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9	ROAD PROFILES AND GUARDRAIL DETAILS
10	ROAD PROFILES AND DETAILS
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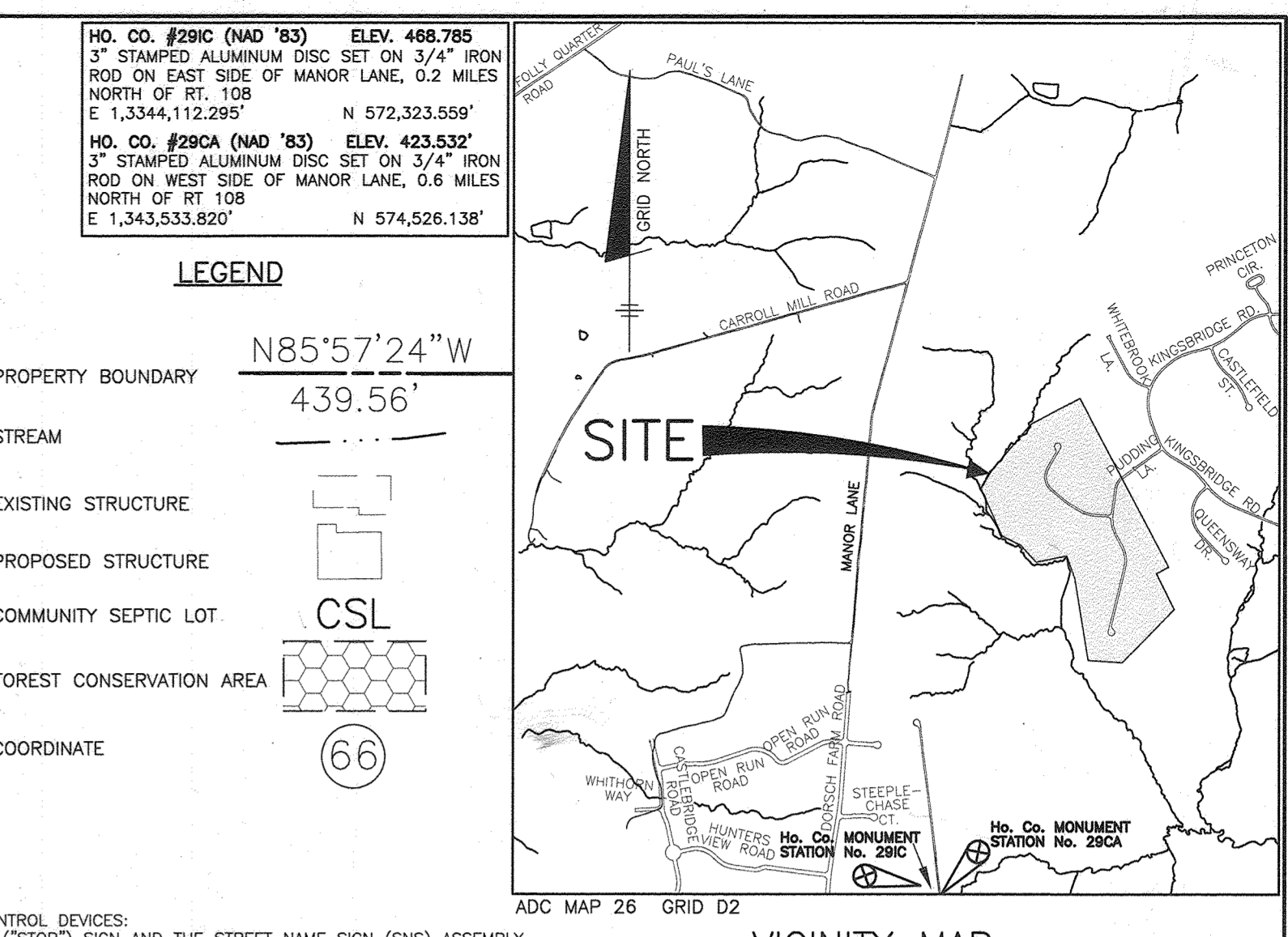
COORDINATE CHART (NAD '83)		
No.	NORTH	EAST
55	580846.1491	1345355.8769
56	578676.9887	1346501.4446
57	578592.1455	1346344.3375
58	578136.0007	1346574.4827
59	577451.4474	1345906.1544
60	577482.4407	1345467.6865
61	578535.6569	1345295.3915
62	578820.4505	1345191.6310
63	578742.5757	1347996.3855
64	578951.2327	1344604.1581
65	579076.9141	1344357.9307
66	579694.2941	1344085.5910
67	579911.2469	1344215.9805
68	580110.3504	1344378.1849
69	580257.2190	1344497.8349
70	580471.7260	1344689.3580
71	580514.1578	1344727.243

MINIMUM LOT SIZE CHART			
LOT NO.	GROSS AREA	PIPESTEM AREA	MIN. LOT SIZE
4	56,726 SF	2,300 SF	54,426 SF
5	55,313 SF	4,024 SF	51,289 SF
9	63,643 SF	11,548 SF	52,095 SF

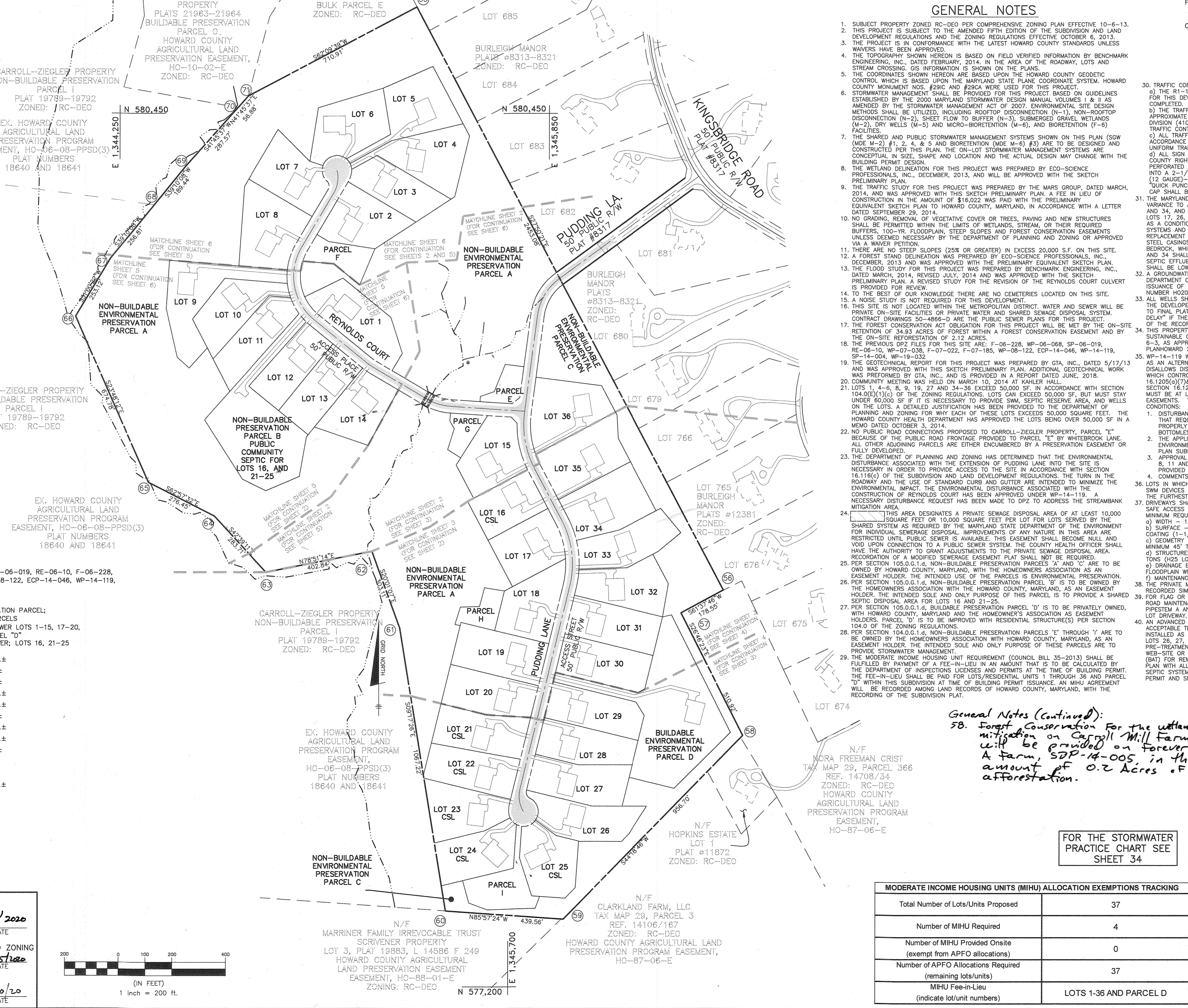
FINAL ROAD CONSTRUCTION PLAN

KINGS FOREST

LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C & E THRU 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND



DENSITY EXCHANGE CHART	
RECEIVING PARCEL	TAX MAP 23, GRID 23, PARCEL INFORMATION
TOAL AREA OF SUBDIVISION	97.74 ACRES
ALLOWED BY RIGHT	97.74 (4.25=22 D.U.)
MAXIMUM DEO UNITS ALLOWED	97.74 (2=47 D.U.)
NUMBER OF UNITS PROPOSED (PRESERVATION PARCEL)	37 (36 LOTS AND 1 BUILDABLE PRESERVATION PARCEL)
DEO DENSITY UNITS TO BE RECEIVED FROM SENDING PARCELS	15
SENDING PARCEL #1	MATTINGLY PROPERTY TAX MAP 18, GRID 18, PARCELS 6 & 10
DEO DENSITY UNITS TO BE RECEIVED FROM SENDING PARCEL #1	2
SENDING PARCEL #2	CARROLL-ZIEGLER PROPERTY TAX MAP 23, GRID 23, PARCEL 148
DEO DENSITY UNITS TO BE RECEIVED FROM SENDING PARCEL #2	2
SENDING PARCEL #3	ITZMAN PROPERTY TAX MAP 18, GRID 18, PARCEL 113
DEO DENSITY UNITS TO BE RECEIVED FROM SENDING PARCEL #3	1
SENDING PARCEL #4	PATAPSCO FALLS, LOT 2, AND HARRISON FOREST, SECTION ONE, LOT 7, TAX MAP 3, GRID 14, PARCELS 6 & 10
DEO DENSITY UNITS TO BE RECEIVED FROM SENDING PARCEL #4	4
SENDING PARCEL #5	LAWSON PROPERTY TAX MAP 20, GRID 20, PARCEL 29
DEO DENSITY UNITS TO BE RECEIVED FROM SENDING PARCEL #5	1
SENDING PARCEL #6	DONNA L SHAPIRO PROPERTY TAX MAP 12, GRID 5, PARCEL 9
DEO DENSITY UNITS TO BE RECEIVED FROM SENDING PARCEL #6	1
SENDING PARCEL #7	CISSELL/SHARP PROPERTY TAX MAP 20, GRID 02, PARCEL 065
DEO DENSITY UNITS TO BE RECEIVED FROM SENDING PARCEL #7	4



- #### GENERAL NOTES
- SUBJECT PROPERTY ZONED RC-DEO PER COMPREHENSIVE ZONING PLAN EFFECTIVE 10-6-13.
 - THIS PROJECT IS SUBJECT TO THE AMENDED FINAL EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE ZONING REGULATIONS EFFECTIVE OCTOBER 6, 2013.
 - THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
 - THE TOPOGRAPHY SHOWN HEREON IS BASED ON FIELD VERIFIED INFORMATION BY BENCHMARK ENGINEERING, INC. DATED FEBRUARY, 2014. IN THE AREA OF THE ROADWAY, LOTS AND STREAM CROSSINGS, GIS INFORMATION IS SHOWN ON THE PLANS.
 - THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE COORDINATE SYSTEM, HOWARD COUNTY MONUMENT NOS. #29C AND #29CA WERE USED FOR THIS PROJECT.
 - STORMWATER MANAGEMENT SHALL BE PROVIDED FOR THIS PROJECT BASED ON GUIDELINES ESTABLISHED BY THE 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME 1, AS AMENDED BY THE STORMWATER MANAGEMENT ACT OF 2007. ENVIRONMENTAL SITE DESIGN METHODS SHOWING ROOFTOP DRAINAGE (M-1), NON-ROOFTOP DRAINAGE (M-2), SHEET FLOW TO BUFFER (N-3), SUBMERGED GRATEL WELLS (M-2), DRY WELLS (M-5) AND MICRO-BIOTRETENTION (M-6), AND BIOTRETENTION (F-6) FACILITIES.
 - THE SHARED AND PUBLIC STORMWATER MANAGEMENT SYSTEMS SHOWN ON THIS PLAN (SOW (MDE M-2) #1, 2, 4, 8 & 5 AND BIOTRETENTION (MDE M-6) #3) ARE TO BE DESIGNED AND CONSTRUCTED PER THIS PLAN. THE ON-SITE STORMWATER MANAGEMENT SYSTEMS ARE CONCEPTUAL IN SIZE, SHAPE AND LOCATION AND THE ACTUAL DESIGN MAY CHANGE WITH THE BUILDING PERMIT DESIGN SUBMISSION.
 - THE WETLAND DELINEATION FOR THIS PROJECT WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DECEMBER, 2013, AND WILL BE APPROVED WITH THE SKETCH PRELIMINARY PLAN.
 - THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE MARS GROUP, DATED MARCH, 2014, AND WAS APPROVED WITH THIS SKETCH PRELIMINARY PLAN. A FEE-IN-LIEU OF CONSTRUCTION IN THE AMOUNT OF \$16,000.00 FOR THE PRELIMINARY EQUIVALENT SKETCH PLAN TO HOWARD COUNTY, MARYLAND, IN ACCORDANCE WITH A LETTER DATED SEPTEMBER 29, 2011.
 - NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAM, OR THEIR REQUIRED BUFFERS, 100'-10' FLOODPLAIN, STEEP SLOPES AND FOREST CONSERVATION EASEMENTS UNLESS DEEMED NECESSARY BY THE DEPARTMENT OF PLANNING AND ZONING OR APPROVED VIA A WAIVER PETITION.
 - IF THERE ARE NO STEEP SLOPES (25% OR GREATER) IN EXCESS 20,000 S.F. ON THIS SITE, A FOREST STAND DELINEATION WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DECEMBER, 2013 AND WAS APPROVED WITH THE PRELIMINARY EQUIVALENT SKETCH PLAN.
 - THE FLOOD STUDY FOR THIS PROJECT WAS PREPARED BY BENCHMARK ENGINEERING, INC., DATED MARCH, 2014, REVISED JULY, 2014 AND WAS APPROVED WITH THE SKETCH PRELIMINARY PLAN. A REVISED STUDY FOR THE REVISION OF THE ROADWAY CULVERT IS PROVIDED FOR REVIEW.
 - TO THE BEST OF OUR KNOWLEDGE THERE ARE NO CEMETERIES LOCATED ON THIS SITE.
 - A NOISE STUDY IS NOT REQUIRED FOR THIS DEVELOPMENT.
 - THIS SITE IS NOT LOCATED WITHIN THE METROPOLITAN DISTRICT. WATER AND SEWER WILL BE PRIVATE ON-SITE FACILITIES OR PRIVATE WATER AND SHARED SEWER DISPOSAL SYSTEM. CONTRACT DRAWINGS 50-4866-D ARE THE PUBLIC SEWER PLANS FOR THIS PROJECT.
 - THE FOREST CONSERVATION ACT OBLIGATION FOR THIS PROJECT WILL BE MET BY THE ON-SITE RESTORATION OF 3.492 ACRES OF FOREST WITHIN FOREST CONSERVATION EASEMENT AND BY THE ON-SITE REFORESTATION OF 2.12 ACRES.
 - THE PREVIOUS DPZ FILES FOR THIS SITE ARE: F-06-228, WP-06-068, SP-06-019, RE-06-10, WP-07-038, F-07-022, F-07-185, WP-08-122, EP-14-046, WP-14-119, SP-14-004, WP-19-032.
 - THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY GTA, INC., DATED 5/17/13 AND WAS APPROVED WITH THIS SKETCH PRELIMINARY PLAN. ADDITIONAL GEOTECHNICAL WORK WAS PERFORMED BY GTA, INC. AND IS PROVIDED IN A REPORT DATED JUNE, 2018.
 - COMMUNITY MEETING WAS HELD ON MARCH 10, 2014 AT KAHLER HALL.
 - LOTS 1, 4-8, 9, 19, 27 AND 34-36 EXCEED 50,000 SF. IN ACCORDANCE WITH SECTION 10.0.0.(c) OF THE ZONING REGULATIONS, IF THESE LOTS EXCEED 50,000 SQUARE FEET, THEY MUST STAY UNDER 60,000 SF IF IT IS NECESSARY TO PROVIDE SWM, SEPTIC RESERVE AREA, AND WELLS ON THE LOTS. A DETAILED JUSTIFICATION HAS BEEN PROVIDED TO THE DEPARTMENT OF PLANNING AND ZONING FOR WHY EACH OF THESE LOTS EXCEEDS 50,000 SQUARE FEET.
 - NO PUBLIC ROAD CONNECTIONS PROPOSED TO CARROLL-ZIEGLER PROPERTY, PARCEL "E" BECAUSE OF THE PUBLIC ROAD FRONTAGE PROVIDED TO PARCEL "E" BY WHITEBROOK LANE. ALL OTHER ADJOINING PARCELS ARE EITHER EQUIPPED WITH A PRESERVATION EASEMENT OR FULLY DEVELOPED.
 - THE DEPARTMENT OF PLANNING AND ZONING HAS DETERMINED THAT THE ENVIRONMENTAL DISTURBANCE ASSOCIATED WITH THE EXTENSION OF PUDDING LANE INTO THE SITE IS NECESSARY IN ORDER TO PROVIDE ACCESS TO THE SITE IN ACCORDANCE WITH SECTION 16.116(c) OF THE ZONING REGULATIONS. THE TURN IN THE ROADWAY AND THE USE OF STANDARD CURB AND GUTTER ARE INTENDED TO MINIMIZE THE ENVIRONMENTAL IMPACT. THE ENVIRONMENTAL DISTURBANCE ASSOCIATED WITH THE CONSTRUCTION OF REYNOLDS COURT HAS BEEN APPROVED UNDER WP-14-119. A NECESSARY DISTURBANCE REQUEST HAS BEEN MADE TO DPZ TO ADDRESS THE STREAMBANK MITIGATION AREA.
 - THIS AREA DESIGNATES A PRIVATE SEWER DISPOSAL AREA OF AT LEAST 10,000 SQUARE FEET OR 10,000 SQUARE FEET PER LOT FOR LOTS SERVED BY THE SHARED SYSTEM AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF ENVIRONMENT FOR INDIVIDUAL SEWER DISPOSAL IMPROVEMENTS OF ANY NATURE IN THIS AREA ARE RESTRICTED UNTIL PUBLIC SEWER IS AVAILABLE. THIS EASEMENT SHALL BECOME NULL AND VOID UPON CONNECTION TO A PUBLIC SEWER SYSTEM. THE COUNTY HEALTH OFFICER SHALL HAVE THE AUTHORITY TO GRANT ADJUSTMENTS TO THE PRIVATE SEWER DISPOSAL AREA. RECONSTRUCTION OF A MODIFIED SEWERAGE EASEMENT PLAN SHALL NOT BE REQUIRED.
 - PER SECTION 10.0.0.(1), NON-BUILDABLE PRESERVATION PARCELS "A" AND "C" ARE TO BE OWNED BY HOWARD COUNTY, MARYLAND, WITH THE HOMEOWNERS ASSOCIATION AS AN EASEMENT HOLDER. THE INTENDED SOLE AND ONLY PURPOSE OF THESE PARCELS ARE TO PROVIDE STORMWATER MANAGEMENT.
 - PER SECTION 10.0.0.(1), NON-BUILDABLE PRESERVATION PARCEL "B" IS TO BE OWNED BY THE HOMEOWNERS ASSOCIATION WITH THE HOWARD COUNTY, MARYLAND, AS AN EASEMENT HOLDER. THE INTENDED SOLE AND ONLY PURPOSE OF THIS PARCEL IS TO PROVIDE A SHARED SEPTIC DISPOSAL AREA FOR LOTS 16 AND 21-25.
 - PER SECTION 10.0.0.(1), NON-BUILDABLE PRESERVATION PARCEL "D" IS TO BE PRIVATELY OWNED, WITH HOWARD COUNTY, MARYLAND, AND THE HOMEOWNER'S ASSOCIATION AS EASEMENT HOLDERS. PARCEL "D" IS TO BE IMPROVED WITH RESIDENTIAL STRUCTURE(S) PER SECTION 10.0.0.(1).
 - PER SECTION 10.0.0.(1), NON-BUILDABLE PRESERVATION PARCELS "E" THROUGH "I" ARE TO BE OWNED BY THE HOMEOWNERS ASSOCIATION WITH HOWARD COUNTY, MARYLAND, AS AN EASEMENT HOLDER. THE INTENDED SOLE AND ONLY PURPOSE OF THESE PARCELS ARE TO PROVIDE STORMWATER MANAGEMENT.
 - THE MODERATE INCOME HOUSING UNIT REQUIREMENT (COUNCIL BILL 35-2013) SHALL BE FULFILLED BY PAYMENT OF A FEE-IN-LIEU IN AN AMOUNT THAT IS TO BE CALCULATED BY THE DEPARTMENT OF INSPECTIONS LICENSES AND PERMITS AT THE TIME OF BUILDING PERMIT. THE FEE-IN-LIEU SHALL BE PAID FOR LOTS/RESIDENTIAL UNITS 1 THROUGH 36 AND PARCEL "D" WITHIN THIS SUBDIVISION AT THE TIME OF BUILDING PERMIT ISSUANCE. AN MIHU AGREEMENT WILL BE RECORDED AMONG LAND RECORDS OF HOWARD COUNTY, MARYLAND, WITH THE RECORDING OF THE SUBDIVISION PLAN.
 - IF AN ALTERNATIVE CONSTRUCTION SECTION 16.116(g)(2) WHICH CONTROLS DISTURBANCE WITHIN ENVIRONMENTAL BUFFERS, SECTION 16.1205(c)(7)&(k) REGARDING RETENTION OF SPECIMEN TREES, AND 16.1205(c)(7)&(k) REGARDING RETENTION OF SPECIMEN TREES, AND 16.1205(c)(7)&(k) REGARDING RETENTION OF SPECIMEN TREES, THE WEAVER WAS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:
 - DISTURBANCES TO THE ENVIRONMENTAL AREAS SHALL BE LIMITED TO THAT REQUIRED FOR ROADWAY CONSTRUCTION, AND SHALL BE PROPERLY STABILIZED. THE REYNOLDS COURT CROSSING SHALL BE A LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
 - THE APPLICANT SHALL OBTAIN MARYLAND DEPARTMENT OF THE ENVIRONMENT PERMITTING AND REFERENCE PERMIT NUMBER ON THE PLAN SUBMISSIONS.
 - APPROVAL TO REMOVE SPECIMEN TREES IS LIMITED TO TREES #5, 6, 7, 8, 11 AND 15, AND SIX MITIGATION TREES (#1-4) CULVERS ARE PROVIDED AND BONDED WITH THE LANDSCAPING.
 - COMMENTS FOR SP-14-004 MUST BE ADDED.
 - IN WHICH THE WELL POINT SHALL BE THE STANDARD SETBACK TO SWM DEVICES AND STORM DRAINS, THE PRIMARY WELL LOCATION WILL BE AT THE FURTHEST POINT FROM SUCH FEATURES, WITHIN THE WELL BOX.
 - DRIVEWAYS SHALL BE PROVIDED FOR RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
 - WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE).
 - SURFACE - 3" OF COMPACT CRUSHER RUN BASE WITH TAR AND CHIP COATING.
 - CEMENTRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM 4% TURNING RADIUS.
 - STRUCTURES (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (425 LBS LOAD).
 - MANAGEMENT ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY.
 - MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
 - FOR FLAG OR PIPESTEM LOTS, REFUSE OR CURB SHALL BE INSTALLED AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND A ROAD RIGHT-OF-WAY LINE AND NOT ONTO THE PIPESTEM LOT DRIVEWAY.
 - AN ADVANCED PRE-TREATMENT SYSTEM, WHICH UTILIZES CURRENTLY ACCEPTABLE TECHNOLOGY TO PERFORM NITROGEN REDUCTION, MUST BE INSTALLED AS A SEPTIC SYSTEM TO BE INSTALLED ON LOTS 26, 27, 33 AND 34 IN THIS SUBDIVISION. THIS ADVANCED PRE-TREATMENT SYSTEM SHALL BE LIMITED TO SYSTEMS LISTED IN THE WEB-SITE OR BAY RESTORATION FUND (BRF) BEST AVAILABLE TECHNOLOGY (BAT) FOR REMOVING NITROGEN FROM ON-SITE SYSTEMS. A SUPPLEMENTAL SITE PLAN WITH ALL OF THE NECESSARY DETAILS FOR INSTALLATION OF THESE SEPTIC SYSTEMS WILL BE REQUIRED PRIOR TO RELEASE OF THE BUILDING PERMIT AND SEPTIC SYSTEM INSTALLATION PERMIT FOR THIS LOT.

SITE DATA TABULATION

- GENERAL SITE DATA
 - PRESENT ZONING: RC-DEO
 - LOCATION: TAX MAP 23 - GRID 23 - PARCEL 148
 - APPLICABLE DPZ FILE REFERENCES: F-06-228, WP-06-068, SP-06-019, RE-06-10, F-06-228, WP-07-038, F-07-022, F-07-185, WP-08-122, EP-14-046, WP-14-119, WP-19-032
 - DEED REFERENCE: L11372 / F.00431
 - PROPOSED USE OF SITE: 36 SFD LOTS; 1 BUILDABLE PRESERVATION PARCEL; 8 NON-BUILDABLE PRESERVATION PARCELS
 - PROPOSED WATER AND SEWER: PRIVATE WATER AND PRIVATE SEWER LOTS 1-15, 17-20, 26-36 AND PRESERVATION PARCEL "D" PRIVATE WATER AND PUBLIC SEWER; LOTS 16, 21-25
- AREA TABULATION
 - TOTAL AREA OF SITE 97.74 Ac.±
 - AREA OF 100 YEAR FLOODPLAIN (APPROX.) 3.36 Ac.±
 - AREA OF STEEP SLOPES (25% OR GREATER) 0.49 Ac.±
 - NET AREA OF SITE 93.89 Ac.±
 - AREA OF THIS PLAN SUBMISSION 97.74 Ac.±
 - LIMIT OF DISTURBANCE (APPROX.) 27.4 Ac.±
 - AREA OF PROPOSED BUILDABLE LOTS & PARCELS 45.34 Ac.±
 - AREA OF NON-BUILDABLE PRESERVATION PARCELS 47.97 Ac.±
 - AREA OF PROPOSED PUBLIC ROAD 4.43 Ac.±
 - AREA OF PROPOSED PUBLIC R/W DEDICATION 0.00 Ac.
- DENSITY TABULATION
 - NET AREA OF SITE 93.89 Ac.±
 - TOTAL NUMBER OF LOTS ALLOWED PER ZONING
1 UNIT PER 4.25 GROSS ACRES ALLOWED BY RIGHT... 22
1 UNIT PER 2 NET ACRES (MAX) PER DEO PROVISION, 46
- UNIT/LOT TABULATION
 - TOTAL NUMBER OF BUILDABLE LOTS PROPOSED ON THIS SUBMISSION 36
 - TOTAL NUMBER OF NON-BUILDABLE PRESERVATION PARCELS PROPOSED ON THIS SUBMISSION 8
 - TOTAL NUMBER OF BUILDABLE PRESERVATION PARCELS PROPOSED ON THIS SUBMISSION 1

APPROVED: DEPARTMENT OF PUBLIC WORKS

[Signature] 1/31/2020
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 2/15/20
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 2/20/20
DATE

EX. HOWARD COUNTY AGRICULTURAL LAND PRESERVATION PROGRAM EASEMENT, HC-06-08-PPSD(3) PLAT NUMBERS 18640 AND 18641

LOT 1-15, 17-20, 26-36 AND PRESERVATION PARCEL "D" PRIVATE WATER AND PUBLIC SEWER; LOTS 16, 21-25

CARROLL-ZIEGLER PROPERTY NON-BUILDABLE PRESERVATION PARCEL I PLAT 19789-19792 ZONED: RC-DEO

LOT 1-15, 17-20, 26-36 AND PRESERVATION PARCEL "D" PRIVATE WATER AND PUBLIC SEWER; LOTS 16, 21-25

BURLEIGH MANOR PLATS #12381 ZONED: RC-DEO

LOT 16-25

CLARKLAND FARM, LLC TAX MAP 28, PARCEL 3 REF. 14106/167 ZONED: RC-DEO

LOT 26-36

MARRINER FAMILY IRREVOCABLE TRUST SCRIVER PROPERTY LOT 3, PLAT 19893, L 14586 F 249 HOWARD COUNTY AGRICULTURAL LAND PRESERVATION EASEMENT, HC-06-08-PPSD(3) PLAT NUMBERS 18640 AND 18641 ZONING: RC-DEO

LOT 1-15, 17-20, 26-36 AND PRESERVATION PARCEL "D" PRIVATE WATER AND PUBLIC SEWER; LOTS 16, 21-25

General Notes (continued):
58. Forest Conservation for the wetland mitigation on Carroll Mill Farm will be provided on Forever A Farm, SDP-14-005 in the amount of 0.2 Acres in the afforestation.

57. The office wetland mitigation is included in this revision plot for Parcel B.

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1. The office wetland mitigation is included in this revision plot for Parcel B.

NO.	DATE	REVISION
1	1/20/20	add general note, update sheet index and sheet no.

BENCHMARK ENGINEERING, INC.
840 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-8105 (F) 410-465-8844
WWW.BE-CVLENGINEERING.COM

[Signature] 4/25/19
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

OWNERS:	NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT:	KINGS FOREST A RESUBDIVISION OF CARROLL-ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER:	JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION:	TAX MAP 23, GRID: 23 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE:	COVER SHEET	DATE:	NOVEMBER, 2019
DRAFT:	MP	DESIGN:	JC
CHECK:	JC	SCALE:	AS SHOWN
SHEET	1	PROJECT NO.	2501
OF	75		

LEGEND

- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- SEWAGE DISPOSAL SEPTIC RESERVE AREA
- BIO-RETENTION AREAS (F-6)
- PROPOSED WELL BOX
- STREAM
- FOREST CONSERVATION EASEMENT
- USE-IN-COMMON ACCESS EASEMENT
- 100-YEAR FLOODPLAIN AREA
- PUBLIC STORM DRAIN & UTILITY EASEMENT

SCLOPES 20%
SCLOPES 25%

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT: THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND INCIDENTAL STRUCTURES, MARYLAND, 10th EDITION, 1994, AND THE STANDARD SPECIFICATIONS FOR BRIDGES AND TOLLBOOTH STRUCTURES, MARYLAND, 10th EDITION, 1994.

NOTE: SHOULDER CLOSURES SHOULD BE USED IN PLACE OF SHOULDER WORK WHEN THE SHOULDER IS CLOSED BY POSITIVE PROTECTION (TYPICALLY PORTABLE BARRIERS OR SIMILAR DEVICES) TO STANDARD WIDTH OF SHOULDER.

WHEN WORK INVOLVES A PAVEMENT EDGE GROUP, FROM TO STANDARD WIDTH, NO SIGNALS TO BE USED.

THERE SHALL BE A MINIMUM OF SEVEN CHANNELIZING DEVICES IN THE SHOULDER TAPER.

THE ENGINEER SHALL CONSIDER ADDITIONAL SHOULDER LANE CLOSURES AND THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXIST.

KEY:

- CHANNELIZING DEVICES
- SOIL SUPPORT
- FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE
- FLASHER
- OPTIONAL FOR USE IN 10-12 MPH OR FASTER APPLICATIONS
- OPTIONAL FOR USE IN 10-12 MPH OR FASTER APPLICATIONS
- OPTIONAL FOR USE IN 10-12 MPH OR FASTER APPLICATIONS

NOTE: SHOULDER WORK TO BE DONE ON PUDDING LANE STA. 4+00 TO 4+50

PROVISIONS CATEGORY CODE ITEMS

APPROVED: *[Signature]*

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
SHOULDER WORK/2-LANE, 2-WAY
EQU. LESS THAN 40 MPH
STANDARD NO. MD 104.02-02

APPROVED: DEPARTMENT OF PUBLIC WORKS

1/21/2020 DATE

CHIEF, BUREAU OF HIGHWAYS *[Signature]*

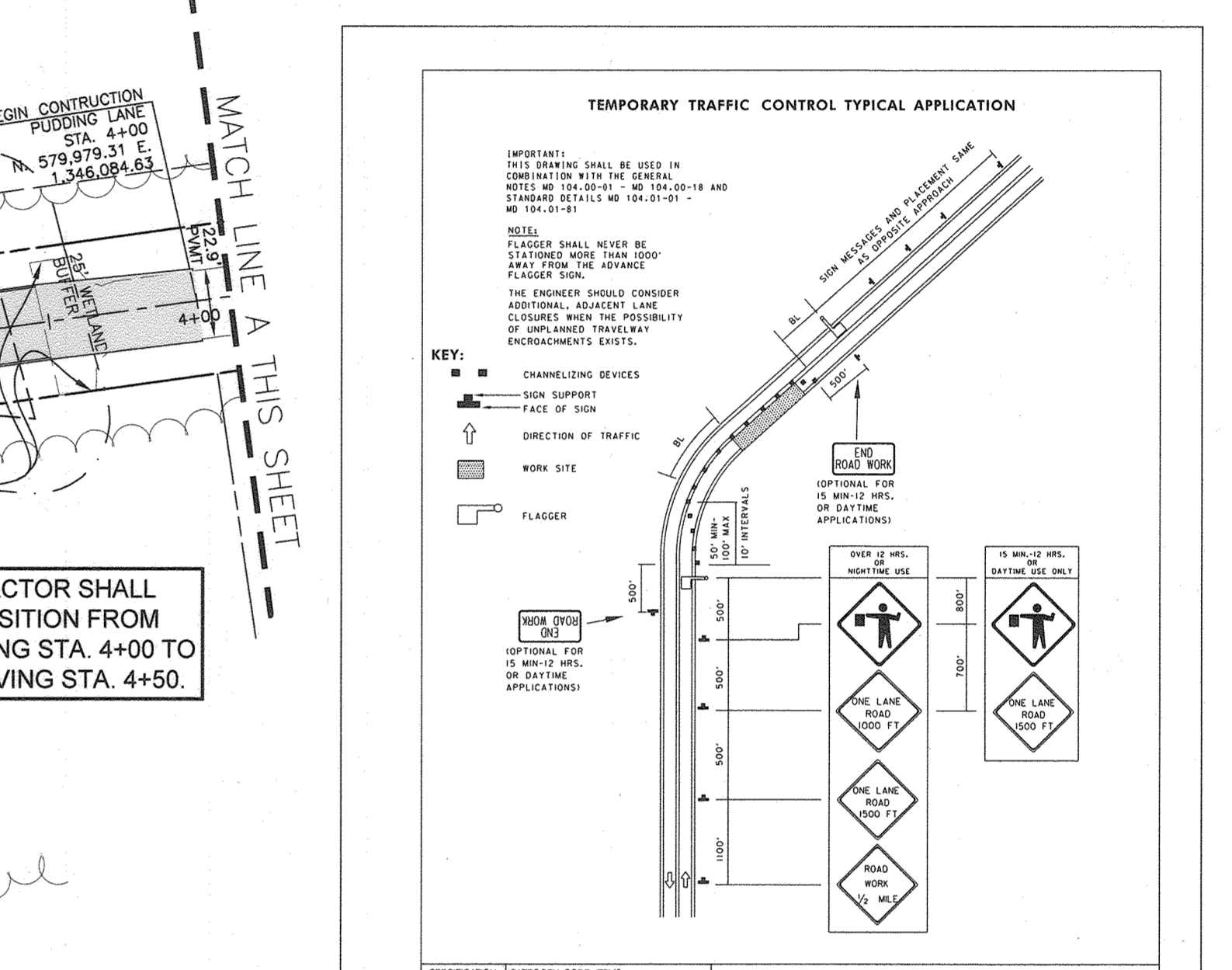
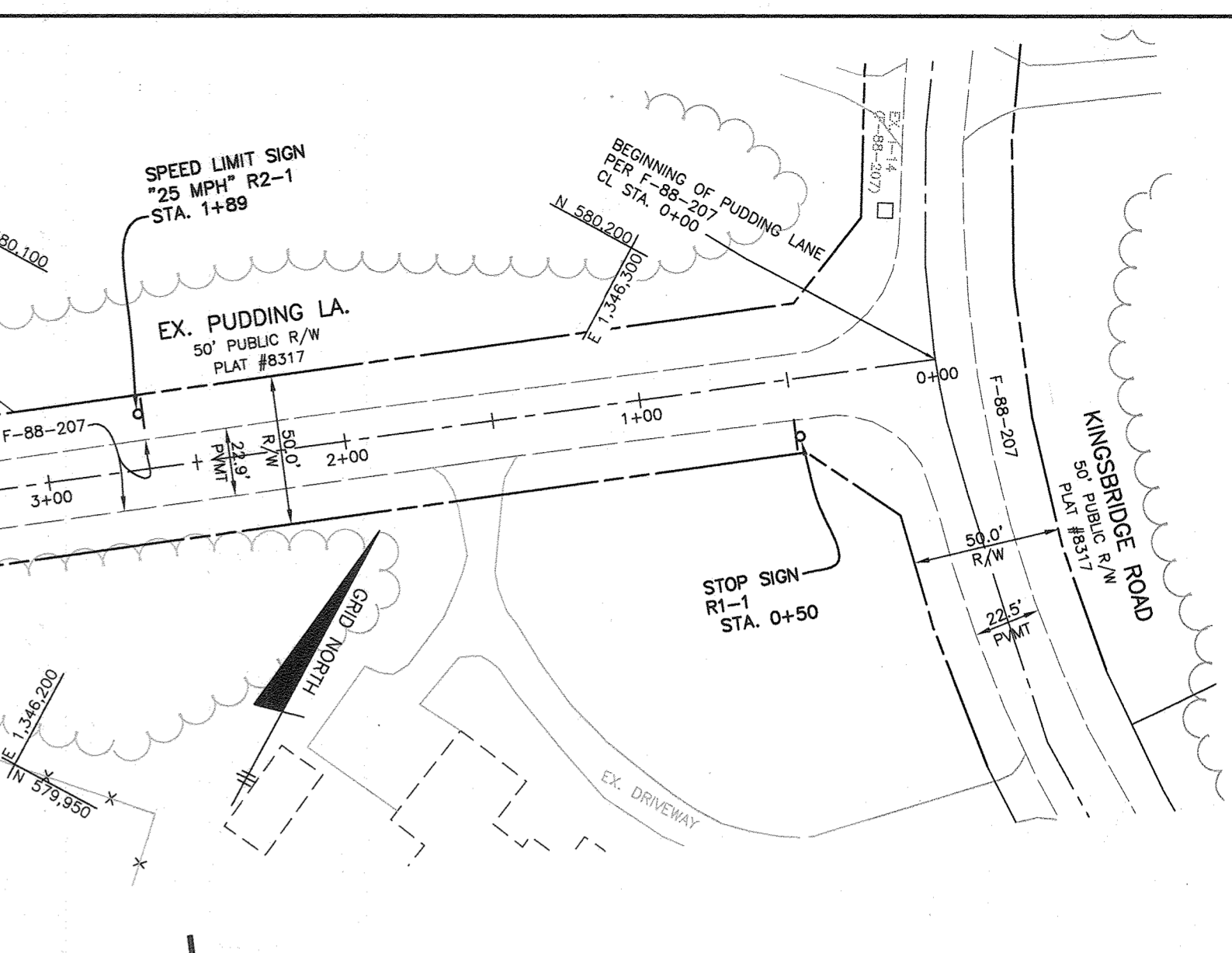
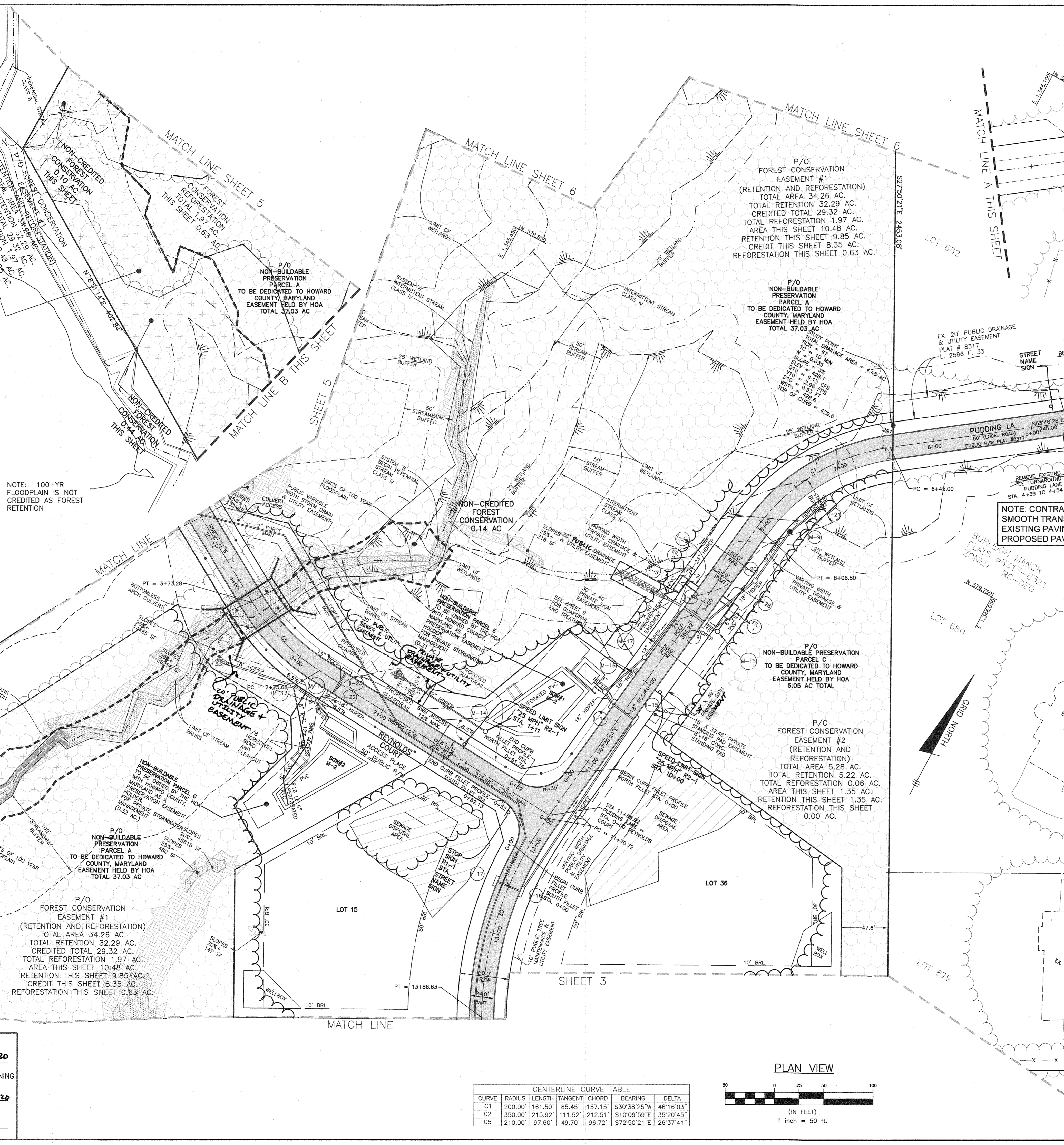
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

3/1/2020 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]*

2/3/20 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]*



NO.	DATE	REVISION
1	1/20/21	Clarify easements, update sheet #s.

BENCHMARK ENGINEERING, INC.
4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042
(P) 410-465-8105 (F) 410-465-6644
WWW.BE-ENGINEERING.COM

[Signature]
12/29/19
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042
DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046, 410-381-3263

PROJECT: **KINGS FOREST**
A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

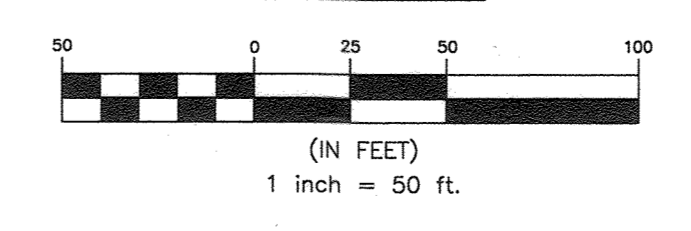
LOCATION: TAX MAP: 23, GRID: 23
PUDDING LANE, ELLICOTT CITY, MD 21042
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

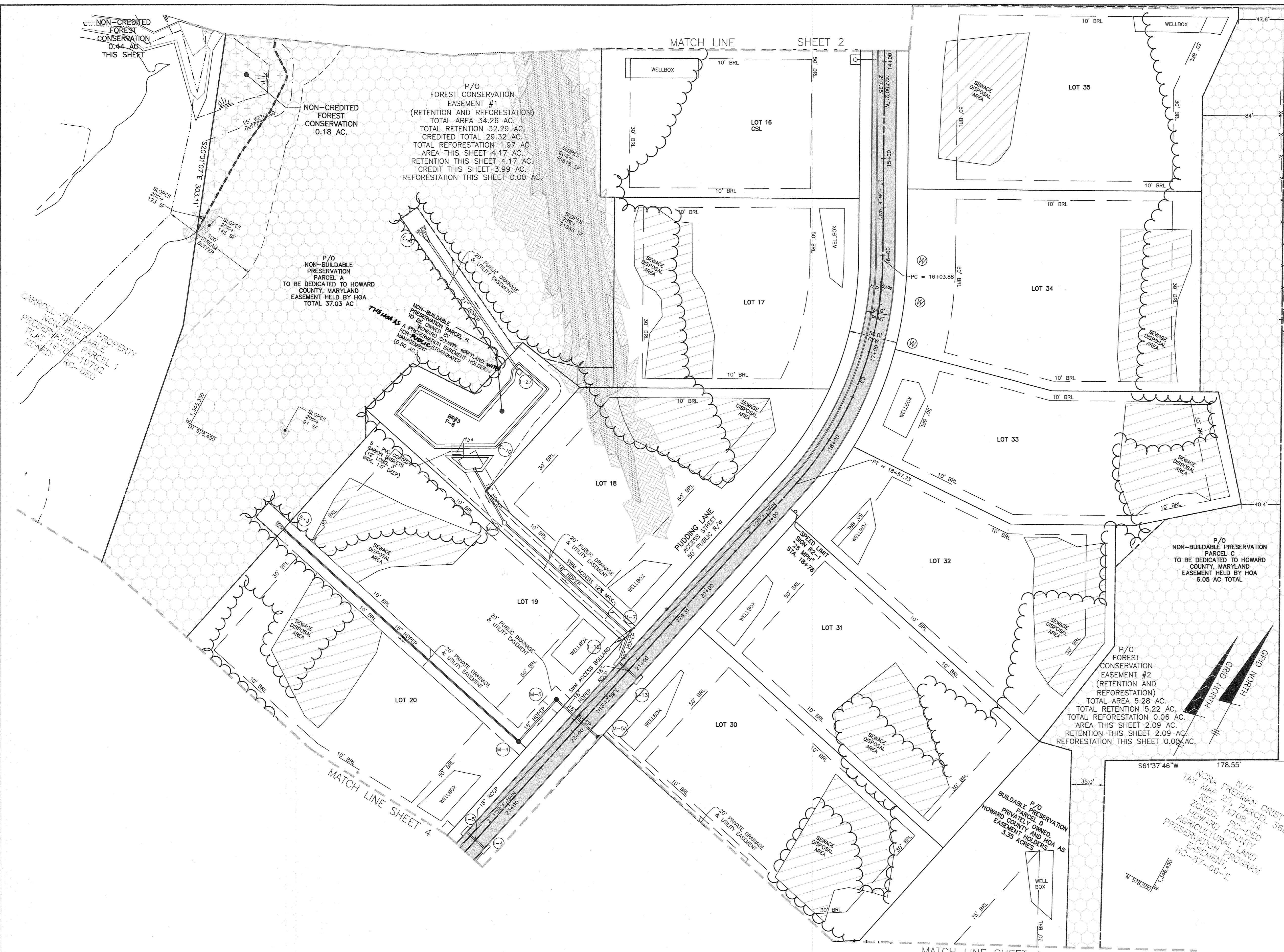
TITLE: **ROAD PLAN**

DATE: NOVEMBER, 2019 PROJECT NO. 2501
SCALE: AS SHOWN SHEET 2 OF 75

CENTERLINE CURVE TABLE

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C1	200.00'	161.50'	85.45'	157.15'	S30°38'25"W	46°16'03"
C2	350.00'	215.92'	111.52'	212.51'	S10°09'59"E	35°20'45"
C3	210.00'	97.60'	49.70'	98.72'	S72°50'21"E	26°37'41"





LEGEND

- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- SEWAGE DISPOSAL SEPTIC RESERVE AREA
- BIO-RETENTION AREAS (F-6)
- PROPOSED WELL BOX
- STREAM
- FOREST CONSERVATION EASEMENT
- USE-IN-COMMON ACCESS EASEMENT
- COMMUNITY SEPTIC LOT (CSL)
- 100-YR FLOODPLAIN AREA
- PUBLIC STORM DRAIN & UTILITY EASEMENT
- SLOPES 20%+
- SLOPES 25%+

CENTERLINE CURVE TABLE

CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C3	350.00'	253.85'	132.80'	248.32'	N07°03'41"W	41°33'20"

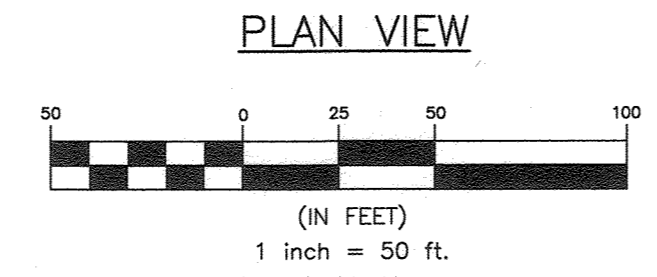
NO.	DATE	REVISION
1	1-20-21	update sheet #s + PARCEL H

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-CIVILENGINEERING.COM

[Signature]
 11/21/19
 Professional Certification I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DRAFT: MP	TITLE: ROAD PLAN
DESIGN: JC	DATE: NOVEMBER, 2019
CHECK: JC	PROJECT NO.: 2501
SCALE: AS SHOWN	SHEET: 3 OF 25

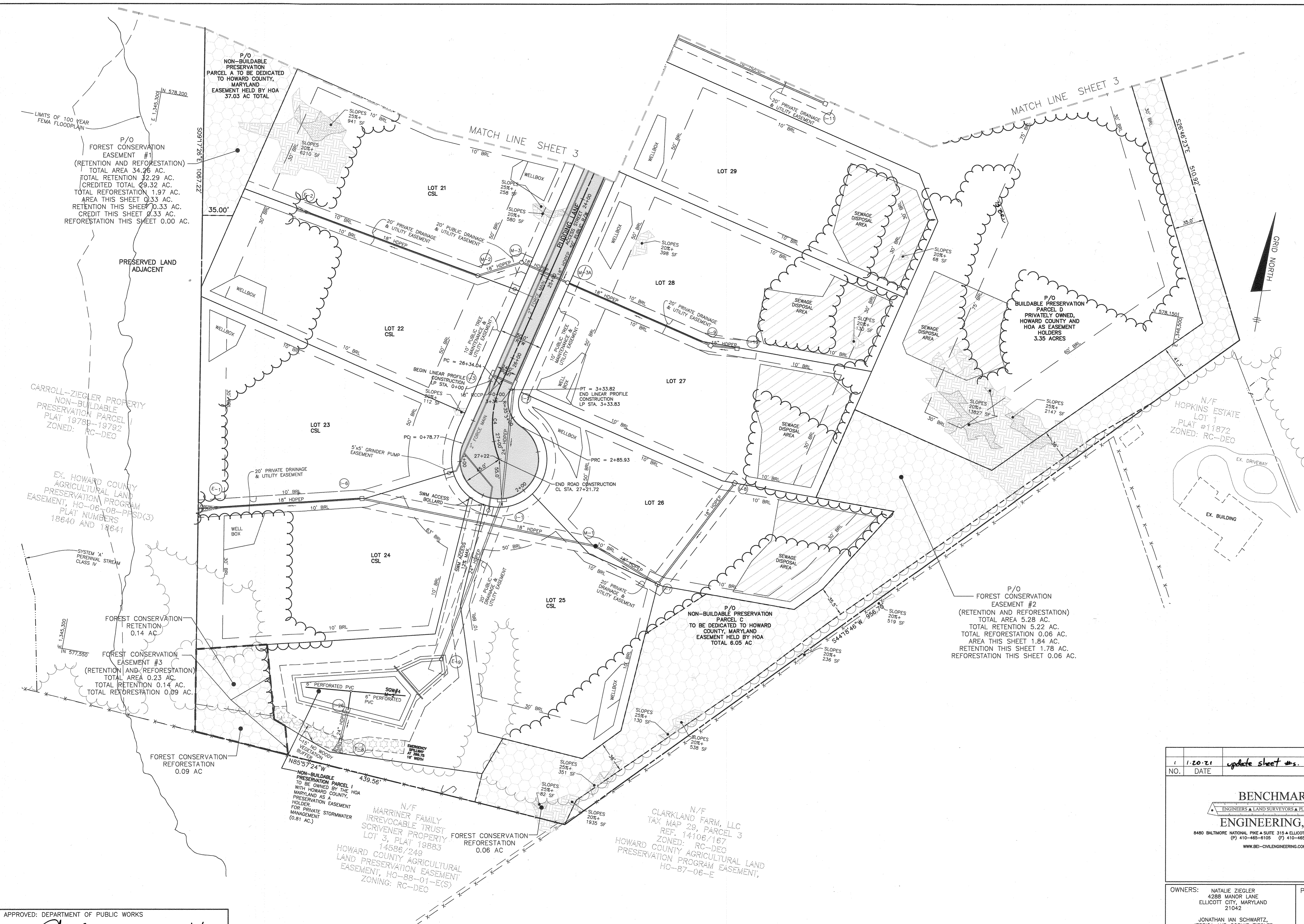
APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 1/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/1/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT JPB
[Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



1/25/201 Carroll-Ziegler Parcel K.dwg/1017 Parcel K Road.dwg, 11/27/2019 11:06:02 AM

LEGEND

- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- SEWAGE DISPOSAL SETBACK RESERVE AREA
- BIO-RETENTION AREAS (F-6)
- PROPOSED WELL BOX
- STREAM
- FOREST CONSERVATION EASEMENT
- USE-IN-COMMON ACCESS EASEMENT
- COMMUNITY SEWER LOT
- PUBLIC STORM DRAIN & UTILITY EASEMENT
- SLOPES 20%+
- SLOPES 25%+



CENTERLINE CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C4	110.50'	87.69'	46.30'	85.40'	S09°00'52"E	45°27'59"

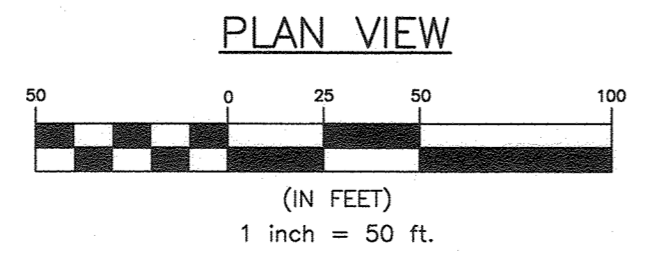
NO.	DATE	REVISION
1	1-20-21	update sheet #s.

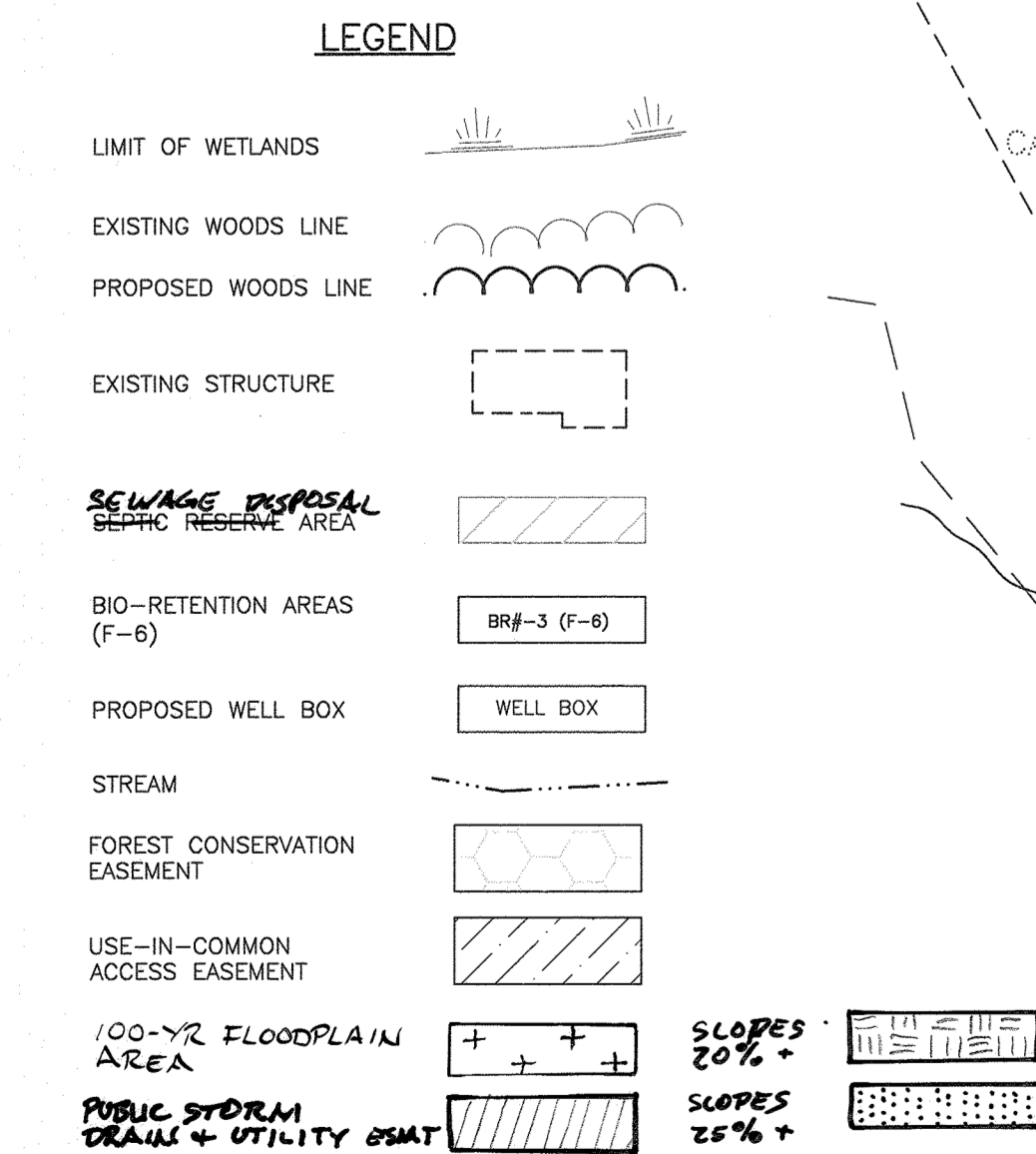
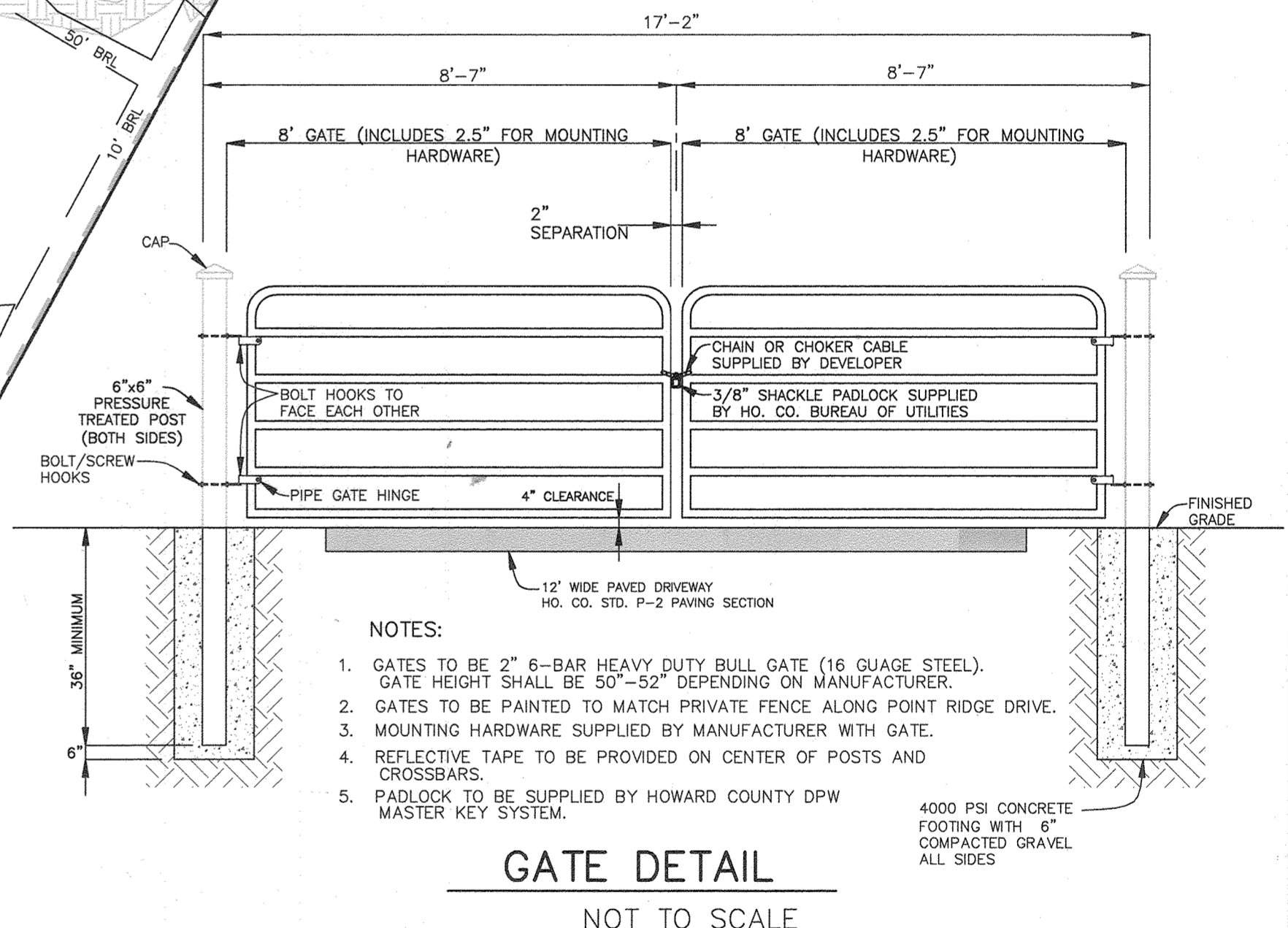
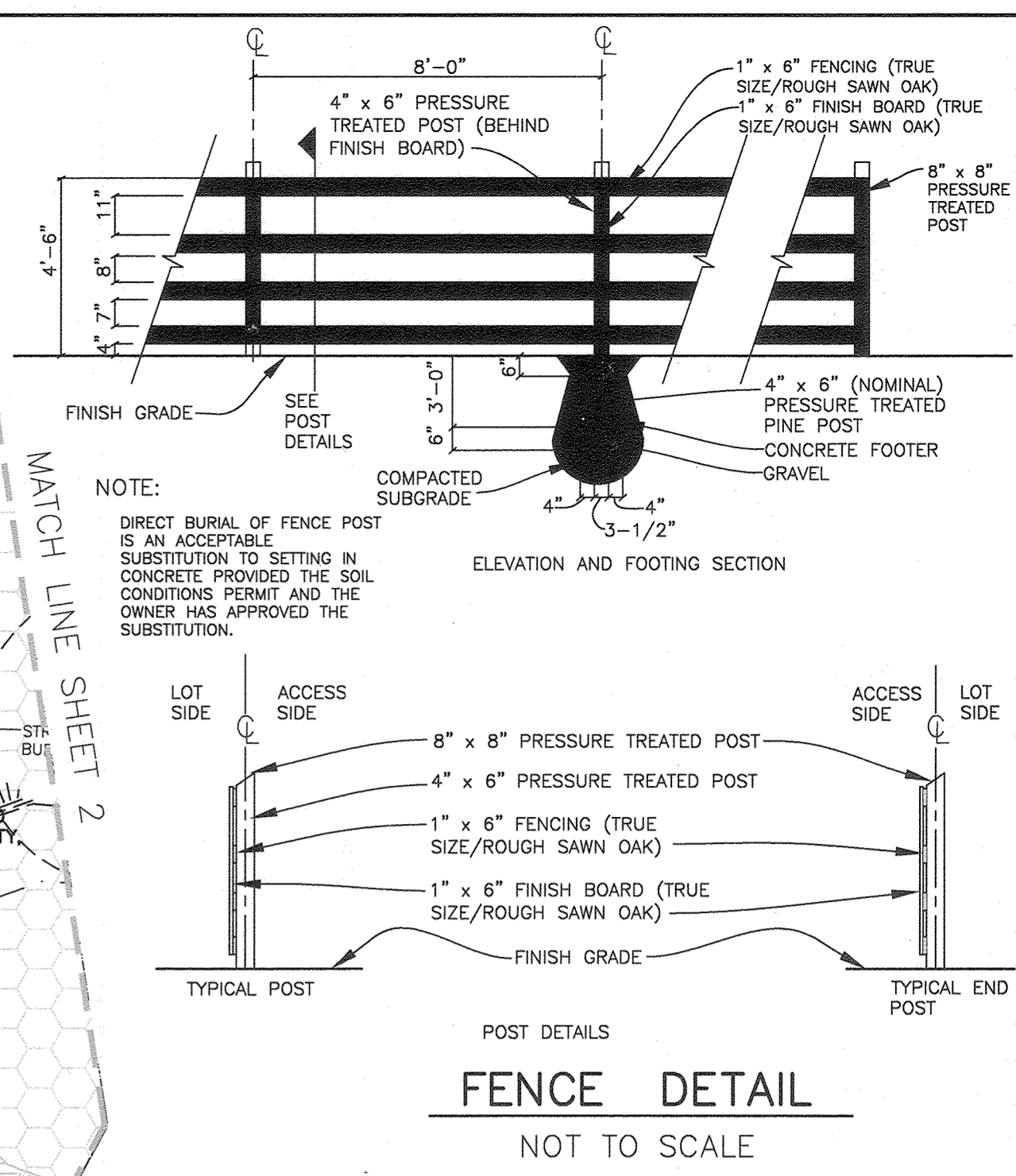
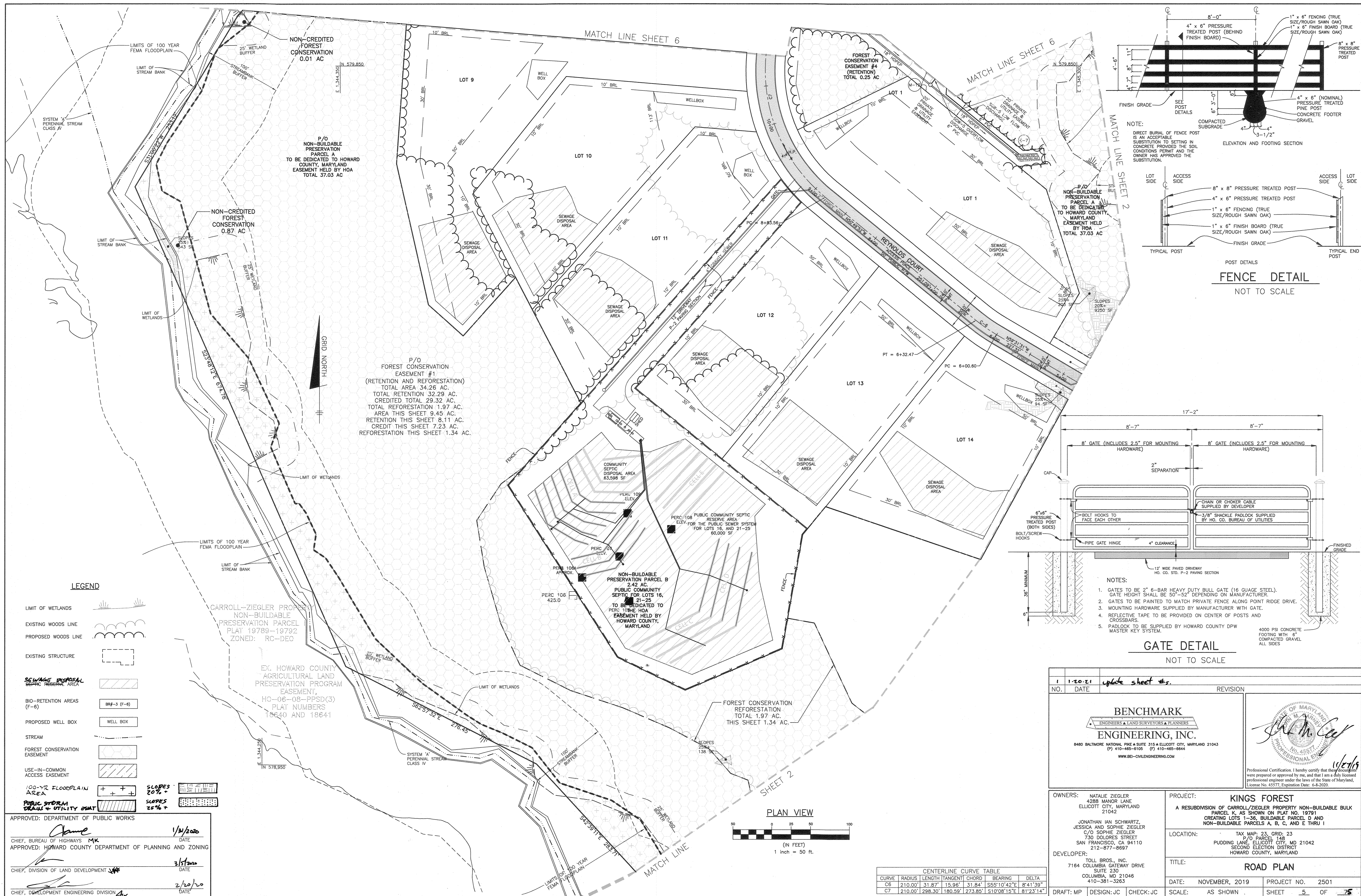
BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BE-CIVILENGINEERING.COM

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

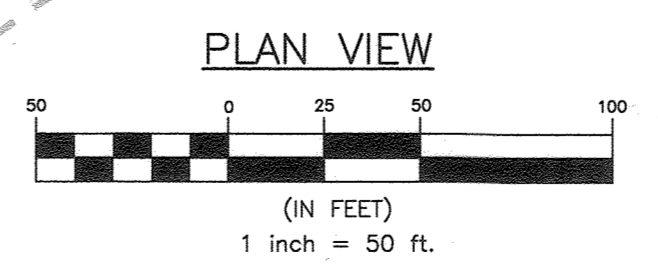
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	LOCATION: TAX MAP: 23, GRID: 23 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DRAFT: MP	TITLE: ROAD PLAN
DESIGN: JC	DATE: NOVEMBER, 2019
CHECK: JC	PROJECT NO. 2501
	SCALE: AS SHOWN
	SHEET 4 OF 7

APPROVED: DEPARTMENT OF PUBLIC WORKS	DATE: 1/31/2020
CHIEF, BUREAU OF HIGHWAYS MK	
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	DATE: 2/17/2020
CHIEF, DIVISION OF LAND DEVELOPMENT	
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE: 2/20/20





APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 1/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 DATE: 3/5/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

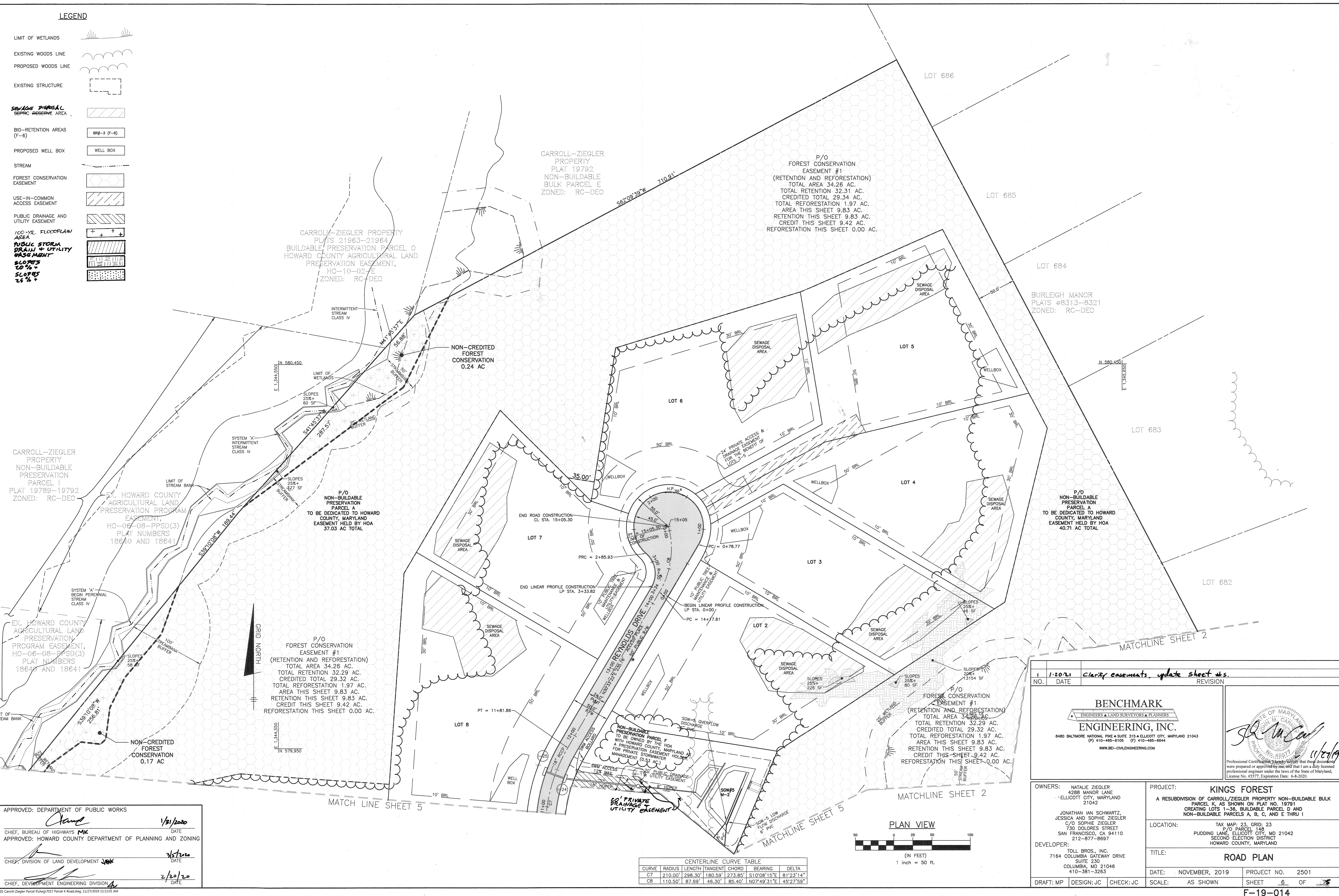


CENTERLINE CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C6	210.00'	31.87'	15.96'	31.84'	S55°10'42"E	8°41'39"
C7	210.00'	298.30'	180.59'	273.85'	S10°08'15"E	81°23'14"

NO.	1	DATE	1-20-21	REVISION	update sheet #s.
BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-8644 WWW.BE-CIVILENGINEERING.COM					
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042 JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697			PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I		
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263			LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
TITLE: ROAD PLAN			DATE: NOVEMBER, 2019 PROJECT NO. 2501		
DRAFT: MP DESIGN: JC CHECK: JC			SCALE: AS SHOWN SHEET 5 OF 25		

LEGEND

- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- SEWAGE DISPOSAL
SEMPIC RESERVE AREA
- BIO-RETENTION AREAS
(F-6)
- PROPOSED WELL BOX
- STREAM
- FOREST CONSERVATION
EASEMENT
- USE-IN-COMMON
ACCESS EASEMENT
- PUBLIC DRAINAGE AND
UTILITY EASEMENT
- 100'-W. FLOODPLAIN
AREA
- PUBLIC STORM
DRAIN & UTILITY
EASEMENT
- SLOPES
10% +
- SLOPES
2.5% +



CARROLL-ZIEGLER
PROPERTY
NON-BUILDABLE
PRESERVATION
PARCEL I
PLAT 18789-18792
ZONED: RC-DEO

EX. HOWARD COUNTY
AGRICULTURAL LAND
PRESERVATION
PROGRAM EASEMENT,
HC-06-08-PPSD(3)
PLAT NUMBERS
18640 AND 18641

NON-CREDITED
FOREST
CONSERVATION
0.17 AC

CARROLL-ZIEGLER PROPERTY
PLATS 21863-21864
BUILDABLE/PRESERVATION PARCEL O
HOWARD COUNTY AGRICULTURAL LAND
PRESERVATION EASEMENT,
HC-10-02-E
ZONED: RC-DEO

NON-CREDITED
FOREST
CONSERVATION
0.24 AC

P/O
FOREST CONSERVATION
EASEMENT #1
(RETENTION AND REFORESTATION)
TOTAL AREA 34.26 AC.
TOTAL RETENTION 32.29 AC.
CREDITED TOTAL 29.32 AC.
TOTAL REFORESTATION 1.97 AC.
AREA THIS SHEET 9.83 AC.
RETENTION THIS SHEET 9.83 AC.
CREDIT THIS SHEET 9.42 AC.
REFORESTATION THIS SHEET 0.00 AC.

CARROLL-ZIEGLER
PROPERTY
PLAT 18792
NON-BUILDABLE
BULK PARCEL E
ZONED: RC-DEO

P/O
FOREST CONSERVATION
EASEMENT #1
(RETENTION AND REFORESTATION)
TOTAL AREA 34.26 AC.
TOTAL RETENTION 32.31 AC.
CREDITED TOTAL 29.34 AC.
TOTAL REFORESTATION 1.97 AC.
AREA THIS SHEET 9.83 AC.
RETENTION THIS SHEET 9.83 AC.
CREDIT THIS SHEET 9.42 AC.
REFORESTATION THIS SHEET 0.00 AC.

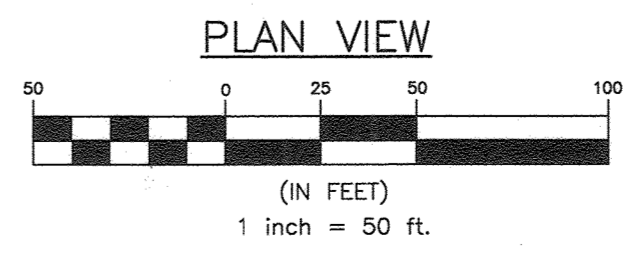
P/O
NON-BUILDABLE
PRESERVATION
PARCEL A
TO BE DEDICATED TO HOWARD
COUNTY, MARYLAND
EASEMENT HELD BY HOA
40.71 AC TOTAL

P/O
FOREST CONSERVATION
EASEMENT #1
(RETENTION AND REFORESTATION)
TOTAL AREA 34.26 AC.
TOTAL RETENTION 32.29 AC.
CREDITED TOTAL 29.32 AC.
TOTAL REFORESTATION 1.97 AC.
AREA THIS SHEET 9.83 AC.
RETENTION THIS SHEET 9.83 AC.
CREDIT THIS SHEET 9.42 AC.
REFORESTATION THIS SHEET 0.00 AC.

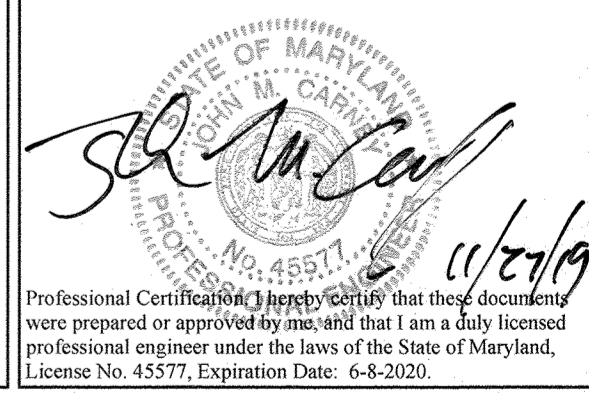
APPROVED: DEPARTMENT OF PUBLIC WORKS
James
CHIEF, BUREAU OF HIGHWAYS MK
DATE 1/31/2020
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature]
CHIEF, DIVISION OF LAND DEVELOPMENT JMK
DATE 3/5/2020
CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature]
DATE 2/20/20

CENTERLINE CURVE TABLE

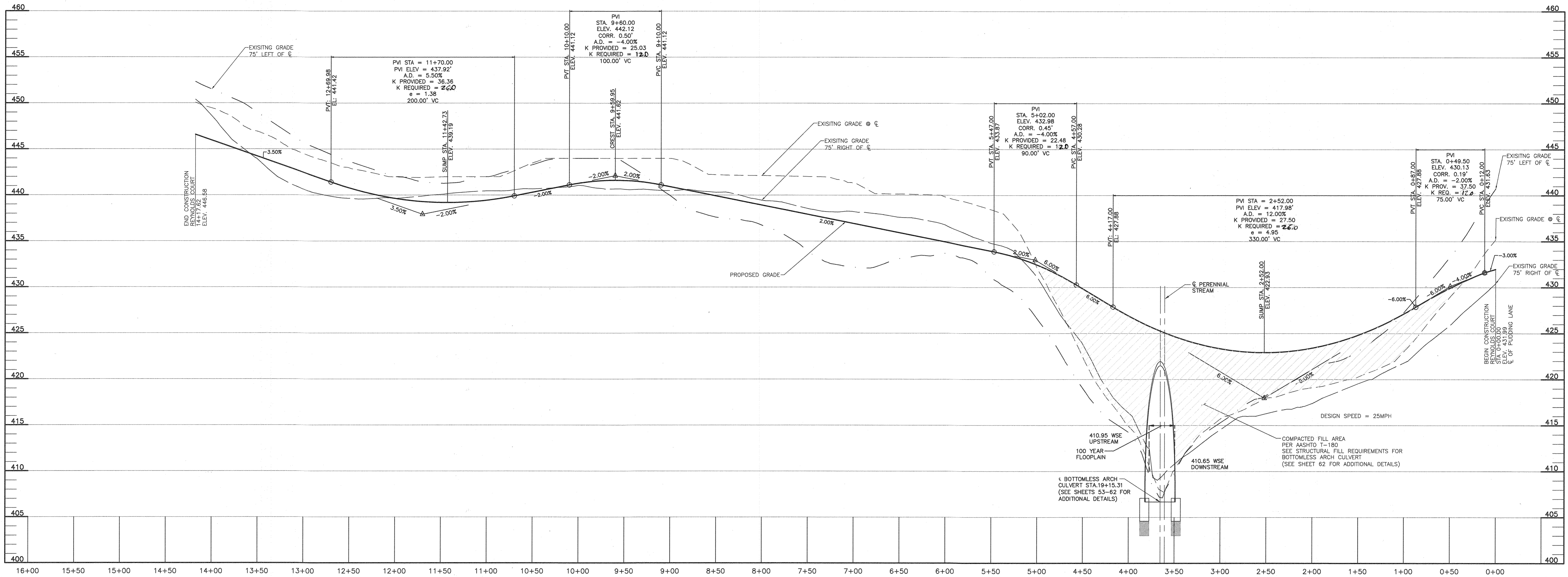
CURVE	RADIUS	LENGTH	TANGENT	CHORD	BEARING	DELTA
C7	210.00'	298.30'	180.59'	273.85'	S10°08'15"E	81°23'14"
CB	110.50'	87.89'	46.30'	85.40'	N07°49'31"E	49°27'59"



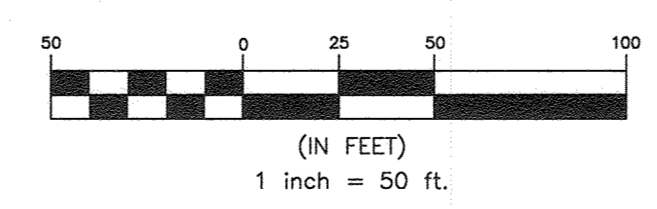
NO.	1	DATE	1.20.21	REVISION	Clarify easements, update sheet #s.
<p>BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-485-8105 (F) 410-485-6644 WWW.BE-CIVILENGINEERING.COM</p>					
<p>OWNERS: NATALIE ZIEGLER 428B MANOR LANE ELLICOTT CITY, MARYLAND 21042</p>			<p>PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I</p>		
<p>DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263</p>			<p>LOCATION: TAX MAP 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>		
<p>TITLE: ROAD PLAN</p>					
DATE: NOVEMBER, 2019		PROJECT NO. 2501			
DRAFT: MP		DESIGN: JC		CHECK: JC	
SCALE: AS SHOWN		SHEET 6 OF 7			



11/2021 Carroll-Ziegler Parcel K (King) 1017 Parcel K Road.dwg, 11/27/2019 11:11:01 AM



Reynolds Court
SCALE: 1"=50' HORIZ., 1"=5' VERT.



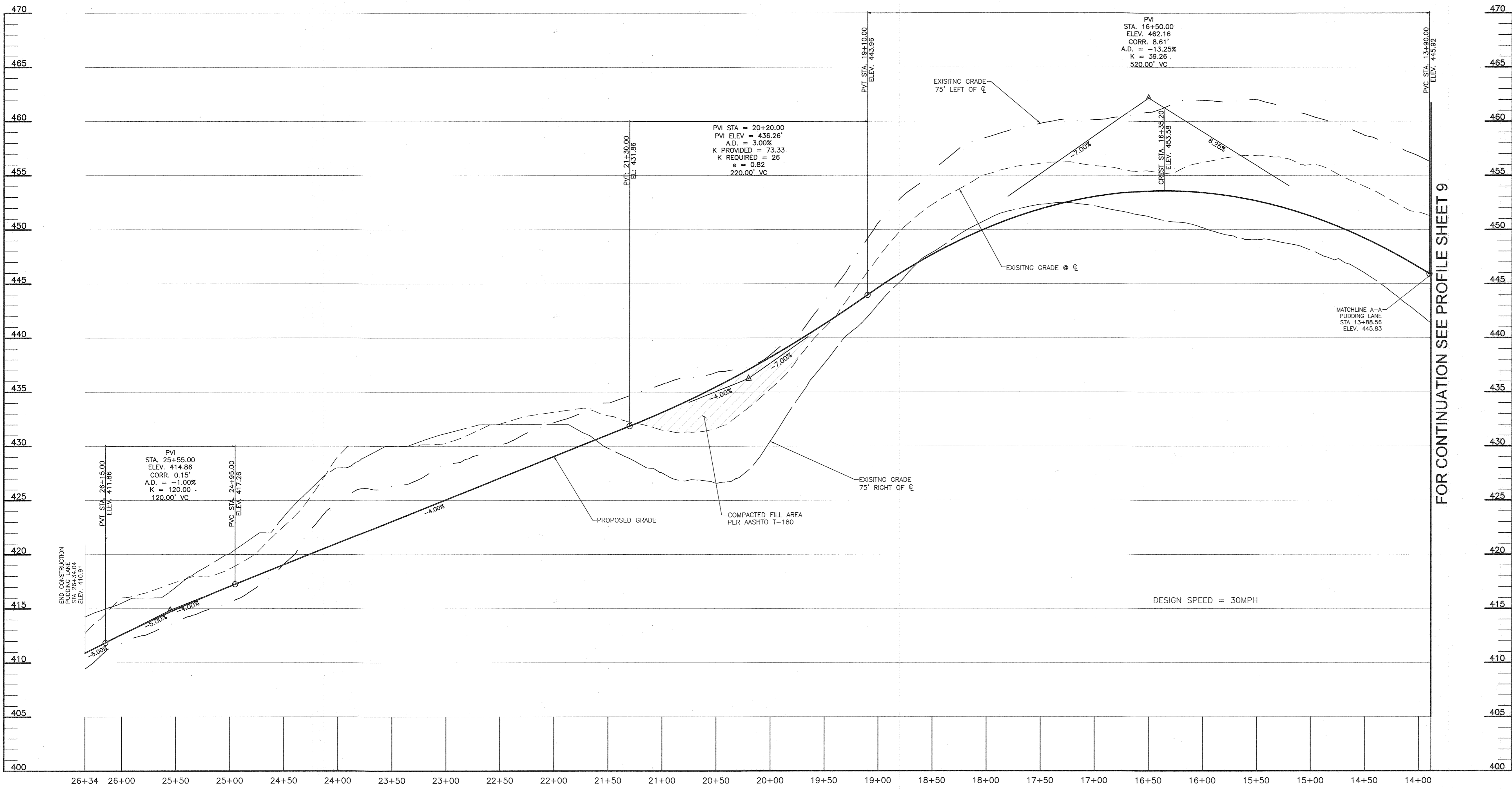
APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 1/31/2020
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 DATE: 3/15/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION
1	1.20.21	update sheet #s.

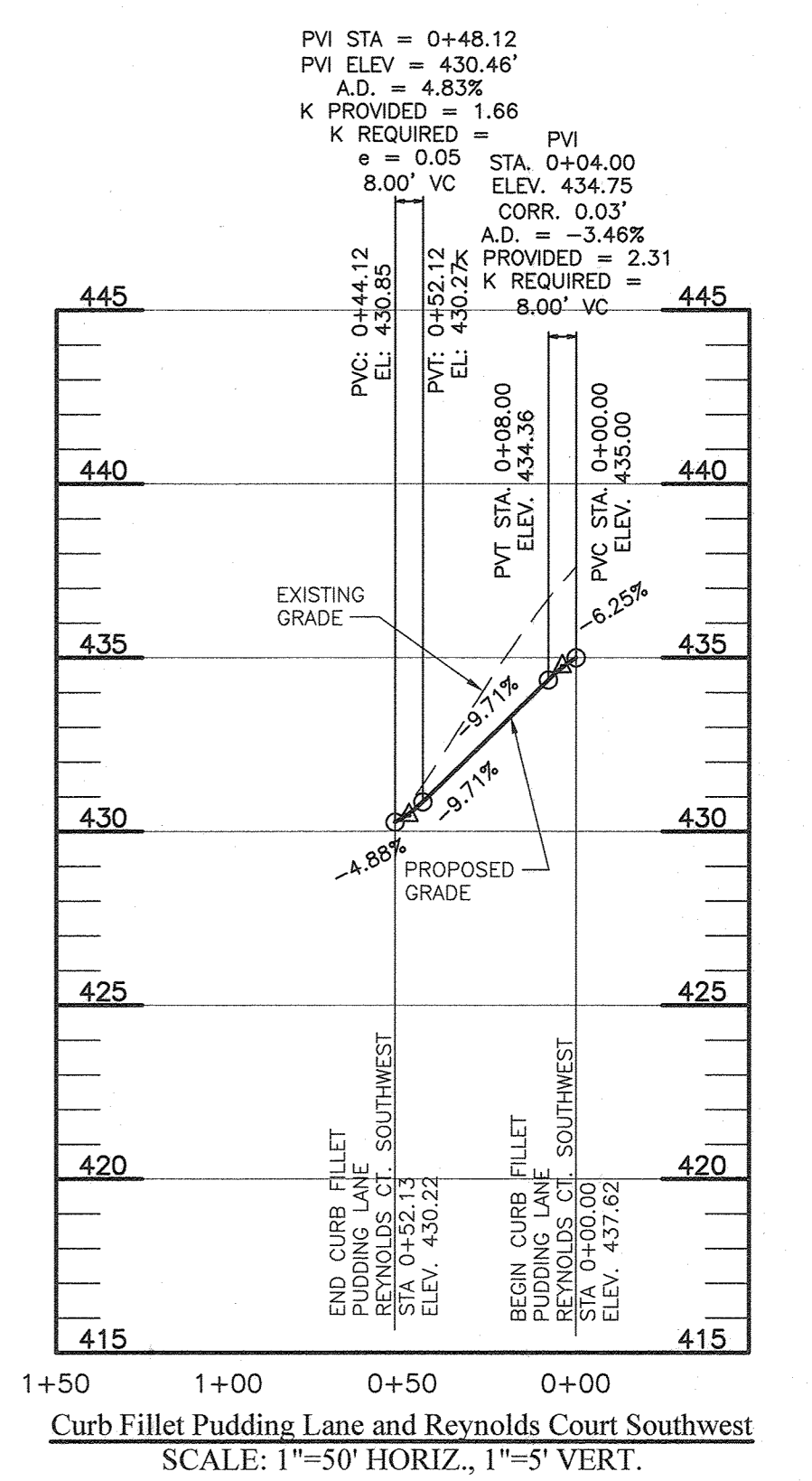
BENCHMARK
 ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6844
 WWW.BEI-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

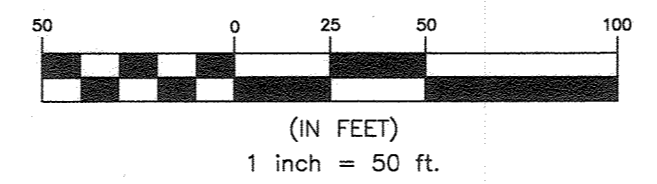
<p>OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042</p> <p>DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263</p>	<p>PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I</p> <p>LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p> <p>TITLE: ROAD PROFILES REYNOLDS CT.</p> <p>DATE: NOVEMBER, 2019 PROJECT NO.: 2501</p>
<p>DRAFT: MP DESIGN: JC CHECK: JC</p>	<p>SCALE: AS SHOWN SHEET 7 OF 7</p>



FOR CONTINUATION SEE PROFILE SHEET 9



Pudding Lane
SCALE: 1"=50' HORIZ., 1"=5' VERT.



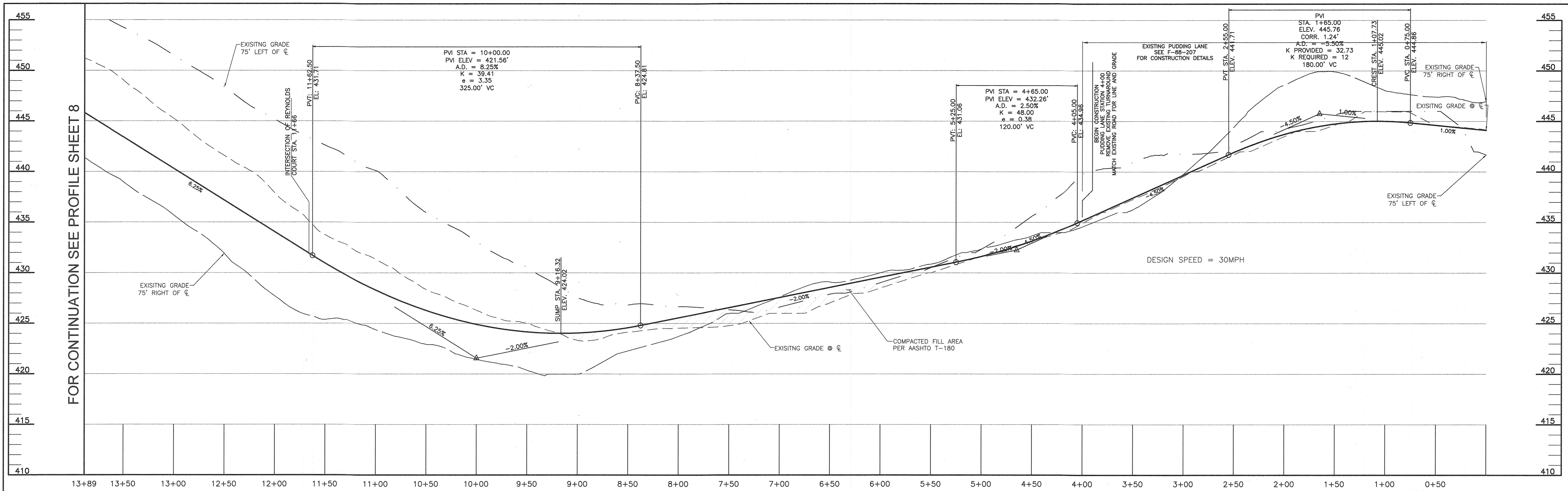
APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 1/21/2020
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 3/17/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION
1	1.20.21	update sheet #s.

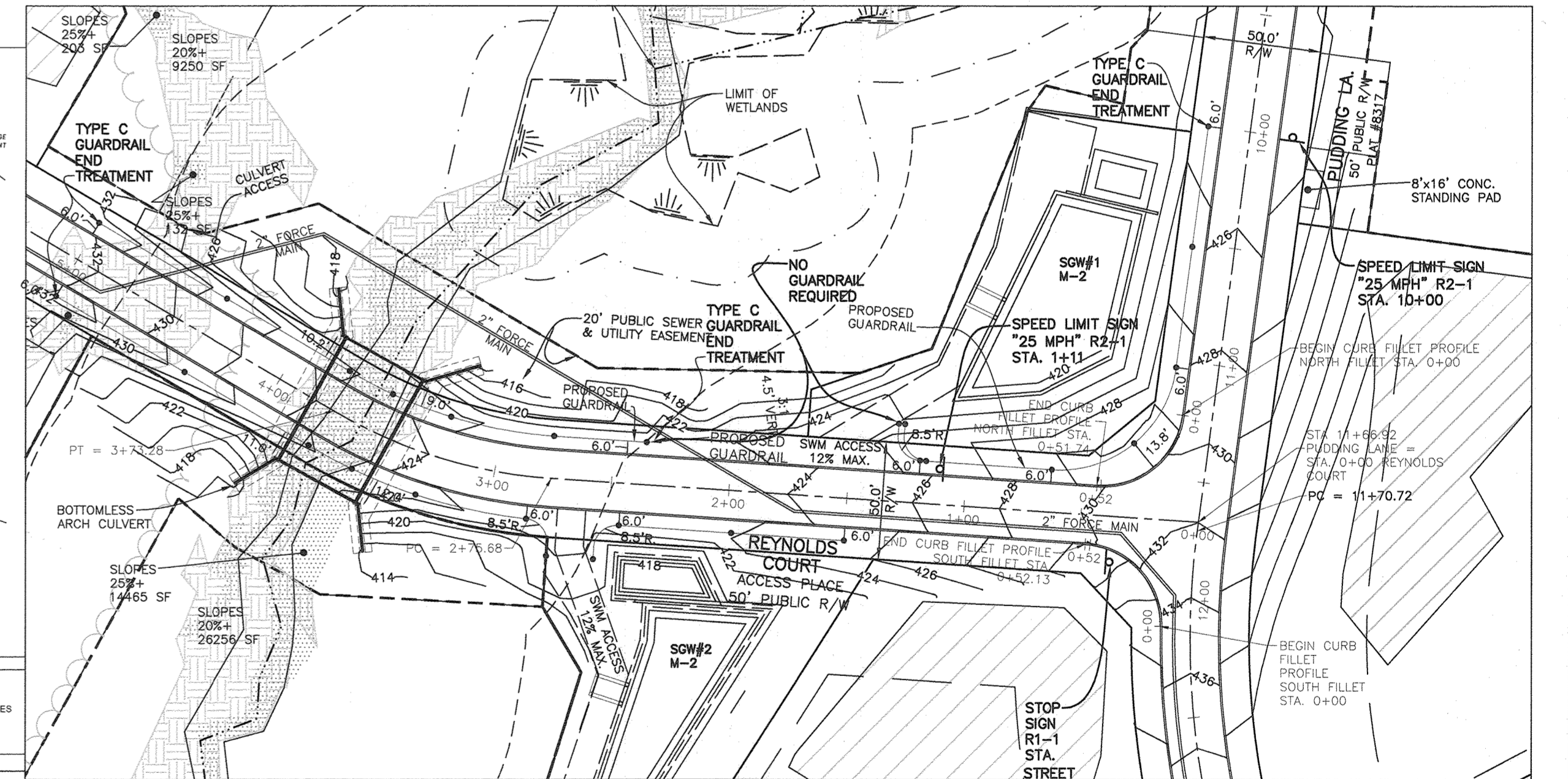
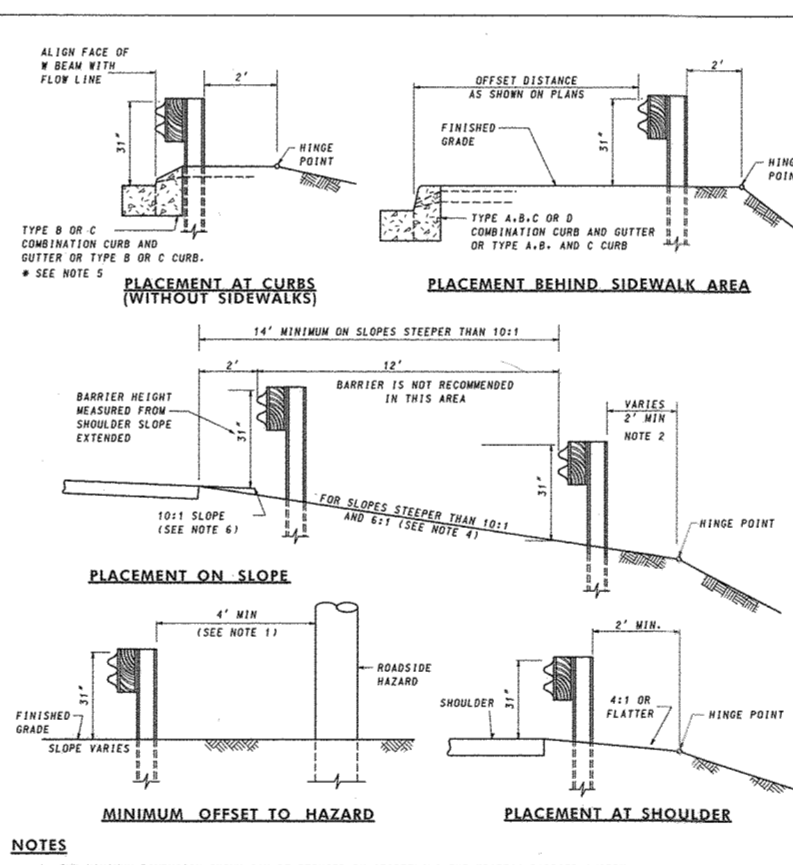
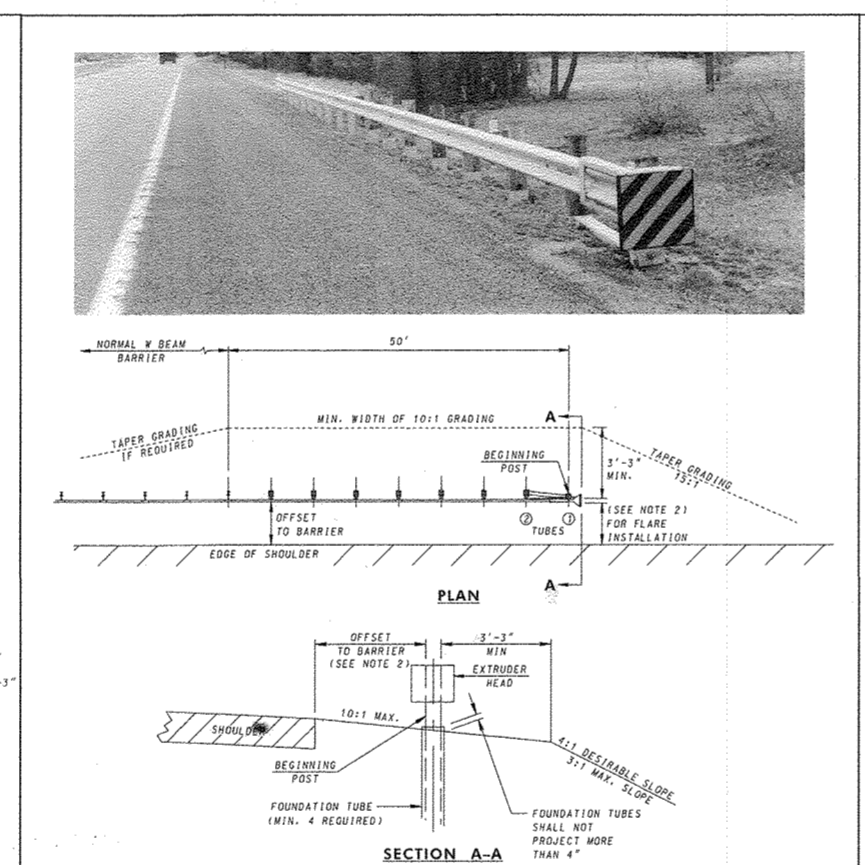
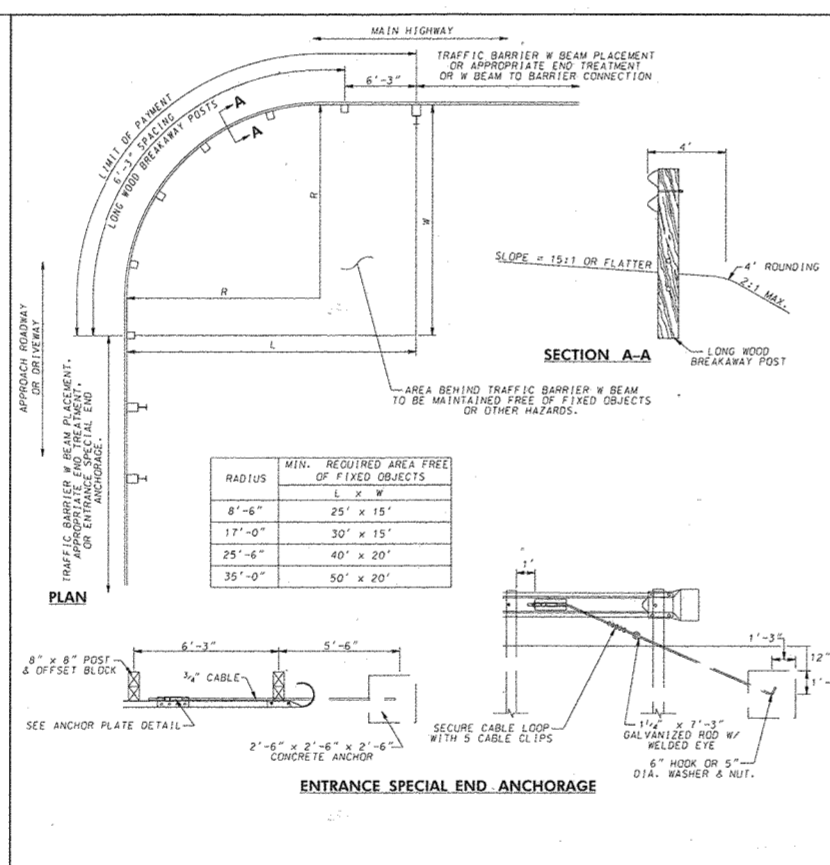
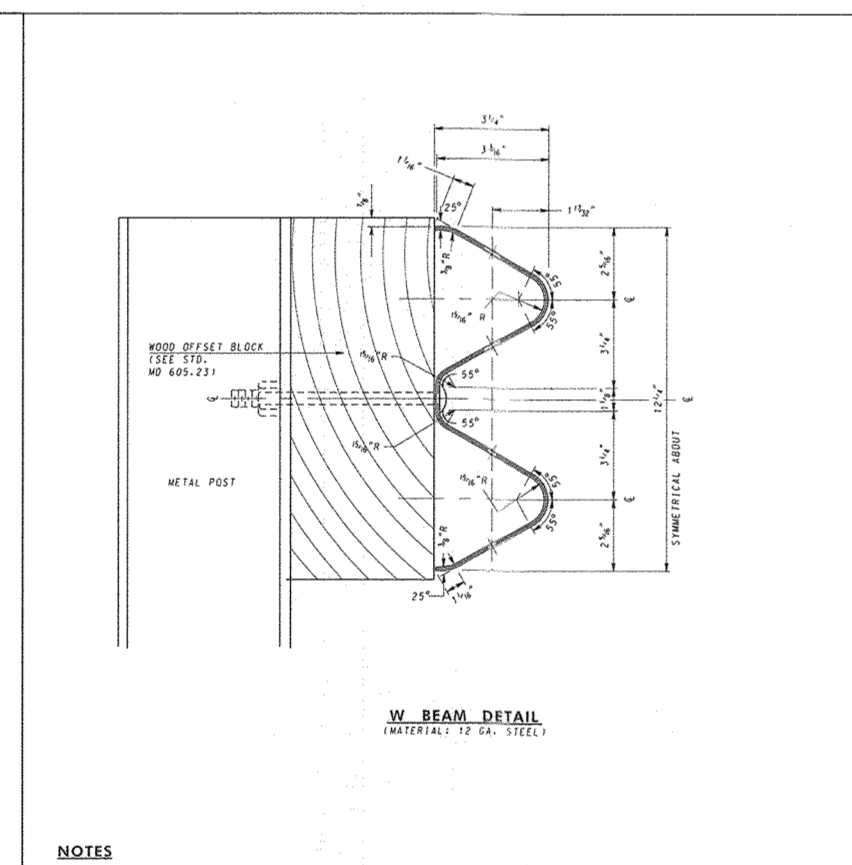
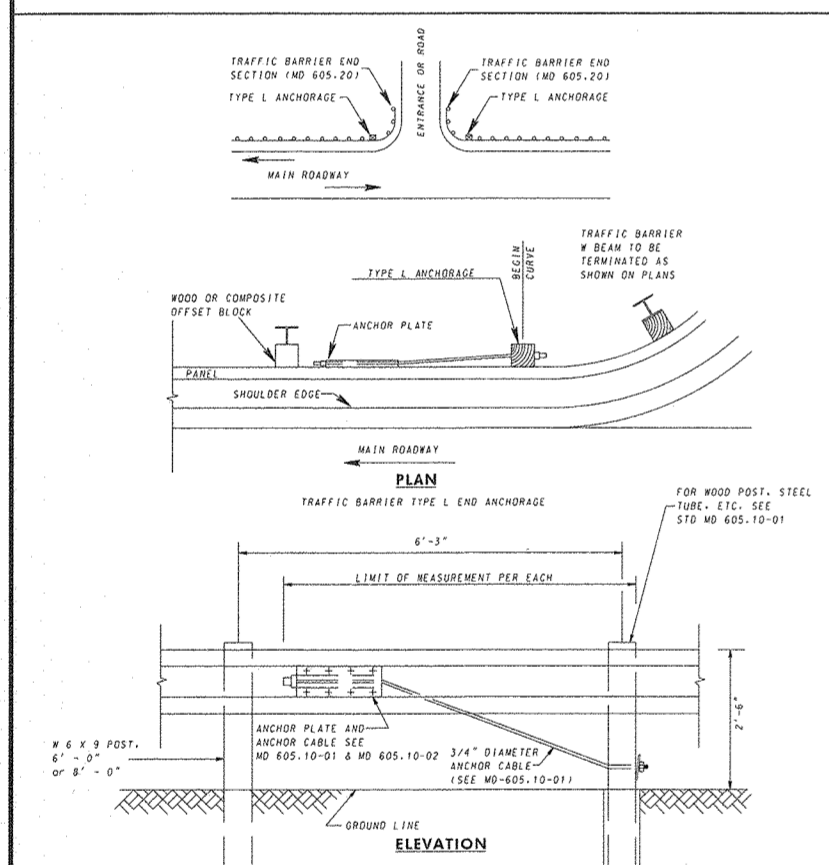
BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6844
 WWW.BEI-CIVILENGINEERING.COM

[Professional Seal]
J. M. CARR
 PROFESSIONAL ENGINEER
 License No. 45577, Expiration Date: 6-8-2020

OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DRAFT: MP	TITLE: ROAD PROFILES PUDDING LANE
DESIGN: JC	DATE: NOVEMBER, 2019
CHECK: JC	PROJECT NO. 2501
	SCALE: AS SHOWN
	SHEET 8 OF 78



Puttling Lane
SCALE: 1"=50' HORIZ., 1"=5' VERT.



APPROVED:	DATE:
<i>[Signature]</i>	1/31/2020
CHIEF, BUREAU OF HIGHWAYS	
APPROVED:	DATE:
<i>[Signature]</i>	3/17/2020
CHIEF, DIVISION OF LAND DEVELOPMENT	
APPROVED:	DATE:
<i>[Signature]</i>	2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION	

APPROVED:	DATE:
<i>[Signature]</i>	1/31/2020
CHIEF, BUREAU OF HIGHWAYS	
APPROVED:	DATE:
<i>[Signature]</i>	3/17/2020
CHIEF, DIVISION OF LAND DEVELOPMENT	
APPROVED:	DATE:
<i>[Signature]</i>	2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION	

APPROVED:	DATE:
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CHIEF, BUREAU OF HIGHWAYS	
APPROVED:	DATE:
<i>[Signature]</i>	3/17/2020
CHIEF, DIVISION OF LAND DEVELOPMENT	
APPROVED:	DATE:
<i>[Signature]</i>	2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION	

APPROVED:	DATE:
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CHIEF, BUREAU OF HIGHWAYS	
APPROVED:	DATE:
<i>[Signature]</i>	3/17/2020
CHIEF, DIVISION OF LAND DEVELOPMENT	
APPROVED:	DATE:
<i>[Signature]</i>	2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION	

APPROVED:	DATE:
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CHIEF, BUREAU OF HIGHWAYS	
APPROVED:	DATE:
<i>[Signature]</i>	3/17/2020
CHIEF, DIVISION OF LAND DEVELOPMENT	
APPROVED:	DATE:
<i>[Signature]</i>	2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION	

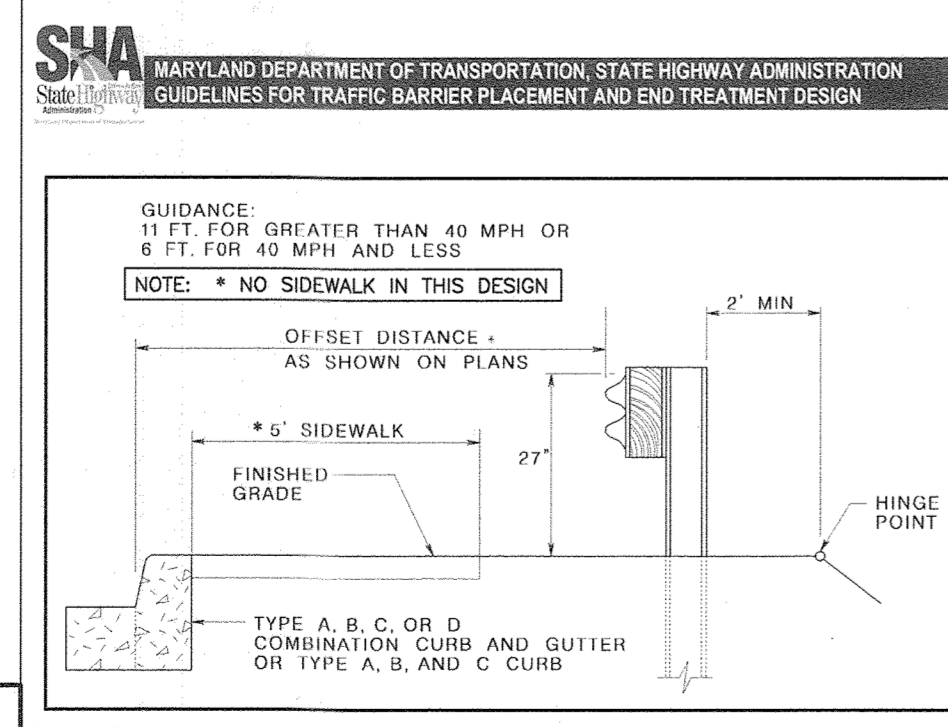
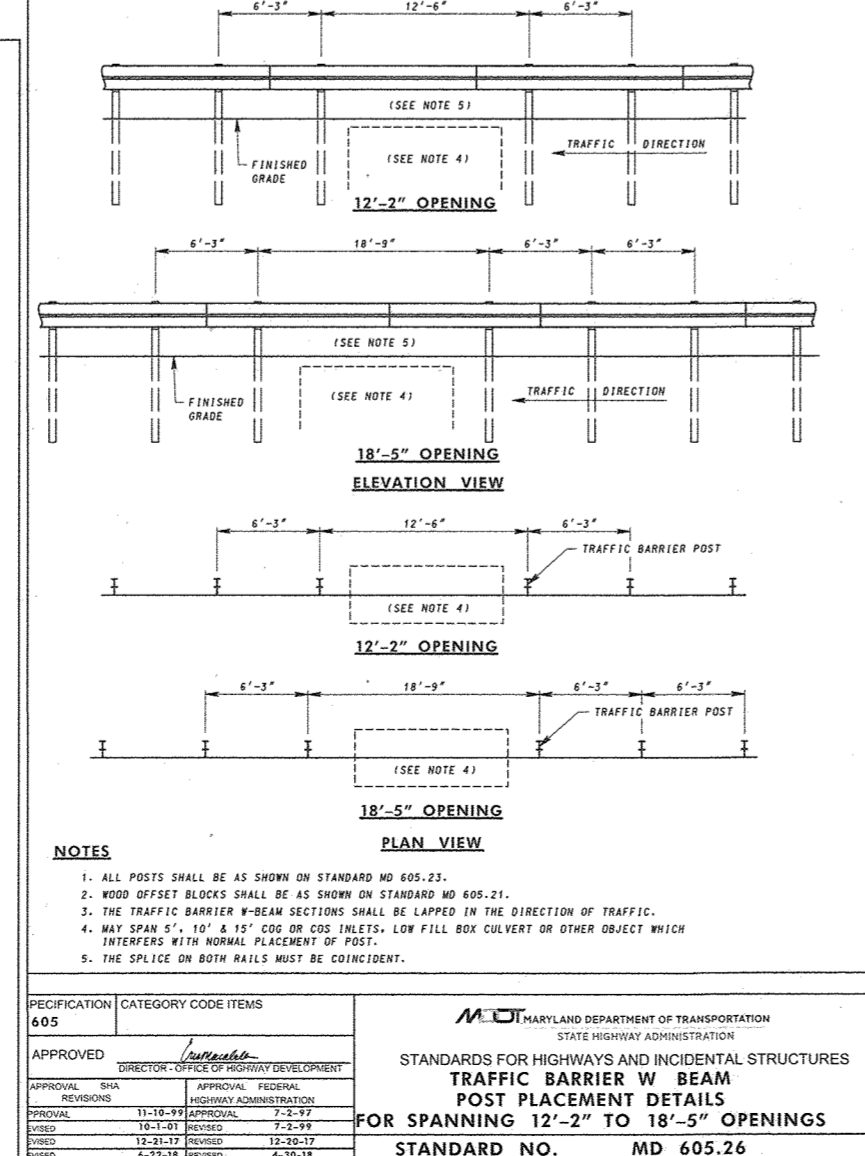
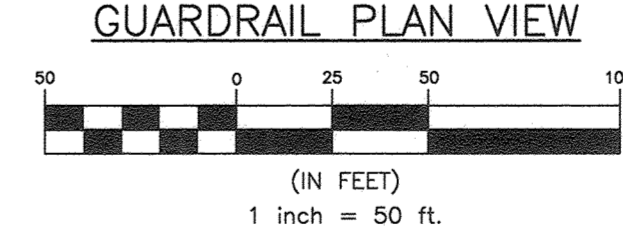


FIGURE 18: PLACEMENT BEHIND SIDEWALK AREA
Appropriate end treatments for installations according to FIGURE 17 are the Type G (or Type H for median applications) turned down treatment for a low-speed facility. For a high-speed facility, if possible, eliminate the curb in the area immediately prior to and through a crashworthy end treatment. Appropriate end treatments for installations according to FIGURE 18 would be designs as provided in the standards



APPROVED:	DATE:
<i>[Signature]</i>	1/31/2020
CHIEF, BUREAU OF HIGHWAYS	
APPROVED:	DATE:
<i>[Signature]</i>	3/17/2020
CHIEF, DIVISION OF LAND DEVELOPMENT	
APPROVED:	DATE:
<i>[Signature]</i>	2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION	

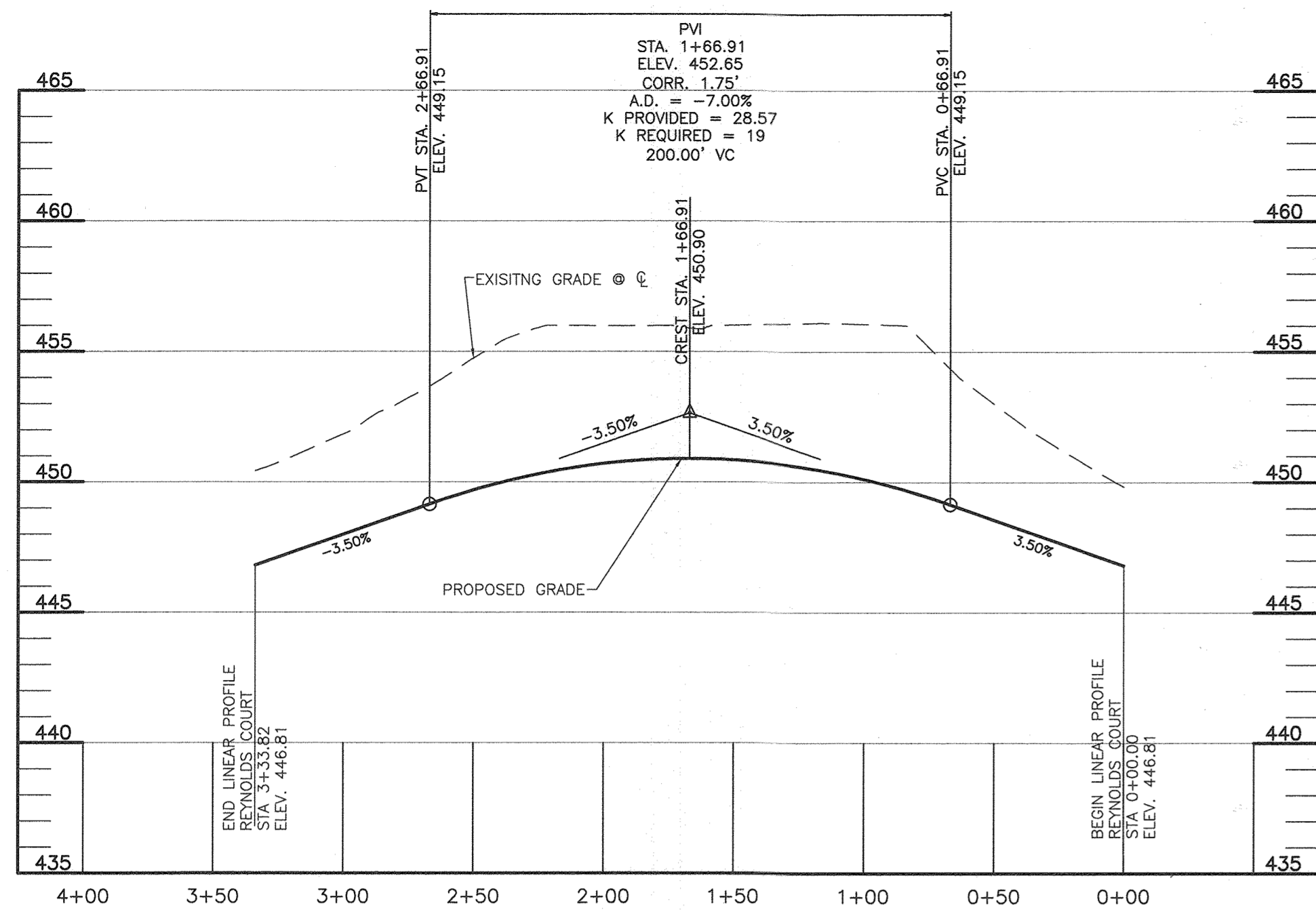


NO.	DATE	REVISION
1	1-20-21	update sheet #s

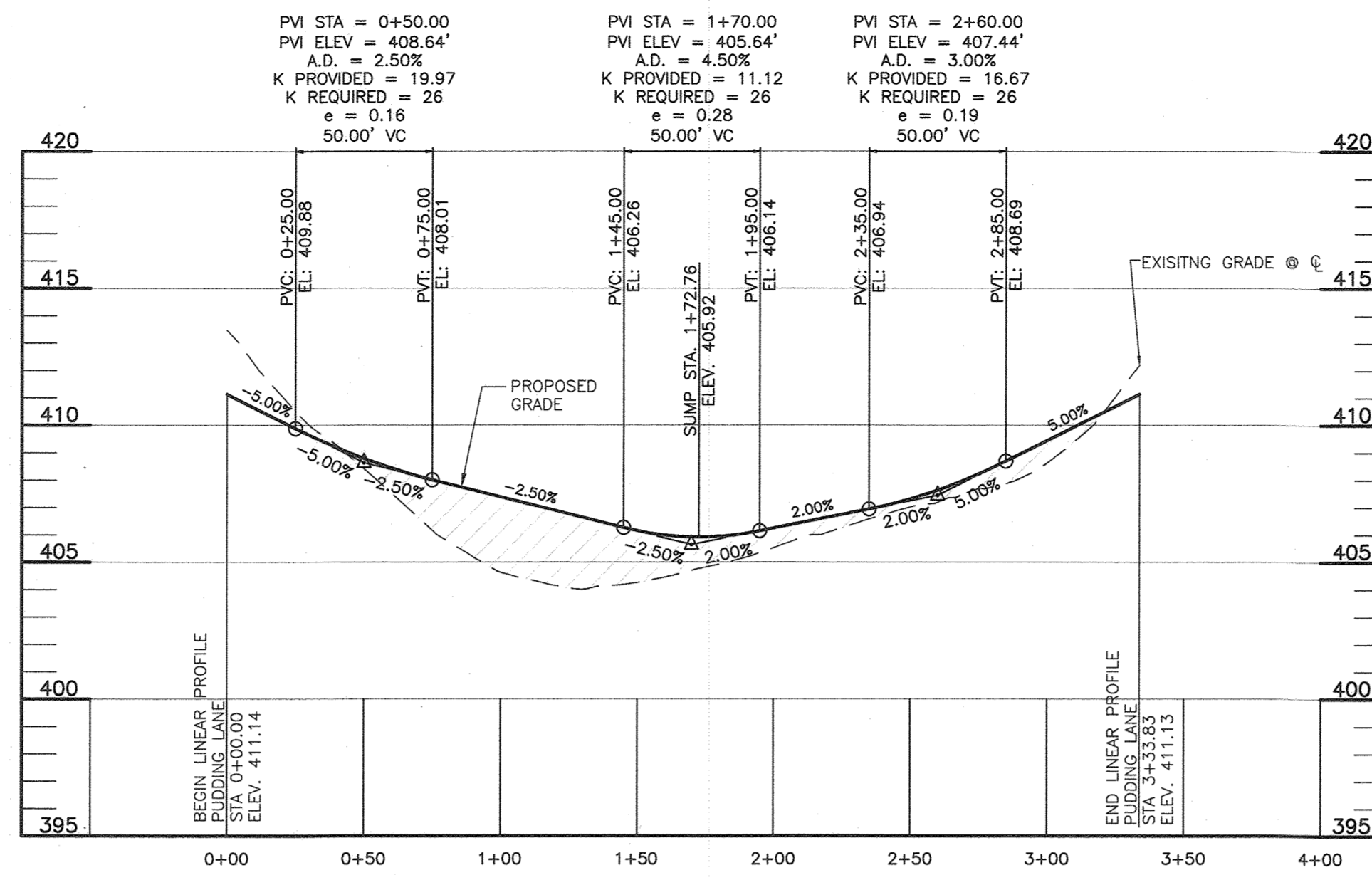
BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE A SUITE 315 & ELLICOTT CITY, MARYLAND 21043
(P) 410-485-6105 (F) 410-485-6644
WWW.BE-CIVILENGINEERING.COM

[Signature]
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

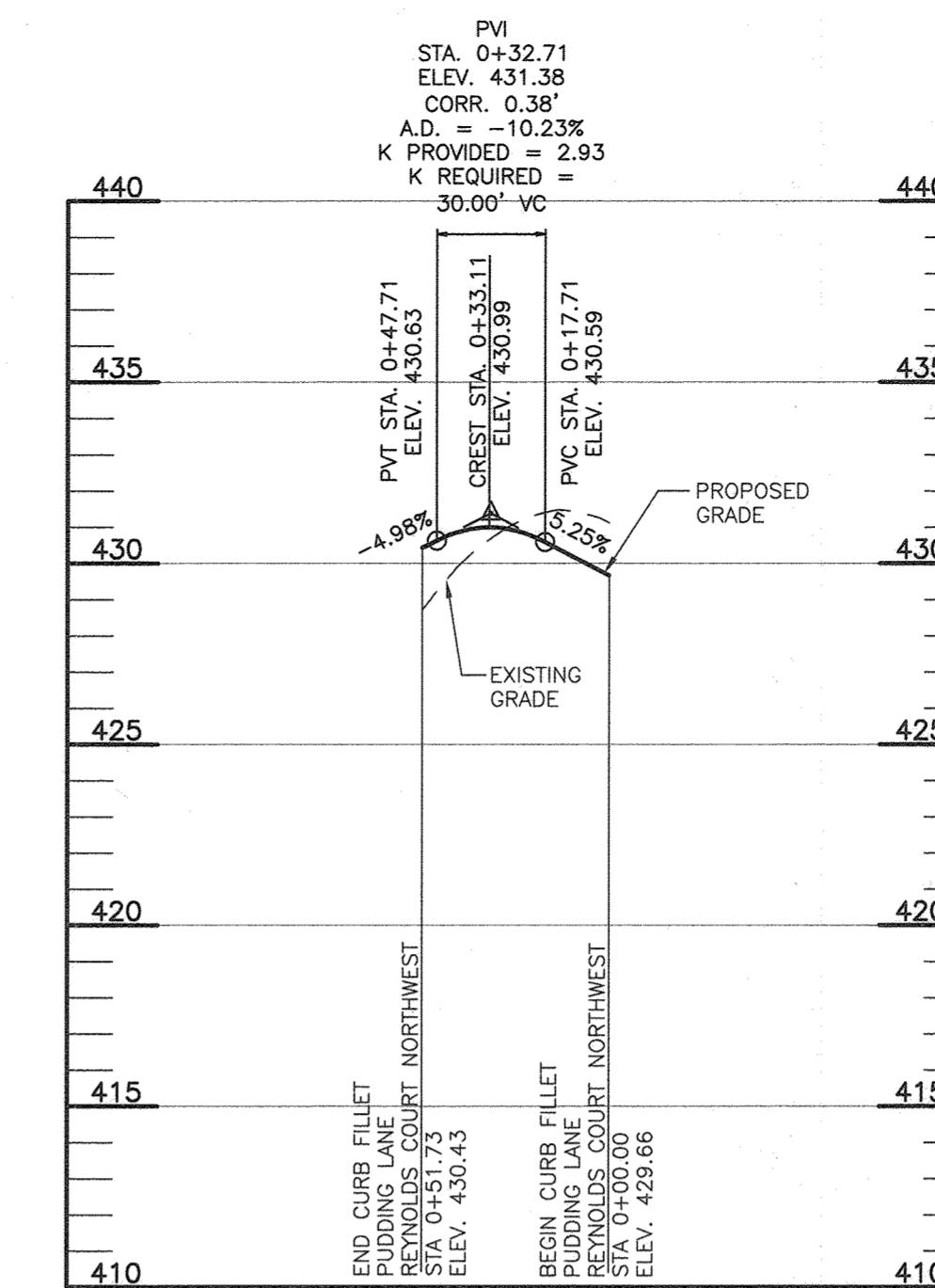
OWNERS:	NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT:	KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER:	JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION:	TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUTTING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE:	ROAD PROFILES AND GUARDRAIL DETAILS	DATE:	NOVEMBER, 2019
DRAFT:	MP	DESIGN:	JC
CHECK:	JC	PROJECT NO.:	2501
SCALE:	AS SHOWN	SHEET:	9 OF 25



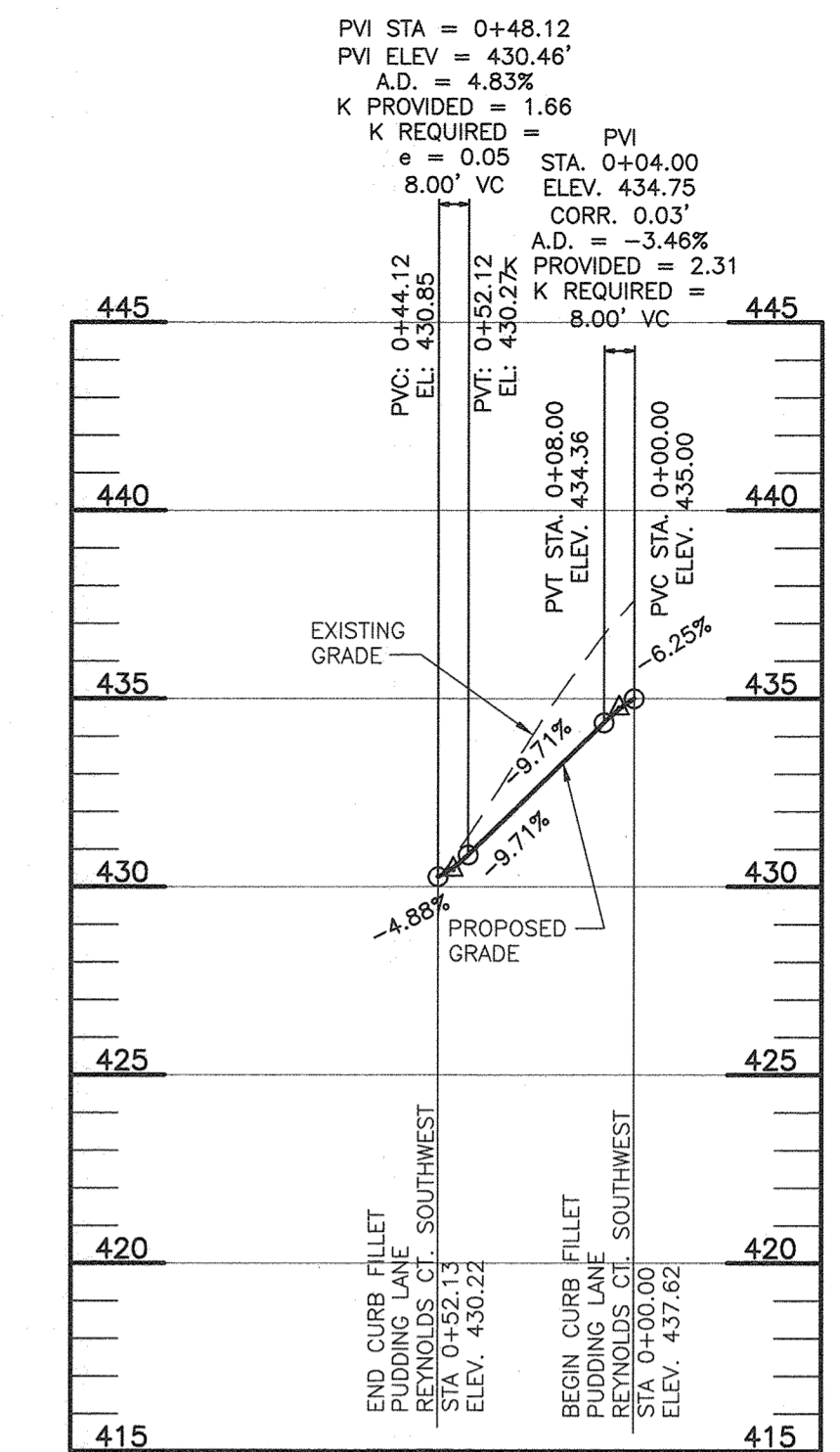
Reynolds Court - Linear Profile
SCALE: 1"=50' HORIZ., 1"=5' VERT.



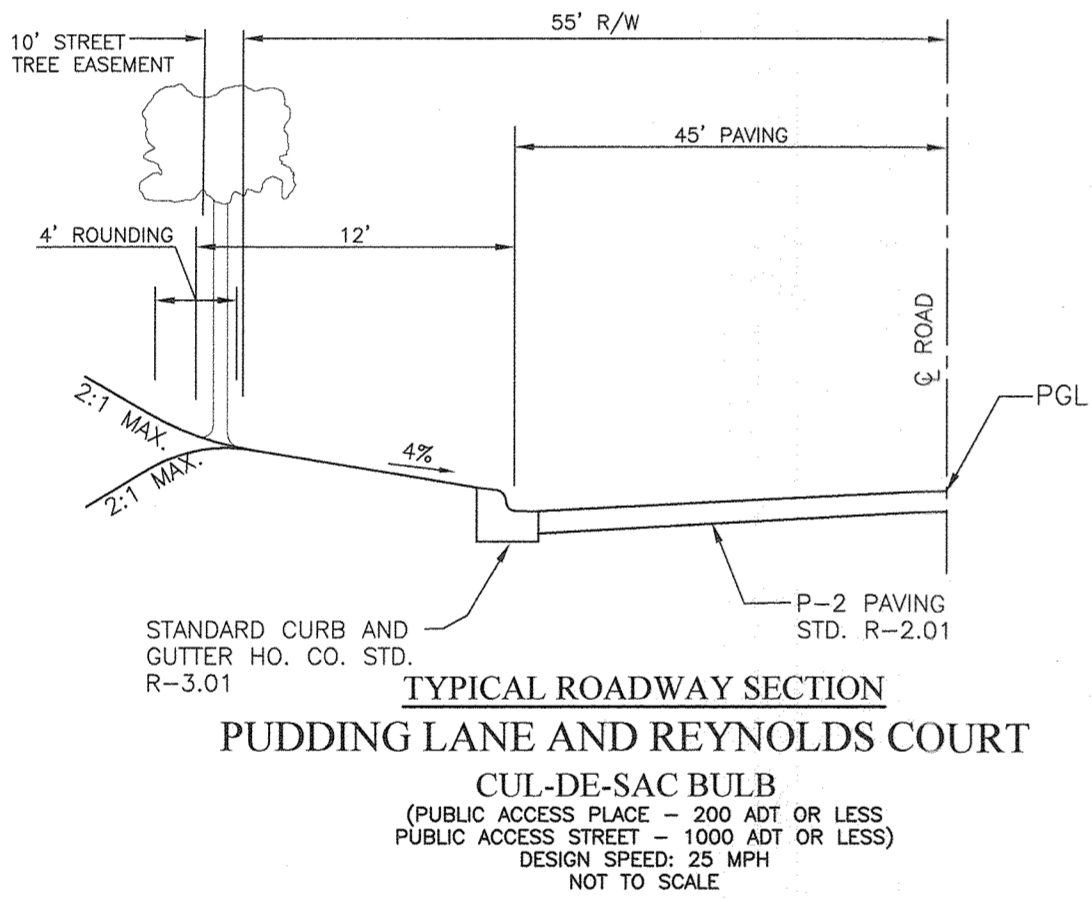
Pudding Lane - Linear Profile
SCALE: 1"=50' HORIZ., 1"=5' VERT.



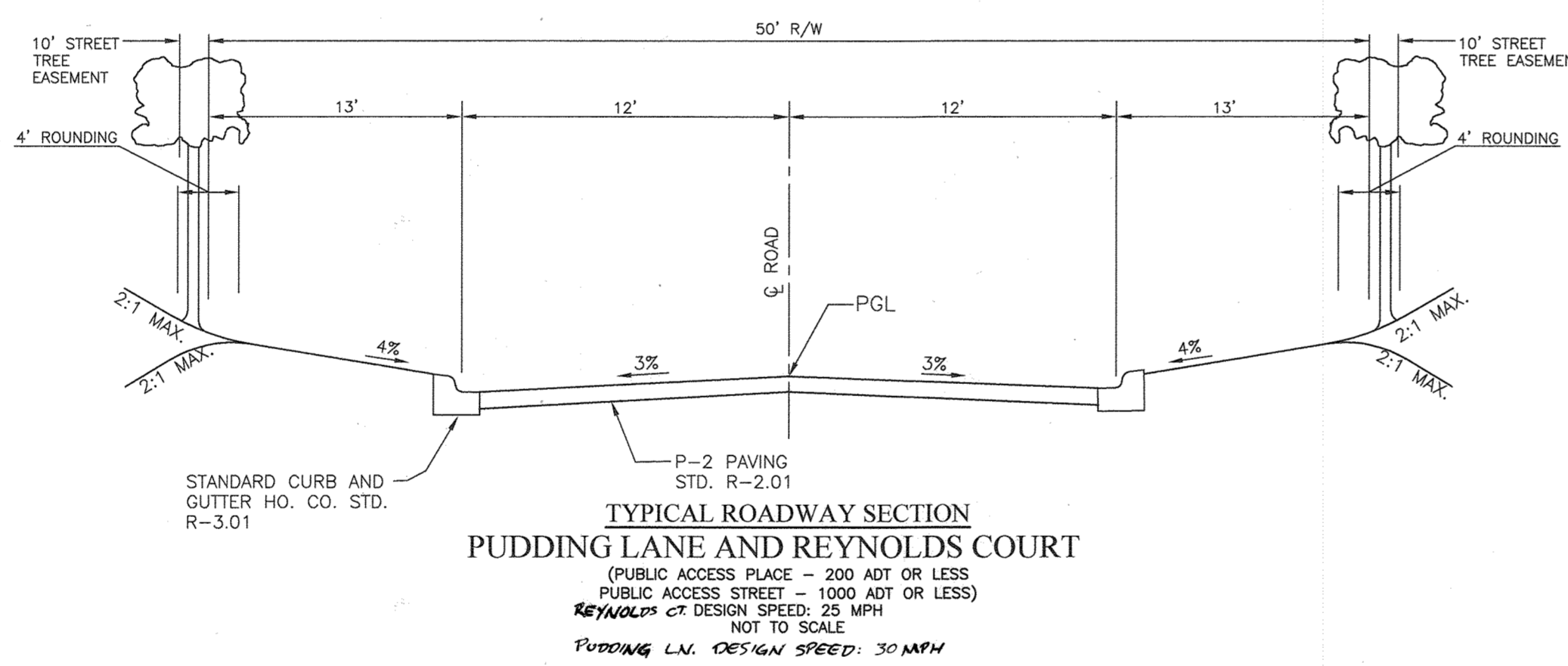
Curb Fillet Pudding Lane and Reynolds Court Northwest
SCALE: 1"=50' HORIZ., 1"=5' VERT.



Curb Fillet Pudding Lane and Reynolds Court Southwest
SCALE: 1"=50' HORIZ., 1"=5' VERT.

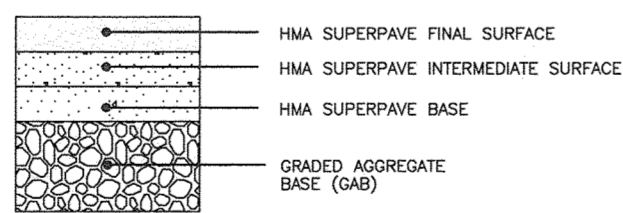


TYPICAL ROADWAY SECTION
PUDDING LANE AND REYNOLDS COURT
CUL-DE-SAC BULB
(PUBLIC ACCESS PLACE - 200 ADT OR LESS
PUBLIC ACCESS STREET - 1000 ADT OR LESS)
DESIGN SPEED: 25 MPH
NOT TO SCALE



TYPICAL ROADWAY SECTION
PUDDING LANE AND REYNOLDS COURT
(PUBLIC ACCESS PLACE - 200 ADT OR LESS
PUBLIC ACCESS STREET - 1000 ADT OR LESS)
REYNOLDS CT DESIGN SPEED: 25 MPH
NOT TO SCALE
PUDDING LN. DESIGN SPEED: 30 MPH

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5		5 TO <7		≥ 7	
			MIN	HMA WITH GAB	MIN	HMA WITH CONSTANT GAB	MIN	HMA WITH CONSTANT GAB
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SAC, RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE BASE	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0

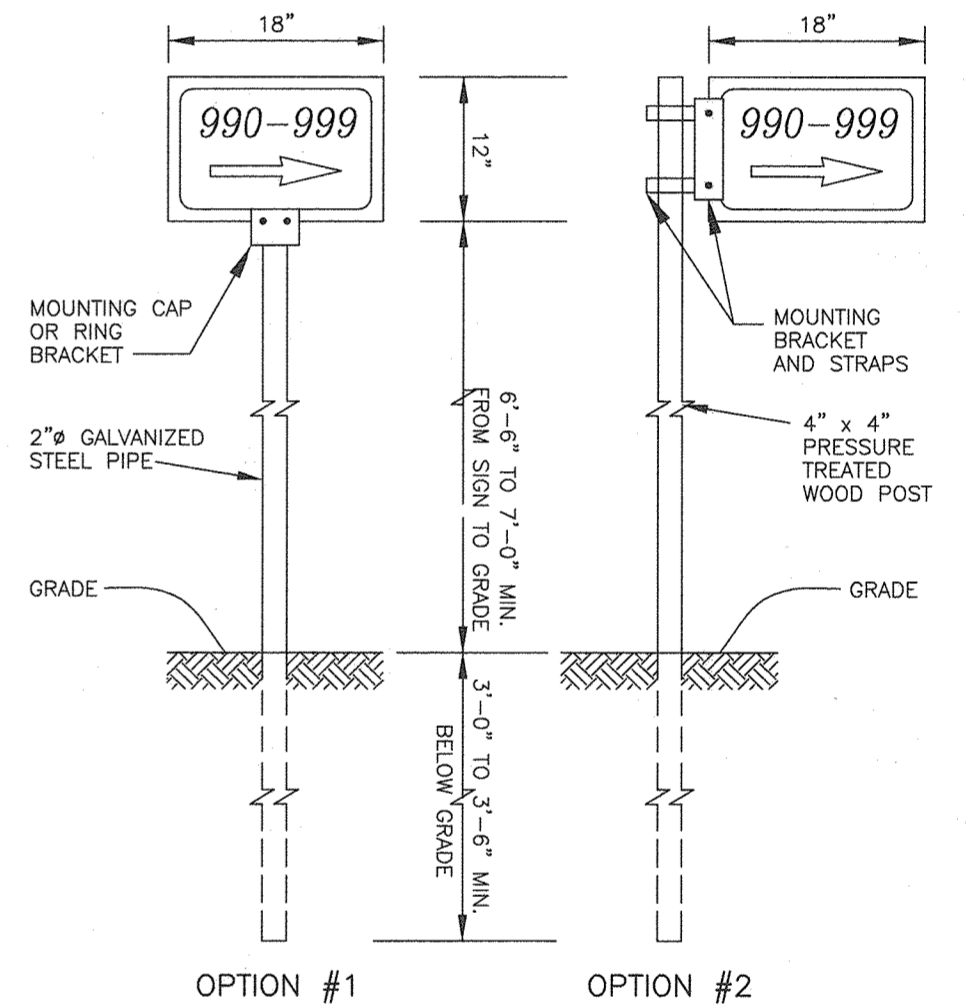


P-2 PAVING DETAIL

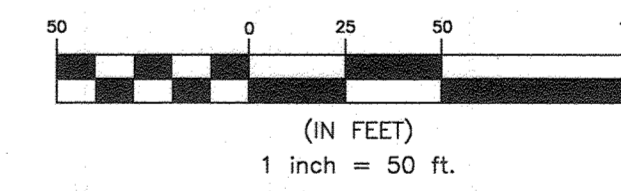
ROAD NAME	ROAD GRADING TIE IN SLOPES			
	BEGINNING STATION	ENDING STATION	RIGHT TIE SLOPE	LEFT TIE SLOPE
PUDDING LANE	4+00	9+50	3:1	3:1
	9+50	15+00	4:1	4:1
	15+00	BEGIN LP	3:1	3:1
REYNOLDS CT.	0+12	2+00	3:1	4:1
	2+00	5+00	2:1	2:1
	5+00	BEGIN LP	4:1	4:1

SEE ROAD PLANS FOR TRAFFIC BARRIER.
2:1 SLOPES ARE NECESSARY TO MINIMIZE ENVIRONMENTAL IMPACTS.
4:1 SLOPES ARE NECESSARY FOR SLOPE RESTRICTION NEAR SEWAGE DISPOSAL AREA.
10' TRANSITION BETWEEN SLOPE CHANGES AS NECESSARY.

- THE FOLLOWING STANDARD SIGN DESIGN SPECIFICATIONS SHALL APPLY:
1. THE SIGN SIZE SHALL BE 12" x 18".
 2. THE SIGN MATERIAL SHALL BE 0.080 GAUGE THICKNESS ANODIZED ALUMINUM.
 3. THE SIGN SHALL HAVE A GREEN BACKGROUND WITH 3" HIGH WHITE REFLECTIVE NUMBERS AND ARROW WITH A WHITE REFLECTIVE BORDER.
 4. WHERE A PRIVATE ROAD NAME IS IN USE OR PART OF A PRIVATE HOMEOWNER'S ARTICLES OF INCORPORATION AGREEMENT THE SIGN SIZE WILL BE ENLARGED TO ACCOMMODATE THE NECESSARY LETTERING BUT REMAIN PROPORTIONAL TO THE ABOVE DESIGN LIMITS.
 5. THE SIGN WILL BE INSTALLED WITHIN THE COMMON DRIVEWAY EASEMENT AREA AS NOTED ON THE FINAL PLAN.
 6. ADDRESS NUMBER IDENTIFICATION SIGNS ARE TO BE PROVIDED UNDER THE TENANTS OF THE HOMEOWNER'S ASSOCIATION INCORPORATION OR A PROPERTY MANAGEMENT COMPANY FOR INSTALLATION AND MAINTENANCE IN ACCORDANCE WITH THE DEPARTMENT OF PLANNING AND ZONING ADDRESS NUMBERING SYSTEM AND PER SECTION 3.503(c) OF THE HOWARD COUNTY CODE - PUBLIC SIGNS, MAINTENANCE/REPAIR AND REPLACEMENT OF THE ADDRESS NUMBER DIRECTIONAL SIGNS WILL BE THE RESPONSIBILITY OF THE HOMEOWNER'S ASSOCIATION OR A PROPERTY MANAGEMENT COMPANY.
 7. COMPLIANCE REGARDING THE INSTALLATION OF THE NEW ADDRESS NUMBER DIRECTIONAL SIGNS WILL BE ENFORCED BY THE DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS AT THE TIME OF FINAL APPROVAL FOR ISSUANCE OF THE USE AND OCCUPANCY PERMITS.



HO. CO. APPROVED SIGN DESIGN AND INSTALLATION DETAIL
NOT TO SCALE



NO.	DATE	REVISION
1	1-20-21	update sheet #s.

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BE-CIVLENGINEERING.COM

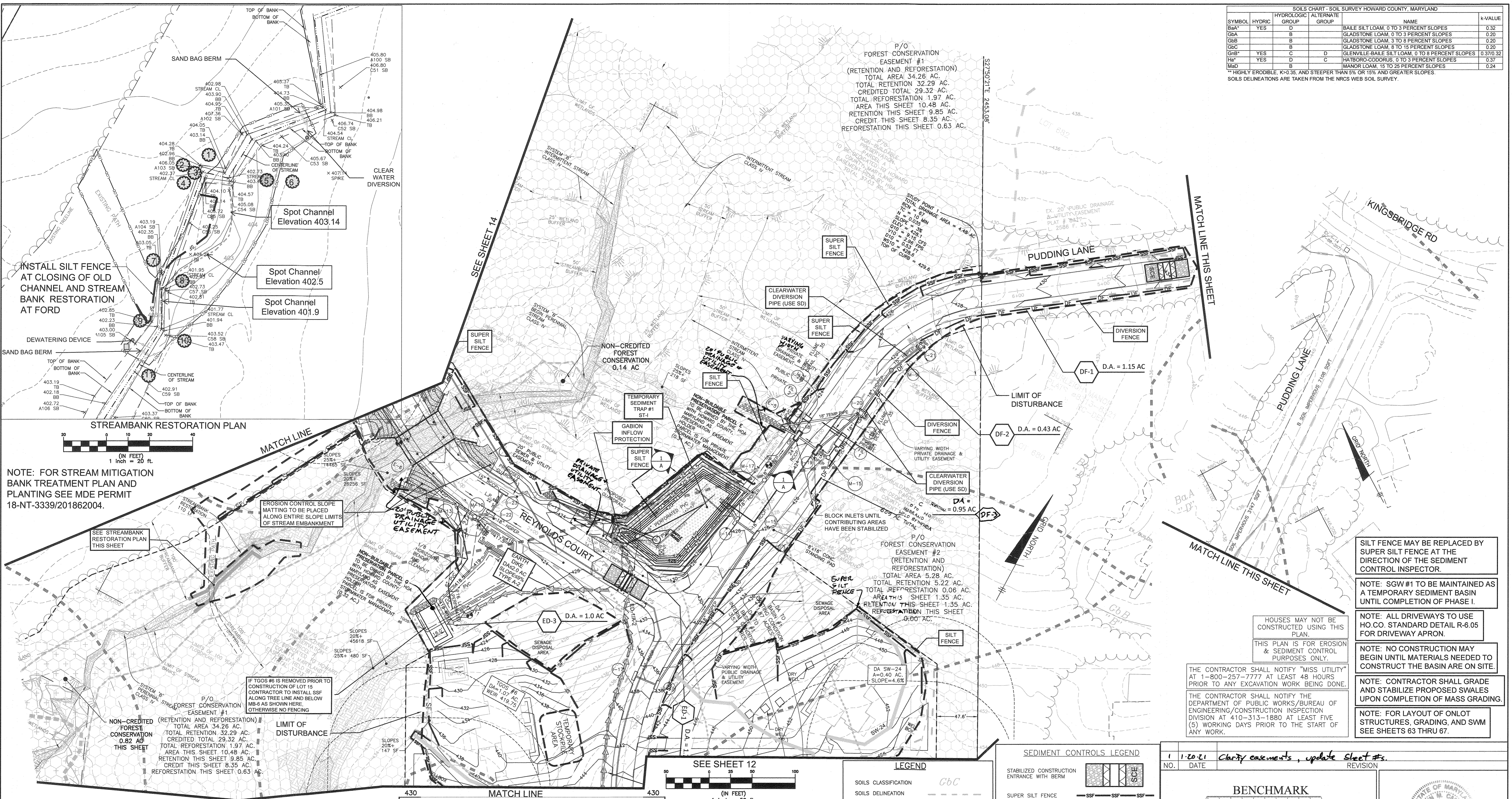
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: REYNOLDS CT. PROFILES	DATE: NOVEMBER, 2019 PROJECT NO. 2501
DRAFT: MP DESIGN: JC CHECK: JC	SCALE: AS SHOWN SHEET 10 OF 75

APPROVED: DEPARTMENT OF PUBLIC WORKS
1/21/2020
DATE
CHIEF, BUREAU OF HIGHWAYS
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
3/5/2020
DATE
CHIEF, DIVISION OF LAND DEVELOPMENT
2/20/20
DATE
CHIEF, DEVELOPMENT ENGINEERING DIVISION

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
BaA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
G8A		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
G8B		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
G8C		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
G8B*	YES	C	D	GLENNVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.370-0.32
H4*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MAD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

* HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
SOIL DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.



NOTE: FOR STREAM MITIGATION BANK TREATMENT PLAN AND PLANTING SEE MDE PERMIT 18-NT-3339/201862004.

SEE SHEET 71 FOR DETAILS ON LOT SWM, GRADING AND HOUSE CONFIGURATIONS

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

[Signature] 1/3/20
 APPROVED: DEPARTMENT OF PUBLIC WORKS

[Signature] 1/31/2020
 CHIEF, BUREAU OF HIGHWAYS MKK

[Signature] 3/17/2020
 APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE

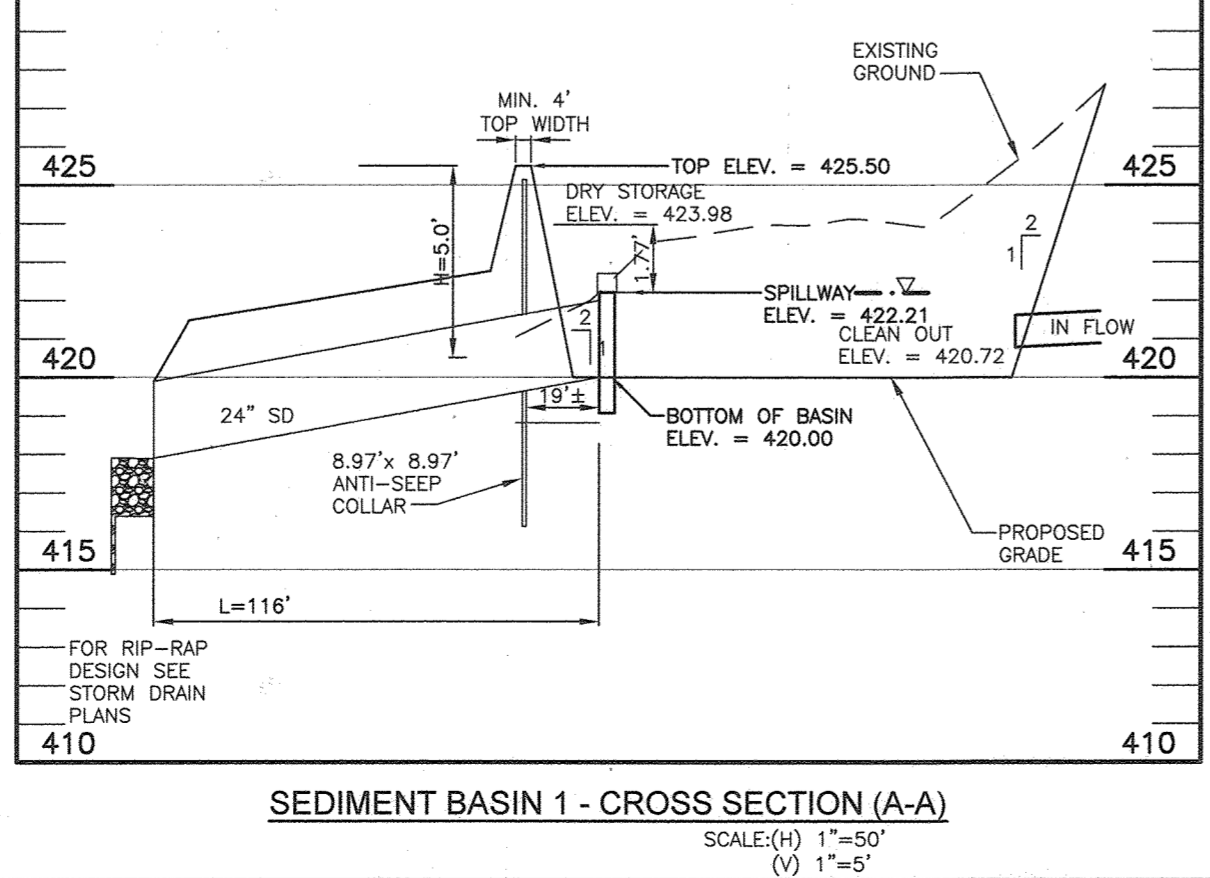
I, THE DEVELOPER, HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 1/26/19
 DEVELOPER

ENGINEER'S CERTIFICATE

I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 1/25/19
 ENGINEER - JOHN M. CAGNEY #45577



Detail G-1-1: Pipe Outlet Sediment Trap ST-1

Drainage Area - Initial	1.87	Acres
Drainage Area - Interim	3.57	Acres
Drainage Area - Final	3.20	Acres
Disturbed Area	3.42	Acres
Total Storage Required	2330.00	CF
Total Storage Provided	2337.00	CF
Wet Storage Required	11615.00	CF
Wet Storage Provided	11615.00	CF
Dry Storage Required	11615.00	CF
Dry Storage Provided	2337.00	CF
Trap Bottom Elevation	420.00	FT
Trap Bottom Dimensions	106.5 x 43.3 FT	X FT
Riser Crest (Dry Storage) Elevation	423.98	FT
Outlet (Wet Storage) Elevation	422.21	FT
Cleanout Elevation	420.72	FT
Top of Embankment Elevation	425.50	FT
Slope	2	H:1 V Ratio
Embankment Top Width	4	FT
Principal Spillway Material	HDPE or CMP	
Barrel Riser, Anti-Seep Collar	27	IN
Riser Diameter	36	IN
Barrel Diameter	26	IN
Truss Rack Diameter	54	IN
Truss Rack Height	25	IN
Anti-Seep Collar Dimensions	8.97	FT
Outlet Protection - Length	10	FT
Outlet Protection - Width	12	FT
Outlet Protection - Depth	19	IN

LEGEND

SOILS CLASSIFICATION: G6C

SOILS DELINEATION: 480, 478

EXISTING CONTOURS: 480, 478

LIMIT OF WETLANDS: [Symbol]

EXISTING WOODS LINE: [Symbol]

PROPOSED WOODS LINE: [Symbol]

EXISTING STRUCTURE: [Symbol]

PROPOSED STRUCTURE: [Symbol]

PROPOSED WELL BOX: WELL BOX

PUBLIC FOREST CONSERVATION EASEMENT: [Symbol]

SEDIMENT CONTROLS LEGEND

STABILIZED CONSTRUCTION ENTRANCE WITH BERM: [Symbol]

SUPER SILT FENCE: SSF

SILT FENCE: SF

DIVERSION FENCE: DF

INLET PROTECTION: IP

STABILIZATION MATTING: ED-1A-2

EARTH DIKE: ED-1A-2

TEMPORARY STONE OUTLET STRUCTURE: [Symbol]

ROCK OUTLET PROTECTION: [Symbol]

GABION INFLOW PROTECTION: [Symbol]

LIMIT OF DISTURBANCE: [Symbol]

20% AND GREATER SLOPES: [Symbol]

25% AND GREATER SLOPES: [Symbol]

DRAINAGE DIVIDE TO SWALE: [Symbol]

1-20-21 *Clarify easements, update sheet #s.*

NO.	DATE	REVISION
1	1-20-21	Clarify easements, update sheet #s.

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE & SUITE 315A ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-CIVILENGINEERING.COM

[Signature] 1/25/19
 PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042

PROJECT: KINGS FOREST
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

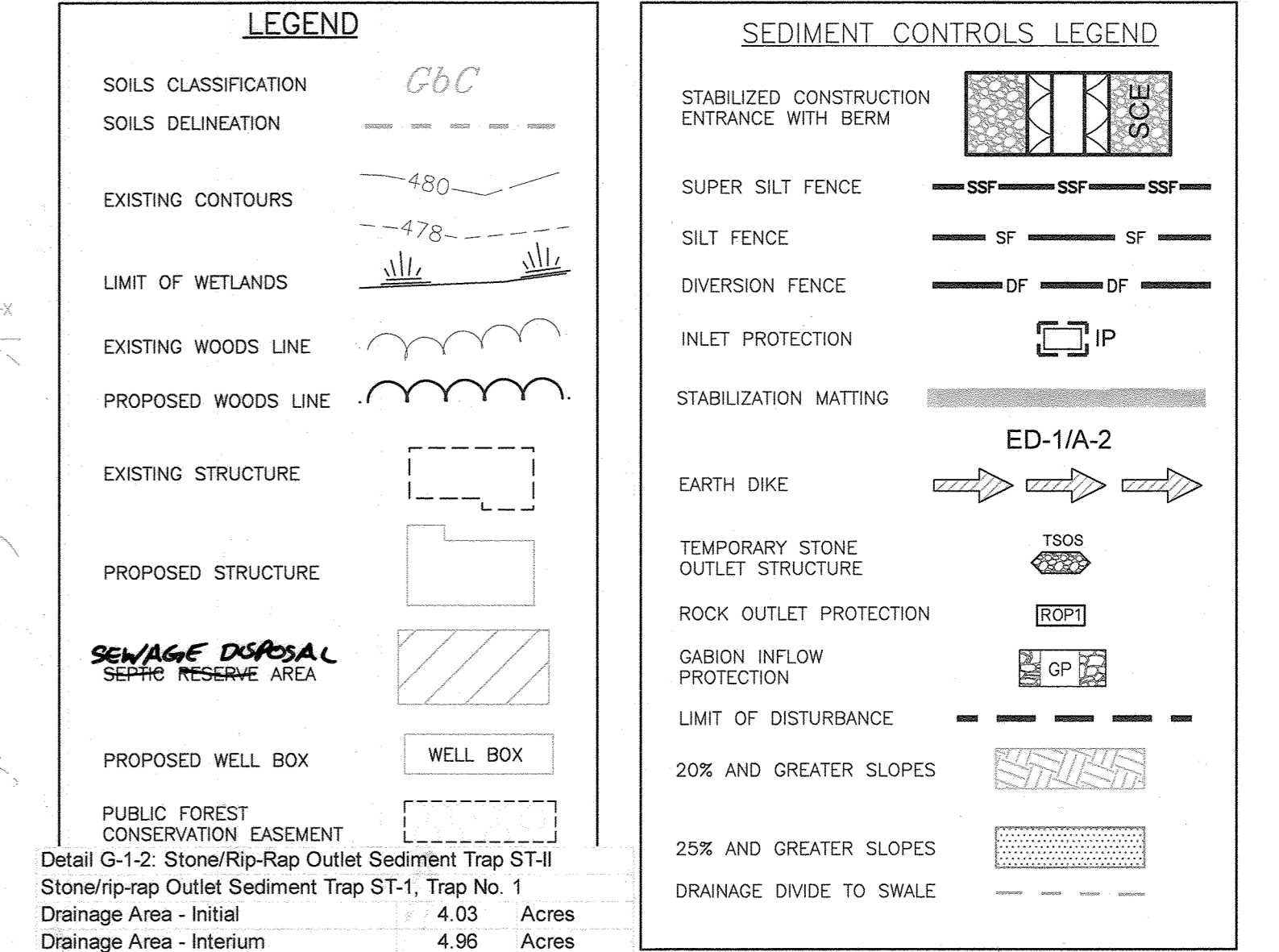
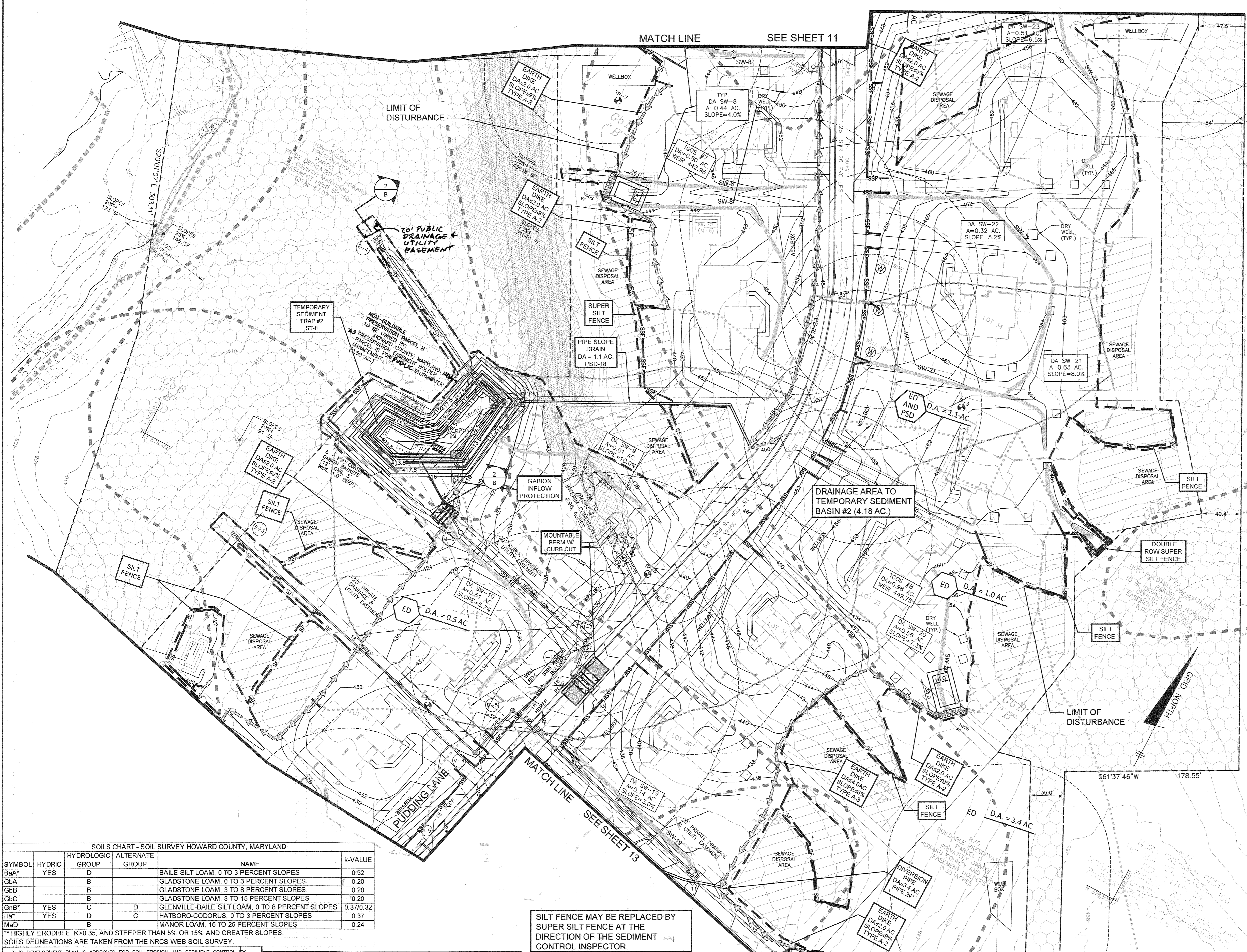
LOCATION: TAX MAP: 23, GRID: 23
 P/O PARCEL K, AS SHOWN ON PLAT NO. 19791
 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
 PUDDING LANE, ELLICOTT CITY, MD 21042
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 211046, 410-381-3263

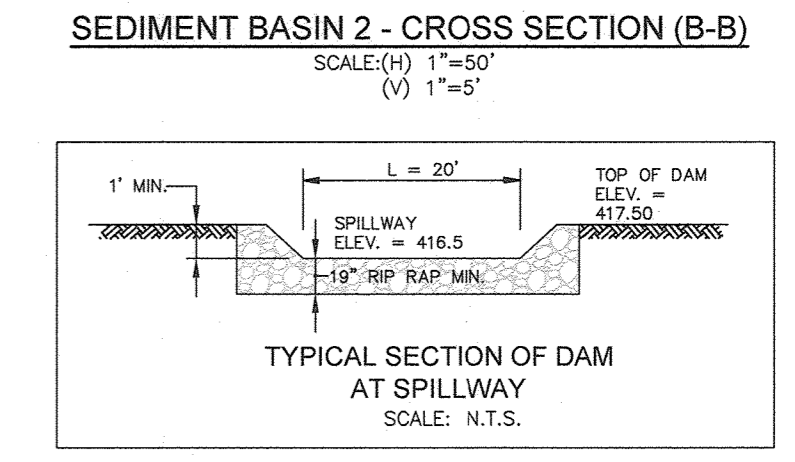
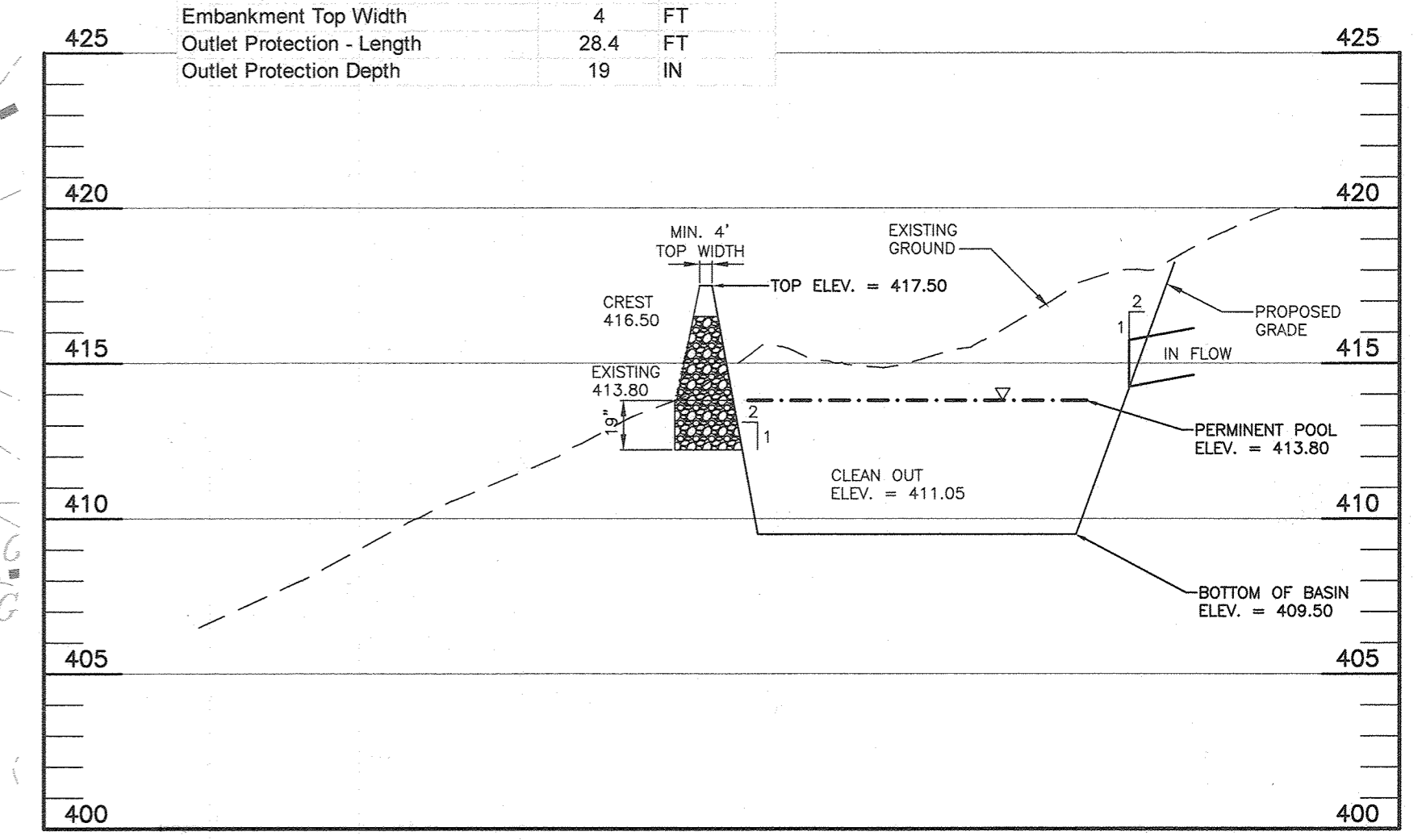
TITLE: GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE I)

DATE: NOVEMBER, 2019 **PROJECT NO.:** 2501

DRAFT: MP **DESIGN:** JC **CHECK:** JC **SCALE:** AS SHOWN **SHEET:** 11 **OF:** 25



Drainage Area - Initial	4.03 Acres
Drainage Area - Interim	4.96 Acres
Drainage Area - Final	4.00 Acres
Disturbed Area	4.96 Acres
Total Storage Required	32275 CF
Total Storage Provided	33400 CF
Wet Storage Required	16137.50 CF
Wet Storage Provided	16289.40 CF
Dry Storage Required	16137.50 CF
Dry Storage Provided	17110.25 CF
Ex. Ground @ Outlet	413.80
Trap Bottom Elevation	409.50 FT
Trap Bottom Dimensions	135 x 19 FT x FT
Weir Length	20'
Weir Crest (Dry Storage) Elevation	416.5 FT
Riser Crest (Dry Storage) Elevation	423.98 FT
Cleanout Elevation	411.05 FT
Top of Embankment Elevation	417.50 FT
Side Slope	2 H:1 V Ratio
Embankment Top Width	4 FT
Outlet Protection - Length	28.4 FT
Outlet Protection Depth	19 IN



SYMBOL	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE
Ba*	YES	D	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GbA		B	GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GbB		B	GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC		B	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GnB*	YES	C	GLENNVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Ha*	YES	D	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MdD		B	MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

APPROVED: DEPARTMENT OF PUBLIC WORKS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTE: ALL DRIVEWAYS TO USE HO.CO. STANDARD DETAIL R-6.05 FOR DRIVEWAY APRON.

NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

NOTE: CONTRACTOR SHALL GRADE AND STABILIZE PROPOSED SWALES UPON COMPLETION OF MASS GRADING.

NOTE: FOR LAYOUT OF ONLOT STRUCTURES, GRADING, AND SWM SEE SHEETS 63 THRU 67.

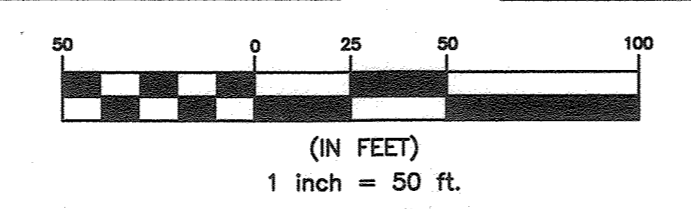
NOTE: BR#3 TO BE MAINTAINED AS A TEMPORARY SEDIMENT BASIN UNTIL COMPLETION OF PHASE I.

HOUSES MAY NOT BE CONSTRUCTED USING THIS PLAN.

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.



NO.	DATE	REVISION
1	1/20/21	Clarify easements, update sheet #s, REVISE PARCEL M

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6844
 WWW.BE-CIVLENGINEERING.COM

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042
 DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046, 410-381-3263

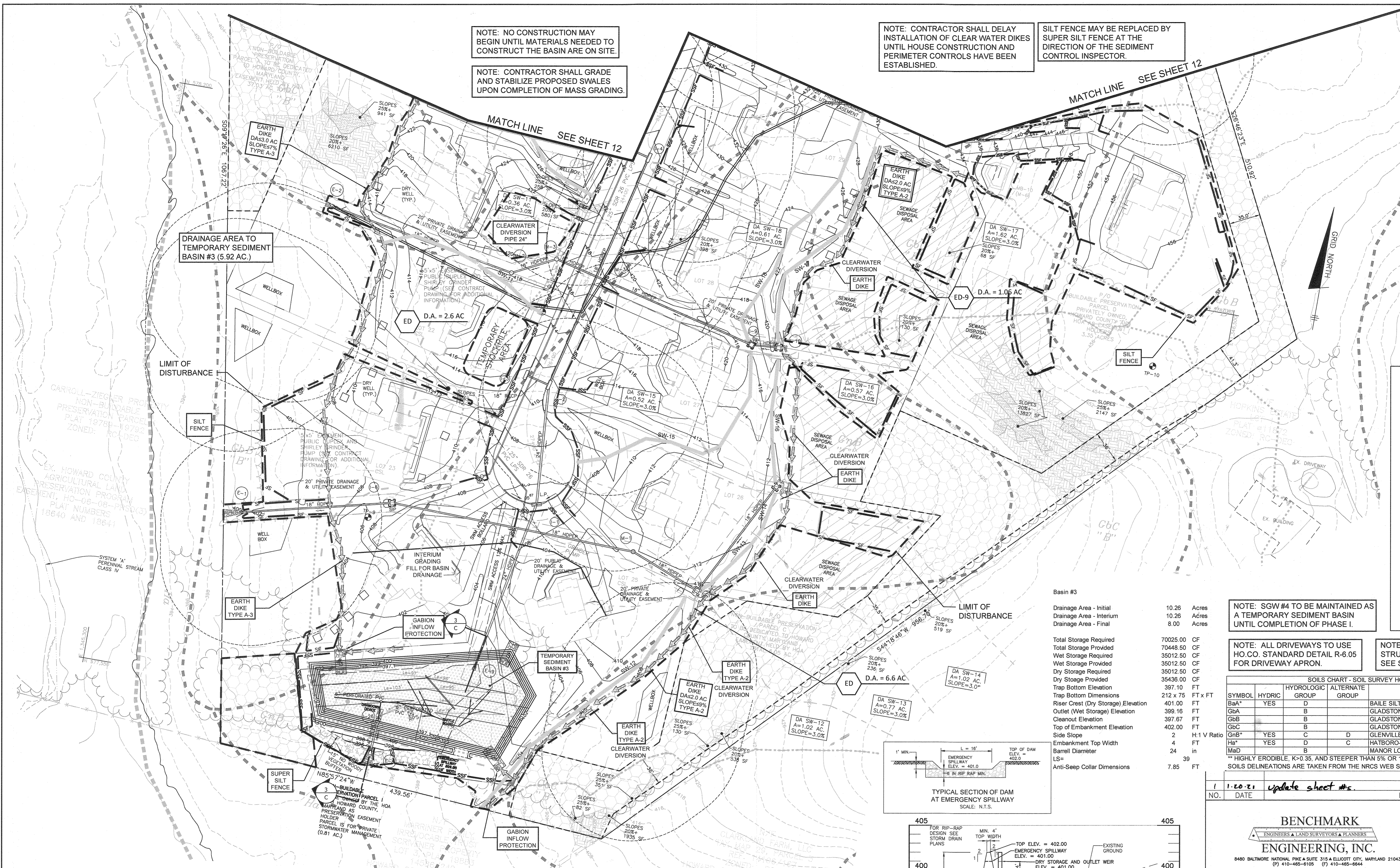
PROJECT: **KINGS FOREST**
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

LOCATION: TAX MAP: 23, GRID: 23, PARCEL 148, PUDDING LANE, ELLICOTT CITY, MD 21042, SECOND ELECTION DISTRICT, HOWARD COUNTY, MARYLAND

TITLE: **GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE I)**

DATE: NOVEMBER, 2019
 SCALE: AS SHOWN

PROJECT NO. 2501
 SHEET 12 OF 75



NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

NOTE: CONTRACTOR SHALL GRADE AND STABILIZE PROPOSED SWALES UPON COMPLETION OF MASS GRADING.

NOTE: CONTRACTOR SHALL DELAY INSTALLATION OF CLEAR WATER DIKES UNTIL HOUSE CONSTRUCTION AND PERIMETER CONTROLS HAVE BEEN ESTABLISHED.

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

LEGEND

SOILS CLASSIFICATION	CbC
SOILS DELINEATION	---
EXISTING CONTOURS	480, 478
LIMIT OF WETLANDS	---
EXISTING WOODS LINE	---
PROPOSED WOODS LINE	---
EXISTING STRUCTURE	---
PROPOSED STRUCTURE	---
SEWAGE DISPOSAL SPECIFIC RESERVE AREA	---
PROPOSED WELL BOX	WELL BOX
PUBLIC FOREST CONSERVATION EASEMENT	---

SEDIMENT CONTROLS LEGEND

STABILIZED CONSTRUCTION ENTRANCE WITH BERM	---
SUPER SILT FENCE	SSSF
SILT FENCE	SF
DIVERSION FENCE	DF
INLET PROTECTION	IP
STABILIZATION MATTING	ED-1/A-2
EARTH DIKE	ED
TEMPORARY STONE OUTLET STRUCTURE	TSOS
ROCK OUTLET PROTECTION	ROPT
GABION INFLOW PROTECTION	GP
LIMIT OF DISTURBANCE	---
20% AND GREATER SLOPES	---
25% AND GREATER SLOPES	---
DRAINAGE DIVIDE TO SWALE	---

Basin #3

Drainage Area - Initial	10.26	Acres
Drainage Area - Interim	10.26	Acres
Drainage Area - Final	8.00	Acres
Total Storage Required	70025.00	CF
Total Storage Provided	70448.50	CF
Net Storage Required	35012.50	CF
Net Storage Provided	35012.50	CF
Dry Storage Required	35012.50	CF
Dry Storage Provided	35436.00	CF
Trap Bottom Elevation	397.10	FT
Trap Bottom Dimensions	212 x 75	FT x FT
Riser Crest (Dry Storage) Elevation	401.00	FT
Outlet (Wet Storage) Elevation	399.16	FT
Cleanout Elevation	397.67	FT
Top of Embankment Elevation	402.00	FT
Side Slope	2	H:1 V Ratio
Embankment Top Width	4	FT
Barrel Diameter	24	in
Bas	39	
Anti-Seep Collar Dimensions	7.85	FT

NOTE: SGW #4 TO BE MAINTAINED AS A TEMPORARY SEDIMENT BASIN UNTIL COMPLETION OF PHASE I.

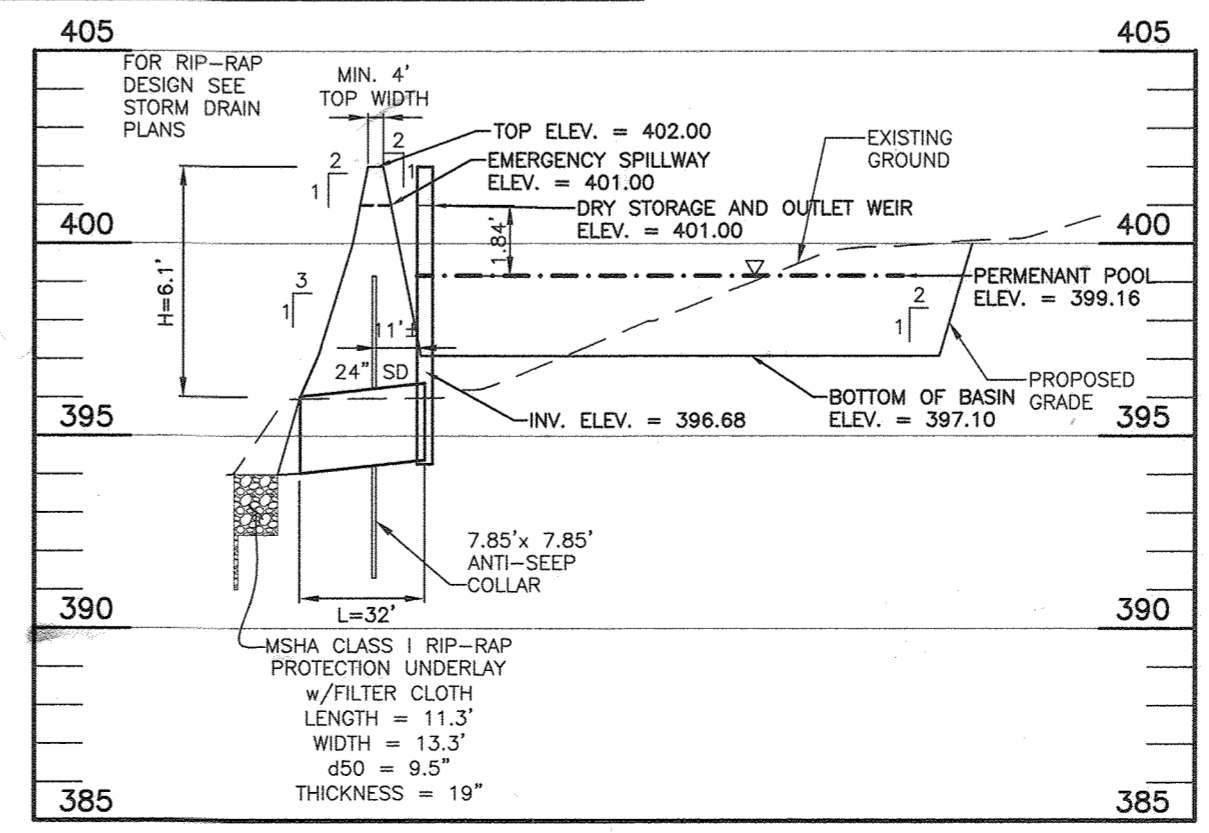
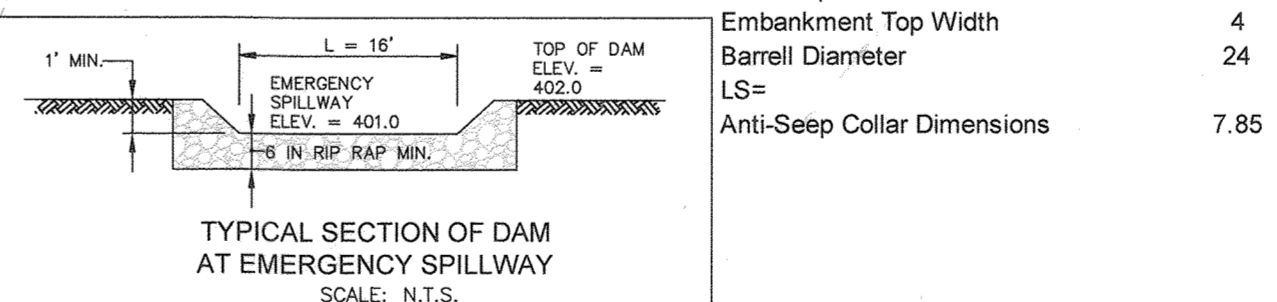
NOTE: ALL DRIVEWAYS TO USE HO.CO. STANDARD DETAIL R-6.05 FOR DRIVEWAY APRON.

NOTE: FOR LAYOUT OF ONLOT STRUCTURES, GRADING, AND SWM SEE SHEETS 63 THRU 67.

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE
BaA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GbA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GnB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.370-0.32
HbA*	YES	D	C	HATBORO-ODORUS, 0 TO 3 PERCENT SLOPES	0.37
MbD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

* HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.



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

John M. Carney 11/26/19
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS
Chane 1/18/2020
CHIEF, BUREAU OF HIGHWAYS MK

APPROVED: DEPARTMENT OF PLANNING AND ZONING
3/15/2020
CHIEF, DIVISION OF LAND DEVELOPMENT
2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE

I, WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER: *John M. Carney* 11/26/19

ENGINEER'S CERTIFICATE

I, CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

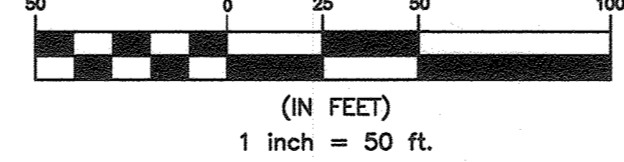
ENGINEER - JOHN M. CARNEY #45577 11/25/19

HOUSES MAY NOT BE CONSTRUCTED USING THIS PLAN.

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.



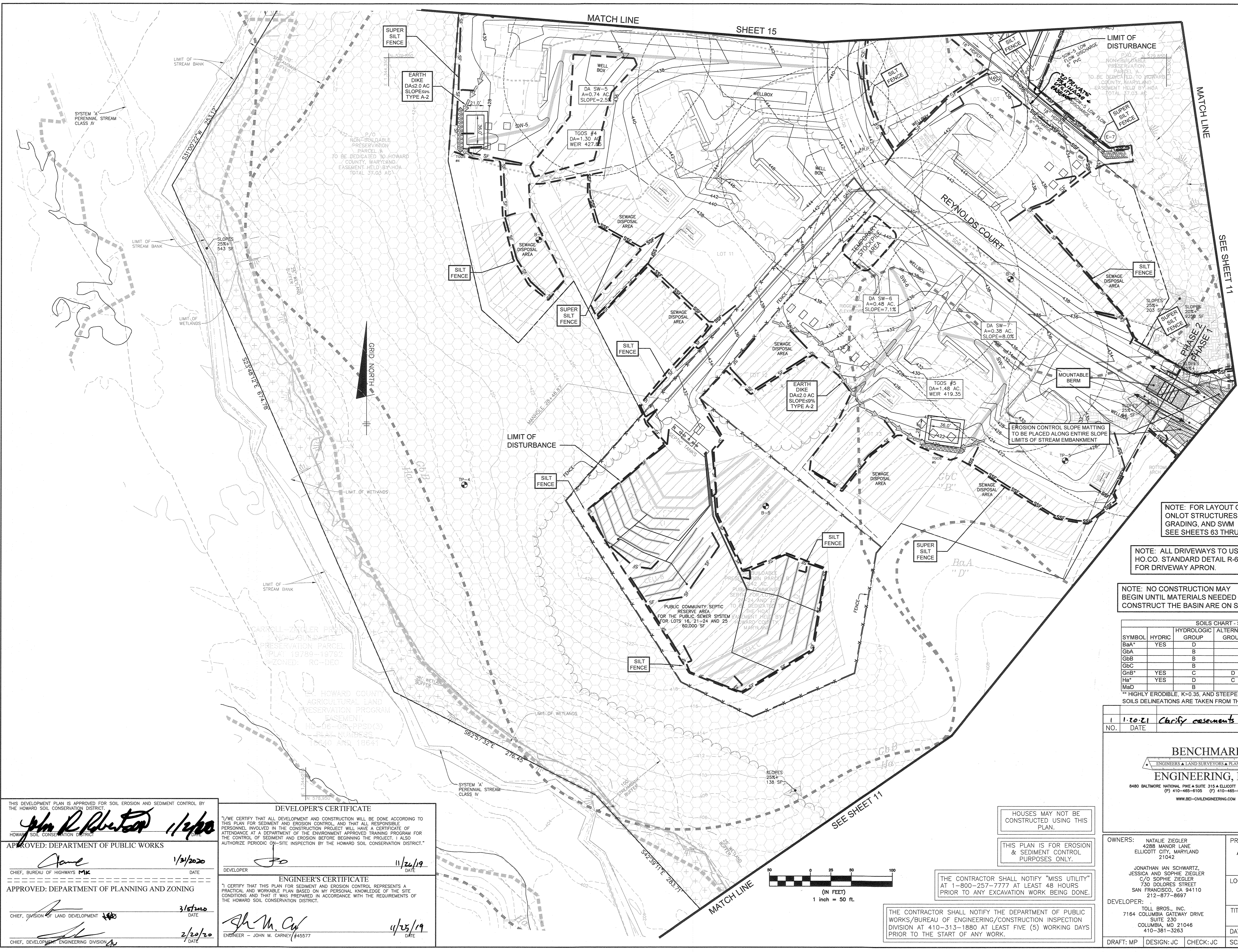
1-20-21 update sheet #s.

NO.	DATE	REVISION
1	1-20-21	update sheet #s.

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE A SUITE 315 ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BE-ENGINEERING.COM

John M. Carney 11/25/19
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577. Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-35, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 750 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION: TAX MAP: 23, GRID: 23 P/0 PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE I)	DATE: NOVEMBER, 2019 PROJECT NO.: 2501
DRAFT: MP DESIGN: JC CHECK: JC	SCALE: AS SHOWN SHEET 13 OF 75



NOTE: CONTRACTOR SHALL GRADE AND STABILIZE PROPOSED SWALES UPON COMPLETION OF MASS GRADING.

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

LEGEND

SOILS CLASSIFICATION	GbC
SOILS DELINEATION	---
EXISTING CONTOURS	480, 478
LIMIT OF WETLANDS	---
EXISTING WOODS LINE	---
PROPOSED WOODS LINE	---
EXISTING STRUCTURE	---
PROPOSED STRUCTURE	---
SEWAGE DISPOSAL RESERVE AREA	---
PROPOSED WELL BOX	WELL BOX
PUBLIC FOREST CONSERVATION EASEMENT	---

SEDIMENT CONTROLS LEGEND

STABILIZED CONSTRUCTION ENTRANCE WITH BERM	---
SUPER SILT FENCE	SSF
SILT FENCE	SF
DIVERSION FENCE	DF
INLET PROTECTION	IP
STABILIZATION MATTING	---
EARTH DIKE	ED-1/A-2
TEMPORARY STONE OUTLET STRUCTURE	TSOS
ROCK OUTLET PROTECTION	ROP
GABION INFLOW PROTECTION	GP
LIMIT OF DISTURBANCE	---
20% AND GREATER SLOPES	---
25% AND GREATER SLOPES	---
DRAINAGE DIVIDE TO SWALE	---

NOTE: FOR LAYOUT OF ONLOT STRUCTURES, GRADING, AND SWM SEE SHEETS 63 THRU 67.

NOTE: ALL DRIVEWAYS TO USE HO.CO. STANDARD DETAIL R-6.05 FOR DRIVEWAY APRON.

NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE
BaA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GbA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GnB*	YES	C	D	GLENNVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Ha*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MdD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

* HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

NO.	DATE	REVISION
1	1-20-21	Clarify easements & update sheet #s.

BENCHMARK ENGINEERING, INC.
 6480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-CIVILENGINEERING.COM

Professional Certification I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042

DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046, 410-381-3263

PROJECT: KINGS FOREST
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

LOCATION: TAX MAP: 23, GRID: 23
 P/0 PARCEL
 PUDDING LANE, ELLICOTT CITY, MD 21042
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE II)

DATE: NOVEMBER, 2019
PROJECT NO.: 2501
SCALE: AS SHOWN
SHEET: 14 OF 75

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

John R. Robertson 1/26/20
 HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS
James 1/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK

APPROVED: DEPARTMENT OF PLANNING AND ZONING
3/5/20
 CHIEF, DIVISION OF LAND DEVELOPMENT

APPROVED: DEPARTMENT OF ENGINEERING DIVISION
2/20/20
 CHIEF, DEPARTMENT OF ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE

I, *John M. Carnie*, CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER: *John M. Carnie* 11/26/19
 DATE

ENGINEER'S CERTIFICATE

I, *John M. Carnie*, CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

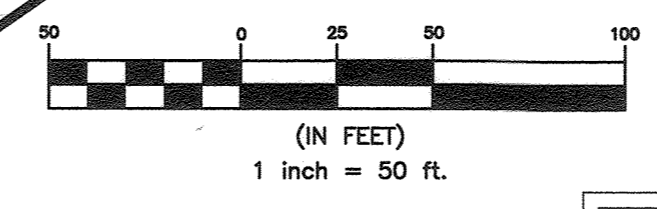
ENGINEER - JOHN M. CARNIE #45577 11/25/19
 DATE

HOUSES MAY NOT BE CONSTRUCTED USING THIS PLAN.

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.



SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE
BaA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GbA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GnB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Ha*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MaD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

** HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

LEGEND

- SOILS CLASSIFICATION: GbC
- SOILS DELINEATION: ---
- EXISTING CONTOURS: 480, 478
- LIMIT OF WETLANDS: [Symbol]
- EXISTING WOODS LINE: [Symbol]
- PROPOSED WOODS LINE: [Symbol]
- EXISTING STRUCTURE: [Symbol]
- PROPOSED STRUCTURE: [Symbol]
- SEWAGE DISPOSAL SEPTIC RESERVE AREA: [Symbol]
- PROPOSED WELL BOX: WELL BOX
- PUBLIC FOREST CONSERVATION EASEMENT: [Symbol]
- 100-YEAR FLOODPLAIN AREA: [Symbol]

NOTE: CONTRACTOR SHALL GRADE AND STABILIZE PROPOSED SWALES UPON COMPLETION OF MASS GRADING.

SEDIMENT CONTROLS LEGEND

- STABILIZED CONSTRUCTION ENTRANCE WITH BERM: [Symbol]
- SUPER SILT FENCE: SSF
- SILT FENCE: SF
- DIVERSION FENCE: DF
- INLET PROTECTION: IP
- STABILIZATION MATING: ED-1/A-2
- EARTH DIKE: ED
- TEMPORARY STONE OUTLET STRUCTURE: [Symbol]
- ROCK OUTLET PROTECTION: ROP
- CABON INFLOW PROTECTION: GP
- LIMIT OF DISTURBANCE: [Symbol]
- 20% AND GREATER SLOPES: [Symbol]
- 25% AND GREATER SLOPES: [Symbol]
- DRAINAGE DIVIDE TO SWALE: [Symbol]



NO.	DATE	REVISION
1	1-20-21	Clarify Easements & update sheet #s.

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
(P) 410-485-6105 (F) 410-485-6644
WWW.BE-CIVILENGINEERING.COM

John M. Carney
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

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

John R. Rolater 1/21/20
CHIEF, BUREAU OF HIGHWAYS MK
DATE: 1/21/2020

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 3/15/2020
CHIEF, DIVISION OF LAND DEVELOPMENT
DATE: 2/20/20

DEVELOPER'S CERTIFICATE

I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER: *[Signature]* 11/26/19
DATE: 11/26/19

ENGINEER'S CERTIFICATE

I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

ENGINEER - JOHN M. CARNEY #45577
DATE: 1/25/19

MATCH LINE SEE SHEET 14

20' PRIVATE DRAINAGE & UTILITY EASEMENT

HOUSES MAY NOT BE CONSTRUCTED USING THIS PLAN.

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

NOTE: ALL DRIVEWAYS TO USE HO.CO. STANDARD DETAIL R-6.05 FOR DRIVEWAY APRON.

NOTE: FOR LAYOUT OF ONLOT STRUCTURES, GRADING, AND SWM SEE SHEETS 63 THRU 67.

NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

1 inch = 50 ft.

OWNERS: NATALIE ZIEGLER
4288 MANOR LANE
ELLICOTT CITY, MARYLAND 21042

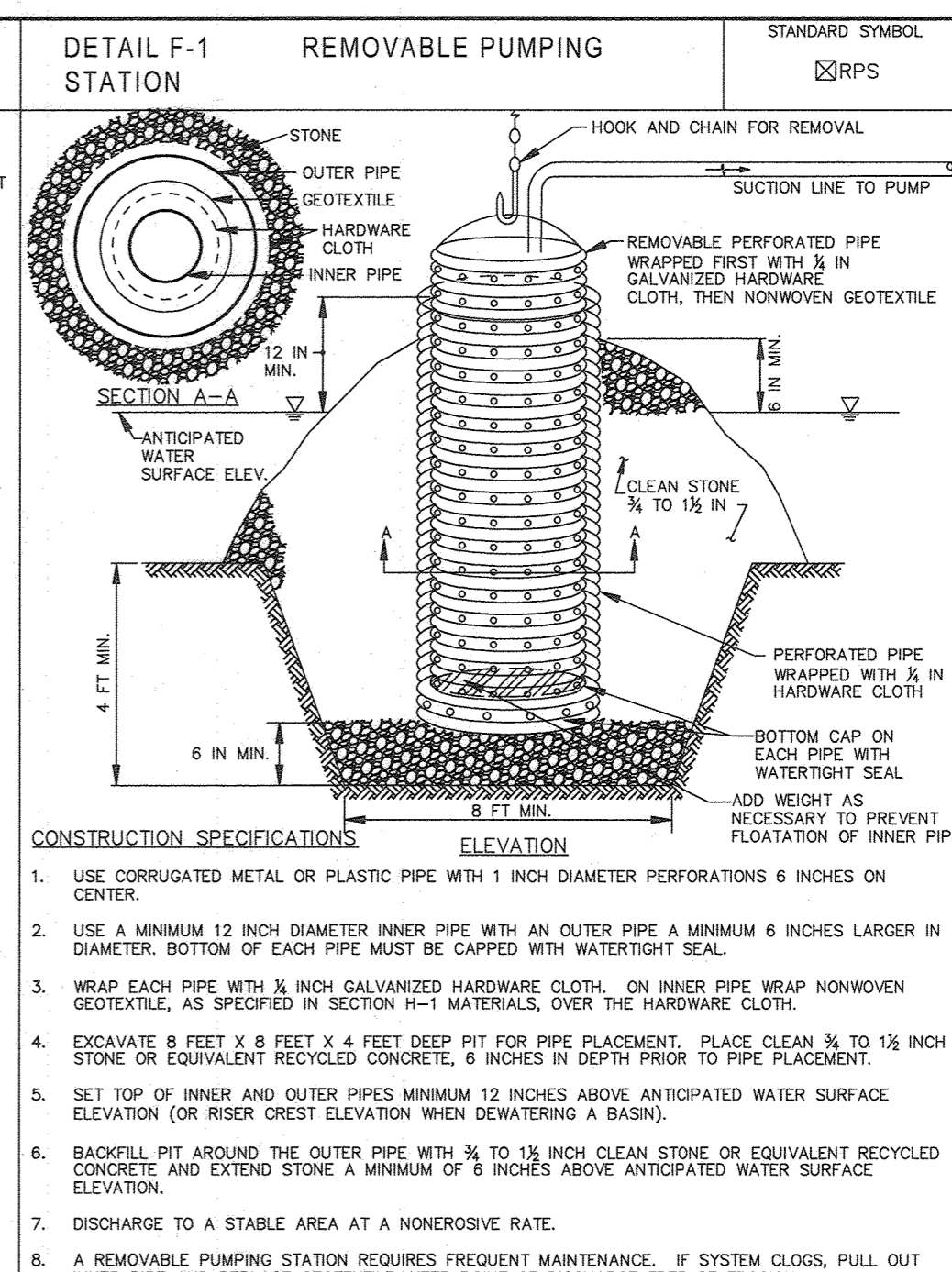
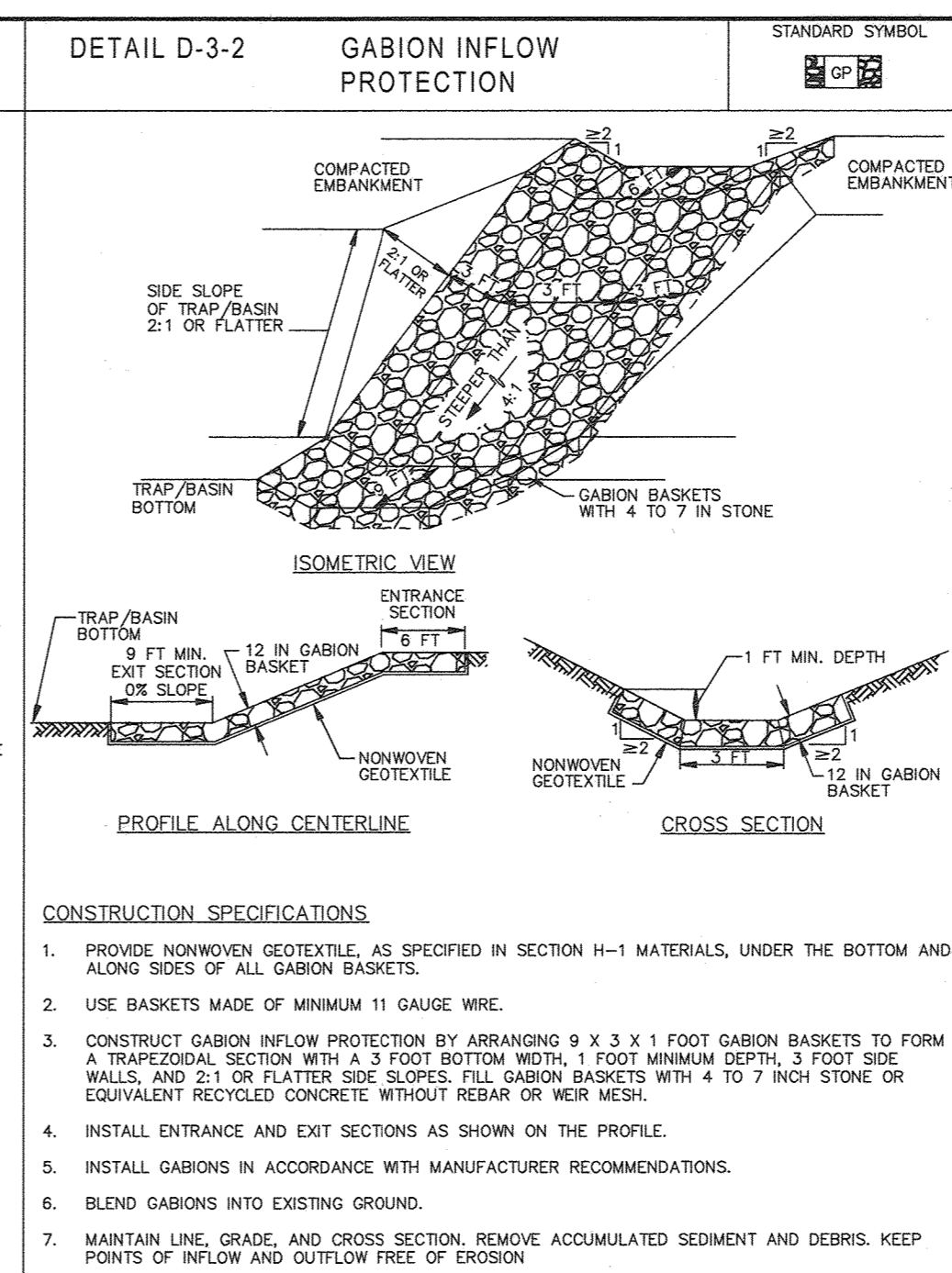
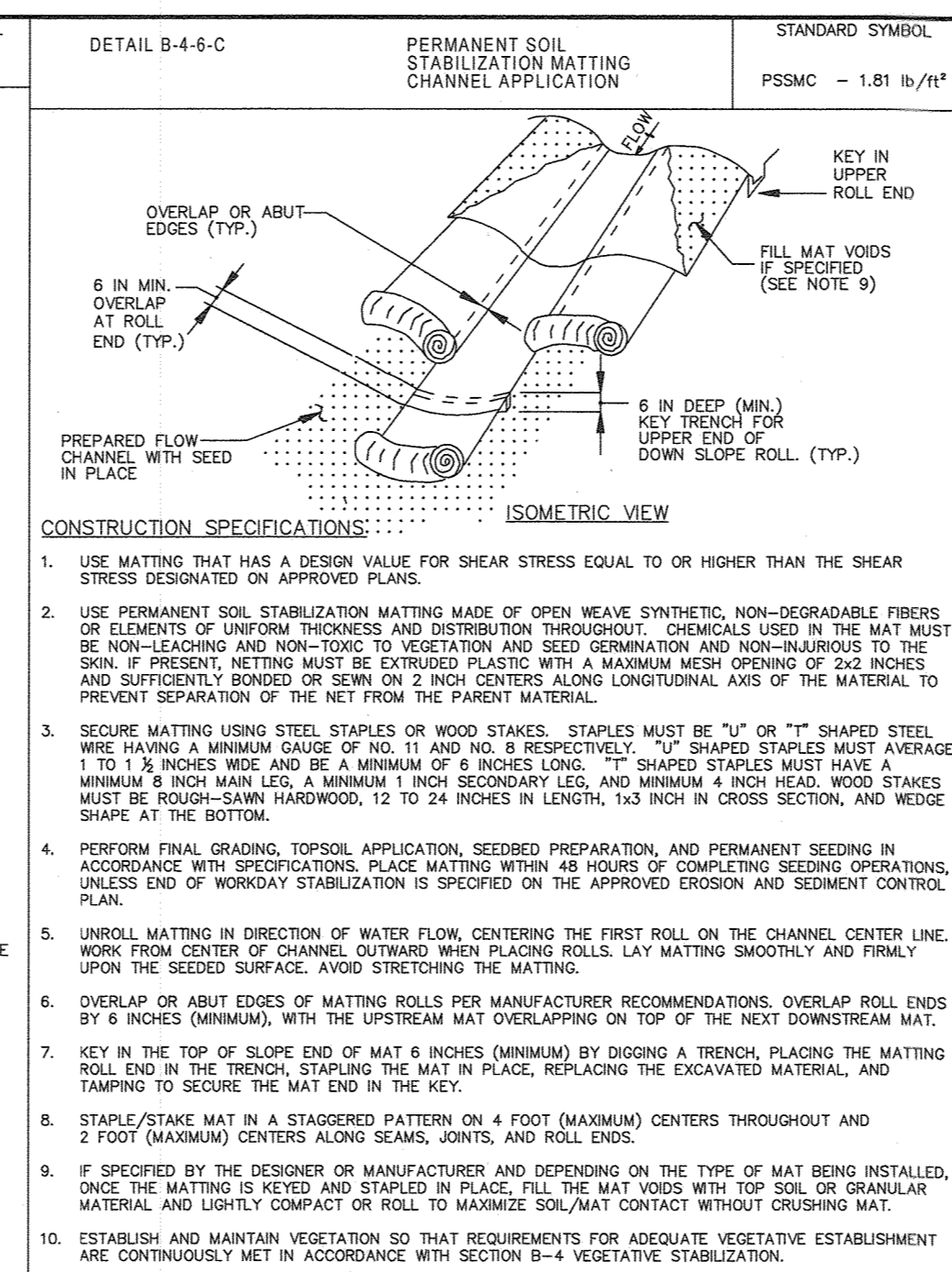
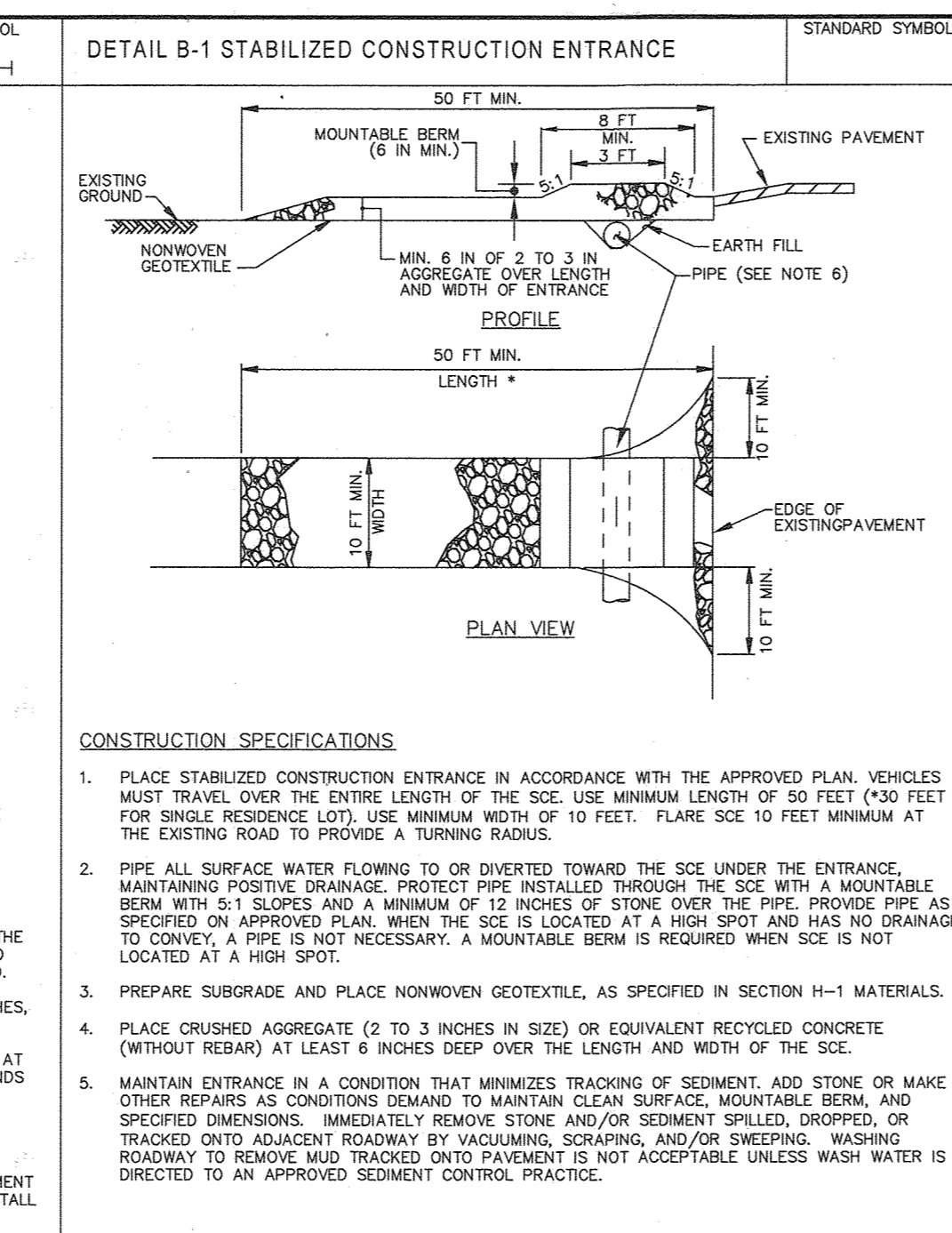
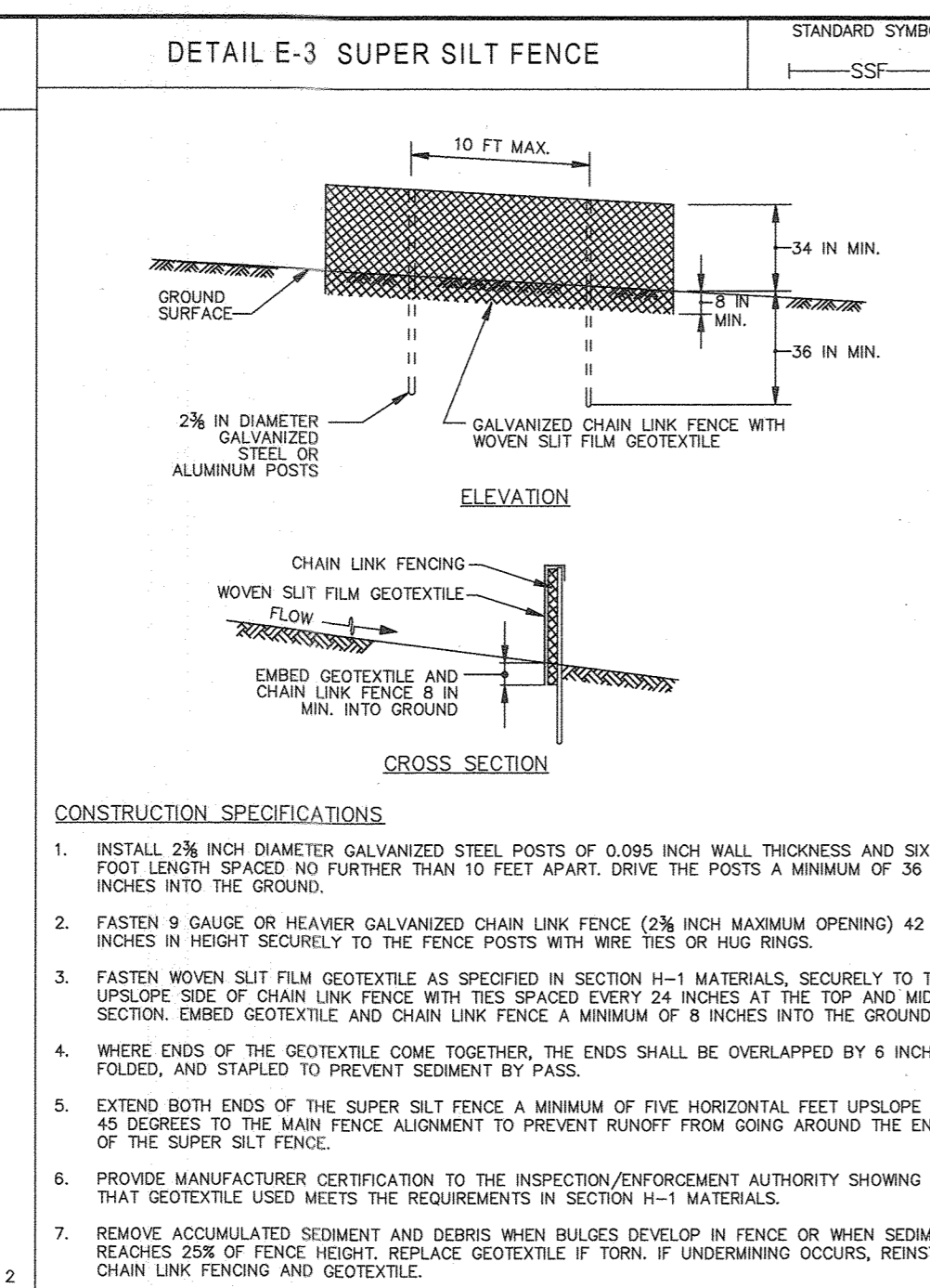
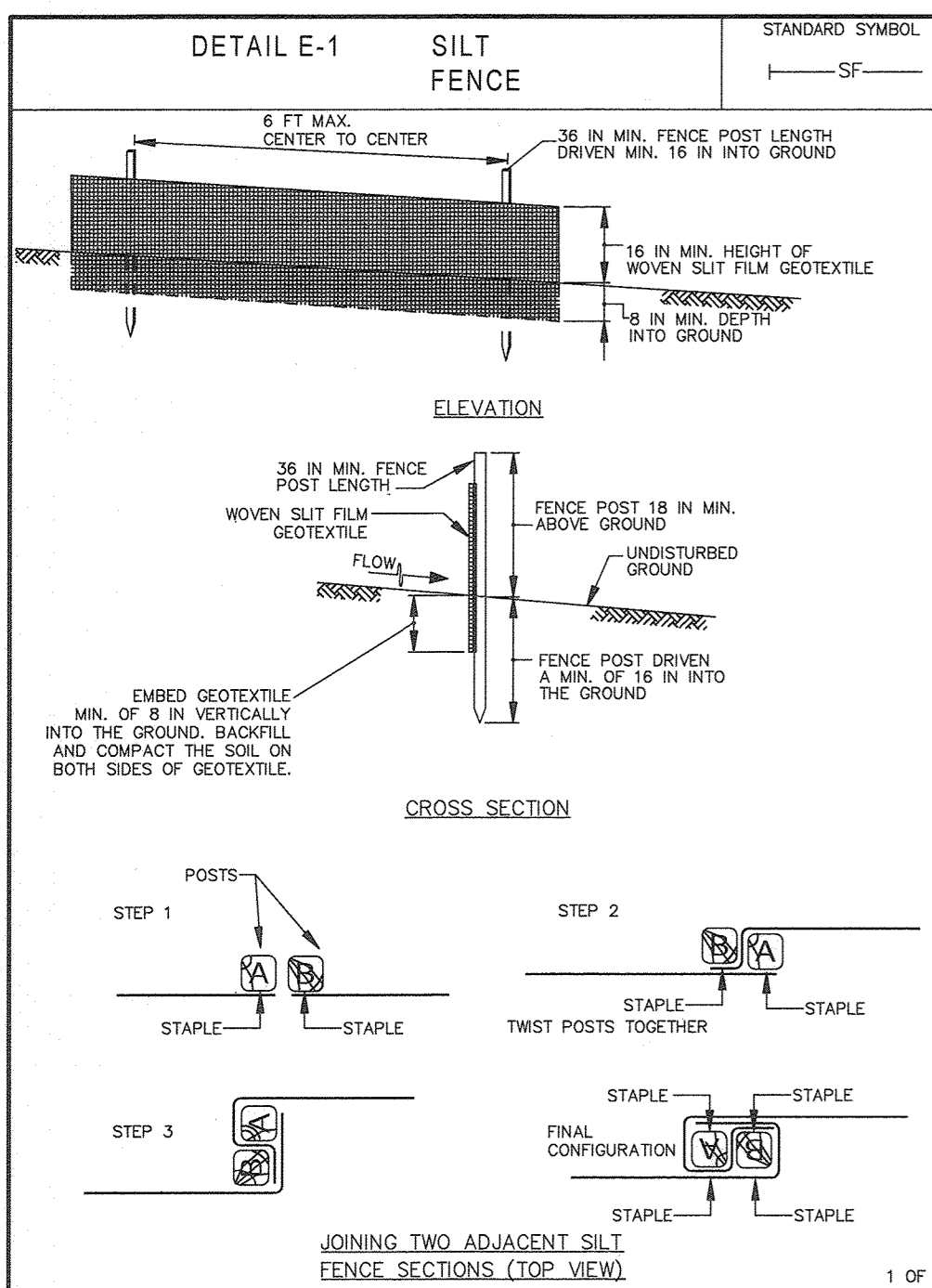
PROJECT: **KINGS FOREST**
A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

LOCATION: TAX MAP: 23, GRID: 23
P/O PARCEL 148
PUDDING LANE, ELLICOTT CITY, MD 21042
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

DEVELOPER: TOLL BROS., INC.
7164 COLUMBIA GATEWAY DRIVE
SUITE 230
COLUMBIA, MD 21046
410-381-3263

TITLE: **GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE II)**

DATE: NOVEMBER, 2019 PROJECT NO. 2501
SCALE: AS SHOWN SHEET 15 OF 75



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

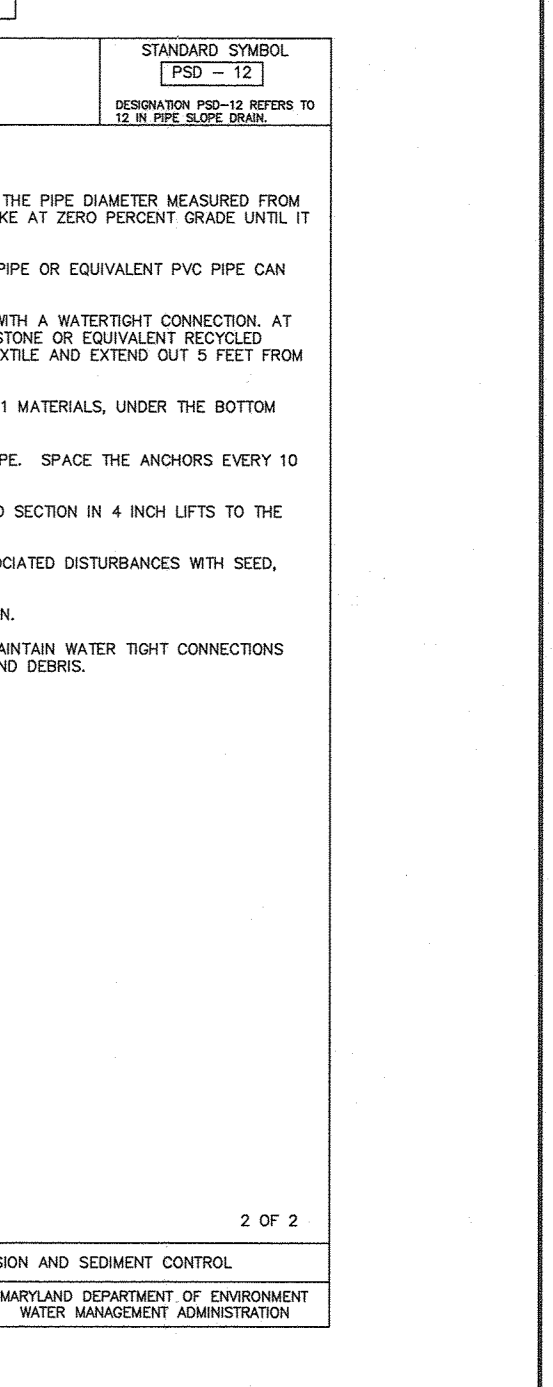
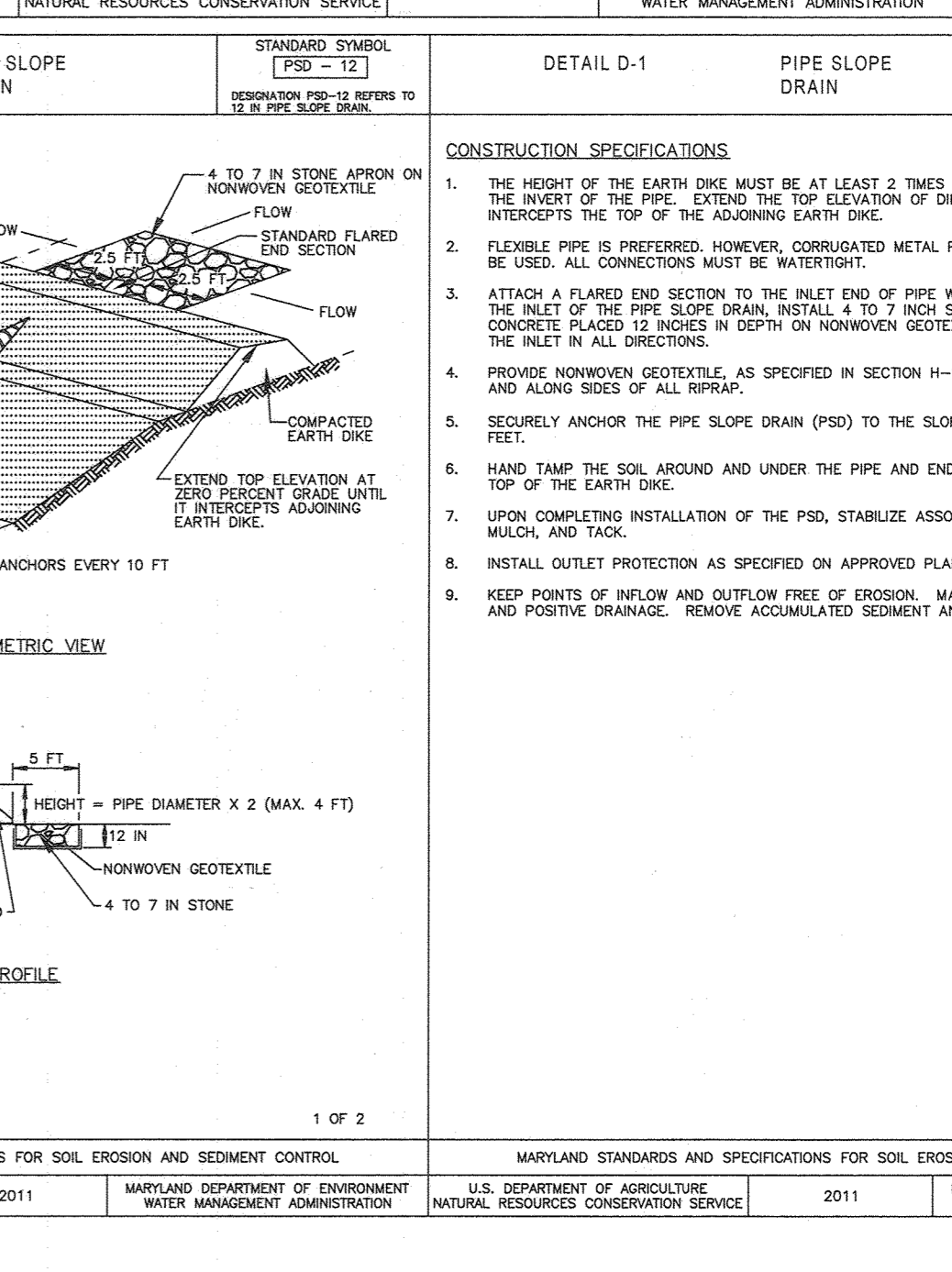
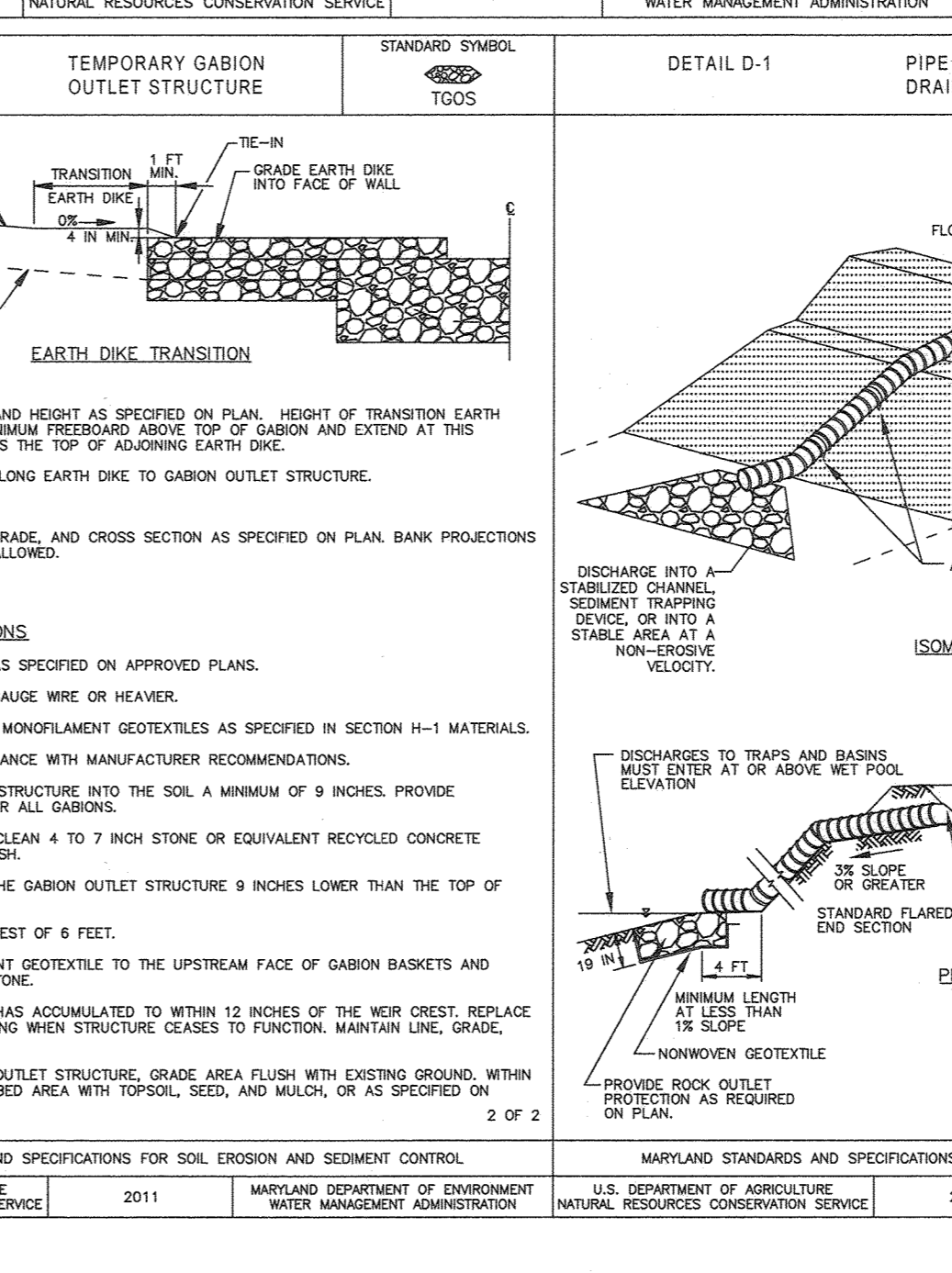
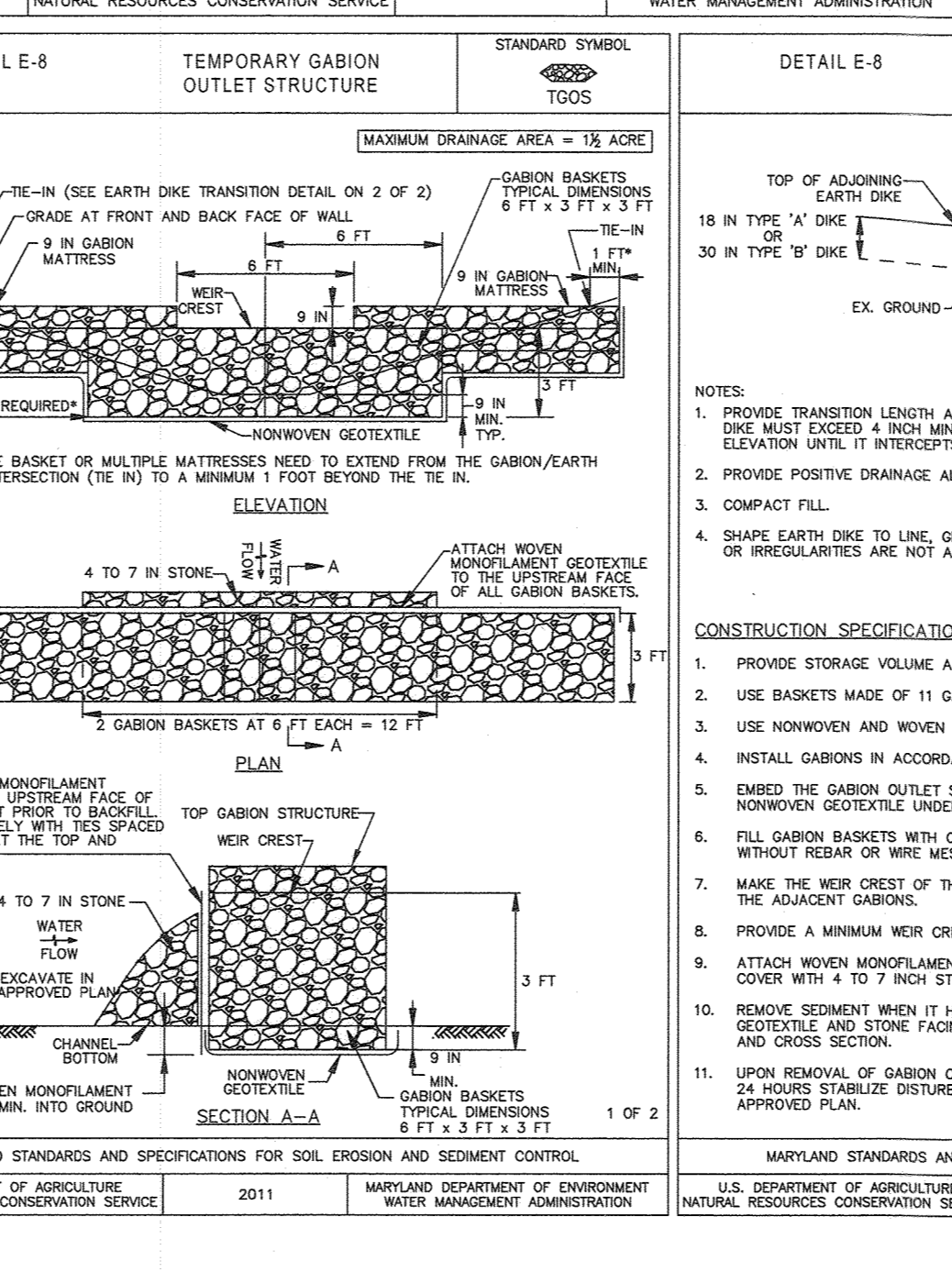
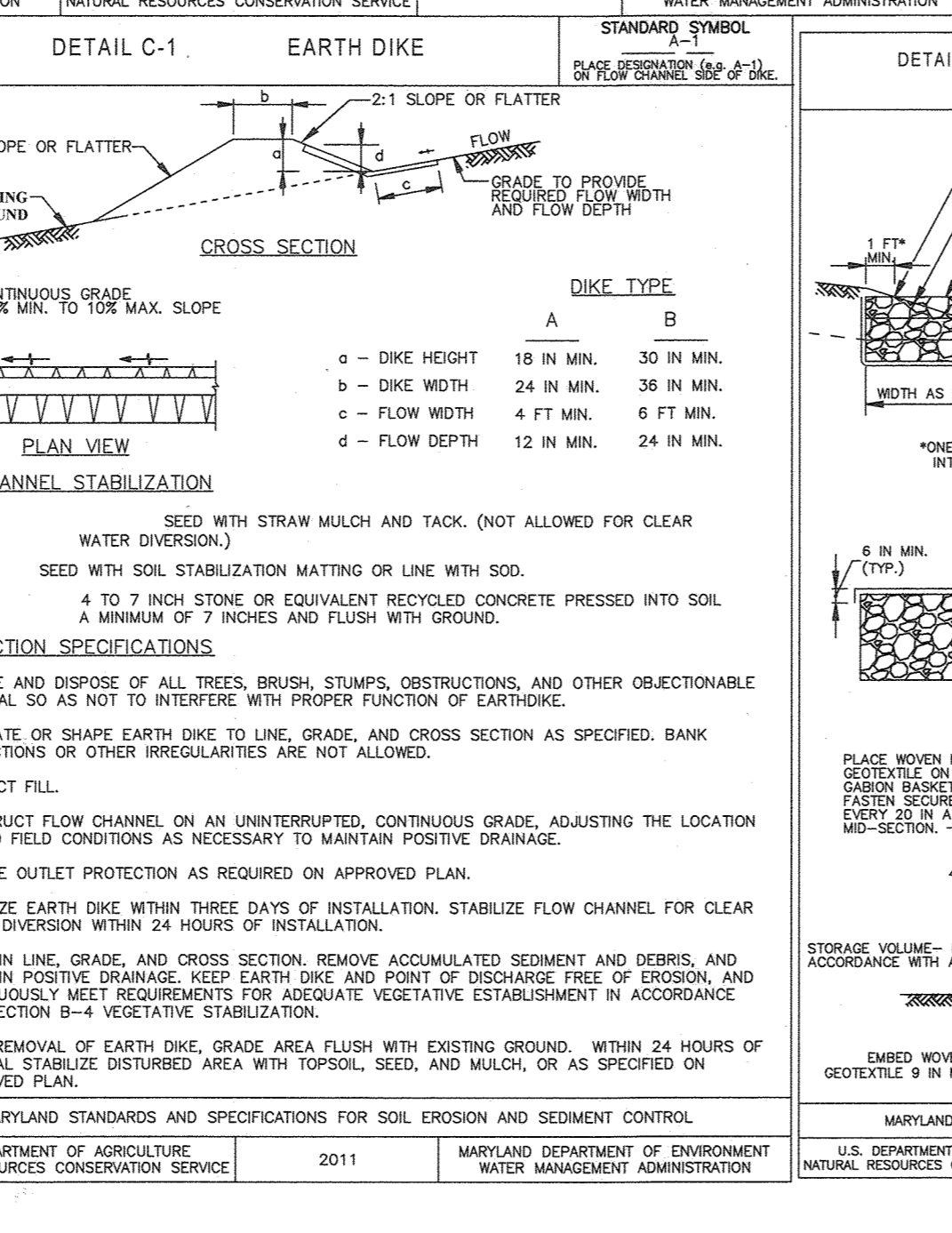
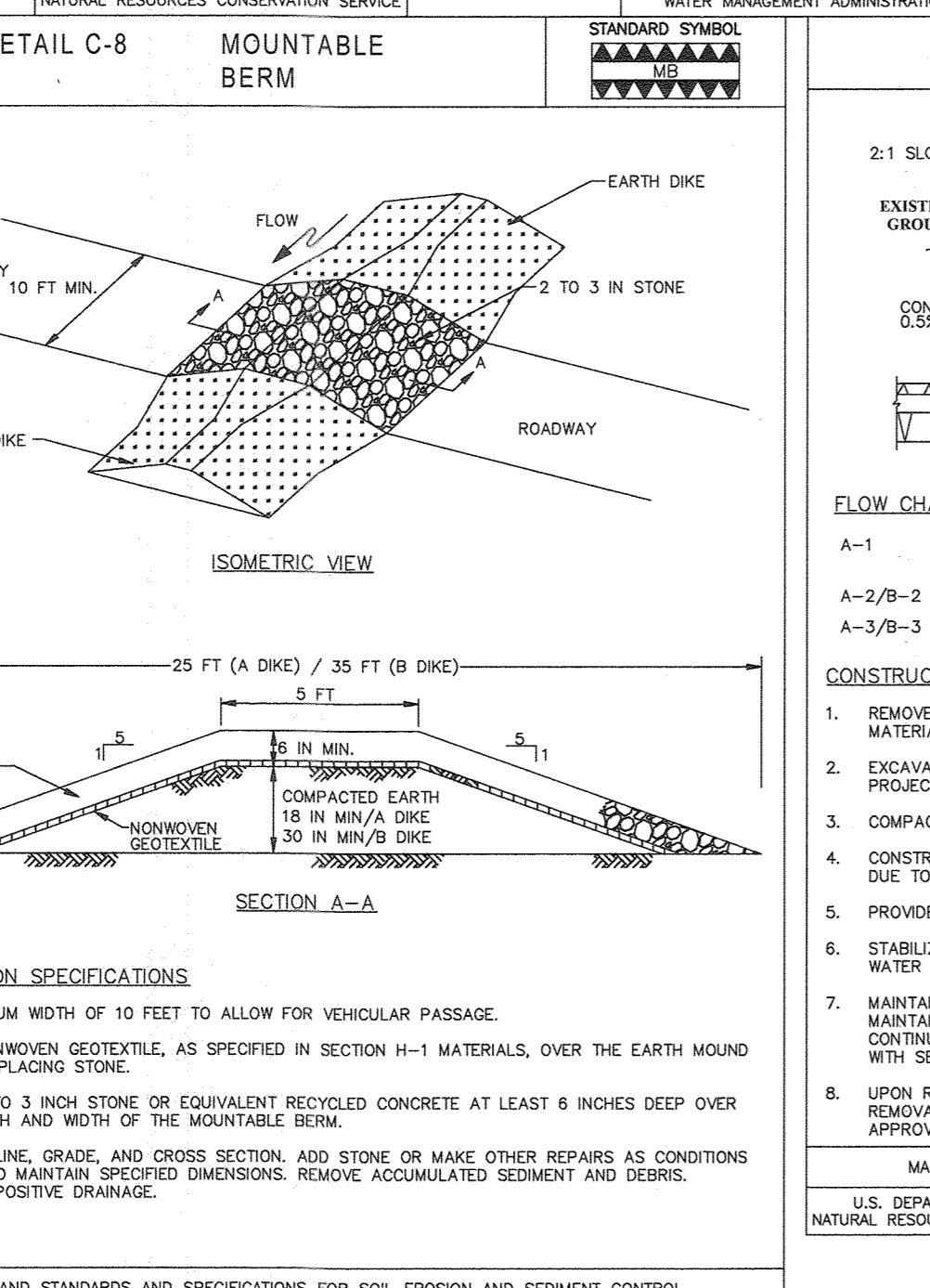
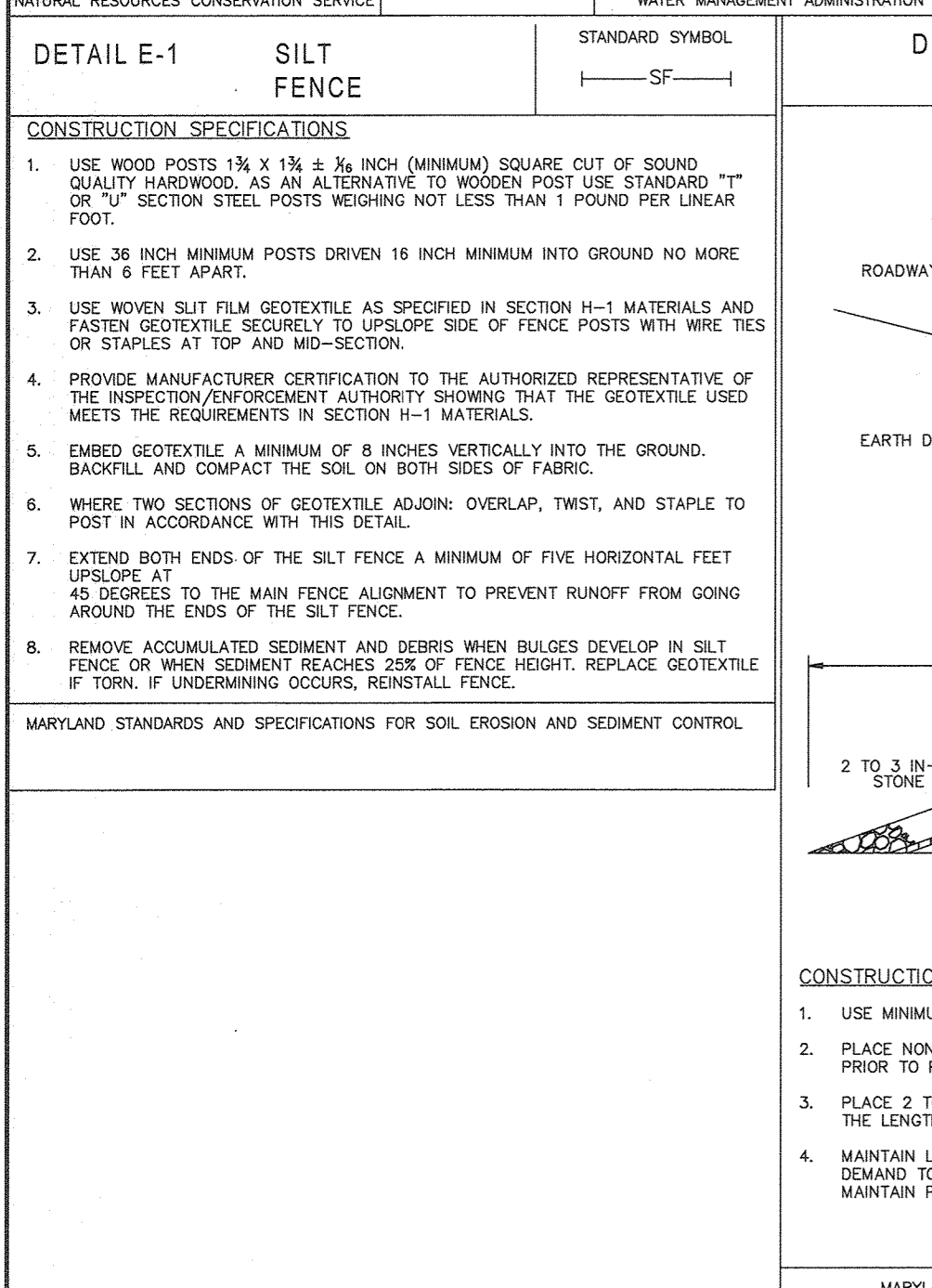
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011.

ENGINEER'S CERTIFICATE: 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.

11/25/19
 ENGINEER - JOHN M. CARNEY #45577

DEVELOPER'S CERTIFICATE: I HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT 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.

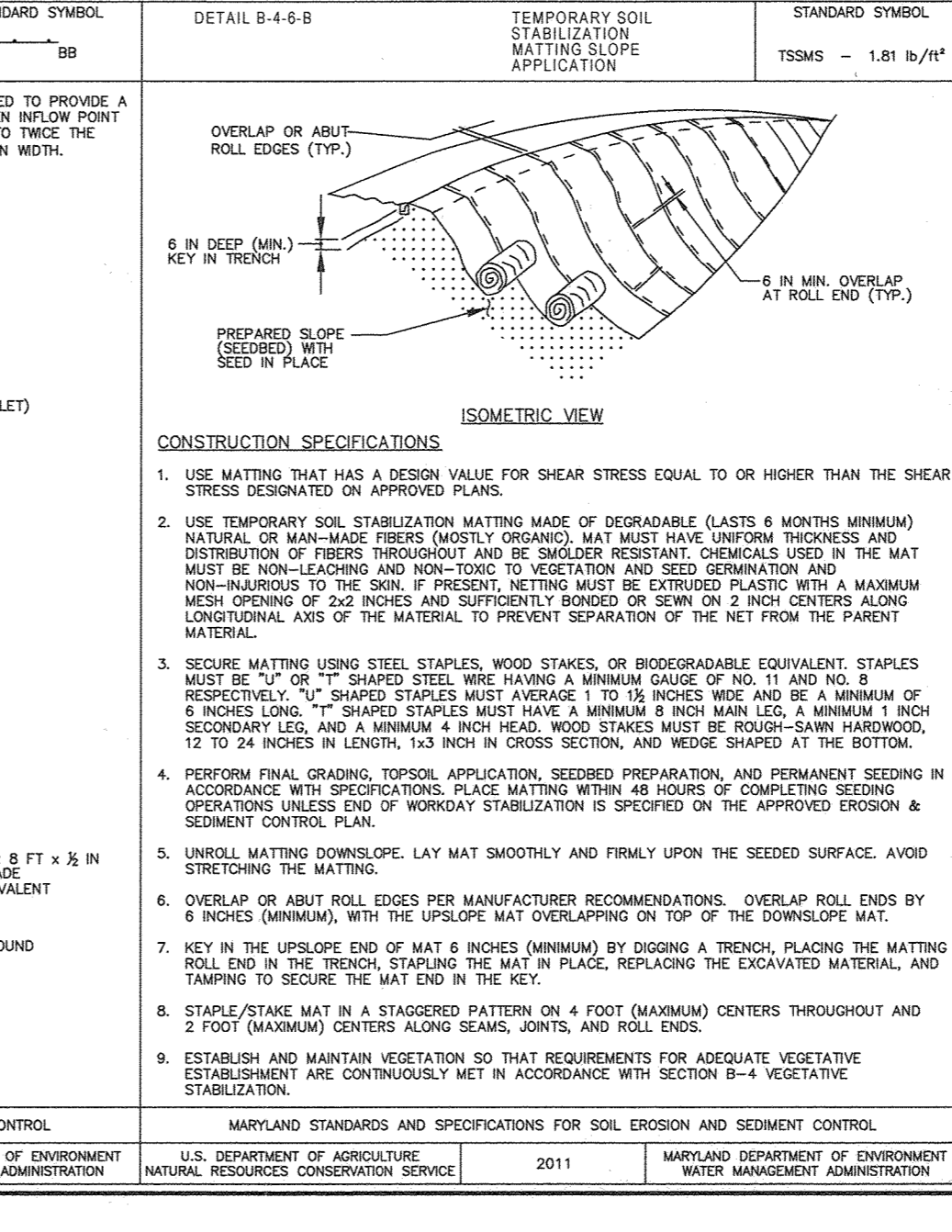
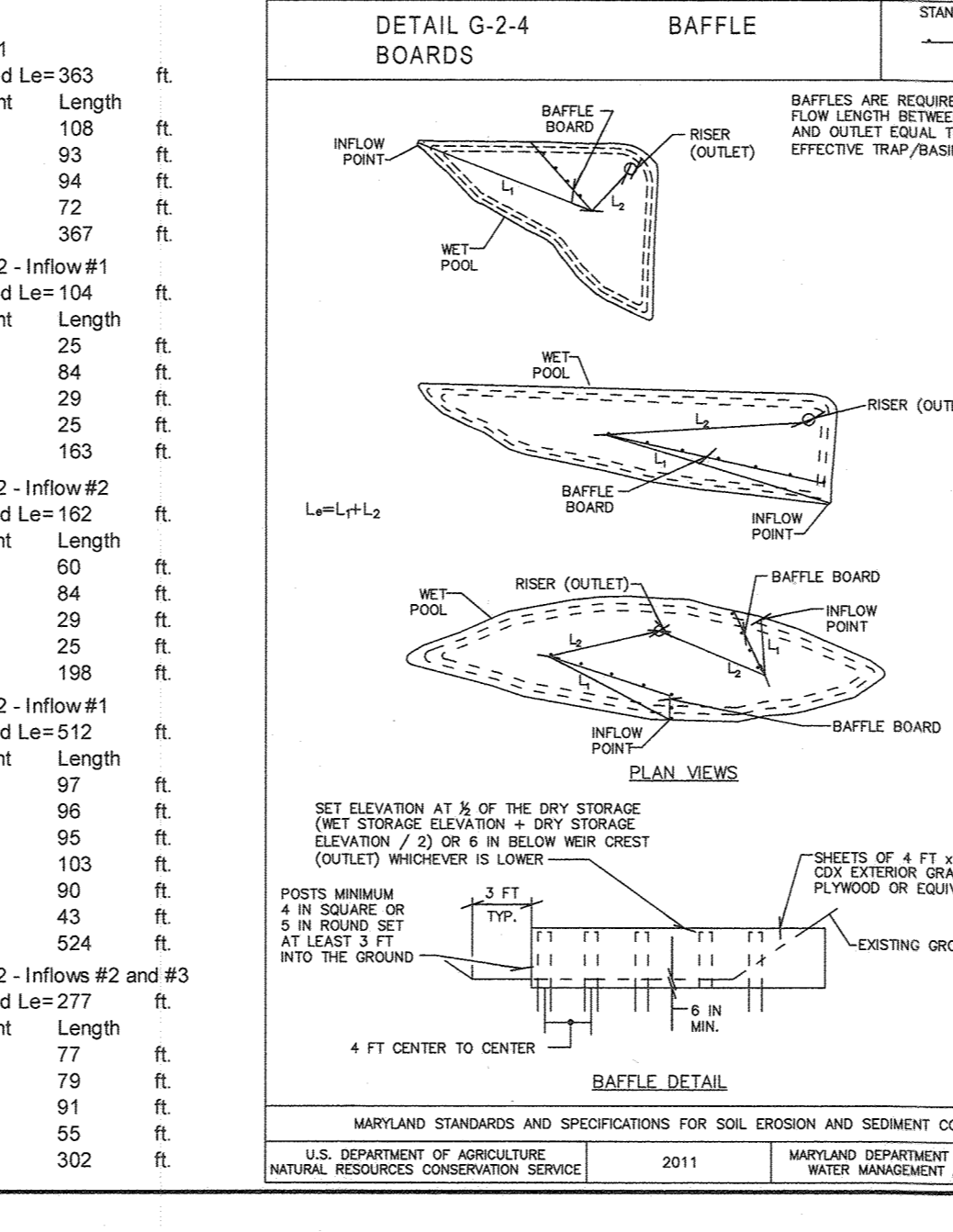
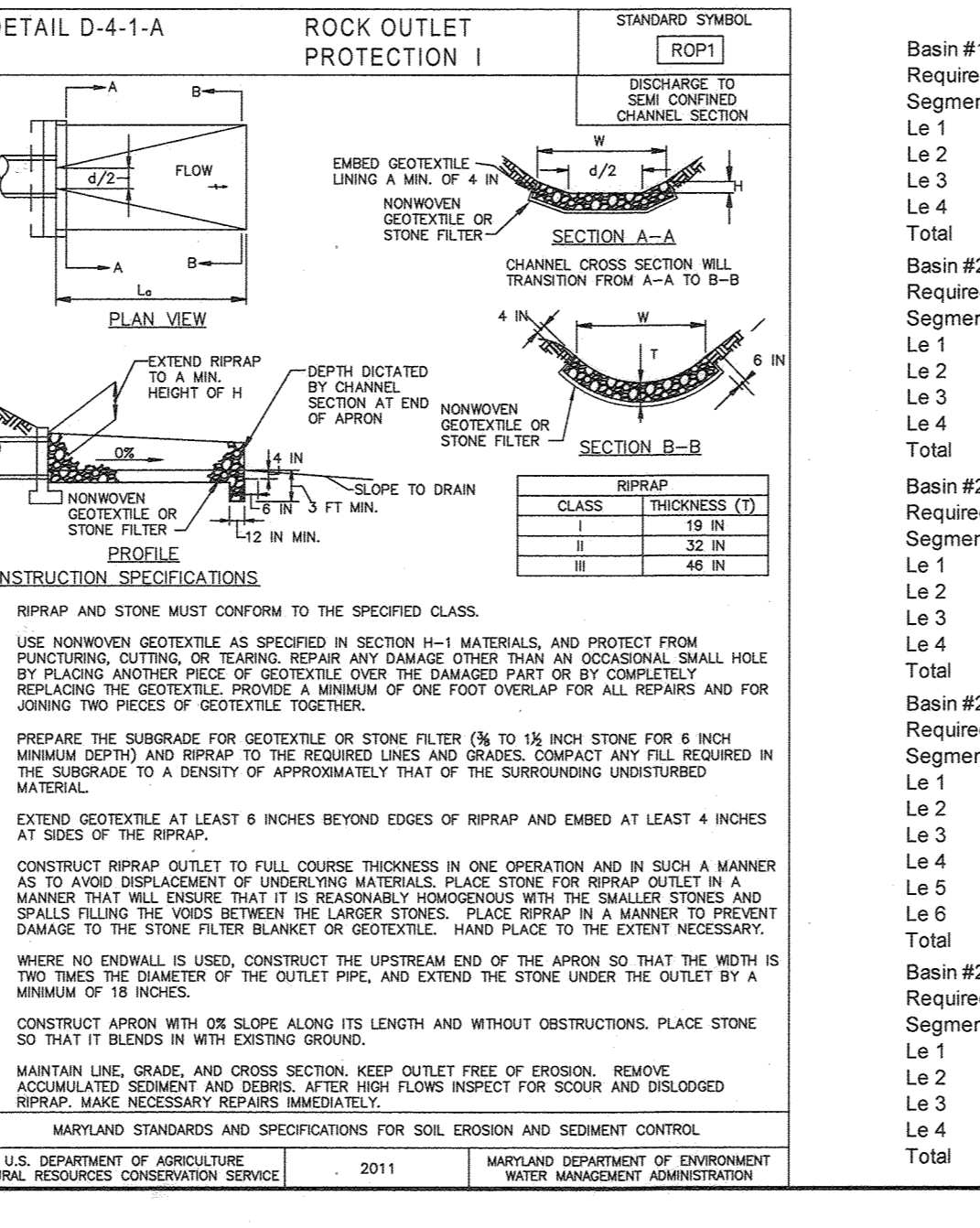
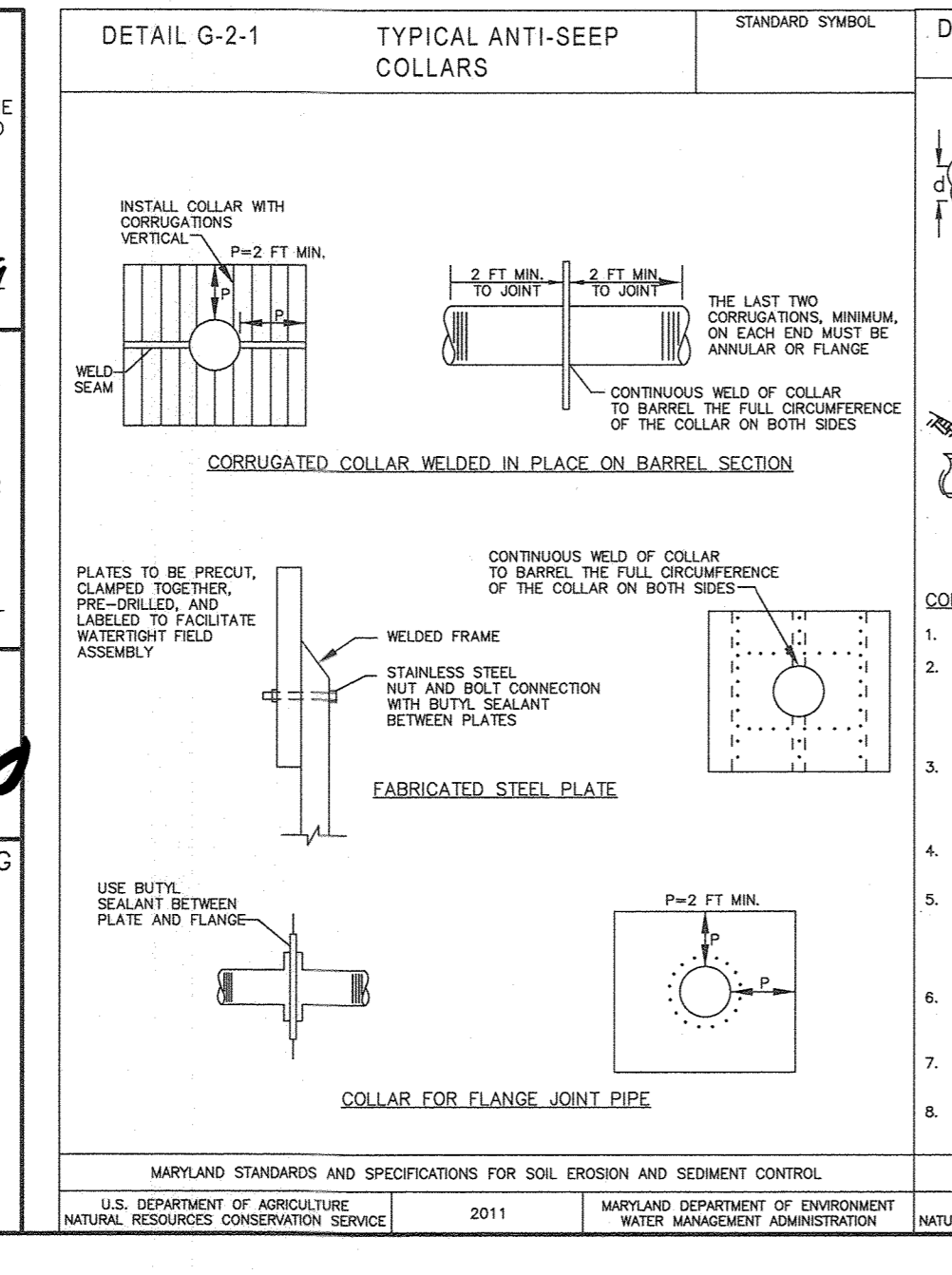
11/26/19
 DEVELOPER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

5/15/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT

1/31/2020
 CHIEF, BUREAU OF HIGHWAYS



SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY

NO. DATE REVISION

1 1/20/21 Revise Sheet #s.

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE A SUITE 315 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-CIVILENGINEERING.COM

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042

PROJECT: KINGS FOREST
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 C/O SOPHIE ZIEGLER, 750 DOLORRES STREET, SAN FRANCISCO, CA 94110, 212-877-8897

DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046, 410-381-3263

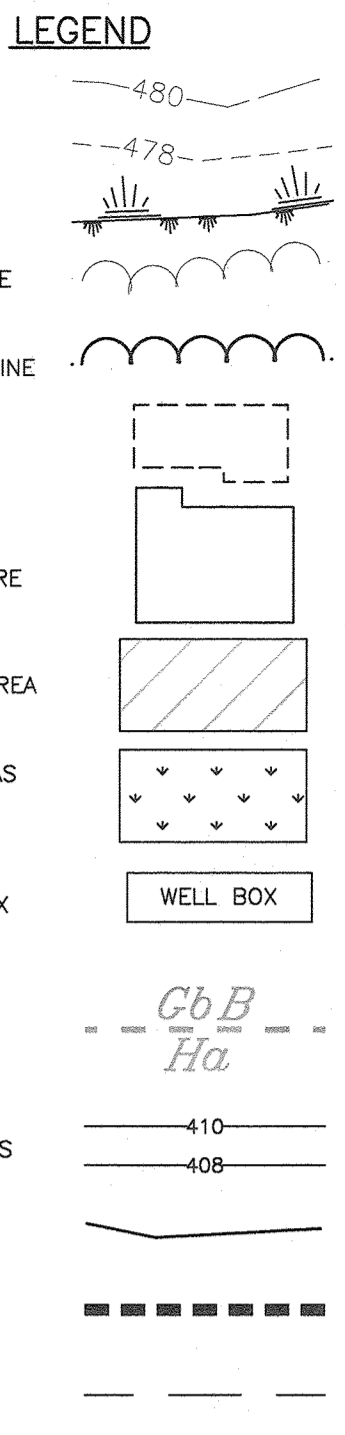
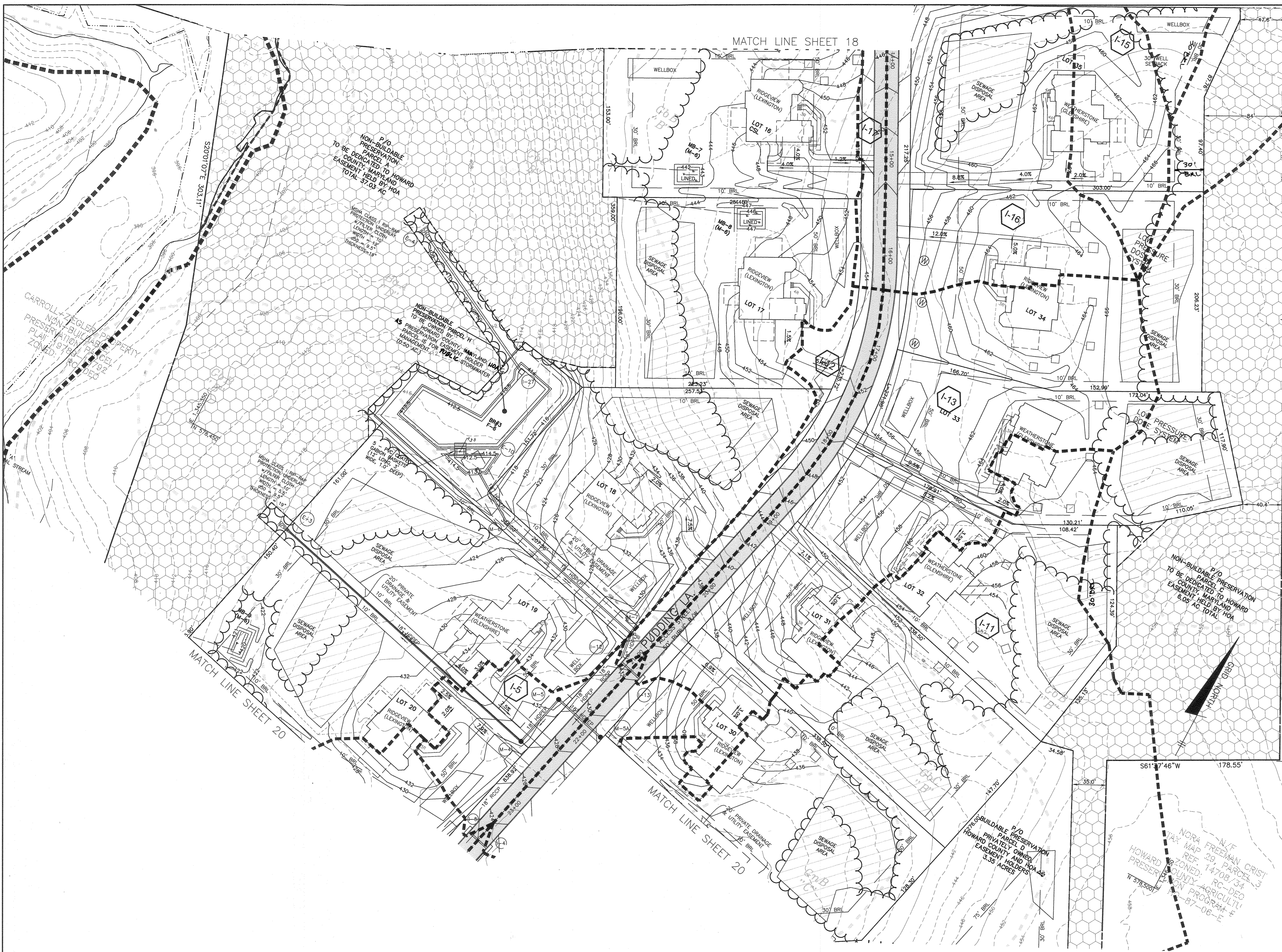
LOCATION: PUDDING LANE, ELLICOTT CITY, MD 21042

TITLE: SEDIMENT EROSION CONTROL NOTES AND DETAILS

DATE: NOVEMBER, 2019 PROJECT NO. 2501

DRAFT: MP DESIGN: JC CHECK: JC SCALE: AS SHOWN SHEET 17 OF 75

F-19-014



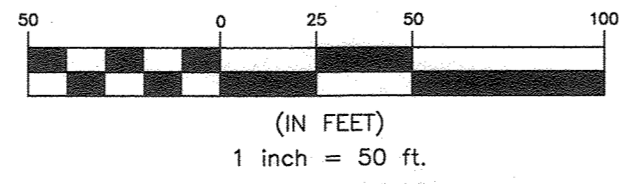
STORM DRAINAGE AREA DATA

AREA = 0.43 AC	1-5	ZONE = RC-DEO
"C" FACTOR = 0.42		IMPERVIOUS = 32%
AREA = 4.26 AC	1-1	ZONE = RC-DEO
"C" FACTOR = 0.21		IMPERVIOUS = 0%
AREA = 0.37 AC	1-12	ZONE = RC-DEO
"C" FACTOR = 0.68		IMPERVIOUS = 73%
AREA = 2.21 AC	1-13	ZONE = RC-DEO
"C" FACTOR = 0.29		IMPERVIOUS = 13%
AREA = 1.22 AC	1-15	ZONE = RC-DEO
"C" FACTOR = 0.27		IMPERVIOUS = 10%
AREA = 1.54 AC	1-16	ZONE = RC-DEO
"C" FACTOR = 0.30		IMPERVIOUS = 14%
AREA = 0.24 AC	1-17	ZONE = RC-DEO
"C" FACTOR = 0.80		IMPERVIOUS = 90%

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 1/21/2020
 CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/17/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 2/20/2020
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



1 1-20-21 <i>Revise Sheet #s, Revise PARCEL H.</i>	
NO.	REVISION
BENCHMARK ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-8844 WWW.BEI-CIVLENGINEERING.COM	
OWNERS:	PROJECT:
NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 750 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION:
DEVELOPER:	TITLE:
TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	STORM DRAIN DRAINAGE AREA MAP
DRAFT: MP	DESIGN: JC
CHECK: JC	SCALE: AS SHOWN
DATE: NOVEMBER, 2019	PROJECT NO. 2501
	SHEET 19 OF 78

13/25/01 Carroll-Ziegler Parcel K(dwg)7044 Parcel K Storm Drain.dwg, 11/25/2019 6:41:29 PM

LEGEND

- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- BIO-RETENTION AREAS (M-6)
- PROPOSED WELL BOX
- SOILS DELINEATION AND CLASSIFICATION
- PROPOSED CONTOURS
- STREAM
- STORM DRAIN DRAINAGE AREA
- PUBLIC DRAINAGE & UTILITY EASEMENT

STORM DRAINAGE AREA DATA

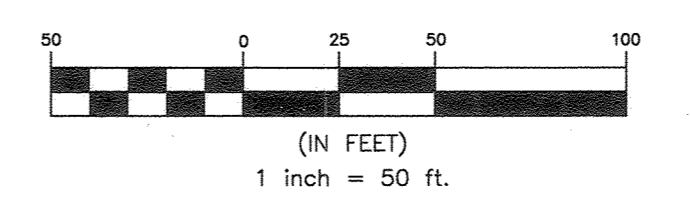
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"C" FACTOR = 0.37		IMPERVIOUS = 20%
AREA = 0.82 AC	1-2	ZONE = RC-DEO
"C" FACTOR = 0.40		IMPERVIOUS = 25%
AREA = 0.87 AC	1-3	ZONE = RC-DEO
"C" FACTOR = 0.33		IMPERVIOUS = 19%
AREA = 0.50 AC	1-4	ZONE = RC-DEO
"C" FACTOR = 0.39		IMPERVIOUS = 27%
AREA = 0.12 AC	1-6	ZONE = RC-DEO
"C" FACTOR = 0.40		IMPERVIOUS = 0%
AREA = 1.15 AC	1-7	ZONE = RC-DEO
"C" FACTOR = 0.19		IMPERVIOUS = 0%
AREA = 5.24 AC	1-8	ZONE = RC-DEO
"C" FACTOR = 0.20		IMPERVIOUS = 0%
AREA = 1.06 AC	1-9	ZONE = RC-DEO
"C" FACTOR = 0.25		IMPERVIOUS = 0%
AREA = 1.21 AC	1-10	ZONE = RC-DEO
"C" FACTOR = 0.21		IMPERVIOUS = 0%



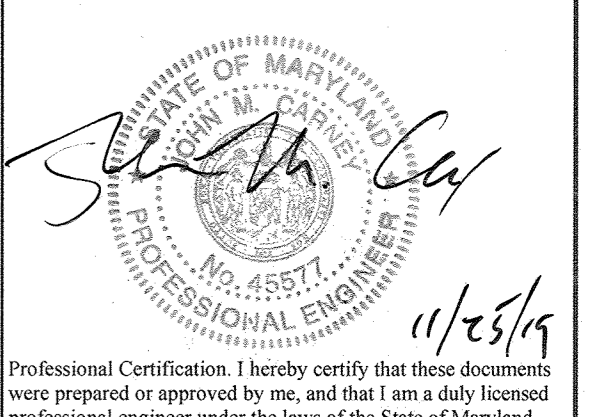
APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS MK
 DATE: 1/31/2020

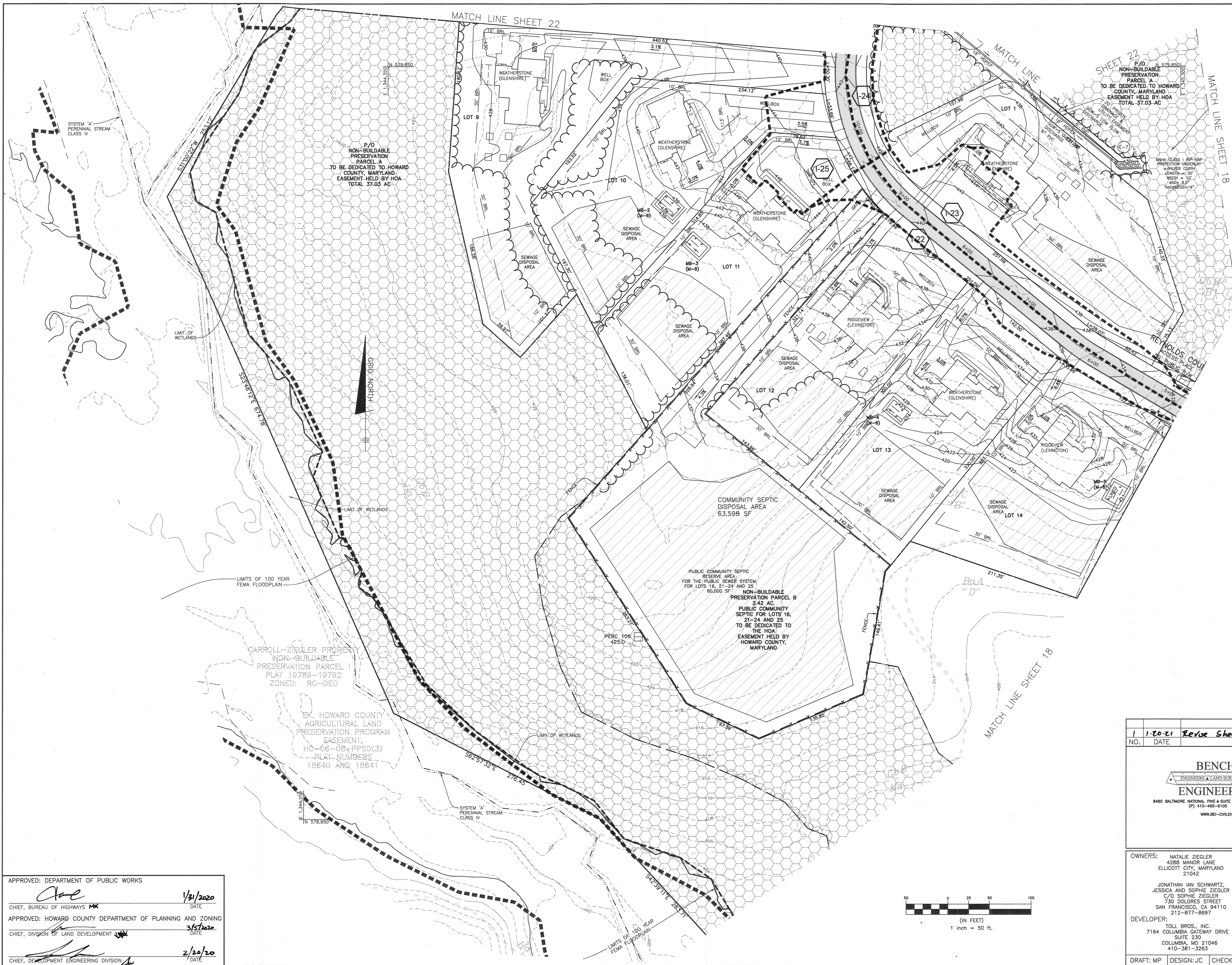
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 3/1/2020

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 2/20/20



1 1-20-21 Revise Sheet #s.		REVISION	
BENCHMARK ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6644 WWW.BE-CIVILENGINEERING.COM			
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042 JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I	
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
DRAFT: MP DESIGN: JC CHECK: JC		TITLE: STORM DRAIN DRAINAGE AREA MAP DATE: NOVEMBER, 2019 PROJECT NO. 2501 SCALE: AS SHOWN SHEET 20 OF 25	





LEGEND

- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- BIO-RETENTION AREAS (M-6)
- PROPOSED WELL BOX
- SOILS DELINEATION AND CLASSIFICATION
- PROPOSED CONTOURS
- STREAM
- STORM DRAIN DRAINAGE AREA
- PUBLIC DRAINAGE & UTILITY EASEMENT

STORM DRAINAGE AREA DATA

AREA = 0.61 AC	1-22	ZONE = RC-DEO
"C" FACTOR = 0.80		IMPERVIOUS = 92%
AREA = 0.75 AC	1-23	ZONE = RC-DEO
"C" FACTOR = 0.63		IMPERVIOUS = 64%
AREA = 1.27 AC	1-24	ZONE = RC-DEO
"C" FACTOR = 0.42		IMPERVIOUS = 33%
AREA = 1.33 AC	1-25	ZONE = RC-DEO
"C" FACTOR = 0.42		IMPERVIOUS = 32%

1 1-20-21 <i>Revise Sheet #s.</i>		REVISION	
NO.	DATE		
<p>BENCHMARK ENGINEERING, INC.</p> <p>ENGINEERS & LAND SURVEYORS & PLANNERS</p> <p>8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6844 WWW.BEI-CIVLENGINEERING.COM</p>			
<p>OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042</p> <p>JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697</p> <p>DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263</p>		<p>PROJECT: KINGS FOREST</p> <p>A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19781 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I</p> <p>LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p> <p>TITLE: STORM DRAIN DRAINAGE AREA MAP</p> <p>DATE: NOVEMBER, 2019 PROJECT NO. 2501</p> <p>SCALE: AS SHOWN SHEET 21 OF 75</p>	

APPROVED: DEPARTMENT OF PUBLIC WORKS

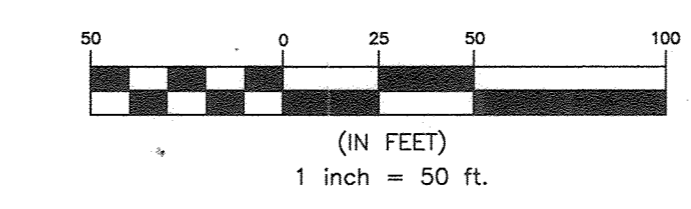
 CHIEF, BUREAU OF HIGHWAYS MK
 DATE: 1/31/2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 3/6/2020

CHIEF, DEVELOPMENT ENGINEERING DIVISION

 DATE: 2/20/20



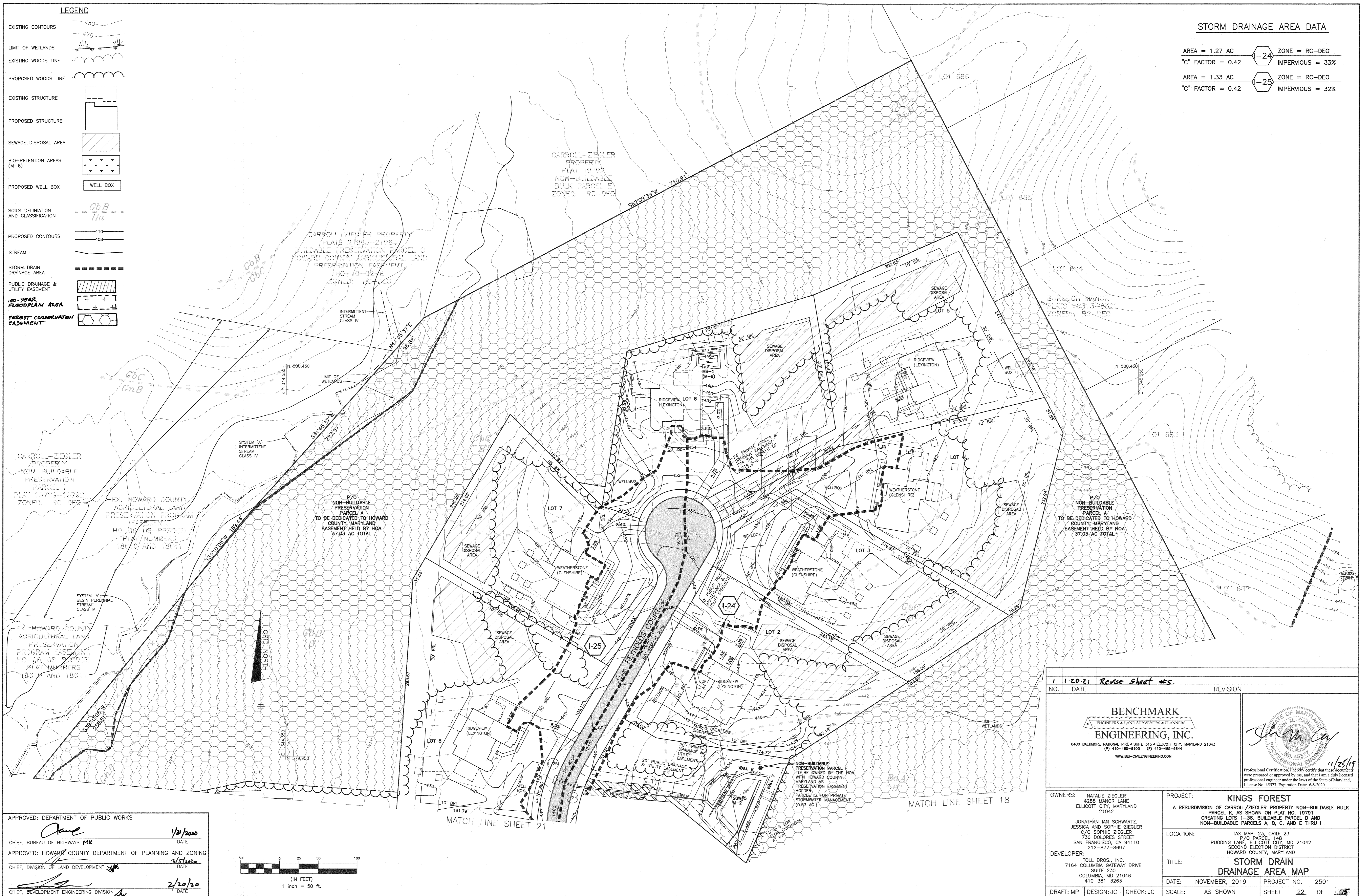
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LEGEND

- EXISTING CONTOURS: 480, 478
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- BIO-RETENTION AREAS (M-6)
- PROPOSED WELL BOX
- SOILS DELINEATION AND CLASSIFICATION: CbB, Ha
- PROPOSED CONTOURS: 410, 408
- STREAM
- STORM DRAIN DRAINAGE AREA
- PUBLIC DRAINAGE & UTILITY EASEMENT
- 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION EASEMENT

STORM DRAINAGE AREA DATA

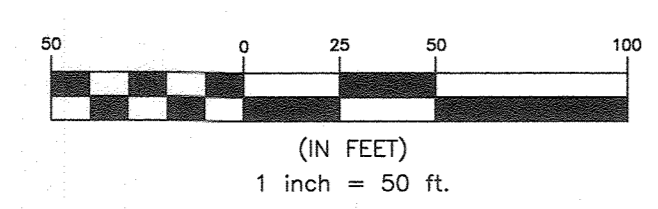
AREA = 1.27 AC	ZONE = RC-DEO
"C" FACTOR = 0.42	IMPERVIOUS = 33%
AREA = 1.33 AC	ZONE = RC-DEO
"C" FACTOR = 0.42	IMPERVIOUS = 32%



APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 1/21/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/5/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

APPROVED: DEVELOPMENT ENGINEERING DIVISION
[Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE



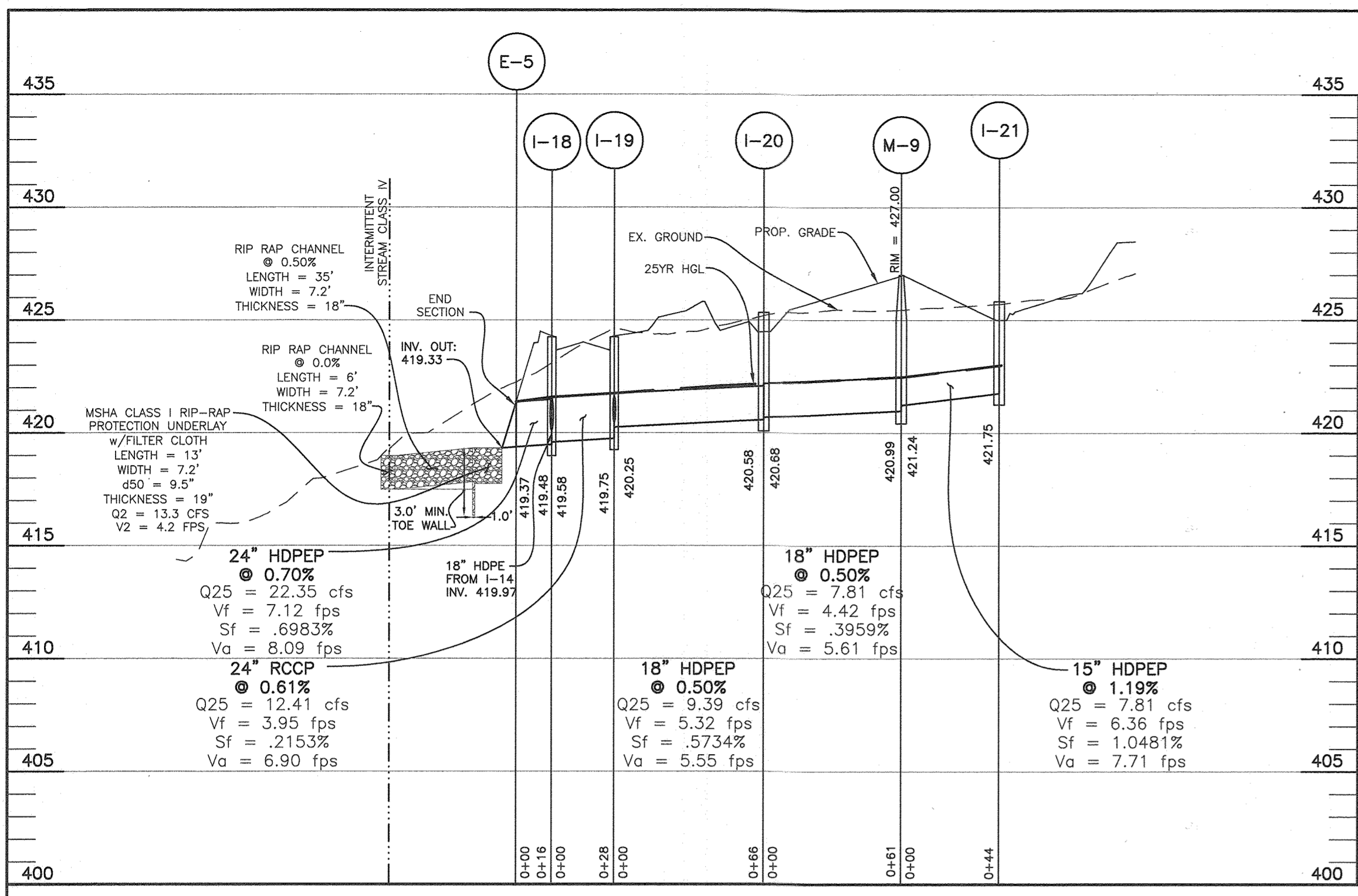
NO.	DATE	REVISION
1	1-20-21	Revise sheet #s.

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-8105 (F) 410-465-6644
 WWW.BE-CIVLENGINEERING.COM

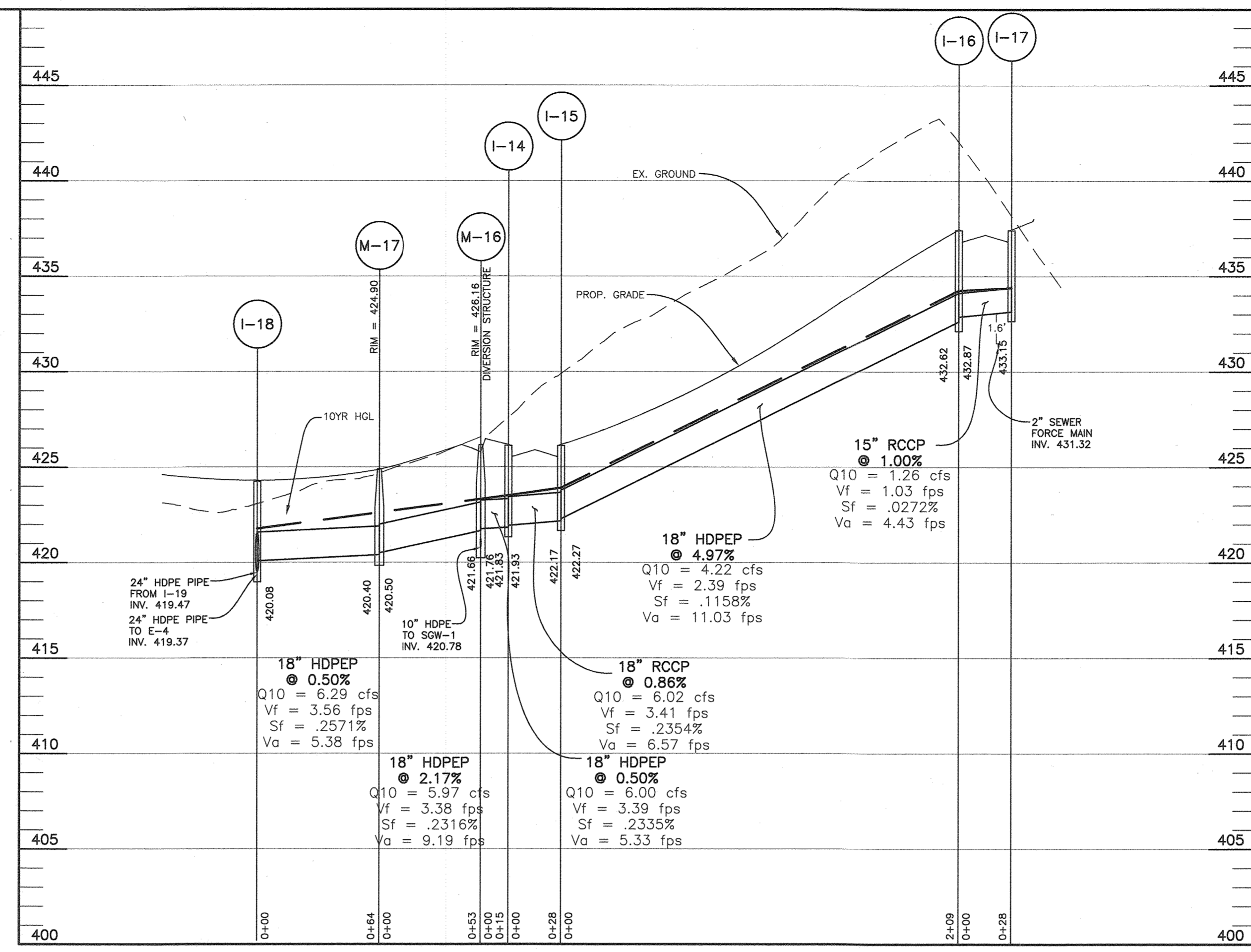
[Professional Seal]
 Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLCOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: STORM DRAIN DRAINAGE AREA MAP	DATE: NOVEMBER, 2019 PROJECT NO.: 2501
DRAFT: MP DESIGN: JC CHECK: JC	SCALE: AS SHOWN SHEET: 22 OF 75

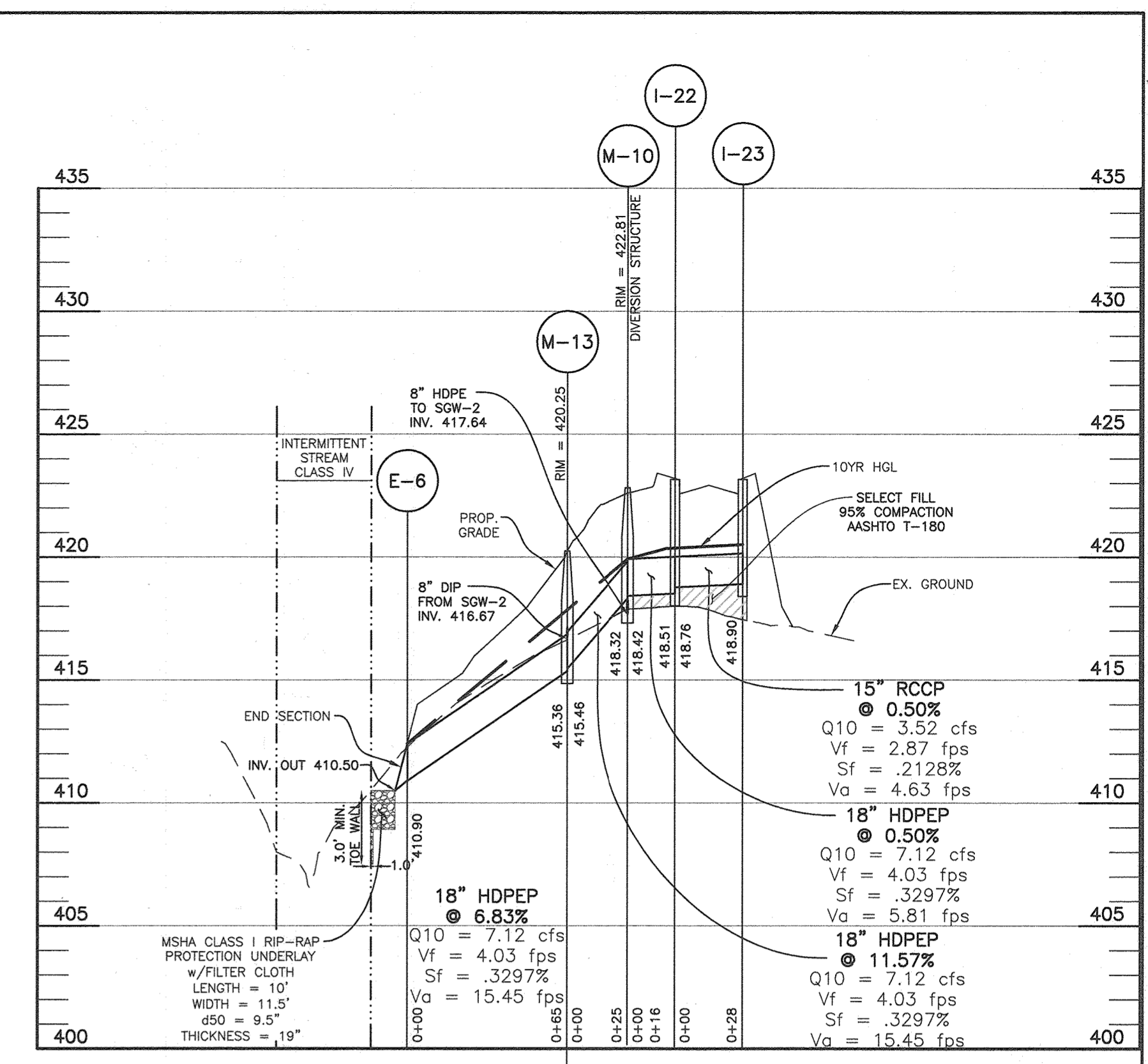
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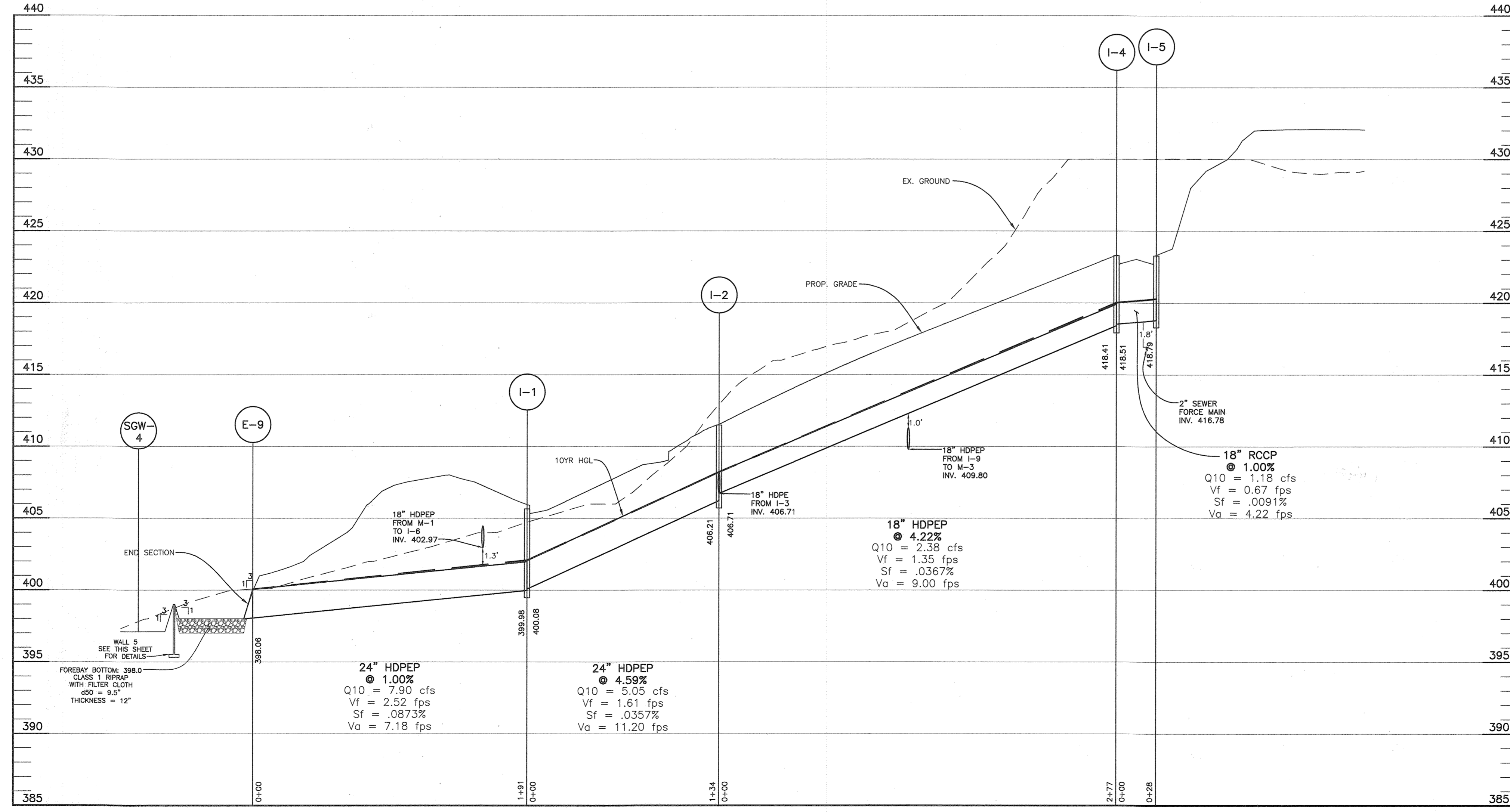
E-5 to I-21
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'



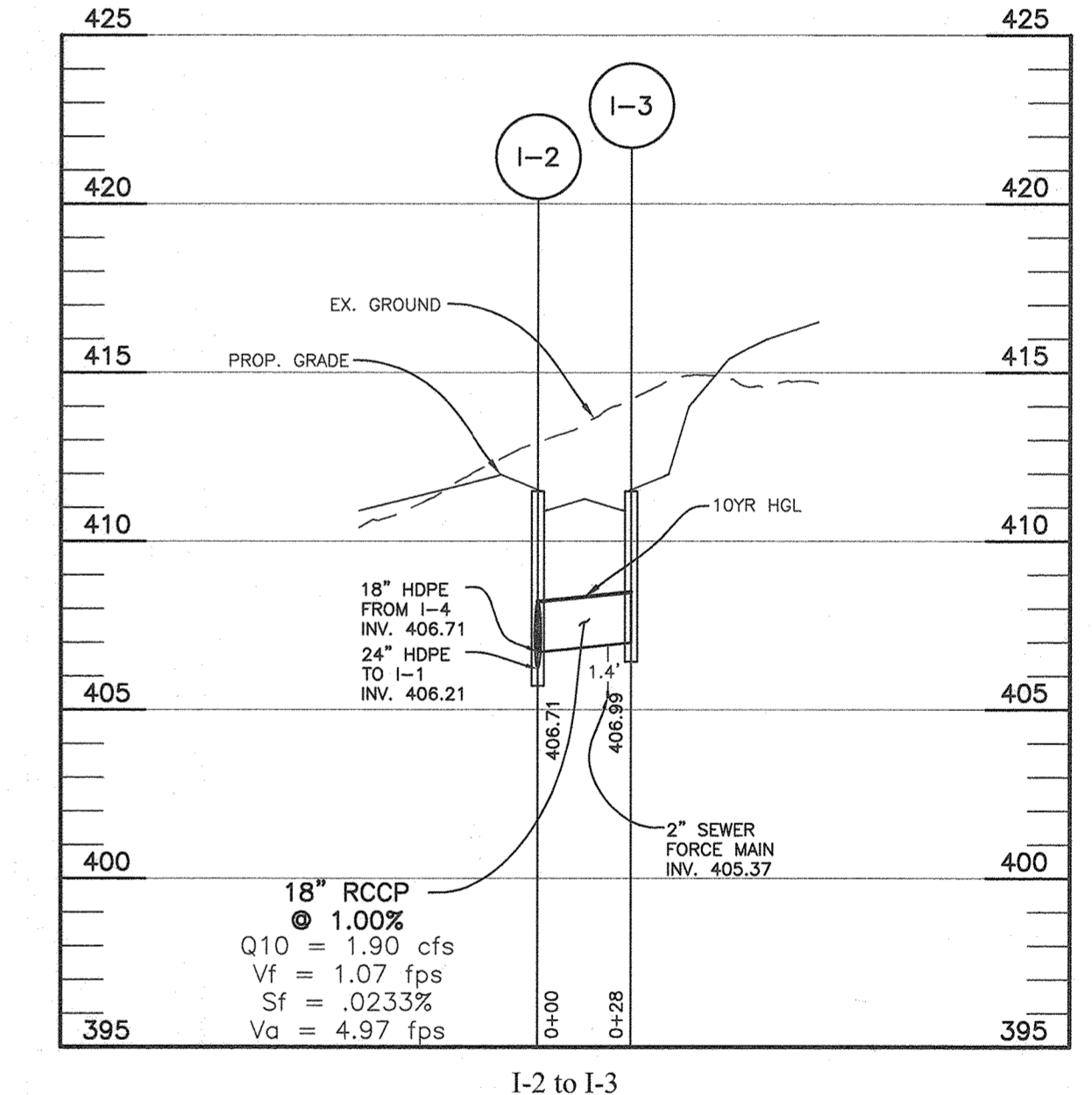
I-18 to I-17
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'



E-6 to I-23
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'



SGW-4 to I-5
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'



I-2 to I-3
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'

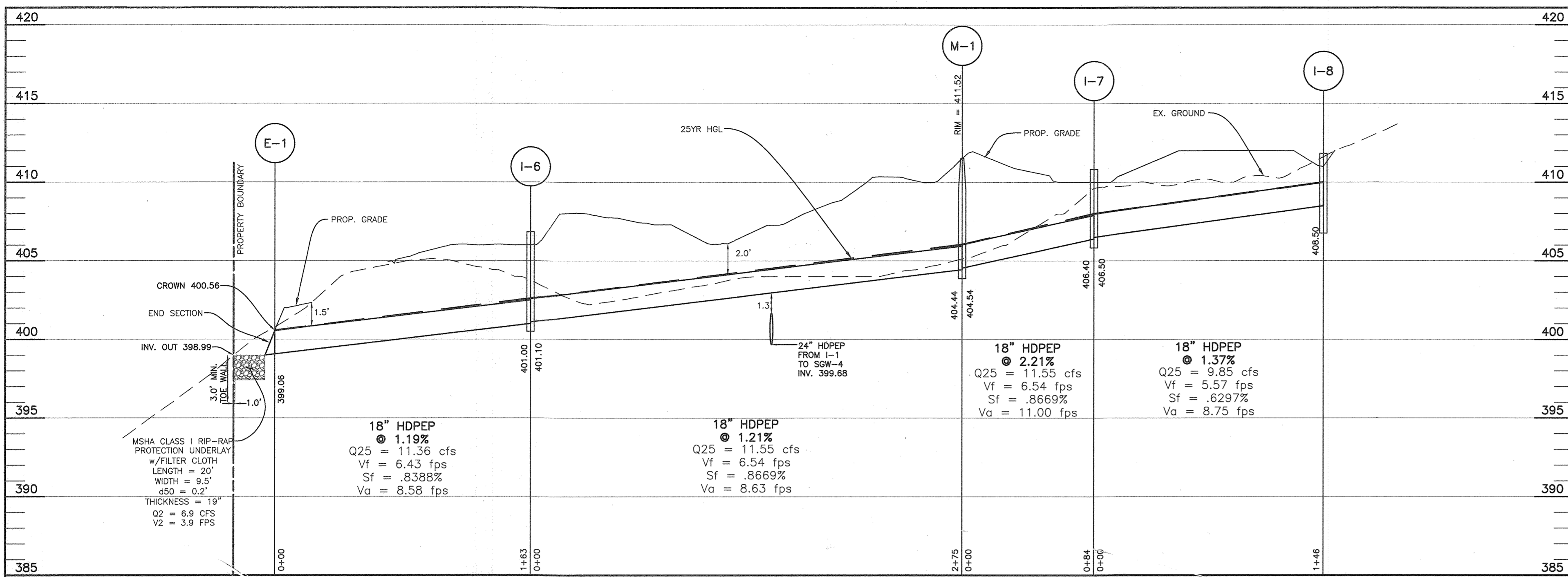
APPROVED: DEPARTMENT OF PUBLIC WORKS
Clare
 CHIEF, BUREAU OF HIGHWAYS MK
 DATE 1/31/2020
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

1 1-20-21 <i>Revise Sheet #s.</i>		REVISION	
<p align="center">BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-485-8105 (F) 410-485-8844 WWW.BEI-CIVILENGINEERING.COM</p>			
<p>OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042</p>		<p>PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19781 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I</p>	
<p>DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263</p>		<p>LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>	
<p>TITLE: STORM DRAIN PROFILES</p>		<p>DATE: NOVEMBER, 2019 PROJECT NO. 2501</p>	
<p>DRAFT: MP DESIGN: JC CHECK: JC</p>		<p>SCALE: AS SHOWN SHEET 23 OF 76</p>	

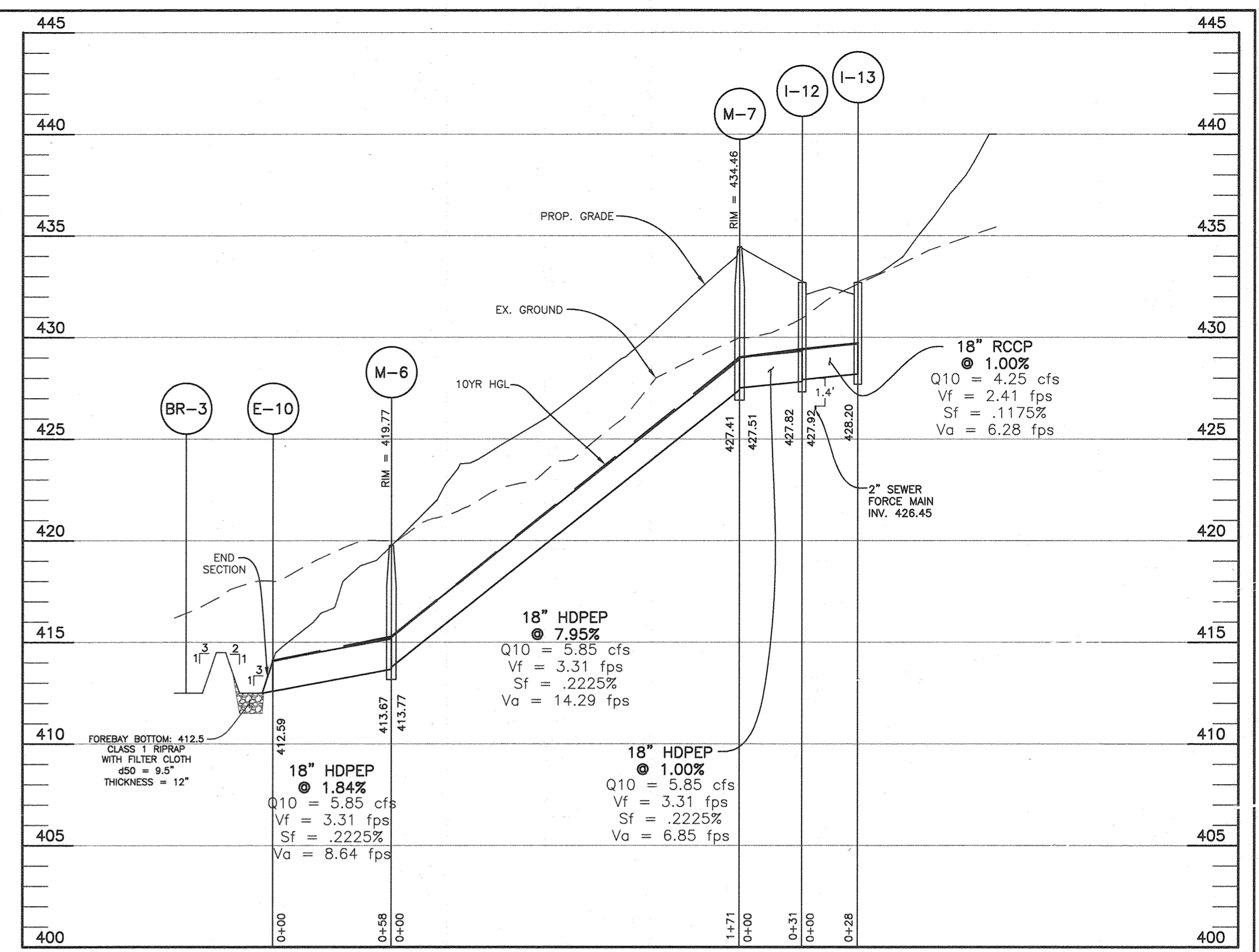
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

Seth A. Carl
4/25/19

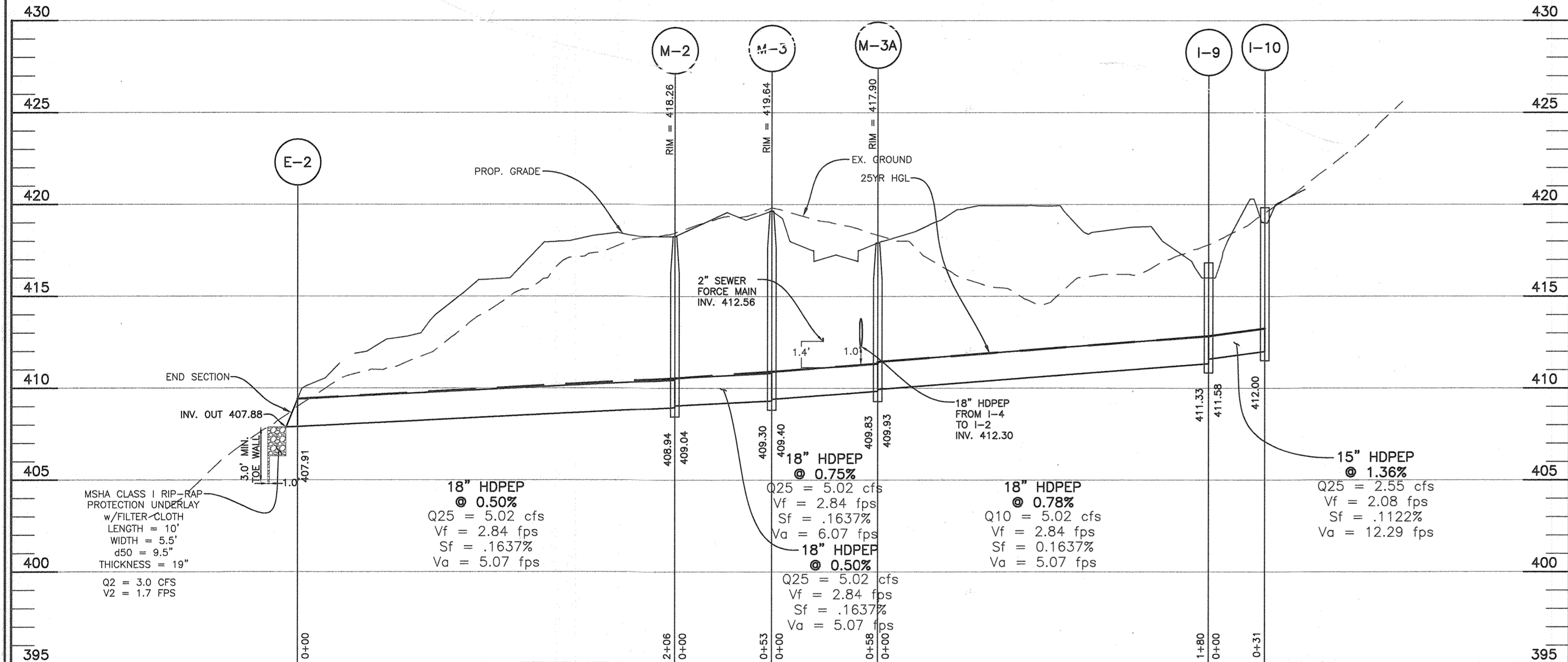
V:\2501 Carroll-Ziegler Parcel K.dwg\7044 Parcel K Storm Drain.dwg, 11/25/2019 6:43:11 PM



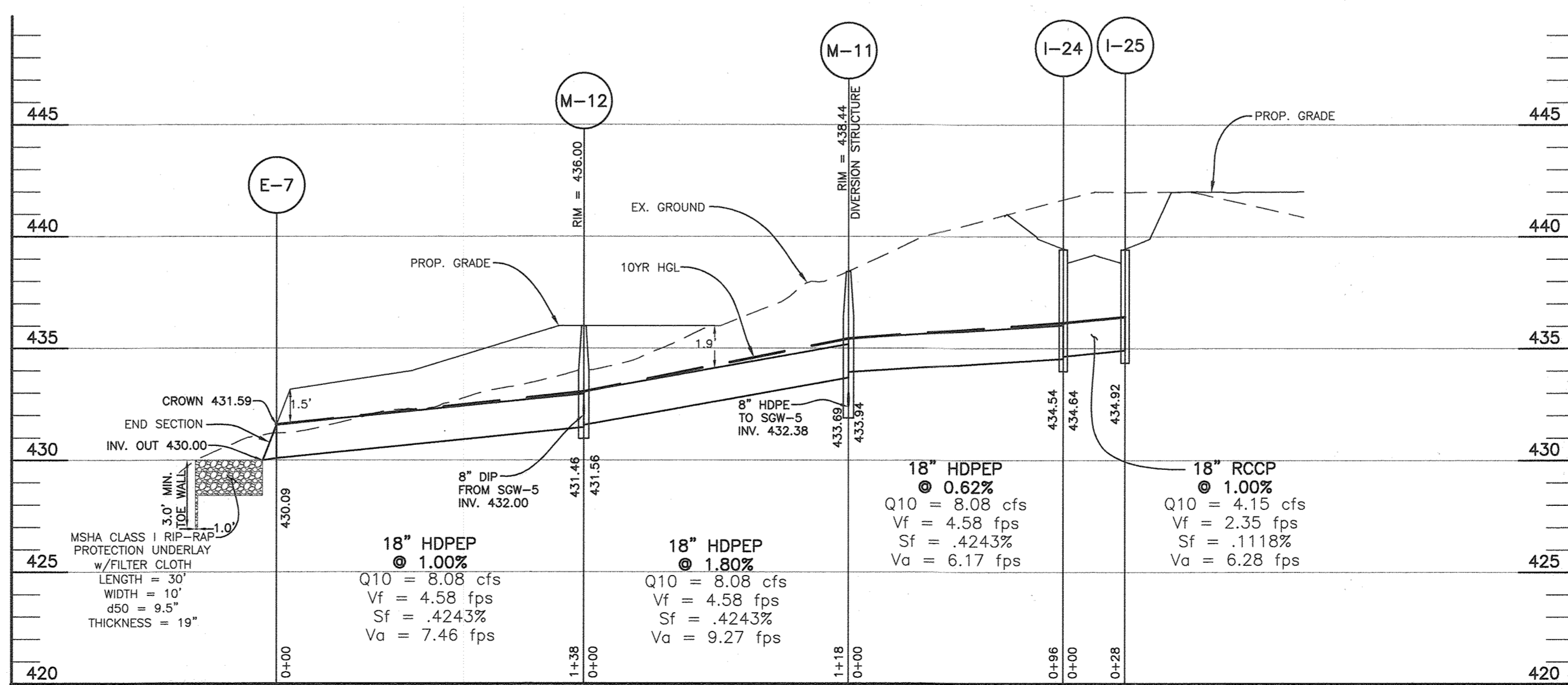
E-1 to I-8
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'



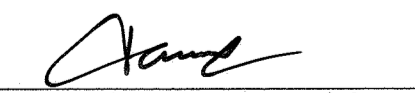
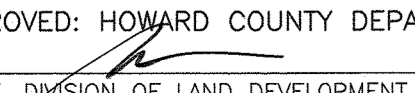

E-10 to I-13
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'

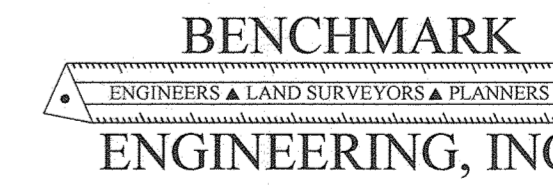


E-2 to I-10
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'



E-7 to I-25
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'

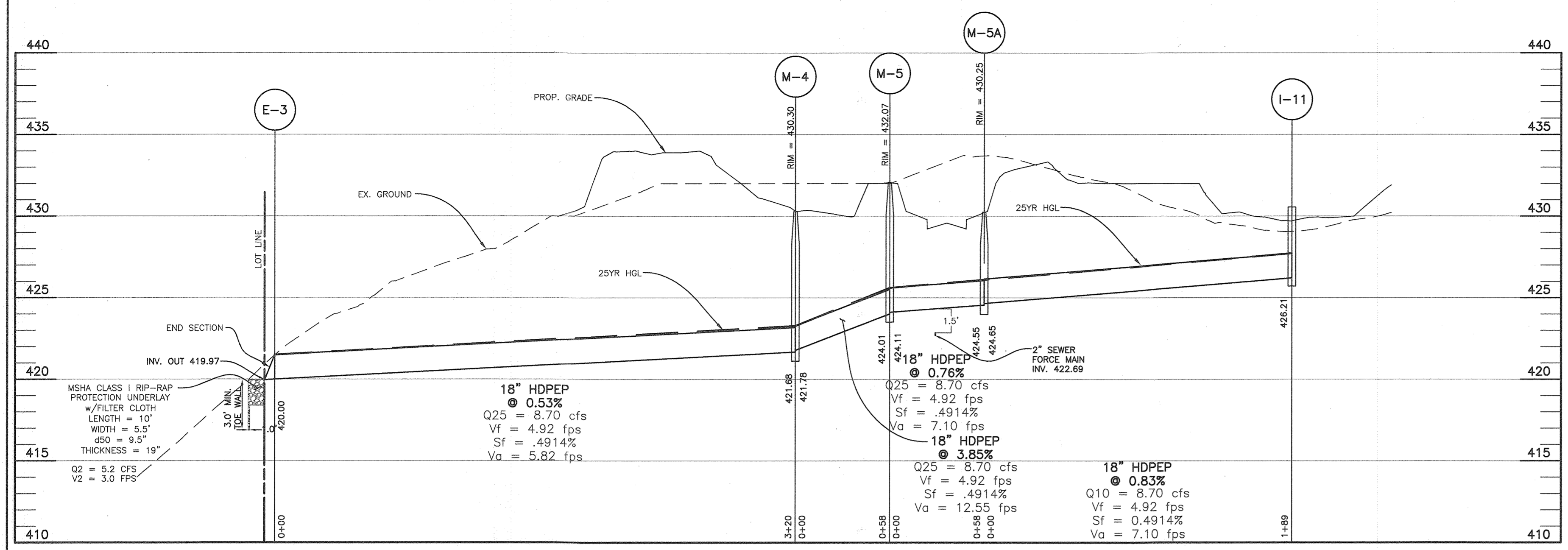
APPROVED: DEPARTMENT OF PUBLIC WORKS

 CHIEF, BUREAU OF HIGHWAYS MK
 DATE: 1/31/2020
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 2/20/20
 APPROVED: CHIEF, DEVELOPMENT ENGINEERING DIVISION

 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 2/20/20

1 1-20-21 Reverse Sheet #s.		REVISION	
 BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-485-8105 (F) 410-485-6844 WWW.BE-CIVLENGINEERING.COM			
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I	
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE: STORM DRAIN PROFILES		DATE: NOVEMBER, 2019 PROJECT NO. 2501 SCALE: AS SHOWN SHEET 24 OF 25	

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

4/6/2019

13/2021 Carroll-Ziegler Parcel K(dwg)7044 Parcel K Storm Drain.dwg, 11/25/2019 6:43:36 PM



STORM DRAIN PIPE SCHEDULE			
PIPE SIZE	LENGTH	TYPE	OWNERSHIP
8"	10'±	HDPE	PUBLIC
10"	30'±	HDPE	PUBLIC
15"	45'±	HDPE	PUBLIC
18"	322'±	HDPE	PUBLIC
24"	282'±	HDPE	PUBLIC
12"	43'±	HDPE	PRIVATE
18"	75'±	HDPE	PRIVATE
15"	55'±	RCCP	PUBLIC
18"	139'±	RCCP	PUBLIC
24"	28'±	RCCP	PUBLIC

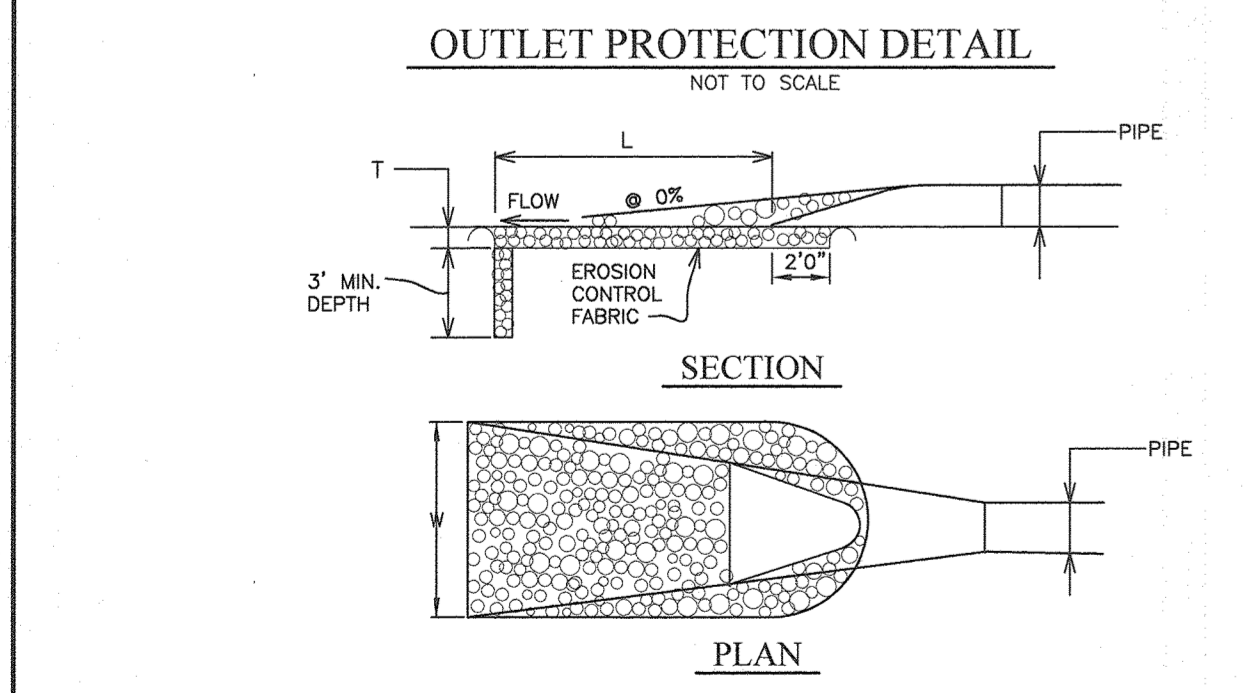
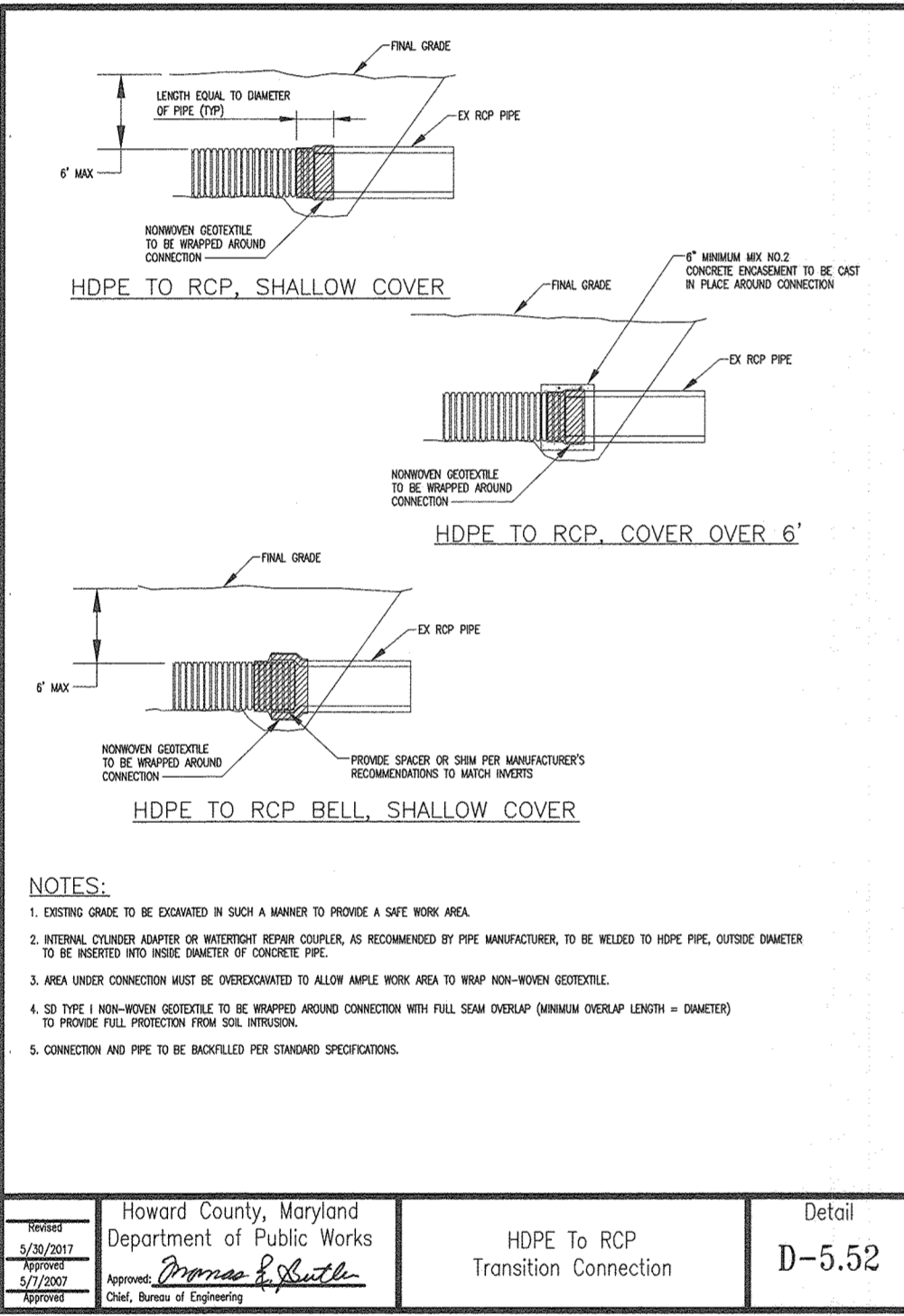
E-3 to I-11
SCALE
HORIZONTAL: 1" = 50'
VERTICAL: 1" = 5'

D.A. #	AREA (Ac.)	"C" (< 25 Yr)	"C" (> 25 Yr)	tc (min)*	I ₂ (in/hr)	I ₁₀ (in/hr)	I ₁₀₀ (in/hr)	Q ₂ (cfs)	Q ₁₀ (cfs)	Q ₁₀₀ (cfs)
I-1	1.36	0.37	0.44	10.0	4.50	6.60	10.00	2.24	3.29	6.02
I-2	0.62	0.40	0.48	10.0	4.50	6.60	10.00	1.10	1.62	2.93
I-3	0.87	0.33	0.41	10.0	4.50	6.60	10.00	1.29	1.90	3.53
I-4	0.50	0.39	0.47	10.0	4.50	6.60	10.00	0.87	1.28	2.32
I-5	0.43	0.42	0.50	10.0	4.50	6.60	10.00	0.80	1.18	2.13
I-6	0.12	0.42	0.28	10.0	4.50	6.60	10.00	0.22	0.32	0.33
I-7	1.15	0.19	0.25	10.0	4.50	6.60	10.00	1.01	1.48	2.85
I-8	5.24	0.20	0.25	10.0	4.50	6.60	10.00	4.74	6.56	13.19
I-9	1.06	0.25	0.32	10.0	4.50	6.60	10.00	1.17	1.72	3.35
I-10	1.21	0.21	0.28	10.0	4.50	6.60	10.00	1.15	1.69	3.41
I-11	4.26	0.21	0.27	10.0	4.50	6.60	10.00	3.97	5.82	11.60
I-12	0.37	0.68	0.78	10.0	4.50	6.60	10.00	1.13	1.65	2.84
I-13	2.21	0.29	0.37	10.0	4.50	6.60	10.00	2.90	4.25	8.08
I-14	0.08	0.86	0.96	10.0	4.50	6.60	10.00	0.30	0.44	0.74
I-15	1.22	0.27	0.35	10.0	4.50	6.60	10.00	1.51	2.22	4.26
I-16	1.54	0.30	0.38	10.0	4.50	6.60	10.00	2.09	3.06	5.78
I-17	0.24	0.80	0.89	10.0	4.50	6.60	10.00	0.86	1.26	2.14
I-18	0.32	0.86	0.96	10.0	4.50	6.60	10.00	1.22	1.80	3.04
I-19	0.79	0.45	0.52	10.0	4.50	6.60	10.00	1.60	2.35	4.14
I-20	0.93	0.20	0.25	10.0	4.50	6.60	10.00	0.82	1.20	2.32
I-21	5.05	0.16	0.21	10.0	4.50	6.60	10.00	3.74	5.49	10.41
I-22	0.61	0.60	0.90	10.0	4.50	6.60	10.00	2.20	3.23	5.49
I-23	0.75	0.63	0.72	10.0	4.50	6.60	10.00	2.11	3.10	5.36
I-24	1.27	0.42	0.50	10.0	4.50	6.60	10.00	2.40	3.53	6.35
I-25	1.33	0.42	0.49	10.0	4.50	6.60	10.00	2.49	3.65	6.59

INLET STRUCTURE TABLE									
NUMBER	TYPE	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	OWNER	STD. DETAIL	REMARKS	
I-1	A-10	N577806.5392, E1345769.4282	400.08(24")	399.98(24")	405.66	PUBLIC	HO.CO. D-4.03	DEPRESS 3"	
I-2	A-10	N577939.8885, E1345759.8406	406.71(18")	406.21(24")	411.49	PUBLIC	HO.CO. D-4.03		
I-3	A-10	N577846.4487, E1345732.9629		406.99(18")	411.49	PUBLIC	HO.CO. D-4.03		
I-4	A-10	N578208.9889, E1345803.2054	418.51(18")	418.41(18")	423.29	PUBLIC	HO.CO. D-4.03		
I-5	A-10	N578215.5491, E1345798.6437		418.79(18")	423.29	PUBLIC	HO.CO. D-4.03		
I-6	D	N577780.2461, E1345610.1015	401.10(18")	401.00(18")	406.83	PRIVATE	HO.CO. D-4.10	OPEN FOUR SIDES	
I-7	D	N577742.4502, E1345963.2054	406.50(18")	406.40(18")	410.83	PRIVATE	HO.CO. D-4.10	OPEN FOUR SIDES	
I-8	D	N577872.4589, E1345975.2430		408.50(18")	411.83	PRIVATE	HO.CO. D-4.10	OPEN FOUR SIDES	
I-9	D	N578023.3243, E1345854.3557	411.58(15")	411.33(18")	416.83	PRIVATE	HO.CO. D-4.10	OPEN FOUR SIDES	
I-10	D	N578025.4744, E1346005.8202		412.00(15")	419.83	PRIVATE	HO.CO. D-4.10	OPEN TWO SIDES	
I-11	D	N578320.4895, E1346056.6779		426.21(18")	430.55	PRIVATE	HO.CO. D-4.10	OPEN TWO SIDES	
I-12	A-10	N578443.8472, E1345854.3557	427.92(18")	427.82(18")	432.70	PUBLIC	HO.CO. D-4.03		
I-13	A-10	N578437.2871, E1345881.2434		428.20(18")	432.70	PUBLIC	HO.CO. D-4.03		
I-14	A-10	N578471.7278, E1345762.9604		421.83(18")	426.13	PUBLIC	HO.CO. D-4.03	DIVERSION INLET	
I-15	A-10	N578468.1134, E1345790.3900	422.27(18")	422.17(18")	426.13	PUBLIC	HO.CO. D-4.03		
I-16	A-10	N578260.4326, E1345771.6864	432.87(15")	432.62(18")	437.40	PUBLIC	HO.CO. D-4.03		
I-17	A-10	N578297.7941, E1345744.1458		433.15(15")	437.40	PUBLIC	HO.CO. D-4.03		
I-18	A-10	N578592.2271, E1345778.6943	419.58(24")	420.08(18")	419.48(24")	PUBLIC	HO.CO. D-4.03		
I-19	A-10	N578588.6351, E1345806.2357	420.25(18")	420.42(15")	419.75(24")	PUBLIC	HO.CO. D-4.03		
I-20	D	N578650.3007, E1345830.3352	420.68(18")	420.58(18")	425.33	PRIVATE	HO.CO. D-4.10	OPEN FOUR SIDES	
I-21	D	N578791.0628, E1345854.9649		421.75(15")	425.83	PRIVATE	HO.CO. D-4.10	OPEN FOUR SIDES	
I-22	A-10	N578345.0851, E1345807.4563	418.76(15")	418.51(18")	423.15	PUBLIC	HO.CO. D-4.03		
I-23	A-10	N578372.6995, E1345509.3124		418.90(15")	423.15	PUBLIC	HO.CO. D-4.03		
I-24	A-10	N579910.6691, E1344923.8067	434.64(18")	434.54(18")	439.42	PUBLIC	HO.CO. D-4.03		
I-25	A-10	N579919.9969, E1344927.7697		434.92(18")	439.42	PUBLIC	HO.CO. D-4.03		
I-26	D	N577538.0200, E1345636.8688		394.38(24")	399.83	PRIVATE	HO.CO. D-4.10	OPEN THREE SIDES	
I-27	D	N578657.6540, E1345623.1391	408.75(4")	407.50(24")	414.33	PRIVATE	HO.CO. D-4.10		
I-28	FLOW THRU	N579622.4829, E1345808.8821	423.64	423.22	424.47	PUBLIC	HO.CO. D-4.35	STRUCTURE 13.5' LENGTH	
I-29	FLOW THRU	N579618.0552, E1345784.0912	423.58	423.16	424.41	PUBLIC	HO.CO. D-4.35	STRUCTURE 13.5' LENGTH	

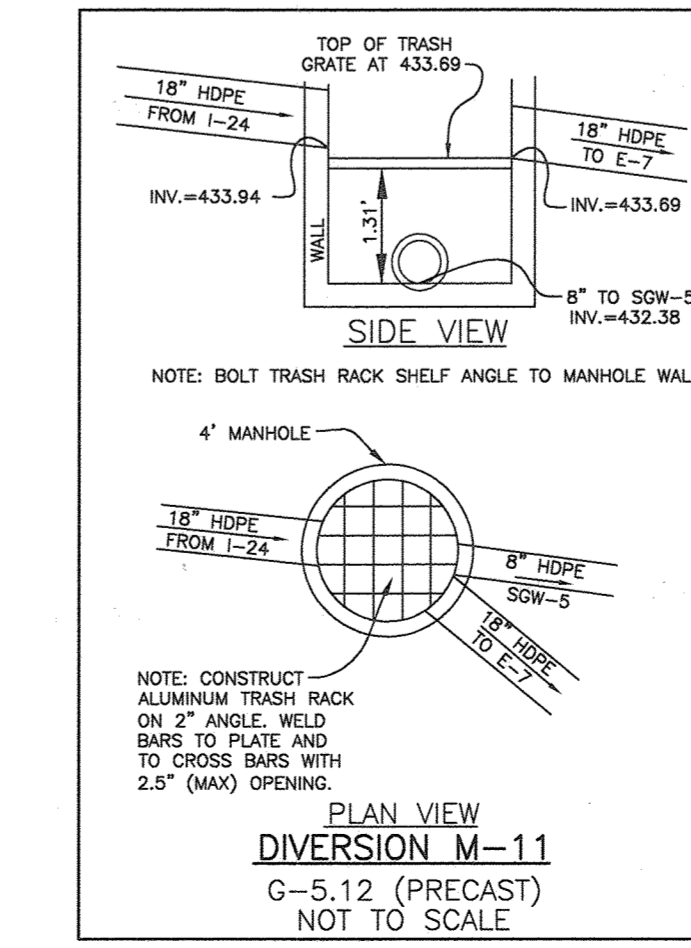
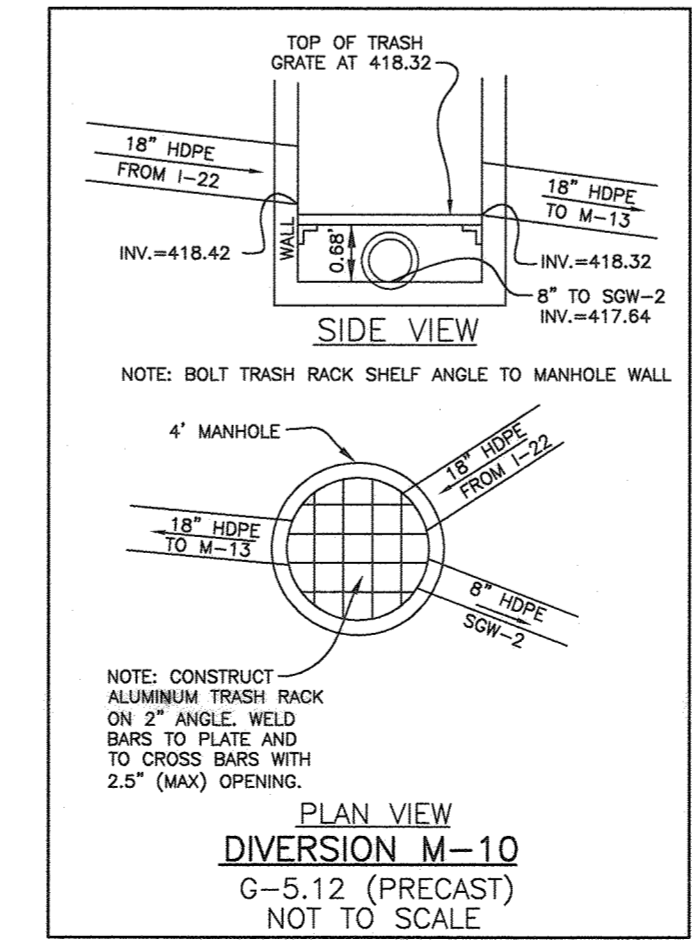
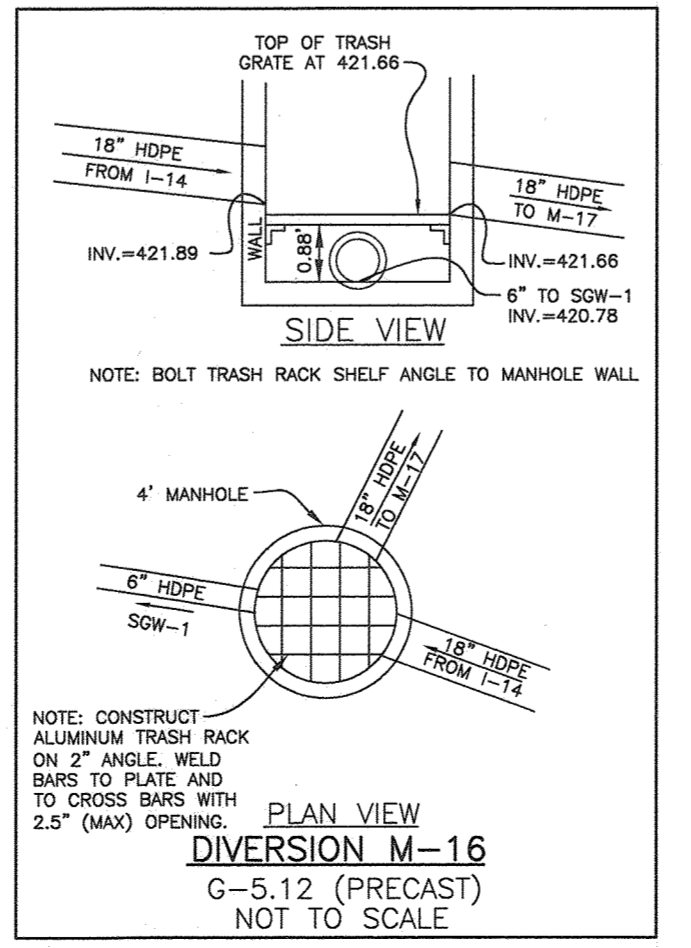
MANHOLE STRUCTURE TABLE								
NUMBER	TYPE	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	OWNER	STD. DETAIL	REMARKS
M-1	48" MH	N577773.2224, E1345885.0441	404.54(18")	404.44(18")	411.52	PRIVATE	HO.CO. G-5.12	
M-2	48" MH	N578055.8824, E1345743.7902	409.04(18")	408.94(18")	418.26	PRIVATE	HO.CO. G-5.12	
M-3	48" MH	N578079.8309, E1345800.0762	409.40(18")	409.30(18")	419.64	PRIVATE	HO.CO. G-5.12	
M-3A	48" MH	N578066.0782, E1345800.0762	409.93(18")	409.83(18")	417.90	PUBLIC	HO.CO. G-5.12	
M-4	48" MH	N578322.7323, E1345803.0165	421.78(18")	421.68(18")	430.30	PRIVATE	HO.CO. G-5.12	
M-5	48" MH	N578379.0472, E1345816.7616	424.11(18")	424.01(18")	432.07	PRIVATE	HO.CO. G-5.12	
M-5A	48" MH	N578365.2945, E1345873.1075	424.65(18")	424.55(18")	430.25	PUBLIC	HO.CO. G-5.12	
M-6	48" MH	N578513.8193, E1345683.4428	413.77(18")	413.67(18")	419.77	PUBLIC	HO.CO. G-5.12	
M-7	48" MH	N578474.3656, E1345850.3201	427.51(18")	427.41(18")	434.46	PUBLIC	HO.CO. G-5.12	
M-9	48" MH	N579710.8360, E1345838.2340	421.24(15")	420.99(18")	427.00	PRIVATE	HO.CO. G-5.12	
M-10	48" MH	N579332.2386, E1345803.0434	418.42(18")	417.64(18")	422.81	PRIVATE	HO.CO. G-5.12	DIVERSION MANHOLE SHALLOW MANHOLE
M-11	48" MH	N579900.6031, E1345019.4025	433.94(18")	432.38(8")	438.44	PRIVATE	HO.CO. G-5.12	DIVERSION MANHOLE
M-12	48" MH	N579825.7844, E1345111.2659	431.56(18")	432.00(6")	436.00	PRIVATE	HO.CO. G-5.12	
M-13	48" MH	N579334.5389, E1345468.3986	415.46(18")	415.36(18")	420.25	PRIVATE	HO.CO. G-5.12	
M-14	48" MH	N579386.1985, E1345662.2895	419.97(6")	418.60(12")	424.48	PRIVATE	HO.CO. G-5.12	
M-15	48" MH	N579586.9353, E1345821.7573	420.56(6")	420.50(15")	426.35	PRIVATE	HO.CO. G-5.12	
M-16	48" MH	N579478.8722, E1345750.3204	421.76(18")	421.66(18")	428.16	PRIVATE	HO.CO. G-5.12	DIVERSION MANHOLE
M-17	48" MH	N579528.8591, E1345769.1337	420.50(18")	420.40(18")	424.90	PUBLIC	HO.CO. G-5.12	

MANHOLE STRUCTURE TABLE						
NUMBER	TYPE	LOCATION	INVERT OUT	OWNER	STD. DETAIL	REMARKS
E-1	18" END SECTION	N577741.6080, E1345451.7251	399.03	PRIVATE	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-2	18" END SECTION	N578092.7242, E1345494.2833	409.97	PRIVATE	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-3	18" END SECTION	N578398.6319, E1345492.1844	419.97	PRIVATE	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-4	24" END SECTION	N578731.7359, E1345477.3562	406.13	PRIVATE	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-5	24" END SECTION	N579592.3331, E1345762.8675	419.06	PUBLIC	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-6	18" END SECTION	N579323.3984, E1345404.1604	410.50	PRIVATE	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-7	18" END SECTION	N579738.8086, E1345218.0029	431.02	PRIVATE	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-8	24" END SECTION	N577505.7178, E1345634.7679	394.00	PRIVATE	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-9	24" END SECTION	N577618.5484, E1345733.6242	398.00	PUBLIC	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-10	18" END SECTION	N578545.3185, E1345634.2242	412.50	PUBLIC	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION
E-11	12" END SECTION	N579393.6946, E1345669.1114	418.00	PRIVATE	SEE MANUFACTURER SPECIFICATIONS	RCP END SECTION



- CONSTRUCTION SPECIFICATIONS**
- THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
 - THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.
 - GEOTEXTILE CLASS C28 OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE REPAIRED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE FABRIC. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.
 - STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR THE RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE Voids BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE FABRIC. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.
 - THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.

STRUCTURE	D-50	LENGTH (L)	WIDTH (W)	THICKNESS (T)	SHA CLASS
E-1	0.2'	20'	9.5'	19"	I
E-2	0.1'	5.5'	10'	19"	I
E-3	0.1'	10'	5.5'	19"	I
E-4				19"	I
E-5	0.12'	13'	7.2'	19"	I
E-6	0.3'	10'	11.5'	19"	I
E-7	0.25'	30'	10'	19"	I
E-8				19"	I
E-9				19"	I
E-10				19"	I



APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 1/21/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 DATE: 3/15/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

1-20-21 Revise Sheet #s.

NO. DATE REVISION

BENCHMARK ENGINEERING, INC.
 840 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-8105 (F) 410-465-6644
 WWW.BE-CIVILENGINEERING.COM

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042

DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046, 410-381-3263

PROJECT: KINGS FOREST
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON

LEGEND

- EXISTING CONTOURS: 480, 478
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- BIO-RETENTION AREAS (M-B)
- PROPOSED WELL BOX
- SOILS DELINEATION AND CLASSIFICATION: CbB, Ha
- PROPOSED CONTOURS: 410, 408
- STREAM
- STORM WATER MANAGEMENT DRAINAGE AREA
- PUBLIC DRAINAGE & UTILITY EASEMENT
- 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION EASEMENT



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

John K. Roberts 1/21/2020
 APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS MK 1/21/2020
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT 3/17/2020
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 2/20/20

DEVELOPER'S CERTIFICATE

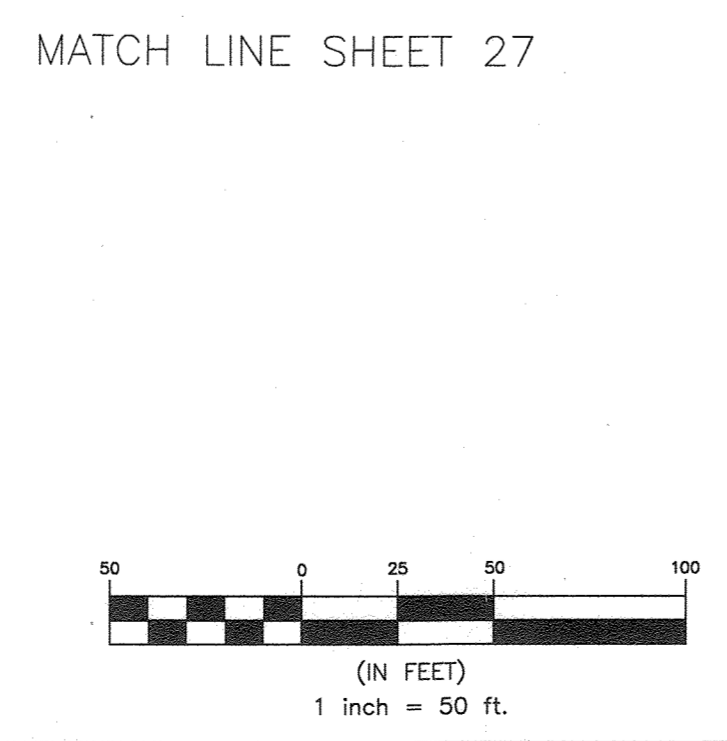
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

John M. Carney 11/26/19
 DEVELOPER 11/26/19

ENGINEER'S CERTIFICATE

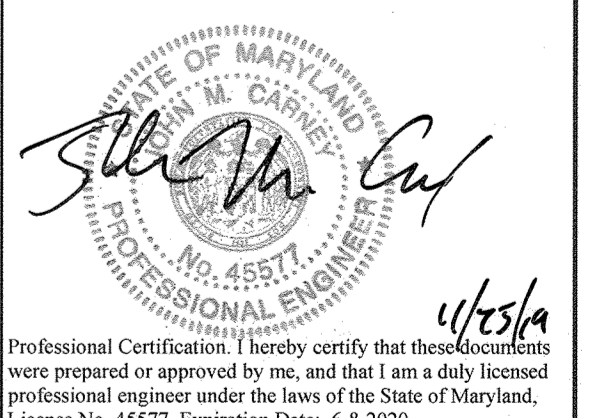
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

John M. Carney 11/25/19
 ENGINEER - JOHN M. CARNEY # 45577 11/25/19

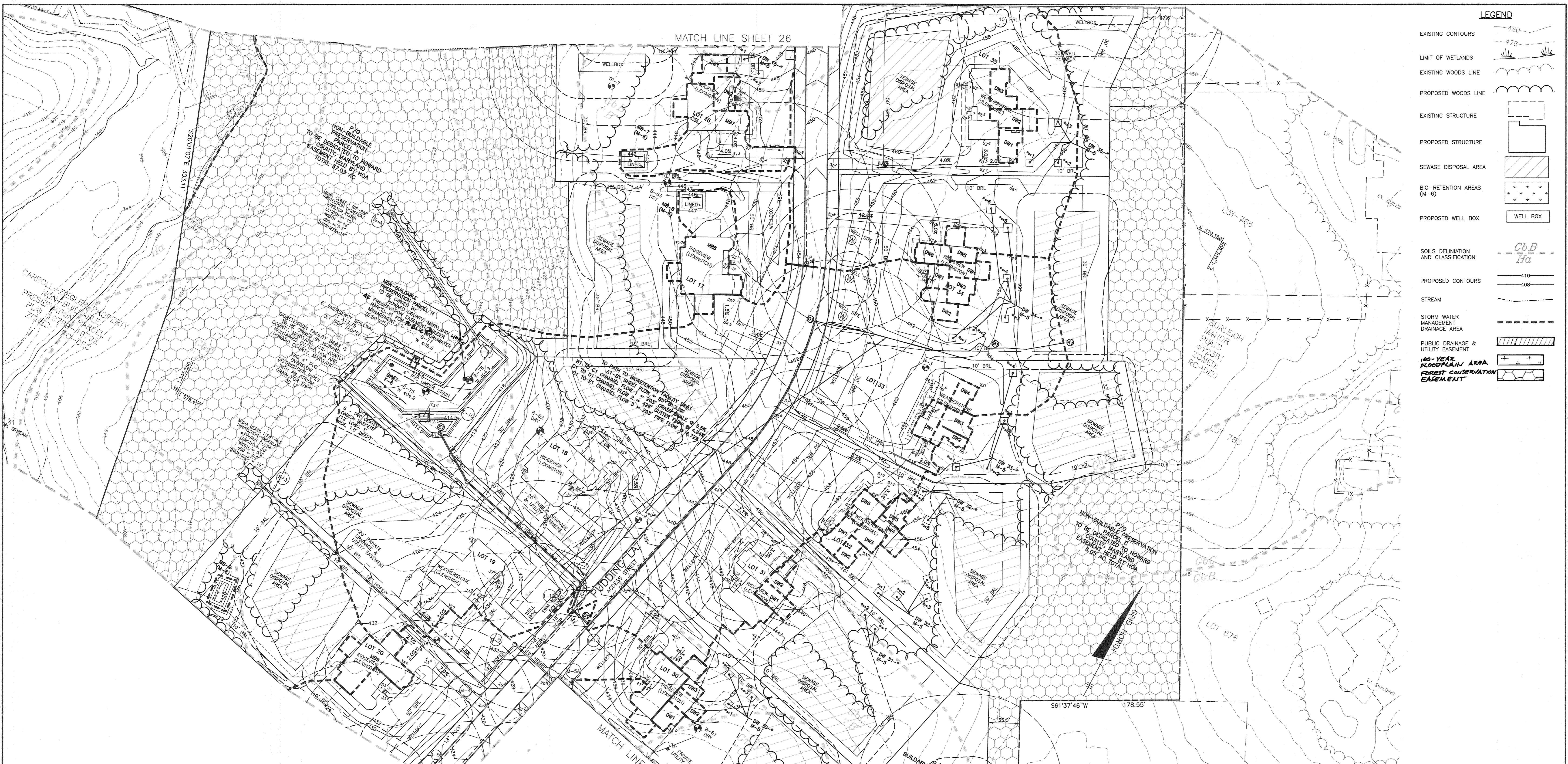


1 1-20-21 <i>Revise Sheet #'s.</i>		REVISION
BENCHMARK ENGINEERING, INC. 8400 BALTIMORE NATIONAL PIKE SUITE 315 • ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BE-CIVLENGINEERING.COM		
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042 JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 149 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: STORMWATER MANAGEMENT DRAINAGE AREA MAP		DATE: NOVEMBER, 2019 PROJECT NO. 2501
DRAFT: MP	DESIGN: JC	CHECK: JC
SCALE: AS SHOWN	SHEET 26 OF 28	

THE PLAN FOR ON-LOT STORMWATER MANAGEMENT IS CONCEPTUAL ONLY. THE PLAN FOR BR-3, SGW-1, SWG-2, SGW-4 AND SGW-5 FACILITIES ARE FINAL. FINAL ON-LOT STORMWATER MANAGEMENT WILL BE DESIGNED UNDER THE BUILDING PERMIT PLAN AND SHOWN AS AN AS-BUILT.



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.



- LEGEND**
- EXISTING CONTOURS
 - LIMIT OF WETLANDS
 - EXISTING WOODS LINE
 - PROPOSED WOODS LINE
 - EXISTING STRUCTURE
 - PROPOSED STRUCTURE
 - SEWAGE DISPOSAL AREA
 - BIO-RETENTION AREAS (M-6)
 - PROPOSED WELL BOX
 - SOILS DELINEATION AND CLASSIFICATION
 - PROPOSED CONTOURS
 - STREAM
 - STORM WATER MANAGEMENT DRAINAGE AREA
 - PUBLIC DRAINAGE & UTILITY EASEMENT
 - 100-YEAR FLOODPLAIN AREA
 - FOREST CONSERVATION EASEMENT

1 1-20-21 Reuse Sheet #5, REVISE PARCEL H.	
NO.	REVISION
BENCHMARK ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-8644 WWW.BE-CIVLENGINEERING.COM	
OWNERS:	PROJECT:
NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION:
DEVELOPER:	TITLE:
TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	STORMWATER MANAGEMENT DRAINAGE AREA MAP
DRAFT: MP	DESIGN: JC
CHECK: JC	SCALE: AS SHOWN
DATE: NOVEMBER, 2019	PROJECT NO. 2501
SHEET 27	OF 75

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

John R. Roberts 11/2/20
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS

James 4/3/2020
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

John M. Carney 2/20/20
CHIEF, DIVISION OF LAND DEVELOPMENT

John M. Carney 2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE

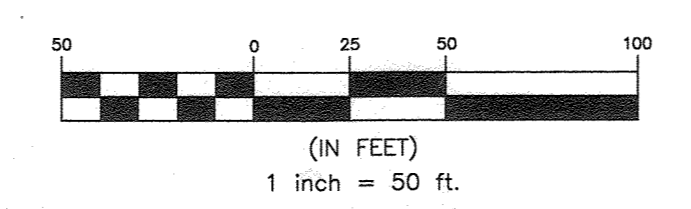
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John 11/26/19
DEVELOPER

ENGINEER'S CERTIFICATE

I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

John M. Carney 4/25/19
ENGINEER - JOHN M. CARNEY # 45577



LEGEND

- EXISTING CONTOURS - 480, 478
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- BIO-RETENTION AREAS (M-6)
- PROPOSED WELL BOX
- SOILS DELINEATION AND CLASSIFICATION - GbB, Ha
- PROPOSED CONTOURS - 410, 408
- STREAM
- STORM WATER MANAGEMENT DRAINAGE AREA
- PUBLIC DRAINAGE & UTILITY EASEMENT
- PAVED DRIVEWAY
- NON-ROOFTOP DISCONNECTION
- 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION EASEMENT



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

John R. Roberts 11/21/20
 HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PUBLIC WORKS
Paul 1/21/2020
 CHIEF, BUREAU OF HIGHWAYS MK

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 3/17/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT

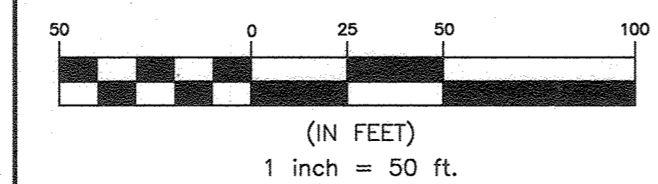
[Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 11/26/19
 DEVELOPER

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

John M. Carney 11/25/19
 ENGINEER - JOHN M. CARNEY # 45577



NO.	1	1-20-21	Revise Sheet #5.	REVISION
BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE NATIONAL PIKE SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-485-8105 (F) 410-485-6844 WWW.BE-CVLENGINEERING.COM				
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I		
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
TITLE: STORMWATER MANAGEMENT DRAINAGE AREA MAP		DATE: NOVEMBER, 2019 PROJECT NO. 2501 SCALE: AS SHOWN SHEET 28 OF 75		
DRAFT: MP		DESIGN: JC CHECK: JC		

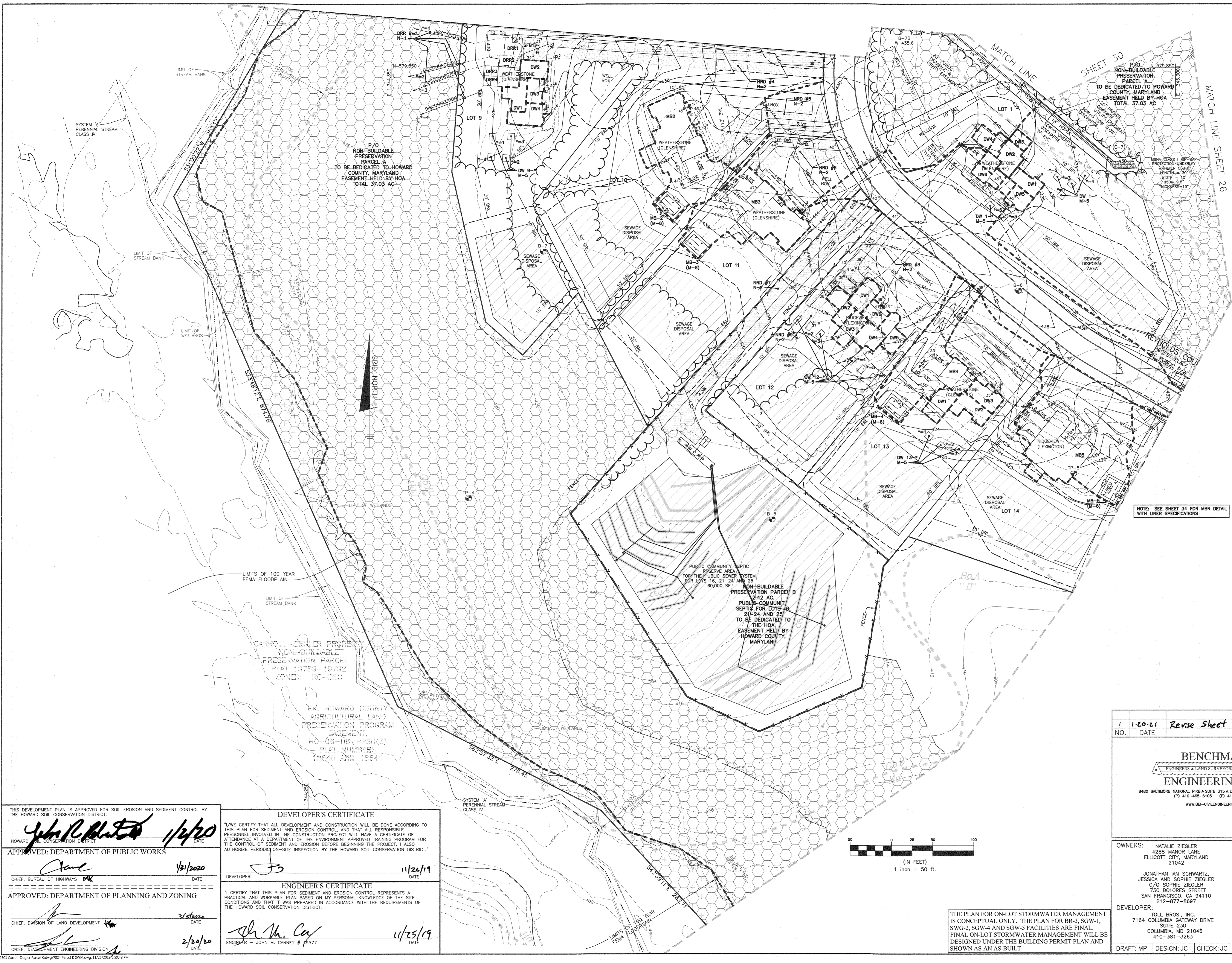
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

John M. Carney 11/25/19
 PROFESSIONAL ENGINEER

THE PLAN FOR ON-LOT STORMWATER MANAGEMENT IS CONCEPTUAL ONLY. THE PLAN FOR BR-3, SGW-1, SWG-2, SGW-4 AND SGW-5 FACILITIES ARE FINAL. FINAL ON-LOT STORMWATER MANAGEMENT WILL BE DESIGNED UNDER THE BUILDING PERMIT PLAN AND SHOWN AS AN AS-BUILT

LEGEND

- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- BIO-RETENTION AREAS (M-6)
- PROPOSED WELL BOX
- SOILS DELINEATION AND CLASSIFICATION
- PROPOSED CONTOURS
- STREAM
- STORM WATER MANAGEMENT DRAINAGE AREA
- PUBLIC DRAINAGE & UTILITY EASEMENT
- PAVED DRIVEWAY
- NON-ROOFTOP DISCONNECTION
- 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION CASEMENT



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

John R. Blanton 1/14/20
 HOWARD SOIL CONSERVATION DISTRICT
 APPROVED: DEPARTMENT OF PUBLIC WORKS
Steve 1/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Steve 3/6/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
Steve 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

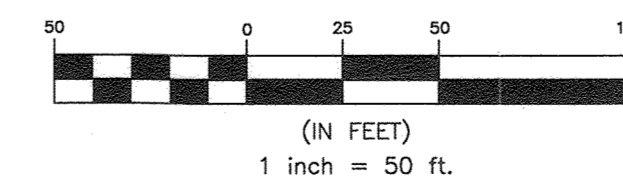
John M. Carney 11/26/19
 DEVELOPER
ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

John M. Carney 11/25/19
 ENGINEER - JOHN M. CARNEY # 45577

CARROLL-ZIEGLER PROPERTY
 NON-BUILDABLE PRESERVATION PARCEL
 PLAT 19788-19792
 ZONED: RC-DEO
 EX. HOWARD COUNTY AGRICULTURAL LAND PRESERVATION PROGRAM EASEMENT,
 HC-06-08-PPSD(3)
 PLAT NUMBERS 18640 AND 18641

NON-BUILDABLE PRESERVATION PARCEL B
 2.42 AC
 PUBLIC COMMUNITY SEPTIC FOR LOTS 11, 12, 14 AND 25
 TO BE DEDICATED TO THE HOA EASEMENT HELD BY HOWARD COUNTY, MARYLAND

NOTE: SEE SHEET 34 FOR MBR DETAIL WITH LINER SPECIFICATIONS



NO.	DATE	REVISION
1	1-20-21	Reverse Sheet #s.

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE A SUITE 315 • ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6844
 WWW.BEI-CVLENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I			
JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND			
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	TITLE: STORMWATER MANAGEMENT DRAINAGE AREA MAP			
DRAFT: MP	DESIGN: JC	CHECK: JC	DATE: NOVEMBER, 2019	PROJECT NO. 2501
SCALE: AS SHOWN	SHEET 29 OF 75			

THE PLAN FOR ON-LOT STORMWATER MANAGEMENT IS CONCEPTUAL ONLY. THE PLAN FOR BR-3, SGW-1, SGW-2, SGW-4 AND SGW-5 FACILITIES ARE FINAL. FINAL ON-LOT STORMWATER MANAGEMENT WILL BE DESIGNED UNDER THE BUILDING PERMIT PLAN AND SHOWN AS AN AS-BUILT

LEGEND

- EXISTING CONTOURS: 480, 478
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
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- NON-ROOFTOP DISCONNECTION
- 100-YEAR FLOOD PLAIN AREA
- FOREST CONSERVATION EASEMENT



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

John L. Hunter 11/16/20
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
James 1/21/2020
 CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 3/15/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DEVELOPER'S CERTIFICATE

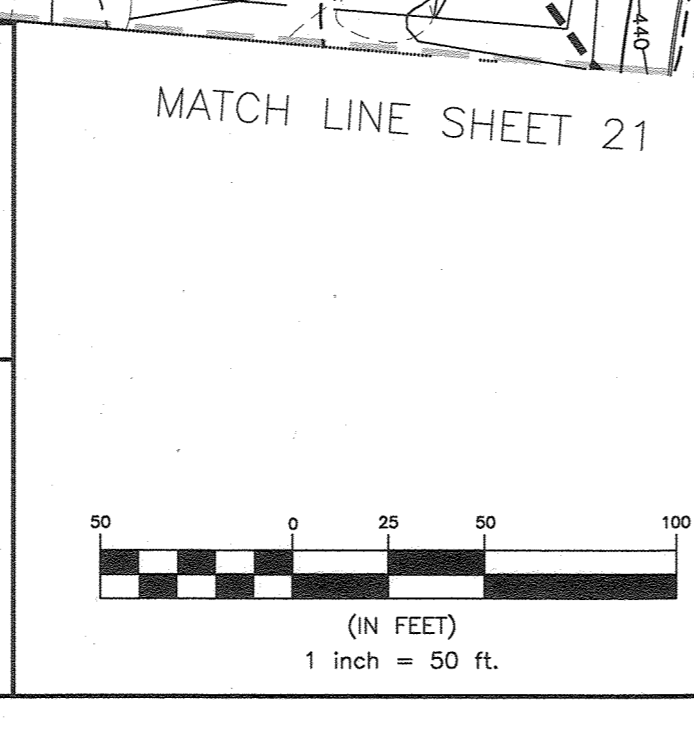
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DEVELOPER: *JSO* 11/26/19 DATE

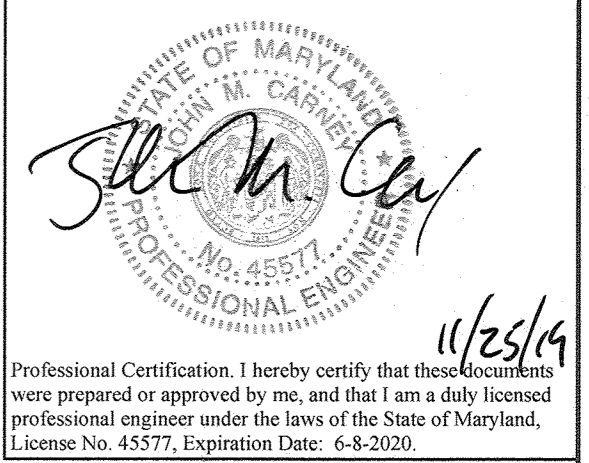
ENGINEER'S CERTIFICATE

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ENGINEER: *John M. Carney* 11/25/19 DATE



1 1-20-21 Revise Sheet #s.		REVISION	
NO.	DATE		
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8450 BALTIMORE NATIONAL PIKE SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6844 WWW.BEI-CIVLENGINEERING.COM			
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TITLE: STORMWATER MANAGEMENT DRAINAGE AREA MAP		DATE: NOVEMBER, 2019 PROJECT NO. 2501	
DRAFT: MP DESIGN: JC CHECK: JC		SCALE: AS SHOWN SHEET 30 OF 75	

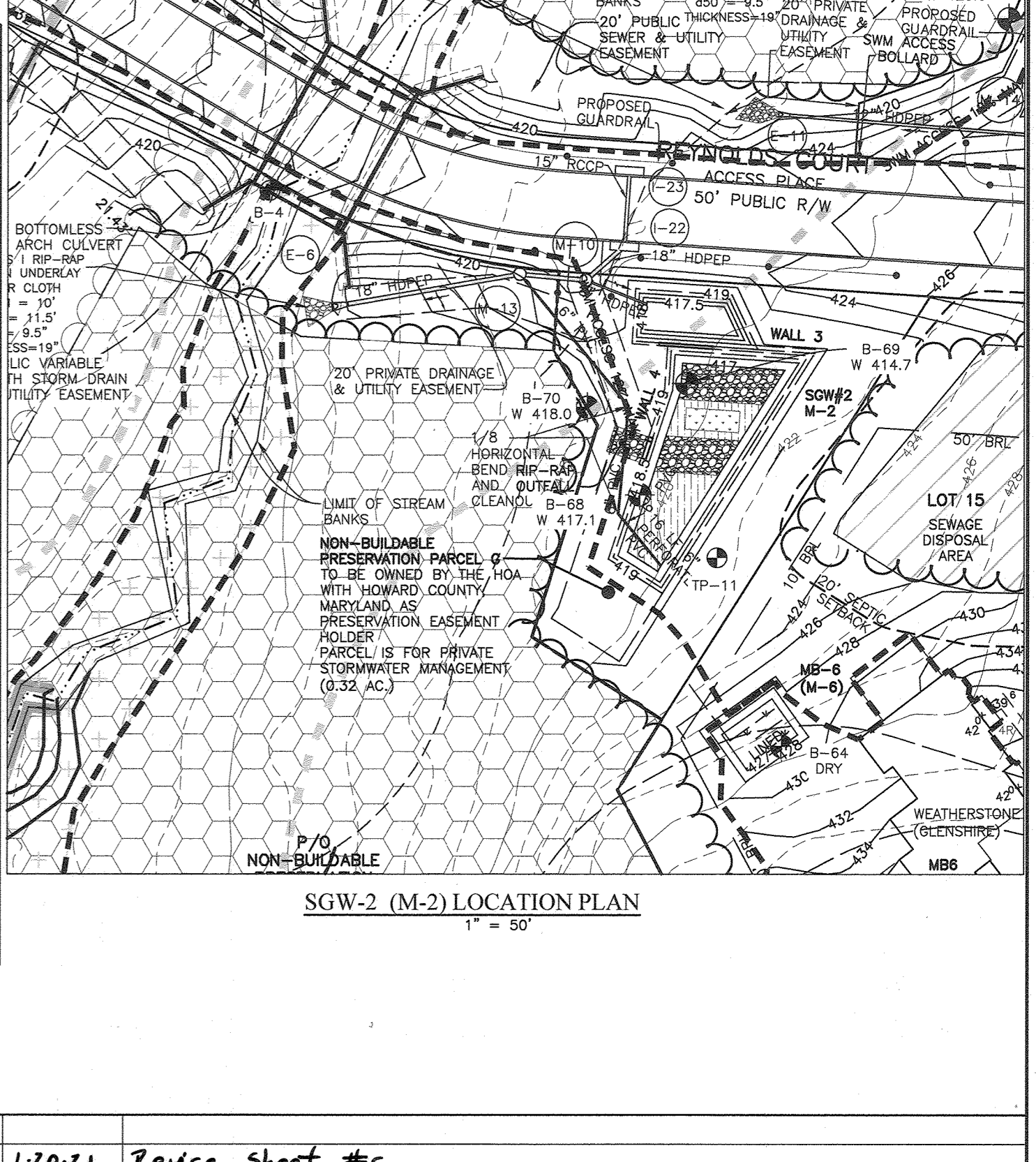
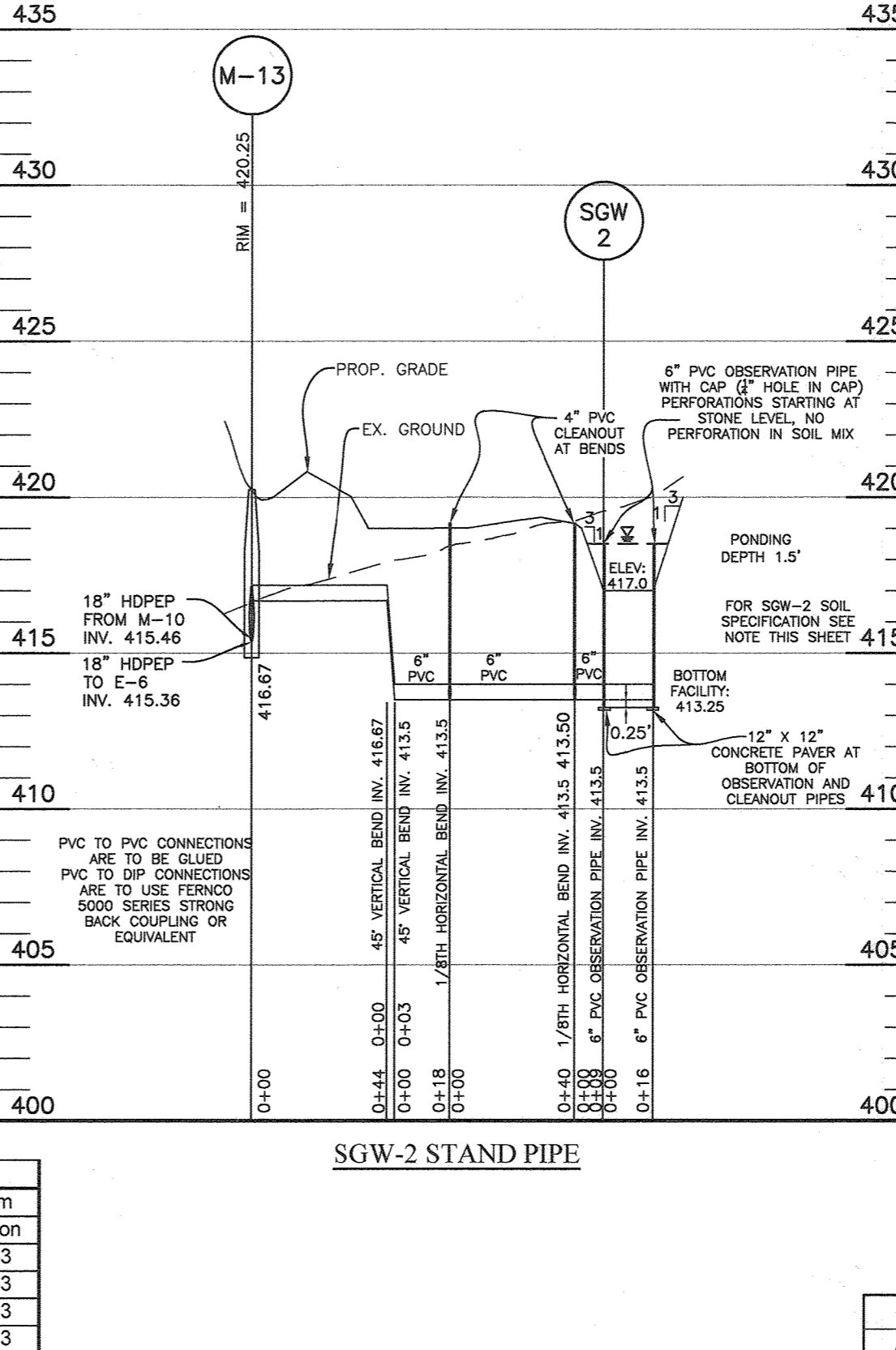
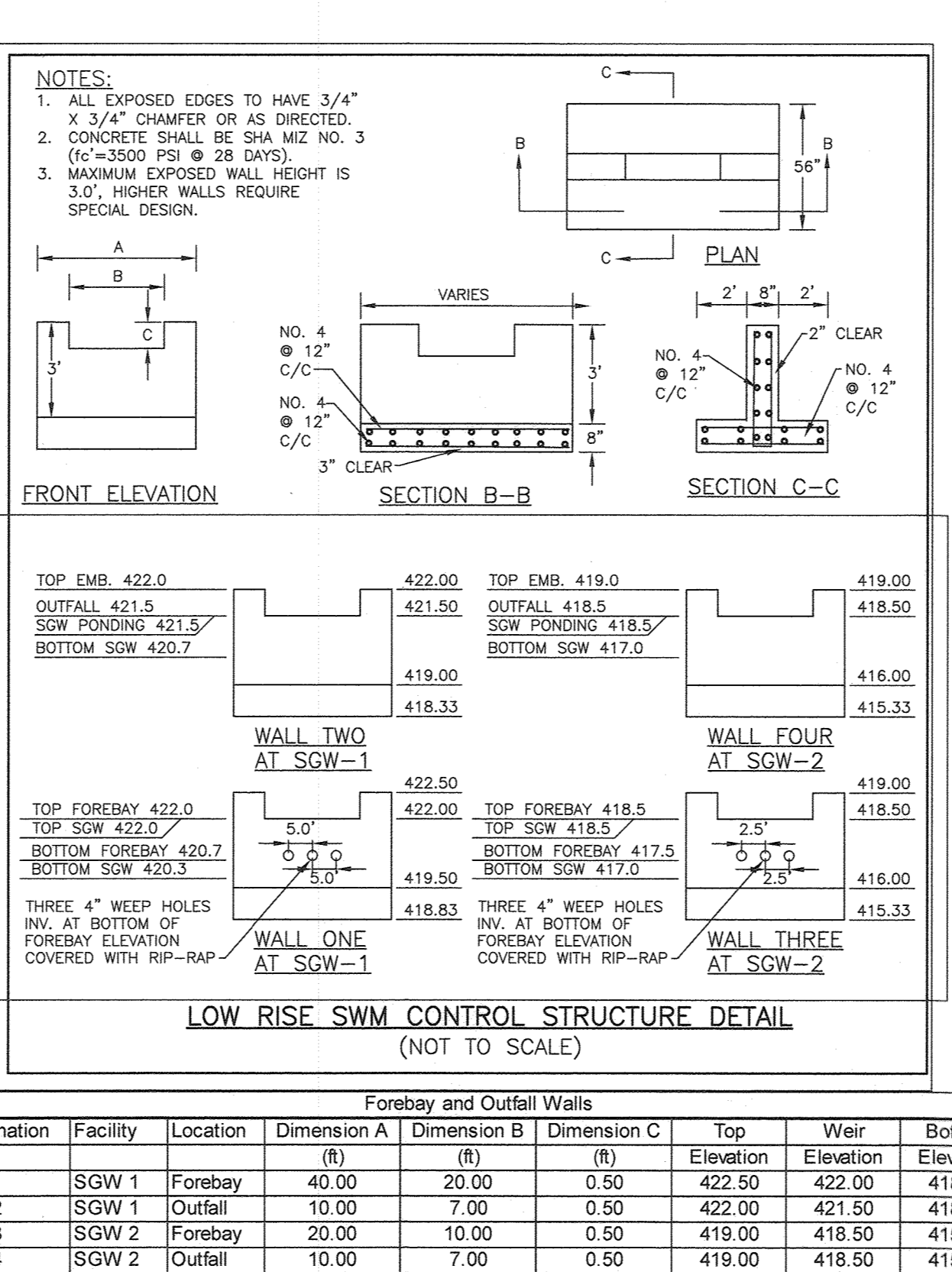
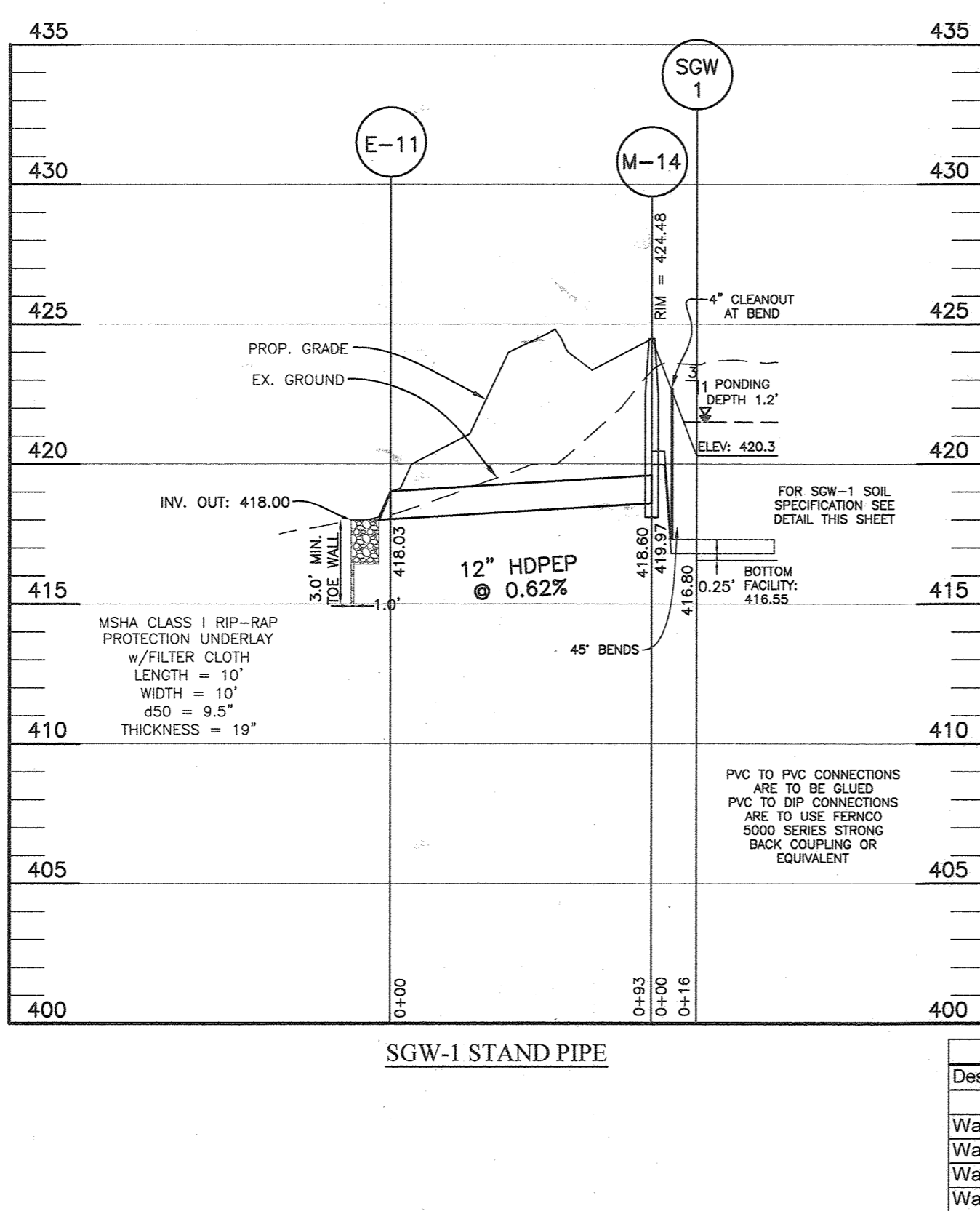
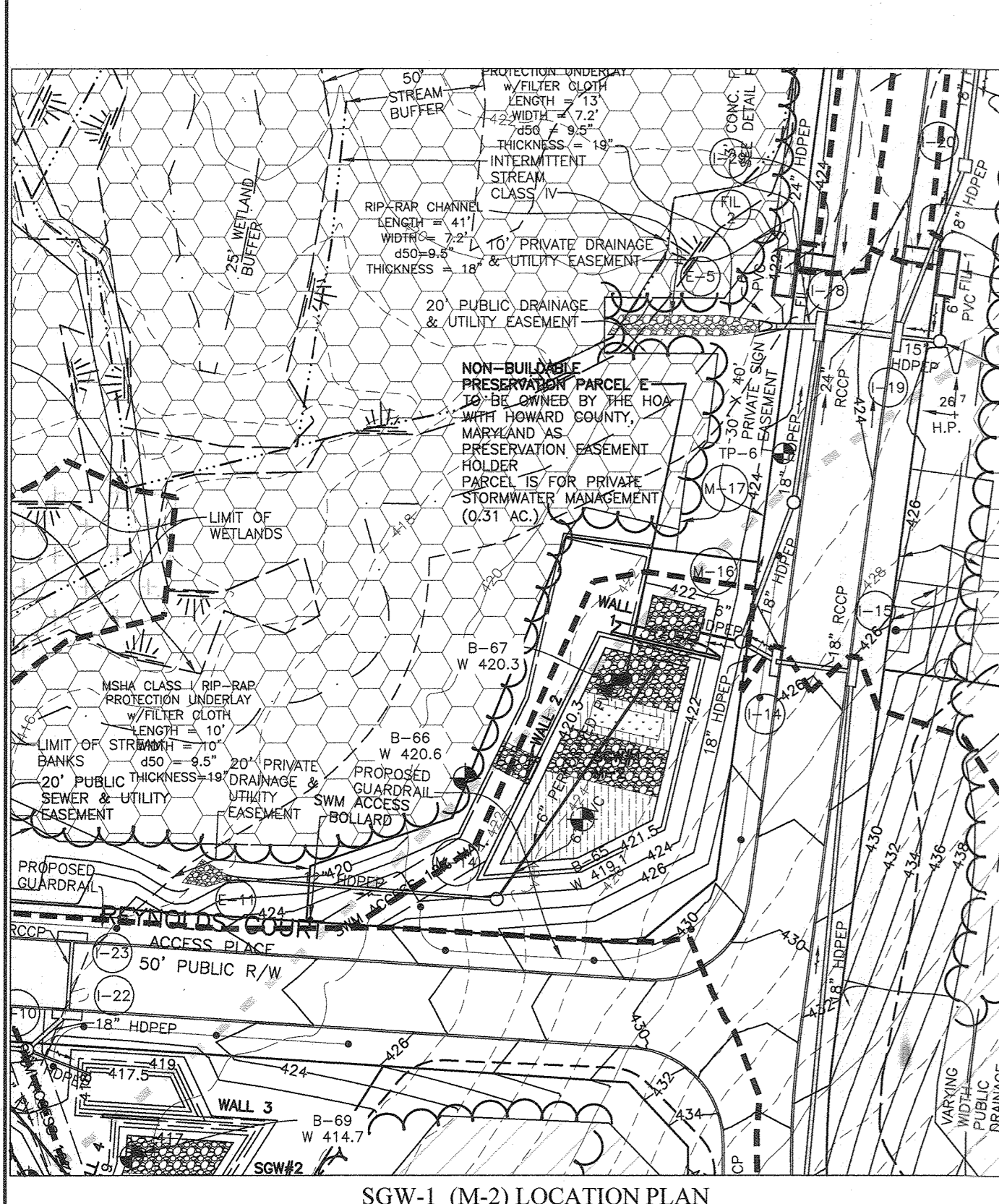
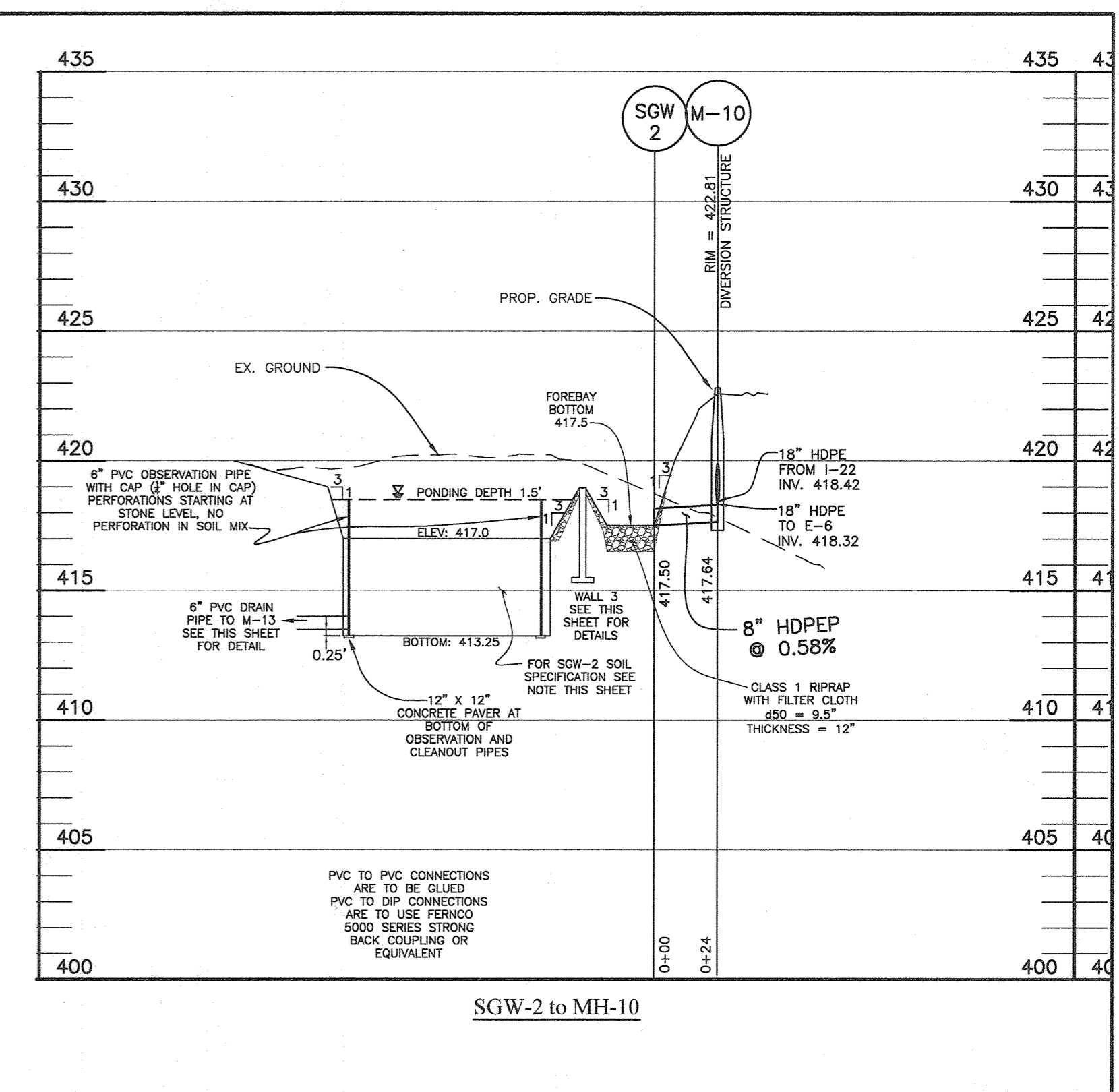
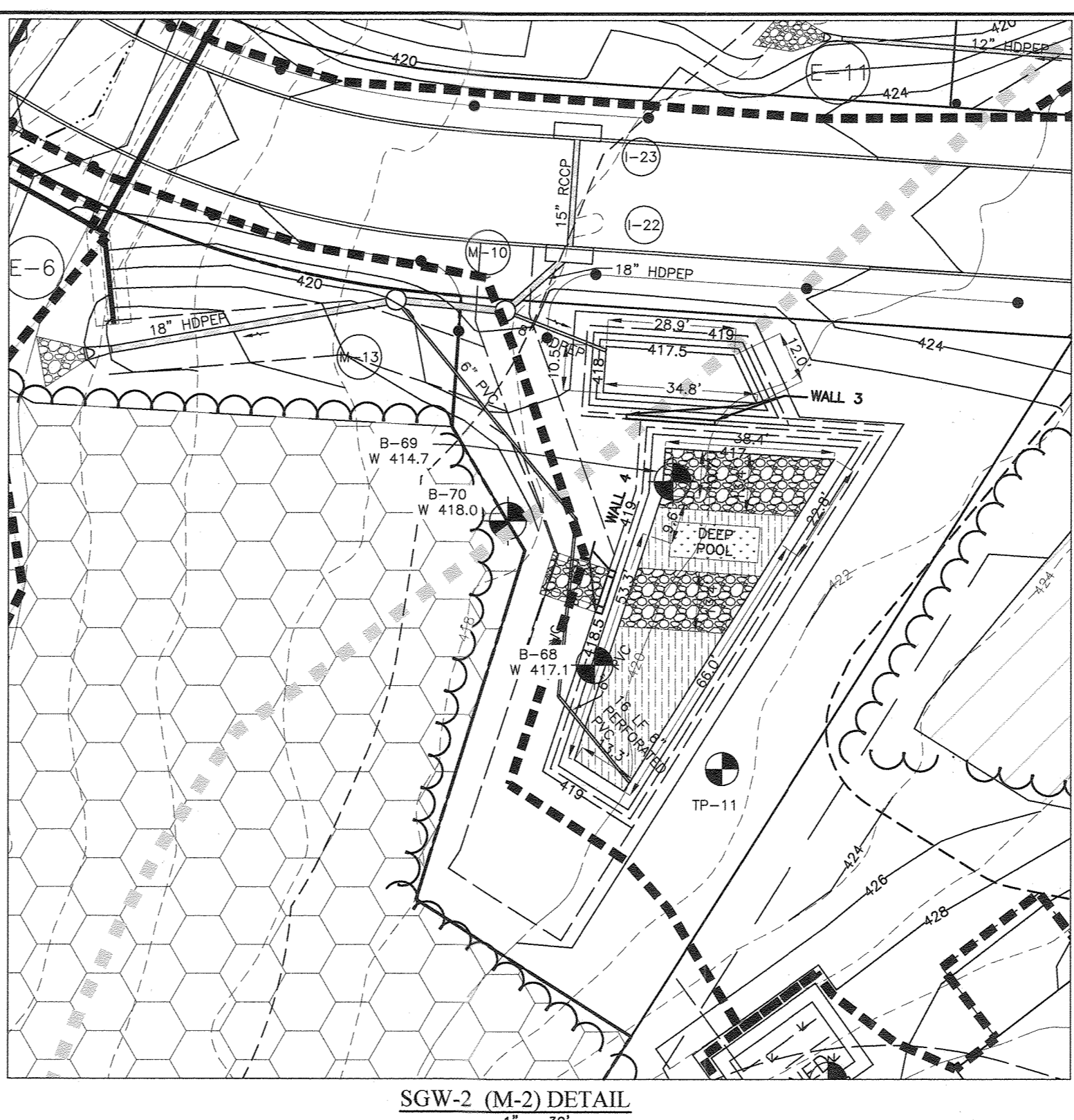
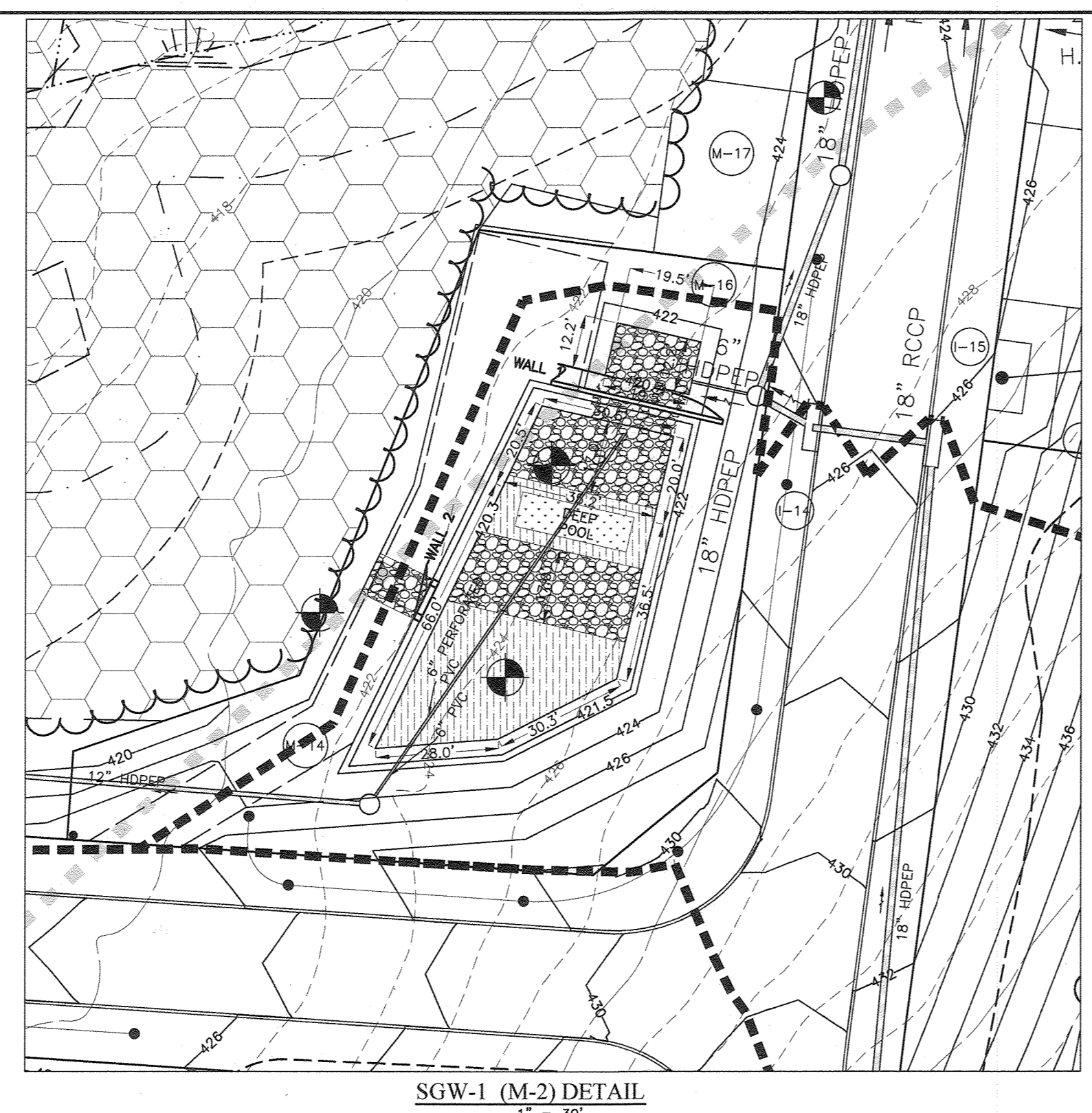
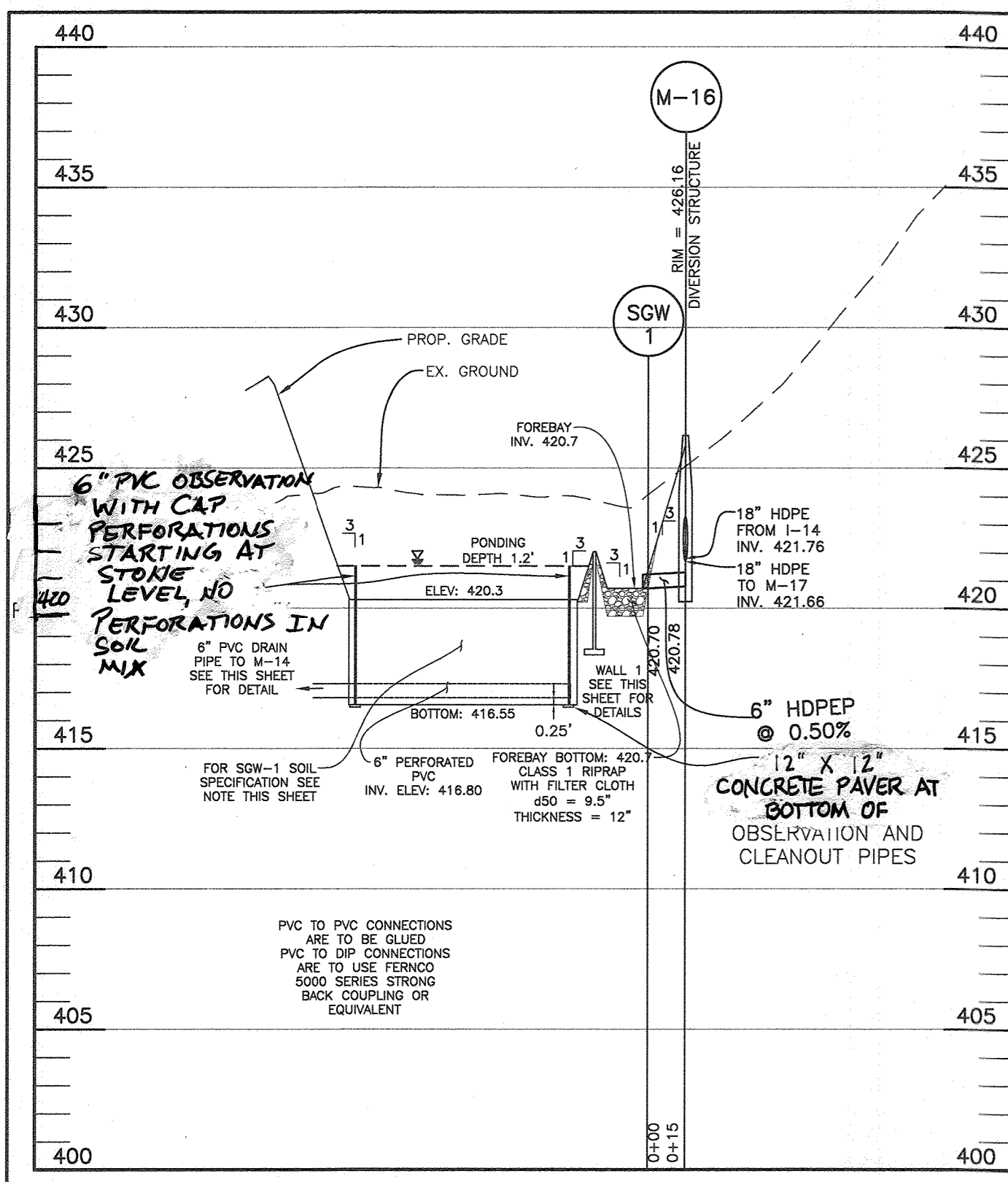


Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

11/25/19

MATCH LINE SHEET 18

THE PLAN FOR ON-LOT STORMWATER MANAGEMENT IS CONCEPTUAL ONLY. THE PLAN FOR BR-3, SGW-1, SWG-2, SGW-4 AND SGW-5 FACILITIES ARE FINAL. FINAL ON-LOT STORMWATER MANAGEMENT WILL BE DESIGNED UNDER THE BUILDING PERMIT PLAN AND SHOWN AS AN AS-BUILT



Designation	Facility	Location	Forebay and Outfall Walls			Top Elevation	Weir Elevation	Bottom Elevation
			Dimension A (ft)	Dimension B (ft)	Dimension C (ft)			
Wall 1	SGW 1 Forebay		40.00	20.00	0.50	422.50	422.00	418.83
Wall 2	SGW 1 Outfall		10.00	7.00	0.50	422.00	421.50	418.33
Wall 3	SGW 2 Forebay		20.00	10.00	0.50	419.00	418.50	415.33
Wall 4	SGW 2 Outfall		10.00	7.00	0.50	419.00	418.50	415.33

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

John R. Blanton 11/2/20
 HOWARD COUNTY SOIL CONSERVATION DISTRICT
 APPROVED: DEPARTMENT OF PUBLIC WORKS
James 1/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
John M. Carney 3/5/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT 466
 APPROVED: ENGINEERING DIVISION
John M. Carney 2/26/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

WETLAND SOIL SPECIFICATION CAN BE FOUND ON SHEET 35. LANDSCAPE DESIGN FOR SUBMERGED GRAVEL WETLANDS ARE ON SHEET 35.

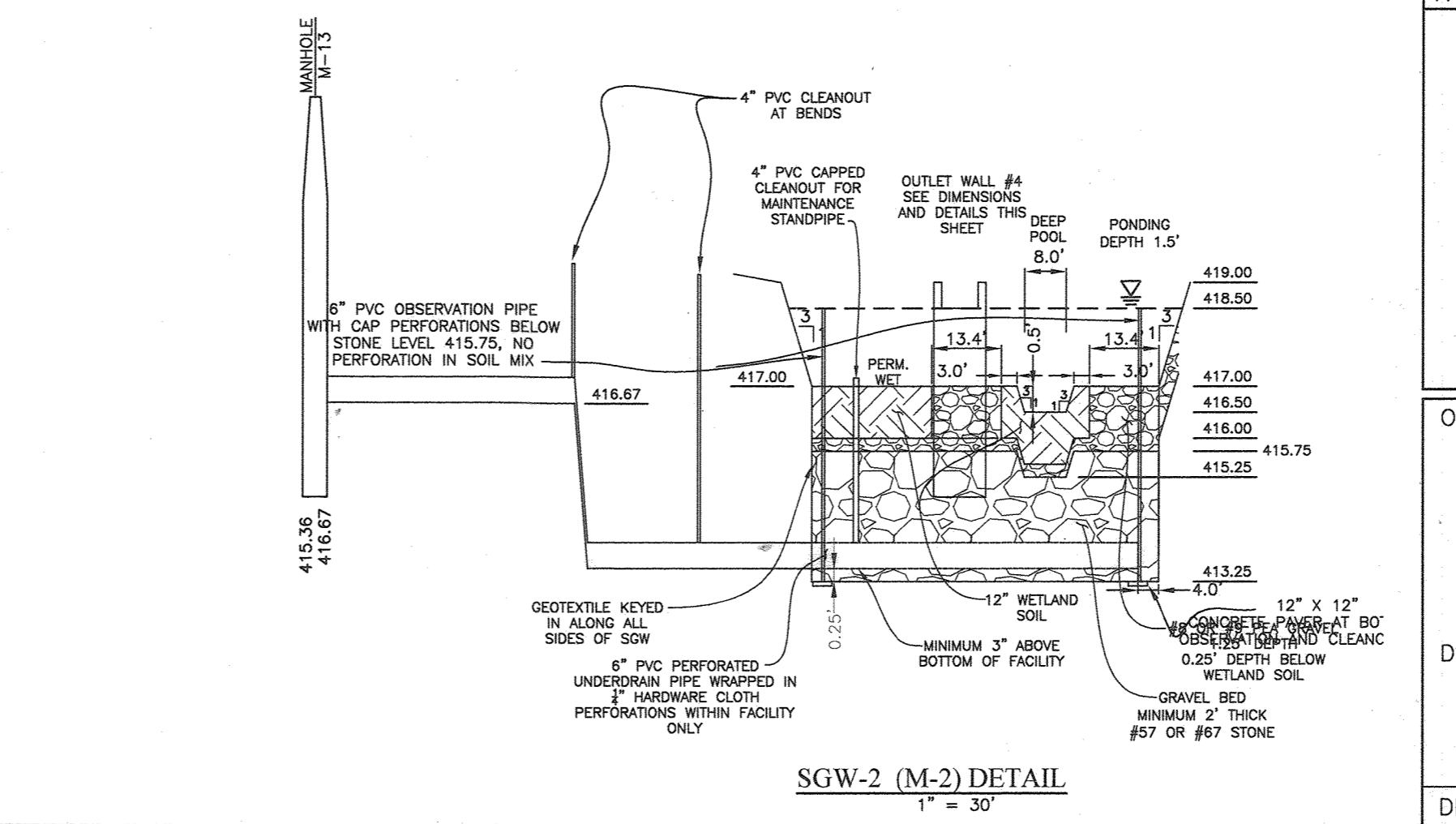
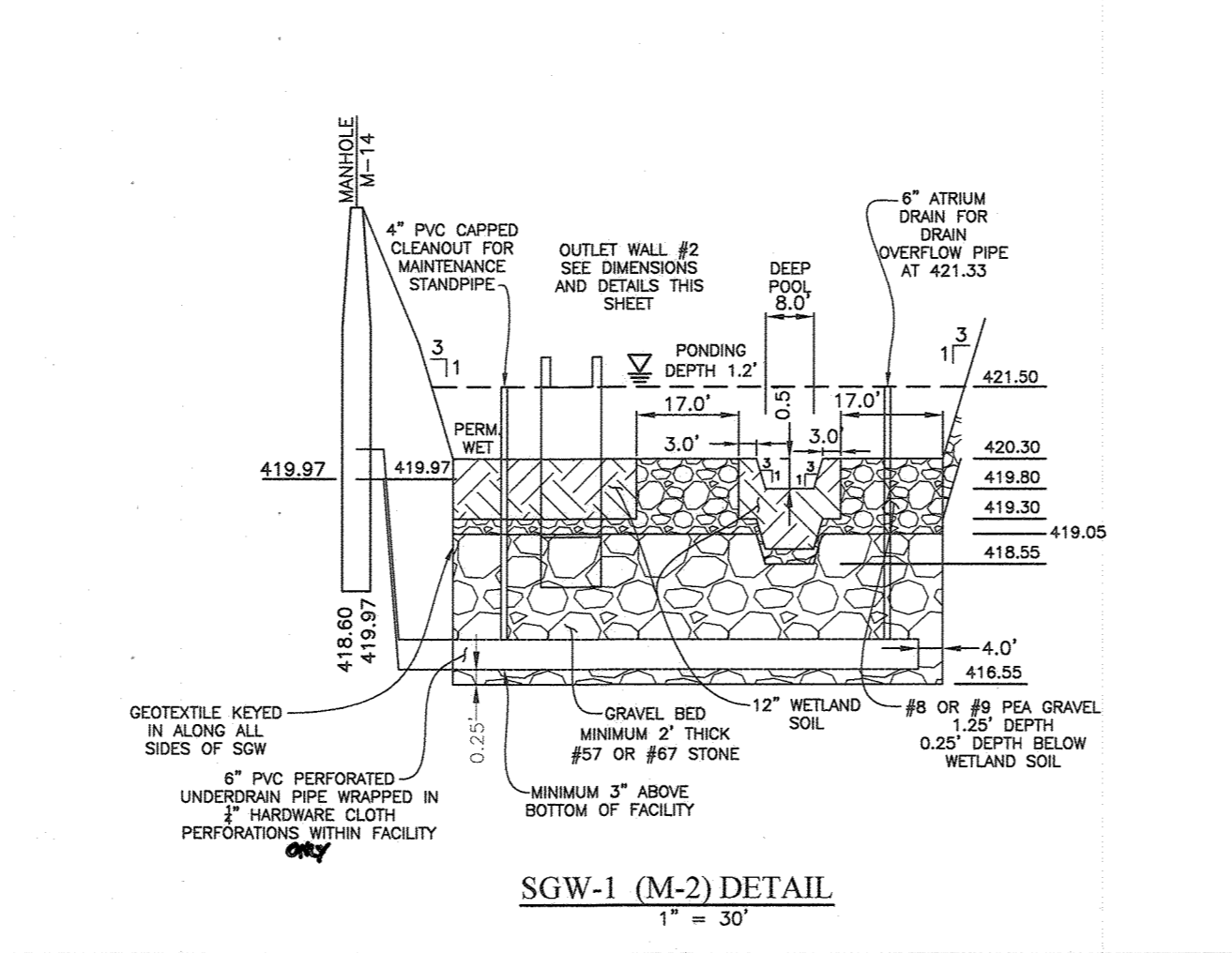
DEVELOPER'S CERTIFICATE

I, THE DEVELOPER, CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

John M. Carney 11/26/19
 DEVELOPER
ENGINEER'S CERTIFICATE

I, CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.

John M. Carney 11/25/19
 ENGINEER - JOHN M. CARNEY # 45577



1 1/20/21 Revise sheet #s.

NO. DATE REVISION

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-CIVILENGINEERING.COM

John M. Carney
 PROFESSIONAL ENGINEER
 PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER
 4288 MANOR LANE
 ELLICOTT CITY, MARYLAND 21042

PROJECT: **KINGS FOREST**
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

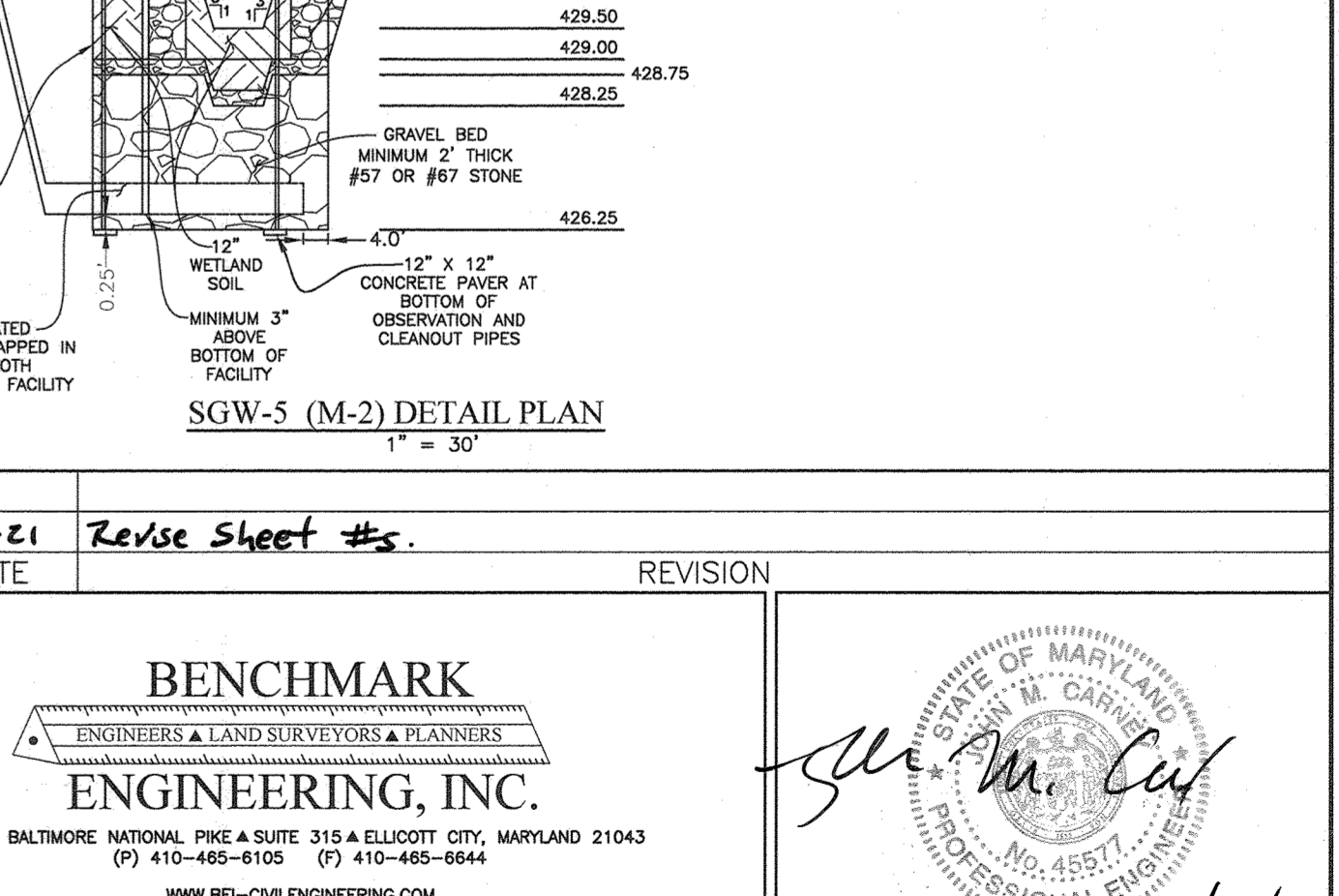
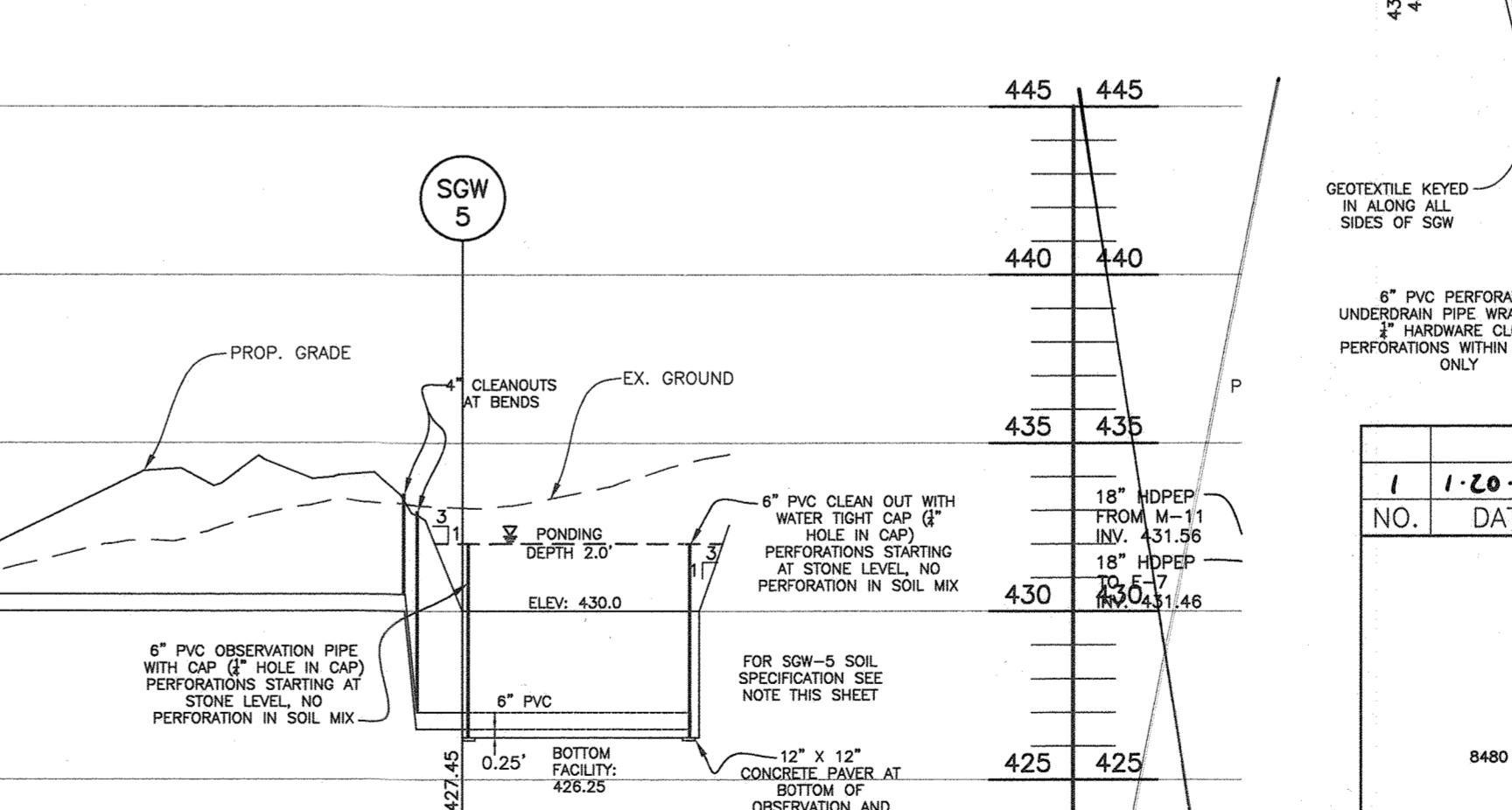
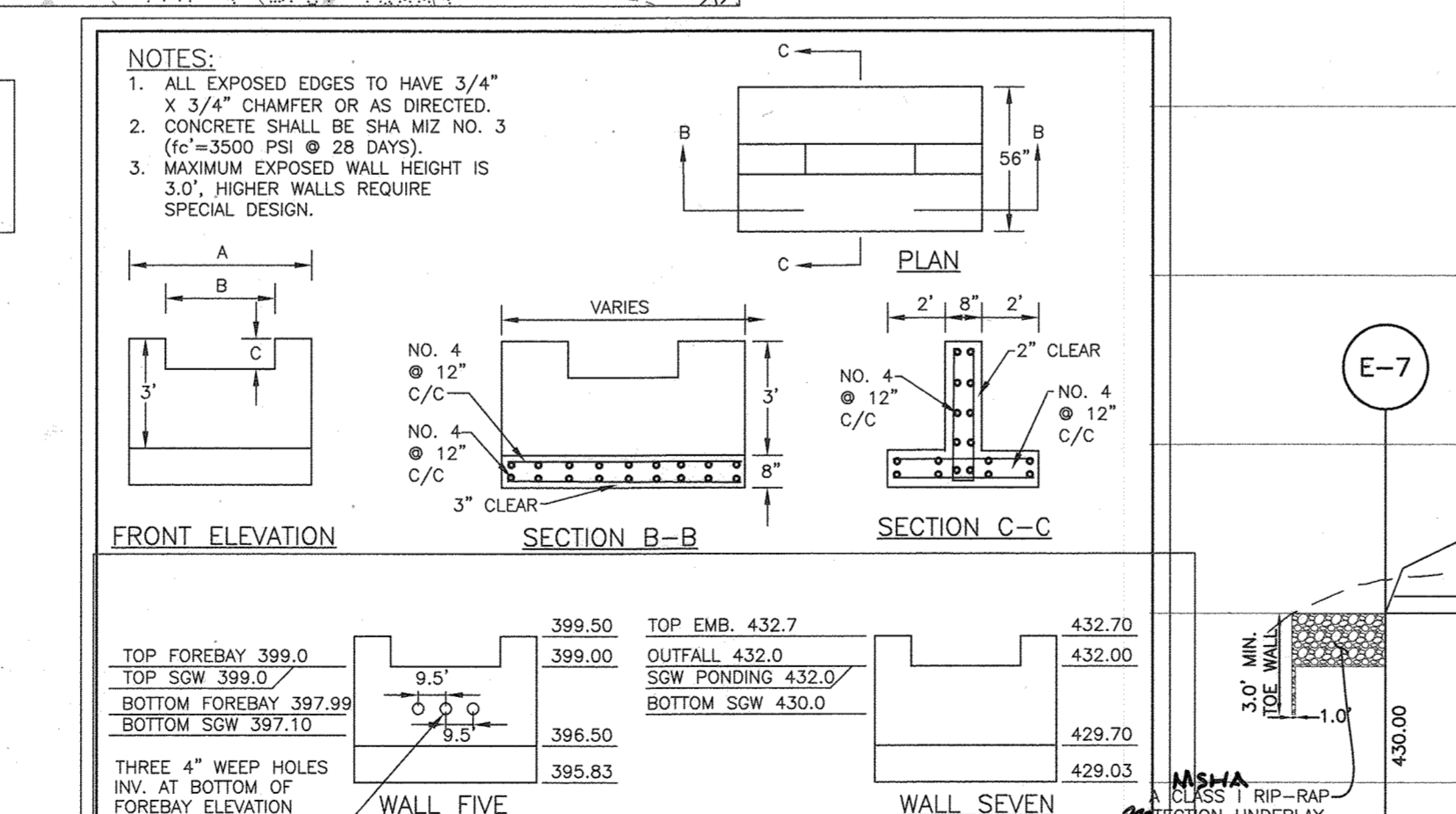
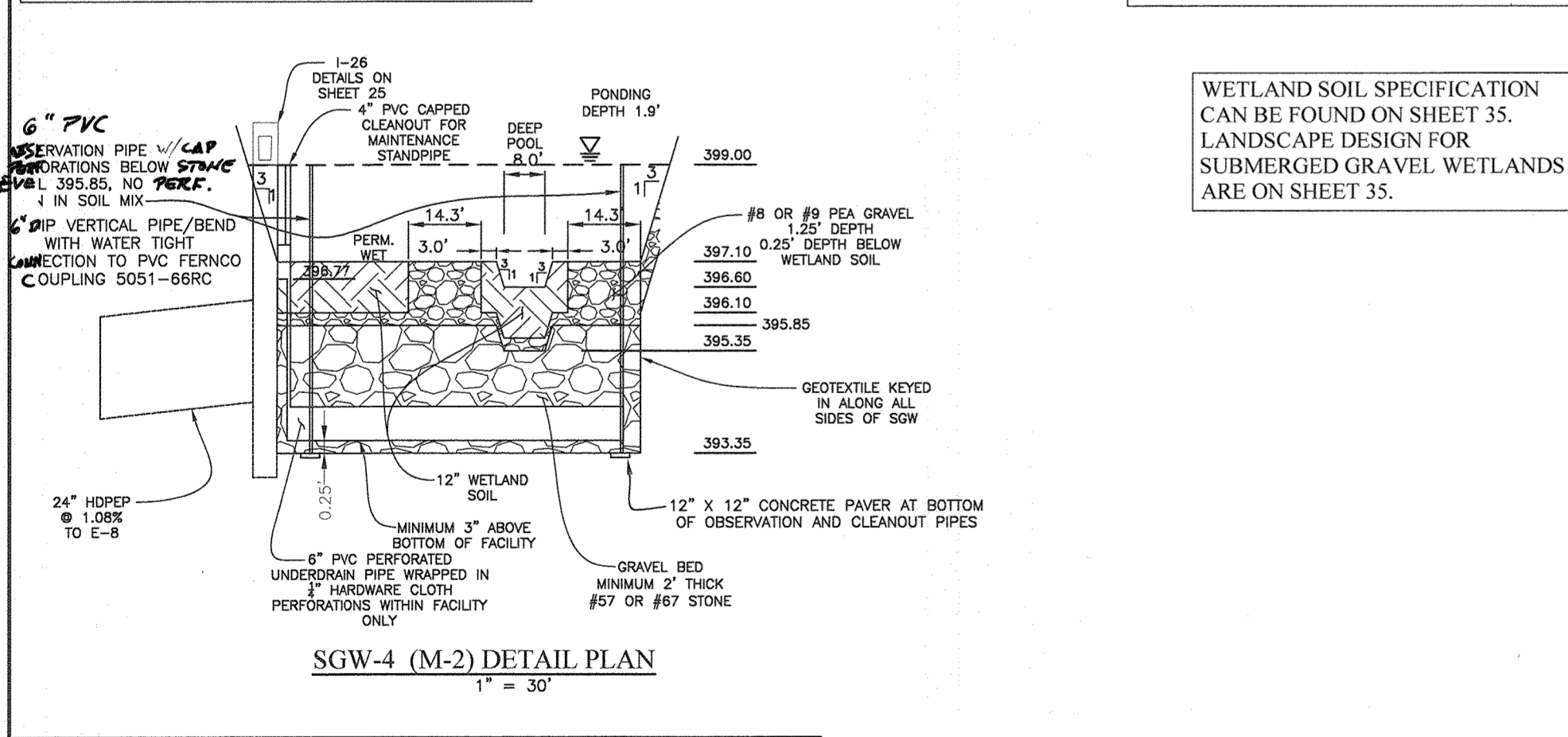
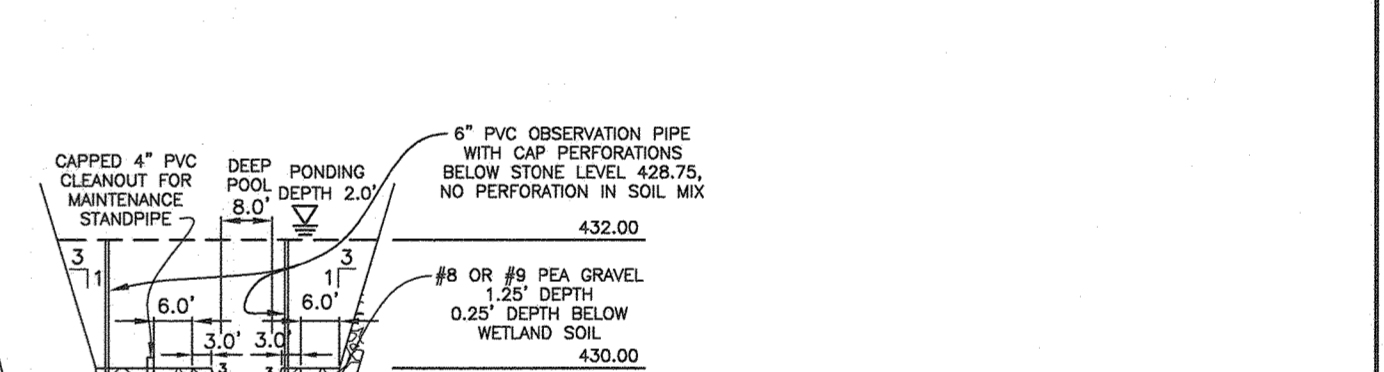
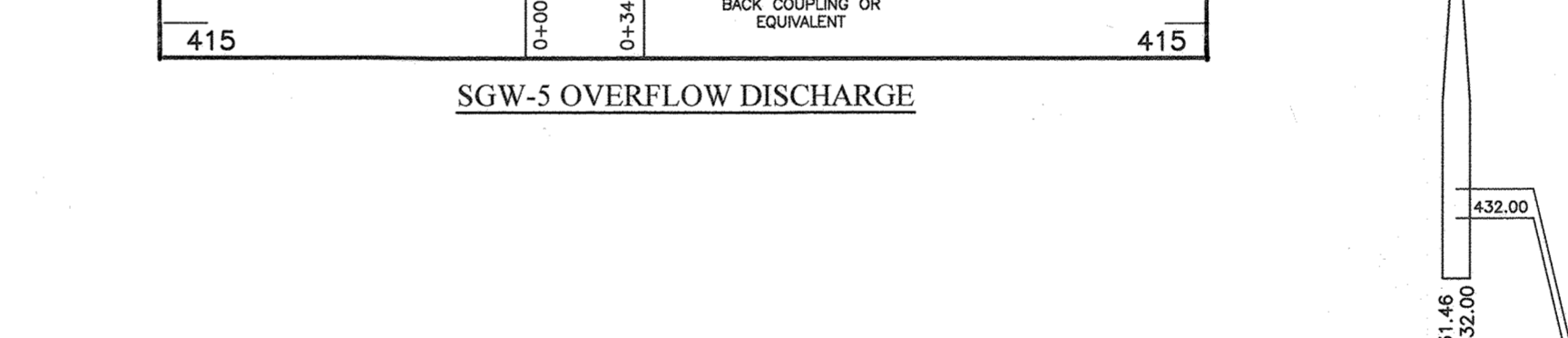
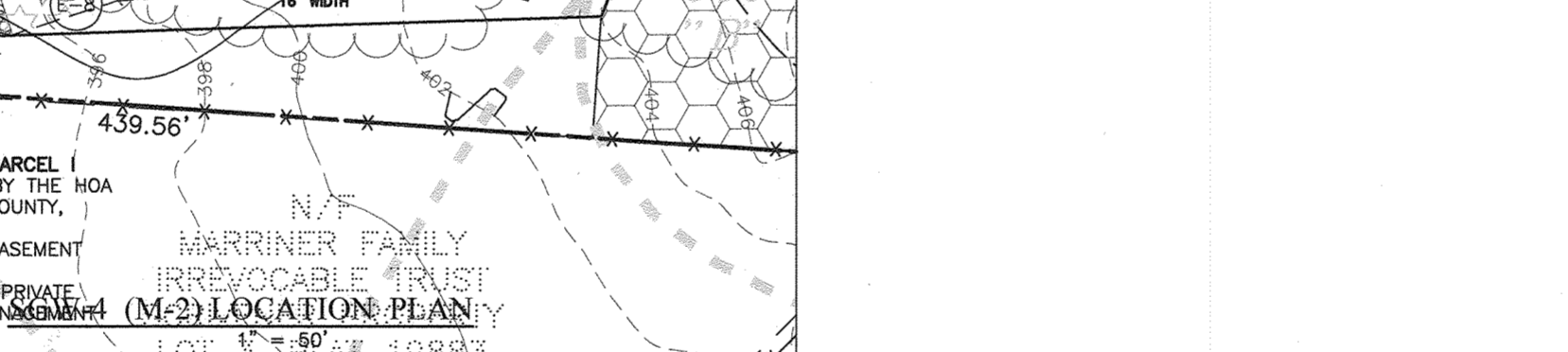
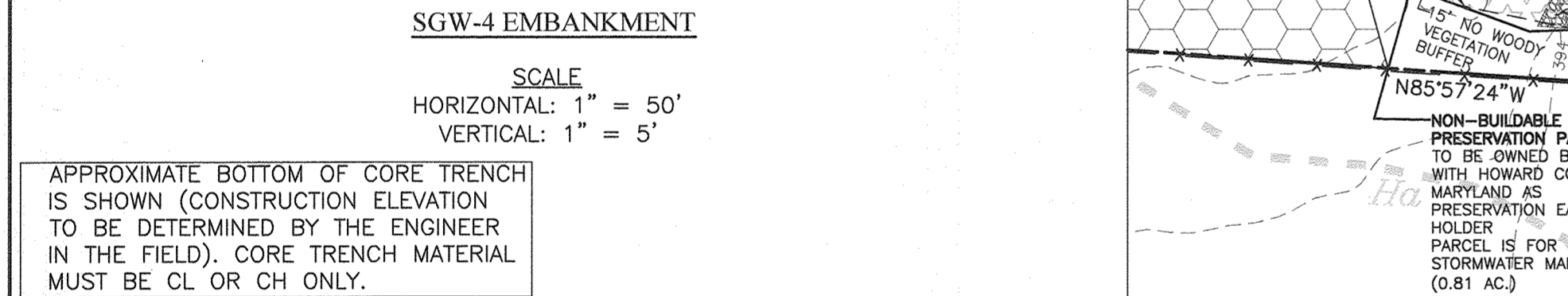
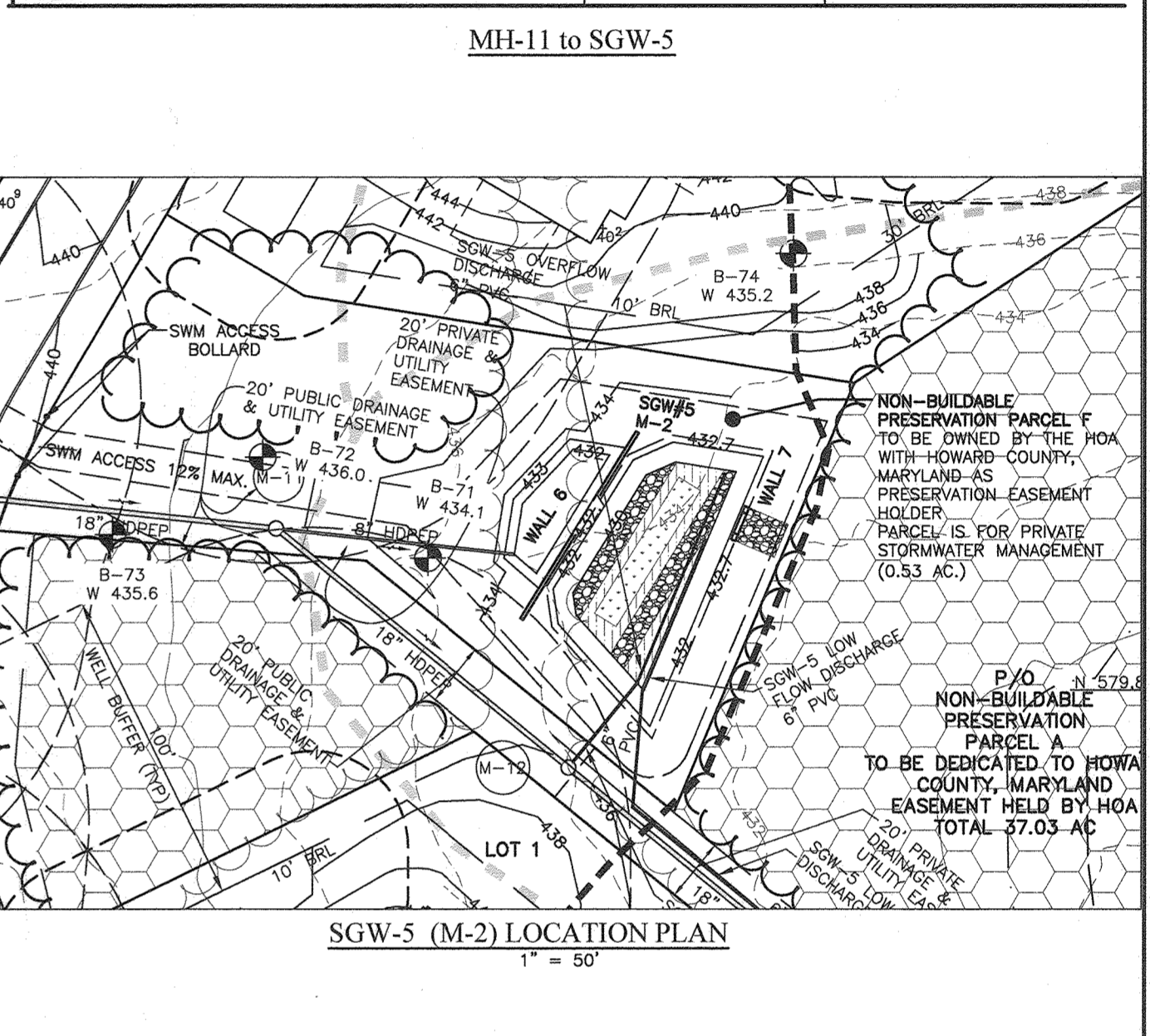
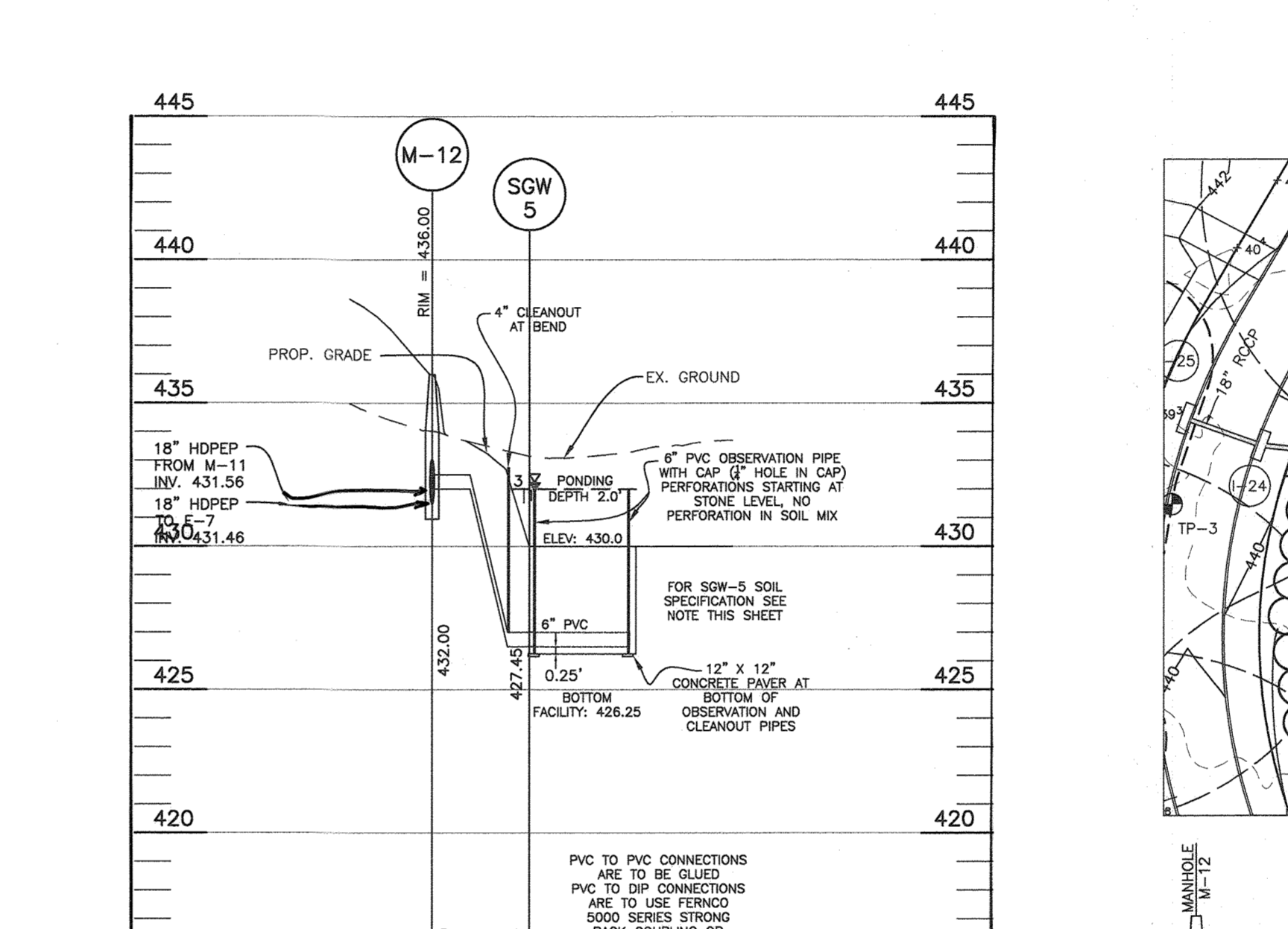
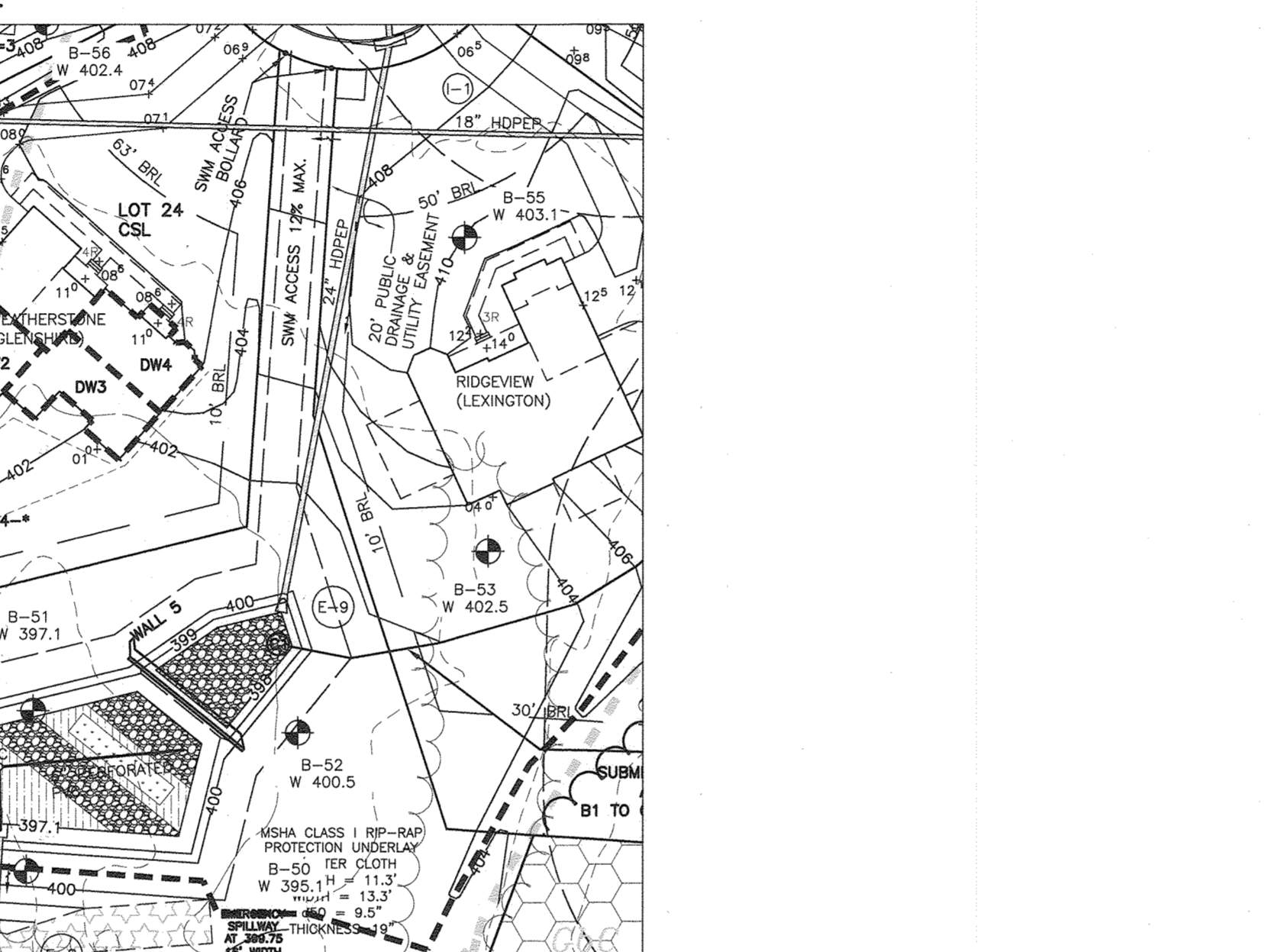
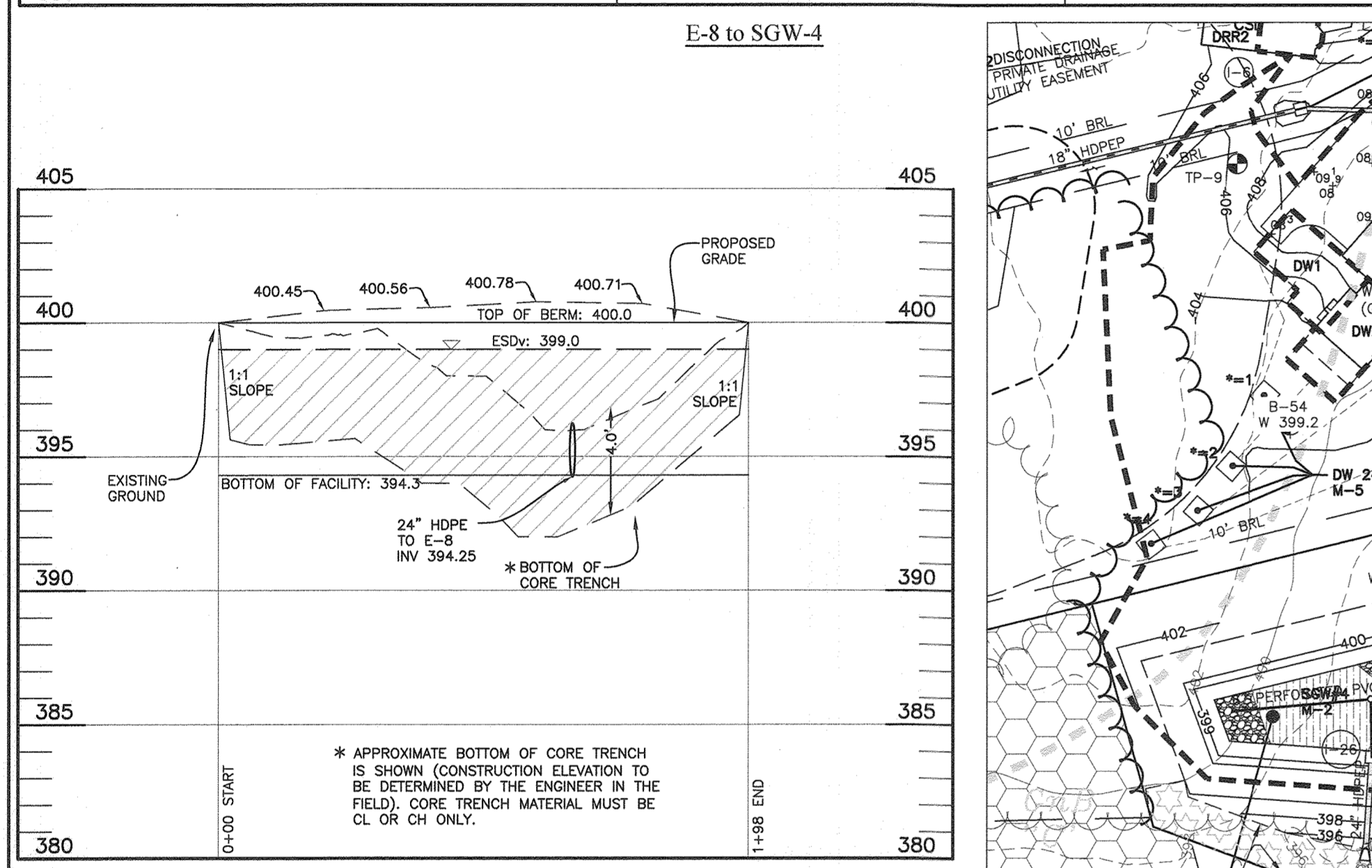
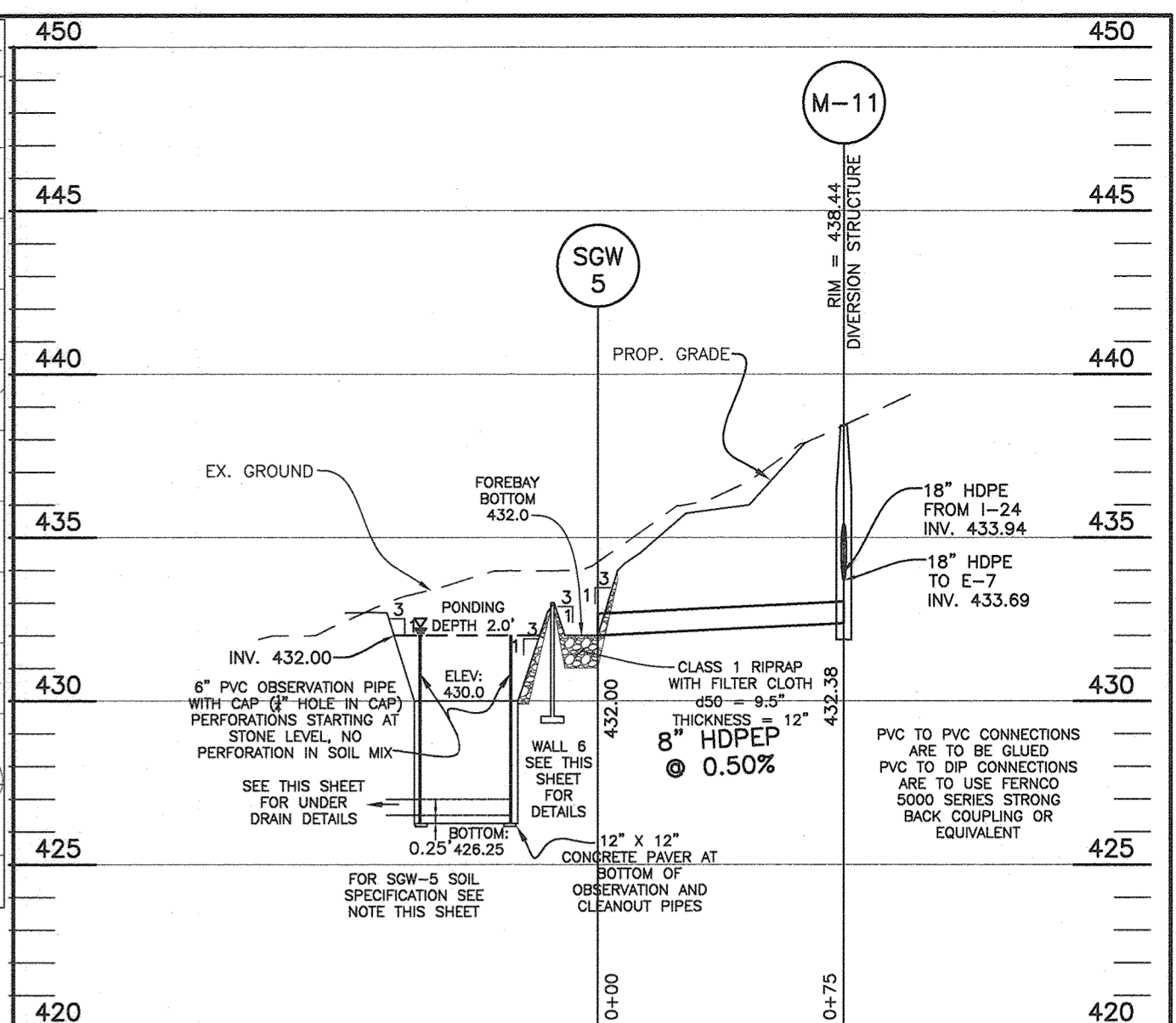
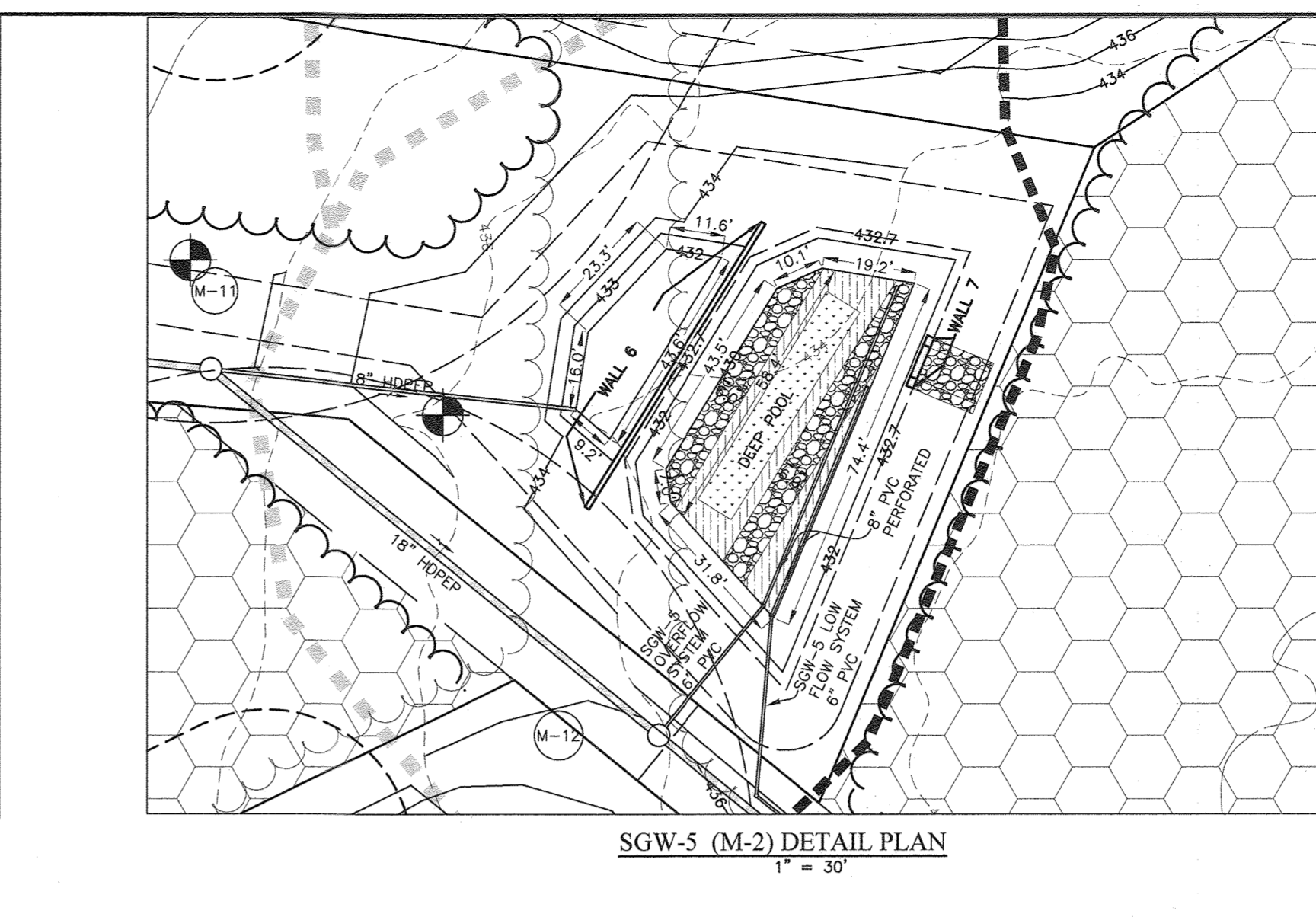
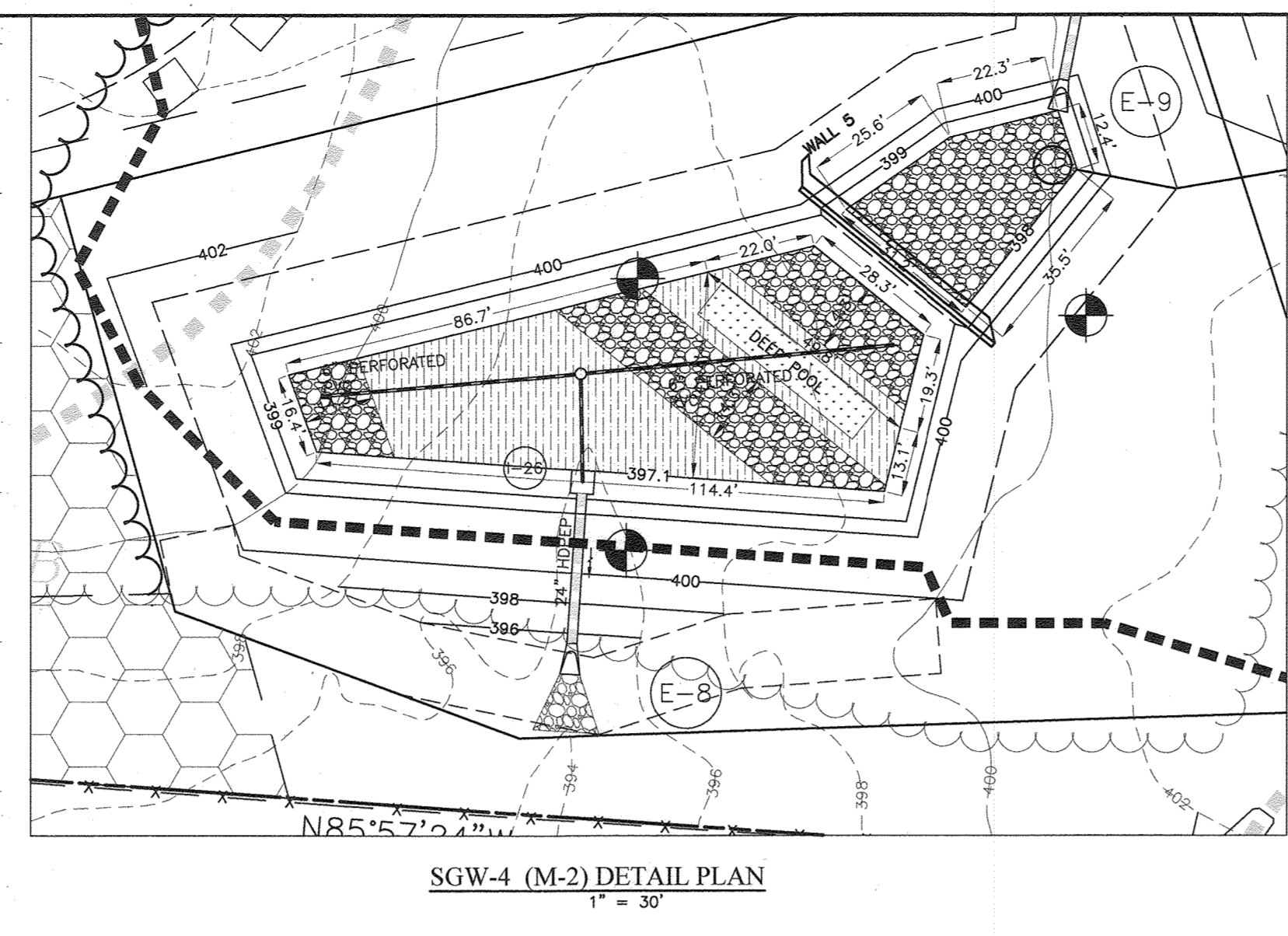
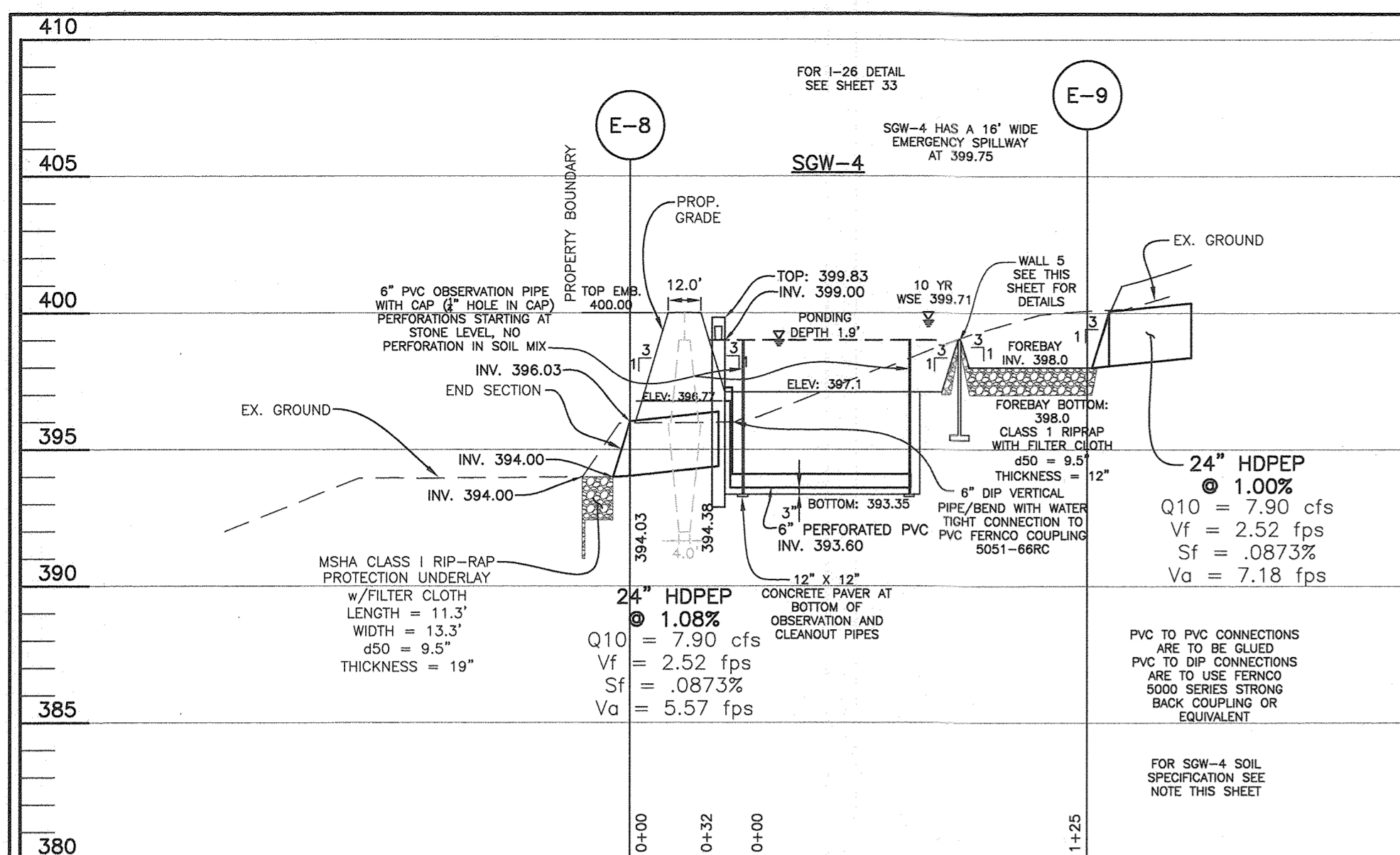
LOCATION: TAX MAP: 23, GRID: 23
 P. PARCEL 148
 PUDDING LANE, ELLICOTT CITY, MD 21042
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

DEVELOPER: JONATHAN IAN SCHWARTZ,
 JESSICA AND SOPHIE ZIEGLER
 C/O SOPHIE ZIEGLER
 750 DOLORES STREET
 SAN FRANCISCO, CA 94110
 212-877-8897

TITLE: **STORMWATER MANAGEMENT NOTES AND DETAILS**

DATE: NOVEMBER, 2019 PROJECT NO. 2501

DRAFT: MP DESIGN: JC CHECK: JC SCALE: AS SHOWN SHEET 31 OF 75



DEVELOPER'S CERTIFICATE

I, **John M. Carney**, certify that all development and construction will be done according to this plan for sediment and erosion control, and that all responsible personnel involved in the construction project will have a certificate of attendance at a department of the environment approved training program for the control of sediment and erosion before beginning the project. I also authorize periodic on-site inspection by the Howard Soil Conservation District.

DATE: 11/20/19

ENGINEER'S CERTIFICATE

I, **John M. Carney**, certify that this plan for sediment and erosion control represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the requirements of the Howard Soil Conservation District.

DATE: 11/25/19

APPROVED: DEPARTMENT OF PUBLIC WORKS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

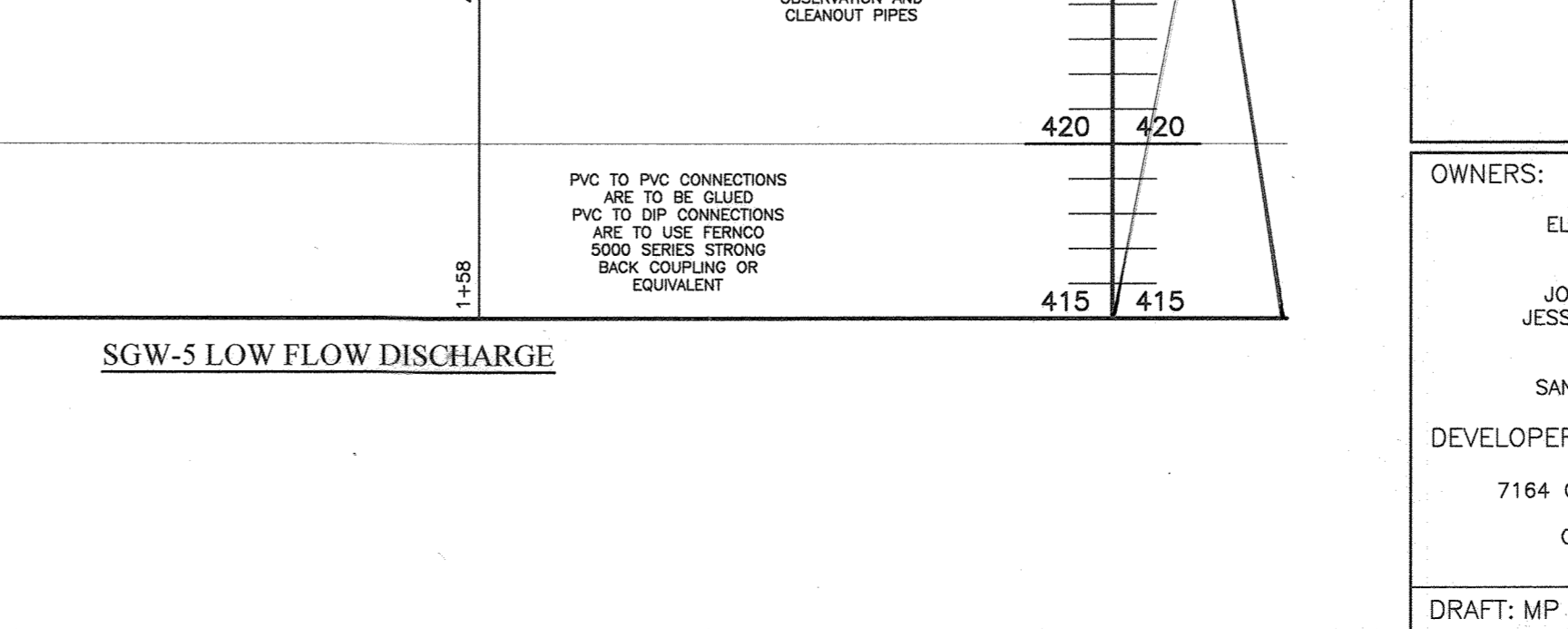
NOTES:

- ALL EXPOSED EDGES TO BE 3/4" X 3/4" CHAMFER OR AS DIRECTED.
- CONCRETE SHALL BE SIA MIZ NO. 3 (f'c=3500 PSI @ 28 DAYS).
- MAXIMUM EXPOSED WALL HEIGHT IS 3.0'. HIGHER WALLS REQUIRE SPECIAL DESIGN.

WETLAND SOIL SPECIFICATION CAN BE FOUND ON SHEET 35. LANDSCAPE DESIGN FOR SUBMERGED GRAVEL WETLANDS ARE ON SHEET 35.

LOW RISE SWM CONTROL STRUCTURE DETAIL (NOT TO SCALE)

Designation	Facility	Location	Dimension A (ft)	Dimension B (ft)	Dimension C (ft)	Top Elevation	Weir Elevation	Bottom Elevation
Wall 5	SGW 4	Forebay	50.00	38.00	0.50	399.50	399.00	395.83
Wall 6	SGW 5	Forebay	88.00	51.00	0.50	433.50	433.00	429.83
Wall 7	SGW 5	Outfall	11.00	7.00	0.70	432.70	432.00	429.03



BENCHMARK ENGINEERING, INC.
840 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-8105 (F) 410-465-6844
WWW.BE-ENGINEERING.COM

REVISIONS:

NO.	DATE	REVISION
1	1-20-21	Revise Sheet #s.

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042

DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046, 410-381-3263

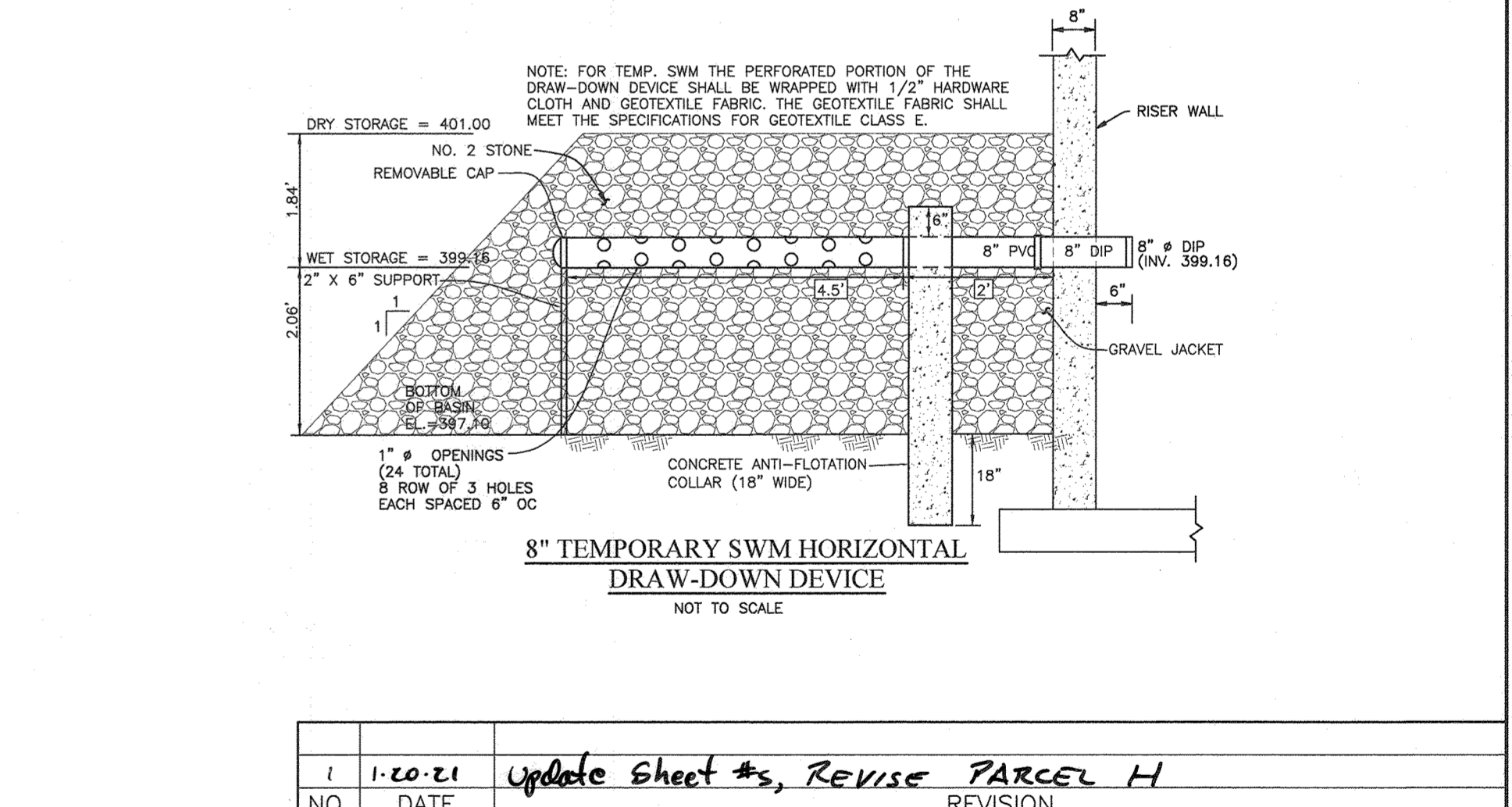
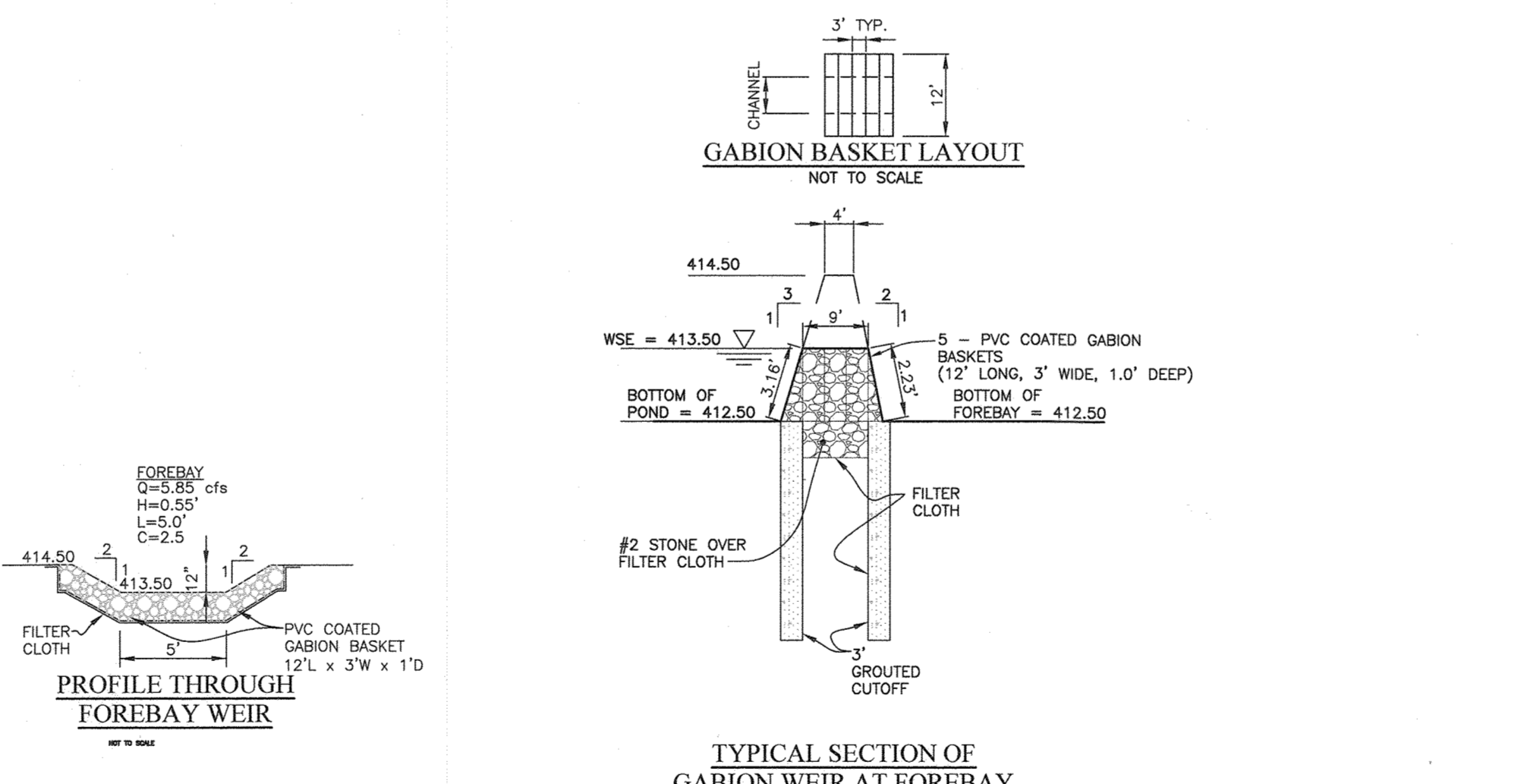
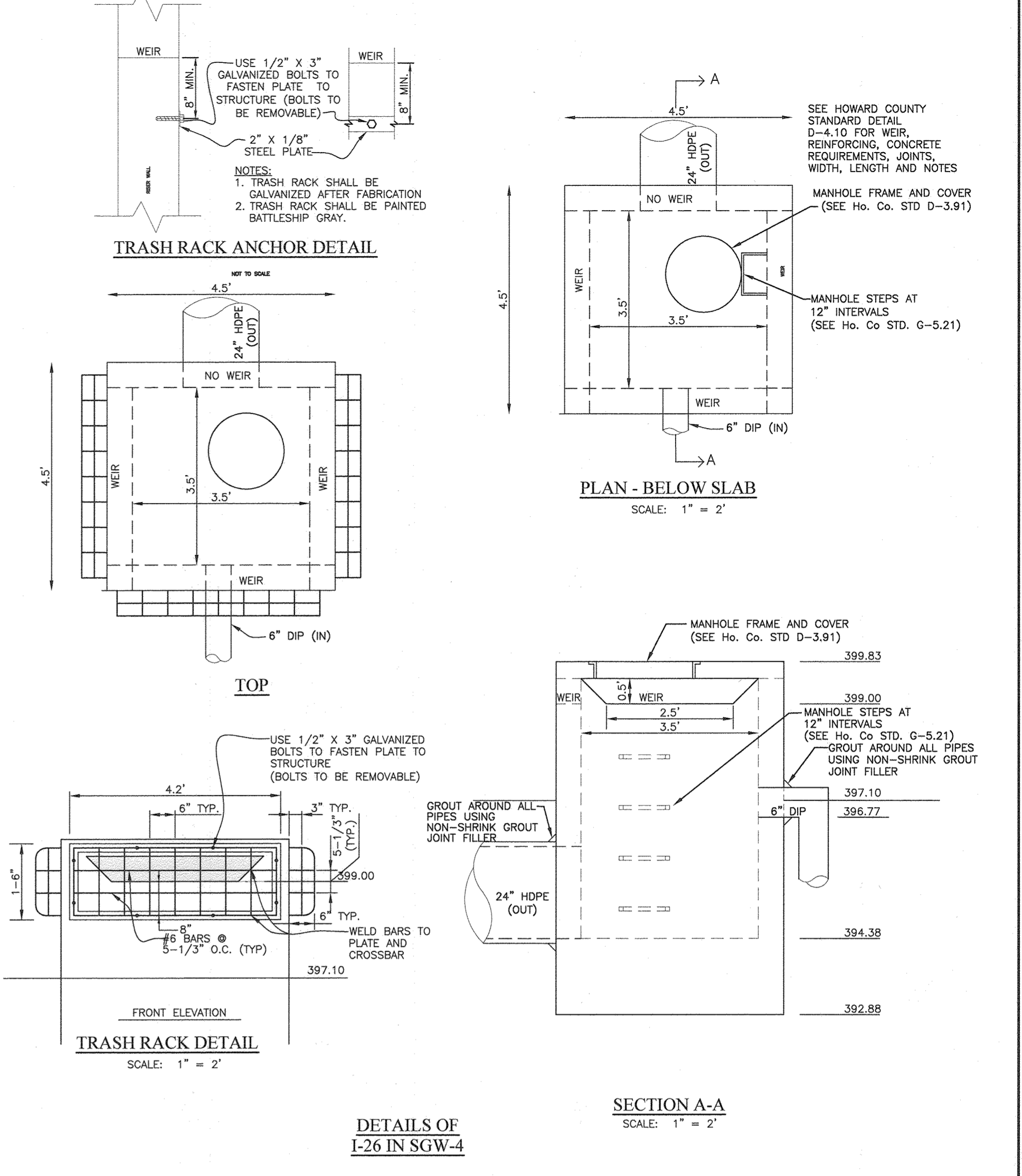
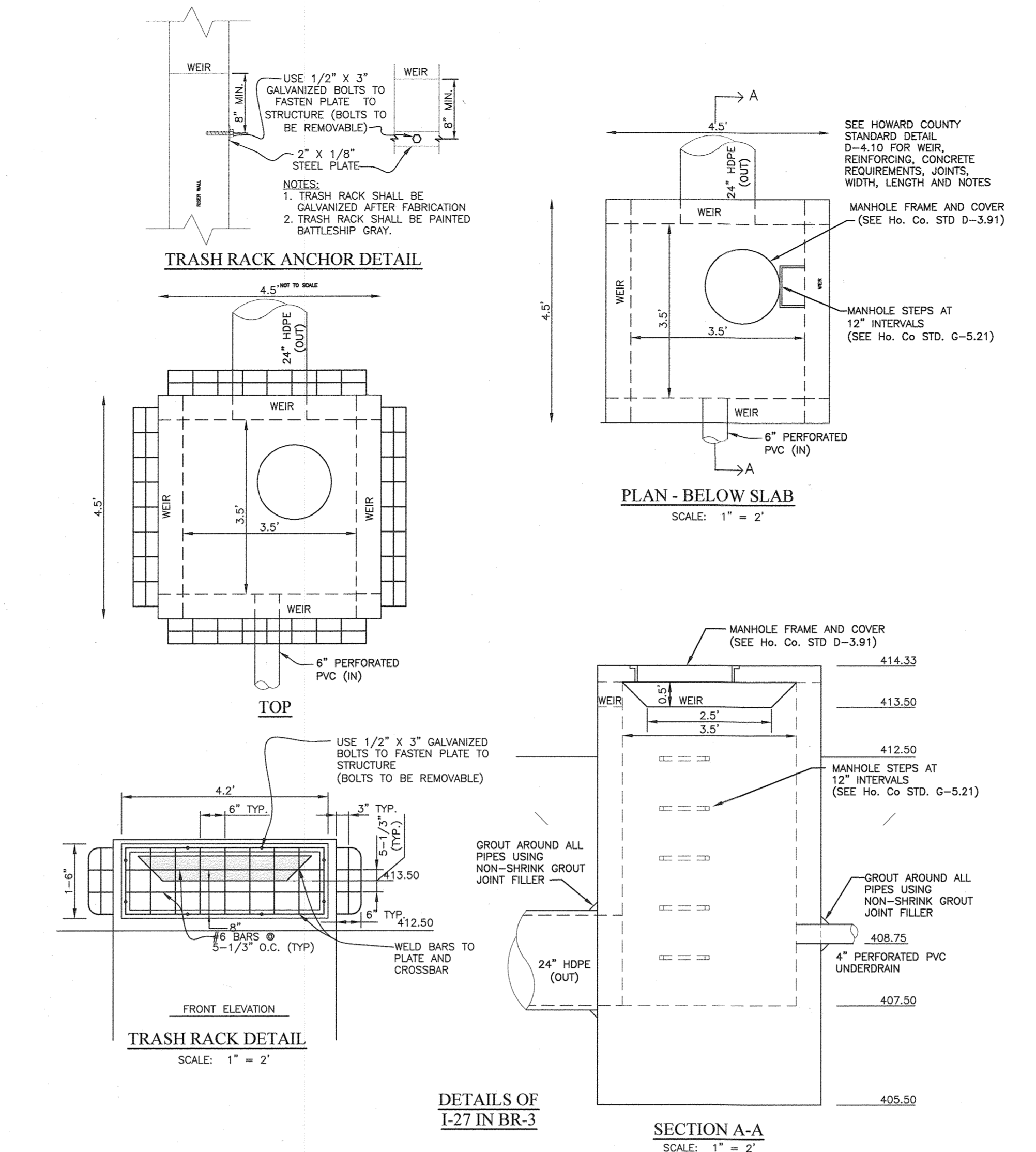
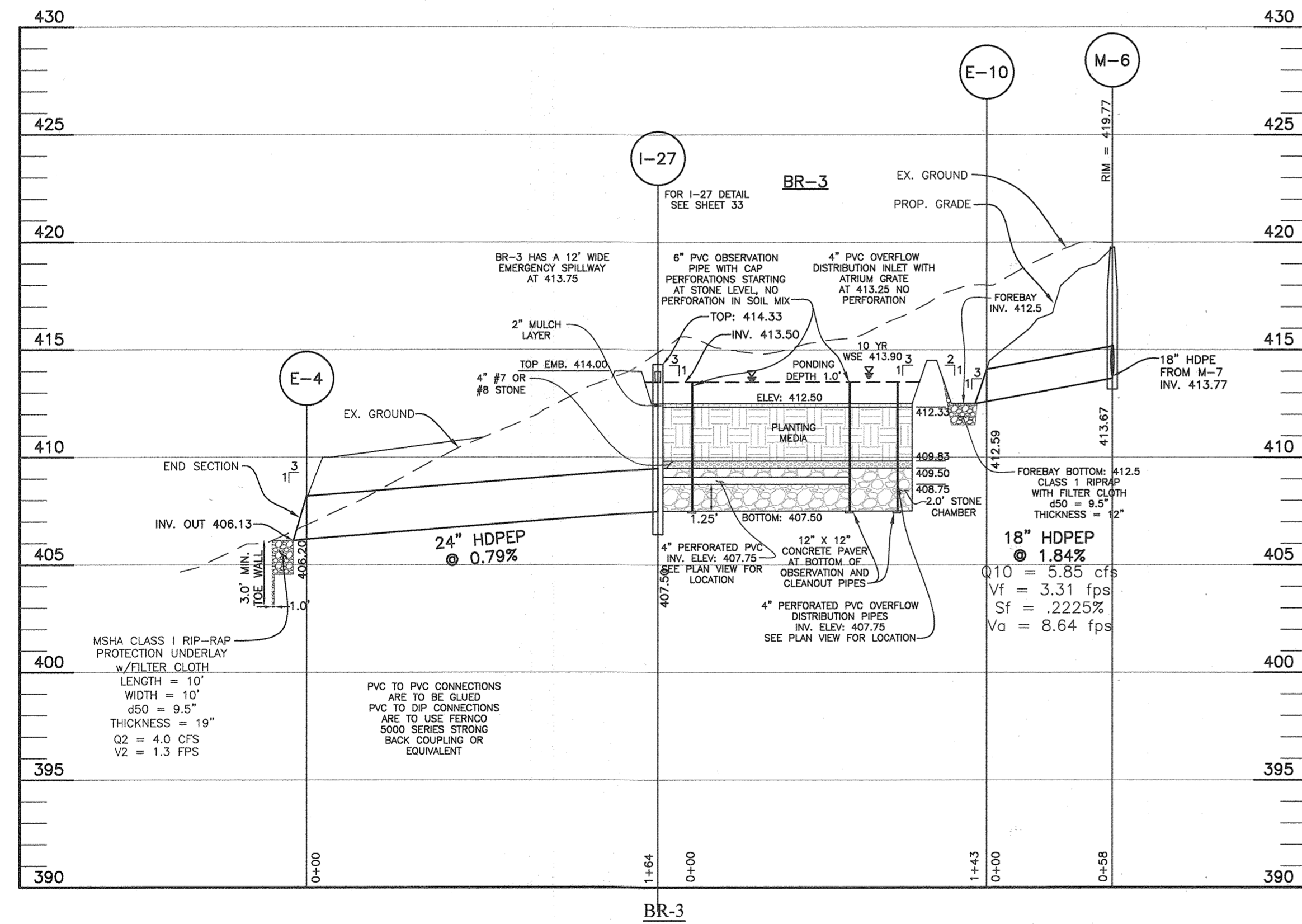
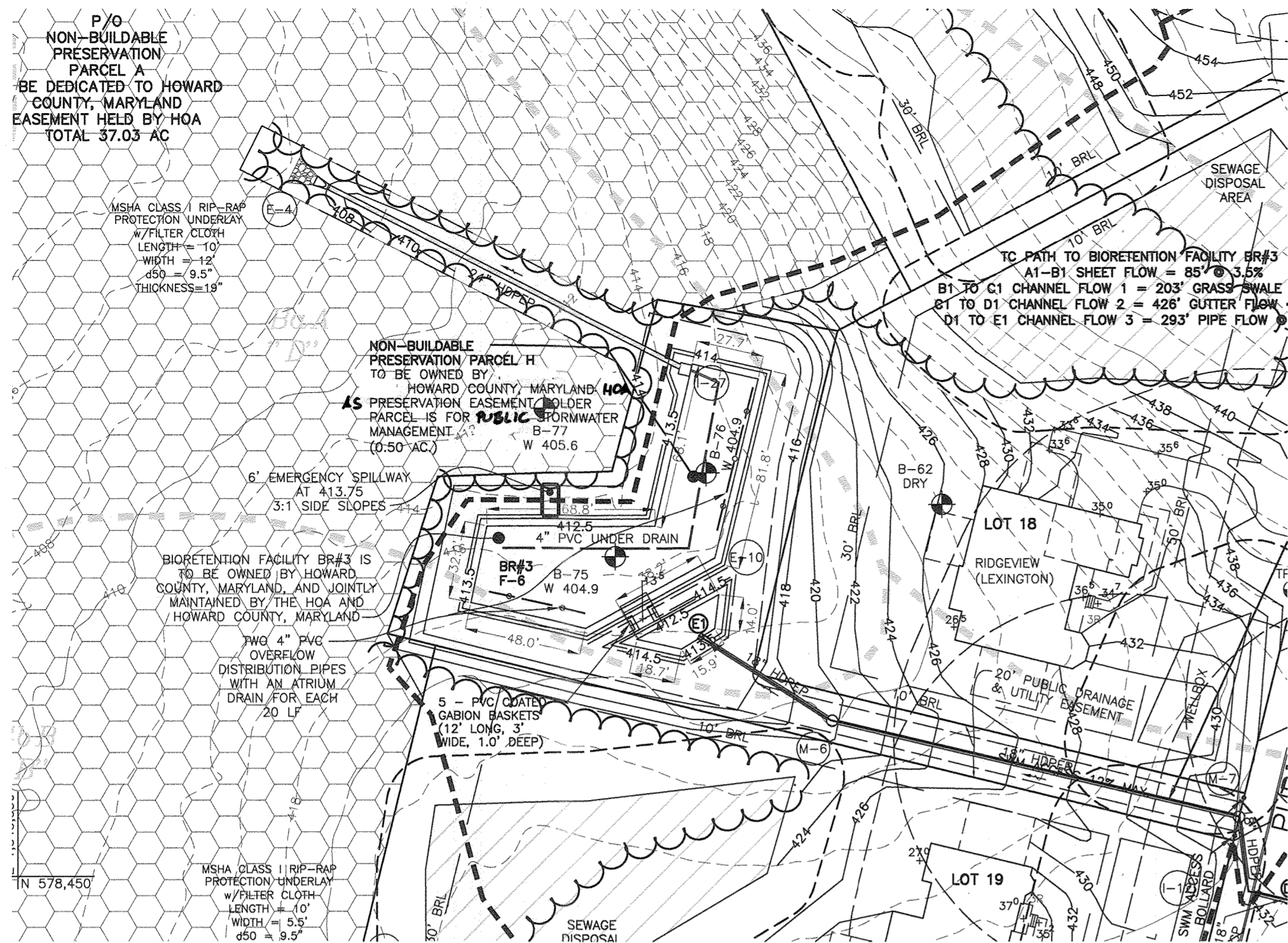
PROJECT: KINGS FOREST, A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

LOCATION: TAX MAP: 23 GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

TITLE: STORMWATER MANAGEMENT NOTES AND DETAILS

DATE: NOVEMBER, 2019 **PROJECT NO.:** 2501

DRAFT: MP **DESIGN:** JC **CHECK:** JC **SCALE:** AS SHOWN **SHEET:** 32 **OF:** 75



WETLAND SOIL SPECIFICATION CAN BE FOUND ON SHEET 35. LANDSCAPE DESIGN FOR SUBMERGED GRAVEL WETLANDS ARE ON SHEET 35.

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

APPROVED: DEPARTMENT OF PUBLIC WORKS
DATE: 11/2/20

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 3/5/2020

DEVELOPER'S CERTIFICATE
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER: [Signature] DATE: 11/20/19

ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

ENGINEER - JOHN M. CARNEY # 45577 DATE: 11/25/19

NO.	DATE	REVISION
1	1-10-21	Update Sheet #s, REVISE PARCEL H

BENCHMARK
ENGINEERS & LAND SURVEYORS & PLANNERS

ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE SUITE 315 A ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BE-CIVLENGINEERING.COM

OWNERS:	NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT:	KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19781 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER:	JONATHAN IAN SCHWARTZ, C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION:	TAX MAP: 23 GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE:	STORMWATER MANAGEMENT NOTES AND DETAILS	DATE:	NOVEMBER, 2019
DRAFT: MP	DESIGN: JC	CHECK: JC	PROJECT NO. 2501
SCALE:	AS SHOWN	SHEET	33 OF 75

Lot Number	Drywell Designation	Impervious Area (SF)	Target Pe =	Volume Provided (CF)	ESDv	Length (ft)	Depth (ft)	Grade	Top of Stone	Bottom of Stone	Full ESDv Provided?
1	1-1	740	0.95	67.58	8.00	8.00	5.00	434.8	434.8	428.6	yes
1	1-2	927	0.95	84.66	8.00	8.00	5.00	434.6	433.6	428.6	yes
1	1-3	383	0.95	34.98	8.00	8.00	5.00	434.5	433.5	428.5	yes
1	1-4	838	0.95	76.53	8.00	8.00	5.00	433.7	432.7	427.7	yes
1	1-5	930	0.95	84.93	8.00	8.00	5.00	442.0	441.0	436.0	yes
1	1-6	1033	0.95	94.34	8.00	8.00	5.00	443.1	442.1	437.1	yes
3	3-1	1064	0.95	97.17	8.00	8.00	5.00	456.3	455.3	450.3	yes
3	3-2	1014	0.95	92.61	8.00	6.00	5.00	457.0	456.0	451.0	yes
3	3-3	927	0.95	84.66	8.00	6.00	5.00	457.2	456.2	451.2	yes
3	3-4	1042	0.95	95.16	8.00	8.00	5.00	456.6	455.6	450.6	yes
3	3-5	913	0.95	83.38	6.00	8.00	5.00	456.2	455.2	450.2	yes
4	4-1	971	0.95	88.68	10.00	6.00	5.00	460.2	459.2	454.2	yes
4	4-2	806	0.95	73.61	8.00	8.00	5.00	460.3	459.3	454.3	yes
4	4-3	976	0.95	89.14	8.00	8.00	5.00	460.1	459.1	454.1	yes
4	4-4	383	0.95	34.98	8.00	8.00	5.00	460.1	459.1	454.1	yes
4	4-5	842	0.95	76.90	8.00	8.00	5.00	460.1	459.1	454.1	yes
4	4-6	988	0.95	90.23	8.00	8.00	5.00	460.0	459.0	454.0	yes
5	5-1	896	0.95	81.83	8.00	8.00	5.00	463.7	462.7	457.7	yes
5	5-2	878	0.95	80.19	8.00	8.00	5.00	464.1	463.1	458.1	yes
5	5-3	663	0.95	60.55	8.00	8.00	5.00	463.3	462.3	457.3	yes
5	5-4	1054	0.95	96.26	8.00	8.00	5.00	460.2	459.2	454.2	yes
5	5-5	553	0.95	50.50	8.00	8.00	5.00	458.7	457.7	452.7	yes
5	5-6	829	0.95	75.71	8.00	8.00	5.00	460.0	459.0	454.0	yes
6	6-1	1000	0.95	91.33	8.00	8.00	5.00	446.1	445.1	440.1	yes
6	6-2	857	0.95	78.27	8.00	8.00	5.00	443.6	442.6	437.6	yes
6	6-3	993	0.95	90.69	8.00	8.00	5.00	443.8	442.8	437.8	yes
7	7-1	1030	0.95	94.07	8.00	8.00	5.00	446.0	445.0	440.0	yes
7	7-2	931	0.95	85.03	8.00	8.00	5.00	446.0	445.0	440.0	yes
7	7-3	887	0.95	81.01	8.00	8.00	5.00	446.7	445.7	440.7	yes
7	7-4	681	0.95	62.19	8.00	8.00	5.00	446.7	445.7	440.7	yes
7	7-5	1011	0.95	92.33	8.00	8.00	5.00	447.3	446.3	441.3	yes
7	7-6	978	0.95	89.32	8.00	8.00	5.00	448.2	447.2	442.2	yes
8	8-1	875	0.95	79.91	8.00	8.00	5.00	438.2	437.2	432.2	yes
8	8-2	878	0.95	80.19	8.00	8.00	5.00	437.2	436.2	431.2	yes
8	8-3	896	0.95	81.83	8.00	8.00	5.00	437.8	436.8	431.8	yes
8	8-4	829	0.95	75.71	8.00	8.00	5.00	439.2	438.2	433.2	yes
8	8-5	553	0.95	50.50	8.00	8.00	5.00	428.0	427.0	422.0	yes
8	8-6	1054	0.95	96.26	8.00	8.00	5.00	429.2	428.2	423.2	yes
9	9-1	803	0.95	73.34	8.00	8.00	5.00	428.0	427.0	422.0	yes
9	9-2	977	0.95	89.23	8.00	8.00	5.00	428.5	427.5	422.5	yes
9	9-3	599	0.95	54.71	8.00	8.00	5.00	428.0	427.0	422.0	yes
9	9-4	728	0.95	66.49	8.00	8.00	5.00	428.0	427.0	422.0	yes
12	12-1	875	0.95	79.91	10.00	6.00	5.00	437.8	436.8	431.8	yes
12	12-2	878	0.95	80.19	10.00	6.00	5.00	437.6	436.6	431.6	yes
12	12-3	896	0.95	81.83	10.00	6.00	5.00	436.5	435.5	430.5	yes
12	12-4	829	0.95	75.71	10.00	6.00	5.00	431.8	430.8	425.8	yes
12	12-5	970	0.95	88.59	10.00	6.00	5.00	430.0	429.0	424.0	yes
12	12-6	637	0.95	58.18	10.00	6.00	5.00	423.1	422.1	417.1	yes
13	13-1	1026	0.95	93.70	8.00	8.00	5.00	422.2	421.2	416.2	yes
13	13-2	972	0.95	88.77	8.00	8.00	5.00	422.2	421.2	416.2	yes
13	13-3	971	0.95	88.68	8.00	8.00	5.00	422.2	421.2	416.2	yes
13	13-4	970	0.95	88.59	8.00	8.00	5.00	422.2	421.2	416.2	yes
13	13-5	937	0.95	85.57	8.00	8.00	5.00	422.2	421.2	416.2	yes
21	21-1	914	0.95	83.47	8.00	8.00	5.00	424.4	423.4	418.4	yes
21	21-2	959	0.95	87.58	8.00	8.00	5.00	417.0	416.0	411.0	yes
21	21-3	987	0.95	90.14	8.00	8.00	5.00	416.0	415.0	410.0	yes
21	21-4	642	0.95	58.63	8.00	8.00	5.00	416.0	415.0	410.0	yes
21	21-5	732	0.95	66.85	8.00	8.00	5.00	420.0	419.0	414.0	yes
21	21-6	731	0.95	66.76	8.00	8.00	5.00	419.5	418.5	413.5	yes
22	22-1	915	0.95	83.57	8.00	8.00	5.00	415.7	414.7	409.7	yes
22	22-2	1001	0.95	91.42	8.00	8.00	5.00	410.9	409.9	404.9	yes
22	22-3	998	0.95	91.15	8.00	8.00	5.00	410.5	409.5	404.5	yes
23	23-1	920	0.95	84.02	8.00	8.00	5.00	410.9	409.9	404.9	yes
23	23-2	1070	0.95	97.72	8.00	8.00	5.00	409.1	408.1	403.1	yes
23	23-3	962	0.95	89.68	8.00	8.00	5.00	410.1	409.1	404.1	yes
23	23-4	977	0.95	89.23	8.00	8.00	5.00	410.7	409.7	404.7	yes
24	24-1	915	0.95	83.57	8.00	8.00	5.00	407.4	406.4	401.4	yes
24	24-2	939	0.95	85.76	8.00	8.00	5.00	402.7	401.7	396.7	yes
24	24-3	992	0.95	90.60	8.00	8.00	5.00	404.4	403.4	398.4	yes
24	24-4	929	0.95	84.84	8.00	8.00	5.00	403.3	402.3	397.3	yes
28	28-1	978	0.95	89.32	8.00	8.00	5.00	424.0	423.0	418.0	yes
28	28-2	998	0.95	91.15	8.00	8.00	5.00	424.9	423.9	418.9	yes
29	29-1	849	0.95	77.54	10.00	6.00	5.00	422.1	421.1	416.1	yes
29	29-2	529	0.95	48.31	10.00	6.00	5.00	425.7	424.7	419.7	yes
29	29-3	893	0.95	81.56	10.00	6.00	5.00	425.7	424.7	419.7	yes
29	29-4	876	0.95	80.00	8.00	8.00	5.00	426.1	425.1	420.1	yes
30	30-1	666	0.95	60.82	8.00	8.00	5.00	437.0	436.0	431.0	yes
30	30-2	785	0.95	71.69	8.00	8.00	5.00	438.4	437.4	432.4	yes
30	30-3	798	0.95	72.88	8.00	8.00	5.00	436.6	435.6	430.6	yes
31	31-1	889	0.95	81.19	8.00	8.00	5.00	450.9	449.9	444.9	yes
31	31-2	647	0.95	59.09	8.00	8.00	5.00	452.0	451.0	446.0	yes
32	32-1	910	0.95	83.11	8.00	8.00	5.00	452.5	451.5	446.5	yes
32	32-2	594	0.95	54.25	8.00	8.00	5.00	451.6	450.6	445.6	yes
32	32-3	781	0.95	71.33	8.00	8.00	5.00	452.8	451.8	446.8	yes
32	32-4	836	0.95	76.35	8.00	8.00	5.00	452.8	451.8	446.8	yes
32	32-5	784	0.95	71.60	8.00	8.00	5.00	453.7	452.7	447.7	yes
32	32-6	996	0.95	90.96	8.00	8.00	5.00	457.8	456.8	451.8	yes
33	33-1	933	0.95	85.21	8.00	8.00	5.00	460.5	459.5	454.5	yes
33	33-2	546	0.95	49.87	8.00	8.00	5.00	463.2	462.2	457.2	yes
33	33-3	808	0.95	73.79	8.00	8.00	5.00	464.0	463.0	458.0	yes
33	33-4	696	0.95	63.56	8.00	8.00	5.00	465.0	464.0	459.0	yes
34	34-1	637	0.95	58.18	8.00	8.00	5.00	462.7	461.7	456.7	yes
34	34-2	970	0.95	88.59	8.00	8.00	5.00	463.1	462.1	457.1	yes
34	34-3	829	0.95	75.71	8.00	8.00	5.00	464.5	463.5	458.5	yes
34	34-4	825	0.95	75.35	8.00	8.00	5.00	464.0	463.0	458.0	yes
34	34-5	950	0.95	86.76	8.00	8.00	5.00	465.0	464.0	459.0	yes
34	34-6	875	0.95	79.91	8.00	8.00	5.00	464.5	463.5	458.5	yes
35	35-1	915	0.95	83.57	8.00	8.00	5.00	464.7	463.7	458.7	yes
35	35-2	1071	0.95	97.81	8.00	8.00	5.00	466.0	465.0	460.0	yes
35	35-3	1017	0.95	92.89	8.00	8.00	5.00	462.1	461.1	456.1	yes
36	36-1	955	0.95	87.31	8.00	8.00	5.00	449.6	448.6	443.6	yes
36	36-2	1000	0.95	91.33	8.00	8.00	5.00	443.6	442.6	437.6	yes
36	36-3	965	0.95	88.13	8.00	8.00	5.00	445.3	444.3	439.3	yes
36	36-4	721	0.95	65.85	8.00	8.00	5.00	449.8	448.8	443.8	yes
36	36-5	849	0.95	77.54	8.00	8.00	5.00	446.2	445.2	440.2	yes

Drywell Designation	Length (ft)	Width (ft)	Depth (ft)	Grade	Top of Stone	Bottom of Stone
1-1	8.00	8.00	5.00	434.8	434.8	428.6
1-2	8.00	8.00	5.00	434.6	433.6	428.6
1-3	8.00	8.00	5.00	434.5	433.5	428.5
1-4	8.00	8.00	5.00	433.7	432.7	427.7
1-5	8.00	8.00	5.00	442.0	441.0	436.0
1-6	8.00	8.00	5.00	443.1	442.1	437.1
3-1	8.00	6.00	5.00	456.3	455.3	450.3
3-2						

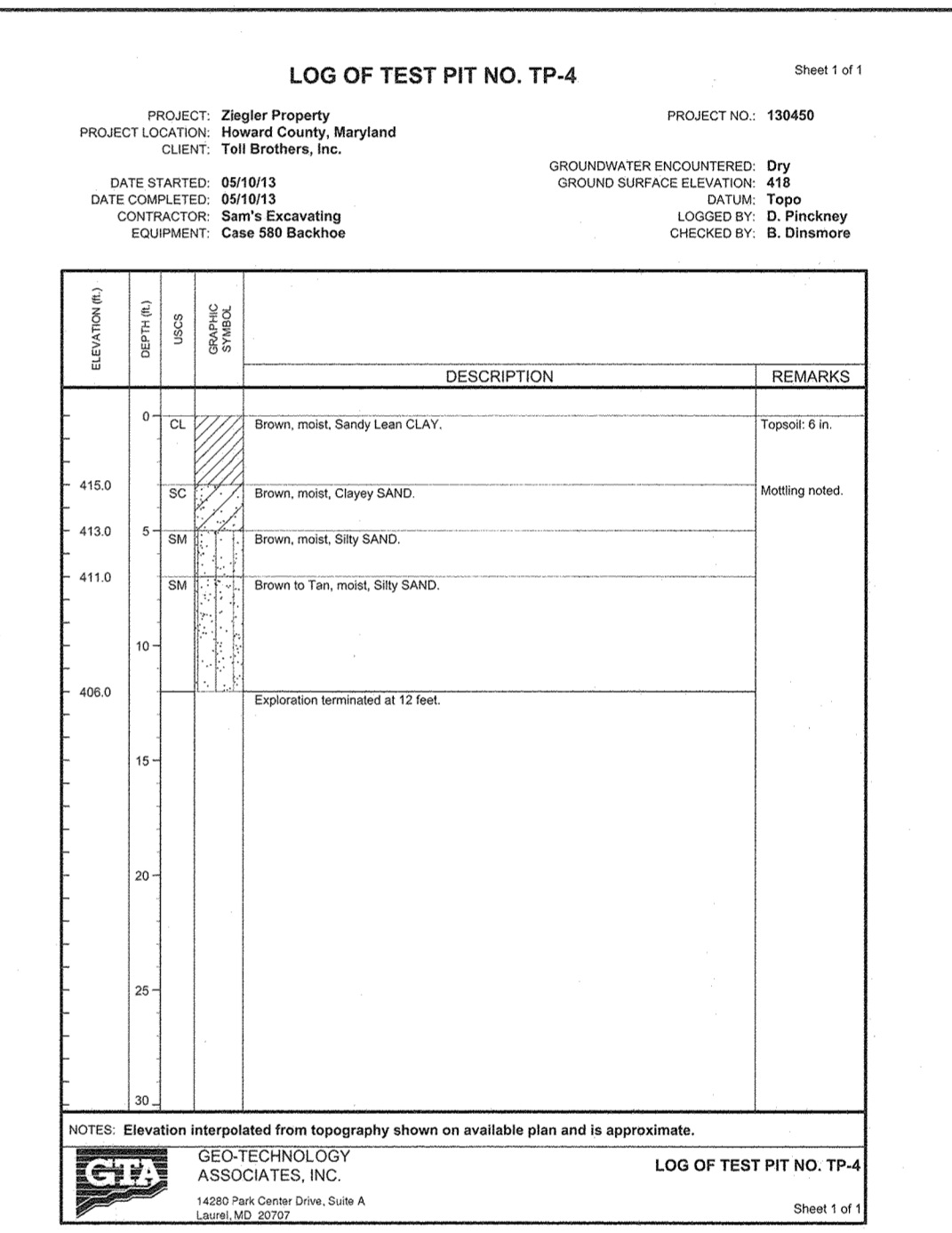
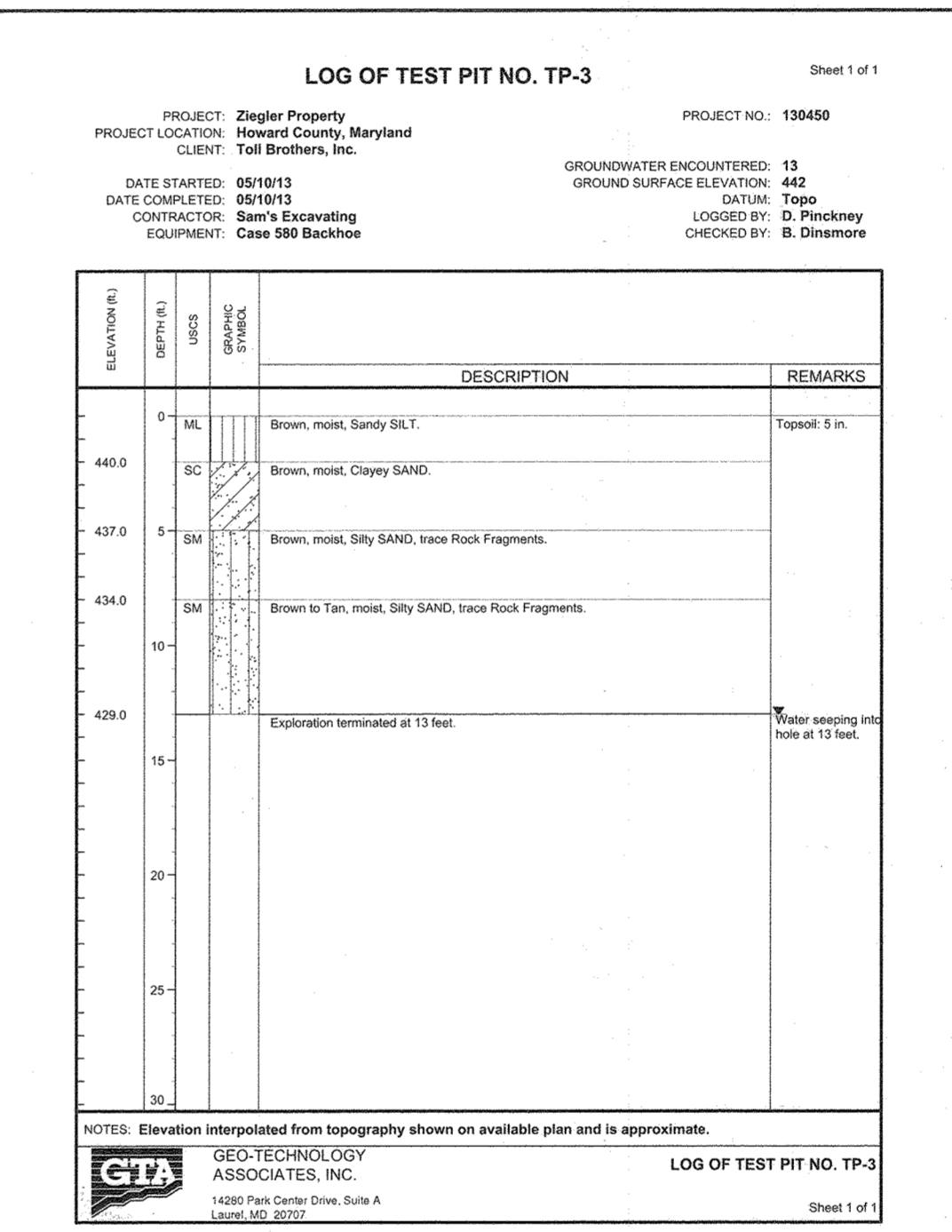
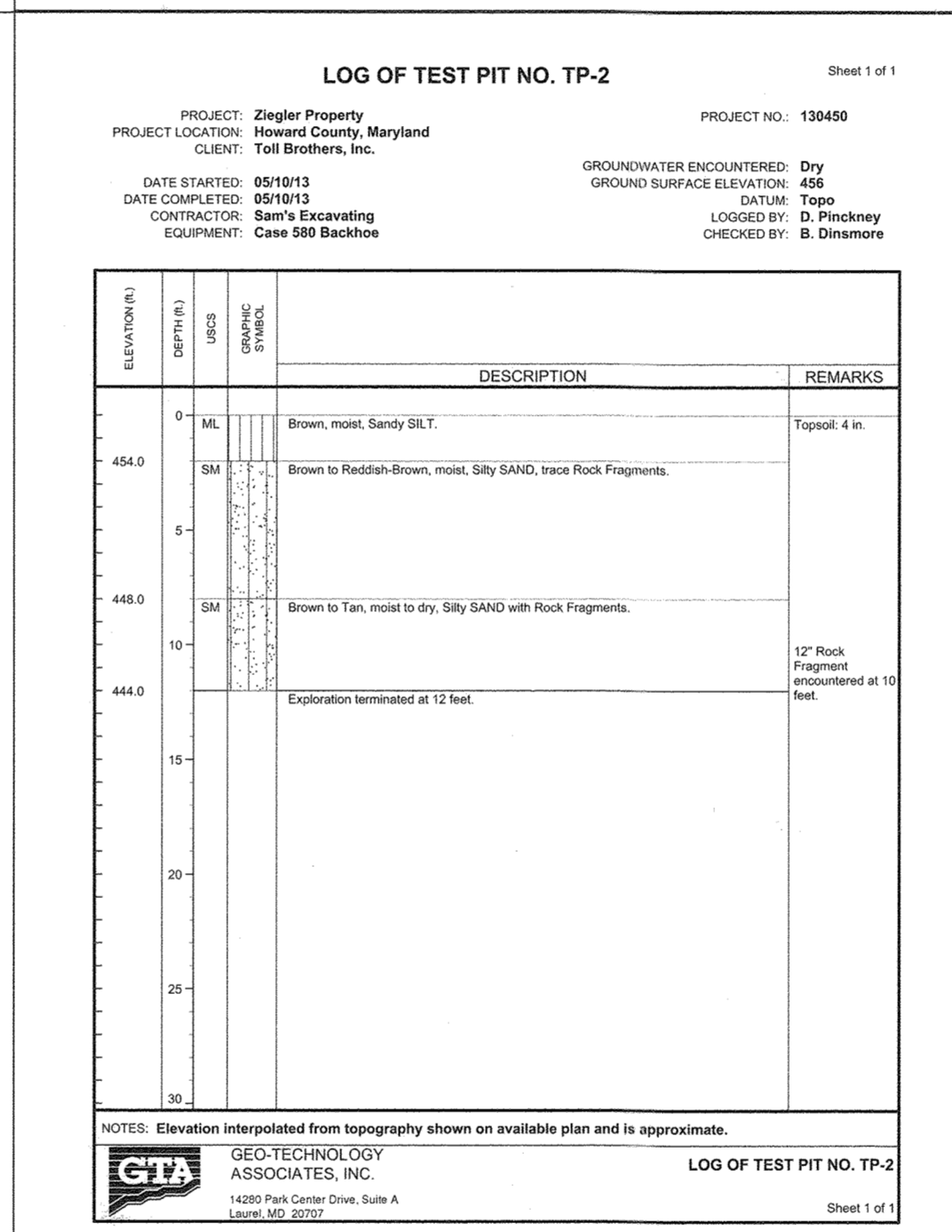
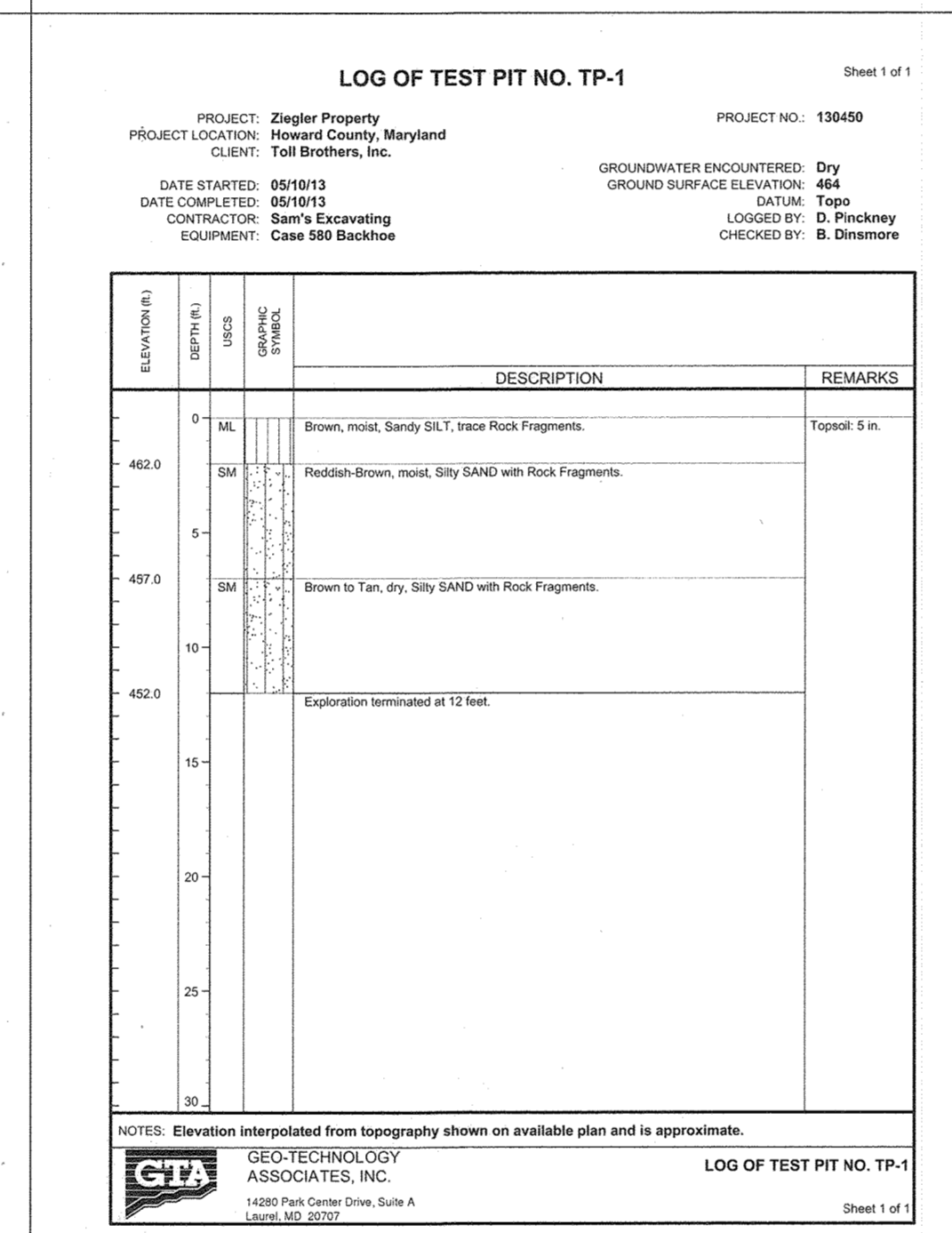
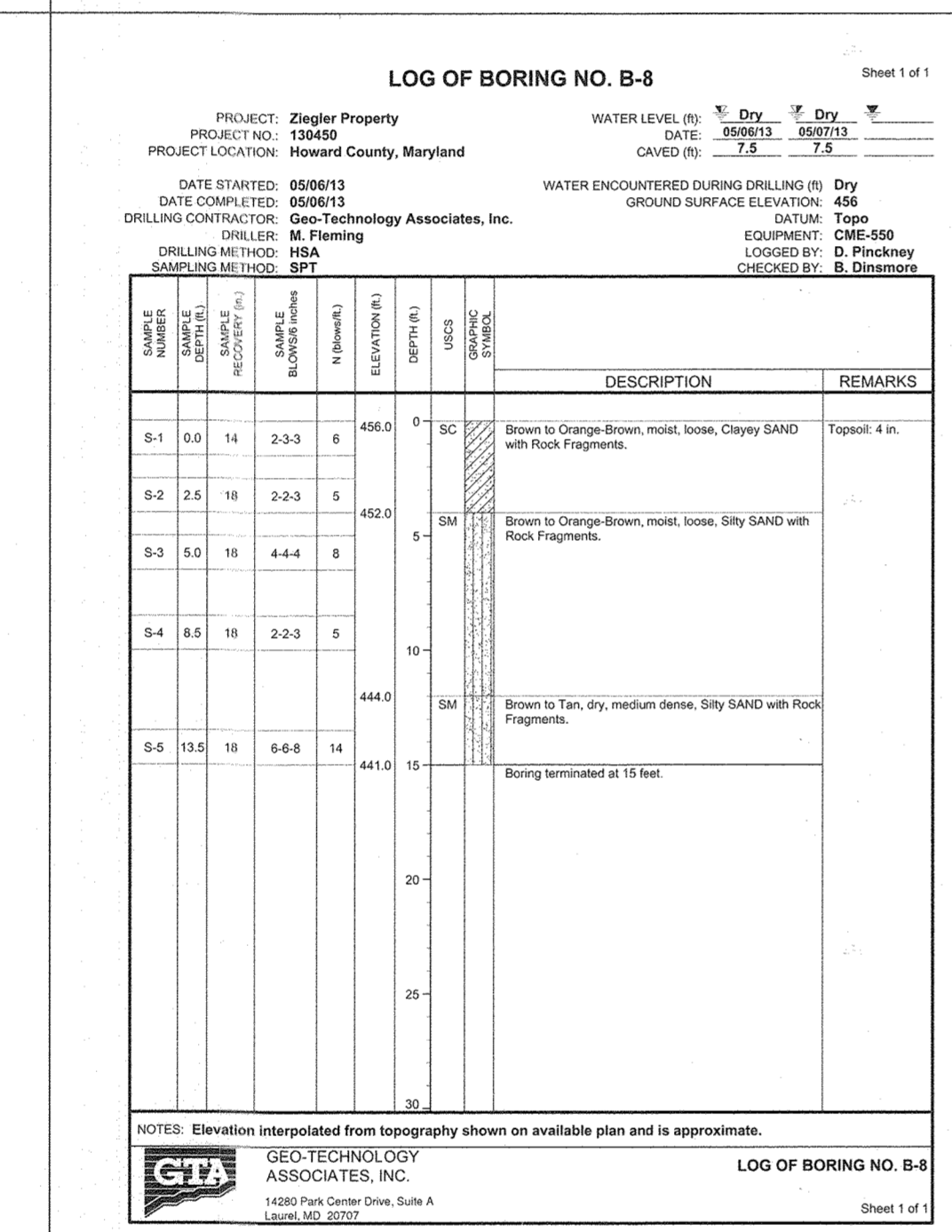
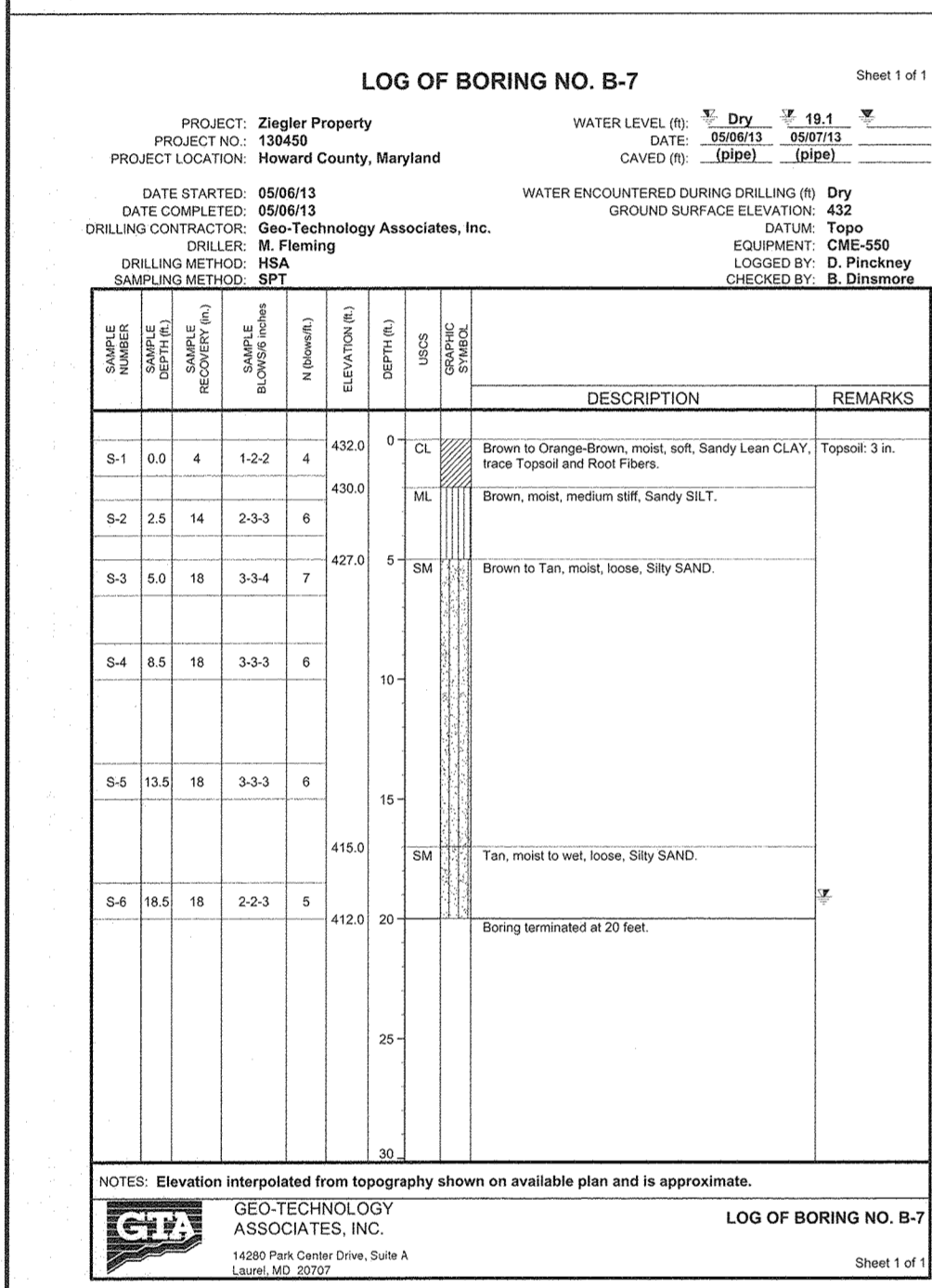
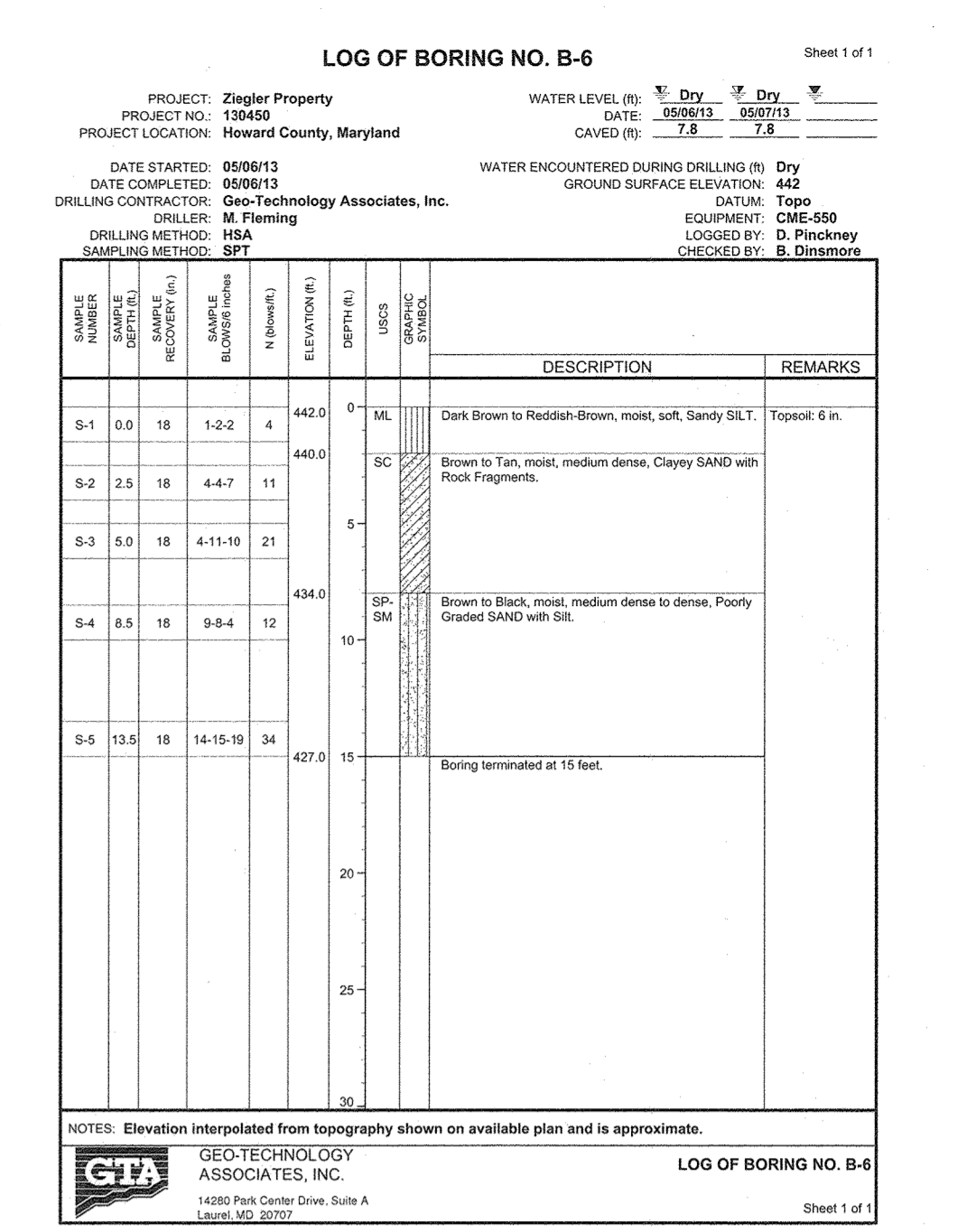
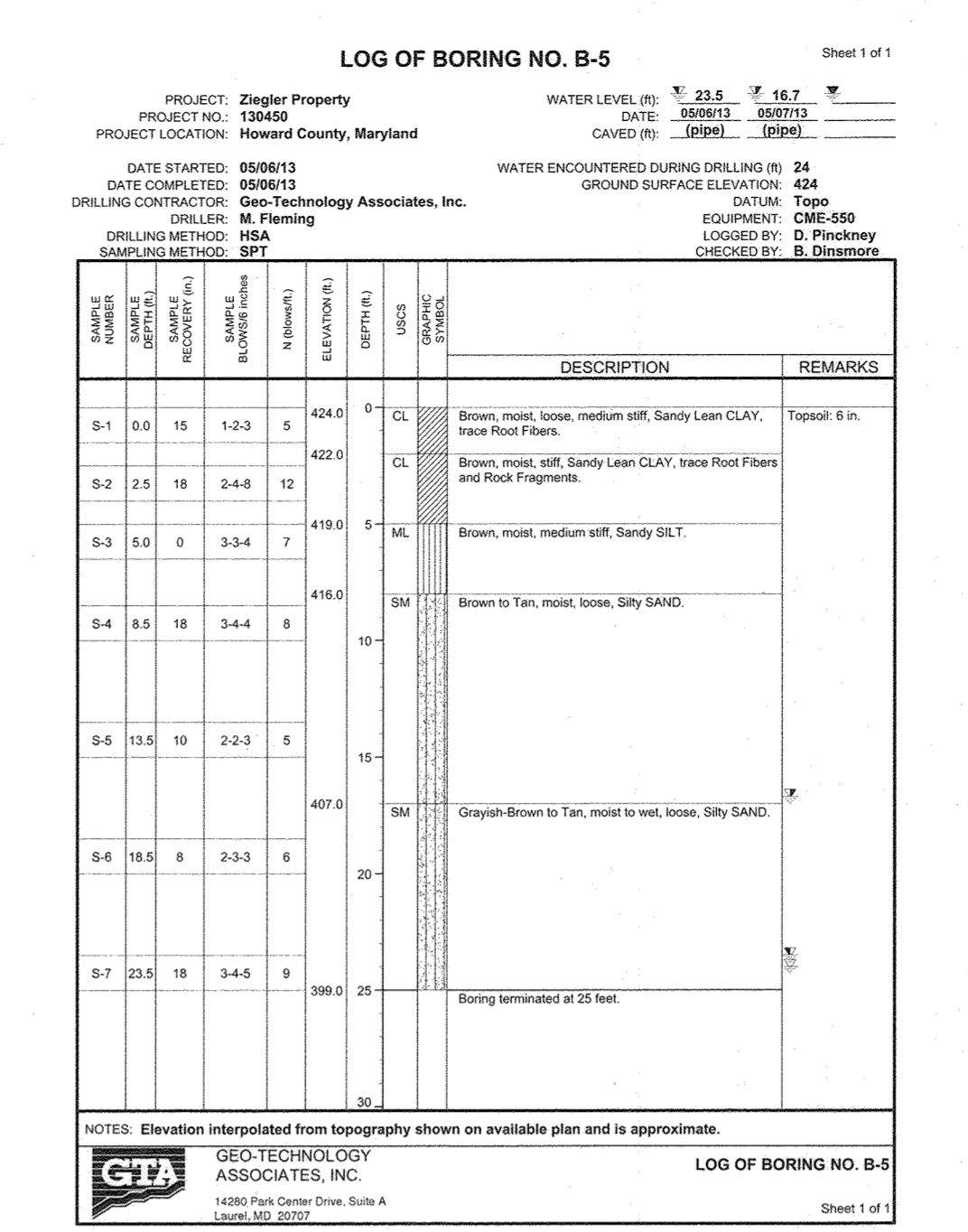
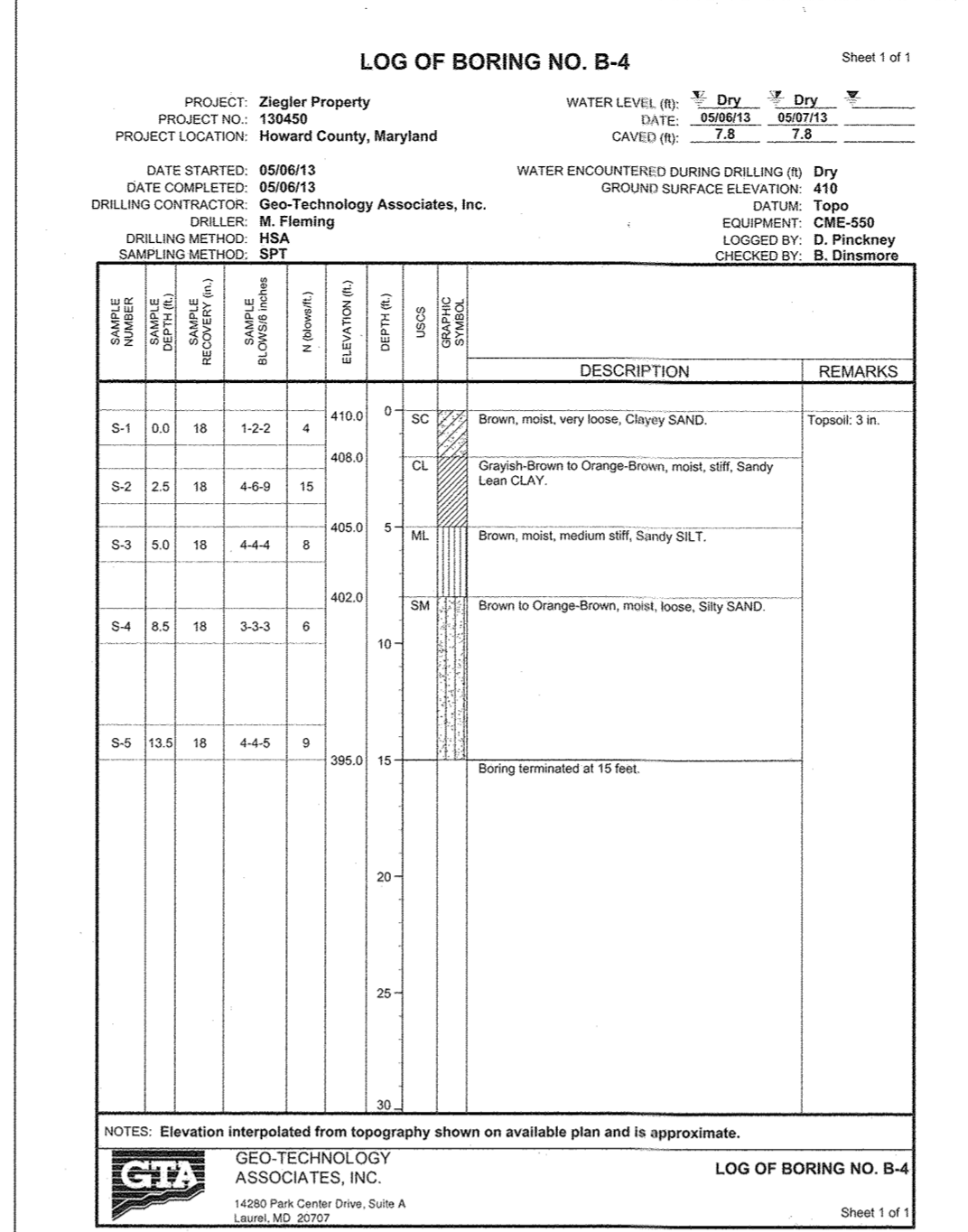
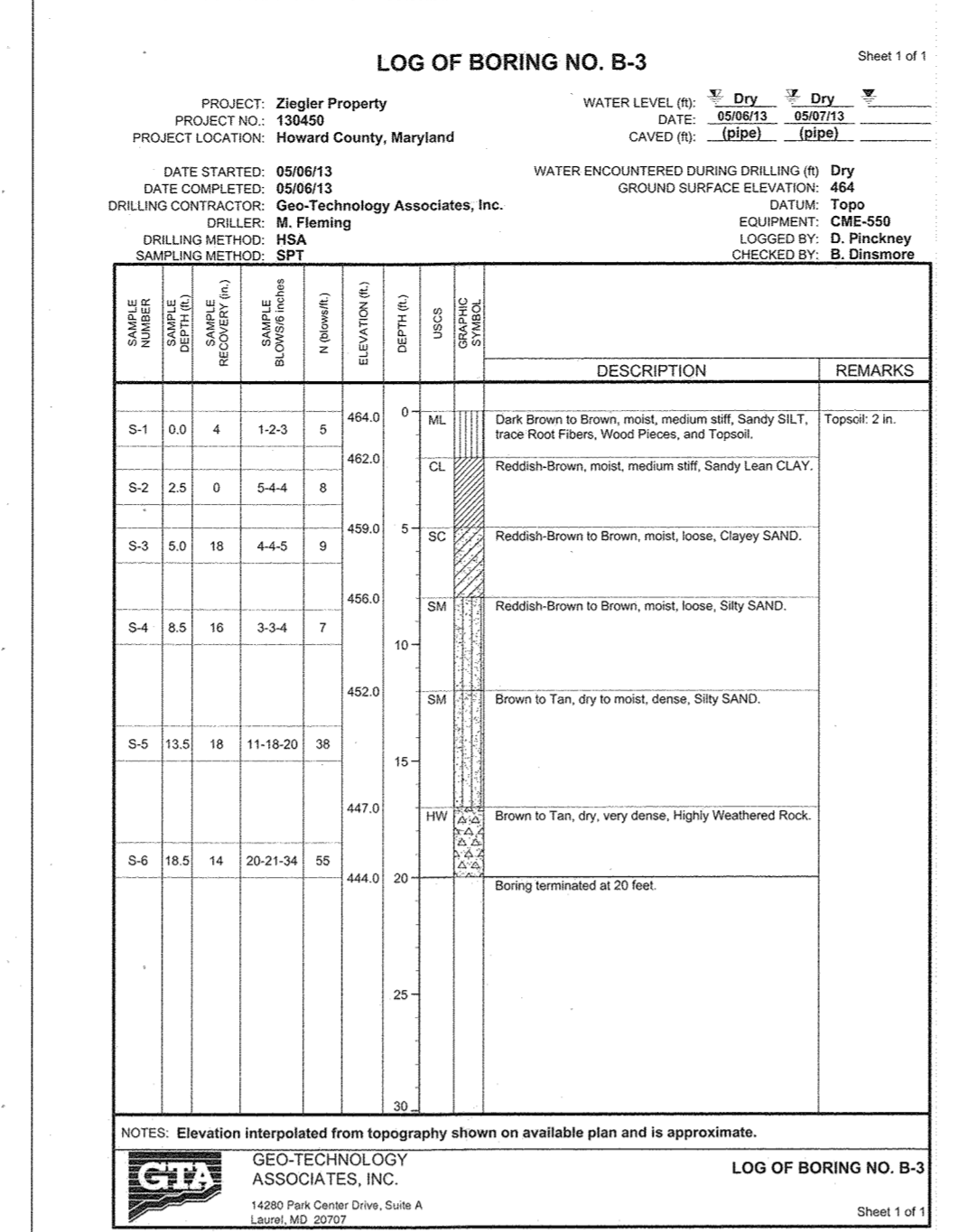
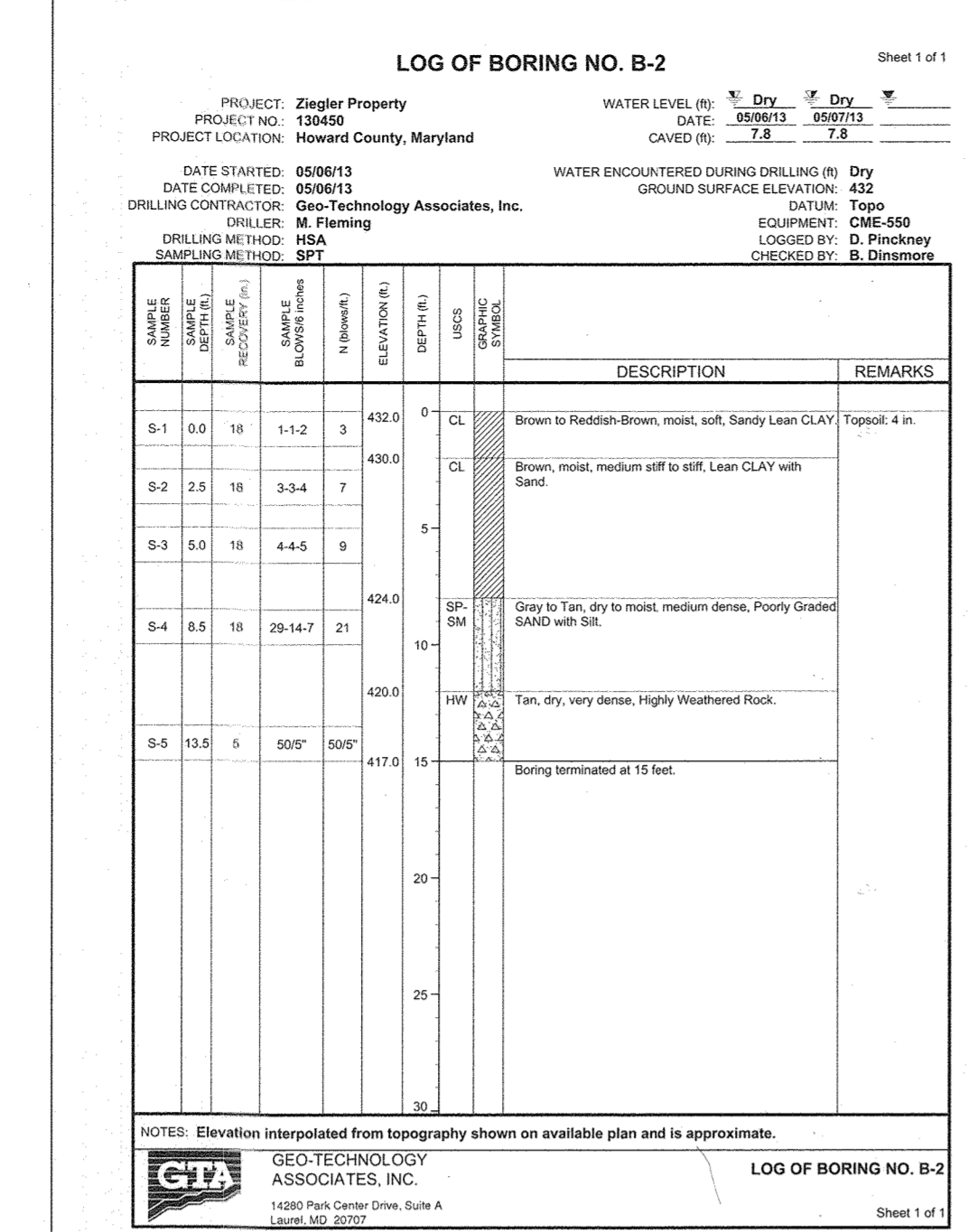
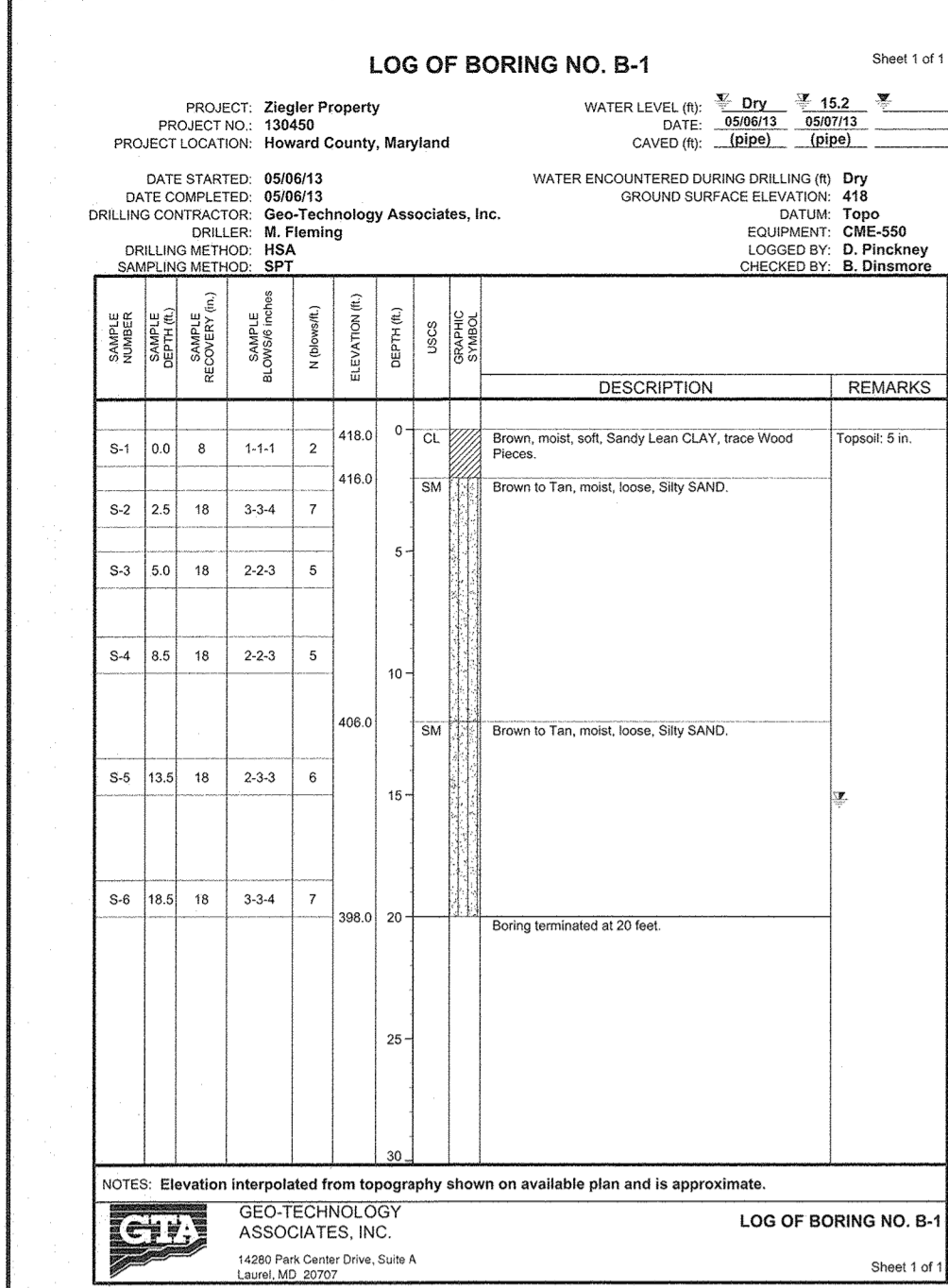


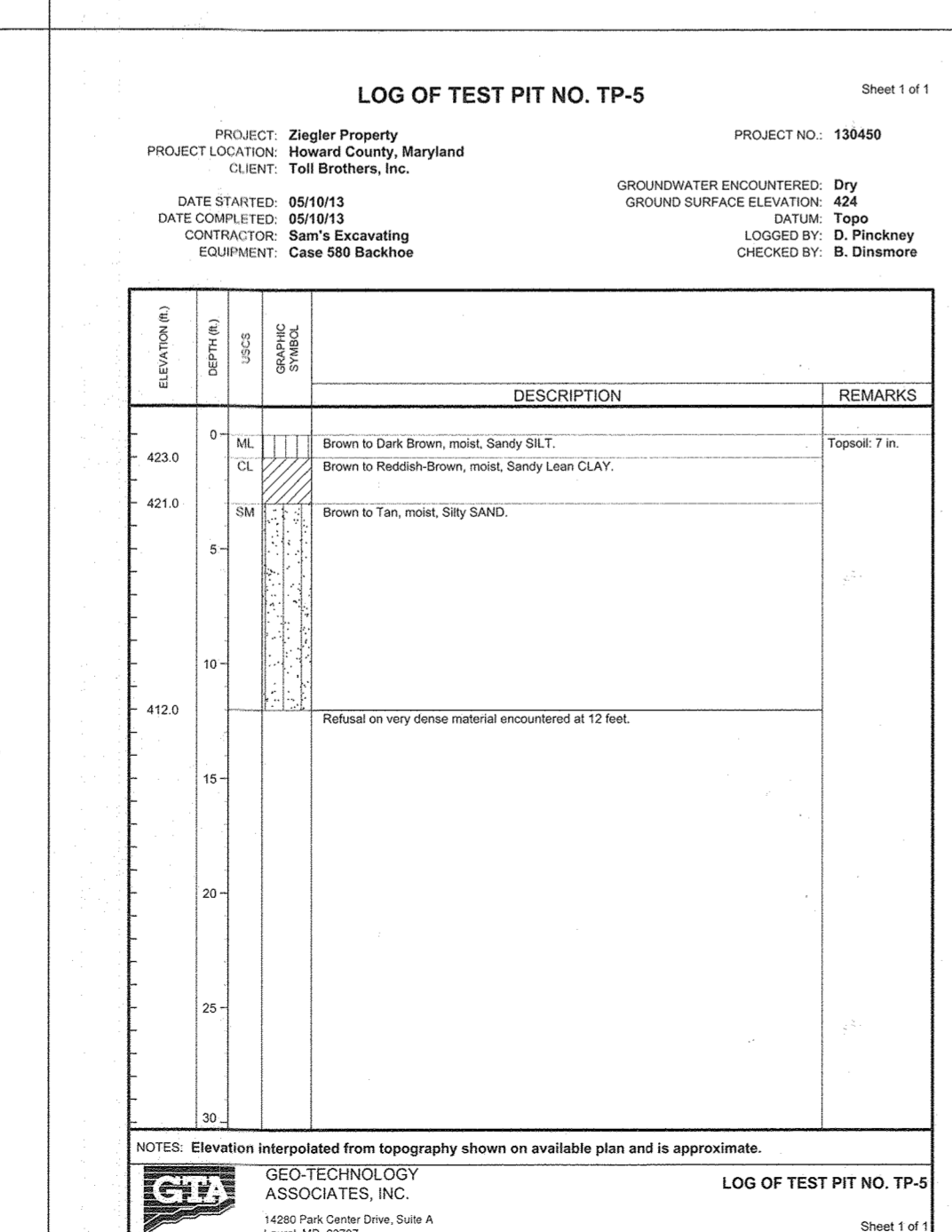
TABLE 1 SUBSURFACE EXPLORATION SUMMARY

EXPLORATION ID NO.	APPROXIMATE EXISTING SURFACE ELEVATION (FT)	APPROXIMATE TERMINATION DEPTH (FT)	APPROXIMATE TOPSOIL THICKNESS (INCHES)	WEATHERED ROCK DEPTH (FT)	HIGHLY WEATHERED ROCK DEPTH (FT)	SHALLOWEST OBSERVED WATER LEVEL (FT)
B-1	418	20	2	17	15	15.2
B-2	432	15	4	17	15	15.2
B-3	444	12	2	14	12	15.2
B-4	419	18	3	NE	NE	15.2
B-5	424	25	6	NE	NE	23.5
B-6	442	15	2	NE	NE	15.2
B-7	432	12	3	NE	NE	18.1
B-8	456	18	4	NE	NE	15.2
TP-1	464	12	4	NE	NE	15.2
TP-2	446	12	4	NE	NE	15.2
TP-3	442	13	6	NE	NE	13
TP-4	418	12	6	NE	NE	15.2
TP-5	424	12	7	12	12	412
TP-6	424	12	4	NE	NE	15.2
TP-7	442	11	4	NE	NE	15.2
TP-8	436	12	6	NE	NE	15.2
TP-9	465	13	8	NE	NE	9.5
TP-10	444	12	4	NE	NE	15.2
TP-11	422	11	4	NE	NE	8

NE = Not Encountered

* Elevation values reported above the approximate location are based on approximate interpolation of the existing grades shown on the uncolored electronic plans, prepared and provided by Benchmark Engineering, Inc. See the project cost engineer.

† Groundwater levels reported above represent the shallowest observed groundwater levels observed in the explorations. It should be noted that the test pit explorations were backfilled upon completion for safety reasons.



LOG OF BORING NO. B-72 Sheet 1 of 1

PROJECT: Ziegler Property
PROJECT NO.: 130469
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 6/8/18
DATE COMPLETED: 6/8/18
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: G. Palmer
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon with Automatic Hammer

WATER LEVEL (ft): 4.4
DATE: 6/7/18
CAVED (ft): 5.7

WATER ENCOUNTERED DURING DRILLING (ft): 8.0
GROUND SURFACE ELEVATION: 439.3
DATE: 6/7/18
EQUIPMENT: CME-55
LOGGED BY: V. Pianigetti
CHECKED BY: M. Whitley

SAMPLE NUMBER	DEPTH (ft)	REMARKS	DESCRIPTION	REMARKS
S-1	0.0 - 1.2	439.3	Dark Brown, moist, medium dense, Silty SAND, trace Rock Fragments.	Topsoil 3 in.
S-2	2.5 - 6	438.3	White, Tan, Grey, moist, loose to medium dense, Silty SAND, trace Clay.	Slight organic top.
S-3	6.0 - 7	437.3	Orange Brown with Dark Grey Mottling, moist, medium dense, Micaceous Silty SAND.	
S-4	8.5 - 12	427.3	Orange Brown with Dark Grey Mottling, moist, medium dense, Micaceous Silty SAND.	
S-5	13.5 - 14	418.3	Boring terminated at 20 feet.	
S-6	18.5 - 18	419.3	Boring terminated at 20 feet.	

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Lanham, MD 20707

LOG OF BORING NO. B-73 Sheet 1 of 1

PROJECT: Ziegler Property
PROJECT NO.: 130469
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 6/8/18
DATE COMPLETED: 6/8/18
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: G. Palmer
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon with Automatic Hammer

WATER LEVEL (ft): 10.7
DATE: 6/7/18
CAVED (ft): PIPE

WATER ENCOUNTERED DURING DRILLING (ft): 8.5
GROUND SURFACE ELEVATION: 440.7
DATE: 6/7/18
EQUIPMENT: CME-55
LOGGED BY: V. Pianigetti
CHECKED BY: M. Whitley

SAMPLE NUMBER	DEPTH (ft)	REMARKS	DESCRIPTION	REMARKS
S-1	0.0 - 8	440.7	Brown, moist, loose, Clayey SAND, trace Rock Fragments.	Topsoil 4 in.
S-2	2.5 - 12	438.7	Light Brown, moist, medium dense, Silty SAND, trace Mica.	
S-3	6.0 - 12	436.7	Brown to Grey Brown, moist, very loose to loose, Micaceous Silty SAND.	
S-4	8.5 - 18	428.7	Dark Reddish Brown to Grey Brown, moist, medium dense, Micaceous Silty SAND.	
S-5	13.5 - 14	423.7	Boring terminated at 20 feet.	
S-6	18.5 - 18	420.7	Boring terminated at 20 feet.	

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Lanham, MD 20707

LOG OF BORING NO. B-74 Sheet 1 of 1

PROJECT: Ziegler Property
PROJECT NO.: 130469
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 6/8/18
DATE COMPLETED: 6/8/18
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: G. Palmer
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon with Automatic Hammer

WATER LEVEL (ft): 8.8
DATE: 6/7/18
CAVED (ft): PIPE

WATER ENCOUNTERED DURING DRILLING (ft): 8.5
GROUND SURFACE ELEVATION: 437.3
DATE: 6/7/18
EQUIPMENT: CME-55
LOGGED BY: V. Pianigetti
CHECKED BY: M. Whitley

SAMPLE NUMBER	DEPTH (ft)	REMARKS	DESCRIPTION	REMARKS
S-1	0.0 - 5	437.3	Dark Brown, moist, loose, Silty SAND, trace Rock Fragments.	Topsoil 3 in.
S-2	2.5 - 12	435.3	Brown, Tan, Grey Brown, moist, loose, Micaceous Silty SAND.	
S-3	6.0 - 15	428.3	Grey Brown, moist, loose, Silty SAND, trace Mica.	
S-4	8.5 - 17	423.3	Grey Brown, moist, medium dense, Micaceous Poorly Graded SAND with Sil.	
S-5	13.5 - 18	422.3	Boring terminated at 15 feet.	
S-6	18.5 - 18	398.3	Grey Brown, moist, dense, Micaceous Silty SAND.	
S-7	18.5 - 18	395.3	Boring terminated at 20 feet.	

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Lanham, MD 20707

LOG OF BORING NO. B-75 Sheet 1 of 1

PROJECT: Ziegler Property
PROJECT NO.: 130469
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 6/7/18
DATE COMPLETED: 6/7/18
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: G. Palmer
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon with Automatic Hammer

WATER LEVEL (ft): 12.6
DATE: 6/7/18
CAVED (ft): 18.9

WATER ENCOUNTERED DURING DRILLING (ft): Dry
GROUND SURFACE ELEVATION: 415.4
DATE: 6/7/18
EQUIPMENT: CME-55
LOGGED BY: V. Pianigetti
CHECKED BY: M. Whitley

SAMPLE NUMBER	DEPTH (ft)	REMARKS	DESCRIPTION	REMARKS
S-1	0.0 - 12	415.4	Brown, moist, very loose, Silty SAND, trace Rock Fragments.	Topsoil 3 in.
S-2	2.5 - 18	413.4	Brown, moist, medium dense, Silty SAND with Rock Fragments.	
S-3	6.0 - 8	408.2	Brown, moist, loose, Silty SAND, trace Clay, Rock Fragments, and Mica.	
S-4	8.5 - 18	403.2	Grey Brown, moist, medium dense, Micaceous Poorly Graded SAND with Sil.	
S-5	13.5 - 18	398.2	Grey Brown, moist, dense, Micaceous Silty SAND.	
S-6	18.5 - 18	395.2	Boring terminated at 20 feet.	

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Lanham, MD 20707

LOG OF BORING NO. B-76 Sheet 1 of 1

PROJECT: Ziegler Property
PROJECT NO.: 130469
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 6/7/18
DATE COMPLETED: 6/7/18
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: G. Palmer
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon with Automatic Hammer

WATER LEVEL (ft): 13.5
DATE: 6/7/18
CAVED (ft): PIPE

WATER ENCOUNTERED DURING DRILLING (ft): 18.5
GROUND SURFACE ELEVATION: 415.4
DATE: 6/7/18
EQUIPMENT: CME-55
LOGGED BY: V. Pianigetti
CHECKED BY: M. Whitley

SAMPLE NUMBER	DEPTH (ft)	REMARKS	DESCRIPTION	REMARKS
S-1	0.0 - 8	415.4	Dark Brown, moist, very loose, Silty SAND, trace Clay and Rock Fragments.	Topsoil 2.5 in.
S-2	2.5 - 18	411.4	Brown, moist, medium dense, Silty SAND with Rock Fragments.	
S-3	6.0 - 16	408.4	Brown, moist, loose to medium dense, Silty SAND, trace Mica.	
S-4	8.5 - 16	403.4	Tan, Grey, moist, loose, Silty SAND.	
S-5	13.5 - 18	398.4	Light Brown, moist, medium dense, Silty SAND, trace Mica.	
S-6	18.5 - 18	395.4	Boring terminated at 20 feet.	

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Lanham, MD 20707

LOG OF BORING NO. B-77 Sheet 1 of 1

PROJECT: Ziegler Property
PROJECT NO.: 130469
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 6/7/18
DATE COMPLETED: 6/7/18
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: G. Palmer
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon with Automatic Hammer

WATER LEVEL (ft): 8.2
DATE: 6/7/18
CAVED (ft): 8.4

WATER ENCOUNTERED DURING DRILLING (ft): Dry
GROUND SURFACE ELEVATION: 415.8
DATE: 6/7/18
EQUIPMENT: CME-55
LOGGED BY: V. Pianigetti
CHECKED BY: M. Whitley

SAMPLE NUMBER	DEPTH (ft)	REMARKS	DESCRIPTION	REMARKS
S-1	0.0 - 10	415.8	Dark Brown, moist, very loose, Silty SAND, trace Rock Fragments.	Topsoil 4 in.
S-2	2.5 - 16	410.8	Brown, moist, medium dense, Silty SAND, trace Rock Fragments and Mica.	
S-3	6.0 - 16	405.8	Light to Grey Brown, moist, medium dense, Silty SAND, trace Rock Fragments and Mica.	
S-4	8.5 - 18	400.8	Tan, Grey, moist, medium dense, Poorly Graded SAND, trace Sil and Mica.	
S-5	13.5 - 18	397.8	Boring terminated at 15 feet.	

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Lanham, MD 20707

LOG OF BORING NO. CUL-1 Sheet 1 of 1

PROJECT: Ziegler Property
PROJECT NO.: 130469
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 6/25/18
DATE COMPLETED: 6/29/18
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: G. Palmer
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon with Automatic Hammer

WATER LEVEL (ft): 12.8
DATE: 6/28/18
CAVED (ft): PIPE

WATER ENCOUNTERED DURING DRILLING (ft): 18.5
GROUND SURFACE ELEVATION: 411.8
DATE: 6/28/18
EQUIPMENT: CME-55
LOGGED BY: V. Pianigetti
CHECKED BY: M. Whitley

SAMPLE NUMBER	DEPTH (ft)	REMARKS	DESCRIPTION	REMARKS
S-1	0.0 - 16	411.8	Brown, moist, loose, Silty SAND.	Topsoil 4 in.
S-2	2.5 - 18	409.8	Grey Brown, moist, medium dense, Silty SAND, trace Mica.	
S-3	6.0 - 18	404.8	Brown, moist, medium dense, Silty SAND with Rock Fragments, trace Mica.	
S-4	8.5 - 16	399.8	Grey Brown, moist, loose to medium dense, Micaceous Silty SAND.	
S-5	13.5 - 16	394.8	Grey Brown, moist, very dense, Highly Weathered Rock, trace Mica.	
S-6	18.5 - 18	389.8	Grey Brown, moist, very dense, Highly Weathered Rock.	
S-7	23.5 - 8	384.8	Grey Brown, moist, very dense, Highly Weathered Rock.	
S-8	28.5 - 12	381.8	Grey Brown, moist, dense, Micaceous Silty SAND.	
S-9	33.5 - 3	378.8	Brown, dry to moist, very dense, Highly Weathered Rock.	
S-10	38.5 - 1	373.8	Dark Grey Brown to Grey Brown, dry, very dense, Partly Weathered Rock.	
S-11	43.5 - 0	368.8	Auger refusal at 46.5 feet.	
S-12	48.5 - 0	363.8	Auger refusal at 46.5 feet.	

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Lanham, MD 20707

LOG OF BORING NO. CUL-2 Sheet 1 of 1

PROJECT: Ziegler Property
PROJECT NO.: 130469
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 6/15/18
DATE COMPLETED: 6/15/18
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: G. Palmer
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon with Automatic Hammer

WATER LEVEL (ft): 3.4
DATE: 6/15/18
CAVED (ft): PIPE

WATER ENCOUNTERED DURING DRILLING (ft): 8.5
GROUND SURFACE ELEVATION: 411.8
DATE: 6/15/18
EQUIPMENT: CME-55
LOGGED BY: V. Pianigetti
CHECKED BY: M. Whitley

SAMPLE NUMBER	DEPTH (ft)	REMARKS	DESCRIPTION	REMARKS
S-1	0.0 - 4	411.8	Dark Brown, moist, very loose, Silty SAND, trace Rock Fragments.	Topsoil 3 in.
S-2	2.5 - 16	409.8	Grey Brown, moist, very soft, Sandy Silty SAND, trace Rock Fragments, trace Mica.	
S-3	6.0 - 14	404.8	Grey to Grey Brown, moist, medium dense, Silty SAND with Rock Fragments, trace Mica.	
S-4	8.5 - 14	399.8	Brown with Yellow, moist, medium dense, Silty SAND, trace Mica.	
S-5	13.5 - 18	394.8	Grey Brown, moist, very dense, Highly Weathered Rock, trace Mica.	
S-6	18.5 - 18	389.8	Brown to Dark Brown, dry to moist, very dense, Highly Weathered Rock.	
S-7	23.5 - 1	384.8	Grey, dry to moist, very dense, Partly Weathered Rock.	
S-8	28.5 - 2	379.8	Auger refusal at 28.5 feet.	

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Lanham, MD 20707

LOG OF BORING NO. CUL-2B Sheet 1 of 1

PROJECT: Ziegler Property
PROJECT NO.: 130469
PROJECT LOCATION: Howard County, Maryland


DATE STARTED: 6/15/18
DATE COMPLETED: 6/15/18
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: G. Palmer
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon with Automatic Hammer

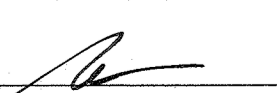
WATER LEVEL (ft): 7.0
DATE: 6/15/18
CAVED (ft): PIPE


WATER ENCOUNTERED DURING DRILLING (ft): 8.5
GROUND SURFACE ELEVATION: 411.8
DATE: 6/15/18
EQUIPMENT: CME-55
LOGGED BY: V. Pianigetti
CHECKED BY: M. Whitley

SAMPLE NUMBER	DEPTH (ft)	REMARKS	DESCRIPTION	REMARKS
S-1	0.0 - 10	411.8	Brown, moist, very loose, Clayey SAND.	Topsoil 3 in.
S-2	2.5 - 14	406.8	Grey, moist, medium dense, Silty Clayey SAND, trace Rock Fragments and Mica.	
S-3	6.0 - 14	401.8	Grey to Brown, moist, loose, Micaceous Silty SAND.	
S-4	8.5 - 14	396.8	Brown with Yellow, moist, medium dense, Silty SAND, trace Mica.	
S-5	13.5 - 14	391.8	Brown, dry to moist, very dense, Highly Weathered Rock, trace Mica.	
S-6	18.5 - 10	386.8	Brown to Dark Brown, dry to moist, very dense, Highly Weathered Rock.	
S-7	23.5 - 4	381.8	Auger refusal at 23.5 feet.	
S-8	28.5 - 2	376.8	Auger refusal at 28.5 feet.	
S-9	33.5 - 2	371.8	Auger refusal at 33.5 feet.	
S-10	38.5 - 2	366.8	Auger refusal at 38.5 feet.	

NOTES:
GEO-TECHNOLOGY ASSOCIATES, INC.
14280 Park Center Drive, Suite A
Lanham, MD 20707

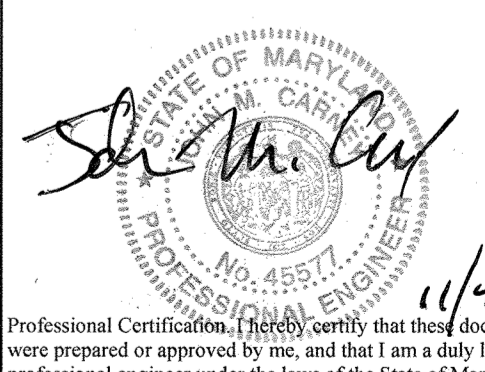
APPROVED: DEPARTMENT OF PUBLIC WORKS

 CHIEF, BUREAU OF HIGHWAYS MK
 DATE: 01/21/2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 3/5/2020


 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 2/20/20

NO.	DATE	REVISION
1	1-20-21	Update sheet #'s

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-CIVLENGINEERING.COM



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: BORING LOGS AND DETAILS	DATE: NOVEMBER, 2019 PROJECT NO. 2501
DRAFT: MP DESIGN: JC CHECK: JC	SCALE: AS SHOWN SHEET 39 OF 75



LEGEND	
EXISTING CONTOURS	480
LIMIT OF WETLANDS	478
STREAM	
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
EXISTING STRUCTURE	
PROPOSED STRUCTURE	
SEWAGE DISPOSAL BASIC RESERVE AREA	
PROPOSED WELL BOX	WELL BOX
PERIMETER LANDSCAPE	
STREET TREE LANDSCAPE	
MITIGATION LANDSCAPE	
PERIMETER DESIGNATION	P1
FOREST CONSERVATION EASEMENT	
PROPERTY BOUNDARY LINE	
LOT LINE	
100-YR FLOODPLAIN EASEMENT	

DEVELOPER'S/BUILDER'S CERTIFICATE
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DEVELOPER - TOLL BROTHERS, INC. DATE 11/26/19

APPROVED: DEPARTMENT OF PUBLIC WORKS DATE 01/31/2020

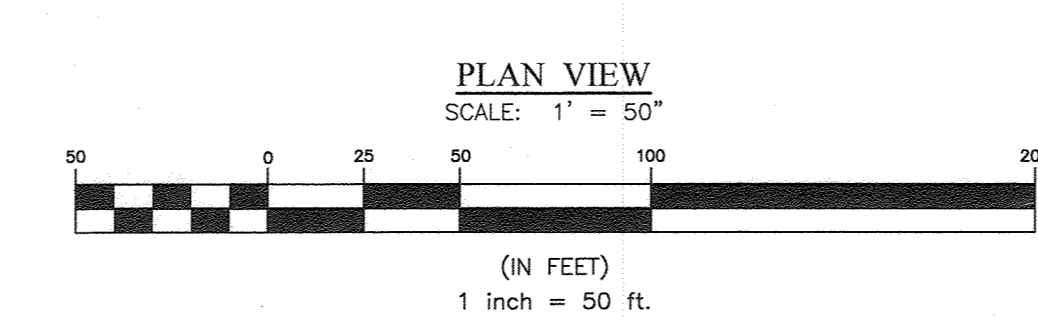
CHIEF, BUREAU OF HIGHWAYS MK

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING DATE 2/5/2020

CHIEF, DIVISION OF LAND DEVELOPMENT

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 2/10/20

NOTE: FOR LOTS 1, 26 THROUGH 36 THE FOREST CONSERVATION EASEMENT RETENTION WIDTH IS GREAT ENOUGH TO PROVIDE LANDSCAPE BUFFER. NO PLANTINGS REQUIRED.



NORA FREEMAN CRIST
 N/F
 TAX MAP REF. 28 PARCEL 366
 HOWARD COUNTY AGRICULTURAL LAND
 PRESERVATION PROGRAM EASEMENT
 14708/34
 RC-DEO
 HC-87-06-E
 N 578.500'

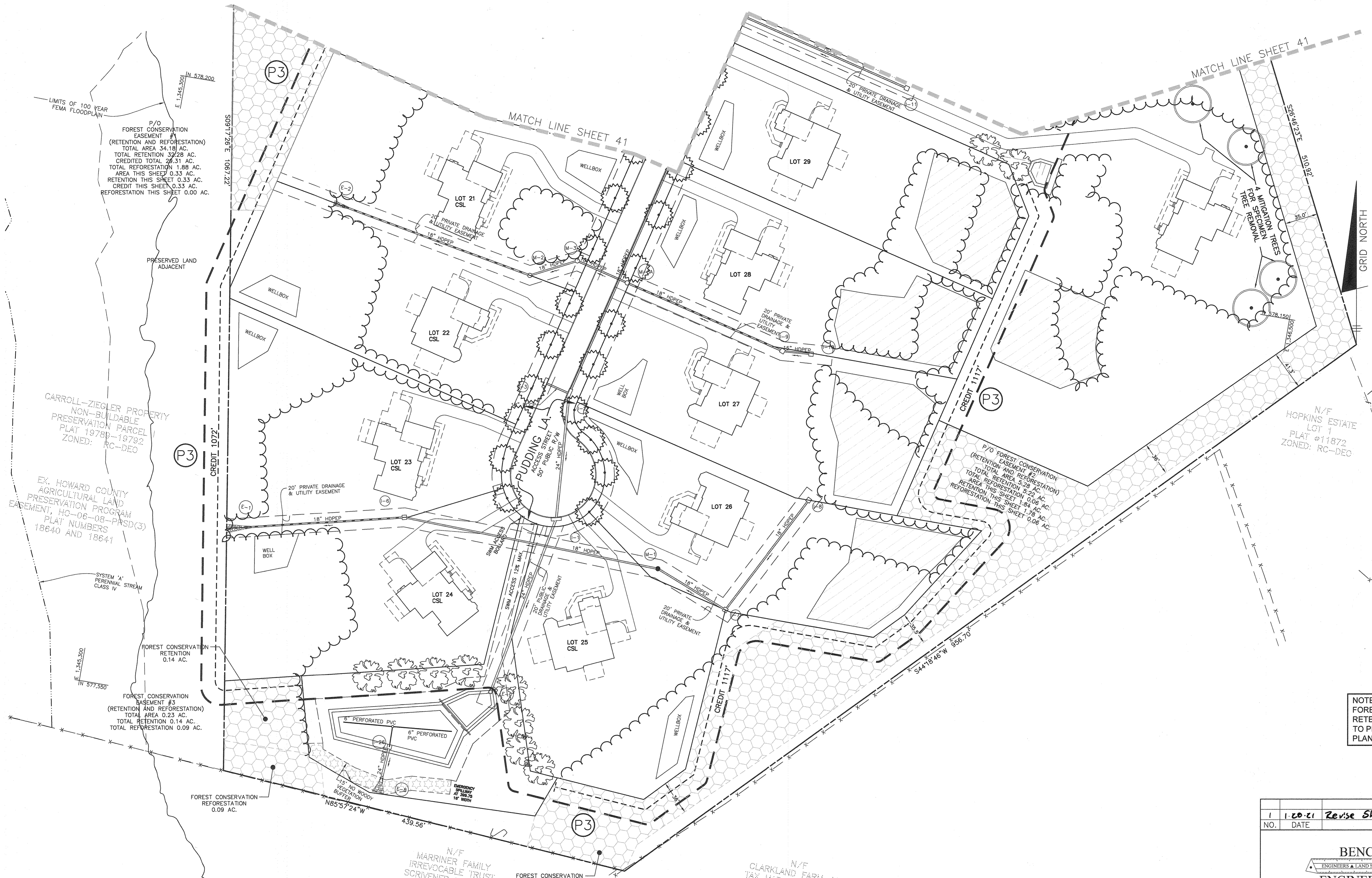
NO. 1	DATE 1-20-21	REVISION	Revise Sheet #s - Add easement label
BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8450 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6844 WWW.BEI-CVLENGINEERING.COM			
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I	
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE: LANDSCAPE PLAN		DATE: NOVEMBER, 2019 PROJECT NO. 2501	
DRAFT: MP DESIGN: JC CHECK: JC		SCALE: AS SHOWN SHEET 41 OF 78	

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

1/25/21

LEGEND

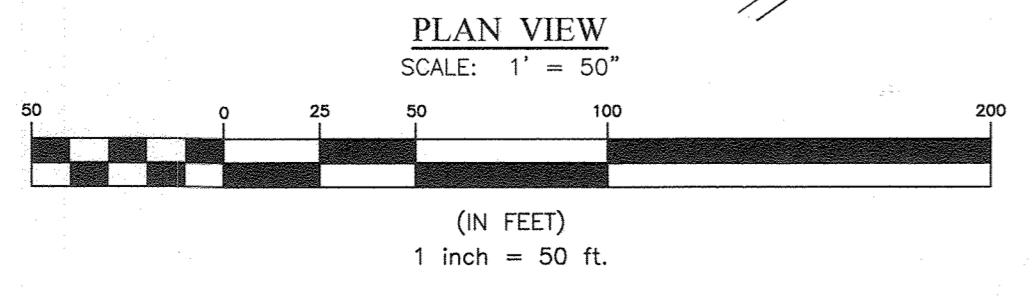
- EXISTING CONTOURS
- LIMIT OF WETLANDS
- STREAM
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL SEPTIC RESERVE AREA
- PROPOSED WELL BOX
- PERIMETER LANDSCAPE
- STREET TREE LANDSCAPE
- MITIGATION LANDSCAPE
- PERIMETER DESIGNATION
- FOREST CONSERVATION EASEMENT
- PROPERTY BOUNDARY LINE
- LOT LINE
- 100-YR FLOODPLAIN EASEMENT



NOTE: FOR LOTS 1, 26 THROUGH 36 THE FOREST CONSERVATION EASEMENT RETENTION WIDTH IS GREAT ENOUGH TO PROVIDE LANDSCAPE BUFFER. NO PLANTINGS REQUIRED.

DEVELOPER'S/BUILDER'S CERTIFICATE
 I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 18.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

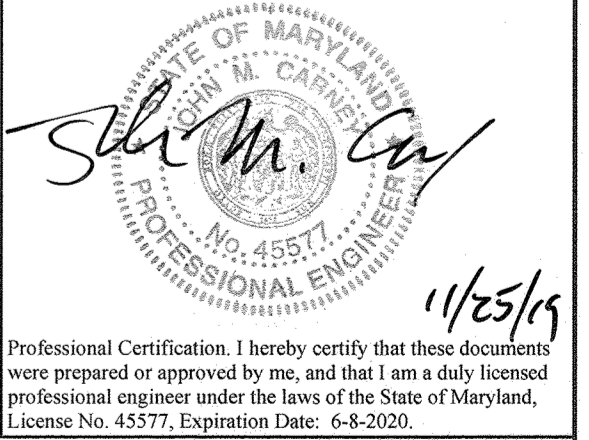
DEVELOPER - TOLL BROTHERS, INC. DATE: 11/26/19
 APPROVED: DEPARTMENT OF PUBLIC WORKS DATE: 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING DATE: 3/5/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 2/20/20

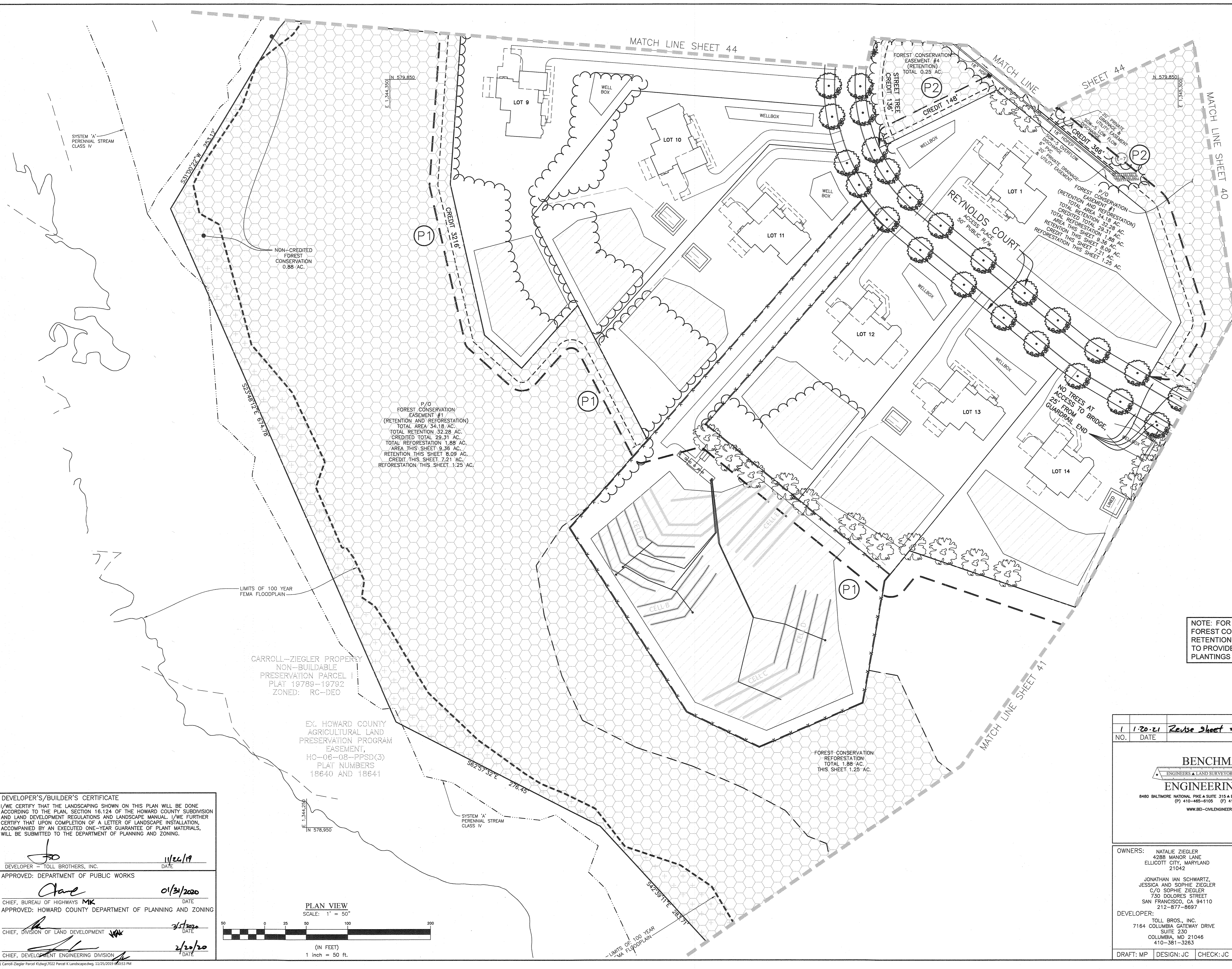


N/F MARRINER FAMILY IRREVOCABLE TRUST SCRIVENER PROPERTY LOT 3, PLAT 19883 14586/249 HOWARD COUNTY AGRICULTURAL LAND PRESERVATION EASEMENT, HC-88-01-E(S) ZONING: RC-DEG

N/F CLARKLAND FARM, LLC TAX MAP 29, PARCEL 3 REF. 14106/167 ZONED: RC-DEG HOWARD COUNTY AGRICULTURAL LAND PRESERVATION PROGRAM EASEMENT, HC-87-06-E

NO.	1	20-21	Revise Sheet #s	REVISION
BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BE-CIVILENGINEERING.COM				
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I		
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 149 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
TITLE: LANDSCAPE PLAN		DATE: NOVEMBER, 2019 PROJECT NO. 2501		
DRAFT: MP DESIGN: JC CHECK: JC		SCALE: AS SHOWN SHEET 42 OF 75		





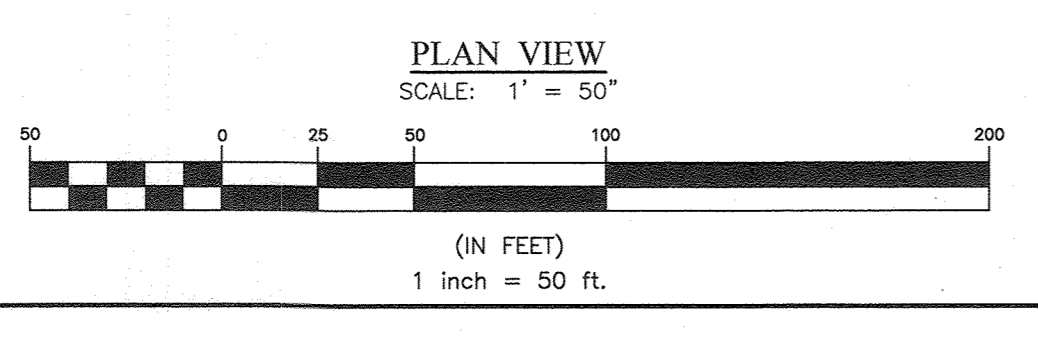
LEGEND

- EXISTING CONTOURS: 480, 478
- LIMIT OF WETLANDS
- STREAM
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL SENSITIVE RESERVE AREA
- PROPOSED WELL BOX
- PERIMETER LANDSCAPE
- STREET TREE LANDSCAPE
- MITIGATION LANDSCAPE
- PERIMETER DESIGNATION: P1
- FOREST CONSERVATION EASEMENT
- PROPERTY BOUNDARY LINE
- LOT LINE
- 100-YR FLOODPLAIN EASEMENT

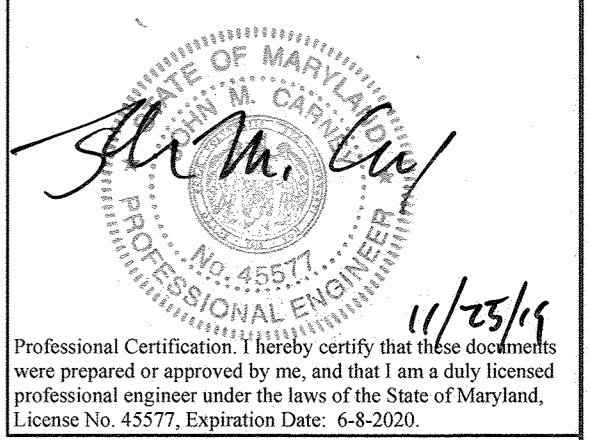
NOTE: FOR LOTS 1, 26 THROUGH 36 THE FOREST CONSERVATION EASEMENT RETENTION WIDTH IS GREAT ENOUGH TO PROVIDE LANDSCAPE BUFFER. NO PLANTINGS REQUIRED.

DEVELOPER'S/BUILDER'S CERTIFICATE
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DEVELOPER - TOLL BROTHERS, INC. DATE: 11/26/19
 APPROVED: DEPARTMENT OF PUBLIC WORKS DATE: 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING DATE: 2/5/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 2/20/20

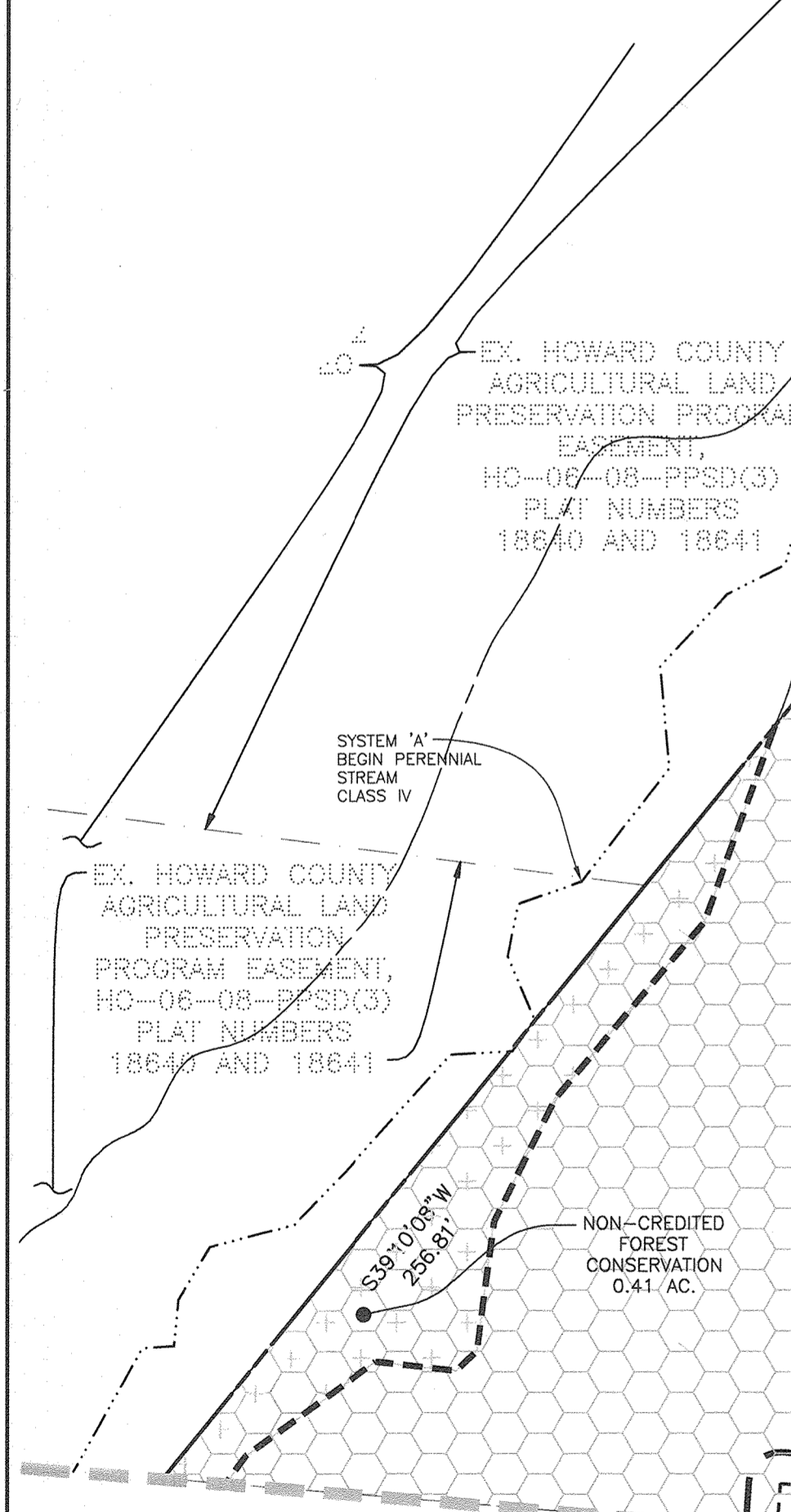
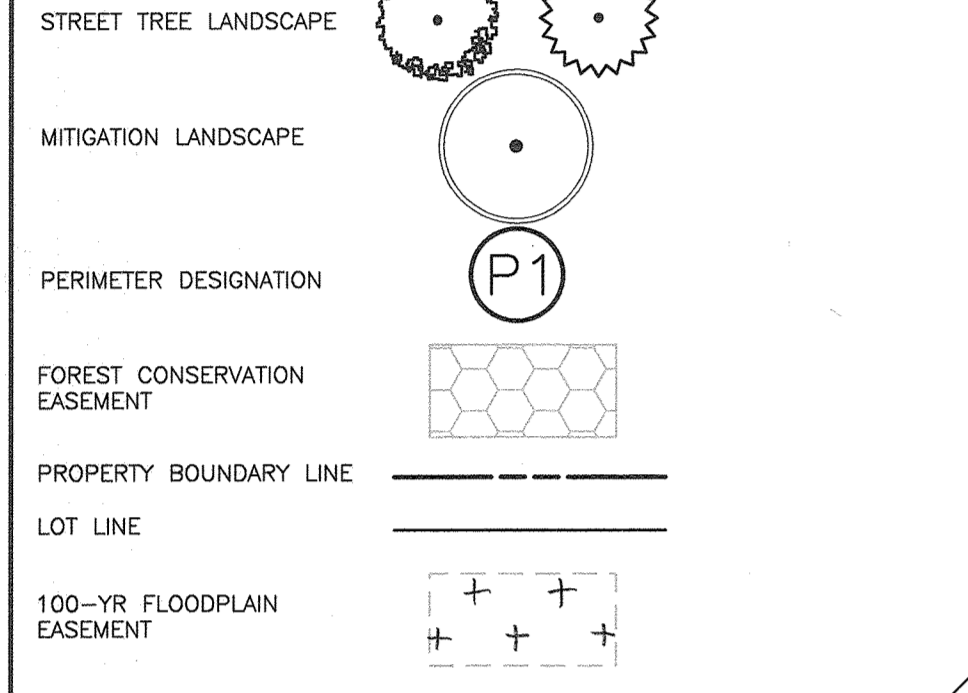
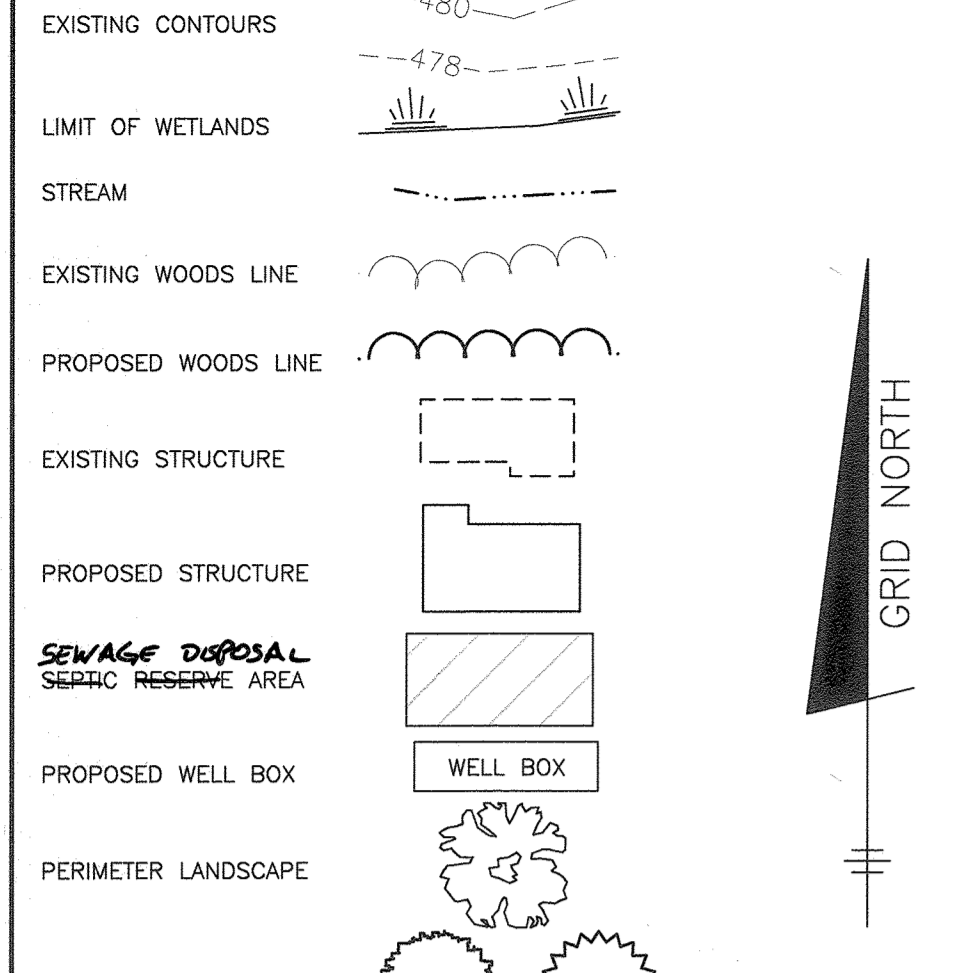


1-20-21 <i>Revise Sheet #s</i>		REVISION	
NO.	DATE		
BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6644 WWW.BE-CIVLENGINEERING.COM			
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042 JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I	
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE: LANDSCAPE PLAN			
DATE: NOVEMBER, 2019		PROJECT NO. 2501	
DRAFT: MP		DESIGN: JC	
CHECK: JC		SCALE: AS SHOWN	
SHEET 013		OF 75	



LEGEND

- EXISTING CONTOURS: 480, 478
- LIMIT OF WETLANDS
- STREAM
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL RESERVE AREA
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- PERIMETER DESIGNATION: P1
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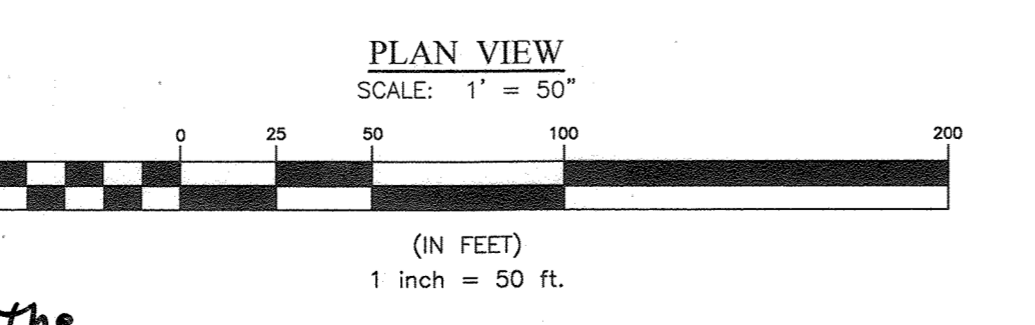
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DEVELOPER: **TOLL BROS., INC.** DATE: **11/24/19**
 APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS: **MK** DATE: **01/31/2020**
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT: **JK** DATE: **2/3/2020**
 CHIEF, DEVELOPMENT ENGINEERING DIVISION: **JK** DATE: **2/20/20**

Supplemental Forest Planting Schedule

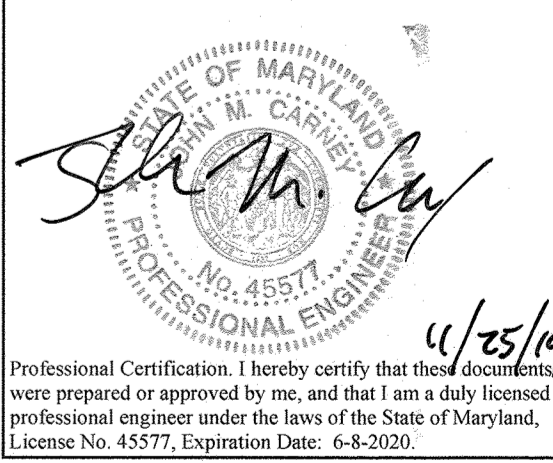
Symbol	Quantity	Name	Height
☉	25	Juniperus Virginiana	6'-8'
☉	14	Red Cedar	6'-8'
☉	13	Thuja Placota	6'-8'
☉		Quercus Arborea Green Giant	6'-8'
☉		Picea Abies	6'-8'
☉		Norway Spruce	6'-8'

Supplemental forest plantings is to be provided by the developer within the Forest Conservation Easement, sides and rear of Lots 5-7.



NOTE: FOR LOTS 1, 26 THROUGH 36 THE FOREST CONSERVATION EASEMENT RETENTION WIDTH IS GREAT ENOUGH TO PROVIDE LANDSCAPE BUFFER. NO PLANTINGS REQUIRED.

NO.	1	DATE	1-20-21	REVISION	Revise Sheet #s, Add easement leaders, Show forest plantings
BENCHMARK ENGINEERING, INC. 8400 BALTIMORE NATIONAL PIKE A SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-8644 WWW.BE-CIVLENGINEERING.COM					
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042			PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I		
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263			LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND		
TITLE: LANDSCAPE PLAN					
DRAFT: MP		DESIGN: JC		CHECK: JC	
DATE: NOVEMBER, 2019		PROJECT NO.: 2501		SHEET: 44 OF 75	

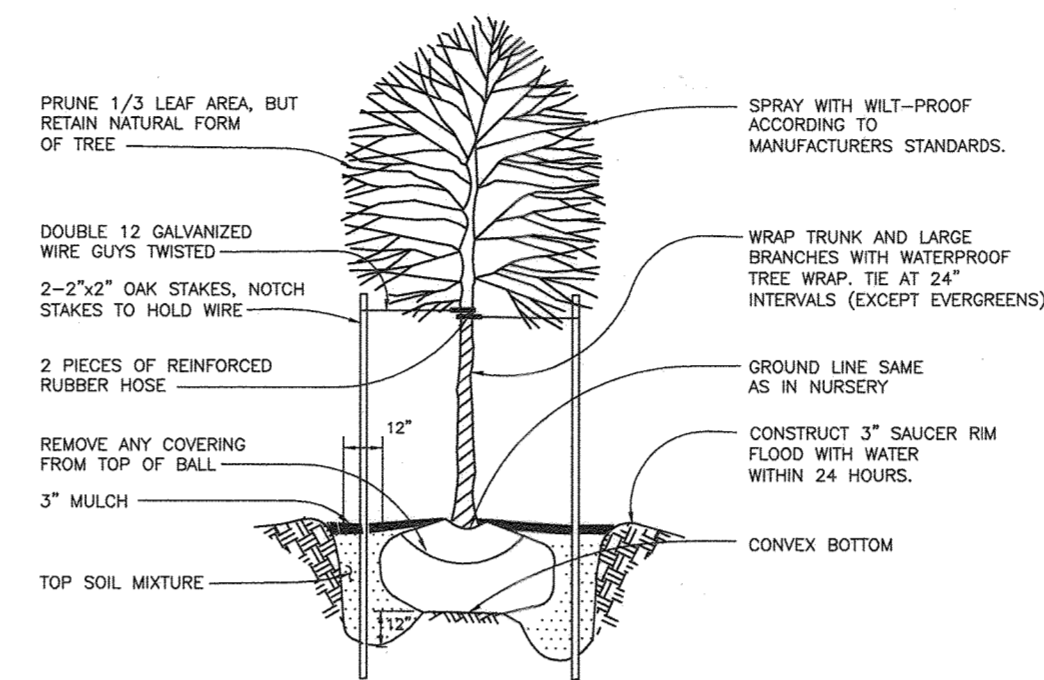


Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

4/25/19

LANDSCAPING NOTES

1. THE PROPOSED LANDSCAPING SHALL BE PROVIDED BY THE PLANTINGS AS SHOWN ON THESE PLANS.
2. THE DEVELOPER SHALL BE RESPONSIBLE FOR ALL INTERNAL PLANTINGS, THE PRESERVATION OF THE EXISTING PERIMETER VEGETATION, AND FOR THE PERIMETER PLANTINGS.
3. A MINIMUM DISTANCE OF TWENTY (20) FEET MUST BE MAINTAINED BETWEEN ANY TREES LOCATED ALONG THE CURB LINE AND FROM STREET LIGHTS.
4. TREES MUST BE PLANTED A MINIMUM OF FIVE (5) FEET FROM AN OPEN SPACE ACCESS STRIP, TEN (10) FEET FROM A DRIVEWAY AND FIVE (5) FEET FROM A STORM DRAIN.
5. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL.
6. STREET TREES SHALL BE PLANTED SIX (6) FEET BEHIND THE BACK OF CURB WHEN THERE ARE NO SIDEWALKS UNLESS THERE IS A CONFLICT WITH A UTILITY. STREET TREES SHALL BE PLANTED IN THE RIGHT-OF-WAY OR EASEMENT AREA ONLY.
7. ALL LANDSCAPING PLANT TYPES SHOWN ON THESE PLANS ARE RECOMMENDATIONS AND MAY BE SUBSTITUTED WITH APPROVED EQUIVALENTS FROM THE HOWARD COUNTY LANDSCAPE MANUAL.
8. NO TREES SHALL BE PLACED WITHIN 10' BEHIND A RETAINING WALL OR WITHIN A RELATED MAINTENANCE EASEMENT, WHICHEVER IS GREATER.
9. SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN, DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.
10. POSTING OF SURETY FOR REQUIRED LANDSCAPING IN ACCORDANCE WITH SECTION 16.124 OF THE LANDSCAPE MANUAL IN THE AMOUNT OF \$14,400 FOR 48 SHADE TREES. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING MUST BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT.
11. THE OWNER, TENANT, AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BERM, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION AND WHEN NECESSARY, REPAIRED OR REPLACED.
12. AT THE TIME OF INSTALLMENT, ALL PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER SIZE REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPING MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES.
13. PER WP-14-119 CONDITION #3 THE DEVELOPER WILL PROVIDE 6 TREES PROVIDED AS PART OF THE LANDSCAPE PLAN DUE TO THE REMOVAL SPECIMEN TREES 3, 4 AND 10. THESE PLANTINGS WILL BE IN ADDITION TO ANY REQUIRED LANDSCAPE OR FOREST CONSERVATION PLANTINGS. THE MITIGATION WILL BE SHOWN ON THE ASSOCIATED LANDSCAPE PLAN AND SURETY FOR THESE ADDITIONAL TREES WILL BE REQUIRED AS PART OF THE FINAL PLAN LANDSCAPE OBLIGATION. ANY PROPOSAL TO REMOVE ADDITIONAL SPECIMEN TREES WILL REQUIRE A NEW ALTERNATIVE COMPLIANCE REQUEST OR AN AMENDMENT TO THE APPROVED WAIVER REQUEST, WP-14-119.
14. PER WP-19-032 APPROVAL CONDITION THE DEVELOPER WILL PROVIDE 6 TREES PROVIDED AS PART OF THE LANDSCAPE PLAN DUE TO THE REMOVAL SPECIMEN TREES 3, 4 AND 10. THESE PLANTINGS WILL BE IN ADDITION TO ANY REQUIRED LANDSCAPE OR FOREST CONSERVATION PLANTINGS. THE MITIGATION WILL BE SHOWN ON THE ASSOCIATED LANDSCAPE PLAN AND SURETY FOR THESE ADDITIONAL TREES WILL BE REQUIRED AS PART OF THE FINAL PLAN LANDSCAPE OBLIGATION.
15. WP-19-032 MITIGATION TREES ARE REQUIRED TO BE 3" - 4" CALIPER NATIVE SPECIES TREES.



TREE PLANTING DETAIL
NOT TO SCALE

STREET TREE SCHEDULE			
ROAD NAME	LF OF FRONTAGE	CREDIT EXISTING VEGETATION	LARGE/MEDIUM TREES
PUDDING LANE	4739	1246	87
REYNOLDS COURT	3167	640	63

STREET TREE PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	63	Acer rubrum 'Red Sunset' RED SUNSET RED MAPLE	2.5" - 3" cal.	TO BE PLANTED ALONG REYNOLDS COURT (PROVIDED BY THE DEVELOPER)
	87	Platanus x acerifolia 'Columbia' COLUMBIA LONDON PLANE	2.5" - 3" cal.	TO BE PLANTED ALONG PUDDING LANE (PROVIDED BY THE DEVELOPER)

PERIMETER LANDSCAPE AND MITIGATION PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	36	Quercus rubra (Red Oak)	2.5" - 3" cal.	TO BE PLANTED ALONG THE LOT PERIMETERS (PROVIDED BY THE DEVELOPER)
	12	Tilia cordata 'Greenspire' (Greenspire Littleleaf Linden)	3" - 4" cal.	TO BE PLANTED ON THE LOTS ALONG THE EASTERN SIDE OF THE PROJECT AS MITIGATION FOR SPECIMEN TREE REMOVAL (PROVIDED BY THE DEVELOPER)

SCHEDULE A - PERIMETER LANDSCAPE EDGE				
CATEGORY	ADJACENT TO PERIMETER PROPERTIES			TOTAL
	1	2	3	
DESIGNATION	1	2	3	
LANDSCAPE TYPE (A, B, C, D OR E)	A	A	A	
LINEAR FEET OF PERIMETER OR ROADWAY FRONTAGE	4284	605	5291	10180
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET)	YES	YES	YES	8064
DESCRIBE CREDIT	3216	514	4334	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET)	NO	NO	NO	0
DESCRIBE CREDIT				
NUMBER OF PLANTS REQUIRED				
SHADE TREES	18	2	16	36
EVERGREEN TREES	0	0	0	0
SHRUBS	0	0	0	0
NUMBER OF PLANTS PROVIDED				
SHADE TREES	18	2	16	36
EVERGREEN TREES	0	0	0	0
SHRUBS	0	0	0	0
OTHER TREES (2:1 SUB.)	0	0	0	0
SHRUBS (10:1 SUB.)	0	0	0	0
DESCRIBE SUBSTITUTION	NA	NA	NA	
CORRECT NUMBER PROVIDED	TRUE	TRUE	TRUE	

WP-14-119 REQUIRES 6 MITIGATION TREES FOR THE REMOVAL OF SPECIMEN TREES.
WP-19-032 REQUIRES 6 MITIGATION TREES FOR THE REMOVAL OF SPECIMEN TREES.
A TOTAL OF 12 MITIGATION TREES ARE PROPOSED, SEE CHART FOR SIZE REQUIREMENT.

DEVELOPER'S/BUILDER'S CERTIFICATE
I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

DEVELOPER - TOLL BROTHERS, INC. DATE 11/26/19

APPROVED: DEPARTMENT OF PUBLIC WORKS
CHIEF, BUREAU OF HIGHWAYS MK DATE 01/31/2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
CHIEF, DIVISION OF LAND DEVELOPMENT WJK DATE 2/5/2020

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 2/20/20

NO. 11-20-21	DATE	REVISE SHEET #s	REVISION
 ENGINEERS • LAND SURVEYORS • PLANNERS 8450 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8103 (F) 410-465-6644 WWW.BE-CIVILENGINEERING.COM			
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-26, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I	
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE: LANDSCAPE PLAN		DATE: NOVEMBER, 2019 PROJECT NO. 2501	
DRAFT: MP	DESIGN: JC	CHECK: JC	SCALE: AS SHOWN SHEET 45 OF 78

**FOREST CONSERVATION WORKSHEET
VERSION 2.0**

(Enter in Yellow Cells)

Project Name: Kings Forest Date: Mar. 2019

NET TRACT AREA:

A. Total tract area.....=	97.70
B. Area within 100 year floodplain.....=	3.40
C. Area to remain in agricultural production.....=	0.00
D. Net tract area.....=	94.30

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)

Input the number "1" under the appropriate land use zoning, and limit to only one entry.

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

E. Afforestation Threshold.....	20% x D =	18.90
F. Conservation Threshold.....	25% x D =	23.60

EXISTING FOREST COVER:

G. Existing forest cover (excluding floodplain).....=	88.60
H. Area of forest above afforestation threshold.....=	69.70
I. Area of forest above conservation threshold.....=	65.00

BREAK EVEN POINT (BEP):

J. Forest retention above threshold with no mitigation (BEP).....	36.60
K. Clearing permitted without mitigation.....=	52.00

PROPOSED FOREST CLEARING:

L. Total area of forest to be cleared.....=	53.70
M. Total area of forest to be retained.....=	34.90

PLANTING REQUIREMENTS:

N. Reforestation for clearing above conservation threshold...=	13.40	0.0'
P. Reforestation for clearing below conservation threshold...=	0.00	
Q. Credit for retention above conservation threshold.....=	11.30	
R. Total reforestation required.....=	2.10	1.0'
S. Total afforestation required.....=	0.00	
T. Total reforestation and afforestation required.....=	2.10	

FOREST CONSERVATION OBLIGATION IS MET BY:
RETENTION OF 34.93 ACRES AND
REFORESTATION OF 2.12 ACRES

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 01/31/2020
CHIEF, BUREAU OF HIGHWAYS MK
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 3/5/2020
CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature] 2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION

Specimen Tree Chart

Key	Species	Size (in.dbh)	CRZ (feet radius)	Remove Or Retain	Comments
1	Tulip poplar	52	78	Retain	poor, trunk rot severe
2	Tulip poplar	30	45	Retain	good
3	White ash	31	46.5	REMOVE	good
4	White ash	30.5	45.75	REMOVE	good
5	Tulip poplar	32	48	Remove	good
6	Tulip poplar	54	81	Remove	fair, trunk rot noted
7	Tulip poplar	38	57	Remove	good
8	Tulip poplar	39	58.5	Remove	good
9	Tulip poplar	42	63	Retain	fair, crown dieback noted
10	Tulip poplar	40	60	REMOVE	good
11	Tulip poplar	34	51	Remove	good
12	Tulip poplar	77	115.5	Retain	poor, trunk rot, limb dieback
13	Tulip poplar	77.5	116.25	Retain	fair condition, some limb dieback
14	American beech	33	49.5	Retain	good
15	Tulip poplar	51.5	77.25	Remove	poor, trunk rot, limb dieback

Forest Stand Data

Key	Community Type	Acreage (gross)	Dominant Vegetation	General Condition	Priority Acreage
F1	Oak-Poplar	52.8	Liriodendron tulipifera, Quercus alba, Fagus grandifolia, Carya glabra, Prunus serotina	Good	52.8 +/- buffers, slopes FIBB
F2	Poplar	35.8	Liriodendron tulipifera, Acer rubrum, Fraxinus pennsylvanica, Platanus occidentalis, Prunus serotina	Fair -	35.8 +/- wetland, buffers FIBB

See accompanying report for complete stand descriptions

FSD NOTES:

- No rare, threatened or endangered species or critical habitats were observed on the property. No historic sites/features were observed on the property.
- Surrounding land use is primarily medium density residential development and agriculture.
- Approximately 17 acres of forest is present within 100 feet of the subject property.
- All wetlands and streams on the property are part of a Use IV watershed. Perennial streams will require 100 foot buffers, intermittent streams will require 50 foot buffers and wetlands will require 25 foot buffers.
- The Wetland and Forest Stand Delineation Report indicates that ATV paths and hunting practices are present within the forest. Be advised, these practices are not permitted within forest conservation easements and must cease if the forest is placed into a conservation easement. Also please be advised, upon inspection of these easements additional mitigation plantings may be required if the site does not meet the standards as specified in the Howard County Code and Forest Conservation Manual.

Eco-Science Professionals, Inc. CONSULTING ECOLOGISTS
PLANNED BY: *[Signature]* 11/15/19
JOHN GARGLES MD DNR FCA QUALIFIED PROFESSIONAL

Wetland Data

WETLAND SYSTEM	COWARDIN CLASSIFICATION	DOMINANT VEGETATION
A	PFO1A-C R3/4UB1	Acer rubrum, Fraxinus pennsylvanica, Lindera benzoin, Symlocarpus foetidus, Boehmeria cylindrica, Impatiens capensis
B	PFO1A-E R3/4UB	Acer rubrum, Fraxinus pennsylvanica, Lindera benzoin, Viburnum dentatum, Ilex verticillata, Symlocarpus foetidus, Boehmeria cylindrica, Cinna arundinacea, Impatiens capensis

NO.	DATE	REVISION
1	1-20-21	Revise Sheet #s
 BENCHMARK ENGINEERING, INC. 8400 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6844 WWW.BE-CIVLENGINEERING.COM		
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042 C/O SOPHIE ZIEGLER JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER 750 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: FOREST CONSERVATION NOTES AND DETAILS		
DRAFT: MP	DESIGN: JC	CHECK: JC
SCALE: AS SHOWN	DATE: NOVEMBER, 2019	PROJECT NO. 2501
		SHEET 46 OF 78

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.



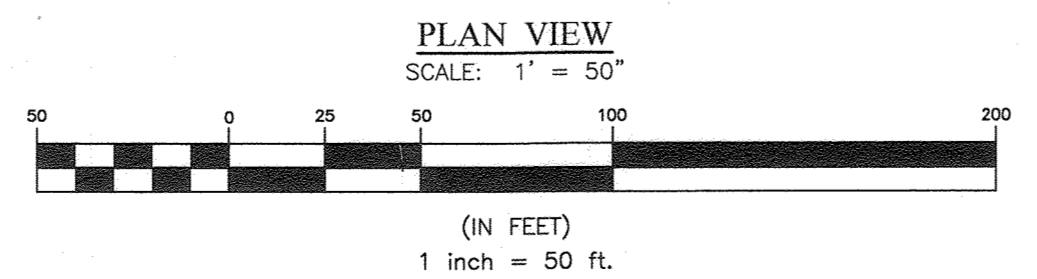
LEGEND

- SOILS CLASSIFICATION
- SOILS DELINEATION
- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- FCE PERMANENT SIGNAGE
- FOREST CONSERVATION EASEMENT
- FOREST CONSERVATION REFORESTATION
- LIMITS OF 100-YEAR FLOODPLAIN

APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 01/21/2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 2/20/20

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 2/20/20



SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE
BAA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GBA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GBB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GBc		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Ha*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MaD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

** HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
 SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

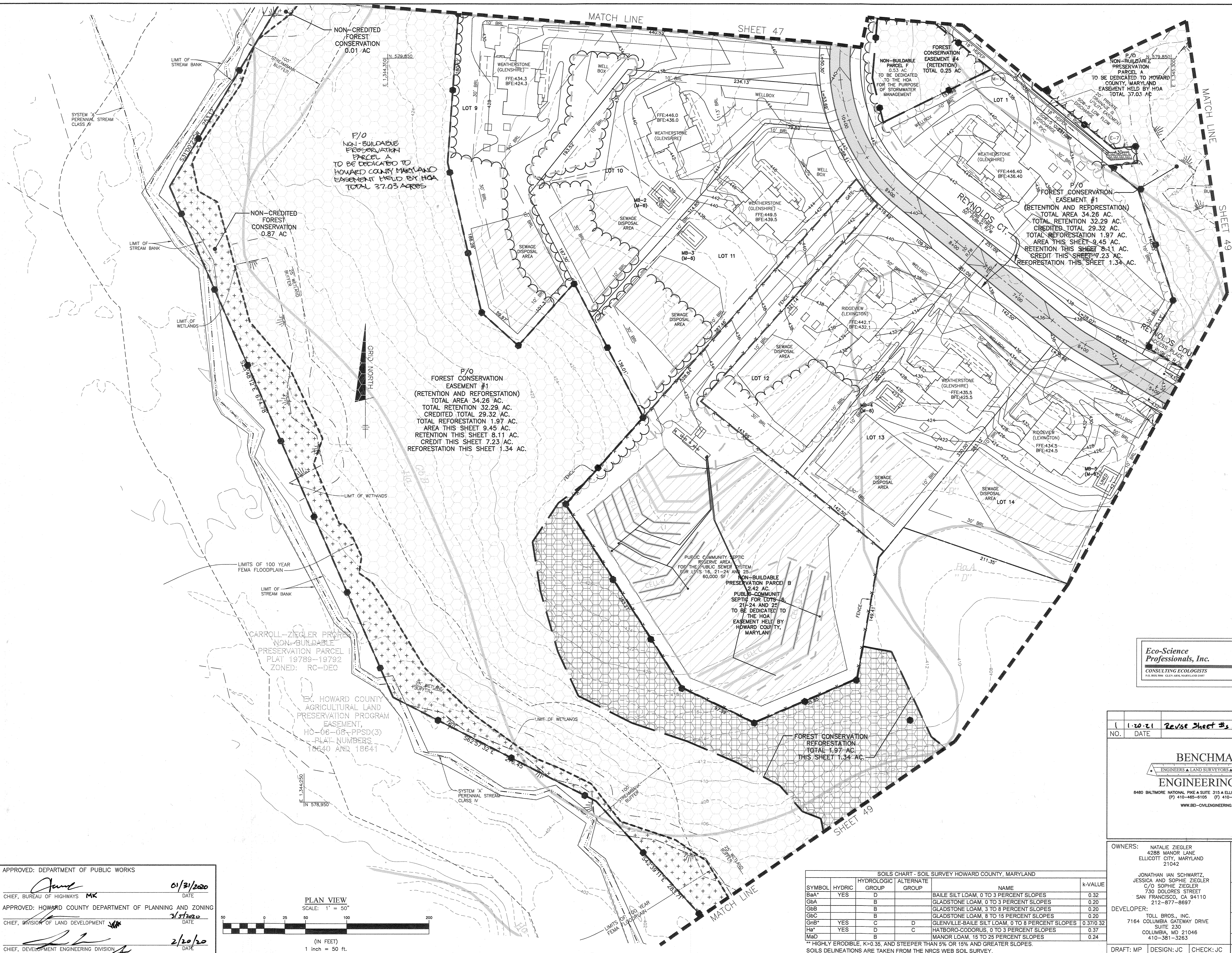
Eco-Science Professionals, Inc.
 CONSULTING ECOLOGISTS
 PLAN PREPARED BY JOHN CANOLES MD DPR FCA QUALIFIED PROFESSIONAL

NO.	DATE	REVISION
1	1-20-21	Revise Sheet #s + add easement leaders

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE A SUITE 315 A ELICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-CVLENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577. Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELICOTT CITY, MARYLAND 21042
 DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046
 PROJECT: **KINGS FOREST**
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU J
 LOCATION: TAX MAP: 23, GRID: 23, PUDDING LANE, ELICOTT CITY, MD 21042
 TITLE: **FOREST CONSERVATION PLAN**
 DATE: NOVEMBER, 2019 PROJECT NO. 2501
 DRAFT: MP DESIGN: JC CHECK: JC SCALE: AS SHOWN SHEET 47 OF 76



LEGEND

- SOILS CLASSIFICATION
- SOILS DELINEATION
- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- FCE PERMANENT SIGNAGE
- FOREST CONSERVATION EASEMENT
- FOREST CONSERVATION REFORESTATION
- LIMITS OF 100-YEAR FLOODPLAIN

P/O FOREST CONSERVATION EASEMENT #1 (RETENTION AND REFORESTATION)
 TOTAL AREA 34.26 AC.
 TOTAL RETENTION 32.29 AC.
 CREDITED TOTAL 29.32 AC.
 TOTAL REFORESTATION 1.97 AC.
 AREA THIS SHEET 9.45 AC.
 RETENTION THIS SHEET 8.11 AC.
 CREDIT THIS SHEET 7.23 AC.
 REFORESTATION THIS SHEET 1.34 AC.

NON-CREDITED FOREST CONSERVATION 0.97 AC

P/O NON-BUILDABLE PRESERVATION PARCEL A TO BE DEDICATED TO HOWARD COUNTY MARYLAND EASEMENT HELD BY HOA TOTAL 37.03 ACRES

P/O FOREST CONSERVATION EASEMENT #1 (RETENTION AND REFORESTATION)
 TOTAL AREA 34.26 AC.
 TOTAL RETENTION 32.29 AC.
 CREDITED TOTAL 29.32 AC.
 TOTAL REFORESTATION 1.97 AC.
 AREA THIS SHEET 9.45 AC.
 RETENTION THIS SHEET 8.11 AC.
 CREDIT THIS SHEET 7.23 AC.
 REFORESTATION THIS SHEET 1.34 AC.

FOREST CONSERVATION REFORESTATION TOTAL 1.97 AC. THIS SHEET 1.34 AC.

CARROLL-ZIEGLER PROPERTY NON-BUILDABLE PRESERVATION PARCEL PLAT 18789-18792 ZONED: RC-DEC

HOWARD COUNTY AGRICULTURAL LAND PRESERVATION PROGRAM EASEMENT, HO-06-06-PPSD(3) PLAT NUMBERS 18640 AND 18641

NON-BUILDABLE PRESERVATION PARCEL B 2.42 AC. PUBLIC COMMUNITY SEPTIC FOR LOTS 16, 21-24 AND 25. 60,000 SF. TO BE DEDICATED TO THE HOA EASEMENT HELD BY HOWARD COUNTY, MARYLAND.

Eco-Science Professionals, Inc.
 CONSULTING ECOLOGISTS
 710 BAY VIEW GLEN VALE, MARYLAND 21077
 Telephone: (410) 485-1800
 www.ecosciencemaryland.com

PLAN PREPARED BY:
 JOHN CANCELES
 MD DNR FCA QUALIFIED PROFESSIONAL
 11/27/19

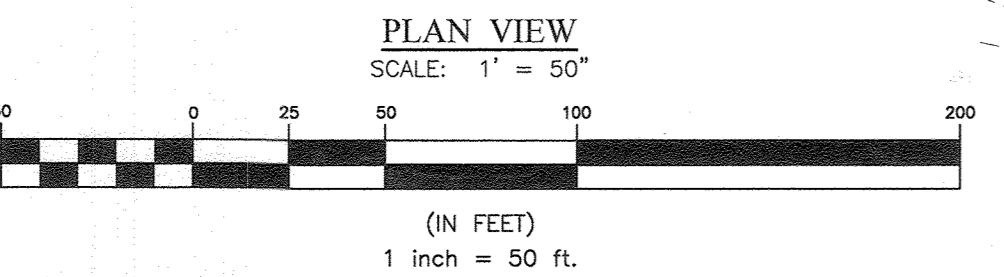
NO.	1-20-21	Revise Sheet #s	REVISION
BENCHMARK ENGINEERING, INC. ENGINEERS • LAND SURVEYORS • PLANNERS 8480 BALTIMORE NATIONAL PIKE SUITE 315 • ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEN-ENGINEERING.COM			
OWNERS: NATALE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 18791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I	
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-361-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE: FOREST CONSERVATION PLAN			
DATE: NOVEMBER, 2019		PROJECT NO. 2501	
DRAFT: MP		SCALE: AS SHOWN	
DESIGN: JC		CHECK: JC	
SHEET 48		OF 48	

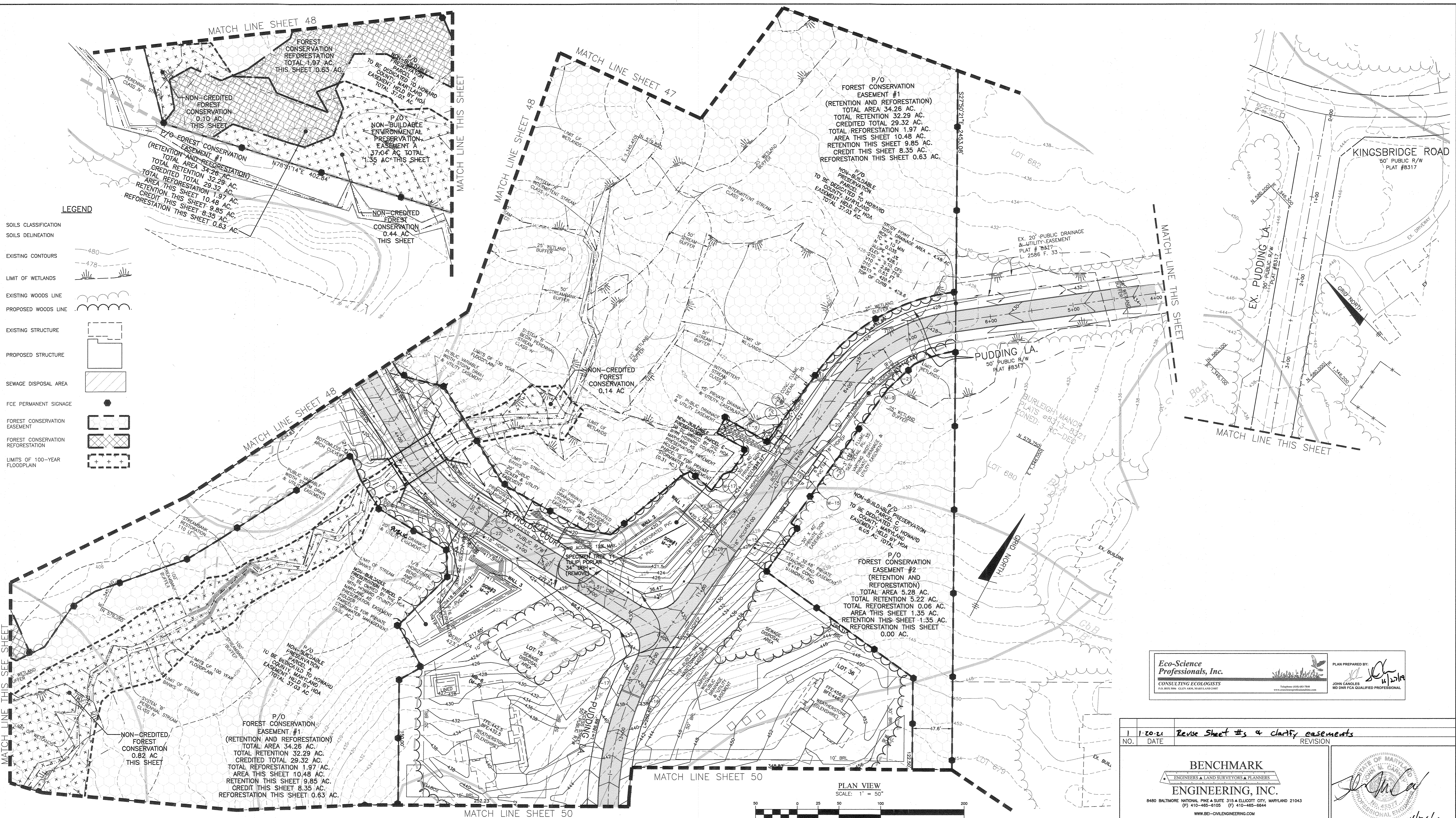
SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
BaA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GbA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GhB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Ha*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MaD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

* HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
 SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 DATE: 2/5/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION





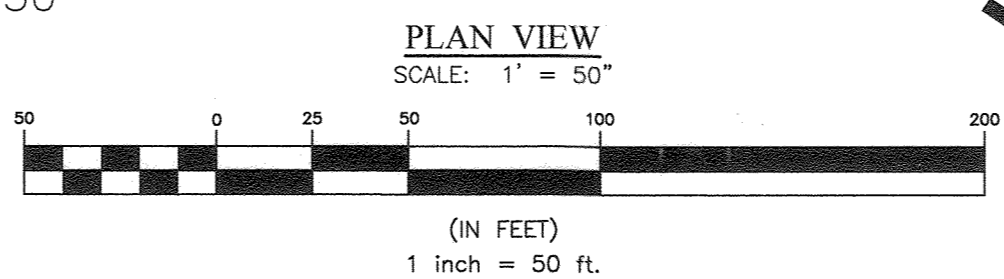
LEGEND

- SOILS CLASSIFICATION
- SOILS DELINEATION
- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
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- FOREST CONSERVATION EASEMENT
- FOREST CONSERVATION REFORESTATION
- LIMITS OF 100-YEAR FLOODPLAIN

APPROVED: DEPARTMENT OF PUBLIC WORKS
Clare 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
W. Stora 1/30/20
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

W. Stora 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE



SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
Ba*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GbA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
Gb*	YES	C	D	GLENNVILLE-BAILE SILT LOAM, 0 TO 9 PERCENT SLOPES	0.37/0.32
H*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MaD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

** HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 6% OR 16% AND GREATER SLOPES.
 SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

Eco-Science Professionals, Inc.
 CONSULTING ECOLOGISTS
 7810 W. GLENVIEW BLVD. SUITE 200
 FORT LAUDERDALE, FL 33309

PLAN PREPARED BY:
John Gingles
 JOHN GINGLES
 MD DNR FCA QUALIFIED PROFESSIONAL

1 | 1-20-21 | *Revise Sheet #'s & clarify easements*
 NO. | DATE | REVISION

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-8644
 WWW.BEI-CVLENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

11/26/19

OWNERS: NATALIE ZIEGLER
 4288 MANOR LANE
 ELLICOTT CITY, MARYLAND
 21042

PROJECT: **KINGS FOREST**
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791
 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

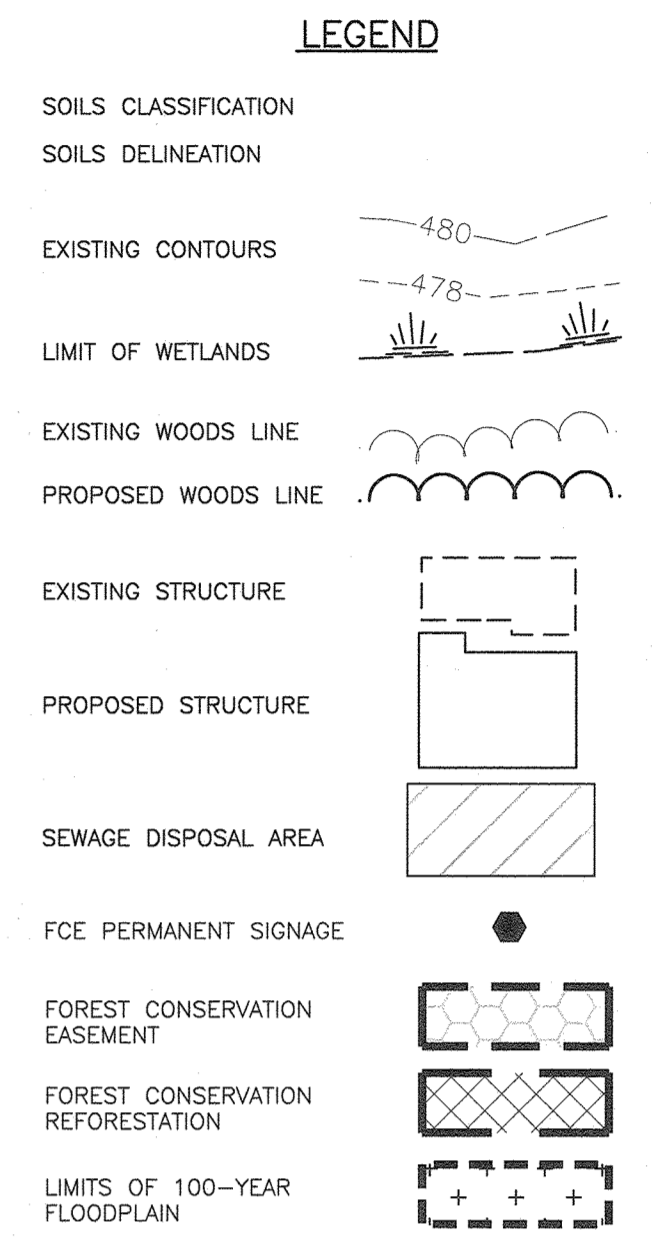
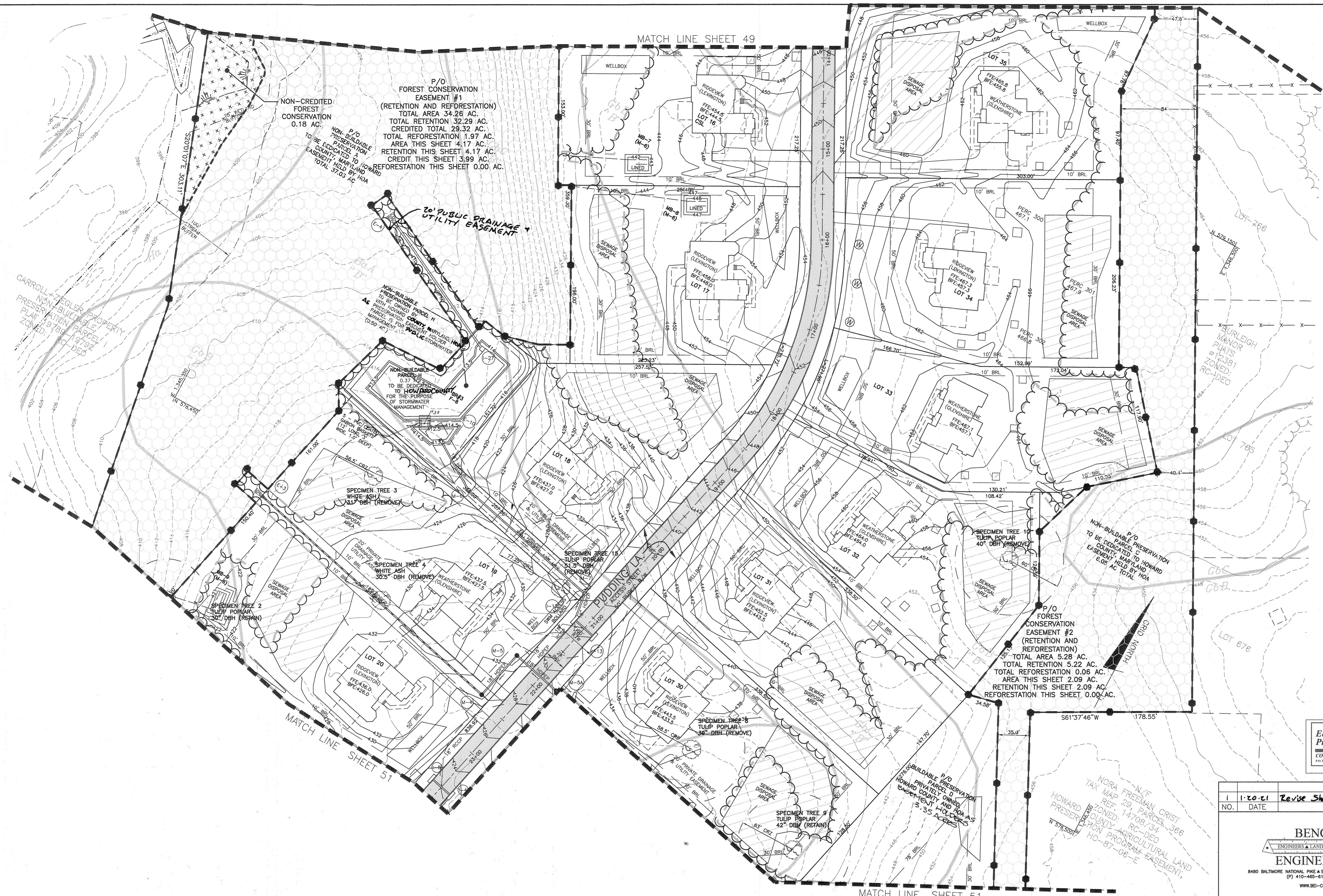
DEVELOPER: TOLL BROS., INC.
 7164 COLUMBIA GATEWAY DRIVE
 SUITE 230
 COLUMBIA, MD 21046
 410-381-3263

LOCATION: TAX MAP: 23, GRID: 23
 P/0 PARCEL 148
 PUDDING LANE, ELLICOTT CITY, MD 21042
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: **FOREST CONSERVATION PLAN**

DATE: NOVEMBER, 2019 PROJECT NO. 2501
 SCALE: AS SHOWN SHEET 49 OF 50

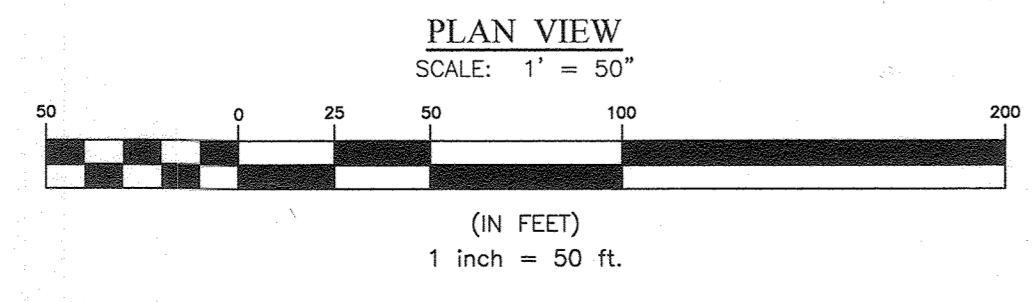
DRAFT: MP DESIGN: JC CHECK: JC



APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS MK
 DATE: 01/31/2020

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 2/20/20

APPROVED: DEVELOPMENT ENGINEERING DIVISION
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 2/20/20



SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
BaA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GbA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GhB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Ha*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
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 SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

Eco-Science Professionals, Inc.
 CONSULTING ECOLOGISTS
 17A 905 BAY...
 PLAN PREPARED BY: JOHN CAROLIS, MD DWR PCA QUALIFIED PROFESSIONAL

NO.	DATE	REVISION
1	1-20-21	Revise Sheet #s + clarify easements, Revise Parcel H

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE A SUITE 315 A ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BE-ENGINEERING.COM

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042

DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046, 410-381-3283

PROJECT: KINGS FOREST
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-35, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU J

LOCATION: TAX MAP: 23, GRID: 23
 CRATING LOTS 1-35, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU J
 PUDDING LANE, ELLICOTT CITY, MD 21042
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

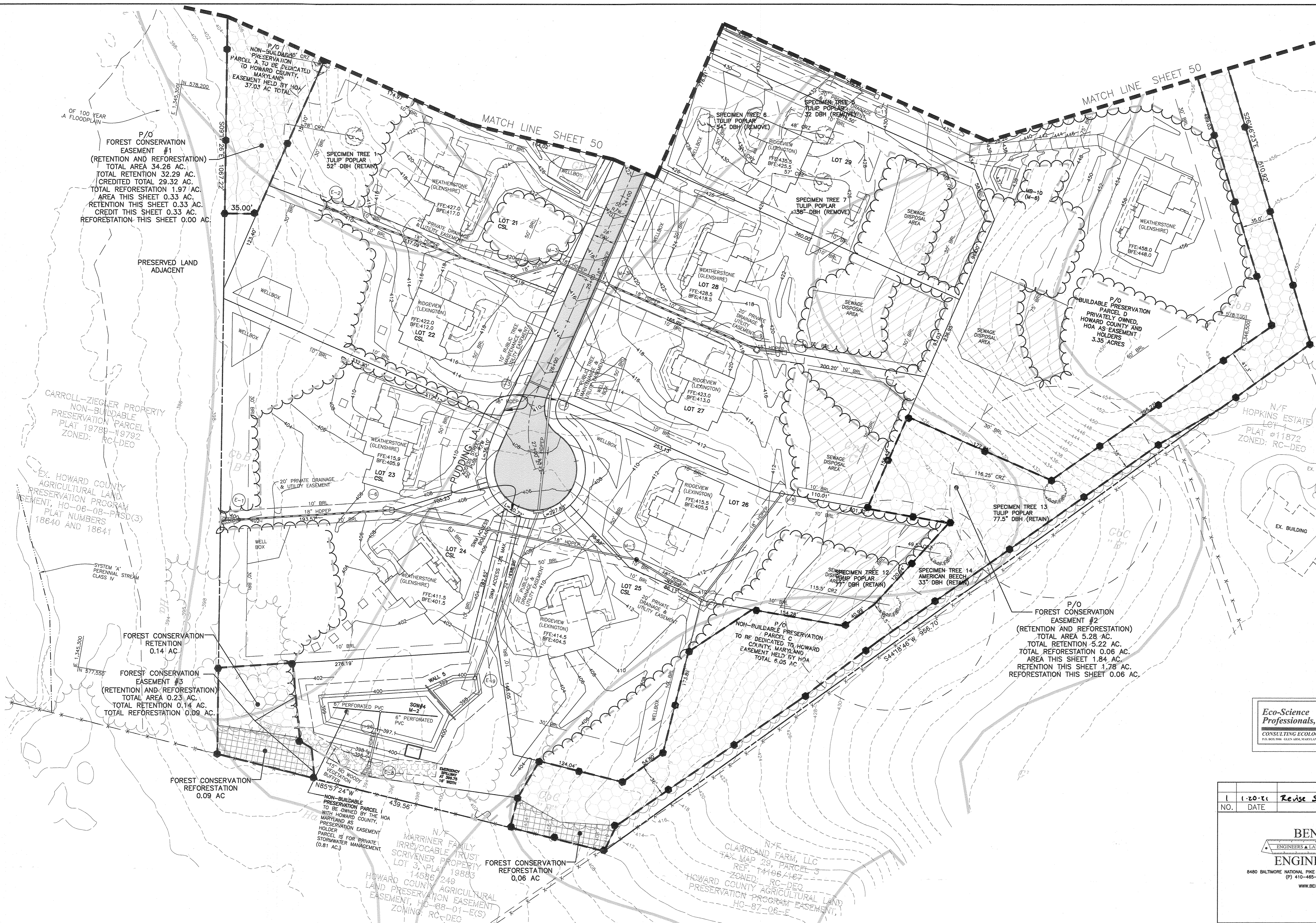
TITLE: FOREST CONSERVATION PLAN

DATE: NOVEMBER, 2019
PROJECT NO.: 2501
SCALE: AS SHOWN
SHEET: 50 OF 75

DRAFT: MP | **DESIGN:** JC | **CHECK:** JC

LEGEND

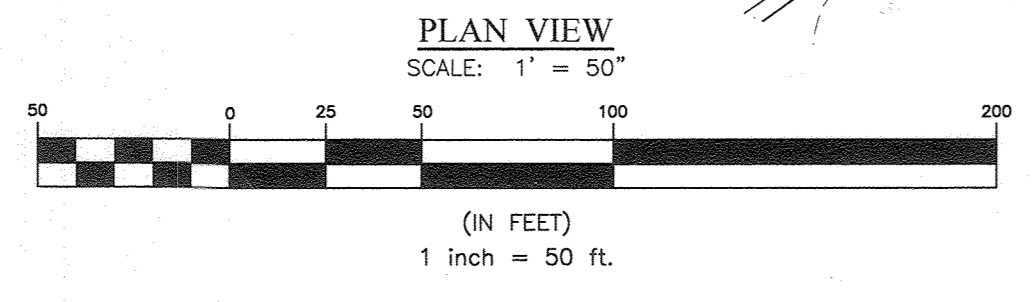
- SOILS CLASSIFICATION
- SOILS DELINEATION
- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- PROPOSED WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- FCE PERMANENT SIGNAGE
- FOREST CONSERVATION EASEMENT
- FOREST CONSERVATION REFORESTATION
- LIMITS OF 100-YEAR FLOODPLAIN



P/O FOREST CONSERVATION EASEMENT #1 (RETENTION AND REFORESTATION) TOTAL AREA 34.26 AC. CREDITED TOTAL 29.32 AC. TOTAL REFORESTATION 1.97 AC. AREA THIS SHEET 0.33 AC. RETENTION THIS SHEET 0.33 AC. CREDIT THIS SHEET 0.33 AC. REFORESTATION THIS SHEET 0.00 AC.

P/O FOREST CONSERVATION EASEMENT #2 (RETENTION AND REFORESTATION) TOTAL AREA 5.28 AC. TOTAL RETENTION 5.22 AC. TOTAL REFORESTATION 0.06 AC. AREA THIS SHEET 1.84 AC. RETENTION THIS SHEET 1.78 AC. REFORESTATION THIS SHEET 0.06 AC.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 3/6/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT
 APPROVED: [Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
BaA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GbA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GbD*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Hs*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MaD		B		MAJOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

* HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
 SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

Eco-Science Professionals, Inc.
 CONSULTING ECOLOGISTS
 PLAN PREPARED BY
 JOHN CANOLES
 MD DNR FCA QUALIFIED PROFESSIONAL

NO. 1	DATE 1-20-20	REVISION	Revise Sheet #s
BENCHMARK ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 215 4 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6644 WWW.BE-CIVLENGINEERING.COM			
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042 JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 COLURES STREET SAN FRANCISCO, CA 94110 212-877-8697		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I	
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE: FOREST CONSERVATION PLAN			
DATE: NOVEMBER, 2019		PROJECT NO. 2501	
DRAFT: MP		SCALE: AS SHOWN	
DESIGN: JC		SHEET 51 OF 75	
CHECK: JC		F-19-014	

REFORESTATION NOTES

A. Planting Plan and Methods

Plant species selection was based on our knowledge regarding plant communities in Maryland's Piedmont Plateau and information provided in the soil survey on typical vegetation for the soil type on the planting site. Species selection was also based on our knowledge of plant availability in the nursery industry.

Reforestation will be accomplished through a mixed planting of whips and branched transplants. Container grown stock is recommended but bareroot stock may be used to help control afforestation costs. If bareroot stock is used the root systems of all plants will be dipped in an anti-desiccant gel prior to planting to improve moisture retention in the root systems.

Prior to planting the proposed Forest Conservation Easements all multiflora rose in the planting area shall be removed. Removal of the rose may be performed with mowing and herbicide treatments. Physical removal of all top growth following by a periodic herbicide treatment of stump sprouts is recommended. Native tree and shrub species occurring within the rose thickets should be retained wherever possible. Herbicides treatments shall occur on 2 month intervals during the first growing season and once each in the spring and fall for subsequent years. Herbicide used shall be made specifically to address woody plant material and shall be applied as per manufacturers specifications, as needed. Care should be taken not to spray planted trees or naturally occurring native trees/shrub seedlings. It is recommended that initiation of rose removal begin at least six months prior to planting.

B. Planting and Soil Specifications

Plant material will be installed in accordance with the Planting Detail and Planting Specifications shown on the Forest Conservation Plan.

Amendments to existing soil will be in accordance with the Planting Specifications shown on the Forest Conservation Plan. Soil disturbance will be limited to individual planting locations.

C. Guarantee Requirements

A 90 percent survival rate of the reforestation plantings will be required after one growing season. All plant material below the 90 percent survival threshold will be replaced at the beginning of the second growing season. At the end of the second growing season, a 75 percent survival rate will be required. All plant material below the 75 percent survival threshold will be replaced by the beginning of the next growing season.

D. Security for Reforestation

Section 16-1209 of the Howard County Forest Conservation Act requires that a developer shall post a security (bond, letter of credit, etc.) with the County to insure that all work is done in accordance with the FCP.

Sequence of Construction

- Sediment control shall be installed in accordance with general construction plan for site.
- Plants shall be installed as per Plant Schedule and the Planting/Soil Specifications for the project.
- Upon completion of the planting, signage shall be installed as shown.
- Plantings shall be maintained and guaranteed in accordance with the Maintenance and Guarantee requirements for project.

Maintenance of Plantings

- Maintenance of plantings shall last for a period of (3) years.
- Plantings must receive 2 gallons of water, either through precipitation or watering, weekly during the 1st growing season, as needed. During second growing season, once a month during May-September, if needed.
- Invasive exotics and noxious weeds will be removed, as required, from planting areas mechanically and/or with limited herbicide. Old field successional species will be retained.
- Plants shall be examined a minimum two times during the growing season for serious plant pests and diseases. Serious problems will be treated with the appropriate agent.
- Dead branches will be pruned from plantings.

Guarantee Requirements

- A 75 percent survival rate of forestation plantings will be required at the end of two growing seasons. All plant material below the 75 percent threshold will be replaced at the beginning of the next growing season. Wild trees arising from natural regeneration may be counted up to 50 percent towards the total survival number if they are healthy, native species at least 12 inches tall.

Education of New Occupants

- The developer shall provide educational information to all property owners within the new development/home about the proper use of forest conservation areas.

Final Inspection and Release of Obligations

- At the end of the post-construction management and protection period the developer shall submit a certification to the County that all forest conservation areas have remained intact or have been restored to appropriate condition, that the stipulated survival rates have been achieved, and that any permanent protection measures required by the plan are in place. Upon review and acceptance, the County will inform the developer of their release of the development of future obligations related to the Forest Conservation Act.

CONSTRUCTION PERIOD PROTECTION PROGRAM

A. Forest Protection Techniques

1. Soil Protection Area (Critical Root Zone)

The soil protection area, or critical root zone, of a tree is that portion of the soil column where most of a its roots may be found. The majority of roots responsible for water and nutrient uptake are located just below the soil surface. Temporary fencing shall be placed around the critical root zone of the forest in areas where the forest limits occur within 50 feet of the limit of disturbance.

2. Fencing and Signage

Existing forest limits occurring within 50 feet of the limits of disturbance shall be protected using temporary protective fencing. Permanent signage shall be placed around the afforestation area prior to plant installation, as shown on the plan.

B. Pre-Construction Meeting

Upon staking of limits of disturbance a pre-construction meeting will be held between the developer, contractor and appropriate County inspector. The purpose of the meeting will be to verify that all sediment control is in order, and to notify the contractor of possible penalties for non-compliance with the FCP.

C. Storage Facilities/Equipment Cleaning

All equipment storage, parking, sanitary facilities, material stockpiling, etc. associated with construction of the project will be restricted to those areas outside of the proposed Forest Conservation Easement. Cleaning of equipment will be limited to area within the LOD of the proposed homesites. Wastewater resulting from equipment cleaning will be controlled to prevent runoff into environmentally sensitive areas.

D. Sequence of Construction

The following timetable represents the proposed timetable for development. The items outlined in the Forest Conservation Plan will be enacted within two (2) years of subdivision approval.

Below find a proposed sequence of construction.

- Install all signage and sediment control devices.
- Hold pre-construction meeting between developer, contractor and County inspector.
- Build access roads, install well and septic systems, and construct houses. Stabilize all disturbed areas accordingly.

- Begin multiflora rose/invasive species removal, as needed. Install permanent protective signage for Easements and initiate plantings in accordance with Forest Conservation Plan. Plantings will be completed within two (2) years of subdivision approval.
- Remove sediment control.
- Hold post-construction meeting with County inspectors to assure compliance with FCP. Submit Certification of Installation.
- Monitor and maintain plantings for 2 years.

E. Construction Monitoring

Eco-Science Professionals, or another qualified professional designated by the developer, will monitor construction of the project to ensure that all activities are in compliance with the Forest Conservation Plan.

F. Post-Construction Meeting

Upon completion of construction, Eco-Science Professionals, or another qualified professional designated by the developer, will notify the County that construction has been completed and arrange for a post-construction meeting to review the project site. The meeting will allow the County inspector to verify that afforestation plantings have been installed.

POST-CONSTRUCTION MANAGEMENT PLAN

Howard County requires a two year post-construction management plan be prepared as part of the forest conservation plan. The plan goes into effect upon acceptance of the construction certification of completion by the County. Eco-Science Professionals, or another qualified professional designated by the developer, will be responsible for implementation of the post-construction management plan.

The following items will be incorporated into the plan:

A. Fencing and Signage

Permanent signage indicating the limits of the retention/reforestation area shall be maintained.

B. General Site Inspections/Maintenance of Plantings

Site inspections will be performed a minimum of three times during the growing season. The purpose of the inspections will be to assess the health of the afforestation plantings. Appropriate measures will be taken to rectify any problems which may arise.

In addition, maintenance of the afforestation plantings will involve the following steps:

- Watering - All plant material shall be watered twice a month during the 1st growing season, more or less frequently depending on weather conditions. During the second growing season, once a month during May-September, if needed.
- Removal of invasive exotics and noxious weeds. Old field successional species will be retained.
- Identification of serious plant pests and diseases, treatment with appropriate agent.
- Pruning of dead branches.
- After 12 and 24 months, replacement of plants, if required, in accordance with the Guarantee Requirements shown on the FCP.

C. Education

The developer will provide appropriate materials to property owners informing them of the location and purpose of the afforestation area. Materials may include site plans and information explaining the intent of the forest conservation law.

D. Final Inspection

At the end of the two year post-construction management period, Eco-Science Professionals, or another qualified professional, will submit to the administrator of the Howard County Forest Conservation Program certification that all retention/afforestation requirements have been met. Upon acceptance of this certification, the County will release the developer from all future obligations and release the developer's bond.

Planting/Soil Specifications

- Installation of bareroot/plug plant stock shall take place between March 15 - April 20; 1860/container stock March 15 -May 30 or September 15 - November 15. Fall planting of B&B stock is not recommended.
- Disturbed areas shall be seeded and stabilized as per general construction plan for project. Planting areas not impacted by site grading shall have no additional topsoil installed.
- Bareroot plants shall be installed so that the top of root mass is level with the top of existing grade. Roots shall be dipped in an anti-desiccant gel prior to planting. Backfill in the planting pits shall consist of 3 parts existing soil to 1 part pine fines or equivalent.
- Fertilizer shall consist of Agriform 22-8-2, or equivalent, applied as per manufacturer's specifications, for woody plants. Herbaceous plant shall be fertilized with Osmocote 8-6-12.
- Plant material shall be transported to the site in a tarp or covered truck. Plants shall be kept moist prior to planting.
- The contractor shall remove all non-organic debris associated with the planting operation from the site.

FCE #1 - Planting 1.97 Ac.

planting units (700 per acre) required: 1379
planting units provided: 1386

QTY	Species	Size	Spacing	Total units
138	Acer Rubrum - Red Maple	2-3' tall whips with shelters	11' o.c.	
69	Acer Saccharinum - Silver Maple	2-3' tall whips with shelters	11' o.c.	
42	Cornus Florida - Flowering Dogwood	2-3' tall whips with shelters	11' o.c.	
28	Diospyros Virginiana - Persimmon	2-3' tall whips with shelters	11' o.c.	
111	Liriodendron Tulipifera - Tulip Poplar	2-3' tall whips with shelters	11' o.c.	
83	Platanus Occidentalis - Sycamore	2-3' tall whips with shelters	11' o.c.	
69	Prunus Serotina - Black Cherry	2-3' tall whips with shelters	11' o.c.	
69	Quercus Alba - White Oak	2-3' tall whips with shelters	11' o.c.	
42	Quercus Rubra - Red Oak	2-3' tall whips with shelters	11' o.c.	
42	Viburnum Prunifolium - Blackhaw	2-3' tall whips with shelters	11' o.c.	
693	Total whips (2.0 planting units per tree)			1386
			Total Planting Units	1386

2" caliper trees (20'x20' spacing) 100 per acre 7.0 planting units
1" caliper tree (15'x15' spacing) 200 per acre 3.5 planting units
seedlings or whips with shelters (11'x11' spacing) 350 per acre 2.0 planting units
seedlings without shelters (8'x8' spacing) 700 per acre 1.0 planting units

FCE #2 - Planting 0.06 Ac.

planting units (700 per acre) required: 42
planting units provided: 56

QTY	Species	Size	Spacing	Total units
5	Acer Rubrum - Red Maple	2-3' tall whips with shelters	11' o.c.	
3	Acer Saccharinum - Silver Maple	2-3' tall whips with shelters	11' o.c.	
2	Cornus Florida - Flowering Dogwood	2-3' tall whips with shelters	11' o.c.	
1	Diospyros Virginiana - Persimmon	2-3' tall whips with shelters	11' o.c.	
4	Liriodendron Tulipifera - Tulip Poplar	2-3' tall whips with shelters	11' o.c.	
3	Platanus Occidentalis - Sycamore	2-3' tall whips with shelters	11' o.c.	
3	Prunus Serotina - Black Cherry	2-3' tall whips with shelters	11' o.c.	
3	Quercus Alba - White Oak	2-3' tall whips with shelters	11' o.c.	
2	Quercus Rubra - Red Oak	2-3' tall whips with shelters	11' o.c.	
2	Viburnum Prunifolium - Blackhaw	2-3' tall whips with shelters	11' o.c.	
28	Total whips (2.0 planting units per tree)			56
			Total Planting Units	56

2" caliper trees (20'x20' spacing) 100 per acre 7.0 planting units
1" caliper tree (15'x15' spacing) 200 per acre 3.5 planting units
seedlings or whips with shelters (11'x11' spacing) 350 per acre 2.0 planting units
seedlings without shelters (8'x8' spacing) 700 per acre 1.0 planting units

FCE #3 - Planting 0.09 Ac.

planting units (700 per acre) required: 63
planting units provided: 74

QTY	Species	Size	Spacing	Total units
7	Acer Rubrum - Red Maple	2-3' tall whips with shelters	11' o.c.	
4	Acer Saccharinum - Silver Maple	2-3' tall whips with shelters	11' o.c.	
2	Cornus Florida - Flowering Dogwood	2-3' tall whips with shelters	11' o.c.	
2	Diospyros Virginiana - Persimmon	2-3' tall whips with shelters	11' o.c.	
6	Liriodendron Tulipifera - Tulip Poplar	2-3' tall whips with shelters	11' o.c.	
4	Platanus Occidentalis - Sycamore	2-3' tall whips with shelters	11' o.c.	
4	Prunus Serotina - Black Cherry	2-3' tall whips with shelters	11' o.c.	
4	Quercus Alba - White Oak	2-3' tall whips with shelters	11' o.c.	
2	Quercus Rubra - Red Oak	2-3' tall whips with shelters	11' o.c.	
2	Viburnum Prunifolium - Blackhaw	2-3' tall whips with shelters	11' o.c.	
37	Total whips (2.0 planting units per tree)			74
			Total Planting Units	74

2" caliper trees (20'x20' spacing) 100 per acre 7.0 planting units
1" caliper tree (15'x15' spacing) 200 per acre 3.5 planting units
seedlings or whips with shelters (11'x11' spacing) 350 per acre 2.0 planting units
seedlings without shelters (8'x8' spacing) 700 per acre 1.0 planting units

FOREST CONSERVATION WORKSHEET VERSION 2.0

Project Name: Kings Forest (Enter in Yellow Cells) Date: Mar. 2019

NET TRACT AREA:

A. Total tract area.....=	97.70
B. Area within 100 year floodplain.....=	3.40
C. Area to remain in agricultural production.....=	0.00
D. Net tract area.....=	94.30

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)

Input the number "1" under the appropriate land use zoning, and limit to only one entry.

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

E. Afforestation Threshold.....	20% x D =	18.9
F. Conservation Threshold.....	25% x D =	23.6

EXISTING FOREST COVER:

G. Existing forest cover (excluding floodplain).....=	88.6
H. Area of forest above afforestation threshold.....=	69.7
I. Area of forest above conservation threshold.....=	65.0

BREAK EVEN POINT (BEP):

J. Forest retention above threshold with no mitigation (BEP).....=	36.6
K. Clearing permitted without mitigation.....=	52.0

PROPOSED FOREST CLEARING:

L. Total area of forest to be cleared.....=	53.7
M. Total area of forest to be retained.....=	34.9

PLANTING REQUIREMENTS:

N. Reforestation for clearing above conservation threshold.....=	13.4	0.0*
P. Reforestation for clearing below conservation threshold.....=	0.0	
Q. Credit for retention above conservation threshold.....=	11.3	
R. Total reforestation required.....=	2.1	
S. Total afforestation required.....=	0.0	
T. Total reforestation and afforestation required.....=	2.1	1.0*

FOREST CONSERVATION OBLIGATION IS MET BY:
RETENTION OF 34.93 ACRES AND
REFORESTATION OF 2.12 ACRES

Forest Conservation Surety Cost Estimate

Financial surety for the required forest conservation shall be posted as part of the DPW's developer's agreement for:

2.12 acres of reforestation within the limits of a forest conservation easement: \$46,174.00

in the total amount of: **\$46,174.00**

DESIGNATION	GROSS RETENTION		NON-CREDIT		NET RETENTION		REFORESTATION
	AREA (AC.)	AREA (AC.)	AREA (AC.)	AREA (AC.)	AREA (AC.)	AREA (AC.)	
EASEMENT #1	34.26	32.29	2.97	29.32	1.97		
EASEMENT #2	5.28	5.22	0.00	5.22	0.06		
EASEMENT #3	0.23	0.14	0.00	0.14	0.09		
EASEMENT #4	0.25	0.25	0.00	0.25	0.00		
TOTALS	40.02	37.90	2.97	34.93	2.12		

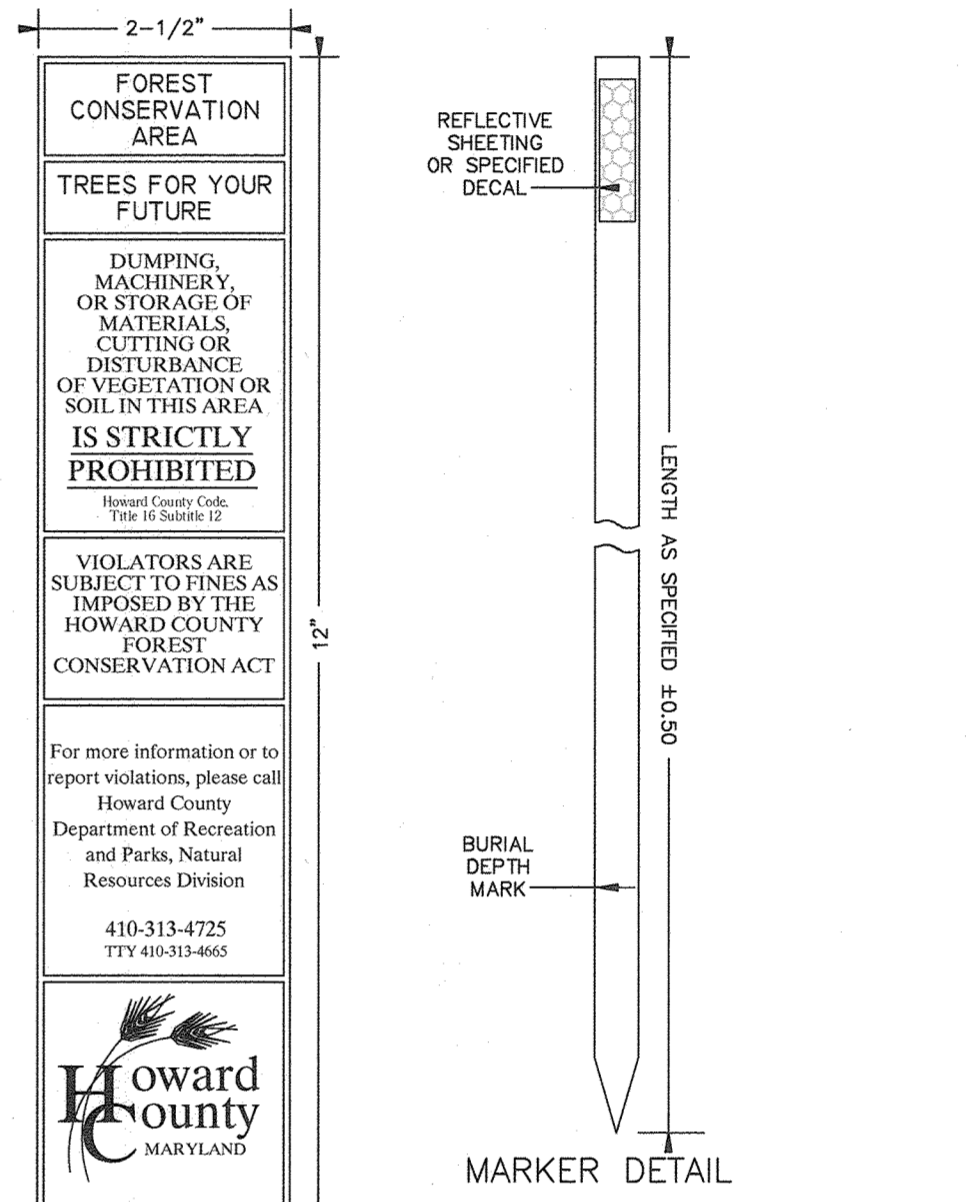
APPROVED: DEPARTMENT OF PUBLIC WORKS

[Signature] 01/31/2020
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

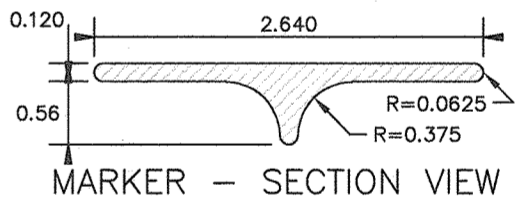
[Signature] 3/5/2020
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



DECAL SPECIFICATIONS

Materials:
Number: 3990 Scotchcode
non-reflective substrate.
Color:
Dark green text and border
on beige background.



FCE CARSONITE MARKER

NOT TO SCALE

Eco-Science Professionals, Inc.
ENGINEERS & LAND SURVEYORS & PLANNERS
CONSULTING ECOLOGISTS
P.O. BOX 1006, ELLENDALE, MARYLAND 21037
Phone: 410-313-4725
www.ecosciencemaryland.com

PLAN PREPARED BY:
[Signature]
JOHN CANGLES
MD DNR FCA QUALIFIED PROFESSIONAL

NO. 1	DATE 1-20-21	REVISION	Revise Sheet #s
<p>BENCHMARK ENGINEERING, INC. 840 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6844 WWW.BE-ENGINEERING.COM</p>		<p>KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I</p>	
<p>OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042</p>		<p>PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I</p>	
<p>DEVELOPER: JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697</p>		<p>LOCATION: TAX MAP: 23, GRID: 23 70 PARCELS 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p>	
<p>TITLE: FOREST CONSERVATION NOTES AND DETAILS</p>		<p>DATE: NOVEMBER, 2019 PROJECT NO. 2501</p>	
<p>DRAFT: MP DESIGN: JC CHECK: JC</p>		<p>SCALE: AS SHOWN SHEET 52 OF 75</p>	

NOTES

GENERAL NOTES:

1. THIS BRIDGE HAS BEEN DESIGNED FOR THE SITE SPECIFIC PROJECT CONDITIONS OUTLINED HEREIN. CONTECH'S DESIGN REFLECTS GEOTECHNICAL, HYDRAULIC, AND SCOUR ANALYSIS INFORMATION PERFORMED BY OTHERS AND PROVIDED TO CONTECH.
2. PRIOR TO CONSTRUCTION, CONTRACTOR MUST VERIFY ALL ELEVATIONS SHOWN THROUGH THE ENGINEER.
3. ONLY CONTECH ENGINEERED SOLUTIONS LLC, THE CON/SPAN® APPROVED PRECASTER IN MARYLAND MAY PROVIDE THE STRUCTURE DESIGNED IN ACCORDANCE WITH THESE PLANS.

DESIGN DATA

DESIGN LOADING:
 BRIDGE UNITS: HL-93
 HEADWALLS: EARTH PRESSURE ONLY
 WINGWALLS: EARTH PRESSURE ONLY
 DESIGN FILL HEIGHT: 2'-6" TO 4'-0"
 FROM TOP OF CROWN TO TOP OF PAVEMENT.
 DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN PER AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
 NOMINAL BEARING RESISTANCE (ARCHES): 15,550 PSF*
 FACTORED BEARING RESISTANCE (ARCHES): 7,000 PSF*
 SERVICE LIMIT STATE BEARING PRESSURE (ARCHES): 4,700 PSF
 NOMINAL BEARING RESISTANCE (WINGWALLS): 13,500 PSF*
 FACTORED BEARING RESISTANCE (WINGWALLS): 6,100 PSF*
 SERVICE LIMIT STATE BEARING PRESSURE (WINGWALLS): 3,000 PSF

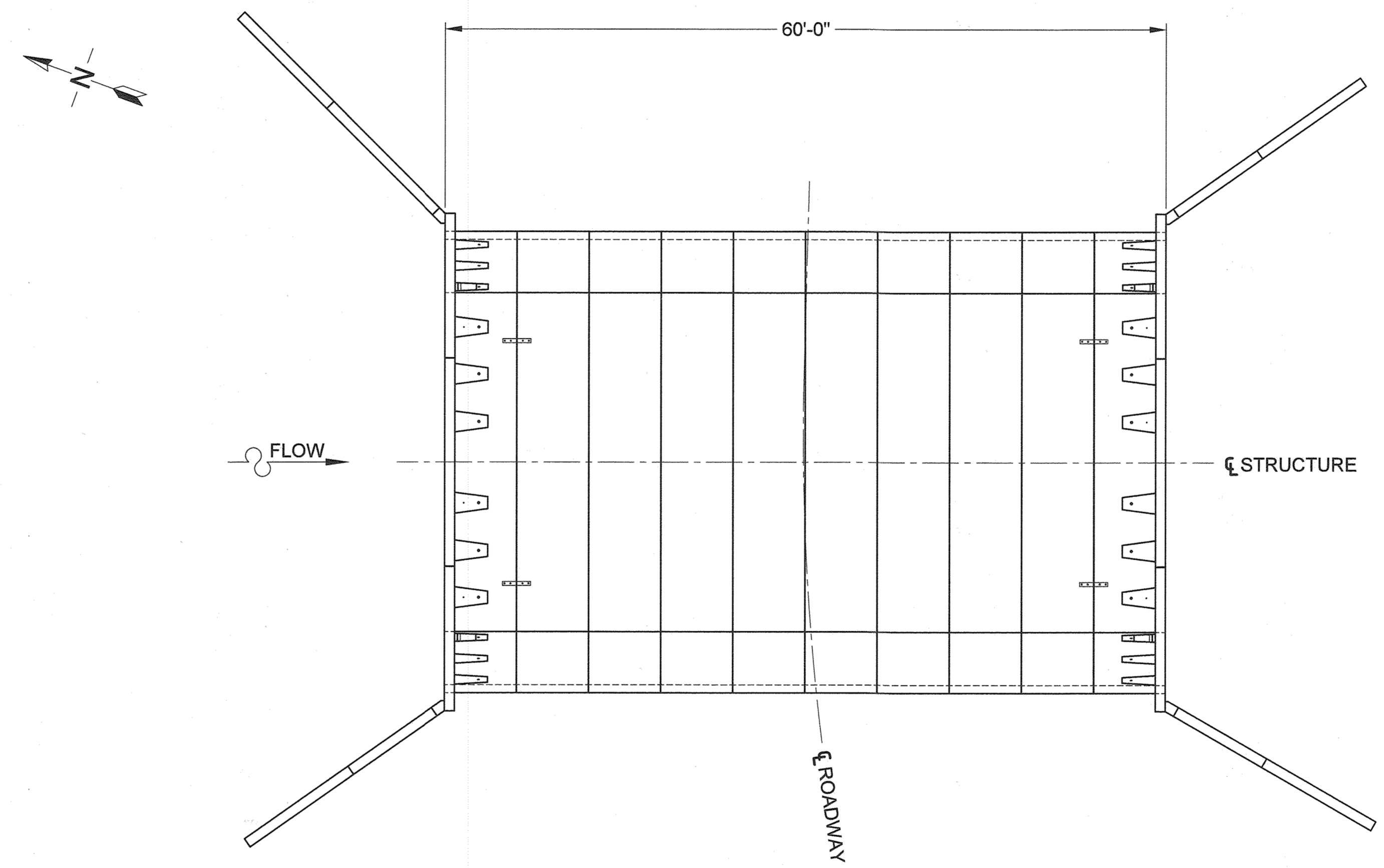
*FOUNDATION EXCAVATION AND SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH THE ADDENDUM TO THE GEOTECHNICAL REPORT FOR THIS PROJECT PREPARED BY GEO-TECHNOLOGY ASSOCIATES, INC. DATED 12/14/2018.

MATERIALS

PRECAST UNITS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH CON/SPAN® SPECIFICATIONS. CONCRETE FOR FOOTINGS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI. REINFORCING STEEL FOR FOOTINGS SHALL CONFORM TO ASTM A615 OR A996-GRADE 60.

KINGS FOREST

HOWARD COUNTY, MARYLAND

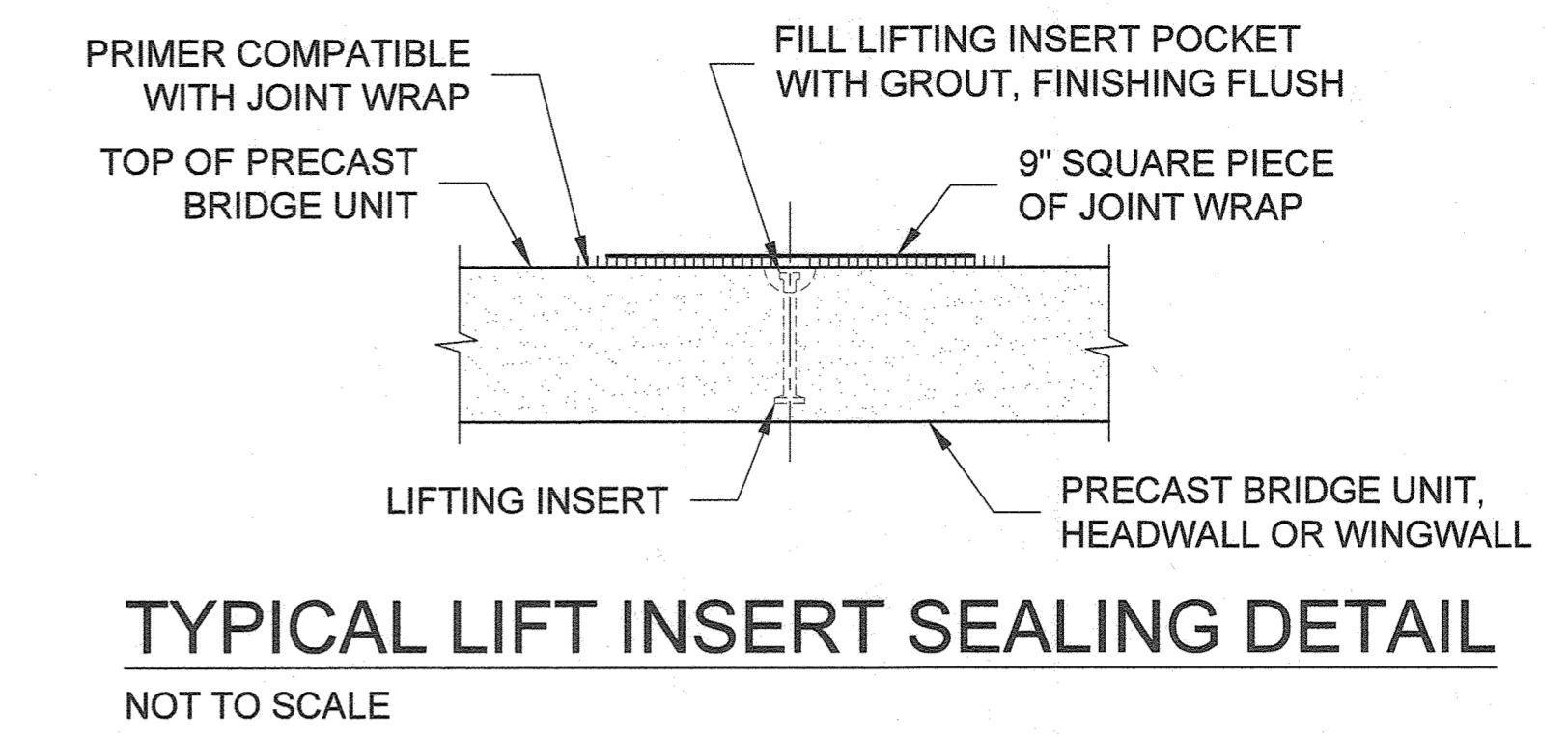
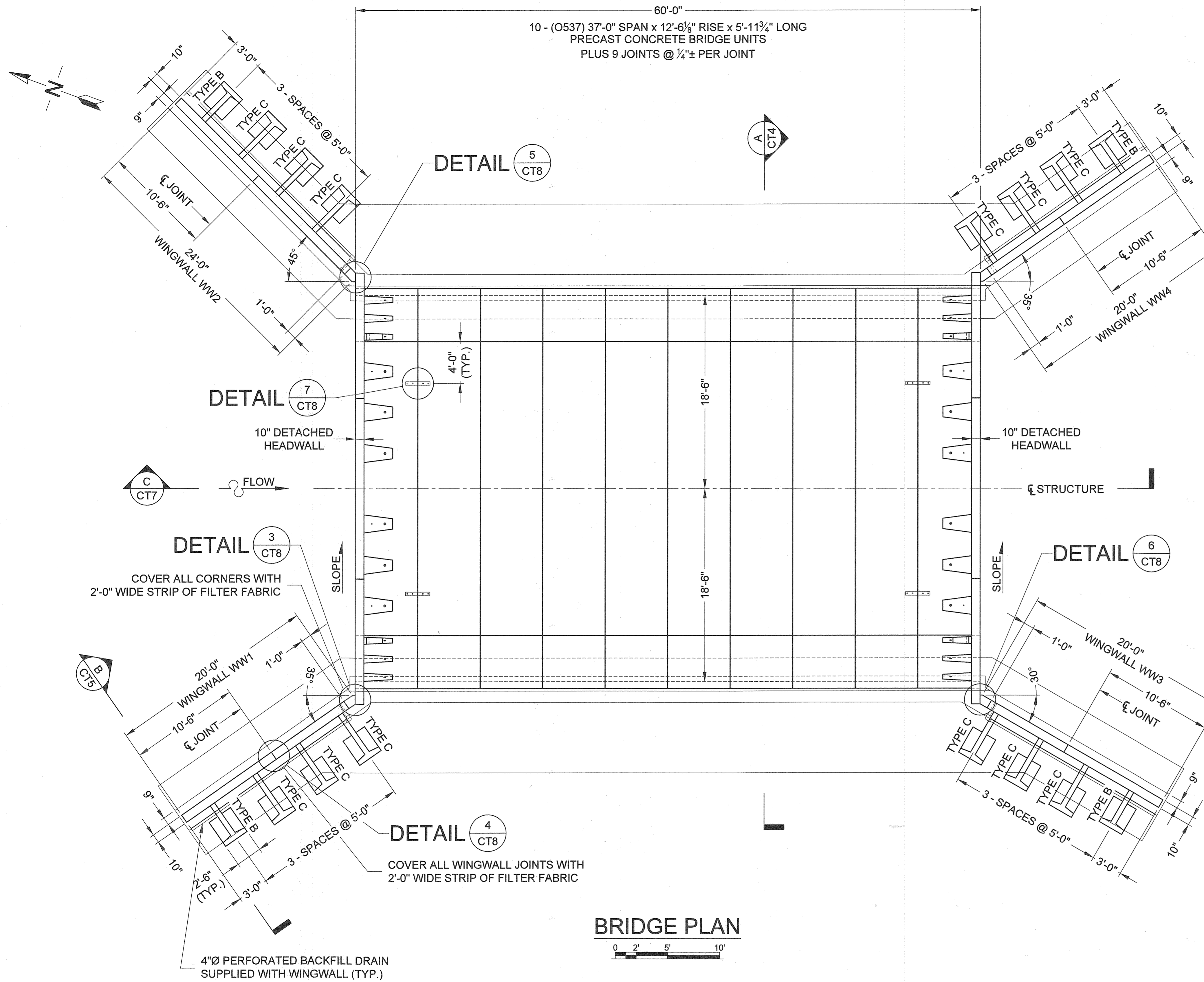


LOCATION PLAN

NOT TO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 01/31/2020
 CHIEF BUREAU OF HIGHWAYS MK DATE
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/1/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT JMM DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 2/20/20 DATE

1 1.10.21 <i>Revise Sheet #s</i>		REVISION	
NO.	DATE		
 www.ContechES.com 9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069 800-338-1122 613-645-7000 613-645-7993 FAX		 Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 36225, Expiration Date: 8-19-2020.	
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042 JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I	
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: Z3 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE: LOCATION PLAN		DATE: OCTOBER, 2019 PROJECT NO. 2501	
DRAFT: TRL	DESIGN: EWM	CHECK: PAC	SCALE: AS SHOWN SHEET 53 OF 75



APPROVED DEPARTMENT OF PUBLIC WORKS

CHIEF: *[Signature]* MIZ 01/31/2020 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT *[Signature]* 2/10/20 DATE

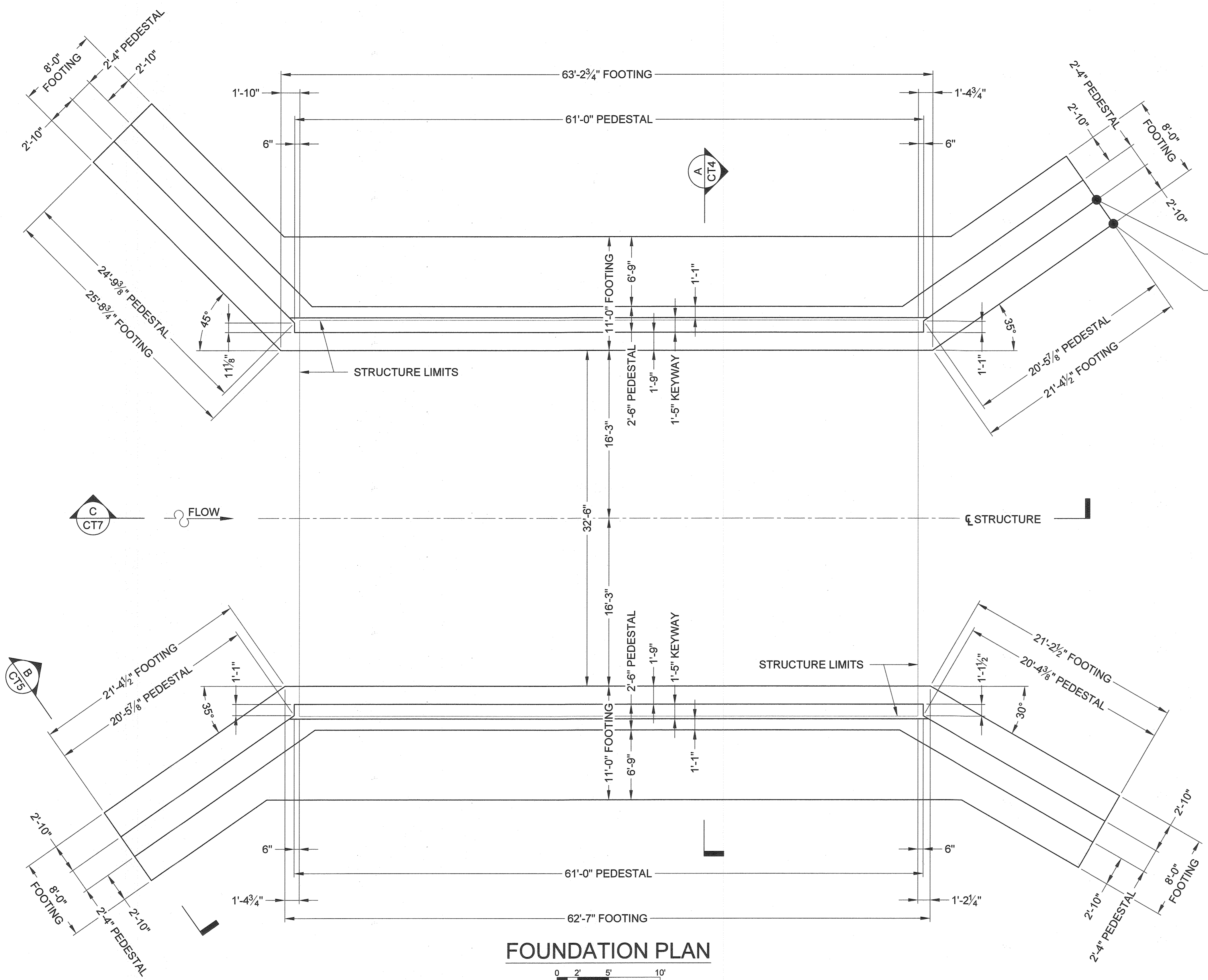
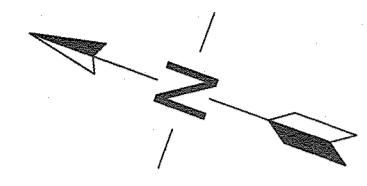
CHIEF, DEVELOPMENT ENGINEERING DIVISION *[Signature]* 2/20/20 DATE

NO.	DATE	REVISION
1	1-10-21	Revise Sheet #s

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800-338-1122 513-645-7000 513-645-7993 FAX

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 36225, Expiration Date: 8-19-2020.

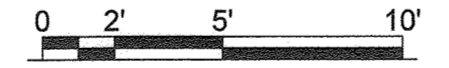
OWNERS:	NATALIE ZIEGLER 4288 MANOR LANE ELLCOTT CITY, MARYLAND 21042	PROJECT:	KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER:	JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION:	TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE:		BRIDGE PLAN	
DRAFT: TRJ	DESIGN: EWM	CHECK: PAC	SCALE: AS SHOWN
DATE: OCTOBER, 2019		PROJECT NO. 2501	
SHEET 54		OF 75	



T/PEDESTAL
ELEV. 409.16 (TYP.)
T/FOOTING
ELEV. 404.49 (TYP.)

NOTE:
LAP (3'-0") #6 LONGITUDINAL BARS IN
WINGWALL AND BRIDGE FOOTINGS
TO MAKE CONTINUOUS

FOUNDATION PLAN



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[Signature] 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK DATE
 APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/1/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 APPROVED
[Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

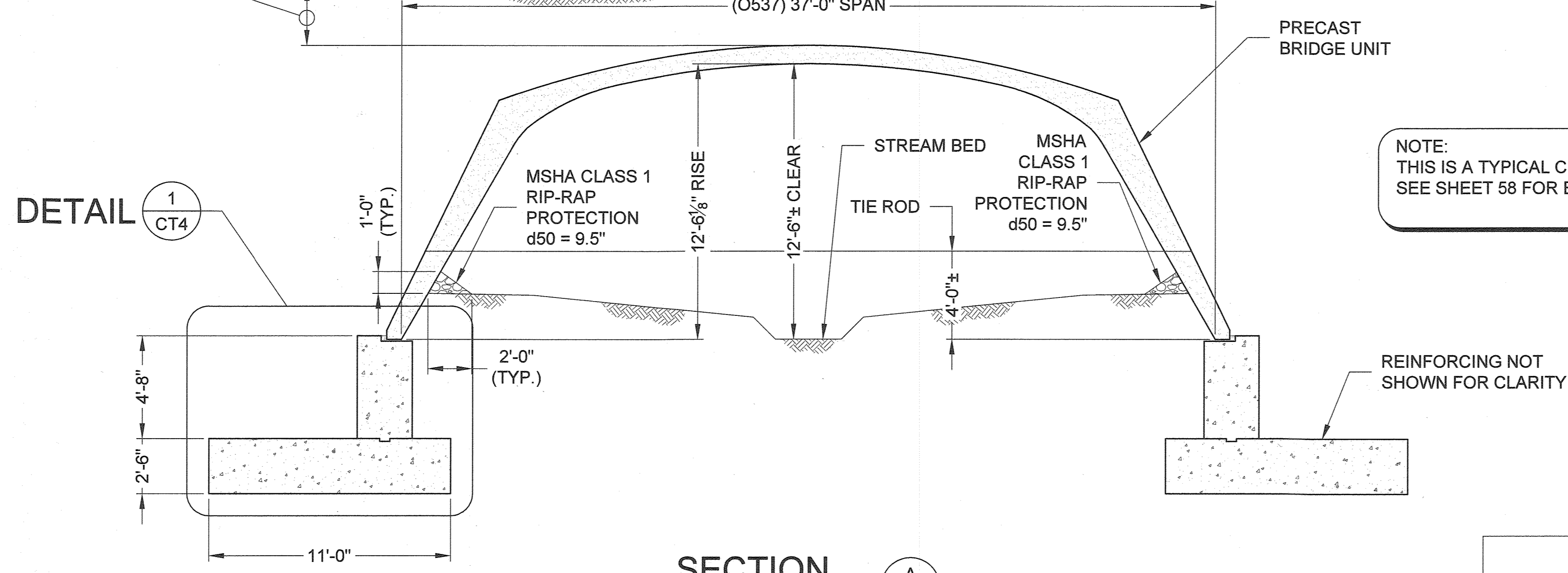
NO.	DATE	REVISION
1	1-10-20	Issue Sheet #s

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<p>OWNERS: NATALIE ZIEGLER 4285 MANOR LANE ELLCOTT CITY, MARYLAND 21042</p> <p>JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 750 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697</p> <p>DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263</p>	<p>PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I</p> <p>LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p> <p>TITLE: FOUNDATION PLAN</p> <p>DATE: OCTOBER, 2019 PROJECT NO. 2501</p> <p>DRAFT: TRL DESIGN: EWM CHECK: PAC SCALE: AS SHOWN SHEET 55 OF 75</p>
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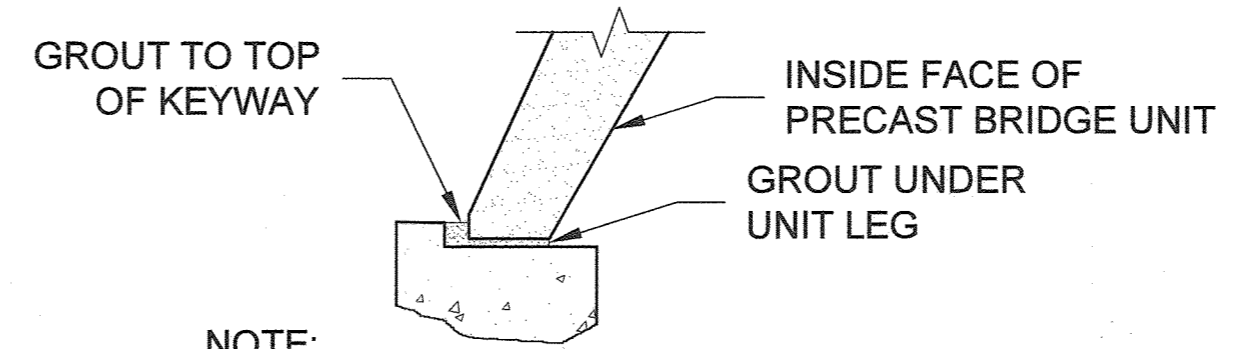
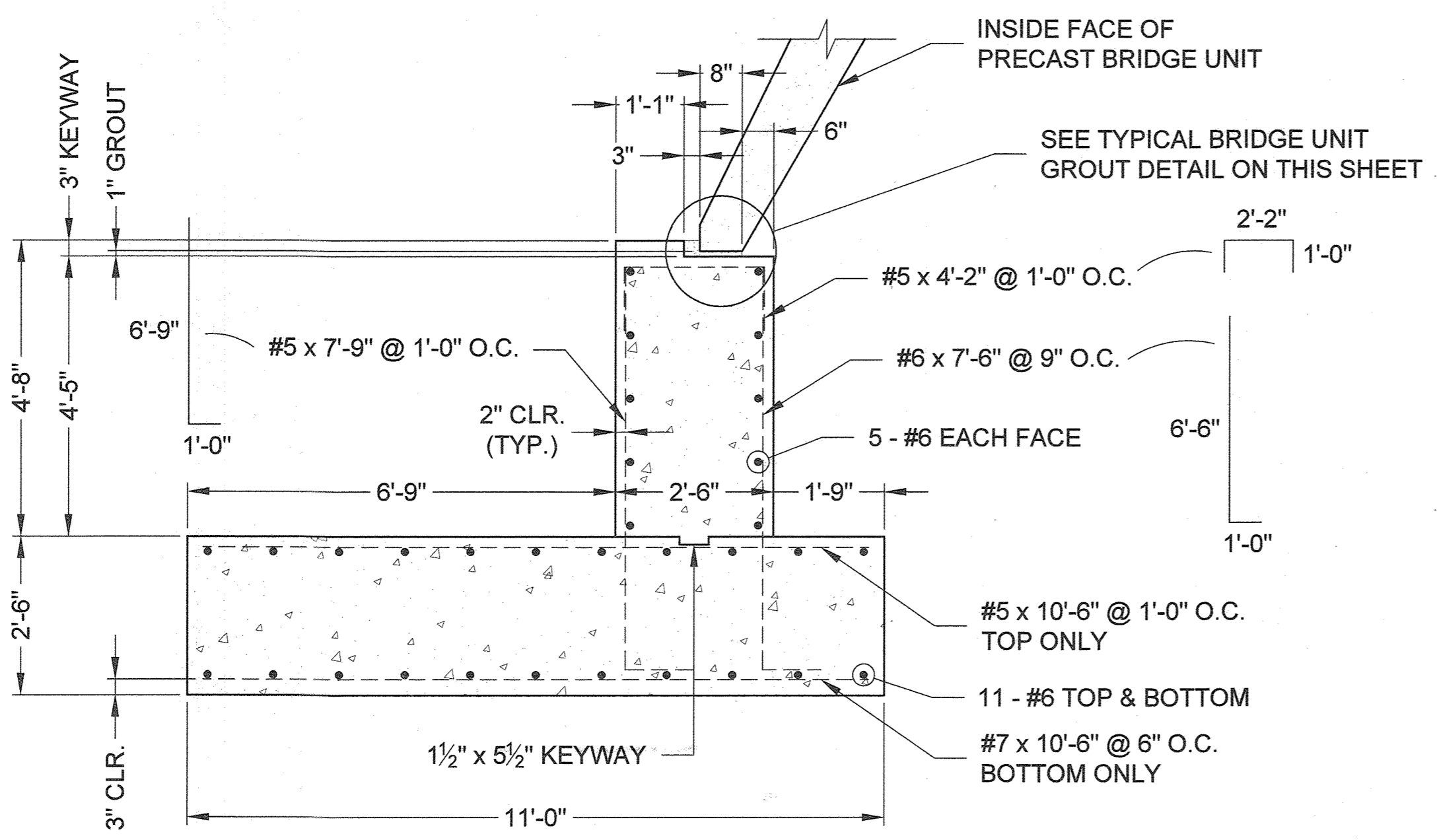
HEIGHT OF COVER VARIES. STRUCTURE DESIGNED FOR 2'-6" MIN. TO 4'-0" MAX.

FINISHED ROADWAY ELEVATION OVER STRUCTURE VARIES, APPROXIMATELY 425.0 MIN. - 426.0 MAX.



NOTE: THIS IS A TYPICAL CROSS-SECTION. SEE SHEET 58 FOR END ELEVATIONS

ELEVATION TABLE	
LOCATION	ELEVATION
TOP OF ARCH	422.33
LOW CHORD OF ARCH	421.50
TOP OF PEDESTAL WALL FOUNDATION	409.16
BOTTOM OF ARCH LEG	408.99
BOTTOM OF KEYWAY	408.91
TOP OF FOUNDATION	404.49
BOTTOM OF FOUNDATION	401.99



TYPICAL BRIDGE UNIT GROUT DETAIL
NOT TO SCALE

APPROVED DEPARTMENT OF PUBLIC WORKS

Jane 01/31/2020
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

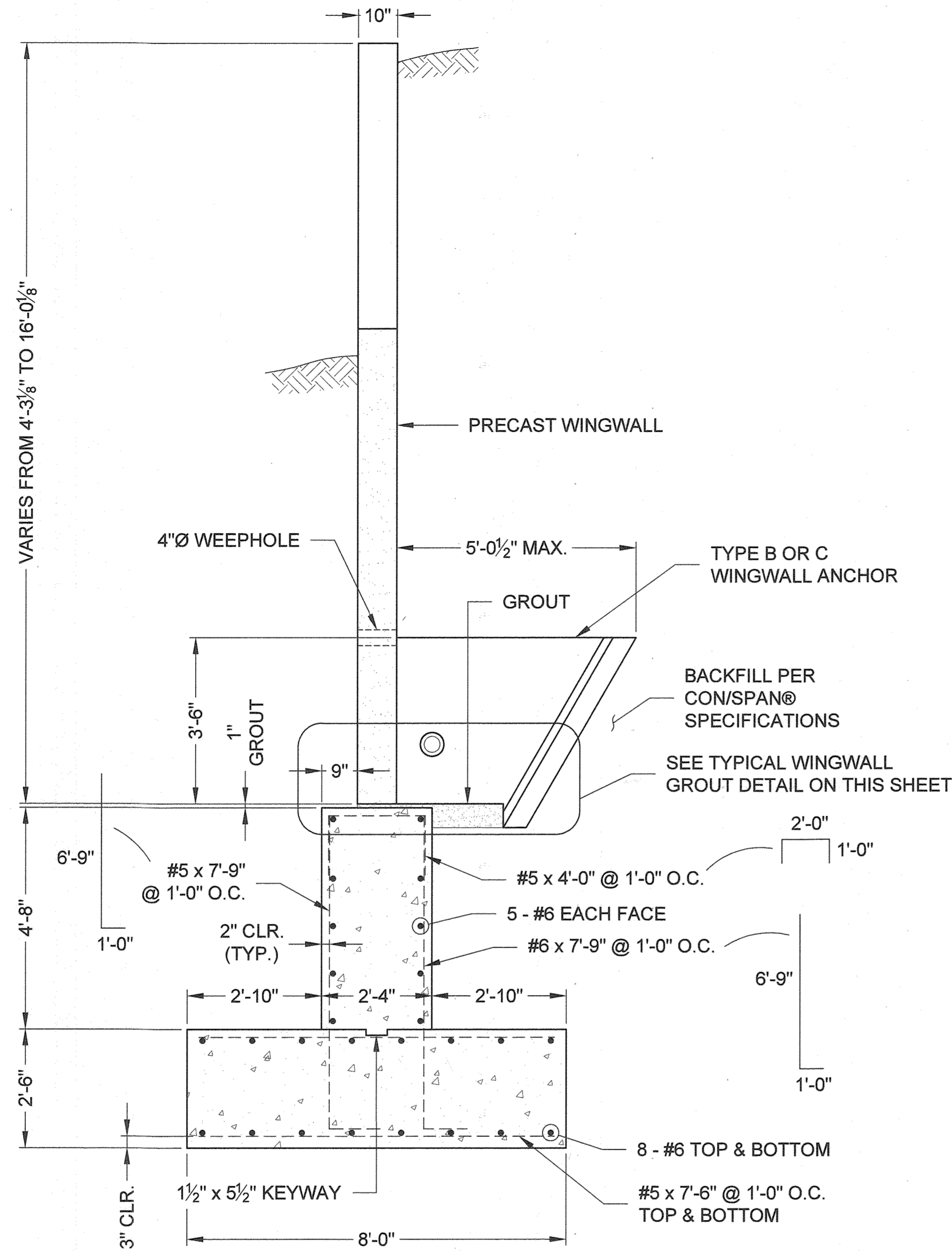
[Signature] 3/5/2020
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

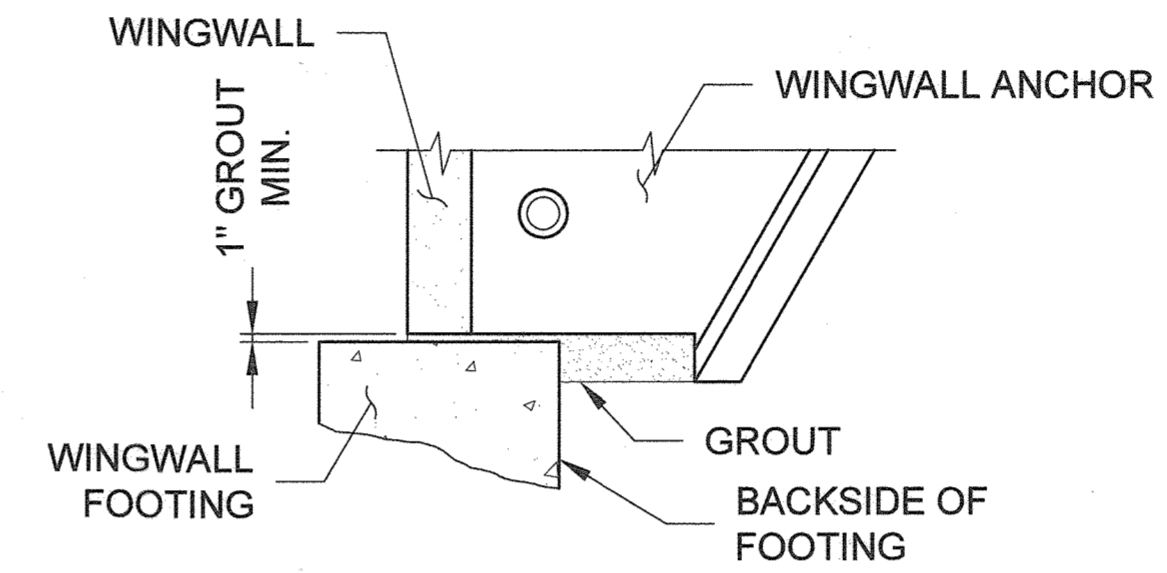
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OWNERS: NATALIE ZIEGLER 4285 MANOR LANE ELLCOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I			
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLCOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND			
TITLE: SECTIONS & DETAILS				
DRAFT: TRL	DESIGN: EWM	CHECK: PAC	DATE: OCTOBER, 2019	PROJECT NO. 2501
SCALE: AS SHOWN		SHEET 56 OF 75		



SECTION **B**
CT2



- NOTES:
- MINIMUM 1" GROUT UNDER WINGWALL LEG & ANCHOR STEM.
 - AREA BETWEEN WINGWALL FOOTING AND WINGWALL ANCHOR SHALL BE GROUTED SOLID BEFORE BACKFILL.
 - FORM BACKSIDE OF FOOTING TO DIMENSIONS SHOWN ON FOUNDATION PLAN.

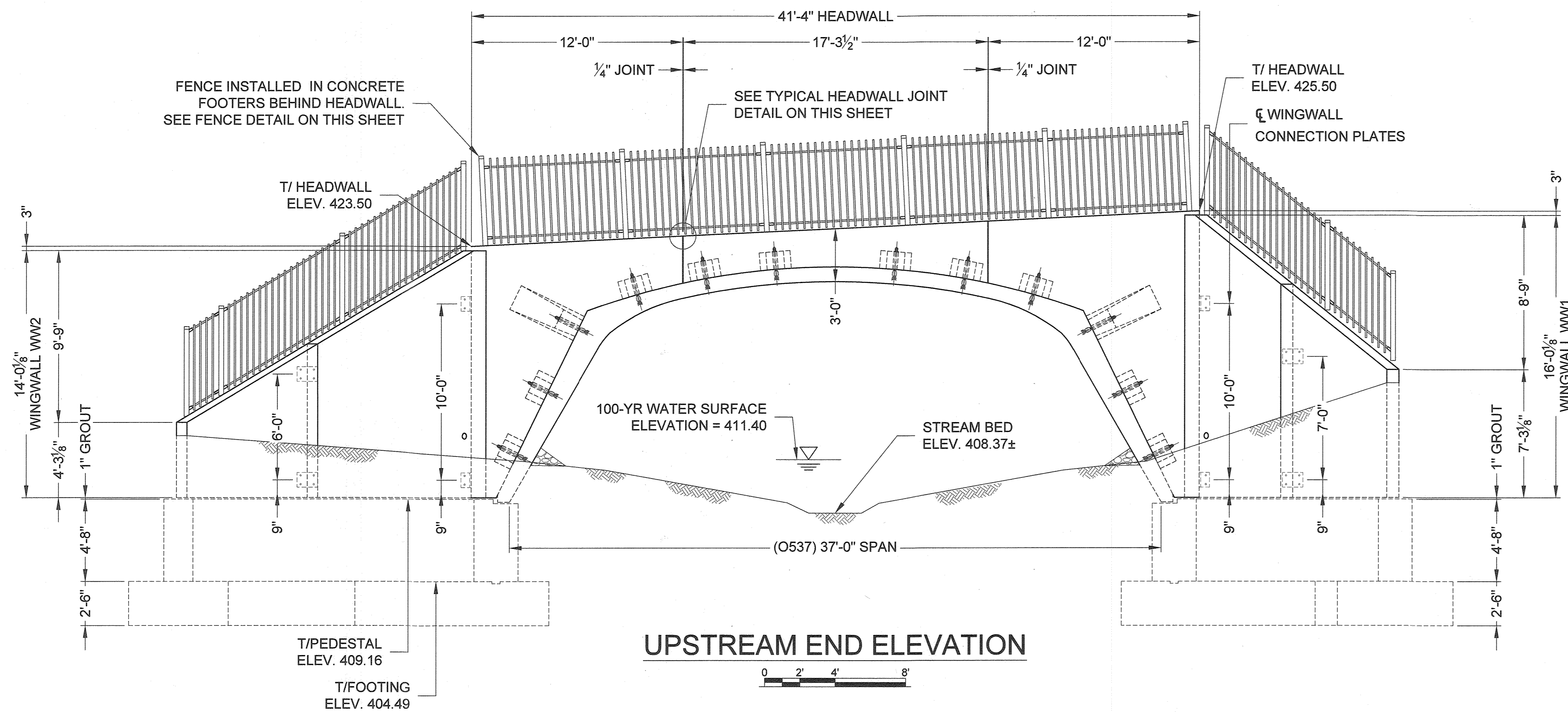
TYPICAL WINGWALL GROUT DETAIL
NOT TO SCALE

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[Signature] 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK DATE
 APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/3/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT WMS DATE
[Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

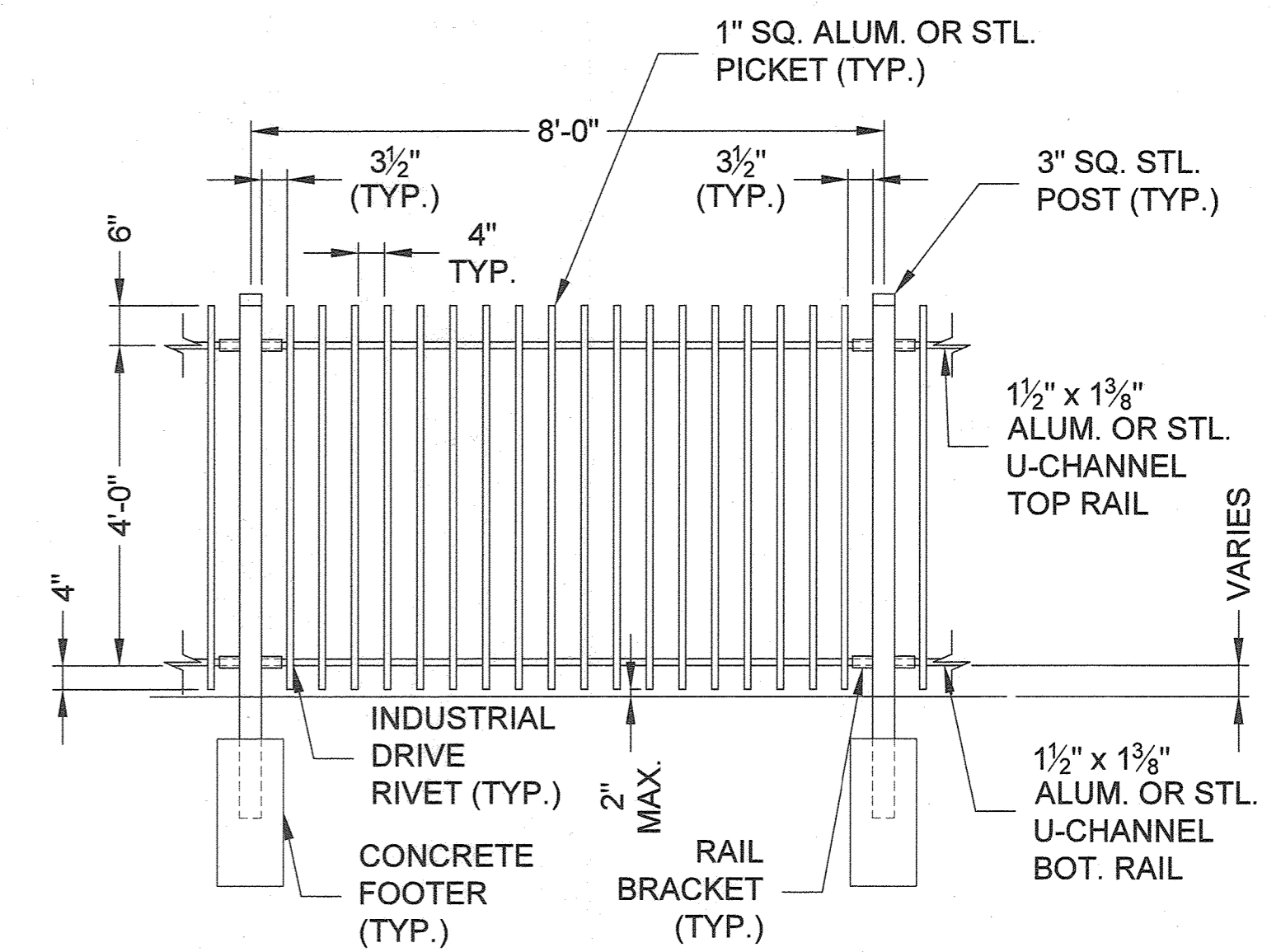
NO.	DATE	REVISION
1	11-20-21	Revise Sheet #s

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OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLCOTT CITY, MARYLAND 21042 JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORIS STREET SAN FRANCISCO, CA 94110 212-877-8697 DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLCOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND TITLE: SECTIONS & DETAILS DATE: OCTOBER, 2019 PROJECT NO. 2501 SCALE: AS SHOWN SHEET 57 OF 78
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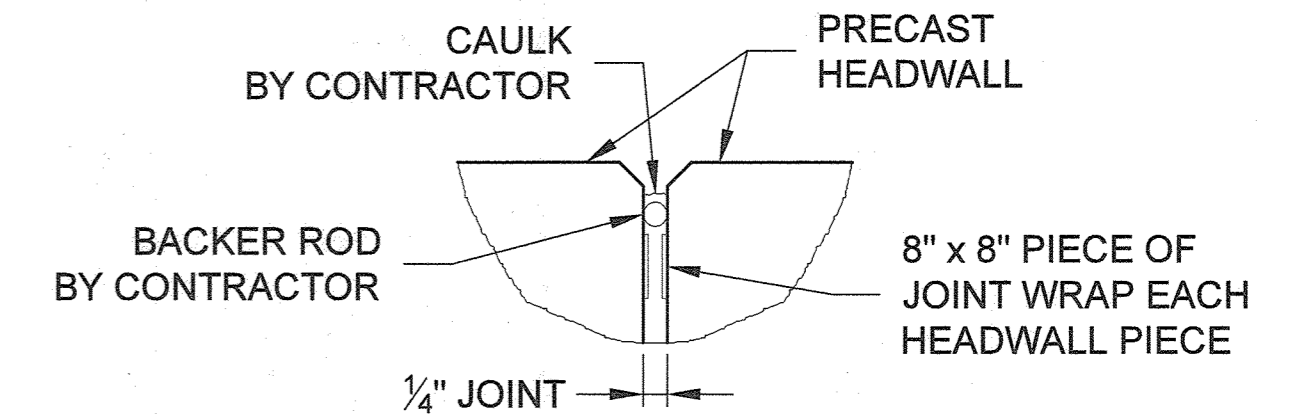
UPSTREAM END ELEVATION



1. USE A METAL FENCE THAT IS EITHER STEEL OR HEAVY DUTY ALUMINUM AND APPROVED FOR USE AROUND POOLS. INSTALL PER THE MANUFACTURES RECOMMENDATIONS. STANDARD DUTY OR UNSPECIFIED DUTY IS NOT ACCEPTABLE.
2. FENCE MUST BE AT LEAST 48" TALL FROM THE GRADE AND CLOSE ENOUGH TO THE GRADE AT THE BOTTOM TO PREVENT ACCESS (2" MAXIMUM).
3. POSTS ARE TO BE SECURED WITH CONCRETE FOOTER AS RECOMMENDED BY THE FENCE MANUFACTURER OR AS SHOWN ON THE HEADWALL PLAN DETAILS.

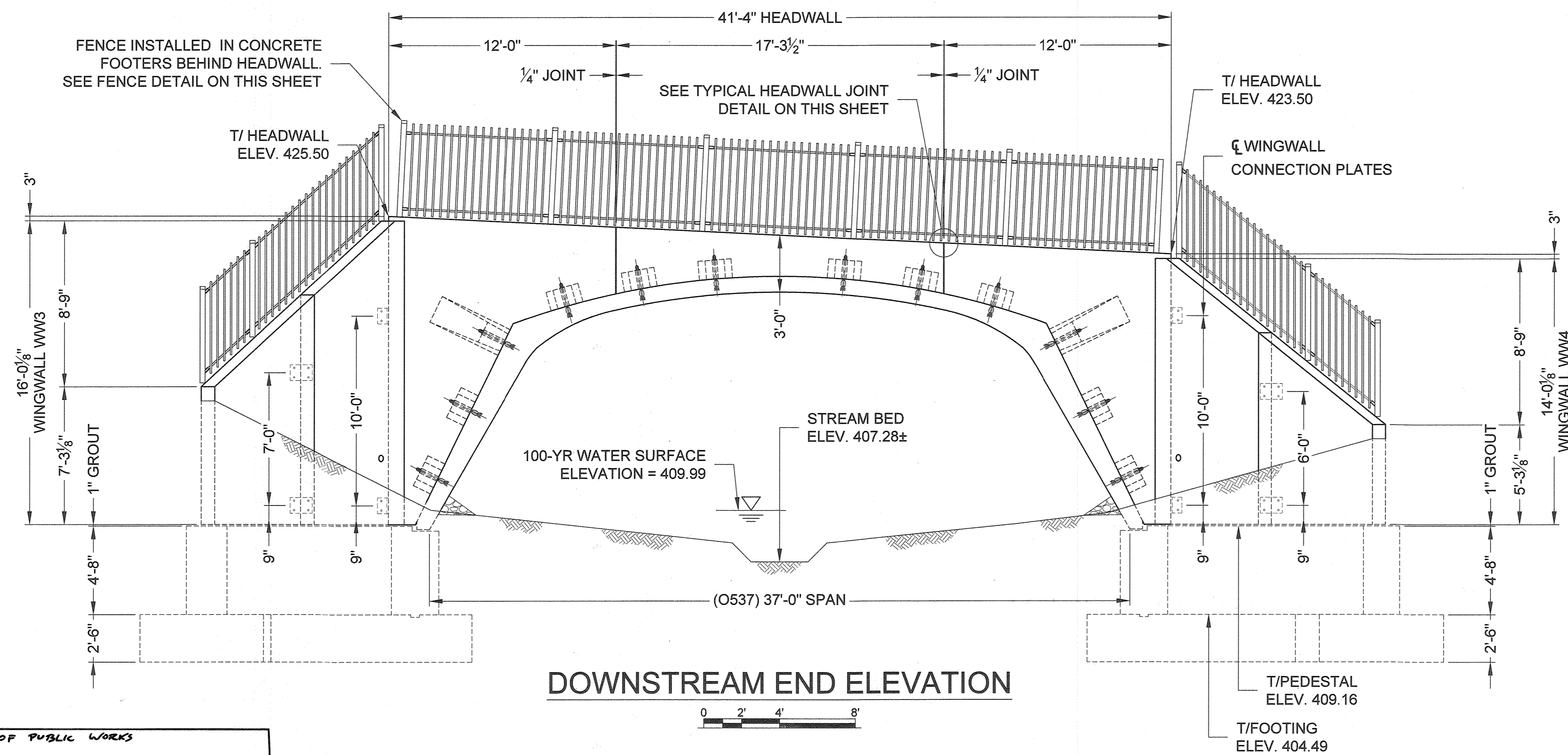
FENCE DETAIL

NOT TO SCALE



TYPICAL HEADWALL JOINT DETAIL

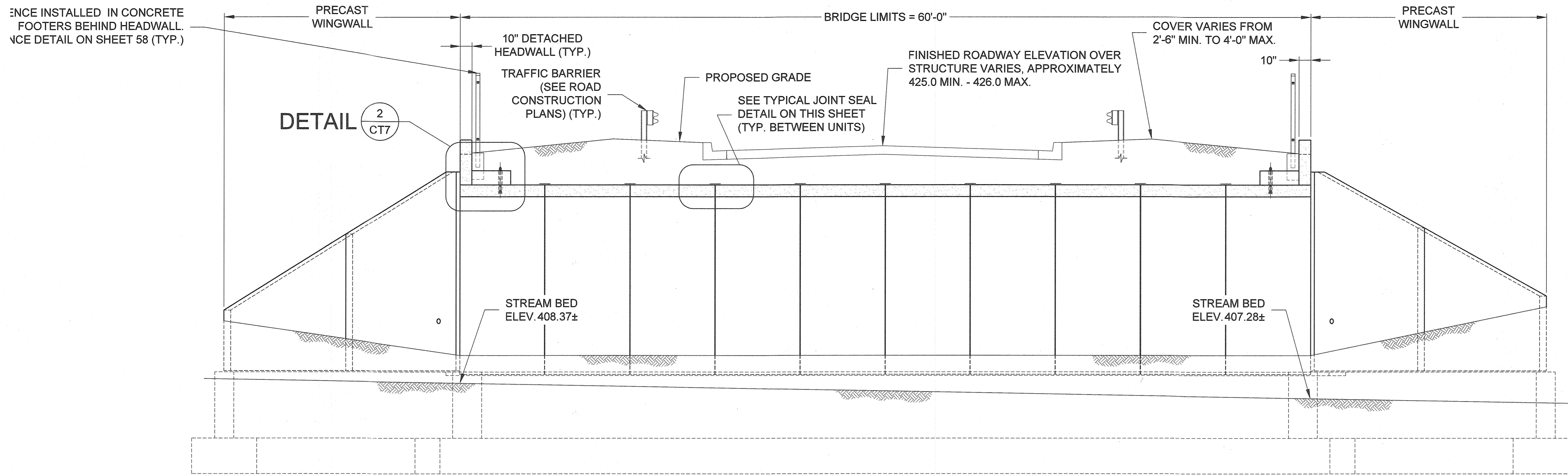
NOT TO SCALE



DOWNSTREAM END ELEVATION

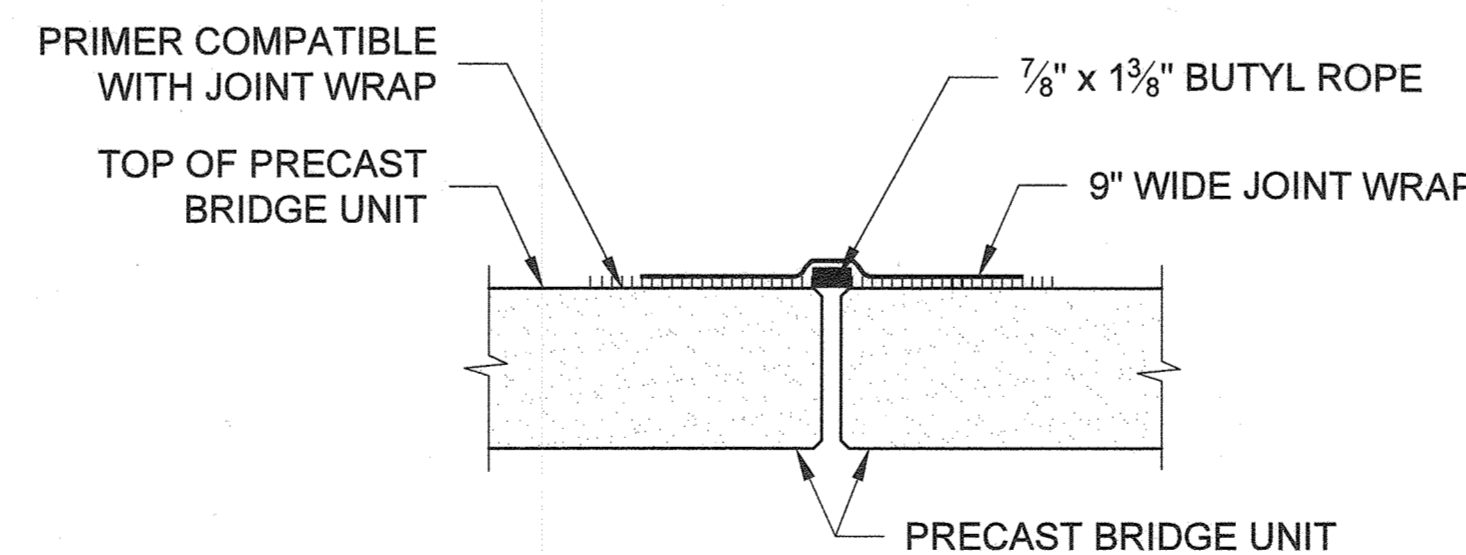
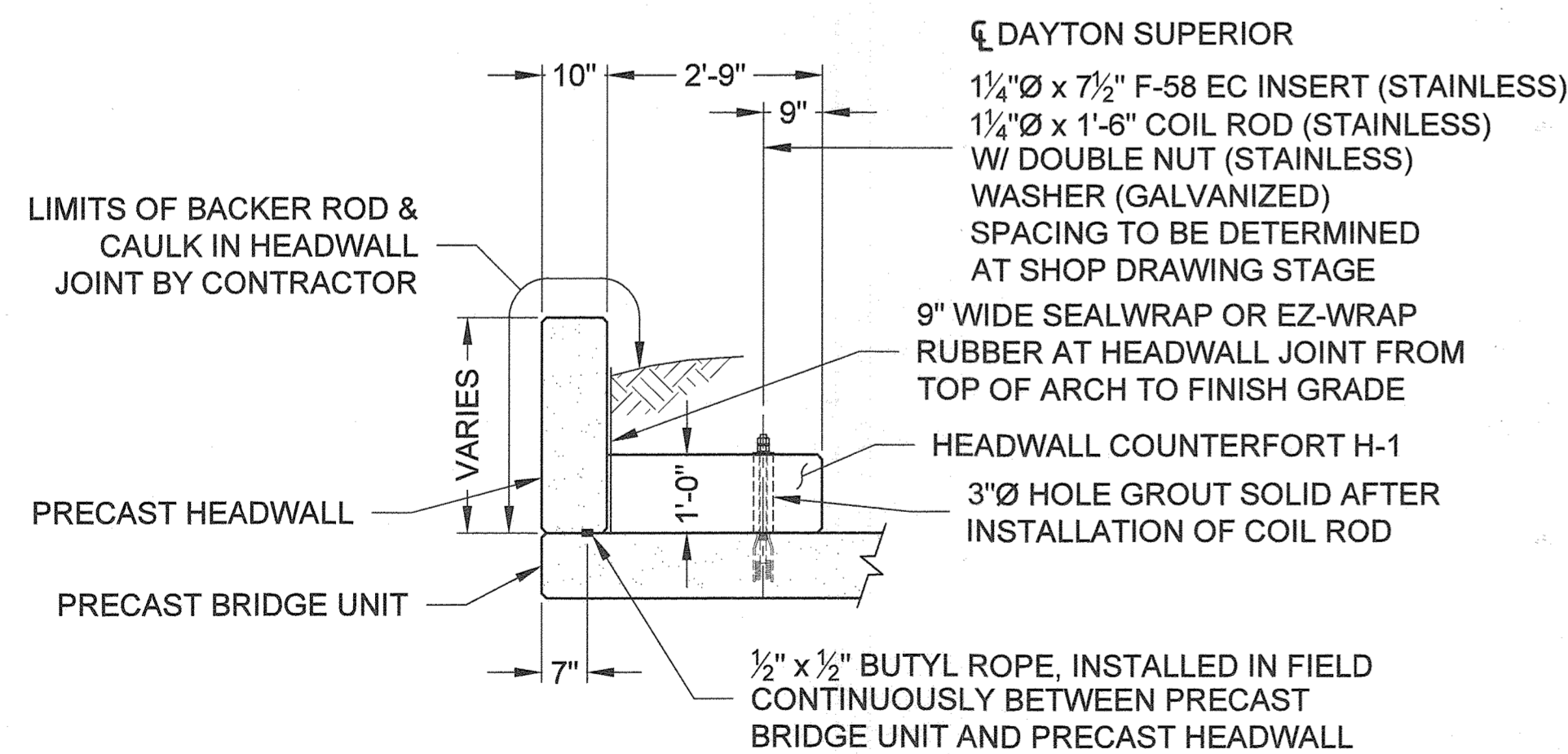
APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK DATE
 APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 1/31/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 2/20/20
 DATE

NO.	DATE	REVISION
1	1-10-20	Revise Sheet #s.
 9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069 800-338-1122 613-645-7000 613-645-7993 FAX		
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042 JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-351-3253		LOCATION: TAX MAP: 23, GRID: 23 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: END ELEVATIONS		DATE: OCTOBER, 2019 PROJECT NO. 2501
DRAFT: TRL	DESIGN: EWM	CHECK: PAC
SCALE: AS SHOWN	SHEET 58	OF 75



SECTION C
0 2' 4' 8'

ELEVATION TABLE	
LOCATION	ELEVATION
TOP OF ARCH	422.33
LOW CHORD OF ARCH	421.50
TOP OF PEDESTAL WALL FOUNDATION	409.16
BOTTOM OF ARCH LEG	408.99
BOTTOM OF KEYWAY	408.91
TOP OF FOUNDATION	404.49
BOTTOM OF FOUNDATION	401.99



APPROVER DEPARTMENT OF PUBLIC WORKS

[Signature] 01/31/2020
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVER HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 2/1/2020
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

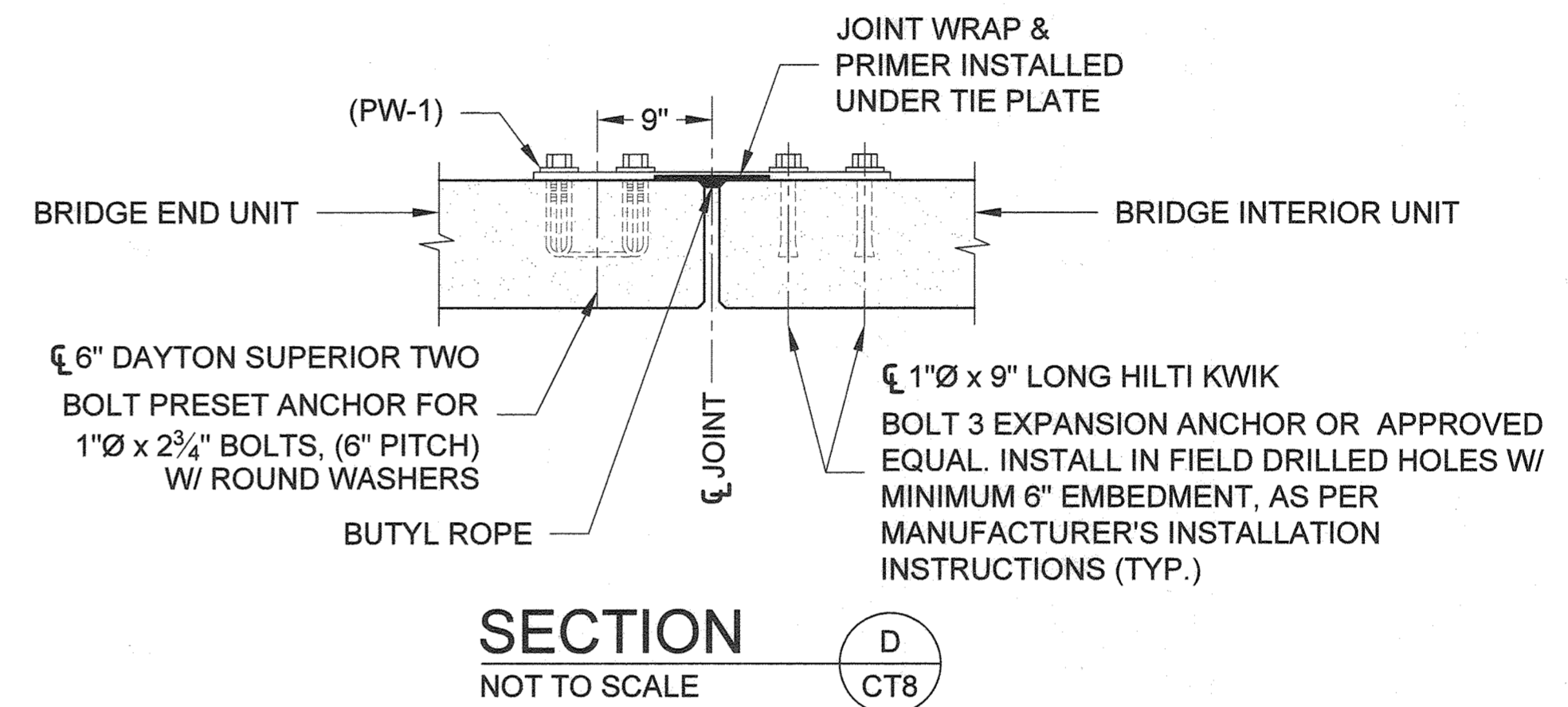
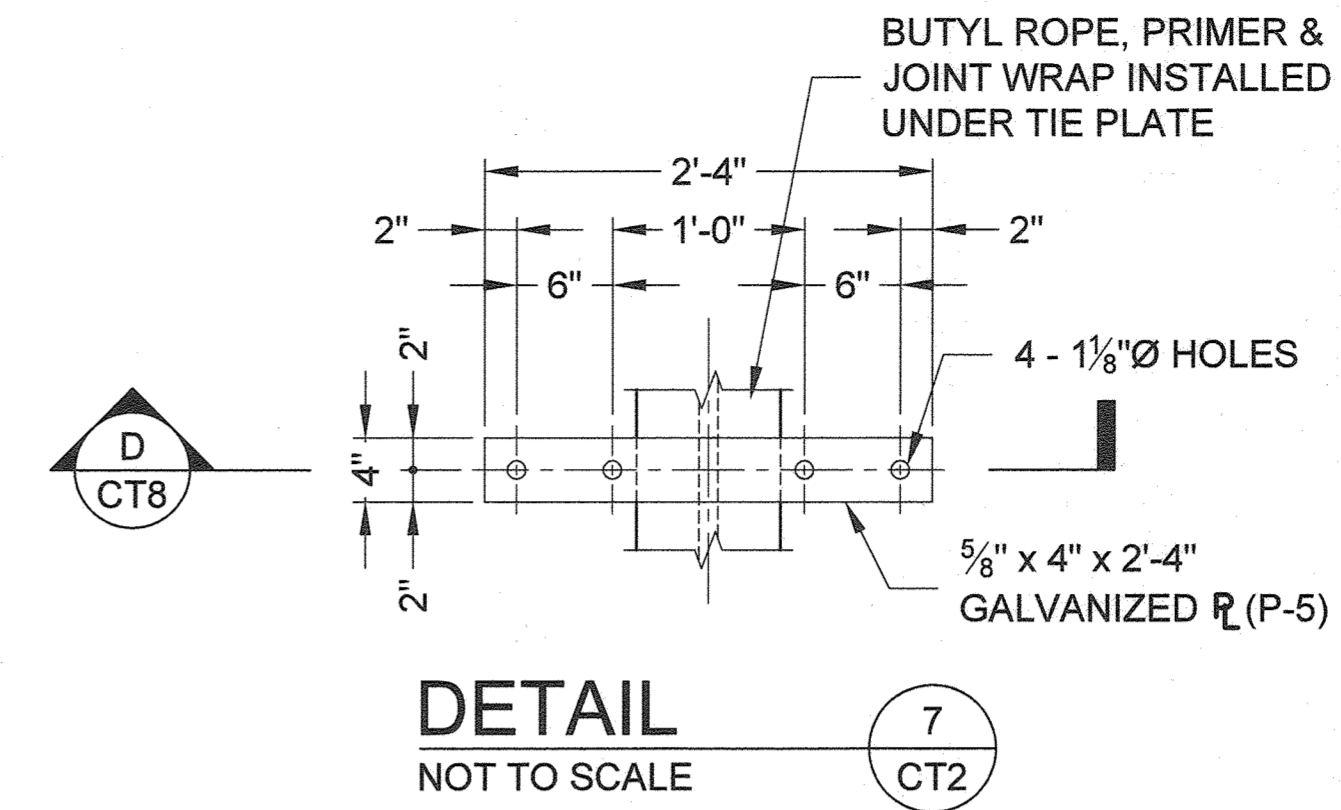
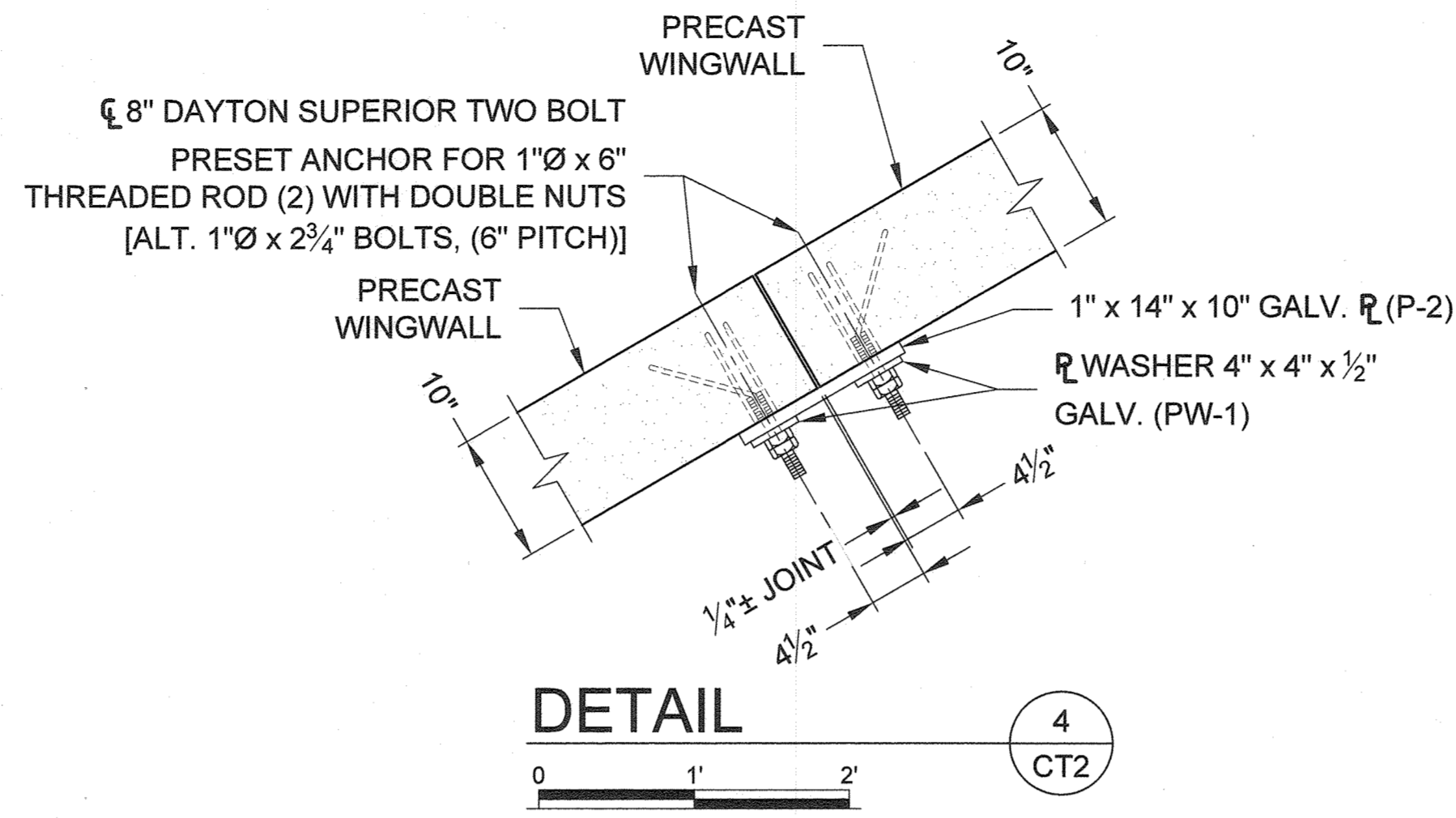
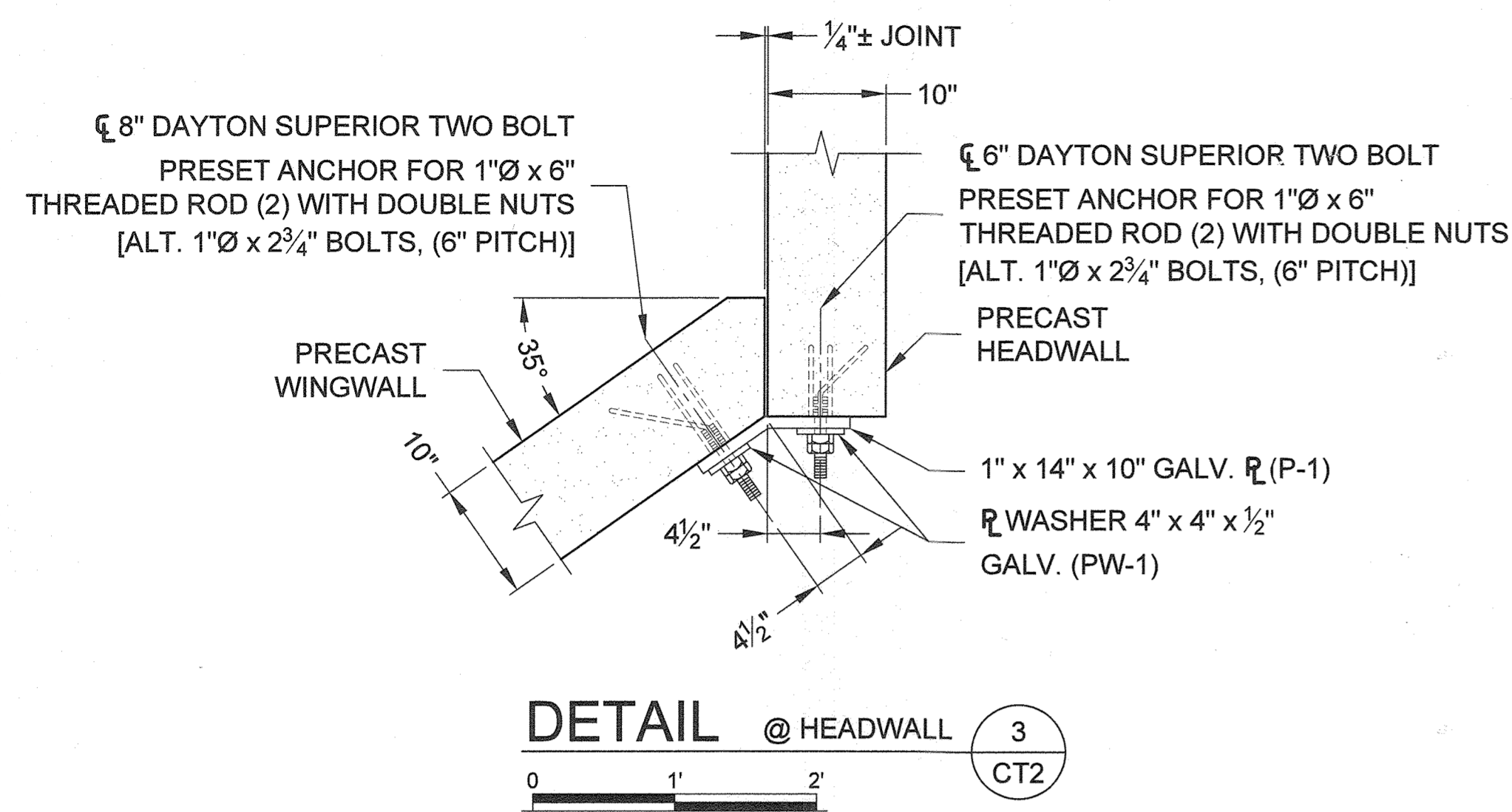
NO.	DATE	REVISION
1	1-20-21	Revised sheet #s

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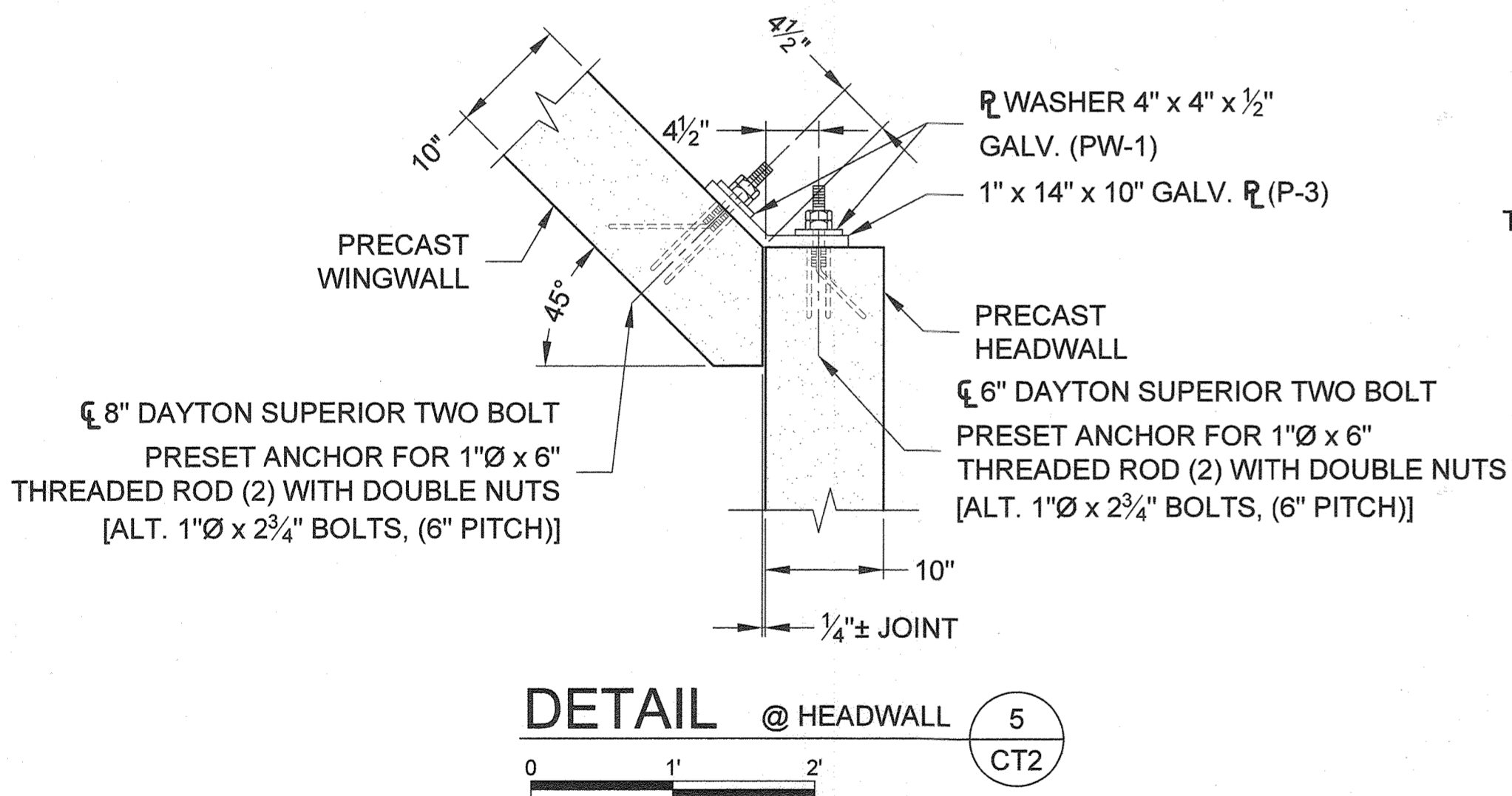
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 36225, Expiration Date: 8-19-2020.

OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLCOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLCOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: LONGITUDINAL SECTION & DETAILS	DATE: OCTOBER, 2019 PROJECT NO. 2501
DRAFT: TRL DESIGN: EWM CHECK: PAC	SCALE: AS SHOWN SHEET 59 OF 75

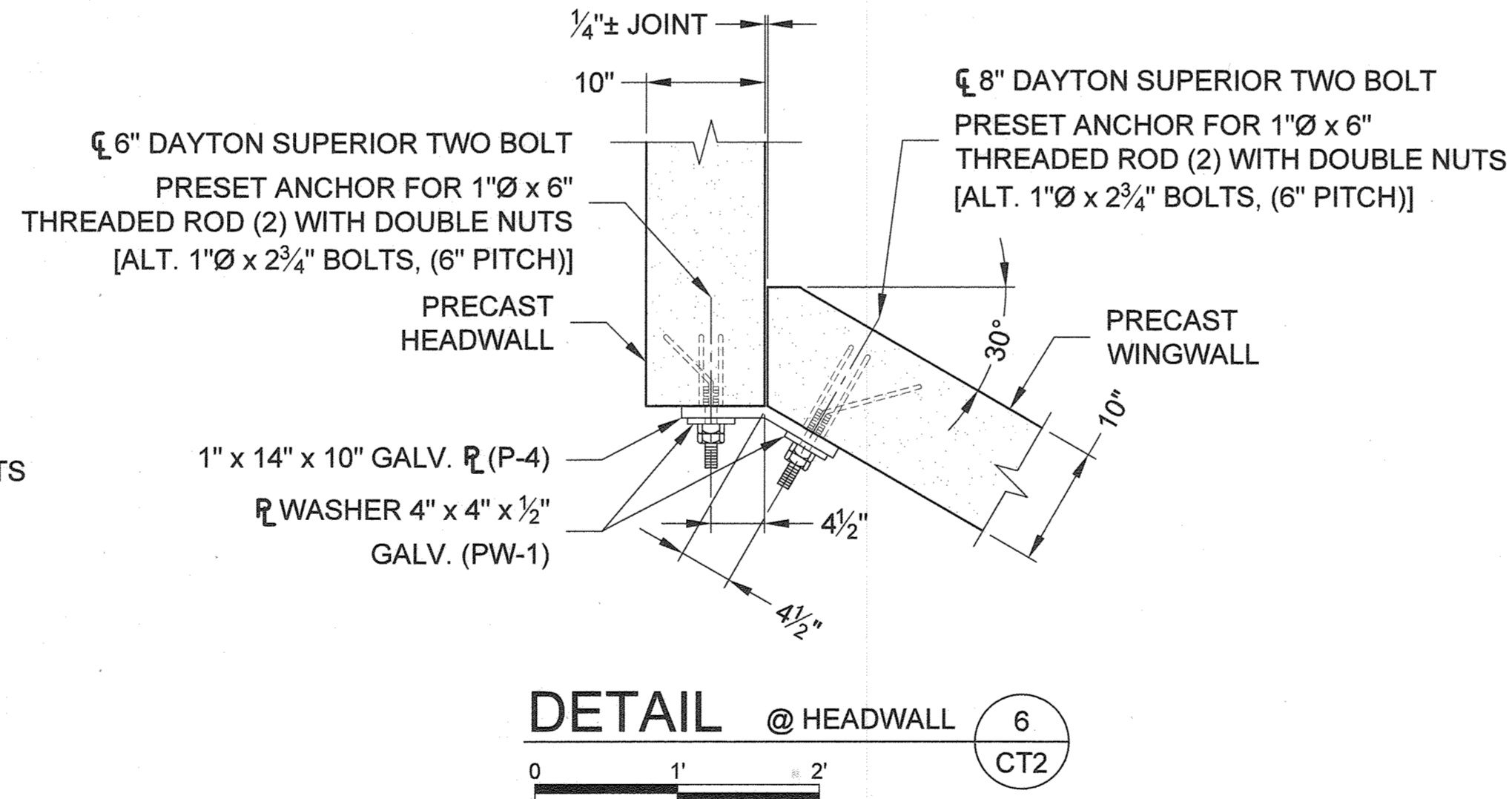
NOTE:
CONNECTION P-1'S MUST BE
POSITIONED WITH SMALL Ø HOLES
TOWARD PRECAST HEADWALL



NOTE:
CONNECTION P-3'S MUST BE
POSITIONED WITH SMALL Ø HOLES
TOWARD PRECAST HEADWALL



NOTE:
CONNECTION P-4'S MUST BE
POSITIONED WITH SMALL Ø HOLES
TOWARD PRECAST HEADWALL



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[Signature] 01/31/2020
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 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 3/5/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT JAK DATE
 APPROVED: CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 2/20/20
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CONTECH SHEET: CT8 OF CT10

NO.	DATE	REVISION
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DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: CONNECTION DETAILS		
DRAFT: TRJ	DESIGN: EWM	CHECK: PAC
DATE: OCTOBER, 2019	PROJECT NO. 2501	SHEET 60 OF 75
SCALE: AS SHOWN		



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 36225, Expiration Date: 8-19-2020.

SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® O-SERIES BRIDGE SYSTEMS

1. DESCRIPTION
 - 1.1. TYPE - THIS WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTING A CON/SPAN® O-SERIES BRIDGE SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DESIGN AND DIMENSIONS SHOWN ON THE PLANS OR AS ESTABLISHED BY THE ENGINEER. IN SITUATIONS WHERE TWO OR MORE SPECIFICATIONS APPLY TO THIS WORK, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.
 - 1.2. DESIGNATION - PRECAST REINFORCED CONCRETE CON/SPAN® O-SERIES BRIDGE UNITS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY SPAN AND RISE. PRECAST REINFORCED CONCRETE WINGWALLS AND HEADWALLS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY LENGTH, HEIGHT, AND DEFLECTION ANGLE. PRECAST REINFORCED CONCRETE EXPRESS™ FOUNDATION UNITS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY LENGTH, HEIGHT AND WIDTH.
2. DESIGN
 - 2.1. SPECIFICATIONS - THE PRECAST ELEMENTS ARE DESIGNED IN ACCORDANCE WITH THE "AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS" 8TH EDITION, ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2017. A MINIMUM OF ONE FOOT OF COVER ABOVE THE CROWN OF THE BRIDGE UNITS IS REQUIRED IN THE INTERIOR. THE COVER OF CONCRETE OVER THE OUTSIDE CIRCUMFERENTIAL REINFORCEMENT SHALL BE 2" MINIMUM. THE COVER OF CONCRETE OVER THE INSIDE CIRCUMFERENTIAL REINFORCEMENT SHALL BE 1½" MINIMUM, UNLESS OTHERWISE NOTED ON THE SHOP DRAWINGS. THE CLEAR DISTANCE OF THE END CIRCUMFERENTIAL WIRES SHALL NOT BE LESS THAN 1" NOR MORE THAN 2" FROM THE ENDS OF EACH SECTION. REINFORCEMENT SHALL BE ASSEMBLED UTILIZING SINGLE OR MULTIPLE LAYERS OF WELDED WIRE FABRIC (NOT TO EXCEED 3 LAYERS), SUPPLEMENTED WITH A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS, WHEN NECESSARY. WELDED WIRE FABRIC SHALL BE COMPOSED OF CIRCUMFERENTIAL AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3. BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE BRIDGE UNIT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL DISTRIBUTION REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3. BELOW. THE ENDS OF THE LONGITUDINAL DISTRIBUTION REINFORCEMENT SHALL BE NOT MORE THAN 3" AND NOT LESS THAN 1½" FROM THE ENDS OF THE BRIDGE UNIT.
 - 2.2. BENDING OF REINFORCEMENT FOR PRECAST BRIDGE UNITS - THE OUTSIDE AND INSIDE CIRCUMFERENTIAL REINFORCING STEEL FOR THE CORNERS OF THE BRIDGE SHALL BE BENT TO SUCH AN ANGLE THAT IS APPROXIMATELY EQUAL TO THE CONFIGURATION OF THE BRIDGE'S OUTSIDE CORNER.
 - 2.3. PLACEMENT OF REINFORCEMENT FOR PRECAST WINGWALLS AND HEADWALLS - THE COVER OF CONCRETE OVER THE LONGITUDINAL AND TRANSVERSE REINFORCEMENT SHALL BE 2" MINIMUM. THE CLEAR DISTANCE FROM THE END OF EACH PRECAST ELEMENT TO THE END OF REINFORCING STEEL SHALL NOT BE LESS THAN 1½" NOR MORE THAN 3". REINFORCEMENT SHALL BE ASSEMBLED UTILIZING A SINGLE LAYER OF WELDED WIRE FABRIC, OR A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS. WELDED WIRE FABRIC SHALL BE COMPOSED OF TRANSVERSE AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3. BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE ELEMENT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3. BELOW.
 - 2.4. PLACEMENT OF REINFORCEMENT FOR PRECAST FOUNDATION UNITS - THE COVER OF CONCRETE OVER THE BOTTOM REINFORCEMENT SHALL BE 3 INCHES MINIMUM. THE COVER OF CONCRETE FOR ALL OTHER REINFORCEMENT SHALL BE 2 INCHES MINIMUM. THE CLEAR DISTANCE FROM THE END OF EACH PRECAST ELEMENT TO THE END OF REINFORCING STEEL SHALL NOT BE LESS THAN 2 INCHES NOR MORE THAN 3 INCHES. REINFORCEMENT SHALL BE ASSEMBLED UTILIZING A SINGLE LAYER OF WELDED WIRE FABRIC OR A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS. WELDED WIRE FABRIC SHALL BE COMPOSED OF TRANSVERSE AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3. BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE ELEMENT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3. BELOW.
3. MATERIALS
 - 3.1. CONCRETE - THE CONCRETE FOR THE PRECAST ELEMENTS SHALL BE AIR-ENTRAINED WHEN INSTALLED IN AREAS SUBJECT TO FREEZE-THAW CONDITIONS, COMPOSED OF PORTLAND CEMENT, FINE AND COARSE AGGREGATES, ADMIXTURES AND WATER. AIR-ENTRAINED CONCRETE SHALL CONTAIN 6 ± 2 PERCENT AIR. THE AIR-ENTRAINED ADMIXTURE SHALL CONFORM TO AASHTO M154. THE MINIMUM CONCRETE COMPRESSIVE STRENGTH SHALL BE AS SHOWN ON THE SHOP DRAWINGS.
 - 3.1.1. PORTLAND CEMENT - SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATIONS C150-TYPE I, TYPE II, OR TYPE III CEMENT.
 - 3.1.2. COARSE AGGREGATE - SHALL CONSIST OF STONE HAVING A MAXIMUM SIZE OF 1 INCH. AGGREGATE SHALL MEET REQUIREMENTS FOR ASTM C33.
 - 3.1.3. WATER REDUCING ADMIXTURE - THE MANUFACTURER MAY SUBMIT, FOR APPROVAL BY THE ENGINEER, A WATER-REDUCING ADMIXTURE FOR THE PURPOSE OF INCREASING WORKABILITY AND REDUCING THE WATER REQUIREMENT FOR THE CONCRETE.
 - 3.1.4. CALCIUM CHLORIDE - THE ADDITION TO THE MIX OF CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE WILL NOT BE PERMITTED.
 - 3.1.5. MIXTURE - THE AGGREGATES, CEMENT AND WATER SHALL BE PROPORTIONED AND MIXED IN A BATCH MIXER TO PRODUCE A HOMOGENEOUS CONCRETE MEETING THE STRENGTH REQUIREMENTS OF THIS SPECIFICATION. THE PROPORTION OF PORTLAND CEMENT IN THE MIXTURE SHALL NOT BE LESS THAN 564 POUNDS (6 SACKS) PER CUBIC YARD OF CONCRETE.
 - 3.2. STEEL REINFORCEMENT
 - 3.2.1. THE MINIMUM STEEL YIELD STRENGTH SHALL BE 60,000 PSI, UNLESS OTHERWISE NOTED ON THE SHOP DRAWINGS.
 - 3.2.2. ALL REINFORCING STEEL FOR THE PRECAST ELEMENTS SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE DETAILED SHOP DRAWINGS SUBMITTED BY THE MANUFACTURER.
 - 3.2.3. REINFORCEMENT SHALL CONSIST OF WELDED WIRE REINFORCING CONFORMING TO ASTM SPECIFICATION A 1064, OR DEFORMED BILLET STEEL BARS CONFORMING TO ASTM SPECIFICATION A 615, GRADE 60. LONGITUDINAL DISTRIBUTION REINFORCEMENT MAY CONSIST OF WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS.
 - 3.3. STEEL HARDWARE
 - 3.3.1. BOLTS AND THREADED RODS FOR WINGWALL CONNECTIONS SHALL CONFORM TO ASTM A 307. NUTS SHALL CONFORM TO AASHTO M292 (ASTM A194) GRADE 2H. ALL BOLTS, THREADED RODS AND NUTS USED IN WINGWALL CONNECTIONS SHALL BE MECHANICALLY ZINC COATED IN ACCORDANCE WITH ASTM B695 CLASS 50.
 - 3.3.2. STRUCTURAL STEEL FOR WINGWALL CONNECTION PLATES AND PLATE WASHERS SHALL CONFORM TO AASHTO M 270 (ASTM A 709) GRADE 36 AND SHALL BE HOT DIP GALVANIZED AS PER AASHTO M111 (ASTM A123).
 - 3.3.3. INSERTS FOR WINGWALLS SHALL BE 1" DIAMETER TWO-BOLT PRESET WINGWALL ANCHORS AS MANUFACTURED BY DAYTON SUPERIOR CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700 AND SHALL BE MECHANICALLY ZINC COATED IN ACCORDANCE WITH ASTM B695 CLASS 50.
 - 3.3.4. FERRULE LOOP INSERTS SHALL BE F-64 FERRULE LOOP INSERTS AS MANUFACTURED BY DAYTON SUPERIOR CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700.
 - 3.3.5. HOOK BOLTS USED IN ATTACHED HEADWALL CONNECTIONS SHALL BE ASTM A307.
 - 3.3.6. INSERTS FOR DETACHED HEADWALL CONNECTIONS SHALL BE AISI TYPE 304 STAINLESS STEEL, EXPANDED COIL INSERTS AS MANUFACTURED BY DAYTON SUPERIOR
4. MANUFACTURE OF PRECAST ELEMENTS - SUBJECT TO THE PROVISIONS OF SECTION 5, BELOW, THE PRECAST ELEMENT DIMENSION AND REINFORCEMENT DETAILS SHALL BE AS PRESCRIBED IN THE PLAN AND SHOP DRAWINGS PROVIDED BY THE MANUFACTURER.
 - 4.1. FORMS - THE FORMS USED IN MANUFACTURE SHALL BE SUFFICIENTLY RIGID AND ACCURATE TO MAINTAIN THE REQUIRED PRECAST ELEMENT DIMENSIONS WITHIN THE PERMISSIBLE VARIATIONS GIVEN IN SECTION 5 OF THESE SPECIFICATIONS. ALL CASTING SURFACES SHALL BE OF A SMOOTH MATERIAL.
 - 4.2. PLACEMENT OF REINFORCEMENT
 - 4.2.1. PLACEMENT OF REINFORCEMENT IN PRECAST BRIDGE UNITS - THE COVER OF CONCRETE OVER THE OUTSIDE CIRCUMFERENTIAL REINFORCEMENT SHALL BE 2" MINIMUM. THE COVER OF CONCRETE OVER THE INSIDE CIRCUMFERENTIAL REINFORCEMENT SHALL BE 1½" MINIMUM, UNLESS OTHERWISE NOTED ON THE SHOP DRAWINGS. THE CLEAR DISTANCE OF THE END CIRCUMFERENTIAL WIRES SHALL NOT BE LESS THAN 1" NOR MORE THAN 2" FROM THE ENDS OF EACH SECTION. REINFORCEMENT SHALL BE ASSEMBLED UTILIZING SINGLE OR MULTIPLE LAYERS OF WELDED WIRE FABRIC (NOT TO EXCEED 3 LAYERS), SUPPLEMENTED WITH A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS, WHEN NECESSARY. WELDED WIRE FABRIC SHALL BE COMPOSED OF CIRCUMFERENTIAL AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3. BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE BRIDGE UNIT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL DISTRIBUTION REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3. BELOW. THE ENDS OF THE LONGITUDINAL DISTRIBUTION REINFORCEMENT SHALL BE NOT MORE THAN 3" AND NOT LESS THAN 1½" FROM THE ENDS OF THE BRIDGE UNIT.
 - 4.2.2. BENDING OF REINFORCEMENT FOR PRECAST BRIDGE UNITS - THE OUTSIDE AND INSIDE CIRCUMFERENTIAL REINFORCING STEEL FOR THE CORNERS OF THE BRIDGE SHALL BE BENT TO SUCH AN ANGLE THAT IS APPROXIMATELY EQUAL TO THE CONFIGURATION OF THE BRIDGE'S OUTSIDE CORNER.
 - 4.2.3. PLACEMENT OF REINFORCEMENT FOR PRECAST WINGWALLS AND HEADWALLS - THE COVER OF CONCRETE OVER THE LONGITUDINAL AND TRANSVERSE REINFORCEMENT SHALL BE 2" MINIMUM. THE CLEAR DISTANCE FROM THE END OF EACH PRECAST ELEMENT TO THE END OF REINFORCING STEEL SHALL NOT BE LESS THAN 1½" NOR MORE THAN 3". REINFORCEMENT SHALL BE ASSEMBLED UTILIZING A SINGLE LAYER OF WELDED WIRE FABRIC, OR A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS. WELDED WIRE FABRIC SHALL BE COMPOSED OF TRANSVERSE AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3. BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE ELEMENT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3. BELOW.
 - 4.2.4. PLACEMENT OF REINFORCEMENT FOR PRECAST FOUNDATION UNITS - THE COVER OF CONCRETE OVER THE BOTTOM REINFORCEMENT SHALL BE 3 INCHES MINIMUM. THE COVER OF CONCRETE FOR ALL OTHER REINFORCEMENT SHALL BE 2 INCHES MINIMUM. THE CLEAR DISTANCE FROM THE END OF EACH PRECAST ELEMENT TO THE END OF REINFORCING STEEL SHALL NOT BE LESS THAN 2 INCHES NOR MORE THAN 3 INCHES. REINFORCEMENT SHALL BE ASSEMBLED UTILIZING A SINGLE LAYER OF WELDED WIRE FABRIC OR A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS. WELDED WIRE FABRIC SHALL BE COMPOSED OF TRANSVERSE AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3. BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE ELEMENT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3. BELOW.
 - 4.3. LAPS, WELDS, AND SPACING FOR PRECAST BRIDGE UNITS - TENSION SPLICES IN THE CIRCUMFERENTIAL REINFORCEMENT SHALL BE MADE BY LAPPING. LAPS MAY BE TACK WELDED TOGETHER FOR ASSEMBLY PURPOSES. FOR SMOOTH WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.5.2 AND 5.11.6.2. FOR DEFORMED BILLET-STEEL WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.5.1 AND 5.11.6.1. THE OVERLAP OF WELDED WIRE FABRIC SHALL BE MEASURED BETWEEN THE OUTER-MOST LONGITUDINAL WIRES OF EACH FABRIC SHEET. FOR DEFORMED BILLET-STEEL BARS, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.1 FOR SPLICES OTHER THAN TENSION SPLICES. THE OVERLAP SHALL BE A MINIMUM OF 1'-0" FOR WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS. THE SPACING CENTER TO CENTER OF THE CIRCUMFERENTIAL WIRES IN A WIRE FABRIC SHEET SHALL BE NOT LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL DISTRIBUTION STEEL FOR EITHER LINE OF REINFORCING IN THE TOP SLAB SHALL BE NOT MORE THAN 1'-4".
 - 4.3.2. LAPS, WELDS, AND SPACING FOR PRECAST WINGWALLS, HEADWALLS AND FOUNDATIONS - SPLICES IN THE REINFORCEMENT SHALL BE MADE BY LAPPING. LAPS MAY BE TACK WELDED TOGETHER FOR ASSEMBLY PURPOSES. FOR SMOOTH WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.5.2 AND 5.11.6.2. FOR DEFORMED WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.5.1 AND 5.11.6.1. FOR DEFORMED BILLET-STEEL BARS, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.1. THE SPACING CENTER-TO-CENTER OF THE WIRES IN A WIRE FABRIC SHEET SHALL BE NOT LESS THAN 2" NOR MORE THAN 8".
 - 4.4. CURING - THE PRECAST CONCRETE ELEMENTS SHALL BE CURED FOR A SUFFICIENT LENGTH OF TIME SO THAT THE CONCRETE WILL DEVELOP THE SPECIFIED COMPRESSIVE STRENGTH IN 28 DAYS OR LESS. ANY ONE OF THE FOLLOWING METHODS OF CURING OR COMBINATIONS THERE OF SHALL BE USED:
 - 4.4.1. STEAM CURING - THE PRECAST ELEMENTS MAY BE LOW-PRESSURE STEAM CURED BY A SYSTEM THAT WILL MAINTAIN A MOIST ATMOSPHERE.
 - 4.4.2. WATER CURING - THE PRECAST ELEMENTS MAY BE WATER CURED BY ANY METHOD THAT WILL KEEP THE SECTIONS MOIST.
 - 4.4.3. MEMBRANE CURING - A SEALING MEMBRANE CONFORMING TO THE REQUIREMENTS OF ASTM SPECIFICATION C309 MAY BE APPLIED AND SHALL BE LEFT INTACT UNTIL THE REQUIRED CONCRETE COMPRESSIVE STRENGTH IS ATTAINED. THE CONCRETE TEMPERATURE AT THE TIME OF APPLICATION SHALL BE WITHIN +/- 10 DEGREES F OF THE ATMOSPHERIC TEMPERATURE. ALL SURFACES SHALL BE KEPT MOIST PRIOR TO THE APPLICATION OF THE COMPOUNDS AND SHALL BE DAMP WHEN THE COMPOUND IS APPLIED.
 - 4.5. STORAGE, HANDLING & DELIVERY
 - 4.5.1. STORAGE - PRECAST CONCRETE BRIDGE ELEMENTS SHALL BE LIFTED AND STORED IN "AS-CAST" POSITION. PRECAST CONCRETE HEADWALL AND WINGWALL UNITS ARE CAST, STORED AND SHIPPED IN A FLAT POSITION. THE PRECAST ELEMENTS SHALL BE STORED IN SUCH A MANNER TO PREVENT CRACKING OR DAMAGE. STORE ELEMENTS USING TIMBER SUPPORTS AS APPROPRIATE. THE UNITS SHALL NOT BE MOVED UNTIL THE CONCRETE COMPRESSIVE STRENGTH HAS REACHED A MINIMUM OF 2500 PSI, AND THEY SHALL NOT BE STORED IN AN UPRIGHT POSITION.
 - 4.5.2. HANDLING - HANDLING DEVICES SHALL BE PERMITTED IN EACH PRECAST ELEMENT FOR THE PURPOSE OF HANDLING AND SETTING. SPREADER BEAMS MAY BE REQUIRED FOR THE LIFTING OF PRECAST CONCRETE BRIDGE ELEMENTS TO PRECLUDE DAMAGE FROM BENDING OR TORSION FORCES.
 - 4.5.3. DELIVERY - PRECAST CONCRETE ELEMENTS MUST NOT BE SHIPPED UNTIL THE CONCRETE HAS ATTAINED THE SPECIFIED DESIGN COMPRESSIVE STRENGTH, OR AS DIRECTED BY THE DESIGN ENGINEER. PRECAST CONCRETE ELEMENTS MAY BE UNLOADED AND PLACED ON THE GROUND AT THE SITE UNTIL INSTALLED. STORE ELEMENTS USING TIMBER SUPPORTS AS APPROPRIATE.
 - 4.6. QUALITY ASSURANCE - THE PRECASTER SHALL DEMONSTRATE ADHERENCE TO THE STANDARDS SET FORTH IN THE NPCA QUALITY CONTROL MANUAL. THE PRECASTER SHALL MEET EITHER SECTION 4.6.1 OR 4.6.2.
 - 4.6.1. CERTIFICATION - THE PRECASTER SHALL BE CERTIFIED BY THE PRECAST/PRESTRESSED CONCRETE INSTITUTE PLANT CERTIFICATION PROGRAM OR THE NATIONAL PRECAST CONCRETE ASSOCIATION'S PLANT CERTIFICATION PROGRAM PRIOR TO AND DURING PRODUCTION OF THE PRODUCTS COVERED BY THIS SPECIFICATION.
 - 4.6.2. QUALIFICATIONS, TESTING AND INSPECTION
 - 4.6.2.1. THE PRECASTER SHALL HAVE BEEN IN THE BUSINESS OF PRODUCING PRECAST CONCRETE PRODUCTS SIMILAR TO THOSE SPECIFIED FOR A MINIMUM OF THREE YEARS. HE SHALL MAINTAIN A PERMANENT QUALITY CONTROL DEPARTMENT OR RETAIN AN INDEPENDENT TESTING AGENCY ON A CONTINUING BASIS. THE AGENCY SHALL ISSUE A REPORT, CERTIFIED BY A LICENSED ENGINEER, DETAILING THE ABILITY OF THE PRECASTER TO PRODUCE QUALITY PRODUCTS CONSISTENT WITH INDUSTRY STANDARDS.
 - 4.6.2.2. THE PRECASTER SHALL SHOW THAT THE FOLLOWING TESTS ARE PERFORMED IN ACCORDANCE WITH THE ASTM STANDARDS INDICATED. TESTS SHALL BE PERFORMED AS

- INDICATED IN SECTION 6 OF THESE SPECIFICATIONS.
 - 4.6.2.1. AIR CONTENT: C231 OR C173
 - 4.6.2.2. COMPRESSIVE STRENGTH: C31, C39, C497
 - 4.6.2.3. THE PRECASTER SHALL PROVIDE DOCUMENTATION DEMONSTRATING COMPLIANCE WITH THIS SECTION TO CONTECH® ENGINEERED SOLUTIONS AT REGULAR INTERVALS OR UPON REQUEST.
 - 4.6.2.4. THE OWNER MAY PLACE AN INSPECTOR IN THE PLANT WHEN THE PRODUCTS COVERED BY THIS SPECIFICATION ARE BEING MANUFACTURED.
- 4.6.3. DOCUMENTATION - THE PRECASTER SHALL SUBMIT PRECAST PRODUCTION REPORTS TO CONTECH® ENGINEERED SOLUTIONS AS REQUIRED.
5. PERMISSIBLE VARIATIONS
 - 5.1. BRIDGE UNITS
 - 5.1.1. INTERNAL DIMENSIONS - THE INTERNAL DIMENSION SHALL VARY NOT MORE THAN 1% FROM THE DESIGN DIMENSIONS NOR MORE THAN 1½" WHICHEVER IS LESS.
 - 5.1.2. SLAB AND WALL THICKNESS - THE SLAB AND WALL THICKNESS SHALL NOT BE LESS THAN THAT SHOWN IN THE DESIGN BY MORE THAN ¼". A THICKNESS MORE THAN THAT REQUIRED IN THE DESIGN SHALL NOT BE CAUSE FOR REJECTION.
 - 5.1.3. LENGTH OF OPPOSITE SURFACES - VARIATIONS IN LAYING LENGTHS OF TWO OPPOSITE SURFACES OF THE BRIDGE UNIT SHALL NOT BE MORE THAN ½" IN ANY SECTION, EXCEPT WHERE BEVELED ENDS FOR LAYING OF CURVES ARE SPECIFIED BY THE PURCHASER.
 - 5.1.4. LENGTH OF SECTION - THE UNDERRUN IN LENGTH OF A SECTION SHALL NOT BE MORE THAN ½" IN ANY BRIDGE UNIT.
 - 5.1.5. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN POSITION OF THE REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1½" FOR THE OUTSIDE CIRCUMFERENTIAL STEEL OR BE LESS THAN 1" FOR THE INSIDE CIRCUMFERENTIAL STEEL AS MEASURED TO THE EXTERNAL OR INTERNAL SURFACE OF THE BRIDGE. THESE TOLERANCES OR COVER REQUIREMENTS DO NOT APPLY TO MATING SURFACES OF THE JOINTS.
 - 5.1.6. AREA OF REINFORCEMENT - THE AREAS OF STEEL REINFORCEMENT SHALL BE THE DESIGN STEEL AREAS AS SHOWN IN THE MANUFACTURER'S SHOP DRAWINGS. STEEL AREAS GREATER THAN THOSE REQUIRED SHALL NOT BE CAUSE FOR REJECTION. THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCING SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCEMENT.
 - 5.2. WINGWALLS & HEADWALLS
 - 5.2.1. WALL THICKNESS - THE WALL THICKNESS SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".
 - 5.2.2. LENGTH/HEIGHT OF WALL SECTIONS - THE LENGTH AND HEIGHT OF THE WALL SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".
 - 5.2.3. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN THE POSITION OF THE REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1½".
 - 5.2.4. SIZE OF REINFORCEMENT - THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCING SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCING. STEEL AREA GREATER THAN THAT REQUIRED SHALL NOT BE CAUSE FOR REJECTION.
 - 5.3. FOUNDATION UNITS
 - 5.3.1. WALL THICKNESS - THE WALL THICKNESS SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".
 - 5.3.2. LENGTH/HEIGHT/WIDTH OF FOUNDATION SECTIONS - THE LENGTH, HEIGHT AND WIDTH OF THE FOUNDATION UNITS SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".
 - 5.3.3. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN THE POSITION OF THE REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1½".
 - 5.3.4. SIZE OF REINFORCEMENT - THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCING SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCING. STEEL AREA GREATER THAN THAT REQUIRED SHALL NOT BE CAUSE FOR REJECTION.
6. TESTING/INSPECTION
 - 6.1. TESTING
 - 6.1.1. TYPE OF TEST SPECIMEN - CONCRETE COMPRESSIVE STRENGTH SHALL BE DETERMINED FROM COMPRESSION TESTS MADE ON CYLINDERS OR CORES. FOR CYLINDER TESTING, A MINIMUM OF 4 CYLINDERS SHALL BE TAKEN FOR EACH BRIDGE ELEMENT. EACH ELEMENT SHALL BE CONSIDERED SEPARATELY FOR THE PURPOSE OF TESTING AND ACCEPTANCE.
 - 6.1.2. COMPRESSION TESTING - CYLINDERS SHALL BE MADE AND TESTED AS PRESCRIBED BY THE ASTM C39 SPECIFICATION. CYLINDERS SHALL BE CURED IN THE SAME ENVIRONMENT AS THE BRIDGE ELEMENTS. CORES SHALL BE OBTAINED AND TESTED FOR COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE PROVISIONS OF THE ASTM C42 SPECIFICATION.
 - 6.1.3. ACCEPTABILITY OF CYLINDER TESTS - WHEN THE AVERAGE COMPRESSIVE STRENGTH OF ALL CYLINDERS TESTED IS EQUAL TO OR GREATER THAN THE DESIGN COMPRESSIVE
 - 6.1.4. ACCEPTABILITY OF CORE TESTS - THE COMPRESSIVE STRENGTH OF THE CONCRETE IN A BRIDGE ELEMENT IS ACCEPTABLE WHEN THE AVERAGE CORE TEST STRENGTH IS EQUAL TO OR GREATER THAN THE DESIGN CONCRETE STRENGTH. WHEN THE COMPRESSIVE STRENGTH OF A CORE TESTED IS LESS THAN THE DESIGN CONCRETE STRENGTH, THE PRECAST ELEMENT FROM WHICH THAT CORE WAS TAKEN MAY BE RE-CORED. WHEN THE COMPRESSIVE STRENGTH OF THE RE-CORE IS EQUAL TO OR GREATER THAN THE DESIGN CONCRETE STRENGTH, THE COMPRESSIVE STRENGTH OF THE CONCRETE IN THAT BRIDGE ELEMENT IS ACCEPTABLE.
 - 6.1.4.1. WHEN THE COMPRESSIVE STRENGTH OF ANY RECORE IS LESS THAN THE DESIGN CONCRETE STRENGTH, THE PRECAST ELEMENT FROM WHICH THAT CORE WAS TAKEN SHALL BE REJECTED.
 - 6.1.4.2. PLUGGING CORE HOLES - THE CORE HOLES SHALL BE PLUGGED AND SEALED BY THE MANUFACTURER IN A MANNER SUCH THAT THE ELEMENTS WILL MEET ALL OF THE TEST REQUIREMENTS OF THIS SPECIFICATION. PRECAST ELEMENTS SO SEALED SHALL BE CONSIDERED SATISFACTORY FOR USE.
 - 6.1.4.3. TEST EQUIPMENT - EVERY MANUFACTURER FURNISHING PRECAST ELEMENTS UNDER THIS SPECIFICATION SHALL FURNISH ALL FACILITIES AND PERSONNEL NECESSARY TO CARRY OUT THE TEST REQUIRED.
- 6.2. INSPECTION - THE QUALITY OF MATERIALS, THE PROCESS OF MANUFACTURE, AND THE FINISHED PRECAST ELEMENTS SHALL BE SUBJECT TO INSPECTION BY THE PURCHASER.
7. JOINTS
 - THE BRIDGE UNITS SHALL BE PRODUCED WITH FLAT BUTT ENDS. THE ENDS OF THE BRIDGE UNITS SHALL BE SUCH THAT WHEN THE SECTIONS ARE LAID TOGETHER THEY WILL MAKE A CONTINUOUS LINE WITH A SMOOTH INTERIOR FREE OF APPRECIABLE IRREGULARITIES. ALL COMPATIBLE WITH THE PERMISSIBLE VARIATIONS IN SECTION 5, ABOVE. THE JOINT WIDTH BETWEEN ADJACENT PRECAST UNITS SHALL NOT EXCEED ¾".
8. WORKMANSHIP/ FINISH
 - THE BRIDGE UNITS, WINGWALLS, HEADWALLS AND FOUNDATION UNITS SHALL BE SUBSTANTIALLY FREE OF FRACTURES. THE ENDS OF THE BRIDGE UNITS SHALL BE NORMAL TO THE WALLS AND CENTERLINE OF THE BRIDGE SECTION, WITHIN THE LIMITS OF THE VARIATIONS GIVEN IN SECTION 5, ABOVE, EXCEPT WHERE BEVELED ENDS ARE SPECIFIED. THE FACES OF THE WINGWALLS AND HEADWALLS SHALL BE PARALLEL TO EACH OTHER, WITHIN THE LIMITS OF VARIATIONS GIVEN IN SECTION 5, ABOVE. THE SURFACE OF THE PRECAST ELEMENTS SHALL BE A SMOOTH STEEL FORM OR TROWELED SURFACE. TRAPPED AIR POCKETS CAUSING SURFACE DEFECTS SHALL BE CONSIDERED AS PART OF A SMOOTH, STEEL FORM FINISH.
9. REPAIRS
 - PRECAST ELEMENTS MAY BE REPAIRED, IF NECESSARY, BECAUSE OF IMPERFECTIONS IN MANUFACTURE OR HANDLING DAMAGE AND WILL BE ACCEPTABLE IF, IN THE OPINION OF THE PURCHASER, THE REPAIRS ARE SOUND, PROPERLY FINISHED AND CURED, AND THE REPAIRED SECTION CONFORMS TO THE REQUIREMENTS OF THIS SPECIFICATION.
10. REJECTION
 - THE PRECAST ELEMENTS SHALL BE SUBJECT TO REJECTION ON ACCOUNT OF ANY OF THE SPECIFICATION REQUIREMENTS. INDIVIDUAL PRECAST ELEMENTS MAY BE REJECTED BECAUSE OF ANY OF THE FOLLOWING:
 - 10.1. FRACTURES OR CRACKS PASSING THROUGH THE WALL, EXCEPT FOR A SINGLE END CRACK THAT DOES NOT EXCEED ONE HALF THE THICKNESS OF THE WALL.
 - 10.2. DEFECTS THAT INDICATE PROPORTIONING, MIXING, AND MOLDING NOT IN COMPLIANCE WITH SECTION 4 OF THESE SPECIFICATIONS.
 - 10.3. HONEYCOMBED OR OPEN TEXTURE.
 - 10.4. DAMAGED ENDS, WHERE SUCH DAMAGE WOULD PREVENT MAKING A SATISFACTORY JOINT.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK DATE
 APPROVED HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 1/31/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 [Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	DATE	REVISION	
1	1-20-21	Revise Sheet #s	

OWNERS: NATALIE ZIEGLER
4288 MANOR LANE
ELLCOTT CITY, MARYLAND
21042

JONATHAN IAN SCHWARTZ,
JESSICA AND SOPHIE ZIEGLER
C/O SOPHIE ZIEGLER
730 DOLORES STREET
SAN FRANCISCO, CA 94110
212-877-8897

DEVELOPER: TOLL BROS., INC.
7164 COLUMBIA GATEWAY DRIVE
SUITE 230
COLUMBIA, MD 21046
410-381-3263

PROJECT: KINGS FOREST
A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK
PARCEL K, AS SHOWN ON PLAT NO. 19791
CREATING LOTS 1-35, THE ABLE C, AND E THRU I

LOCATION: TAX MAP: 23, GRID: 23
P/O PARCEL 148
PUDDING LANE, ELLCOTT CITY, MD 21042
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: SPECIFICATIONS

DATE: OCTOBER, 2019 **PROJECT NO.** 2501

DRAFT: TRL | **DESIGN:** EWM | **CHECK:** PAC **SCALE:** AS SHOWN **SHEET** 61 **OF** 75

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 36225, Expiration Date: 8-19-2020.

SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® O-SERIES BRIDGE SYSTEMS (CONT'D)

11. MARKING
EACH BRIDGE UNIT SHALL BE CLEARLY MARKED BY WATERPROOF PAINT. THE FOLLOWING SHALL BE SHOWN ON THE INSIDE OF THE VERTICAL LEG OF THE BRIDGE SECTION:
BRIDGE SPAN X BRIDGE RISE
DATE OF MANUFACTURE
NAME OR TRADEMARK OF THE MANUFACTURER
12. INSTALLATION PREPARATION
TO ENSURE CORRECT INSTALLATION OF THE PRECAST CONCRETE BRIDGE SYSTEM, CARE AND CAUTION MUST BE EXERCISED IN FORMING THE SUPPORT AREAS FOR BRIDGE UNITS, HEADWALL, AND WINGWALL ELEMENTS. EXERCISING SPECIAL CARE WILL FACILITATE THE RAPID INSTALLATION OF THE PRECAST COMPONENTS.

- 12.1. FOOTINGS
DO NOT OVER EXCAVATE FOUNDATIONS UNLESS DIRECTED BY SITE SOIL ENGINEER TO REMOVE UNSUITABLE SOIL.
- THE SITE SOILS ENGINEER SHALL CERTIFY THAT THE BEARING CAPACITY MEETS OR EXCEEDS THE FOOTING DESIGN REQUIREMENTS, PRIOR TO THE CONTRACTOR POURING OF THE FOOTINGS.

- THE BRIDGE UNITS AND WINGWALLS SHALL BE INSTALLED ON EITHER PRECAST OR CAST-IN-PLACE CONCRETE FOOTINGS. THE SIZE AND ELEVATION OF THE FOOTINGS SHALL BE AS DESIGNED BY THE ENGINEER. A KEYWAY SHALL BE FORMED IN THE TOP SURFACE OF THE BRIDGE FOOTING AS SPECIFIED ON THE PLANS. NO KEYWAY IS REQUIRED IN THE WINGWALL FOOTINGS, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

- THE FOOTINGS SHALL BE GIVEN A SMOOTH FLOAT FINISH AND SHALL REACH A COMPRESSIVE STRENGTH OF 2,000 PSI BEFORE PLACEMENT OF THE BRIDGE AND WINGWALL ELEMENTS. BACKFILLING SHALL NOT BEGIN UNTIL THE FOOTING HAS REACHED THE FULL DESIGN COMPRESSIVE STRENGTH.

- THE FOOTING SURFACE SHALL BE CONSTRUCTED IN ACCORDANCE WITH GRADES SHOWN ON THE PLANS. WHEN TESTED WITH A 10'-0" STRAIGHT EDGE, THE SURFACE SHALL NOT VARY MORE THAN 1/4" IN 10'-0".

- IF A PRECAST CONCRETE FOOTING IS USED, THE CONTRACTOR SHALL PREPARE A 4" THICK BASE LAYER OF COMPACTED GRANULAR MATERIAL THE FULL WIDTH OF THE FOOTING PRIOR TO PLACING THE PRECAST FOOTING.

- THE FOUNDATIONS FOR PRECAST CONCRETE BRIDGE ELEMENTS AND WINGWALLS MUST BE CONNECTED BY REINFORCEMENT TO FORM ONE MONOLITHIC BODY. EXPANSION JOINTS SHALL NOT BE USED.

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION OF THE FOUNDATIONS PER THE PLANS AND SPECIFICATIONS.

13. INSTALLATION
13.1. GENERAL - THE INSTALLATION OF THE PRECAST CONCRETE ELEMENTS SHALL BE AS EXPLAINED IN THE PUBLICATION CON/SPAN BRIDGE SYSTEMS INSTALLATION HANDBOOK.

- 13.1.1. LIFTING - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT A CRANE OF THE CORRECT LIFTING CAPACITY IS AVAILABLE TO HANDLE THE PRECAST CONCRETE UNITS. THIS CAN BE ACCOMPLISHED BY USING THE WEIGHTS GIVEN FOR THE PRECAST CONCRETE COMPONENTS AND BY DETERMINING THE LIFTING REACH FOR EACH CRANE UNIT. SITE CONDITIONS MUST BE CHECKED WELL IN ADVANCE OF SHIPPING TO ENSURE PROPER CRANE LOCATION AND TO AVOID ANY LIFTING RESTRICTIONS. THE LIFT ANCHORS OR HOLES PROVIDED IN EACH UNIT ARE THE ONLY MEANS TO BE USED TO LIFT THE ELEMENTS. THE PRECAST CONCRETE ELEMENTS MUST NOT BE SUPPORTED OR RAISED BY OTHER MEANS THAN THOSE GIVEN IN THE MANUALS AND DRAWINGS WITHOUT WRITTEN APPROVAL FROM CONTECH® ENGINEERED SOLUTIONS.

- 13.1.2. CONSTRUCTION EQUIPMENT WEIGHT RESTRICTIONS - IN NO CASE SHALL EQUIPMENT OPERATING IN EXCESS OF THE DESIGN LOAD (HL-93) BE PERMITTED OVER THE BRIDGE UNITS UNLESS APPROVED BY CONTECH® ENGINEERED SOLUTIONS.

- 13.1.2.1. IN THE IMMEDIATE AREA OF THE BRIDGE UNITS, THE FOLLOWING RESTRICTIONS FOR THE USE OF HEAVY CONSTRUCTION MACHINERY DURING BACKFILLING OPERATIONS APPLY:

- NO CONSTRUCTION EQUIPMENT SHALL CROSS THE BARE PRECAST CONCRETE BRIDGE UNIT.
- AFTER THE COMPACTED FILL LEVEL HAS REACHED A MINIMUM OF 4" OVER THE CROWN OF THE BRIDGE, CONSTRUCTION EQUIPMENT WITH A WEIGHT OF LESS THAN 10 TONS MAY CROSS THE BRIDGE.
- AFTER THE COMPACTED FILL LEVEL HAS REACHED A MINIMUM OF 1'-0" OVER THE CROWN OF THE BRIDGE, CONSTRUCTION EQUIPMENT WITH A WEIGHT OF LESS THAN 30 TONS MAY CROSS THE BRIDGE.
- AFTER THE COMPACTED FILL LEVEL HAS REACHED THE DESIGN COVER OR 2'-0" MINIMUM, OVER THE CROWN OF THE PRECAST CONCRETE BRIDGE, CONSTRUCTION EQUIPMENT WITHIN THE DESIGN LOAD LIMITS FOR THE ROAD MAY CROSS THE PRECAST CONCRETE BRIDGE.

- 13.2. LEVELING PAD/SHIMS - THE BRIDGE UNITS AND WINGWALLS SHALL BE SET ON HARDBOARD SHIMS CONFORMING TO ASTM D1037 OR PLASTIC SHIMS (DAYTON SUPERIOR P-80, P-81 OR APPROVED EQUAL) MEASURING 5" x 5", MINIMUM, UNLESS SHOWN OTHERWISE ON THE PLANS. A MINIMUM GAP OF 1/2" SHALL BE PROVIDED BETWEEN THE FOOTING AND THE BOTTOM OF THE BRIDGE'S

- VERTICAL LEGS OR THE BOTTOM OF THE WINGWALL. ALSO, A SUPPLY OF 1/4", 1/2" AND 3/4" THICK HARDBOARD OR PLASTIC SHIMS FOR VARIOUS SHIMMING PURPOSES SHALL BE ON SITE.
- 13.3. PLACEMENT OF BRIDGE UNITS - THE BRIDGE UNITS SHALL BE PLACED AS SHOWN ON THE ENGINEER'S PLAN DRAWINGS. SPECIAL CARE SHALL BE TAKEN IN SETTING THE ELEMENTS TO THE TRUE LINE AND GRADE. THE JOINT WIDTH BETWEEN ADJACENT PRECAST UNITS SHALL NOT EXCEED 3/4".

- 13.4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE STRUCTURE SPAN DURING ALL PHASES OF INSTALLATION. DUE TO THE ARCH SHAPE, BRIDGE ELEMENTS WILL TEND TO SPREAD UNDER SELF-WEIGHT. IT IS IMPERATIVE THAT ANY LATERAL SPREADING OF THE BRIDGE ELEMENTS BE AVOIDED DURING AND AFTER THEIR PLACEMENT. GENERALLY, HORIZONTAL CABLE TIES OR TIE RODS ARE SHIPPED IN THE LARGER BRIDGE ELEMENTS TO ASSIST IN PREVENTING THIS SPREADING. CABLE TIES/TIE RODS SHALL NOT BE REMOVED UNTIL BRIDGE UNITS ARE GROUTED AND GROUT HAS CURED. IT IS RECOMMENDED THAT TEMPORARY HARDWOOD BLOCKS BE USED IN CONJUNCTION WITH THE CABLE TIES/TIE RODS TO MAINTAIN SPAN. IF, HOWEVER, DUE TO SITE RESTRICTIONS, THESE CABLE TIES/TIE RODS MUST BE REMOVED PRIOR TO PLACEMENT OF THE BRIDGE ELEMENTS, THE CONTRACTOR MUST NOTIFY CONTECH (MANUFACTURER) AND REQUEST A SUGGESTED INSTALLATION PROCEDURE.

IN ADDITION, IF THE CABLE TIES/TIE RODS MUST BE REMOVED PRIOR TO SETTING ARCH UNITS, THE FOLLOWING QUALITY CONTROL PROCEDURE MUST BE FOLLOWED:

- 1) FIND "MEASURED SPAN" UPON ARCH UNIT'S DELIVERY TO SITE. PRIOR TO LIFTING FROM TRUCK AND REMOVING CABLE TIES/TIE RODS, "MEASURED SPAN" SHALL BE THE AVERAGE OF (3) SPAN MEASUREMENTS ALONG THE LAY LENGTH OF THE ARCH UNIT.
- 2) AFTER SETTING OF BRIDGE UNIT ON THE FOUNDATION, VERIFY THE SPAN. THIS "INSTALLED SPAN MEASUREMENT" SHALL NOT EXCEED THE MAXIMUM OF:
 - A) THE NOMINAL SPAN + 1/2" OR
 - B) THE "MEASURED SPAN"

IF THE "INSTALLED SPAN MEASUREMENT" EXCEEDS THIS AMOUNT, THE ARCH UNIT SHALL BE LIFTED AND RE-SET UNTIL THE "INSTALLED SPAN MEASUREMENT" MEETS THE LIMITS.

- 13.5. PLACEMENT OF WINGWALLS, HEADWALLS AND FOUNDATION UNITS - THE WINGWALLS, HEADWALLS AND FOUNDATIONS SHALL BE PLACED AS SHOWN ON THE PLAN DRAWINGS. SPECIAL CARE SHALL BE TAKEN IN SETTING THE ELEMENTS TO THE TRUE LINE AND GRADE.

- 13.6. WATERPROOFING/JOINT PROTECTION AND SUBSURFACE DRAINAGE

- 13.6.1. EXTERNAL PROTECTION OF JOINTS - THE BUTT JOINT MADE BY TWO ADJOINING BRIDGE UNITS SHALL BE COVERED WITH A 1/8" x 1 1/2" PREFORMED BITUMINOUS JOINT SEALANT AND A MINIMUM OF A 9" WIDE JOINT WRAP. THE SURFACE SHALL BE FREE OF DIRT BEFORE APPLYING THE JOINT MATERIAL. A PRIMER COMPATIBLE WITH THE JOINT WRAP TO BE USED SHALL BE APPLIED FOR A MINIMUM WIDTH OF 9" ON EACH SIDE OF THE JOINT. THE EXTERNAL WRAP SHALL BE CS212 BY CONCRETE SEALANTS INC., EZ-WRAP RUBBER BY PRESS-SEAL GASKET CORPORATION, SEAL WRAP BY MAR MAC MANUFACTURING CO. INC. OR APPROVED EQUAL. THE JOINT SHALL BE COVERED CONTINUOUSLY FROM THE BOTTOM OF ONE BRIDGE SECTION LEG, ACROSS THE TOP OF THE BRIDGE AND TO THE OPPOSITE BRIDGE SECTION LEG. ANY LAPS THAT RESULT IN THE JOINT WRAP SHALL BE A MINIMUM OF 6" LONG WITH THE OVERLAP RUNNING DOWNHILL.

- 13.6.2. IN ADDITION TO THE JOINTS BETWEEN BRIDGE UNITS, THE JOINT BETWEEN THE END BRIDGE UNIT AND THE HEADWALL SHALL ALSO BE SEALED AS DESCRIBED ABOVE. IF PRECAST WINGWALLS ARE USED, THE JOINT BETWEEN THE END BRIDGE UNIT AND THE WINGWALL SHALL BE SEALED WITH A 2'-0" STRIP OF FILTER FABRIC. ALSO, IF LIFT HOLES ARE FORMED IN THE BRIDGE UNITS, THEY SHALL BE PRIMED AND COVERED WITH A 9" x 9" SQUARE OF JOINT WRAP.

- 13.6.3. DURING THE BACKFILLING OPERATION, CARE SHALL BE TAKEN TO KEEP THE JOINT WRAP IN ITS PROPER LOCATION OVER THE JOINT.

- 13.6.4. SUBSOIL DRAINAGE SHALL BE AS DIRECTED BY THE ENGINEER.

- 13.7. GROUTING

- 13.7.1. GROUTING SHALL NOT BE PERFORMED WHEN TEMPERATURES ARE EXPECTED TO GO BELOW 35° FOR A PERIOD OF 72 HOURS. GROUTING SHOULD BE COMPLETED AS SOON AS PRACTICAL AFTER PRECAST ARCHES HAVE BEEN INSTALLED. FILL THE BRIDGE-FOUNDATION KEYWAY WITH CEMENT GROUT (PORTLAND CEMENT AND WATER OR CEMENT MORTAR COMPOSED OF PORTLAND CEMENT, SAND AND WATER) WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI. VIBRATE AS REQUIRED TO ENSURE THAT THE ENTIRE KEY AROUND THE BRIDGE ELEMENT IS COMPLETELY FILLED. IF BRIDGE ELEMENTS HAVE BEEN SET WITH TEMPORARY TIES (CABLES, BARS, ETC.) GROUT MUST ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI BEFORE TIES MAY BE REMOVED.

- 13.7.2. ALL GROUT SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 1/4".

- 13.7.3. LIFTING AND ERECTION ANCHOR RECESSES SHALL BE FILLED WITH GROUT.

- 13.7.4. AFTER GROUT HAS REACHED ITS DESIGN STRENGTH THE TEMPORARY HARDWOOD WEDGES SHALL BE REMOVED AND THEIR HOLES FILLED WITH GROUT.

- 13.8. BACKFILL

- 13.8.1. DO NOT PERFORM BACKFILLING DURING WET OR FREEZING WEATHER.

- 13.8.2. NO BACKFILL SHALL BE PLACED AGAINST ANY STRUCTURAL ELEMENTS UNTIL THEY HAVE BEEN APPROVED BY THE ENGINEER.

- 13.8.3. BACKFILL SHALL BE CONSIDERED AS ALL REPLACED EXCAVATION AND NEW EMBANKMENT ADJACENT TO THE PRECAST CONCRETE ELEMENTS. THE PROJECT CONSTRUCTION AND MATERIAL SPECIFICATIONS, WHICH INCLUDE THE SPECIFICATIONS FOR EXCAVATION FOR STRUCTURES AND ROADWAY EXCAVATION AND EMBANKMENT CONSTRUCTION, SHALL APPLY EXCEPT AS MODIFIED IN THIS SECTION.

- 13.8.4. BACKFILL ZONES:

- IN-SITU SOIL
 - ZONE A: CONSTRUCTED EMBANKMENT OR OVERFILL
 - ZONE B: FILL THAT IS DIRECTLY ASSOCIATED WITH PRECAST CONCRETE BRIDGE INSTALLATION.
 - ZONE C: ROAD STRUCTURE
- 13.8.5. REQUIRED BACKFILL PROPERTIES

- 13.8.5.1. IN-SITU SOIL - NATURAL GROUND IS TO BE SUFFICIENTLY STABLE TO ALLOW EFFECTIVE SUPPORT TO THE PRECAST CONCRETE BRIDGE UNITS. AS A GUIDE, THE EXISTING NATURAL GROUND SHOULD BE OF SIMILAR QUALITY AND DENSITY TO ZONE B MATERIAL FOR MINIMUM LATERAL DIMENSION OF ONE BRIDGE SPAN OUTSIDE OF THE BRIDGE FOOTING.

- 13.8.5.2. ZONE A - ZONE A REQUIRES FILL MATERIAL WITH SPECIFICATIONS AND COMPACTING PROCEDURES EQUAL TO THAT FOR NORMAL ROAD EMBANKMENTS.

- 13.8.5.3. ZONE B - GENERALLY, SOILS SHALL BE REASONABLY FREE OF ORGANIC MATTER, AND, NEAR CONCRETE SURFACES, FREE OF STONES LARGER THAN 3" IN DIAMETER SEE CHARTS FOR DETAILED DESCRIPTIONS OF ACCEPTABLE SOILS.

- 13.8.5.4. ZONE C - ZONE C IS THE ROAD SECTION OF GRAVEL, ASPHALT OR CONCRETE BUILT IN COMPLIANCE WITH LOCAL ENGINEERING PRACTICES.

- 13.8.5.5. GEOTECHNICAL ENGINEER SHALL REVIEW GRADATIONS OF ALL INTERFACING MATERIALS AND, IF NECESSARY, RECOMMEND GEOTEXTILE FILTER FABRIC (PROVIDED BY CONTRACTOR)

- 13.8.6. PLACING AND COMPACTING BACKFILL
DUMPING FOR BACKFILLING IS NOT ALLOWED ANY NEARER THAN 3'-0" FROM THE BRIDGE LEG.

THE FILL MUST BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE MAXIMUM DIFFERENCE IN THE SURFACE LEVELS OF THE FILL ON OPPOSITE SIDES OF THE BRIDGE MUST NOT EXCEED 2'-0".

THE FILL BEHIND WINGWALLS MUST BE PLACED AT THE SAME TIME AS THAT OF THE BRIDGE FILL. IT MUST BE PLACED IN PROGRESSIVELY PLACED HORIZONTAL LAYERS NOT EXCEEDING 8" PER LAYER.

THE BACKFILL OF ZONE B SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% OF THE STANDARD PROCTOR, AS REQUIRED BY AASHTO T-99.

SOIL WITHIN 1'-0" OF CONCRETE SURFACES SHALL BE HAND-COMPACTED. ELSEWHERE, USE OF ROLLERS IS ACCEPTABLE. IF VIBRATING ROLLER-COMPACTORS ARE USED, THEY SHALL NOT BE STARTED OR STOPPED WITHIN ZONE B AND THE VIBRATION FREQUENCY SHOULD BE AT LEAST 30 REVOLUTIONS PER SECOND.

THE BACKFILL MATERIAL AND COMPACTING BEHIND WINGWALLS SHALL SATISFY THE CRITERIA FOR THE BRIDGE BACKFILL, ZONE B.

BACKFILL AGAINST A WATERPROOFED SURFACE SHALL BE PLACED CAREFULLY TO AVOID DAMAGE TO THE WATERPROOFING MATERIAL.

- 13.8.7. BRIDGE UNITS
FOR FILL HEIGHTS OVER 12 FEET (AS MEASURED FROM TOP CROWN OF BRIDGE TO FINISHED GRADE), NO BACKFILLING MAY BEGIN UNTIL A BACKFILL COMPACTION TESTING PLAN HAS BEEN COORDINATED WITH AND APPROVED BY CONTECH® ENGINEERED SOLUTIONS.

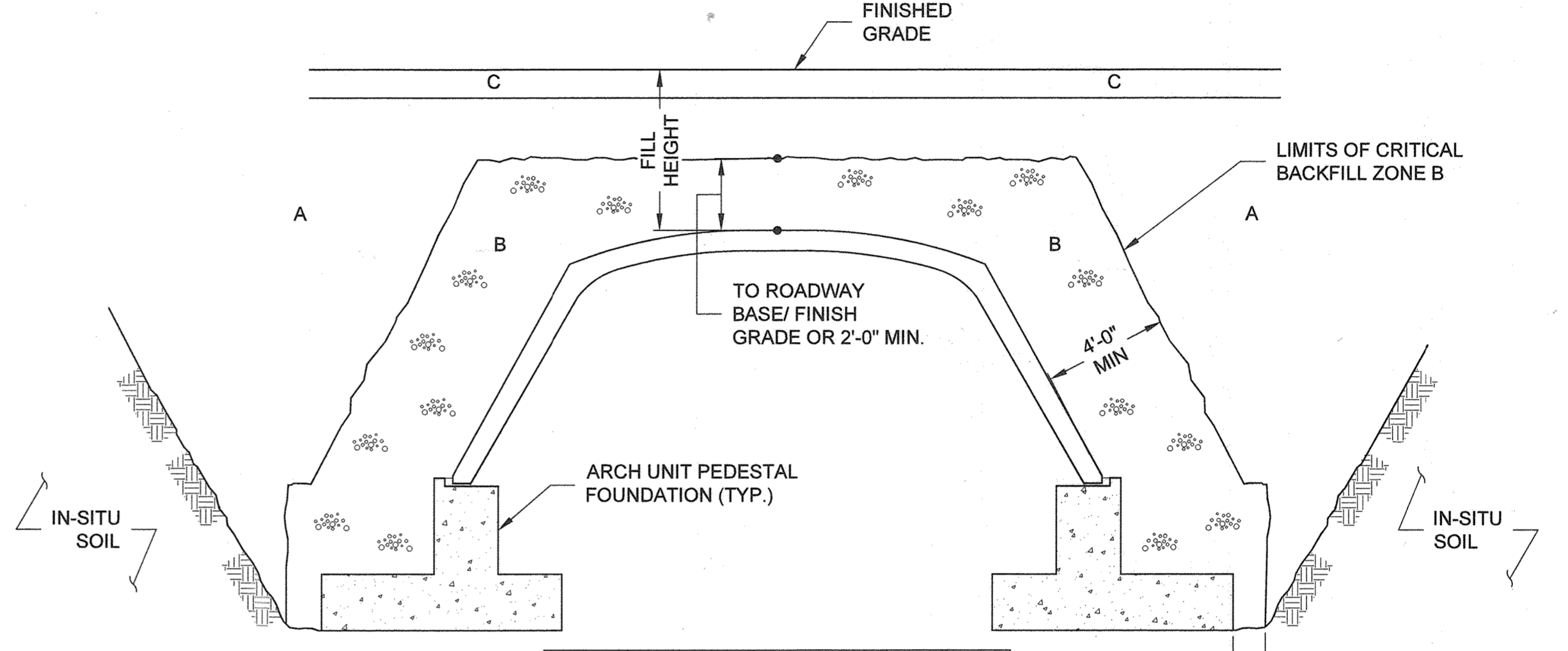
- 13.8.8. WINGWALLS
BACKFILL IN FRONT OF WINGWALLS SHALL BE CARRIED TO GROUND LINES SHOWN IN THE PLANS.

- 13.8.9. MONITORING
THE CONTRACTOR SHALL CHECK SETTLEMENTS AND HORIZONTAL DISPLACEMENT OF FOUNDATION TO ENSURE THAT THEY ARE WITHIN THE ALLOWABLE LIMIT PROVIDED BY THE ENGINEER. THESE MEASUREMENTS SHOULD GIVE AN INDICATION OF THE SETTLEMENTS AND DEFORMATIONS ALONG THE LENGTH OF THE FOUNDATIONS.

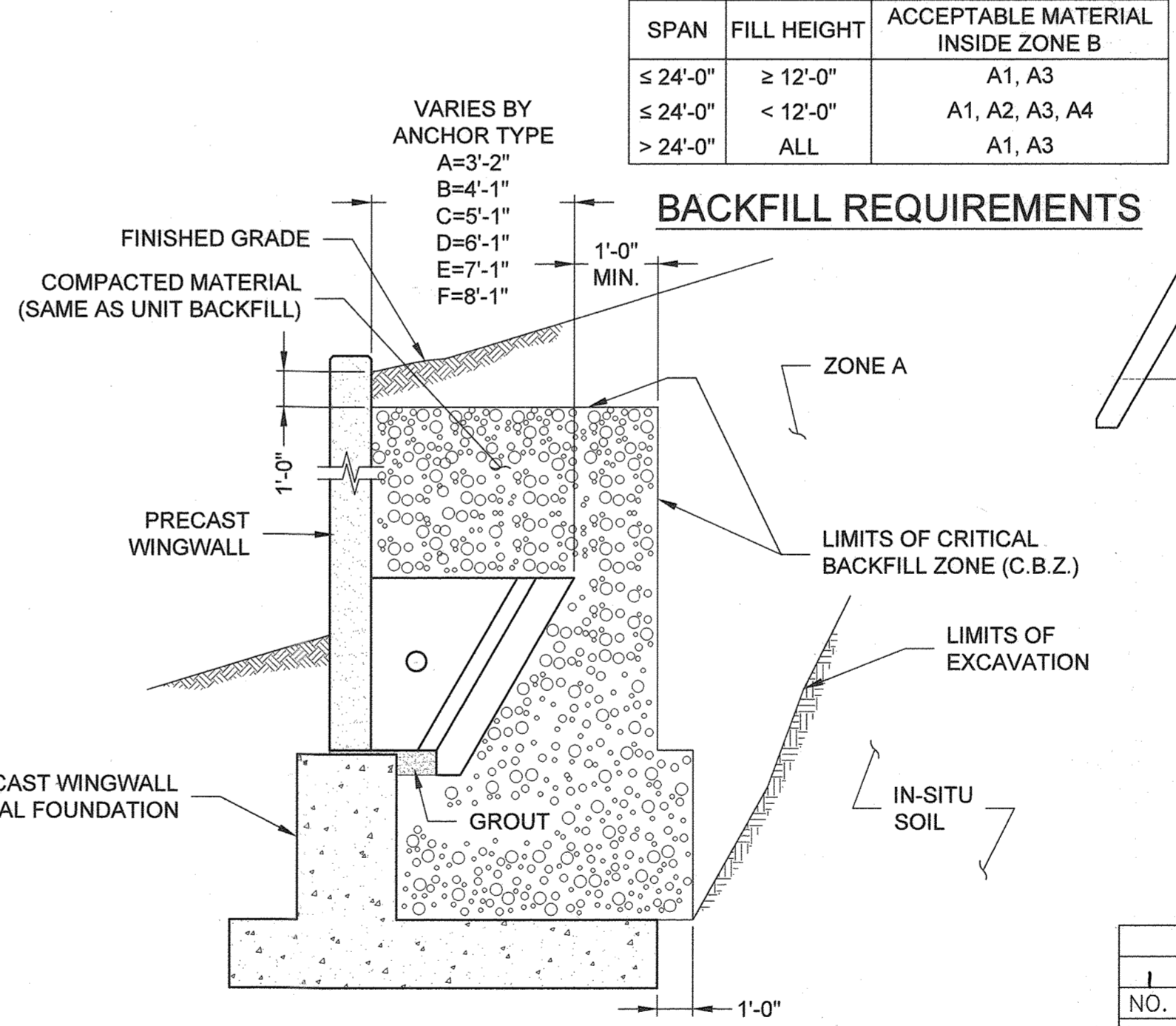
THE FIRST MEASUREMENT SHOULD TAKE PLACE AFTER THE ERECTION OF ALL PRECAST BRIDGE SYSTEM ELEMENTS, A SECOND AFTER COMPLETION OF BACKFILLING, AND A THIRD BEFORE OPENING OF THE BRIDGE TO TRAFFIC. FURTHER MEASUREMENTS MAY BE MADE ACCORDING TO LOCAL CONDITIONS.

ACCEPTABLE SOILS FOR USE IN ZONE B BACKFILL

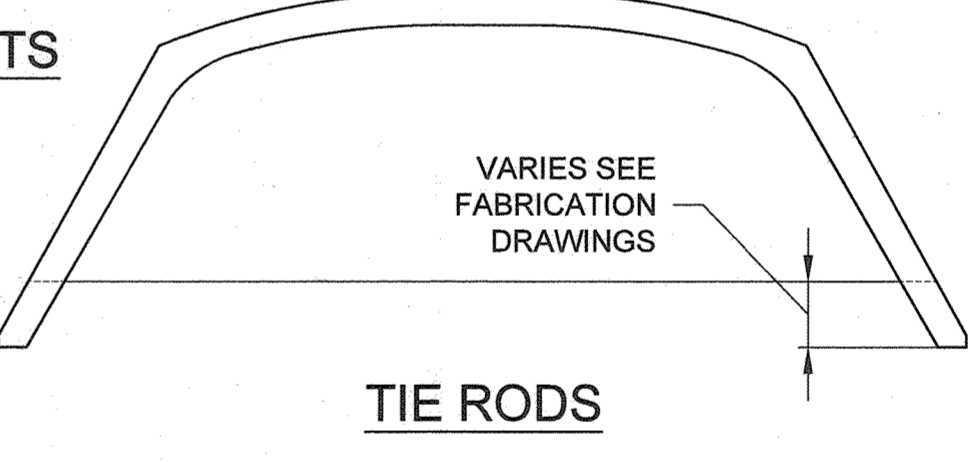
TYPICAL USCS MATERIALS	AASHTO GROUP	AASHTO SUBGROUP	PERCENT PASSING US SIEVE NO.			CHARACTER OF FRACTION PASSING NO. 40 SIEVE		SOIL DESCRIPTION
			#10	#40	#200	LIQUID LIMIT	PLASTICITY INDEX	
GW, GP, SP	A1	A-1a	50 MAX	30 MAX	15 MAX		6 MAX	LARGELY GRAVEL BUT CAN INCLUDE SAND AND FINES GRAVELLY SAND OR GRADED SAND, MAY INCLUDE FINES
GM, SW, SP, SM		A-1b		50 MAX	25 MAX		6 MAX	
GM, SM, ML, SP, GP	A2	A-2-4			35 MAX	40 MAX	10 MAX	SANDS, GRAVELS WITH LOW-PLASTICITY SILT FINES SANDS, GRAVELS WITH PLASTIC SILT FINES
SC, GC, GM		A-2-5			35 MAX	41 MIN	10 MAX	
SP, SM, SW	A3			51 MIN	10 MAX		NON-PLASTIC	FINE SANDS
ML, SM, SC	A4				36 MIN	40 MAX	10 MAX	LOW-COMPRESSIBILITY SILTS



SPAN	FILL HEIGHT	ACCEPTABLE MATERIAL INSIDE ZONE B
≤ 24'-0"	≥ 12'-0"	A1, A3
≤ 24'-0"	< 12'-0"	A1, A2, A3, A4
> 24'-0"	ALL	A1, A3



WALL BACKFILL REQUIREMENTS



NO. 1		DATE 11/20/21		REVISION	
		Revise sheet #s			
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLCOTT CITY, MARYLAND 21042				PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I	
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263				LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLCOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND	
TITLE: SPECIFICATIONS				DATE: OCTOBER, 2019 PROJECT NO. 2501	
DRAFT: TRL DESIGN: EWM CHECK: PAC				SCALE: AS SHOWN SHEET 62 OF 75	

APPROVED: DEPARTMENT OF PUBLIC WORKS

[Signature] 01/31/2020
CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 2/15/2020
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

LEGEND

- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- BIO-RETENTION AREAS (M-6)
- PROPOSED WELL BOX
- STREAM
- LIMIT OF DISTURBANCE
- NON-ROOFTOP DISCONNECTION AREA
- NON-ROOFTOP DISCONNECT RECEIVING AREA (N-2)
- DRAINAGE AREA
- 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION EASEMENT

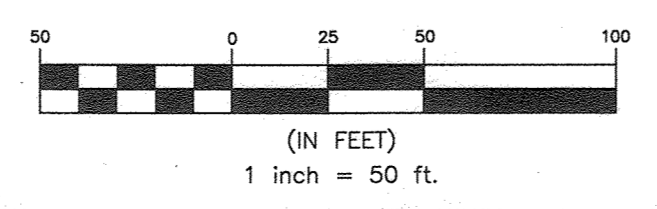


APPROVED: DEPARTMENT OF PUBLIC WORKS
James 01/21/2020
 CHIEF, BUREAU OF HIGHWAYS/ROADS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
John M. Carney 2/20/20
 CHIEF, DIVISION OF LAND DEVELOPMENT
John M. Carney 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
John M. Carney 11/24/19
 DEVELOPER/BUILDER DATE

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
John M. Carney 11/25/19
 ENGINEER - JOHN M. CARNEY #45277 DATE



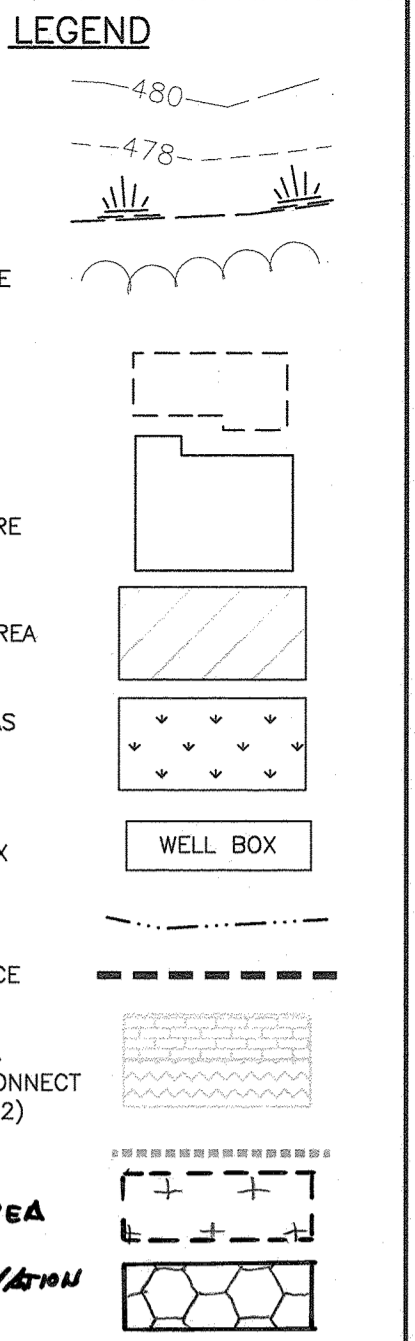
SEE PLAT FOR EASEMENTS, LOT DIMENSIONS, AREA AND SETBACKS.

THE PURPOSE OF THIS PLAN IS TO SHOW THE SPECIFIC HOUSE, GRADING AND STORMWATER MANAGEMENT FOR THESE LOTS. THIS PLAN SHEET AND THE NEXT INCLUDE THE FINAL STORMWATER DESIGN.

NO.	DATE	REVISION
1	1-20-21	Revise Sheet #s, clarify easement + add plat reference note

BENCHMARK
 ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
 6840 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6844
 WWW.BE-CIVILENGINEERING.COM

OWNERS:	NATALIE ZIEGLER 4288 MANOR LANE ELLCOTT CITY, MARYLAND 21042	PROJECT:	KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER:	JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 750 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION:	TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE:	BUILDING PERMIT PLAN	DATE:	NOVEMBER, 2019
DRAFT: MP	DESIGN: JC	CHECK: JC	PROJECT NO. 2501
SCALE:	AS SHOWN	SHEET	63 OF 75



APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 01/31/2020
 CHIEF, BUREAU OF HIGHWAYS MK DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/5/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

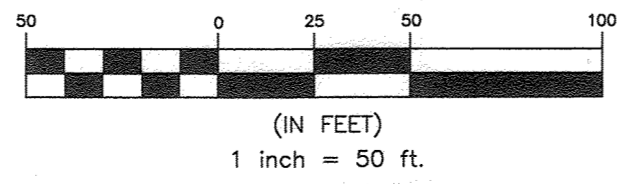
APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 11/26/19
 DEVELOPER/BUILDER DATE

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 11/25/19
 ENGINEER - JOHN M. CARNEY #45577 DATE



SEE PLAT FOR EASEMENTS, LOT DIMENSIONS, AREAS, AND SETBACKS.

THE PURPOSE OF THIS PLAN IS TO SHOW THE SPECIFIC HOUSE, GRADING AND STORMWATER MANAGEMENT FOR THESE LOTS. THIS PLAN SHEET AND THE NEXT INCLUDE THE FINAL STORMWATER DESIGN.

NO. 1	DATE 1-20-21	REVISION	Revise Sheet #s, clarify easement + add plat reference note.
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 A ELLICOTT CITY, MARYLAND 21043 (P) 410-485-6105 (F) 410-485-6844 WWW.BEI-CIVILENGINEERING.COM			
OWNERS:	NATALIE ZIEGLER 4288 MANOR LANE ELICOTT CITY, MARYLAND 21042	PROJECT:	KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
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TITLE:	BUILDING PERMIT PLAN	DATE:	NOVEMBER, 2019
DRAFT:	MP	DESIGN:	JC
CHECK:	JC	PROJECT NO.:	2501
SCALE:	AS SHOWN	SHEET:	64 OF 78

LEGEND

- EXISTING CONTOURS
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- BIO-RETENTION AREAS (M-6)
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- STREAM
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- NON-ROOFTOP DISCONNECT RECEIVING AREA (N-2)
- DRAINAGE AREA
- 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION EASEMENT



CARROLL-ZIEGLER PROPERTY
NON-BUILDABLE
PRESERVATION PARCEL
PLAT 1978B-1978C
ZONED: RC-DEO

EX. HOWARD COUNTY
AGRICULTURAL LAND
RESERVATION PROGRAM
ENT. HC-06-08-PASDC3
PLAT NUMBERS
18640 AND 18641

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 1/31/2020
CHIEF, BUREAU OF HIGHWAYS & DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
[Signature] 1/2/20
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/5/2020
CHIEF, DIVISION OF LAND DEVELOPMENT

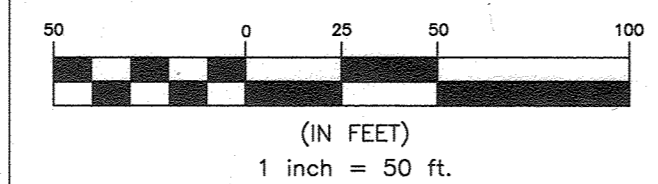
[Signature] 2/20/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE
I, WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 11/24/19
DEVELOPER/BUILDER

ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 11/25/19
ENGINEER - JOHN M. CARNEY #45577



SEE PLAT FOR EASEMENTS,
LOT DIMENSIONS, AREAS, AND
SETBACKS.

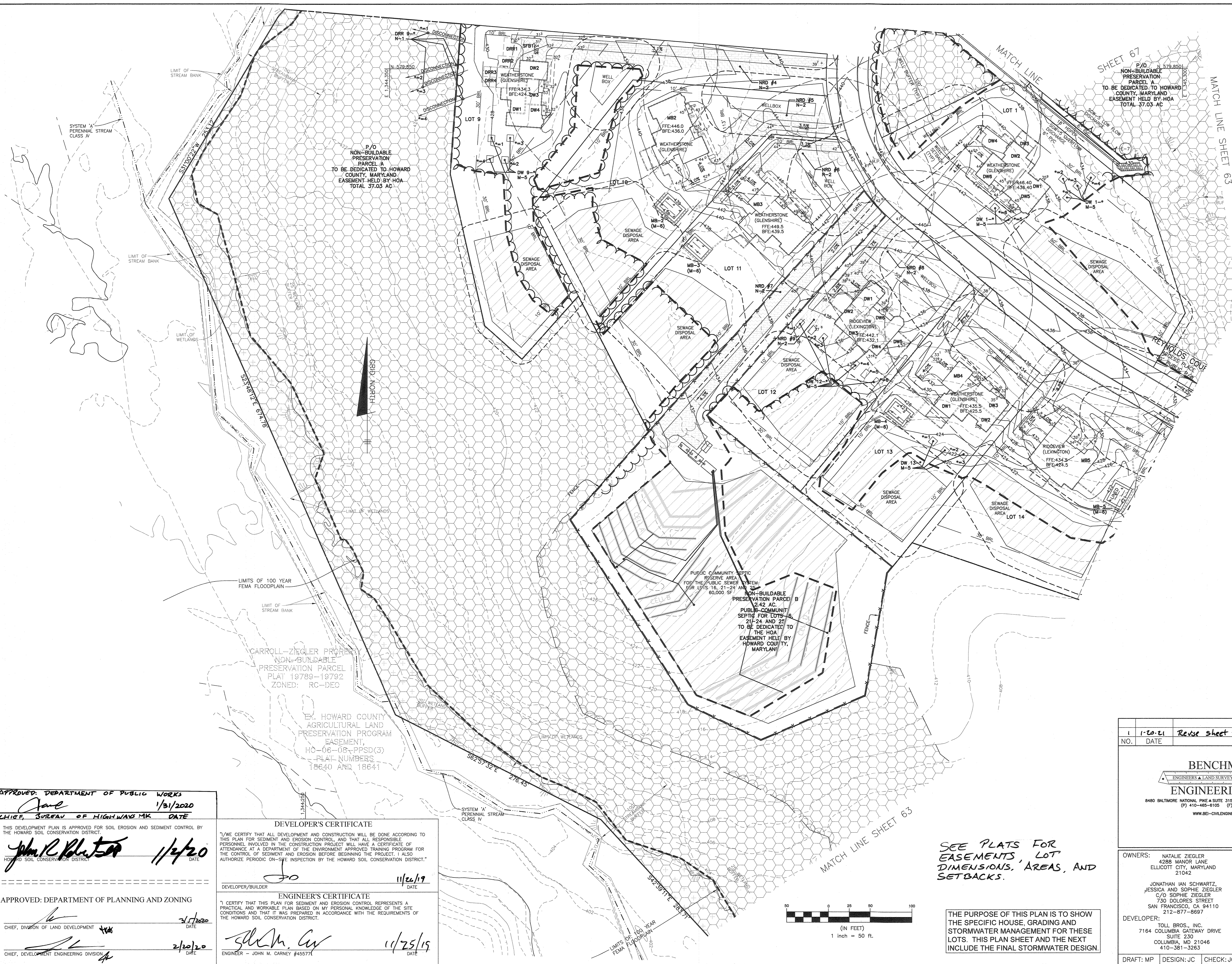
THE PURPOSE OF THIS PLAN IS TO SHOW THE SPECIFIC HOUSE, GRADING AND STORMWATER MANAGEMENT FOR THESE LOTS. THIS PLAN SHEET AND THE NEXT INCLUDE THE FINAL STORMWATER DESIGN.

NO.	DATE	REVISION
1	1-20-20	Revise sheet #s + add plat reference note

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

[Signature] 11/25/19
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

<p>OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042</p> <p>JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 750 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697</p> <p>DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263</p>	<p>PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I</p> <p>LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 149 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND</p> <p>TITLE: BUILDING PERMIT PLAN</p> <p>DATE: NOVEMBER, 2019 PROJECT NO. 2501</p> <p>DRAFT: MP DESIGN: JC CHECK: JC SCALE: AS SHOWN SHEET 65 OF 75</p>
---	--



LEGEND

- EXISTING CONTOURS: 480, 478
- LIMIT OF WETLANDS
- EXISTING WOODS LINE
- EXISTING STRUCTURE
- PROPOSED STRUCTURE
- SEWAGE DISPOSAL AREA
- BIO-RETENTION AREAS (M-6)
- PROPOSED WELL BOX
- STREAM
- LIMIT OF DISTURBANCE
- NON-ROOFTOP DISCONNECTION AREA
- NON-ROOFTOP DISCONNECTION RECEIVING AREA (N-2)
- DRAINAGE AREA
- 100-YEAR FLOODPLAIN AREA
- FOREST CONSERVATION EASEMENT

APPROVED: DEPARTMENT OF PUBLIC WORKS
Jane 1/31/2020
 CHIEF, BUREAU OF HIGHWAY MK DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/1/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 2/10/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
 DEVELOPER/BUILDER: *[Signature]* 11/22/19 DATE

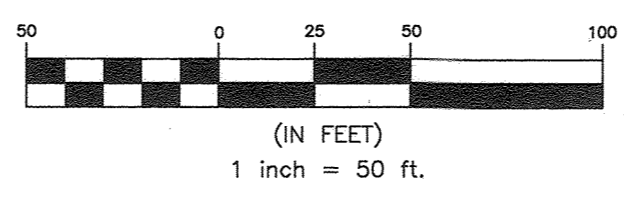
ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 ENGINEER - JOHN M. CARNEY #45577 11/25/19 DATE

NO.	DATE	REVISION
1	1-20-21	Revise sheet #s + add plat reference note

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE SUITE 315 A ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-8105 (F) 410-465-8844
 WWW.BE-CVLENGINEERING.COM

[Signature]
 JOHN M. CARNEY
 PROFESSIONAL ENGINEER
 NO. 45577
 EXPIRES 12/31/2020
 11/25/19

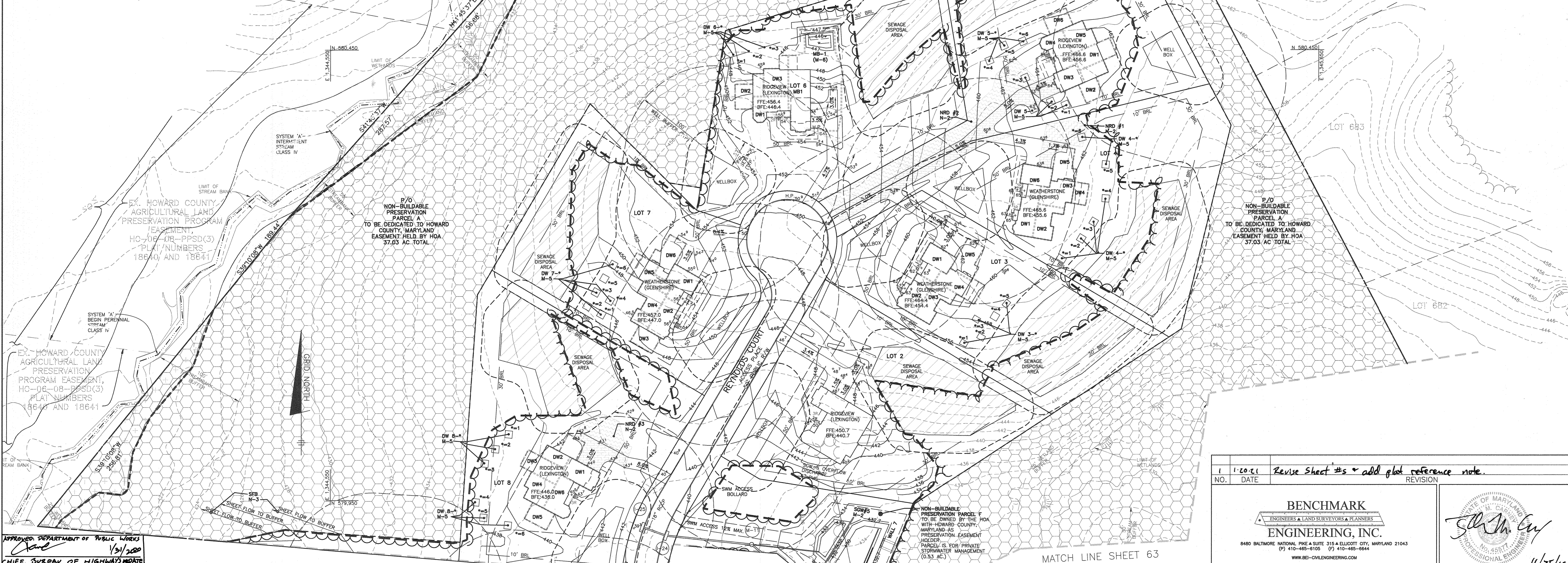
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: BUILDING PERMIT PLAN	DATE: NOVEMBER, 2019 PROJECT NO. 2501
DRAFT: MP DESIGN: JC CHECK: JC	SCALE: AS SHOWN SHEET 66 OF 75



SEE PLATS FOR EASEMENTS, LOT DIMENSIONS, AREAS, AND SETBACKS.

THE PURPOSE OF THIS PLAN IS TO SHOW THE SPECIFIC HOUSE, GRADING AND STORMWATER MANAGEMENT FOR THESE LOTS. THIS PLAN SHEET AND THE NEXT INCLUDE THE FINAL STORMWATER DESIGN.

- LEGEND**
- EXISTING CONTOURS
 - LIMIT OF WETLANDS
 - EXISTING WOODS LINE
 - EXISTING STRUCTURE
 - PROPOSED STRUCTURE
 - SEWAGE DISPOSAL AREA
 - BIO-RETENTION AREAS (M-6)
 - PROPOSED WELL BOX
 - STREAM
 - LIMIT OF DISTURBANCE
 - NON-ROOFTOP DISCONNECTION AREA
 - NON-ROOFTOP DISCONNECT RECEIVING AREA (N-2)
 - DRAINAGE AREA
 - 100-YEAR FLOODPLAIN AREA
 - FOREST CONSERVATION EASEMENT



APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 1/31/2020
 CHIEF, BUREAU OF HIGHWAY WORKS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 3/5/2020
 CHIEF, DIVISION OF LAND DEVELOPMENT

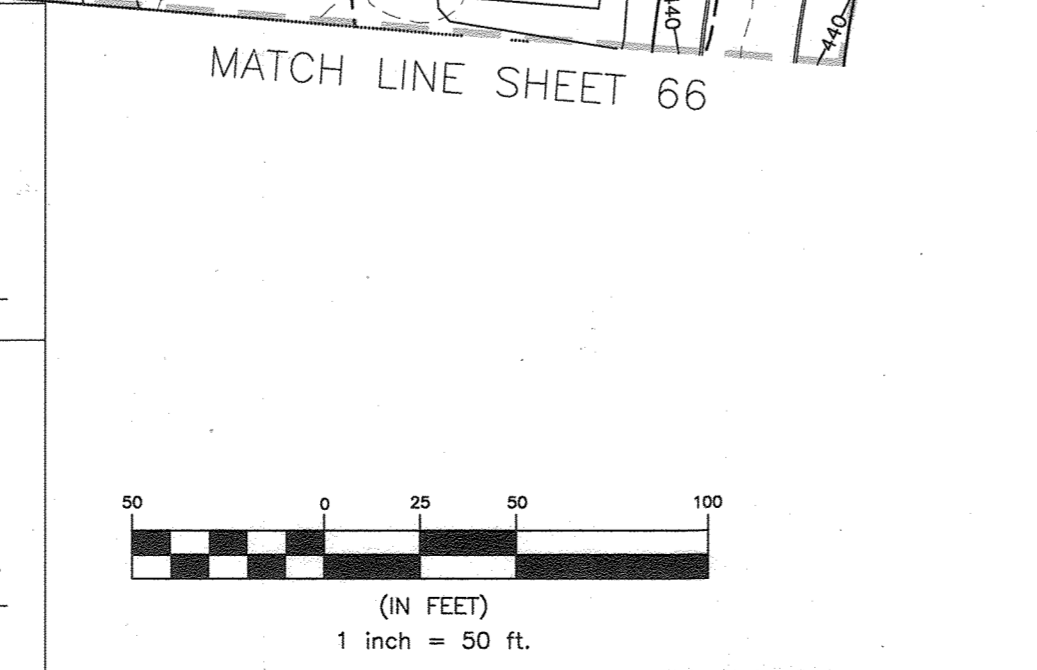
APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 2/20/20
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

[Signature] 11/25/19
 DEVELOPER/BUILDER DATE

ENGINEER'S CERTIFICATE
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[Signature] 11/25/19
 ENGINEER - JOHN M. CARNEY #45677 DATE



MATCH LINE SHEET 63

SEE PLAT FOR EASEMENTS, LOT DIMENSIONS, AREAS, AND SETBACKS.

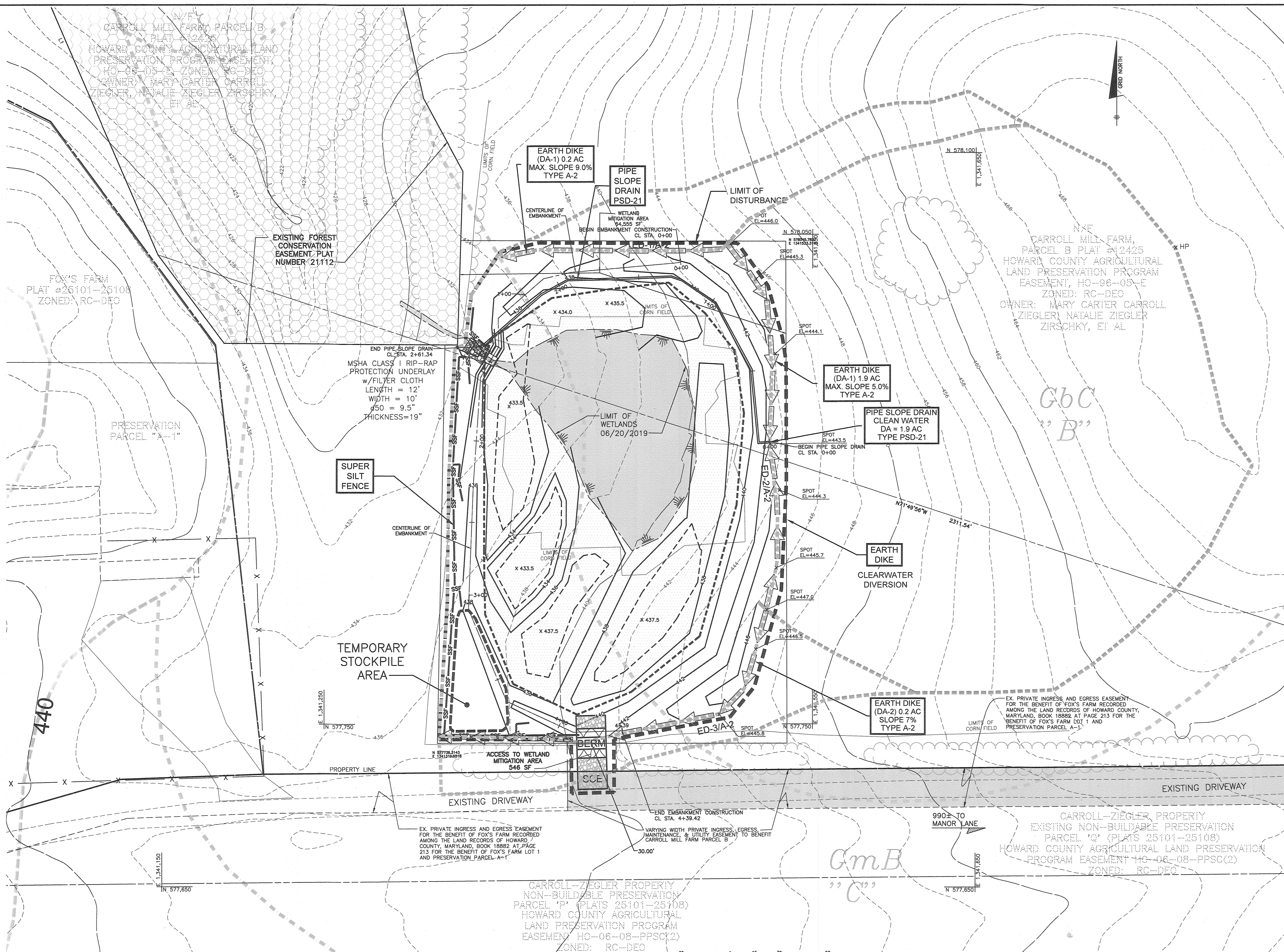
THE PURPOSE OF THIS PLAN IS TO SHOW THE SPECIFIC HOUSE, GRADING AND STORMWATER MANAGEMENT FOR THESE LOTS. THIS PLAN SHEET AND THE NEXT INCLUDE THE FINAL STORMWATER DESIGN.

NO.	DATE	REVISION
1	1/20/21	Revise Sheet #s + add plot reference note.

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE SUITE 315 A ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BEI-CIVLENGINEERING.COM

[Signature] 11/25/19
 PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 45577, Expiration Date: 6-8-2020.

OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042	PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263	LOCATION: TAX MAP: 23, GRID: 23 P/0 PARCEL: 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: BUILDING PERMIT PLAN	
DRAFT: MP	DESIGN: JC
DATE: NOVEMBER, 2019	PROJECT NO.: 2501
SCALE: AS SHOWN	SHEET 67 OF 75



LEGEND

SOILS CLASSIFICATION: GbC

SOILS DELINEATION: ---

EXISTING CONTOURS: ---

LIMIT OF WETLANDS: ---

EXISTING WOODS LINE: ---

EXISTING FOREST CONSERVATION EASEMENT: ---

WETLAND AREA: ---

PROPOSED WETLAND MITIGATION AREA: ---

DRAINAGE DIVIDE: ---

VICINITY MAP
SCALE: 1" = 2000'
ADC MAP: 4814
GRID: G10

FOREST CONSERVATION WORKSHEET FOR CARROLL MILL FARM WETLAND MITIGATION BANK, F-19-014

Net Tract Area

A. Total (Gross) Tract Area	A = 350.5
B. Area within 100-year Floodplain	B = 0.0
C. Other Deductions (Identify AREA OF NO LAND USE CHANGE)	C = 349.1
D. Net Tract Area	D = 1.4

Land Use Category
Insert the number "1" under the appropriate land use (limit to only one entry)

Rural LD	Rural MD	Suburban	Linear	Office	Mixed Use/PUD
0	0	0	1	0	0

Planting Requirements

E. Afforestation Threshold (Net Tract Area x 15%)	E = 0.2
F. Reforestation Threshold (Net Tract Area x 20%)	F = 0.3

Existing Forest Cover

G. Existing Forest Cover within the Net Tract Area	G = 0.0
H. Area of Forest above Afforestation Threshold	H = 0.0
I. Area of Forest above Reforestation Threshold	I = 0.0

Break Even Point

J. Break Even Point	J = 0.0
K. Forest Clearing Permitted without Mitigation	K = 0.0

Proposed Forest Clearing

L. Total Area of Forest to be Cleared	L = 0.0
M. Total Area of Forest to be Retained	M = 0.0

Planting Requirements Inside Watershed

N. Reforestation for Clearing above the Reforestation Threshold	N = 0.0
P. Reforestation for Clearing below the Reforestation Threshold	P = 0.0
Q. Credit for Retention above the Reforestation Threshold	Q = 0.0
R. Total Reforestation Required	R = 0.0
S. Total Afforestation Required	S = 0.2
T. Total Reforestation and Afforestation Requirement	T = 0.2
U. 75% of Total Obligation (Retention + Planting)	U = 0.2
V. Planting Required Onsite to meet 75% Obligation	V = 0.2

Planting Requirements Outside Watershed

W. Total Planting within Development Site Watershed	W = 0.0
X. Total Afforestation Required	X = 0.2
Y. Remaining Planting within Watershed for Reforestation Credit	Y = 0.0
Z. Reforestation for Clearing above the Reforestation Threshold	Z = 0.0
AA. Reforestation for Clearing below the Reforestation Threshold	AA = 0.0
BB. Credit for Retention above the Reforestation Threshold	BB = 0.0
CC. Total Reforestation Required	CC = 0.0
DD. Total Afforestation and Reforestation Requirement	DD = 0.2

GENERAL NOTES:
1. THE FOREST OBLIGATION FOR AFFORESTATION IS BEING PROVIDED FOR THE LIMIT OF DISTURBANCE OF THIS WETLAND AREA. THE OBLIGATION IS FULFILLED BY THE SUBMISSION OF A REDLINE REVISION TO THE FOREST BANK AT FOREVER A FARM, SDP-14-005 SHOWING 0.20 ACRES OF FOREST BANK BEING USED FOR THIS SITE.
2. MARYLAND DEPARTMENT OF THE ENVIRONMENTAL PERMIT NUMBER 18-NT-3339/20182004 ARMY CORPS OF ENGINEERS PERMIT NUMBER NAB-2018-62004-443.
3. HOWARD COUNTY AGRICULTURAL PRESERVATION BOARD APPROVED THE WETLAND MITIGATION AREA ON JULY 22, 2019.

APPROVED: DEPARTMENT OF PUBLIC WORKS

James
CHIEF, BUREAU OF HIGHWAYS
03/10/2022
DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

John M. Carney
CHIEF, DIVISION OF LAND DEVELOPMENT
01/24
DATE

John M. Carney
CHIEF, DEVELOPMENT ENGINEERING DIVISION
3.24.21
DATE

DEVELOPER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

John M. Carney
DEVELOPER
1/25/21
DATE

ENGINEER'S CERTIFICATE

I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

John M. Carney
ENGINEER - JOHN M. CARNEY #45577
1/25/21
DATE

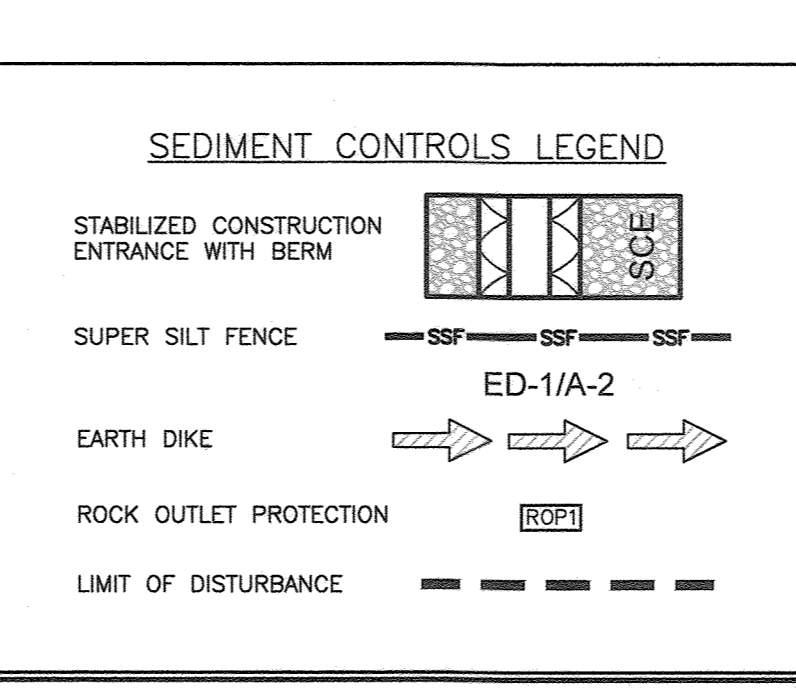
SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
GbB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GmB*	YES	C		GLENNVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES	0.37

** HIGHLY ERODIBLE, K<0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

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

Alexander Batches
HOWARD SOIL CONSERVATION DISTRICT
02/23/2021
DATE



THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

OWNER OF CARROLL MILL FARM, PARCEL B
NATALIE C. ZIEGLER AND JESSICA ZIEGLER (SUCCESSOR TRUSTEE) OF THE ZIEGLER FAMILY IRREVOCABLE TRUST FOR THE BENEFIT OF ALEXANDRA N. ZIRSCHKY AND J. CHRISTIAN ZIRSCHKY
4888 CASTLEBRIDGE ROAD
ELlicott CITY, MD, 21042

Myra Brosius
ISA Certified Arborist #MA5411A
MD DNR FCA Qualified Professional
Myra.brosius@gmail.com

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. BOX 596 GLEN ARM, MARYLAND 21087
Telephone (410) 683-7800
www.ecoscienceprofessionals.com

BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE SUITE 315 A ELlicott CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6844
WWW.BE-CIVILENGINEERING.COM

NO. DATE REVISION

1	1-25-21	ADD WETLAND CONSTRUCTION PLAN SHEETS TO CONSTRUCTION SET
---	---------	--

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELlicott CITY, MARYLAND 21042
DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046, 410-381-3263

PROJECT: KINGS FOREST
A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

LOCATION: TAX MAP: 23, GRID: 23
PUDDING LANE, ELlicott CITY, MD 21042
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

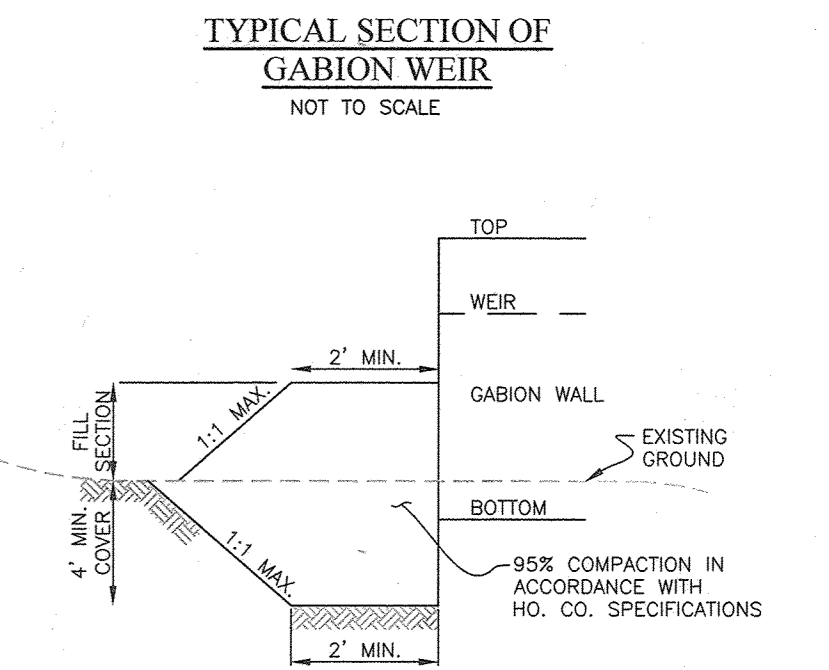
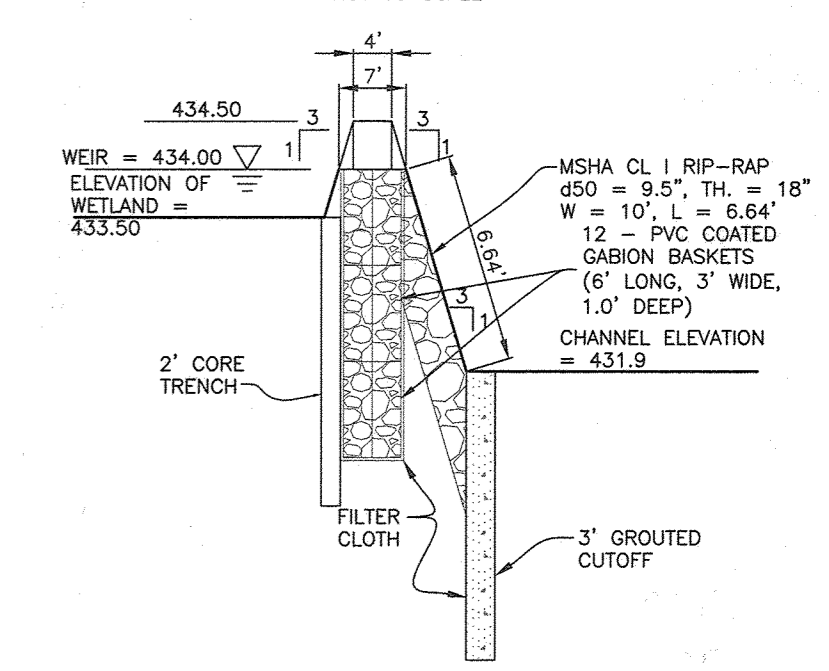
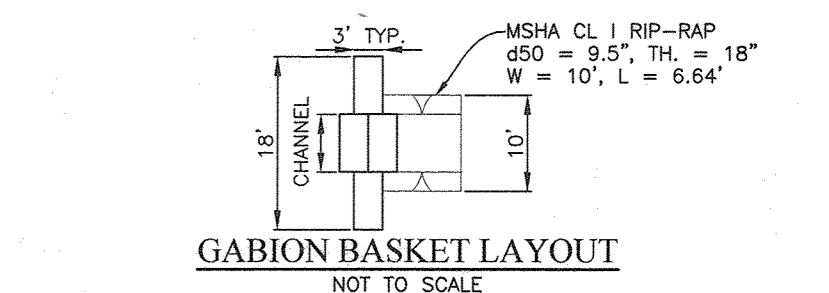
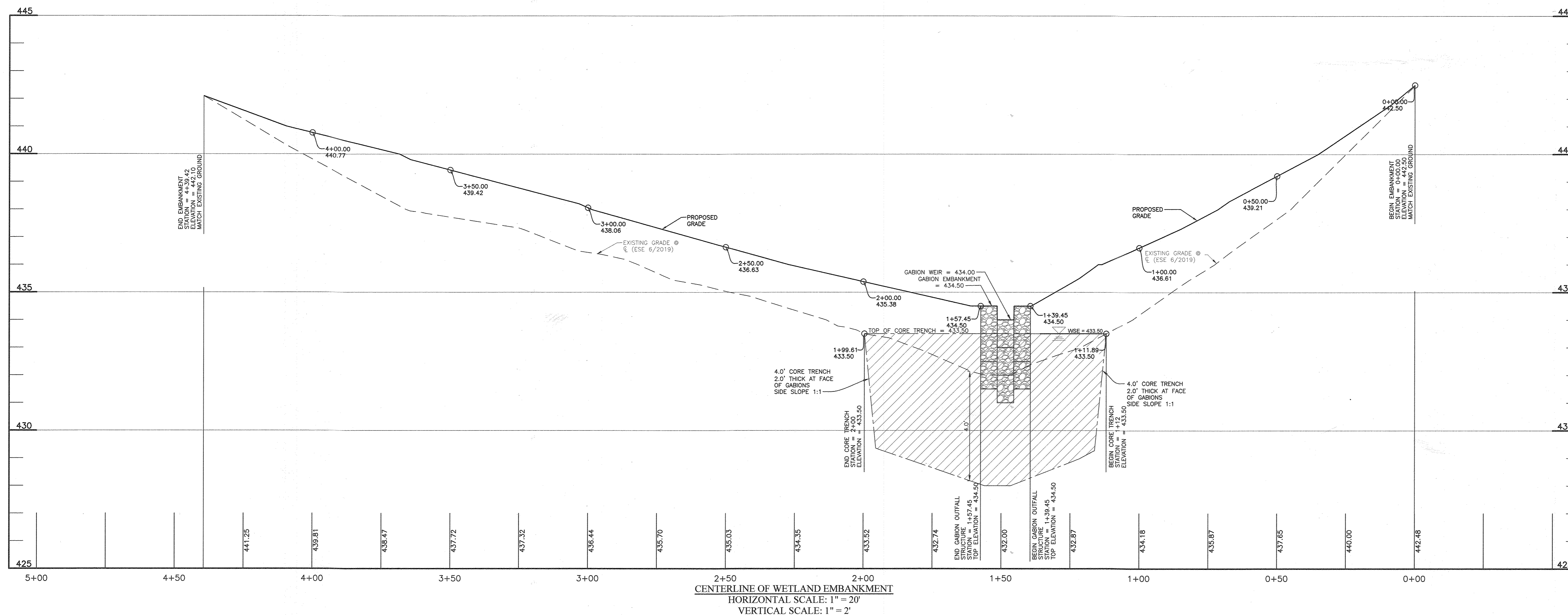
TITLE: Revised Final Road Construction Plan
KINGS FOREST WETLAND MITIGATION AREA
OFF SITE AT CARROLL MILL FARM, PARCEL B

DATE: JANUARY, 2021
PROJECT NO.: 2501
SCALE: AS SHOWN
SHEET: 68 OF 75

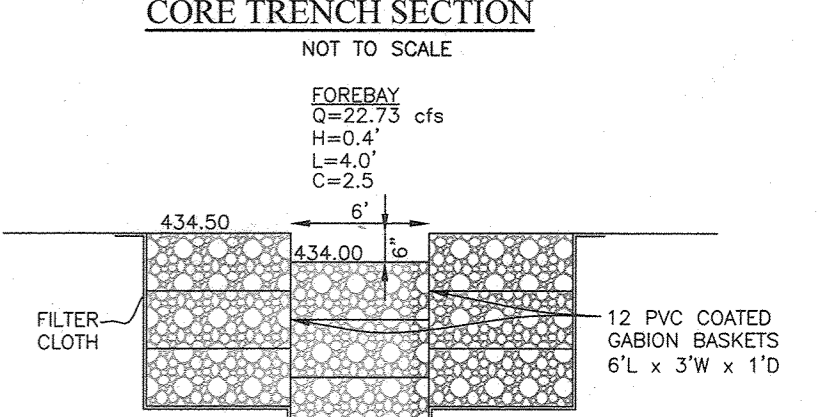
DRAFT: LDD **DESIGN:** JC **CHECK:** JC

John M. Carney
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 45577, Expiration Date: 6-8-2022.

1/25/21



NOTES:
 1. IF WATER IS ENCOUNTERED DURING THE CONSTRUCTION OF THE CORE TRENCH, IT IS TO BE REMOVED BY PUMPING.
 2. CORE TRENCH SHALL CONSIST OF IMPERVIOUS MATERIAL (GC, SC, CL, CH) AS DIRECTED BY A GEOTECHNICAL ENGINEER ON-SITE AND MAY REQUIRE TO BE HAULED FROM AN OFFSITE LOCATION.



PROFILE THROUGH FOREBAY WEIR
NOT TO SCALE

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPER: *[Signature]* DATE: 1/28/21

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

ENGINEER - JOHN M. CARNEY #45577 DATE: 1/28/21

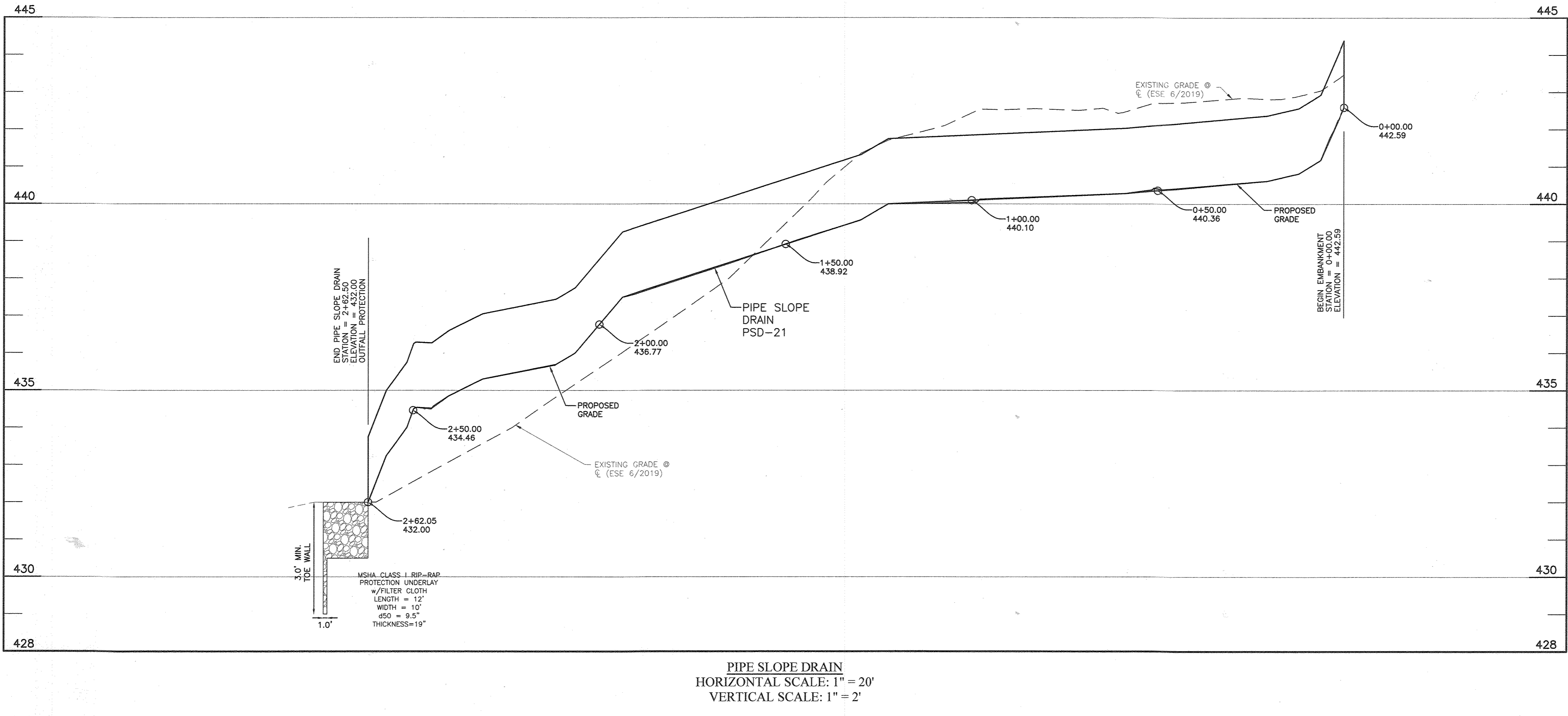
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

Alexander Hutchins DATE: 02/23/2021

APPROVED: DEPARTMENT OF PUBLIC WORKS
 DATE: 02/10/2021

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DATE: 4/7/21

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 DATE: 3-24-21



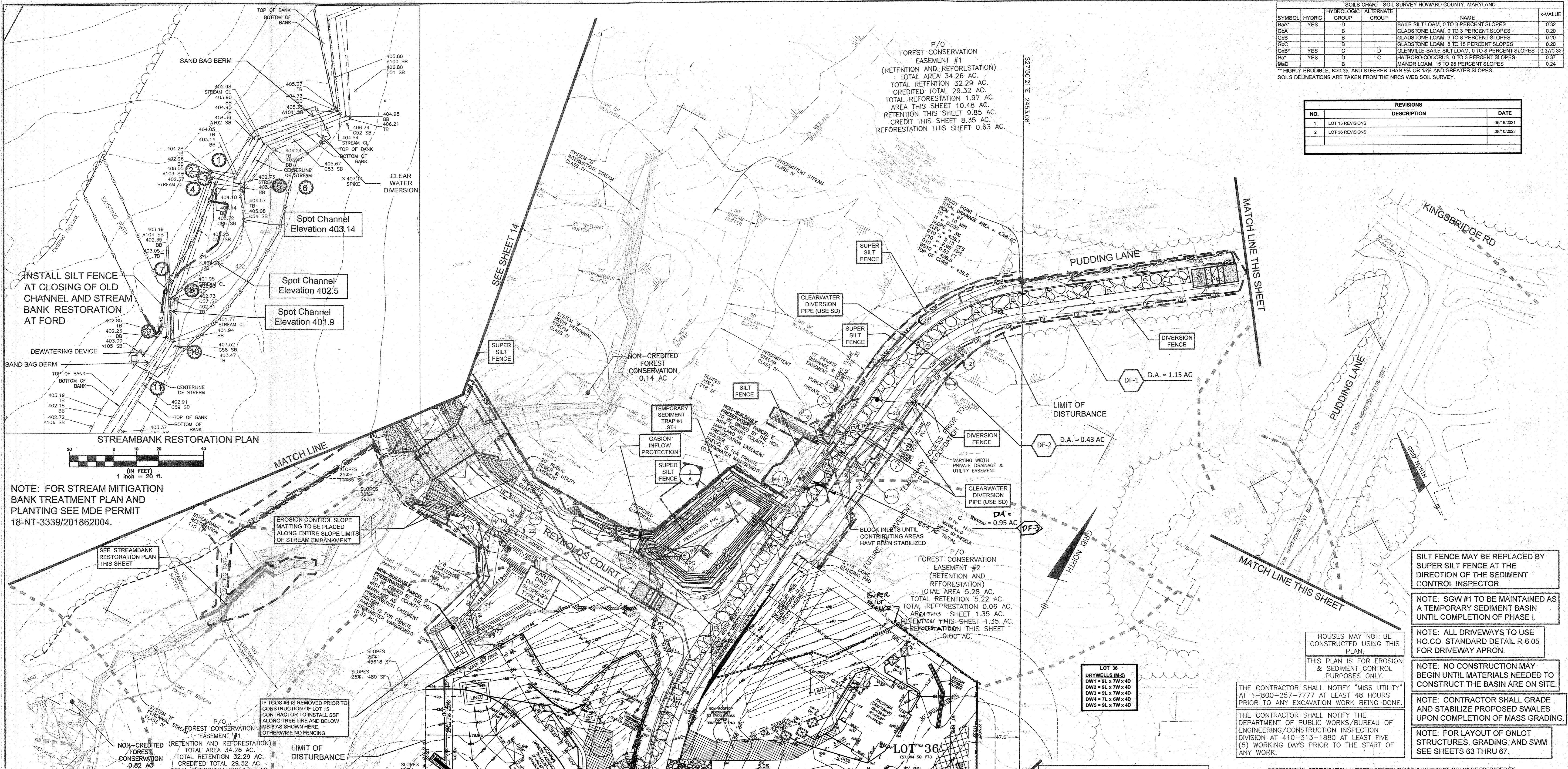
OWNER OF CARROLL MILL FARM, PARCEL B
 NATALIE C. ZIEGLER AND JESSICA ZIEGLER (SUCCESSOR TRUSTEE) OF THE ZIEGLER FAMILY IRREVOCABLE TRUST FOR THE BENEFIT OF ALEXANDRA N. ZIRSCHKY AND J. CHRISTIAN ZIRSCHKY
 4888 CASTLEBRIDGE ROAD ELLICOTT CITY, MD. 21042

1	1-25-21	ADD WETLAND CONSTRUCTION PLAN SHEETS TO CONSTRUCTION SET
NO.	DATE	REVISION
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6844 WWW.BE-CVLENGINEERING.COM		
OWNERS: NATALIE ZIEGLER 4288 MANOR LANE ELLICOTT CITY, MARYLAND 21042 JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697		PROJECT: KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER: TOLL BROS., INC. 7164 COLUMBIA GATEWAY DRIVE SUITE 230 COLUMBIA, MD 21046 410-381-3263		LOCATION: TAX MAP: 23, GRID: 23 P/O PARCEL 148 PUDDING LANE, ELLICOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE: <i>Revised Road Construction Plan</i> KINGS FOREST WETLAND MITIGATION AREA OFF SITE AT CARROLL MILL FARM, PARCEL B		DATE: JANUARY, 2021 PROJECT NO. 2501 SCALE: AS SHOWN SHEET 70 OF 75
DRAFT: LDD DESIGN: JC CHECK: JC		F-19-014 G-20-32

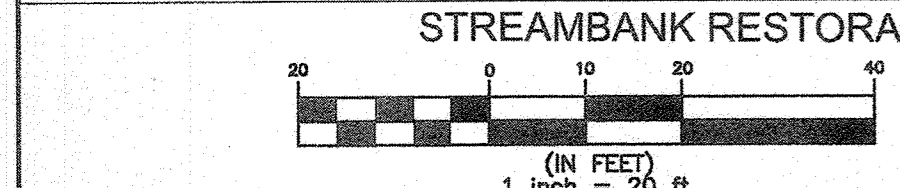
SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
BaA*	YES	D		BALE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GSA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GnB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GnB		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GnB*	YES	C	D	GLENVILLE-BALE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Hs*	YES	D	C	HATBORO-COORUS, 0 TO 3 PERCENT SLOPES	0.37
MD		B		MAJOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

*HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

REVISIONS		
NO.	DESCRIPTION	DATE
1	LOT 15 REVISIONS	05/19/2021
2	LOT 36 REVISIONS	08/10/2023

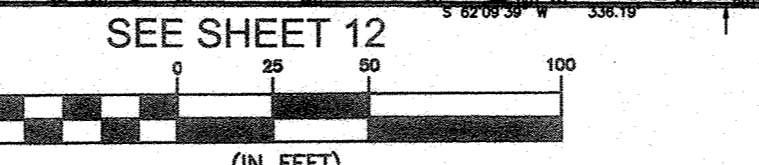
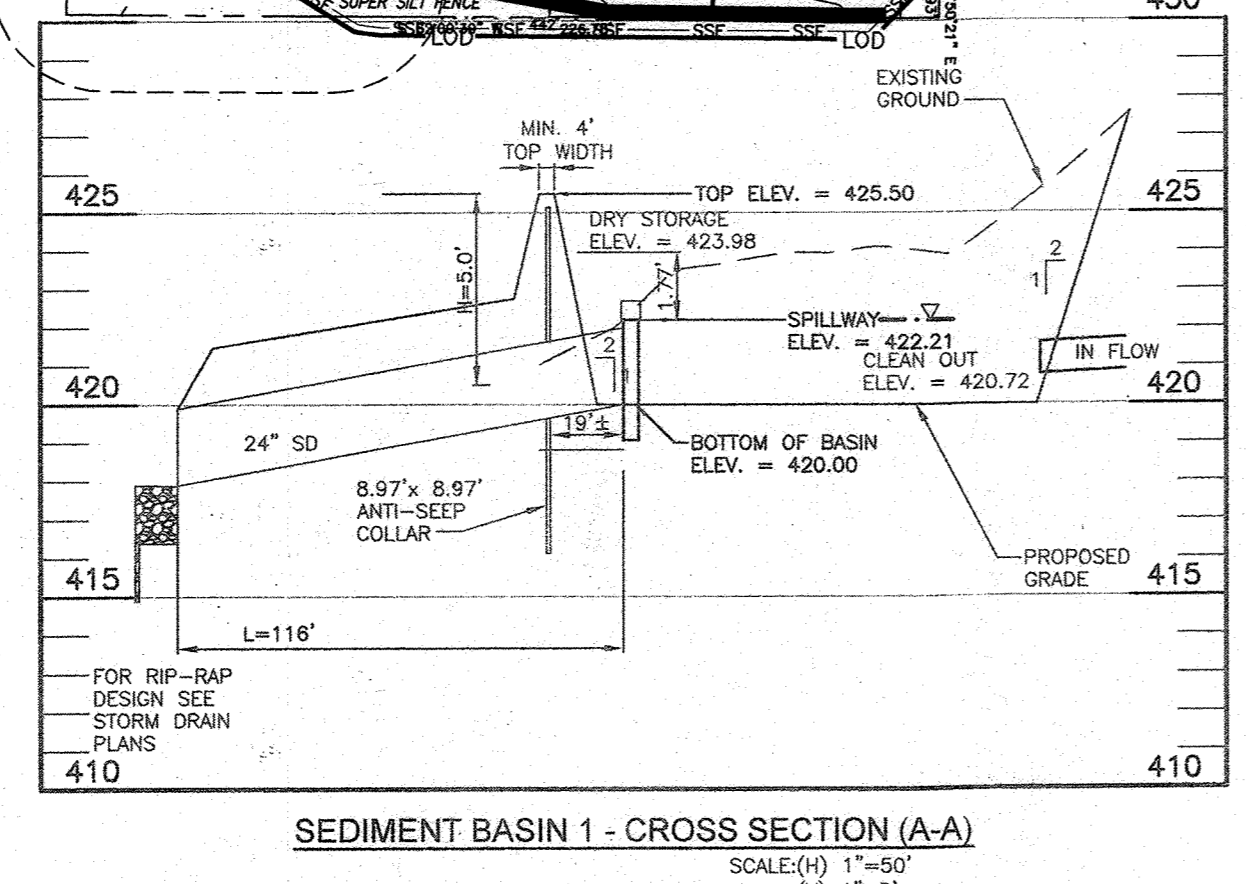


NOTE: FOR STREAM MITIGATION BANK TREATMENT PLAN AND PLANTING SEE MDE PERMIT 18-NT-3339/201862004.



APPROVED, DEPARTMENT OF PLANNING AND ZONING
 08/23/23
 9.22.23
 APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 09/19/2023
 APPROVED: HOWARD SOIL CONSERVATION DISTRICT
 09/11/23
 PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF MARYLAND, LICENSE NO. 21328, EXPIRES 18/25.

LOT 15
 DISCONNECTION OF ROOFTOP RUNOFF (N-1)
 3 TOTAL
 MICRO BIO-RETENTION (M-5)
 5 ROOF DRAINS PRIOR TO BIO
 3 ROOF DRAINS SHEET FLOW TO BIO
 29' (L) X 22.50' (W) X 1' (D)
 TOTAL STORAGE 516 CF.



LEGEND	
SOILS CLASSIFICATION	ChC
SOILS DELINEATION	480
EXISTING CONTOURS	478
LIMIT OF WETLANDS	
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
EXISTING STRUCTURE	
PROPOSED STRUCTURE	
SEWAGE DISPOSAL SEPTIC RESERVE AREA	
PROPOSED WELL BOX	WELL BOX
PUBLIC FOREST CONSERVATION EASEMENT	

SEDIMENT CONTROLS LEGEND	
STABILIZED CONSTRUCTION ENTRANCE WITH BERM	
SUPER SILT FENCE	SSF
SILT FENCE	SF
DIVERSION FENCE	DF
INLET PROTECTION	IP
STABILIZATION MATTING	ED-1/A-2
EARTH DIKE	
TEMPORARY STONE OUTLET STRUCTURE	TSOS
ROCK OUTLET PROTECTION	ROPT
GABION INFLOW PROTECTION	GP
LIMIT OF DISTURBANCE	
20% AND GREATER SLOPES	
25% AND GREATER SLOPES	
DRAINAGE DIVIDE TO SWALE	

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTE: SGW #1 TO BE MAINTAINED AS A TEMPORARY SEDIMENT BASIN UNTIL COMPLETION OF PHASE I.

NOTE: ALL DRIVEWAYS TO USE HO.CO. STANDARD DETAIL R-6.05 FOR DRIVEWAY APRON.

NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

NOTE: CONTRACTOR SHALL GRADE AND STABILIZE PROPOSED SWALES UPON COMPLETION OF MASS GRADING.

NOTE: FOR LAYOUT OF ONLOT STRUCTURES, GRADING, AND SWM SEE SHEETS 63 THRU 67.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF MARYLAND, LICENSE NO. 21328, EXPIRES DATE 18/25.

I HEREBY CERTIFY ITEMS SHOWN ONLY FOR THE LOTS LISTED IN THE REVISIONS BLOCK; THESE ITEMS ARE REVISIONS FROM THE PREVIOUSLY APPROVED PLANS.

ESE CONSULTANTS
 ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
 ESE Consultants Inc.
 6731 Columbia Gateway Drive • Suite 123 • Columbia, MD 21046
 Tel: 410-872-9105 • Fax: 410-872-4870

NEW SHEET *REVISED*

OWNERS: NATALIE ZIEGLER
 4288 MANOR LANE
 ELLICOTT CITY, MARYLAND
 21042

PROJECT: KINGS FOREST
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, G, AND E THRU I

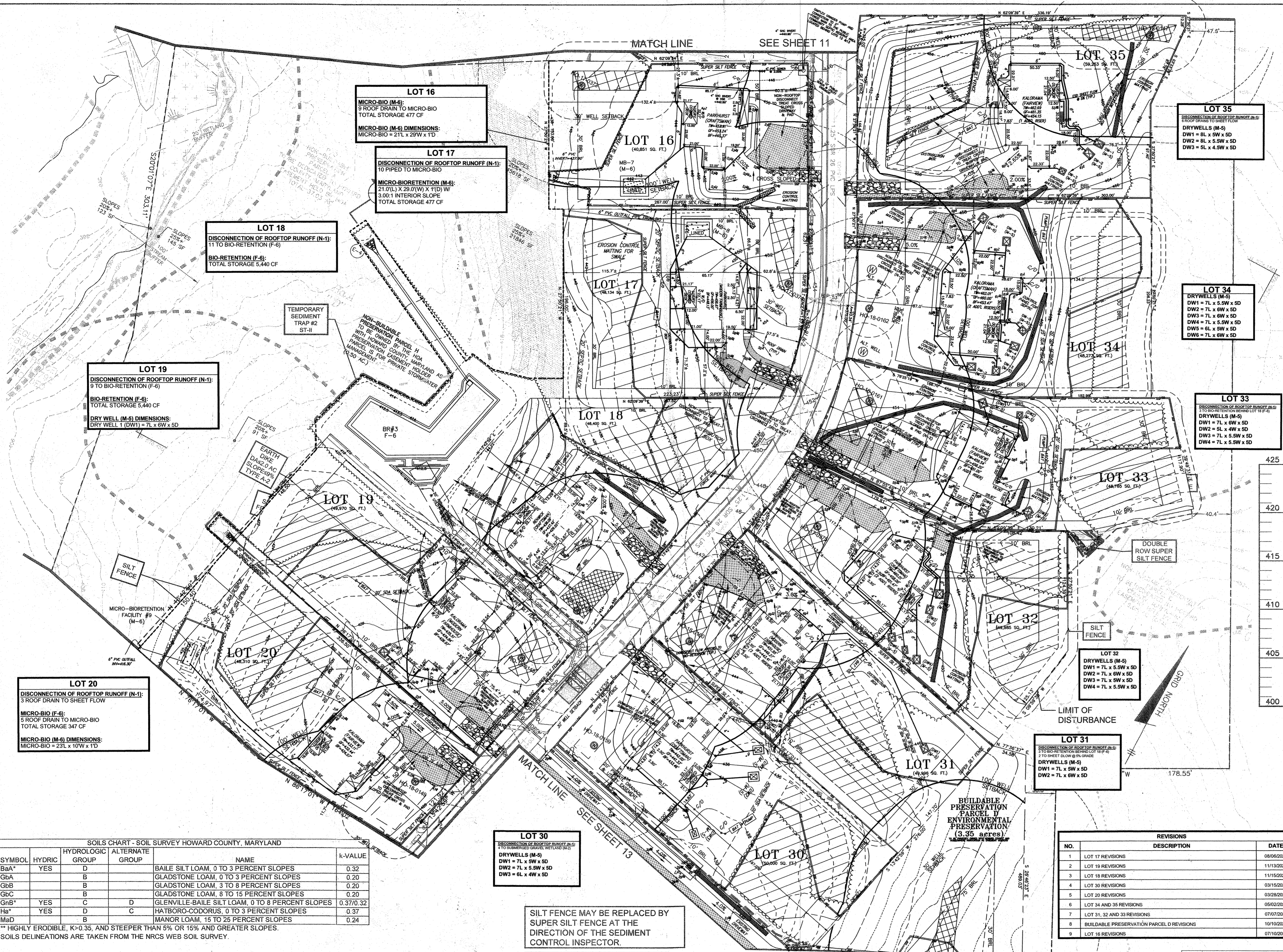
DEVELOPER: TOLL BROS., INC.
 7164 COLUMBIA GATEWAY DRIVE
 SUITE 230
 COLUMBIA, MD 21046
 410-381-3263

LOCATION: TAX MAP 23, GRID: 23
 P/O. PARCEL 148
 PUDDING LANE, ELLICOTT CITY, MD 21042
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE I)

DATE: NOVEMBER, 2019 PROJECT NO. 2501

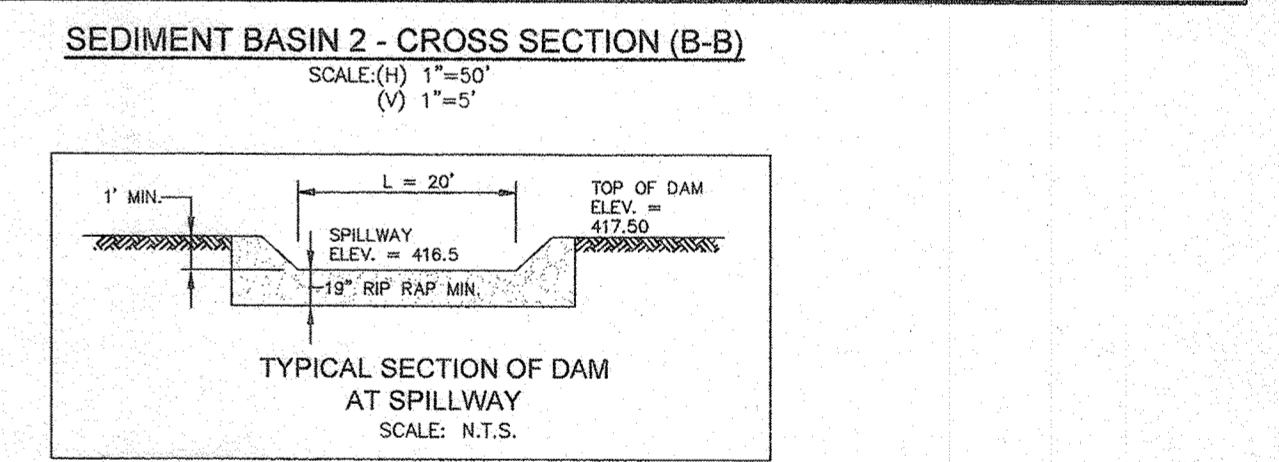
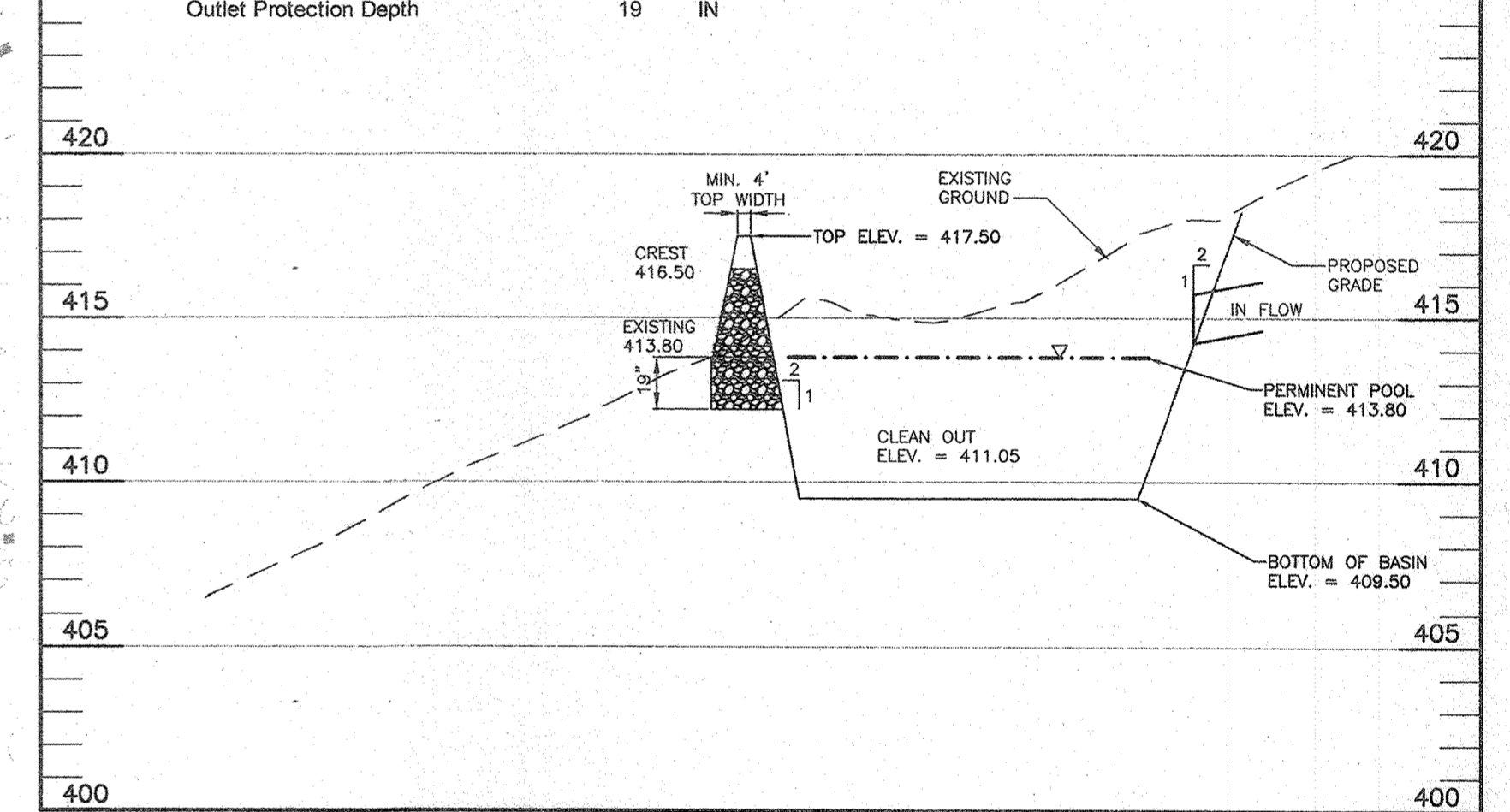
DRAFT: MP DESIGN: JC CHECK: JC SCALE: AS SHOWN SHEET 71 OF 75



LEGEND	
SOILS CLASSIFICATION	660
SOILS DELINEATION	---
EXISTING CONTOURS	480 478
LIMIT OF WETLANDS	---
EXISTING WOODS LINE	---
PROPOSED WOODS LINE	---
EXISTING STRUCTURE	---
PROPOSED STRUCTURE	---
SEWAGE DISPOSAL RESERVE AREA	---
PROPOSED WELL BOX	WELL BOX

SEDIMENT CONTROLS LEGEND	
STABILIZED CONSTRUCTION ENTRANCE WITH BERM	---
SUPER SILT FENCE	SSF
SILT FENCE	SF
DIVERSION FENCE	DF
INLET PROTECTION	IP
STABILIZATION MATTING	ED-1A-2
EARTH DIKE	---
TEMPORARY STONE OUTLET STRUCTURE	TSOS
ROCK OUTLET PROTECTION	ROP
GABION INFLOW PROTECTION	GP
LIMIT OF DISTURBANCE	---
20% AND GREATER SLOPES	---
25% AND GREATER SLOPES	---
DRAINAGE DIVIDE TO SWALE	---

PUBLIC FOREST CONSERVATION EASEMENT	
Detail G-1-2, Stone/Rip-Rap Outlet Sediment Trap ST-1	4.03 Acres
Stone/Rip-rap Outlet Sediment Trap ST-1, Trap No. 1	4.96 Acres
Drainage Area - Initial	4.00 Acres
Drainage Area - Interim	4.96 Acres
Drainage Area - Final	4.00 Acres
Disturbed Area	4.96 Acres
Total Storage Required	32275 CF
Total Storage Provided	33400 CF
Wet Storage Required	18137.50 CF
Wet Storage Provided	16289.40 CF
Dry Storage Required	18137.50 CF
Dry Storage Provided	17110.25 CF
Ex. Ground @ Outlet	413.80 FT
Trap Bottom Elevation	409.50 FT
Trap Bottom Dimensions	135 x 19 FT x FT
Weir Length	20'
Weir Crest (Dry Storage) Elevation	416.5 FT
Riser Crest (Dry Storage) Elevation	423.98 FT
Cleanout Elevation	411.05 FT
Top of Embankment Elevation	417.50 FT
Side Slope	2 H:1 V Ratio
Embankment Top Width	4 FT
Outlet Protection - Length	28.4 FT
Outlet Protection Depth	19 IN



SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE
BaA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GbA	B			GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GbB	B			GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GbC	B			GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GnB*	YES	C	D	GLENNVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Ha*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MaD	B			MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

* HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

LOT 30
DISCONNECTION OF ROOFTOP RUNOFF (N-1) TO BIO-RETENTION (F-6) DRYWELLS (M-5) DIMENSIONS: DW1 = 7L x 5W x 5D DW2 = 7L x 5W x 5D DW3 = 6L x 4W x 5D

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

NOTE: ALL DRIVEWAYS TO USE HO.CO. STANDARD DETAIL R-6.05 FOR DRIVEWAY APRON.

NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

NOTE: CONTRACTOR SHALL GRADE AND STABILIZE PROPOSED SWALES UPON COMPLETION OF MASS GRADING.

NOTE: BR#3 TO BE MAINTAINED AS A TEMPORARY SEDIMENT BASIN UNTIL COMPLETION OF PHASE I.

BUILDABLE PRESERVATION PARCEL D
DISCONNECTION OF ROOFTOP RUNOFF (N-1) TO BIO-RETENTION (F-6) DRYWELLS (M-5) DIMENSIONS: DW1 = 7L x 5W x 5D DW2 = 7L x 5W x 5D DW3 = 6L x 4W x 5D

REVISIONS		
NO.	DESCRIPTION	DATE
1	LOT 17 REVISIONS	08/06/2021
2	LOT 19 REVISIONS	11/13/2021
3	LOT 18 REVISIONS	11/15/2021
4	LOT 30 REVISIONS	03/15/2022
5	LOT 28 REVISIONS	03/28/2022
6	LOT 34 AND 35 REVISIONS	05/02/2022
7	LOT 31, 32 AND 33 REVISIONS	07/07/2022
8	BUILDABLE PRESERVATION PARCEL D REVISIONS	10/10/2022
9	LOT 16 REVISIONS	07/10/2023

HOUSES MAY NOT BE CONSTRUCTED USING THIS PLAN.

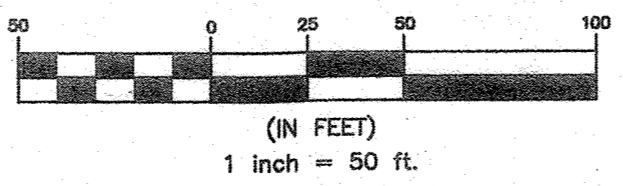
THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
8/10/23
7/24/23
07/24/2023

APPROVED: HOWARD SOIL CONSERVATION DISTRICT
8/10/23
08/09/23
07/10/23



PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF MARYLAND, LICENSE NO. 21328, EXPIRATION DATE 1/8/25.

I HEREBY CERTIFY ITEMS SHOWN ONLY FOR THE LOTS LISTED IN THE REVISIONS BLOCK; THESE ITEMS ARE REVISIONS FROM THE PREVIOUSLY APPROVED PLANS.

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL
ESE Consultants, Inc.
6731 Columbia Gateway Drive • Suite 120 • Columbia, MD 21046
T: 410-872-9105

NEW SHEET *REVISED*

OWNERS: NATALIE ZIEGLER, 4288 MANOR LANE, ELLICOTT CITY, MARYLAND 21042
JONATHAN VAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER, C/O SOPHIE ZIEGLER, 730 DOLORES STREET, SAN FRANCISCO, CA 94110, 212-877-8697

DEVELOPER: TOLL BROS., INC., 7164 COLUMBIA GATEWAY DRIVE, SUITE 230, COLUMBIA, MD 21046, 410-381-3263

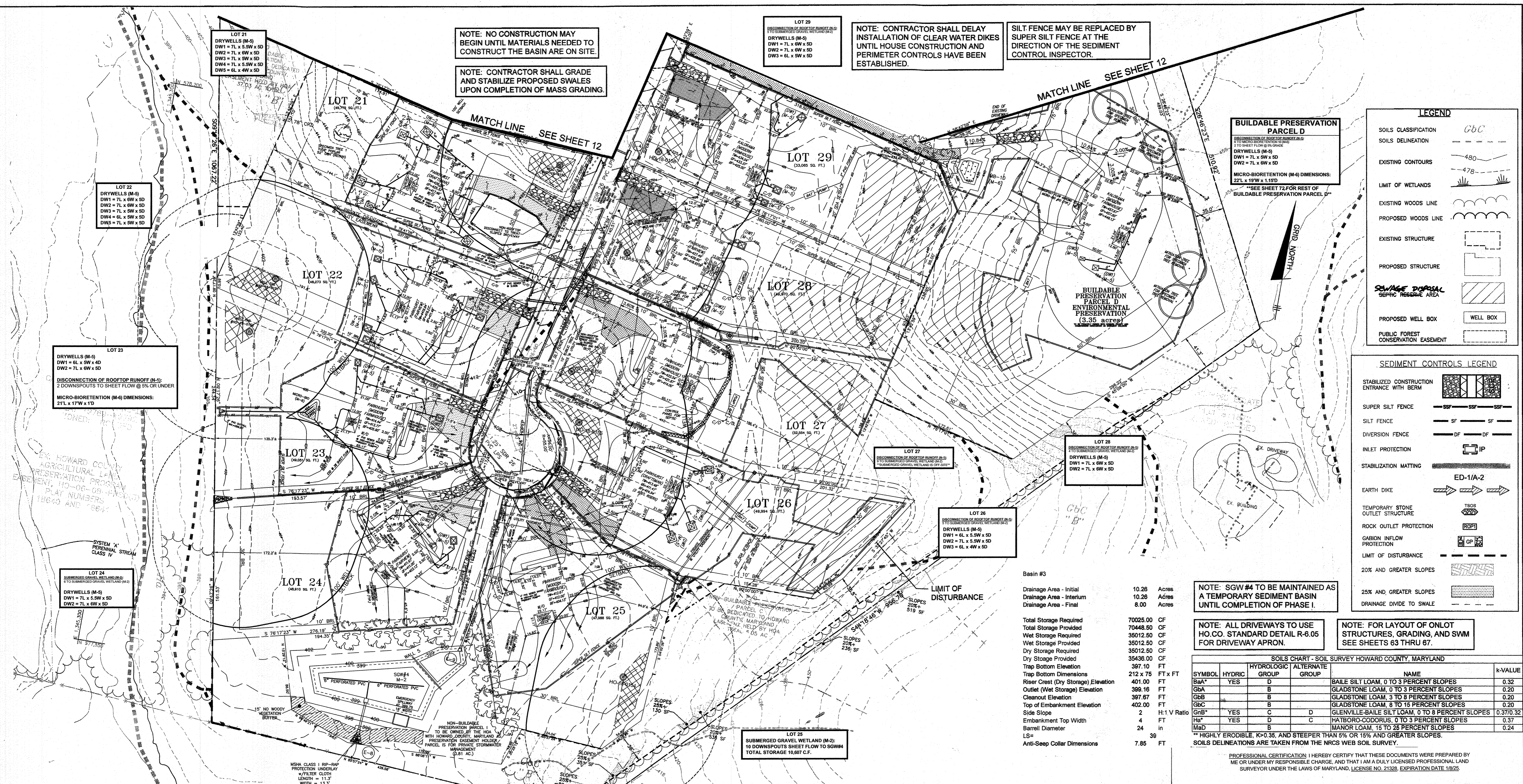
PROJECT: **KINGS FOREST**
A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19781 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I

LOCATION: TAX MAP: 23, GRID: 23
PUDDING LANE, ELLICOTT CITY, MD 21042
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: **GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE I)**

DATE: NOVEMBER, 2019 PROJECT NO. 2501
SCALE: AS SHOWN SHEET 72 OF 75

DRAFT: MP DESIGN: JC CHECK: JC



NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

NOTE: CONTRACTOR SHALL GRADE AND STABILIZE PROPOSED SWALES UPON COMPLETION OF MASS GRADING.

NOTE: CONTRACTOR SHALL DELAY INSTALLATION OF CLEAR WATER DIKES UNTIL HOUSE CONSTRUCTION AND PERIMETER CONTROLS HAVE BEEN ESTABLISHED.

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

LEGEND

SOILS CLASSIFICATION	G6C
SOILS DELINEATION	---
EXISTING CONTOURS	480, 478
LIMIT OF WETLANDS	---
EXISTING WOODS LINE	---
PROPOSED WOODS LINE	---
EXISTING STRUCTURE	---
PROPOSED STRUCTURE	---
SEWAGE DISPOSAL SEPTIC RESERVE AREA	---
PROPOSED WELL BOX	---
PUBLIC FOREST CONSERVATION EASEMENT	---

SEDIMENT CONTROLS LEGEND

STABILIZED CONSTRUCTION ENTRANCE WITH BERM	---
SUPER SILT FENCE	---
SILT FENCE	---
DIVERSION FENCE	---
INLET PROTECTION	---
STABILIZATION MATTING	---
EARTH DIKE	---
TEMPORARY STONE OUTLET STRUCTURE	---
ROCK OUTLET PROTECTION	---
GABION INFLOW PROTECTION	---
LIMIT OF DISTURBANCE	---
20% AND GREATER SLOPES	---
25% AND GREATER SLOPES	---
DRAINAGE DIVIDE TO SWALE	---

NOTE: SGW #4 TO BE MAINTAINED AS A TEMPORARY SEDIMENT BASIN UNTIL COMPLETION OF PHASE I.

NOTE: ALL DRIVEWAYS TO USE HO CO. STANDARD DETAIL R-6.05 FOR DRIVEWAY APRON.

NOTE: FOR LAYOUT OF ONLOT STRUCTURES, GRADING, AND SWM SEE SHEETS 63 THRU 67.

Basin #3

Drainage Area - Initial	10.26	Acres
Drainage Area - Interim	10.26	Acres
Drainage Area - Final	8.00	Acres

Total Storage Required	70025.00	CF
Total Storage Provided	70448.50	CF
Wet Storage Required	35012.50	CF
Wet Storage Provided	35012.50	CF
Dry Storage Required	35012.50	CF
Dry Storage Provided	35436.00	CF
Trap Bottom Elevation	387.10	FT
Trap Bottom Dimensions	212 x 75	FT x FT
Riser Crest (Dry Storage) Elevation	401.00	FT
Outlet (Wet Storage) Elevation	399.16	FT
Cleanout Elevation	397.67	FT
Top of Embankment Elevation	402.00	FT
Side Slope	2	H:1 V Ratio
Embankment Top Width	4	FT
Barrel Diameter	24	in
LS=	39	
Anti-Sleep Collar Dimensions	7.85	FT

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE
BaA*	YES	B		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
G6A		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
G6B		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
G6C		B		GLADSTONE LOAM, 8 TO 16 PERCENT SLOPES	0.20
G6B*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
H6*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37/0.30
M6D		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

** HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF MARYLAND, LICENSE NO. 21328, EXPIRATION DATE 10/25/25.

I HEREBY CERTIFY ITEMS SHOWN ONLY FOR THE LOTS LISTED IN THE REVISIONS BLOCK; THESE ITEMS ARE REVISIONS FROM THE PREVIOUSLY APPROVED PLANS.

ESE CONSULTANTS
ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL

ESE Consultants, Inc.
8731 Columbia Gateway Drive • Suite 120 • Columbia, MD 21046
T: 410-872-9105

NEW SHEET *REVISED*

OWNERS:	NATALIE ZIEGLER 4289 MANOR LANE ELLCOTT CITY, MARYLAND 21042	PROJECT:	KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 18791 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER:	JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8897	LOCATION:	TAX MAP: 23, GRID: 23 P/O PARCEL 48 PUDDING LANE, ELLCOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE:	GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE I)	DATE:	NOVEMBER, 2019
DRAFT:	MP DESIGN: JC CHECK: JC	PROJECT NO.:	2501
		SCALE:	AS SHOWN
			SHEET 73 OF 75

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 7/18/23
DATE

[Signature] 7/13/23
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[Signature] MK 07/10/2023
DATE

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

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

[Signature] 06/14/23
DATE

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF MARYLAND, LICENSE NO. 21328, EXPIRATION DATE 10/25/25.

[Signature] 06/08/23
DATE

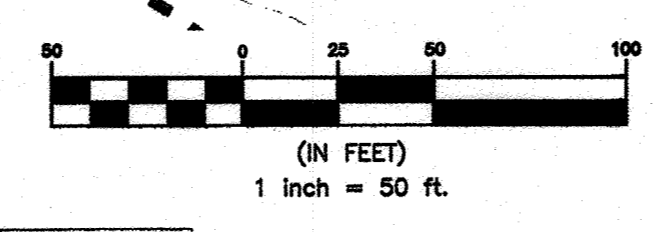
MICHAEL JOE BOYSE
PROFESSIONAL SURVEYOR FOR ESE CONSULTANTS, INC.
MD LICENSE NO. 21328, EXPIRES 10/25

HOUSES MAY NOT BE CONSTRUCTED USING THIS PLAN.

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

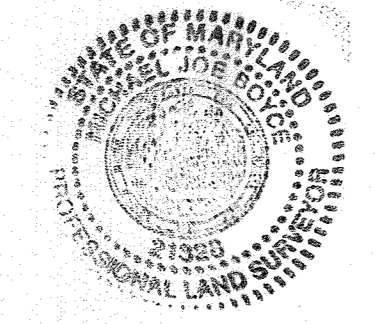
THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

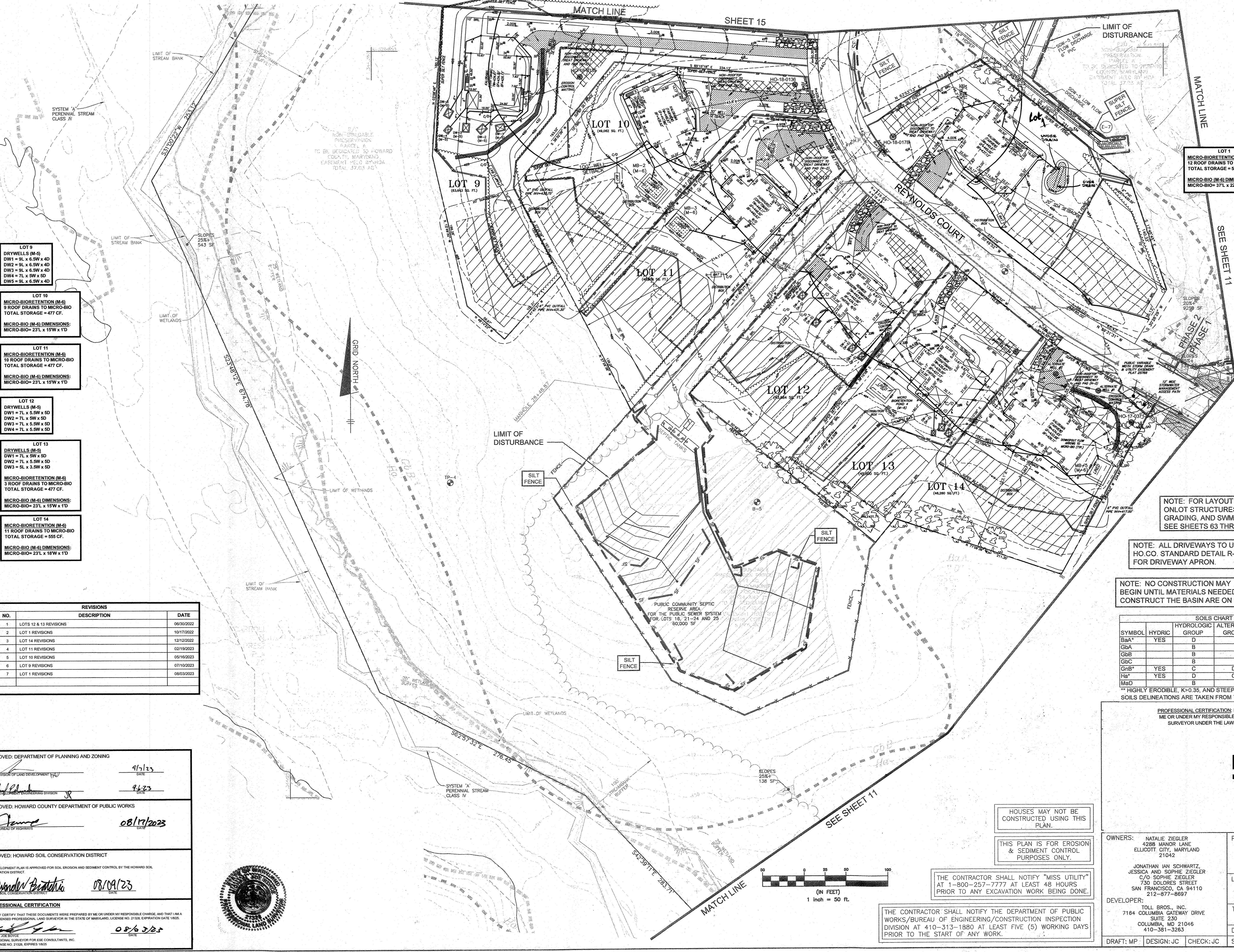
THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.



REVISIONS

NO.	DESCRIPTION	DATE
1	LOTS 21 & 23 REVISIONS	08/27/2021
2	LOT 22 REVISIONS	09/03/2021
3	LOT 27 REVISIONS	01/12/2022
4	LOT 28 REVISIONS	01/13/2022
5	LOT 28 REVISIONS	02/01/2022
6	LOT 29 REVISIONS	04/15/2022
7	LOTS 21 AND 22 REVISIONS	05/16/2022
8	LOTS 23 AND 25 REVISIONS	06/16/2022
9	LOTS 22 AND 24 REVISIONS	10/05/2022
10	BUILDABLE PRESERVATION PARCEL D REVISIONS	10/10/2022
11	LOT 24 REVISIONS	04/24/2023
12	LOTS 23 AND 25 REVISIONS	06/08/2023





NOTE: CONTRACTOR SHALL GRADE AND STABILIZE PROPOSED SWALES UPON COMPLETION OF MASS GRADING.

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

LEGEND

SOILS CLASSIFICATION	000
SOILS DELINEATION	---
EXISTING CONTOURS	480, 478
LIMIT OF WETLANDS	---
EXISTING WOODS LINE	---
PROPOSED WOODS LINE	---
EXISTING STRUCTURE	---
PROPOSED STRUCTURE	---
SOIL DISPOSAL	---
PROPOSED WELL BOX	---
PUBLIC FOREST CONSERVATION EASEMENT	---

SEDIMENT CONTROLS LEGEND

STABILIZED CONSTRUCTION ENTRANCE WITH BERM	---
SUPER SILT FENCE	SSF
SILT FENCE	SF
DIVERSION FENCE	DF
INLET PROTECTION	IP
STABILIZATION MATTING	---
EARTH DIKE	ED-1A-2
TEMPORARY STONE OUTLET STRUCTURE	TSOS
ROCK OUTLET PROTECTION	ROP
GABION INFLOW PROTECTION	GP
LIMIT OF DISTURBANCE	---
20% AND GREATER SLOPES	---
25% AND GREATER SLOPES	---
DRAINAGE DIVIDE TO SWALE	---

- LOT 9**
DRYWELLS (M-5)
DW1 = 9L x 6.5W x 4D
DW2 = 9L x 6.5W x 4D
DW3 = 9L x 6.5W x 4D
DW4 = 7L x 5W x 5D
DW5 = 9L x 6.5W x 4D
- LOT 10**
MICRO-BIORETENTION (M-6)
9 ROOF DRAINS TO MICRO-BIO
TOTAL STORAGE = 477 CF.
MICRO-BIO (M-6) DIMENSIONS:
MICRO-BIO = 23'L x 15'W x 1'D
- LOT 11**
MICRO-BIORETENTION (M-6)
10 ROOF DRAINS TO MICRO-BIO
TOTAL STORAGE = 477 CF.
MICRO-BIO (M-6) DIMENSIONS:
MICRO-BIO = 23'L x 15'W x 1'D
- LOT 12**
DRYWELLS (M-5)
DW1 = 7L x 5.5W x 5D
DW2 = 7L x 5W x 5D
DW3 = 7L x 5.5W x 5D
DW4 = 7L x 5.5W x 5D
- LOT 13**
DRYWELLS (M-5)
DW1 = 7L x 5W x 5D
DW2 = 7L x 5.5W x 5D
DW3 = 5L x 3.5W x 5D
- LOT 14**
MICRO-BIORETENTION (M-6)
11 ROOF DRAINS TO MICRO-BIO
TOTAL STORAGE = 555 CF.
MICRO-BIO (M-6) DIMENSIONS:
MICRO-BIO = 23'L x 15'W x 1'D

REVISIONS

NO.	DESCRIPTION	DATE
1	LOTS 12 & 13 REVISIONS	06/20/2022
2	LOT 1 REVISIONS	10/17/2022
3	LOT 14 REVISIONS	12/19/2022
4	LOT 11 REVISIONS	02/19/2023
5	LOT 10 REVISIONS	05/16/2023
6	LOT 9 REVISIONS	07/10/2023
7	LOT 1 REVISIONS	08/03/2023

NOTE: FOR LAYOUT OF ONLOT STRUCTURES, GRADING, AND SWM SEE SHEETS 63 THRU 67.

NOTE: ALL DRIVEWAYS TO USE HO.CO. STANDARD DETAIL R-6.05 FOR DRIVEWAY APRON.

NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	k-VALUE
BAA*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
GBA		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
GBB		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
GBc		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
Gnb*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Hb*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MbD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

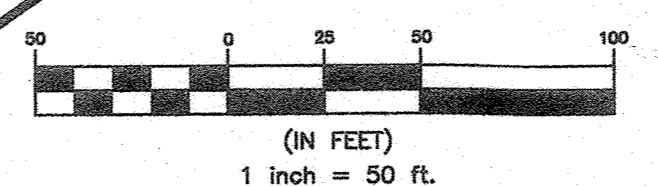
** HIGHLY ERODIBLE, K=0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES.
SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 9/7/23
 9/7/23

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 08/17/2023

APPROVED: HOWARD SOIL CONSERVATION DISTRICT
 08/09/23

PROFESSIONAL CERTIFICATION
 08/6/2023



THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DULY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF MARYLAND, LICENSE NO. 21328, EXPIRATION DATE 18/25.

I HEREBY CERTIFY ITEMS SHOWN ONLY FOR THE LOTS LISTED IN THE REVISIONS BLOCK; THESE ITEMS ARE REVISIONS FROM THE PREVIOUSLY APPROVED PLANS.

ESE CONSULTANTS
 ENGINEERING • PLANNING • SURVEYING • ENVIRONMENTAL

ESE Consultants, Inc.
 6731 Columbia Gateway Drive • Suite 120 • Columbia, MD 21046
 T: 410-872-9105

NEW SHEET *REVISED*

OWNERS:	NATALIE ZIEGLER 4288 MANOR LANE ELLCOTT CITY, MARYLAND 21042	PROJECT:	KINGS FOREST A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAN NO. 19791 CREATING LOTS 1-38, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU I
DEVELOPER:	JONATHAN IAN SCHWARTZ, JESSICA AND SOPHIE ZIEGLER C/O SOPHIE ZIEGLER 730 DOLORES STREET SAN FRANCISCO, CA 94110 212-877-8697	LOCATION:	TAX MAP: 23, GRID: 23 P/O PARCEL: 148 PUDDING LANE, ELLCOTT CITY, MD 21042 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
TITLE:	GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE II)	DATE:	NOVEMBER, 2019
DRAFT:	MP DESIGN: JC CHECK: JC	PROJECT NO.:	2501
SCALE:	AS SHOWN	SHEET:	74 OF 75

SOILS CHART - SOIL SURVEY HOWARD COUNTY, MARYLAND					
SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME	K-VALUE
Ba*	YES	D		BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES	0.32
Gba		B		GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES	0.20
Gbb		B		GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES	0.20
Gbc		B		GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	0.20
GnB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES	0.37/0.32
Ha*	YES	D	C	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES	0.37
MaD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES	0.24

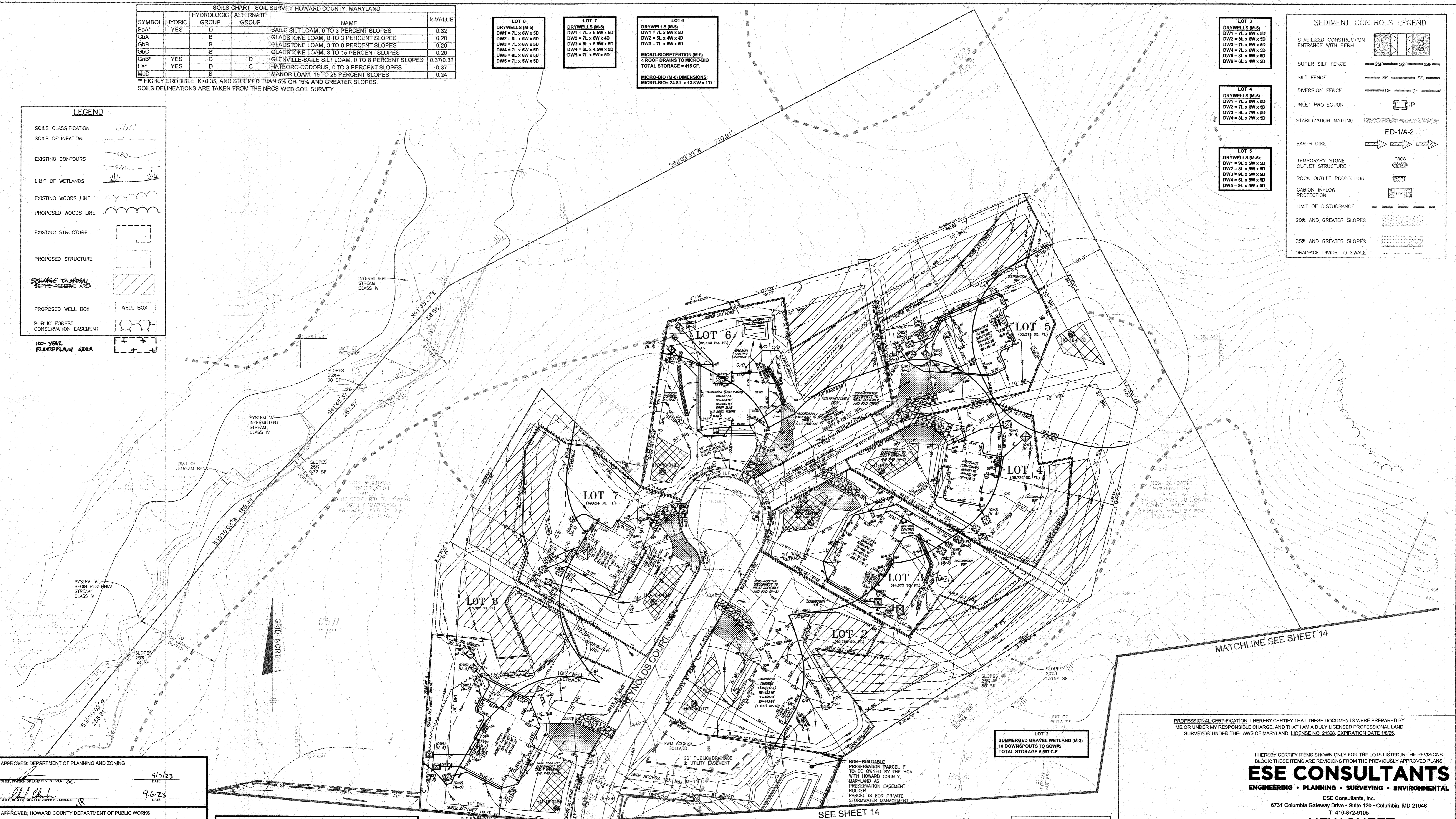
* HIGHLY ERODIBLE, K>0.35, AND STEEPER THAN 5% OR 15% AND GREATER SLOPES. SOILS DELINEATIONS ARE TAKEN FROM THE NRCS WEB SOIL SURVEY.

- LOT 8 DRYWELLS (M-5)**
DW1 = 7L x 6W x 5D
DW2 = 6L x 6W x 5D
DW3 = 7L x 6W x 5D
DW4 = 7L x 6W x 5D
DW5 = 6L x 6W x 5D
DW5 = 7L x 9W x 5D
- LOT 7 DRYWELLS (M-5)**
DW1 = 7L x 5.5W x 5D
DW2 = 7L x 6W x 4D
DW3 = 6L x 5.5W x 5D
DW4 = 6L x 4.5W x 5D
DW5 = 7L x 5W x 5D
- LOT 6 DRYWELLS (M-5)**
DW1 = 7L x 5W x 5D
DW2 = 5L x 4W x 4D
DW3 = 7L x 5W x 5D
- MICRO-BIORETENTION (M-6)**
4 ROOF DRAINS TO MICRO-BIO
TOTAL STORAGE = 415 CF.
- MICRO-BIO (M-6) DIMENSIONS:**
MICRO-BIO= 24.8L x 13.8W x 1D

- LOT 3 DRYWELLS (M-5)**
DW1 = 7L x 6W x 5D
DW2 = 6L x 6W x 5D
DW3 = 7L x 6W x 5D
DW4 = 7L x 6W x 5D
DW5 = 6L x 6W x 5D
DW6 = 6L x 4W x 5D
- LOT 4 DRYWELLS (M-5)**
DW1 = 7L x 6W x 5D
DW2 = 7L x 6W x 5D
DW3 = 6L x 7W x 5D
DW4 = 6L x 7W x 5D
- LOT 5 DRYWELLS (M-5)**
DW1 = 9L x 5W x 5D
DW2 = 6L x 5W x 5D
DW3 = 6L x 5W x 5D
DW4 = 6L x 5W x 5D
DW5 = 9L x 5W x 5D

SEDIMENT CONTROLS LEGEND	
STABILIZED CONSTRUCTION ENTRANCE WITH BERM	
SUPER SILT FENCE	
SILT FENCE	
DIVERSION FENCE	
INLET PROTECTION	
STABILIZATION MATTING	
EARTH DIKE	
TEMPORARY STONE OUTLET STRUCTURE	
ROCK OUTLET PROTECTION	
GABION INFLOW PROTECTION	
LIMIT OF DISTURBANCE	
20% AND GREATER SLOPES	
25% AND GREATER SLOPES	
DRAINAGE DVIDE TO SWALE	

LEGEND	
SOILS CLASSIFICATION	
SOILS DELINEATION	
EXISTING CONTOURS	
LIMIT OF WETLANDS	
EXISTING WOODS LINE	
PROPOSED WOODS LINE	
EXISTING STRUCTURE	
PROPOSED STRUCTURE	
SEWAGE DISPOSAL SEPTIC RESERVE AREA	
PROPOSED WELL BOX	
PUBLIC FOREST CONSERVATION EASEMENT	
100-YEAR FLOODPLAIN AREA	



APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT *BC* 9/1/23
 CHIEF, DESIGN & PERMITS DIVISION *AL* 9/6/23

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

James 08/17/2023
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD SOIL CONSERVATION DISTRICT

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

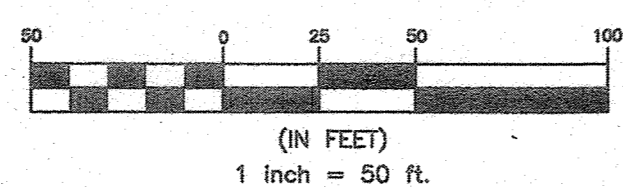
Olivera Bratchie 08/09/23
 HOWARD SOIL CONSERVATION DISTRICT

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DAILY LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF MARYLAND, LICENSE NO. 21326, EXPIRATION DATE 10/25.

Olivera Bratchie 08/09/23
 PROFESSIONAL SURVEYOR FOR ESE CONSULTANTS, INC.
 MD. LICENSE NO. 21326, EXPIRES 10/25

NO.	REVISIONS DESCRIPTION	DATE
1	LOT 6 REVISIONS	01/13/2023
2	LOT 7 REVISIONS	02/17/2023
3	LOT 8 REVISIONS	03/07/2023
4	LOT 3 REVISIONS	04/19/2023
5	LOTS 2 AND 5 REVISIONS	07/10/2023
6	LOTS 4 AND 6 REVISIONS	08/03/2023



NOTE: ALL DRIVEWAYS TO USE HO.CO. STANDARD DETAIL R-6.05 FOR DRIVEWAY APRON.

NOTE: NO CONSTRUCTION MAY BEGIN UNTIL MATERIALS NEEDED TO CONSTRUCT THE BASIN ARE ON SITE.

NOTE: FOR LAYOUT OF ONLOT STRUCTURES, GRADING, AND SWM SEE SHEETS 63 THRU 67.

SILT FENCE MAY BE REPLACED BY SUPER SILT FENCE IN THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY WORK.

HOUSES MAY NOT BE CONSTRUCTED USING THIS PLAN.

THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY RESPONSIBLE CHARGE, AND THAT I AM A DAILY LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF MARYLAND, LICENSE NO. 21326, EXPIRATION DATE 10/25.

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 6731 Columbia Gateway Drive • Suite 120 • Columbia, MD 21046
 T: 410-872-9105

NEW SHEET *REVISED*

OWNERS: NATALIE ZIEGLER
 4288 MANOR LANE
 ELLICOTT CITY, MARYLAND
 21042

JONATHAN IAN SCHWARTZ,
 JESSICA AND SOPHIE ZIEGLER
 C/O SOPHIE ZIEGLER
 730 DOLORES STREET
 SAN FRANCISCO, CA 94110
 212-877-8697

DEVELOPER: TOLL BROS. INC.
 7164 COLUMBIA GATEWAY DRIVE
 SUITE 230
 COLUMBIA, MD 21046
 410-381-3263

PROJECT: **KINGS FOREST**
 A RESUBDIVISION OF CARROLL/ZIEGLER PROPERTY NON-BUILDABLE BULK PARCEL K, AS SHOWN ON PLAT NO. 19791
 CREATING LOTS 1-36, BUILDABLE PARCEL D AND NON-BUILDABLE PARCELS A, B, C, AND E THRU 1

LOCATION: TAX MAP: 23, GRID: 23
 C/O PARCEL 148
 PUDDING LANE, ELLICOTT CITY, MD 21042
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

TITLE: **GRADING AND SEDIMENT EROSION CONTROL PLAN (PHASE II)**

DATE: NOVEMBER, 2019 PROJECT NO. 2501
 SCALE: AS SHOWN SHEET 75 OF 75

DRAFT: MP DESIGN: JC CHECK: JC