FINAL ROAD CONSTRUCTION PLAN

LINCOLN GLEN

LOTS 1-10 & OPEN SPACE LOT 11

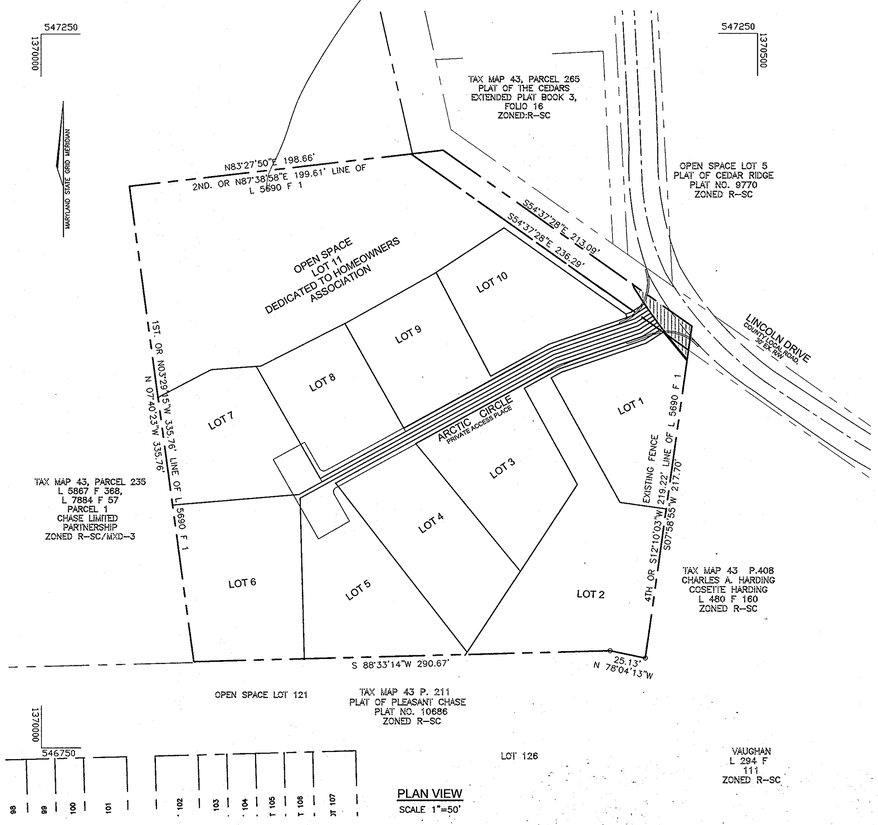
HOWARD COUNTY, MARYLAND

SITE DATA

LOCATION: TAX MAP 43, PARCEL 407
DEED REFERENCE: 448/527
6TH ELECTION DISTRICT
EXISTING ZONING: RSC
DENSITY: 4 UNITS/AC (2.62895 AC x 4 = 10 UNITS)
GROSS AREA OF PARCEL : 114,510 SF (2.62895 AC.)
TOTAL AREA OF ROADWAY INCLUDING WIDENING STRIPS: 608 SF (0.01397 AC.)
AREA OF FLOODPLAIN: NONE
AREA OF STEEP SLOPES: NONE
NET AREA OF PROJECT: 2.62895 AC.
NUMBER OF PROPOSED RESIDENTIAL LOTS: 10
AREA OF PROPOSED RESIDENTIAL LOTS: 83,858 SF (1.925 AC)
AREA OF SMALLEST BUILDABLE LOT PROPOSED: 6,381 SF (LOT 9)
NUMBER OF PROPOSED OPEN SPACE LOTS: 1 (LOT 11)
AREA OF OPEN SPACE REQUIRED: (0.53 AC.) 22,902.00 S.F. (20% x 114,510 SF)
CREDITED OPEN SPACE : 27,941.00 S.F. (0.64 AC.).
NON-CREDITED OPEN SPACE: 2,089 SF (0.04795 AC.)
TOTAL AREA OF OPEN SPACE PROPOSED: 30044 S.F. (0.68974 AC.)
DPZ FILE REFERENCES: S-02-004, P-07-006.

GENERAL NOTES

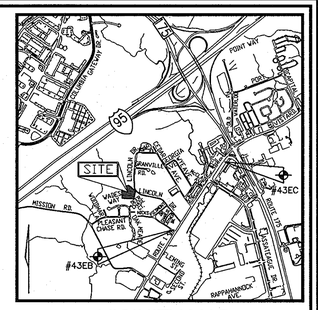
1. THIS SUBDIVISION COMPLIES WITH THE 4TH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AS AMENDED BY COUNCIL BILL 45-2003 AND THIS SUBJECT PROPERTY IS ZONED R-SC PER THE 2/2/04 COMPREHENSIVE ZONING PLAN AND THE "COMP LITE" ZONING AMENDMENTS EFFECTIVE 07/28/06.
2. THE PROJECT BOUNDARY IS BASED ON A FIELD RUN BOUNDARY SURVEY BY FREDERICK WARD ASSOCIATES, DATED MAY 09, 2001.
3. THE TOPOGRAPHY SHOWN HEREON IS BASED ON A FIELD RUN TOPOGRAPHIC SURVEY WITH TWO FEET CONTOUR INTERVALS PERFORMED BY FREDERICK WARD ASSOCIATES, DATED APRIL, 2001.
4. WATER & SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
5. STORMWATER MANAGEMENT TO BE PROVIDED FOR THE DEVELOPMENT BY ONE POCKET POND LOCATED ON OPEN SPACE LOT 11 AND RAIN GARDEN FOR PART OF LOT 1. THE FACILITY WILL BE PRIVATELY OWNED AND MAINTAINED BY THE HOA. LOCATION AND DESIGN DETAIL OF RAINGARDEN FOR LOT 1 WILL BE PROVIDED ON SITE DEVELOPMENT PLAN.
6. THERE ARE NO WETLANDS, WETLAND BUFFERS, STREAM AND STREAM BUFFERS LOCATED ON-SITE.
7. THERE ARE NO FLOODPLAINS ON SITE (SLOPES GREATER THAN 25%).
8. FOREST STAND DELINEATION PLAN PREPARED BY EXPLORATION RESEARCH INC. DATED JANUARY, 2007.
9. APFO TRAFFIC STUDY PREPARED BY THE TRAFFIC GROUP DATED JUNE, 2001. AND REVISED ON DECEMBER 14, 2001 WAS APPROVED JANUARY 2002.
10. THERE ARE NO STEEP SLOPES GREATER THAN 25% LOCATED WITHIN SUBJECT PROPERTY.
11. STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF $20,190.00 TO BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR THE REQUIRED 29 STREET TREES (PRIVATE), 37 SHADE TREES, 20 EVERGREEN TREES AND 8 SHRUBS AROUND TRASH PAD.
12. STREET LIGHTING WILL BE PROVIDED IN ACCORDANCE WITH SECTION 134 OF THE HOWARD COUNTY ZONING REQUIREMENTS. THE LIGHT INTENSITY AT THE PROPERTY LINE SHALL NOT EXCEED 0.1 FOOT CANDLES.
13. THE POCKET POND IS HAZARD CLASS 'A'.
14. THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
15. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL/CEMETERY LOCATIONS ON SITE.
16. OPEN SPACE LOT 11 WILL BE OWNED BY THE HOMEOWNERS ASSOCIATION.
17. TRASH COLLECTION RECYCLING AND SNOW REMOVAL WILL BE PROVIDED TO THE JUNCTION OF THE FLAG, PIPESTEM OR PRIVATE ACCESS PLACE EASEMENT AND THE ROAD RIGHT-OF-WAY LINE ONLY.
18. GEOTECHNICAL STUDY PREPARED MARCH 2002 BY HERBST BENSON ASSOCIATES.
19. REFERENCE S-02-04, P-07-006 APPROVED SEPTEMBER 5, 2007.
20. RECHARGE VOLUME IS PROVIDED BY GRASS CHANNEL CREDIT.
21. FOREST CONSERVATION OBLIGATION TO BE FULFILLED BY PAYMENT OF A FEE-IN-LIEU OF $12,741.30 (16988.40 SQ. FT. X $0.75 = 12, 471.30) FOR 0.39 AC OF REQUIRED REFORESTATION.
22. THE COORDINATES SHOWN HERE ON ARE BASED UPON THE HOWARD COUNTY GEOMETRIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLACE COORDINATE SYSTEM, HOWARD COUNTY MONUMENTS NOS 43EL AND 43 EB.
23. EXISTING UTILITIES ARE BASED ON AVAILABLE RECORD DRAWINGS AND FIELD LOCATED EVIDENCE.
24. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
25. ALL EXISTING HOUSES, SHEDS, DRIVEWAYS, FENCES, AND MISC. STRUCTURES LOCATED ON SITE ARE TO BE REMOVED.
26. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
27. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
28. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
29. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PAVEMENT OF ANY ASPHALT.
30. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (1993)AND AS MODIFIED BY "GUIDELINES FOR STREET LIGHTS IN RESIDENTIAL DEVELOPMENTS (JUNE 1993)." A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREETLIGHT AND ANY TREE.
31. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2"GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE)- 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
32. NO CLEARING, GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURE SHALL BE PERMITTED WITHIN THE LIMIT OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
33. PROTECTIVE COVENANTS INCLUDING COVENANTS GOVERNING THE MAINTENANCE OF COMMUNITY OWNED OPEN SPACE AND THE MAINTENANCE OF THE PRIVATE ACCESS PLACE, THE MAINTENANCE OF THE STREET TREES AND ANY RESERVATIONS OF HOME OWNER'S ASSOCIATION TO BE RECORDED.
34. THE ARTICLES OF INCORPORATION OF LINCOLN GLEN HOMEOWNERS' ASSOCIATION, INC. WERE ACCEPTED AND APPROVED BY THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION ON JANUARY 31, 2008.
35. THE MAINTENANCE AGREEMENT FOR THE PRIVATE ACCESS PLACE TO BE RECORDED SIMULTANEOUSLY WITH THE PLAT IN THE LAND RECORDS OF HOWARD COUNTY.
36. THE TRASH PAD, STREET TREES AND BUS PAD SHOWN HEREON TO BE PRIVATELY MAINTAINED BY THE LINCOLN GLEN HOMEOWNERS ASSOCIATION, INC.
37. A WAIVER PETITION HAS BEEN SUBMITTED AND APPROVED, DATED DECEMBER 21, 2007 TO WAIVE SECTION 5.2.6.d.1.a, OF DESIGN MANUAL VOLUME I, WHICH REQUIRES THAT A 12' LEVEL AREA BE PROVIDED AROUND THE ENTIRE FACILITY. (INCLUDING THE TOP OF DAM) FOR MAINTENANCE ACCESS TO ALLOW A 10' TOP OF DAM AND SECTION 5.2.7.A.4, WHICH REQUIRES THAT ALL WET PONDS HAVE A POND DRAIN CAPABLE OF DRAINING THE PERMANENT POOL WITHIN 24 HOURS TO ALL NO POND DRAIN.
APPROVAL WAS BASED PRINCIPALLY ON THE FACT THAT THE STORM WATER MANAGEMENT FACILITY SHOULD BE PRIVATELY OWNED AND MAINTAINED, IF THE PERMANENT POOL NEEDS TO BE DRAINED FOR MAINTENANCE A SMALL PRIVATE PUMP CAN BE UTILIZE AND THERE IS NO ADVERSE IMPACT TO COUNTY INFRASTRUCTURE
38. A WAIVER PETITION WAS SUBMITTED AND APPROVED DATED JANUARY 16, 2007 TO WAIVE DESIGN MANUAL, VOLUME SECTION 5.2.6.D.1, WHICH REQUIRES THE TOP OF DAM TO BE 12' IN WIDTH, TO REDUCE THE TOP OF DAM TO BE 10' WIDE. THE APPROVAL WAS BASED ON PRINCIPALLY ON THE FACT THAT THE POND SHOULD BE PRIVATELY OWNED AND MAINTAINED AND THAT THERE IS NO ADVERSE IMPACT TO COUNTY INFRASTRUCTURE.



PLAN VIEW
SCALE 1"=50'

BENCHMARK NO. 1:
COUNTY CONTROL #43EC
N 547821.276 E 1372882.447
ELEV. = 220.369

BENCHMARK NO. 2:
COUNTY CONTROL #43EB
N 545963.658 E 1371573.830
ELEV. = 216.991



VICINITY MAP
SCALE: 1"=2,000'

ADC COORDINATES:
N 486,300
E 856,000
MAP:20, GRID:G-1

COORDINATE LIST		
POINT	NORTH	EAST
3108	546810.50494	1370106.39579
3110	547143.26281	1370061.56374
3200	546817.84090	1370396.96970
3203	546812.64628	1370421.55694
3311	547165.87643	1370258.93708
3312	547165.03134	1370259.12197
3313	547028.23522	1370451.78650

SHEET INDEX	
DESCRIPTION	SHEET NO.
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SEDIMENT & EROSION CONTROL DETAILS	4 OF 8
STORM DRAIN DRAINAGE AREA MAP FOR CULVERT & DETAILS	5 OF 8
STORMWATER MANAGEMENT DETAILS	6 OF 8
STORMWATER MANAGEMENT DETAILS	7 OF 8
LANDSCAPE AND FOREST CONSERVATION PLAN & DETAILS	8 OF 8

APPROVED : FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

NO.	REVISION	DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 6/4/08

Chief, Development Engineering Division — Date 6/2/08

STORMWATER MANAGEMENT REQUIREMENTS - AREA 'B'					
AREA 0.40 AC.	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (W_{QV})	0.0059 AC. FT.	0	0.0059 AC. FT.	RAIN GARDEN FOR LOT 1, 1/2 ROOF
2	RECHARGE VOLUME (R_{EV})	0.0008 AC. FT.	0.171 AC.	0.0008 AC.-FT.	RAIN GARDEN FOR LOT 1, 1/2 ROOF
3	CHANNEL PROTECTION VOLUME (CP_V)	N/A ,01<2.0 CFS	N/A	0.0073 AC. N/A	Q1=0.47 CFS
4	OVERHEAD FLOOD PROTECTION ($Q_{10}P$)	N/A	N/A	N/A	N/A
5	EXTREME FLOOD VOLUME ($Q_{100}P$)	N/A	N/A	N/A	

STORMWATER MANAGEMENT REQUIREMENTS - AREA 'A'					
AREA 2.52 AC.	REQUIREMENT	VOLUME REQUIREMENT WITHOUT CREDITS	CREDITS	VOLUME REQUIREMENT WITH CREDITS	NOTES
1	WATER QUALITY VOLUME (W_{QV})	0.1116 AC. FT.	0	0.1116 AC. FT.	1 YEAR EXTENDED DETENTION POCKET POND(P-5)
2	RECHARGE VOLUME (R_{EV})	0.0145 AC. FT. OR 0.1744 AC.	0.1744 AC.	0	0.1744 AC IMPERVIOUS TO GRASS CHANNELS IN AREA A
3	CHANNEL PROTECTION VOLUME (CP_V)	0.1641 AC-FT	N/A	0.1641 AC-FT	1 YEAR EXTENDED DETENTION POCKET POND(P-5)
4	OVERHEAD FLOOD PROTECTION ($Q_{10}P$)	N/A	N/A	N/A	
5	EXTREME FLOOD VOLUME ($Q_{100}P$)	N/A	N/A	N/A	

AS-BUILT CERTIFICATION
"I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS."
ROBERT H. VOGEL, P.E. No.16193

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER

OWNER/DEVELOPER

MICHAEL PFAU
TRINITY QUALITY HOMES. INC.
3675 PARK AVE., STE. 301
ELLICOTT CITY, MARYLAND 21043
(410) 480-0023

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2008."

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER — 4/23/08

ROBERT H. VOGEL, PE No.16193

FINAL ROAD CONSTRUCTION PLAN
COVER SHEET
LINCOLN GLEN
LOTS 1-10 AND OPENSPACE LOT 11

TAX MAP 43 GRID 8 PARCELS 407
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: APRIL 2008
SCALE: AS SHOWN
W.O. NO.: 06-35.00

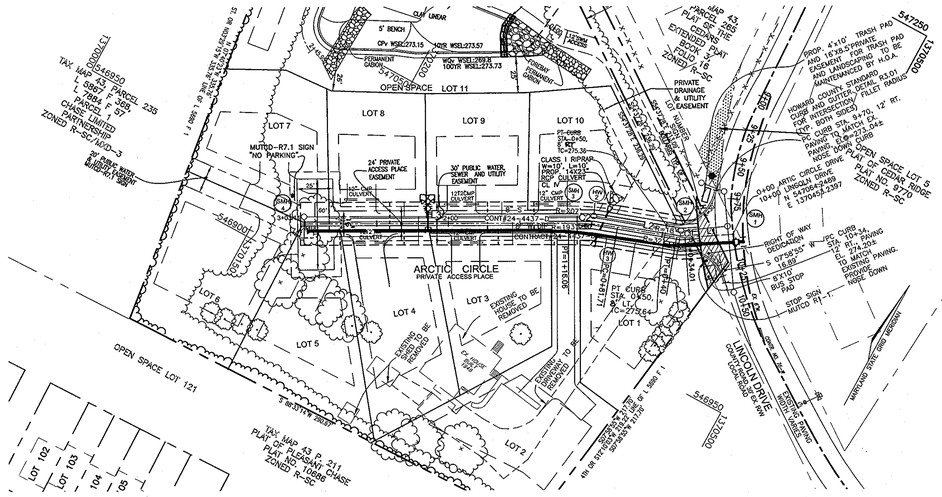
SHEET 1 OF 8

AS-BUILT 3/24/2011

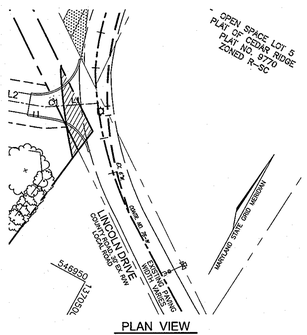
F-08-041

LINE TABLE		
LINE	LENGTH	BEARING
L1	34.01	S57°20'59"W
L2	41.72	S71°03'45"W
L3	187.06	S61°13'26"W

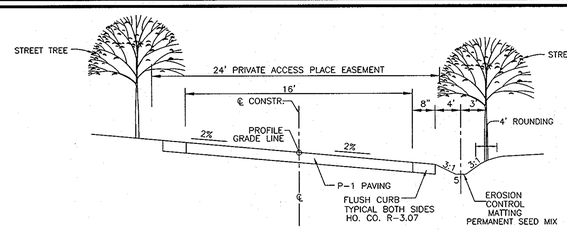
CURVE TABLE						
CURVE	LENGTH	RADIUS	DELTA ANGLE	TANGENT	CHORD DIRECTION	CHORD LENGTH
C1	5.98	25.00	13°42'46"	3.01	N64°12'22"E	5.97
C2	34.34	200.00	9°50'19"	17.21	S66°08'36"W	34.30



ROAD PLAN
SCALE:1"=50'



PLAN VIEW
SCALE:1"=50'



STA. 0+12 TO 3+03

TYPICAL ROADWAY SECTION
ARCTIC CIRCLE DRIVE
CLASSIFICATION: PRIVATE ACCESS PLACE

DESIGN SPEED : 15 MPH
SECTION NOT TO SCALE

*PROVIDE HOWARD COUNTY STANDARD CURB & GUTTER TO STA. 0+50
TRANSITION TO FLUSH CURB 0+50 TO 0+65
FLUSH CURB 0+65 TO 3+03

PRIVATE ACCESS PLACE STREET TREE SCHEDULE				
	15	NUMBER OF STREET TREES REQUIRED		
	15	NUMBER OF STREET TREES PROVIDED		
CC	13	CORNELIAN CHERRY CORNUS MAS	2 1/2"-3' Ht.	B & B
OC	2	OKAME CHERRY PRUNUS X 'OKAME' (GROWTH HEIGHT=25')	4'-6" Ht.	B & B

STREET TREE CALCULATIONS			
STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
ARCTIC CIRCLE DRIVE	600/40	15	15

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAMW PLANTING SPECIFICATIONS AND THE HOWARD COUNTY LANDSCAPE MANUAL.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

SIGNAGE LOCATION CHART			
STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
ARCTIC CIRCLE	0+19.75	17.5' LT.	STOP SIGN MUTCD R1-1
ARCTIC CIRCLE	0+19.50	20.25' RT.	LOT NUMBER SIGN SEE THIS SHEET FOR DETAIL
ARCTIC CIRCLE	AS SHOWN		NO PARKING MUTCD- R7.1

STREET LIGHT LOCATION CHART			
STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
ARCTIC CIRCLE	0+12.23	41.5' RIGHT	150-WATT PREMIER POST-TOP FIXTURE

APPROVED : FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

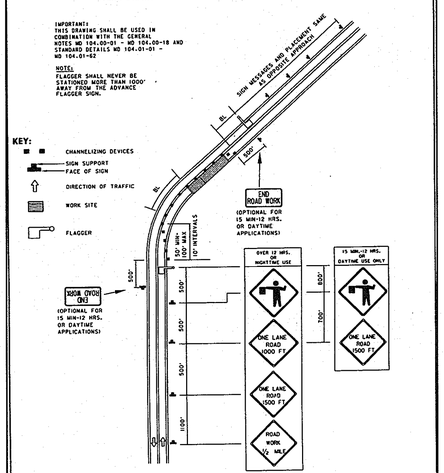
COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT — DATE

NO.	REVISION	DATE

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT:
THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 - MD 104.00-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-02

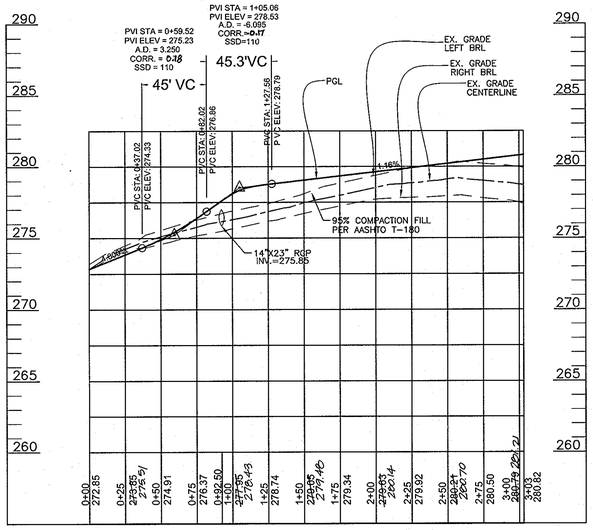
NOTE:
FLAGGER SHALL NEVER BE LOCATED MORE THAN 1000' AWAY FROM THE ADVANCE FLAGGER SIGN.



SPECIFICATION 104	CATEGORY CODE ITEMS
APPROVED	DIRECTOR - OFFICE OF TRAFFIC AND SAFETY
SHA	APPROVAL - SHA 6-20-03 / APPROVAL - FEDERAL HIGHWAY ADMINISTRATION 9-29-03
	REVISED / REVISED
	REVISED / REVISED

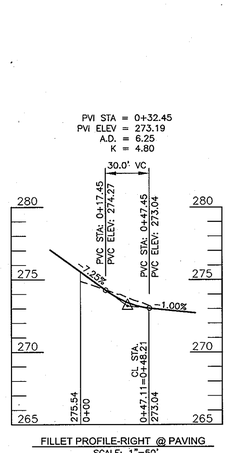
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
FLAGGING OPERATION/2-LANE, 2-WAY EQL/LESS THAN 40 MPH
STANDARD NO. MD 104.02-10

MAINTAINANCE OF TRAFFIC
USING REVISED SHA DETAILS
NOT TO SCALE

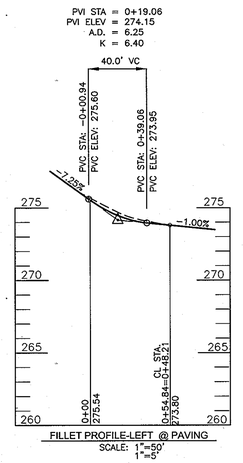


ARCTIC CIRCLE
PRIVATE ACCESS PLACE
DESIGN SPEED 15 MPH

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



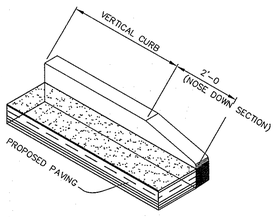
FILLET PROFILE-RIGHT @ PAVING
SCALE: 1"=50'
1"=5'



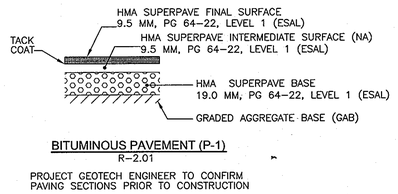
FILLET PROFILE-LEFT @ PAVING
SCALE: 1"=50'
1"=5'

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER

AS-BUILT CERTIFICATION
"I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS."
ROBERT H. VOGEL, P.E. No. 16193

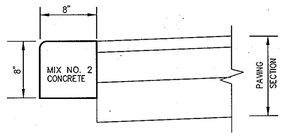


NOSE DOWN CURB
NOT TO SCALE

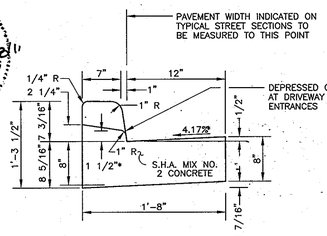


BITUMINOUS PAVEMENT (P-1)
R-2.01

PROJECT GEOTECH ENGINEER TO CONFIRM PAVING SECTIONS PRIOR TO CONSTRUCTION



STANDARD FLUSH CURB
HO. CO. STD DETAIL R.307
NOT TO SCALE



*NOTE : DEPRESSED CURB IN HANDICAP ACCESSABLE AREAS SHALL HAVE A 0.0417'(1/2") RISE FROM PAVING TO TOP OF CURB.

STANDARD COMBINATION CURB AND GUTTER
HOWARD COUNTY STANDARD R-3.01
NOT TO SCALE

OWNER/DEVELOPER

MICHAEL PFAU
TRINITY QUALITY HOMES. INC.
3675 PARK AVE., STE. 301
ELLICOTT CITY, MARYLAND 21043
(410) 480-0023

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2008."

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 6/4/08

Chief, Development Engineering Division — Date 6/2/08

FINAL ROAD CONSTRUCTION PLAN
ROAD CONSTRUCTION
PLAN, PROFILE & DETAILS
LINCOLN GLEN
LOTS 1-10 AND OPENSPACE LOT 11

TAX MAP 43 GRID 8 PARCELS 407
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

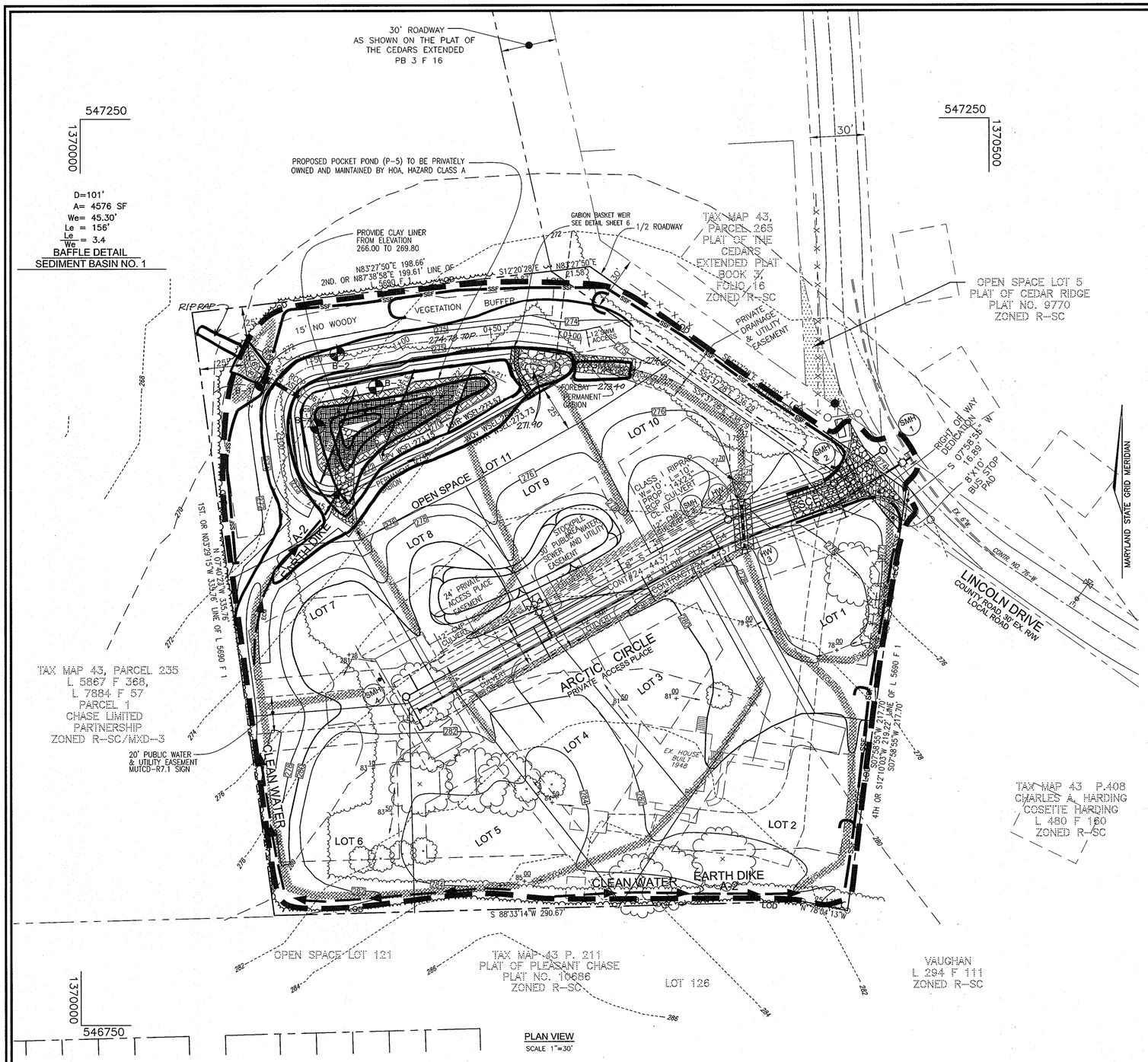
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	APRIL 2008
SCALE:	AS SHOWN
W.O. NO.:	06-35.00

SHEET 2 OF 8

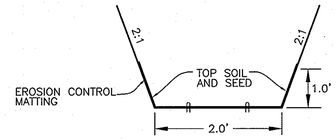
AS-BUILT 3/24/11 F-08-041



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	TYPE
ScB	SANDY AND CLAYEY LAND, GENTLY SLOPING	C

NOTE: HOWARD SOIL SURVEY, MAP NUMBER 20



TYPICAL GRASS CHANNEL CONSTRUCTION DETAIL
NTS

LINCOLN GLEN

AREA 2.63 AC	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
1	WATER QUALITY VOLUME WQV	0.1116 AC. FT.	0	0.1116 AC. FT.	POCKET POND (P-5)
2	RECHARGE VOLUME REV	0.0145 AC. FT. OR 0.1744 AC.	0.1744 AC.	0	ROOFTOP AND NON-ROOFTOP DISCONNECT CREDIT
3	CHANNEL PROTECTION VOLUME CPV	0.1641 AC. FT.	N/A	0.641 AC. FT.	1 YEAR EXTENDED DETENTION POCKET POND (P-5)
4	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	N/A
5	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE:
1. 50% Wqv PROVIDED IN MICROPOOL
2. ROOFTOP AND NON-ROOFTOP CREDIT FOR Rev
3. Cpv PROVIDE BY EXTENDED DETENTION POCKET POND(P-5)

LINCOLN GLEN

AREA 0.40 AC	REQUIREMENT	VOLUME REQUIREMENT W/O CREDITS	CREDITS	VOLUME REQUIREMENT AFTER CREDITS	NOTES
1	WATER QUALITY VOLUME WQV	0.0059 AC. FT.	0	0.0059 AC. FT.	RAIN GARDEN FOR LOT 1 ,1/2 ROOF
2	RECHARGE VOLUME REV	0.0008 AC. FT. OR 0.0073 AC.		0.0008 AC. FT. OR 0.0073 AC.	RAIN GARDEN FOR LOT 1 ,1/2 ROOF
3	CHANNEL PROTECTION VOLUME CPV	N/R Q1,2.0 cfs Q1< 2.0 cfs	N/A	N/A	Q1=0.047 cfs
4	OVERHEAD FLOOD PROTECTION, Q10P	N/A	N/A	N/A	N/A
5	EXTREME FLOOD VOLUME, Q100P	N/A	N/A	N/A	

NOTE:
1. Wqv & Rev FOR 1/2 ROOFTOP IN POND 'B' PROVIDED BY LOT 1 RAIN GARDEN (TO BE PROVIDED WITH SDP)
3. Cpv NOT REQUIRED, Q1< 2.0 cfs

POND LINERS INCLUDE:

A) 6 TO 12 INCHES OF CLAY SOIL (MIN 15% PASSING THE #200 SIEVE AND A MAX PERMEABILITY OF 1X10 CM/SEC),
B) A 30 MIL POLY-LINER
C) BENTONITE
D) USE OF CHEMICAL ADDITIVE (SEE NRCS AGRICULTURAL HANDBOOK NO.387 DATE 1971, ENGINEERING FIELD MANUAL)
E) OTHER SUITABLE MATERIALS APPROVED BY THE APPROPRIATE REVIEW AUTHORITY

LEGEND

EXISTING CONTOUR 440
PROPOSED CONTOUR 412
SPOT ELEVATION +82.53
DIRECTION OF FLOW
EXISTING TREES TO REMAIN
PROPOSED STREET TREE
SOILS SIB2 SsE
SUPER SILT FENCE SSF
LIMIT OF DISTURBANCE LOD
EARTHDIKE
EROSION CONTROL MATTING
CLAY LINEAR
5' BENCH
ROW DEDICATION
OPEN SPACE LOT 5

BASIN NO.1

TRAP TYPE:	BASIN
EX. DRAINAGE AREA:	0.61 AC.
PROP. DRAINAGE AREA:	2.30 AC. BASIN +
WET STORAGE REQIRED	4140 CF
WET STORAGE PROVIDED	4140 CF
DRY STORAGE REQIRED	4140 CF
DRY STORAGE PROVIDED	9583 CF
TOTAL STORAGE REQUIRED:	8,280 Cf
TOTAL STORAGE PROVIDED:	13773 Cf
BOTTOM ELEV:	266.00
CREST ELEVATION	272.20
WET STORAGE ELEVATION	266.00-269.80
DRY STORAGE ELEVATION:	269.80-272.20
TOTAL STORAGE DEPTH:	6.20'
TOP OF EMBANKMENT	275.00
CLEANOUT ELEVATION:	268.50
SIDE SLOPES:	3:1
EMERGENCY SPILLWAY:	N/A

Q1 EX.=0.40 cfs
Q10 EX.=1.68 cfs
Q1 SED=0.35 cfs
Q10 SED=11.45 cfs

EXCLUDES CLEANWATER DIVERSION

POND NO.1
(DRAINAGE AREA A)

POCKET POND (P-5)
HAZARD CLASS A
PRIVATELY OWNED & MAINTAINED
1 YR WSEL = 272.18
10 YR WSEL = 272.54
100 YR WSEL = 277.72
WQv WSEL = 269.80

WQv=0.056 Ac. Ft.
REQD 0.09 Ac. Ft. PROVIDED
CPv=0.21 Ac.Ft.
Rev=CREDIT
Q_1 EX. = 2.20 CFS
* Q_1 W/SWM = 0.08 CFS
Q_{10} EX. = 8.56 CFS
* Q_{10} W/SWM = 9.76 CFS
Q_{100} EX. = 14.72 CFS
* Q_{100} W/SWM = 14.89 CFS

* INCLUDES UNMANAGED AREA

APPROVED : FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT — DATE

NO.	REVISION	DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 6/4/08

Chief, Development Engineering Division — Date 6/2/08

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AND "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

SIGNATURE OF DEVELOPER MICHAEL PFAU — DATE 4/11/08

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION AND SEDIMENT AND EROSION CONTROL REPRESENTS A PROCTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. 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 OF ENGINEER ROBERT H. VOGEL — DATE 4/11/08

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

USDA-NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD S.C.D. — 5/21/08 DATE

OWNER/DEVELOPER

MICHAEL PFAU
TRINITY QUALITY HOMES, INC.
3675 PARK AVE., STE. 301
ELLICOTT CITY, MARYLAND 21043
(410) 480-0023

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2008."

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER — 6/28/11

AS-BUILT CERTIFICATION

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

ROBERT H. VOGEL, P.E. NO 16193

FINAL ROAD CONSTRUCTION PLAN
GRADING, SEDIMENT AND EROSION CONTROL PLAN

LINCOLN GLEN
LOTS 1-10 AND OPENSPACE LOT 11

TAX MAP 43 GRID 8 PARCELS 407
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

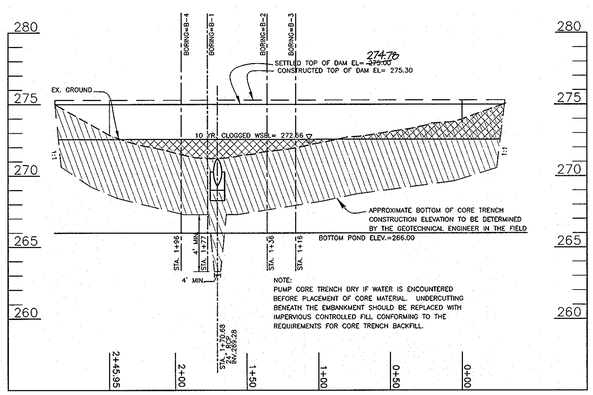
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET TEL: 410.461.7666
ELLICOTT CITY, MD 21043 FAX: 410.461.8961

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

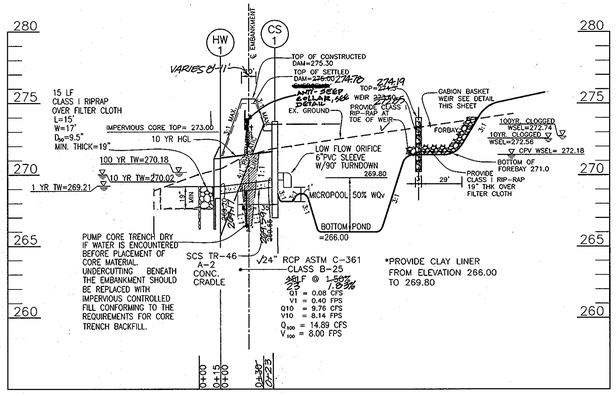
DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	APRIL 2008
SCALE:	AS SHOWN
W.O. NO.:	06-35.00

SHEET 3 OF 8

AS-BUILT 3/24/2011 F-08-041

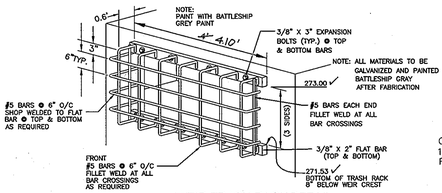


SWM FACILITY
PROFILE ALONG CENTERLINE EMBANKMENT
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

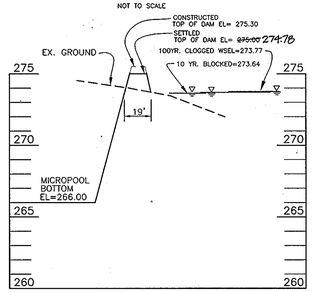


SWM FACILITY
SECTION THROUGH PRINCIPAL SPILLWAY
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

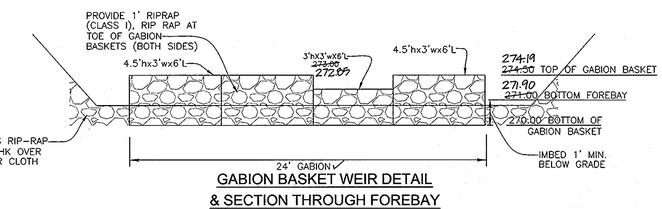
CLAY LINER: (a) 6 TO 12 INCHES OF CLAY SOIL (MINIMUM 15% PASSING THE #200 SIEVE AND A MAXIMUM PERMEABILITY OF 1 x 10^{-5}Cm/Sec.
(b) 30 MIL POLY-LINER OR
(c) BENTANITE



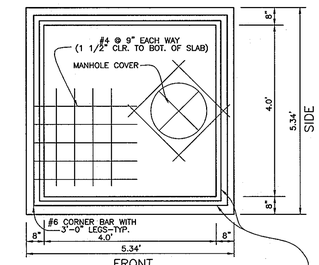
WEIR TRASH RACK DETAIL
NOT TO SCALE



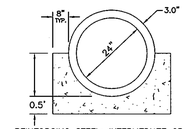
SECTION THROUGH EMERGENCY SPILLWAY
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



GABION BASKET WEIR DETAIL
& SECTION THROUGH FOREBAY
NOT TO SCALE



FRONT
4" TOP SLAB
NOT TO SCALE



REINFORCING STEEL: INTERMEDIATE GRADE
CONCRETE: CLASS B fc'=4,000 P.S.I. fc=1,600 P.S.I.

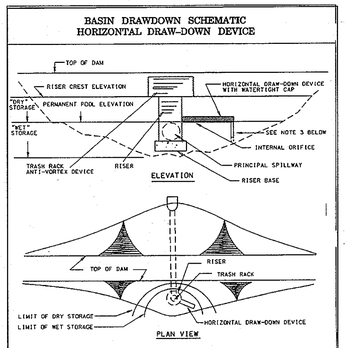
(REF. TR-46)
SCS TR-46
A-2
PIPE CRADLE DETAIL
NOT TO SCALE

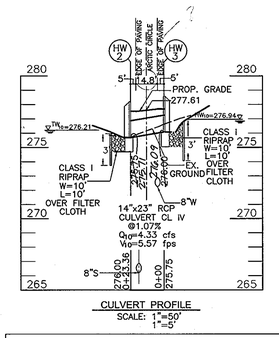
REINFORCING TO BE 4X4 W4.0 WELDED WIRE FABRIC
PERMENANT LOW FLOW TO BE CLOSED DURING SEC PHASE
100 YR WSEL=272.72
10 YR WSEL 272.54
Cpv WSEL = 272.18
TEMP 4" PVC HORIZONTAL DRAWDOWN 269.75
TOP OF MICROPOOL EL=269.80
50% WQv
BOTTOM OF MICRO POOL EL=266.00
(4) CONCRETE ANCHOR BOLTS
TOP STRUCTURE EL=273.33 273.22
8"WALL
KEYED JOINT, JOINT SEALER AASHTO M198, TYPE B APPLIED TO KEYWAY.
4" WEIR 3 SIDES – 272.11 272.20
BOTTOM OF TRASH RACK 271.53
CL 1.4" ø OPENING IN 6" ø CAP 269.86
24" RCP OUT INV. 269.65 269.59
EL. 266.00
0.67' 4.0' 0.67'
5.34'
FRONT PRECAST STRUCTURE CS-1 DETAIL
SCALE1"=3'

HORIZONTAL DRAW DOWN REMOVED WHEN CONVERTING TO FINAL POND

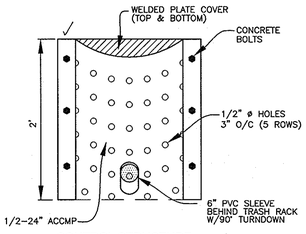
HORIZONTAL DRAW DOWN TO BE REMOVED AND HOLE CLOSED WITH WATER TIGHT GROUT WHEN CONVERTING TO FINAL POND.

0.66' PROJECTION (TYP)
PROVIDE 2 –1" ø HOLES FOR ROW ROWS 3" O/C PROVIDE 36 TOTAL HOLES
4" PVC HORIZONTAL DRAWDOWN
TOP OF MICROPOOL 4" ø PVC EL=269.80 4.0' SOLID
5' PERF.
6"-90° ELBOW IS BEHIND TRASH RACK
6" PVC SLEEVE WITH 90° TURNDOWN
ANGLE SUPPORT
(4) CONCRETE ANCHOR BOLTS
TOP STRUCTURE EL=273.33 273.78
TEMPORARY 3.2"øHOLE IN 4" ø CAP CL=269.87 269.62
275.00 TOP OF DAM (SETTLED)
PROVIDE 18"COVER
PROVIDE WATERTIGHT CONNECTION
24" RCCP B-25 ASTM C-361
2' MAX. STUB
PIPE CRADLE SEE DETAIL THIS SHEET
PERMANENT 6" ø CAP WITH 1.4" ø HOLE (TO BE CLOSED DURING SEDIMENT CONTROL PHASE)
272.20 DRY STORAGE
269.80
269.75
WET STORAGE
266.0
EL. 266.00
0.67' 4.0' 0.67'
5.34'
SIDE SECTION PRECAST STRUCTURE CS-1 DETAIL
SCALE1"=3'

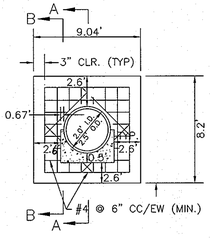


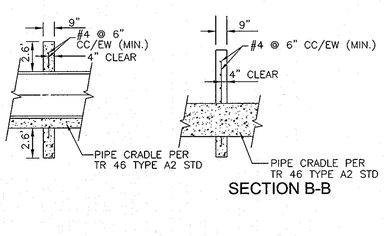


CULVERT PROFILE
SCALE: 1"=50'
1"=5'



CONTROL STRUCTURE
TRASH RACK DETAIL
SCALE: 1/2" = 1'

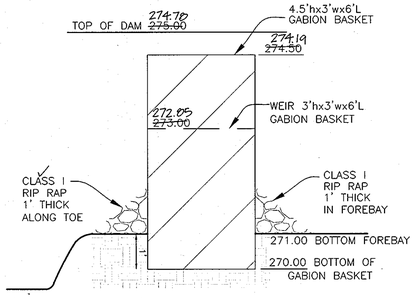




SECTION B-B

NOTE:
USE ASPHALT JOINT FILLER MATERIAL BETWEEN CONCRETE SURFACES EXCEPT BETWEEN PIPE AND CRADLE.

SECTION A-A
CONCRETE ANTI-SEEP COLLAR
NOT TO SCALE



CROSS SECTION FOREBAY DAM

STRUCTURE SCHEDULE						
NO.	TYPE	LOCATION	TOP ELEV.	INV IN	INV OUT	HO. CO. DETAILS
HW–3	TYPE 'D' HEADWALL	N 547013.35 E 1370365.22	278.42	–	270.09 276.00	D 5.44
HW–2	TYPE 'D' HEADWALL	N 547035.96 E 1370363.64	278.17	276.71 275.75	–	D 5.44
HW–1	TYPE 'C' ENDWALL	N 547108.20 E 1370100.74	271.95	269.65	264.71 269.20	D 5.21

PIPE SCHEDULE		
PIPE SIZE	TYPE	TOTAL LENGTH
14"X23"	RCP CLASS IV	25 LF
24"	RCP ASTM C 361 CLASS B–25	45 LF

APPROVED : FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

NO.	REVISION	DATE

AS-BUILT CERTIFICATION

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

ROBERT H. VOGEL, P.E. NO.16193

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/1/08

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/08

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON–SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AND "AS–BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

SIGNATURE OF DEVELOPER, TRINITY QUALITY HOMES, INC. — DATE 4/11/08

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION AND SEDIMENT AND EROSION CONTROL REPRESENTS A PROCTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. 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 OF ENGINEER, ROBERT H. VOGEL — DATE 4/11/08

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

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD S.C.D. — DATE 5/21/08

OWNER/DEVELOPER
MICHAEL PFAU
TRINITY QUALITY HOMES. INC.
3675 PARK AVE., STE. 301
ELLICOTT CITY, MARYLAND 21043
(410) 480–0023

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09–27–2008."

FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT DETAILS

LINCOLN GLEN
LOTS 1-10 AND OPENSPACE LOT 11

TAX MAP 43 GRID 8 PARCELS 407
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND ROBERT HARRIS VOGEL No. 16193 PROFESSIONAL ENGINEER 4/11/08
ROBERT H. VOGEL, PE No.16193

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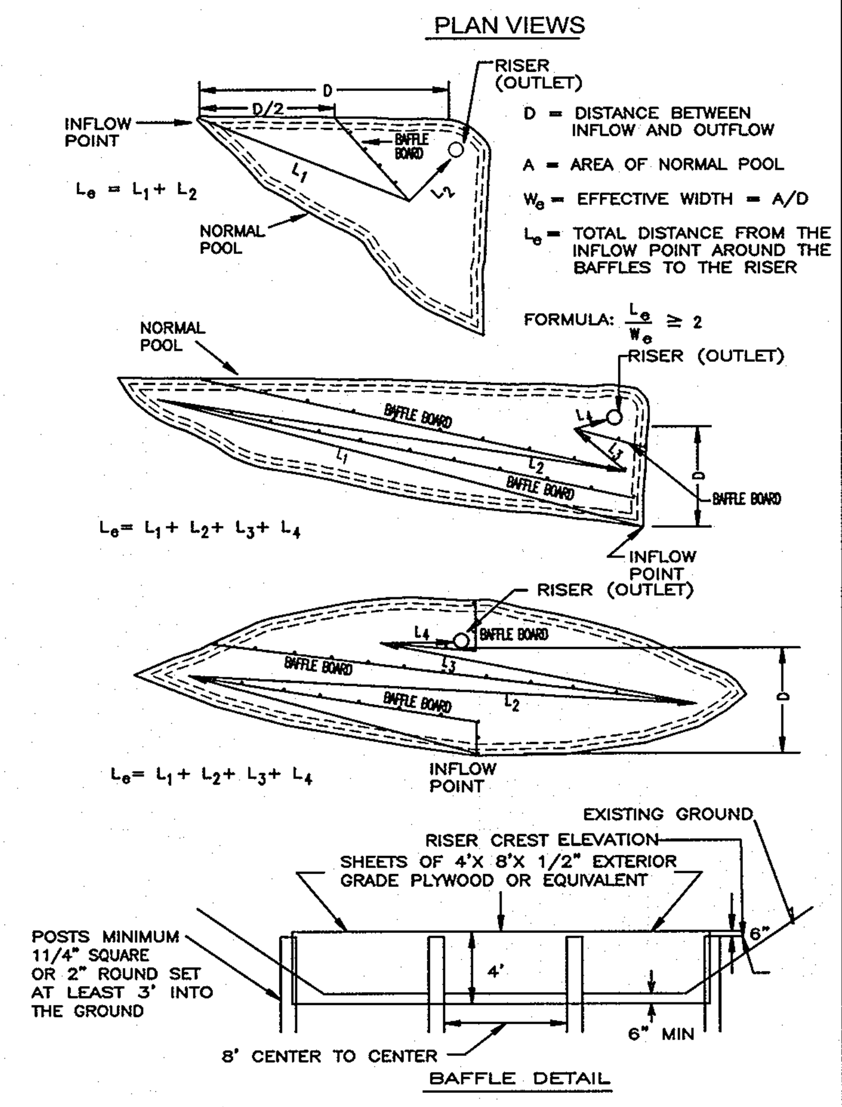
SHEET 6 OF 8

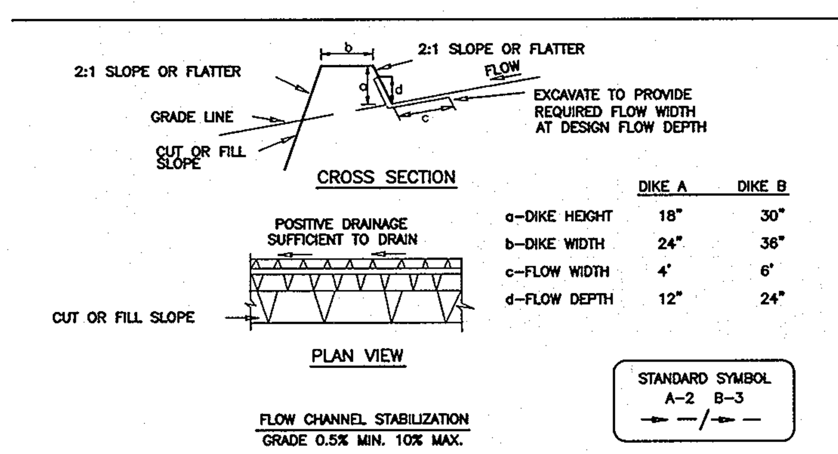
AS-BUILT 3/24/2011 F-08-041

DETAIL 18 - SEDIMENT BASIN BAFFLES



U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE C - 10 - 28	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 1 - EARTH DIKE



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

STANDARD SYMBOL
A-2 B-3

1. SEED AND COVER WITH STRAW MULCH.
2. SEED AND COVER WITH EROSION CONTROL MATTING OR LINE WITH SOD.
3. 4" – 7" STONE OR RECYCLED CONCRETE EQUIVALENT PRESSED INTO THE SOIL 7" MINIMUM

CONSTRUCTION SPECIFICATIONS

1. ALL TEMPORARY EARTH DIKES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET. SPOT ELEVATIONS MAY BE NECESSARY FOR GRADES LESS THAN 1%.

2. RUNOFF DIVERTED FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.

3. RUNOFF DIVERTED FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED, STABILIZED AREA AT A NON-EROSIVE VELOCITY.

4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONAL MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIKE.

5. THE DIKE SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.

6. FILL SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.

7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIKE.

8. INSPECTION AND MAINTENANCE MUST BE PROVIDED PERIODICALLY AND AFTER EACH RAIN EVENT.

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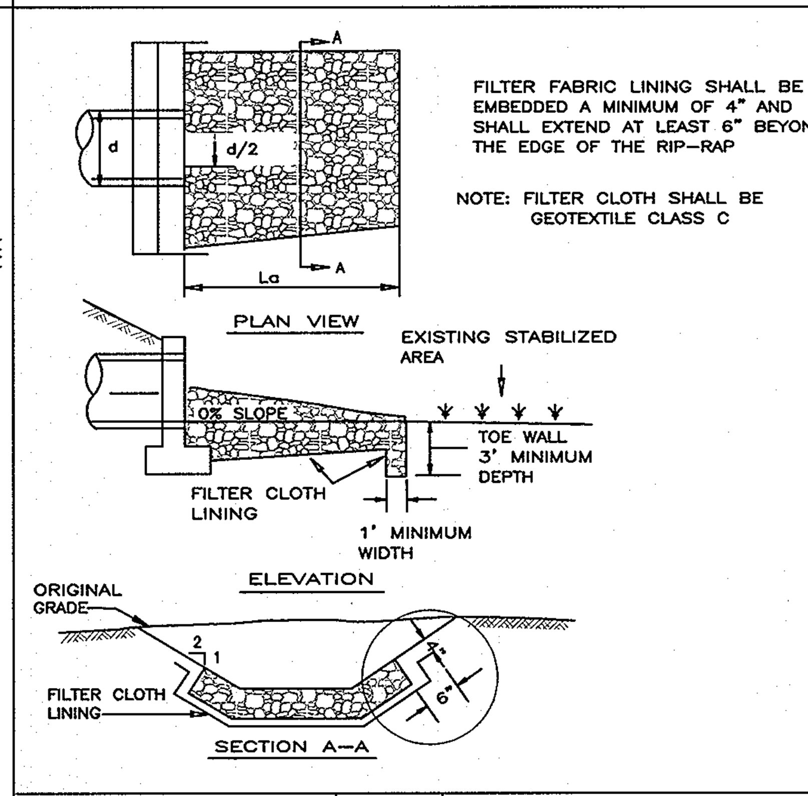
DETAIL 27 - ROCK OUTLET PROTECTION III



FILTER FABRIC LINING SHALL BE EMBEDDED A MINIMUM OF 4" AND SHALL EXTEND AT LEAST 6" BEYOND THE EDGE OF THE RIP–RAP

NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

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ROCK OUTLET PROTECTION

CONSTRUCTION SPECIFICATIONS

1. 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 COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP–RAP OR FILTER.

3. 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.

4. 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.

5. 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.

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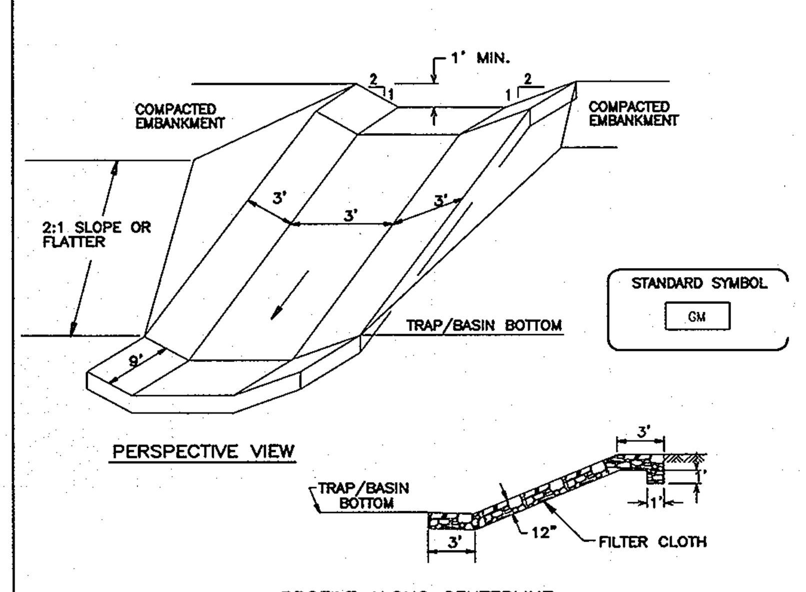
DETAIL 6 - GABION INFLOW PROTECTION



STANDARD SYMBOL
GM

CONSTRUCTION SPECIFICATIONS

1. GABION INFLOW PROTECTION SHALL BE CONSTRUCTED OF 9' X 3' X 9" GABION BASKETS FORMING A TRAPEZOIDAL CROSS SECTION 1' DEEP, WITH 2:1 SIDE SLOPES, AND A 3' BOTTOM WIDTH.
2. GEOTEXTILE CLASS C SHALL BE INSTALLED UNDER ALL GABION BASKETS.
3. THE STONE USED TO FILL THE GABION BASKETS SHALL BE 4" – 7".
4. GABIONS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
5. GABION INFLOW PROTECTION SHALL BE USED WHERE CONCENTRATED FLOW IS PRESENT ON SLOPES STEEPER THAN 4:1.

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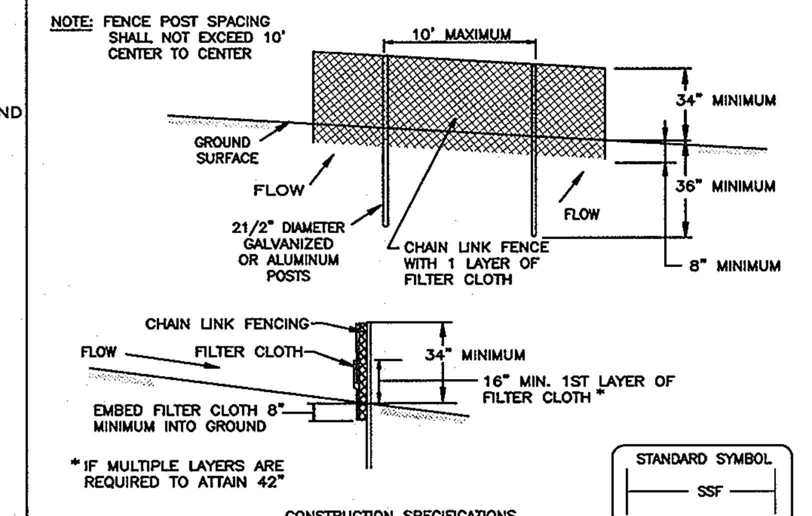
DETAIL 33 - SUPER SILT FENCE

NOTE: FENCE POST SPACING SHALL NOT EXCEED 10' CENTER TO CENTER



CONSTRUCTION SPECIFICATIONS

1. FENCING SHALL BE 42" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MARYLAND STATE HIGHWAY DETAILS FOR CHAIN LINK FENCING. THE SPECIFICATION FOR A 6' FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6' LENGTH POSTS.

2. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES. THE LOWER TENSION WIRE, BRACE AND TRUSS RODS, DRIVE ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE.

3. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24" AT THE TOP AND MID SECTION.

4. FILTER CLOTH SHALL BE EMBEDDED A MINIMUM OF 8" INTO THE GROUND.

5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.

6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT BUILDUPS REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES 50% OF FENCE HEIGHT

7. FILTER CLOTH SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID SECTION AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:

TENSILE STRENGTH	50 LBS/IN (MIN.)	TEST: MSMT 509
TENSILE MODULUS	20 LBS/IN (MIN.)	TEST: MSMT 509
FLOW RATE	0.3 GAL/FT² /MINUTE (MAX.)	TEST: MSMT 322
FILTERING EFFICIENCY	75% (MIN.)	TEST: MSMT 322

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SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTION, LICENSE AND PERMITS SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313–1855).
2. ALL VEGETATION AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: (A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3:1, (B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING, AND MULCHING (SEC. G). TEMPORARY STABILIZATION WITH MULCH ALONE SHALL BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
7. SITE ANALYSIS :

TOTAL AREA	2.63 AC.
AREA DISTURBED	2.63 AC.
AREA TO BE ROOFED OR PAVED	0.60 AC.
AREA TO BE VEGETATIVELY STABILIZED	2.03 AC.
TOTAL CUT	3,500 CY
TOTAL FILL	3,500 CY
OFFSITE WASTE/BORROW AREA LOCATION	*

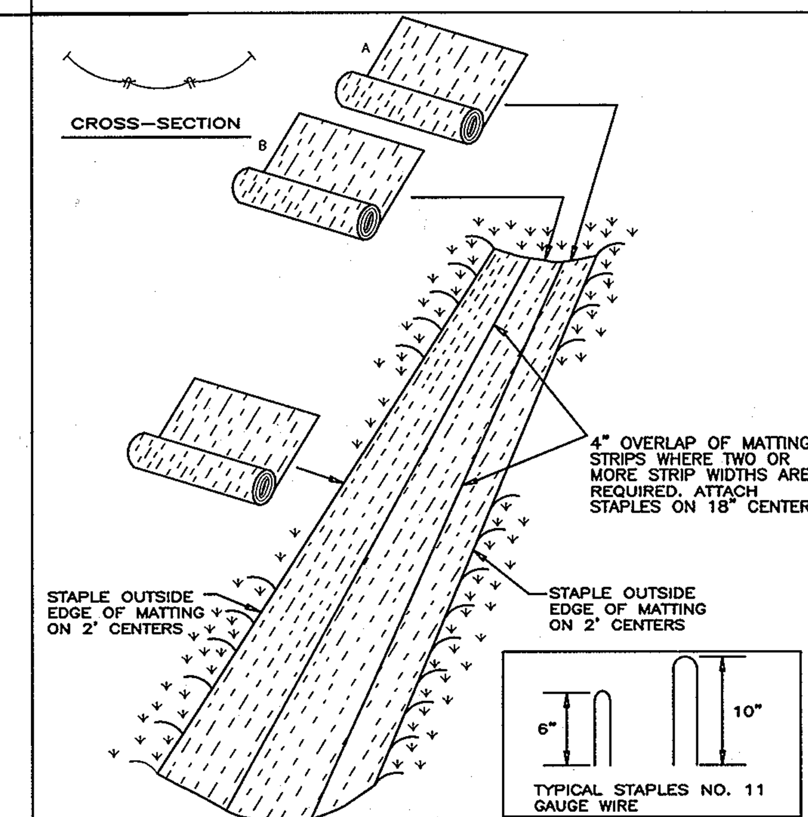
8. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
9. ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
10. ON ALL SITES WITH DISTURBED AREAS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

* TO BE DETERMINED BY CONTRACTOR, WITH PRE–APPROVAL OF THE SEDIMENT CONTROL INSPECTOR WITH AN APPROVED AND ACTIVE GRADING PERMIT.

SEQUENCE OF CONSTRUCTION

SEQUENCE OF CONSTRUCTION	DURATION
1. OBTAIN GRADING PERMIT.	
2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313–1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.	
3. CONSTRUCT STABLIZED CONSTRUCTION ENTRANCE.	1 DAY
4. INSTALL SILT FNCE & SUPER SILT FENCE.	1 DAY
5. CONSTRUCT STORMWATER MANAGEMENT FACILITY (SEDIMENT BASIN) .	2 DAYS
6. INSTALL EARTH DIKES AND DIVERSION DIKES, TEMP. DIVERSION PIPE W/BERM.	1 WEEK
7. AFTER OBTAINING PERMISSION FROM SEDIMENT CONTROL INSPECTOR TO PROCEED, ROUGH GRADE SITE TO LOD AND INSTALL EROSION CONTROL MATTING.	3 DAYS
8. INSTALL STORM DRAIN CULVERT, WATER AND SEWER.	2 WEEKS
9. GRADE ROAD TO SUB–BASE.	5 DAYS
10. WITH ROAD GRADED TO SUBE–BASE AND BEGIN INSTALLATION OF BARRIER CURB AND FLUSH CURB AS SHOWN ON THE PLAN.	1 WEEK
12. FINALIZE SITE GRADING IN CONFORMANCE WITH THIS PLAN.	2 DAYS
13. WITH INSPECTOR APPOVAL AND FINAL ROAD PAVING COMPLETE STABILIZE ANY REMAING DISTURBED AREAS.	3 DAYS
14. INSTALL STREET TREES AND ALL LANDSCAPING.	1 WEEK
15. WITH SEDIMENT CONRTOL INSPECTORS APPROVAL CONVERT SEDIMENT BASIN TO FINAL STORMWATER MANAGEMENT FACILITY AFTER SITE STABILIZED.	1 WEEK

DETAIL 30 - EROSION CONTROL MATTING



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EROSION CONTROL MATTING

CONSTRUCTION SPECIFICATIONS

1. KEY–IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A NARROW TRENCH, 6" IN DEPTH. BACKFILL THE TRENCH AND TAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS–SECTION. SECURE WITH A ROW OF STAPLES ABOUT 4" DOWN SLOPE FROM THE TRENCH. SPACING BETWEEN STAPLES IS 6".

2. STAPLE THE 4" OVERLAP IN THE CHANNEL CENTER USING AN 18" SPACING BETWEEN STAPLES.

3. BEFORE STAPLING THE OUTER EDGES OF THE MATTING, MAKE SURE THE MATTING IS SMOOTH AND IN FIRM CONTACT WITH THE SOIL.

4. STAPLES SHALL BE PLACED 2' APART WITH 4 ROWS FOR EACH STRIP, 2 OUTER ROWS, AND 2 ALTERNATING ROWS DOWN THE CENTER.

5. WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4", SHIPLAP FASHION. REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6" APART IN A STAGGERED PATTERN ON EITHER SIDE.

6. THE DISCHARGE END OF THE MATTING LINER SHOULD BE SIMILARLY SECURED WITH 2 DOUBLE ROWS OF STAPLES.

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

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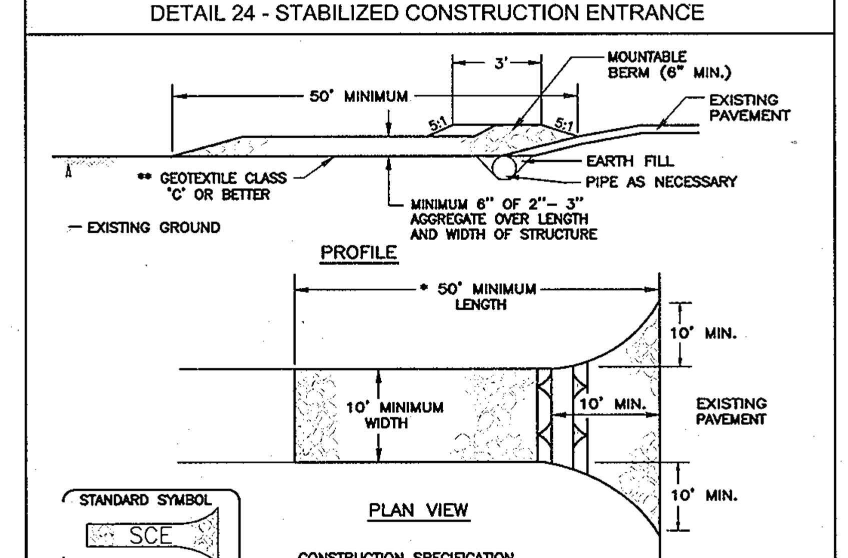
DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



CONSTRUCTION SPECIFICATION

1. LENGTH – MINIMUM OF 50' (* 30' FOR A SINGLE RESIDENCE LOT).
2. WIDTH – 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
3. GEOTEXTILE FABRIC (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. ** THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.
4. STONE – CRUSHED AGGREGATE (2" TO 3") OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.
5. SURFACE WATER – ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. PIPE HAS TO BE SIZED ACCORDING TO THE DRAINAGE. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM WILL BE REQUIRED.
6. LOCATION – A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

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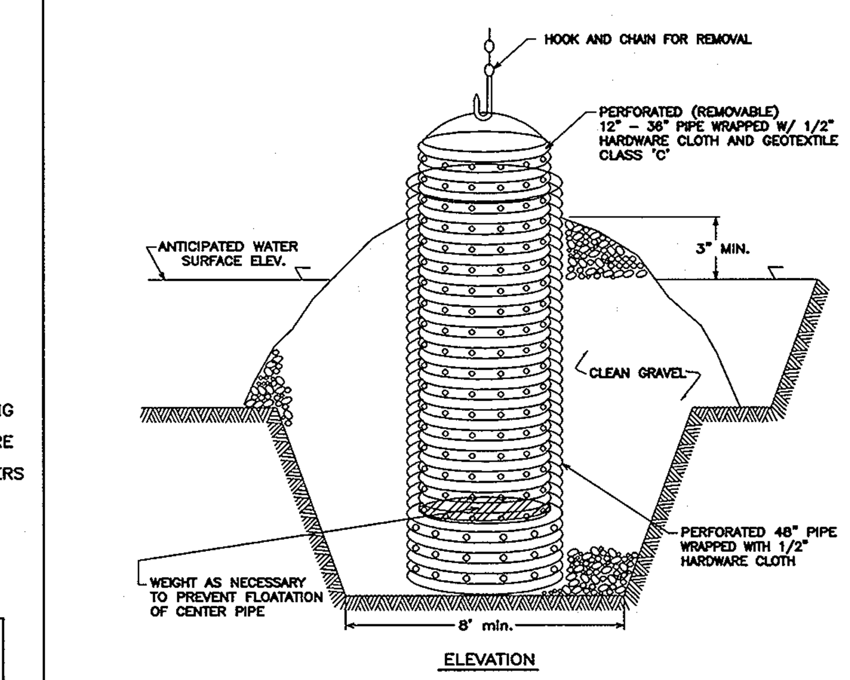
DETAIL 20A - REMOVABLE PUMPING STATION



CONSTRUCTION SPECIFICATIONS

1. THE OUTER PIPE SHOULD BE 48" DIA. OR SHALL, IN ANY CASE, BE AT LEAST 4" GREATER IN DIAMETER THAN THE CENTER PIPE. THE OUTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH TO PREVENT BACKFILL MATERIAL FROM ENTERING THE PERFORATIONS.

2. AFTER INSTALLING THE OUTER PIPE, BACKFILL AROUND OUTER PIPE WITH 2" AGGREGATE OR CLEAN GRAVEL.

3. THE INSIDE STAND PIPE (CENTER PIPE) SHOULD BE CONSTRUCTED BY PERFORATING A CORRUGATED OR PVC PIPE BETWEEN 12" AND 36" IN DIAMETER. THE PERFORATIONS SHALL BE 1/2" X 6" SLITS OR 1" DIAMETER HOLES 6" ON CENTER. THE CENTER PIPE SHALL BE WRAPPED WITH 1/2" HARDWARE CLOTH FIRST, THEN WRAPPED AGAIN WITH GEOTEXTILE CLASS C.

4. THE CENTER PIPE SHOULD EXTEND 12" TO 18" ABOVE THE ANTICIPATED WATER SURFACE ELEVATION OR RISER CREST ELEVATION WHEN DEWATERING A BASIN.

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DEWATERING STRATEGY

DEWATERING REFERS TO THE ACT OF REMOVING AND DISCHARGING WATER FROM EXCAVATED AREAS ON CONSTRUCTION SITES OR FROM SEDIMENT TRAPS OR BASINS ON CONSTRUCTION SITES. STANDARDS AND SPECIFICATIONS FOR DEWATERING PRACTICES FOLLOW:

THESE STANDARDS APPLY TO REMOVAL AND DISCHARGE OF WATER FROM ANY EXCAVATED AREA OR SEDIMENT TRAP OR BASIN AT ANY CONSTRUCTION SITE. GIVEN THE UNIQUE CONDITIONS AT ANY PARTICULAR CONSTRUCTION SITE, ANY OR ALL OF THE PRACTICES MAY APPLY. REGARDLESS OF THE APPLICABILITY OF THE PRACTICES LISTED HEREIN, OPERATORS ARE REQUIRED TO USE ACCEPTABLE PROCEDURES FOR MAINTENANCE AND DEWATERING. IN ALL CASES, EVERY EFFORT SHALL BE MADE TO ELIMINATE SEDIMENT POLLUTION ASSOCIATED WITH DEWATERING.

DESIGNERS SHALL SPECIFY THE PREFERRED PROCEDURES FOR DEWATERING ON PLANS. IN PARTICULAR, DESIGNERS SHOULD IDENTIFY PROCEDURES FOR DEWATERING SEDIMENT TRAPS AND BASINS PRIOR TO ELIMINATION OF THE LAST SEDIMENT CONTROL FACILITY ON THE SITE OR PRIOR TO CONVERSION OF SEDIMENT CONTROL FACILITIES TO STORMWATER MANAGEMENT FACILITIES. RECOMMENDED PROCEDURES SHALL BE CONSISTENT WITH THESE STANDARDS. ATYPICAL SITE CONDITIONS MAY REQUIRE INNOVATIVE DEWATERING DESIGNS. DEWATERING MEASURES NOT REFERENCED IN THIS STANDARD MAY BE USED WITH THE CONSENT OF THE APPROVAL AUTHORITY.

DEWATERING OF EXCAVATED AREAS

A. DESIGNERS SHALL SPECIFY ON PLANS, AND IN SEQUENCES OF CONSTRUCTION INCLUDED ON PLANS, PRACTICES FOR DEWATERING OF EXCAVATED AREAS. PLAN REVIEWERS SHALL CHECK TO SEE THAT PROCEDURES FOR DEWATERING ARE INCLUDED ON PLANS.

B. IN ALL CASES, WATER REMOVED FROM EXCAVATED AREAS SHALL BE DISCHARGED SUCH THAT IT SHALL PASS THROUGH A SEDIMENT CONTROL DEVICE PRIOR TO ENTERING RECEIVING WATERS. SEDIMENT CONTROL DEVICES INCLUDE SEDIMENT TRAPS AND BASINS, IN ADDITION TO THE PRACTICES IN THIS SECTION.

APPROVED PRACTICES FOR DEWATERING OF EXCAVATED AREAS

1. PUMPING OF WATER TO AN EXISTING SEDIMENT BASIN OR TRAP IN WHICH THE ENTIRE VOLUME OF WATER FROM THE AREA TO BE DEWATERED CAN BE CONTAINED WITHOUT DISCHARGE TO RECEIVING WATERS.

2. PUMPING OF WATER TO AN EXISTING SEDIMENT BASIN OR TRAP SUCH THAT THE ENTIRE VOLUME OF WATER FROM THE AREA TO BE DEWATERED CAN BE MANAGED WITHOUT EXCEEDING THE DESIGN OUTFLOW FROM THE SEDIMENT CONTROL STRUCTURE.

3. REMOVABLE PUMPING STATION STANDARDS AND SPECIFICATIONS FOR REMOVABLE PUMPING STATION ARE ON DETAIL 20A.

4. USE OF A SUMP PIT STANDARDS AND SPECIFICATIONS FOR A SUMP PIT ARE ON DETAIL 20B.

5. SEDIMENT TANK STANDARDS AND SPECIFICATIONS FOR A SUMP PIT ARE ON DETAIL 21.

DEWATERING OF SEDIMENT TRAPS AND BASINS.

DESIGNERS SHALL SPECIFY ON PLANS, AND IN SEQUENCES OF CONSTRUCTION INCLUDED ON PLANS, THE PRACTICES FOR DEWATERING OF TRAPS AND BASINS. PLAN REVIEWERS SHALL CHECK TO SEE THAT PROCEDURES FOR DEWATERING TO BE USED ARE INCLUDED ON PLANS. IN ALL CASES, WATER REMOVED FROM TRAPS AND BASINS SHALL BE DISCHARGED SO THAT IT PASSES THROUGH A SEDIMENT CONTROL DEVICE PRIOR TO ENTERING RECEIVING WATERS.

APPROVED PRACTICES FOR DEWATERING OF TRAPS AND BASINS.
1. REMOVABLE PUMPING STATION.
2. USE OF A SUMP PIT.
3. USE OF A FLOATING SUCTION HOSE TO PUMP THE CLEANER WATER FROM THE TOP OF THE POND. AS THE CLEANER WATER IS PUMPED THE SUCTION HOSE WILL LOWER AND EVENTUALLY ENCOUNTER SEDIMENT LADEN WATER. WHEN THIS HAPPENS THE PUMPING OPERATION WILL CEASE. PROVISIONS SHALL BE MADE TO FILTER WATER.

21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

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

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

I. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:

A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.

B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.

C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.

D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

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

CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA–SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

II. TOPSOIL SPECIFICATIONS – SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

I. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR A SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAT 1 AND 1/2" IN DIAMETER.

II. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

III. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4–8 TONS/ACRE (200–400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.

II. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

I. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION – SECTION I – VEGETATIVE STABILIZATION METHODS AND MATERIALS.

III. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:
I. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
A. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PRESCRIBED TO RAISE THE PH TO 6.5 OR HIGHER.
B. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 1.5 PERCENT BY WEIGHT.
C. TOPSOIL HAVING SOLUBLE SALT CONTENT GREATER THAN 500 PARTS PER MILLION SHALL NOT BE USED.
D. NO SOD OR SEED SHALL BE PLACED ON SOIL SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO–TOXIC MATERIALS.
NOTE: TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

II. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMMENDMENTS SPECIFIED IN 20.0 VEGETATIVE STABILIZATION–SECTION I–VEGETATIVE STABILIZATION METHODS AND MATERIALS.

V. TOPSOIL APPLICATION

I. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS, GRADE STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.

II. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4" – 8" HIGHER IN ELEVATION.

III. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4" – 8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADING SHALL BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

IV. TOPSOIL SHALL NOT BE PLACE WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG–LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED. SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

1) PREFERRED–APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/ 100 SQ.FT.) AND 600 LBS PER ACRE 10–10–10 FERTILIZER (14 LBS./ 1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT THE TIME OF SEEDING, APPLY 400 LBS. PER ACRE 30–0–0 UREAFORM FERTILIZER (9 LBS/1000 SQ.FT.)

2) ACCEPTABLE–APPLY 2 TONS PER ACRE DOLOMATIC LIMESTONE (92 LBS/ 1000 SQ.FT.) AND APPLY 1000 LBS. PER ACRE 10–10–10– FERTILIZER (23 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

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

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

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

TEMPORARY SEEDING NOTES

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

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

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

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

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

APPROVED : FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER
HOWARD COUNTY HEALTH DEPARTMENT
DATE

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN
SEDIMENT & EROSION CONTROL DETAILS
LINCOLN GLEN
LOTS 1-10 AND OPENSPACE LOT 11

TAX MAP 43 GRID 8 PARCELS 407
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

OWNER/DEVELOPER
MICHAEL PFAU
TRINITY QUALITY HOMES. INC.
3675 PARK AVE., STE. 301
ELLICOTT CITY, MARYLAND 21043
(410) 480–0023

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

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	APRIL 2008
SCALE:	AS SHOWN
W.O. NO.:	06-35.00

4 SHEET OF 8

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/4/08

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/08

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON–SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AND "AS–BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

SIGNATURE OF DEVELOPER — 4/11/08 DATE
TRINITY QUALITY HOMES, INC.

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION AND SEDIMENT AND EROSION CONTROL REPRESENTS A PROCTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. 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 OF ENGINEER — 4/11/08 DATE
ROBERT H. VOGEL

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

~~USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE~~

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

HOWARD S.C.D. — 5/21/08 DATE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09–27–2008."

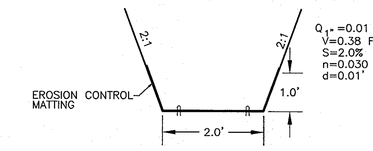
AS-BUILT 3/24/2011 F-08-041

SOILS LEGEND		
SYMBOL	NAME / DESCRIPTION	TYPE
ScB	SANDY AND CLAYEY LAND, GENTLY SLOPING	C

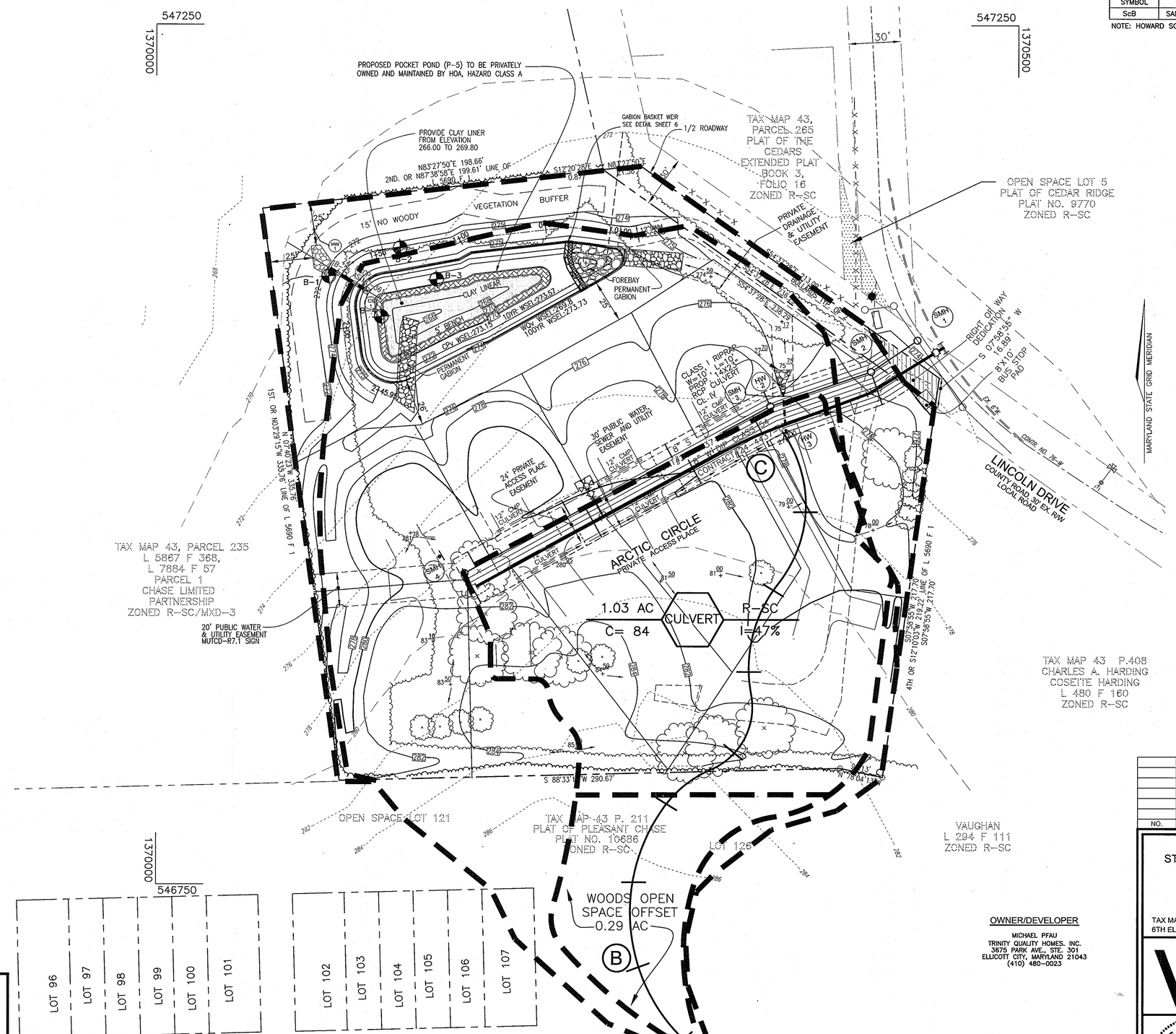
NOTE: HOWARD SOIL SURVEY, MAP NUMBER 20

TC PATH INFORMATION

A–B	B–C
SHEET FLOW	SHALLOW CONCENTRATED
75' @ 6.7%	330' @ 5.45%



TYPICAL GRASS CHANNEL(SIDE DITCH)
NTS



STORM DRAIN DRAINAGE AREA MAP FOR CULVERT
SCALE: 1"=30'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/4/08

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/08

APPROVED : FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

NO.	REVISION	DATE

OWNER/DEVELOPER

MICHAEL PFAU
TRINITY QUALITY HOMES, INC.
3675 PARK AVE., STE. 301
ELLICOTT CITY, MARYLAND 21043
(410) 480-0023

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2008."

FINAL ROAD CONSTRUCTION PLAN
STORM DRAIN DRAINAGE AREA MAP FOR CULVERT & DETAILS
LINCOLN GLEN
LOTS 1-10 AND OPENSPACE LOT 11

TAX MAP 43 GRID 8 — PARCELS 407
6TH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
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TEL: 410.461.7666 FAX: 410.461.8961

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193 — DATE 4/18/08

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	APRIL 2008
SCALE:	AS SHOWN
W.O. NO.:	06-35.00

SHEET 5 OF 8

AS-BUILT 3/24/2011

F-08-041

MARYLAND 378
STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

CONSTRUCTION SPECIFICATIONS
THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD–378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25–FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

EARTH FILL

MATERIAL THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

PLACEMENT AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTIONTHE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +\-2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T–99 (STANDARD PROCTOR).

CUT OFF TRENCHTHE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

EMBANKMENT CORETHE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATED CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100–200 PSI; 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM–CM. MATERIAL SHALL BE PLACED SUCH THAT MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEANS SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF THE STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL (FLOWABLE FILL)ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL– FREE OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS – (POLYMER COATED STEEL PIPE)– STEEL PIPES WITH POLYMERIC COATING SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M–245 & M–246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.

MATERIALS – (ALUMINUM COATED STEEL PIPE) – THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M–274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M–190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.

MATERIALS – (ALUMINUM PIPE) – THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M–196 OR M–211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M–190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI–SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS – ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI–SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE–ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12–INCH WIDE HUGGER TYPE BAND WITH O–RING GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4(FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END. A 24–INCH WIDE BY 3/8–INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8"INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE.

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING – THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."
6. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:
1. MATERIALS – REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C–361.
2. BEDDING – REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING/CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING/CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THEIRUCTURE BACKFILLSECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.
3. LAYING PIPE – BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION 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 SHOWN ON THE DRAWINGS.

PLASTIC PIPE– THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:
1. MATERIALS – PVC PIPE SHALL BE PVC–1120 OR PVC–1220 CONFORMING TO ASTM D–1785 OR ASTM D–2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" –10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.
2. JOINTS AND CONNECTIONS TO ANTI–SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.
3. BEDDING – THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."
5. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

DRAINAGE DIAPHRAGMS – WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE
CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

ROCK RIPRAP
ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

GEOTEXILE SHALL BE PLACED UNDER ALL RIPRAP AND SHALL MEET REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

CARE OF WATER DURING CONSTRUCTION
ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT 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 FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION
ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT I A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD–342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

EROSION AND SEDIMENT CONTROL
CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.

POND BOTTOM SOIL CONDITIONS

IF BROKEN ROCK FRAGMENTS ARE ENCOUNTERED AT FINISHED POND BOTTOM, UNDER CUT A MINIMUM OF 12" BELOW BASIN GRADE AND TO A HORIZONTAL DISTANCE OF AT LEAST 18" BEYOND EACH EDGE OF THE BROKEN ROCK AND BACKFILL WITH FINE–GRAINED ML OR CL SOILS COMPACTED TO A FIRM CONDITION. THIS PROCEDURE SHOULD BE PERFORMED UNDER THE SUPERVISION OF THE PROJECT GEOTECHNICAL ENGINEER.

IN ORDER TO LOWER THE INFILTRATION RATE INTO THE SANDS WITH GRAVEL, IT IS RECOMMENDED THAT THE SANDS WITH GRAVEL BE UNDERCUT AND REPLACED WITH A MINIMUM OF 12 INCHES OF SOILS CLASSIFIED AS SM PER ASTM D–2487 OR SANDY LOAM PER USDA CLASSIFICATION. THE FILL SOIL SHOULD BE COMPACTED TO AT LEAST 95 PERCENT OF ITS MAXIMUM DRY DENSITY PER ASTM D–698.

OPERATION, MAINTENANCE AND INSPECTION

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

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT EXTENDED DETENTION FACILITY

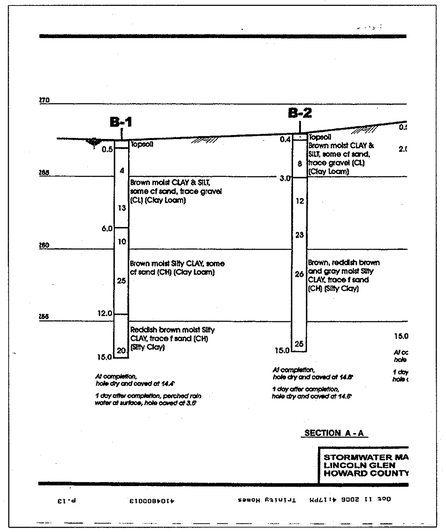
STORMWATER MANAGEMENT FACILITY

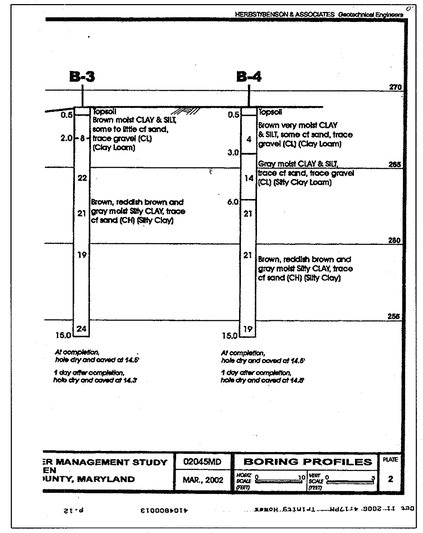
ROUTINE MAINTENANCE

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

NON–ROUTINE MAINTENANCE

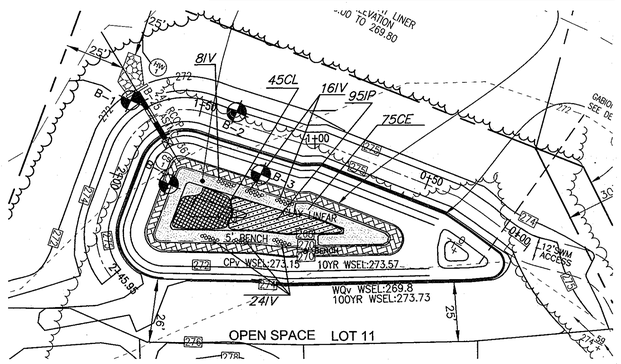
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERE WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.





FACILITY #1

STORMWATER POND HERBACEOUS LANDSCAPE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
IP	95	Iris pseudocoris Yellow Water Iris	plug	1.5' oc
IV	48	Iris versicolor Blue Flag (wear gloves)	plug	1.5' oc
CE	75	Cyperus esculentus Yellow Nut Sedge	plug	2' oc
CL	45	Carex lacustris Lake Sedge	plug	2' oc



APPROVED : FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER HOWARD COUNTY HEALTH DEPARTMENT — DATE

NO.	REVISION	DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 6/4/08

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 6/2/08

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON–SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT. I SHALL ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AND "AS–BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

SIGNATURE OF DEVELOPER TRINITY QUALITY HOMES, INC. — DATE 4/11/08

ENGINEER'S CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION AND SEDIMENT AND EROSION CONTROL REPRESENTS A PROCTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. 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 OF ENGINEER ROBERT H. VOGEL — DATE 4/11/08

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

USDA–NATURAL RESOURCES CONSERVATION SERVICE — DATE

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

HOWARD S.C.D. — DATE 5/21/08

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09–27–2008."

ROBERT H. VOGEL, PE No.16193

OWNER/DEVELOPER

MICHAEL PFAU
TRINITY QUALITY HOMES, INC.
3675 PARK AVE., STE. 301
ELLICOTT CITY, MARYLAND 21043
(410) 480–0023

FINAL ROAD CONSTRUCTION PLAN
STORMWATER MANAGEMENT DETAILS

LINCOLN GLEN
LOTS 1-10 AND OPENSPACE LOT 11

TAX MAP 43 GRID 8 PARCELS 407
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: RHV/RJ
DRAWN BY: RJ
CHECKED BY: RHV
DATE: APRIL 2008
SCALE: AS SHOWN
W.O. NO.: 06-35.00

SHEET 7 OF 8

AS-BUILT 3/24/2011

F-08-041

FOREST CONSERVATION WORKSHEET

NET TRACT AREA:

A. TOTAL TRACT AREA	2.63 AC
B. AREA WITHIN 100 YEAR FLOODPLAIN	0.00 AC
C. AREA TO REMAIN IN AGRICULTURAL PRODUCTION	0.00 AC
D. NET TRACT AREA	2.63 AC

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

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

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

E. AFFOREST THRESHOLD	15%	X D = 0.39 AC
F. CONSERVATION THRESHOLD	20%	X D = 0.53 AC

EXISTING FOREST COVER:

G. EXISTING FOREST COVER (EXCLUDING FLOODPLAIN) =	0.00 AC
H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD =	0.00 AC
I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD =	0.00 AC

BREAK EVEN POINT:

J. FOREST RETENTION WITH NO MITIGATION REQUIRED =	0.00 AC
K. CLEARING PERMITTED WITHOUT MITIGATION =	0.00 AC

PROPOSED FOREST CLEARING:

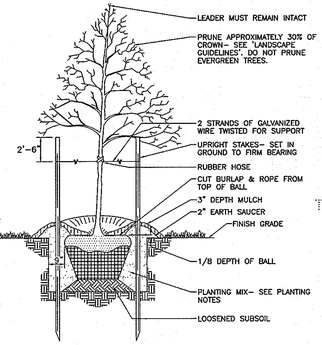
L. TOTAL AREA OF FOREST TO BE CLEARED =	0.00 AC
M. TOTAL AREA OF FOREST TO BE RETAINED =	0.00 AC

PLANTING REQUIREMENTS:

N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD =	0.00 AC
P. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD =	0.00 AC
Q. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD =	0.00 AC
R. TOTAL REFORESTATION REQUIRED =	0.00 AC
S. TOTAL AFFORESTATION REQUIRED =	0.39 AC
T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED =	0.39 AC

LANDSCAPE NOTES:

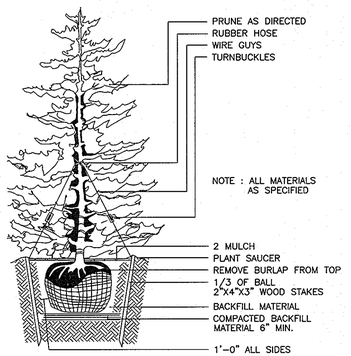
1. FINAL SURETY FOR THE STORMWATER MANAGEMENT AREA LANDSCAPING, PERIMETER LANDSCAPING, STREET TREES (PRIVATE), AND TRASH PAD WILL BE POSTED AS LANDSCAPE PART OF THE FINAL ROAD CONSTRUCTION PLAN DEVELOPER AGREEMENT.
2. STREET TREES ALONG THE PRIVATE ACCESS PLACE WILL BE MAINTAINED BE THE H.O.A. AND WILL BE ADDRESSED BY THE RECORDED PRIVATE ROAD MAINTENANCE AGREEMENT AND THE H.O.A. DOCUMENT.



TREE PLANTING AND STAKING
DECIDUOUS TREES UP TO 2–1/2" CALIPER
NOT TO SCALE

NOTES

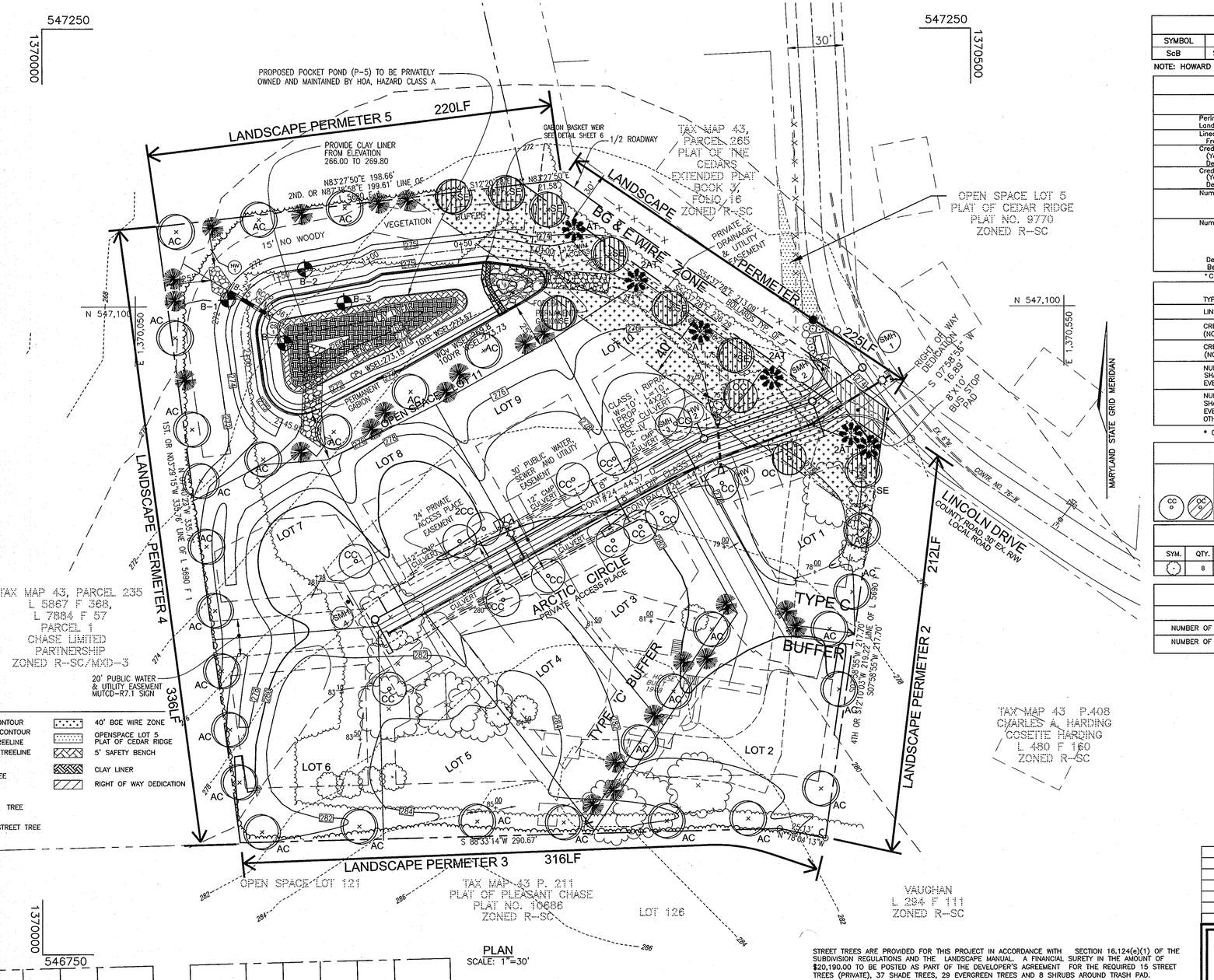
1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE–WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2–1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM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



TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE

LEGEND

---200--- EXISTING CONTOUR	40' BGE WIRE ZONE
282 PROPOSED CONTOUR	OPENSPACE LOT 5 PLAT OF CEDAR RIDGE
EXISTING TREELINE	5' SAFETY BENCH
PROPOSED TREELINE	CLAY LINER
SHADE TREE	RIGHT OF WAY DEDICATION
EVERGREEN TREE	
PROPOSED STREET TREE	



PLAN
SCALE: 1"=30'

LANDSCAPE NOTES

1. AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED FOR THIS SITE BE OF THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF THE REQUIRED PLANTING MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.
2. THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, 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 OR REPLACED.
3. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
4. NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN THE LANDSCAPE EDGE FOR WHICH CREDIT IS BEING TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS AUTHORIZED.

B G & E NOTES:

1. THE LANDSCAPING ON WIREZONE (40' FROM BGE POLES) IS IN ACCORDANCE WITH BGE LIST OF TREES AND PLANTS.
2. BGE RESERVES THE RIGHT TO TRIM, TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BGE SHALL BE DEEMED A HAZARD TO THE SAFE AND RELIABLE DELIVERY OF ELECTRICITY.
3. THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OR VEGETATION IMMEDIATELY ADJACENT TO THE BGE R/W OR EASEMENT, IF BGE DETERMINES THE TREES ARE COMPROMISING THE SAFETY OR A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR EASEMENT.

DEVELOPER'S/OWNER'S LANDSCAPE CERTIFICATE

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

DEVELOPER'S/OWNER'S NAME:
TRINITY QUALITY HOMES

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development — Date 6/4/08

Chief, Development Engineering Division — Date 6/2/08

SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	TYPE
ScB	SANDY AND CLAYEY LAND, GENTLY SLOPING	C

NOTE: HOWARD SOIL SURVEY, MAP NUMBER 20

SCHEDULE A
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO ROADWAYS	ADJACENT TO PERIMETER PROPERTIES				TOTAL
Perimeter/Frontage Designation Landscape Type	1 B	2 A	3 A	4 A	5 A	
Linear Feet of Roadway Frontage/Perimeter	225'	212'	316'	336'	220'	
Credit for Existing Vegetation (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	220' YES*	
Credit for Wall, Fence or Berm (Yes, No, Linear Feet Describe below if needed)	No	No	No	No	No	
Number of Plants Required						
Shade Trees	1:50 5	1:60 4	1:60 6	1:60 6	1:60 0	21
Evergreen Trees	1:40 6	–	–	–	–	06
Shrubs						
Number of Plants Provided						
Shade Trees	5	4	6	6	0	21
Evergreen Trees	6	–	–	–	–	06
Other Trees (2:1 Substitution)	–	–	–	–	–	
Shrubs (10:1 Substitution)	–	–	–	–	–	
Describe Plant Substitution Credits Below if needed)						

* CREDIT SWMF PERIMETER

SCHEDULE D : STORMWATER MANAGEMENT
TYPE B BUFFER

LINEAR FEET OF PERIMETER	560 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO
NUMBER OF TREES REQUIRED SHADE 1:50 EVERGREEN 1:40	12 SHADE TREES 14 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	12 SHADE TREES 14 EVERGREEN TREES 0 TREES (0 SUBSTITUTION TREES)

* CREDIT 4 SHADE TREES PERIMETER 5

STREET TREES (PRIVATE)

	15	NUMBER OF STREET TREES REQUIRED	300/40	
	15	NUMBER OF STREET TREES PROVIDED		
CC	13	CORNELIAN CHERRY CORNUS MAS	2 1/2'–3' Ht.	B & B
OC	2	OKAME CHERRY PRUNUS X 'OKAME' (GROWTH HEIGHT=25')	4'–6' Ht.	B & B

TRASH PAD LANDSCAPING

SYM.	QTY.	DESCRIPTION	SIZE	REMARKS
⊙	8	DWARF JAPANESE YEW	2 1/2'–3' HT	B&B

*****LANDSCAPE SCHEDULE BETWEEN LOTS 1, 2, 3 & 4**

DESCRIPTION			
NUMBER OF STREET TREES REQUIRED	175 LF TYPE C BUFFER	SHADE TREES/LINEAR FT.1:40	4
		EVERGREEN TREES/LINEAR FEET 1:20	9
NUMBER OF STREET TREES PROVIDED		SHADE TREES	4
		EVERGREEN TREES	9

STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF $20,190.00 TO BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR THE REQUIRED 15 STREET TREES (PRIVATE), 37 SHADE TREES, 29 EVERGREEN TREES AND 8 SHRUBS AROUND TRASH PAD.

LANDSCAPE SCHEDULE

	QUAN.	BOTANICAL NAME	SIZE	REM.
AC	29	ACER RUBRUM 'AUTUMN FLAME' AUTUMN FLAME RED MAPLE (SHADE TREES) SCH-D, P-2, P-3, P-4	2 1/2"–3" Cal.	B & B
SE	08	SERVICEBERRY AMELANCHIER CANADENSIS (GROWTH HEIGHT=15') P-1, SCH D (3)	4'–6' HT.	B & B
	20	PINUS STROBUS P-1, SCH D EASTERN WHITE PINE (EVERGREEN TREES)	6'–8' HT.	B & B
AT	06	ARBORVITAE TECHNY THUJA OCCIDENTALIS 'TECHNY' (GROWTH HEIGHT=25')	6'–8' HT.	B & B

***PROVIDE TOTAL 13 ADDITIONAL TREES FROM 1, 3 & 4 TO LOT# 2.

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09–27–2008."

ROBERT H. VOGEL, PE No.16193

R Joshi
ROMA JOSHI
DNR QUALIFIED PROFESSIONAL

OWNER/DEVELOPER
MICHAEL PFAU
TRINITY QUALITY HOMES. INC.
3675 PARK AVE., STE. 301
ELLICOTT CITY, MARYLAND 21043
(410) 480–0023

APPROVED : FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

COUNTY HEALTH OFFICER, HOWARD COUNTY HEALTH DEPARTMENT — DATE

NO.	REVISION	DATE

FINAL ROAD CONSTRUCTION PLAN FOREST CONSERVATION AND LANDSCAPING PLAN & DETAILS

LINCOLN GLEN

LOTS 1-10 AND OPENSPACE LOT 11

TAX MAP 43 GRID 8 — PARCELS 407
6TH ELECTION DISTRICT — HOWARD COUNTY, MARYLAND

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

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — PROFESSIONAL ENGINEER

DESIGN BY:	RHV/RJ
DRAWN BY:	RJ
CHECKED BY:	RHV
DATE:	APRIL 2008
SCALE:	AS SHOWN
W.O. NO.:	06-35.00

SHEET 8 OF 8

AS-BUILT 3/24/2011

F-08-041