

GENERAL NOTES

- SITE ANALYSIS**
 AREA OF SITE: 65,814 SF (1.51 AC.)
 AREA OF WETLAND AND BUFFERS: 0 SF (0.00 AC.)
 AREA OF FLOODPLAIN AND BUFFERS: 0 SF (0.00 AC.)
 AREA OF FORESTS: 0 SF (0.00 AC.)
 AREA OF STEEP SLOPES (15% OR GREATER): 4,026 SF (0.09 AC.)
 AREA OF ERODIBLE SOILS: 0 SF (0.00 AC.)
 LIMIT OF DISTURBED AREA: 59,270 SF (1.36 AC.)
 PROPOSED SITE USE: RETAIL BUILDING 13,000 SF/0.30 AC
 PARKING/SIDWALKS 24,575 SF/ 0.56 AC
 GREEN OPEN AREA: 28,239 SF (0.65 AC.)
 PROPOSED IMPERVIOUS AREA: 37,575 SF (0.86 AC.)
 CUT: 1133 CY FILL: 546 CY
- PROJECT BACKGROUND:**
 LOCATION : COLUMBIA, MD.; TAX MAP 42, BLOCK 8, PARCEL 322, LOT F-2, & FORMER ADJACENT SHA LAND
 ZONING : NT/INDUSTRIAL
 SUBDIVISION : RIVERS CORPORATE PARK
 SECTION/AREA : 1/1
 DPZ REFERENCES: SDP-86-10, FDP-184-A-IV, SDP-08-008
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A FIELD TOPOGRAPHICAL SURVEY WITH TWO FOOT CONTOUR INTERVALS PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC., DATED MARCH, 2007.
 - THE PROPERTY LINES SHOWN HEREON IS BASED ON A BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL, INC., DATED MARCH, 2007.
 - A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
 - ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
 - PUBLIC WATER AVAILABLE THROUGH CONTRACT #24-1174-0.
 - PUBLIC SEWER AVAILABLE THROUGH CONTRACT #24-1174-0.
 - TRAFFIC IMPACT STUDY PREPARED BY THE TRAFFIC GROUP, INC., DATED JULY 31, 2007. APPROVED AUGUST 23, 2007.
 - BUILDING TO HAVE INSIDE WATER METER SETTINGS.
 - THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, DEVELOPMENT OR CONSTRUCTION OF THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION, OR BUILDING AND GRADING PERMITS.
 - NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS AND FOREST CONSERVATION EASEMENT AREAS.
 - THE SUBJECT PROPERTY IS ZONED NT PER THE 02/02/04 COMPREHENSIVE ZONING PLAN AND THE COMP LITE ZONING AMENDMENTS DATED 07/28/08.
 - THIS PROJECT IS EXEMPT FROM THE REQUIREMENTS OF SECTION 16.1202(b)(4) OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BECAUSE IT IS LOCATED IN THE NT ZONE.
 - THERE IS NO FLOODPLAIN LOCATED ON PARCEL F-2.
 - THERE ARE NO WETLANDS LOCATED ON PARCEL F-2.
 - THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS 42DA AND 42DB WERE USED FOR THIS PROJECT.
 - TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO CEMETERIES OR GRAVE SITES LOCATED ON THE SUBJECT PROPERTY.
 - STORM WATER MANAGEMENT TO BE PROVIDED FOR THIS DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING MICRO BIO-RETENTION FACILITIES & PERMEABLE PAVEMENT.
 - THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT.
 - NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THE PROPERTY.
 - SEDIMENT AND EROSION CONTROL WILL BE PROVIDED FOR THIS SITE.
 - OLD COLUMBIA ROAD IS NOT A SCENIC ROAD.
 - APPROVAL OF THIS ECP DOES NOT CONSTITUTE APPROVAL OF ANY SUBSEQUENT OR ASSOCIATED SUBDIVISION OR SITE DEVELOPMENT PLAN. REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND HOWARD COUNTY ZONING REGULATIONS SHALL OCCUR AT THE SUBDIVISION AND SITE PLAN STAGES. THEREFORE, THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED COMMENTS, INCLUDING THOSE THAT MAY ALTER OVERALL SITE DESIGN AS THE PROJECT PROGRESSES.

ENVIRONMENTAL CONCEPT PLAN RIVERS OVERLOOK RIVERS CORPORATE PARK 10000 OLD COLUMBIA ROAD LOT F-2 / PARCEL 322 & FORMER ADJACENT SHA LAND (Parcel 535) HOWARD COUNTY, MARYLAND

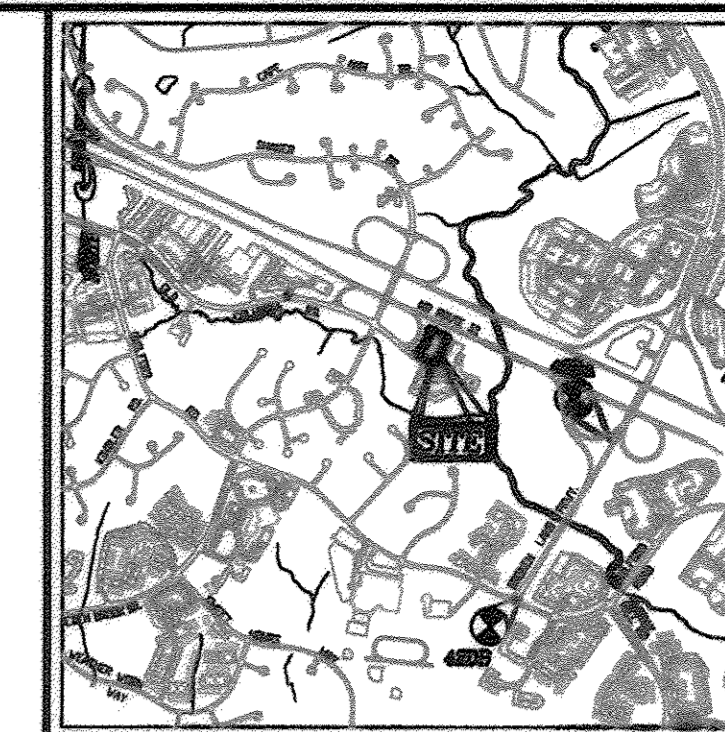
LEGEND

EXISTING CONTOUR
 PROPOSED CONTOUR
 EXISTING SPOT ELEVATION
 PROPOSED SPOT ELEVATION

EXISTING TREES TO REMAIN
 LIGHT POLES
 PROPOSED SIDEWALK
 RIGHT-OF-WAY LINE
 PROPERTY LINE
 ADJ. PROPERTY LINES
 EX. 20' DRAINAGE AND UTILITY EASEMENT

BENCHMARKS

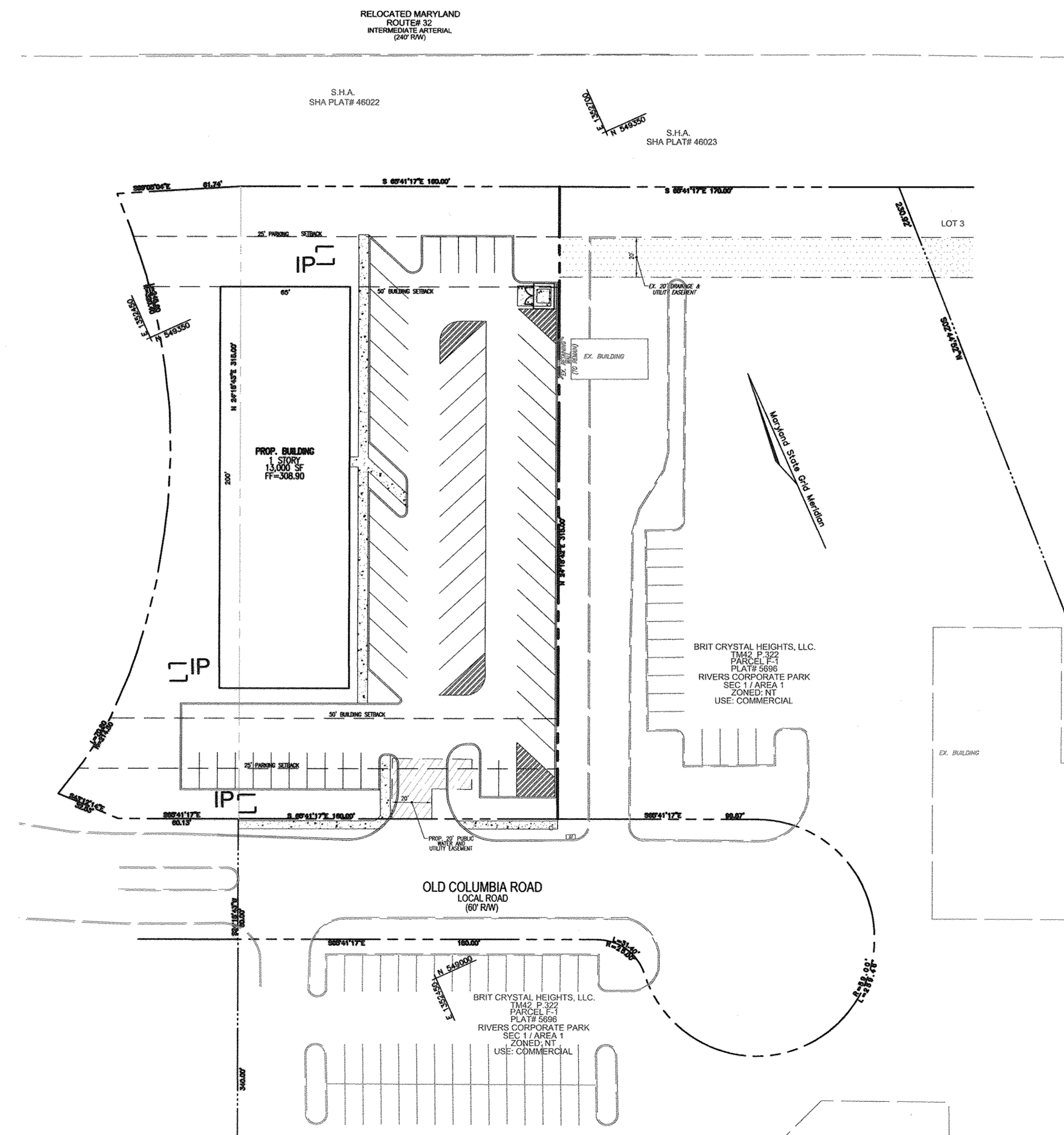
HOWARD COUNTY BENCHMARK 42DA (CONC. MON.)
 N 548260.108 E 1354371.811 ELEV. 299.06
 HOWARD COUNTY BENCHMARK 42DB (CONC. MON.)
 N 546638.827 E 1353431.484 ELEV. 310.83



VICINITY MAP
 SCALE: 1"=2000'
 ADC MAP COORDINATE: 5053 C3

ENVIRONMENTAL SITE DESIGN NARRATIVE:

- IN ACCORDANCE WITH CHECKLIST ITEM III.K.
- THERE ARE NO NATURAL 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 2 & 3.
 - THE CONCEPTUAL DESIGN SHOWN HEREON PROVIDES THE "REDUCTION IN IMPERVIOUS AREA THROUGH BETTER SITE DESIGN, ALTERNATIVE SURFACES AND NON STRUCTURAL PRACTICES" TO THE MAXIMUM EXTENT PRACTICAL. THE SITE ENVIRONMENTAL DESIGN INCORPORATES THE USE OF ALTERNATIVE SURFACES IN PERIMETER PARKING AREAS. OTHER PRACTICES, THOUGH NOT NON-STRUCTURAL, INCLUDE THE USE OF MICRO-SCALE PRACTICES MICRO-BIORETENTION (M-6) TO ACHIEVE THE REQUIRED ESDV.
 - 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 REQUIREMENTS AT THE TIME OF APPROVAL OF THE SDP BY SIGNATURE OF THE SDP BY THE HOWARD SOIL CONSERVATION DISTRICT.
 - STORMWATER MANAGEMENT FOR THE PROJECT SHALL BE MET FOR THE REQUIRED P = 1.0" & 2.6" THROUGH THE USE OF MICRO-BIORETENTION FACILITIES (M-6) AND ALTERNATIVE SURFACES PERMEABLE PAVEMENT (A-2). THE RESULTS OF THE ENVIRONMENTAL SITE DESIGN FOR THIS PROJECT WILL REFLECT "WOODS IN GOOD CONDITION" TO THE MAXIMUM EXTENT PRACTICABLE.
- AT THIS CONCEPT STAGE OF DEVELOPMENT:
- ALL ITEMS LISTED IN SECTION II.C.1.A HAVE BEEN INCLUDED IN THE GENERAL NOTES
 - IMPLEMENTATION OF THE ESD PLANNING TECHNIQUES AND PRACTICES TO THE MAXIMUM EXTENT PRACTICABLE HAVE BEEN ACHIEVED BY MEETING THE REQUIRED ESDV.
 - ANY DESIGN MANUAL AND WAIVER PETITIONS FOR ENVIRONMENTAL AND STORMWATER DESIGN SHALL BE SUBMITTED UNDER THE SITE DEVELOPMENT PLAN STAGE. HOWEVER IT SHOULD BE NOTED WE DO NOT ANTICIPATE THE NEED FOR ANY WAIVERS TO SWM.
 - NO WAIVER PETITIONS FOR ENVIRONMENTAL DISTURBANCE OR ENCROACHMENTS ARE REQUIRED.



LOCATION MAP
 SCALE: 1"=40'

OWNER
 TAYLOR FAMILY LP A
 4100 COLLEGE AVENUE
 ELLICOTT CITY, MD 21041
 (410) 465-3500

DEVELOPER
 LAND DESIGN AND DEVELOPMENT
 MR. DONALD REUMER
 5300 DORSEY HALL DR.
 ELLICOTT CITY, MD 21042
 (443) 367-0422

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN
 COVER SHEET
 RIVERS OVERLOOK
 RIVERS CORPORATE PARK
 10000 OLD COLUMBIA RD
 LOT F-2 / PARCEL 322 &
 FORMER ADJACENT SHA LAND
 HOWARD COUNTY, MARYLAND**

TAX MAP 42 BLOCK 8
 6TH ELECTION DISTRICT
 DPZ REF'S: SDP-86-10,
 FDP-184-A-IV, SDP-08-008

ZONED: NT
 PARCEL 322, LOT F-2
 HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 13174 EXPIRATION DATE: 01-21-2013

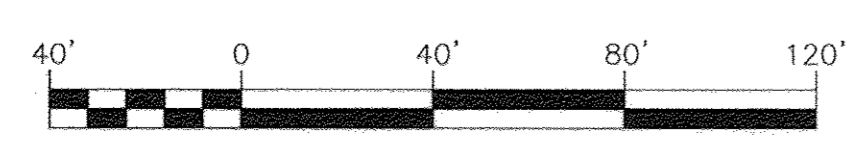
DESIGN BY: JBS
 DRAWN BY: JMR
 CHECKED BY: RHY
 DATE: SEPTEMBER 2012
 SCALE: AS SHOWN
 W.O. NO.: 06-58

1 SHEET OF 4

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 2/8/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 2/07/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE



SHEET INDEX

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

ADDRESS CHART

LOT/PARCEL#	STREET ADDRESS
F-2/322 & FORMER ADJACENT SHA LAND (Parcel 535)	10000 NE OLD COLUMBIA RD.

PERMIT INFORMATION CHART

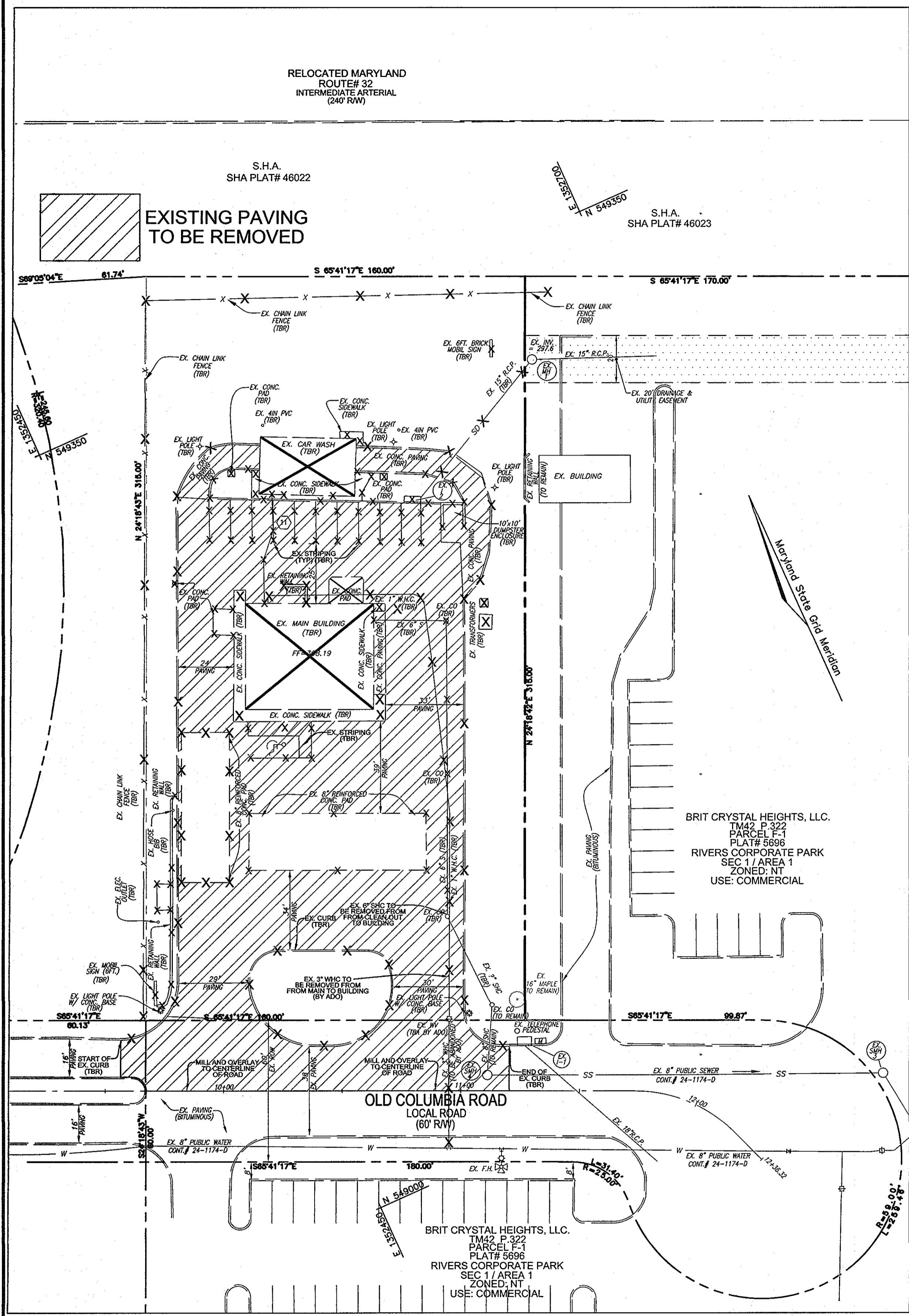
SUBDIVISION NAME	SECTION/AREA	LOT/PARCEL NUMBER
RIVERS CORPORATE PARK	2/1	F-2/322

PLAT OR L/F	GRID NO.	ZONING	TAX MAP NO.	ELECT. DIST.	CENSUS TR.
L10605/F479	8	NT/INDUSTRIAL	42	6TH	6062

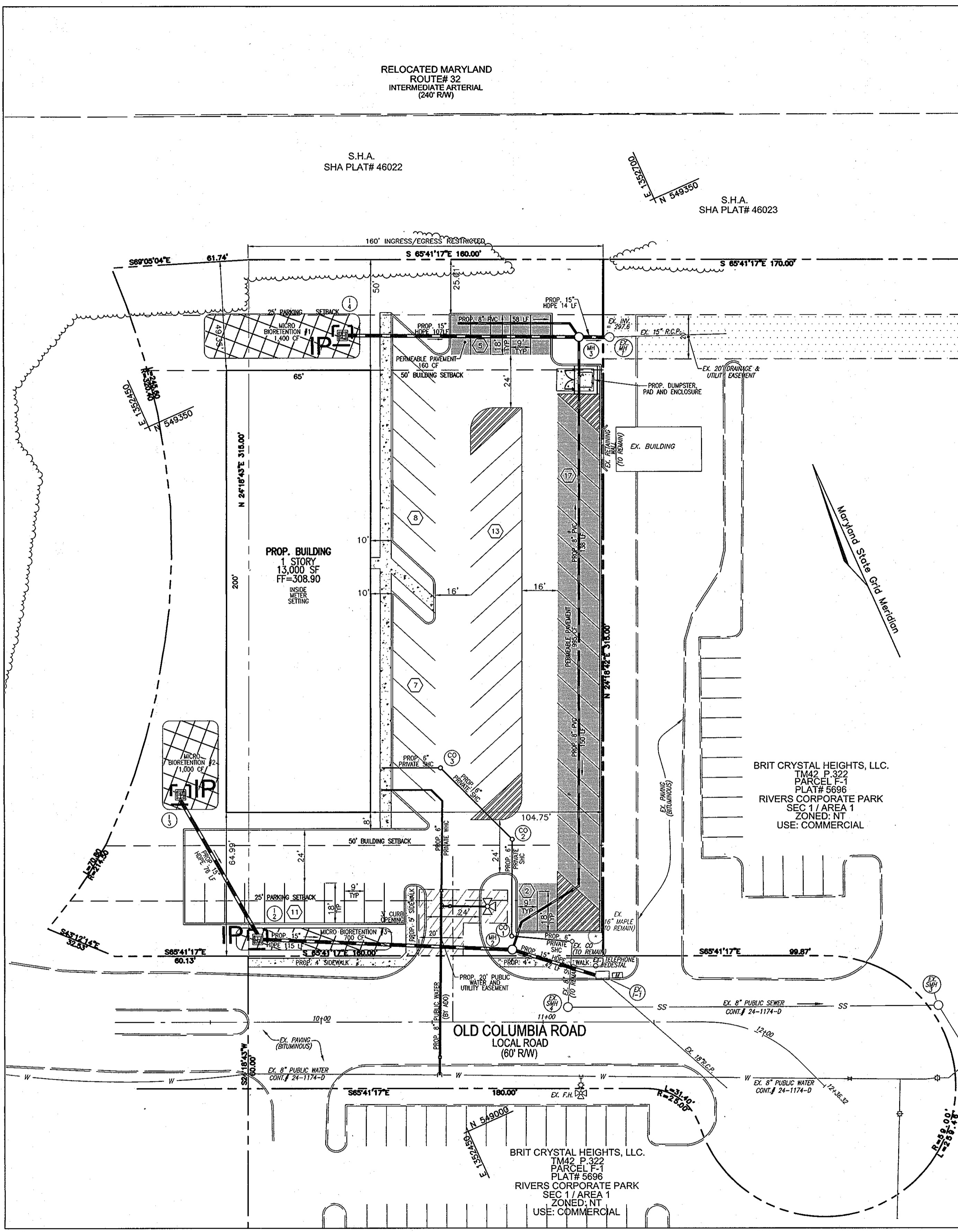
WATER CODE: E16 SEWER CODE: 5290000

LEGEND:

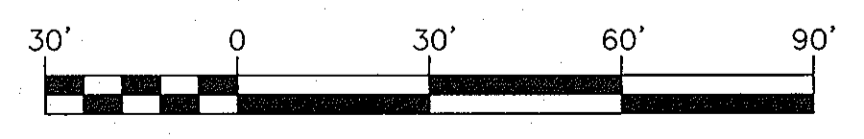
- ===== EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- ⊗ EXISTING LIGHT POLE WITH CONCRETE BASE
- ⊠ EXISTING MAILBOX
- ⊙ EXISTING SIGN
- ⊕ EXISTING SANITARY MANHOLE
- SS EXISTING SANITARY LINE
- ⊕ EXISTING CLEANOUT
- ⊕ EXISTING FIRE HYDRANT
- W EXISTING WATER LINE
- PROPOSED STORM DRAIN
- ⊠ PROPOSED STORM DRAIN INLET
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- PROPOSED SIDEWALK
- EXISTING TREELINE
- PROPOSED TREELINE
- EX. 20' DRAINAGE AND UTILITY EASEMENT
- PROP. 20' PUBLIC WATER AND UTILITY EASEMENT
- PROP. MICRO BIORETENTION AREA
- PROP. PERVIOUS PAVEMENT



DEMOLITION PLAN VIEW
SCALE: 1"=30'



LAYOUT PLAN VIEW
SCALE: 1"=30'



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 2/6/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 2/6/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

EX. WHC ABANDONMENT NOTE:
THE ABANDONMENT OF THE EXISTING 3" WATER TO FOLLOW VOLUME IV REQUIREMENTS FOR CLOSING THE VALVE, CUTTING AND CAPPING THE 3" WATER BEHIND THE VALVE, AND REMOVAL OF THE ROADWAY BOX.

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DEVELOPER
LAND DESIGN AND DEVELOPMENT
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5300 DORSEY HALL DR.
ELLCOTT CITY, MD 21042
(443) 367-0422

NO.	REVISION	DATE

**ENVIRONMENTAL CONCEPT PLAN
SITE LAYOUT, DEMOLITION PLAN,
AND SITE DETAILS**
RIVERS OVERLOOK
RIVERS CORPORATE PARK
10000 OLD COLUMBIA RD
LOT F-2 / PARCEL 322 &
FORMER ADJACENT SHA LAND
HOWARD COUNTY, MARYLAND

TAX MAP 42 BLOCK 8
6TH ELECTION DISTRICT
DPZ REF'S: SDP-86-10,
FDP-184-A-IV, SDP-08-008

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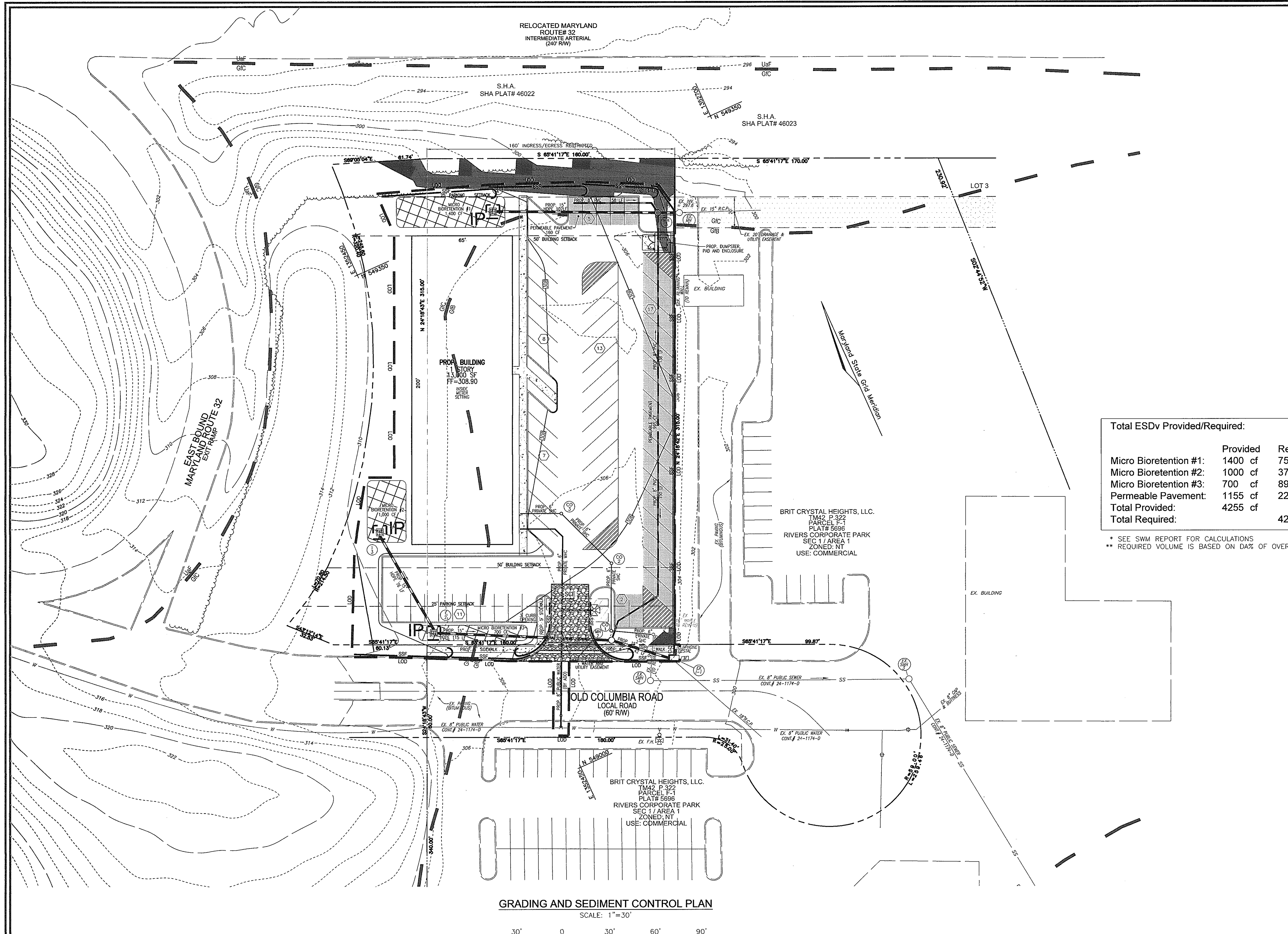
PROFESSIONAL CERTIFICATE

DESIGN BY: JBS
DRAWN BY: JMR
CHECKED BY: RHW
DATE: SEPTEMBER 2012
SCALE: AS SHOWN
W.O. NO.: 06-58

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. 11875 EXPIRATION DATE 01-21-2015

2 SHEET OF 4

JEFFREY B. SMITH, PE No.31373



LEGEND:

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
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- PROPOSED STORM DRAIN INLET
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- EXISTING TREELINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED SIDEWALK
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- 20' DRAINAGE AND ENTRANCE
- STABILIZED CONSTRUCTION UTILITY EASEMENT
- PROP. 20' PUBLIC WATER AND UTILITY EASEMENT
- PROP. MICRO BIORETENTION AREA
- PROP. PERVIOUS PAVEMENT

Total ESDv Provided/Required:

	Provided	Required**
Micro Bioretention #1:	1400 cf	750 cf
Micro Bioretention #2:	1000 cf	378 cf
Micro Bioretention #3:	700 cf	898 cf
Permeable Pavement:	1155 cf	2212 cf
Total Provided:	4255 cf	4238 cf*

* SEE SWM REPORT FOR CALCULATIONS
 ** REQUIRED VOLUME IS BASED ON DA% OF OVERALL DA

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**ENVIRONMENTAL CONCEPT PLAN
 SOILS MAP, GRADING, EROSION, AND
 SEDIMENT CONTROL PLAN
 RIVERS OVERLOOK
 RIVERS CORPORATE PARK
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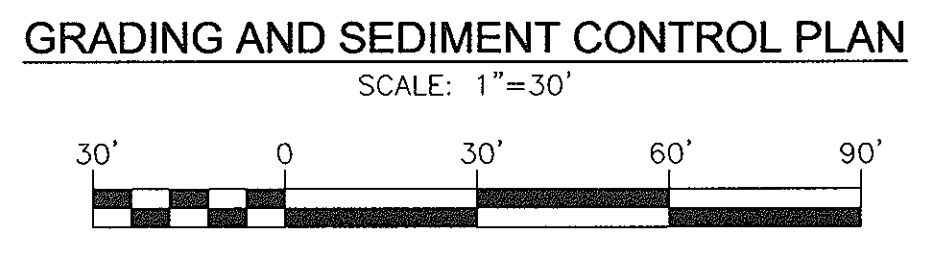
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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 2/5/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 2/07/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE



SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
GfB	GLADSTONE-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
GfC	GLADSTONE-URBAN LAND COMPLEX, 8 TO 15 PERCENT SLOPES	B
UdF	UDORTMENTS, HIGHWAY, 0 TO 65 PERCENT SLOPES	-

PROFESSIONAL CERTIFICATE

DESIGN BY: JBS
 DRAWN BY: JMR
 CHECKED BY: RHV
 DATE: SEPTEMBER 2012
 SCALE: AS SHOWN
 W.O. NO.: 06-58

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. 31273 EXPIRATION DATE 01-21-2015

3 SHEET OF 4

JEREMY B. SMITH, PE No. 31373

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

SPECIFICATIONS FOR BIORETENTION

1. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN BIORETENTION ARE DETAILED IN TABLE B.3.2.

2. PLANTING SOIL

THE SOIL SHALL BE A UNIFORM 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 BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE 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 CHAIR 15.00.01A.

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

- PH RANGE: 5.2-7.0
- ORGANIC MATTER: 1.5-4% (BY WEIGHT)
- MAGNESIUM: 35 LB./AC
- PHOSPHORUS (PHOSPHATE - P2O5): 175 LB./AC
- POTASSIUM (POTASH - K2O): 85 LB./AC
- SOLUBLE SALTS: NOT TO EXCEED 500 PPM

ALL BIORETENTION AREAS SHALL HAVE A MINIMUM OF ONE TEST. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND ADDITIONAL TEST OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOP SOIL WAS EXCAVATED.

SINCE DIFFERENT LABS CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TESTING RESULTS SHALL COME FROM THE SAME TESTING FACILITY. SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MOOPIED (HIGHER WITH LIME OR LOWER) WITH IRON SULFATE PLUS SULFUR.

3. COMPACTION

IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION AREA AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE HOES TO REMOVE ORIGINAL SOIL. IF BIORETENTION AREAS ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LOGS, OR HIGH PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACATURE THE SOIL PROFILE THROUGH 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 REQUIRED SAND LAYER. PUMP ANY PONDING 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 16". 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 BIORETENTION AREAS CAN BE FOUND IN APPENDIX A, SECTION A.2.3, OF THE 2000 MARYLAND STORMWATER DESIGN MANUAL.

5. PLANT INSTALLATION

MULCH SHOULD BE PLACED TO A UNIFORM THICKNESS OF 2" TO 3". SHREDED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. FINE 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 (8 TO 12 MONTHS) FOR ACCEPTANCE.

ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST 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 ENTIRE PLANTING PROCESS.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE SOUTHWEST OF THE TREE BALL.

GRASSES AND LEGUMINE SEEDS SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUMINE PLUSS 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 FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDS THIS GOAL. ONLY 100 FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS OF NITROGEN PER 1000 SQUARE FEET.

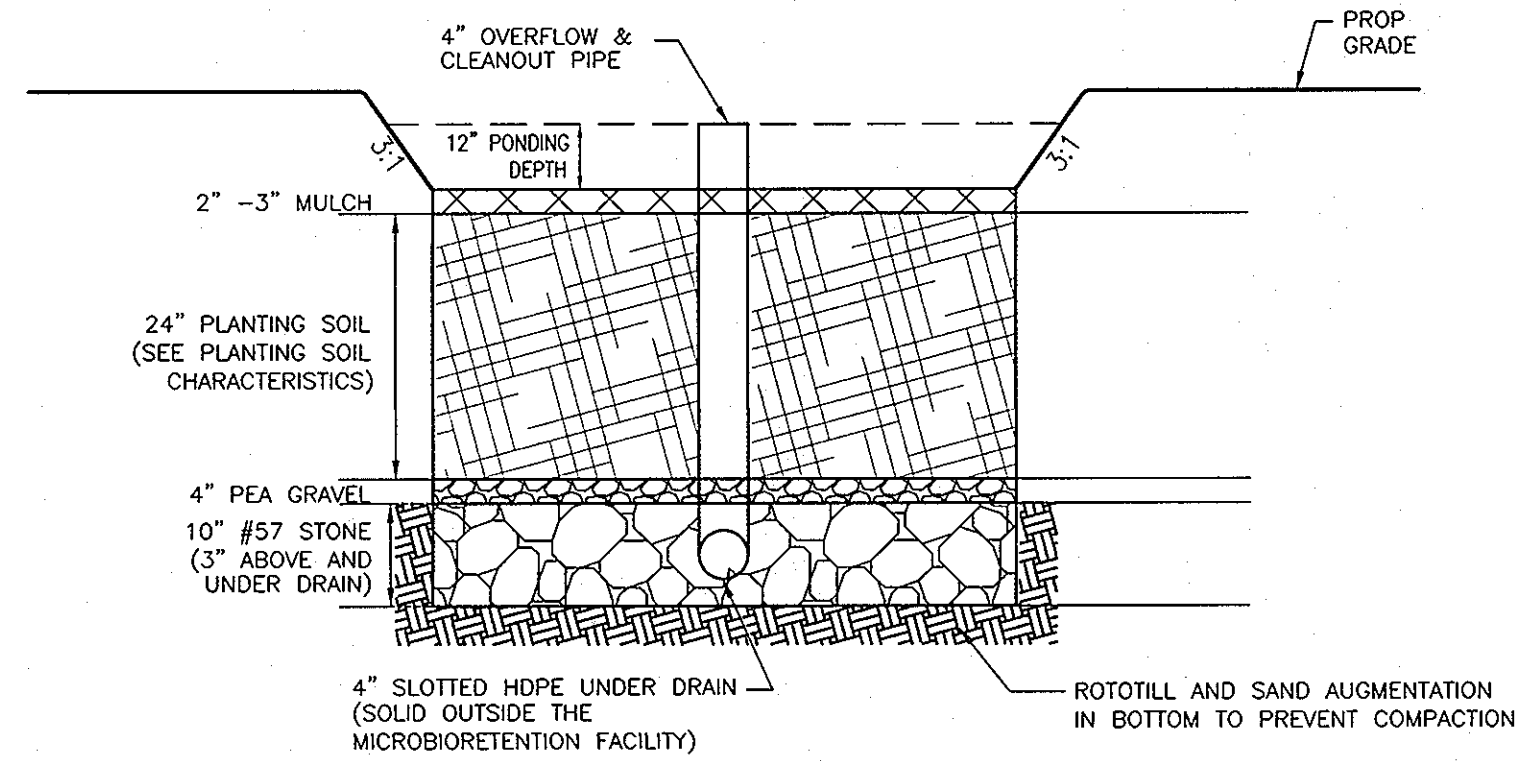
6. UNDERDRAINS

UNDERDRAINS ARE TO BE PLACED ON A 3/4" WIDE SECTION FILTER CLOTH. PIPE IS PLACED NEXT, FOLLOWED BY THE GRAVEL BEDDING. THE ENDS OF UNDERDRAIN PIPES NOT TERMINATING IN AN OBSERVATION WELL SHALL BE CAPPED.

THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELL AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

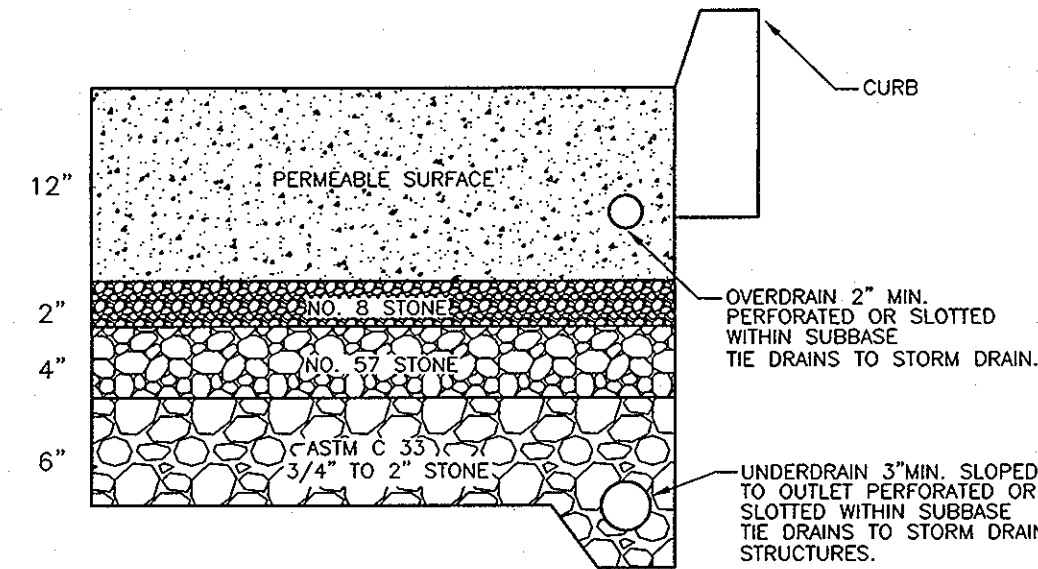
THE BIORETENTION FACILITY MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.



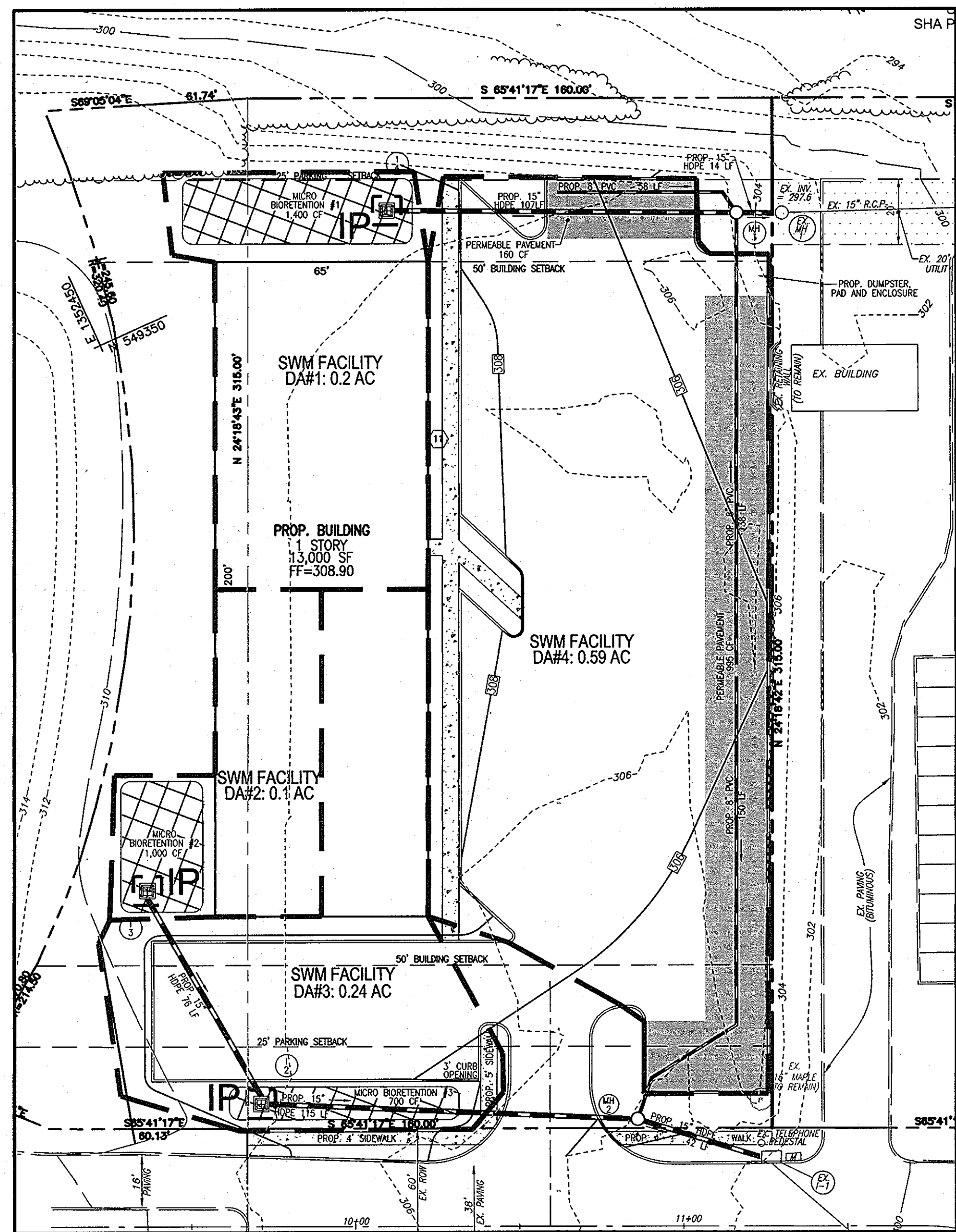
DETAIL - MICROBIORETENTION
NOT TO SCALE

OPERATION AND MAINTENANCE

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



DETAIL - PERMEABLE PAVEMENT
NOT TO SCALE



SWM FACILITY DRAINAGE AREA MAP
SCALE: 1"=30'

OWNER
TAYLOR FAMILY LP A
4100 COLLEGE AVENUE
ELLICOTT CITY, MD 21041
(410) 465-3500

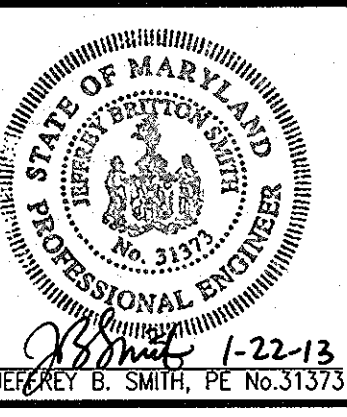
DEVELOPER
LAND DESIGN AND DEVELOPMENT
MR. DONALD REWVER
5300 DORSEY HALL DR.
ELLICOTT CITY, MD 21042
(443) 367-0422

NO.	REVISION	DATE

ENVIRONMENTAL CONCEPT PLAN
SITE NOTES, DETAILS & SWM DA MAP
RIVERS OVERLOOK
RIVERS CORPORATE PARK
10000 OLD COLUMBIA RD
LOT F-2/7 PARCEL 322 &
FORMER ADJACENT SHALAND
HOWARD COUNTY, MARYLAND
ZONED: NT
PARCEL 322, LOT F-2
HOWARD COUNTY, MARYLAND

TAX MAP 42 BLOCK 8
6TH ELECTION DISTRICT
DPZ REF'S: SDP-86-10,
FDP-184-A-IV, SDP-08-008

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: JBS
DRAWN BY: JMR
CHECKED BY: RHY
DATE: SEPTEMBER 2012
SCALE: AS SHOWN
W.O. NO.: 06-58

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12213, EXPIRATION DATE 01-31-2017.

4 SHEET OF 4

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 2/8/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 2/07/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE