

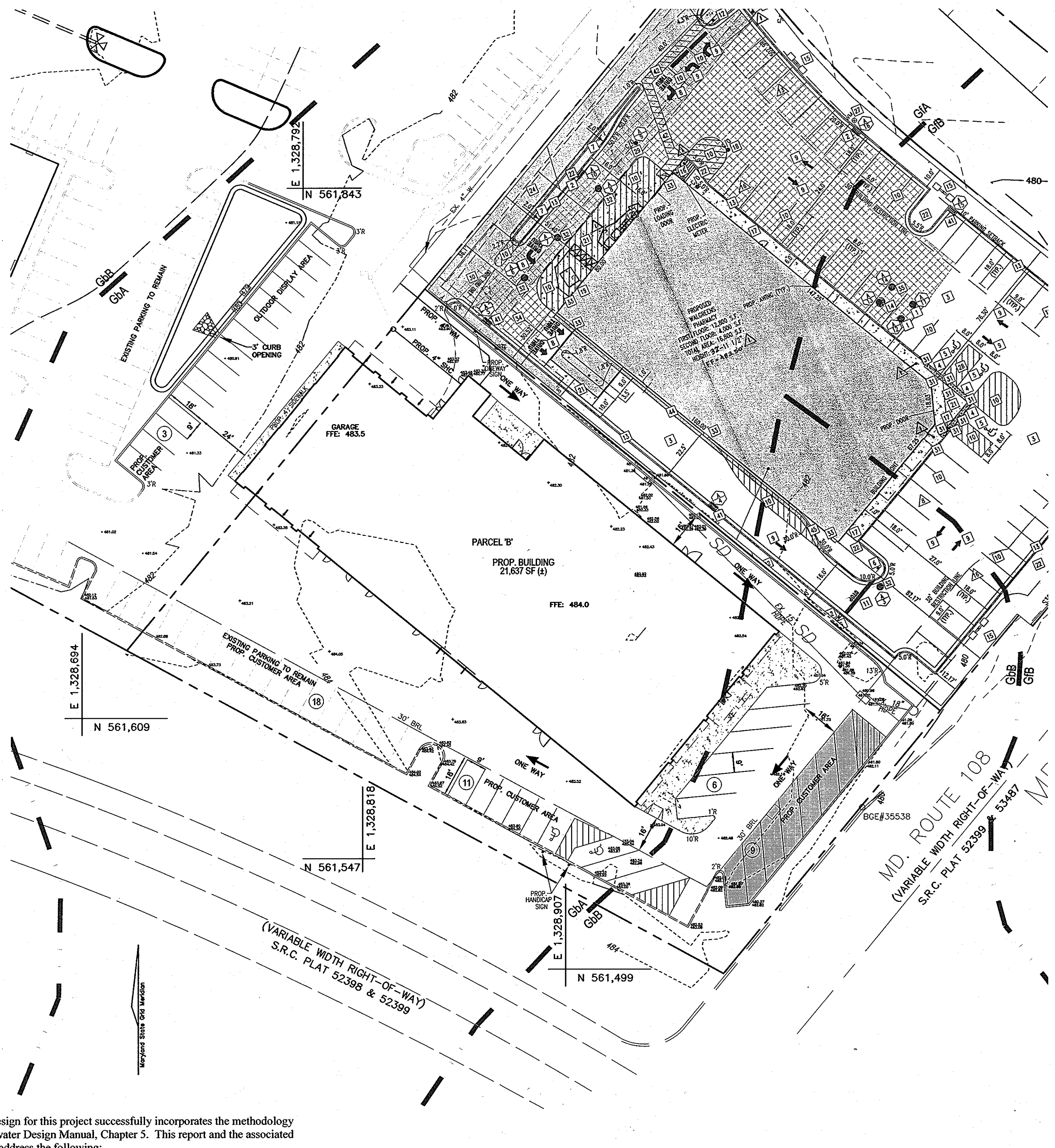
**GENERAL NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:
  - MISS UTILITY 1-800-257-7777
  - VERIZON TELEPHONE COMPANY 410-324-0281
  - HOWARD COUNTY BUREAU OF UTILITIES 410-313-2366
  - AT&T CABLE LOCATION DIVISION 1-800-393-3553
  - B.G.&E. CO. CONTRACTOR SERVICES 410-650-4620
  - B.G.&E. CO. UNDERGROUND DAMAGE CONTROL 410-787-4620
  - STATE HIGHWAY ADMINISTRATION 410-531-5533
- PROPERTY BOUNDARY AND TOPOGRAPHY PREPARED BY ROBERT H. VOGEL ENGINEERING INC., NOVEMBER, 2007.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO CEMETERIES OR GRAVE SITES LOCATED ON THE SUBJECT PROPERTY.
- STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING MICRO BIO-RETENTION FACILITIES & PERMEABLE PAVEMENT.
- THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DEVELOPMENT OR CONSTRUCTION OF THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION, OR BUILDING AND GRADING PERMITS.
- THE SUBDIVISION PLAN IS SUBJECT TO THE FOLLOWING DPZ FILES:
  - SDP-95-23, F-94-38, F-92-161, SP-93-14, ZB-947M, SDP-01-20
- THE SUBJECT PROPERTY IS ZONED "B-2" IN ACCORDANCE WITH THE 2/2/04 COMPREHENSIVE ZONING PLAN AND THE COMPLEMENTARY REGULATIONS EFFECTIVE ON 7/28/06.
- THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT, NOR ARE THERE ANY HISTORIC STRUCTURES ON SITE.
- THE PROPOSED FACILITY AND RELATED CONSTRUCTION WILL NOT AFFECT ENVIRONMENTAL FEATURES OR BUFFERS.
- EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- WATER AND SEWER FOR THIS PROJECT WILL BE PUBLIC. WATER WILL BE PROVIDED THROUGH CONTRACT #44-3323-D. SEWER WILL BE PROVIDED THROUGH CONTRACT #30-3687-D.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 3422 AND 0015 WERE USED FOR THIS PROJECT.
- NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THE PROPERTY.
- THERE IS NO 100-YR FLOODPLAIN WITHIN THE LIMITS OF THIS SITE.
- SEDIMENT AND EROSION CONTROL WILL BE PROVIDED FOR THIS SITE.
- A NOISE STUDY IS NOT REQUIRED FOR THIS SUBDIVISION.
- THERE ARE EXISTING STRUCTURES LOCATED ON SITE. ALL EXISTING STRUCTURES LOCATED ON-SITE SHALL BE REMOVED.
- MD ROUTE 108 IS NOT A SCENIC ROAD.
- APPROVAL OF THIS ECP DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION PLAN/PLAT AND/OR SITE DEVELOPMENT PLAN STAGES AND/OR RED-LINE REVISION PROCESS. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.
- FOREST CONSERVATION WAS ADDRESSED WITH THE SUBDIVISION FOR HOLWECK SUBDIVISION. F-94-38
- NO ENVIRONMENTAL FEATURES (WETLANDS, STREAMS, STEEP SLOPES AND BUFFERS) EXIST ON SITE.
- STOCKPILING WILL NOT BE PERMITTED ON SITE.

# ENVIRONMENTAL CONCEPT PLAN

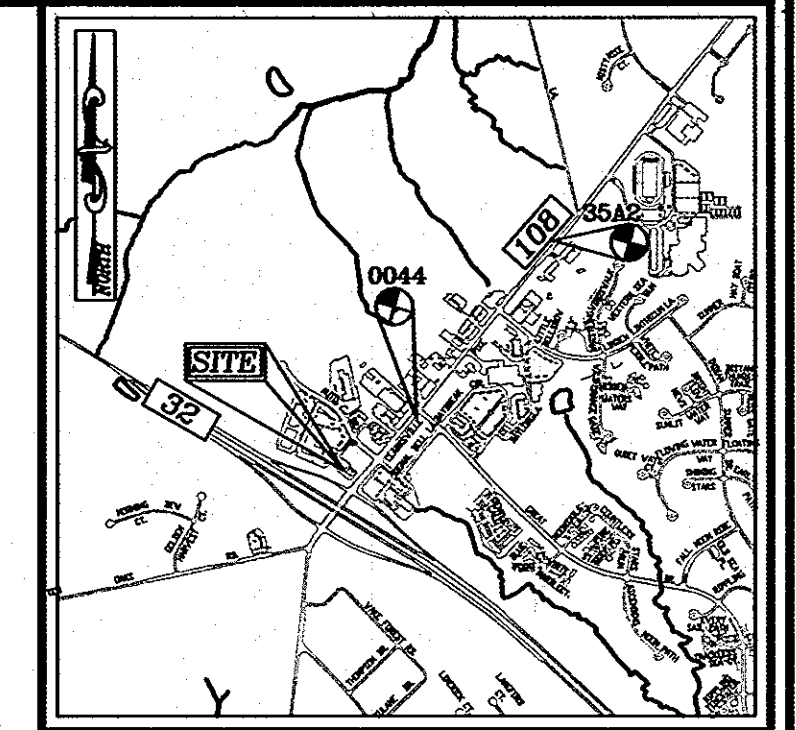
## ANTWERPEN TOYOTA

PARCEL 365 (L. 04960 / F. 00136)



**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEWOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- EXISTING FENCE
- PROPOSED STORMDRAIN
- PROPOSED SIDEWALK
- PROPOSED TREETRUNK
- PROPOSED CURB
- PROPOSED STREET LIGHT
- EXISTING SOILS
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED SILT FENCE
- PROPOSED LIMIT OF DISTURBANCE
- PROP. PERMEABLE PAVEMENT



**VICINITY MAP**  
SCALE: 1"=200'  
ADC MAP COORDINATE: PG. 4933 / K-7

**BENCHMARKS**  
HOWARD COUNTY BENCHMARK 35A2 (CONC. MON.)  
N 564,154.8143 E 1,331,201.0011 ELEV. 487.907  
HOWARD COUNTY BENCHMARK 0044 (CONC. MON.)  
N 562,176.4689 E 1,329,641.8452 ELEV. 484.477

**ANTWERPEN TOYOTA ENVIRONMENTAL CONCEPT PLAN**

**INTRODUCTION**

The subject property is located on the northwest side of MD Route 108 & 32 in the Clarksville community of Howard County, Maryland.

The adjacent parcels include a Walgreens and Car dealership. The subject property currently contains associated parking for the existing Car dealership.

The property is zoned Business General (B-2) and is proposed to be developed with a 21,637 sf commercial building. Based on the amount of existing impervious area (52,506 sf) and the proposed impervious area (51,206 sf) this site is classified as redevelopment.

The property does not contain specimen trees. The soils are specified as hydrologic soil group (HSG) 'B' and are specified as Gladstone loam soils in conjunction with the Howard County Soil Survey. The topography does not result in steep slopes and a site visit did not reveal any wetland areas on-site.

**METHODOLOGY**

Stormwater management for the project has been provided in accordance with the 2000 Maryland Stormwater Design Manual, 2007 Stormwater Management Act (Environmental Site Design), MDE Design Computations and Howard County requirements. The proposed improvements consist of a commercial building with associated parking. The site slopes both to the west and east. The Maryland Department of the Environment, Environmental Site Design criteria has been implemented. The Environmental Concept Plan addresses the overall requirements for the site. There are 3 drainage sub areas which have been delineated by ESD treatment. The attached spreadsheet tabulates the ESD, by drainage area (minimum, maximum and target). The Environmental Concept Plan utilizes micro-bioretenion facilities and permeable pavement to accommodate the total ESD volume required for the project. Underdrains will be provided at the micro-bioretenion facility and will outfall at the west side of the site.

A micro-bioretenion facility and permeable concrete are utilized to fulfill the ESDv requirement. Each drainage area provides ESDv which exceeds the minimum (PE = 1.0") and does not exceed the maximum (PE=2.6"). The total ESDv provided by the two micro-bioretenion facilities meets the minimum required. Additionally, Rev is provided in the soil under the storage (per County policy).

**CONCLUSION**

The ESDv requirement of 1,999 cf for the proposed project is provided utilizing micro-bioretenion (1,798 cf) and permeable concrete (363 cf) totaling 2,161 cf provided. Considering the size and configuration of the development we anticipate sediment control will be accommodated by perimeter silt fence.

The Environmental Site Design for this project successfully incorporates the methodology present in the MDE stormwater Design Manual, Chapter 5. This report and the associated Concept Plan successfully address the following:

- Map of all site resources
- Field verification of the natural resource map
- Proposed limits of clearing and grading
- Location of proposed impervious areas
- Location of existing and proposed utilities
- Preliminary estimates of stormwater requirements
- Preliminary location of ESD practices
- Stable conveyance of stormwater at potential outfall locations
- Narrative addresses:
  - Natural resource protection and enhancement
  - Maintenance of natural flow patterns
  - Reduction of impervious areas through better site design, alternative surfaces, and non structural practices
  - Integration of erosion and sediment control into the stormwater strategy
  - Implementation of ESD planning techniques and practices to the MEP

**PLAN VIEW**  
SCALE: 1"=30'

**PARKING TABULATION**

REQUIRED: 2 SPACES PER 1000 SF OF BUILDING  
21637 SF x 2/1000 SF = 44 SPACES  
1 SPACE PER 1000 SF OF OUTDOOR DISPLAY AREA  
1944 SF x 1/1000 SF = 2 SPACES  
TOTAL REQUIRED = 46 SPACES  
PROVIDED: 47 SPACES

**SHEET INDEX**

DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 4
SITE LAYOUT PLAN	2 OF 4
SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN	3 OF 4
DRAINAGE AREA MAP & DETAILS	4 OF 4

**OWNER/DEVELOPER**

ANTOY LLC  
12420 AUTO DRIVE  
CLARKSVILLE, MD 21029  
(410) 531-5700

**ENVIRONMENTAL CONCEPT PLAN**

**NEW CAR DEALERSHIP  
ANTWERPEN TOYOTA  
12410 AUTO DRIVE**

TAX MAP 34 BLOCK 06 PARCEL 365, LOT: PARCEL B ZONED: B-2  
2ND ELECTION DISTRICT DPZ REFERENCES: CONT. #30-3687-D (SEWER) & LOT: PARCEL B  
CONT. #44-3323-D (WATER) HOWARD COUNTY, MARYLAND

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

**DESIGN BY:** JBS  
**DRAWN BY:** JMR  
**CHECKED BY:** RHW/JBS  
**DATE:** DECEMBER 2011  
**SCALE:** AS SHOWN  
**W.O. NO.:** 06-16

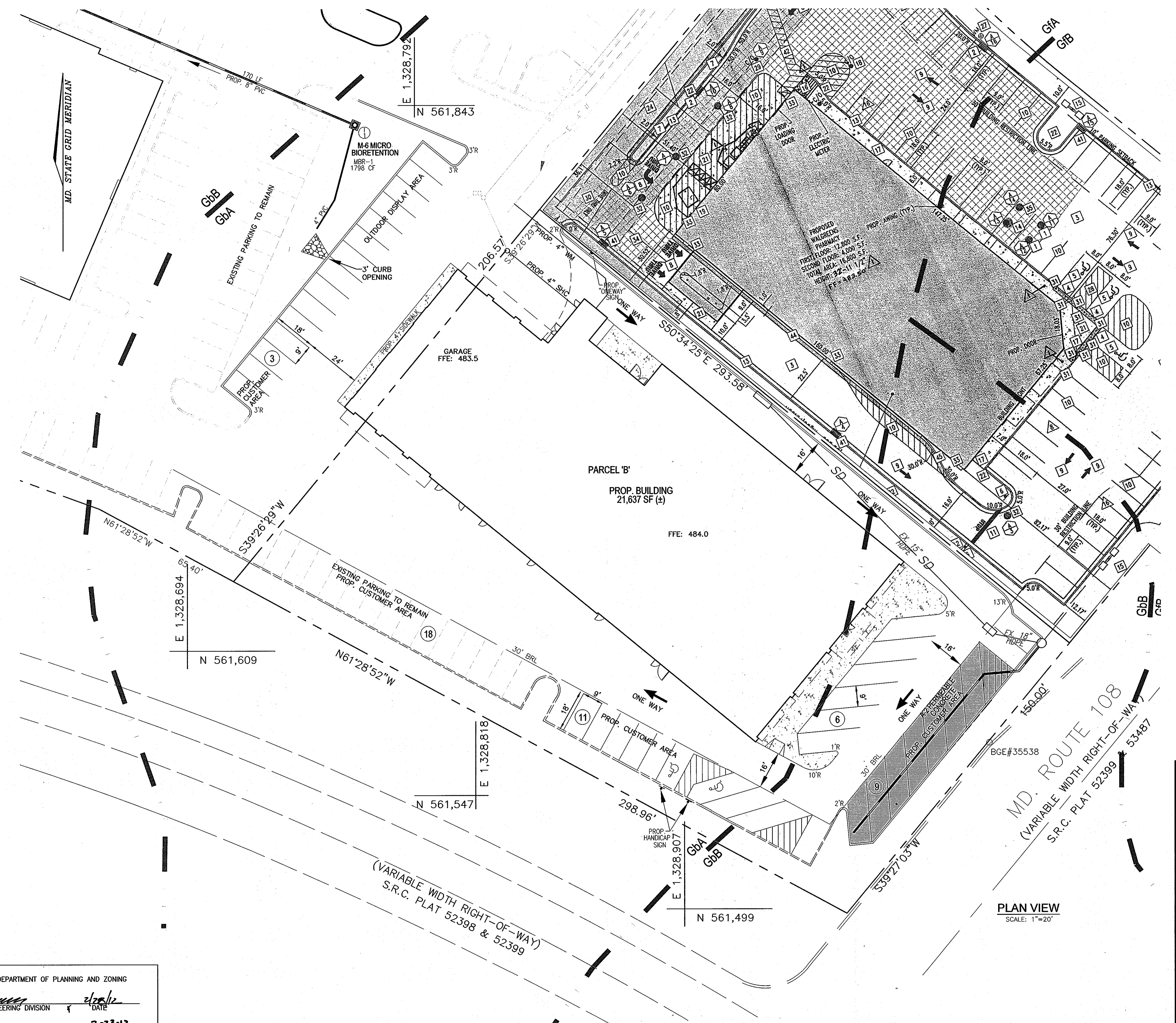
**PROFESSIONAL CERTIFICATE**  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 31373 EXPIRES ON 01-21-2015

1 SHEET OF 4

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 2/23/12  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 2-23-12  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE



**LEGEND:**

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREELINE
	EXISTING FENCE
	PROPOSED STORMDRAIN
	PROPOSED SIDEWALK
	PROPOSED TREELINE
	PROPOSED CURB
	PROPOSED STREET LIGHT
	EXISTING SOILS
	PROP. PERMEABLE PAVEMENT

**OWNER/DEVELOPER**  
 ANTOY LLC  
 12420 AUTO DRIVE  
 CLARKSVILLE, MD 21029  
 (410) 531-5700

**ENVIRONMENTAL CONCEPT PLAN**  
**SITE LAYOUT PLAN**  
**NEW CAR DEALERSHIP**  
**ANTWERPEN TOYOTA**  
 12410 AUTO DRIVE  
 PARCEL 365 (L 04960 / F 00136)  
 PLAT NO. 11178  
 ZONED: B-2  
 LOT: PARCEL B  
 HOWARD COUNTY, MARYLAND

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

**PROFESSIONAL CERTIFICATE**  
 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. 31373 EXPIRES ON 01-21-2015

DESIGN BY: JBS  
 DRAWN BY: JMR  
 CHECKED BY: RHV/JBS  
 DATE: DECEMBER 2011  
 SCALE: AS SHOWN  
 W.O. NO.: 06-16

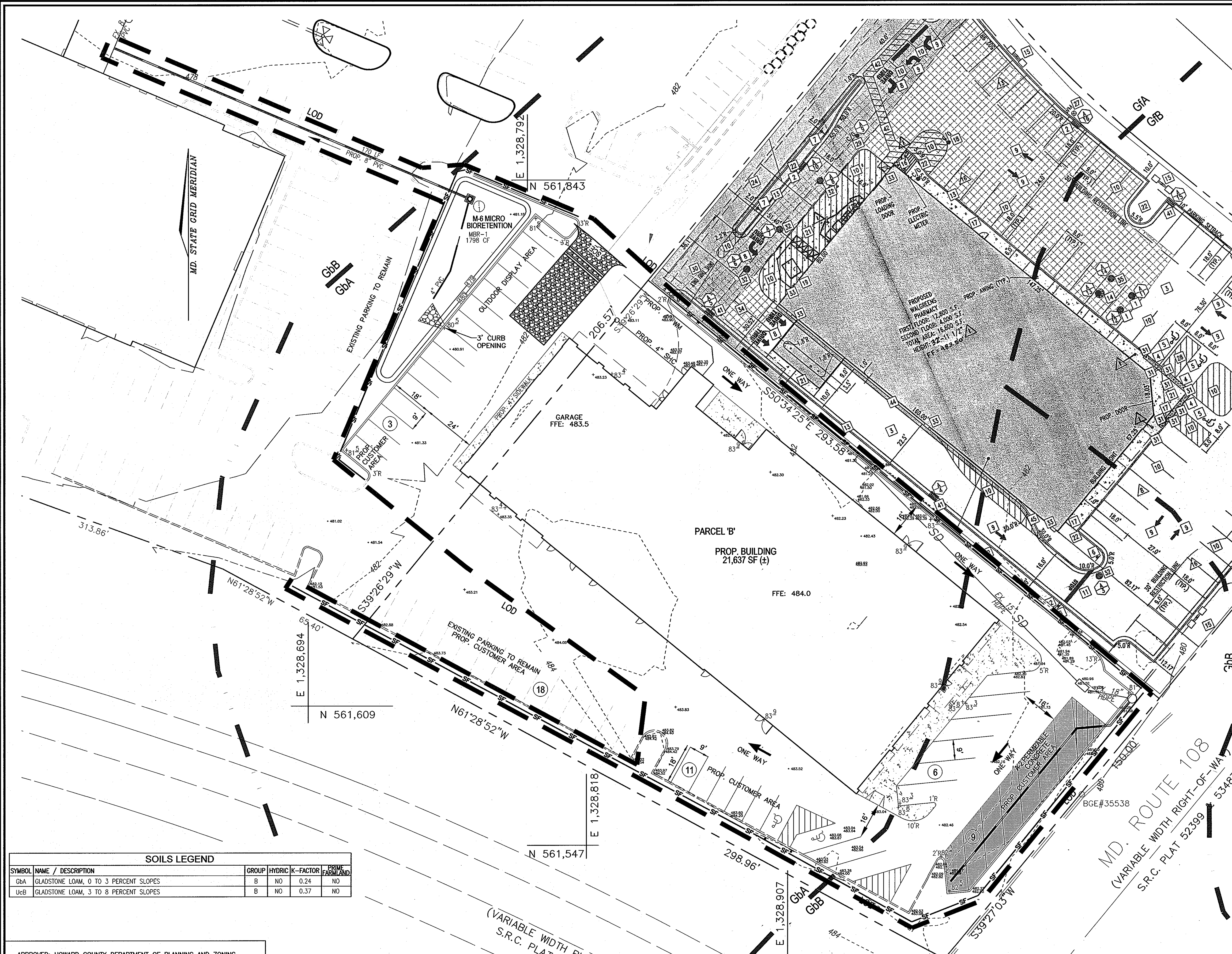
2 SHEET OF 4

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 2/28/12  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE

*[Signature]* 2-23-12  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE

**PLAN VIEW**  
 SCALE: 1"=20'



**LEGEND:**

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING TREE LINE
	EXISTING FENCE
	PROPOSED STORM DRAIN
	PROPOSED SIDEWALK
	PROPOSED TREE LINE
	PROPOSED CURB
	PROPOSED STREET LIGHT
	EXISTING SOILS
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROPOSED STABILIZED CONSTRUCTION ENTRANCE
	PROPOSED SILT FENCE
	PROPOSED LIMIT OF DISTURBANCE
	PROP. PERMEABLE PAVEMENT

**SOILS LEGEND**

SYMBOL NAME / DESCRIPTION	GROUP	HYDRIC	K-FACTOR	PERM. FIRMNESS
GbA GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	B	NO	0.24	NO
UcB GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	B	NO	0.37	NO

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 2-23-12  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 2-23-12  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

PLAN VIEW  
 SCALE: 1"=20'

**OWNER/DEVELOPER**  
 ANTOY, LLC  
 12420 AUTO DRIVE  
 CLARKSVILLE, MD 21029  
 (410) 531-5700

**ENVIRONMENTAL CONCEPT PLAN  
 SOILS MAP, GRADING, EROSION  
 AND SEDIMENT CONTROL PLAN  
 NEW CAR DEALERSHIP  
 ANTWERPEN TOYOTA  
 12410 AUTO DRIVE  
 PARCEL 365 (L 04960) (F 00136)  
 TAX MAP 34 BLOCK 06 PLAT NO. 11178 ZONED: B-2  
 2ND ELECTION DISTRICT LOT: PARCEL B  
 D/FZ REFERENCES: CONT. #30-3687-D (SEWER) & HOWARD COUNTY, MARYLAND  
 CONT. #44-3323-D (WATER)**

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

DESIGN BY: JBS  
 DRAWN BY: JMR  
 CHECKED BY: RWV/JBS  
 DATE: DECEMBER 2011  
 SCALE: AS SHOWN  
 W.O. NO.: 06-16

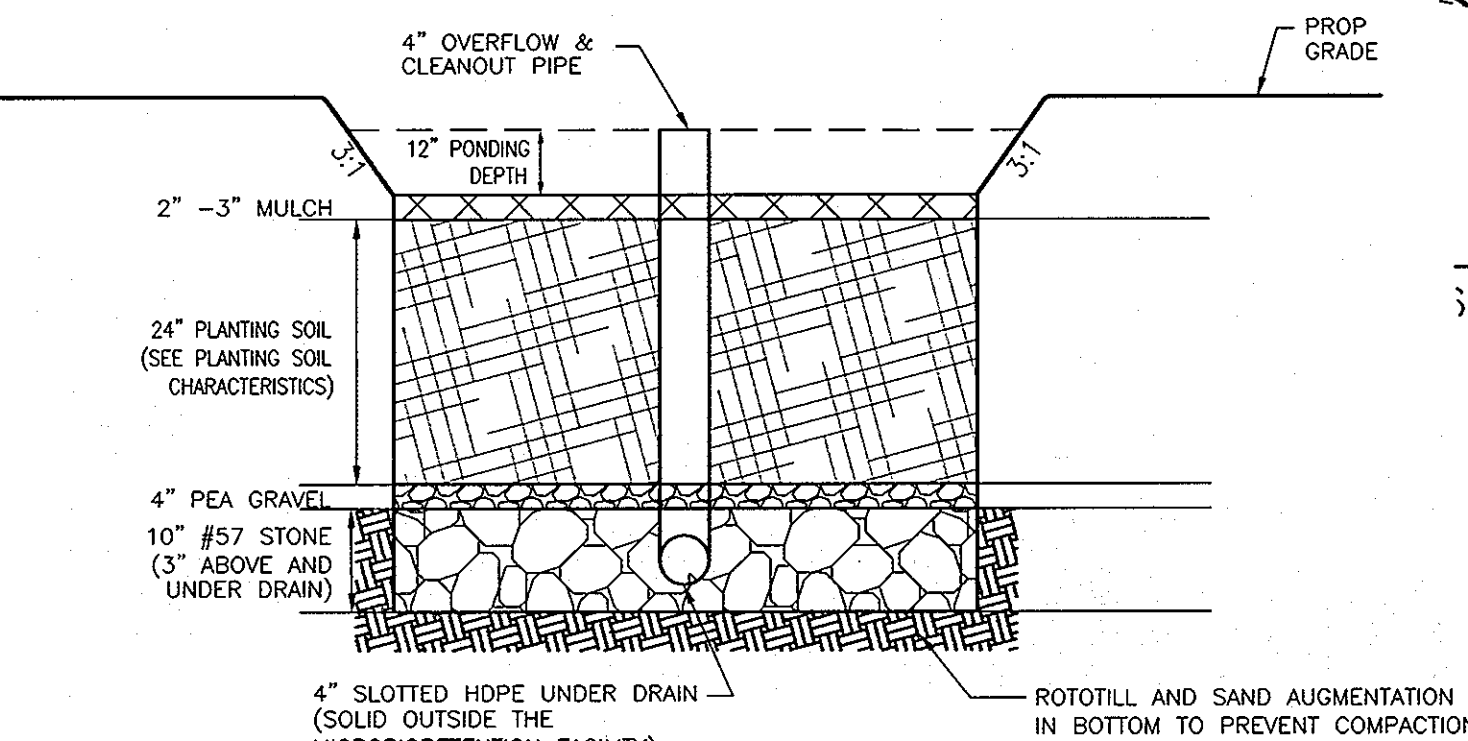
PROFESSIONAL CERTIFICATE  
 I HEREBY CERTIFY THAT THESE DOCUMENTS  
 WERE PREPARED OR APPROVED BY ME, AND  
 THAT I AM A DAILY LICENSED PROFESSIONAL  
 ENGINEER UNDER THE LAWS OF THE STATE  
 OF MARYLAND, LICENSE NO. 31373  
 EXPIRATION DATE 01-21-2015

3 SHEET OF 4

APPENDIX B.3. CONSTRUCTION SPECIFICATIONS FOR SAND FILTERS, BIORETENTION AND OPEN CHANNELS

SPECIFICATIONS FOR BIORETENTION

- 1. MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN BIORETENTION ARE DETAILED IN TABLE B.3.2.
- 2. PLANTING SOIL**  
THE SOIL SHALL BE A UNIFORM MIXTURE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR COMPACTED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE AN OBSTACLE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERBERIS GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.06.01.05.  
THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:  
PHRASE: 52-70  
ORGANIC MATTER: 1.5-4% (BY WEIGHT)  
MAGNESIUM: 50 LB/AC  
PHOSPHORUS (PHOSPHATE - P2O5): 75 LB/AC  
POTASSIUM (POTASH - K2O): 80 LB/AC  
SOLUBLE SALTS: NOT TO EXCEED 500 PPM  
ALL BIORETENTION AREAS SHALL HAVE A MINIMUM OF ONE TEST. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND AN ADDITIONAL TEST OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOP SOIL WAS EXCAVATED.  
SINCE DIFFERENT LABS CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TESTING RESULTS SHALL COME FROM THE SAME TESTING FACILITY. SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.
- 3. COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION AREA AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE TOES TO REMOVE ORIGINAL SOIL. IF BIORETENTION AREAS ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TYPE. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.  
COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR BROILER. THESE TILLING OPERATIONS ARE TO REPERFORATE THE SOIL PROFILE THROUGHOUT THE 12 INCH CONSTRUCTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.  
ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE REQUIRED SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.  
WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.  
WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO APPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.
- 4. PLANT MATERIAL**  
RECOMMENDED PLANT MATERIAL FOR BIORETENTION AREAS CAN BE FOUND IN APPENDIX A, SECTION A.2.3. OF THE 2000 MARYLAND STORMWATER DESIGN MANUAL.
- 5. PLANT INSTALLATION**  
MULCH SHOULD BE PLACED TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL MIXED TO ELIMINATE HOT SPOTS.  
ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED 90 DEGREES ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS.  
TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.  
GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE MARYLAND GRASS AND COVER PLANTING SPECIFICATIONS.  
THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL LIME FERTILIZER AT A RATE OF 2 POUNDS OF NITROGEN PER 1000 SQUARE FEET.
- 6. UNDERDRAINS**  
UNDERDRAINS ARE TO BE PLACED ON A 2" WIDE SECTION FILTER FLOTT. PIPE IS PLACED NEXT, FOLLOWED BY THE GRAVEL BEDDING. THE ENDS OF UNDERDRAIN PIPES NOT TERMINATING IN AN OBSERVATION WELL SHALL BE CAPPED.  
THE MAIN COLLECTION PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELL AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE INCH DIAMETER PER EVERY 1000 SQUARE FEET OF SURFACE AREA).
- 7. MISCELLANEOUS**  
THE BIORETENTION FACILITY MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.



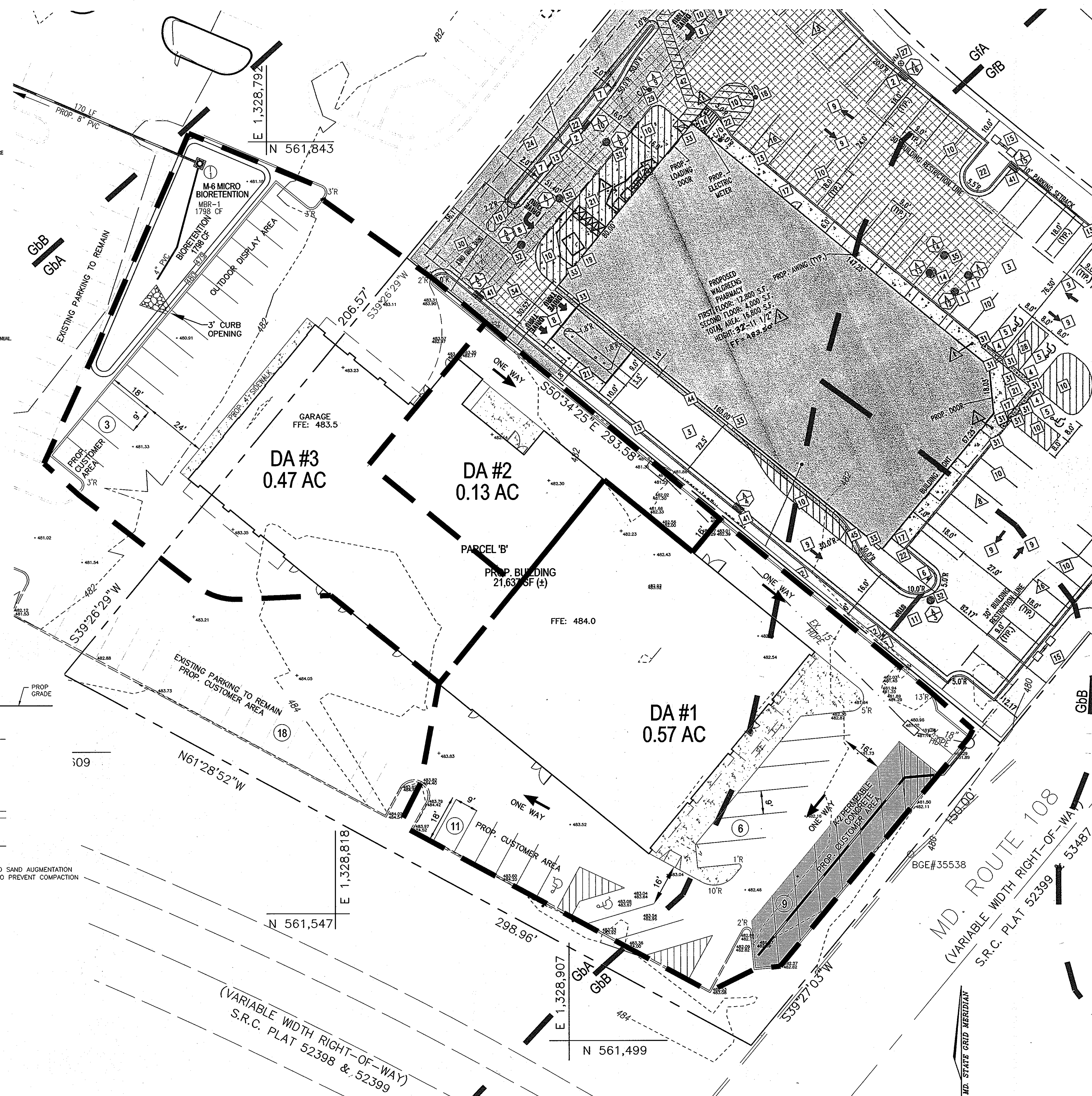
**OPERATION AND MAINTENANCE SCHEDULE FOR BIO-RETENTION AREAS**

- ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING.
- SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, TREATMENT OF ALL DEFICIENT STAKES AND WIRES.
- MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
- SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 2/20/12  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 2-23-12  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE



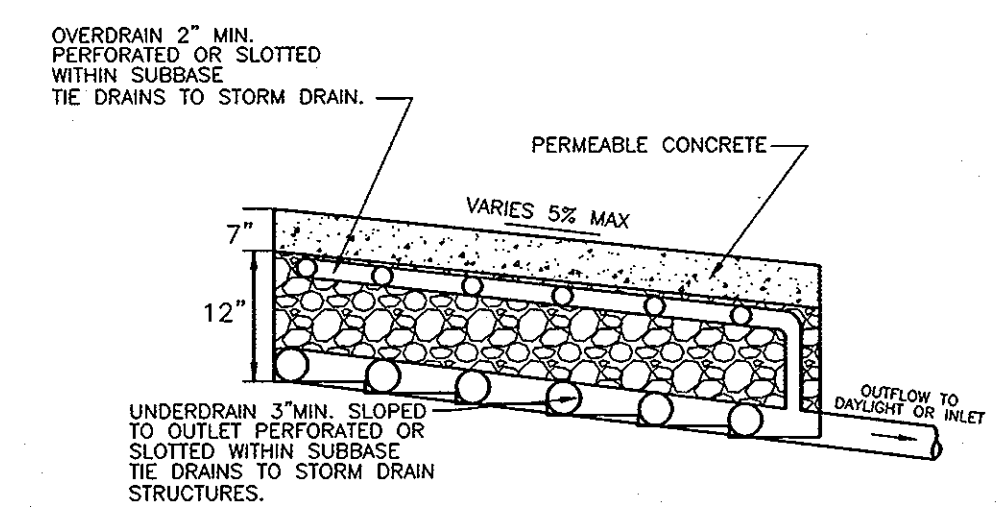
PLAN VIEW  
SCALE: 1"=20'

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- EXISTING FENCE
- PROPOSED STORMDRAIN
- PROPOSED SIDEWALK
- PROPOSED TREELINE
- PROPOSED CURB
- PROPOSED STREET LIGHT
- EXISTING SOILS
- DRAINAGE AREA
- PROP. PERMEABLE PAVEMENT

ESD PRACTICES BY DRAINAGE AREA	
DRAINAGE AREA	ESD PRACTICE
#1	MICRO BIORETENTION AREA
#2	NA-OVER TREATMENT IN MBR
#3	PERMEABLE PAVEMENT

DRAINAGE AREA	IMPERVIOUS AREA	GRASS AREA	TOTAL AREA	PERCENT IMPERVIOUS	RV	ESD <sub>V</sub> MIN	ESD <sub>V</sub> MAX	ESD <sub>V</sub> PROPOSED
1	20473	0	20473	1.00	0.95	810	2107	1798
2	5663	0	5663	1.00	0.95	224	583	0
3	24829	0	24829	1.00	0.95	983	2555	363
TOTAL AREA			50965 SF					2161 CF
			1.17 AC					



LEGEND:

- PRIVATE PERMEABLE CONCRETE
- ASTM C 33 3/4" TO 2" STONE

**OWNER/DEVELOPER**  
ANTOY, LLC  
12420 AUTO DRIVE  
CLARKSVILLE, MD 21029  
(410) 531-5700

**ENVIRONMENTAL CONCEPT PLAN**  
**DRAINAGE AREA MAP & DETAIL SHEET**  
**NEW CAR DEALERSHIP**  
**ANTWERPEN TOYOTA**  
12410 AUTO DRIVE  
PARCEL 365 (L 04960 / F. 00136)  
PLAT NO. 11178

TAX MAP 34, BLOCK 06  
2ND ELECTION DISTRICT  
DPZ REFERENCES: CONT. #30-3687-D (SEWER) & #44-3323-D (WATER)

ZONED: B-2  
LOT: PARCEL B  
HOWARD COUNTY, MARYLAND

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

DESIGN BY: JBS  
DRAWN BY: JMR  
CHECKED BY: RHV/JBS  
DATE: DECEMBER 2011  
SCALE: AS SHOWN  
W.O. NO.: 06-16

PROFESSIONAL CERTIFICATE  
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. 11373, EXPIRATION DATE 01-31-2015.

4 SHEET OF 4