

UPPER FARNANDIS BRANCH STREAM RESTORATION

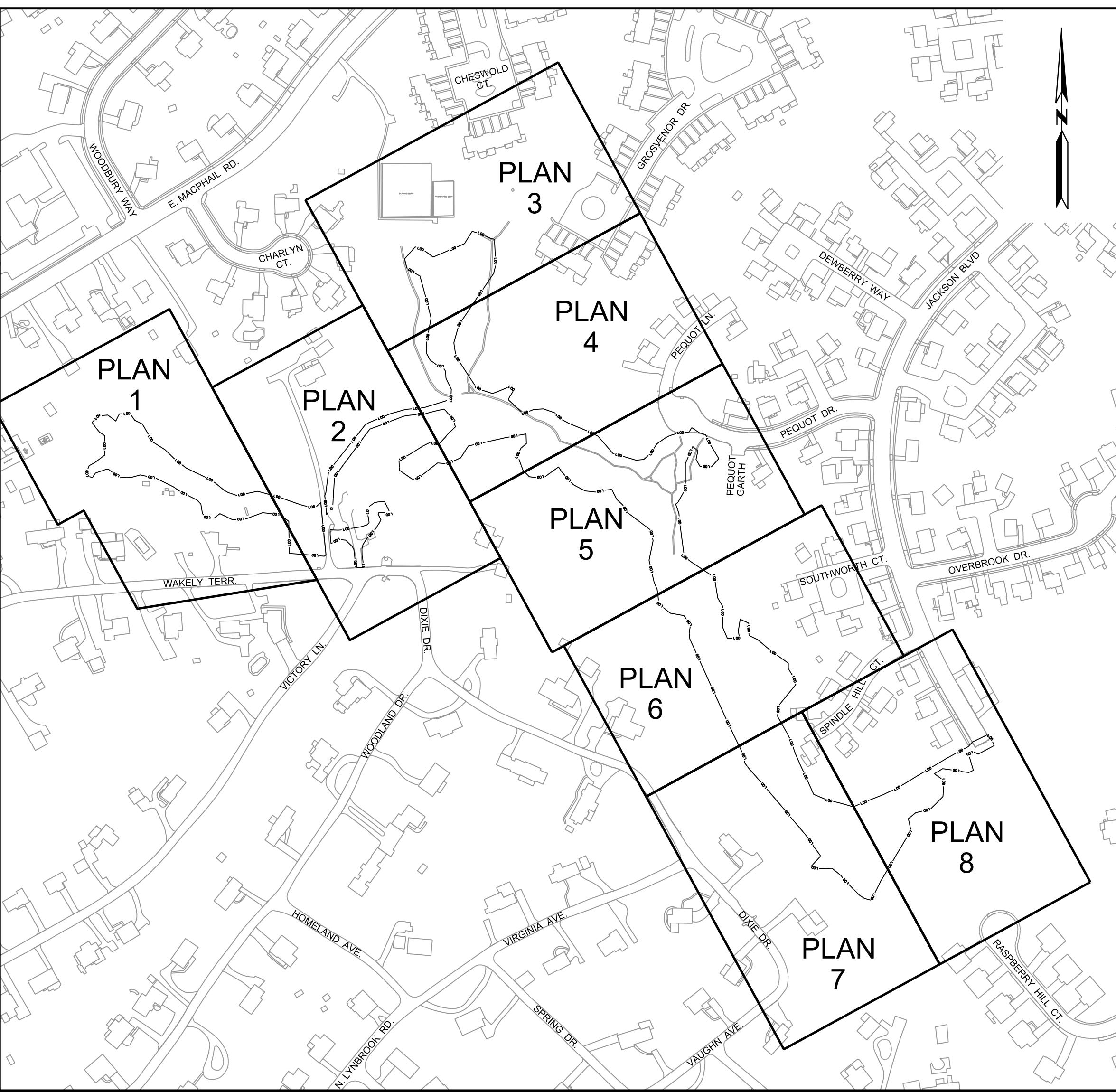
HARFORD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
WATERSHED PROTECTION AND RESTORATION

SHEET INDEX

DWG. NO.	SHEET NO.	SHEET TITLE
TI-01	1	TITLE SHEET
ER-01 TO ER-08	2-9	ENVIRONMENTAL RESOURCES MAP
GS-01 TO GS-08	10-17	GEOMETRY SHEETS
GS-09	18	GEOMETRY TABLES
GR-01 TO GR-08	19-26	GRADING PLANS
GR-09	27	GRADING STRUCTURE TABLES
DE-01 TO DE-06	28-33	STREAM DETAILS
PR-01 TO PR-04	34-37	PROFILES
ES-01 TO ES-08	38-45	EROSION & SEDIMENT CONTROL PLANS
ESN-01	46	EROSION & SEDIMENT CONTROL NOTES
ESD-01	47	EROSION & SEDIMENT CONTROL DETAILS
LS-01 TO LS-08	48-55	LANDSCAPE PLANS
LD-01 TO LD-02	56-57	LANDSCAPE DETAILS
TS-01 TO TS-03	58-60	SURVEYED TREE INFORMATION TABLES
MT-01	61	MAINTENANCE OF TRAFFIC PLAN
MT-02	62	MAINTENANCE OF TRAFFIC NOTES & DETAILS

GENERAL NOTES

1. THE EXISTING TOPOGRAPHY WITH ONE FOOT CONTOUR INTERVALS WAS PREPARED BY KC TECHNOLOGIES, INC IN SEPTEMBER 2023 AND IS BASED ON NAD 83/91 & NAVD 88 DATUM.
2. PROPERTY BOUNDARY LINES ARE BASED ON PLATS AND DEED OF RECORD AND DO NOT REPRESENT A FIELD-RUN BOUNDARY SURVEY.
3. WETLANDS AND WATERWAYS WERE FIELD DELINEATED DURING MAY 31 THOUGH JUNE 2, 2023 BY KC TECHNOLOGIES, INC.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS STANDARD DETAILS, AS CURRENTLY ACCEPTED OR AS OTHERWISE NOTED.
5. NECESSARY PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO PROTECT EXISTING STRUCTURE OR PROPERTY, AND ANY DAMAGE TO THEM DUE TO NEGLIGENCE SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
6. THE EXISTING UTILITIES AND OBSTRUCTIONS SHOWN ARE FROM THE BEST AVAILABLE RECORDS AND SHALL BE VERIFIED BY THE CONTRACTOR TO HIS/HER OWN SATISFACTION BEFORE STARTING CONSTRUCTION. NEITHER THE OWNER NOR KC TECHNOLOGIES, INC. WARRANT OR GUARANTEE THE COMPLETENESS OR CORRECTNESS OF THE INFORMATION GIVEN.
7. IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO SPECIFICALLY MENTION ANY WORK, WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THE PROJECT, SHALL NOT RELIEVE THE CONTRACTOR OF HIS/HER RESPONSIBILITY TO PERFORM SUCH WORK.
8. THE CONTRACTOR SHALL NOTIFY BGE, (410) 234-5691, FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS.
9. THE CONTRACTOR SHALL NOTIFY VERIZON, (410) 224-9497, FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS.
10. THE CONTRACTOR SHALL NOTIFY THE HARFORD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, (410) 638-3122, FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THE DRAWINGS SO THAT A PRECONSTRUCTION MEETING CAN BE SCHEDULED.
11. THE CONTRACTOR SHALL NOTIFY MISS UTILITY @ 1-800-357-7777 FIVE (5) WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS.
12. PIPE ELEVATIONS REFER TO INVERTS UNLESS OTHERWISE NOTED.
13. LOCATION OF FEATURES SHOWN ON THE SITE PLAN HAVE BEEN FIELD VERIFIED.
14. STRUCTURES MAY BE FIELD ADJUSTED AT THE DIRECTION OF THE ENGINEER OR STREAM SPECIALIST TO MINIMIZE DISTURBANCE AND MAXIMIZE FUNCTIONAL UPLIFT.
15. THE PROJECT IS IN THE BYNUM RUN WATERSHED.
16. THE MARYLAND SURFACE WATER USE DESIGNATION IS USE III (NATURAL TROUT WATERS). IN STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.
17. THE RESTORATION PROJECT SHALL BE CONSTRUCTED UNDER THE SUPERVISION OF AN APPROVED QUALIFIED RESTORATION SPECIALIST.
18. SPECIFICATIONS SHALL BE PERFORMED IN ACCORDANCE WITH MD SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.



SITE LOCATION

SCALE: 1" = 200'

CONTROL NOTE:
THE HORIZONTAL AND VERTICAL DATUM SHOWN HEREON ARE BASED
ON THE FOLLOWING HARFORD COUNTY SURVEY CONTROL SYSTEM:

HORIZONTAL: NAD 1983/1991
VERTICAL: NAVD 1988

MONUMENTS:
FALLSTON N 675,445.19 E 1,477,585.69 ELEV. 455.79
FALLSTON AZ MK. N 676,752.37 E 1,477,595.25 ELEV. 464.98

OWNER / DEVELOPER:

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
212 S. BOND STREET, 1ST FLOOR
BEL AIR, MD 21014
CONTACT: LINDSEY SNYDER
LGSNYDER@HARFORDCOUNTYMD.GOV
(410) 638-3217 - EXT 1394

ENGINEER:

KCI TECHNOLOGIES, INC.
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
CONTACT: SHANNON LUCAS, PE
(410) 316-7800

PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.

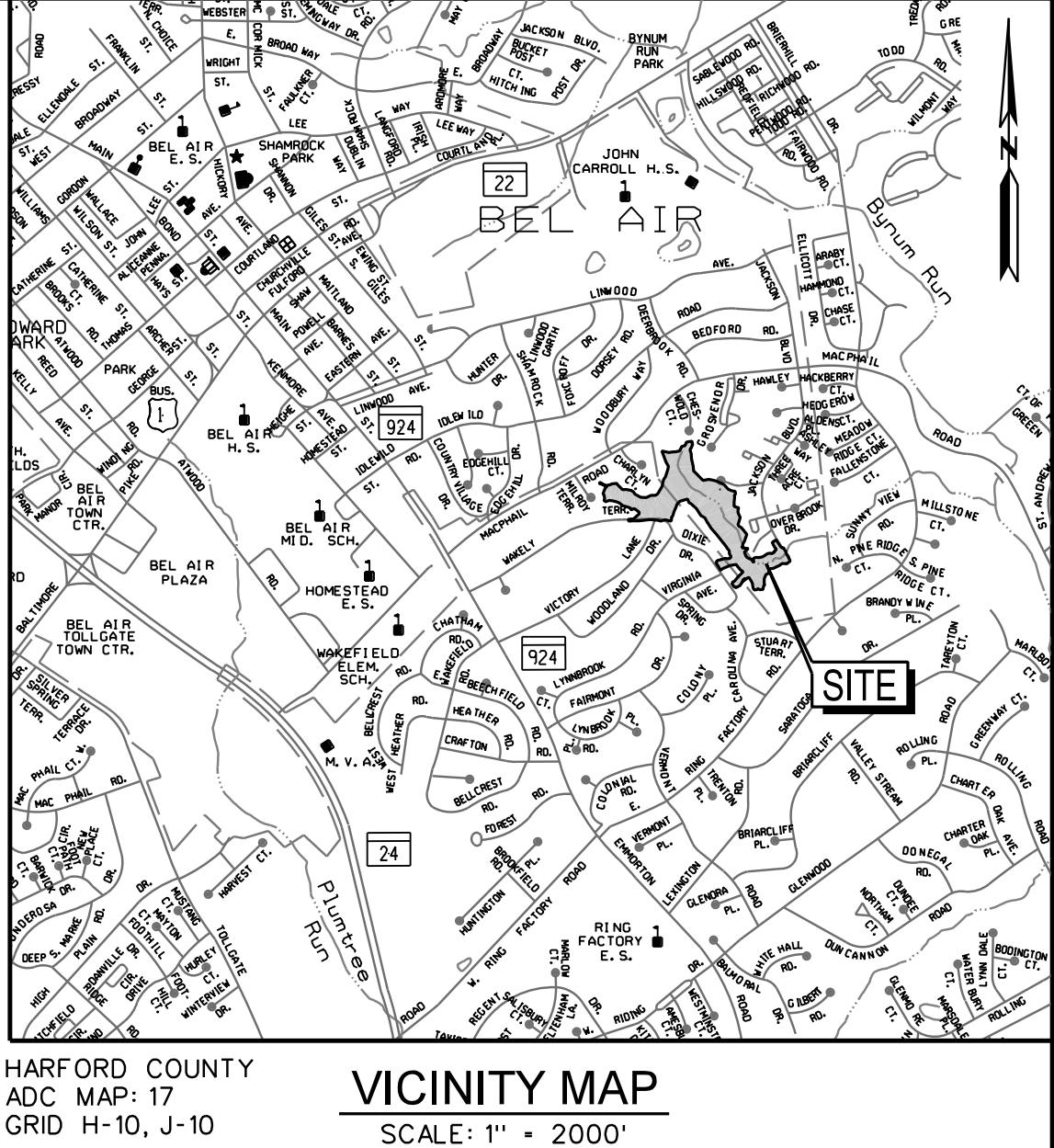


NO.	DATE

60% SUBMITTAL
NOT FOR
CONSTRUCTION

DATE	BY
JAN 2025	
AS SHOWN	
DESIGNED BY	
HS, SL, JT, BM	
DRAWN BY	
CSD, BM	

TITLE SHEET		DRAWING NO.
UPPER FARNANDIS BRANCH STREAM RESTORATION		TI-01
SHEET 1 OF 62 KCI JOB NUMBER 172107055.04		DEPARTMENT OF PUBLIC WORKS



MATCH LINE - SEE SHEET GS-02

HONS ROBERT F
MAC PHAIL RD.
T.M.: 49 GRID: 02C P. 265
DEED: 01297/461
TAX ACCT. 03-039714
ZONING: R2

MARTIN JAMES A
MARTIN JUDITH L
295 WAKELY TERR.
T.M.: 49 GRID: 03C P. 109
LOT: 4 DEED: 06231/001
PLAT: 43030
TAX ACCT. 03-143341
ZONING: R2

N 678750 *E 1500650*

MIDDLEKAUFF
EDWARD BRUCE ETAL
607 E. MAC PHAIL RD.
T.M.: 49 GRID: 02C P. 763
DEED: 00918/992
TAX ACCT. 03-053385
ZONING: P2

TOLLEY STEPHEN C
605 E. MAC PHAIL RD.
T.M.: 49 GRID: 02C P. 745
DEED: 03282/224
TAX ACCT. 03-047709
ZONING: R2

M-T1
MILROY
TRIB.
NORTH—

NIELSEN GERALD
NIELSEN BARBARA
603 E. MAC PHAIL
T.M.: 49 GRID: 02C
DEED: 01041/6
TAX ACCT. 03-055
ZONING: R2

DU MONT JAMES R
DU MONT PATRICIA S
907 MILROY TERR.
T.M.: 49 GRID: 02C P. 097
DEED: 03179/089
TAX ACCT. 03-064417
ZONING: R2

M-T1
MILR
TRIB

MAAS SCOTT
HEIDERMAN DANA
299 WAKELY TERR.
M: 49 GRID: 02C P. 99
DEED: 12837/001
PLAT: 5063
AX ACCT. 03-060926
ZONING: R2

MUCCI SANDRA GENE
291 WAKELY TERR.
T.M.: 49 GRID: 03C P. 136
LOT: 3 DEED: 08097/163
PLAT: 43030
TAX ACCT: 03-143333

CRESWELL CHARLES P
CRESWELL MARY P
283 WAKELY TERR.
T.M.: 49 GRID: 03C P. 14
DEED: 01363/658
PLAT: 4026
TAX ACCT. 03-161625
ZONING: R2

CRESWELL CHARLES R
CRESWELL MARY P
283 WAKELY TERR.
T.M.: 49 GRID: 03C P. 143
DEED: 01363/658
PLAT: 4026
TAX ACCT. 03-161625
ZONING: R2

PROFESSIONAL CERTIFICATION. 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. 33079, Expiration Date 01-16-2027

KCI
TECHNOLOGIES

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

936 RIDGE BROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

(IN FEET) 1 inch = 20ft.			
		DATE JAN. 2025	DRAWING NO. GS-01
	BY	SCALE 1" = 20'	GEOMETRY SHEET UPPER FARNANDIS BRANCH STREAM RESTORATION
		DESIGNED BY HS, SL, JT, BM	
		DRAWN BY CSD, BM	
		HARFORD COUNTY, MARYLAND	
		DEPARTMENT OF PUBLIC WORKS	
		SHEET 10 OF 62	KCI JOB NUMBER 172107055.04

PLOTTED: "02:00 PM on Monday, January 13, 2025"
FILE: M:\2021\172107055.04\Drawings\pGS_P003_GeometrySheet.dgn

MATCH LINE - SEE SHEET GS-02

<img alt="A detailed cadastral map of a residential area showing property boundaries, street names, and various easements. The map includes labels for 'CHESWOLD CT.', 'GROSVENOR DR.', and 'EX. TENNIS COURTS'. It features a grid system with property lots labeled with letters and numbers (e.g., G-T3, G-T2, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100, C101, C102, C103, C104, C105, C106, C107, C108, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C130, C131, C132, C133, C134, C135, C136, C137, C138, C139, C140, C141, C142, C143, C144, C145, C146, C147, C148, C149, C150, C151, C152, C153, C154, C155, C156, C157, C158, C159, C160, C161, C162, C163, C164, C165, C166, C167, C168, C169, C170, C171, C172, C173, C174, C175, C176, C177, C178, C179, C180, C181, C182, C183, C184, C185, C186, C187, C188, C189, C190, C191, C192, C193, C194, C195, C196, C197, C198, C199, C200, C201, C202, C203, C204, C205, C206, C207, C208, C209, C210, C211, C212, C213, C214, C215, C216, C217, C218, C219, C220, C221, C222, C223, C224, C225, C226, C227, C228, C229, C230, C231, C232, C233, C234, C235, C236, C237, C238, C239, C240, C241, C242, C243, C244, C245, C246, C247, C248, C249, C250, C251, C252, C253, C254, C255, C256, C257, C258, C259, C260, C261, C262, C263, C264, C265, C266, C267, C268, C269, C270, C271, C272, C273, C274, C275, C276, C277, C278, C279, C280, C281, C282, C283, C284, C285, C286, C287, C288, C289, C289, C290, C291, C292, C293, C294, C295, C296, C297, C298, C299, C299, C300, C301, C302, C303, C304, C305, C306, C307, C308, C309, C309, C310, C311, C312, C313, C314, C315, C316, C317, C318, C319, C319, C320, C321, C322, C323, C324, C325, C326, C327, C328, C329, C329, C330, C331, C332, C333, C334, C335, C336, C337, C338, C339, C339, C340, C341, C342, C343, C344, C345, C346, C347, C348, C349, C349, C350, C351, C352, C353, C354, C355, C356, C357, C358, C359, C359, C360, C361, C362, C363, C364, C365, C366, C367, C368, C369, C369, C370, C371, C372, C373, C374, C375, C376, C377, C378, C379, C379, C380, C381, C382, C383, C384, C385, C386, C387, C388, C389, C389, C390, C391, C392, C393, C394, C395, C396, C397, C398, C399, C399, C400, C401, C402, C403, C404, C405, C406, C407, C408, C409, C409, C410, C411, C412, C413, C414, C415, C416, C417, C418, C419, C419, C420, C421, C422, C423, C424, C425, C426, C427, C428, C429, C429, C430, C431, C432, C433, C434, C435, C436, C437, C438, C439, C439, C440, C441, C442, C443, C444, C445, C446, C447, C448, C449, C449, C450, C451, C452, C453, C454, C455, C456, C457, C458, C459, C459, C460, C461, C462, C463, C464, C465, C466, C467, C468, C469, C469, C470, C471, C472, C473, C474, C475, C476, C477, C478, C479, C479, C480, C481, C482, C483, C484, C485, C486, C487, C488, C489, C489, C490, C491, C492, C493, C494, C495, C496, C497, C498, C499, C499, C500, C501, C502, C503, C504, C505, C506, C507, C508, C509, C509, C510, C511, C512, C513, C514, C515, C516, C517, C518, C519, C519, C520, C521, C522, C523, C524, C525, C526, C527, C528, C529, C529, C530, C531, C532, C533, C534, C535, C536, C537, C538, C539, C539, C540, C541, C542, C543, C544, C545, C546, C547, C548, C549, C549, C550, C551, C552, C553, C554, C555, C556, C557, C558, C559, C559, C560, C561, C562, C563, C564, C565, C566, C567, C568, C569, C569, C570, C571, C572, C573, C574, C575, C576, C577, C578, C579, C579, C580, C581, C582, C583, C584, C585, C586, C587, C588, C589, C589, C590, C591, C592, C593, C594, C595, C596, C597, C598, C599, C599, C600, C601, C602, C603, C604, C605, C606, C607, C608, C609, C609, C610, C611, C612, C613, C614, C615, C616, C617, C618, C619, C619, C620, C621, C622, C623, C624, C625, C626, C627, C628, C629, C629, C630, C631, C632, C633, C634, C635, C636, C637, C638, C639, C639, C640, C641, C642, C643, C644, C645, C646, C647, C648, C649, C649, C650, C651, C652, C653, C654, C655, C656, C657, C658, C659, C659, C660, C661, C662, C663, C664, C665, C666, C667, C668, C669, C669, C670, C671, C672, C673, C674, C675, C676, C677, C678, C679, C679, C680, C681, C682, C683, C684, C685, C686, C687, C688, C689, C689, C690, C691, C692, C693, C694, C695, C696, C697, C698, C699, C699, C700, C701, C702, C703, C704, C705, C706, C707, C708, C709, C709, C710, C711, C712, C713, C714, C715, C716, C717, C718, C719, C719, C720, C721, C722, C723, C724, C725, C726, C727, C728, C729, C729, C730, C731, C732, C733, C734, C735, C736, C737, C738, C739, C739, C740, C741, C742, C743, C744, C745, C746, C747, C748, C749, C749, C750, C751, C752, C753, C754, C755, C756, C757, C758, C759, C759, C760, C761, C762, C763, C764, C765, C766, C767, C768, C769, C769, C770, C771, C772, C773, C774, C775, C776, C777, C778, C779, C779, C780, C781, C782, C783, C784, C785, C786, C787, C788, C789, C789, C790, C791, C792, C793, C794, C795, C796, C797, C798, C799, C799, C800, C801, C802, C803, C804, C805, C806, C807, C808, C809, C809, C810, C811, C812, C813, C814, C815, C816, C817, C818, C819, C819, C820, C821, C822, C823, C824, C825, C826, C827, C828, C829, C829, C830, C831, C832, C833, C834, C835, C836, C837, C838, C839, C839, C840, C841, C842, C843, C844, C845, C846, C847, C848, C849, C849, C850, C851, C852, C853, C854, C855, C856, C857, C858, C859, C859, C860, C861, C862, C863, C864, C865, C866, C867, C868, C869, C869, C870, C871, C872, C873, C874, C875, C876, C877, C878, C879, C879, C880, C881, C882, C883, C884, C885, C886, C887, C888, C889, C889, C890, C891, C892, C893, C894, C895, C896, C897, C898, C899, C899, C900, C901, C902, C903, C904, C905, C906, C907, C908, C909, C909, C910, C911, C912, C913, C914, C915, C916, C917, C918, C919, C919, C920, C921, C922, C923, C924, C925, C926, C927, C928, C929, C929, C930, C931, C932, C933, C934, C935, C936, C937, C938, C939, C939, C940, C941, C942, C943, C944, C945, C946, C947, C948, C949, C949, C950, C951, C952, C953, C954, C955, C956, C957, C958, C959, C959, C960, C961, C962, C963, C964, C965, C966, C967, C968, C969, C969, C970, C971, C972, C973, C974, C975, C976, C977, C978, C979, C979, C980, C981, C982, C983, C984, C985, C986, C987, C988, C989, C989, C990, C991, C992, C993, C994, C995, C996, C997, C998, C999, C999, C1000, C1001, C1002, C1003, C1004, C1005, C1006, C1007, C1008, C1009, C1009, C1010, C1011, C1012, C1013, C1014, C1015, C1016, C1017, C1018, C1019, C1019, C1020, C1021, C1022, C1023, C1024, C1025, C1026, C1027, C1028, C1029, C1029, C1030, C1031, C1032, C1033, C1034, C1035, C1036, C1037, C1038, C1039, C1039, C1040, C1041, C1042, C1043, C1044, C1045, C1046, C1047, C1048, C1049, C1049, C1050, C1051, C1052, C1053, C1054, C1055, C1056, C1057, C1058, C1059, C1059, C1060, C1061, C1062, C1063, C1064, C1065, C1066, C1067, C1068, C1069, C1069, C1070, C1071, C1072, C1073, C1074, C1075, C1076, C1077, C1078, C1079, C1079, C1080, C1081, C1082, C1083, C1084, C1085, C1086, C1087, C1088, C1089, C1089, C1090, C1091, C1092, C1093, C1094, C1095, C1096, C1097, C1098, C1099, C1099, C1100, C1101, C1102, C1103, C1104, C1105, C1106, C1107, C1108, C1109, C1109, C1110, C1111, C1112, C1113, C1114, C1115, C1116, C1117, C1118, C1119, C1119, C1120, C1121, C1122, C1123, C1124, C1125, C1126, C1127, C1128, C1129, C1129, C1130, C1131, C1132, C1133, C1134, C1135, C1136, C1137, C1138, C1139, C1139, C1140, C1141, C1142, C1143, C1144, C1145, C1146, C1147, C1148, C1149, C1149, C1150, C1151, C1152, C1153, C1154, C1155, C1156, C1157, C1158, C1159, C1159, C1160, C1161, C1162, C1163, C1164, C1165, C1166, C1167, C1168, C1169, C1169, C1170, C1171, C1172, C1173, C1174, C1175, C1176, C1177, C1178, C1179, C1179, C1180, C1181, C1182, C1183, C1184, C1185, C1186, C1187, C1188, C1189, C1189, C1190, C1191, C1192, C1193, C1194, C1195, C1196, C1197, C1198, C1199, C1199, C1200, C1201, C1202, C1203, C1204, C1205, C1206, C1207, C1208, C1209, C1209, C1210, C1211, C1212, C1213, C1214, C1215, C1216, C1217, C1218, C1219, C1219, C1220, C1221, C1222, C1223, C1224, C1225, C1226, C1227, C1228, C1229, C1229, C1230, C1231, C1232, C1233, C1234, C1235, C1236, C1237, C1238, C1239, C1239, C1240, C1241, C1242, C1243, C1244, C1245, C1246, C1247, C1248, C1249, C1249, C1250, C1251, C1252, C1253, C1254, C1255, C1256, C1257, C1258, C1259, C1259, C1260, C1261, C1262, C1263, C1264, C1265, C1266, C1267, C1268, C1269, C1269, C1270, C1271, C1272, C1273, C1274, C1275, C1276, C1277, C1278, C1279, C1279, C1280, C1281, C1282, C1283, C1284, C1285, C1286, C1287, C1288, C1289, C1289, C1290, C1291, C1292, C1293, C1294, C1295, C1296, C1297, C1298, C1299, C1299, C1300, C1301, C1302, C1303, C1304, C1305, C1306, C1307, C1308, C1309, C1309, C1310, C1311, C1312, C1313, C1314, C1315, C1316, C1317, C1318, C1319, C1319, C1320, C1321, C1322, C1323, C1324, C1325, C1326, C1327, C1328, C1329, C1329, C1330, C1331, C1332, C1333, C1334, C1335, C1336, C1337, C1338, C1339, C1339, C1340, C1341, C1342, C1343, C1344, C1345, C1346, C1347, C1348, C1349, C1349, C1350, C1351, C1352, C1353, C1354, C1355, C1356, C1357, C1358, C1359, C1359, C1360, C1361, C1362, C1363, C1364, C1365, C1366, C1367, C1368, C1369, C1369, C1370, C1371, C1372, C1373, C1374, C1375, C1376, C1377, C1378, C1379, C1379, C1380, C1381, C1382, C1383, C1384, C1385, C1386, C1387, C1388, C1389, C1389, C1390, C1391, C1392, C1393, C1394, C1395, C1396, C1397, C1398, C1399, C1399, C1400, C1401, C1402, C1403, C1404, C1405, C1406, C

PROFESSIONAL CERTIFICATION. 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. 33079, Expiration Date 01-16-2010.



EDGEBROOK ROAD
MARYLAND 21152
PHONE: (410) 316-7800
(410) 316-7818

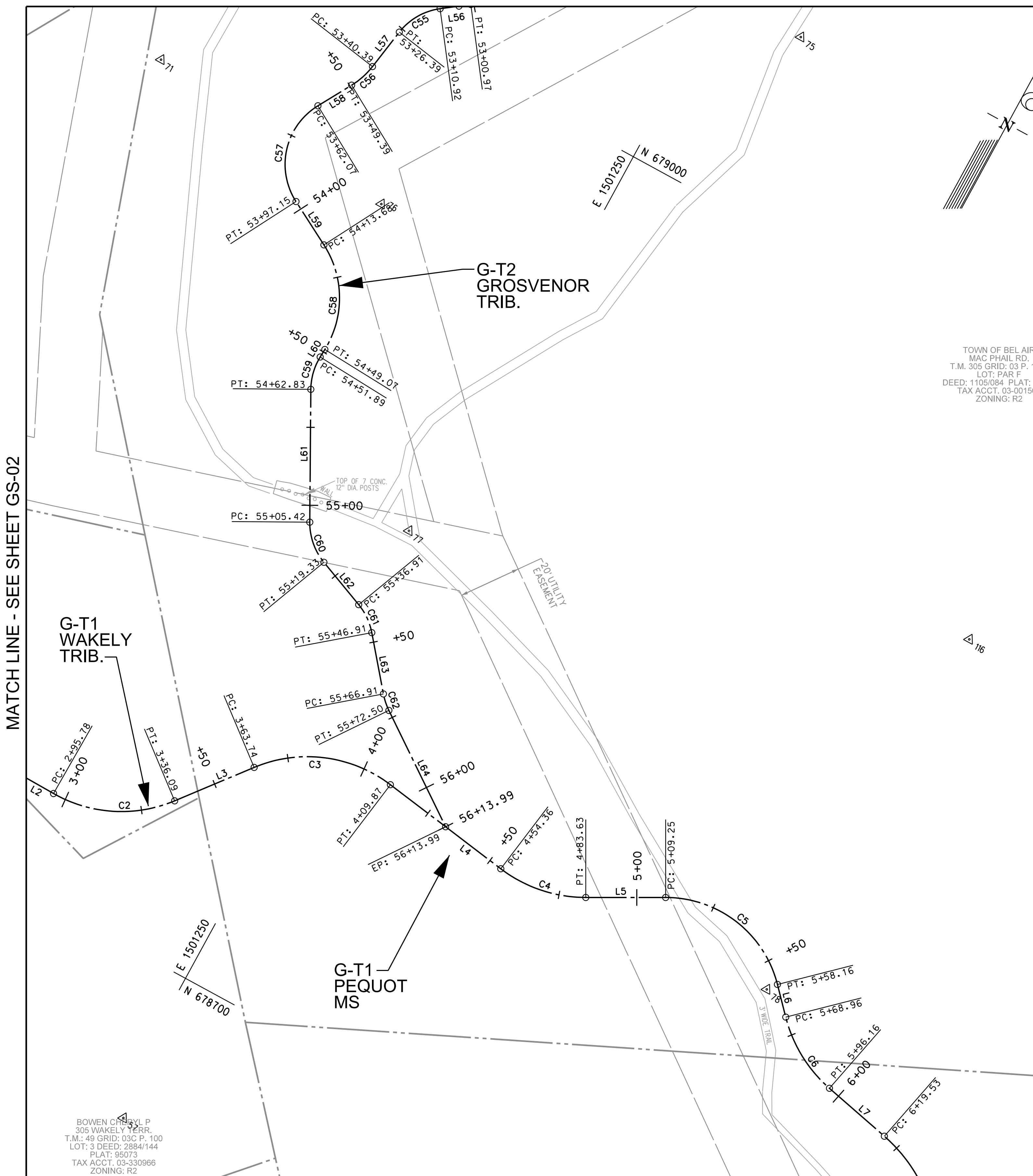
60% SUBMITTA
NOT FOR
CONSTRUCTION

GEOMETRY SHEET

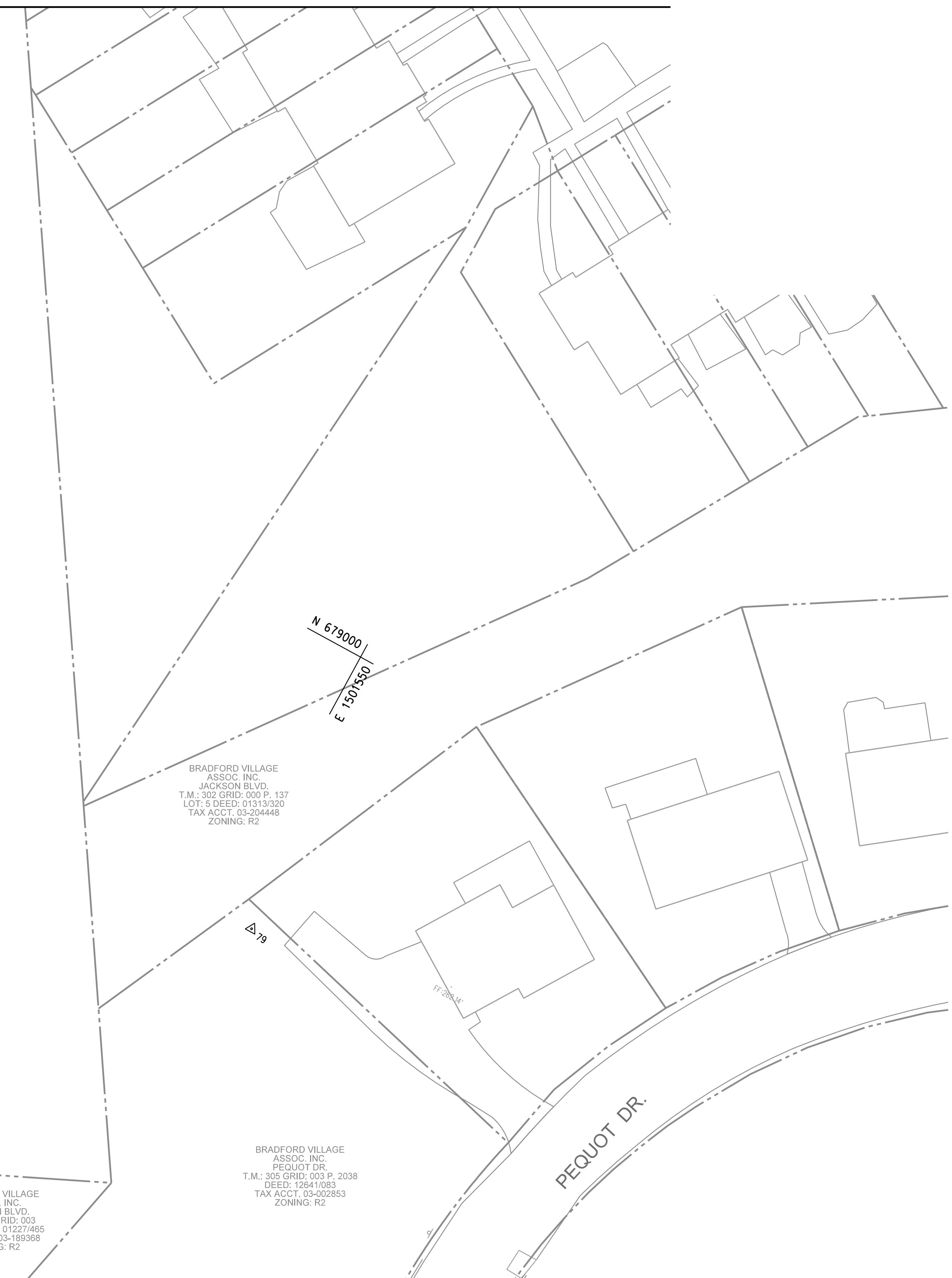
UPPER FARNANDIS BRANCH STREAM RESTORATION

DRAWING NO.
GS-03
SHEET 12 OF 62
KCI JOB NUMBER
172107055.04

MATCH LINE - SEE SHEET GS-03



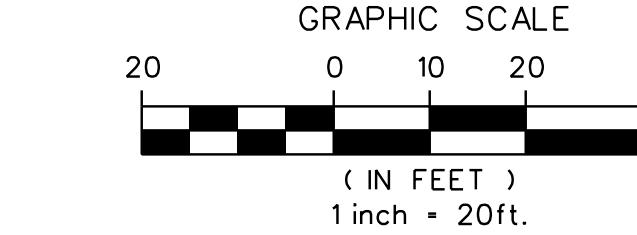
MATCH LINE - SEE SHEET GS-05



PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.



60% SUBMITTAL
NOT FOR
CONSTRUCTION



DATE: JAN. 2025
SCALE: 1" = 20'
DESIGNED BY: HS, SL, JT, BM
DRAWN BY: CSD, BM

GEOMETRY SHEET
UPPER FARNANDIS BRANCH
STREAM RESTORATION

DRAWING NO.: GS-04

SHEET 13 OF 62
KCI JOB NUMBER
172107055.04

DEPARTMENT OF PUBLIC WORKS



PROFESSIONAL CERTIFICATION. 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. 33079, Expiration Date 01-16-2027



60% SUBMITTAL
NOT FOR CONSTRUCTION

MANAGERS
BOOK ROAD
AND 21152
(316) 7800
6-7818

GEOMETRY SHEET

UPPER FARNANDIS BRANCH STREAM RESTORATION

Y MARYLAND

DEPARTMENT OF PUBLIC

DEPARTMENT OF PUBLIC WORKS

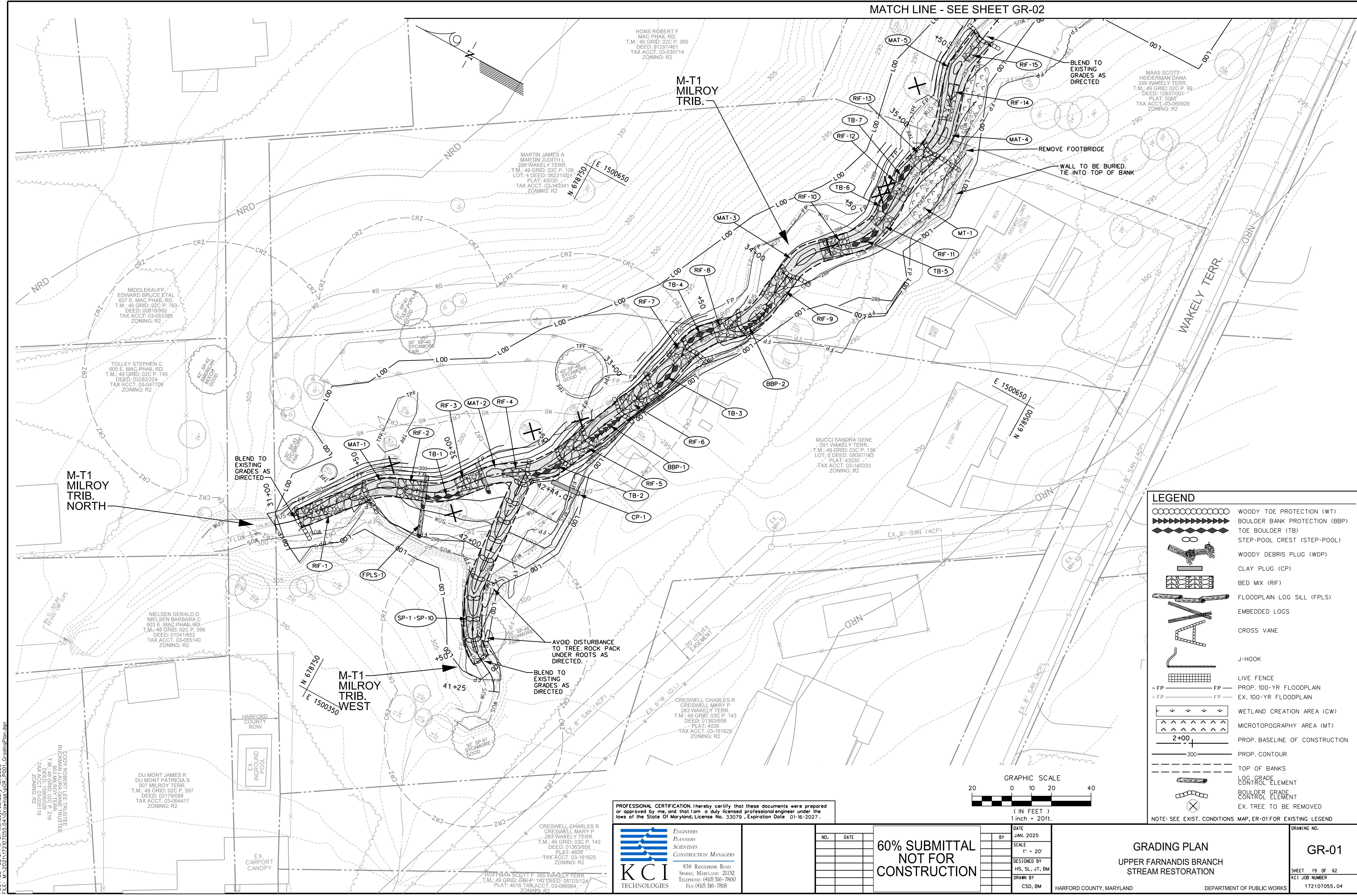
Curve Table							
Curve #	Radius	Length	Delta	Tangent	Chord Direction	Chord Length	Alignment Name
C1	44.00	41.15'	53°34'57.96"	22.22'	N64° 17' 55.73"E	39.67'	WAKELY PEQUOT
C2	44.00	40.31'	52°29'16.30"	21.69'	N64° 50' 46.56"E	38.91'	WAKELY PEQUOT
C3	44.00	46.13'	60°04'24.55"	25.44'	N68° 38' 20.69"E	44.05'	WAKELY PEQUOT
C4	45.00	29.27'	37°16'02.42"	15.17'	N80° 02' 31.75"E	28.76'	WAKELY PEQUOT
C5	37.00	48.91'	75°44'06.45"	28.77'	S80° 43' 26.24"E	45.42'	WAKELY PEQUOT
C6	45.00	27.20'	34°37'35.34"	14.03'	S60° 10' 10.68"E	26.78'	WAKELY PEQUOT
C7	50.00	40.09'	45°56'20.00"	21.19'	S54° 30' 48.36"E	39.02'	WAKELY PEQUOT
C8	50.00	39.42'	45°10'00.67"	20.80'	S54° 07' 38.69"E	38.40'	WAKELY PEQUOT
C9	65.00	39.23'	34°34'56.96"	20.23'	S59° 25' 10.55"E	38.64'	WAKELY PEQUOT
C10	65.00	52.35'	46°08'51.07"	27.69'	S19° 03' 16.53"E	50.95'	WAKELY PEQUOT
C11	65.00	79.04'	69°40'02.71"	45.23'	S30° 48' 52.35"E	74.26'	WAKELY PEQUOT
C12	62.00	66.46'	61°25'13.49"	36.83'	S34° 56' 16.96"E	63.33'	WAKELY PEQUOT
C13	65.00	68.61'	60°28'29.89"	37.89'	S34° 27' 55.17"E	65.47'	WAKELY PEQUOT
C14	65.00	88.03'	77°35'54.69"	52.26'	S25° 54' 12.77"E	81.46'	WAKELY PEQUOT
C15	55.00	60.79'	63°19'39.36"	33.92'	S18° 46' 05.10"E	57.74'	WAKELY PEQUOT
C16	55.00	26.78'	27°53'54.98"	13.66'	S36° 28' 57.29"E	26.52'	WAKELY PEQUOT
C17	55.00	44.83'	46°42'05.31"	23.74'	S45° 53' 02.46"E	43.60'	WAKELY PEQUOT
C18	60.00	13.88'	13°15'14.47"	6.97'	S62° 36' 27.88"E	13.85'	WAKELY PEQUOT
C19	58.00	70.42'	69°33'47.24"	40.28'	N89° 14' 15.73"E	66.17'	WAKELY PEQUOT
C20	70.00	34.75'	28°26'21.80"	17.74'	N68° 40' 33.01"E	34.39'	WAKELY PEQUOT

Curve Table							
Curve #	Radius	Length	Delta	Tangent	Chord Direction	Chord Length	Alignment Name
C61	20.00	10.00'	28°38'52.40"	5.11'	S53° 39' 49.59"E	9.90'	GROSVENOR TRIB.
C62	21.00	5.59'	15°15'32.71"	2.81'	S46° 58' 09.74"E	5.58'	GROSVENOR TRIB.
C63	15.00	15.33'	58°32'36.63"	8.41'	S33° 13' 13.96"E	14.67'	CHARLYN TRIB.
C64	15.00	10.01'	38°15'01.80"	5.20'	S23° 04' 26.55"E	9.83'	CHARLYN TRIB.
C65	15.00	11.54'	44°04'42.99"	6.07'	S20° 09' 35.95"E	11.26'	CHARLYN TRIB.
C66	15.00	8.22'	31°24'37.22"	4.22'	S13° 49' 33.07"E	8.12'	CHARLYN TRIB.
C67	12.00	7.01'	33°27'34.76"	3.61'	N40° 15' 55.61"E	6.91'	DIXIE TRIB. 1
C68	12.00	16.67'	79°34'48.28"	9.99'	S83° 12' 52.87"E	15.36'	DIXIE TRIB. 1
C69	23.00	11.66'	29°02'08.87"	5.96'	S57° 56' 33.17"E	11.53'	DIXIE TRIB. 1
C70	15.00	12.87'	49°10'41.91"	6.86'	S47° 52' 16.64"E	12.48'	DIXIE TRIB. 1
C71	14.00	10.16'	41°34'57.09"	5.32'	S44° 04' 24.23"E	9.94'	DIXIE TRIB. 1
C72	18.00	12.91'	41°06'13.71"	6.75'	N79° 04' 28.06"E	12.64'	DIXIE TRIB. 2
C73	20.00	10.62'	30°24'46.49"	5.44'	N84° 25' 11.67"E	10.49'	DIXIE TRIB. 2
C74	20.00	15.38'	44°04'02.45"	8.09'	S88° 45' 10.35"E	15.01'	DIXIE TRIB. 2
C75	20.00	22.60'	64°44'33.71"	12.68'	N80° 54' 34.02"E	21.42'	DIXIE TRIB. 2
C76	23.00	21.75'	54°11'23.97"	11.77'	N10° 24' 12.98"E	20.95'	MS TRIB. CAROLINA AVE.
C77	33.00	47.14'	81°50'43.95"	28.61'	N3° 25' 27.01"W	43.23'	MS TRIB. CAROLINA AVE.
C78	33.00	46.70'	81°04'30.04"	28.22'	N3° 48' 33.97"W	42.90'	MS TRIB. CAROLINA AVE.
C79	30.00	20.65'	39°26'24.20"	10.75'	S43° 00' 29.52"W	20.25'	OUTFALL SD-4
C80	30.00	15.00'	28°38'52.40"	7.66'	S37° 36' 43.62"W	14.84'	OUTFALL SD-4

Line Table			
Line #	Length	Direction	Alignment Name
L1	67.31'	N37° 30' 26.75"E	WAKELY PEQUOT
L2	12.32'	S88° 54' 35.29"E	WAKELY PEQUOT
L3	27.65'	N38° 36' 08.41"E	WAKELY PEQUOT
L4	44.49'	S81° 19' 27.04"E	WAKELY PEQUOT
L5	25.62'	N61° 24' 30.54"E	WAKELY PEQUOT
L6	10.81'	S42° 51' 23.01"E	WAKELY PEQUOT
L7	23.37'	S77° 28' 58.36"E	WAKELY PEQUOT
L8	21.97'	S31° 32' 38.36"E	WAKELY PEQUOT
L9	18.58'	S76° 42' 39.03"E	WAKELY PEQUOT
L10	78.41'	S42° 07' 42.07"E	WAKELY PEQUOT
L11	43.72'	S4° 01' 09.00"W	WAKELY PEQUOT
L12	14.34'	S65° 38' 53.71"E	WAKELY PEQUOT
L13	47.82'	S4° 13' 40.22"E	WAKELY PEQUOT
L14	67.97'	S64° 42' 10.11"E	WAKELY PEQUOT
L15	76.49'	S12° 53' 44.58"W	WAKELY PEQUOT
L16	26.48'	S50° 25' 54.78"E	WAKELY PEQUOT
L17	50.50'	S22° 31' 59.80"E	WAKELY PEQUOT
L18	63.52'	S69° 14' 05.11"E	WAKELY PEQUOT
L19	15.96'	S55° 58' 50.64"E	WAKELY PEQUOT
L20	43.75'	N54° 27' 22.11"E	WAKELY PEQUOT

Line Table			
Line #	Length	Direction	Alignment Name
L41	41.12'	N74° 31' 00.47"E	MILROY TRIB.
L42	5.26'	N6° 20' 21.86"E	MILROY TRIB.
L43	37.73'	N84° 43' 41.50"E	MILROY TRIB.
L44	7.31'	N27° 38' 51.39"E	MILROY TRIB. WEST
L45	16.58'	N63° 11' 59.36"E	MILROY TRIB. WEST
L46	58.45'	N85° 44' 44.54"E	MILROY TRIB. WEST
L47	9.83'	S20° 23' 04.47"W	GROSVENOR TRIB.
L48	2.05'	S70° 43' 09.46"W	GROSVENOR TRIB.
L49	28.12'	S5° 23' 12.82"E	GROSVENOR TRIB.
L50	5.96'	S57° 20' 11.10"W	GROSVENOR TRIB.
L51	10.04'	S2° 49' 59.55"W	GROSVENOR TRIB.
L52	9.80'	S56° 22' 25.29"W	GROSVENOR TRIB.
L53	16.47'	S16° 29' 57.32"E	GROSVENOR TRIB.
L54	11.34'	S43° 51' 58.78"W	GROSVENOR TRIB.
L55	6.57'	S18° 30' 42.46"W	GROSVENOR TRIB.
L56	9.95'	S53° 39' 52.18"W	GROSVENOR TRIB.
L57	14.00'	S9° 20' 37.00"W	GROSVENOR TRIB.
L58	12.68'	S29° 58' 12.33"W	GROSVENOR TRIB.
L59	16.53'	S61° 23' 29.90"E	GROSVENOR TRIB.
L60	2.82'	S3° 12' 10.05"W	GROSVENOR TRIB.

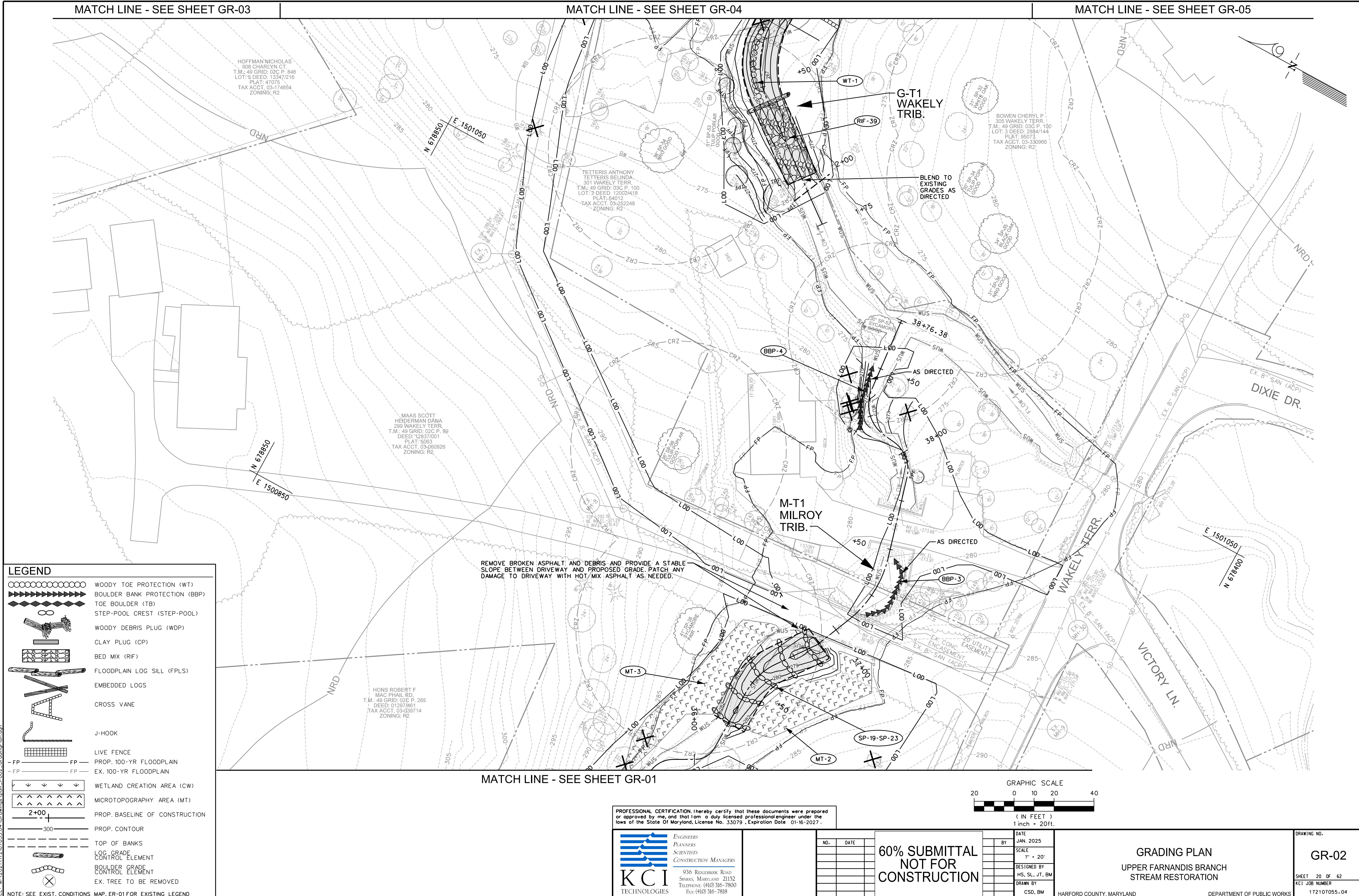
MATCH LINE - SEE SHEET GR-02



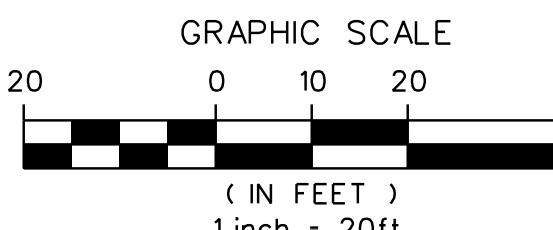
MATCH LINE - SEE SHEET GR-03

MATCH LINE - SEE SHEET GR-04

MATCH LINE - SEE SHEET GR-05



MATCH LINE - SEE SHEET GR-01



**60% SUBMITTAL
NOT FOR
CONSTRUCTION**

NO.	DATE

DATE	BY
JAN. 2025	
SCALE	1" • 20'
DESIGNED BY	HS, SL, JT, BM
DRAWN BY	CSD, BM



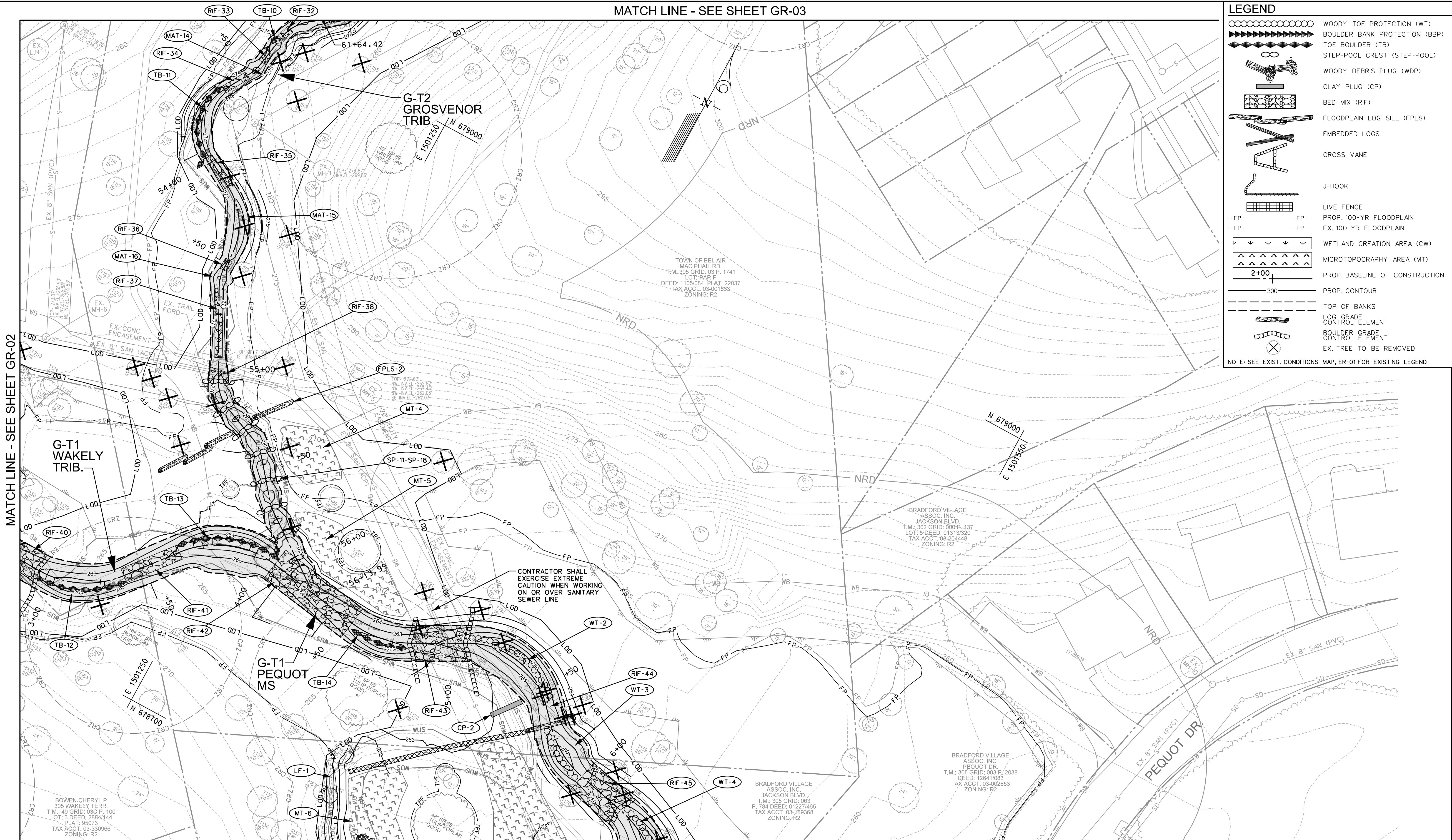
PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 33079, Expiration Date 01-16-2027.



**60% SUBMITTAL
NOT FOR
CONSTRUCTION**

NO.	DATE	BY	DATE
			JAN. 2025
			SCALE 1" • 20'
			DESIGNED BY HS, SL, JT, BM
			DRAWN BY CSD, BM

GRADING PLAN		DRAWING NO.
UPPER FARNANDIS BRANCH STREAM RESTORATION		GR-03
SHEET 21 OF 62	KCI JOB NUMBER	172107055.04



PROFESSIONAL CERTIFICATION. 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. 33079, Expiration Date 01-16-2027.



ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

60% SUBMITTAL
NOT FOR
CONSTRUCTION

ATE

60% SUBMITTAL
NOT FOR
CONSTRUCTION

GRADING PLAN

UPPER FARNANDIS BRANCH STREAM RESTORATION

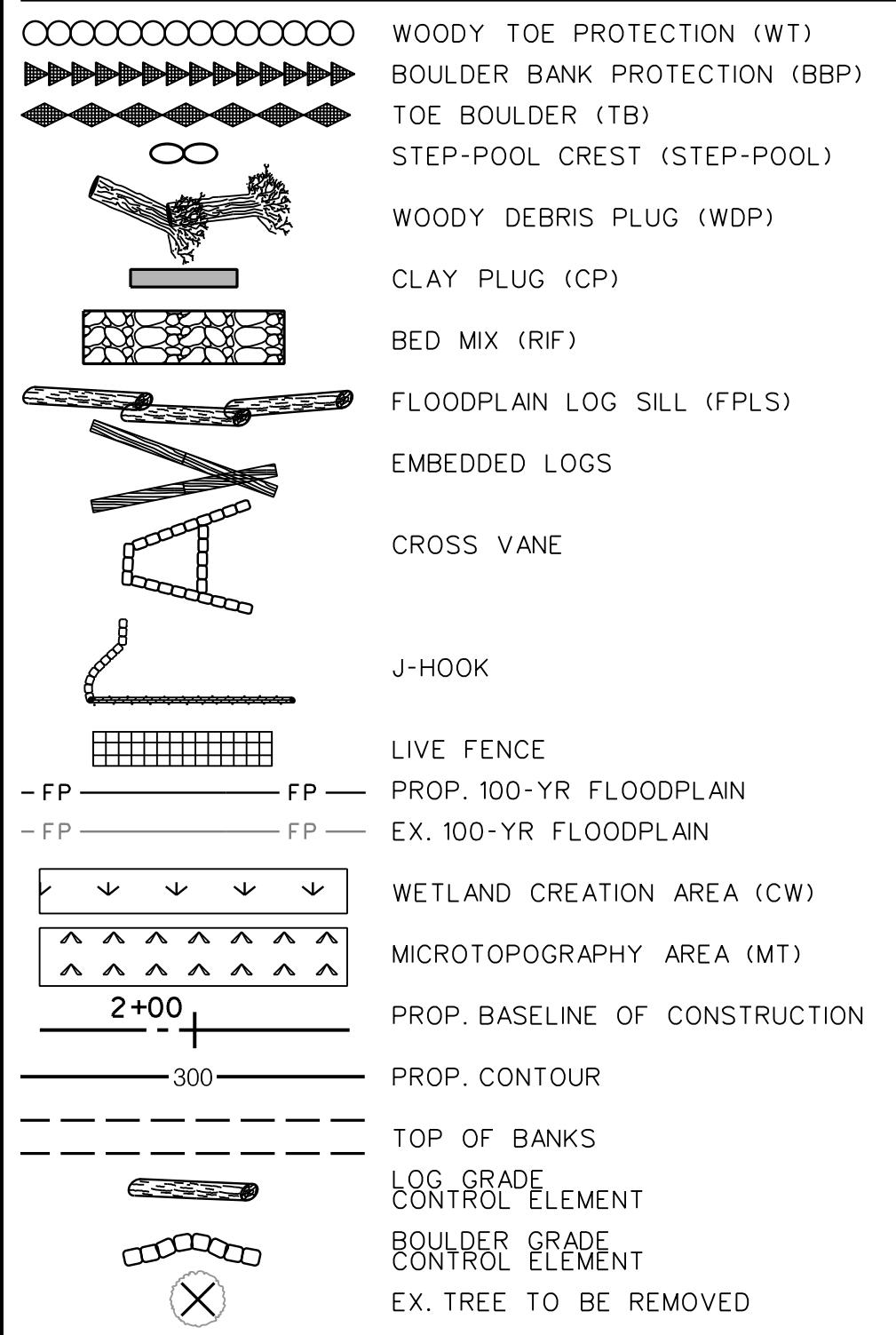
MARYLAND DEPARTMENT OF AGRICULTURE

ING NO.
GR-04
T 22 OF 62
JOB NUMBER
172107055.04

MATCH LINE - SEE SHEET GR-04

MATCH LINE - SEE SHEET GR-02

LEGEND



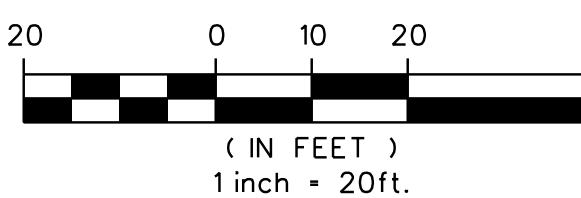
CONTRACTOR SHALL
EXERCISE EXTREME
CAUTION WHEN WORKING
ON OR OVER SANITARY
SEWER LINE

MATCH LINE - SEE SHEET GR-06

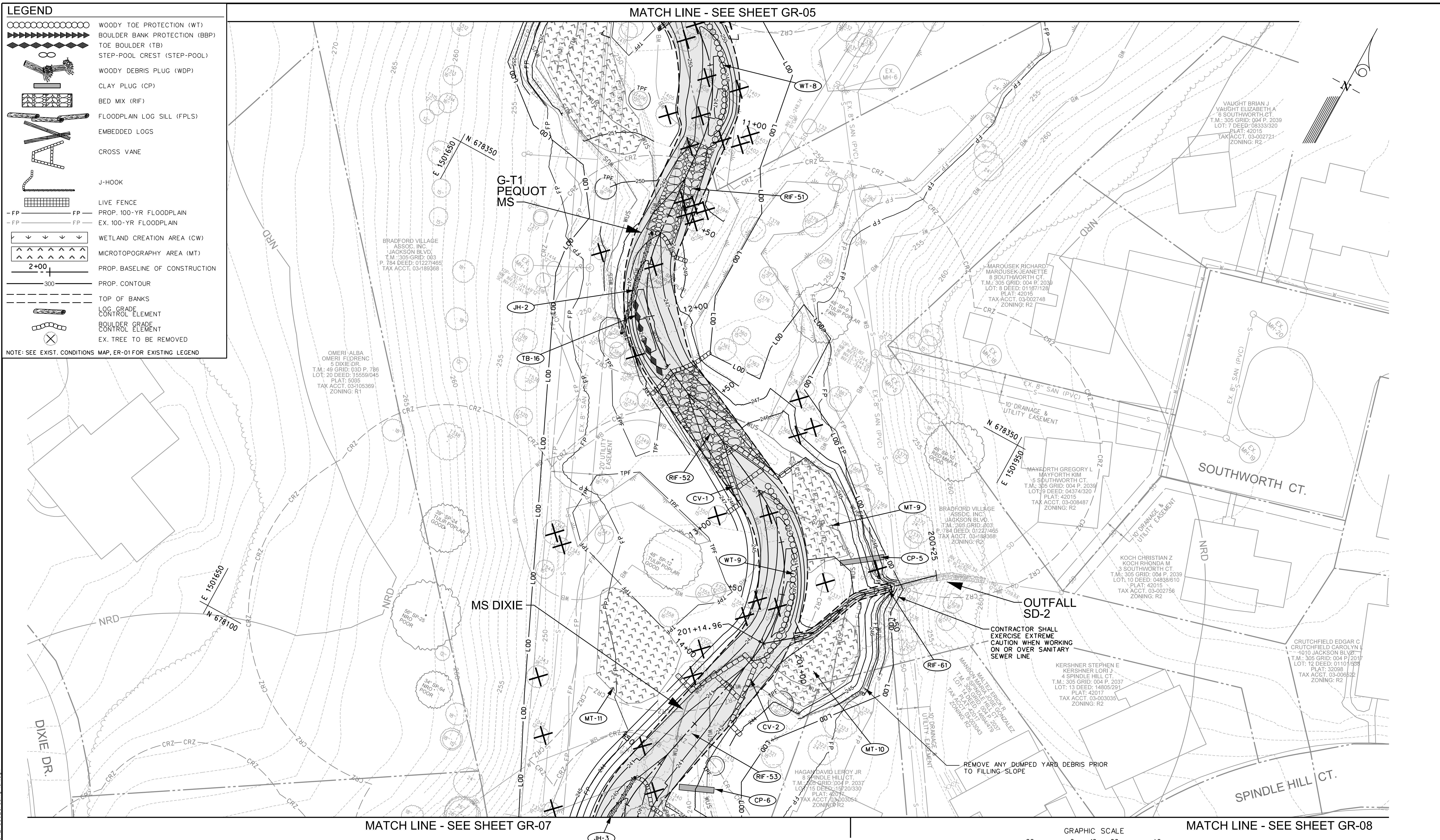
PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 33079, Expiration Date 01-16-2027.



60% SUBMITTAL
NOT FOR
CONSTRUCTION



GRADING PLAN
UPPER FARNANDIS BRANCH
STREAM RESTORATION
DRAWING NO. GR-05
SHEET 23 OF 62
KCI JOB NUMBER 172107055.04
HARFORD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS



PLOTTED: "02:01 PM on Monday, January 13, 2025"
FILE: M:\2021\JZ210705\04\Drawings\pGR_P006_GradingPlan.dan

PROFESSIONAL CERTIFICATION. 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. 33079, Expiration Date 01-16-2027.



*ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS*

1

ATE
60% SUBMITTAL
NOT FOR
CONSTRUCTION

ITAL R TION

GRADING PLAN

UPPER FARNANDIS BRANCH STREAM RESTORATION

DRAWING NO.

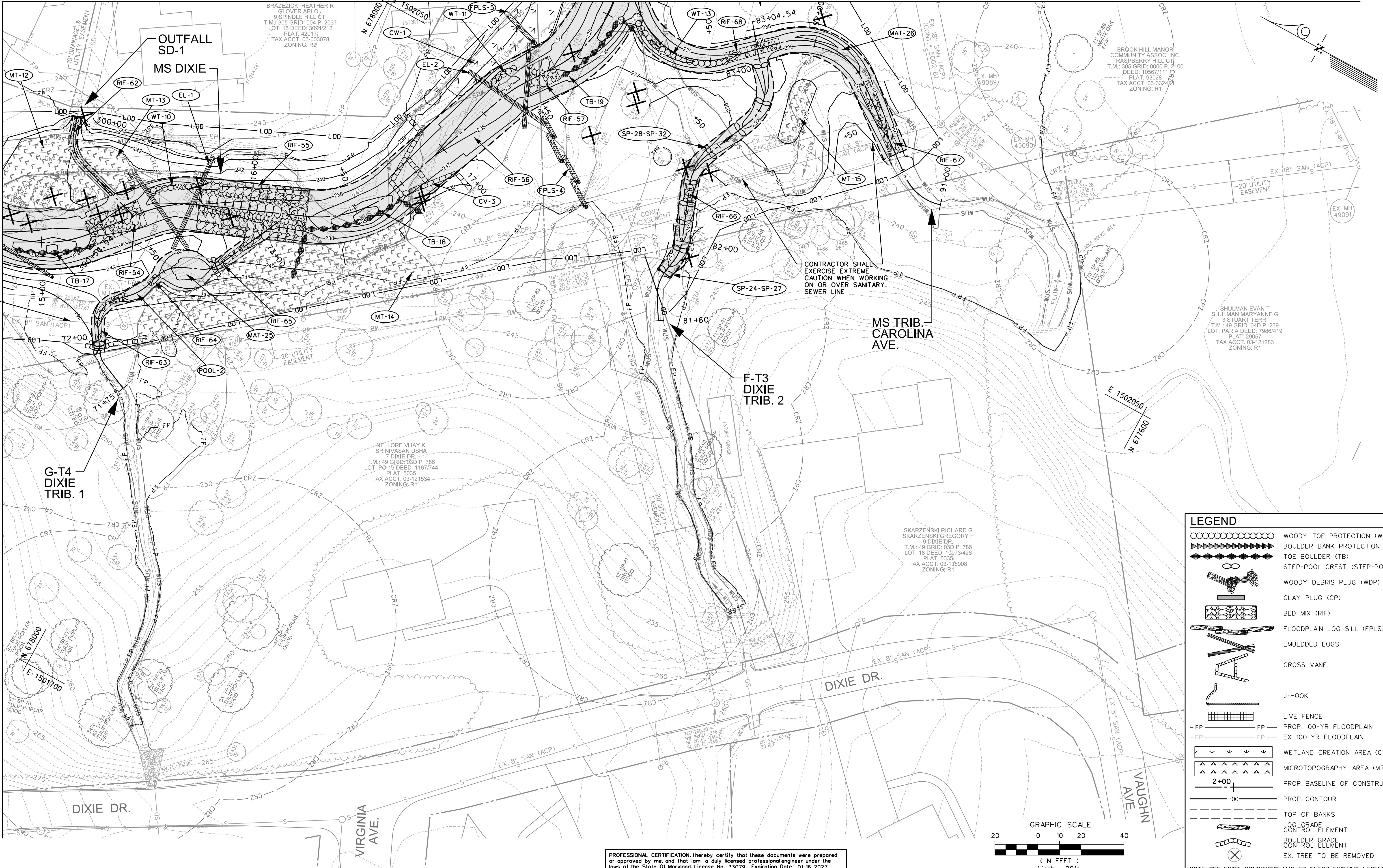
GR-06

SHEET 24 OF 62
KCI JOB NUMBER
172107055.04

MATCH LINE - SEE SHEET GR-08

CONTRACTOR SHALL
CAUTION EXTREME
WHEN WORKING
ON OR OVER SANITARY
SEWER LINE

MATCH LINE - SEE SHEET GR-06



PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.



NO.	DATE

60% SUBMITTAL
NOT FOR
CONSTRUCTION

BY	JAN 2025
SCALE	1" • 20'
DESIGNED BY	HS, SL, JT, BM
DRAWN BY	CSD, BM

HARFORD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

GR-07

GRADING PLAN
UPPER FARNANDIS BRANCH
STREAM RESTORATION

SHEET 25 OF 62

KCI JOB NUMBER

172107055.04

MATCH LINE - SEE SHEET GR-06



MATCH LINE - SEE SHEET GR-07

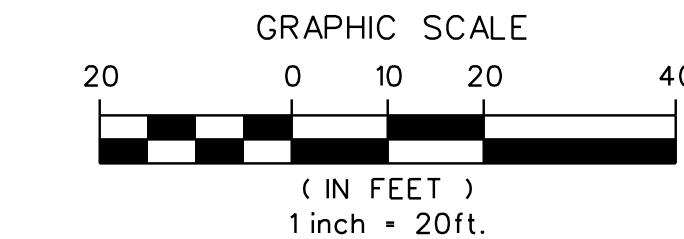
CONTRACTOR SHALL
EXERCISE EXTREME
CAUTION WHEN WORKING
ON OR OVER SANITARY
SEWER LINE

GABION BASKET
TO BE DISMANTLED
AND REUSED

PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.



60% SUBMITTAL
NOT FOR
CONSTRUCTION



GRADING PLAN
UPPER FARNANDIS BRANCH
STREAM RESTORATION
HARFORD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

GR-08
SHEET 26 OF 62
KCI JOB NUMBER
172107055.04

MATTED POOL BENDS				
NAME	FROM STATION (PC)	TO STATION (PT)	OFFSET DISTANCE*	REINFORCED MATTING REQUIRED (SY)
MILROY N & MILROY				
MAT-1	31+49.2	31+65.0	2.0	6.8
MAT-2	32+10.6	32+19.8	2.0	5.7
MAT-3	34+01.7	34+21.7	2.0	11.3
MAT-4	35+00.4	35+17.5	2.0	10.8
MAT-5	35+36.2	35+50.2	2.0	10.2
GROSVENOR N & GROSVENOR				
MAT-6	51+12.9	51+35.9	1.0	8.4
MAT-7	51+60.0	51+79.0	1.0	6.3
MAT-8	51+78.5	51+89.6	1.0	6.8
MAT-9	51+99.4	52+10.5	1.0	6.8
MAT-10	52+15.7	52+24.8	1.0	6.6
MAT-11	52+41.3	52+62.4	1.0	6.8
MAT-12	52+88.7	53+01.0	1.0	7.2
MAT-13	53+10.0	53+20.3	1.0	6.7
MAT-14	53+40.4	53+49.4	1.0	4.2
MAT-15	54+13.7	54+49.1	1.0	18.0
MAT-16	54+54.2	54+62.8	1.0	5.4
CHARLYN				
MAT-17	60+30.0	60+45.3	0.8	4.9
MAT-18	60+59.0	60+69.0	0.8	3.2
MAT-19	60+87.6	60+99.1	0.8	3.7
MAT-20	61+05.6	61+14.2	0.8	2.7
MAT-21	61+23.0	61+31.0	0.8	2.6
SD-4				
MAT-22	100+35.5	100+56.1	2.0	17.7
MAT-23	100+61.4	100+76.8	2.0	13.1
MAT-24	100+91.6	101+22.7	2.0	27.4
DIXIE TRIB 1				
MAT-25**	72+46.1	72+72.1	5.0	32.9
MS TRIB CAROLINA				
MAT-26	91+69.6	92+16.8	2.0	32.0
TOTAL REINFORCED NATURAL FIBER MATTING (SY):				
**MATTING ON RB AND LB				
225.1				

*LENGTH MEASURED ALONG OUTSIDE BANK AT TOE OF SLOPE

**MATTING ON RB AND LB

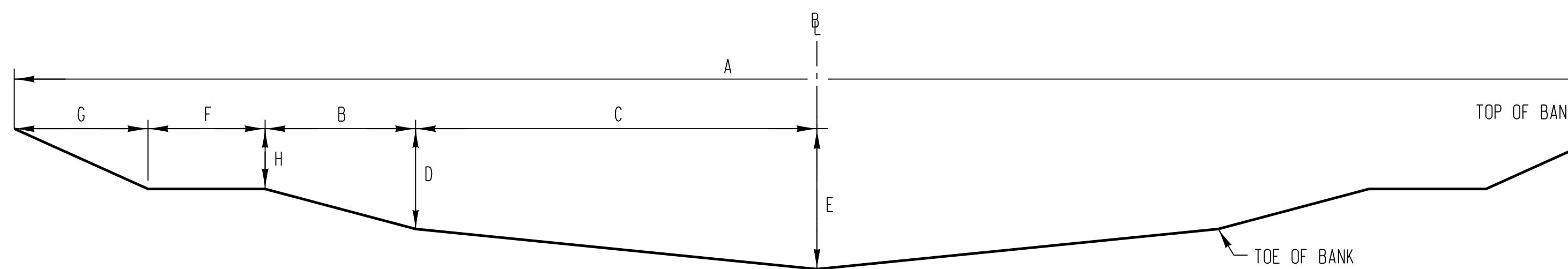
WOODY TOE				
NAME	FROM STATION (PC)	TO STATION (PT)	OFFSET DISTANCE*	REINFORCED NATURAL FIBER MATTING (SY)
WAKELY PEQUOT MS DIXIE MS				
WT-1	2+83.5	3	L	44
WT-2	5+09.3	5+58.2	2.5	39.9
WT-3	5+69.0	5+96.2	2.5	21.4
WT-4	6+19.5	6+59.6	2.5	31.4
WT-5	6+81.8	7+21.0	2.5	30.9
WT-6	7+39.6	7+78.8	2.5	40.7
WT-7	8+50.0	9+09.6	6	65.1
WT-8	10+46.7	11+13.1	6	62.5
WT-9	12+97.5	13+85.6	5	94.8
WT-10	15+55.6	15+74.6	8	21.7
WT-11	17+36.5	17+48.9	8	14
WT-12	18+79.0	19+13.7	6	37.7
MS TRIB CAROLINA				
WT-13	92+42.4	92+89.1	2	49.5
TOTAL LENGTH (LF):				
616.9				
TOTAL REINFORCED NATURAL FIBER MATTING (SY):				
460.6				
*LENGTH MEASURED ALONG OUTSIDE BANK AT TOE OF SLOPE				

CLAY PLUGS					
NAME	US STATION DISTANCE	US OFFSET DISTANCE	DS STATION DISTANCE	DS OFFSET DISTANCE	CLAY VOLUME (TON)
MILROY N & MILROY					
CP-1	32+42.2	7.6	38+48.7	19.7	R 25.4
WAKELY PEQUOT MS DIXIE MS					
CP-2	5+52.9	10.1	5+57.0	25.4	R 22.0
CP-3	6+85.4	77.2	6+86.0	58.6	R 51.9
CP-4	9+57.5	26.1	9+57.8	13.3	R 35.7
CP-5	13+34.7	47.2	13+35.9	26.5	L 31.4
CP-6	14+42.5	27.7	14+52.2	14.4	L 34.5
CP-7	18+19.4	32.0	18+27.9	17.8	R 24.0
TOTAL CLAY VOLUME (TON):					224.9

EMBEDDED LOGS					
NAME	CENTERLINE STATION	BOULDER TYPE	8" MN DIA LOG LENGTH (LF)	BOULDER QUANTITY (TON)	GEOTEXTILE (SY)
WAKELY PEQUOT MS DIXIE MS					
EL-1	15+65.0	II	85	10	7
EL-2	17+45.0	II	88	10	7
EL-3	19+00.0	II	85	10	7
TOTAL LOG LENGTH (LF):					258
TOTAL BOULDER TYPE II (TN):					29
TOTAL GEOTEXTILE (SY):					21

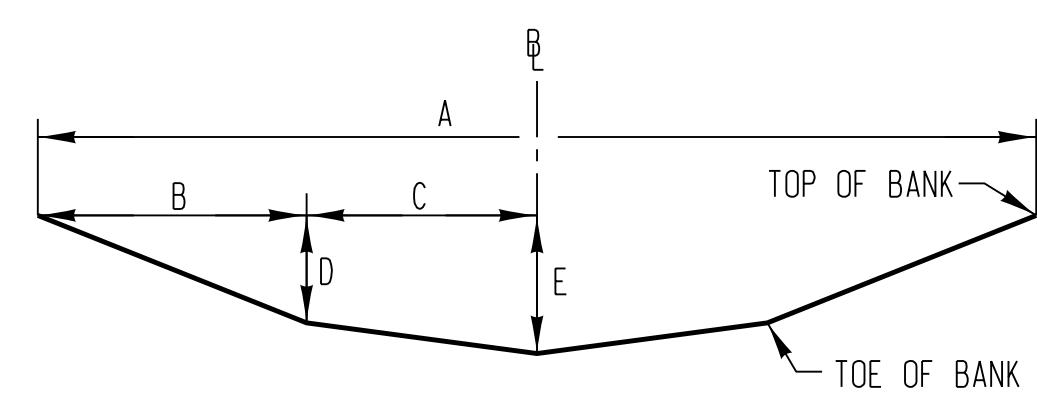
CROSS VANE						
NAME	STATION AT POINT X*	STATION AT POINT Y*	VANE MATERIAL	BOULDER QUANTITY (TON)	REINFORCED NATURAL FIBER MATTING (SY)	GEOTEXTILE (SY)
WAKELY PEQUOT MS DIXIE MS						
CV-1	12+75.1	12+97.5	IMBRICATED	39.8	II	57.8
CV-2	13+85.6	14+13.6	IMBRICATED	48.8	cut/NA	21.8
CV-3	16+71.5	16+97.4	IMBRICATED	46.6	cut/NA	20.2
TOTAL IMBRICATED (TN):					135.2	
TOTAL BED MIX TYPE II (TN):					57.8	
TOTAL REINFORCED NATURAL FIBER MATTING (SY):					52.4	
GEOTEXTILE (SY):					62.3	
*SEE DETAIL						

FLOODPLAIN LOG SILL*						
NAME	CENTERLINE STATION**	RB OFFSET STATION	CREST DISTANCE (LF)	LB OFFSET STATION	LB OFFSET DISTANCE (LF)	1' MIN DIA LOG LENGTH (LF)**
MILROY N & MILROY						
PFLS-1	31+80.0	31+80.0	23.3	N/A	N/A	15.2
GROSVENOR N & GROSVENOR						
PFLS-2	55+30.0	55+21.4	42.2	55+35.3	25.5	57.4
PFLS-3	7+41.6	7+41.0	38.3	N/A	N/A	29.6
PFLS-4						



TYPICAL SECTION RIFFLE/CREST 'B'

NOT TO SCALE

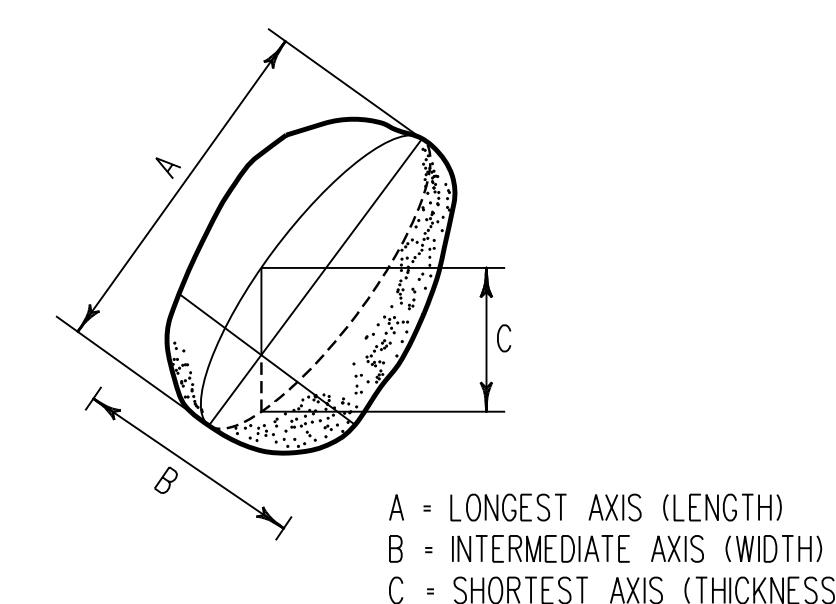


TYPICAL SECTION RIFFLE/CREST 'A'

NOT TO SCALE

GENERAL NOTES

1. SUITABLE STONES (BOULDERS, COBBLE, GRAVEL) FROM THE CLASS 5 EXCAVATION MEETING THE SPECIFIED GRADATION SHALL BE SALVAGED WHEN POSSIBLE. ONLY FURNISH MATERIAL WHEN SALVAGED IS NOT AVAILABLE.
2. STONES SHALL BE GRAY OR BROWN IN COLOR (SHALL NOT BE WHITE).
3. NUMBER OF STONES SHOWN IN DETAILS AND GRADING SHEETS IS FOR GRAPHICAL PURPOSES ONLY. ACTUAL NUMBER OF STONES SHALL DEPEND ON STONE SIZE AND STREAM DIMENSIONS.
4. ALL STONES SHALL BE CAREFULLY PLACED AND TIGHT FITTING MINIMIZING Voids/GAPS.
5. Voids SHALL BE CHINKED USING THE LARGEST PARTICLE SIZE THAT CAN BE USED TO FILL THE VOID, THEN WITH SUITABLE BACKFILL.
6. STRUCTURES SHALL BE CONSTRUCTED IN LIFTS WITH Voids FILLED THROUGHOUT CONSTRUCTION AND PRIOR TO PLACEMENT OF TOP LAYERS IF APPLICABLE.
7. WHERE EXISTING CONDITIONS REQUIRE FILL BEYOND THE MATERIAL SHOWN AND SPECIFIED ON THE STREAM DETAILS, SUITABLE BACKFILL SHALL BE USED TO FILL THE CHANNEL TO ESTABLISH SUBGRADE ELEVATIONS AND DIMENSIONS TO PREPARE FOR SPECIFIED MATERIAL PLACEMENT.
8. SUITABLE BACKFILL MATERIAL SHALL BE SALVAGED THROUGH CLASS 5 EXCAVATION. IF SALVAGED SUITABLE BACKFILL MATERIAL IS NOT AVAILABLE, USE FURNISHED BANK RUN GRAVEL-BASE AS APPROVED BY THE COUNTY AND/OR ENGINEER.
9. LOGS SHALL BE SALVAGED.
10. REFERENCES TO RIGHT AND LEFT ARE ORIENTED LOOKING DOWNSTREAM.
11. ALL PROPOSED GEOTEXTILE SHALL BE NONWOVEN CLASS SE.
12. TOPSOIL SHALL BE SALVAGED THROUGH CLASS 5 EXCAVATION AS APPROVED BY THE COUNTY AND OR ENGINEER. IF SALVAGED TOPSOIL IS NOT APPROVED, UTILIZE FURNISHED TOPSOIL.
13. BOULDERS ARE DEPICTED ON THE PLANS AS TWO STACKED FEATURES. USE OF ONE BOULDER INSTEAD OF TWO IS ALLOWABLE SO LONG AS THE REQUIRED FOOTER DEPTH IS MET. IMBRICATED SHOULD NOT BE UTILIZED WHERE BOULDER TYPES I, II, OR III ARE SPECIFIED.



**BOULDER (STONE)
AXIS DEFINITION**

NOT TO SCALE

ABBREVIATIONS:

BP BEGIN POINT
 EP END POINT
 US UPSTREAM
 DS DOWNSTREAM
 PT POINT OF TANGENCY, UPSTREAM END OF A RIFFLE, DOWNSTREAM END OF A POOL
 PC POINT OF CURVATURE, DOWNSTREAM END OF THE RIFFLE, UPSTREAM END OF A POOL
 LB LEFT BANK ORIENTED LOOKING DOWNSTREAM
 RB RIGHT BANK ORIENTED LOOKING DOWNSTREAM
 NFM NATURAL FIBER MATTING
 RNFN REINFORCED NATURAL FIBER MATTING
 GCE GRADE CONTROL ELEMENT

PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.



TYPICAL RIFFLE/CREST										
REACH	TEMPLATE	STATION*	A	B	C	D	E	F	G	H
MILROY TRIB. NORTH	A	31+12.3 - 32+33.3	9.5	2.75	2.0	0.9	1.0	-	-	-
MILROY TRIB.	A	32+51.2 - 34+01.7	11.0	3.5	2.0	1.2	1.4	-	-	-
MILROY TRIB.	A	34+21.7 - 35+63.5	11.0	3.0	2.5	1.25	1.4	-	-	-
MILROY TRIB.	A	36+26.5 - 36+88.6	18.0	5.0	4.0	1.85	2.0	-	-	-
MILROY TRIB. WEST	A	41+42.9 - 42+44.1	9.0	2.5	2.0	1.25	1.4	-	-	-
GROSVENOR TRIB. NORTH	A	50+86.2 - 52+84.3	6.5	1.75	1.5	0.7	0.9	-	-	-
GROSVENOR TRIB.	A	52+86.5 - 53+62.1	7.0	1.75	1.75	0.8	1.0	-	-	-
GROSVENOR TRIB.	A	53+97.1 - 54+94.8	7.5	2.0	1.75	0.9	1.1	-	-	-
CHARLYN TRIB.	A	60+00.0 - 61+64.4	5.5	1.5	1.25	0.5	0.7	-	-	-
GROSVENOR TRIB.	A	55+04.4 - 56+09.8	9.5	2.25	2.5	1.1	1.3	-	-	-
MAINSTEM WAKELY TRIB.	A	2+00.0 - 3+63.7	16.0	4.5	3.5	1.45	1.7	-	-	-
MAINSTEM PEQUOT	A	4+09.9 - 8+18.0	16.5	4.75	3.5	1.5	1.9	-	-	-
MAINSTEM PEQUOT	A	8+18.0 - 10+46.7	25.0	4.5	8.0	1.35	2.1	-	-	-
MAINSTEM PEQUOT	A	11+13.1 - 12+97.5	22.0	4.0	7.0	1.25	2.0	1.75	3.0	1.0
MAINSTEM DIXIE	B	13+85.6 - 17+64.8	25.5	2.0	6.0	1.6	2.2	-	-	-
MS JACKSON	A	18+35.2 - 19+83.6	26.4	6.95	6.25	2.2	2.7	-	-	-
CAROLINA TRIB.	A	91+33.0 - 92+99.9	12.0	3.5	2.5	1.45	1.7	-	-	-
DIXIE TRIB. 1	A	71+96.9 - 73+16.3	6.0	1.5	1.5	0.55	0.7	-	-	-
DIXIE TRIB. 2	A	81+70.3 - 81+72.3	7.5	1.75	2.0	0.5	0.5	-	-	-
DIXIE TRIB. 2	A	81+82.9 - 82+18.6	7.5	1.75	2.0	0.7	0.8	-	-	-
DIXIE TRIB. 2	A	82+26.8 - 83+04.5	8.0	2.0	2.0	0.8	0.9	-	-	-
OUTFALL SD-4	A	100+26.6 - 101+65.6	10.8	3.4	2.0	0.3	1.7	-	-	-
OUTFALL SD-2	A	200+47.2 - 201+06.0	4.0	1.0	1.0	0.3	0.5	-	-	-
OUTFALL SD-1	A	300+00.0 - 300+48.3	4.0	1.0	1.0	0.3	0.5	-	-	-

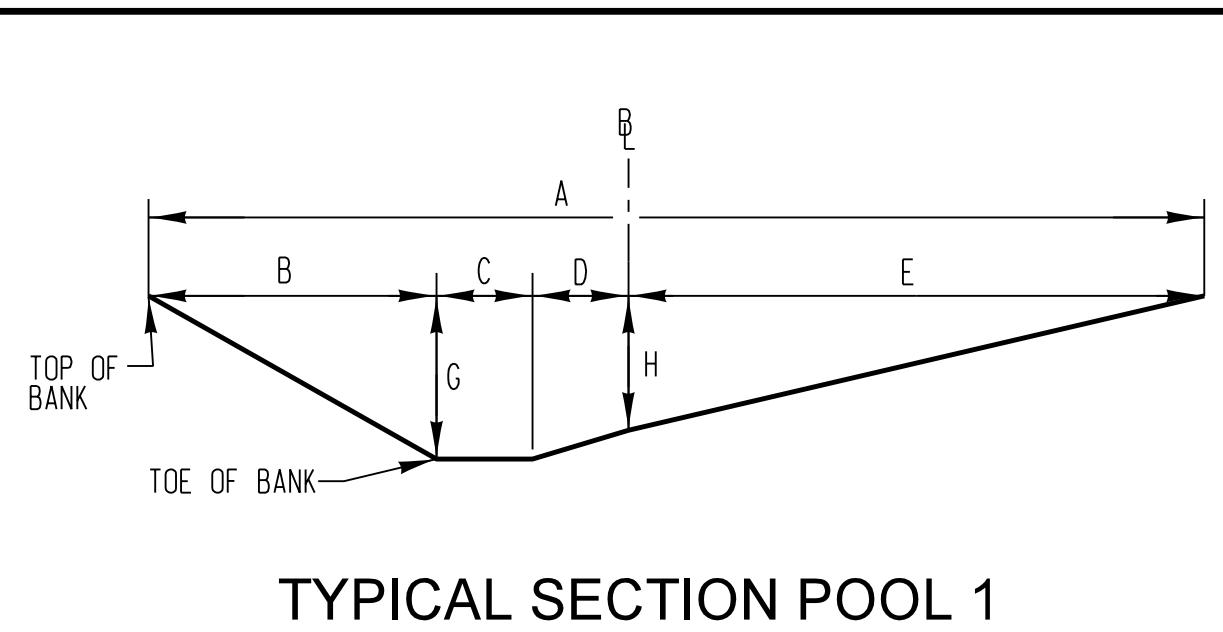
* STATION RANGES ARE REPRESENTATIVE FOR DETERMINATION OF RIFFLE DIMENSIONS ALONG BASELINE, NOT THE ACTUAL LOCATION FOR RIFFLE INSTALLATION.

% by Volume of Total Mix	BED MIXES						Thickness
	Brush	Suitable * Material	Gravel * Stone	Class 0 Riprap	Class I Riprap	Class II Riprap	
Class 0 Bed Mix	10%	20%	20%	50%			1.0'
Class I Bed Mix	10%	20%	15%	15%	40%		1.5'
Class II Bed Mix		10%	10%	20%	30%	30%	2.0'
Class I Bed Mix No Brush		20%	15%	15%	50%		1.5'

* SHALL NOT BE COMPRISED OF RIPRAP, BUT SHALL BE NATURAL RIVER STONE. SEE GENERAL NOTES 1 AND 8.

BOULDER TYPE	AXIS			FEATURE	FOOTER DEPTH
	A (LONGEST) MAX.	B (INTERMEDIATE) RANGE	C (SHORTEST) MIN.		
BOULDER TYPE I	2.0'	1.0' - 1.5'	0.75'	BOULDER GRADE CONTROL ELEMENTS, STEP POOL CRESTS BOULDER BANK PROTECTION, TOE BOULDER	1.5' 0.75'
BOULDER TYPE II	2.5'	1.5' - 2.0'	1.0'	BOULDER GRADE CONTROL ELEMENTS, STEP POOL CRESTS, J-HOOK BOULDER BANK PROTECTION, TOE BOULDER	2.0' 1.0'
BOULDER TYPE III	3.0'	2.0' - 2.5'	1.5'	TOE BOULDER	1.5'
IMBRICATED	3.0'	1.5' - 2.5'	1.5'	BOULDER GRADE CONTROL ELEMENTS, STEP POOL CRESTS, CROSS VANE	3.0'

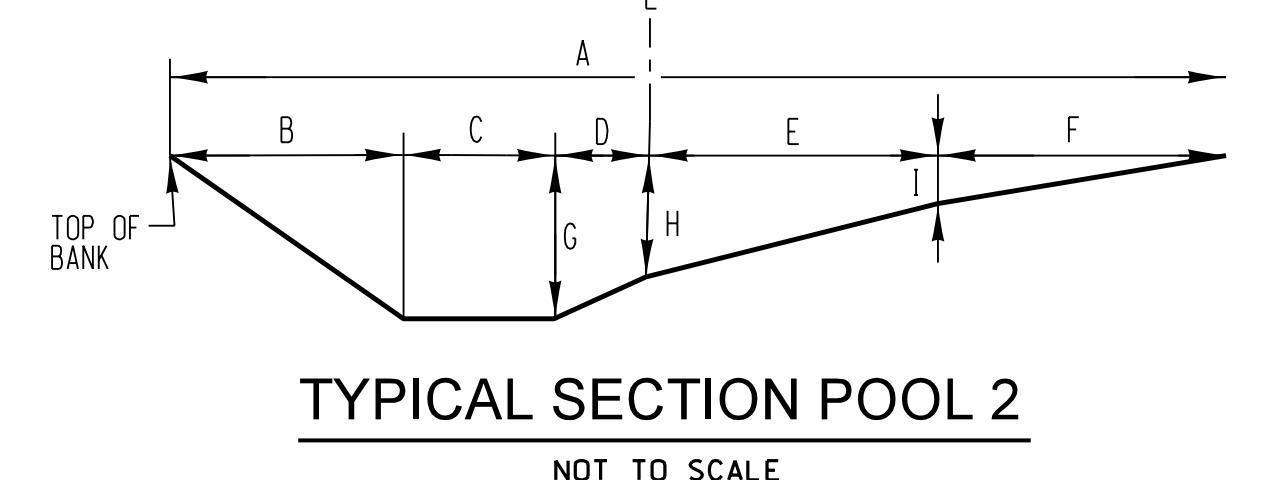
STREAM DETAILS						DRAWING NO.
UPPER FARNANDIS BRANCH STREAM RESTORATION						DE-01
HARFORD COUNTY, MARYLAND						SHEET 28 OF 62 KCI JOB NUMBER 172107055.04
60% SUBMITTAL NOT FOR CONSTRUCTION						DEPARTMENT OF PUBLIC WORKS



TYPICAL SECTION POOL 1

NOT TO SCALE

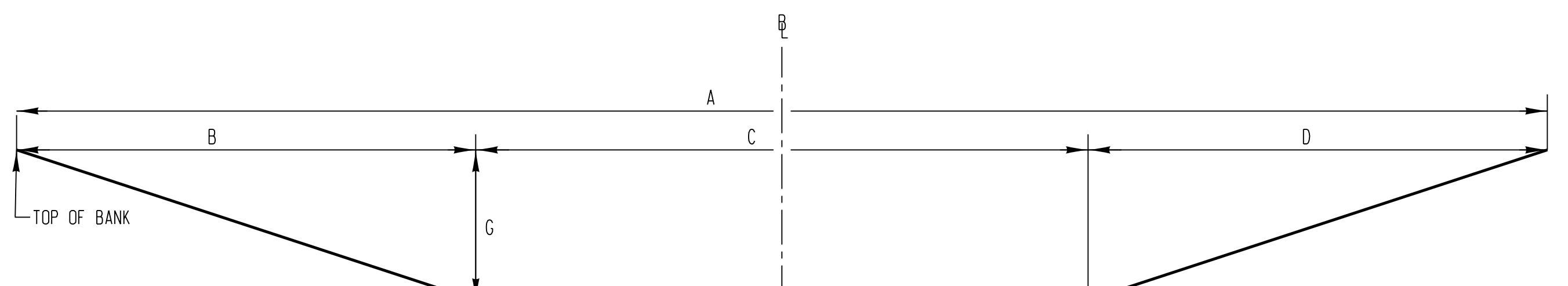
NOTE: POOL RIGHT IS A MIRROR IMAGE OF POOL LEFT.



TYPICAL SECTION POOL 2

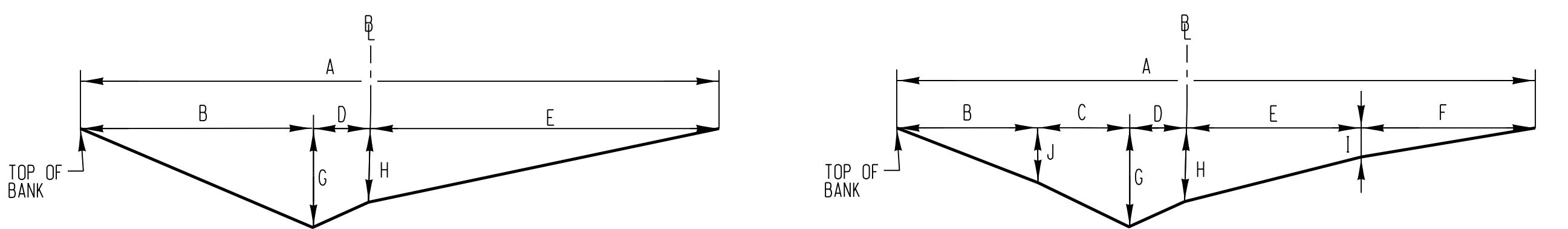
NOT TO SCALE

NOTE: POOL RIGHT IS A MIRROR IMAGE OF POOL LEFT.



TYPICAL SECTION POOL 3

NOT TO SCALE

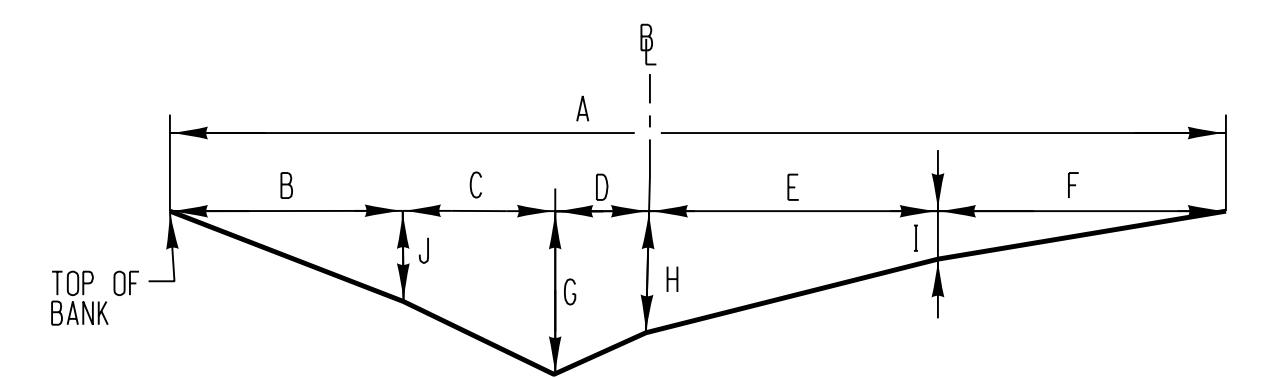


TYPICAL SECTION POOL 4

NOT TO SCALE

NOTE: POOL RIGHT IS A MIRROR IMAGE OF POOL LEFT.

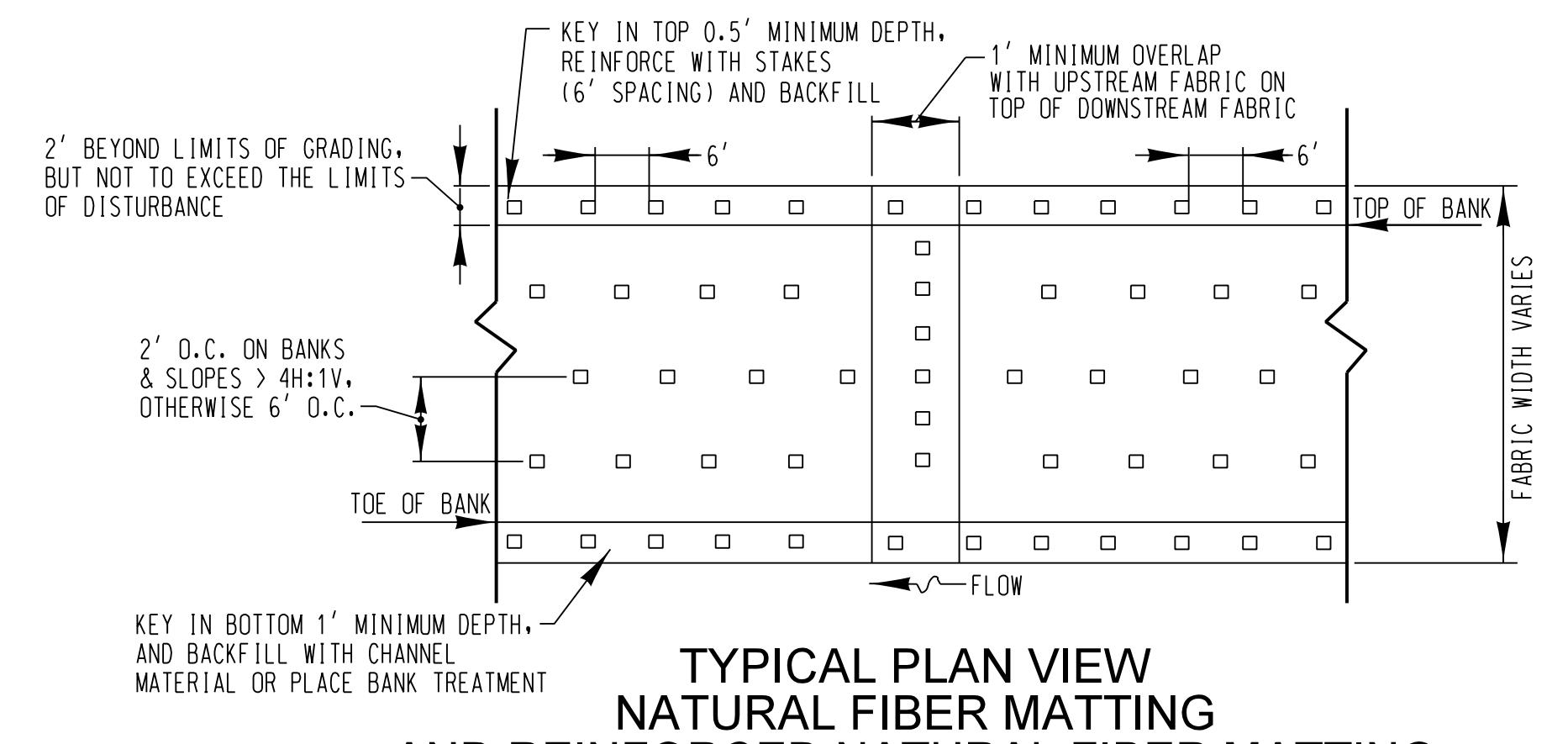
POOL DIMENSIONS REFLECT MAXIMUM DEPTHS OCCURRING AT STATIONS PER THE PROFILE AND CROSS SECTIONS. PROVIDE SMOOTH TRANSITIONS BETWEEN RIFFLE AND POOLS



TYPICAL SECTION POOL 5

NOT TO SCALE

NOTE: POOL RIGHT IS A MIRROR IMAGE OF POOL LEFT.



**TYPICAL PLAN VIEW
NATURAL FIBER MATTING
AND REINFORCED NATURAL FIBER MATTING**

NOT TO SCALE

NOTES:

1. NATURAL FIBER MATTING TO BE ROLLED LENGTHWISE FROM THE TOP OF BANK A MINIMUM OF TWO FOOT PAST THE LIMITS OF GRADING. IF MORE THAN ONE ROLL IS REQUIRED, MID-BANK OVERLAP SHOULD BE A MINIMUM OF ONE FOOT AND SECURELY FASTENED WITH STAKES. NATURAL FIBER MATTING SHOULD OVERLAP BY ONE FOOT WITH REINFORCED NATURAL FIBER MATTING ALONG STREAM BANKS.

2. NATURAL FIBER MATTING IS TO BE APPLIED ON ALL LIMITS OF GRADING OUTSIDE OF THE TOP OF BANK EXCLUDING MICROTOPOGRAPHY, AND CREATED WETLANDS. REINFORCED NATURAL FIBER MATTING IS TO BE APPLIED ON ALL STREAM BANKS WHERE BOULDER OR BED MIX DOES NOT APPLY TO THE TOP OF BANK. INSIDE BENDS OF POOLS ARE NOT MATTED.

3. NATURAL FIBER MATTING. MATTING FOR THE TREATMENT AREAS SHALL CONSIST OF A MACHINE PRODUCED MAT OF DEGRADABLE, NATURAL FIBERS AND SHALL MEET THE FOLLOWING MINIMUM SPECIFICATIONS:

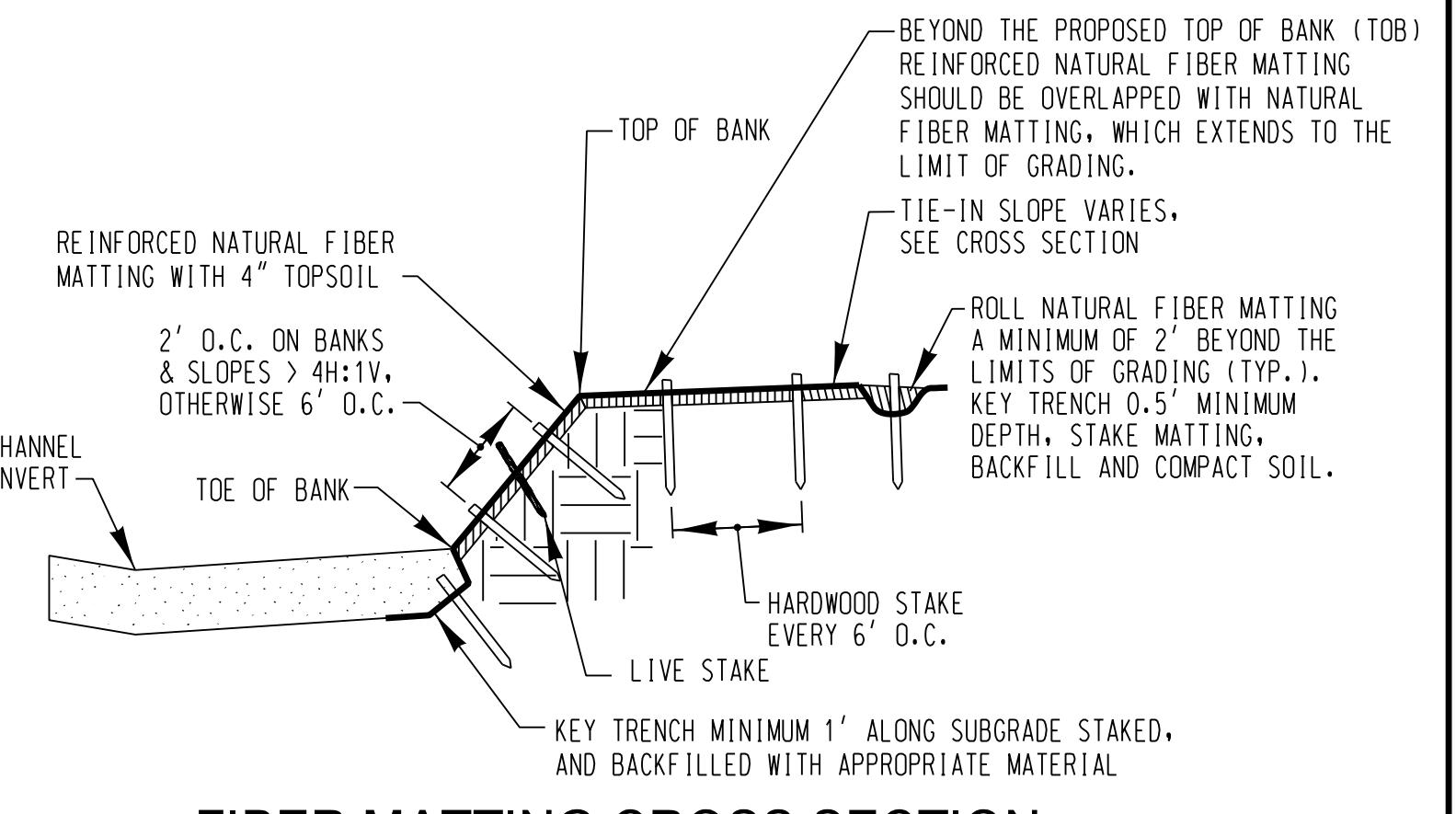
MATERIAL: WOVEN COIR FIBER YARN OR TWINE
THICKNESS: 0.35 IN. (ASTM D5199)
WEIGHT: 20.6 OZ./SF. (ASTM D5261)
WIDTH TENSILE STRENGTH DRY: 1516 x 1032 LBS./FT. (ASTM D4595)
WIDTH TENSILE STRENGTH WET: 924 x 684 LBS./FT. (ASTM D4595)
MAX. ELONGATION DRY: 30% x 26% LBS./FT. (TOP LAYER)
MAX. ELONGATION WET: 8% x 9% LBS./FT. (BOTTOM LAYER)
FLOW VELOCITY: 16 FT./SEC. (4.9 M/SEC.)
SHEAR STRESS: 5 LBS./SF. (239.40 Pa)
OPEN AREA: 50%
LONGEVITY: 3 YEARS

4. REINFORCED NATURAL FIBER MATTING. MATTING SHALL CONSIST OF A DOUBLE-LAYERED BIODEGRADABLE FABRIC: A BOTTOM LAYER OF JUTE FABRIC AND A TOP LAYER OF HIGH STRENGTH COIR MATTING, CONNECTED TOGETHER. REINFORCED NATURAL FIBER MATTING SHALL MEET THE FOLLOWING MINIMUM SPECIFICATIONS:

MATERIALS: WOVEN COIR FIBER (TOP LAYER) AND JUTE FABRIC (BOTTOM LAYER)
THICKNESS: 0.35 IN.
WEIGHT: 33.3 OZ./SF.
PERMEABILITY: 1.03 IN./SEC.
MAX. ELONGATION DRY: 30% x 26% LBS./FT. (TOP LAYER)
MAX. ELONGATION WET: 8% x 9% LBS./FT. (BOTTOM LAYER)
FLOW VELOCITY: 16 FT./SEC. (4.9 M/SEC.)
SHEAR STRESS: 5 LBS./SF. (239.40 Pa)

5. MATTING STAKES. STAKES FOR SECURING THE MATTING ALONG OTHER PORTIONS OF THE MATTING MATERIAL ABOVE THE TOE TRENCH AND FOR THE KEY IN TRENCH AT THE TOP OF THE SLOPE SHALL CONSIST OF 1-1/2" X 1-1/2" HARDWOOD STAKES, 18-INCHES IN LENGTH, UNIFORMLY TAPERED FOR EASY INSERTION INTO THE SOIL AND FLAT AT THE TOP END FOR HAMMERING. TOP OF INSTALLED STAKES SHALL NOT PROTRUDE GREATER THAN 2-INCHES ABOVE FINISHED GRADE.

SHEAR STRESS: 4.5 PSF
FLOW VELOCITY: 12 FT./SEC.
LIFE EXPECTANCY: 3 YEARS IN REINFORCED NATURAL FIBER MATTING



FIBER MATTING CROSS SECTION

NOT TO SCALE

NOTE:
THE OUTSIDE BENDS OF POOLS SPECIFIED ON THE PLANS AS MATTED POOL BENDS SHALL ONLY HAVE REINFORCED NATURAL FIBER MATTING AS THE BANK TREATMENT APPLIED PER THE FIBER MATTING CROSS SECTION, INCLUDING LIVE STAKES.

TYPICAL POOL												
REACH	TEMPLATE	STATION	A	B	C	D	E	F	G*	H	I	J
OUTFALL SD-4	POOL5	100+48.8 - 101+09.1	13.4	4.0	2.0	2.0	2.0	3.4	2.8	2.0	1.0	2.0
OUTFALL SD-4	POOL7	100+19.2	12.0	4.0	2.0	-	-	-	3.0	-	-	2.0
MAINSTEM WAKLEY TRIB.	POOL6	2+61.3 - 3+11.0	18.0	6.0	-	3.0	3.5	5.5	3.4	-	1.7	-
MAINSTEM WAKLEY TRIB.	POOL6	3+80.3 - 3+95.3	22.0	6.0	-	3.0	3.5	9.5	3.4	-	1.7	-
MAINSTEM PEQUOT	POOL4	4+70.0	17.0	6.0	-	2.5	8.5	-	3.8	2.5	-	-
MAINSTEM PEQUOT		5+28.8 - 5+36.3										
MAINSTEM PEQUOT	POOL6	6+37.5 - 8+18.0	20.0	6.0	-	2.5	3.5	8	3.8	-	1.9	-
MAINSTEM PEQUOT	POOL6	5+83.8	20.0	6.0	-	2.5	3.5	8	3.4	-	2.4	-
MAINSTEM PEQUOT	POOL1	8+75.2 - 10+95.9	29.0	7.0	3.5	2.5	16.0	-	4.2	3.1	-	-
MAINSTEM PEQUOT	POOL2	12+05.5 - 12+12.5	25.0	6.0	3.5	1.5	1.0	13	4.0	3.3	2.8	-
MAINSTEM PEQUOT	POOL2	13+50.6 - 13+64.3	22.0	6.0	3.5	1.5	1.0	10	4.0	3.3	1.1	-
MAINSTEM DIXIE	POOL1	15+05.4										
MAINSTEM DIXIE	POOL1	17+97.8 - 18+14.5	28.8	7.8	3.5	1.5	16.0	-	4.4	3.7	-	-
MAINSTEM DIXIE		15+64.4										
MAINSTEM DIXIE	POOL1	17+41.9	25.5	4.8	2.0	6.0	12.8	-	3.0	2.2	-	-
MAINSTEM DIXIE	POOL1	16+54.3	25.5	7.8	3.5	1.5	12.8	-	4.4	3.0	-	-
MS JACKSON	POOL1	18+97.6	29.9	7.7	3.5	2.5	16.2	-	4.7	3.9	-	-
MS JACKSON	POOL1	19+57.0 - 19+60.5	29.9	7.7	3.5	2.5	16.2	-	5.4	4.2	-	-
MILROY TRIB. NORTH	POOL1	31+60.0 - 32+15.2	9.5	2.8	1.0	1.0	4.8	-	1.8	1.5	-	-
MILROY TRIB.	POOL1	32+45.0										
MILROY TRIB.	POOL1	34+46.8 - 35+44.8	12.0	4.0	1.0	1.0	6.0	-	2.4	1.9	-	-
MILROY TRIB.	POOL7	32+78.8 - 34+11.7	12.0	4.0	2.0	-	-	-	2.4	-	-	1.7
MILROY TRIB. (STEP POOL)	POOL7	36+33.1 - 36+75.1	18.0	5.0	4.0	-	-	-	2.9	-	-	1.9
MILROY TRIB. (STEP POOL)	POOL7	41+48.1 - 42+32.1	9.0	2.5	2.0	-	-	-	2.1	-	-	1.3
CAROLINA TRIB.	POOL4	91+99.4 - 92+77.4	13.0	4.5	-	2.0	6.5	-	3.1	2.0	-	-
DIXIE TRIB. 2 (STEP POOL)	POOL7	81+90.1 - 82+13.2	7.5	1.8	2.0	-	-	-	1.2	-	-	0.7
DIXIE TRIB. 2 (STEP POOL)	POOL7	82+36.4 - 82+88.0	8.0	2.0	2.0	-	-	-	1.5	-	-	0.8
DIXIE TRIB. 1 (STEP POOL)	POOL3	72+35.4	11.3	2.3	3.0	2.3	-	-	1.2	-	-	-
GROSVENOR TRIB. NORTH	POOL1	51+25.2 - 52+26.7	7.0	2.5	0.5	0.5	3.5	-	1.6	1.2	-	-
GROSVENOR TRIB. NORTH	POOL6	32+94.8 - 53+84.3	9.0	3.0	-	1.0	1.5	3.5	1.6	-	1.1	-
GROSVENOR TRIB.	POOL6	52+94.8 - 53+84.3	9.5	3.3	-	1.0	1.8	4.25	2.0	-	1.4	-
GROSVENOR TRIB.	POOL6	54+32.7 - 54+58.3	10.8	3.8	-	1.0	4.0	-	2.0	1.1	-	-
CHARLYN TRIB.	POOL4	60+40.4 - 61+27.5	6.5	2.3	-	0.8	3.5	-	1.2	1.0	-	-
GROSVENOR TRIB. (STEP POOL)	POOL7	55+11.9 - 56+02.3	12.0	4.0	2.0	-	-	-	2.1	-	-	2.0

* MAX DEPTH

PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.

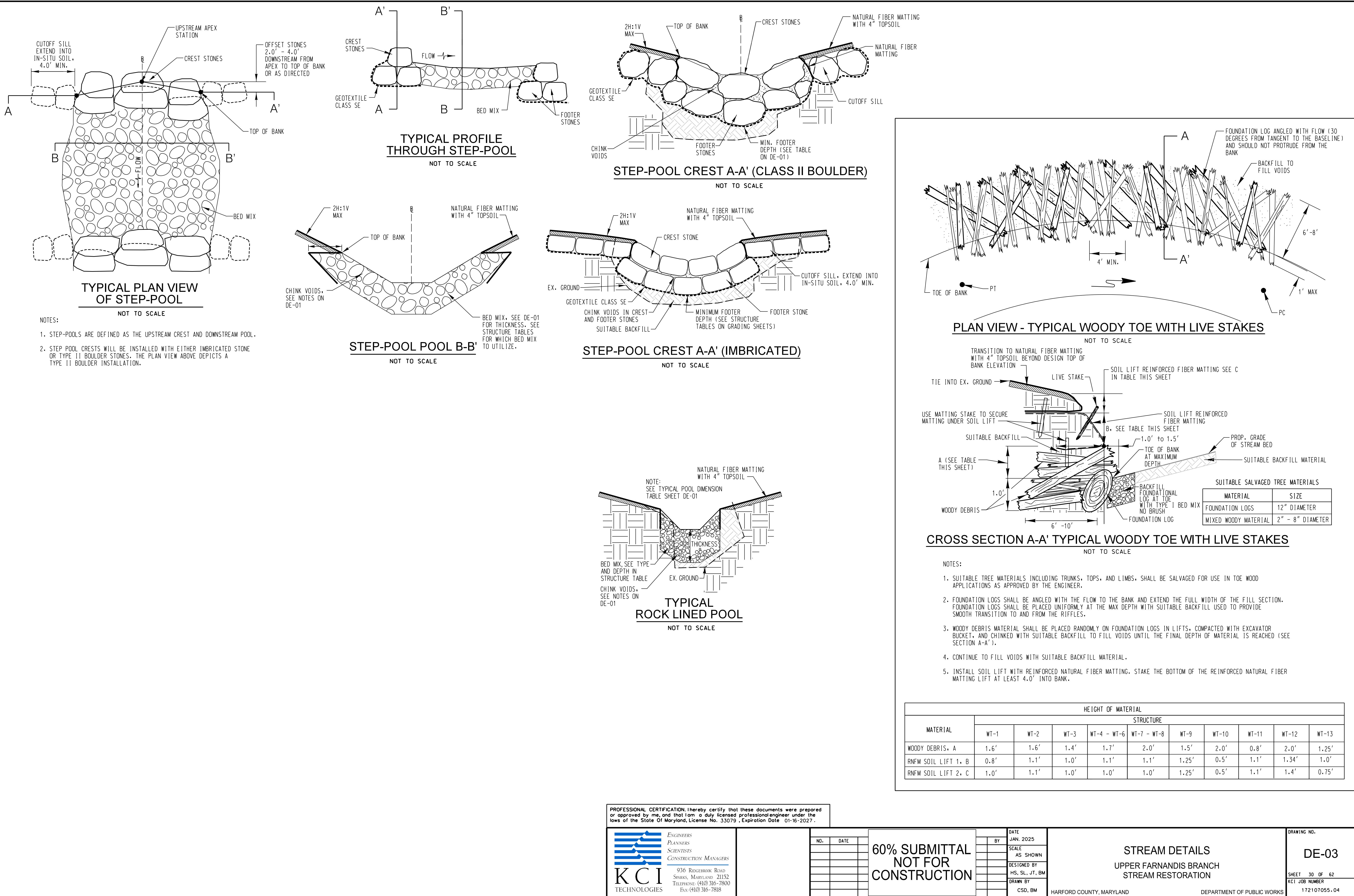
NO.	DATE
BY	JAN. 2025
SCALE	AS SHOWN
DESIGNED BY	HS, SL, JT, BM
DRAWN BY	CSD, BM

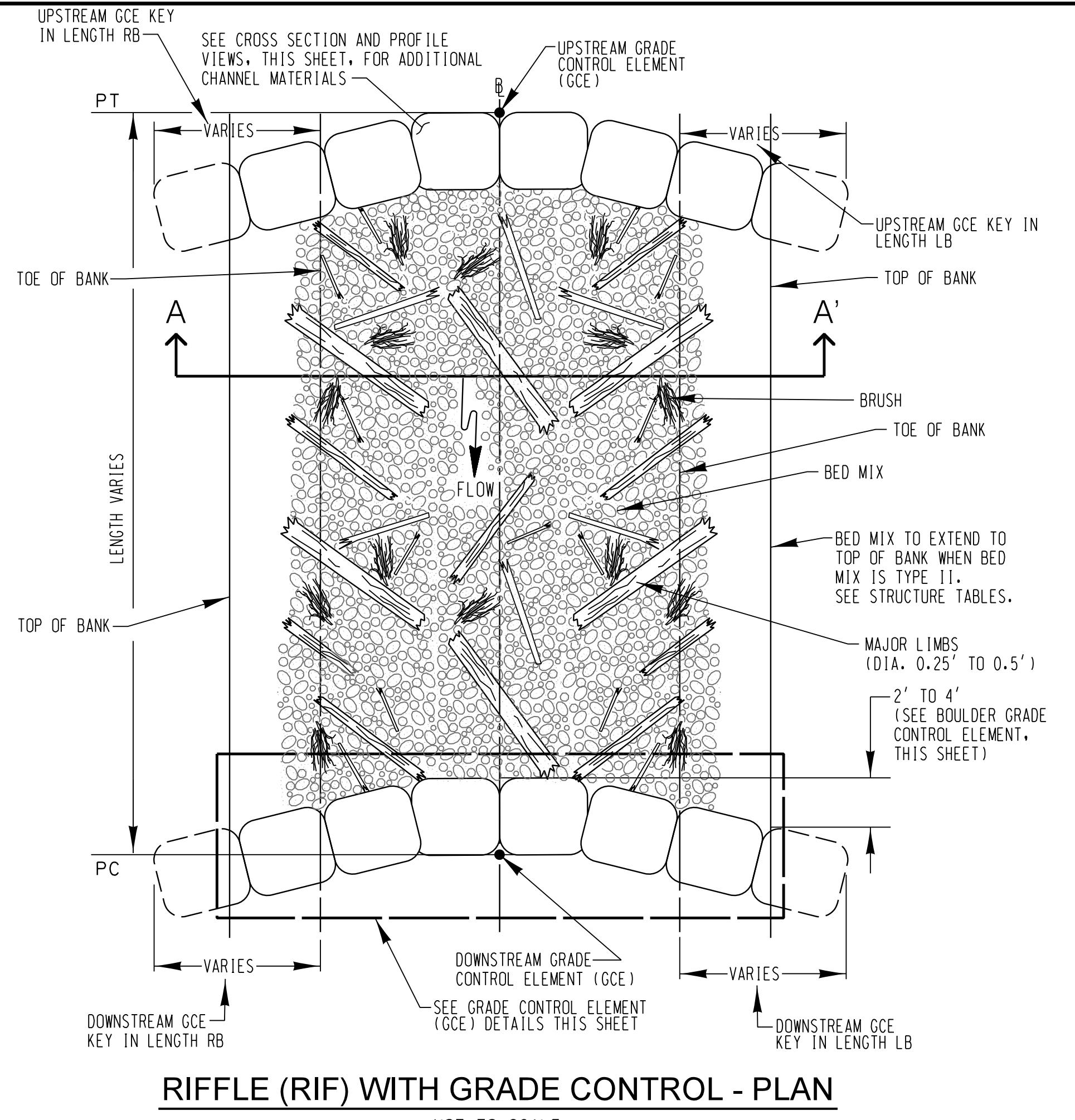
**60% SUBMITTAL
NOT FOR CONSTRUCTION**

STREAM DETAILS
UPPER FARNANDIS BRANCH
STREAM RESTORATION

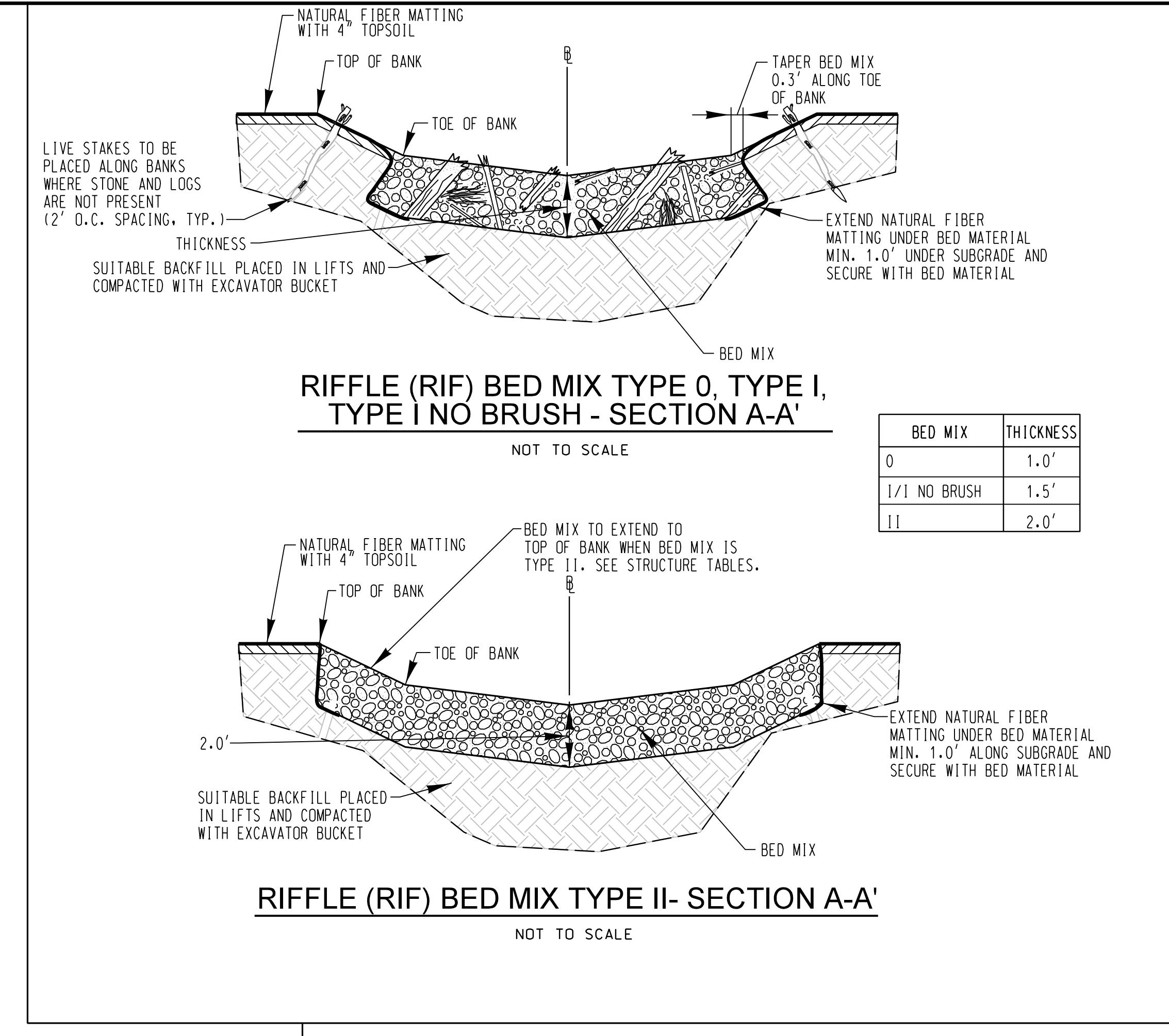
DRAWING NO.
DE-02

FILE: M:\2024\1NT2025\04 Drawings\DE-002 StreamDetails.dwg
FILE: M:\20



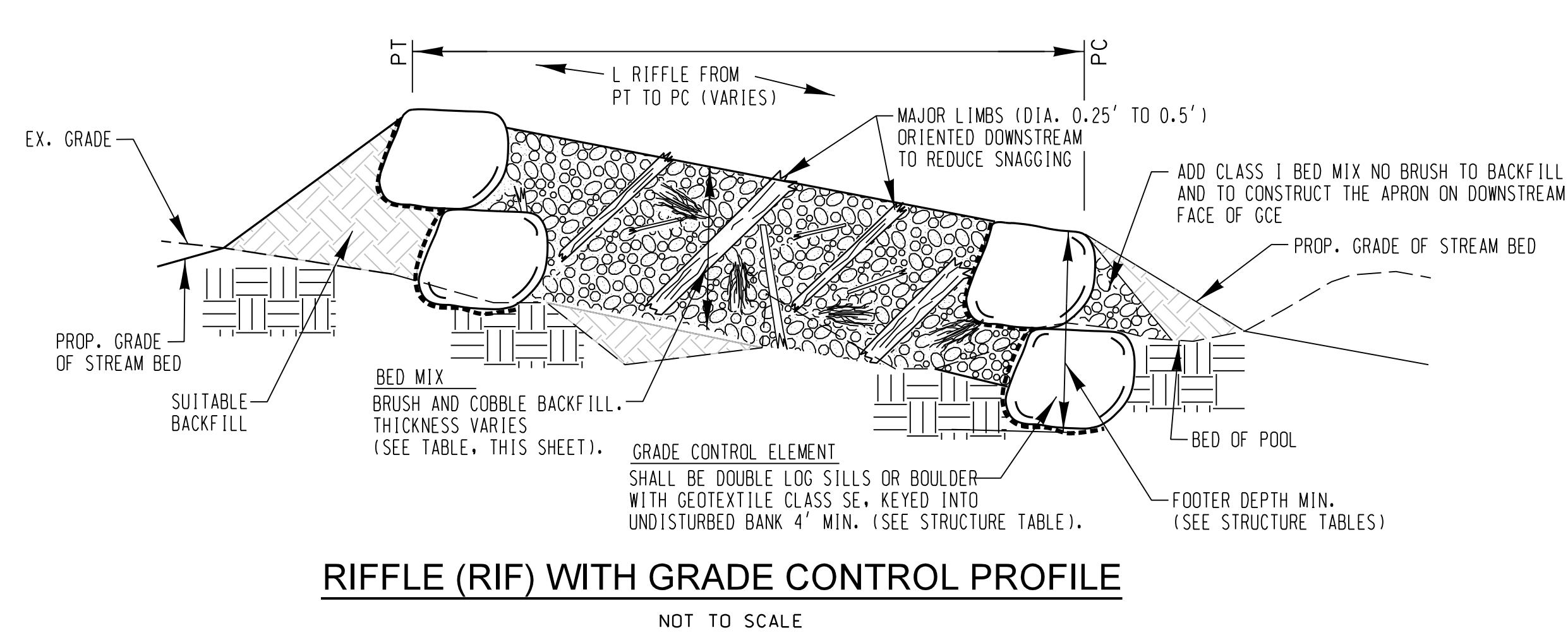


RIFFLE (RIF) WITH GRADE CONTROL - PLAN

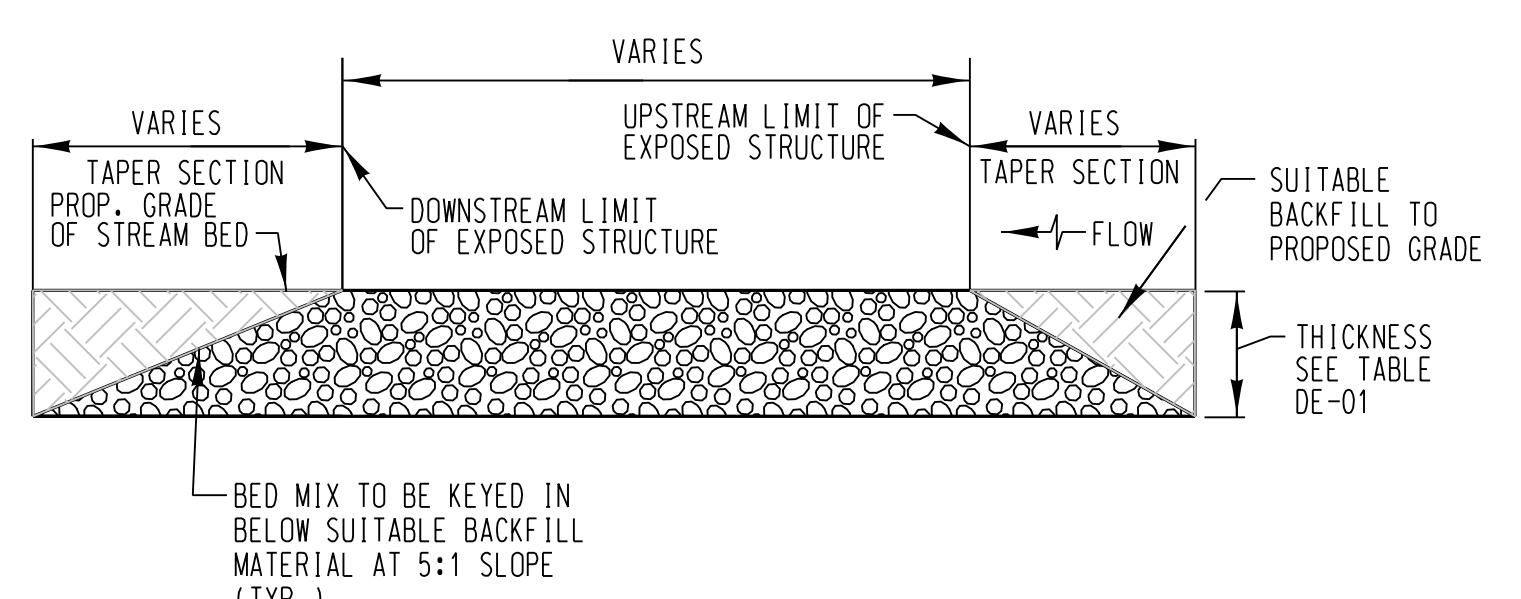


RIFFLE (RIF) BED MIX TYPE 0, TYPE I, TYPE I NO BRUSH - SECTION A-A'

RIFFLE (RIF) BED MIX TYPE II - SECTION A-A'



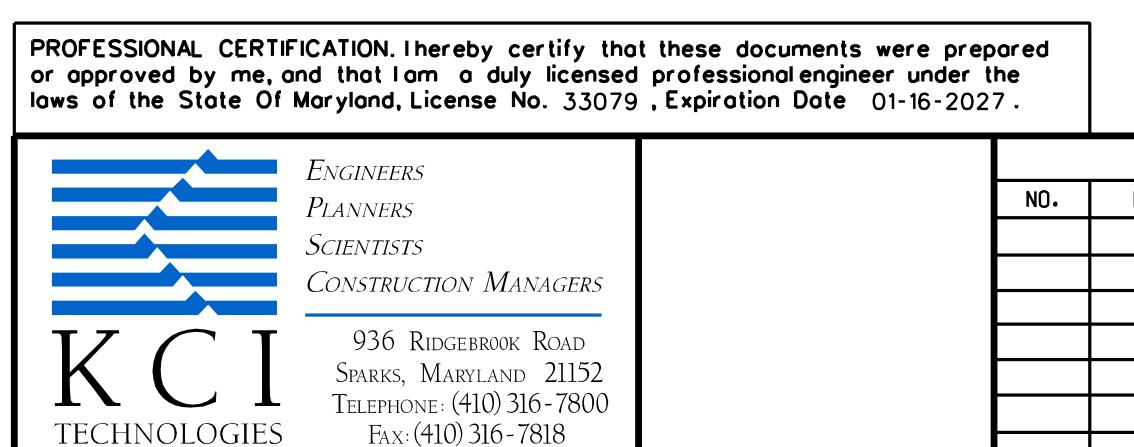
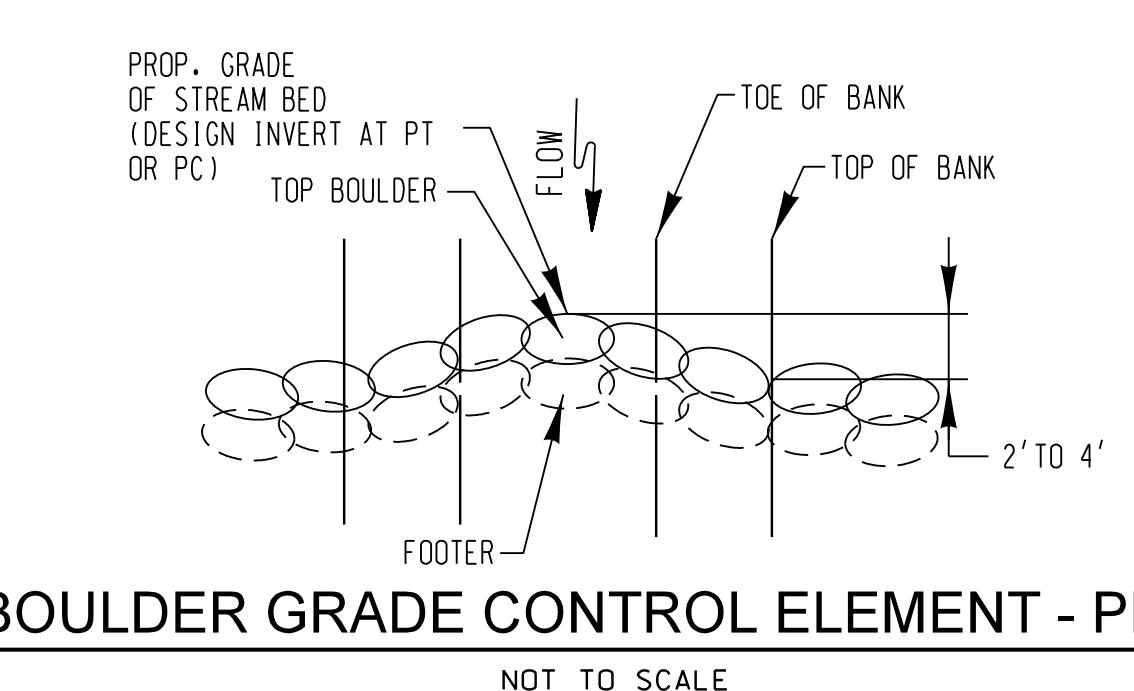
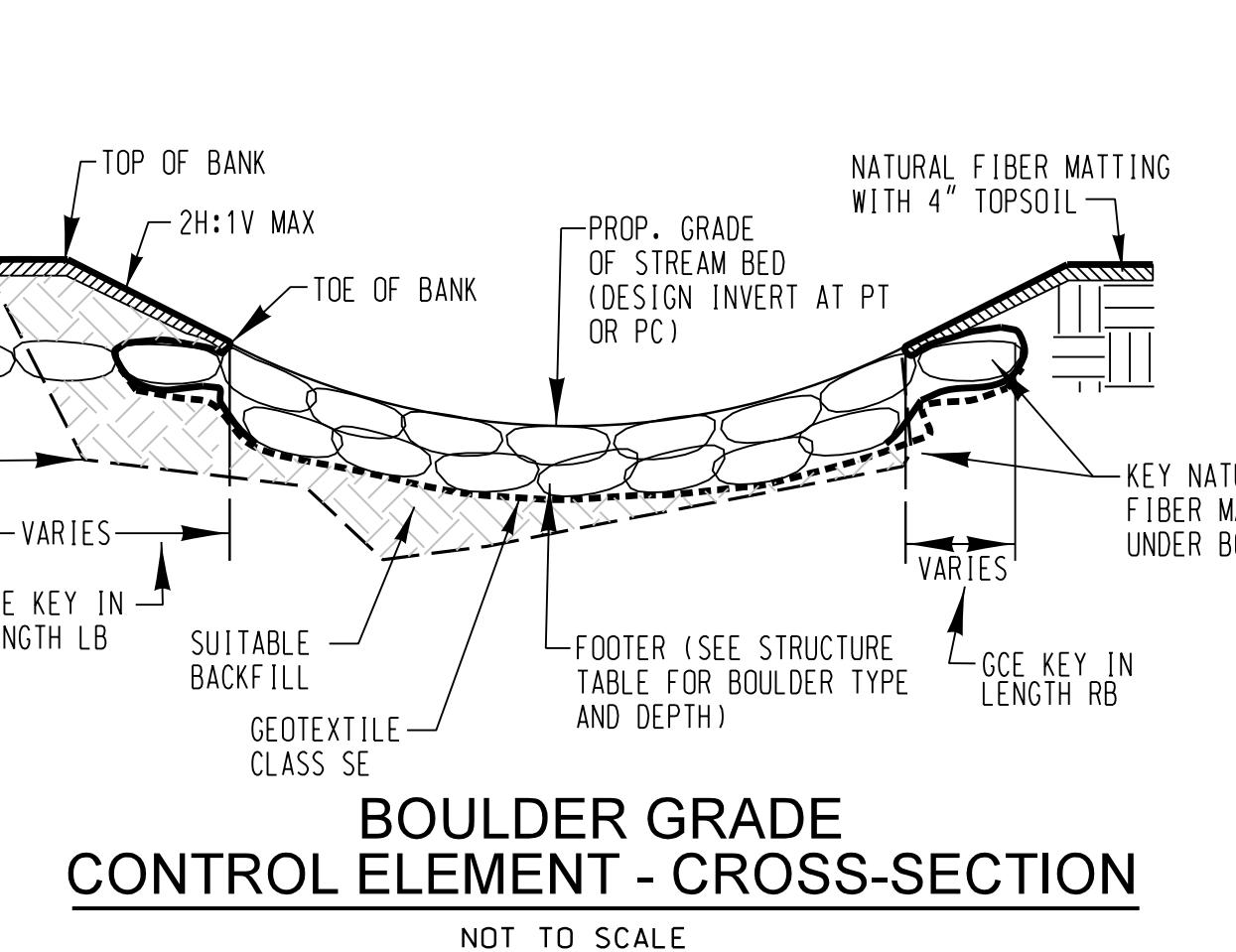
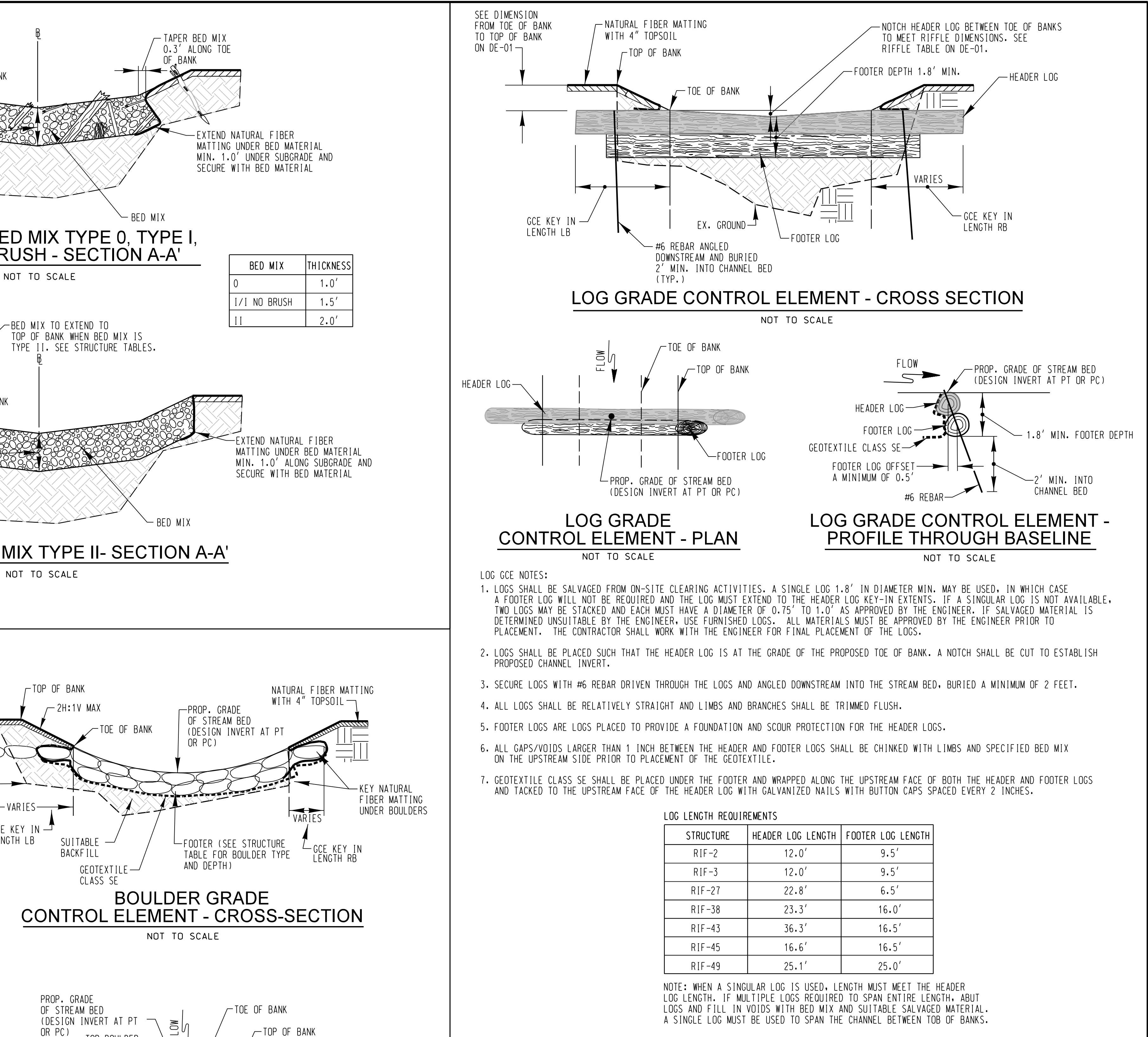
RIFFLE (RIF) WITH GRADE CONTROL PROFILE



RIFFLE (RIF) WITHOUT GRADE CONTROL ELEMENT(S) PROFILE

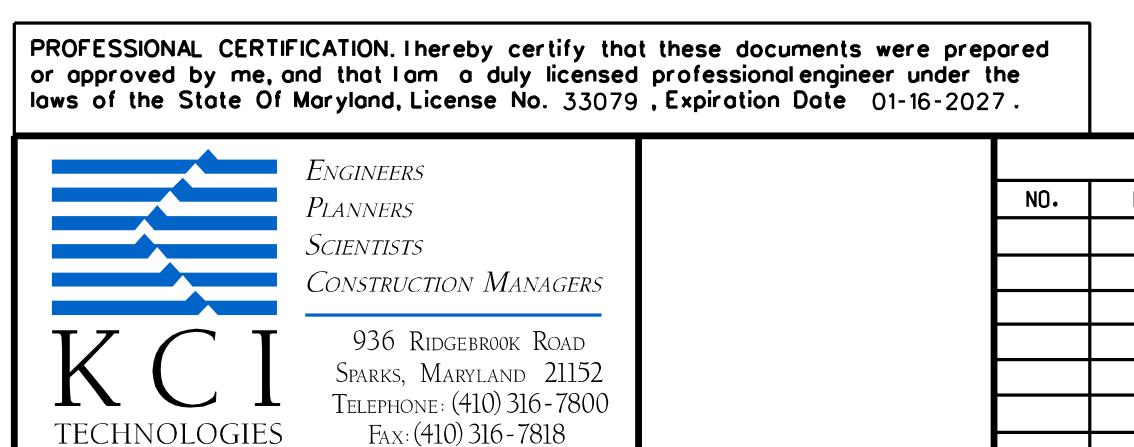
NOTES:

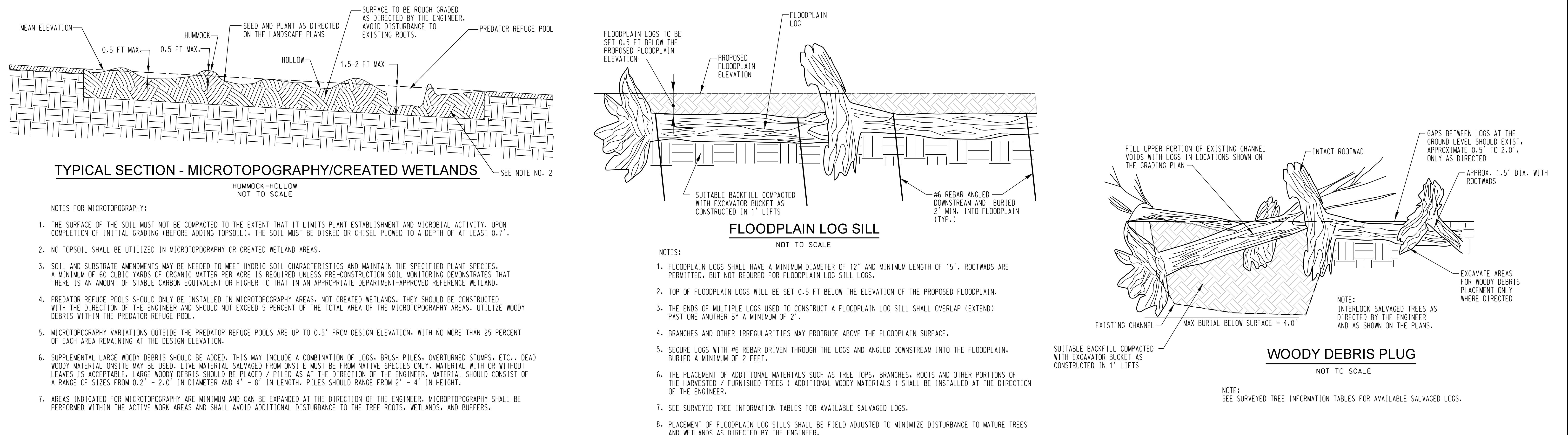
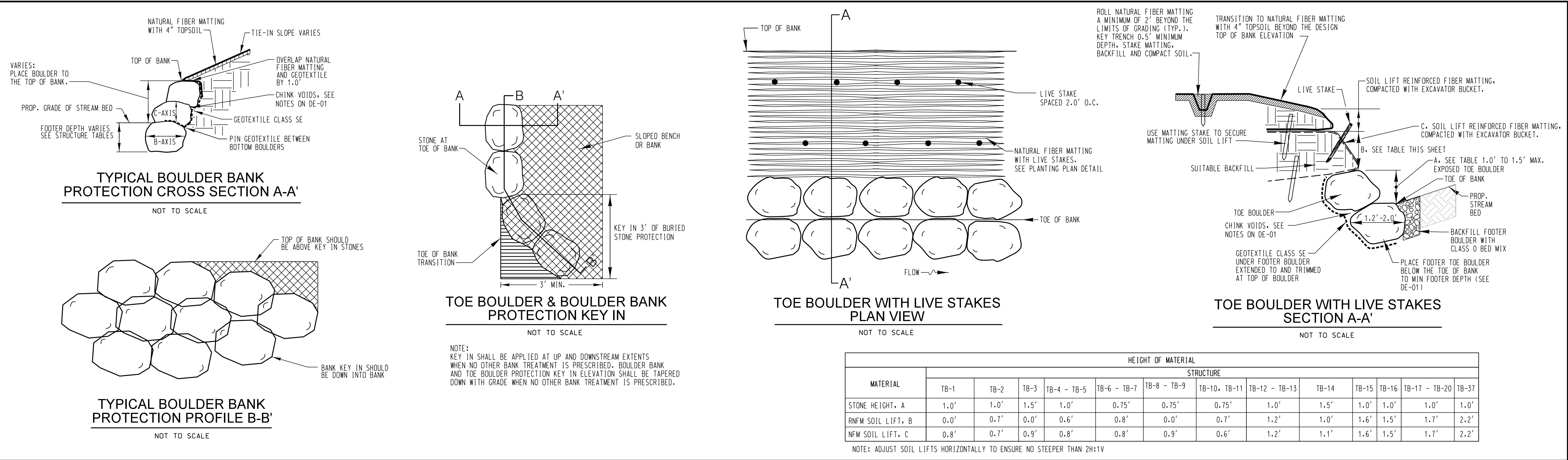
1. RIGHT AND LEFT BANKS ARE DETERMINED WHEN FACING DOWNSTREAM.
2. GRADE CONTROL ELEMENTS (GCE) ARE LOCATED AT THE UPSTREAM AND IN MOST CASES DOWNSTREAM END OF RIFFLES AND CONSTRUCTED WITH BOULDERS OR LOGS, SEE GRADING PLANS, PROFILES, AND STRUCTURE TABLES.
3. BED MIX SHALL BE PLACED AND CHINKED IN LIFTS TO MINIMIZE Voids AND PREVENT SUBSURFACE FLOW.
4. UPSTREAM/DOWNSTREAM GCE KEY IN LENGTH LB/RB VARY. SEE STRUCTURE TABLES FOR EXACT LENGTHS. THE LENGTH MAY BE FIELD ADJUSTED AS APPROVED BY THE ENGINEER.
5. SUITABLE BACKFILL MATERIAL SHALL BE COMPACTED SUCH THAT FUTURE SETTLEMENT IS KEPT TO A MINIMUM.
6. SUITABLE BACKFILL SHALL BE SALVAGED MATERIAL. IF SALVAGED SUITABLE BACKFILL IS NOT AVAILABLE, USE FURNISHED BANK RUN GRAVEL AS APPROVED BY THE COUNTY AND/OR ENGINEER.
7. IN AREAS OF CUT WHERE SALVAGED/CLASS I RIFFLE BED MIX IS PROPOSED, OVEREXCAVATION IS NOT REQUIRED, SO LONG AS THE MATERIAL IN THE BOTTOM OF THE PROPOSED CHANNEL MEETS CLASS I MIX DISTRIBUTION SPECIFIED ON DE-01 OR AS APPROVED BY THE ENGINEER. NFM SHOULD BE TRENCHED IN AT THE TOE.



BOULDER GCE NOTES:

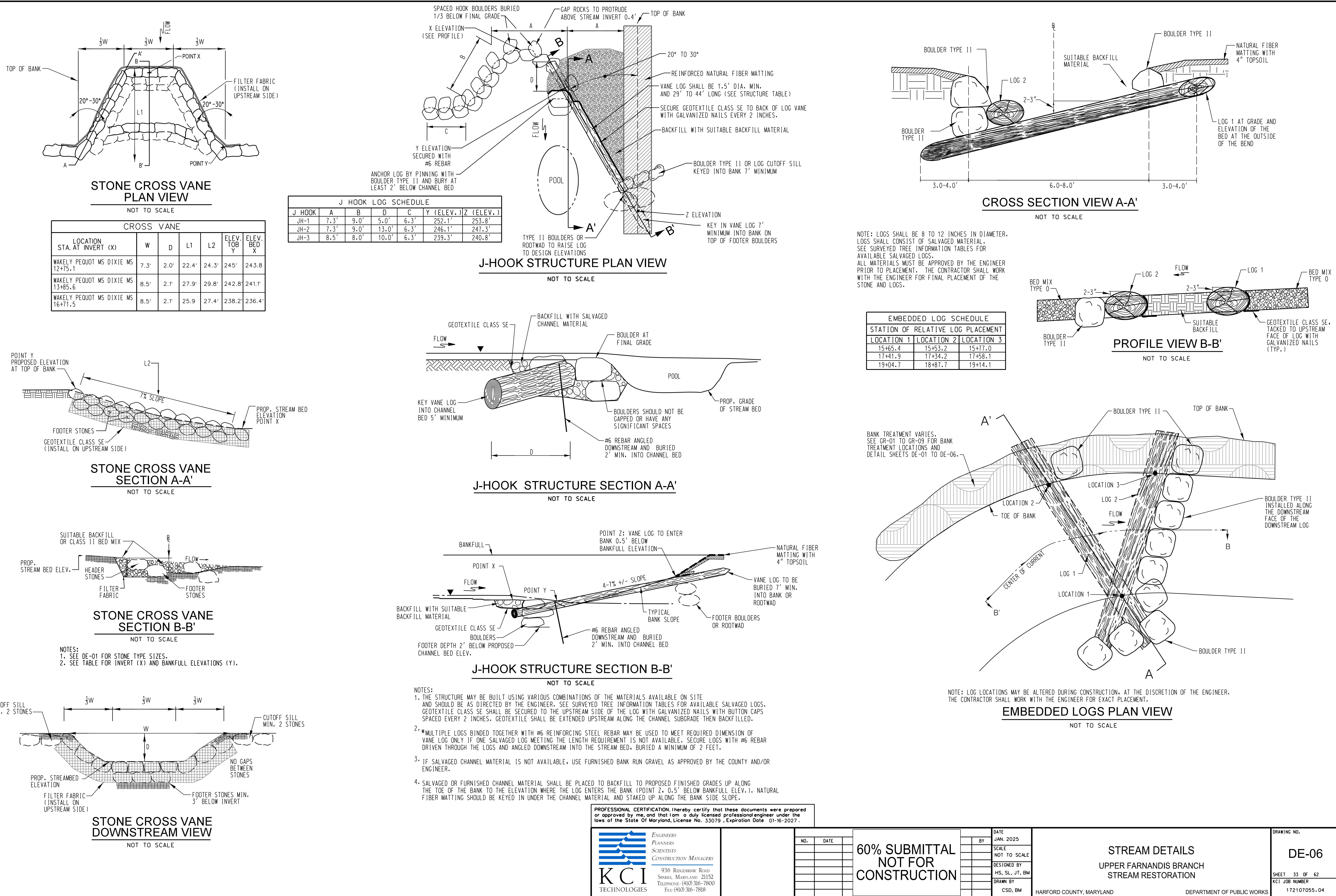
1. BOULDERS SHALL BE PLACED FIRST AT THE CHANNEL INVERT ALIGNED WITH THE PC. THE REST OF THE BOULDERS OF THE GCE SHALL BE ANGLED DOWNSTREAM. THE UPSTREAM/DOWNSTREAM GCE KEY IN LENGTH RB SHALL BE PLACED PERPENDICULAR TO THE TOP OF BANK.
2. ALL GAPS/Voids BETWEEN BOULDERS SHALL BE CHINKED WITH BED MIX UNTIL ALL Voids ARE FILLED.
3. ON THE UPSTREAM FACE OF THE BOULDERS A LAYER OF GEOTEXTILE SHALL BE PLACED AS SHOWN IN THE DETAIL, THE ENTIRE LENGTH OF THE GCE.

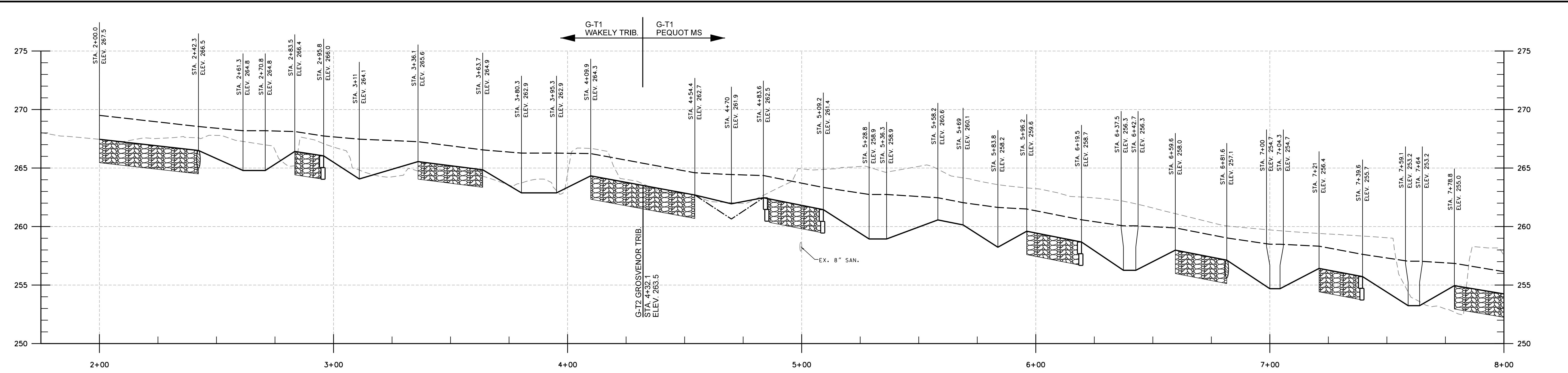




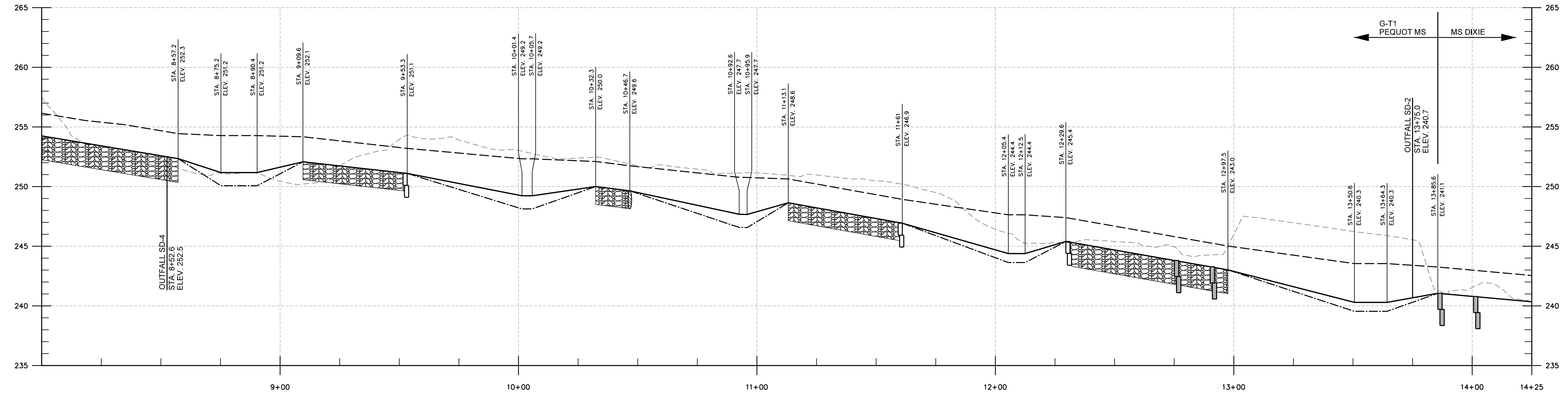
PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 33079, Expiration Date 01-16-2027.											
 ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS KCI TECHNOLOGIES						DATE JAN. 2025 SCALE NOT TO SCALE DESIGNED BY HS, SL, JT, BM DRAWN BY CSD, BM			60% SUBMITTAL NOT FOR CONSTRUCTION		

STREAM DETAILS UPPER FARNANDIS BRANCH STREAM RESTORATION HARFORD COUNTY, MARYLAND DEPARTMENT OF PUBLIC WORKS			DRAWING NO. DE-05 SHEET 32 OF 62 KCI JOB NUMBER 172107055.04
---	--	--	--

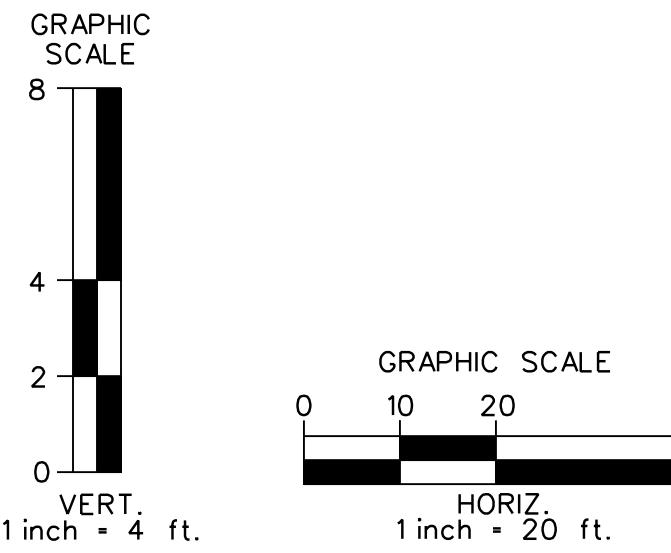




G-T1 WAKELY TRIB. - G-T1 PEQUOT MS - MS DIXIE - MS JACKSON



G-T1 WAKELY TRIB. - G-T1 PEQUOT MS - MS DIXIE - MS JACKSON- CONT'D



LEGEND

EXISTING GROUND (UNDER BASELINE)
PROPOSED BED GRADE (UNDER BASELINE)
PROPOSED TOP OF BANK (BANKFULL)
PROPOSED THALWEG *

* WHEN THALWEG IS OFFSET FROM BASELINE

STRUCTURES LEGEND

PROP. BOULDER TYPE I
PROP. BOULDER TYPE II
PROP. IMBRICATED
PROP. LOG
PROP. BED MATERIAL

PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.

NO.	DATE

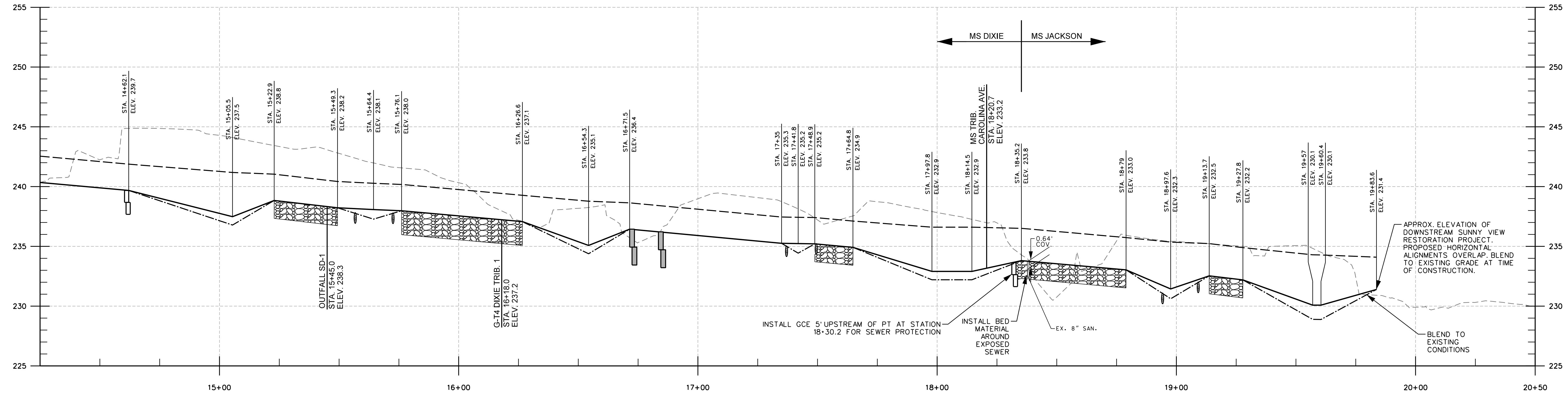
KCI
TECHNOLOGIES

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21252
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

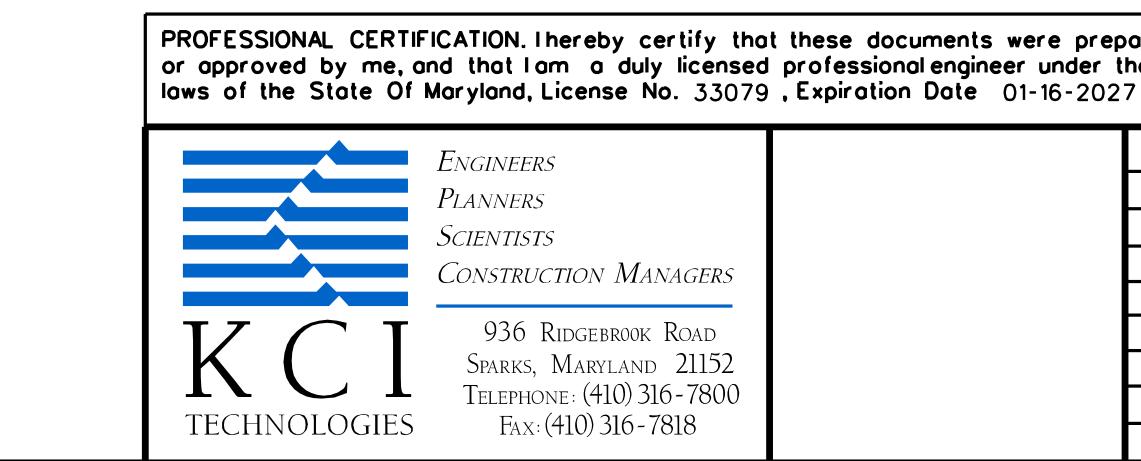
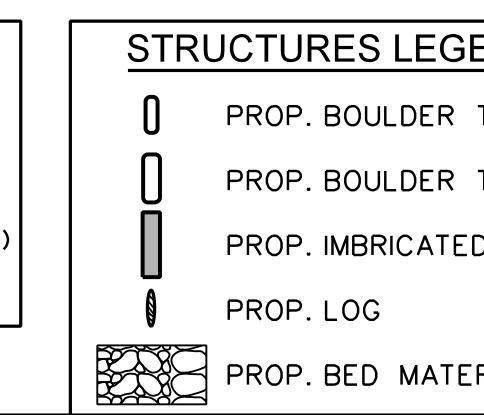
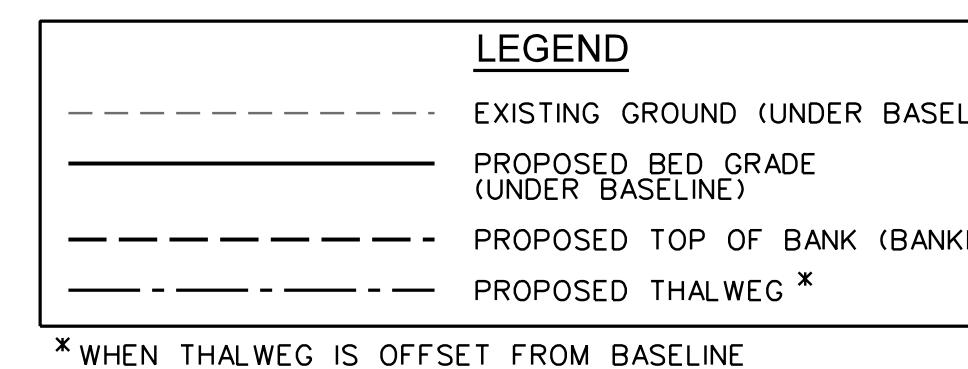
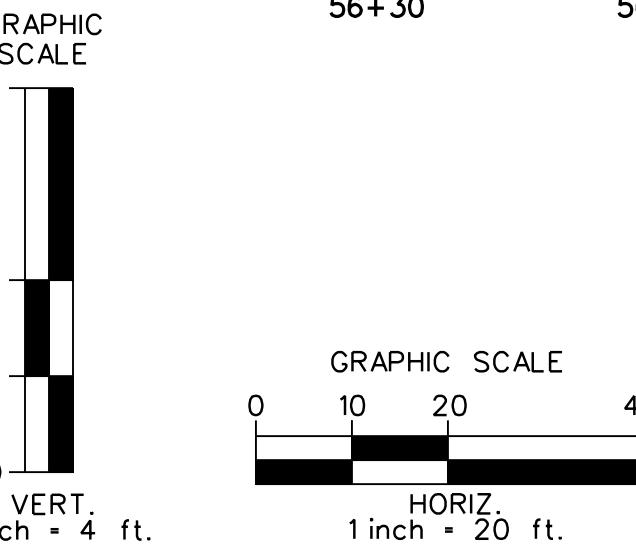
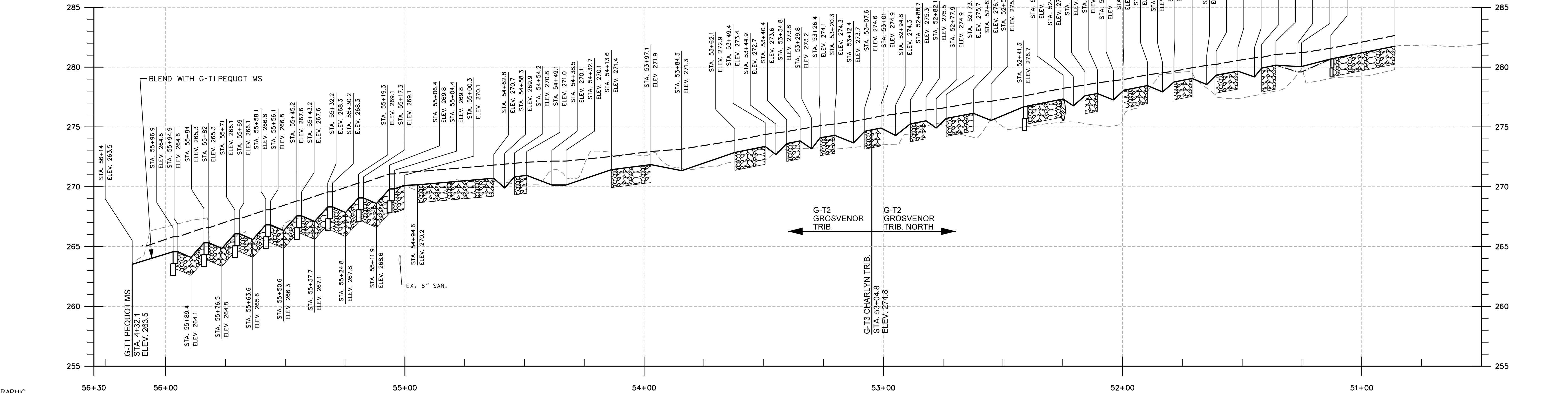
**60% SUBMITTAL
NOT FOR
CONSTRUCTION**

PROFILES
UPPER FARNANDIS BRANCH
STREAM RESTORATION
HARFORD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

DRAWING NO.
PR-01
SHEET 34 OF 62
KCI JOB NUMBER
172107055.04

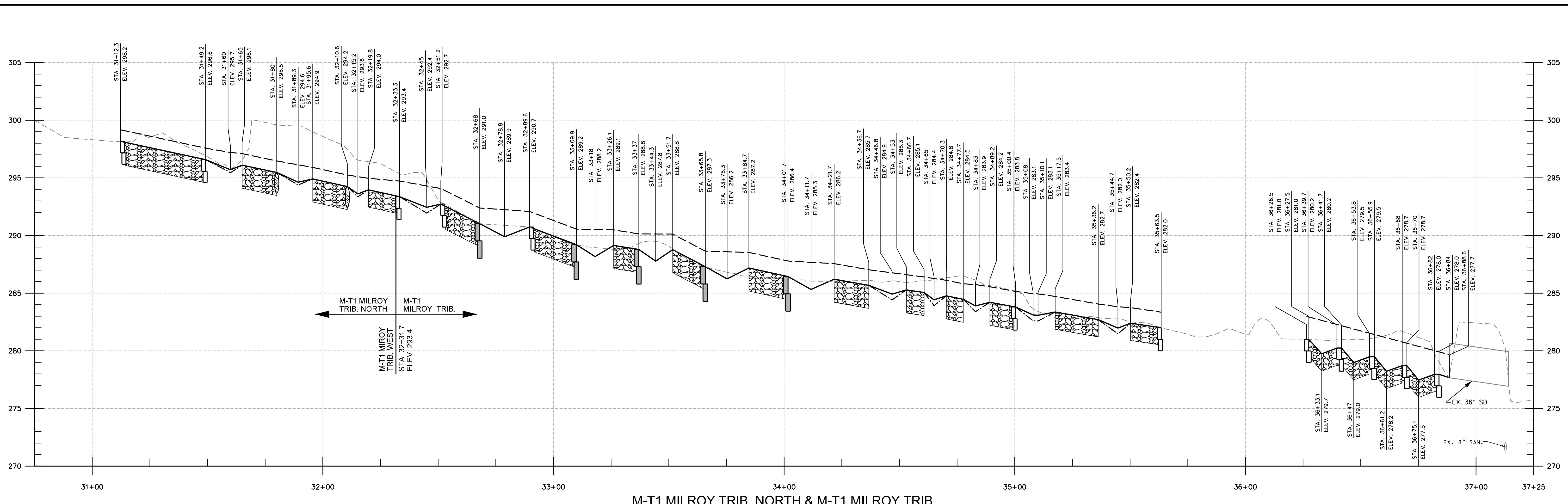


G-T1 WAKELEY TRIB. - G-T1 PEQUOT MS - MS DIXIE - MS JACKSON - CONT'D

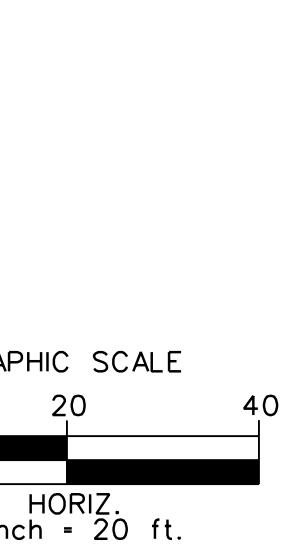


60% SUBMITTAL
NOT FOR
CONSTRUCTION

NO.	DATE
1	01/13/2025
2	01/13/2025
3	01/13/2025
4	01/13/2025
5	01/13/2025
6	01/13/2025
7	01/13/2025
8	01/13/2025
9	01/13/2025
10	01/13/2025
11	01/13/2025
12	01/13/2025
13	01/13/2025
14	01/13/2025
15	01/13/2025
16	01/13/2025
17	01/13/2025
18	01/13/2025
19	01/13/2025
20	01/13/2025
21	01/13/2025
22	01/13/2025
23	01/13/2025
24	01/13/2025
25	01/13/2025
26	01/13/2025
27	01/13/2025
28	01/13/2025
29	01/13/2025
30	01/13/2025
31	01/13/2025
32	01/13/2025
33	01/13/2025
34	01/13/2025
35	01/13/2025
36	01/13/2025
37	01/13/2025
38	01/13/2025
39	01/13/2025
40	01/13/2025
41	01/13/2025
42	01/13/2025
43	01/13/2025
44	01/13/2025
45	01/13/2025
46	01/13/2025
47	01/13/2025
48	01/13/2025
49	01/13/2025
50	01/13/2025
51	01/13/2025
52	01/13/2025
53	01/13/2025
54	01/13/2025
55	01/13/2025
56	01/13/2025
57	01/13/2025
58	01/13/2025
59	01/13/2025
60	01/13/2025
61	01/13/2025
62	01/13/2025
63	01/13/2025
64	01/13/2025
65	01/13/2025
66	01/13/2025
67	01/13/2025
68	01/13/2025
69	01/13/2025
70	01/13/2025
71	01/13/2025
72	01/13/2025
73	01/13/2025
74	01/13/2025
75	01/13/2025
76	01/13/2025
77	01/13/2025
78	01/13/2025
79	01/13/2025
80	01/13/2025
81	01/13/2025
82	01/13/2025
83	01/13/2025
84	01/13/2025
85	01/13/2025
86	01/13/2025
87	01/13/2025
88	01/13/2025
89	01/13/2025
90	01/13/2025
91	01/13/2025
92	01/13/2025
93	01/13/2025
94	01/13/2025
95	01/13/2025
96	01/13/2025
97	01/13/2025
98	01/13/2025
99	01/13/2025
100	01/13/2025
101	01/13/2025
102	01/13/2025
103	01/13/2025
104	01/13/2025
105	01/13/2025
106	01/13/2025
107	01/13/2025
108	01/13/2025
109	01/13/2025
110	01/13/2025
111	01/13/2025
112	01/13/2025
113	01/13/2025
114	01/13/2025
115	01/13/2025
116	01/13/2025
117	01/13/2025
118	01/13/2025
119	01/13/2025
120	01/13/2025
121	01/13/2025
122	01/13/2025
123	01/13/2025
124	01/13/2025
125	01/13/2025
126	01/13/2025
127	01/13/2025
128	01/13/2025
129	01/13/2025
130	01/13/2025
131	01/13/2025
132	01/13/2025
133	01/13/2025
134	01/13/2025
135	01/13/2025
136	01/13/2025
137	01/13/2025
138	01/13/2025
139	01/13/2025
140	01/13/2025
141	01/13/2025
142	01/13/2025
143	01/13/2025
144	01/13/2025
145	01/13/2025
146	01/13/2025
147	01/13/2025
148	01/13/2025
149	01/13/2025
150	01/13/2025
151	01/13/2025
152	01/13/2025
153	01/13/2025
154	01/13/2025
155	01/13/2025
156	01/13/2025
157	01/13/2025
158	01/13/2025
159	01/13/2025
160	01/13/2025
161	01/13/2025
162	01/13/2025
163	01/13/2025
164	01/13/2025
165	01/13/2025
166	01/13/2025
167	01/13/2025
168	01/13/2025
169	01/13/2025
170	01/13/2025
171	01/13/2025
172	01/13/2025
173	01/13/2025
174	01/13/2025
175	01/13/2025
176	01/13/2025
177	01/13/2025
178	01/13/2025
179	01/13/2025
180	01/13/2025
181	01/13/2025
182	01/13/2025
183	01/13/2025
184	01/13/2025
185	01/13/2025
186	01/13/2025
187	01/13/2025
188	01/13/2025
189	01/13/2025
190	01/13/2025
191	01/13/2025
192	01/13/2025
193	01/13/2025
194	01/13/2025
195	01/13/2025
196	01/13/2025
197	01/13/2025
198	01/13/2025
199	01/13/2025
200	01/13/2025
201	01/13/2025
202	01/13/2025
203	01/13/2025
204	01/13/2025
205	01/13/2025
206	01/13/2025
207	01/13/2025
208	01/13/2025
209	01/13/2025
210	01/13/2025
211	01/13/2025
212	01/13/2025
213	01/13/2025
214	01/13/2025
215	01/13/2025
216	01/13/2025
217	01/13/2025
218	01/13/2025
219	01/13/2025
220	01/13/2025
221	01/13/2025
222	01/13/2025
223	01/13/2025
224	01/13/2025
225	01/13/2025
226	01/13/2025
227	01/13/2025
228	01/13/2025
229	01/13/2025
230	01/13/2025
231	01/13/2025
232	01/13/2025
233	01/13/2025
234	01/13/2025
235	01/13/202



M-T1 MILROY TRIB. WEST



LEGEND
EXISTING GROUND (UNDER BASELINE)
PROPOSED BED GRADE (UNDER BASELINE)
PROPOSED TOP OF BANK (BANKFULL)
PROPOSED THALWEG *
* WHEN THALWEG IS OFFSET FROM BASELINE

STRUCTURES LEGEND
PROP. BOULDER TYPE I
PROP. BOULDER TYPE II
PROP. IMBRICATED
PROP. LOG
PROP. BED MATERIAL

PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.

ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21252
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

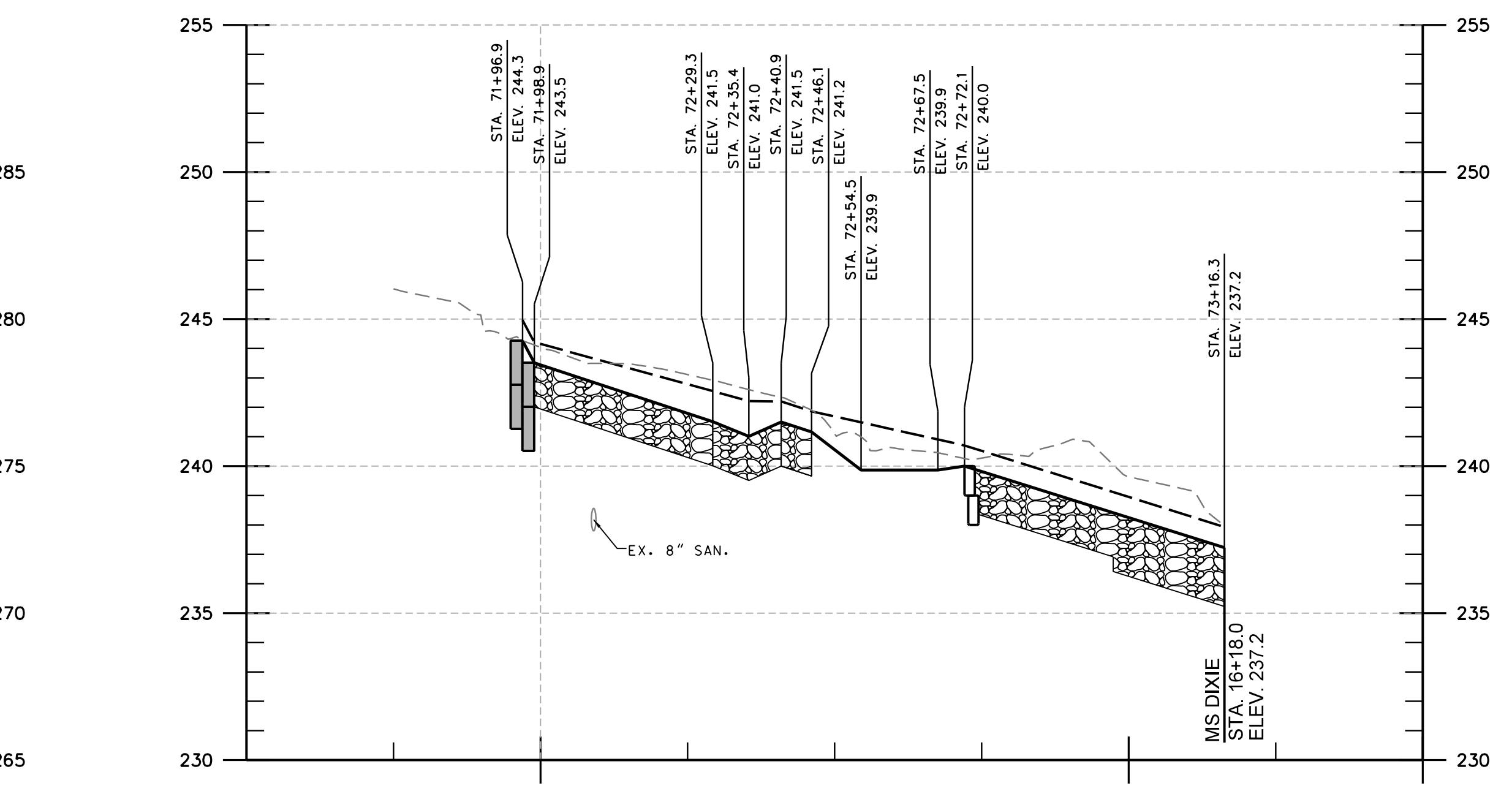
60% SUBMITTAL
NOT FOR
CONSTRUCTION

NO.	DATE
BY	JAN. 2025
SCALE	HORZ. 1" = 20' VERT. 1" = 4'
DESIGNED BY	HS, SL, JT, BM
DRAWN BY	CSD, BM

PROFILES
UPPER FARNANDIS BRANCH
STREAM RESTORATION
HARFORD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS
DRAWING NO. PR-03
SHEET 36 OF 62
KCI JOB NUMBER 172107055.04

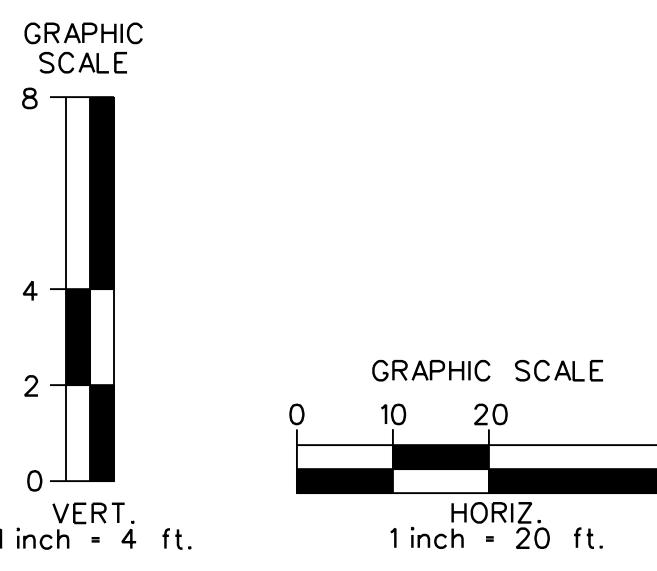
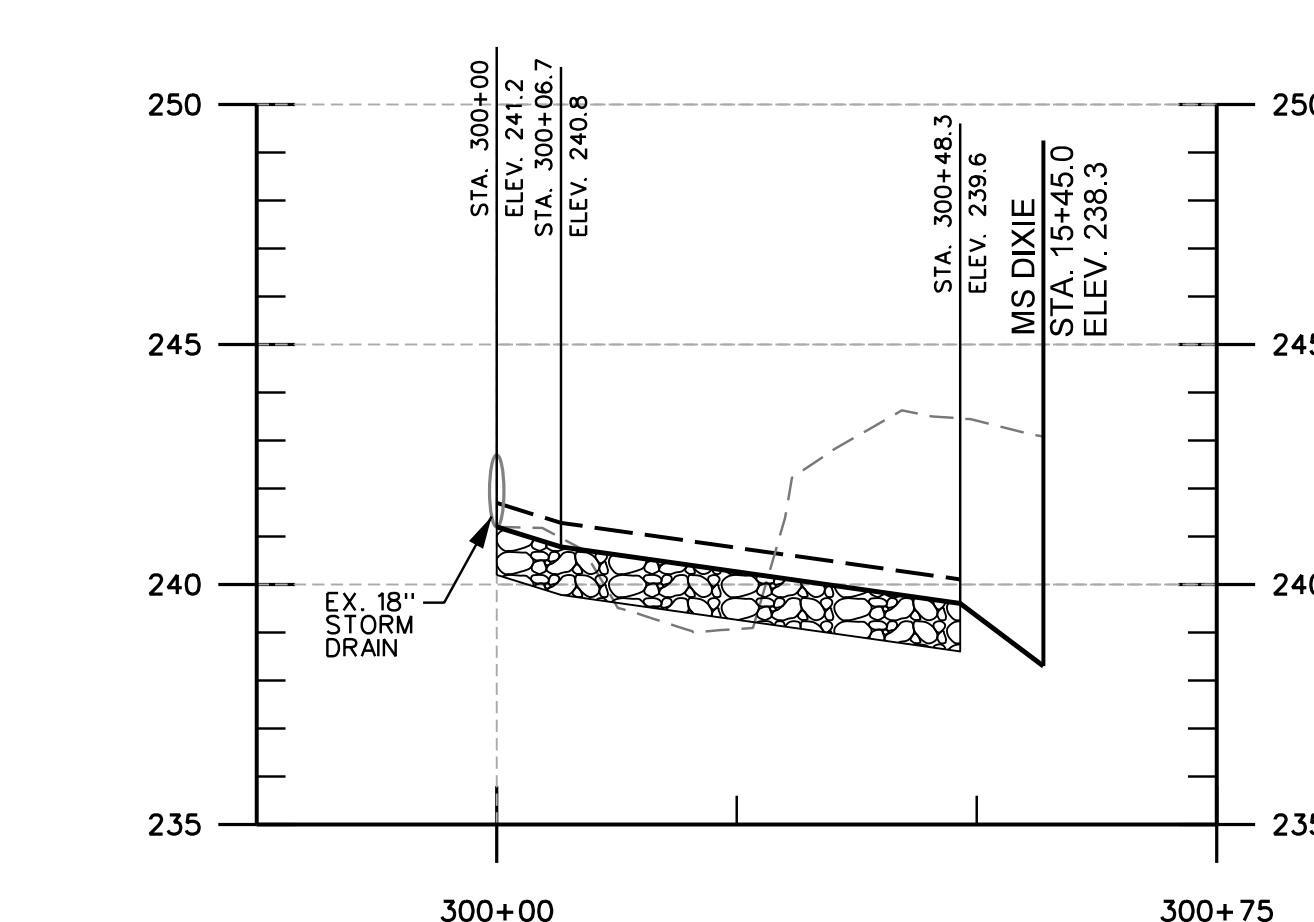
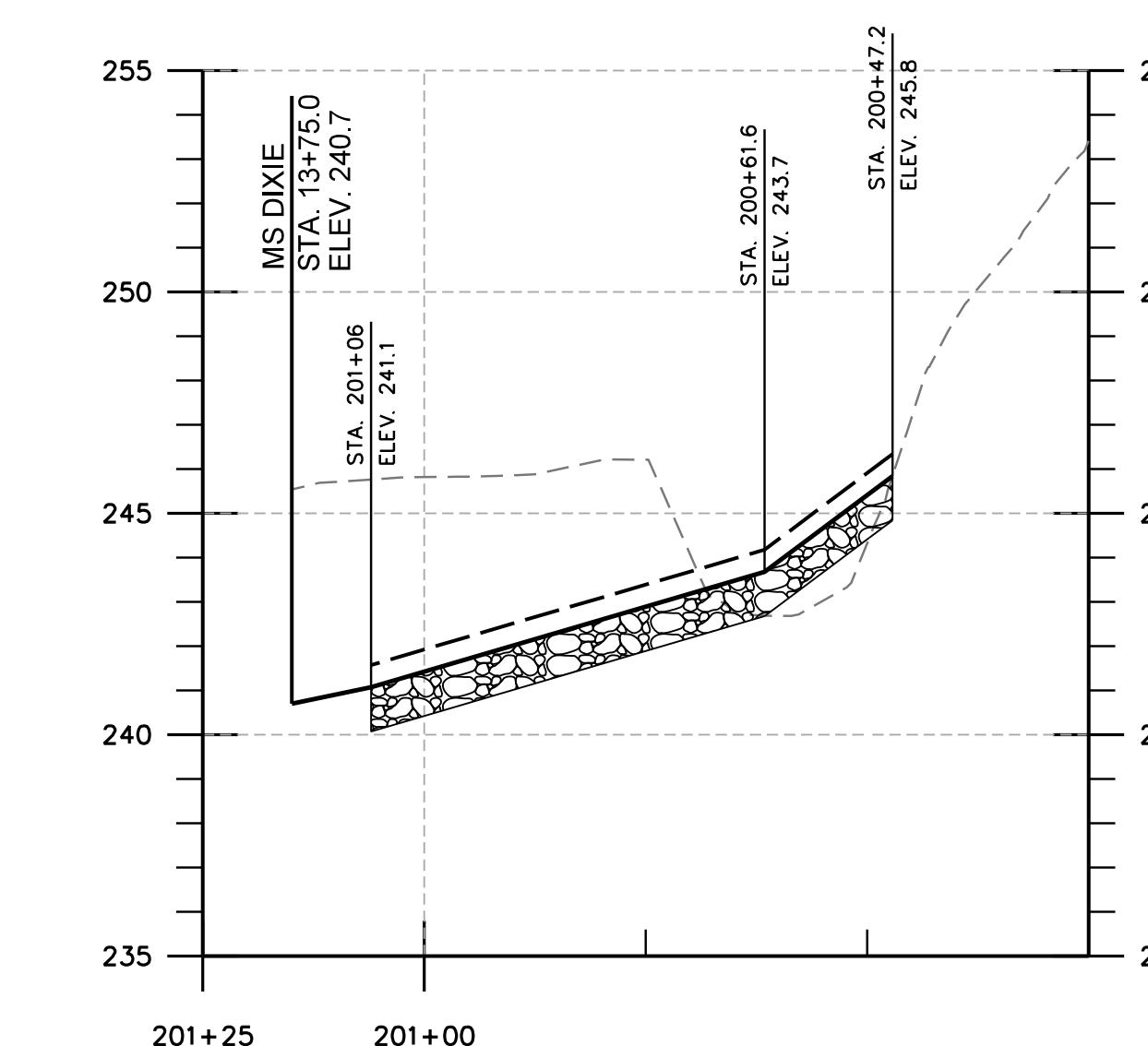
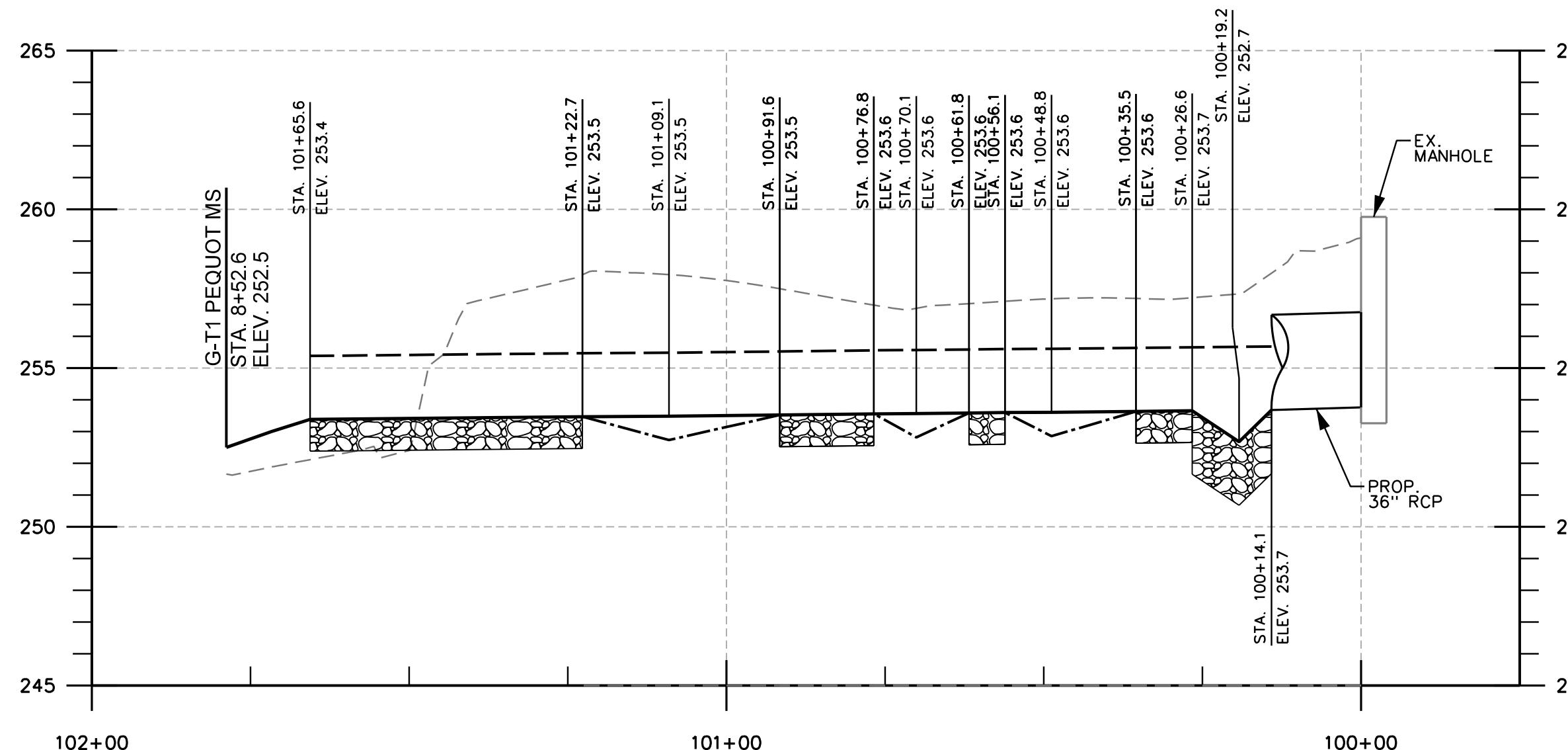
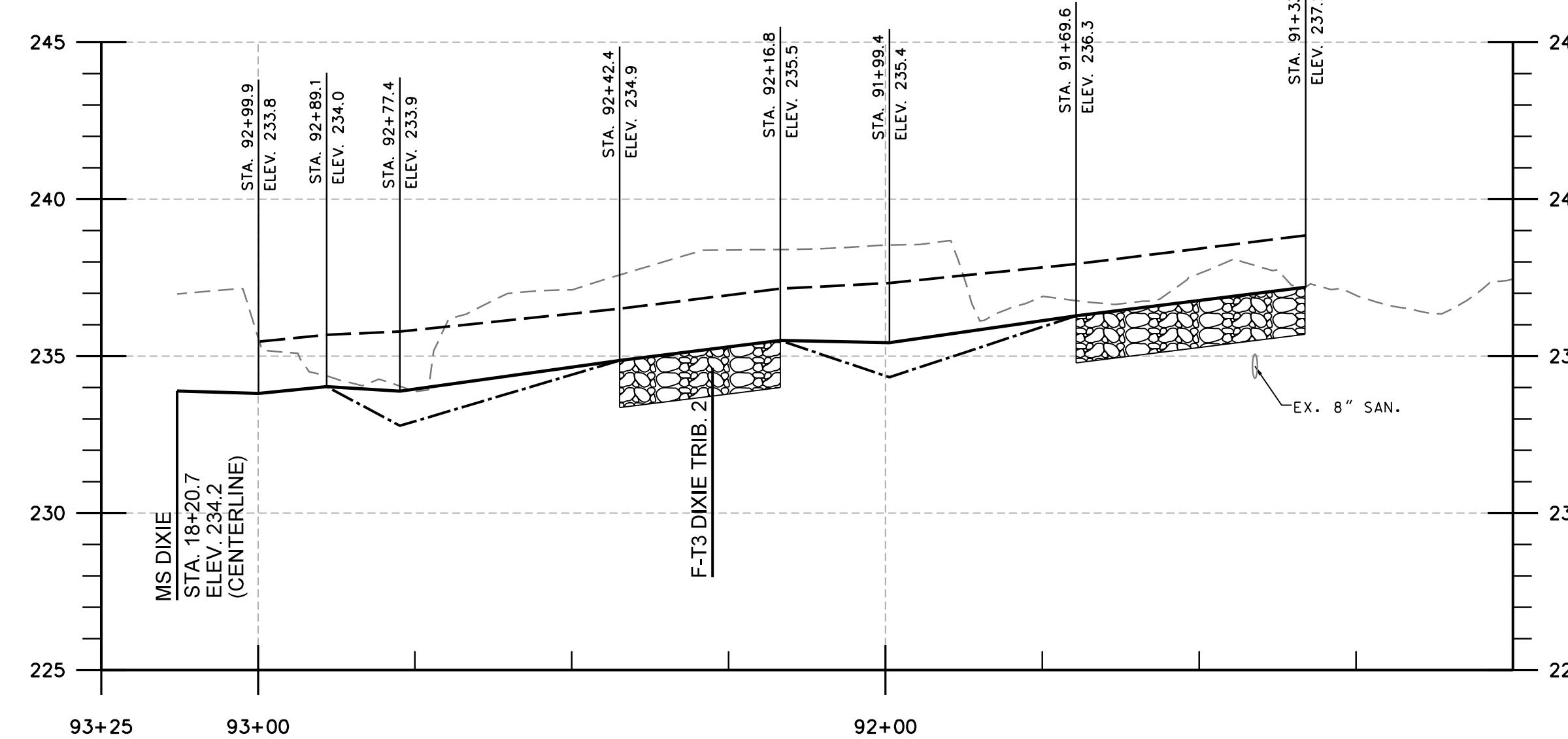
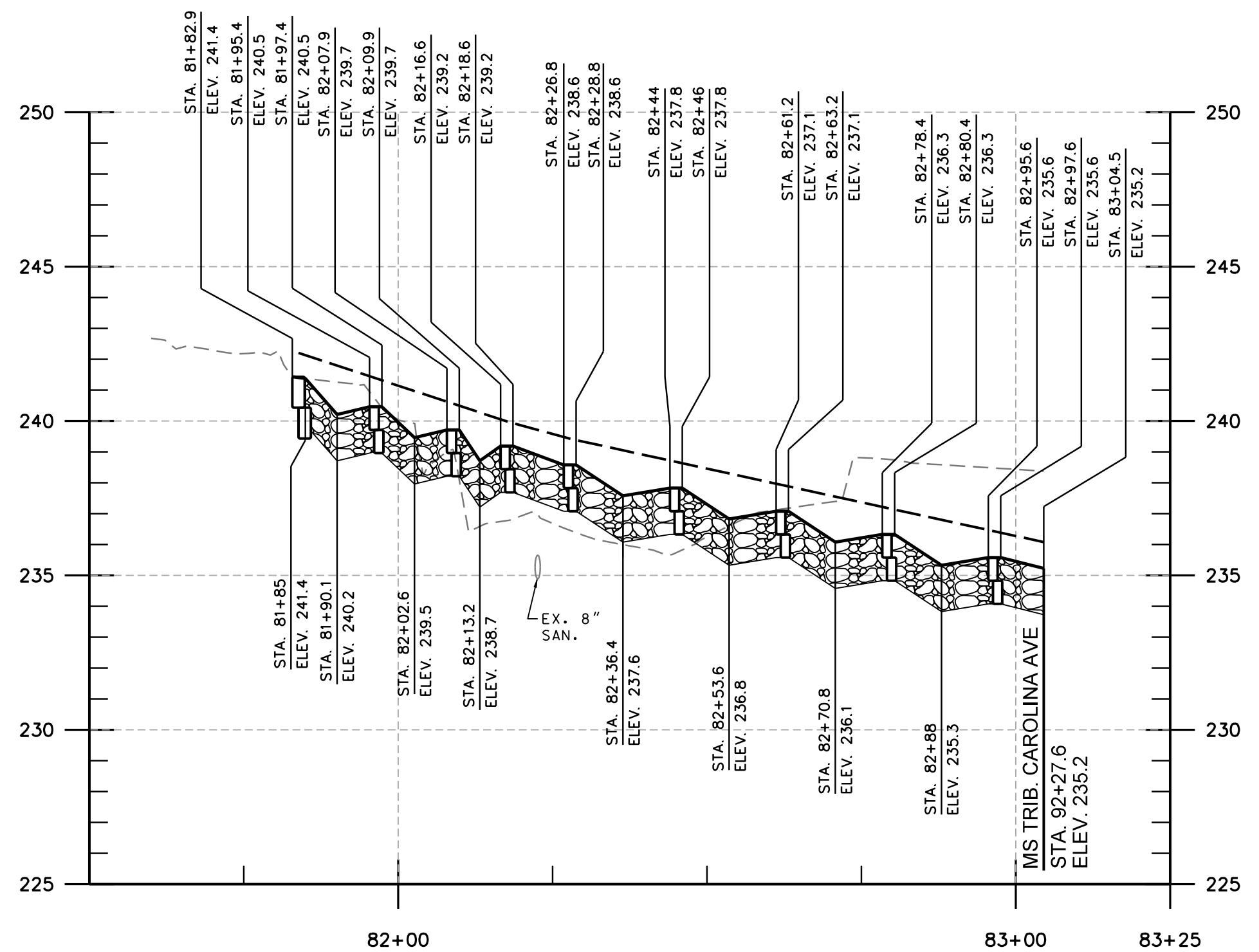
G-T3 CHARLYN TRIB.

EX. 8" SAN.



EX. 8" SAN.

EX. 8" SAN.



LEGEND
EXISTING GROUND (UNDER BASELINE)
PROPOSED BED GRADE (UNDER BASELINE)
PROPOSED TOP OF BANK (BANKFULL)
PROPOSED THALWEG *
* WHEN THALWEG IS OFFSET FROM BASELINE

STRUCTURES LEGEND
PROP. BOULDER TYPE I
PROP. BOULDER TYPE II
PROP. IMBRICATED
PROP. LOG
PROP. BED MATERIAL

PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.

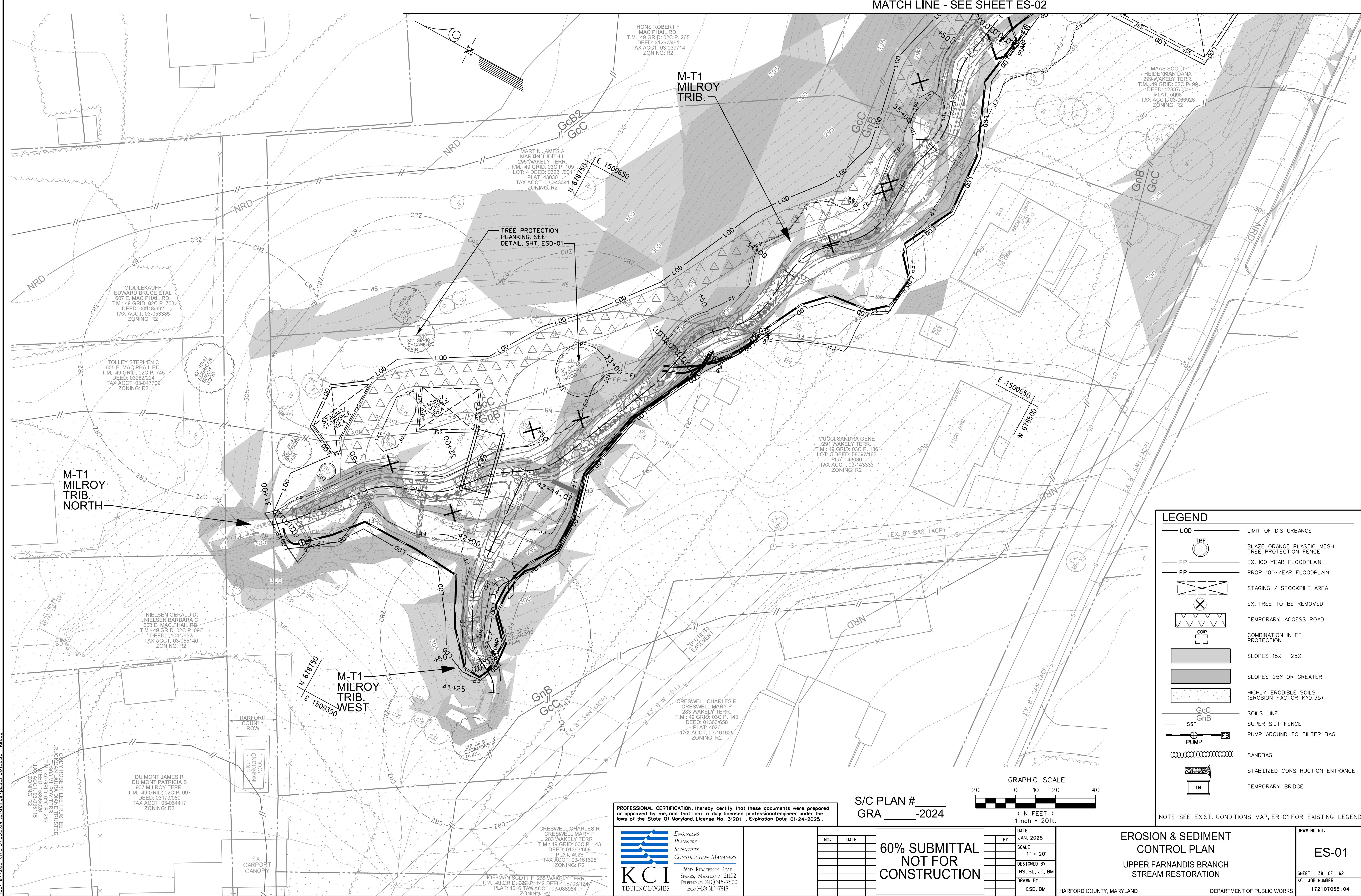
KCI TECHNOLOGIES	ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS 936 RIDGEBROOK ROAD SPARKS, MARYLAND 21252 TELEPHONE: (410) 316-7800 FAX: (410) 316-7818	NO. DATE	DATE BY JAN. 2025
			SCALE HORZ. 1" = 20' VERT. 1" = 4'
			DESIGNED BY HS, SL, JT, BM
			DRAWN BY CSD, BM

**60% SUBMITTAL
NOT FOR
CONSTRUCTION**

PROFILES
UPPER FARNANDIS BRANCH
STREAM RESTORATION
HARFORD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

PR-04
SHEET 37 OF 62
KCI JOB NUMBER
172107055.04

MATCH LINE - SEE SHEET ES-02

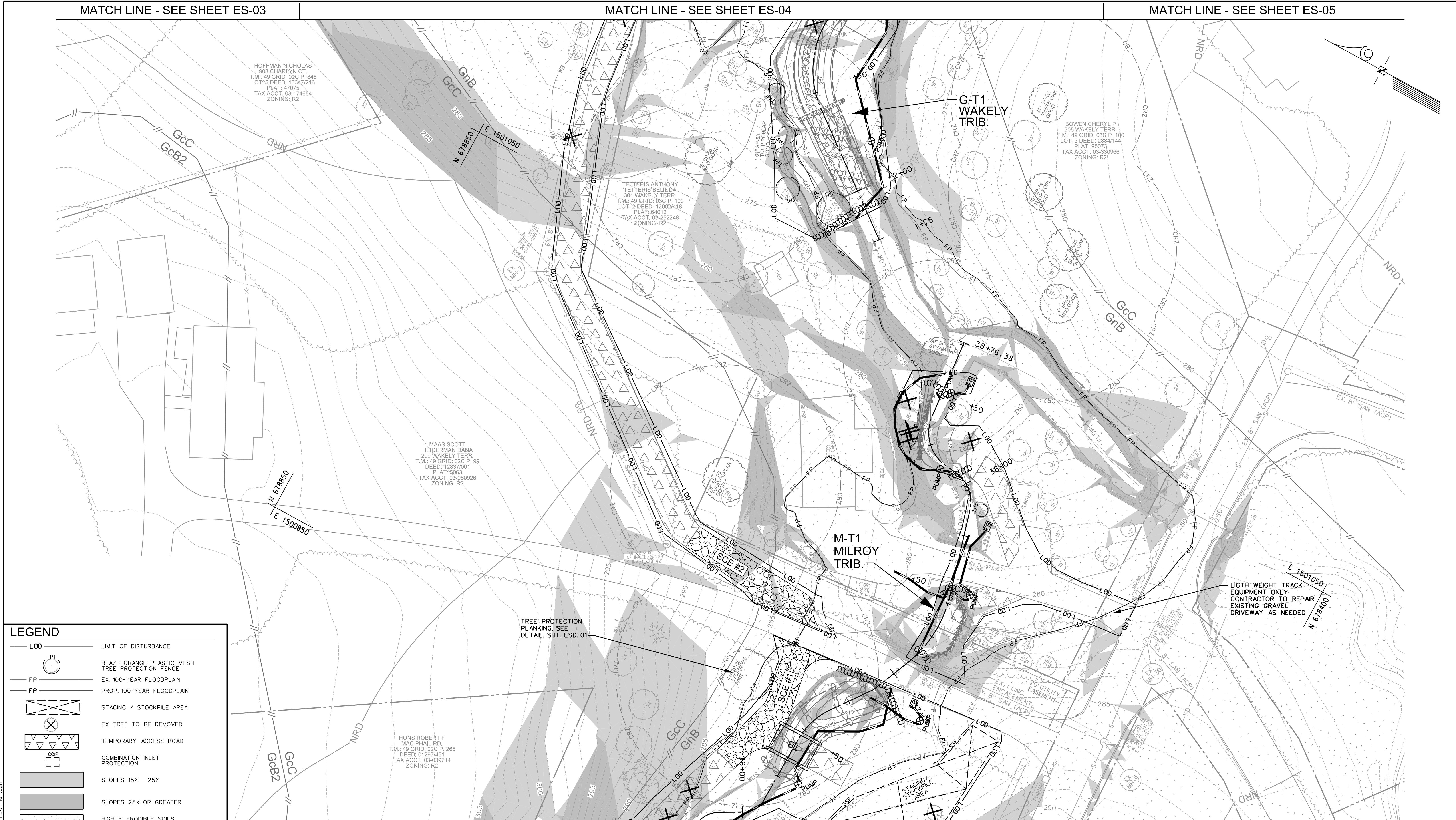


PLOTTED: "02:02 PM on Monday, January 13, 2025"
FILE: M:\\2025\\172107055\\01\\DSC00005.DOCX

MATCH LINE - SEE SHEET ES-03

MATCH LINE - SEE SHEET ES-04

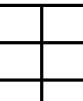
MATCH LINE - SEE SHEET ES-05



MATCH LINE - SEE SHEET ES-01

GRAPHIC SCALE

<p>PROFESSIONAL CERTIFICATION. 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. 31201 , Expiration Date 01-24-2025 .</p> <p> The logo consists of a stylized 'K' and 'C' formed by blue horizontal bars, with a smaller 'I' to the right.</p> <p><i>ENGINEERS</i> <i>PLANNERS</i> <i>SCIENTISTS</i> <i>CONSTRUCTION MANAGERS</i></p> <p>K C I TECHNOLOGIES</p> <p>936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152 TELEPHONE: (410) 316-7800 FAX: (410) 316-7818</p> <p>NO.</p>	
--	--



60% SUBMITTAL NOT FOR CONSTRUCTION

EROSION & SEDIMENT CONTROL PLAN

UPPER FARNANDIS BRANCH STREAM RESTORATION

ING NO.

ES-02

T 39 OF 62
JOB NUMBER

PLOTTED: "02:03 PM on Monday, January 13, 2025"
FILE: M:\\2025\\172107055\\1\\Drawings\\002\\ECC-Plan.dwg

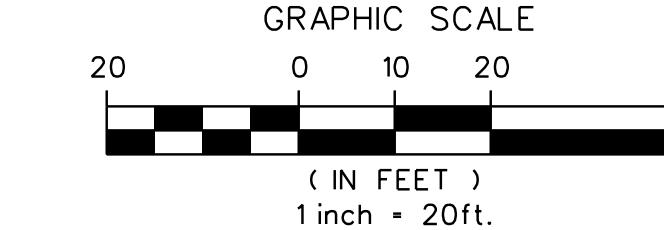
NOTE: SEE EXIST. CONDITIONS MAP, ER-01 FOR EXISTING LEGEND



PROFESSIONAL CERTIFICATION: 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. 31201, Expiration Date 01-24-2025.



60% SUBMITTAL
NOT FOR
CONSTRUCTION



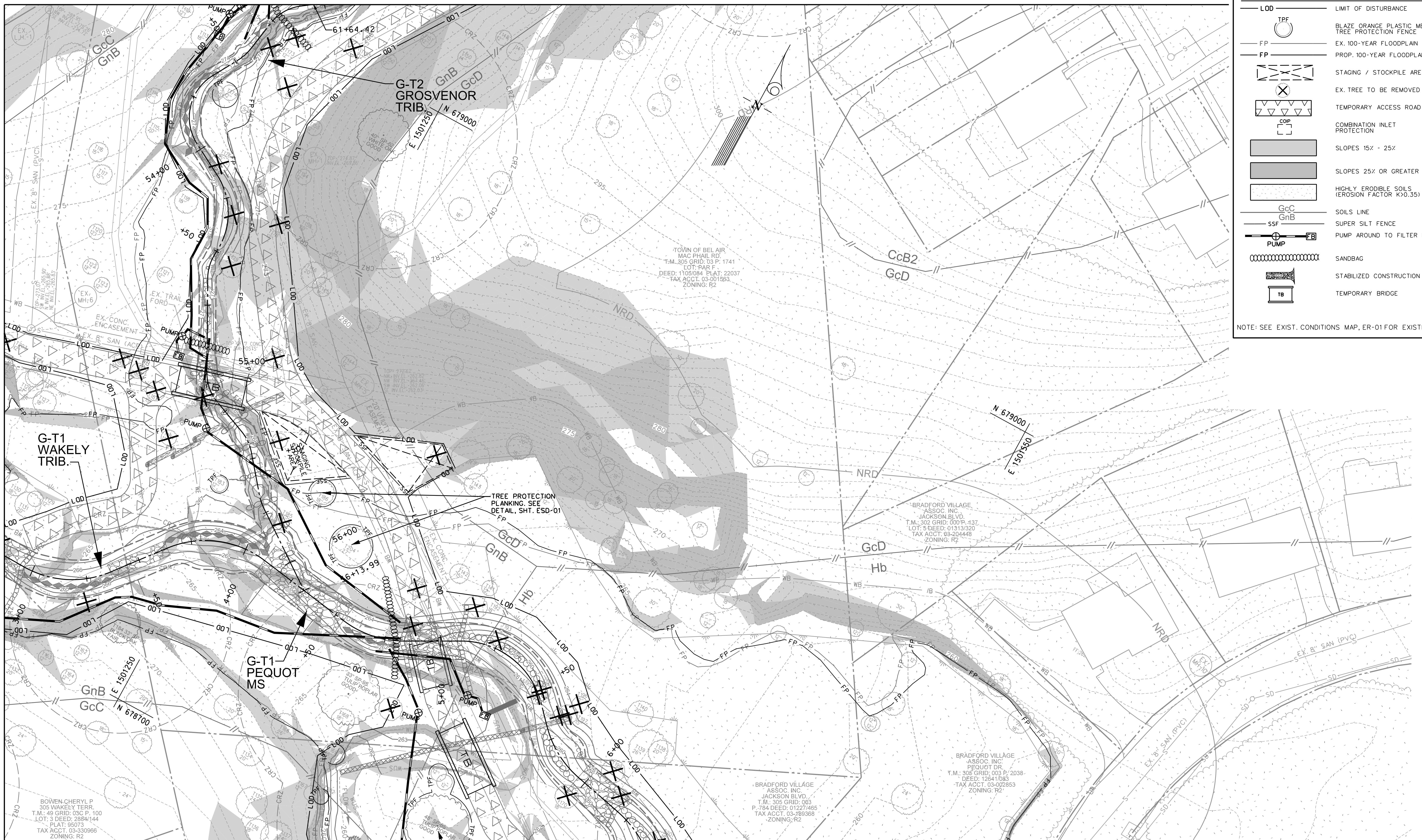
S/C PLAN # _____
GRA _____-2024

EROSION & SEDIMENT
CONTROL PLAN
UPPER FARNANDIS BRANCH
STREAM RESTORATION

DRAWING NO. _____
ES-03
SHEET 40 OF 62
KCI JOB NUMBER 172107055.04
DEPARTMENT OF PUBLIC WORKS

MATCH LINE - SEE SHEET ES-03

MATCH LINE - SEE SHEET ES-02

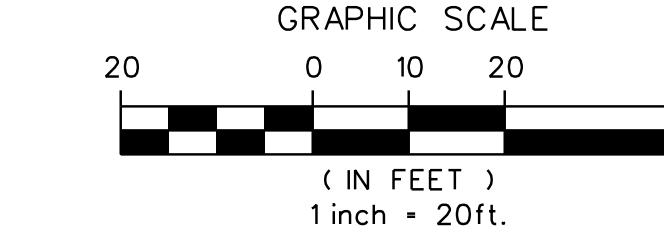


MATCH LINE - SEE SHEET ES-05

PROFESSIONAL CERTIFICATION: 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. 31201, Expiration Date 01-24-2025.



60% SUBMITTAL
NOT FOR
CONSTRUCTION



S/C PLAN # GRA -2024

EROSION & SEDIMENT CONTROL PLAN		DRAWING NO.
UPPER FARNANDIS BRANCH STREAM RESTORATION		ES-04
HARFORD COUNTY, MARYLAND		SHEET 41 OF 62 KCI JOB NUMBER 172107055.04
DEPARTMENT OF PUBLIC WORKS		

MATCH LINE - SEE SHEET ES-04

MATCH LINE - SEE SHEET ES-02

LEGEND

- LOD — LIMIT OF DISTURBANCE
- TPF — BLAZE ORANGE PLASTIC MESH TREE PROTECTION FENCE
- FP — EX. 100-YEAR FLOODPLAIN
- FP — PROP. 100-YEAR FLOODPLAIN
- X — STAGING / STOCKPILE AREA
- X — EX. TREE TO BE REMOVED
- X — TEMPORARY ACCESS ROAD
- COIP — COMBINATION INLET PROTECTION
- SLOPES 15% - 25%
- SLOPES 25% OR GREATER
- Hb — HIGHLY ERODIBLE SOILS (EROSION FACTOR K>0.35)
- GcC — SOILS LINE
- GnB — SUPER SILT FENCE
- SSF — PUMP AROUND TO FILTER BAG
- FB — SANBAG
- CSD — STABILIZED CONSTRUCTION ENTRANCE
- TB — TEMPORARY BRIDGE

PLOTTED: "02:03 PM on Monday, January 13, 2025.
FILE: M:\2024\1720\2055.04\Drawings\PLS\PL005_ES-C-Plan.dwg

PROFESSIONAL CERTIFICATION: 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. 31201, Expiration Date 01-24-2025.



ENGINEERS
PLANNERS
SCIENTISTS
CONSTRUCTION MANAGERS
936 RIDGEBROOK ROAD
SPARKS, MARYLAND 21152
TELEPHONE: (410) 316-7800
FAX: (410) 316-7818

NO. DATE

BY JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

DRAWN BY CSD, BM

DATE JAN 2025

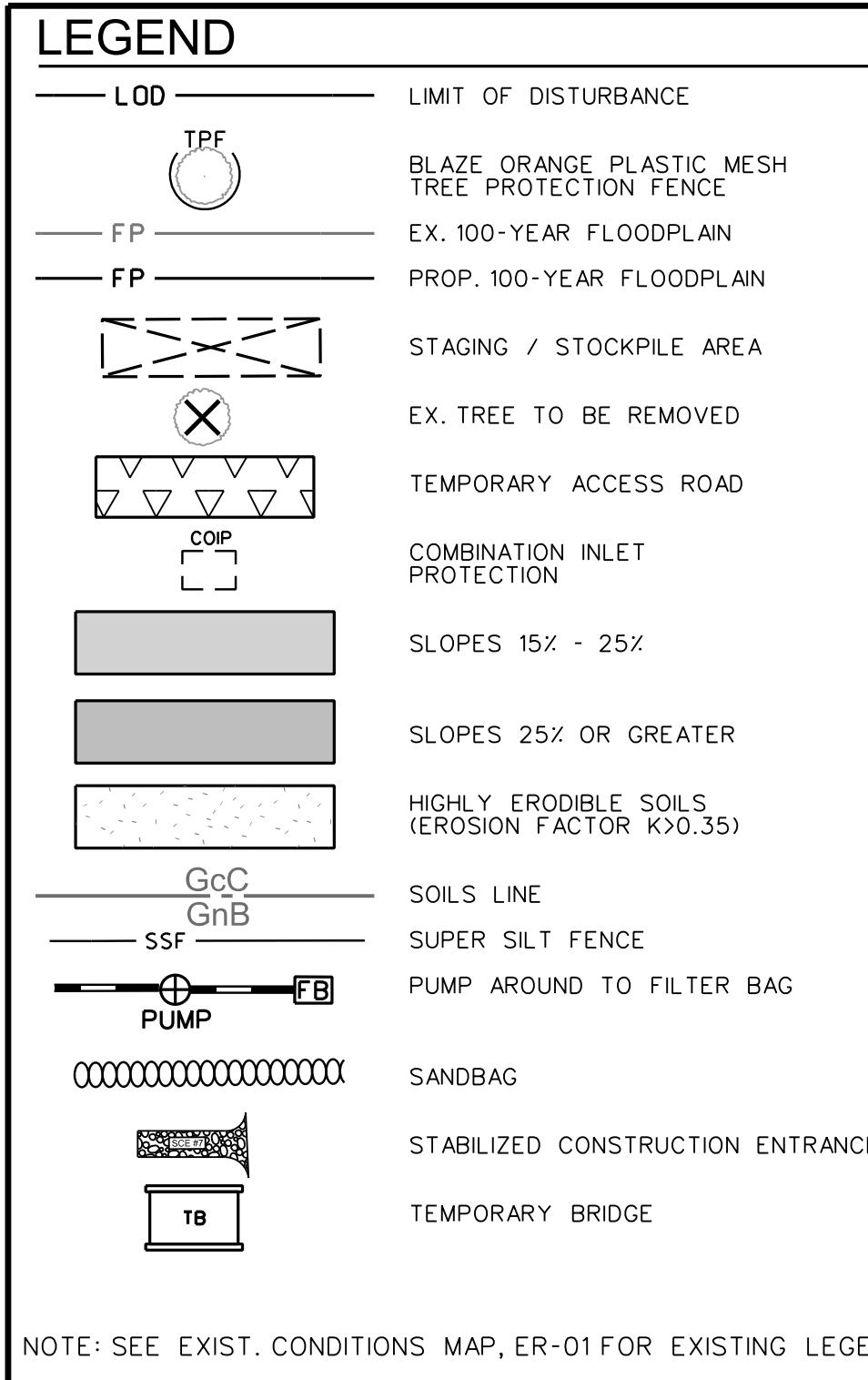
SCALE 1" = 20'

DESIGNED BY HS, SL, JT, BM

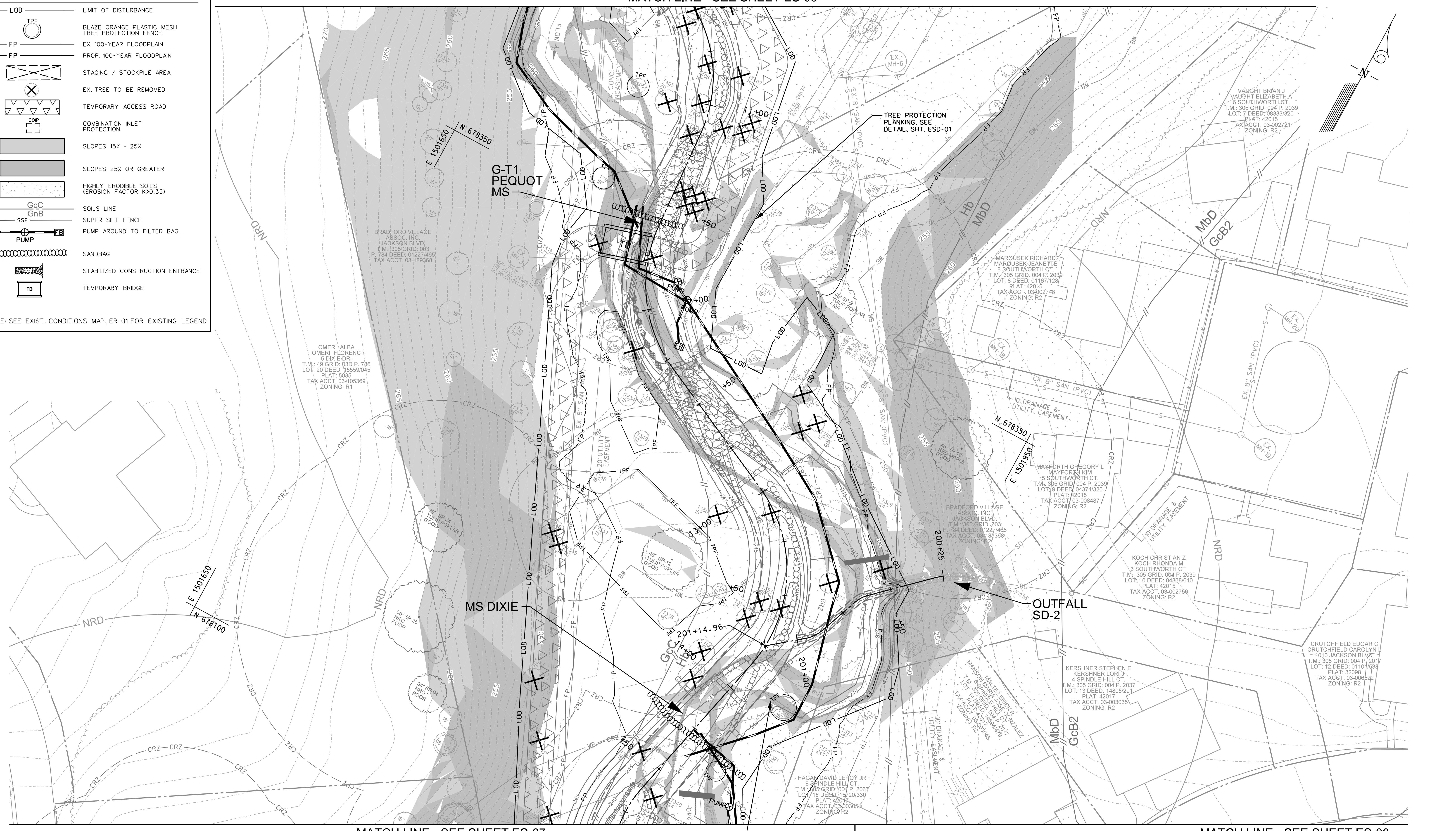
DRAWN BY CSD, BM

DATE JAN 2025

SCALE 1" = 20'



MATCH LINE - SEE SHEET ES-05



PROFESSIONAL CERTIFICATION: 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. 31201, Expiration Date 01-24-2025.



60% SUBMITTAL
NOT FOR
CONSTRUCTION

NO.	DATE
BY	JAN 2025
SCALE	1" = 20'
DESIGNED BY	HS, SL, JT, BM
DRAWN BY	CSD, BM

EROSION & SEDIMENT
CONTROL PLAN
UPPER FARNANDIS BRANCH
STREAM RESTORATION

HARFORD COUNTY, MARYLAND

DRAWING NO.
ES-06
SHEET 43 OF 62
KCI JOB NUMBER
172107055.04

DEPARTMENT OF PUBLIC WORKS

MATCH LINE - SEE SHEET ES-06

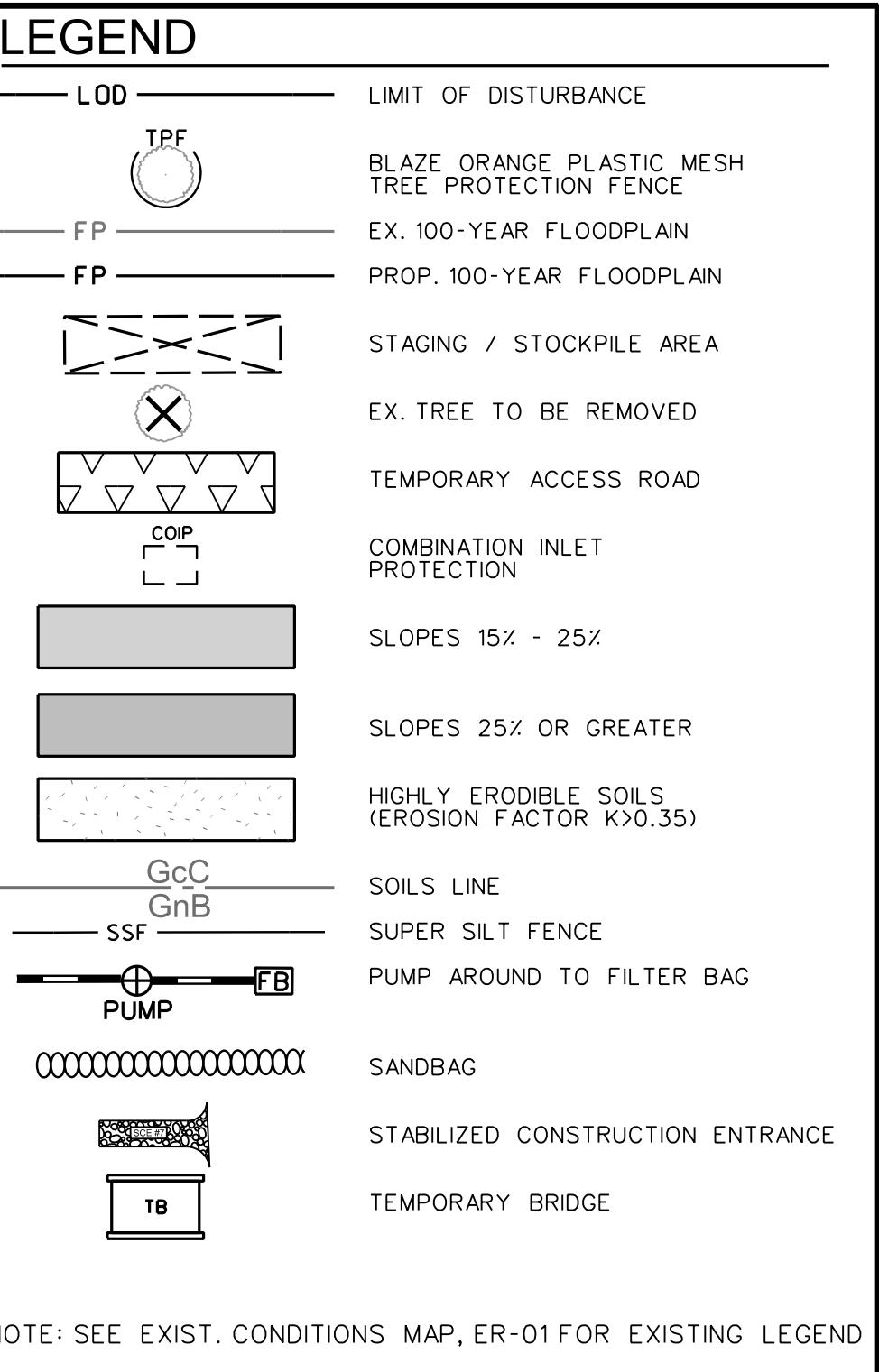
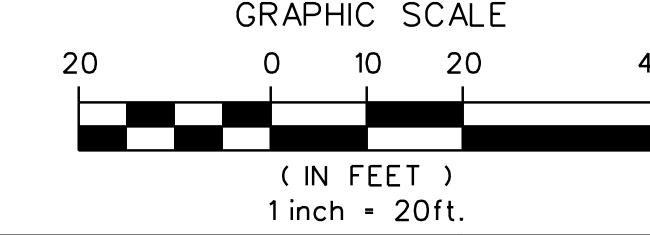


MATCH LINE - SEE SHEET ES-06



MATCH LINE - SEE SHEET ES-07

<small>PROFESSIONAL CERTIFICATION: 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. 31201, Expiration Date 01-24-2025.</small>	
	<small>ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS 936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152 TELEPHONE: (410) 316-7800 FAX: (410) 316-7818</small>
60% SUBMITTAL NOT FOR CONSTRUCTION	



S/C PLAN # _____
GRA _____-2024

EROSION & SEDIMENT
CONTROL PLAN
UPPER FARNANDIS BRANCH
STREAM RESTORATION

HARFORD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

172107055.04

EROSION AND SEDIMENT CONTROL

GENERAL NOTES

- A GRADING UNIT OF 20 ACRES IS THE MAXIMUM CONTIGUOUS AREA ALLOWED TO BE GRADED AT A GIVEN TIME.
- A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PROCEEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY DPW. NO MORE THAN THIRTY ACRES CUMULATIVELY MAY BE DISTURBED AT ANY GIVEN TIME.
- THE CONTRACTOR/OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. FURTHER, NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL REQUIRED PERMITS HAVE BEEN OBTAINED.
- THE LIMITS OF DISTURBANCE SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO GRADING OF THE SITE TO ENSURE COMPLIANCE WITH APPROVED PLANS. ALL FOREST RETENTION AREAS WILL BE DELINEATED WITH BLAZE ORANGE FENCE (ORANGE SAFETY FENCE) AS WELL AS ANY SWM INFILTRATION PRACTICE PRIOR TO ANY CLEARING WORK BEYOND THE LIMITS OF DISTURBANCE AND IN ANY AREA INSIDE THE FOREST RETENTION AND SWM INFILTRATION AREA IS CONSIDERED TO BE A VIOLATION OF THIS PLAN.
- ALL SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY UPON COMPLETION OF THE INSTALLATION OF PERIMETER SEDIMENT CONTROL PRACTICES THE SITE MUST BE INSPECTED BY THE DEPARTMENT OF PUBLIC WORKS (DPW). NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT THE APPROVAL FROM DPW.
- ALL POINTS OF INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT TRACKING OF MUD INTO PUBLIC WAYS. DURING CONSTRUCTION, EVERY MEANS WILL BE TAKEN TO CONTROL SOIL EROSION AND SILTATION. IF NECESSARY A WASH RACK MAY NEED TO BE ESTABLISHED.
- EARTH DIKES, SEDIMENT TRAPS, ETC. WILL BE LOCATED AS SHOWN ON THESE DRAWINGS. FIELD CHANGES AND MAJOR ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. THE SITE INSPECTOR PRIOR TO INSTALLATION MUST APPROVE ALL SUCH CHANGES. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE RE-APPROVAL BY THE HARFORD SOIL CONSERVATION DISTRICT.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
 - THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
 - SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT SITE.
- DUST CONTROL MUST BE MANAGED AS PART OF ALL SEDIMENT CONTROL PLANS. FAILURE TO DO SO IS A VIOLATION OF THIS PLAN.
- SEDIMENT BASINS MUST BE BUILT TO DESIGN SPECIFICATIONS SHOWN ON THE PLAN. IF THE BASIN IS TO BE USED AS A FUTURE SWM FACILITY, THE BASIN WILL BE BUILT IN ACCORDANCE WITH THE LATEST MD-378 STANDARDS AND SPECIFICATIONS. SPECIFIED MATERIALS MUST BE USED. NO CHANGES OR MODIFICATIONS WILL BE MADE WITHOUT WRITTEN AUTHORIZATION OF THE HARFORD SOIL CONSERVATION DISTRICT.
- TEMPORARY FENCING SHALL BE PLACED AROUND ALL SEDIMENT BASINS, TRAPS, AND PONDS DURING CONSTRUCTION AND SITE GRADING.
- AT THE END OF EACH WORKING DAY ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT OPERATIONAL. A WEEKLY LOG WILL BE KEPT IN ACCORDANCE WITH NOI/NPDES REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES.
- ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS DURING ALL PHASES OF ROAD CONSTRUCTION TO ENSURE POSITIVE FLOW TO TRAPS AND OR BASINS.
- CUT AND/OR FILL SHALL BE DONE IN CONFORMANCE WITH 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR LAND GRADING.
- SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRaversing THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.
- OFF-SITE WASTE OR BORROW AREAS SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE IMPORT OR EXPORT OF MATERIAL TO/FROM THE PROJECT SITE.
- ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON THE PUBLIC RIGHT-OF-WAY SHALL BE IMMEDIATELY REMOVED.
- STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
- TOPSOIL, LIMING, FERTILIZING, SEEDING, MULCHING, SOD, ETC. ARE ALL ESSENTIAL PARTS OF THE SEDIMENT CONTROL PLAN AND MUST BE COMPLETED ALONG WITH ALL OTHER PRACTICES.
- TRAPS TO BE REMOVED SHALL BE DEWATERED AS PER THE 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
- PRIOR TO REMOVAL OF TRAPS OR CONVERSION OF SEDIMENT BASINS TO SWM FACILITIES, THE STORM DRAINS WILL BE FLUSHED.
- SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS FOR WHICH THE PRACTICES WERE INSTALLED HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF THE DPW INSPECTOR. ALL DISTURBED AREAS RESULTING FROM THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL PRIOR TO INSPECTOR'S APPROVAL CONSTITUTES A VIOLATION.

TEMPORARY SEEDING SUMMARY

SEED MIXTURE (HARDINESS ZONE 6B) FROM TABLE B.1				FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	
1	ANNUAL RYEGRASS	40	2/15 - 4/30 8/15 - 11/30	0.5 INCH	436 LB/AC (10 LB/ 1000 SF)
2	FOXTAIL MILLET	30	5/1 - 8/14	0.5 INCH	2 tons/ac (90 LB/ 1000 SF)

NOTE: THE PURPOSE OF THIS PLAN IS TO ADDRESS SEDIMENT CONTROL FOR MASS GRADING, ROAD AND UTILITY CONSTRUCTION ONLY. INDIVIDUAL OR COLLECTIVE HOME/ COMMERCIAL BUILDING CONSTRUCTION WILL REQUIRE A SEPARATE SEDIMENT CONTROL PLAN. THE DEVELOPER/CONTRACTOR SHALL COMPLY WITH ALL STABILIZATION REQUIREMENTS OF THIS PLAN. TEMPORARY BUILDINGS MAY BE PERMITTED WITH THE APPROVAL OF THE HARFORD COUNTY DPW.

SITE ANALYSIS

TOTAL SITE AREA SQ. FT./AC.	283,324 / 6.50	ACRES
TOTAL DISTURBED AREA SQ. FT./AC.	283,324 / 6.50	ACRES
AREA TO BE PAVED SQ. FT./AC.	0.00 / 0.00	ACRES
AREA TO BE STABILIZED SQ. FT./AC.	234,987 / 5.39	ACRES
CUT CU. YD.	4,224	CU. YDS.
FILL CU. YD.	4,759	CU. YDS.
NPDES ID POINT:	678,502 N	1,501,608 E

PERMANENT VEGETATION STABILIZATION

ALL DISTURBED AREAS, WHICH ARE NOT TO BE PAVED, SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH THE LANDSCAPE PLANS. DISTURBED AREAS OUTSIDE THE LANDSCAPING ZONES SHOWN SHALL BE PERMANENTLY STABILIZED IN ACCORDANCE WITH MARYLAND STATE HIGHWAY STANDARD SPECIFICATION 705-TURFGRASS ESTABLISHMENT.

TEMPORARY VEGETATION STABILIZATION

A) SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES BY DISCING, RAKING OR OTHER ACCEPTABLE MEANS.

B) SOIL AMENDMENTS: APPLY 600 LBS PER ACRE OF 10-10-10 FERTILIZER AND TWO TONS PER ACRE OF LIME.

C) SEEDING:

FOR PERIODS OF MARCH 1 TO APRIL 30 AND AUGUST 15 TO NOVEMBER 15: SEED WITH 2.5 LBS. PER ACRE OF CEREAL RYE PLUS 30 LBS. PER ACRE OF TALL FESCUE OR 5 LBS. PER ACRE OF REDTOP OR 20 LBS. PER ACRE OF PERENNIAL RYEGRASS. FOR PERIOD OF MAY 1 TO AUGUST 14: SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS OR 40 LBS. PER ACRE OF JAPANESE OR FOXTAIL MILLET. FOR THE PERIOD OF NOVEMBER 16 TO FEBRUARY 28: PROTECT THE SITE BY APPLYING TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING OR USE SOD.

D) MULCHING SPECIFICATIONS:

MULCH SHALL BE APPLIED TO ALL SEDED AREAS IMMEDIATELY AFTER SEEDING. APPLY 2 TONS PER ACRE OF STRAW OVER ALL SEDED AREAS. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHALL BE INCREASED TO 2.5 TONS PER ACRE.** MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE LOSS BY WIND AND WATER. THE TYPE OF MULCH ANCHORING USED MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICATIONS.

*IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICATIONS, CHAPTER B, TABLE B-1(PAGE B 20).

** IF A DIFFERENT TYPE OF MULCH IS TO BE USED, IT MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICATION, CHAPTER B: MULCHING (PAGES B 6 & B 7)

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIALS FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.

4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.

6. RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.

7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES:

ANNUAL RYEGRASS (*LOLIUM MULTIFLORUM*), MILLET (*SETARIA ITALICA*), BARLEY (*Hordeum sp.*), OATS (*UNIOLA SP.*) AND/OR RYE (*SECALE CEREALE*). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE LOCAL WETLAND AND WATERWAY DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.

8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.

9. TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:

USE III WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THOUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.

10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.

11. CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

EROSION AND SEDIMENT CONTROL PLAN #: _____
RECOMMENDED FOR APPROVAL

HARFORD COUNTY DPW

TECHNICAL CONCURRENCE:

HARFORD SOIL CONSERVATION DISTRICT

APPROVED BY:

HARFORD SOIL CONSERVATION DISTRICT

SEQUENCE OF CONSTRUCTION

1. OBTAIN GRADING PERMIT. (THE CONTRACTOR IS ALERTED THAT IN-STREAM WORK IS PROHIBITED BETWEEN OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.)

2. NOTIFY THE DPW SEDIMENT CONTROL INSPECTOR AT 410-638-3127, 48 HOURS IN ADVANCE OF COMMENCING WORK. SCHEDULE THE PRE-CONSTRUCTION MEETING. CONTACT MISS UTILITY AT 1-800-257-7777 48 HOURS PRIOR TO COMMENCING WORK.

3. ALL IN-STREAM WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE PUMP AROUND CRITERIA.

PHASE I: M-T1 MILROY TRIB, INCLUDING: MILROY TRIB NORTH, MILROY TRIB WEST AND G-T1 WAKELY TRIB.

4. CLEAR AS NECESSARY, INSTALL STABILIZED CONSTRUCTION ENTRANCE #1 AND COMPLETE THE ACCESS ROAD, INSTALL TEMPORARY ACCESS BRIDGE AND TEMPORARY STAGING/STOCKPILE AREAS.

5. PERFORM STREAM GRADING AND STREAM RESTORATION WORK, STARTING WITH MILROY TRIB NORTH AND MILROY TRIB WEST UNTIL MILROY TRIB ST. 33-29.5

- CONTINUING FROM MILROY ST. TRIB 33-29.5 TO MILROY ST. 35-56

- CONTINUING FROM MILROY ST. 35-56 AND ENDING AT CULVERT CROSSING.

- CONTINUING FROM MILROY TRIB. ST. 38-00 AND ENDING AT STATION 38-50

- WORKING UPSTREAM TO DOWNSTREAM.

- BUILD STRUCTURE NEAR THE DRIVEWAY,

- STABILIZE ALL DISTURBED AREAS AT FINAL GRADE.

CONTRACTOR SHALL DISTURB ONLY THAT MUCH AREA THAT CAN BE BROUGHT TO FINAL GRADE AND STABILIZED BY THE END OF EACH DAY.

SANDBAG DIVERSIONS SHALL BE REMOVED FROM THE CHANNEL AND ANY DISTURBED AREA STABILIZED BY THIS PROCESS AT THE END OF EACH WORKDAY.

6. REMOVE ALL PHASE I SEDIMENT CONTROLS. WITH PERMISSION FROM INSPECTOR, CONTRACTOR SHALL PROCEED WITH PHASE II.

PHASE II: G-T3 CHARLYN TRIB, G-T2 GROSVENOR TRIB NORTH, G-T2 GROSVENOR TRIB AND G-T1 PEQUOT MAINSTREAM DOWNTO ST. 4-80

7. CLEAR ONLY AS NEEDED TO INSTALL STABILIZED CONSTRUCTION ENTRANCES #2 AND #3.

8. CLEAR AS NECESSARY AND COMPLETE THE ACCESS ROAD BETWEEN ENTRANCES #2 AND #3, INSTALL TEMPORARY ACCESS BRIDGES, AND THE TEMPORARY STAGING/STOCKPILE AREAS.

9. INSTALL PUMP AROUND PRACTICE AND DEWATERING PRACTICE FOR PHASE II.

10. PERFORM STREAM GRADING AND STREAM RESTORATION WORK, WORKING UPSTREAM TO DOWNSTREAM.

11. STABILIZE ALL DISTURBED AREAS AT FINAL GRADE.

CONTRACTOR SHALL DISTURB ONLY THAT MUCH AREA THAT CAN BE BROUGHT TO FINAL GRADE AND STABILIZED BY THE END OF EACH DAY.

SANDBAG DIVERSIONS SHALL BE REMOVED FROM THE CHANNEL AND ANY DISTURBED AREA STABILIZED BY THIS PROCESS AT THE END OF EACH WORKDAY.

12. REMOVE ALL PHASE II SEDIMENT CONTROLS. WITH PERMISSION FROM INSPECTOR, CONTRACTOR SHALL PROCEED WITH PHASE III.

PHASE III: G-T1 PEQUOT MAINSTEM FROM 4-80 DOWNTO 8-68 INCLUDING OUTFALL SD-4

13. INSTALL PHASE III PUMP AROUND PRACTICE AND DEWATERING DEVICE.

14. PERFORM STREAM GRADING AND STREAM RESTORATION WORK, WORKING UPSTREAM TO DOWNSTREAM.

CREATE NEW DAYLIGHT STREAM FROM OUTFALL SD-4.

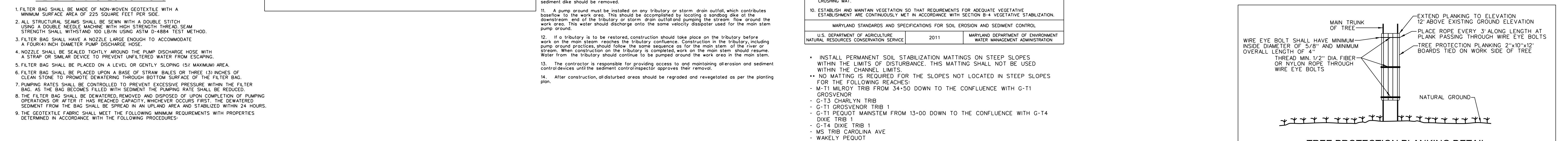
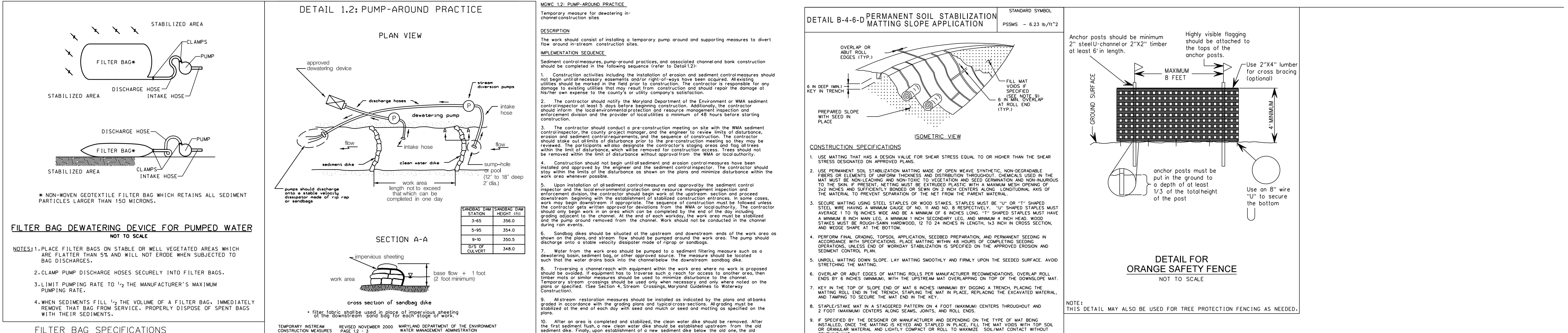
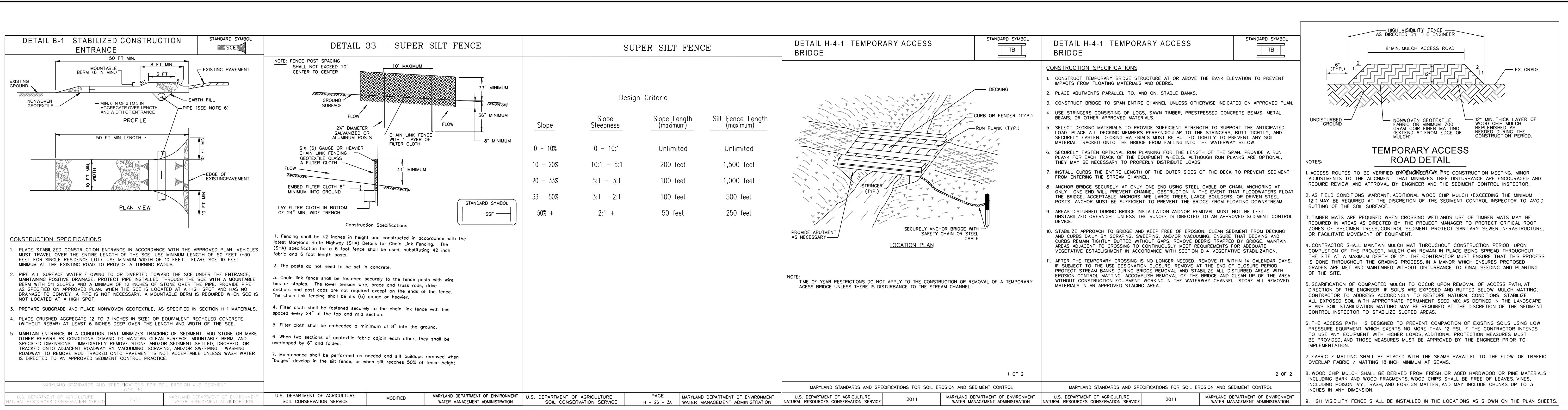
STABILIZE ALL DISTURBED AREAS AT FINAL GRADE.

CONTRACTOR SHALL DISTURB ONLY THAT MUCH AREA THAT CAN BE BROUGHT TO FINAL GRADE AND STABILIZED BY THE END OF EACH DAY.

SANDBAG DIVERSIONS SHALL BE REMOVED FROM THE CHANNEL AND ANY DISTURBED AREA STABILIZED BY THIS PROCESS AT THE END OF EACH WORKDAY.

15. REMOVE ALL PHASE III SEDIMENT CONTROLS. WITH PERMISSION FROM INSPECTOR, CONTRACTOR SHALL PROCEED WITH PHASE IV.

PHASE IV: G-T1 PEQUOT 8-68 TO 20-08.57, INCLUDING: G-T4 DIXIE TRIB, F-T3, DIXIE TRIB. 2 AND MS TRIB CAROLINA AVENUE.





MATCH LINE - SEE SHEET LS-03

MATCH LINE - SEE SHEET LS-04

MATCH LINE - SEE SHEET LS-05



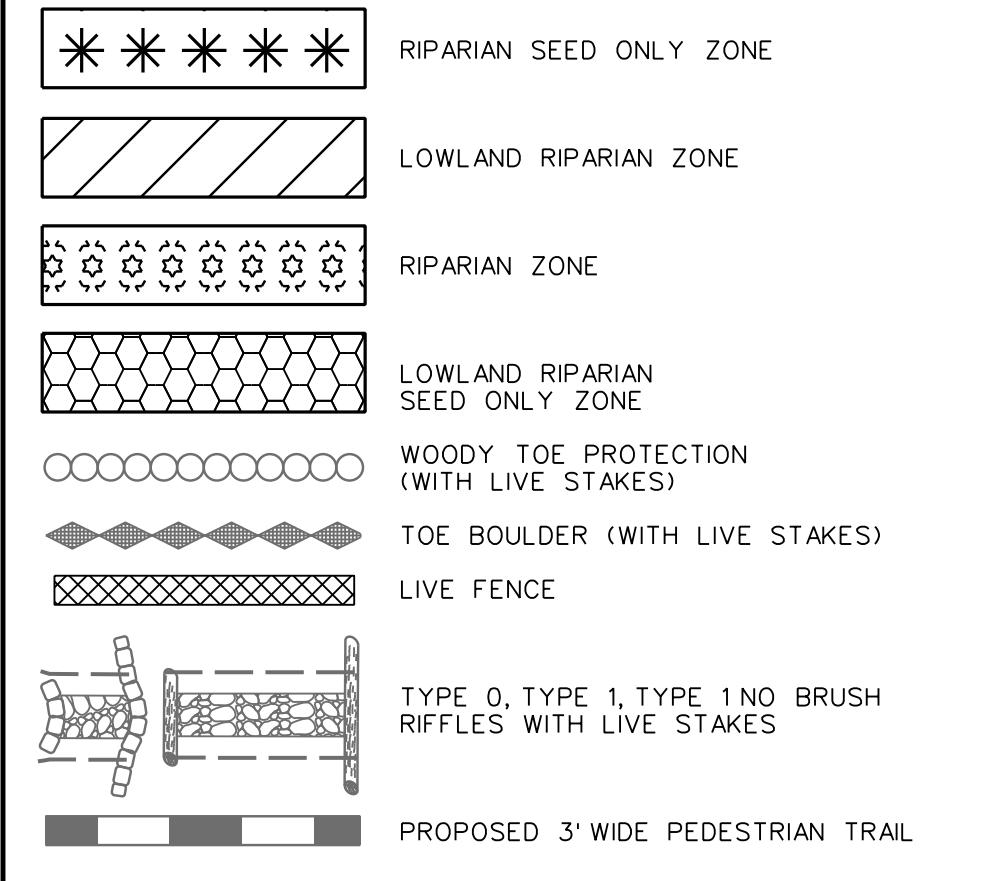


MATCH LINE - SEE SHEET LS-03

MATCH LINE - SEE SHEET LS-02

MATCH LINE - SEE SHEET LS-05

LEGEND



PROFESSIONAL CERTIFICATION: 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. 33079, Expiration Date 01-16-2027.



NO.	DATE

60% SUBMITTAL
NOT FOR
CONSTRUCTION

DATE: JAN 2025
SCALE: 1" • 20'
DESIGNED BY: HS, SL, JT, BM
DRAWN BY: CSD, BM
(IN FEET)
1 inch = 20ft.

LANDSCAPE PLAN
UPPER FARNANDIS BRANCH
STREAM RESTORATION
HARFORD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

DRAWING NO.
LS-04
SHEET 51 OF 62
KCI JOB NUMBER
172107055.04

MATCH LINE - SEE SHEET LS-04

MATCH LINE - SEE SHEET LS-02

BOWEN CHERYL P
305 WAKELY TERR.
T.M.: 49 GRID: 03C P: 100
LOT: 1 DEED: 2884/144
PLAT: 55073
TAX ACCT: 03-262221
ZONING: R2

BRADFORD VILLAGE
ASSOC. INC.
PEQUOT DR.
T.M.: 305 GRID: 003 P: 2088
LOT: 1 DEED: 12641/083
PLAT: 55073
TAX ACCT: 03-02853
ZONING: R2

BULLIS ROBERT V
BULLIS JEAN P
3 DIXIE DR.
T.M.: 49 GRID: 03C P: 786
LOT: 1 DEED: 9417/444
PLAT: 55073
TAX ACCT: 03-082970
ZONING: R1

BRADFORD VILLAGE
ASSOC. INC.
JACKSON BLVD.
T.M.: 305 GRID: 003 P: 784
LOT: 25 DEED: 01227/465
PLAT: 55073
TAX ACCT: 03-189368
ZONING: R2

TABOR LAURIE J
TABOR ROBERT S
5 PEQUOT DR.
T.M.: 305 GRID: 003 P: 2038
LOT: 25 DEED: 06199/186
PLAT: 55073
TAX ACCT: 03-003019
ZONING: R2

FILE: M:\2024\1720\2055.04\Drawings\PLS\PO05\LandscapePlan.dwg

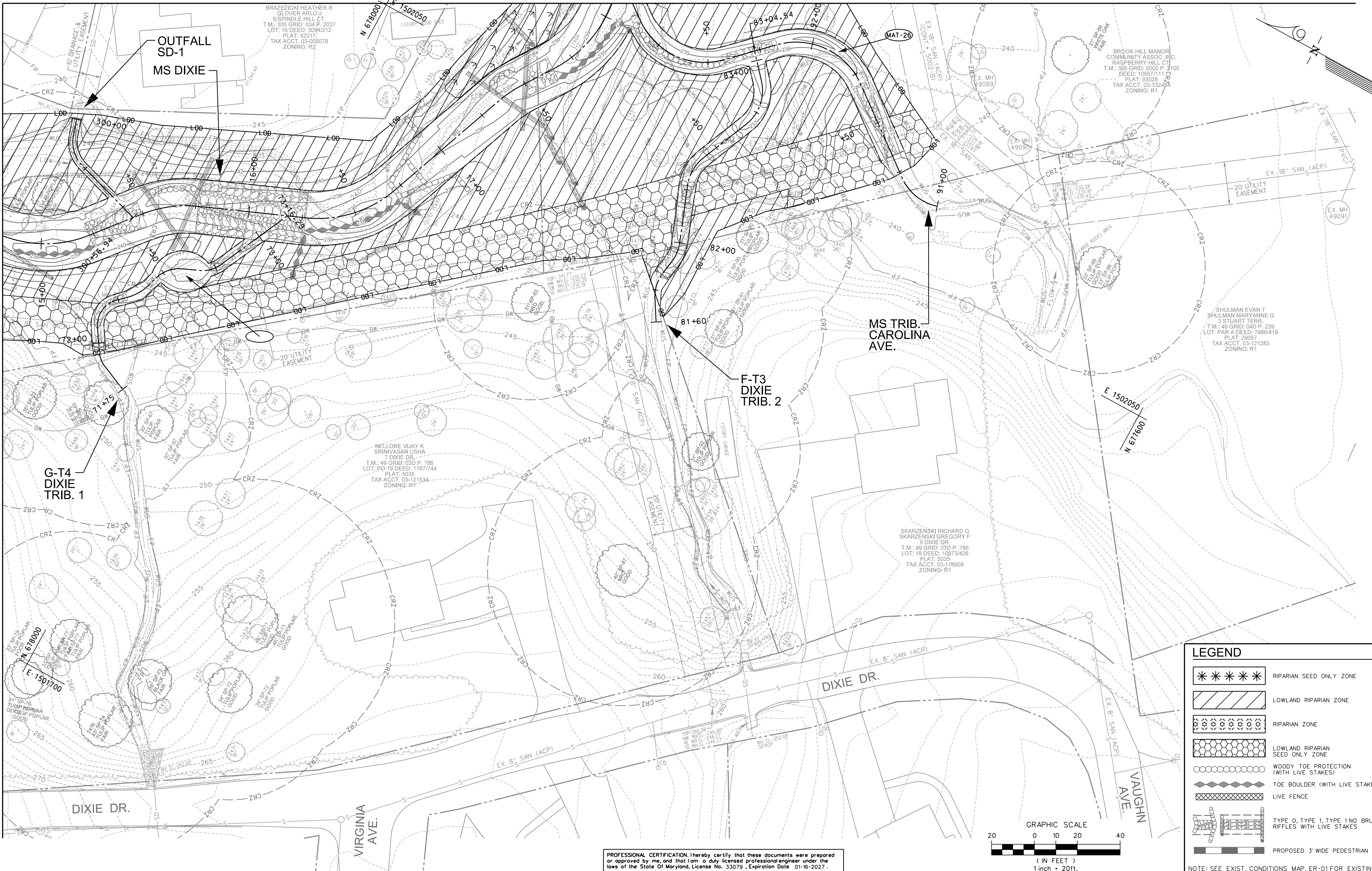
LEGEND

- RIPARIAN SEED ONLY ZONE
- LOWLAND RIPARIAN ZONE
- RIPARIAN ZONE
- LOWLAND RIPARIAN SEED ONLY ZONE
- WOODY TOE PROTECTION (WITH LIVE STAKES)
- TOE BOULDER (WITH LIVE STAKES)
- LIVE FENCE
- TYPE 0, TYPE 1, TYPE 1 NO BRUSH RIFLES WITH LIVE STAKES
- PROPOSED 3' WIDE PEDESTRIAN TRAIL

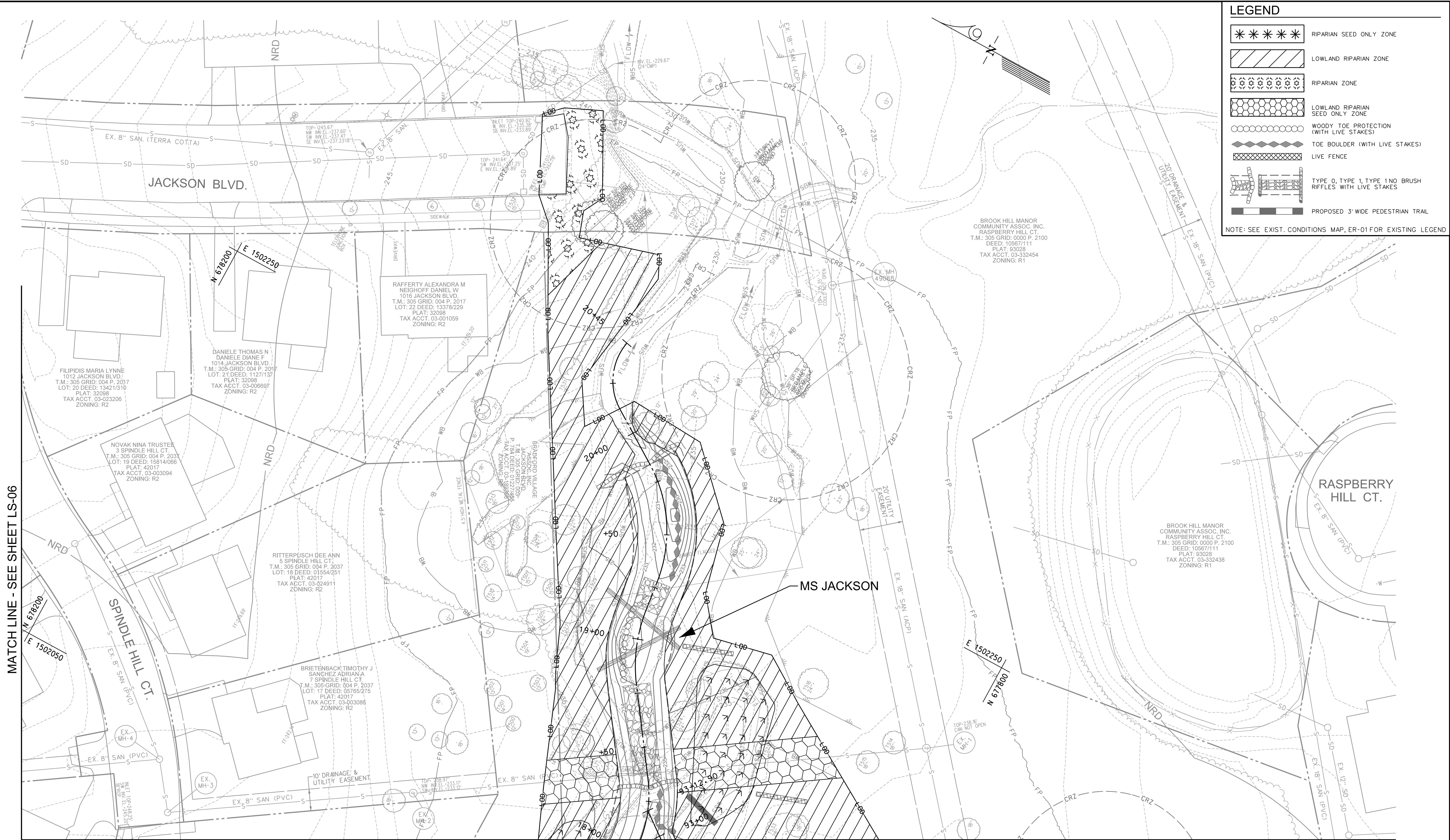


MATCH LINE - SEE SHEET LS-08

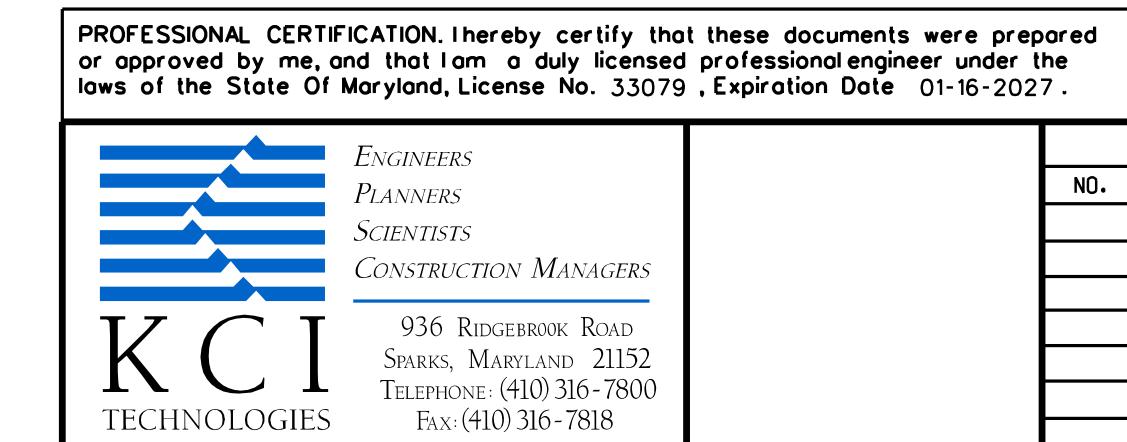
MATCH LINE - SEE SHEET LS-06



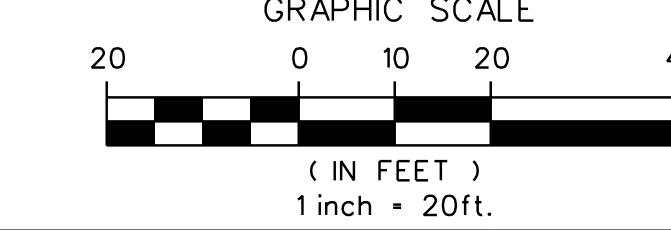
MATCH LINE - SEE SHEET LS-06



MATCH LINE - SEE SHEET LS-07



60% SUBMITTAL
NOT FOR
CONSTRUCTION



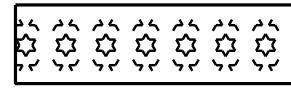
DRAWING NO.
LS-08
SHEET 55 OF 62
KCI JOB NUMBER
172107055.04

LANDSCAPE PLAN
UPPER FARNANDIS BRANCH
STREAM RESTORATION
HARFORD COUNTY, MARYLAND
DEPARTMENT OF PUBLIC WORKS

MASTER PLANT SCHEDULE

RIPARIAN ZONE

(36,768 SQ FT / 0.84 AC)



Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
TREES & UNDERSTORY TREES (80%)					
41	Quercus rubra	Northern Red Oak	5' Height	Container	11' O.C.
41	Quercus alba	White Oak	5' Height	Container	11' O.C.
41	Celtis occidentalis	Common Hackberry	5' Height	Container	11' O.C.
41	Tilia americana	American Basswood	5' Height	Container	11' O.C.
41	Cercis canadensis	Redbud	5' Height	Container	11' O.C.
41	Chionanthus virginicus	White Fringetree	5' Height	Container	11' O.C.
SHRUBS (20%)					
38	Amelanchier canadensis	Serviceberry	3' Height	Container	6'-8' O.C.
38	Asimina triloba	Pawpaw	3' Height	Container	6'-8' O.C.
38	Hamamelis virginiana	Witch Hazel	3' Height	Container	6'-8' O.C.
38	Ilex opaca	American Holly	3' Height	Container	6'-8' O.C.

LOWLAND RIPARIAN ZONE

(139,736 SQ FT / 3.21 AC)



Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
TREES & UNDERSTORY TREES (80%)					
116	Acer rubrum	Red Maple	5' Height	Container	11' O.C.
116	Acer saccharinum	Silver Maple	5' Height	Container	11' O.C.
116	Betula nigra	River Birch	5' Height	Container	11' O.C.
116	Nyssa sylvatica	Black Gum	5' Height	Container	11' O.C.
116	Platanus occidentalis	American Sycamore	5' Height	Container	11' O.C.
116	Quercus bicolor	Swamp White Oak	5' Height	Container	11' O.C.
116	Quercus phellos	Willow Oak	5' Height	Container	11' O.C.
116	Carpinus caroliniana	Musclewood	5' Height	Container	11' O.C.
SHRUBS (20%)					
143	Ilex verticillata	Common Winterberry	3' Height	Container	6'-8' O.C.
143	Lindera benzoin	Spicebush	3' Height	Container	6'-8' O.C.
143	Physocarpus opulifolius	Ninebark	3' Height	Container	6'-8' O.C.
143	Viburnum dentatum	Southern Arrowwood	3' Height	Container	6'-8' O.C.

WOODY TOE (WITH LIVE STAKES)

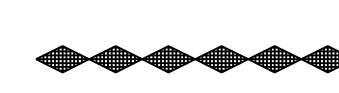
(620 LF / 2,480 SF / 0.06 AC)



Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
LIVE STAKES					
52	Cornus racemosa	Gray dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
52	Cornus omomum	Silky dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
52	Cornus sericea	Red osier dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
52	Salix lucida	Shining willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
52	Salix discolor	Pussy willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
52	Salix sericea	Silky willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.

TOE BOULDER (WITH LIVE STAKES) ZONE

(684 LF / 2,736 SF / 0.06 AC)



Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
LIVE STAKES					
57	Cornus racemosa	Gray dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
57	Cornus omomum	Silky dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
57	Cornus sericea	Red osier dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
57	Salix lucida	Shining willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
57	Salix discolor	Pussy willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
57	Salix sericea	Silky willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.

MATTED POOLS (WITH LIVE STAKES) ZONE

(555 LF / 2,220 SF / 0.05 AC)



Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
LIVE STAKES					
46	Cornus racemosa	Gray dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
46	Cornus omomum	Silky dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
46	Cornus sericea	Red osier dogwood	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
46	Salix lucida	Shining willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
46	Salix discolor	Pussy willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.
46	Salix sericea	Silky willow	3' Length 0.5"-1.5" dia.	Dormant stems	2' O.C.

Notes:
Dormant stem quantities represent the total number of individual stems.
See Stream Detail DE-08 (Sheet X of X) for placement of live stake within structure as a single row.
Locations shown as callouts on each landscape plan sheet.

NOTES:
LIVE STAKES CAN BE SHIFTED ON-SITE DURING INSTALLATION AT THE DIRECTION OF THE
INSPECTOR DEPENDENT UPON SITE HYDROLOGY AND CANOPY COVERAGE

MASTER PLANT SCHEDULE

LIVE FENCING ZONE

(323 LF)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
646	Cornus omomum	Silky Dogwood	5'-6' Length 0.5"-2.5" dia.	Dormant Stems	12' Stems / LF, single & bunched
646	Cornus sericea	Red osier dogwood	5'-6' Length 0.5"-2.5" dia.	Dormant Stems	12' Stems / LF, single & bunched
646	Cornus racemosa	Gray dogwood	5'-6' Length 0.5"-2.5" dia.	Dormant Stems	12' Stems / LF, single & bunched
646	Salix discolor	Pussy willow	5'-6' Length 0.5"-2.5" dia.	Dormant Stems	12' Stems / LF, single & bunched
646	Salix lucida	Shining willow	5'-6' Length 0.5"-2.5" dia.	Dormant Stems	12' Stems / LF, single & bunched
646	Salix sericea	Silky willow	5'-6' Length 0.5"-2.5" dia.	Dormant Stems	12' Stems / LF, single & bunched

Notes:
Dormant stem quantities represent the total number of individual stems.
See Landscape Details LD-02 (Sheet X of X) for live fence details.

LIVE STAKES ALONG RIFFLES - TYPE 0, TYPE 1 & TYPE 1 NO BRUSH

(1,349 LF / 5,396 SF / 0.12 AC)

Qty	Botanical Name	Common Name	Size	Form	Spacing/Rate
112	Cornus sericea	Red osier dogwood	3' Length 0.5"-1.5" dia.	Dormant Stems	2' O.C.
112	Cornus omomum	Silky dogwood	3' Length 0.5"-1.5" dia.	Dormant Stems	2' O.C.
112	Cornus racemosa	Gray dogwood	3' Length 0.5"-1.5" dia.	Dormant Stems	2' O.C.
112	Salix discolor	Pussy willow	3' Length 0.5"-1.5" dia.	Dormant Stems	2' O.C.
112	Salix lucida	Shining willow	3' Length 0.5"-1.5" dia.	Dormant Stems	2' O.C.
112	Salix sericea	Silky willow	3' Length 0.5"-1.5" dia.	Dormant Stems	2' O.C.

Notes:
Dormant stem quantities represent the total number of individual stems.
See Stream Detail DE-04 (Sheet X of X) for placement of live stake within structure as a single row.

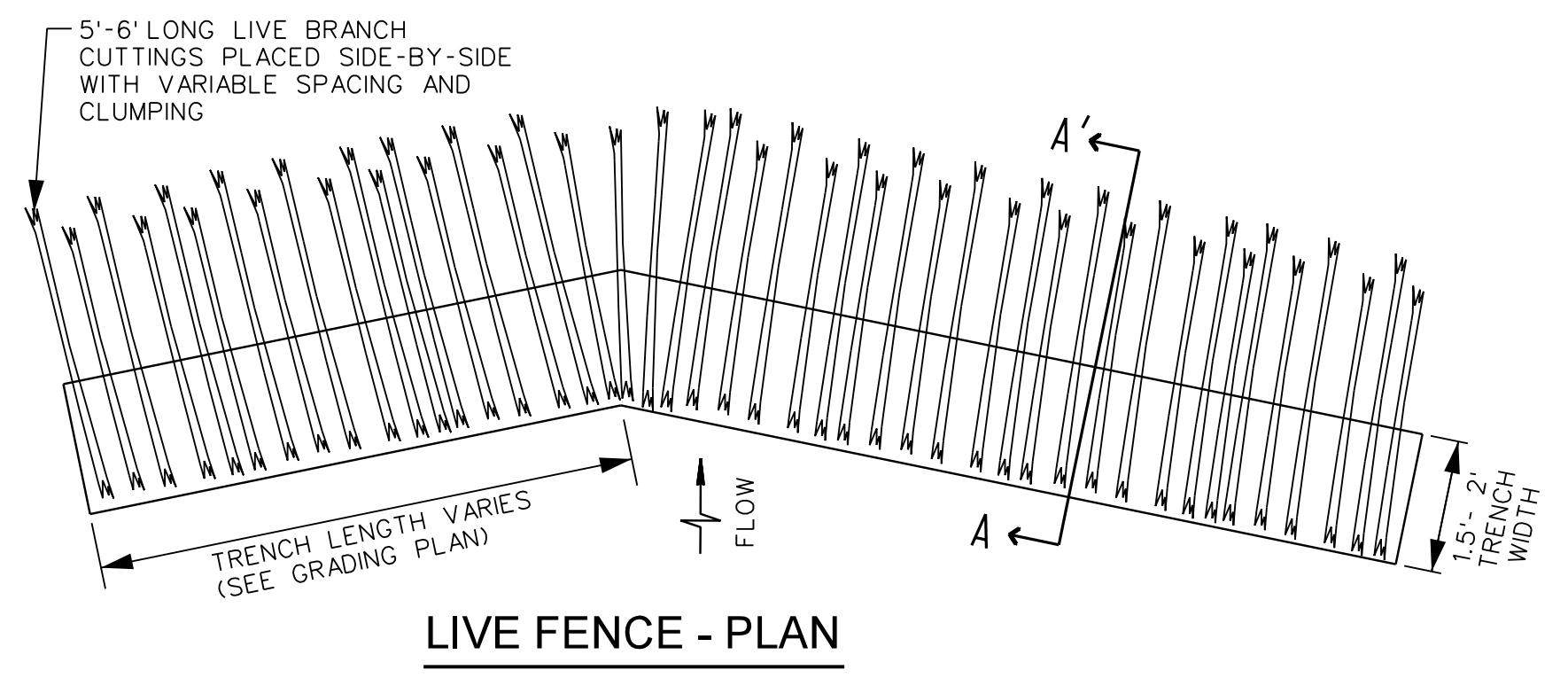
PERMANENT SEEDING FOR LOWLAND RIPARIAN, LOWLAND RIPARIAN SEED ONLY, LIVE STAKE, WOODY TOE, TOE BOULDER, AND BRUSH/COBBLE/RIFFLE ZONES

(187,030 SQ FT / 4.29 AC)

Qty	Botanical Name
171.6 lbs	ERNST MIX ERNMX-713 MD UPPER MIDLAND FACW MIX

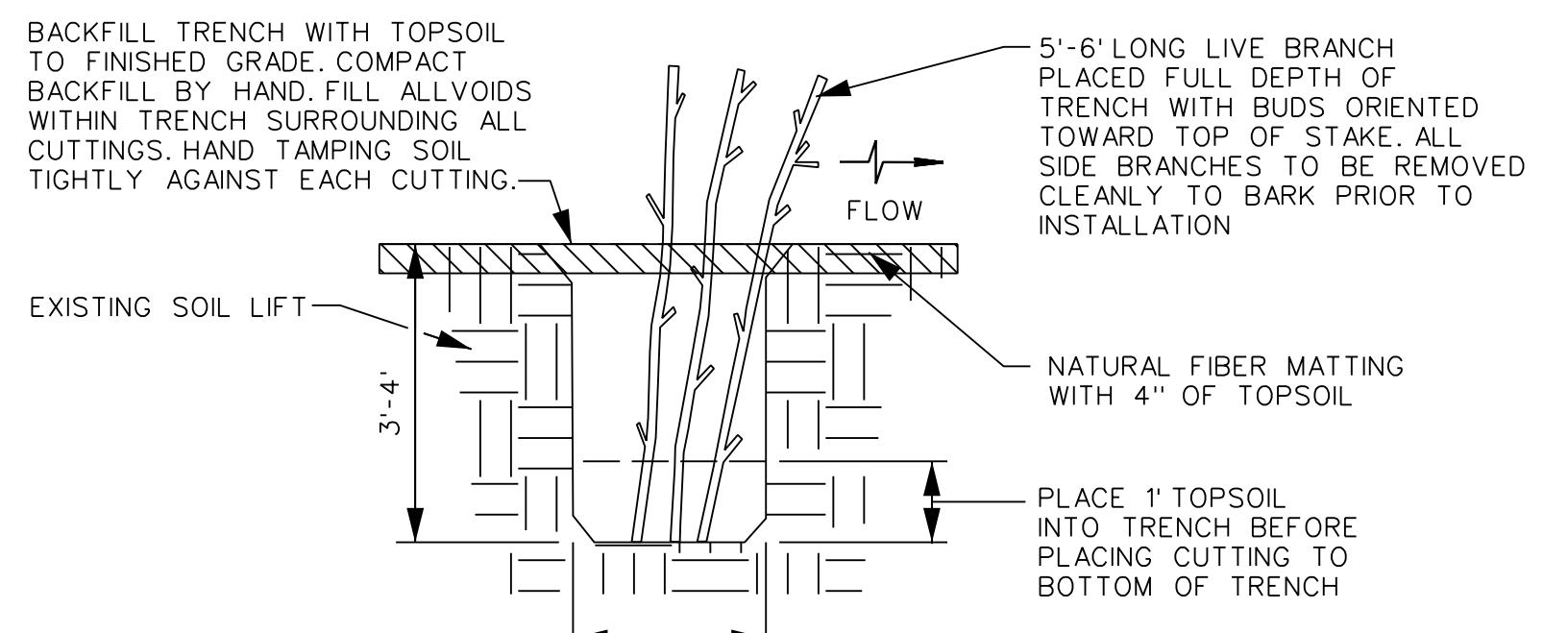
Application Rate of 40 lb / ac
ERNST MIX # 713: MD UPPER MIDLAND FACW MIX
OR SIMILAR MIX AS APPROVED BY ENGINEER.

MIX FORMULATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE DEPENDING ON THE AVAILABILITY OF EXISTING AND NEW PRODUCTS WHILE THE FORMULA MAY CHANGE, THE GUIDING PHILOSOPHY AND FUNCTION OF THE MIX WILL NOT.



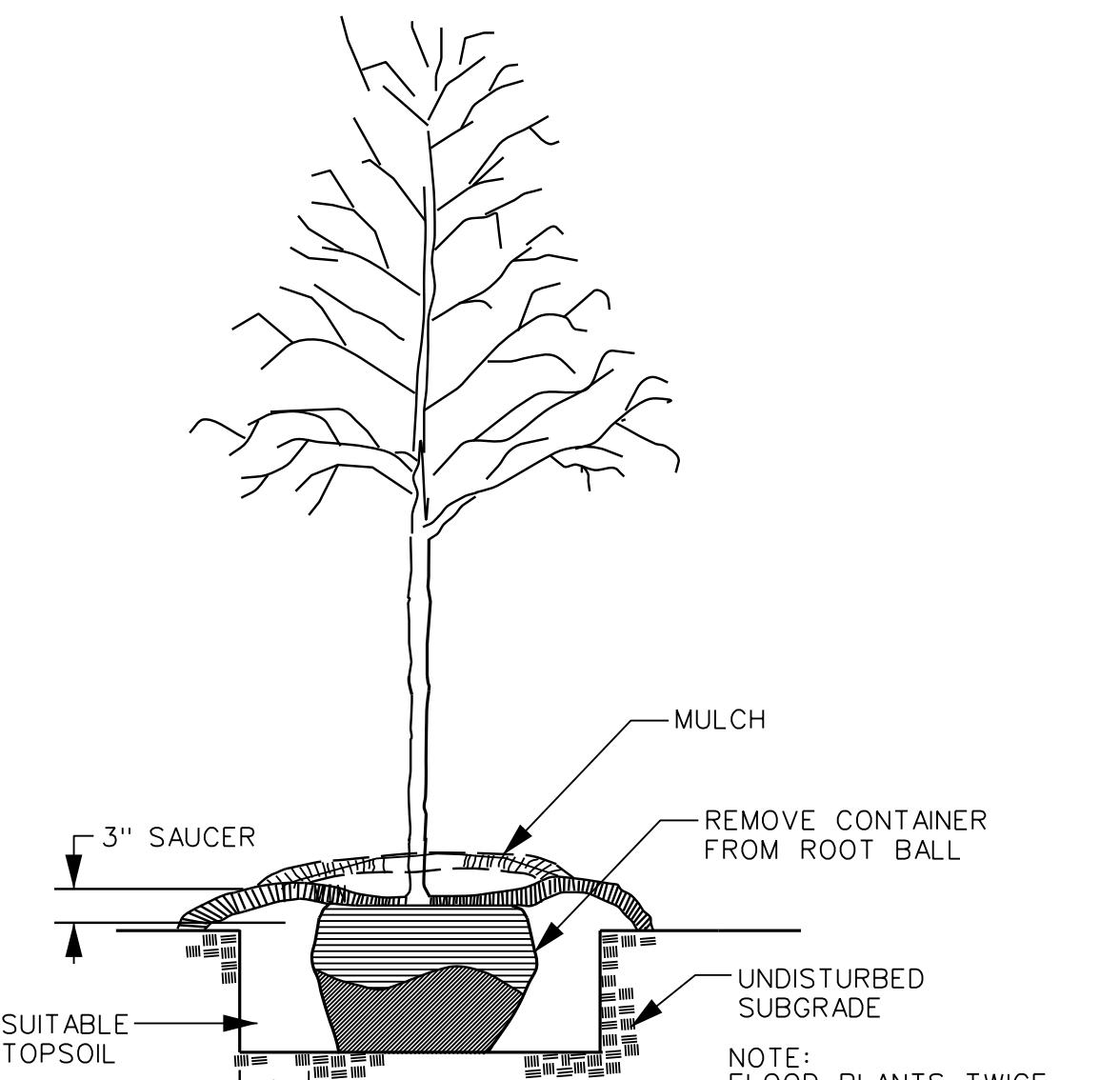
LIVE FENCE - PLAN

NOT TO SCALE



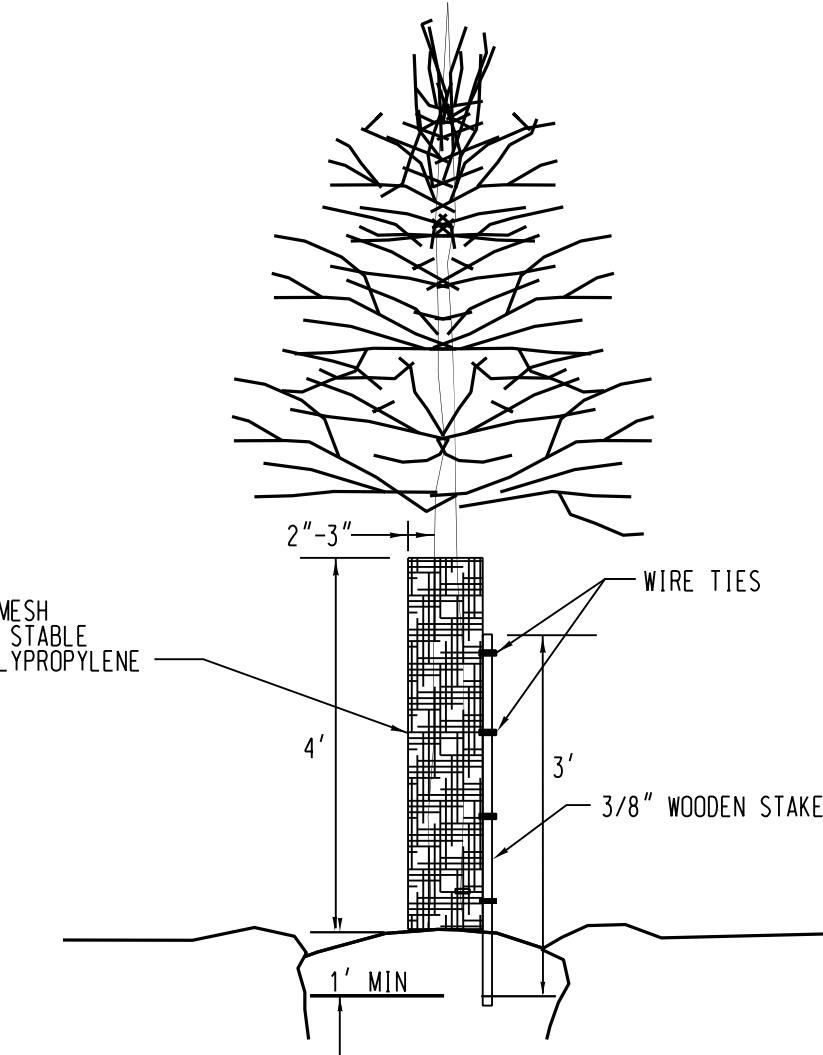
LIVE FENCE - TYPICAL SECTION A-A'

NOT TO SCALE



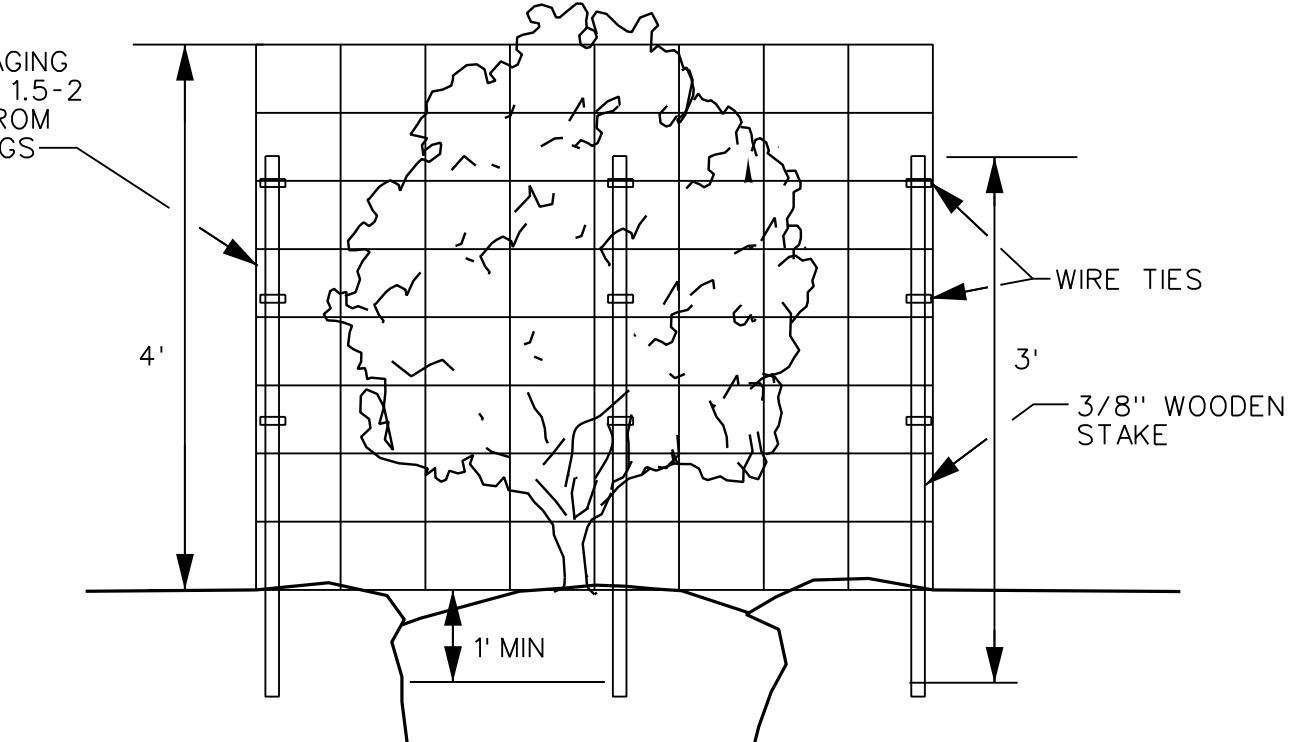
TREE PLANTING DETAIL

NOT TO SCALE



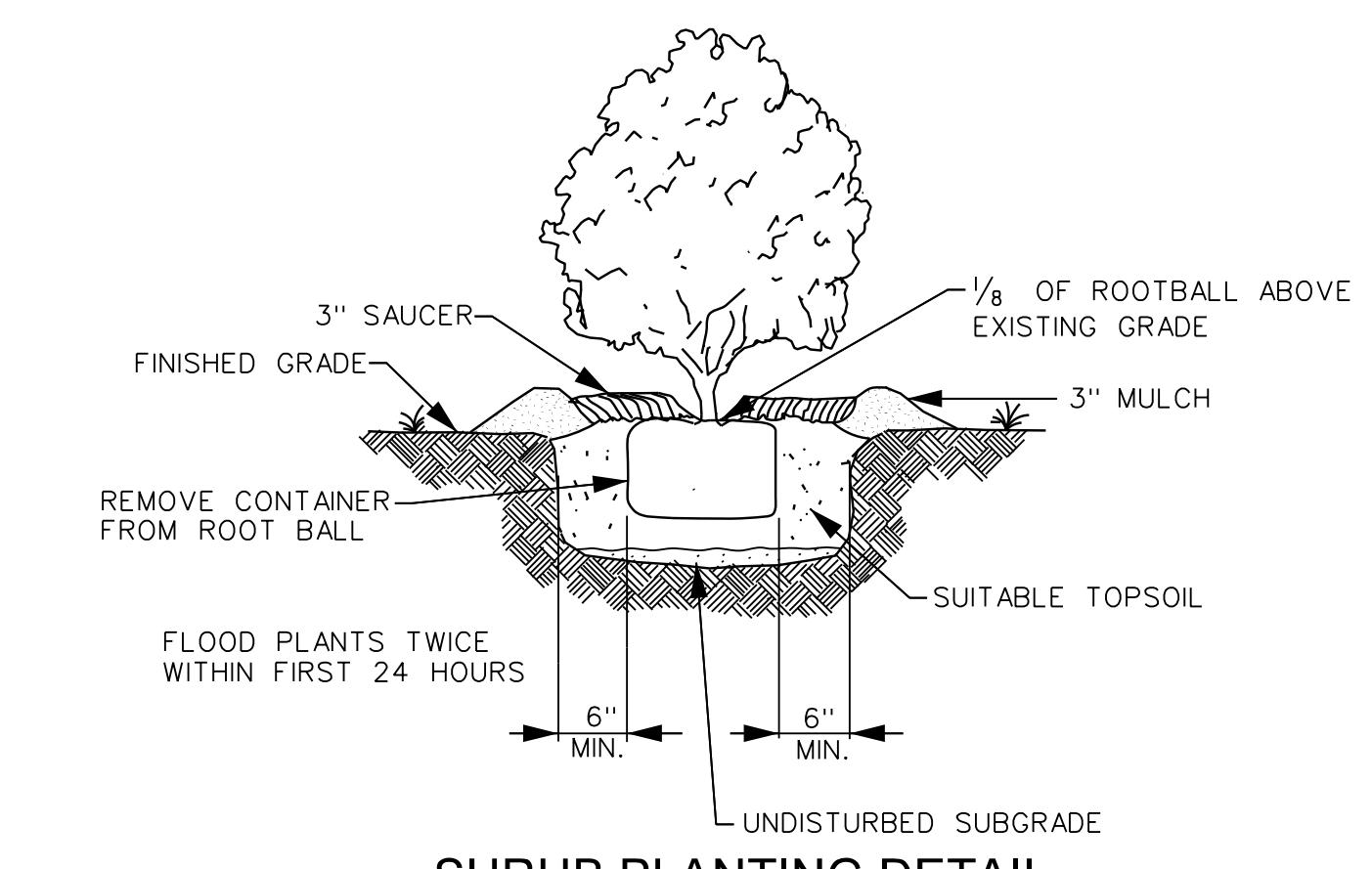
TREE SHELTER DETAIL

NOT TO SCALE



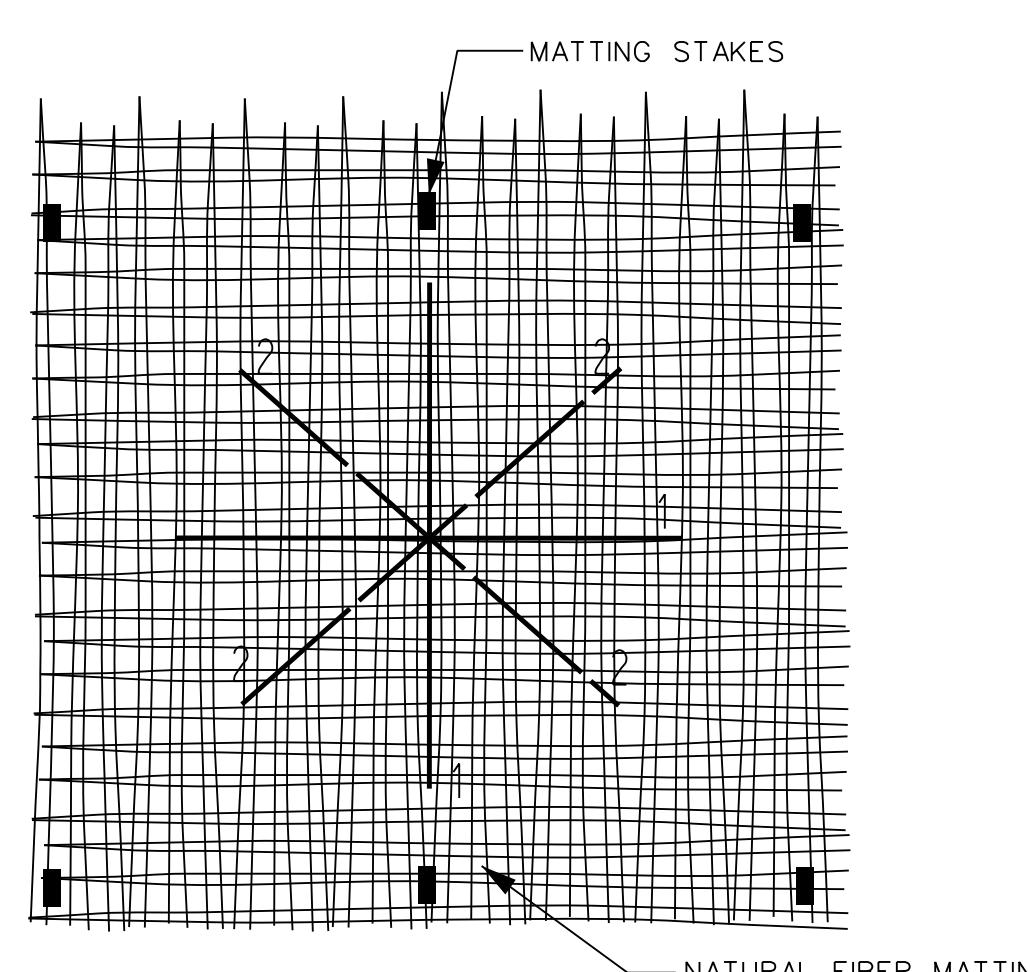
DEER CAGE PROTECTION DETAIL FOR ALL PLANTINGS

NOT TO SCALE



SHRUB PLANTING DETAIL

NOT TO SCALE

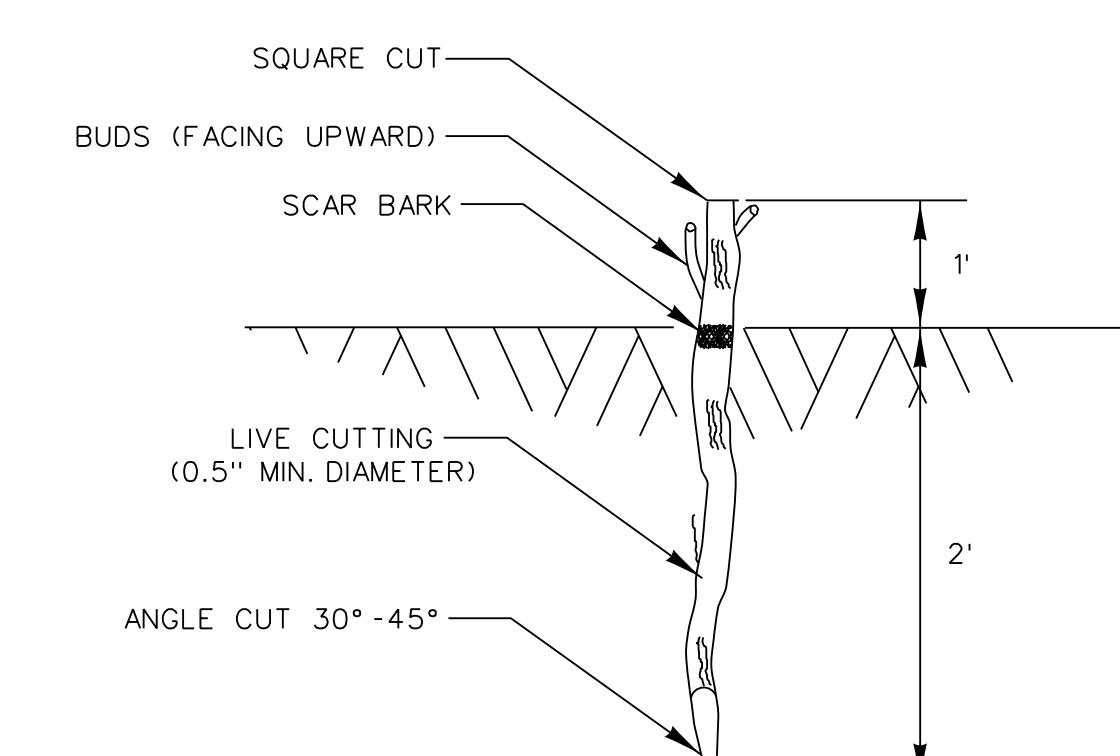


PLANTING WITHIN NATURAL FIBER MATTING

NOT TO SCALE

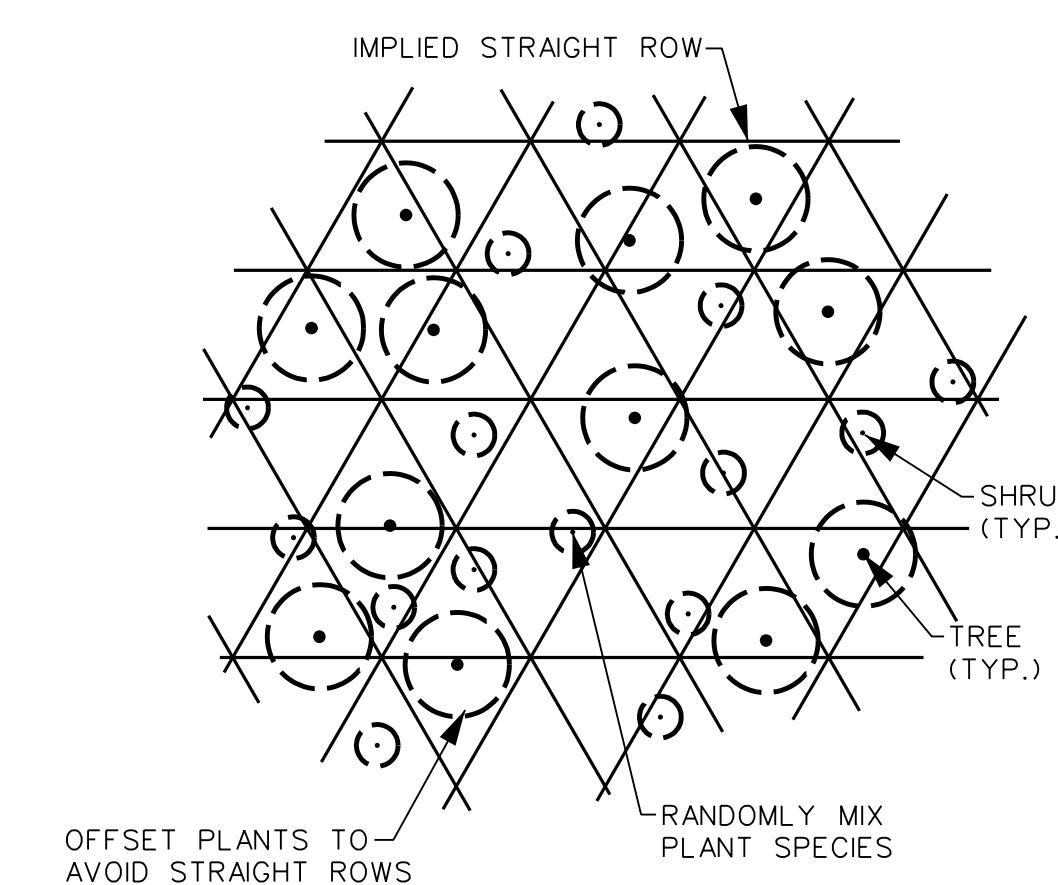
SEQUENCE:

1. CUT NATURAL FIBER MATTING USING A SHARP KNIFE, FOLLOWING THE SOLID LINE IN THE DIAGRAM. ALL CUTS SHALL BE A MINIMUM OF 2 FEET FROM ANY SEAMS, OVERLAPS, OR EDGES OF THE MATTING. SIZE OF CUT DEPENDS ON PROPOSED PLANT.
2. PULL BACK CUT MATTING AWAY FROM CENTER AND TEMPORARILY PIN BACK, FOLLOWING DASHED LINE IN THE DIAGRAM.
3. DIG HOLE FOR PLANT.
4. REMOVE TEMPORARY PINS FROM CUT MATTING AND PLACE MATTING FIRMLY IN HOLE.
5. PLACE PLANT ON TOP CUT MATTING.
6. BACKFILL AND SECURE PLANT IN HOLE.



LIVE STAKE DETAIL

NOT TO SCALE



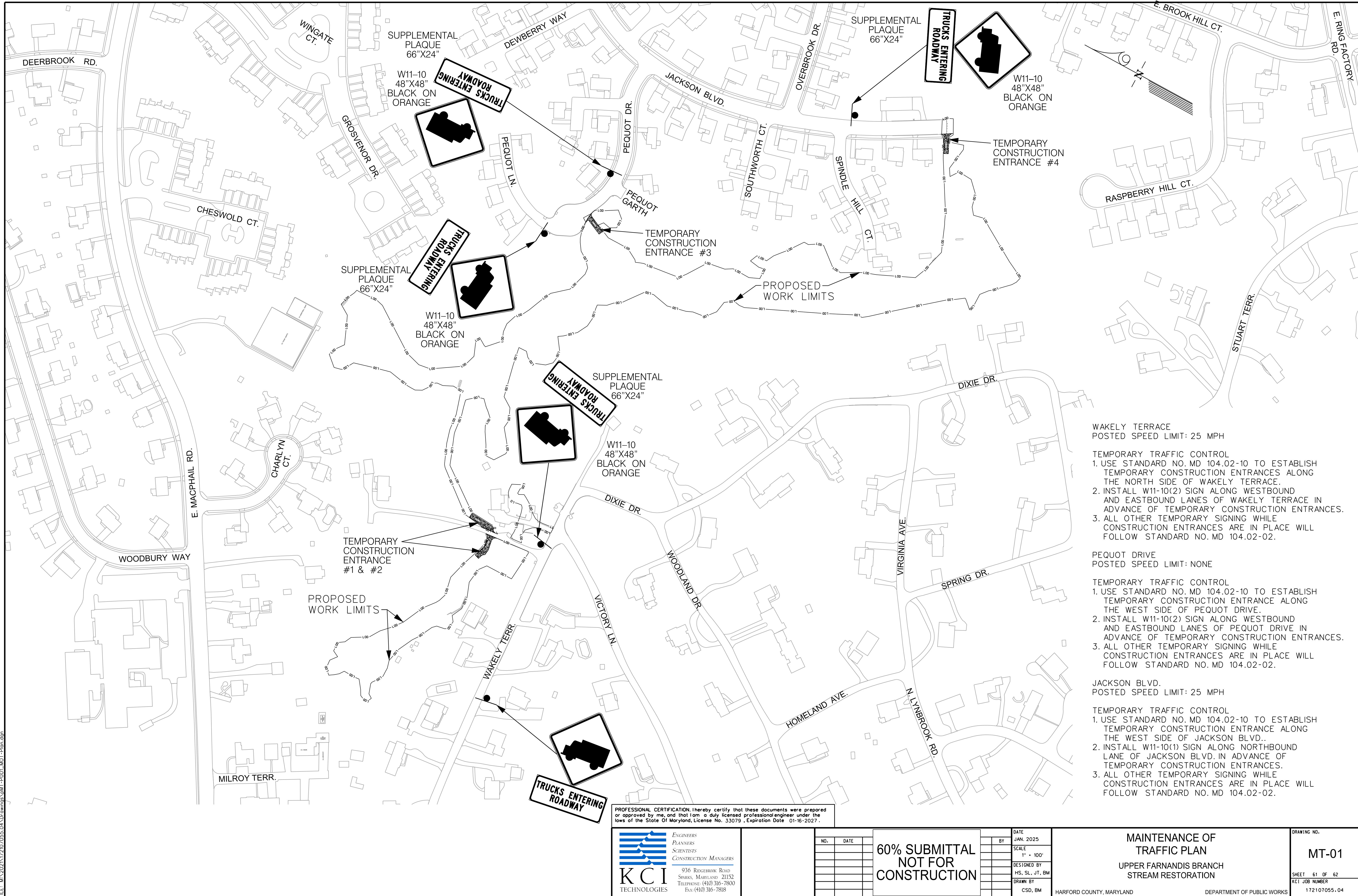
RANDOM PLANT SPACING

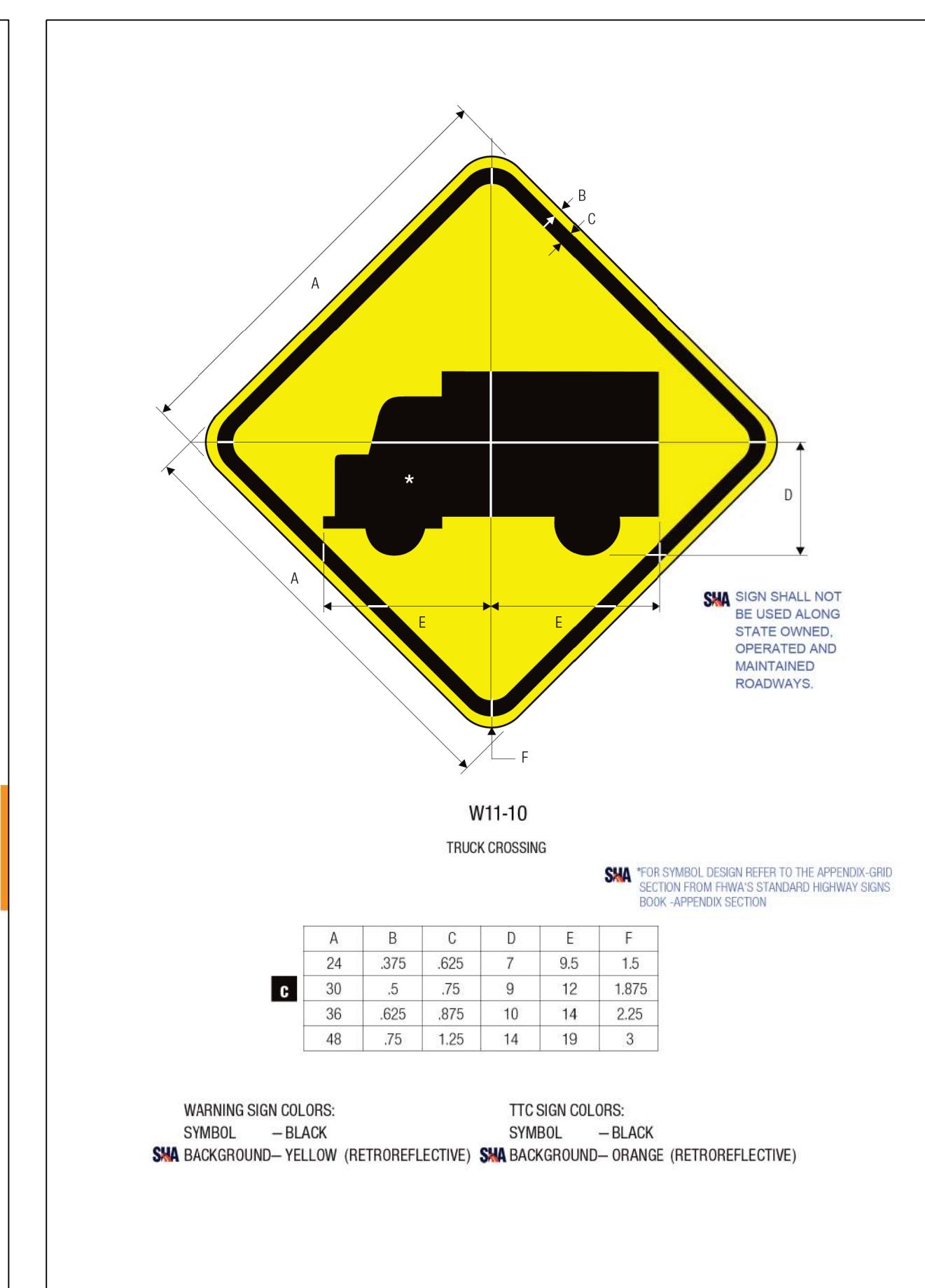
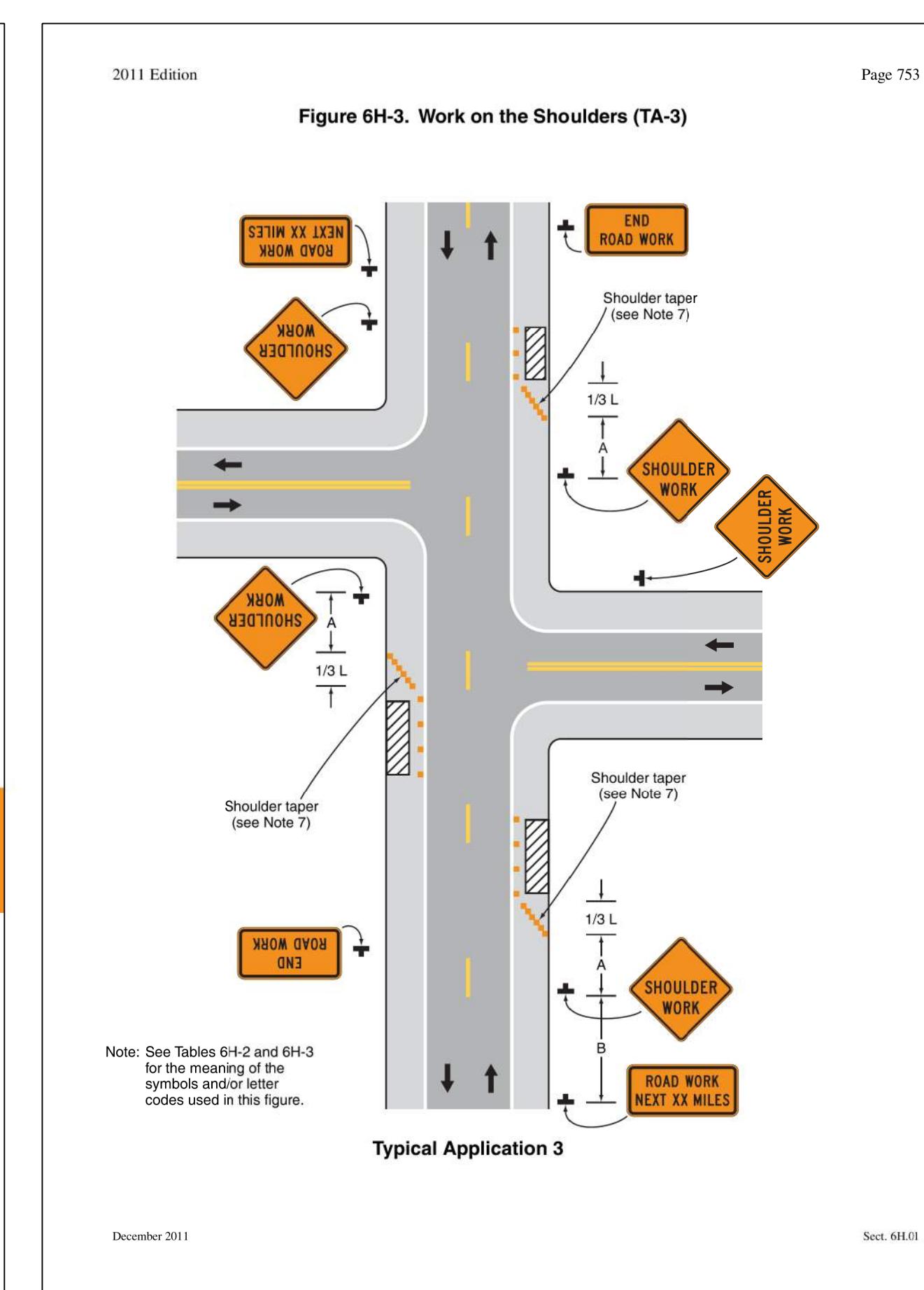
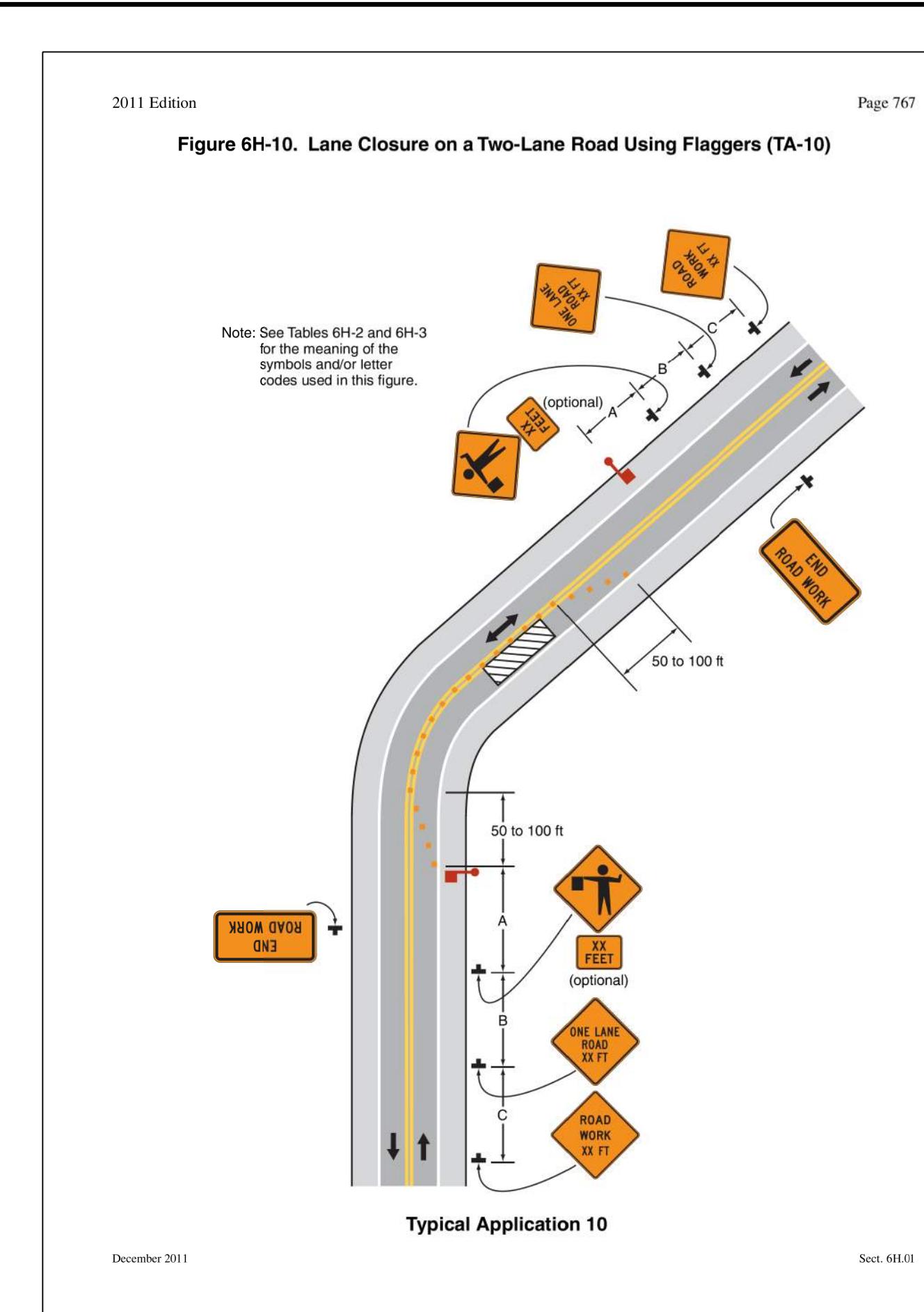
NOT TO SCALE

NOTE:

1. TREE PLANTING SHALL BE A RANDOM DISTRIBUTION OF SPECIES AND TREE TYPE.
2. REFER TO PLANT SCHEDULES FOR DENSITIES, CLUSTER PLANTS RANDOMLY AS DIRECTED BY ON-SITE INSPECTOR.

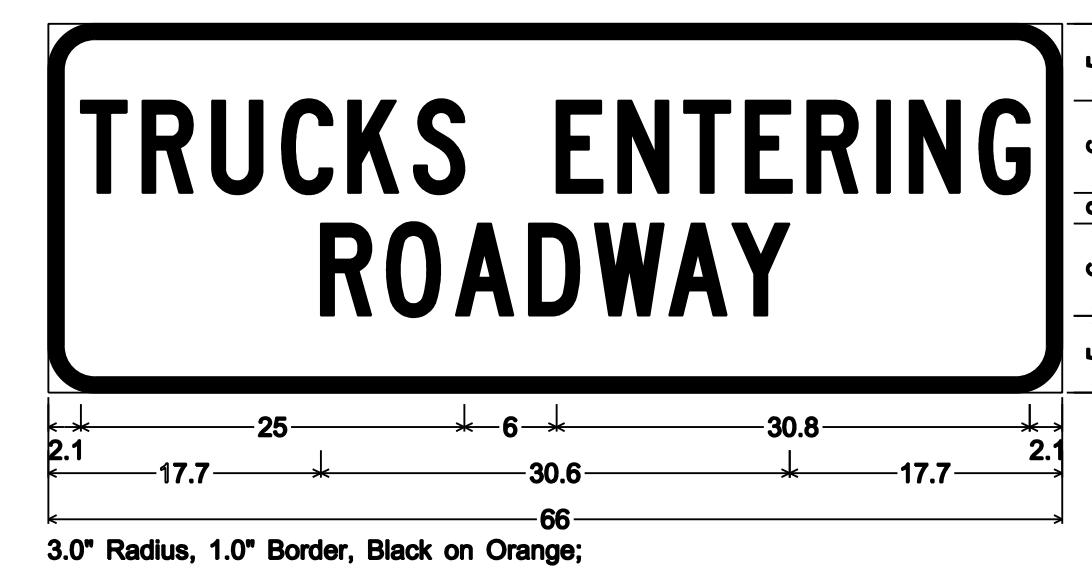
<p>PROFESSIONAL CERTIFICATION I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 33079, Expiration Date 01-16-2025.</p>	
1	1
2	1
3	1
4	1
5	1
6	1
7	1
8	1
9	1
10	1
11	1
12	1
13	1
14	1
15	1
16	1
17	1
18	1
19	1
20	1
21	1
22	1
23	1
24	1
25	1
26	1
27	1
28	1
29	1
30	1
31	1
32	1
33	1
34	1
35	1
36	1
37	1
38	1
39	1
40	1
41	1
42	1
43	1
44	1
45	1
46	1
47	1
48	1
49	1
50	1
51	1
52	1
53	1
54	1
55	1
56	1
57	1
58	1
59	1
60	1
61	1
62	1
63	1
64	1
65	1
66	1
67	1
68	1
69	1
70	1
71	1
72	1
73	1
74	1
75	1
76	1
77	1
78	1
79	1
80	1
81	1
82	1
83	1
84	1
85	1
86	1
87	1
88	1
89	1
90	1
91	1
92	1
93	1
94	1
95	1
96	1
97	1
98	1
99	1
100	1
101	1
102	1
103	1
104	1
105	1
106	1
107	1
108	1
109	1
110	1
111	1
112	1
113	1
114	1
115	1
116	1
117	1
118	1
119	1
120	1
121	1
122	1
123	1
124	1
125	1
126	1
127	1
128	1
129	1
130	1
131	1
132	1
133	1
134	1
135	1
136	1
137	1
138	1
139	1
140	1
141	1
142	1
143	1
144	1
145	1
146	1
147	1
148	1
149	1
150	1
151	1
152	1
153	1
154	1
155	1
156	1
157	1
158	1
159	1
160	1
161	1
162	1
163	1
164	1
165	1
166	1
167	1
168	1
169	1
170	1
171	1
172	1
173	1
174	1
175	1
176	1
177	1
178	1
179	1
180	1
181	1
182	1
183	1
184	1
185	1
186	1
187	1
188	1
189	1
190	1
191	1
192	1
193	1
194	1
195	1
196	1
197	1
198	1
199	1
200	1
201	1
202	1
203	1
204	1
205	1
206	1
207	1
208	1
209	1
210	1
211	1
212	1
213	1
214	1
215	1
216	1
217	1
218	1
219	1
220	1
221	1
222	1
223	1
224	1
225	1
226	1
227	1
228	1
229	1
230	1
231	1
232	1
233	1
234	1
235	1
236	1
237	1
238	1
239	1
240	1
241	1
242	1
243	1
244	1
245	1
246	1
247	1
248	1
249	1
250	1
251	1
252	1
253	1
254	1
255	1
256	1
257	1
258	1
259	1
260	1
261	1
262	1
263	1
264	1
265	1
266	1
267	1
268	1
269	1
270	1
271	1
272	1
273	1
274	1
275	1
276	1
277	1
278	1
279	1
280	1
281	1
282	1
283	1
284	1
285	1
286	1
287	1





MAINTENANCE OF TRAFFIC GENERAL NOTES

1. ALL TEMPORARY TRAFFIC CONTROL ACTIVITIES SHALL BE IN ACCORDANCE WITH THE MARYLAND STATE HIGHWAY ADMINISTRATION (MD SHA) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, JULY 2018, THE MD SHA BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES, THE 2011 MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MDMUTCD), AND/ OR AS DIRECTED BY THE ENGINEER.
2. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN TRAFFIC CONTROL SIGNS AND DEVICES. THE CONTRACTOR SHALL MAINTAIN TRAFFIC DURING HOURS OF CONSTRUCTION IN ACCORDANCE WITH THE METHODS OF THE TRAFFIC CONTROL REFERENCED ON THIS SHEET, OTHER CONTRACT DOCUMENTS, THE MDMUTCD, AND REVISIONS THERETO.
3. CONSTRUCTION ACTIVITY, LOADING OR UNLOADING OF EQUIPMENT SHALL NOT BLOCK ANY TRAFFIC LANE OR PARKING AREAS WITHIN THE WORK ZONE UNLESS PREVIOUSLY APPROVED BY THE ENGINEER.
4. ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS UNLESS PERMISSION FOR CLOSURE IS GRANTED BY THE PROPERTY OWNER/MANAGER. HOWEVER, ACCESSIBILITY FOR EMERGENCY VEHICLES SHALL BE MAINTAINED AT ALL TIMES.
5. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT EDITION OF THE MDMUTCD. ALL SIGNS, TRAFFIC DRUMS AND CONES SHALL BE FULLY REFLECTORIZED WITH HIGH INTENSITY, REFLECTIVE SHEETING PER THE MDMUTCD.
6. ALL TEMPORARY TRAFFIC CONTROL SIGNS MOUNTED IN SHOULDERS ON TEMPORARY/PORTABLE SUPPORTS SHALL BE CONSTRUCTED FROM MATERIALS IN THE QUALIFIED PRODUCTS LIST. ALUMINUM SIGNS ARE NOT PERMITTED ON TEMPORARY/ PORTABLE SUPPORTS. ALUMINUM TEMPORARY TRAFFIC CONTROL SIGNS ARE PERMITTED WHEN MOUNTED ON POSTS (GROUND MOUNTED).
7. SIGNS THAT ARE NOT APPLICABLE FOR A PARTICULAR CONSTRUCTION PHASE SHALL BE REMOVED OR COMPLETELY COVERED WITH A NON-TRANSPARENT MATERIAL.
8. THE CONTRACTOR SHALL BE REQUIRED TO ADHERE TO THIS PLAN FOR MAINTAINING TRAFFIC DURING CONSTRUCTION. ANY DEVIATION FROM THIS PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
9. CONSTRUCTION EQUIPMENT AND MATERIALS SHALL BE STORED OFF THE TRAVEL LANES IN THE DESIGNATED STOCKPILE AND STAGING AREA. EQUIPMENT AND MATERIALS SHALL BE OUTSIDE OF THE CLEAR ZONE OR BEHIND BARRIER AT ALL TIMES AS APPROVED BY THE ENGINEER.
10. THE CONTRACTOR IS REQUIRED TO CLEAR ANY DEBRIS ON THESE LOCAL ROADS CREATED FROM CONSTRUCTION VEHICLES.
11. CONTRACTOR MAY USE TYPE III BARRICADES AND DRUMS PLACED ACROSS THE SCE'S WHEN NOT IN USE TO DISCOURAGE ACCESS FROM NON-CONSTRUCTION VEHICLES.
12. ONE TRUCK CROSSING SIGN PER W11-10(1) SHALL BE PLACED IN EACH DIRECTION OF THE PROPOSED SCE LOCATIONS:
 - JACKSON BOULEVARD REQUIRES ONE W11-10(1) SIGN
 - PEQUOT DRIVE SHALL HAVE TWO W11-10(1) SIGNS
 - WAKFIY TERRACE SHALL HAVE TWO W11-10(1) SIGNS



DATE

60% SUBMITTAL
NOT FOR CONSTRUCTION

MAINTENANCE OF TRAFFIC NOTES & DETAILS

UPPER FARNANDIS BRANCH STREAM RESTORATION

DRAWING NO.
MT-02
SHEET 62 OF 62
KCI JOB NUMBER
172107055.04