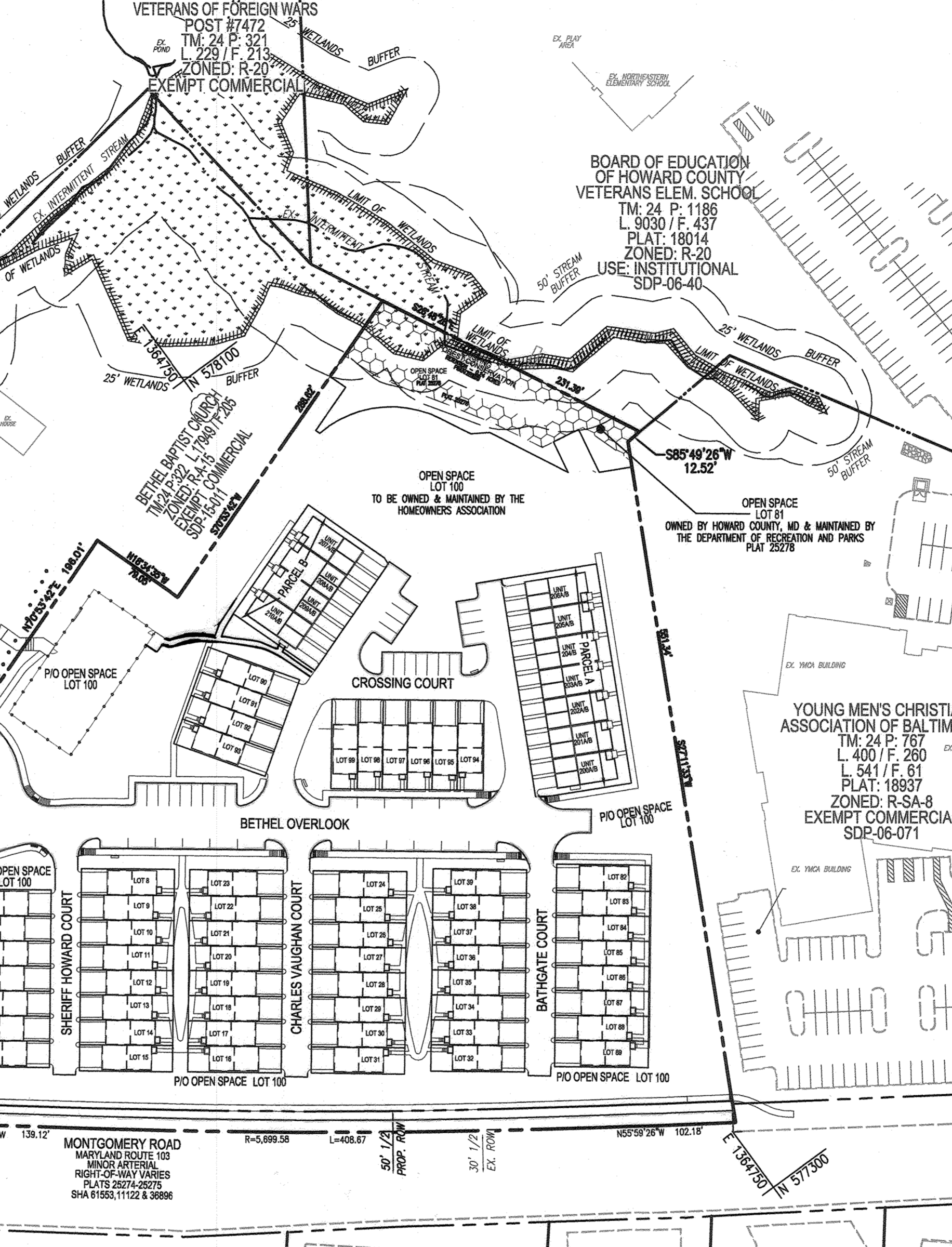
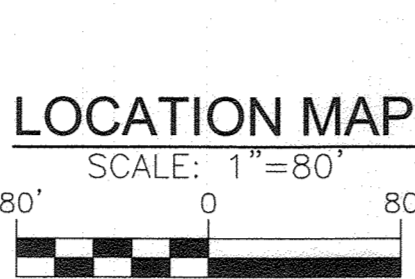


GENERAL NOTES

- 1. PROJECT BACKGROUND: TAX MAP 24 BLOCK 24... 2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION... 3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777... 4. ALL ASPECTS OF THE PROJECT ARE IN CONFORMANCE WITH THE LATEST HIGHEST STANDARDS UNLESS OTHERWISE SPECIFIED... 5. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)... 6. THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY ROBERT H. VOGEL... 7. THE PROJECT BOUNDARY IS BASED ON A BOUNDARY SURVEY PREPARED BY ROBERT H. VOGEL ENGINEERING, INC... 8. ON NOVEMBER 21, 2017 A CONFIRMATORY DEED TO CONSOLIDATE PARCELS 322, 323, 324, 325, 326 AND 327 WAS RECORDED... 9. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM... 10. THE SUBJECT PROPERTY IS ZONED R-A-15 IN ACCORDANCE WITH THE 10/06/13 COMPREHENSIVE ZONING PLAN... 11. AND IS SUBJECT TO THIS PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS... 12. EXISTING UTILITIES ARE BASED ON HOWARD COUNTY RECORDS, FIELD SURVEY, AND AVAILABLE RECORD DRAWINGS... 13. SHC ELEVATIONS ARE LOCATED AT THE PROPERTY LINE / EDGE OF EASEMENT... 14. ALL DRIVEWAY ENTRANCES SHALL UTILIZE HOWARD COUNTY STANDARD DETAIL NO. R-6-03.5... 15. THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING... 16. IN ACCORDANCE WITH SECTION 128 OF THE HOWARD COUNTY ZONING REGULATIONS, BAY WINDOWS, CHIMNEYS, OR EXTERIOR STAIRWAYS NOT MORE THAN 16 FEET IN WIDTH... 17. NO GRADING, REMOVAL OF VEGETATION OR TREES, PAING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN FORESTED WETLANDS... 18. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT OF WASHINGTON... 19. WATER AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE... 20. PUBLIC WATER AND SEWER ALLOCATION WILL BE GRANTED AT THE TIME OF ISSUANCE OF THE BUILDING PERMIT... 21. TO THE BEST OF THE OWNER'S KNOWLEDGE, THERE ARE NO BURIAL GROUNDS OR CEMETERIES LOCATED ON THIS PROPERTY... 22. THE PROJECT HAS GONE BEFORE THE HISTORIC DISTRICT COMMISSION... 23. THE PROPOSED UTILITIES SHALL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM... 24. THERE IS NO 100-YR FLOODPLAIN WITHIN THE LIMITS OF THIS PROJECT... 25. A FOREST CONSERVATION PLAN PREPARED BY ROBERT H. VOGEL ENGINEERING, INC. IS PART OF THIS SITE DEVELOPMENT PLAN... 26. FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO COMPLY WITH THE REQUIREMENTS OF SECTION 18.122.D OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS... 27. FOREST STAND DELINEATION PLAN PREPARED BY GEORGE PROFESSIONALS, INC. C/O MR. JOHN CANOLES, AUGUST 2011 AND AUGUST 2013... 28. MONTGOMERY ROAD IS CLASSIFIED AS A MINOR ARTERIAL... 29. SIGNAL MODIFICATION AT THE PROPOSED INTERSECTION OF ROAD A, LONG GATE SHOPPING CENTER AND MD RTE 103 SHALL BE COORDINATED... 30. PRIVATE BETHEL BAPTIST CHURCH CROSSING COURT ACCESS... 31. A TRAFFIC STUDY WAS PREPARED BY THE TRAFFIC GROUP, INC. DATED MARCH 25, 2014... 32. THE LANDSCAPE PLAN WAS PREPARED IN ACCORDANCE WITH SECTION 16.124(F)(1) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS... 33. STREET TREES HAVE BEEN PROVIDED FOR THIS PROJECT... 34. OPEN SPACE LOT 100 TO BE OWNED AND MAINTAINED BY A HOME OWNERS ASSOCIATION... 35. ESTIMATES OF EARTHWORK QUANTITIES ARE PROVIDED SOLELY FOR THE PURPOSE OF CALCULATING FEES... 36. SOIL COMPACTION SPECIFICATIONS, REQUIREMENTS, METHODS AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS... 37. THE GEOTECHNICAL ENGINEER TO CONFIRM PAVING SECTION PRIOR TO CONSTRUCTION... 38. SEE CONTRACT # 14-4822-D & 14-5144-D... 39. DRIVEWAY SLOPES SHALL BE NO GREATER THAN 15% UNLESS APPROVED BY DEED... 40. MINIMUM GRADIENT FOR CONCRETE OR OTHER IMPERVIOUS SURFACES SHALL BE 1/16" PER FOOT (0.6%)... 41. MAXIMUM GRADIENT SHALL BE 2-1/2" PER FOOT (21%)... 42. A NOISE STUDY WAS PREPARED FOR THIS PROJECT BY ROBERT H. VOGEL ENGINEERING, INC. DATED MARCH 2014... 43. NOISE WALL CONFORMING TO THE DETAILS AND SPECIFICATIONS SHOWN ON SHEETS 30 AND 31... 44. ALL CURB AND GUTTER TO BE HOWARD COUNTY STANDARD DETAIL 3.01 UNLESS OTHERWISE NOTED... 45. WHERE DRAINAGE FLOWS AWAY FROM CURB, CONTRACTOR TO REVERSE THE CUTTER PAN... 46. ALL ELEVATIONS ARE TO FINISHING/BOTTOM OF CURB UNLESS OTHERWISE NOTED... 47. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED... 48. CONTRACTOR RESPONSIBLE FOR CONSTRUCTING ALL HANDICAP RAMPS AND HANDICAP ACCESS IN ACCORDANCE WITH CURRENT ADA REQUIREMENTS... 49. TRASH AND RECYCLING COLLECTION WILL BE PROVIDED BY A PRIVATE REVERSE CONTRACTOR FOR EACH INDIVIDUAL UNIT... 50. THIS PLAN IS SUBJECT TO A DESIGN MANUAL, WAIVER OF DESIGN MANUAL VOLUME II, SECTIONS 4.3.B.3.5, 4.5.F AND 5.3... 51. THIS PLAN IS SUBJECT TO WP 15-036, ON OCTOBER 23, 2014... 52. THE FOLLOWING STANDARDS (CONSTRUCTION AND TEMPORARY TRAFFIC CONTROL) ARE REQUIRED FOR THIS PROJECT... 53. THE MODERATE INCOME HOUSING UNIT AGREEMENT FOR THE 8 DWELLING UNITS WAS RECORDED WITH PLAT F-18-048... 54. THE MODERATE INCOME HOUSING UNIT COVENANTS AND RESTRICTIONS FOR THE 5 LOW INCOME HOUSING UNITS (LIHU), WERE RECORDED WITH PLAT F-16-048... 55. IN ACCORDANCE WITH SECTION 16.121(A)(2) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS... 56. PRIVATE RANGE OF ADDRESS SIGNS AND/OR PRIVATE ROAD STREET NAME SIGNS (SNS) SHALL BE FABRICATED AND INSTALLED BY HOWARD COUNTY BUREAU OF ENGINEERING... 57. THIS PROJECT SHALL BE IN ACCORDANCE WITH THE SHA US 28 / MD 103 - (H02275187) PROJECT... 58. THE OFFICIAL PRE-SUBMISSION COMMUNITY MEETING WAS HELD FOR THE PROJECT ON NOVEMBER 21, 2013 AT THE ELLICOTT CITY SHOPPING CENTER

PROJECT BOUNDARY LINE TABLE with columns for LINE, COURSE, DISTANCE, BEARING, and POINT.

SITE DEVELOPMENT PLAN LONG GATE OVERLOOK LOTS 1-39, 82-99, BUILDABLE PARCELS A & B AND OPEN SPACE LOT 100

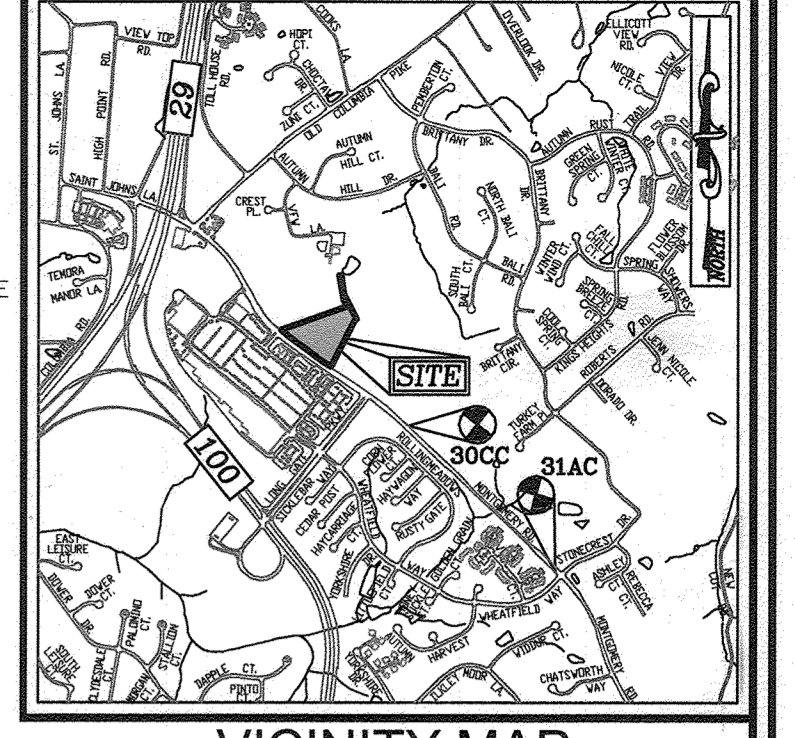


PERMIT INFORMATION CHART with columns for SUBDIVISION NAME, SECTION/AREA, LOT/ PARCEL, and TAX MAP.

LEGEND table listing symbols for PROPERTY LINE, RIGHT-OF-WAY LINE, ADJACENT PROPERTY LINE, CENTERLINE OF EXISTING STREAM, EX. FOREST CONSERVATION EASEMENT, etc.

PARKING TABULATION table showing total number of dwelling units, off-street parking spaces, and on-street parking spaces.

SITE ANALYSIS DATA CHART table with columns A through T, detailing project area, slopes, zoning, and other site characteristics.



SHEET INDEX table with columns for SHEET NO. and DESCRIPTION.

RECREATION OPEN SPACE TABULATION table showing total recreation open space required and provided.

OWNER / DEVELOPER information including contact details for BEAZER HOMES and ATTN: J. MARTIN SHAFER, AREA PRESIDENT.

MHU AGREEMENT table detailing the terms of the Moderate Income Housing Unit agreement.

ADDRESS CHART table listing lot numbers and corresponding street addresses.

REVISED SITE DEVELOPMENT PLAN COVER SHEET with revision table and project details.

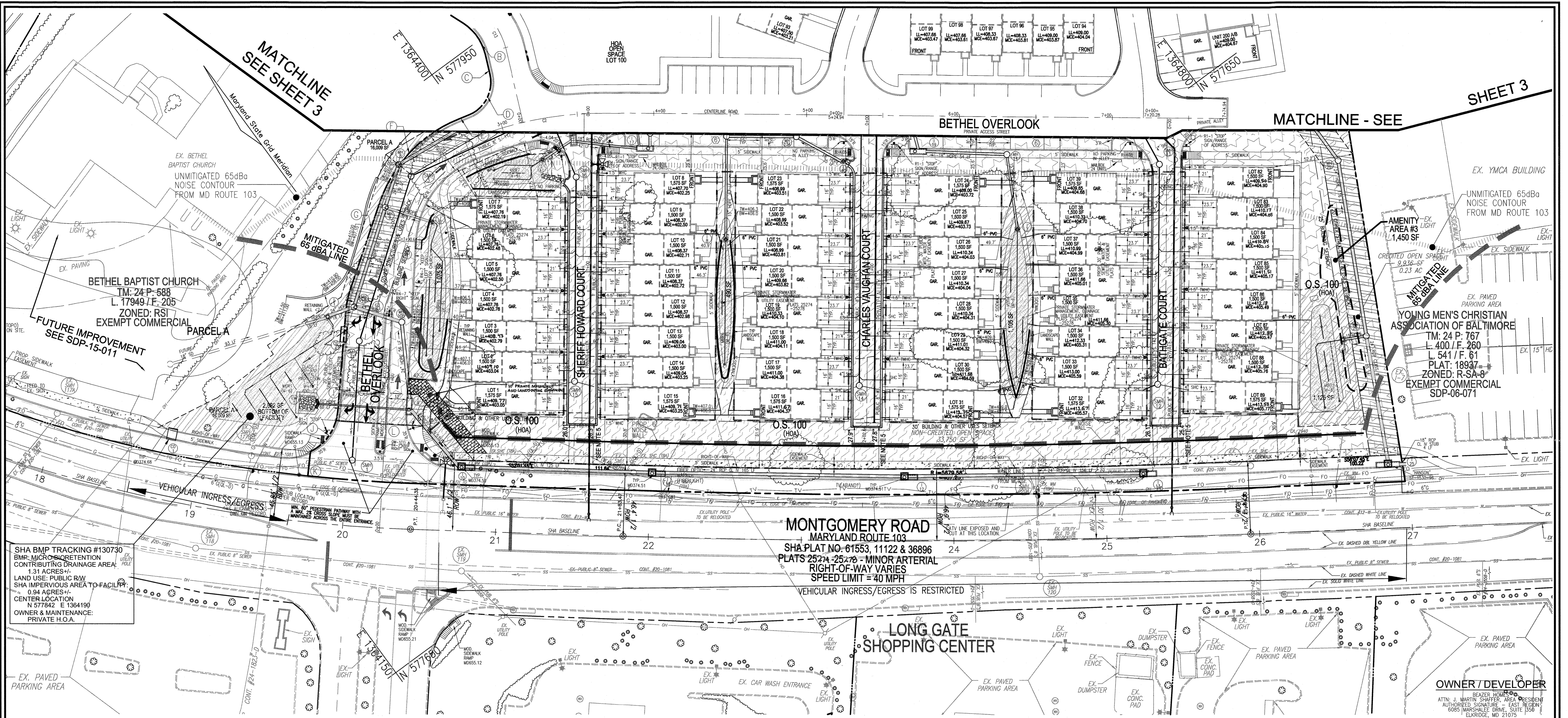
Professional engineering stamps for VOGEL ENGINEERING and TIMMONS GROUP, including license numbers and signatures.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING with signatures and dates for the Chief, Development Engineering Division and Chief, Division of Land Development.

SEE SHEET 3 FOR ADDITIONAL GENERAL NOTES

MATCHLINE
SEE SHEET 3

SHEET 3



SHA BMP TRACKING #130730
BMP MICRO BIORETENTION
CONTRIBUTING DRAINAGE AREA:
1.31 ACRES +/-
LAND USE: PUBLIC R/W
SHA IMPERVIOUS AREA TO FACILITY:
0.94 ACRES +/-
CENTER LOCATION
N 577842 E 1364190
OWNER & MAINTENANCE:
PRIVATE H.O.A.

EX. YMCA BUILDING
UNMITIGATED 65dBa
NOISE CONTOUR
FROM MD ROUTE 103

AMENITY EX LIGHT
AREA #3
1,450 SF

CREDITED OPEN SPACE
9,936 SF
0.23 AC

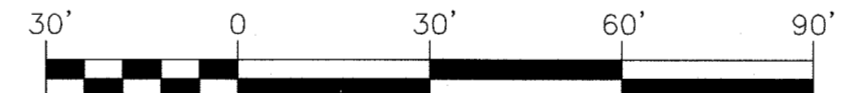
EX. MITIGATED
65 DBA LINE

EX. PAVED
PARKING AREA

YOUNG MEN'S CHRISTIAN
ASSOCIATION OF BALTIMORE
TM: 24 P. 767
L. 400 / F. 260
PLAT: 18937
ZONED: R-SA-8
EXEMPT COMMERCIAL
SDP-06-071

MONTGOMERY ROAD
MARYLAND ROUTE 103
SHA PLAT NO. 61553, 11122 & 36896
PLATS 25274-25278 - MINOR ARTERIAL
RIGHT-OF-WAY VARIES
SPEED LIMIT = 40 MPH
VEHICULAR INGRESS/EGRESS IS RESTRICTED

SITE LAYOUT PLAN
SCALE: 1" = 30'



LEGEND:

PROPERTY LINE	EXISTING TREELINE
RIGHT-OF-WAY LINE	STORMDRAIN
ADJACENT PROPERTY LINE	STORMDRAIN INLET
EXISTING CURB AND GUTTER	PROPOSED TREELINE
EXISTING UTILITY POLE	CURB
EXISTING LIGHT POLE	SIDWALK
EXISTING MAILBOX	MICRO BIORETENTION AREA
EXISTING SIGN	NON-CREDITED OPEN SPACE
EXISTING SANITARY MANHOLE	CREDITED OPEN SPACE
EXISTING SANITARY LINE	PRIVATE STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT
EXISTING CLEANOUT	PRIVATE DRAINAGE & UTILITY EASEMENT
EXISTING FIRE HYDRANT	10' PRIVATE MAINTENANCE AND LANDSCAPE EASEMENT
EXISTING WATER LINE	
EXISTING FENCE	
PRIVATE STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT	
PRIVATE DRAINAGE & UTILITY EASEMENT	
PRIVATE DRAINAGE & UTILITY EASEMENT	

- NOTES:**
- ADA RAMPS TO BE CONSTRUCTED TO SHA STANDARDS AS SPECIFIED HEREON.
 - WHEN CONSTRUCTING MD655.12 ON A RADIUS, ALL MEASUREMENTS MUST BE TAKEN FROM BACK OF RAMP.
 - REFER TO SHEETS 9 AND 31-32 FOR RETAINING WALL DETAILING
 - REFER TO SHEET 16 FOR NOISE WALL DETAILS.
 - APPROXIMATE POLE RELOCATIONS ARE SHOWN HEREON, BGE SHALL DETERMINE ACTUAL RELOCATED POSITIONS
 - TEST PITS REQUIRED THROUGHOUT STATIONS BL 18+00-27+00 TO DETERMINE LOCATIONS OF EXISTING UTILITIES. HORIZONTAL/VERTICAL ADJUSTMENTS MAY BE REQUIRED. SEE SHEET 1, NOTE 11.

TRENCH BACKFILL
TRENCH BACKFILL FOR STORM DRAINAGE AND UTILITIES SHALL CONFORM TO STANDARD DETAIL MD-578.01 OR AS DETAILED ON THE PLANS. IF STEEL PLATES ARE USED, THEY MUST BE 1" THICK MINIMUM, PROPERLY SECURED WITH ANCHORS AND TEMPORARY PAYMENT WEDGING, AND EXTEND 1 FOOT MINIMUM BEYOND ALL EDGES OF THE TRENCH. THE TRENCH SHALL BE BACKFILLED WITH FLOWABLE GRADE FILL FOR UTILITY CUTS OR OTHER APPROVED MATERIAL UP TO THE BOTTOM OF THE FULL DEPTH PAVEMENT PATCHING SECTION. THE FULL DEPTH PAVEMENT PATCHING SECTION, CONSISTING OF THE SPECIFIED GRADED AGGREGATE AND HOT MIX ASPHALT SHALL BE PLACED AND CONSTRUCTED TO BE FLUSH WITH EXISTING ROAD SURFACE GRADE. FOLLOWING THIS, THE PAVEMENT SHALL BE RESURFACED AS SHOWN ON THE PLANS. IF RESURFACING OF THE EXISTING ROADWAY IS NOT SHOWN ON THE PLANS, THE EXISTING PAVEMENT SHALL BE MAILED AND OVERLAD FOR 25 FEET IN EACH DIRECTION (MEASURED FROM THE CENTERLINE OF THE TRENCH) FOR THE FULL WIDTH OF THE ROADWAY. MILL OR GRIND 2" AND REPLACE WITH 2" OF THE ABOVE-NOTED HOT MIX ASPHALT SUPERPAVE MIX.

STREET SIGN LOCATION CHART

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
BETHEL OVERLOOK	0+52.8	2.5 LT.	KEEP RIGHT SIGN (R4-7)
BETHEL OVERLOOK	0+63.6	37.8 LT.	STOP SIGN (R1-1) *
BETHEL OVERLOOK	0+69.4	18.3 RT.	STREET NAME SIGN ASSEMBLY
BETHEL OVERLOOK	0+91.9	15.6 RT.	SPEED LIMIT 25 SIGN (R2-1)
BETHEL OVERLOOK	1+41.8	1.5 LT.	KEEP RIGHT SIGN (R4-7)
BETHEL OVERLOOK	1+64.9	16.7 RT.	KEEP LEFT SIGN (R4-7) W/ "CHURCH" SIGN
SHERIFF HOWARD COURT	0+17.5	16.8 LT.	STOP SIGN (R1-1) W/ RANGE OF ADDRESS SIGN
SHERIFF HOWARD COURT	0+28.2	14.7 RT.	NO PARKING
CHARLES VAUGHAN COURT	0+17.9	16.5 LT.	STOP SIGN (R1-1) W/ RANGE OF ADDRESS SIGN
CHARLES VAUGHAN COURT	0+18.2	16.4 RT.	NO PARKING
BATHGATE COURT	0+10.2	12.6 LT.	STOP SIGN (R1-1) W/ RANGE OF ADDRESS SIGN
BATHGATE COURT	0+17.1	24.1 RT.	NO PARKING

* TEMPORARY USE DURING CONSTRUCTION AS DIRECTED BY DPW
REFER TO SHEET 21 & 22 FOR MSHA REQUIRED SIGNS

CURVE DATA TABLE

ROAD NAME	CURVE	LENGTH	RADIUS	TANGENT	DELTA	CHORD BEARING	CHORD LENGTH
BETHEL OVERLOOK	C1	83.33	75.00	46.56	63°39'44"	S71°21'23"W	79.11

MD RTE 103 - CURVE DATA TABLE - BASELINE

STATION	LENGTH	RADIUS	TANGENT	DELTA	CHORD BEARING	CHORD LENGTH
16+45.47-20+44.35	398.89	954.93	202.40	23°56'00"	S39°54'56"E	396.00
21+83.47-25+94.30	410.83	5729.58	205.50	0°40'30"	N3°56'11"W	410.74

STREET LIGHT LOCATION CHART

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
BETHEL OVERLOOK	0+52.9	58.2' RT.	LED LUMINAIRE INSTALLED ON 27 FT STEEL POLE ASSOCIATED WITH NEW SIGNAL CONSTRUCTION
BETHEL OVERLOOK	7+53	12.5' RT.	100 WATT HPS VAPOR PREMIER POST-TOP FIXTURE MOUNTED ON A 14" BLACK FIBERGLASS POLE

LEGEND:

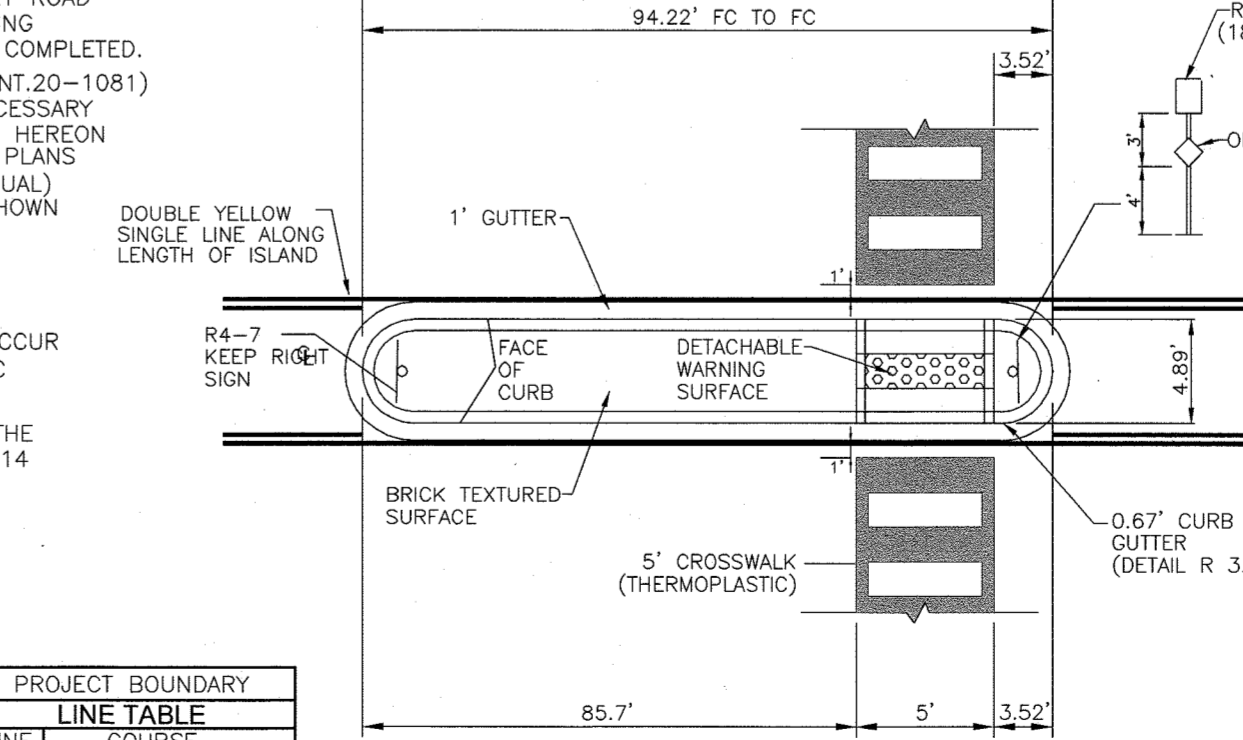
- PROPOSED STREET LIGHT 100 WATT HPS VAPOR PREMIER POST TOP
- PROPOSED STREET LIGHT 150 WATT HPS VAPOR PREMIER POST TOP
- PROPOSED STREET LIGHT REFER TO SHW 144PH001.3XX, SHT 30

STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM SPACING OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.

- NOTES:**
- "STOP SIGN" AT ROAD A / MONTGOMERY ROAD INTERSECTION IS TEMPORARY FOR USE DURING CONSTRUCTION UNTIL THE SIGNAL WORK IS COMPLETED.
 - EXISTING MANHOLES 117A & 117B (CONT. 20-1081) SHALL BE RECONSTRUCTED TO PROVIDE NECESSARY CLEARANCE FOR ROAD WIDENING AS SHOWN HEREON AND THE SHA US29/M103 - HOZ275187 PLANS AND THE SHA US29/M103 - HOZ275187 PLANS FOR THE MICRO-BIORETENTION FACILITIES SHOWN. HEREON IS LOCATED ON SHEET 9
 - ASSIGNED TOWNHOUSE ADDRESSES SHALL BE PLACED ON BOTH THE FRONT AND REAR OF THE UNITS.
 - CONSTRUCTION INCLUDING DECKS CAN OCCUR UP TO 10' FROM THE EDGE OF THE PUBLIC WATER & SEWER EASEMENT
 - SEE NOTE 59, SHEET 1 REGARDING THE DECISION AND ORDER FROM AA CASE 14-014 REGARDING ALLEY SETBACK FROM FUTURE MD 103 RIGHT-OF-WAY LINE
 - REFER TO SHEET 14 FOR BUILDING FOOTPRINTS AND GENERIC ELEVATIONS.

ROAD CLASSIFICATION

STREET NAME	CLASSIFICATION	DESIGN SPEED	LIMITS
BETHEL OVERLOOK	PRIVATE ACCESS STREET	25 MPH	STA. 0+00 TO 7+74.94
SHERIFF HOWARD COURT	PRIVATE ALLEY	15 MPH	STA. 0+00 TO 2+02.17
CHARLES VAUGHAN COURT	PRIVATE ALLEY	15 MPH	STA. 0+00 TO 2+02.64
BATHGATE COURT	PRIVATE ALLEY	15 MPH	STA. 0+00 TO 2+00.05



PROJECT BOUNDARY LINE TABLE

LINE	COURSE
B	R=33.00' L=26.50'
C	S23°09'45"W L=13.50'
D	R=23.00' L=32.60'
E	N75°37'28"W L=7.27'
F	R=90.00' L=77.50'
G	S55°32'27"W L=60.54'
H	R=52.00' L=12.72'
I	S40°57'57"W L=66.06'
J	R=33.00' L=33.72'
K	S24°10'06"W L=15.89'
L	N50°09'55"W L=57.90'
M	N05°29'45"W L=29.63'

NO.	REVISION	DATE
7	REVISE PERMISSIBLE SIDEWALK TO CONCRETE SIDEWALK ALONG RT 103	10-13-21
5	REVISE TO ADD MODIFIED CURB AND GUTTER	8-26-21
3	REVISE FRONT PORCH, POOR AND LEAD-WALK LOCATION, AMEND SIDEWALK, AMEND FF ELEV AND MINOR SPOT ELEV AMEND TENNIS COURT ELEV, REDUCE L-5 PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

REVISED SITE DEVELOPMENT PLAN
SITE LAYOUT PLAN
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
(SFA RESIDENTIAL)
2ND ELECTION DISTRICT
TAX MAP: 24 GRD: 24
092 REFS: SEE SITE ANALYSIS DATA CHART ON COVER SHEET
PARCEL(S): ZONED: R-A-15
SEE GENERAL NOTE 1
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: RHW/EDS.
DRAWN BY: VETG.
CHECKED BY: RHW.
DATE: JANUARY 2021
SCALE: AS SHOWN
W.O. NO.: 08-48

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. 16163 EXPIRATION DATE: 09-27-2022

ROBERT H. VOSEL, PE No. 16163

2 SHEET OF 37

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division 3-22-21
DATE

Chief, Division of Land Development 4/1/21
DATE

Director 5-3-21
DATE

LEGEND:

- PROPERTY LINE
RIGHT-OF-WAY LINE
ADJACENT PROPERTY LINE
EXISTING CURB AND GUTTER
EXISTING LIGHT POLE
EXISTING UTILITY POLE
EXISTING MAILBOX
EXISTING SIGN
EXISTING SANITARY MANHOLE
EXISTING SANITARY LINE
EXISTING CLEANOUT
EXISTING FIRE HYDRANT
EXISTING WATER LINE
EXISTING FENCE
CENTERLINE OF EXISTING STREAM
EXISTING TREE LINE
EXISTING WETLANDS
STORMDRAIN
STORMDRAIN INLET
SIDEWALK
PROPOSED TREE LINE
CURB
STREET SIGN
MICRO BIORETENTION AREA
EX. FOREST CONSERVATION EASEMENT PLAT 18014
FOREST CONSERVATION EASEMENT PLAT 25274-25278
NON-CREATED OPEN SPACE
CREATED OPEN SPACE

STREET SIGN LOCATION CHART
STREET NAME STATION OFFSET FIXTURE/POLE TYPE
BETHEL OVERLOOK 2+96.1 23.0' LT. STOP SIGN (R1-1)
CROSSING COURT 0+37(EAST) 16' LT. W/ RANGE OF ADDRESS SIGN
CROSSING COURT 0+35(WEST) 14.5' LT. W/ RANGE OF ADDRESS SIGN

NOTES:
1. TRAFFIC CONTROL DEVICES:
A. THE R1-1(STOP) SIGNS AND STREET NAME SIGN (SNS) ASSEMBLIES FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASIC PAVING IS COMPLETE.
B. THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
C. ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE 'MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES' (MUTCD).

CURVE DATA TABLE
ROAD NAME CURVE LENGTH RADIUS TANGENT DELTA CHORD BEARING CHORD LENGTH
BETHEL OVERLOOK C2 94.91 230.39 48.14 23.3612° N68°00'38" W 94.24
CROSSING COURT (E) C3 33.36 100.00 16.83 18°08'42" E 33.20
CROSSING COURT (E) C4 39.27 150.00 19.75 15°00'00" S67°23'42" W 39.16
CROSSING COURT (W) C5 33.48 200.00 16.78 09°35'26" S31°59'17" W 33.44
CHURCH C6 36.39 47.00 19.16 44°21'25" N00°59'03" E 35.48

ROAD CLASSIFICATION
STREET NAME CLASSIFICATION DESIGN SPEED LIMITS
BETHEL OVERLOOK PRIVATE ACCESS STREET 25 MPH STA. 0+00 TO 7+74.94
CROSSING COURT (E) PRIVATE ALLEY 15 MPH STA. 0+00 TO 2+30.34
CROSSING COURT (W) PRIVATE ALLEY 15 MPH STA. 0+00 TO 1+97.28
CROSSING COURT (C) PRIVATE ALLEY 15 MPH STA. 0+00 TO 1+49.42

GENERAL NOTES (CON'T)

- 65. THIS PROJECT IS SUBJECT TO ALTERNATIVE COMPLIANCE PETITION WP-17-056, APPROVED JANUARY 13, 2017; AN ALTERNATIVE COMPLIANCE TO SECTION 16.144(m) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS...
66. THIS PROJECT IS SUBJECT TO WP-17-120, ON JUNE 8, 2017, THE PLANNING DIRECTOR APPROVED THE REQUEST FOR AN ALTERNATIVE COMPLIANCE TO THE FOLLOWING TWO SECTIONS OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS...
67. THIS PROJECT IS SUBJECT TO WP-18-032, ON SEPTEMBER 27, 2017, THE PLANNING DIRECTOR APPROVED THE REQUEST FOR AN ALTERNATIVE COMPLIANCE TO THE FOLLOWING TWO SECTIONS OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS...
68. THIS PROJECT IS SUBJECT TO WP-18-039, ON OCTOBER 6, 2017, THE PLANNING DIRECTOR APPROVED THE REQUEST FOR AN ALTERNATIVE COMPLIANCE TO THE FOLLOWING TWO SECTIONS OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS...
69. CONSTRUCTION INCLUDING DECKS CAN OCCUR UP TO 10' FROM THE EDGE OF THE PUBLIC WATER & SEWER EASEMENTS...
70. THIS PROJECT IS SUBJECT TO WP-18-082, ON MARCH 12, 2018, THE PLANNING DIRECTOR APPROVED THE REQUEST FOR AN ALTERNATIVE COMPLIANCE TO THE FOLLOWING TWO SECTIONS OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS...
71. AN INGRESS / EGRESS EASEMENT HAS BEEN CONVEYED TO BETHEL BAPTIST CHURCH OF HOWARD COUNTY, INC. IN A DEED DATED MARCH 15, 2018 AND RECORDED AT LIBER 18121, PAGE 293, BETHEL OVERLOOK (PRIVATE ROAD) SHALL BE OWNED AND MAINTAINED BY THE LONG GATE OVERLOOK PROJECT H.O.A.
72. THIS PROJECT IS SUBJECT TO AN EMAIL FROM THE CHIEF OF THE DEPARTMENT OF PLANNING AND ZONING DATED JUNE 25, 2018 STATING HOWARD COUNTY REJECTED THE PROCESSING OF THE PLAN ORIGINALS UNTIL THEY ARE REVISED TO PROVIDE ON-SITE 100 YEAR STORMWATER MANAGEMENT IN ACCORDANCE WITH SECTION 16.144/SECTION 16.156 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS...
73. IN A LETTER DATED SEPTEMBER 12, 2018, HOWARD COUNTY NOTIFIED THE OWNER THAT F-16-048 CANNOT RECEIVE SIGNATURE APPROVAL DUE TO COUNCIL BILL 56-2018 ADOPTED JULY 27, 2018, WHICH TEMPORARILY PROHIBITS ISSUING CERTAIN PERMITS, DEVELOPMENT PLAN APPROVALS AND ZONING CHANGES FOR PROPERTIES LOCATED WITHIN THE TIBER BRANCH AND PLUMTREE BRANCH WATERSHEDS...
74. IN A LETTER DATED SEPTEMBER 20, 2018, HOWARD COUNTY NOTIFIED THE OWNER THAT THIS PLAN, SDP 14-074 CANNOT RECEIVE SIGNATURE APPROVAL DUE TO COUNCIL BILL 56-2018 ADOPTED JULY 27, 2018, WHICH TEMPORARILY PROHIBITS ISSUING CERTAIN PERMITS, DEVELOPMENT PLAN APPROVALS AND ZONING CHANGES FOR PROPERTIES LOCATED WITHIN THE TIBER BRANCH AND PLUMTREE BRANCH WATERSHEDS...
75. IN A LETTER DATED OCTOBER 22, 2019, HOWARD COUNTY NOTIFIED THE OWNER OF THE EXPIRATION OF THE TEMPORARY PLAN PROCESSING MORATORIUM FOR CERTAIN PERMITS, DEVELOPMENT PLAN APPROVALS AND ZONING CHANGES FOR PROPERTIES LOCATED WITHIN THE TIBER BRANCH AND PLUMTREE BRANCH WATERSHEDS...
76. THE LONG GATE OVERLOOK HOMEOWNERS ASSOCIATION (H.O.A.) IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF THE PERMETER 2 AND STREET TREE PLANTINGS REQUIRED FOR THIS LONG GATE OVERLOOK PROJECT WHICH ARE LOCATED ON THE PROPERTY OF BETHEL BAPTIST CHURCH. REFER TO THE LEFT SIDE OF THE ENTRANCE ROAD (BETHEL OVERLOOK) AND THE PLANTINGS ALONG THE WEST SIDE OF THE TENNIS COURT AMENITY.

NOTES

- 1. ASSIGNED TOWNHOUSE ADDRESSES SHALL BE PLACED ON BOTH THE FRONT AND REAR OF THE UNITS.
2. REFER TO SHEET 14 FOR BUILDING FOOTPRINTS AND GENERIC ELEVATIONS.

OWNER / DEVELOPER

BEATER HOMES
ATTN: J. MARTIN SHAFFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
8088 MARSHLEE DRIVE, SUITE 350
ELKRIEDE, MD 21075
443-539-5249

REVISIONS
8 REVISE TO ADD SIDEWALK BETWEEN UNIT 210 A/B AND LOT 90 5-10-23
6 REVISE RETAINING WALL AND GRADING NEAR TENNIS COURT 9-15-21
5 REVISE TO ADD MODIFIED CURB AND GUTTER 8-26-21
3 REVISE FRONT PORCH, PORCH AND SIDEWALK LOCATIONS, ADOPT SIDEWALK AND PLAY AREA AND MAKE STREETS BAY, AMEND TENNIS COURT ELEV, REPAIR L.S. PLANTINGS 6-7-21

REVISED SITE DEVELOPMENT PLAN
SITE LAYOUT PLAN
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
ZONED: R-SA-8
TAX MAP: 24 GRD: 24
DPZ REF'S: SEE SITE ANALYSIS DATA CHART ON COVER SHEET
PARCEL(S): SEE GENERAL NOTE 1
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING

TIMMONS GROUP

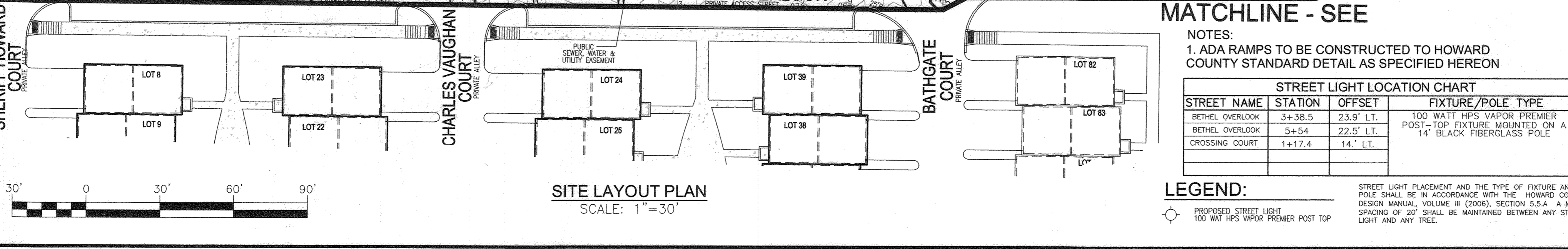
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: RHW/EDS
DRAWN BY: VETG
CHECKED BY: RHW
DATE: JANUARY 2021
SCALE: AS SHOWN
W.O. NO.: 08-48

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193
EXPIRATION DATE: 09-27-2022
TIMMONS GROUP
H. VOGEL, PE No. 16193

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 3/22/21
CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 4/21/21
DIRECTOR DATE: 5-3-21



PROJECT BOUNDARY LINE TABLE
LINE COURSE
A S21°11'40"E 9.54'
B R=33.00' L=25.95'
C S23°09'45"W 13.20'
D R=23.00' L=32.60'
E N75°37'28"W 2.22'
F R=30.00' L=77.50'

FUTURE IMPROVEMENT
SEE SDP-15-017

AMENITY AREA #2
2,792 SF

AMENITY AREA #1
2,482 SF

BUILDABLE PARCEL B

BUILDABLE PARCEL A

CROSSING COURT

UNIT 206 A/B

UNIT 205 A/B

UNIT 204 A/B

UNIT 203 A/B

UNIT 202 A/B

UNIT 201 A/B

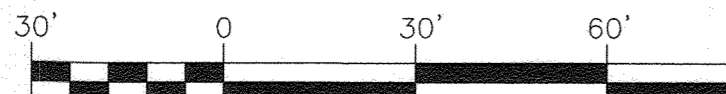
UNIT 200 A/B

UNIT 199 A/B

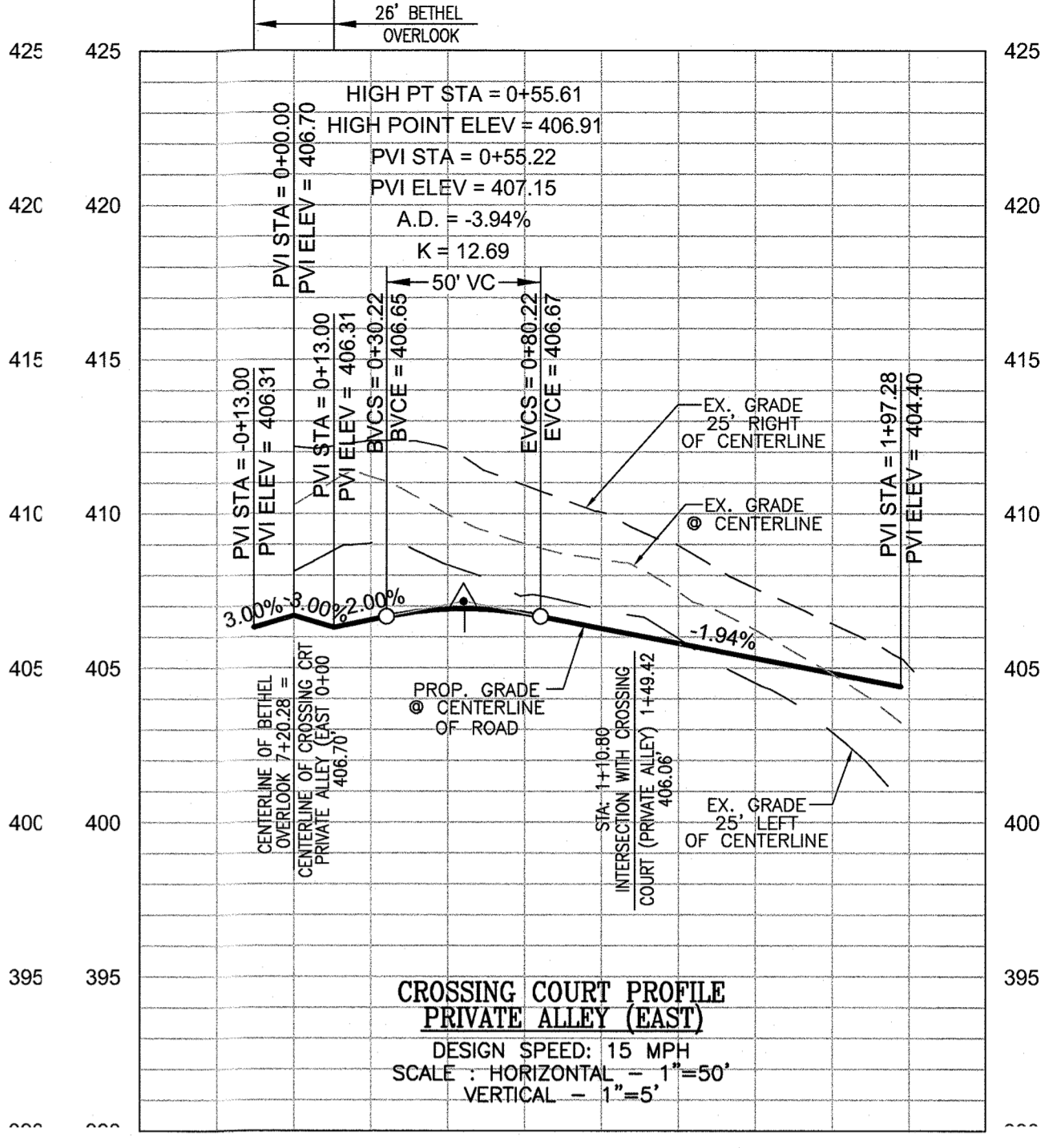
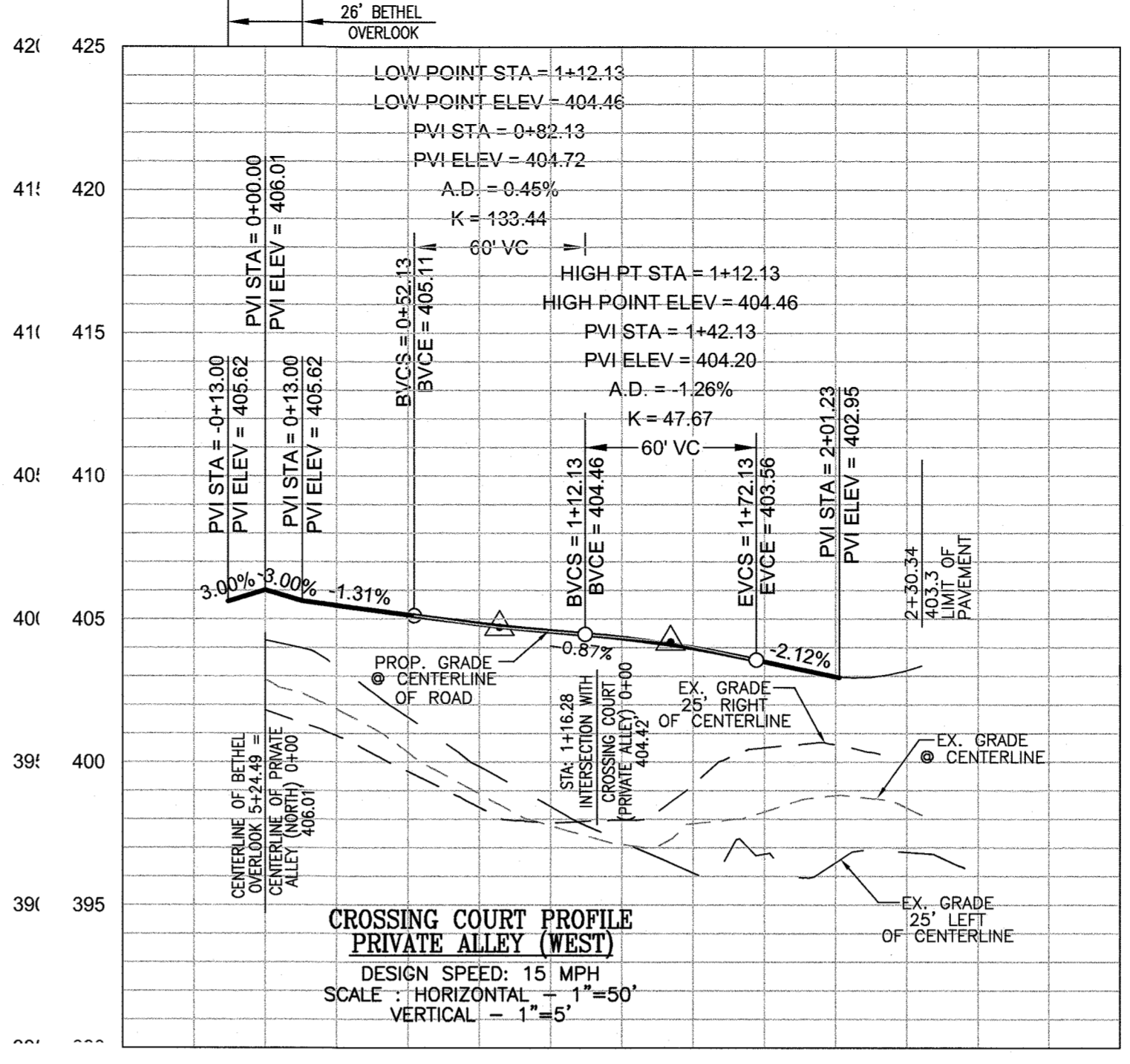
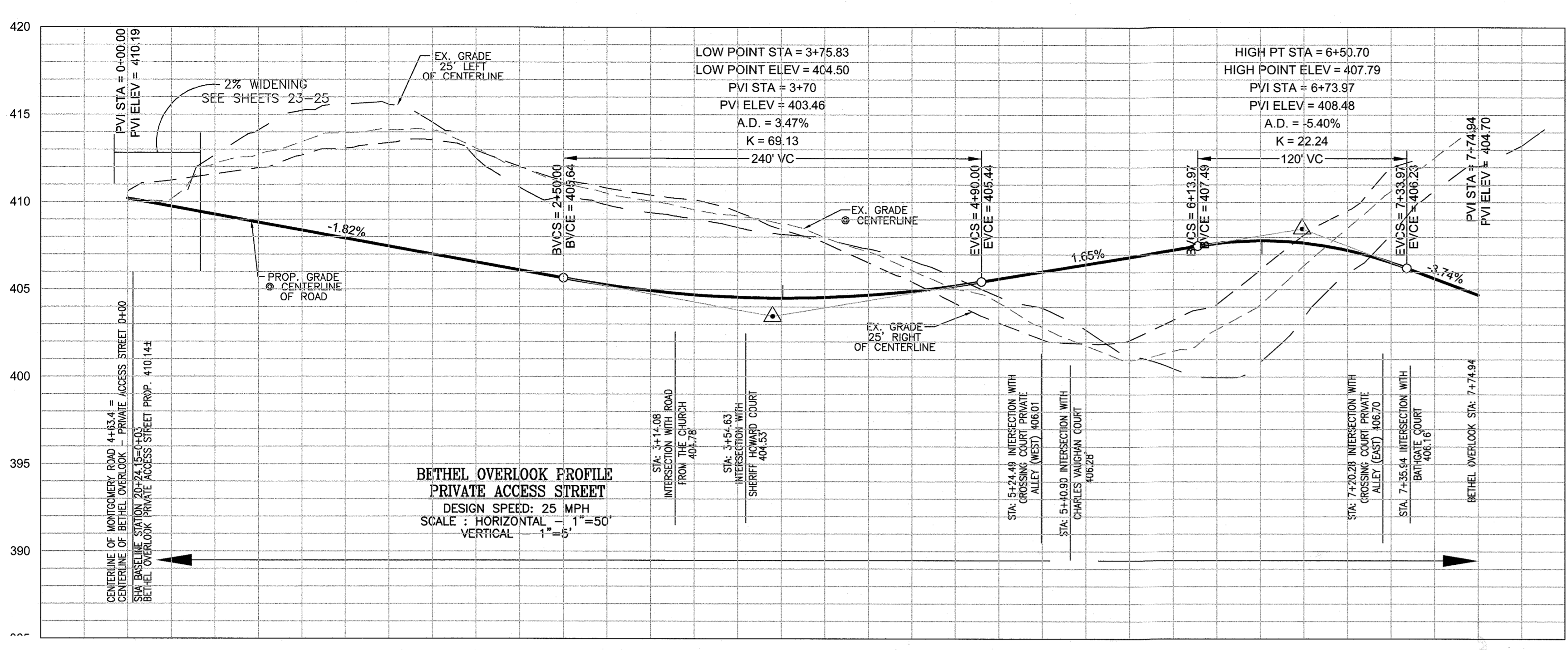
UNIT 198 A/B

MATCHLINE - SEE SHEET 2

MATCHLINE - SEE SHEET 2



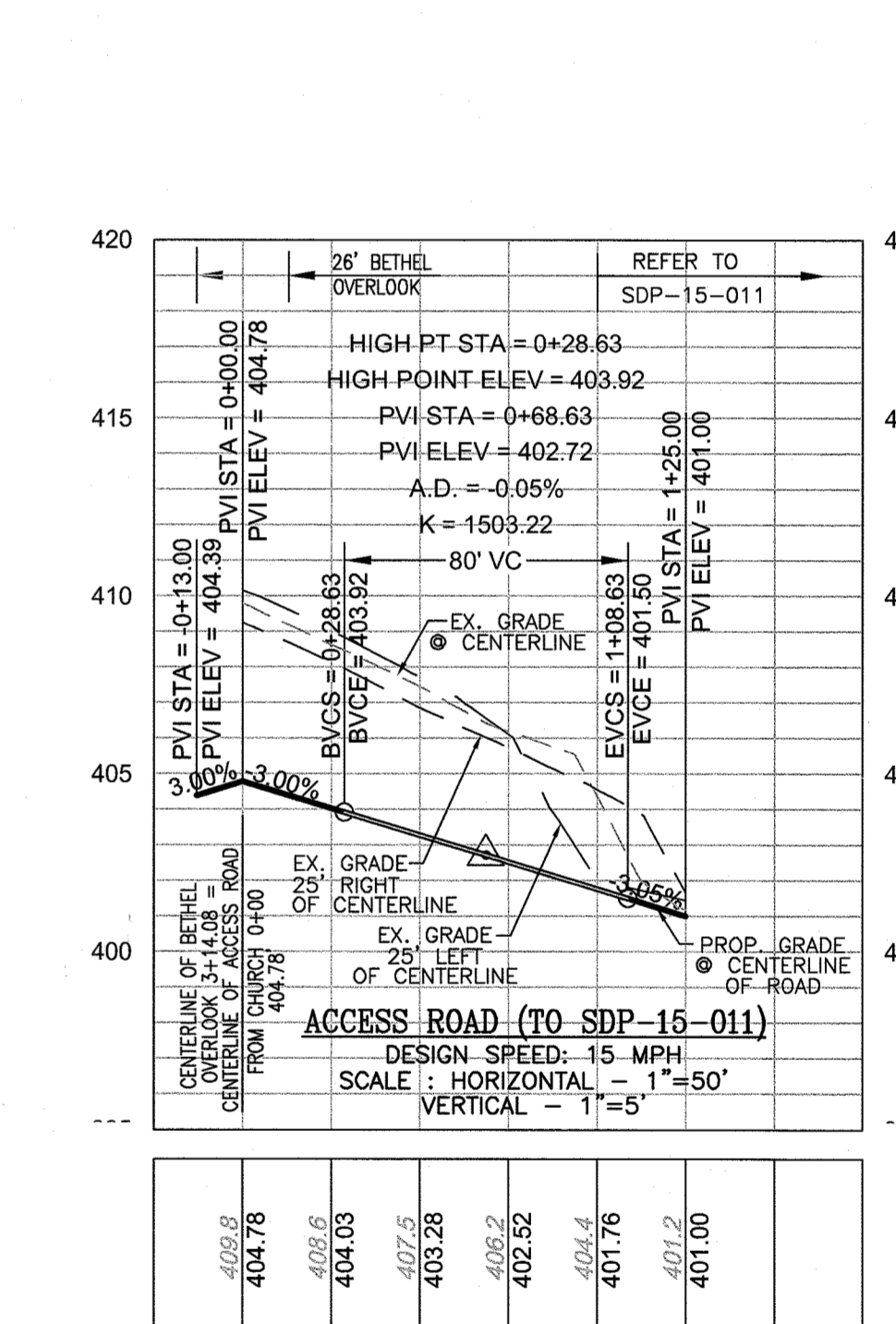
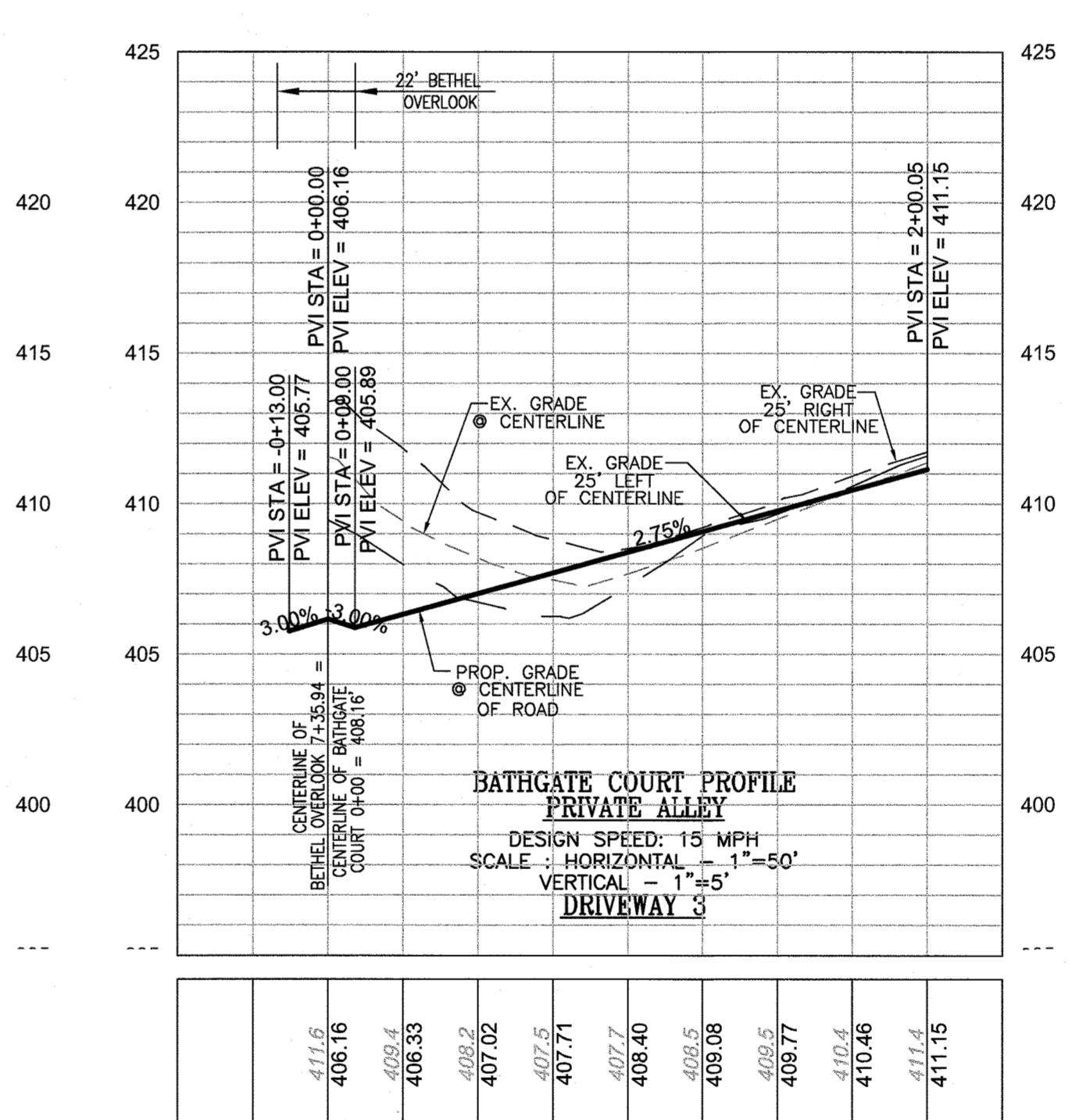
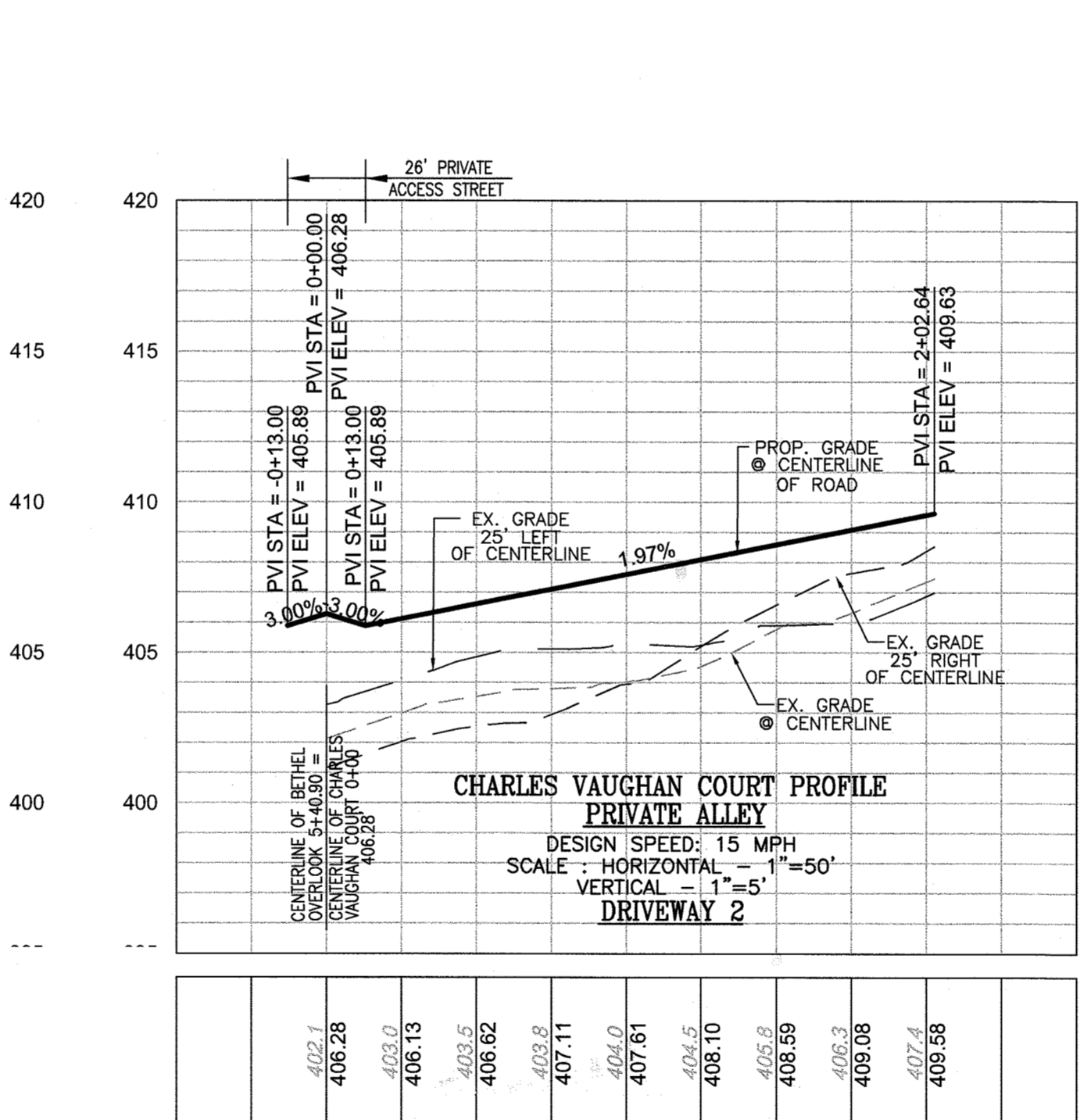
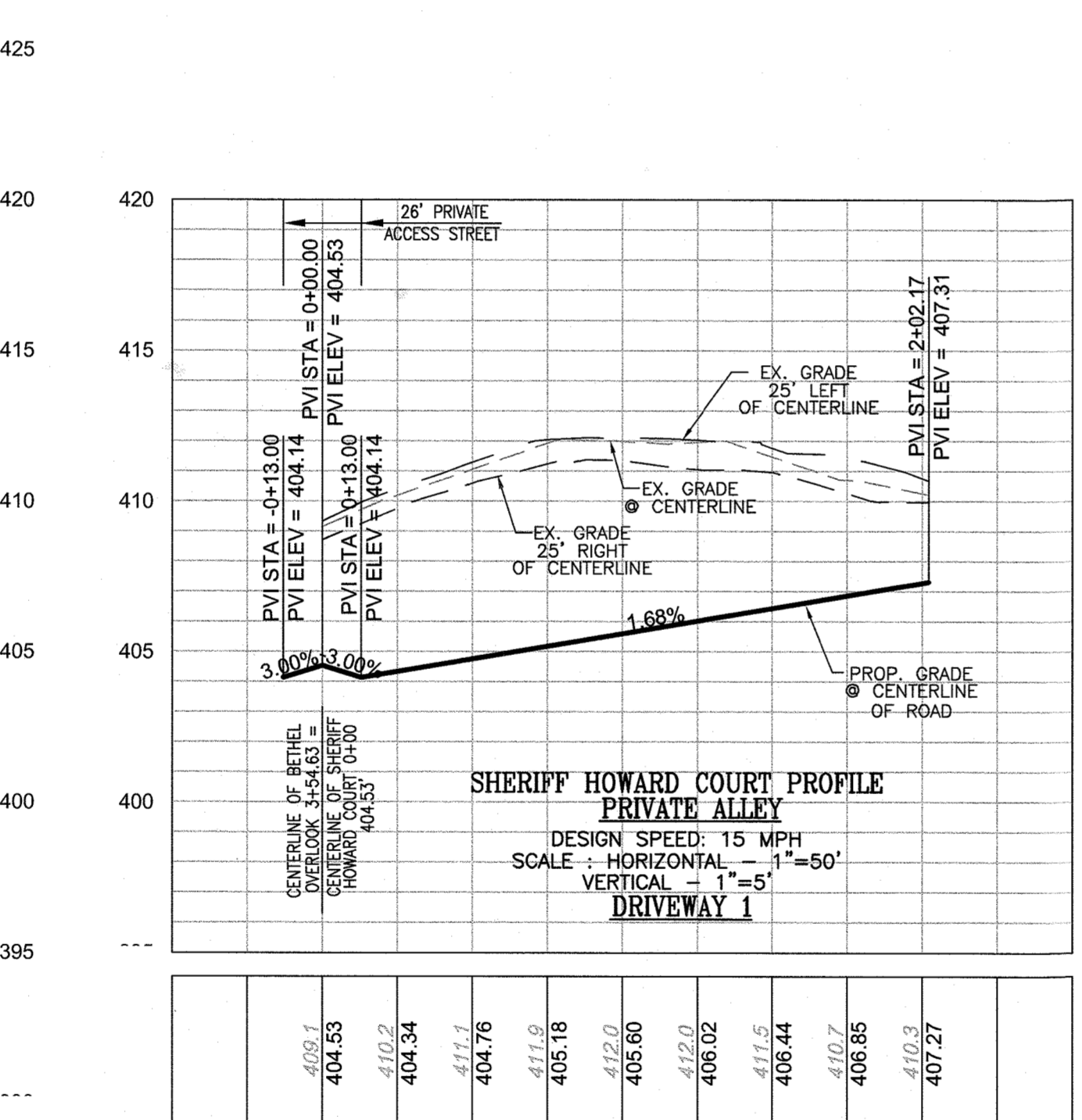
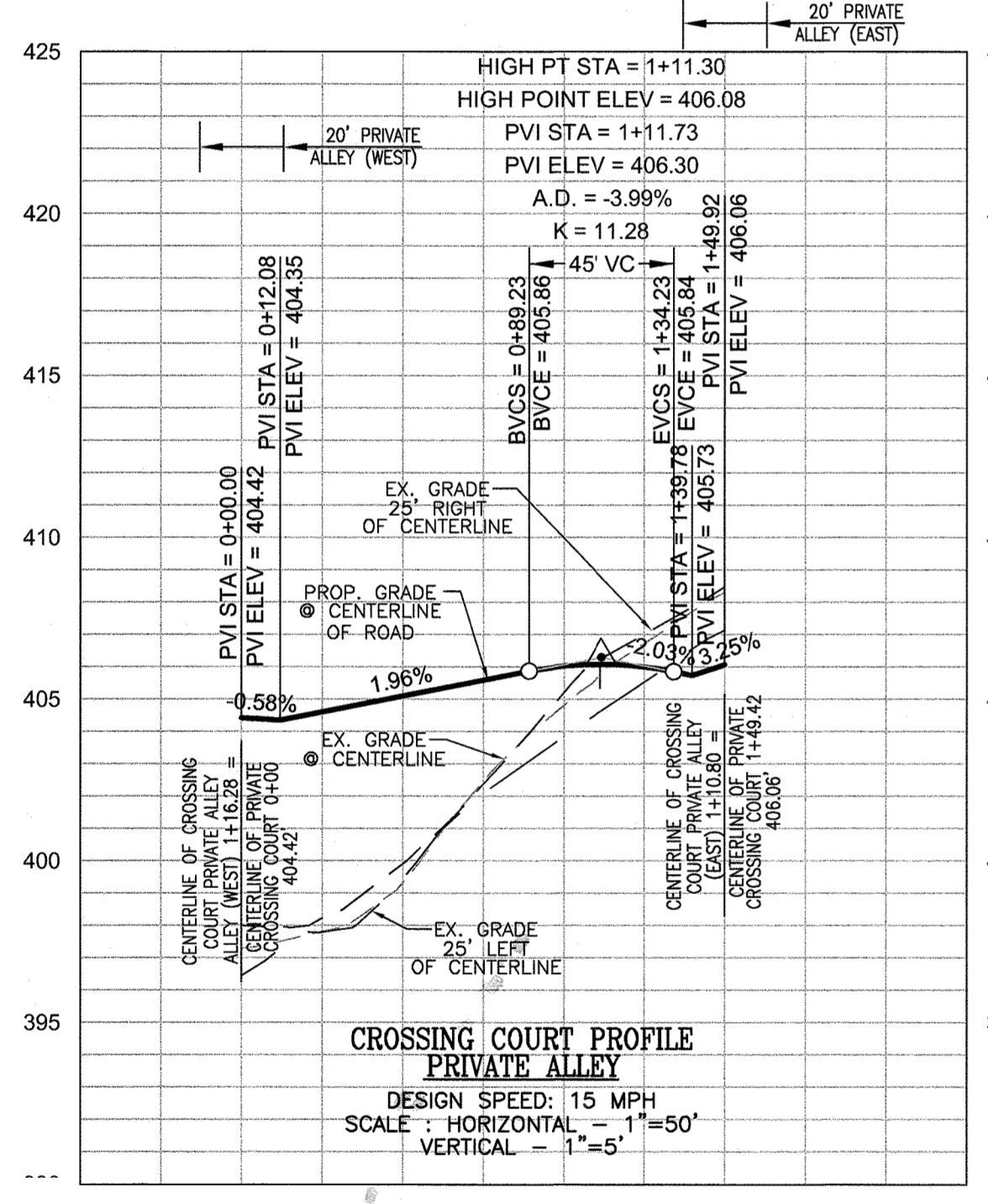
SITE LAYOUT PLAN SCALE: 1" = 30'



410.1	410.19	410.2	409.74	409.28	408.83	408.37	407.92	407.46	407.01	406.55	406.10	405.64	405.23	404.81	404.39	403.97	403.55	403.13	402.71	402.29	401.87	401.45	410.1
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402.6	402.67	401.8	401.85	400.34	398.89	397.77	397.12	397.84	398.26	398.83	399.4	400.0	400.6	401.2	401.8	402.4	403.0	403.6	404.2	404.8	405.4	406.0	406.6	407.2
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409.3	408.70	408.55	411.2	410.0	408.90	408.76	408.28	407.5	406.80	406.2	405.32	404.83	404.3	403.8	403.3	402.8	402.3	401.8	401.3	400.8	400.3	399.8	399.3	398.8
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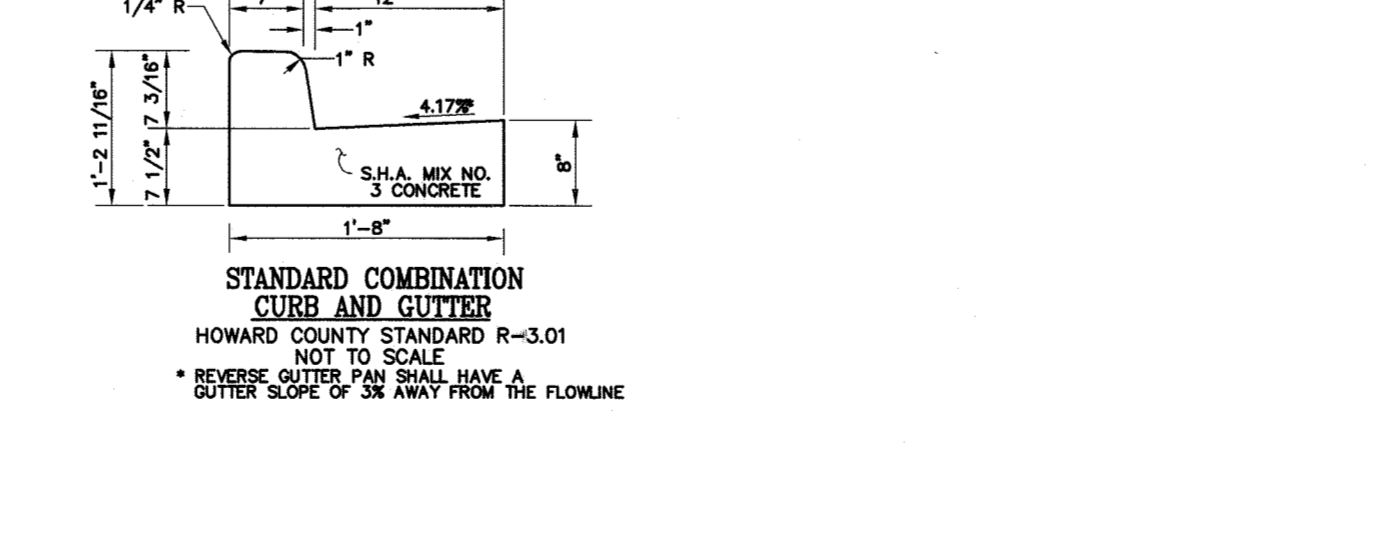
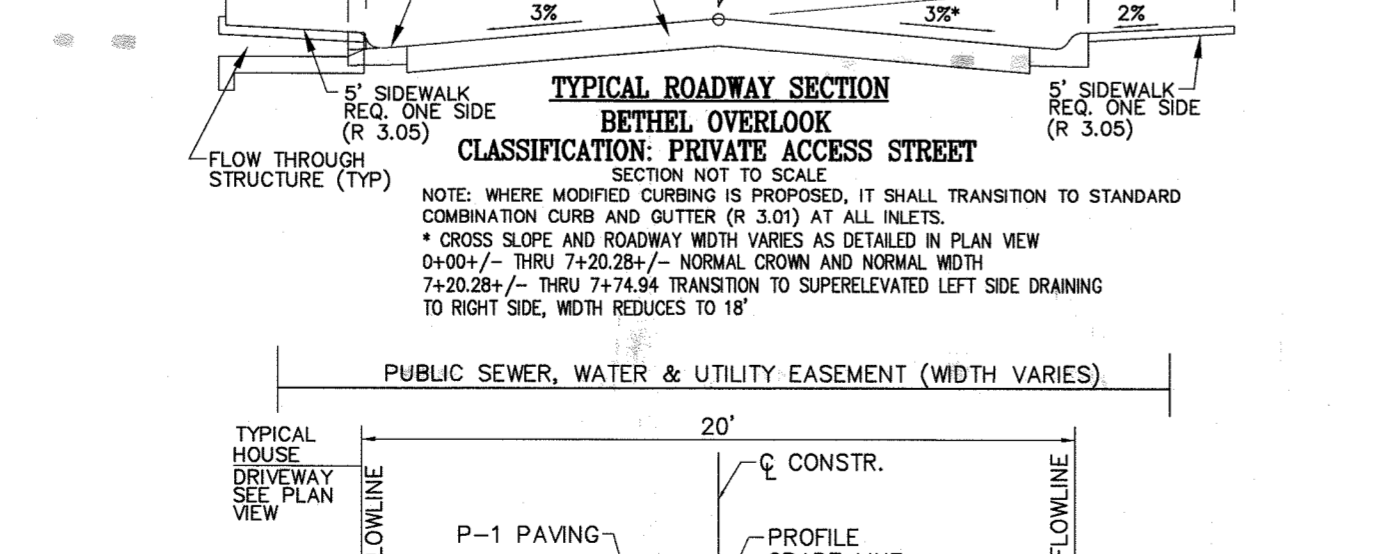
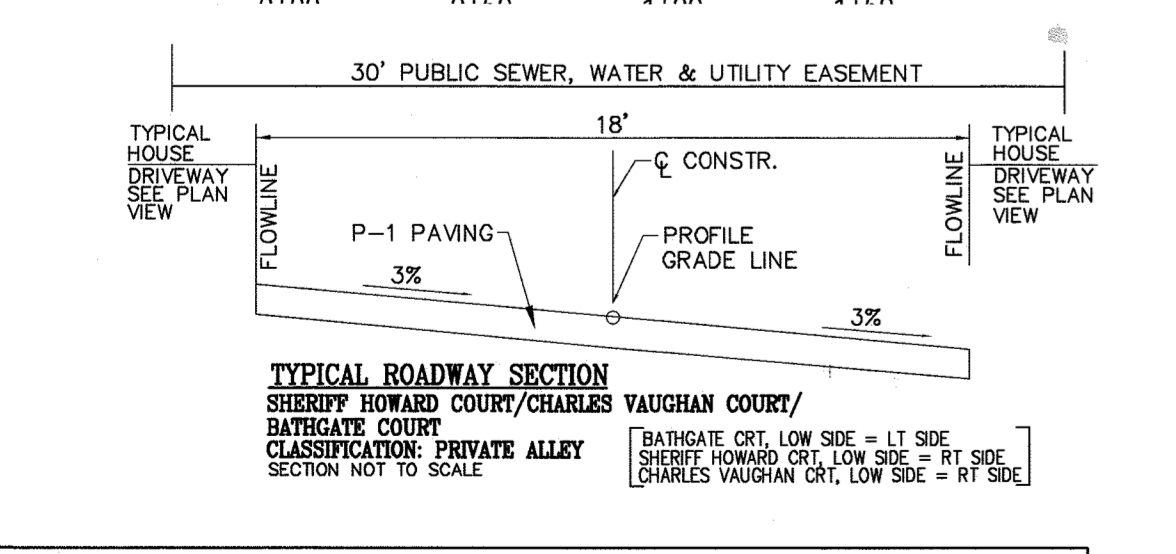
397.3	397.31	397.82	397.82	399.32	402.46	404.82	406.72	407.2	407.7	408.2	408.7	409.2	409.7	410.2	410.7	411.2	411.7	412.2	412.7	413.2	413.7	414.2	414.7	415.2
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409.1	404.53	410.2	404.34	404.76	405.18	410.0	405.60	406.02	411.5	406.44	406.85	410.3	407.27	407.7	408.2	408.7	409.2	409.7	410.2	410.7	411.2	411.7	412.2	412.7
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402.1	406.28	406.13	406.62	407.11	404.0	407.61	408.1	408.6	409.1	409.6	410.1	410.6	411.1	411.6	412.1	412.6	413.1	413.6	414.1	414.6	415.1	415.6	416.1	416.6
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411.6	406.16	409.4	406.33	409.2	407.02	407.71	408.40	409.06	409.77	410.46	411.15	411.84	412.53	413.22	413.91	414.60	415.29	415.98	416.67	417.36	418.05	418.74	419.43	420.12
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409.8	404.78	404.03	407.5	403.28	402.52	401.76	401.0	400.24	400.48	400.72	400.96	401.20	401.44	401.68	401.92	402.16	402.40	402.64	402.88	403.12	403.36	403.60	403.84	404.08
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SECTION NUMBER	ROAD AND STREET CLASSIFICATION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION	PAVING SECTION
P-1	26' PRIVATE ACCESS STREET	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
P-2	26' PRIVATE ACCESS STREET	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
P-3	26' PRIVATE ACCESS STREET	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
P-4	26' PRIVATE ACCESS STREET	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division: *[Signature]* DATE: 3/22/21

Chief, Division of Land Development: *[Signature]* DATE: 4/21/21

Director: *[Signature]* DATE: 5/3/21

TYPICAL ROADWAY SECTION CROSSING COURT ALLEY (WEST)/CROSSING COURT ALLEY (EAST). Shows cross-section with 3% P-1 PAVING, PROFILE GRADE LINE, and 3% SLOPE. Includes 26' PRIVATE ACCESS STREET.

OWNER / DEVELOPER: BEAZER HOMES. ATTN: J. MARTIN SHAFER, AREA PRESIDENT. AUTHORIZED SIGNATURE: EAST STREET, 8065 MARSHALL DRIVE, SUITE 350, ELK RIDGE, MD 21075. 443-539-9249

1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020
NO.	REVISION	DATE

REVISED SITE DEVELOPMENT PLAN
ROAD PROFILES
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B AND OPEN SPACE LOT 100
(SFA RESIDENTIAL)

2ND ELECTION DISTRICT: 24
TAX MAP: 24
DPZ, REF'S: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

ZONED: R-A-15
PARCEL(S): SEE GENERAL NOTE 1
HOWARD COUNTY, MARYLAND

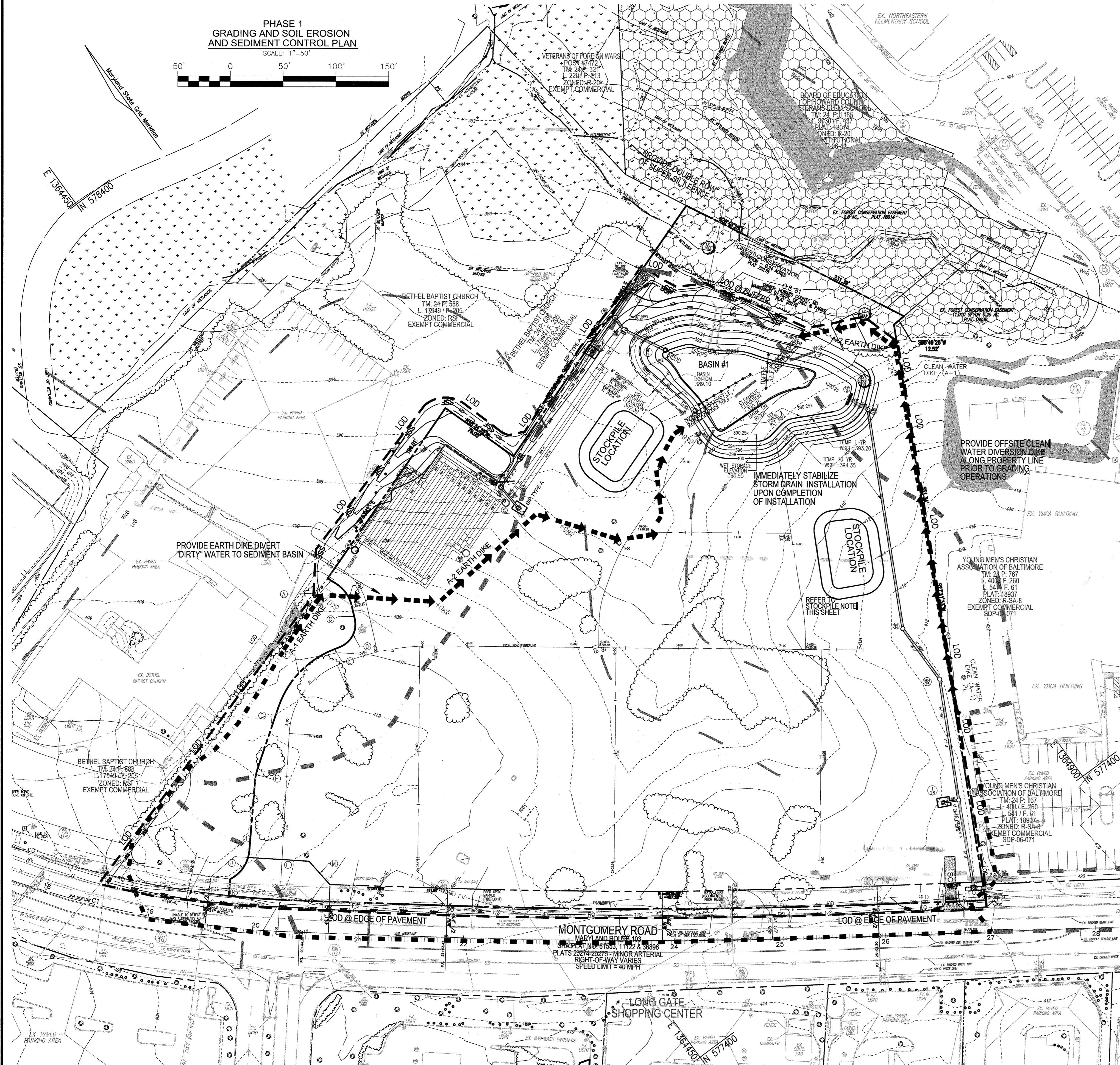
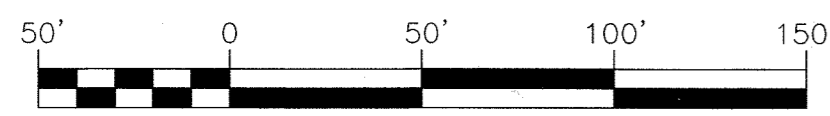
VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: RHW/EDS.
DRAWN BY: VETG.
CHECKED BY: RHW.
DATE: JANUARY 2021
SCALE: AS SHOWN
W.O. NO.: 08-48

PROFESSIONAL CERTIFICATE I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19193, EXPIRATION DATE: 09-27-2022.

4 OF 37

**PHASE 1
GRADING AND SOIL EROSION
AND SEDIMENT CONTROL PLAN**
SCALE: 1"=50'



NOTES

1. ALL EARTH DIKES ARE TO BE PLACED IN WORKING ORDER AT THE END OF EACH WORKING DAY.
2. IMBRICATE SF/SSF IN 3' SEGMENTS AS REQUIRED UPHILL BY 2' IN ELEVATION.
3. GP INFLOW PROTECTION AT ENDS OF EARTH DIKE SHALL EXTEND ONTO BASIN BOTTOM, SEE DETAIL SH 9

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.

BASIN #1

FACILITY TYPE:	TEMPORARY SEDIMENT BASIN
EX. DRAINAGE AREA:	7.4 AC.
PROP. DRAINAGE AREA:	7.3 AC.
TOTAL WET STORAGE REQD:	13,320 CF
TOTAL DRY STORAGE REQD:	13,320 CF
TOTAL STORAGE REQUIRED:	26,640 CF
TOTAL WET STORAGE PRVD:	13,342 CF
TOTAL DRY STORAGE PRVD:	14,438 CF
TOTAL STORAGE PROVIDED:	27,781 CF
BOTTOM ELEV:	389.10
RISER CREST ELEVATION:	393.50 (0.50' NOTCH @ 392.3)
WET STORAGE ELEVATION:	389.10-390.95
DRY STORAGE ELEVATION:	390.95-392.30
TOTAL STORAGE DEPTH:	3.2 (392.3 - 389.10)
TOP OF EMBANKMENT:	396.40 (SETTLED)
CLEANOUT ELEVATION:	390.25
SIDE SLOPES:	3:1 INSIDE 3:1 OUTSIDE
EMERGENCY SPILLWAY:	N/A

- 01 (EX.): 2.1 CFS
- 01 (BASIN): 1.8 CFS
- *THROUGH DEWATER DEVICE ORIFICE AND RISER NOTCH OUTFALLS INTO STORM DRAIN SYSTEM
- 1 YR TSMW WSEL = 393.20
- 10 YR TSMW WSEL = 394.35
- 010 (BASIN): 19.5 CFS

NOTES:

1. CONSTRUCTION MAY NOT BEGIN UNTIL THE PIPE MATERIALS NEEDED TO CONSTRUCT BASIN #1 ARE ON-SITE
2. AS THE PROJECT SITE IS UNDER 20 ACRES, THE ENTIRE SITE CAN BE DISTURBED. THE SEPARATION OF "PHASE 1 AND PHASE 2" AS DETAILED HEREON IS TO SEPARATE REQUIRED TASKS AS DIRECTED BY HSCD.

SHA NOTES:

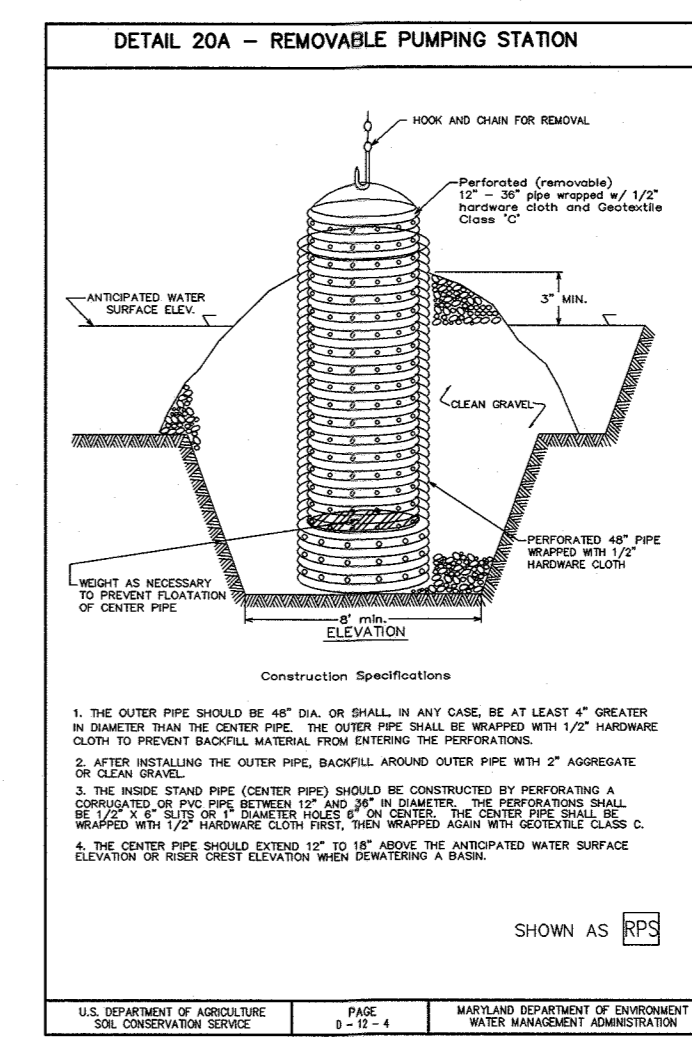
1. ALL WATER SHOULD BE TREATED PRIOR TO ENTERING THE SHA RIGHT-OF-WAY OR THE PROJECT SHOULD PROVIDE SAME DAY STABILIZATION.
2. ALL EROSION AND SEDIMENT CONTROL DESIGN SHOULD BE PER THE 2011 STANDARDS.

NOTE:

CONTRACTOR TO PROVIDE IMMEDIATE REPAIR OF ANY EARTH DIKES INTERRUPTED DURING CONSTRUCTION.

NOTE:

- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UPHILL WHERE IT RUNS DOWNHILL, NO MORE THAN 35 FEET APART
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.



NOTE: LOCATE STOCKPILE AS SHOWN HEREON OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED. STOCKPILES SHALL BE IN ACCORDANCE WITH SECTION B.4., SEE SHEET 8

LEGEND

- PROPERTY LINE
- - - RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- CENTERLINE OF EXISTING STREAM
- EX. FOREST CONSERVATION EASEMENT
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREES (FIELD LOCATED)
- EXISTING TREETLINE (FIELD LOCATED)
- EXISTING FENCE
- PROPOSED TREETLINE
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- PROPOSED CURB AND GUTTER
- EX. WETLANDS
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- M1B2 M1D3 SOILS BOUNDARY
- SF SSF SILT FENCE
- LOD SUPER SILT FENCE
- LIMIT OF DISTURBANCE
- SCE STABILIZED CONSTRUCTION ENTRANCE
- EARTH DIKE
- PROPOSED DRAINAGE DIVIDE
- EXISTING DRAINAGE DIVIDE
- STANDARD INLET PROTECTION

OWNER / DEVELOPER

BEAZER HOMES
ATTN: J. MARTIN SHAFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALL DRIVE, SUITE 350
ELLSBURG, MD 21724
443-539-9249

6	REVISE RETAINING WALL AND GRADING NEAR TENNIS COURT	9-15-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020
NO.	REVISION	DATE

REVISED SITE DEVELOPMENT PLAN
PHASE 1 - GRADING AND SOIL EROSION
AND SEDIMENT CONTROL PLAN
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
42744-42749
(SFA RESIDENTIAL)
ZONED: R-A-15
TAX MAP: 24 GRID: 24
PARCEL(S): SEE GENERAL NOTE 1
DPZ REF. SEE SITE ANALYSIS DATA CHART ON COVER SHEET
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: RHV/EDS.
DRAWN BY: VETG.
CHECKED BY: RHV.
DATE: JANUARY 2021.
SCALE: AS SHOWN
W.O. NO.: 08-48

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. 18193
EXPIRATION DATE: 09-27-2022

5 SHEET OF 37

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
3-22-21
CHIEF, DEVELOPMENT ENGINEERING DIVISION
4/2/21
CHIEF, DIVISION OF LAND DEVELOPMENT
5-3-21
DIRECTOR

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

OWNER/DEVELOPER SIGNATURE
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.

DESIGNER'S SIGNATURE
PRINTED NAME
ROBERT H. VOGEL
MD REGISTRATION NO. 16193
P.E. R.L.S. OR R.L.A. (circle one)

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

DATE: 1/25/21

SOILS LEGEND

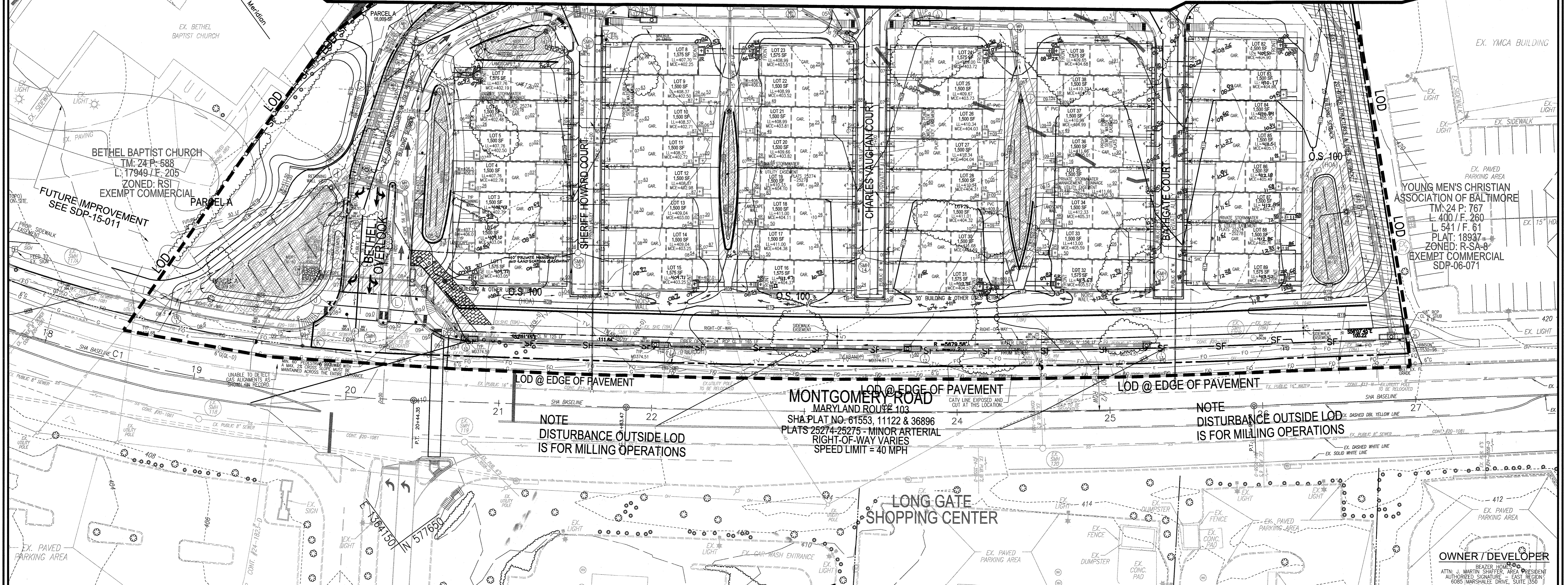
SYMBOL	NAME / DESCRIPTION	GROUP
LoB	LEGORE-MONTALTO-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
MeB	MATCHING SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	D

NOTE: BASED ON USDA NRCS WEB SOIL SURVEY

MATCHLINE - SEE SHEET 7

MATCHLINE - SEE SHEET 7

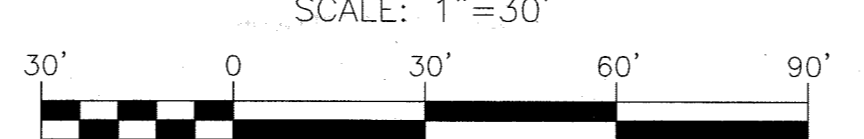
SHEET 7



LEGEND:

PROPERTY LINE	EXISTING FENCE	SIDEWALK
RIGHT-OF-WAY LINE	EXISTING 10' CONTOUR	PROPOSED TREELINE
ADJACENT PROPERTY LINE	EXISTING 2' CONTOUR	CURB
EXISTING CURB AND GUTTER	CENTERLINE OF EXISTING STREAM	PROPOSED 10' CONTOUR
EXISTING UTILITY POLE	SOILS	PROPOSED 2' CONTOUR
EXISTING LIGHT POLE	EXISTING TREELINE	STABILIZED CONSTRUCTION ENTRANCE
EXISTING MAILBOX	EXISTING MODERATE SLOPES	SILT FENCE
EXISTING SIGN	EXISTING STEEP SLOPES	SUPER SILT FENCE
EXISTING SANITARY MANHOLE	STORMDRAIN	LIMIT OF DISTURBANCE
EXISTING SANITARY LINE	STORMDRAIN INLET	10' PRIVATE MAINTENANCE AND LANDSCAPING EASEMENT
EXISTING CLEANOUT	PRIVATE STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT	
EXISTING FIRE HYDRANT	PRIVATE DRAINAGE & UTILITY EASEMENT	
EXISTING WATER LINE	PRIVATE STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT	
30' PUBLIC SEWER, WATER & UTILITY EASEMENT	PRIVATE DRAINAGE & UTILITY EASEMENT	

SOILS MAP & PHASE 2 GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN



NOTE:
CONTRACTOR TO PROVIDE IMMEDIATE REPAIR OF ANY EARTH DIKES INTERRUPTED DURING CONSTRUCTION.

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 DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

NOTE:
- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

SYMBOL	DESCRIPTION	TYPE
LoC	LEGORE SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B
LoB	LEGORE-MONTALTO-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
WcB	WATCHUNG SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	D

SHA NOTES:
1. ALL WATER SHOULD BE TREATED PRIOR TO ENTERING THE SHA RIGHT-OF-WAY OR THE PROJECT SHOULD PROVIDE SAME DAY STABILIZATION.
2. ALL EROSION AND SEDIMENT CONTROL DESIGN SHOULD BE PER THE 2011 STANDARDS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division
 DATE: 3-22-21
 Chief, Division of Land Development
 DATE: 4/2/21
 Director
 DATE: 5-3-21

OWNER/DEVELOPER CERTIFICATION:
 I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL APPLICABLE 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 OF 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.
 Owner/Developer Signature: U.P. Land Dev. Brian A. Knauer
 Printed Name & Title: U.P. Land Dev. Brian A. Knauer

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.
 Designer's Signature: Robert H. Vogel
 Printed Name: ROBERT H. VOGEL
 Date: 1/25/21
 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.
 Signature: John P. Plummer / 1/25/21
 Date: 1/25/21
 Title: HOWARD S.C.D.

NO.	REVISION	DATE
5	REVISE TO ADD MODIFIED CURB AND GUTTER	8-24-21
3	REMOVE FRONT PORCH, DECK AND LEAD-WALK LOCATIONS. AMEND SIDEWALK, AMEND PE BLEV. AND MINOR SHOT ELEV. AMEND TERRACE COURT ELEV. REDEFINE LS PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

REVISED SITE DEVELOPMENT PLAN
 SOILS MAP & PHASE 2 - GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN
LONG GATE OVERLOOK
 LOTS 1-39, 82-99, BUILDABLE PARCELS A & B AND OPEN SPACE LOT 100
 A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278 (SFA RESIDENTIAL)
 2ND ELECTION DISTRICT TAX MAP: 24 GRID: 24 ZONED: R-A-15
 DPZ REF: SEE: SITE ANALYSIS DATA CHART ON COVER SHEET PARCELS: SEE GENERAL NOTE 1 HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
 3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21143
 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 FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2022

DESIGN BY: RHW/EDS
 DRAWN BY: VETG
 CHECKED BY: RHW
 DATE: JANUARY 2021
 SCALE: AS SHOWN
 W.O. NO.: 08-48

6 SHEET OF 37

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.

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING FENCE
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- CENTERLINE OF EXISTING STREAM
- SOILS
- EXISTING TREELINE
- EXISTING WETLANDS
- EXISTING MODERATE SLOPES
- EXISTING STEEP SLOPES
- STORMDRAIN
- STORMDRAIN INLET
- SIDEWALK
- PROPOSED TREELINE
- CURB
- PROPOSED 10' CONTOUR
- PROPOSED 2' CONTOUR
- SILT FENCE
- LOD
- LIMIT OF DISTURBANCE
- CURB INLET PROTECTION
- STANDARD INLET PROTECTION
- STANDARD INLET PROTECTION
- SUPER SILT FENCE
- PRIVATE STORMWATER MANAGEMENT, DRAINAGE & UTILITY EASEMENT
- PRIVATE DRAINAGE & UTILITY EASEMENT

NOTE:
- SILT FENCE IS TO BE REPLACED WITH SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
- SILT FENCE SHALL BE CURLED UPHILL NO MORE THAN 35 FEET APART
- DOUBLE ROWS OF SUPER SILT FENCE SHALL BE INSTALLED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

SOILS LEGEND

SYMBOL	DESCRIPTION	TYPE
LeC	LEGORE SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B
LoB	LEGORE-MONTALTO-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
WcB	WATCHUNG SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	D

OWNER / DEVELOPER
BEAZER HOMES
ATTN: J. MARTIN SHARTER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHLEE DRIVE, SUITE 350
ELKROIDE, MD 21075
443-539-9249

NO.	REVISION	DATE
8	REVISE TO ADD SIDEWALK BETWEEN UNIT 210 AIB AND LOT 90	5-10-23
6	REVISE RETAINING WALL AND GRADING NEAR TENNIS COURT	7-15-21
5	REVISE TO ADD MODIFIED CURBS AND GUTTER	8-26-21
3	REVISE FRONT PORCH, DOOR AND LEAD-WALK LOCATIONS, AMEND SIDEWALK, AMEND P.E. ELEV. AND MAIN SPOT ELEV. AMEND TENNIS COURT ELEV. REDLINE L.S. PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020
NO.	REVISION	DATE

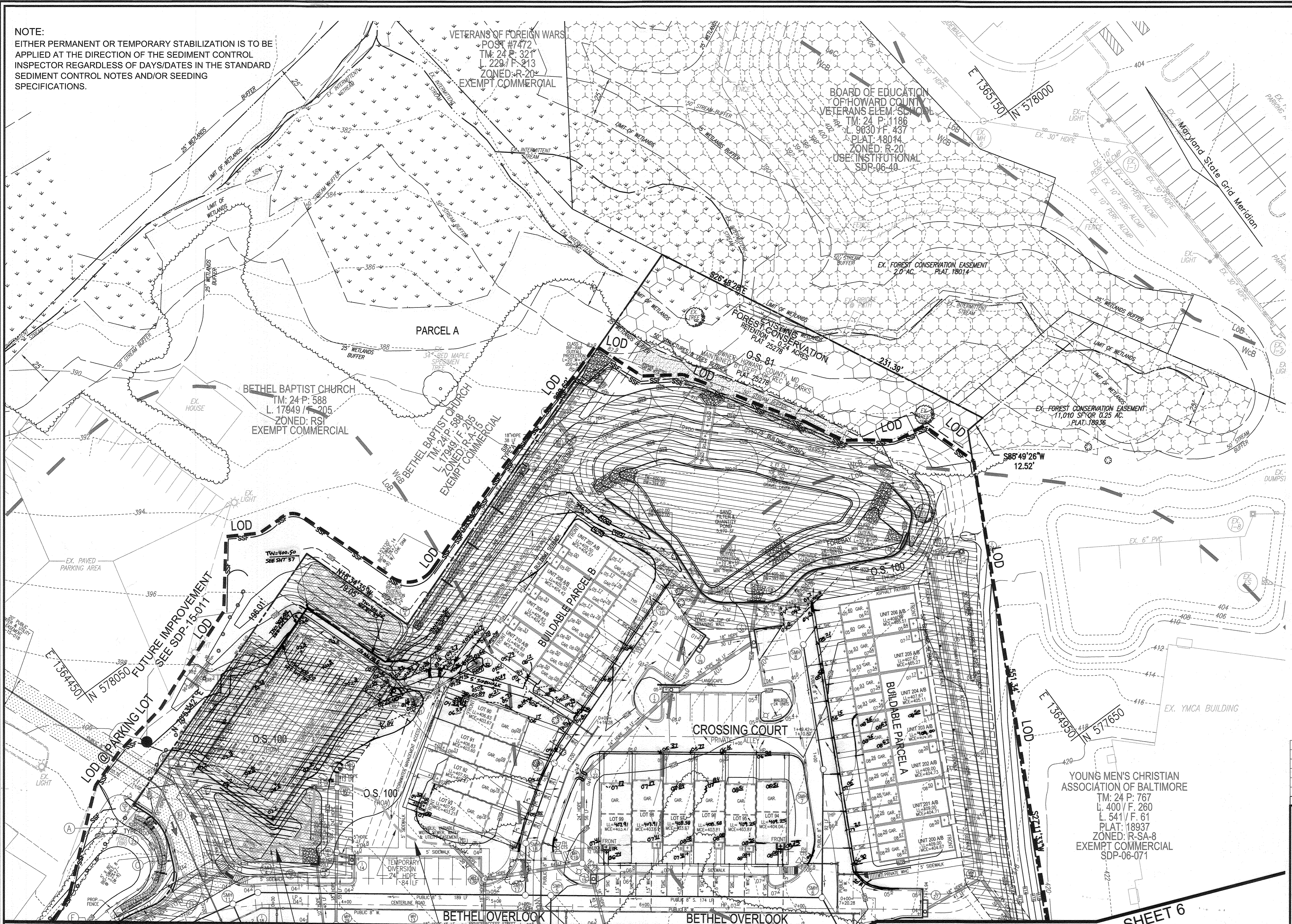
REVISED SITE DEVELOPMENT PLAN
SOILS MAP & PHASE 2 - GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN
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25794, 25710 (SFA RESIDENTIAL)
2ND ELECTION DISTRICT
TAX MAP: 24 GRID: 24
DPZ REFS: SEE SITE ANALYSIS DATA CHART ON COVER SHEET
PARCELS: SEE GENERAL NOTE 1
HOWARD COUNTY, MARYLAND
ZONED: R-A-15

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: RHW/EJS
DRAWN BY: VETG
CHECKED BY: RHW
DATE: JANUARY 2021
SCALE: AS SHOWN
W.O. NO.: 08-48

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. 18180
EXPIRATION DATE: 09-27-2022

7 SHEET OF 37



MATCHLINE - SEE SHEET 6

MATCHLINE - SEE SHEET 6

SOILS MAP & PHASE 2
GRADING AND SOIL EROSION
AND SEDIMENT CONTROL PLAN
SCALE: 1"=30'



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
DATE: 3-22-21
DATE: 4/21/21
DATE: 5-3-21

OWNER/DEVELOPER CERTIFICATION:
I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF 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.

OWNER/DEVELOPER SIGNATURE: Brian A. Kwasner
PRINTED NAME & TITLE: Brian A. Kwasner V.P. and Dev

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 AND OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

DESIGNER'S SIGNATURE: Robert H. Vogel
PRINTED NAME: ROBERT H. VOGEL
DATE: 1/25/21
MO REGISTRATION NO. 16193
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.

HOWARD S.C.D. DATE: 1/25/21

- NOTES**
- REFER TO SHEET 9 FOR SEQUENCE OF CONSTRUCTION REFER TO SHEETS 8 & 9 FOR STANDARD DETAILS AND STABILIZATION NOTES
 - SUPER SILT FENCE CAN BE SUBSTITUTED WITH STANDARD SILT FENCE WITH PERMISSION FROM SEDIMENT CONTROL INSPECTOR.

NOTE: LOCATE STOCKPILE AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. STOCKPILES EXCEEDING 15 FEET IN HEIGHT SHALL BE BENCHED.

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

- A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1155, AFTER THE FUTURE LOT AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
 - BEFORE THE START OF EARTH DISTURBANCE.
 - UPON COMPLETION OF THE INSTALLATION OF PERMANENT EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.
 - BEFORE THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER DISTURBED AREA.
 - BEFORE THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.

OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE SECURED. COORDINATION AND 10 DAY CONFLICTS WITH THIS PLAN.

- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THEREOF.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DATES AS TO THE SURFACE OF ALL PERMETER CONTROLS, DICES, SWALES, TRENCHES, PERMETER SLOPES, AND ALL SLOPES STEEPER THAN 3:1 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DATES AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-3), TURFGRASS SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-5). PERMANENT SEEDING AND TURFGRASS SEEDING WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE SECOND AND SEVENTH SEEDING DATES OF THE GROUND IS FROZEN, INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15' OF CUT AND/OR FULL STOCKPILES (SEC. B-4-8) IN EXCESS OF 20 FT. MUST BE RENEWED WITH STABLE OUTLET, ALL CONCENTRATED FLOW, STEEP SLOPES, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOIL STABILIZATION MATINGS (SEC. B-4-6).
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE, AND ARE TO BE MAINTAINED IN OPERATIONAL CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE CID.

- SITE ANALYSIS:
 - TOTAL AREA OF SITE: F16-0201 L.O.D. 7.35+/= ACRES
 - AREA DISTURBED: 7.67/- ACRES
 - AREA TO BE REEDED OR PAVED: 4.97/- ACRES
 - AREA TO BE VEGETATIVELY STABILIZED: 1.61/- ACRES
 - TOTAL CUT: 1.97/- CU. YDS. TOTAL
 - TOTAL FILL: 0.33/- CU. YDS. TOTAL
 - OFFSITE WASH/BORROW AREA LOCATION: TBD

- REFER TO ITEM 11 BELOW
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID, AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS REQUIRED. PRE-INSPECTION AND SHOULD INCLUDE:
 - INSPECTION DATE
 - INSPECTION TIME (ROUTE, PRE-Storm Event, During Rain Event)
 - NAME AND TITLE OF INSPECTOR
 - WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
 - BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND/OR CURRENT ACTIVITIES
 - EVIDENCE OF SEDIMENT DISCHARGES
 - IDENTIFICATION OF PLAN DISCREPANCIES
 - IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
 - IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
 - COMPLIANCE STATING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
 - PHOTOGRAPHS
 - MONITORING/SAMPLING
 - MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
 - OTHER INSPECTION ITEMS AS REQUIRED BY THE GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES (NPDES, MD).

- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE (3) PILE LENGTHS OR THAT WHICH CAN BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
- ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MAJOR REVISIONS MAY ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
- DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SCHEDULED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM AVERAGE OF 20 AC. PER GRADING UNIT) AT A TIME WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE HSCD, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME. WASH WATER FROM PAVING EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SURFACES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
- TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
- SLT FENCE SHALL BE INSTALLED AND MAINTAINED THROUGHOUT CONSTRUCTION AND MAINTAINED AT 25" MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPWARD BY 2" IN ELEVATION.
- STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUDES):
 - USE I AND IP MARCH 1 - JUNE 15
 - USE II AND IP OCTOBER 1 - APRIL 30
 - USE IV MARCH 1 - MAY 31
- A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE.

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

DEFINITION
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

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

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

CRITERIA

- GENERAL USE:
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE (FROM FIGURE 8.3) AND BASED ON THE SITE CONDITION OR PURPOSE (FROM FIGURE 8.2) SELECTED MIXTURE(S).
 - ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DITCHES FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC PURPOSES MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 542 - CRITICAL AREA PLANTING.
 - FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
 - FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (45-0-0) AT 3-1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.

- TURFGRASS SEEDING:
 - AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
 - SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTIRE MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - KENTUCKY BLUEGRASS: FULL SUN MIXTURE. FOR USE IN AREAS THAT RECEIVE INTENSIVE MAINTENANCE. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS AND SEEDING RATES: 1-5 TONS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - KENTUCKY BLUEGRASS/PERSNAIR RYE FILL SUN MIXTURE. FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MAINTENANCE. CERTIFIED PERENNIAL GRASSES/CULTIVARS/RYE TO 40 PERCENT OF THE TOTAL MIXTURE BY WEIGHT. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE. FOR USE IN BROADLY PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MAINTENANCE IN FULL SUN TO MEDIUM SHADE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 35 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 5 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET OR MORE. CULTIVARS MAY BE BLENDED.
 - KENTUCKY BLUEGRASS/TINE FESCUE: SHADE MIXTURE. FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MAINTAINED TURF AREAS. MIXTURE INCLUDES CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE 60 TO 70 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.

NOTES:
SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY AND 777, TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND. CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTURE PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SOIL CONSERVATION PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE.

- IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES:
 - WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 15 TO OCTOBER 1 (HARDNESS ZONES: SR, GA)
 - EASTERN MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONE: GR)
 - SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDNESS ZONES: TA, 7A)
- TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER POWER METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO BE REEDED. REMOVE ALL ROCKS, STONES AND DEBRIS OVER 1/4 INCHES DIAMETER. THE RESULTING SURFACE MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
 - IF SOIL MOISTURE IS DEFICIENT, WATER THE AREAS TO BE REEDED PRIOR TO PLANTING 1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.
- SOIL TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER):
 - GENERAL SPECIFICATIONS:
 - CLASS OF TURFGRASS SOO MUST BE MARYLAND STATE CERTIFIED. SOO LABELS MUST BE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
 - SOO MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4 INCH, PLUS OR MINUS 1/8 INCH. AT THE TIME OF CUTTING, MEASUREMENT FOR THICKNESS MUST EXCLUDE GRASS GROWTH AND THATCH, BROKEN PAGES AND TOM OR UNSEEN ENDS WILL NOT BE ACCEPTABLE.
 - STANDARD SIZE SECTIONS OF SOO MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUBJECTED VERTICALLY WITH A FIRM GRASS ON TOP UP TO 10 PERCENT OF THE SEEDING.
 - SOO MUST NOT BE HARVESTED OR COMPACTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
 - SOO MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 30 HOURS. SOO NOT TRANSPORTED WITH THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
 - SOO INSTALLATION:
 - DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY BRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOO.
 - LAY THE FIRST ROW OF SOO IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOO IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE SOO'S SURFACE.
 - WHEREVER POSSIBLE, LAY SOO WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERED JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOO TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOO ROOTS AND THE UNDERLYING SOIL SURFACE.
 - WATER THE SOO IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOO PAD AND SOIL SURFACE BELOW ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND BRIGATING FOR ANY PIECE OF SOO WITHIN EIGHT HOURS.

- SOO MAINTENANCE:
 - IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST TO A DEPTH OF 4 INCHES. WATER SOO DURING THE HEAT OF THE DAY TO PREVENT WILTING.
 - AFTER THE FIRST WEEK, SOO MAINTENANCE IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
 - DO NOT MOW UNTIL THE SOO IS FIRMLY ROOTED. NO MORE THAN 1/2 OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

PERMANENT SEEDING SUMMARY

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	FERTILIZER RATE (10-20-20)			LIME RATE
					N	P ₂ O ₅	K ₂ O	
1	COOL SEASON ANNUAL GRASS OR LEGUMES OR MIXTURE	1.0 LB/60 LB/AC	MAY 15 TO OCT 15	1/4-1/2 IN.	45 LB/AC	90 LB/AC	90 LB/AC	2 TONS/AC (10 LB PER 1000 SF)
	TALL FESCUE	1.0 LB/60 LB/AC	MAY 15 TO OCT 15	1/4-1/2 IN.	1.0 LB/60 LB/AC	2.0 LB/60 LB/AC	2.0 LB/60 LB/AC	2 TONS/AC (10 LB PER 1000 SF)
	OR LEGUMES	1.0 LB/60 LB/AC	MAY 15 TO OCT 15	1/4-1/2 IN.	1.0 LB/60 LB/AC	1.0 LB/60 LB/AC	1.0 LB/60 LB/AC	2 TONS/AC (10 LB PER 1000 SF)

**R-4-2 STANDARDS AND SPECIFICATIONS
FOR SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS**

DEFINITION
THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES
WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA

- SOIL PREPARATION:
 - TEMPORARY STABILIZATION:
 - SEEDING PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL FLOWS, OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
 - APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
 - INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE EQUIPMENT.
 - PERMANENT STABILIZATION:
 - A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE TEST SHALL DETERMINE THE NUTRIENT LEVELS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
 - SOIL PH BETWEEN 6.0 AND 7.0.
 - SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
 - SOIL CONTENTS LESS THAN 40 PERCENT PLY BUT ENOUGH FINE GRANDED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD WATER.
 - SOILS WITH LESS THAN 10 PERCENT ORGANIC MATTER SHALL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
 - SOILS CONTAINING LESS THAN 1 PERCENT ORGANIC MATTER BY WEIGHT.
 - SOIL CONTENTS SUFFICIENT PERMANENT TO PERMIT ADEQUATE ROOT PENETRATION.
 - SOIL CONTENTS SUFFICIENT PERMANENT TO PERMIT ADEQUATE ROOT PENETRATION.
 - APPLICATION OF AMENDMENTS OR TOPSOILS IS REQUIRED FOR 0-10% SOILS DO NOT MEET THE ABOVE CRITERIA. AMENDMENTS OR TOPSOILS SHALL BE APPLIED TO THE FOLLOWING AREAS:
 - GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCAFFOLD OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.
 - APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
 - MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE EQUIPMENT. RAKE DRAIN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS TO PLANTS, AND/OR UNDESIRABLE PLANTS, AND/OR UNDESIRABLE PLANTS. UNDESIRABLE PLANTS OR OBJECTS SHALL BE REMOVED. UNDESIRABLE PLANTS SHALL BE REMOVED BY CUTTING OR OTHER MEANS. UNDESIRABLE PLANTS SHALL BE REMOVED BY CUTTING OR OTHER MEANS. UNDESIRABLE PLANTS SHALL BE REMOVED BY CUTTING OR OTHER MEANS.
 - PREPARE SURFACE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
 - PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SLOPE.
 - MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT AND SOIL OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE. MAINTAINABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS A MODULAR OR ALUMINUM PIPE. PROVIDE A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE.

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

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

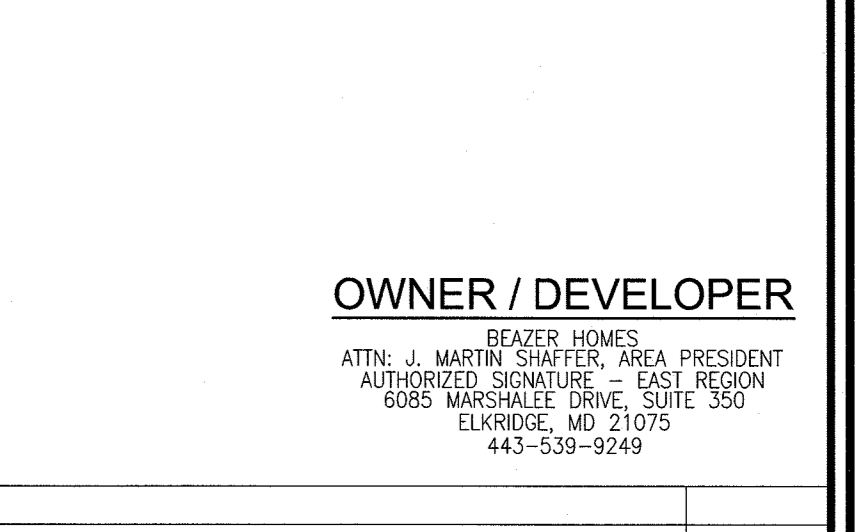
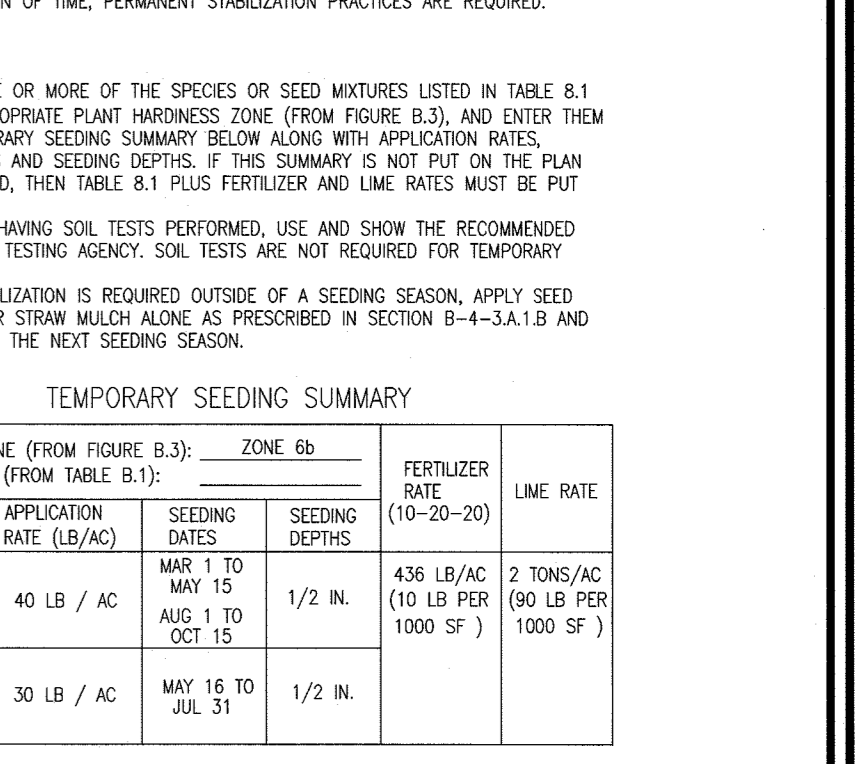
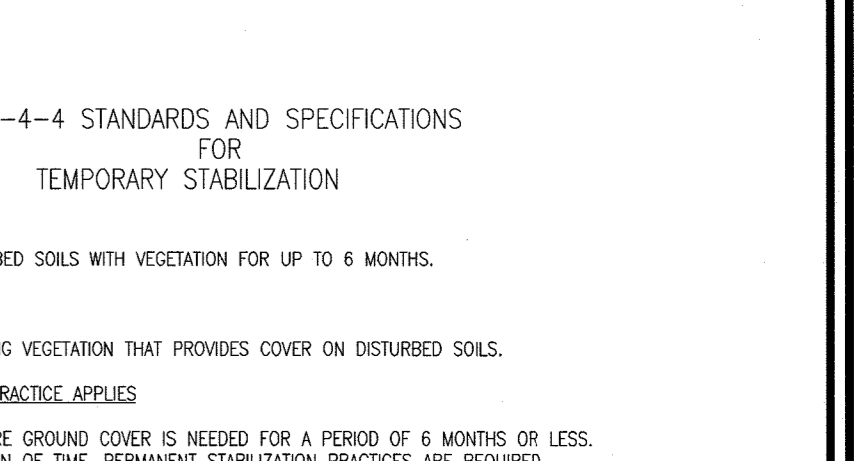
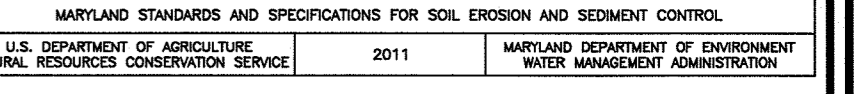
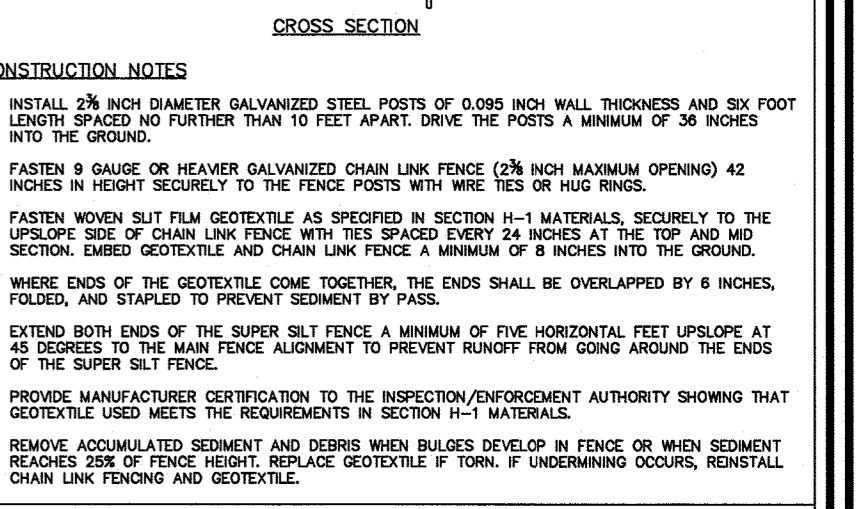
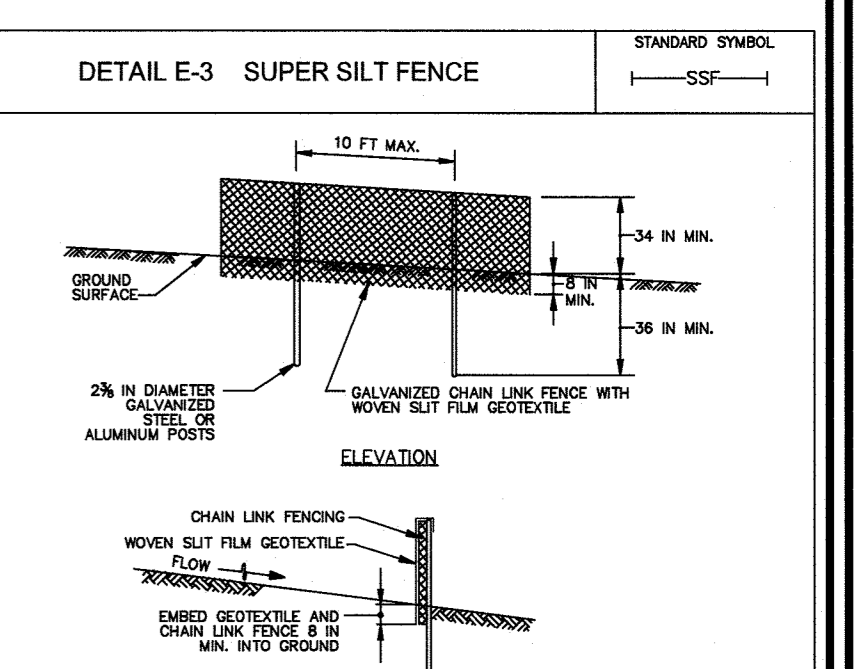
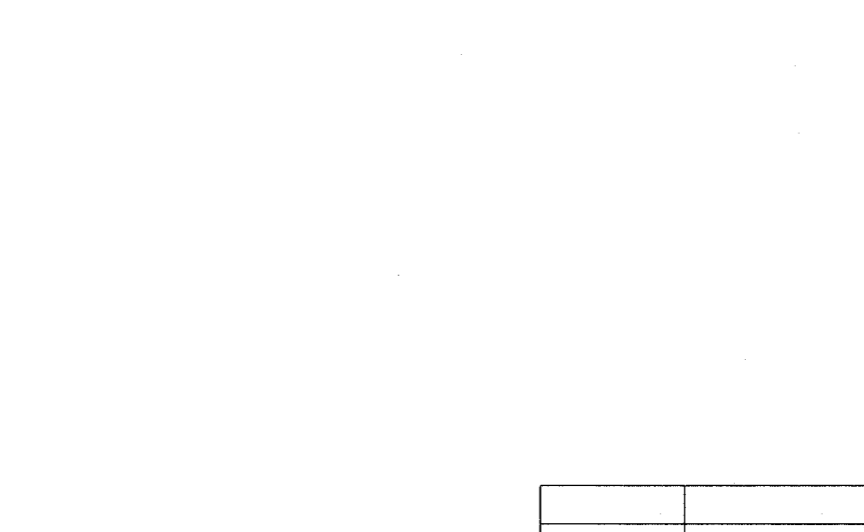
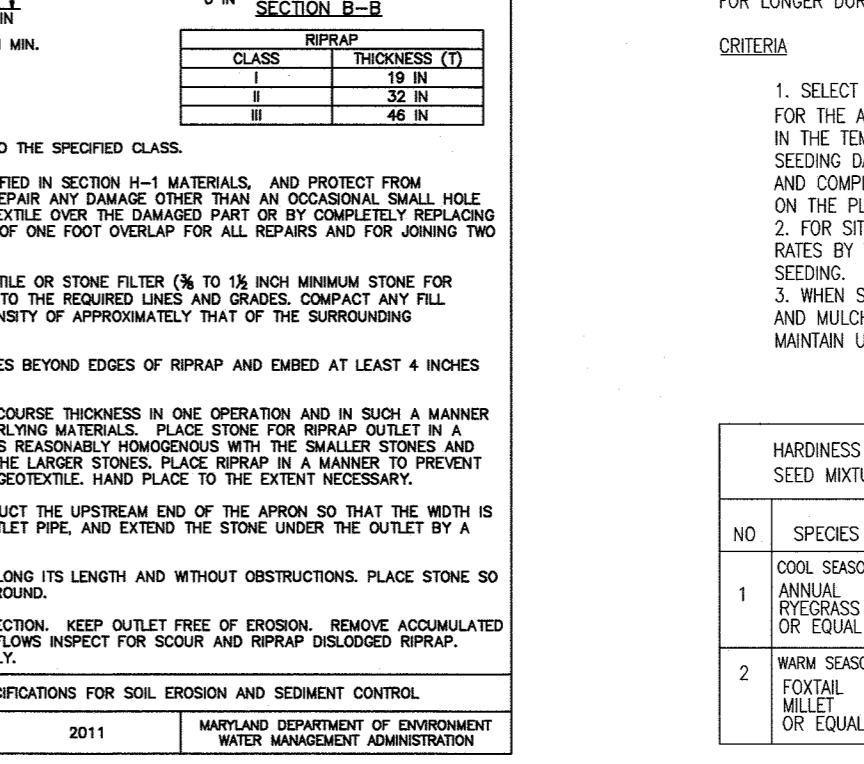
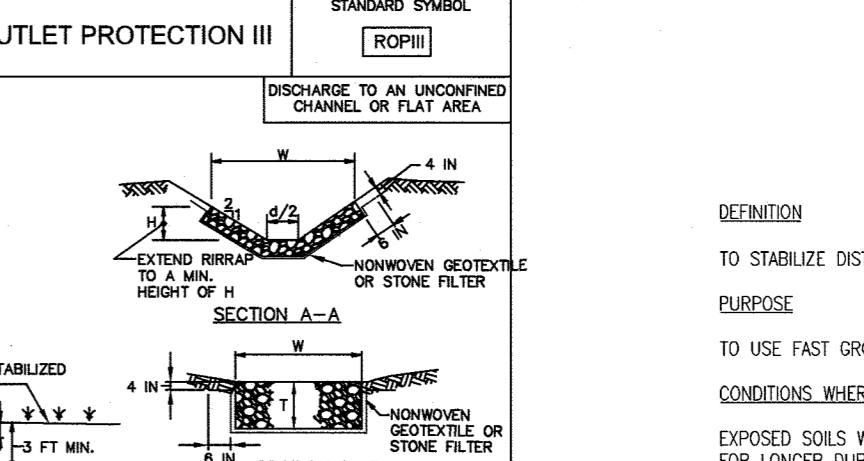
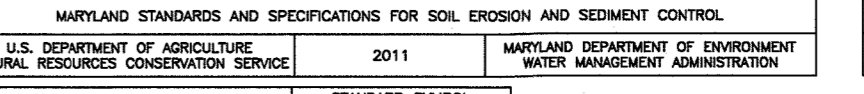
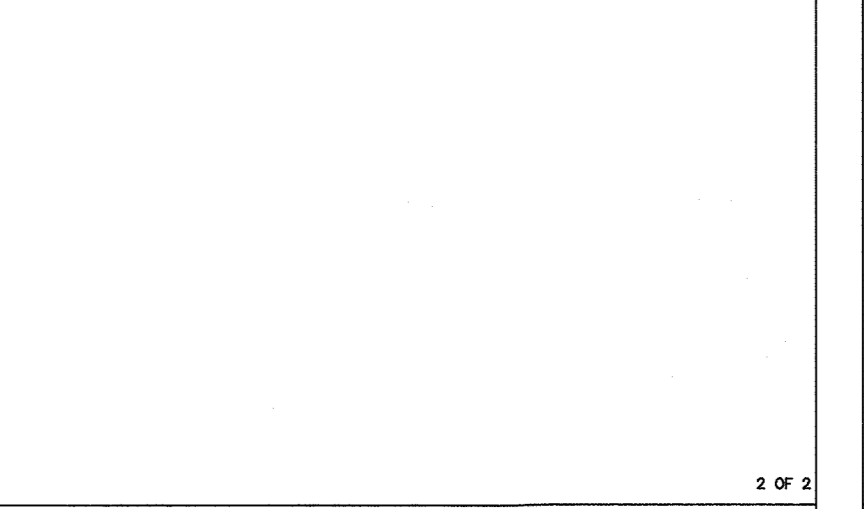
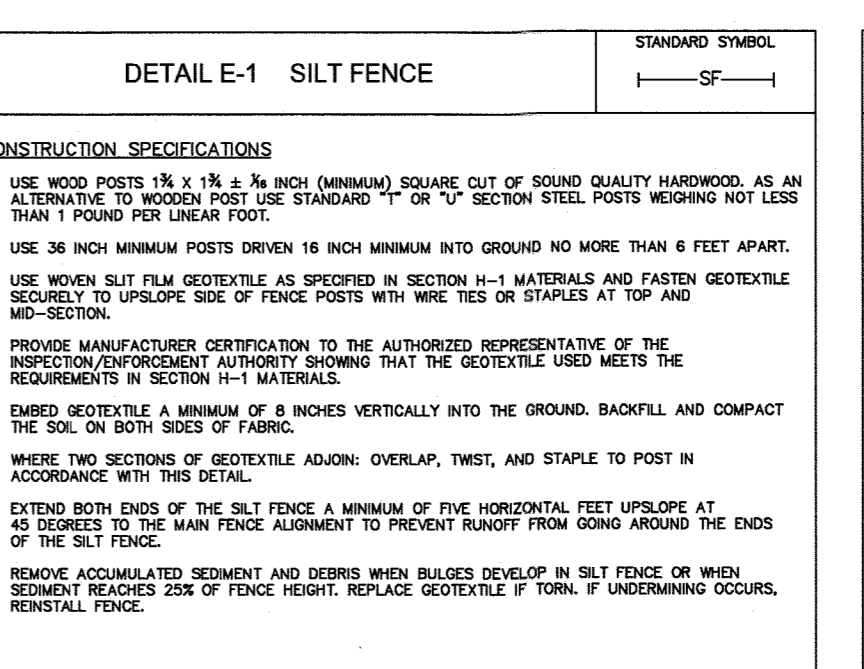
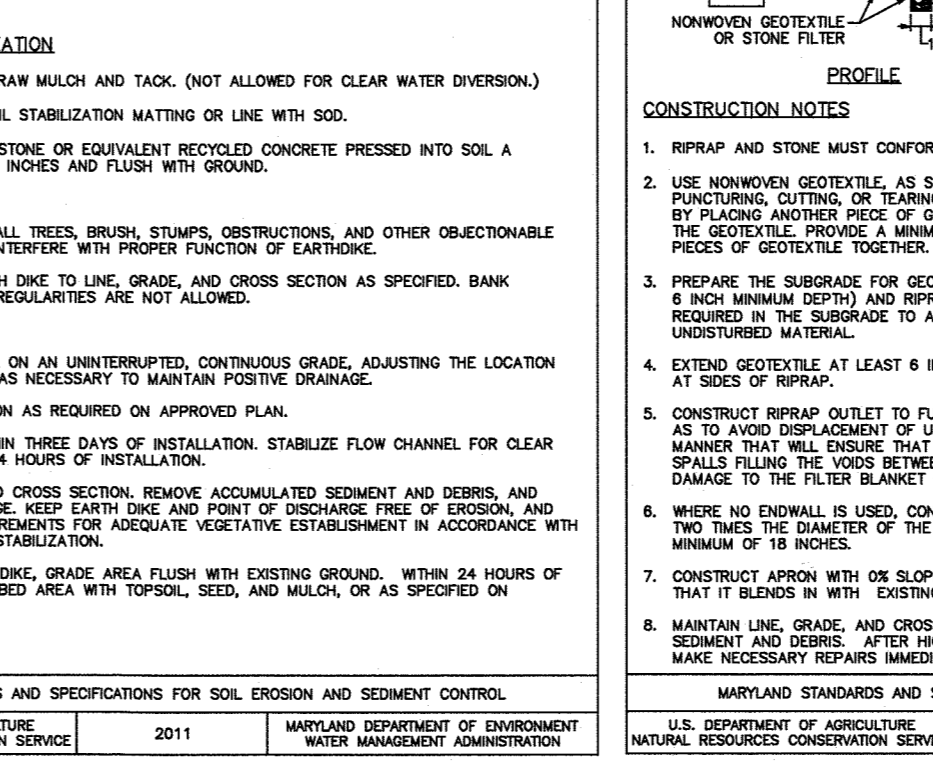
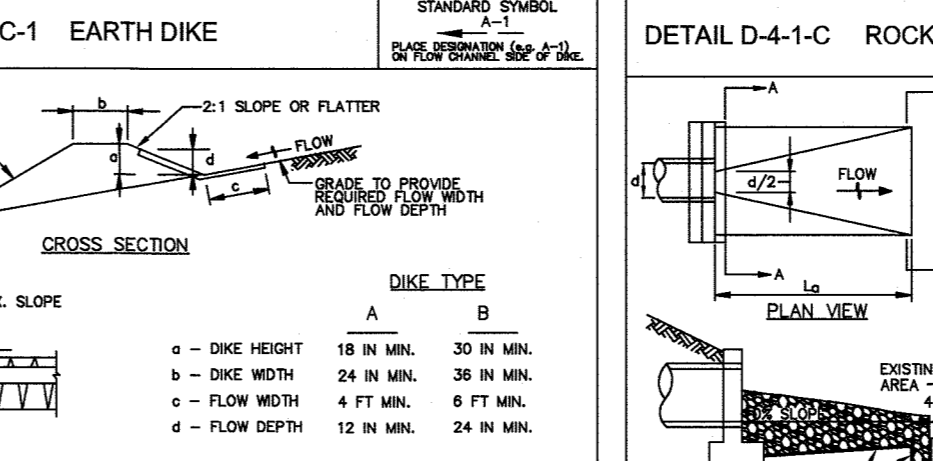
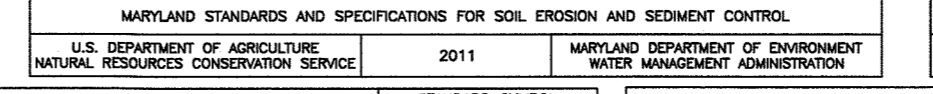
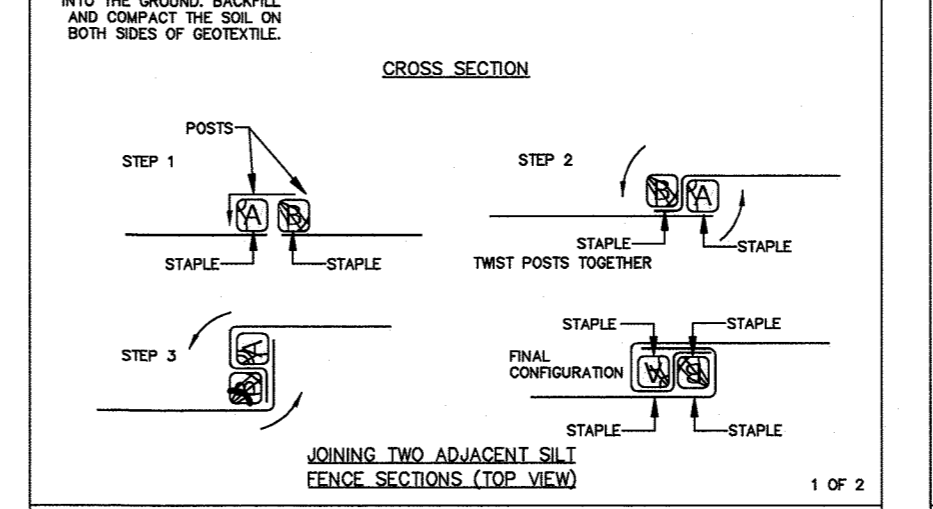
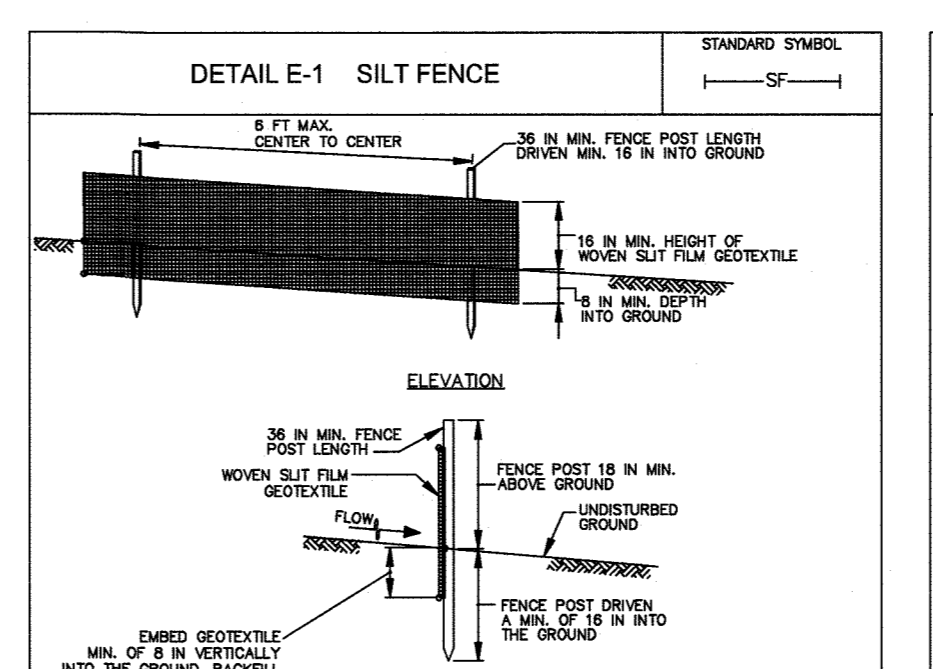
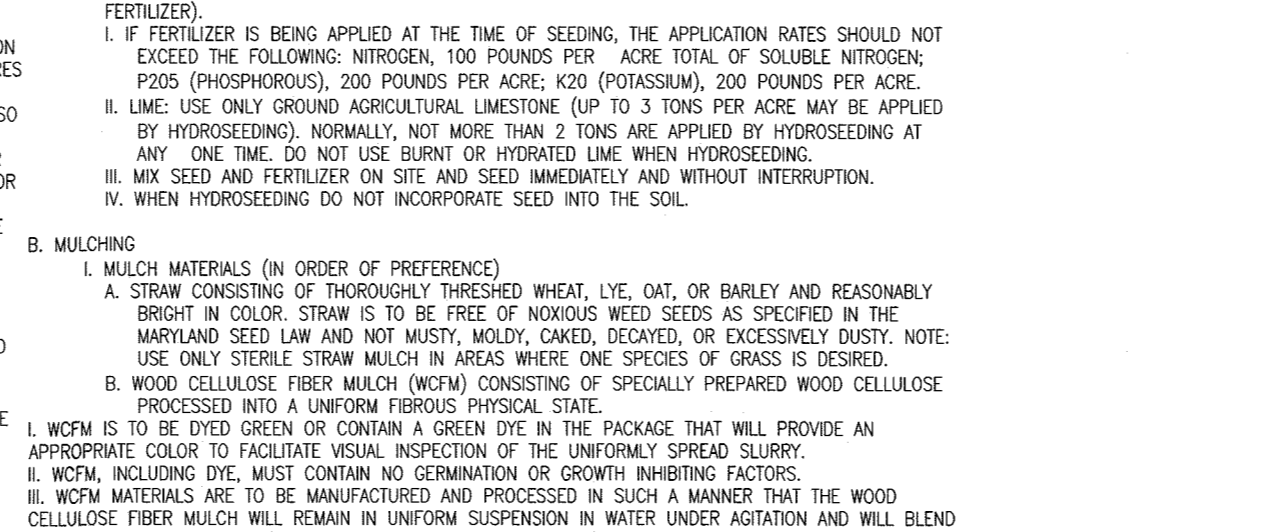
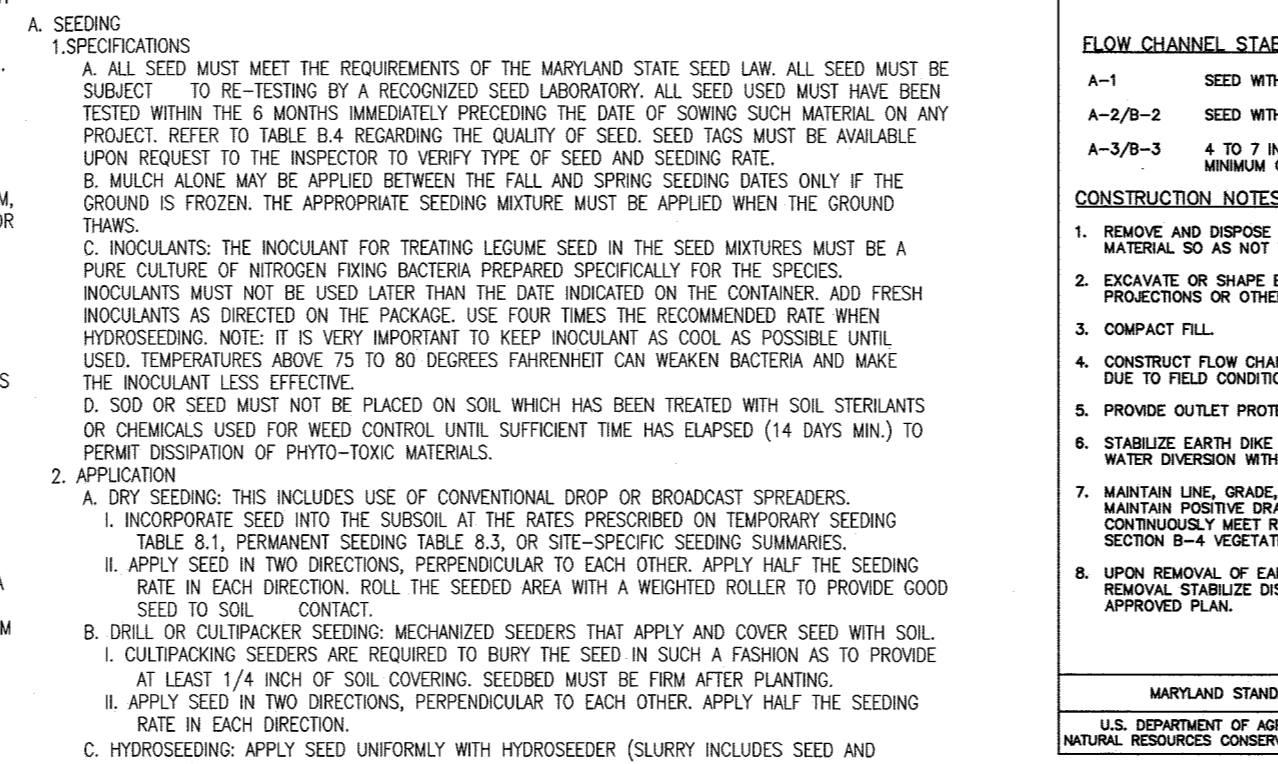
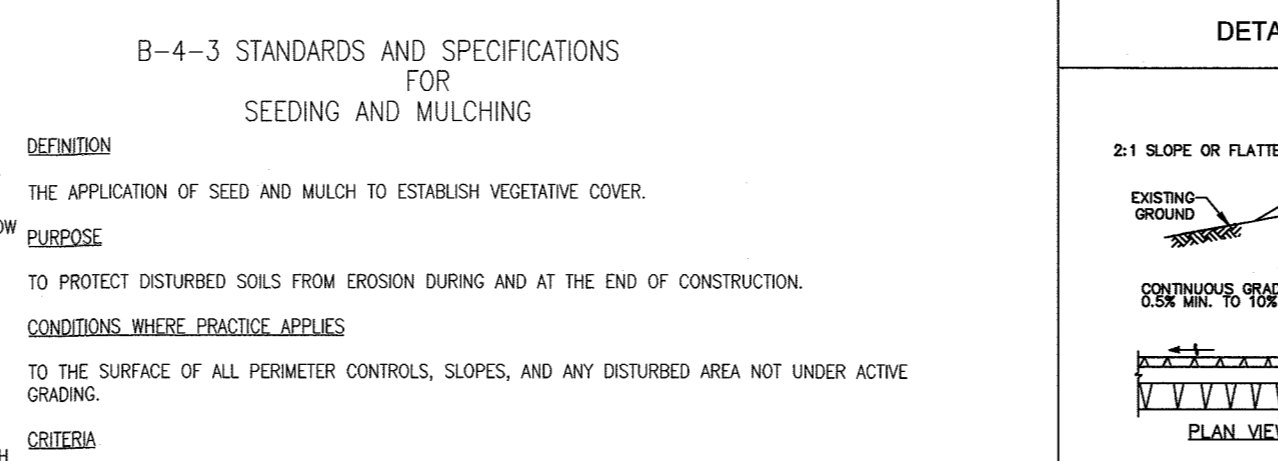
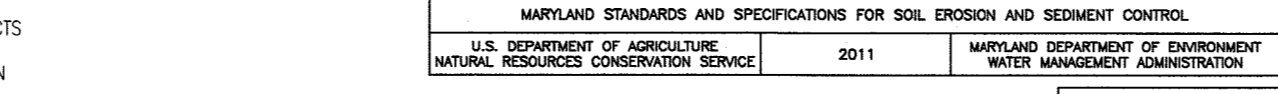
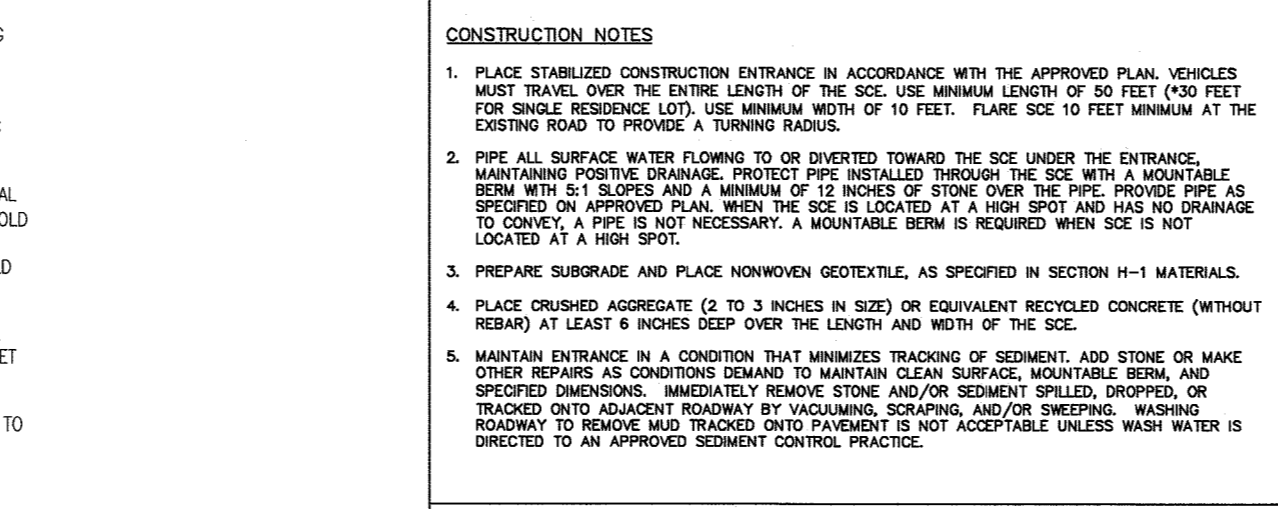
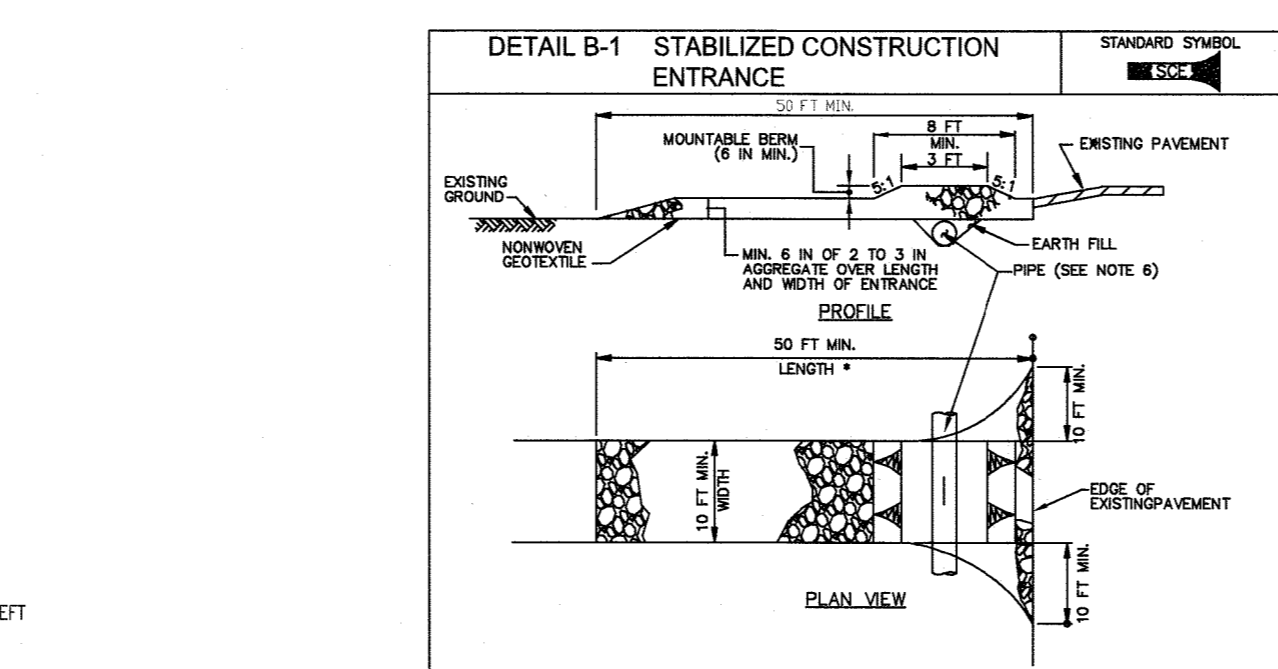
PURPOSE
TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

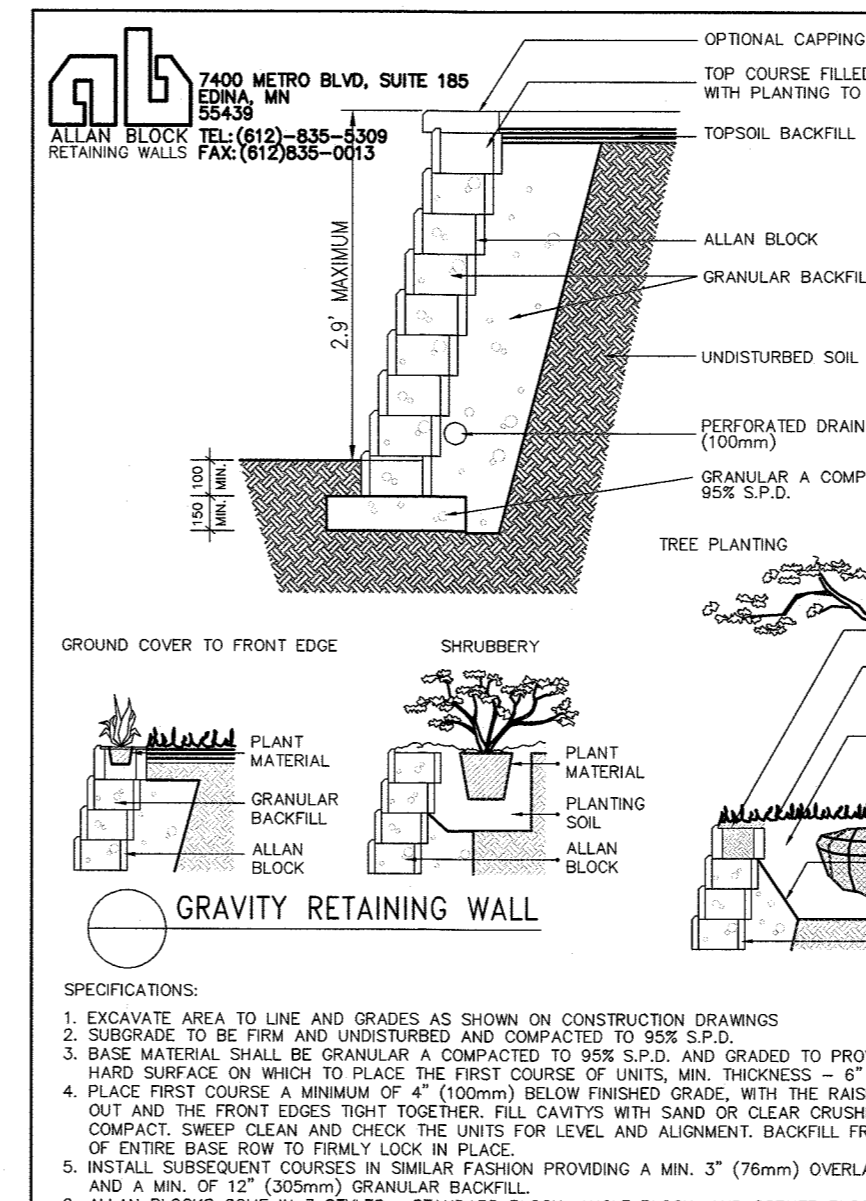
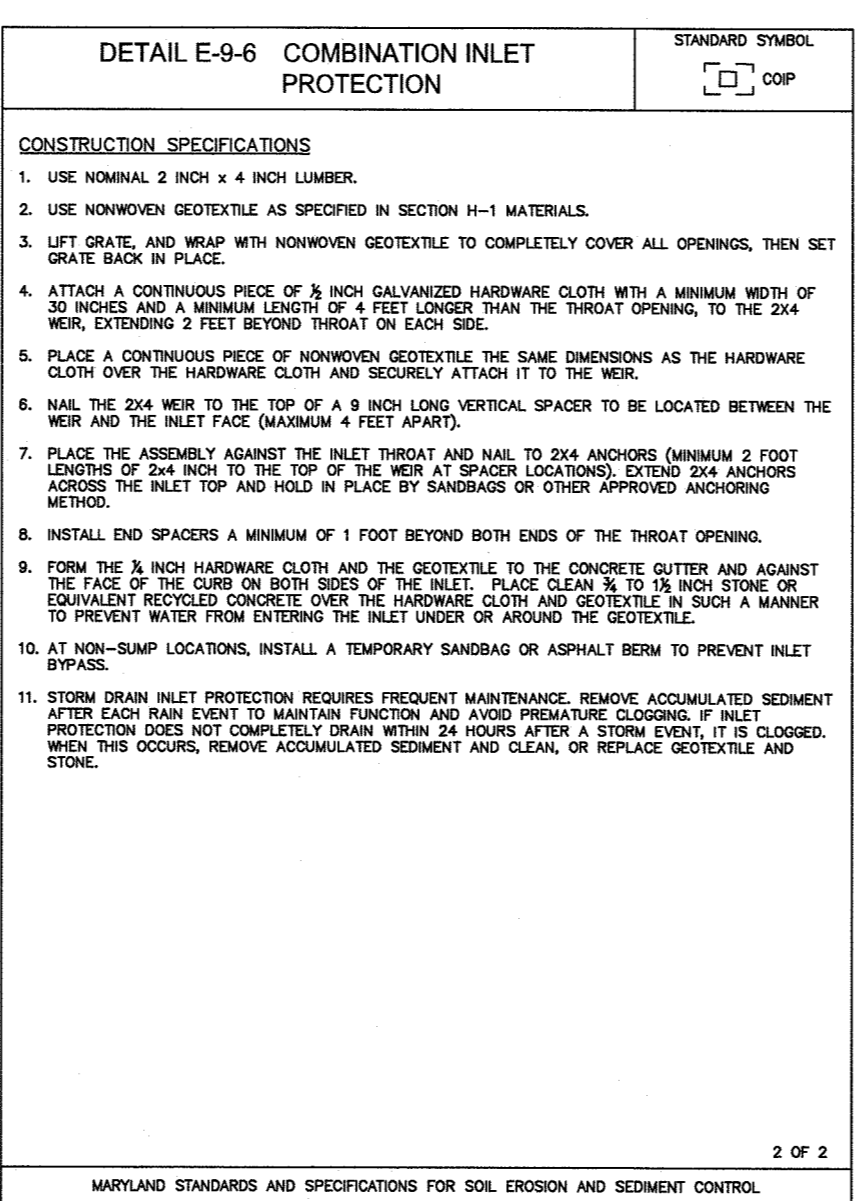
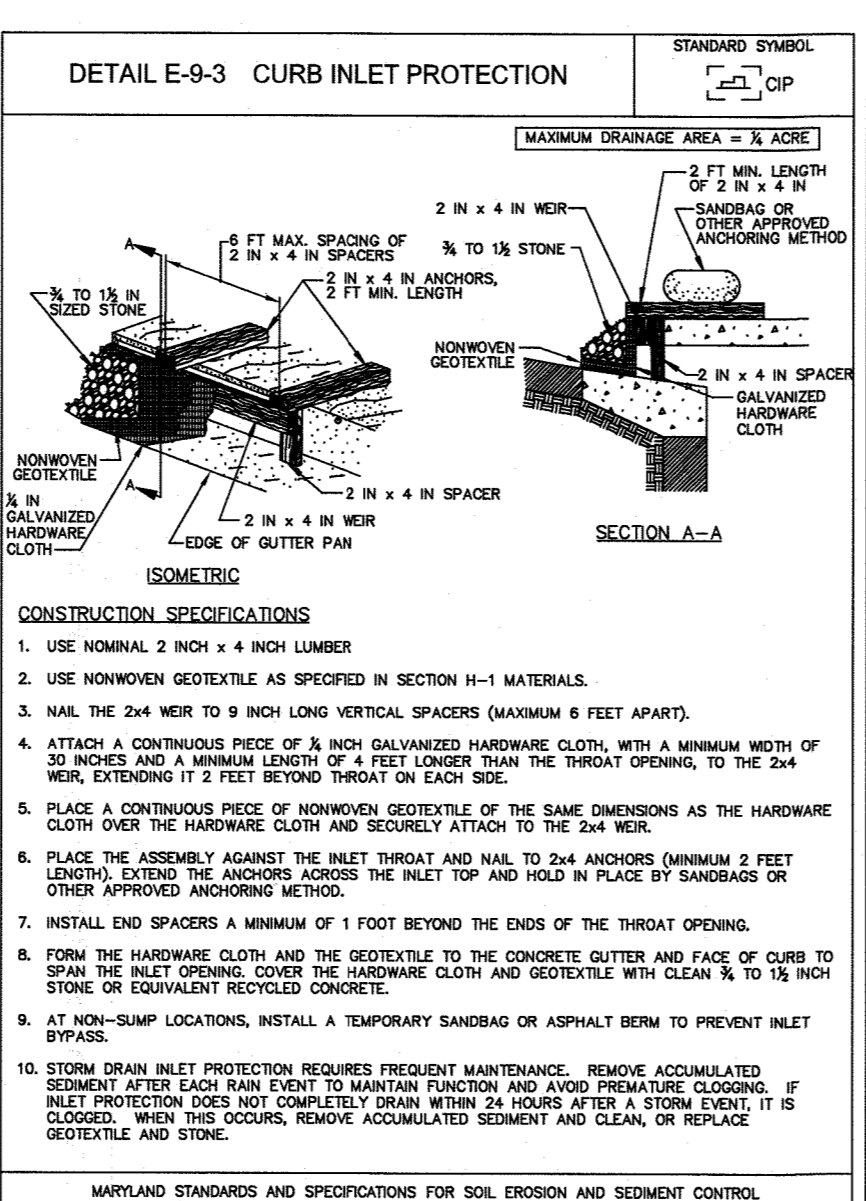
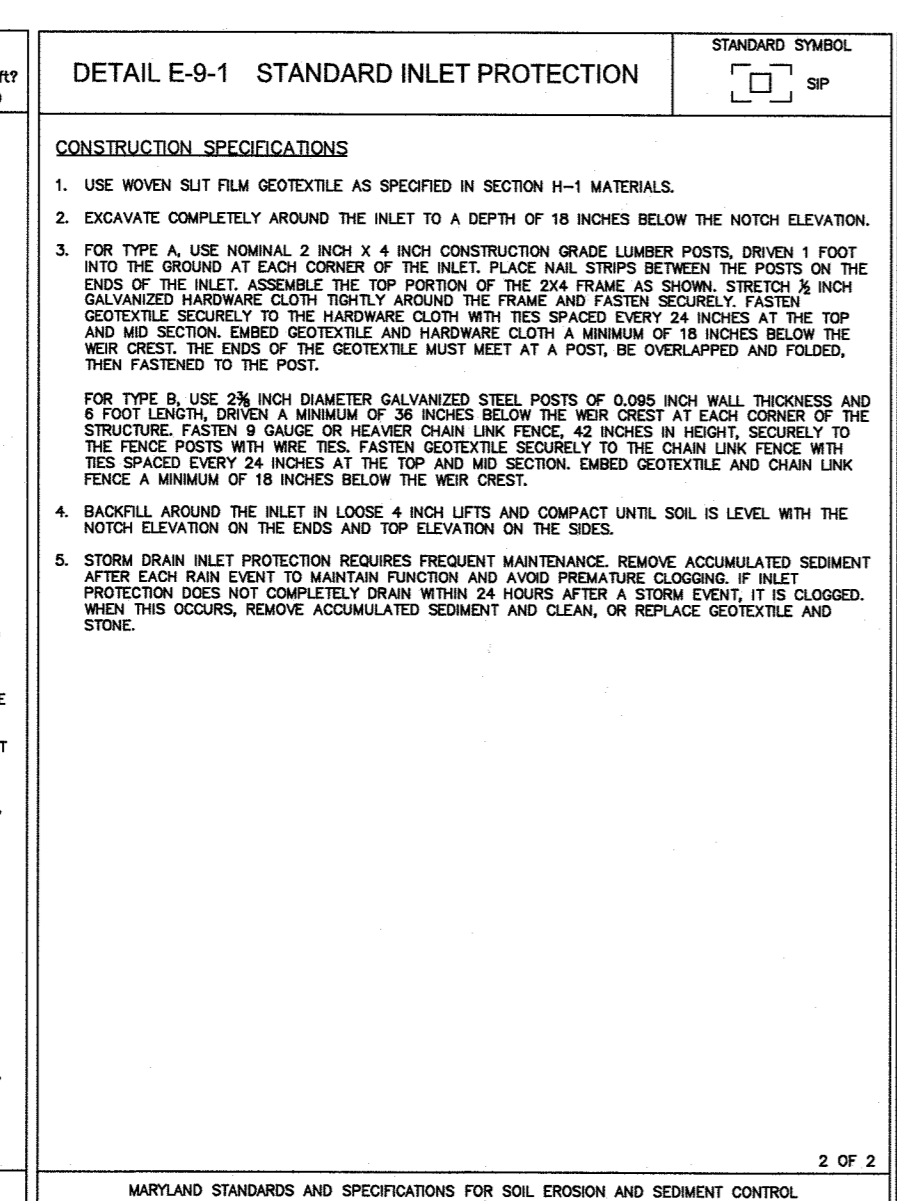
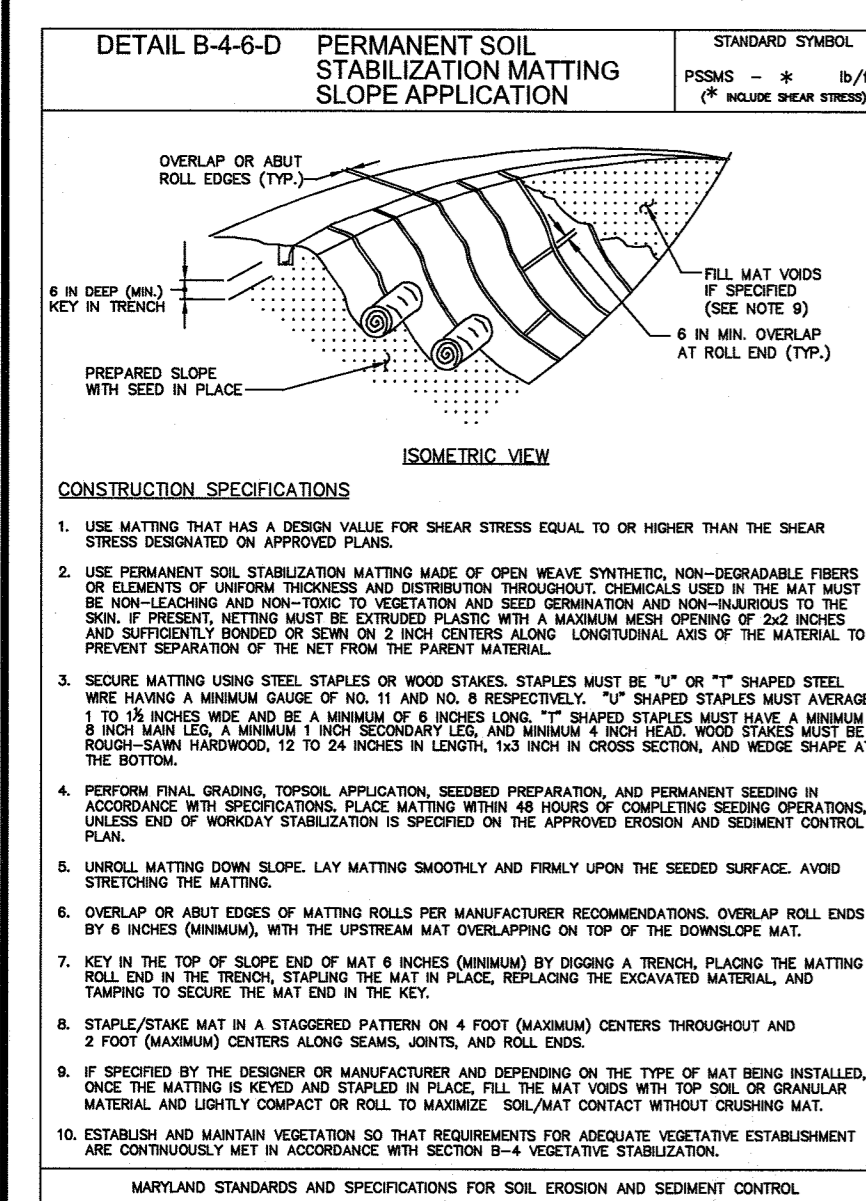
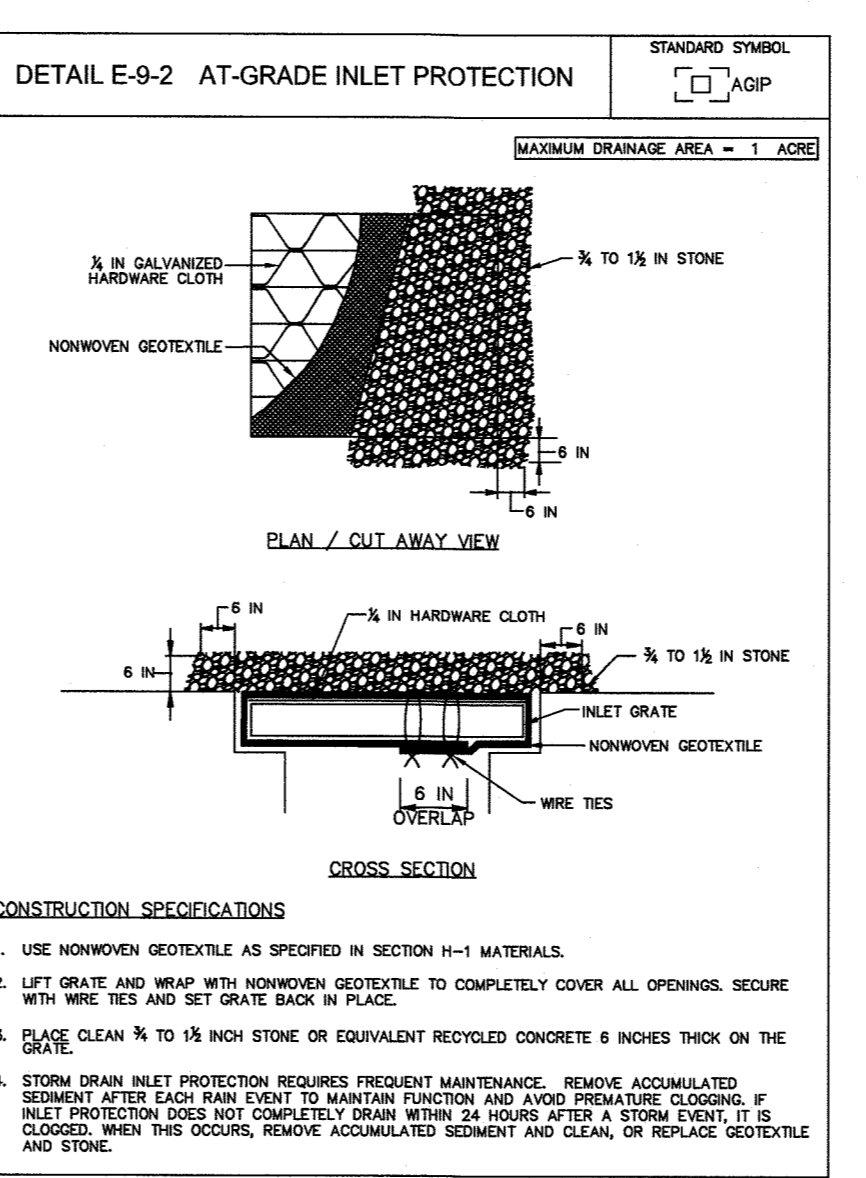
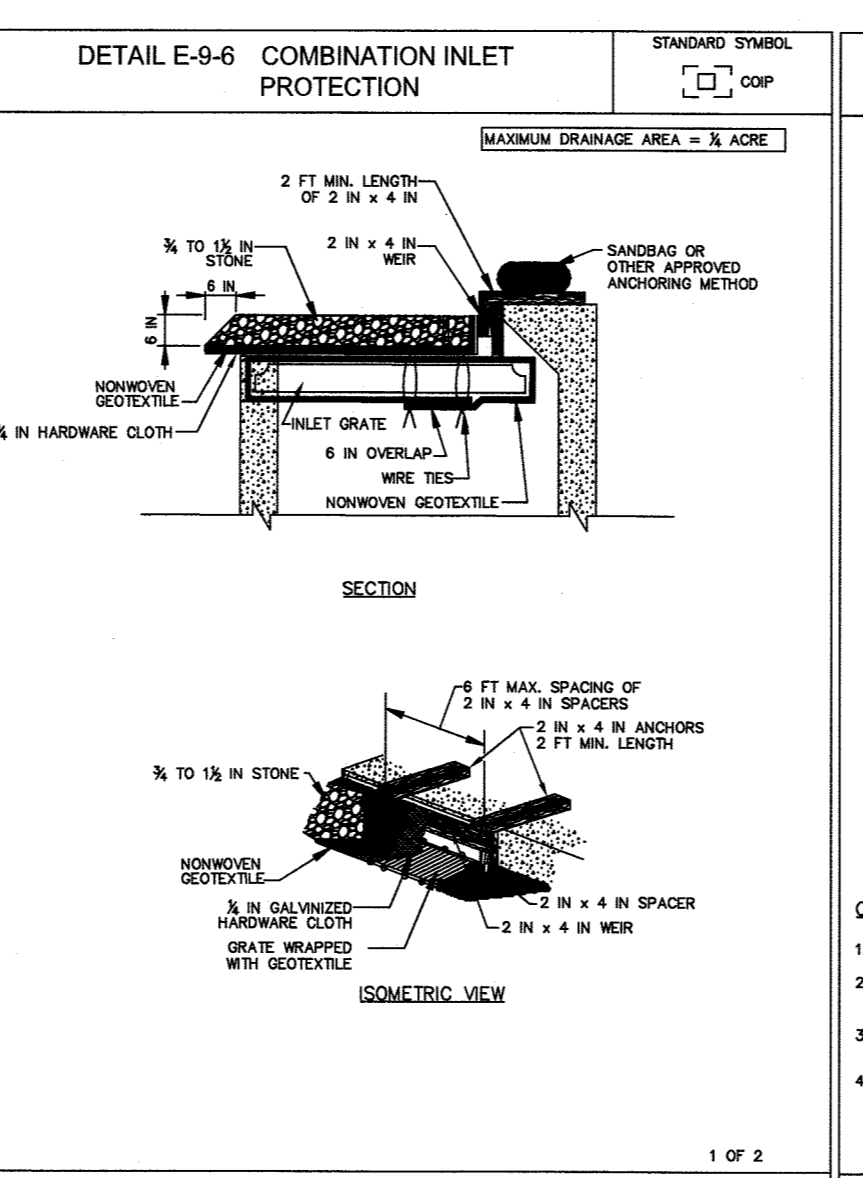
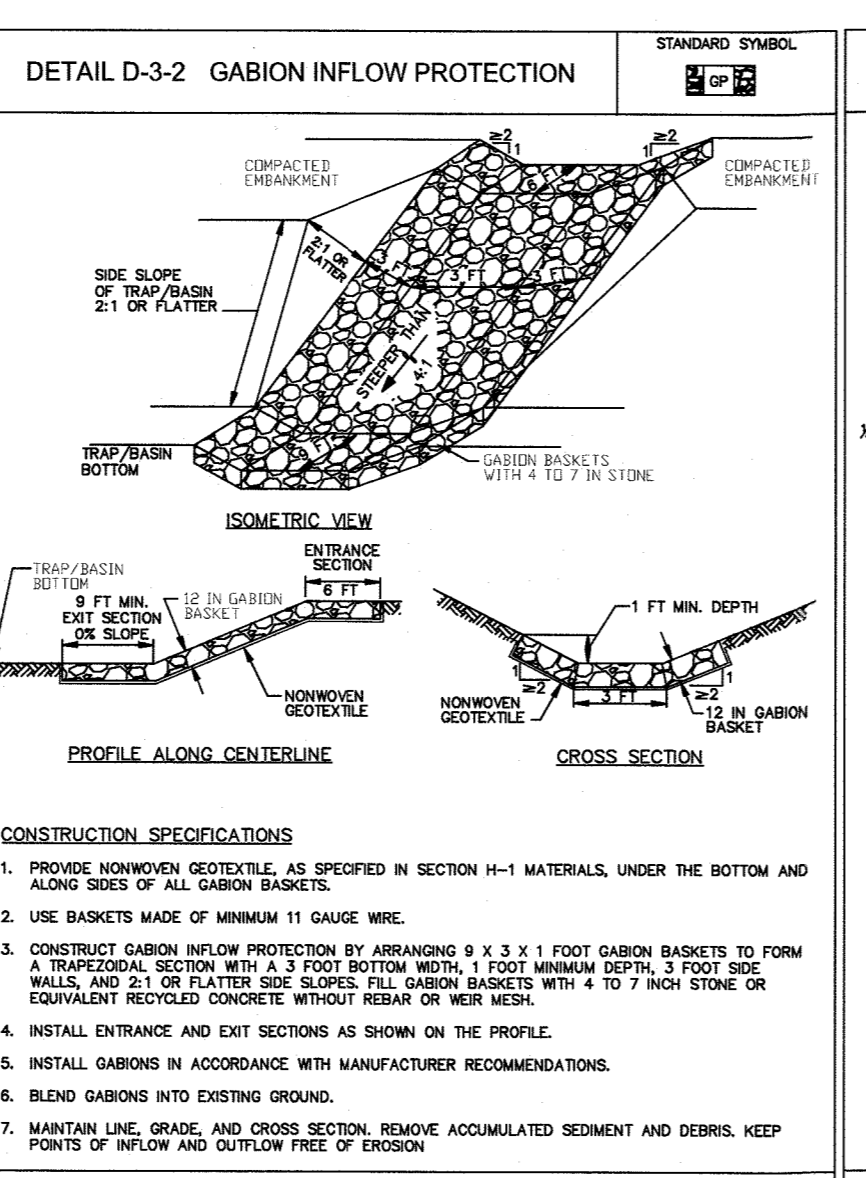
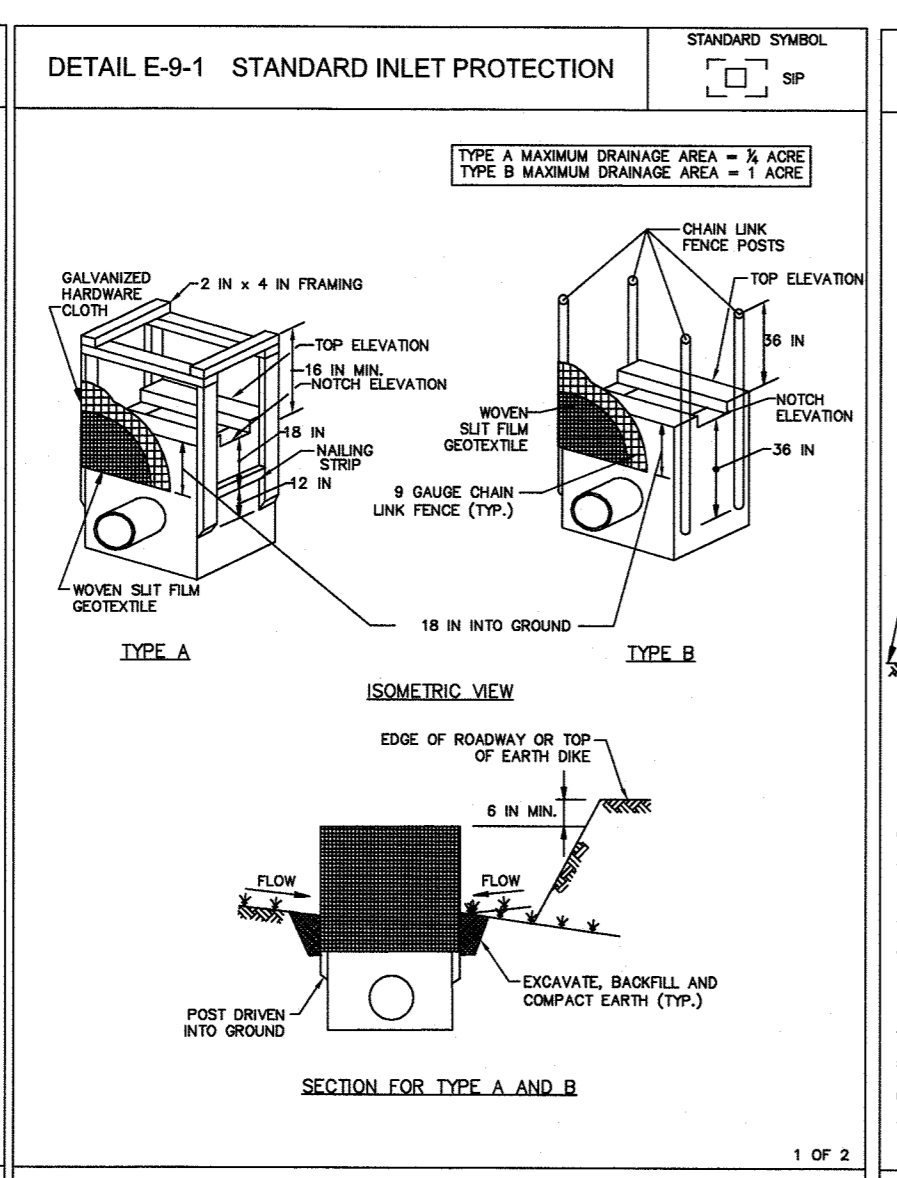
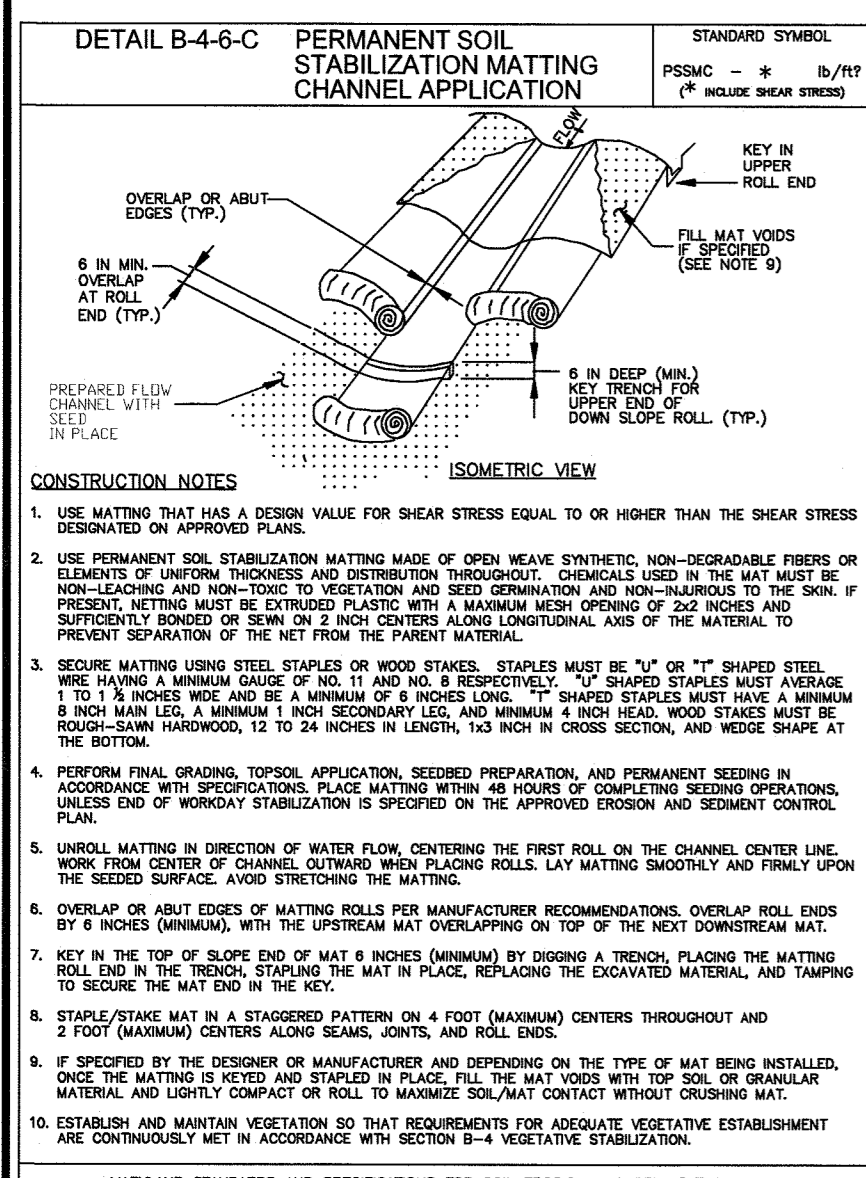
CONDITIONS WHERE PRACTICE APPLIES
TO THE SURFACE OF ALL PERMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

- TOPSOIL TO BE PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, AND/OR UNDESIRABLE PLANTS, AND/OR UNDESIRABLE PLANTS, AND/OR UNDESIRABLE PLANTS.
- TOPSOIL SALVAGED FROM AN EXISTING SITE IS TO BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR OVER SOIL TYPE CAN BE DETERMINED BY THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SURVEY PUBLISHED BY USDA-NRCS.
- TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
 - A TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
 - THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
 - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
 - THE SOIL IS SO ACRID THAT TREATMENT WITH LIMESTONE IS MOST FEASIBLE.
- SOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
 - A ALL SEEDS MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL. ON ANY PROJECT, REFER TO TABLE 8.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY THE TYPE OF SEED AND SEEDING RATE.
 - SOO OR SEED MUST NOT BE PLACED ON SOIL THAT IS NOT ADEQUATELY PREPARED. ONLY IF THE GROUND IS FROZEN, THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAW.
 - INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEEDS IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST BE USED LATER THAN THE DATE INDICATED ON THE PACKAGE. USE FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANTS AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
 - HYDROSSEEDING: HYDROSSEEDING IS TO BE USED ONLY ON SLOPES THAT ARE NOT STEEPER THAN 2:1. HYDROSSEEDING IS TO BE USED ONLY ON SLOPES THAT ARE NOT STEEPER THAN 2:1. HYDROSSEEDING IS TO BE USED ONLY ON SLOPES THAT ARE NOT STEEPER THAN 2:1. HYDROSSEEDING IS TO BE USED ONLY ON SLOPES THAT ARE NOT STEEPER THAN 2:1.

- MULCHING:
 - MULCH MATERIALS (IN ORDER OF PREFERENCE):
 - STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLTY, CURED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: DO NOT USE STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
 - WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
 - WCFM IS TO BE LIVED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORM SPREAD SLURRY.
 - WHERE THE SUBSOIL IS EITHER HEAVILY MOIST OR COMPOSED OF HEAVY CLAYS, SPREAD GRASS LIME AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.
- APPLICATION:
 - WCFM IS TO BE APPLIED AT THE TIME OF SEEDING. THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE; TOTAL OF SOLUBLE NITROGEN, PHOSPHORUS, 200 POUNDS PER ACRE; POTASSIUM, 200 POUNDS PER ACRE.
 - LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE) MAY BE APPLIED BY HYDROSSEEDING. NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSSEEDING AT ANY ONE TIME. DO NOT USE BURST OR HORNEAD LIME WHEN HYDROSSEEDING.
 - ALL MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
 - WHEN HYDROSSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.





SEQUENCE OF CONSTRUCTION

PHASE 1 WORK - BASIN CONSTRUCTION

1. OBTAIN GRADING PERMIT. - (1 DAY)
2. DEVELOPER / CONTRACTOR SHALL REQUEST A PRE-CONSTRUCTION MEETING WITH THE APPROPRIATE ENFORCEMENT AUTHORITY PRIOR TO BEGINNING CONSTRUCTION. - (1 DAY)
3. NOTIFY HOWARD COUNTY BUREAU OF INSPECTIONS AND PERMITS (410-313-1880) AT LEAST 24 HOURS BEFORE STARTING ANY WORK. - (1 DAY)
4. STAKEOUT LIMITS OF DISTURBANCE. - (3 DAYS)

PHASE 2 WORK

1. WITH PERMISSION OF SEDIMENT CONTROL INSPECTOR AND WITH BASIN#1 IN PLACE, DRESS EASTERN AND WESTERN BOUNDARY EARTH DIKE / CLEAN WATER DIVERSION PRIOR TO MASS GRADING OPERATIONS. - (2 DAYS)
2. CLEAR & GRUB REMAINING SITE WITHIN THE LIMITS OF DISTURBANCE. - (2 DAYS)
3. BEGIN SITE MASS GRADING OPERATIONS AS SHOWN HEREIN, BRINGING SITE TO ROAD SUBGRADE ELEVATIONS AND COMPACTED FLOORS FOR UTILITY INSTALLATION AND PROPOSED HOME CONSTRUCTION. (3 WEEKS)
4. PLACE MONTGOMERY ROAD - MD ROUTE 103 WISCONSIN AREA TO SUBGRADE. - (3 DAYS)
5. COMPLETE MASS GRADING; STABILIZE THOSE AREAS AT FINISHED GRADE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH OR AS DIRECTED BY THE SEDIMENT CONTROL INSPECTOR. - (2 DAYS)
6. INSTALL PROJECT WATER MAIN & SEWER EXTENSIONS. ALLOW FOR CONTINUED CONVEYANCE OF SEDIMENT LAIDEN WATER TO THE BASIN. - (1 MONTH)
7. RETAIN REMAINING STORM DRAIN SYSTEMS AND TEMPORARY PIPE DIVERSIONS AS SHOWN HEREIN. ADD INLET PROTECTION, PER DETAILS HEREON, AS WORK PROGRESSES TO ANY INLET WHICH DOES NOT FLOW THROUGH THE BASIN. - (1 MONTH)
8. BLOCK PIPES FROM 1-23 AND MH-7 TO MHA, MH-5A TO MH-5 - (1 MONTH)
9. BIOSWALE TO 1-23 SHOULD NOT BE CONSTRUCTED UNTIL UP-LAND DRAINAGE AREAS ARE VEGETATIVELY STABILIZED. - (3 MONTHS)
10. PROJECT STORMWATER SED - MICROBIORETENTION AND BIOSWALE SYSTEMS CAN BE EXCAVATED AT THIS POINT TO AN ELEVATION AT LEAST 1 FOOT ABOVE ULTIMATE FINISH ELEVATION. THIS MATERIAL CAN BE UTILIZED FOR ON-SITE MASS GRADING. FILL MATERIALS AS WELL AS PROVIDE POCKETS OF SEDIMENT STORAGE FOR THE ALLOWANCE OF THE EVENTUAL BASIN BACKFILL OPERATIONS. ADD INLET PROTECTION, PER DETAILS HEREON, AS WORK PROGRESSES TO ANY INLET WHICH DOES NOT FLOW THROUGH THE BASIN. DO NOT CONSTRUCT BIOSWALE #8 AT THIS TIME. BLOCK CO-4 AND 1-23 FROM RECEIVING RUNOFF. - (1 MONTH)
11. WITH TEMPORARY PIPE DIVERSIONS IN PLACE AND WITH PERMISSION FROM SEDIMENT CONTROL INSPECTOR, THE WESTERN EARTH DIKES GABION INFLOW PROTECTION CAN BE REMOVED, EARTH DIKE REDUCED OR REMOVED AND MASS GRADING OPERATIONS COMPLETED. - (2 WEEKS)
12. WITH ABOVE COMPLETED, COMPLETE THE CONSTRUCTION OF THE SHEET 31-33. - (1 MONTH)
13. BASIN SHALL REMAIN UNTIL DIRECTED BY SEDIMENT CONTROL INSPECTOR.
14. COMPLETE INSTALLATION OF 48" UNDERGROUND PIPE STORAGE FACILITY, ANY AREA PLACED TO FINAL GRADE AFTER 48" SYSTEM INSTALLATION SHALL BE STABILIZED WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. SLOPES SHALL BE PROTECTED WITH PERMANENT SOIL STABILIZATION MATTING - SLOPE APPLICATION (SPSMs-2.0). AS TENNIS COURT SUB-GRASSES ARE ESTABLISHED, AREA SHOULD BE CAPPED WITH CR-6 TO MAKE READY FOR TENNIS COURT CONSTRUCTION. - (1 MONTH)
15. WITH UTILITIES (WATER SEWER AND STORM DRAIN) IN-PLACE, COMPLETE OPERATIONS REQUIRED FOR THE INSTALLATION OF ROAD SECTION STONE, CURB & GUTTER, BASE COURSE PAVEMENT FOR INTERIOR ROADS AND MD 103 WISCONSIN. - (1 WEEK)
16. INSTALL CURB & GUTTER AND BASE COURSE PAVEMENT - (1 WEEK)
17. THE GRADE SITE NEAR CURBING AND SIDEWALK STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. OBTAIN PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR TO PROCEED. - (2 DAYS)
18. COMPLETE INSTALLATION OF 48" DIRT UTILITIES (1 MONTH)
19. BEGIN HOME CONSTRUCTION - (2 YEARS)
20. COMPLETE INSTALLATION OF ANY INTERIOR SIDEWALK AND STABILIZE WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - (5 DAYS)
21. WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, COMPLETE ANY REMAINING FINE GRADING IN ACCORDANCE WITH STORMWATER MANAGEMENT CRITERIA AND SURFACE COURSE PAVEMENT - (2 WEEKS)
22. AFTER PERMISSION HAS BEEN GIVEN BY SEDIMENT CONTROL INSPECTOR, REMOVE ANY REMAINING E/S CONTROLS AND STABILIZE THE DISTURBED AREAS WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - (1 MONTH)
23. WITH THE COMPLETION OF ITEM 21, CONSTRUCT/CONVERT THE MICRO-BIORETENTION FACILITIES AS SHOWN AND DETAILED HEREIN AND CONVERT BASIN TO THE STORMWATER QUANTITY FILTER / SAND FILTER ONLY WITH PERMISSION OF SEDIMENT CONTROL INSPECTOR AND CONTRIBUTING DRAINAGE AREAS UPSTREAM ARE STABILIZED. - (1 MONTH)
24. CONTRACTOR SHALL PROVIDE A COPY OF THE HOWARD SOIL CONSERVATION AS-BUILT APPROVAL LETTER FOR POND TO CID INSPECTOR.
25. WITH HOME CONSTRUCTION COMPLETE INSTALL ANY REMAINING LANDSCAPING AND SURFACE COURSE PAVEMENT - (2 WEEKS)
26. AFTER PERMISSION HAS BEEN GIVEN BY SEDIMENT CONTROL INSPECTOR, REMOVE ANY REMAINING E/S CONTROLS AND STABILIZE THE DISTURBED AREAS WITH PERMANENT SEEDING MIXTURE AND STRAW MULCH. - (1 WEEK)

NOTE: ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION

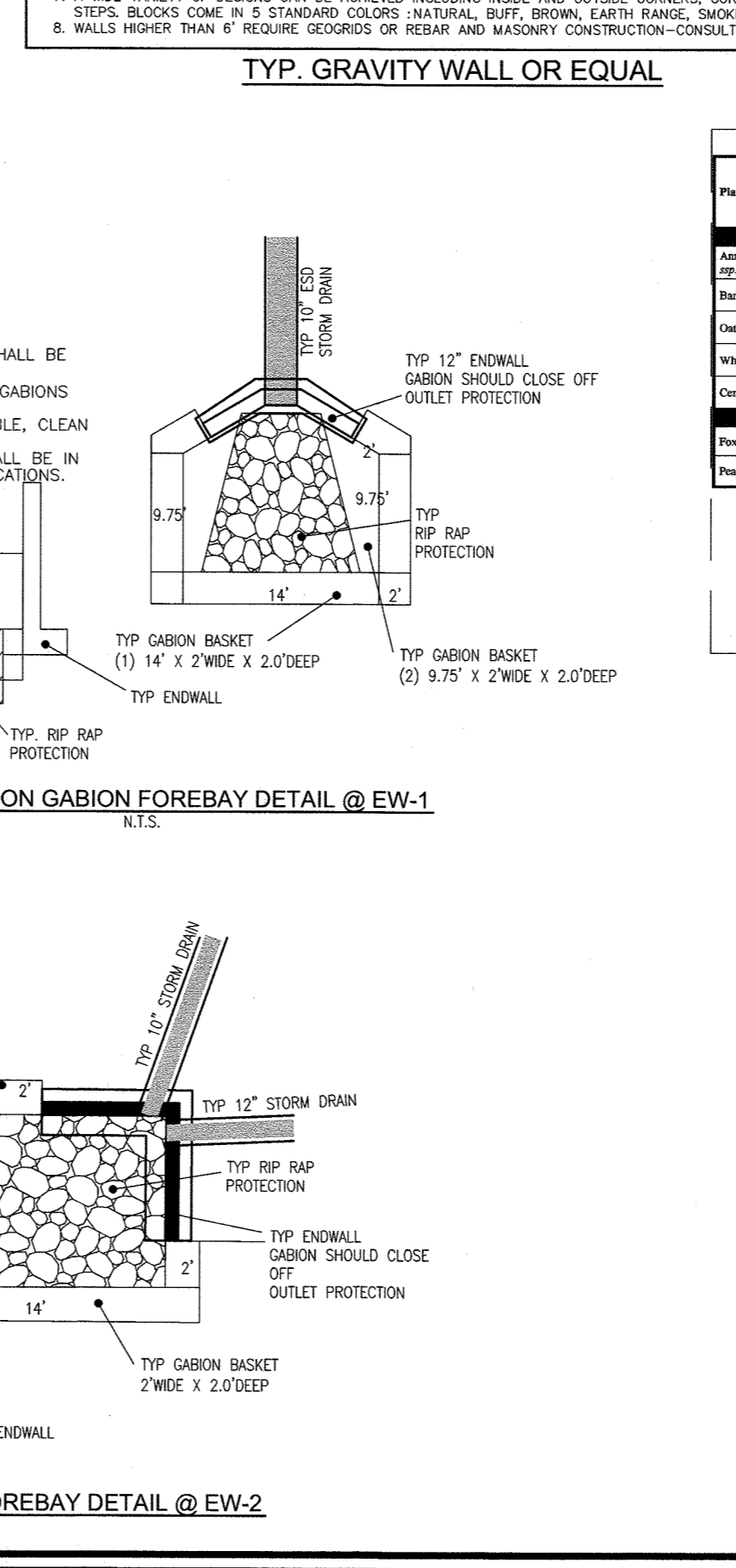
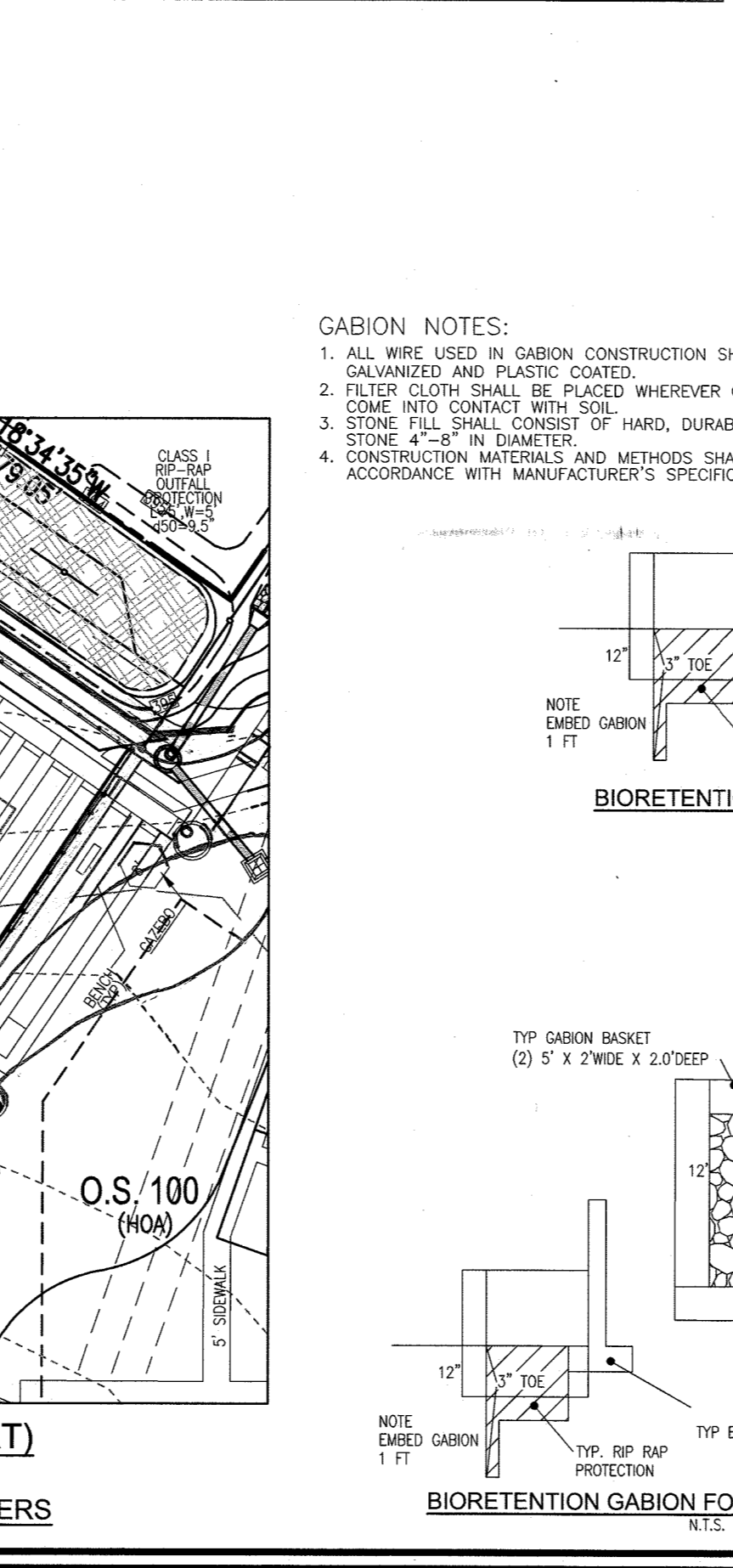
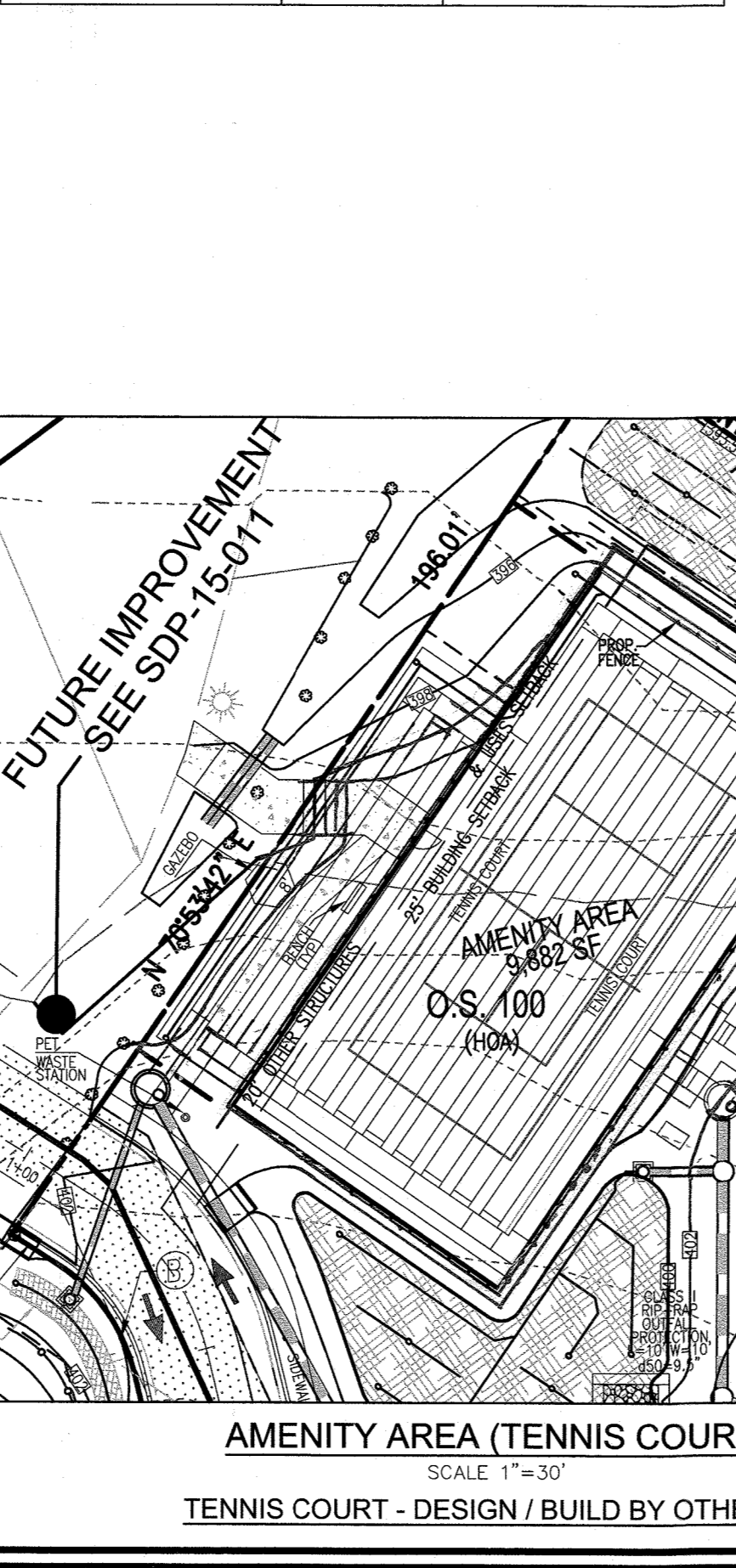
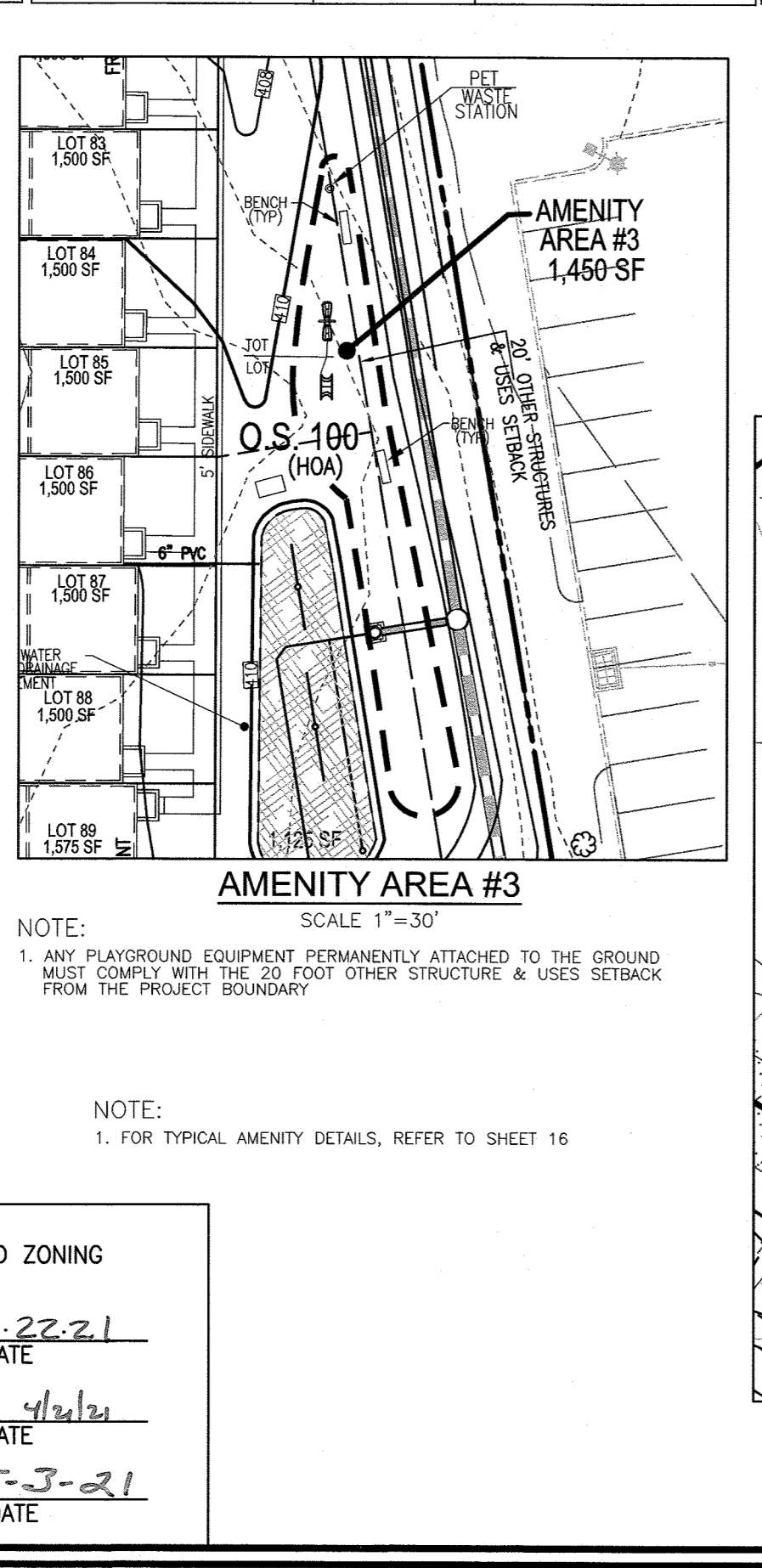
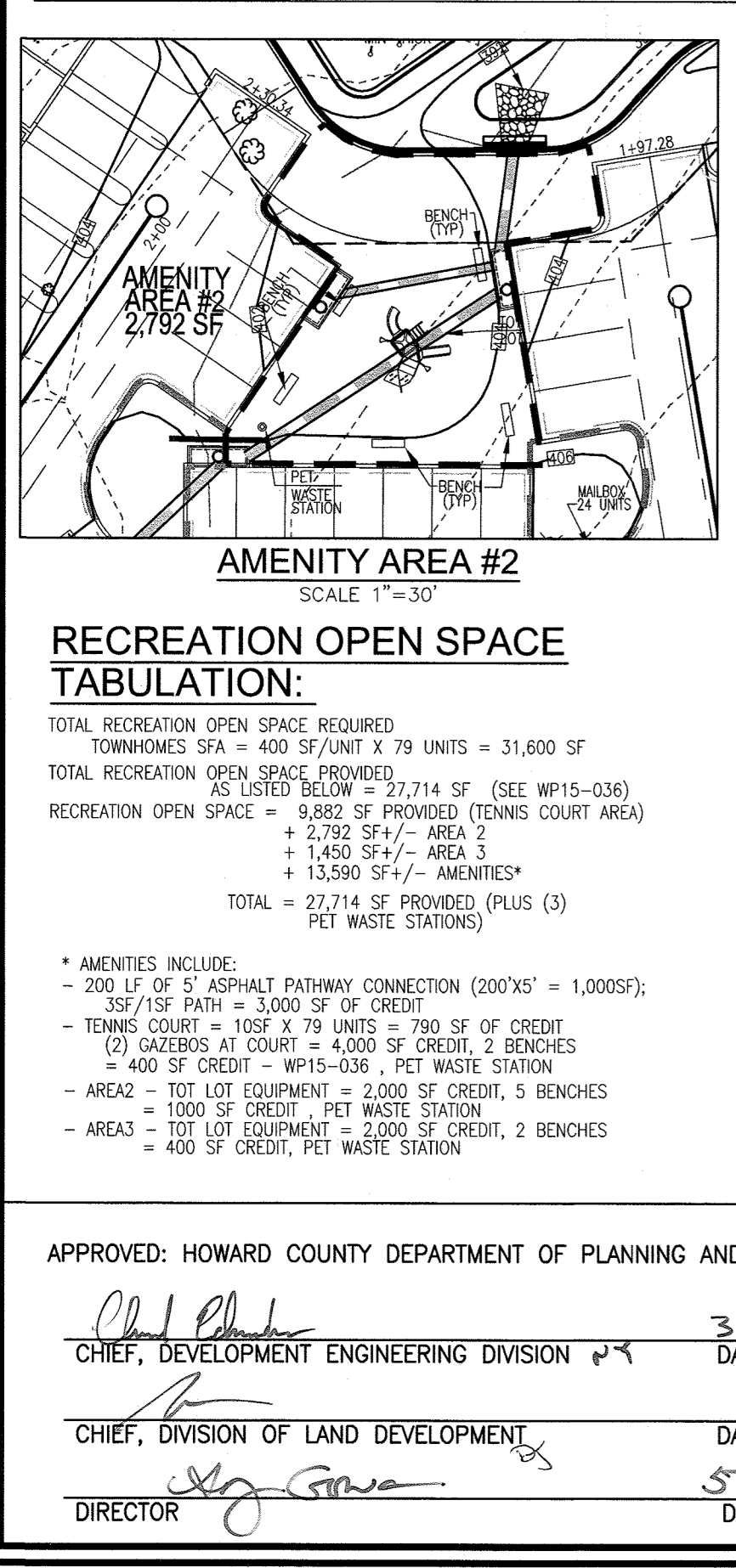


Table 1: Temporary Seeding for Soil Stabilization

Plant Species	Seeding Rate ¹		Seeding Date	Recommended Seeding Dates by Plant Hardiness Zone ²	
	lb/1000 SF	sq ft/1000 SF		Zone 6a	Zone 6b
Annual Ryegrass (Lolium perenne)	40	1.0	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15
Perennial Ryegrass (Lolium perenne)	60	2.0	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15
Fescue (Festuca ovina)	120	2.0	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15
Perennial Fescue (Festuca ovina)	120	2.0	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15
Perennial Ryegrass (Lolium perenne)	120	2.0	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15
Perennial Fescue (Festuca ovina)	120	2.0	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15	May 15 to May 31, Aug 1 to Sep 15

Notes: 1) Seeding rate based on dry weight of seed. 2) Actual planting area shall be adjusted to reflect actual ground conditions and planting site conditions. 3) Seeding shall be done in accordance with the requirements of the Howland Soil Conservation District.

OWNER / DEVELOPER

BEAZER HOMES
ATTN: J. MARSH SHIFFER, AREA PRESIDENT
AUTHORIZED SIGNATURE EAST REGION
6085 MARSHALL DRIVE, SUITE 350
ELKROCK, MD 21757
443-539-9249

REVISED SITE DEVELOPMENT PLAN
GRADING AND SOIL EROSION AND SEDIMENT CONTROL PLAN - DETAILS AND AMENITY AREA DETAILS

LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND 80-100 PLATS 25764-25778 (SFA RESIDENTIAL) 25774-25779

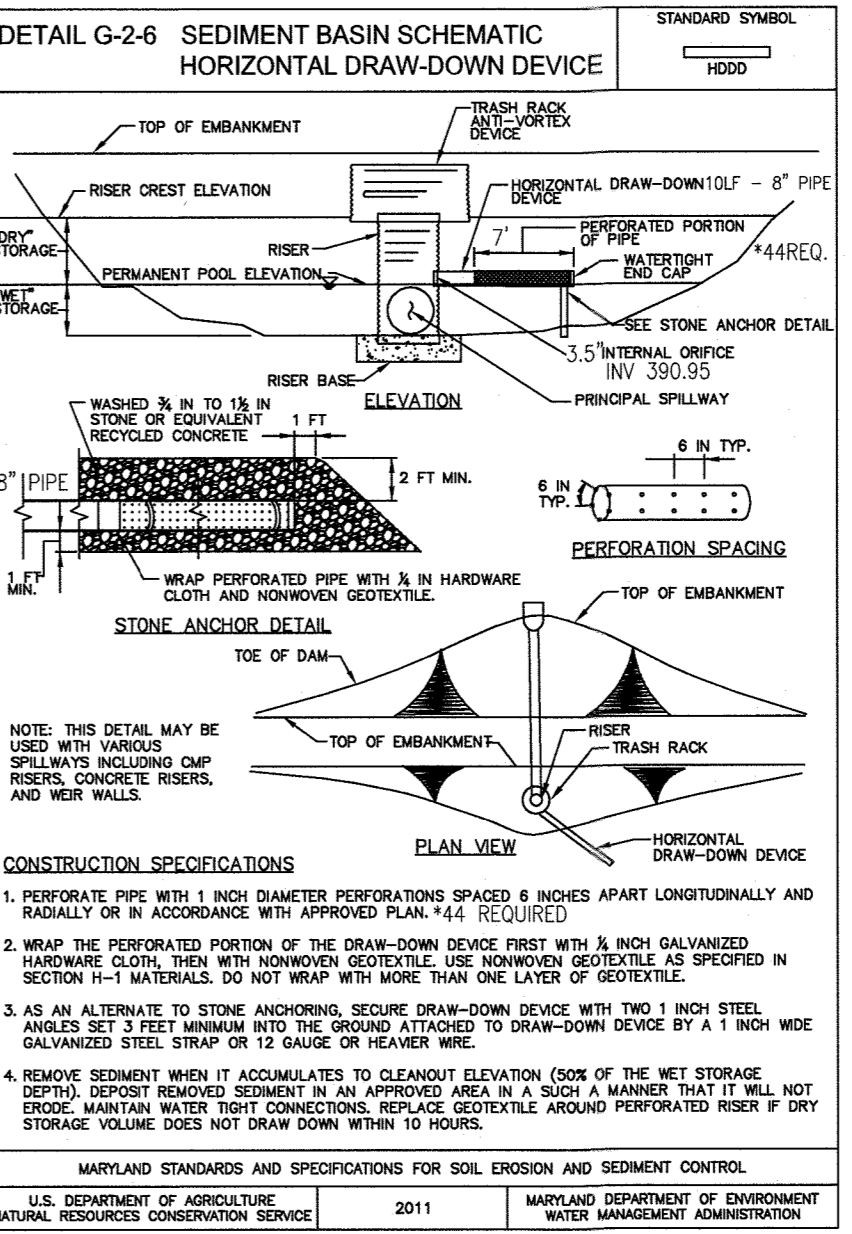
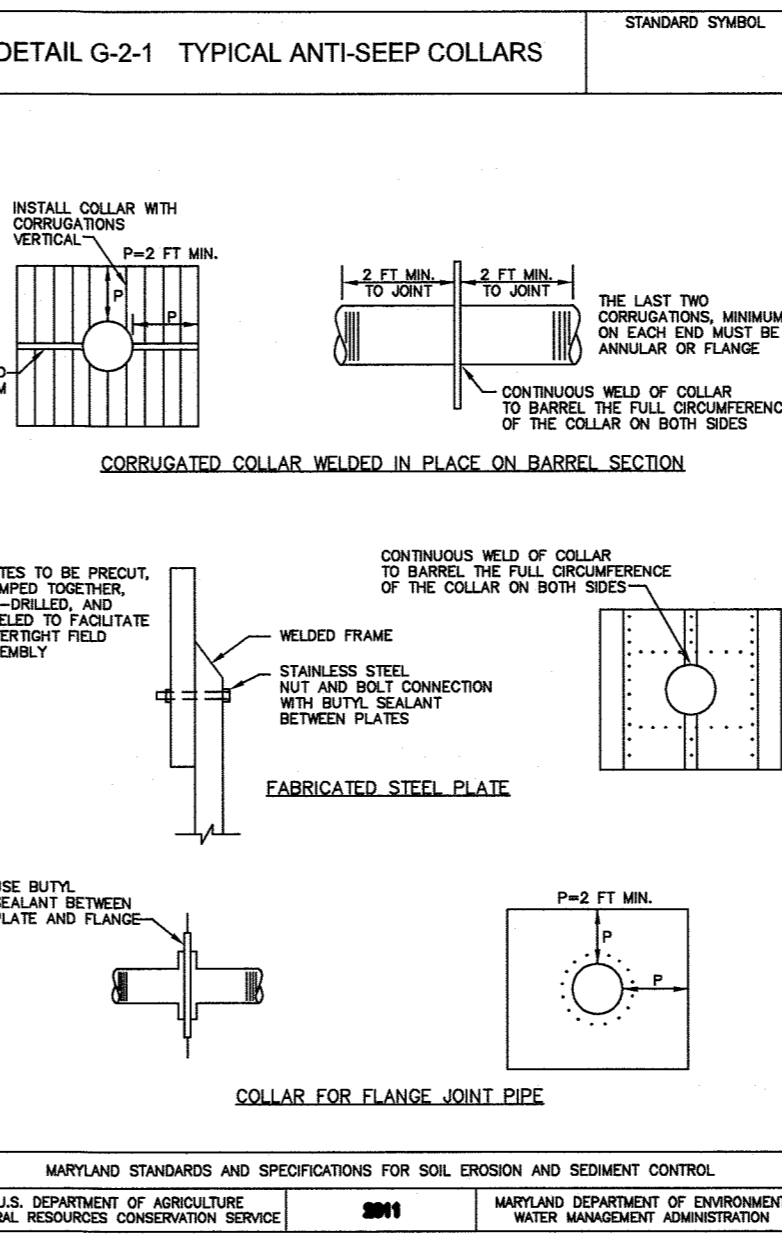
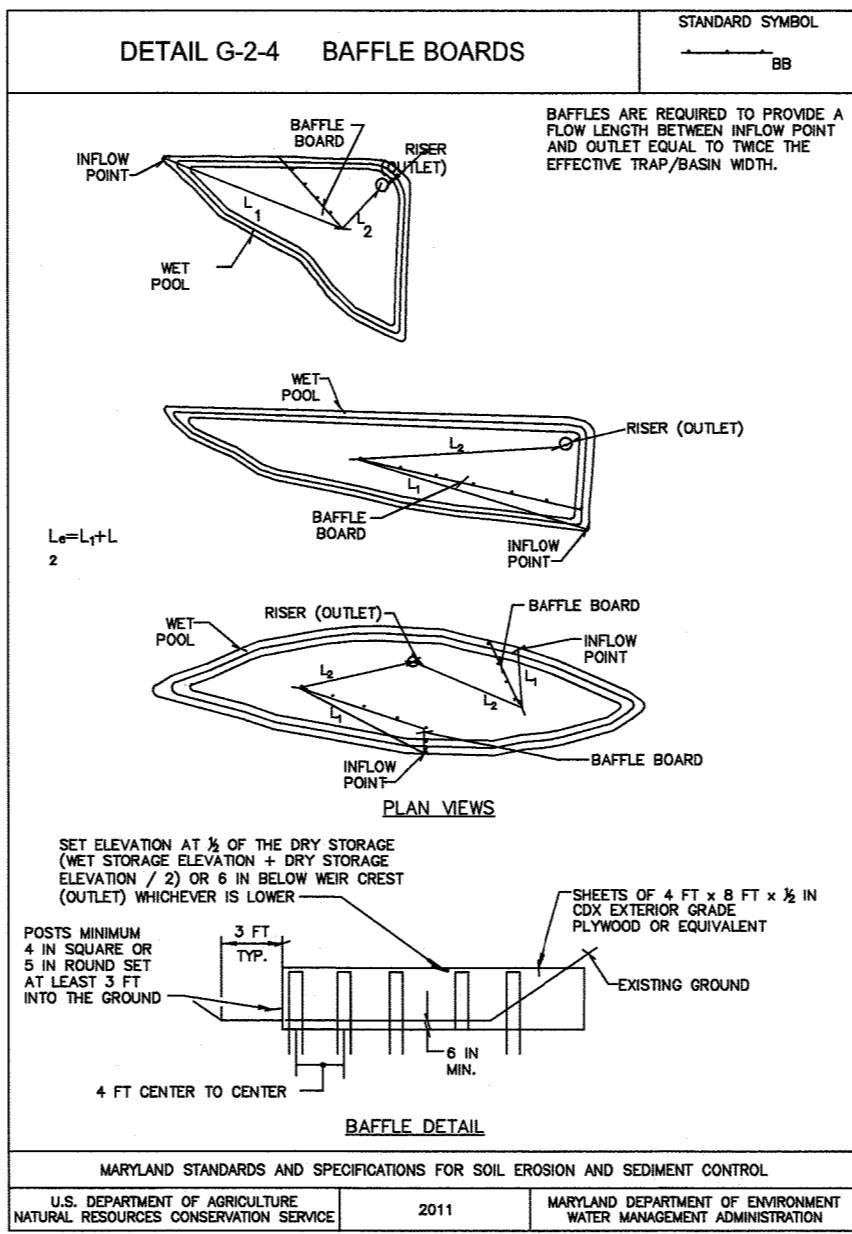
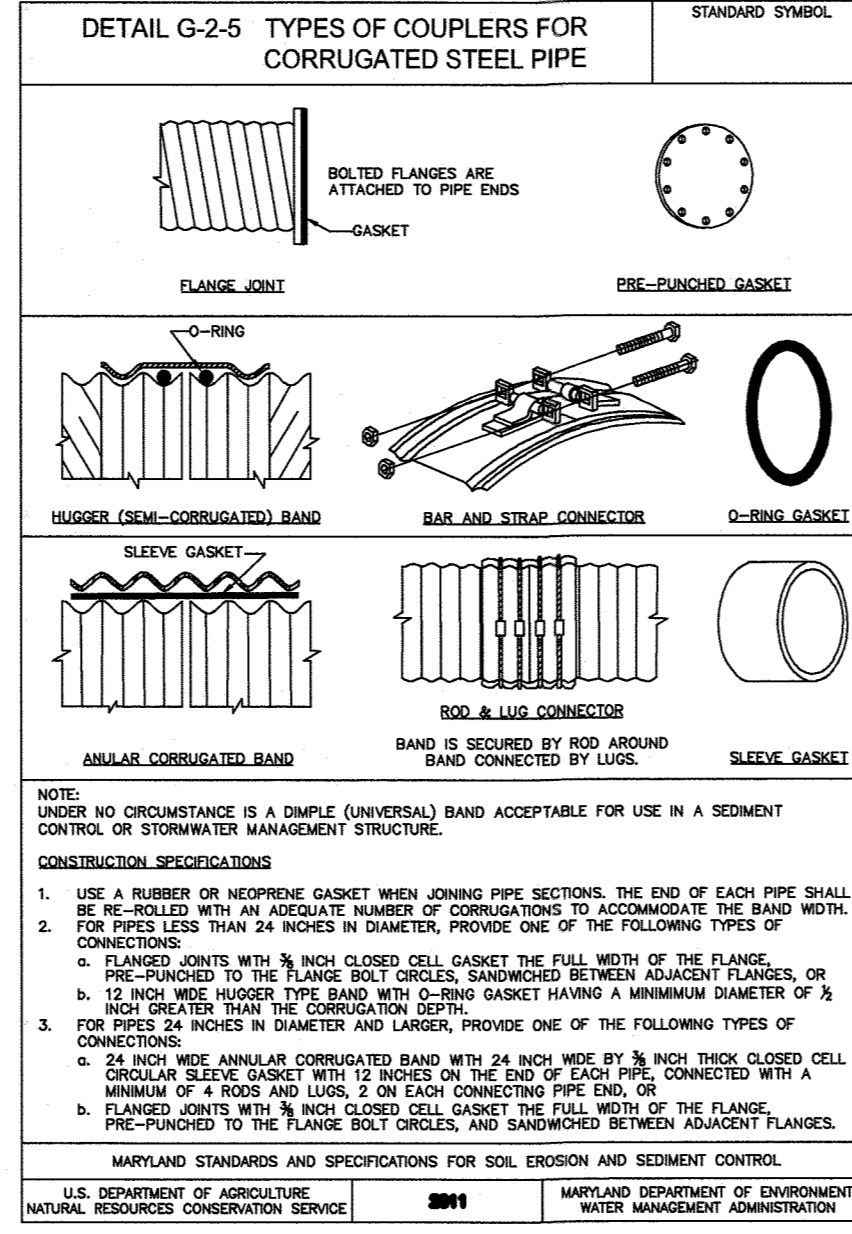
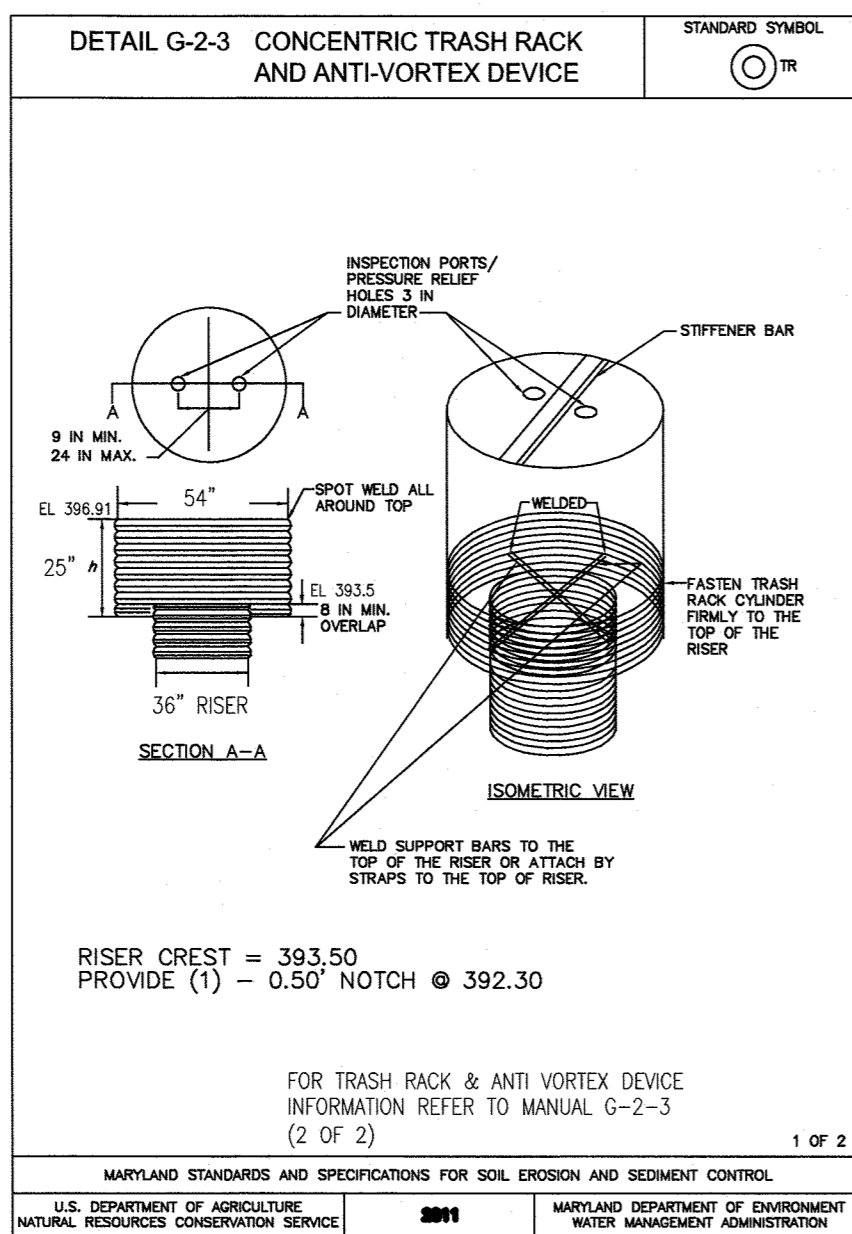
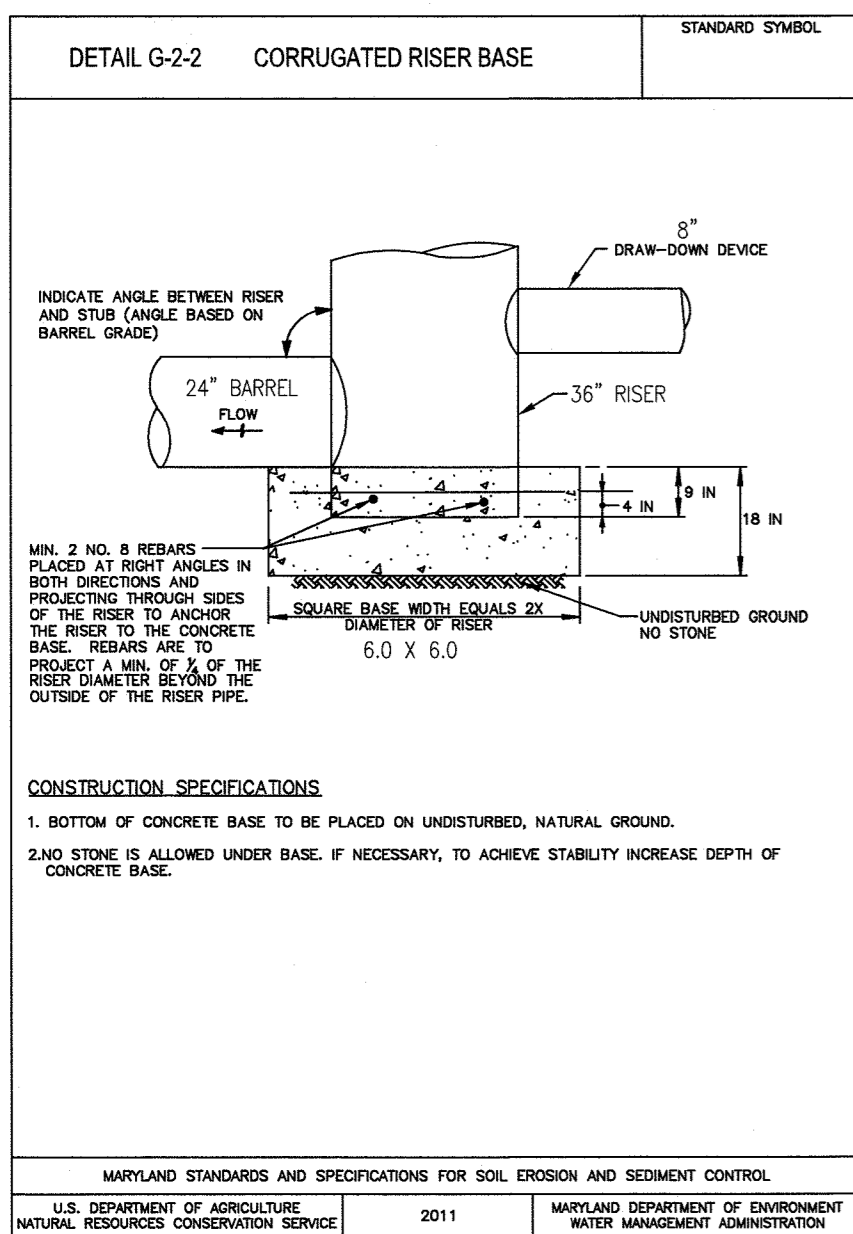
2ND ELECTION DISTRICT: 24
DPE REF'S: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

DESIGNER: VOGEL ENGINEERING
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21143
P: 410.461.7666 F: 410.461.8961 www.timmons.com

DESIGN BY: RHW/EDS
DRAWN BY: VETG
CHECKED BY: RHW
DATE: JANUARY 2021
SCALE: AS SHOWN
W.O. NO.: 08-48

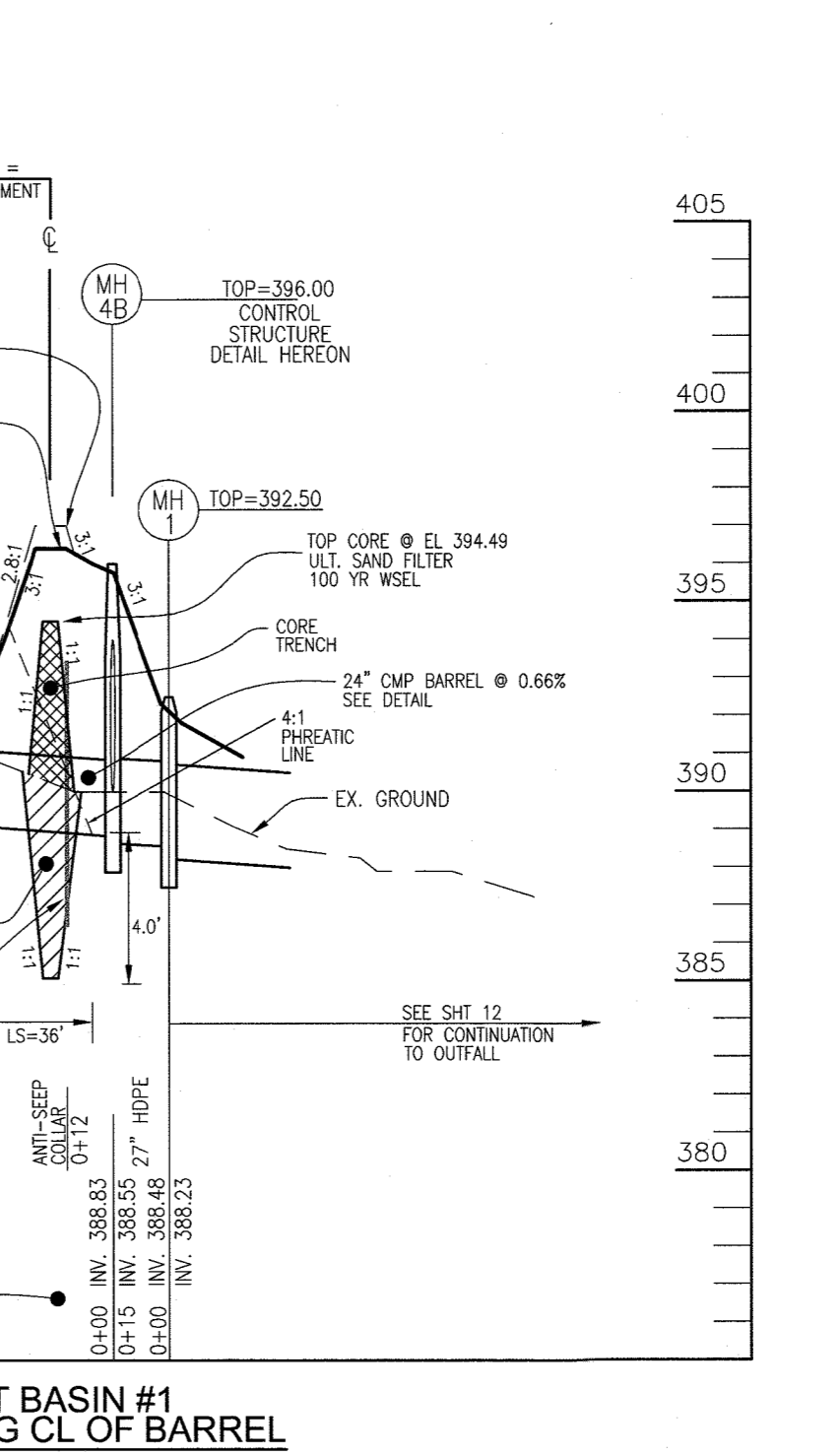
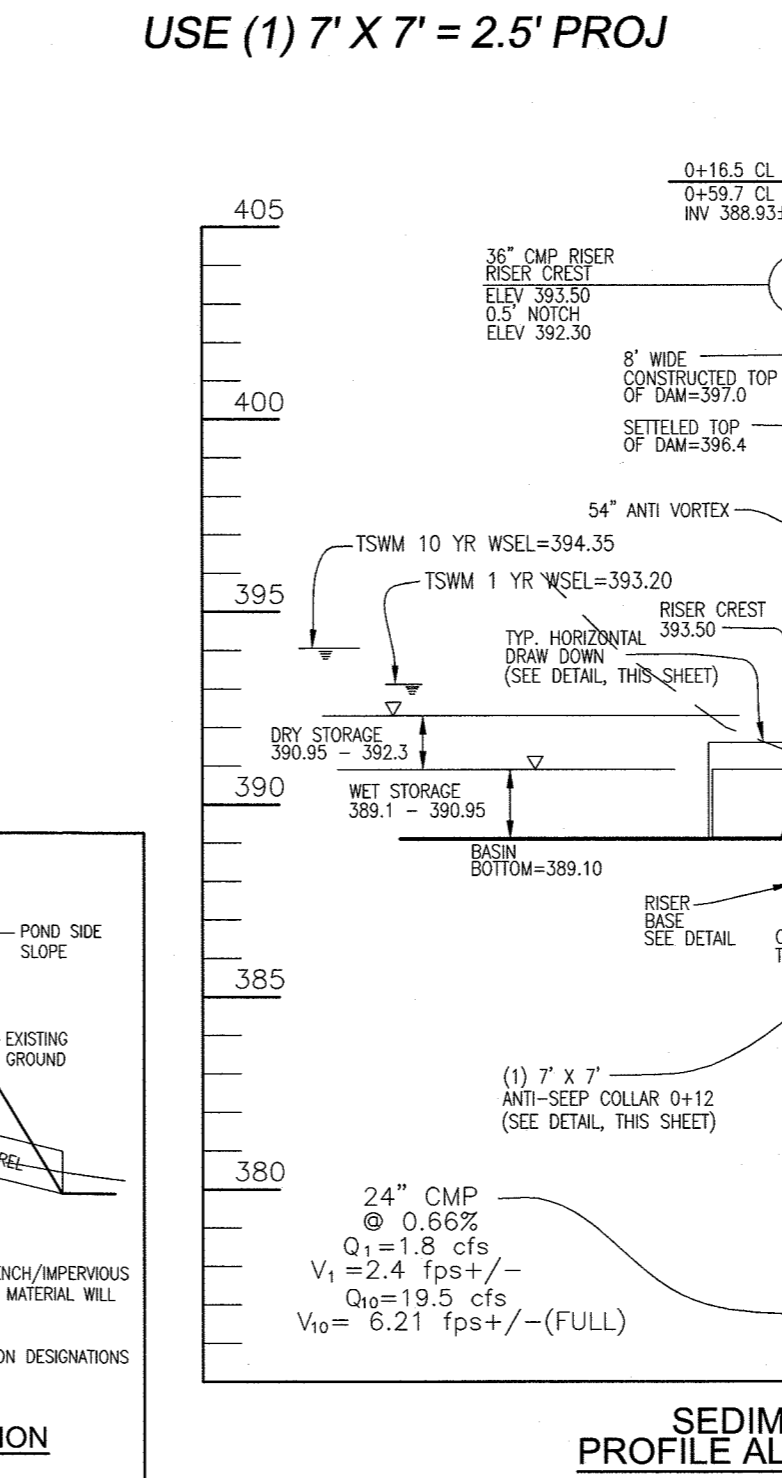
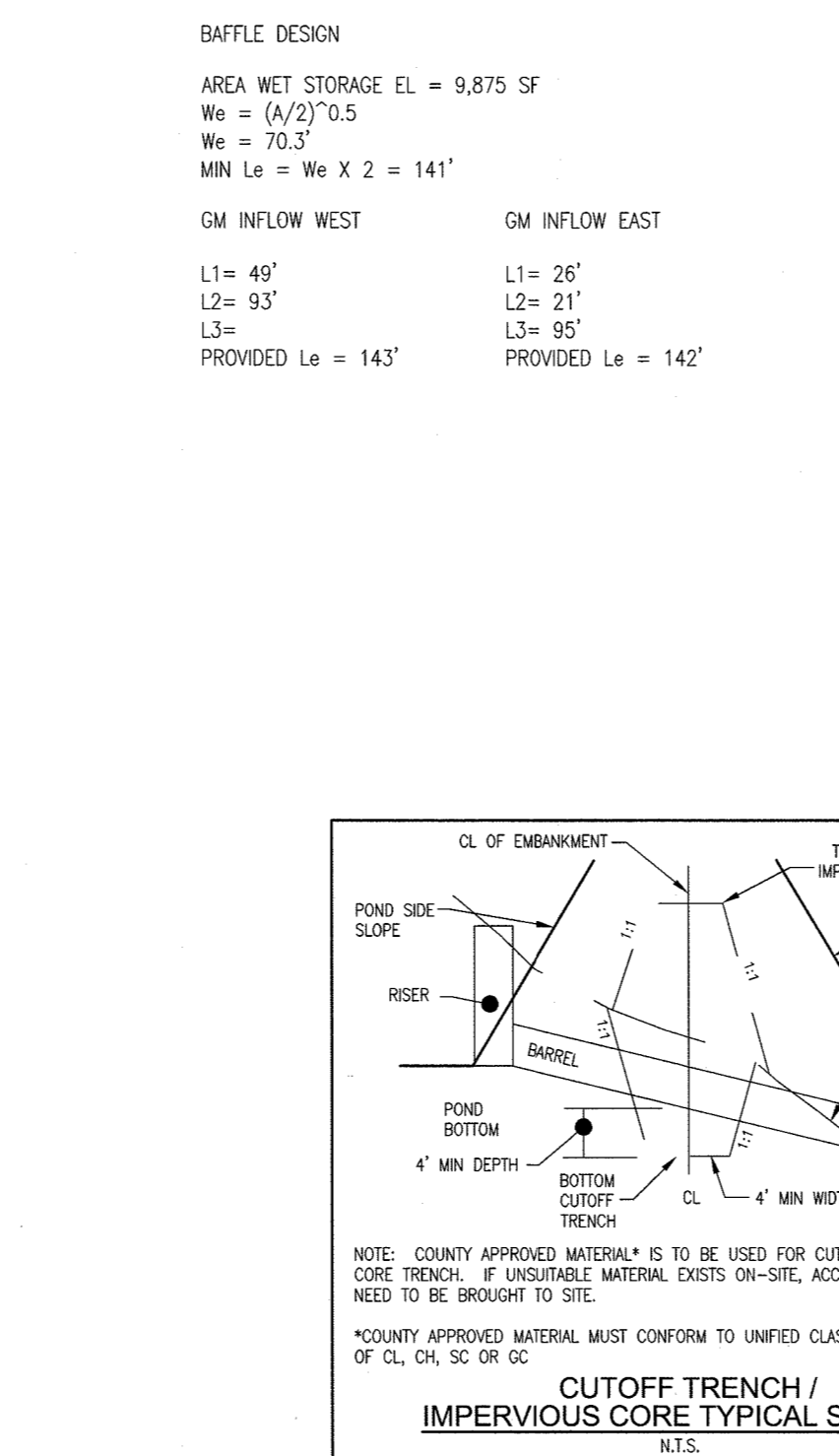
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A duly licensed professional engineer under the laws of the state of Maryland, license no. 16193, expiration date: 09-27-2022

9 SHEET OF 37



CONSTRUCTION SPECIFICATIONS

- INSTALL SEDIMENT CONTROL PRACTICES NECESSARY TO CONSTRUCT BASIN. CLEAR AND GRUB TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBSTRUCTIONABLE MATERIAL FROM THE AREAS WHERE THE EMBANKMENT IS TO BE PLACED. DO NOT CLEAR THE POOL AREA UNTIL COMPLETION OF THE EMBANKMENT. UNLESS THE POOL AREA IS TO BE USED FOR BORROW, SALVAGE TOPSOIL FOR LATER USE.
- EXCAVATE CUT-OFF TRENCH ALONG CENTERLINE OF PROPOSED EMBANKMENT. A MINIMUM DEPTH OF 4 FEET AND A BOTTOM (MIN. 4 FEET) WIDE ENOUGH TO PERMIT OPERATION OF EXCAVATION AND COMPACTOR EQUIPMENT. CONSTRUCT SIDE SLOPES 1:1 OR FLATTER. CUT-OFF TRENCH MUST BE CONTINUOUS AND THE ENTIRE LENGTH OF EMBANKMENT. COMPACTOR REQUIREMENTS ARE THE SAME AS THOSE FOR THE EMBANKMENT. DEWATER THE TRENCH DURING THE BACKFILLING COMPACTOR OPERATIONS, USING AN APPROVED PRACTICE.
- CONSTRUCT EMBANKMENT OF CLEAN SOIL FREE OF ROOTS, WOODY VEGETATION, OVERSEED STONES, ROCKS, OR OTHER OBSTRUCTIONABLE MATERIAL. FILL MATERIAL FOR IMPERVIOUS CORE AND CUT-OFF TRENCH MUST CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30 PERCENT PASSING THE #200 SIEVE. USE FILL MATERIAL CONTAINING SUFFICIENT MOISTURE SO THAT THE SOIL CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTOR. PLACE FILL MATERIAL IN SIX-INCH TO EIGHT INCH THICK CONTINUOUS LIFTS OVER THE ENTIRE LENGTH OF THE FILL. OBTAIN COMPACTOR BY PASSING CONSTRUCTION EQUIPMENT OR COMPACTOR OVER THE FILL, SO THAT THE ENTIRE SURFACE OF EACH LAYER OF FILL IS TRAVERSED AT LEAST FOUR TIMES. CONSTRUCT THE EMBANKMENT TO AN ELEVATION A MINIMUM OF 10 PERCENT HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT.
- INSTALL PRINCIPAL SPILLWAY PRIOR TO, OR CONCURRENTLY WITH, FILL PLACEMENT. DO NOT EXCAVATE EMBANKMENT FOR PLACEMENT OF SPILLWAY. ALL PIPE CONNECTIONS, INCLUDING ANTI-SEEP COLLARS MUST BE COMPLETELY WATER TIGHT. INSTALL FILTER DIAPHRAGM WHEN SPECIFIED ON PLAN. BARREL CONNECTION TO RISER MUST BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ATTACH BARREL STUD TO RISER AT THE SAME PERCENT (SLOPE) OF GRADE AS THE BARREL. FOR CONCRETE RISER/BARREL ASSEMBLY, POUR RISER WITH BARREL IN PLACE OR SET PRE-CAST RISER AND INSTALL PROTECTION COLLAR FOR WATER TIGHT CONNECTION. PLACE FILL MATERIAL AROUND THE PIPE SPILLWAY IN FOUR (4) INCH LIFTS AND HAND COMPACT AROUND THE PIPE TO A DEPTH OF 1.5 TIMES THE PIPE DIAMETER (MINIMUM). SECURELY INSTALL ANTI-VORTEX DEVICE AND TRASH RACK AS SHOWN ON PLAN. INSTALL THE EMERGENCY SPILLWAY IN UNDISTURBED NATURAL GROUND. CONSTRUCT SPILLWAY WITHIN A TOLERANCE OF ± 0.2 FEET.
- STABILIZE EMBANKMENT AND ASSOCIATED DISTURBED AREAS WITHIN THREE (3) DAYS OF COMPLETION WITH SEED AND MULCH. MONITOR EMBANKMENT AND MAINTAIN EROSION FREE DURING THE LIFE OF THE BASIN.
- INSTALL FENCING AND SIGNAGE IN ACCORDANCE WITH THE APPROVED PLAN. REMOVE SEDIMENT WHEN ACCUMULATED MATERIAL HAS REACHED 25 PERCENT OF THE TOTAL STORAGE DEPTH. RESTORE BASIN TO ORIGINAL DESIGN VOLUME. PLACE REMOVED SEDIMENTS IN A CONTROLLED AREA AND STABILIZE. DO NOT DEPOSIT SEDIMENT DOWNSTREAM OF THE EMBANKMENT, ADJACENT TO A STREAM OR FLOODPLAIN.
- WHEN THE CONTRIBUTING DRAINAGE AREA IS STABLE, THE BASIN CAN BE REMOVED IN ACCORDANCE WITH THE APPROVED SEDIMENT CONTROL PLAN. A SEDIMENT BASIN DESIGNED, BUILT AND CERTIFIED AS A STORMWATER MANAGEMENT STRUCTURE, MAY BE CONVERTED WHEN THE CONTRIBUTORY DRAINAGE AREA IS STABLE. PROPERLY DEWATER BASIN, MODIFY OUTLET STRUCTURE, PERFORM ADDITIONAL GRADING, AND PROVIDE REQUIRED STORAGE VOLUME IN ACCORDANCE WITH APPROVED STORMWATER MANAGEMENT PLANS.



DEWATERING STRATEGY

Dewatering refers to the act of removing and discharging water from excavated areas on construction sites or from sediment traps or basins on construction sites. Standards and specifications for dewatering practices follow:

These standards apply to removal and discharge of water from any excavated area or sediment trap or basin at any construction site. Given the unique conditions at any particular construction site, any or all of the practices may apply. Regardless of the applicability of the practices listed herein, operators are required to use acceptable procedures for maintenance and dewatering. In all cases, every effort shall be made to eliminate sediment pollution associated with dewatering.

Designers shall specify the preferred procedures for dewatering on plans. In particular, designers should identify procedures for dewatering sediment traps and basins prior to elimination of the last sediment control facility on the site or prior to operation of sediment control facilities to stormwater management facilities. Recommended procedures shall be consistent with these standards. Atypical site conditions may require innovative dewatering designs. Dewatering measures not referenced in this standard may be used with the consent of the approval authority.

A. Dewatering of Excavated Areas

- Designers shall specify plans, and in sequence of construction included on plans, practices for dewatering of excavated areas. Plan reviewers shall check to see that procedures for dewatering are included on plans.
- In all cases, water removed from excavated areas shall be discharged such that it shall pass through a sediment control device prior to entering receiving waters. Sediment control devices include sediment traps and basins, in addition to the practices in this section.

B. Dewatering of Sediment Traps and Basins

- Removable pumping station.
- Use of a Sump Pit.
- Use of a floating suction hose to pump the cleaner water from the top of the pond. As the cleaner water is pumped the suction hose will lower and eventually encounter sediment laden water. When this happens the pumping operation will cease. Provisions shall be made to filter water

APPROVED PRACTICES FOR DEWATERING OF EXCAVATED AREAS

- Pumping of water to an existing sediment basin or trap in which the entire volume of water from the area to be dewatered can be contained without discharge to receiving waters.
- Pumping of water to an existing sediment basin or trap such that the entire volume of water from the area to be dewatered can be managed without exceeding the design outflow from the sediment control structure.
- Removable Pumping Station? Standards and specifications for Removable Pumping Station are on Detail 208.
- Use of a Sump Pit: Standards and specifications for a sump pit are on Detail 208.
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- Removable Pumping Station? Standards and specifications for Removable Pumping Station are on Detail 208.
- Use of a Sump Pit: Standards and specifications for a sump pit are on Detail 208.
- Sediment Trap: Standards and specifications for a sump pit are on Detail 21.

APPROVED PRACTICES FOR DEWATERING OF SEDIMENT TRAPS AND BASINS

- Removable pumping station.
- Use of a Sump Pit.
- Use of a floating suction hose to pump the cleaner water from the top of the pond. As the cleaner water is pumped the suction hose will lower and eventually encounter sediment laden water. When this happens the pumping operation will cease. Provisions shall be made to filter water

APPROVED PRACTICES FOR DEWATERING OF EXCAVATED AREAS

- Pumping of water to an existing sediment basin or trap in which the entire volume of water from the area to be dewatered can be contained without discharge to receiving waters.
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APPROVED PRACTICES



LEGEND

---	PROPERTY LINE
---	RIGHT-OF-WAY LINE
---	ADJACENT PROPERTY LINE
---	CENTERLINE OF EXISTING STREAM
---	EX. FOREST CONSERVATION EASEMENT
---	EXISTING CURB AND GUTTER
---	EXISTING UTILITY POLE
---	EXISTING LIGHT POLE
---	EXISTING MAILBOX
---	EXISTING SIGN
---	EXISTING SANITARY MANHOLE
---	EXISTING SANITARY LINE
---	EXISTING CLEANOUT
---	EXISTING FIRE HYDRANT
---	EXISTING WATER LINE
---	EXISTING TREES
---	EXISTING TREELINE
---	EXISTING FENCE
---	PROPOSED TREELINE
---	PROPOSED STORM DRAIN
---	PROPOSED STORM DRAIN INLET
---	PROPOSED CURB AND GUTTER
---	PROPOSED SIDEWALK
---	EX. WETLANDS
---	EXISTING CONTOUR
---	PROPOSED CONTOUR
---	PROPOSED SPOT ELEVATION
---	M1B2
---	M1D3
---	SOILS BOUNDARY
---	DRAINAGE AREA DIVIDE

DRAINAGE AREA: CO
 C FACTOR: 4A
 ZONING: % IMPERVIOUS

GENERAL NOTES (CONT)

77. THIS PROJECT IS SUBJECT TO ALTERNATIVE COMPLIANCE PETITION WP-21-013, APPROVED SEPTEMBER 22, 2020 BY THE DIRECTOR OF THE DEPARTMENT OF PLANNING AND ZONING. APPROVED THE REQUEST FOR ALTERNATIVE COMPLIANCE TO SECTION 16.120(C)(1) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS THAT REQUIRES ALL COMMERCIAL, INDUSTRIAL OR APARTMENT (CONDO) LOTS TO HAVE A MINIMUM FRONTAGE OF 60 FEET ON AN APPROVED PUBLIC ROAD WHICH PROVIDES ACCESS TO THE PROPERTY. THE PROJECT PROPOSES TO CONSTRUCT TWO CONDOMINIUM BUILDINGS (STACKED TOWNHOMES) WITHIN TWO BUILDABLE PARCELS (PARCELS A AND B) OF THE PROJECT THAT WILL FRONT ON A PRIVATE ROAD. THE TWO PARCELS ARE TO BE PLATTED AND DESIGNED AS PART OF THE FINAL PLAT F-21-008 AND SITE DEVELOPMENT PLAN, SDP-14-074 (REDLINE REVISION). APPROVAL IS SUBJECT TO THE FOLLOWING THREE (3) CONDITIONS:

1. THE APPROVAL OF THIS ALTERNATIVE COMPLIANCE PETITION SHALL APPLY ONLY TO THE TWO (2) PROPOSED APARTMENT/CONDOMINIUM BUILDINGS THAT SHALL BE SITUATED ON PROPOSED BUILDABLE PARCELS A AND B.
2. THE PROPOSED PRIVATE ROADS THAT SHALL PROVIDE ACCESS FOR THE TWO CONDOMINIUM BUILDINGS MUST COMPLY WITH THOSE DESIGN STANDARDS REQUIRED BY THE DESIGN MANUAL.
3. INCLUDE THIS ALTERNATIVE COMPLIANCE PETITION DECISION AS A GENERAL NOTE ON THE FINAL PLAN AND SITE DEVELOPMENT PLAN. THIS NOTE SHALL INCLUDE THE ALTERNATIVE COMPLIANCE PETITION FILE NUMBER, THE REGULATORY SECTION, THE DECISION DATE, AND THE CONDITIONS OF APPROVAL.

78. IN ACCORDANCE WITH SECTION 112.0.0.1.E. OF THE ZONING REGULATIONS LIMITS THE LENGTH OF SINGLE-FAMILY ATTACHED OR APARTMENT BUILDINGS TO 120 FEET. HOWEVER, THIS SECTION GRANTS THE DIRECTOR OF DPZ THE AUTHORITY TO APPROVE A GREATER LENGTH, UP TO A MAXIMUM OF 300 FEET, BASED ON DETERMINATION THAT THE DESIGN OF THE BUILDING WILL MITIGATE THE VISUAL IMPACT OF THE INCREASED LENGTH.

IN A LETTER DATED OCTOBER 5, 2020, THE DIRECTOR APPROVED THE REQUEST TO ALLOW A "STACKED" SINGLE-FAMILY ATTACHED BUILDING WITH A MAXIMUM BUILDING LENGTH AT 168 FEET.

79. A FINAL PLAT OF RESUBDIVISION (F-21-008) WAS RECORDED ON 4/19/21.

OWNER / DEVELOPER

BEAZER HOMES
 ATTN: J. MARTIN SHAFFER, AREA PRESIDENT
 AUTHORIZED SIGNATURE - EAST REGION
 6085 MARSHALLEE DRIVE, SUITE 350
 ELKRODGE, MD 21073
 443-533-9249

NO.	REVISION	DATE
8	REVISE TO ADD SIDEWALK BETWEEN UNIT 210 A/B AND LOT 90	5-10-21
7	REVISE PERMEABLE SIDEWALK TO CONCRETE SIDEWALK ALONG RETIERS	10-13-21
6	REVISE RETAINING WALL AND GRADING NEAR TENNIS COURT	7-15-21
5	REVISE TO ADD MODIFIED CURB AND GUTTER	8-26-21
3	REVISE FRONT PORCH, DOOR AND LEAD WALK LOCATION. AMEND SIDEWALK. AMEND FF ELEV. AND MINOR SPOT ELEV. AMEND TENNIS COURT ELEV. REDLINE. L.S. PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

REVISED SITE DEVELOPMENT PLAN STORM DRAIN DRAINAGE AREA MAP AND SOILS MAP

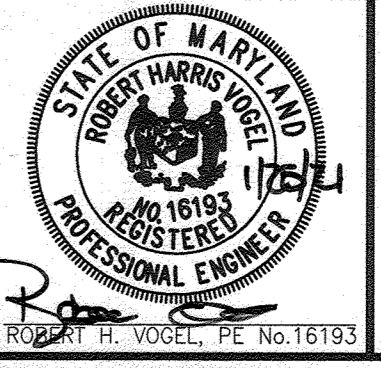
LONG GATE OVERLOOK
 LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
 AND OPEN SPACE LOT 100
 A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
 2764-28710
 (SFA RESIDENTIAL)

2ND ELECTION DISTRICT
 TAX MAP: 24 GRID: 24
 DPZ REF'S: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

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: RHW/EDS
 DRAWN BY: VETG
 CHECKED BY: RHW
 DATE: JANUARY 2021
 SCALE: AS SHOWN
 W.O. NO.: 08-48

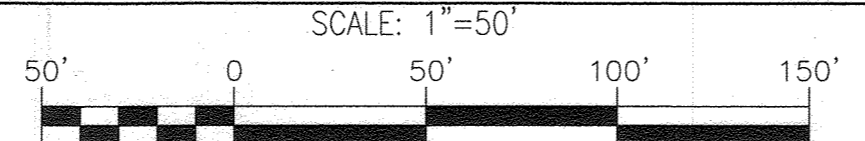
PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 09-27-2022

11 SHEET OF 37

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 DATE: 3/22/21
 DATE: 4/12/21
 DATE: 5-3-21

SHA BMP TRACKING #130730
 BMP: MICRO-BIORETENTION
 CONTRIBUTING DRAINAGE AREA:
 1.31 ACRES +/-
 LAND USE: PUBLIC R/W
 SHA IMPERVIOUS AREA TO FACILITY:
 0.94 ACRES +/-
 CENTER LOCATION
 N 577842 E 1364190
 OWNER & MAINTENANCE:
 PRIVATE H.O.A.

STORM DRAIN DRAINAGE AREA MAP

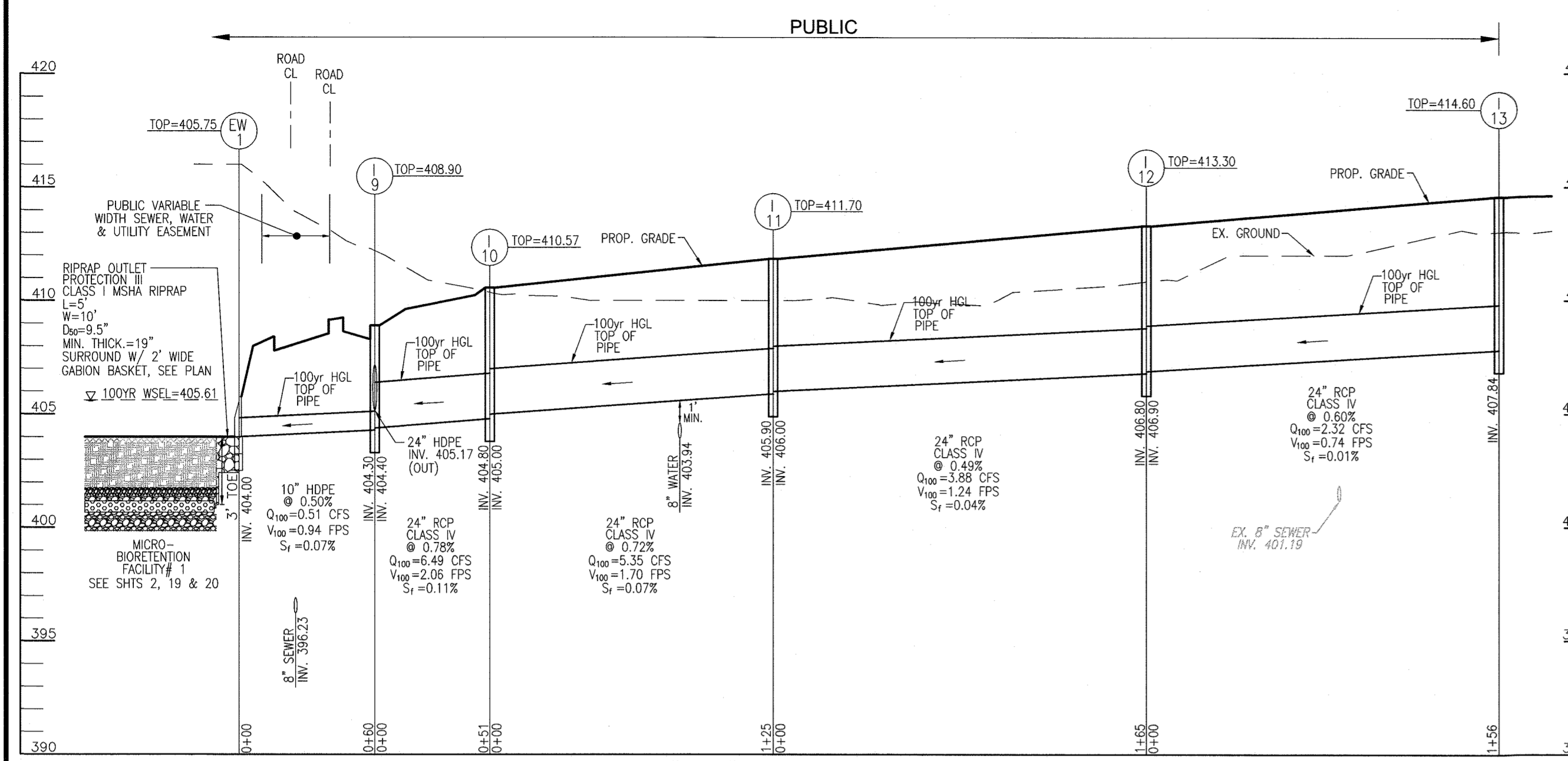


NOTES:
 1. WORST CASE 5 MIN. TC ASSUMED THROUGHOUT DESIGN.
 2. PERCENT IMPERVIOUS SHOWN, IGNORES ESD STORMWATER MANAGEMENT "CREDITS", I.E. PERMEABLE SURFACES, ROOFTOP DISCONNECTS, ETC.

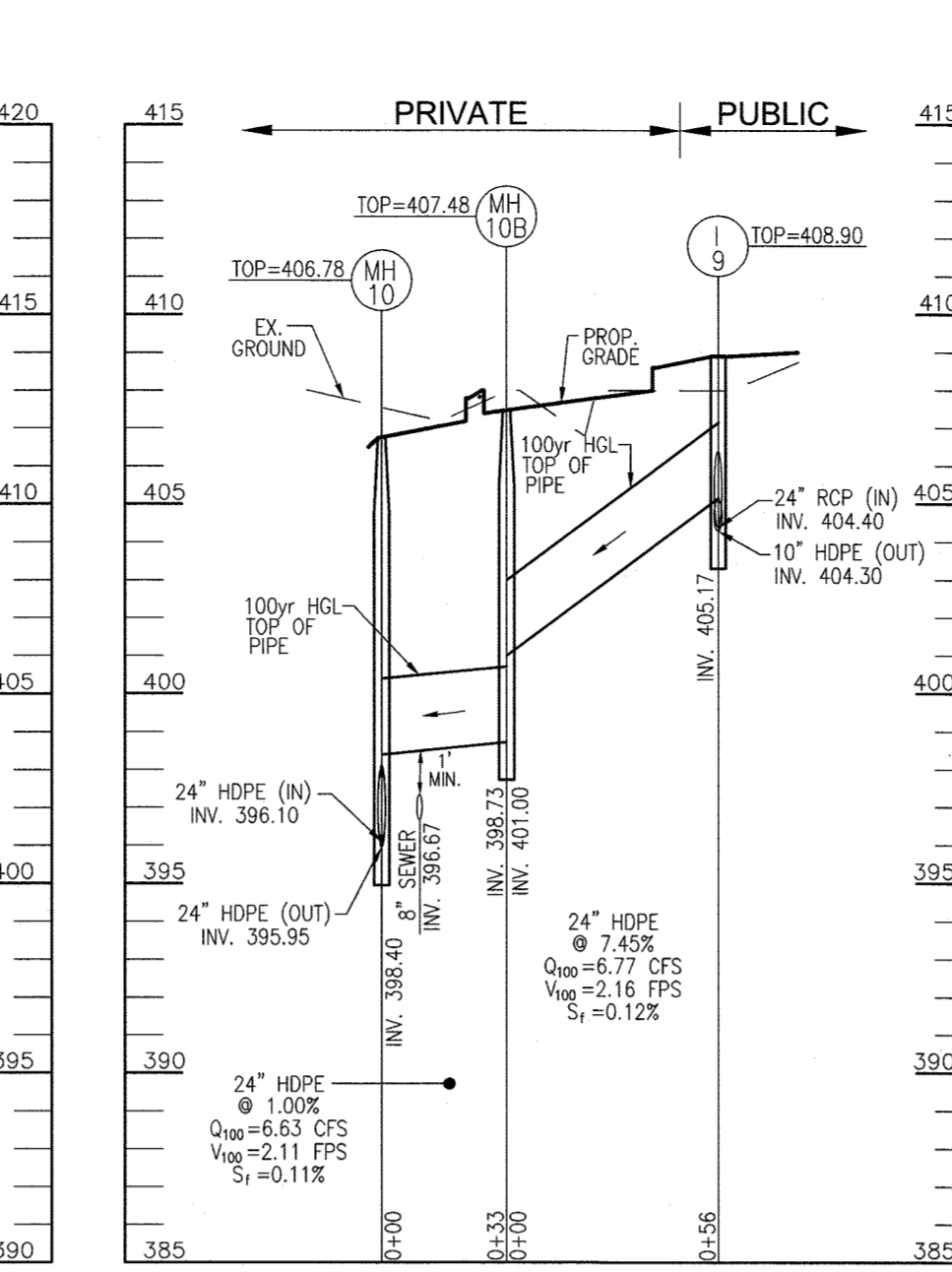
SOILS LEGEND

SYMBOL	NAME / DESCRIPTION	GROUP
LOB	LEFORE-MONTALTO-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
WcB	WATCHUNG SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	D

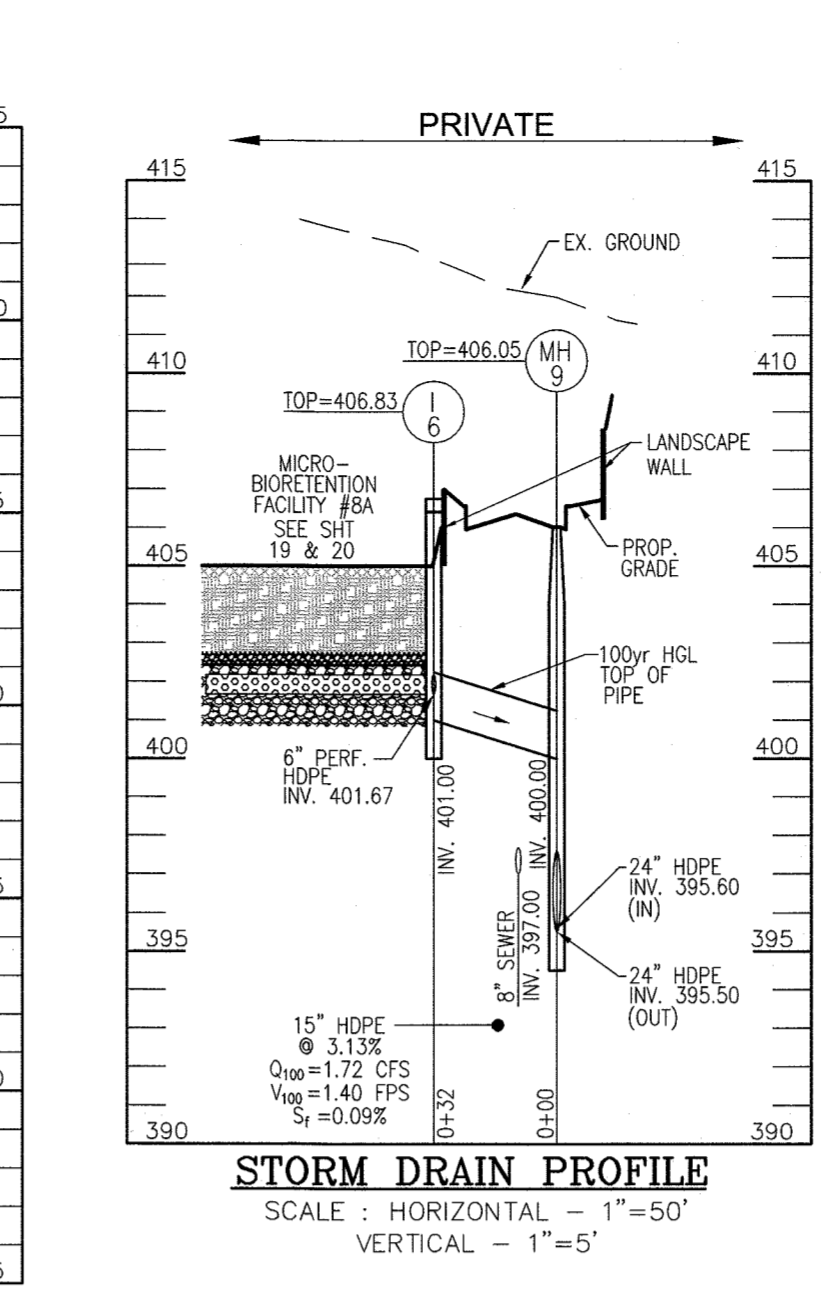
NOTE: BASED ON USDA NRCS WEB SOIL SURVEY



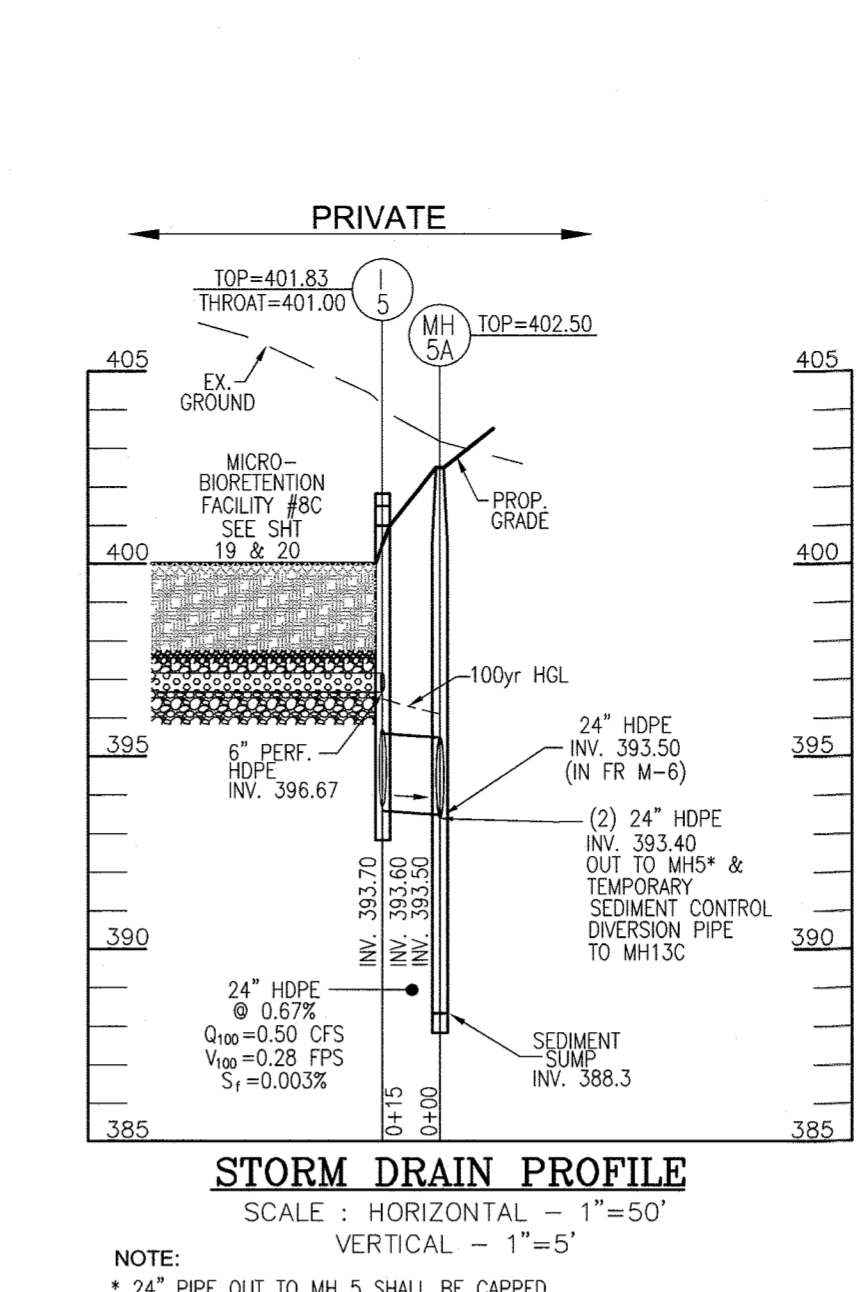
PUBLIC "SHA" - STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



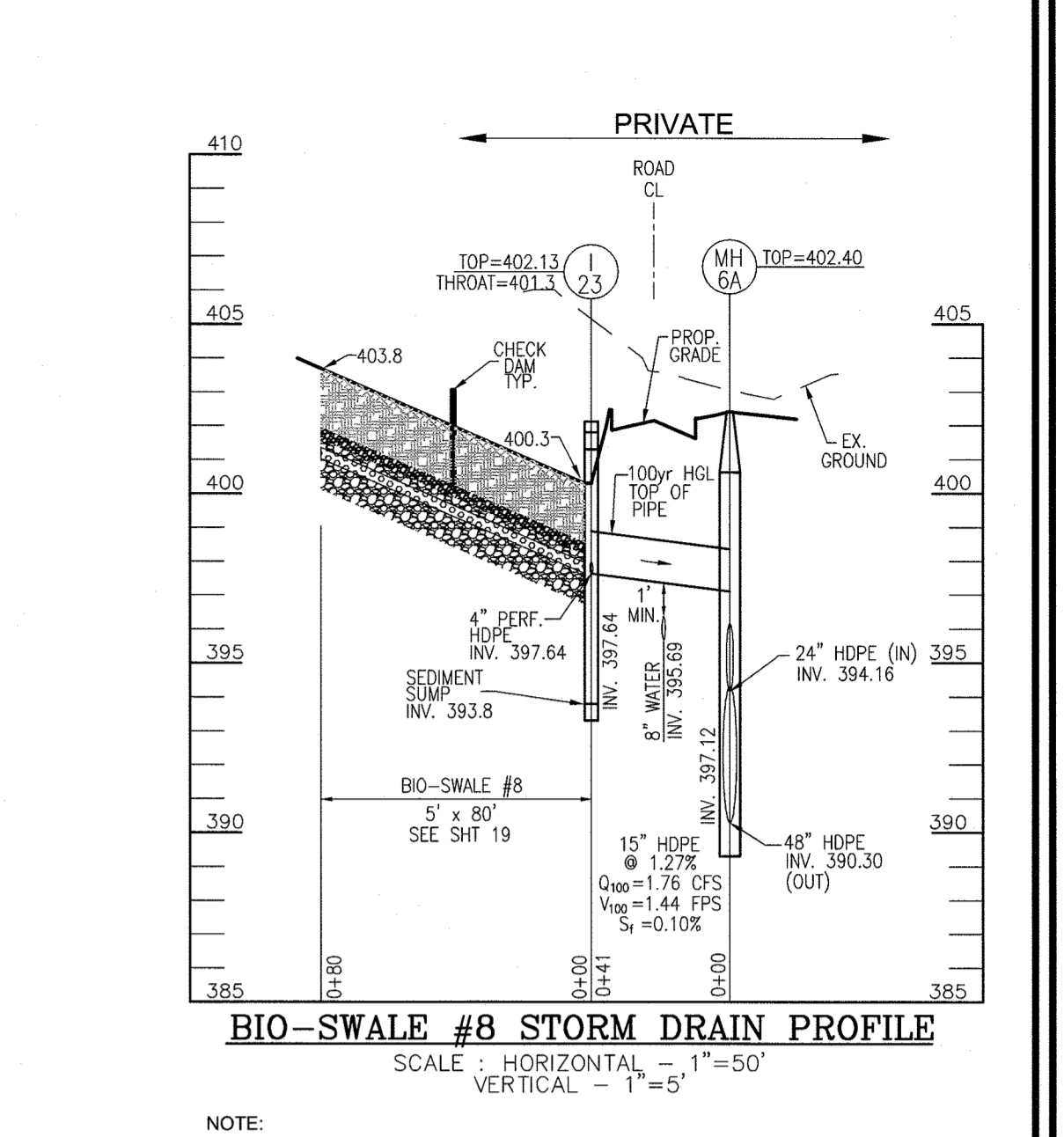
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



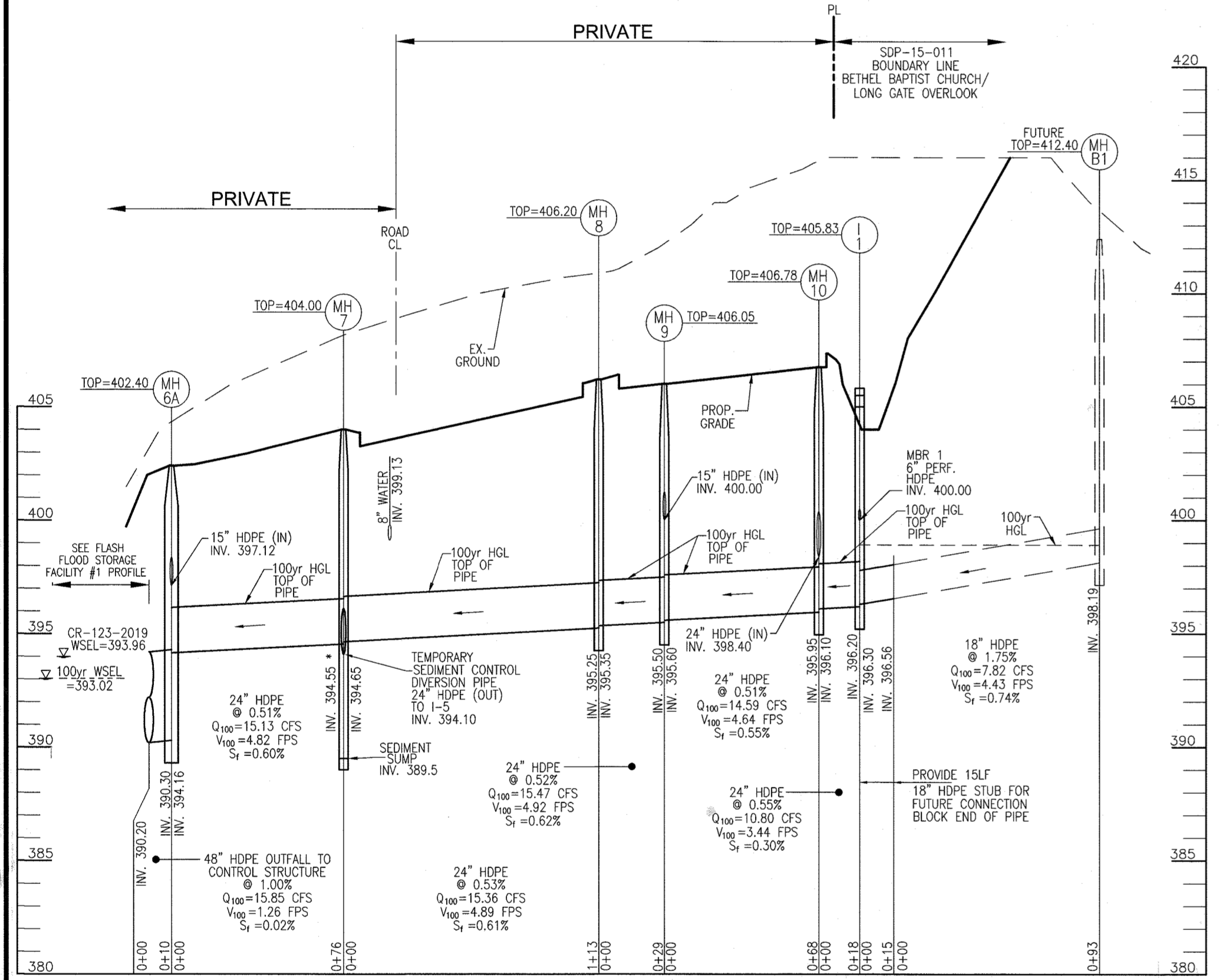
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



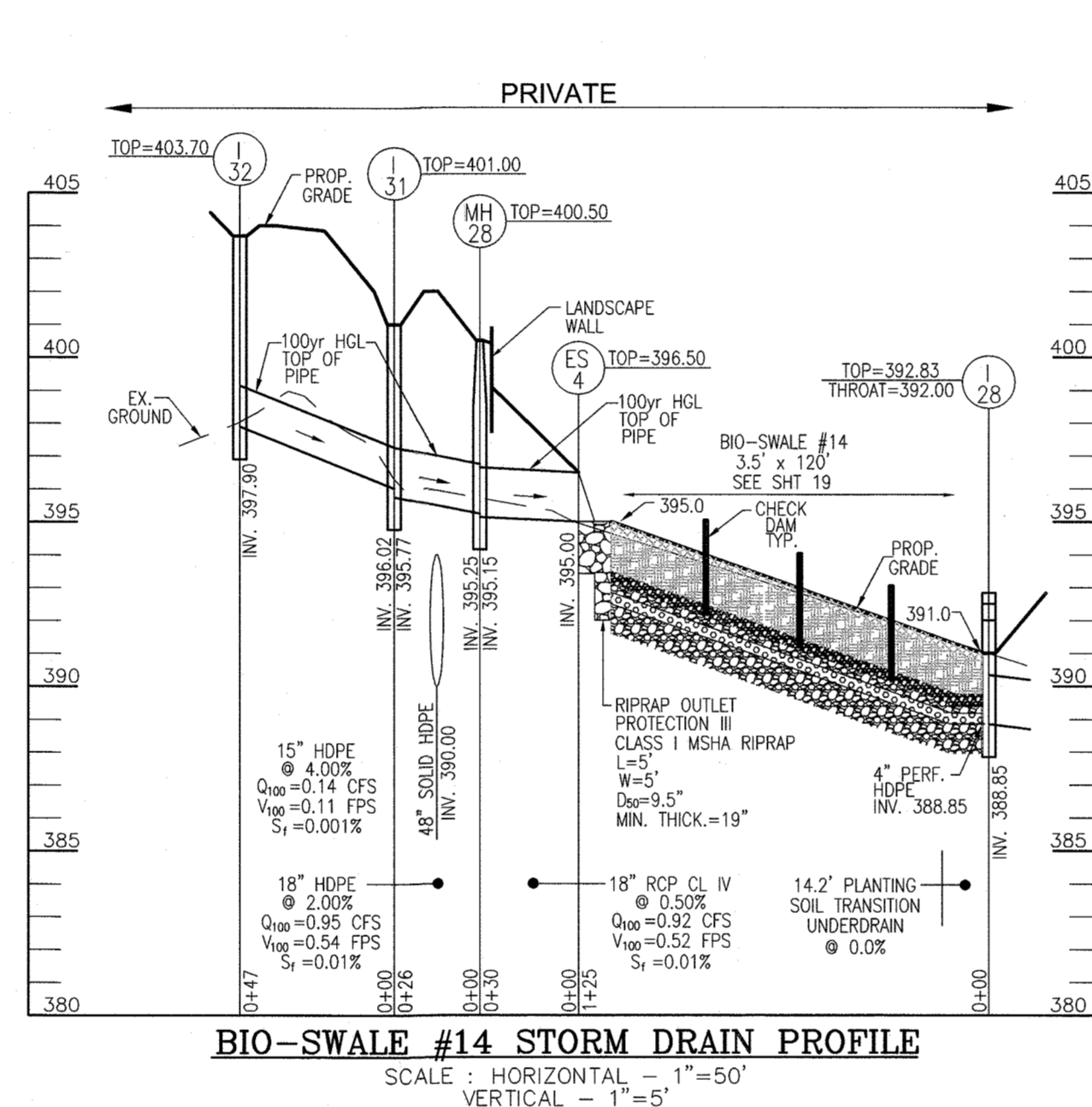
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



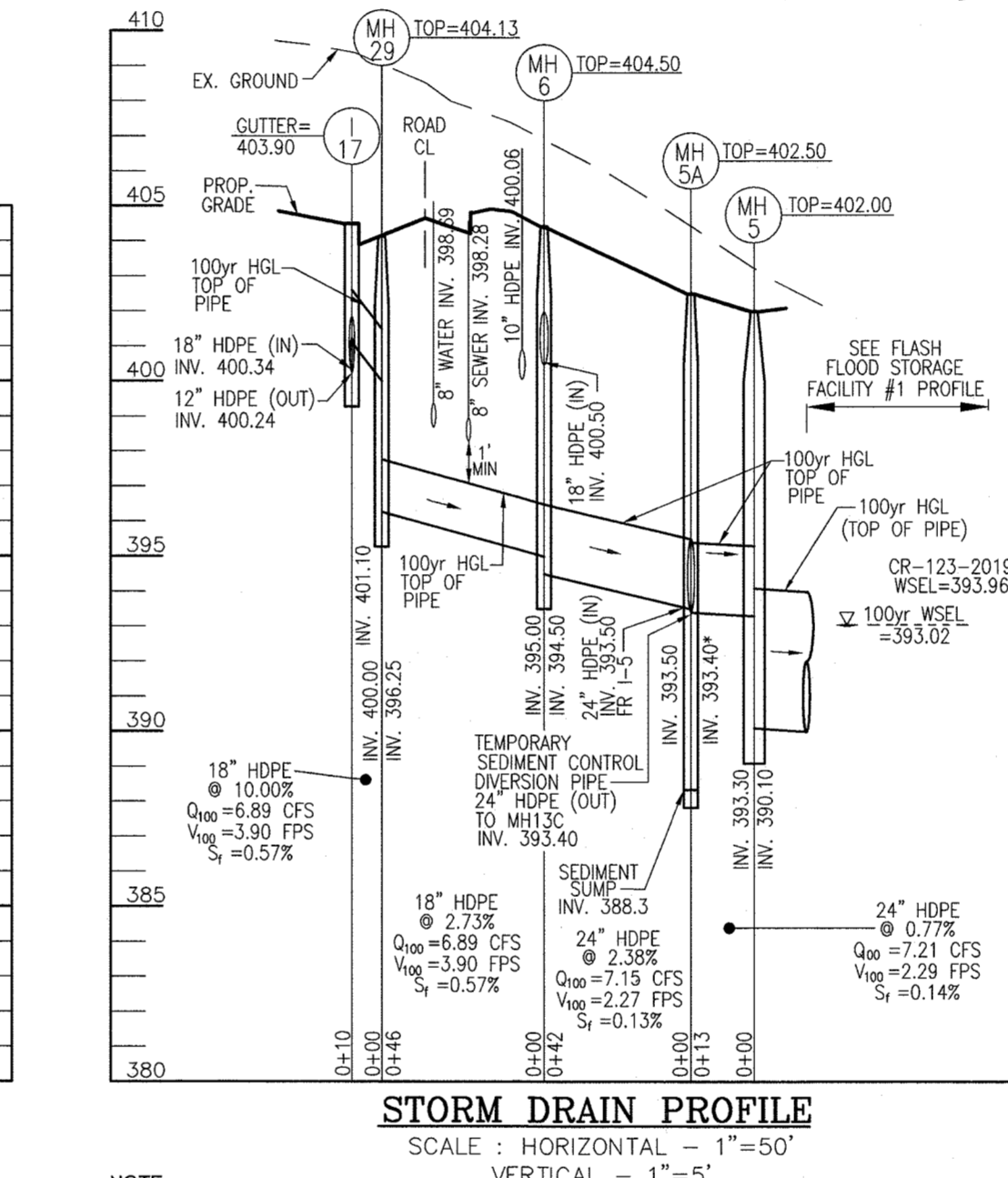
BIO-SWALE #8 STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



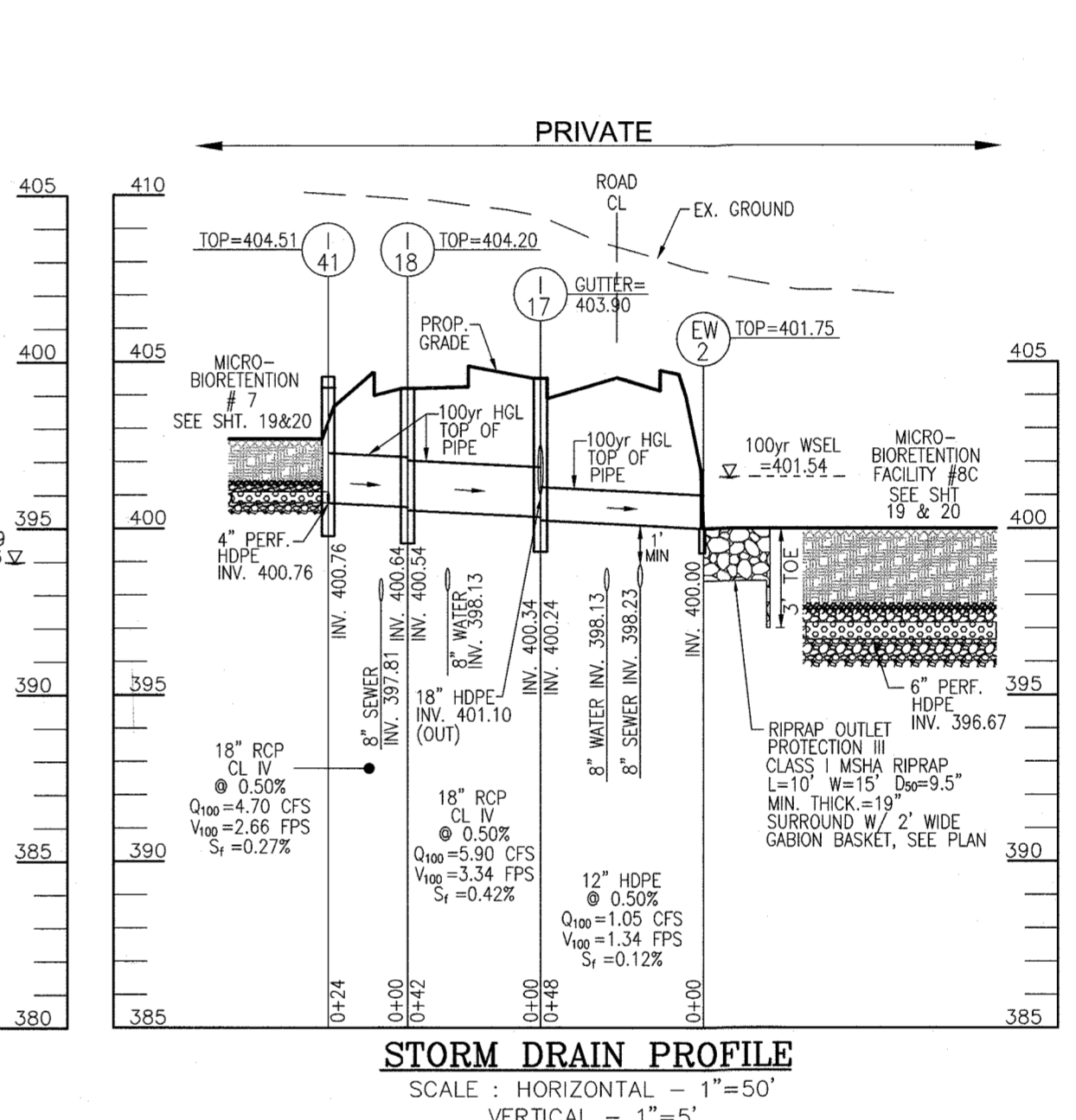
STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



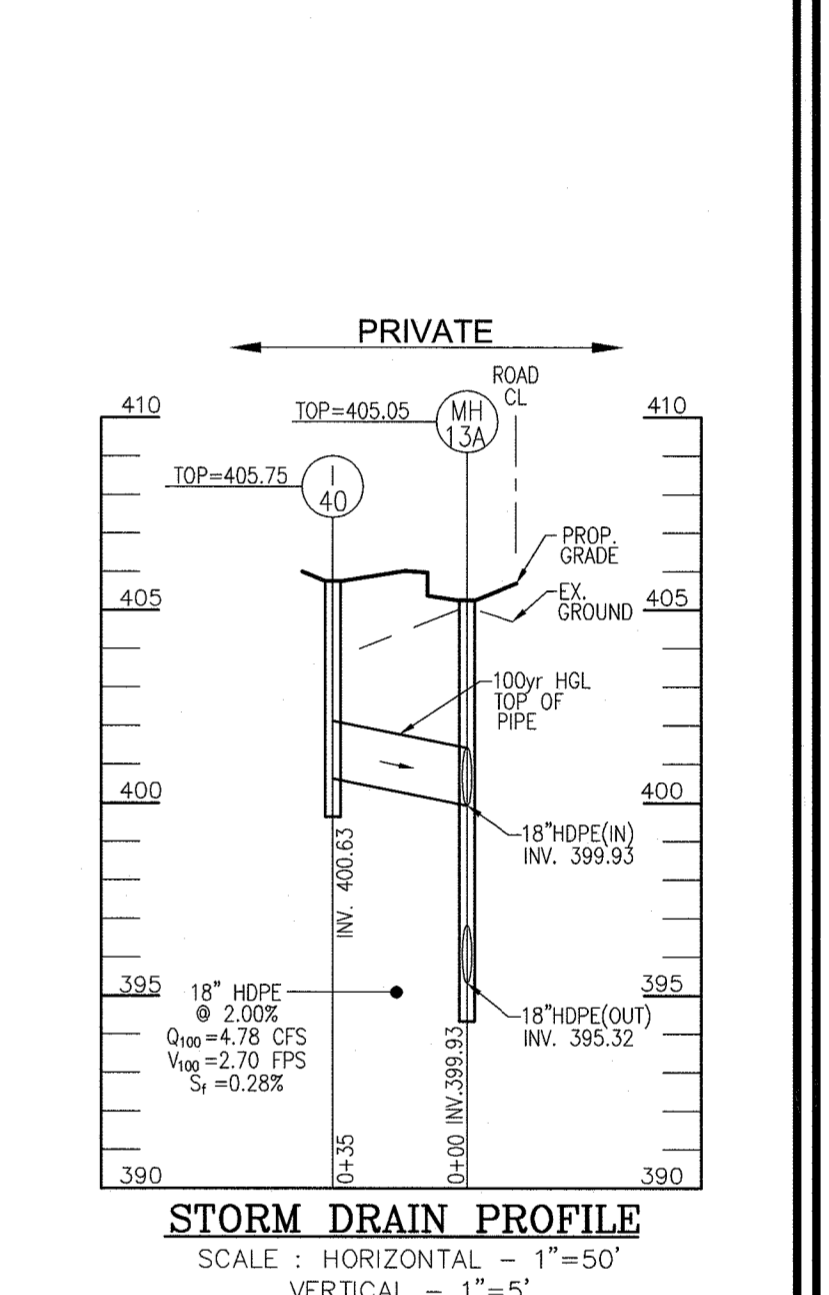
BIO-SWALE #14 STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



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



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

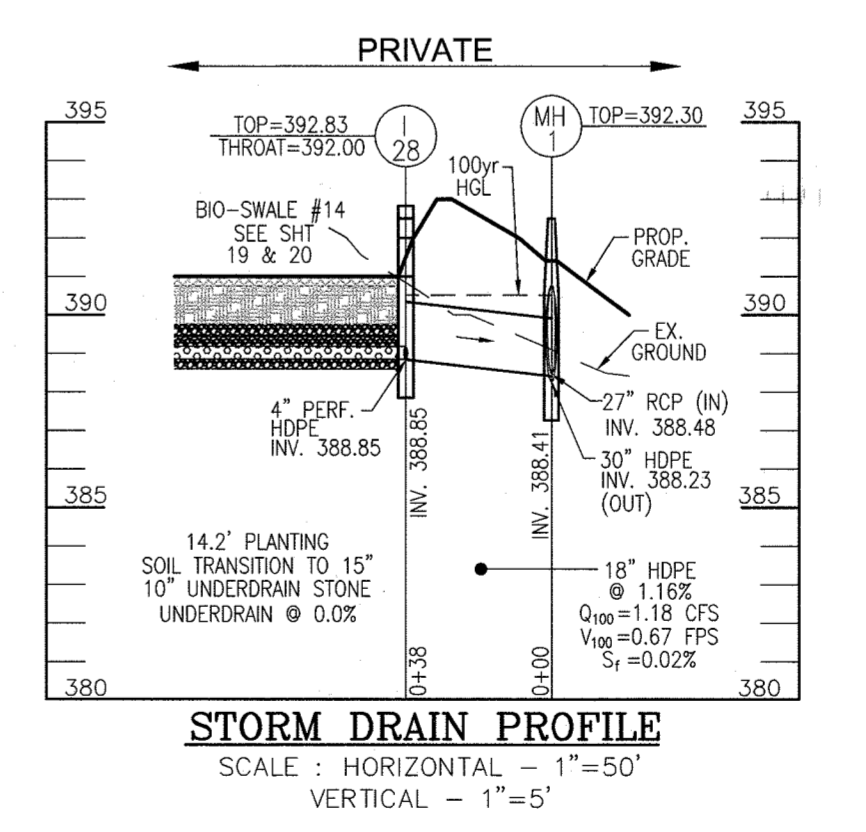
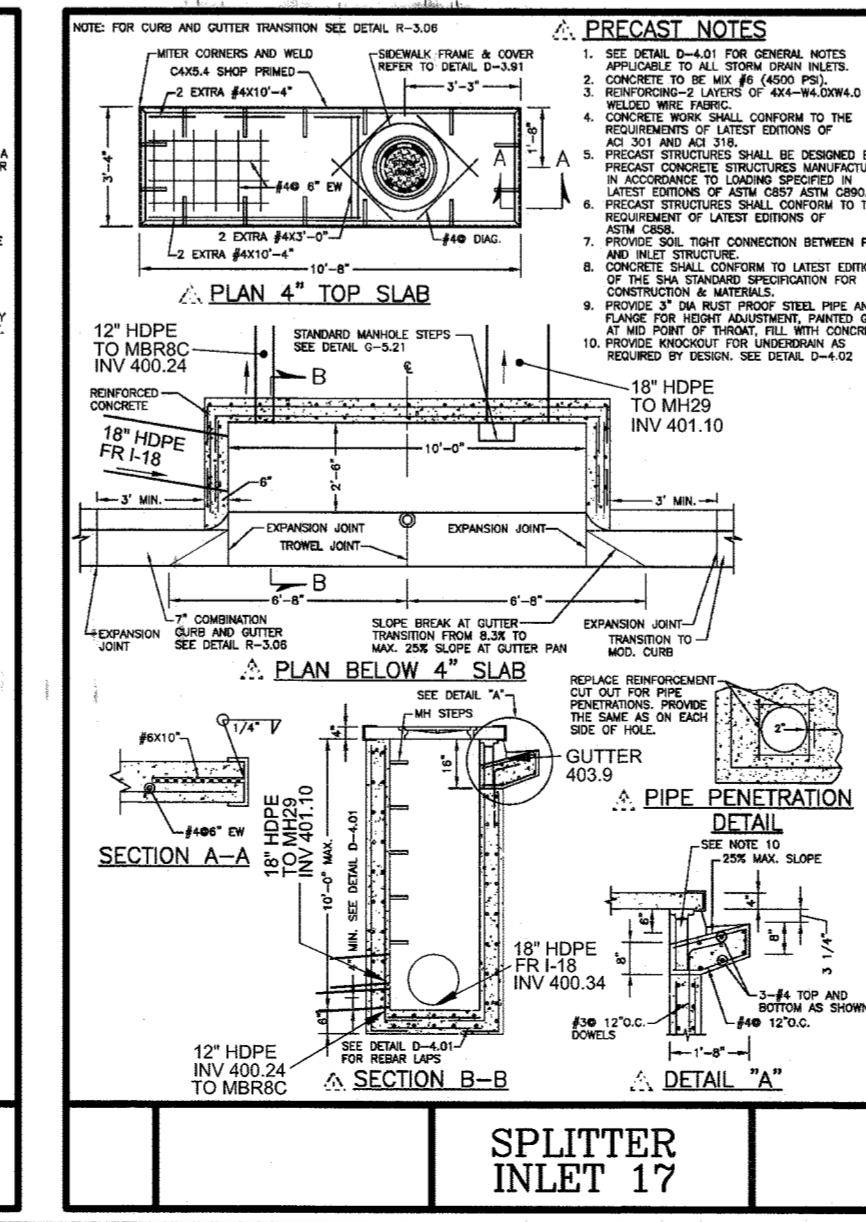
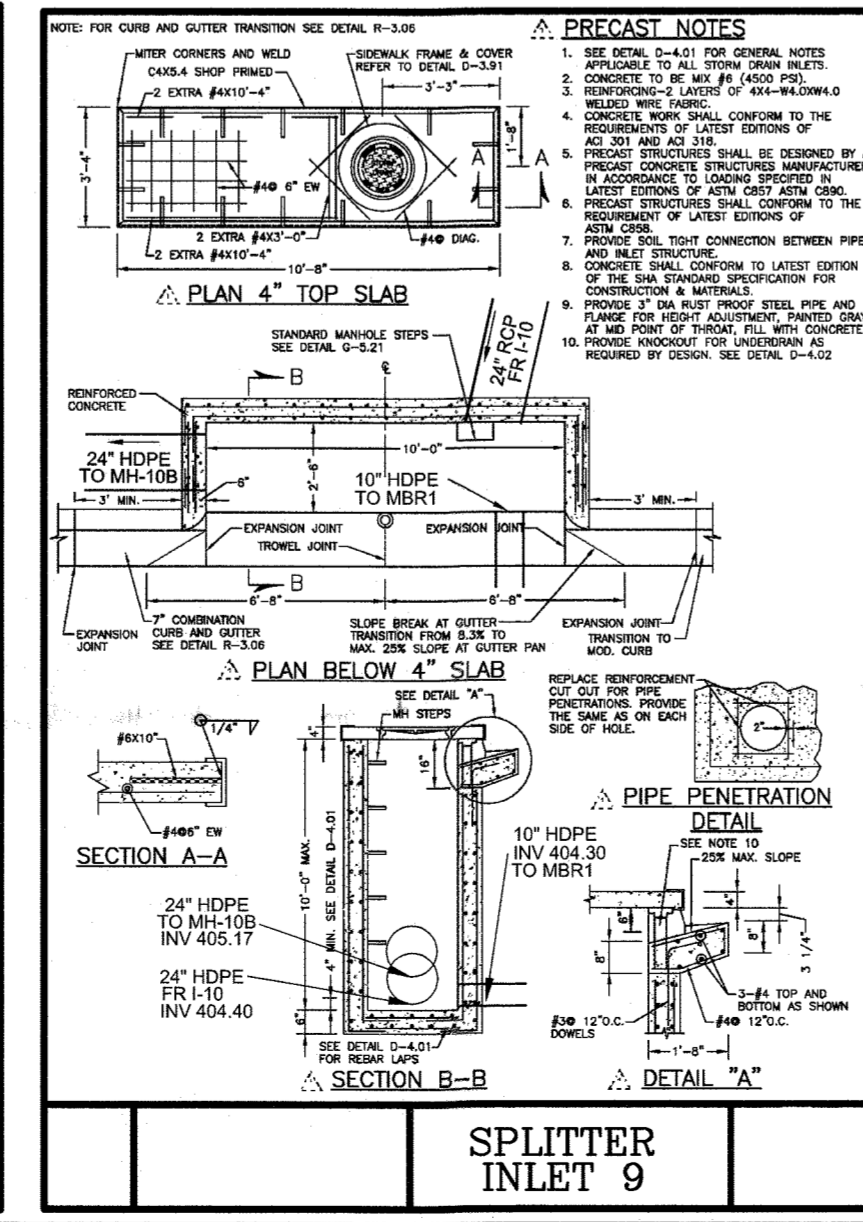
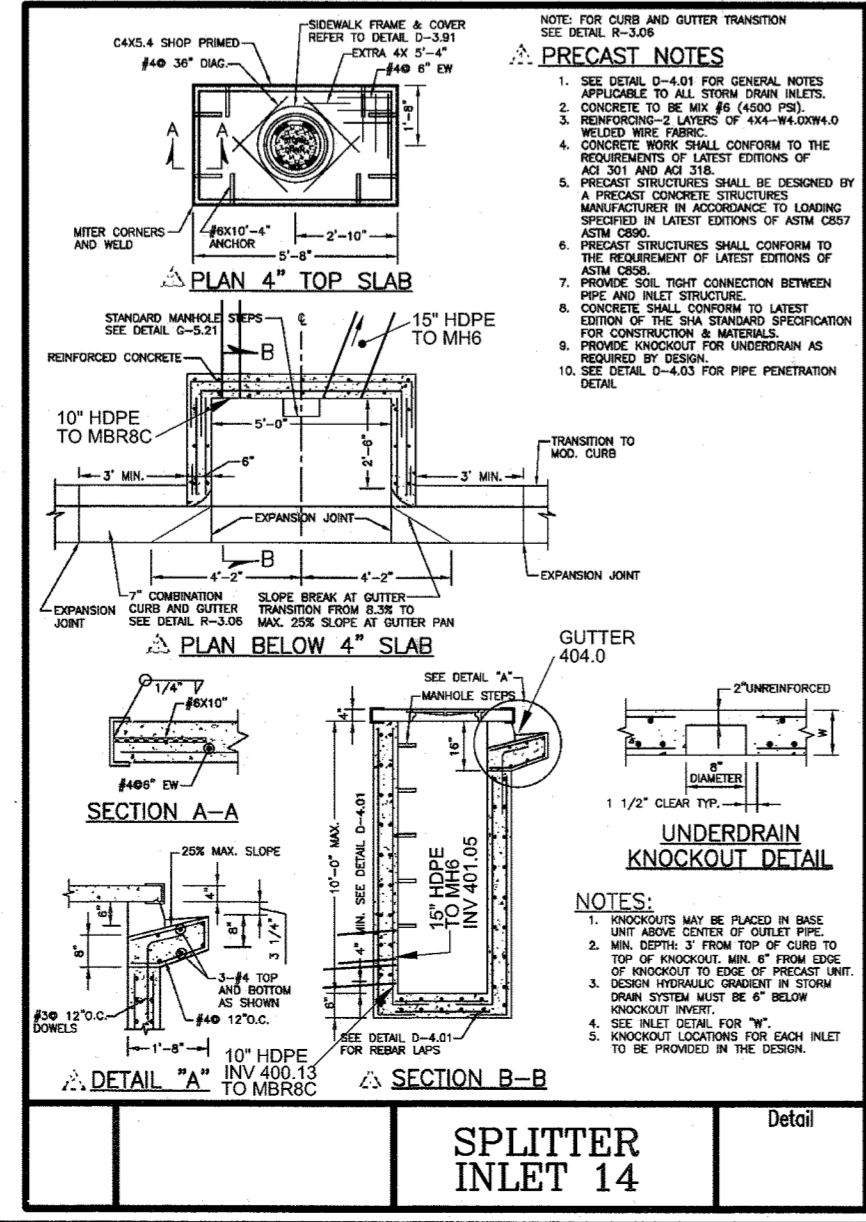


STORM DRAIN PROFILE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

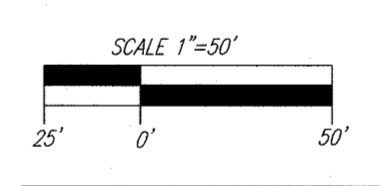
NOTE:
* 24" PIPE OUT TO MH SHALL BE CAPPED UNTIL ALL UPLAND AREAS ARE VEGETATIVELY STABILIZED.
MHS SHALL ONLY RECEIVE CLEAN WATER.

NOTES:
1. WORST CASE 5 MIN. TC ASSUMED THROUGHOUT DESIGN.
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3. DESIGN ASSUMES COMPLETE FAILURE OF PROPOSED MICRO-SCALE PRACTICES.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 3/22/21
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
 [Signature] 4/21/21
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 [Signature] 5-3-21
 DIRECTOR DATE



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



OWNER / DEVELOPER
 BEAVER HOMES
 AITNE J. MARTIN, CHARTER AREA PRESIDENT
 AUTHORIZED SIGNATURE - EAST REGION
 6085 MARSHALL DRIVE, SUITE 350
 ELK RIDGE, MD 21075
 413-539-9249

NO.	REVISION	DATE
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

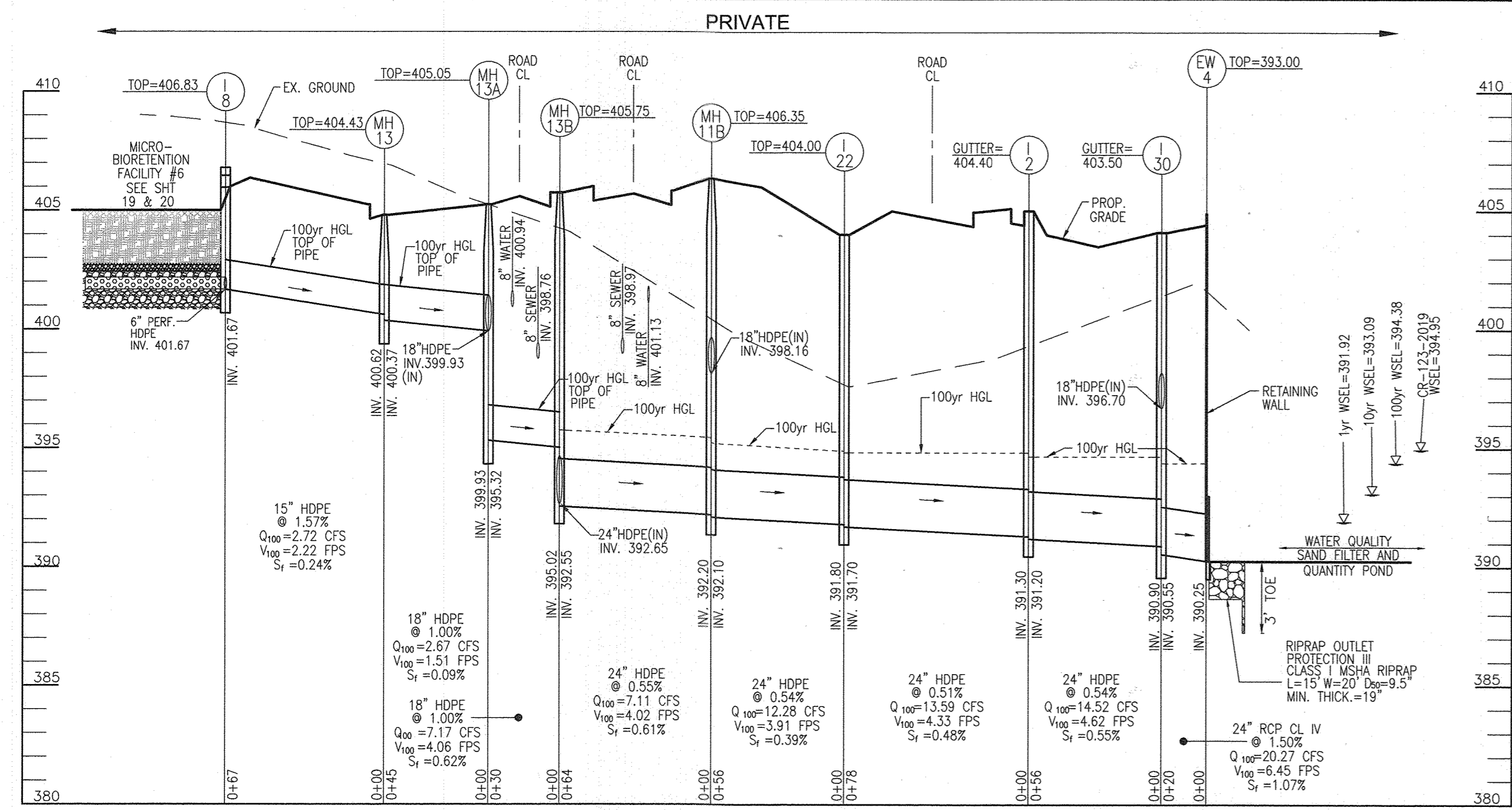
REVISED SITE DEVELOPMENT PLAN
 STORM DRAIN PROFILES
LONG GATE OVERLOOK
 LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
 AND OPEN SPACE LOT 100
 A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE DRIVE, SUITE 350
 ELK RIDGE, MD 21075
 (SFA RESIDENTIAL)

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/EDS
 DRAWN BY: VETG
 CHECKED BY: RHV
 DATE: JANUARY 2021
 SCALE: AS SHOWN
 W.O. NO.: 08-48

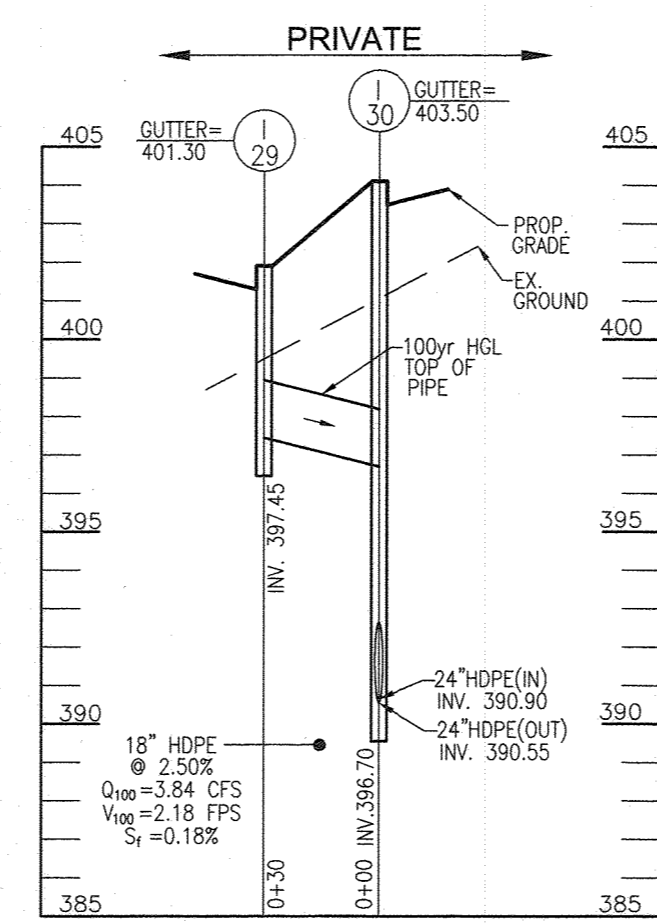
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12 SHEET OF 37



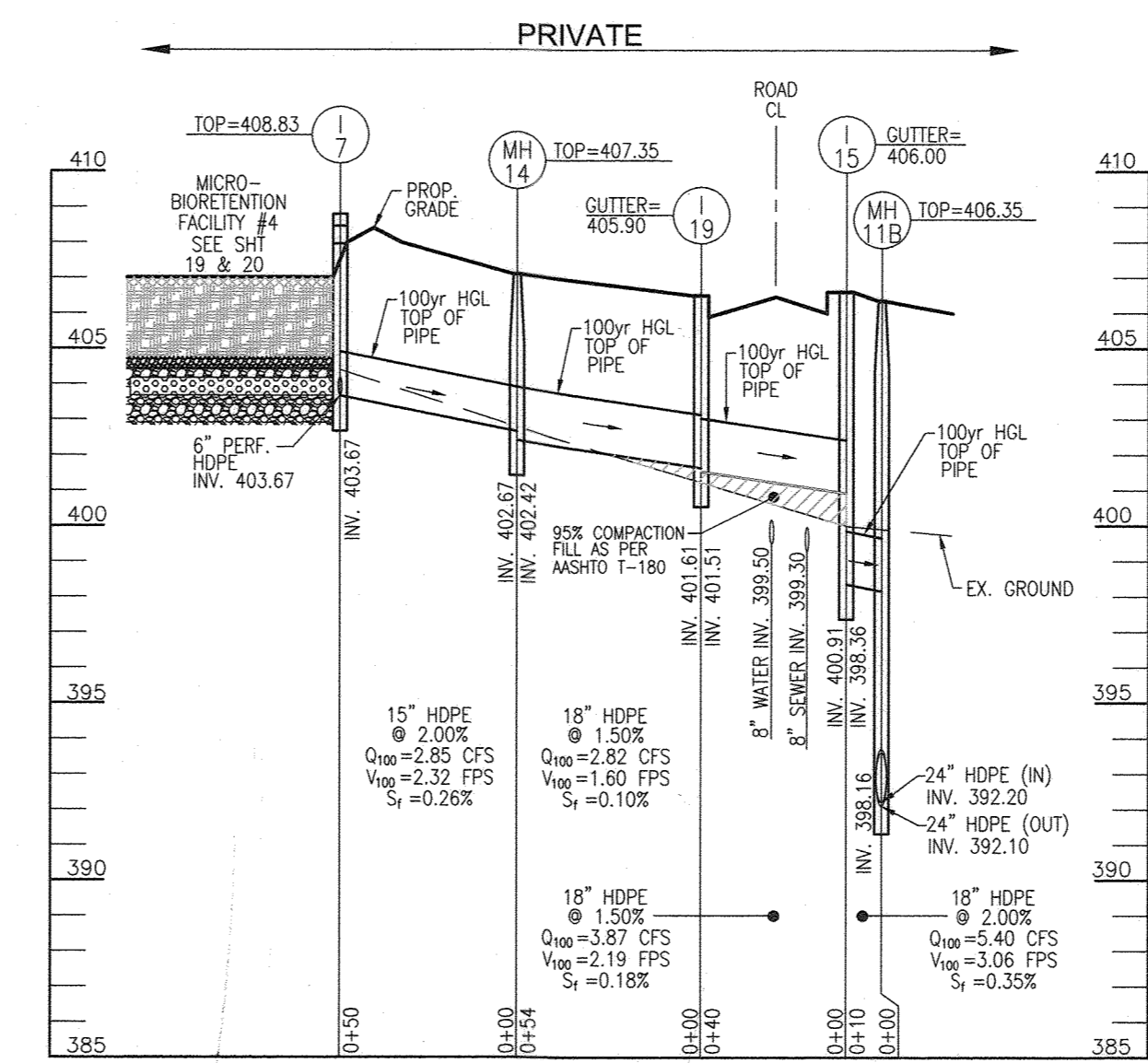
STORM DRAIN PROFILE

SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



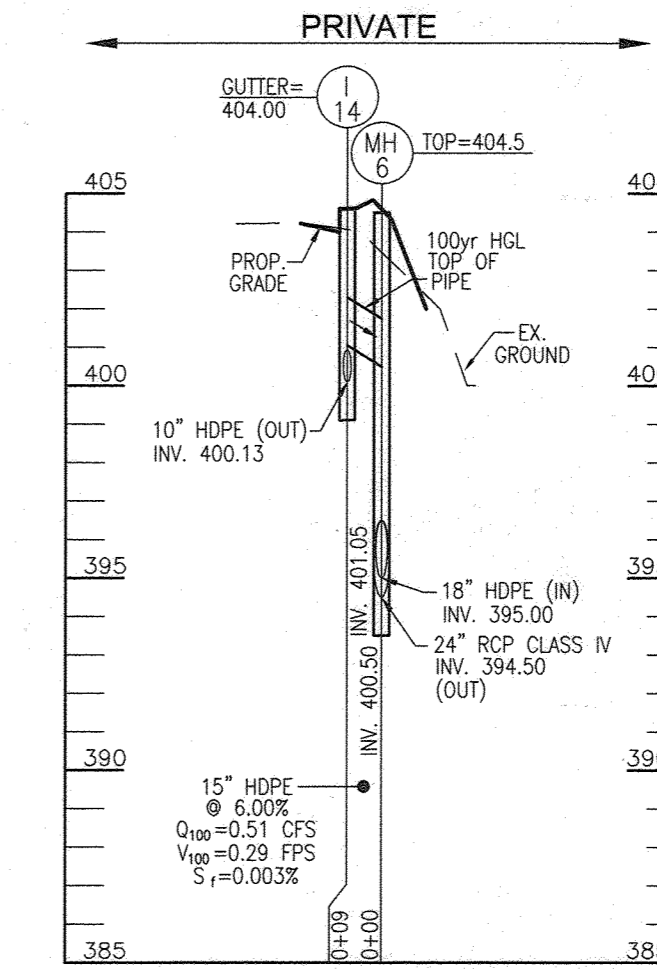
STORM DRAIN PROFILE

SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



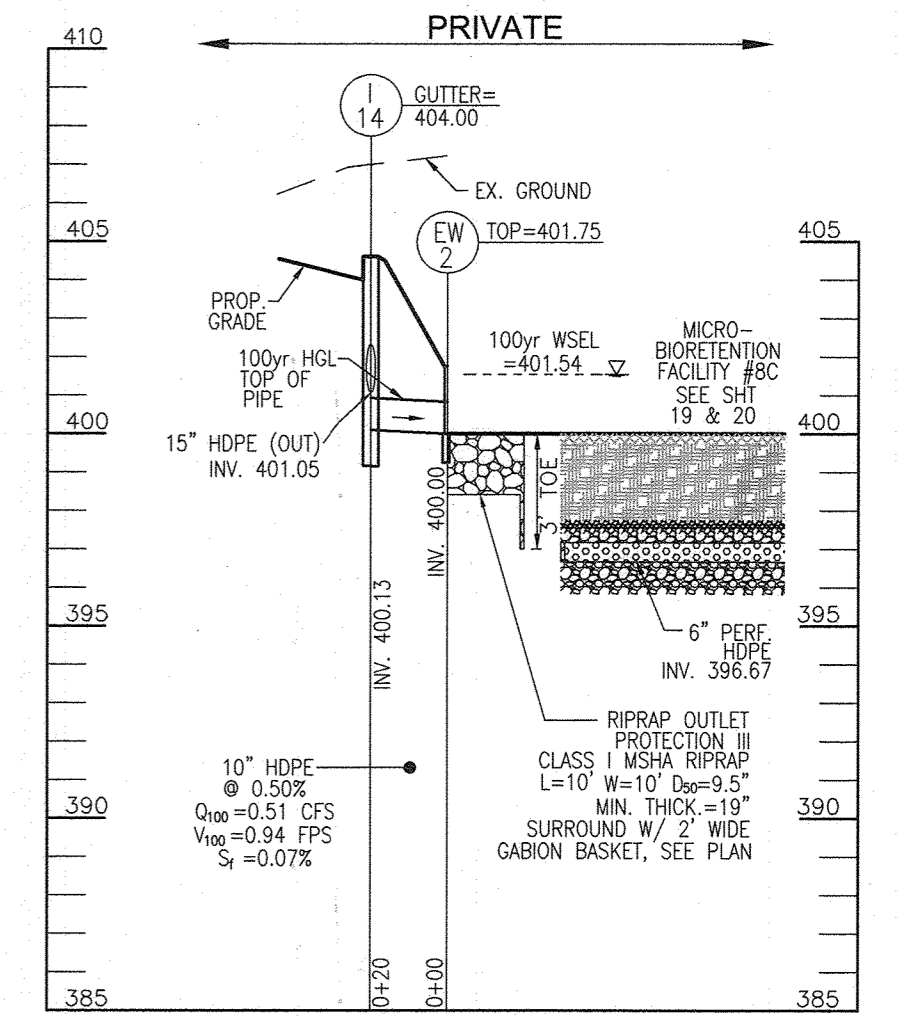
STORM DRAIN PROFILE

SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



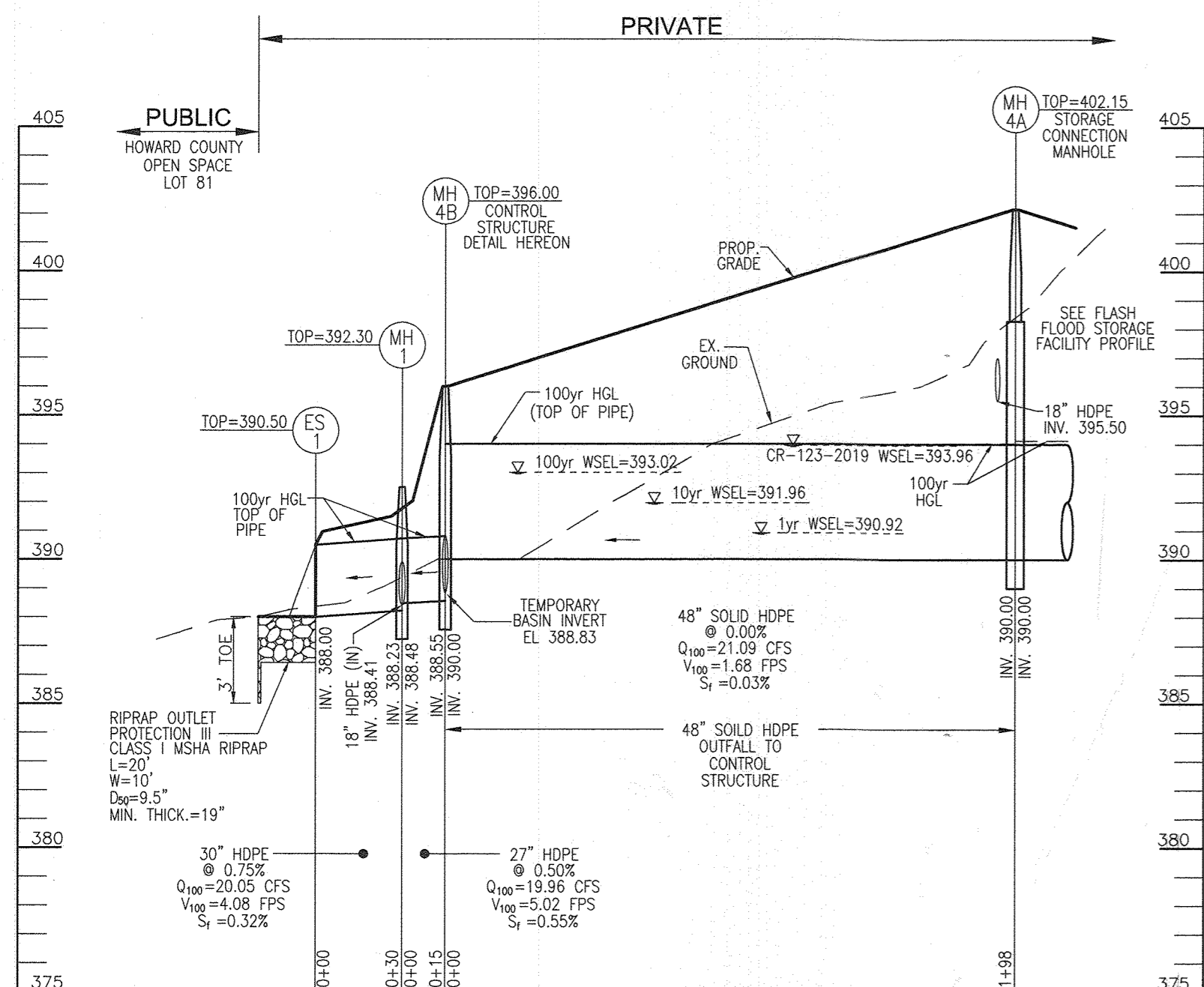
STORM DRAIN PROFILE

SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



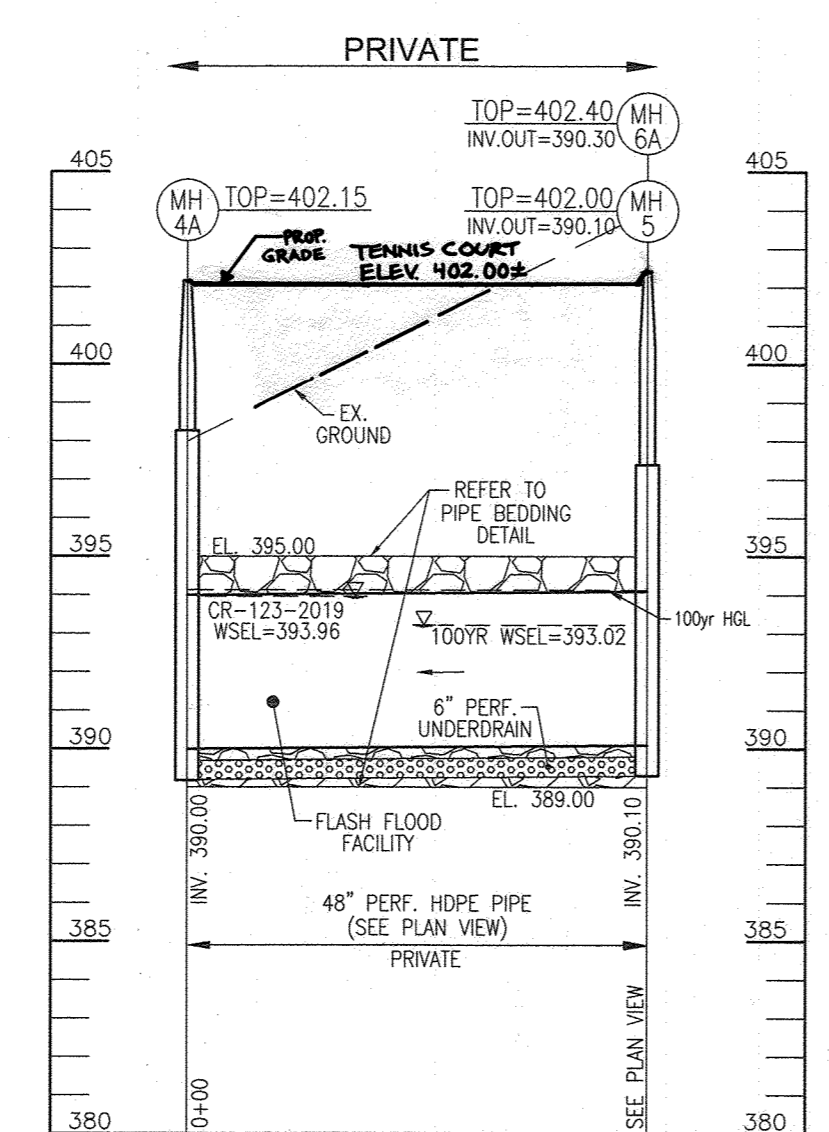
STORM DRAIN PROFILE

SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



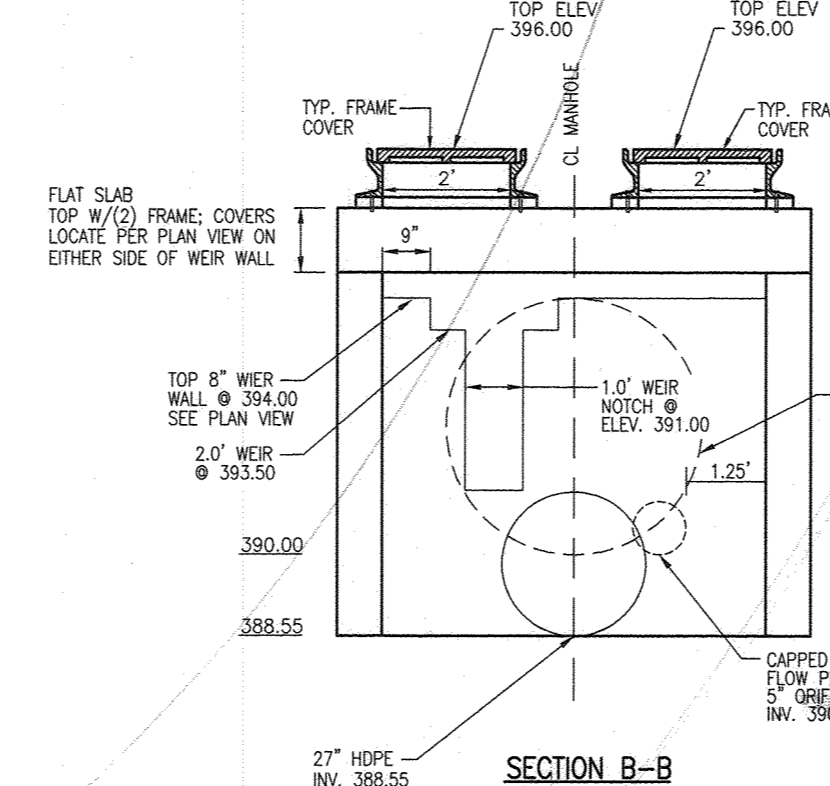
FLASH FLOOD STORAGE FACILITY #1 PROFILE

SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



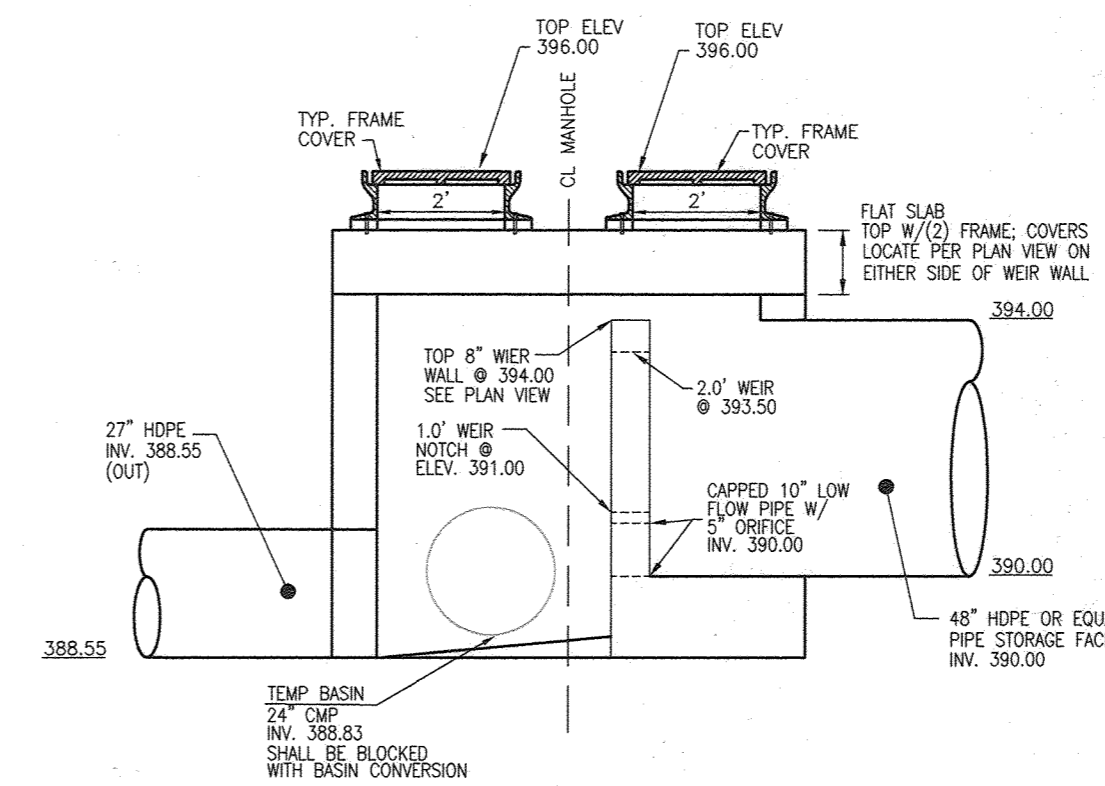
FLASH FLOOD STORAGE FACILITY #1 PROFILE

SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



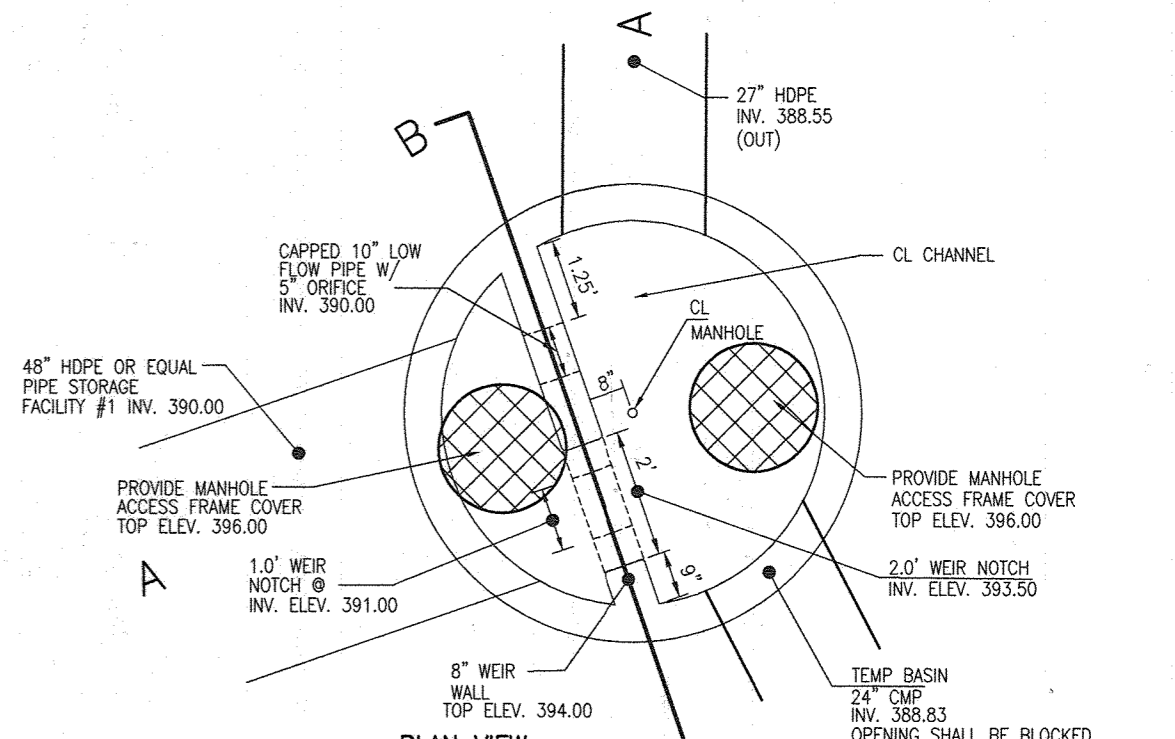
SECTION B-B

MH-4B
MODIFIED MD 384.05
SCALE: 1"=3'



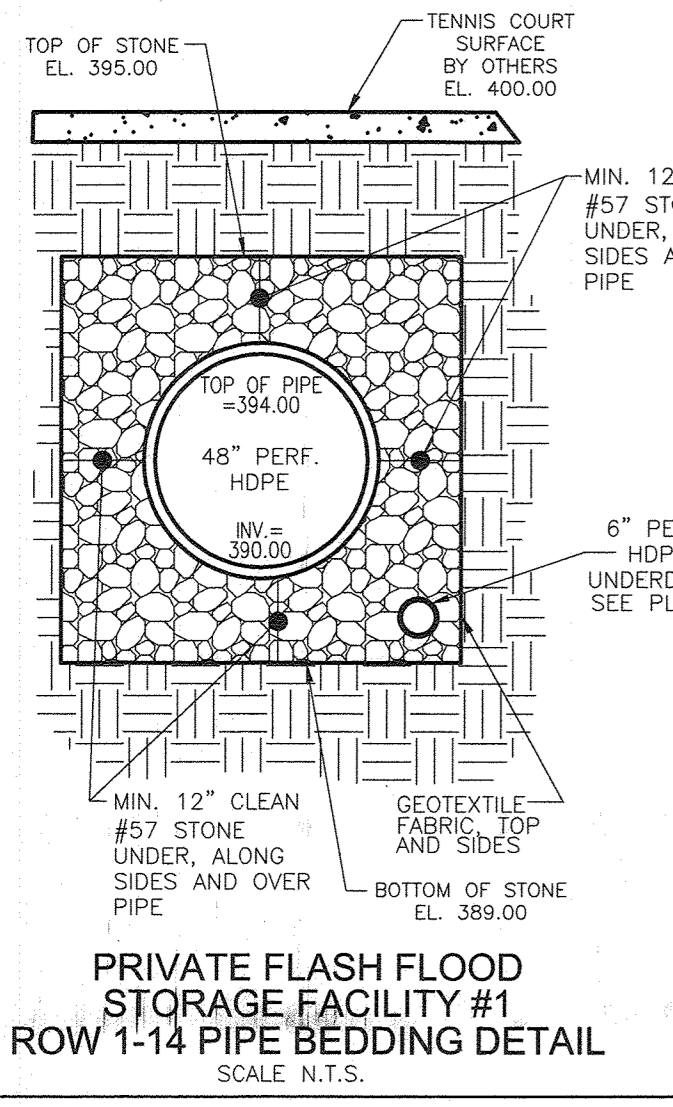
SECTION A-A

MH-4B
MODIFIED MD 384.05
SCALE: 1"=3'



PLAN VIEW

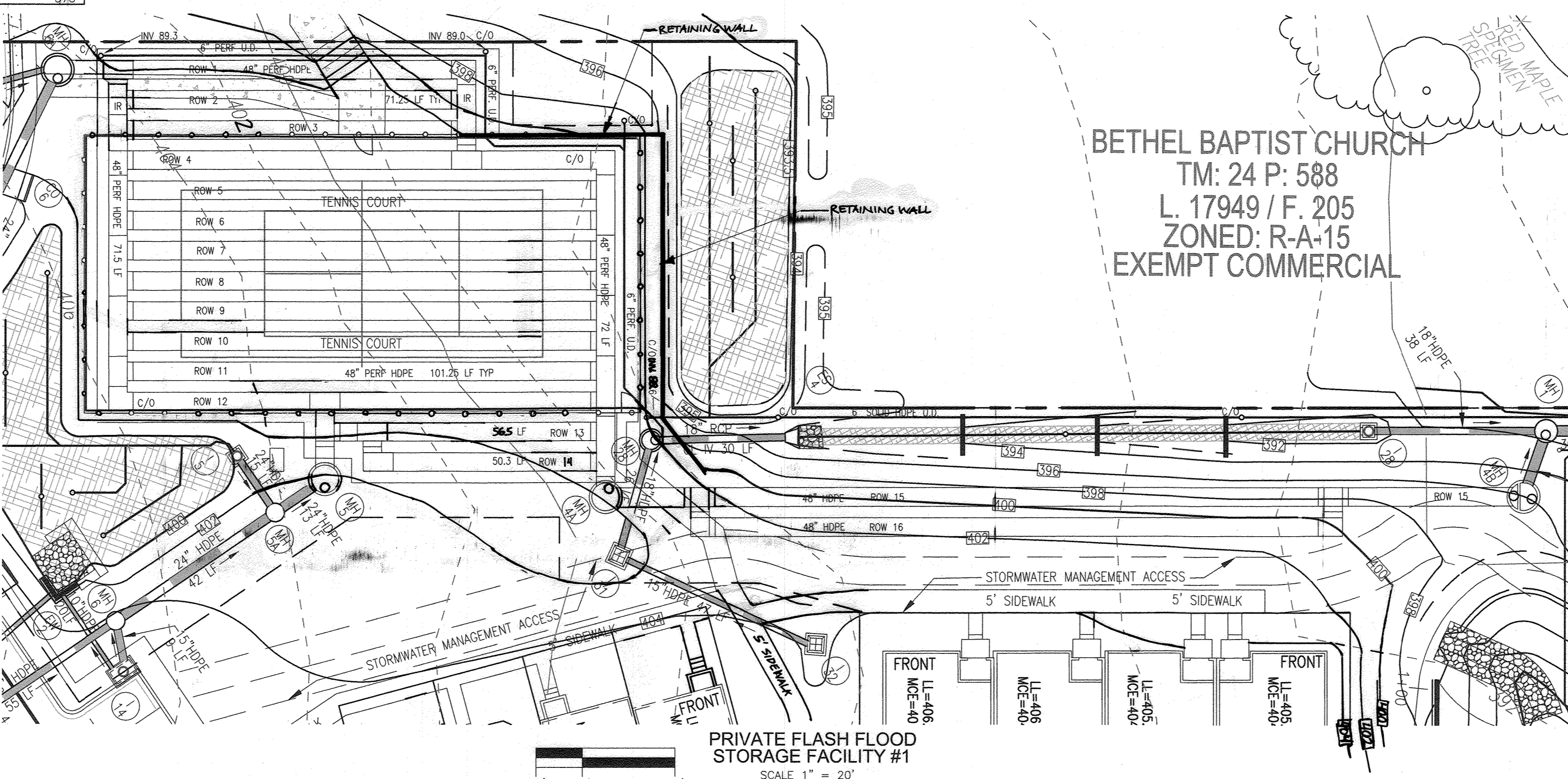
MH-4B
MODIFIED MD 384.05
SCALE: 1"=3'



PRIVATE FLASH FLOOD STORAGE FACILITY #1

SCALE N.T.S.

NOTE: FOR CLEANOUT (C/O) / MANHOLE INLET RISER (R) SEE DETAILS (OR EQUAL) SHEET 14.
NOTES:
1. ROWS 1-14 ARE PERFORATED 48" HDPE.
2. PIPE BETWEEN MH-4A AND M-4A IS SOLID 48" HDPE.
3. MH-4B IS STORAGE FACILITY #1 CONTROL STRUCTURE.



PRIVATE FLASH FLOOD STORAGE FACILITY #1

SCALE 1" = 20'

BETHEL BAPTIST CHURCH
TM: 24 P: 588
L. 17949 / F. 205
ZONED: R-A-15
EXEMPT COMMERCIAL

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION
CHIEF, DIVISION OF LAND DEVELOPMENT
DIRECTOR

3/21/22
DATE
3/21/22
DATE
3-3-21
DATE

NOTES:
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2. PERCENT IMPERVIOUS SHOWN, IGNORES STORMWATER MANAGEMENT "CREDITS", I.E. PERMEABLE SURFACES, ROOFTOP DISCONNECTS, ROOFTOPS TO PERMEABLE SURFACE SUB-BASE PRACTICES
3. DESIGN ASSUMES COMPLETE FAILURE OF PROPOSED MICRO-SCALE PRACTICES

OWNER / DEVELOPER
BEAZER HOMES
ATTN: J. MARTIN SHAFFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALLE DRIVE, SUITE 350
ELKROCK, MD 21079
443-539-9249

NO.	REVISION	DATE
8	REVISE TO ADD SIDEWALK BETWEEN UNIT 210 A/B AND LOT 90	5-10-23
6	REVISE RETAINING WALL AND GRADING NEAR TENNIS COURT	9-15-21
3	REVISE FRONT PORCH, POOR AND LEAD-WALK LOCATION, AMEND SIDEWALK, AMEND PP ELEV. AND MINOR STAT. ELEV. AMEND TENNIS COURT ELEV. REDEFINE L-S PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

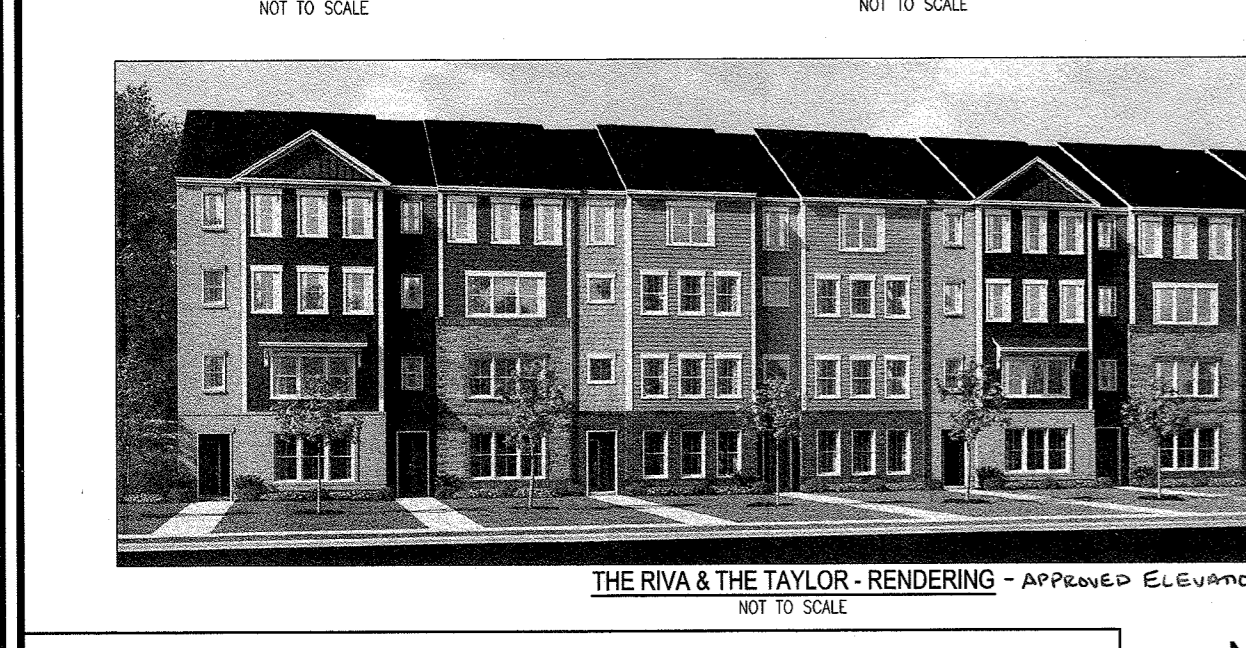
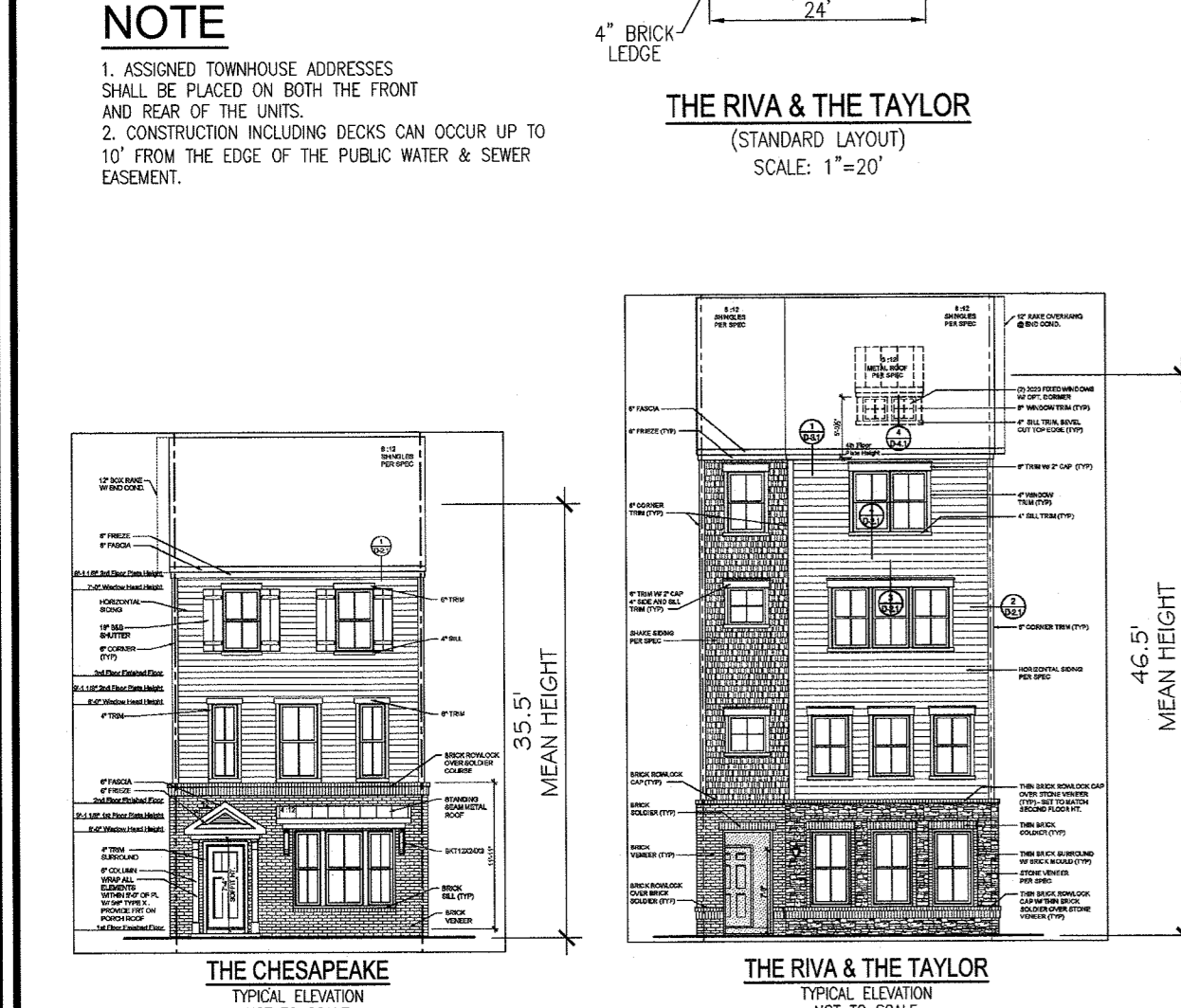
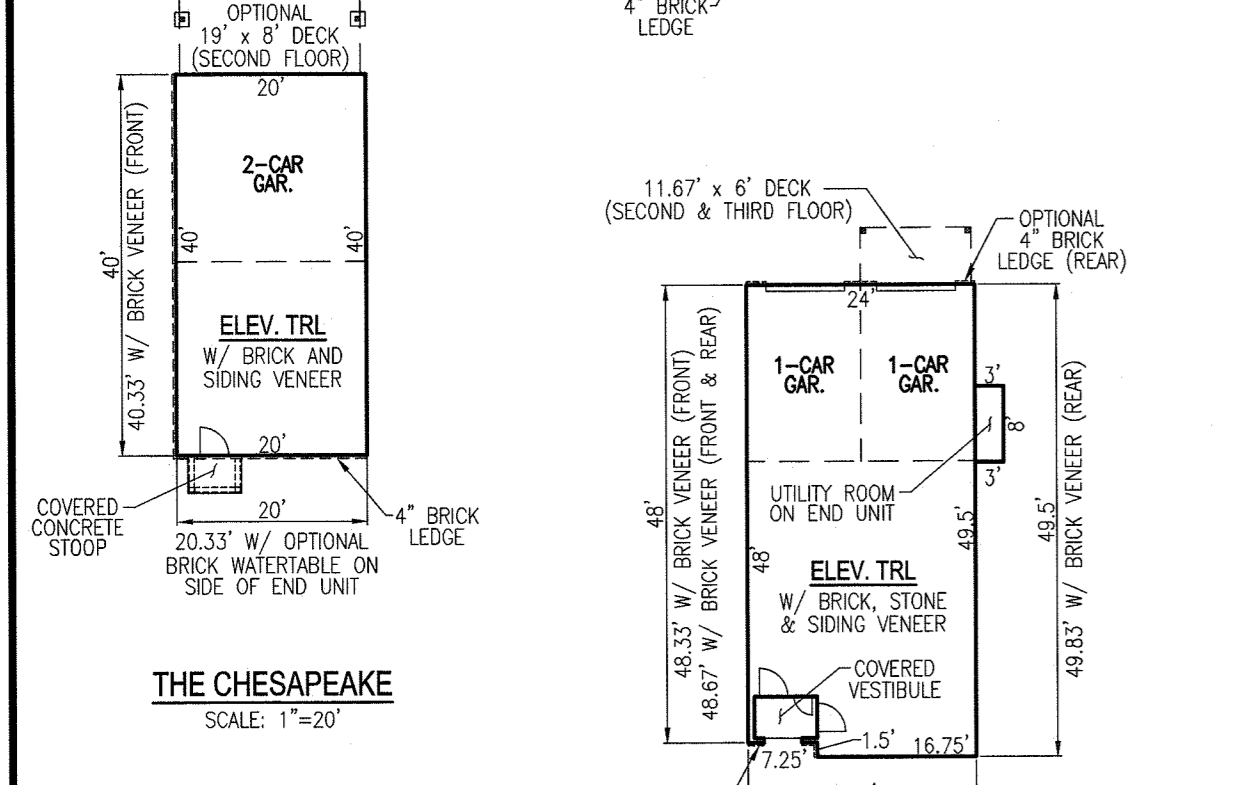
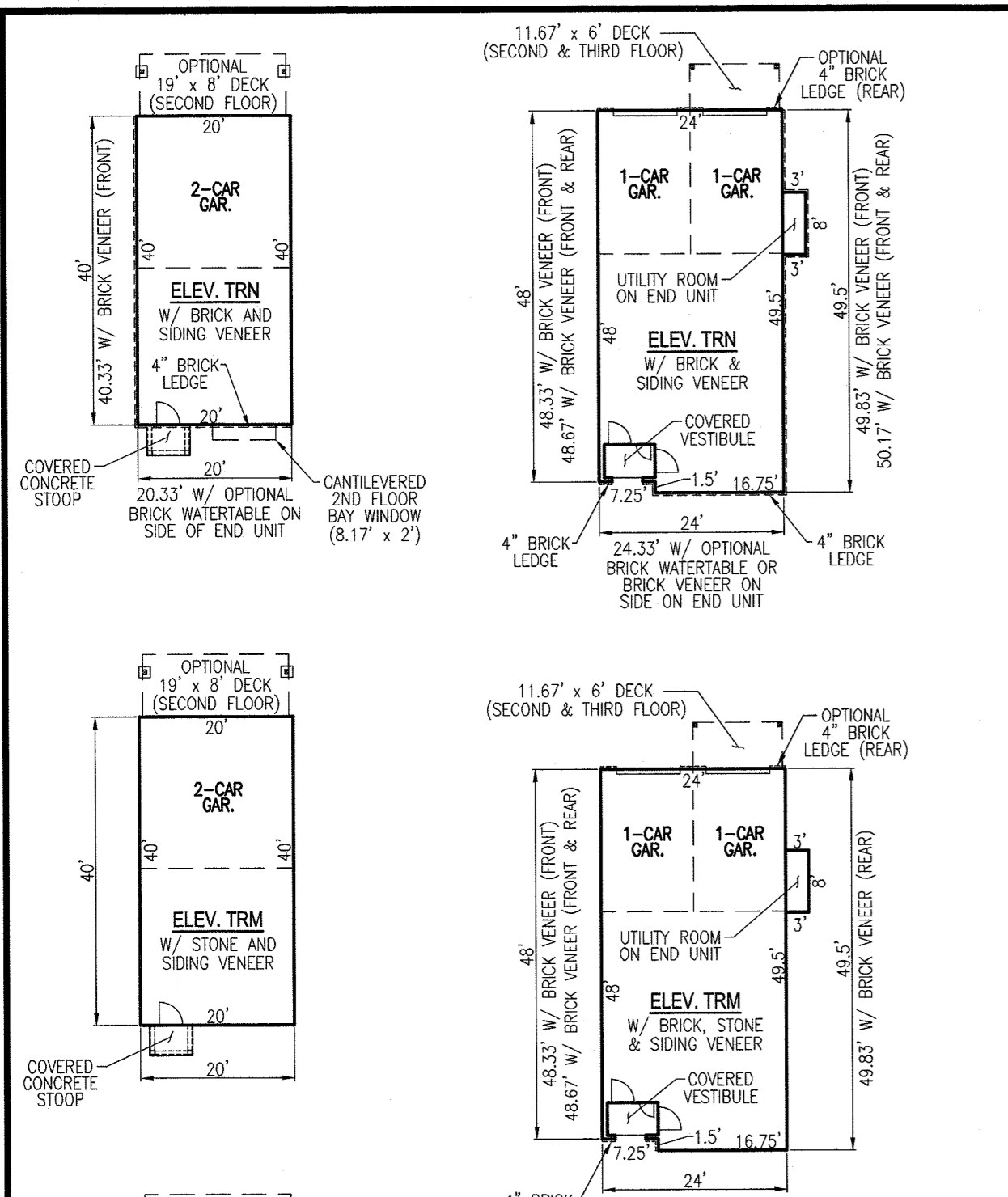
REVISED SITE DEVELOPMENT PLAN
STORM DRAIN PROFILES
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
(SFA RESIDENTIAL) 29764-28716

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. 16193, EXPIRATION DATE: 09-27-2022

DESIGN BY: RHY/EDS.
DRAWN BY: VETG
CHECKED BY: RHY
DATE: JANUARY 2021
SCALE: AS SHOWN
W.O. NO.: 08-48

13 SHEET OF 37

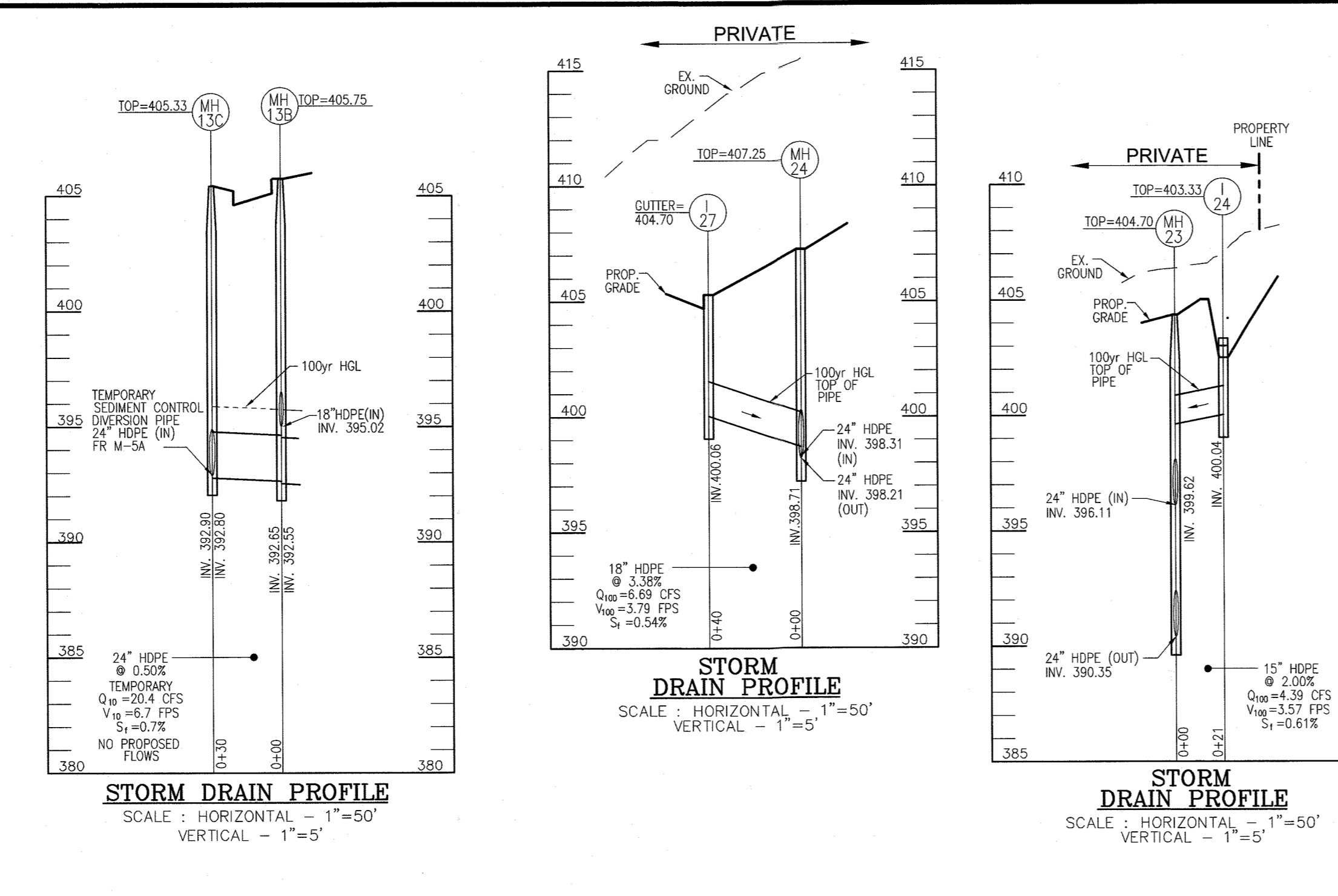


APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 5-3-21

CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 5/3/21

DIRECTOR DATE: 5-3-21



STRUCTURE SCHEDULE

STR #	TYPE	INV. IN	INV. OUT	TOP ELEV	DETAIL	LOCATION	REMARKS
L-1	D	400.00/396.30	396.20	405.83	D-4.10	E=1364251.51 N=577863.12	MBR 1
L-2	A-10	391.30	391.20	404.40	D-4.03	E=1364765.54 N=577328.53	SUMP
L-5	D	396.67/393.70	393.60	401.83	D-4.10	E=1364533.36 N=577914.03	MBR 8C
L-6	D	401.67	401.00	406.83	D-4.10	E=1364343.30 N=577872.31	MBR 8A
L-7	D	403.67	403.67	408.83	D-4.10	E=1364648.88 N=577642.24	MBR 4
L-8	D	401.67	401.67	406.83	D-4.10	E=1364491.21 N=577749.66	MBR 8
L-9	A-10	404.40	404.34/05.17	MID 408.90	D-4.03	E=1364258.58 N=577783.01	MD 103
L-10	COG-10	405.00	404.80	MID 414.60	D-4.10	E=1364765.54 N=577328.53	MD 103
L-11	COG-10	406.00	405.90	MID 417.70	MD 374.51	E=1364362.04 N=577655.37	MD 103
L-12	COG-10	406.90	406.80	MID 413.30	MD 374.51	E=1364493.74 N=577555.71	MD 103
L-13	COG-10	-	407.84	MID 414.60	MD 374.51	E=1364620.90 N=577465.08	MD 103
L-14	A-5	-	400.13/401.05	404.00	D-4.02	E=1364921.30 N=577822.47	SUMP
L-15	D	400.91	393.36	406.00	D-4.02	E=1364667.20 N=577763.88	SUMP
L-17	A-10	400.94	400.24	403.90	D-4.03	E=1364478.18 N=577833.00	SUMP
L-18	DEL S	400.64	400.54	404.20	D-4.25	E=1364449.47 N=577860.83	SUMP
L-19	A-10	401.61	401.51	405.90	D-4.03	E=1364832.39 N=577717.70	SUMP
L-22	S	391.80	391.70	404.00	D-4.27	E=1364677.02 N=577817.48	SUMP
L-23	D	397.64	397.64	402.13	D-4.10	E=1364834.67 N=577957.86	SWALE 8
L-24	D	400.00	400.04	403.33	D-4.10	E=1364963.63 N=577787.18	SUMP
L-25	COG-15	409.10	409.00	415.66	ST-1530-98	E=1364765.80 N=577374.99	DETAIL HEREON
L-26	D	406.17	406.07	411.33	D-4.10	E=1364778.16 N=577458.10	MBR 2
L-27	A-10	-	400.06	404.70	D-4.03	E=1364504.12 N=577618.66	SUMP
L-28	D	388.65	388.65	392.83	D-4.10	E=1364762.44 N=577998.93	SWALE 14
L-29	A-10	397.45	397.45	401.30	D-4.03	E=1364791.32 N=577840.66	SUMP
L-30	A-10	396.70/390.90	390.55	403.50	D-4.03	E=1364817.40 N=577823.90	SUMP
L-31	S	396.02	396.77	401.00	D-4.27	E=1364618.34 N=577920.66	SUMP
L-32	S	-	397.90	403.70	D-4.27	E=1364664.74 N=577916.50	SUMP
L-40	YARD INLET	-	400.83	406.75	D-4.12	E=1364833.67 N=577745.23	SUMP
L-41	D	400.75	400.75	404.51	D-4.10	E=1364425.57 N=577862.83	MBR 7
MH-1	60" MANHOLE	388.48/388.41	388.23	392.30	G 5.13	E=1364798.71 N=578011.48	(1)
MH-4B	60" MANHOLE	390.00	388.55	396.50	G 5.13	E=1364846.71 N=577957.76	CONTROL STRUCTURE
MH-4A	60" MANHOLE	390.00	390.00	402.15	G 5.13	E=1364611.26 N=577932.09	STORAGE CONNECTION MH
MH-5	60" MANHOLE	393.30	390.10	402.00	G 5.13	E=1364502.86 N=577915.81	(1)
MH-5A	48" MANHOLE	380.50/390.50	393.40/393.40	402.50	G 5.12	E=1364545.11 N=577905.24	(1)
MH-2	48" MANHOLE	400.50/396.00	394.50	404.00	G 5.12	E=1364620.30 N=577871.93	(1)
MH-9A	60" MANHOLE	384.10/397.12	390.33	402.40	G 5.13	E=1364469.41 N=577980.02	(1)
MH-7	48" MANHOLE	394.65	394.65/394.10	404.00	G 5.12	E=1364460.13 N=577904.45	(1)
MH-8	48" MANHOLE	396.35	395.25	406.20	G 5.12	E=1364347.70 N=577915.81	(1)
MH-9	48" MANHOLE	400.00/396.00	395.50	406.05	G 5.12	E=1364524.20 N=577898.41	(1)
MH-10	48" MANHOLE	388.40/396.10	393.95	406.75	G 5.12	E=1364289.22 N=577856.16	(1)
MH-10B	48" MANHOLE	401.00	398.73	407.48	G 5.12	E=1364288.54 N=577831.77	(1)
MH-11B	48" MANHOLE	388.16/392.20	392.10	406.35	G 5.12	E=1364643.55 N=577772.70	(1)
MH-13	48" MANHOLE	400.62	400.37	404.43	G 5.12	E=1364531.55 N=577803.54	(1)
MH-13A	48" MANHOLE	398.83	395.32	405.05	G 5.12	E=1364468.12 N=577776.41	(1)
MH-13B	48" MANHOLE	395.02/392.65	392.55	405.75	G 5.12	E=1364586.91 N=577801.55	(1)
MH-13C	48" MANHOLE	392.90	392.80	406.33	G 5.12	E=1364683.35 N=577831.33	(1)
MH-14	48" MANHOLE	402.67	402.42	407.35	G 5.12	E=1364672.39 N=577885.84	(1)
MH-23	48" MANHOLE	388.00/396.11	390.35	404.70	G 5.12	E=1364940.55 N=577790.74	(1)
MH-24	48" MANHOLE	388.71/388.31	388.21	407.25	G 5.12	E=1364844.69 N=577613.18	(1)
MH-25	48" MANHOLE	402.58	402.48	414.00	G 5.12	E=1364844.67 N=577654.02	(1)
MH-26	48" MANHOLE	405.75/405.00	404.90	413.00	G 5.12	E=1364791.75 N=577451.02	(1)
MH-28	48" MANHOLE	395.25	395.15	403.50	G 5.12	E=1364616.67 N=577948.40	(1)
MH-29	48" MANHOLE	400.00	-	404.13	G 5.12	E=1364822.40 N=577834.75	(1)
ES-1	30" END SEC.	-	388.00	390.50	HDPE	E=1364829.09 N=578021.99	(2) 30" End Section
ES-4	18" END SEC.	-	385.00	386.50	HDPE	E=1364846.71 N=577957.76	(2) 18" End Section
EW-1	10" FC" ENDWALL	-	404.00	405.75	MD 398.61	E=1364212.58 N=577821.35	(2) 10" End Wall
EW-2	12" FC" ENDWALL	-	400.00	401.75	D-5.21	E=1364508.39 N=577872.99	(2) 12" End Wall
EW-3	24" FC" ENDWALL	-	390.25	393.00	D-5.21	E=1364887.60 N=577842.33	(2) 24" End Wall
EW-4	24" FC" ENDWALL	-	390.25	393.00	D-5.21	E=1364833.61 N=577842.36	(2) 24" End Wall

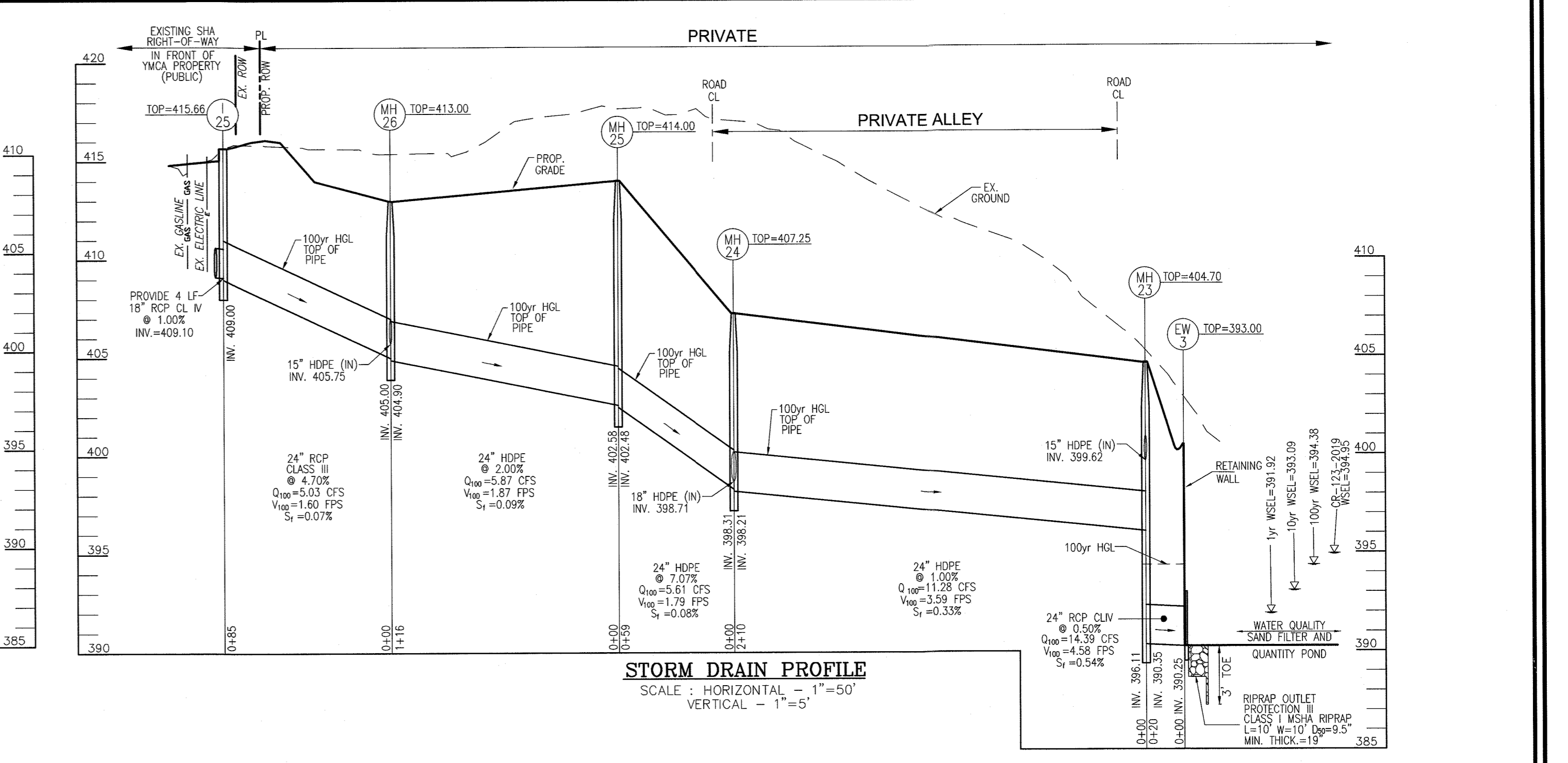
STRUCTURE SCHEDULE

STR #	TYPE	DEPTH REQUIREMENT	TOP/CL STCR	DETAIL	LOCATION	PUBLIC/PRIVATE	REMARKS
CO-1	PASS THRU	D=7.5" (Note 1)	408.40 G	D-4.35	16+78.40, 39.50' LT	PUBLIC	L=6.0', T=5.0'
CO-2	PASS THRU	D=7.5" (Note 1)	407.00 G	D-4.35	1+28.32, 28.20' RT	PUBLIC	L=11.0', T=5.0'
CO-3	PASS THRU	D=4.33" (Note 1)	406.30 G	D-4.35	1+89.07, 13.00' RT	PUBLIC	L=6.0', T=5.0'
CO-4	PASS THRU	D=4.33" (Note 1)	404.90 G	D-4.35	2+71.13, 13.00' LT	PUBLIC	L=6.0', T=5.0'
CO-5	PASS THRU	D=4.33" (Note 1)	401.50 G	D-4.35	0+92.43, 12.00' LT	PUBLIC	L=6.0', T=5.0'
CO-6	PASS THRU	D=7.5" (Note 1)	402.40 G	D-4.35	0+89.21, 12.00' RT	PUBLIC	L=6.0', T=5.0'
CO-7	PASS THRU	D=7.5" (Note 1)	404.10 G	D-4.35	3+76.00, 13.00' LT	PUBLIC	L=6.0', T=5.0'

NOTE: 1. DIMENSION FROM FLOWLINE/FACE CURB (R-3.01) TO BACK OF 4" LIP

NOTES:

- WORST CASE 5 MIN. TC ASSUMED THROUGHOUT DESIGN.
- PERCENT IMPERVIOUS SHOWN, IGNORES STORMWATER MANAGEMENT "CREDITS", I.E. PERMEABLE SURFACES, ROOFTOP DISCONNECTS, ROOFTOPS TO PERMEABLE SURFACE SUB-BASE PRACTICES.
- DESIGN ASSUMES COMPLETE FAILURE OF PROPOSED MICRO-SCALE PRACTICES.



PRIVATE PIPE SCHEDULE

Size	Class	Total Length
10"	HDPE	80
12"	HDPE	48
15"	HDPE	262
18"	HDPE	482
18"	RCP CL IV	98
24"	HDPE	1132
24"	RCP CL II	65
24"	RCP CL IV	44
27"	HDPE	30
48"	PERF HDPE (1)	1441
48"	HDPE (1)	352

* The total length of pipe is linear feet only.

** If HDPE is specified, smooth interior pipe is to be installed. Contractor shall install pipe in accordance with manufacturer's specifications.

(1) APPROX. PIPE STORAGE FACILITY

OWNER / DEVELOPER

BEAZER HOMES
ATTN: J. MARTIN SHAFFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALEE DRIVE, SUITE 350
ELKRIEGE, MD, 21075
443-539-3249

REVISED SITE DEVELOPMENT PLAN
STORM DRAIN PROFILES AND ARCHITECTURAL FOOTPRINTS & ELEVATIONS
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278 (SFA RESIDENTIAL)

2ND ELECTION DISTRICT ZONED: R-A-15
TAX MAP: 24 GRID: 24 PARCELS: SEE GENERAL NOTE 1
DPZ REF: SEE SITE ANALYSIS DATA CHART ON COVER SHEET 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

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2022

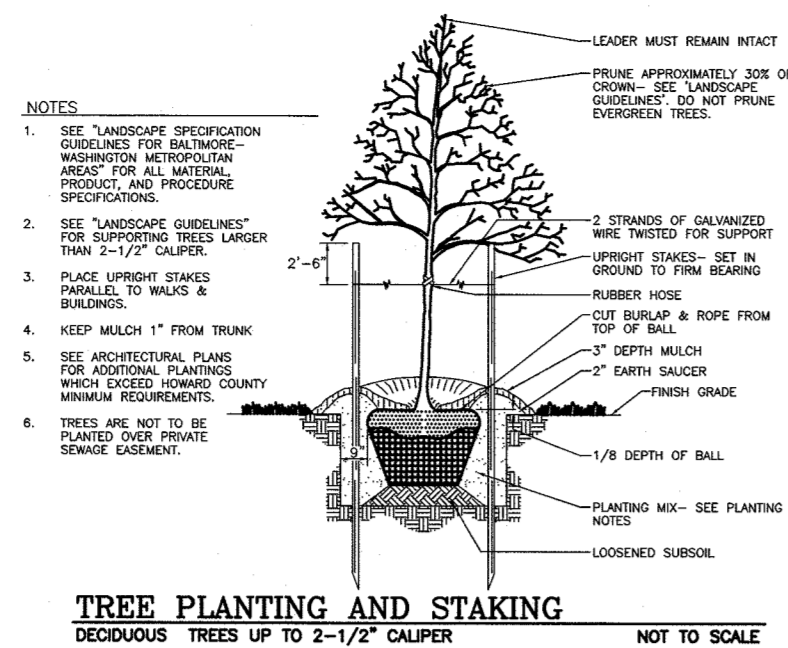
DESIGN BY: RHV/EDS.
DRAWN BY: VETG.
CHECKED BY: RHV.
DATE: JANUARY 2021
SCALE: AS SHOWN
W.O. NO.: 08-48

14 SHEET OF 37

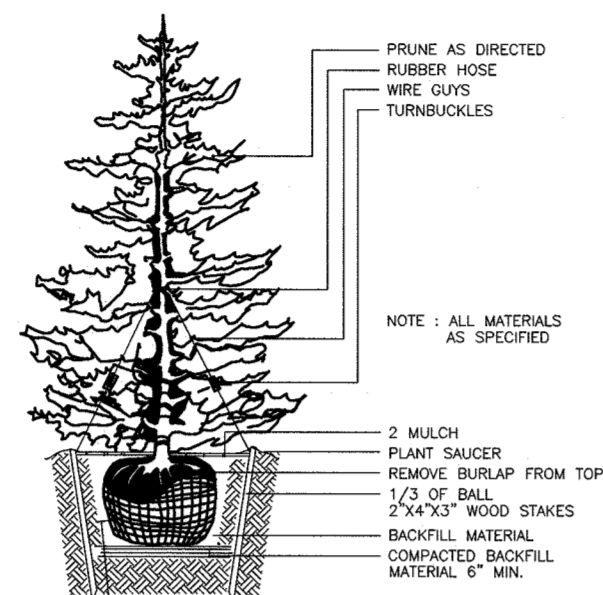
REPLACEMENT MYLAR SDP-14-074

GENERAL NOTES:

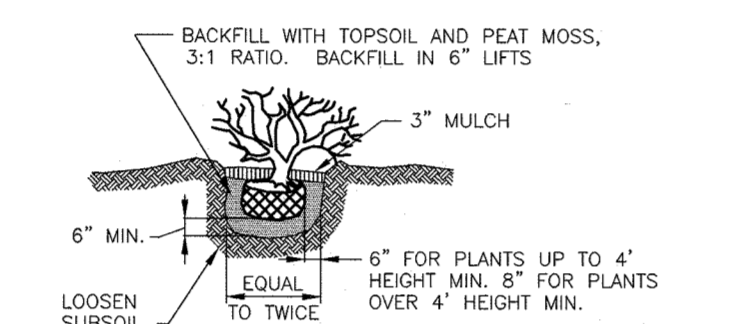
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED INTERNAL AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
- THE LANDSCAPE PLAN WAS PREPARED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. A FINANCIAL SURETY FOR THE REQUIRED PERIMETER LANDSCAPING HAS BEEN POSTED AS PART OF THE DPW DEVELOPER AGREEMENT IN THE AMOUNT OF \$ 15,150 (\$9,000 FOR 30 SHADE TREES, AND \$6,150 FOR 41 EVERGREEN TREES). FINANCIAL SURETY FOR THE REQUIRED INTERNAL LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$ 23,700.00 FOR THE REQUIRED 79 SHADE TREES.
- STREET TREES HAVE BEEN PROVIDED FOR THIS PROJECT IN ACCORDANCE WITH SECTION 16.124(1) OF THE SUBDIVISION REGULATIONS AND THE LANDSCAPE MANUAL. FINANCIAL SURETY IN THE AMOUNT OF \$13,200.00 SHALL BE COLLECTED WITH THE DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 44 TREES WITH THIS PLAN.
- THE OWNER AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH LAND MATERIALS AND BERMS, FENCES & WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION AND WHEN APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION AND WHEN NECESSARY, REPAIRED OR REPLACED.
- AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HERewith LISTED & APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW & APPROVAL FROM THE DEPARTMENT OF PLANNING & 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 APPLICABLE PLANS AND CERTIFICATES.
- A 6-FOOT HEIGHT NOISE WALL SHALL PROVIDE 615 LINEAR FEET OF LANDSCAPING CREDIT ALONG PERIMETER 1".



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



TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE



SHRUB PLANTING DETAIL
NOT TO SCALE

STREET TREE CALCULATIONS			
STREET NAME	LINEAR FEET	NO. REQUIRED	NO. PROVIDED
BETHEL OVERLOOK	1038/40	26	26
MD RTE. 103	713/40	18	36*

* MEET BGE GREEN ZONE PLANTINGS
FINANCIAL SURETY IN THE AMOUNT OF \$13,200.00 SHALL BE COLLECTED WITH THE DEPARTMENT OF PUBLIC WORKS COST ESTIMATE FOR THE REQUIRED 44 SHADE TREES

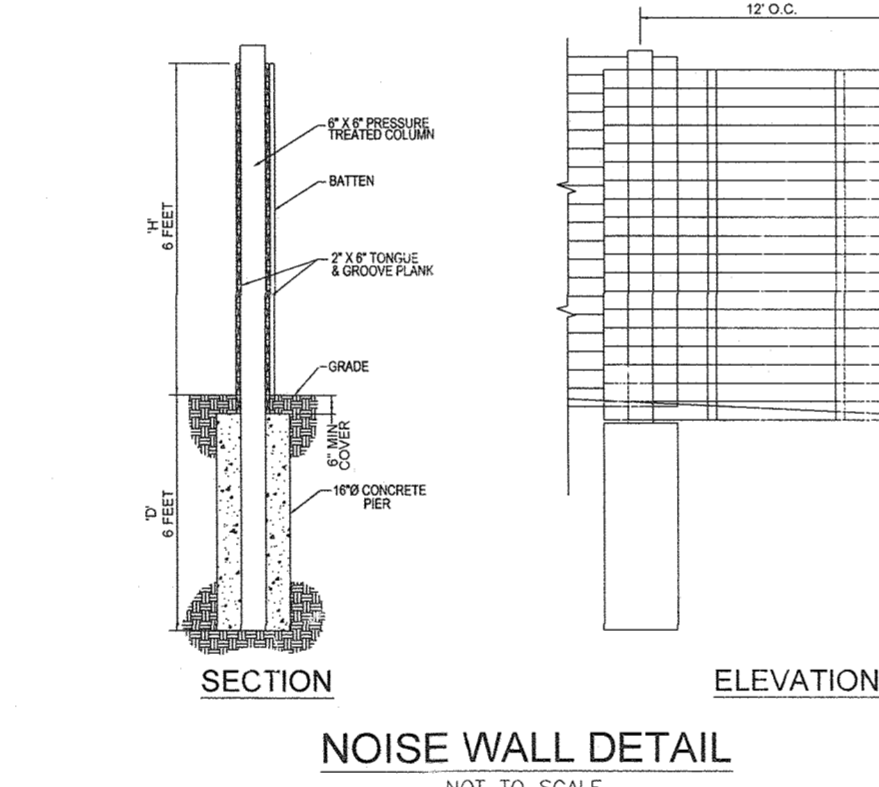
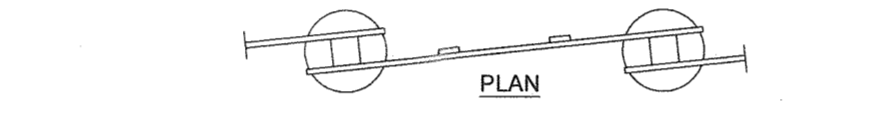
LANDSCAPE SCHEDULE - REQUIRED STREET TREE PLANTINGS					
KEY	QUAN.	BOTANICAL NAME	SIZE	CAT.	TYPE
(1) HW	36	CRATAEGUS CRUS-CRULLI 'THORNLESS', THORNLESS, COOKSPUR, HAWTHORNE	1.5" - 2" CAL (STREET)	B & B	SMALL*
LP	26	PLATANUS X ACERIFOLIA - BLOODGOOD BLOODGOOD LONDON PLANE	2.5" CAL (STREET)	B & B	LARGE SHADE

* MEET BGE GREEN ZONE PLANTINGS
(1) PLANTINGS ARE ACCEPTABLE PER SHA PREFERRED PLANT LIST
NOTE: PLANTINGS SPECIFIED HEREIN MAY BE SUBSTITUTED WITH SPECIES LISTED IN APPENDIX B & C OF THE HOWARD COUNTY LANDSCAPE MANUAL.

RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING SCHEDULE 'C'	
NUMBER OF DWELLING UNITS	79
NUMBER OF TREES REQUIRED (1.0 DU SFA)	79
NUMBER OF TREES PROVIDED	32
SHADE TREES (2:1 SUBSTITUTION)	94

SCHEDULE C - PROPOSED PLANTING				
KEY	QUAN.	BOTANICAL NAME	SIZE	CAT.
21		CERES CANADENSIS 'OKLAHOMA' OKLAHOMA RED BUD	1 1/2" - 2" CAL	B & B *
73		PRUNUS Y. YEDONENSIS 'AKEBONO' AKEBONO YOSHINO CHERRY	1 1/2" - 2" CAL	B & B (DW)
CO	5	QUERCUS 'SPIRIT' OAK	2.5" CAL	B & B (SHADE)
PO	27	QUERCUS PALUSTRIS PINN OAK	2.5" CAL	B & B (SHADE)

* MEET BGE GREEN ZONE PLANTINGS
NOTE: PLANTINGS SPECIFIED HEREIN MAY BE SUBSTITUTED WITH SPECIES LISTED IN APPENDIX B & C OF THE HOWARD COUNTY LANDSCAPE MANUAL.
FINANCIAL SURETY FOR THE REQUIRED INTERNAL LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$ 23,700.00 FOR THE REQUIRED 79 SHADE TREES



NOISE WALL DETAIL
NOT TO SCALE

SHA LANDSCAPE NOTES

LANDSCAPE CONSTRUCTION WITHIN THE RIGHT OF WAY OF THE MARYLAND STATE HIGHWAY ADMINISTRATION (SHA) SHALL CONFORM TO THESE NOTES.

7.2 SHA STANDARD SPECIFICATIONS
LANDSCAPE CONSTRUCTION SHALL CONFORM TO SECTIONS 701 THROUGH 716 AND LANDSCAPE MATERIALS SHALL CONFORM TO SECTION 920 OF THE SHA 2008 STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, INCLUDING ALL REVISIONS OR SUPPLEMENTS, AND AS SPECIFIED IN THESE NOTES. THESE REQUIREMENTS SHALL SUPERSEDE ALL OTHER SPECIFICATIONS FOR WORK WITHIN THE SHA RIGHT OF WAY.

7.3 EROSION & SEDIMENT CONTROL MANAGER
SOIL DISTURBANCE SUCH AS GRADING, EXCAVATION, SOIL PLACEMENT OR OTHER ACTIVITIES THAT INVOLVE SOIL DISTURBANCE WITHIN THE SHA RIGHT OF WAY SHALL BE SUPERVISED BY AN EROSION AND SEDIMENT CONTROL MANAGER WITH A VALID SHA 'YELLOW CARD' IN CONFORMANCE WITH SHA 2008 SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS AND ANY APPLICABLE EROSION AND SEDIMENT CONTROL PERMIT.

7.4 TEMPORARY STABILIZATION
TEMPORARY STABILIZATION SHALL BE INSTALLED IN CONFORMANCE WITH SECTION 704 TO ENSURE THAT AREAS OF SOIL DISTURBANCE ARE PROTECTED FROM RAINFALL AND FLOWING WATER UNTIL PERMANENT STABILIZATION IS INSTALLED.
1. TEMPORARY MULCH, EITHER AS TEMPORARY STRAW MULCH OR TEMPORARY MATTING MULCH, SHALL BE INSTALLED AT THE END OF EACH WORKING DAY TO PROVIDE 'SAME DAY STABILIZATION' UNLESS OTHER APPROVED STABILIZATION IS INSTALLED.
2. TEMPORARY STRAW MULCH SHALL BE INSTALLED ON AREAS AND SLOPES FLATTER THAN 4:1; TEMPORARY MATTING MULCH SHALL BE APPLIED ON SLOPES 4:1 AND STEEPER, AND TO AREAS WITHIN CHANNELS.
3. TEMPORARY SEED SHALL BE INSTALLED IN LIEU OF TEMPORARY MULCH WHEN SOIL REDISTURBANCE IS EXPECTED MORE THAN 30 DAYS AFTER SOIL DISTURBANCE. THE REQUIRED APPLICATION RATE OF 20-16-12 FERTILIZER SHALL BE REDUCED TO 200 LBS PER ACRE. 7:1

7.6 ROADWAY PAVEMENT REMOVAL
AREAS OF ROADWAY PAVEMENT REMOVAL SHALL BE EXCAVATED TO REMOVE PAVEMENTS, AGGREGATE BASE, AND COMPACTED SOIL TO A MINIMUM DEPTH OF 10 INCHES BELOW THE PAVEMENT SURFACE, OR AS NECESSARY TO REMOVE ALL UNSUITABLE MATERIALS FOR LANDSCAPING. THE EXCAVATED AREAS SHALL BE RESTORED WITH SUBSOIL AND TOPSOIL AS PART OF SOIL RESTORATION.

7.7 EXCAVATION AND DEBRIS REMOVAL
DEBRIS RELATED TO THE DEMOLITION OF SIDEWALKS, DRIVEWAYS, CURBS, TREES, STUMPS, ROOTS, FENCING, PIPES, AND OTHER MATERIALS THAT MAY INTERFERE WITH LANDSCAPE INSTALLATION OR FUTURE MAINTENANCE WITHIN THE SHA RIGHT OF WAY SHALL BE EXCAVATED AS NECESSARY FOR THEIR COMPLETE REMOVAL AND DISPOSAL.

7.8 SOIL RESTORATION
AREAS OF PAVEMENT REMOVAL, EXCAVATION OR DRILLING IN LANDSCAPED AREAS SHALL REMOVE EXCAVATED DEBRIS AND RESTORE THE SUBGRADE WITH APPROVED SUBSOIL AND TOPSOIL PLACED IN CONFORMANCE WITH SECTION 701 OF THE SHA STANDARD SPECIFICATIONS.
1. A LAYER OF APPROVED TOPSOIL AT LEAST 4 INCH DEPTH SHALL BE PLACED ON ALL DISTURBED AREAS FLATTER THAN 2:1 AND IN ALL CHANNELS PRIOR TO SEEDING, SODDING OR OTHER LANDSCAPING UNLESS OTHERWISE SPECIFIED.
2. A LAYER OF APPROVED TOPSOIL AT LEAST 2 INCH DEPTH SHALL BE PLACED ON ALL DISTURBED AREAS 2:1 AND STEEPER PRIOR TO SEEDING, SODDING OR OTHER LANDSCAPING, UNLESS OTHERWISE SPECIFIED.
3. BIODIVERSITY SOIL MIX (BSM) SHALL BE INSTALLED IN CONFORMANCE WITH THE PLANS AND PERTINENT SPECIFICATIONS.

7.9 TURFGRASS SOD ESTABLISHMENT
WHEN LANDSCAPING INVOLVES THE RESTORATION OF TURFGRASS SOD IN URBAN OR SUBURBAN AREAS, OR AREAS THAT ARE ADJACENT TO COMMERCIAL OR RESIDENTIAL PROPERTIES WHERE PEDESTRIANS MAY EXPECTED, OR WHERE STORMWATER IS CONVEYED IN GRASS-LINED CHANNELS, THE GROUND COVER VEGETATION OF AREAS IMPACTED BY CONSTRUCTION SHALL BE RESTORED WITH TURFGRASS SOD, AND THE FOLLOWING NOTE SHALL BE INSERTED IN TO THE SHA LANDSCAPE NOTES:
SHALL BE PERFORMED IN ALL DISTURBED AREAS OF THE SHA RIGHT OF WAY, OR WITHIN THE AREAS INDICATED IN THE PLANS, IN CONFORMANCE WITH SECTION 705 OF THE SHA STANDARD SPECIFICATIONS. THE REQUIRED APPLICATION RATE OF 20-16-12 FERTILIZER SHALL BE REDUCED TO 200 LBS PER ACRE, AND NO FERTILIZER SHALL BE APPLIED FROM NOV. 15 TO MAY 1.

FOREST RETENTION AREAS AND NOTES

- THE WETLANDS AND WETLAND BUFFERS ARE LOCATED ON OPEN SPACE LOT 81.
- NO RARE, THREATENED OR ENDANGERED SPECIES WERE OBSERVED ON THIS SITE.
- FORESTED AREAS ADJACENT TO FLOODPLAINS AND STREAM BUFFERS ARE SUBSTANTIALLY RETAINED IN OPEN SPACE LOT 81.
- CHANGES IN GRADING AND RUNOFF WITHIN CONSTRUCTION/INSTALLATION AREAS WILL NOT STRESS ADJACENT SOILS WITHIN THE FOREST RETENTION AREA. SEDIMENT CONTROL MEASURES WILL REDUCE CONCENTRATED FLOW RUNOFF TO CONWATER MANAGEMENT FACILITY WITHIN THE CONSTRUCTION SITE, AND/OR REDIRECT CLEAR WATER AWAY FROM CONSTRUCTION AREAS.
- THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT. HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

CONSTRUCTION PERIOD PROTECTION AND MANAGEMENT NOTES FOR FOREST CONSERVATION

- PRE-CONSTRUCTION PHASE**
- FOR RETENTION AREAS, INSTALL BLAZE ORANGE FENCE AND RETENTION SIGNS BEFORE CONSTRUCTION BEGINS.
 - FENCING SHALL BE MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS THE SITUATION WARRANTS.
 - A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNING TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.
- CONSTRUCTION PHASE**
- NO DISTURBANCE OR DUMPING IS ALLOWED INSIDE THE TREE RETENTION AREA.
 - NO EQUIPMENT SHALL BE OPERATED, STAGED OR STORED INSIDE THE TREE RETENTION AREA INCLUDING TREE CANOPIES.
 - IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR WITHER AND WATERED AS NEEDED.
- POST-CONSTRUCTION PHASE**
- AT THE DIRECTION OF A QUALIFIED TREE CARE EXPERT, DAMAGES TO RETAINED TREES SHALL BE REPAIRED BY THE CONTRACTOR.
 - FENCE REMOVAL AND STABILIZATION SHALL BE AS PER THE SEDIMENT AND EROSION CONTROL PLAN.
 - POST CONSTRUCTION MANAGEMENT PROGRAM (FOREST CONSERVATION MANUAL)
 - INSPECTION
 - NOTICE OF TWO YEAR GROWING SEASON MANAGEMENT PROGRAM
 - MANAGEMENT OF RETENTION AREAS
 - MANAGEMENT OF REFORESTATION AREAS (WATERING SCHEDULE, FERTILIZING, CONTROL OF INVASIVES AND PROTECTION FROM PESTS, DISEASES AND MECHANICAL INJURY)
 - REPLACEMENT OF DEAD MATERIAL
 - EDUCATION OF NEW RESIDENTS
 - DO NOT REMOVE SIGNS.

SEQUENCE OF CONSTRUCTION-FOREST CONSERVATION

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

SCHEDULE 'A' PERIMETER LANDSCAPE EDGE

CATEGORY	PERIMETER TO PERIMETER PROPERTIES AND ROADWAYS				TOTAL
	1	2	3	4	
PERIMETER/FRONTAGE DESIGNATION	C	C	A	A	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	713	900	231	546	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	NO	YES (2) 50 LF	YES (2) 231 LF	NO	
CREDIT FOR WALL, APPROX. OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	YES (3) 615 LF	YES (4) 140 LF	NO	NO	
NUMBER OF PLANTS REQUIRED	1:40 3	1:40 18	1:60 9	30	
EVERGREEN TREES	1:20 5	1:20 36	-	41	
SHRUBS	-	-	-	-	
NUMBER OF PLANTS PROVIDED	-	15	5	20 (2)	
EVERGREEN TREES	5 (1)	6 (1)	8	49 (1)	
OTHER TREES (2:1 SUBSTITUTION)	1 (1)	30	-	6 (1)	
SHRUBS (2:1 SUBSTITUTION)	-	-	-	0	
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED	-	(5)	-	-	

- BGE COMPLIANT
- CREDIT EX. VEGETATION TO REMAIN.
- CREDIT FOR NOISE / MASONRY WALL ("BARRIER" PER DETAIL MINIMUM) WITH ARTICULATING ARCHITECTURE
- CREDIT FOR MASONRY/STACKED BLOCK WALL
- THE LONG GATE OVERLOOK HOMEOWNERS ASSOCIATION (H.O.A.) IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF THE PERIMETER 2 AND STREET TREE PLANTINGS REQUIRED FOR THIS LONG GATE OVERLOOK PROJECT WHICH ARE LOCATED ON THE PROPERTY OF BETHEL BAPTIST CHURCH. REFER TO THE LEFT SIDE OF THE ENTRANCE ROAD (BETHEL OVERLOOK) AND THE PLANTINGS ALONG THE WEST SIDE OF THE TENNIS COURT AMENITY

LANDSCAPE SCHEDULE - REQUIRED PERIMETER PLANTINGS

KEY	QUAN.	BOTANICAL NAME	SIZE	CAT.	TYPE
AR	5	ACER RUBROM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2.5" CAL	B & B	LARGE SHADE
TT	15	TILIA TOMENTOSA SILVER LINDEN	2.5" CAL	B & B	LARGE SHADE
CC	6	CORNUS KOUSA KOUSSA DOGWOOD	1.5" - 2" CAL	B & B	SMALL SHADE* (1)
AH	10	ALEX OPACA AMERICAN HOLLY	5-6" HT.	B & B	LARGE EVER.*
PN	5	RILEY 'NELLIE R. STEVENS' NELLIE R. STEVENS HOLLY	5-6" HT.	B & B	SMALL EVER.* (1)
AP	8	PINUS NIGRA AUSTRALIAN PINE	8" HT.	B & B	EVER.
GA	26	THILIA PULICATA GIANT ARBORVITAE 'GREEN GIANT'	5-6" HT.	B & B	LARGE EVER.*
NB	30	NYRICA PENNSYLVANICA NORTHERN BAYBERRY	2" - 2 1/2" HT.	B & B	SHRUB

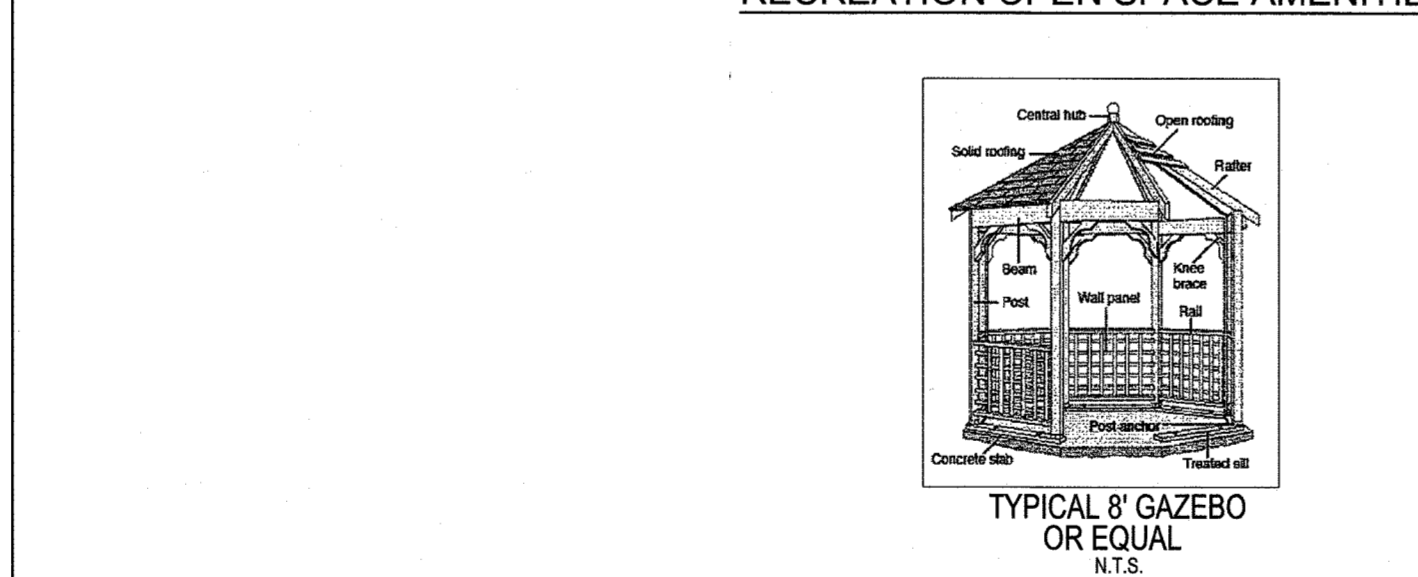
* MEET BGE GREEN ZONE PLANTINGS
(1) PLANTINGS ARE ACCEPTABLE PER SHA PREFERRED PLANT LIST
NOTE: PLANTINGS SPECIFIED HEREIN MAY BE SUBSTITUTED WITH SPECIES LISTED IN APPENDIX B & C OF THE HOWARD COUNTY LANDSCAPE MANUAL.

FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$ 15,150 (\$9,000 FOR 30 SHADE TREES AND \$6,150 FOR 41 EVERGREEN TREES)

LANDSCAPE SCHEDULE NOTES:

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRD 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.

RECREATION OPEN SPACE AMENITIES



TYPICAL 8' GAZEBO OR EQUAL
N.T.S.

RECREATION OPEN SPACE TABULATION:

TOWNHOMES SFA = 400 SF/UNIT X 79 UNITS = 31,600 SF
TOTAL RECREATION OPEN SPACE PROVIDED
AS LISTED BELOW = 27,714 SF (SEE WP15-036)
RECREATION OPEN SPACE = 9,882 SF PROVIDED (TENNIS COURT AREA)
+ 2,792 SF +/- AREA 2
+ 1,450 SF +/- AREA 3
+ 13,590 SF +/- AMENITIES*
TOTAL = 27,714 SF PROVIDED (PLUS (3) PET WASTE STATIONS)

* AMENITIES INCLUDE:
- 200 LF OF 5' ASPHALT PATHWAY CONNECTION (200'X5" = 1,000SF)
- 35F/15F PATH = 3,000 SF OF CREDIT
- TENNIS COURT = 105F X 79 UNITS = 790 SF OF CREDIT
- (2) GAZEBOS AT COURT = 4,000 SF CREDIT, 2 BENCHES
- 400 SF CREDIT = WP15-036 - PET WASTE STATION
- AREA2 - TOT LOT EQUIPMENT = 2,000 SF CREDIT, 5 BENCHES
- 1000 SF CREDIT - PET WASTE STATION
- AREA3 - TOT LOT EQUIPMENT = 2,000 SF CREDIT, 2 BENCHES
- 400 SF CREDIT, PET WASTE STATION

Landscaping Brands
800-231-1327
13364 Rendezvous 4' Contour Bench
Partially Surface Mount OR EQUAL

DOG WASTE STATION PRODUCT SPECS:

TYPICAL NOISE WALL DETAILS OR APPROVED EQUAL

STREET NAME	POINT	STATION	OFFSET	GROUND	WALL	WALL HEIGHT
MD 103	W1	20+62.50	71.8' LT.	409'	415'	6 FEET TALL
MD 103	W2	20+72.24	61.1' LT.	410.1'	416.1'	6 FEET TALL
MD 103	W3	21+83.47	61.5' LT.	412.25'	418.25'	6 FEET TALL
MD 103	W4	24+44.42	62.0' LT.	414.2'	420.2'	6 FEET TALL
MD 103	W5	25+45.67	62.2' LT.	415.3'	421.3'	6 FEET TALL
MD 103	W6	26+70.69	62.5' LT.	416'	422'	6 FEET TALL

OWNER / DEVELOPER
BREAZER HOMES
ATTN: J. MARY SHAFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALL DRIVE, SUITE 300
ELK RIDGE, MD 21075
443-539-9249

REVISIONS:

NO.	REVISION	DATE
3	REVISE FRONT PORCH, DOOR AND LEAD-WALK LOCATION, AMEND SIDEWALK, AMEND PE BLEX AND MINIMAL SPT ELEV. AMEND TENNIS COURT EBLD. REDLINE LS PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

DEVELOPER/OWNER CERTIFICATE

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

SIGNATURE OF DEVELOPER: *[Signature]* DATE: *Jan 19, 2021*

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* DATE: *3/22/21*
CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* DATE: *4/21/21*
DIRECTOR: *[Signature]* DATE: *5-3-21*

REVISED SITE DEVELOPMENT PLAN
LANDSCAPING NOTES & DETAILS AND NOISE WALL & OPEN SPACE AMENITY DETAILS

LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND 80-119 - PLATS 25274-25278
(SFA RESIDENTIAL) 2678-4-32716

2ND ELECTION DISTRICT
TAX MAP: 24 GRID: 24
DPZ REF'S: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

ZONED: R-A-15
PARCEL(S): SEE GENERAL NOTE 1
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: RHW/EDS.
DRAWN BY: VETG.
CHECKED BY: RHW.
DATE: JANUARY 2021
SCALE: AS SHOWN
W.O. NO.: 08-48

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. 11815
EXPIRATION DATE: 09-27-2022

16 SHEET OF 37



LEGEND:

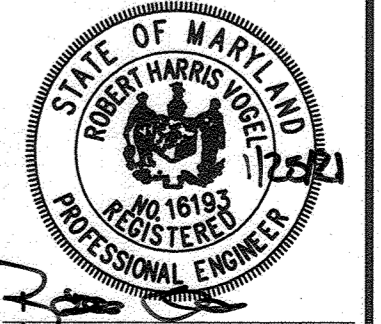
	PROPERTY LINE
	RIGHT-OF-WAY LINE
	ADJACENT PROPERTY LINE
	EXISTING CURB AND GUTTER
	EXISTING UTILITY POLE
	EXISTING LIGHT POLE
	EXISTING MAILBOX
	EXISTING SIGN
	EXISTING SANITARY MANHOLE
	EXISTING SANITARY LINE
	EXISTING CLEANOUT
	EXISTING FIRE HYDRANT
	EXISTING WATER LINE
	EXISTING FENCE
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	CENTERLINE OF EXISTING STREAM
	SOILS
	EXISTING TREE LINE
	EXISTING WETLANDS
	EXISTING MODERATE SLOPES
	EXISTING STEEP SLOPES
	STORMDRAIN
	STORMDRAIN INLET
	SIDEWALK
	PROPOSED TREE LINE
	CURB
	PROPOSED 10' CONTOUR
	PROPOSED 2' CONTOUR
	MICRO-SCALE PRACTICE BIO-SWALE
	MICRO-SCALE PRACTICE MICRO BIORETENTION
	PROPOSED DRAINAGE AREA DIVIDE

OWNER / DEVELOPER
 BEAZER HOMES
 ATTN: J. MARTIN SHAFER, AREA PRESIDENT
 AUTHORIZED SIGNATURE - EAST REGION
 6085 MARSHALEE DRIVE, SUITE 350
 ELK RIDGE, MD 21075
 443-539-9249

NO.	REVISION	DATE
8	REVISE TO ADD SIDEWALK BETWEEN UNIT 210 AB AND LOT 80	5-10-23
6	REVISE RETAINING WALL AND GRADING NEAR TENNIS COURT	7-15-21
5	REVISE TO ADD MODIFIED CURB AND GUTTER	8-24-21
3	REVISE FRONT PORCH, DOOR AND LEAD-WALK LOCATION, AMEND SIDEWALK, AMEND EE ELEV. AND MINOR SPOT ELEV. AMEND TENNIS COURT ELEV. REDLINE L/S PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

REVISED SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT DRAINAGE AREA MAP
LONG GATE OVERLOOK
 LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
 AND OPEN SPACE LOT 100
 A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
 27764-25710 (SFA RESIDENTIAL)
 2ND ELECTION DISTRICT
 TAX MAP: 24 GRID: 24
 892 REFS: SEE SITE ANALYSIS DATA CHART ON COVER SHEET
 PARCEL(S): SEE GENERAL NOTE 1
 HOWARD COUNTY, MARYLAND
 ZONED: R-A-15

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



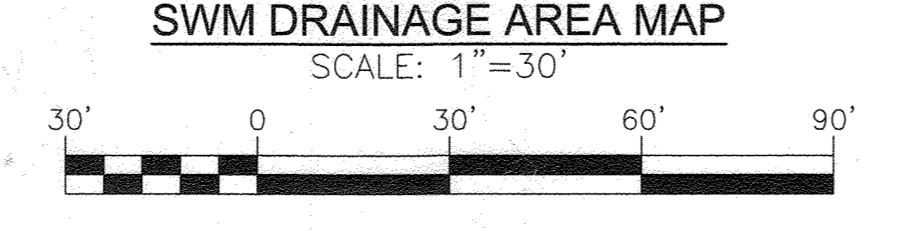
DESIGN BY: RHV/EDS.
 DRAWN BY: VETG.
 CHECKED BY: RHV.
 DATE: JANUARY 2021
 SCALE: AS SHOWN
 W.O. NO.: 08-48

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. 16163, EXPIRATION DATE: 09-27-2022

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature]
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 3-22-21
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 1/12/21
 DIRECTOR
 DATE: 5-3-21

SOILS LEGEND

SYMBOL	DESCRIPTION	TYPE
LoC	LEGORE SILT LOAM, 8 TO 15 PERCENT SLOPES, STONY	B
LoB	LEGORE-MONTALTO-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES	B
WcB	WATCHUNG SILT LOAM, 3 TO 8 PERCENT SLOPES, STONY	D



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1) DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

a. Maintenance of areas receiving disconnected runoff is generally no different than that required for other lawn or landscaped areas. The Owner shall ensure the areas receiving runoff are protected from future compaction or development of impervious area. In commercial areas, foot traffic should be discouraged as well.

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

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

2. FILTERING MEDIA OR PLANTING SOIL
THE SOIL SHALL BE A UNIFORM 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 PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF HERBACID GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 16.06.01.02.
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% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
• CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
• pH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO 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 CATION ANALYSIS IS REQUIRED FOR THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

3. 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 TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.
COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RESTRUCTURE THE SOIL PROFILE THROUGH THE 12" HIGH COMPACTION 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 TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. ROTOTILL THE REMAINDER OF THE TOPSOIL TO FINISH GRADE. THE REMAINDER OF THE BIORETENTION AREA, WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

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

5. PLANT INSTALLATION
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED 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. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.
ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/5TH 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 LEONINE SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEONINE 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 DEFLECTS, OR AT A MINIMUM, IMPEDS THIS GOAL. ONLY 40% 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.

6. UNDERDRAINS
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
• PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).
• PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (60 x 60 x 44) 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 1/4" BELOW THE UNDERDRAIN.
• A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1000.0 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
• A 4" LAYER OF PE# 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).

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

OPERATION AND MAINTENANCE SCHEDULE FOR MICROBIORETENTION / BIO-SWALE AREAS

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

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

Table B.4.1 Materials Specifications for Micro-Bioretenion, Rain Gardens & Landscape Infiltration-

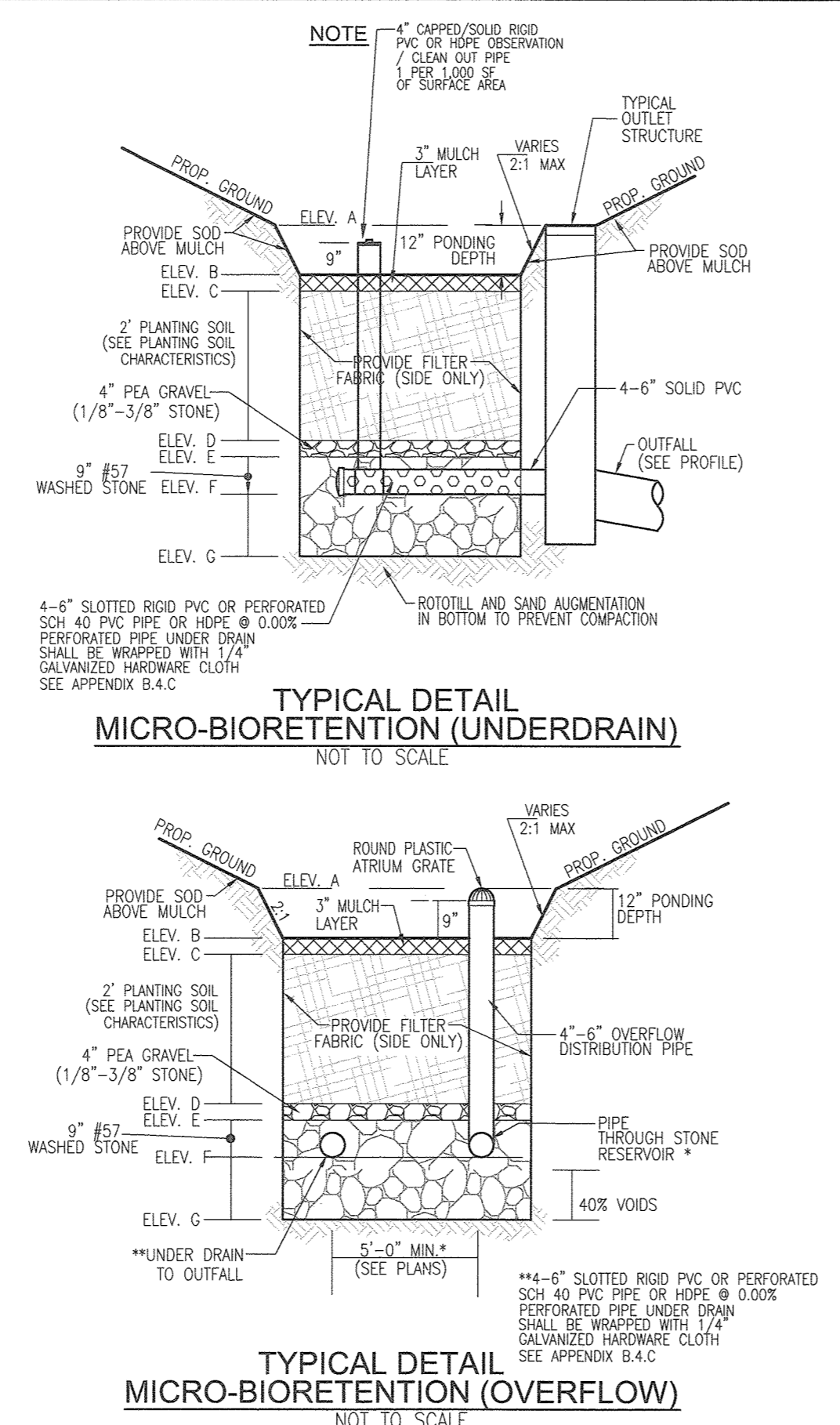
Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' deep]	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile	n/a	n/a	PE Type I nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" or 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f _c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO #10) are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3-22-21
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 4/16/21
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 5-3-21
DIRECTOR DATE



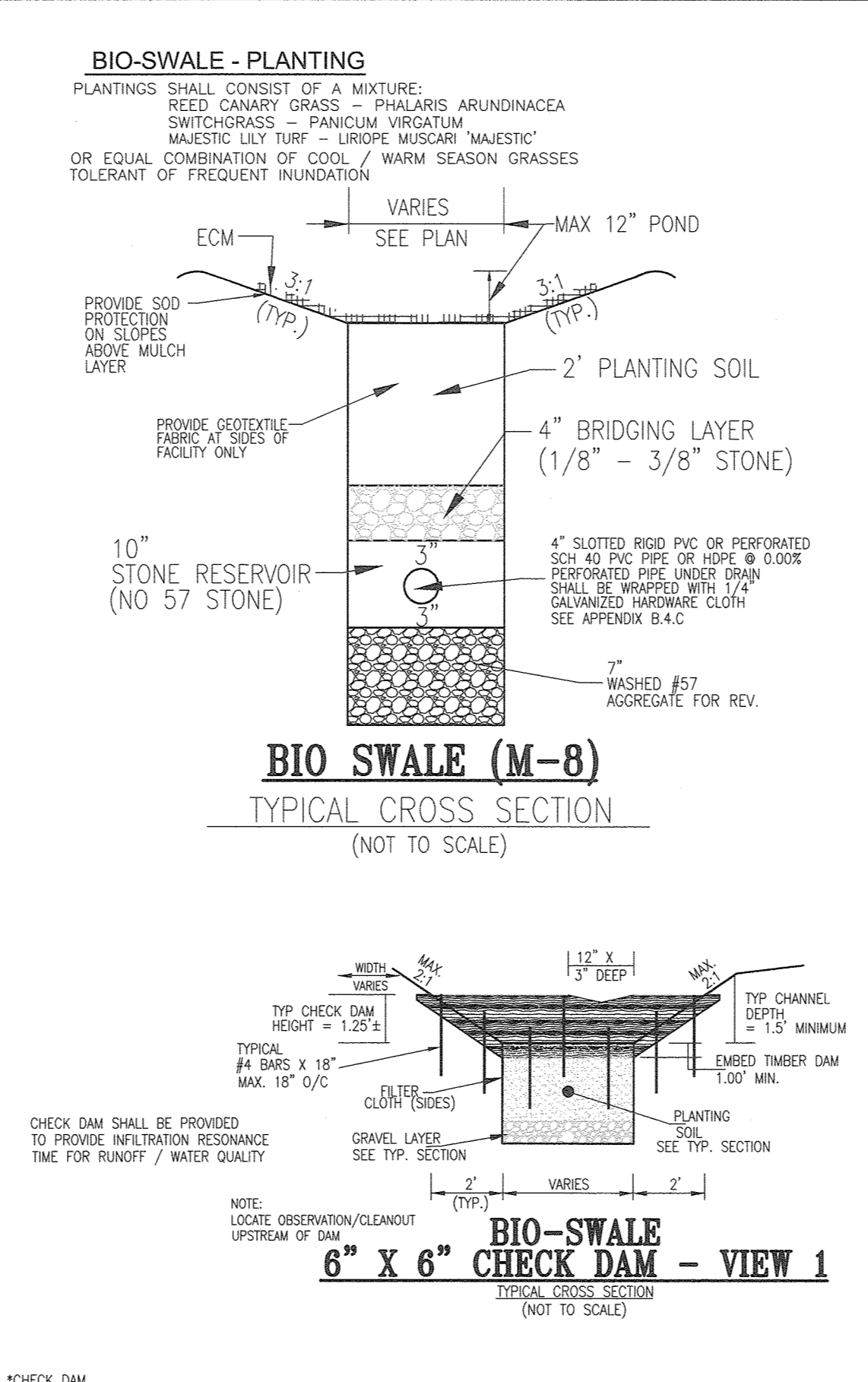
MICROBIORETENTION NOTES:

- ONLY THE SIDES OF MICRO BIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICRO BIORETENTION WILL CAUSE THE MBR TO FAIL AND THEREFORE SHALL NOT BE INSTALLED.
- WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH. SEE APPENDIX B.4.C.6.
- PROVIDE 5" MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIODS. (SEE PLANS)

MICRO-BIORETENTION FACILITY - DESIGN ELEVATION CHART

MBR FACILITY #	ESD WSEL A	TOP MULCH B	TOP PLANT SOIL C	BOTTOM PLANT SOIL D	BOTTOM PE# GRAVEL E	INV UNDERDRAIN F	REV STORAGE (INCHES)	INV EXCAVATION G	SURFACE AREA SF	APPROX DIM
SOUTH AREA										
1	408.00	404.00	405.75	401.75	401.42	400.67	25	398.57	2582	SEE PLAN
2	410.30	409.50	409.25	407.25	406.92	406.17	10	405.94	1128	SEE PLAN
4	428.00	407.00	406.75	404.75	404.42	403.67	10	402.84	1128	SEE PLAN
6	406.00	405.00	404.75	402.75	402.42	401.67	10	400.84	490	SEE PLAN
7	408.68	402.68	402.43	401.43	401.26	400.76	10	399.99	580	SEE PLAN
8A	406.00	405.00	404.75	402.75	402.42	401.67	10	400.84	1078	SEE PLAN
8C	401.00	400.00	399.75	397.75	397.42	396.67	10	395.84	2640	SEE PLAN
21	394.50	393.50	393.25	392.25	391.42	390.67	10	389.84	1638	SEE PLAN

MBR1 - MODIFIED TO PROVIDE 12" PLANTING SOIL, 8" STONE (2" PE# 2" OVER 4" UNDERDRAIN)
MBR21 - MODIFIED TO PROVIDE 18" PLANTING SOIL



BIO-SWALE FACILITY - DESIGN ELEVATION CHART

MBR FACILITY #	LOW PT. ESD WSEL A	TOP MULCH B	TOP PLANT SOIL C	BOTTOM PLANT SOIL D	BOTTOM PE# GRAVEL E	INV UNDERDRAIN F	REV STORAGE (INCHES)	INV EXCAVATION G	SURFACE AREA SF	APPROX DIM
SOUTH AREA										
14	392.00	391.00	390.75	389.75	389.43	388.85	10	388.02	420	SEE PLAN
8	401.30	400.30	400.05	398.55	398.22	397.64	10	396.81	400	SEE PLAN

BIO-SWALE FACILITY - DESIGN ELEVATION CHART

MBR FACILITY #	LOW PT. ESD WSEL A	TOP MULCH B	TOP PLANT SOIL C	BOTTOM PLANT SOIL D	BOTTOM PE# GRAVEL E	INV UNDERDRAIN F	REV STORAGE (INCHES)	INV EXCAVATION G	SURFACE AREA SF	APPROX DIM
SOUTH AREA										
14	392.00	391.00	390.75	389.75	389.43	388.85	10	388.02	420	SEE PLAN
8	401.30	400.30	400.05	398.55	398.22	397.64	10	396.81	400	SEE PLAN

SWALE 14 - MODIFIED TO PROVIDE 15" PLANTING SOIL, 4" PE# 3" STONE OVER 4" UNDERDRAIN @ I-28
SWALE 8 - MODIFIED TO PROVIDE 18" PLANTING SOIL, 4" PE# 3" STONE OVER 4" UNDERDRAIN @ I-23

- NOTES:
1. ALL BIO-SWALE FACILITIES ARE PRIVATELY OWNED AND MAINTAINED.
2. REFER TO SHEET 12 FOR PROFILES OF BIO-SWALES.
3. CHART LOW PT. ESD WSEL AND TABLE VALUES REPRESENT THE TYPICAL SECTION ELEVATIONS OF THE SWALE AT THE OUTLET STRUCTURE. SWALE SURFACE ELEVATION AND TYPICAL SECTION SHALL HONOR THE PROPOSED SWALE GRADES

Appendix A. Landscaping Guidance for Stormwater BMPs..... Specific Landscaping Criteria

Table A.4 Commonly Used Species for Bioretention Areas

Trees	Shrubs	Herbaceous Species:
<i>Red Maple</i>	<i>Asterias parviflora</i>	<i>Andropogon virginicus</i>
<i>Betula nigra</i>	<i>Bottlebrush Buckeye</i>	<i>Broomrape</i>
<i>River Birch</i>	<i>Cephalanthus occidentalis</i>	<i>Eupatorium perfoliatum</i>
<i>Juniperus virginiana</i>	<i>Hemamelis virginiana</i>	<i>Scirpus pungens</i>
<i>Eastern Red Cedar</i>	<i>Witch Hazel</i>	<i>Three Square Bulrush</i>
<i>Chionodoxa virginica</i>	<i>Vaccinium corymbosum</i>	<i>Iris versicolor</i>
<i>Prunella</i>	<i>Highbush Blueberry</i>	<i>Blue Flag</i>
<i>Nyssa glabra</i>	<i>Ilex glabra</i>	<i>Lobelia cardinalis</i>
<i>Black Gum</i>	<i>Japanese Flowering Quince</i>	<i>Cardinal Flower</i>
<i>Diarrhiza virginiana</i>	<i>Ilex verticillata</i>	<i>Panicum virginicum</i>
<i>Persea</i>	<i>Winterberry</i>	<i>Switchgrass</i>
<i>Pistacia glaberrima</i>	<i>Viburnum dentatum</i>	<i>Dichanthium scoparium</i>
<i>Sycamore</i>	<i>Aronia</i>	<i>Broom Pate Grass</i>
<i>Quercus laevis</i>	<i>Lindera benzoin</i>	<i>Andropogon laevis</i>
<i>Pin Oak</i>	<i>Spiraea</i>	<i>Tall Coneflower</i>
<i>Quercus phellos</i>	<i>Myrica pennsylvanica</i>	<i>Scirpus cespitosus</i>
<i>White Oak</i>	<i>Bayberry</i>	<i>Woodgrass</i>
<i>Sweetgum</i>		<i>Veronica novboracensis</i>
<i>Black Willow</i>		<i>New York Ironweed</i>

Note 1: For more options on plant selection for bioretention, consult Bioretention Manual (RTAB, 1999) or the Design of Stormwater Filtering Systems (Clayton and Schuler, 1997).

- TABLE A.4 IS TAKEN FROM THE "2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II - APPENDIX A"
- CONTRACTOR SHALL BE FAMILIAR WITH APPENDIX B.4.C. CONSTRUCTION SPECIFICATIONS AND TABLE B.4.1. MATERIAL SPECIFICATIONS. IN ADDITION THE "2000 MARYLAND STORMWATER DESIGN MANUAL - VOLUME II - APPENDIX A OFFERS ADDITIONAL HELPFUL INFORMATION.
- NO TREES SHALL BE PLANTED WITHIN A MICRO-BIORETENTION FACILITY. USE ONLY SHRUB OR HERBACEOUS SPECIES.
- ABOVE TABLE A.4. IS FOR INFORMATIONAL PURPOSES ONLY. LANDSCAPE CONTRACTOR SHALL INSTALL PLANTINGS SPECIFIED OR USE APPROVED EQUAL SPECIES WHICH ARE TOLERANT TO FLUCTUATING WATER LEVELS.
- PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THIS SITE DEVELOPMENT PLAN.

2. PERMEABLE PAVEMENTS

CONSTRUCTION CRITERIA:

- THE FINISHING TIES SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH PERMEABLE PAVEMENT:
- EROSION AND SEDIMENT CONTROL: FINAL GRADING FOR INSTALLATION SHOULD NOT TAKE PLACE UNTIL THE SURROUNDING SITE IS STABILIZED. IF THIS CANNOT BE ACCOMPLISHED, RUNOFF FROM DISTURBED AREAS SHALL BE DIVERTED AROUND PROPOSED PAVEMENT LOCATIONS.
- SOIL COMPACTION: SUB SOILS SHALL NOT BE COMPACTED. CONSTRUCTION SHOULD BE PERFORMED WITH LIGHTWEIGHT, WIDE TRACKED EQUIPMENT TO MINIMIZE COMPACTION. UNWANTED MATERIALS SHOULD BE PLACED IN A CONFINED AREA.
- DISTRIBUTION CHECKS: OVERDRAIN, UNDERDRAIN, AND DISTRIBUTION PIPES SHALL BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND THE PERFORATIONS MEET SPECIFICATIONS (SEE APPENDIX B. 4). THE UPSTREAM ENDS OF PIPES SHOULD BE CAPPED PRIOR TO INSTALLATION. ALL UNDERDRAIN OR DISTRIBUTION PIPES USED SHOULD BE INSTALLED ALONG THE BED BOTTOM.
- SUBBASE INSTALLATION: SUBBASE AGGREGATE SHALL BE CLEAN AND FREE OF FINES. THE SUBBASE SHALL BE PLACED IN LIFTS 4" TO 6" THICK, LIGHTLY ROLLED ACCORDING TO THE SPECIFICATIONS (SEE APPENDIX B.4).

INSPECTION:

- REGULAR INSPECTIONS SHOULD BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:
- DURING EXCAVATION TO SUBGRADE
 - DURING PLACEMENT AND BACKFILL OF ANY DRAINAGE OR DISTRIBUTION SYSTEM(S)
 - DURING PLACEMENT OF THE CURB AND STONE SUBBASE MATERIAL
 - UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

MAINTENANCE CRITERIA:

THE FOLLOWING PROCEDURES SHOULD BE CONSIDERED ESSENTIAL FOR MAINTAINING PERMEABLE PAVEMENT SYSTEMS:

- PAVEMENTS SHOULD BE USED ONLY WHERE REGULAR MAINTENANCE CAN BE PERFORMED. MAINTENANCE AGREEMENT SHOULD CLEARLY SPECIFY HOW ANY CONDUIT ROUTINE TASKS TO ENSURE LONG-TERM PERFORMANCE.
- PAVEMENT SURFACES SHOULD BE SWEEP AND VACUUMED TO PREVENT SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING SYSTEMS AND COMPRESSED AIR SYSTEMS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- DRAINAGE PIPES, INLETS, STONE EDGE DRAINS, AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SURFACE SHOULD BE CLEANED OUT AT REGULAR INTERVALS.
- TRUCKS AND OTHER HEAVY VEHICLES CAN GRIND DIRT AND GRIT INTO THE PORE SPACES, LEADING TO CLOGGING AND PREMATURE FAILURE. THESE VEHICLES SHOULD BE PREVENTED FROM TRAVELING AND SPOILING MATERIAL ON THE PAVEMENT.
- DEICERS SHOULD BE USED IN MODERATION. WHEN USED, DEICERS SHOULD BE NON-TOXIC AND ORGANIC AND CAN BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR PRETREATED SALT. SNOW PLOWING SHOULD BE DONE CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

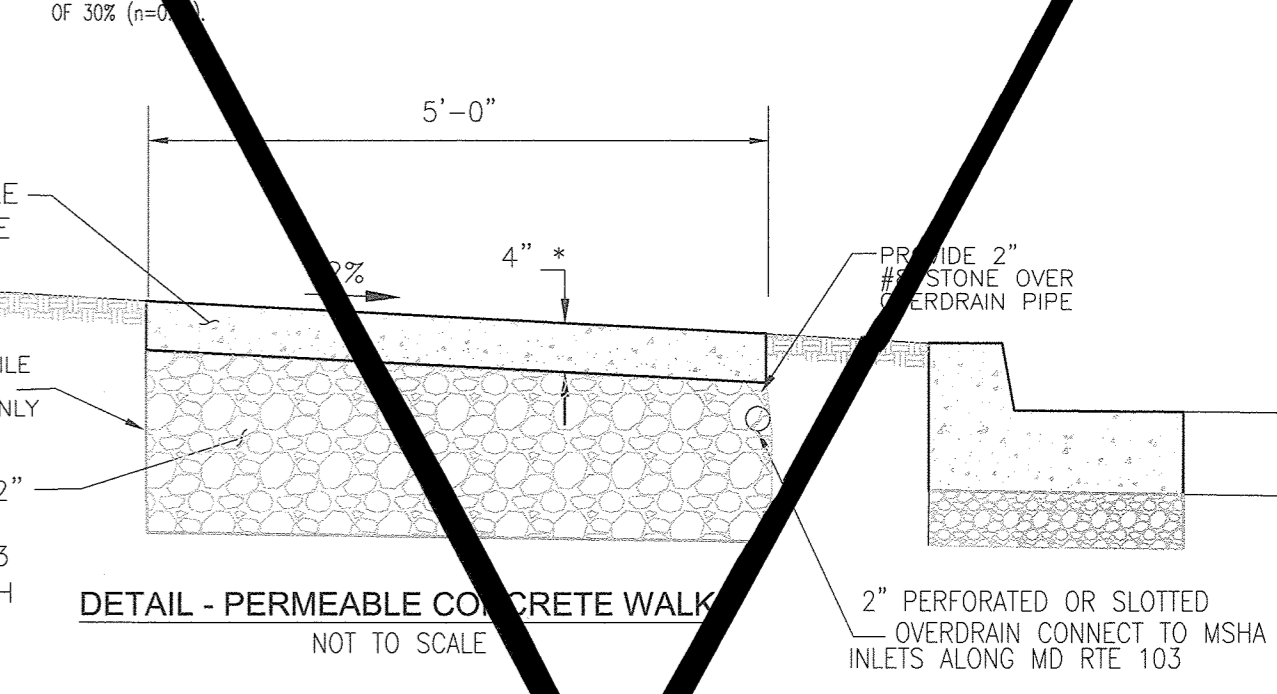
HOWARD COUNTY OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DISCONNECTION OF ROOFTOP RUNOFF (N-1), DISCONNECTION OF NON-ROOFTOP RUNOFF (N-2)

- A. MAINTENANCE OF AREAS RECEIVING DISCONNECTED RUNOFF IS GENERALLY NO DIFFERENT THAN THAT REQUIRED FOR OTHER LANNOR LANDSCAPE AREAS. THE OWNER SHALL ENSURE THE AREAS RECEIVING RUNOFF ARE PROTECTED FROM FUTURE COMPACTION OR DEVELOPMENT OF IMPERVIOUS AREA. IN COMMERCIAL AREAS, FOOT TRAFFIC SHOULD BE DISCOURAGED AS WELL.**

B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.

- PERMEABLE CONCRETE SPECIFICATIONS**
DESIGN THICKNESS - PERMEABLE CONCRETE APPLICATIONS SHALL BE DESIGNED SO THAT THE THICKNESS OF THE CONCRETE SLAB SHALL SUPPORT THE TRAFFIC AND VEHICULAR LOADS THAT WILL BE CARRIED. APPLICATIONS MAY BE DESIGNED USING OTHER STANDARD PAVEMENT PROCEDURES (E.G., AASHTO, AASHTO 308, AASHTO 330R) USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.
MIX & INSTALLATION - TRADITIONAL PORTLAND CEMENTS (ASTM C 150, C 1157) MAY BE USED IN PERVIOUS CONCRETE APPLICATIONS. PHOSPHORUS ADMIXTURES MAY ALSO BE USED. MATERIALS SHOULD BE TESTED (E.G., TROW BATHING) PRIOR TO CONSTRUCTION SO THAT CRITICAL PROPERTIES (E.G., SETTING TIME, RATE OF STRENGTH DEVELOPMENT, POROSITY, PERMEABILITY) CAN BE DETERMINED.
AGGREGATE - PERVIOUS CONCRETE CONTAINS A LIMITED FINE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4" TO NO. 4), NO. 8 (3/8" TO NO. 16) AND NO. 89 (3/8" TO NO.50) SIZES. SWELL-SOAK AGGREGATE (UP TO 1" INCH) MAY ALSO BE USED.
WATER CONTENT - PERVIOUS CONCRETE AGGREGATE RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADMIXTURES. WATER QUALITY SHOULD MEET A GENERAL RULE, POTABLE WATER SHOULD BE USED. ALTHOUGH RECYCLED CONCRETE PRODUCTION WATER MEETING ASTM C 94 OR AASHTO M 157 MAY ALSO BE USED.
ADMIXTURES - CHEMICAL ADMIXTURES (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADMIXTURES SHOULD MEET ASTM C 494 (CHEMICAL ADMIXTURES) AND ASTM C 260 (AIR ENTRAINING ADMIXTURES) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS.
BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (MINIMUM).



NOTES:
1. SIDEWALK TO BE SCRIBED IN 5'-0" MAXIMUM SQUARES.
2. EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 10' APART.
3. 1/2" PREFORMED EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK.
4. WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 1/2" PREFORMED EXPANSION JOINT BETWEEN SIDEWALK AND CURB.
5. ON LONGITUDINAL SIDEWALK GRADIENTS OF 5 OR GREATER, A CONCRETE HEADER, 6" THICK AND 6" DEEP BELOW THE NORMAL 4" SIDEWALK THICKNESS SHALL BE CONSTRUCTED FOR THE FULL WIDTH OF THE SIDEWALK AT INTERVALS OF 48 FEET. THE HEADERS SHALL BE PLACED AT THE EXPANSION JOINT LOCATIONS AND SHALL BE MONOLITHIC WITH THE SIDEWALK.
6. THE CONCRETE MIX SHALL BE PER B.4.B SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF - 1. PERVIOUS CONCRETE SPECIFICATIONS, AS SHOWN HEREON.
• CONCRETE THICKNESS SHALL BE DESIGNED/CONTROLLED BY GEOTECHNICAL CONSULTANT.

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

- THE INDIVIDUAL LAND OWNER SHALL PERIODICALLY SWEEP OR VACUUM POREOUS CONCRETE PAVEMENT (A) THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSED AIR SYSTEMS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
- THE INDIVIDUAL LAND OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SURFACE.
- THE INDIVIDUAL LAND OWNER SHALL USE DEICERS IN MODERATION. DEICERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
- THE INDIVIDUAL LAND OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE-INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOW MELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

OWNER / DEVELOPER

BEAZER HOMES
ATTN: J. MARY SHAFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALL DRIVE, SUITE 350
ELK RIDGE, MD 21075
443-539-9249

NO.	REVISION	DATE
7	REVISE PERMEABLE SIDEWALK TO CONCRETE SIDEWALK ALONG RT 103	10-13-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020
NO.	REVISION	DATE

REVISED SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT NOTES & DETAILS
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE, LOT 80 - PLATS 25274-25278
276-A-277B
(SFA RESIDENTIAL)

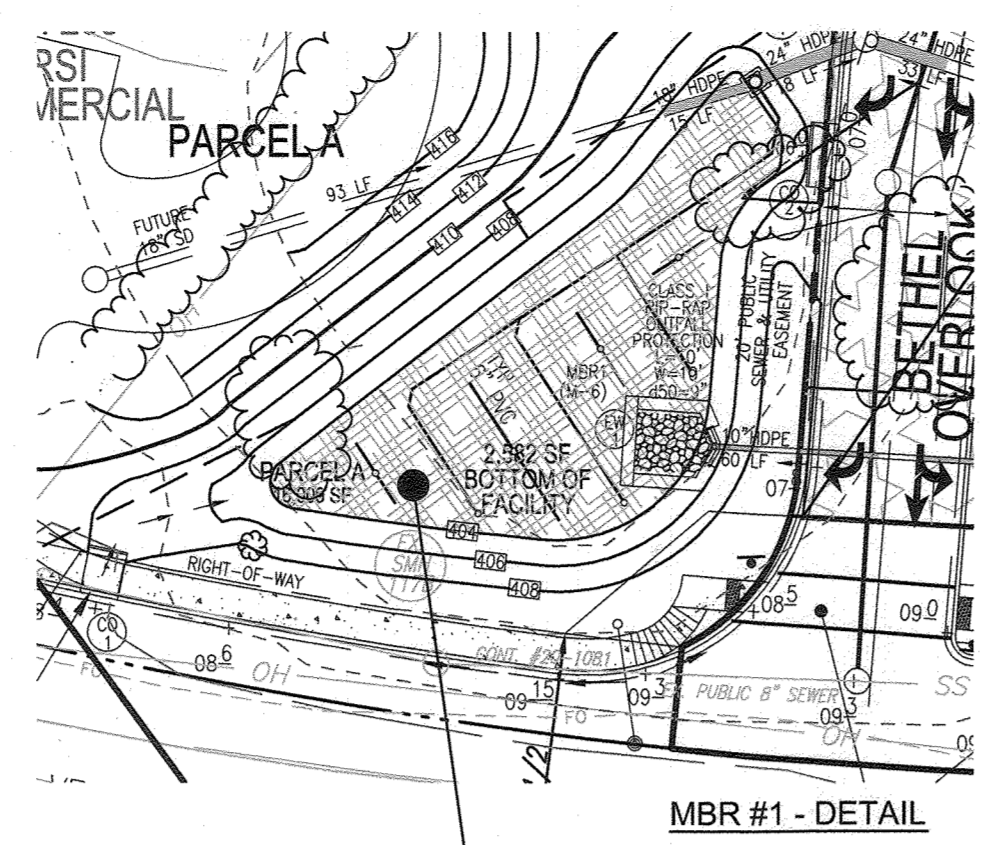
LONGGATE OVERLOOK - R-A-15 - ESDv COMPUTATIONS "PIPE" STORAGE / ES-1 OUTFALL

SITE AREA: 7.87 AC 254000
 TARGET P: 1.96 IN
 SITE IMPERVIOUS: 60.97 PERCENT
 SITE Rv: 0.5867
 SITE ESDv: 33553 CF +/-

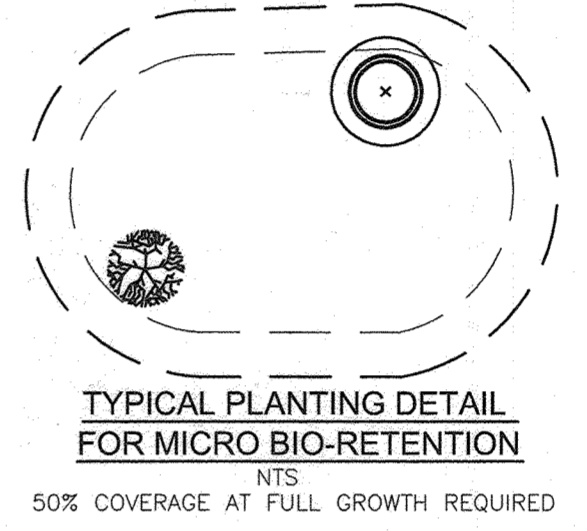
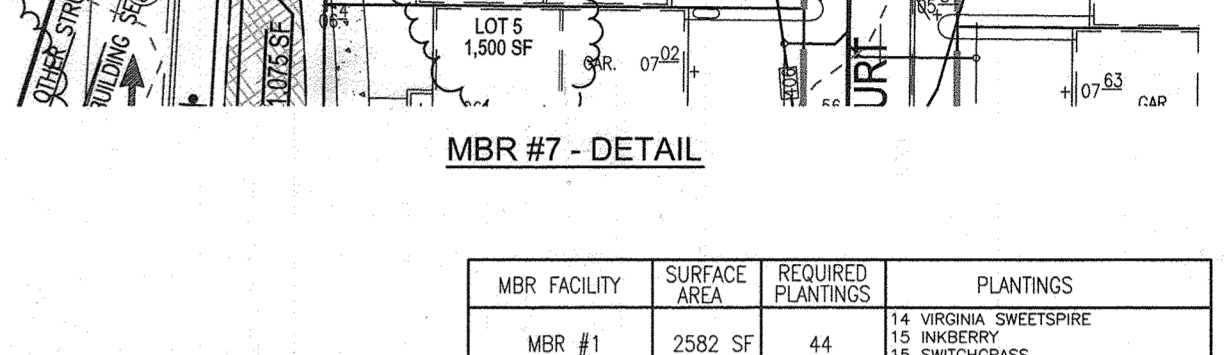
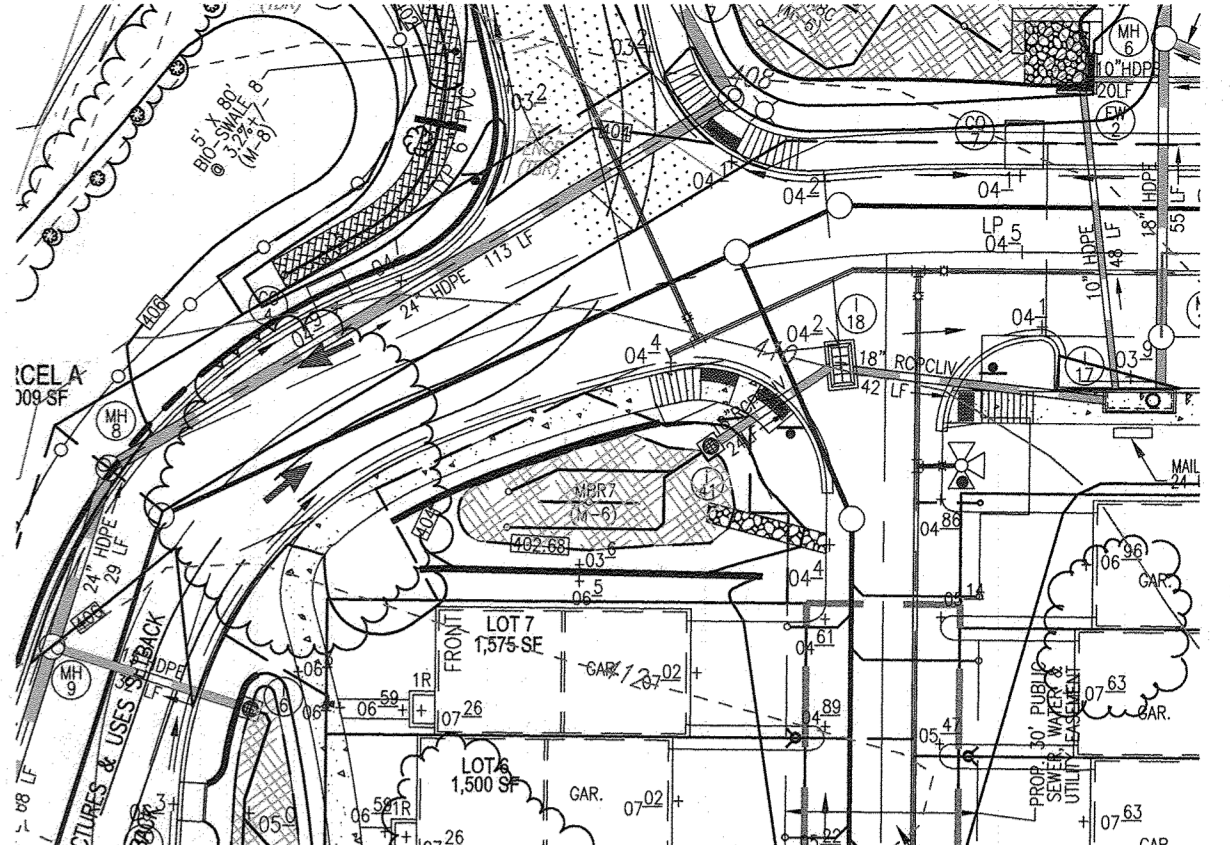
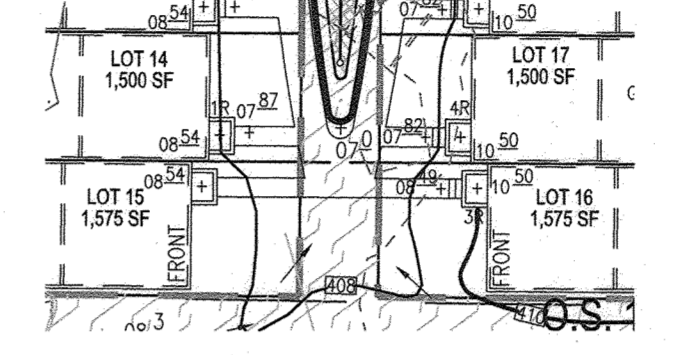
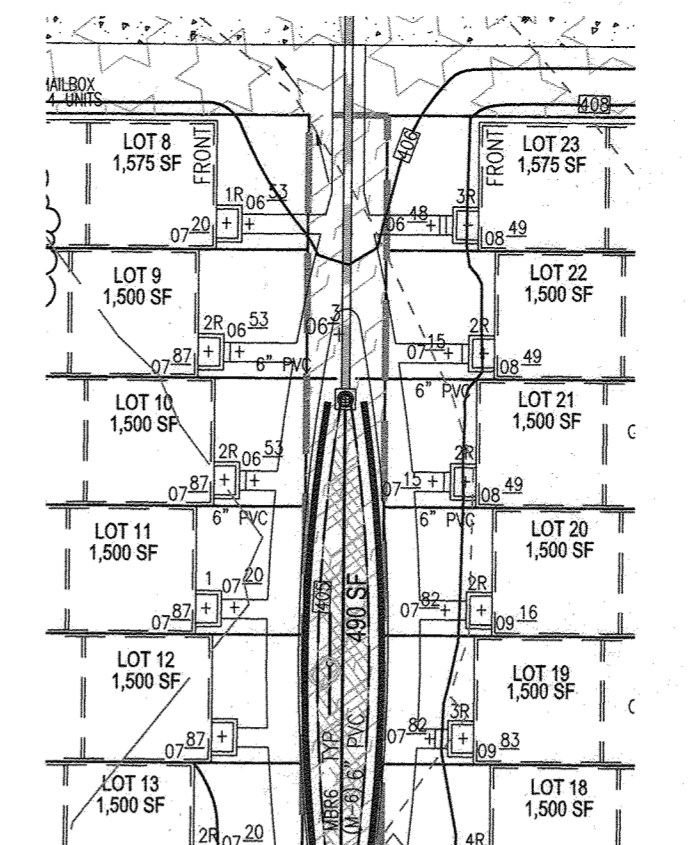
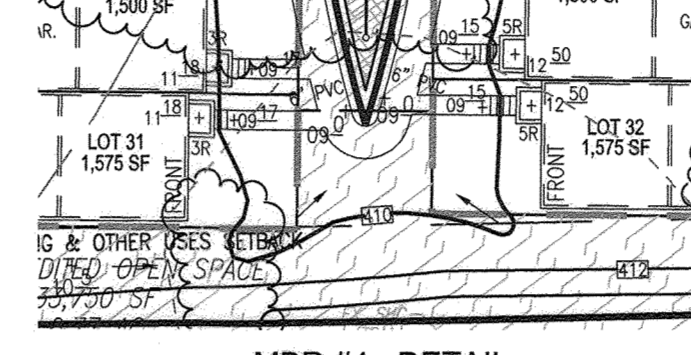
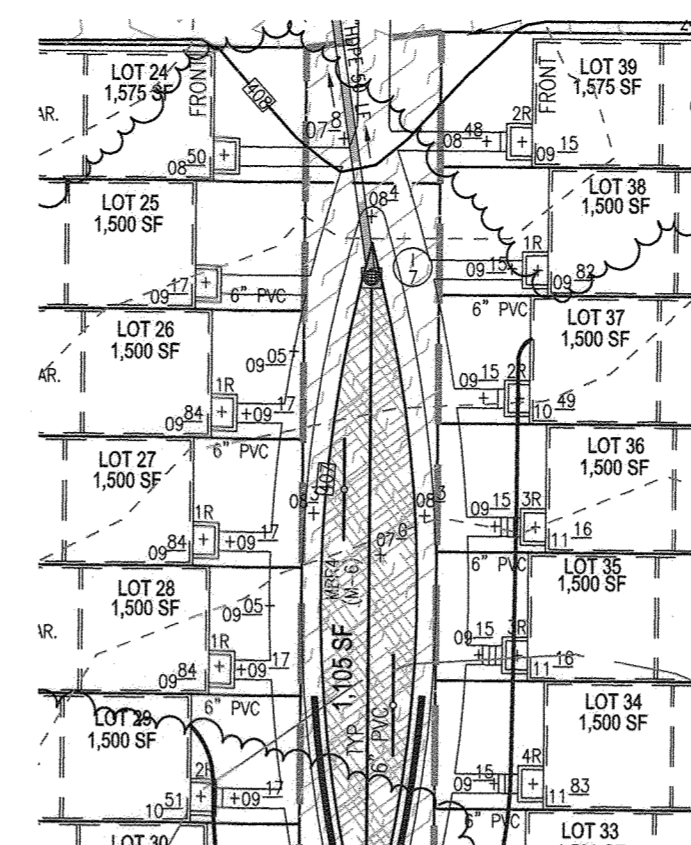
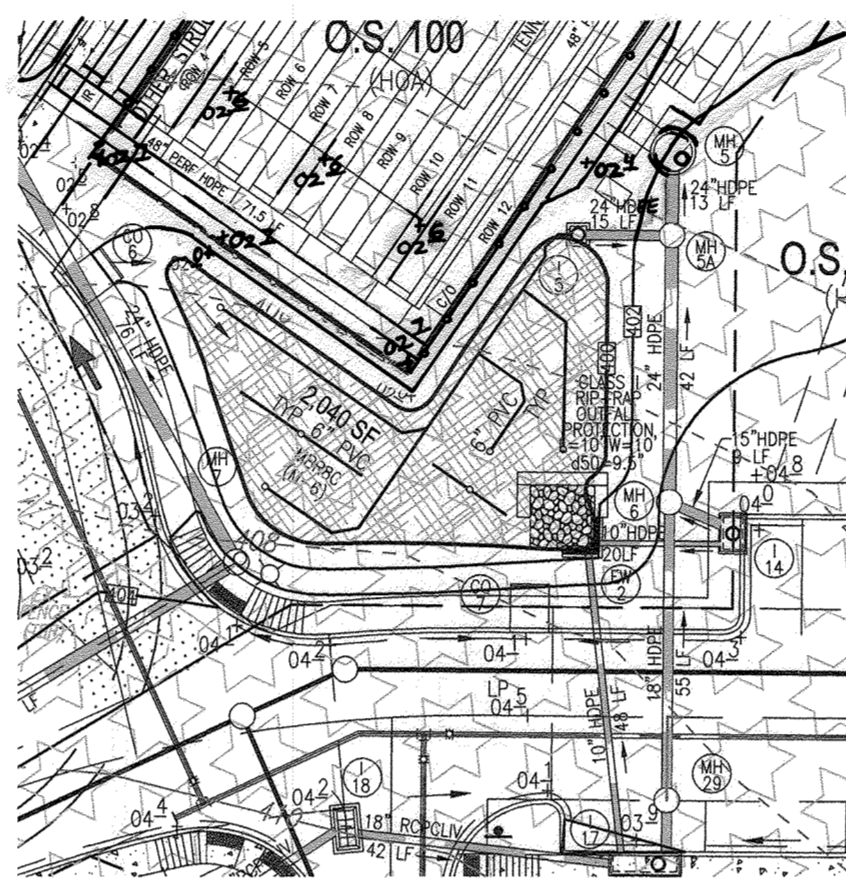
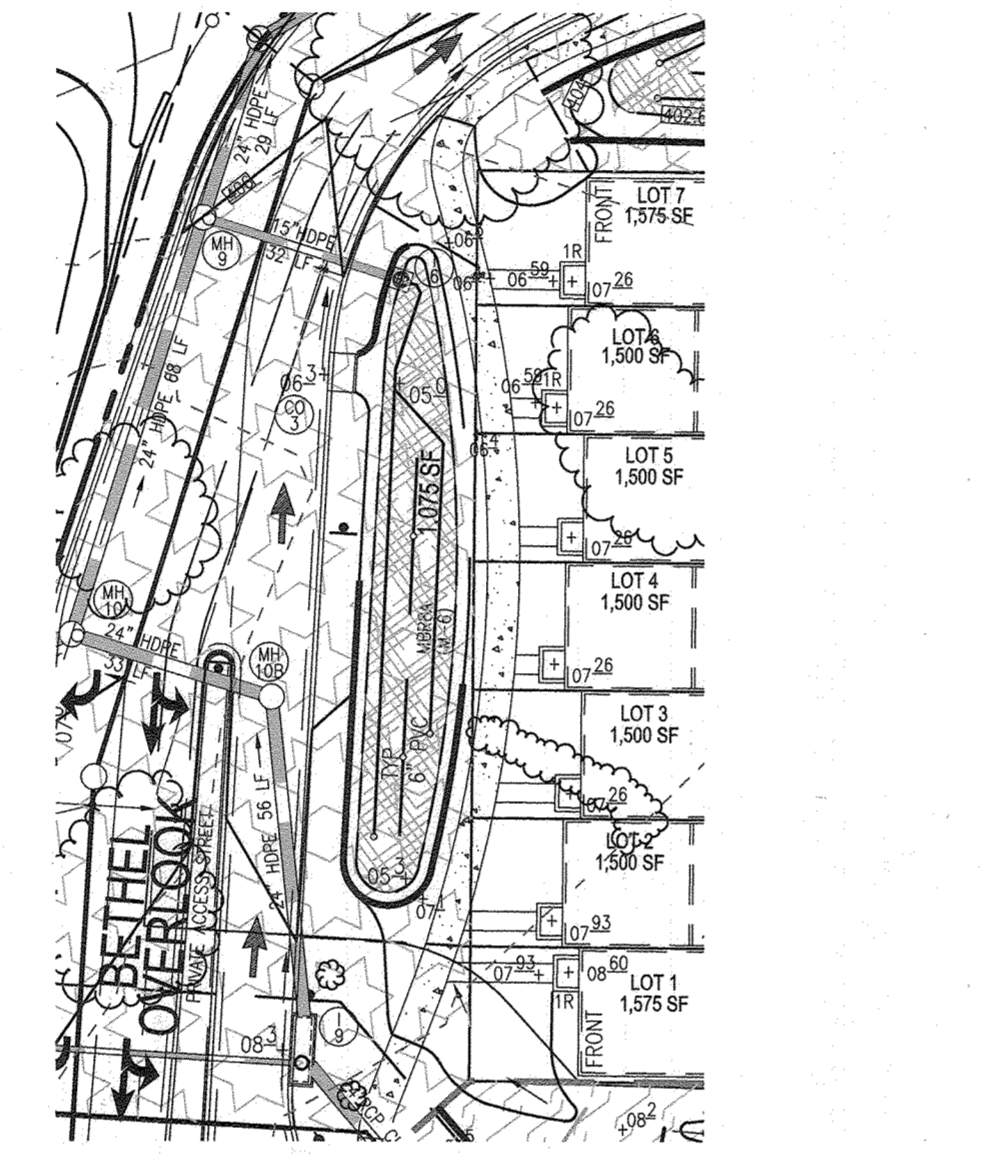
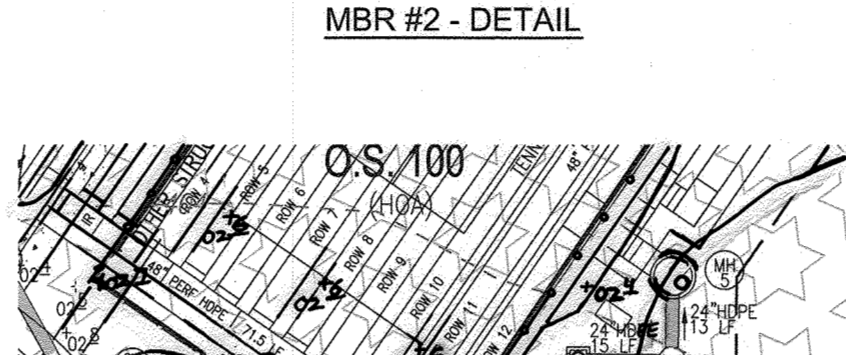
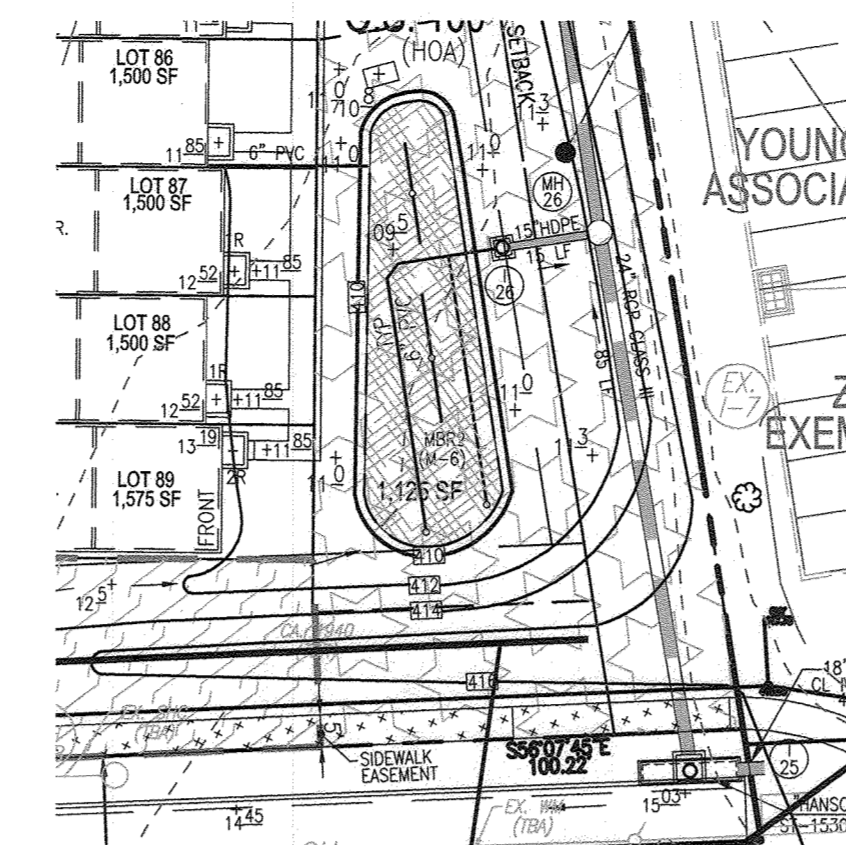
Revised: Mar-14
 Approved: Dec-14
 Revised: Dec-19
 Revised: Feb-20
 Revised: Jun-20
 Revised: Oct-22

Rv=0.05+0.009Xl
 Vmin=1.0' rainfall
 Vmax=1yr rainfall+2.6'

DA #	% IMPERV	Rv	DA (SF)	MINIMUM VOLUME	MAXIMUM VOLUME	1.96" VOLUME	VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
1SHA	36.14	0.3753	37215	1.31	1789	4682	3507	5070	0.47	0.84	MICROSCALE MICRO-BIO RETENTION #1 3443 2582 SF MICRO BIO 1627 STONE RESERVOIR BELOW MBR # 2.1 613 Excess 2175 cuft
7A	100.00	0.9500	6400	0.15	507	1317	993	0	6400	0.15	0.00
7C	60.32	0.5929	12763	0.29	631	1640	1236	775	7099.2	0.18	0.12
TOTAL	191.63		39168	Check							
8A	45.43	0.4589	9100	0.21	348	905	682	1430	4134	0.09	0.11
8B	40.05	0.4105	10865	0.25	376	977	737	530	4400	0.10	0.15
8C	65.01	0.6351	27505	0.63	1456	3785	2853	2720	17880	0.41	0.22
14	27.81	0.3003	18890	0.43	473	1229	926	860	5253	0.12	0.31
21	51.28	0.5115	17306	0.40	738	1918	1446	2180	8875	0.20	0.19
PROJECT TOTALS	47.2	0.4716	160164	3.68	6395	16471	12116	17964	75566	1.73	1.95



SHA BMP TRACKING #132189
 BMP: MICRO-BIORETENTION
 CONTRIBUTING DRAINAGE AREA:
 1.31 ACRES +/-
 LAND USE: PUBLIC R/W
 SHA IMPERVIOUS AREA TO FACILITY:
 0.94 ACRES +/-
 CENTER LOCATION
 N 577842 E 1364190
 OWNER & MAINTENANCE:
 PRIVATE H.O.A.



MBR FACILITY	SURFACE AREA	REQUIRED PLANTINGS	PLANTINGS
MBR #1	2582 SF	44	14 VIRGINIA SWEETSPIRE 15 INKBERRY 15 SWITCHGRASS
MBR #2	1125 SF	19	3 VIRGINIA SWEETSPIRE 8 INKBERRY 8 SWITCHGRASS
MBR #4	1105 SF	19	5 VIRGINIA SWEETSPIRE 7 INKBERRY 7 SWITCHGRASS
MBR #6	490 SF	8	2 VIRGINIA SWEETSPIRE 3 INKBERRY 3 SWITCHGRASS
MBR #7	315 SF	6	3 VIRGINIA SWEETSPIRE 3 INKBERRY
MBR #8A	1075 SF	18	2 VIRGINIA SWEETSPIRE 8 INKBERRY 8 SWITCHGRASS
MBR #8C	2040 SF	35	5 VIRGINIA SWEETSPIRE 15 INKBERRY 15 SWITCHGRASS
MBR #21	1635 SF	28	8 VIRGINIA SWEETSPIRE 10 INKBERRY 10 SWITCHGRASS

LONGGATE OVERLOOK - R-A-15 - ESDv COMPUTATIONS TO SAND FILTER / QUANTITY FACILITY

SITE AREA: 7.87 AC 254000
 TARGET P: 1.96 IN
 SITE IMPERVIOUS: 60.97 PERCENT
 SITE Rv: 0.5867
 SITE ESDv: 33553 CF +/-

Revised: Mar-14
 Approved: Dec-14
 Revised: Dec-19
 Revised: Feb-20
 Revised: Jun-20
 Revised: Oct-22

Rv=0.05+0.009Xl
 Vmin=1.0' rainfall
 Vmax=1yr rainfall+2.6'

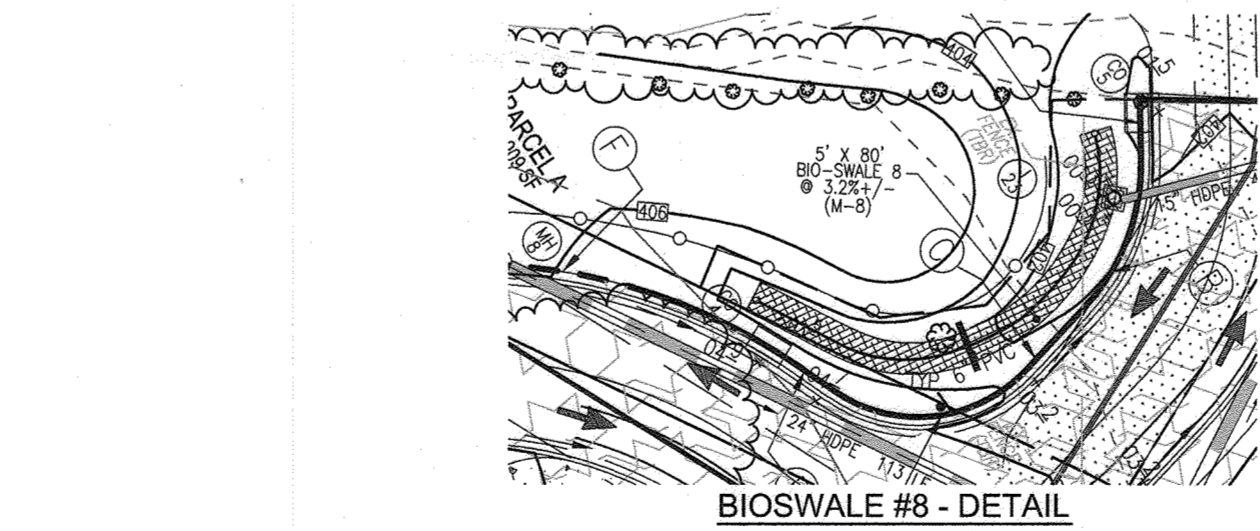
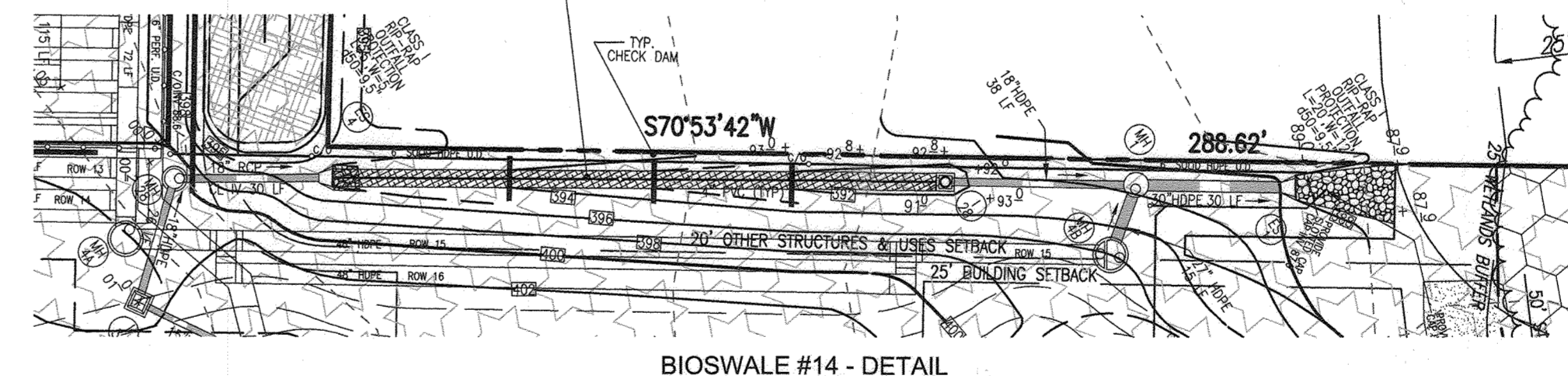
DA #	% IMPERV	Rv	DA (SF)	MINIMUM VOLUME	MAXIMUM VOLUME	1.96" VOLUME	VOLUME PROVIDED*	IMPERV (SF)	IMPERV (AC)	GREEN AREA	REMARKS
2	23.68	0.2631	8750	0.20	192	499	376	1500	2072	0.05	0.15
BATHGATE COURT											
3A	100.00	0.9500	6800	0.16	538	1400	1055	0	6800	0.16	0.00
3B	100.00	0.9500	6101	0.14	483	1256	947	0	6101	0.14	0.00
3C	100.00	0.9500	6250	0.15	503	1307	985	0	6250	0.15	0.00
3D	0.00	0.0000	5834	0.12	22	58	44	0	0	0.00	0.12
TOTAL	24645		24645	Check							
Subarea drains to and is Overmanaged in Surface Sand Filter pond facility											
19	36.36	0.3772	25305	0.58	795	2088	1589	0	9200	0.21	0.37
Subarea drains to and is Overmanaged in Surface Sand Filter pond facility											
CHARLES VAUGHAN COURT											
5A	100.00	0.9500	6000	0.14	475	1235	931	0	6000	0.14	0.00
5B	100.00	0.9500	8446	0.19	669	1738	1310	0	8446	0.19	0.00
5C	0.00	0.0000	3954	0.09	16	43	32	0	0	0.00	0.09
TOTAL	18400		18400	Check							
Subarea drains to and is Overmanaged in Surface Sand Filter pond facility											
6A	58.96	0.5807	12955	0.30	629	1633	1232	650	7662	0.18	0.12
MICROSCALE MICRO-BIO RETENTION #6 650 490 SF MICRO BIO											
4	53.67	0.5331	14514	0.33	645	1676	1264	1470	7790	0.18	0.15
MICROSCALE MICRO-BIO RETENTION #4 1470 1105 SF MICRO BIO											
SAND FILTER	53.10	0.5279	79891	1.83	3515	9138	6889	7960	42425	0.97	0.86
STRUCTURAL SAND FILTER 7960 970 SF FILTER N-2 DISCONNECTION OF NON-ROOFTOP, 29 LF											
PROJECT TOTALS	55.7	0.5524	184500	4.24	8475	22082	16616	11571	102784	2.36	1.87

Appendix A. Landscaping Guidance for Stormwater BMPs Specific Landscaping Criteria

Table A.4 Commonly Used Species for Bio-retention Areas

Trees	Shrubs	Herbaceous Species
Rose	Aster multiflorus	Andropogon virginicus
Red Maple	Blackberry	Broomrape
Blackberry	Blackberry	Equisetum purpureum
River Birch	Blackberry	Joe Pye Weed
Juniperus virginiana	Hamamelis virginiana	Scirpus pungens
Eastern Red Cedar	Witch Hazel	Three Square Balm
Chionodoxa virginiana	Vaccinium corymbosum	Iron verbena
Fringe tree	Highbush Blueberry	Blue Flag
Myrica sp.	Ilex glabra	Cardinal Flower
Black Gum	Inkberry	Cardinal Flower
Diostyris virginiana	Ilex verticillata	Panicum virgatum
Periwinkle	Blackberry	Switchgrass
Platanus occidentalis	Viburnum dentatum	Dichostemum scoparium
Sycamore	Broom Pate Grass	Broom Pate Grass
Quercus palustris	Lindera benzoin	Rudbeckia lactinosa
Pine Oak	Spicebush	Tall Oxeye
Quercus phellos	Myrica pennsylvanica	Scirpus operarius
Willow Oak	Bayberry	Woodgrass
Black willow	Vernonia noveboracensis	New York Ironweed

Note 1: For more options on plant selection for bio-retention, consult Bio-retention Manual (DETA, 1995) or the Design of Stormwater Filtering Systems (Chapman and Schuler, 1997).



"BIO-SWALE & MICRO-BIORETENTION" PLANTING SCHEDULE NOTES:

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLANT DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
5. SEE SHEET 10 FOR TYPICAL PLANTING SPECIFICATIONS AND DETAILS.
6. MICRO-BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.229 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDv SUMMARY.

BIO-SWALE 14 PLANTING SCHEDULE

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
5	PANICUM VIRGATUM SWITCHGRASS	5 GALLON	CONT
5	ILEX GLABRA "SHAMROCK" INKBERRY HOLLY	3 GALLON	CONT
2	LIROPE MUSCARI "MAJESTIC" MAJESTIC LILY TURF / BLUE FLAG	3 GALLON	CONT

SF x 75% x 0.229 STEMS PER SQUARE FOOT = PLANTS REQUIRED
 NOTE: WITH PERMISSION FROM HOWARD COUNTY, PLANTINGS SPECIFIED HEREON MAY BE SUBSTITUTED WITH APPROVED SPECIES LISTED IN TABLE A-4 AS SHOWN HEREON.

BIO-SWALE 8 PLANTING SCHEDULE

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
5	PANICUM VIRGATUM SWITCHGRASS	5 GALLON	CONT
5	ILEX GLABRA "SHAMROCK" INKBERRY HOLLY	3 GALLON	CONT
2	LIROPE MUSCARI "MAJESTIC" MAJESTIC LILY TURF / BLUE FLAG	3 GALLON	CONT

SF x 75% x 0.229 STEMS PER SQUARE FOOT = PLANTS REQUIRED
 NOTE: WITH PERMISSION FROM HOWARD COUNTY, PLANTINGS SPECIFIED HEREON MAY BE SUBSTITUTED WITH APPROVED SPECIES LISTED IN TABLE A-4 AS SHOWN HEREON.

BIO-SWALE 8 PLANTING SCHEDULE

QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
5	PANICUM VIRGATUM SWITCHGRASS	5 GALLON	CONT
5	ILEX GLABRA "SHAMROCK" INKBERRY HOLLY	3 GALLON	CONT
2	LIROPE MUSCARI "MAJESTIC" MAJESTIC LILY TURF / BLUE FLAG	3 GALLON	CONT

SF x 75% x 0.229 STEMS PER SQUARE FOOT = PLANTS REQUIRED
 NOTE: WITH PERMISSION FROM HOWARD COUNTY, PLANTINGS SPECIFIED HEREON MAY BE SUBSTITUTED WITH APPROVED SPECIES LISTED IN TABLE A-4 AS SHOWN HEREON.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3-22-21
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 4/16/21
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 5-2-21
 DIRECTOR DATE

1. TABLE A.4 IS TAKEN FROM THE "2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II - APPENDIX A."
 2. CONTRACTOR SHALL BE FAMILIAR WITH APPENDIX B.4.C. CONSTRUCTION SPECIFICATIONS AND TABLE B.4.1. MATERIAL SPECIFICATIONS. IN ADDITION THE "2000 MARYLAND STORMWATER DESIGN MANUAL - VOLUME II - APPENDIX A OFFERS" ADDITIONAL HELPFUL INFORMATION.
 3. NO TREES SHALL BE PLANTED WITHIN A MICRO-BIORETENTION FACILITY. USE ONLY SHRUB OR HERBACEOUS SPECIES.
 4. ABOVE TABLE A.4. IS FOR INFORMATIONAL PURPOSES ONLY. LANDSCAPE CONTRACTOR SHALL INSTALL PLANTINGS SPECIFIED OR USE APPROVED EQUAL SPECIES WHICH ARE TOLERANT TO FLUCTUATING WATER LEVELS.
 5. PLANTINGS SHOWN HEREON ARE THE RESPONSIBILITY OF THE DEVELOPER TO INSTALL DURING THE CONSTRUCTION OF THIS SITE DEVELOPMENT PLAN.

1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HOWARD COUNTY PLANTING SPECIFICATIONS.
 2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
 3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
 4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLANT DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
 5. SEE SHEET 10 FOR TYPICAL PLANTING SPECIFICATIONS AND DETAILS.
 6. MICRO-BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (0.229 STEMS PER SQUARE FOOT). ABOVE PLANTING RATIOS ARE TO BE APPLIED TO THE AREAS PROVIDED IN THE ESDv SUMMARY.

OWNER / DEVELOPER
 BEAZER HOMES
 ATTN: J. MARTIN SHAFER, AREA PRESIDENT
 AUTHORIZED SIGNATURE - EAST REGION
 6085 MARSHALL DRIVE, SUITE 350
 ELKROBE, MD 21075
 443-539-9249

NO.	REVISION	DATE
8	REVISE TO ADD SIDEWALK BETWEEN UNIT 210A/B AND LOT 90	5-10-23
7	REVISE PERMEABLE SIDEWALK TO CONCRETE SIDEWALK ALONG RT 103	10-13-21
6	REVISE RETAINING WALL AND GRADING NEAR TENNIS COURT	9-15-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

REVISED SITE DEVELOPMENT PLAN
 STORMWATER MANAGEMENT
 NOTES & DETAILS
LONG GATE OVERLOOK
 LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
 AND OPEN SPACE LOT 100
 A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
 27704-27710
 (SFA RESIDENTIAL)

2ND ELECTION DISTRICT
 TAX MAP: 24 GRID: 24
 DPZ REFS: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

PARCELS: SEE GENERAL NOTE 1
 HOWARD COUNTY, MARYLAND

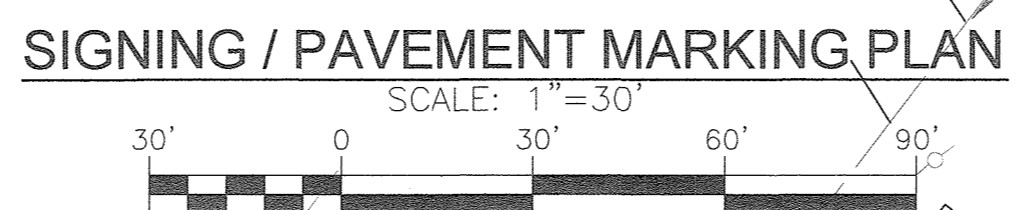
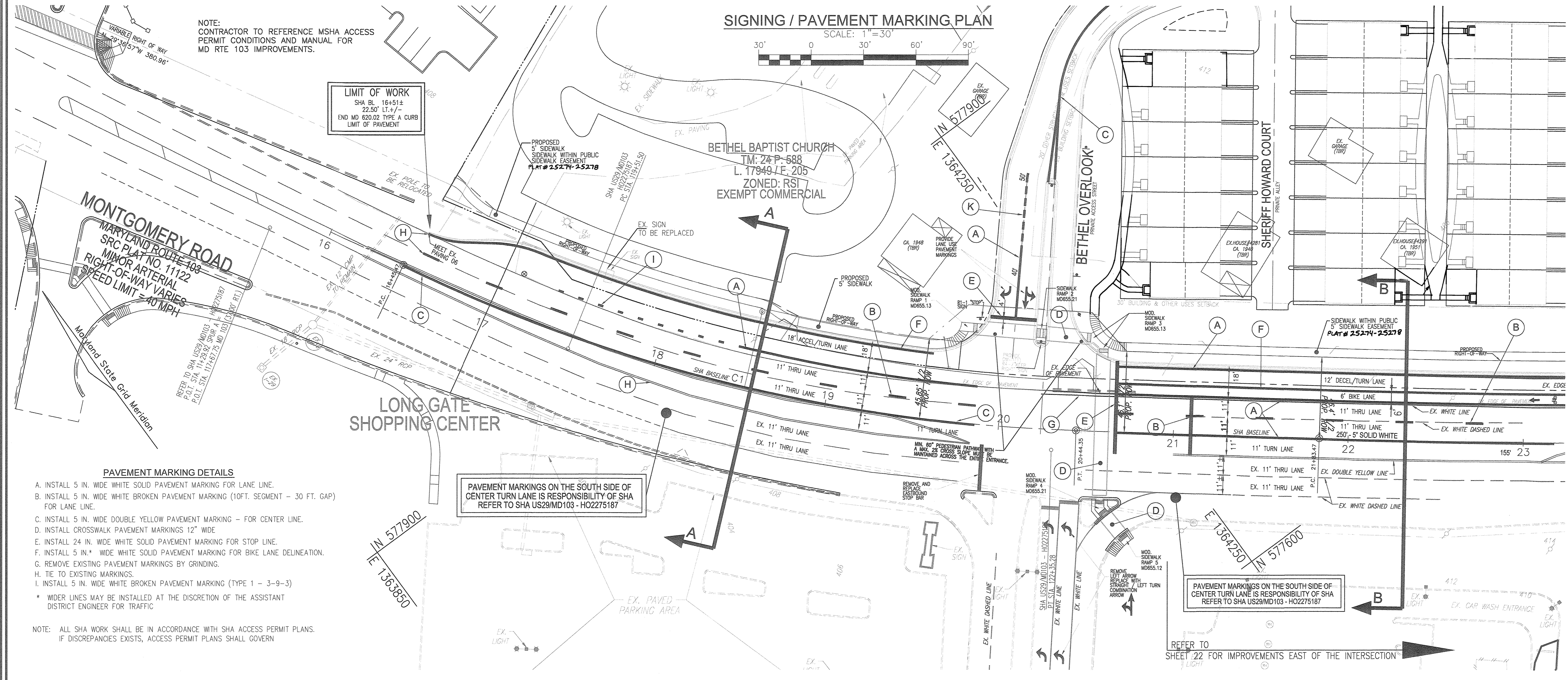
VOGEL ENGINEERING
 TIMMONS GROUP

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

DESIGN BY: RHY/EDS
 DRAWN BY: VETG
 CHECKED BY: RHY
 DATE: JANUARY 2021
 SCALE: AS SHOWN
 W.O. NO.: 08-48

PROFESSIONAL CERTIFICATE
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16189 EXPIRATION DATE: 09-27-2022

20 SHEET OF 37



NOTE: CONTRACTOR TO REFERENCE MSHA ACCESS PERMIT CONDITIONS AND MANUAL FOR MD RTE 103 IMPROVEMENTS.

LIMIT OF WORK
SHA BL 16+51±
22.50' LT. ±
END MD 620.02 TYPE A CURB
LIMIT OF PAVEMENT

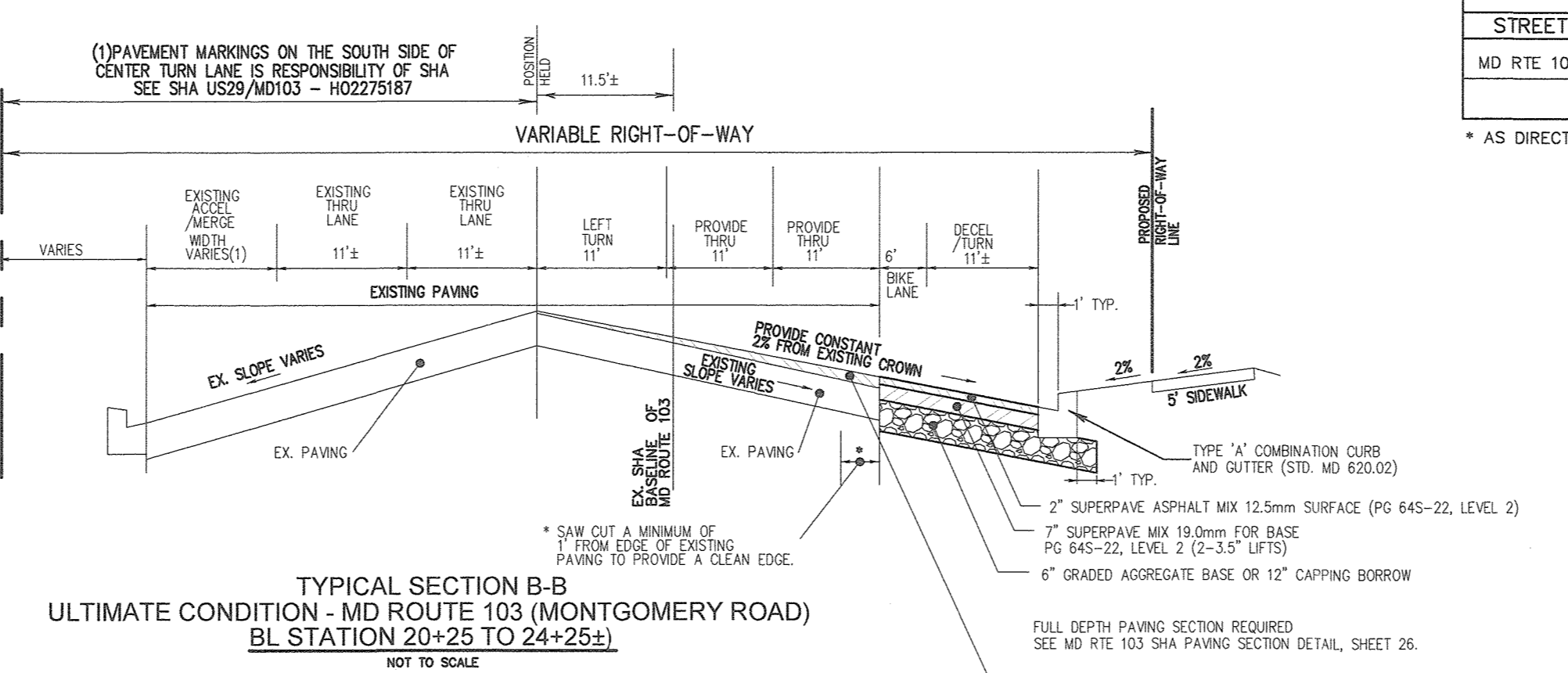
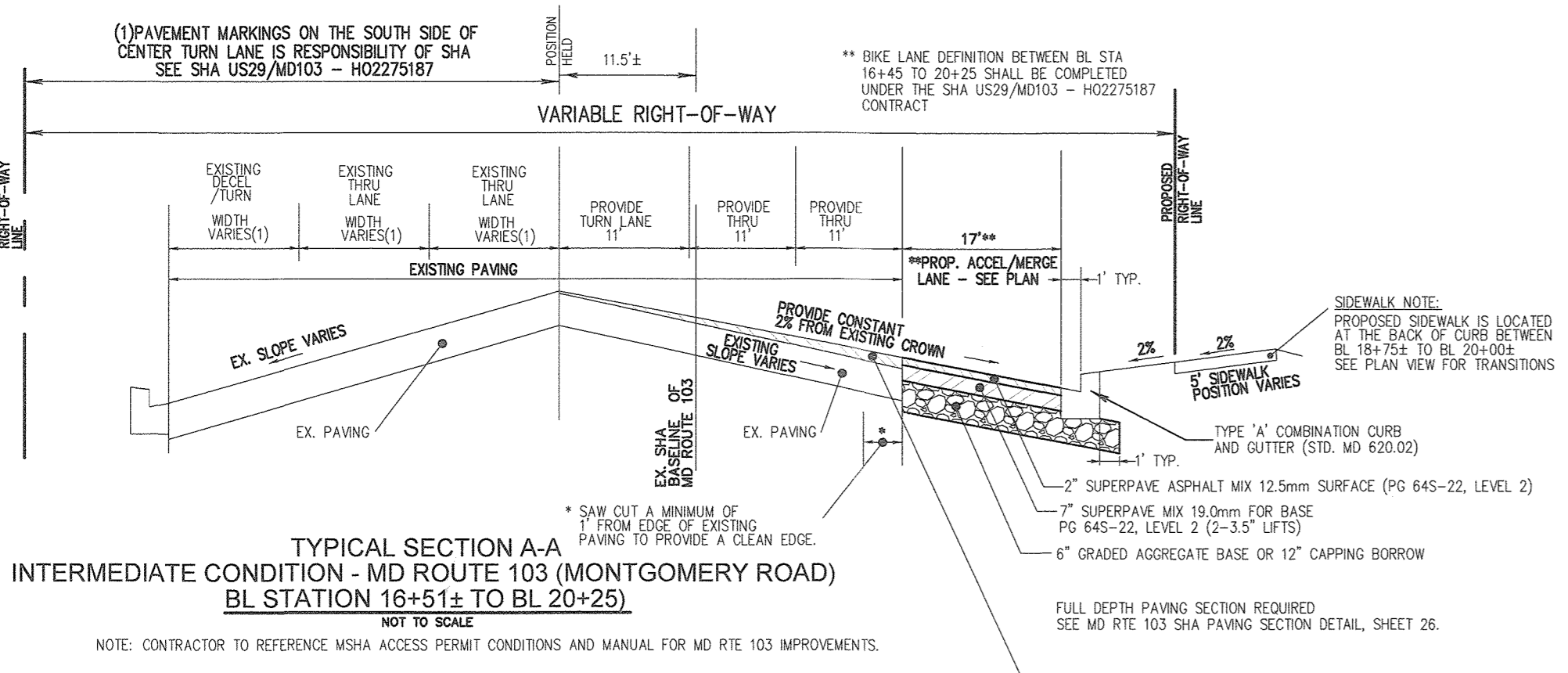
NOTE

- "STOP SIGN" AT BETHEL OVERLOOK / MONTGOMERY ROAD INTERSECTION IS TEMPORARY FOR USE DURING CONSTRUCTION UNTIL THE SIGNAL WORK IS COMPLETED.
- CONTRACTOR SHALL LOCATE / TEST PIT EXISTING UTILITIES (FIBER OPTIC & OTHER UTILITIES ALONG MONTGOMERY ROAD WIDENING) WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. SEE SHEET 1, NOTE 11.
- ADA RAMPS / CROSSINGS ARE DETAILED ON SHEET 26

- PAVEMENT MARKING DETAILS**
- A. INSTALL 5 IN. WIDE WHITE SOLID PAVEMENT MARKING FOR LANE LINE.
 - B. INSTALL 5 IN. WIDE WHITE BROKEN PAVEMENT MARKING (10FT. SEGMENT - 30 FT. GAP) FOR LANE LINE.
 - C. INSTALL 5 IN. WIDE DOUBLE YELLOW PAVEMENT MARKING - FOR CENTER LINE.
 - D. INSTALL CROSSWALK PAVEMENT MARKINGS 12" WIDE
 - E. INSTALL 24 IN. WIDE WHITE SOLID PAVEMENT MARKING FOR STOP LINE.
 - F. INSTALL 5 IN. WIDE WHITE SOLID PAVEMENT MARKING FOR BIKE LANE DELINEATION.
 - G. REMOVE EXISTING PAVEMENT MARKINGS BY GRINDING.
 - H. TIE TO EXISTING MARKINGS.
 - I. INSTALL 5 IN. WIDE WHITE BROKEN PAVEMENT MARKING (TYPE 1 - 3-9-3)
- * WIDER LINES MAY BE INSTALLED AT THE DISCRETION OF THE ASSISTANT DISTRICT ENGINEER FOR TRAFFIC
- NOTE: ALL SHA WORK SHALL BE IN ACCORDANCE WITH SHA ACCESS PERMIT PLANS. IF DISCREPANCIES EXISTS, ACCESS PERMIT PLANS SHALL GOVERN

PAVEMENT MARKINGS ON THE SOUTH SIDE OF CENTER TURN LANE IS RESPONSIBILITY OF SHA REFER TO SHA US29/MD103 - H02275187

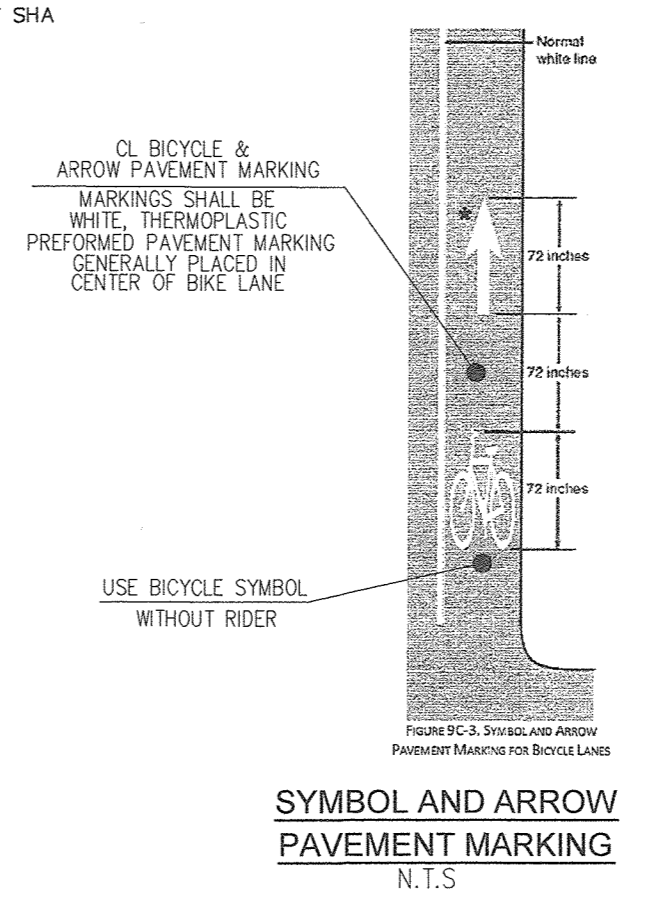
PAVEMENT MARKINGS ON THE SOUTH SIDE OF CENTER TURN LANE IS RESPONSIBILITY OF SHA REFER TO SHA US29/MD103 - H02275187



BIKE LANE SIGN LOCATION CHART

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
MD RTE 103	17+31.5	43.9' LT.	BIKE LANE R3-17 ENDUS: R3-17B

* AS DIRECTED BY SHA



OWNER/DEVELOPER
BEAVER HOMES
ATTN: J. MARTIN SHAFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALE DRIVE, SUITE 350
ELK RIDGE, MD 21075
443-539-9249

NO.	REVISION	DATE
3	REVISE FRONT PORCH, POOR AND LEAD-WALK LOCATION, AMEND SIDEWALK, AMEND P.F. ELEV. AND MAJOR SPOT ELEV. AMEND TENNIS COURT ELEV. REDLINE L.S. PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF C.R.-123-2019	9-28-20

REVISED SITE DEVELOPMENT PLAN
MD ROUTE 103 SIGNING AND PAVEMENT MARKING PLAN
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278 (SFA RESIDENTIAL)

2ND ELECTION DISTRICT
TAX MAP: 24 GRID: 24
DPZ REFS: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

ZONED: R-A-15
PARCELS: SEE GENERAL NOTE 1
HOWARD COUNTY, MARYLAND

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

TIMMONS GROUP

DESIGN BY: RHV/EDS.
DRAWN BY: VETG.
CHECKED BY: RHV.
DATE: DECEMBER 2019
SCALE: AS SHOWN
W.O. NO.: 08-48

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183 EXPIRATION DATE: 09-27-2022

ROBERT H. VOGEL, PE No. 16183

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

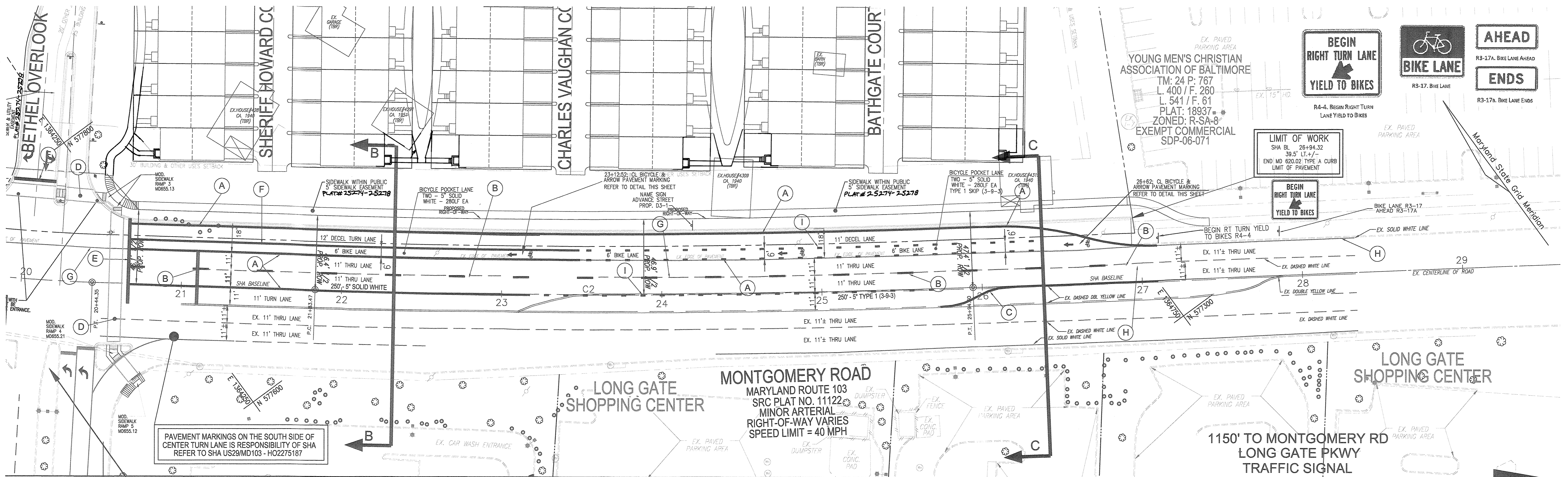
12/22/19
1/3/20
1-3-20

MD RTE 103 - CURVE DATA TABLE

CURVE	STATION	LENGTH	RADIUS	DELTA	TANGENT	CHORD BEARING	CHORD LENGTH
C1	16+45.47 - 20+44.35	398.89	954.93	23°56'00"	202.40	S39°54'56"E	396.00

TRENCH BACKFILL

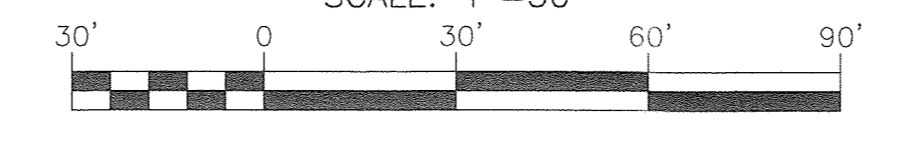
TRENCH BACKFILL FOR STORM DRAINS AND UTILITIES SHALL CONFORM TO STANDARD DETAIL MD-578.01 OR AS DETAILED ON THE PLANS. IF STEEL PLATES ARE USED, THEY MUST BE 1" THICK MINIMUM, PROPERLY SECURED WITH ANCHORS AND TEMPORARY PAVEMENT WEDGES, AND EXTEND 1 FOOT MINIMUM BEYOND ALL EDGES OF THE TRENCH. THE TRENCH SHALL BE BACKFILLED WITH FLOWABLE BACKFILL FOR UTILITY CUTS OR OTHER APPROVED MATERIAL UP TO THE BOTTOM OF THE FULL DEPTH PAVEMENT PATCHING SECTION. THE FULL DEPTH PATCHING PAVEMENT SECTION, CONSISTING OF THE SPECIFIED GRADED AGGREGATE AND HOT MIX ASPHALT, SHALL BE PLACED AND CONSTRUCTED TO BE FLUSH WITH EXISTING ROAD SURFACE GRADE. FOLLOWING THIS, THE PAVEMENT SHALL BE RESURFACED AS SHOWN ON THE PLANS. IF RESURFACING OF THE EXISTING ROADWAY IS NOT SHOWN ON THE PLANS, THE EXISTING PAVEMENT SHALL BE MILLED AND OVERLID FOR 25 FEET IN EACH DIRECTION (MEASURED FROM THE CENTERLINE OF THE TRENCH) FOR THE FULL WIDTH OF THE ROADWAY. MILL OR GRIND 2" AND REPLACE WITH 2" OF THE ABOVE-NOTED HOT MIX ASPHALT SUPERPAVE MIX.



EXISTING MONTGOMERY RD LONG GATE CENTER TRAFFIC SIGNAL
REFER TO SHEETS 30 & 31 FOR MODIFICATIONS

REFER TO SHEET 21 FOR IMPROVEMENTS EAST OF THE INTERSECTION

SIGNING / PAVEMENT MARKING PLAN



NOTE: CONTRACTOR TO REFERENCE MSHA ACCESS PERMIT CONDITIONS AND MANUAL FOR MD RTE 103 IMPROVEMENTS.

NOTE:
1. CONTRACTOR SHALL LOCATE/TEST PIT EXISTING UTILITIES (FIBER OPTIC & OTHER UTILITIES ALONG MONTGOMERY ROAD WIDENING) WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. SEE SHEET 1, NOTE 11.

NOTE:
WORK SHALL BE COMPLETED IN ACCORDANCE WITH SHA ACCESS PERMIT SHA 14APH0013XX IF DISCREPANCIES ARE FOUND, SHA ACCESS PERMIT SHA 14APH0013XX SHALL GOVERN

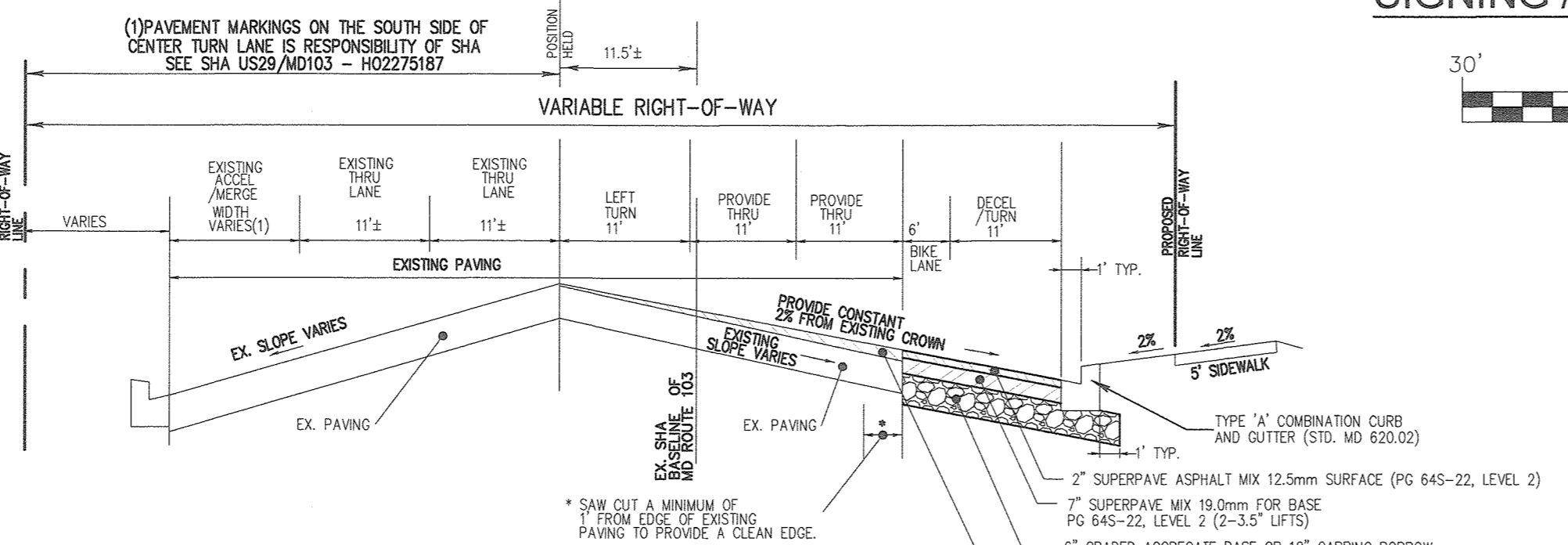
OWNER/DEVELOPER
BEAZER HONES
ATTN: J. MARTIN SHAFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHLEE DRIVE, SUITE 350
ELKBRIDGE, MD 21075
443-639-9249

- PAVEMENT MARKING DETAILS**
- A. INSTALL 5 IN. WIDE WHITE SOLID PAVEMENT MARKING FOR LANE LINE.
 - B. INSTALL 5 IN. WIDE WHITE BROKEN PAVEMENT MARKING (10FT. SEGMENT - 30 FT. GAP)
 - C. PROVIDE 24 IN. WIDE DOUBLE YELLOW PAVEMENT MARKING - FOR CENTER LINE.
 - D. INSTALL CROSSWALK PAVEMENT MARKINGS 12" WIDE
 - E. INSTALL 24 IN. WIDE WHITE SOLID PAVEMENT MARKING FOR STOP LINE.
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- * WIDER LINES MAY BE INSTALLED AT THE DISCRETION OF THE ASSISTANT DISTRICT ENGINEER FOR TRAFFIC

NOTE: ALL SHA WORK SHALL BE IN ACCORDANCE WITH SHA ACCESS PERMIT PLANS. IF DISCREPANCIES EXIST, ACCESS PERMIT PLANS SHALL GOVERN

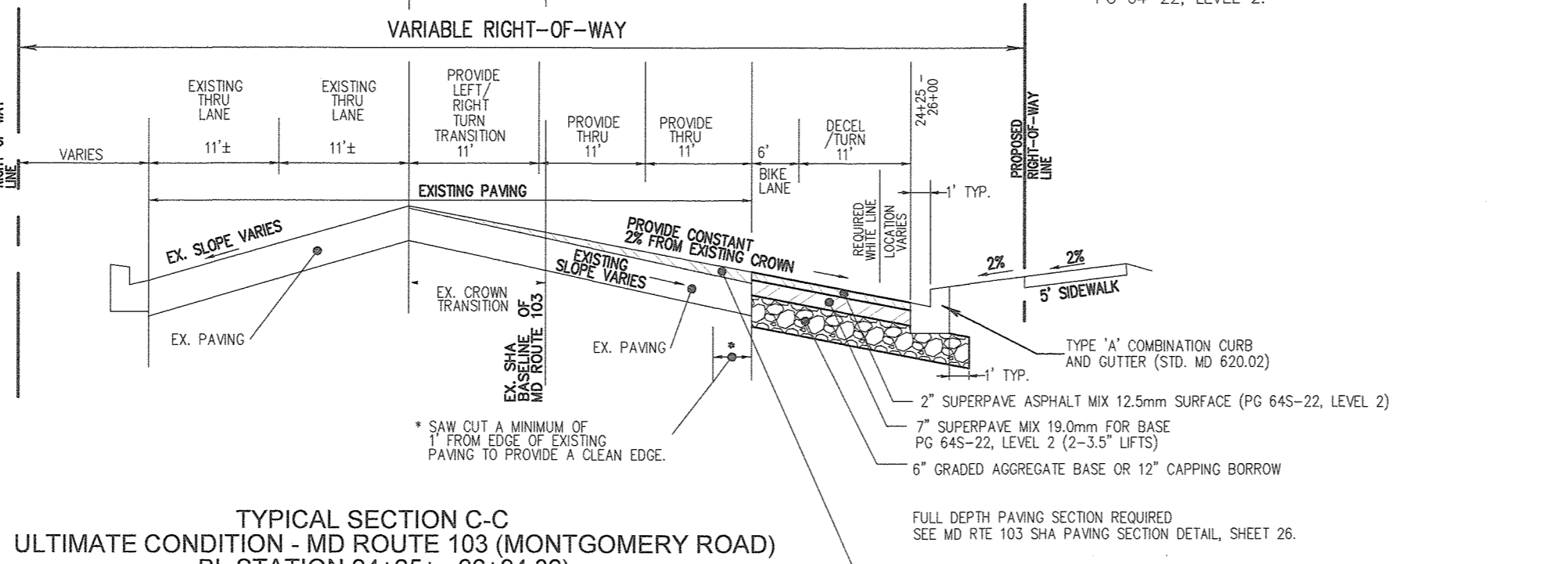
MD RTE 103 - CURVE DATA TABLE

CURVE	BL. STATION	LENGTH	RADIUS	DELTA	TANGENT	CHORD BEARING	CHORD LENGTH
C2	21+83.47-25+94.30	410.83	5729.58	04°06'30"	205.50	S53°56'11"E	410.74



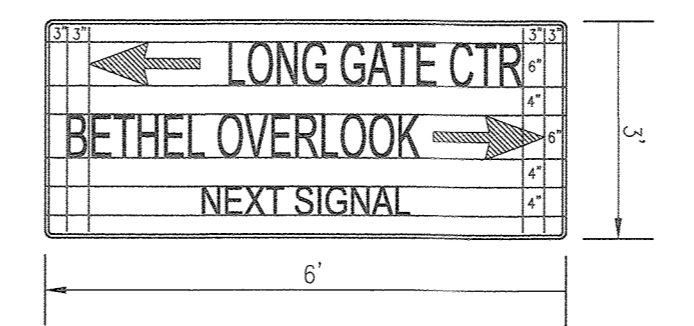
TYPICAL SECTION B-B
ULTIMATE CONDITION - MD ROUTE 103 (MONTGOMERY ROAD)
BL STATION 20+25 TO 24+25

NOTE: CONTRACTOR TO REFERENCE MSHA ACCESS PERMIT CONDITIONS AND MANUAL FOR MD RTE 103 IMPROVEMENTS.

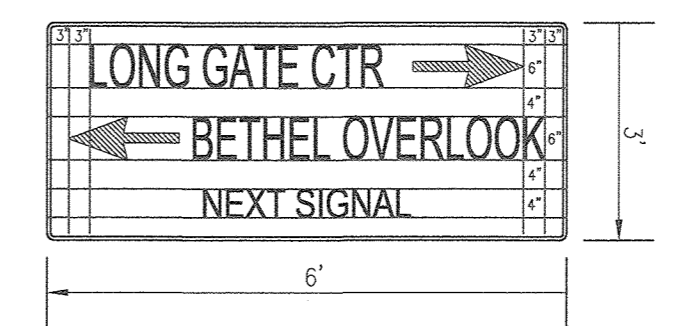


TYPICAL SECTION C-C
ULTIMATE CONDITION - MD ROUTE 103 (MONTGOMERY ROAD)
BL STATION 24+25.5 - 26+94.32

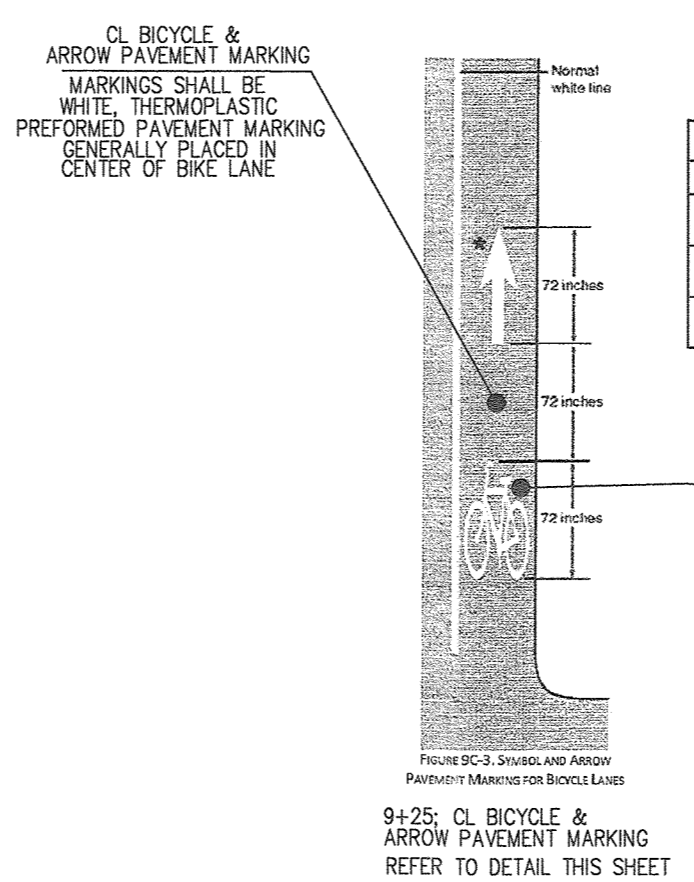
NOTE: CONTRACTOR TO REFERENCE MSHA ACCESS PERMIT CONDITIONS AND MANUAL FOR MD RTE 103 IMPROVEMENTS.



WESTBOUND ADVANCE GUIDE SIGN
SCALE: N.T.S.



EASTBOUND ADVANCE GUIDE SIGN
SCALE: N.T.S.



SYMBOL AND ARROW PAVEMENT MARKING
N.T.S.

BIKE LANE SIGN LOCATION CHART

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
MD RTE 103	27+86	27.6' LT.	BIKE LANE R3-17 AHEAD R3-17A
MD RTE 103	27+10.5	26.5' LT.	BEGIN RT TURN YIELD TO BIKES R4-4

* AS DIRECTED BY SHA

TRENCH BACKFILL
TRENCH BACKFILL FOR STORM DRAINS AND UTILITIES SHALL CONFORM TO STANDARD DETAIL MD-578.01 OR AS DETAILED ON THE PLANS. IF STEEL PLATES ARE USED, THEY MUST BE 1" THICK MINIMUM, PROPERLY SECURED WITH ANCHORS AND TEMPORARY PAVEMENT WEDGES, AND EXTEND 1 FOOT MINIMUM BEYOND ALL EDGES OF THE TRENCH. THE TRENCH SHALL BE BACKFILLED WITH FLOWABLE BACKFILL FOR UTILITY CUTS OR OTHER APPROVED MATERIAL UP TO THE BOTTOM OF THE FULL DEPTH PAVEMENT PATCHING SECTION. THE FULL DEPTH PATCHING PAVEMENT SECTION, CONSISTING OF THE SPECIFIED GRADED AGGREGATE AND HOT MIX ASPHALT, SHALL BE PLACED AND CONSTRUCTED TO BE FLUSH WITH EXISTING ROAD SURFACE GRADE. FOLLOWING THIS, THE PAVEMENT SHALL BE RESURFACED AS SHOWN ON THE PLANS. IF RESURFACING OF THE EXISTING ROADWAY IS NOT SHOWN ON THE PLANS, THE EXISTING PAVEMENT SHALL BE MILLED AND OVERLAID FOR 25 FEET IN EACH DIRECTION (MEASURED FROM THE CENTERLINE OF THE TRENCH) FOR THE FULL WIDTH OF THE ROADWAY. MILL OR GRIND 2" AND REPLACE WITH 2" OF THE ABOVE-NOTED HOT MIX ASPHALT SUPERPAVE MIX.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* 12/23/19
CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* 1/3/20
DIRECTOR: *[Signature]* 1-3-20

NO.	REVISION	DATE
3	REMOVE FRONT PORCH, DOOR AND LEAD-WALK LOCATION. AMEND SIDEWALK, AMEND FE ELEK AND	6-7-21
1	MINOR SPOT ELEV AMEND TUNNE COURT ELEV. REDLINE LS PLANNING	9-28-20
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	9-28-20

REVISED SITE DEVELOPMENT PLAN
MD ROUTE 103 SIGNING AND PAVEMENT MARKING PLAN

LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278 (SFA RESIDENTIAL)

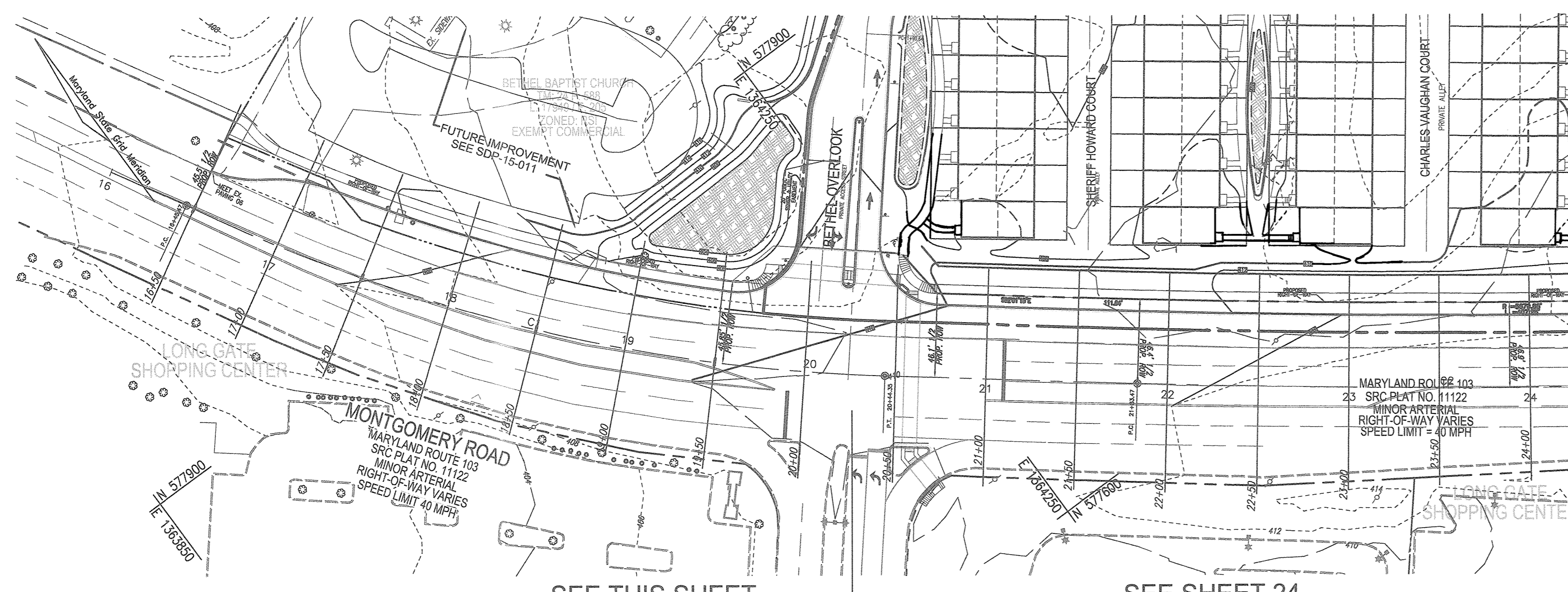
2ND ELECTION DISTRICT TAX MAP: 24 GRID: 24 DPZ REF: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7665 F: 410.461.8961 www.timmons.com

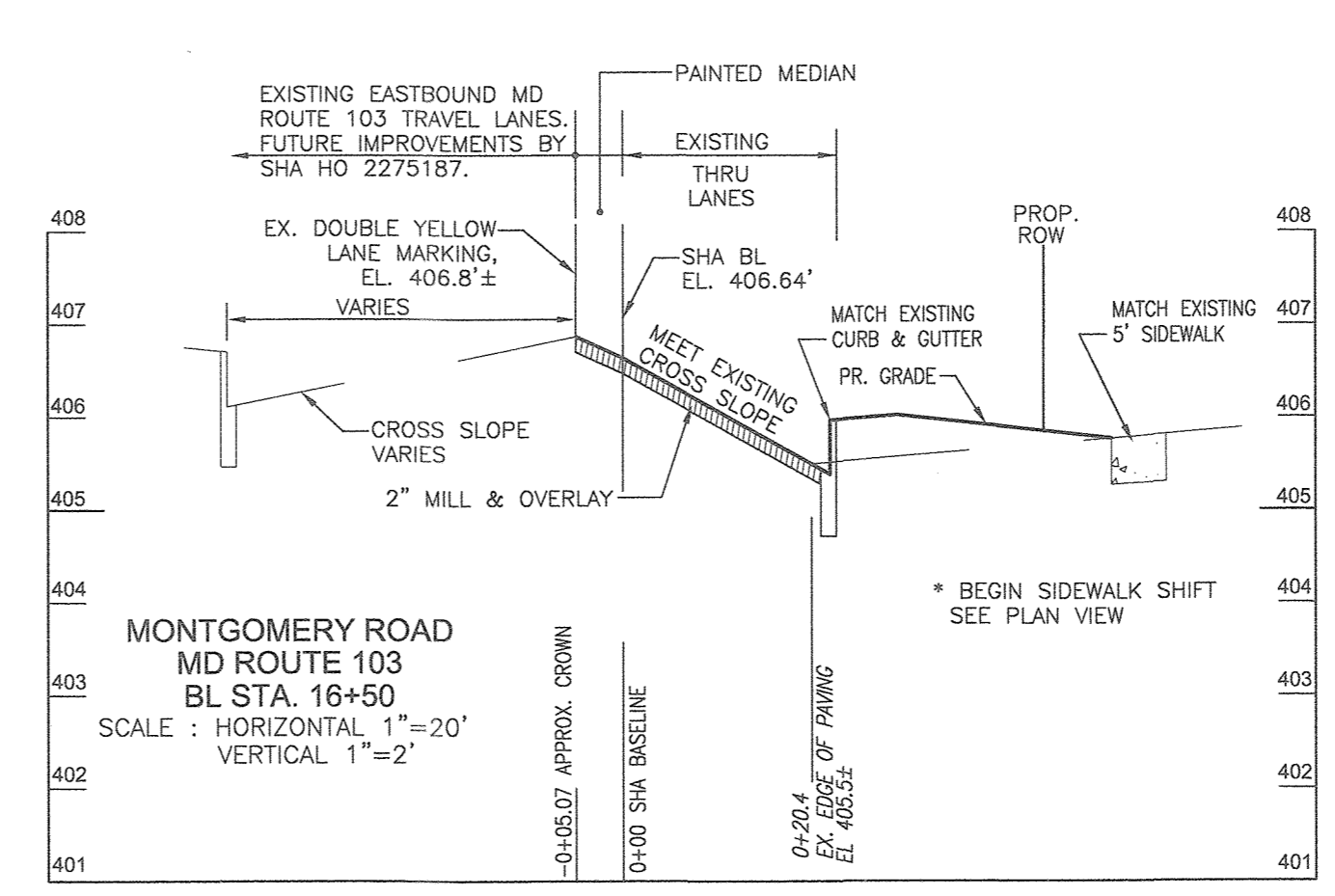
DESIGN BY: RHW/EDS
DRAWN BY: VETG
CHECKED BY: RHW
DATE: DECEMBER 2019
SCALE: AS SHOWN
W.O. NO.: 08-48

PROFESSIONAL CERTIFICATE I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A duly LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2022

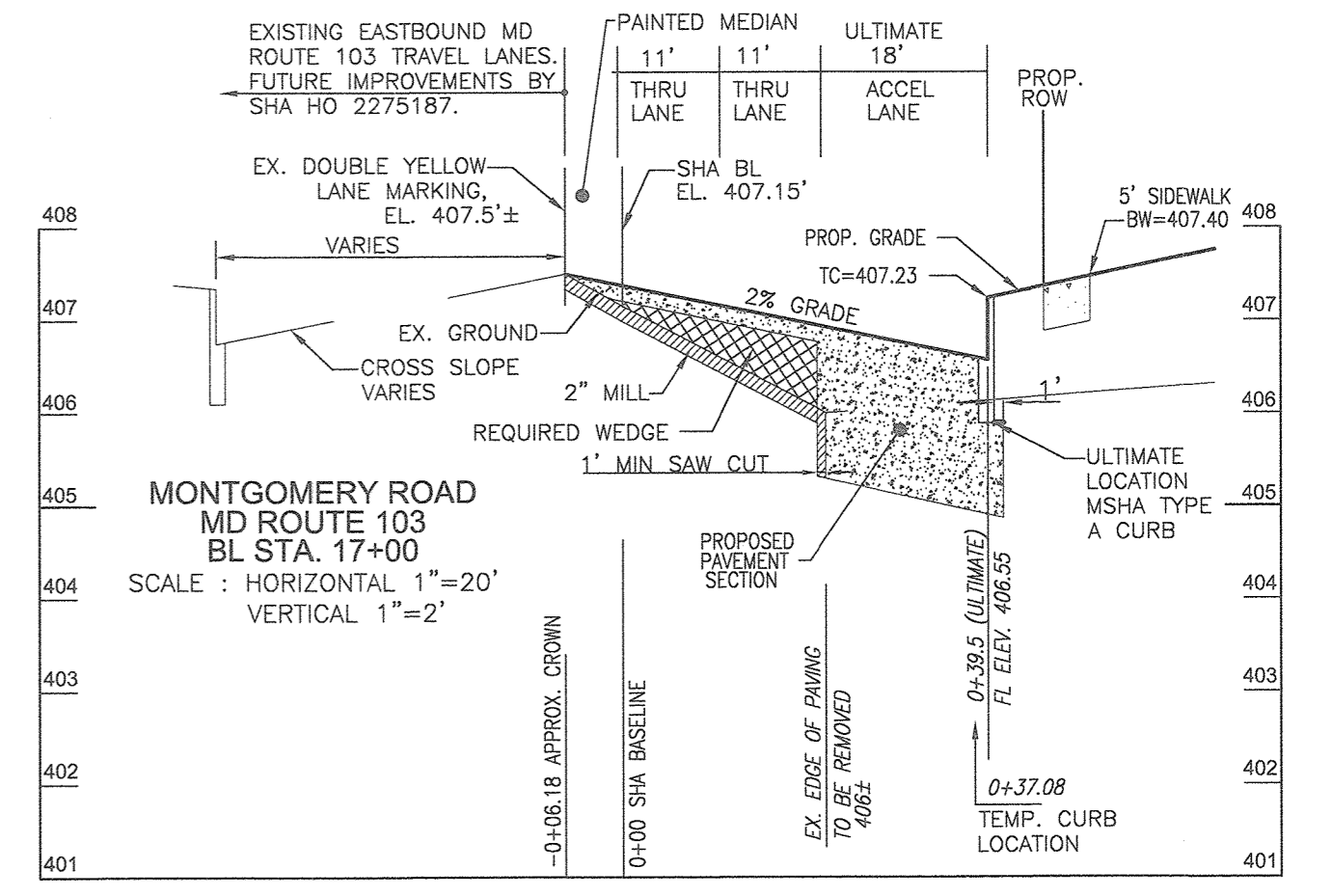
22 SHEET OF 37



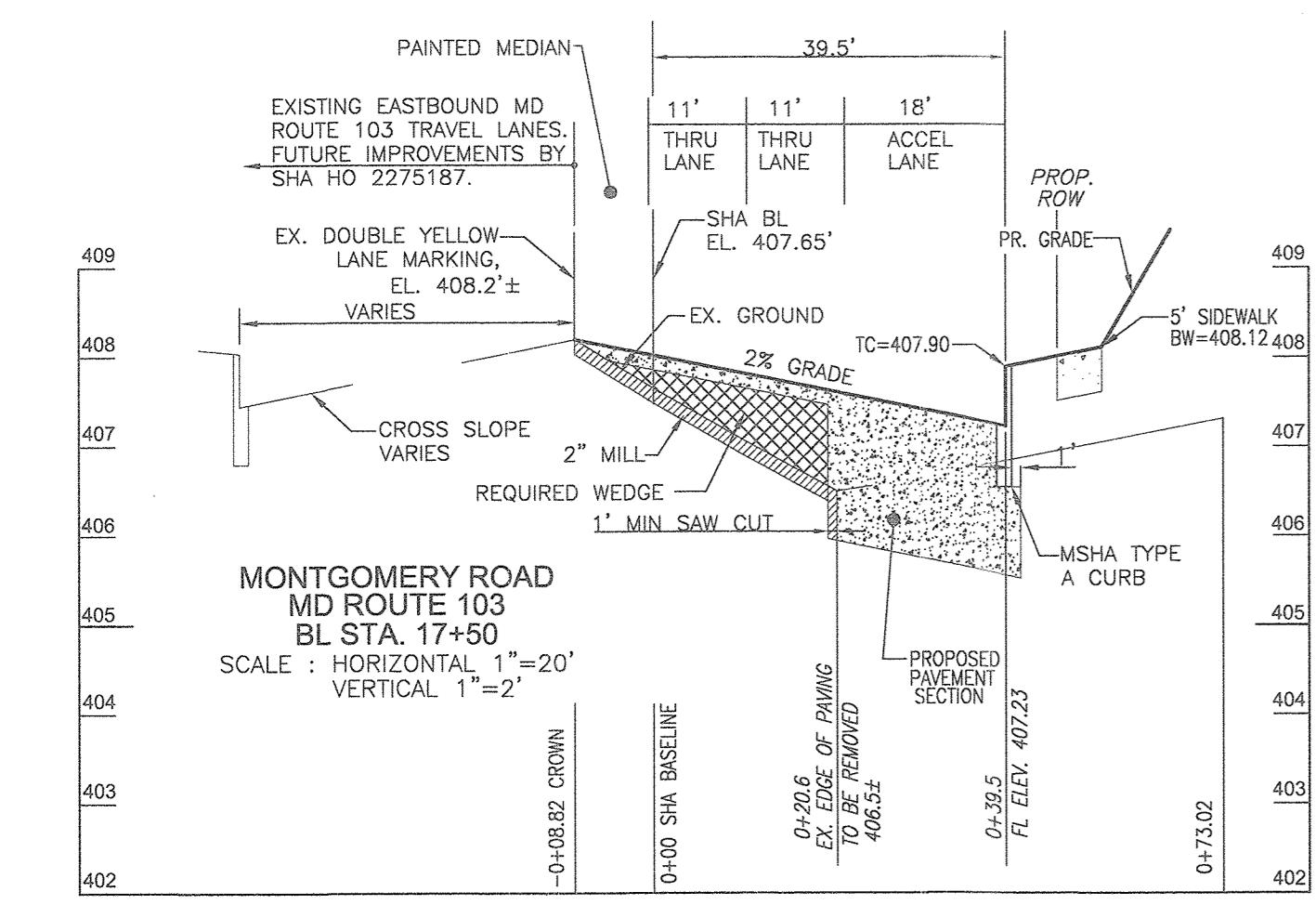
PLAN VIEW - SECTION LOCATIONS
SCALE: 1"=50'



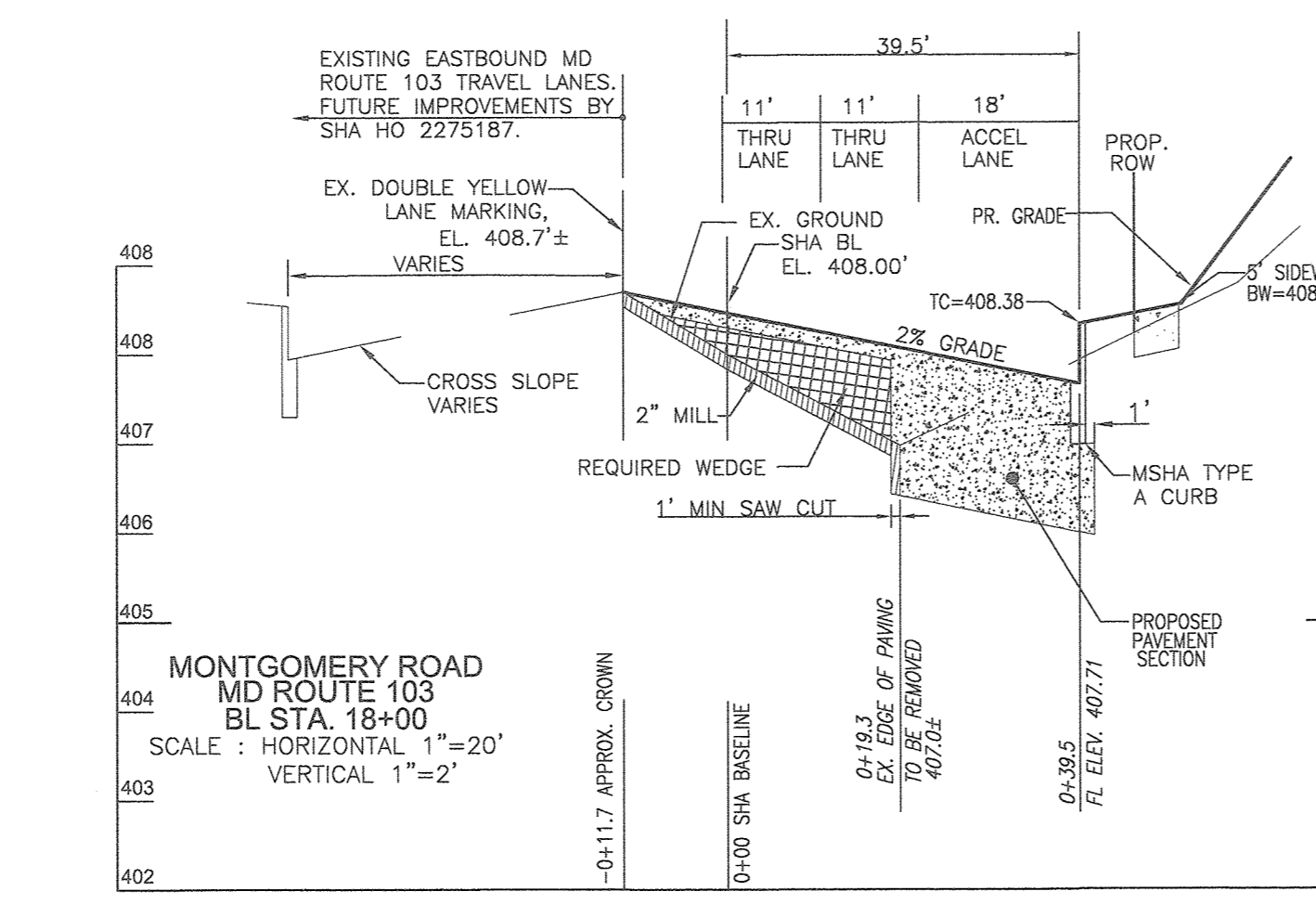
MONTGOMERY ROAD MD ROUTE 103 BL STA. 16+50
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



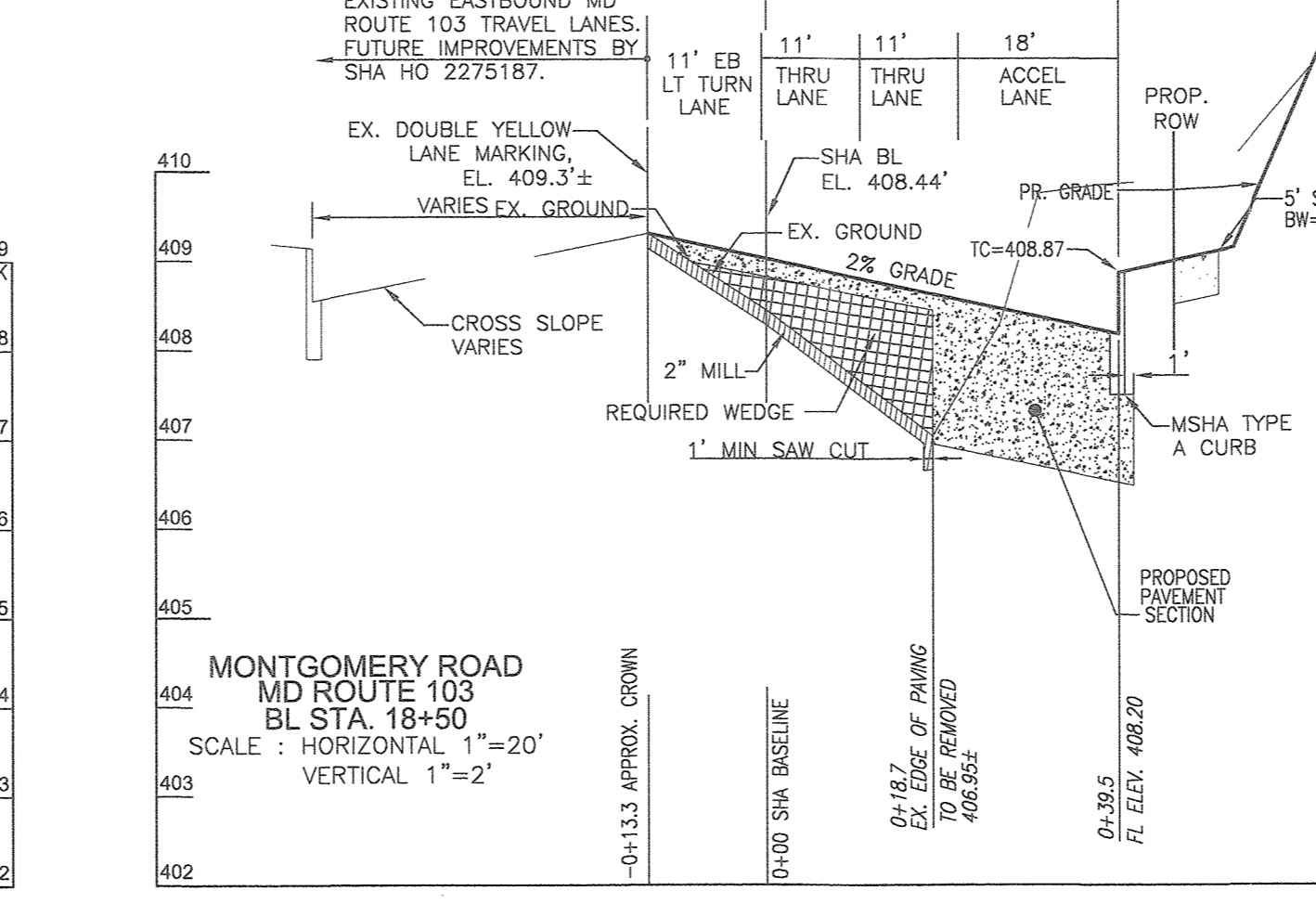
MONTGOMERY ROAD MD ROUTE 103 BL STA. 17+00
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



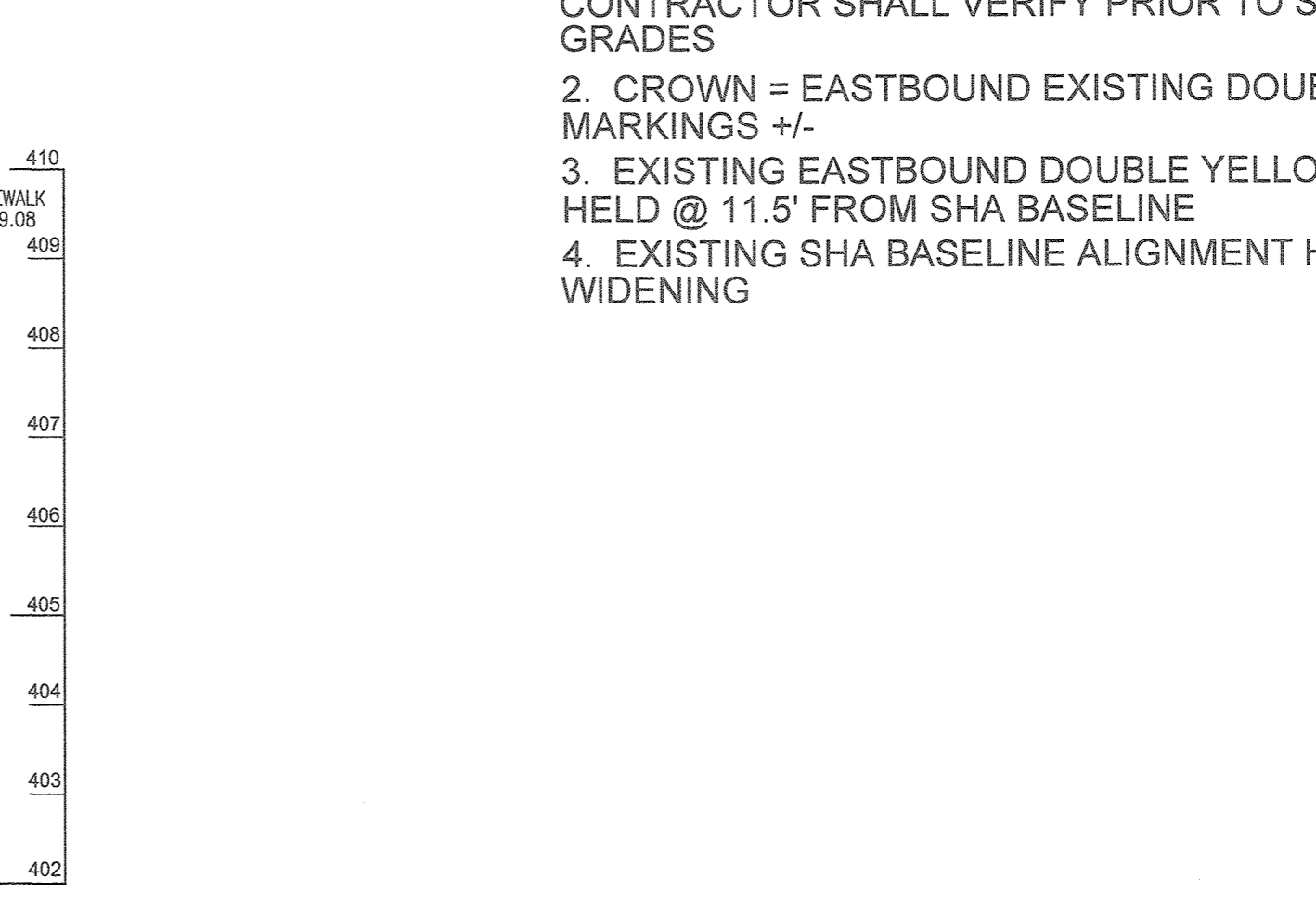
MONTGOMERY ROAD MD ROUTE 103 BL STA. 17+50
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



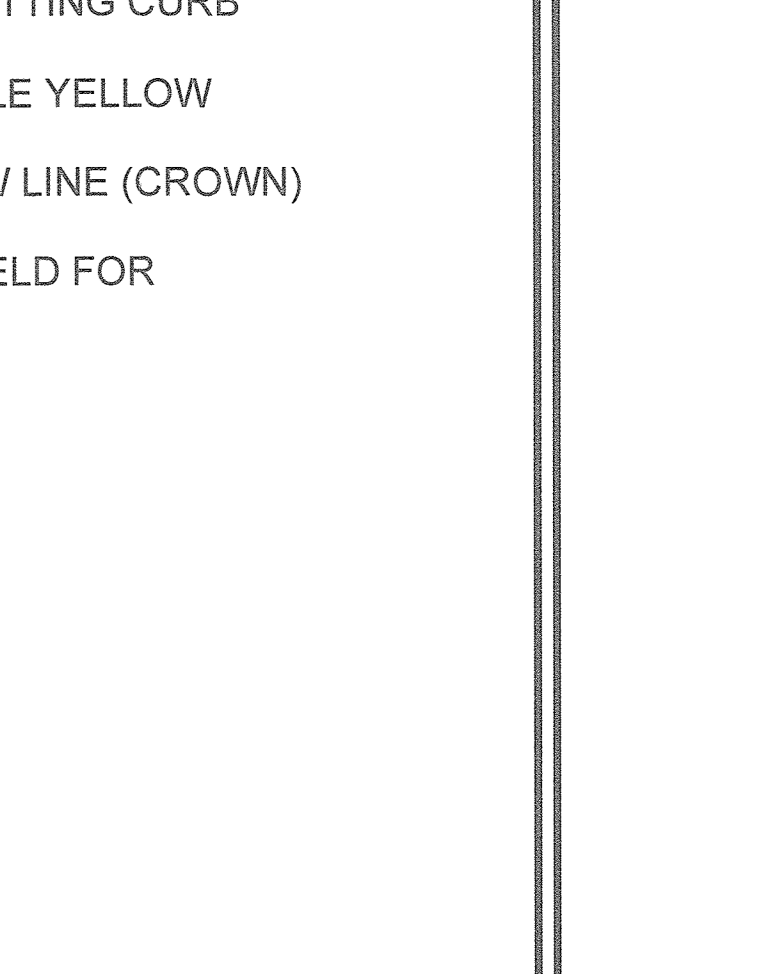
MONTGOMERY ROAD MD ROUTE 103 BL STA. 18+00
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



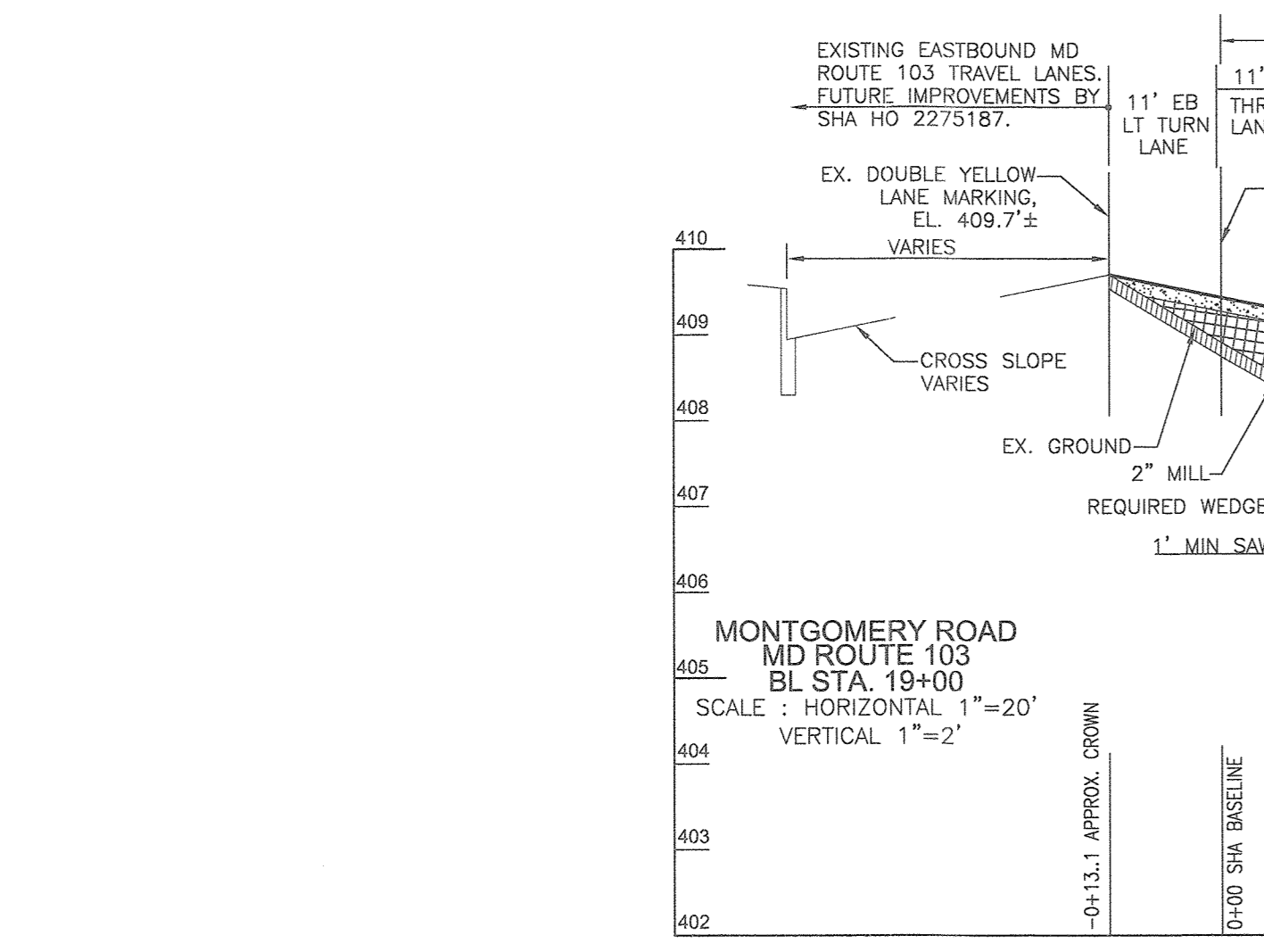
MONTGOMERY ROAD MD ROUTE 103 BL STA. 18+50
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



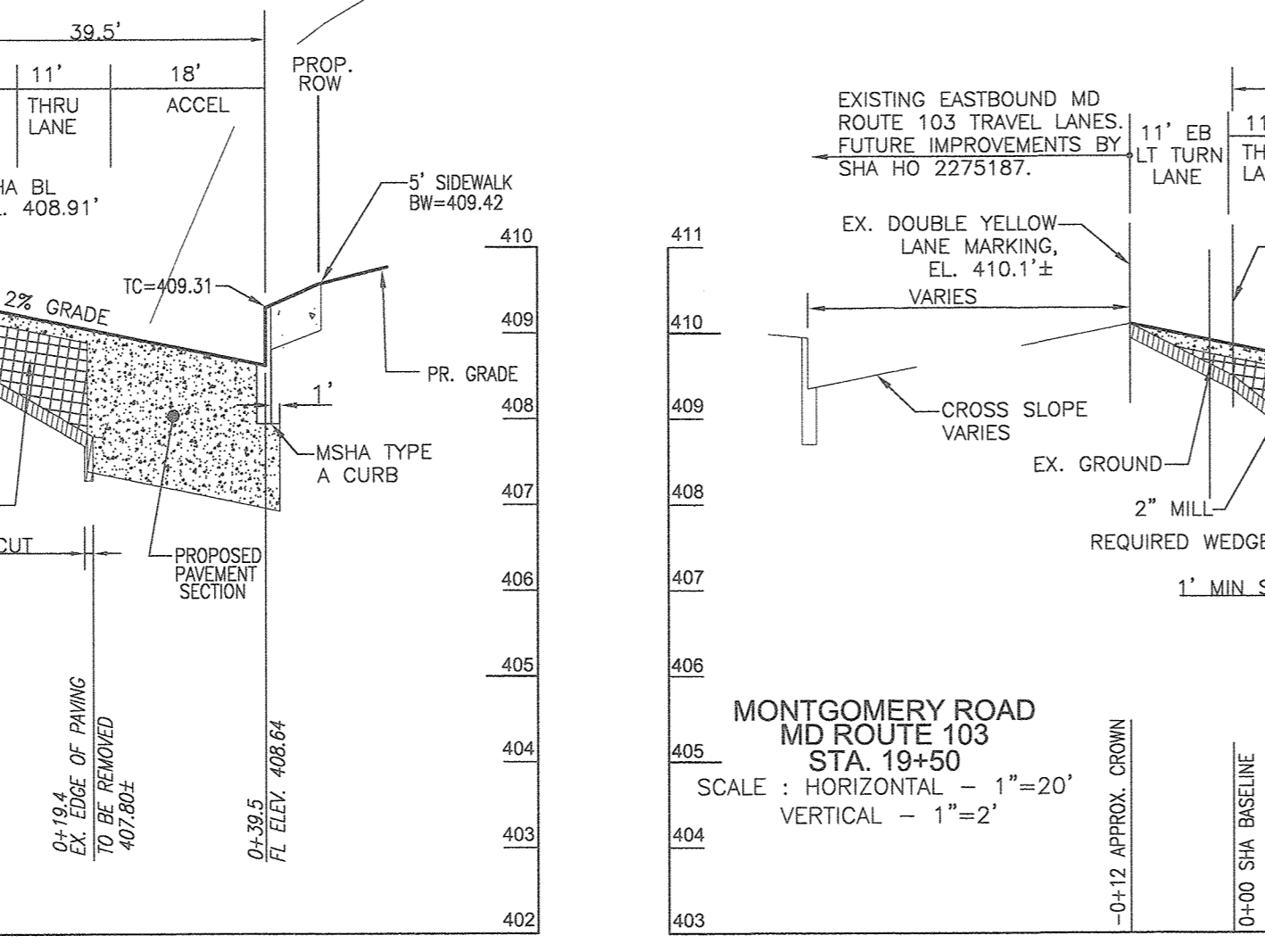
MONTGOMERY ROAD MD ROUTE 103 BL STA. 19+00
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



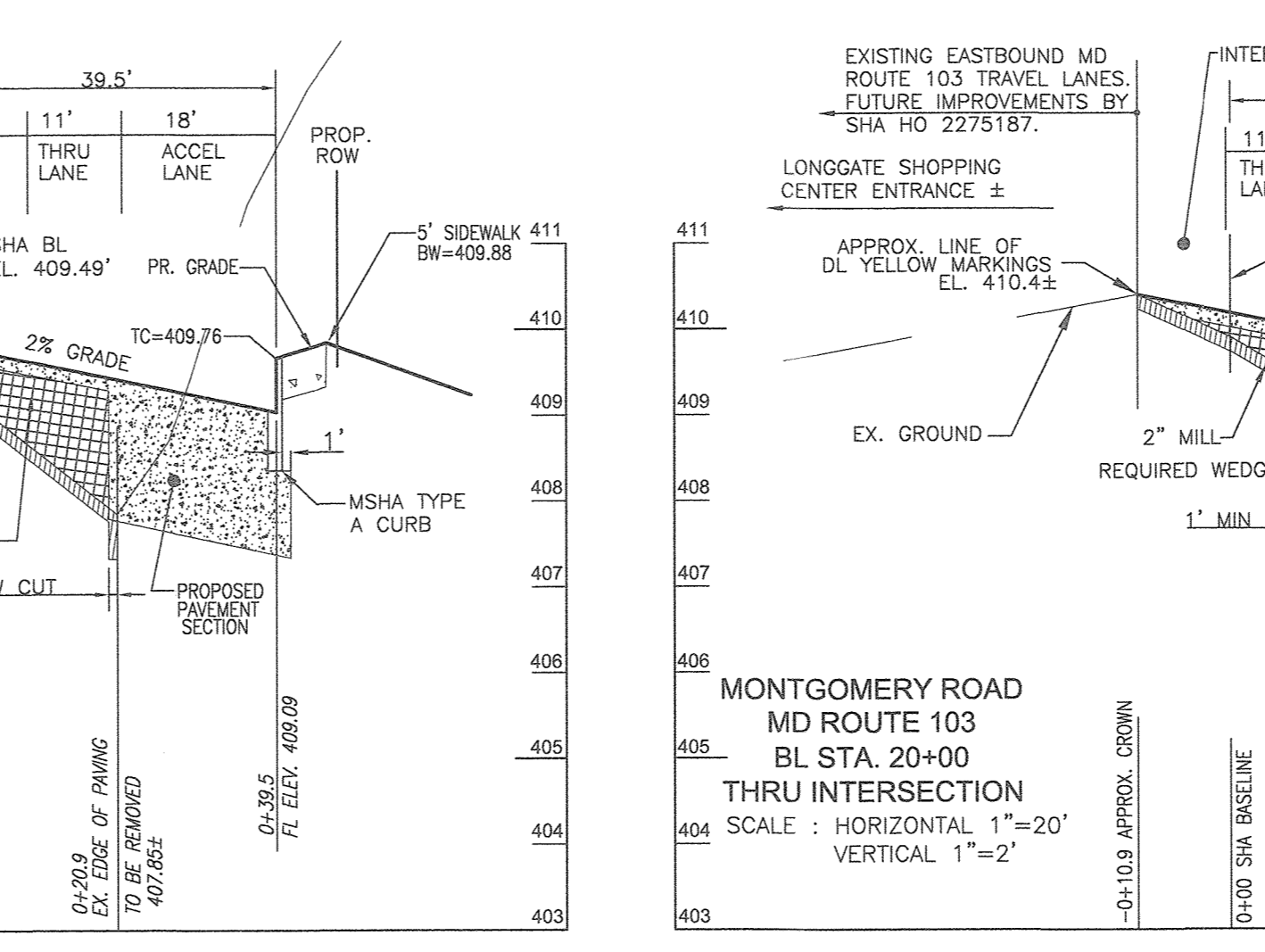
MONTGOMERY ROAD MD ROUTE 103 BL STA. 19+50
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



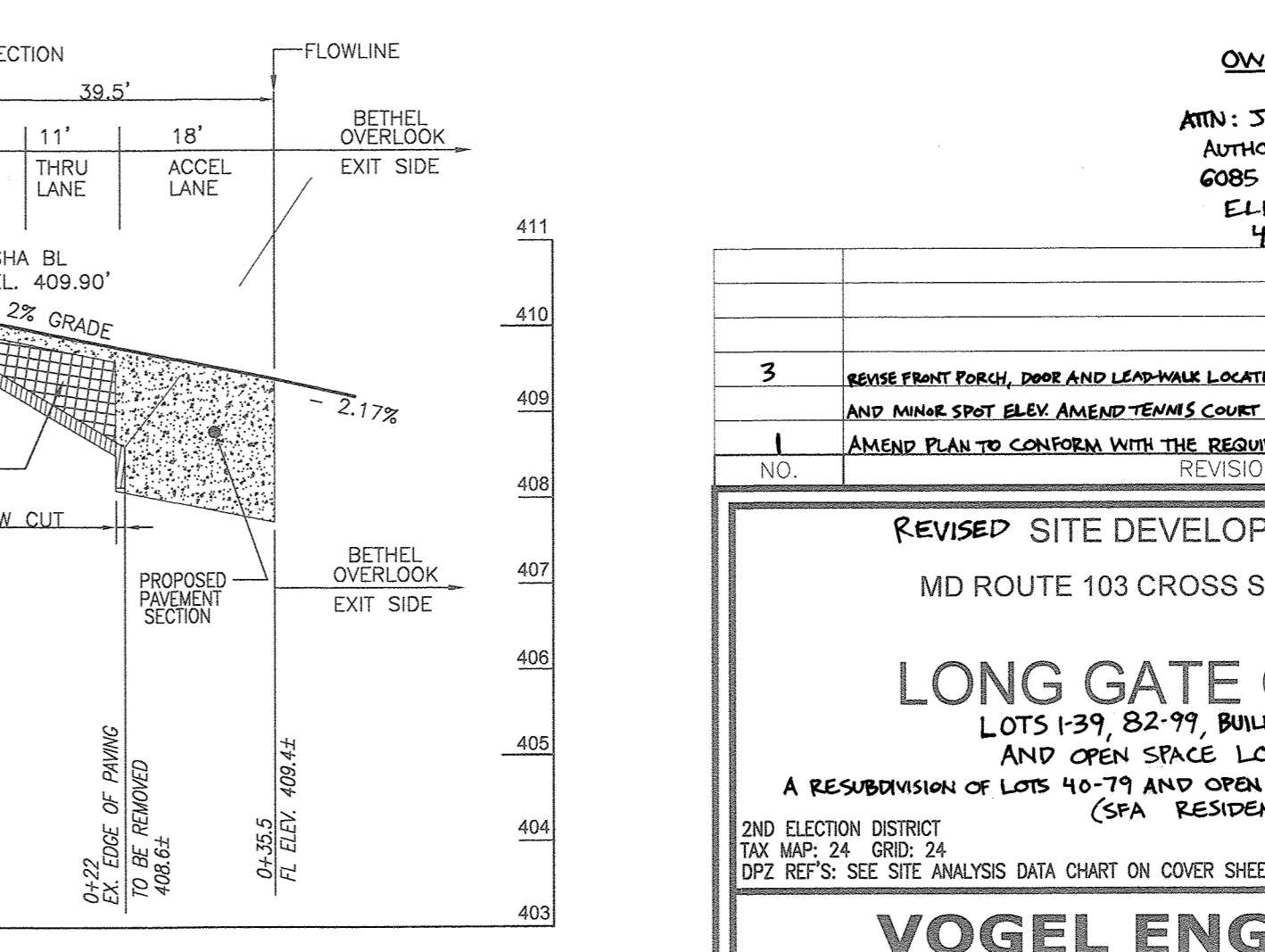
MONTGOMERY ROAD MD ROUTE 103 BL STA. 19+50
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



MONTGOMERY ROAD MD ROUTE 103 BL STA. 20+00
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



MONTGOMERY ROAD MD ROUTE 103 BL STA. 20+00 THRU INTERSECTION
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'



MONTGOMERY ROAD MD ROUTE 103 BL STA. 20+00 THRU INTERSECTION
SCALE: HORIZONTAL 1"=20' VERTICAL 1"=2'

- NOTES:
- EXISTING DOUBLE YELLOW & SHA BL ELEVATIONS TAKEN FROM FIELD SURVEY ON OR ABOUT JUNE 2015 CONTRACTOR SHALL VERIFY PRIOR TO SETTING CURB GRADES
 - CROWN = EASTBOUND EXISTING DOUBLE YELLOW MARKINGS +/-
 - EXISTING EASTBOUND DOUBLE YELLOW LINE (CROWN) HELD @ 11.5' FROM SHA BASELINE
 - EXISTING SHA BASELINE ALIGNMENT HELD FOR WIDENING

OWNER/DEVELOPER
BEAZER HOMES
ATTN: J. MARTIN SHAFFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALEE DRIVE, SUITE 350
ELKROGE, MD 21075
443-539-9249

NO.	REVISION	DATE
3	REVISE FRONT PORCH, DOOR AND LEAD-WALK LOCATION, AMEND SIDEWALK, AMEND FF. ELEV. AND PAVE SPOT ELEV. AMEND TERMS COURT ELEV. REDLINE LS PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	9-28-20

REVISED SITE DEVELOPMENT PLAN
MD ROUTE 103 CROSS SECTIONS AND DETAILS
LONG GATE OVERLOOK
LOTS 139, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
2ND ELECTION DISTRICT ZONED: R-A-15
TAX MAP: 24 GRID: 24 PARCEL(S): SEE GENERAL NOTE 1
DPZ REFS: SEE SITE ANALYSIS DATA CHART ON COVER SHEET HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
TIMMONS GROUP
3300 NORTH RIDGE ROAD, SUITE 110, ELLICOTT CITY, MD 21043
P: 410.461.7566 F: 410.461.8961 www.timmons.com

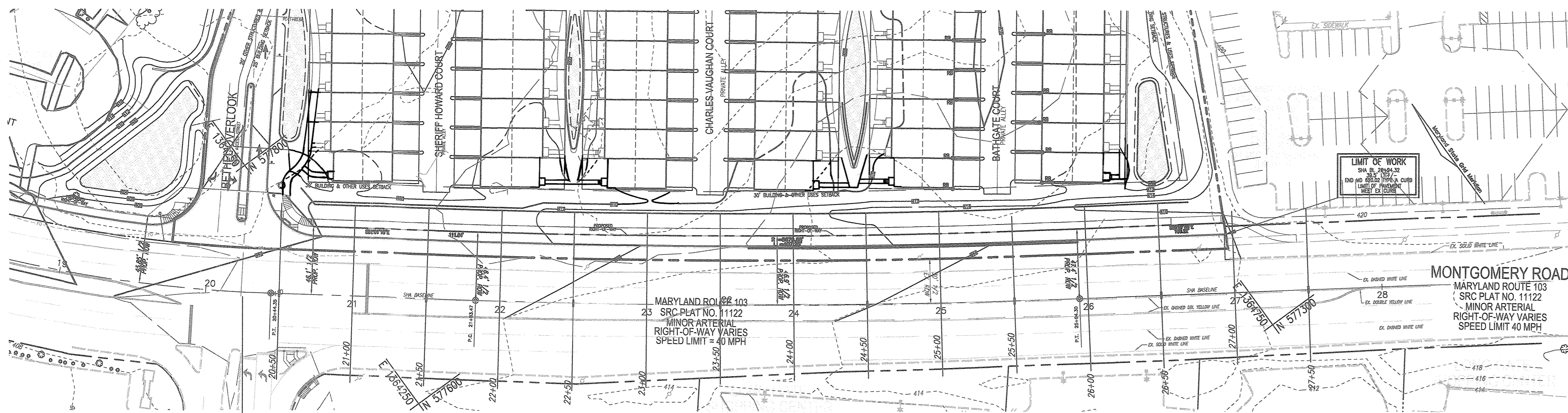
DESIGN BY: RHW/EDS.
DRAWN BY: VETG
CHECKED BY: RHW
DATE: DECEMBER 2019
SCALE: AS SHOWN
W.O. NO.: 08-48

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16183, EXPIRATION DATE: 09-27-2022

ROBERT H. VOGEL, PE No. 16183

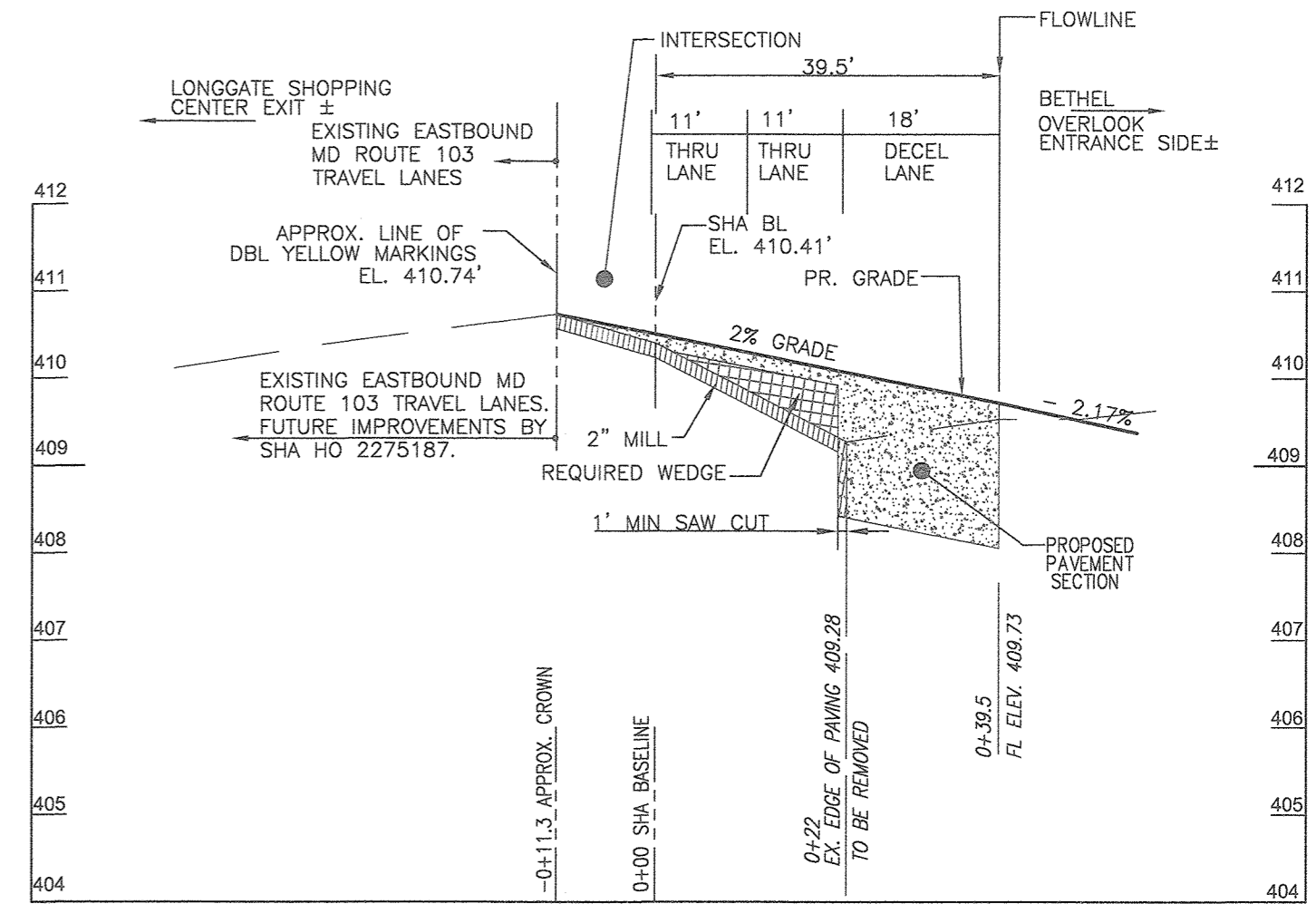
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
12/22/19 DATE
1/3/20 DATE
1-3-20 DATE

NOTE:
WORK SHALL BE COMPLETED IN ACCORDANCE WITH SHA ACCESS PERMIT SHA 14APH0013XX
IF DISCREPANCIES ARE FOUND, SHA ACCESS PERMIT SHA 14APH0013XX SHALL GOVERN



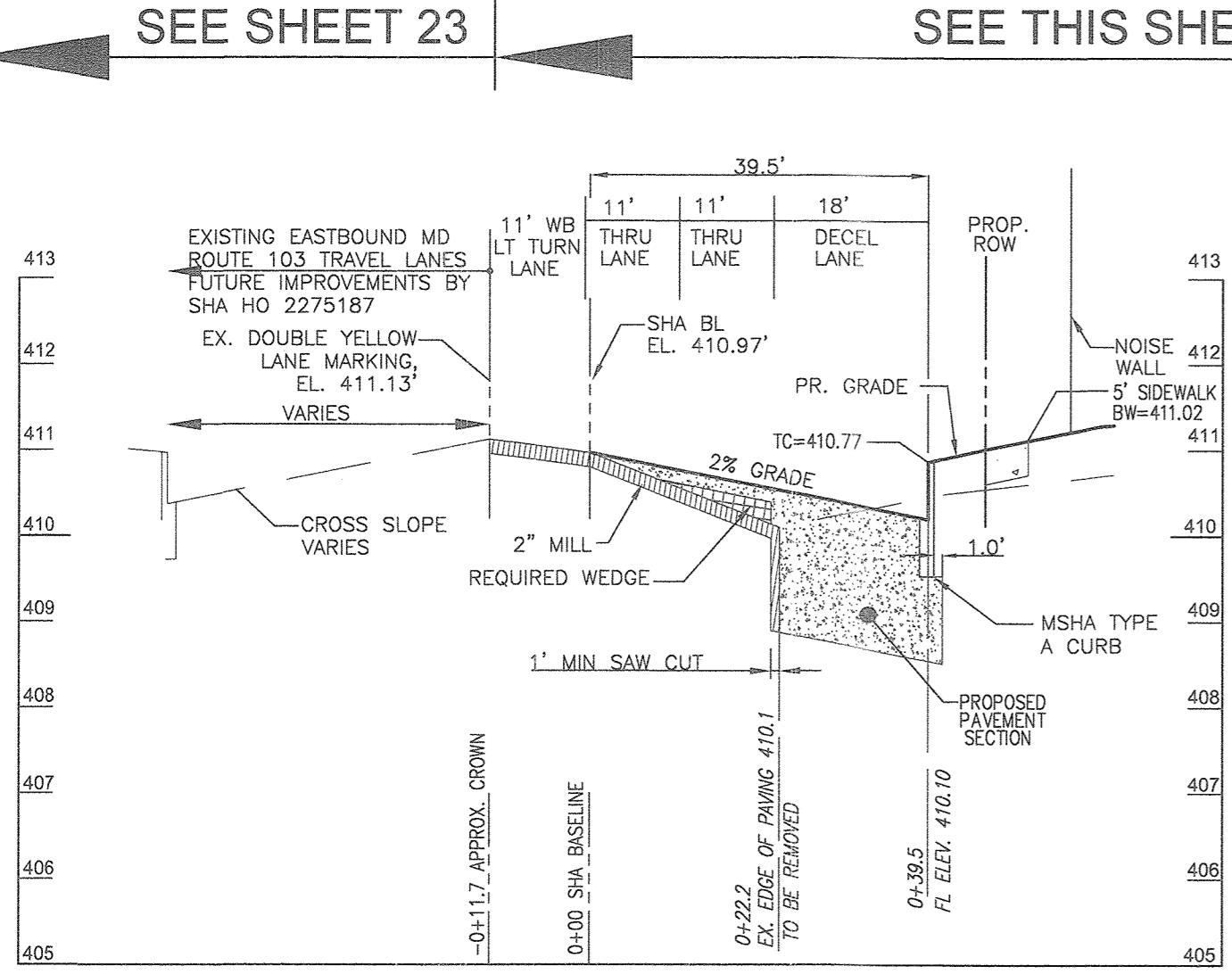
PLAN VIEW - SECTION LOCATIONS

SCALE: 1"=50'



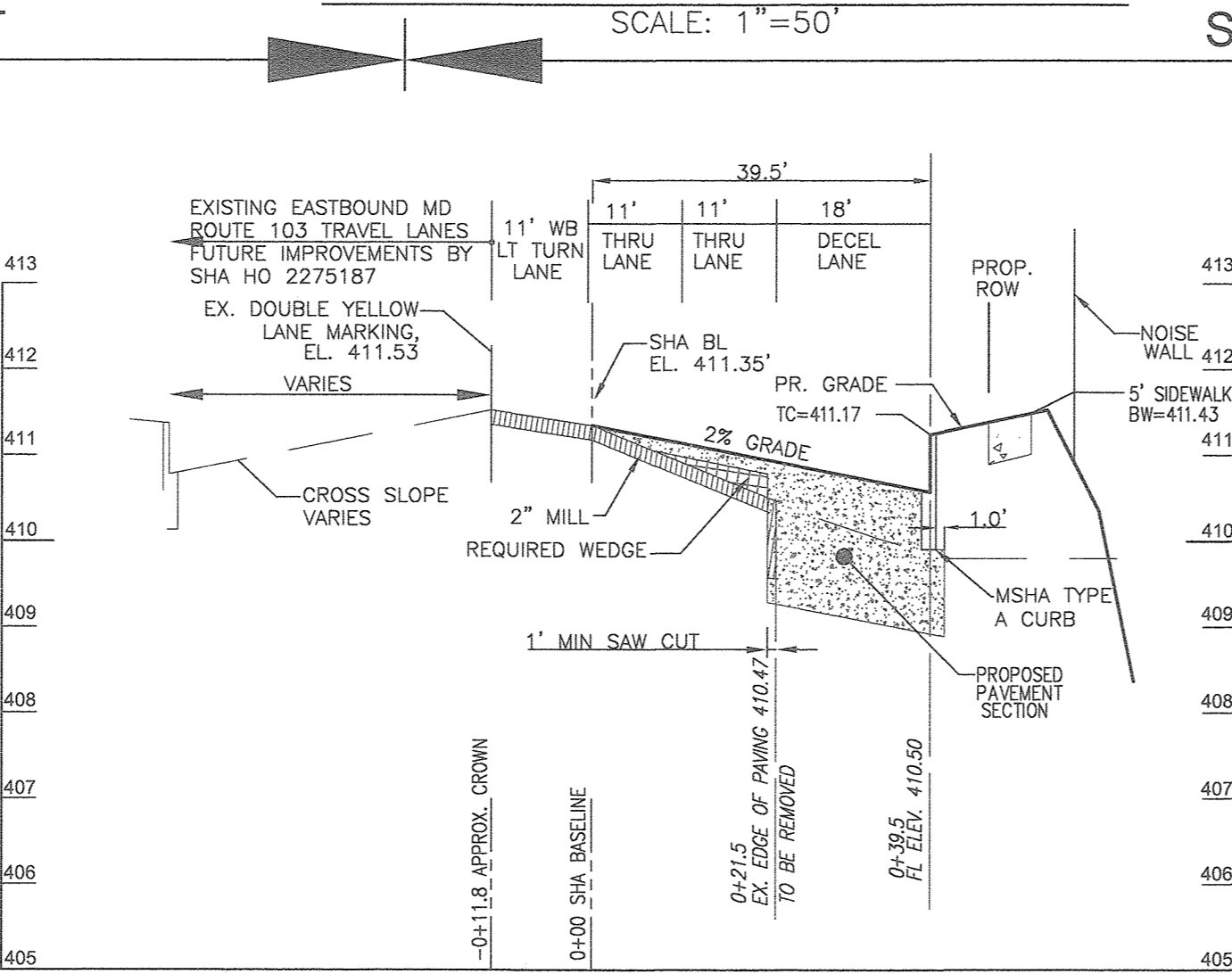
MONTGOMERY ROAD MD ROUTE 103

BL STA. 20+50 THRU INTERSECTION
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'



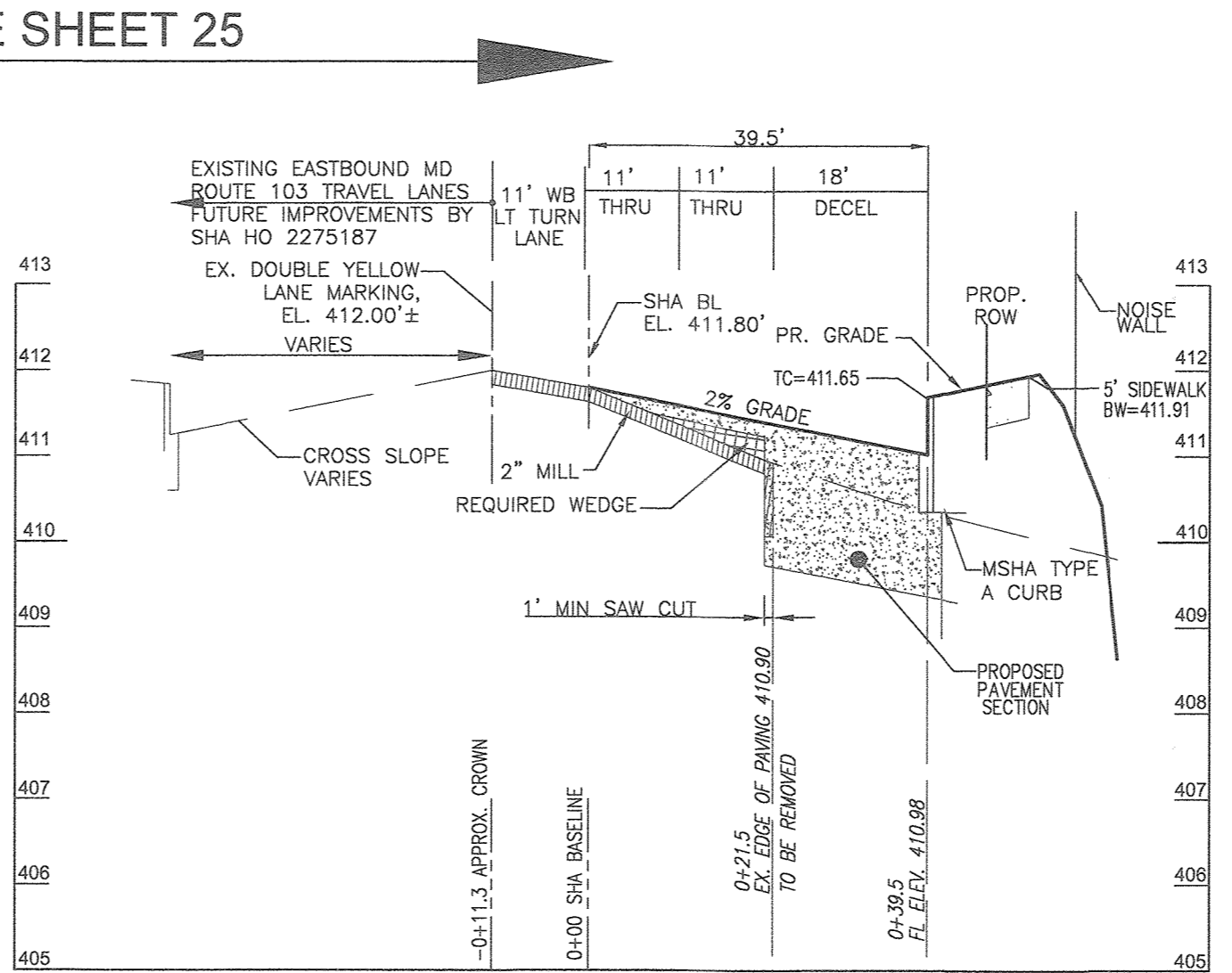
MONTGOMERY ROAD MD ROUTE 103

BL STA. 21+00
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'



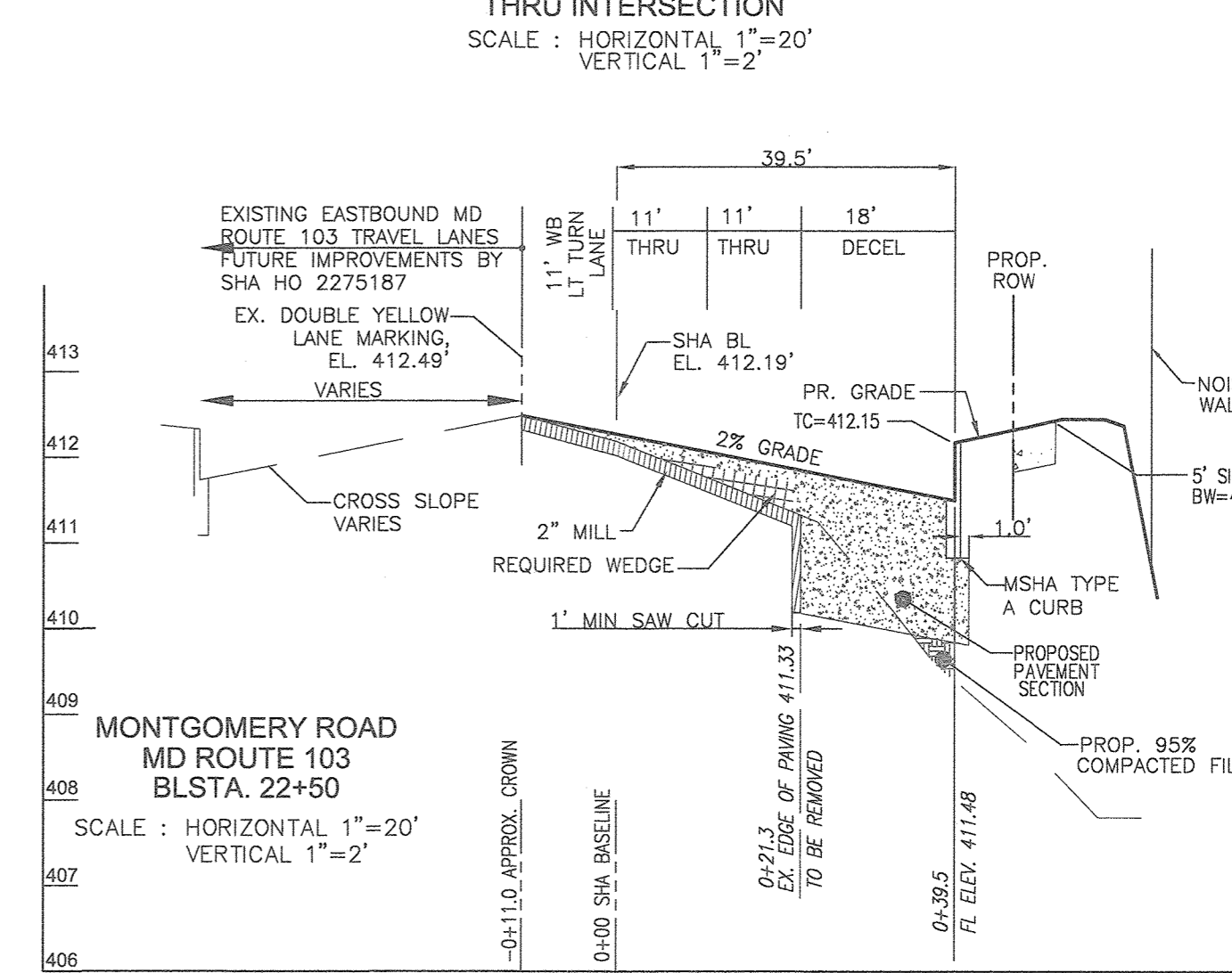
MONTGOMERY ROAD MD ROUTE 103

BL STA. 21+50
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'



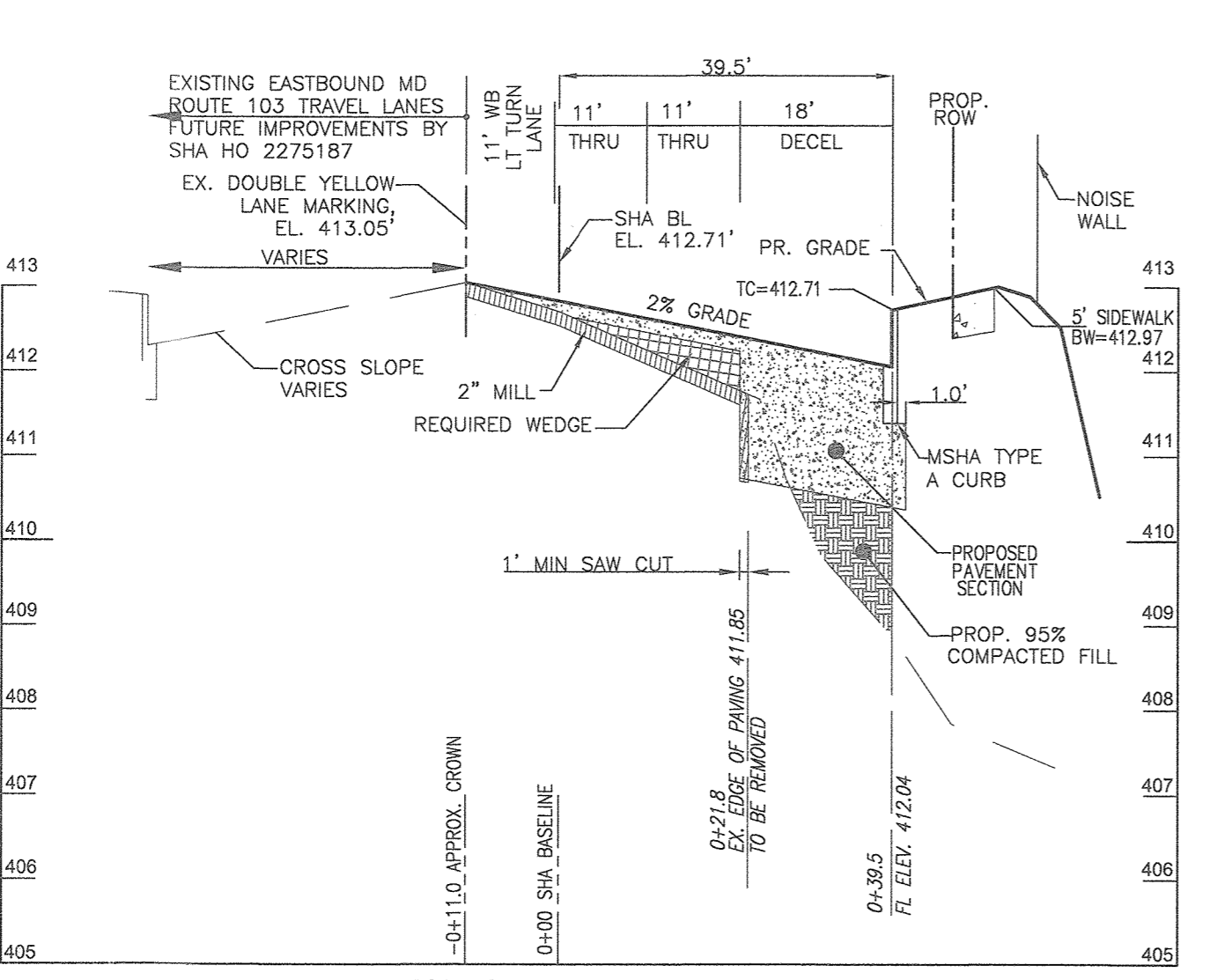
MONTGOMERY ROAD MD ROUTE 103

BL STA. 22+00
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'



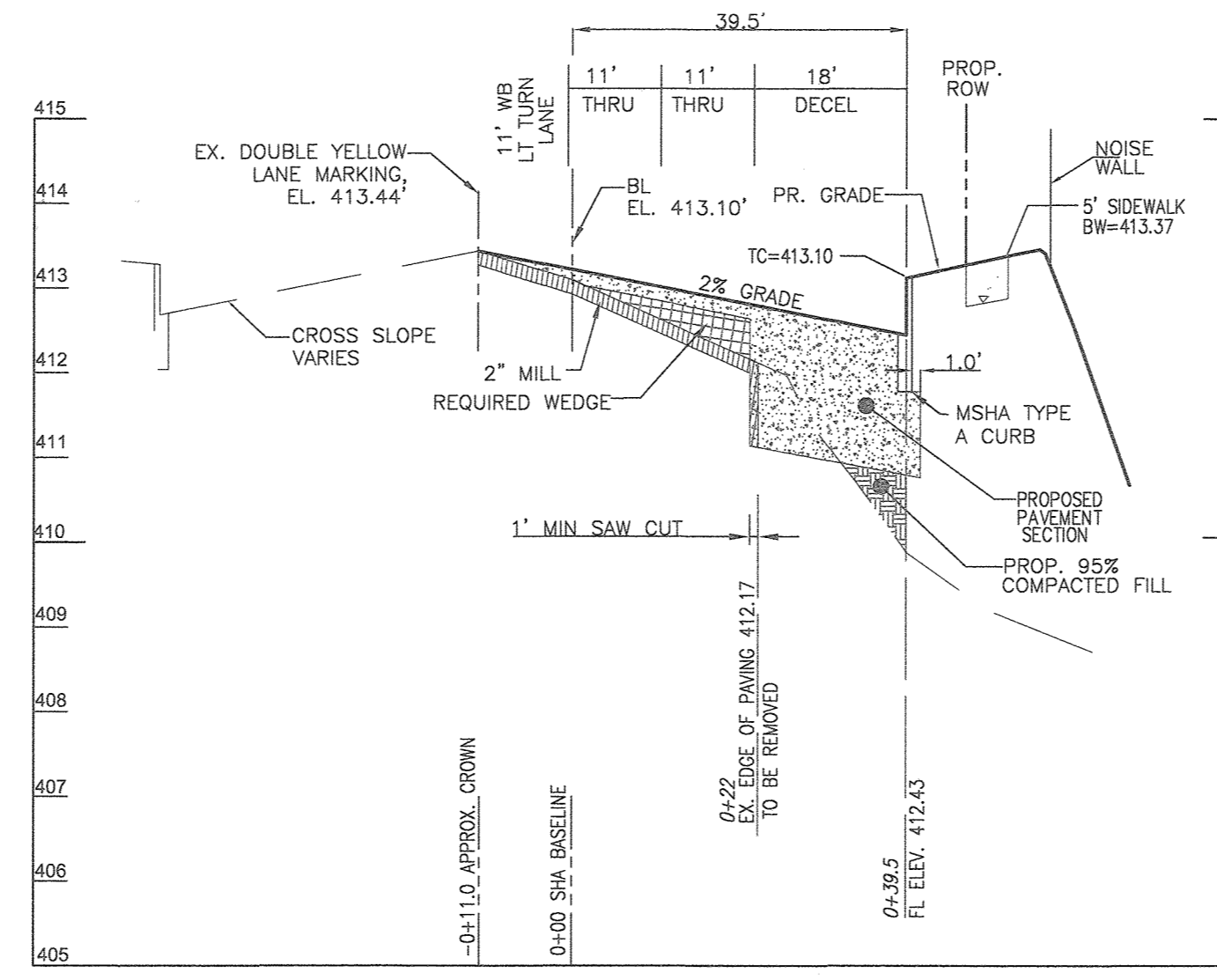
MONTGOMERY ROAD MD ROUTE 103

BL STA. 22+50
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'



MONTGOMERY ROAD MD ROUTE 103

BL STA. 23+00
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'



MONTGOMERY ROAD MD ROUTE 103

BL STA. 23+50
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=2'

- NOTES:
- EXISTING DOUBLE YELLOW & SHA BL ELEVATIONS TAKEN FROM FIELD SURVEY ON OR ABOUT JUNE 2015 CONTRACTOR SHALL VERIFY PRIOR TO SETTING CURB GRADES
 - CROWN = EASTBOUND EXISTING DOUBLE YELLOW MARKINGS +/-
 - EXISTING EASTBOUND DOUBLE YELLOW LINE (CROWN) HELD @ 11.5' FROM SHA BASELINE
 - EXISTING SHA BASELINE ALIGNMENT HELD FOR WIDENING

OWNER/DEVELOPER
BEAZER HOMES
ATTN: J. MARTIN SHAFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
GOBS MARSHALEE DRIVE, SUITE 350
ELKCRIDGE, MD 21075
443-539-9249

NO.	REVISION	DATE
3	REMOVE FRONT PORCH, DOOR AND LEAD WALK LOCATION, AMEND SIDEWALK, AMEND FF ELEV AND G-7-21	12/22/19
1	MINOR SPOT ELEV. AMEND TENNIS COURT ELEV. REPLY L5 PLANTINGS	1/31/20
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	9-28-20

REVISED SITE DEVELOPMENT PLAN
MD ROUTE 103 CROSS SECTIONS AND DETAILS

LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 140-79 AND OPEN SPACE LOT 80 (SPA RESIDENTIAL)

2ND ELECTION DISTRICT
TAX MAP: 24 GRID: 24
DPZ REF'S: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

ZONED: R-A-15
PARCEL(S): SEE GENERAL NOTE 1
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/EDS
DRAWN BY: VETG
CHECKED BY: RHV
DATE: DECEMBER 2019
SCALE: AS SHOWN
W.O. NO.: 08-48

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ROBERT J. VOGEL, PE No. 16183

24 SHEET OF 37

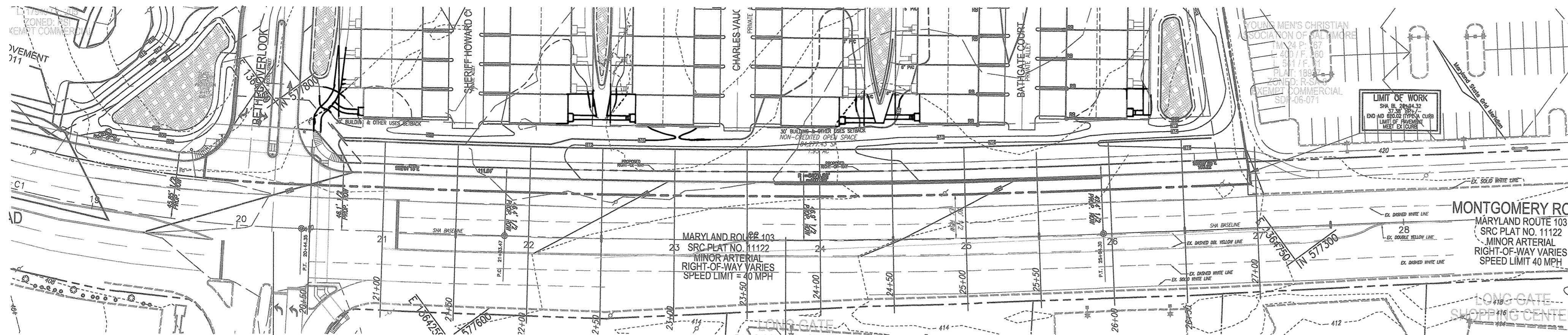
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DEVELOPMENT ENGINEERING DIVISION
12/22/19
DATE

1/31/20
DATE

1-3-20
DATE

NOTE:
WORK SHALL BE COMPLETED IN ACCORDANCE WITH SHA ACCESS PERMIT SHA 14APH0013XX
IF DISCREPANCIES ARE FOUND, SHA ACCESS PERMIT SHA 14APH0013XX SHALL GOVERN

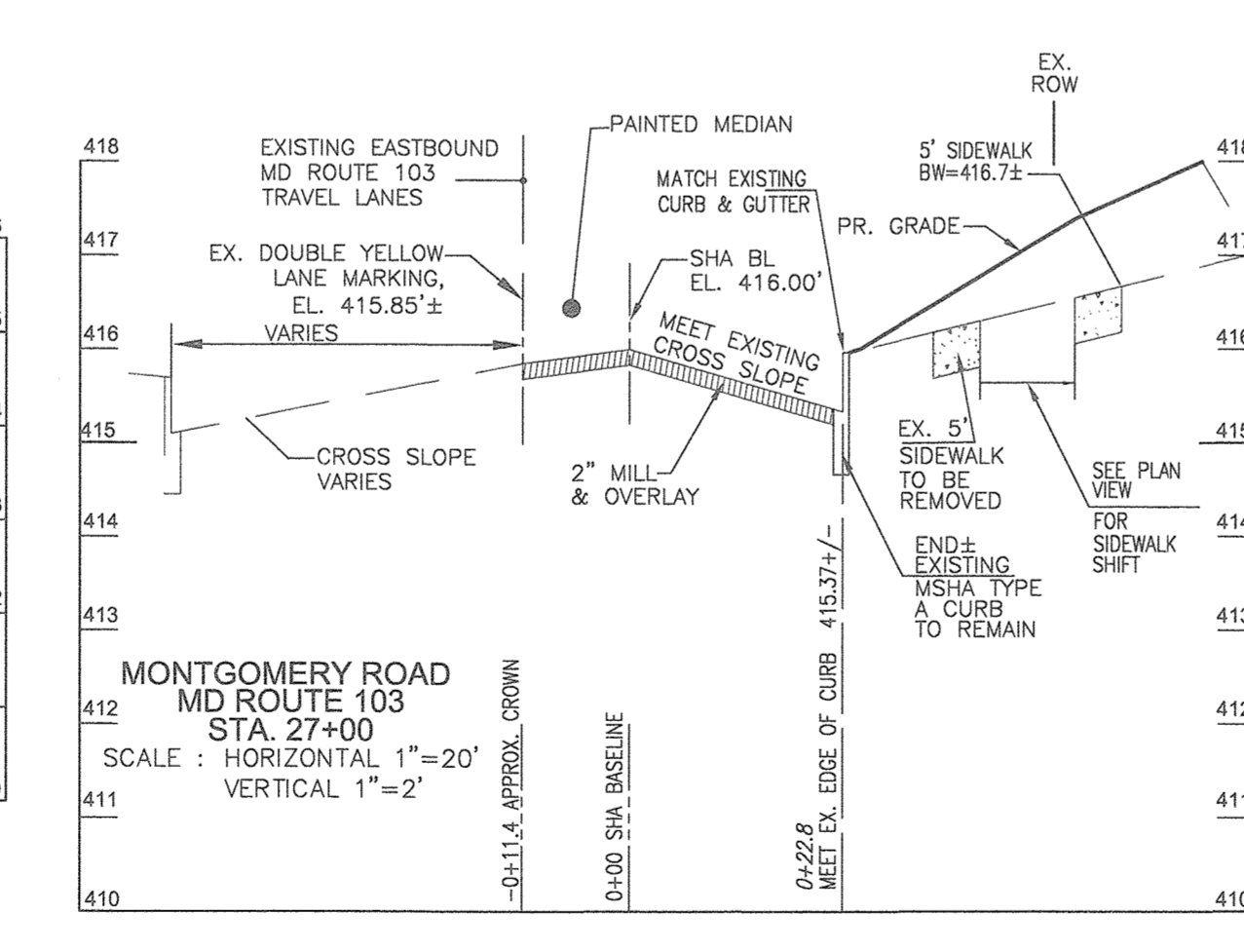
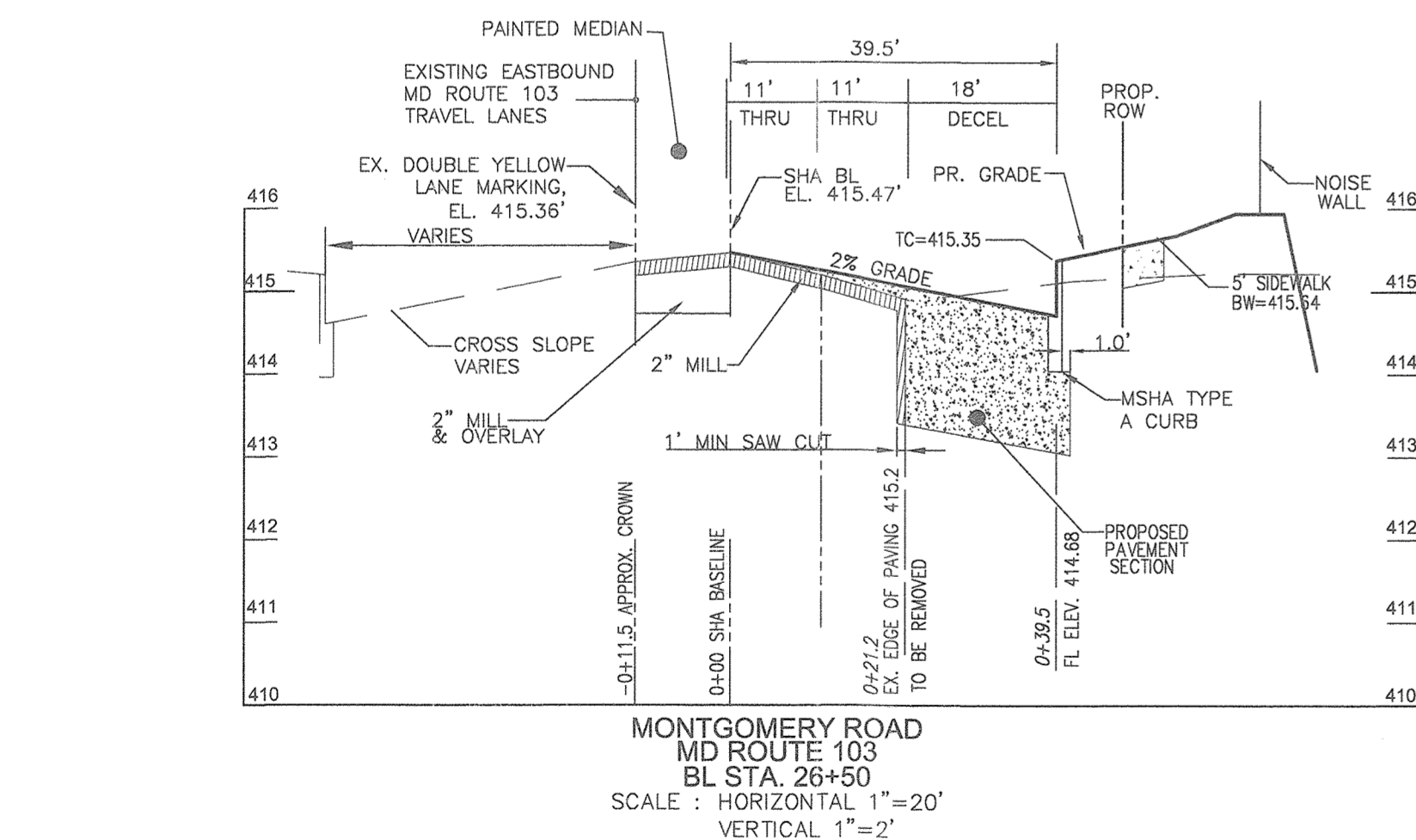
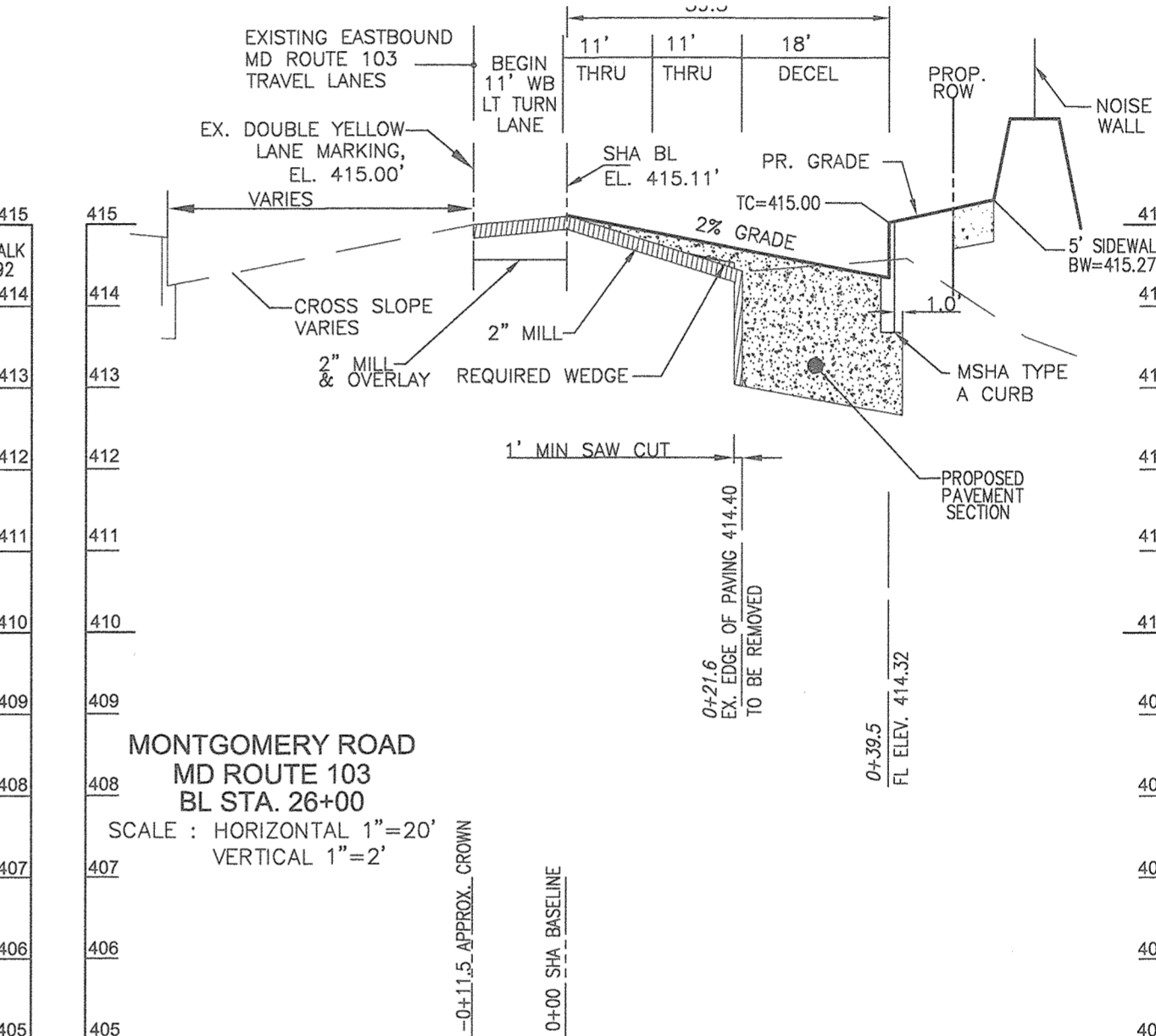
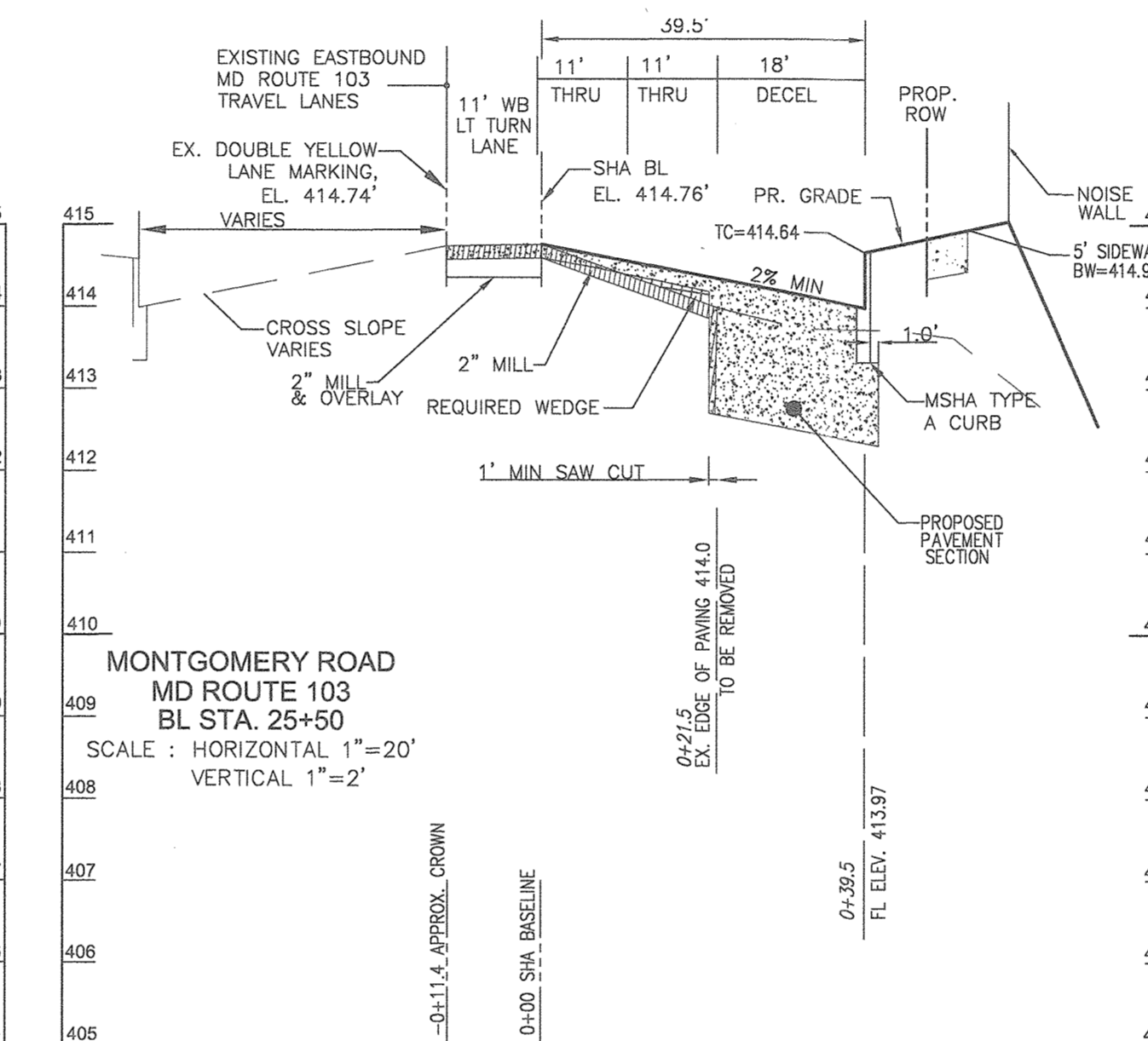
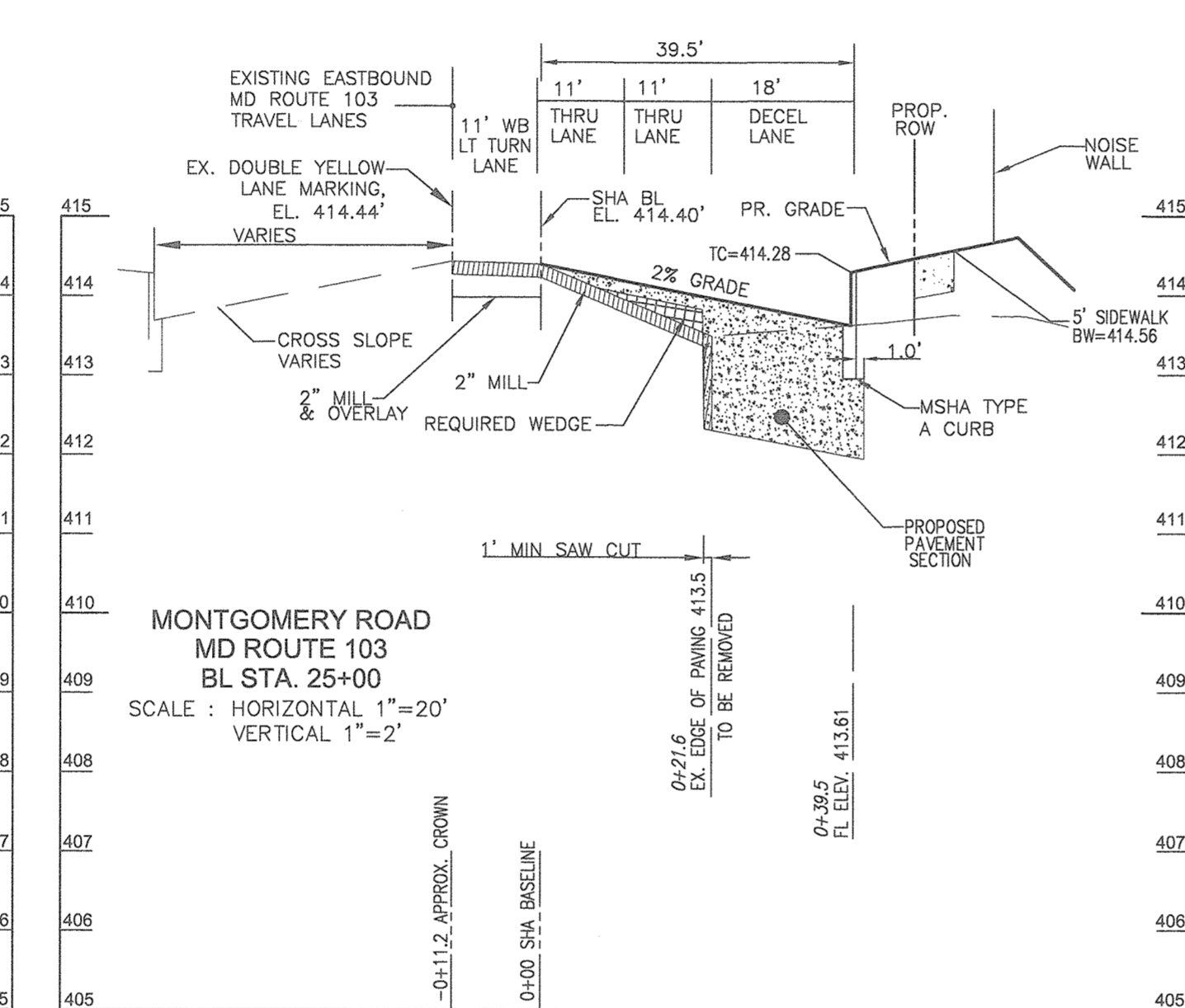
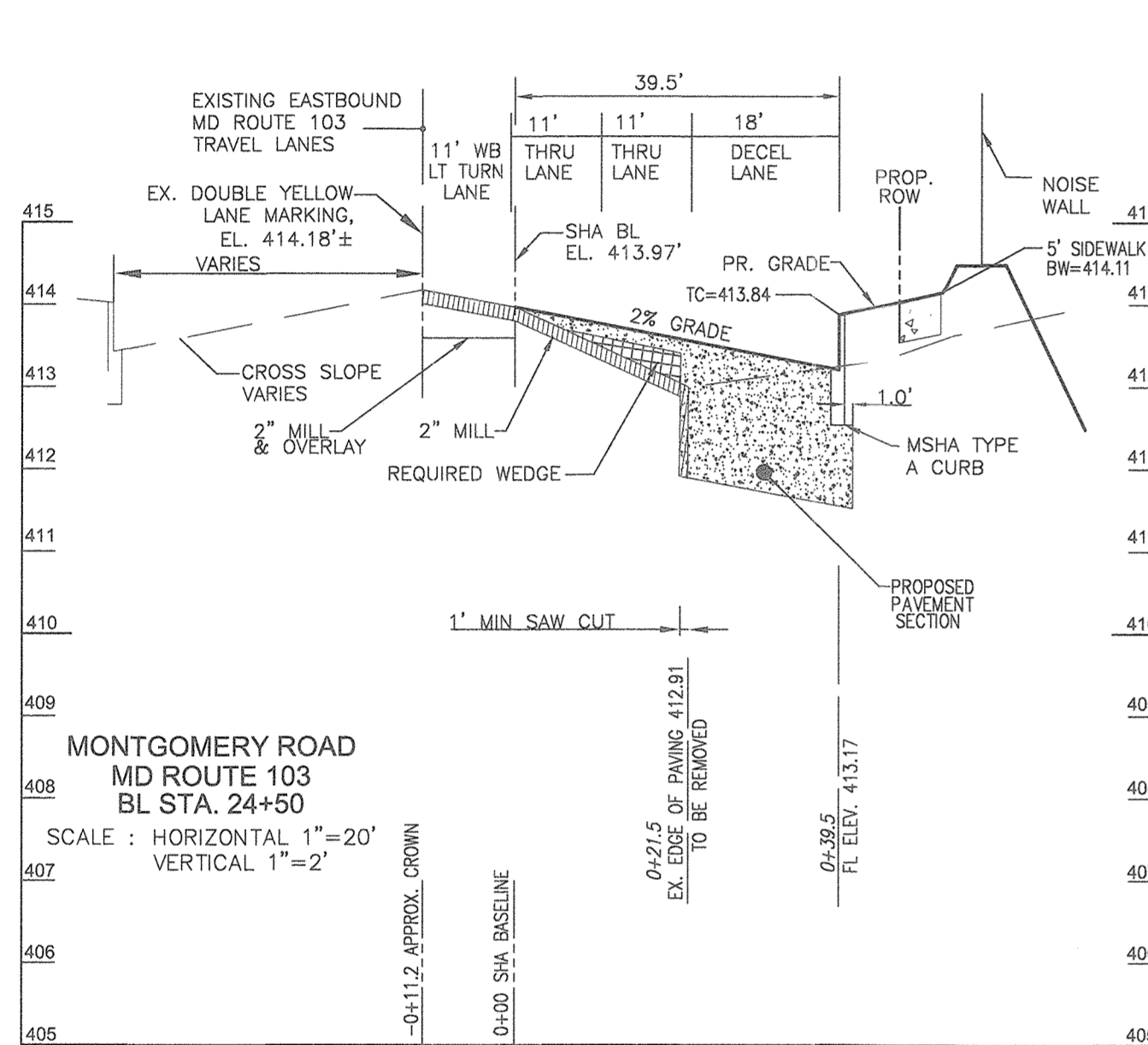


PLAN VIEW - SECTION LOCATIONS
SCALE: 1"=50'

SEE SHEET 23

SEE SHEET 24

SEE THIS SHEET



- NOTES:
- EXISTING DOUBLE YELLOW & SHA BL ELEVATIONS TAKEN FROM FIELD SURVEY ON OR ABOUT JUNE 2015. CONTRACTOR SHALL VERIFY PRIOR TO SETTING CURB GRADES.
 - CROWN = EASTBOUND EXISTING DOUBLE YELLOW MARKINGS +/- CROWN SHIFTS TO BASELINE ± AT OR NEAR SHA BL STATION 25+50 +/-
 - EXISTING EASTBOUND DOUBLE YELLOW LINE (CROWN) HELD @ 11.5' FROM SHA BASELINE
 - EXISTING SHA BASELINE ALIGNMENT HELD FOR WIDENING

NOTE:
WORK SHALL BE COMPLETED IN ACCORDANCE WITH SHA ACCESS PERMIT SHA 14APH0013XX
IF DISCREPANCIES ARE FOUND, SHA ACCESS PERMIT SHA 14APH0013XX SHALL GOVERN

OWNER/DEVELOPER
BEAZER HOMES
ATTN: J. MARTIN SHAFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALEE DRIVE, SUITE 350
ELK RIDGE, MD 21075
443-539-9249

NO.	REVISION	DATE
3	REVISE FRONT PORCH, DOOR AND LEAD-WALK LOCATION. AMEND SIDEWALK AND NO. FE. ELEV. AND MINOR SPOT ELEV. AMEND TENNIS COURT ELEV. REDLINE L.S. PLANTINGS	6-7-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	9-28-20

REVISED SITE DEVELOPMENT PLAN
MD ROUTE 103 CROSS SECTIONS AND DETAILS

LONG GATE OVERLOOK

LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 PLATS-25274-25278
(SFA RESIDENTIAL)

2ND ELECTION DISTRICT TAX MAP: 24 GRID: 24 ZONED: R-A-15
DPZ REF: SEE SITE ANALYSIS DATA CHART ON COVER SHEET PARCEL(S): SEE GENERAL NOTE 1
OF MARYLAND LICENSE NO. 16193 EXPIRATION DATE: 09-27-2022

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/EDS
DRAWN BY: VETG
CHECKED BY: RHV
DATE: DECEMBER 2019
SCALE: AS SHOWN
W.O. NO.: 08-48

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A STATE LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 16193 EXPIRATION DATE: 09-27-2022

25 SHEET OF 37

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION

CHIEF, DIVISION OF LAND DEVELOPMENT

DIRECTOR

12/22/19
DATE

1/3/20
DATE

1-3-20
DATE

LEGEND:

- PROPERTY LINE
- RIGHT-OF-WAY LINE
- ADJACENT PROPERTY LINE
- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING FENCE
- EXISTING TREELINE
- PROPOSED CURB
- PROPOSED STANDARD SIDEWALK
- PROP. MICRO BIORETENTION AREA
- FULL DEPTH PAVEMENT SECTION REQUIRED REFER TO TYPICAL SECTION
- GRINDING, RE'D. 2" MILL, VARIABLE DEPTH WEDGE/LEVEL AND RESURFACING REFER TO TYPICAL SECTION

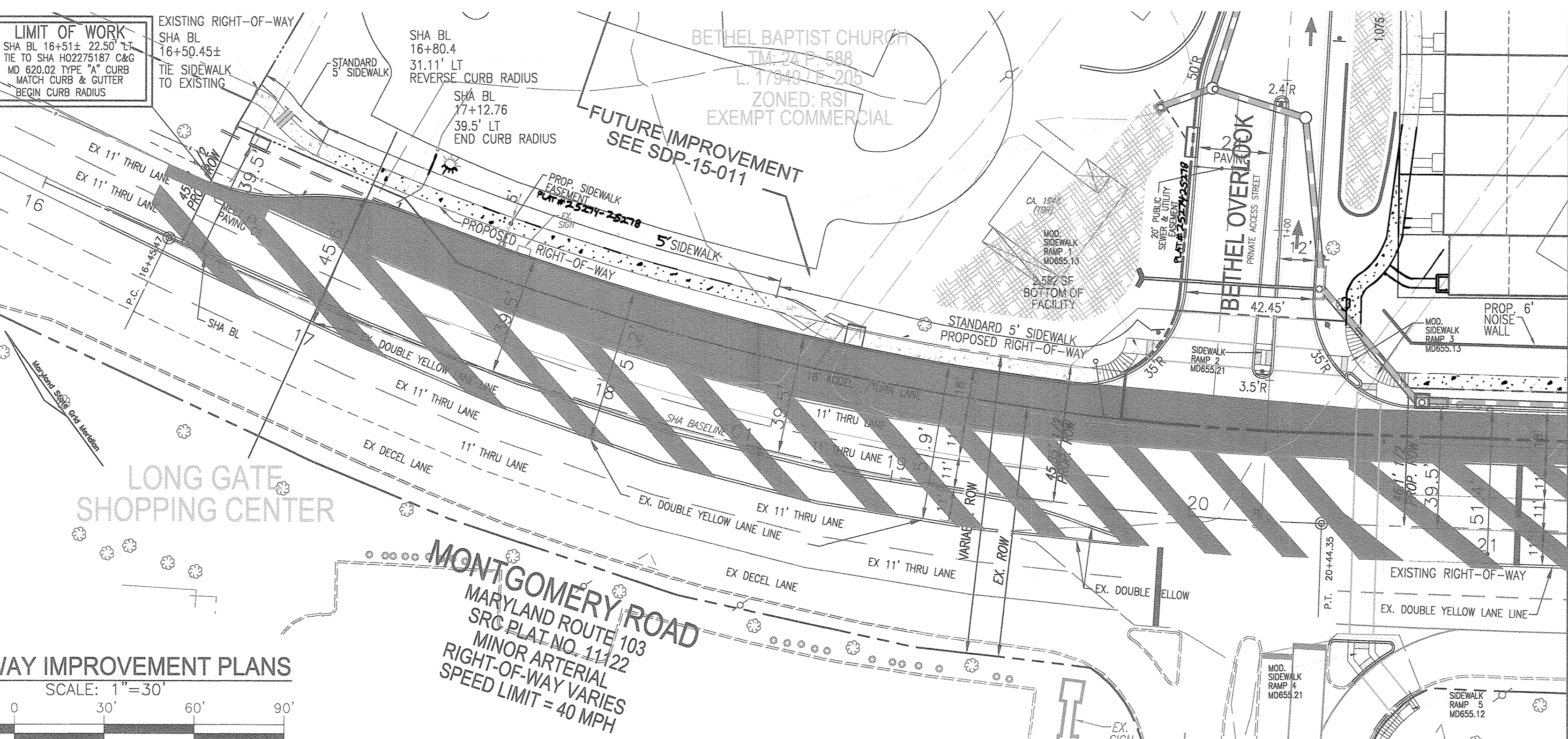
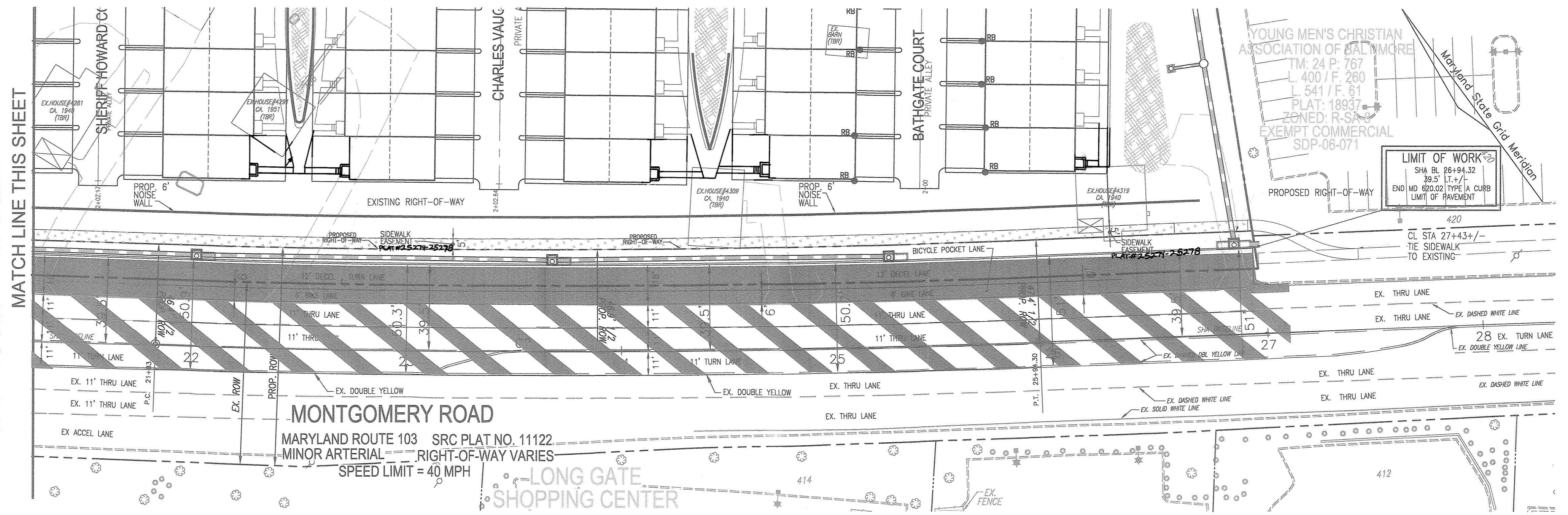
DETAIL OF RAMP 1
SCALE: 1"=20'

DETAIL OF RAMP 2
SCALE: 1"=20'

DETAIL OF RAMP 3
SCALE: 1"=20'

DETAIL OF RAMP 4 & 5
SCALE: 1"=20'

- NOTES:**
- ADA RAMPS TO BE CONSTRUCTED TO SHA STANDARDS AS SPECIFIED HEREON
 - THE DECELERATION / ACCELERATION LANES SHALL BE 11' EXCLUDING THE GUTTER PAN. SEE TYPICAL SECTION
 - FOR TYPICAL SECTIONS, SEE SHEET 21 & 22



ROADWAY IMPROVEMENT PLANS
SCALE: 1"=30'

MD RTE 103 (SHA) PAVING SECTION
N.T.S.

- 2" SUPERPAVE ASPHALT MIX 12.5mm SURFACE (PG 64S-22, LEVEL 2)
- 7" SUPERPAVE MIX 19.0mm FOR BASE (PG 64S-22, LEVEL 2 (2-3.5" LIFTS))
- 6" GRADED AGGREGATE BASE OR 12" CAPPING BORROW

OWNER / DEVELOPER
BEAZER HOMES
ATTN: S. MARTIN SHAFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALLE DRIVE, SUITE 3500
ELK RIDGE, MD 21075
443-539-9249

NO.	REVISION	DATE
7	REVISE PERMEABLE SIDEWALK TO CONCRETE SIDEWALK ALONG RT 103	10-13-21
3	REVISE FRONT PORCH, DOOR AND LEAD-PANKE LOCATION. AMEND SIDEWALK AND RAMP FF ELEV AND	6-7-21
	CHANGE SPOT ELEV. AMEND TRINITY COURT ELEV. REDLINE L-5 PLANTING	
	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	9-28-20

REVISED SITE DEVELOPMENT PLAN
ROADWAY IMPROVEMENT

LONG GATE OVERLOOK
LOTS 1-29, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 PLATS 25274-25278
(SFA RESIDENTIAL)

2ND ELECTION DISTRICT
TAX MAP: 24 GRID: 24
DPZ REF'S: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

ZONED: R-4-15
PARCEL(S): SEE GENERAL NOTE 1
HOWARD COUNTY, MARYLAND

VOGEL ENGINEERING
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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: RHY/EDS
DRAWN BY: VETG
CHECKED BY: RHY
DATE: DECEMBER 2019
SCALE: AS SHOWN
W.O. NO.: 08-48

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2022

26 SHEET OF 37

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature]
DATE: 12/22/19

CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature]
DATE: 1/3/20

DIRECTOR
[Signature]
DATE: 1-3-20

NOTE:
WORK SHALL BE COMPLETED IN ACCORDANCE WITH SHA ACCESS PERMIT SHA 14APH0013XX
IF DISCREPANCIES ARE FOUND, SHA ACCESS PERMIT SHA 14APH0013XX SHALL GOVERN

Material	Specification/Test Method	Size	Notes
sand	ASTM A-33 concrete sand	0.075" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
peat	ash content: < 15% pH range: 5.2 to 6.9 loose bulk density: 0.12 to 0.15 g/cc	n/a	The material must be red-edge boric peat, shredded, uncompacted, uniform, and clean.
leaf compost	AAASIT0-M-43	0.375" to 0.75"	
underdrain gravel	ASTM-D-4833 (granular strength-125 lb.) ASTM-D-4832 (Tensile Strength - 300 lb.)	0.800" max equivalent opening size of #80 sieve	Must maintain 125 gms per sq. ft. flow rate. Note: a 4" pea gravel layer may be substituted for geotextiles meant to "separate" filter fabric layers. SIDS: ONLY USE 4" PEA GRAVEL BETWEEN SAND & UNDERDRAIN STONE.
impermeable liner (if required)	ASTM-D-4833 (thickness) ASTM-D-412 (tensile strength 1,100 lb., elongation 300%) ASTM-D-624 (Tear resistance - 150 lb/in) ASTM-D-471 (water absorption: +8 to -2% mass)	30 mil thickness	Liner to be ultraviolet resistant. A geotextile fabric should be used to protect the liner from puncture.
underdrain piping	1" DIA. Type PS 28 or AASIT0-M-278	4" - 6" PVC schedule 40 PIP or SDR35	3/8" PVC @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; see necessary underdrain pipes
concrete (cast-in-place)	MSHA Standards and Specs. Section 902, Min No. 3, F _c = 3500 psi, normal weight, air-entrained; per pre-cast manufacturer	n/a	on-site testing of poured-in-place concrete required. 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland
concrete (pre-cast)	ASTM A-36	n/a	SEE ABOVE NOTE
non-woven geotextile	ASTM A-36	n/a	structural geotextile to be hot-dipped galvanized ASTM-A123

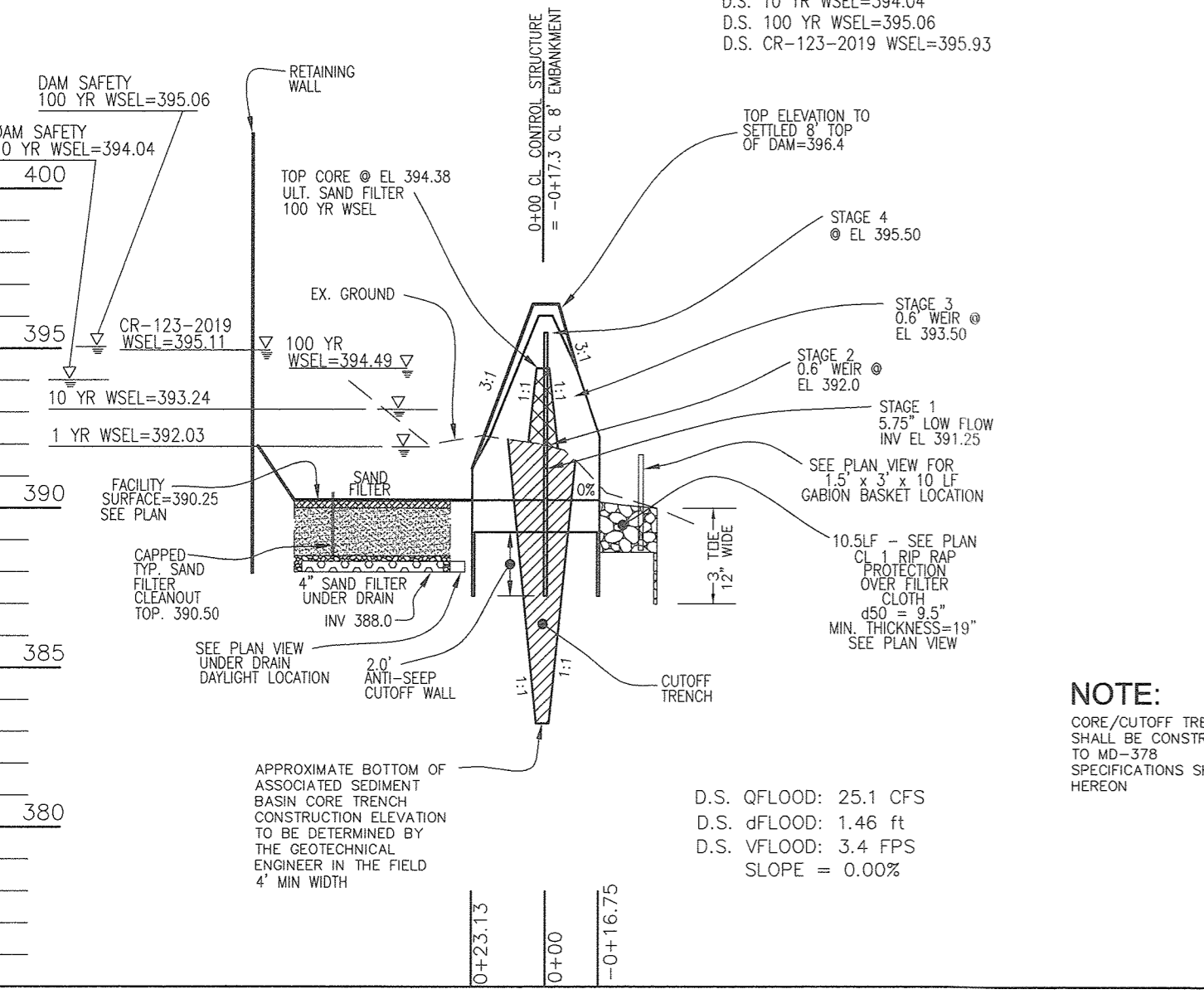
Appendix B.3 Construction Specifications for Sand Filters, Biosession and Open Channels

- B.3.A Sand Filter Specifications**
- Material Specifications for Sand Filters**
The allowable materials for sand filter construction are detailed in Table B.3.1.
 - Sand Filter Testing Specifications**
Underground sand filters, facilities within sensitive groundwater aquifers, and filters designed to serve within hot spots are to be tested for water tightness prior to placement of filter media. Entrances and exits should be plugged and the system completely filled with water to demonstrate water tightness. Water tightness means no leakage for a period of 6 hours.
All overflow weirs, multiple outlets and flow distribution slots are to be field-tested to verify adequate distribution of flows.
 - Sand Filter Construction Specifications**
Provide sufficient maintenance access (i.e., 12-foot-wide road with legally recorded easement). Vegetated access slopes are to be a maximum of 10%; grass slopes to 15%; gravel slopes to 25%.
Absolutely no runoff is to enter the filter until all contributing drainage areas have been stabilized.
Surface of filter bed is to be level.
All underground sand filters should be clearly delineated with signs so that they may be located when maintenance is due.
Surface sand filters may be planted with appropriate grasses; see Appendix A.

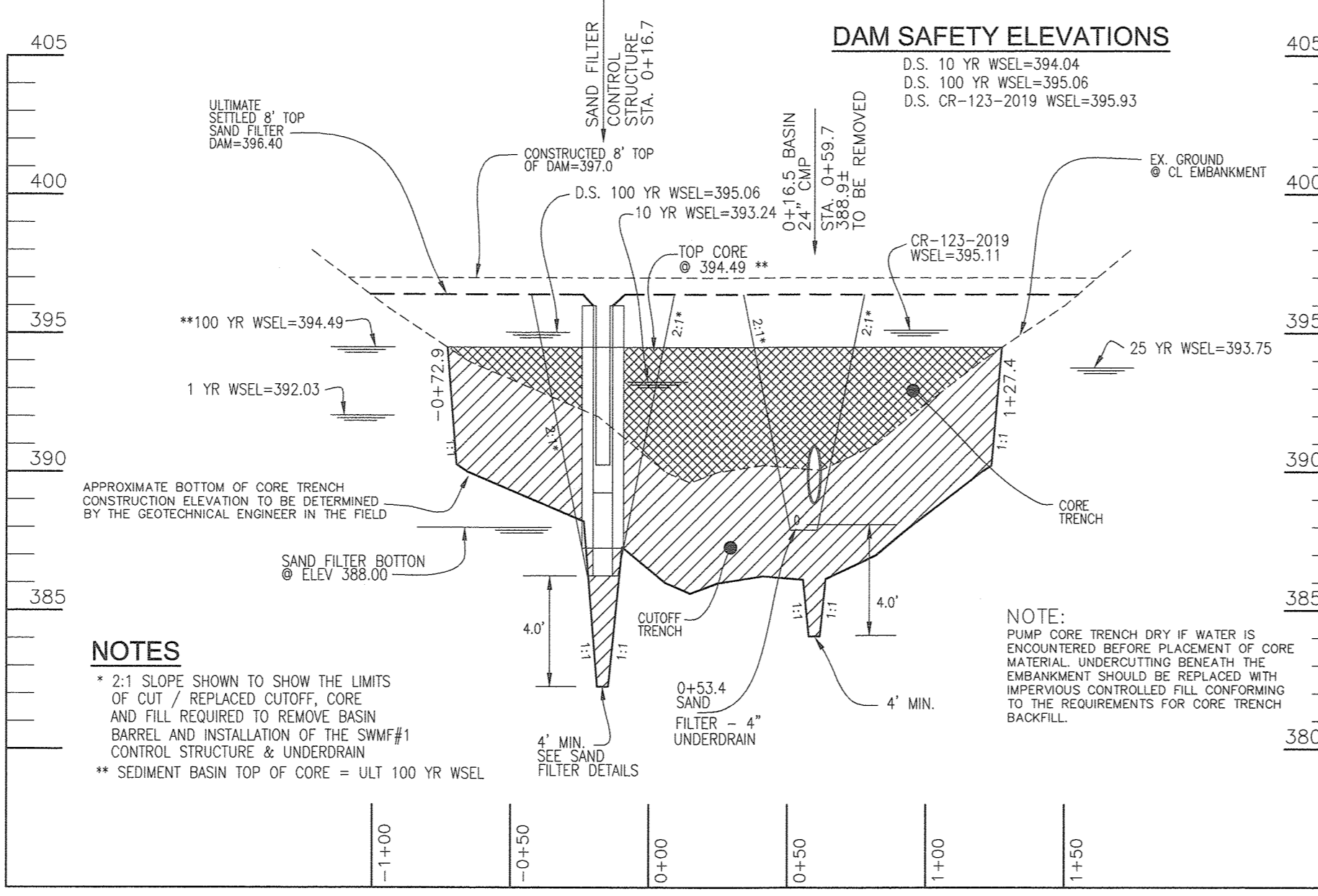
SWMF #1 - F-1 SAND FILTER

TYPE:	MD: 378
HAZARD CLASS:	7A
EX. DRAINAGE AREA:	8.90 AC.
PROP. DRAINAGE AREA:	4.4 AC.
BOTTOM ELEV.:	390.25 TOP SAND FILTER
BOTTOM SAND FILTER:	388.00
LOW FLOW INVERT:	391.25
SAND FILTER:	388.0 - 390.25 (SURFACE)
TOP OF EMBANKMENT:	395.40
SETTLED SED BASIN TOP ELEV.:	395.50
EMERGENCY SPILLWAY:	SEE SHT 29&30 395.50

DAM SAFETY ELEVATIONS

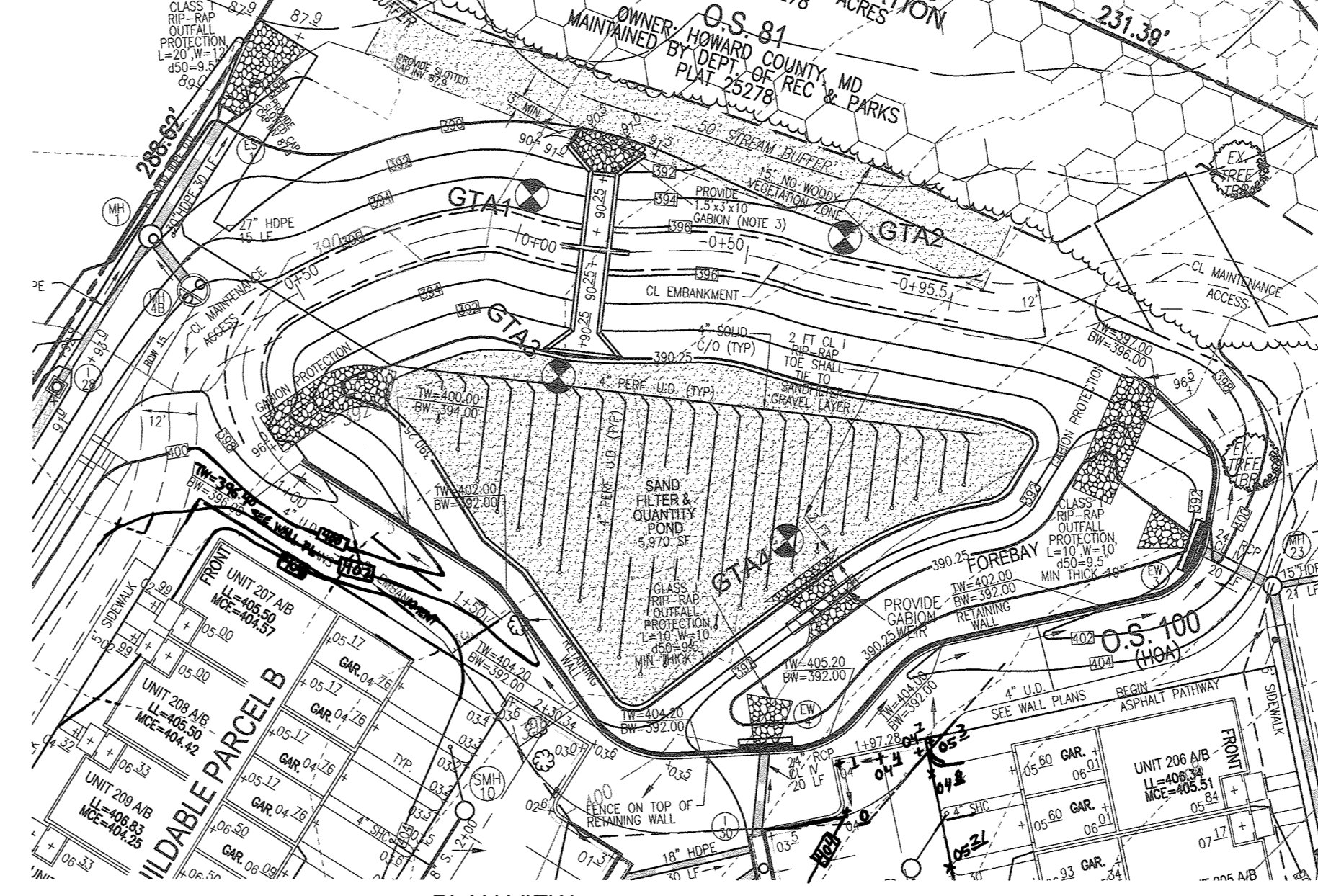


F-1 SAND FILTER PROFILE ALONG CL CONTROL STRUCTURE
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'



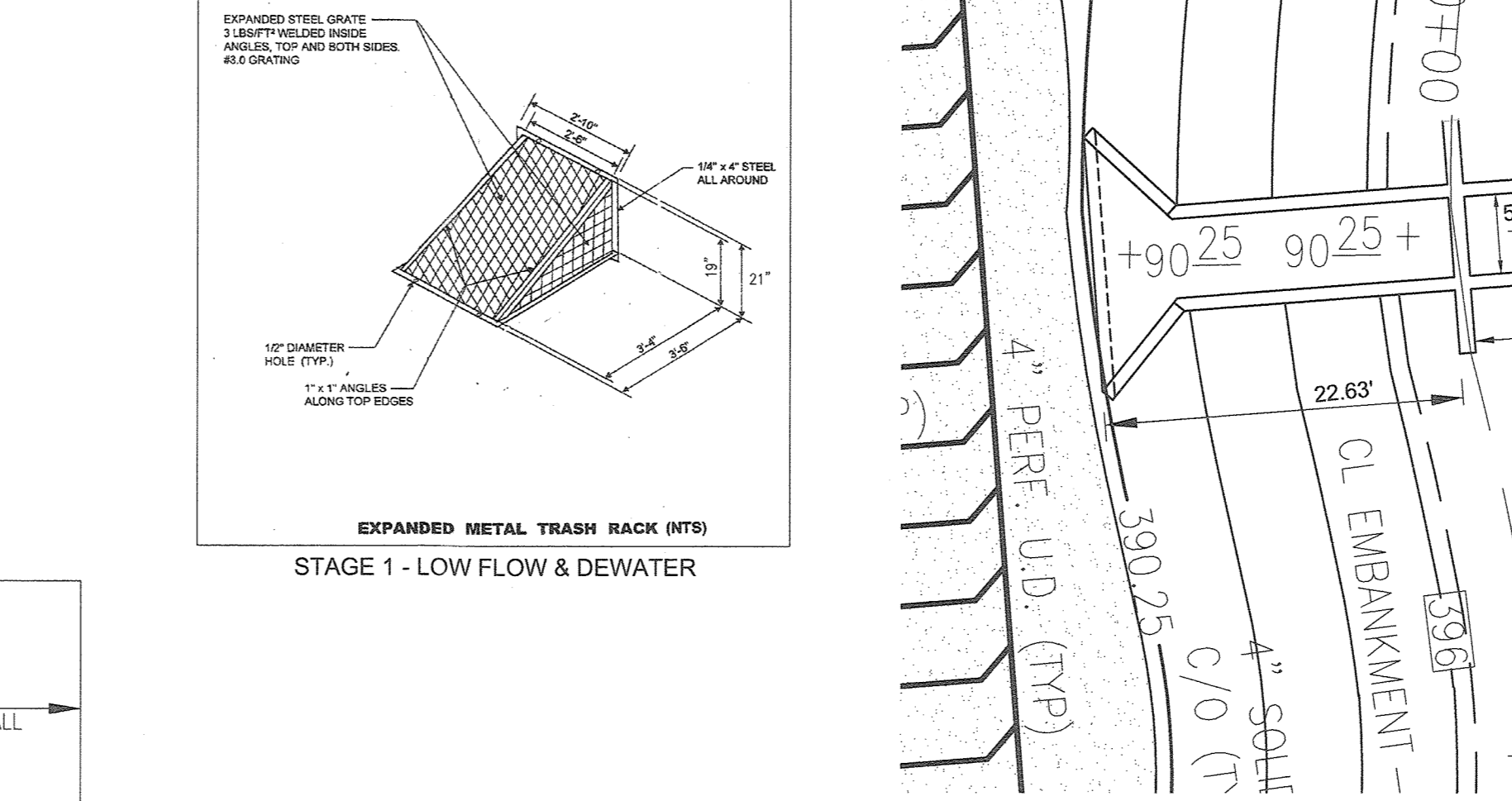
PROFILE ALONG CL OF SAND FILTER EMBANKMENT
SCALE: HORIZONTAL - 1"=50'
VERTICAL - 1"=5'

F-1 SAND FILTER
2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME 1 CHAPTER 3 - SECTION 3.4.6 FILTERING MAINTENANCE CRITERIA
THE SEDIMENT CHAMBER OUTLET DEVICES SHALL BE CLEANED/REPAIRED WHEN DRAWDOWN TIMES WITHIN THE CHAMBER EXCEED 36 HOURS. TRASH AND DEBRIS SHALL BE REMOVED AS NECESSARY.
SEDIMENT SHOULD BE CLEANED OUT OF THE SEDIMENTATION CHAMBER WHEN IT ACCUMULATES TO A DEPTH OF MORE THAN SIX INCHES. VEGETATION WITHIN THE SEDIMENTATION CHAMBER SHOULD BE REMOVED TO A HEIGHT OF 18 INCHES.
WHEN THE FILTERING CAPACITY OF THE FILTER DIMINISHES SUBSTANTIALLY (E.G., WHEN WATER PONDS ON THE SURFACE OF THE FILTER BED FOR MORE THAN 72 HOURS), THE TOP FEW INCHES OF DISCOLORED MATERIAL SHALL BE REMOVED AND SHALL BE REPLACED WITH FRESH MATERIAL. THE REMOVED SEDIMENTS SHOULD BE DISPOSED IN AN ACCEPTABLE MANNER (E.G., LANDFILL). SILT/SEDIMENTS SHOULD BE REMOVED FROM THE FILTER BED WHEN THE ACCUMULATION EXCEEDS ONE INCH.
SURFACE SAND FILTERS (F-1) THAT HAVE A GRASS COVER SHOULD BE MOWED A MINIMUM OF 3 TIMES PER GROWING SEASON TO MAINTAIN MAXIMUM GRASS HEIGHTS LESS THAN 12 INCHES.
CONSTRUCTION OF SAND FILTER AREAS SHALL CONFORM TO THE SPECIFICATIONS OUTLINED IN APPENDIX B.3.



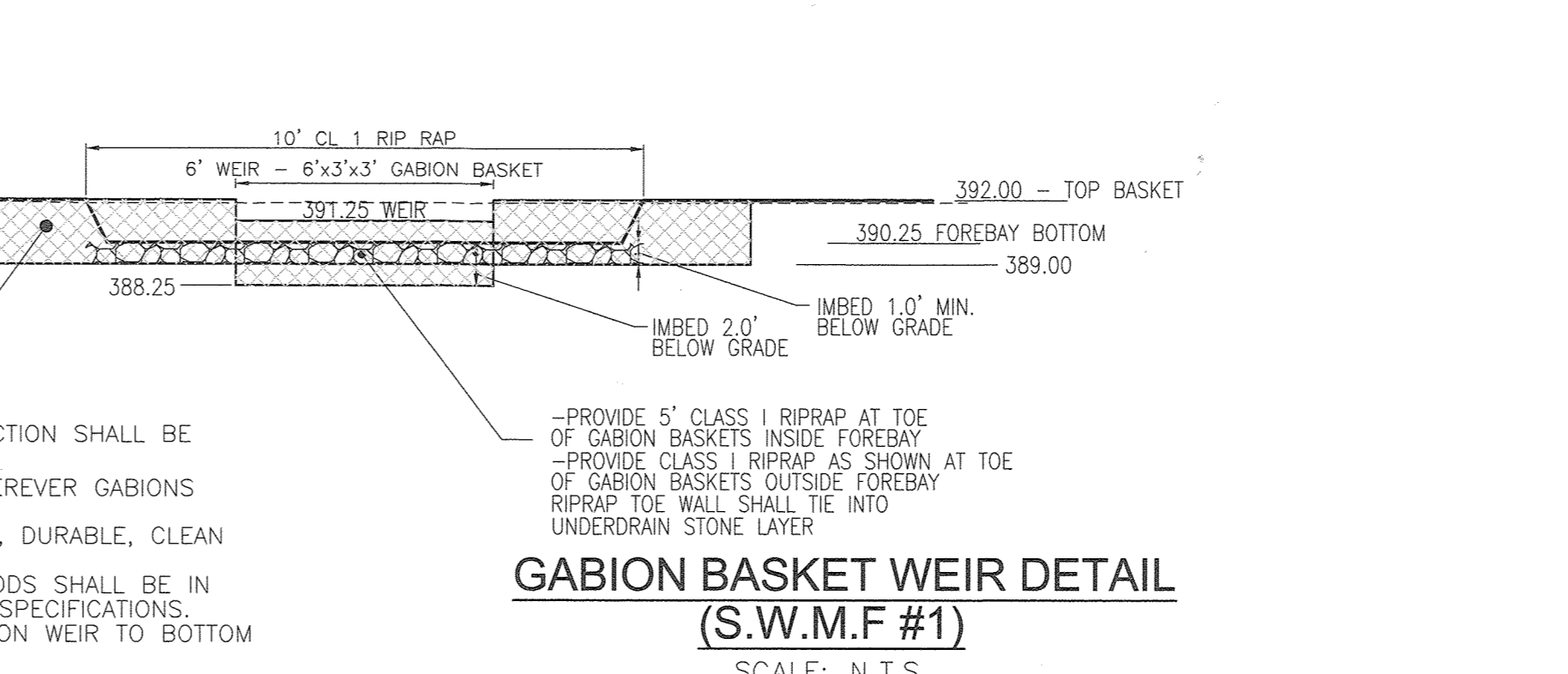
PLAN VIEW PRIVATE SWMF #1 - F-1 SAND FILTER
SCALE: 1" = 30'

NOTES:
1. A GEOTECHNICAL ENGINEER IS TO BE PRESENT ON-SITE TO SUPERVISE THE CONSTRUCTION OF THE IMPERVIOUS CORE / CUTOFF TRENCH PER MD-378 SPECIFICATIONS.
2. IMPERVIOUS CORE MATERIAL SHALL BE DEWATERED PRIOR TO PLACEMENT OF COUNTY APPROVED FILL MATERIAL.
3. THE SITE SHALL BE STRIPPED OF TOPSOIL AND ANY OTHER UNSUITABLE MATERIALS FROM THE EMBANKMENT OF STRUCTURE AREA IN ACCORDANCE WITH SOIL CONSERVATION GUIDELINES. AFTER STRIPPING OPERATIONS HAVE BEEN COMPLETED, THE EXPOSED SUBGRADE MATERIALS SHOULD BE PROOF-ROLLED WITH A LOADED DUMP TRUCK OR SIMILAR EQUIPMENT IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE FOR AREAS THAT ARE NOT ACCESSIBLE TO A DUMP TRUCK. EXPOSED MATERIAL SHALL BE OBSERVED AND TESTED BY A GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE UTILIZING A DYNAMIC CONE PENETROMETER. ANY EXCESSIVE SOFT OR LOOSE MATERIALS IDENTIFIED BY PROOF ROLLING OR PENETROMETER TESTING SHOULD BE EXCAVATED TO SUITABLY FIRM SOIL AND THEN REESTABLISHED BY BACKFILLING WITH SUITABLE SOIL.
4. REFER TO GEOTECHNICAL RECOMMENDATIONS SHEET 27.

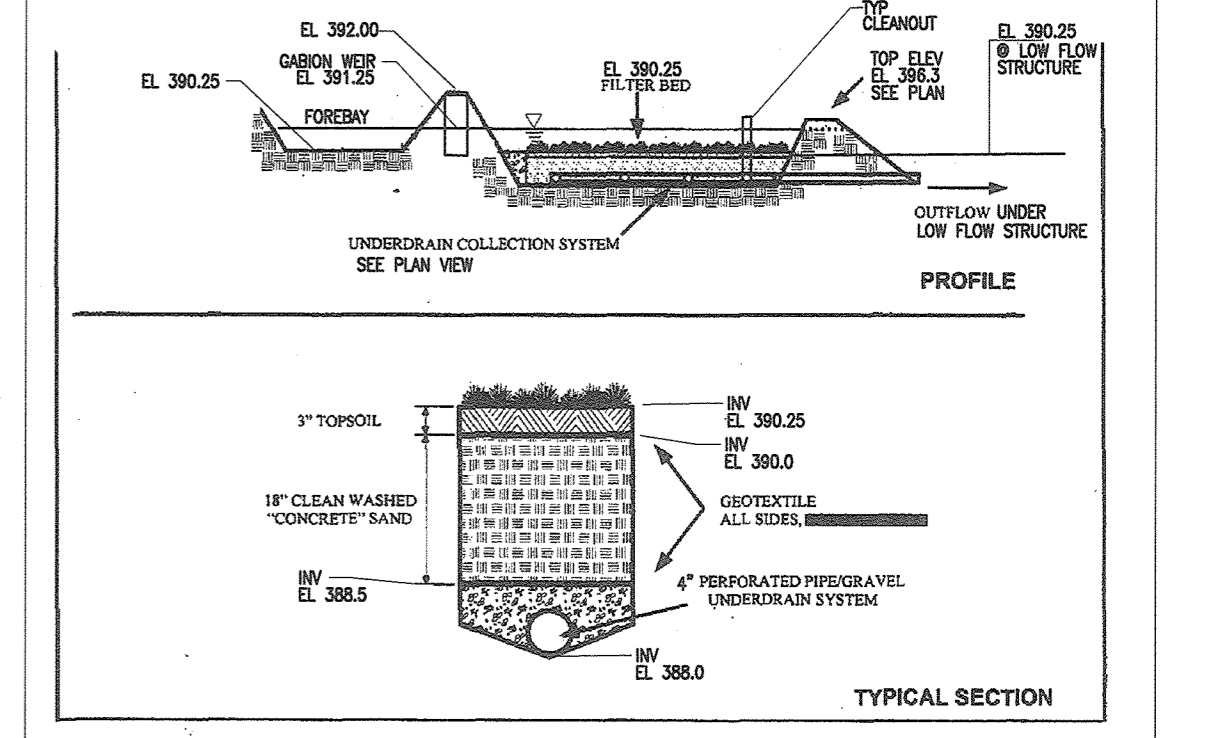


STAGE 1 - LOW FLOW & DEWATER
SCALE: 1" = 10'
SEE SHEET 29 & 30

OPERATION AND MAINTENANCE SCHEDULE FOR STORMWATER MANAGEMENT FACILITY
STORMWATER MANAGEMENT FACILITY
ROUTINE MAINTENANCE (S.W.M.F. #1 / F-1 SAND FILTER)
1. FACILITY WILL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHOULD BE PERFORMED PERFORMED DURING WET WEATHER TO DETERMINE IT IS FUNCTIONING PROPERLY.
2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES A YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHOULD BE MOWED AS NEEDED.
3. DEBRIS AND LITTER NEXT TO THE OUTLET STRUCTURE SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
4. VISIBLE SIGNS OF EROSION IN THE POND AS WELL AS RIPRAP OUTLET AREAS SHALL BE REPAIRED AS SOON AS IT IS NOTICED.
NON-ROUTINE MAINTENANCE (HOWARD COUNTY)
1. STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, THE LOW RISE STRUCTURE, SAND FILTER & PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
2. SEDIMENT SHOULD BE REMOVED WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERES WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY BY THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS.

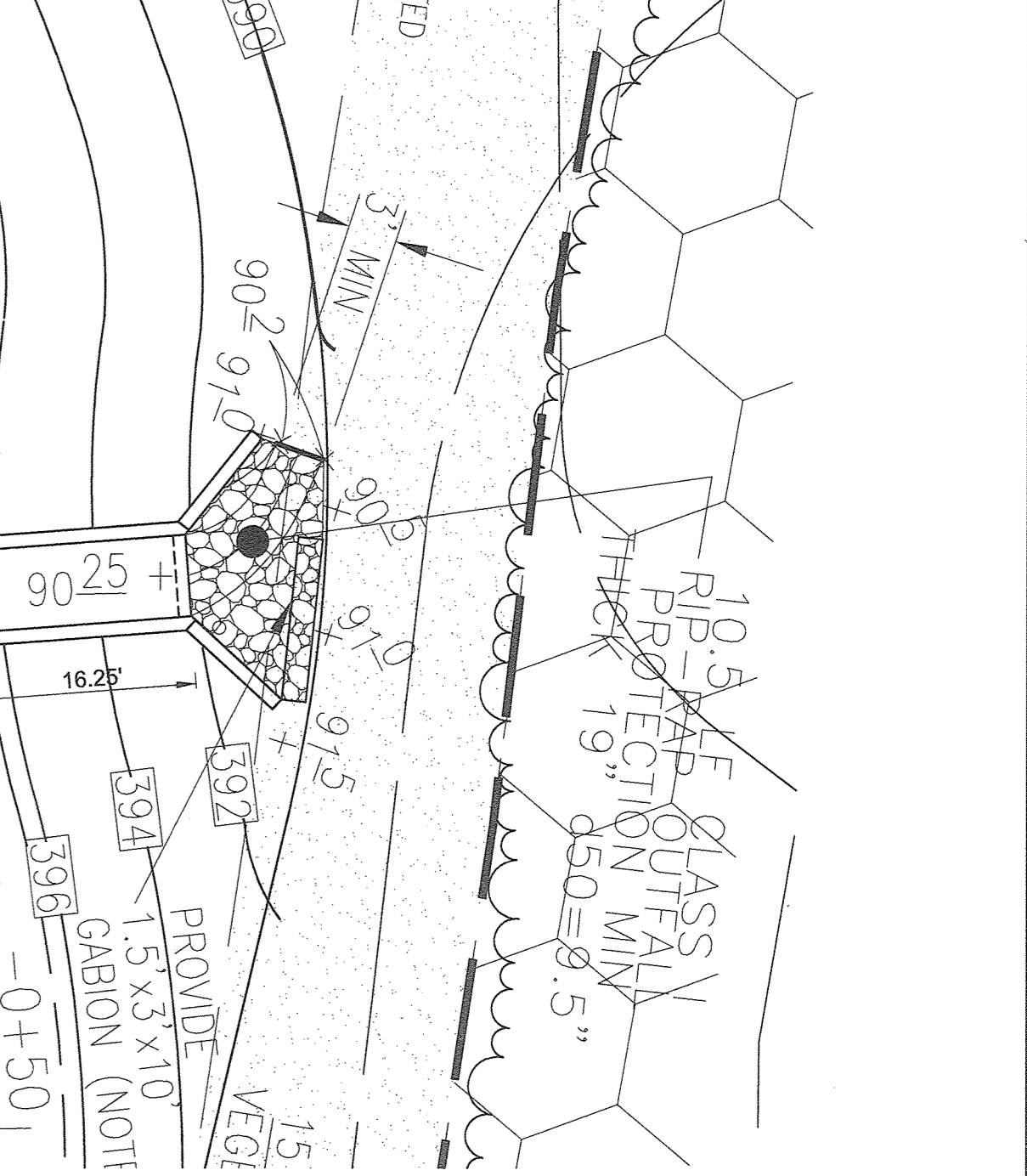


GABION BASKET WEIR DETAIL (S.W.M.F. #1)
SCALE: N.T.S.



STORMWATER FACILITY TYPICAL SAND FILTER DETAILS
SCALE: HORIZONTAL - N.T.S.

SAND FILTER - PLANTING
SAND FILTER PLANTINGS SHALL CONSIST OF A MIXTURE:
REED CANARY GRASS - PHALARIS ARUNDINACEA
SWITCHGRASS - PANICUM VIRGATUM
CREeping BENTGRASS - AGROSTIS PALUSTRIS
OR EQUAL COMBINATION OF COOL / WARM SEASON GRASSES TOLERANT OF FREQUENT INUNDATION
2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME 1 CHAPTER 3 - SECTION 3.4.6 FILTERING MAINTENANCE CRITERIA
SURFACE SAND FILTERS (F-1) THAT HAVE A GRASS COVER SHOULD BE MOWED A MINIMUM OF 3 TIMES PER GROWING SEASON TO MAINTAIN MAXIMUM GRASS HEIGHTS LESS THAN 12 INCHES.
CONSTRUCTION OF SAND FILTER AREAS SHALL CONFORM TO THE SPECIFICATIONS OUTLINED IN APPENDIX B.3.



SWMF #1 - CONTROL STRUCTURE PLAN VIEW
SCALE: 1" = 10'
SEE SHEET 29 & 30

NO.	REVISION	DATE
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020
3	REVISE FRONT YARD, DOOR AND SIDEWALK LOCATIONS, AMEND SIDEWALK, AMEND PE ELEV. AND 6'-7'-21"	

REVISED SITE DEVELOPMENT PLAN
NON-MD-378 S.W.M.F. #1 - F-1 SAND FILTER - NOTES AND DETAILS
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOT 100
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
(SFA RESIDENTIAL) 25794-25710
2ND ELECTION DISTRICT
TAX MAP: 24 GRID: 24
DPZ REF'S: SEE SITE ANALYSIS DATA CHART ON COVER SHEET
PARCEL(S): SEE GENERAL NOTE 1
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: RHY/EDS
DRAWN BY: VETG
CHECKED BY: RHY
DATE: JANUARY 2021
SCALE: AS SHOWN
W.O. NO.: 08-48

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. 11913
EXPIRATION DATE: 09-27-2023

28 SHEET OF 37

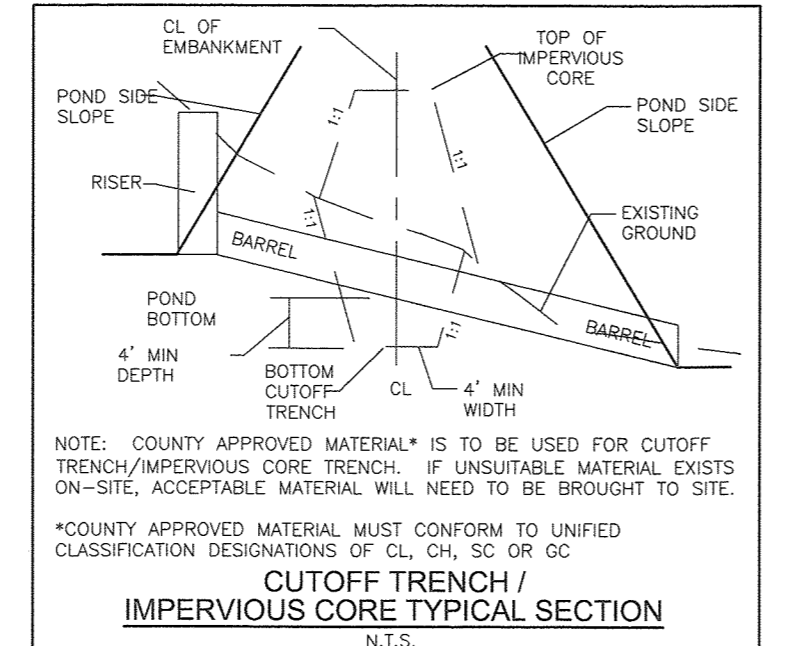
OWNER/DEVELOPER CERTIFICATION:
I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTION AND MAINTENANCE CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I SHALL ENGAGE A MARYLAND REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION, AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

OWNER/DEVELOPER SIGNATURE: *Brian A. Kuznetsov*
PRINTED NAME & TITLE: **BRIAN A. KUZNETSOV, V.P. AND DEV.**

OPERATION, MAINTENANCE AND INSPECTION
INSPECTION OF THE POND(S) SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATORS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

AS-BUILT CERTIFICATION
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS

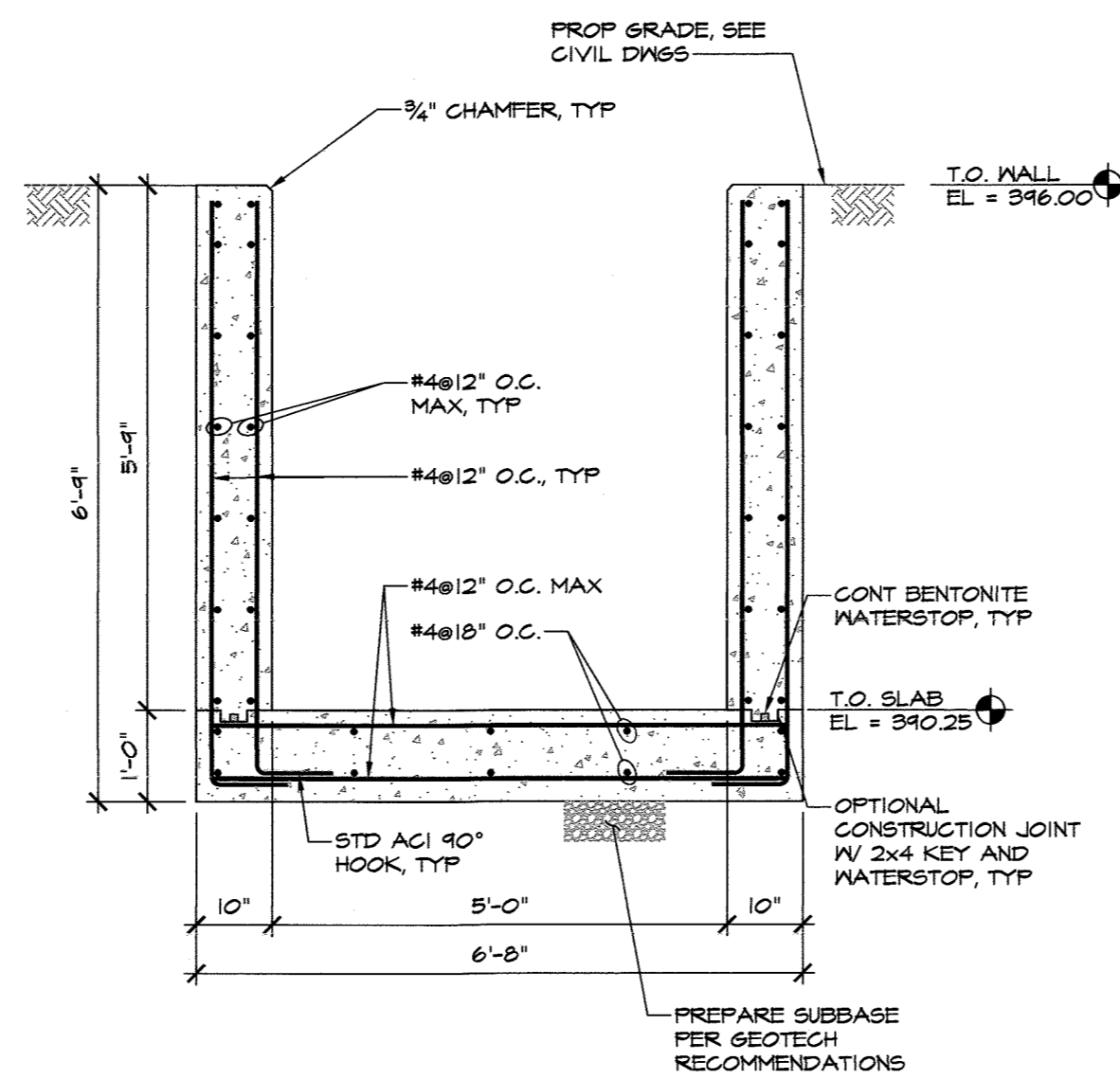
SIGNATURE: _____ PE NO. _____
DATE: _____



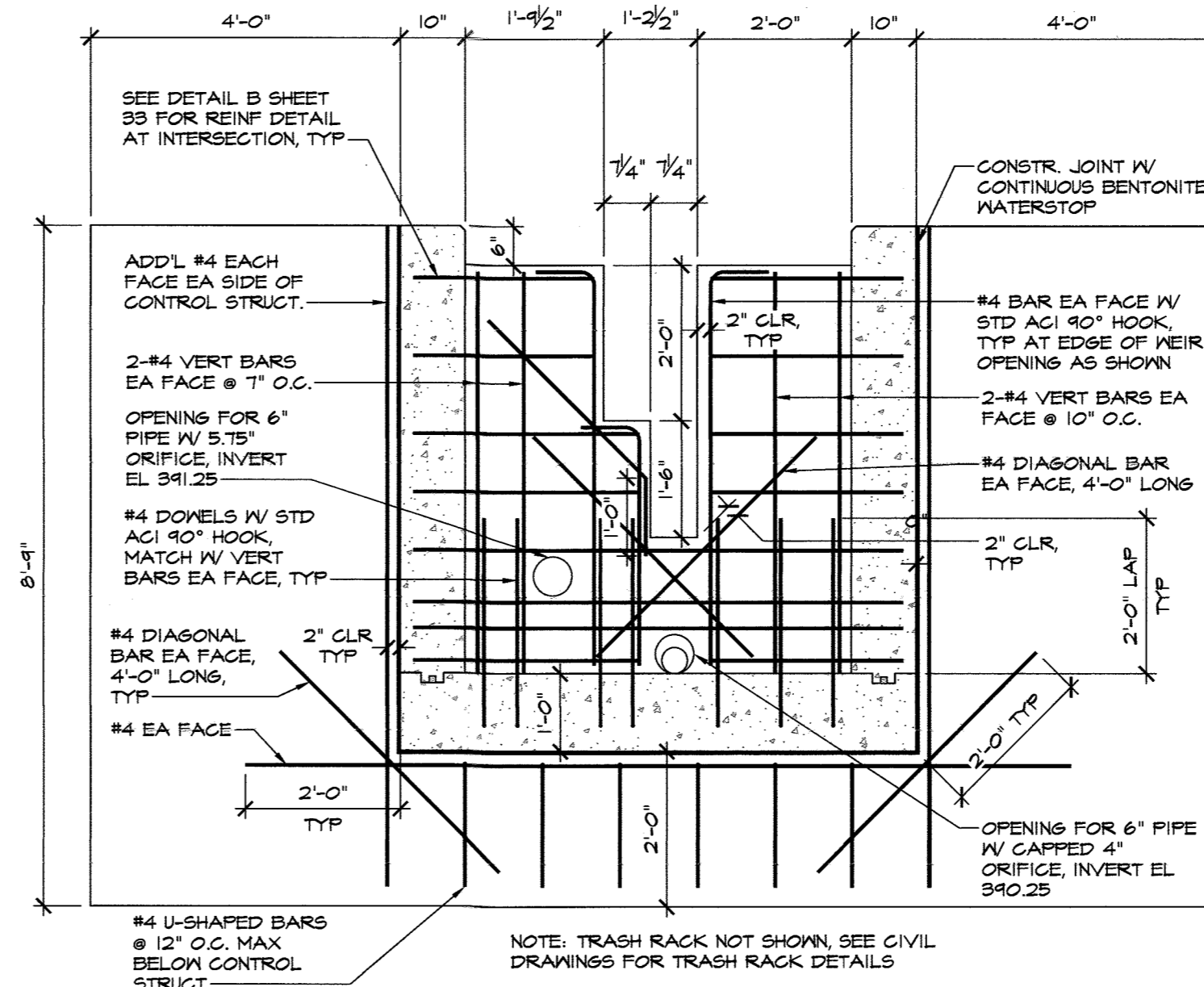
CUTOFF TRENCH / IMPERVIOUS CORE TYPICAL SECTION
N.T.S.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DEVELOPMENT ENGINEERING DIVISION: *[Signature]* 3-22-21
CHIEF, DIVISION OF LAND DEVELOPMENT: *[Signature]* 3-2-21
DIRECTOR: *[Signature]* 3-2-21

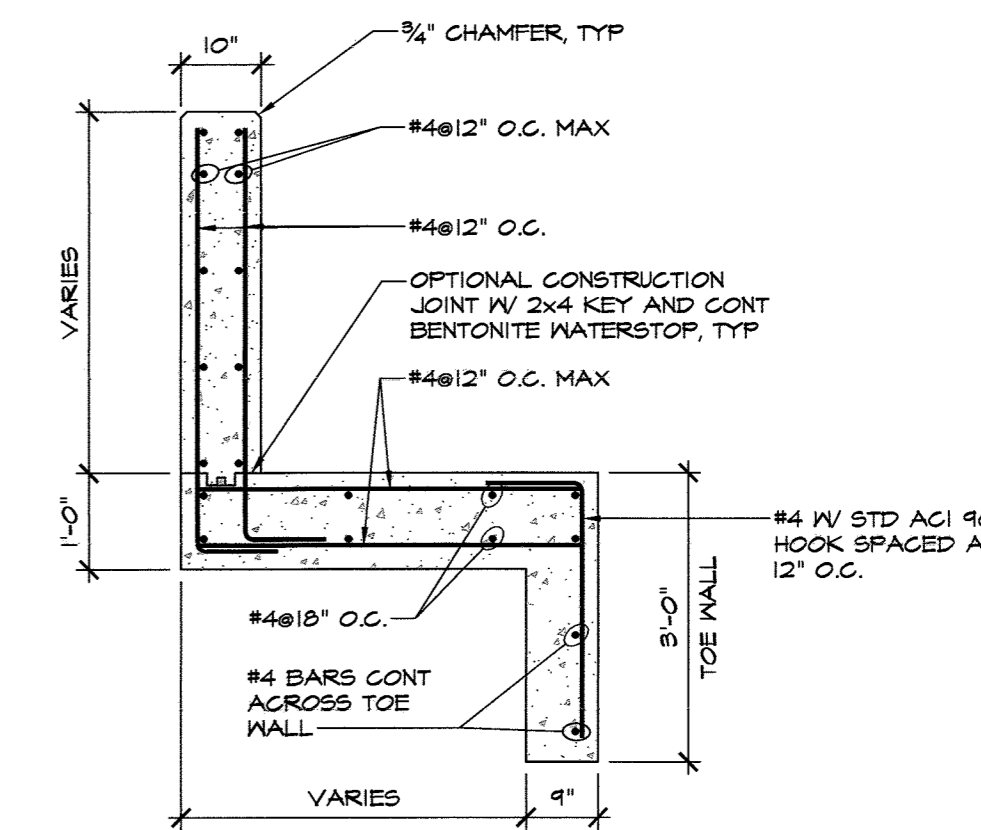
THIS PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, AND SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
[Signature] 1/25/21
HOWARD S.C.D.



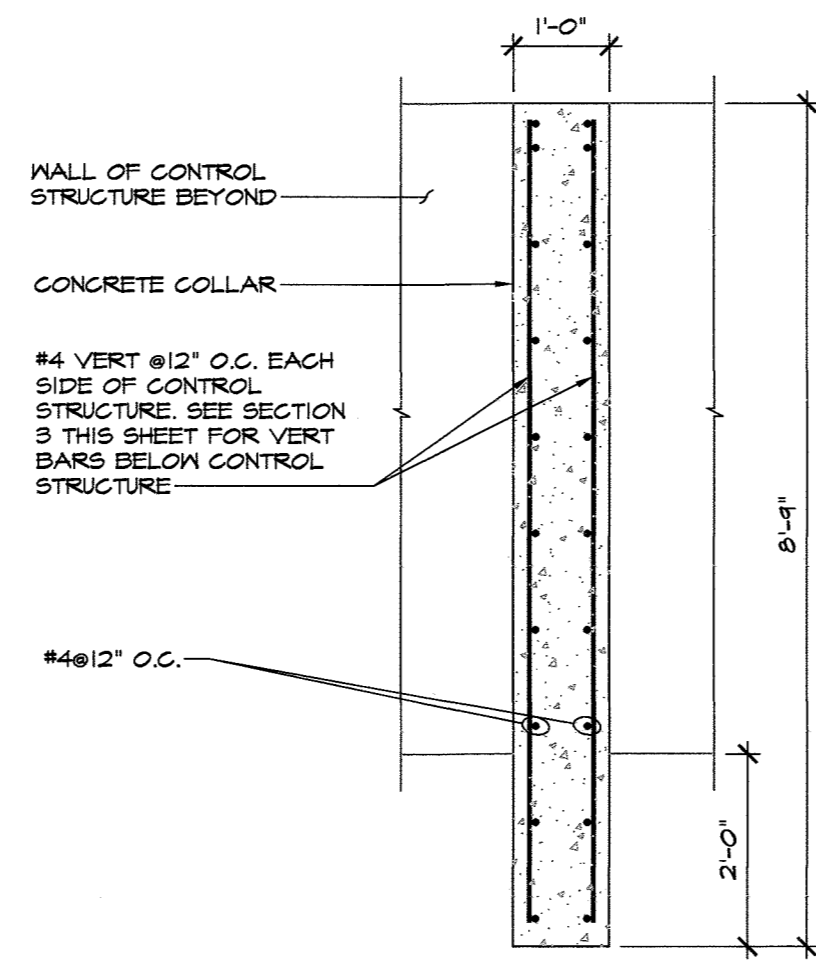
2 TRANSVERSE SECTION
SCALE: 3/8" = 1'-0"



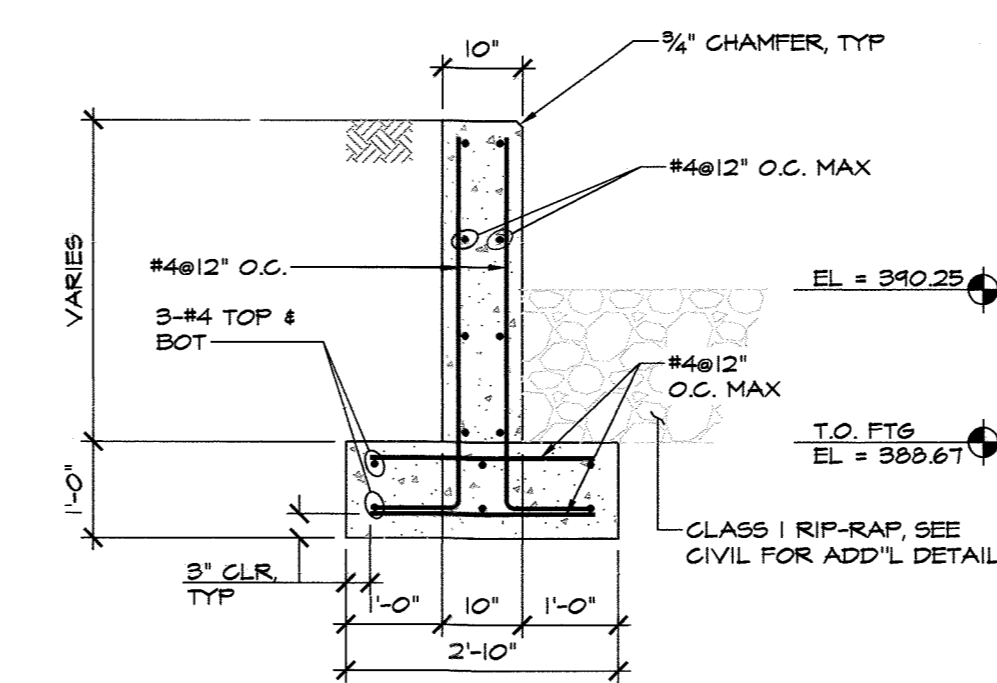
3 SECTION THRU WEIR & CONG COLLAR
SCALE: 3/8" = 1'-0"



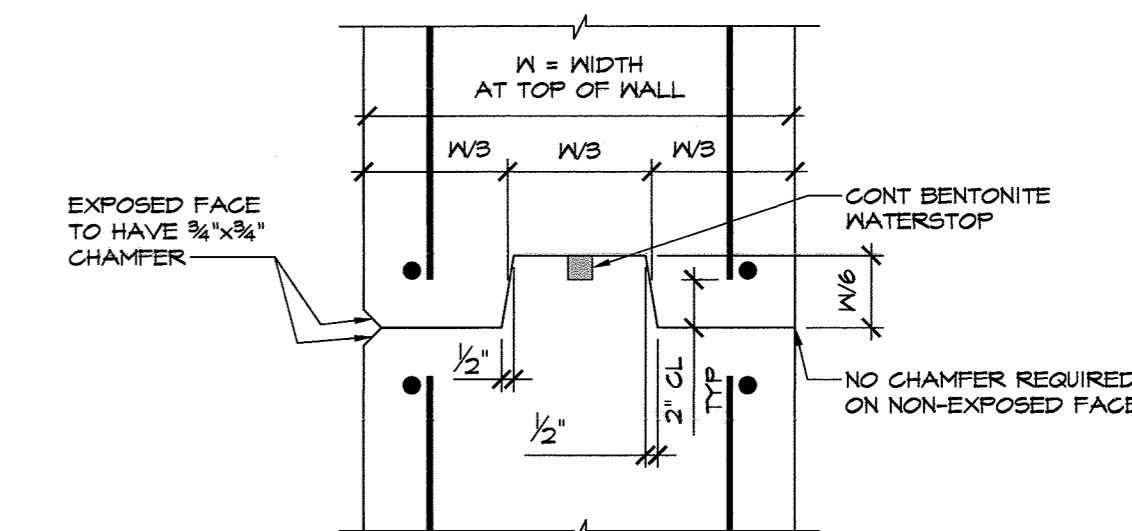
4 WING WALL SECTION
SCALE: 1/2" = 1'-0"



5 SECTION THRU CONCRETE COLLAR
SCALE: 3/8" = 1'-0"

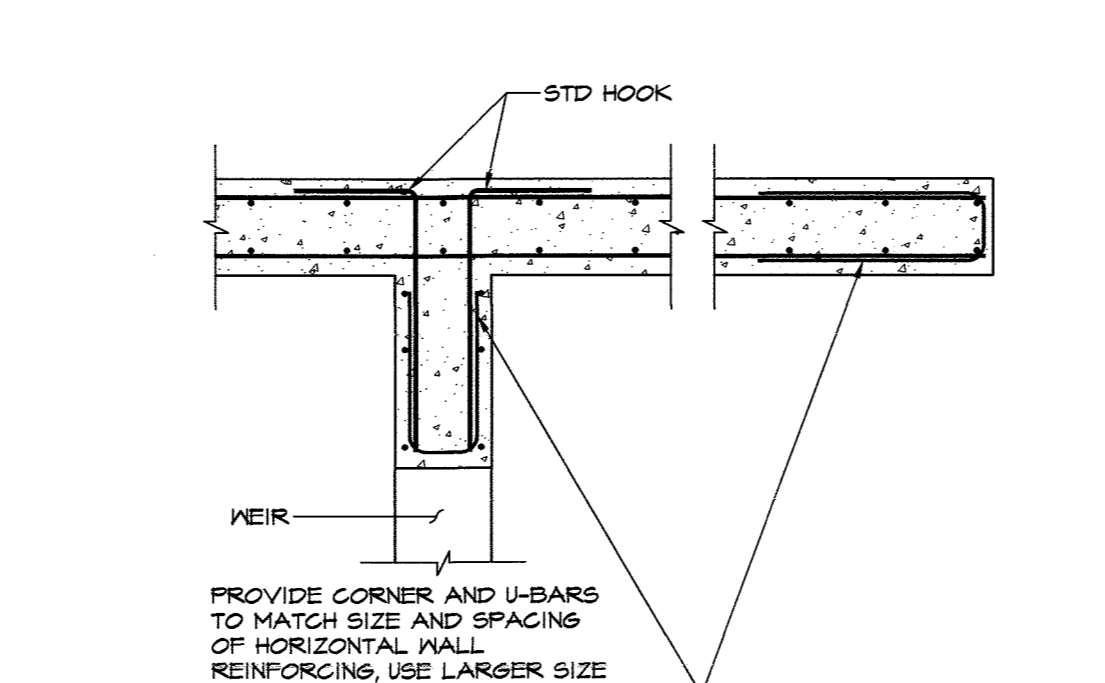


6 WING WALL SECTION
SCALE: 1/2" = 1'-0"

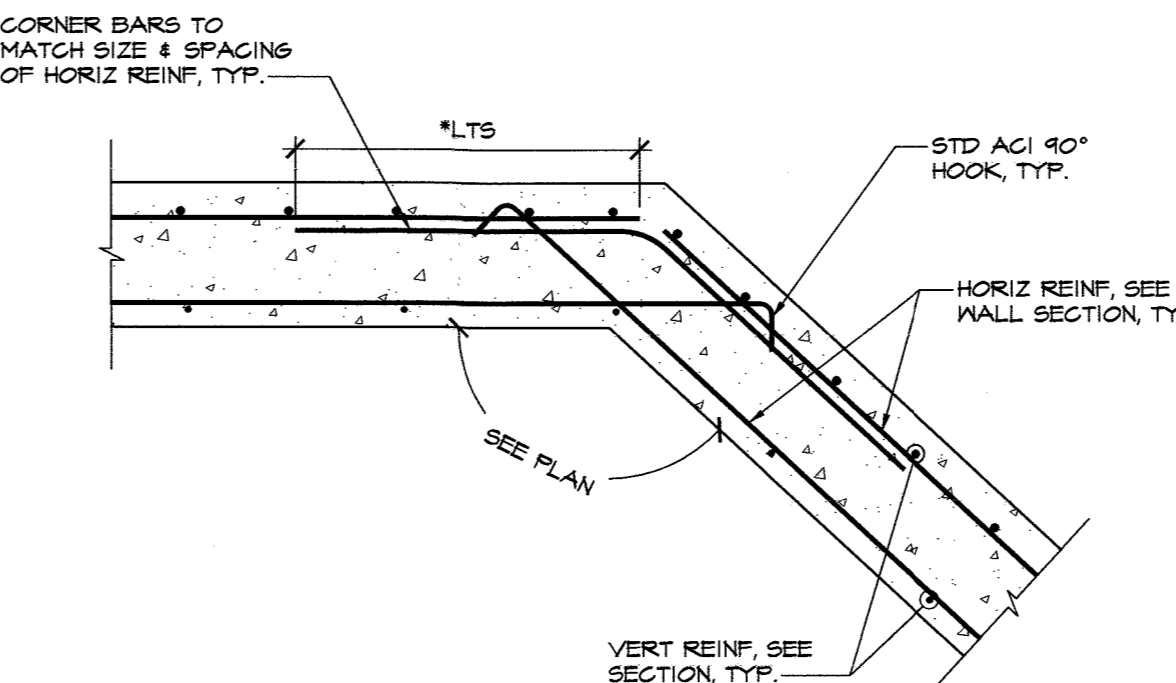


A CONCRETE WALL CONTRACTION/CONSTRUCTION JOINTS
SCALE: NTS

- NOTES:
1. CONCRETE WALLS SHALL HAVE CONTRACTION JOINT LOCATED AS SHOWN ON SECTION 1/30.
 2. STOP KEY 9" BELOW TOP OF WALL.
 3. REINFORCING STEEL SHALL NOT PASS THROUGH CONTRACTION OR EXPANSION JOINT.
 4. ALL KEYS ARE NOMINAL SIZE.
 5. ONLY PLACE CONTRACTION JOINTS IN STEMS (NO JOINT IN FOOTINGS).



B CONCRETE WALL CORNER REINFORCING
SCALE: NTS



C REINFORCING @ BEND IN WALL
SCALE: NTS

OWNER / DEVELOPER
BEAZER HOMES
ATTN: J. MARTIN SHAFFER, AREA PRESIDENT
AUTHORIZED SIGNATURE - EAST REGION
6085 MARSHALLEE DRIVE, SUITE 350
ELKRODE, MD 21075
443-539-9249

OWNER/DEVELOPER CERTIFICATION
I/WE 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 THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I SHALL ENGAGE A MARYLAND REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION, AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

[Signature]
OWNER/DEVELOPER SIGNATURE
BRIAN A. KRAUFF J.P. LAND DEV.
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. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.

[Signature]
DESIGNER'S SIGNATURE
DATE: 10/12/2020
JAMES M. PORTE
PRINTED NAME
MD REGISTRATION NO. 30440
P.E., R.L.S., OR R.L.A. (circle one)

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature]
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 3.22.21
[Signature]
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 4/21/21
[Signature]
DIRECTOR
DATE

THIS PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, AND SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
[Signature]
HOWARD S.C.D.
DATE: 1/15/20

NO.	REVISION	DATE
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	9-28-20

REVISED SITE DEVELOPMENT PLAN
S.W.M.F. #1 - STRUCTURAL DETAILS & NOTES FOR CONTROL STRUCTURE
LONG GATE OVERLOOK
LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
AND OPEN SPACE LOTS 100 & 101
A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOTS 80 AND 81 - PLATS 25274-25278
(SFA RESIDENTIAL)
2ND ELECTION DISTRICT
TAX MAP: 24 GRID: 24
DPZ REFS: SEE SITE ANALYSIS DATA CHART ON COVER SHEET
ZONED: R-A-15
PARCEL(S): SEE GENERAL NOTE 1
HOWARD COUNTY, MARYLAND

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
1220-C EAST JOPPA RD, SUITE 605
TOWSON, MARYLAND 21286
(410) 821-1690
FAX (410) 821-1748
Copyright 2020 Morris & Ritchie Associates, Inc.

DESIGN BY: J.M.P.
DRAWN BY: J.M.P.
CHECKED BY: J.T.
DATE: 10/12/2020
SCALE: AS SHOWN
JOB NO.:
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. 30440
EXPIRATION DATE: 12-24-2021
JAMES M. PORTE
PROFESSIONAL ENGINEER
30 SHEET OF 37

SEGMENTAL RETAINING WALL SPECIFICATIONS

PART 1 - GENERAL

1.1 WORK INCLUDES

WORK INCLUDES FURNISHING AND INSTALLING SEGMENTAL RETAINING WALL UNITS, GEOGRID REINFORCEMENT, WALL FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS PRODUCED BY VOGEL ENGINEERING - TIMMONS GROUP AND AS SPECIFIED HEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FURNISHING AND INSTALLING OF ALL APPROPRIATE MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR CONSTRUCTION OF THE GEOGRID REINFORCED SEGMENTAL RETAINING WALLS. THE GEOTECHNICAL EXPLORATION FOR THE SITE WAS PERFORMED BY GTA, AS SUMMARIZED IN OUR REPORT DATED FEBRUARY 10, 2020.

1.2 REFERENCE STANDARDS

- A. ASTM C90-75 (1981 REV) - HOLLOW LOAD BEARING MASONRY UNITS.
- B. ASTM C140-75 (1981 REV) - SAMPLING AND TESTING CONCRETE MASONRY UNITS.
- C. ASTM C145-75 (1981 REV) - SOLID LOAD BEARING CONCRETE MASONRY UNITS.
- D. GEOSYNTHETIC RESEARCH INSTITUTE (GRI), GR-904 - DETERMINATION OF LONG TERM DESIGN STRENGTH OF GEOGRIDS.
- E. ASTM D 638 - TEST METHOD FOR TENSILE PROPERTIES OF PLASTIC.
- F. ASTM D 1248 - SPECIFICATION OF POLYETHYLENE PLASTICS MOLDING AND EXTRUSION MATERIALS.
- G. ASTM D 4218 - TEST METHOD FOR CARBON BLACK CONTENT IN POLYETHYLENE COMPOUNDS BY THE MUFFLE FURNACE TECHNIQUE.
- H. ASTM D 3034 - SPECIFICATION FOR POLYVINYL CHLORIDE (PVC) PIPE.
- I. ASTM C 1372 - SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.

1.3 DELIVERY, STORAGE AND HANDLING

- A. CONTRACTOR SHALL CHECK THE MATERIALS UPON DELIVERY TO ENSURE THAT THE PROPER MATERIAL HAS BEEN RECEIVED.
- B. CONTRACTOR SHALL PREVENT EXCESSIVE WIND, WET CEMENT, EPOXY, AND LIKE MATERIALS WHICH MAY ATFX THEMSELVES, FROM COMING IN CONTACT WITH THE MATERIALS.
- C. CONTRACTOR SHALL PROTECT THE MATERIALS FROM DAMAGE. DAMAGED MATERIAL SHALL NOT BE INCORPORATED INTO THE REINFORCED RETAINING WALLS.
- D. GEOGRIDS SHALL BE STORED ABOVE -20F.

1.4 SUBMITTALS/CERTIFICATION

THE CONTRACTOR SHALL SUBMIT A MANUFACTURER'S CERTIFICATION, PRIOR TO THE START OF THE WORK, THAT THE RETAINING WALL SYSTEM COMPONENTS MEET THE REQUIREMENTS OF ASTM C 1372 AND OTHER REQUIREMENTS SPECIFIED HEREIN. THIS CERTIFICATION SHOULD BE PROVIDED TO THE GEOTECHNICAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO WALL CONSTRUCTION.

PART 2 - PRODUCTS

2.1 DEFINITIONS

- A. GEOGRID IS A HIGH DENSITY POLYETHYLENE, POLYESTER, OR POLYPROPYLENE GRID, SPECIFICALLY FABRICATED FOR USE AS A SOIL REINFORCEMENT.
- B. CONCRETE RETAINING WALL UNITS ARE AS DETAILED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
- C. BACKFILL IS THE SOIL WHICH IS USED AS FILL FOR THE REINFORCED SOIL MASS.
- D. FOUNDATION SOIL IS THE IN-SITU SOIL OR CONTROLLED COMPACTED FILL PLACED BELOW THE BOTTOM OF THE RETAINING WALL AND GEOGRID ZONE.

2.2 MATERIALS

THE CONTRACTOR SHALL SUBMIT MANUFACTURER'S CATALOGS AND SAMPLES OF THE PROPOSED MATERIALS FOR APPROVAL BY THE PROJECT GEOTECHNICAL ENGINEER A MINIMUM OF SEVEN DAYS BEFORE THE START OF CONSTRUCTION. MATERIALS SHALL BE TRANSPORTED TO THE SITE ONLY AFTER APPROVAL OF THE PROPOSED MATERIALS BY THE PROJECT GEOTECHNICAL ENGINEER.

A. CONCRETE UNITS

- 1. MASONRY UNITS SHALL BE KEYSTONE COMPAC III STRAIGHT FACE UNITS AS DETAILED IN THE DRAWINGS. SUBSTITUTION OF OTHER CONCRETE UNITS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.
- 2. CONCRETE WALL UNITS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI, IN ACCORDANCE WITH ASTM C-90. THE CONCRETE SHALL HAVE ADEQUATE FREEZE/THAW PROTECTION WITH A MAXIMUM MOISTURE ABSORPTION OF 6 PERCENT.
- 3. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C 1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.
- 4. THE UNITS SHALL PASS 100 FREEZE/THAW CYCLES IN WATER WITH LESS THAN 1% WEIGHT LOSS IN ACCORDANCE WITH ASTM C 1372.
- 5. EXTERIOR DIMENSIONS MAY VARY. UNITS ARE REQUIRED TO HAVE A MINIMUM OF 1.0 SQUARE FOOT OF FACE AREA EACH.
- 6. UNITS SHALL HAVE ANGLED SIDES AND BE CAPABLE OF ATTAINING CONCAVE AND CONVEX ALIGNMENT CURVES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 7. UNITS SHALL BE INTERLOCKED WITH NON-CORROSIVE REINFORCED FIBERGLASS PINS.
- 8. UNITS SHALL BE INTERLOCKED AS TO PROVIDE A MAXIMUM OF 1.25-INCH OF SETBACK PER BLOCK.

B. LEVELING PAD

MATERIAL FOR LEVELING PAD/FOOTING SHALL CONSIST OF COMPACTED FREE-DRAINING COARSE AGGREGATES MEETING THE REQUIREMENTS OF ASTM #57 STONE. A COMPACTED LEVELING PAD SHALL BE A MINIMUM OF 6 INCHES THICK AND 24 INCHES WIDE IS REQUIRED.

C. FIBERGLASS CONNECTING PINS

- 1. THERMOSET ISOPHTHALIC POLYESTER RESIN PULTRUDED FIBERGLASS REINFORCEMENT RODS, A MINIMUM ONE-HALF INCH IN DIAMETER.
- 2. PINS SHALL HAVE A MINIMUM FLEXURAL STRENGTH OF 128,000 PSI AND SHORT BEAM SHEAR OF 6,400PSI.
- 3. FOR SUBSTITUTION OF CONCRETE UNITS, USE OF OTHER COMPATIBLE CONNECTOR SYSTEMS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.

D. GEOGRID

- 1. GEOSYNTHETIC REINFORCEMENT SHALL CONSIST OF HIGH PERFORMANCE WOVEN POLYESTER GEOGRIDS MANUFACTURED BY TENAX INTERNATIONAL FOR SOIL REINFORCEMENT APPLICATIONS. THE TYPE, STRENGTH AND PLACEMENT LOCATION OF THE REINFORCING GEOSYNTHETIC SHALL BE AS SHOWN ON THE PLANS. DETAILED TEST DATA SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION AND SHALL INCLUDE TENSILE STRENGTH (ASTM D 4595 OR ASTM D 6637), CREEP (ASTM D 5692), SITE DAMAGE AND DURABILITY (GR 66-4), PULLOUT (ASTM D 6706), AND CONNECTION (ASTM D6692) TEST DATA.
- 2. INCLUDED WITH THE TEST DATA SHALL BE A REPORT THAT WILL SHOW THAT THE MIRAFI 3XT SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 3,500 POUNDS PER LINEAR FOOT (MARV), A LONG-TERM DESIGN STRENGTH OF 1,818 POUNDS PER LINEAR FOOT, IN ACCORDANCE WITH ASTM D 6637 AND A JUNCTION STRENGTH OF 975 POUNDS PER LINEAR FOOT (MARV) IN ACCORDANCE WITH GR-904.
- 3. INCLUDED WITH THE TEST DATA SHALL BE A REPORT THAT WILL SHOW THAT THE MIRAFI 140N SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 4,700 POUNDS PER LINEAR FOOT (MARV), A LONG-TERM DESIGN STRENGTH OF 2,378 POUNDS PER LINEAR FOOT, IN ACCORDANCE WITH ASTM D 6637 AND A JUNCTION STRENGTH OF 1,468 POUNDS PER LINEAR FOOT (MARV) IN ACCORDANCE WITH GR-904.
- 4. TYPE OF FENCING SELECTED BY THE OWNER/DEVELOPER MAY INTERFERE WITH GEOGRID REINFORCEMENT. INSTALL SONOTUBES CONCURRENTLY WITH GEOGRID AND FILL PLACEMENT TO AVOID CONFLICTS OR DAMAGE TO GEOGRID. OWNER SHALL SELECT FENCING PRIOR TO START OF WALL CONSTRUCTION SO WALL AND FENCE CONTRACTORS CAN COORDINATE INSTALLATION.

E. REINFORCED ZONE

CONTROLLED FILL SOILS SHALL MEET THE REQUIREMENTS OF AASHO GROUP CLASSIFICATION OF A-2-4 OR MORE GRANULAR. IF ADEQUATE QUANTITIES ARE NOT AVAILABLE ON-SITE, IMPORTED BACKFILL SHALL MEET THE ABOVE REQUIREMENTS AND SHOULD BE APPROVED BY GTA.

F. RETAINED AND STRUCTURAL FILL

CONTROLLED FILL SOILS TO BE PLACED OUTSIDE THE REINFORCED BACKFILL AREA AND WHERE SPECIFIED SHALL CONSIST OF ON-SITE OR BORROW SOILS MEETING THE REQUIREMENTS OF USCS SM OR MORE GRANULAR. ALL FILL MATERIALS PROPOSED TO BE PLACED BEHIND THE REINFORCED BACKFILL SHALL BE PLACED AS CONTROLLED FILL COMPACTED TO 92 PERCENT OF THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE MODIFIED PROCTOR, ASTM D-1557.

G. UNIT FILL / DRAINAGE LAYER

THE UNIT FILL AND DRAINAGE LAYER SHALL CONSIST OF ASTM #57 STONE AND BE PLACED WITHIN THE BLOCK AS UNIT FILL, AND BEHIND THE BLOCK AS THE DRAINAGE LAYER WITH A MINIMUM THICKNESS OF 12 INCHES THICK, AS INDICATED ON THE WALL SECTIONS.

H. LOW-PERMEABILITY SOIL

LOW-PERMEABILITY SOILS TO BE PLACED AT THE TOP OF THE WALL WHERE SPECIFIED SHALL CONSIST OF SILTY OR CLAYEY SOILS MEETING THE REQUIREMENTS OF ML, CL, OR SC WITH A MINIMUM OF 30% PASSING THE #200 SIEVE.

I. DRAINAGE PIPE

THE DRAINAGE PIPES SHALL BE PERFORATED HDPE OR SOLID PVC PIPE AS INDICATED ON THE DRAWINGS.

J. FILTER FABRIC

FILTER FABRIC SHALL BE NON-WOVEN, POLYPROPYLENE GEOTEXTILE, 140N MANUFACTURED BY NIDCOLON MIRAFI GROUP OR APPROVED EQUIVALENT.

K. DRAINAGE COMPOSITE

THE DRAINAGE GEODECOMPOSITE SHOULD BE TENAX 700 DOUBLE SIDED MANUFACTURED BY TENAX CORPORATION, OR APPROVED EQUIVALENT.

PART 3 - EXECUTION

A. EARTHWORK

- 1. THE CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. UNDER NO CIRCUMSTANCES SHOULD THE EXCAVATION LINES AND GRADES BE EXCEEDED, EXCEPT WITH OWNER'S APPROVAL. THE CONTRACTOR SHALL PROTECT THE EXCAVATION FROM SLOUGHING BY EXCAVATING TO THE APPROPRIATE GRADE FOR THE GIVEN SOIL TYPE AND COVERING THE EXCAVATED FACE WITH THE STONE DRAINAGE LAYER.
- 2. THE BOTTOM OF WALL EXCAVATION SHALL BE SLOPED AT A MINIMUM GRADE OF 2% TOWARDS THE WALL FACE.
- 3. THE CONTRACTOR IS RESPONSIBLE FOR STABILITY OF ALL EXCAVATION AND FILL SLOPES REQUIRED TO CONSTRUCT THE WALL. PERFORM ALL EXCAVATION IN ACCORDANCE WITH THE APPLICABLE OSHA AND COUNTY STANDARDS.
- 4. PRIOR TO RETAINING WALL CONSTRUCTION AND THE PLACEMENT OF FILL, ALL TOPSOIL SHALL BE STRIPPED AND REMOVED FROM THE WALL AREA AND THE AREAS BELOW AND BEHIND EACH WALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE GRADING PLAN.
- 5. CONCURRENTLY WITH WALL CONSTRUCTION, INSTALL PROPOSED INLETS, EW3, EW4, AND ASSOCIATED PIPE WITHIN THE AREA OF THE PROPOSED REINFORCED ZONE.

B. FOUNDATION SUBGRADE PREPARATION

- 1. FOUNDATION SOIL SHALL BE EXCAVATED AS REQUIRED FOR INSTALLATION OF LEVELING PAD, GEOGRID, STRUCTURAL FILL, AND OTHER ELEMENTS AND AS SHOWN ON THE CONSTRUCTION DRAWINGS.
- 2. THE EXPOSED SUBGRADE SHALL BE THOROUGHLY PROFILES. THE SURFICIAL SOFT/LOOSE SOILS, AND TOPSOIL SHALL BE REMOVED TO A STABLE SUBGRADE AS DIRECTED BY GTA.
- 3. ALL FILL REQUIRED TO ACHIEVE THE WALL BOTTOM ELEVATION SHALL CONSIST OF STRUCTURAL FILL THAT MEETS THE REQUIREMENTS OF PART 2, ITEM F. THE FILL SHALL BE PREPARED, PLACED, COMPACTED, AND TESTED IN ACCORDANCE WITH PART 3, ITEM F. PLACEMENT OF STRUCTURAL FILL SHALL NOT PROCEED UNTIL THE SUBGRADE HAS BEEN APPROVED BY GTA.
- 4. FOUNDATION SOIL SHOULD BE EXAMINED BY GTA TO ASSURE THAT THE ACTUAL FOUNDATION SOIL STRENGTH MEETS OR EXCEEDS ASSUMED DESIGN STRENGTH. SOILS NOT MEETING REQUIRED STRENGTH SHOULD BE REMOVED AND REPLACED WITH CONTROLLED, COMPACTED MATERIAL.
- 5. ALLOWABLE BEARING PRESSURE FOR NATURAL AND CONTROLLED, COMPACTED STRUCTURAL FILL SHALL BE AS SPECIFIED IN PART 5, FOUNDATION SOIL.

C. LEVELING PAD

- 1. THE LEVELING PAD SHALL BE PLACED AS SHOWN ON THE CONSTRUCTION DRAWINGS WITH A MINIMUM THICKNESS OF 6 INCHES AND 24 INCHES WIDE.
- 2. LEVELING PAD MATERIALS SHALL BE INSTALLED ON UNDISTURBED IN-SITU SOILS OR CONTROLLED, COMPACTED BACKFILL. IF UNDOCUMENTED FILL IS ENCOUNTERED AT THE RETAINING WALL FOUNDATION SUBGRADE, THE UNDOCUMENTED FILL SHALL BE OVER EXCAVATED DOWN TO NATURAL, UNDISTURBED GROUND, AND BACKFILLED WITH MATERIAL IDENTIFIED IN PART 1, ITEM F. THE BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH PART 3, ITEM F.
- 4. LEVELING PAD SHALL BE PREPARED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH BASE. GAPS SHALL NOT BE ALLOWED.
- 5. THE LEVELING PAD SHALL BE CONSTRUCTED WITH THE MATERIALS DESCRIBED IN PART 2.

D. UNIT INSTALLATION

- 1. FIRST COURSE OF CONCRETE WALL UNITS SHALL BE PLACED ON THE LEVELING PAD. THE UNITS SHALL BE CHECKED FOR LEVEL AND ALIGNMENT. THE FIRST COURSE IS THE MOST IMPORTANT TO PROVIDE ACCURATE AND ACCEPTABLE RESULTS.
- 2. ENSURE THAT UNITS ARE IN FULL CONTACT WITH BASE.
- 3. UNITS ARE PLACED SIDE BY SIDE FOR FULL LENGTH OF WALL ALIGNMENT. ALIGNMENT MAY BE DONE BY MEANS OF A STRING LINE OR OFFSET FROM BASE LINE.
- 4. INSTALL FIBERGLASS CONNECTING PIN.
- 5. LAY UP EACH COURSE ENSURING THAT THE CONNECTING PINS ARE INSERTED THROUGH FRONT SLOT OF THE UNIT, AND INTO THE RECEIVING SLOT IN THE COURSE BENEATH. REPEAT PROCEDURE TO THE EXTENT OF WALL HEIGHT.
- 6. AT THE END OF EACH COURSE WHERE THE WALL CHANGES ELEVATION, UNITS SHALL BE TURNED INTO THE BACKFILL. UNITS SHALL BE LAID AS TO CREATE THE MINIMUM RADIUS POSSIBLE, UNLESS OTHERWISE SHOWN ON THE DRAWINGS. A MINIMUM OF ONE UNIT SHALL BE INSTALLED INTO THE GRADE. ONLY THE FRONT FACE OF THE UNITS SHALL BE VISIBLE FROM THE SIDE OF THE WALL.
- 7. CAP UNITS SHALL BE INSTALLED AND BONDED WITH CONSTRUCTION ADHESIVE OR EPOXY CEMENT AS REQUIRED BY MANUFACTURER.
- 8. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE FOR THE BACK OF THE RETAINING WALL DURING CONSTRUCTION.

E. GEOGRID INSTALLATION

- 1. THE GEOGRID SOIL REINFORCEMENT SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL AND CONNECTED TO THE CONCRETE WALL UNITS. HOOK GRID OVER THE FIBERGLASS CONNECTING PIN, FULL TAUT, AND ANCHOR BEFORE BACKFILL IS PLACED ON THE GEOGRID.
- 2. SLACK IN THE GEOGRID AT THE WALL UNIT CONNECTIONS SHALL BE REMOVED IN A MANNER, AND TO SUCH A DEGREE, AS APPROVED BY THE ENGINEER.
- 3. GEOGRID SHALL BE LAID AT THE PROPER ELEVATION AND ORIENTATION AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE ENGINEER.
- 4. CORRECT ORIENTATION (ROLL DIRECTION) OF THE GEOGRID SHALL BE VERIFIED BY THE CONTRACTOR.
- 5. GEOGRID SHALL BE SECURED IN-PLACE WITH STAPLES, PINS, SAND BAGS, OR BACKFILL AS REQUIRED BY FILL PROPERTIES, FILL PLACEMENT PROCEDURES, OR WEATHER CONDITIONS, OR AS DIRECTED BY THE ENGINEER.
- 6. OVERLAPS.
- 7. UNUSUAL GEOGRID DOES NOT NEED TO BE OVERLAPPED IN THE ACROSS THE ROLL DIRECTION, EXCEPT TO CONTAIN THE FILL AT THE SLOPE FACE WHEN WRAP-AROUND FENCING IS USED. UNUSUAL GRID SHOULD BE OVERLAPPED 48" IN THE ROLLED DIRECTION.
- 8. A LAYER OF SOIL A MINIMUM OF 4 INCHES IN THICKNESS SHALL BE SPREAD BETWEEN UNUSUAL GEOGRID LAYERS IN THE AREA TO BE OVERLAPPED, OR AS DIRECTED.

F. PLACEMENT OF FILL AND BACKFILL

- 1. FILL MATERIALS SHALL BE PLACED IN LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS.
- 2. AT THE TIME OF COMPACTION, FILL MATERIALS SHALL BE WITHIN -2% TO +4% OF THE OPTIMUM MOISTURE CONTENT, AND SHALL BE COMPACTED TO A MINIMUM OF 92% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM SPECIFICATION D-1557, THE MODIFIED PROCTOR METHOD.
- 3. BACKFILL SHALL BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF WRINKLES IN AND/OR MOVEMENT OF THE GEOGRID. PLACE BACKFILL FROM FRONT OF GEOGRID AND SPREAD TO BACK OF GEOGRID.
- 4. THE LIFT OF BACKFILL IMMEDIATELY BELOW A LAYER OF GEOGRID SHALL BE SCARIFIED TO A DEPTH OF 2 INCHES IMMEDIATELY AFTER COMPLETION OF LIFT COMPACTION. THE GEOGRID SHALL BE PLACED AND THE SUBSEQUENT LIFT OF SOIL PLACED AND COMPACTED THE SAME DAY AS THE UNDERLYING LIFT IS SCARIFIED.
- 5. ONLY HAND-OPERATED COMPACTION EQUIPMENT SHALL BE ALLOWED WITHIN 4 FEET OF THE WALL FACE.
- 6. BACKFILL SHALL BE PLACED FROM THE WALL OUTWARD TO ENSURE THAT THE GEOGRID REMAINS TAUT.
- 7. TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED WITHIN THE REINFORCED ZONE BEHIND THE WALL.
- 8. RUBBER-TIRED EQUIPMENT MAY PASS OVER THE GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHOULD BE AVOIDED.
- 9. ALL FILL AND BACKFILL OPERATIONS SHALL BE OBSERVED ON A FULL-TIME BASIS BY A QUALIFIED SOIL TECHNICIAN TO DETERMINE IF MINIMUM COMPACTION REQUIREMENTS ARE BEING MET AND THAT MATERIALS MEETING OR EXCEEDING THE SPECIFICATION REQUIREMENTS ARE USED.
- 10. IN-PLACE DENSITY TESTS SHALL BE PERFORMED WITH A MINIMUM OF 1 TEST PER 2,000 SQUARE FEET OF FILL AREA FOR EACH LIFT OF FILL PLACED. THE ELEVATION AND LOCATION OF THE TESTS SHALL BE CLEARLY IDENTIFIED AT THE TIME OF FILL PLACEMENT.
- 11. THE BACKFILL MATRIX MUST BE CONSTRUCTED SO THAT FINE GRAN SOILS DO NOT TRAP WATER.

G. DRAINAGE

- 1. DRAINAGE FILL SHALL BE PLACED BEHIND THE WALL TO THE LIMITS SHOWN. THE DRAINAGE FILL SHALL BE A MINIMUM OF 12-INCHES THICK AND SHALL MEET THE REQUIREMENTS OF ASTM #57 STONE. THE DRAINAGE FILL SHALL BE WRAPPED IN FILTER FABRIC (MIRAFI 140N OR EQUAL) AS SHOWN ON THE DRAWINGS.
- 2. POSITIVE DRAINAGE SHALL BE MAINTAINED DURING AND AFTER CONSTRUCTION. SOILS WITHIN THE REINFORCED ZONE THAT BECOME WET DURING CONSTRUCTION SHALL BE DRIED OR REMOVED.
- 3. INSTALL THE PERFORATED DRAINAGE PIPES AND LATERAL DRAINAGE PIPES INCREMENTALLY ALONG WITH THE INSTALLATION OF CONCRETE UNITS AND PLACEMENT OF FILL.

H. FENCE

THE SELECTED FENCE SHALL BE INSTALLED BEHIND THE BLOCK CELLS AS SHOWN ON THE DRAWINGS AT FENCE POST HOLDER LOCATIONS AND IN ACCORDANCE WITH THE FENCE DESIGNER'S SPECIFICATIONS.

PART 4 - CONSTRUCTION OBSERVATION AND TESTING

- A. THE RETAINING WALL SHOULD ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF GTA TO CONFIRM THAT THE SOIL AND MATERIALS USED DURING CONSTRUCTION MEET THE REQUIREMENTS SPECIFIED HEREIN. IF GTA IS NOT CONTRACTED TO PROVIDE CONSTRUCTION OBSERVATION AND TESTING SERVICES DURING WALL CONSTRUCTION, GTA IS RELIEVED OF ALL RESPONSIBILITY FOR THE PERFORMANCE OF THE WALLS.
- B. THE REQUIRED BEARING PRESSURE BENEATH THE FOOTING OF THE WALL SHALL BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE GEOTECHNICAL ENGINEER PRIOR TO THE START OF WALL CONSTRUCTION. THE REQUIRED TEST PROCEDURE SHALL BE THE DYNAMIC CONE PENETROMETER (DCP) TEST ASTM SPT-399.
- C. THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN.

PART 5 - DESIGN PARAMETERS

WALL GEOMETRY	
MAXIMUM EXPOSED WALL HEIGHT (FT.):	14.8'
ANGLE OF FACE (DEG.):	8'
BLOCK EMBEDMENT (IN.):	VARIES (SEE PROFILES)
MAXIMUM BACKFILL SLOPE ANGLE (DEG.):	18.4'
MAXIMUM TOE SLOPE ANGLE (DEG.):	18.4'

REINFORCED FILL ZONE	
DENSITY OF BACKFILL (PCF):	135
PHI (DEG.):	32
COHESION (PSF):	0

RETAINED ZONE	
DENSITY (PCF):	125
PHI (DEG.):	26
COHESION (PSF):	0

FOUNDATION SOIL	
DENSITY (PCF):	125
PHI (DEG.):	26
COHESION (PSF):	0
LEVELING PAD MATERIAL:	NO. 57 STONE
ALLOWABLE BEARING PRESSURE (PSF):	3,000

MODULAR BLOCK DATA	
KEYSTONE BLOCKS:	COMPAC III UNITS
KEYSTONE CAP BLOCKS:	4" HIGH CAP UNITS
UNIT FILL:	AGGREGATE, ASTM NO. 57

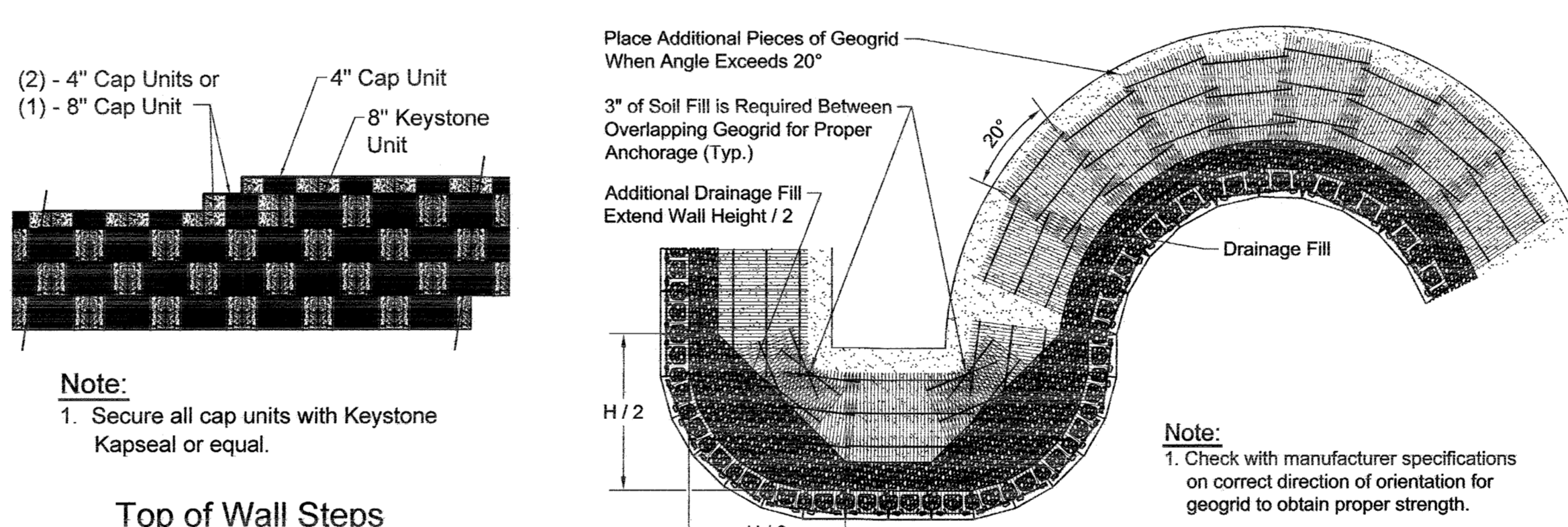
GEOGRID DATA	
GEOGRID TYPE:	MIRAFI 3XT AND 5XT
COVERAGE OF GEOGRIDS:	100
WALL/SOIL INTERACTION COEFFICIENT:	0.8
DIRECT SHEAR COEFFICIENT:	0.8
CONSTRUCTION DAMAGE BASED ON:	CRUSHED STONE
GEOGRID LENGTH (FT.):	6 FEET TO 17 FEET
GEOTEXTILE:	MIRAFI 140 N, OR APPROVED EQUIVALENT

PART 6 - DESIGN CRITERIA

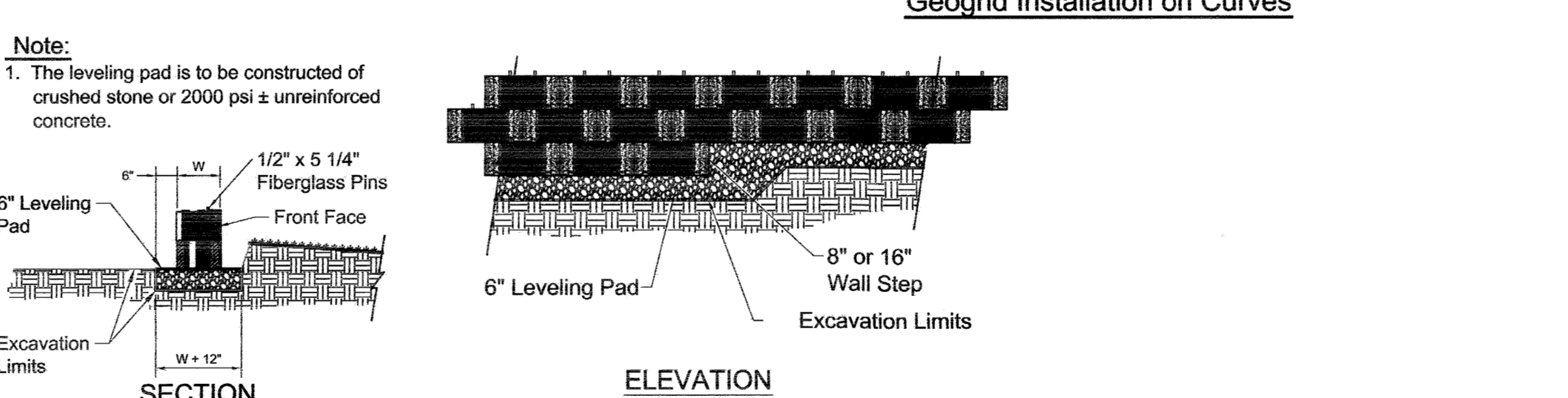
- 1. DESIGN PARAMETERS:
 - MIN. F.S. FOR SLIDING: 1.5
 - MIN. F.S. FOR OVERTURNING: 2.0
 - MIN. F.S. FOR UNCERTAINTIES: 1.5
 - MIN. F.S. FOR GLOBAL STABILITY: 1.3
 - LIVE LOAD (GRASS): 100 PSF
 - LIVE LOAD (ROAD): 250 PSF
- 2. THIS WALL IS LOCATED ENTIRELY ON PRIVATE PROPERTY AND IS TO BE PRIVATELY MAINTAINED BY THE PROPERTY OWNER.
- 3. THE STRUCTURAL DESIGN OF THE FENCE IS TO BE PERFORMED BY OTHERS PER LOCAL CODE.
- 4. STOCKPILES SHALL NOT BE PLACED ON TOP OF ANY RETAINING WALL WITHIN THE REINFORCED OR RETAINED ZONES AT ANY TIME. STOCKPILES SHALL NOT BE PLACED AT THE BASE OF ANY RETAINING WALL WITHIN 20 FEET OF THE WALL FACE AT ANY TIME. STOCKPILE MATERIALS INCLUDE, BUT ARE NOT LIMITED TO SOIL, SNOW, AND LANDSCAPING MATERIAL.

PART 7 - CONSTRUCTION SEQUENCE

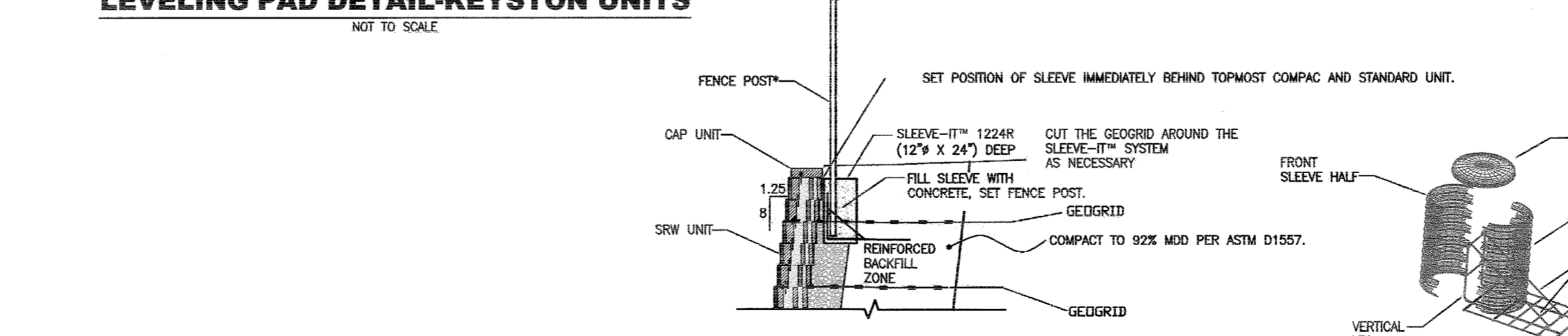
- A. OBTAIN BUILDING PERMITS AND INSTALL SEDIMENT AND EROSION CONTROL DEVICES.
- B. CONSTRUCT LEVELING PAD.
- C. CONCURRENTLY WITH WALL CONSTRUCTION, INSTALL PROPOSED INLETS, EW3, EW4, AND ASSOCIATED PIPE CONCURRENTLY TO WALL CONSTRUCTION.
- D. TRIM BLOCKS TO BE FLUSH AROUND PIPE PENETRATION. GROUT BLOCKS A MINIMUM OF 2 FEET AROUND THE PIPE PENETRATION WITH 4,000 PSI GROUT.
- E. CONSTRUCT WALL INCLUDING BLOCK, GEOGRID, AND REINFORCED FILL.
- F. INSTALL FENCE POST BEHIND BLOCK CELLS AT FENCE POST HOLDER LOCATIONS IN ACCORDANCE WITH FENCE DESIGNER'S SPECIFICATIONS.
- G. INSTALL CAP UNITS.
- H. LOWER FOOTINGS FOR LOTS 60/61 AND 62/63 AS DETAILED IN THE DRAWINGS.



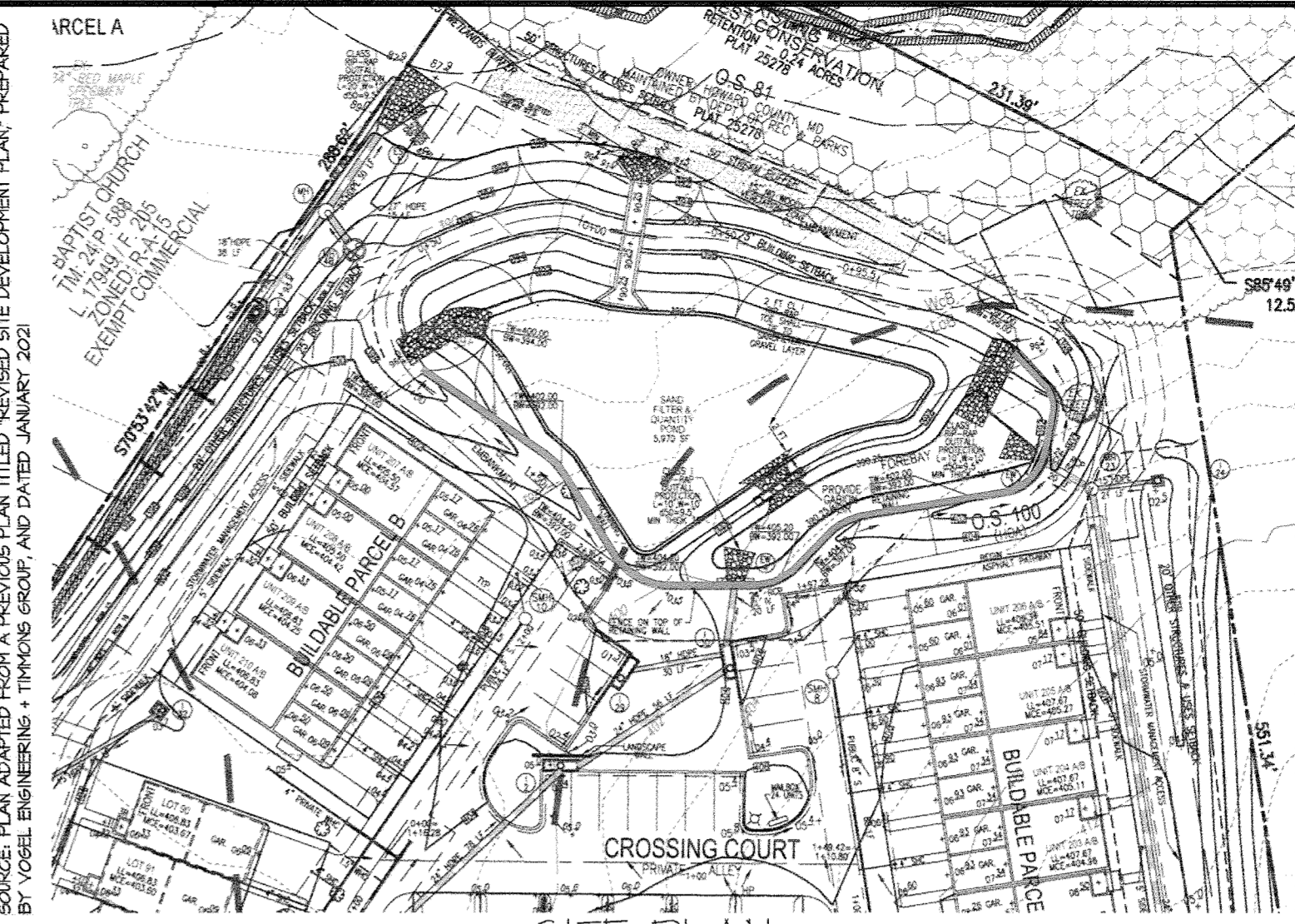
Geogrid Installation on Curves



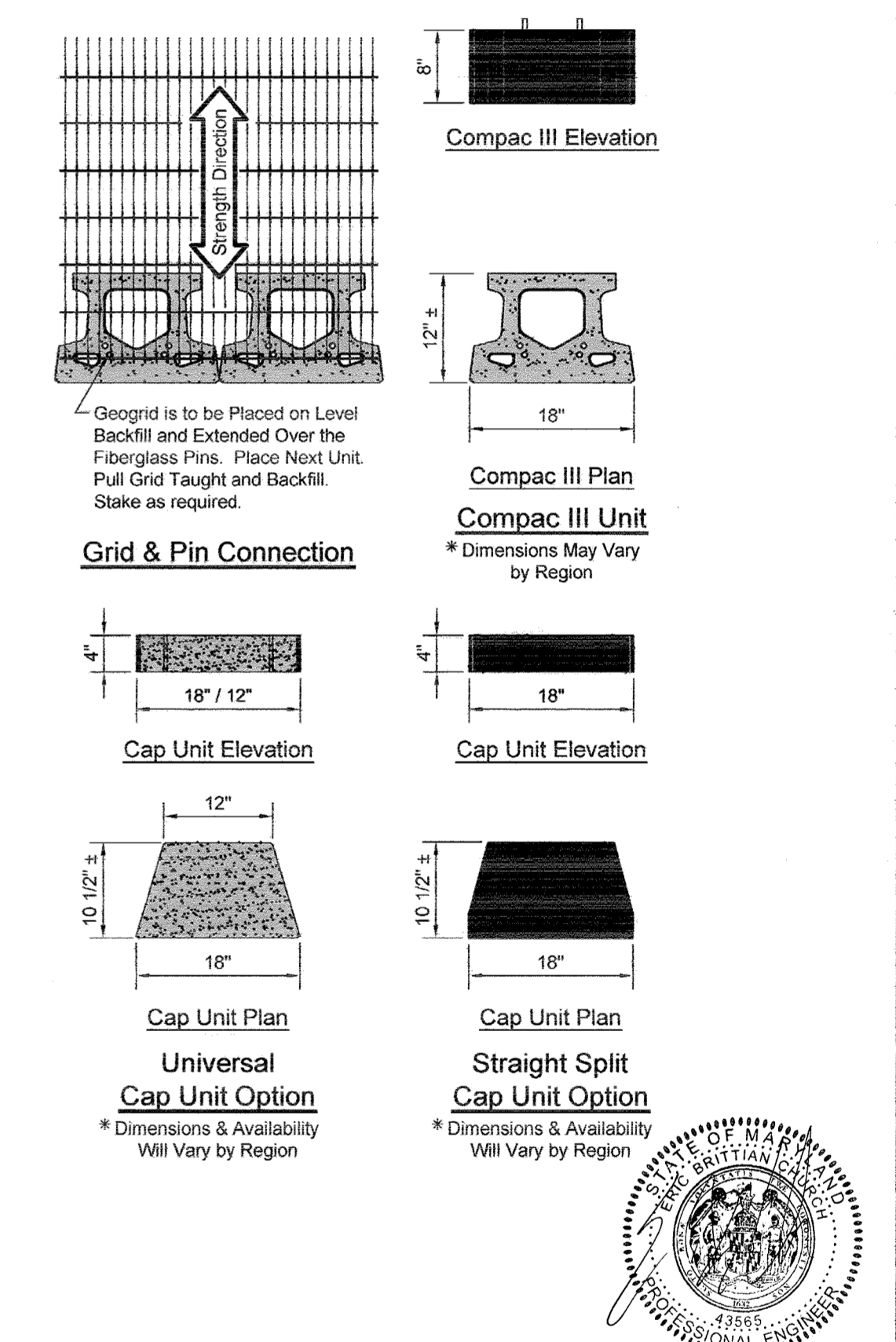
LEVELING PAD DETAIL-KEYSTONE UNITS



DETAIL OF FENCE POST INSTALLATION USING SLEEVE-IT™ 1224R



SITE PLAN SCALE: 1" = 50'



GTA
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REVISED SITE DEVELOPMENT PLAN NOTES & DETAILS
LONG GATE OVERLOOK
 HOWARD COUNTY, MARYLAND

DATE	REVISIONS	JOB NO.
2020-06-09	REVISED WALL PLANS BASED ON ADJUSTED STORM DRAIN ALIGNMENT	31200237
2020-08-21	REVISED WALL PLANS	SCALE: NOT TO SCALE
2020-10-12	REVISED 'SITE DEVELOPMENT PLAN' INCORPORATED	DATE: JUNE 2020
2020-01-05	REVISED 'SITE DEVELOPMENT PLAN' INCORPORATED	DRAWN BY: KCT
2021-05-03	REVISED PLANS TO ELIMINATE CONCRETE COLLARS	DESIGN BY: EBC
6-4-21	REVISE STORM DRAIN WALL PENETRATION DETAILS AND SPECIFICATIONS FROM HDPE TO RCP	REVIEW BY: TMW
		SHEET: 31 OF 37

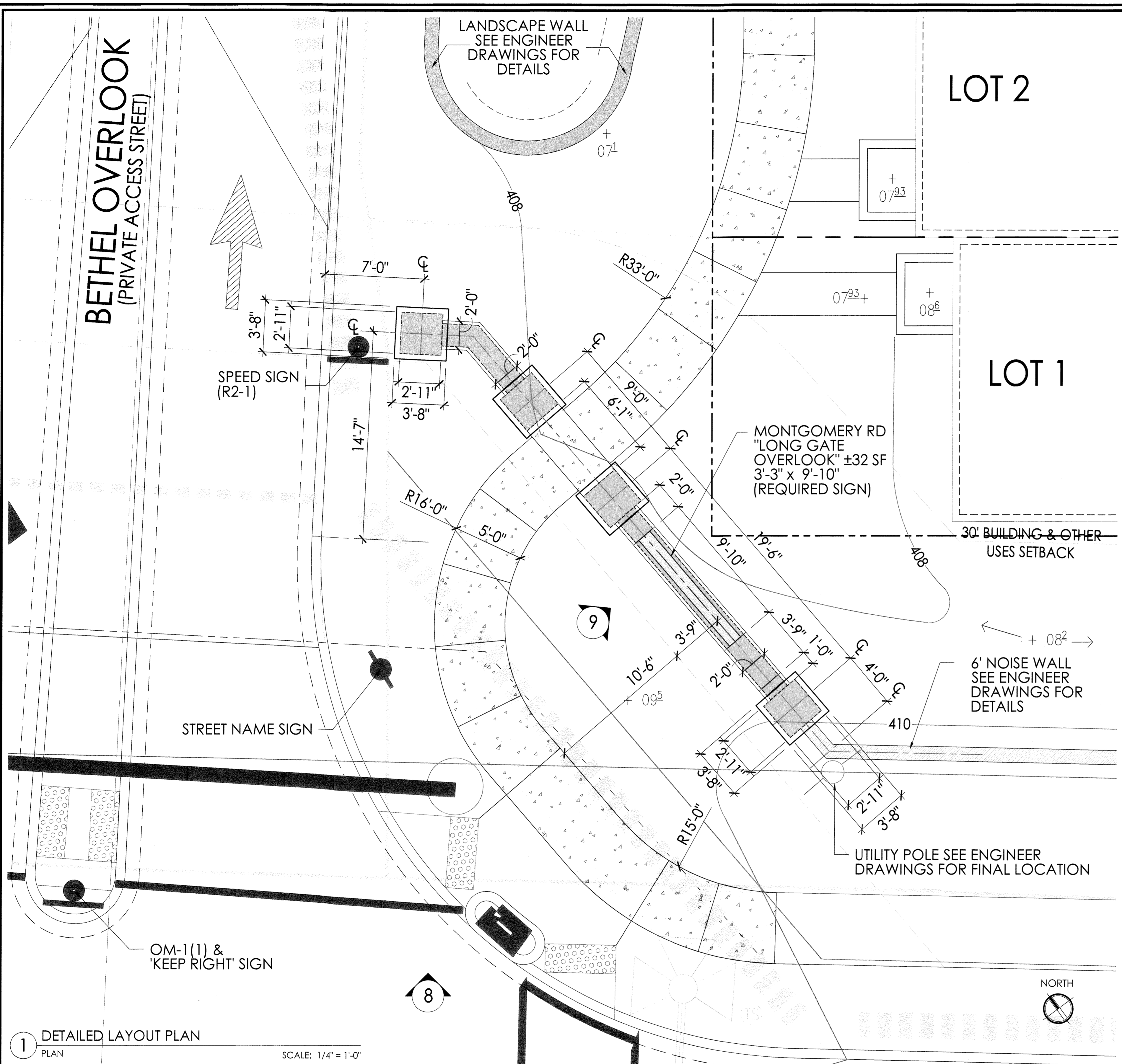
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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

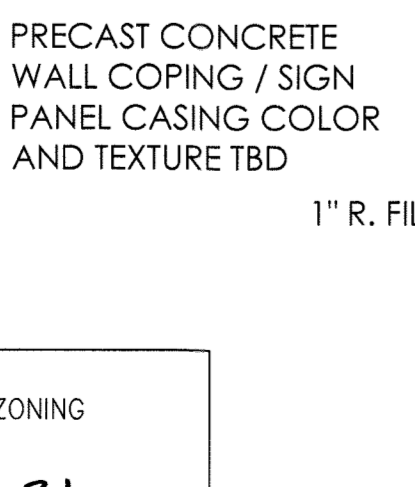
Howard Edmondson
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 7/26/21

For Army Gov
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 7/29/21

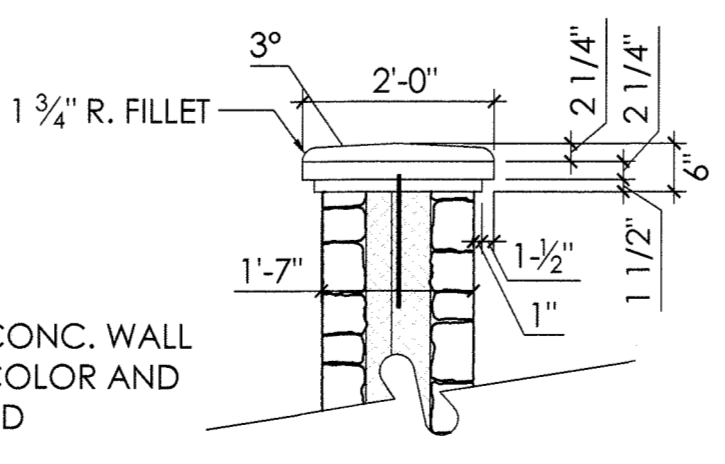
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 DIRECTOR
 DATE: 7/29/21



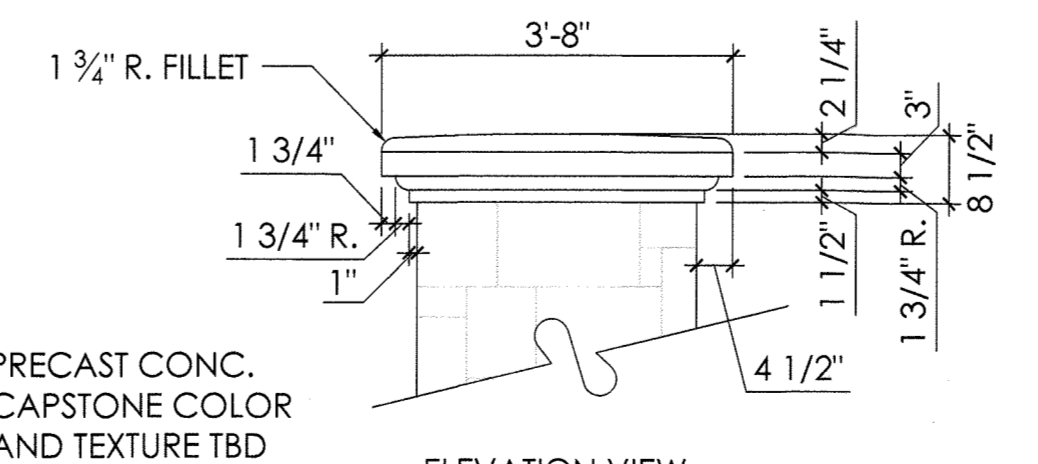
1 DETAILED LAYOUT PLAN
PLAN SCALE: 1/4" = 1'-0"



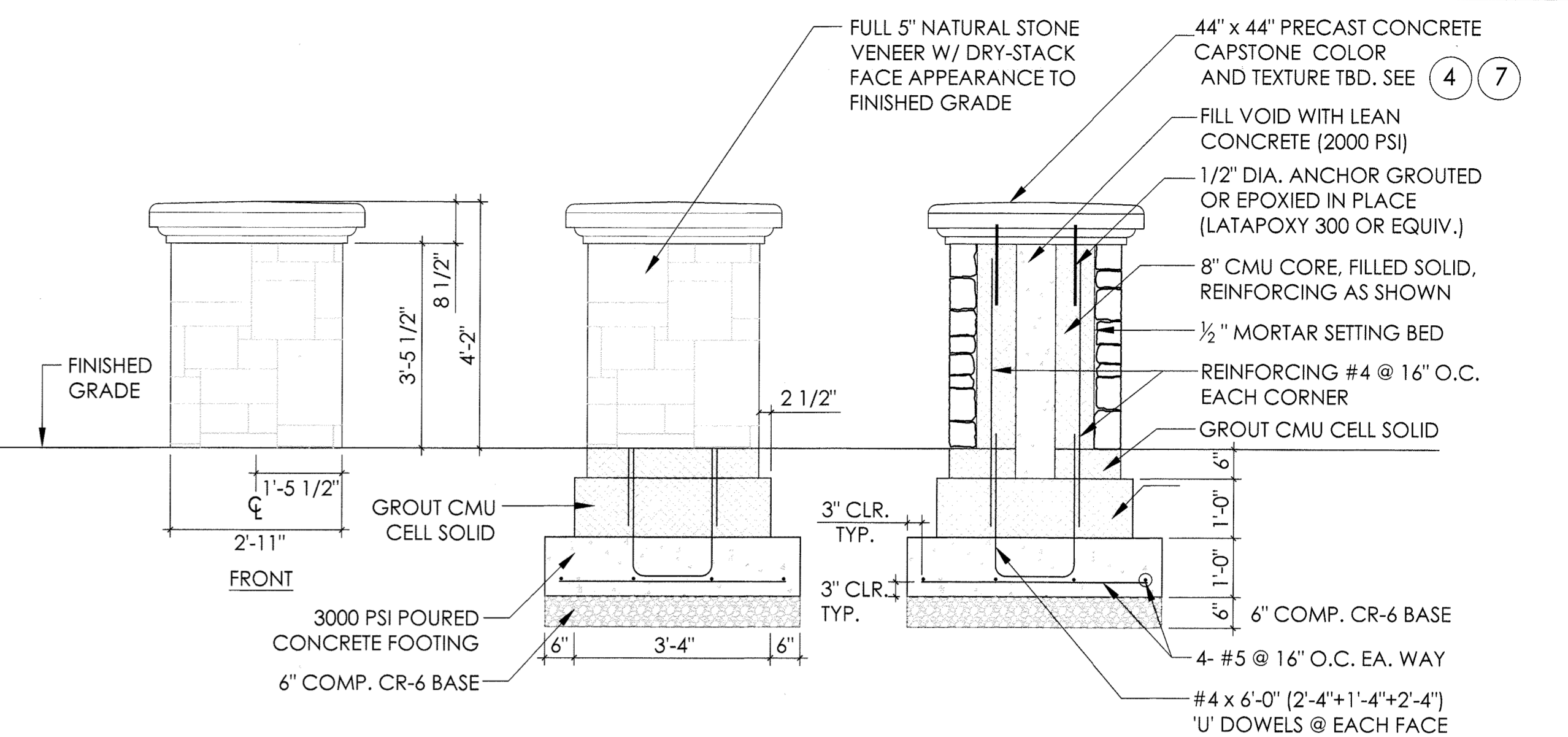
2 PRECAST CONC. SIGNWALL COPING
SECTION SCALE: 1/2" = 1'-0"



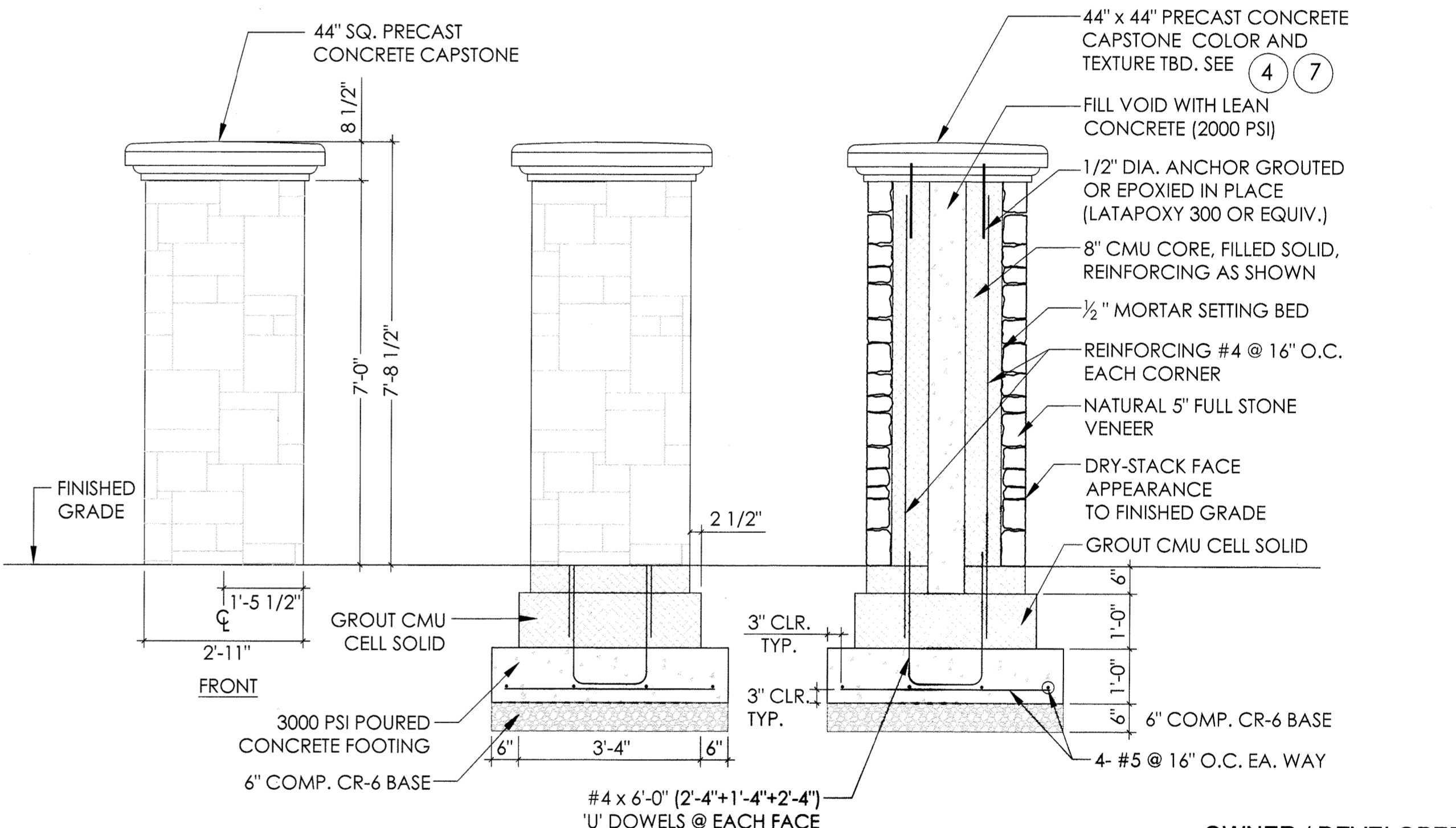
3 PRECAST CONC. WALL COPING
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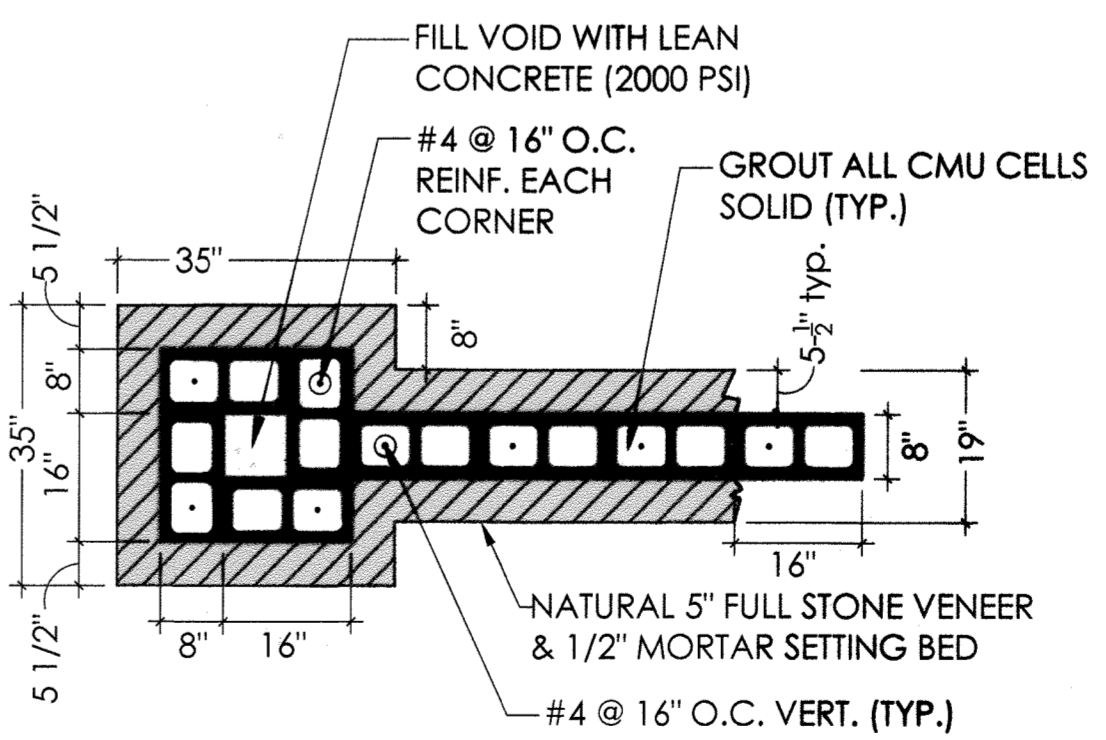
4 PRECAST CONC. CAPSTONE
SECTION SCALE: 1/2" = 1'-0"



5 35" SMALL STONE PIER
ELEVATION/SECTION SCALE: 1/2" = 1'-0"



6 35" ARCHWAY & TALL STONE PIER
ELEVATION/SECTION SCALE: 1/2" = 1'-0"



7 2-11" STONE VENEER PIER / ENTRY WALL CMU CORE DETAIL
PLAN SCALE: 1/2" = 1'-0"

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division
 7.26.21
 Chief, Division of Land Development
 7.29.21
 Director

OWNER / DEVELOPER
 BEAZER HOMES
 ATTN: J. MARTIN SHAFFER, AREA PRESIDENT
 AUTHORIZED SIGNATURE - EAST REGION
 6085 MARSHALLEE DRIVE, SUITE 350
 ELK RIDGE, MD 21075
 443-539-9249

REVISED TO ADD A PRIVATE MONUMENT AND LANDSCAPING EASEMENT		6-14-21
AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019		FEB. 2020
NO.	REVISIONS	DATE
4	REVISED TO ADD A PRIVATE MONUMENT AND LANDSCAPING EASEMENT	6-14-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

REVISED SITE DEVELOPMENT PLAN

LONG GATE OVERLOOK
 LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
 AND OPEN SPACE LOT 100
 A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
 (SFA RESIDENTIAL)

2ND ELECTION DISTRICT
 TAX MAP: 24 GRID: 24
 DPZ REF'S: SEE SITE ANALYSIS DATA CHART ON COVER SHEET

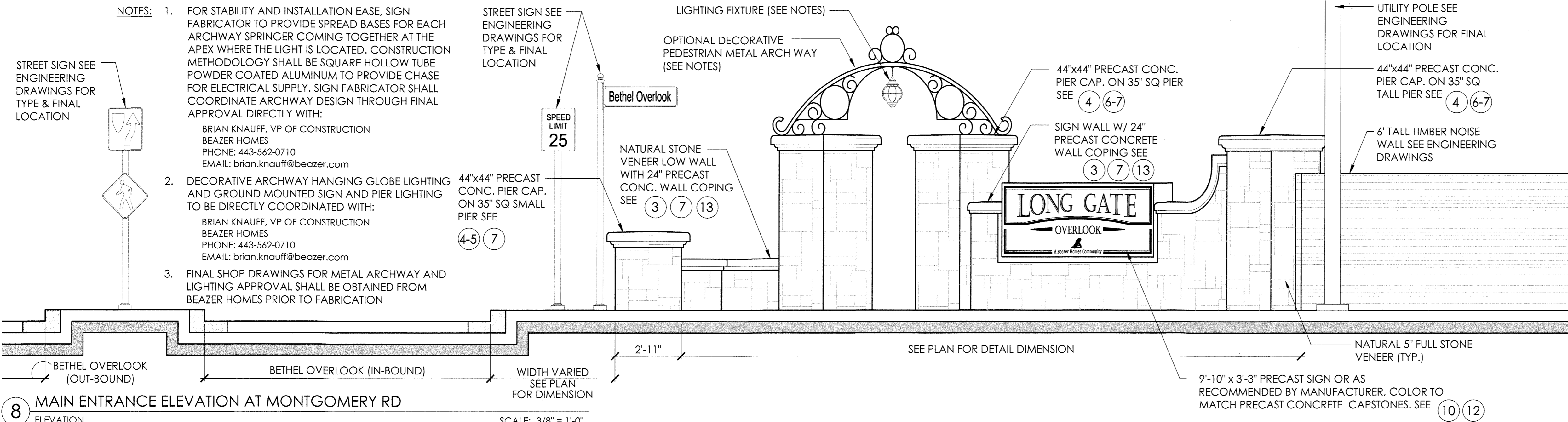
ENGINEERS
 PLANNERS
 SCIENTISTS
 CONSTRUCTION MANAGERS

KCI
 TECHNOLOGIES

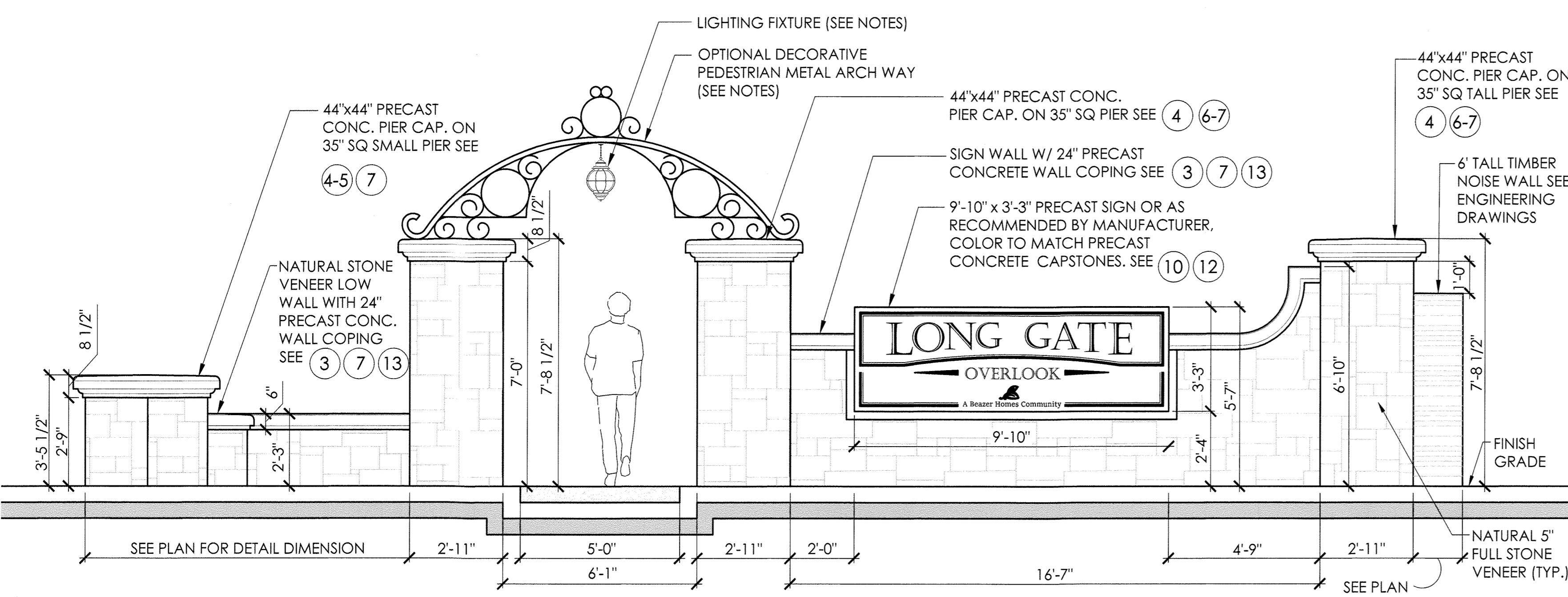
936 RIDGEBOOK ROAD
 SMITHS MARYLAND 21152
 TELEPHONE (410) 336-7800
 FAX (410) 336-7818

DESIGN BY: KCI
 DRAWN BY: KCI
 CHECKED BY: KCI
 DATE: JUNE 2021
 SCALE: AS SHOWN
 W.O. NO.: 08-48

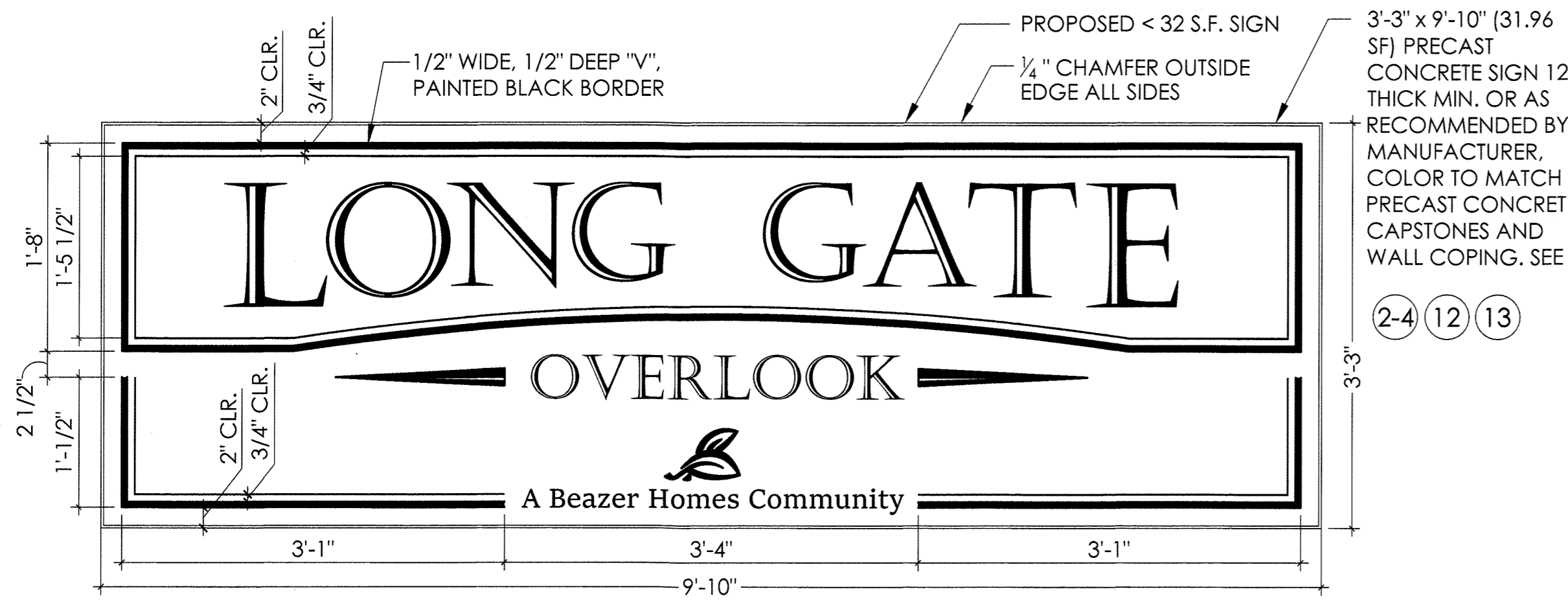
PROFESSIONAL CERTIFICATE
 34 SHEET OF 37



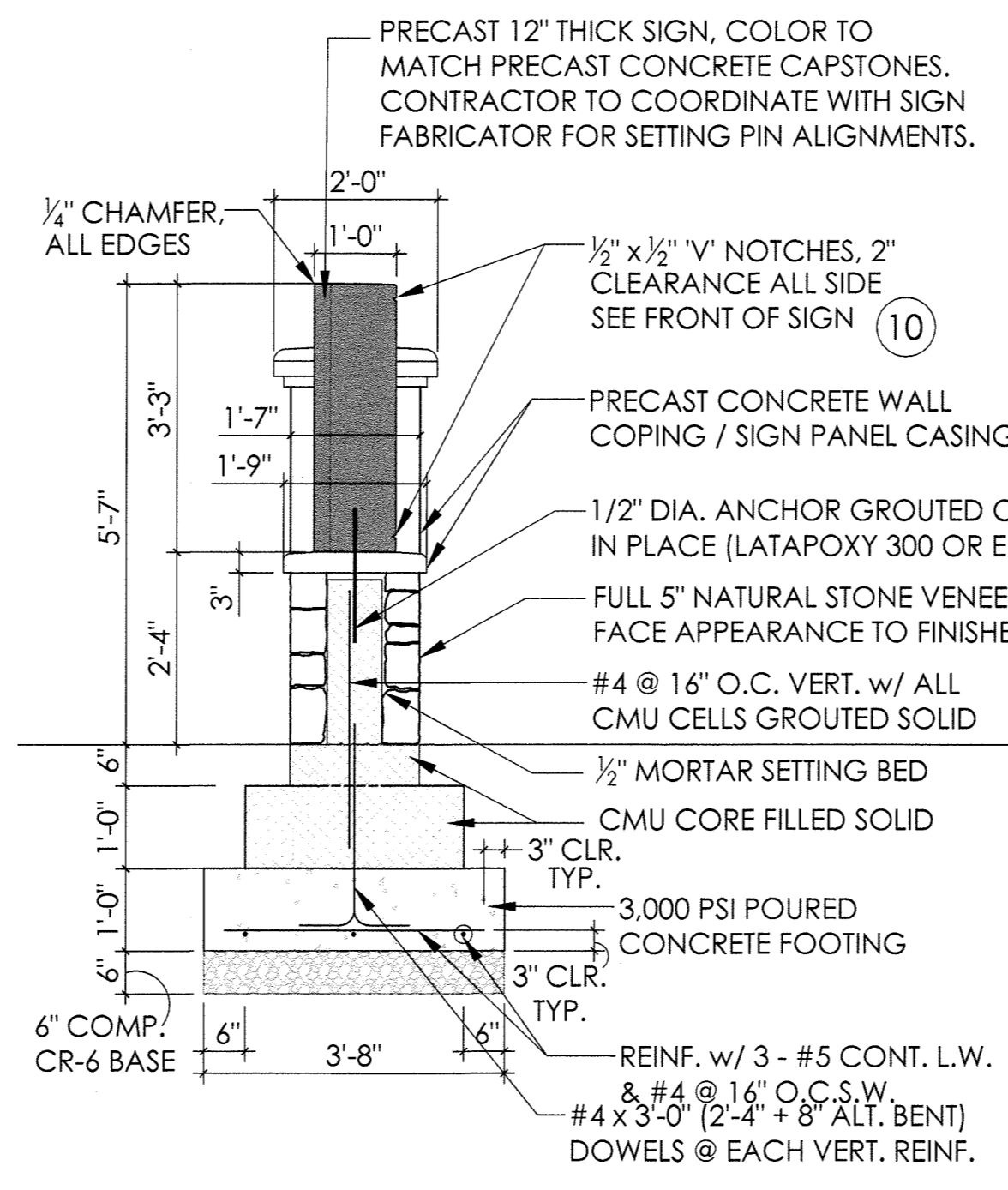
8 MAIN ENTRANCE ELEVATION AT MONTGOMERY RD
ELEVATION SCALE: 3/8" = 1'-0"



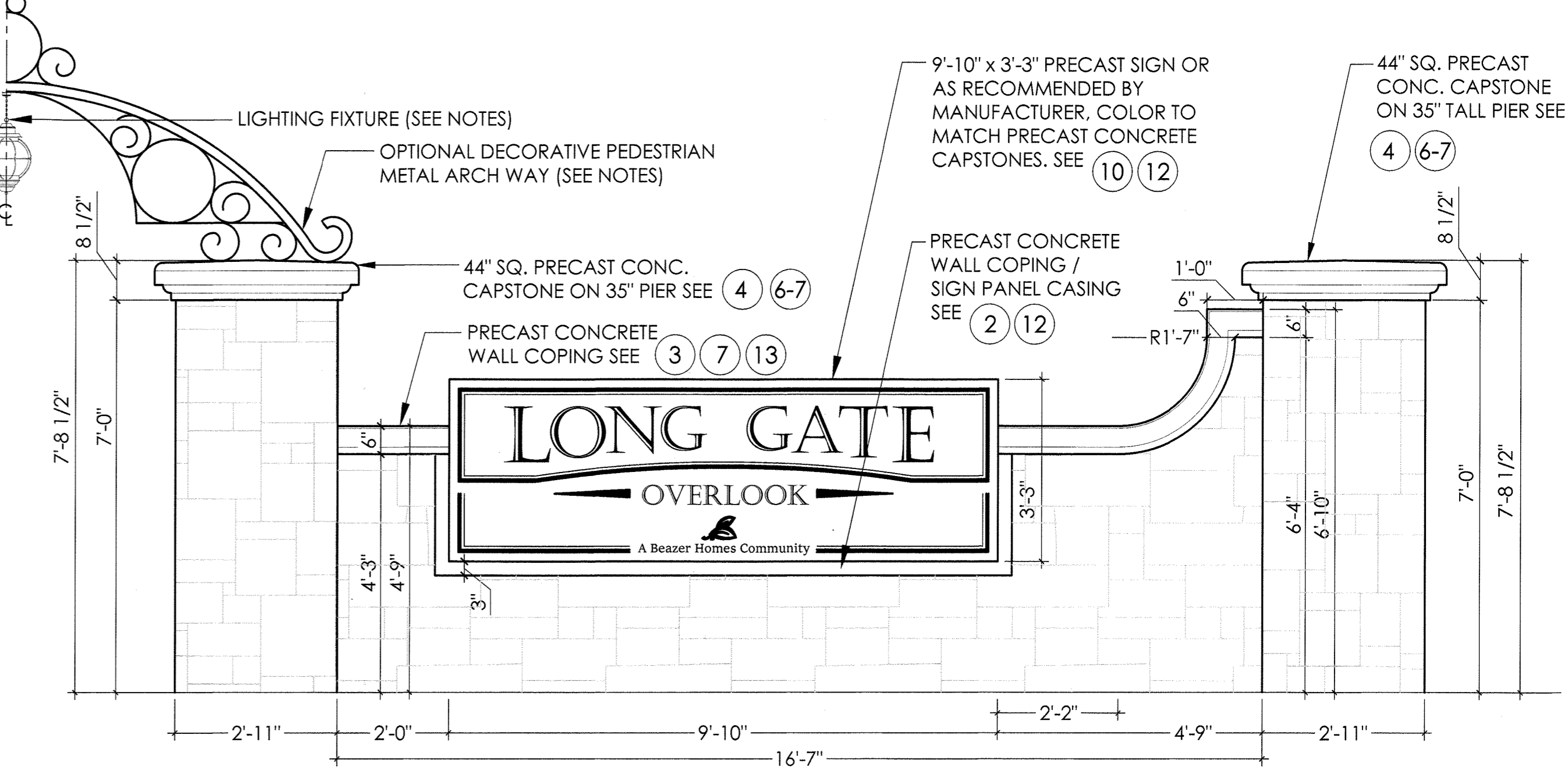
9 ENTRY FEATURE WALL FRONT ELEVATION
ELEVATION SCALE: 3/8" = 1'-0"



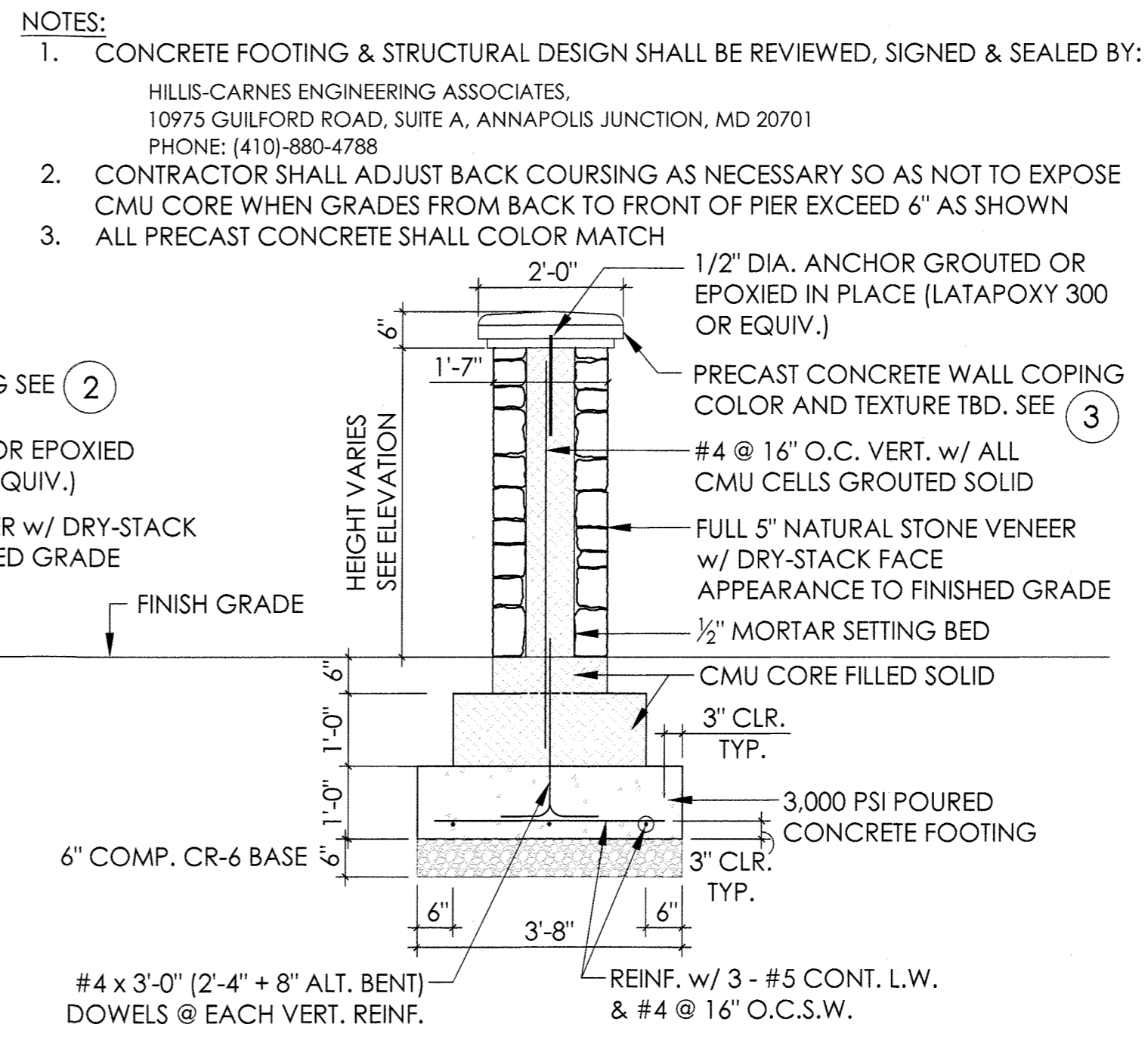
10 PRECAST CONC. SIGN PANEL w/ SIGN AREA CALCULATION PER HOWARD COUNTY ZONING REGULATION
ELEVATION SCALE: 1" = 1'-0"



12 SIGN WALL / SIGN PANEL DETAIL
SECTION SCALE: 1/2" = 1'-0"



11 SIGN WALL & PIER ENLARGEMENT
ELEVATION SCALE: 1/2" = 1'-0"



13 STONE VENEER WALL DETAIL
SECTION SCALE: 1/2" = 1'-0"

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chad Edmister 7.26.21
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
 7/29/21
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
Alex For Amy Gowan 7.29.21
 DIRECTOR DATE

SIGN PANEL NOTE:
 ALL SIGN LETTERING SHALL BE RECESSED INTO PRECAST SIGN PANEL. SHOP DRAWINGS TO BE PROVIDED BY MANUFACTURER FOR APPROVAL. COMMUNITY NAME IN CASTELLAR - PAINTED IN BLACK & GOLD. STANDARD BEAZER HOMES LOGO - PAINTED IN BEAZER HOMES GREEN. SIGN FABRICATOR TO REQUEST COLOR GUIDANCE PDF FROM KCI. FINAL COLOR SAMPLE TO BE APPROVED BY KCI & OWNER.
 SUBMIT LETTER LAYOUT PROOF TO KCI FOR REVIEW & APPROVAL PRIOR TO FABRICATION OF PRECAST SIGNS.

NOTES:
 1. CONCRETE FOOTING & STRUCTURAL DESIGN SHALL BE REVIEWED, SIGNED & SEALED BY: HILLIS-CARNES ENGINEERING ASSOCIATES, 10975 GUILFORD ROAD, SUITE A, ANNAPOLIS JUNCTION, MD 20701, PHONE: (410)-890-4788
 2. CONTRACTOR SHALL ADJUST BACK COURSING AS NECESSARY SO AS NOT TO EXPOSE CMU CORE WHEN GRADES FROM BACK TO FRONT OF PIER EXCEED 6" AS SHOWN
 3. ALL PRECAST CONCRETE SHALL COLOR MATCH

OWNER / DEVELOPER
 BEAZER HOMES
 ATTN: J. MARTIN SHAFER, AREA PRESIDENT
 AUTHORIZED SIGNATURE - EAST REGION
 6085 MARSHALEE DRIVE, SUITE 350
 ELKRODE, MD 21075
 443-539-9249

NO.	REVISION	DATE
4	REVISE TO ADD A PRIVATE MANAGEMENT AND LANDSCAPING BASEMENT	6-14-21
1	AMEND PLAN TO CONFORM WITH THE REQUIREMENTS OF CR-123-2019	FEB. 2020

REVISED SITE DEVELOPMENT PLAN
LONG GATE OVERLOOK
 LOTS 1-39, 82-99, BUILDABLE PARCELS A & B
 AND OPEN SPACE LOT 100
 A RESUBDIVISION OF LOTS 40-79 AND OPEN SPACE LOT 80 - PLATS 25274-25278
 (SFA RESIDENTIAL)

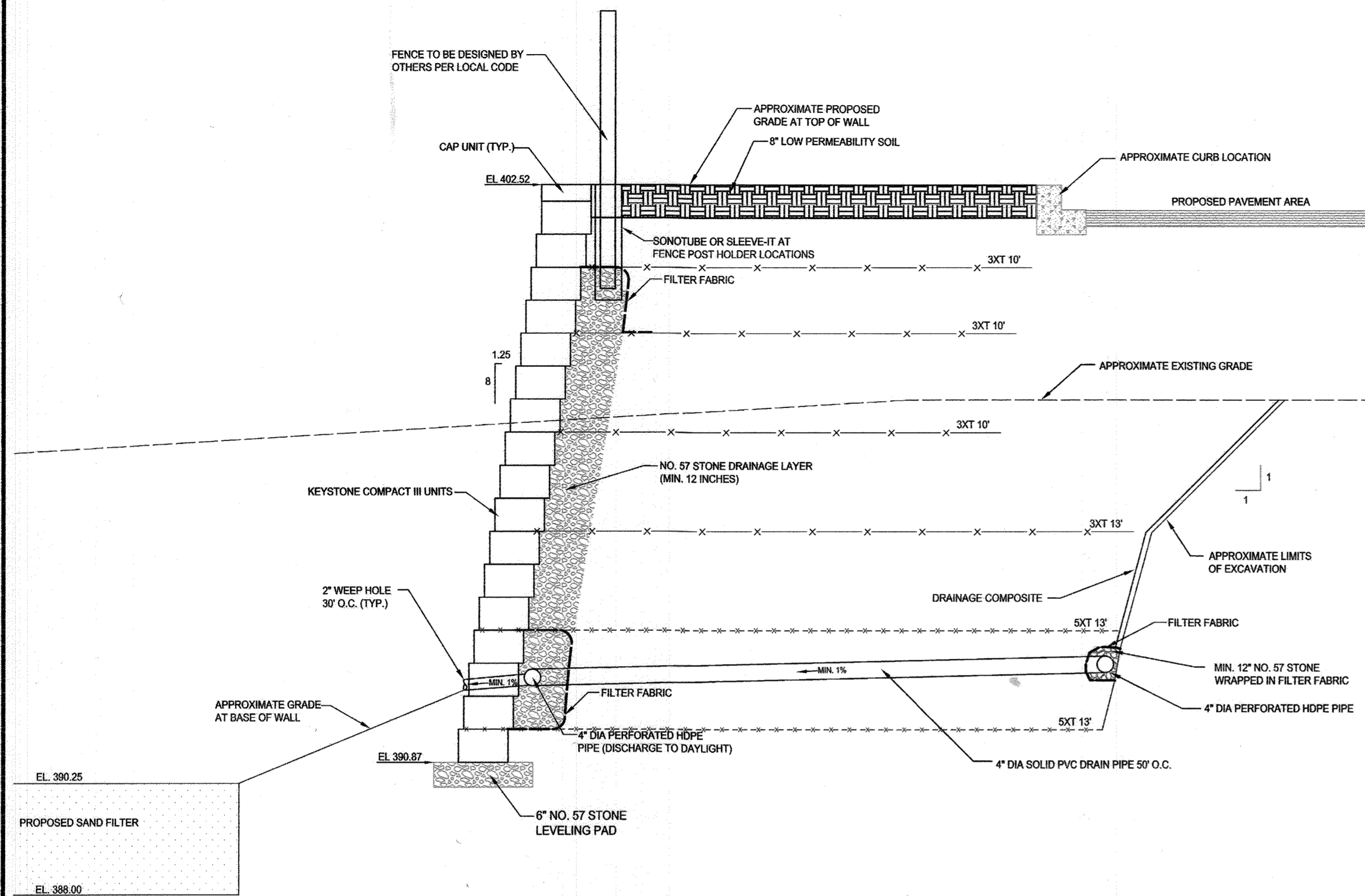
KCI TECHNOLOGIES
 936 ROCKBROOK ROAD
 SHARPS, MARYLAND 21152
 TELEPHONE: (410) 335-7800
 FAX: (410) 316-7818

ENTRY MONUMENT AND DETAILS

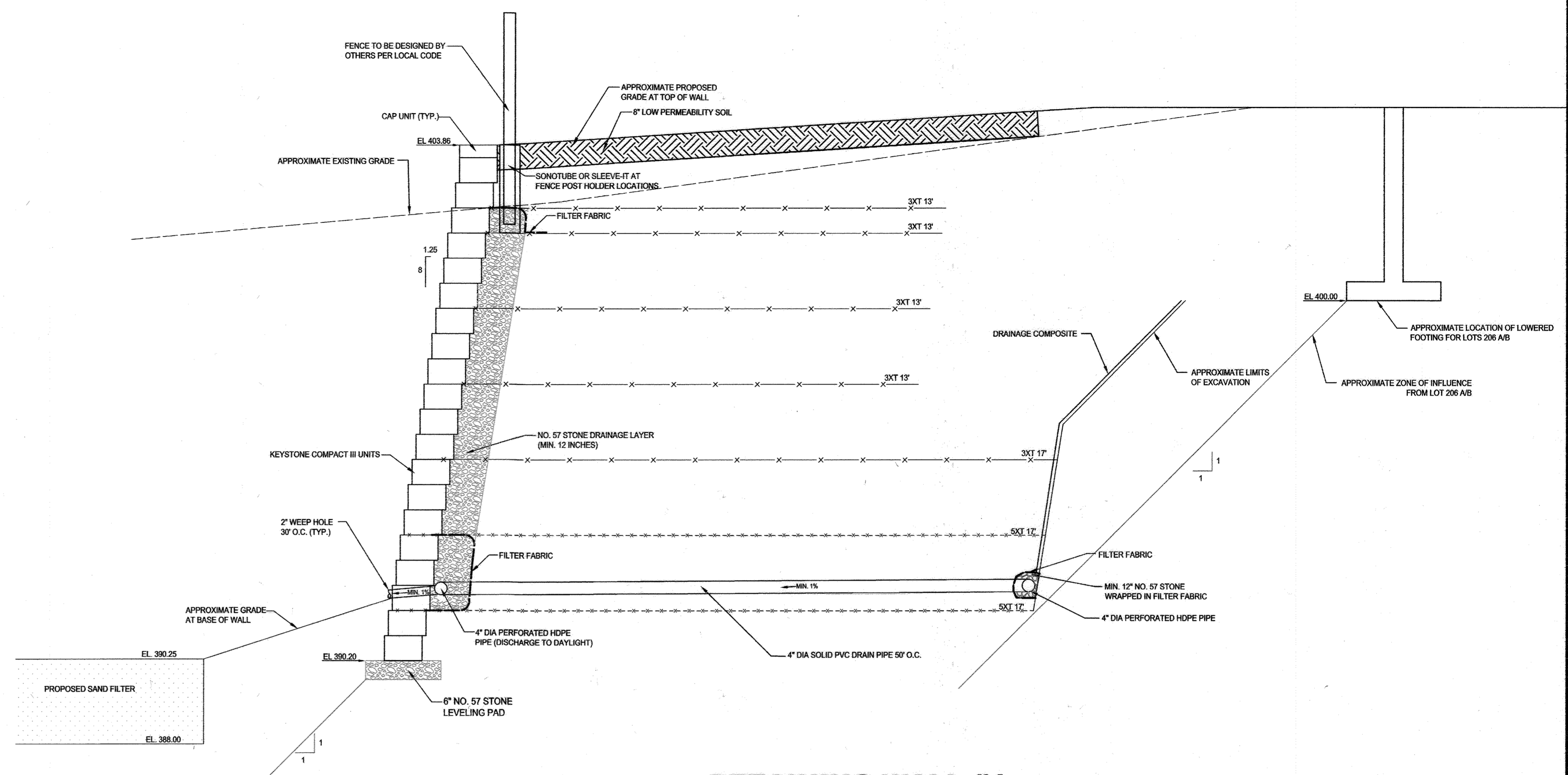
DESIGN BY: KCI
 DRAWN BY: KCI
 CHECKED BY: KCI
 DATE: JUNE 2021
 SCALE: AS SHOWN
 W.O. NO.: 08-48

PROFESSIONAL CERTIFICATE
 35 SHEET OF 37

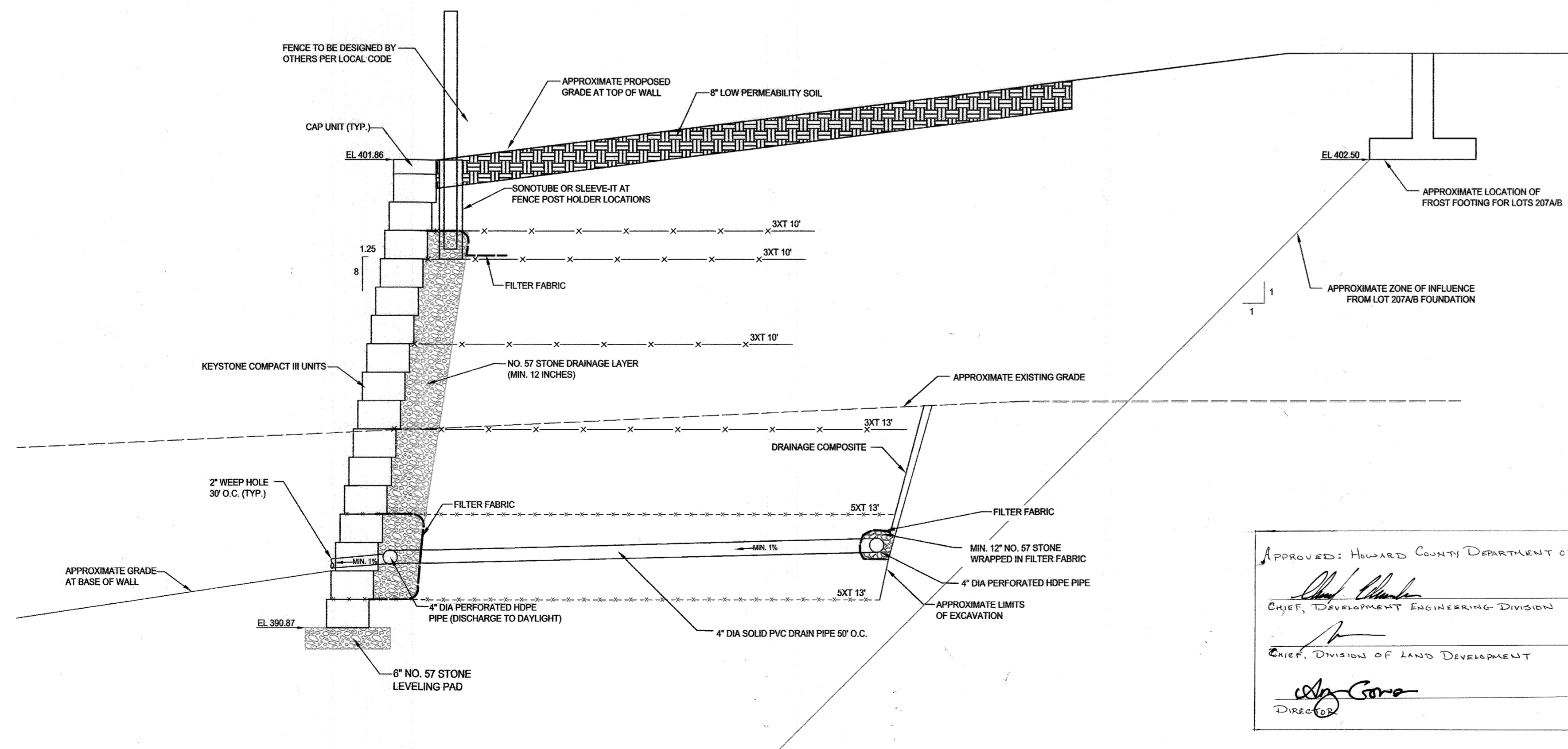
L:\Share\Project Files\2020\2020-06-09 - Long Gate Overlook\GEO\CD\Phy\GEO 31200237 - Long Gate Overlook Retaining Wall Plans



**RETAINING WALL #1
CROSS SECTION VIEW @ STA. 2+09**
SCALE: 1" = 2'



**RETAINING WALL #1
CROSS SECTION VIEW @ STA. 0+85**
SCALE: 1" = 2'



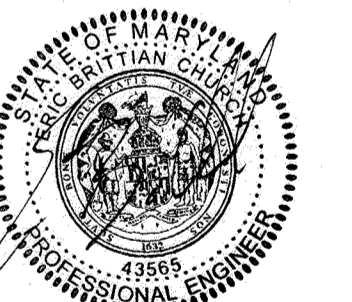
**RETAINING WALL #1
CROSS SECTION VIEW @ STA. 2+25**
SCALE: 1" = 2'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 3-22-21
CHIEF, DEVELOPMENT ENGINEERING DIVISION NY DATE

[Signature] 4/14/21
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 5-3-21
DIRECTOR DATE



		GEO-TECHNOLOGY ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3445-A BOX HILL CORPORATE CENTER DRIVE ABINGDON, MARYLAND 21009 410-515-9446 FAX: 410-515-4895 WWW.GTAENG.COM © 2021 GEO-TECHNOLOGY ASSOCIATES, INC.	
		RETAINING WALL CROSS SECTION LONG GATE OVERLOOK HOWARD COUNTY, MARYLAND	
DATE 2020-06-09 2020-09-21 2020-10-12 2020-01-05	REVISIONS ● REVISED WALL PLANS BASED ON ADJUSTED STORM DRAIN ALIGNMENT ● REVISED WALL PLANS ● REVISED "SITE DEVELOPMENT PLAN" INCORPORATED ● REVISED "SITE DEVELOPMENT PLAN" INCORPORATED	JOB NO: 31200237 SCALE: AS SHOWN DATE: JUNE 2020 DRAWN BY: KCT DESIGN BY: EBC REVIEW BY: TMW SHEET: 33 OF 33	

SEGMENTAL RETAINING WALL SPECIFICATIONS

PART 1 - GENERAL

1.1 WORK INCLUDES

WORK INCLUDES FURNISHING AND INSTALLING SEGMENTAL RETAINING WALL UNITS, GEGRID REINFORCEMENT, WALL FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. THE CONTRACTOR SHALL PROTECT THE EXCAVATION FROM SLOUGHING BY EXCAVATING TO THE APPROPRIATE GRADE FOR THE GIVEN SOIL TYPE AND COVERING THE EXCAVATED FACE WITH THE STONE DRAINAGE LAYER.

1.2 REFERENCE STANDARDS

- A. ASTM C90-75 (1981 REV) - HOLLOW LOAD BEARING MASONRY UNITS.
- B. ASTM C140-75 (1981 REV) - SAMPLING AND TESTING CONCRETE MASONRY UNITS.
- C. ASTM C145-75 (1981 REV) - SOLID LOAD BEARING CONCRETE MASONRY UNITS.
- D. GEOSYNTHETIC RESEARCH INSTITUTE (GRI), GRI-G04 - DETERMINATION OF LONG TERM DESIGN STRENGTH OF GEORGRIDS.
- E. ASTM D 638 - TEST METHOD FOR TENSILE PROPERTIES OF PLASTIC.
- F. ASTM D 1248 - SPECIFICATION OF POLYETHYLENE PLASTICS MOLDING AND EXTRUSION MATERIALS.
- G. ASTM D 4218 - TEST METHOD FOR CARBON BLACK CONTENT IN POLYETHYLENE COMPOUNDS BY THE MUFFLE FURNACE TECHNIQUE.
- H. ASTM D 3034 - SPECIFICATION FOR POLYVINYL CHLORIDE (PVC) PIPE.
- I. ASTM C 1372 - SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.

1.3 DELIVERY, STORAGE AND HANDLING

- A. CONTRACTOR SHALL CHECK THE MATERIALS UPON DELIVERY TO ENSURE THAT THE PROPER MATERIAL HAS BEEN RECEIVED.
- B. CONTRACTOR SHALL PREVENT EXCESSIVE MUD, WET CEMENT, EPOXY, AND LIKE MATERIALS WHICH MAY AFFECT THEMSELVES, FROM COMING IN CONTACT WITH THE MATERIALS.
- C. CONTRACTOR SHALL PROTECT THE MATERIALS FROM DAMAGE, DAMAGED MATERIAL SHALL NOT BE INCORPORATED INTO THE REINFORCED RETAINING WALLS.
- D. GEORGRIDS SHALL BE STORED ABOVE -20°F

1.4 SUBMITTALS/CERTIFICATION

THE CONTRACTOR SHALL SUBMIT A MANUFACTURER'S CERTIFICATION, PRIOR TO THE START OF THE WORK, THAT THE RETAINING WALL SYSTEM COMPONENTS MEET THE REQUIREMENTS OF ASTM C 1372 AND OTHER REQUIREMENTS SPECIFIED HEREIN. THIS CERTIFICATION SHOULD BE PROVIDED TO THE GEOTECHNICAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO WALL CONSTRUCTION.

PART 2 - PRODUCTS

2.1 DEFINITIONS

- A. GEORGRID IS A HIGH DENSITY POLYETHYLENE, POLYESTER, OR POLYPROPYLENE GRID, SPECIFICALLY FABRICATED FOR USE AS A SOIL REINFORCEMENT.
- B. CONCRETE RETAINING WALL UNITS ARE AS DETAILED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
- C. BACKFILL IS THE SOIL WHICH IS USED AS FILL FOR THE REINFORCED SOIL MASS.
- D. FOUNDATION SOIL IS THE IN-SITU SOIL OR CONTROLLED COMPACTED FILL PLACED BELOW THE BOTTOM OF THE RETAINING WALL AND GEORGRID ZONE.

2.2 MATERIALS

THE CONTRACTOR SHALL SUBMIT MANUFACTURER'S CATALOG AND SAMPLES OF THE PROPOSED MATERIALS FOR APPROVAL BY THE PROJECT GEOTECHNICAL ENGINEER A MINIMUM OF SEVEN DAYS BEFORE THE START OF CONSTRUCTION. MATERIALS SHALL BE TRANSPORTED TO THE SITE ONLY AFTER APPROVAL OF THE PROPOSED MATERIALS BY THE PROJECT GEOTECHNICAL ENGINEER.

A. CONCRETE UNITS

- 1. MASONRY UNITS SHALL BE KEYSTONE COMPAC III STRAIGHT FACE UNITS AS DETAILED IN THE DRAWINGS. SUBSTITUTION OF OTHER CONCRETE UNITS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.
- 2. CONCRETE WALL UNITS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI, IN ACCORDANCE WITH ASTM C-90. THE CONCRETE SHALL HAVE ADEQUATE FREEZE/THAW PROTECTION WITH A MAXIMUM MOISTURE ABSORPTION OF 6 PERCENT.
- 3. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C 1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.
- 4. THE UNITS SHALL PASS 100 FREEZE/THAW CYCLES IN WATER WITH LESS THAN 1% WEIGHT LOSS IN ACCORDANCE WITH ASTM C 1372.
- 5. EXTERIOR DIMENSIONS MAY VARY. UNITS ARE REQUIRED TO HAVE A MINIMUM OF 1.0 SQUARE FOOT OF FACE AREA EACH. UNITS SHALL HAVE ANGLED SIDES AND BE CAPABLE OF ATTAINING CONCAVE AND CONVEX ALIGNMENT CURVES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 6. UNITS SHALL BE INTERLOCKED WITH NON-CORROSIVE REINFORCED FIBERGLASS PINS.
- 7. UNITS SHALL BE INTERLOCKED AS TO PROVIDE A MAXIMUM OF 1.25-INCH OF SETBACK PER BLOCK.

B. LEVELING PAD

MATERIAL FOR LEVELING PAD/FOOTING SHALL CONSIST OF COMPACTED FREE-DRAINING COARSE AGGREGATES MEETING THE REQUIREMENTS OF ASTM #57 STONE. A COMPACTED LEVELING PAD SHALL BE A MINIMUM OF 6 INCHES THICK AND 24 INCHES WIDE IS REQUIRED.

C. FIBERGLASS CONNECTING PINS

- 1. THERMOSET ISOPHTHALIC POLYESTER RESIN PULTRUDED FIBERGLASS REINFORCEMENT RODS, A MINIMUM ONE-HALF INCH IN DIAMETER.
- 2. PINS SHALL HAVE A MINIMUM FLEXURAL STRENGTH OF 128,000 PSI AND SHORT BEAM SHEAR OF 6,400PSI.
- 3. FOR SUBSTITUTE OF CONCRETE UNITS, USE OF OTHER COMPATIBLE CONNECTION SYSTEMS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.

D. GEORGRID

- 1. GEOSYNTHETIC REINFORCEMENT SHALL CONSIST OF HIGH PERFORMANCE WOVEN POLYESTER GEORGRIDS MANUFACTURED BY TENCATE INTERNATIONAL FOR SOIL REINFORCEMENT APPLICATIONS. THE TYPE, STRENGTH AND PLACEMENT LOCATION OF THE REINFORCING GEOSYNTHETIC SHALL BE AS SHOWN ON THE PLANS. DETAILED TEST DATA SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION AND SHALL INCLUDE TENSILE STRENGTH (ASTM D 4595 OR ASTM D 6637), CREEP (ASTM D 5262), SITE DAMAGE AND DURABILITY (GRI GG-4), PULLOUT (ASTM D 6706), AND CONNECTION (ASTM D6638) TEST DATA.
- 2. INCLUDED WITH THE TEST DATA SHALL BE A REPORT THAT WILL SHOW THAT THE MIRAFI 3XT SHALL HAVE AN ULTIMATE TENSILE STRENGTH OF 3,500 POUNDS PER LINEAR FOOT (MARV), A LONG-TERM DESIGN STRENGTH OF 1,918 POUNDS PER LINEAR FOOT, IN ACCORDANCE WITH ASTM D 6637 AND A JUNCTION STRENGTH OF 975 POUNDS PER LINEAR FOOT (MARV) IN ACCORDANCE WITH GRI-G04.
- 3. TYPE OF FENCING SELECTED BY THE OWNER/DEVELOPER MAY INTERFERE WITH GEORGRID REINFORCEMENT. INSTALL SONOTUBES CONCURRENTLY WITH GEORGRID AND FILL PLACEMENT TO AVOID CONFLICTS OR DAMAGE TO GEORGRID. OWNER SHALL SELECT FENCING PRIOR TO START OF WALL CONSTRUCTION SO WALL AND FENCE CONTRACTORS CAN COORDINATE INSTALLATION.

E. REINFORCED ZONE

CONTROLLED FILL SOIL SHALL MEET THE REQUIREMENTS OF ASTM NO. 57 STONE UP TO EL. 396.33. CONTROLLED FILL SOILS PLACED ABOVE EL. 396.33 SHALL MEET THE REQUIREMENTS OF AHSHTO GROUP CLASSIFICATION OF A-2-4 OR MORE GRANULAR, IF ADEQUATE QUANTITIES ARE NOT AVAILABLE ON-SITE, IMPORTED BACKFILL SHALL MEET THE ABOVE REQUIREMENTS AND SHALL BE APPROVED BY GTA.

F. RETAINED AND STRUCTURAL FILL

CONTROLLED FILL SOILS TO BE PLACED OUTSIDE THE REINFORCED BACKFILL AREA AND WHERE SPECIFIED SHALL CONSIST OF ON-SITE OR BORROW SOILS MEETING THE REQUIREMENTS OF USCS SM OR MORE GRANULAR. ALL FILL MATERIALS PROPOSED TO BE PLACED BEHIND THE REINFORCED BACKFILL SHALL BE PLACED AS CONTROLLED FILL COMPACTED TO 92 PERCENT OF THE MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE MODIFIED PROCTOR, ASTM D-1557.

G. UNIT FILL / DRAINAGE LAYER

THE UNIT FILL AND DRAINAGE LAYER SHALL CONSIST OF ASTM #57 STONE AND BE PLACED WITHIN THE BLOCK AS UNIT FILL AND BEHIND THE BLOCK AS THE DRAINAGE LAYER WITH A MINIMUM THICKNESS OF 12 INCHES THICK, AS INDICATED ON THE WALL SECTIONS.

H. LOW-PERMEABILITY SOIL

LOW-PERMEABILITY SOILS TO BE PLACED AT THE TOP OF THE WALL WHERE SPECIFIED SHALL CONSIST OF SILTY OR CLAYEY SOILS MEETING THE REQUIREMENTS OF ML, CL, OR SC WITH A MINIMUM OF 30% PASSING THE #200 SIEVE.

I. DRAINAGE PIPE

THE DRAINAGE PIPES SHALL BE PERFORATED HOPE OR SOLID PVC PIPE AS INDICATED ON THE DRAWINGS.

J. FILTER FABRIC

FILTER FABRIC SHALL BE NON-WOVEN, POLYPROPYLENE GEOTEXTILE, 140N MANUFACTURED BY NICOLON MIRAFI GROUP OR APPROVED EQUIVALENT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

10-29-21
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 11/1/21
 CHIEF, DIVISION OF LAND DEVELOPMENT
 11/2/21
 DIRECTOR

PART 3 - EXECUTION

A. EARTHWORK

- 1. THE CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. UNDER NO CIRCUMSTANCES SHOULD THE EXCAVATION LINES AND GRADES BE EXCEEDED, EXCEPT WITH OWNER'S APPROVAL. THE CONTRACTOR SHALL PROTECT THE EXCAVATION FROM SLOUGHING BY EXCAVATING TO THE APPROPRIATE GRADE FOR THE GIVEN SOIL TYPE AND COVERING THE EXCAVATED FACE WITH THE STONE DRAINAGE LAYER.
- 2. THE BOTTOM OF WALL EXCAVATION SHALL BE SLOPED AT A MINIMUM GRADE OF 2% TOWARDS THE WALL FACE.
- 3. THE CONTRACTOR IS RESPONSIBLE FOR STABILITY OF ALL EXCAVATION AND FILL SLOPES REQUIRED TO CONSTRUCT THE WALL. PERFORM ALL EXCAVATION IN ACCORDANCE WITH THE APPLICABLE OSHA AND CITY STANDARDS.
- 4. PRIOR TO RETAINING WALL CONSTRUCTION AND THE PLACEMENT OF FILL, ALL TOPSOIL SHALL BE STRIPPED AND REMOVED FROM THE WALL AREA AND THE AREAS BELOW AND BEHIND EACH WALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE GRADING PLAN.
- 5. PRIOR TO WALL CONSTRUCTION, INSTALL THE UNDER DRAIN SYSTEM THAT TRAVERSES BELOW THE PROPOSED WALL AND BACKFILL WITH CRE. ALL PIPES WITHIN REINFORCED ZONE AND DIRECTLY UNDER WALL FACE SHALL BE PERFORATED SCH 40 PVC.
- 6. CONCURRENTLY WITH WALL CONSTRUCTION, INSTALL ALL STORM DRAIN WITHIN 10 FEET OF REINFORCED ZONE.
 - a. THE STORM DRAIN FROM MH28 TO E54 SHALL BE INSTALLED CURRENTLY WITH WALL CONSTRUCTION. THE 18" RCP WILL INTERSECT THE WALL. UNITS SHALL BE CUT TO FIT AROUND PIPE PENETRATION. THE BLOCK UNITS AROUND THE PIPE PENETRATION SHALL BE FILLED WITH 4,000 PSI GROUT A MINIMUM OF 2' AROUND THE PIPE.

B. FOUNDATION SUBGRADE PREPARATION

- 1. FOUNDATION SOIL SHALL BE EXCAVATED AS REQUIRED FOR INSTALLATION OF LEVELING PAD, GEORGRID, STRUCTURAL FILL, AND OTHER ELEMENTS AND AS SHOWN ON THE CONSTRUCTION DRAWINGS.
- 2. THE EXPOSED SUBGRADE SHALL BE THOROUGHLY PROFFEROLLED. THE SURFICIAL SOFT/LOOSE SOILS, AND TOPSOIL SHALL BE REMOVED TO A STABLE SUBGRADE AS DIRECTED BY GTA.
- 3. ALL FILL REQUIRED TO ACHIEVE THE WALL BOTTOM ELEVATION SHALL CONSIST OF STRUCTURAL FILL THAT MEETS THE REQUIREMENTS OF PART 2, ITEM F. THE FILL SHALL BE PREPARED, PLACED, COMPACTED, AND TESTED IN ACCORDANCE WITH PART 3, ITEM F. PLACEMENT OF STRUCTURAL FILL SHALL NOT PROCEED UNTIL THE SUBGRADE HAS BEEN APPROVED BY GTA.
- 4. FOUNDATION SOIL SHOULD BE EXAMINED BY GTA TO ASSURE THAT THE ACTUAL FOUNDATION SOIL STRENGTH MEETS OR EXCEEDS ASSUMED DESIGN STRENGTH. SOILS NOT MEETING REQUIRED STRENGTH SHOULD BE REMOVED AND REPLACED WITH CONTROLLED, COMPACTED MATERIAL.
- 5. ALLOWABLE BEARING PRESSURE FOR NATURAL AND CONTROLLED, COMPACTED STRUCTURAL FILL SHALL BE AS SPECIFIED IN PART 5, FOUNDATION SOIL.

C. LEVELING PAD

- 1. THE LEVELING PAD SHALL BE PLACED AS SHOWN ON THE CONSTRUCTION DRAWINGS WITH A MINIMUM THICKNESS OF 6 INCHES AND 24 INCHES WIDE.
- 2. LEVELING PAD MATERIALS SHALL BE INSTALLED UNDISTURBED IN-SITU SOILS OR CONTROLLED, COMPACTED BACKFILL.
- 3. IF UNDOCUMENTED FILL IS ENCOUNTERED AT THE RETAINING WALL FOUNDATION SUBGRADE, THE UNDOCUMENTED FILL SHALL BE OVER EXCAVATED DOWN TO NATURAL UNDISTURBED GROUND, AND BACKFILLED WITH MATERIAL IDENTIFIED IN PART 1, ITEM F. THE BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH PART 3, ITEM F.
- 4. LEVELING PAD SHALL BE PREPARED TO ENSURE COMPLETE CONTACT OF RETAINING WALL UNIT WITH BASE. GAPS SHALL NOT BE ALLOWED.
- 5. THE LEVELING PAD SHALL BE CONSTRUCTED WITH THE MATERIALS DESCRIBED IN PART 2.

D. UNIT INSTALLATION

- 1. FIRST COURSE OF CONCRETE WALL UNITS SHALL BE PLACED ON THE LEVELING PAD. THE UNITS SHALL BE CHECKED FOR LEVEL AND ALIGNMENT. THE FIRST COURSE IS THE MOST IMPORTANT TO PROVIDE ACCURATE AND ACCEPTABLE RESULTS.
- 2. ENSURE THAT UNITS ARE IN FULL CONTACT WITH BASE.
- 3. UNITS ARE PLACED SIDE BY SIDE FOR FULL LENGTH OF WALL ALIGNMENT. ALIGNMENT MAY BE DONE BY MEANS OF A STRING LINE OR OFFSET FROM BASE LINE.
- 4. INSTALL FIBERGLASS CONNECTING PIN.
- 5. LAY UP EACH COURSE ENSURING THAT THE CONNECTING PINS ARE INSERTED THROUGH FRONT SLOT OF THE UNIT, AND INTO THE RECEIVING SLOT IN THE COURSE BENEATH. REPEAT PROCEDURE TO THE EXTENT OF WALL HEIGHT.
- 6. AT THE END OF EACH COURSE WHERE THE WALLS CHANGE ELEVATION, UNITS SHALL BE TURNED INTO THE BACKFILL UNITS SHALL BE LAID AS TO CREATE THE MINIMUM RADIUS POSSIBLE UNLESS OTHERWISE SHOWN ON THE DRAWINGS. A MINIMUM OF ONE UNIT SHALL BE INSTALLED INTO THE GRADE, ONLY THE FRONT FACE OF THE UNITS SHALL BE VISIBLE FROM THE SIDE OF THE WALLS.
- 7. CAP UNITS SHALL BE INSTALLED AND BONDED WITH CONSTRUCTION ADHESIVE OR EPOXY CEMENT AS REQUIRED BY MANUFACTURER.
- 8. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE FOR THE BACK OF THE RETAINING WALLS DURING CONSTRUCTION.

E. GEORGRID INSTALLATION

- 1. THE GEORGRID SOIL REINFORCEMENT SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL AND CONNECTED TO THE CONCRETE WALL UNITS. HOOK GRID OVER THE FIBERGLASS CONNECTING PIN, PULL TAUT, AND ANCHOR BEFORE BACKFILL IS PLACED ON THE GEORGRID.
- 2. SLACK IN THE GEORGRID AT THE WALL UNIT CONNECTIONS SHALL BE REMOVED IN A MANNER, AND TO SUCH A DEGREE, AS APPROVED BY THE ENGINEER.
- 3. GEORGRID SHALL BE LAID AT THE PROPER ELEVATION AND ORIENTATION AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE ENGINEER.
- 4. CORRECT ORIENTATION (ROLL DIRECTION) OF THE GEORGRID SHALL BE VERIFIED BY THE CONTRACTOR.
- 5. GEORGRID SHALL BE SECURED IN-PLACE WITH STAPLES, PINS, SAND BAGS, OR BACKFILL AS REQUIRED BY FILL PROPERTIES, FILL PLACEMENT PROCEDURES, OR WEATHER CONDITIONS, OR AS DIRECTED BY THE ENGINEER.
- 6. OVERLAPS.
 - a. UNIAXIAL GEORGRID DOES NOT NEED TO BE OVERLAPPED IN THE ACROSS THE ROLL DIRECTION, EXCEPT TO CONTAIN THE FILL AT THE SLOPE FACE WHEN WRAP-AROUND FACING IS USED. UNIAXIAL GRID SHOULD BE OVERLAPPED 48" IN THE ROLLED DIRECTION.
 - b. A LAYER OF SOIL A MINIMUM OF 4 INCHES IN THICKNESS SHALL BE SPREAD BETWEEN UNIAXIAL GEORGRID LAYERS IN THE AREA TO BE OVERLAPPED, OR AS DIRECTED.

F. PLACEMENT OF FILL AND BACKFILL

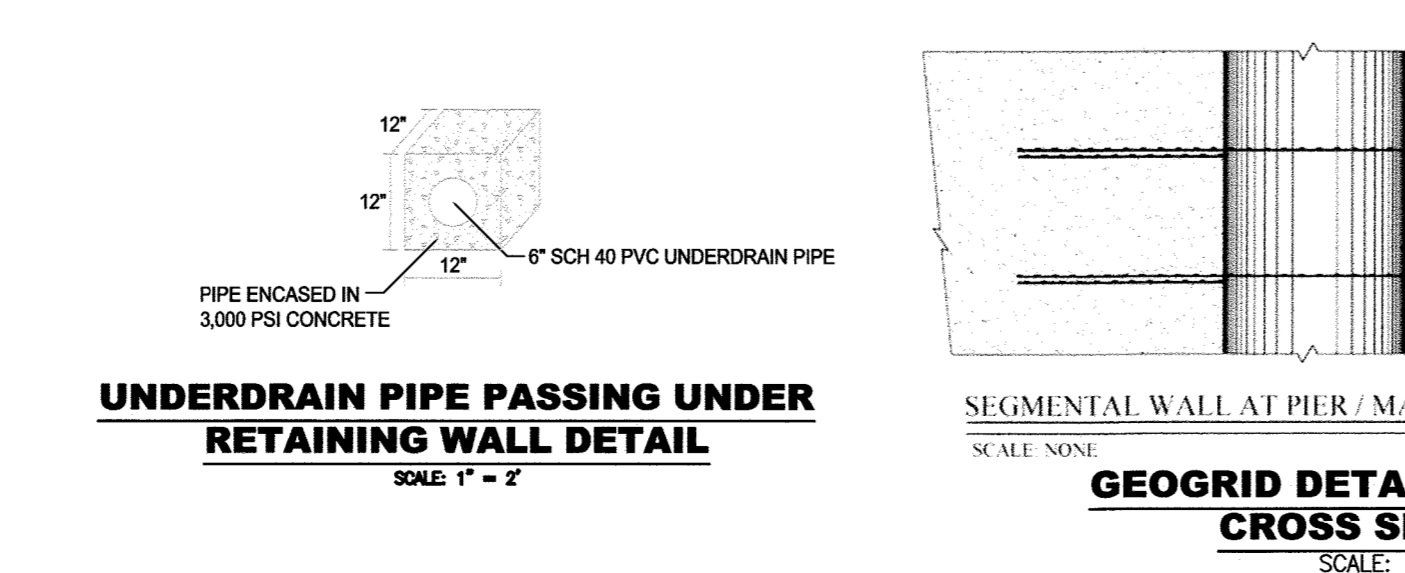
- 1. FILL MATERIALS SHALL BE PLACED IN LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS.
- 2. AT THE TIME OF COMPACTION, LIFT MATERIALS SHALL BE WITHIN -2% TO +4% OF THE OPTIMUM MOISTURE CONTENT, AND SHALL BE COMPACTED TO A MINIMUM OF 92% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM SPECIFICATION D-1557, THE MODIFIED PROCTOR METHOD.
- 3. BACKFILL SHALL BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF WRINKLES IN AND/OR MOVEMENT OF THE GEORGRID. PLACE BACKFILL FROM FRONT OF GEORGRID AND SPREAD TO BACK OF GEORGRID.
- 4. THE LIFT OF BACKFILL IMMEDIATELY BELOW A LAYER OF GEORGRID SHALL BE SCARIFIED TO A DEPTH OF 2 INCHES IMMEDIATELY AFTER COMPLETION OF LIFT COMPACTION. THE GEORGRID SHALL BE PLACED AND THE SUBSEQUENT LIFT OF SOIL PLACED AND COMPACTED THE SAME DAY AS THE UNDERLYING LIFT IS SCARIFIED.
- 5. ONLY HAND-OPERATED COMPACTION EQUIPMENT SHALL BE ALLOWED WITHIN 4 FEET OF THE WALL FACE.
- 6. BACKFILL SHALL BE PLACED FROM THE WALL OUTWARD TO ENSURE THAT THE GEORGRID REMAINS TAUT.
- 7. TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED WITHIN THE REINFORCED ZONE BEHIND THE WALL.
- 8. RUBBER-TIRED EQUIPMENT MAY PASS OVER THE GEORGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHOULD BE AVOIDED.
- 9. ALL FILL AND BACKFILL OPERATIONS SHALL BE OBSERVED ON A FULL-TIME BASIS BY A QUALIFIED SOIL TECHNICIAN TO DETERMINE IF MINIMUM COMPACTION REQUIREMENTS ARE BEING MET AND THAT MATERIALS MEETING OR EXCEEDING THE SPECIFICATION REQUIREMENTS ARE USED.
- 10. IN-PLACE DENSITY TESTS SHALL BE PERFORMED WITH A MINIMUM OF 1 TEST PER 2,000 SQUARE FEET OF FILL AREA FOR EACH LIFT OF FILL PLACED. THE ELEVATION AND LOCATION OF THE TESTS SHALL BE CLEARLY IDENTIFIED AT THE TIME OF FILL PLACEMENT.
- 11. THE BACKFILL MATRIX MUST BE CONSTRUCTED SO THAT FINE GRAIN SOILS DO NOT TRAP WATER.

G. DRAINAGE

- 1. DRAINAGE FILL SHALL BE PLACED BEHIND THE WALLS TO THE LIMITS SHOWN. THE DRAINAGE FILL SHALL BE A MINIMUM OF 12 INCHES THICK AND SHALL MEET THE REQUIREMENTS OF ASTM #57 STONE. THE DRAINAGE FILL SHALL BE WRAPPED IN FILTER FABRIC (MIRAFI 140N OR EQUAL) AS SHOWN ON THE DRAWINGS.
- 2. POSITIVE DRAINAGE SHALL BE MAINTAINED DURING AND AFTER CONSTRUCTION. SOILS WITHIN THE REINFORCED ZONE THAT BECOME WET DURING CONSTRUCTION SHALL BE DRIED OR REMOVED.
- 3. INSTALL THE PERFORATED DRAINAGE PIPES AND LATERAL DRAINAGE PIPES INCREMENTALLY ALONG WITH THE INSTALLATION OF CONCRETE UNITS AND PLACEMENT OF FILL.

H. FENCE

THE SELECTED FENCE SHALL BE INSTALLED BEHIND THE BLOCK CELLS AS SHOWN ON THE DRAWINGS AT FENCE POST HOLDER LOCATIONS AND IN ACCORDANCE WITH THE FENCE DESIGNER'S SPECIFICATIONS.



PART 4 - CONSTRUCTION OBSERVATION AND TESTING

- A. THE RETAINING WALL SHOULD ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF GTA TO CONFIRM THAT THE SOIL AND MATERIALS USED DURING CONSTRUCTION MEET THE REQUIREMENTS SPECIFIED HEREIN. IF GTA IS NOT CONTRACTED TO PROVIDED CONSTRUCTION OBSERVATION AND TESTING SERVICES DURING WALL CONSTRUCTION, GTA IS RELIEVED OF ALL RESPONSIBILITY FOR THE PERFORMANCE OF THE WALLS.
- B. THE REQUIRED BEARING PRESSURE BENEATH THE FOOTING OF THE WALL SHALL BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE GEOTECHNICAL ENGINEER PRIOR TO THE START OF WALL CONSTRUCTION. THE REQUIRED TEST PROCEDURE SHALL BE THE DYNAMIC CONE PENETROMETER (DCP) TEST ASTM STP-399.
- C. THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN.

PART 5 - DESIGN PARAMETERS

WALL GEOMETRY	WALL #2
MAXIMUM EXPOSED WALL HEIGHT (FT.):	6.32'
ANGLE OF FACE (DEG.):	8'
BLOCK EMBEDMENT (IN.):	WIRES (MIN. 8')
MAXIMUM BACKFILL SLOPE ANGLE (DEG.):	18.4'
MAXIMUM TOE SLOPE ANGLE (DEG.):	18.4'
REINFORCED FILL ZONE	NO. 57 STONE
DENSITY OF BACKFILL (PCF):	110
PHI (DEG.):	36
COHESION (PSF):	0
RETAINED ZONE	125
DENSITY (PCF):	26
PHI (DEG.):	0
COHESION (PSF):	0
FOUNDATION SOIL	125
DENSITY (PCF):	24
PHI (DEG.):	0
COHESION (PSF):	0
LEVELING PAD MATERIAL	NO. 57 STONE
ALLOWABLE BEARING PRESSURE (PSF):	2,500
MODULAR BLOCK DATA	
KEYSTONE BLOCKS:	COMPAC III UNITS
KEYSTONE CAP BLOCKS:	4" IRON CAP UNITS
UNIT FILL:	AGGREGATE, ASTM NO. 57

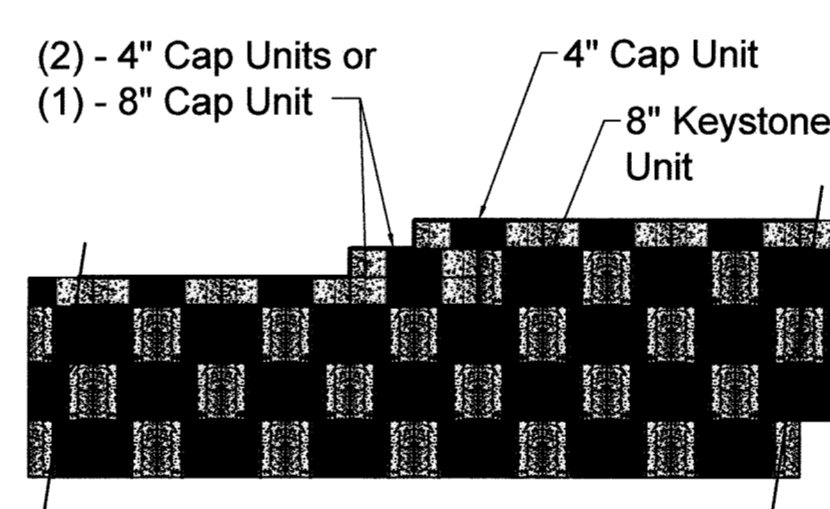
GEORGRID DATA	MIRAFI 3XT
GEORGRID TYPE:	100
COVERAGE OF GEORGRIDS:	0.8
WALL/SOIL INTERACTION COEFFICIENT:	0.8
DIRECT SHEAR COEFFICIENT:	CRUSHED STONE
CONSTRUCTION DAMAGE BASED ON:	5 FEET TO 9 FEET
GEORGRID LENGTH (FT.):	MIRAFI 140 N, OR APPROVED EQUIVALENT
GEOTEXTILE:	

PART 6 - DESIGN CRITERIA

- 1. DESIGN PARAMETERS
 - MIN. F.S. FOR SLIDING: 1.5
 - MIN. F.S. FOR OVERTURNING: 2.0
 - MIN. F.S. FOR UNCERTAINTIES: 1.5
 - MIN. F.S. FOR GLOBAL STABILITY: 1.3
 - LIVE LOAD (GRASS): 100 PSF
 - DEAD LOAD (HOUSE): 0 PSF
- 2. THE WALL IS LOCATED ENTIRELY ON PRIVATE PROPERTY AND IS TO BE PRIVATELY MAINTAINED BY THE PROPERTY OWNER.
- 3. THE STRUCTURAL DESIGN OF THE FENCE IS TO BE PERFORMED BY OTHERS PER LOCAL CODE.
- 4. STOCKPILES SHALL NOT BE PLACED ON TOP OF ANY RETAINING WALL WITHIN THE REINFORCED OR RETAINED ZONES AT ANY TIME. STOCKPILES SHALL NOT BE PLACED AT THE BASE OF ANY RETAINING WALL WITHIN 20 FEET OF THE WALL FACE AT ANY TIME. STOCKPILE MATERIALS INCLUDE, BUT ARE NOT LIMITED TO SOIL, SNOW, AND LANDSCAPING MATERIAL.

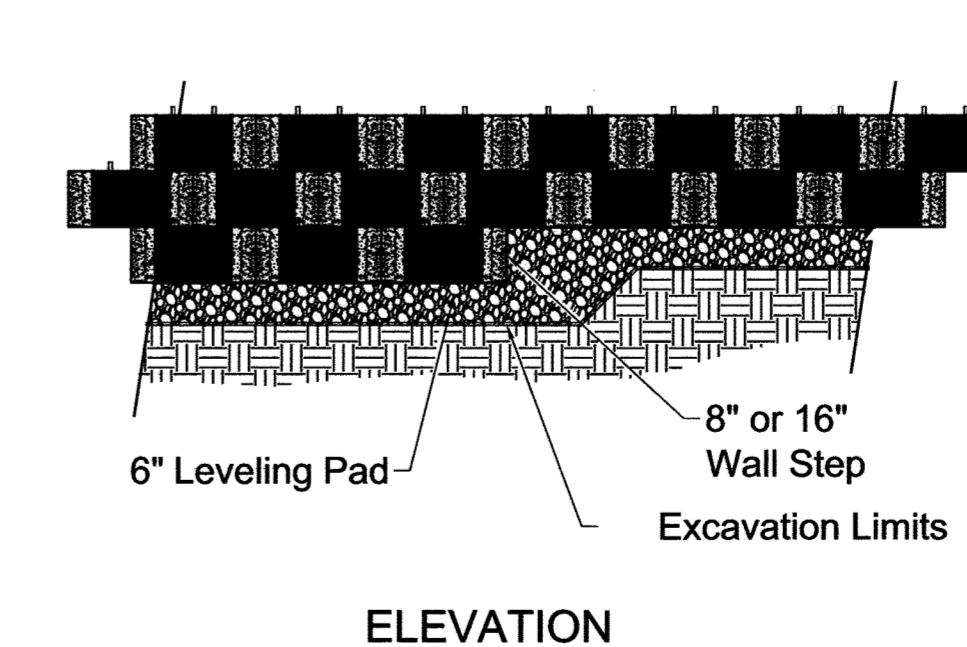
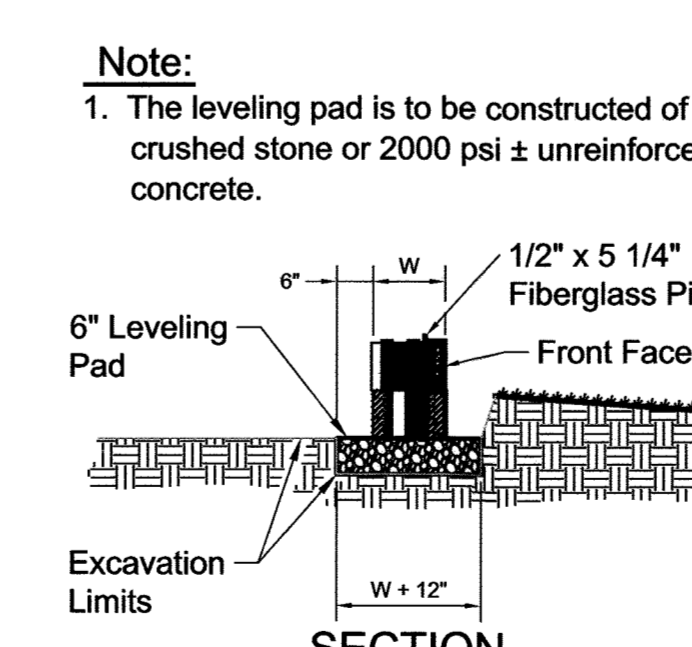
PART 7 - CONSTRUCTION SEQUENCE

- A. OBTAIN BUILDING PERMITS AND INSTALL SEDIMENT AND EROSION CONTROL DEVICES.
- B. CONSTRUCT LEVELING PAD.
- C. PRIOR TO WALL CONSTRUCTION, INSTALL UNDER DRAIN SYSTEM ASSOCIATED WITH UNDERGROUND SWM FACILITY.
- D. CONCURRENTLY WITH WALL CONSTRUCTION INSTALL ALL STORMDRAIN STRUCTURES AND ASSOCIATED PIPE WITHIN 10' OF THE PROPOSED REINFORCED ZONE.
- E. TRIM BLOCKS TO BE FLUSH AROUND PIPE PENETRATION. GROUT BLOCKS A MINIMUM OF 2 FEET AROUND THE PIPE PENETRATION WITH 4,000 PSI GROUT.
- F. CONSTRUCT WALL INCLUDING BLOCK, GEORGRID, AND REINFORCED FILL.
- G. INSTALL FENCE POST BEHIND BLOCK CELLS AT FENCE POST HOLDER LOCATIONS IN ACCORDANCE WITH FENCE DESIGNER'S SPECIFICATIONS.
- H. INSTALL CAP UNITS.

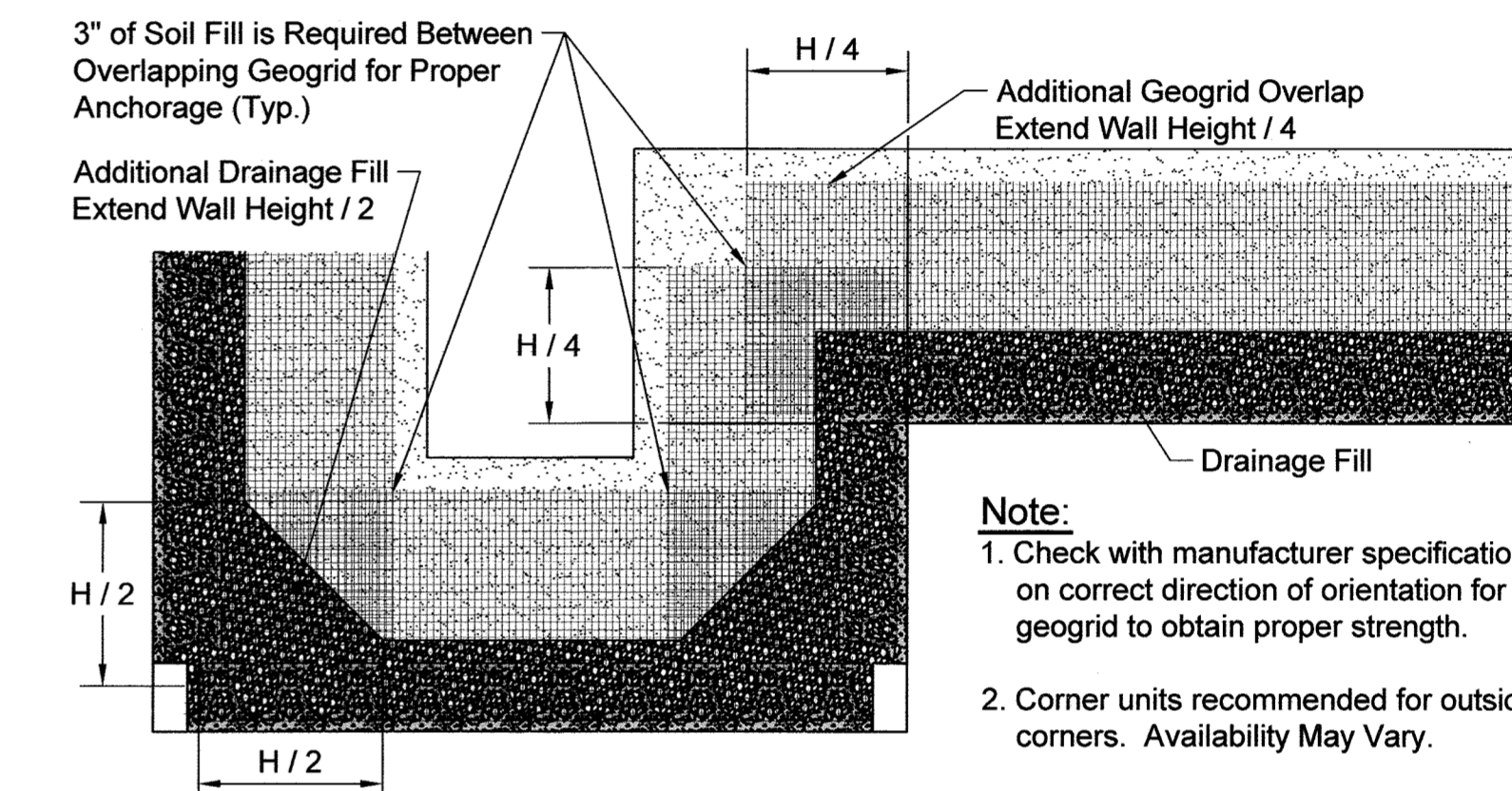
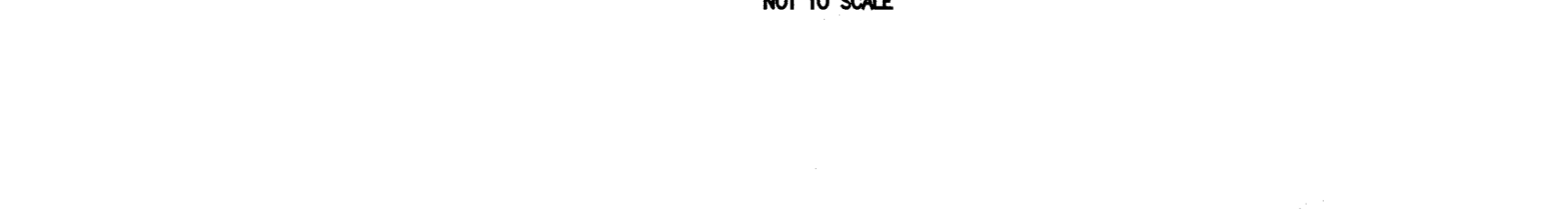


Note:
 1. Secure all cap units with Keystone Kasepal or equal.

Top of Wall Steps

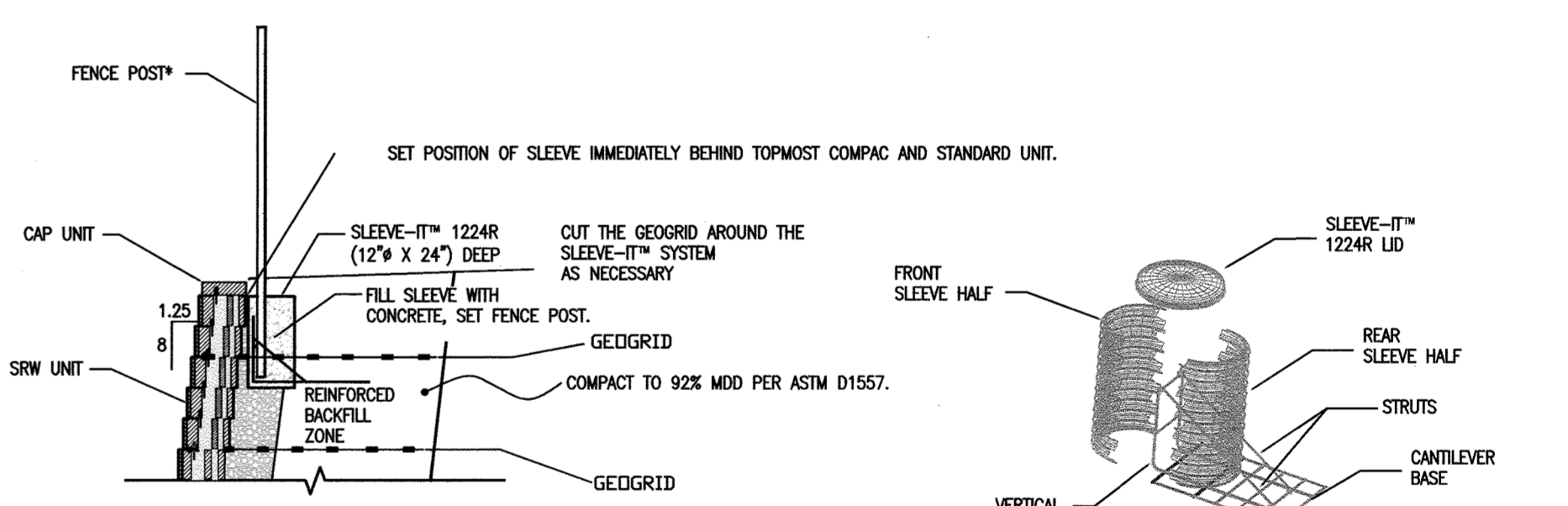


LEVELING PAD DETAIL-KEYSTON UNITS



Geogrid Installation at Corners

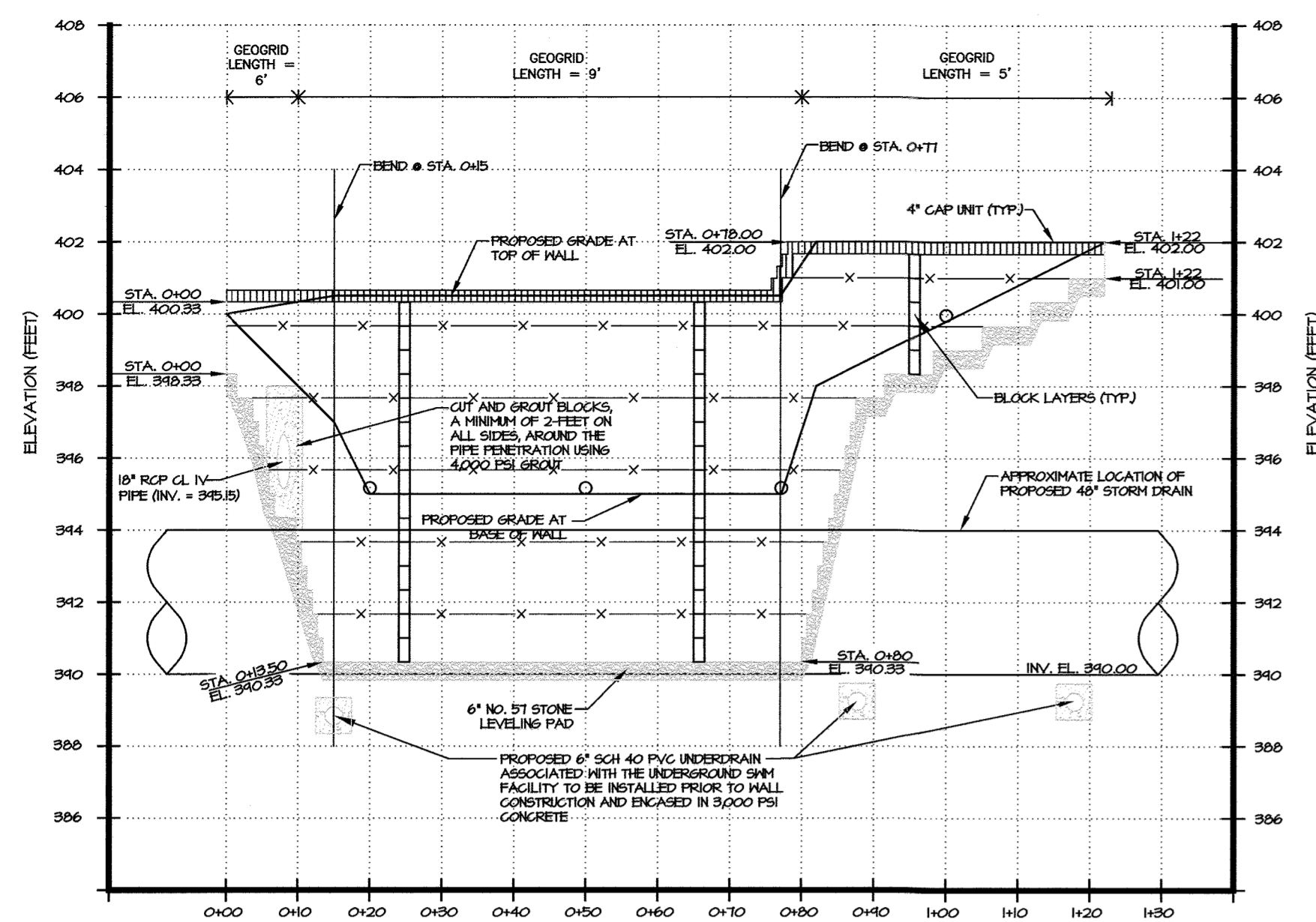
Note:
 1. Check with manufacturer specifications on correct direction of orientation for geogrid to obtain proper strength.
 2. Corner units recommended for outside corners. Availability May Vary.



DETAIL OF FENCE POST INSTALLATION USING SLEEVE-IT™ 1224R

NOT TO SCALE

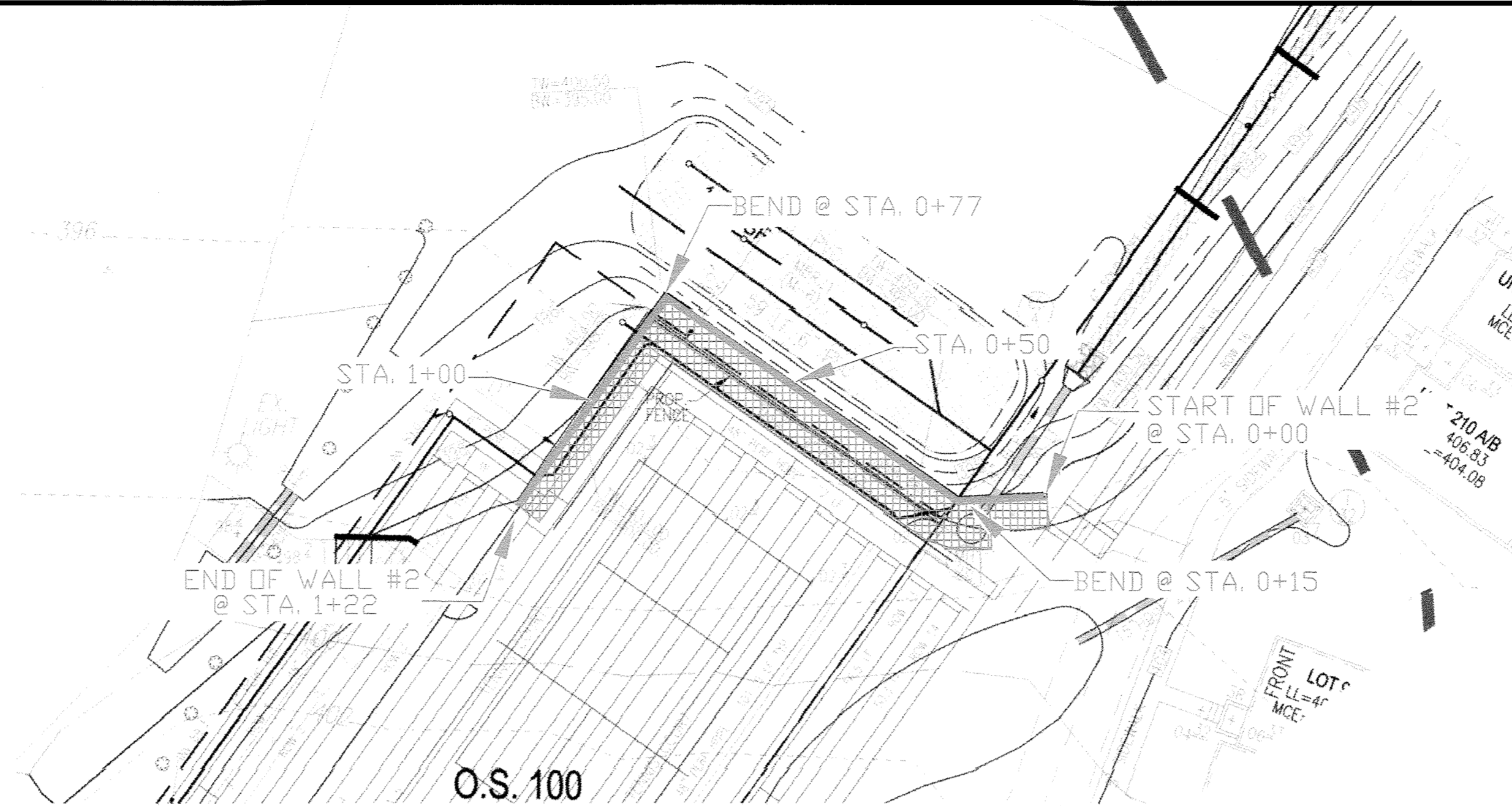
		GEO-TECHNOLOGY ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3445-A BOX HILL CORPORATE CENTER DRIVE ABINGDON, MARYLAND 21009 410-515-9446 FAX: 410-515-4895 WWW.GTAENG.COM © 2021 GEO-TECHNOLOGY ASSOCIATES, INC.	
		REVISED SITE DEVELOPMENT PLAN KEYSTONE NOTES AND DETAILS LONG GATE OVERLOOK RETAINING WALL #2 HOWARD COUNTY, MARYLAND	
DATE 2021-08-20 2021-08-26 9/5/21	REVISIONS ● REVISED PLANS ● REVISED PLANS REVISE RETAINING WALL AND GRADING NEAR TENNIS COURT	JOB NO: 31200237 SCALE: AS SHOWN DATE: JULY 2021 DRAWN BY: LFB DESIGN BY: EBC REVIEW BY: TMW SHEET: 36	50P-14-074



RETAINING WALL #2 PROFILE

SCALE: HORZ. 1" = 20'
VERT. 1" = 4'

3XT GEOGRID

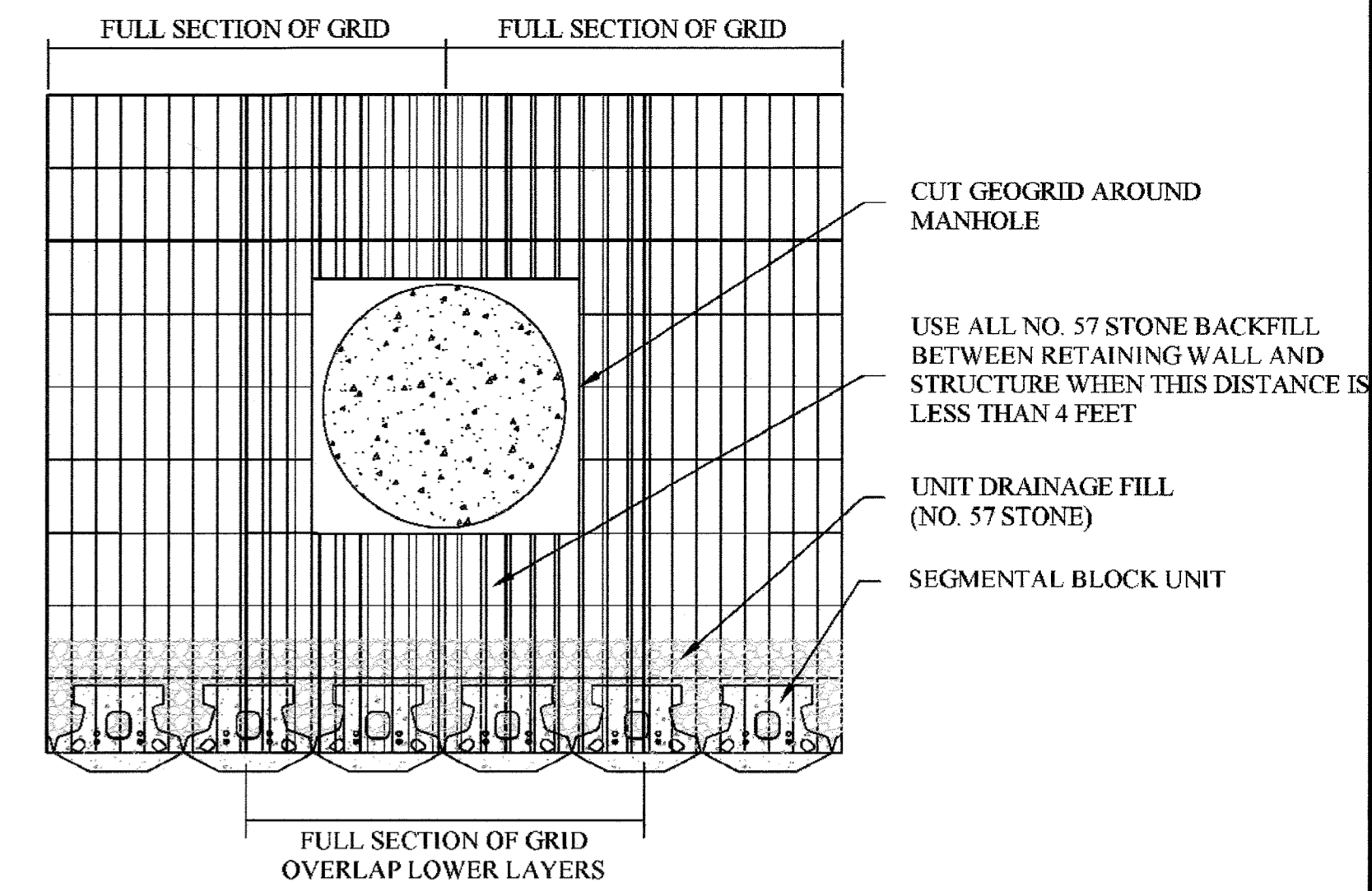


RETAINING WALL #2 LOCATION PLAN

SCALE: 1" = 20'

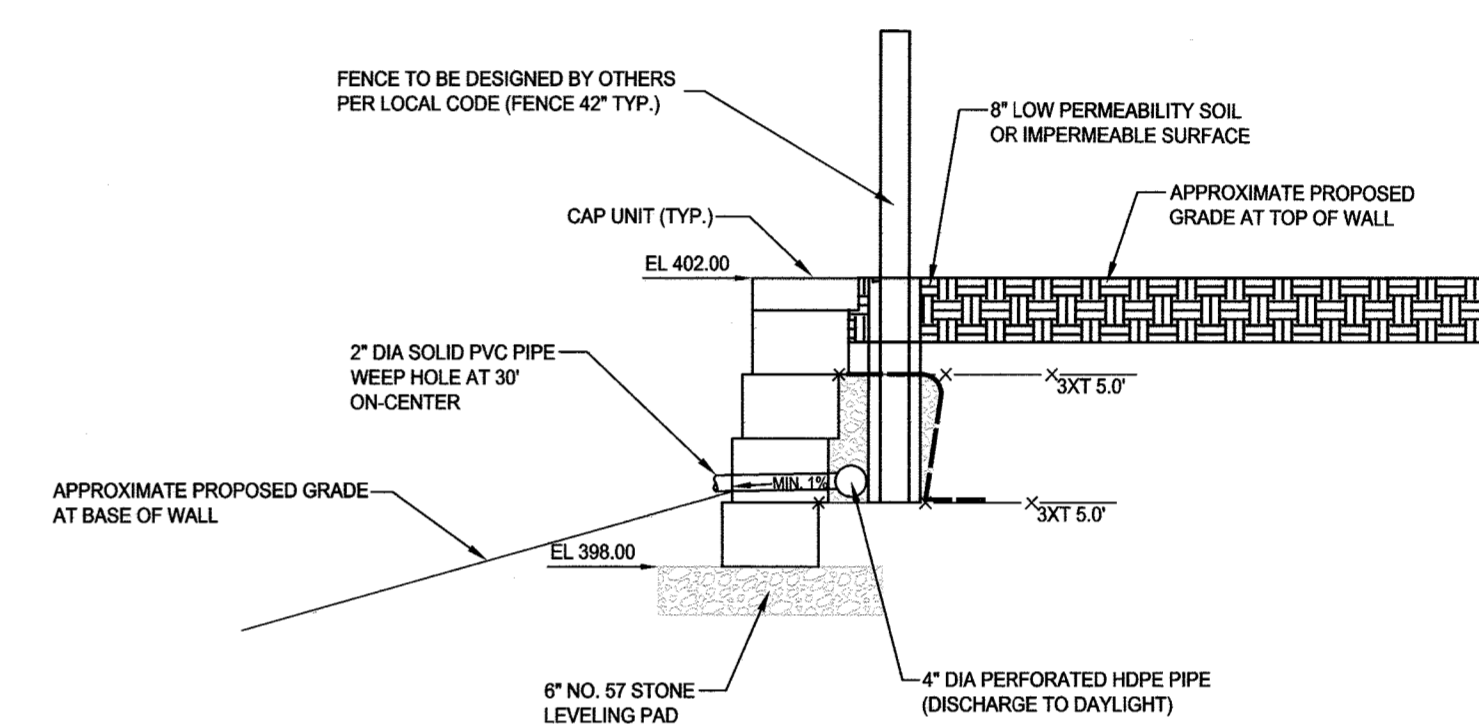
APPROXIMATE REINFORCED ZONE

PROPOSED KEYSTONE BLOCK WALL



GEOGRID DETAIL AT STRUCTURES PLAN VIEW

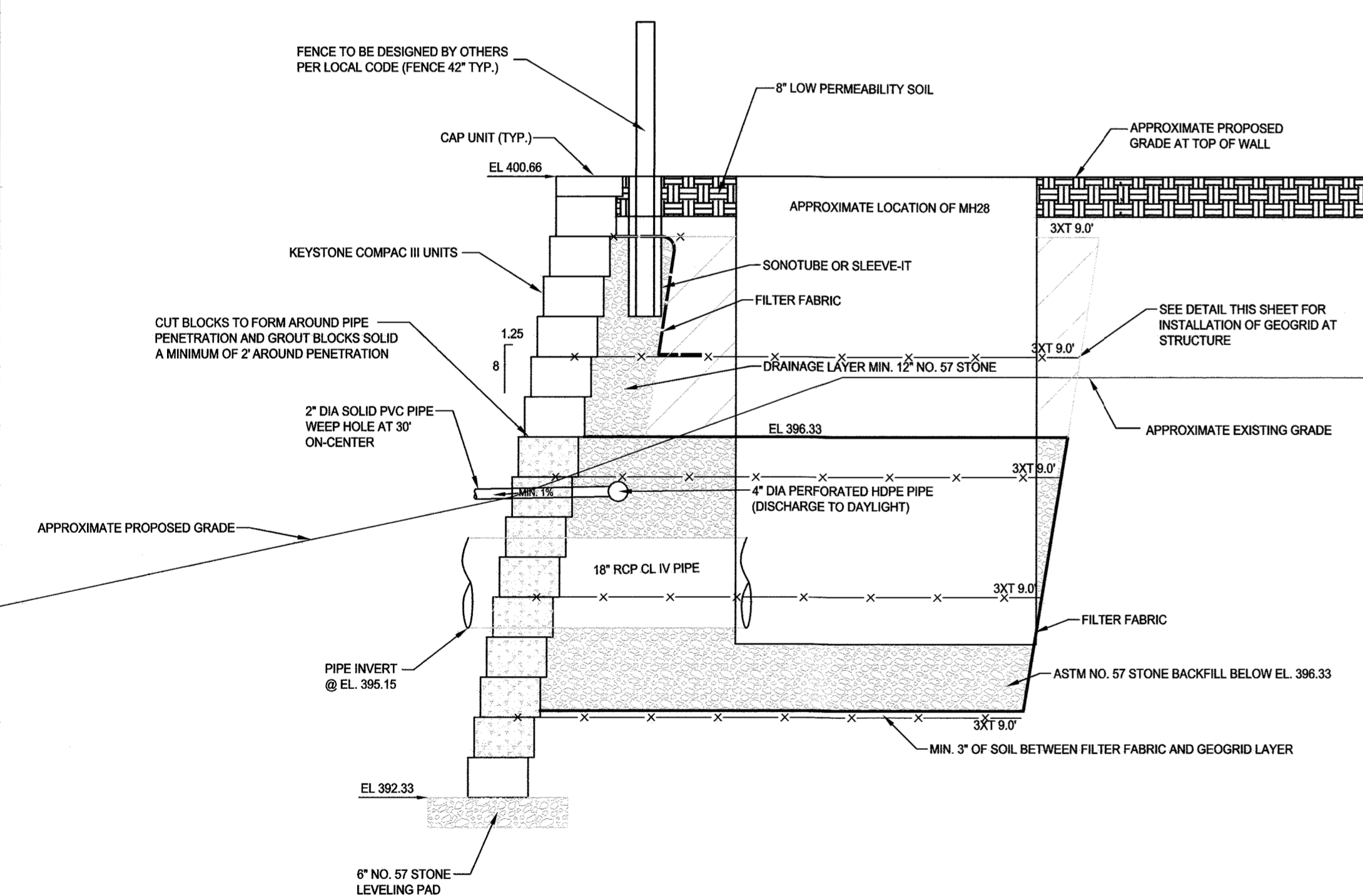
SCALE: NOT TO SCALE



RETAINING WALL #2 CROSS SECTION @ STA 1+00

SCALE: 1"=2'

3XT GEOGRID

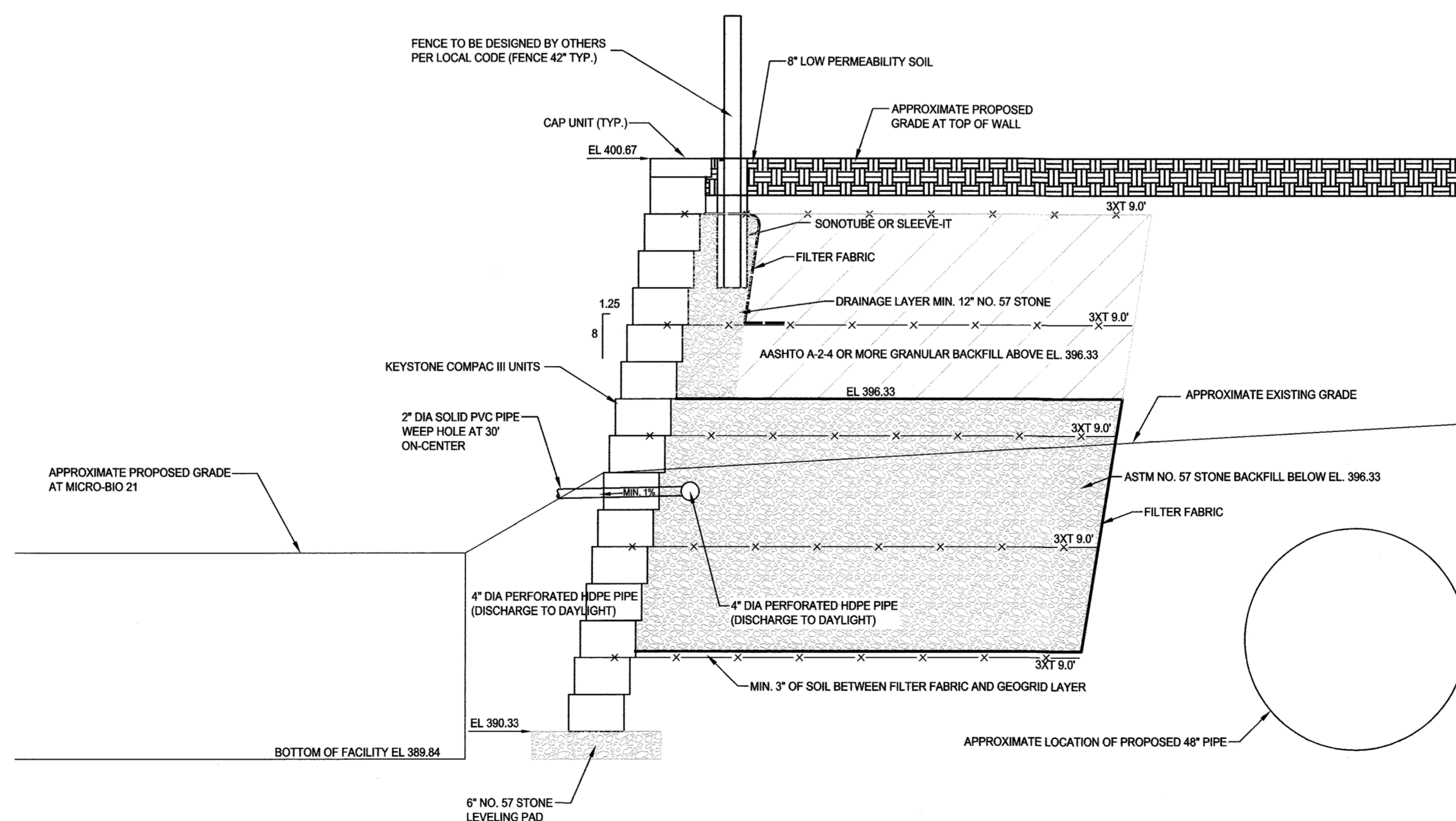


RETAINING WALL #2 CROSS SECTION @ STA 0+14

SCALE: 1"=2'

3XT GEOGRID

AASHTO A-2-4 OR MORE GRANULAR BACKFILL



RETAINING WALL #2 CROSS SECTION @ STA 0+50

SCALE: 1"=2'

3XT GEOGRID

AASHTO A-2-4 OR MORE GRANULAR BACKFILL



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
DIRECTOR	DATE

	GEO-TECHNOLOGY ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 3445-A BOX HILL CORPORATE CENTER DRIVE ABINGDON, MARYLAND 21009 410-515-9446 FAX: 410-515-4895 WWW.GTAENG.COM © 2021 GEO-TECHNOLOGY ASSOCIATES, INC.	JOB NO.: 31200237 SCALE: AS SHOWN DATE: JULY 2021 DRAWN BY: LFB DESIGN BY: EBC REVIEW BY: TMW SHEET: 37
	REVISED SITE DEVELOPMENT PLAN WALL PROFILE, CROSS SECTIONS, LOCATION PLAN AND TYPICAL DETAILS LONG GATE OVERLOOK RETAINING WALL #2 HOWARD COUNTY, MARYLAND	REVISIONS 2021-08-20 REVISED PLANS 2021-08-26 REVISED PLANS 7-15-21 REVISE RETAINING WALL AND GRADING NEAR TENNIS COURT