SITE DEVELOPMENT PLAN
OAKMONT at TURF VALLEY
(CONDOMINIUM BUILDINGS)
3rd ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

INDEX OF SHEETS

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2	DIMENSION PLAN
3	SITE DEVELOPMENT PLAN
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6	STORMDRAIN PROFILES AND SHC & WHC PROFILES
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14	RETAINING WALL DETAILS

ADDRESS CHART

BUILDING NO.	STREET ADDRESS
BUILDING # 1	11090 RESORT ROAD
BUILDING # 2	11070 RESORT ROAD
BUILDING # 3	11050 RESORT ROAD
BUILDING # 4	11030 RESORT ROAD

PERMIT INFORMATION CHART

SUBDIVISION NAME		SECTION/AREA		LOT/PARCEL #
OAKMONT AT TURF VALLEY				R,S,T,U,V,W
PLAT #	BLOCK #	ZONE	TAX MAP	ELEC. DIST.	CENSUS TRACT
18773 & 18775	10	PGCC	P/O 8	3	602200
WATER CODE			SEWER CODE		
H-06			5992000		
PROPOSED IMPROVEMENTS: APARTMENT BUILDINGS					

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.

_____ P.E. NO.: _____

SIGNATURE DATE: _____

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

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER 8/13/08 DATE

MARK BUDA
PRINTED NAME OF DEVELOPER

BY THE ENGINEER:

"I CERTIFY THAT THIS PLAN FOR ~~POND CONSTRUCTION~~ EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. ~~I ALSO ADVISED THE DEVELOPER THAT HE/SHE MUST CHOOSE 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 7/25/08 DATE

R. JACOB HICKMAN
PRINTED NAME OF ENGINEER

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

USDA – NATURAL RESOURCES CONSERVATION SERVICE DATE

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

8/21/08
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS DATE

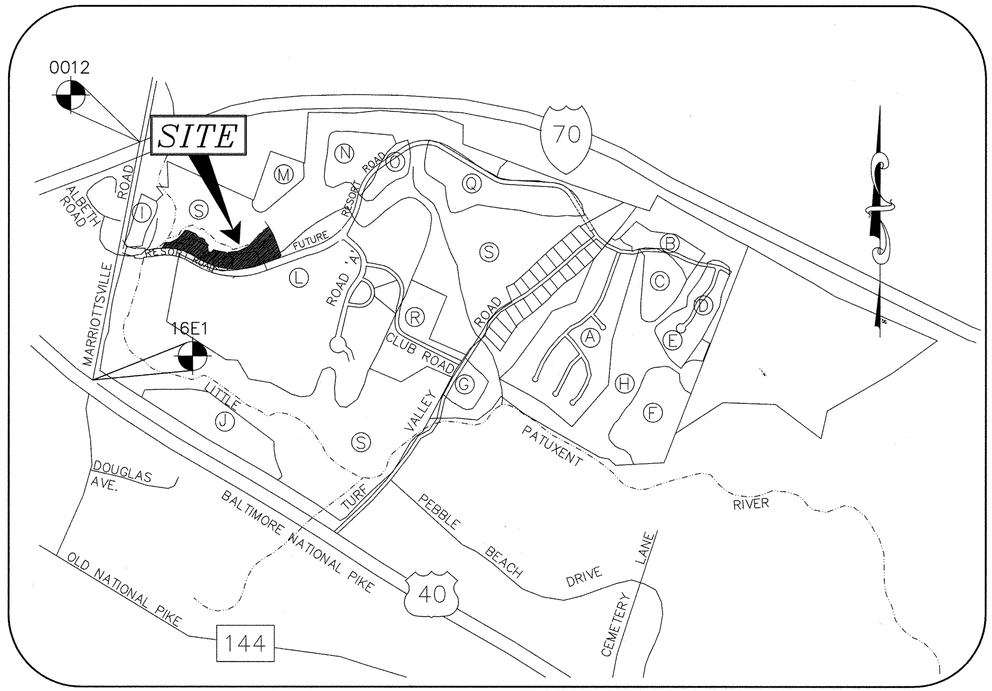
APPROVED: DEPARTMENT OF PLANNING AND ZONING

8/26/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

8/25/08
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

9/4/08
DIRECTOR DATE

H:\03-081\DWG\SDP\TV-TOPO-2000\DAM-SIM



ADC MAP COORDINATES: 11- B-3

VICINITY MAP
SCALE : 1" = 1000'

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. 17942, Exp Date 9/3/08

STATE OF MARYLAND — R. JACOB HICKMAT — No. 17942 — PROFESSIONAL ENGINEER

No As-Built information is required on this sheet

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. 21443 Expiration Date: 12-21-16

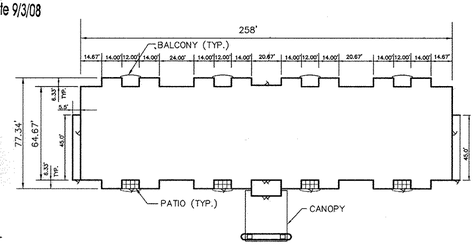
STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER

9-29-16
AS-BUILT

BUILDER/DEVELOPER

JAMES KEELTY & CO., INC.
61 E. PADONIA RD.
TIMONIUM, MARYLAND
21094-0528
(410) 252-8600

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08



BUILDING A PLAN
SCALE: 1"=50'

BUILDING A PROFILE
SCALE: 1"=50'

LEGEND

- DENOTES WETLANDS
- DENOTES 4' CONCRETE SIDEWALK
- LOD — DENOTES LIMITS OF DISTURBANCE
- DENOTES LEVEL SPREADER
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- SSF — SUPER SILT FENCE
- EROSION CONTROL MATTING
- DENOTES PROPOSED PAVED AREAS
- EXISTING TREELINE
- PROPOSED TREELINE

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/CONSTRUCTION INSPECTIONS DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE (5) DAYS PRIOR TO ANY EXCAVATION WORK:

MISS UTILITY	1-800-257-7777
C&P TELEPHONE COMPANY	(410) 725-9976
HOWARD COUNTY BUREAU OF UTILITIES	(410) 313-4900
AT&T CABLE LOCATION DIVISION	(410) 393-3533
BALTIMORE GAS & ELECTRIC	(410) 685-0123
STATE HIGHWAY ADMINISTRATION	(410) 531-5533
HOWARD COUNTY DEPT. OF PUBLIC WORKS/ CONSTRUCTION INSPECTION DIVISION	(410) 313-1880

4. EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON AERIAL PHOTOGRAPHIC MAPPING PREPARED BY MAPPING ASSOCIATES DATED MARCH 2006.
5. COORDINATES BASED ON NAD '83, MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS No. 16E1 AND 0012.
   STA. No. 16E1 N 593,250.9638 E 1,340,192.7070 EL. 463.906
   STA. No. 0012 N 596,502.7604 E 1,340,864.3654, EL. 486.230
6. SITE ANALYSIS DATA:

RECORD PLAT NUMBER:	18773-18775
TOTAL PROJECT AREA:	36.48 AC.±
AREA OF PLAN SUBMISSION:	9.73 AC.±
AREA OF BUILDING COVERAGE:	1.64 AC.± (17%)
ZONING:	PGCC, PGCC-2 (MULTI USE SUBDISTRICT)
PROPOSED USE:	APARTMENT BUILDINGS
FLOOR SPACE ON EACH LEVEL:	7,772 SQ.FT.
NUMBER OF PROPOSED UNITS:	PAR. R-48 UNITS, PARCELS S, T, U-48 UNITS EACH. TOTAL 192 UNITS.
NUMBER OF PARKING SPA. REQUIRED:	2 SPACES PER UNIT (192/2=384 SPACES)
NUMBER OF PARKING SPA. PROVIDED:	385 SPACES
NUMBER OF PARKING SPA. OFF STREET:	168 SPACES
NUMBER OF PARKING SPA. ON STREET:	217 SPACES
NUMBER OF HANDICAPPED PARKING SPA.:	8 SPACES
AREA OF SUBDIVISION:	36.48 ACRES ±
OPEN SPACE REQUIRED:	15% OF 36.48 AC. OR 5.47 AC.
OPEN SPACE PROVIDED:	16.30 AC. (PARCEL V, W, & X.)
DPZ FILE NUMBER:	F-02-082, WP-07-110

   PER FINAL DEVELOPMENT PLAN, 2ND AMENDMENT 200 UNITS ARE ALLOWED, 192 UNITS ARE PROVIDED
7. WATER AND SEWER ARE PUBLIC, CONNECTED TO PROJECT # 20-3601-D.
8. WATER HOUSE CONNECTIONS ARE FOR INSIDE METER SETTING, FOR ALL CONNECTIONS.
9. STORMWATER MANAGEMENT IS PROVIDED BY TWO F-1 SAND-FILTER FACILITIES, SHEET FLOW TO BUFFER CREDIT IN ACCORDANCE WITH THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II. . STORMWATER MANAGEMENT WILL BE PRIVATELY OWNED AND MAINTAINED BY HOA.
10. WETLAND DELINEATIONS PERFORMED BY B.S. ENVIRONMENTAL, INC. DATED: JUNE 2000. APPROVED UNDER F-02-82.
11. TRAFFIC STUDY BY THE TRAFFIC GROUP, DATED JANUARY 7, 2005. APPROVED UNDER 4TH AMENDED COMPREHENSIVE SKETCH PLAN IN APRIL 27, 2006.
12. NO CEMETERIES OR HISTORIC STRUCTURES EXIST ON SITE.
13. NO EXISTING STRUCTURES EXIST ON SITE.
14. THIS PROJECT IS EXEMPT FROM HOWARD COUNTY FOREST CONSERVATION REQUIREMENTS UNDER SECTION 16.1202(b) OF THE COUNTY CODE BECAUSE IT IS A PLANNED UNIT DEVELOPMENT WHICH HAS PRELIMINARY DEVELOPMENT PLAN APPROVAL AND 50 % OR MORE OF THE LAND IS RECORDED AND SUBSTANTIALLY DEVELOPED BEFORE DECEMBER 31, 1992.
15. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES. PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIREd WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN.
16. ALL STORM DRAIN PIPES TO BE HDPE PIPES UNLESS OTHERWISE NOTED.
17. COMPACTION IN FILL AREAS TO BE 95% AS DETERMINED PER AASHTO T-180.
18. USE HO. CO. STD. R-3.01 STANDARD 7" COMBINATION CURB AND GUTTER, UNLESS OTHERWISE NOTED.
19. USE HOWARD COUNTY STD. P-2 PAVING SECTION AND SIDEWALK STD. DET. R-3.05 UNLESS OTHERWISE SHOWN.
20. SHARED ACCESS EASMENTS , SHARED PARKING EASEMENTS AND WALL MAINTENANCE EASEMENTS HAVE BEEN RECORDED ON PLAT ~~18775-18775~~ IN THE LAND RECORD OF HOWARD COUNTY, MARYLAND (LIBER/~~7331~~, FOLIO/~~292~~. 19935-38
21. LANDSCAPING HAS BEEN PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING (195 SHADE TREES, 29 EVERGREEN AND 450 SHRUBS) HAS BEEN POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT IN THE AMOUNT OF $76,350
22. CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES ON SITE PRIOR TO COMMENCING CONSTRUCTION.
23. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNAGE 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 PLACEMENT OF ANY ASPHALT.
24. IN ACCORDANCE WITH SECTION 128 OF HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEY OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS, PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR SETBACK.
25. THE SUBJECT PROPERTY IS ZONED PGCC PER THE 2/2/04 COMPREHENSIVE ZONING PLAN AND PER THE COMP LITE ZONING REGULATION AMENDMENT EFFECTIVE 7/28/06.
26. STREET LIGHT PLACEMENT AND 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 DEVELOPMENT (JUNE 1993) A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
27. 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 GUAGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GUAGE) -3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
28. ALL PLAN DIMENSIONS ARE TO FACE OF THE CURB UNLESS OTHERWISE NOTED.
29. THERE IS NO FLOODPLAIN ON SITE.
30. ALL WATER METERS ARE PRIVATE, INSIDE METERS.
31. ENTRANCE IMPROVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH HOWARD COUNTY STANDARD R-10.01.
32. RETAINING WALLS IN EXCESS OF 30" IN HEIGHT SHALL HAVE A SAFETY RAILING.
33. TRASH WILL BE STORED IN THE FIRST FLOOR (PARKING AREA) AND WILL BE MOVEd TO THE TRASH PADS ON THE COLLECTION DAY. REFUSE REMOVAL WILL BE PRIVATE, AND WILL BE SCHEDULED BY THE COLLECTION COMPANY.
34. AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEMS SHALL BE PROVIDED FOR EACH BUILDING.
35. THE MAIN ENTRANCES OF THE BUILDINGS SHALL BE UTILIZED BY HANDICAPPED PERSONS.
36. A KNOX BOX SHALL BE PLACED ON THE FRONT SIDE OF EACH BUILDING, TO THE RIGHT OF THE MAIN ENTRANCE 4-5' IN HEIGHT AND NO MORE THAN 6' LATERALLY FROM THE DOOR.
37. ALL RETAINING WALLS 30" IN HEIGHT OR GREATER SHALL HAVE A FENCE ALONG ENTIRE LENGTH. FENCE SHALL BE 36" IN HEIGHT WITH OPENINGS LESS THAN 4" IN WIDTH.
38. STREET LIGHT SHALL BE LOCATED AT EACH ENTRANCE. STA. 6+81.01 OFFSET 39' LEFT, AND ST. 21+14.83 TLEFTUSE A 250 WATT SAG/30' POLE/ 12' ARM.
39. THIS PROJECT IS SUBJECT TO WP-07-110, APPROVED ON JUNE 29, 2007. TO WAIVE REQUIREMENT OF CONSTRUCTION OF SIDEWALKS ON BOTH SIDED OF ALL STREETS IN THE PROJECT AND ALONG THE PROJEC FRONTAGE IN RESIDENTIAL SITE DEVELOPMENTS.
40. PRIOR TO GRADING PERMIT APPLICATION, THE PROJECT SHALL COMPLY WITH THE REQUIREMENTS OF HOWARD COUNTY COUNCIL BILL 60-2007.

AS-BUILT

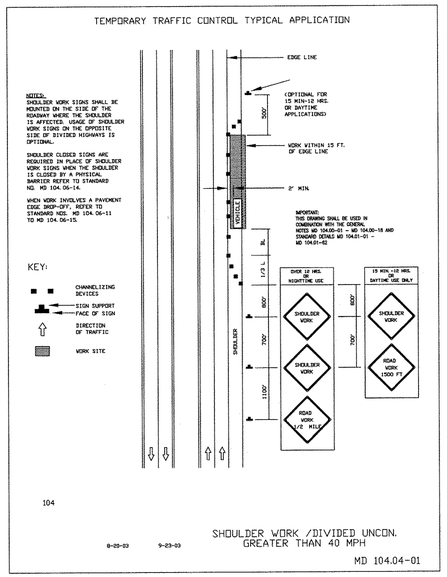
project	date
03-081	DEC.2007
illustration	engineering
MMM	MMM
scale	approval
AS SHOWN	

no.	revisions	date
1	REVISED NUMBER OF UNITS PER PLAN	2/4/15

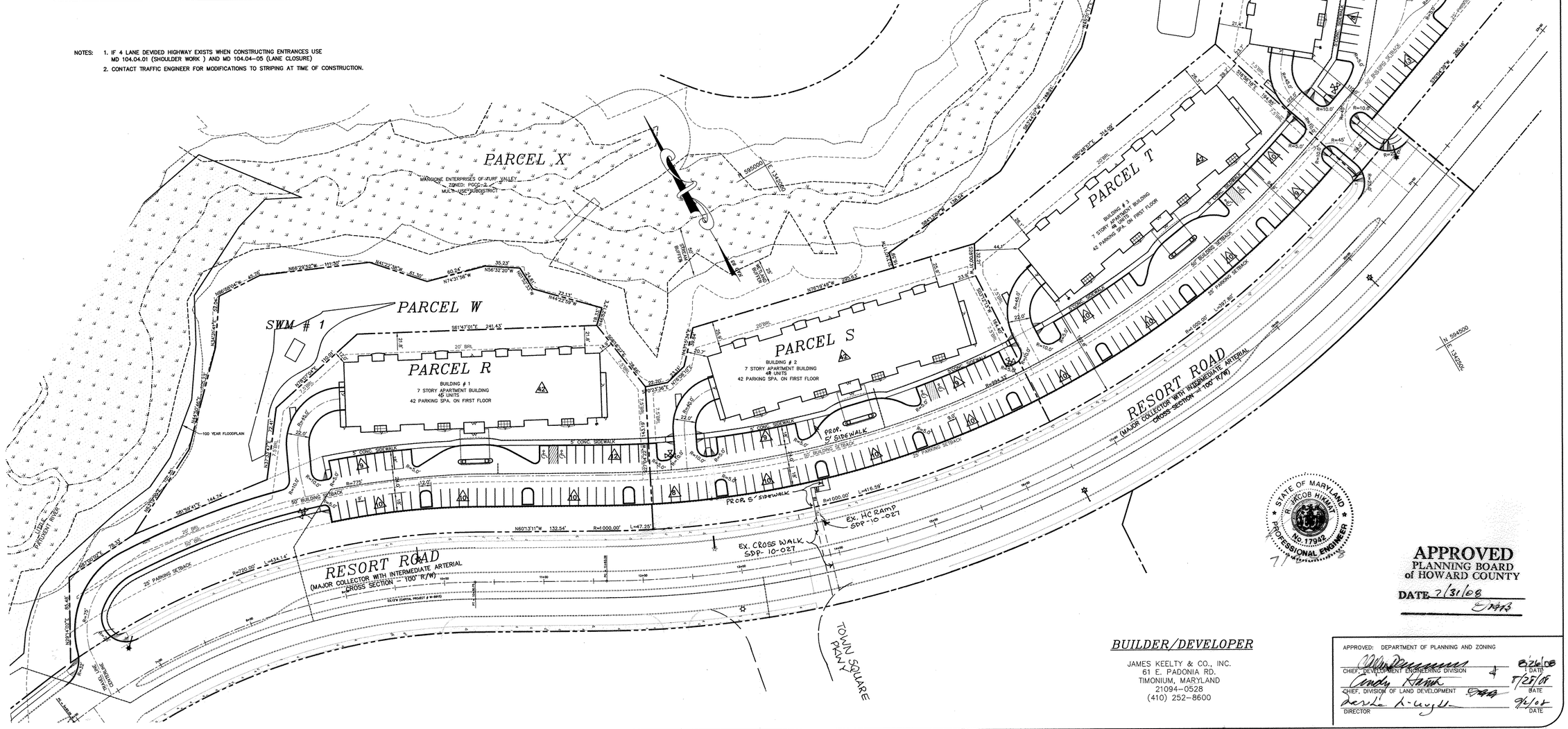
OAKMONT AT TURF VALLEY
PARCELS: R, S, T, U, V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
COVER SHEET

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Balt. (301) 621-5521 Wash. (410) 997-0298 Fax.

SDP-07-062



NOTES:
1. IF 4 LANE DEVIDED HIGHWAY EXISTS WHEN CONSTRUCTING ENTRANCES USE MD 104.04.01 (SHOULDER WORK) AND MD 104.04-05 (LANE CLOSURE)
2. CONTACT TRAFFIC ENGINEER FOR MODIFICATIONS TO STRIPING AT TIME OF CONSTRUCTION.



9-29-16 AS-BUILT 8-1-16

For revision 2 by Benchmark Engineering Only

No As-Built information is required on this sheet

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: 21443 Expiration Date: 12-21-16

STATE OF MARYLAND R. JACOB HIKMAT No. 17942 PROFESSIONAL ENGINEER

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08

BUILDER/DEVELOPER

JAMES KEELTY & CO., INC.
61 E. PADONIA RD.
TIMONIUM, MARYLAND
21094-0528
(410) 252-8600

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 8/26/08
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 8/25/08
DIRECTOR	DATE 9/2/08

AS-BUILT

project	03-081
date	DEC 2007
illustration	MMM
engineering	MMM
scale	1"=50'
approval	

no.	description	date
2	ADD SIDEWALK FOR EX. CROSSWALK ALONG RESORT RD.	4-29-15
1	ADD SIDEWALK FOR EX. HC RAMP ALONG RESORT RD.	11-14-13

revisions

OAKMONT AT TURF VALLEY

PARCELS: R, S, T, U, V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

DIMENSION PLAN

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Bal. (301) 621-5321 Wash. (410) 997-0298 Fax.

SDP-07-062

H:\03-081\DWG\SDP\TV-TOPO-2000\OAM-SWM

SWM POND DATA:

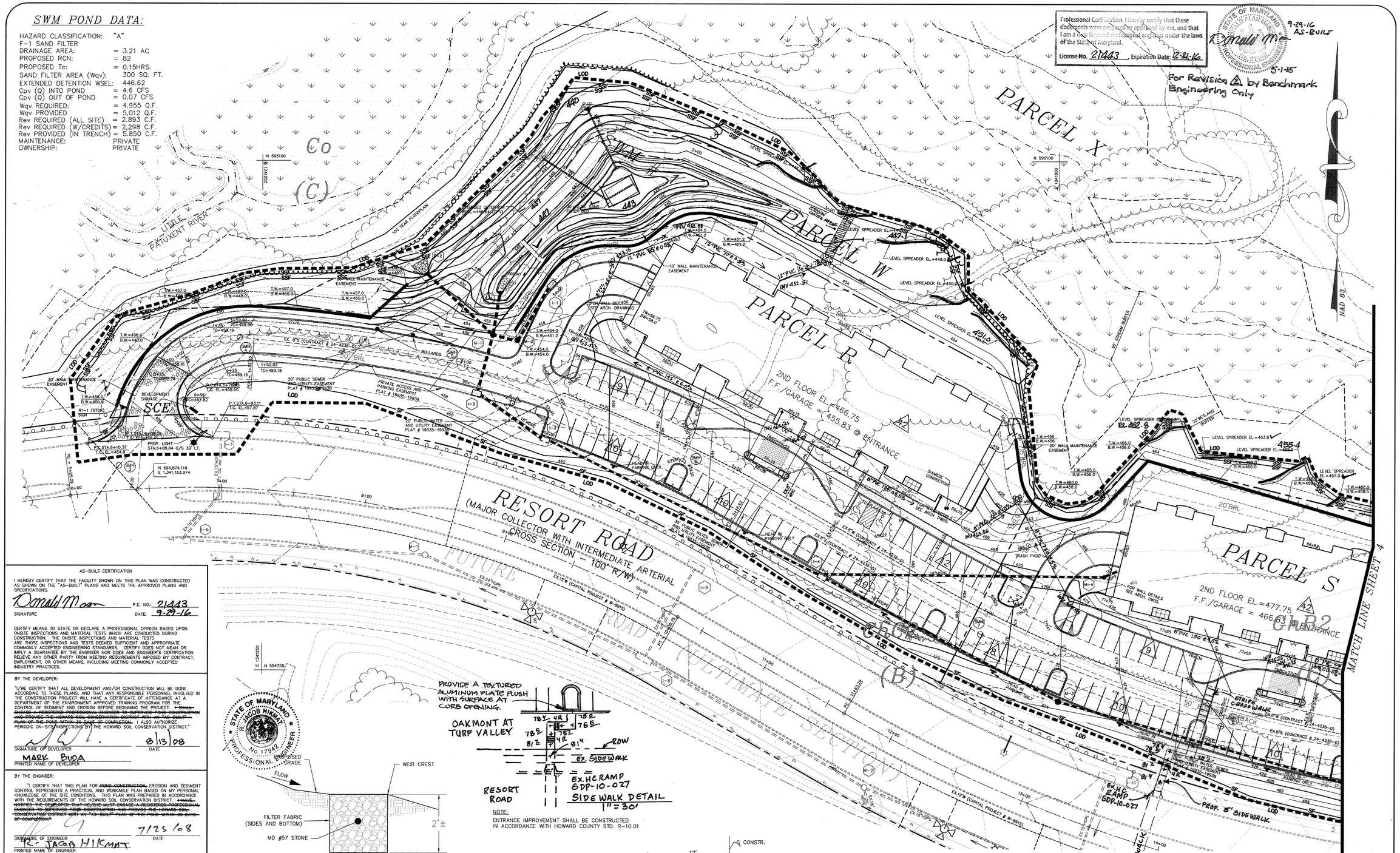
HAZARD CLASSIFICATION:	"A"
F-1 SAND FILTER	
DRAINAGE AREA:	= 3.21 AC
PROPOSED RCN:	= 82
PROPOSED Tc:	= 0.15HRS.
SAND FILTER AREA (Wqv):	300 SQ. FT.
EXTENDED DETENTION WSEL:	446.62
Cpv (Q) INTO POND	= 4.6 CFS
Cpv (Q) OUT OF POND	= 0.07 CFS
Wqv REQUIRED:	= 4.955 Q.F.
Wqv PROVIDED	= 5,012 Q.F.
Rev REQUIRED (ALL SITE)	= 2.893 C.F.
Rev REQUIRED (W/CREDITS)	= 2,298 C.F.
Rev PROVIDED (IN TRENCH)	= 5.850 C.F.
MAINTENANCE:	PRIVATE
OWNERSHIP:	PRIVATE

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. 21443 Expiration Date: 12-31-16

STATE OF MARYLAND — RONALD MOORE — No. 21443 — PROFESSIONAL ENGINEER

9-29-16 AS-BUILT

5-1-15 For Revision 2 by Benchmark Engineering Only



APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 2/31/08

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.

Ronald Moore — P.E. NO.: 21443
SIGNATURE — DATE: 9-29-16

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

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SIGNATURE OF DEVELOPER — DATE 8/13/08
MARK BUDA
PRINTED NAME OF DEVELOPER

BY THE ENGINEER:

"I CERTIFY THAT THIS PLAN FOR ~~POND CONSTRUCTION,~~ EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. ~~I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.~~"

SIGNATURE OF ENGINEER — DATE 7/25/08
R. JACOB HIKMAT
PRINTED NAME OF ENGINEER

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

USDA - NATURAL RESOURCES CONSERVATION SERVICE — DATE

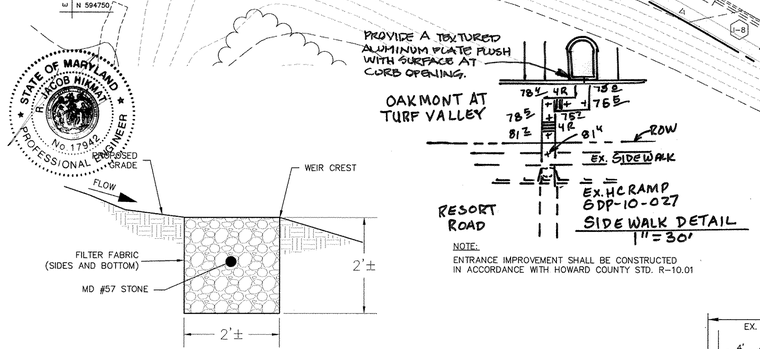
THESE PLANS FOR SMALL ~~POND CONSTRUCTION,~~ SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT — DATE 8/25/08

APPROVED: DEPARTMENT OF PLANNING AND ZONING

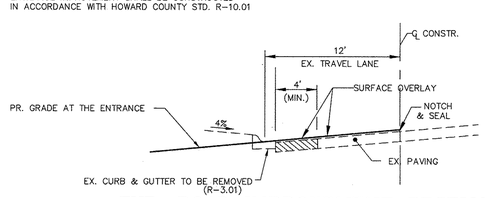
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8/26/08
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 8/28/08
DIRECTOR — DATE 9/2/08

STATE OF MARYLAND — R. JACOB HIKMAT — No. 17942 — PROFESSIONAL ENGINEER

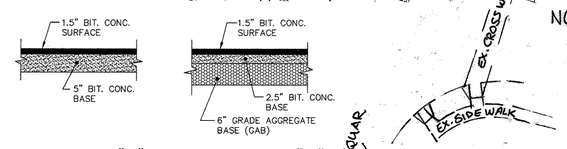


LEVEL SPREADER DETAIL
NTS

NOTES:
THE TOP OF THE STONE ELEVATION FOR EACH DEVICE SHALL BE LEVEL FOR ITS ENTIRE LENGTH.
THE LOW SIDE OF THE DEVICE SHALL TYPICALLY BE INSTALLED AT THE LIMITS OF THE LOD.
IF THE DRAINAGE AREA ABOVE THE SPREADER IS NOT STABILIZED AND WITH THE PERMISSION OF THE INSPECTOR, FILTER FABRIC MAY BE EXTENDED FROM THE IN FLOW SIDE AND LAID OVER THE TOP OF THE DEVICE UNTIL THE DRAINAGE AREA IS STABILIZED.



TYP. ROAD IMPROVEMENT SECTION AT THE ENTRANCE
RESORT ROAD
SECTION NOT TO SCALE



PAVING SECTION - P2
SECTION NOT TO SCALE

no.	description	date
2	ADD SIDEWALK FOR EX. STUDIO, CROSSWALK, RELOCATED EX. HC RAMP	4-28-08
1	EBY PRINCIPAL SPILLWAY TO 15" RCP, AND BENCHMARK SYSTEM	OCT 2008

project	03-081
date	DEC.2007
illustration	engineering
MMM	
scale	1"=30'
approval	RJH

OAKMONT AT TURF VALLEY
PARCELS: R, S, T, U, V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND
GRADING AND SEDIMENT CONTROL PLAN

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Balt. (301) 621-8521 Wash. (410) 997-0298 Fax.

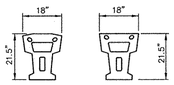
AS-BUILT

SDP-07-062

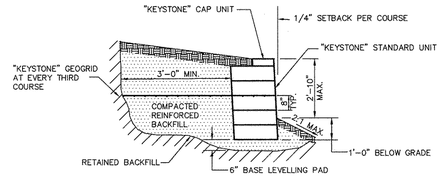
03-081\SDP-TOPO.2000

SWM POND DATA:

HAZARD CLASSIFICATION:	"A"
F-1 SAND FILTER	
DRAINAGE AREA:	= 3.44 AC
PROPOSED RCN:	= 82
PROPOSED Tc:	= 0.37 HRS.
SAND FILTER AREA (Wqv):	150 SQ. FT.
EXTENDED DETENTION WSEL:	473.63
Cpv (Q) INTO POND	= 2.6 CFS
Cpv (Q) OUT OF POND	= 0.07 CFS
Wqv REQUIRED:	= 6,568 C.F.
Wqv PROVIDED	= 6,649 C.F.
Rev REQUIRED (ALL SITE)	= 2.893 C.F.
Rev REQUIRED (W/CREDITS)	= 2,298 C.F.
Rev PROVIDED (IN TRENCH)	= 5,850 C.F.
MAINTENANCE:	PRIVATE
OWNERSHIP:	PRIVATE



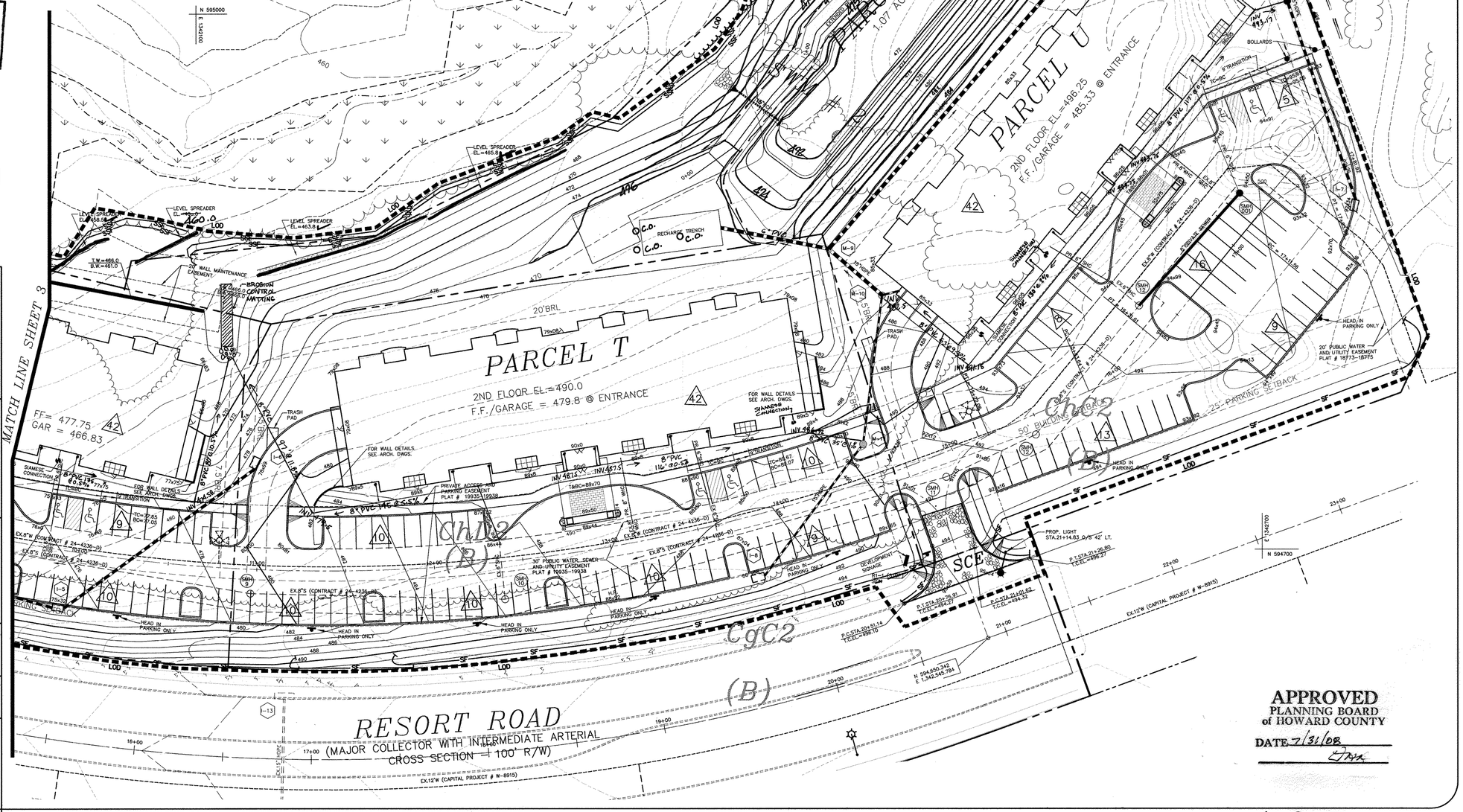
"KEYSTONE" STANDARD UNIT
N.T.S.



RETAINING WALL DETAIL

N.T.S.

NOTE: 1. ALL FOOTING AND DESIGN SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. COMPACTED REINFORCED BACKFILL SHALL CONSISIT OF GRAVEL OR CRUSHED STONE (1/2" TO 3/4") AT 95% STANDARD PROCTOR COMPACTION.



APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08

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. 21443 Expiration Date: 12-21-16

STATE OF MARYLAND — BRIAN F. CLEARY — No. 21443 — REGISTERED PROFESSIONAL ENGINEER

FOR BEI REVISIONS ONLY
12/1/2015

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. 28567 Expiration Date: 1-22-2015

AS-BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY/DEVELOPMENT SHOWN HEREON WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLAN AND IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS.

Donald M. 21443 9-29-16
SIGNATURE DATE

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

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

BY THE DEVELOPER:

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

8/13/08
SIGNATURE OF DEVELOPER DATE

MARK BUDA
PRINTED NAME OF DEVELOPER

BY THE ENGINEER:

"I CERTIFY THAT THIS PLAN FOR ~~POND CONSTRUCTION~~ EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. ~~I HAVE NOTIFIED THE DEVELOPER THAT I WILL BE NOT 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.~~"

7/25/08
SIGNATURE OF ENGINEER DATE

E. CLEARY 21443
PRINTED NAME OF ENGINEER — PROFESSIONAL ENGINEER

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

USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

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

John V. Kenton 8/25/08
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 8/26/08
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 8/28/08
DIRECTOR	DATE 9/2/08

03-081

project	date
03-081	DEC.2007
illustration	engineering
MMM	MMM
scale	approval
1"=30'	RJH

no.	description	date
3	REVISE SWM ACCESS TO LAGO RD	5-11-16
2	RELOCATE SWM ACCESS TO EX. LAGO RD	12-4-13
1	REV. PERIMETER, STRUCTURE TO 15 % MAX. AND TOP/BOTTOM ELEVATIONS	OCT 2008

revisions

OAKMONT AT TURF VALLEY

PARCELS: R, S, T, U, V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

GRADING AND SEDIMENT CONTROL PLAN

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SDP-07-062

AS-BUILT

HOWARD SOIL CONSERVATION DISTRICT 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 , DISKING 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 ACRES DOLOMITIC LIMESTONE (92 LBS./1000 SQ.FT.) AND 600 LBS. PER ACRE 10–10–10 FERTILIZER (14 LBS/1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING , APPLY 400 LBS. PER ACRE 30–0–0 UREAFORM FERTILIZER (9 LBS./1000 SQ.FT.).
2) ACCEPTABLE – APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ.FT.) AND 1000 LBS. PER ACRE 10–10–10 FERTILIZER (23 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISK 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 LOBS. 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 OF 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 TONE/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 SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

TEMPORARY SEEDING NOTES

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

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, FOR 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 OCTOBER 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 16 THRU NOVEMBER 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 WEED FREE SMALL GRAIN TOOL OR 218 GAL PER ACRE (5 GAL/1000 SQ.FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 8 FEET OR STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING HIGHER, USE 348 GAL PER ACRE (8 GAL/1000 SQ.FT.) FOR ANCHORING.
REFER TO THE 1983 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.

STANDARD SEDIMENT CONTROL NOTES

1) A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF NAY CONSTRUCTION, (313–1855).

2) ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT "MARYLAND STANDARDS AND 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 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.

5) ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1991 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC.51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC.52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.

6) ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

7) SITE ANALYSIS:

TOTAL AREA OF SITE:	9.73	ACRES
AREA DISTURBED:	5.0	ACRES
AREA TO BE ROOFED OR PAVED:	4.0	ACRES
AREA TO BE VEGITATIVELY STABILIZED:	1.0	ACRES
TOTAL CUT:	35,000	CU. YDS.
TOTAL FILL:	35,000	CU. YDS.
TOTAL WASTE/BORROW AREA LOCATION:	N/A	

23,600 CU.FT. OF FILL WILL BE OBTAINED FROM PARCEL Q.
THESE QUANTITIES ARE FOR PERMIT PURPOSES ONLY.
CONTRACTOR IS REQUIRED TO PROVIDE HIS OWN QUANTITIES MEASUREMENTS.

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.

P.E. NO.:
SIGNATURE DATE:

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

BY THE DEVELOPER:
"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. ~~I/WE FURTHER AGREE TO RETAIN A PERSONAL PROFESSIONAL ENGINEER TO SUPERVISE AND CERTIFY THAT THE PROJECT WILL BE BUILT PER PLAN. I/WE ALSO AUTHORIZE PERIODIC ON–SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.~~"
8/13/08
SIGNATURE OF DEVELOPER DATE
MACK BUDA
PRINTED NAME OF DEVELOPER

BY THE ENGINEER:
"I CERTIFY THAT THIS PLAN FOR ~~POND CONSTRUCTION~~ EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. ~~I/WE 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.~~ I
8/12/08
SIGNATURE OF ENGINEER DATE
R. JACOB HIKMAT
PRINTED NAME OF ENGINEER

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

USDA – NATURAL RESOURCES CONSERVATION SERVICE DATE

~~THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.~~
8/25/08
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
8/26/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
8/28/08
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
9/2/08
DIRECTOR DATE

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08

STATE OF MARYLAND R. JACOB HIKMAT No. 17942 PROFESSIONAL ENGINEER

BUILDER/DEVELOPER

JAMES KEELTY & CO., INC.
61 E. PADONIA RD.
TIMONIUM, MARYLAND
21094–0528
(410) 252–8600

8) ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

9) ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

10) ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

11) TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH CAN BE BACK FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.

STANDARD AND SPECIFICATIONS FOR TOPSOIL

DEFINITION

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

PURPOSE

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

CONDITIONS WHERE PRACTICE APPLIES

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 SPECIFICATION. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA–SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

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

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

ii. TOPSOIL MUST BE FREE OF PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSON–SON GRASS, NUTSEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.

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

III. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:

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

IV. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:

i. ON SOIL MEETING TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER AND LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:

a. pH FOR TOPSOILS SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A pH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE PERSCRIBED 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 WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO–TOXIC MATERIALS.

NOTE: TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

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

V. TOPSOIL APPLICATION

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

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

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

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

VI. ALTERNATIVE FOR PERMANENT SEEDING – INSTEAD OF APPLYING THE FULL AMOUNTS OF LIME AND COMMERCIAL FERTILIZER, COMPOSTED SLUDGE AND AMENDMENTS MAY BE APPLIED AS SPECIFIED BELOW:

i. COMPOSTED SLUDGE MATERIAL FOR USE AS A SOIL CONDITIONER FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES SHALL BE TESTED TO PRESCRIBE AMENDMENTS AND FOR SITES HAVING AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

a. COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS WHO ARE PERMITTED (AT THE TIME OF ACQUISITION OF THE COMPOST) BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UNDER COMAR 26.04.06.

b. COMPOSTED SLUDGE SHALL CONTAIN AT LEASE 1 PERCENT NITROGEN, 1.5 PERCENT PHOSPHOURUS, AND 0.2 PERCENT POTASSIUM AND HAVE A Ph OF 7.0 TO 8.0. IF COMPOST DOES NOT MEET THESE REQUIREMENTS, THE APPROPRIATE CONSTITUENTS MUST BE ADDED TO MEET THE REQUIREMENTS PRIOR TO USE.

c. COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON/1,000 SQUARE FEET.

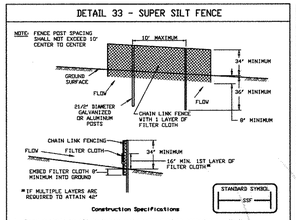
iv. COMPOSTED SLUDGE SHALL BE AMENDED WITH A POTASSIUM FERTILLIZER APPLIED AT THE RATE OF 4 LB/1,000 SQUARE FEET, AND 1/3 THE NORMAL LIME APPLICATION RATE.

REFERENCES: GUIDELINE SPECIFICATIONS, SOIL PREPARATION AND SODDING. MD–VA, PUB. #1, COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF MARYLAND AND VIRGINIA POLYTECHNIC INSTITUTES. REVISED 1973.

EROSION AND SEDIMENT CONTROL NOTES

1. ALL SEDIMENT CONTROL OPERATIONS ARE TO BE DONE IN ACCORDANCE WITH SECTION 219 OF THE HOWARD COUNTY VOLUME IV DESIGN MANUAL AND THE STANDARDS AND SPECIFICATIONS FOR SEDIMENT CONTROL IN DEVELOPING AREAS.
2. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSTALLED AS THE FIRST ORDER OF BUSINESS.
3. ALL EXCAVATED MATERIALS SHALL BE STOCKPILED ON THE UPGRADE SIDE OF THE MAIN TRENCH.
4. EXCAVATION AND BACKFILL SHALL BE LIMITED TO THAT WHICH CAN BE STABILIZED WITHIN ONE WORKING DAY.
5. IMMEDIATELY FOLLOWING BACKFILL OF THE SEWER TRENCH, ALL DISTURBED AREAS ARE TO BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION AND SEEDING NOTES SHOWN ON THIS SHEET.
6. THROUGHOUT THE PROJECT, THE CONTRACTOR SHALL REGULARLY INSPECT ALL SEDIMENT CONTROL DEVICES AND PROVIDE ALL NECESSARY MAINTENANCE TO INSURE THAT ALL DEVICES ARE IN OPERATIVE CONDITION.
7. ALL SEDIMENT CONTROL FACILITIES SHALL REMAIN IN PLACE UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

DETAIL 33 - SUPER SILT FENCE



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 6' fence shall be used, substituting 42" fabric and 6' length posts.

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MDMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MDMT 509
Flow Rate	0.3 gal/ft²/minute (max.)	Test: MDMT 322
Filtering Efficiency	75% (min.)	Test: MDMT 322

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE H – 26 – 3 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

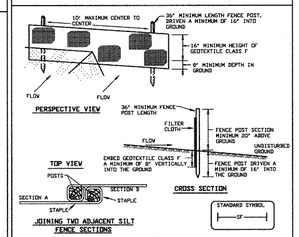
SUPER SILT FENCE

Design Criteria

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

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE H – 26 – 3A | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 22 - SILT FENCE



Construction Specifications

1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 11/2" x 11/2" square (nominal) cut, or 13/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard T or U section weighting not less than 1.00 pond per linear foot.

2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MDMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MDMT 509
Flow Rate	0.3 gal ft²/ minute (max.)	Test: MDMT 322
Filtering Efficiency	75% (min.)	Test: MDMT 322

3. Where ends of geotextile fabric come together, they shall be overlapped, folded and stapled to prevent sediment bypass.

4. Silt Fence shall be inspected after each rainfall event and maintained when bulges occur or when sediment accumulation reaches 50% of the fabric height.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE E – 15 – 3 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SILT FENCE

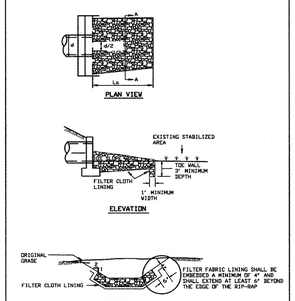
Silt Fence Design Criteria

Slope Steepness	(Maximum) Slope Length	(Maximum) Silt Fence Length
Flatter than 50:1	unlimited	unlimited
50:1 to 10:1	125 feet	1,000 feet
10:1 to 5:1	100 feet	750 feet
5:1 to 3:1	60 feet	500 feet
3:1 to 2:1	40 feet	250 feet
2:1 and steeper	20 feet	125 feet

Note: In areas of less than 25 slope and sandy soils (USDA general classification system, soil Class A) maximum slope length and silt fence length will be unlimited. In these areas a silt fence may be the only perimeter control required.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE E – 15 – 3A | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 27 - ROCK OUTLET PROTECTION III



NOTE: FILTER CLOTH SHALL BE GEOTEXTILE CLASS C

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE F – 18 – 18 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

ROCK OUTLET PROTECTION III

CONSTRUCTION SPECIFICATIONS

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grading limits when installed respectively in the riprap or filter.

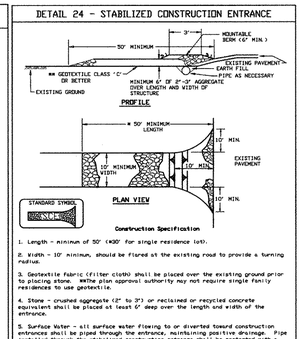
3. Geotextile shall be protected from punching, cutting, or tearing. Any damage other damage other than an occasional small hole shall be repaired by placing another piece of geotextile over the damaged part or by completely replacing the geotextile. All overlaps whether for repairs or for joining two pieces of geotextile shall be a minimum of one foot.

4. Stone for the riprap 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 riprap or gabion outlets shall be delivered and 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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE F – 18 – 18A | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE



Construction Specification

1. Length - minimum of 50' (*30' for single residence lot).

2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.

3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. Where 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.

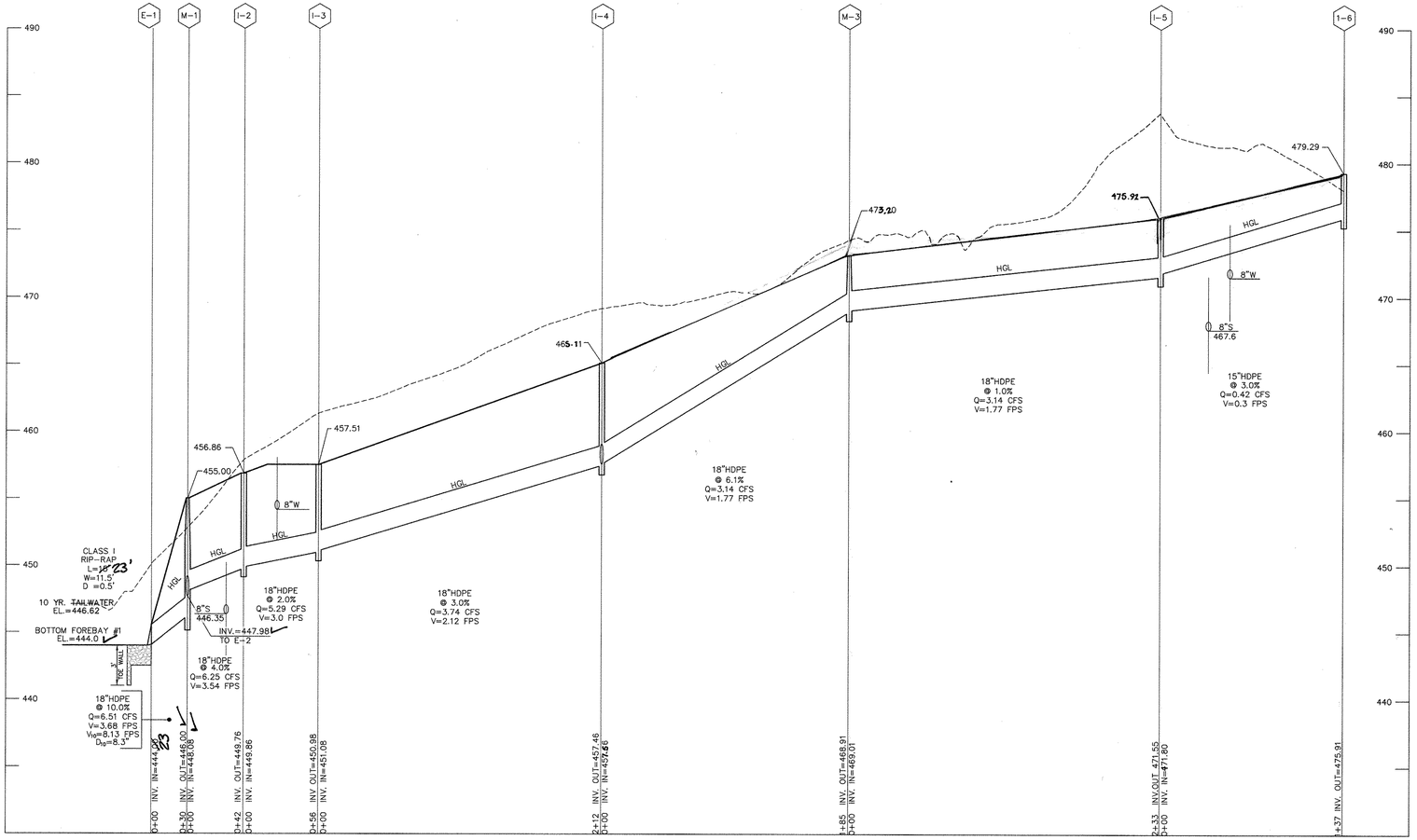
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a minimum of 6" of compacted stone over the pipe. Additional measures may be required to insure that no sediment leaves the site. When the SCE is located at a high point 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.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE | PAGE F – 17 – 3 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

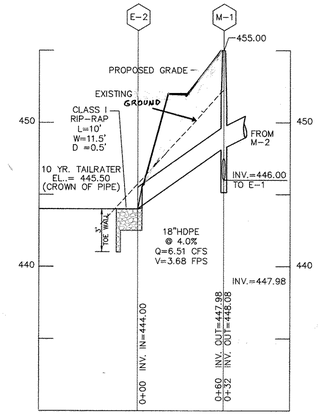
SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT
2. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES, WITH MOUNTABLE BERM, AT LOCATIONS SHOWN. (1 DAY)
3. CONSTRUCT SUPER SILT FENCES



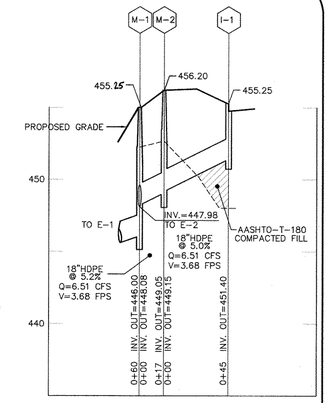
STORM DRAIN PROFILE

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



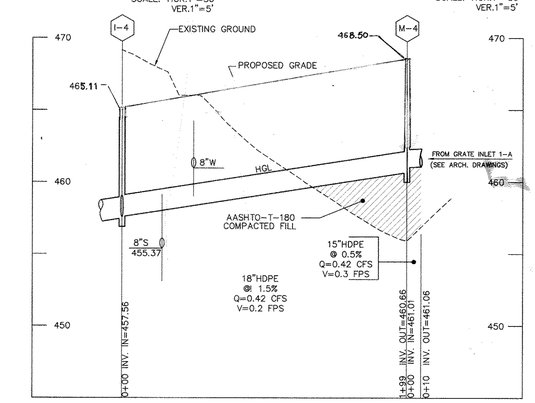
STORM DRAIN PROFILE

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



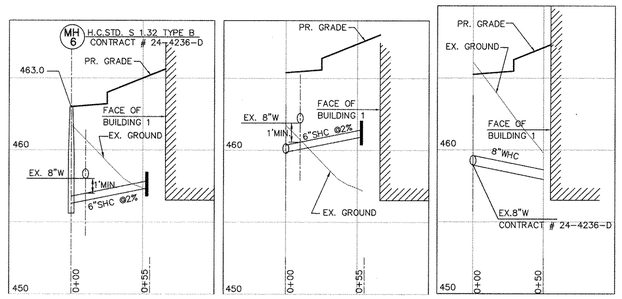
STORM DRAIN PROFILE

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



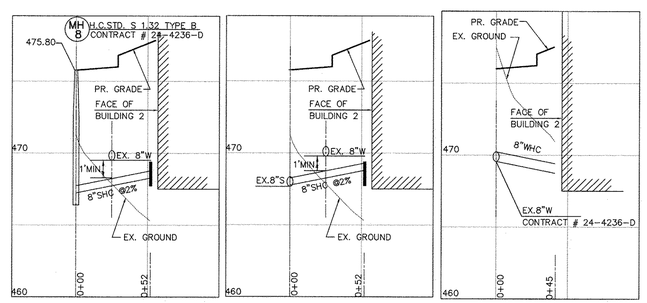
STORM DRAIN PROFILE

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



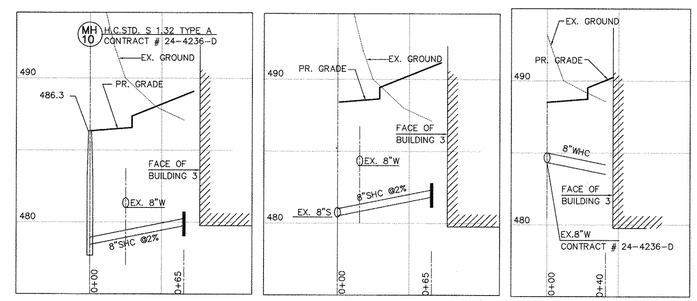
SHC & WHC PROFILE FOR BUILDING # 1

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



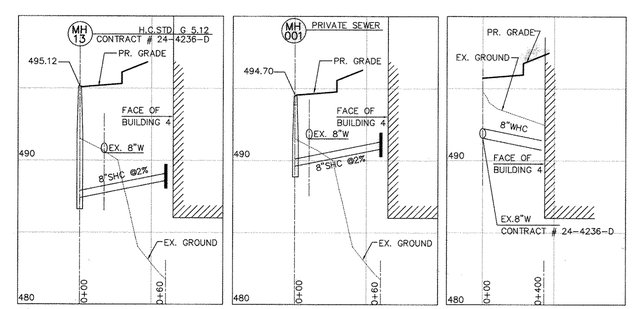
SHC & WHC PROFILE FOR BUILDING # 2

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



SHC & WHC PROFILE FOR BUILDING # 3

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



SHC & WHC PROFILE FOR BUILDING # 4

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

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8/26/08

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 8/28/08

DIRECTOR — DATE 9/2/08

STATE OF MARYLAND — RICHARD JACOB KIKAN — No. 17942 — PROFESSIONAL ENGINEER

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 9-29-16

STATE OF MARYLAND — DONALD ALAN MASON — No. 21443 — PROFESSIONAL ENGINEER — 9-29-16 — AS-BUILT

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. 21443 Expiration Date: 12-21-16

project	date
03-081	OCT.2007
illustration	engineering
MMM	MMM
scale	approval
1"=50'	

no.	revisions	date
1	CORRECT FINISHED GRADE ELEVATION	OCT 2009

OAKMONT AT TURF VALLEY

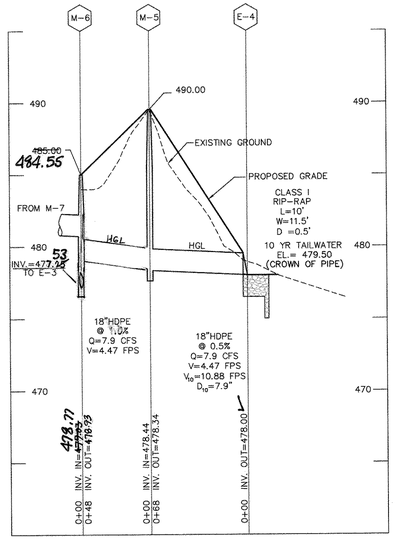
PARCELS: R, S, T, U, V &W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
HOWARD COUNTY, MARYLAND
THIRD ELECTION DISTRICT

STORMDRAIN PROFILES AND SHC & WHC PROFILES

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Balt. (301) 621-5321 Wash. (410) 997-0298 Fax.

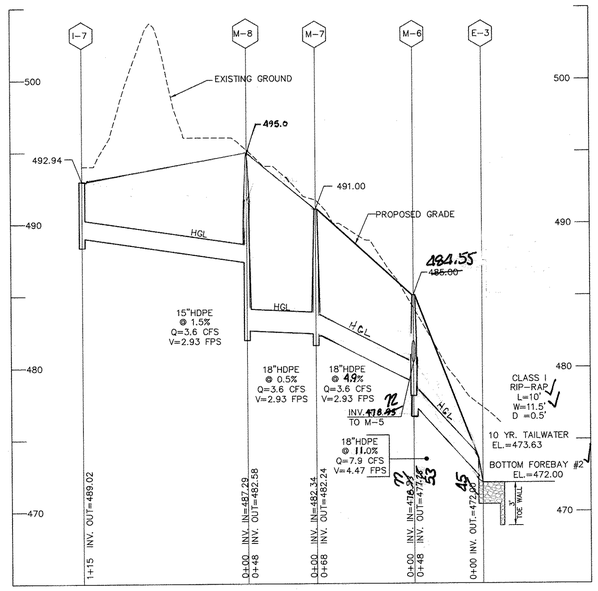
SDP-07-062

H:\03-081\DWG\SDP\TV-TOPO-2000\DAM-SWM



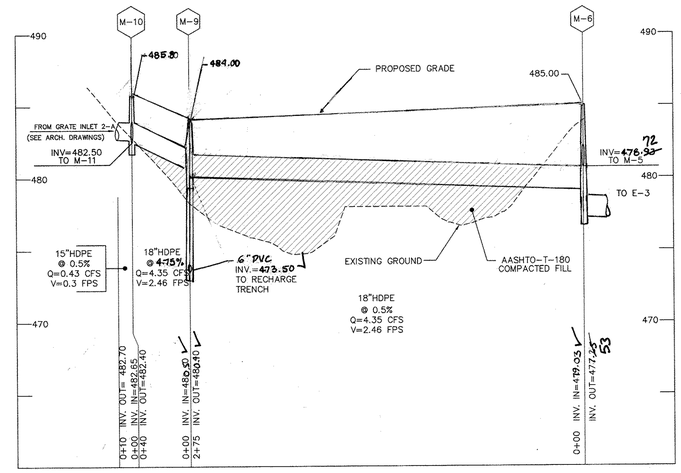
STORM DRAIN PROFILE

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



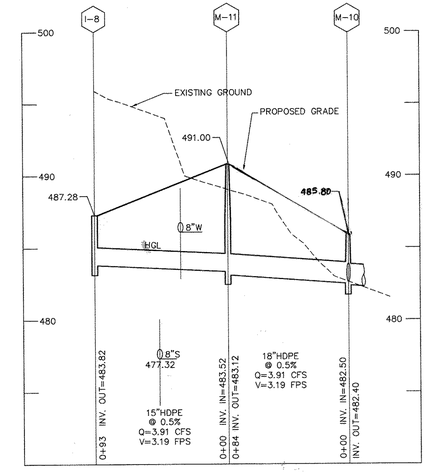
STORM DRAIN PROFILE

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



STORM DRAIN PROFILE

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



STORM DRAIN PROFILE

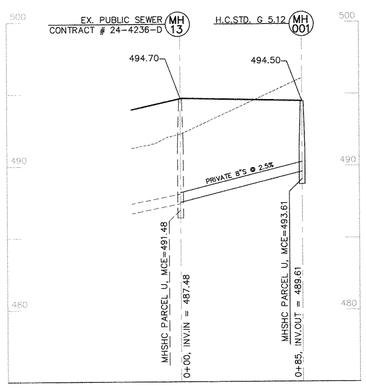
SCALE: HOR.1"=50' VER.1"=5'

STRUCTURE SCHEDULE

NO.	LOCATION*	TOP**	INV. IN	INV. OUT	COMMENTS
ES-1	N 595,007.5 E 1,341,413.8	–	–	444.00	END SECTION
ES-2	N 595,021.8 E 1,341,364.3	–	–	444.00	END SECTION
ES-3	N 595,106.0 E 1,342,601.4	–	–	472.00	END SECTION
ES-4	N 595,162.7 E 1,342,600.6	–	–	478.00	END SECTION
I-1	N 595,013.9 E 1,341,451.2	455.25	–	451.40	INLET TYPE A-5 (HO. CO. STD SD 4.40)
I-2	N 594,941.7 E 1,341,398.9	456.86	449.86	449.76	INLET TYPE A-5 (HO. CO. STD SD 4.40)
I-3	N 594,908.9 E 1,341,445.8	457.51	451.08	450.98	INLET TYPE A-5 (HO. CO. STD SD 4.40)
I-4	N 594,815.1 E 1,341,636.8	465.11	457.56	457.46	INLET TYPE A-10 (HO. CO. STD SD 4.02)
I-5	N 594,668.1 E 1,342,022.3	475.91	471.80	471.55	INLET TYPE A-10 (HO. CO. STD SD 4.02)
I-6	N 594,747.8 E 1,342,134.3	479.29	–	475.91	INLET TYPE A-5 (HO. CO. STD SD 4.40)
I-7	N 594,892.6 E 1,342,752.4	492.94	–	489.02	INLET TYPE A-5 (HO. CO. STD SD 4.40)
I-8	N 594,686.5 E 1,342,415.8	487.28	–	483.82	INLET TYPE A-5 (HO. CO. STD SD 4.40)
M-1	N 594,980.4 E 1,341,409.3	455.~~00~~ 28	448.08	447.98 446.00	DIVERSION MANHOLE (SHEET 7)
M-2	N 594,976.7 E 1,341,426.1	456.20	449.15	449.05	MH (HO. CO. STD G 5.01)
M-3	N 594,729.1 E 1,341,800.0	473.10	469.01	468.91	MH (HO. CO. STD G 5.01)
M-4	N 594,814.7 E 1,341,831.7	468.50	461.01	460.66	MH (HO. CO. STD G 5.01)
M-5	N 595,121.2 E 1,342,651.2	490.00	478.44	478.34	MH (HO. CO. STD G 5.01)
M-6	N 595,076.2 E 1,642,635.8 484.55	~~485.00~~	479.03	476.35 11 477.45 53	DIVERSION MANHOLE (SHEET 7)
M-7	N 595,049.3 E 1,342,699.6	491.00	482.34	472.24	MH (HO. CO. STD G 5.01)
M-8	N 595,006.8 E 1,342,6714.2	495.00	487.29	482.58	MH (HO. CO. STD G 5.01)
M-9	N 594,868.3 E 1,342,456.2 484.38	~~484.00~~	480.50	480.40 473.50	DIVERSION MANHOLE (SHEET 7)
M-10	N 594,842.2 E 1,342,486.1	485.60	482.65 482.50	482.40	MH (HO. CO. STD G 5.01)
M-11	N 594,758.9 E 1,342,475.4	491.00	483.52	483.12	MH (HO. CO. STD G 5.01)

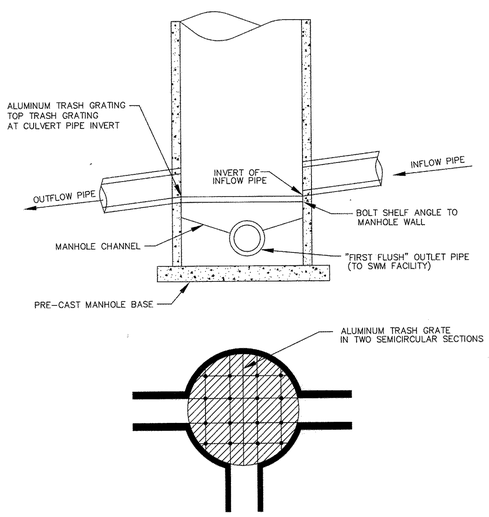
* STATIONS GIVEN TO CENTERLINE FACE OF INLET AT TOP OF CURB FOR INLETS LOCATED WITHIN THE ROAD RIGHT-OF-WAY. STATIONS FOR YARD INLETS TO CL OF INLET. LOCATION OF MANHOLES IS TO CL OF MANHOLE COVER. END SECTION GIVEN TO THE CENTERLINE OF PIPE AT THE CONNECTION OF THE STORM DRAIN PIPE TO THE END SECTION.

** ELEVATIONS MEASURED TO CENTER OF ALL INLETS.



PRIVATE SEWER PROFILE

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



TYP. ISOLATION/DIVERSION MANHOLE FOR MANHOLE # 1, 6 & 9

NTS

PIPE SCHEDULE

QUANTITY	PIPE SIZE
365	15" HDPE
1768	18" HDPE

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this AS-BUILT plan.
Donald Mason, P.E. No. 21443 Date 9-29-16

STATE OF MARYLAND DONALD ALAN MASON No. 21443 PROFESSIONAL ENGINEER

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. 21443 Expiration Date: 12-21-16

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 8/26/08

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 8/28/08

DIRECTOR — DATE 9/1/08

STATE OF MARYLAND R. JACOB HIMMIT No. 17942 PROFESSIONAL ENGINEER

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08

AS-BUILT

project	date
03-081	DEC 2007
illustration	engineering
MMM	MMM
scale	approval
1"=50'	RJH

no.	revisions description	date
1	REVISE STORM DRAIN PROFILES, CONNECT FLUSHER, CHANGE ELEVATIONS AND ADD STRUCTURE SCHEDULE	OCT 2008

OAKMONT AT TURF VALLEY

PARCELS: R, S, T, U, V & W

TAX MAP 16, P/O PARCEL 8, BLOCK 10

HOWARD COUNTY, MARYLAND

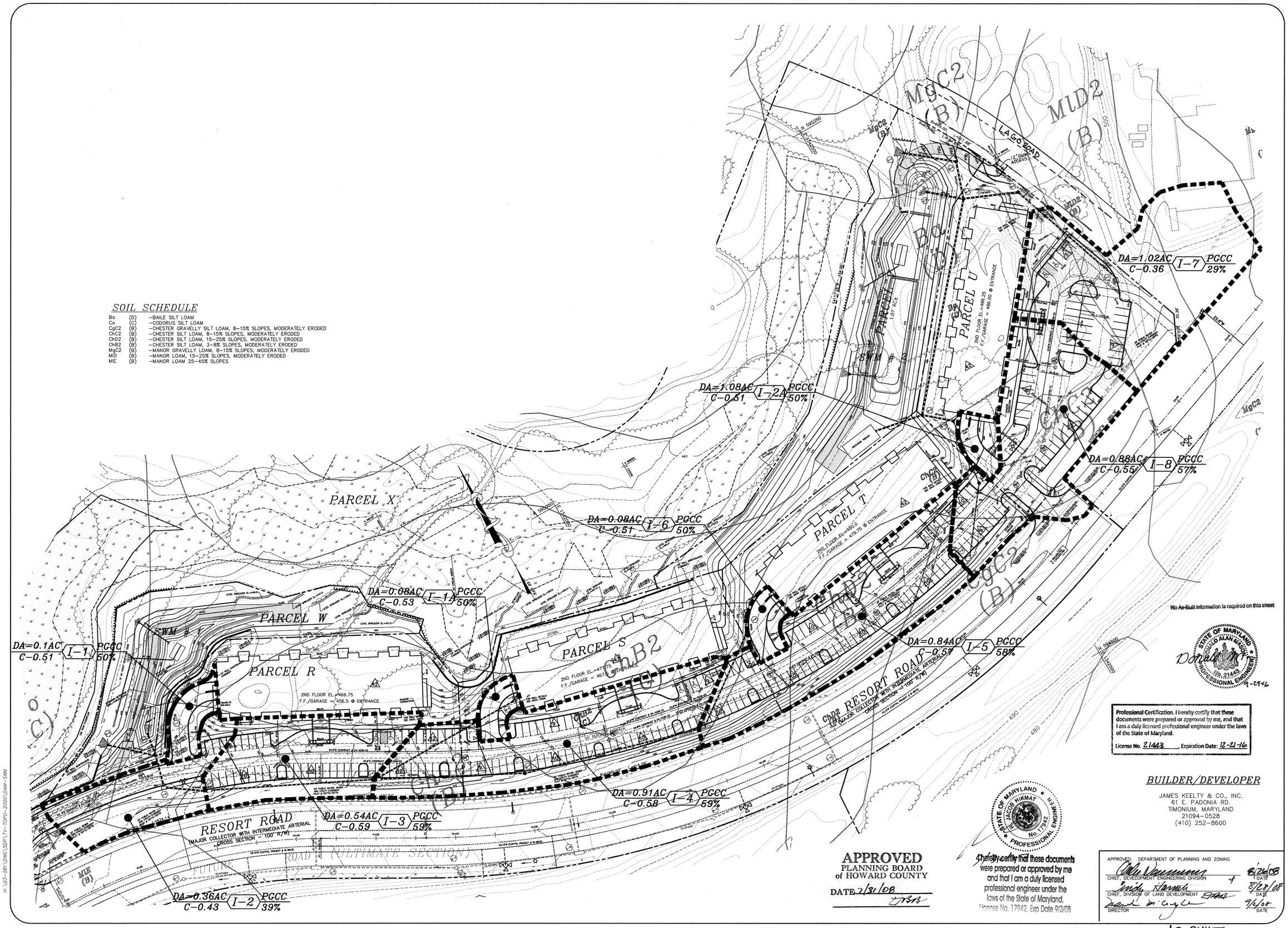
THIRD ELECTION DISTRICT

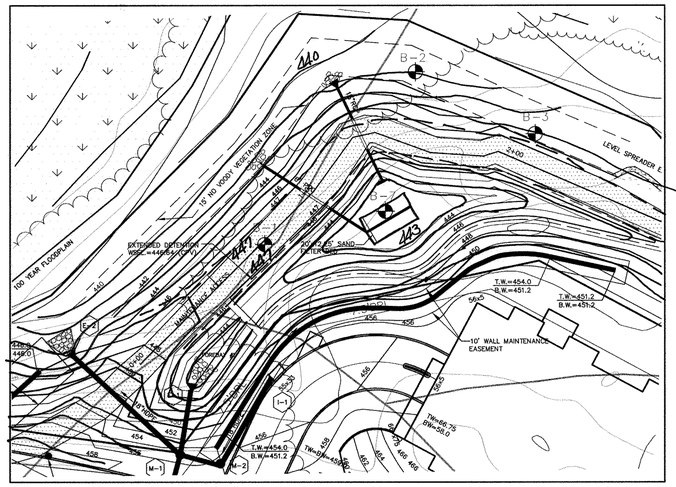
STORMDRAIN PROFILES

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Balt. (301) 621-5321 Wash. (410) 997-0298 Fax.

SDP-07-062

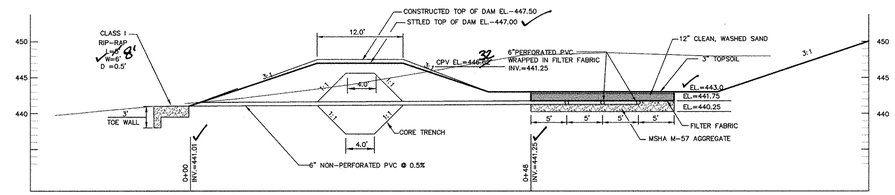
H:\03-081\DWG\SDP\TV-TOPO-2000\DAM-SWM


SOIL SCHEDULE
Ba (D) -BAILE SILT LOAM
Co (C) -CODORUS SILT LOAM
CgC2 (B) -CHESTER GRAVELLY SILT LOAM, 8-15% SLOPES, MODERATELY ERODED
ChC2 (B) -CHESTER SILT LOAM, 8-15% SLOPES, MODERATELY ERODED
ChD2 (B) -CHESTER SILT LOAM, 15-25% SLOPES, MODERATELY ERODED
ChB2 (B) -CHESTER SILT LOAM, 3-8% SLOPES, MODERATELY ERODED
MgC2 (B) -MANOR GRAVELLY LOAM, 8-15% SLOPES, MODERATELY ERODED
MlD (B) -MANOR LOAM, 15-25% SLOPES, MODERATELY ERODED
MlE (B) -MANOR LOAM 25-45% SLOPES
PARCEL X
PARCEL W
PARCEL R
PARCEL S
PARCEL T
PARCEL U
PARCEL Q
SWM # 1
SWM # 2
SWM # 3
RESORT ROAD
(MAJOR COLLECTOR WITH INTERMEDIATE ARTERIAL CROSS SECTION - 100' R/W)
FUTURE ROAD (ULTIMATE SECTION)
LAGO ROAD
DA=0.1AC C-0.51 I-1 PGCC 50%
DA=0.36AC C-0.43 I-2 PGCC 39%
DA=0.54AC C-0.59 I-3 PGCC 59%
DA=0.91AC C-0.58 I-4 PGCC 59%
DA=0.84AC C-0.57 I-5 PGCC 58%
DA=0.08AC C-0.51 I-6 PGCC 50%
DA=0.08AC C-0.53 I-11 PGCC 50%
DA=1.08AC C-0.51 I-2A PGCC 50%
DA=1.02AC C-0.36 I-7 PGCC 29%
DA=0.88AC C-0.55 I-8 PGCC 57%
2ND FLOOR EL=466.75
F.F./GARAGE = 456.5 @ ENTRANCE
2ND FLOOR EL=477.75
F.F./GARAGE = 467.5 @ ENTRANCE
2ND FLOOR EL=460.0
F.F./GARAGE = 479.75 @ ENTRANCE
2ND FLOOR EL=486.25
F.F./GARAGE = 484.00 @ ENTRANCE
LEVEL SPREADER EL=485.0
LEVEL SPREADER EL=475.0
LEVEL SPREADER EL=465.0
12-20MIL AREDES
N 592250
N 594500
N 595000
No As-Built information is required on this sheet
STATE OF MARYLAND
DONALD ALAN MASON
No. 21443
PROFESSIONAL ENGINEER
12-29-16
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. 21443 Expiration Date: 12-21-16
BUILDER/DEVELOPER
JAMES KEELTY & CO., INC.
61 E. PADONIA RD.
TIMONIUM, MARYLAND
21094-0528
(410) 252-8600
APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08
STATE OF MARYLAND
JACOB HIKMAT
No. 17942
PROFESSIONAL ENGINEER
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. 17942, Exp Date 9/3/08
APPROVED: DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 8/26/08
CHIEF, DIVISION OF LAND DEVELOPMENT DATE 8/28/08
DIRECTOR DATE 9/4/08
AS-BUILT
project 03-081
date OCT. 2007
illustration MMM
engineering MMM
scale 1"=50'
approval
no. 1
description SHOWS SWM ACCESS & LEGO ROAD
date 5-12-16
revisions
OAKMONT AT TURF VALLEY
PARCELS: R, S, T, U, V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DRAINAGE AREA MAP
MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Balt. (301) 621-5521 Wash. (410) 997-0298 Fax.
8 OF 14
SDP-07-062
H:\03-081\DWG\SDP\TV-TOPO-2000\DAM-SWM



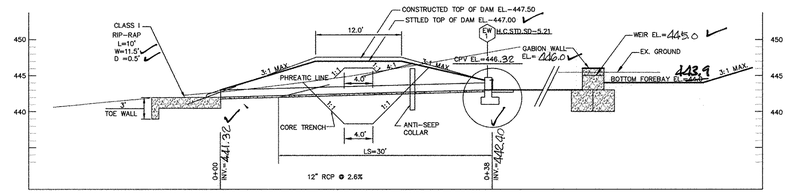
SWM POND # 1 PLAN

SCALE: 1"=30'



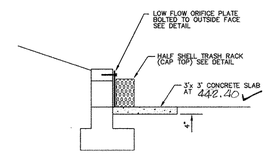
SAND FILTER PROFILE
SWM POND # 1

SCALE: 1"=10'



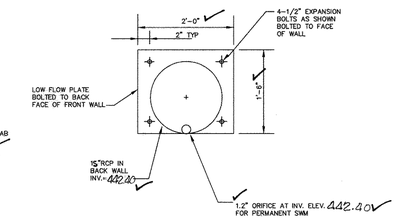
PRINCIPAL SPILLWAY PROFILE
SWM POND # 1

SCALE: 1"=10'



LOW FLOW DETAIL

SCALE: 1"=3'

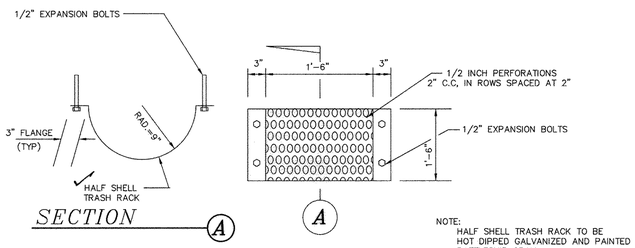


LOW FLOW ORIFICE DETAIL

NTS

SWM POND DATA:

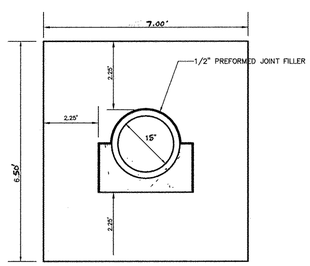
HAZARD CLASSIFICATION:	"A"
F-1 SAND FILTER	
DRAINAGE AREA:	= 3.21 AC
PROPOSED RCN:	= 82
PROPOSED Tc:	= 0.15HRS.
SAND FILTER AREA (Wqv):	300 SQ. FT.
EXTENDED DETENTION WSEL:	446.62
Cpv (Q) INTO POND	= 4.6 CFS
Cpv (Q) OUT OF POND	= 0.07 CFS
Wqv REQUIRED:	= 4.955 Q.F.
Wqv PROVIDED	= 5,012 Q.F.
Rev REQUIRED (ALL SITE)	= 2.893 C.F.
Rev REQUIRED (W/CREDITS)	= 2,298 C.F.
Rev PROVIDED (IN TRENCH)	= 5.850 C.F.
MAINTENANCE:	PRIVATE
OWNERSHIP:	PRIVATE



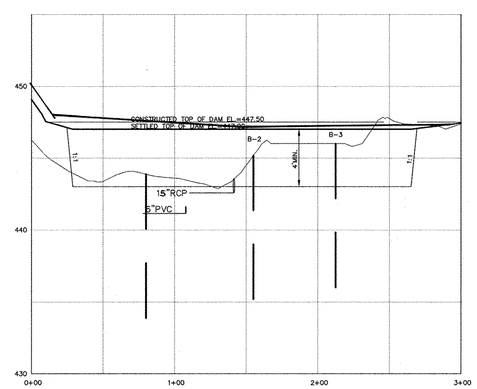
NOTE:
HALF SHELL TRASH RACK TO BE HOT DIPPED GALVANIZED AND PAINTED BATTLESHIP GRAY.

HALF SHELL TRASH RACK

NTS

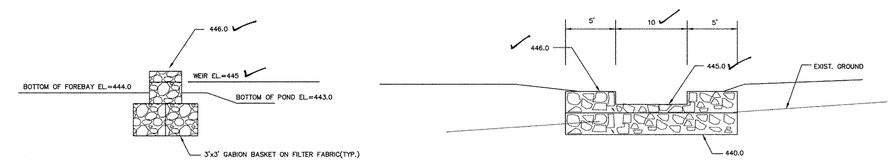


ANTI-SEEP COLLAR DETAIL



CENTERLINE DAM PROFILE

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



GENERAL NOTES:
1. GABIONS ARE TO BE EMBEDDED INTO EARTH FILL BY TWO (2) FEET
2. FOREBAY WEIR SHALL CONSIST OF 3'x3' GABION BASKETS PLACED ON FILTER FABRIC AS SHOWN.

GABION WALL DETAIL

NTS

AS-BUILT CERTIFICATION

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

Donald Mon — P.E. NO.: 21443
SIGNATURE — DATE: 9-29-16

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

BY THE DEVELOPER:

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

8/13/08
SIGNATURE OF DEVELOPER — DATE
MARK BUDA
PRINTED NAME OF DEVELOPER

BY THE ENGINEER:

"I CERTIFY THAT THIS PLAN FOR ~~POND CONSTRUCTION~~, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. ~~I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.~~"

9/30/07
SIGNATURE OF ENGINEER — DATE
P. JACOB HIKMAT
PRINTED NAME OF ENGINEER

~~THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MET 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.~~

John W. Minter — 8/23/08
~~HOWARD SOIL CONSERVATION DISTRICT — DATE~~

~~APPROVED: DEPARTMENT OF PUBLIC WORKS~~

~~CHIEF, BUREAU OF HIGHWAYS — DATE~~

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Kent Sheubrooks — 8/26/08
CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE

Andy Hunt — 8/28/08
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE

David A. Lanzen — 9/2/08
DIRECTOR — DATE

STATE OF MARYLAND — P. JACOB HIKMAT — No. 17942 — PROFESSIONAL ENGINEER

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. 17942, Exp Date 9/3/08

OWNER/DEVELOPER

JAMES KEELTY & CO., INC.
61 E. PADONIA RD.
TIMONIUM, MARYLAND
21094-0528
(410) 252-8600

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08

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. 21443 Expiration Date: 12-21-16

STATE OF MARYLAND — DONALD ALAN MON — No. 21443 — PROFESSIONAL ENGINEER
Donald Mon — 9/29/16 AS-BUILT
8/1/16
FOR REVISIONS BY B.E.I DATED 8/1/16

AS-BUILT

project	date
03-081	OCT.2007
illustration	engineering
MMM	MMM
scale	approval
AS SHOWN	

no.	description	date
2	REVISED SWM/FBH OUTFALL ELEVATION CHANGE PIPE SIZE	8/1/16 OCT. 2008
1		

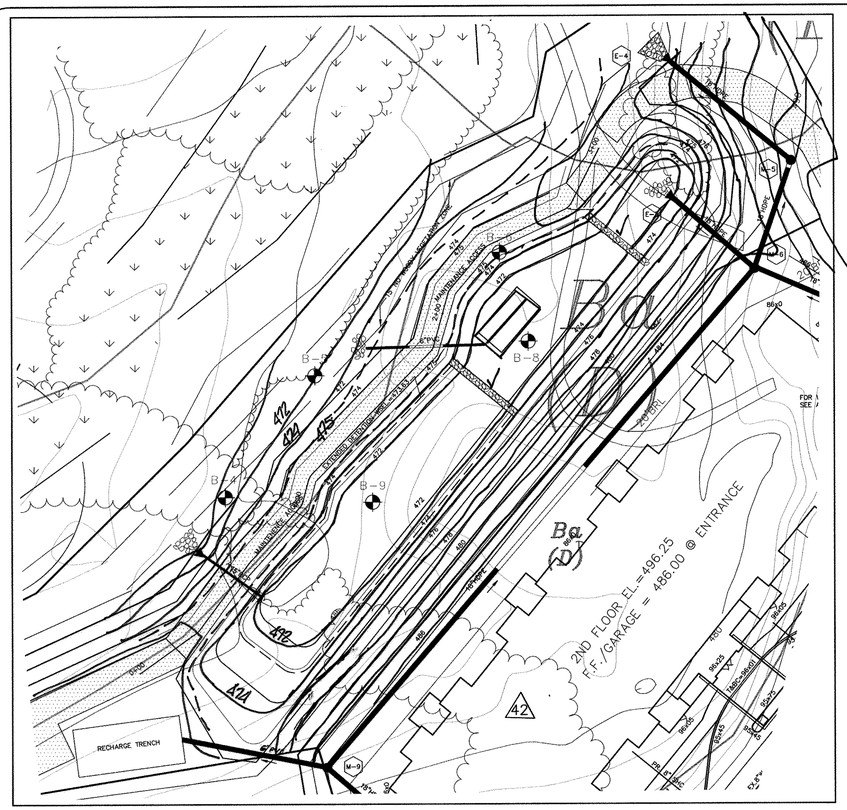
revisions

OAKMONT AT TURF VALLEY
PARCELS: R, S, T, U, V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT — HOWARD COUNTY, MARYLAND
STORMWATER MANAGEMENT DETAIL - POND # 1

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Balt. (301) 621-5521 Wash. (410) 997-0298 Fax.

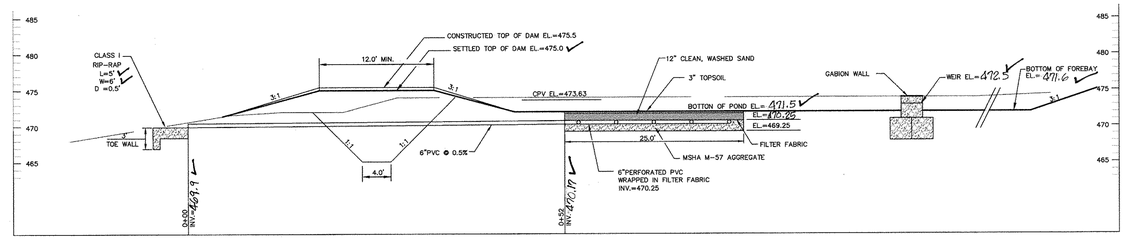
SDP-07-062

H:\03-081\DWG\SDP\TY-TOPO-2000\DAM-SWM



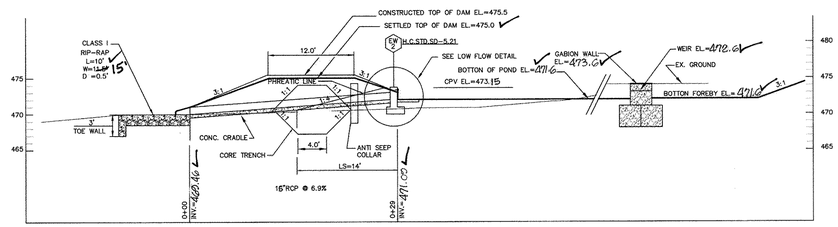
SWM POND # 2 PLAN

SCALE: 1"=30'



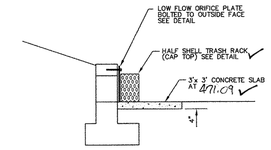
SAND FILTER PROFILE
SWM POND # 2

SCALE: 1"=10'



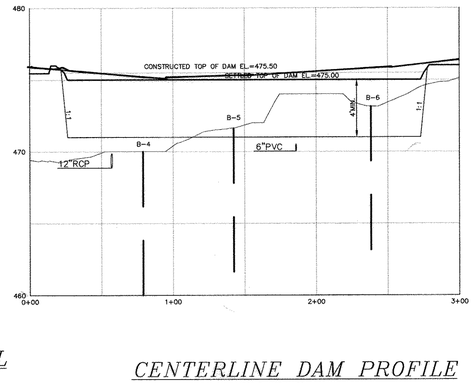
PRINCIPAL SPILLWAY PROFILE

SCALE: 1"=10'



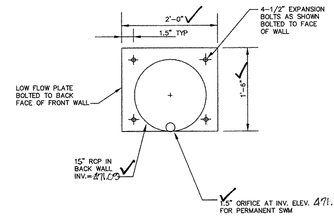
LOW FLOW DETAIL

SCALE: 1"=3'



CENTERLINE DAM PROFILE

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

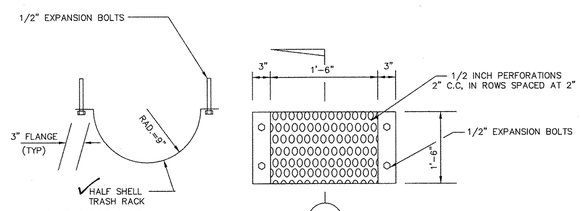


LOW FLOW ORIFICE DETAIL

NTS

SWM POND DATA:

HAZARD CLASSIFICATION:	"A"
F-1 SAND FILTER	
DRAINAGE AREA:	= 3.44 AC
PROPOSED RCN:	= 82
PROPOSED Tc:	= 0.37 HRS.
SAND FILTER AREA (Wqv):	150 SQ. FT.
EXTENDED DETENTION WSEL:	473.63
Cpv (Q) INTO POND	= 2.6 CFS
Cpv (Q) OUT OF POND	= 0.07 CFS
Wqv REQUIRED:	= 6,568 C.F.
Wqv PROVIDED	= 6,649 C.F.
Rev REQUIRED (ALL SITE)	= 2.893 C.F.
Rev REQUIRED (W/CREDITS)	= 2,298 C.F.
Rev PROVIDED (IN TRENCH)	= 5.850 C.F.
MAINTENANCE:	PRIVATE
OWNERSHIP:	PRIVATE

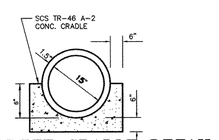


SECTION A

HALF SHELL TRASH RACK

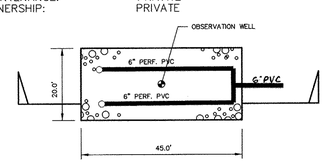
NTS

NOTE:
HALF SHELL TRASH RACK TO BE HOT DIPPED GALVANIZED AND PAINTED BATTLESHIP GRAY.



CONCRETE CRADLE DETAIL

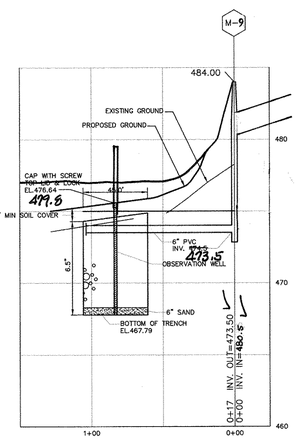
N.T.S.



1). FILTER FABRIC (CLASS C) TOP AND ALL SIDES EXCEPT BOTTOM
2). AGGREGATE SIZE 1.5" TO 3" MINIMUM WITH NO FINES
3). CAP ALL ENDS OF PIPE.
4). USE SCHEDULE SDR 35 OR 40.
5). PERFORATIONS 3/8" DIAMETER. TERMINATE PERFORATIONS A MINIMUM 1' FROM END OF TRENCH.

STONE RECHARGE TRENCH

1"=20'



STONE RECHARGE TRENCH SECTION

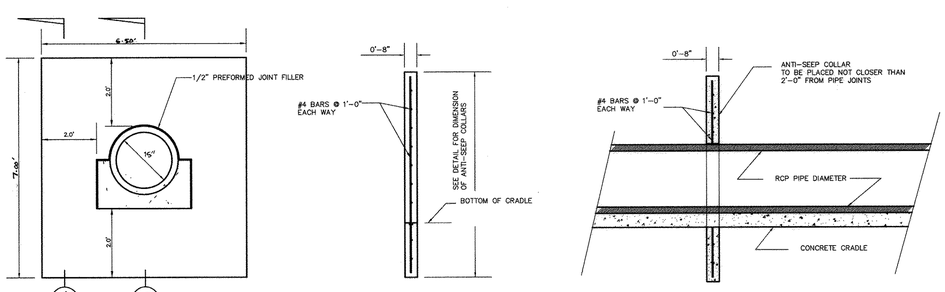
SCALE: HOR. 1"=50' VER. 1"=5'

OWNER/DEVELOPER

JAMES KEELTY & CO., INC.
61 E. PADONIA RD.
TIMONIUM, MARYLAND
21094-0528
(410) 252-8600

STATE OF MARYLAND — R. JACOB HIKMAT — No. 17942 — PROFESSIONAL ENGINEER

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. 17942, Exp Date 9/3/08



ANTI-SEEP COLLAR DETAIL

SECTION 1 N.T.S.

SECTION 2 N.T.S.

AS-BUILT CERTIFICATION

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

SIGNATURE: Donald Mann P.E. NO.: 21443 DATE: 9-29-16

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

BY THE DEVELOPER:

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

SIGNATURE OF DEVELOPER: 8/13/08 DATE

PRINTED NAME OF DEVELOPER: MARK BUDA

BY THE ENGINEER:

"I CERTIFY THAT THIS PLAN FOR ~~POND CONSTRUCTION,~~ EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. ~~I HAVE ADVISED THE DEVELOPER THAT I/WE MUST PROVIDE 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: 9/30/07 DATE

PRINTED NAME OF ENGINEER: R. JACOB HIKMAT

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

USDA - NATURAL RESOURCES CONSERVATION SERVICE DATE

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

HOWARD SOIL CONSERVATION DISTRICT 8/25/08 DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION 9/26/08 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 8/28/08 DATE

DIRECTOR 9/2/08 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. 21443 Expiration Date: 12-21-16

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

9-29-16 AS-BUILT
8-1-16
FOR REVISIONS BY DET DATED 8-1-16

AS-BUILT

H:\03-081\DWG\SDP\TV-TOPO-2000\DAM-SWM

project	date
03-081	OCT 2007
illustration	engineering
MMM	MMM
scale	approval
AS SHOWN	

no.	revisions	date
2	REVISED SWM#2 OUTFALL ELEVATION CHANGE PER S.D.E.	8/1/16

OAKMONT AT TURF VALLEY

PARCELS: R, S, T, U,V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT HOWARD COUNTY, MARYLAND

STORMWATER MANAGEMENT DETAILS – POND # 2

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Bal. (301) 621-5521 Wash. (410) 997-0298 Fax.

SDP-07-062

MD-378 POND SPECIFICATIONS (JANUARY 2000)

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 STORM WATER 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 DRAIN 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 CC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

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

COMPACTION – THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH 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 TRENCH – THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE 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 CORE – THE 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.

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

PIPE CONDUIT

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

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

I. MATERIALS – (POLYMER COATED STEEL PIPE) – STEEL PIPES WITH POLYMERIC COATINGS 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–21 L 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 IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE–PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12–INCH WIDE STANDARD LAP TYPE BAND WITH 12–INCH WIDE BY 3/8–INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12–INCH WIDE HUGGER TYPE BAND WITH O–RING GASKETS HAVING A MINIMUM DIAMETER OF ½ 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 SEARNS 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 THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE – BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END 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 AS 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 D1785 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. BACKFILL SHALL CONFORM TO "STRUCTURE BACKFILL."

5. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

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

CONCRETE

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

ROCK RIPRAP

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

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

CARE OF WATER DURING CONSTRUCTION

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATIONS, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED HEIR 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 IN A SIGHTLY CONDITION ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD–342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

EROSION AND SEDIMENT CONTROL

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

OPERATION, MAINTENANCE AND INSPECTION

INSPECTION OF THE POND(S) SHOWN HEREON SHALL BY PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD–378), THE POND OWNER(S) AND THE 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 MAINTENENCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SURFACE SAND FILTER

1. THE STORMWATER WETLAND FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.
2. THE TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF ONCE PER YEAR, WHEN VEGETATION REACHES 18" IN HEIGHT OR AS NEEDED.
3. FILTERS THAT HAVE A GRASS COVER SHALL BE MOWED A MINIMUM OF THREE (3) TIMES PER GROWING SEASON TO MAINTAIN A MAXIMUM GRASS HEIGHT OF LESS THAN 12 INCHES.
4. DEBRIS AND LITTER SHALL BE REMOVED DURING REGULAR MOWING OPERATION AND AS NEEDED.
5. VISIBLE SIGNS OF EROSION IN THE FACILITY SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
6. REMOVE SILT WHEN IT EXCEEDS FOUR (4) INCHES DEEP IN THE FOREBAY.
7. WHEN WATER PONDS ON THE SURFACE OF THE FILTER BED FOR MORE THAN 72 HOURS. THE TOP FEW INCHES OF DISCOLORED MATERIAL SHALL BE REPLACED WITH FRESH MATERIAL. PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIAL AND LIQUID MUST BE FOLLOWED BY THE OWNER.
8. A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
9. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITCH OPERATION AND MAINTENANCE CRITERIA.
10. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION SYSTEM HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

GEOTECHNICAL RECOMENDATIONS:

THE AREA OF THE PROPOSED SWM FACILITY SHOULD BE STRIPPED OF TOPSOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OR STRUCTURE AREA IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROOFROLLED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE.

FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK. THE EXPOSED MATERIALS SHOULD BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVELY SOFT OR LOOSE MATERIALS IDENTIFIED BY PROOFROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLE FIRM SOIL, AND THEN GRADES RE–ESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.

A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHOULD BE PRESENT TO MONITOR PLACEMENT AND COMPACTION OF FILL FOR THE EMBANKMENT AND CUT–OF TRENCH. IN ACCORDANCE WITH MARYLAND SOIL CONSERVATION SPECIFICATIONS 378 SOILS CONSIDERED SUITABLE FOR CENTER OF EMBANKMENT AND CUT–OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH OR CL.

IT IS OUR PROFESSIONAL OPINION THAT IN ADDITION TO THE SOIL MATERIALS DESCRIBED ABOVE A FINE–GRAINED SOIL, INCLUDING SILT (ML) WITH A PLASTICITY INDEX OF 10 OR MORE CAN BE UTILIZED FOR THE CENTER OF THE EMBANKMENT AND CORE TRENCH. ALL FILL MATERIALS MUST BE PLACED AND COMPACTED IN ACCORDANCE WITH MD SCS 178 SPECIFICATIONS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Turf Valley @ Oakmont SWM — Boring No. B-1
Location: Howard County, MD — Job # 052128
SAMPLER — Datum: — Hammer Wt. 140 lbs. — Hole Diameter 6" — Foreman Lamont Smith
Surf. Elev. 444.0 ft. — Hammer Drop 30 in. — Rock Core Diameter — Inspector
Date Started 7/20/05 — Pipe Size 2.0 in. — Boring Method HSA — Date Completed 7/20/05

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM	SPT Blows	N	SPT Blows/Foot Curve (10 20 30)
444	D	Light brown, moist, medium stiff to stiff, sandy clay, trace silt, trace mica, trace rock fragments. Sample 1 contains organics. (CL)	5" of Topsoil	9"		3-3-3	6	
442	D			18"		5-8-10	18	
440	D	Tan, moist, medium dense to loose, silty sand, trace clay. (SM)	No groundwater encountered while drilling	15"		5-8-7	15	
438	D			18"		4-5-4	9	
436	D			15"		4-5-7-10	12	
434	D	Bottom of Hole @ 12. 0'						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
GROUND WATER: AT COMPLETION Dry ft.; AFTER 24 HRS. ft.; AFTER ___ HRS. ft.
CAVE IN DEPTH: 4.0 ft.
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING
STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30". COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Turf Valley @ Oakmont SWM — Boring No. B-2
Location: Howard County, MD — Job # 052128
SAMPLER — Datum: — Hammer Wt. 140 lbs. — Hole Diameter 6" — Foreman Lamont Smith
Surf. Elev. 442.0 ft. — Hammer Drop 30 in. — Rock Core Diameter — Inspector
Date Started 7/20/05 — Pipe Size 2.0 in. — Boring Method HSA — Date Completed 7/20/05

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM	SPT Blows	N	SPT Blows/Foot Curve (10 20 30)
442	D	Tan, moist, very loose, silty sand, trace clay, trace wood fragments. (SM)	8" of Topsoil	12"		2-2-2	4	
440	D	Tan to yellowish orange, moist to wet, medium dense, clayey sand, trace rock fragments, trace to no organics. (SC)		18"		11-12-11	23	
438	D			18"		7-6-5	11	
436	D		Groundwater encountered while drilling @ 8.5'	15"		3-5-8	13	
434	D	Light brown, moist, dense, silty coarse sand and gravel. (GM-SM)		18"		14-16-20-30	36	
432	D	Bottom of Hole 12.0'						

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
GROUND WATER: AT COMPLETION 4.5 ft.; AFTER 24 HRS. Dry ft.; AFTER ___ HRS. ft.
CAVE IN DEPTH: 7.0 ft.
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING
STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1' WITH 140# HAMMER FALLING 30". COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Turf Valley @ Oakmont SWM — Boring No. B-3
Location: Howard County, MD — Job # 052128
SAMPLER — Datum: — Hammer Wt. 140 lbs. — Hole Diameter 6" — Foreman Lamont Smith
Surf. Elev. 446.0 ft. — Hammer Drop 30 in. — Rock Core Diameter — Inspector
Date Started 7/20/05 — Pipe Size 2.0 in. — Boring Method HSA — Date Completed 7/20/05

Elevation/ Depth	SOIL SYMBOLS/ SAMPLE CONDITIONS	Description	Boring and Sampling Notes	Rec.	NM	SPT Blows	N	SPT Blows/Foot Curve (10 20 30)
446	D	Light brown, moist, very loose, silty sand, trace clay, trace mica. (SM)	9" of Topsoil	13"		1-1-1	2	
444	D	Light brown, moist, medium stiff, sandy clay, trace mica, trace rock fragments, trace organics. (CL)		16"		3-3-6	9	
442	D	Light gray, moist, medium dense, silty sand, trace clay, trace mica, trace rock fragments. (SM)		18"		5-6-7	13	
440	D	Light brown, damp, medium dense, silty sand, trace mica. Sample 5 contains rock fragments. (SM)	Groundwater encountered @ 9.0' while drilling	15"		4-6-5	11	
438	D			18"		9-11-17-20	28	
436

SCHEDULE A : PERIMETER LANDSCAPED EDGE

CATEGORY	ADJACENT TO ROADWAYS	ADJACENT TO PERIMETER PROPERTIES		TOTAL
LANDSCAPE TYPE	E (PERIMETER 1)	A (PERIMETERS 2)	A (PERIMETERS 3)	
LINEAR FEET OF PERIMETER	1800 LF	432 LF	2021 LF	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET)	NO	NO	NO	
CREDIT FOR WALL, FENCE, OR BERM (YES, NO, LINEAR FEET)	NO	NO	NO	
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	45 SHADE TREES 0 EVERGREEN TREES 450 SHRUBS	7 SHADE TREES 0 EVERGREEN TREES 0 SHRUBS	34 SHADE TREES 0 EVERGREEN TREES 0 SHRUBS	86 SHADE TREES 0 EVERGREEN TREES 120 SHRUBS
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION)	45 SHADE TREES 0 EVERGREEN TREES 0 SUBSTITUTION TREES 450 SHRUBS	7 SHADE TREES 0 EVERGREEN TREES 0 SUBSTITUTION TREES 0 SHRUBS	34 SHADE TREES 0 EVERGREEN TREES 0 SUBSTITUTION TREES 0 SHRUBS	86 SHADE TREES 0 EVERGREEN TREES 0 SUBSTITUTION TREES 450 SHRUBS

LANDSCAPE REQUIREMENT PLANTING SCHEDULE

QUANTITY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE
225		ABELIA X GRANDIFLORA	GLOSSY ABELIA	2 1/2' – 3' HT.
86		ACER RUBRUM 'RED SUNSET'	RED SUNSET RED MAPLE	2 1/2" – 3" CAL.
225		EUONYMUS ALATUS 'COMPACTA'	DWARF WINGED EUONYMUS	2' – 2 1/2' HT.
15		PICEA ABIES	NORWAY SPRUCE	6'–8' HT.
14		PINUS STROBUS	EASTERN WHITE PINE	6'–8' HT.
64		QUERCUS RUBRA	RED OAK	2 1/2" – 3" CAL.
45		TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	2 1/2" – 3" CAL.

TOTAL
674 TREES & SHRUBS (195 SHADE TREES, 29 EVERGREEN TREES, 450 SHRUBS)

SCHEDULE B: PARKING LOT INTERNAL LANDSCAPING

NUMBER OF PARKING SPACES	218
NUMBER OF PLANTING ISLANDS REQUIRED	22
NUMBER OF PLANTING ISLANDS PROVIDED	22
NUMBER OF TREES REQUIRED SHADE TREES	22 SHADE TREES
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTION)	22 SHADE TREES 0 TREES

SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF PERIMETER	1154 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO
NUMBER OF TREES REQUIRED SHADE TREES EVERGREEN TREES	23 SHADE TREES 29 EVERGREEN TREES
NUMBER OF TREES PROVIDED SHADE TREES EVERGREEN TREES OTHER TREES (2:1 SUBSTITUTION)	23 SHADE TREES 29 EVERGREEN TREES 0 TREES (0 SUBSTITUTION TREES)

SCHEDULE C: RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING

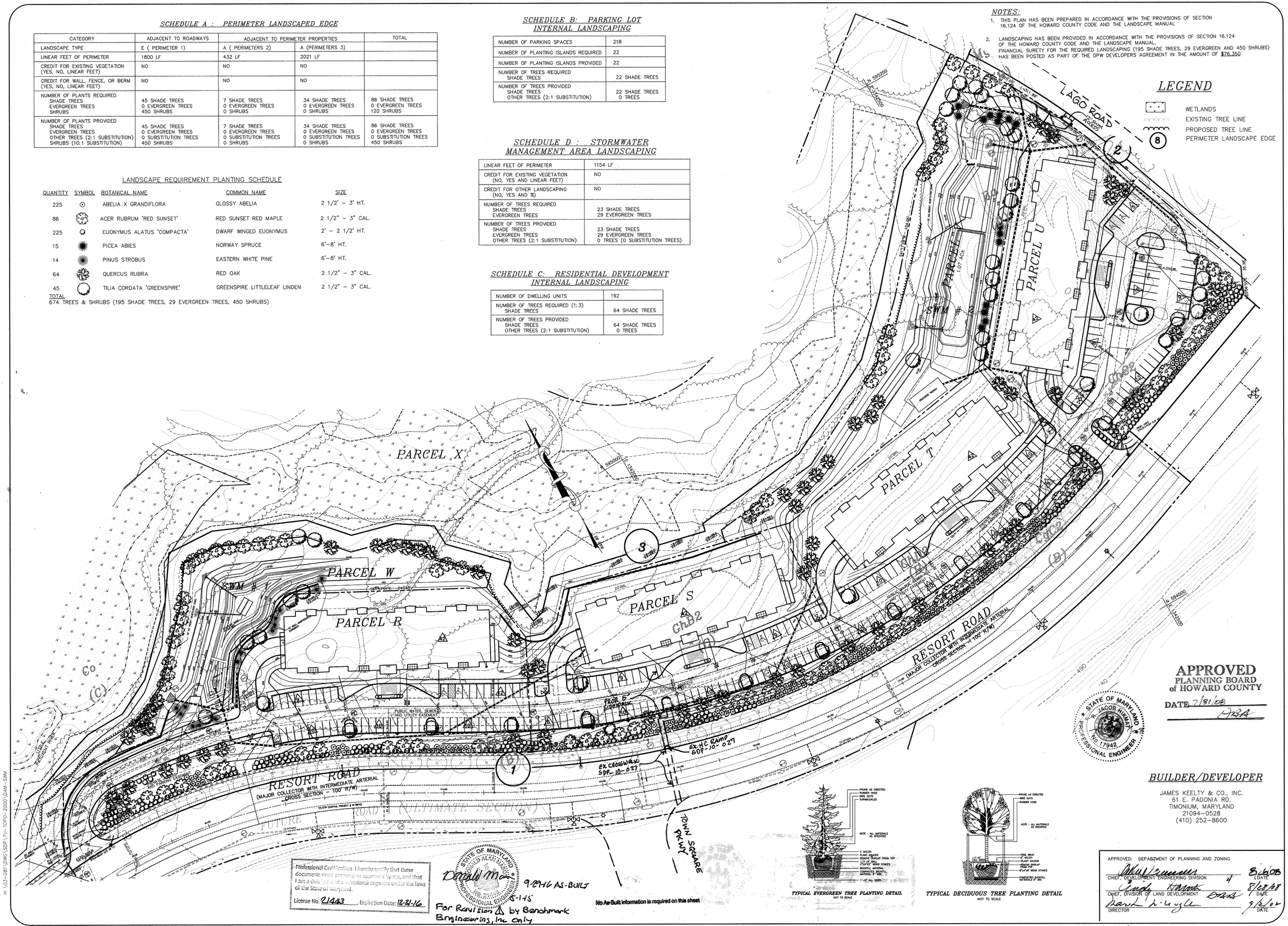
NUMBER OF DWELLING UNITS	192
NUMBER OF TREES REQUIRED (1:3) SHADE TREES	64 SHADE TREES
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTION)	64 SHADE TREES 0 TREES

NOTES:

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
2. LANDSCAPING HAS BEEN PROVIDED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING (195 SHADE TREES, 29 EVERGREEN AND 450 SHRUBS) HAS BEEN POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT IN THE AMOUNT OF $76,350

LEGEND

- WETLANDS
- EXISTING TREE LINE
- PROPOSED TREE LINE
- PERIMETER LANDSCAPE EDGE



TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE

TYPICAL DECIDUOUS TREE PLANTING DETAIL
NOT TO SCALE

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. 21443, Expiration Date: 12-21-16

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

Donald Moore 9-29-16 AS-BUILT
8-1-15
For Revision 1 by Benchmark Engineering, Inc Only

No As-Built information is required on this sheet

STATE OF MARYLAND — R. JACOB KUHLMAY — No. 17942 — PROFESSIONAL ENGINEER

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08

BUILDER/DEVELOPER

JAMES KEELTY & CO., INC.
61 E. PADONIA RD.
TIMONIUM, MARYLAND
21094–0528
(410) 252–8600

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION		8/6/08 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT		8/28/08 DATE
DIRECTOR		9/3/08 DATE

project	date
03-081	DEC.2007
illustration	engineering
MMM	MMM
scale	approval
1"=50'	RJH

NO.	description	date
2	SIDWALK ACCESS & LAGO ROAD	5-12-16
1	RE-SIGNING & LANDSCAPING ADJACENT TO STORAGE & SIDWALK ALONG RESORT ROAD	4-29-15

revisions

OAKMONT AT TURF VALLEY

PARCELS: R, S, T, U, V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

LANDSCAPE PLAN

MILDENBERG, BOENDER & ASSOC., INC.
Engineers Planners Surveyors
5072 Dorsey Hall Drive, Suite 202, Ellicott City, Maryland 21042
(410) 997-0296 Balt. (301) 621-5321 Wash. (410) 997-0298 Fax.

AS-BUILT

SDP-07-062

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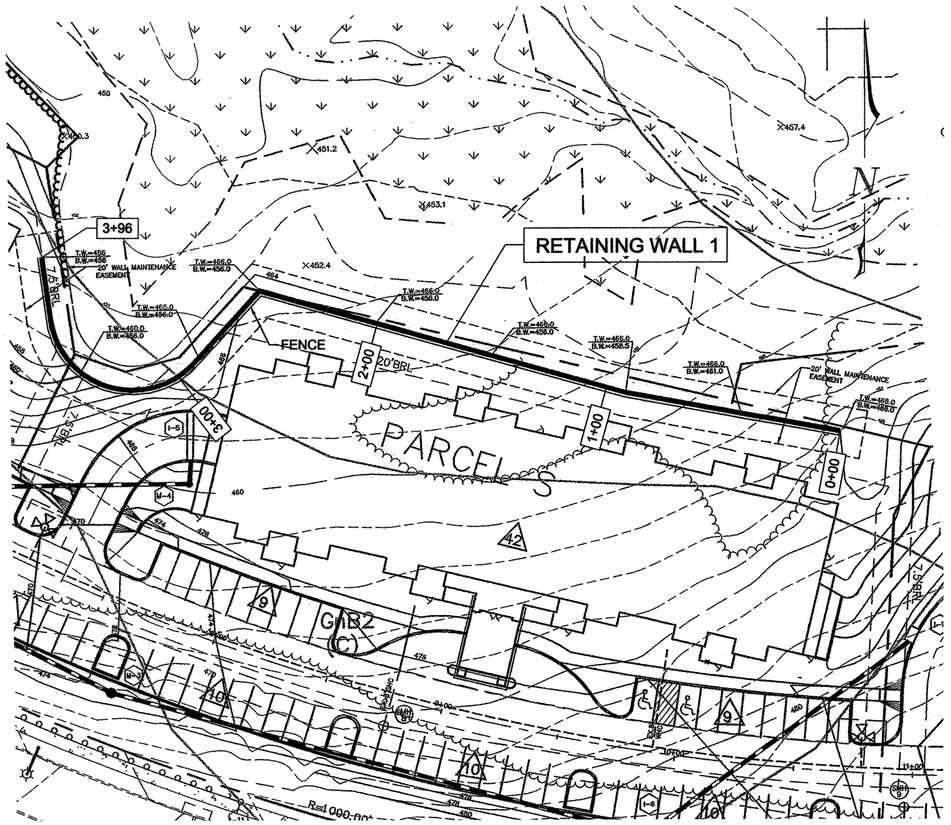
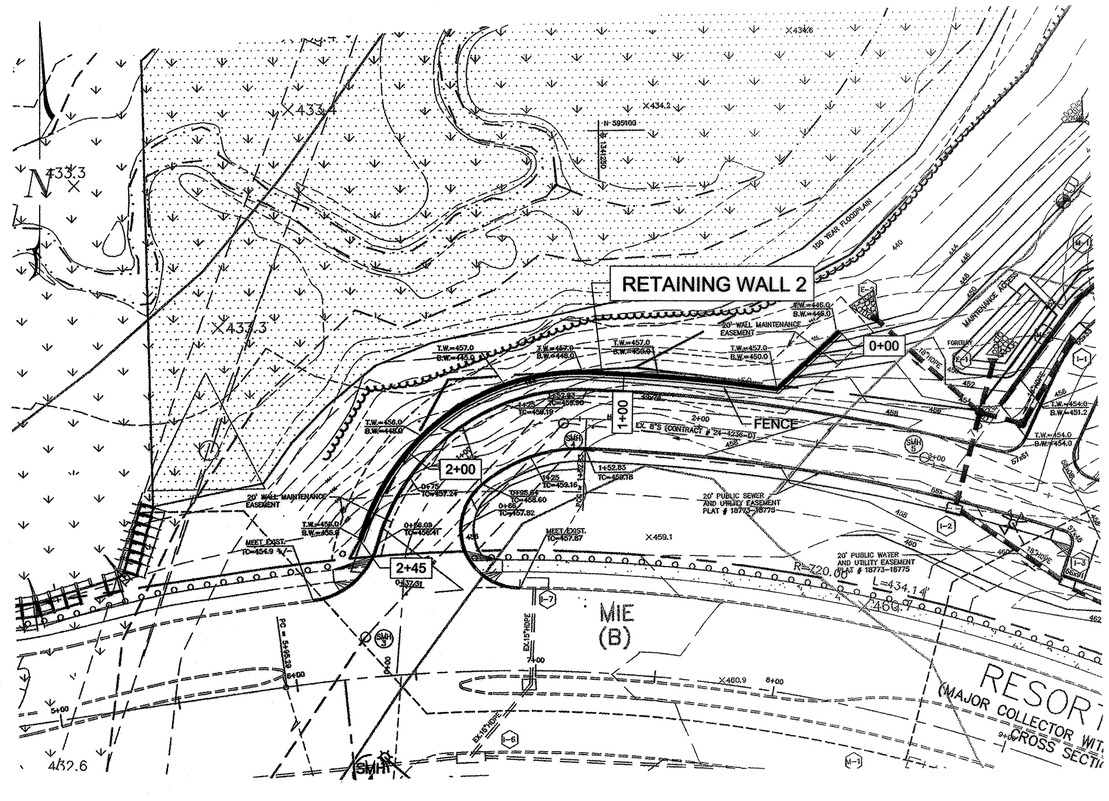


WALL #1 LOCATION PLAN

1" = 30'



WALL #2 LOCATION PLAN

1" = 30'

SPECIFICATIONS

KEYSTONE MODULAR CONCRETE BLOCK RETAINING WALL

PART 1: GENERAL

1.01 Description

A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.

B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.

C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

1.02 Delivery, Storage and Handling

A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.

B. Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PART 2: PRODUCTS

2.01 Modular Concrete Retaining Wall Units

A. Modular concrete units shall conform to the following architectural requirements:
face color - concrete gray - standard manufacturers' color may be specified by the Owner.
face finish - sculptured rock face in angular tri-planer configuration. Other face finishes will not be allowed without written approval of Owner.
bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.
exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.

B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.

C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:
compressive strength = 3000 psi minimum;
absorption = 8 % maximum (6% in northern states) for standard weight aggregates;
dimensional tolerances = ± 1/8" from nominal unit dimensions not including rough split unit dimensions not including rough split face, ±1/16" unit height - top and bottom planes;
unit size - 8" (H) x 18" (W) x 22" (D) minimum;
unit weight - 100 lbs/unit minimum for standard weight aggregates;
inter-unit shear strength - 600 plf minimum at 2 psi normal pressure;
geogrid/unit peak connection strength - 600 plf minimum at 2 psi normal force.

D. Modular concrete units shall conform to the following constructability requirements:
vertical setback = 1/8"± per course (near vertical) or 1"+ per course per the design;
alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;
maximum horizontal gap between erected units shall be - 1/2 inch.

2.02 Shear Connectors

A. Shear connectors shall be 1/2 inch diameter thermoset isophtalic polyester resin-protruded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.

B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

2.03 Base Leveling Pad Material

A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.

2.04 Unit Drainage Fill

A. Unit drainage fill shall consist of #57crushed stone.

2.05 Reinforced Backfill

A. Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-80
No. 200	0-40

Plasticity Index (PI) <10 and Liquid Limit <40 per ASTM D-4318.

B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the reinforced soil mass.

2.06 Geogrid Soil Reinforcement

A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn.

2.07 Drainage Pipe

A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

PART 3 EXECUTION

3.01 Excavation

A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.

3.02 Base Leveling Pad

A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.

B. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

3.03 Modular Unit Installation

A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.

B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.

C. Install shear/connecting devices per manufacturer's recommendations.

D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.

E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed three courses.

3.04 Structural Geogrid Installation

A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.

B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.

C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.

D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

3.05 Reinforced Backfill Placement

A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.

B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.

C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.

D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete unit.

E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.

F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.

G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

3.06 Cap Installation

A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

3.07 Field Quality Control

A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.

B. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.

NOTES:

1.) No trees shall be planted within 10 feet of the top of the retaining wall.

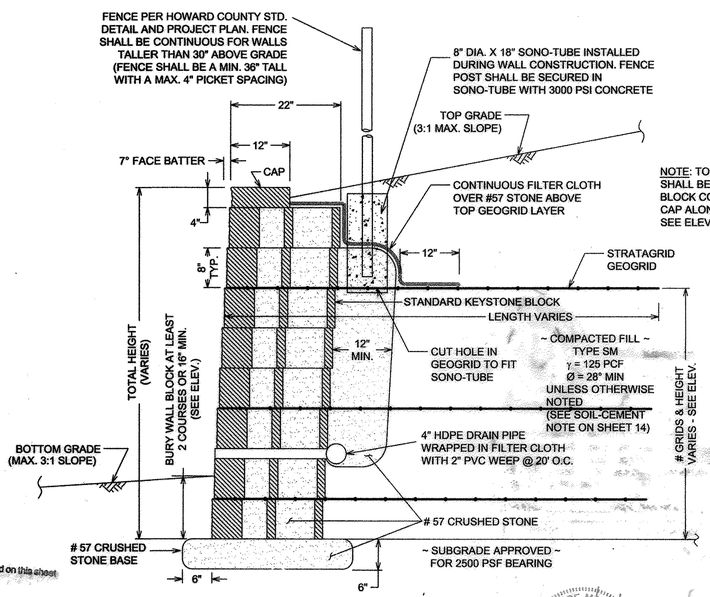
2.) Retaining walls shall only be constructed under the observation of a registered professional engineer and a (NICET, WACEL, or equiv.) certified soils technician.

3.) The required bearing pressure beneath the wall system shall be verified in the field by a certified soils technician. Testing documentation must be provided to the Howard County Inspector prior to start of construction. The required bearing test shall be the Dynamic Cone Penetrometer test ASTM STP-399.

4.) The suitability of fill material shall be confirmed by the on-site soils technician. Each 8" lift must be compacted to a minimum 95% standard proctor density and the testing report shall be made available to the Howard County Inspector upon completion of construction.

5.) Walls shall not be constructed on uncertified fill materials.

6.) Walls shall not be constructed within a Howard Co. right-of-way or easement.



NOTE: TOP GRID LAYER SHALL BE LOCATED 2 BLOCK COURSES BELOW CAP ALONG ENTIRE WALL - SEE ELEVATION

TYPICAL WALL SECTION

N.T.S.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEER DIVISION	DATE 8/26/08
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 8/28/08
DIRECTOR	DATE 9/2/08

APPROVED
PLANNING BOARD
HOWARD COUNTY
DATE 7/31/08

As-Built information is required on this sheet

STATE OF MARYLAND DONALD ALAN WAGNER No. 21403 PROFESSIONAL ENGINEER
9-28-16

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. 21403 Expiration Date 12-21-16

STATE OF MARYLAND RICHARD W. SHEPHERD No. 14434 PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 14434
EXPIRATION DATE: 05/13/09

AS-BUILT

project no.	date
04062-F	
design by HTM	drawn by HTM
scale as shown	approved by RWS

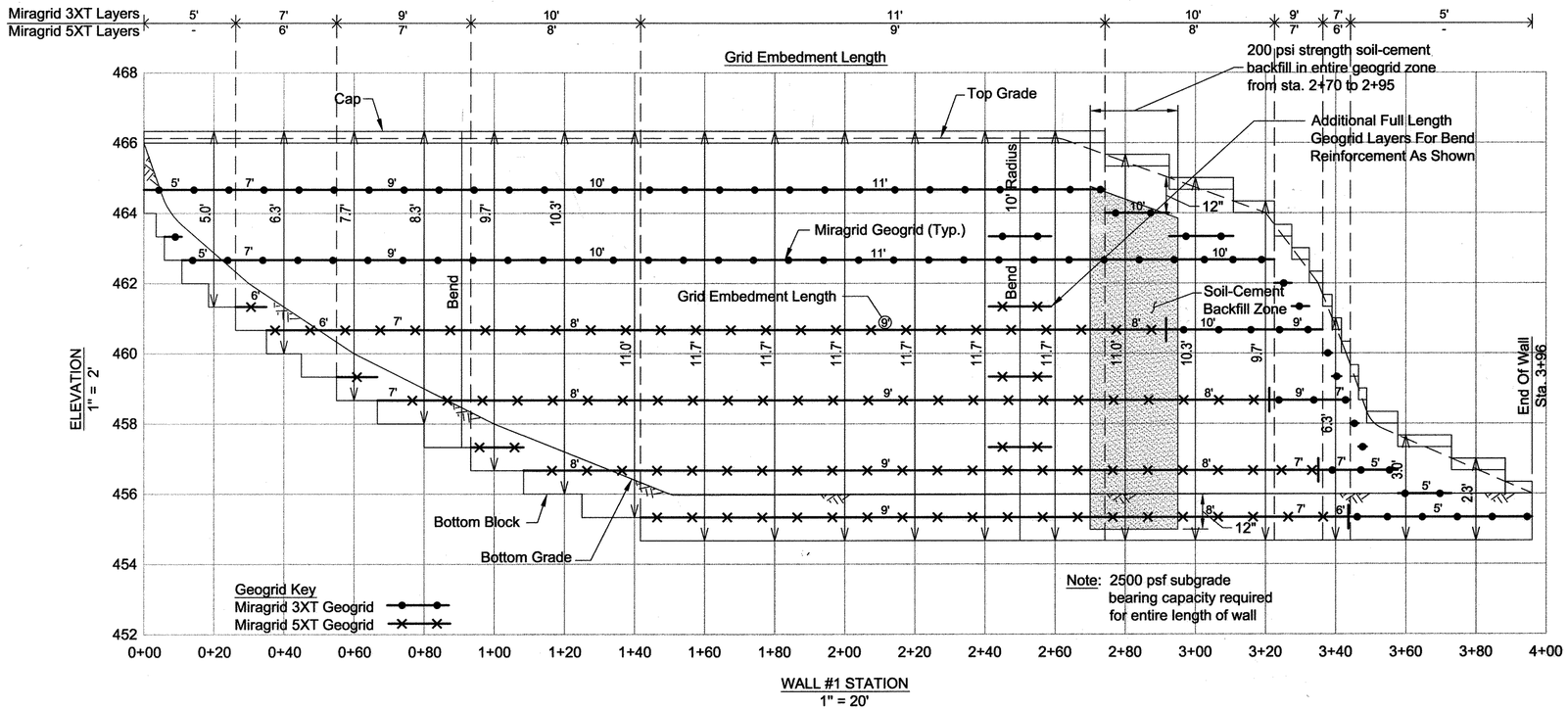
no.	description	date
	revisions	

OAKMONT AT TURF VALLEY
PARCELS: R, S, T, U, V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLND

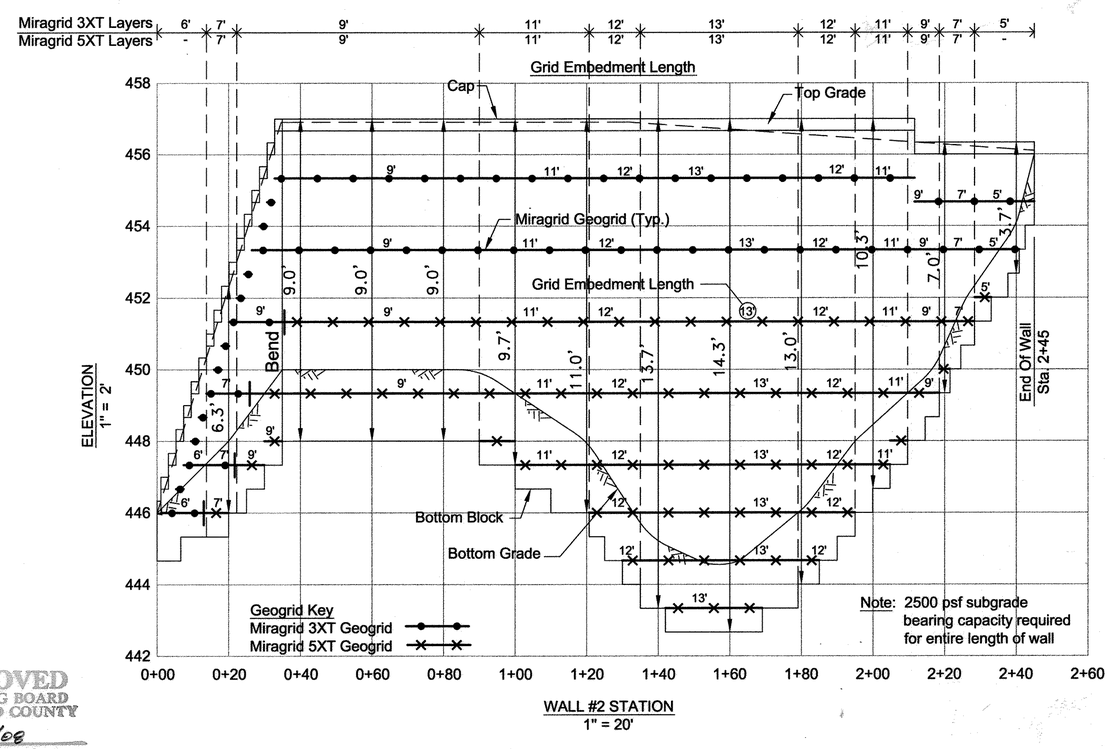
RETAINING WALL LOCATION PLAN & DETAILS

HILLIS-CARNES ENGINEERING ASSOCIATES
109/75 Guilford Road, Suite A Annapolis Junction, MD
(410) 880-4788 Fax: (410)880-4099

SDP-07-062



WALL #1 ELEVATION



WALL #2 ELEVATION

Soil-Cement Backfill Note:

Where shown and noted, backfill entire geogrid reinforced soil zone from 1 ft. below proposed bottom grade to 1 ft. below proposed top grade with compacted soil-cement. The soil-cement shall consist of a ratio of at least 140 lbs. portland cement thoroughly mixed with 1 yd.³ of type SM soil at 3% over optimum moisture content to achieve a min. 28 day compressive strength of 200 psi.

project no.	date	drawn by	approved by
04082-F		HTM	RWS
design by		scale	
HTM		as shown	

no	description	date
	revisions	

OAKMONT AT TURF VALLEY
PARCELS: R, S, T, U, V & W
TAX MAP 16, P/O PARCEL 8, BLOCK 10
THIRD ELECTION DISTRICT
HOWARD COUNTY, MARYLND

RETAINING WALL ELEVATIONS

HILLIS-CARNES
ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A
(410) 880-4788
Annapolis Junction, MD
Fax: (410)880-4686

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEER DIVISION	DATE 8/26/08
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 8/28/08
DIRECTOR	DATE 9/2/08

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 7/31/08

No As-Built Information is required on this sheet

9/22/16

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. 21443 Expiration Date: 12-21-16

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS 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. 14434, EXPIRATION DATE: 05/13/09

SDP-07-062