

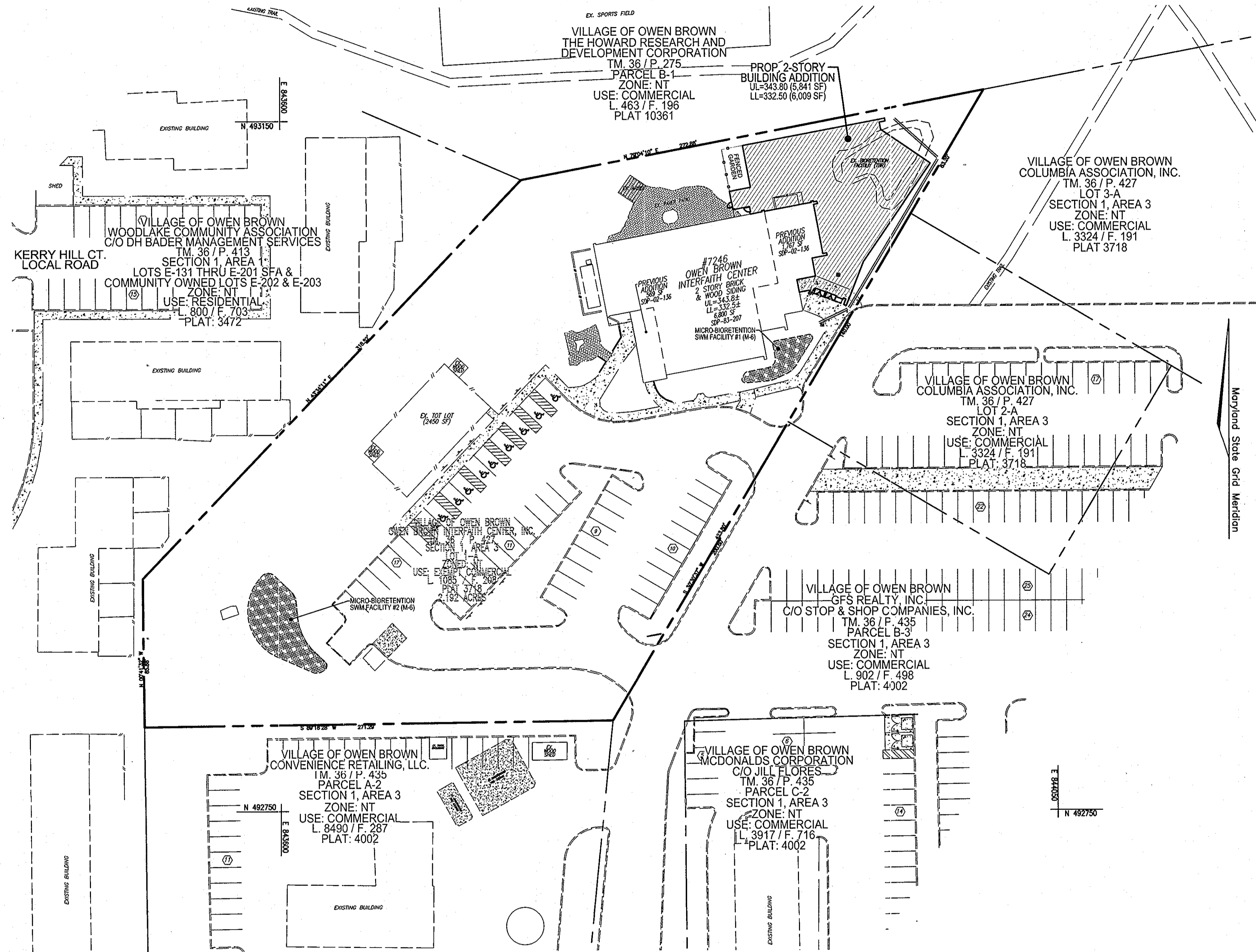
**GENERAL NOTES**

- ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS ALTERNATIVE COMPLIANCES HAVE BEEN APPROVED.
- EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTOR'S 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 OPERATIONS SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- THE COORDINATES SHOWN HEREON ARE BASED UPON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE SYSTEM. HOWARD COUNTY MONUMENT NOS. 428B AND 368B WERE USED FOR THIS PROJECT.
- THE PROPERTY LINES SHOWN HEREON ARE BASED ON COLUMBIA, VILLAGE OF OWEN BROWN, PLAT 3718, DATED MAY 5, 1997.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM FIELD RUN SURVEY BY ROBERT H. VOGEL ENGINEERING, INC., ON JANUARY 12, 2012.
- HORIZONTAL AND VERTICAL SURVEY CONTROLS: THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED ON THE MARYLAND STATE PLANE COORDINATE SYSTEM (BASED ON COLUMBIA, VILLAGE OF OWEN BROWN, PLAT 3718, DATED MAY 5, 1997) AS PROJECTED BY HOWARD COUNTY MONUMENTS 368B (N 49233.215/E 842256.749), AND 428B (N 490648.777/E 843214.855). ALL VERTICAL CONTROLS ARE BASED ON FINISHED FLOOR ELEVATION OF EXISTING BUILDING AS SHOWN ON SDP-02-136.
- GEOTECHNICAL REPORT TO BE PROVIDED AT SITE DEVELOPMENT PHASE.
- THERE ARE NO WETLANDS, STREAMS, STEEP SLOPES, OR 100-YEAR FLOODPLAIN LOCATED ON SITE.
- THE SUBJECT PROPERTY IS ZONED NT PER THE 02/07/2004 COMPREHENSIVE ZONING PLAN AND THE COMP LITE ZONING REGULATION AMENDMENTS EFFECTIVE ON 07/28/06.
- PUBLIC WATER AVAILABLE THROUGH CONTRACT NO. 24-0735-D.
- PUBLIC SEWER AVAILABLE THROUGH CONTRACT NO. 24-0735-D.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- BUILDING ADDITION TO HAVE ROOF LEADERS WHICH EMPTY INTO STORM DRAIN SYSTEM.
- ALL ELEVATIONS ARE TO FLOWLINE/BOTTOM OF CURB UNLESS OTHERWISE NOTED.
- LANDSCAPING FOR THE EXPANSION OF THIS SITE SHALL BE PROVIDED AT THE SITE DEVELOPMENT PLAN STAGE IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE NEW TOWN ALTERNATIVE COMPLIANCE PROVISIONS OF THE LANDSCAPE MANUAL.
- THIS PROJECT IS EXEMPT FROM THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1202(b)(1)(v) OF THE HOWARD COUNTY CODE BECAUSE IT IS PART OF A PLANNED UNIT DEVELOPMENT (NEW TOWN) WITH PRELIMINARY PLAN APPROVAL PRIOR TO 12/31/92.
- EXISTING CRADLEROCK WAY IS CLASSIFIED AS A MAJOR COLLECTOR.
- THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- THE PROPOSED BUILDING ADDITION WILL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
- A KNOX BOX IS REQUIRED TO BE PLACED ON THE FRONT OF THE BUILDING. IT SHALL BE PLACED TO THE RIGHT OF THE MAIN ENTRANCE AT A RANGE OF 4'-5' IN HEIGHT AND NO MORE THAN 6' LATERALLY FROM THE DOOR. ITS LOCATION IS SHOWN ON THESE PLANS. THE BOX SHALL BE ELECTRONICALLY SUPERVISED TO NOTIFY THE OWNER THAT IT IS BEING ACCESSSED (INTEGRATED WITH THE FIRE ALARM SYSTEM).
- LANDSCAPING NOT PERMITTED WITHIN 7'-1/2' OF EACH SIDE OF THE FIRE DEPARTMENT CONNECTION. PROVIDE A CLEAR UNOBSTRUCTED ACCESS PATH TO THE FIRE DEPARTMENT CONNECTION. NFPA-1 13.1.4
- FIRE LANES SHOULD BE PROVIDED IN THIS SITE TO ALLOW EMERGENCY VEHICLE ACCESS. EITHER FIRE LANE SIGNAGE SHOULD BE INSTALLED, OR THE CURBS SHOULD BE PAINTED IN RED AND STENCILED TO IDENTIFY THE ROAD AS A FIRE LANE.
- ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL PERFORATED SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL PERFORATED SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- SIGNAGE HAS BEEN PROVIDED ON THE BUILDING IDENTIFYING THE BUILDING ADDRESS.
- TRASH COLLECTION AND RECYCLABLES TO BE PRIVATE.
- THERE ARE NO SPECIMEN OR CHAMPION TREES ON THIS SITE.
- ALL EXTERIOR LIGHTING TO COMPLY WITH THE REQUIREMENTS FOUND IN ZONING SECTION 134 OF THE HOWARD COUNTY ZONING REGULATIONS.
- THIS PROJECT IS SUBJECT TO COMPLIANCE WITH THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- 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 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.
- A PARKING ANALYSIS AND SHARED PARKING CHART WILL BE PROVIDED AT THE SITE DEVELOPMENT PLAN STAGE IN ACCORDANCE WITH SECTION 133.5.1 OF THE ZONING REGULATIONS. SHOULD ADDITIONAL PARKING AREAS BE REQUIRED FOR THE EXPANSION OF THIS FACILITY, REVISIONS TO OR EXPANSION OF THE LOD MAY BE REQUIRED WHICH COULD THEN REQUIRE REVISIONS TO THIS ENVIRONMENTAL CONCEPT PLAN.

# ENVIRONMENTAL CONCEPT PLAN OWEN BROWN INTERFAITH CENTER

7246 CRADLE ROCK WAY COLUMBIA, MD 21045  
LOT 1A, VILLAGE OF OWEN BROWN, SECTION 1, AREA 3

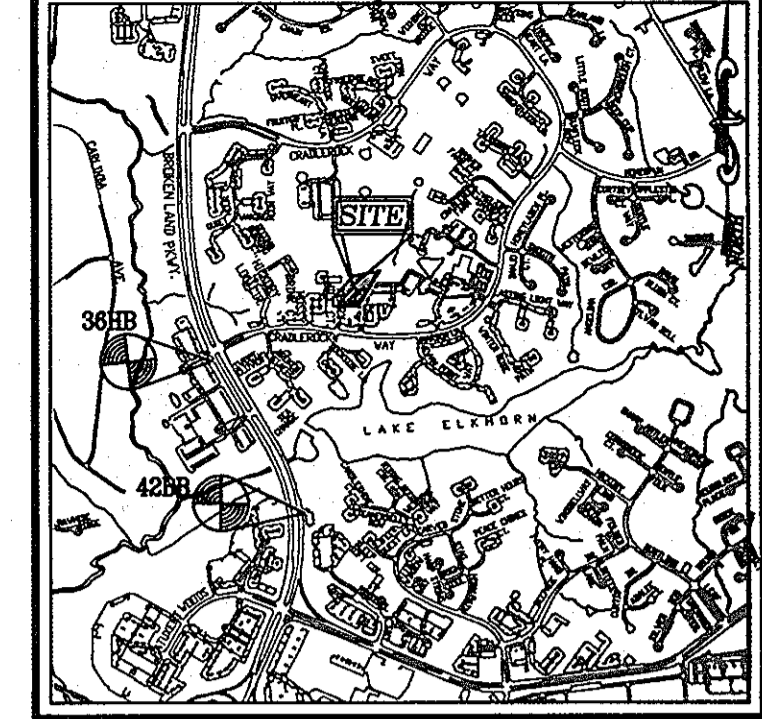
ZONED: NT  
PLAT 3718



LOCATION MAP  
SCALE: 1"=40'

**LEGEND**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- DIRECTION OF FLOW
- EXISTING TREES TO REMAIN
- LIGHT POLES
- CONCRETE



VICINITY MAP  
SCALE: 1"=2000'  
ADC MAP COORDINATES: 5053/91

**BENCHMARKS**

HOWARD COUNTY BENCHMARK 368B (PER SDP-02-136)  
N 492,233.215 E 842,256.749 ELEV.: 314.169  
HOWARD COUNTY BENCHMARK 428B (PER SDP-02-136)  
N 490,648.777 E 843,214.855 ELEV.: 306.689

**SITE DATA**

LOCATION: TAX MAP 36, GRID 21, PARCEL 427, LOT 1-A  
6TH ELECTION DISTRICT  
PRESENT ZONING: NT  
SUBDIVISION: VILLAGE OWEN BROWNS 1 AR 3  
SECTION/AREA: SECTION 1/ AREA 3  
SITE AREA: 2.192 AC  
OPEN SPACE AREA (PER FDP-150-A-I): 9.651 AC  
SITE ADDRESS: 7246 CRADLEROCK WAY COLUMBIA, MD 21044  
DEED/PLAT REFERENCES: L1085/F.208, PLAT 3718-3719  
DPZ REFERENCES: FDP-150-A-II, SDP-83-207, F-74-086, F-77-052, SDP-02-136.  
USE OF STRUCTURE: RELIGIOUS CENTER  
BUILDING COVERAGE:  
EXISTING BUILDING: 9,136 SF (0.210 AC OR 2.17% OF GROSS OPEN SPACE AREA)  
PROPOSED EXPANSION: 6,009 SF (0.138 AC OR 1.43% OF GROSS OPEN SPACE AREA)  
TOTAL BUILDING COVERAGE (EX. + PROP.): 15,145 SF (0.348 AC OR 3.60% OF GROSS OPEN SPACE AREA)  
OPEN SPACE (LOTS 1A - 4A): 9.651 AC  
TOTAL OPEN SPACE BUILDING COVERAGE:  
15,135 (1-A) + 1,990 (4-A) = 17,085 SF (0.392 AC OR 4.06% OF GROSS OPEN SPACE AREA)  
ALLOWED COVERAGE IS 10% OF TOTAL OPEN SPACE (CREDIT AND NON-CREDIT) AREA PER FDP-150-A-II  
WETLANDS ON SITE: 0.00 AC  
WETLAND BUFFERS ON SITE: 0.00 AC  
STREAM BUFFERS ON SITE: 0.00 AC  
AREA OF ON-SITE 100 YEAR FLOODPLAIN: 0.00 AC  
AREA OF EXISTING SOILS: 0.00 AC  
AREA OF PROBABLE SOILS: 0.00 AC  
PROJECT AREA (AREA OF PARCEL 1A): 2.912 AC  
LIMIT OF DISTURBED AREA: 0.39 AC  
AREA MANAGED BY ESDV (THIS PLAN): 0.37 AC  
\*IMPERVIOUS AREA: 0.21 AC  
\*GREEN AREA: 0.16 AC

**ENVIRONMENTAL SITE DESIGN NARRATIVE**

THIS ENVIRONMENTAL CONCEPT PLAN IS INTENDED TO INCORPORATE WATER QUALITY FOR THE INITIAL CHURCH EXPANSION (SDP-02-136) IN ADDITION TO THE EXPANSION CURRENTLY PROPOSED. THE PROPOSED ADDITION REQUIRES THE ELIMINATION OF THE BIO-RETENTION FACILITY INSTALLED IN CONJUNCTION WITH SDP-02-136.  
THIS PLAN UTILIZES THE ENVIRONMENTAL SITE DESIGN CRITERIA TO COMPUTE THE ESDV FOR THE PREVIOUSLY CONSTRUCTED IMPERVIOUS SURFACES. THE PROPOSED LIMIT OF DISTURBANCE IS UTILIZED FOR THE ADDITIONAL ESDV.  
THE PROPOSED MICRO BIO-RETENTION FACILITIES WILL BE CONSTRUCTED UTILIZING THE UPDATED MDE SPECIFICATIONS (ESD) WHICH WILL PROVIDE FOR MORE EFFECTIVE TREATMENT. THE TOTAL AREA SUBJECT TO THE PROPOSED ESD TREATMENTS MEETS OR EXCEEDS THE TOTAL REQUIRED OF THE PREVIOUS AND CURRENT EXPANSIONS.  
THE DISCHARGE FROM THE SITE WILL CONTINUE TO UTILIZE THE EXISTING STORM DRAIN SYSTEM, MAINTAINING CURRENT FLOW PATTERNS. THE BUILDING ADDITION DOES NOT REQUIRE ADDITIONAL PARKING SINCE PARKING IS ACCOMMODATED BY A SHARED PARKING AGREEMENT WITH THE RETAIL CENTER WHICH MINIMIZES THE ADDITION OF UNNECESSARY IMPERVIOUS SURFACES.  
SEDIMENT CONTROLS WILL BE IMPLEMENTED FOR ALL ASPECTS OF THE PROPOSED CONSTRUCTION. THE ECP REFLECTS THE IMPLEMENTATION OF ENVIRONMENTAL SITE DESIGN TECHNIQUES TO THE MAXIMUM EXTENT POSSIBLE IN ORDER TO ACCOMMODATE THE PREVIOUS AND CURRENT BUILDING EXPANSIONS.  
THERE ARE NO WETLANDS, STREAMS OR THEIR BUFFERS, 100-YEAR FLOODPLAIN, SPECIMEN TREES OR ANY OTHER NATURAL RESOURCES LOCATED ON-SITE THAT WOULD REQUIRE PROTECTION.

**OWNER/DEVELOPER**

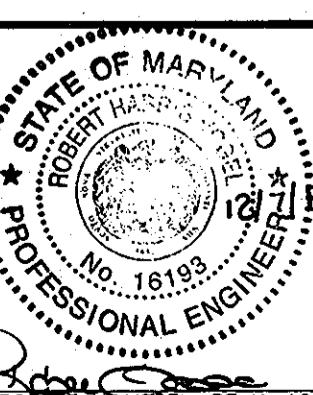
OWEN BROWN INTERFAITH CENTER, INC. COLUMBIA ASSOCIATION, INC.  
10221 WINDYBROOK CIRCLE  
7246 CRADLEROCK WAY COLUMBIA, MD 21044  
COLUMBIA, MD 21045  
410-938-9000 410-581-5551

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN  
COVER SHEET**

**OWEN BROWN INTERFAITH CENTER**  
7246 CRADLEROCK WAY COLUMBIA, MD 21045  
VILLAGE OF OWEN BROWN, SECTION 1, AREA 3  
TAX MAP 36, BLOCKS 21  
6TH ELECTION DISTRICT  
PROPOSED USE: RELIGIOUS CENTER  
PARCEL P/O 427, LOT 1A  
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

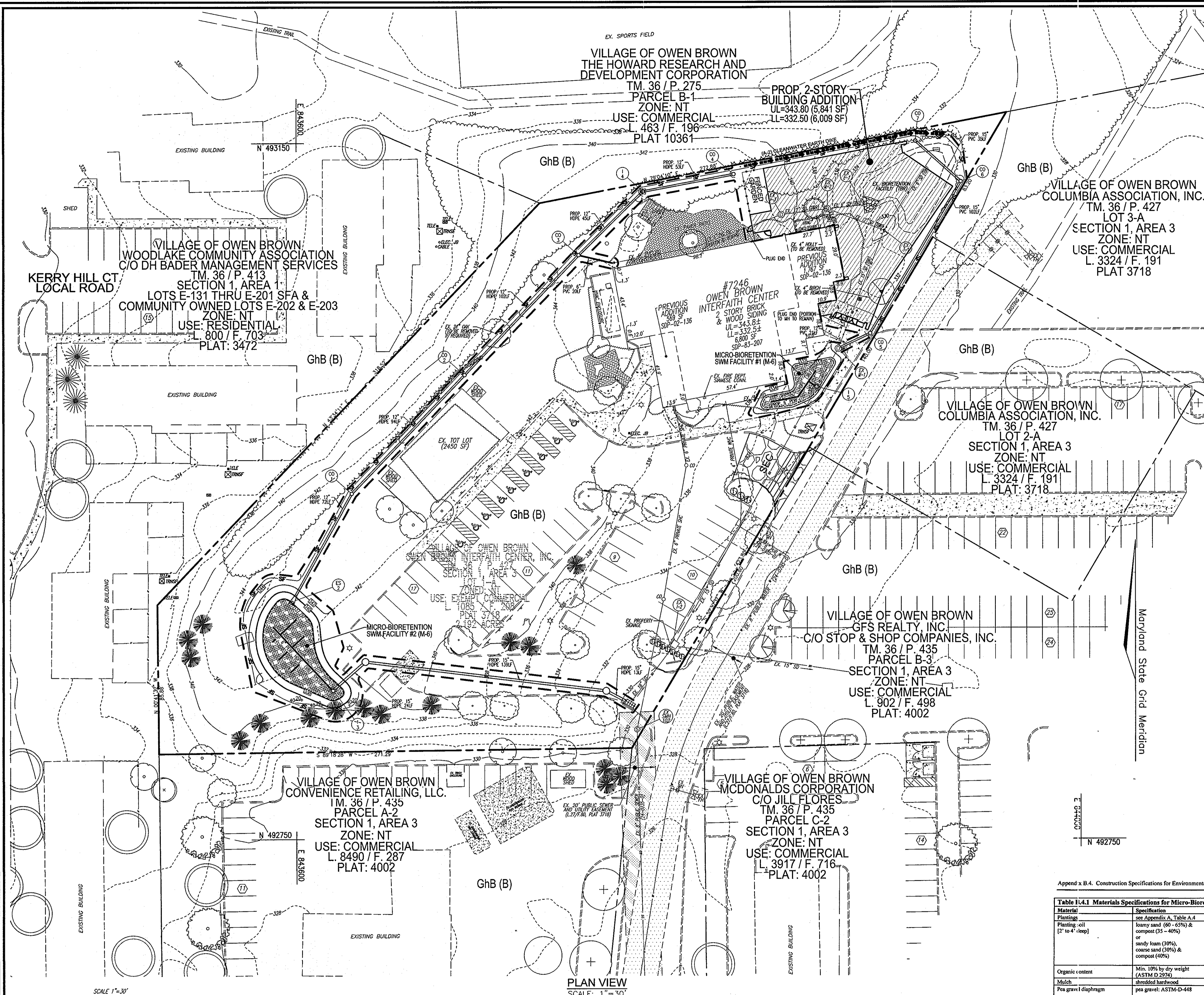


PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 18193. EXPIRATION DATE: 08-27-2014  
DESIGN BY: RHV  
DRAWN BY: DZ  
CHECKED BY: RHV  
DATE: DECEMBER 2012  
SCALE: AS SHOWN  
W.O. NO.: 11-08

**SHEET INDEX**

DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 2
LAYOUT PLAN, GRADING AND SEDIMENT CONTROL	2 OF 2

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
[Signature] 12/13/12  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
[Signature] 12/12/12  
CHIEF, DIVISION OF LAND DEVELOPMENT



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

**1. MATERIAL SPECIFICATIONS**  
 THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

**2. 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 MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE AN OBSTACLE TO PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERBERIS GRASS, DACTYLOCTENIUM, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.

THE PLANTING SOIL SHALL MEET THE FOLLOWING CRITERIA:  
 \* SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURE CLASSIFICATION)  
 \* ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (50%-60%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (20%), AND COMPOST (40%).  
 \* CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%  
 \* PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.

THERE 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 SOLUBLE SALTS. A TEXTURAL 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 EXCAVATED.

**3. COMPACTION**  
 IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION AIDS TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WHEEL TRACKS OR WASH TRUCK EQUIPMENT, OR LIGHT EQUIPMENT WITH TIRE TREADS. USE OF EQUIPMENT WITH PAVEMENT 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 FLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION 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 OPTIONAL SAND LAYER. PUMP AND POURED 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 SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH WASH TRACKS.

**4. PLANT MATERIAL**  
 RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

**5. PLANT INSTALLATION**  
 COMPOST 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". SHREDED OR CHIPPED 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. SHREDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOTS OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/5TH OF THE BALL IS 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. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. 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.

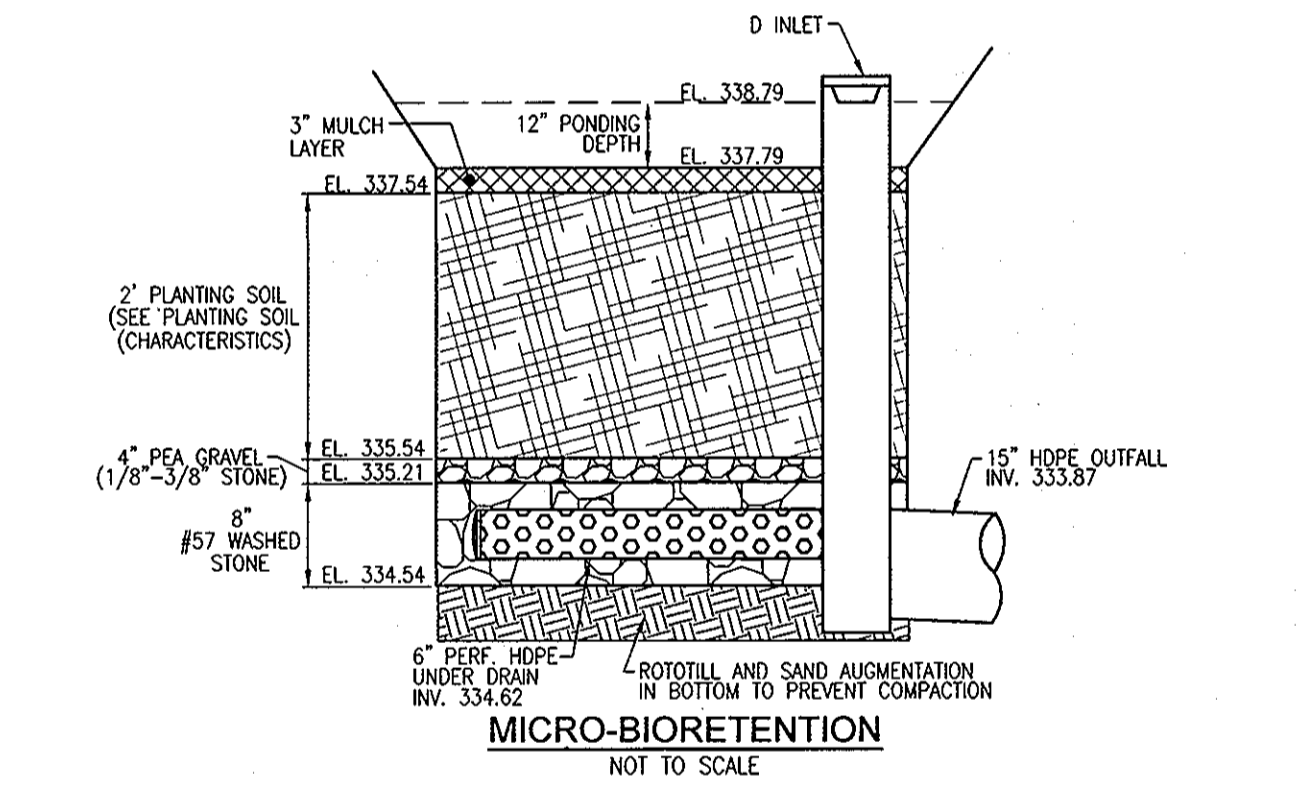
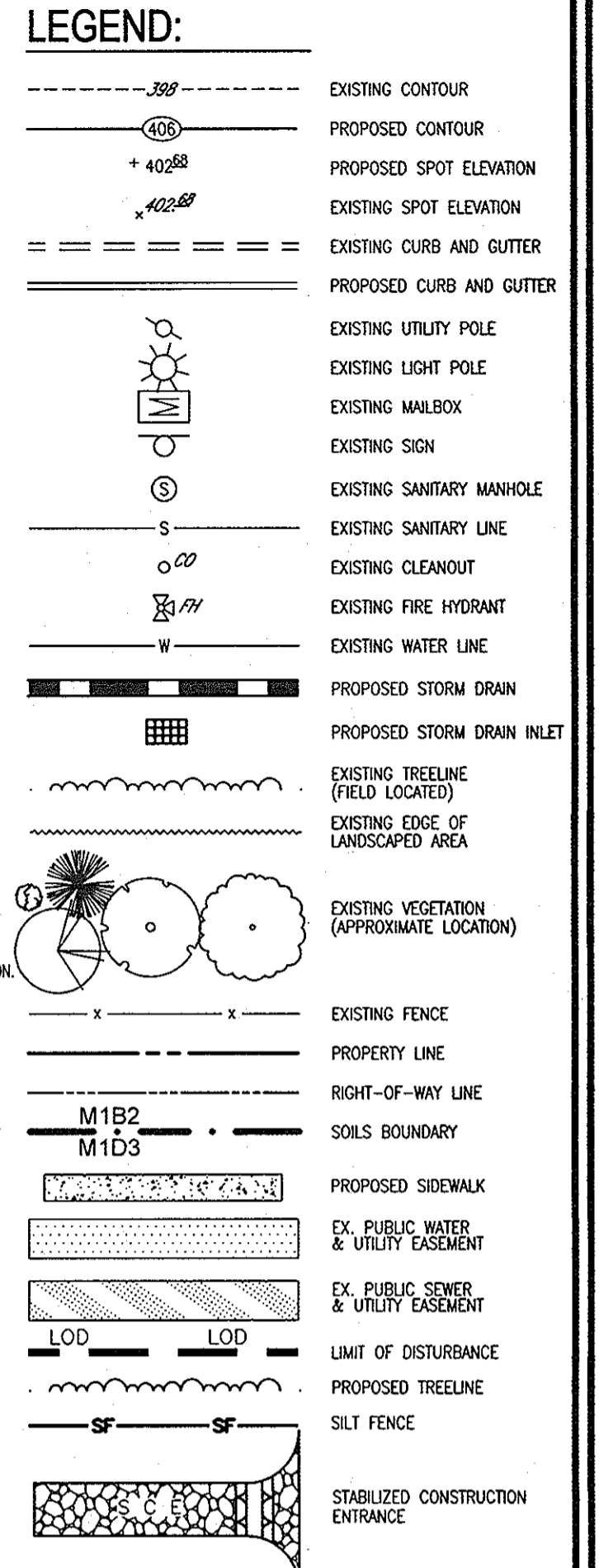
GRASSES AND LEGUME SEED SHOULD BE DROPPED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLOTS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ACCURATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS, DEFOLIANTS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

**6. 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 PERFORATED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).  
 \* PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4A) GALVANIZED HAWTHORNE CLOTH.  
 \* GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.  
 \* THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.  
 \* A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.  
 \* A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES IN TO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

THIS MAIN COLLECTOR 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).

**7. MISCELLANEOUS**  
 THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.



**OWNER/DEVELOPER**

OWEN BROWN INTERFAITH CENTER, INC. COLUMBIA ASSOCIATION, INC.  
 10221 WINDCOPPER CIRCLE  
 7246 CRADLEROCK WAY COLUMBIA, MD 21044  
 COLUMBIA, MD 21045  
 410-538-5000 410-581-5551

**SOILS LEGEND**

SYMBOL	NAME / DESCRIPTION	GROUP
GhB	GLENELG-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	D

NOTE: BASED ON HOWARD SOIL SURVEY

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 12/13/12

CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 12/12/12

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

1. 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.

2. THE OWNER SHALL PERFORM A PLANT 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.

3. 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.

4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

**UCC**

Pe= 2 inches  
 ESDv=(PexRvxA)/12  
 Rv=0.05+(0.000xI)  
 V min=L\*0.1 rainfall  
 V max=1yr rainfall=2.6"

DA	% IMPERV	Rv	DA	ESDv	MINIMUM VOLUME	MAXIMUM VOLUME	VOLUME PROVIDED*	SURPLUS OR DEFICIT*	IMPERV AREA	GREEN AREA
2	65	0.635	0.1194	550	275	716	280	-275	0.0776	0.0418
1,6	58	0.572	0.3018	1253	627	1629	1212	275	0.1750	0.1268
TOTAL ESDv BY SUBAREA					1893.7		1492	0	0.25	0.17

\* Bio-retention utilized in each subarea at the rate of 75%. Surplus utilized in other subareas at the rate of 100%.

**Table B.4.1 Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration.**

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%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Mulch	shredded hardwood	aged 6 months, minimum; no pine or wood chips	
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain d'ain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile	n/a	n/a	FE Type I nonwoven
Gravel (underdrains and infiltration basins)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (2 1/2" to 3/4")	
Underdrain piping	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 pipe; not necessary underdrain pipe. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth.
Poured in place concrete (if required)	MSHA Min No. 3, F. = 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-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 308.8R9; vertical loading #10 or #12 @ 16" o.c.; alternate vertical loading based on soil pressures; and analysis of potential cracking.
Sand	AASHTO M-6 or ASTM-C-33	0.075 to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

**ENVIRONMENTAL CONCEPT PLAN**

**LAYOUT PLAN, GRADING AND SEDIMENT CONTROL**

**OWEN BROWN INTERFAITH CENTER**

TAX MAP 36 BLOCKS 21  
 6TH ELECTION DISTRICT

746 CRADLEROCK WAY COLUMBIA, MD 21045  
 PARCEL 427 LOT 1-A  
 PROPOSED USE: RELIGIOUS CENTER

PARCEL P/O 427, LOT 1A  
 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS

8407 MAIN STREET  
 ELLICOTT CITY, MD 21043  
 TEL: 410.461.7666  
 FAX: 410.461.8961

DESIGN BY: RHV  
 DRAWN BY: DJ  
 CHECKED BY: RHV  
 DATE: DECEMBER 2012  
 SCALE: AS SHOWN  
 W.O. NO.: 11-06

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. EXPIRES DATE: 09-27-2014

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