

**GENERAL NOTES**

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY STANDARDS AND SPECIFICATIONS. ALL WORK AND MATERIALS SHALL COMPLY WITH O.S.H.A. STANDARDS.
- EXISTING UTILITIES LOCATED FROM SURVEYS, 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.
- THE EXISTING TOPOGRAPHIC INFORMATION FROM HOWARD COUNTY GIS, COUNTY RECORDS AND AN AERIAL TOPOGRAPHICAL SURVEY PERFORMED BY FOTOMAC AERIAL SURVEYS, INC. DATED MAY 2001. EXISTING UTILITIES WERE LOCATED FROM PREVIOUSLY APPROVED ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS.
- COORDINATES AND ELEVATIONS ARE BASED ON MARYLAND COORDINATE SYSTEM - NAD83(1991) AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 3022 AND 314C.
- THE PROPERTY LINES SHOWN HEREON IS BASED ON A FIELD RUN BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC. DATED OCTOBER 29, 2013.
- ALL ELEVATIONS ARE TO FLOWLINE/BOTTOM OF CURB UNLESS OTHERWISE NOTED.
- THE GEOTECHNICAL ENGINEER TO CONFIRM PAVING SECTION PRIOR TO CONSTRUCTION. ALL PAVING TO BE PAVING PER GEOTECHNICAL RECOMMENDATIONS.
- THE SUBJECT PROPERTY IS ZONED R-SI (RESIDENTIAL SENIOR - INSTITUTIONAL) AND R-A-15 (RESIDENTIAL APARTMENT DISTRICT) PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- WATER AND SEWER SERVICE FOR THIS PROJECT IS CURRENTLY PUBLIC WATER FOR THIS PROJECT IS A CONNECTION TO CONTRACT NO. 12-14. SEWER FOR THIS PROJECT IS A CONNECTION TO CONTRACT NO. 20-1081-D.
- THERE IS NO 100YR FLOODPLAIN WITHIN THE LIMITS OF THIS PROJECT.
- NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS ARE LOCATED ONSITE.
- WETLANDS AND STREAMS SHOWN ONSITE ARE BASED ON ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, FEBRUARY 11, 2014.

AT THIS CONCEPT STAGE OF DEVELOPMENT, A WAIVER WILL BE REQUIRED FOR MINOR GRADING WITHIN A 25' WETLAND BUFFER AND A 50' STREAM BUFFER TO PROVIDE MANAGEMENT FOR THE EXISTING CHURCH IN ACCORDANCE WITH THE REQUIREMENTS OF THE QES WATERSHED PROTECTION PARTNERSHIP. WAIVERS FOR MINOR ENVIRONMENTAL DISTURBANCES, IF FINAL DESIGN DICTATES, WILL BE SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF FORTHCOMING WAIVERS PETITIONS.

- FOREST STAND DELINEATION PLAN PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, FEBRUARY 11, 2014.
  - THERE ARE NO SPECIMEN OR CHAMPION TREES WITHIN THE LOD.
- FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH A SUBDIVISION OR SITE DEVELOPMENT PLAN.
- SOIL TYPES SHOWN HEREON ARE IN ACCORDANCE WITH THE WEB SOIL SURVEY - HOWARD COUNTY, MARYLAND. 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.

AT THIS CONCEPT STAGE OF DEVELOPMENT, A WAIVER WILL BE REQUIRED FOR MINOR GRADING WITHIN A 25' WETLAND BUFFER AND A 50' STREAM BUFFER TO PROVIDE MANAGEMENT FOR THE EXISTING CHURCH IN ACCORDANCE WITH THE REQUIREMENTS OF THE QES WATERSHED PROTECTION PARTNERSHIP. WAIVERS FOR MINOR ENVIRONMENTAL DISTURBANCES, IF FINAL DESIGN DICTATES, WILL BE SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF FORTHCOMING WAIVERS PETITIONS.

- GEOTECHNICAL INVESTIGATIONS, AS REQUIRED, SHALL COMPLETED AS PART OF THE SITE DEVELOPMENT PLAN PACKAGE.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF ALTERNATIVE SURFACES IN NEW PARKING AREAS (PERVIOUS CONCRETE), THE USE OF MICRO-SCALE PRACTICES (MICRO-BIORETENTION, BIO-SWALES, AND STONE TRENCHES / LEVEL SPREADERS).
- THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
- ADDITIONAL MANAGEMENT/ESD VOLUME IS BEING PROVIDED ABOVE THE REQUIREMENTS OF RE-DEVELOPMENT TO MEET THE REQUIREMENTS OF THE HOWARD COUNTY NON-PROFIT RAIN TAX CREDIT POLICY.

- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (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 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.
- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.

**ENVIRONMENTAL SITE DESIGN NARRATIVE**

IN ACCORDANCE WITH CHECKLIST ITEM III.K.

- THERE ARE NATURAL AREAS ON THE PROJECT SITE.
 

AT THIS CONCEPT STAGE OF DEVELOPMENT, A WAIVER WILL BE REQUIRED FOR MINOR GRADING WITHIN A 25' WETLAND BUFFER AND A 50' STREAM BUFFER TO PROVIDE MANAGEMENT FOR THE EXISTING CHURCH IN ACCORDANCE WITH THE REQUIREMENTS OF THE QES WATERSHED PROTECTION PARTNERSHIP. WAIVERS FOR MINOR ENVIRONMENTAL DISTURBANCES, IF FINAL DESIGN DICTATES, WILL BE SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF FORTHCOMING WAIVERS PETITIONS.

NO DISTURBANCE TO THE STREAM, WETLAND OR WOODED RESOURCES ARE PROPOSED.

- NO DRAMATIC DISTURBANCE TO THE NATURAL DRAINAGE PATTERNS ARE PROPOSED, PLEASE REFER TO THE PROPOSED GRADING.

- THE CONCEPTUAL DESIGN SHOWN HEREON PROVIDES THE "REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN UTILIZING ALTERNATIVE SURFACES, MICRO-SCALE PRACTICES AND NON STRUCTURAL PRACTICES" TO THE MAXIMUM EXTENT PRACTICAL.

THE SITE DESIGN QUALIFIES AS REDEVELOPMENT AND INCORPORATES THE USE OF ALTERNATIVE SURFACES IN NEW PARKING AREAS (PERVIOUS CONCRETE), THE USE OF MICRO-SCALE PRACTICES (MICRO-BIORETENTION, BIO-SWALES, AND STONE TRENCHES / LEVEL SPREADERS) TO ACHIEVE THE REQUIRED ESDV.

SOME EXISTING IMPERVIOUS AREAS SHALL BE CONVERTED TO THE "GREEN" AREAS AS SHOWN HEREON.

- SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE A PROPOSED SILT FENCE PERIMETER CONTROLS AROUND THE PROPOSED DISTURBED AREAS. SEDIMENT CONTROL SHALL BE IN ACCORDANCE WITH CURRENT REQUIREMENTS AND SHALL BE APPROVED BY THE HOWARD SOIL CONSERVATION DISTRICT.

- STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET AS REQUIRED BY THE RE-DEVELOPMENT CRITERIA THROUGH BETTER SITE DESIGN UTILIZING ALTERNATIVE SURFACES, MICRO-SCALE PRACTICES AND NON STRUCTURAL PRACTICES" TO THE MAXIMUM EXTENT PRACTICAL.



ALTERNATIVE SURFACES IN NEW PARKING AREAS (PERVIOUS CONCRETE), THE USE OF MICRO-SCALE PRACTICES (MICRO-BIORETENTION, BIO-SWALES, AND STONE TRENCHES / LEVEL SPREADERS) THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION" TO THE MAXIMUM EXTENT PRACTICABLE.

ADDITIONAL MANAGEMENT/ESD VOLUME IS BEING PROVIDED ABOVE THE REQUIREMENTS OF RE-DEVELOPMENT TO MEET THE REQUIREMENTS OF THE HOWARD COUNTY NON-PROFIT RAIN TAX CREDIT POLICY.

III.K.6.

- AT THIS CONCEPT STAGE OF DEVELOPMENT, A WAIVER WILL BE REQUIRED FOR MINOR GRADING WITHIN A 25' WETLAND BUFFER AND A 50' STREAM BUFFER TO PROVIDE MANAGEMENT FOR THE EXISTING CHURCH IN ACCORDANCE WITH THE REQUIREMENTS OF THE QES WATERSHED PROTECTION PARTNERSHIP. WAIVERS FOR MINOR ENVIRONMENTAL DISTURBANCES, IF FINAL DESIGN DICTATES, WILL BE SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN. APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) DOES NOT CONSTITUTE AN APPROVAL OF FORTHCOMING WAIVERS PETITIONS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

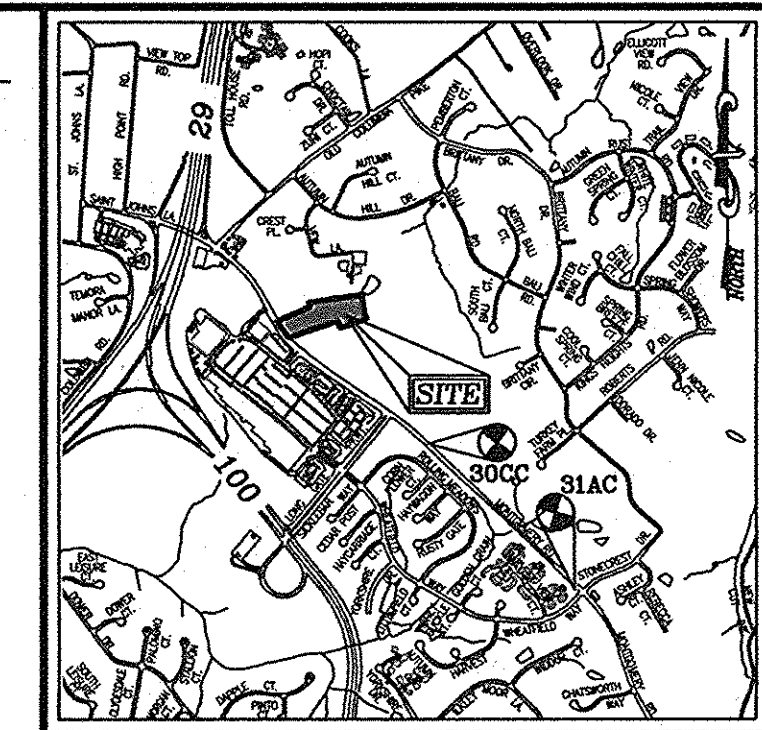
 6-5-14  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
 6/2/14  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

# ENVIRONMENTAL CONCEPT PLAN BETHEL BAPTIST CHURCH

PARCELS 588 & 322  
 L.399/F.798; L.403/F.373; L. 786 F. 406  
 L.10473/F.77  
 ZONED: RSI & RA-15

**BENCHMARKS**

HOWARD COUNTY BENCHMARK - 300C (CONC. MONUMENT)  
 N 576747.03 E 1365563.14 ELEV. 427.32  
 LOCATION: MONTGOMERY ROAD 1/3 MILE EAST OF LONG GATE PARKWAY  
 HOWARD COUNTY BENCHMARK - 314C (CONC. MONUMENT)  
 N 575223.09 E 1367092.12 ELEV. 432.55  
 LOCATION: MONTGOMERY ROAD 3/4 MILE EAST OF LONG GATE PARKWAY



VICINITY MAP

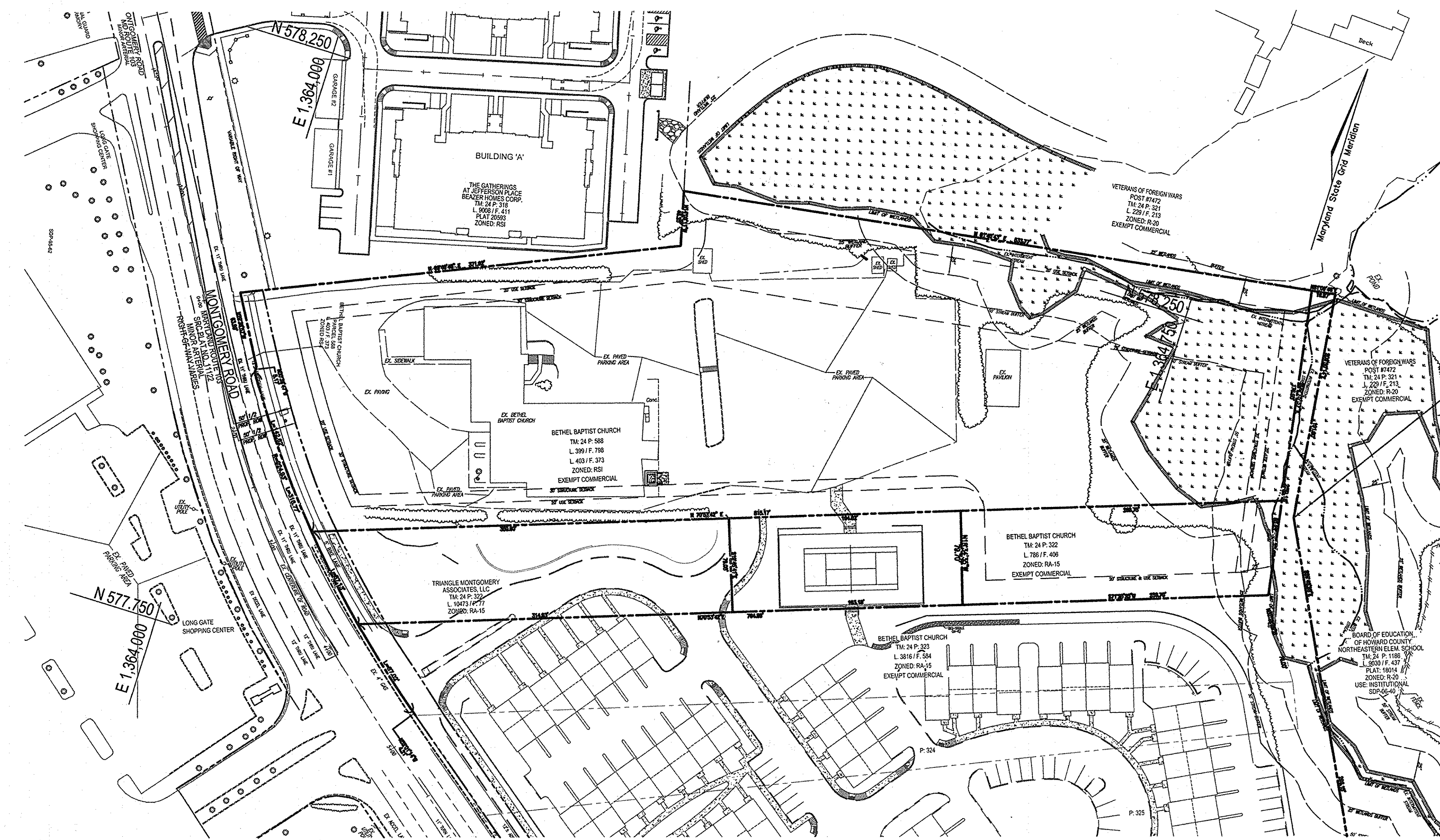
SCALE: 1"=200'  
ADC MAP COORDINATE: PG. 4815 K10

**SHEET INDEX**

DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 5
LAYOUT AND GRADING PLAN	2 OF 5
DRAINAGE AREA MAP AND STORMWATER MANAGEMENT DETAILS	3 OF 5
REDEVELOPMENT / ESD DRAINAGE AREA MAP	4 OF 5
WATERSHED PROTECTION PARTNERSHIP DRAINAGE AREA MAP	5 OF 5

**LEGEND**

	EXISTING CONTOUR
	PROPOSED CONTOUR
	EXISTING CURB AND GUTTER
	PROPOSED 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 FENCE
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	EXISTING TREELINE



LOCATION MAP

SCALE: 1"=60'

**SITE ANALYSIS DATA CHART**

A. TOTAL PROJECT AREA:	213,981 S.F. OR 4.9123 AC.*
PARCEL AREA:	PARCEL 588: 4,4346 AC DEED
	PARCEL 322: 0.4777 AC DEED
BOUNDARY SURVEY:	4.4346 + 0.4777 = 4.9123 ACRES*
	*SUBJECT TO LAND TRANSFERS WITH CURRENT ECP 14-009
B. AREA OF PLAN SUBMISSION (CONSTR. LOD):	69,000 S.F. OR 1.58 AC.±
C. AREA OF WETLANDS:	24,841 S.F. OR 0.57 AC.
D. AREA OF FLOODPLAIN:	0 S.F. OR 0.00 AC.
E. AREA OF FOREST:	50,796 S.F. OR 1.166 AC.
F. AREA OF STEEP SLOPES (15% & GREATER):	0 S.F. OR 0.00 AC.
G. ERODIBLE SOILS:	N/A
H. LIMIT OF DISTURBED AREA (SWM LOD):	1.54 AC. (PROPOSED SWM IMPROVEMENTS)
I. PROPOSED USES FOR SITE AND STRUCTURES:	EXISTING CHURCH FACILITY TO REMAIN
J. GREEN OPEN AREA:	2.7 AC.
K. PROPOSED IMPERVIOUS AREA:	2.2 AC.
L. PRESENT ZONING DESIGNATION:	RS-1 AND R-A-15
M. OPEN SPACE REQUIRED:	N/A
N. TOTAL NUMBER OF UNITS ALLOWED:	N/A
O. TOTAL NUMBER OF UNITS PROPOSED:	N/A
P. DPZ FILE REFERENCES:	ECP 14-009

**PARCELS 588 & 323**  
 OWNER  
 BETHEL BAPTIST CHURCH OF HOWARD COUNTY, INC.  
 MR. JASON C. RIDGELL  
 4261 MONTGOMERY ROAD  
 ELLICOTT CITY, MD 21043  
 PHONE: (410)


**PARCEL 322**  
 OWNER/DEVELOPER  
 TRIANGLE MONTGOMERY ASSOCIATES, LLC.  
 TRIANGLE OLD ANNAPOLIS ASSOCIATES, LLC.  
 MR. J. CHRIS PIPPEN  
 4261 MONTGOMERY ROAD  
 ELLICOTT CITY, MD 21043  
 PHONE: (410) 404-8246

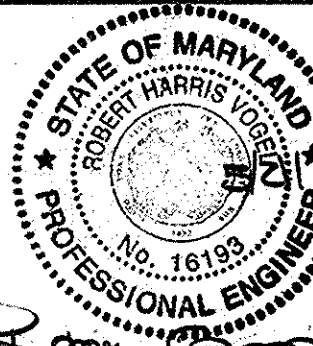
**ENVIRONMENTAL CONCEPT PLAN  
COVER SHEET**

**BETHEL BAPTIST CHURCH**  
 4261 MONTGOMERY ROAD  
 CHURCH - EXEMPT COMMERCIAL

TAX MAP 24, BLOCK 24  
2ND ELECTION DISTRICT

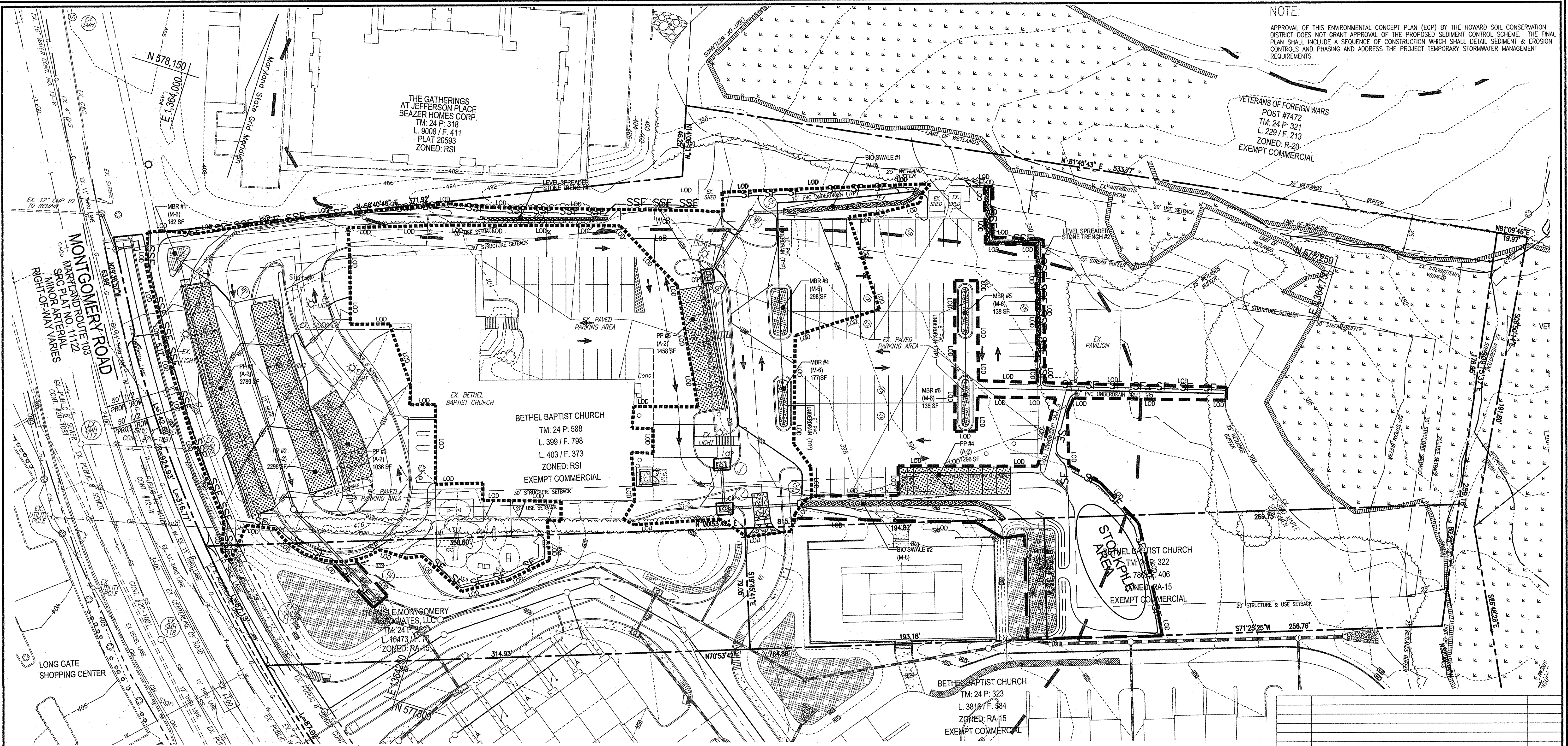
ZONED: R-A-15 & RS-1  
PARCELS 588 & 322  
HOWARD COUNTY, MARYLAND


**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  
 DESIGN BY: EDS  
 DRAWN BY: GH / RVE  
 CHECKED BY: RHY  
 DATE: MAY 2014  
 SCALE: AS SHOWN  
 W.O. NO.: 08-48

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRES DATE 08-2014  
 1 SHEET OF 5

NOTE:  
 APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.



LAYOUT AND GRADING PLAN  
 SCALE 1" = 30'

NOTE:  
 EITHER PERMANENT OR TEMPORARY STABILIZATION IS TO BE APPLIED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR REGARDLESS OF DAYS/DATES IN THE STANDARD SEDIMENT CONTROL NOTES AND/OR SEEDING SPECIFICATIONS.

MAPPED SOILS TYPES

SYMBOL	NAME / DESCRIPTION	GROUP	HYDRAULIC	PERCENT SAND	PERCENT SILT	PERCENT CLAY	PERCENT ORGANIC	PERCENT ROCK	PERCENT COBBLES	PERCENT STONES
L8E	LEONARD-WOODLAND-BROWN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B/C2/C3	NO	0-22	NO	NO	NO	NO	NO	NO
M8E	MATCHING SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	D	PREDOM	0-22	NO	NO	NO	NO	NO	NO

NOTE:  
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL EROSION FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

NOTE:  
 - SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.  
 - SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART  
 - DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TIELINE (FIELD LOCATED)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED SIDEWALK
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED SUPER SILT FENCE
- PROPOSED LIMIT OF DISTURBANCE
- PROPOSED SILT FENCE
- PROPOSED INLET PROTECTION
- PROPOSED PERMEABLE PAVEMENT
- PROPOSED MICRO-BIOTENTION
- PROPOSED STONE TRENCH
- PROPOSED BIO-SWALE
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED DRAINAGE DIVIDE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chad Edwards* 6-5-14  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Vest Shulwood* 6/23/14  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

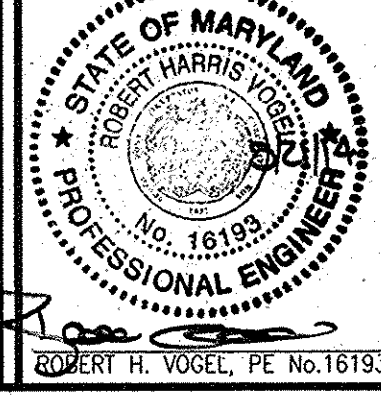
PARCELS 588 & 323 OWNER  
 BETHEL BAPTIST CHURCH OF HOWARD COUNTY, INC.  
 MR. JASON C. RIDGELL  
 4261 MONTGOMERY ROAD  
 ELLICOTT CITY, MD 21043  
 PHONE: (410)

PARCEL 322 OWNER/DEVELOPER  
 TRIANGLE MONTGOMERY ASSOCIATES, LLC.  
 TRIANGLE OLD ANNAPOLIS ASSOCIATES, LLC.  
 MR. J. CHRIS PIPPEN  
 4261 MONTGOMERY ROAD  
 ELLICOTT CITY, MD 21043  
 PHONE: (410) 404-8246

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN  
 LAYOUT AND GRADING PLAN  
**BETHEL BAPTIST CHURCH**  
 4261 MONTGOMERY ROAD  
 CHURCH - EXEMPT COMMERCIAL  
 ZONED: R-A-15 & RS-1  
 PARCELS 588 & 322  
 HOWARD COUNTY, MARYLAND

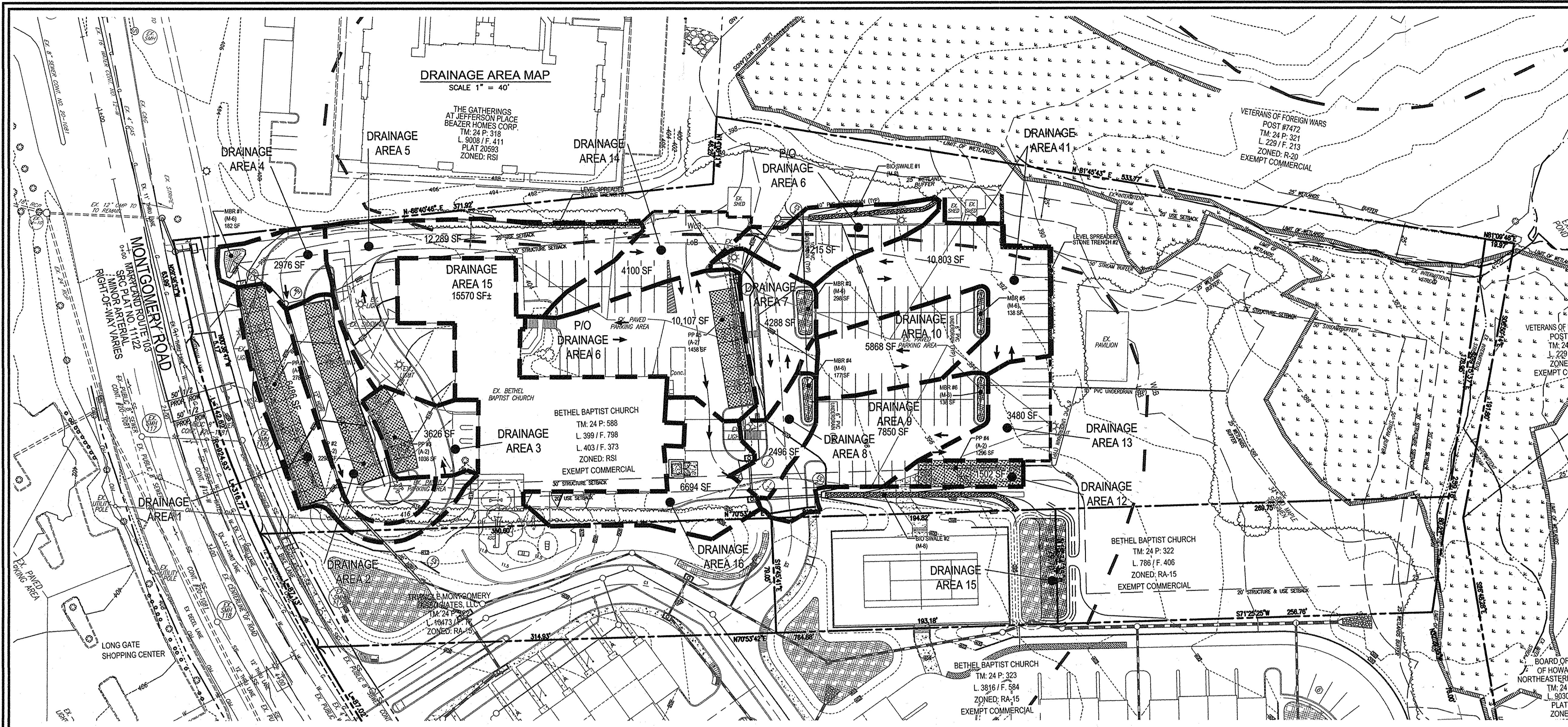
**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666  
 FAX: 410.461.8961



DESIGN BY: EDS  
 DRAWN BY: GH / RVE  
 CHECKED BY: RHV  
 DATE: MAY 2014  
 SCALE: AS SHOWN  
 W.O. NO.: 08-48

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. 18199 EXPIRATION DATE 09-27-2014

2 SHEET OF 5

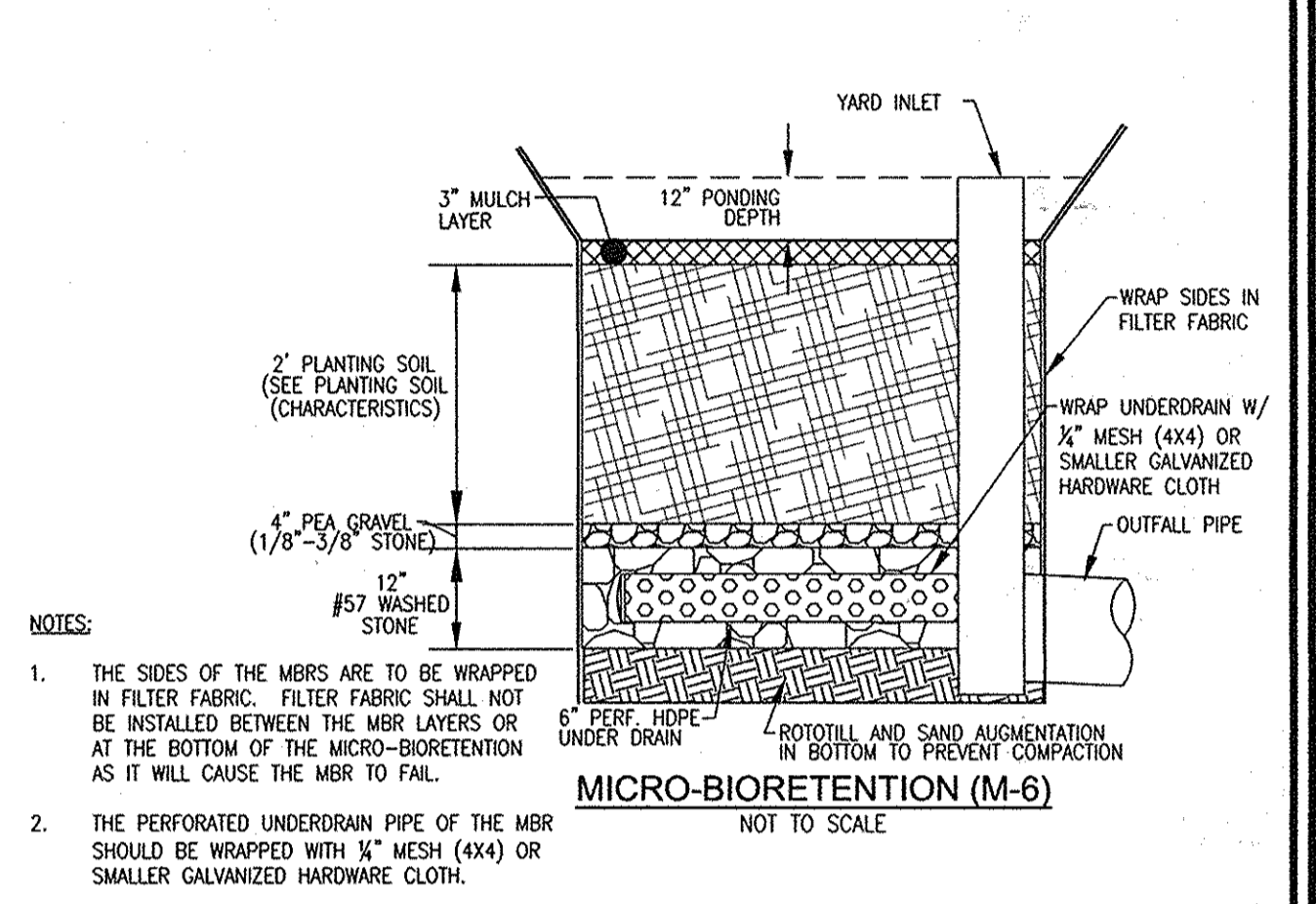


### NOTES:

- APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SUBDIVISION, SITE DEVELOPMENT PLAN AND/OR BUILDING AND GRADING PERMIT. REVIEW OF THIS PLAN FOR COMPLIANCE WITH ZONING AND SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE SUBDIVISION, SITE DEVELOPMENT PLAN, AND/OR PERMIT STAGES. THEREFORE, THIS PLAN IS SUBJECT TO ADDITIONAL AND MORE DETAILED COMMENTS AS THE PLAN IS PROCESSED THROUGH THESE STAGES.
- THERE ARE NO ENVIRONMENTAL FEATURES: FLOODPLAIN, WETLANDS, STREAMS, STEEP SLOPES OR FOREST THAT EXISTS ON THIS PROPERTY OR WITHIN THE DEVELOPED AREA.

### LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED SIDEWALK



### OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIOTENTION SWALE (M-8), AND ENHANCED FILTERS (M-9)

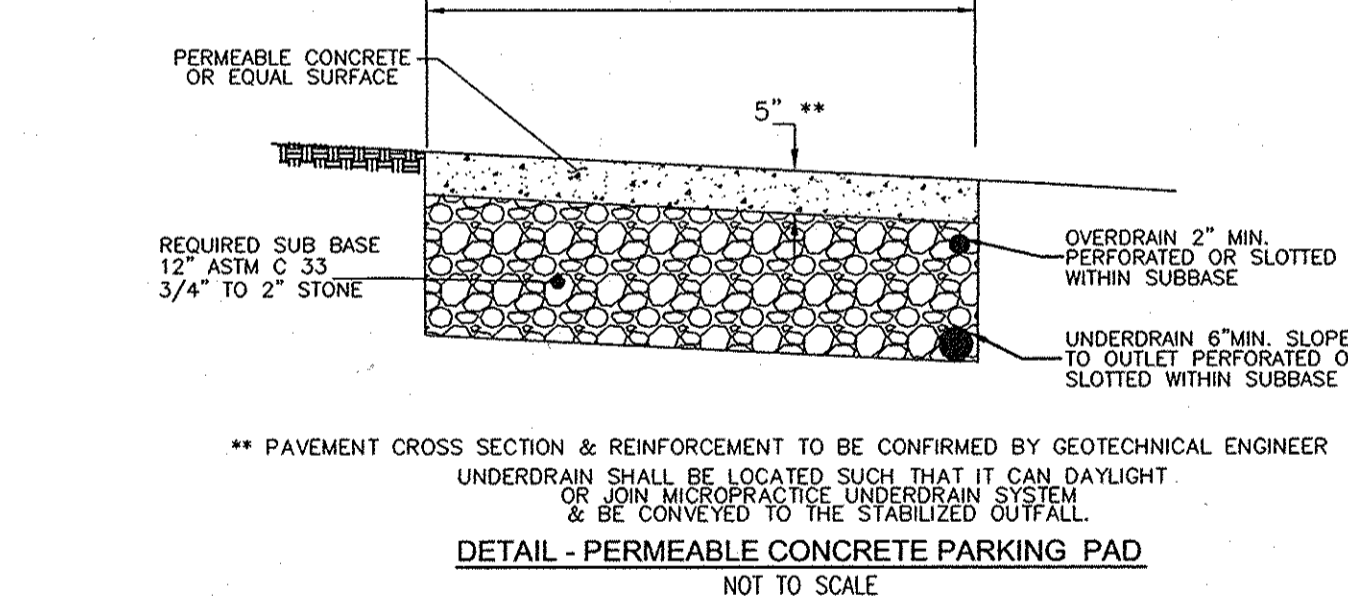
- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

**NOTE:**  
REFER TO SHEETS 4 & 5 FOR ESD SUMMARY FOR REQUIREMENTS OF RE-DEVELOPMENT AND THE OFFICE OF ENVIRONMENTAL SUSTAINABILITY - WATERSHED PROTECTION PARTNERSHIP

#### APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS

- MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
- FILTERING MEDIA OR PLANTING SOIL**  
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MOVED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERKOWITZ GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COAR 10.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:  
  - SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION).
  - ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (80%-85%) AND COMPOST (15%-20%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
  - CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
  - PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMMONIUMS (E.G. UREA, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.
 THESE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH AND ADDITIONAL TESTS OF ORGANIC MATTER AND SULFUR SALTS. A TOTAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS OBTAINED.
- COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIOTENTION PRACTICES AND THE REQUIRED BACKFILL WHEN POSSIBLE. USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EQUIPPED WITH TIRE TREADS, 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 RESURFACING. COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIOTENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. SUBSTITUTIVE METHODS MUST BE APPROVED BY THE ENGINEER. ROTILLAGE TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.  
 ROTILLAGE TO 3 INCHES OF SAND INTO THE BASE OF THE BIOTENTION FACILITY BEFORE BACKFILLING THE ORIGINAL SAND LAYER. PUMP ANY PAVED WAYS BEFORE PREPARING (ROTILLAGE) BASE. WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, PUMP TO 3 TO 4 INCHES DEEP TOPSOIL OVER THE SAND. THEN ROTILLAGE SAND/TOPSOIL TO CREATE AN GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIOTENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIOTENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SAND AND SAND. GRADE BIOTENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARCH TRACKS.
- PLANT MATERIAL**  
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
- PLANT INSTALLATION**  
CONCEPT IS A BETTER ORGANIC MATERIAL SOURCE IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHROUDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIOTENTION AREA. DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHROUDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE. ROOTKILLER OF THE PLANT MATERIAL SHALL BE KEPT DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/10TH OF THE BALL IS ABOVE FINAL GROUND 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. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRIGED 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 LEARNIE SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEARNIE PLANTS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS. THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIOTENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDITIONAL FERTILIZERS, OR AT A MINIMUM NUTRIENTS SHALL BE ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTILLAGE UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.
- UNDERDRAINS**  
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:  
  - PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F758, TYPE PS 28, OR AASHTO M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G. PVC OR HDPE).
  - PERFORATION - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PERFORATIONS SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4x4) GALVANIZED HARDWARE CLOTH.
  - GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
  - THE MAIN COLLECTION PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
  - A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
  - A 4" LAYER OF SAND SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT WASHING OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".
 THIS MAIN COLLECTION PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).
- MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 DATE: 6-5-14  
 DATE: 6-5-14  
 DATE: 6-5-14

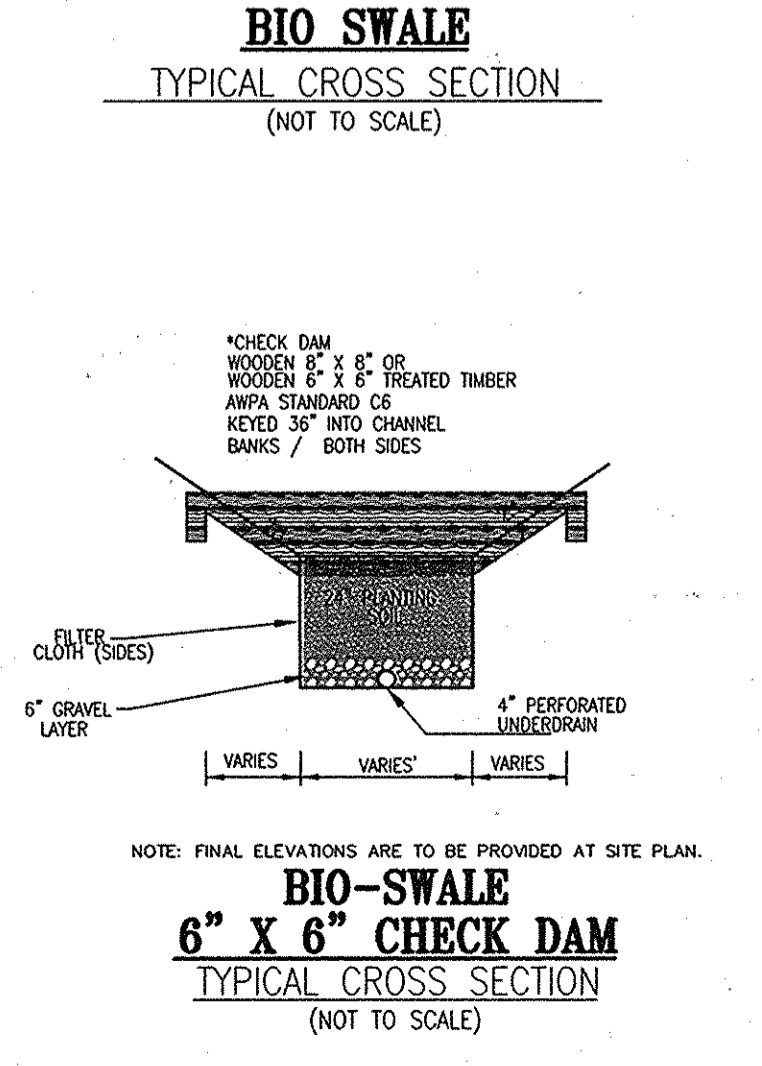
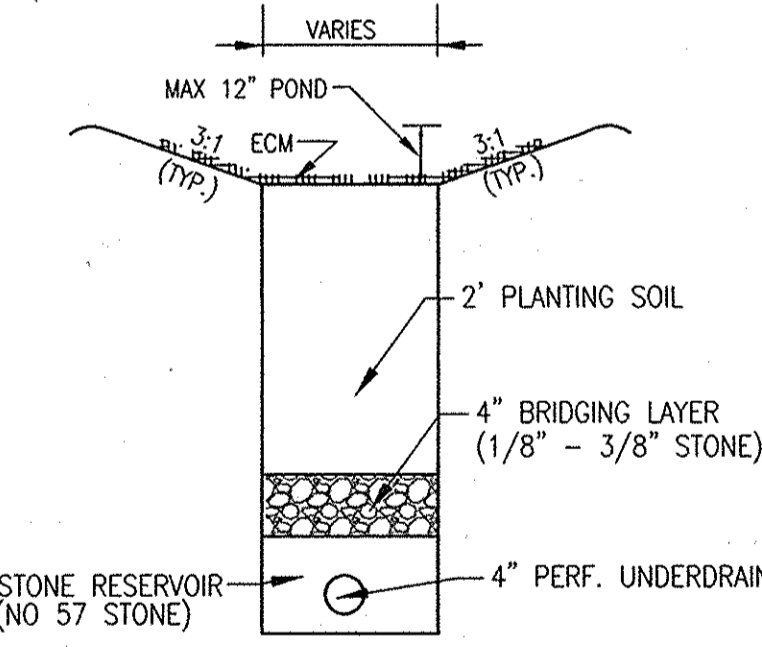


#### Appendix B.4. Construction Specifications for Environmental Site Design Practices

Material	Specification	Size	Notes
Planting soil	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (2' to 4' deep)	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%) or coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	n/a	aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	shredded hardwood pea gravel: ASTM-D448	NO. 8 OR NO. 9 (1/4" TO 3/8")	
Curtain drain	ornamental stone: washed cobble	stone: 2" to 5"	
Geotextile	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	F-758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underdrain cloth
Underdrain piping	MSHA Mix No. 3; C <sub>1</sub> = 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM-615-60	n/a	on-site testing of pre-cast in-place concrete required; 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.8/89; vertical loading (H-10 or H-20); allowable horizontal loading based on soil pressure; and analysis of potential cracking
Poured in place concrete (if required)	MSHA Mix No. 3; C <sub>1</sub> = 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM-615-60	n/a	Sand substitutions such as Diabase and Graystone (AASHTO #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
Sand	AASHTO M-6 or ASTM-C-33	0.02" to 0.04"	

#### B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

- THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.
- PERVIOUS CONCRETE SPECIFICATIONS**  
DESIGN THICKNESS - PERVIOUS CONCRETE APPLICATIONS SHALL BE DESIGNED SO THAT THE THICKNESS OF THE CONCRETE SLAB SHALL SUPPORT THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED. APPLICATIONS MAY BE DESIGNED USING EITHER STANDARD PAVEMENT PROCEDURES (E.G., AASHTO, A21 325.9R, A21 330R) OR USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.  
 MIX & INSTALLATION - TRADITIONAL PORTLAND CEMENTS (ASTM C 150, C 1157) MAY BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOSPHORUS ADJUTIVES MAY ALSO BE USED. MATERIALS SHOULD BE TESTED (E.G., TRIAL BATCHING) PRIOR TO CONSTRUCTION SO THAT CRITICAL PROPERTIES (E.G., SETTING TIME, RATE OF STRENGTH DEVELOPMENT, POROSITY, PERMEABILITY) CAN BE DETERMINED.  
 AGGREGATE - PERVIOUS CONCRETE CONTAINS A LIMITED FINE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4 IN. TO NO. 4), NO. 8 (3/8 IN. TO NO.16) AND NO. 9 (3/8 IN. TO NO.50) SIEVES. SINGLE-SIZED AGGREGATE (UP TO 1 INCH) MAY ALSO BE USED.  
 WATER CONTENT - WATER-TO-CEMENT RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADJUTIVES. WATER QUALITY SHOULD MEET AT 30A. AS A GENERAL RULE, POTABLE WATER SHOULD BE USED ALTHOUGH RECYCLED CONCRETE PRODUCTION WATER MEETING ASTM C 94 OR AASHTO M 157 MAY ALSO BE USED.  
 ADJUTIVES - CHEMICAL ADJUTIVES (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADJUTIVES SHOULD MEET ASTM C 494 (CHEMICAL ADJUTIVES) AND ASTM C 280 (AIR ENTRAINING ADJUTIVES) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS. BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (w=0.30).
  - PERVIOUS INTERLOCKING CONCRETE PAVEMENTS (PIP)**  
PAPER BLOCKS - BLOCKS SHOULD BE EITHER 3/4 IN. OR 4 IN. THICK, AND MEET ASTM C 338 OR CSA A231.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 20% OR MORE (40% PREFERRED) OF THE SURFACE AREA OPEN. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT INFILL AND BASE COURSE MATERIALS AND DIMENSIONS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED.  
 INFILL MATERIALS AND LEVELING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM. PIP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND.  
 BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (w=0.30).
  - REINFORCED TURF**  
REINFORCED GRASS PAVEMENT (RGP) - WHETHER USED WITH GRASS OR GRAVEL, THE RGP THICKNESS SHALL BE AT LEAST 1-3/4" THICK WITH A LOAD CAPACITY CAPABLE OF SUPPORTING THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED.
- #### OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERVIOUS PAVEMENT (A-2)
- THE OWNER SHALL PERIODICALLY SHEED (OR INCUVA POROUS CONCRETE PAVEMENT) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SHEEDING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSION AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
  - THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRIVING TO THE SURFACE.
  - THE OWNER SHALL USE DEICERS IN MODERATION. DEICERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PREPARED SALT.
  - THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOWMELT SHOULD NOT BE DIRECTED TO PERVIOUS PAVEMENT.



PARCELS 588 & 323  
 OWNER: BETHEL BAPTIST CHURCH OF HOWARD COUNTY, INC. MR. JASON C. RIDGELL 4261 MONTGOMERY ROAD ELLICOTT CITY, MD 21043 PHONE: (410) 404-8246

PARCEL 322  
 OWNER/DEVELOPER: TRIANGLE MONTGOMERY ASSOCIATES, LLC. TRIANGLE OLD ANNAPOLIS ASSOCIATES, LLC. MR. J. CHRIS PIPER 4291 MONTGOMERY ROAD ELLICOTT CITY, MD 21043 PHONE: (410) 404-8246

NO.	REVISION	DATE

### ENVIRONMENTAL CONCEPT PLAN DRAINAGE AREA MAP AND STORMWATER MANAGEMENT DETAILS BETHEL BAPTIST CHURCH 4261 MONTGOMERY ROAD CHURCH - EXEMPT COMMERCIAL

TAX MAP 24 BLOCK 24 2ND ELECTION DISTRICT  
 ZONED: R-A-15 & RS-1  
 PARCELS 588 & 322  
 HOWARD COUNTY, MARYLAND

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

DESIGN BY: EDS  
 DRAWN BY: GH / RVE  
 CHECKED BY: RHY  
 DATE: MAY 2014  
 SCALE: AS SHOWN  
 W.O. NO.: 08-48

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 JURISDICTION OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRES DATE 09-27-2014

3 SHEET OF 5

**NOTE:**

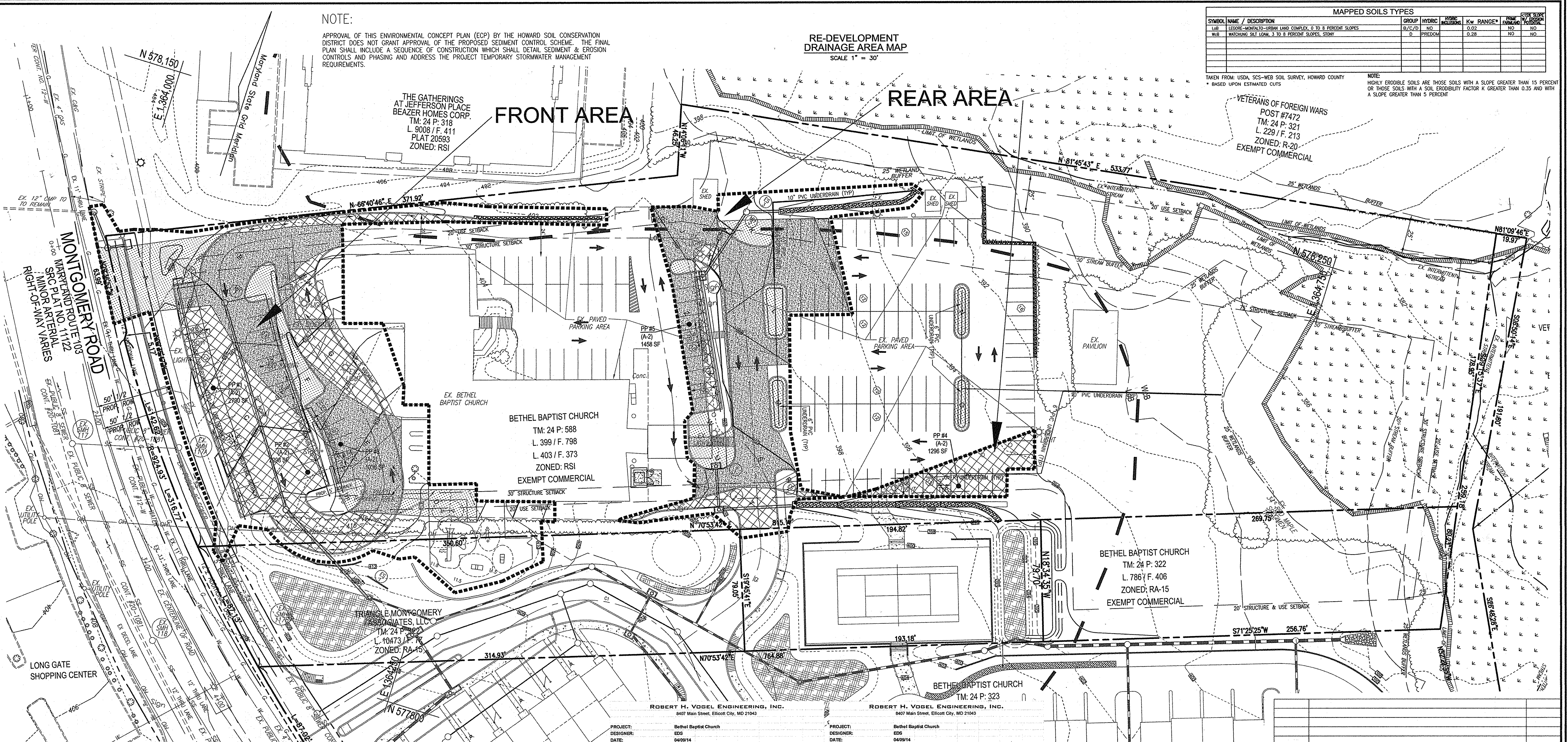
APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.

**RE-DEVELOPMENT DRAINAGE AREA MAP**

SCALE 1" = 30'

MAPPED SOILS TYPES						
SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	PERCENT PERVIOUS	Kw RANGE*	PERCENT IMPERVIOUS
LUB	LECOOSE-MONTAIGU-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B/C/D	NO	NO	0.02	NO
WUB	WATCHUNG SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	D	PERDOM	NO	0.28	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY  
 \*BASED UPON ESTIMATED CUTS  
 NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT



**LEGEND:**

	EXISTING CONTOUR		PROPOSED 10' CONTOUR
	PROPOSED CONTOUR		PROPOSED 2' CONTOUR
	PROPOSED SPOT ELEVATION		PROPOSED DRAINAGE DIVIDE
	EXISTING CURB AND GUTTER		PROPOSED NEW IMPERVIOUS AREA FULL 2.6\"/>
	EXISTING UTILITY POLE		EXISTING IMPERVIOUS AREA REMOVED AND VEGETATED
	EXISTING LIGHT POLE		EXISTING IMPERVIOUS AREA REPLACED WITH PROPOSED IMPERVIOUS 1\"/>
	EXISTING SIGN		PROPOSED STORM DRAIN
	EXISTING SANITARY MANHOLE		PROPOSED STORM DRAIN INLET
	EXISTING SANITARY LINE		EXISTING TREE LINE (FIELD LOCATED)
	EXISTING CLEANOUT		EXISTING FENCE
	EXISTING FIRE HYDRANT		PROPERTY LINE
	EXISTING WATER LINE		RIGHT-OF-WAY LINE
	PROPOSED STORM DRAIN		SOILS BOUNDARY
	PROPOSED STORM DRAIN INLET		PROPOSED SIDEWALK
	EXISTING TREE LINE (FIELD LOCATED)		
	EXISTING FENCE		
	PROPERTY LINE		
	RIGHT-OF-WAY LINE		
	SOILS BOUNDARY		
	PROPOSED SIDEWALK		

BETHEL BAPTIST CHURCH			
AREA	EX. PAVE TO GRASS (GRASS HATCH)	PAVE TO PAVE (SHADE HATCH)	EX. GRASS TO PAVE (CROSS HATCH)
	EXISTING IMPERVIOUS TO PROPOSED PERVIOUS AREAS	EXISTING IMPERVIOUS TO PROPOSED IMPERVIOUS	EXISTING PERVIOUS AREAS TO PROPOSED IMPERVIOUS
	Square Feet	Square Feet	Square Feet
A	2385		
B		5334	
C			8379
D	855		
E		3257	
F	1486		
G			1610
H			772
I			963
J			1154
K			
L			
M			
N			
O			
P			
Q			
R			
S			
T			
U			
V			
W			
X			
Y			
Z			
REAR			
TOTALS	2928	10064	4113
PROJECT TOTALS	7774	18675	15687

PROJECT: Bethel Baptist Church  
 DESIGNER: EDS  
 DATE: 04/09/14

TOTAL ESDv REQUIRED:	2,712 c.f.
12\"/>	
PerVIOUS Paving:	Area (SF): 2789
PerVIOUS Paving #1:	2789 sf of 0.126
FRONT	547 c.f.
Depth Add. Stone (ft.) x Area x 0.30	1.00
	837 c.f.
	1383 total c.f.
PerVIOUS Paving #2:	Area (SF): 2298
FRONT	450 c.f.
Depth Add. Stone (ft.) x Area x 0.30	1.00
	689 c.f.
	1140 total c.f.
PerVIOUS Paving #3:	Area (SF): 1036
FRONT	203 c.f.
Depth Add. Stone (ft.) x Area x 0.30	1.00
	311 c.f.
	514 total c.f.
Total Alternative Surface - PerVIOUS Paving VOLUME Provided	3,037 c.f.
Micro-Bioretenation:	Total ESDv Required: 2,712 c.f.
	Total PerVIOUS Paving Provided: 3,037 c.f.
	-325 c.f. Remaining Volume
TOTAL ESDv PROVIDED:	3,037 c.f.

PROJECT: Bethel Baptist Church  
 DESIGNER: EDS  
 DATE: 04/09/14

TOTAL ESDv REQUIRED:	1,246 c.f.
12\"/>	
PerVIOUS Paving:	Area (SF): 1296
PerVIOUS Paving REAR #1:	1296 sf of 0.126
	254 c.f.
Depth Add. Stone (ft.) x Area x 0.30	1.00
	389 c.f.
	643 total c.f.
PerVIOUS Paving REAR #2:	Area (SF): 1458
	286 c.f.
Depth Add. Stone (ft.) x Area x 0.30	1.00
	437 c.f.
	723 total c.f.
Total Alternative Surface - PerVIOUS Paving VOLUME Provided	1,366 c.f.
Micro-Bioretenation:	Total ESDv Required: 1,246 c.f.
	Total PerVIOUS Paving Provided: 1,366 c.f.
	-120 c.f. Remaining Volume
TOTAL ESDv PROVIDED:	1,366 c.f.

**NOTE:**

THIS DRAINAGE AREA MAP SHOWS THE EXISTING AREAS OF IMPERVIOUS PROPOSED TO BE REVERTED TO "GRASS"/PERVIOUS AREAS, EXISTING AREAS OF IMPERVIOUS TO REMAIN IMPERVIOUS AND EXISTING PERVIOUS AREA TO BE PAVED.

THIS PROJECT QUALIFIES AS REDEVELOPMENT. THE REQUIREMENTS OF REDEVELOPMENT IS MET HEREON THROUGH THE USE OF PERMEABLE SURFACE PRACTICES.

ADDITIONAL VOLUME IS PROVIDED FOR USE IN MEETING THE REQUIREMENTS OF THE WATERSHED PROTECTION PARTNERSHIP

THE PRACTICES DETAILED HEREON ARE BEING PROVIDED TO MEET THE REQUIREMENTS OF THE RE-DEVELOPMENT CRITERIA

THE PROPOSAL SUCCESSFULLY PROVIDES STORMWATER VOLUME EQUIVALENT TO 1" OVER 50% OF THE EXISTING IMPERVIOUS AREAS AND 2.6" FOR ALL NEW IMPERVIOUS AREAS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Phil Carter* 6-5-14  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Neil Seal* 6/23/14  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

PARCELS 588 & 323  
 OWNER  
 BETHEL BAPTIST CHURCH  
 OF HOWARD COUNTY, INC.  
 4261 MONTGOMERY ROAD  
 ELLICOTT CITY, MD 21043  
 PHONE: (410) \_\_\_\_\_

PARCEL 322  
 OWNER/DEVELOPER  
 TRIANGLE MONTGOMERY ASSOCIATES, LLC  
 OF HOWARD COUNTY, INC.  
 MR. JASON C. RIDGELL  
 4261 MONTGOMERY ROAD  
 ELLICOTT CITY, MD 21043  
 PHONE: (410) 404-8246

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN  
 REDEVELOPMENT / ESD DRAINAGE AREA MAP

**BETHEL BAPTIST CHURCH**  
 4261 MONTGOMERY ROAD  
 CHURCH - EXEMPT COMMERCIAL

TAX MAP 24 BLOCK 24  
 2ND ELECTION DISTRICT

ZONED: R-A-15 & RS-1  
 PARCELS 588 & 322  
 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666  
 FAX: 410.461.1961

PROFESSIONAL CERTIFICATE

DESIGN BY: EDS  
 DRAWN BY: GH / RVE  
 CHECKED BY: RRV  
 DATE: MAY 2014  
 SCALE: AS SHOWN  
 W.O. NO.: 08-48

STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 No. 18192  
 EXPIRES 12-31-2018  
 ROBERT H. VOGEL, PE No. 16193

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. 18192 EXPIRES 12-31-2018

4 SHEET OF 5

**NOTE:**

APPROVAL OF THIS ENVIRONMENTAL CONCEPT PLAN (ECP) BY THE HOWARD SOIL CONSERVATION DISTRICT DOES NOT GRANT APPROVAL OF THE PROPOSED SEDIMENT CONTROL SCHEME. THE FINAL PLAN SHALL INCLUDE A SEQUENCE OF CONSTRUCTION WHICH SHALL DETAIL SEDIMENT & EROSION CONTROLS AND PHASING AND ADDRESS THE PROJECT TEMPORARY STORMWATER MANAGEMENT REQUIREMENTS.

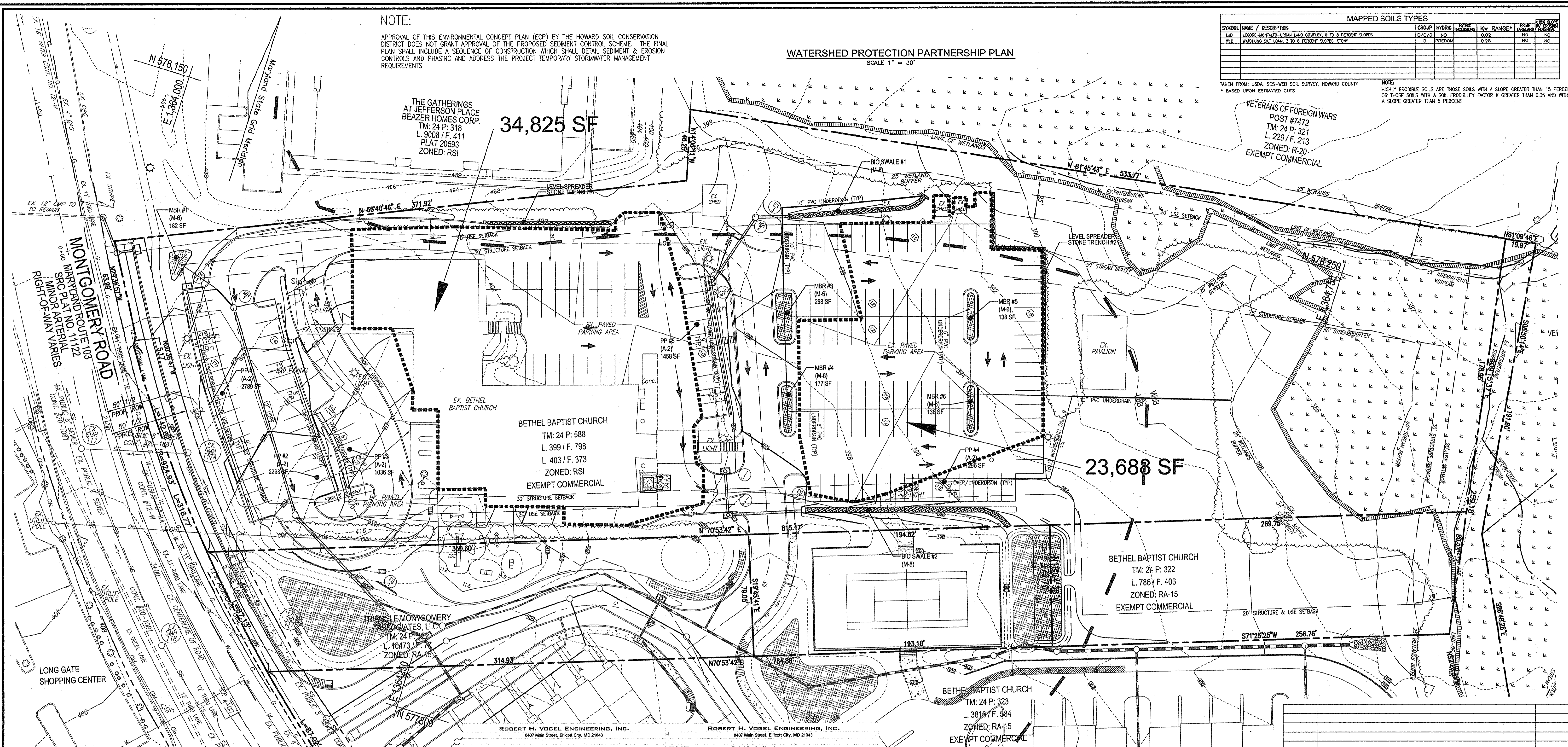
**WATERSHED PROTECTION PARTNERSHIP PLAN**

SCALE 1" = 30'

SYMBOL NAME / DESCRIPTION		MAPPED SOILS TYPES			
SYMBOL	DESCRIPTION	GROUP	HYDRO	PERCENT	PERCENT
LsB	LEGOSSE-MONTICELLO-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B/C/D	NO	0.02	NO
WbB	WATCHUNG SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	D	PREDOM	0.28	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY  
 \* BASED UPON ESTIMATED CUTS

NOTE:  
 HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL EROSION FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT



**LEGEND:**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEARDIRT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREELINE (FIELD LOCATED)
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED SIDEWALK

PROPOSED 10' CONTOUR  
 PROPOSED 2' CONTOUR  
 PROPOSED DRAINAGE DIVIDE  
 PROPOSED MICRO-BIOTRETMENT  
 PROPOSED STONE TRENCH  
 PROPOSED BIO-SWALE

**ROBERT H. VOGEL ENGINEERING, INC.**  
 8407 Main Street, Ellicott City, MD 21043

**ESD DESIGN COMPUTATIONS**  
 HOWARD COUNTY O.E.S. - WATERSHED PROTECTION PARTNERSHIP

Project: Bethel Baptist Church  
 Location: OES - Watershed Prot. Partner  
 Location: Howard County, MD  
 Job No.: 08-48

By: EDS  
 Date: 4/29/14  
 Check: [Blank]  
 Date: [Blank]

QUALITY SITE FOR REDEVELOPMENT - See ECP14-066  
 Size of Parcel 322 (F-3): 4.91 Ac. - After land swap  
 Existing Impervious Area: 36,822 s.f. 1.99 Ac.  
 Proposed Impervious Area within LOD: 36,230 s.f. 1.79 Ac.  
 % Impervious: 40.6 %

Site Characteristics:  
 LOD Area: 58,513 s.f. 1.34 Ac.  
 Existing Impervious Area within LOD: 56,908 s.f. 1.31 Ac.  
 Proposed Impervious Area within LOD: 56,230 s.f. 1.29 Ac.

ESD Methodology  
 \* Provide 1" Treatment for all Existing Impervious Areas within LOD  
 Refer to Watershed Protection Partnership requirements

ESD Computations:  
 Impervious within LOD: 56,230 s.f. 1.29 Ac.  
 Pe = 1.00 In.  
 Rv = 0.05 + (0.009)(1) = 100%  
 Area: 56,230 s.f. 1.29 Ac.

ESDv = (Pe)(Rv)(A)12 = 4452 c.f. Total ESDv Required 100% Credit WATERSHED PROTECTION PARTNERSHIP

**ROBERT H. VOGEL ENGINEERING, INC.**  
 8407 Main Street, Ellicott City, MD 21043

**PROJECT:** Bethel Baptist Church  
**DESIGNER:** EDS  
**DATE:** 04/09/14

TOTAL ESDv REQUIRED: 4,452 c.f.

PERVIOUS PAVING: See Redevelopment Computations for Excess Volume  
 Excess Volume Provided with Re-development Computations

FRONT AREA	REAR AREA
325 c.f.	120 c.f.
Total Alternative Surface - Previous Paving VOLUME Provided: 445 c.f.	

Micro-Scale Practices:  
 Total ESDv Required: 4,452 c.f.  
 Total Previous Paving Provided: 4,007 c.f. Remaining Volume: 445 c.f.

Practice	Volume
Gravel Trench at Western Side of Church Building	198 c.f.
Gravel Trench at Rear Parking Area	342 c.f.
Bio-Swale - Western Boundary Rear Parking Area	360 c.f.
Bio-Swale - Eastern Boundary - Near Tennis Court	615 c.f.
Micro-bioretenment - Eastern Boundary - Near Tennis Court	1200 c.f.
182 SF REMOVE EX. PAVEMENT FOR MBR #1	240 c.f.
298 SF REMOVE EX. PAVEMENT FOR MBR #3	395 c.f.
177 SF REMOVE EX. PAVEMENT FOR MBR #4	235 c.f.
138 SF REMOVE EX. PAVEMENT FOR MBR #5	180 c.f.
138 SF REMOVE EX. PAVEMENT FOR MBR #6	180 c.f.
Total Micro-Scale Practice - MBR Volume Provided	4,142 c.f.

TOTAL ESDv PROVIDED: 4,587 c.f.

**NOTE:**

THIS DRAINAGE AREA MAP SHOWS THE EXISTING AREAS OF IMPERVIOUS. THERE ARE A FEW AREAS OF "GRASS" AROUND THE CHURCH BUILDING, WHICH HAVE BEEN DEDUCTED FROM THE COMPUTATIONS.

THIS PROJECT QUALIFIES AS REDEVELOPMENT. THE REQUIREMENTS OF REDEVELOPMENT ARE BEING MET THROUGH THE USE OF A PERMEABLE SURFACE PRACTICE. THE VOLUME IS PROVIDED SEPARATELY FROM THE PRACTICES OUTLINED HEREON.

THE PRACTICES DETAILED HEREON ARE BEING PROVIDED TO MEET THE REQUIREMENTS OF THE HOWARD COUNTY - O.E.S. WATERSHED PROTECTION PARTNERSHIP PROGRAM AND SUCCESSFULLY PROVIDES FOR A STORMWATER VOLUME EQUIVALENT TO 1" OVER THE EXISTING IMPERVIOUS AREAS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division  
 DATE: 6-5-14

Chief, Division of Land Development  
 DATE: 6/2/14

PARCELS 588 & 323  
 OWNER  
 BETHEL BAPTIST CHURCH  
 OF HOWARD COUNTY, INC.  
 MR. JASON C. RIDGELL  
 4261 MONTGOMERY ROAD  
 ELLICOTT CITY, MD 21043  
 PHONE: (410) [Blank]

PARCEL 322  
 OWNER/DEVELOPER  
 TRIANGLE MONTGOMERY ASSOCIATES, LLC  
 OF HOWARD COUNTY, INC.  
 MR. J. CHRIS PIPPEN  
 4291 MONTGOMERY ROAD  
 ELLICOTT CITY, MD 21043  
 PHONE: (410) 404-8246

NO. REVISION DATE

**ENVIRONMENTAL CONCEPT PLAN**  
**WATERSHED PROTECTION PARTNERSHIP**  
**DRAINAGE AREA MAP**  
**BETHEL BAPTIST CHURCH**  
 4261 MONTGOMERY ROAD  
 CHURCH - EXEMPT COMMERCIAL

TAX MAP 24 BLOCK 24  
 2ND ELECTION DISTRICT

ZONED: RA-15 & RS-1  
 PARCELS 588 & 322  
 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET  
 ELLICOTT CITY, MD 21043  
 TEL: 410-461-7666  
 FAX: 410-461-8961

DESIGN BY: EDS  
 DRAWN BY: GH / RVE  
 CHECKED BY: RHV  
 DATE: MAY 2014  
 SCALE: AS SHOWN  
 W.O. NO.: 08-48

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. 18193, EXPIRING DATE 07-27-2018

PROFESSIONAL CERTIFICATE

5 SHEET OF 5