approx. 90" Ht. (Min.)	0	0	0
Lindera benzoin/Spicebush	SLB		0	0	0
Sambucus canadensis/Elderberry	SCB		3	4	7
Viburnum dentatum/Southern Arrowwood	SVD		0	9	9
Herbaceous					
Andropogon virginicus/Broomsedge	HAV		0	28	28
Carex pennsylvanica/Oxeye	HCA		0	19	19
Schizachyrium scoparium/Bluestem	HSC		0	28	28
Aquilegia canadensis/Wild Columbine	HAC	1- Gal (or 1.5 Gal) (1.5' Ht. Min.)	17	15	32
Cimicifuga racemosa/Black Snakeroot	HCR		11	0	11
Lilium superbum/Turkey Cap Lily	HLB		0	34	34
Rudbeckia hirta/Black-eyed Susan	HRH		0	21	21

Notes:
 1. Space herbaceous plants at 18" oc. (Bilateral-triangle spacing) for 1-gal. size. (planting 1-gal. size, then space at 12" oc. and increase quantity 1-gal. above by 25%.
 2. Cover soils in riparian planting bed with approved hardwood mulch after planting.



- FOREST CONSERVATION PROGRAM SEQUENCE**
(TO BE PERFORMED AT FINAL PLAN STAGE)
- OBTAIN ALL NECESSARY PERMITS.
 - STAKEOUT LIMITS OF DISTURBANCE.
 - FIELD MEETING TO REVIEW AND VERIFY LIMIT OF DISTURBANCE FOR THE SITE GRADING AND CONSTRUCTION.
 - INSTALL FOREST CONSERVATION SIGNS AND FOREST PROTECTION DEVICES (FENCES) ALONG THE PORTION OF THE LIMIT OF DISTURBANCE (THAT INVOLVES CLEARING AND/OR RETENTION OF TREES).
 - COMMENCE SITE CONSTRUCTION.
 - INSTALL FOREST PLANTING AND THE REMAINDER OF THE CONSERVATION SIGNS ALONG THE EDGE OF THE CONSERVATION EASEMENT. MOVE CONSERVATION SIGNS INSTALLED IN #4 (ABOVE) TO THE EDGE OF THE CONSERVATION EASEMENT.
 - INSPECTION AND CERTIFICATION FOR THE RELEASE OF THE CONSTRUCTION PERIOD OBLIGATIONS; START OF POST-CONSTRUCTION MANAGEMENT PERIOD.
 - POST-CONSTRUCTION MANAGEMENT FOR A PERIOD OF 2 YEARS (MIN).
 - FINAL INSPECTION AND CERTIFICATION FOR THE RELEASE OF THE OWNER'S FOREST CONSERVATION SURETY.
(TO BE PERFORMED AT FINAL PLAN STAGE)

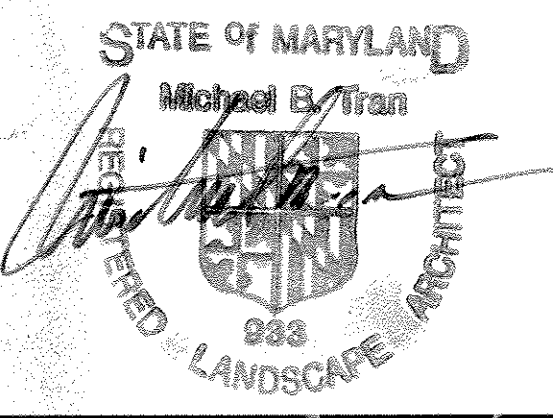
- GENERAL NOTES**
- THIS REFORESTATION PLAN IS PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF SUBTITLE 12 "FOREST CONSERVATION" OF THE HOWARD COUNTY CODE.
 - IMPLEMENTATION OF THIS PLAN MUST BE PERFORMED BY A CONTRACTOR THAT IS KNOWLEDGEABLE AND EXPERIENCED IN AFFORESTATION/REFORESTATION TECHNIQUES AND PRACTICES.
 - AT FINAL PLAN STAGE, THE OWNER IS RESPONSIBLE FOR A 2-YEAR (MIN.) POST-CONSTRUCTION MAINTENANCE PERIOD WHICH INVOLVES ACTIVITIES NECESSARY TO ENSURE SURVIVAL AND GROWTH OF THE CONSERVATION AREA. TWO INSPECTIONS PER YEAR BY A QUALIFIED PROFESSIONAL AT BEGINNING AND END OF THE GROWING SEASON, ARE RECOMMENDED IN ORDER TO TAKE REMEDIAL STEPS AS NECESSARY. IF, AFTER ONE YEAR, THE POSSIBILITY EXISTS THAT THE ORIGINAL PLANTING (IF APPLICABLE) WILL NOT MEET SURVIVAL RATE STANDARDS, THE APPLICANT MAY CHOOSE TO ESTABLISH REINFORCEMENT PLANTINGS.
 - AT THE END OF THE POST-CONSTRUCTION MANAGEMENT AND PROTECTION PERIOD, CERTIFICATION BY A QUALIFIED CONSULTANT WILL BE REQUIRED BEFORE TO THE OWNER CAN BE RELEASED FROM HIS/HER FOREST CONSERVATION OBLIGATION TO THE ADMINISTRATOR OF THE HOWARD COUNTY FOREST CONSERVATION PROGRAM.
 - THE DEVELOPER/BUILDER SHALL (IN WRITING) NOTIFY ALL LOT OWNERS OF THIS DEVELOPMENT OF THE EXISTENCE OF FOREST CONSERVATION AREAS AND THAT DISTURBANCE TO THE FOREST CONSERVATION AREAS OR THE REMOVAL OF FOREST CONSERVATION SIGNAGE IS PROHIBITED.
 - THE PROPOSED FOREST CONSERVATION EASEMENTS (FCE) SHOWN ON THESE PLANS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1202 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FCE; HOWEVER, THE INITIAL GRADING TO DEVELOP THE SITES (AT SUBSEQUENT PLAN STAGES) AND FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
 - TO FULFILL THE FOREST CONSERVATION OBLIGATION FOR THE DEVELOPMENT OF THIS SITE, AT LEAST 85% CREDITED ACRES OF ON-SITE FOREST CONSERVATION EASEMENTS WHICH ARE COMPRISED OF 1.48± AC. OF NET TRACT RETENTION, 1.54± AC. OF NON-CREDITED FOREST RETENTION WITHIN THE FLOODPLAIN, AND 5.14± AC. OF AFFORESTATION PLANTING. FOREST CONSERVATION EASEMENTS NUMBER ONE THROUGH FOUR SHALL BE RECORDED ON FINAL PLAT F 06-019.
 - RECORDATION AND PLANTING OF FOREST CONSERVATION EASEMENT NUMBER FIVE SHALL BE DELAYED UNTIL PARCEL D IS MASS GRADED IN CONJUNCTION WITH THE PHASE IV FINAL DEVELOPMENT PLANS AND PLATS.
 - THE OUTSTANDING FOREST CONSERVATION OBLIGATION OF 1.90 ACRES OF OFF-SITE AFFORESTATION FOR THIS SUBDIVISION SHALL BE MET BY PROVIDING 1.90 ACRES OF OFF-SITE AFFORESTATION OR 3.80 ACRES OF OFF-SITE RETENTION BEFORE THE LAST PHASE OF THIS PROJECT CAN OBTAIN APPROVAL BY THE DPZ.
 - FOREST CONSERVATION SURETY IN THE AMOUNT OF \$137,910.96 FOR THE FIVE ON-SITE FOREST CONSERVATION EASEMENTS WILL BE POSTED AS A PART OF THE DEVELOPER'S AGREEMENTS



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 9/16/06

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 9/14/06

Chief, Development Engineering Division
 Date: 9/14/06



GLW GUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE, SUITE 250 - BERTHLETTVILLE OFFICE PARK
 BERTHLETTVILLE, MARYLAND 20886
 TEL: 301-421-4024 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.
4.7.2017	Revised FCE tab to update per note on COA	JRS	MIT
11.9.16	Revised FCE tab to update per note on COA	JRS	MIT
9.5.16	Revised FCE tab to update per note on COA	JRS	MIT
4/11/2016	Abandoned FCE 2A & 4, added FCE 2E, 4A, 4B, 4C, 4D	JRS	MIT
2/16/16	Revised FCE tab to incorporate FCE 2A, 2B, 4C, corrected FCE	JRS	MIT
11.22.2005	REVISED PER DPZ COMMENTS.	JRS	
10.27.2005	REVISED PER DPZ COMMENTS.	JRS	

OWNER: Deep Run Property Management, LLC, 191 Miller Hollow Lane, Lake City, Tennessee 37769, Attn: Robert L. Curtis, Jr., 865-494-0016

DEVELOPER/CONTRACT PURCHASER: Bozuto Homes, Inc., 7850 Walker Drive, Suite 400, Greenbelt, MD 20770-3203, Attn: John Burnham, 301-623-1511

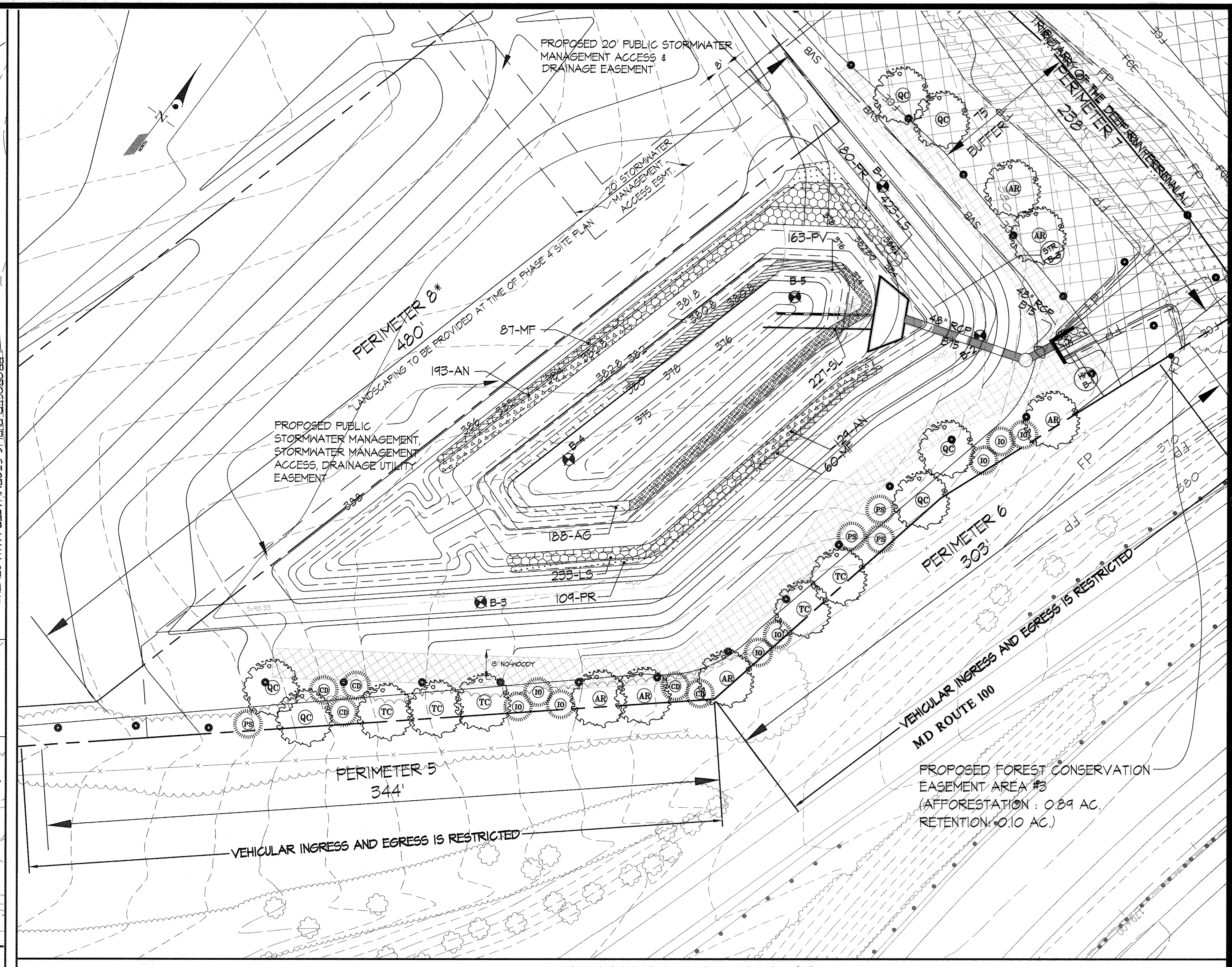
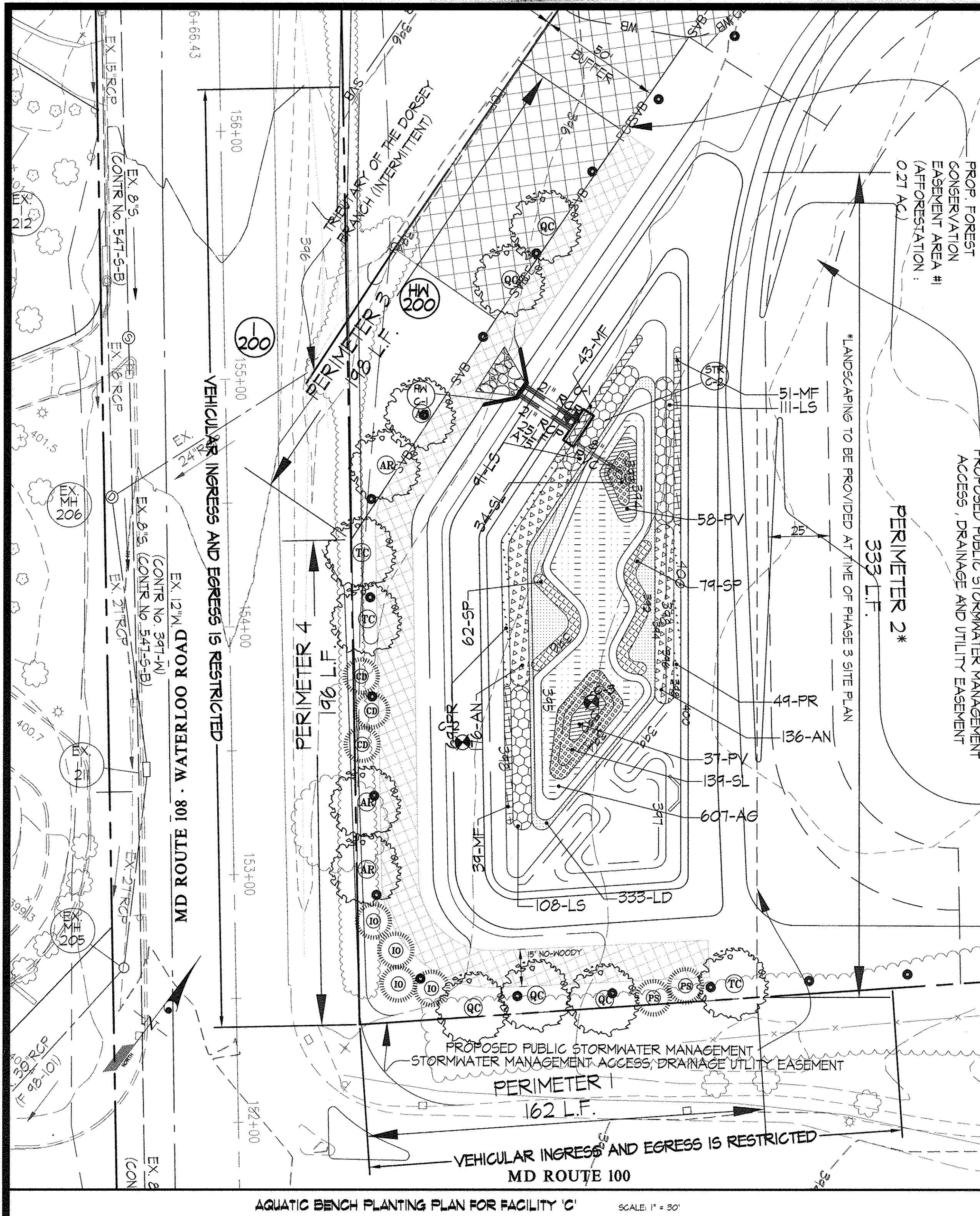
FOREST CONSERVATION NOTES, SCHEDULES AND DETAILS 09/08/2016

SHIPLEY'S GRANT
 Non-buildable Parcels "A" thru "E"
 Tax Map 37, Grid 1-2, Part of Parcel 4

NO ASBUILT INFORMATION

SCALE	ZONING	G. L. W. FILE No.
NTS	R-A-15/B-1/POR	03006
DATE	TAX MAP - GRID	SHEET
JAN., 2006	37-1&2	23 OF 25

HOWARD COUNTY, MARYLAND



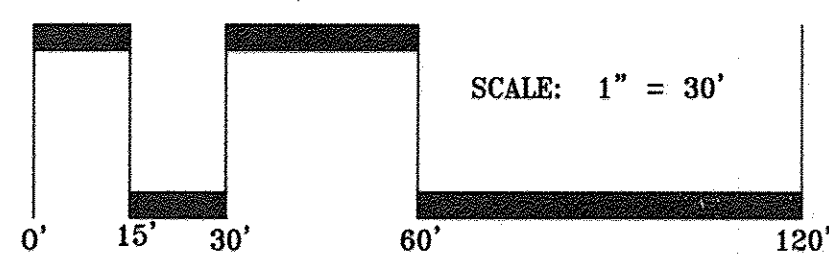
NOTE: EASEMENT SHADING HAS BEEN OMITTED FOR CLARITY. FOR INFORMATION NOT SHOWN, SEE SHEETS 2 THROUGH 4.

NOTE: EASEMENT SHADING HAS BEEN OMITTED FOR CLARITY. FOR INFORMATION NOT SHOWN, SEE SHEETS 2 THROUGH 4.

PLANT LIST FOR STORMWATER MANAGEMENT PONDS

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	NOTES
PERENNIALS/GROUND COVER				
AG	795	Andropogon glomeratus Bushy Beardgrass	1 gal. cont.	18" o.c. ZONE 1
AN	634	Aster novi-belgii New York Aster	1 gal. cont.	18" o.c. ZONE 3
LD	333	Lobelia dortmanna Water Lobelia	1 gal. cont.	18" o.c. ZONE 2
LS	966	Lobelia siphilitica Great Blue Lobelia	1 gal. cont.	18" o.c. ZONE 3
MF	237	Monarda fistulosa Wild Bergamot	1 gal. cont.	18" o.c. ZONE 4
SL	400	Sagittaria latifolia Duck Potato	1 gal. cont.	18" o.c. ZONE 1
SP	141	Scirpus pungens Three-Square Bulrush	1 gal. cont.	18" o.c. ZONE 2
PR	407	Polemonium reptans Jacob's Ladder	1 gal. cont.	18" o.c. ZONE 4
PV	258	Feltandra virginica Arrow Arum	1 gal. cont.	18" o.c. ZONE 1

THE REQUIRED IMPROVEMENTS TO MARYLAND ROUTE 102 (INCLUDING STREET TREES AND SIDEWALKS) SHALL BE PROCESSED, APPROVED AND BONDED THROUGH THE APPROPRIATE STATE AGENCIES IN ACCORDANCE WITH THE APPROVED PHASING INDICATED IN THE TRAFFIC IMPACT ANALYSIS.



THIS PLAN IS FOR PLANTING PURPOSES ONLY!

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 9/14/06

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING + ZONING
 Chief, Division of Land Development
 Date: 9/14/06

STATE OF MARYLAND
 Michael B. Tran
 LANDSCAPE ARCHITECT

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3809 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20886
 TEL: 301-421-4024 FAX: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DEVELOPER/OWNER PARCEL C
 BA Waterloo Townhomes, LLC
 c/o Bozzuto Homes, Inc.
 7850 Walker Drive, Suite 400
 Greenbelt, MD 20770-3203
 Attn: Duncan Stiddell
 301-623-1525

LANDSCAPE PLAN - STORMWATER MANAGEMENT 09/09/2016
 SHIPLEY'S GRANT
 Non-buildable Parcels "A" thru "E"
 PLAT NUMBERS 18428 THROUGH 18431
 NO ASBUILT INFORMATION

SCALE: AS SHOWN
 ZONING: R-A-15/B-1/POR
 DATE: JULY, 2006
 TAX MAP - GRID: 37-1&2
 G. L. W. FILE No.: 03006
 SHEET: 24 OF 25

L:\CADD\DRAWINGS\03006\SPMG\Bound 0's\Q's.dwg DES: JRS DRN: JRS CHK: KAF

10.21.05 REVISED PER DPZ COMMENTS. JRS BY APPR.

ELECTION DISTRICT No. 1

HOWARD COUNTY, MARYLAND

PLANT LIST				
SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	NOTES
SHADE TREES				
AR	10	Acer rubrum 'October Glory' October Glory Red Maple	2 1/2"-3" Cal. B&B 12' - 14' height 6' min. branching ht	
TC	8	Tilia cordata 'Greenspire' Greenspire Littleleaf Linden	2 1/2"-3" Cal. B&B 12' - 14' height 6' min. branching ht	
QC	9	Quercus coccinea Scarlet Oak	2 1/2"-3" Cal. B&B 12' - 14' height 6' min. branching ht	
EVERGREEN TREES				
CD	8	Cedrus deodara Deodar Cedar	8'-10' height	
IO	12	Ilex opaca American Holly	7-8' height 16 male and 31 female plants (1 male to 3 females)	
PS	6	Pinus strobus White Pine	8'-10' height	

PLANT MATERIALS AND PLANTING METHODS

A. PLANT MATERIALS

THE LANDSCAPE CONTRACTOR SHALL FURNISH AND INSTALL AND/OR DIG BALL, BURLAP AND TRANSPORT ALL OF THE PLANT MATERIALS CALLED FOR ON DRAWINGS AND/OR LISTED IN THE PLANT SCHEDULE.

1. PLANT NAMES

PLANT NAMES USED IN THE PLANT SCHEDULE SHALL CONFORM WITH "STANDARDIZED PLANT NAMES," LATEST EDITION.

2. PLANT STANDARDS

ALL PLANT MATERIAL SHALL BE EQUAL TO OR BETTER THAN THE REQUIREMENTS OF THE "USA STANDARD FOR NURSERY STOCK" LATEST EDITION AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN (HEREAFTER REFERRED TO AS AAN STANDARDS). ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY. SHALL HAVE A NORMAL HABIT OF GROWTH AND SHALL BE FIRST QUALITY, SOUND, VIGOROUS, WELL-BRANCHED AND WITH HEALTHY, WELL-FURNISHED ROOT SYSTEMS. THEY SHALL BE FREE OF DISEASE, INSECT PESTS AND MECHANICAL INJURIES.

3. PLANT MEASUREMENTS

ALL PLANTS SHALL CONFORM TO THE MEASUREMENTS SPECIFIED IN THE PLANT SCHEDULE AS APPROVED BY THE ARC.

A. CALIPER MEASUREMENTS SHALL BE TAKEN SIX INCHES (6") ABOVE GRADE FOR TREES UNDER FOUR (4) INCH CALIPER AND TWELVE (12") ABOVE GRADE FOR TREES FOUR INCHES (4") IN CALIPER AND OVER.

B. MINIMUM BRANCHING HEIGHT FOR ALL TREES SHALL BE SIX FEET (6'). MAXIMUM EIGHT FEET (8').

C. MINIMUM SIZE FOR PLANTING SHADE TREES SHALL BE 3"-37" CALIPER, 14'-16' IN HEIGHT.

D. MINIMUM SIZE FOR PLANTING MINOR OR INTERMEDIATE FOCUS TREES (MINES CRABAPPLES, ETC.) SHALL BE 3"-37" CALIPER, 10'-12' IN HEIGHT.

E. MINIMUM SIZE FOR PLANTING SHRUBS SHALL BE 18" - 24" SPREAD UNLESS NOTED OTHERWISE.

F. CALIPER, HEIGHT, SPREAD AND SIZE OF BALL SHALL BE GENERALLY AS FOLLOWS:

CALIPER	HEIGHT	SPREAD	SIZE OF BALL
3" - 35"	14'-16'	6'-8'	32" DIAMETER
35" - 41"	14'-18'	8'-10'	36" DIAMETER
41" - 45"	16'-18'	8'-10'	40" DIAMETER
45" - 5"	16'-17'	10'-12'	44" DIAMETER
5" - 55"	18'-20'	10'-12'	48" DIAMETER
55" - 6"	18'-20'	12'-14'	52" DIAMETER

ALL PLANT MATERIAL SHALL GENERALLY AVERAGE THE MEDIAN FOR THE SIZE RANGES INDICATED ABOVE AS INDICATED IN THE "AAN STANDARDS".

4. PLANT IDENTIFICATION

LEGIBLE LABELS SHALL BE ATTACHED TO ALL SHADE TREES, MINOR TREES, SPECIMEN SHRUBS AND BUNDLES OR BOXES OF OTHER PLANT MATERIAL, GIVING THE BOTANICAL NAME AND COMMON NAME, SIZE AND QUANTITY OF EACH. EACH SHIPMENT OF PLANTS SHALL BEAR CERTIFICATES OF INSPECTION AS REQUIRED BY FEDERAL, STATE AND COUNTY AUTHORITIES.

5. PLANT INSPECTION

THE ARC MAY, UPON REQUEST BY THE BUILDER OR DEVELOPER, AT LEAST TEN (10) DAYS PRIOR TO THE INSTALLATION OF ANY PROPOSED PLANT MATERIAL, INSPECT ALL PROPOSED PLANT MATERIAL AT THE SOURCE OF ORIGIN.

B. PLANTING METHODS

ALL PROPOSED PLANT MATERIALS THAT MEET THE SPECIFICATIONS IN SECTION A ARE TO BE PLANTED IN ACCORDANCE WITH THE FOLLOWING METHODS DURING THE PROPER PLANTING SEASONS AS DESCRIBED IN THE FOLLOWING.

1. PLANTING SEASONS

THE PLANTING OF DECIDUOUS TREES, SHRUBS AND VINES SHALL BE FROM MARCH 1ST TO JUNE 15TH AND FROM SEPTEMBER 15TH TO DECEMBER 15TH. PLANTING OF DECIDUOUS MATERIAL MAY BE CONTINUED DURING THE WINTER MONTHS PROVIDING THERE IS NO FROST IN THE GROUND AND FROST-FREE TOPSOIL PLANTING MIXTURES ARE USED.

THE PLANTING OF EVERGREEN MATERIAL SHALL BE FROM MARCH 15TH TO JUNE 15TH AND FROM AUGUST 15TH TO DECEMBER 1ST. NO PLANTING SHALL BE DONE WHEN GROUND IS FROZEN OR EXCESSIVELY MOIST. NO FROZEN OR WET TOPSOIL SHALL BE USED AT ANY TIME.

2. DIGGING

ALL PLANT MATERIAL SHALL BE DUG, BALLED AND BURLAPPED (B&B) IN ACCORDANCE WITH THE "AAN STANDARDS".

3. EXCAVATION OF PLANT PITS

THE LANDSCAPING CONTRACTOR SHALL EXCAVATE ALL PLANT PITS, VINE PITS, HEDGE TRENCHES AND SHRUB BEDS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

A. LOCATIONS OF ALL PROPOSED PLANT MATERIAL SHALL BE STAKED AND APPROVED IN THE FIELD BY THE LANDSCAPE ARCHITECT BEFORE ANY OF THE PROPOSED PLANT MATERIAL IS INSTALLED BY THE LANDSCAPE CONTRACTOR.

B. ALL PITS SHALL BE GENERALLY CIRCULAR IN OUTLINE, VERTICAL SIDES, DEPTH SHALL NOT BE LESS THAN 6" DEEPER THAN THE ROOT BALL. DIAMETER SHALL NOT BE LESS THAN TWO TIMES THE DIAMETER OF THE ROOT BALL AS SET FORTH IN THE FOLLOWING SCHEDULE.

C. IF AREAS ARE DESIGNATED AS SHRUB BEDS OR HEDGE TRENCHES, THEY SHALL BE EXCAVATED TO AT LEAST 18" DEPTH MINIMUM. AREAS DESIGNATED FOR GROUND COVERS AND VINES SHALL BE EXCAVATED TO AT LEAST 12" IN DEPTH MINIMUM.

D. DIAMETER AND DEPTH OF TREE PITS SHALL GENERALLY BE AS FOLLOWS:

PLANT SIZE	ROOT BALL	DIAMETER	DEPTH
3" - 35" CAL.	32"	64"	28"
35" - 41" CAL.	36"	72"	32"
41" - 45" CAL.	40"	80"	36"
45" - 5" CAL.	44"	88"	40"
5" - 55" CAL.	48"	96"	44"
55" - 6" CAL.	52"	104"	48"

A 20% COMPACTION FIGURE OF THE SOIL TO BE REMOVED IS ASSIGNED AND WILL BE ALLOWED IN CALCULATION OF EXTRA TOPSOIL. THE TABULATED FIT SIZES ARE FOR PURPOSES OF UNIFORM CALCULATION AND SHALL NOT OVERRIDE THE SPECIFIED DEPTHS BELOW THE BOTTOMS OF THE ROOT BALLS.

4. STAKING, GUYING AND WRAPPING

ALL PLANT MATERIAL SHALL BE STAKED OR GUYED, AND WRAPPED IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS:

A. STAKES: SHALL BE SOUND WOOD 2" X 2" ROUGH SHOWN OAK OR SIMILAR DURABLE WOODS, OR LENGTHS, MINIMUM 1'-0" FOR MAJOR TREES AND 9'-0" MINIMUM FOR MINOR TREES.

B. WIRE AND CABLE: WIRE SHALL BE #10 GA. GALVANIZED OR BETHANIZED ANNEALED STEEL WIRE. FOR TREES OVER 3" CALIPER, PROVIDE 5/16" TURN BUCKLES, EYE AND EYE WITH 4" TAKE-UP. FOR TREES OVER 3" CALIPER, PROVIDE 3/16" 17 STRAND CABLE. CADMIUM PLATED STEEL WITH GALVANIZED "EYE" THIMBLES OF WIRE AND HOSE ON TREES UP TO 3" IN CALIPER.

C. HOSE: SHALL BE NEW 3 PLY REINFORCED RUBBER HOSE, MINIMUM 1/2" I.D. "PLASTIC LOCK TIES" OR "PAUL'S TREES BRACES" MAY BE USED IN PLACE OF WIRE AND HOSE ON TREES UP TO 3" IN CALIPER.

D. ALL TREES UNDER 3" IN CALIPER ARE TO BE PLANTED AND STAKED IN ACCORDANCE WITH THE ATTACHED "TYPICAL TREE STAKING DETAIL". ALL TREES OVER 3" IN CALIPER ARE TO BE PLANTED AND GUYED IN ACCORDANCE WITH THE ATTACHED "TYPICAL TREE GUYING DETAIL".

5. PLANT PRUNING, EDGING AND MULCHING

A. EACH TREE SHRUB OR VINE SHALL BE PRUNED IN AN APPROPRIATE MANNER TO ITS PARTICULAR REQUIREMENTS, IN ACCORDANCE WITH ACCEPTED STANDARD PRACTICE. BROKEN OR BRUISED BRANCHES SHALL BE REMOVED WITH CLEAN CUTS FLUSH WITH THE ADJACENT TRUNK OR BRANCHES. ALL CUTS OVER 1/2" IN DIAMETER SHALL BE PAINTED WITH AN APPROVED ANTISEPTIC TREE WOUND DRESSING.

B. ALL TRENCHES AND SHRUB BEDS SHALL BE EDGED AND CULTIVATED TO THE LINES SHOWN ON THE DRAWINGS. THE AREAS AROUND ISOLATED PLANTS SHALL BE EDGED AND CULTIVATED TO THE FULL DIAMETER OF THE PIT. SOIL WHICH HAS BEEN REMOVED AND STAKED SHALL BE USED TO TRIM THE EDGES OF ALL EXCAVATED AREAS TO THE NEAT LINES OF THE PLANT FIT SAUCERS. THE EDGES OF SHRUB AREAS, HEDGE TRENCHES AND VINE POCKETS.

C. AFTER CULTIVATION, ALL PLANT MATERIALS SHALL BE MULCHED WITH A 2" LAYER OF FINE, SHREDDED PINE BARK, PEAT MOSS, OR ANOTHER APPROVED MATERIAL OVER THE ENTIRE AREA OF THE BED OR SAUCER.

6. PLANT INSPECTION AND ACCEPTANCE

THE ARC SHALL BE RESPONSIBLE FOR INSPECTING ALL PLANTING PROJECTS ON A PERIODIC BASIS TO ASSURE THAT ALL WORK IS PROCEEDING IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.

7. PLANT GUARANTEE

ALL PLANT MATERIAL SHALL BE GUARANTEED FOR THE DURATION OF ONE FULL GROWING SEASON, AFTER FINAL INSPECTION AND ACCEPTANCE OF THE WORK IN THE PLANTING PROJECT. PLANTS SHALL BE ALIVE AND IN SATISFACTORY GROWING CONDITION AT THE END OF THE GUARANTEE PERIOD.

A. FOR THIS PURPOSE, THE "GROWING SEASON" SHALL BE THAT PERIOD BETWEEN THE END OF THE "SPRING" PLANTING SEASON, AND THE COMMENCEMENT OF THE "FALL" PLANTING SEASON.

B. GUARANTEE FOR PLANTING PERFORMED AFTER THE SPECIFIED END OF THE "SPRING" PLANTING SEASON, SHALL BE EXTENDED THROUGH THE END OF THE NEXT FOLLOWING "SPRING" PLANTING SEASON.

SODDING

ALL SODDING SHALL BE IN ACCORDANCE TO THE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" LATEST EDITION APPROVED BY THE LANDSCAPE CONTRACTORS ASSOCIATION OF METROPOLITAN WASHINGTON AND THE AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS.

ALL SOD SHALL BE STRONGLY ROOTED SOD, NOT LESS THAN TWO YEARS OLD AND FREE OF WEEDS AND INDESIRABLE NATIVE GRASSES. PROVIDE ONLY SOD CAPABLE OF GROWTH DEVELOPMENT WHEN PLANTED AND IN STRIPS NOT MORE THAN 18" WIDE X 4' LONG. PROVIDE SOD COMPOSED PRINCIPALLY OF IMPROVED STRAIN KENTUCKY BLUEGRASS, SUCH AS, COLUMBIA, VICTA, OR EGKORT.

STORM WATER MANAGEMENT AREA LANDSCAPING - SCHEDULE D									
PERIMETER	SWMF	ADJACENT LAND USE	LINEAR FEET OF PERIMETER	LANDSCAPE BUFFER TYPE	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET)	# OF PLANTS REQUIRED	# OF PLANTS PROVIDED	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET)	
1"-1	FOND 'C'	ROADWAY	162'	B	NO	4	4	NO	NO
1"-2"	FOND 'C'	ROADWAY	333'	B	NO	7	4	NO	NO
1"-3	FOND 'C'	OPEN SPACE	148'	A	NO	4	0	NO	NO
1"-4	FOND 'C'	ROADWAY	196'	B	NO	4	5	NO	NO
1"-5	FOND 'B'	ROADWAY	344'	B	NO	7	9	NO	NO
1"-6	FOND 'B'	RESIDENTIAL	303'	B	NO	6	8	NO	NO
1"-7	FOND 'B'	OPEN SPACE	238'	A	NO	4	0	NO	NO
1"-8"	FOND 'B'	PARKING LOT	480'	A	NO	8	0	NO	NO

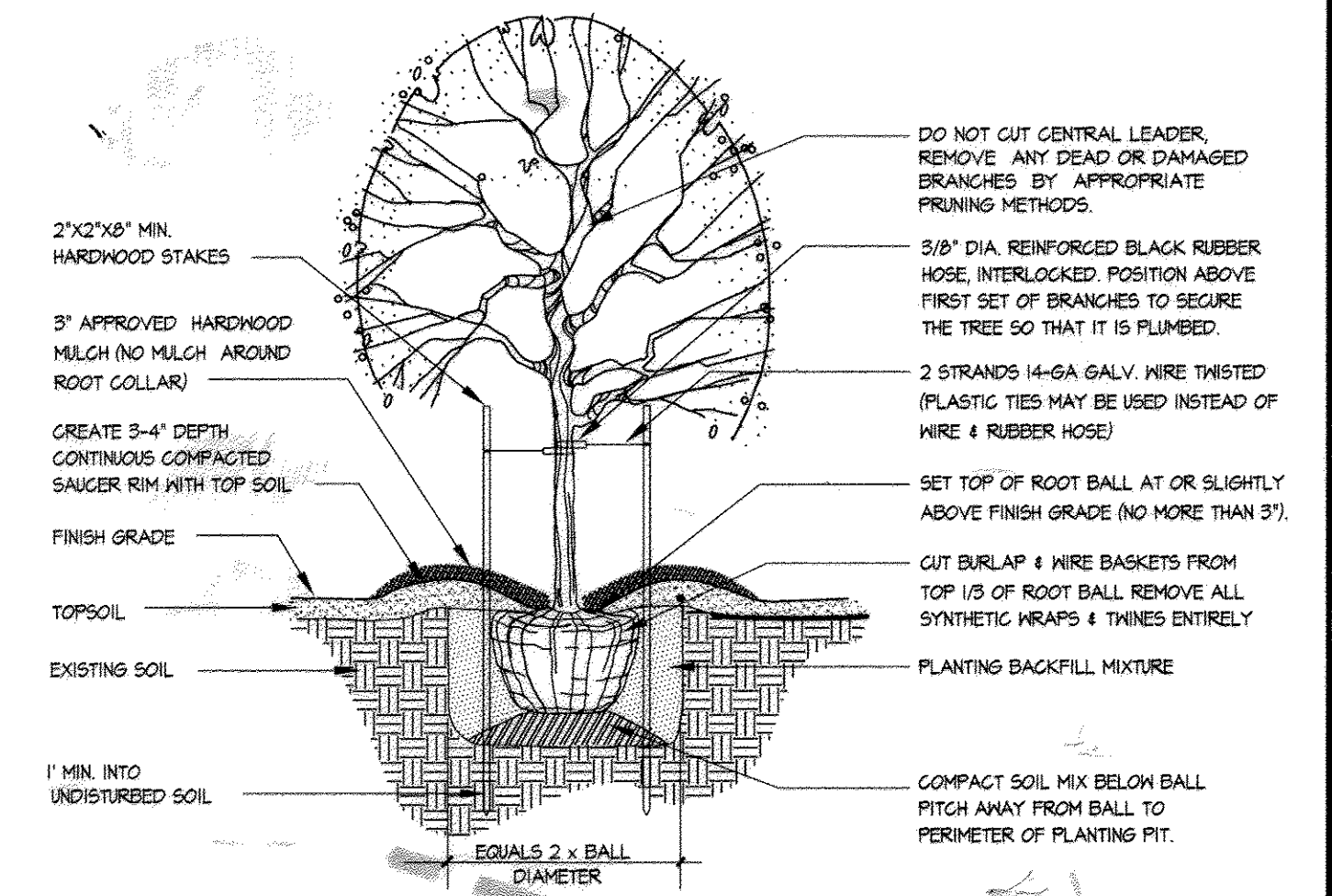
SCHEDULE D REQUIRED SURETY: 44 SHADE TREES @ \$300/TREE = \$13,200.00
35 EVG. TREES @ \$150/TREE = \$5,250.00
TOTAL = \$18,450.00

* NOTE: LANDSCAPING TO BE PROVIDED AT TIME OF PHASE 3 SITE PLAN.
* NOTE: LANDSCAPING TO BE PROVIDED AT TIME OF PHASE 4 SITE PLAN.

THE LANDSCAPE SURETY WILL BE INCLUDED IN THE DEVELOPER'S AGREEMENT

LANDSCAPING NOTES:

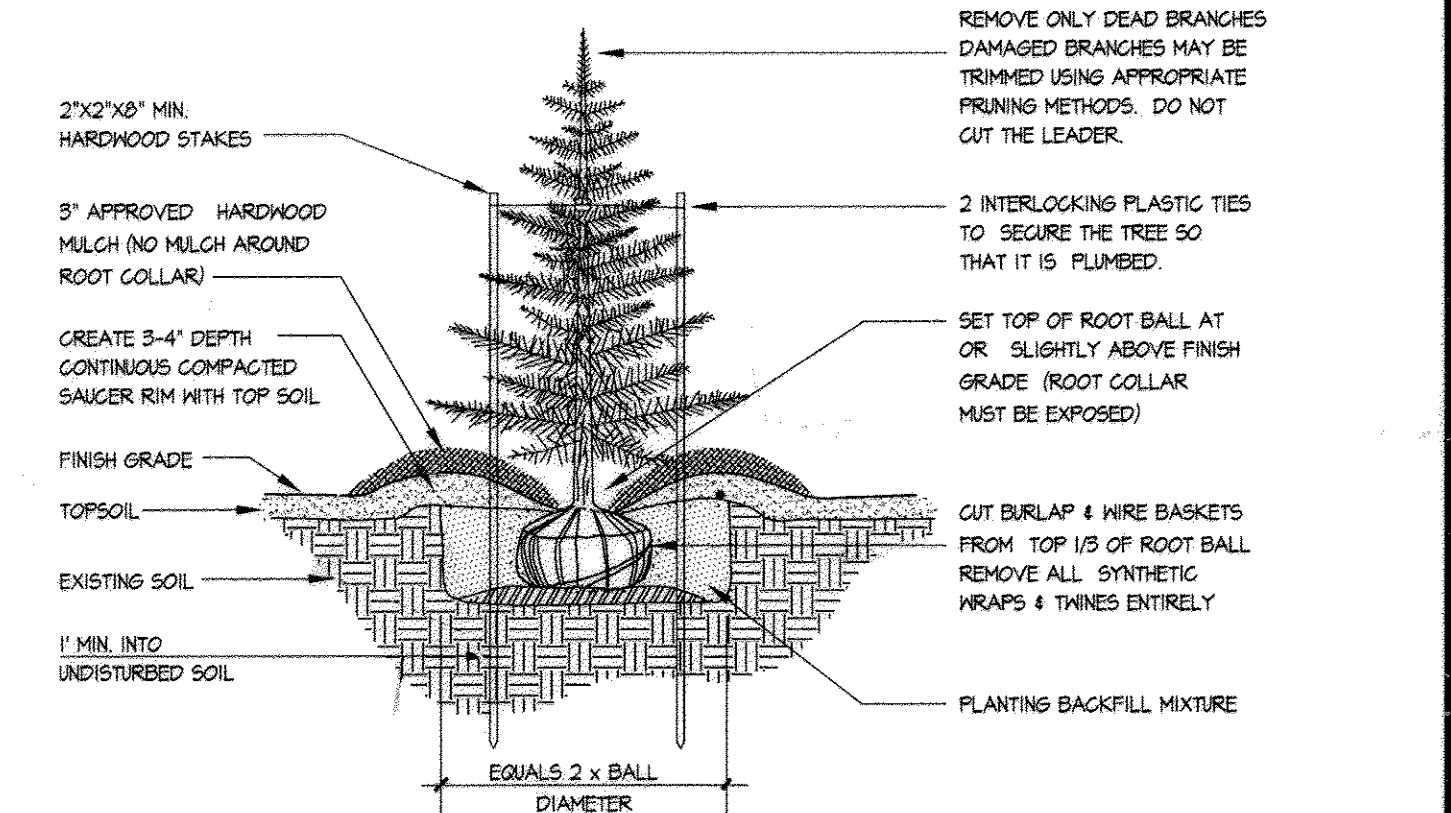
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE OF THE HOWARD COUNTY LANDSCAPE MANUAL.
- CONTRACTOR SHALL NOTIFY ALL UTILITIES AT LEAST (5) FIVE DAYS BEFORE STARTING WORK. ALL GENERAL NOTES, ESPECIALLY THOSE REGARDING UTILITIES, ON SHEET 1 SHALL APPLY.
- FIELD VERIFY UNDERGROUND UTILITY LOCATIONS AND EXISTING CONDITIONS BEFORE STARTING PLANTING WORK. CONTACT ENGINEER / LANDSCAPE ARCHITECT IF ANY RELOCATIONS ARE REQUIRED.
- PLANT QUANTITIES SHOWN ON PLANT LIST ARE PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. IF DISCREPANCIES EXIST BETWEEN QUANTITIES SHOWN ON THE PLAN AND THOSE SHOWN ON THE PLANT LIST, THE QUANTITIES ON THE PLAN SHALL TAKE PRECEDENCE.
- ALL PLANT MATERIAL SHALL BE FULL, HEAVY, WELL FORMED, AND SYMMETRICAL, AND CONFORM TO THE A.A.N. SPECIFICATIONS, AND BE INSTALLED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
- NO SUBSTITUTION SHALL BE MADE WITHOUT WRITTEN CONSENT OF THE OWNER OR HIS REPRESENTATIVE.
- ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES BUT NOT OTHERWISE PLANTED, PAVED, OR MULCHED SHALL BE SEEDED OR SODDED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING IF HE/SHE ENCOUNTERS SOIL DRAINAGE CONDITIONS WHICH MAY BE DETRIMENTAL TO THE GROWTH OF THE PLANTS.
- ALL EXPOSED EARTH WITHIN LIMITS OF PLANTING BEDS SHALL BE MULCHED WITH SHREDDED HARDWOOD MULCH PER PLANTING DETAILS.
- THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BERRS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND, WHEN NECESSARY, REPAIRED AND REPLACED.
- "SCHEDULE D - STORMWATER MANAGEMENT AREA LANDSCAPING" IS PROVIDED FOR LANDSCAPE SURETY CALCULATION PURPOSES ONLY. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED WITH THE DPW DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$18,450.00 FOR:
44 SHADE TREES @ \$300/TREE = \$13,200.00
35 EVG. TREES @ \$150/TREE = \$5,250.00
- NO LANDSCAPING WILL BE ALLOWED WITHIN STORMDRAIN EASMENTS.



NOTE: ALL SUPPORTING DEVICES (STAKES, WIRES, ETC.) SHALL BE REMOVED AFTER 2 GROWING SEASONS.

DECIDUOUS TREE PLANTING DETAIL

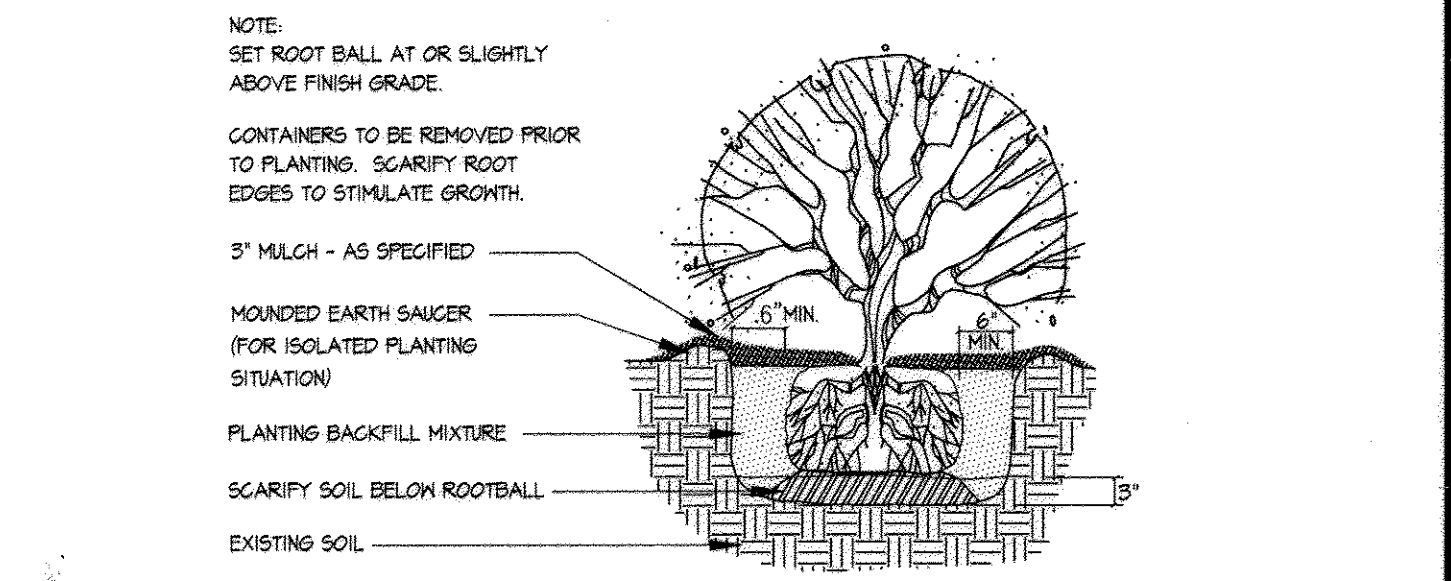
FOR PLANTING MATERIAL UP TO 3 1/2" CALIPER



NOTE: ALL SUPPORTING DEVICES (STAKES, TIES, ETC.) SHALL BE REMOVED AFTER 2 GROWING SEASONS.

EVERGREEN TREE PLANTING DETAIL

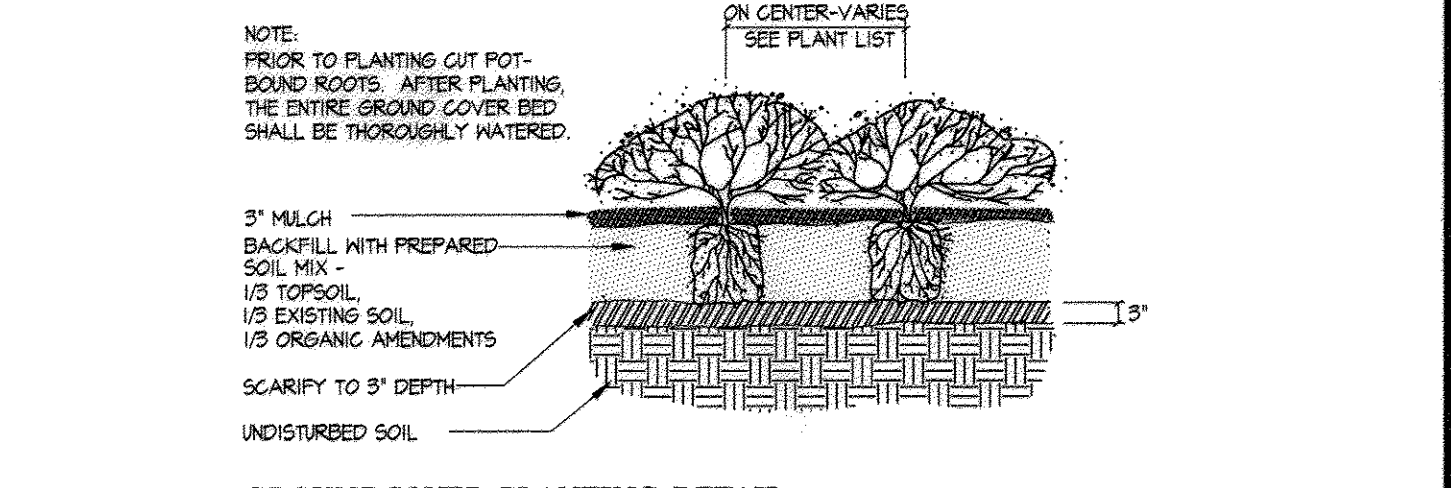
FOR PLANTING MATERIAL UP TO 3 1/2" CALIPER



NOTE: SET ROOT BALL AT OR SLIGHTLY ABOVE FINISH GRADE. CONTAINERS TO BE REMOVED PRIOR TO PLANTING. SCARIFY ROOT EDGES TO STIMULATE GROWTH.

SHRUB PLANTING DETAIL

FOR PLANTING MATERIAL UP TO 3 1/2" CALIPER



NOTE: PRIOR TO PLANTING CUT ROOT-BOUND ROOTS. AFTER PLANTING THE ENTIRE GROUND COVER BED SHALL BE THOROUGHLY WATERED.

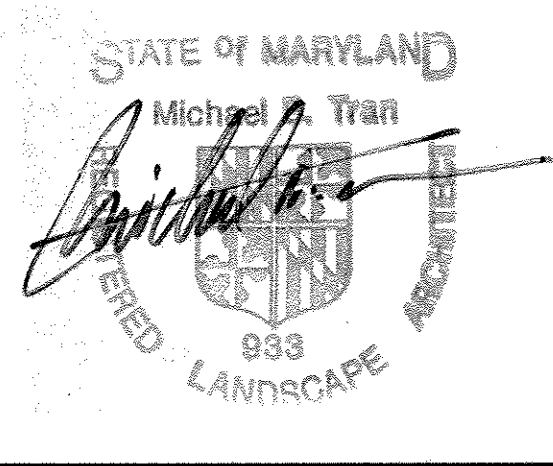
GROUND COVER PLANTING DETAIL

FOR PLANTING MATERIAL UP TO 3 1/2" CALIPER

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Michael Tran 9/14/16
Chief, Bureau of Highways

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chris Hantz 9/14/16
Chief, Division of Land Development

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Michael Tran 9/14/16
Chief, Development Engineering Division



GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT. 410-880-1820 DC/WA. 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.
10.21.05	REVISED PER DPZ COMMENTS.	JRS	

DEVELOPER/OWNER PARCEL C
BA Waterloo Townhomes, LLC
c/o Bozzuto Homes, Inc.
7850 Walker Drive, Suite 400
Greenbelt, MD 20770-3203
Attn: Durson Slidell
301-623-1525

LANDSCAPE NOTES & DETAILS
SHIPLEY'S GRANT
Non-buildable Parcels "A" thru "E"
PLAT NUMBERS 18428 THROUGH 18431
ELECTION DISTRICT No. 1

SCALE	ZONING	G. L. W. FILE NO.
AS SHOWN	R-A-15/B-1/ POR	03006
DATE	TAX MAP - GRID	SHEET
JULY, 2006	37-1&2	25 OF 25