

GENERAL NOTES

- THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT FROM A CERTIFIED TITLE ABSTRACTOR. A TITLE REPORT COULD REVEAL ADDITIONAL CONVEYANCES, EASEMENTS, OR RIGHT-OF-WAYS NOT SHOWN HEREON.
- HORIZONTAL DATUM (BEARINGS AND COORDINATES AS SHOWN HEREON) ARE BASED ON THE STATE OF MARYLAND GRID MERIDIAN (NAD 83/91) AS REFERENCED FROM HOWARD COUNTY CONTROL STATIONS 0066 & 24B5.
- DEED REFERENCE: N/F VJL DEMIREL AND EYLEM DEMIREL LIBER 11399, FOLIO 313 DATED OCTOBER 27, 2008
- THE PROJECT BOUNDARY IS BASED ON A FIELD RUN BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC. IN SEPTEMBER 2011.
- AREA AS SURVEYED: PARCEL 1: 18,440 SQUARE FEET OR 0.4233 ACRES
PARCEL 2: 49,109 SQUARE FEET OR 1.1274 ACRES
PARCEL 3: 23,267 SQUARE FEET OR 0.5341 ACRES
TOTAL: 90,816 SQUARE FEET OR 2.0848 ACRES
- TAX MAP 24, GRID 1, PARCELS 62, 63, & P/O 544 (LOT 112)
- THE TOPOGRAPHY SHOWN ON THIS PLAN IS TAKEN FROM FIELD SURVEY BY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC. IN SEPTEMBER 2011.
- WATER AND SEWER FOR THIS PROJECT WILL BE PROVIDED THROUGH EXTENSION OF WATER CONTRACT 27-W AND SEWER CONTRACT 186-S UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
- THIS PLAN IS SUBJECT TO SECTION 117.3 OT (OFFICE TRANSITION) OF THE HOWARD COUNTY ZONING REGULATIONS.
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- EXISTING UTILITIES LOCATED FROM HOWARD COUNTY GIS, TOPOGRAPHIC SURVEY AND AS-BUILT DRAWINGS. 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.
- NO FLOODPLAIN IS LOCATED ONSITE.
- NO STEEP SLOPES OVER 20,000 SF CONTIGUOUS ARE LOCATED ONSITE.
- FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE ADDRESSED BY A FOREST CONSERVATION PLAN SUBMITTED WITH THE SITE DEVELOPMENT PLAN.
- THERE ARE NO WETLANDS, STREAMS OR BUFFERS ONSITE.
- 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, AND MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION. THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
- 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.
- NO FOREST RESOURCES ARE PRESENT ON THE SITE. HOWEVER THE SITE DOES CONTAIN SPECIMEN TREES.
- ZB 1049M - DECISION AND ORDER DATED FEBRUARY 6, 2013. GRANTS PETITIONERS REQUEST FOR REZONING OF THE PROPERTY FROM THE R-20 TO OT DISTRICT AND GRANTS APPROVAL OF THE FDP.

ENVIRONMENTAL SITE DESIGN NARRATIVE:

IN ACCORDANCE WITH CHECKLIST ITEM III.K.

- THERE ARE NO ENVIRONMENTALLY SENSITIVE AREAS ON THE PROJECT SITE. NO DISTURBANCE TO A STREAM OR WETLAND OR THEIR WOODED RESOURCES IS PROPOSED.
- NO DRAMATIC DISTURBANCE TO THE NATURAL DRAINAGE PATTERNS ARE PROPOSED. PLEASE REFER TO THE PROPOSED GRADING, SHEET 3.
- THE CONCEPTUAL DESIGN SHOWN HEREON PROVIDES THE "REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN, ALTERNATIVE SURFACES AND MICRO-SCALE PRACTICES" TO THE EXTENT PRACTICAL. THE SITE DESIGN INCORPORATES THE USE OF ALTERNATIVE SURFACES IN PARKING AREAS. OTHER PRACTICES INCLUDE THE USE OF MICRO-SCALE PRACTICES (MICRO-BIORETENTION) TO ACHIEVE THE REQUIRED ESDV.
- EXISTING IMPERVIOUS AREAS (EXISTING HOMES AND DRIVEWAY, TO BE REMOVED).
- SEDIMENT CONTROL FOR THIS SPECIFIC SITE PLAN WILL BE PROVIDED THROUGH THE USE A PROPOSED SILT FENCE PERIMETER CONTROLS AROUND THE PROPOSED DISTURBED AREAS AND A SEDIMENT TRAP. 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 FOR THE REQUIRED P = 1.8" THROUGH THE USE OF MICRO-BIORETENTION FACILITIES AND ALTERNATIVE SURFACES. THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION" TO THE MAXIMUM EXTENT PRACTICABLE.

III.K.6.

AT THIS CONCEPT STAGE OF DEVELOPMENT:

- NO WAIVER PETITIONS FOR ENVIRONMENTAL DISTURBANCE OR ENCROACHMENTS ARE REQUIRED. A WAIVER FOR REMOVAL OF SPECIMEN TREES SHALL BE SUBMITTED WITH THE FUTURE SITE DEVELOPMENT PLAN

MAPPED SOILS TYPES						
SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	PERCENT	K-FACTOR	CRUSTY SOILS
GHB	GLENN-G-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B/O	NO	NO	0.20	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
K-FACTOR = $K_w \times 0.4 \text{ DEPTH}$
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

SITE ANALYSIS DATA CHART

- | | |
|---|----------------------------|
| A. TOTAL PROJECT AREA: | 87,119 S.F. OR 2.00 AC. |
| B. AREA OF PLAN SUBMISSION: | 2.00 AC. |
| C. AREA OF WETLANDS: | 0 S.F. OR 0.00 AC. |
| D. AREA OF FLOODPLAIN: | 0 S.F. OR 0.00 AC. |
| E. AREA OF FOREST: | 0 S.F. OR 0.00 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: | 1.82 AC. |
| I. PROPOSED USES FOR SITE AND STRUCTURES: | COMB. OFFICE / RESIDENTIAL |
| J. GREEN OPEN AREA: | 1.18 AC. |
| K. PROPOSED IMPERVIOUS AREA: | 0.82 AC. |
| L. PRESENT ZONING DESIGNATION: | R-20 |
| 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: | N/A |

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 6/13/13
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 5/14/13

ENVIRONMENTAL CONCEPT PLAN

DEMIREL PROPERTY

(L.11399/F.313)
2ND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SHEET INDEX	
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 4
LAYOUT PLAN	2 OF 4
GRADING AND SOIL EROSION & SEDIMENT CONTROL PLAN	3 OF 4
SWM NOTES AND DETAILS	4 OF 4



VICINITY MAP

SCALE: 1"=2000'
ADC MAP COORDINATE: HC 4815 96

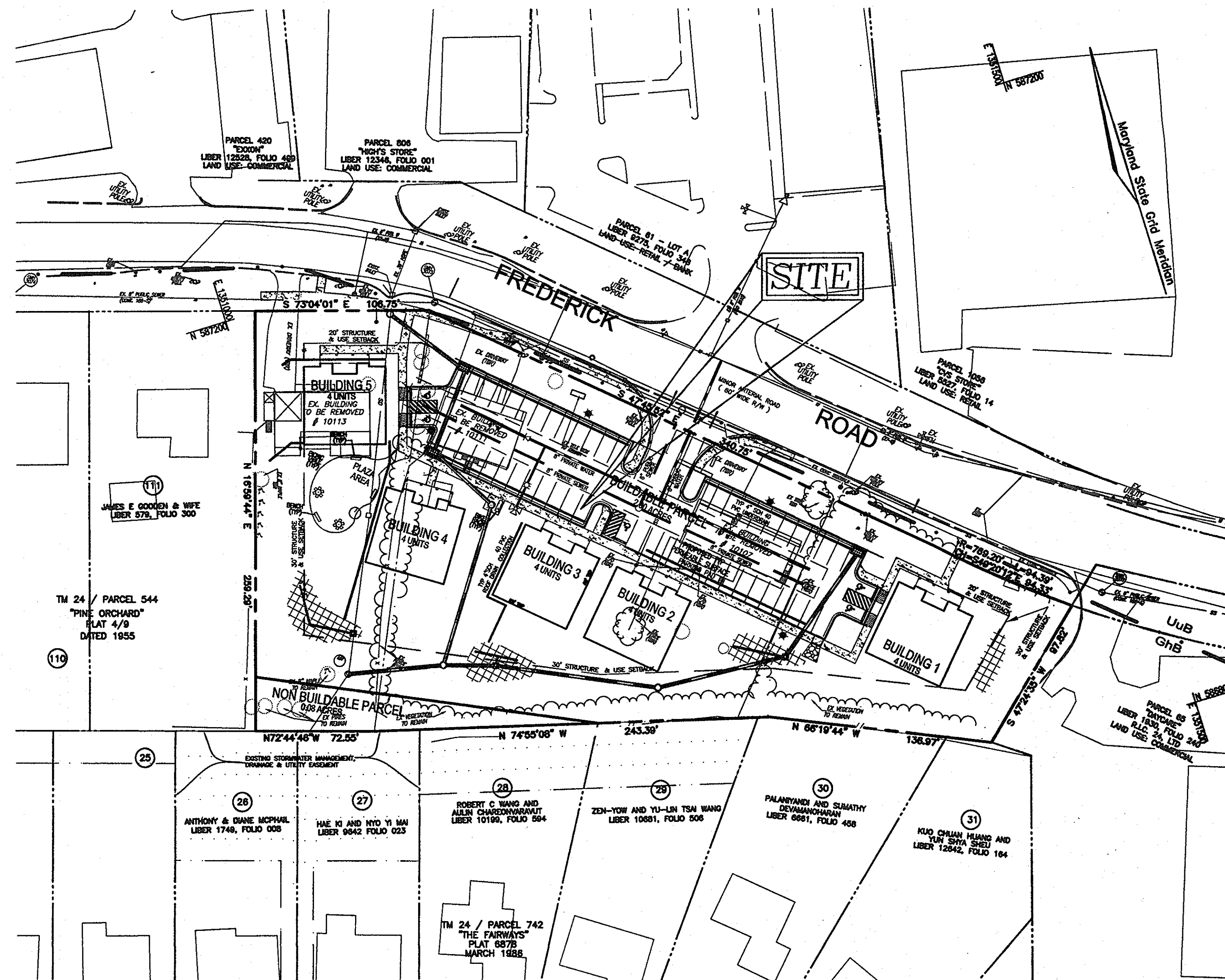
BENCHMARKS

HOWARD COUNTY BENCHMARK - 0066
N 587380.5040 E 1352603.4423 ELEV. 396.518
LOCATION: RT 40 BY ENCHANTED FOREST SHOPPING CENTER

HOWARD COUNTY BENCHMARK - 24B5
N 586956.2726 E 1356570.7844 ELEV. 390.170
LOCATION: ISLE AT CORNER RT.40 AND DOGWOOD DR.

LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- CENTERLINE OF EXISTING STREAM



SITE DATA

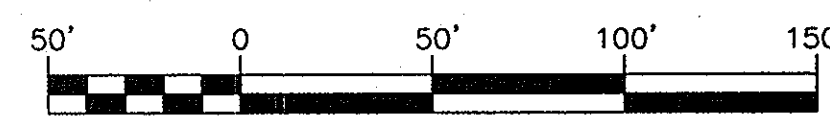
- TOTAL SITE AREA: 2.00 ACRES
- CURRENT ZONING: OT (OFFICE TRANSITION)
- PROPOSED USE: COMBINATION OFFICE / RESIDENTIAL
- HOURS OF OPERATION: LOW IMPACT / SMALL SCALE OFFICE
6:00 AM - 10:00 PM WEEKDAYS
7:00 AM - 6:00 PM WEEKENDS
- IMPERVIOUS SURFACE COVERAGE: 50% MAXIMUM ALLOWED OR 43,560 SF
35,544 SF / 0.82 ACRES OR 41% PROPOSED
- STRUCTURE LIMITATION: 5,000 SF MAXIMUM GROSS FLOOR AREA
- EACH BUILDING CONTAINS TWO OFFICE UNITS ON THE GROUND FLOOR AND TWO RESIDENTIAL UNITS ON THE SECOND FLOOR
- GROSS FLOOR AREA PER BUILDING:
- 2,460± (1ST) +2,460± (2ND) = 4,920 SF±
- GROSS FLOOR AREA OF RESIDENTIAL UNITS PER BUILDING:
- 1,198 SF± X 2 UNITS = 2,396 SF±
- THE RESIDENTIAL UNITS OCCUPY 48.7 % OF THE BUILDING GROSS AREA (50% MAX. ALLOWED)
- TYPICAL STRUCTURE HEIGHT: 34 FEET MAXIMUM
31.8 FEET MID PEAK PROVIDED

PERMIT INFORMATION CHART					
SUBDIVISION NAME	SECTION/ AREA	LOT/ PARCEL	PARCELS 62, 63 & P/O 544		
PLAT REF.	BLOCK NO	ZONE	TAX MAP	ELECT DIST.	CENSUS TR.
N/A	1	OT	24	2ND	XXXXXXX

LOCATION MAP
SCALE: 1" = 50'

PARKING TABULATION

- NUMBER OF PARKING SPACES REQUIRED: 5 PROPOSED BUILDINGS @ 2,460 SF = 12,300 SF
5 BUILDINGS X 2 APARTMENTS = 10 APARTMENTS
12,300 SF X 3.3 SPACES PER 1,000 SF = 40.59 SPACES
10 APARTMENTS X 2.3 SPACES PER APT. = 23.00 SPACES
64.25 SPACES REQUIRED*
 - NUMBER OF PARKING SPACES PROVIDED: 59 SPACES (MINIMUM 54.39*)
- * USE OF SHARED PARKING ALLOWED PER SECTION 133.E.1.A. OF HOWARD COUNTY ZONING REGULATIONS



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ENVIRONMENTAL CONCEPT PLAN
COVER SHEET
DEMIREL PROPERTY
L.11399/F.313

2ND ELECTION DISTRICT
TAX MAP: 24, GRID: 1

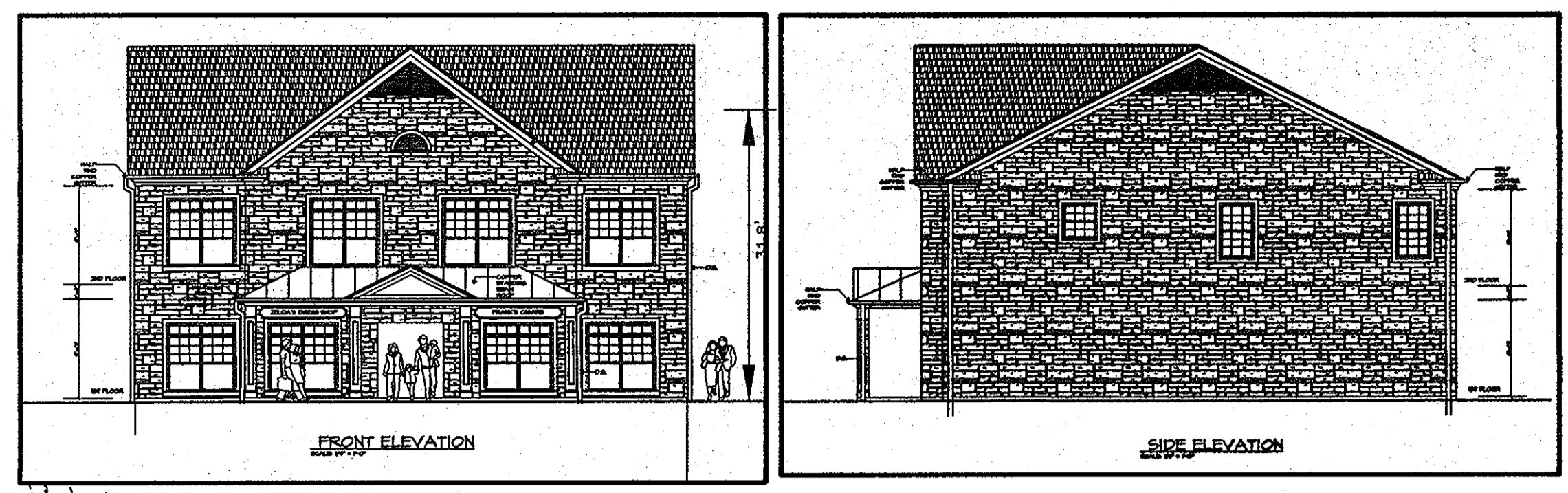
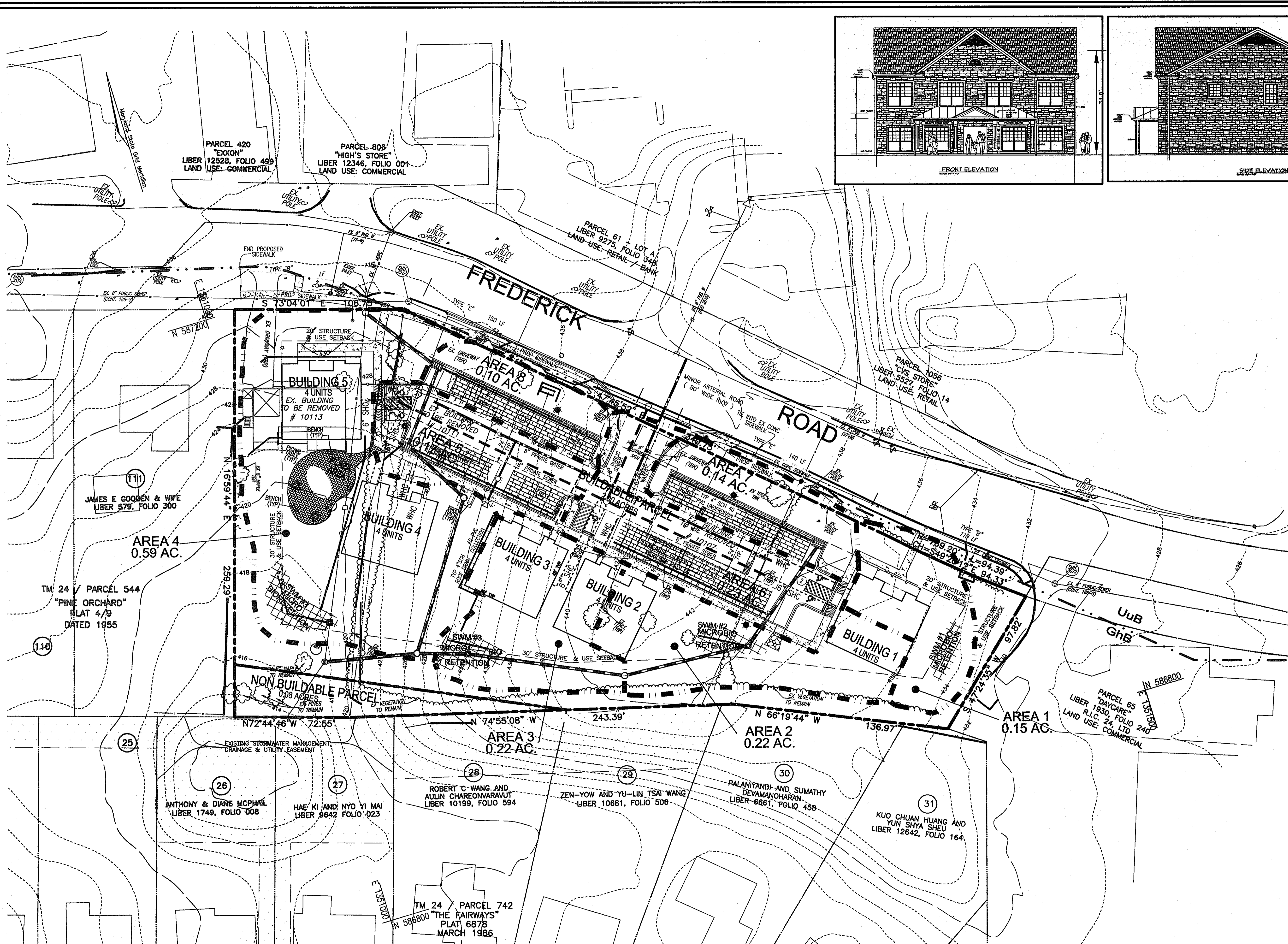
ZONED: OT-
PARCELS 62, 63 AND P/O 544 (LOT 112)
HOWARD COUNTY, MARYLAND

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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. 16193 EXPIRATION DATE: 09-27-2014

DESIGN BY: EDS
DRAWN BY: JER
CHECKED BY: RHY
DATE: APRIL 2013
SCALE: AS SHOWN
W.O. NO.: 11-01

1 SHEET OF 4



LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING 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 FIRE HYDRANT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLETS
- EXISTING TREELINE
- SOILS BOUNDARY
- UuB
- GhB
- MICRO-BIORETENTION FACILITY
- PERMEABLE SURFACE PARKING PAD
- DRAINAGE DIVIDE
- EXISTING STREET TREES

SITE LIGHTING:

- PROPOSED LIGHTING SHALL BE LIMITED TO BOLLARD OR OVERHEAD FIXTURES NOT TO EXCEED 14FT. IN HEIGHT AND SHALL MEET ALL COUNTY REQUIREMENTS. ALL LIGHTING SHALL BE DIRECTED DOWN AND AWAY FROM ADJOINING PROPERTIES VIA CUTOFF SHIELDS AND SHALL BE INSTALLED SUCH THAT THE SURROUNDING RESIDENTIAL AREAS AND ROADWAYS WILL NOT BE IMPACTED.
- ALL LIGHTING SHALL COMPLY WITH SECTION 134 OF THE ZONING REGULATIONS.
- LOCATE LIGHTING POLES A MINIMUM OF 3'-0" BEHIND FACE OF CURB TO CENTER, OR 1'-0" OFF EDGE OF SIDEWALK.
- POLE LOCATIONS SHALL BE COORDINATED WITH LANDSCAPING.

Pole Options - 12' decorative fiberglass, 14' plain or decorative fiberglass

Column	Posture	Gothic
LUMINAIRE	SHOTS	LIGHT SOURCE
9,500	100	Sodium Vapor
15,000	150	Sodium Vapor
8,500	100	Metal Halide
14,000	150	Metal Halide

Acorn	Havre de Grace	Maple Lawn	Torsion

BGE "MAPLE LAWN" POST TOP LUMINAIRE MOUNTED ON 14' PLAIN OR DECORATIVE POLE.

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
LAYOUT PLAN
DEMIREL PROPERTY
L11389/F.313

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2 SHEET OF 4

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 6/3/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE

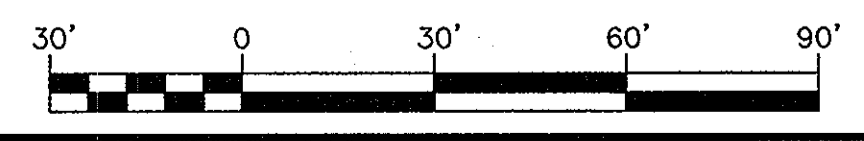
[Signature] 5/14/13
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE

LAYOUT PLAN SCALE: 1" = 30'

MAPPED SOILS TYPES									
SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	PERCENT	K-FACTOR	PERCENT	PERCENT	PERCENT	PERCENT
GhB	GLENELO-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B/O	NO	NO	0.20	NO	NO	NO	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
K-FACTOR = Kw @ 0-4" DEPTH

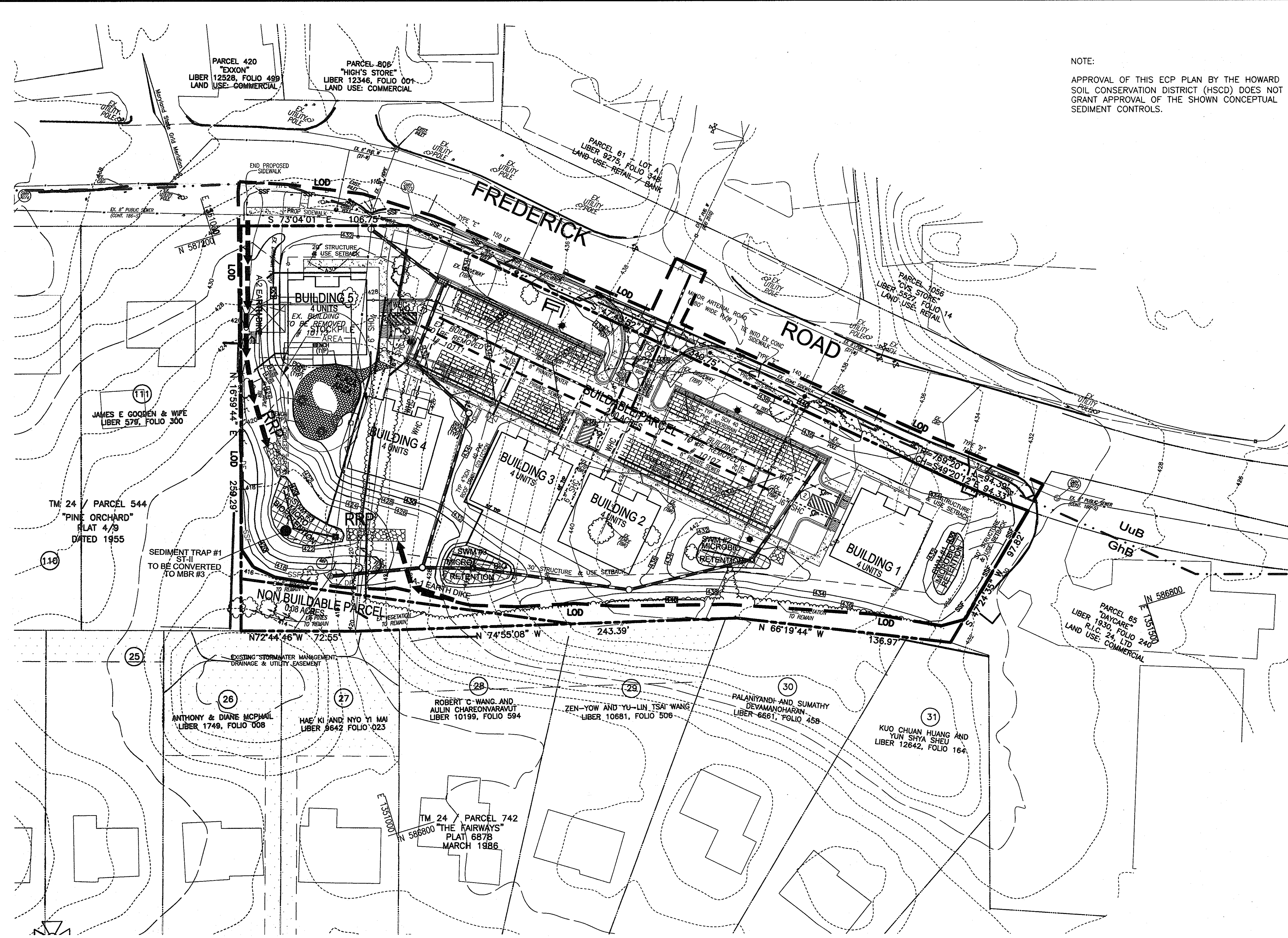
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K:\PROJECTS\11-01\ENG\DWG\EGP\02-OVERALL.DWG



LEGEND

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLETS
- EXISTING TREELINE
- SOILS BOUNDARY
- FA
- RUB
- MICRO-BIORETENTION FACILITY
- DRY WELL
- PERMEABLE SURFACE PARKING PAD
- BIO SWALE
- DRAINAGE DIVIDE
- PROPOSED CONVERTED GRASSED / VEGETATED AREA

NOTE:
 APPROVAL OF THIS ECP PLAN BY THE HOWARD SOIL CONSERVATION DISTRICT (HSCD) DOES NOT GRANT APPROVAL OF THE SHOWN CONCEPTUAL SEDIMENT CONTROLS.

SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT.
2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410-313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.
3. INSTALL SEDIMENT CONTROL MEASURES AS SHOWN ON PLAN AND IN ACCORDANCE WITH DETAILS.
4. AFTER OBTAINING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR TO PROCEED.
5. COMPLETE SITE DEVELOPMENT.
6. COMPLETE CONSTRUCTION OF MICRO-BIORETENTION FACILITIES & ALL STORMWATER MANAGEMENT FEATURES. CONVERT SEDIMENT TRAP TO MICRO-BIORETENTION FACILITY AS SHOWN & DETAILED HEREON.
6. UPON STABILIZATION OF ALL DISTURBED AREAS AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ALL PERIMETER SEDIMENT CONTROL DEVICES.

NOTES

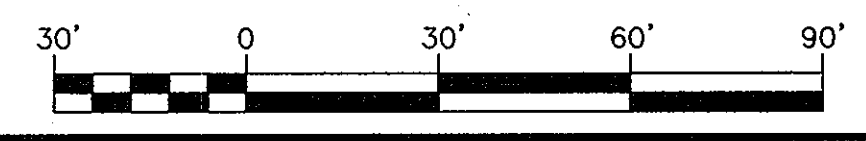
- DURING GRADING AND AFTER EACH RAINFALL THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL MEASURES SHOWN HEREON.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITH:
- A. 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, SWALES, DITCH PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1.
 - B. 14 CALENDAR DAYS FOR ALL OTHER DISTURBED AREAS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6/13/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 5/14/13
 CHIEF, DIVISION OF LAND DEVELOPMENT

GRADING & DRAINAGE AREA PLAN
 SCALE: 1"=30'

MAPPED SOILS TYPES					
SYMBOL	NAME / DESCRIPTION	GROUP	HYDRIC	PERCENT CLAY	PERCENT SAND
G/S	GLENELO-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B/D	NO	NO	NO

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.



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NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
GRADING PLAN
DEMIREL PROPERTY
 L11389/F.313

ZONED: O.T.
 PARCELS 62, 63 AND P/O 544 (LOT 112)
 HOWARD COUNTY, MARYLAND

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3 SHEET OF **4**

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

- 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 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 A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.02.
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 (60%-65%) AND COMPOST (40% TO 40%) OR SANDY LOAM (30%), COARSE SAND (5%), 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.
THESE SHALL BE AT LEAST ONE SOIL TEST PER PRACTICE. 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 TEXTURAL ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

- 3. COMPACTION**
IT IS VERY IMPORTANT TO MANAGE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL WHEN POSSIBLE. USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LONGER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. 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 AVOIDED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL, PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACURE THE SOIL PROFILE THROUGH THE 12 INCH OPERATION 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. WATER BEFORE PREPARING (ROTILLING) BASE.
ROTILL TO 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE ORIGINAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTILLING) BASE.
WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTILL THE SAND/TOPSOIL TO CREATE A GRANULATION 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 MARSH 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 INNER AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED 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. SHREDDED MULCH MUST BE WELL AERED (6 TO 12 MONTHS) FOR ACCEPTANCE.
ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH 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 CHISEL 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 DRILLED 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 ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING MAGNESIUM ACETATE, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTILL 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 F 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED. 4" RIGID PIPE (1/8" P.W. OF HOLES).
• PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER FOOT. PIPE SHALL BE WRAPPED WITH 4" OR 4.5" GALVANIZED HARDWARE 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 0.2% SLOPE.
• A RED, 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 3/4" 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 EXCAVATED 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.

- OPERATION AND MAINTENANCE SCHEDULE FOR MICROBIORETENTION 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. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 HARTLAND STORMWATER DESIGN MANUAL VOLUME 3, TABLE A.4.1 AND 2.
 - SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION BEYOND TREATMENT, TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT 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 BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

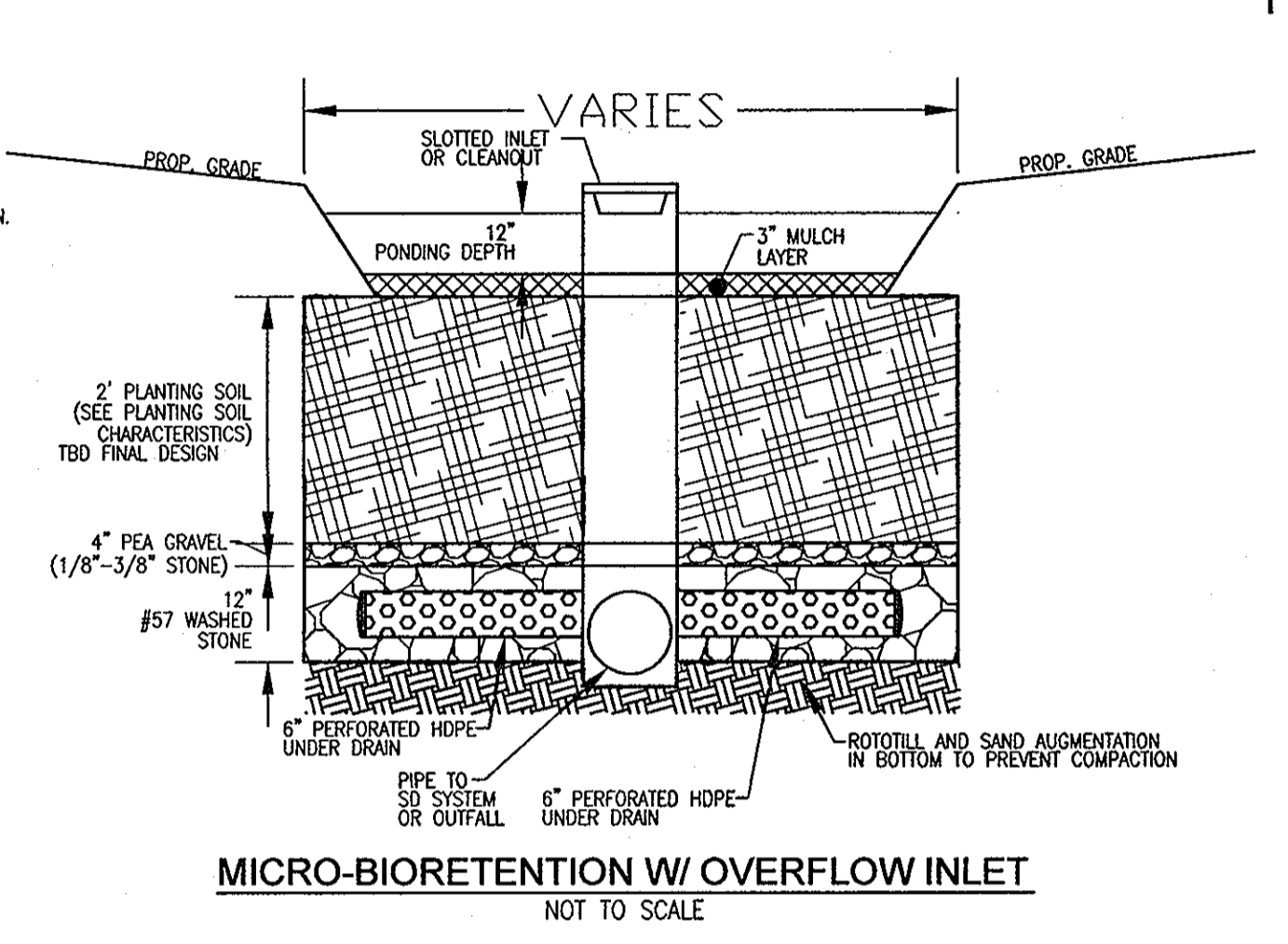
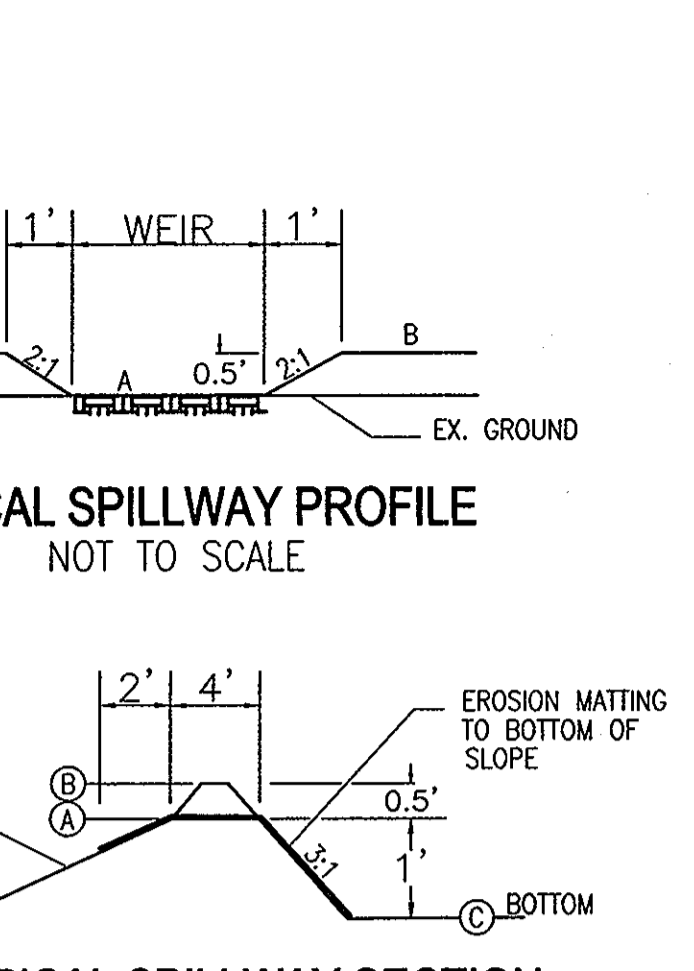
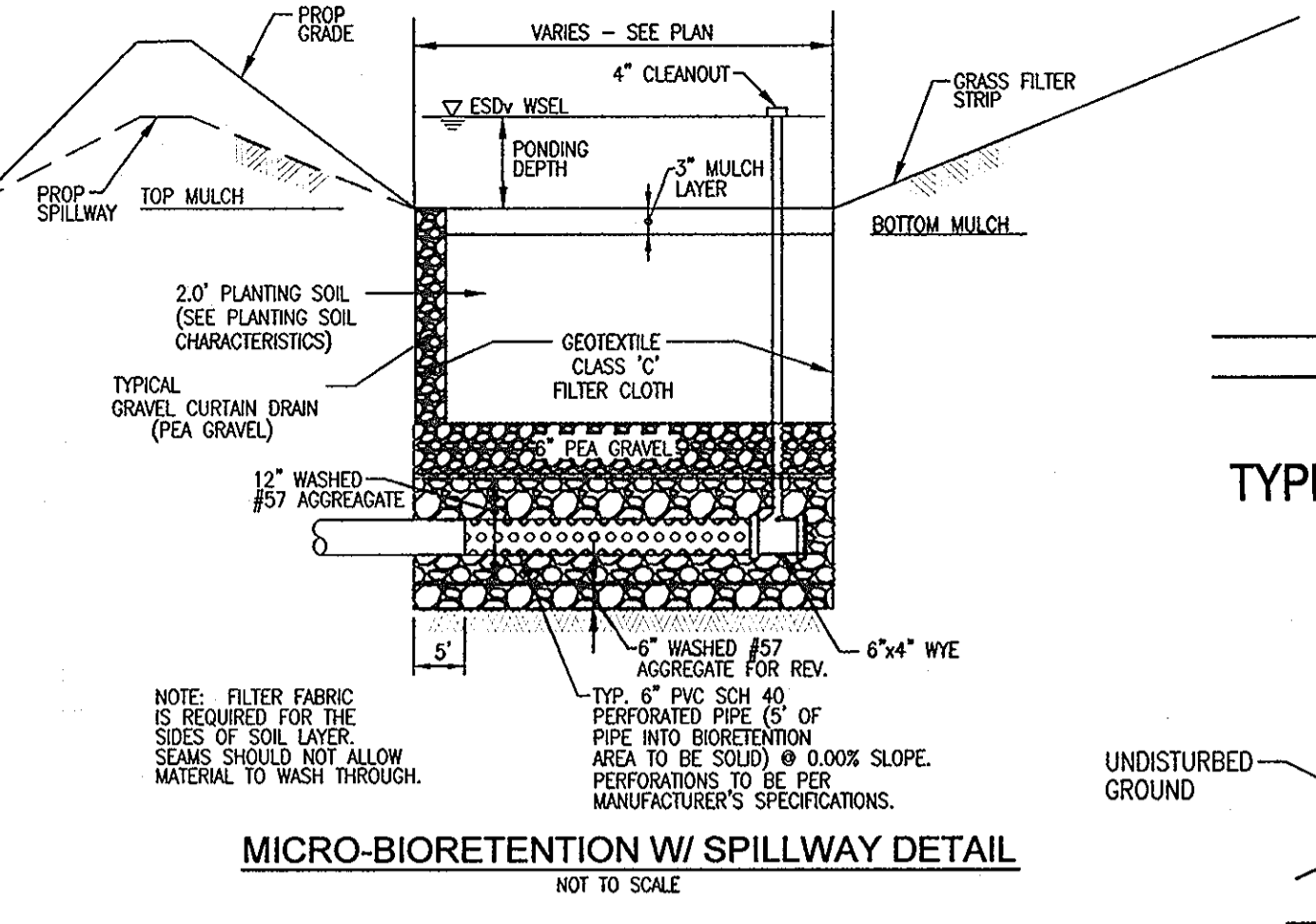
Appendix B.4. Construction Specifications for Environmental Site Design Practices

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil (7" to 4" deep)	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (10%) & 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)		
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 drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile	AASHTO M-43	n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)		NO. 57 OR NO. 6 AGGREGATE (3/8" 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 pipes. Perforated pipe shall be wrapped with 1/2-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; F _c = 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 308.2R; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking. Sand substitutions such as Diabase and Gneiss (AASHTO #10 are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
Sand	AASHTO-M-6 or ASTM-C-33	0.075" to 0.04"	

SYMBOL / DESCRIPTION	GROUP	HYDRO	PERCENT CLAY	K-FACTOR	PERCENT SAND	PERCENT SILT	PERCENT CLAY
Gsb GLENELG-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B/D	NO	NO	0.20	NO	NO	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY
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
K-FACTOR = Kw @ 0-4' DEPTH

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6/13/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 5/14/13
 CHIEF, DIVISION OF LAND DEVELOPMENT



A-2. PERMEABLE PAVEMENTS

- CONSTRUCTION CRITERIA:**
- THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH PERMEABLE PAVEMENT:
 - EROSION AND SEDIMENT CONTROL: FINAL GRADING FOR INSTALLATION SHOULD NOT TAKE PLACE UNTIL THE SURROUNDING SITE IS STABILIZED. IF THIS CANNOT BE ACCOMPLISHED, RUNOFF FROM DISTURBED AREAS SHALL BE DIVERTED AROUND PROPOSED PAVEMENT LOCATIONS.
 - SOIL COMPACTION: SUB SOILS SHALL NOT BE COMPACTED. CONSTRUCTION SHOULD BE PERFORMED WITH LIGHTWEIGHT, WIDE TRACKED EQUIPMENT TO MINIMIZE COMPACTION. EXCAVATED MATERIALS SHOULD BE PLACED IN A CONTAINED AREA.
 - DISTRIBUTION SYSTEMS: OVERDRAIN, UNDERDRAIN, AND DISTRIBUTION PIPES SHALL BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS (SEE APPENDIX B. 4). THE UPSTREAM ENDS OF PIPES SHOULD BE CAPPED PRIOR TO INSTALLATION. ALL UNDERDRAIN OR DISTRIBUTION PIPES USED SHOULD BE INSTALLED FLAT ALONG THE BED BOTTOM.
 - SUBBASE INSTALLATION: SUBBASE AGGREGATE SHALL BE CLEAN AND FREE OF FINES. THE SUBBASE SHALL BE PLACED IN LIFTS AND LIGHTLY ROLLED ACCORDING TO THE SPECIFICATIONS (SEE APPENDIX B.4).

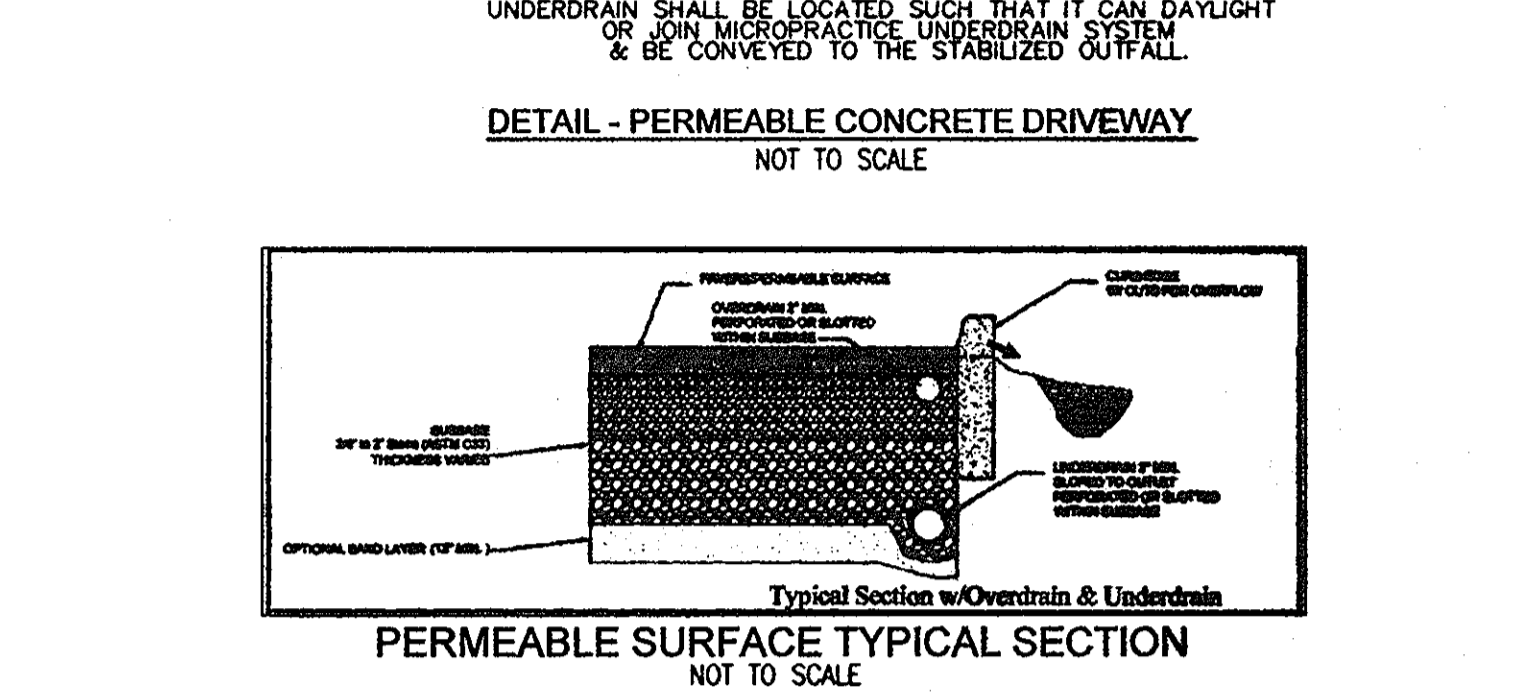
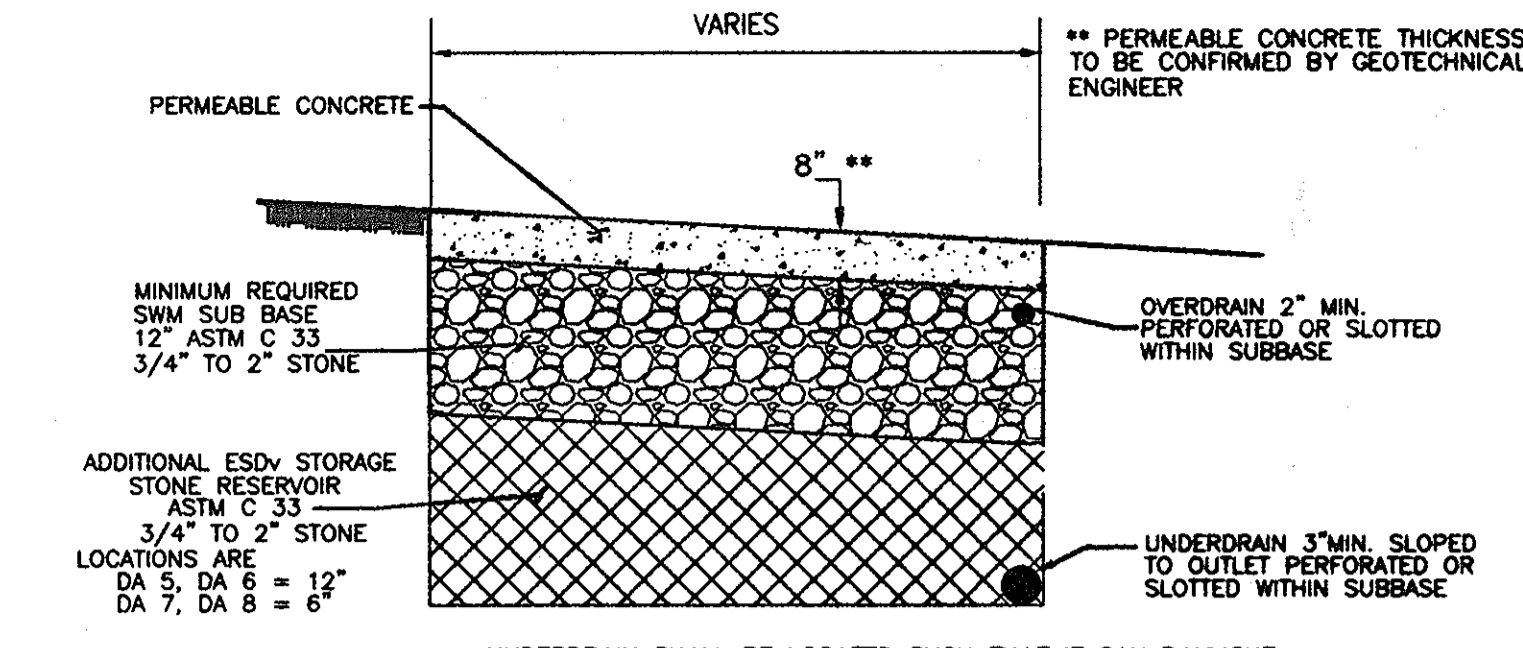
- INSPECTION:**
- REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:
- DURING EXCAVATION TO SUB GRADE.
 - DURING PLACEMENT AND BACKFILL OF ANY DRAINAGE OR DISTRIBUTION SYSTEM(S).
 - DURING PLACEMENT OF THE CRUSHED STONE SUBBASE MATERIAL.
 - DURING COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

MAINTENANCE CRITERIA:

- THE FOLLOWING PROCEDURES SHOULD BE CONSIDERED ESSENTIAL FOR MAINTAINING PERMEABLE PAVEMENT SYSTEMS:
- PAVEMENTS SHOULD BE USED ONLY WHERE REGULAR MAINTENANCE CAN BE PERFORMED. MAINTENANCE AGREEMENTS SHOULD CLEARLY SPECIFY HOW TO CONDUCT ROUTINE TASKS TO ENSURE LONG-TERM PERFORMANCE.
 - PAVEMENT SURFACES SHOULD BE SWEEPED AND VACUUMED TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING SYSTEMS AND COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
 - DRAINAGE PIPES, INLETS, STONE EDGE DRAINS, AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.
 - TRUCKS AND OTHER HEAVY VEHICLES CAN GRIND DIRT AND GRIT INTO THE POROUS SURFACES, LEADING TO CLOSING AND PREMATURE FAILURE. THESE VEHICLES SHOULD BE PREVENTED FROM TRACKING AND SPILLING MATERIAL ON TO THE PAVEMENT.
 - DEICERS SHOULD BE USED IN MODERATION. WHEN USED, DEICERS SHOULD BE NON-TOXIC AND ORGANIC AND CAN BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT. SNOW PLOWING SHOULD BE DONE CAREFULLY WITH BLADES SET ONE-INCH HIGHER THAN NORMAL. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

HOWARD COUNTY - OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

- THE OWNER SHALL PERIODICALLY SWEEP (OR VACUUM POROUS CONCRETE PAVEMENT) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSED 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 DRAINING TO THE SUBBASE
- THE OWNER SHALL USE DEICERS IN MODERATION. DEICERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
- THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.



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, ACI 308.2R, ACI 308R) 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 ADMITTIVES MAY ALSO BE USED. MATERIALS SHALL BE TESTED (E.G., TYP. BUILDING) 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 THE 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. 88 (3/8 IN. TO NO.20) SIEVES. SINGLE-SIEVE 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 ADMITTIVES. WATER QUALITY SHOULD MEET AQA 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.
ADMITTIVES - CHEMICAL ADMITTIVES (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADMITTIVES SHOULD MEET ASTM C 494 (CHEMICAL ADMITTIVES) AND ASTM C 260 (AIR ENTRAINING ADMITTIVES) 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% (n=0.30).
2. PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)
PAVER BLOCKS - BLOCKS SHOULD BE EITHER 3/4 IN. OR 4 IN. THICK, AND MEET ASTM C 936 OR CSA A231.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 20% OR MORE (WAS 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. PICP 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% (n=0.30).
3. REINFORCED TURF
REINFORCED GRASS PAVEMENT (RGP) - WHETHER USED WITH GRASS OR GRVEL, 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.

DEMIREL PROPERTY - ENVIRONMENTAL CONCEPT PLAN ESDv COMPUTATIONS

DA	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.8" VOLUME	VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
1	28.30	0.3047	6361	0.15	162	420	291	420	1800	0.04	0.10	MICROSCALE MICRO-BIO RETENTION #1 432 432 SF MICRO BIO
2	26.46	0.2882	9636	0.22	231	602	417	602	2550	0.06	0.16	MICROSCALE MICRO-BIO RETENTION #2 602 625 SF MICRO BIO
3	42.42	0.4318	9370	0.22	337	877	607	800	3975	0.09	0.12	MICROSCALE MICRO-BIO RETENTION #3 800 800 SF MICRO BIO
4	28.79	0.3091	25700	0.59	662	1721	1192	1132	7400	0.17	0.42	MICROSCALE MICRO-BIO RETENTION #4 940 940 SF MICRO BIO
5	100.00	0.9500	7240	0.17	573	1490	1032	840	7240	0.17	0.00	MICROSCALE MICRO-BIO RETENTION #5 268 PERM SURFACE PARKING PAD @ .15 410 STONE UNDER PERM SURFACE PARKING @ 1.0' 162 PERM SURFACE SIDEWALK @ .15
6	100.00	0.9500	10235	0.23	810	2107	1458	1164	10235	0.23	0.00	ALT SURFACE PARKING AREA (BUILDING 1 & 2) 367 PERM SURFACE PARKING PAD @ .15 562 STONE UNDER PERM SURFACE PARKING @ 1.0' 235 PERM SURFACE SIDEWALK @ .15
7	42.28	0.4305	6150	0.14	221	574	397	574	2600	0.06	0.08	ALT SURFACE - FREDERICK ROAD EAST PARKING BAY 349 PERM SURFACE PARKING PAD @ .15 267 STONE UNDER PERM SURFACE PARKING @ 0.5' 617
8	45.35	0.4581	4565	0.10	174	453	314	453	2070	0.05	0.06	ALT SURFACE - FREDERICK ROAD WEST PARKING BAY 369 PERM SURFACE PARKING PAD @ .15 267 STONE UNDER PERM SURFACE PARKING @ 0.5' 617
PROJECT TOTALS	47.8	0.4801	79257	1.82	3171	8244	5707	5985	37872	0.87	0.95	

NOTE:
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 ANTICIPATED AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.

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ENVIRONMENTAL CONCEPT PLAN
STORMWATER MANAGEMENT - NOTES & DETAILS
DEMIREL PROPERTY
L11389 / F.313

2ND ELECTION DISTRICT
TAX MAP: 24 082

ZONED: OT
PARCELS 62, 63 AND P/O 544 (LOT 112)
HOWARD COUNTY, MARYLAND

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DESIGN BY: EDS.
DRAWN BY: JER.
CHECKED BY: RHY.
DATE: APRIL 2013.
SCALE: AS SHOWN.
W.O. NO.: 11-01

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. 16183 EXPIRATION DATE: 09-27-2014

4 SHEET OF 4