

**GENERAL NOTES**

- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:  
 MISS UTILITY: 1-800-257-7777  
 VERIZON TELEPHONE COMPANY: 410-954-6281  
 HOWARD COUNTY BUREAU OF UTILITIES: 410-313-2366  
 AT&T CABLE LOCATION DIVISION: 410-393-3553  
 B.G.&E. CO. CONTRACTOR SERVICES: 410-850-4620  
 B.G.&E. CO. UNDERGROUND DAMAGE CONTROL: 410-787-4620  
 STATE HIGHWAY ADMINISTRATION: 410-531-5533
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- ANY DAMAGE TO PUBLIC RIGHTS-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- IN ACCORDANCE WITH SECTION 12B OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS, OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NOT MORE THAN 4 FEET INTO ANY SETBACKS. PORCHES OR DECKS, OPEN OR ENCLOSED MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT FRONT OR REAR YARD SETBACK.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:  
 A) WIDTH - 12 FEET (16 FEET IF SERVING MORE THAN ONE RESIDENCE)  
 B) SURFACE - 7 INCHES OF PERMEABLE CONCRETE WITH 12 INCHES ASTM C-33 3/4" TO 2" STONE SUB-BASE  
 C) GEOMETRY - MAXIMUM 14% GRADE, MAXIMUM 10% GRADE CHANGE, AND MINIMUM 45 FOOT TURNING RADIUS  
 D) STRUCTURES (CULVERTS/BRIDGES) - MUST SUPPORT 25 GROSS TON LOADING (H25 LOADING)  
 E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD EVENTS WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE  
 F) STRUCTURE CLEARANCES - MINIMUM 12 FEET  
 G) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
- SEE DETAIL R-6.01 OF THE HOWARD COUNTY VOLUME IV DESIGN MANUAL FOR THE DRIVEWAY ENTRANCE ON GLENROBBIN PLACE.
- DEED REFERENCE: L5125/F.672
- THE PROJECT BOUNDARY AND TOPOGRAPHY IS TAKEN FROM FIELD SURVEY WITH TWO FOOT CONTOUR INTERVALS PREPARED BY CLARK, FINEROCK, & SACKET, AUGUST 2002 OF PARCEL 46 AND 815.
- THIS SUBDIVISION IS SUBJECT TO SECTION 18.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND/OR SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS.
- STORM WATER MANAGEMENT (CPV, REV AND WOV) TO BE PROVIDED FOR THIS DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING MICRO-BIORETENTION, RAIN BARRELS, PERVIOUS DRIVEWAYS AND SIDEWALKS. MICRO-BIORETENTION FACILITIES TO BE MAINTAINED BY THE HOA.
- THE OFFSITE 100-YR FLOODPLAIN INDICATED IS TAKEN FROM HOWARD COUNTY FEMA PANELS #240044-0039 AND #240044-0043. THERE ARE NO FLOODPLAINS ON THIS SITE.
- FOREST STAND DELINEATION PLAN AND WETLAND REPORT PREPARED BY ENVIRONMENTAL SYSTEMS ANALYSIS, DATED DECEMBER, 2002. THERE ARE NO WETLANDS ON THIS SITE.
- THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.200 OF THE HOWARD COUNTY CODE; FOREST CONSERVATION ACT FOR THIS SUBDIVISION HAVE BEEN FULFILLED BY 0.17 AC. OF RETENTION AND 0.28 AC. OF REFORESTATION PROVIDED ONSITE. THE REMAINING 0.89 AC. IS PROVIDED IN AN OFFSITE EASEMENT. SURETY IN THE AMOUNT OF \$20,000.00 IS TO BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT.  
 RETENTION - 0.17 AC. (7,405.20 X 20 = \$1,482.00)  
 REFORESTATION ONSITE - 0.28AC. (12,197 SF X 50 = \$7,581.00)  
 RETENTION OFFSITE - 3.5 AC. (152,005.60 SF X 20 = \$30,514.12)  
 RETENTION OFFSITE - NORDAU SUBDIVISION, LOTS 8 & 9, PLAT BOOK: 3, PAGE: 51
- APFO TRAFFIC STUDY PREPARED BY STREET TRAFFIC STUDIES, LTD., DATED DECEMBER, 2002 AND APPROVED BY SKETCH PLAN 4/28/03.
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL/CEMETERY LOCATIONS ON SITE.
- NOISE STUDY IS NOT REQUIRED BASED ON DESIGN MANUAL, SECTION 5.2.F GUIDELINES. 5.2.F GUIDELINES.
- THE SUBJECT PROPERTY IS ZONED "R-12" IN ACCORDANCE WITH THE 2/2/04 COMPREHENSIVE ZONING PLAN AND THE COMP. LITE ZONING REGULATIONS EFFECTIVE ON 7/28/06, AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003.
- ALL SIGN POST 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 RUBER SLEEVE (12 GAUGE-3" LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- DPZ REFERENCE: P-07-15, S-03-011, WP-10-059.
- MARY LANE IS A LOCAL PUBLIC ROAD.
- ALL EXISTING WELLS AND SEPTIC AREAS WITHIN 100' OF THE SITE HAVE BEEN SHOWN TO THE BEST OF OUR KNOWLEDGE. THE EXISTING WELL ON OPEN SPACE LOT 12 TO BE ABANDONED.
- THE FINAL PAVING SECTION TO BE CONFIRMED BY HOWARD COUNTY CONSTRUCTION INSPECTION DESIGN.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006) SECTION 5.5.A. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 0080 AND 421A WERE USED FOR THIS PROJECT.
- THE PROJECT IS IN CONFORMANCE WITH THE 5TH EDITION OF THE HOWARD COUNTY SUBDIVISION REGULATIONS.
- SOILS INFORMATION WAS TAKEN FROM THE USDA WEB SOIL SURVEY.
- ALL LOTS TO BE SERVED BY THE PRIVATE ACCESS PLACE. (GLENROBBIN PLACE)
- FOR FLAG OR PIPESTEM LOT, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE PRIVATE FLAG OR PIPESTEM AND THE PUBLIC ROAD RIGHT-OF-WAY, AND NOT ONTO THE FLAG OR PIPESTEM LOT DRIVEWAY.
- THE OPEN SPACE LOTS (11-13) WILL BE OWNED AND MAINTAINED BY A HOMEOWNERS ASSOCIATION.
- THERE ARE NO SLOPES IN EXCESS OF 15% ON THE PROPERTY.
- THE SITE IS LOCATED IN THE METROPOLITAN DISTRICT.
- THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY HILLES-CARNES, DATED NOVEMBER 3, 2006
- THIS 4"x10" CONCRETE TRASH PAD (6 INCHES IN DEPTH) WILL BE MAINTAINED BY THE OWNERS OF LOTS 1-10 PURSUANT TO THE DECLARATION OF RIGHT OF ACCESS AND MAINTENANCE OBLIGATIONS RECORDED AMONG THE LAND RECORDS OF HOWARD COUNTY.
- THE SIDEWALK ADJACENT TO MARY LANE WILL SERVE AS A CHILD STANDING PAD IN ACCORDANCE WITH THE APPROVAL OF THE BOARD OF EDUCATION.
- A PRIVATE ROAD STREET NAME SIGN (SNS) THAT NEEDS TO BE INSTALLED AT THE INTERSECTION OF THE PRIVATE ROAD WITH A PUBLIC ROAD, SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-313-5752 FOR DETAILS AND COST ESTIMATES.
- THERE ARE NO STREAMS AND WETLANDS LOCATED WITHIN THE PROPERTY.
- STREET TREES ARE REQUIRED FOR THIS SUBDIVISION IN ACCORDANCE WITH SECTION 16.124(c)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN STREET LIGHTS AND TREES.
- EXISTING UTILITY LOCATIONS SHOWN ARE TAKEN FROM AVAILABLE RECORDS.
- THIS PLAN IS SUBJECT WP-10-059 APPROVED NOVEMBER 18, 2009 TO WAIVE SECTION 16.121(c)(3)(iii) - PARKING LOT ISLANDS, DRIVEWAY EASEMENTS SERVING NON-OPEN SPACE USES, OVERHEAD UTILITY TRANSMISSION LINES, AND NARROW STRIPS UNDER 35 FEET WIDE WHICH DO NOT COUNT TOWARDS MINIMUM OPEN SPACE REQUIREMENTS TO PROVIDE CREDITED OPEN SPACE AREAS. LESS THEN 35' IN WIDTH SUBJECT TO THE OPEN SPACE LOTS MUST BE DEDICATED TO THE HOMEOWNERS ASSOCIATION.
- LANDSCAPING IS BEING PROVIDED IN ACCORDANCE WITH SECTION 16.124(c)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. SURETY IN THE AMOUNT OF \$15,450.00 (36 STREET TREES X \$300.00 EACH = \$10,800) + (14 SHADE TREES X \$300.00 EACH = \$4,200) + (3 EVERGREEN TREES X \$150.00 = \$450.00).
- OFFSITE FOREST CONSERVATION EASEMENT PLAN TOPOGRAPHY BASED ON A SURVEY PREPARED BY PATTON, HARRIS, RUST & ASSOCIATES. BOUNDARY BASED ON PLAT BOOK 3, PAGE 51.
- ROOF DRAINAGE FOR GARAGES TO BE OUTLET INTO THE PERVIOUS DRIVEWAY. SUB-BASE TO INFILTRATE OVERLAPPING TREES TO BE INSTALLED IN CASE OF CLOGGING OR SATURATION. BUTTER SCREENS TO BE UTILIZED AS PRE-TREATMENT MEASURE.

# FINAL ROAD CONSTRUCTION PLAN

## THE GLENS AT GUILFORD

### LOTS 1-10 & OPEN SPACE LOTS 11-13

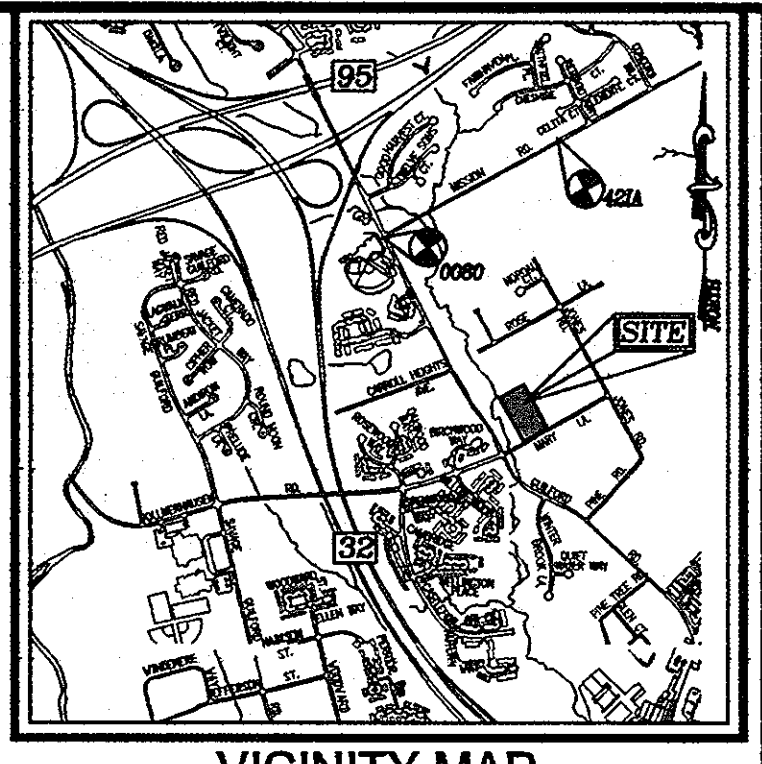
#### A RESUBDIVISION OF LOTS 1 & 2-A, (P.46 & P.815), BLOCK E-3

#### NORDAU SUBDIVISION

#### HOWARD COUNTY, MARYLAND

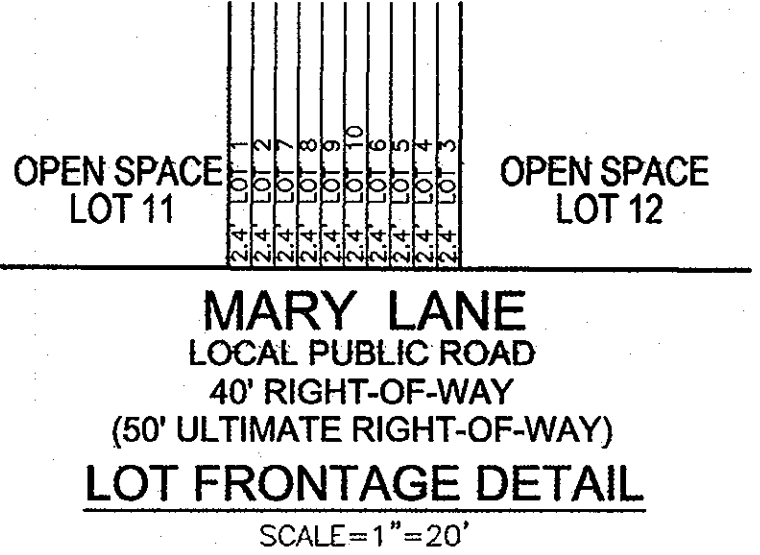
**LEGEND**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- DIRECTION OF FLOW
- EXISTING TREES TO REMAIN
- LIGHT POLES
- LIMIT OF WETLAND
- WETLAND BUFFER
- 100YR FLOOD PLAIN
- PUBLIC SEWER, WATER AND UTILITY EASEMENT
- EXISTING PARCEL/LOT DIVIDE LINE
- MICRO-BIO RETENTION FACILITY
- RECREATION OPEN SPACE
- PRIVATE ACCESS DRAINAGE AND UTILITY EASEMENT
- 4' PAINTED SIDEWALK



NO.	NORTHING	EASTING	ELEVATION	TYPE
421A	N 543390.409	E 1364912.625	311.956	CONC. MONUMENT
0080	N 542366.913	E 1363075.951	282.350	CONC. MONUMENT

LOT NO.	GROSS AREA	PIPE STEM AREA	MINIMUM LOT SIZE
1	7,651 SF	250 SF	7,401 SF
2	7,820 SF	418 SF	7,402 SF
3	7,529 SF	126 SF	7,403 SF
4	9,018 SF	279 SF	8,739 SF
5	9,209 SF	429 SF	8,780 SF
6	9,237 SF	576 SF	8,661 SF
7	8,504 SF	954 SF	7,550 SF
8	10,064 SF	1,180 SF	8,884 SF
9	9,640 SF	1,261 SF	8,379 SF
10	9,922 SF	1,232 SF	8,690 SF



**SITE DATA**

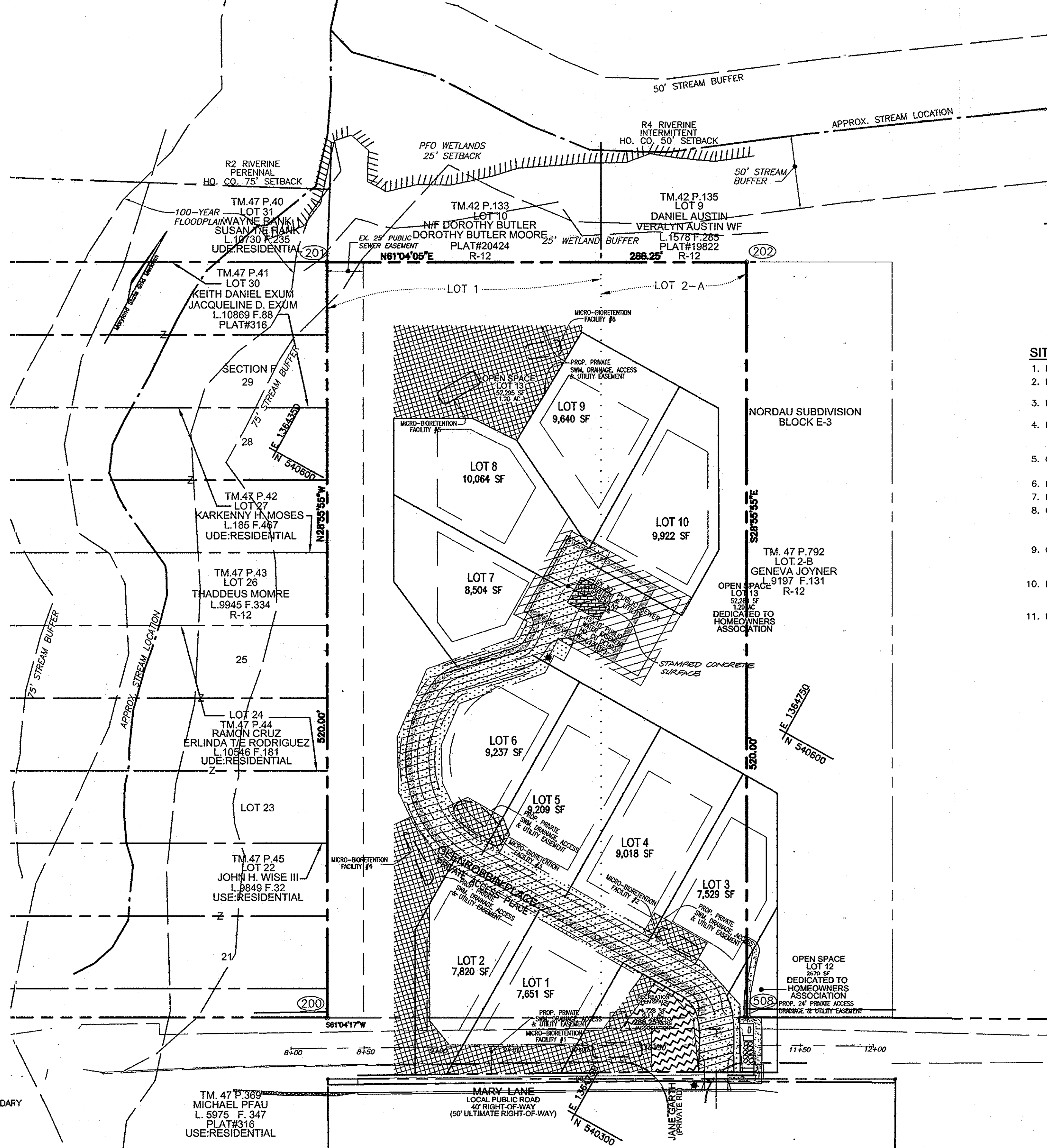
- EXISTING ZONING: R-12
- LOCATION: TAX MAP 42, GRID 24, TAX MAP 47, GRID 6, 6TH ELECTION DISTRICT
- DEED REFERENCE: LOT 1 & 2A (P.46 & P.815) L.6243, F.570
- LOT AREA: LOT 1 PLAT BOOK 3, FOLIO 51 2.25 ACRES; LOT 2A PLAT BOOK 10, FOLIO 76 1.19 ACRES
- GROSS TRACT AREA: 3.44 ACRES; MARY LANE RIGHT OF WAY DEDICATION 0.03 ACRES
- MINIMUM LOT SIZE: 7,400 S.F.
- OPEN SPACE: MINIMUM LOT SIZE OPTION 7,200 S.F. 40% REQUIRED; GROSS TRACT AREA X 40% 1.37 ACRES; AREA OF OPEN SPACE LOTS 11, 12 & 13 1.37 ACRES
- COLLECTIVE LOT AREAS: AREA OF PROPOSED BUILDABLE LOTS 2.02 AC.; AREA OF OPEN SPACE LOTS 11, 12, & 13 1.37 AC.
- RECREATION OPEN SPACE REQUIRED: 10 LOTS @ 200 S.F. / LOT 2,000 S.F.; REC. OPEN SPACE PROVIDED (LOT 11) 2,000 S.F.
- MINIMUM SETBACKS: FRONT 20'; SIDE 7.5'; REAR 30'

DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 9
FINAL ROAD CONSTRUCTION PLAN, PROFILE, CROSS SECTIONS & DETAILS	2 OF 9
GRADING, SEDIMENT & EROSION CONTROL PLAN	3 OF 9
SEDIMENT & EROSION CONTROL DETAILS	4 OF 9
STORMDRAIN DRAINAGE AREA MAP & SOILS MAP	5 OF 9
STORM DRAIN PROFILES	6 OF 9
LANDSCAPE AND FOREST CONSERVATION PLAN	7 OF 9
FOREST CONSERVATION DETAILS	8 OF 9
OFFSITE FOREST CONSERVATION EASEMENT PLAN	9 OF 9

NO.	NORTHING	EASTING
200	540275.8447	1364569.1698
201	540730.9603	1364317.6350
202	540870.3928	1364569.9179
508	540415.2772	1364821.4527

**OWNER/DEVELOPER**

HOWARD COUNTY HOUSING COMMISSION  
 6751 COLUMBIA GATEWAY DRIVE  
 3RD FLOOR, GATEWAY BUILDING  
 COLUMBIA, MARYLAND 21044  
 410-313-6316



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 [Signature] 6-7-10  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 6/11/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 6/17/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT

**FINAL ROAD CONSTRUCTION PLANS**  
**COVER SHEET**

**THE GLENS AT GUILFORD**  
 LOTS 1-10 & OPEN SPACE LOTS 11-13  
 A RESUBDIVISION OF LOTS 1 & 2-A, (P.46 & P.815), BLOCK E-3  
 NORDAU SUBDIVISION

TAX MAP #47 GRID 6 & 24 PARCELS 46 & 815  
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

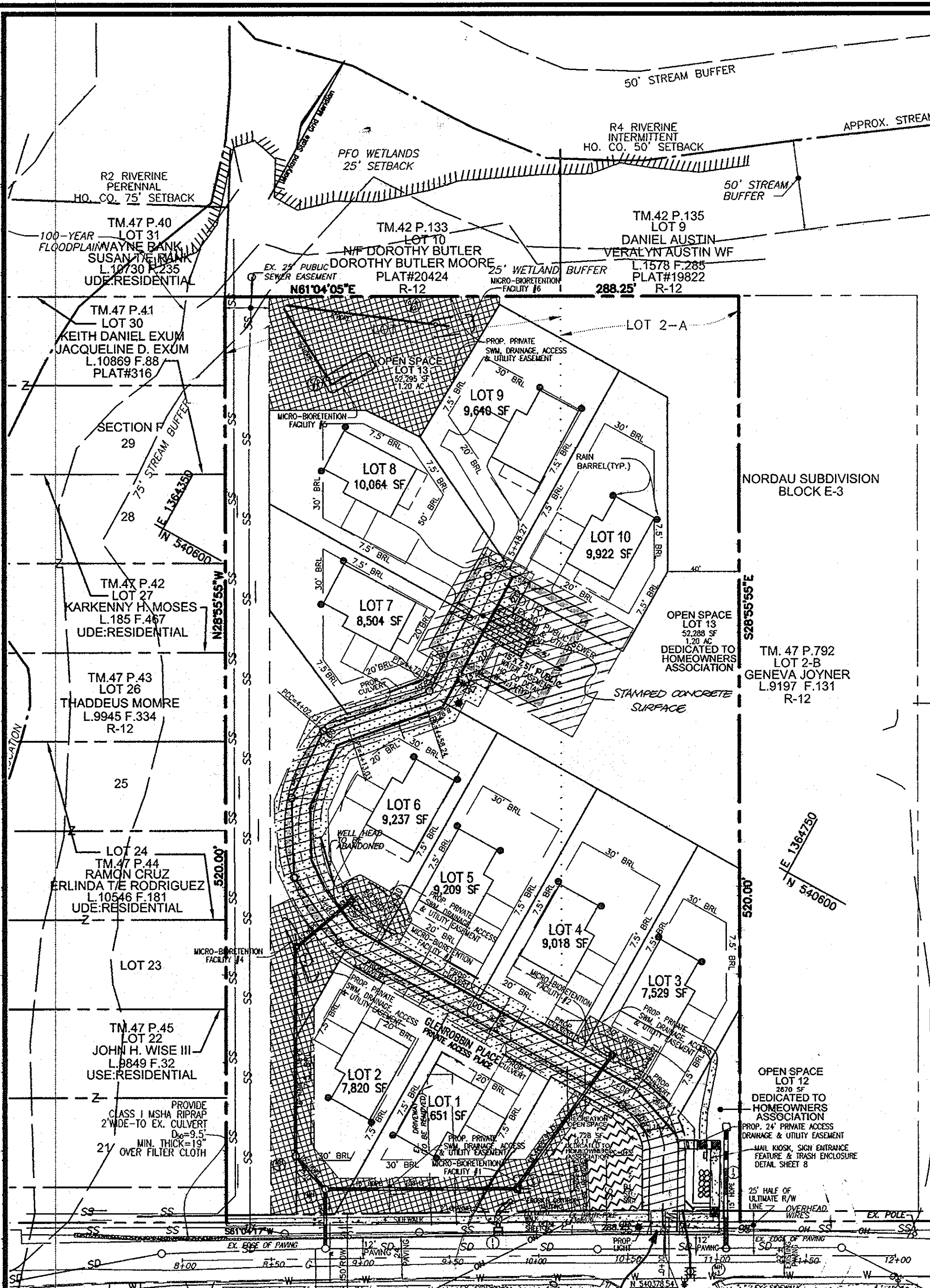
**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET TEL: 410.461.7666  
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

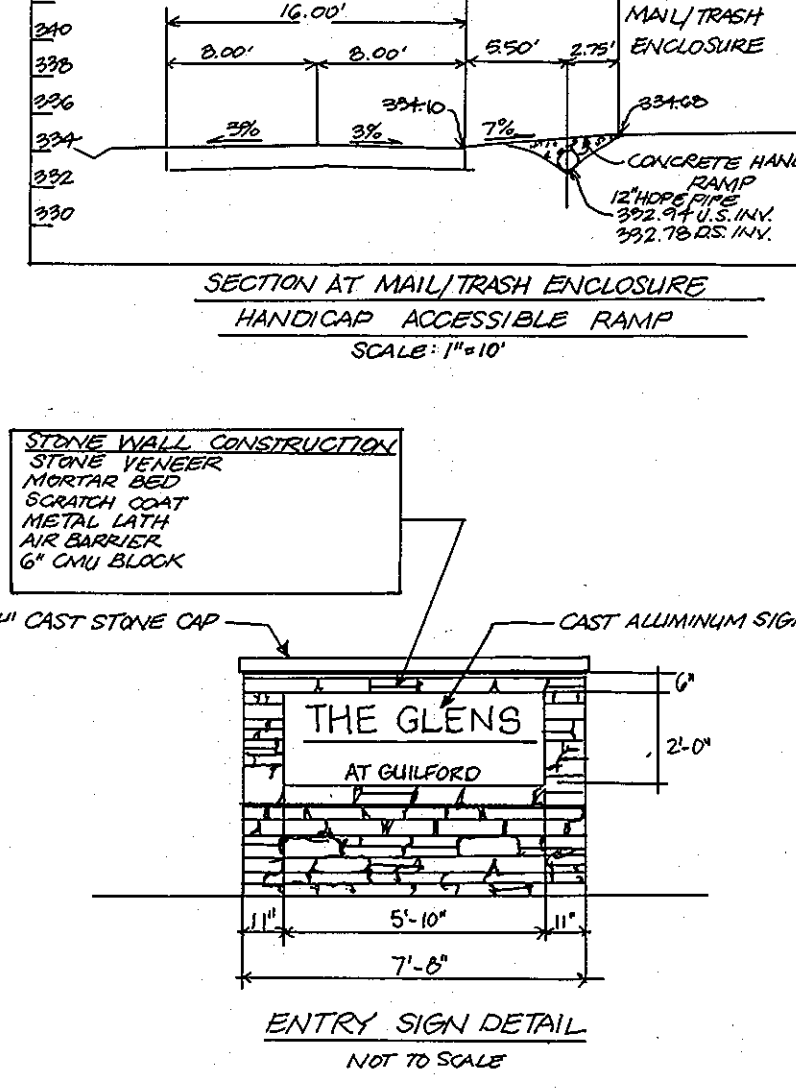
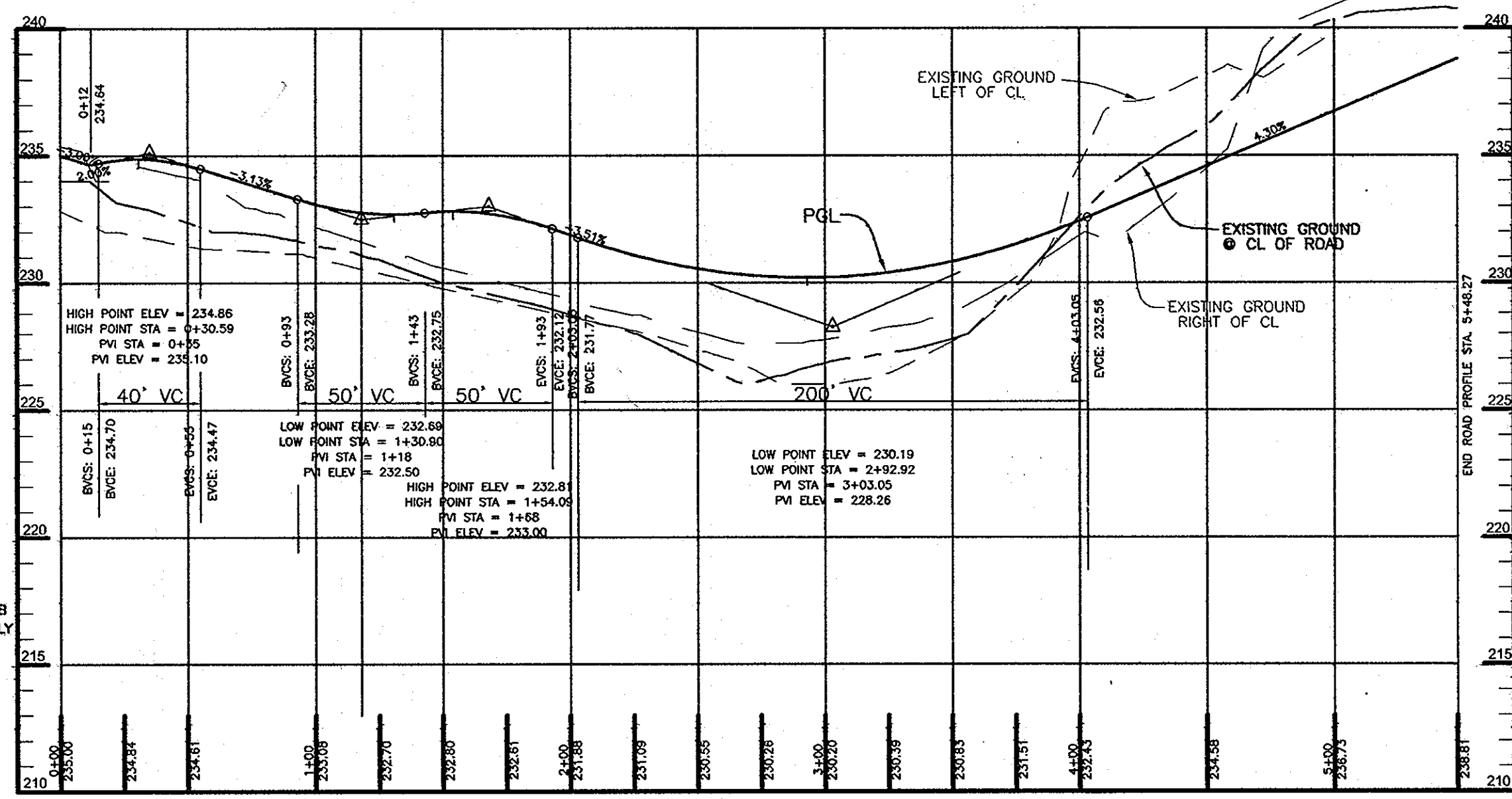
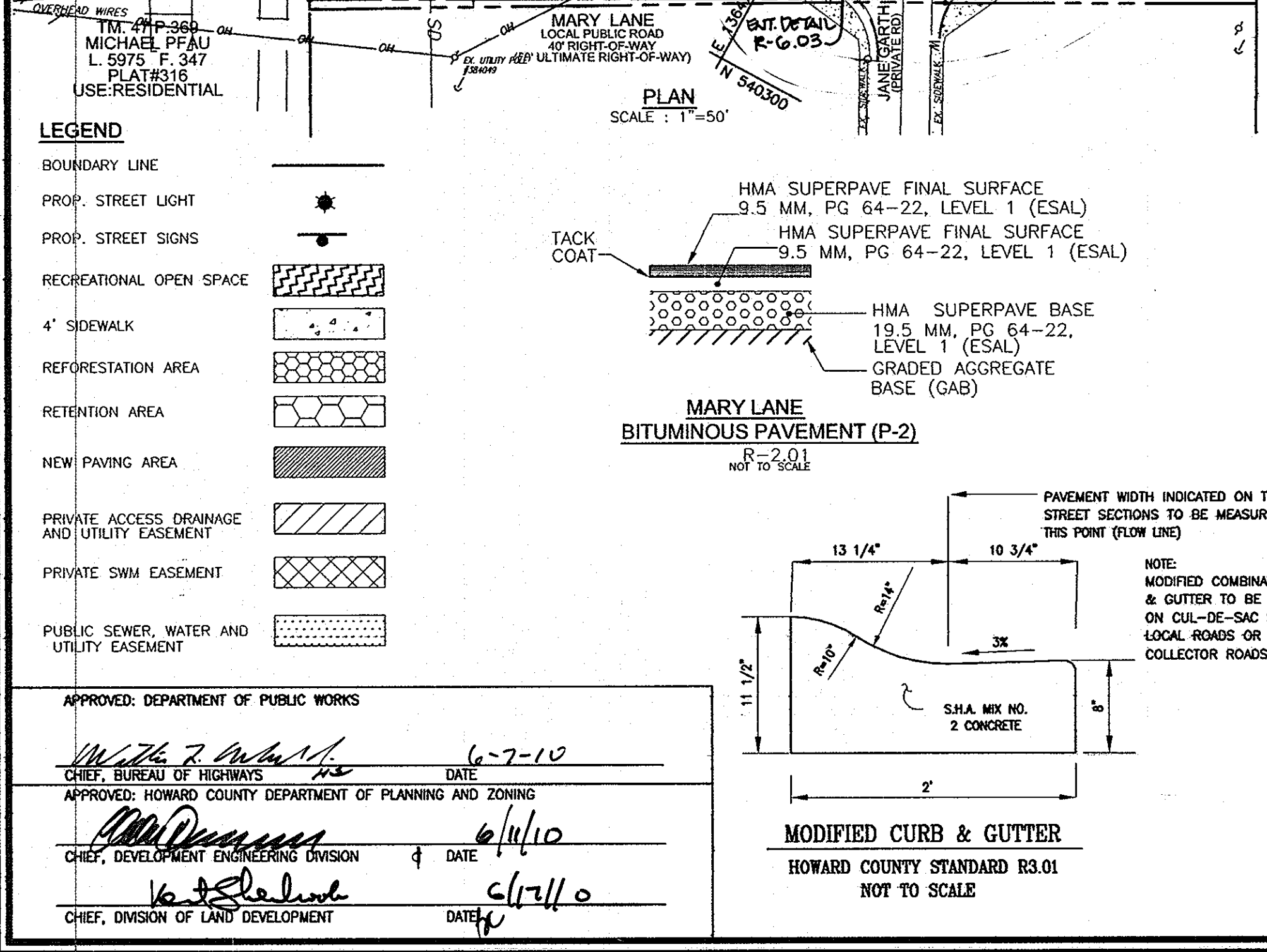
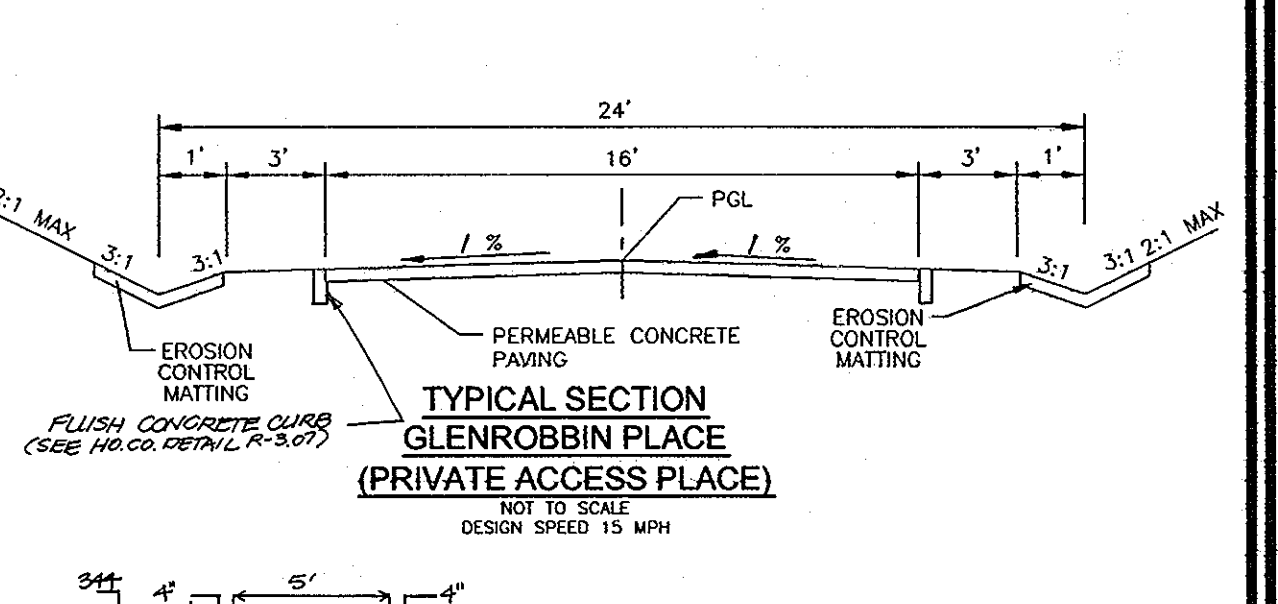
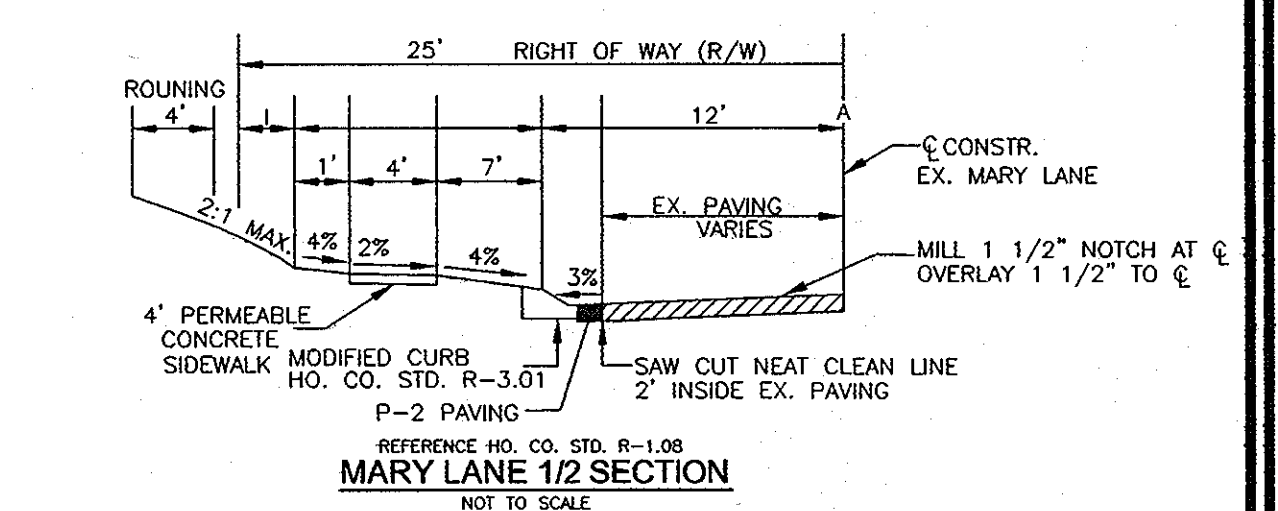
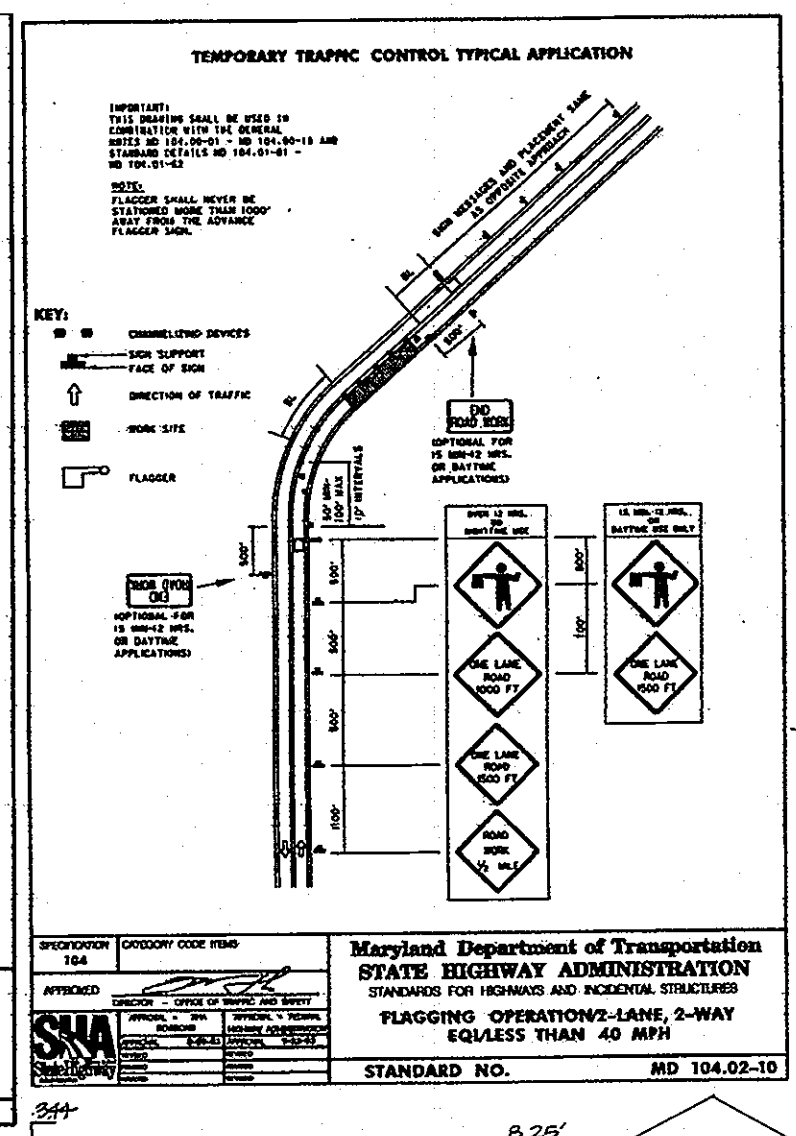
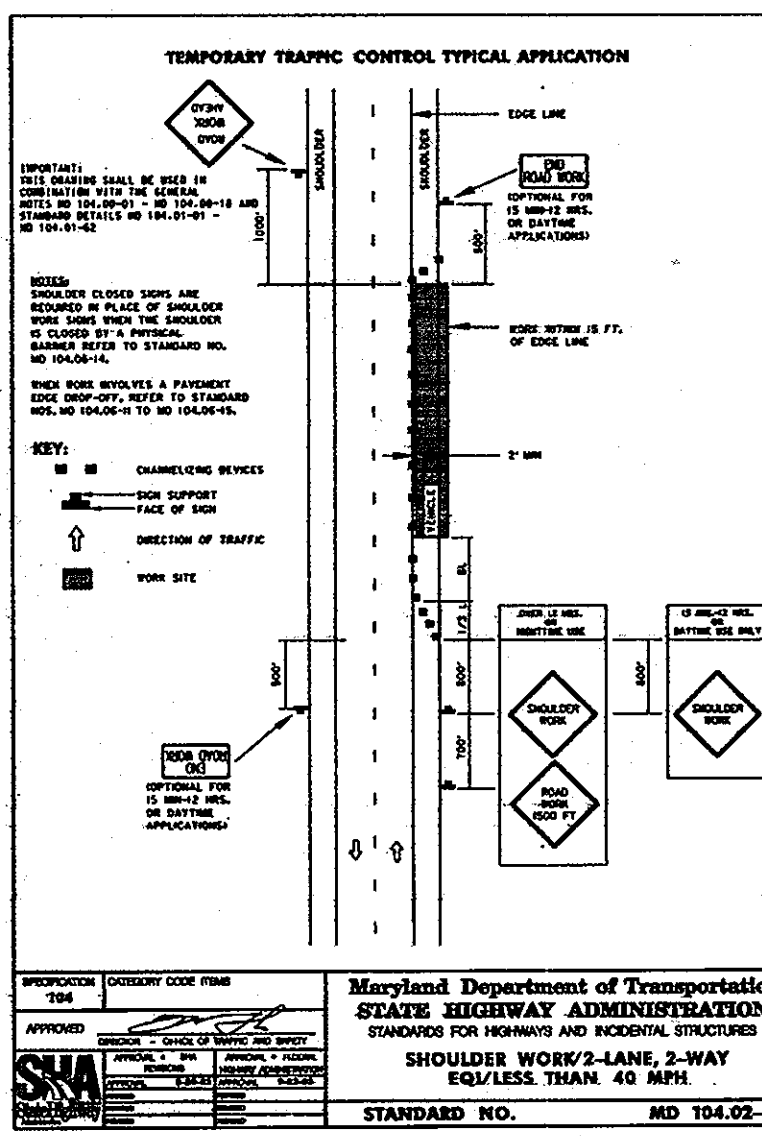
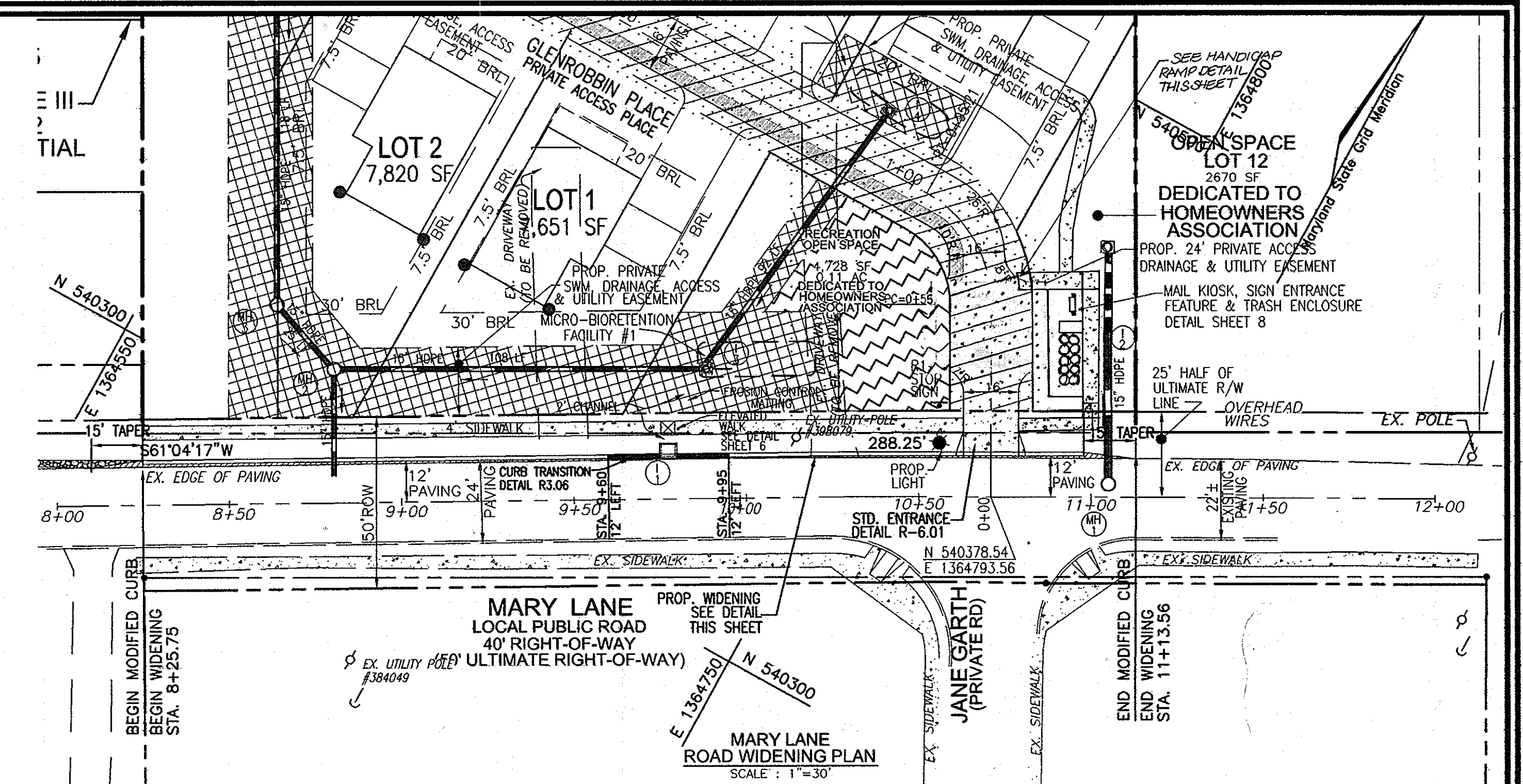
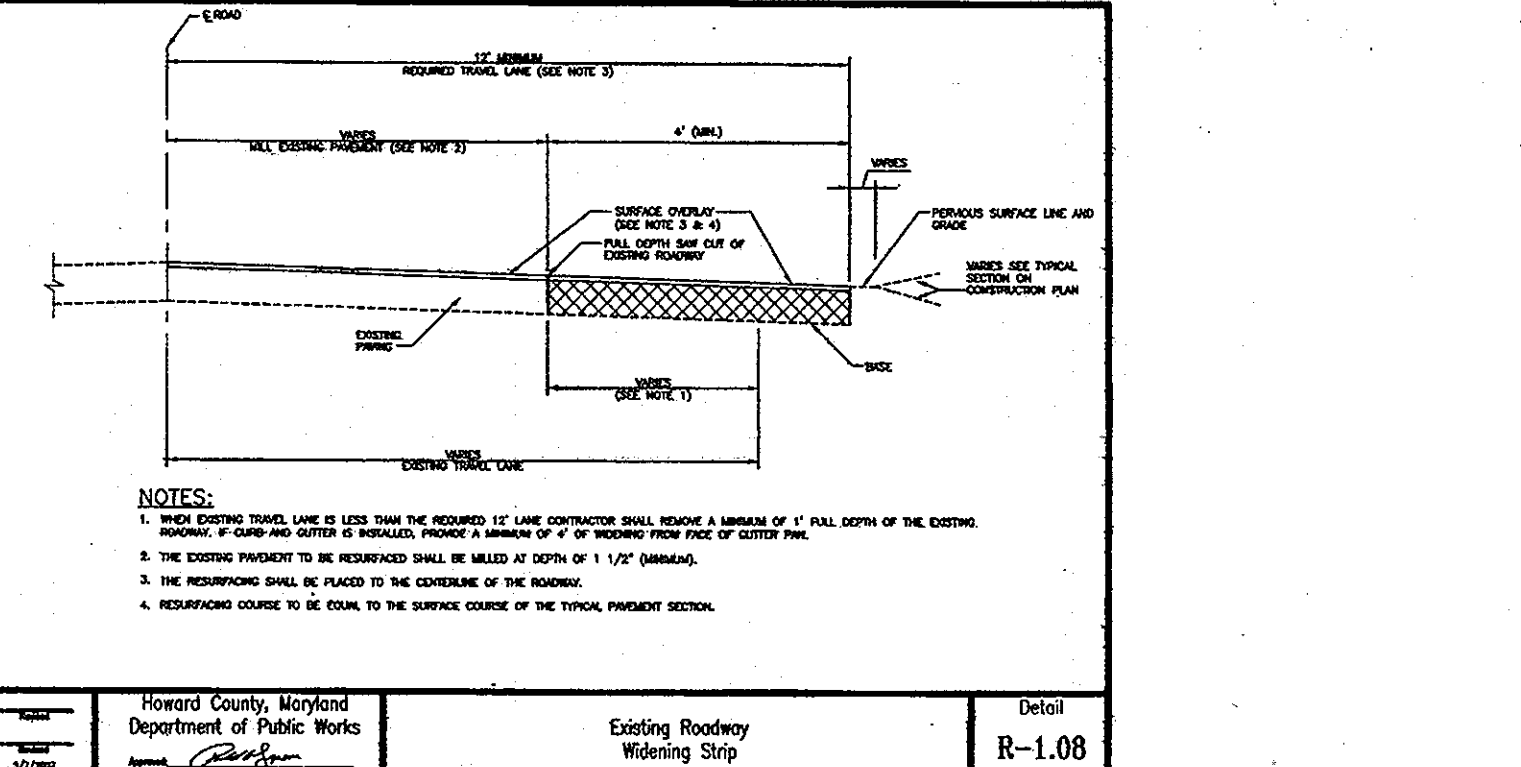
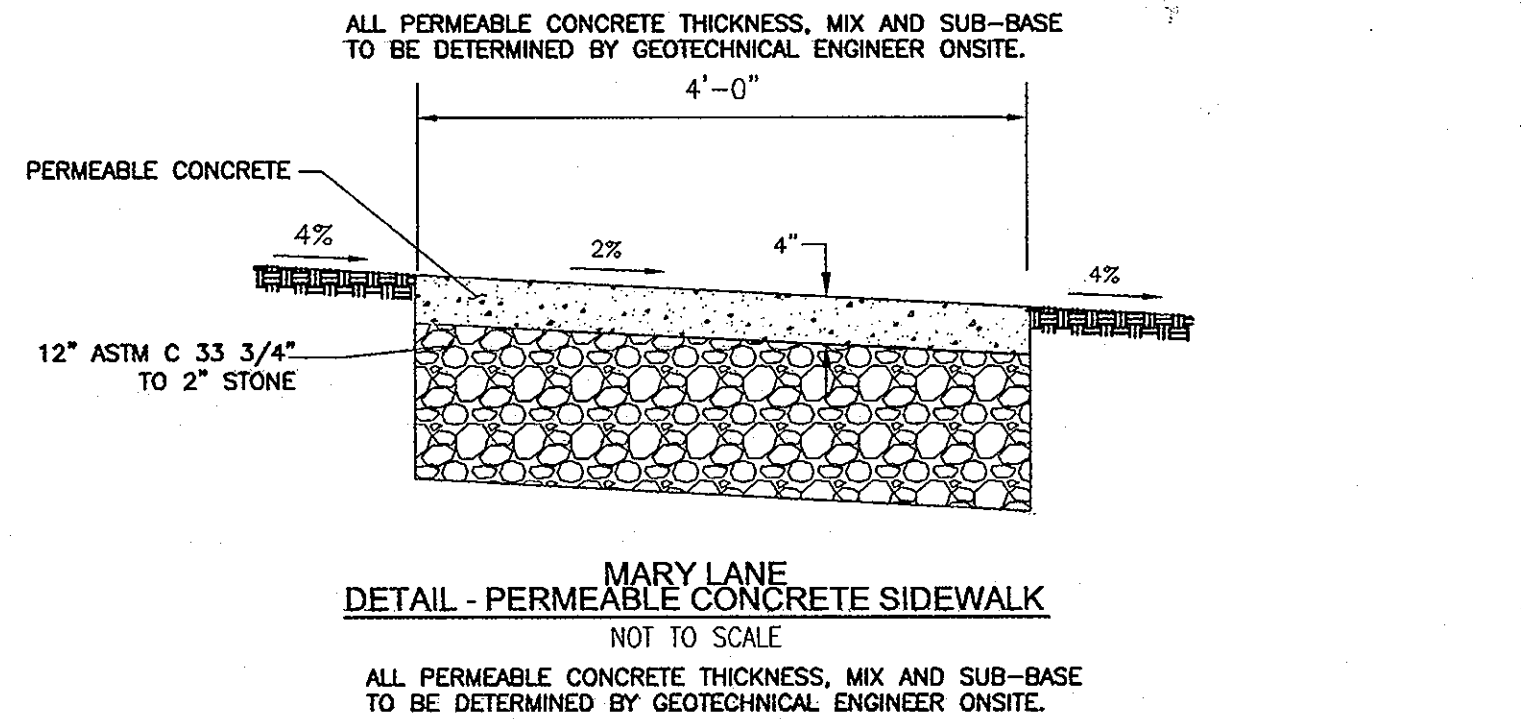
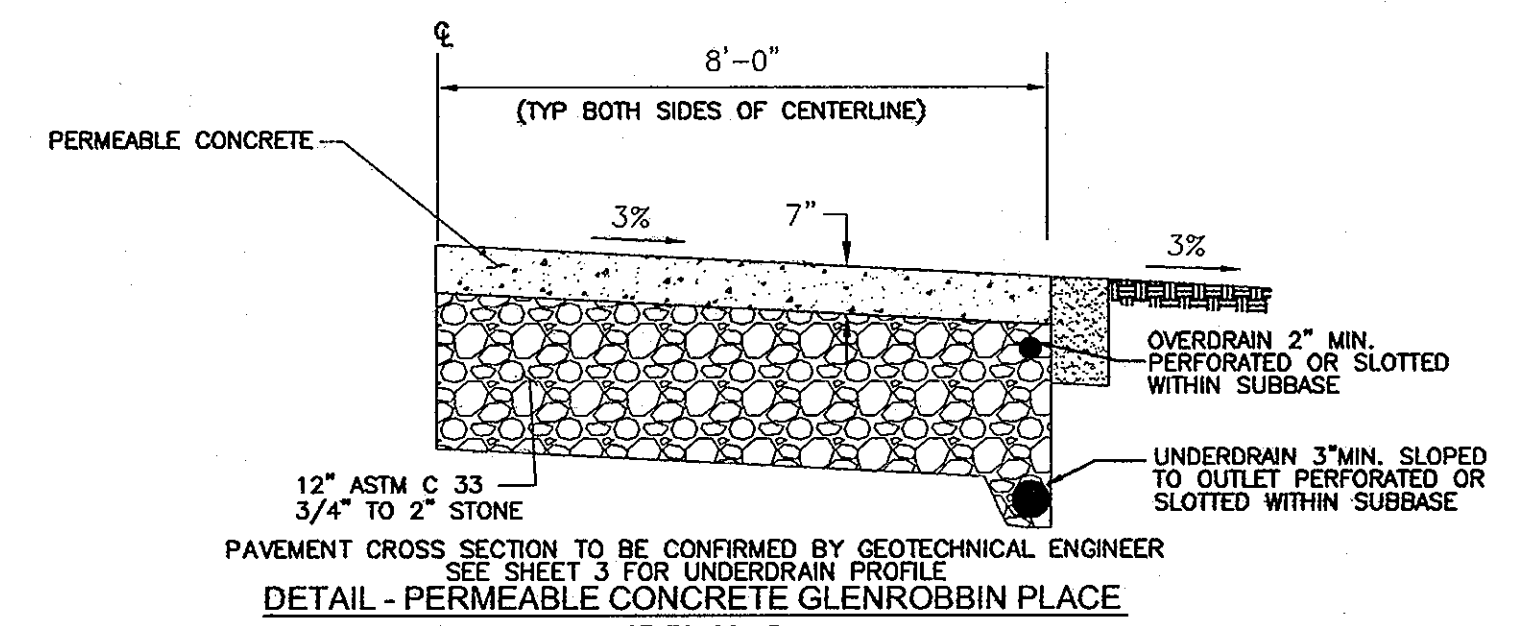
DESIGN BY: JCO  
 DRAWN BY: KG  
 CHECKED BY: RHV  
 DATE: APRIL 2010  
 SCALE: 1"=50'  
 W.O. NO.: 08-35

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: 06-29-2010

1 SHEET OF 9



STREET LIGHT CHART		
QUANTITY	SYMBOL	FIXTURE/POLE TYPE
1	*	GREENWAY SERIES 130 WATT LED MOUNTED ON 4" I.D. SCH 40 STRAIGHT ALUMINUM POLE-20' DIRECT BURIAL. (MARY LANE) STA. 0+15.96, LT. 15.83'
1	*	GREENWAY SERIES 130 WATT LED MOUNTED ON 4" I.D. SCH 40 STRAIGHT ALUMINUM POLE-20' DIRECT BURIAL. (GLENROBBIN PLACE) STA. 4+69.86, RT. 12.10'



DRIVEWAY CULVERT CHART			
LOT NO.	LENGTH	SIZE	TYPE
1	20'	12"	HOPE
2	20'	12"	HOPE
3	22'	12"	HOPE
4	22'	12"	HOPE
5	20'	12"	HOPE
6	29'	12"	HOPE
7	22'	12"	HOPE

SIGNAGE LOCATION CHART			
STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
GLENROBBIN PLACE	0+26.51	15' LEFT	R1-1 STOP SIGN

OWNER/DEVELOPER  
HOWARD COUNTY HOUSING COMMISSION  
6751 COLUMBIA GATEWAY DRIVE  
3RD FLOOR, GATEWAY BUILDING  
COLUMBIA, MARYLAND 21044  
410-313-6316

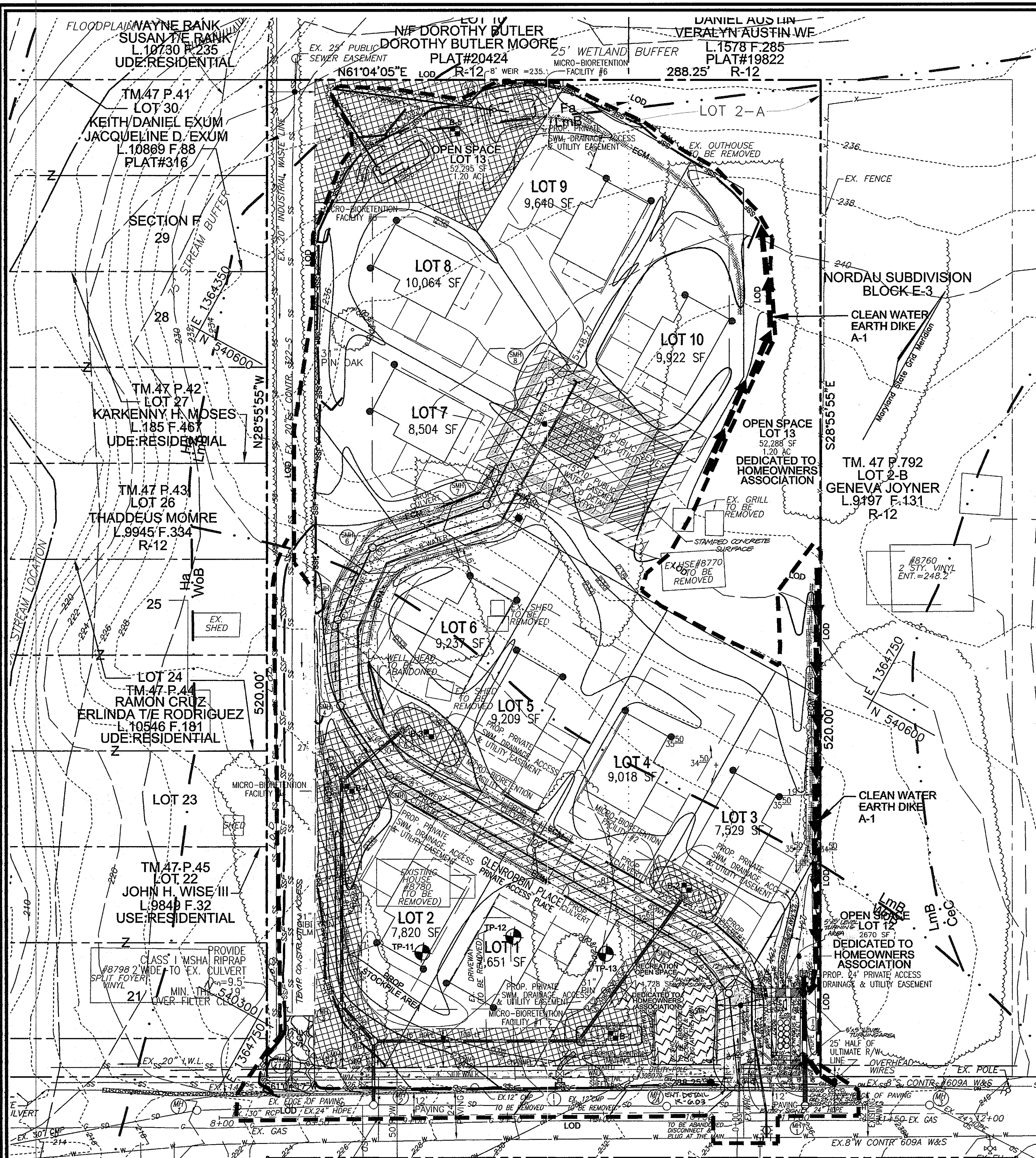
FINAL ROAD CONSTRUCTION PLANS  
FINAL ROAD CONSTRUCTION PLAN, PROFILE,  
CROSS SECTIONS & DETAILS  
THE GLENS AT GUILFORD  
LOTS 1-10 & OPEN SPACE LOTS 11-13  
A RESUBDIVISION OF LOTS 1 & 2-A, (P.46 & P.815), BLOCK E-3  
NORDAU SUBDIVISION  
TAX MAP #47 GRID 6 & 24 PARCELS 46 & 815  
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: JCO  
DRAWN BY: KGC  
CHECKED BY: RHY  
DATE: APRIL 2010  
SCALE: AS SHOWN  
W.O. NO.: 08-35

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. 16193 EXPIRATION DATE: 09-27-2010

2 SHEET OF 9



SOILS LEGEND		
SYMBOL	DESCRIPTION	TYPE
CeC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	B
CrD	CROOM AND EVESBORO SOILS, 10 TO 15 PERCENT SLOPES	C
Fa	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D
Ha	HATBORO-CORDORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	D
LeC	LEGORE SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B
LmB	LEGORE-MONTALTO SILT LOAMS, 3 TO 8 PERCENT SLOPES	B
UcB	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	B
UcD	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	B
WoB	WOODSTOWN SANDY LOAM, 2 TO 5 PERCENT SLOPES MODERATELY ERODED	C

NOTES:  
 1. SOILS INFORMATION WAS TAKEN FROM THE USDA WEB SOIL SURVEY, WWW.WEBSOILSURVEY.NRCS.USDA.GOV.  
 2. THERE ARE NO SLOPES IN EXCESS OF 15% ON THE PROPERTY.

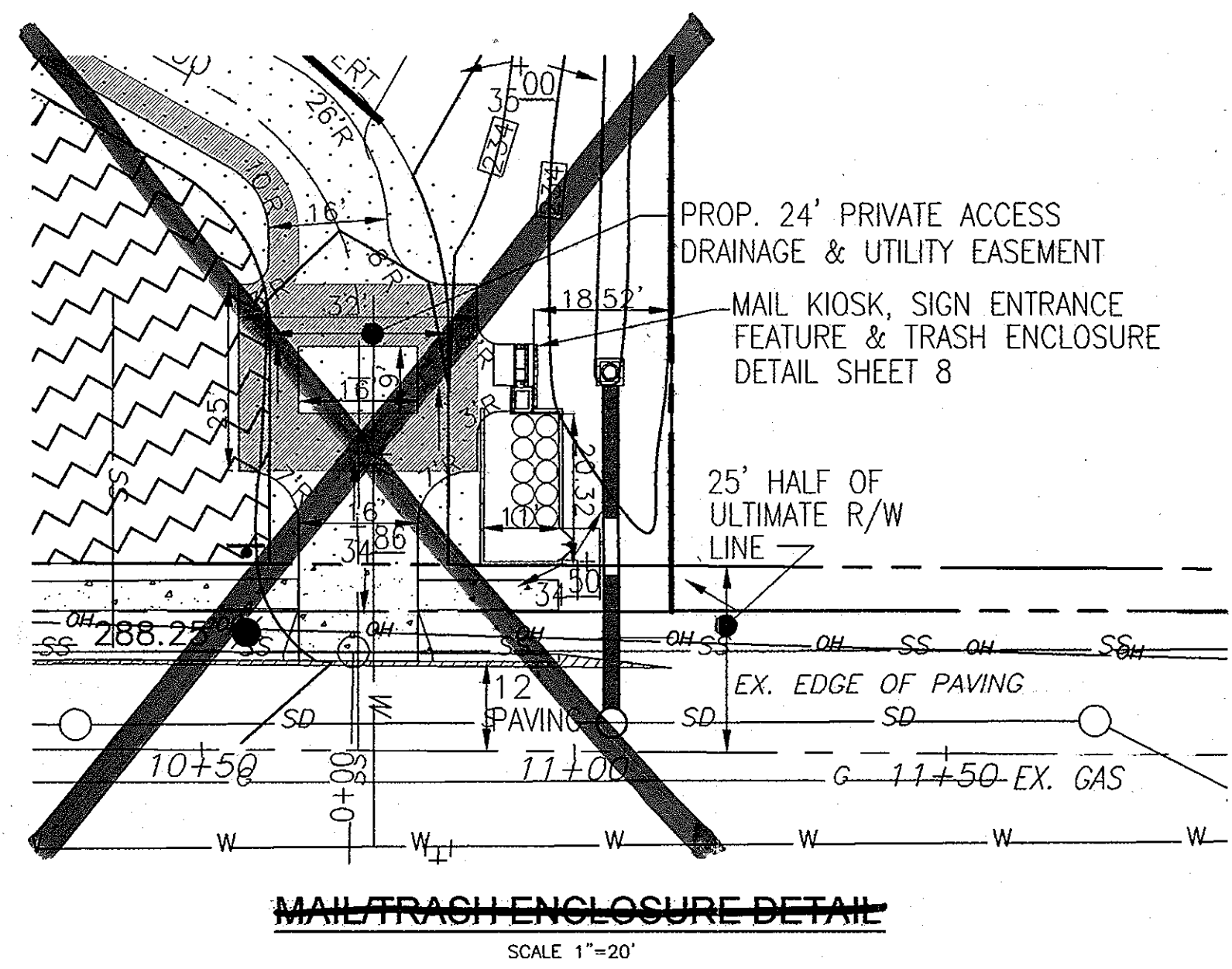
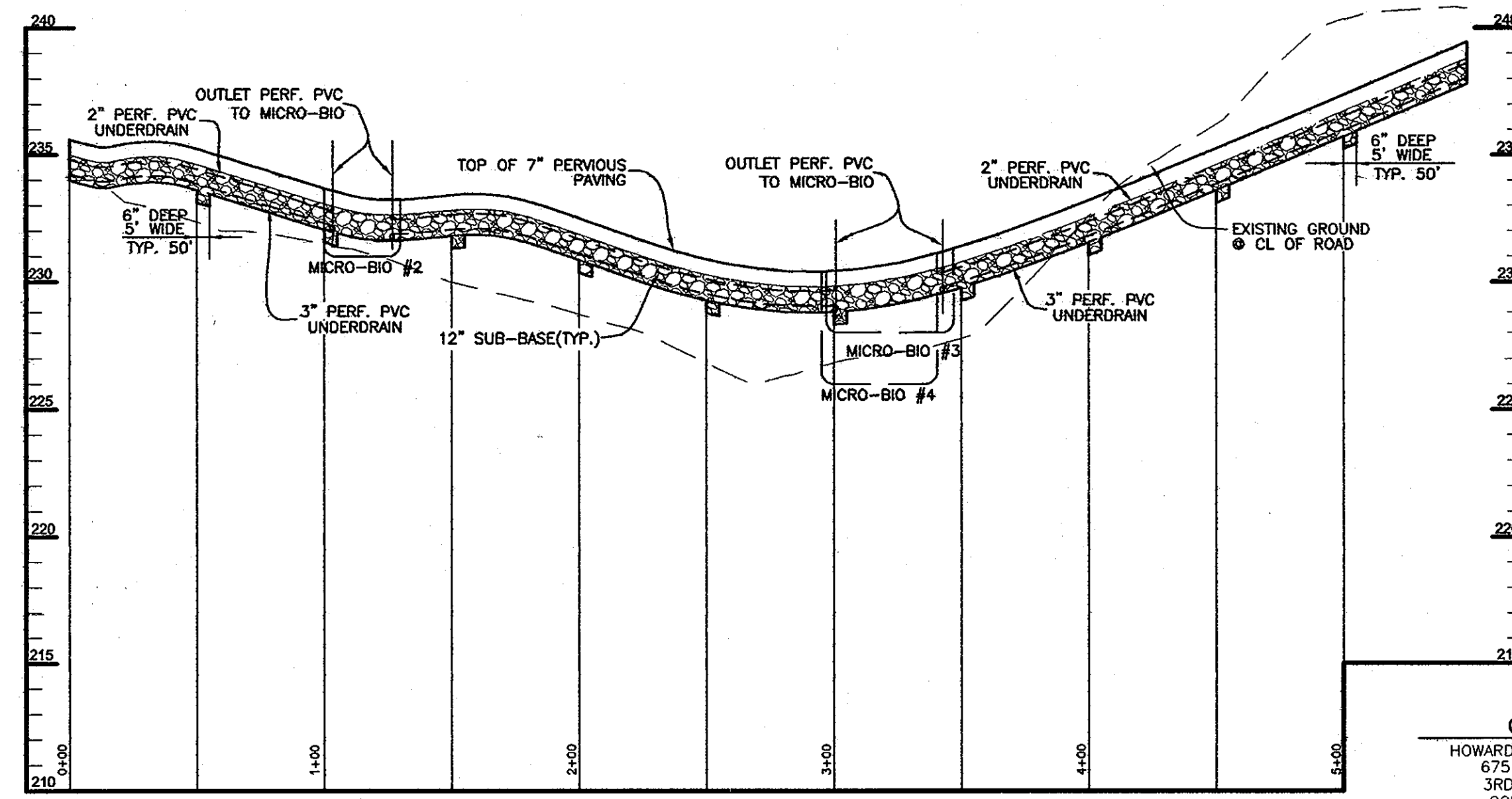
**LEGEND:**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- 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
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- EXISTING TREELINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- PROPOSED SIDEWALK
- SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- CURB INLET PROTECTION
- STABILIZED CONSTRUCTION ENTRANCE
- EROSION CONTROL MATTING
- FOREST CONSERVATION EASEMENT
- STREET LIGHT
- EXISTING PARCEL/LOT DIMD LINE
- WETLAND
- 100 YEAR FLOODPLAIN
- 75' STREAM BUFFER
- WETLANDS
- EXIST. TREE TO REMAIN
- EXIST. TREE TO BE REMOVED
- NEW PAVING AREA
- PRIVATE ACCESS DRAINAGE AND UTILITY EASEMENT
- PRIVATE SWM EASEMENT
- PUBLIC SEWER, WATER AND UTILITY EASEMENT

**CHANNEL DETAIL**  
NOT TO SCALE

**RAIN BARREL DETAIL**  
NOT TO SCALE

**OWNER/DEVELOPER**  
 HOWARD COUNTY HOUSING COMMISSION  
 6751 COLUMBIA GATEWAY DRIVE  
 3RD FLOOR, GATEWAY BUILDING  
 COLUMBIA, MARYLAND 21044  
 410-313-6316



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 DATE: 6-7-10  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 DATE: 6/11/10  
 APPROVED: CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 6/17/10

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 DATE: 5/20/10

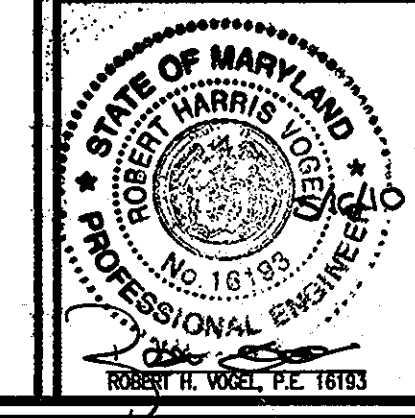
ENGINEER'S CERTIFICATE:  
 I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
 DATE: 5/16/10

DEVELOPER'S CERTIFICATE:  
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.  
 DATE: May 13, 2010

NO.	ADD MAIL/TRASH ENCLOSURE	REVISION	DATE
1	ADD MAIL/TRASH ENCLOSURE		11-22-10

**FINAL ROAD CONSTRUCTION PLANS**  
**GRADING, SEDIMENT & EROSION CONTROL PLAN**  
**THE GLENS AT GUILFORD**  
 LOTS 1-10 & OPEN SPACE LOTS 11-13  
 A RESUBDIVISION OF LOTS 1 & 2-A, (P. 46 & P. 815), BLOCK E-3  
 NORDAU SUBDIVISION  
 TAX MAP #47 GRID 6 & 24 PARCELS 46 & 815  
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

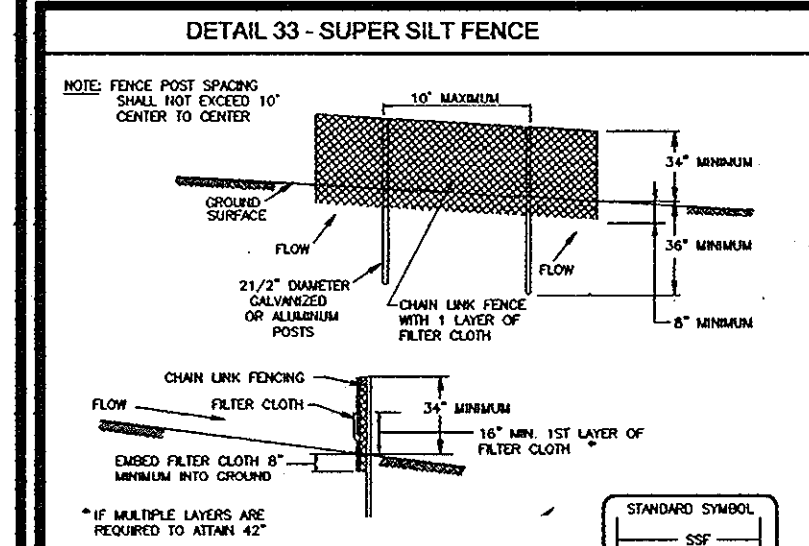
**ROBERT H. VOGEL, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET TEL: 410.461.7666  
 ELLICOTT CITY, MD 21043 FAX: 410.461.8961



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. 16183  
 EXPIRATION DATE: 08-27-2010

DESIGN BY: JCO  
 DRAWN BY: KG  
 CHECKED BY: RELV  
 DATE: APRIL 2010  
 SCALE: 1"=30'  
 W.O. NO.: 08-35

3 SHEET OF 9



### DETAIL 33 - SUPER SILT FENCE

1. FENCING SHALL BE 42" IN HEIGHT AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST MANUFACTURED STATE HOUSING DEPARTMENT FOR CHAIN LINK FENCING. THE SPACING FOR A 4" FENCE SHALL BE USED, SUBSTITUTING 42" FABRIC AND 6" LENGTH POSTS.

2. CHAIN LINK FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES. THE LOWER TENSION WIRE BRACE AND THRU RODS, DRIVE ANCHORS AND POST CAPS ARE NOT REQUIRED EXCEPT ON THE ENDS OF THE FENCE.

3. FILTER CLOTH SHALL BE FASTENED SECURELY TO THE CHAIN LINK FENCE WITH THIS SPACED EVERY 24" AT THE SIDE AND SECTION.

4. FILTER CLOTH SHALL BE CHECKED A MINIMUM OF 8" INTO THE GROUND.

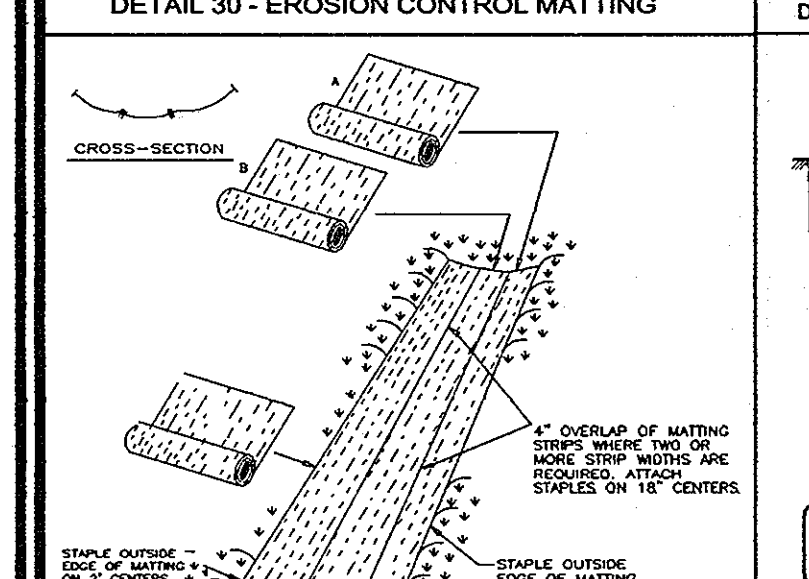
5. WHEN TWO SECTIONS OF FILTER CLOTH MEET EACH OTHER, THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.

6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND SILT DEPOSITS REMOVED WHEN "TRUCKS" DEVELOP IN THE SILT FENCE, OR WHEN SILT REACHES 50% OF FENCE HEIGHT.

7. FILTER CLOTH SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND 800 SECTION AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTECHNICAL CLASS 'F':

TEST: MEAST 508  
 TEST: MEAST 509  
 TEST: MEAST 511  
 TEST: MEAST 522

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### DETAIL 34 - EROSION CONTROL MATTING

1. LENGTH - BY MINIMUM OF 50' FOR A SINGLE RESIDENCE LOT.

2. WIDTH - BY MINIMUM, SHOULD BE PLACED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

3. GEOTECHNICAL FINISH (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO THE MATTING. THE MATTING SHALL BE PLACED OVER THE EXISTING GROUND WITH THE SOLE OF MATTING AS A HIGH POINT AND NO DROPS TO CORNER. A PIPE (OPTIONAL) IS NOT NECESSARY, PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE COLLECTED. A HUMAN WELL BE REQUIRED.

4. LOCATION - STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE THE MOTOR TRAVEL OVER THE DRIVE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

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### EROSION CONTROL MATTING

**CONSTRUCTION SPECIFICATIONS**

- KEY-IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A NARROW TRENCH 6" IN DEPTH. BACKFILL THE TRENCH AND TRAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS-SECTION. SECURE WITH A ROW OF STAPLES ABOUT 4" DOWN SLOPE FROM THE TRENCH. SPACING BETWEEN STAPLES IS 6".
- STAPLE THE 4" OVERLAP IN THE CHANNEL CENTER USING AN 11" SPACING BETWEEN STAPLES.
- BEFORE STAPLING THE OUTER EDGES OF THE MATTING, MAKE SURE THE MATTING IS SMOOTH AND IN FIRM CONTACT WITH THE SOIL.
- STAPLES SHALL BE PLACED 2" APART WITH 4 ROWS FOR EACH STRIP, 2 OUTER ROWS, AND 2 ALTERNATING ROWS DOWN THE CENTER.
- WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 4". SIMILAR PATTERN REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAPLES SPACED 6" APART IN A STAGGERED PATTERN ON EITHER SIDE.
- THE OVERLAP END OF THE MATTING LAYER SHOULD BE SIMILARLY SECURED WITH 2 DOUBLE ROWS OF STAPLES.

NOTE: IF FLOW WILL ENTER FROM THE EDGE OF THE MATTING THEN THE AREA EFFECTED BY THE FLOW MUST BE KEVED-IN.

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### SEQUENCE OF CONSTRUCTION DURATION

NO.	DESCRIPTION	DURATION
1.	OBTAIN GRADING PERMIT.	
2.	NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.	
3.	CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.	1 DAY
4.	INSTALL SUPER SILT FENCE AND PERMIETER CLEAN WATER DIKES.	1 DAY
5.	AFTER OBTAINING PERMISSION FROM SEDIMENT CONTROL INSPECTOR TO PROCEED, INSTALL STORM DRAIN 1-5, M-2 AND THE EX. M-24 FOR CLEAN WATER BYPASS.	3 DAYS
6.	MASS GRADE SITE AND BEGIN SEWER, WATER AND REMAINING STORM DRAIN, BLOCK INLETS, EXCEPT 1-5.	3 WEEKS
7.	CONSTRUCT SWM FACILITIES 1, 2, AND 3.	3 WEEKS
8.	GRADE ROAD TO SUB-BASE AND BEGIN INSTALLATION OF FLUSH CURB AND PAVE ROAD, INSTALL CURB & GUTTER AND SIDEWALK ALONG MART LANE.	1 MONTH
9.	FINALIZE SITE GRADING IN CONFORMANCE WITH THIS PLAN, AND STABILIZE.	2 DAYS
10.	WITH INSPECTOR APPROVAL AND FINAL ROAD PAVING COMPLETE STABILIZE ANY REMAINING DISTURBED AREAS AND REMOVE INLET BLOCKING.	3 DAYS
11.	INSTALL STREET TREES, PERIMETER LANDSCAPING AND BIORETENTION PLANTINGS.	1 WEEK
12.	WITH SEDIMENT CONTROL INSPECTORS APPROVAL REMOVE ALL SEDIMENT CONTROL DEVICES.	3 DAYS

**NOTES**

DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL MEASURES SHOW HEREON.

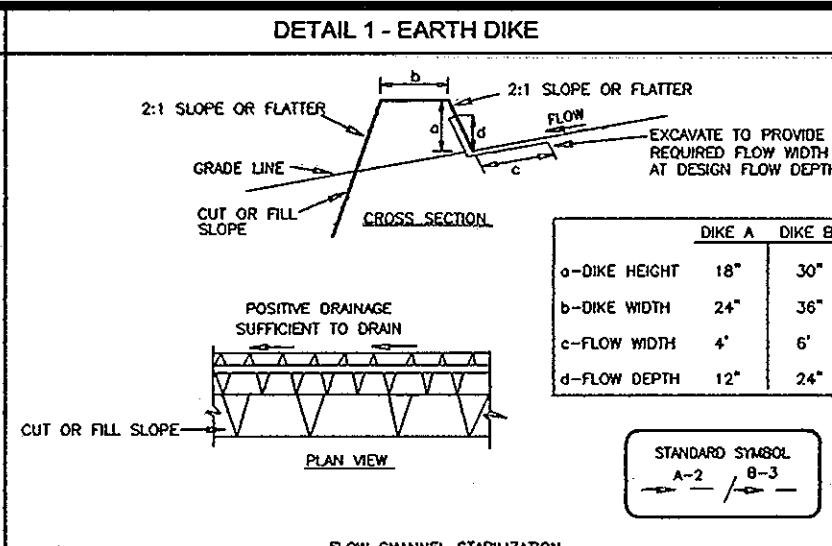
FOLLOWING INITIAL SOIL DISTURBANCE OR EROSION PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITH:

- 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, SWALES, DITCH PERIMETER SLOPES SLOPES AND ALL SLOPES GREATER THAN 3:1.
- 14 CALENDAR DAYS FOR ALL OTHER DISTURBED AREAS.

APPROVED: William R. Smith, CHIEF, BUREAU OF HIGHWAYS, DATE: 6-7-10

APPROVED: John K. Roberts, CHIEF, DEVELOPMENT ENGINEERING DIVISION, DATE: 6/10/10

APPROVED: John K. Roberts, CHIEF, DIVISION OF LAND DEVELOPMENT, DATE: 6/10/10



### DETAIL 1 - EARTH DIKE

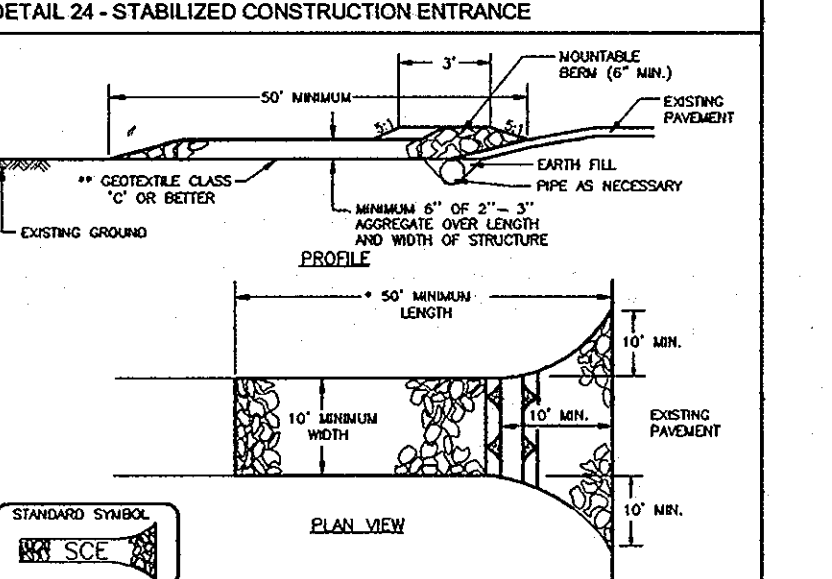
**CONSTRUCTION SPECIFICATIONS**

- SEED AND COVER WITH STRAW MULCH.
- SEED AND COVER WITH EROSION CONTROL MATTING OR LINER WITH SOIL.
- 4" = 7" STONE OR RECYCLED CONCRETE EQUIVALENT PRESSED INTO THE SOIL 7" MINIMUM.

**CONSTRUCTION SPECIFICATIONS**

- ALL TOPSOILING MATERIAL SHALL BE UNDISTURBED POSITIVE GRADE TO A UNIFORM 3" DEPTH. A CLEAN SURFACE SHALL BE NEEDED FOR GRASSES LESS THAN 1/2" HEIGHT TO BE ESTABLISHED.
- ROCKS, BRUSH, STUMPS, AND OTHER OBSTRUCTIONS SHALL BE REMOVED FROM THE EROSION CONTROL AREA.
- ROCKS, BRUSH, STUMPS, AND OTHER OBSTRUCTIONS SHALL BE REMOVED FROM THE EROSION CONTROL AREA.
- THE DIKE SHALL BE EXCAVATED OR SHORED TO LINE, GRADE AND CROSS SECTION AS REQUIRED TO MEET THE DESIGN CRITERIA AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPROVE FLOW.
- FILL SHALL BE COMPACTED BY BULKY MOVING EQUIPMENT TO THE DIKE TOP, ALL EARTH REMOVED AND NOT REUSED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIKE.
- INSPECTION AND MAINTENANCE MUST BE PROVIDED PERIODICALLY AND AFTER EACH RAIN EVENT.

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### DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

**CONSTRUCTION SPECIFICATION**

- LENGTH - BY MINIMUM OF 50' FOR A SINGLE RESIDENCE LOT.
- WIDTH - BY MINIMUM, SHOULD BE PLACED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- GEOTECHNICAL FINISH (FILTER CLOTH) SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO THE MATTING. THE MATTING SHALL BE PLACED OVER THE EXISTING GROUND WITH THE SOLE OF MATTING AS A HIGH POINT AND NO DROPS TO CORNER. A PIPE (OPTIONAL) IS NOT NECESSARY, PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE COLLECTED. A HUMAN WELL BE REQUIRED.
- LOCATION - STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE THE MOTOR TRAVEL OVER THE DRIVE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, PAGE # 8-33

APPROVED: William R. Smith, CHIEF, BUREAU OF HIGHWAYS, DATE: 6-7-10

APPROVED: John K. Roberts, CHIEF, DEVELOPMENT ENGINEERING DIVISION, DATE: 6/10/10

APPROVED: John K. Roberts, CHIEF, DIVISION OF LAND DEVELOPMENT, DATE: 6/10/10

### MARYLAND 378 STORMWATER MANAGEMENT POND CONSTRUCTION SPECIFICATIONS

#### CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and ASHTO specifications apply to the most recent version.

#### Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

#### Earth Fill

**Material** - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer. Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

**Placement** - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

**Compaction** - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall be not less than 95% of maximum dry density with a moisture content within +\%-2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

**Cut Off Trench** - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability.

**Embankment Core** - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

#### Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent flooding the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe unless there is a compacted fill of 24" or greater over the type and quality conforming to that specified for the core of the embankment or other embankment materials.

#### Pipe Conduits

All pipes shall be circular in cross section.

#### Corrugated Metal Pipe

All of the following criteria shall apply for corrugated metal pipe:

- Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coating shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of ASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.
- Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of ASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipes, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of ASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of ASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of ASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

- Coupling, bands, anti-seep collars, and sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials of least 2/16 in thickness.
- Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled on an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inch diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket; Pre-Punched to the flange bolt circle sandwich between adjacent flanges; a 12 inch wide standard lap type band with 12 inch wide by 3/8 inch thick closed cell neoprene gasket; and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8-inch closed cell gaskets the full width of the flange is also acceptable.

Helicouly corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

- Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
- Backfilling shall conform to "Structure Backfill".
- Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

**Reinforced Concrete Pipe** - All of the following criteria shall apply for reinforced concrete pipe:

- Materials - Reinforced concrete pipe shall have ball and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.
- Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding/cradle for their entire length. This bedding/cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe to at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.
- Laying pipe - Ball and spigot pipe shall be placed with the ball end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.
- Backfilling shall conform to "Structure Backfill".
- Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

**Plastic Pipe** - The following criteria shall apply for plastic pipe:

- Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" - 10" inch pipe shall meet the requirements of ASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of ASHTO M254 Type S.
- Joints and connections to anti-seep collars shall be completely watertight.
- Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

**Drainage Diaphragms** - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

**Concrete**

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

**Rock Riprap**

Riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

**Core of Water during Construction**

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the work to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spigot or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the piling and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water pumps from which the water shall be pumped.

**Stabilization**

All borrow areas shall be graded to provide proper drainage and left in a slightly condition. All exposed surfaces of the embankment, spillway, sump and borrow areas, and berms shall be stabilized by seeding, liming, fertilized and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (WD-342) or as shown on the accompanying drawings.

**Erosion and Sediment Control**

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

#### SEQUENCE OF CONSTRUCTION DURATION

1. OBTAIN GRADING PERMIT.

2. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.

3. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE. 1 DAY

4. INSTALL SUPER SILT FENCE AND PERMIETER CLEAN WATER DIKES. 1 DAY

5. AFTER OBTAINING PERMISSION FROM SEDIMENT CONTROL INSPECTOR TO PROCEED, INSTALL STORM DRAIN 1-5, M-2 AND THE EX. M-24 FOR CLEAN WATER BYPASS. 3 DAYS

6. MASS GRADE SITE AND BEGIN SEWER, WATER AND REMAINING STORM DRAIN, BLOCK INLETS, EXCEPT 1-5. 3 WEEKS

7. CONSTRUCT SWM FACILITIES 1, 2, AND 3. 3 WEEKS

8. GRADE ROAD TO SUB-BASE AND BEGIN INSTALLATION OF FLUSH CURB AND PAVE ROAD, INSTALL CURB & GUTTER AND SIDEWALK ALONG MART LANE. 1 MONTH

9. FINALIZE SITE GRADING IN CONFORMANCE WITH THIS PLAN, AND STABILIZE. 2 DAYS

10. WITH INSPECTOR APPROVAL AND FINAL ROAD PAVING COMPLETE STABILIZE ANY REMAINING DISTURBED AREAS AND REMOVE INLET BLOCKING. 3 DAYS

11. INSTALL STREET TREES, PERIMETER LANDSCAPING AND BIORETENTION PLANTINGS. 1 WEEK

12. WITH SEDIMENT CONTROL INSPECTORS APPROVAL REMOVE ALL SEDIMENT CONTROL DEVICES. 3 DAYS

**NOTES**

DURING GRADING AND AFTER EACH RAINFALL, THE CONTRACTOR SHALL INSPECT AND PROVIDE THE NECESSARY MAINTENANCE ON THE SEDIMENT AND EROSION CONTROL MEASURES SHOW HEREON.

FOLLOWING INITIAL SOIL DISTURBANCE OR EROSION PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITH:

- 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, SWALES, DITCH PERIMETER SLOPES SLOPES AND ALL SLOPES GREATER THAN 3:1.
- 14 CALENDAR DAYS FOR ALL OTHER DISTURBED AREAS.

**ENGINEER'S CERTIFICATE:**

I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

**DEVELOPER'S CERTIFICATE:**

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE IN ACCORDANCE TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTIONS BY THE HOWARD SOIL CONSERVATION DISTRICT.

APPROVED: John K. Roberts, CHIEF, DIVISION OF LAND DEVELOPMENT, DATE: 6/10/10

APPROVED: John K. Roberts, CHIEF, DIVISION OF LAND DEVELOPMENT, DATE: 6/10/10

### 21.0 STANDARDS AND SPECIFICATIONS FOR TOPSOIL

#### PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE. PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAVING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

- PREFERRED-APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ.FT.) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT THE TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS./1000 SQ.FT.)
- ACCEPTABLE-APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS./1000 SQ.FT.) AND APPLY 1000 LBS PER ACRE 10-10-10 FERTILIZER (23 LBS./1000 SQ.FT.) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

SEEDING: FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 10 LBS PER ACRE (1.4 LBS./1000 SQ.FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 60 LBS FESCUE AND 11 TALL FESCUE PER ACRE (14 LBS./1000 SQ.FT.) OF WEeping LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 28, PROTECT SITE BY: OPTION (1) 2 TONS PER ACRE WELLS ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOD. OPTION (3) SEED WITH 60 LBS/ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ. FT.) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. PREPARE AND LAY MULCH IMMEDIATELY AFTER APPLICATION USING MULCHING TOOL OR 218 GALLONS PER ACRE (5 GA./1000 SQ.FT.) OF EMULSIFIED ASPHALT AT RATE OF 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GA./1000 SQ.FT.) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDING.

#### TEMPORARY SEEDING NOTES

SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAVING, DISCING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: APPLY 600 LBS. PER ACRE 10-10-10 FERTILIZER (14 LBS./1000 SQ.FT.)

SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30, AND FROM AUGUST 15 THRU NOVEMBER 15, SEED WITH 2 1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS./1000 SQ.FT.) FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 BUSHEL PER ACRE OF WEEPING LOVEGRASS (67 LBS./1000 SQ.FT.). FOR THE PERIOD NOVEMBER 1 THRU FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING: APPLY 1 1/2 TO 2 TONS PER ACRE (70 TO 90 LBS./1000 SQ. FT.) OF UNROTTED SMALL GRASS STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCHING TOOL OR 218 GALLONS PER ACRE (5 GA./1000 SQ.FT.) OF EMULSIFIED ASPHALT ON SLOPES 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (8 GA./1000 SQ.FT.) FOR ANCHORING.

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR RATE AND METHODS NOT SPECIFIED.

#### CONSTRUCTION AND MATERIAL SPECIFICATIONS

- TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SGS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTATION STATION.
- TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
  - TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SGS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTATION STATION.
  - TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SGS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTATION STATION.
- WHERE POSSIBLE, THE SOIL PROTECTION ZONE SHALL EXTEND TO THE DRIP LINE OF SPECIMEN TREES. FOR OTHER GROUPS OF TREES, THE ZONE SHALL BE THE ZONE WHICH IS 40% OF THE HEIGHT OF THE TREE, WHICHEVER IS GREATER.
- NO CONSTRUCTION ACTIVITY IS PERMITTED WITHIN THE SOIL PROTECTION ZONE.
- IF SOIL HAS BEEN COMPACTED OR GRADING HAS TAKEN PLACE IN THE VICINITY OF THE SOIL PROTECTION ZONE, ROOT PRUNING SHALL BE IMPLEMENTED PER ROOT PRUNING DETAIL, UNLESS ON THIS PLAN.
- ROOT PRUNING SHALL OCCUR PRIOR TO THE BEGINNING OF CONSTRUCTION.
- WHERE THE SOIL PROTECTION ZONE MUST ENVELOPE INSIDE THE CRITICAL ROOT ZONE OF A TREE, SOIL DISTURBANCE SHALL BE MITIGATED WITH VERTICAL MULCHING OR RADIAL TREESING.
- PRIOR TO CONSTRUCTION, THE LIMITS OF DISTURBANCE SHALL BE MARKED AND THE DETERMINE WHICH TREES WILL NEED PREVENTATIVE TREATMENT OF REMOVAL.
- TREE MAINTENANCE AND REMOVAL SHALL BE UNDERTAKEN BY A QUALIFIED MID TREE EXPERT TO ENSURE DAMAGE TO SURROUNDING TREES IS MINIMIZED.
- BRUSH AND LIMBS REMOVED FOR CONSTRUCTION SHALL BE CHIPPED AND SPREAD AT THE EDGE OF THE PROTECTION ZONE TO A DEPTH OF 6 INCHES; THIS SHALL OCCUR OUTSIDE THE SOIL PROTECTION ZONE WHERE DEBRIS COULD IMPACT OTHERWISE UNPROTECTED CRITICAL ROOT ZONE.

#### DEFINITION

PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

#### PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETABLE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNDESIRABLE SOIL GRADATION.

#### CONDITIONS WHERE PRACTICE APPLIES

- THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES (WHICHEVER):
  - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PROVIDE VEGETATIVE GROWTH.
  - THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
  - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
  - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
- FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

#### SEDIMENT CONTROL NOTES

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPT. OF INSPECTION, LICENSE AND PERMITS SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION OR GRADING OPERATIONS.
- ALL VEGETATION AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THEREOF.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN (A) 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3:1. (B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 7, HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING, SOD, TEMPORARY SEEDING, AND MULCHING (SEC. 7). TEMPORARY STABILIZATION MATERIAL SHALL BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR REMOVAL HAVE BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SOIL ANALYSIS:
 

TOTAL AREA	3.44 AC.
AREA DISTURBED	0.75 AC.
AREA TO BE ROOFED OR PAVED	0.75 AC.
AREA TO BE VEGETATIVELY STABILIZED	2.69 AC.
TOTAL FILL	4.22 CY
- OFFSITE WASTE/BORROW AREA LOCATION:
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROLS MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVAL MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED WITHIN ONE WORKING DAY, WHICHEVER IS SHORTER.
- TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR WITH AN APPROVED AND ACTIVE GRADING PERMIT.

APPROVED: John K. Roberts, CHIEF, DIVISION OF LAND DEVELOPMENT, DATE: 6/10/10

APPROVED: John K. Roberts, CHIEF, DIVISION OF LAND DEVELOPMENT, DATE: 6/10/10

### FINAL ROAD CONSTRUCTION PLANS

#### SEDIMENT & EROSION CONTROL DETAILS

THE GLENS AT GUILFORD  
 LOTS 1-10 & OPEN SPACE LOTS 11-13  
 A RESUBDIVISION OF LOTS 1 & 2-A, (P.46 & P.816), BLOCK E-3  
 NORDAU SUBDIVISION

TAX MAP #47 GRID 6 & 24 PARCELS 46 & 816  
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERS & SURVEYORS**

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

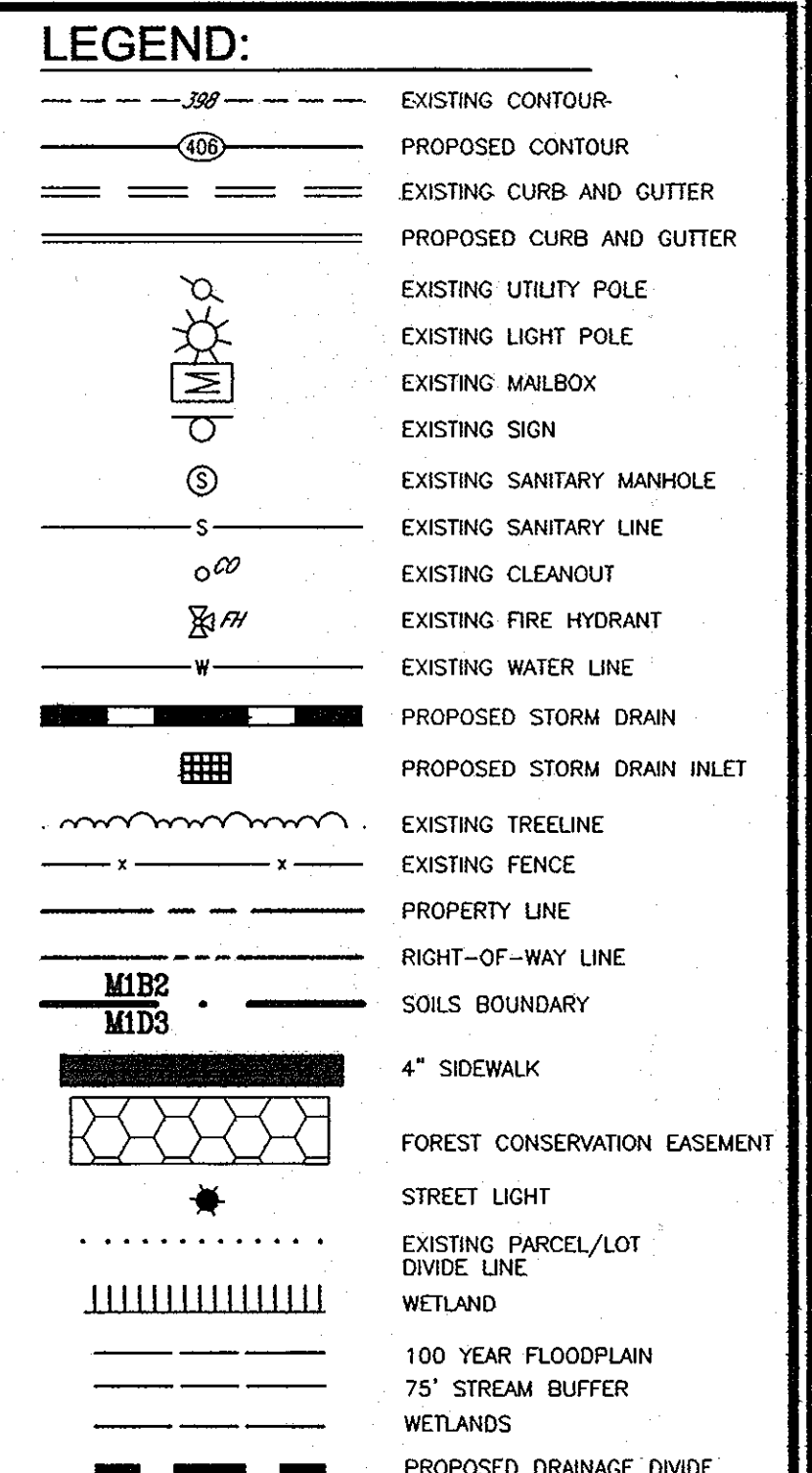
DESIGN BY: JCO  
 DRAWN BY: KG  
 CHECKED BY: RHY  
 DATE: APRIL 2010  
 SCALE: AS SHOWN  
 W.O. NO.: 08-035

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. 16185 EXPIRATION DATE: 09-27-2010

4 SHEET OF 9

F-09-112



**DRAINAGE AREA TABULATION**

NO.	AREA	'C'	% IMP.	SOIL	ZONE
I-2	3.30 AC	0.29	38	B & C	R-12
I-3	0.34 AC	0.31	38	C	R-12
I-4	0.35 AC	0.30	38	B & C	R-12
I-5	0.26 AC	0.31	38	C	R-12
I-6	0.66 AC	0.29	38	B & C	R-12
I-7	0.59 AC	0.29	38	B	R-12
I-8	0.34 AC	0.29	38	B	R-12

**SOILS LEGEND**

SYMBOL	DESCRIPTION	TYPE
CeC	CHILLUM LOAM, 5 TO 10 PERCENT SLOPES	B
CrD	CROOM AND EVESBORO SOILS, 10 TO 15 PERCENT SLOPES	C
Fa	FALLSINGTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	D
Ha	HATBORO-CORDORUS SILT LOAMS, 0 TO 3 PERCENT SLOPES	D
LeC	LEGORE SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B
LmB	LEGORE-MONTALTO SILT LOAMS, 3 TO 8 PERCENT SLOPES	B
UcB	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 0 TO 5 PERCENT SLOPES	B
UcD	URBAN LAND-CHILLUM-BELTSVILLE COMPLEX, 5 TO 15 PERCENT SLOPES	B
WbB	WOODSTOWN SANDY LOAM, 2 TO 5 PERCENT SLOPES MODERATELY ERODED	C

**NOTES:**

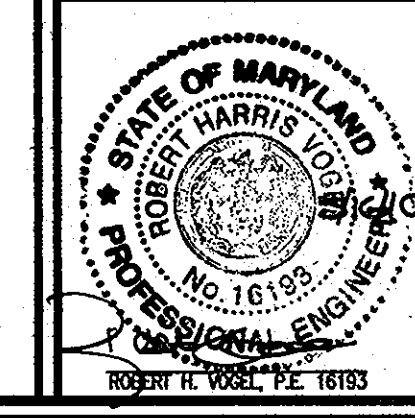
- SOILS INFORMATION WAS TAKEN FROM THE USDA WEB SOIL SURVEY, WWW.WEBSOILSURVEY.NRCS.USDA.GOV.
- THERE ARE NO SLOPES IN EXCESS OF 15% ON THE PROPERTY.

**OWNER/DEVELOPER**  
 HOWARD COUNTY HOUSING COOPERATIVE  
 6751 COLUMBIA GATEWAY DRIVE  
 3RD FLOOR, GATEWAY BUILDING  
 COLUMBIA, MARYLAND 21044  
 410-313-6316

NO.	ADD. MAIL/ TRASH ENCLOSURE	REVISION	DATE
1	ADD MAIL/ TRASH ENCLOSURE		11/22/10

**FINAL ROAD CONSTRUCTION PLANS  
 STORM DRAIN DRAINAGE AREA MAP  
 & SOILS MAP**  
**THE GLENS AT GUILFORD**  
 LOTS 1 & OPEN SPACE LOTS 11-13  
 A RESUBDIVISION OF LOTS 1 & 2-A, (P.46 & P.815), BLOCK E-3  
 NORDAU SUBDIVISION  
 TAX MAP #47 GRID 6 & 24 PARCELS 46 & 815  
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL  
 ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET TEL: 410.461.7666  
 ELLICOTT CITY, MD 21043 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. 16193, EXPIRATION DATE 08-27-2010

DESIGN BY: JCO  
 DRAWN BY: KG  
 CHECKED BY: RHV  
 DATE: APRIL 2010  
 SCALE: 1"=50'  
 W.O. NO.: 08-35

5 SHEET OF 9

**OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-2), MICRORETENTION (M-2), RAIN GARDENS (M-2), PVD RETENTION SWALES (M-2), ENHANCED FILTERS (M-2)**

- 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. *APPROPRIATE PERFORMANCES, MATERIALS, SIZES, AND SIGNAGE FOR RAIN GARDENS, PVDs, SWALES AND FILTERS, REFER TO TABLE A-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 CONSIDERED 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 WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED RAINWATER HARVESTING (M-1)**

- EMPTY BARRELS ON A MONTHLY BASIS AND CLEAN BARREL WITH HOSE.
- VERIFY INTEGRITY OF LEAF SCREENS, GUTTERS, DOWNSPOUTS, SPIGOTS, AND AND MOSQUITO SCREENS CLEAN AND REMOVE DEBRIS.
- DAMAGED COMPONENTS SHALL BE REPLACED AS NEEDED.
- TO AVOID FREEZING, BARREL SHOULD BE EITHER DISCONNECTED OR ALLOWED TO DRAIN BY BOTTOM SPIGOT DURING THE WINTER SEASON.

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

- PAVEMENT SURFACES SHOULD BE SWEEPED AND VACUUMED (IF RIGID CONCRETE) 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 SURFACE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.
- DEICERS SHOULD BE USED IN MODERATION. DEICERS SHOULD BE NON-TORIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PREBLENDED SNOW MELTS. SNOW MELTS SHOULD BE CAREFULLY APPLIED WITH BLADES SET ONE INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOWMELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

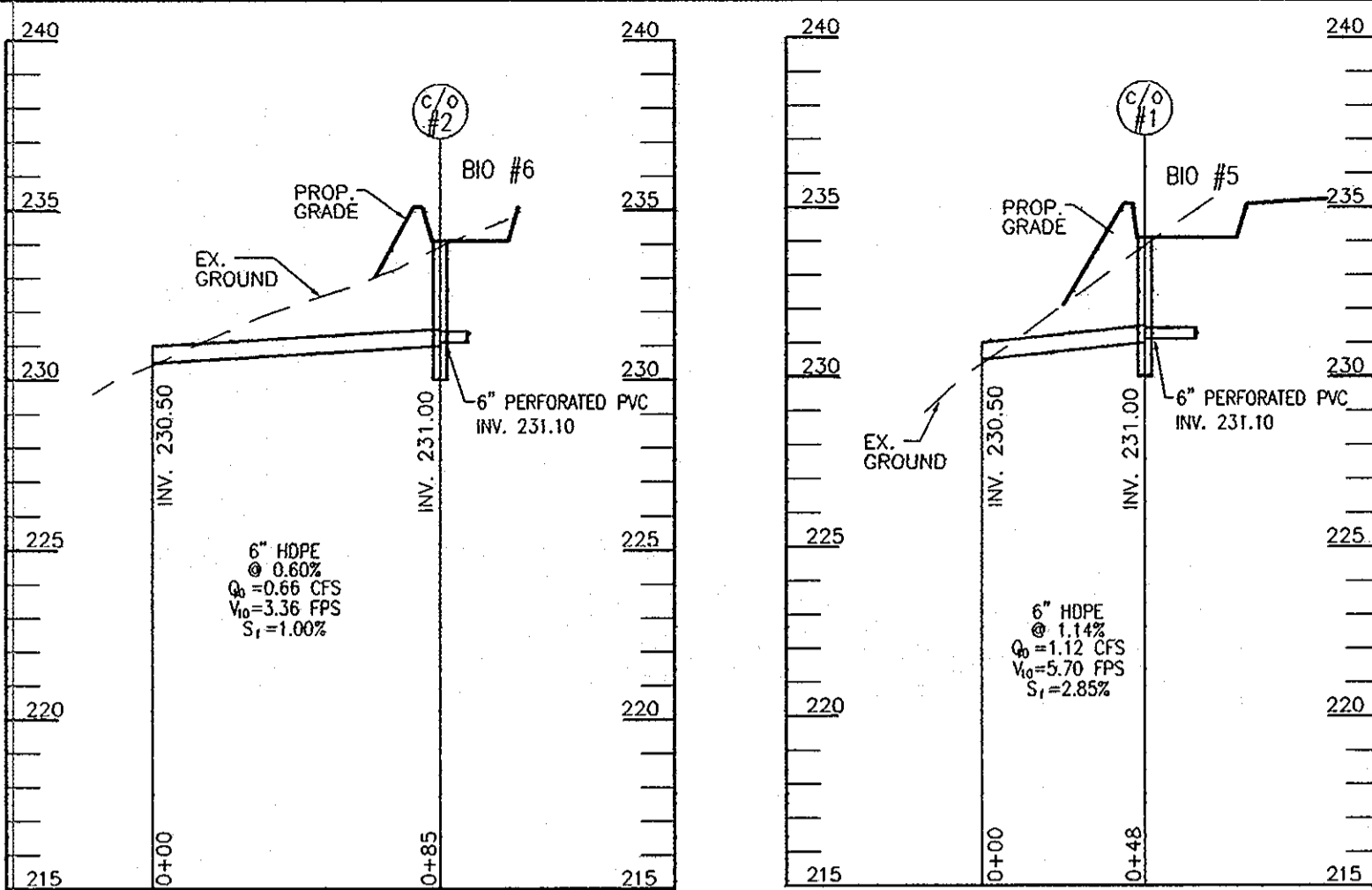
**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED GREEN ROOF (A-D)**

THE FOLLOWING OPERATION AND MAINTENANCE SCHEDULE SHALL BE IMPLEMENTED TO THE FUNCTION OF THE GREEN ROOF SYSTEM IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE "GREEN ROOF SYSTEM DISTRIBUTOR":

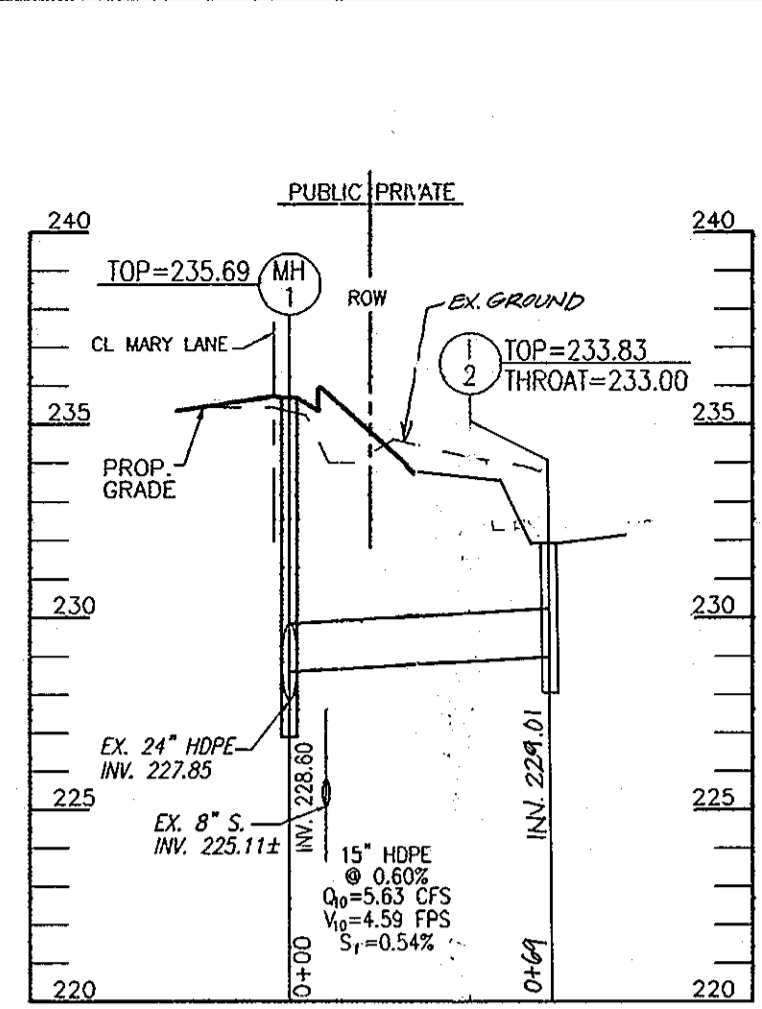
**WEED** - ON AN ANNUAL BASIS REMOVE UNWANTED PLANT MATERIAL.  
**REPLACE** - REPLACE FAILED PLANT MATERIAL WHEN THE FAILED PLANT AREA EXCEEDS FIVE PERCENT (5%) OF THE ROOF AREA.  
**IRRIGATE** - A NEWLY INSTALLED ROOF SHOULD BE IRRIGATED DURING THE FIRST GROWING SEASON, SATURATE THE GREEN ROOF AT LEAST ONCE A WEEK DURING THE FIRST GROWING SEASON. AFTER VEGETATION IS ESTABLISHED, IRRIGATION MAY BE REQUIRED PERIODICALLY DURING DRY PERIODS.  
**NUTRIENT** - THE APPLICATION OF A SLOW RELEASE FERTILIZER IN THE SPRING IS RECOMMENDED ON AN ANNUAL BASIS.  
**INSPECT FOR DRAINAGE** - AFTER EACH SIGNIFICANT RAINFALL INSPECT DOWNSPOUTS OR DRAINAGE CHANNELS/COURSES FOR CLOGS.  
**INSPECT FOR LEAKS** - AFTER EACH SIGNIFICANT RAINFALL INSPECT THE GREEN ROOF FOR LEAKS.

**NOTE: ALL SITE DISCHARGE FLOW TO AN UNNAMED TRIBUTARY OF THE LITTLE PATUXENT RIVER. STREAM USE 1-P**

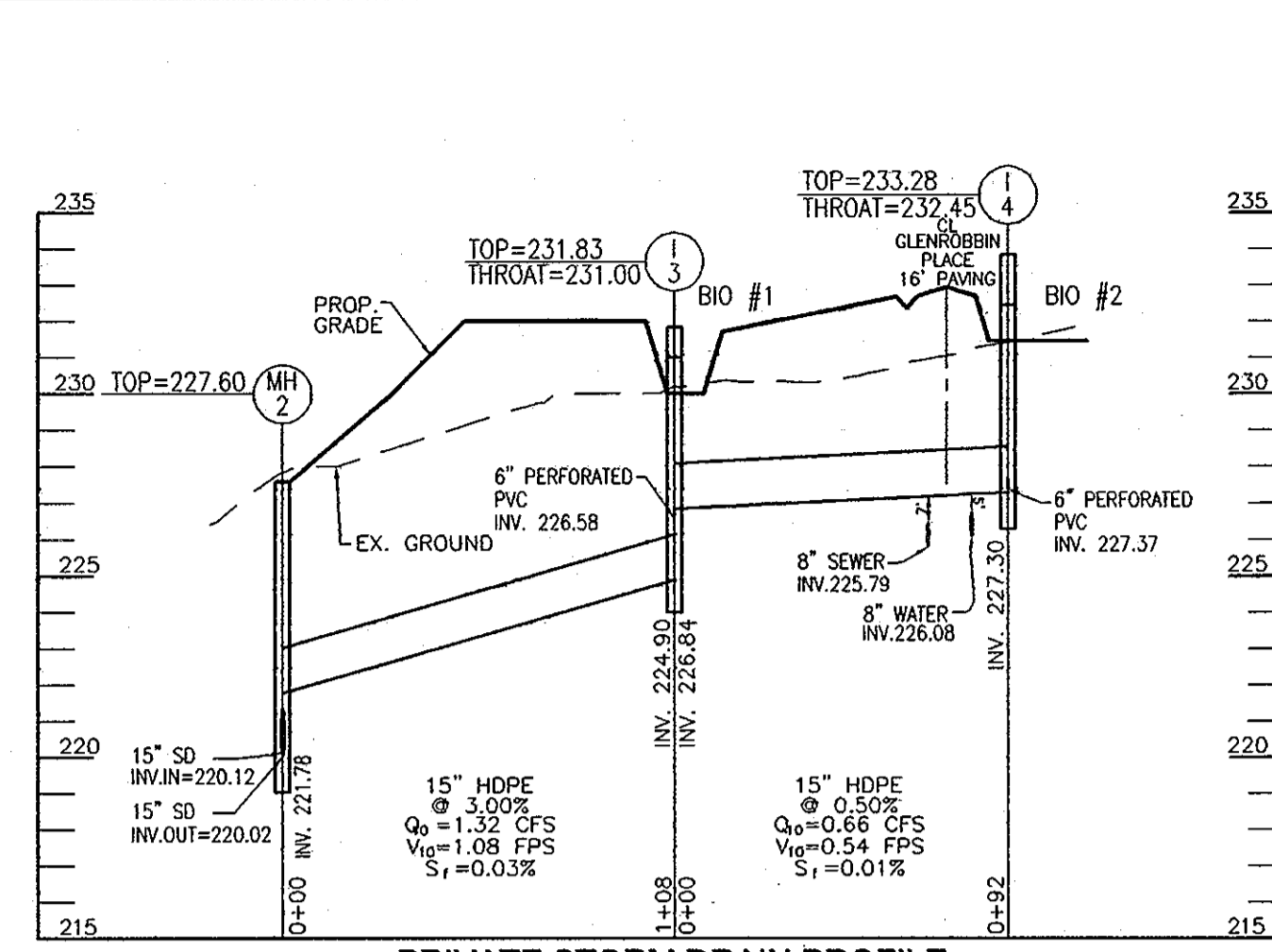
APPROVED: DEPARTMENT OF PUBLIC WORKS  
 WITH 2.04.10 6-7-10  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 6/10/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT 6/10/10



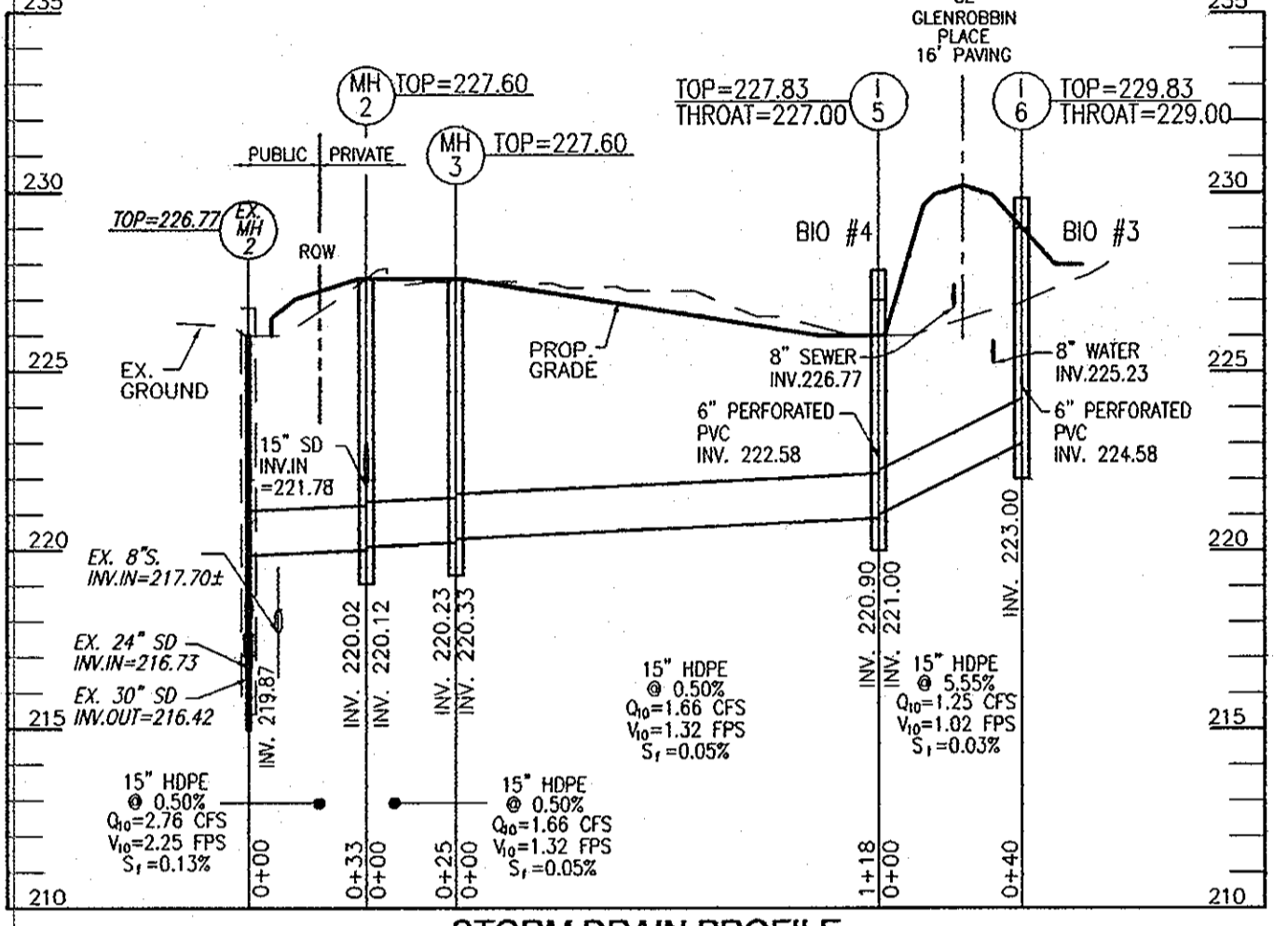
PRIVATE STORM DRAIN PROFILE  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'



STORM DRAIN PROFILE  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'



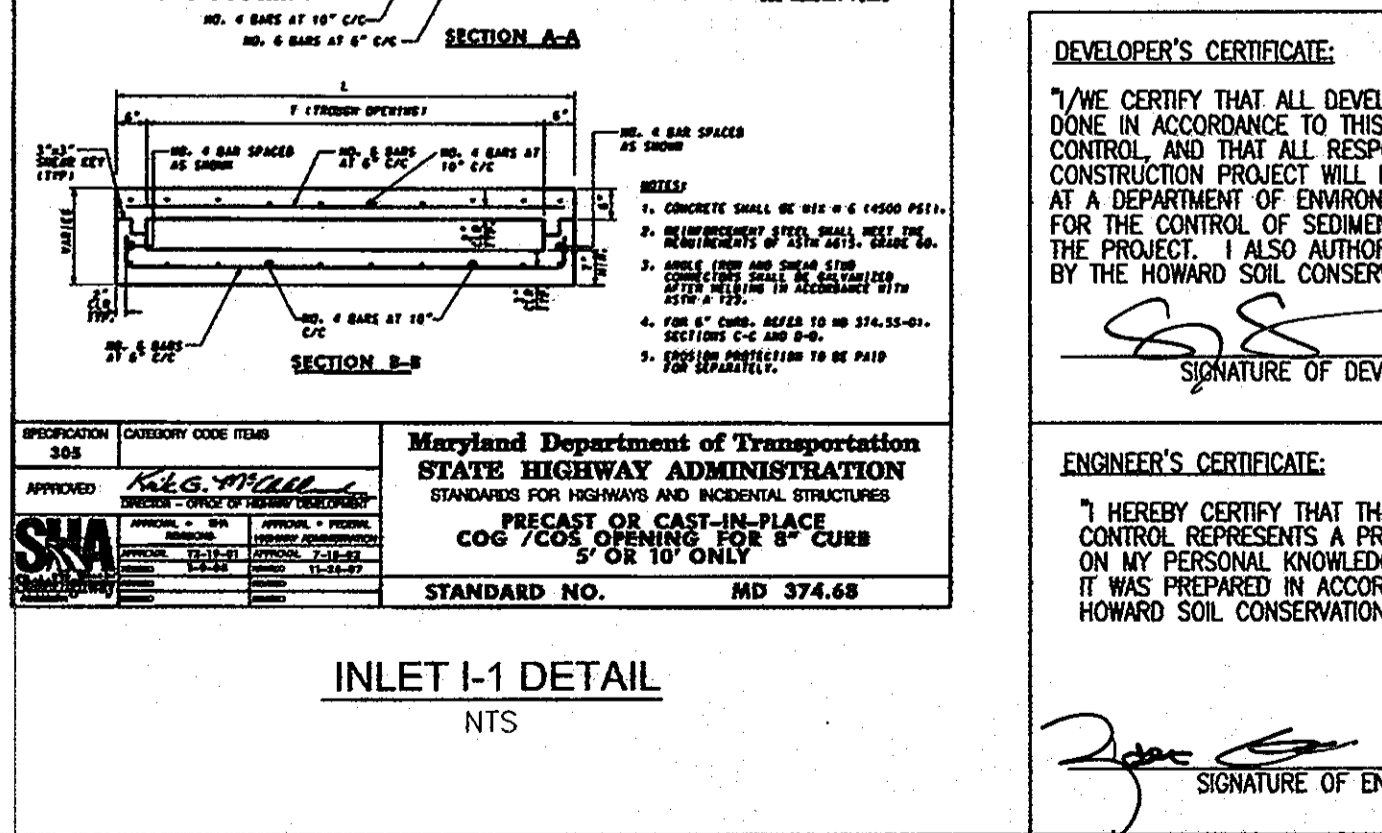
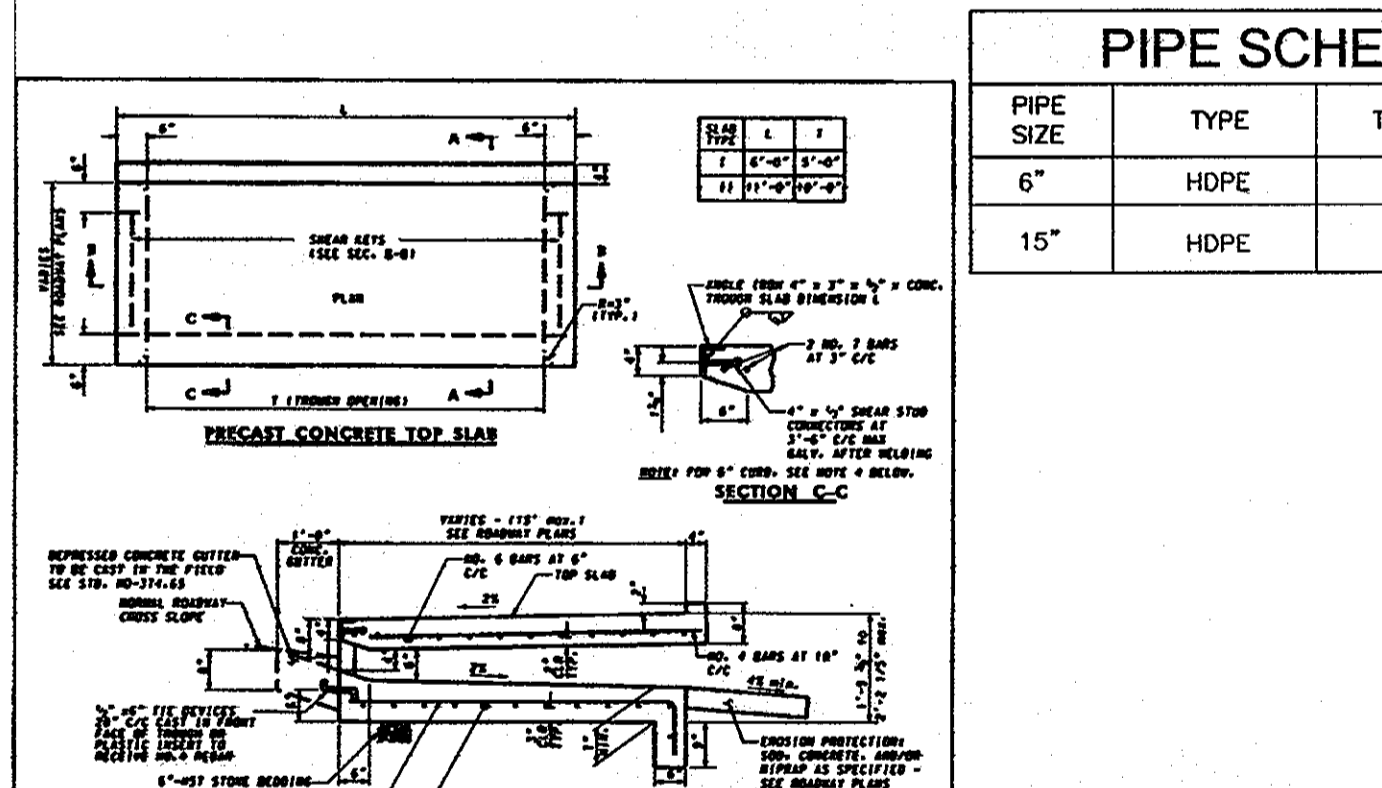
PRIVATE STORM DRAIN PROFILE  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'



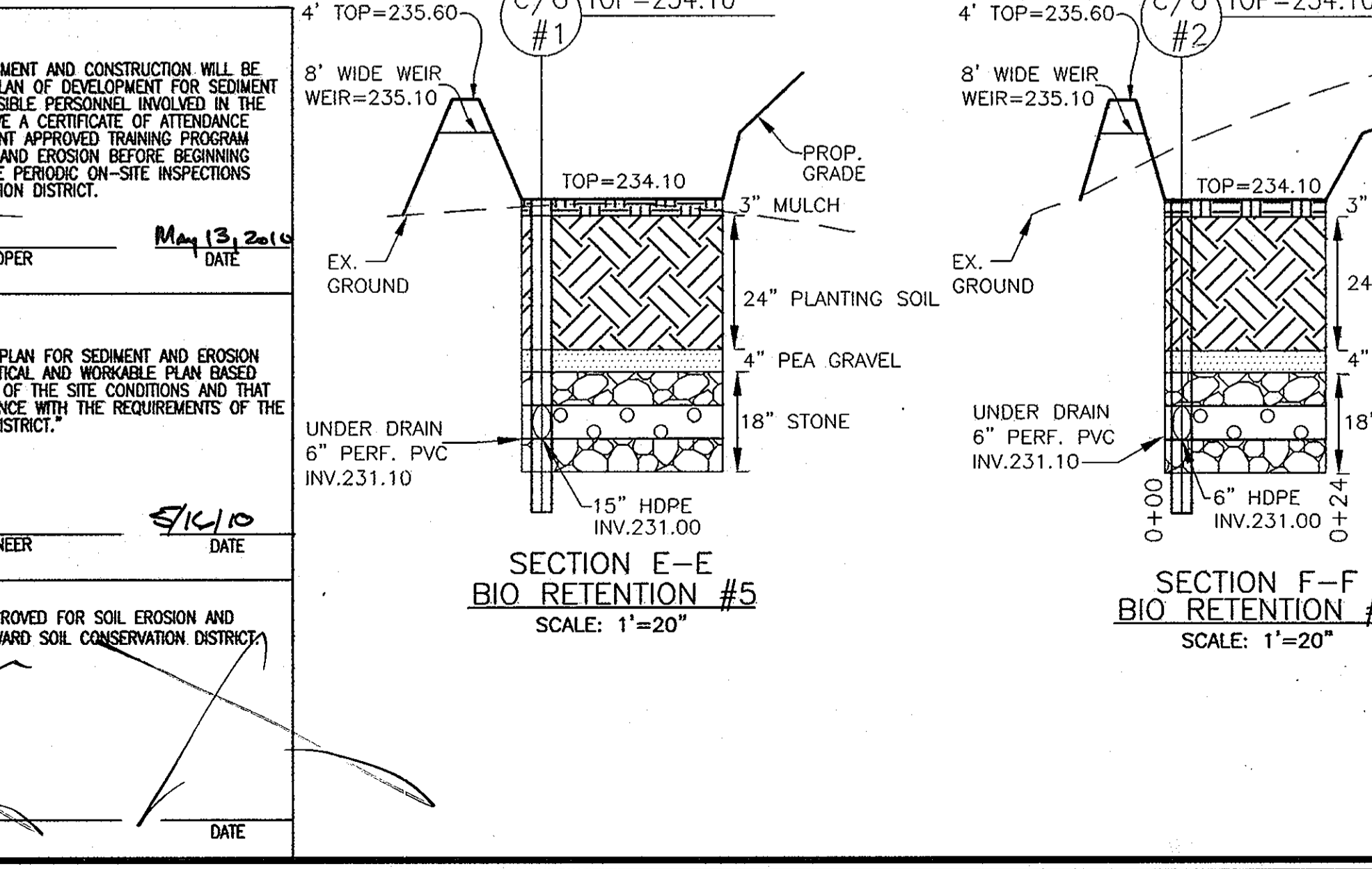
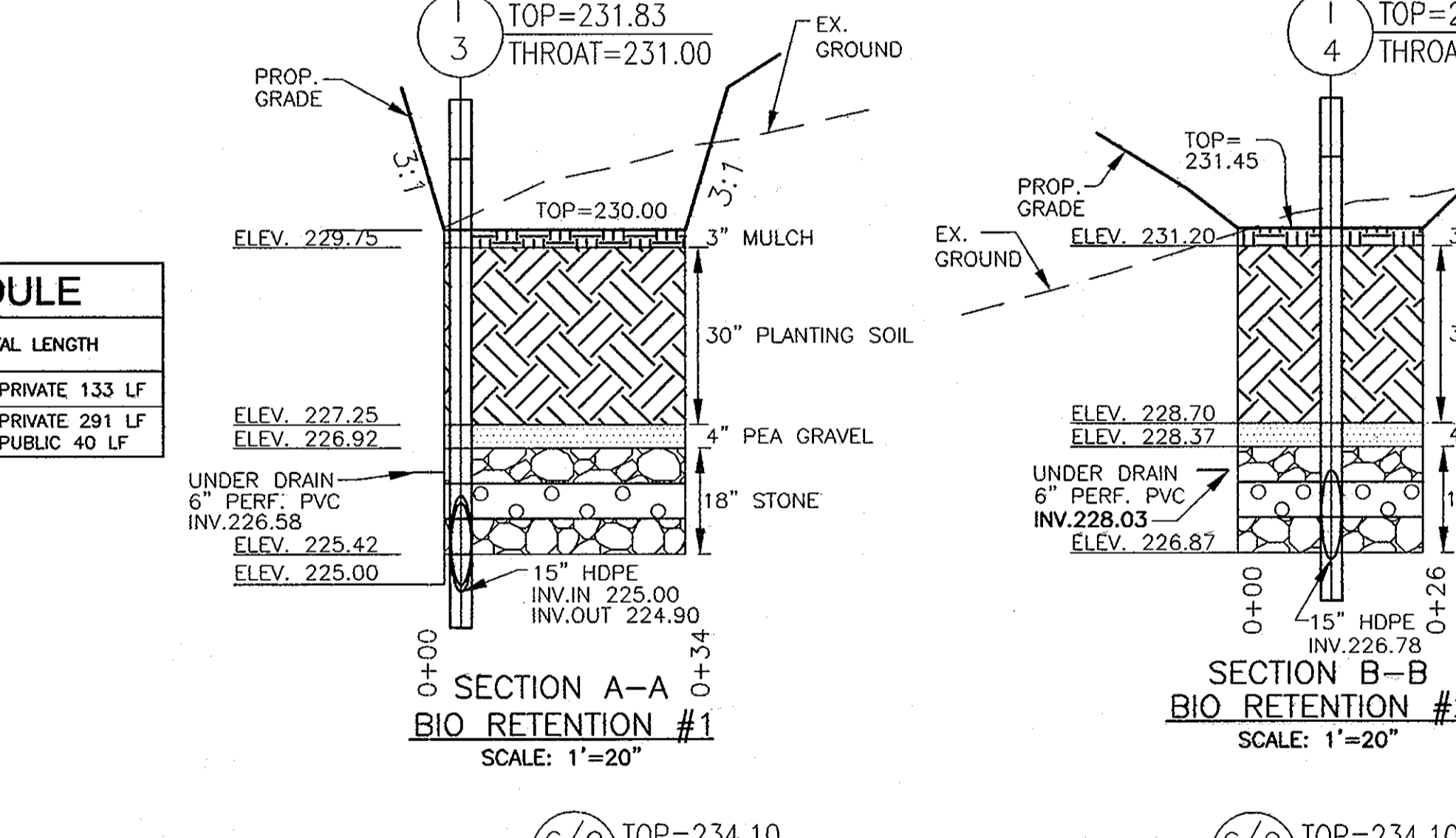
STORM DRAIN PROFILE  
SCALE: HORIZONTAL - 1"=50'  
VERTICAL - 1"=5'

STRUCTURE SCHEDULE									
NO.	TYPE	NORTHING	EASTING	TOP ELEV.	INV. IN.	INV. OUT.	REMARKS	REMARKS	
I-1	STD. SHA PRECAST 5' COG THROUGH STRUCTURE	MARY LANE STA. 9+77.5, 12' LT	224.16	-	-	-	SHA MD 374.6B		
I-2	TYPE 'D' INLET, THROAT ELEV. 233.00	N 540456.66 E 1364767.99	233.83	-	-	-	D-4-10	PRIVATE	
I-3	TYPE 'D' INLET, THROAT ELEV. 231.00	N 540371.37 E 1364703.24	231.83	225.00	224.90	D-4-10	PRIVATE		
I-4	TYPE 'D' INLET, THROAT ELEV. 232.45	N 540462.63 E 1364713.47	233.28	-	-	-	D-4-10	PRIVATE	
I-5	TYPE 'D' INLET, THROAT ELEV. 227.00	N 540430.65 E 1364528.91	227.83	221.00	220.90	D-4-10	PRIVATE		
I-6	TYPE 'D' INLET, THROAT ELEV. 229.00	N 540268.31 E 136454.55	229.83	-	-	-	D-4-10	PRIVATE	
c/o #1	CLEANOUT	N 540718.45 E 1364390.54	234.10	-	-	-	PRIVATE		
c/o #2	CLEANOUT	N 540774.45 E 1364428.65	234.10	-	-	-	PRIVATE		
M-1	STANDARD 4' PRECAST MANHOLE	N 540395.92 E 1364817.26	235.69	228.64	227.89	G-5-11	PUBLIC		
M-2	STANDARD 4' PRECAST MANHOLE	N 540319.13 E 1364608.73	227.60	220.12	220.02	G-5-11	PRIVATE		
M-3	STANDARD 4' PRECAST MANHOLE	N 54327.47 E 1364585.18	227.60	220.33	220.23	G-5-11	PRIVATE		

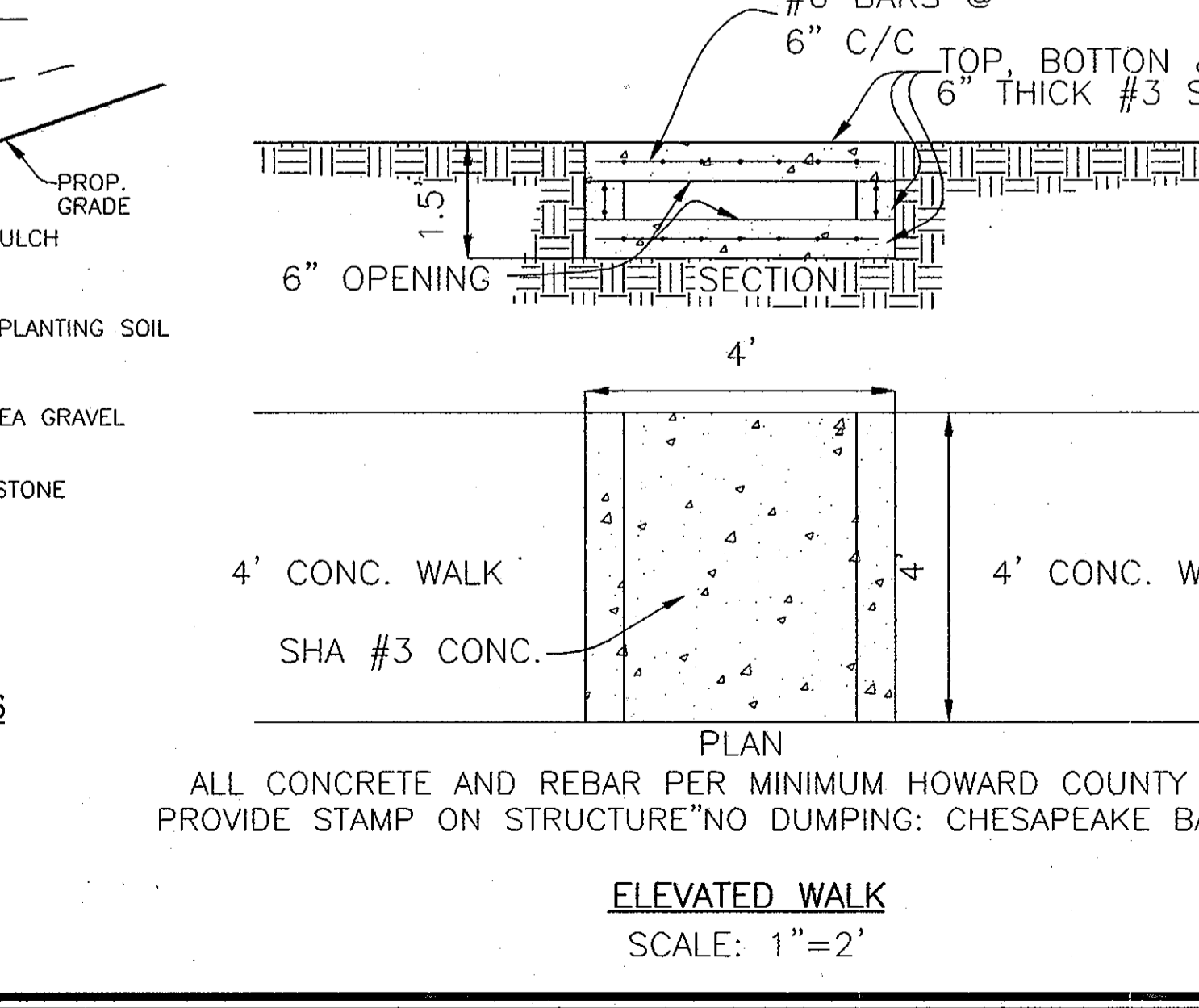
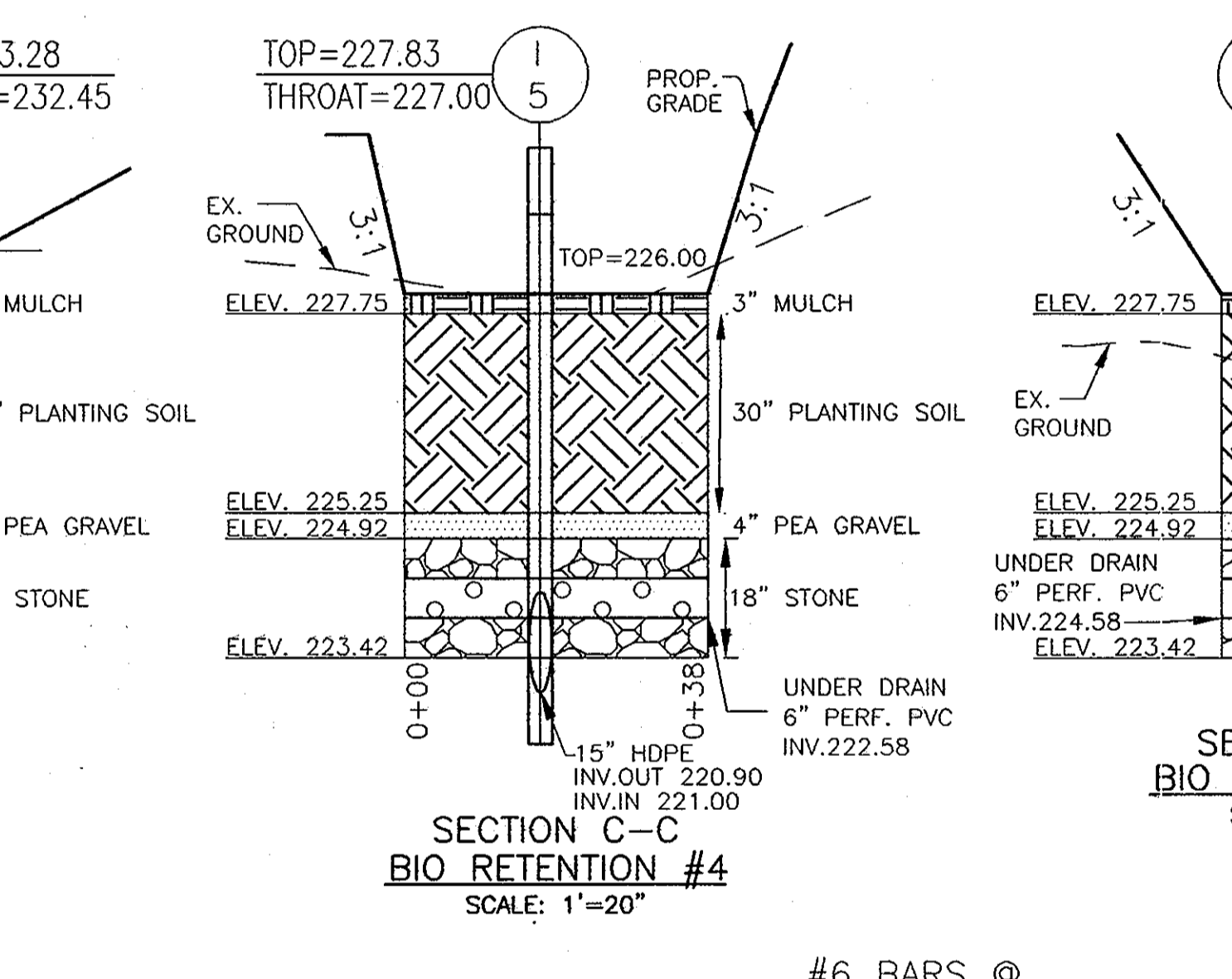
NOTE: TOP OF TYPE 'D' INLET IS TOP OF SLAB. TOP OF SHA STRUCTURE IS CENTER TOP OF SLAB AT FACE OF CURB.



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 APPROVED: MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 APPROVED: ROBERT H. VOGEL ENGINEERING, INC.

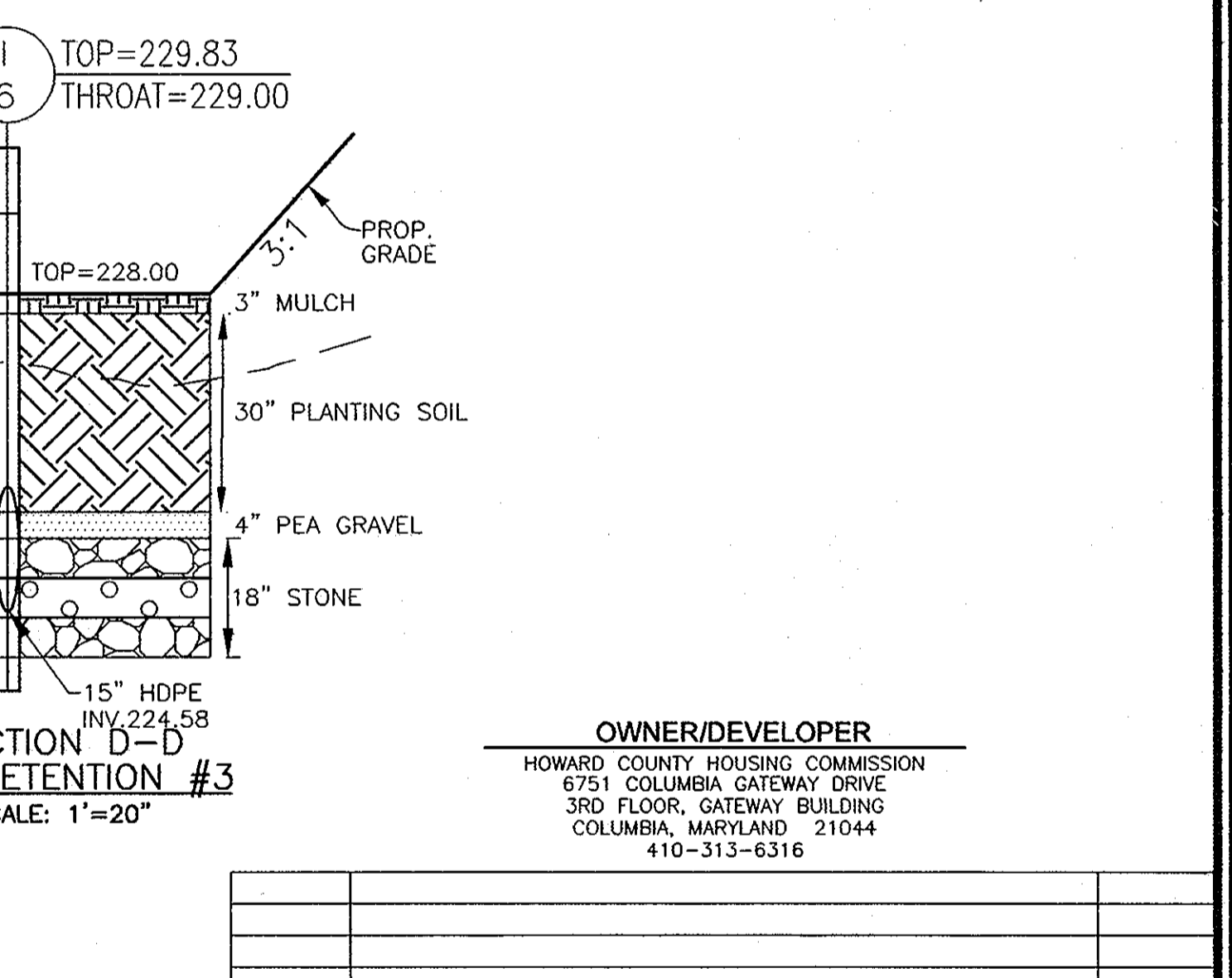


SPECIFICATIONS									
1. Material Specifications									
2. Construction Specifications									
3. Detail Specifications									



SPECIFICATIONS									
1. Material Specifications									
2. Construction Specifications									
3. Detail Specifications									

SPECIFICATIONS									
1. Material Specifications									
2. Construction Specifications									
3. Detail Specifications									



OWNER/DEVELOPER  
 HOWARD COUNTY HOUSING COMMISSION  
 3RD FLOOR, GATEWAY BUILDING  
 COLUMBIA, MARYLAND 21044  
 410-313-6316

ADD MAIL/TRASH ENCLOSURE  
 NO. 1 REVISION DATE 11-22-10

### FINAL ROAD CONSTRUCTION PLANS

#### STORM DRAIN PROFILES

THE GLENS AT GUILFORD  
 LOTS 1-10 & OPEN SPACE LOTS 11-13  
 A RESUBDIVISION OF LOTS 1 & 2-A, (P.46 & P.815), BLOCK E-3  
 NORDAU SUBDIVISION  
 TAX MAP #47 GRID 6 & 24 PARCELS 46 & 815  
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

DESIGN BY: JCO  
 DRAWN BY: KG  
 CHECKED BY: RLW  
 DATE: APRIL 2010  
 SCALE: AS SHOWN  
 W.O. NO.: 08-35

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: 09-27-2010

6 SHEET OF 9

STREET TREES			
ROAD NAME	LENGTH	QTY. REQUIRED	QTY. PROVIDED
MARY LANE	288 LF	7	7
GLENROBBIN PLACE	1096 LF	27	29

NOTE: A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

PLANT SCHEDULE FOR STREET TREES						
TYPES	QUANTITY	BOTANIC NAME	COMMON NAME	SIZE/AMOUNT	CONDITION	SPACING
8	8	ACER GINALLA	AMUR MAPLE	2-1/2" CAL MIN.	B & B/CONT.	40' O.C. ±
9	9	ACER RIBRUM 'OCTOBER GLORY'	FEMALE OCTOBER GLORY RED MAPLE	2-1/2" CAL MIN.	B & B/CONT.	40' O.C. ±
9	9	GLEDTISIA TRACANTHOS INERMIS	FEMALE HONEY LOCUST	2-1/2" CAL MIN.	B & B/CONT.	40' O.C. ±
10	10	ACER SACCHARUM 'GREEN MOUNTAIN MAPLE'	GREEN MOUNTAIN SUGAR	2-1/2" CAL MIN.	B & B/CONT.	40' O.C. ±

- LANDSCAPE NOTES**
- A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
  - AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED FOR THIS SITE BE OF THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF THE REQUIRED PLANTING MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.
  - THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
  - THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. SURETY IN THE AMOUNT OF \$15,450.00 (36 STREET TREES X \$300.00 EACH = \$8,700) + (14 SHADE TREES X \$300.00 EACH = \$4,200) + (3 EVERGREEN TREES X \$150.00 EACH = \$450) WILL BE POSTED WITH THE DEVELOPER'S AGREEMENT.
  - NO CLEARING OF EXISTING VEGETATION IS PERMITTED WITHIN THE LANDSCAPE EDGE FOR WHICH CREDIT IS BEING TAKEN; HOWEVER, LANDSCAPE MAINTENANCE IS AUTHORIZED.
  - CONTRACTOR SHALL CERTIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
  - FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- B & E NOTES:**
- THE LANDSCAPING ON WIREZONE (40' FROM BGE POLES) IS IN ACCORDANCE WITH BGE LIST OF TREES AND PLANTS.
  - BGE RESERVES THE RIGHT TO TRIM, TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BGE SHALL BE DEEMED A HAZARD TO THE SAFE AND RELIABLE DELIVERY OF ELECTRICITY.
  - THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OR VEGETATION IMMEDIATELY ADJACENT TO THE BGE R/W OR EASEMENT, IF BGE DETERMINES THE TREES ARE COMPROMISING THE SAFETY OR A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR EASEMENT. IF BGE DEVELOPER'S AGREEMENT
- STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(e)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. SURETY IN THE AMOUNT OF \$15,450.00 WILL BE POSTED WITH THE DEVELOPER'S AGREEMENT.

SCHEDULE A PERIMETER LANDSCAPE EDGE				
CATEGORY	ADJACENT TO ROADWAYS	ADJACENT TO PERIMETER PROPERTIES		
PERIMETER/FRONTAGE DESIGNATION LANDSCAPE TYPE	B	1	2	3
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	100'	520'	288'	520'
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	YES* 130'	YES* 170'	YES* 321'
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO
NUMBER OF PLANTS REQUIRED (LF REMAINING)	100'	390'	118'	199'
SHADE TREES	1:50/2	1:60/7	1:60/2	1:60/3
EVERGREEN TREES	1:40/3	-	-	-
SHRUBS	-	-	-	-
NUMBER OF PLANTS PROVIDED				
SHADE TREES	2	7	2	3
EVERGREEN TREES	3	-	-	-
OTHER TREES (2:1 SUBSTITUTION)	-	-	-	-
SHRUBS (10:1 SUBSTITUTION)	-	-	-	-
(DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	-	-	-	-

\* EXISTING WOODS TO REMAIN

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 DATE: 6-7-10  
 CHIEF, BUREAU OF HIGHWAYS

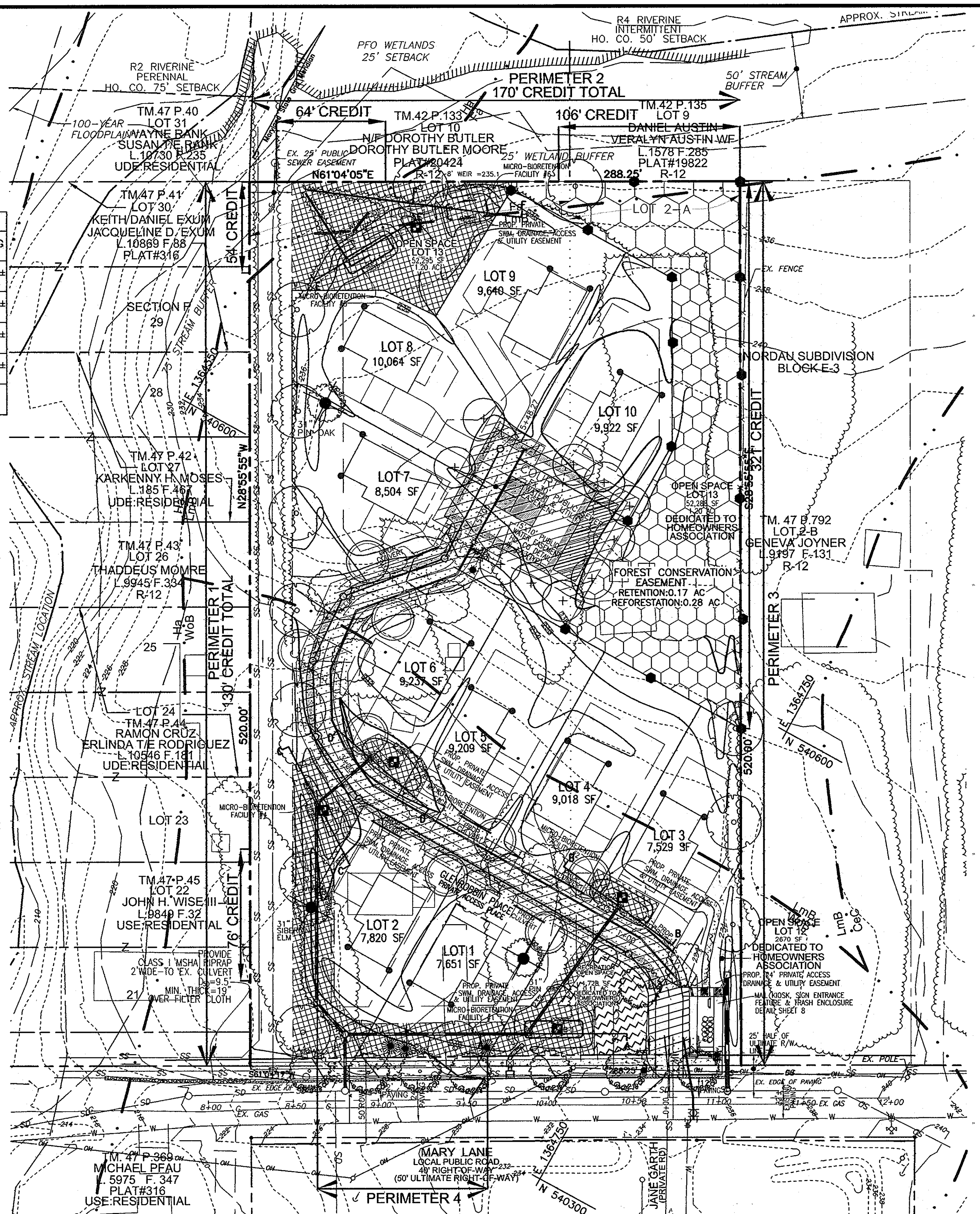
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 DATE: 6/11/10  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

DATE: 6/11/10  
 CHIEF, DIVISION OF LAND DEVELOPMENT

**DEVELOPER'S/BUILDER'S CERTIFICATE**

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

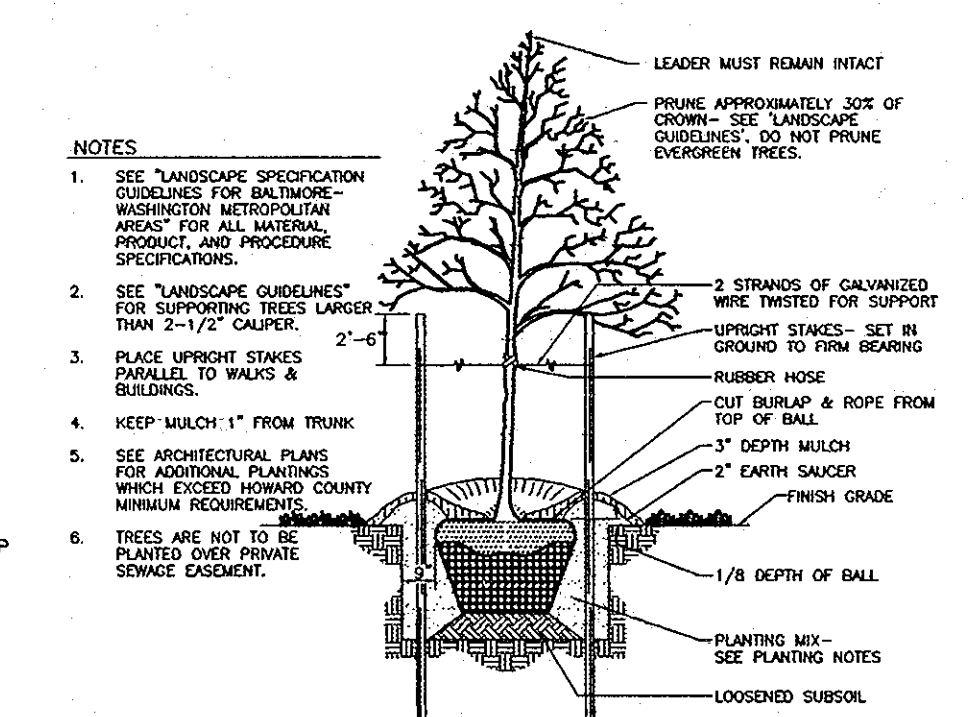
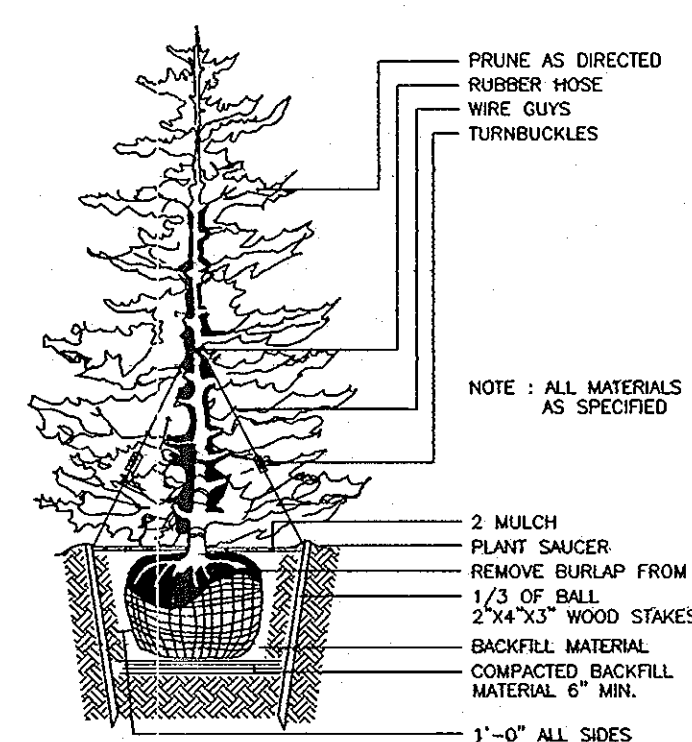
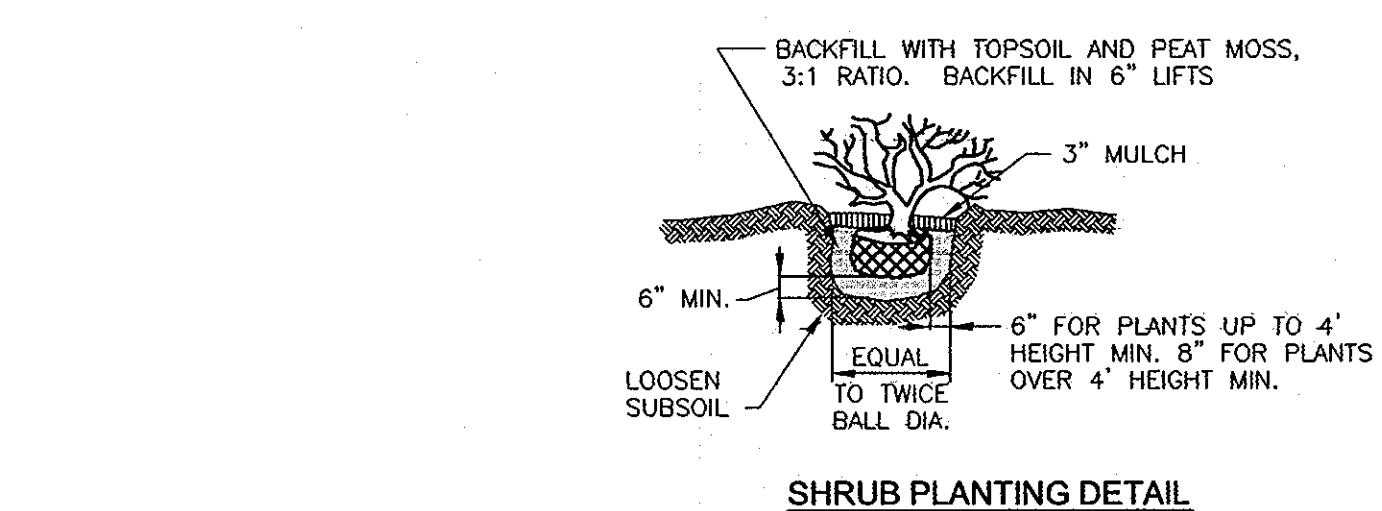
DATE: May 13, 2010  
 SIGNATURE OF DEVELOPER



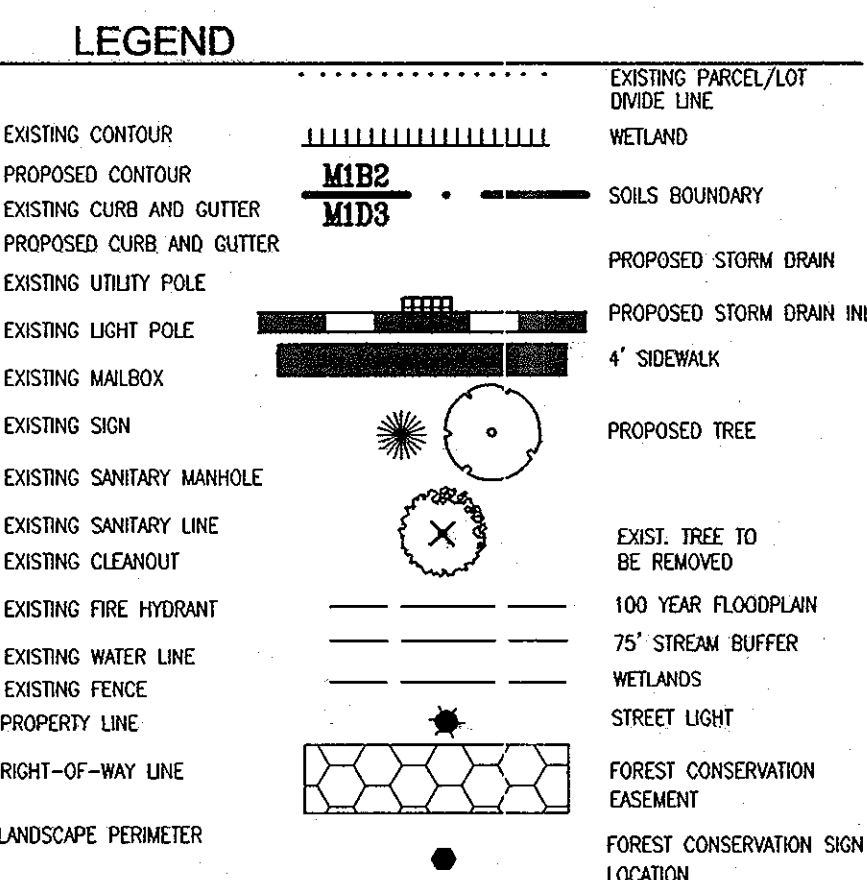
STREET LIGHT CHART	
QUANTITY SYMBOL	FIXTURE/POLE TYPE
1	GREENWAY SERIES 130 WATT LED MOUNTED ON 4" I.D. SCH 40 STRAIGHT ALUMINUM POLE-20' DIRECT BURIAL (MARY LANE) STA. 0+15.96, LT. 15.83'
1	GREENWAY SERIES 130 WATT LED MOUNTED ON 4" I.D. SCH 40 STRAIGHT ALUMINUM POLE-20' DIRECT BURIAL (GLENROBBIN PLACE) STA. 4+69.86, RT. 12.10'

PLANT SCHEDULE FOR PERIMETERS			
KEY	QUAN.	PLANT NAME	REMARK
14	14	NYSSA SYLVATICA FEMALE TUPELO (SHADE TREE)	2-1/2" - 3" CAL. B&B
3	3	PICEA ABIES NORWAY SPRUCE (EVERGREEN TREES)	6'-8' HT. B&B

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH LCAWM PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.



- NOTES**
- SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR MATERIALS" WASHINGTON METROPOLITAN AREA FOR ALL MATERIAL, PRODUCT AND PROCEDURE SPECIFICATIONS.
  - SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
  - SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTING WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
  - KEEP MULCH 1" FROM TRUNK.
  - TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWER EASEMENT.
- NOTE: ALL MATERIALS AS SPECIFIED

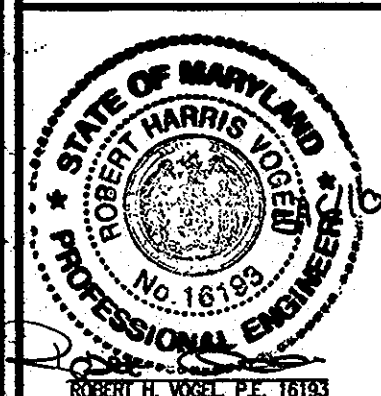


NO.	REVISION	DATE
1	ADD MAIL/TRASH ENCLOSURE	11-22-10

**FINAL ROAD CONSTRUCTION PLANS**  
**LANDSCAPE AND FOREST CONSERVATION PLAN**  
**THE GLENS AT GUILFORD**  
 LOTS 1-10 & OPEN SPACE LOTS 11-13  
 A RESUBDIVISION OF LOTS 1 & 2-A, (P.46 & P.815), BLOCK E-3  
 NORDAU SUBDIVISION

TAX MAP #47 GRID 6 & 24 PARCELS 46 & 815  
 6TH ELECTION DISTRICT 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

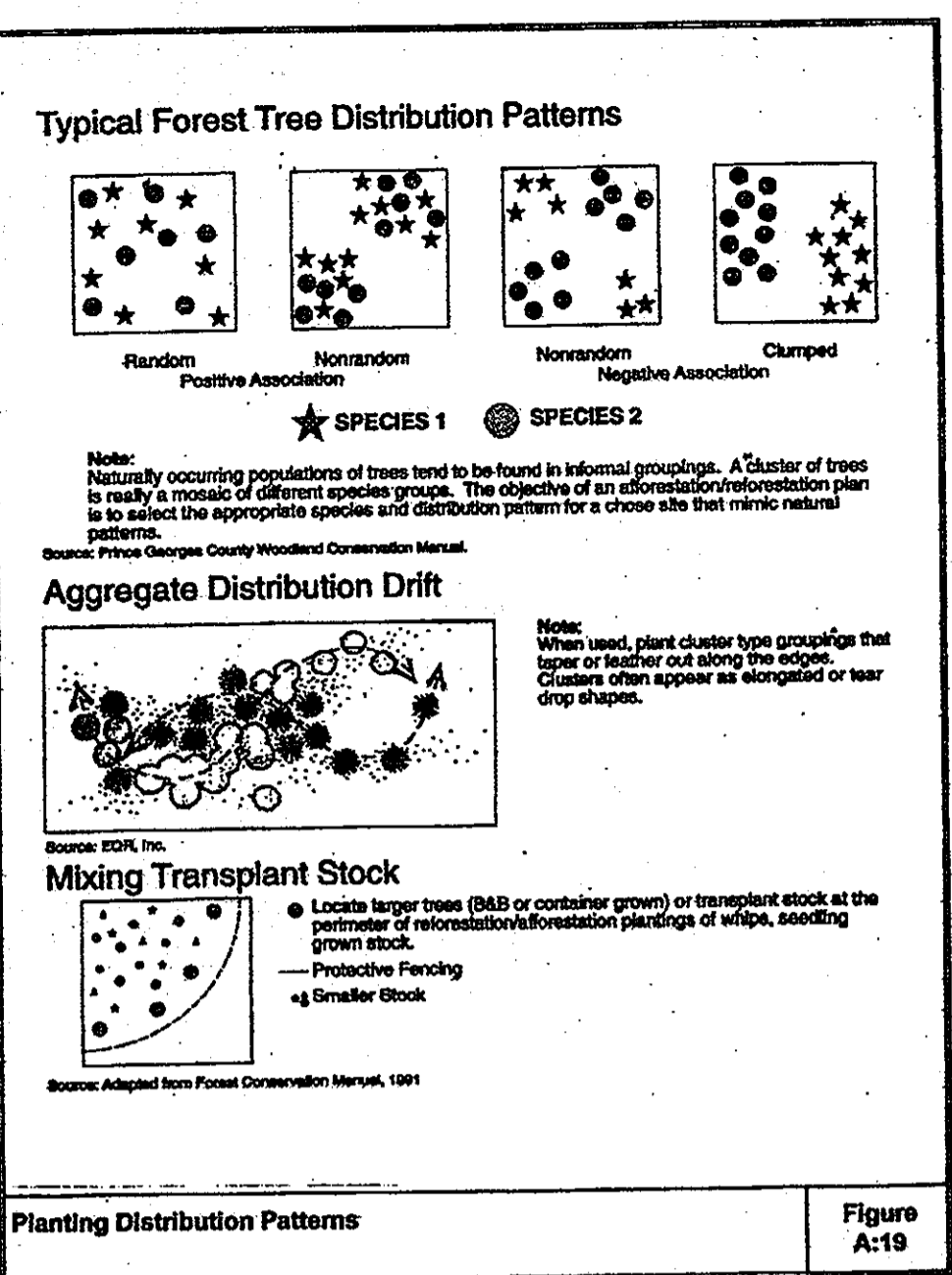
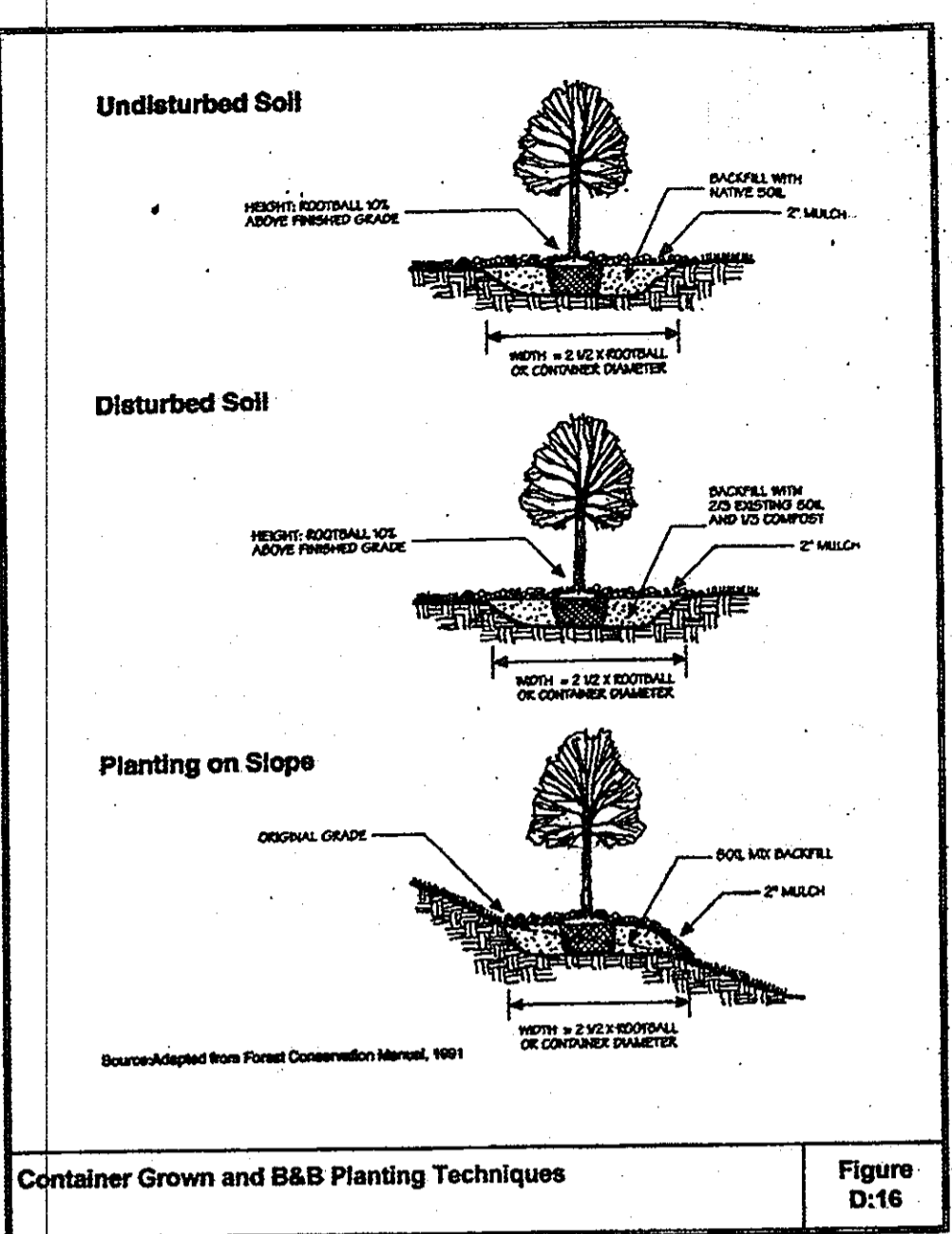


**PROFESSIONAL CERTIFICATE**

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. 16193 EXPIRATION DATE: 09-27-2010

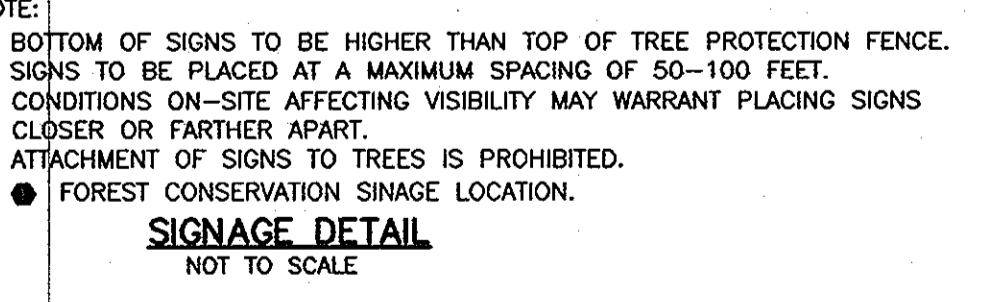
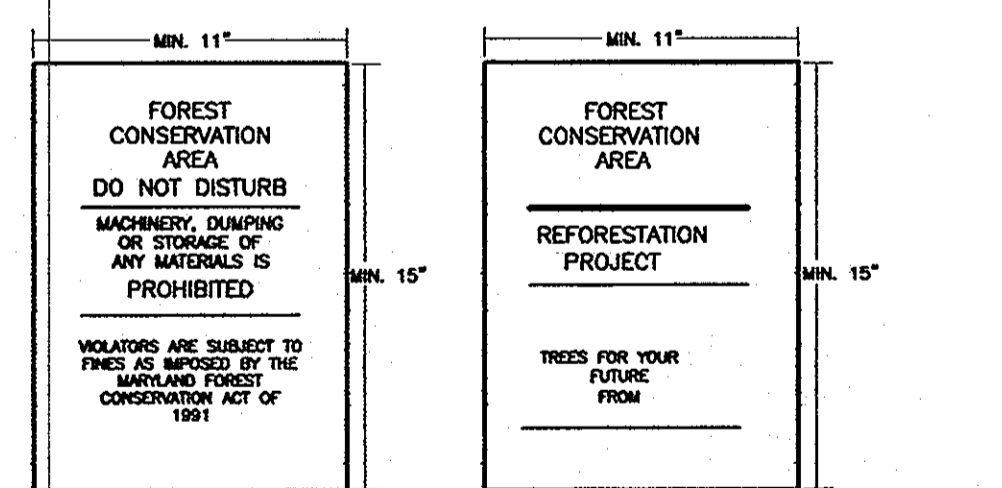
DESIGN BY: JCO  
 DRAWN BY: KG  
 CHECKED BY: RHV  
 DATE: APRIL, 2010  
 SCALE: 1"=40'  
 W.O. NO.: 08-35

7 SHEET OF 9



Size	Number Required per Acre	Approximate Spacing feet on center	Survivability Requirements At the end of the second growing season
Bare Root Seedlings or Whips	700	6 x 6	55% 385
Container Grown Seedling Tubes (Minimum Cavity Width 1.5")	450	10 x 10	65% 290
Container Grown 1 1/2" Galton	350	12 x 12	75% 260
Container Grown 5 1/2 Galton or 1 1/2 Caliper B & B	200	15 x 15	85% 170
Container Grown 15 1/2 Galton or 1.5-2" Caliper B & B	100	20 x 20	100% 100

**Site Stocking** Figure A:18



APPROVED: DEPARTMENT OF PUBLIC WORKS  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 APPROVED: DEVELOPMENT ENGINEERING DIVISION  
 APPROVED: DIVISION OF LAND DEVELOPMENT

DATE: 6-7-10  
 DATE: 6/11/10  
 DATE: 6/17/10  
 DATE: 6/17/10

**HOWARD COUNTY FOREST CONSERVATION WORKSHEET**

**NET TRACT AREA:**  
 A. TOTAL TRACT AREA 3.44 AC  
 B. AREA WITHIN 100 YEAR FLOODPLAIN 0.00 AC  
 C. AREA TO REMAIN IN AGRICULTURAL PRODUCTION 0.00 AC  
 D. NET TRACT AREA 3.44 AC

**LAND USE CATEGORY**  
 INPUT THE NUMBER "1" UNDER THE APPROPRIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY.  
 ARA MDR IDA HDR MPD CIA  
 0 0 0 0 0 0

**EXISTING FOREST COVER:**  
 E. AFFOREST THRESHOLD 15% X D = 0.52 AC  
 F. CONSERVATION THRESHOLD 20% X D = 0.69 AC

**BREAK EVEN POINT:**  
 J. BREAK EVEN POINT 0.79 AC  
 K. CLEARING PERMITTED WITHOUT MITIGATION 0.43 AC

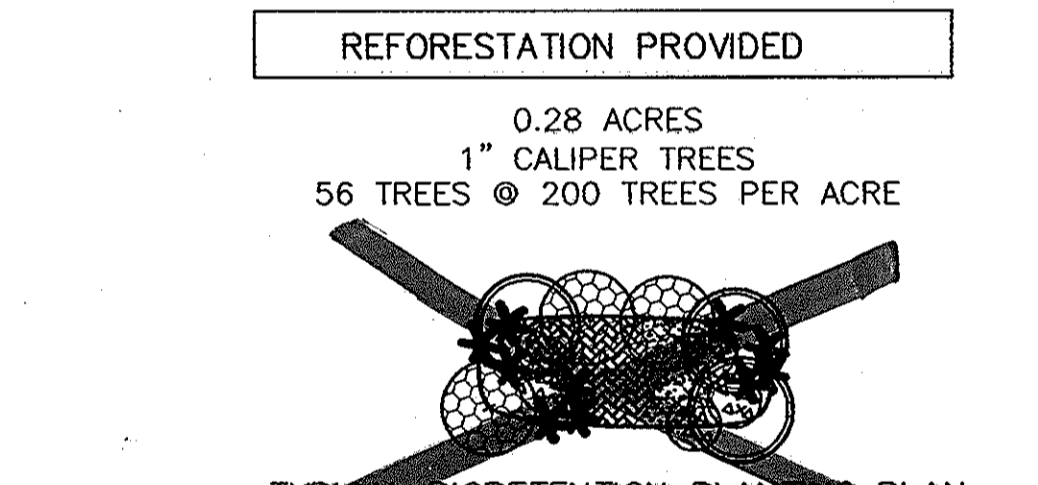
**PROPOSED FOREST CLEARING:**  
 L. TOTAL AREA OF FOREST TO BE CLEARED 1.05 AC  
 M. TOTAL AREA OF FOREST TO BE RETAINED 0.17 AC  
 N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD 0.13 AC  
 O. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD 0.00 AC  
 P. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD 0.00 AC  
 Q. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD 1.17 AC  
 R. TOTAL REFORESTATION REQUIRED (N+P-Q) 0.00 AC  
 S. TOTAL AFFORESTATION REQUIRED 0.00 AC  
 T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED 1.17 AC

**TOTAL FOREST RETENTION:** 0.17 AC.

REFORESTATION OBLIGATION TO BE FULFILLED BY ON SITE RETENTION OF 0.17 ACRES & REFORESTATION OF 0.28 ACRES. THE REMAINING 0.99 ACRES OF REFORESTATION WILL BE FULFILLED BY AN OFF-SITE FOREST RETENTION EASEMENT LOCATED ON TAX MAP #2, PARCEL 136, LOTS 8 & 9.

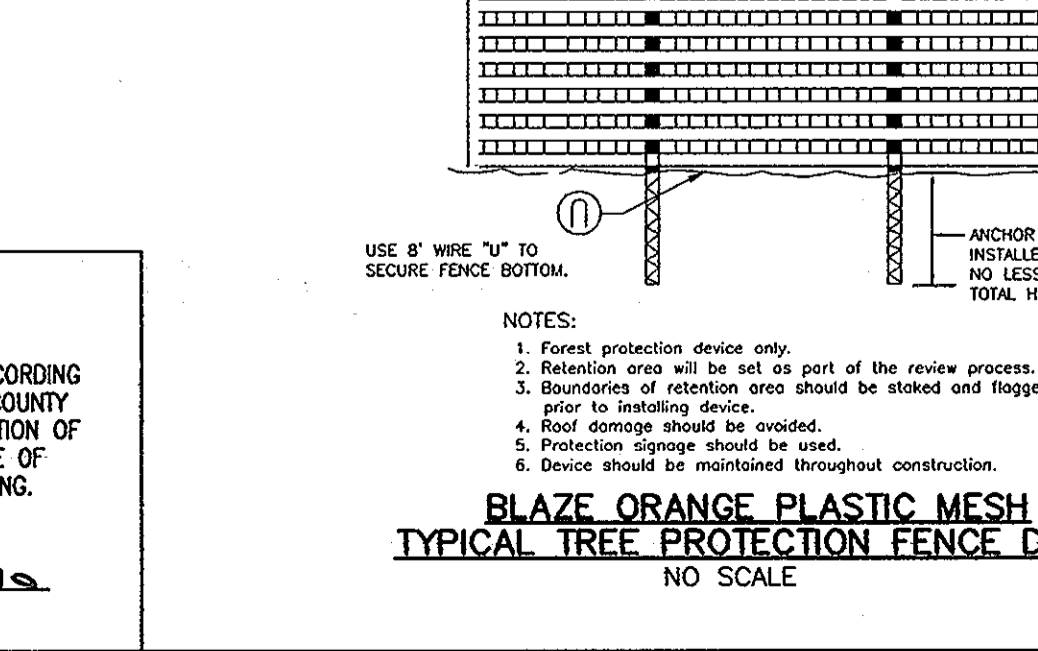
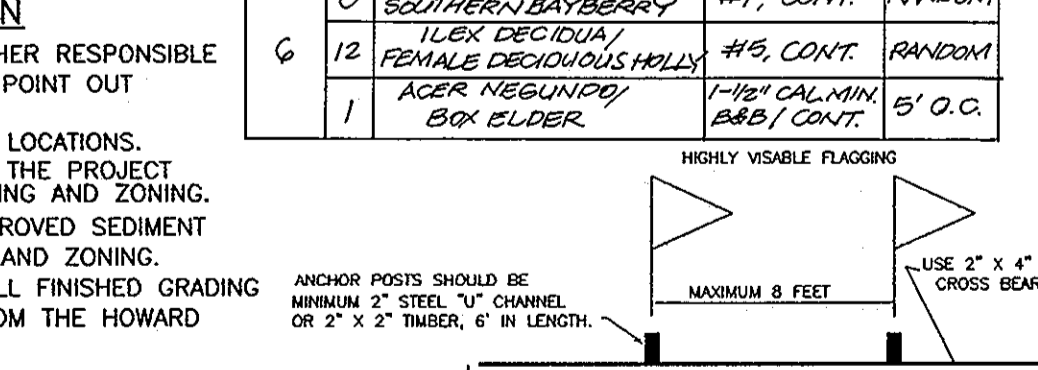
RETENTION - 0.17 AC. (7,405.20 x .20 = \$1,482.00)  
 REFORESTATION ONSITE - 0.28AC. (12,197 SF x .50 = \$7,581.00)  
 RETENTION OFFSITE - 0.91 AC. (152,825.00 SF x .20 = \$30,565.00)  
**FINANCIAL SURETY FOR ON SITE FOREST OBLIGATION IN THE AMOUNT OF \$39,048.00 WILL BE POSTED WITH THE DEVELOPER'S AGREEMENT.**

BOTANICAL NAME	QUANTITY	SIZE	SPACING (FT)
Acer rubrum Red Maple	10	1" Cal.	15 X 15
Liquidambar styraciflua American Sweetgum	12	1" Cal.	15 X 15
Platanus occidentalis Sycamore	12	1" Cal.	15 X 15
Prunus serotina Black Cherry	12	1" Cal.	15 X 15
Quercus palustris Pin Oak	10	1" Cal.	15 X 15



**REFORESTATION PROVIDED**  
 0.28 ACRES  
 1" CALIPER TREES  
 56 TREES @ 200 TREES PER ACRE

POLY NO.	BOTANICAL/COMMON NAME	SIZE	REMARKS
1	CORNUS SERICEA REDOSGIER DOGWOOD	#5, CONT.	5' O.C.
2	ARONIA ARBUTIFOLIA RED CHERRY	#5, CONT.	5' O.C.
3	ARONIA ARBUTIFOLIA RED CHERRY	#5, CONT.	5' O.C.
4	CORNUS SERICEA REDOSGIER DOGWOOD	#5, CONT.	5' O.C.
5	ACER RUBRUM OCTOBER GLORY RED MAPLE	1 1/2" CAL. MIN.	5' O.C.
6	SOUTHERN BAYBERRY	#1, CONT.	RANDOM
7	ILEX DECIDUA RHAMNUS OBOVATUS HOLLY	#5, CONT.	RANDOM
8	ACER NEGUNDO BOX ELDER	1 1/2" CAL. MIN.	5' O.C.
9	MYRTICA SERPYLLIFERA SOUTHERN BAYBERRY	#1, CONT.	RANDOM
10	ILEX DECIDUA RHAMNUS OBOVATUS HOLLY	#5, CONT.	RANDOM
11	ACER NEGUNDO BOX ELDER	1 1/2" CAL. MIN.	5' O.C.



**SCHEDULE D: BIO-RETENTION FACILITIES (TOTAL) AREA LANDSCAPING-TYPE 'B' BUFFER**

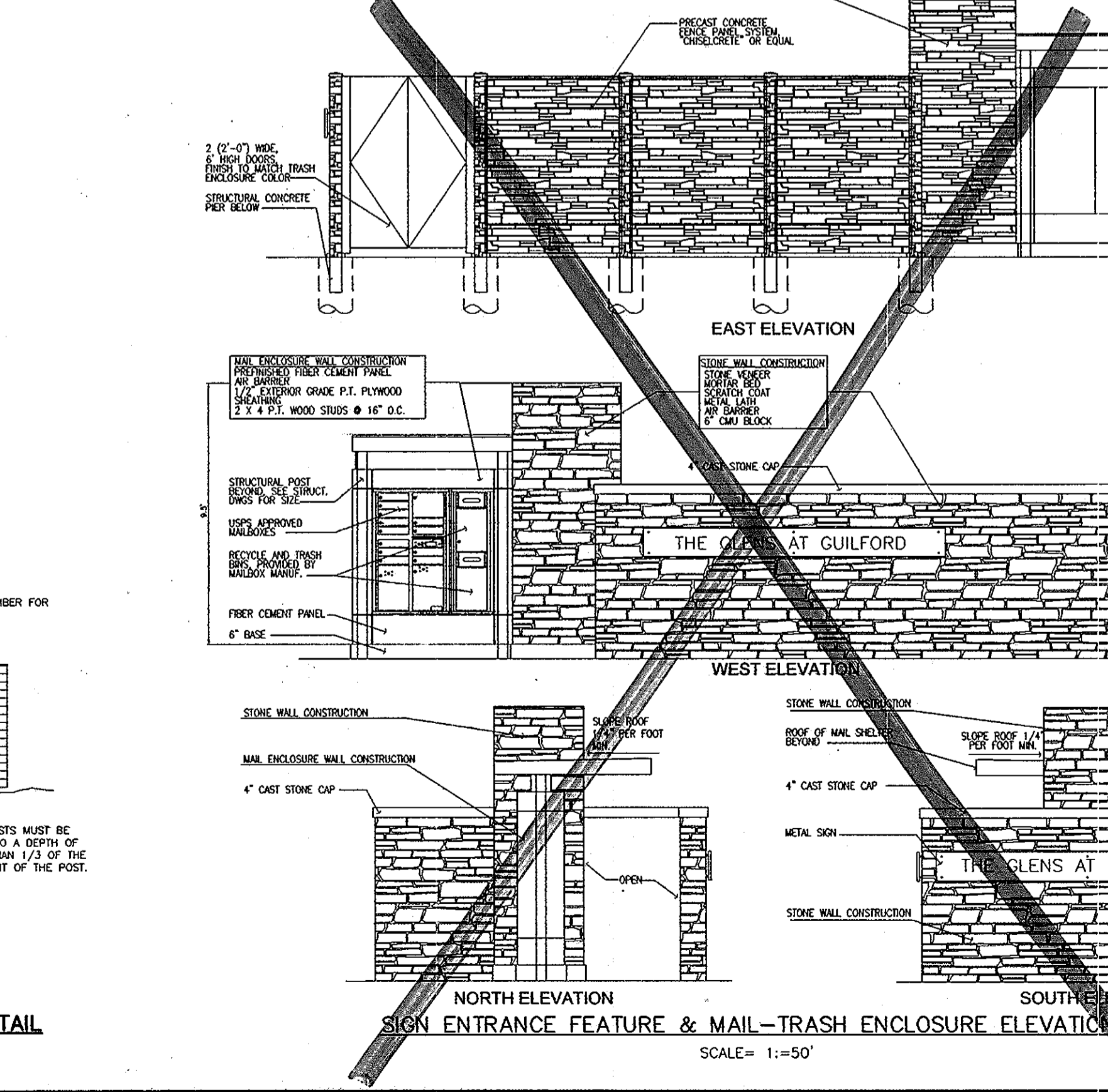
	BIO-RETENTION FACILITY#1	BIO-RETENTION FACILITY#2	BIO-RETENTION FACILITY#3	BIO-RETENTION FACILITY#4	BIO-RETENTION FACILITY#5	BIO-RETENTION FACILITY#6	TOTAL
LINEAR FEET OF PERIMETER	85'	72'	97'	211'	293'	231'	
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO	NO	NO	NO	NO	NO	
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO	NO	NO	NO	NO	NO	
NUMBER OF TREES REQUIRED							
SHADE TREES 1:50	1	1	1	2	3	2	10
EVERGREEN TREES 1:40	2	2	2	4	6	4	20
NUMBER OF TREES PROVIDED							
SHADE TREES	1	1	2	4	3	2	10
SHRUBS	2	2	2	4	6	4	20

**BIORETENTION PLANTING SCHEDULE**

KEY	NO.	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
3		ACER RUBRUM RED MAPLE	1" - 1 1/2" CAL.	B & B
3		JUNIPER VIRGINIANA EASTERN RED CEDAR	5" - 6" HT.	B & B
5		VACCINIUM CORYMBOSUM HIGHBUSH BLUEBERRY	3 GALLON	CONT.
10		LINDERA BENZOIN SPICE BUSH	3 GALLON	CONT.
65		IMPATIENS VIRGINICA BROOM SEDGE	2" POT	CONT.
65		PANICUM VIRGATUM SWITCH GRASS	2" POT	1' O.C.

**REFORESTATION PLANTING NOTES**

- REFORESTATION AREAS MAY BE PLANTED AS SOON AS REASONABLE TO DO SO. LATE WINTER-EARLY SPRING PLANTINGS ARE PREFERRED. EARLIEST PLANTING DATES WILL VARY FROM YEAR TO YEAR BUT PLANTING MAY GENERALLY BEGIN AS SOON AS THE GROUND IS NO LONGER FROZEN. ALTERNATE PLANTING DATES MAY BE CONSIDERED AS CONDITION WARRANTS.
- SOIL AMENDMENTS AND FERTILIZATION RECOMMENDATIONS WILL BE MADE BASED UPON THE RESULTS OF SOIL ANALYSIS FOR NITROGEN, PHOSPHORUS, POTASSIUM, ORGANIC MATTER CONTENT AND PH. IF REQUIRED, FERTILIZER WILL BE PROVIDED USING A SLOW RELEASE, SOLUBLE 16-8-16 ANALYSIS DESIGNED TO LAST 8-9 YEARS CONTAINED IN POLYETHYLENE PERFORATED BAGS SUCH AS MANUFACTURED BY ADOCO WORKS, P.O. BOX 310 HOLLIS, N.Y. 11423 OR APPROVED EQUAL.
- PLANT MATERIALS WILL BE PLANTED IN ACCORDANCE WITH THE PLANTING DETAILS AND PLANT SCHEDULE.
- PLANT MATERIAL SHALL BE NURSERY GROWN AND INSPECTED PRIOR TO PLANTING. PLANTS NOT CONFORMING TO THE AMERICAN STANDARD FOR NURSERY STOCK SPECIFICATIONS FOR SIZE, FORM, VIGOR, OR ROOTS, OR DUE TO TRUNK WOUNDS, BREAKAGE, DESICCATION, INSECT OR DISEASE MUST BE REPLACED.
- PLANTING STOCK MUST BE PROTECTED FROM DESICCATION AT ALL TIMES PRIOR TO PLANTING. MATERIALS HELD FOR PLANTING SHALL BE MOISTENED AND PLACED IN COOL SHADED AREAS UNTIL READY FOR PLACEMENT.
- NEWLY PLANTED TREES MAY REQUIRE WATERING AT LEAST ONCE PER WEEK DURING THE FIRST GROWING SEASON DEPENDING ON RAINFALL IN ORDER TO GET ESTABLISHED. THE INITIAL PLANTING OPERATION SHOULD ALLOW FOR WATERING DURING INSTALLATION TO COMPLETELY SOAK BACKFILL MATERIAL.
- MULCH SHALL BE APPLIED IN ACCORDANCE WITH THE DIAGRAM PROVIDED AND SHALL CONSIST OF COMPOSTED, SHREDDED HARDWOOD BARK MULCH, FREE OF WOOD ALYCHS.
- ALL NURSERY STOCK TO BE SPRAYED WITH DEER REPELLENT CONTAINING BITREX, SUCH AS REPELLEX. ALL NURSERY STOCK TO BE GROWN WITH DEER REPELLENT TABLETS IN GROWING MEDIUM, SUCH AS REPELLEX TABLETS.



**MATERIALS SPECIFICATIONS FOR BIO-RETENTION**

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SPECIFICATION	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL (2 1/2 TO 4" DEEP)	20-30% TOPSOIL 50-60% LEAF COMPOSITE 30% COARSE SAND CONSTRUCTION SAND	N/A	USDA SOIL TYPES LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM
PEA GRAVEL DAMPPROOF AND CURTAIN DRAIN	PEA GRAVEL ASTM-D-448 ORNAMENTAL STONE WASHED CORNERS	PEA GRAVEL NO. 6 STONE: 2" TO 5"	
GEOTEXTILE	CLASS 100-APPROXIMATE OPENING SIZE (ASTM-D-4751), GRAB TENSILE STRENGTH (ASTM-D-4632), PUNCTURE RESISTANCE (ASTM-D-4833)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN PIPING	AKSHIO M-43	0.375" TO 0.75"	
UNDERDRAIN PIPING	F 75E, TYPE PS 28 00R AKSHIO M-278	4" TO 6" BROD SCHEDULE 40 PVC OR SDR35	3/4" PERFT. @ 4" O.C., 4 HOLES PER ROW MIN OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES
POURED IN PLACE CONCRETE (IF REQUIRED)	M50 MIX NO. 3, 14-3500 PS @ 28 DAYS, NORMAL WEIGHT, AIR-CONTAINED REINFORCING TO MEET ASTM-613-60	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 AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND - DESIGN TO INCLUDE WEARING SURFACE, CURBS, VERTICAL CURBING (H-10 OR H-20); ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES), AND ANALYSIS OF POSSIBLE CRACKING.
SAWD (1" DEEP)	AKSHIO-M-8 OR ASTM-C-33	0.002" TO 0.004"	SAWD SUBSTITUTIONS OVER AS CRACKED AND CRACKS ARE NOT ACCEPTABLE. NO CALCIUM OXIDATION OR POLYMER SAND SUBSTITUTIONS ARE ACCEPTABLE. NO TRUCK DUST CAN BE USED FOR SAND

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

**SPECIFICATIONS FOR BIORETENTION**

- MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN BIORETENTION ARE DETAILED IN TABLE B.3.2.
- 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 PLACED WITH THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVIDE A HINDERANCE TO THE PLANTING OPERATIONS. THE BIORETENTION SOIL SHALL BE FREE OF BERMOUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER MAP 13.08.01.05.
- COMPACTION**  
THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:  
 PH RANGE: 5.2 - 7.0  
 ORGANIC MATTER: 4% - 4% (BY WEIGHT)  
 MACRO NUTRIENTS (PER LB. AC):  
 NITROGEN: 75 LB./AC  
 PHOSPHORUS: 75 LB./AC  
 POTASSIUM: 75 LB./AC  
 SOLUBLE SILICA: 100 LB./AC  
 ALL BIORETENTION AREAS SHALL HAVE A MINIMUM OF ONE TEST. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, PHOSPHORUS, AND POTASSIUM AND AN ADDITIONAL TEST OF ORGANIC MATTER, AND SOLUBLE SILICA. A TEXTURAL ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOP SOIL WAS EXCAVATED.  
 SINCE DIFFERENT LAB CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TESTING RESULTS SHALL COME FROM THE SAME TESTING FACILITY. SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.
- 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 TIRE TIRE USE. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW 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.
- UNDERDRAINS**  
RECOMMENDED PLANT MATERIAL FOR BIORETENTION AREAS CAN BE FOUND IN APPENDIX A, SECTION A.2.3. OF THE 2000 MARYLAND STORMWATER DESIGN MANUAL.  
 UNDERDRAINS ARE TO BE PLACED ON A 1"-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).
- MISCILLANEOUS**  
THE BIORETENTION FACILITY MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

**OWNER/DEVELOPER**  
 HOWARD COUNTY HOUSING COMMISSION  
 6751 COLUMBIA GATEWAY DRIVE  
 3RD FLOOR, GATEWAY BUILDING  
 COLUMBIA, MARYLAND 21044  
 410-313-6316

**FINAL ROAD CONSTRUCTION PLANS**  
**FOREST CONSERVATION DETAILS**  
**THE GLENS AT GUILFORD**  
 LOTS 1-10 & OPEN SPACE LOTS 11-13  
 A RESUBDIVISION OF LOTS 1 & 2-A, (P.46 & P.815), BLOCK E-3  
 NORDAU SUBDIVISION

TAX MAP #47 GRID 6 & 24 PARCELS 46 & 815  
 6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

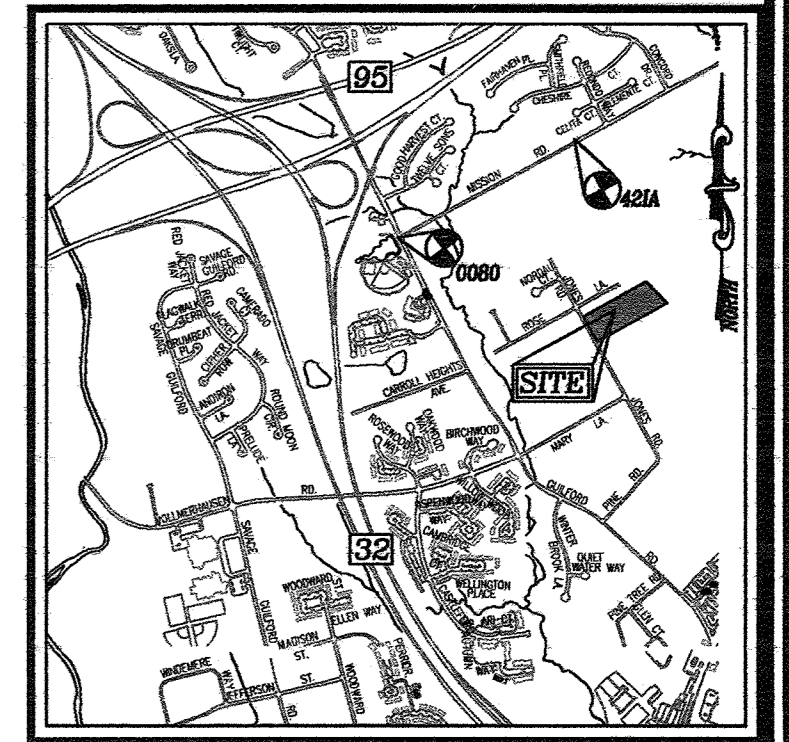
**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET ELLIOTT CITY, MD 21043 TEL: 410-461-7666 FAX: 410-461-8361

**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 09-27-2010

DESIGN BY: JCO  
 DRAWN BY: KG  
 CHECKED BY: RHY  
 DATE: APRIL 2010  
 SCALE: AS SHOWN  
 W.O. NO.: 08-35

8 SHEET OF 9





VICINITY MAP  
SCALE: 1"=200'  
ADC COORDINATE: 5053 K6

**FOREST BANK 3.51 AC. PLAT # 21417**

1. GLENS OF GUILFORD (THIS PLAN) - 1.78 AC.  
AVAILABLE BALANCE: 1.78 AC.
2. AVANTI-HASLUP PROPERTY PARCELS B-1, B-2 AND B-3 (F-15-015)  
AVAILABLE BALANCE: 0.74 AC.
3. GREENWOOD VILLAGE (F-19-051)  
AVAILABLE BALANCE: 0.99 AC.

**LEGEND:**

- EXISTING CONTOUR
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREELINE
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- SOILS BOUNDARY
- FOREST CONSERVATION EASEMENT
- EXISTING PARCEL/LOT DIVIDE LINE
- LIMIT OF WETLAND
- STREAM
- WETLANDS BUFFER
- STREAM BUFFER
- WETLANDS
- FOREST CONSERVATION SIGNAGE LOCATION

**OWNER/DEVELOPER**

HOWARD COUNTY HOUSING COMMISSION  
6751 COLUMBIA GATEWAY DRIVE  
3RD FLOOR, GATEWAY BUILDING  
COLUMBIA, MARYLAND 21044  
410-313-6316

NO.	REVISION	DATE
2	REVISE THE PLAN TO INCORPORATE GREENWOOD VILLAGE INTO THE FOREST BANK INFORMATION	9-26-19
1	REVISE FOREST BANK INFORMATION	9/25/15

**FINAL ROAD CONSTRUCTION PLANS  
OFFSITE FOREST CONSERVATION PLAN**

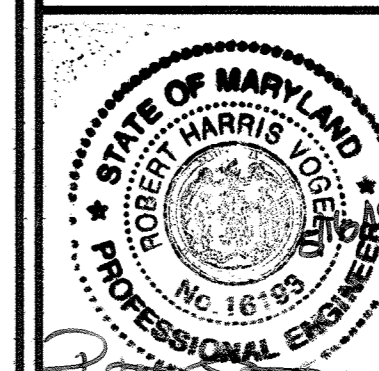
NORDAU SUBDIVISION LOTS 8-9 PLAT BOOK 3 PAGE 51

**THE GLENS AT GUILFORD**

LOTS 1-10 & OPEN SPACE LOTS 11-13  
A RESUBDIVISION OF LOTS 1 & 2, A (P.46 & P.815), BLOCK E-3  
NORDAU SUBDIVISION

TAX MAP #47 GRID 6 & 24 PARCELS 46 & 815  
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

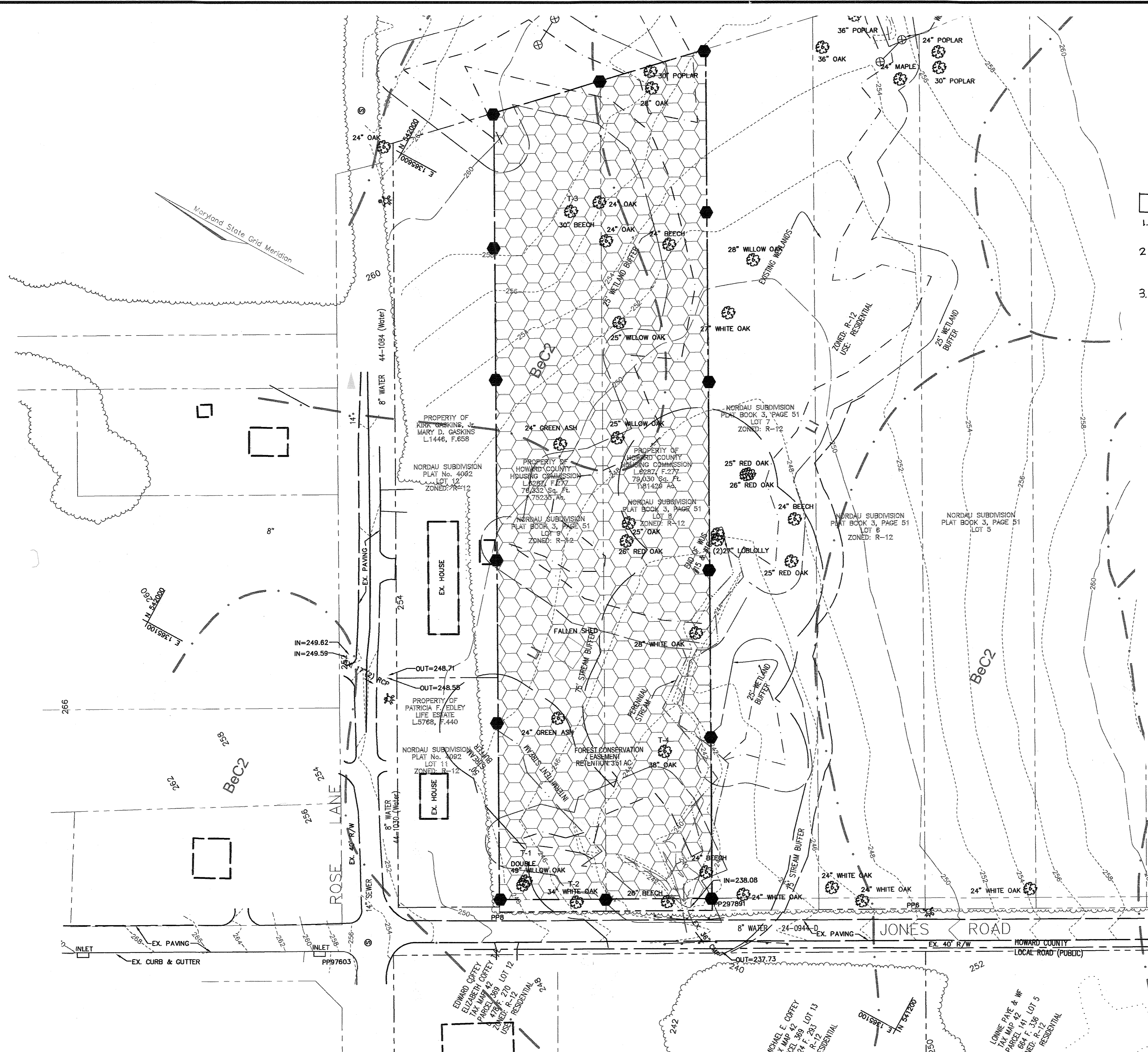
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PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16189, EXPIRATION DATE: 09-27-2010.

DESIGN BY: JCO  
DRAWN BY: KG  
CHECKED BY: RHY  
DATE: APRIL 2010  
SCALE: AS SHOWN  
W.O. NO.: 08-35

9 SHEET OF 9



**FOREST STAND ANALYSIS TABLE**

KEY	A. TYPE OF COMMUNITY	B. AREA	C. SOILS INFORMATION			D. EXISTING VEGETATION	E. STAND CHARACTERISTICS			F. SEN. ENV. AREA IN FOREST	G. HABITAT
			1. SOILS TYPES	2. TYPICAL FOREST COVER FOR SOILS TYPE	3. WOODLAND SUITABILITY INDEX		1. SIZE (DIA)	2. AGE (YRS)	3. GENERAL CONDITION		
F-1	TREES, WETLANDS, STREAMS	3.5 Ac	BeC2 Li	MIXED HARDWOODS	16 11	OAK, BEECH FEW LOBLOLLY PINES	N/A	N/A	N/A	0.8 Ac WETLANDS	F

**PLAN**

SCALE: 1"=50'

**SPECIMEN TREE CHART**

NO.	SIZE	TYPE	CONDITION
T1	49" DBH	DOUBLE WILLOW OAK	GOOD
T2	34" DBH	WHITE OAK	GOOD
T3	30" DBH	BEECH	GOOD
T4	38" DBH	OAK	FAIR

J. CHRIS OGLE  
DNR QUALIFIED FOREST PROFESSIONAL

APPROVED: DEPARTMENT OF PUBLIC WORKS

*Matthew J. ...* 6-2-10  
CHIEF, BUREAU OF HIGHWAYS DATE

*...* 6/17/10  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*...* 6/17/10  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE