

**GENERAL NOTES**

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSMA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- 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: 1-800-257-7777  
 HOWARD COUNTY BUREAU OF UTILITIES: 410-313-2366  
 AT&T CABLE LOCATION: 410-313-2366  
 B.G. & CO. CONTRACTOR SERVICES: 410-859-4620  
 B.G. & CO. UNDERGROUND DAMAGE CONTROL: 410-787-4620  
 STATE HIGHWAY ADMINISTRATION: 410-531-5533
- THIS FINAL PLAN IS SUBJECT TO THE FOLLOWING DPZ FILES:  
 CONTRACT NO. 44-3305-D, CONTRACT NO. 30-1001 AND PROPOSED SEWER EXTENSION FY2016-S-6296,  
 EOP-15-082, WP-16-118 AND F-15-113.  
 THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON TOPOGRAPHIC SURVEYS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED APRIL 27TH AND DECEMBER 31ST, 2014. OFFSITE TOPOGRAPHY FROM HOWARD COUNTY GIS. THE PROJECT BOUNDARY SHOWN HEREON IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JAN. 8, 2015.
- 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 COUNTY'S PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- TO THE BEST OF THE OWNER'S KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THE SUBJECT PROPERTY.
- STORMWATER MANAGEMENT FOR THE PROJECT IS PROVIDED BY THE USE OF MICRO-SCALE PRACTICES IN ACCORDANCE WITH ENVIRONMENTAL SITE DESIGN CRITERIA. MICRO-SCALE PRACTICES INCLUDE MICRO-BIORETENTION (M-6) FACILITIES, BIOSWALES (M-5) AND AS WELL AS GRAVEL TRENCHES ALONG THE USE-IN-COMMON DRIVEWAY THESE FACILITIES WILL BE PRIVATELY OWNED AND MAINTAINED.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.  
 - SEWER FOR THIS PROJECT SHALL BE FROM AN EXTENSION OF CONTRACT NO. 44-3305-D.  
 - WATER AND SEWER SERVICE WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE. ALLOCATIONS WILL BE GRANTED AT TIME OF ISSUANCE OF BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME. EXISTING WELL AND SEPTIC LOCATED ON LOT 1/2 MUST BE PROPERLY ABANDONED AND DOCUMENTATION SENT TO HEALTH DEPARTMENT PRIOR TO FINAL PLAN.
- THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DEVELOPMENT OR RESTRICTION OF THESE LOTS MUST CONFORM WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION, OR BUILDING AND GRADING PERMITS.
- THE SUBJECT PROPERTY IS ZONED R-20 IN ACCORDANCE WITH THE 10 / 2013 COMPREHENSIVE ZONING PLAN AND IS SUBJECT TO THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE 10/2/03 PER COUNCIL BILL 75-2003. THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT.
- EXISTING UTILITIES ARE SHOWN ON PLANS, FIELD SURVEYS, PUBLIC WATER AND GAS AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATIONS OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTOR'S INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL BEFORE CONSTRUCTION ACTIVITY 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 COORDINATE SYSTEM SHOWN HEREON ARE BASED ON THE HOWARD COUNTY GEODETIC DATUM WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 35-11 & 35-12 WERE USED FOR THIS PROJECT. NO WORK, THREATENED OR ENGINEERED SPECIES OR THEIR HABITATS OR OTHER FEATURES OF SIGNIFICANT SCIENTIFIC, SEEDIMENT AND EROSION CONTROL WILL BE PROVIDED FOR THIS SITE.
- THERE IS AN AREA OF WETLANDS PRESENT ON THE SOUTHEAST CORNER OF THE SITE PER ECO-SOURCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES. APRIL 2015 SURVEY.
- FOREST STAND DELINEATION PLAN PREPARED BY ECO-SOURCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES. ON APRIL 2015. MR. CANOLES NOTED 29 SPECIMEN TREES ON THE PROJECT SITE. THIS PLAN PROPOSES THE REMOVAL OF SPECIMEN TREES #01-29. ST-1, ST-2, ST-3, ST-4, ST-5, ST-6, ST-7, ST-8, ST-9, ST-10, ST-11, ST-12, ST-13, ST-14, ST-15, ST-16, ST-17, ST-18, ST-19, ST-20, ST-21, ST-22, ST-23, ST-24, ST-25, ST-26, ST-27, ST-28, ST-29, ST-30, ST-31, ST-32, ST-33, ST-34, ST-35, ST-36, ST-37, ST-38, ST-39, ST-40, ST-41, ST-42, ST-43, ST-44, ST-45, ST-46, ST-47, ST-48, ST-49, ST-50, ST-51, ST-52, ST-53, ST-54, ST-55, ST-56, ST-57, ST-58, ST-59, ST-60, ST-61, ST-62, ST-63, ST-64, ST-65, ST-66, ST-67, ST-68, ST-69, ST-70, ST-71, ST-72, ST-73, ST-74, ST-75, ST-76, ST-77, ST-78, ST-79, ST-80, ST-81, ST-82, ST-83, ST-84, ST-85, ST-86, ST-87, ST-88, ST-89, ST-90, ST-91, ST-92, ST-93, ST-94, ST-95, ST-96, ST-97, ST-98, ST-99, ST-100, ST-101, ST-102, ST-103, ST-104, ST-105, ST-106, ST-107, ST-108, ST-109, ST-110, ST-111, ST-112, ST-113, ST-114, ST-115, ST-116, ST-117, ST-118, ST-119, ST-120, ST-121, ST-122, ST-123, ST-124, ST-125, ST-126, ST-127, ST-128, ST-129, ST-130, ST-131, ST-132, ST-133, ST-134, ST-135, ST-136, ST-137, ST-138, ST-139, ST-140, ST-141, ST-142, ST-143, ST-144, ST-145, ST-146, ST-147, ST-148, ST-149, ST-150, ST-151, ST-152, ST-153, ST-154, ST-155, ST-156, ST-157, ST-158, ST-159, ST-160, ST-161, ST-162, ST-163, ST-164, ST-165, ST-166, ST-167, ST-168, ST-169, ST-170, ST-171, ST-172, ST-173, ST-174, ST-175, ST-176, ST-177, ST-178, ST-179, ST-180, ST-181, ST-182, ST-183, ST-184, ST-185, ST-186, ST-187, ST-188, ST-189, ST-190, ST-191, ST-192, ST-193, ST-194, ST-195, ST-196, ST-197, ST-198, ST-199, ST-200, ST-201, ST-202, ST-203, ST-204, ST-205, ST-206, ST-207, ST-208, ST-209, ST-210, ST-211, ST-212, ST-213, ST-214, ST-215, ST-216, ST-217, ST-218, ST-219, ST-220, ST-221, ST-222, ST-223, ST-224, ST-225, ST-226, ST-227, ST-228, ST-229, ST-230, ST-231, ST-232, ST-233, ST-234, ST-235, ST-236, ST-237, ST-238, ST-239, ST-240, ST-241, ST-242, ST-243, ST-244, ST-245, ST-246, ST-247, ST-248, ST-249, ST-250, ST-251, ST-252, ST-253, ST-254, ST-255, ST-256, ST-257, ST-258, ST-259, ST-260, ST-261, ST-262, ST-263, ST-264, ST-265, ST-266, ST-267, ST-268, ST-269, ST-270, ST-271, ST-272, ST-273, ST-274, ST-275, ST-276, ST-277, ST-278, ST-279, ST-280, ST-281, ST-282, ST-283, ST-284, ST-285, ST-286, ST-287, ST-288, ST-289, ST-290, ST-291, ST-292, ST-293, ST-294, ST-295, ST-296, ST-297, ST-298, ST-299, ST-300, ST-301, ST-302, ST-303, ST-304, ST-305, ST-306, ST-307, ST-308, ST-309, ST-310, ST-311, ST-312, ST-313, ST-314, ST-315, ST-316, ST-317, ST-318, ST-319, ST-320, ST-321, ST-322, ST-323, ST-324, ST-325, ST-326, ST-327, ST-328, ST-329, ST-330, ST-331, ST-332, ST-333, ST-334, ST-335, ST-336, ST-337, ST-338, ST-339, ST-340, ST-341, ST-342, ST-343, ST-344, ST-345, ST-346, ST-347, ST-348, ST-349, ST-350, ST-351, ST-352, ST-353, ST-354, ST-355, ST-356, ST-357, ST-358, ST-359, ST-360, ST-361, ST-362, ST-363, ST-364, ST-365, ST-366, ST-367, ST-368, ST-369, ST-370, ST-371, ST-372, ST-373, ST-374, ST-375, ST-376, ST-377, ST-378, ST-379, ST-380, ST-381, ST-382, ST-383, ST-384, ST-385, ST-386, ST-387, ST-388, 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ST-514, ST-515, ST-516, ST-517, ST-518, ST-519, ST-520, ST-521, ST-522, ST-523, ST-524, ST-525, ST-526, ST-527, ST-528, ST-529, ST-530, ST-531, ST-532, ST-533, ST-534, ST-535, ST-536, ST-537, ST-538, ST-539, ST-540, ST-541, ST-542, ST-543, ST-544, ST-545, ST-546, ST-547, ST-548, ST-549, ST-550, ST-551, ST-552, ST-553, ST-554, ST-555, ST-556, ST-557, ST-558, ST-559, ST-560, ST-561, ST-562, ST-563, ST-564, ST-565, ST-566, ST-567, ST-568, ST-569, ST-570, ST-571, ST-572, ST-573, ST-574, ST-575, ST-576, ST-577, ST-578, ST-579, ST-580, ST-581, ST-582, ST-583, ST-584, ST-585, ST-586, ST-587, ST-588, ST-589, ST-590, ST-591, ST-592, ST-593, ST-594, ST-595, ST-596, ST-597, ST-598, ST-599, ST-600, ST-601, ST-602, ST-603, ST-604, ST-605, ST-606, ST-607, ST-608, ST-609, ST-610, ST-611, ST-612, ST-613, ST-614, ST-615, ST-616, ST-617, ST-618, ST-619, ST-620, ST-621, ST-622, ST-623, ST-624, ST-625, ST-626, ST-627, ST-628, ST-629, ST-630, ST-631, ST-632, ST-633, ST-634, ST-635, ST-636, ST-637, ST-638, ST-639, ST-640, ST-641, ST-642, ST-643, ST-644, ST-645, ST-646, ST-647, ST-648, ST-649, ST-650, ST-651, ST-652, ST-653, ST-654, ST-655, ST-656, ST-657, ST-658, ST-659, ST-660, ST-661, ST-662, ST-663, ST-664, ST-665, ST-666, ST-667, ST-668, ST-669, ST-670, ST-671, ST-672, ST-673, ST-674, ST-675, ST-676, ST-677, ST-678, ST-679, ST-680, ST-681, ST-682, ST-683, ST-684, ST-685, ST-686, ST-687, ST-688, ST-689, ST-690, ST-691, ST-692, ST-693, ST-694, ST-695, ST-696, ST-697, ST-698, ST-699, ST-700, ST-701, ST-702, ST-703, ST-704, ST-705, ST-706, ST-707, ST-708, ST-709, ST-710, ST-711, ST-712, ST-713, ST-714, ST-715, ST-716, ST-717, ST-718, ST-719, ST-720, ST-721, ST-722, ST-723, ST-724, ST-725, ST-726, ST-727, ST-728, ST-729, ST-730, ST-731, ST-732, ST-733, ST-734, ST-735, ST-736, ST-737, ST-738, ST-739, ST-740, ST-741, ST-742, ST-743, ST-744, ST-745, ST-746, ST-747, ST-748, ST-749, ST-750, ST-751, ST-752, ST-753, ST-754, ST-755, ST-756, ST-757, ST-758, ST-759, ST-760, ST-761, ST-762, ST-763, ST-764, ST-765, ST-766, ST-767, ST-768, ST-769, ST-770, ST-771, ST-772, ST-773, ST-774, ST-775, ST-776, ST-777, ST-778, ST-779, ST-780, ST-781, ST-782, ST-783, ST-784, ST-785, ST-786, ST-787, ST-788, ST-789, ST-790, ST-791, ST-792, ST-793, ST-794, ST-795, ST-796, ST-797, ST-798, ST-799, ST-800, ST-801, ST-802, ST-803, ST-804, ST-805, ST-806, ST-807, ST-808, ST-809, ST-810, ST-811, ST-812, ST-813, ST-814, ST-815, ST-816, ST-817, ST-818, ST-819, ST-820, ST-821, ST-822, ST-823, ST-824, ST-825, ST-826, ST-827, ST-828, ST-829, ST-830, ST-831, ST-832, ST-833, ST-834, ST-835, ST-836, ST-837, ST-838, ST-839, ST-840, ST-841, ST-842, ST-843, ST-844, ST-845, ST-846, ST-847, ST-848, ST-849, ST-850, ST-851, ST-852, ST-853, ST-854, ST-855, ST-856, ST-857, ST-858, ST-859, ST-860, ST-861, ST-862, ST-863, ST-864, ST-865, ST-866, ST-867, ST-868, ST-869, ST-870, ST-871, ST-872, ST-873, ST-874, ST-875, ST-876, ST-877, ST-878, ST-879, ST-880, ST-881, ST-882, ST-883, ST-884, ST-885, ST-886, ST-887, ST-888, ST-889, ST-890, ST-891, ST-892, ST-893, ST-894, ST-895, ST-896, ST-897, ST-898, ST-899, ST-900, ST-901, ST-902, ST-903, ST-904, ST-905, ST-906, ST-907, ST-908, ST-909, ST-910, ST-911, ST-912, ST-913, ST-914, ST-915, ST-916, ST-917, ST-918, ST-919, ST-920, ST-921, ST-922, ST-923, ST-924, ST-925, ST-926, ST-927, ST-928, ST-929, ST-930, ST-931, ST-932, ST-933, ST-934, ST-935, ST-936, ST-937, ST-938, ST-939, ST-940, ST-941, ST-942, ST-943, ST-944, ST-945, ST-946, ST-947, ST-948, ST-949, ST-950, ST-951, ST-952, ST-953, ST-954, ST-955, ST-956, ST-957, ST-958, ST-959, ST-960, ST-961, ST-962, ST-963, ST-964, ST-965, ST-966, ST-967, ST-968, ST-969, ST-970, ST-971, ST-972, ST-973, ST-974, ST-975, ST-976, ST-977, ST-978, ST-979, ST-980, ST-981, ST-982, ST-983, ST-984, ST-985, ST-986, ST-987, ST-988, ST-989, ST-990, ST-991, ST-992, ST-993, ST-994, ST-995, ST-996, ST-997, ST-998, ST-999, ST-1000, ST-1001, ST-1002, ST-1003, ST-1004, ST-1005, ST-1006, ST-1007, ST-1008, ST-1009, ST-1010, ST-1011, ST-1012, ST-1013, ST-1014, ST-1015, ST-1016, ST-1017, ST-1018, ST-1019, ST-1020, ST-1021, ST-1022, ST-1023, ST-1024, ST-1025, ST-1026, ST-1027, ST-1028, ST-1029, ST-1030, ST-1031, ST-1032, ST-1033, ST-1034, ST-1035, ST-1036, ST-1037, ST-1038, ST-1039, ST-1040, ST-1041, ST-1042, ST-1043, ST-1044, ST-1045, ST-1046, ST-1047, ST-1048, ST-1049, ST-1050, ST-1051, ST-1052, ST-1053, ST-1054, ST-1055, ST-1056, ST-1057, ST-1058, ST-1059, ST-1060, ST-1061, ST-1062, ST-1063, ST-1064, ST-1065, ST-1066, ST-1067, ST-1068, ST-1069, ST-1070, ST-1071, ST-1072, ST-1073, ST-1074, ST-1075, ST-1076, ST-1077, ST-1078, ST-1079, ST-1080, ST-1081, ST-1082, ST-1083, ST-1084, ST-1085, ST-1086, ST-1087, ST-1088, ST-1089, ST-1090, ST-1091, ST-1092, ST-1093, ST-1094, ST-1095, ST-1096, ST-1097, ST-1098, ST-1099, ST-1100, ST-1101, ST-1102, ST-1103, ST-1104, ST-1105, ST-1106, ST-1107, ST-1108, ST-1109, ST-1110, ST-1111, ST-1112, ST-1113, ST-1114, ST-1115, ST-1116, ST-1117, ST-1118, ST-1119, ST-1120, ST-1121, ST-1122, ST-1123, ST-1124, ST-1125, ST-1126, ST-1127, ST-1128, ST-1129, ST-1130, ST-1131, ST-1132, ST-1133, ST-1134, ST-1135, ST-1136, ST-1137, ST-1138, ST-1139, ST-1140, ST-1141, ST-1142, ST-1143, ST-1144, ST-1145, ST-1146, ST-1147, ST-1148, ST-1149, ST-1150, ST-1151, ST-1152, ST-1153, ST-1154, ST-1155, ST-1156, ST-1157, ST-1158, ST-1159, ST-1160, ST-1161, ST-1162, ST-1163, ST-1164, ST-1165, ST-1166, ST-1167, ST-1168, ST-1169, ST-1170, ST-1171, ST-1172, ST-1173, ST-1174, ST-1175, ST-1176, ST-1177, ST-1178, ST-1179, ST-1180, ST-1181, ST-1182, ST-1183, ST-1184, ST-1185, ST-1186, ST-1187, ST-1188, ST-1189, ST-1190, ST-1191, ST-1192, ST-1193, ST-1194, ST-1195, ST-1196, ST-1197, ST-1198, ST-1199, ST-1200, ST-1201, ST-1202, ST-1203, ST-1204, ST-1205, ST-1206, ST-1207, ST-1208, ST-1209, ST-1210, ST-1211, ST-1212, ST-1213, ST-1214, ST-1215, ST-1216, ST-1217, ST-1218, ST-1219, ST-1220, ST-1221, ST-1222, ST-1223, ST-1224, ST-1225, ST-1226, ST-1227, ST-1228, ST-1229, ST-1230, ST-1231, ST-1232, ST-1233, ST-1234, ST-1235, ST-1236, ST-1237, ST-1238, ST-1239, ST-1240, ST-1241, ST-1242, ST-1243, ST-1244, ST-1245, ST-1246, ST-1247, ST-1248, ST-1249, ST-1250, ST-1251, ST-1252, ST-1253, ST-1254, ST-1255, ST-1256, ST-1257, ST-1258, ST-1259, ST-1260, ST-1261, ST-1262, ST-1263, ST-1264, ST-1265, ST-1266, ST-1267, ST-1268, ST-1269, ST-1270, ST-1271, ST-1272, ST-1273, ST-1274, ST-1275, ST-1276, ST-1277, ST-1278, ST-1279, ST-1280, ST-1281, ST-1282, ST-1283, ST-1284, ST-1285, ST-1286, ST-1287, ST-1288, ST-1289, ST-1290, ST-1291, ST-1292, ST-1293, ST-1294, ST-1295, ST-1296, ST-1297, ST-1298, ST-1299, ST-1300, ST-1301, ST-1302, ST-1303, ST-1304, ST-1305, ST-1306, ST-1307, ST-1308, ST-1309, ST-1310, ST-1311, ST-1312, ST-1313, ST-1314, ST-1315, ST-1316, ST-1317, ST-1318, ST-1319, ST-1320, ST-1321, ST-1322, ST-1323, ST-1324, ST-1325, ST-1326, ST-1327, ST-1328, ST-1329, ST-1330, ST-1331, ST-1332, ST-1333, ST-1334, ST-1335, ST-1336, ST-1337, ST-1338, ST-1339, ST-1340, ST-1341, ST-1342, ST-1343, ST-1344, 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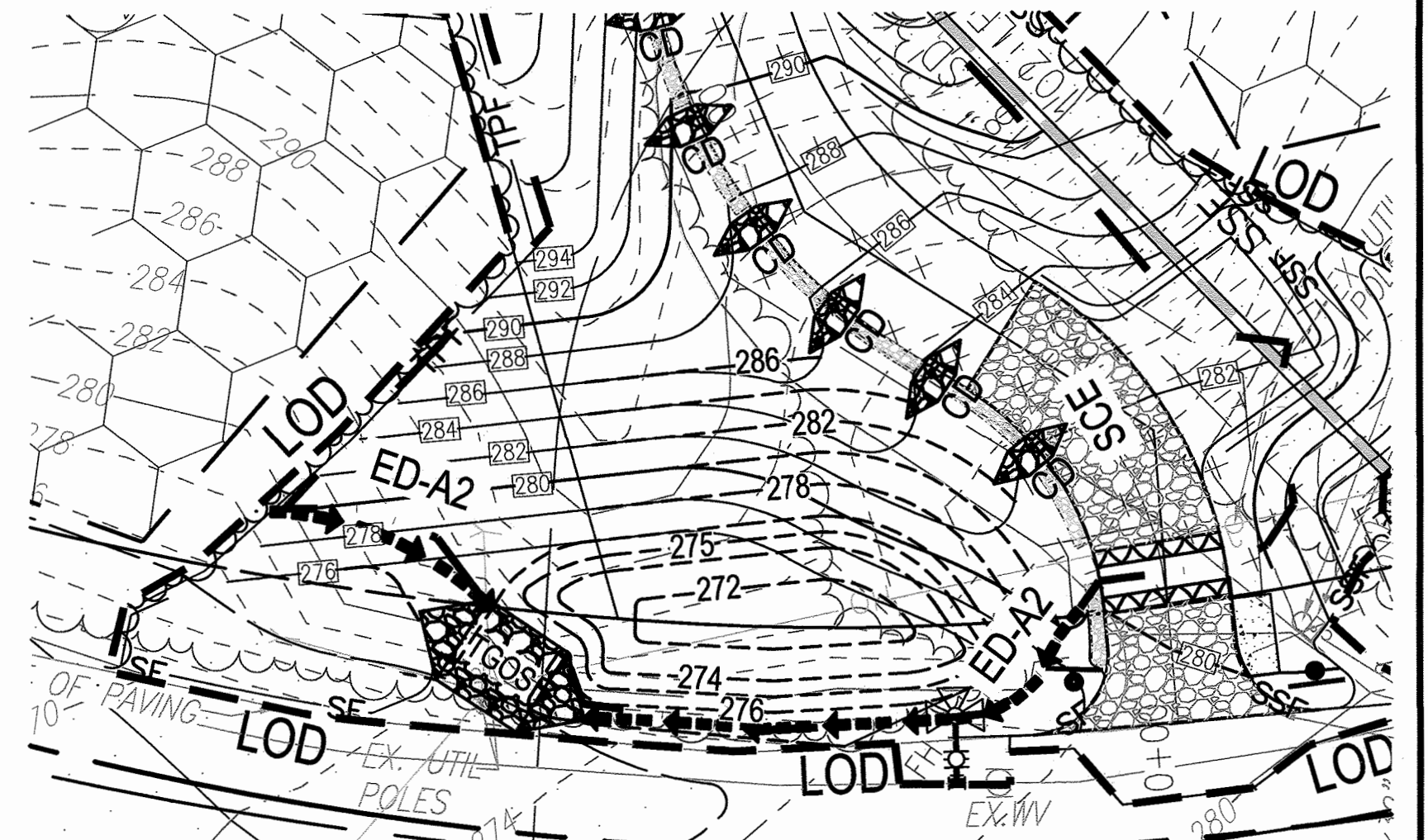






**LEGEND**

---	PROPERTY LINE	---	EXISTING WETLANDS
---	RIGHT-OF-WAY LINE	---	PRIVATE USE-IN-COMMON ACCESS EASEMENT
---	ADJACENT PROPERTY LINE	---	FOREST CONSERVATION EASEMENT (RETENTION)
---	CENTERLINE OF EXISTING STREAM	---	NON-CREDITED FOREST CONSERVATION EASEMENT
---	EXISTING STREAM BANK	---	DFIRM FLOODPLAIN
---	EXISTING CURB AND GUTTER	---	PUBLIC STORMWATER MANAGEMENT, DRAINAGE AND UTILITY EASEMENT
---	EXISTING TREELINE	---	EXISTING STEEP SLOPES (25% SLOPES OR GREATER)
---	TREELINE	---	EXISTING MODERATE SLOPES (15% TO 24.9% SLOPES)
---	SPECIMEN TREE	---	SSP
---	EXISTING UTILITY POLE	---	SUPER SILT FENCE
---	EXISTING LIGHT POLE	---	LOD
---	EXISTING MAILBOX	---	LIMIT OF DISTURBANCE
---	EXISTING SIGN	---	EROSION CONTROL MATTING
---	EXISTING SANITARY MANHOLE	---	STABILIZED CONSTRUCTION ENTRANCE
---	EXISTING SANITARY LINE	---	TREE PROTECTION FENCE
---	EXISTING CLEANOUT	---	MICRO-BIOTENTION FACILITY (M-8)
---	EXISTING FIRE HYDRANT	---	DW
---	EXISTING WATER LINE	---	DRY WELL (M-5)
---	EXISTING 10' CONTOUR	---	STORM DRAIN UNDERDRAIN / ROOF DRAIN
---	EXISTING 2' CONTOUR	---	CHECK DAM
---	SOILS	---	EARTH DIKE
---	10' CONTOUR	---	SIP
---	2' CONTOUR	---	AGIP
---	SPOT ELEVATION	---	
---	TEMPORARY CONTOUR	---	
---	TEMPORARY GABION OUTLET STRUCTURE	---	
---	TEMPORARY STONE OUTLET STRUCTURE	---	



**TGOS - ENTRANCE DETAIL**  
SCALE: 1" = 20'

**OWNER/DEVELOPER**  
BRYAN AND EMILY PASS  
7715 SUFFOLK WAY  
HANOVER, MD 21076  
240-481-6971

**NOTE:**

- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UPHILL. NO MORE THAN 35 FEET APART.
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- DIVERSION FENCE SHALL BE INSTALLED AS SHOWN HEREON OR AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDS. & SPECS. WHICHEVER IS MORE RESTRICTIVE.

**NOTE:**  
NO HOUSES MAY BE BUILT USING THIS PLAN.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 9.22.17  
CHIEF, DEVELOPMENT ENGINEERING DIVISION & DATE

*[Signature]* 9.25.17  
CHIEF, DIVISION OF LAND DEVELOPMENT & DATE

**OWNER/DEVELOPER CERTIFICATION:**  
I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

*[Signature]* 8/21/17  
OWNER/DEVELOPER SIGNATURE  
Bryan Pass, Owner  
PRINTED NAME & TITLE

**DESIGN CERTIFICATION:**  
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 7/12/17  
DESIGNER'S SIGNATURE  
ROBERT H. VOGEL  
PRINTED NAME

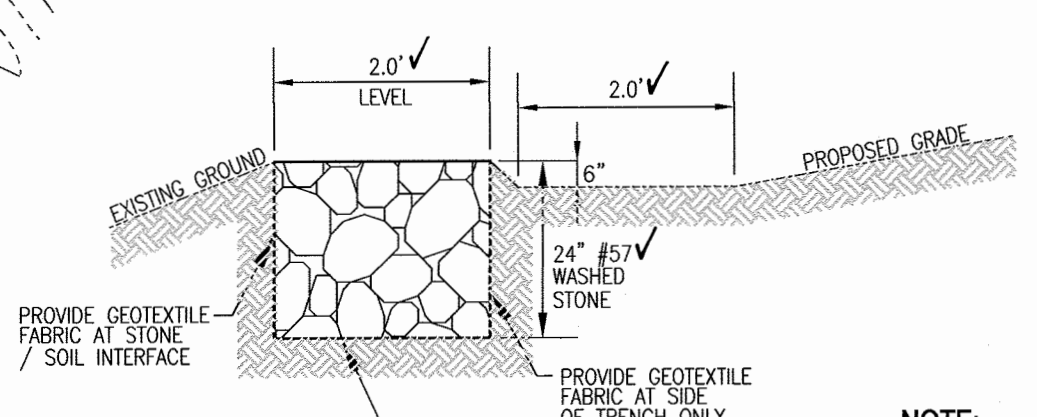
MD REGISTRATION NO. 16193  
P.E. R.L.S., OR R.L.A. (circle one)

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 9/19/17  
DATE

**AS-BUILT CERTIFICATION FOR PSWIM**  
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT EROSION OF THE UNDERGROUND SWIM FACILITY.

16193 5-27-20  
PSWIM



**SEDIMENT CONTROL PRACTICE SUMMARY TABLE**

PRACTICE NO.	1	2	3	4	5	6
DRAINAGE AREA (AC)	0.85	0.82	0.37	0.27	0.84	0.30
RCN	83	35	30	77	61	77
AVG. SLOPE %	-	3.40	6.90	-	12.80	10.00
PRACTICE TYPE	GABION OUTLET STRUCTURE	EARTH DIKE-1 (A-2)	EARTH DIKE-2 (A-2)	STONE OUTLET STRUCTURE	AT GRADE INLET PROTECTION	STANDARD INLET PROTECTION
STORAGE DEPTH	3.00	-	-	2.00	-	-
BOTTOM ELEV.	272.00	-	-	361.00	-	-
WEIR ELEV.	275.00	-	-	363.00	-	-
BOTTOM AREA (A.F.)	240	-	-	112	-	-
STORAGE REQUIRED (C.F.)	1530	-	-	486	-	-
STORAGE PROVIDED (C.F.)	1672	-	-	514	-	-
DETAIL NO.	E-8	C-1	C-1	E-7	E-9-2	E-9-1

**MAPPED SOILS TYPES - HOWARD COUNTY SOIL MAP #17 CLARKSVILLE NE**

SMBL NAME / DESCRIPTION	GROUP	HYDRIC	HYDRIC INCLUSIONS	K FACTOR	POSS. FAVORABLE POTENTIAL	CRSE SLOPE
Gbc GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	NO	NO	0.28	YES	NO
Gbc GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	NO	NO	0.28	YES	NO
McD MANOR LOAM, 15 TO 25 PERCENT SLOPES, VERY ROCKY	B	NO	NO	0.28	NO	YES
T MfE MANOR-BANKERTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B	NO	NO	0.20	NO	YES
GcB GLENVILLE - ODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	NO	NO	0.43	YES	YES
Cc CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	NO	YES	0.32	NO	NO

TAKEN FROM: USDA, SCS-WEBB SOIL SURVEY, HOWARD COUNTY

**NOTE:**  
HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL EROSION FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

**NOTE:**  
FOR SOILS ON SITE THAT WOULD BE CONSIDERED HIGHLY ERODIBLE BY THE HOWARD SOIL CONSERVATION DISTRICT, MORE STRINGENT SEEDING AND STABILIZATION METHODS MAY BE EXPECTED AT SITE DEVELOPMENT STAGE

NO.	REVISION	DATE

**FINAL PLAN GRADING, EROSION, SEDIMENT CONTROL PLAN, AND SOILS MAP**

**PASS PROPERTY**  
7831 HARRIET TUBMAN LANE  
COLUMBIA, MD 21044  
ZONED: R-20

TAX MAP 35 GRID 23 PARCEL 117  
5TH 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

**PROFESSIONAL CERTIFICATE**

DESIGN BY: RHV  
DRAWN BY: KG/GAH  
CHECKED BY: RHV  
DATE: JULY 2017  
SCALE: AS SHOWN  
W.O. NO.: 14-15

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: 09-27-2018

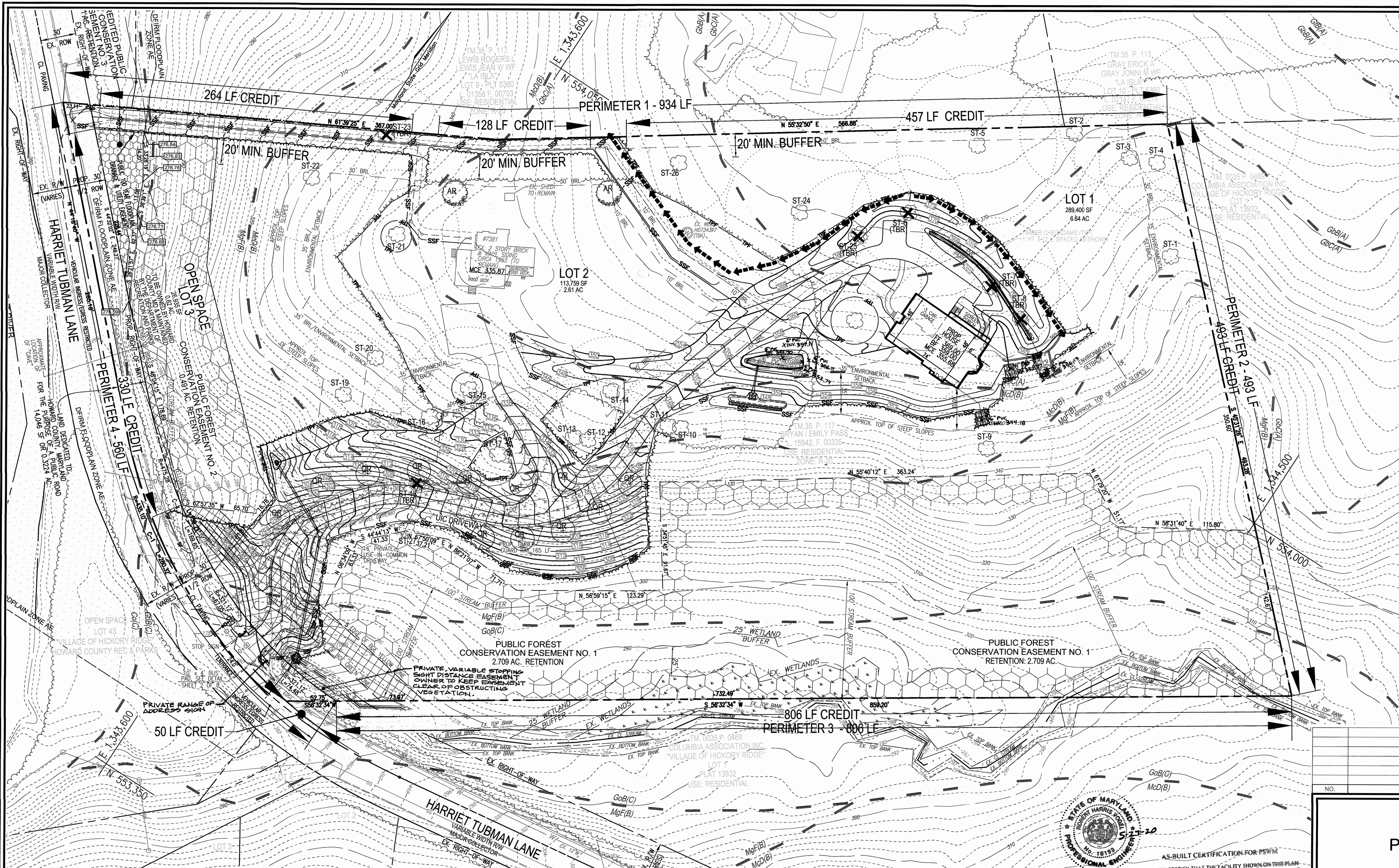
3 SHEET OF 8

AS-BUILT, SEPTEMBER 2019 F-15-113









### LEGEND

	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	CENTERLINE OF EXISTING STREAM
	EXISTING STREAM BANK
	EXISTING CURB AND GUTTER
	EXISTING TREELINE
	TREELINE
	SPECIMEN TREE
	EXISTING LIGHT POLE
	EXISTING UTILITY POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	SPOT ELEVATION
	EXISTING WETLANDS
	PRIVATE USE-IN-COMMON ACCESS EASEMENT
	FOREST CONSERVATION EASEMENT (RETENTION)
	DIRM FLOODPLAIN
	PUBLIC STORMWATER MANAGEMENT, DRAINAGE AND UTILITY EASEMENT
	LIMIT OF DISTURBANCE
	TREE PROTECTION FENCE
	MICRO-BIORETENTION FACILITY (M-6)
	DRY WELL (M-5)
	SHADE TREES
	EVERGREEN TREES
	SHRUB
	SPECIMEN TREE CRITICAL ROOT ZONE
	SPECIMEN TREE TO BE REMOVED

**OWNER/DEVELOPER**  
 BRYAN AND EMILY PASS  
 7715 SUFFOLK WAY  
 HANOVER, MD 21076  
 240-481-6971

NO.	REVISION	DATE

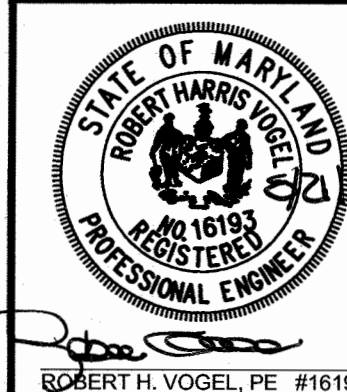
## FINAL PLAN LANDSCAPE PLAN PASS PROPERTY

7831 HARRIET TUBMAN LANE  
 COLUMBIA, MD 21044  
 ZONED: R-20

TAX MAP 35 GRID 23 PARCEL 117  
 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

DESIGN BY:	DATE:
RHV	JULY 2017
KG/GAH	AS SHOWN
RHV	14-15



**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: 09-27-2018

**NOTE:**  
 LANDSCAPING FOR LOTS 1 & 2 IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY IN THE AMOUNT OF \$34,200.00 FOR THE REQUIRED 14 SHADE TREES (\$600 FOR PERIMETER LANDSCAPING AND \$3,600 FOR SPECIMEN TREE REPLACEMENT) WILL BE PAID WITH THE DEVELOPER AGREEMENT. FINAL APPROVAL OF THE LANDSCAPE PLAN WILL BE DEFERRED TO THE SITE DEVELOPMENT PLAN.

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

### SCHEDULE 'A' PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO PERIMETER AND ROADWAYS	TOTAL
PERIMETER/FRONTAGE DESIGNATION	1 2 3 4	
LANDSCAPE TYPE	A B C D	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	934 LF 493 LF 806 LF 560 LF	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	*YES *YES *YES *YES	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	No No No No	
NUMBER OF PLANTS REQUIRED (*)	85 LF 1:60 LF 0 LF 0 LF 0 LF	2
SHRUBS		
EVERGREEN TREES		
NUMBER OF PLANTS PROVIDED		
SHADE TREES	2	2
EVERGREEN TREES		
EX SHADE TREES		
OTHER TREES (2:1 SUBSTITUTION)		
SHRUBS (10:1 SUBSTITUTION)		
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED		

### LANDSCAPE PLAN SCALE: 1" = 40'

### LANDSCAPE SCHEDULE

SYMBOL	KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
	AR	2	ACER RUBRUM 'RED SUNSET' RED SUNSET RED MAPLE	2 1/2"-3" CAL.	B & B

**NOTE:**  
 REFER TO SHEET 7 OF 8 FOR LANDSCAPING NOTES AND DETAILS.

### SPECIMEN TREE REPLACEMENT SCHEDULE

SYMBOL	KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
	OR	12	QUERCUS RUBRA RED OAK	2 1/2"-3" CAL.	B & B

**NOTE:** PER THE CONDITIONS OF WP-16-118, AN ADDITIONAL 18 TREES WERE REQUIRED TO OFFSET THE REMOVAL OF 9 SPECIMEN TREES. THE PLAN HAS SINCE BEEN REVISED SUCH THAT WE ARE NOW REMOVING ONLY 6 SPECIMEN TREES, THEREFORE ON 12 REPLACEMENT TREES ARE PROVIDED.

### MAPPED SOIL TYPES - HOWARD COUNTY SOIL MAP #17 CLARKSVILLE NE

SYMBOL NAME / DESCRIPTION	GROUP	H2O%	SHRIMP	K FACTOR	PERCENT SAND	PERCENT SILT	PERCENT CLAY
GbB GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	NO	NO	0.28	YES	NO	
GbC GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	NO	NO	0.28	YES	NO	
MdD MANOR LOAM, 15 TO 25 PERCENT SLOPES, VERY ROCKY	B	NO	NO	0.28	NO	YES	
MdF MANOR-BANKTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B	NO	NO	0.20	NO	YES	
GaB GLENVILLE - CODORUS - SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	NO	NO	0.43	YES	YES	
Co CODORUS AND HAYBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	NO	YES	0.32	NO	YES	

**NOTE:** HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL CROSBY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT

AS-BUILT CERTIFICATION FOR PSWM  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWIM FACILITY.

16193  
 P.E. #



**GENERAL NOTES**

- NO RARE, THREATENED OR ENDANGERED SPECIES OR THEIR HABITAT WERE OBSERVED ON THE PROPERTY.
- SURROUNDING LAND USE IS PRIMARILY HIGH DENSITY RESIDENTIAL DEVELOPMENT.
- APPROXIMATELY 17 ACRES OF FOREST IS PRESENT WITHIN 100 FEET OF THE SUBJECT PROPERTY.
- ALL WETLANDS AND STREAMS ON THE PROPERTY ARE PART OF THE MIDDLE PATUXENT RIVER WATERSHED (02-13-11). THE STREAMS ON SITE ARE CONSIDERED TO BE USE IV-P WATERS. PERENNIAL STREAMS WILL REQUIRE 100 FOOT BUFFERS, INTERMITTENT STREAMS WILL REQUIRE 50 FOOT BUFFERS AND WETLANDS WILL REQUIRE 25 FOOT BUFFERS.
- NO HISTORIC ELEMENTS OR CEMETERIES ARE KNOWN TO OCCUR ON THE PROPERTY.
- THE SITE DOES INCLUDE 0.31 ACRES +/- OF 100 YEAR FLOODPLAIN.
- THE SPECIMEN TREES TO BE REMOVED ARE:  
ST-6, ST-7, ST-8, ST-18, ST-23, & ST-25
- SPECIMEN TREES WITH ROOT SYSTEMS IMPACTED BY DEVELOPMENT ARE ST-9 THRU ST-17, ST-19, ST-21, ST-22, ST-24, ST-26 AND ST-27. THOSE SPECIMEN TREES TO REMAIN WHICH ARE INSIDE THE LIMIT OF DISTURBANCE SHALL BE PROTECTED WITH TREE PROTECTION FENCE AND ROOT PRUNING. SPECIMEN TREES OUTSIDE THE LIMITS OF DISTURBANCE SHALL BE PROTECTED WITH ROOT PRUNING.

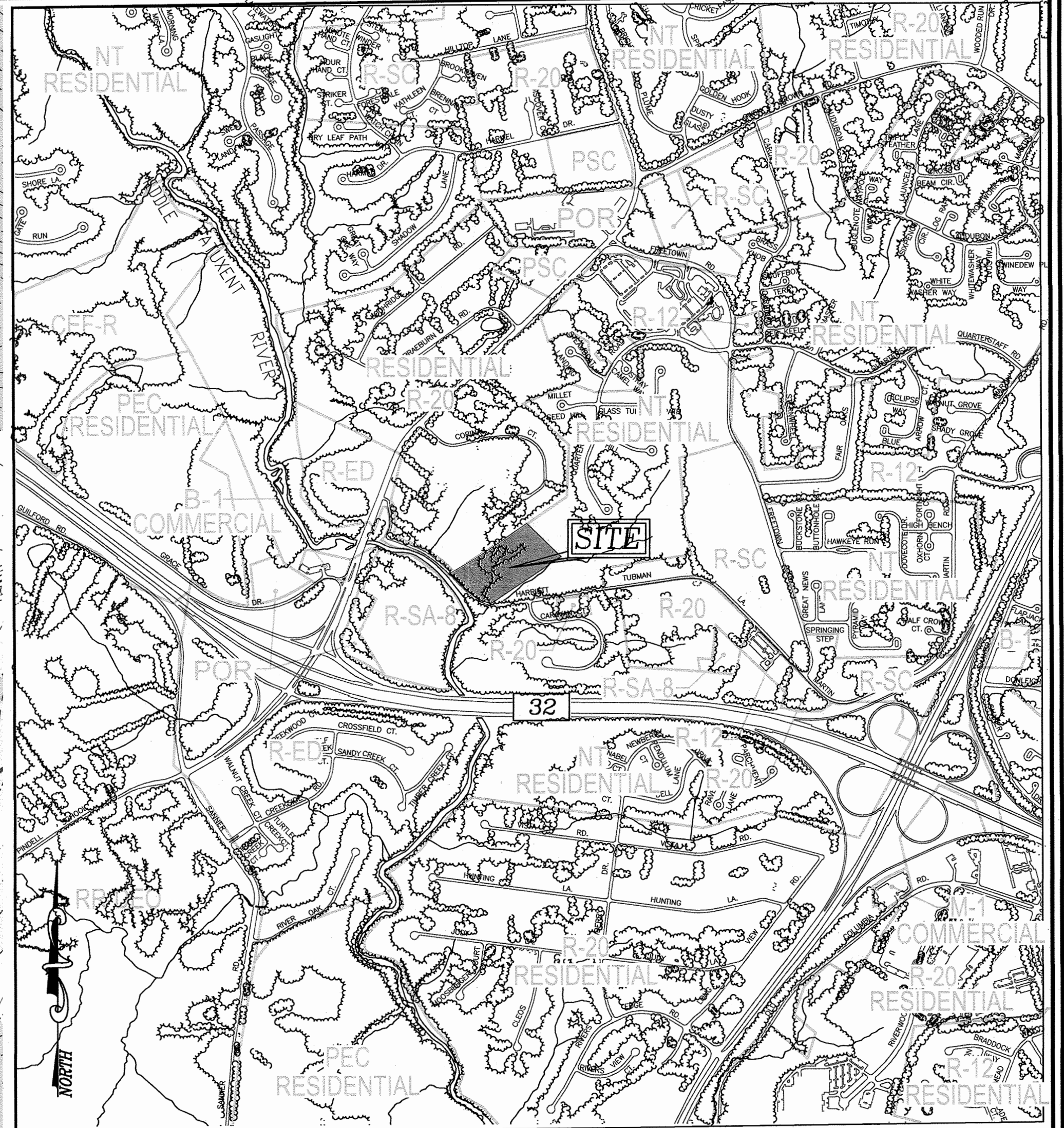
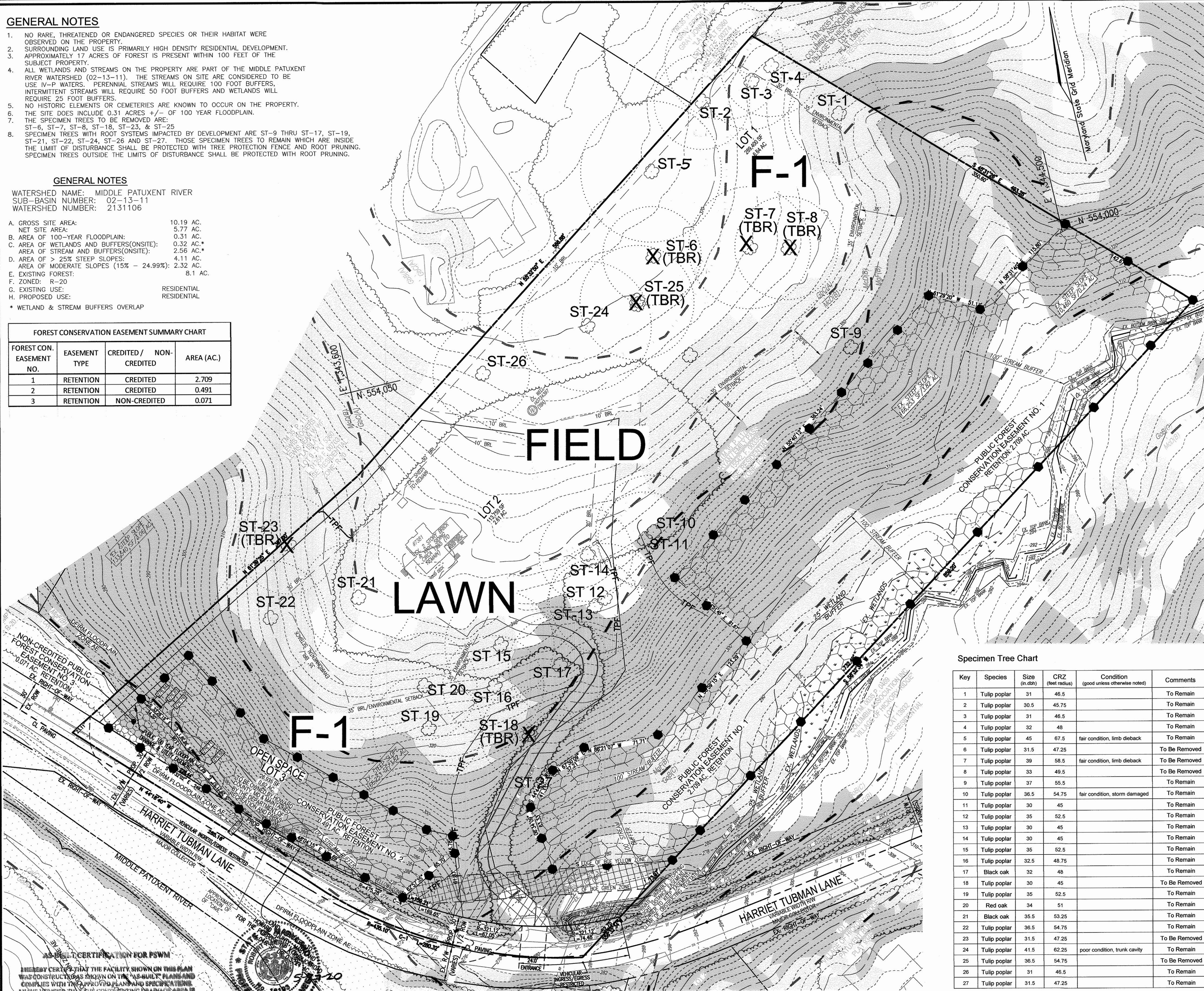
**GENERAL NOTES**

WATERSHED NAME: MIDDLE PATUXENT RIVER  
SUB-BASIN NUMBER: 02-13-11  
WATERSHED NUMBER: 2131106

- A. GROSS SITE AREA: 10.19 AC.
- B. NET SITE AREA: 5.77 AC.
- C. AREA OF 100-YEAR FLOODPLAIN: 0.31 AC.
- D. AREA OF WETLANDS AND BUFFERS(ONSITE): 0.32 AC. +
- E. AREA OF STREAM AND BUFFERS(ONSITE): 2.56 AC. +
- F. AREA OF > 25% STEEP SLOPES: 4.11 AC.
- G. AREA OF MODERATE SLOPES (15% - 24.99%): 2.32 AC.
- H. EXISTING FOREST: 8.1 AC.
- I. ZONED: R-20
- J. EXISTING USE: RESIDENTIAL
- K. PROPOSED USE: RESIDENTIAL
- L. WETLAND & STREAM BUFFERS OVERLAP

**FOREST CONSERVATION EASEMENT SUMMARY CHART**

FOREST CON. EASEMENT NO.	EASEMENT TYPE	CREDITED / NON-CREDITED	AREA (AC.)
1	RETENTION	CREDITED	2.709
2	RETENTION	CREDITED	0.491
3	RETENTION	NON-CREDITED	0.071



**LEGEND:**

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF PAVING
- EXISTING WETLANDS
- EXISTING WETLAND BUFFER
- EXISTING STREAM
- EXISTING STREAM BUFFER
- 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 TREES
- EXISTING WOOD FENCE
- EXISTING METAL FENCE
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- SOILS
- EXISTING STEEP SLOPES (25% SLOPES OR GREATER)
- EXISTING MODERATE SLOPES (15% TO 24.99% SLOPES)
- FOREST CONSERVATION SIGN
- TREE PROTECTION FENCE
- EXISTING SPECIMEN TREE TO BE REMOVED
- EXISTING DFRM FLOODPLAIN
- PROPOSED CREDITED FOREST CONSERVATION EASEMENT
- NON-CREDITED FOREST CONSERVATION EASEMENT
- TREE PROTECTION FENCE
- LIMIT OF DISTURBANCE
- SPECIMEN TREE CRITICAL ROOT ZONE

**VICINITY MAP**

SCALE: 1"=1,000'  
ADC MAP COORDINATE: 32, D-4

**Eco-Science Professionals, Inc.**  
Consulting Ecologists  
P.O. Box 5004 Glen Arm, Maryland 21057 Telephone (410) 832-2460 Fax (410) 832-2468

**NO AS-BUILT INFORMATION ON THIS SHEET**

NO.	REVISION	DATE

**FINAL PLAN  
FOREST CONSERVATION PLAN**

**PASS PROPERTY**  
7831 HARRIET TUBMAN LANE  
COLUMBIA, MD 21044  
ZONED: R-20

TAX MAP 35 GRID 23 PARCEL 117  
5TH 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: RHVE  
DRAWN BY: KGI/GAH  
CHECKED BY: RHV  
DATE: JULY 2017  
SCALE: AS SHOWN  
W.O. NO.: 14-15

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 08-27-2018

6 SHEET OF 8

**Specimen Tree Chart**

Key	Species	Size (inches)	CRZ (feet radius)	Condition (good unless otherwise noted)	Comments
1	Tulip poplar	31	46.5		To Remain
2	Tulip poplar	30.5	45.75		To Remain
3	Tulip poplar	31	46.5		To Remain
4	Tulip poplar	32	48		To Remain
5	Tulip poplar	45	67.5	fair condition, limb dieback	To Remain
6	Tulip poplar	31.5	47.25		To Be Removed
7	Tulip poplar	39	58.5	fair condition, limb dieback	To Be Removed
8	Tulip poplar	33	49.5		To Be Removed
9	Tulip poplar	37	55.5		To Remain
10	Tulip poplar	36.5	54.75	fair condition, storm damaged	To Remain
11	Tulip poplar	30	45		To Remain
12	Tulip poplar	35	52.5		To Remain
13	Tulip poplar	30	45		To Remain
14	Tulip poplar	30	45		To Remain
15	Tulip poplar	35	52.5		To Remain
16	Tulip poplar	32.5	48.75		To Remain
17	Black oak	32	48		To Remain
18	Tulip poplar	30	45		To Be Removed
19	Tulip poplar	35	52.5		To Remain
20	Red oak	34	51		To Remain
21	Black oak	35.5	53.25		To Remain
22	Tulip poplar	36.5	54.75		To Remain
23	Tulip poplar	31.5	47.25		To Be Removed
24	Tulip poplar	41.5	62.25	poor condition, trunk cavity	To Remain
25	Tulip poplar	36.5	54.75		To Be Removed
26	Tulip poplar	31	46.5		To Remain
27	Tulip poplar	31.5	47.25		To Remain

FOR PROTECTION / TREATMENT OF TREES TO REMAIN SEE SHEET 7

**Forest Stand Data**

Key	Community Type	Acreage (gross)	Dominant Vegetation	General Condition	Priority Acreage
F1	Poplar	8.1	Liriodendron tulipifera, Quercus alba, Quercus velutina, Quercus rubra, Acer rubrum, Platanus occidentalis	Good	5.0 acres +/- buffers, slopes

**MAPPED SOILS TYPES - HOWARD COUNTY SOIL MAP #17 CLARKSVILLE NE**

SYMBOL NAME / DESCRIPTION	GROUP	HYDRIC	MOISTURE REGIMEN	K FACTOR	POSS. FLOODING	STEEPER SLOPE
GCB GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	A	NO	NO	0.28	YES	NO
GBC GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	A	NO	NO	0.28	YES	NO
MCD MANOR LOAM, 15 TO 25 PERCENT SLOPES, VERY ROCKY	B	NO	NO	0.28	NO	YES
MJF MANOR-BARNERTOWN SANDY LOAMS, 25 TO 65 PERCENT SLOPES, ROCKY	B	NO	NO	0.20	NO	YES
GGB GLENVILLE-CODORUS SILT LOAMS, 0 TO 8 PERCENT SLOPES	C	NO	NO	0.43	YES	YES
CO CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	NO	YES	0.32	NO	NO

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY  
NOTE: HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT  
NOTE: FOR SOILS ON SITE THAT WOULD BE CONSIDERED HIGHLY ERODIBLE BY THE HOWARD SOIL CONSERVATION DISTRICT, MORE STRINGENT SEEDING AND STABILIZATION METHODS MAY BE EXPECTED AT SITE DEVELOPMENT STAGE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

9-22-17  
DATE

9-25-17  
DATE



**HOWARD COUNTY  
FOREST CONSERVATION WORKSHEET**

**ZONED R-20  
NET TRACT AREA:**  
 A. TOTAL TRACT AREA = 10.19 AC.  
 B. AREA WITHIN 100 YEAR FLOODPLAIN = 0.311 AC.  
 C. AREA IN PRESERVATION PARCEL = 0.00 AC.  
 D. NET TRACT AREA = 9.88 AC.

**LAND USE CATEGORY**  
 INPUT THE NUMBER "1" UNDER THE APPROPRIATE LAND USE ZONING, AND LIMIT TO ONLY ONE ENTRY. ZONED R-20

ARA MDR IDA HDR MPD CIA  
 0 0 0 1 0 0

**E. AFFOREST THRESHOLD** = 1.5% X 9.88 = 1.5 AC.  
**F. CONSERVATION THRESHOLD** = 20% X 9.88 = 2.0 AC.

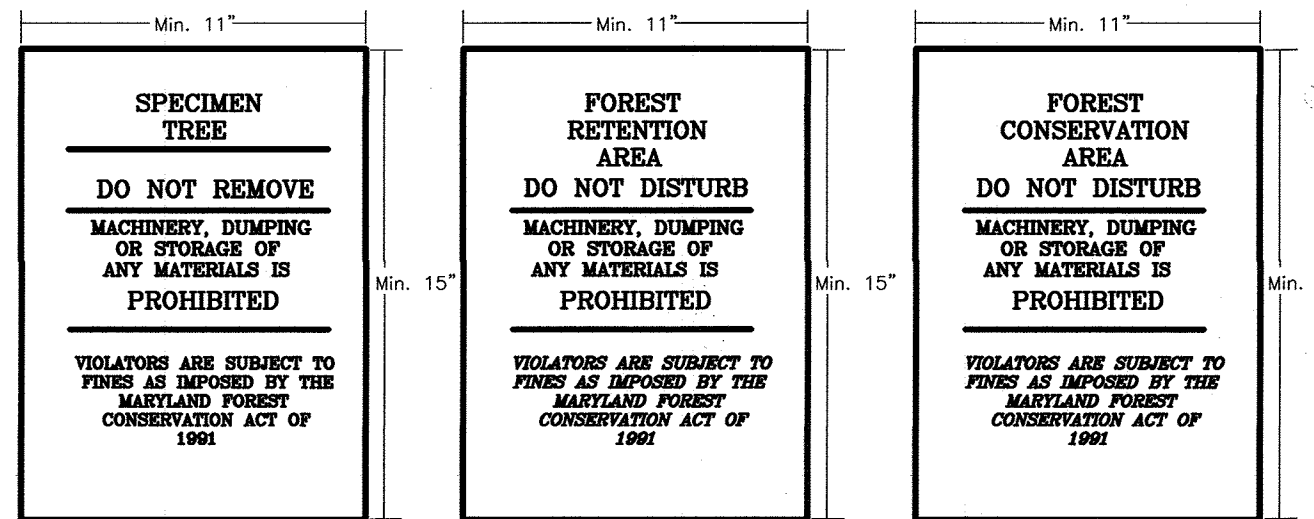
**EXISTING FOREST COVER:**  
 G. EXISTING FOREST COVER = 7.80 AC. (FSD REPORT)  
 H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD = 6.31 AC.  
 I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD = 5.81 AC.

**BREAK EVEN POINT:**  
 (2 X 1) + F = BREAK EVEN POINT (3.14 AC)

J. FOREST RETENTION WITH NO MITIGATION = 1.20 AC.  
 K. CLEARING PERMITTED WITHOUT MITIGATION = 4.65 AC.

**PROPOSED FOREST CLEARING:**  
 L. TOTAL AREA OF FOREST TO BE CLEARED = 4.60 AC. (MAX. NOT PLANNED)  
 M. TOTAL AREA OF FOREST TO BE RETAINED = 3.20 AC. (FC EASEMENT)

**PLANTING REQUIREMENTS:**  
 N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD (L X 25) = 1.15 AC.  
 P. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD = 0.00 AC.  
 Q. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD (M-F) = 1.22 AC.  
 R. TOTAL REFORESTATION REQUIRED (N+P-Q) = 0.00 AC.  
 S. TOTAL AFFORESTATION REQUIRED = 0.00 AC.  
 T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED = 0.00 AC.



**NOTE:**  
 1. BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.  
 2. SIGNS TO BE PLACED APPROXIMATELY 50-100 FEET APART. CONDITIONS ON SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART. WHERE SIGNS ARE TO BE PLACED AT THE REAR OF PROPOSED LOTS, SPACING SHALL BE APPROX. 25-30' +/-.  
 3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.  
 4. ALL FOREST CONSERVATION SIGNAGE SHALL BE IN PLACE FOR PERPETUITY.  
 5. SIGN LOCATION SYMBOL = ●

**FOREST CONSERVATION AREA SIGNS**

**SEQUENCE OF CONSTRUCTION-FOREST CONSERVATION**

1. PRECONSTRUCTION MEETING /SITE WALK WITH CONTRACTORS AND OTHER RESPONSIBLE PARTIES TO DEFINE PROTECTION MEASURES TO BE UTILIZED AND TO POINT OUT PARTICULAR TREES TO BE SAVED.
2. STAKE OUT LIMITS OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS.
3. INSTALL TREE PROTECTION FENCING; FENCING TO BE INSPECTED BY THE PROJECT ENGINEER OR THE PROJECT ECOLOGIST AND HOWARD COUNTY PLANNING AND ZONING.
4. PROCEED WITH TREE REMOVAL AND SITE IMPROVEMENTS AS PER APPROVED SEDIMENT CONTROL PLAN - TO BE INSPECTED BY HOWARD COUNTY PLANNING AND ZONING.
5. TEMPORARY TREE PROTECTION DEVICES SHALL BE REMOVED AFTER ALL FINISHED GRADING AND UTILITY CONSTRUCTION HAS OCCURRED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

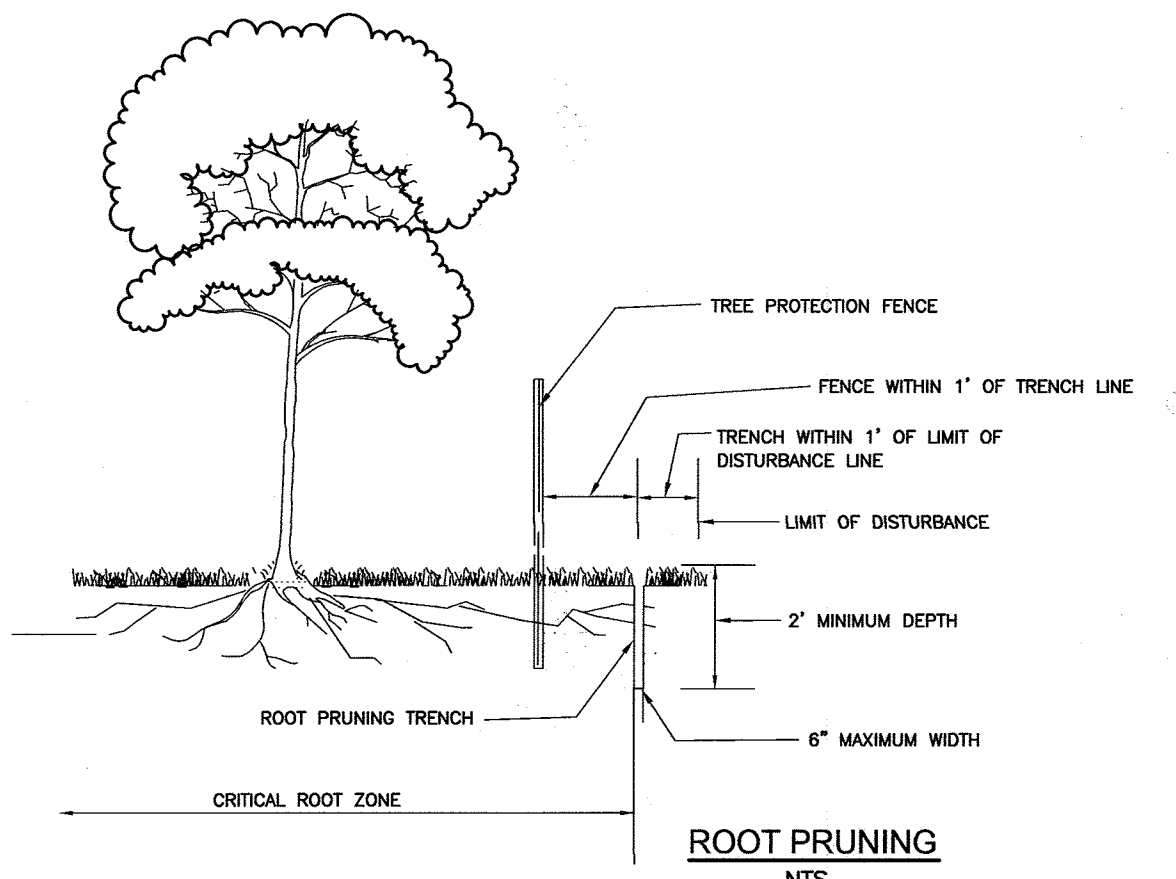
**FOREST CONSERVATION:**

FOREST CONSERVATION REQUIREMENTS AS SET FORTH IN SECTION 16.1202 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT. HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

THE FOREST CONSERVATION OBLIGATION TO BE FULFILLED BY THE PLACEMENT OF 3.20 AC. INTO A RETENTION EASEMENT.  
 - NO SURETY IS REQUIRED.

**CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION**

- PRE-CONSTRUCTION PHASE**
1. FOR RETENTION AREAS, INSTALL BLAZE ORANGE FENCE, SUPER SILT FENCE, AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
  2. FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS.
  3. A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNE TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.
- CONSTRUCTION PHASE**
1. NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.
  2. NO EQUIPMENT SHALL BE OPERATED INSIDE THE TREE RETENTION AREA INCLUDING TREE CORPUSES.
  3. IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.
- POST-CONSTRUCTION PHASE**
1. AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
  2. FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.
  3. DO NOT REMOVE SIGNS.



**NOTES:**  
 1. RETENTION AREAS HAVE BEEN ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN APPROVAL.  
 2. BOUNDARIES OF RETENTION AREAS TO BE STAKED, FLAGGED AND/OR FENCED PRIOR CONSTRUCTION.  
 3. EXACT LOCATION OF ROOT PRUNING TRENCH SHOULD BE IDENTIFIED.  
 4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR ORGANIC SOIL.  
 5. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.

**SPECIMEN TREES:**  
 ST-12, ST-13, ST-14, ST-15, ST-16, ST-19, ST-20, ST-24 AND ST-26: PROVIDE TREE PROTECTION FENCING AND CARRY OUT REQUIRED ROOT PRUNING PRIOR TO ANY GRADING AND/OR INSTALLATION OF UTILITIES.  
 ST-9, ST-22, ST-27: PROVIDE SUPER SILT FENCE AND CARRY OUT REQUIRED ROOT PRUNING PRIOR TO ANY GRADING AND/OR INSTALLATION OF UTILITIES.  
 ST-10, ST-11, ST-17, ST-21: PROVIDE SUPER SILT FENCE AND TREE PROTECTION FENCE AND CARRY OUT REQUIRED ROOT PRUNING PRIOR TO ANY GRADING AND/OR INSTALLATION OF UTILITIES OR REMOVAL OF ADJACENT SPECIMEN TREES.

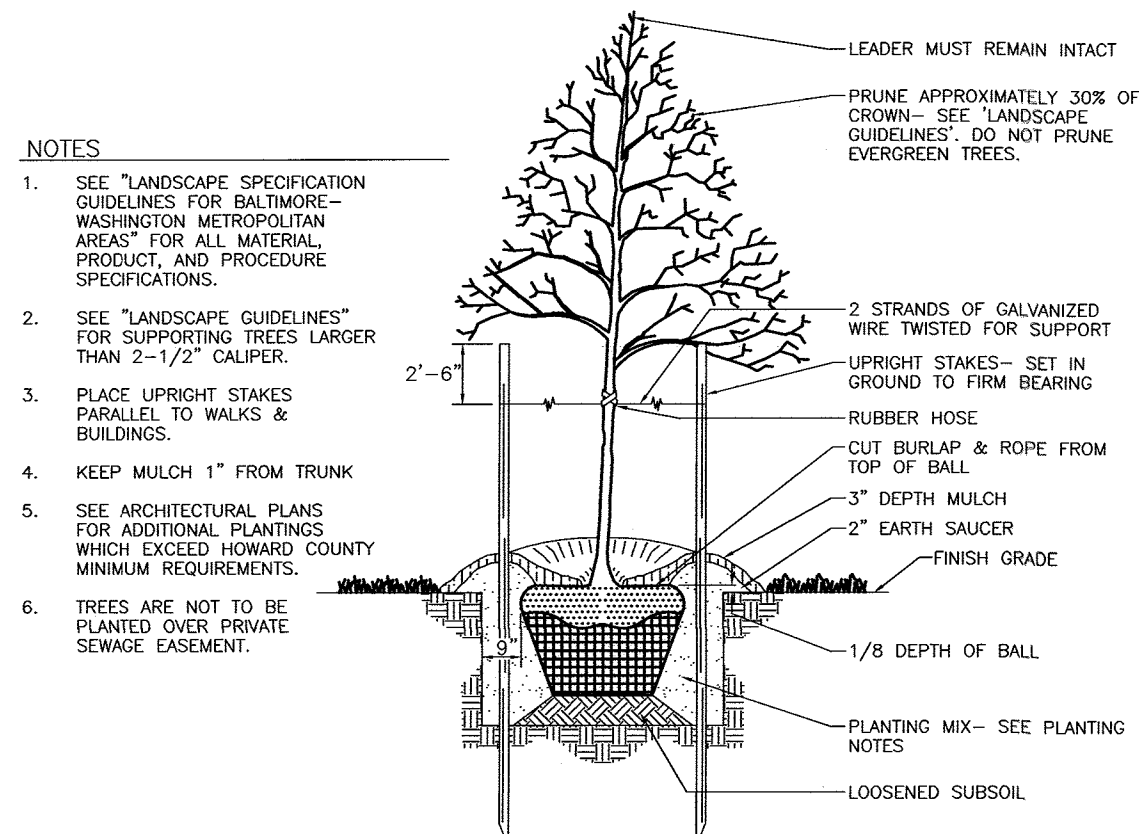
**FOREST CONSERVATION DETAILS**

*[Signature]*  
 JOHN CANOLES  
 DNR QUALIFIED PROFESSIONAL

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 9-22-17  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

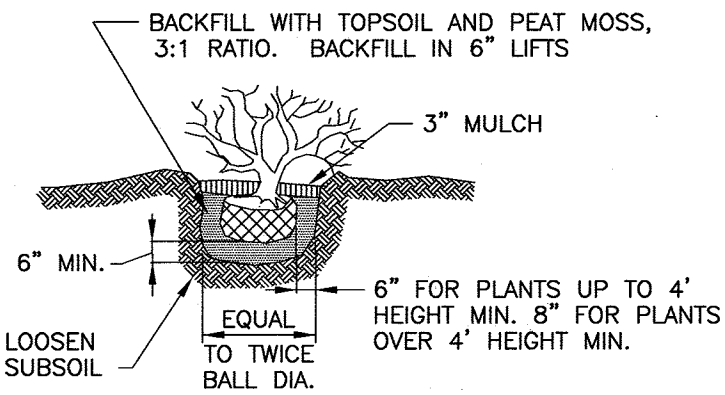
*[Signature]* 9-25-17  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE



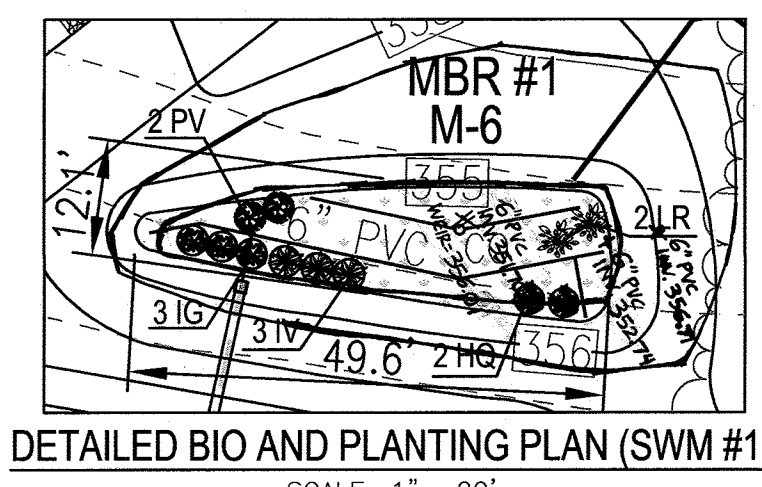
**TREE PLANTING AND STAKING**  
 DECIDUOUS TREES UP TO 2-1/2" CALIPER NOT TO SCALE

**NOTES:**

1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK.
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.



**SHRUB PLANTING DETAIL**  
 NOT TO SCALE



**BIORETENTION PLANTING SCHEDULE**

KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
IG	14	ILEX VERTICILLATA "WINTERBERRY"	1 GALLON	18" O.C.
IV	16	VIBURNUM DENTATUM ARROWWOOD VIBURNUM	1 GALLON	18" O.C.
HQ	13	ASTER NOVAE-ANGLIAE NEW ENGLAND ASTER	1 GALLON	30" O.C.
LR	13	LOBELIA CARDINALIS CARDINAL FLOWER	4' HT	SPECIMEN QUALITY STRAIGHT LEADER
PV	13	KALMIA LATIFOLIA MOUNTAIN LAUREL	4' HT	SPECIMEN QUALITY STRAIGHT LEADER

**PERENNIALS/GROUNDCOVER PLANTING SCHEDULE**

LEGEND	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
[Symbol]	79	RUIDECKIA HIRTA BLACK EYED SUSAN	4" POT	12"-15" O.C. FOR SIDES AND BOTTOM OF MBR. MIX ALL VARIETIES IN A NATURALIZED RANDOM PATTERN THROUGHOUT. PLANT IN GROUPS OF NO LESS THAN 9 PLANTS PER CLUMP
[Symbol]	79	PHLOX STOLONIFERA CREEPING PHLOX	1 QT.	

FACILITY #	LF	AREA	STEMS REQUIRED (0.0229)		PLANTINGS PROVIDED							PERENNIALS/GROUND COVER PROVIDED		TOTAL
			IG	IV	HQ	LR	PV	BA	AG					
BIO-SWALE #1	113	491	12	12	3	3	2	2	2	17	17	34		
MBR #1	330	660	16	19	3	4	4	4	4	23	23	46		
<b>TOTALS:</b>	<b>443</b>	<b>1151</b>	<b>28</b>	<b>31</b>	<b>6</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>40</b>	<b>40</b>	<b>34</b>		

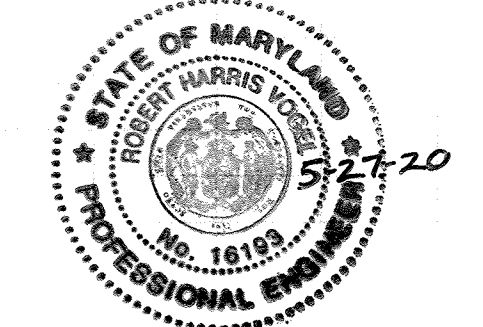
BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.0229 STEMS PER SQUARE FOOT).

**MICRO-BIORETENTION PLANTING SCHEDULE (SHRUBS/ORNIMENTAL GRASSES)**

**DEVELOPER/BUILDER CERTIFICATION**

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN (SHEETS A-1, D, 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]* 8/16/17  
 SIGNATURE OF DEVELOPER DATE



**LANDSCAPE DETAILS**

AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOSING OF THE UNDERGROUND SWM FACILITY.

*[Signature]* 16193 5-27-20  
 P.E. # DATE

**LANDSCAPE NOTES**

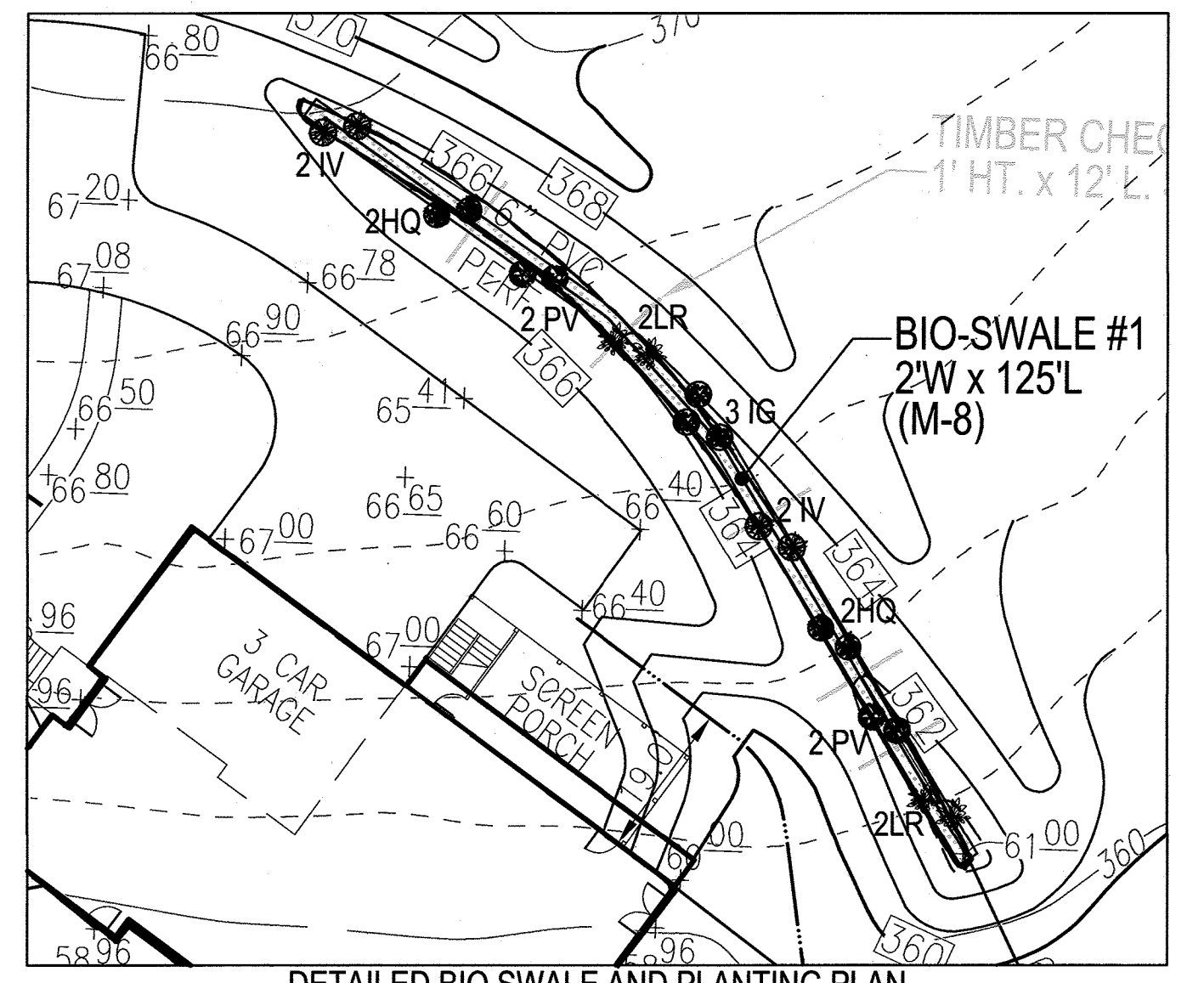
1. AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR 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 UNITS, SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR BIDDING IS MADE TO THE APPLICABLE PLANS.
2. THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BENCH, 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.
3. 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.
4. 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 AN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HED PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
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.

**GENERAL NOTES:**

1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED SPECIMEN TREE REPLACEMENT AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
2. A LANDSCAPE PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY IN THE AMOUNT OF \$42000 FOR THE REQUIRED 14" SHADE TREES (\$400 PER PERIMETER AND \$3600 FOR SPECIMEN TREE REPLACEMENT) WILL BE PAID WITH THE DEVELOPER AGREEMENT.
3. THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DEVELOPMENT OR CONSTRUCTION OF THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN THE TIME OF SUBDIVISION OF THE SITE DEVELOPMENT PLAN, MAJOR REVISIONS TO BUILDING AND GRADING PERMITS. THERE ARE NO BURIAL GROUNDS, CEMETARIES OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
4. NO LANDSCAPING TO BE INSTALLED WITHIN ANY PUBLIC BASEMENT FOR WATER, SEWER OR STORM DRAIN.
5. ANY EXISTING STREET TREES DAMAGED OR DESTROYED DURING CONSTRUCTION WILL BE REPLACED BY THE CONTRACTOR.
6. LANDSCAPING IS NOT PERMITTED WITHIN 7.5' ON EACH SIDE OF THE FIRE DEPARTMENT CONNECTION. PROVIDE A CLEAR, UNOBSTRUCTED ACCESS PATH TO THE FIRE DEPARTMENT CONNECTION. NFP-1 13.1.4



**OWNER/DEVELOPER**  
 BRYAN AND EMILY PASS  
 7715 SUFFOLK WAY  
 HANOVER, MD 21076  
 240-481-6971

**FINAL PLAN  
 LANDSCAPE, FOREST CONSERVATION PLAN AND  
 STORMWATER MANAGEMENT NOTES AND DETAILS**

**PASS PROPERTY**  
 7831 HARRIET TUBMAN LANE  
 COLUMBIA, MD 21044  
 ZONED: R-20 PARCEL 117

TAX MAP 35 GRID 23 PARCEL 117  
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

**PROFESSIONAL CERTIFICATE**

DESIGN BY: RHVE  
 DRAWN BY: KGGAH  
 CHECKED BY: RHV  
 DATE: JULY 2017  
 SCALE: AS SHOWN  
 W.O. NO.: 14-15

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 05-27-2018.

7 SHEET OF 8

AS-BUILT, SEPTEMBER 2019 F-15-113



DRAINAGE AREAS FOR STORMWATER MANAGEMENT					
AREA NO.	AREA (AC.)	IMPERVIOUS (%)	STORMWATER MANAGEMENT PRACTICE	ESDv PROVIDED (C.F.)	ESDv PROVIDED (C.F.)
1-A	0.04	100.00	DRYWELLS	202	202
1-B	0.55	15.16	MBR #1 (M-6)	653	653
1-C	0.27	14.06	BIOSWALE (M-8)	416	416
1-D	0.19	30.44	GRAVEL TRENCHES	300	300
TOTAL AREA #1				1571	1571
2	0.58	26.30	GRAVEL TRENCHES	702	702
TOTAL AREA #2				702	702
B-1	1.48	8.88	STORM DRAIN BYPASS	-	-
TOTAL				2273	2273



ESDv DRAINAGE AREA MAP  
SCALE=1"=50'

ENVIRONMENTAL SITE DESIGN PRACTICE VOLUMES PROVIDED											
DRAINAGE AREA #	AREA TREATED	SUBAREA NUMBER	PERMEABLE PAVEMENT	BIO RETENTION INFILTRATION	LANDSCAPE GREEN ROOF	BIO SWALE	GRAVEL TRENCH	DRY WELLS	ESDv VOLUME	ESDv VOLUME	
1	46256	1A-1D	0	653	0	0	416	300	202	0	1571
2	25211	2	0	0	0	0	702	0	0	0	702
ESDv REQUIRED									2214	CF	
* STORAGE, 75% OF ESD TREATED									TOTAL ESDv PROVIDED 2273		

MAPPED SOILS TYPES - HOWARD COUNTY SOIL MAP #17 CLARKSVILLE NE										
SYMBOL NAME / DESCRIPTION	GROUP	HYDRC	PERCENT SAND	K FACTOR	PERCENT CLAY	PERCENT SILT	PERCENT ORGANIC	PERCENT ROCK	PERCENT COBBLES	PERCENT STONES
Gbr	A	NO	NO	0.28	YES	NO	NO	NO	NO	NO
Gbc	A	NO	NO	0.28	YES	NO	NO	NO	NO	NO
Md	B	NO	NO	0.28	NO	YES	NO	NO	NO	NO
Mf	B	NO	NO	0.20	NO	YES	NO	NO	NO	NO
Gbr	C	NO	NO	0.43	YES	YES	NO	NO	NO	NO
Cc	C	NO	YES	0.32	NO	NO	NO	NO	NO	NO

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 9.22.17  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 9.25.17  
CHIEF, DIVISION OF LAND DEVELOPMENT

PASS PROPERTY - FINAL ESDv COMPUTATIONS											
DA	% IMPERV	Rv	DA (SF)	DA (AC)	MINIMUM VOLUME	MAXIMUM VOLUME	1.157 PROVIDED	VOLUME PROVIDED	IMPERV (SF)	IMPERV (AC)	REMARKS
AREA 1A REAR HSE	100.00	0.9500	1045	0.02	83	215	98	101	1045	0.02	0.00
AREA 1B HSE/DRIVEWAY	100.00	0.9500	1045	0.02	83	215	98	101	1045	0.02	0.00
AREA 1C REAR DRIVEWAY	15.16	0.1864	23904	0.55	371	966	442	653	3624	0.08	0.47
AREA 1D WEST OF DW	14.06	0.1765	11879	0.27	175	454	208	416	1670	0.04	0.23
WEST OF DW	30.44	0.3240	8883	0.19	226	588	269	300	2552	0.06	0.13
AREA 2 WEST OF DW	26.30	0.2867	25211	0.58	602	1566	717	702	6630	0.15	0.43
PROJECT TOTALS	23.2		71467	1.64				2273	16566	0.38	1.26

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

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

2. FILTERING MEDIA OR PLANTING SOIL  
THE SOIL SHALL BE A UNIFORM MIXTURE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR COMBINED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVE AN OBSTACLE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERBERIS, GRASS, QUINCE, HAWTHORN, HEDERA, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.06.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:  
\* SOIL COMPOSITION - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).  
\* CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.  
\* PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO ADJUST PH.  
THERE SHALL BE AT LEAST ONE SOIL TEST PER PRACTICE. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH AND ADDITIONAL TESTS OF ORGANIC MATTER AND SOLUBLE SALTS. A TEXTURE ANALYSIS IS REQUIRED FROM THE SITE. THE TOPSOIL, IF TOPSOIL IS APPLIED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

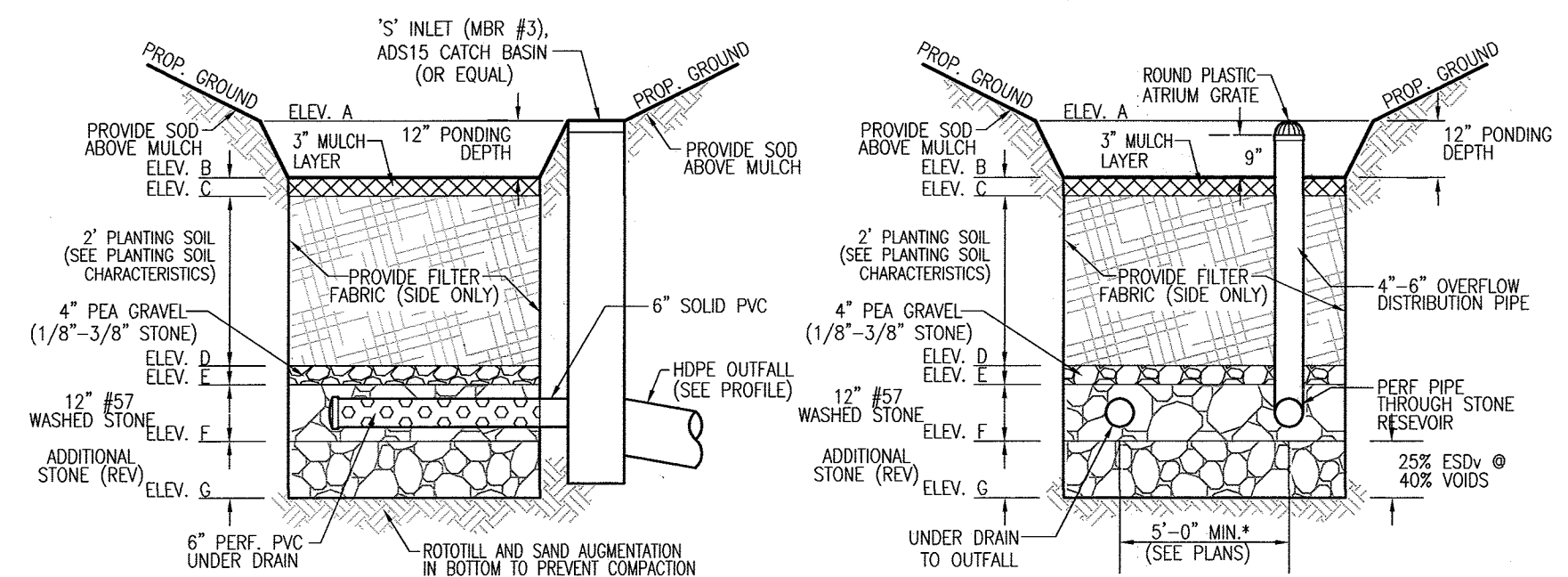
3. COMPACTION  
IT IS VERY IMPORTANT TO MAINTAIN COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL WHEN POSSIBLE. USE EXCAVATION HOES TO REWORK AND EXCAVATE LONGER. THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT OR LIGHT EQUIPMENT WITH TIRE TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

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

5. PLANT INSTALLATION  
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SUBSEQUENCE TO A UNIFORM THICKNESS OF 2" TO 3" SPREAD OVER THE ENTIRE MICRO-BIORETENTION AREA. THE ONLY ACCEPTED MULCH, PINE NEEDLE AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING STORM EVENTS AND ARE NOT ACCEPTABLE. SHROUDED MULCH MUST BE WELL ADDED TO 12 MONTHS FOR ACCEPTANCE. ROOTKILLER AND 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. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES SHOULD 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 PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

6. UNDERDRAINS  
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:  
\* PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F756, TYPE PS 28, OR AASHTO M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).  
\* PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4x4) GALVANIZED HAWTHORN CLOTH.  
\* GRAVEL - THE GRAVEL LAYER 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. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES SHOULD 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 PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

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



MICRO-BIORETENTION (UNDERDRAIN) NOT TO SCALE

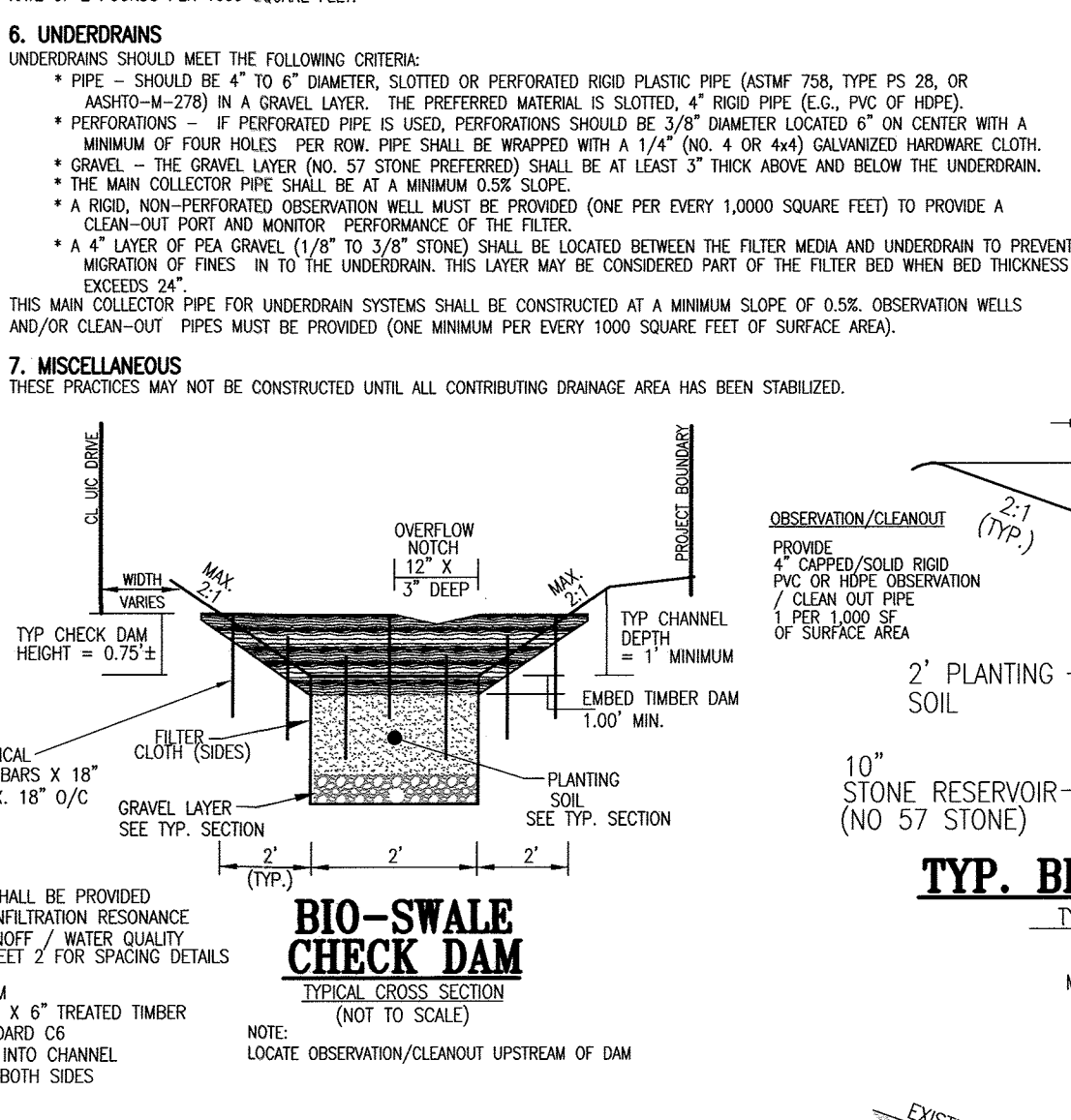
MICRO-BIORETENTION (OVERFLOW) NOT TO SCALE

OPERATION AND MAINTENANCE SCHEDULE FOR (M-6), (M-7) AND (M-8) MICROBIORETENTION AREAS

1. ANNUAL MAINTENANCE OF PLANT MATERIAL, MULCH LAYER AND SOIL LAYER IS REQUIRED.  
2. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.  
3. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. THIS INSPECTION WILL INCLUDE REMOVAL OF DEAD AND DISEASED VEGETATION CONSIDERING BEYOND TREATMENT. TREATMENT OF ALL DISEASED TREES AND SHRUBS AND REPLACEMENT OF ALL DEFICIENT STAKES AND WIRES.  
4. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.  
5. SOIL EROSION TO BE ADDRESSED ON AN AS NEEDED BASIS WITH A MINIMUM OF ONCE PER MONTH AND AFTER HEAVY STORM EVENTS.

NOTE:  
SIZE OF MICRO-BIORETENTION AND RAIN GARDEN SURFACE AREA SHALL BE PLANTED.

MICRO-BIORETENTION DATA CHART														
Facility #	Ponding Depth (ft)	Ponding Elevation	Top of Mulch ELEV. B	Bottom of Mulch ELEV. C	Depth of Plant Mix	Bottom of Plant Mix ELEV. D	Bottom of Pea Gravel ELEV. E	Bottom of Stone ELEV. F	Invert of Underdrain	Additional Depth Stone (ft)	Bottom of Rev. G	Surface Area (SF)	Approx. Dimensions (ft midpoint)	
1	1.48	356.69	356.69	354.76	2.00	352.75	352.42	1.00	351.46	381.66	0.83	350.50	490	125 x 11.9
BIO-SWALE DATA CHART														
1	1.48	356.69	356.69	350.46	2.00	358.75	358.42	1.00	357.46	357.69		313	125 x 2.5	



NOTE: CHECK DAM SHALL BE PROVIDED TO PROVIDE INFILTRATION RESONANCE TIME FOR RUNOFF / WATER QUALITY IMPROVEMENT FOR SLOWING RUNOFF.

\*CHECK DAM WOODEN 6" X 6" TREATED TIMBER WITH A MINIMUM OF 4" TREATMENT. KEYED 12" INTO CHANNEL BANKS / BOTH SIDES.

NOTE: LOCATE OBSERVATION/CLEANOUT UPSTREAM OF DAM

AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND PSWM FACILITY.

16193 5-27-20

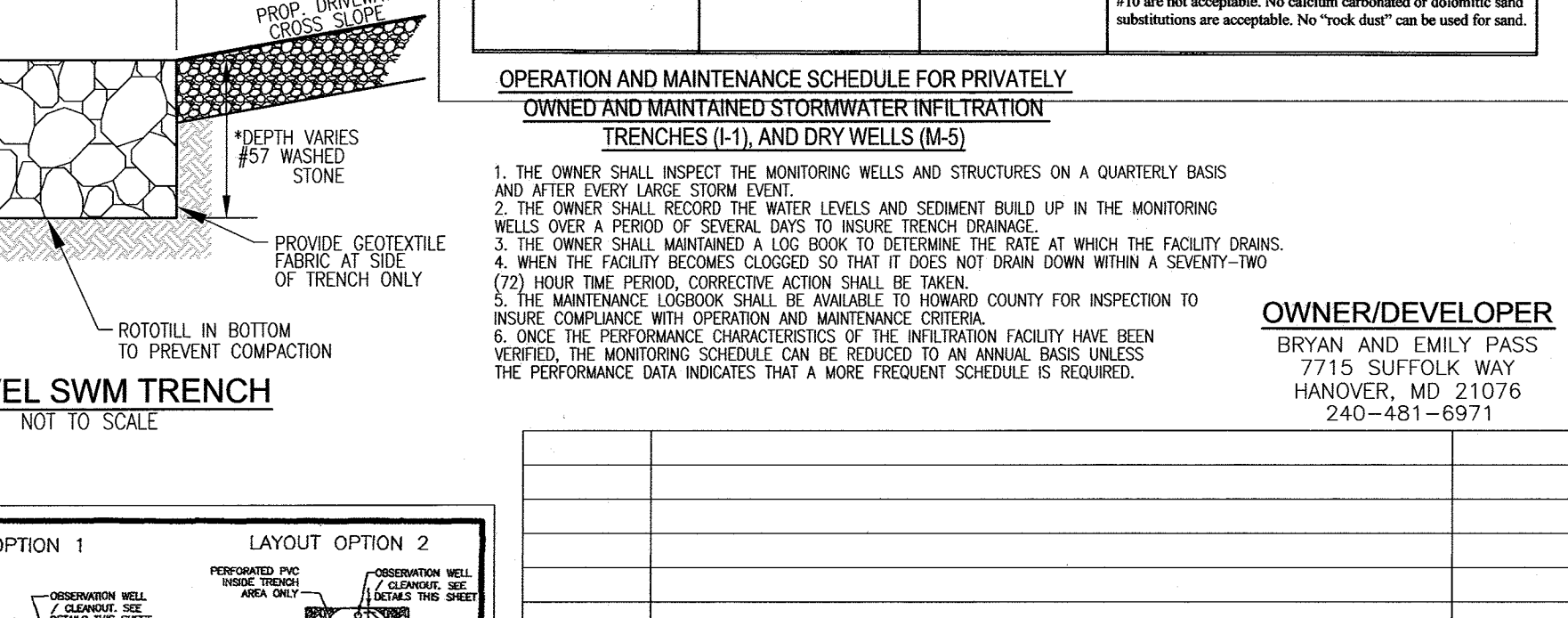
Appendix B.4. Construction Specifications for Environmental Site Design Practices

Material	Specification	Notes
Planting	See Appendix A, Table A.4.1	Plantings are site-specific.
Planting soil	Heavy sand (60-65%) & compost (35-40%) or sandy loam (30%), coarse sand (30%), and compost (40%)	USDA and types heavy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)	
Mulch	Shredded hardwood	aged 6 months, minimum no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	No. 8 OR NO. 9 (1/8" TO 3/8")
Curtain drain	ornamental stone: washed cobble	stone: 2" to 5"
Geotextile		PE Type 1 nonwoven
Gravel underdrain and additional stone	AASHTO M-43	No. 57 OR NO. 6 (1/2" TO 3/4")
Underdrain piping	F 756, Type PS 28 or AASHTO M-278	4" rigid schedule 40 PVC or SDR35
Flowed in place concrete (if required)	MSHA Mix No. 3, 1" - 3500 psi @ 28 days, normal weight, air-entrained, reinforcing to meet ASTM 615-60	Slotted or perforated pipe, 1/8" per @ 6" center, 4 holes per row, minimum of 3" of gravel in-place concrete required; 28 day strength and slump test; all concrete design cases in place and approved by a professional structural engineer licensed in the State of Maryland; design includes meeting ACC Code 58.05.01 vertical loading (H-10 or H-20); allowable increased loading (based on soil strength); and analysis of potential cracking.
Sand	AASHTO M-6 or ASTM-C-33	0.075" to 0.04"

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER INFILTRATION TRENCHES (M-1), AND DRY WELLS (M-5)

1. THE OWNER SHALL INSPECT THE MONITORING WELLS AND STRUCTURES ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.  
2. THE OWNER SHALL RECORD THE WATER LEVELS AND SEDIMENT BUILT UP IN THE MONITORING WELLS OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.  
3. THE OWNER SHALL MAINTAIN A LOG BOOK TO MAINTAIN THE RATE AT WHICH THE FACILITY DRAINS.  
4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN A SEVENTY-TWO (72) HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.  
5. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.  
6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

OWNER/DEVELOPER  
BRYAN AND EMILY PASS  
7715 SUFFOLK WAY  
HANOVER, MD 21076  
240-481-6971



FINAL PLAN  
ESDv DRAINAGE AREA MAP  
NOTES AND DETAILS

PASS PROPERTY  
7831 HARRIET TUBMAN LANE  
COLUMBIA, MD 21044  
ZONED: R-20

TAX MAP 35 GRID 23  
5TH ELECTION DISTRICT

PARCEL 117  
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: RHVE  
DRAWN BY: KOGAH  
CHECKED BY: RHV  
DATE: JULY 2017  
SCALE: AS SHOWN  
W.O. NO.: 14-15

PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2018

8 SHEET OF 8