

GENERAL NOTES

- 1. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS ALTERNATIVE COMPLIANCE HAS BEEN APPROVED.
2. ALL CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
3. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:
MISS UTILITY: 1-800-257-7777
VERIZON TELEPHONE COMPANY: 1-410-954-6781
HOWARD COUNTY BUREAU OF UTILITIES: 1-410-313-2366
AT&T CABLE LOCATION DIVISION: 1-800-393-4250
B&E CO. CONTRACTOR SERVICES: 1-410-890-4620
B&E CO. UNDERGROUND DAMAGE CONTROL: 1-410-787-4620
MARYLAND STATE HIGHWAY ADMINISTRATION: 1-410-531-5533
4. THE CONTRACTOR SHALL NOTIFY 'MISS UTILITY' AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
5. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
6. ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
7. THIS FINAL SUPPLEMENTAL PLAN IS SUBJECT TO THE FOLLOWING DPZ FILES: ECP-21-027.
8. THE EXISTING TOPOGRAPHY AND ELEVATIONS SHOWN HEREON IS BASED ON A FIELD SURVEY BY VOGEL ENGINEERING + TIMMONS GROUP, DATED JANUARY 2019, AND SUPPLEMENTED BY HOWARD COUNTY GIS.
9. THE PROJECT BOUNDARY IS BASED ON A FIELD BOUNDARY PERFORMED BY VOGEL ENGINEERING + TIMMONS GROUP, DATED APRIL 2020.
10. THE COORDINATES AND ELEVATIONS SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY CONTROL STATION 31EF AND 00B1 WERE USED FOR THIS PROJECT.
11. THE SUBJECT PROPERTY IS ZONED R-20 IN ACCORDANCE WITH THE ZONING REGULATIONS EFFECTIVE ON OCT. 09, 2013, AND IS SUBJECT TO SUBDIVISION AND LAND DEVELOPMENT REGULATIONS EFFECTIVE OCT. 01, 2007 PER COUNCIL BILL 47-2007 & 48-2007. DEVELOPMENT OR CONSTRUCTION ON THIS PROPERTY MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, ALTERNATIVE COMPLIANCE PETITION APPLICATION OR BUILDING/GRADING PERMIT APPLICATIONS.
12. EXISTING UTILITIES LOCATED FROM TOPOGRAPHIC SURVEY AND AS-BUILT RECORD DRAWINGS, CONTRACTOR SHALL LOCATE UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
13. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- WATER FOR THIS PROJECT SHALL BE FROM PUBLIC SERVICE CONNECTIONS FROM CONTRACT NO. #44-1031.
- SEWER FOR THIS PROJECT SHALL BE FROM THE PROPOSED EXTENSION OF CONTRACT NO. #14-3503-D.
- PUBLIC UTILITY LINES SHALL PROVIDE SEWER SERVICE FOR THE INDIVIDUAL LOTS.
- WATER AND SEWER SERVICE WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
- PUBLIC WATER AND SEWERAGE ALLOCATION WILL BE GRANTED AT TIME OF ISSUANCE OF BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.
14. CONSTRUCTION OF PUBLIC WATER SERVICE CONNECTIONS AND THE PUBLIC SEWER EXTENSION AND LPSS SHALL BE BY THE HOWARD COUNTY A.D.O. PROCESS.
15. THE PROPOSED DWELLINGS SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
16. SOIL TYPES SHOWN HEREON ARE IN ACCORDANCE WITH THE SOIL SURVEY REPORT BY HOWARD COUNTY, MARYLAND. THIS SITE IS NOT LOCATED IN A HISTORIC DISTRICT.
17. NO RARE, THREATENED OR ENDANGERED SPECIES OR THEIR HABITATS WERE OBSERVED ON THE PROPERTY.
18. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAM(S) OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS.
19. THERE ARE NO 'FLOODPLAIN' AREAS LOCATED WITHIN THE DEVELOPMENT AREA.
20. THERE ARE NO QUALIFYING AREAS OF STEEP SLOPES (25% OR GREATER) ON THIS SITE.
21. THE PROJECT SITE WAS EVALUATED FOR THE PRESENCE OF ENVIRONMENTAL FEATURES AND A LETTER HAS BEEN PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, DATED DECEMBER 1, 2020.
- MR. CANOLES NOTED THAT THE PROPERTY IS CURRENTLY DOMINATED BY LAWN, PASTURE AND SCATTERED YOUNG TREES.
- NO SPECIFIC SIZED TREES, FOREST OR ANY OTHER REGULATED ENVIRONMENTAL FEATURES WERE FOUND WITHIN THE LIMITS OF THE DEVELOPMENT AREA FOR THIS PROJECT.
- THERE ARE 0 S.F. (0.00 AC.) AREA OF WETLANDS PRESENT WITHIN THE DEVELOPMENT AREA PER SITE EVALUATION BY ECO-SCIENCE PROFESSIONALS, INC., IN NOVEMBER 2020.
22. THE SUBJECT PROPERTY PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION.
- DEVELOPMENT OF THE SITE WILL REQUIRE 0.2 ACRES OF AFFORESTATION TO MEET THE FCA OBLIGATION.
- FOREST CONSERVATION OBLIGATIONS FOR THIS PROJECT SHALL BE MET BY THE PURCHASE OF THE EQUIVALENT OF 0.20 AC. (8,711 S.F.) OF AFFORESTATION CREDIT IN THE HIMEL PROPERTY SDP-05-132 FOREST CONSERVATION BANK.
23. THE SUBJECT PROPERTY PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION.
- SURETY IN THE AMOUNT OF \$4,356.00 SHALL BE COLLECTED AS PART OF THE DED COST ESTIMATE.
24. LANDSCAPING FOR LOTS 1-3 IS INCLUDED WITH THE SUPPLEMENTAL PLAN SET, AND PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
25. FINANCIAL SURETY FOR THE PERIMETER LANDSCAPING IN THE AMOUNT OF \$7,200.00 FOR THE REQUIRED 15 SHADE TREES AND 10 EVERGREEN TREES WILL BE BONDED PER THIS PROVISION AND PAID WITH THE BUILDER'S GRADING PERMIT.
26. PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124.(E)(1) OF THE SUBDIVISION REGULATIONS AND LANDSCAPE MANUAL. FINANCIAL SURETY OF \$4,800.00 FOR THE REQUIRED 16 STREET TREES ALONG THE PUBLIC ROADWAY SHALL BE COLLECTED AS PART OF THE DED COST ESTIMATE.
27. IN ACCORDANCE WITH SECTION 16.121(A)(1) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, THE OPEN SPACE REQUIREMENT FOR THIS P-20 ZONED MINOR SUBDIVISION (2000 SQ LOT) IS 6% OF GROSS AREA (1.46X 6% = 0.88 ACRES) AND WILL BE MET BY A PAYMENT OF FEE-IN-LIEU.
28. IN ACCORDANCE WITH SECTION 16.121(A)(4) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, THIS PROJECT IS EXEMPT FROM PROVIDING RECREATION OPEN SPACE.
29. ANY NECESSARY DESIGN MANUAL WAIVERS OR ALTERNATIVE COMPLIANCE APPLICATIONS SHALL BE FILED AT SITE DEVELOPMENT PLAN STAGE.
30. WHARFF LANE IS CLASSIFIED AS A LOCAL ROAD.
31. SITE ACCESS SHALL BE VIA PRIVATE DRIVEWAYS FROM WHARFF LANE.
32. A TRAFFIC STUDY IS NOT REQUIRED FOR THIS PROJECT.
33. A NOISE STUDY IS NOT REQUIRED FOR THIS SUBDIVISION.
34. AN ADEQUATE ROADS FACILITIES TEST STUDY IS NOT REQUIRED FOR THIS PROJECT.
35. TEST PITS AND INFORMATION SHALL BE PROVIDED AT THE DEVELOPMENT PLAN STAGE.
36. ALL DRIVEWAY ENTRANCES SHALL UTILIZE HOWARD COUNTY STANDARD DETAIL NO. R-6.01 UNLESS OTHERWISE NOTED.
37. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
A) WIDTH - 12 FEET (16 FEET SERVING MORE THAN ONE RESIDENCE).
B) SURFACE - 6 INCHES OF COMPACTED CRUSHED RUBBLE BASE WITH TAR AND CHIP COATING (1-1 1/2" MIN.)
C) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% CHANGE AND MINIMUM OF 45-FOOT TURNING RADIUS.
D) STRUCTURES (CULVERTS/BRIDGES) - SUPPORTING 25 GROSS TONS (HEAVY LOADING).
E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
F) STRUCTURE CLEARANCES - MINIMUM 12 FEET.
G) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
38. THE PRE-SUBMISSION COMMUNITY MEETING WAS VIRTUALLY HELD FOR THIS PROJECT ON JANUARY 27, 2021.
39. AN ENVIRONMENTAL CONCEPT PLAN (ECP-21-027) WAS APPROVED AUGUST 9, 2021.
40. MIHU'S ARE REQUIRED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 108.0.E OF THE HOWARD COUNTY ZONING MANUAL. AT LEAST 10% OF DWELLING UNITS SHALL BE MODERATE INCOME HOUSING UNITS.
41. THE DEVELOPER WILL PAY A FEE-IN-LIEU TO ADDRESS THIS REQUIREMENT.
42. DECLARATION OF COVENANTS SHALL BE RECORDED WITH THE SITE DEVELOPMENT PLAN AND SIMULTANEOUSLY WITH THE PRIVATE STORMWATER DEVICES LOCATED ON THESE LOTS. ALL STORMWATER DEVICES SHALL BE PRIVATE. ALL STORMWATER DEVICES SHALL BE LOCATED WITHIN THE PRIVATE LOTS, AND OWNED AND MAINTAINED BY THE HOMEOWNER. ALL PRIVATE STORMWATER MANAGEMENT PRACTICES SHOWN HEREON ARE FOR INFORMATIONAL PURPOSES ONLY AND SHALL BE CONSTRUCTED UNDER THE SITE DEVELOPMENT PLAN. FURTHER REVIEW AND REVISION MAY OCCUR AT SITE DEVELOPMENT PLAN STAGE.
43. APPROVAL OF THIS FINAL SUPPLEMENTAL PLAN DOES NOT CONSTITUTE AN APPROVAL OF ANY SUBSEQUENT AND ASSOCIATED SITE DEVELOPMENT PLAN AND/OR RED-LINE REVISION PLAN, ADDITIONAL REVIEW OF THIS PROJECT FOR COMPLIANCE WITH THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS SHALL OCCUR AT THE SITE DEVELOPMENT PLAN STAGES AND/OR RED-LINE REVISION PROCESS. THE APPLICANT AND CONSULTANT SHOULD EXPECT ADDITIONAL AND MORE DETAILED REVIEW COMMENTS (INCLUDING COMMENTS THAT MAY ALTER THE OVERALL SITE DESIGN) AS THIS PROJECT PROGRESSES THROUGH THE PLAN REVIEW PROCESS.
44. LAND DEDICATED TO HOWARD COUNTY, MARYLAND FOR PURPOSES OF A PUBLIC ROAD (4,199 SF.)
45. THERE IS AN EXISTING DWELLING/STRUCTURE LOCATED ON LOT #1 TO REMAIN.
46. NO NEW BUILDINGS, EXTENSIONS OR ADDITIONS TO THE EXISTING DWELLING ARE TO BE CONSTRUCTED AT A DISTANCE LESS THAN THE ZONING REGULATION REQUIREMENTS.
47. THE 10 YEAR STORM FLOWS SHALL BE SAFELY AND ADEQUATELY CONVEYED TO A STABLE OUTFALL.
48. THIS PROJECT IS SUBJECT TO A DESIGN MANUAL WAIVER DMW2-023.
49. IN A LETTER DATED JUNE 8, 2022, THE CHIEF OF THE DEPARTMENT OF PUBLIC WORKS-UTILITY DESIGN DIVISION APPROVED THE USE OF A LOW-PRESSURE SEWER SYSTEM (LPSS) FOR THIS DEVELOPMENT IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME II - WATER AND SEWER (DMW2) SECTION 8.3.B.2.; SUBJECT TO THE FOLLOWING CONDITIONS:
- THE REQUEST IS APPROVED, CONTINGENT UPON CONFORMANCE WITH THE CHANGES OUTLINED BELOW AND GRAPHICALLY MARKED ON THE WEAVER EXHIBIT.
1. THE MAIN LINE 1.5" LPSS FORCE MAIN SHALL BE PUBLIC AND LOCATED 5 FEET SOUTH OF THE CURB & GUTTER LINE IN THE PUBLIC RIGHT-OF-WAY/PAVED ROADWAY.
2. EACH HOUSE SHALL HAVE A PRIVATE GRINDER PUMP WITH A PRESSURE SEWER HOUSE CONNECTION ASSEMBLY (DMV4, S-4.03) LOCATED AT THE PROPERTY LINE.
3. THE PUBLIC 1.5" LPSS FM SHALL HAVE A TERMINAL END AS DETAILED IN DMV4, S-4.15.
4. THE PUBLIC 1.5" LPSS FM SHALL DISCHARGE INTO A TRANSITION MH AS DETAILED IN DMV4, S-4.15.
5. THE PUBLIC LPSS AND GRAVITY SEWER CONSTRUCTION SHALL BE DOCUMENTED UNDER THE PROCEDURES FOR PUBLIC WATER/SEWER EXTENSIONS OR ADVANCED DEPOSIT ORDER AS APPLICABLE.

NOTE:

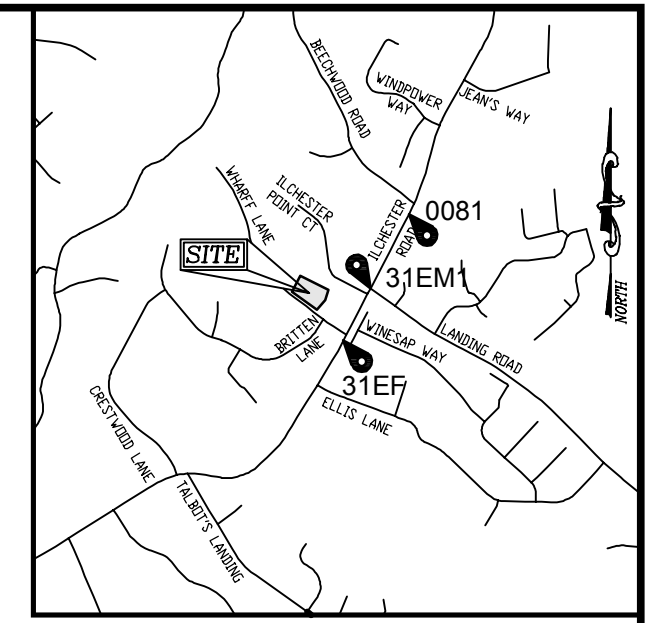
ALL WATER CONNECTIONS SHALL BE 1-1/2" WITH 1" OUTSIDE METER SETTINGS, UNLESS OTHERWISE NOTED. REFER TO HOWARD COUNTY DETAILS W-3.28 OUTSIDE METER SETTINGS.

FINAL SUPPLEMENTAL PLAN WHARFF LANE LOTS 1-3

4935 WHARFF LANE, ELLICOTT CITY, MD 21043 HOWARD COUNTY, MD

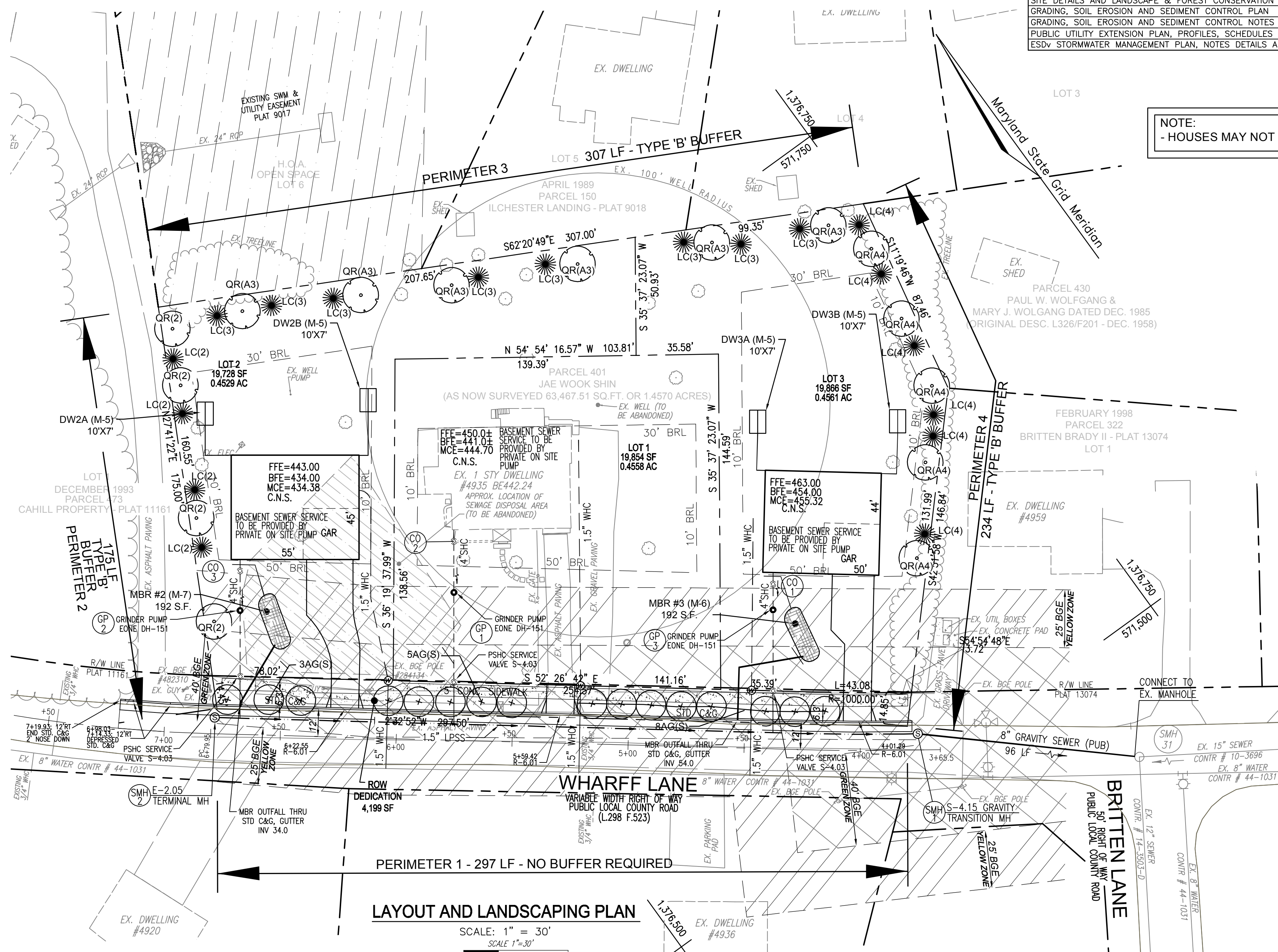
BENCHMARKS

- 31EF : N 571,267.917 E 1,376,907.417 ELEV. 469.471' CONC. MON AT THE INTERSECTION OF ILCHESTER RD AND WHARFF LANE
31EM1 : ELEV. 471.694' 3/4" REBAR AT THE CORNER OF ILCHESTER RD AND LANDING RD.
00B1 : N 572,335.338 E 1,377,504.092 ELEV. 477.919' CONC. MON ILCHESTER RD SOUTH OF BEECHWOOD RD.



SHEET INDEX table with columns: DESCRIPTION, SHEET NO. Includes entries for COVER SHEET, LAYOUT AND LANDSCAPING PLAN, SITE DETAILS AND LANDSCAPE & FOREST CONSERVATION NOTES & DETAILS, etc.

NOTE: - HOUSES MAY NOT BE BUILT USING THIS PLAN.



LOT SIZE CHART table with columns: LOT, MIN. LOT SIZE, MAX. REDUCTION, R/W DEED. AREA, LOT AREA. Lists lot sizes for lots 1, 2, and 3.

ADDRESS CHART table with columns: LOT NO., STREET ADDRESS. Lists addresses for lots 1, 2, and 3.

SWM PRACTICE CHART - PRIVATE LOTS table with columns: LOT #, ESD PRACTICE, ADDRESS. Lists ESD practices for lots 1, 2, and 3.

SUMMARY OF FINDINGS FOR APFO TRAFFIC ANALYSIS: IN ACCORDANCE WITH HOWARD COUNTY DESIGN MANUAL VOLUME 3, CHAPTER 4 SECTION 4.7(B)(5), A TRAFFIC STUDY IS NOT REQUIRED FOR THIS PROJECT.

MODERATE INCOME HOUSING UNITS (MIHU) ALLOCATION EXEMPTIONS TRACKING table with columns: TOTAL NUMBER OF LOTS/UNITS PROPOSED, NUMBER OF MIHU REQUIRED, etc.

OWNER/DEVELOPER: JAE WOOK SHIN, 4935 WHARFF LANE, ELLICOTT CITY, MD 21043, (202) 415-7414

FINAL SUPPLEMENTAL PLAN COVER SHEET, LAYOUT AND LANDSCAPING PLAN WHARFF LANE LOTS 1-3

VOGEL ENGINEERING + TIMMONS GROUP 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043

Professional Engineer seal for Robert H. Vogel, PE No. 16193, and project details including design by RHW/GAH/EDS, date NOVEMBER 2022, and scale AS SHOWN.

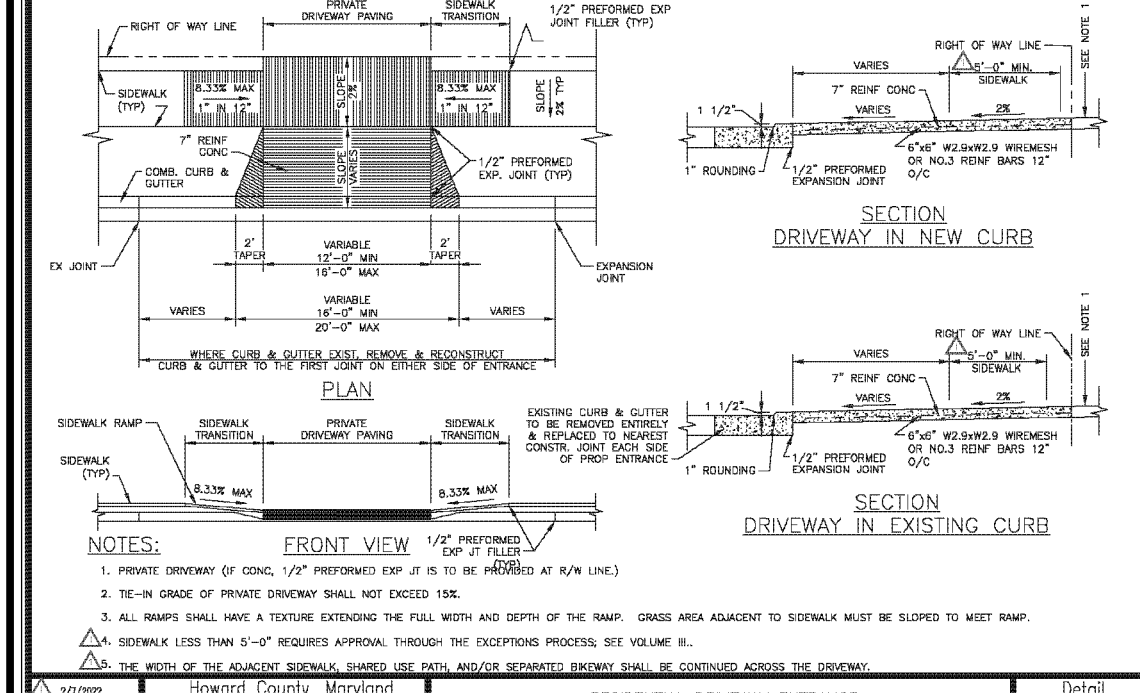
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING, Chief, Development Engineering Division, Chad Edmondson, 11/27/2023

Chief, Division of Land Development, 11/15/2023

SECTION	ROAD AND STREET CLASSIFICATION / TYPE	CALIFORNIA STANDARD ROAD CROSS SECTION	2 TO 4" R OF 2"	2.7	4 TO 6" R OF 2"	4.7	6 TO 8" R OF 2"	8.7	10 TO 12" R OF 2"
P-1	NEW STREET TYPE	RESIDENTIAL	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-2	EXISTING STREET TYPE	RESIDENTIAL	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-3	EXISTING STREET TYPE	RESIDENTIAL	1.5	1.5	1.5	1.5	1.5	1.5	1.5
P-4	EXISTING STREET TYPE	RESIDENTIAL	1.5	1.5	1.5	1.5	1.5	1.5	1.5

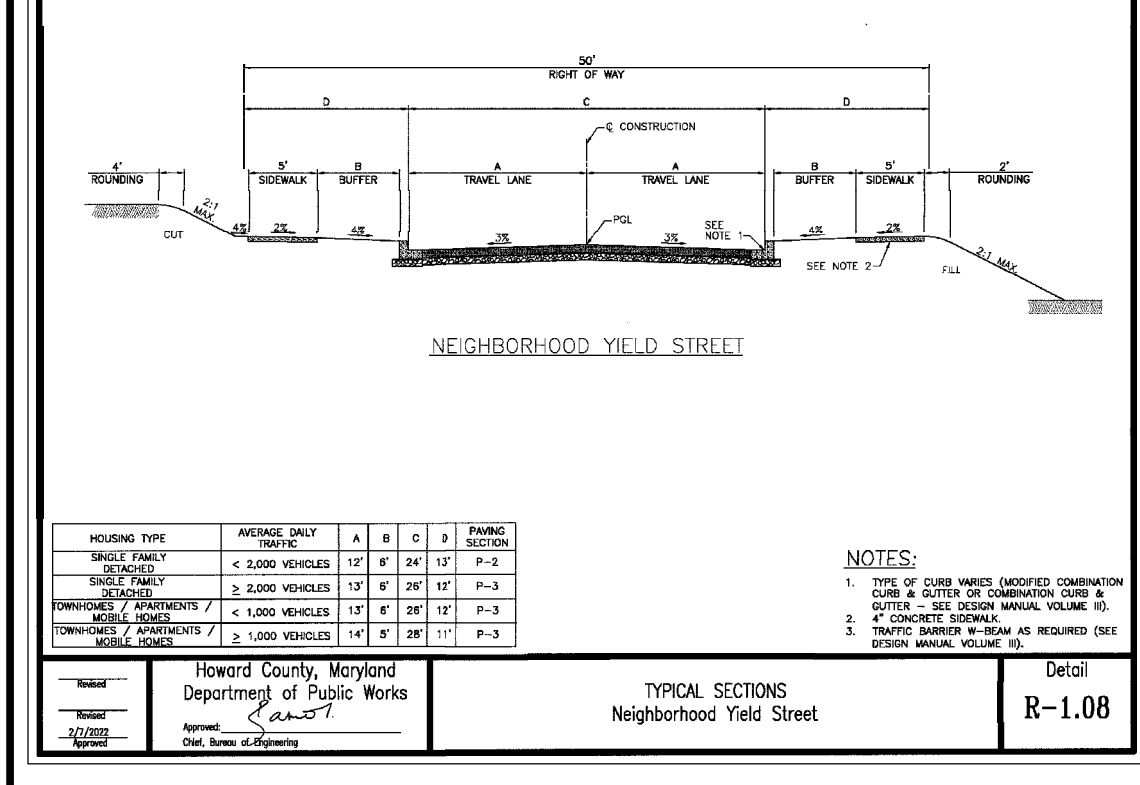
**NOTES:**

- RESURFACING SHALL BE TO THE FULL DEPTH OF THE EXISTING ROADWAY. IF CURB AND GUTTER IS INSTALLED, PROVIDE A MINIMUM OF 4" OF WIDENING FROM THE FACE OF THE GUTTER PAN.
- THE EXISTING PAVEMENT TO BE RESURFACED SHALL BE MILLED AT A DEPTH OF 1-1/2" (MINIMUM).
- THE RESURFACING SHALL BE PLACED TO THE CENTERLINE OF ROADWAY.
- RESURFACING COURSE TO BE EQUAL TO THE SURFACE COURSE OF THE TYPICAL PAVEMENT SECTION.



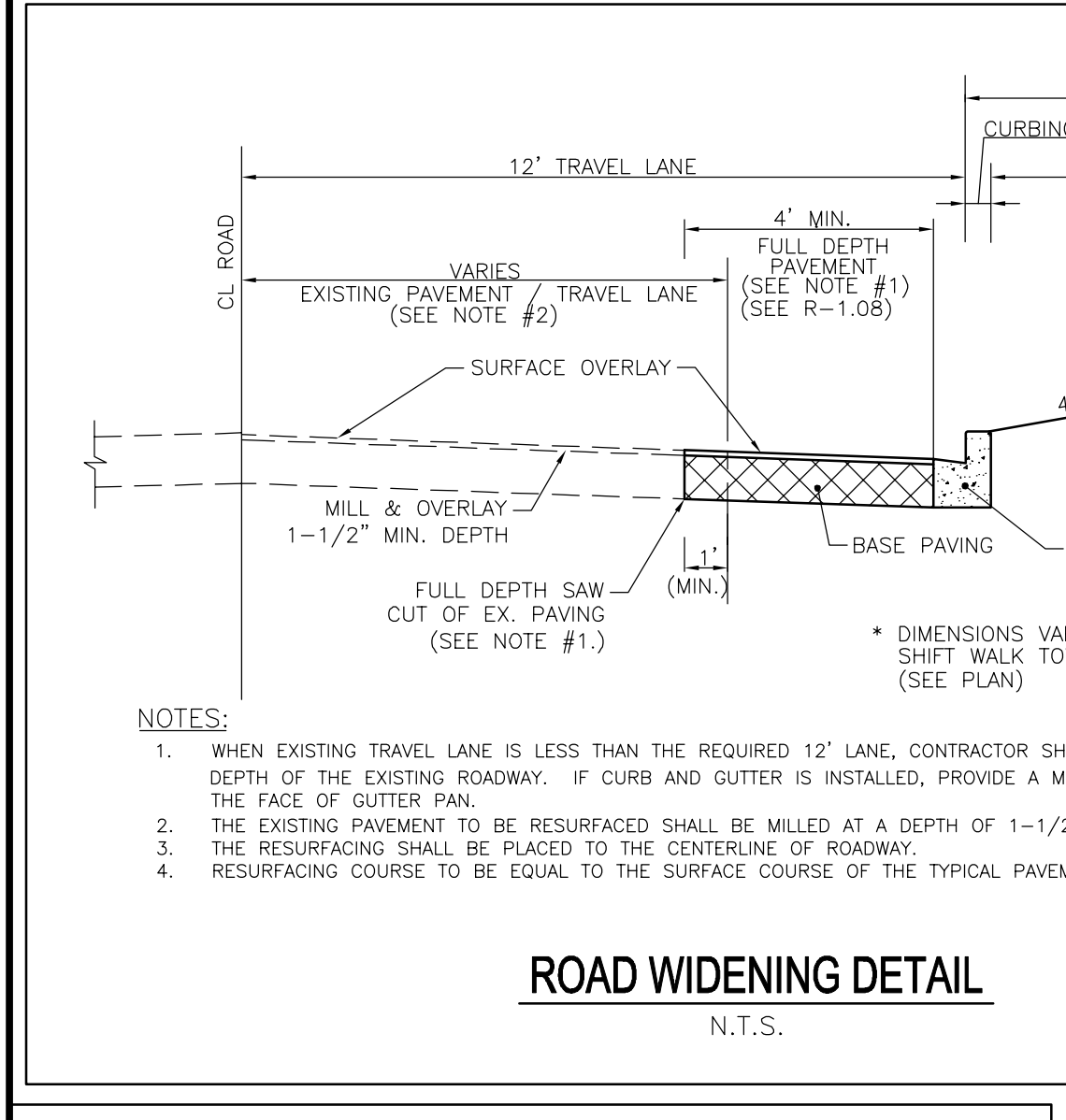
**NOTES:**

- PRIVATE DRIVEWAY OF CONC. 1/2" PRESTRESSED ASP. AT 10 TO 12" MAXIMUM SPACING.
- NO. 4 REIN. SHALL HAVE A TENSILE EXTENSION THE FULL WIDTH AND CENTER OF THE DRIVEWAY. CURBS AND ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET WALK.
- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.



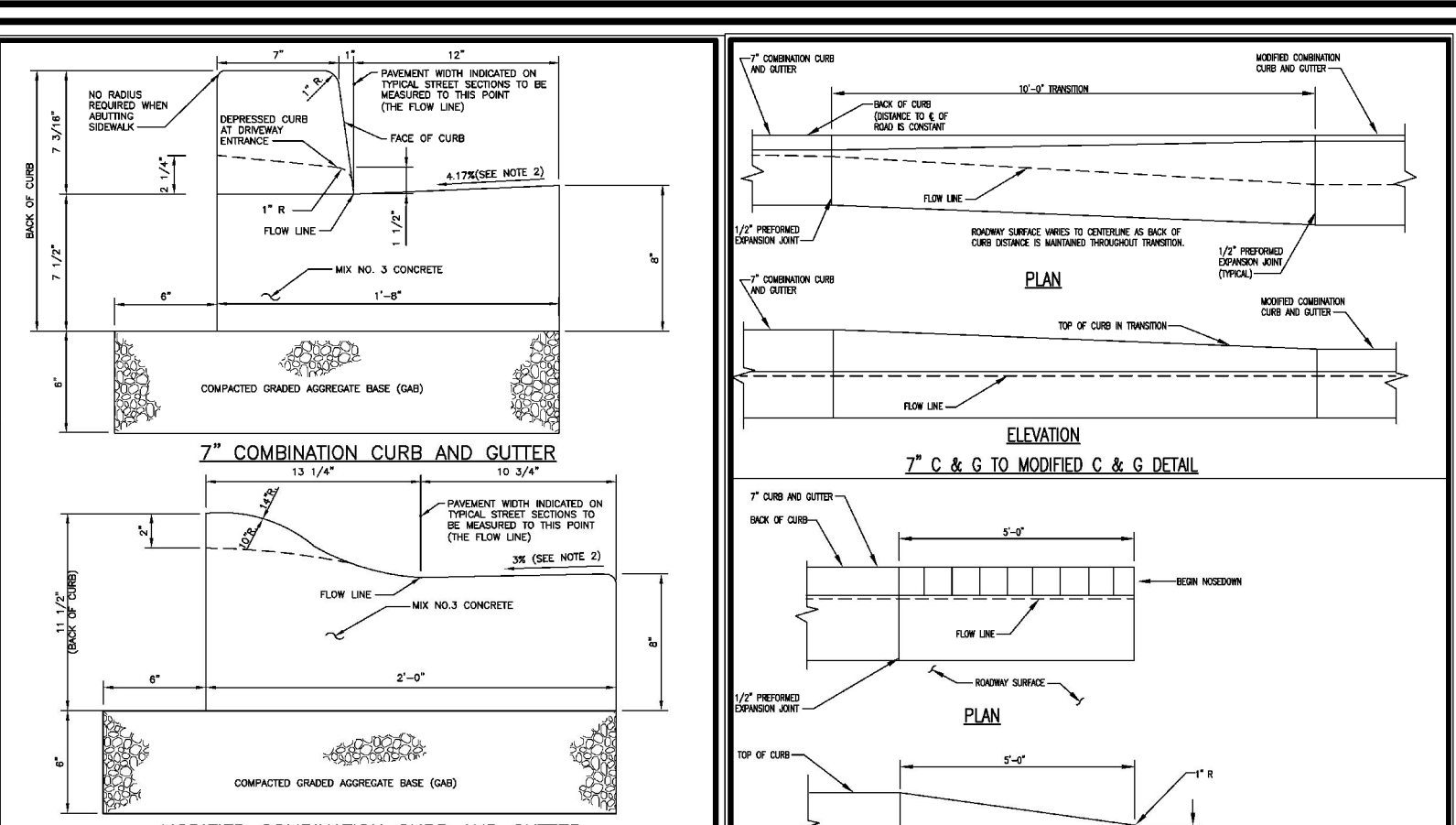
**NOTES:**

- TYPE OF CURB SHALL DEVELOPED CONSTRUCTION CURB OR CURB WITH 7" COMBINATION CURB AND GUTTER.
- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.



**NOTES:**

- WHEN EXISTING TRAVEL LANE IS LESS THAN THE REQUIRED 12' LANE, CONTRACTOR SHALL REMOVE A MINIMUM OF 1' FULL DEPTH OF THE EXISTING ROADWAY. IF CURB AND GUTTER IS INSTALLED, PROVIDE A MINIMUM OF 4" OF WIDENING FROM THE FACE OF THE GUTTER PAN.
- THE EXISTING PAVEMENT TO BE RESURFACED SHALL BE MILLED AT A DEPTH OF 1-1/2" (MINIMUM).
- THE RESURFACING SHALL BE PLACED TO THE CENTERLINE OF ROADWAY.
- RESURFACING COURSE TO BE EQUAL TO THE SURFACE COURSE OF THE TYPICAL PAVEMENT SECTION.

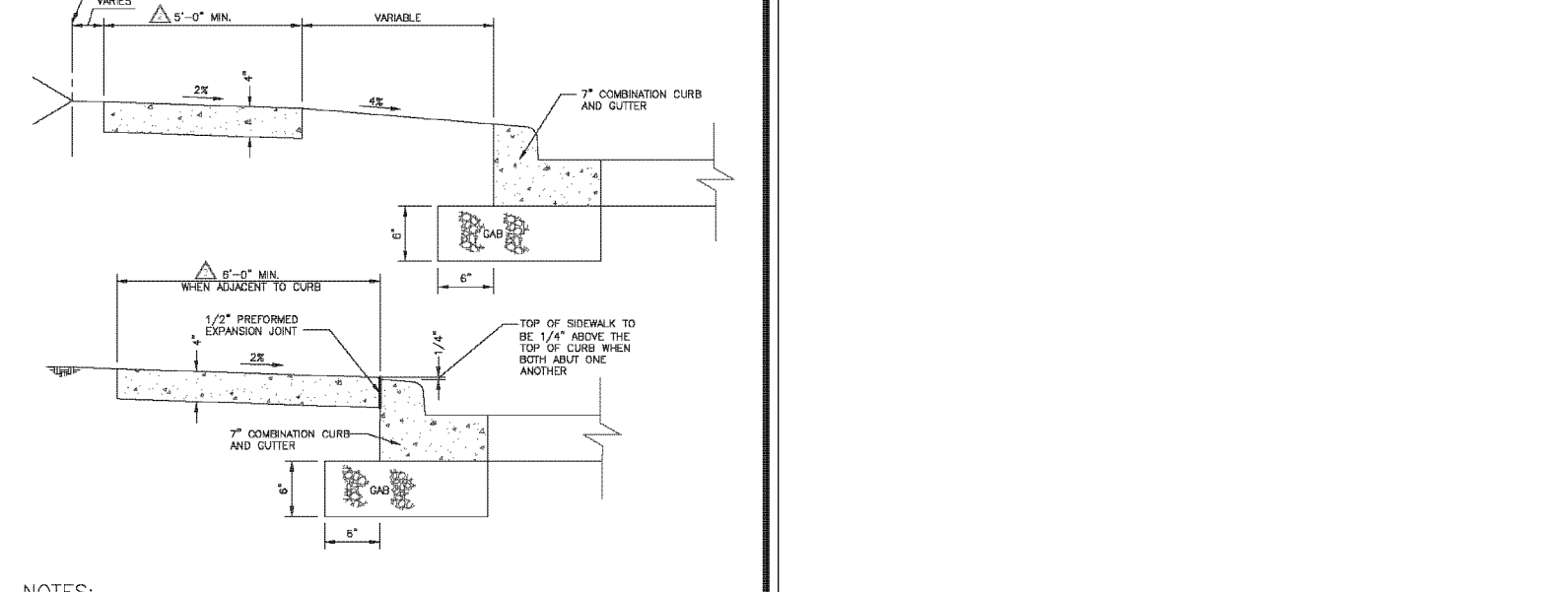


**NOTE: MODIFIED COMBINATION CURB AND GUTTER**

THIS CURB SHALL BE INSTALLED ON THE HIGH SIDE OF SUBGRADE. THE CURB SHALL BE 7" HIGH FROM THE TOP LINE AND SHALL BE 1/2" WIDE FROM THE TOP LINE. THE CURB SHALL BE 1/2" WIDE FROM THE TOP LINE. THE CURB SHALL BE 1/2" WIDE FROM THE TOP LINE.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.



**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.



**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.



**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

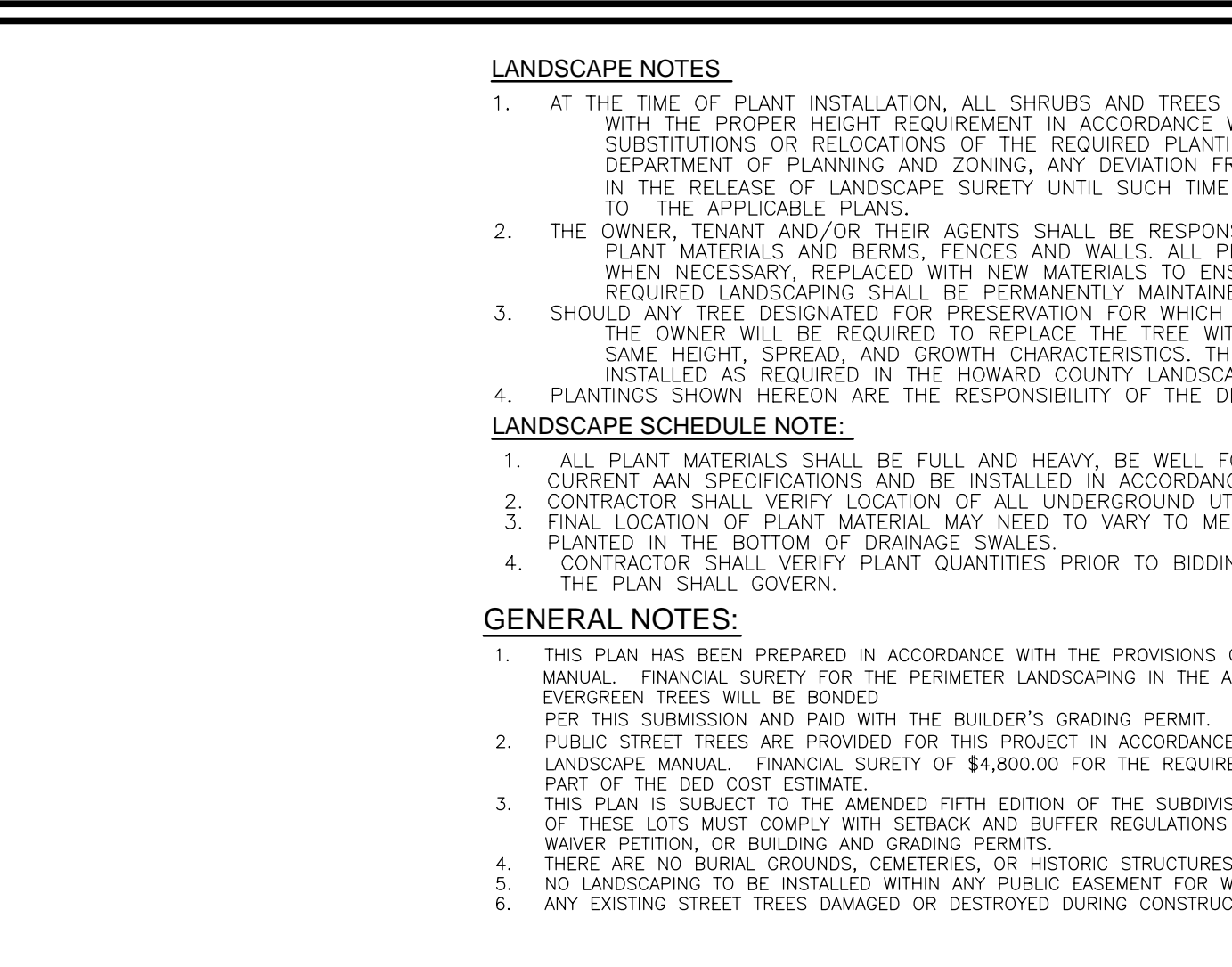
- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

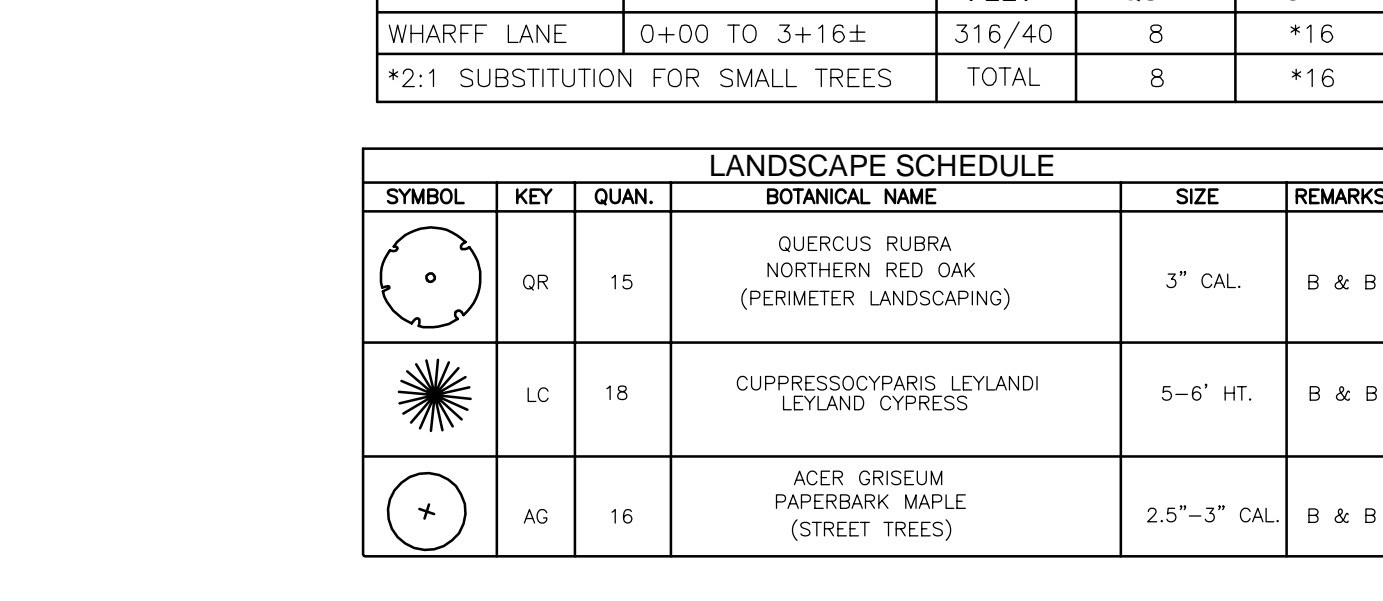
**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.



**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.



**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**NOTES:**

- CONCRETE SHALL BE 3000 PSI COMPACTED AND FINISHED TO THE SURFACE OF THE DRIVEWAY.
- TRAFFIC SIGNAGE AS SHOWN AS REQUIRED BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

**LANDSCAPE NOTES:**

- AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.
- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, DIES PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD, AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THE FINAL PLAN.

**LANDSCAPE SCHEDULE NOTE:**

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

**GENERAL NOTES:**

- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE PERIMETER LANDSCAPING IN THE AMOUNT OF \$7,200.00 FOR THE REQUIRED 15 SHADE TREES AND 18 EVERGREEN TREES WILL BE BONDED FOR THIS SUBMISSION AND PAID WITH THE BUILDER'S GRADING PERMIT.
- PUBLIC STREET TREES ARE PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124 (E)(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY OF \$4,800.00 FOR THE REQUIRED 16 STREET TREES ALONG THE PUBLIC ROADWAY SHALL BE COLLECTED AS PART OF THE DED COST ESTIMATE.
- THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, DEVELOPMENT OR CONSTRUCTION OF THESE LOTS MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN.
- WAIVER PETITION, OR BUILDING AND GRADING PERMITS.
- THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- NO LANDSCAPING TO BE INSTALLED WITHIN ANY PUBLIC EASEMENT FOR WATER, SEWER, OR STORM DRAIN.
- ANY EXISTING STREET TREES DAMAGED OR DESTROYED DURING CONSTRUCTION WILL BE REPLACED BY THE CONTRACTOR.

**STREET TREE CALCULATIONS**

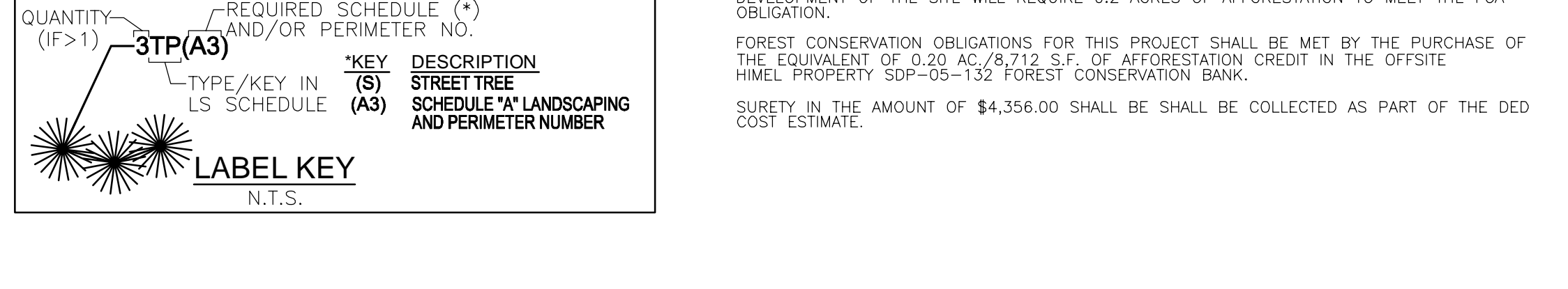
STREET NAME	STATION	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
WHARFF LANE	0+00 TO 3+16±	316/40	8	*16
*2:1 SUBSTITUTION FOR SMALL TREES		TOTAL	8	*16

**LANDSCAPE SCHEDULE**

SYMBOL	KEY	QUAN.	BOTANICAL NAME	SIZE	REMARKS
OR	OR	15	QUERCUS RUBRA NORTHERN RED OAK (PERIMETER LANDSCAPING)	3" CAL.	B & B
LC	LC	18	CUPRESSOCYPARIS LEYLANDI LEYLANDI CYPRESS	5-6' HT.	B & B
AG	AG	16	ACER GRISEUM PAPERBARK MAPLE (STREET TREES)	2.5"-3" CAL.	B & B

**SCHEDULE 'A' PERIMETER LANDSCAPE EDGE**

CATEGORY	ADJACENT TO PERIMETER AND ROADWAYS	TOTAL
PERIMETER/FRONTAGE DESIGNATION	1 2 3 4	-
LANDSCAPE TYPE	NO. B B B B	-
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	297 LF 175 LF 307 LF 234 LF	1013 LF
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO NO NO NO	-
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO NO NO NO	-
NUMBER OF PLANTS REQUIRED		
SHADE TREES	150 4 150 6	150 5
EVERGREEN TREES	140 4 140 6	140 6
SHRUBS	-	-
REPLACEMENT SHADE TREES	-	-
NUMBER OF PLANTS PROVIDED		
SHADE TREES	4 8 6 5	15
EVERGREEN TREES	4 8 6 6	18
EX SHADE TREES	-	-
OTHER TREES (2:1 SUBSTITUTION)	-	-
SHRUBS (10:1 SUBSTITUTION)	-	-
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED		



**NOTES:**

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

**DPZ'S POLICES GOVERNING THE PLACEMENT OF LANDSCAPING AND STREET TREES IN PROXIMITY TO BGE'S POWER LINES OR TRANSMISSION RIGHT-OF-WAY ARE BASED ON BGE'S PUBLISHED "PLANTING ZONE CONCEPT" WHICH STIPULATES THE MAXIMUM ALLOWABLE SIZE OF PLANT MATERIALS FOR THREE DEFINED ZONES. AS THE DISTANCE FROM BGE EQUIPMENT INCREASES, SO DOES THE SIZE OF THE ALLOWABLE PLANT MATERIALS. THESE THREE ZONES ARE DEFINED AS FOLLOWS:**

ZONE	DISTANCE FROM THE BGE POWER LINE OR TRANSMISSION RIGHT-OF-WAY	MAXIMUM HEIGHT OF VEGETATION
GREEN	UP TO 20 FEET	25 FEET
YELLOW	BETWEEN 20 FEET AND 45 FEET	40 FEET
RED	BEYOND 45 FEET	ABOVE 40 FEET

**B & E NOTES:**

- BGE RESERVES THE RIGHT TO TRIM, TOP OR CUT DOWN ANY TREE IN PROXIMITY TO THE LINE THAT IN THE OPINION OF BGE SHALL BE DEEMED A HAZARD TO THE SAFE AND RELIABLE DELIVERY OF ELECTRICITY.
- THE DEPARTMENT OF PLANNING AND ZONING MAY AUTHORIZE THE TRIMMING OR REMOVAL OF TREES OR VEGETATION IMMEDIATELY ADJACENT TO THE BGE R/W OR EASEMENT, IF BGE DETERMINES THE TREES ARE COMPROMISING THE SAFETY OF A TRANSMISSION LINE LOCATED WITHIN THEIR UTILITY R/W OR EASEMENT, IF BGE INTENDS TO TRIM OR REMOVE TREES WITHIN FOREST CONSERVATION EASEMENT, A LETTER SPECIFYING THE LOCATION AND SCOPE OF WORK NEEDS TO BE SENT TO DPZ AT LEAST 30 DAYS IN ADVANCE OF UNDERPINNING THE WORK. DPZ UNDERSTANDS CONSTRUCTION EMPLOYERS' NEED TO PROTECT ITS TRANSMISSION LINES AND WILL NOT UNREASONABLE WITHOUT PERMISSION.
- CALL MGS UTILITY TO MARK UP THE LOCATION OF EXISTING GAS LINE BEFORE PLANTING STREET TREES ALONG WHARFF LANE & PLANT STREET TREES 10' AWAY FROM EXISTING GASLINE AS REQUIRED.

**OWNER/DEVELOPER**

JAE WOOK SHIN  
4935 WHARFF LANE  
ELLIOTT CITY, MD 21043  
(202) 415-7414

**FINAL SUPPLEMENTAL PLAN**

**SITE DETAILS AND LANDSCAPE & FOREST CONSERVATION NOTES & DETAILS**

**WHARFF LANE**

NOTS 1-3  
4935 WHARFF LANE  
SINGLE FAMILY RESIDENTIAL  
L. 17968 / F. 00281  
HOWARD COUNTY, MARYLAND  
ZONED: R-20  
PARCEL 401

**VOGEL ENGINEERING**

**TIMMONS GROUP**

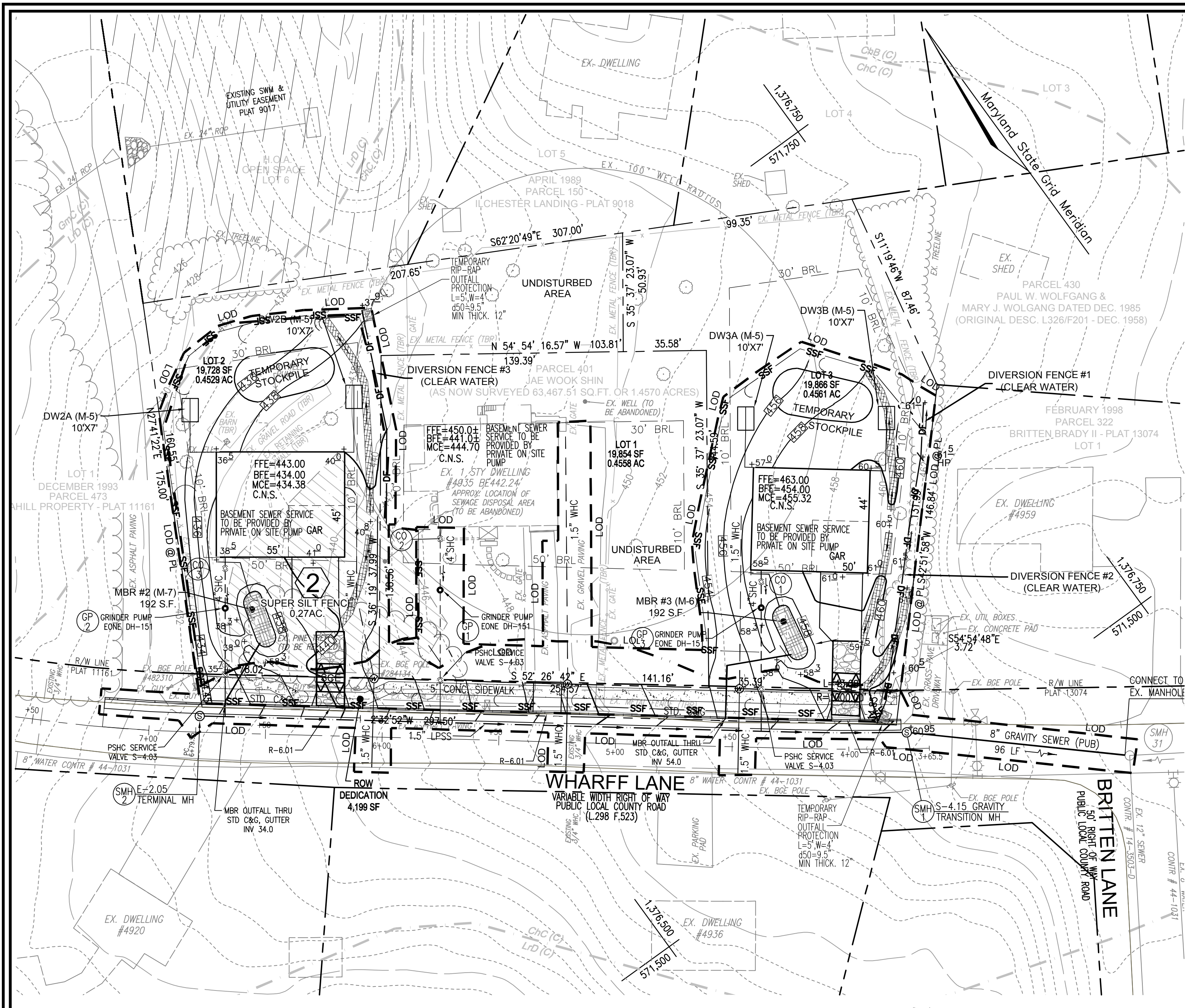
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
P: 410.461.7666 F: 410.461.8961 www.timmons.com

**PROFESSIONAL CERTIFICATE**

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 17120222 EXPIRATION DATE: 09-27-2024

DESIGN BY: RHW/GAH/EDS.  
DRAWN BY: GAH/EDS.  
CHECKED BY: RHW.  
DATE: NOVEMBER 2022.  
SCALE: AS SHOWN.  
W.O. NO.: 42431.

2 SHEET OF 6



**LEGEND**

- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING OVERHEAD UTILITY LINE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING TREELINE
- PROPOSED TREELINE
- LIMIT OF DISTURBANCE
- 1.5" WATER HOUSE CONNECTION
- ROOF DRAIN / UNDER DRAIN
- PUBLIC SEWER
- PUBLIC 1.5" LPSS
- PRIVATE SHC AND GRINDER PUMP
- MICRO-BIORETENTION (M-6)
- DRYWELL (M-5)
- EXISTING SOILS
- SUPER SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- ESC DRAINAGE AREA LABEL
- ESC DRAINAGE DIVIDE

**GENERAL NOTES:**  
 - SILT FENCE RUNNING DOWNHILL SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART.  
 - ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.  
 - DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.  
 - SEDIMENT CONTROLS INTERRUPTED BY INSTALLATION OF UTILITY LINES ARE TO BE REPAIRED IMMEDIATELY.  
 - STABILIZATION IS TO BE DONE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STDS. & SPECS., WHICHEVER IS MORE RESTRICTIVE.  
 - FOR SOILS ONSITE THAT WOULD BE CONSIDERED HIGHLY ERODIBLE BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT, MORE STRINGENT SEEDING AND STABILIZATION METHODS MAY BE EXPECTED AT SITE DEVELOPMENT STAGE.  
 - REFER TO PLAN SHEET 06 FOR SEQUENCE OF CONSTRUCTION.  
 - REFER TO PLAN SHEET 07 FOR SEDIMENT TRAP STANDARD DETAILS.  
 - REFER TO PLAN SHEET 06 FOR STABILIZATION STANDARD DETAILS AND NOTES.

**NOTE:**  
 EITHER PERMANENT OR TEMPORARY STABILIZATION IS TO BE APPLIED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR REGARDLESS OF DAYS/DATES IN THE STANDARD SEDIMENT CONTROL NOTES AND/OR SEEDING SPECIFICATIONS.

**NOTE:** LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED. SEE STABILIZATION SPEC'S SHEET 4.

**SEDIMENT CONTROL - DIVERSION FENCE - DRAINAGE AREA CHART**

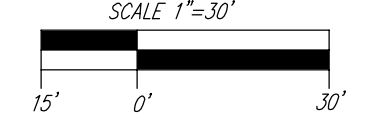
AREA	PRACTICE DESCRIPTION	DETAIL NO.	AREA ACRES	TYPE	SIZE	SLOPE	SLOPE LENGTH
3	DIVERSION FENCE #1	C-9	0.02	-	-	2.2%	-
4	DIVERSION FENCE #2	C-9	0.11	-	-	0.9%	-
5	DIVERSION FENCE #3	C-9	0.28	-	-	5.6%	-

**SEDIMENT CONTROL - PSSMC - VELOCITY CHART**

PRACTICE DESCRIPTION	DETAIL NO.	AREA ACRES	VEL	SLOPE	COMPUTED SHEAR STRESS	USE PSSMC SHEAR STRESS
SIDE YARD SWALE / TSSMC #2A	B-4-6-C	0.23	4.83	5.3%	0.53 LB/SF	1.5 LB/SF
SIDE YARD SWALE / TSSMC #2B	B-4-6-C	0.10	2.72	2.0%	0.18 LB/SF	1.5 LB/SF
SIDE YARD SWALE / TSSMC #3A	B-4-6-C	0.08	3.16	3.5%	0.26 LB/SF	1.5 LB/SF
SIDE YARD SWALE / TSSMC #3B	B-4-6-C	0.08	2.82	2.6%	0.20 LB/SF	1.5 LB/SF
SIDE YARD SWALE / TSSMC #3C	B-4-6-C	0.03	2.00	2.0%	0.11 LB/SF	1.5 LB/SF

**GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN**

SCALE 1"=30'



**NOTE:**  
 - HOUSES MAY NOT BE BUILT USING THIS PLAN.

**MAPPED SOILS TYPES - CLARKSVILLE NW / NE MAP #16 / 17**

SYMBOL	NAME / DESCRIPTION	GROUP	K-FACTOR	HYDRIC	HYDRIC INCLUSIONS	PRIME FARMLAND	<15% SLOPE W/ EROSION POTENTIAL
ChC	CHILLUM-RUSSETT LOAMS, 5-10 PERCENT SLOPES	C	.43	NO	NO	*YES	YES
LdD	LEGORE-RELAY GRAVELLY LOAMS, 15 TO 25 PERCENT SLOPES	C	.64	NO	NO	NO	YES

TAKEN FROM: USDA, SCS-WEB SOIL SURVEY, HOWARD COUNTY \*FARMLAND OF STATEWIDE IMPORTANCE

**NOTES:**  
 1. HIGHLY ERODIBLE SOILS ARE THOSE SOILS WITH A SLOPE GREATER THAN 15 PERCENT OR THOSE SOILS WITH A SOIL ERODIBILITY FACTOR K GREATER THAN 0.35 AND WITH A SLOPE GREATER THAN 5 PERCENT.  
 2. ALL SOILS WITHIN THE DEVELOPMENT AREA ARE CONSIDERED HIGHLY ERODIBLE SOILS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DocuSigned by:  
 Chad Edmondson  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 11/27/2023

DocuSigned by:  
 [Signature]  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 11/15/2023

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

DocuSigned by:  
 Jae Wook Shin  
 OWNER/DEVELOPER SIGNATURE  
 DATE: 12/5/2022  
 PRINTED NAME & TITLE

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

DocuSigned by:  
 Rob Vogel  
 DESIGNER'S SIGNATURE  
 DATE: 12/5/2022  
 ROBERT H. VOGEL  
 PRINTED NAME  
 MD REGISTRATION NO. 16193  
 (E) R.L.S., OR R.L.A. (circle one)

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

DocuSigned by:  
 Alexander Bratichie  
 DATE: 11/16/2023  
 HOWARD S.C.D.

**OWNER/DEVELOPER**  
 JAE WOOK SHIN  
 4935 WHARFF LANE  
 ELLICOTT CITY, MD 211043  
 (202) 415-7414

NO.	REVISION	DATE

**FINAL SUPPLEMENTAL PLAN**  
**GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN**  
**WHARFF LANE**  
 LOTS 1-3  
 4935 WHARFF LANE  
 SINGLE FAMILY RESIDENTIAL  
 L 17968 / F. 00281  
 ZONED: R-20  
 PARCEL 401  
 HOWARD COUNTY, MARYLAND

**VOGEL ENGINEERING**  
 TIMMONS GROUP  
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 211043  
 P: 410.461.7666 F: 410.461.8961 www.timmons.com

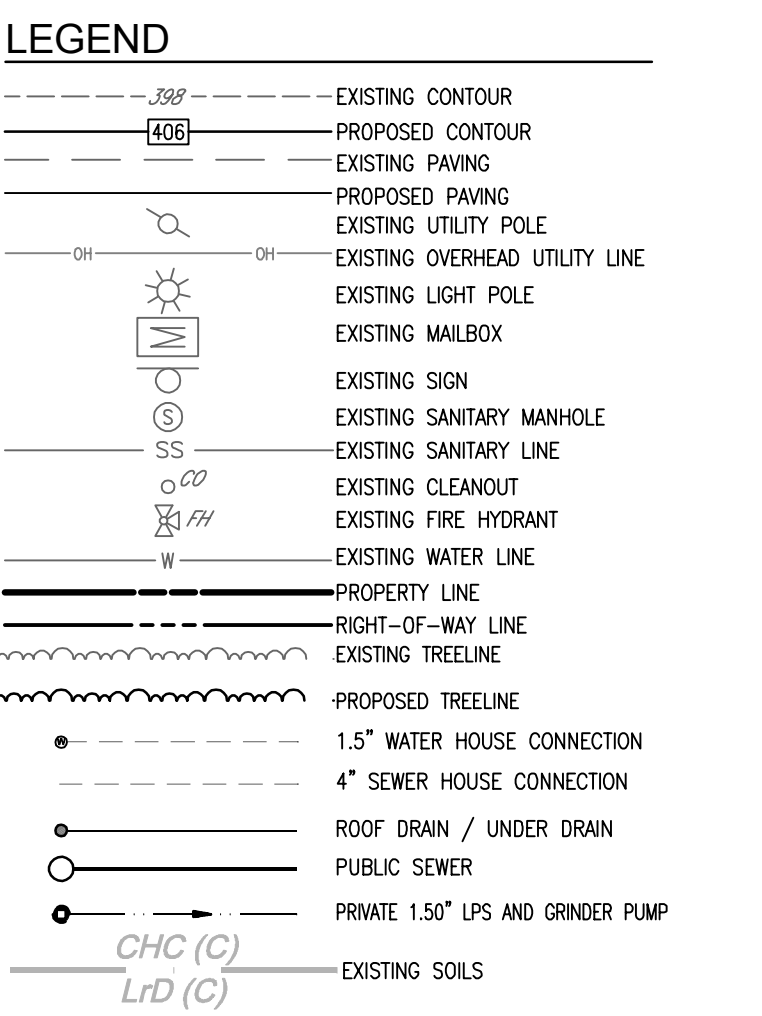
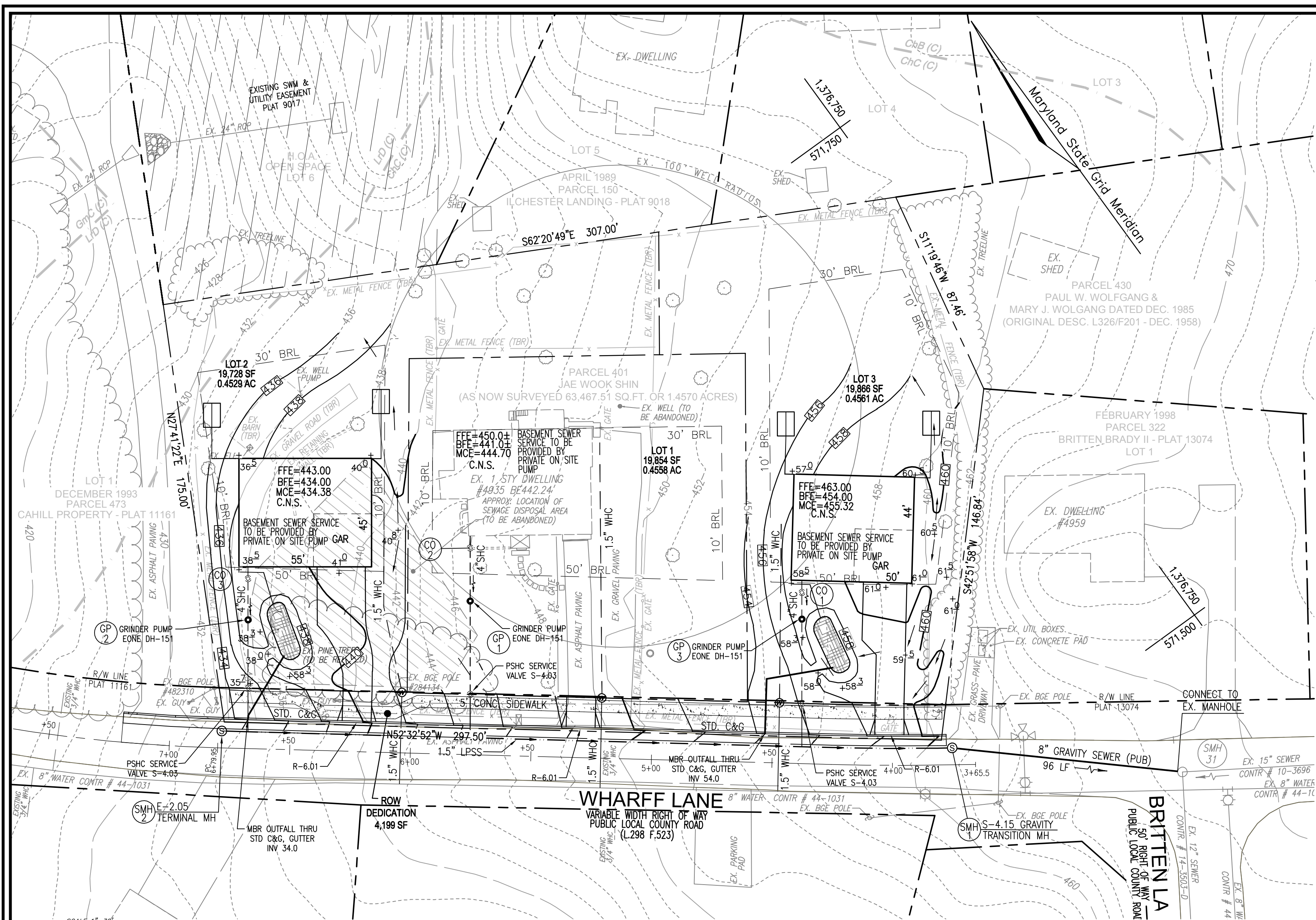
DESIGN BY: RHW/GAH/EDS  
 DRAWN BY: GAH/EDS  
 CHECKED BY: RHW  
 DATE: NOVEMBER 2022  
 SCALE: AS SHOWN  
 W.O. NO.: 42431

PROFESSIONAL CERTIFICATE  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A SOIL LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. MY LICENSE NO. IS 16193. EXPIRATION DATE: 07-27-2024

DocuSigned by:  
 Rob Vogel  
 ROBERT H. VOGEL, PE No.16193

3 SHEET OF 6





**NOTES**

- THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:
  - MISS UTILITY: 1-800-257-7777
  - VERIZON TELEPHONE COMPANY: 1-410-954-6281
  - HOWARD COUNTY BUREAU OF UTILITIES: 410-313-2366
  - AT&T CABLE LOCATION DIVISION: 1-800-393-3553
  - B.G.&E. CO. CONTRACTOR SERVICES: 410-850-4620
  - B.G.&E. CO. UNDERGROUND DAMAGE CONTROL: 410-787-4620
  - STATE HIGHWAY ADMINISTRATION: 410-531-5533
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- THE CONTRACTOR SHALL NOTIFY HOWARD COUNTY - UTILITIES, 48 HOURS IN ADVANCE OF WORK (410) 313-4958.
- ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS.

APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.

**CONSTRUCTION NOTES FOR ADVANCE DEPOSIT ORDER (A.D.O.) WORK IN THE PUBLIC RIGHT-OF-WAY**

**PART I GENERAL CONSTRUCTION NOTES**

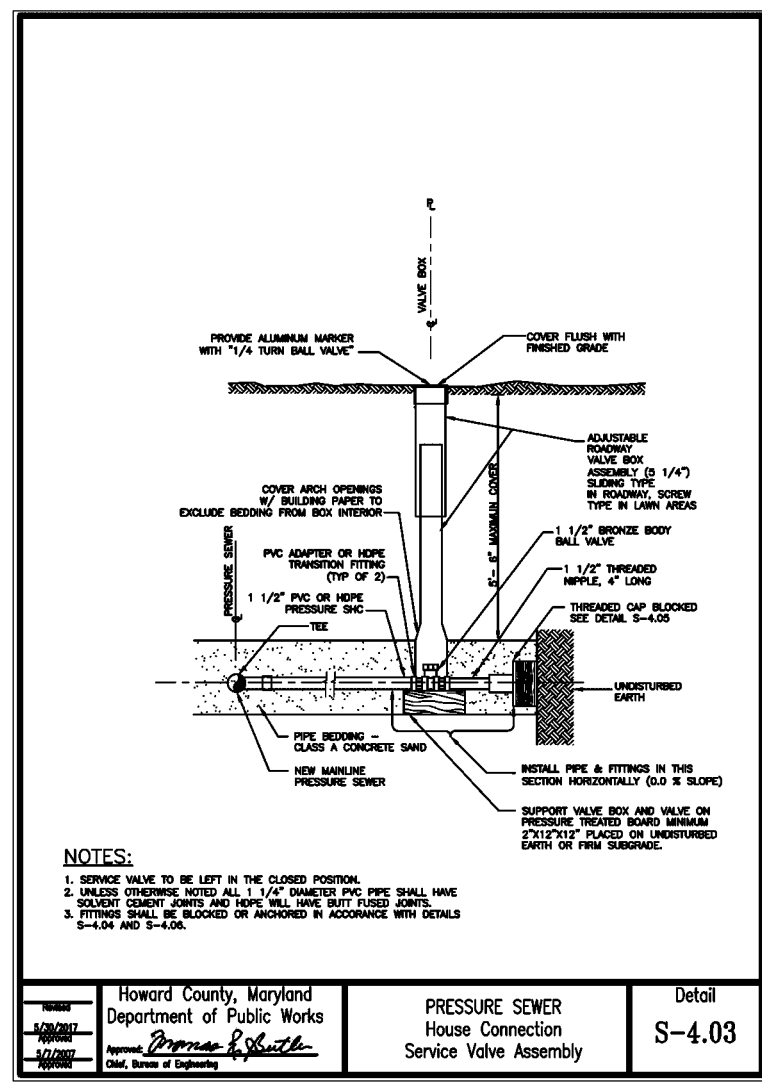
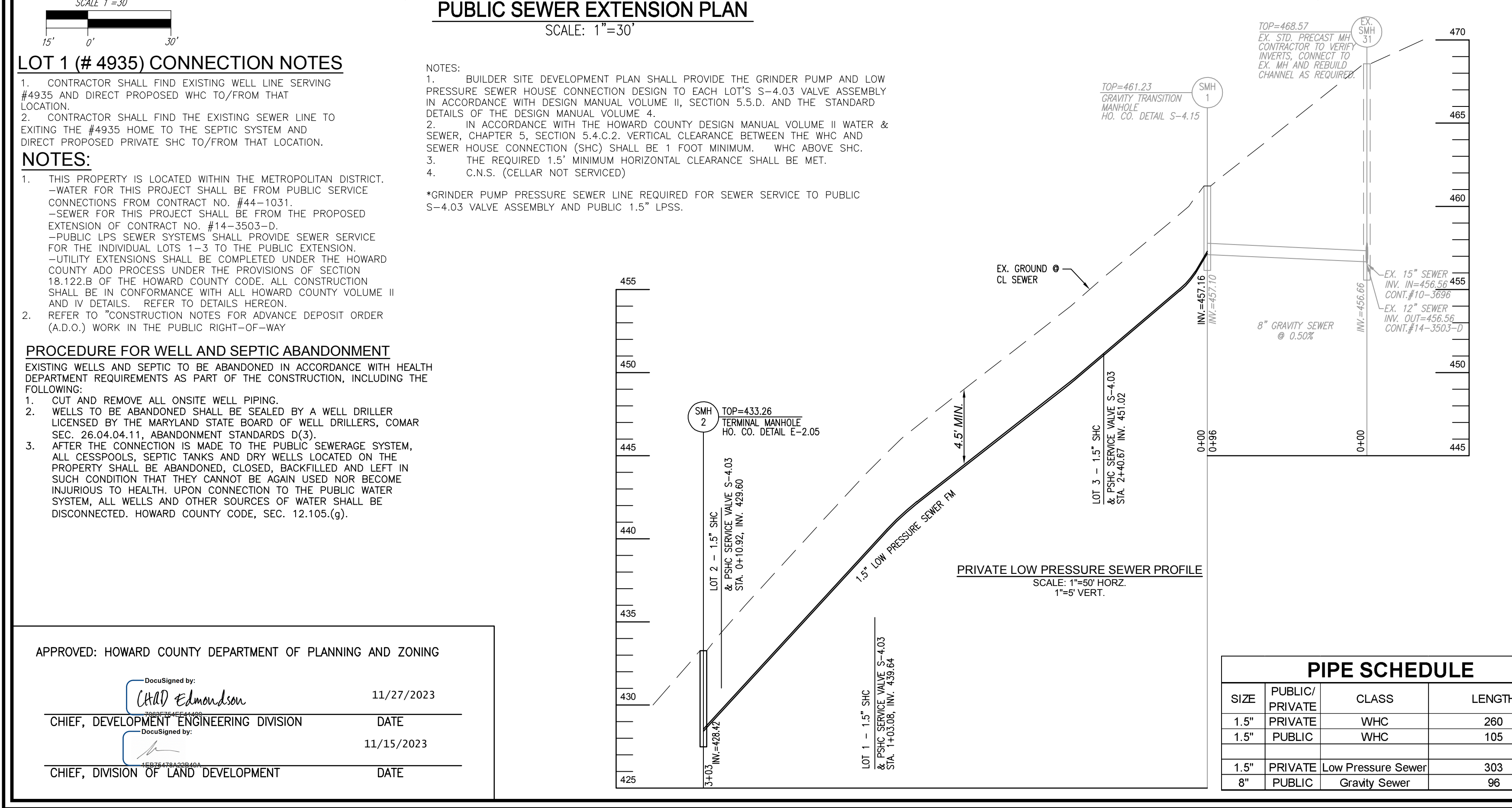
- For details not shown on the drawing, and for materials and construction methods, use Howard County Design Manual, Volume IV, Standard Specifications and Details for Construction (Latest Edition). The contractor shall have a copy of Volume IV on the job.
- The A.D.O. construction work must be performed under the continuous inspection of the Howard County Bureau of Utilities. The contractor shall notify the Bureau of Utilities (Mr. Harry Zelmer at 410-313-4942 or Mr. Don Campbell at 410-313-1438) at least five (5) days prior to the start of any construction for this A.D.O.
- Clear all utilities by a minimum of 12 inches. Clear all poles by 5'0" minimum or tunnel as required unless otherwise noted. The contractor shall coordinate with the utility companies to schedule the bracing of the poles.
- The contractor shall notify all utilities and agencies and Miss Utility at least two (2) working days before starting work shown on the plans.
- Existing utilities in the vicinity of the proposed work for which test pits have not been dug shall be located by the contractor in advance of construction operations at his own expense.
- The contractor shall notify the Howard County Bureau of Highways, 410-313-7450, at least five working days before open cutting or boring/jacking of any County road for laying water or sewer mains or service connections.
- Work performed within Maryland State Highway Administration (MSHA) right-of-way shall be performed in accordance with the MSHA permit issued for the contract. The contractor shall notify the Maryland State Highway Administration, 410-313-5533, at least five (5) working days before excavating within the Maryland State Highway right-of-way for laying water or sewer mains or service connections.
- Excavations must be supported for the protection of workers, the construction work area and adjacent property. Refer to Temporary Excavation Support Systems under Section 1000.03.03 of the Standard Specifications.
- Excavations must be kept well drained at all times. Dewatering, drainage and pumping is required during construction. Refer to Dewatering, Drainage and Pumping under Section 1000.03.03 of the Standard Specifications. Pumps must be the proper type and capacity to maintain a dry work area.
- The use of steel plates to protect the trench and roadway shall be as specified under Section 1000.03.05, Section 104 and Standard Detail Plate G-4.02 of the Standard Specifications.
- Temporary and permanent repair of roadway openings shall be as specified under Section 1000.03.08 and Standard Detail Plate G-4.01 of the Standard Specifications unless otherwise specified by Permit from the authority having jurisdiction. Temporary paving shall consist of not less than 12 (twelve) inches of crushed stone and 2 (two) inches of bituminous cold patch material.

**PART II WATER CONSTRUCTION NOTES**

- All water mains shall be D.I.P., Class 54 minimum, or AWWA C900/C905 P.V.C. pipe, Class DR18 minimum.
- Tops of all water pipes shall have not less than 4'0" of cover unless otherwise noted.
- Valves adjacent to tees shall be strapped to tees.
- Fire hydrants shall be set to the bury line elevations shown on the Plans. All fire hydrants shall be installed in accordance with Standard Details. The soil around the fire hydrant shall be compacted in accordance with Sections 1000 and 1005 of the Standard Specifications.
- All fittings shall be buttressed or anchored with concrete in accordance with Standard Details unless otherwise provided for on the drawings.
- The contractor shall notify the Bureau of Utilities at least 48 hours in advance of scheduled shutdowns of the existing water main. Shutdowns of the existing water main for new connections and removal of existing service connections shall be as specified under Section 1002.06 - Connections of the Standard Specifications.
- The contractor shall not operate any water main valves on the existing water system.
- Water service connections shall be as specified under Section 1004-Water House Service and Appurtenances of the Standard Specifications and Standard Detail Plate. The minimum size of a single residential WHC for new residential construction is 1-1/2 inch diameter with 1-inch meter. Installation of the water meter is not part of the A.D.O. construction work. Water service connections include pressure and leak testing, disinfection and bacteriological testing.
- [For commercial meters] The new water meter assembly shall be the (type) per Howard County Detail Plate W-3.24. Installation of the water meter is not part of the A.D.O. construction work.
- If the existing water meter will be moved to the new meter connection inside the building, the contractor shall contact the Meter Division of the Bureau of Utilities at 410-313-4948 to schedule relocation of the meter setting.
- The abandonment of existing water service connections shall be as specified under Section 1015.03 of the Standard Specifications. Removal of the existing corporation stop or tapping saddle requires a scheduled shutdown of the water main. The existing corporation stop shall be removed from the water main and the pipe repaired with a County approved stainless steel full circle repair clamp such as Ford Meter F52, Mueller 550 or Romac SS2 series.
- Tracer wire and continuity test stations shall be installed on all water mains in accordance with Detail Plate G-8.21 of the Standard Specifications.
- Proper Assembly of Gasketed PVC Pipe Joints. The manufacturer's insertion line of gasketed PVC pipe joints indicates the maximum depth of insertion of the spigot into the bell. After assembly of the joint, the line shall remain visible. Dual insertion lines on gasketed PVC pipe indicate the maximum and minimum depth of insertion of the spigot into the bell.
- Tees, crosses, bends greater than 5 degrees, and similar fittings for use with C-900 PVC water pipe shall be ductile iron conforming to AWWA C153.
- All changes in horizontal or vertical direction of PVC water pipe shall be made with high-deflection couplings, 5 degree sweeps or standard bends. No bending of pipe or deflection of PVC pipe joints is permitted.
- Seventeen (17) pound sacrificial anodes shall be installed on all valves and ductile iron fittings used with PVC water mains in accordance with the Standard Specifications and Details. Magnesium anodes shall be installed on all iron valves and ductile iron fittings including restraints and harnesses. Zinc anodes shall be installed on all stainless steel fittings and saddles used with PVC water mains.

**PART III SEWER CONSTRUCTION NOTES**

- All sewer mains shall be D.I.P. or P.V.C. unless otherwise noted.
- All manholes shall be 4'0" inside diameter unless otherwise noted.
- Sewer force mains shall be D.I.P. unless otherwise noted.
- Sewer house connections shall be as specified under Section 1009.03 of the Standard Specifications and the Standard Details.
- House(s) with the symbol "C.N.S." indicates that the cellar cannot be served by a gravity sewer service connection.



**OWNER/DEVELOPER**

JAE WOOK SHIN  
4935 WHARFF LANE  
ELLCOTT CITY, MD 21043  
(202) 415-7414

**FINAL SUPPLEMENTAL PLAN**

**PUBLIC UTILITY EXTENSION PLAN, PROFILES SCHEDULES AND ADO PROCEDURES**

**WHARFF LANE**

LOTS 1-3  
4935 WHARFF LANE  
SINGLE FAMILY RESIDENTIAL ZONED: R-20  
L. 17968 / F. 00281 PARCEL 401  
TAX MAP 31 BLOCK 10 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

**VOGEL ENGINEERING**

**TIMMONS GROUP**

3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043  
P: 410.461.7666 F: 410.461.8961 www.timmons.com

**DESIGN BY:** RHV/GAH/EDS  
**DRAWN BY:** GAH/EDS  
**CHECKED BY:** RHV  
**DATE:** NOVEMBER 2022  
**SCALE:** AS SHOWN  
**W.O. NO.:** 42431

**PROFESSIONAL CERTIFICATE**

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 1193 EXPIRATION DATE: 09-27-2024

**5** SHEET OF **6**

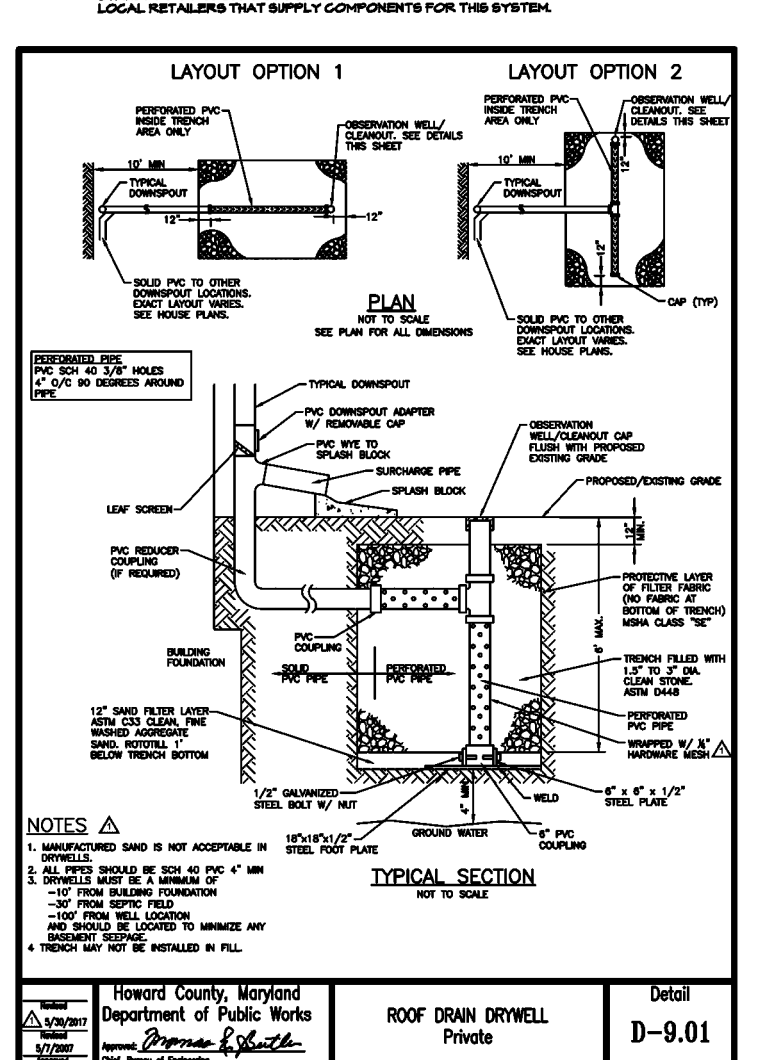
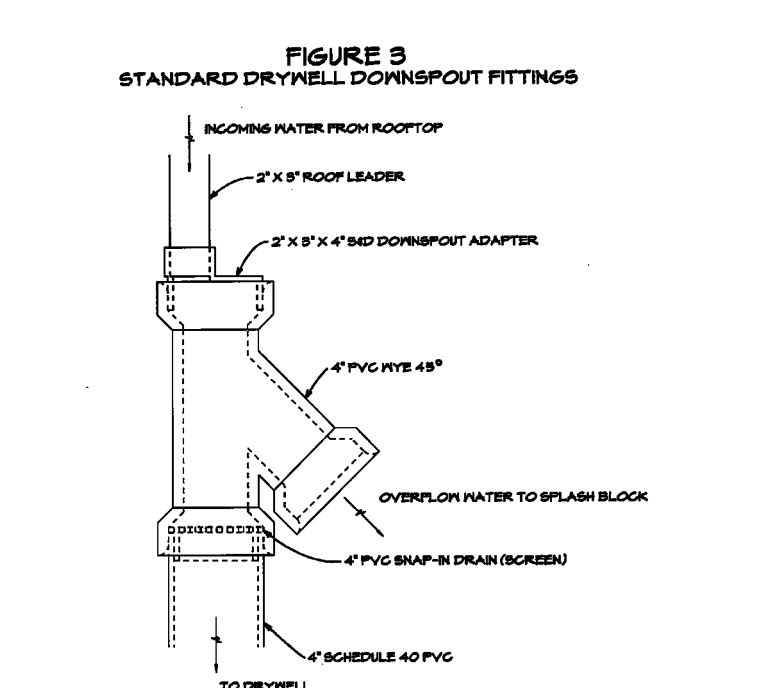
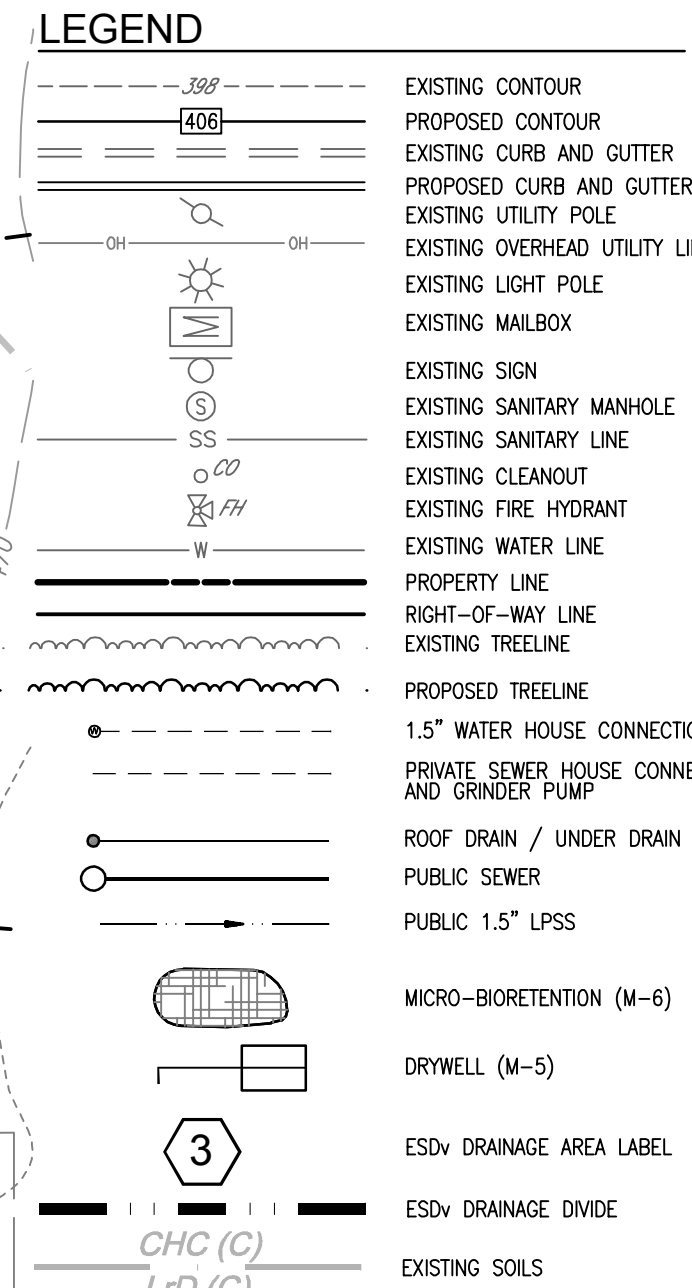
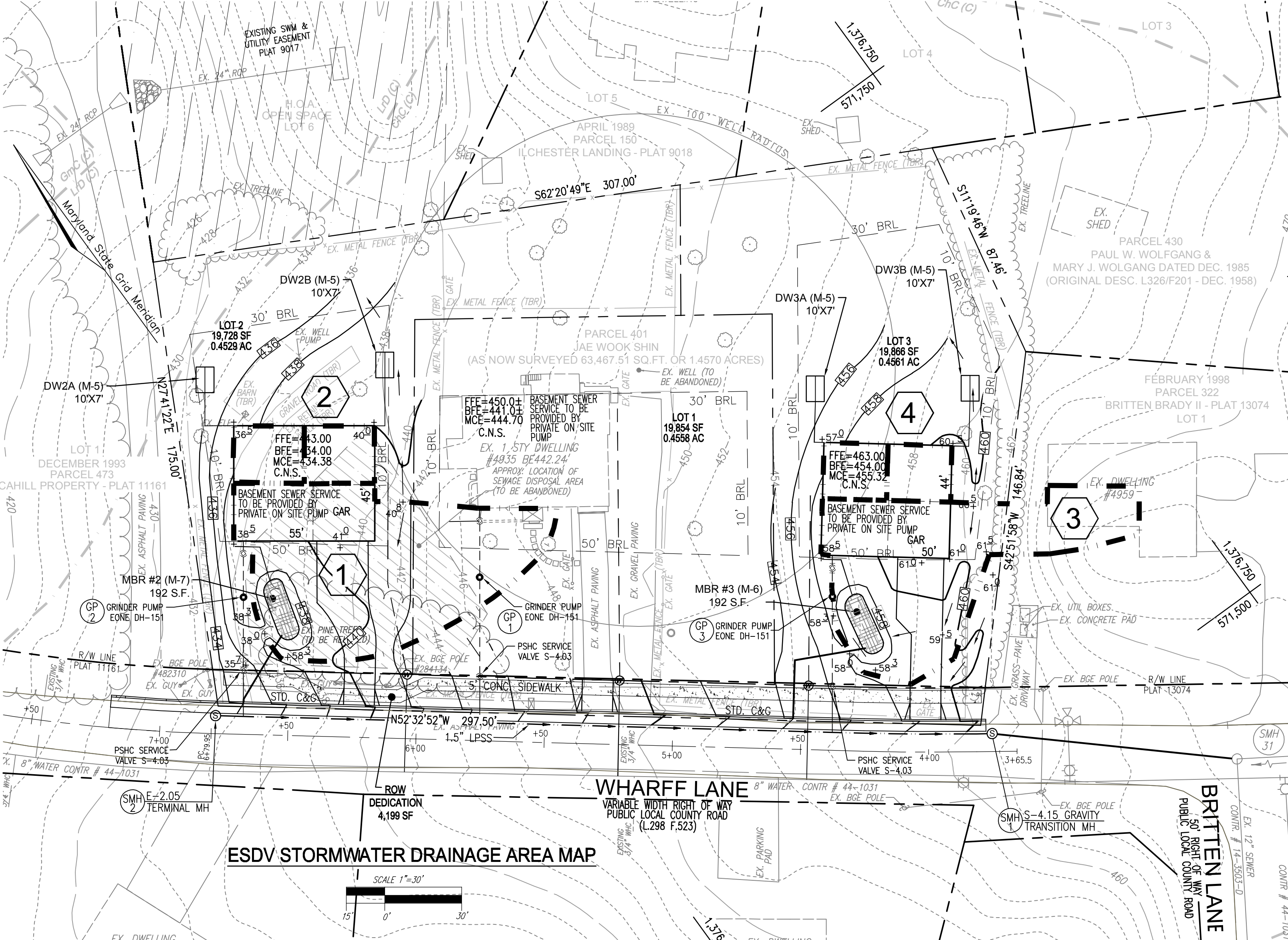
**APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING**

DocuSigned by:  
**Chad Edmondson** 11/27/2023  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DocuSigned by:  
**Chad Edmondson** 11/15/2023  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

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

- MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.
- FILTERING MEDIA OR PLANTING SOIL**  
THE SOIL SHALL BE A UNIFORM MIX. FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVIDE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERNOLA GRASS, CLOVERGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:  
  - SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION).
  - ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35%-40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
  - CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 0%.
  - PH RANGE - SHOULD BE BETWEEN 6.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.
 THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH AND ADDITIONAL TESTS OF ORGANIC MATTER AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.
- COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADERS, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TREADS. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL BE CONSIDERED CONTRIBUTIVE TO DESIGN FAILURE. COMPACTION CAN BE ALLEVATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COORDINATION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.  
 ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE. WHEN BACKFILLING THE SAND LAYER, FIRST PLACE 2 TO 4 INCHES OF TOPSOIL OVER THE SAND. THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MESH TRACKS.
- PLANT MATERIAL**  
RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.
- PLANT INSTALLATION**  
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. FINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.  
 ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS. THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DURING A MINIMUM 18-MONTH PERIOD IS ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.
- UNDERDRAINS**  
UNDERDRAINS MEET THE FOLLOWING CRITERIA:  
  - PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS 28, OR ASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).
  - PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4x4) GALVANIZED HARDWARE CLOTH.
  - GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
  - THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
  - A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
  - A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".
 THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).
- MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.



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

Material	Specification	Notes
Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Media	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%
Planting Soil	See Appendix A, Table A.1	ESDv soil types loamy sand or sandy loam; clay content < 2%