

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY STANDARDS AND SPECIFICATIONS. ALL WORK AND MATERIALS SHALL COMPLY WITH O.S.H.A. STANDARDS.
- 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
 VERICON: 1-800-257-7777
 BUREAU OF UTILITIES: 410-313-4800
 W&P: 1-800-257-1133
 B.G.&E. (CONSTRUCTION SERVICES): 410-637-8713
 B.G.&E. (EMERGENCY): 410-685-0133
 STATE HIGHWAY ADMINISTRATION: 410-531-5533
 COLONIAL PIPELINE CO.: 410-795-1390
- SITE ANALYSIS:**
 GROSS AREA OF PROJECT: 1.569 AC.
 PRESENT ZONING: R-ED
 PROPOSED USE: C/O RESIDENTIAL (SFA)
 NUMBER OF RESIDENTIAL LOTS PROPOSED: 11 LOTS
 IMPERVIOUS AREA: 1.239 AC.
 LIMIT OF DISTURBANCE: 1.39 AC.
 CUT: 2500 CY FILL: 2500 CY
- PROJECT BACKGROUND:**
 LOCATION: TAX MAP 25, BLOCK 14, PARCEL 159
 ZONING: R-ED
 SUBDIVISION: AUTUMN RIVER PHASE IV
 SITE AREA: 1.569 AC. TOTAL
 DEED REFERENCES: L 9546 F-30
- 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 RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- ANY EXISTING STREET TREES DAMAGED OR DESTROYED DURING CONSTRUCTION WILL BE REPLACED BY THE CONTRACTOR.
- EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- THE COORDINATES SHOWN HEREON ARE BASED UPON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 3044005R AND 3044004R WERE USED FOR THIS PROJECT.
- THE PROJECT BOUNDARY SHOWN IS BASED ON A BOUNDARY SURVEY PREPARED BY FISHER, COLLINS, & CARTER, INC. DATED FEBRUARY 14, 2000, WHICH WAS VERIFIED AS CORRECT BY ROBERT H. VOGEL ENGINEERING, INC. IN MARCH 2010.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM AN AERIAL TOPOGRAPHIC SURVEY PREPARED BY WINGS AERIAL MAPPING COMPANY, INC. PHOTOGRAPHED MARCH 1995.
- THE SUBJECT PROPERTY IS ZONED "R-ED" IN ACCORDANCE WITH THE 2/2/04 COMPREHENSIVE ZONING PLAN AND THE COMP. LITE ZONING REGULATIONS EFFECTIVE ON 7/28/06.
- THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT.
- THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
- THIS PROJECT IS SUBJECT TO COMPLIANCE WITH THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DEVELOPMENT OR CONSTRUCTION ON THIS PROPERTY MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF THE SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION OR BUILDING/GRADING PERMIT APPLICATIONS.
- INGRESS AND EGRESS TO THE SITE IS RESTRICTED ALONG COLLEGE AVENUE.
- A TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE TRAFFIC GROUP, INC., DATED JULY 2010.
- APFO TRAFFIC STUDY PREPARED BY THE TRAFFIC GROUP DATED MAY 30, 2006, REVISED JUNE 5, 2008; APPROVED UNTIL F-02-035.
- A NOISE STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT.
- IN ACCORDANCE WITH 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, OR EXTERIOR ENCLOSURE MAY PROJECT NOT MORE THAN 10 FEET INTO THE FRONT OR REAR YARD SETBACK. SUNROOMS AND DECKS FOR R-ED LOTS AND CERTAIN LOTS APPROVED TO USE THE R-ED ZONING REGULATIONS ARE ALLOWED TO EXTEND UP TO 10 FEET INTO A REAR SETBACK ALONG NOT MORE THAN 60% OF THE REAR FACE OF A DWELLING ON A LOT WHICH ADJOINS OPEN SPACE ALONG A MAJORITY OF THE REAR LOT.
- FOR DRIVEWAY ENTRANCE DETAILS REFER TO THE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD DETAIL R-6.03 (RUSHING RIVER), DETAIL R-6.05 (AUTUMN CREST) AND FOR SIDEWALK RAMP DETAILS REFER TO DETAIL R-4.02. SEE SHEET 3
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY DWELLINGS 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 - 6 INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN.)
 C) GEOMETRY - MAXIMUM 15% 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) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
- WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
- WATER AND SEWER SERVICE FOR THIS PROJECT WILL BE PUBLIC. WATER WILL BE PROVIDED THROUGH CONTRACT NO. 14-4720-D. SEWER WILL BE PROVIDED THROUGH CONTRACT NO. 14-4720-D. THIS SUBDIVISION IS TO BE SERVED BY THE AUTUMN RIVER PUMPING STATION AND THE SDP AND PLAT SHALL NOT BE APPROVED UNTIL IT IS OPERATIONAL.
- PUBLIC WATER AND SEWER ALLOCATION WILL BE GRANTED AT THE TIME OF ISSUANCE OF THE BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.
- STORMWATER MANAGEMENT TO BE PROVIDED FOR THE PARCEL 159 DEVELOPMENT BY ENVIRONMENTAL SITE DESIGN UTILIZING 2 MICROBIOTENTATION FACILITIES IN OPEN SPACE LOT 120. THE FACILITIES WILL BE PRIVATELY OWNED BY THE HOMEOWNERS. STORMWATER MANAGEMENT TEST PITS #1 & #2 WITHIN THE PROPOSED MICRO BIOTENTATION AREAS TO DETERMINE THE DEPTH OF ROCK AND WATER WAS DONE JULY 2011. AS A RESULT NO ROCK OR WATER ARE WITHIN 4' OF THE BOTTOM OF THE FACILITIES.
- LANDSCAPING FOR THIS PROJECT WAS PROVIDED WITH FINAL PLAN, F-13-019.
- PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(a)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY WAS POSTED AS PART OF THE DPW DEVELOPERS AGREEMENT UNDER F-13-019.
- COLLEGE AVENUE IS A SCENIC ROAD. A 32' WIDE FOREST BUFFER IS PROVIDED FOR FORESTATION AS PROVIDED ON S-98-16, AND TYPE "B" BUFFER LANDSCAPING IS PROVIDED ALONG COLLEGE AVE.
- THIS PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.120 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION. THE FOREST CONSERVATION REQUIREMENT FOR THE REQUIRED 0.21 ACRES OF FORESTATION IS MET IN A FOREST BANK, COLLEGE AVENUE PUMP STATION, AUTUMN RIVER BULK PAVEMENT, S-98-16, S-98-10-081.
- WP-07-095: A WAIVER PETITION HAS BEEN SUBMITTED AND APPROVED, DATED AUGUST 22, 2007, TO WAIVE SECTION 16.116 TO ALLOW GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW STRUCTURES WITHIN 25 FEET OF A WETLAND. SECTION 16.116(a)(2) TO ALLOW GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW STRUCTURES WITHIN 75' OF PERMANENT STREAM BANK AND SECTION 16.116 (b) TO ALLOW GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, NEW STRUCTURES AND PAVING ON LAND WITH STEEP SLOPES.
 APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
 1. COMPLIANCE WITH ALL SUBDIVISION REVIEW COMMITTEE COMMENTS.
 2. COMPLIANCE WITH THE COMMENTS DATED AUGUST 14, 2007 FROM THE HOWARD SOIL CONSERVATION DISTRICT.
 3. APPROVAL OF ANY STATE PERMITS REQUIRED FOR THE ENVIRONMENTAL DISTURBANCES. THE PERMIT NUMBER MUST BE SHOWN AS A GENERAL NOTE ON THE FINAL PLAN.
 4. ON THE PRELIMINARY PLAN AND ALL FUTURE SUBDIVISION PLANS, PROVIDED A BRIEF DESCRIPTION OF WAIVER PETITION, WP-07-095, AS A GENERAL NOTE TO INCLUDE REQUESTS, SECTIONS OF THE REGULATIONS, ACTION AND DATE.
 5. IN LIEU OF PROVIDING RETAINING WALLS ON OPEN SPACE LOT 28 (BEHIND LOTS 33 AND 34), THE AREA WILL BE GRADED, BUT NOT TO EXCEED THE LOD SHOWN ON THE WAIVER PETITION EXHIBIT, AND REVEGETATED AND PLANTED.
- A DESIGN MANUAL WAIVER TO WAIVE VOLUME IV, DETAIL R-1.02 WHICH REQUIRES A 50-FOOT WIDE RIGHT-OF-WAY FOR A PUBLIC ACCESS PLACE AND PUBLIC ACCESS STREET, HAS BEEN SUBMITTED AND APPROVED, DATED OCTOBER 15, 2008. APPROVAL WAS BASED ON THE FOLLOWING:
 A. THE PLAN WAS ORIGINALLY DESIGNED & APPROVED UNDER SEPARATE REGULATIONS WHICH ONLY REQUIRED A 40-FOOT RIGHT-OF-WAY. UPDATING THE PLAN TO CURRENT STANDARDS WOULD HAVE A SIGNIFICANT AFFECT ON THE SUBDIVISION AS ALREADY APPROVED.
 B. THE REQUEST TO ALLOW THE 40-FOOT RIGHT-OF-WAY WIDTH IS APPROVED BUT THE MINIMUM PAVEMENT WIDTHS MUST BE PROVIDED AS SPECIFIED WITH THE WAIVER REQUEST.
- A DESIGN MANUAL WAIVER TO WAIVE VOLUME IV, SECTION 2.4B AND APPENDIX A WHICH REQUIRES A MINIMUM 28-FOOT PAVEMENT WIDTH ALONG TOWNHOMES HAS BEEN SUBMITTED AND APPROVED, DATED DECEMBER 22, 2011. APPROVAL WAS BASED ON THE FOLLOWING:
 A. NO PARKING SHALL BE PERMITTED ALONG RUSHING RIVER DRIVE.
 B. IF THE PARKING QUANTITIES WITHIN THE SUBMITTAL OF THE SDP (2 CAR GARAGE AND 2 CARS ON THE DRIVEWAY) THIS APPROVAL SHALL BE RE-EVALUATED TO ENSURE IT MEETS THE MINIMUM REQUIREMENTS FOR OVERFLOW PARKING, AS SHOWN ON THE SDP, THE GARAGES (AND POSSIBLY THE DRIVEWAYS) ARE TOO NARROW TO DOUBLE PARK.
- PROTECTIVE COVENANTS GOVERNING THE MAINTENANCE OF THE MAINTENANCE OF THE USE-IN-COMMON DRIVEWAY, THE MAINTENANCE OF THE STREET TREES, THE RESTRICTION OF FOREST CONSERVATION AREAS, AND ANY RESERVATIONS OF THE HOMEOWNERS ASSOCIATION TO BE RECORDED, ARTICLES OF INCORPORATION OF THE HOMEOWNERS ASSOCIATION WERE ACCEPTED AND APPROVED BY THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION ON 10 / 1 / 2012. (RECEIPT NO. 014881859)
- OPEN SPACE LOT 120 SHOWN HEREON ARE HEREBY DEDICATED TO THE HOME OWNERS ASSOCIATION FOR THE RESIDENTS OF THIS SUBDIVISION. THE ARTICLES OF INCORPORATION FOR THE HOME OWNERS ASSOCIATION WERE FILED WITH THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION ON 10 / 1 / 2012. RECEIPT NO. 014881858
- TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO BURIAL/CEMETERY LOCATIONS, HISTORIC STRUCTURES EXISTING ON THIS SITE.
- PLANNING BOARD CASE NO. 393 APPROVED BY PLANNING BOARD ON JUNE, 21 2012.
- IN ACCORDANCE WITH SECTION 107.D.1.B OF THE HOWARD COUNTY ZONING REGULATIONS, LOT COVERAGE FOR ALL SINGLE FAMILY ATTACHED UNITS WITHIN THE ENTIRE AUTUMN RIVER SUBDIVISION WILL NOT EXCEED 60% OF THE GROSS ACREAGE OF EACH SINGLE FAMILY ATTACHED LOT.
- THE DEPARTMENT OF PUBLIC WORKS IS NOT REQUIRING A REFUSE PAD FOR THE DWELLINGS ALONG AUTUMN CREST WAY, HOWEVER, TRASH COLLECTION MUST BE WITHIN 5' OF THE COUNTY ROADWAY. TRASH AND RECYCLING COLLECTION WILL BE PROVIDED AT THE INTERSECTION OF BENDING SKY WAY AND AUTUMN CREST WAY.
- THIS PLAN IS SUBJECT TO WP-11-206 TO SECTION 16.120(a)(4) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATION TO EXTEND THE DISTANCE ALONG A PRIVATE ROAD FROM 200' TO 247' AND TO SECTION 16.120(a)(7) FOR THE REMOVAL OF THE EXISTING 32' SILVER MAPLE TREE. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS:
 A) ON THE PRELIMINARY EQUIVALENT SKETCH PLAN AND ALL FUTURE SUBDIVISION PLANS AND SITE DEVELOPMENT PLANS, PROVIDE A BRIEF DESCRIPTION OF WAIVER PETITION, WP-11-206, AS A GENERAL NOTE TO INCLUDE REQUESTS, SECTIONS OF THE REGULATIONS, ACTION AND DATE.
 B) THE PRIVATE ROAD MUST BE CONSTRUCTED TO PUBLIC ROAD STANDARDS IN ACCORDANCE WITH THE COMMENTS FROM THE DEVELOPMENT ENGINEERING DIVISION DATED JULY 8, 2011.
 C) PROVIDE A TYPE "C" BUFFER ALONG THE COLLEGE AVENUE (SCENIC ROAD) PROPERTY BOUNDARY. THESE TREES MUST BE A MINIMUM 2-1/2" TO 3" CALIPER SHADE TREES AND 6"-8" IN HEIGHT EVERGREENS.
 D) WAIVER APPROVAL IS LIMITED TO THE REMOVAL OF THE ONE 32' SILVER MAPLE TREE AS SHOWN ON THE WAIVER EXHIBIT. THE DEVELOPER SHALL DESIGN THIS SUBDIVISION PROPOSAL TO BE IN ACCORDANCE WITH THE SCENIC ROAD PROTECTION REQUIREMENTS OF SECTION 16.125 OF THE SUBDIVISION REGULATIONS.
 E) THE DEVELOPER SHALL DESIGN THIS SUBDIVISION PROPOSAL TO BE IN ACCORDANCE WITH THE SCENIC ROAD PROTECTION REQUIREMENTS OF SECTION 16.125 OF THE SUBDIVISION REGULATIONS.
- A PRIVATE ROAD STREET NAME SIGN ASSEMBLY SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF HIGHWAYS AT THE DEVELOPERS/OWNERS EXPENSE. CONTACT HOWARD COUNTY TRAFFIC DIVISION AT 410-343-2430 FOR DETAILS AND COST ESTIMATES.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAMS OR OTHER BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN.
- ALL WATER HOUSE CONNECTIONS SHALL BE FOR INSIDE METER SETTING UNLESS OTHERWISE NOTED ON THE PLANS OR IN SPECIFICATIONS.

SITE DEVELOPMENT PLAN

AUTUMN RIVER

PHASE IV

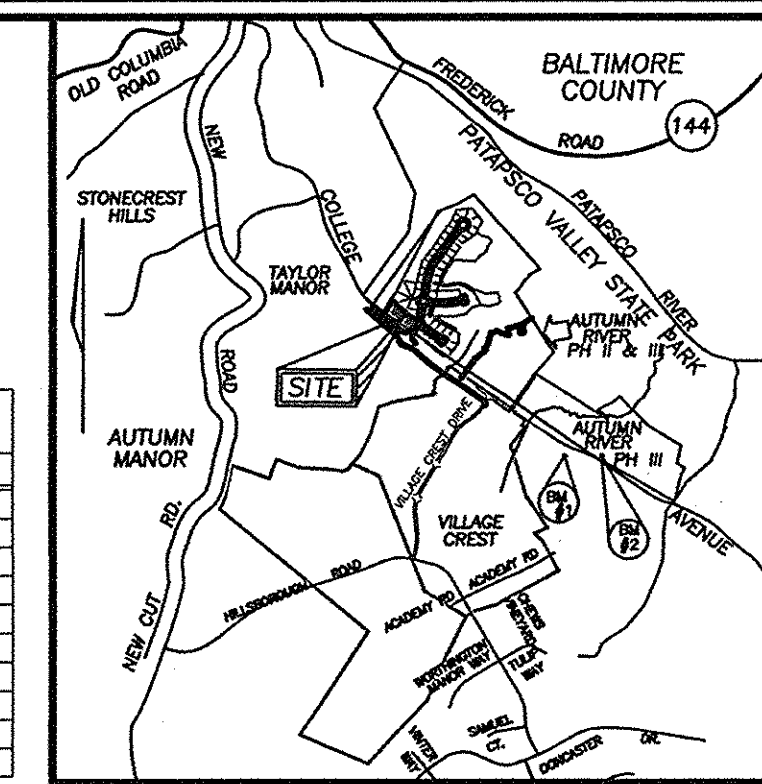
LOTS 69 & 70, 111-119 AND OPEN SPACE LOT 120
HOWARD COUNTY, MARYLAND

BENCHMARKS

BENCHMARK NO. 1: COUNTY CONTROL #3044005R
 3/4" REBAR 0.8' BELOW SURFACE
 N. 578233.92, E. 1473142.33
 ELEV. = 374.38'
 BENCHMARK NO. 2: COUNTY CONTROL #3044004R
 3/4" REBAR 0.6' BELOW SURFACE
 N. 578128.03, E. 1473460.71
 ELEV. = 362.575'

COORDINATE LIST

NO.	NORTHING	EASTING	NO.	NORTHING	EASTING
100	N 579840.9292	E 1371318.0145	5406	N 579882.1382	E 1371751.2614
105	N 579784.3129	E 1371649.3129	7500	N 579678.6312	E 1371233.5369
108	N 579807.3069	E 1371682.5843	7501	N 579798.3254	E 1371358.2393
118	N 579513.6237	E 1371464.5759	7502	N 579709.8144	E 1371459.7698
119	N 579529.1394	E 1371498.0959	7503	N 579685.0292	E 1371520.0913
120	N 579585.6209	E 1371552.0513	7504	N 579630.9242	E 1371574.4499
4025	N 579795.4828	E 1371779.3682	7505	N 579702.1243	E 1371634.5456
4026	N 579894.0429	E 1371765.4631	7508	N 579528.5598	E 1371411.0535
4027	N 579694.0628	E 1371753.4975	7509	N 579536.1088	E 1371399.0119
5120	N 579604.3500	E 1371698.9443	7510	N 579604.0309	E 1371360.3404



VICINITY MAP
 SCALE 1"=2000'
 ADC MAP / GRID NO.: 28 / B2

SHEET INDEX

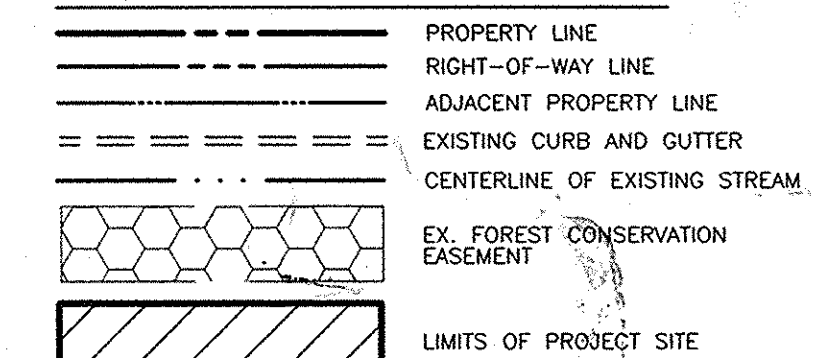
DESCRIPTION	SHEET NO.
COVER SHEET	1 OF 6
LAYOUT AND LANDSCAPE PLAN SHEET	2 OF 6
ROAD PROFILES AND SITE DETAILS	3 OF 6
SOILS MAP, GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN	4 OF 6
GRADING AND SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS	5 OF 6
STORMWATER MANAGEMENT AND LANDSCAPING NOTES AND DETAILS	6 OF 6

NOTE: IN ACCORDANCE WITH SECTION 107.D.1.B OF THE HOWARD COUNTY ZONING REGULATIONS (10/2003), LOTS 69, 70, 111, 112 AND 113 THRU 119 HAVE A MAXIMUM ALLOWABLE LOT COVERAGE OF 60% ON A PER LOT BASIS. THE TABLE BELOW SHOWS THE LOT COVERAGE OF THE TYPICAL MOBILE HOME SITES HEREON WITHOUT OPTIONS AND THE MAXIMUM ALLOWABLE LOT COVERAGE FOR EACH MOBILE HOME SITES WITH THOSE OPTIONS WHICH EXCEEDS THE MAXIMUM COVERAGE (COVR) OF A GIVEN LOT WILL REQUIRE VARIANCE APPROVAL.

LOT #	LOT SIZE SF	BASE MODEL SF	BASE MODEL COVERAGE %	MAX 60% COVERAGE SF	ALLOWABLE OPTIONS SF
69	3283	1103.0	33.5	1975.0	872.0
70	2480	1094.6	44.0	1492.0	398.2
111	2466	1097.6	44.5	1479.6	382.0
112	5695	1102.5	19.4	3415.8	2313.3
113	2513	895.0	35.6	1507.8	612.8

CHART CONTINUED BELOW...

LEGEND



LOT #	LOT SIZE SF	BASE MODEL SF	BASE MODEL COVERAGE %	MAX 60% COVERAGE SF	ALLOWABLE OPTIONS SF
114	1796	48.8	2.7	1071.6	200.9
115	2428	895.6	36.9	1456.8	561.2
116	2445	867.3	35.3	1467.0	579.7
117	1810	881.2	48.7	1086.6	199.5
118	1824	876.6	48.1	1094.4	217.7
119	2440	876.6	36.7	1464.0	568.4

DEVELOPER
 AUTUMN DEVELOPMENT CORPORATION (PAR C)
 C/O LAW OFFICES OF SPANH & BRODIA
 5401 TWIN KNOLLS ROAD, SUITE 7
 COLUMBIA, MARYLAND 21045
 410-992-9700

DEVELOPER
 AUTUMN DEVELOPMENT CORPORATION
 C/O LAND DESIGN & DEVELOPMENT, INC.
 5300 DORSEY HALL DR STE 102
 ELLICOTT CITY, MD 21042-7819
 ATTN: MR. DONALD R. RUEWER
 (443) 367-0422



SITE ANALYSIS DATA

- TOTAL PROJECT AREA: 1.569 AC
- AREA OF PLAN SUBMISSION: 1.569 AC
- LIMIT OF DISTURBANCE: 1.39 AC
- R-ED
- PROPOSED USES FOR SITE AND STRUCTURES: SINGLE FAMILY ATTACHED
- FLOOR SPACE ON EACH LEVEL OF BUILDING PER USE: N/A
- TOTAL NUMBER OF UNITS ALLOWED FOR PROJECT AS SHOWN ON FINAL PLAT: 11 BUILDABLE LOTS TOTAL
- TOTAL NUMBER OF UNITS PROPOSED ON SUBMISSION: 11
- MAXIMUM NUMBER OF EMPLOYEES: N/A
- MAXIMUM NUMBER OF UNITS PER USE: N/A
- NUMBER OF PARKING SPACES PROVIDED BY HO. CO. ZONING REGULATIONS: 2 PER SFA HOUSE
- NUMBER OF PARKING SPACES PROVIDED ON SITE: 2 PER SFA HOUSE
- OPEN SPACE ON SITE: LOT 120
- AREA OF RECREATION OPEN SPACE REQUIRED BY SUBDIVISION & LAND DEVELOPMENT REGULATIONS: N/A
- BUILDING COVERAGE OF SITE: N/A
- APPLICABLE DPZ FILE REFERENCES: BUILDING COVERAGE - REFER TO CHART HEREON S-98-16, P-99-16, F-00-131, F-01-08, S-02-004, P.B. 325, P.B. 148, P-07-016, P-08-008, WP-09-083, F-09-021, F-10-061, F-11-067, ECP-11-054, WP-11-206, F-12-067, SP-12-001, P.B.393, F-13-019
- ANY OTHER INFORMATION WHICH MAY BE RELEVANT: TAX MAP 25, GRID 14 / 21, PARCEL 159 / 279 2ND ELECTION DISTRICT
- FLOOR AREA RATIO: N/A

PARKING TABULATION:

TOTAL NUMBER OF UNITS PROPOSED: 11
 PARKING SPACES REQUIRED: 2 SPACES PER UNIT = 22 SPACES
 0.3 SPACES PER UNIT FOR GUEST/OVERFLOW PARKING = 4 SPACES
 TOTAL PARKING SPACES REQUIRED: = 26 SPACES

PARKING SPACES PROVIDED:
 2 SPACES IN GARAGE = 22 SPACES (FOR 11 UNITS)
 1 SPACE ON DRIVEWAY = 11 SPACES (FOR 11 UNITS)

TOTAL PARKING SPACES PROVIDED: = 33 SPACES

ADDRESS CHART

UNIT/BUILDING	STREET ADDRESS
LOT 69	4908 RUSHING RIVER DRIVE
LOT 70	4906 RUSHING RIVER DRIVE
LOT 111	4904 RUSHING RIVER DRIVE
LOT 112	4902 RUSHING RIVER DRIVE
LOT 113	4907 AUTUMN CREST WAY
LOT 114	4909 AUTUMN CREST WAY
LOT 115	4922 AUTUMN CREST WAY
LOT 116	4915 AUTUMN CREST WAY
LOT 117	4917 AUTUMN CREST WAY
LOT 118	4919 AUTUMN CREST WAY
LOT 119	4921 AUTUMN CREST WAY

PERMIT INFORMATION CHART

SUBDIVISION NAME	SECTION/AREA	LOTS/PARCEL #			
AUTUMN RIVER PHASE IV	N/A	172 & 279			
PLAT # OR L/T	BLOCK NO.	ZONE	TAX MAP	ELECT. DIST.	CENSUS TR.
PLAT NO. 22807	14 & 21	R-ED	25	2ND	6027.00

NOTE

GARAGES MAY NOT BE CONVERTED TO LIVING SPACE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 5/30/14
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 6/05/14
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 6/10/14
 DIRECTOR DATE

NO.	REVISION	DATE
1	REVISE DEPTH OF TOWNHOUSE UNIT, ADD 2.9' HIGH LANDSCAPE WALL, AND REVISE GRADING 69-112	7/8/14

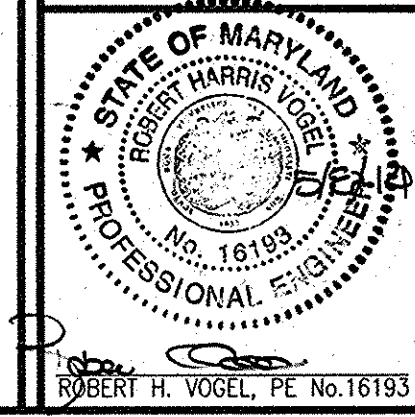
SITE DEVELOPMENT PLAN
COVER SHEET
 AUTUMN RIVER - PHASE IV
 LOTS 69 & 70, LOTS 111-119 AND OPEN SPACE LOT 120

2ND ELECTION DISTRICT TAX MAP: 25 GRID: 14 & 21

ZONING: R-ED
 PARCELS: 159, 172, & 279
 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, EXPIRES 08-27-2014

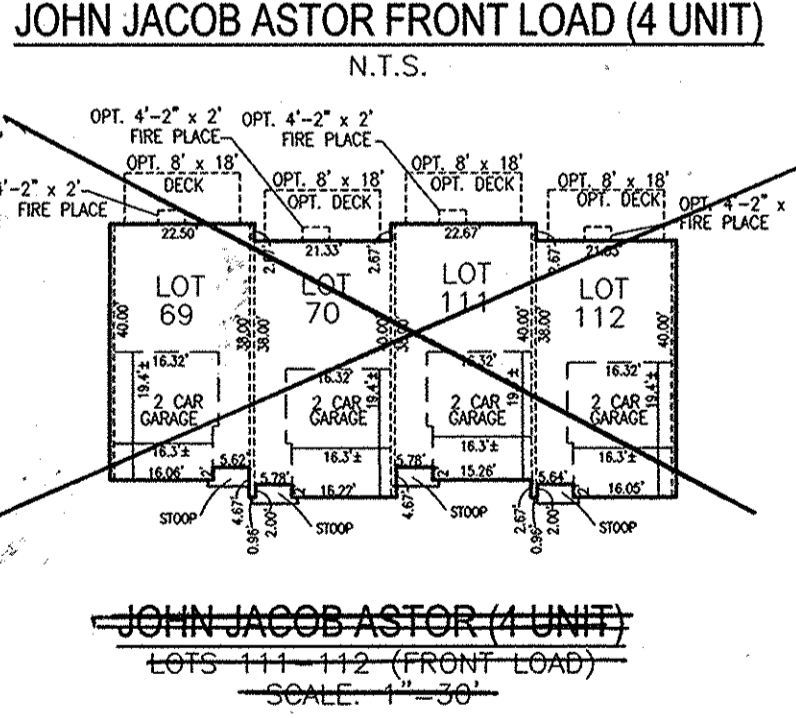
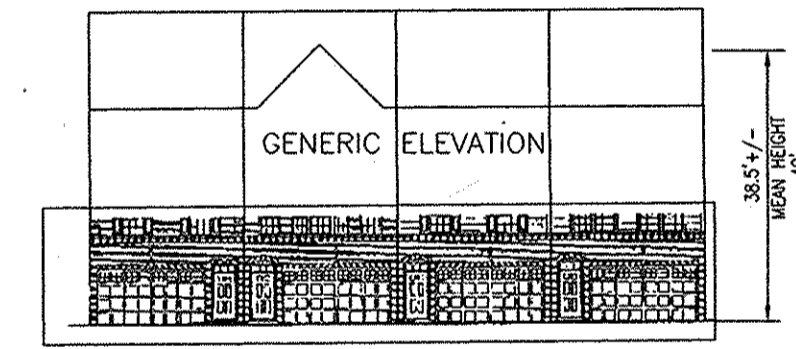
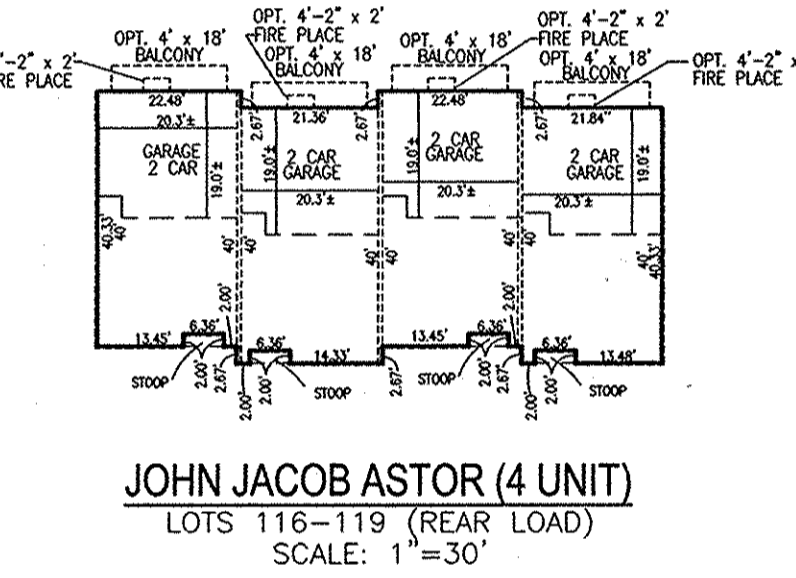
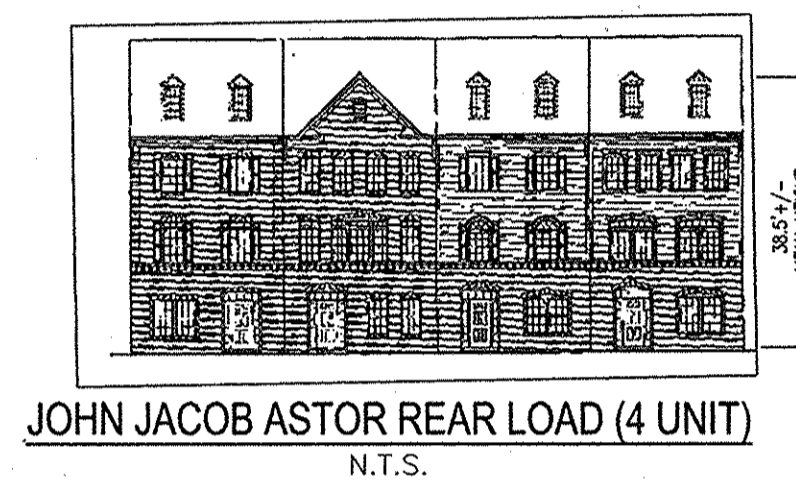
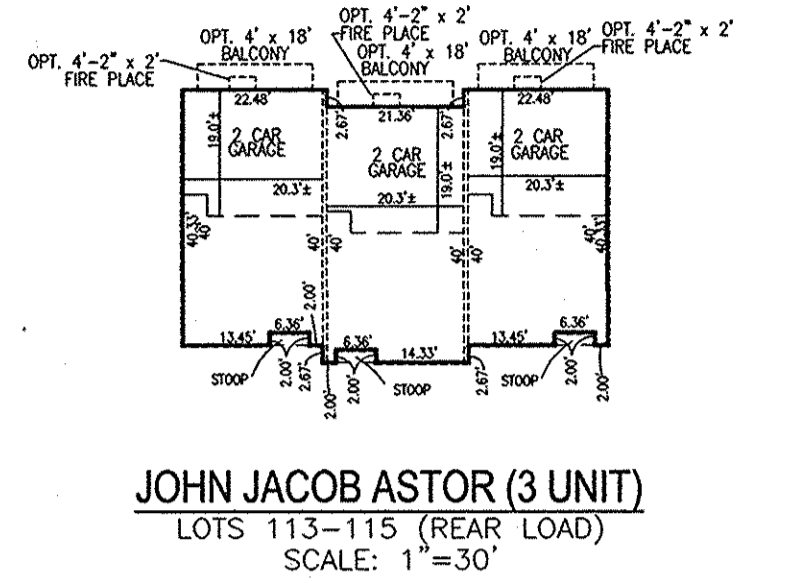
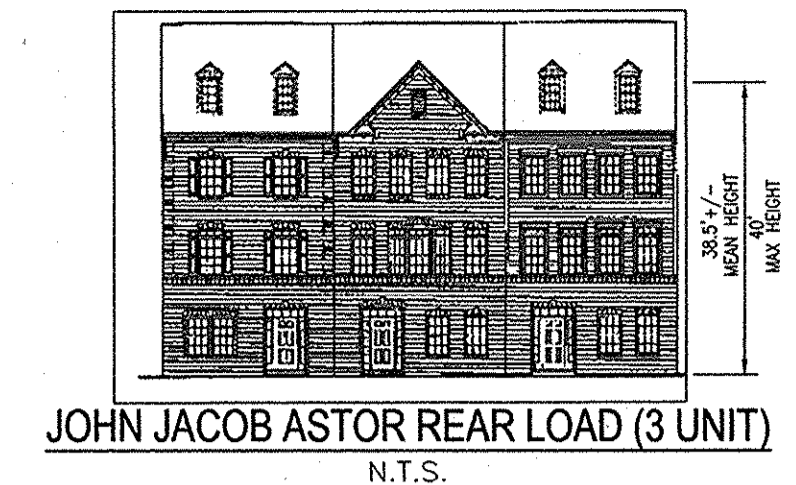
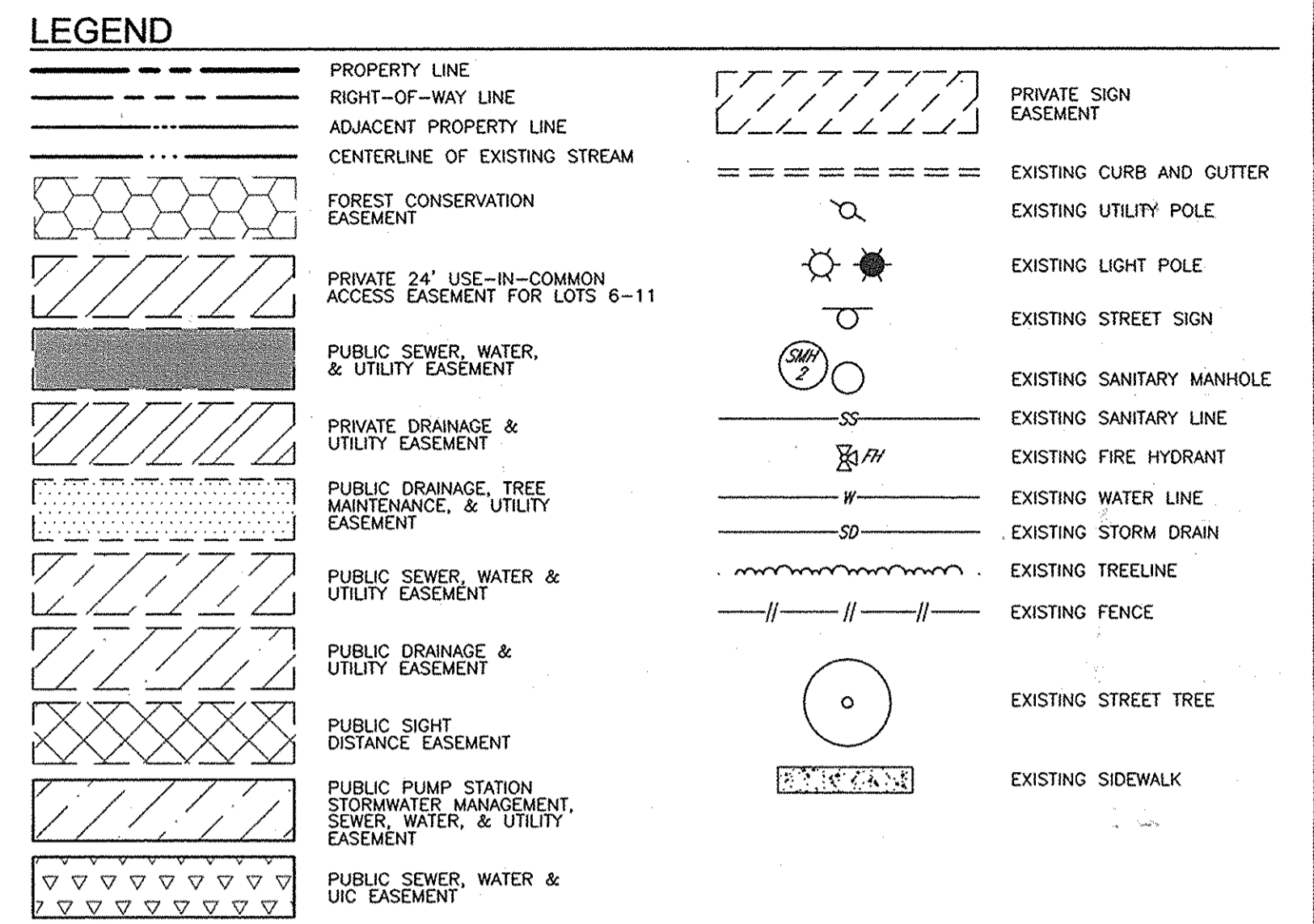
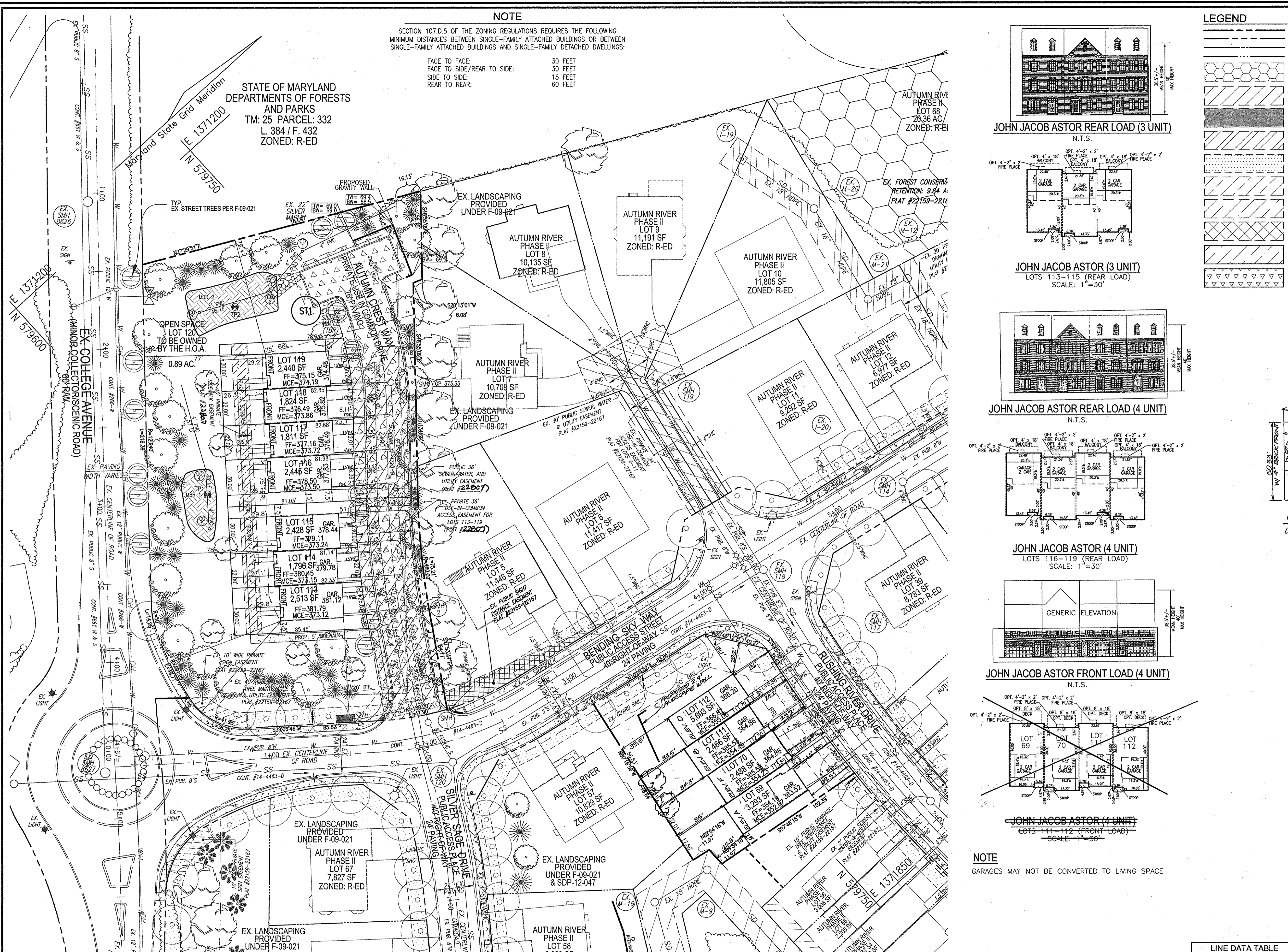
DESIGN BY: JTD/GAH
 DRAWN BY: JER/GAH
 CHECKED BY: EDS
 DATE: MARCH 2014
 SCALE: AS SHOWN
 W.O. NO.: 04-145

1 SHEET OF 6

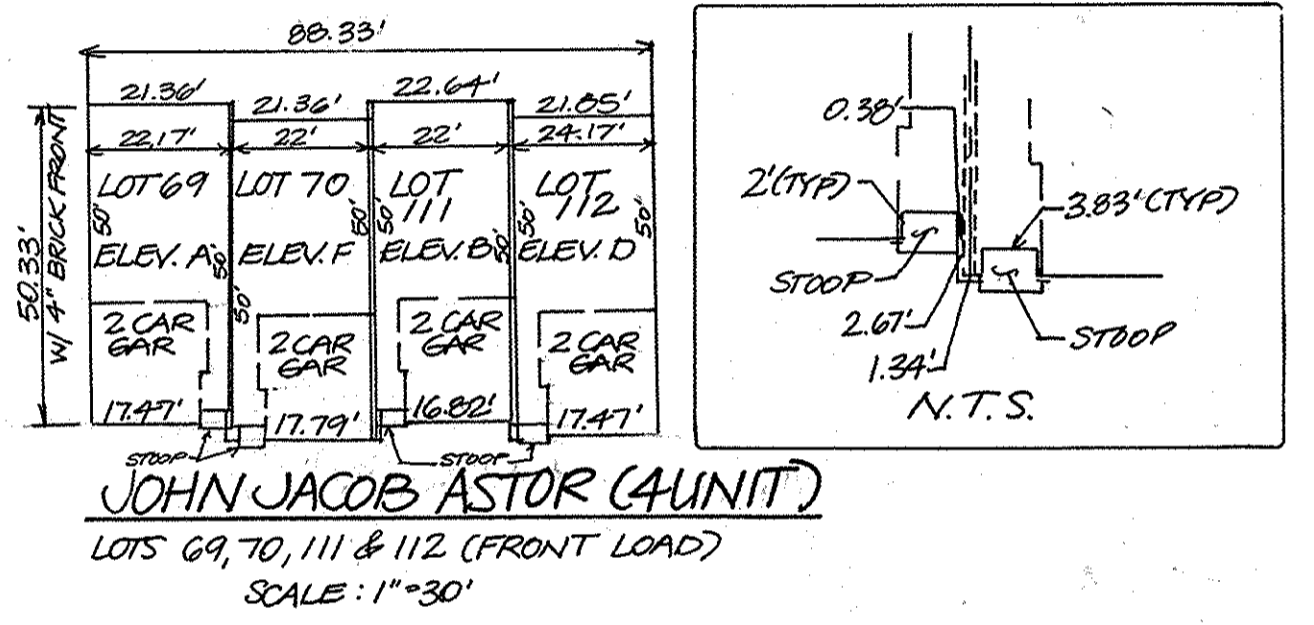
NOTE
SECTION 107.D.5 OF THE ZONING REGULATIONS REQUIRES THE FOLLOWING MINIMUM DISTANCES BETWEEN SINGLE-FAMILY ATTACHED BUILDINGS OR BETWEEN SINGLE-FAMILY ATTACHED BUILDINGS AND SINGLE-FAMILY DETACHED DWELLINGS:

FACE TO FACE: 30 FEET
FACE TO SIDE/REAR TO SIDE: 30 FEET
SIDE TO SIDE: 15 FEET
REAR TO REAR: 60 FEET

STATE OF MARYLAND
DEPARTMENTS OF FORESTS
AND PARKS
TM: 25 PARCEL: 332
L. 384 / F. 432
ZONED: R-ED



NOTE
GARAGES MAY NOT BE CONVERTED TO LIVING SPACE



OWNER
HISTORIC ELLICOTT PROPERTIES, INC.
4100 COLLEGE AVE
ELLCOTT CITY, MD 21042-7819
(410) 465-3500

BUILDER
IV HOMES
9720 PATUXENT WOODS DRIVE
COLUMBIA, MD 21046
(410) 796-0908

OWNER
AUTUMN DEVELOPMENT CORPORATION (PAR C)
C/O LAW OFFICES OF SPAHN & BROIDA
5401 TWIN KNOLLS ROAD, SUITE 7
COLUMBIA, MARYLAND 21045
410-992-9700

DEVELOPER
AUTUMN DEVELOPMENT CORPORATION
C/O LAND DESIGN & DEVELOPMENT, INC.
5300 DORSEY HALL DR STE 102
ELLCOTT CITY MD 21042-7819
ATTN: MR. DONALD R. REUWER
(443) 367-0422

NO.	REVISION	DATE
1	REVISE DEPTH OF TOWNHOUSE ADD 2.9' HIGH LANDSCAPE WALL, AND REVISE GRADING LOT 69-112	7/8/14

SITE DEVELOPMENT PLAN
LAYOUT AND LANDSCAPE PLAN
AUTUMN RIVER - PHASE IV
LOTS 69 & 70, LOTS 111-119 AND OPEN SPACE LOT 120

2ND ELECTION DISTRICT
TAX MAP: 25 GRID: 14 & 21

ZONING: R-ED
PARCELS: 159, 172, & 279
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLCOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8991

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 5-30-14
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 6-05-14
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 6/10/14
DIRECTOR DATE

NOTE
STREET TREES ALONG COLLEGE AVE. WERE PROVIDED UNDER F-09-021

F13-019 PRIVATE STREET LIGHT LOCATION CHART

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
AUTUMN CREST WAY	0+35	17.5' RT.	150 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE
AUTUMN CREST WAY	2+89	19' RT.	100 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE

F13-019 STREET SIGN LOCATION CHART

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
AUTUMN CREST WAY	0+32	16' LT.	STOP SIGN (R1-1) STREET SIGN (D3-1) AUTUMN CREST WAY
AUTUMN CREST WAY	0+72	16' RT.	SPEED LIMIT SIGN (R2-1)
AUTUMN CREST WAY	3+28	N/A	NO PARKING IN TEE-TURNAROUND (DOUBLE ARROW SYMBOL)

LINE DATA TABLE

LINE	BEARING	DISTANCE
L1	N57°53'47"W	85.28'
L2	N48°55'09"W	56.51'
L3	N69°46'59"W	28.36'

CURVE DATA TABLE

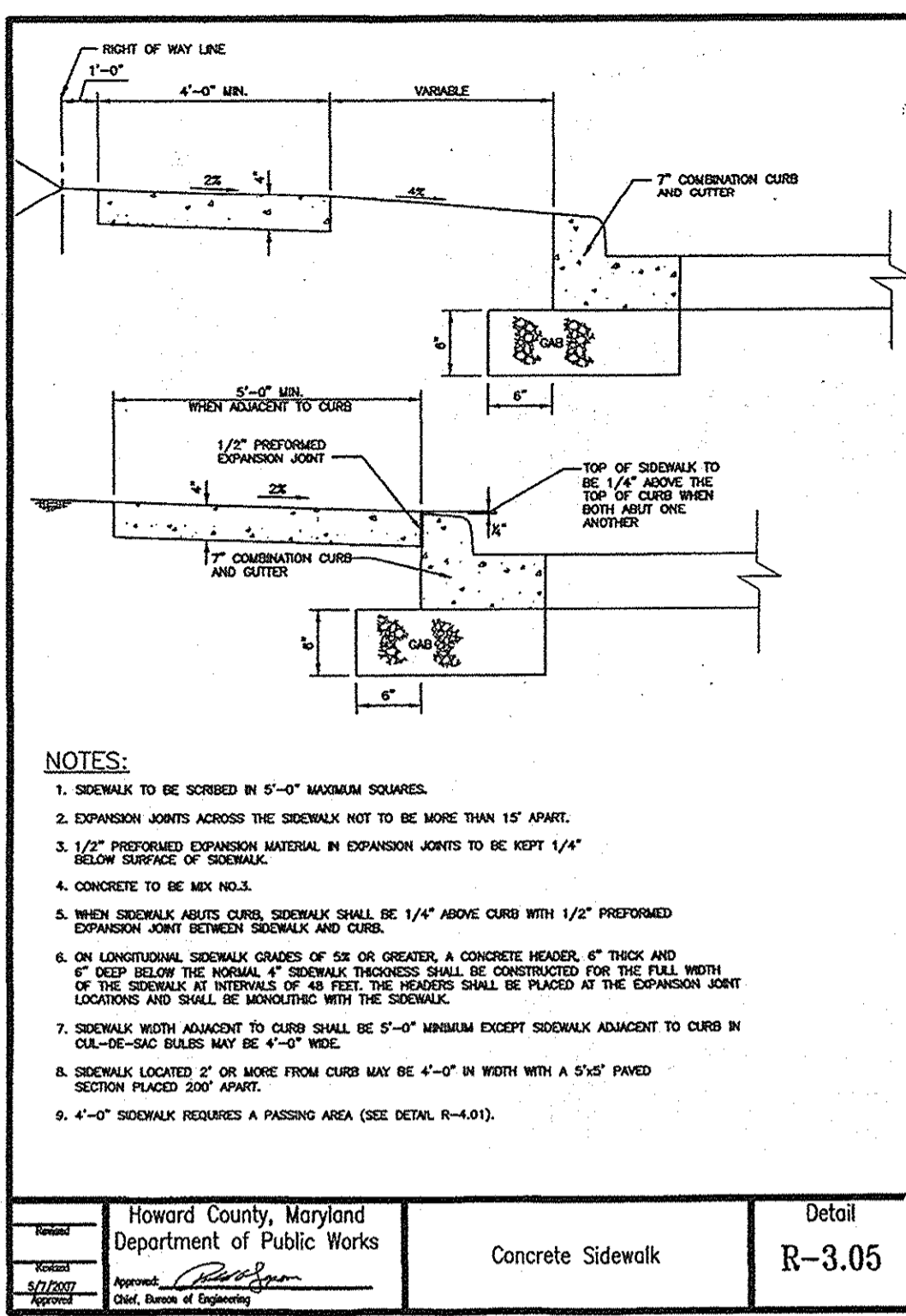
CURVE	LENGTH	RADIUS	TANGENT	DELTA	CHORD BEARING	CHORD LENGTH
C1	78.18'	499.00'	39.17'	8°58'38"	N53°24'28"W	78.10'
C2	73.54'	201.00'	37.18'	20°57'42"	S59°24'00"E	73.13'

PROFESSIONAL CERTIFICATE

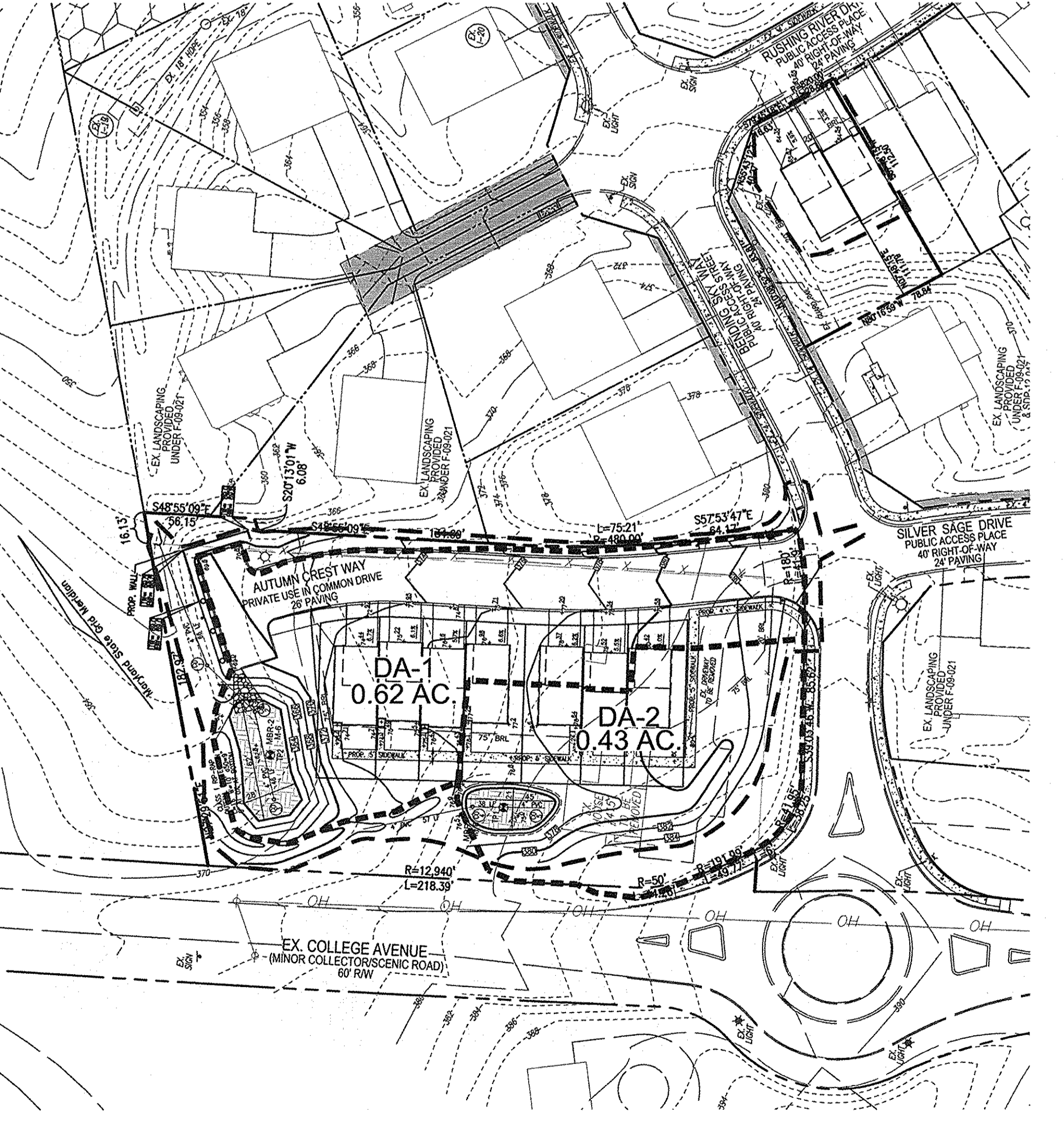
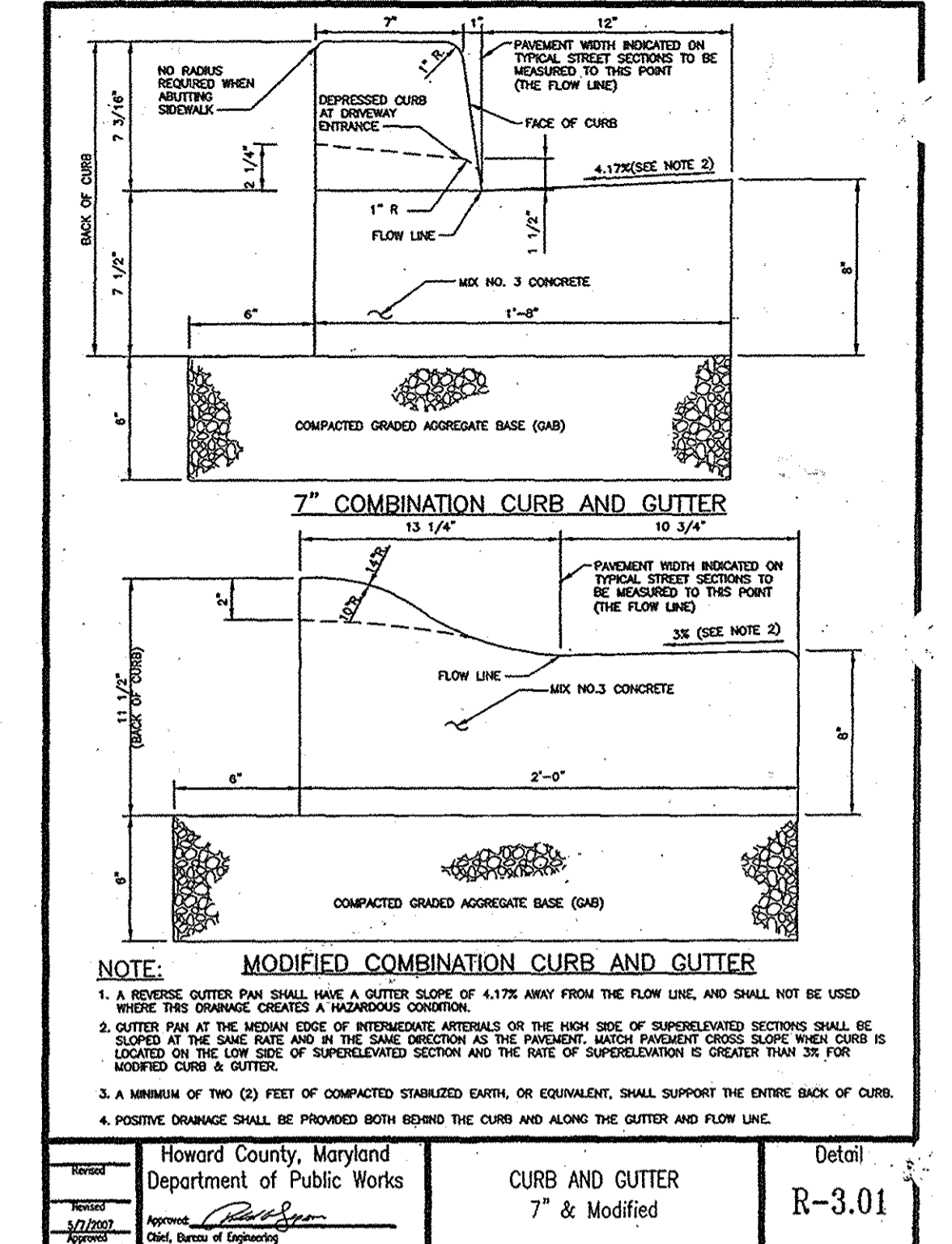
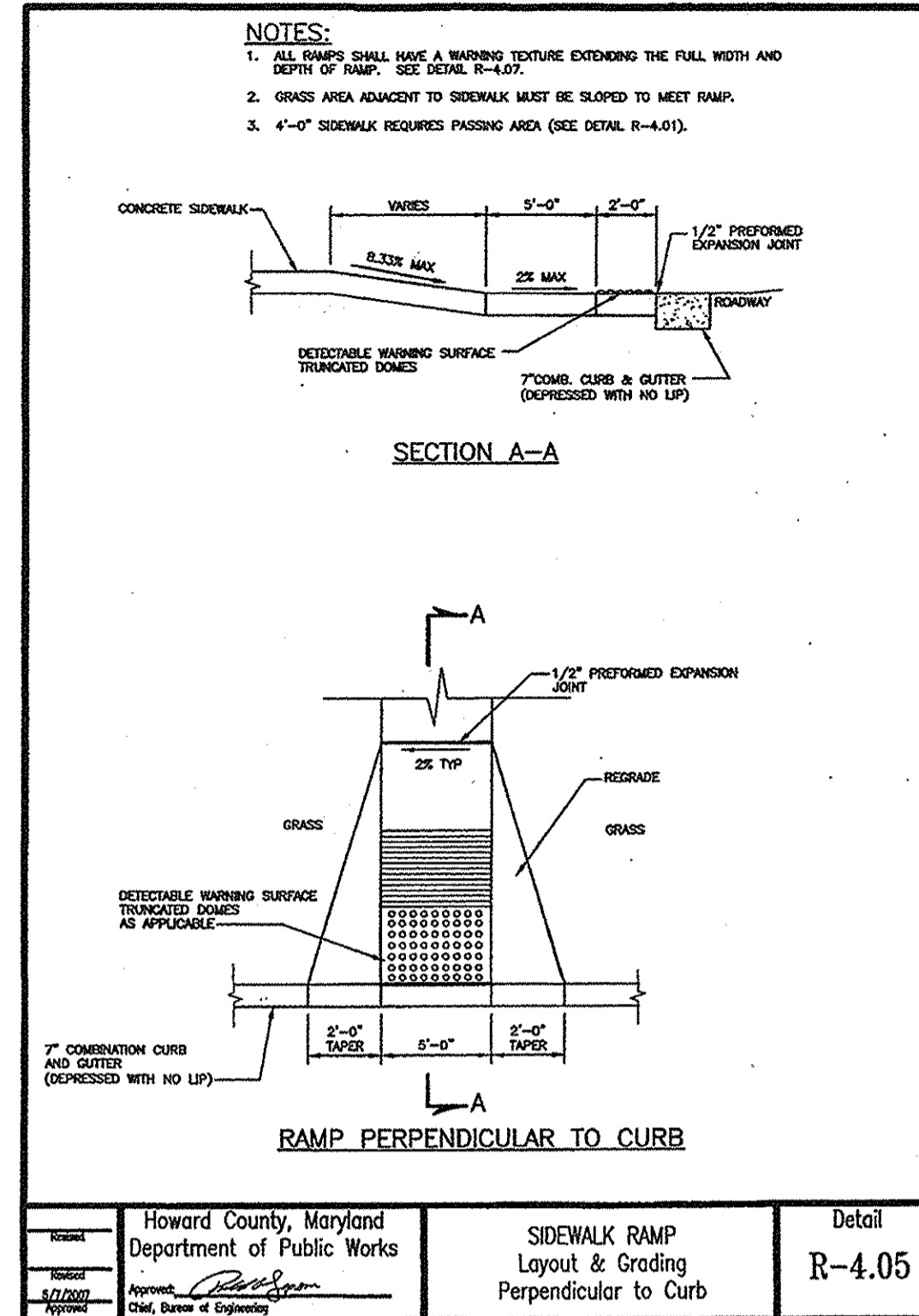
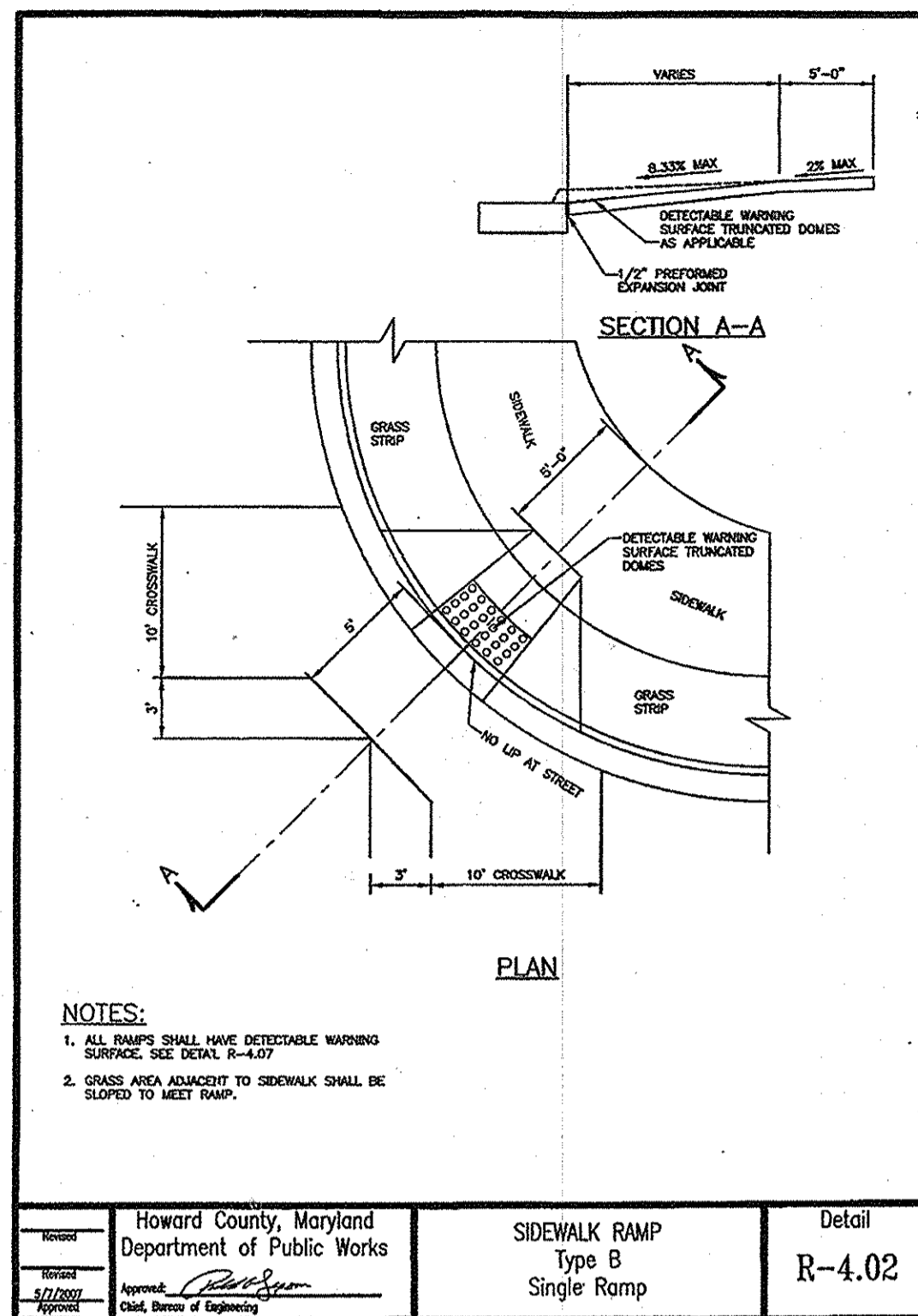
DESIGN BY: JTD/GAH
DRAWN BY: JER/GAH
CHECKED BY: EDS
DATE: MARCH 2014
SCALE: AS SHOWN
W.O. NO.: 04-145

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. EXPIRES 03/31/2015

2 SHEET OF 6



SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <S> 5 TO <T> 2.7	3 TO <S> 5 TO <T> 2.7	
P-1	PARKING DRIVE AREAS: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	PAVEMENT MATERIAL (INCHES)	MIN	MAX WITH GRASS	MAX WITH CONSTANT GRASS
		HMA SUPERPAVE FINAL SURFACE 9.5 MM PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5
P-2	PARKING DRIVE AREAS: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROAD, ACCESS STREET COL-DE-GRASS, RESIDENTIAL	GRADED AGGREGATE BASE (GAB)	NA	NA	NA
		HMA SUPERPAVE FINAL SURFACE 9.5 MM PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5
P-3	PARKING DRIVE AREAS: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROAD, ACCESS STREET COL-DE-GRASS, RESIDENTIAL	GRADED AGGREGATE BASE (GAB)	NA	NA	NA
		HMA SUPERPAVE FINAL SURFACE 9.5 MM PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5
P-4	PARKING DRIVE AREAS: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROAD, ACCESS STREET COL-DE-GRASS, RESIDENTIAL	GRADED AGGREGATE BASE (GAB)	NA	NA	NA
		HMA SUPERPAVE FINAL SURFACE 9.5 MM PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5

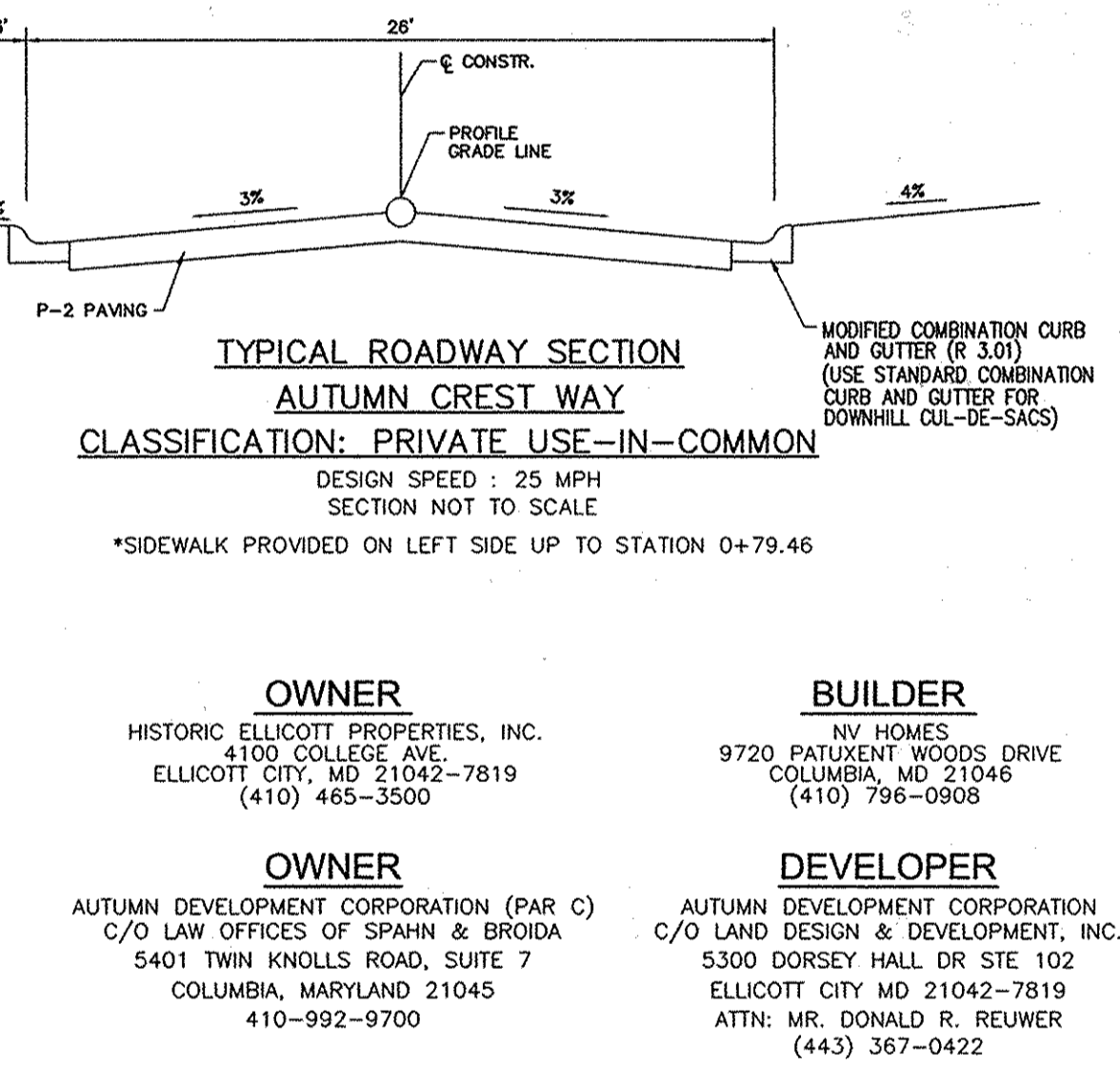
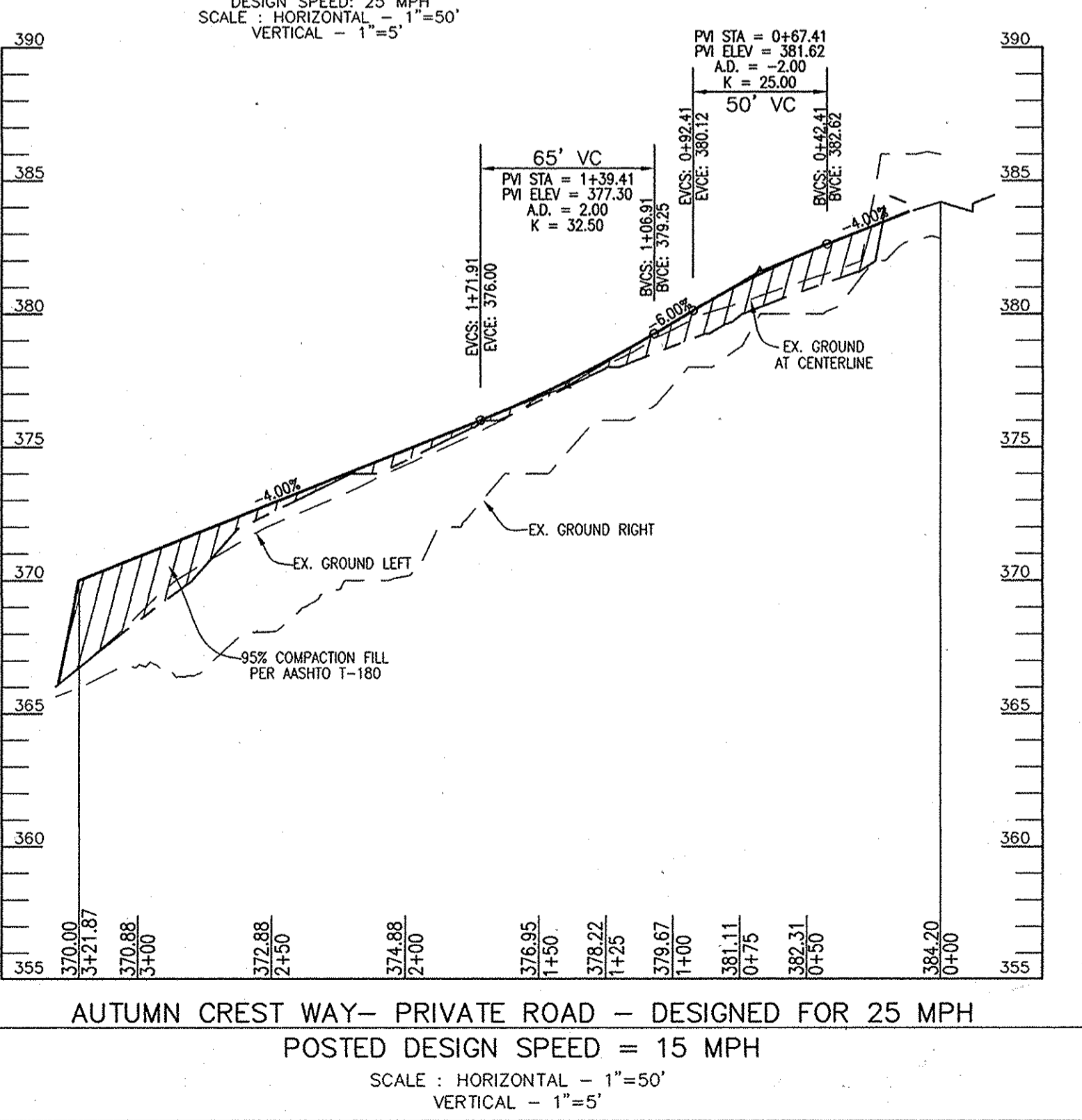
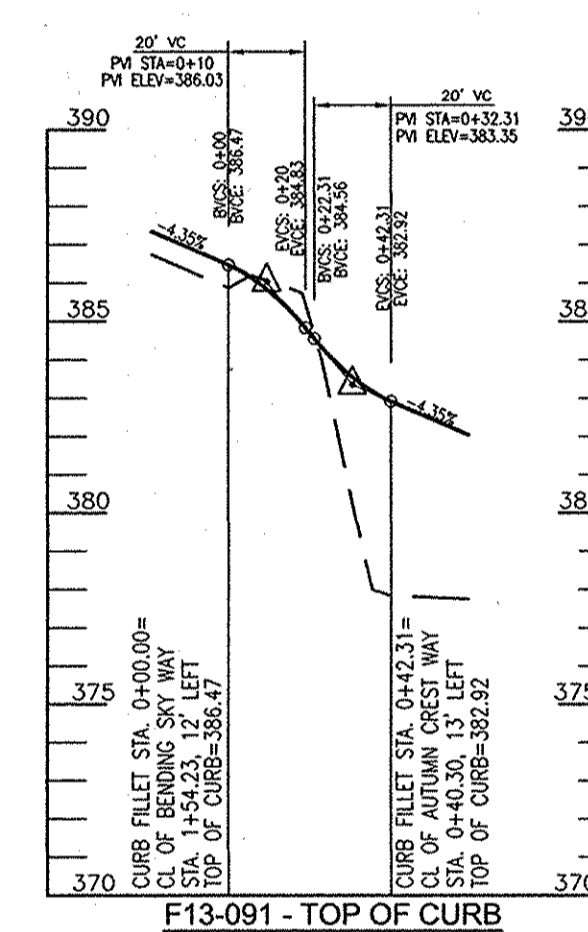
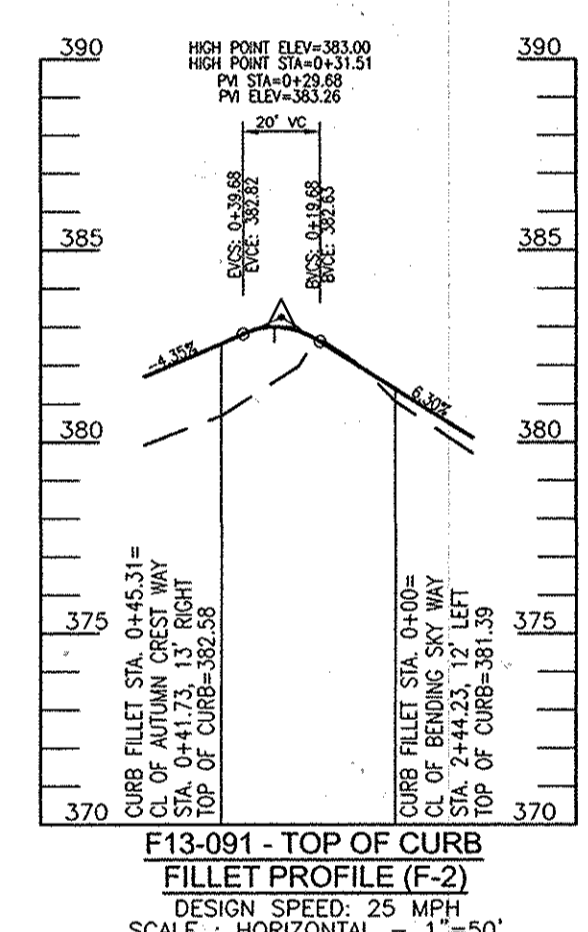
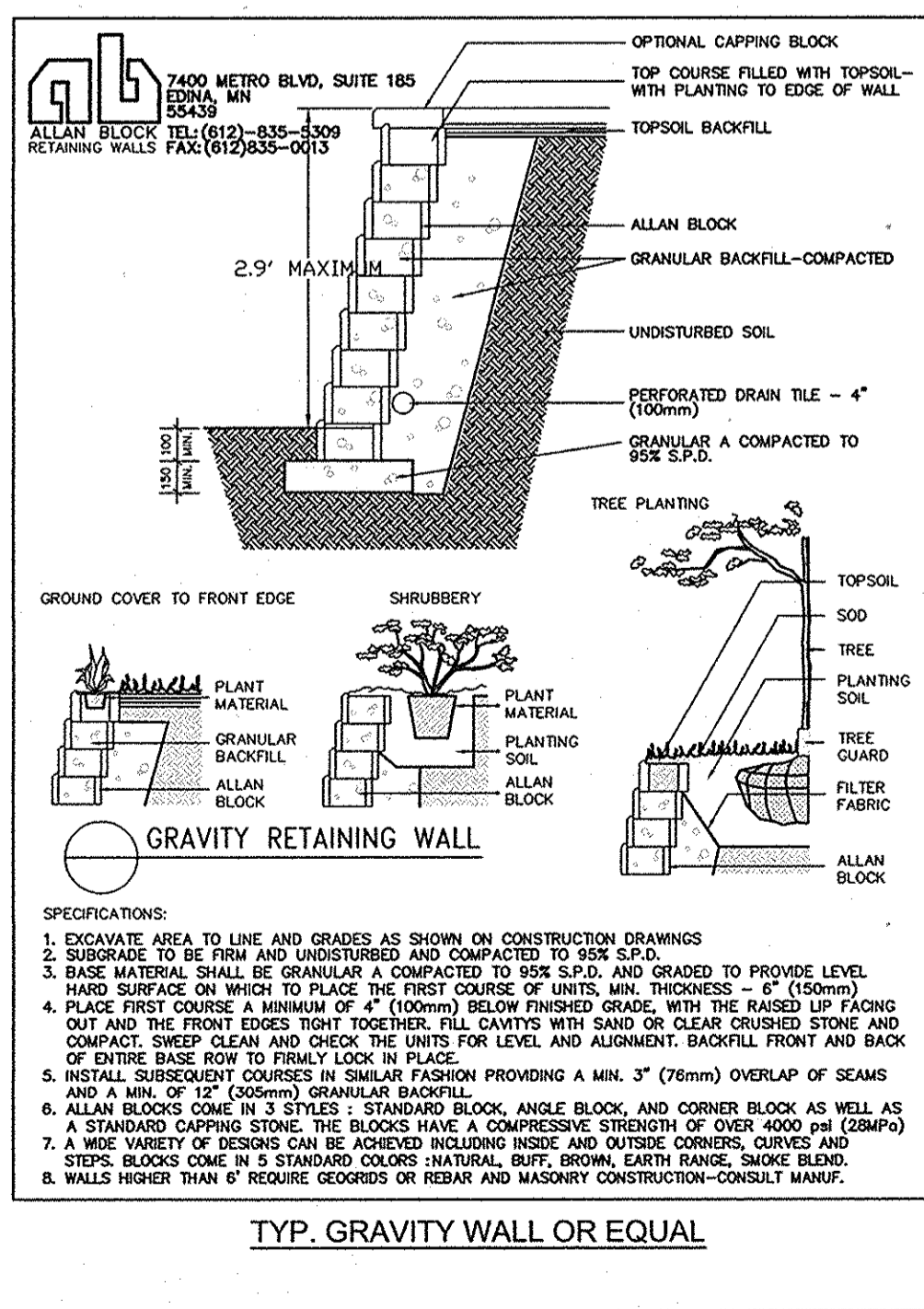


APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 5/30/14
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE

[Signature] 6/05/14
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE

[Signature] 6/10/14
DIRECTOR
DATE



SITE DEVELOPMENT PLAN
ROAD PROFILES AND SITE DETAILS
AUTUMN RIVER - PHASE IV
LOTS 69 & 70, LOTS 111-119 AND OPEN SPACE LOT 120

2ND ELECTION DISTRICT
TAX MAP: 25 GRID: 14 & 21

ZONING: R-ED
PARCELS: 159, 172, & 279
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
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ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

DESIGN BY: JTD/GAH
DRAWN BY: JER/GAH
CHECKED BY: EDS.
DATE: MARCH 2014
SCALE: AS SHOWN
W.O. NO.: 04-145

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, EXPIRES DATE 07-27-2014

3 SHEET OF 6

**HOWARD SOIL CONSERVATION DISTRICT
STANDARD SEDIMENT CONTROL NOTES**

- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERE TO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN A 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DITCHES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1 OR 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT STABILIZATION (SECS. B-4-1-3), TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE USED 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 THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:**
TOTAL SITE AREA: 1.569 ACRES
AREA DISTURBED: 0.62 ACRES
AREA TO BE ROOFED OR PAVED: 0.7 ACRES
TOTAL CUT: 2500 CU. YDS.
TOTAL FILL: 2500 CU. YDS.
OFFICE WASTE/BORROW LOCATION: **
- *ESTIMATE ONLY. CONTRACTOR SHALL VERIFY QUANTITIES TO HIS OWN SATISFACTION.
**TO BE DETERMINED BY CONTRACTOR, WITH APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, WITH AN APPROVED AND ACTIVE GRADING PERMIT.
- ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL 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 APPROVALS 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 CAN BE BACK FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
- ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO ANY CONSTRUCTION.
- A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM AVERAGE OF 20 AC. PER GRADING UNIT) AT A TIME, WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA HAS BEEN RESEEDING AND STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

**B-4-5 STANDARDS AND SPECIFICATIONS
FOR PERMANENT STABILIZATION**

DEFINITION
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

- GENERAL SPECIFICATIONS**
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITIONS OR PURPOSE (FROM TABLE B.2, ENTER SELECTED MIXTURES).
 - APPLY SEEDS TO THE DISTURBED SOILS AT THE RECOMMENDED SEEDING RATES. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - ADDITIONAL PLANTING SPECIFICATIONS FOR PERMANENT SITES SUCH AS SHORTLINES, STREAM BANKS, OR DITCHES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE CODE, SECTION 542 - CRITICAL AREA PLANTING.
 - FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
 - FOR AREAS RECEIVING LOW MAINTENANCE APPLY UREA FROM FERTILIZER (45-0-0) AT 3 1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
- TURFGRASS MIXTURES**
 - AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, PUBLIC AND COMMERCIAL SITES WHICH REQUIRE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURES, APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - FOR SITES WHERE TURFGRASS IS TO BE USED IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT, IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MIXTURE OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - KENTUCKY BLUEGRASS/FERNALIA, RTE: FULL SUN MIXTURE. FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MAINTENANCE. CERTIFIED PERENNIAL REGIONS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MIXTURE OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - ILLINOIS BLUEGRASS/KENTUCKY BLUEGRASS, FULL SUN MIXTURE. FOR USE IN DROUGHT PRONE AREAS AND/OR AREAS RECEIVING LOW TO MEDIUM MAINTENANCE IN FULL SUN. USE IN AN IRREGULAR MIXTURE INCLUDING CERTIFIED TALL FESCUE CULTIVARS 55 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET, ONE OR MORE CULTIVARS MAY BE BLENDED.
 - KENTUCKY BLUEGRASS/FINE FESCUE, SHADE MIXTURE. FOR USE IN AREAS WITH SHADE IN ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MAINTAINED TURF AREAS. INCLUDING CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 55 TO 100 PERCENT AND CERTIFIED FINE FESCUE AND 0 TO 70 PERCENT. SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET.
- IDEAL TIMES OF SEEDING FOR TURFGRASS MIXTURES**
 - WEST-MD: MARCH 15 TO JUNE 1, AUGUST 10 TO OCTOBER 1 (HARDNESS ZONES: SR, GA)
 - CENTRAL-MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: GB)
 - SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: TA, 7A)
- TALL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1/8 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL PASS NO DIFFICULTY.**
- IF SOIL MOISTURE IS DEFICIENT, APPLY WATER TO MOISTEN WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THE SOIL IS MOISTURE SUFFICIENT FOR SEEDING. THIS IS ESPECIALLY TRUE FOR SITES IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.**
- DO NOT PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).**

**B-4-2 STANDARDS AND SPECIFICATIONS
FOR PERMANENT STABILIZATION**

DEFINITION
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

- GENERAL SPECIFICATIONS**
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITIONS OR PURPOSE (FROM TABLE B.2, ENTER SELECTED MIXTURES).
 - APPLY SEEDS TO THE DISTURBED SOILS AT THE RECOMMENDED SEEDING RATES. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - ADDITIONAL PLANTING SPECIFICATIONS FOR PERMANENT SITES SUCH AS SHORTLINES, STREAM BANKS, OR DITCHES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE CODE, SECTION 542 - CRITICAL AREA PLANTING.
 - FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
 - FOR AREAS RECEIVING LOW MAINTENANCE APPLY UREA FROM FERTILIZER (45-0-0) AT 3 1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
- TURFGRASS MIXTURES**
 - AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, PUBLIC AND COMMERCIAL SITES WHICH REQUIRE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURES, APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - FOR SITES WHERE TURFGRASS IS TO BE USED IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT, IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MIXTURE OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - KENTUCKY BLUEGRASS/FERNALIA, RTE: FULL SUN MIXTURE. FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MAINTENANCE. CERTIFIED PERENNIAL REGIONS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MIXTURE OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
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 - KENTUCKY BLUEGRASS/FINE FESCUE, SHADE MIXTURE. FOR USE IN AREAS WITH SHADE IN ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MAINTAINED TURF AREAS. INCLUDING CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 55 TO 100 PERCENT AND CERTIFIED FINE FESCUE AND 0 TO 70 PERCENT. SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET.
- IDEAL TIMES OF SEEDING FOR TURFGRASS MIXTURES**
 - WEST-MD: MARCH 15 TO JUNE 1, AUGUST 10 TO OCTOBER 1 (HARDNESS ZONES: SR, GA)
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- IF SOIL MOISTURE IS DEFICIENT, APPLY WATER TO MOISTEN WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THE SOIL IS MOISTURE SUFFICIENT FOR SEEDING. THIS IS ESPECIALLY TRUE FOR SITES IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.**
- DO NOT PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).**

**B-4-3 STANDARDS AND SPECIFICATIONS
FOR SEEDING AND MULCHING**

DEFINITION
THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE
TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES
TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

- SEEDING**
 - ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS PRECEDING THE DATE OF SOWING AND MUST BE ON THE PLAN.
 - REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
 - WHICH MULCH MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND IS FROZEN.
 - CO-INOCULATE THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA SPECIALLY FOR THE SPECIES.
 - INOCULANTS MUST BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANTS AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
 - SOIL OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL. UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN) TO PERMIT DISSIPATION OF PHENOXY-TOXIC MATERIALS.
 - APPLY FERTILIZER IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE FERTILIZER LABEL OR AS APPROVED BY THE PLAN.
 - DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
 - HYDROSEEDING: SEEDS ARE TO BE SOWN AT THE RATES PRESCRIBED ON THE SEEDING TABLE B.1. PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
 - APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. THE SEEDER AREA WITH A WHEELED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
 - DRILL OR CULDEPANNER SEEDING: MECHANIZED SEEDING THAT APPLY AND COVER SEED WITH SOIL. OUTLAPPING SEEDERS ARE REQUIRED TO BURR THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDING MUST BE FROM AERIAL PLANTING.
 - IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: AMMONIUM, 100 POUNDS PER ACRE. TOTAL OF SOLUBLE NITROGEN, 2000 (PHOSPHORUS), 2000 (POTASSIUM), 2000 POUNDS PER ACRE.
 - USE ONLY GRADED AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE) MAY BE APPLIED BY HYDROSEEDING. NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNED OR HYDRATED LIME WITH HYDROSEEDING.
 - MIX SEED AND FERTILIZER ON SOIL AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
 - WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.
- MULCHING**
 - MULCH MATERIALS (IN ORDER OF PREFERENCE):
 - STRAW CONSISTING OF THOROUGHLY TREATED WHEAT, RYE, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, HARDY, CRACKED, OR UNUSUALLY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
 - WOOD CELLULOSE FIBER MULCH (CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE) IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - WORM CASTS: WORM CASTS MUST BE USED IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMITY SPREAD RATES.
 - WORM CASTS MUST BE USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
 - WORM CASTS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION AND WILL BLEND WITH SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
 - WORM CASTS MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE DETRIMENTAL TO THE GROWTH OF THE GRASS SEEDLINGS.
 - WORM CASTS MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS (APPROXIMATELY 1/2 INCH), PH PARTICULATE OF 4.0 TO 1.5 PERCENT, MAXIMUM WATER HOLDING CAPACITY OF 90 PERCENT MAXIMUM.
 - APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
 - WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.
 - WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MAXIMUM WET WEIGHT OF MULCH MUST BE 2000 POUNDS PER ACRE. USE A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MUST BE DONE BY ONE OF THE FOLLOWING METHODS LISTED BY THE MANUFACTURER:
 - MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THE PRACTICE SHOULD FOLLOW THE CONTOUR.
 - WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MAXIMUM WET WEIGHT OF MULCH MUST BE 2000 POUNDS PER ACRE. USE A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - SYNTHETIC BRIDGES SUCH AS ACRYLIC (AND IT'S DERIVATIVE, DCA-10, PERGOSOL, TERMA TAC, TERMA TACK, OR OTHER APPROVED EQUAL) MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS SHOULD BE HEAVIER AT THE EDGES OF STOCKPILE AREAS FROM WHICH WIND OR WATER CAN REMOVE MULCH. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
 - LIGHTWEIGHT PLASTIC NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

**B-4-4 STANDARDS AND SPECIFICATIONS
FOR PERMANENT STABILIZATION**

DEFINITION
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

- GENERAL SPECIFICATIONS**
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITIONS OR PURPOSE (FROM TABLE B.2, ENTER SELECTED MIXTURES).
 - APPLY SEEDS TO THE DISTURBED SOILS AT THE RECOMMENDED SEEDING RATES. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - ADDITIONAL PLANTING SPECIFICATIONS FOR PERMANENT SITES SUCH AS SHORTLINES, STREAM BANKS, OR DITCHES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE CODE, SECTION 542 - CRITICAL AREA PLANTING.
 - FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
 - FOR AREAS RECEIVING LOW MAINTENANCE APPLY UREA FROM FERTILIZER (45-0-0) AT 3 1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
- TURFGRASS MIXTURES**
 - AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, PUBLIC AND COMMERCIAL SITES WHICH REQUIRE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURES, APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - FOR SITES WHERE TURFGRASS IS TO BE USED IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT, IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MIXTURE OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - KENTUCKY BLUEGRASS/FERNALIA, RTE: FULL SUN MIXTURE. FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MAINTENANCE. CERTIFIED PERENNIAL REGIONS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MIXTURE OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - ILLINOIS BLUEGRASS/KENTUCKY BLUEGRASS, FULL SUN MIXTURE. FOR USE IN DROUGHT PRONE AREAS AND/OR AREAS RECEIVING LOW TO MEDIUM MAINTENANCE IN FULL SUN. USE IN AN IRREGULAR MIXTURE INCLUDING CERTIFIED TALL FESCUE CULTIVARS 55 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET, ONE OR MORE CULTIVARS MAY BE BLENDED.
 - KENTUCKY BLUEGRASS/FINE FESCUE, SHADE MIXTURE. FOR USE IN AREAS WITH SHADE IN ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MAINTAINED TURF AREAS. INCLUDING CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 55 TO 100 PERCENT AND CERTIFIED FINE FESCUE AND 0 TO 70 PERCENT. SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET.
- IDEAL TIMES OF SEEDING FOR TURFGRASS MIXTURES**
 - WEST-MD: MARCH 15 TO JUNE 1, AUGUST 10 TO OCTOBER 1 (HARDNESS ZONES: SR, GA)
 - CENTRAL-MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: GB)
 - SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: TA, 7A)
- TALL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1/8 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL PASS NO DIFFICULTY.**
- IF SOIL MOISTURE IS DEFICIENT, APPLY WATER TO MOISTEN WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THE SOIL IS MOISTURE SUFFICIENT FOR SEEDING. THIS IS ESPECIALLY TRUE FOR SITES IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.**
- DO NOT PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).**

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate #	Seeding		Recommended Seeding Dates by Plant Hardness Zone #		
		lb/ac	lb/1000 SF	5b and 6a	6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (<i>Lolium perenne</i> sp. multiflorum)	40	1.0	0.5	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 15 to Oct 15	Feb 15 to Apr 30; Aug 15 to Oct 15
Barley (<i>Hordeum vulgare</i>)	96	2.2	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 15 to Oct 15	Feb 15 to Apr 30; Aug 15 to Oct 15
Oat (<i>Avena sativa</i>)	77	1.7	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 15 to Oct 15	Feb 15 to Apr 30; Aug 15 to Oct 15
Wheat (<i>Triticum aestivum</i>)	120	2.8	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 15 to Oct 15	Feb 15 to Apr 30; Aug 15 to Oct 15
Creole Ryegrass (<i>Dactyloctenium aegyptium</i>)	112	2.8	1.0	Mar 15 to May 31; Aug 1 to Oct 31	Mar 1 to May 15; Aug 15 to Oct 15	Feb 15 to Apr 30; Aug 15 to Oct 15
Warm-Season Grasses						
Foxtail Millet (<i>Setaria fabryi</i>)	30	0.7	0.5	Jun 1 to Jul 31	May 15 to Jul 31	May 1 to Aug 14
Parrot Millet (<i>Pennisetum glaucum</i>)	30	0.5	0.5	Jun 1 to Jul 31	May 15 to Jul 31	May 1 to Aug 14

NOTES:
1. Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Annual planting rates shall be adjusted to reflect present seed germination and purity, as noted. Adjustments are usually needed for the cool-season grasses.
2. Seeding rates listed above are for temporary seedings, when planted alone. When planted as a mix with warm-season and cool-season, use 1/2 of the seeding rate listed above for the cool-season grasses.
3. Cool-season grasses should not be used as a mix with warm-season grasses unless the seedling rate is specified on the seed tag. Cool-season grasses should not be used as a mix with warm-season grasses unless the seedling rate is specified on the seed tag.
4. Cool-season grasses should not be used as a mix with warm-season grasses unless the seedling rate is specified on the seed tag.
5. Cool-season grasses should not be used as a mix with warm-season grasses unless the seedling rate is specified on the seed tag.

- SEQUENCE OF CONSTRUCTION**
- OBTAIN HOWARD COUNTY GRADING PERMIT. (1 WEEK)
 - NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (313-1850) AT LEAST 24 HOURS BEFORE STARTING ANY WORK.
 - CONDUCT A PRECONSTRUCTION MEETING WITH THE SEDIMENT CONTROL INSPECTOR PRIOR TO ANY LAND DISTURBANCE (1 DAY)
 - BEFORE STARTING ANY WORK CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE. (1 DAY)
 - INSTALL PERIMETER SUPER SILT FENCE. (1 DAY)
 - WITH PERMISSION FROM SEDIMENT CONTROL INSPECTOR BEGIN MASS GRADING OF SITE (1 WEEK)
 - BEGIN GRADING OPERATIONS ON INTERIOR OF OFFSITE. BRING SITE TO SUBGRADE ELEVATIONS (1 WEEK)
 - INSTALL SEWER HOSE CONNECTIONS AND WATER HOSE CONNECTIONS (4 WEEKS)
 - GRADE ROAD TO SUB-BASE AND APPLY DUST CONTROL SPECIFICATIONS. (1 WEEK)
 - WITH ROAD GRADED TO SUB-BASE, BEGIN CURB AND GUTTER CONSTRUCTION AND ROAD PAVING. INSTALL SIDEWALKS. (2 WEEKS)
 - INSTALL STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BARR AND INSTALL SUPER SILT FENCE AS SHOWN ON THIS PLAN. (1 DAY)
 - WHEN BUILDINGS ARE NEARING COMPLETION, FINE GRADE, INSTALL LANDSCAPING AND STABILIZE ALL ALL LAWN AREAS USING THE PERMANENT SEEDING SPECIFICATION (1 WEEK)
 - CONSTRUCT MICRO-BIOTENTIONS FACILITIES AND STABILIZE IMMEDIATELY. (2 WEEKS)
 - WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR, AND FINAL ROAD PAVING COMPLETE, STABILIZE ANY REMAINING DISTURBED AREAS, AND FLUSH STRAIN DRAIN SYSTEM. (2 DAYS)
 - INSTALL PERIMETER LANDSCAPING AS WELL AS MICRO-BIOTENTIONS PLANTINGS. (1 WEEK)
 - WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR AND WITH SITE STABILIZED REMOVE REMAINING SEDIMENT CONTROL DEVICES. (1 DAY)

**B-4-4 STANDARDS AND SPECIFICATIONS
FOR TEMPORARY STABILIZATION**

DEFINITION
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA

- SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
- FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED SEEDING RATES AND LIME RATES AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GRASS AND THATCH. BROKEN PASTS AND TORN OR UNWORN ENDS WILL NOT BE ACCEPTABLE.
- STANDARD SIZE SECTIONS OF SOIL MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
- DO NOT MUST BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
- DO NOT TRANSPORTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
- SOIL INSTABILIZATION**
 - DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOIL.
 - LAY THE FIRST ROW OF SOIL IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND THOROUGHLY MOISTENED EACH OTHER. STUCKER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOIL IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT Voids WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
 - WHEREVER POSSIBLE, LAY SOIL WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STUCKER JOINTS, DITCHES AND CHANNELS PARALLEL TO THE CONTOUR TO PREVENT SURFACE SOIL LOSS. ENSURE SOIL CONTACT EXISTS BETWEEN SOIL ROOTS AND THE UNDERLIEING SOIL SURFACE.
 - WATER THE SOIL IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOIL PAD AND SOIL SURFACE BELOW THE SOIL ARE THOROUGHLY WET. COMPLETE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOIL WITHIN 200 FT.
- SOIL MAINTENANCE**
 - IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOISTURE TO A DEPTH OF 4 INCHES. WATER SOIL DURING THE NIGHT OF THE DAY TO PREVENT WILTING.
 - AFTER THE FIRST WEEK, SOIL WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
 - DO NOT MOW UNTIL THE SOIL IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF MUST BE REMOVED BY THE MOWER, CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

**B-4-4 STANDARDS AND SPECIFICATIONS
FOR TEMPORARY STABILIZATION**

DEFINITION
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA

- SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
- FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED SEEDING RATES AND LIME RATES AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GRASS AND THATCH. BROKEN PASTS AND TORN OR UNWORN ENDS WILL NOT BE ACCEPTABLE.
- STANDARD SIZE SECTIONS OF SOIL MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
- DO NOT MUST BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
- DO NOT TRANSPORTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
- SOIL INSTABILIZATION**
 - DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOIL.
 - LAY THE FIRST ROW OF SOIL IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND THOROUGHLY MOISTENED EACH OTHER. STUCKER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOIL IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT Voids WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
 - WHEREVER POSSIBLE, LAY SOIL WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STUCKER JOINTS, DITCHES AND CHANNELS PARALLEL TO THE CONTOUR TO PREVENT SURFACE SOIL LOSS. ENSURE SOIL CONTACT EXISTS BETWEEN SOIL ROOTS AND THE UNDERLIEING SOIL SURFACE.
 - WATER THE SOIL IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOIL PAD AND SOIL SURFACE BELOW THE SOIL ARE THOROUGHLY WET. COMPLETE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOIL WITHIN 200 FT.
- SOIL MAINTENANCE**
 - IN THE ABSENCE OF ADE

MATERIALS SPECIFICATIONS FOR BIO-RETENTION			
MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTING SOIL (2' TO 4' DEEP)	SAND 35-60% SILT 30-55% CLAY 0-5%	N/A	USDA SOIL TYPES LOAMY SAND, SANDY LOAM OR LOAM
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM
PEA GRAVEL DRAINAGE AND CURTAIN DRAIN	PEA GRAVEL: ASTM-D-448 ORNAMENTAL STONE: WASHED COBBLES	PEA GRAVEL NO. 6 STONE: 2" TO 5"	
GEOTEXTILE	CLASS "C" APPARENT OPENING SIZE (ASTM-D-4751) SAND TENSILE STRENGTH (ASTM-D-4633), PUNCTURE RESISTANCE (ASTM-D-4633)	N/A	FOR USE AS NECESSARY BENEATH UNDERDRAINS ONLY
UNDERDRAIN GRAVEL	ASH10 M-43	0.375" TO 0.75"	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OR 40	4" TO 6" RIGID SCHEDULE 40 PVC OR SD33	3/8" PERFOR. @ 6" O.C. 4 HOLES PER ROW. MIN. OF 3" OF GRAVEL OVER PIPES; NOT NECESSARY UNDERDRAIN PIPES
FOUR IN PLACE CONCRETE (IF REQUIRED)	MSH MIX NO. 3, 10-1500 28 DAY COMP. STRENGTH. AIR-ENTRAINED, REINFORCING TO MEET ASTM-615-60	N/A	ON-SITE TESTING OF POWER-IN-PLACE CONCRETE REQUIRED. 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND - DESIGN TO INCLUDE MEETING ACI CODE 318R/89, VERTICAL LOADING (W-10 OR W-20); ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING.
SAND (1' DEEP)	ASH10-M-6 OR ASTM-C-33	0.075" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DOLOMITE AND CRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATE OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND

BIORETENTION PLANTING SCHEDULE NOTES:

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAS SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRO PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO BIDDING.
3. 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.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLANT DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
5. SEE LANDSCAPE PLAN FOR TYPICAL PLANTING DETAILS.

OPERATION AND MAINTENANCE SCHEDULE FOR M-6 BIO-RETENTION AREAS

1. THE OWNER SHALL MAINTAIN THE PLANT, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANTING MATERIAL SHALL BE FREE OF DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
2. THE OWNER SHALL PERFORM A PLANT INSPECT IN THE SPRING AND FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS AND REPLACE ALL DEFICIENT STAKES AND WIPES.
3. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY 2 TO 3 YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

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

1. MATERIAL SPECIFICATIONS

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

2. PLANTING SOIL

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVIDE A HINDERANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.02.

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

- PH RANGE: 5.2 - 7.0
- ORGANIC MATTER: 1.5 - 4% (BY WEIGHT)
- MAGNESIUM: 35 LB./AC
- PHOSPHORUS (PHOSPHATE - P2O5): 75 LB./AC
- POTASSIUM (POTASH - K2O): 85 LB./AC
- SOLUBLE SALTS: NOT TO EXCEED 500 PPM

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

SINCE DIFFERENT 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.

3. COMPACTION

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

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACATURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SIMILAR METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE REQUIRED SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADIENT ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.

WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL

RECOMMENDED PLANT MATERIAL FOR BIORETENTION AREAS CAN BE FOUND IN APPENDIX A, SECTION A.2.3, OF THE 2000 MARYLAND STORMWATER DESIGN MANUAL.

5. PLANT INSTALLATION

MULCH SHOULD BE PLACED TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS.

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

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

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

6. UNDERDRAINS

UNDERDRAINS ARE TO BE PLACED ON A 3"-0" 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 MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

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

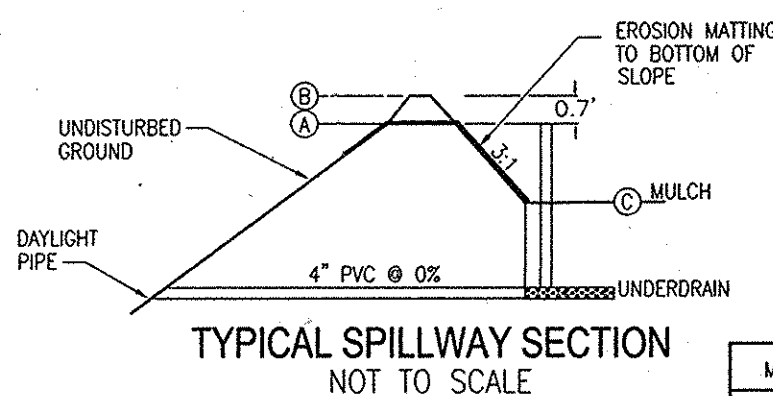
F13-019 BIORETENTION PLANTING REQUIREMENTS			
MBR	AREA	STEMS REQUIRED	STEMS PROVIDED
1	788 SF	18	18
2	1488 SF	34	34

BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.229 STEMS PER SQUARE FOOT).

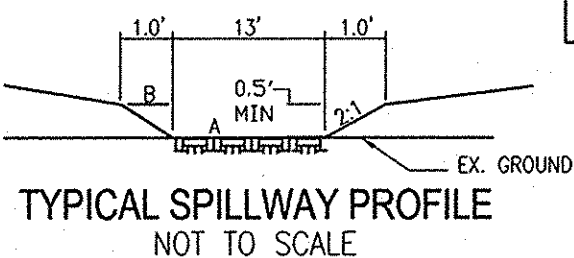
F13-019 - MICRO-BIORETENTION PLANTING SCHEDULE						
KEY	SYM	MBR #1	MBR #2	TOTAL QTY	BOTANICAL NAME/COMMON NAME	REMARKS
1	IC	6	12	18	HEX GLABRA COMPACTA COWSLIP	3 GALLON CONT
2	VT	6	11	17	VIBURNUM TRICORUM AMERICAN HEBEBURN CRANBERRY	5 GALLON CONT
3	KL	6	11	17	KALMA LATIFOLIA MOUNTAIN LABEL	5 GALLON CONT

F13-019 - SCHEDULE D : STORMWATER MANAGEMENT AREA LANDSCAPING			
LINEAR FEET OF PERIMETER	MBR #1	MBR #2	
111 LF			162 LF
CREDIT FOR EXISTING VEGETATION (NO, YES AND LINEAR FEET)	NO	NO	
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	YES, 100%*	YES, 100%*	
NUMBER OF TREES REQUIRED (C BUFFER)	1 SHADE TREES 5 EVERGREEN TREES	3 SHADE TREES 4 EVERGREEN TREES	
NUMBER OF TREES PROVIDED (SEE BIORETENTION PLANT LIST*)			

*SURETY FOR BIORETENTION PROVIDED IN THE BID COST ESTIMATE

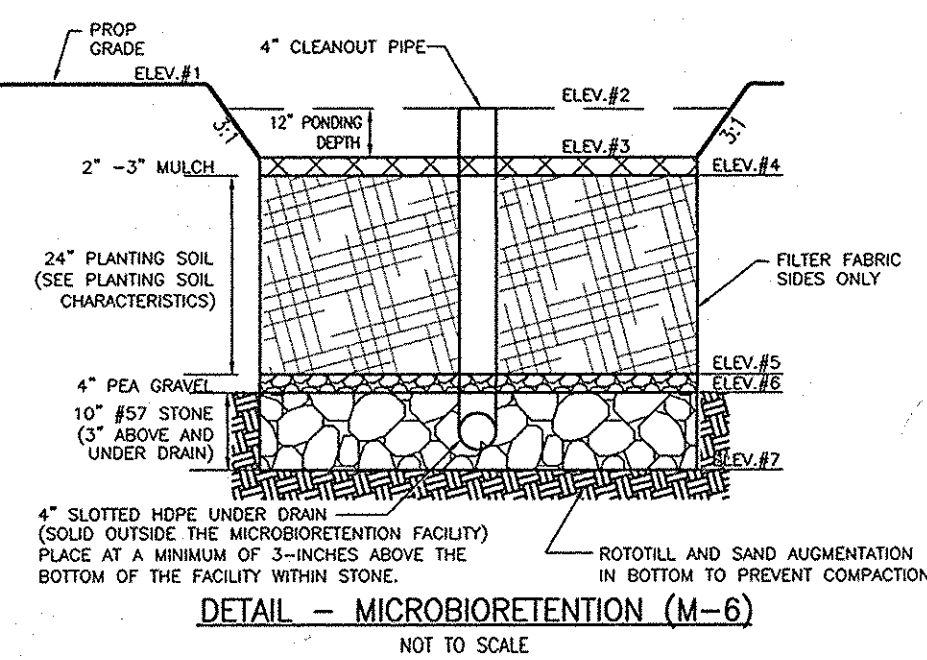


TYPICAL SPILLWAY SECTION NOT TO SCALE



TYPICAL SPILLWAY PROFILE NOT TO SCALE

MBR FACILITY	A	B	C
MBR #1	376.0	377.0	375.0
MBR #2	363.8	364.3	362.8



DETAIL - MICROBIORETENTION (M-6) NOT TO SCALE

RAIN GARDEN ELEVATIONS									
RAIN GARDEN	1	2	3	4	5	6	7	4\"/>	
#1	377.0	376.0	375.0	374.75	372.75	372.42	371.59	371.84	370.75
#2	364.3	363.8	362.8	362.55	360.55	360.22	359.39	359.64	358.0

SWM CHART			
SITE	ESDV REQUIRED	MICRO-BIORETENTION VOLUME PROVIDED	TOTAL PROVIDED
	2,241 CF*	MBR-1 = 826 CF MBR-2 = 1,499 CF	2325 CF

* 2,989 x 75% = 2,241 CF

GENERAL NOTES:

1. LANDSCAPING FOR THIS PROJECT IS PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN ON FILE WITH F-13-019 IN ACCORDANCE WITH 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING IN THE AMOUNT OF \$17,700.00 FOR THE REQUIRED 39 SHADE TREES AND 40 EVERGREEN TREES WAS POSTED AS PART OF THE F-13-019.
2. THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, PLANT MATERIALS, 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 REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
3. AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS LISTED HEREWITH AND APPROVED FOR THIS SITE SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS 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 APPLICABLE PLANS AND CERTIFICATES.
4. THERE ARE NO FLOODPLAIN, WETLANDS, STREAMS, OR STEEP SLOPES WITHIN PARCEL 159.
5. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE WETLANDS, WETLANDS BUFFER, STREAM BANK BUFFER OR FOREST CONSERVATION EASEMENTS.
6. THE SUBJECT PROPERTY IS ZONED "R-ED" IN ACCORDANCE WITH THE 2/2/04 COMPREHENSIVE ZONING PLAN AND THE COMP. LITE ZONING REGULATIONS EFFECTIVE 07/28/06, AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003.
7. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY FISHER, COLLINS, & CARTER, INC., DATED FEBRUARY 14, 2000. VERIFIED AS CORRECT BY ROBERT H. VOGEL ENGINEERING, INC. IN MARCH 2010.
8. THE EXISTING TOPOGRAPHY IS TAKEN FROM AN AERIAL TOPOGRAPHIC SURVEY WITH 2-FOOT CONTOUR INTERVALS PREPARED BY WINGS AERIAL MAPPING COMPANY, INC., DATED MARCH 1995.
9. THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
10. TO THE BEST OF THE OWNERS KNOWLEDGE, THERE ARE NO GRAVE SITES, OR CEMETERIES LOCATED ON THE SUBJECT PROPERTY.
11. THE REMOVAL OF TREES 30" OR GREAT DHB IS PROHIBITED WITH OUT COUNTY APPROVAL.
12. THIS PLAN IS SUBJECT TO A WAIVER TO SECTION 16.1205(a)(7) OF THE SUBDIVISION REGULATIONS FOR THE REMOVAL OF THE 39" SILVER MAPLE SPECIMEN TREE, APPROVED SEPTEMBER 14, 2010.

LANDSCAPE NOTES

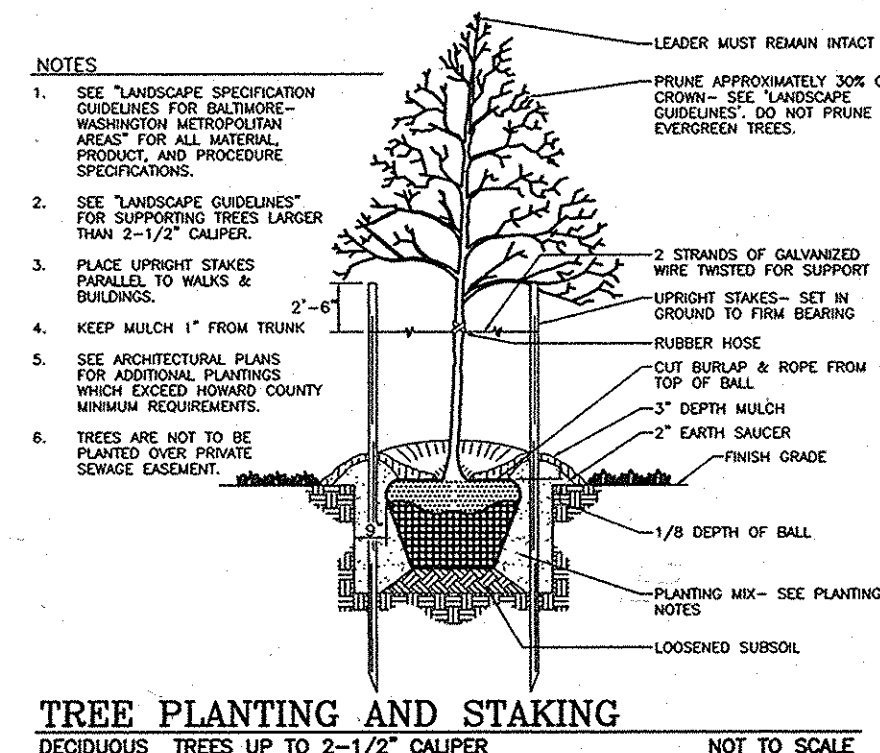
1. THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
2. SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD, AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.
3. PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.

LANDSCAPE SCHEDULE NOTE:

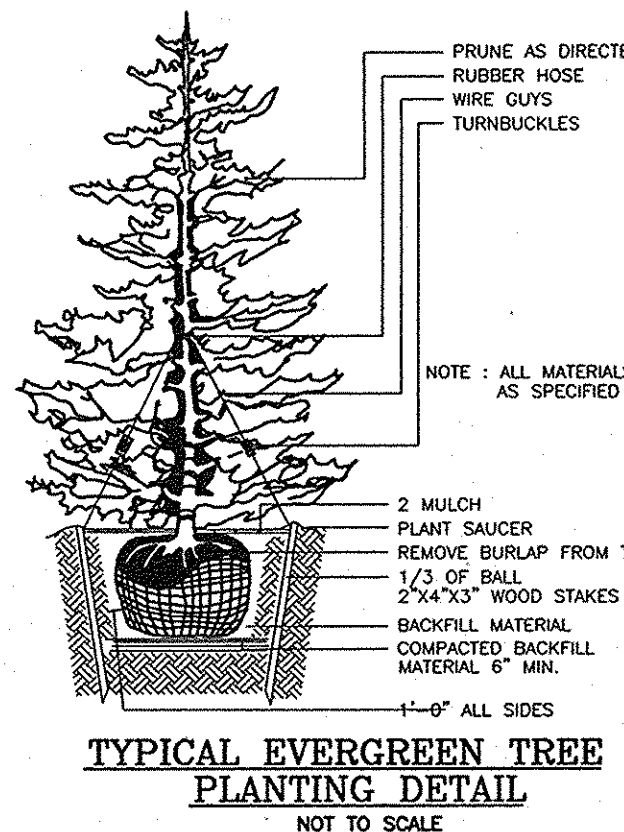
1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAS SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRO PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO BIDDING.
3. FINAL LOCATION OF PLANT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

F 13-019 STREET TREE CALCULATIONS

STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
AUTUMN CREST WAY (PRIVATE ROAD)	322/40	8	8



TREE PLANTING AND STAKING DECIDUOUS TREES UP TO 2-1/2" CALIPER NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL NOT TO SCALE

B G & E NOTES:

1. THE LANDSCAPING ON WIREZONE (40' FROM BGE POLES) IS IN ACCORDANCE WITH BGE LIST OF TREES AND PLANTS.
2. 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.
3. 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 OF A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR EASEMENT. IF BGE INTENDS TO TRIM OR REMOVE TREES WITHIN A FOREST CONSERVATION EASEMENT, A LETTER SPECIFYING THE LOCATION AND SCOPE OF WORK NEEDS TO BE SENT TO DPZ AT LEAST 30 DAYS IN ADVANCE OF UNDERTAKING THE WORK. DPZ UNDERSTANDS CONSTELLATION ENERGY'S NEED TO PROTECT ITS TRANSMISSION LINES AND WILL NOT UNREASONABLY WITHHOLD PERMISSION.

F13-019 SCHEDULE A: PERIMETER LANDSCAPE EDGE					
CATEGORY	ADJACENT TO PERIMETER PROPERTIES/ROADWAYS				TOTAL
	1	2	3	4	
PERIMETER/FRONTAGE DESIGNATION	1	2	3	4	
LANDSCAPE TYPE	1	2	3	4	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	336'	183'	240'	214'	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET, DESCRIBE BELOW IF NEEDED)	NO	YES 1 EX. 22" MAPLE	NO	NO	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET, DESCRIBE BELOW IF NEEDED)	NO	NO	NO	NO	
NUMBER OF PLANTS REQUIRED (LF REMAINING)					
SHADE TREES	1:50 7	1:40 5	1:40 6	1:40 5	23
EVERGREEN TREES	1:40 8	1:20 9	1:20 12	1:20 11	40
NUMBER OF PLANTS PROVIDED					
SHADE TREES	7	4*	6	5	22
EVERGREEN TREES	8	9	12	11	40
OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	-	-	-	-	-

* CREDIT TAKEN FOR EXISTING 22" MAPLE TREE

THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. A FINANCIAL SURETY IN THE AMOUNT OF \$17,700.00 FOR THE REQUIRED 39 SHADE TREES AND 40 EVERGREEN TREES SHALL BE POSTED WITH THE BUILDER'S GRADING PERMIT FOR THIS PLAN.

F13-019 SCHEDULE C RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING	
NUMBER OF DWELLING UNITS (SFA)	9
NUMBER OF TREES REQUIRED (1:1 DU SFA)	9
NUMBER OF TREES PROVIDED	
SHADE TREES	9
OTHER TREES (2:1 SUBSTITUTION)	-

F13-019 LANDSCAPE SCHEDULE				
KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
1	22	ACER BUERGERIANUM TRIDENT MAPLE	2 1/2"-3" CAL.	B & B
2	9	CERCIS CANADENSIS EASTERN REDBUD (INTERNAL LANDSCAPING)	2 1/2"-3" CAL.	B & B
3	40	ILLEX "NELLIE R. STEVENS" NELLIE R. STEVENS HOLLY	6'-8' HT.	B & B
4	8	ACER GINNALA AMUR MAPLE (STREET TREE)	2 1/2"-3" CAL.	B & B

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.

SIGNATURE OF DEVELOPER: EDWARD SPANH DATE: 5/19/14

OWNER: HISTORIC ELLICOTT PROPERTIES, INC. 4100 COLLEGE AVE. ELLICOTT CITY, MD 21042-7819 (410) 465-3500

BUILDER: HW HOMES 9720 PATUXENT WOODS DRIVE COLUMBIA, MD 21046 (410) 796-0908

OWNER: AUTUMN DEVELOPMENT CORPORATION (PAR C) C/O LAW OFFICES OF SPANH & BROIDA 5401 TWIN KNOLLS ROAD, SUITE 7 COLUMBIA, MARYLAND 21045 410-992-9700

DEVELOPER: AUTUMN DEVELOPMENT CORPORATION C/O LAND DESIGN & DEVELOPMENT, INC. 5300 DORSEY HALL DR STE 102 ELLICOTT CITY MD 21042-7819 ATTN: MR. DONALD R. REUWER (443) 367-0422

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN STORMWATER MANAGEMENT AND LANDSCAPING NOTES AND DETAILS AUTUMN RIVER - PHASE IV LOTS 69 & 70, LOTS 111-119 AND OPEN SPACE LOT 120

ZONING: R-ED
PARCELS: 159, 172, & 279
HOWARD COUNTY, MARYLAND

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

DESIGN BY: JTD/GAH
DRAWN BY: JER/GAH
CHECKED BY: EDS
DATE: MARCH 2014
SCALE: AS SHOWN
W.O. NO.: 04-145

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A duly licensed PROFESSIONAL ENGINE