

SOILS LEGEND			
SOIL	NAME	CLASS	K*VALUE
GgB	Glennel loam, 3 to 8 percent slopes	B	0.20
GgC	Glennel loam, 8 to 15 percent slopes	B	0.20
GhB	Glennel-Urban land complex, 0 to 8 percent slopes	B	0.20

LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
x 448.5	SPOT ELEVATION
1" 50	EXISTING STORM DRAIN
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	EXISTING CABLE LINE
---	EXISTING GAS LINE
---	EXISTING OVERHEAD WIRE
---	EXISTING TREE LINE
GgB	SOIL LINES AND TYPES
---	EXISTING WETLANDS & WETLAND BUFFER
⊗	DENOTES EXISTING TREES TO BE REMOVED
⊙	DENOTES EXISTING TREES TO REMAIN
---	CRITICAL ROOT ZONE
---	DENOTES 15%-24.9% SLOPES

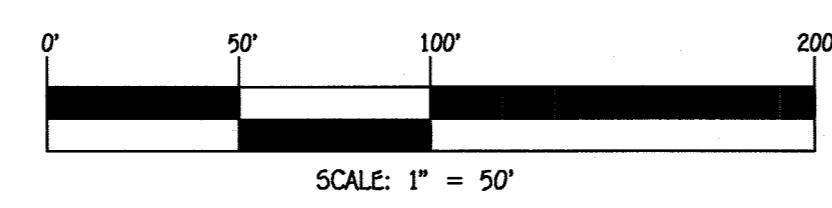
Specimen Tree Chart

Key (X#)	Species	Size (n.dbh)	CRZ (feet radius)	Comments
1	Tulip poplar	32.5	48.75	
2	Tulip poplar	31	46.5	
3	Tulip poplar	37	55.5	
4	Tulip poplar	37.5	56.25	twin stems
5	Tulip poplar	36	54	two specimen trunks joined at ground plus a 3" smaller trunk
6	Tulip poplar	44.5	66.75	fair, storm damage
7	Tulip poplar	31	46.5	
8	Black cherry	36	54	
9	Red oak	35	52.5	
10	Tulip poplar	43	64.5	
11	Tulip poplar	34	51	
12	Tulip poplar	35	52.5	
13	White pine	34	51	
14	White pine	31	46.5	
15	Tulip poplar	34	51	TO BE REMOVED
16	Tulip poplar	37	55.5	
17	Red maple	37	55.5	
18	Silver maple	55.5	83.25	



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-3899

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
N. J. Davis 6-25-19
 PLANNING DIRECTOR DATE



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. 36386, EXPIRATION DATE: 01/12/2020.
Stephen J. Jantz 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



OWNERS
 PARCEL 04
 LENNIS HAMMOCK
 4489 CENTENNIAL LANE
 ELLICOTT CITY, MD 21042
 PARCEL 05
 ROBERT & HELEN SPHODEN
 5710 SAN GABRIEL DRIVE
 PENSACOLA, FL 32504
 RIGHT-OF-WAY
 CHATEAU BUILDERS, INC.
 5305 VILLAGE CENTER DRIVE
 SUITE 305
 COLUMBIA, MD 21044
 PARCEL 174
 CHARLES & SHIRLEY HARDY
 10202 MAXINE STREET
 ELLICOTT CITY, MD 21042

DEVELOPER
 CENTENNIAL RESERVE, LLC
 308 MAGOTHY ROAD
 SEVERNA PARK, MARYLAND 21146
 DAVE WOESSNER
 410-461-0837

EXISTING CONDITIONS AND DEMOLITION PLAN
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
 TAX MAP NO.: 30 GRID NO.: 01 PARCEL NOS.: 04, 05, & 174
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 2 OF 15

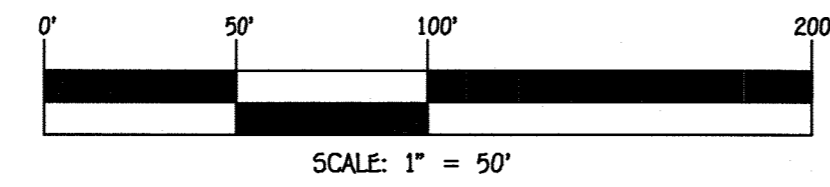
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GhB	Glenelg-Urban land complex, 0 to 0 percent slopes	B	0.20

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---	EXISTING WATER LINE
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 (410) 461-2992

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
William J. Davis 6-25-19
 PLANNING DIRECTOR DATE



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 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. 38396, EXPIRATION DATE: 01/12/2020.
Stephen J. Jurek 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE

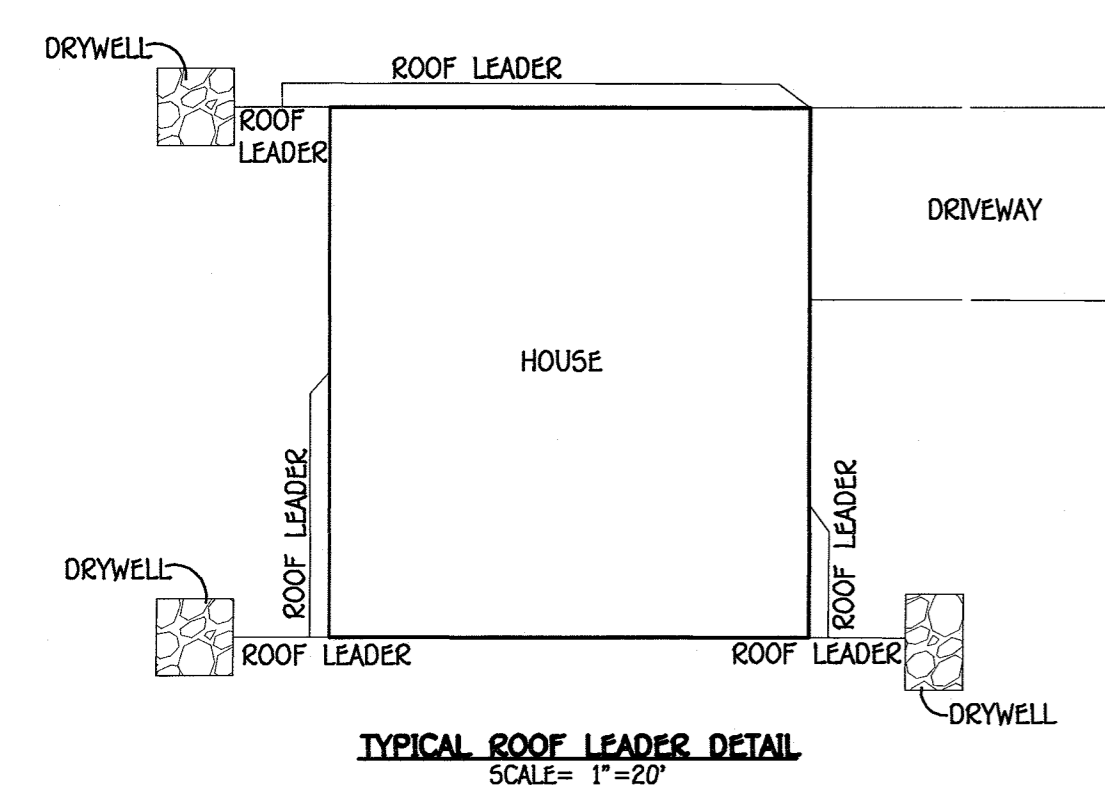


OWNERS	DEVELOPER
PARCEL 04 LENNIS HAMRICK 4489 CENTENNIAL LANE ELICOTT CITY, MD 21042 PARCEL 05 ROBERT & HELEN SPEDDEN 5710 SAN GABRIEL DRIVE PENSACOLA, FL 32504	CENTENNIAL RESERVE, LLC 308 MACOTHY ROAD SEVERNA PARK, MARYLAND 21146 DAVE WOESGNER 410-461-0837

EXISTING CONDITIONS AND DEMOLITION PLAN
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
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 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 3 OF 15

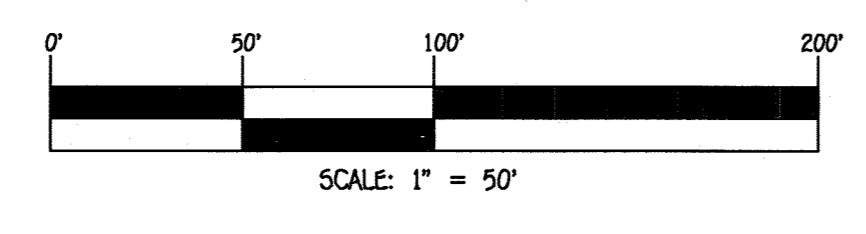
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TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
N. Williams
 PLANNING DIRECTOR
 6-25-19
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Stephen J. Jantz 6/3/19
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OWNERS
 PARCEL 04
 LENNIS HAMRICK
 4489 CENTENNIAL LANE
 ELLICOTT CITY, MD 21042
 PARCEL 05
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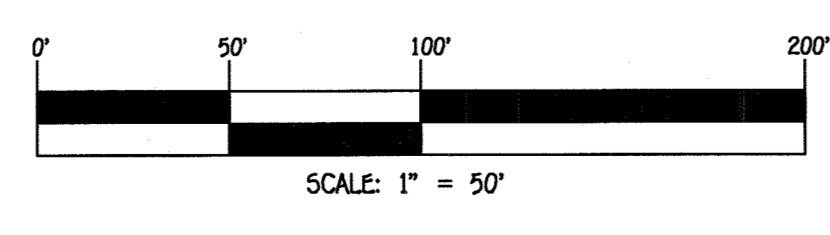
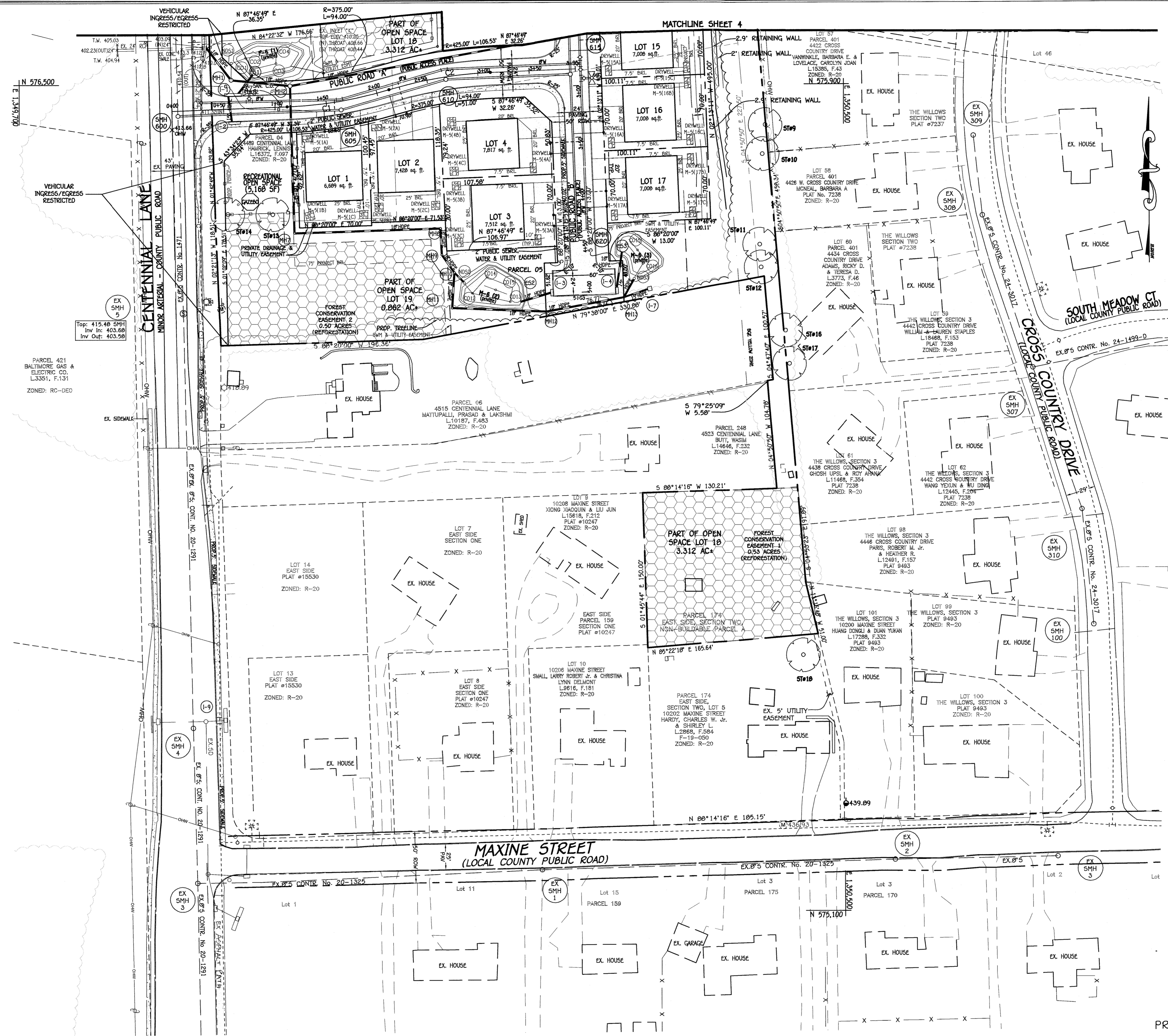
DEVELOPER
 CENTENNIAL RESERVE, LLC
 308 MCGOTHY ROAD
 SEVERNA PARK, MARYLAND 21146
 DAVE WOESENER
 410-461-0837

PRELIMINARY EQUIVALENT SKETCH PLAN
CENTENNIAL RESERVE
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 SHEET 4 OF 15

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CURVE DATA PUBLIC ROAD 'A'	
C1	STA. 1+11.36 TO STA. 2+11.62 RADIUS = 400.00' R ARC LENGTH = 100.26' TAN. = 50.40' DELTA = 97°10'51" CHORD = N80°35'58" E 100.00'
C2	STA. 2+11.62 TO STA. 3+11.88 RADIUS = 400.00' R ARC LENGTH = 100.26' TAN. = 50.40' DELTA = 86°49'59" CHORD = N80°35'58" E 100.00'



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Stephen J. Jeter 6/3/19
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 PARCEL 04
 LENNIS HAMMOCK
 4489 CENTENNIAL LANE
 ELLICOTT CITY, MD 21042
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 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
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 SHEET 5 OF 15

FISHER, COLLINS & CARTER, INC.
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 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
Nancy J. J. ... 6-25-19
 PLANNING DIRECTOR DATE

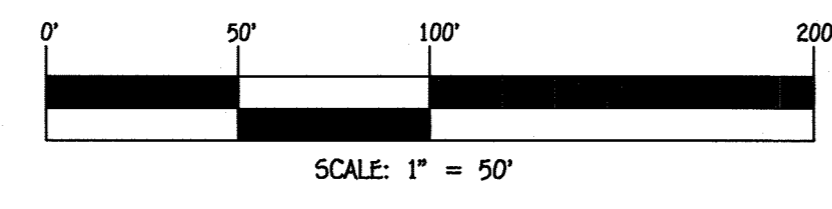
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Specimen Tree Chart				
Key (X#)	Species	Size (in. dbh)	CRZ (feet radius)	Comments
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 ELLICOTT CITY, MARYLAND 21042
 (410) 461-3995

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
 PLANNING DIRECTOR
 DATE: 6-25-19



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 Signature: Stephen J. [unclear] 6/3/19
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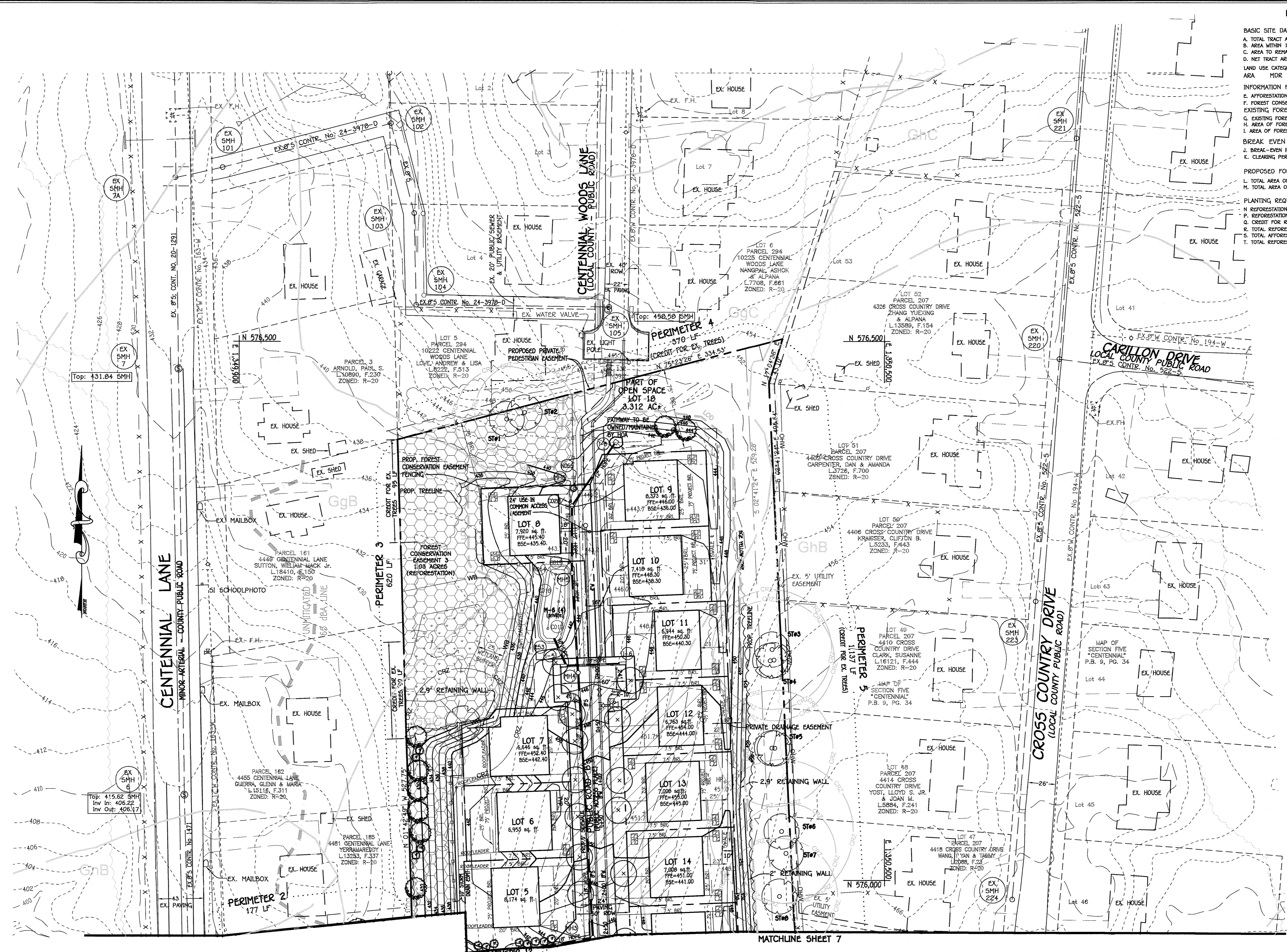
PERIMETER	SCHEDULE A PERIMETER LANDSCAPE EDGE												
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	SPECIMEN TREES
CATEGORY	Open space to Roadway	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Adjacent to Perimeter Properties	Open space to Roadway	Adjacent to Roadway	Adjacent to Roadway
LANDSCAPE TYPE	B	A	A	A	A	A	A	A	A	A	B	B	B
LINEAR FEET OF PERIMETER	19 LF	17 LF	620 LF	370 LF	1,137 LF	165 LF	280 LF	211 LF	527 LF	182 LF	84 LF	78 LF	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	-	-	YES, 189 LF	YES, 370 LF	YES, 1,137 LF	-	-	-	-	-	-	-	-
CREDIT FOR WALL, FENCE OR BERRM (YES, NO, LINEAR FEET) (DESCRIBE IF NEEDED)	-	-	-	-	-	-	-	-	-	-	-	-	-
NUMBER OF PLANTS REQUIRED													
SHADE TREES	1	3	7	0	0	3	5	4	9	4	2	2	2
EVERGREEN TREES	1	3	7	0	0	3	5	4	9	4	2	2	2
SHRUBS	1	3	7	0	0	3	5	4	9	4	2	2	2

STREET TREE SCHEDULE				
QTY.	SYMBOL	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
16	(X)	QUERCUS RUBRA NORTHERN RED OAK	2.5-3" CAL.	40' APART ON PUBLIC R/W
24	(O)	PLATANUS OCCIDENTALIS "BLOODGOOD" LONDON PLANETREE	2.5-3" CAL.	40' APART ON PUBLIC R/W

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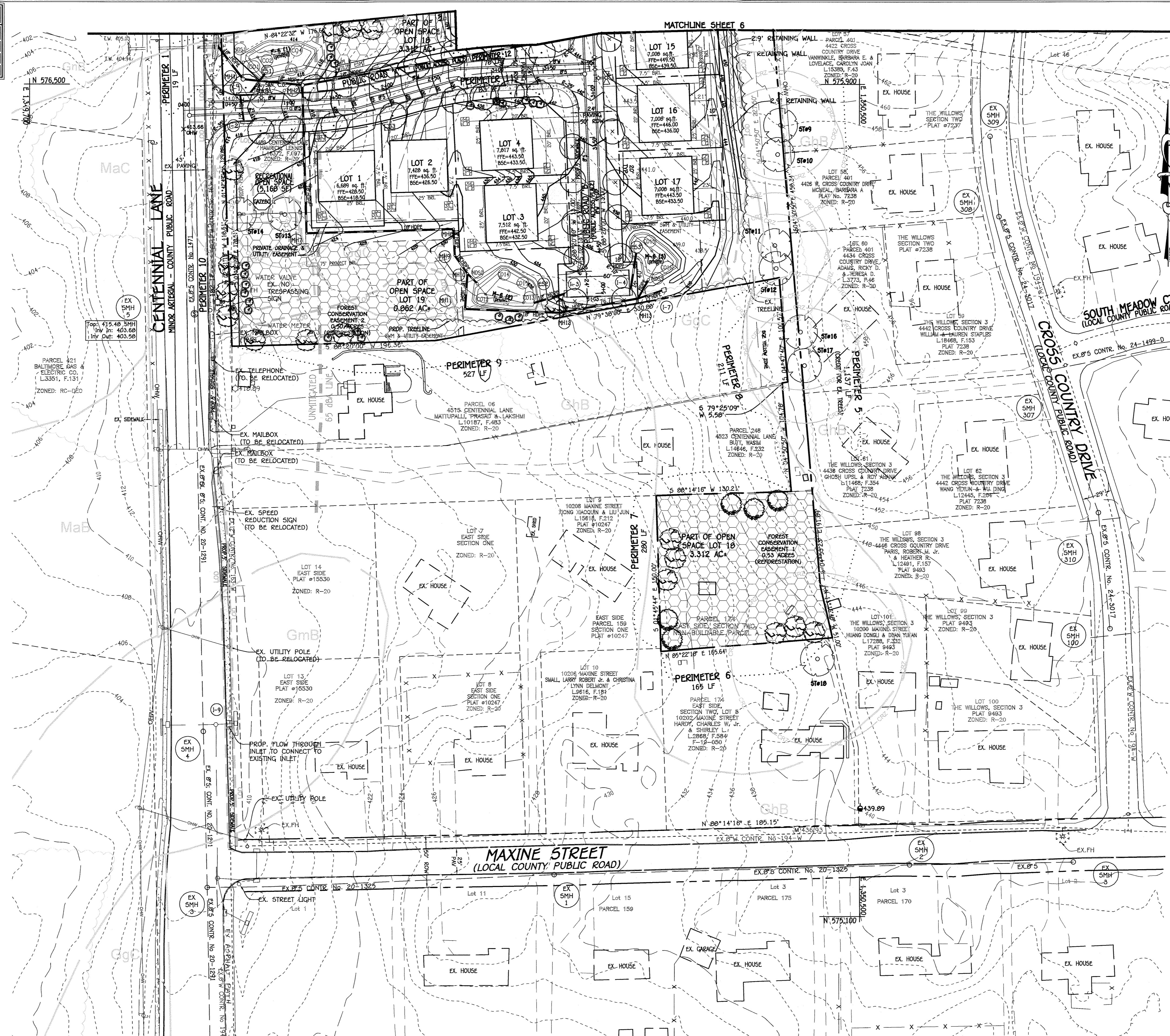
PRELIMINARY LANDSCAPE & FOREST CONSERVATION PLAN
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 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 6 OF 15



FOREST CONSERVATION WORKSHEET VERSION 1.0	
BASIC SITE DATA:	
A. TOTAL TRACT AREA	8.1 AC
B. AREA WITHIN 100 YEAR FLOODPLAIN	0
C. AREA TO REMAIN IN AGRICULTURAL PRODUCTION	0
D. NET TRACT AREA	8.1 AC
LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)	
AREA	MDR IDA HDR MPD CIA
INFORMATION FOR CALCULATIONS:	
E. AFFORESTATION THRESHOLD	0.15% x D = 1.2
F. FOREST CONSERVATION THRESHOLD	0.20% x D = 1.6
EXISTING FOREST COVER:	
G. EXISTING FOREST COVER (EXCLUDING FLOODPLAIN)	0.8
H. AREA OF FOREST ABOVE AFFORESTATION THRESHOLD	0.8
I. AREA OF FOREST ABOVE CONSERVATION THRESHOLD	0.0
BREAK-EVEN POINT:	
J. BREAK-EVEN POINT	0.0
K. CLEARING PERMITTED WITHOUT MITIGATION	0.0
PROPOSED FOREST CLEARING:	
L. TOTAL AREA OF FOREST TO BE CLEARED	0.8
M. TOTAL AREA OF FOREST TO BE RETAINED	0.0
PLANTING REQUIREMENTS:	
N. REFORESTATION FOR CLEARING ABOVE CONSERVATION THRESHOLD	0.0
O. REFORESTATION FOR CLEARING BELOW CONSERVATION THRESHOLD	1.5
P. CREDIT FOR RETENTION ABOVE CONSERVATION THRESHOLD	0.0
R. TOTAL REFORESTATION REQUIRED	1.5
S. TOTAL AFFORESTATION REQUIRED	0.1
T. TOTAL REFORESTATION AND AFFORESTATION REQUIRED	2.0

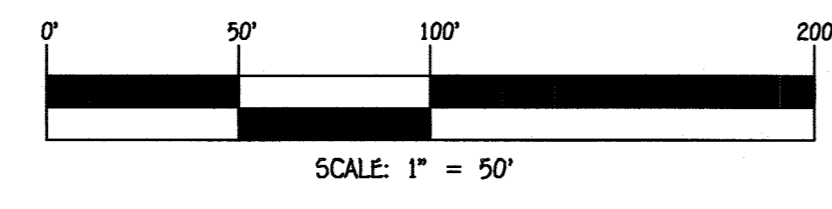
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 (410) 461-2995

TENTATIVELY APPROVED
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 HOWARD COUNTY
Valerie J. Davis 6-25-19
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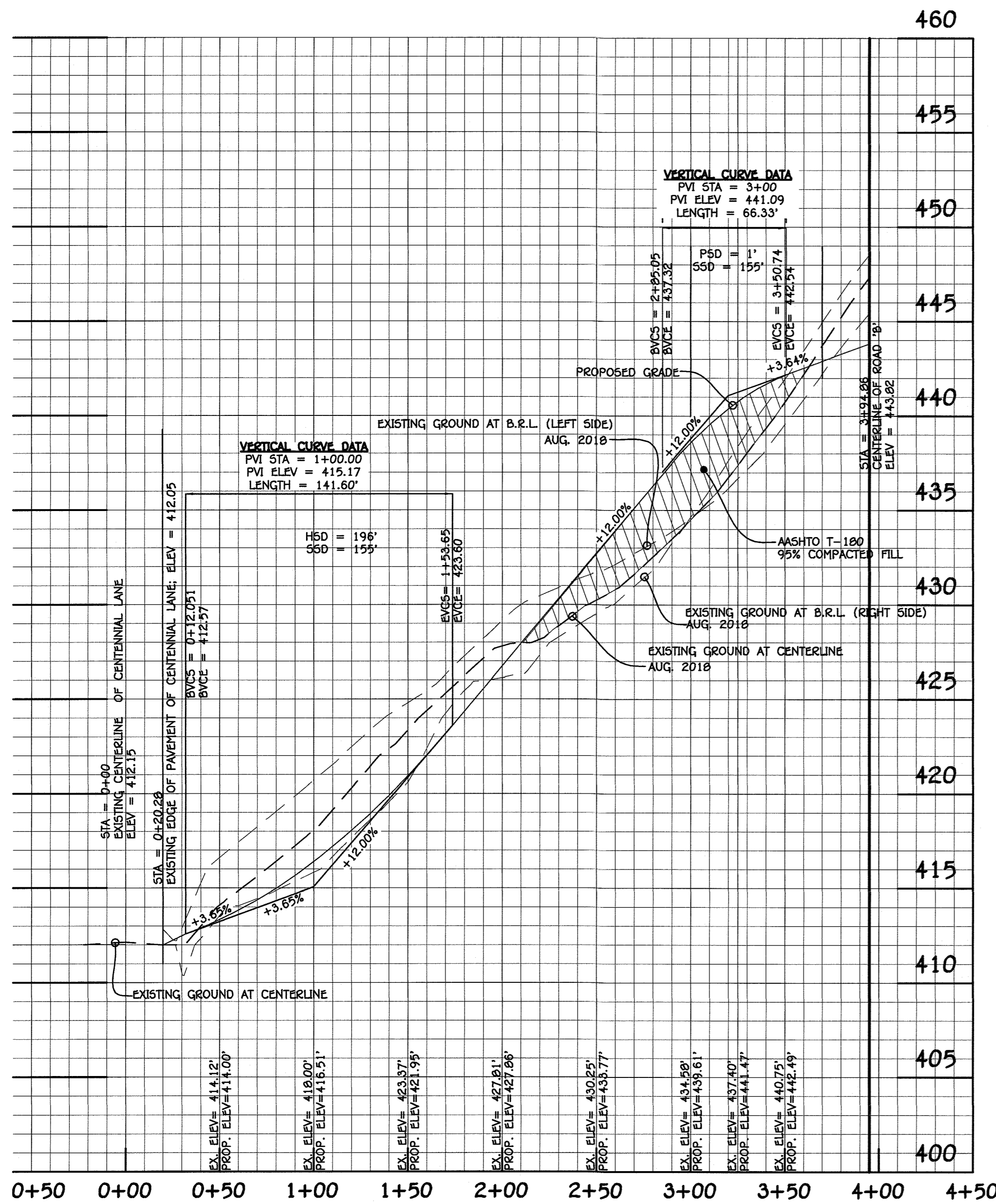
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Stephen J. Tuite 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



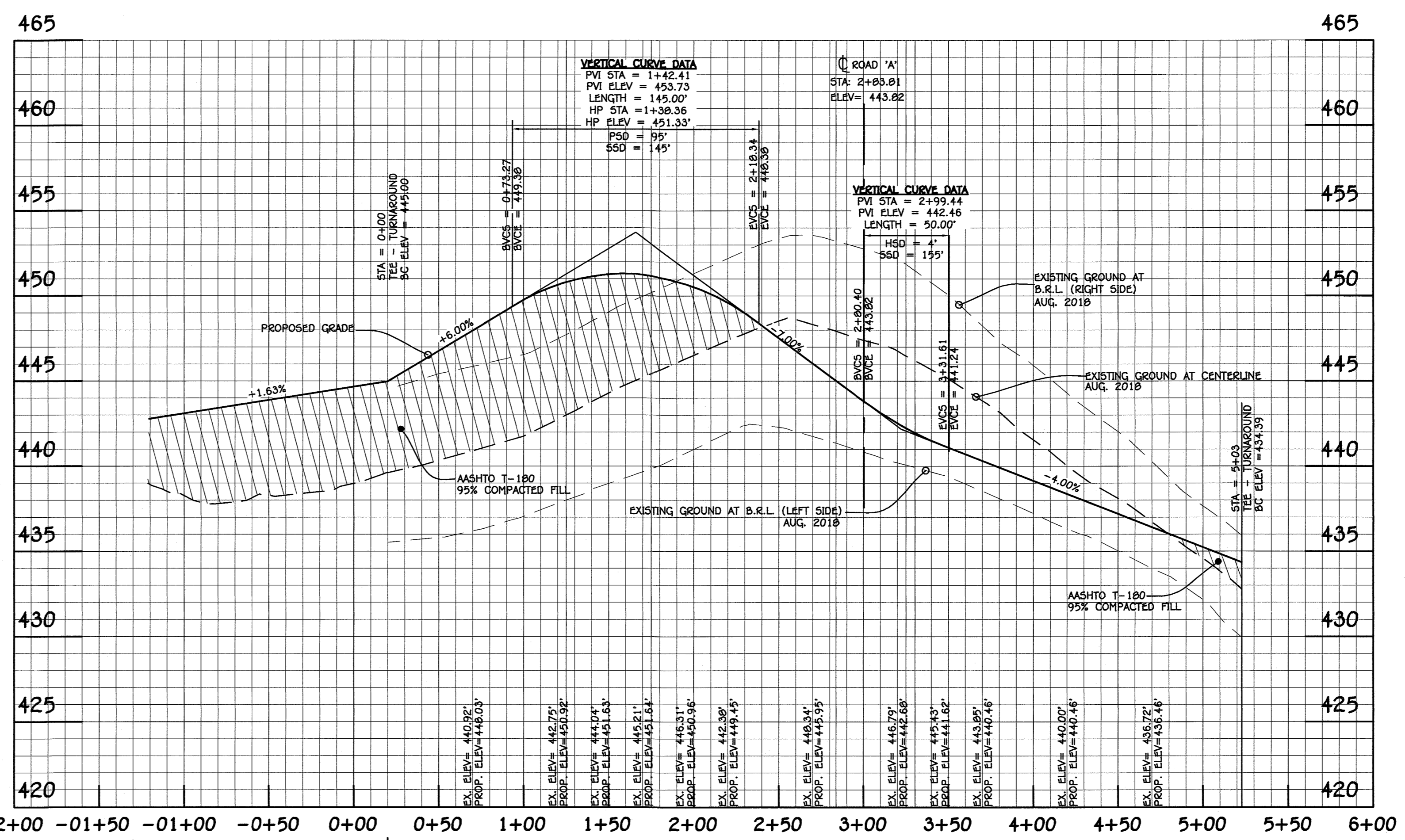
OWNERS
 PARCEL 04
 LENNIS HAMRICK
 4489 CENTENNIAL LANE
 ELLICOTT CITY, MD 21042
 PARCEL 05
 ROBERT & HELEN SPEDDEN
 5710 SAN GABRIEL DRIVE
 PENSACOLA, FL 32504
 RIGHT-OF-WAY
 CHATEAU BUILDERS, INC.
 5305 VILLAGE CENTER DRIVE
 SUITE 305
 COLUMBIA, MD 21044
 PARCEL 174
 CHARLES & SHIRLEY HARDY
 10202 MAXINE STREET
 ELLICOTT CITY, MD 21042

DEVELOPER
 CENTENNIAL RESERVE, LLC
 309 MACCOTTY ROAD
 SEVERNA PARK, MARYLAND 21146
 DAVE WOESSNER
 410-461-0837

PRELIMINARY LANDSCAPE & FOREST
 CONSERVATION PLAN
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
 TAX MAP NO.: 30 GRID NO.: 01 PARCEL NOS.: 04, 05, & 174
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 7 OF 15

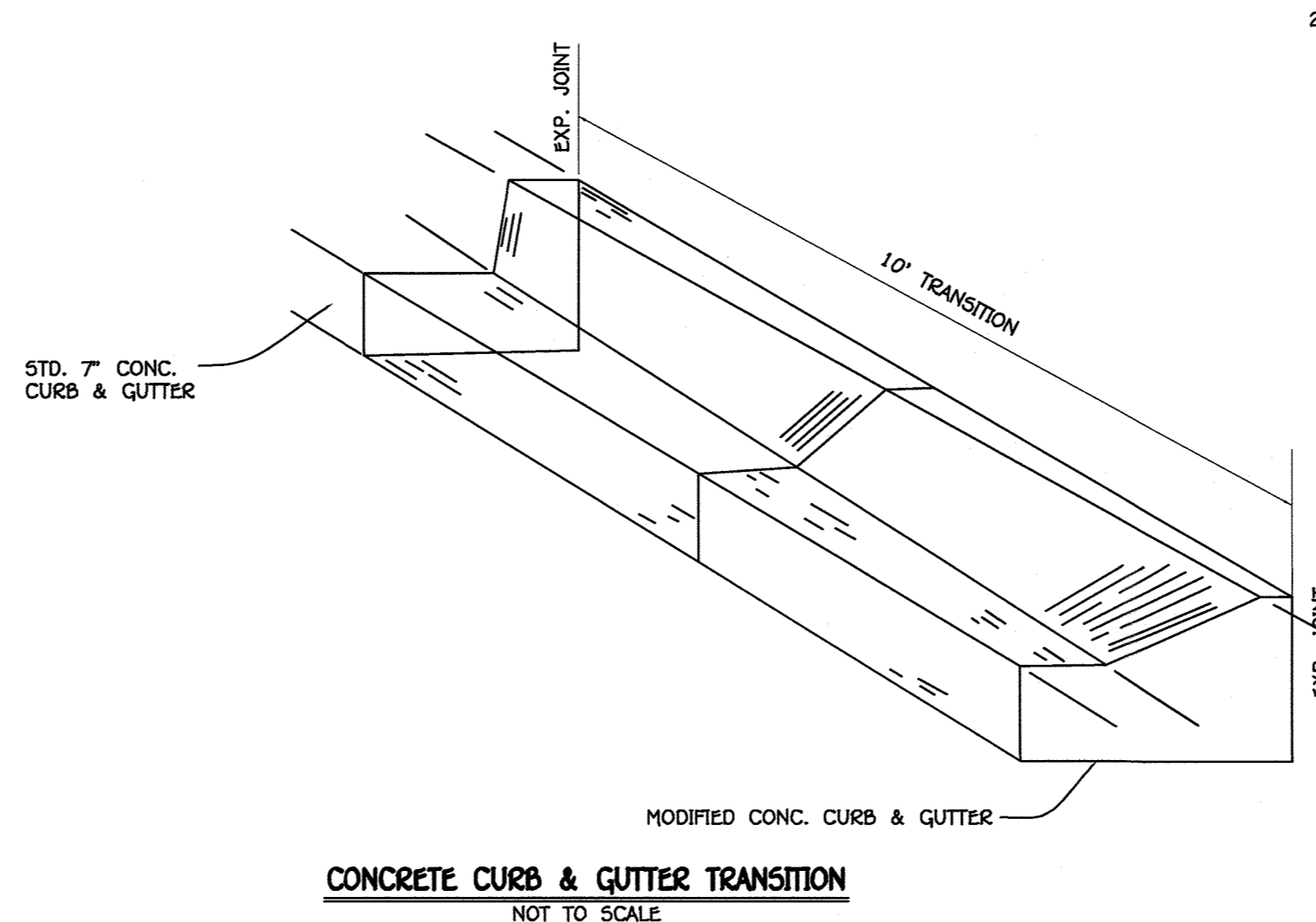
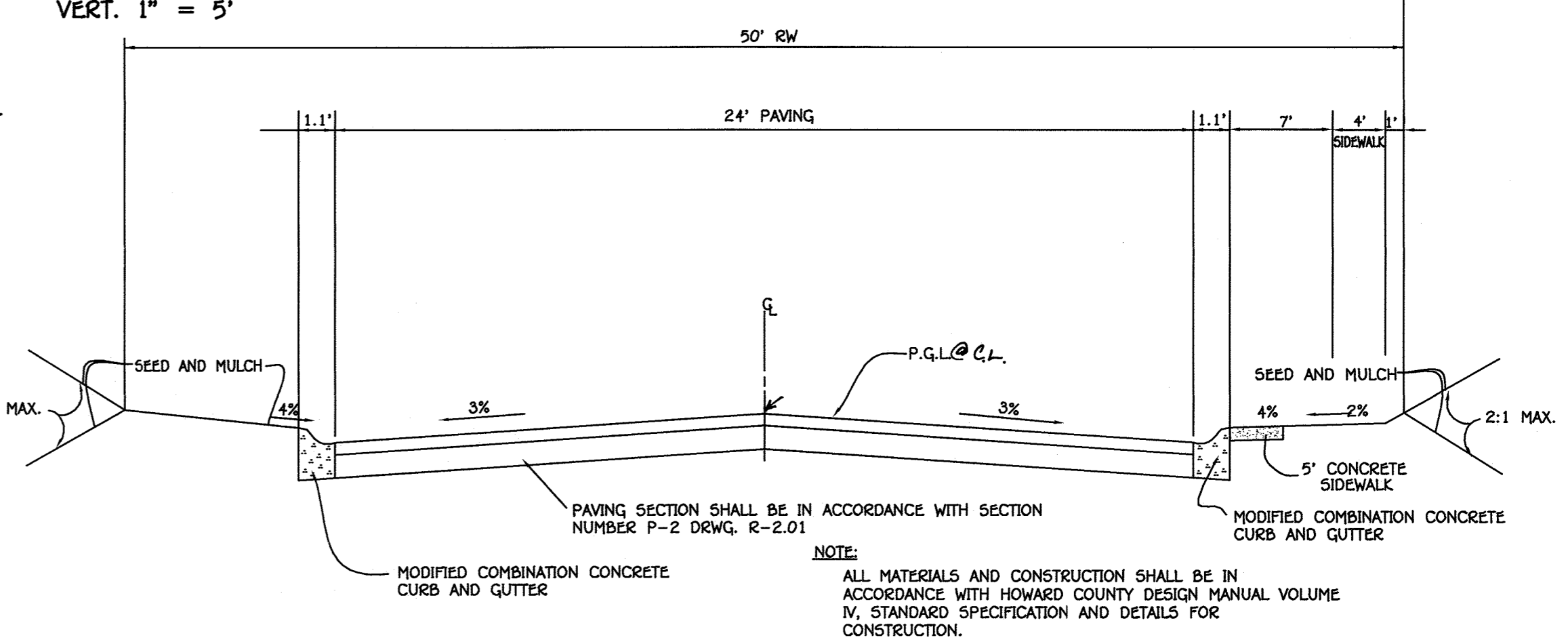
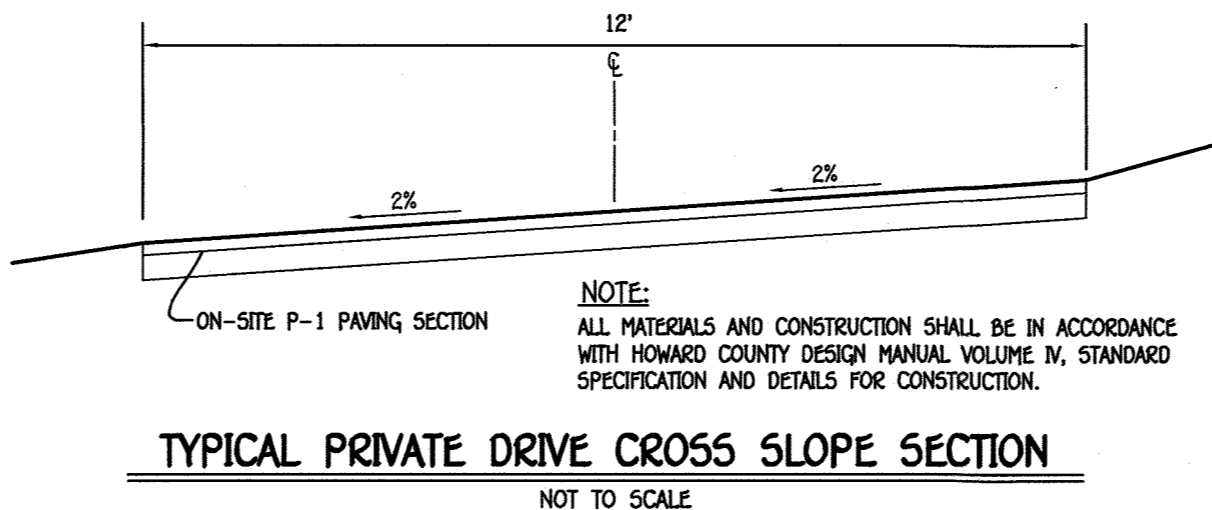
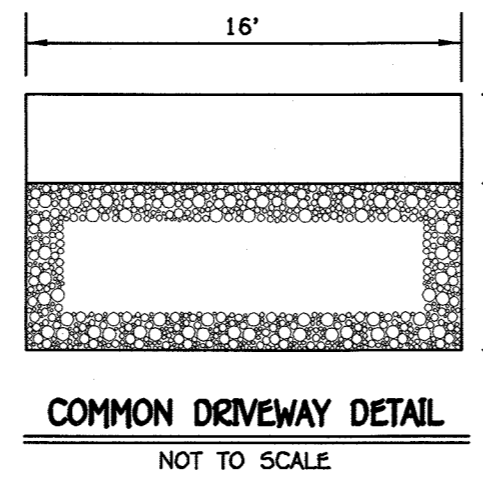


PROFILE ROAD 'A'
 DESIGN SPEED: 25 MPH
 CLASSIFICATION: PUBLIC ACCESS PLACE
 SCALE HORZ. 1" = 50'
 VERT. 1" = 5'



PROFILE ROAD 'B'
 DESIGN SPEED: 25 MPH
 CLASSIFICATION: PUBLIC ACCESS PLACE
 SCALE HORZ. 1" = 50'
 VERT. 1" = 5'

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5			5 TO <7			>7		
			MIN HMA WITH GAB	HMA WITH CONSTANT GAB		MIN HMA WITH GAB	HMA WITH CONSTANT GAB		MIN HMA WITH GAB	HMA WITH CONSTANT GAB	
P-1	PARKING BAYS: RESIDENTIAL AND NON-RESIDENTIAL PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY DRIVEWAYS	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	3.0	2.5			
		GRADED AGGREGATE BASE (GAB)	8.5	7.0	5.0	4.0	4.0	4.0			
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-SACS: RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.0	1.0	1.0	1.0	1.0	1.0			
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	2.0				
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0				



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. 36386, EXPIRATION DATE: 01/12/2020.
Stephan J. Smith 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



OWNERS
 PARCEL 04
 LENNIS HAMRICK
 4489 CENTENNIAL LANE
 ELLICOTT CITY, MD 21042
 PARCEL 05
 ROBERT & HELEN SPEDDEN
 5710 SAN GABRIEL DRIVE
 PENSACOLA, FL 32504
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 CHATEAU BUILDERS, INC.
 309 MAGDOOTH ROAD
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 COLUMBIA, MD 21044
 PARCEL 17A
 CHARLES & SHIRLEY HARDY
 10202 MAXINE STREET
 ELLICOTT CITY, MD 21042

DEVELOPER
 CENTENNIAL RESERVE, LLC
 309 MAGDOOTH ROAD
 SEVERNA PARK, MARYLAND 21146
 DAVE WOSSNER
 410-461-0837

PRELIMINARY ROAD PROFILES
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
 TAX MAP NO.: 30 GRID NO.: 01 PARCEL NOS.: 04, 05, & 174
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 8 OF 15

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2895

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
Nick DiStasio 6-25-19
 PLANNING DIRECTOR DATE

SOIL	NAME	CLASS	K VALUE
GgB	Glenelg loam, 3 to 8 percent slopes	B	0.20
GgC	Glenelg loam, 8 to 15 percent slopes	B	0.20
GhB	Glenelg-Urbán land complex, 0 to 8 percent slopes	B	0.20

SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
x 448.5	SPOT ELEVATION
10' 50'	EXISTING STORM DRAIN
10' 50'	PROPOSED STORM DRAIN PIPE
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	PROPOSED SEWER
---	PROPOSED WATER
---	EXISTING CABLE LINE
---	EXISTING GAS LINE
---	EXISTING OVERHEAD WIRE
---	PROPOSED PAVING/PATH
---	PROPOSED SIDEWALKS
---	FOREST CONSERVATION EASEMENT (REFORESTATION)
---	FOREST CONSERVATION EASEMENT FENCING
---	LIMIT OF DISTURBANCE
---	SUPER SILT FENCE
---	SILT FENCE
---	EXISTING TREE LINE
---	PROPOSED TREE LINE
---	DRYWELL (M-5)-TYPICAL
---	SOIL LINES AND TYPES
---	EXISTING WETLANDS & WETLAND BUFFER
---	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
---	PROPOSED ROOF LEADER
---	DENOTES EXISTING TREES TO BE REMOVED
---	DENOTES EXISTING TREES TO REMAIN
---	CRITICAL ROOT ZONE
---	DENOTES 15%-24.9% SLOPES

NOTE: SOIL PROFILES BASED ON ON-SITE OBSERVATION ON NOVEMBER 2, 2018. B-1 WAS NOT EXCAVATED DUE TO LOCATION OF AN EXISTING UTILITY LINE.

EXISTING GROUND 440' BOTTOM OF EXCAVATION B-1A 13.3' NOTE: WATER WAS ENCOUNTERED AT THE BOTTOM.

EXISTING GROUND 438.7' BOTTOM OF EXCAVATION B-2 13.5' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 448.5' BOTTOM OF EXCAVATION B-3 13.3' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 448.5' BOTTOM OF EXCAVATION B-4 13' NOTE: WATER WAS ENCOUNTERED DURING EXCAVATION AT 10'.

EXISTING GROUND 448.5' BOTTOM OF EXCAVATION B-5 13' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 433.5' BOTTOM OF EXCAVATION B-6 12.8' NOTE: WATER WAS ENCOUNTERED AT THE BOTTOM.

EXISTING GROUND 453.2' BOTTOM OF EXCAVATION B-7 13.3' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 448.5' BOTTOM OF EXCAVATION B-8 12' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 458.2' BOTTOM OF EXCAVATION B-9 13' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 432.9' BOTTOM OF EXCAVATION B-11 13' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 443.5' BOTTOM OF EXCAVATION B-12 13.5' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 431.0' BOTTOM OF EXCAVATION B-13 14' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 457.8' BOTTOM OF EXCAVATION B-14 12.7' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 448.7' BOTTOM OF EXCAVATION B-15 12.4' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 447.9' BOTTOM OF EXCAVATION B-16 13.4' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 431.9' BOTTOM OF EXCAVATION B-20 13.2' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 426.1' BOTTOM OF EXCAVATION B-21 13.5' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 425.5' BOTTOM OF EXCAVATION B-22 13.5' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 413.8' BOTTOM OF EXCAVATION B-23 13.5' NOTE: WATER WAS ENCOUNTERED AT THE BOTTOM.

EXISTING GROUND 417.4' BOTTOM OF EXCAVATION B-24 14.3' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 439.9' BOTTOM OF EXCAVATION B-17 13' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 431.4' BOTTOM OF EXCAVATION B-18 12' NOTE: WATER WAS ENCOUNTERED AT THE BOTTOM.

EXISTING GROUND 431.5' BOTTOM OF EXCAVATION B-19 13.2' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 432.9' BOTTOM OF EXCAVATION B-11 13' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 443.5' BOTTOM OF EXCAVATION B-12 13.5' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 431.0' BOTTOM OF EXCAVATION B-13 14' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

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EXISTING GROUND 448.7' BOTTOM OF EXCAVATION B-15 12.4' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 447.9' BOTTOM OF EXCAVATION B-16 13.4' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 431.9' BOTTOM OF EXCAVATION B-20 13.2' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 426.1' BOTTOM OF EXCAVATION B-21 13.5' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 425.5' BOTTOM OF EXCAVATION B-22 13.5' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 413.8' BOTTOM OF EXCAVATION B-23 13.5' NOTE: WATER WAS ENCOUNTERED AT THE BOTTOM.

EXISTING GROUND 417.4' BOTTOM OF EXCAVATION B-24 14.3' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

EXISTING GROUND 439.9' BOTTOM OF EXCAVATION B-17 13' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

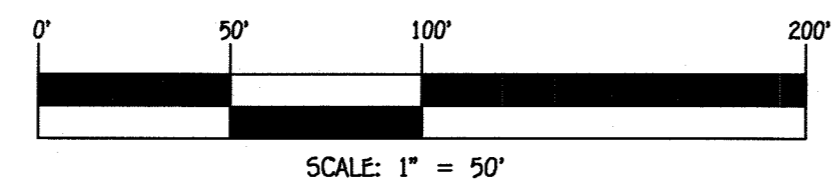
EXISTING GROUND 431.4' BOTTOM OF EXCAVATION B-18 12' NOTE: WATER WAS ENCOUNTERED AT THE BOTTOM.

EXISTING GROUND 431.5' BOTTOM OF EXCAVATION B-19 13.2' NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-3995

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
Walter J. Liu 6-25-19
 PLANNING DIRECTOR DATE



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. 36366, EXPIRATION DATE: 01/12/2020.
Stephen J. Jantz 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



OWNERS
 PARCEL 04
 LENNIS HAMRICK
 4489 CENTENNIAL LANE
 ELLICOTT CITY, MD 21042
 PARCEL 05
 ROBERT & HELEN SPEDDEN
 5710 SAN GABRIEL DRIVE
 PENSACOLA, FL 32504
 PARCEL 17A
 CHARLES & SHIRLEY HARDY
 10202 MAXINE STREET
 ELLICOTT CITY, MD 21042

DEVELOPER
 CENTENNIAL RESERVE, LLC
 309 MAGDOFF ROAD
 SEVERNA PARK, MARYLAND 21146
 DAVE WOESNER
 410-461-0837

PRELIMINARY GRADING, SEDIMENT, & EROSION CONTROL PLAN AND SOILS MAP
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
 TAX MAP NO.: 30 GRID NO.: 01 PARCEL NOS.: 04, 05, & 174
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 9 OF 15

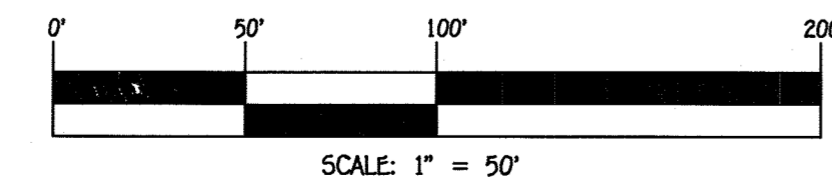
SOILS LEGEND			
SOIL	NAME	CLASS	K VALUE
GgB	Glenelg loam, 3 to 8 percent slopes	B	0.20
GgC	Glenelg loam, 8 to 15 percent slopes	B	0.20
GhB	Glenelg-Urban land complex, 0 to 8 percent slopes	B	0.20

LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
x 449.5	SPOT ELEVATION
18" 50	EXISTING STORM DRAIN
---	PROPOSED STORM DRAIN PIPE
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	PROPOSED SEWER
---	PROPOSED WATER
---	EXISTING CABLE LINE
---	EXISTING GAS LINE
---	EXISTING OVERHEAD WIRE
---	PROPOSED PAVING/PATH
---	PROPOSED SIDEWALKS
---	FOREST CONSERVATION EASEMENT (REFORESTATION)
---	FOREST CONSERVATION EASEMENT FENCING
---	LIMIT OF DISTURBANCE
---	SUPER SILT FENCE
---	SILT FENCE
---	EXISTING TREE LINE
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---	DRYWELL (M-5)-TYPICAL
---	SOIL LINES AND TYPES
---	EXISTING WETLANDS & WETLAND BUFFER
---	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
---	PROPOSED ROOF LEADER
---	DENOTES EXISTING TREES TO BE REMOVED
---	DENOTES EXISTING TREES TO REMAIN
---	CRITICAL ROOT ZONE
---	DENOTES 15%-24.9% SLOPES

EXISTING GROUND 457.8'	EXISTING GROUND 446.7'
BOTTOM OF EXCAVATION 12.7'	BOTTOM OF EXCAVATION 12.4'
NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.	NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.
EXISTING GROUND 447.9'	EXISTING GROUND 439.9'
BOTTOM OF EXCAVATION 13.4'	BOTTOM OF EXCAVATION 13'
NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.	NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.
EXISTING GROUND 431.4'	EXISTING GROUND 431.5'
BOTTOM OF EXCAVATION 12'	BOTTOM OF EXCAVATION 13.2'
NOTE: WATER WAS ENCOUNTERED AT THE BOTTOM.	NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALDWIN NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-3999

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
Nathan Howard 6-25-19
 PLANNING DIRECTOR DATE



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. 38386, EXPIRATION DATE: 01/12/2020.
Stephen J. Smith 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



OWNERS
 PARCEL 04
 LENNIS HAMRICK
 4489 CENTENNIAL LANE
 ELLICOTT CITY, MD 21042
 PARCEL 09
 ROBERT & HELEN SPEDDEN
 5710 SAN GABRIEL DRIVE
 PENSACOLA, FL 32504
 RIGHT-OF-WAY
 CHATEAU BUILDERS, INC.
 308 MAGDOOTH ROAD
 SUITE 305
 COLUMBIA, MD 21044
 PARCEL 174
 CHARLES & SHIRLEY HARDY
 10202 MAXINE STREET
 ELLICOTT CITY, MD 21042

DEVELOPER
 CENTENNIAL RESERVE, LLC
 308 MAGDOOTH ROAD
 SEVERNA PARK, MARYLAND 21146
 DAVE WOESSNER
 410-461-0837

PRELIMINARY GRADING, SEDIMENT, & EROSION CONTROL PLAN AND SOILS MAP
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
 TAX MAP NO.: 30 GRID NO.: 01 PARCEL NOS.: 04, 05, & 174
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 10 OF 15
 SP-19-001

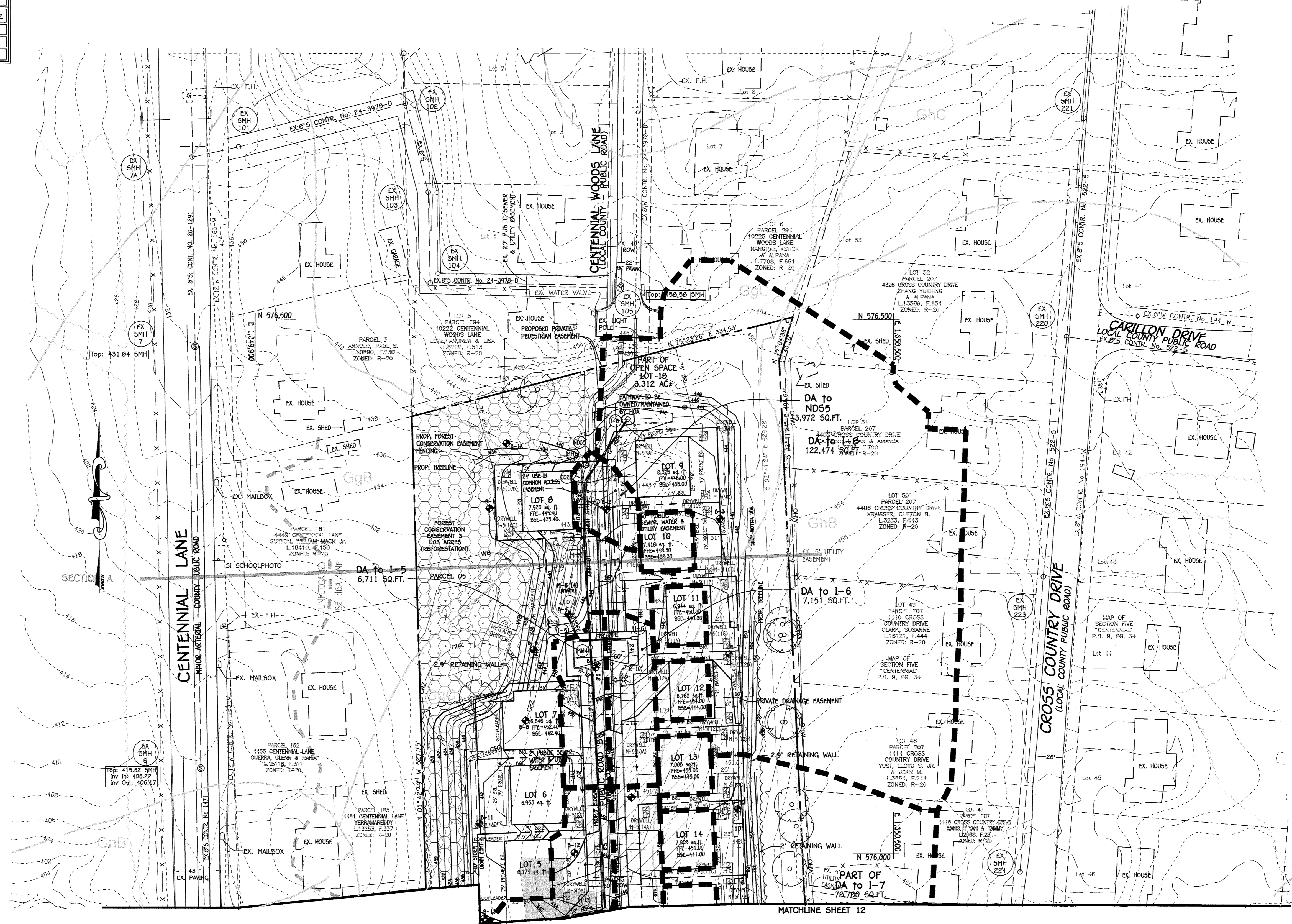


EXISTING GROUND 431.9'	EXISTING GROUND 426.1'
BOTTOM OF EXCAVATION 13.2'	BOTTOM OF EXCAVATION 13.5'
NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.	NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.
EXISTING GROUND 425.5'	EXISTING GROUND 413.6'
BOTTOM OF EXCAVATION 13.5'	BOTTOM OF EXCAVATION 13.5'
NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.	NOTE: WATER WAS ENCOUNTERED AT THE BOTTOM.
EXISTING GROUND 417.4'	
BOTTOM OF EXCAVATION 14.3'	
NOTE: NO ROCK OR WATER WAS ENCOUNTERED DURING EXCAVATION.	

SOILS LEGEND			
SOIL	NAME	CLASS	K VALUE
GgB	Glenn loam, 3 to 8 percent slopes	B	0.20
GgC	Glenn loam, 0 to 15 percent slopes	B	0.20
GhB	Glenn-Urbn land complex, 0 to 0 percent slopes	B	0.20

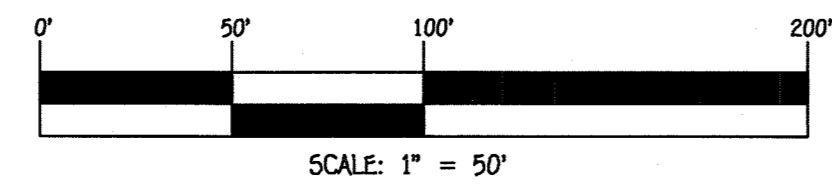
LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
x 448.5	SPOT ELEVATION
---	EXISTING STORM DRAIN
---	PROPOSED STORM DRAIN PIPE
---	EXISTING WATER LINE
---	EXISTING SEWER LINE
---	EXISTING CABLE LINE
---	EXISTING GAS LINE
---	EXISTING OVERHEAD WIRE
---	PROPOSED PAVING/ PATH
---	PROPOSED SIDEWALKS
---	FOREST CONSERVATION EASEMENT (REFORESTATION)
---	FOREST CONSERVATION EASEMENT FENCING
---	EXISTING TREE LINE
---	PROPOSED TREE LINE
---	DRYWELL (M-5)-TYPICAL
---	SOIL LINES AND TYPES
---	DRAINAGE DIVIDE
---	EXISTING WETLANDS & WETLAND BUFFER
---	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
---	PROPOSED ROOF LEADER
---	DENOTES EXISTING TREES TO REMAIN
---	CRITICAL ROOT ZONE
---	DENOTES 15%-24.9% SLOPES

DRAINAGE AREA INFORMATION			
STR #	AREA	C FACTOR	Tc
1-8	2.01 AC	0.32	10 MIN.
1-7	1.01 AC	0.31	10 MIN.
1-6	0.16 AC	0.65	10 MIN.
1-5	0.15 AC	0.72	10 MIN.
ND55	0.09 AC	0.35	11 MIN.
ND54	0.58 AC	0.54	11 MIN.



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2995

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
Nancy J. Davis 6-25-19
 PLANNING DIRECTOR DATE



PROFESSIONAL CERTIFICATION
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Stephen Smith 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



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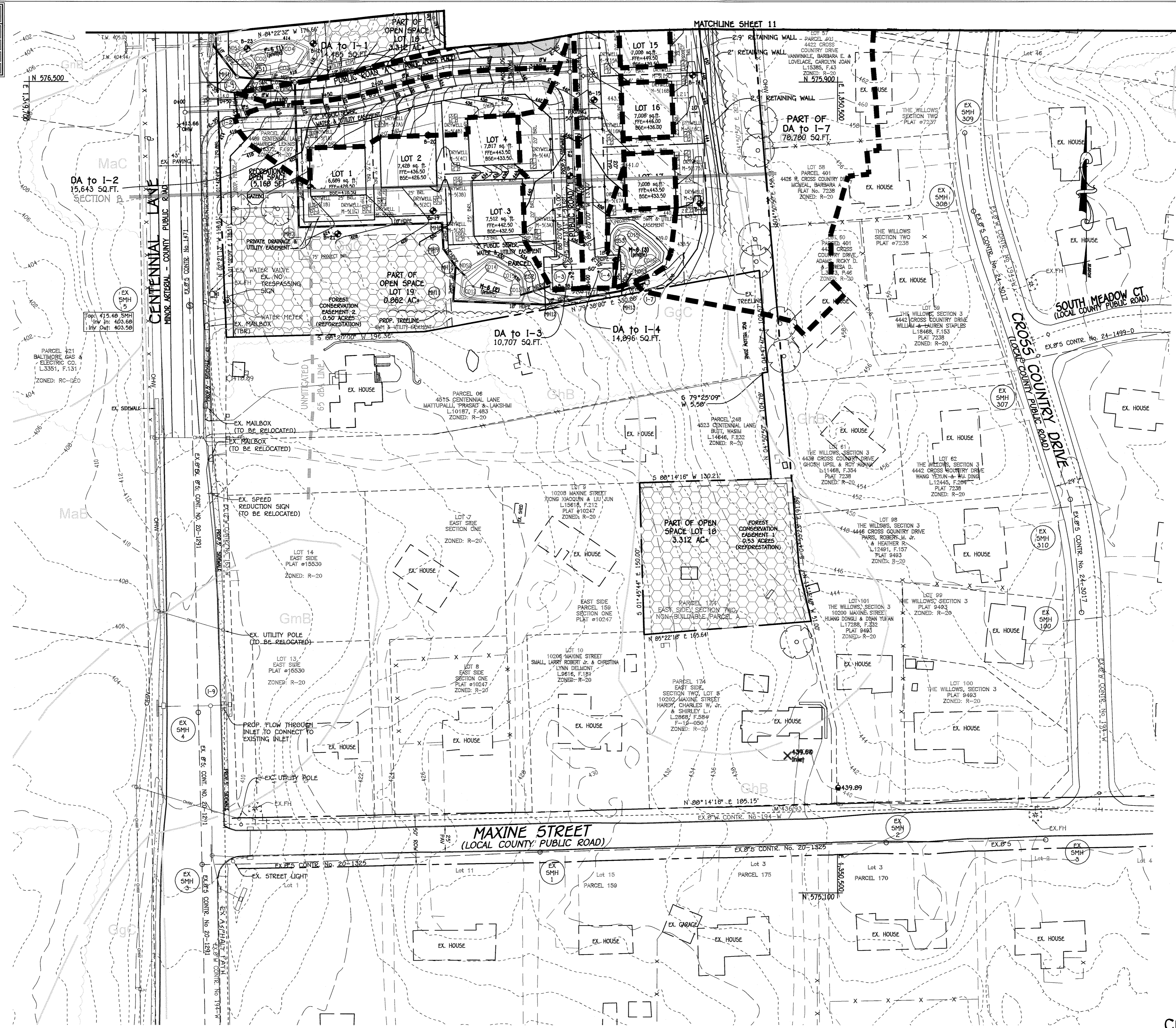
DEVELOPER
 CENTENNIAL RESERVE, LLC
 309 MACGOTHY ROAD
 SEVERNA PARK, MARYLAND 21146
 DAVE WOESSNER
 410-461-0837

INLET DRAINAGE AREA MAP
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
 TAX MAP NO.: 30 GRID NO.: 01 PARCEL NOS.: 04, 05, & 174
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 11 OF 15

SOILS LEGEND			
SOIL	NAME	CLASS	K VALUE
GgB	Glennig loam, 3 to 8 percent slopes	B	0.20
GgC	Glennig loam, 8 to 15 percent slopes	B	0.20
GhB	Glennig-Urban land complex, 0 to 8 percent slopes	B	0.20

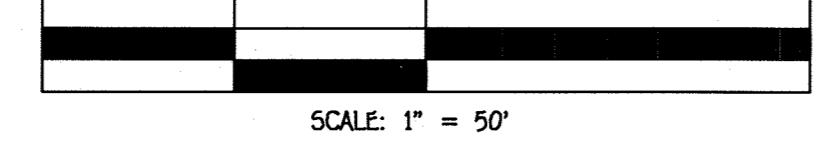
LEGEND	
SYMBOL	DESCRIPTION
---	EXISTING CONTOUR 2' INTERVAL
---	EXISTING CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 10' INTERVAL
---	PROPOSED CONTOUR 2' INTERVAL
x 448.5	SPOT ELEVATION
18" 50	EXISTING STORM DRAIN
18" 50	PROPOSED STORM DRAIN PIPE
CL FA	EXISTING WATER LINE
CL WL	EXISTING SEWER LINE
---	EXISTING CABLE LINE
---	EXISTING GAS LINE
---	EXISTING OVERHEAD WIRE
---	PROPOSED PAVING/ PATH
---	PROPOSED SIDEWALKS
---	FOREST CONSERVATION EASEMENT (REFORESTATION)
---	FOREST CONSERVATION EASEMENT FENCING
---	EXISTING TREE LINE
---	PROPOSED TREE LINE
---	DRYWELL (M-5)-TYPICAL
---	SOIL LINES AND TYPES
---	DRAINAGE DIVIDE
---	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
---	PROPOSED ROOF LEADER
---	DENOTES EXISTING TREES TO REMAIN
---	CRITICAL ROOT ZONE
---	DENOTES 15%-24.9% SLOPES

DRAINAGE AREA INFORMATION			
STR #	AREA	C FACTOR	Tc
I-4	0.33 AC	0.69	10 MIN.
I-3	0.25 AC	0.65	10 MIN.
I-2	0.36 AC	0.62	10 MIN.
I-1	0.98 AC	0.58	10 MIN.
ND53	0.34 AC	0.69	11 MIN.
ND52	0.25 AC	0.65	11 MIN.
ND51	0.11 AC	0.35	11 MIN.



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2999

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
Walter J. Smith 6-25-19
 PLANNING DIRECTOR DATE



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. 36366, EXPIRATION DATE: 01/12/2020.
Andrew J. Jurek 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



OWNERS		DEVELOPER	
PARCEL 04 LENNIS HAMBICK 4489 CENTENNIAL LANE ELLICOTT CITY, MD 21042	RIGHT-OF-WAY CHAITEAU BUILDERS, INC. 308 MACDUFFY ROAD SUITE 305 COLUMBIA, MD 21044	CENTENNIAL RESERVE, LLC 308 MACDUFFY ROAD SEVERNA PARK, MARYLAND 21146	DAVE WOESSNER 410-461-0837
PARCEL 05 ROBERT & HELEN SPEDDEN 5710 SAN GABRIEL DRIVE PENSACOLA, FL 32504	PARCEL 174 CHARLES & SHIRLEY HARDY 10202 MAXINE STREET ELLICOTT CITY, MD 21042		

INLET DRAINAGE AREA MAP
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
 ZONED R-20
 TAX MAP NO.: 30 GRID NO.: 01 PARCEL NOS.: 04, 05, & 174
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 12 OF 15

Infiltration and Filter System Construction Specifications

Infiltration and filter systems either take advantage of existing permeable soils or create a permeable medium such as sand for WC, and Re v. In some instances where permeability is great, these facilities may be used for Op as well. The most common systems include infiltration trenches, infiltration basins, sand filters, and organic filters.

When properly planted, vegetation will thrive and enhance the functioning of these systems. For example, pre-treatment buffers will trap sediments that often are bound with phosphorus and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide aeration for stormwater to permeate soil for groundwater recharge. Finally, successful plantings provide aesthetic value and wildlife habitat making these facilities more desirable to the public.

Design Constraints:

- > Planting buffer strips of at least 20 feet will cause sediments to settle out before reaching the facility, thereby reducing the possibility of clogging.
- > Determine areas that will be saturated with water and water table depth so that appropriate plants may be selected (hydrology will be similar to bioretention facilities, see Figure A.5 and Table A.4 for planting material guidance).
- > Plants known to send down deep taproots should be avoided in systems where filter fabric is used as part of facility design.
- > Test soil conditions to determine if soil amendments are necessary.
- > Plants shall be located so that access is possible for structure maintenance.
- > Stabilize heavy flow areas with erosion control mats or sod.
- > Temporarily divert flows from seeded areas until vegetation is established.
- > See Table A.5 for additional design considerations.

Bio-retention

Soil Bed Characteristics

The characteristics of the soil for the bioretention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollutant uptake (nitrogen and phosphorus) is accomplished through absorption and microbial activity within the soil profile. Therefore, soils must balance their chemical and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume (Environmental Quality Resources (EQE), 1996; Engineering Technology Inc. and Biohabitats, Inc. (ET&B), 1993). Soils should fall within the SM, ML, SC classifications or the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.9"/hr) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 1" in diameter. Brush or seeds from noxious weeds (e.g., Johnson Grass, Mugwort, Nutsedge, and Canada Thistle or other noxious weeds as specified under COMAR 15.08.01.05.) should not be present in the soils. Placement of the planting soil should be in 12 to 18 lifts that are loosely compacted (tamped lightly with a backhoe bucket or traversed by dozer tracks). The specific characteristics are presented in Table A.3.

Table A.3 Planting Soil Characteristics

Parameter	Value
pH range	5.2 to 7.00
Organic matter	1.5 to 4.0% (by weight)
Magnesium	35 lbs. per acre, minimum
Phosphorus (phosphate - P2O5)	75 lbs. per acre, minimum
Potassium (potash - K2O)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	0 to 5%
Silt	30 to 55%
Sand	35 to 60%

Mulch Layer

The mulch layer plays an important role in the performance of the bioretention system. The mulch layer helps maintain soil moisture and avoids surface sealing, which reduces permeability. Mulch helps prevent erosion, and provides a microenvironment suitable for soil biota at the mulch/soil interface. It also serves as a pretreatment layer, trapping the finer sediments, which remain suspended after the primary pretreatment.

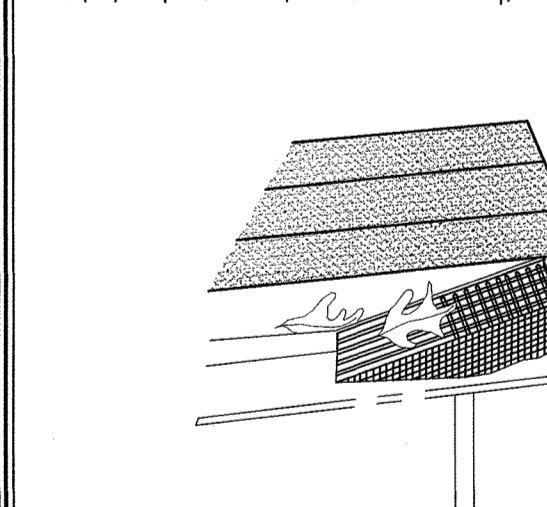
The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (biocycled or stored for at least 12 months), uniform in color, and free of other materials such as weed seeds, soil, roots, etc. The mulch should be applied to a maximum depth of three inches. Grass clippings should not be used as a mulch material.

Planting Guidance

Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bioretention simulates an upland-species ecosystem. The community should be dominated by trees, but have a distinct community of understory trees, shrubs and herbaceous materials by creating a diverse, dense plant cover. A bioretention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure.

The proper selection and installation of plant materials is key to a successful system. There are essentially three zones within a bioretention facility (Figure A.5). The lowest elevation supports plant species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge

is the highest elevation and generally supports plants adapted to drier conditions. A sample of appropriate plant materials for bioretention facilities are included in Table A.4. The layout of plant material should be flexible, but should follow the general principles described in Table A.5. The objective is to have a system, which resembles a random, and natural plant layout, while maintaining optimal conditions for plant establishment and growth. For a more extensive bioretention plan, consult ET&B, 1993 or Clayton and Schaefer, 1997.

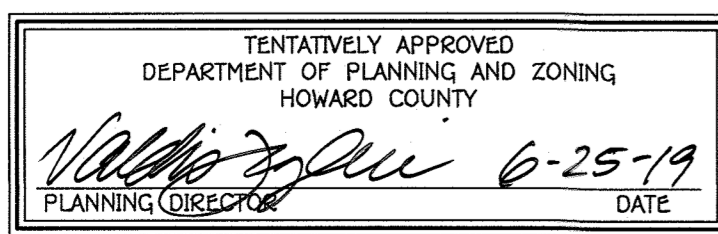


GUTTER DRAIN FILTER DETAIL

NOT TO SCALE

STORMWATER MANAGEMENT NOTES

- STORMWATER MANAGEMENT IS PROVIDED IN ACCORDANCE WITH CHAPTER 3, "ENVIRONMENTAL SITE DESIGN" OF THE 2007 MARYLAND STORMWATER MANAGEMENT DESIGN MANUAL, EFFECTIVE MAY 4, 2010.
- MAXIMUM CONTRIBUTING ROOF TOP AREA TO EACH DOWNSPOUT SHALL BE 1,000 SQ. FT. OR LESS.
- DRYWELLS SHALL BE PROVIDED AT LOCATIONS WHERE THE LENGTH OF DISCONNECTION IS LESS THAN 75' AT 5%. THE SIZE AND CONSTRUCTION OF THE DRYWELL SHALL BE IN ACCORDANCE WITH THE DETAIL SHOWN ON THIS SHEET.
- FINAL GRADING IS SHOWN ON THE SITE DEVELOPMENT PLAN.



RETAINING WALL NOTES:

- TIMBER SHALL BE EITHER:
- CREOSOTE TREATED RAILROAD TIES
 - CCA TREATED LANDSCAPING TIMBERS (40 lbs./CF RETENTION)
- HARDWARE SHALL BE HOT DIPPED GALVANIZED
- WEEP HOLES WITH OR WITHOUT GRAVEL DRAIN ARE MINIMUM MEASURES FOR GROUNDWATER. A DRAIN SYSTEM SHOULD BE DESIGNED & UTILIZED. DESIGN SHALL BE VERIFIED FOR SITE SPECIFIC SOIL CONDITION BY A PROFESSIONAL GEOTECHNICAL ENGINEER.

RETAINING WALL DETAIL

NOT TO SCALE

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. 36366, EXPIRATION DATE: 01/12/2020.

Stephen Jester 6/3/19
DATE OF PROFESSIONAL ENGINEER



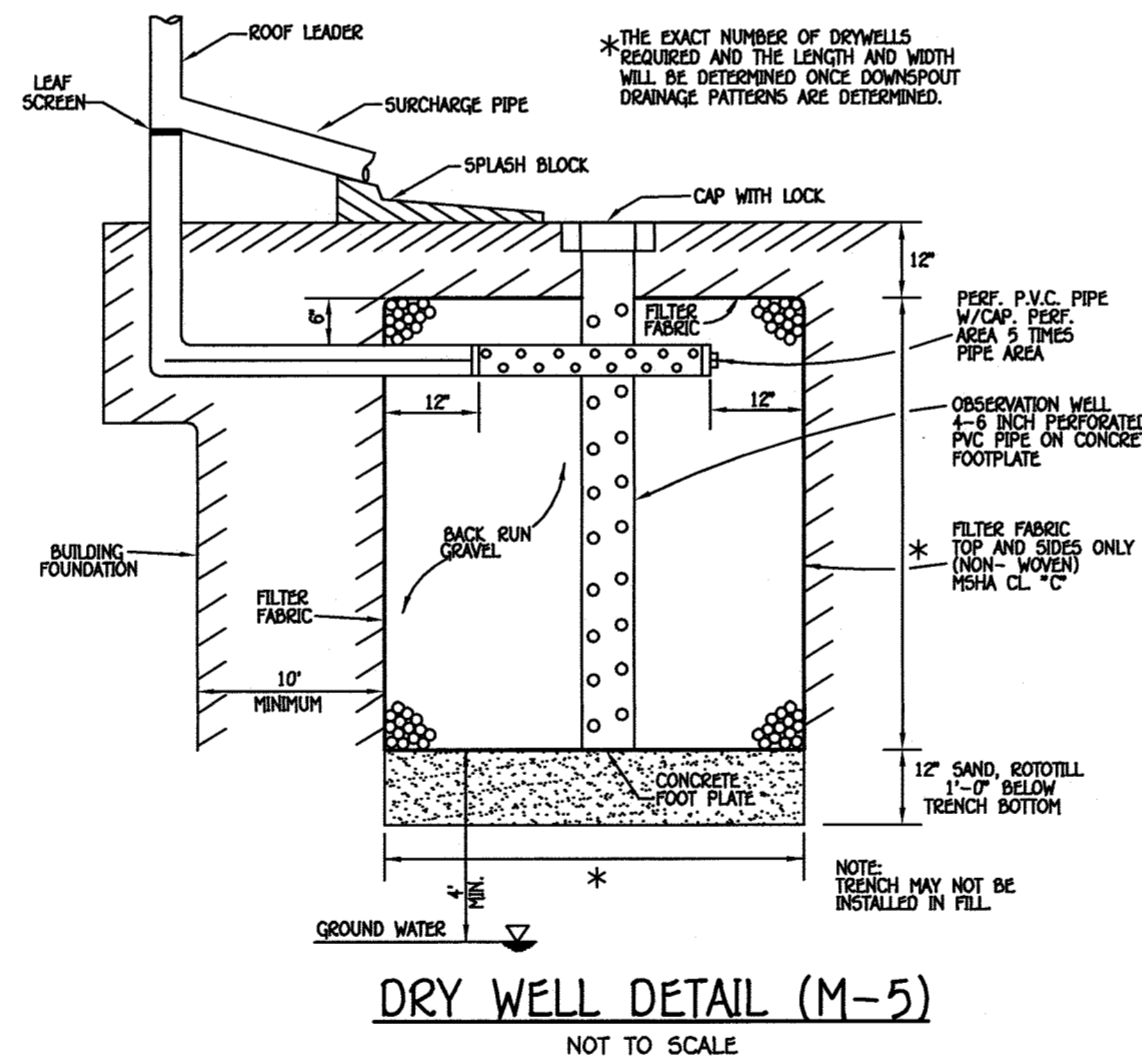
OPERATION & MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED DRY WELLS (M-5)

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

DRY WELL CHART

LOT No.	DRYWELL No.	AREA OF ROOF PEER DRYWELL	VOLUME REQUIRED	VOLUME PROVIDED	AREA OF TREATMENT	L	W	D
LOT 1	1A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 1	1B	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 1	1C	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 2	2A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 2	2B	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 2	2C	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 3	3A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 3	3B	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 3	3C	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 3	4A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 4	4B	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 4	4C	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 5	5A	705 SQ.FT.	90 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 6	6A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 7	7A	1037 SQ.FT.	132 CU.FT.	132 CU.FT.	100%*	11'	6'	5'
LOT 8	8A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 8	8B	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 8	8C	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 9	9A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 9	9B	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 9	9C	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 10	10A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 10	10B	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 10	10C	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 11	11A	600 SQ.FT.	76 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 11	11B	800 SQ.FT.	102 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 11	11C	600 SQ.FT.	76 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 12	12A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 12	12B	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 12	12C	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 13	13A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 13	13B	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 13	13C	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 14	14A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 14	14B	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 14	14C	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 15	15A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 15	15B	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 15	15C	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 16	16A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 16	16B	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 16	16C	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 17	17A	792 SQ.FT.	101 CU.FT.	120 CU.FT.	100%*	10'	6'	5'
LOT 17	17B	1005 SQ.FT.	128 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'
LOT 17	17C	953 SQ.FT.	121 CU.FT.	145 CU.FT.	100%*	8.5'	8.5'	5'

* AREA OF TREATMENT EXCEEDS THAT REQUIRED.



DRY WELL DETAIL (M-5)

NOT TO SCALE

Table B.4. Materials Specifications for Micro-Bioretenion, Rain Gardens & Landscape Infiltration

Material	Specification	Size	Notes
Plantings	see Appendix A: Table A.4	n/a	plantings are site-specific
Filtering soil (2' to 4' deep)	loamy sand 60-65% compost 35-40% or sandy loam 30% coarse sand 30% compost 40%	n/a	USDA soil types loamy sand or sandy loam; clay content <5%
Organic Content	min. 10% by dry weight (ASTM D 2974)	n/a	
Mulch	shredded hardwood	n/a	aged 6 months, minimum
Pea gravel diaphragm	pea gravel: ASTM-D-448	No. 8 or No. 9 (1/8" to 3/8")	
Curbin drain	ornamental stone: washed	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASTHO M-43	No. 57 or No. Aggregate (3/8" to 3/4")	
Underdrain piping	1" 758, Type P5 2B or AASTHO M-27B	4" to 6" rigid schedule 40 PVC or 50835	slotted or perforated pipe: 3/8" perf., 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underdrain pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth.
Poured in place concrete (if required)	MSHA Mix No. 3; f = 3500 psi at 28 days, normal weight, air-entrained; reinforcing to meet ASTM-B15-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved data or local standards require design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 308.2R, vertical loading 0.10 or H-20; allowable horizontal loading (based on soil pressures); and analysis of potential cracking.
Sand	AASTHO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Gneiss (AASTHO) #10 are not acceptable. No calcium carbonate or dolomite sand substitutions are acceptable. No "rock dust" can be used for sand.

STORMWATER MANAGEMENT NOTES AND DETAILS

CENTENNIAL RESERVE

LOTS 1 THRU 17, OPEN SPACE LOT 18
4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET

TAX MAP NO.: 30 GRID NO.: 01 PARCEL Nos.:04, 05, & 174

ZONED R-20

SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

SCALE: AS SHOWN DATE: APRIL, 2019

SHEET 13 OF 15

OWNERS

PARCEL 04
LENNIS HAMRICK
4489 CENTENNIAL LANE
ELLIOTT CITY, MD 21042

RIGHT-OF-WAY
CHATEAU BUILDERS, INC.
3305 VILLAGE CENTER DRIVE
SUITE 305
COLUMBIA, MD 21044

PARCEL 05
ROBERT & HELEN SPEDDEN
5710 SAN GABRIEL DRIVE
PENSACOLA, FL 32504

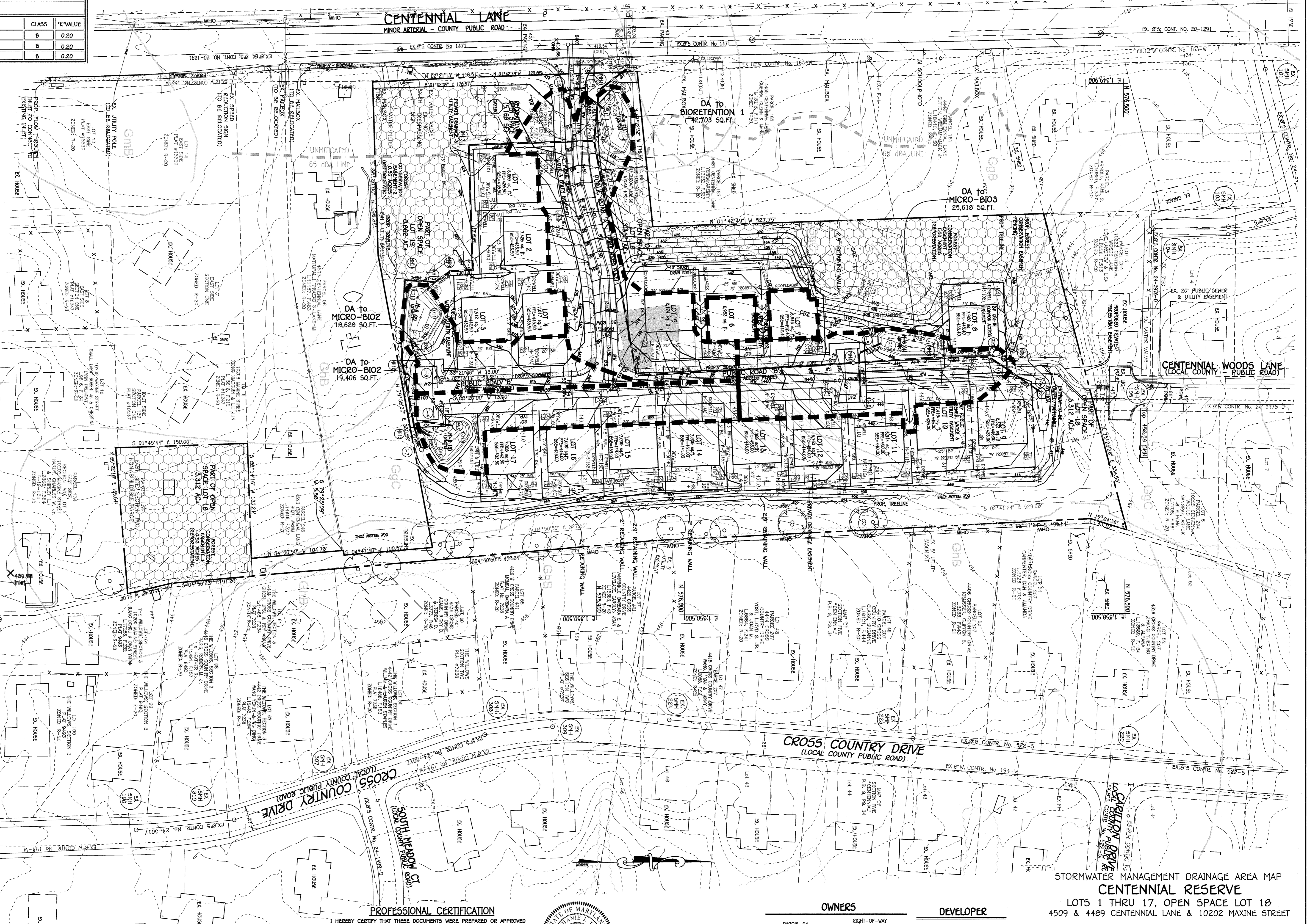
DEVELOPER

CENTENNIAL RESERVE, LLC
308 HADITH CENTER DRIVE
SEVERNA PARK, MARYLAND 21146

DAVE WOESSNER
410-461-0837

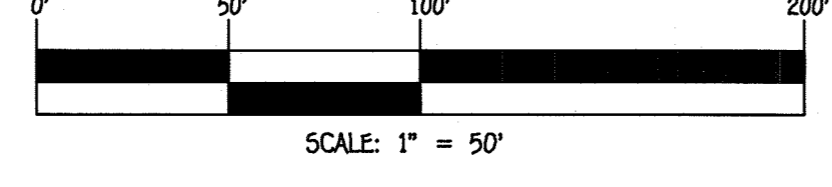
SOIL	NAME	CLASS	K VALUE
GgB	Glennelg loam, 3 to 8 percent slopes	B	0.20
GgC	Glennelg loam, 8 to 15 percent slopes	B	0.20
GhB	Glennelg-Urbn land complex, 0 to 8 percent slopes	B	0.20

SYMBOL	DESCRIPTION
	EXISTING CONTOUR 2' INTERVAL
	EXISTING CONTOUR 10' INTERVAL
	PROPOSED CONTOUR 10' INTERVAL
	PROPOSED CONTOUR 2' INTERVAL
	SPOT ELEVATION
	EXISTING STORM DRAIN
	PROPOSED STORM DRAIN PIPE
	EXISTING WATER LINE
	EXISTING SEWER LINE
	EXISTING GAS LINE
	EXISTING OVERHEAD WIRE
	PROPOSED PAVING/ PATH
	PROPOSED SIDEWALKS
	FOREST CONSERVATION EASEMENT (REFORESTATION)
	FOREST CONSERVATION EASEMENT FENCING
	EXISTING TREE LINE
	PROPOSED TREE LINE
	DRYWELL (M-5)-TYPICAL
	SOIL LINES AND TYPES
	DRAINAGE DIVIDE
	BIO RETENTION FACILITY (F-6) OR (M-6) AS NOTED
	PROPOSED ROOF LEADER
	DENOTES EXISTING TREES TO REMAIN
	CRITICAL ROOT ZONE
	DENOTES 15%-24.9% SLOPES



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PARK
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2995

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
Naldine Qui 6-25-19
 PLANNING DIRECTOR DATE



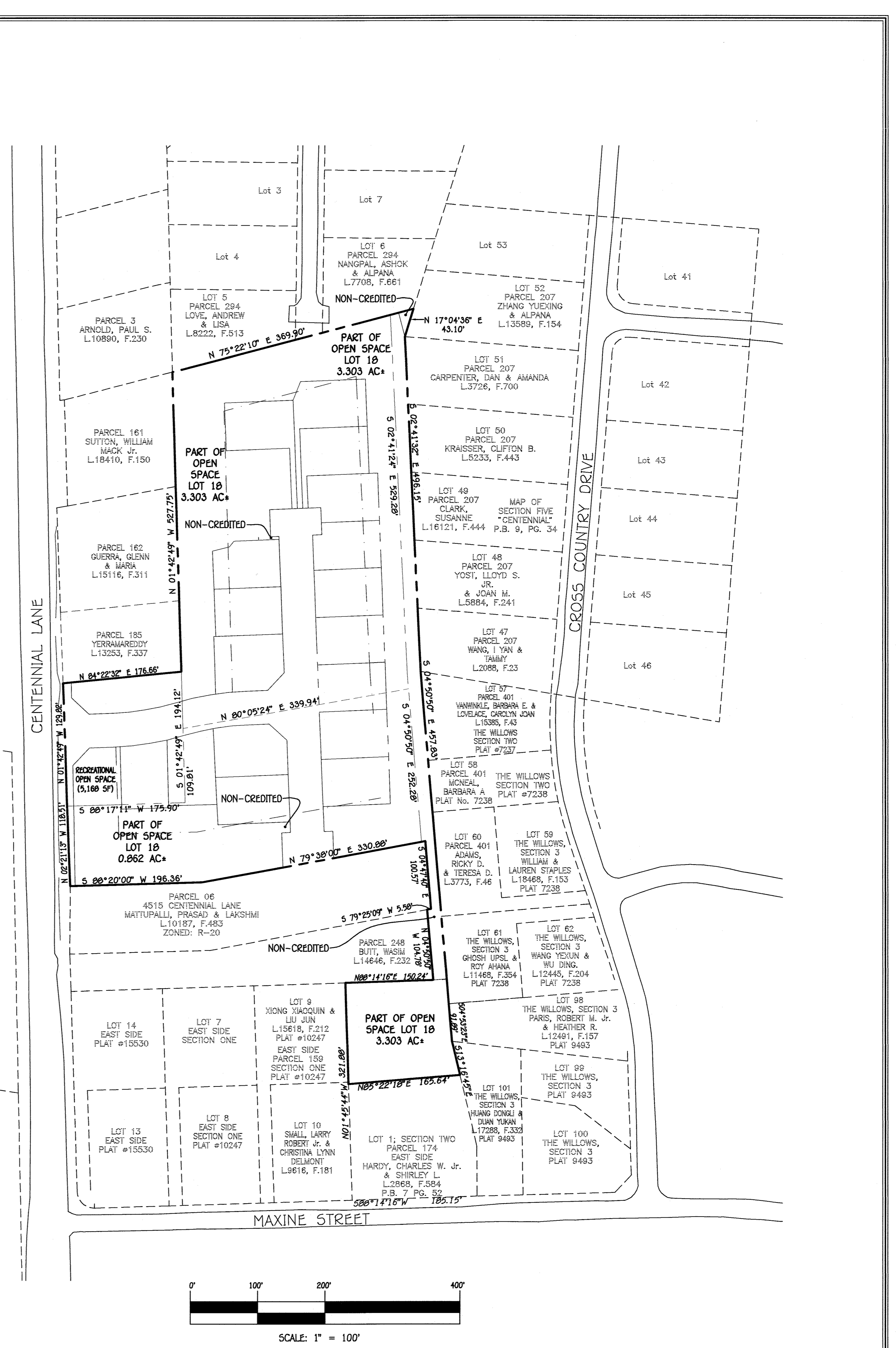
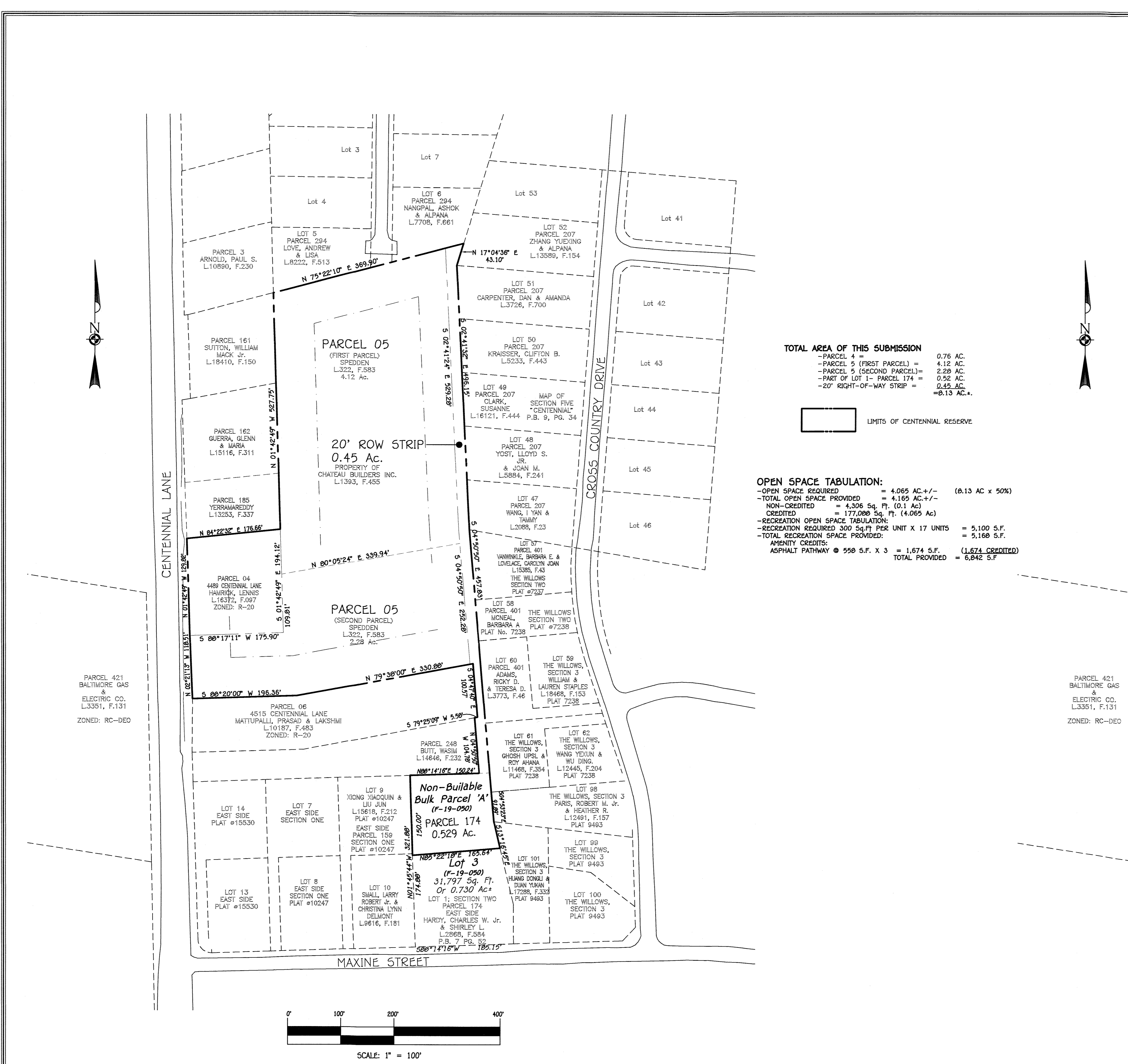
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Stephen Tuter 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



OWNERS
 PARCEL 04
 LENNIS HAMRICK
 4489 CENTENNIAL LANE
 ELLICOTT CITY, MD 21042
 PARCEL 09
 ROBERT & HELEN SPEDDEN
 5710 SAN GABRIEL DRIVE
 PENSACOLA, FL 32504
 RIGHT-OF-WAY
 CHATEAU BUILDINGS, INC.
 5305 VILLAGE CENTER DRIVE
 SUITE 305
 COLUMBIA, MD 21044
 PARCEL 17A
 CHARLES & SHIRLEY HARDY
 10202 MAXINE STREET
 ELLICOTT CITY, MD 21042

DEVELOPER
 CENTENNIAL RESERVE, LLC
 308 MAGNIN ROAD
 SEVERNA PARK, MARYLAND 21146
 DAVE WOESSNER
 410-461-0837

STORMWATER MANAGEMENT DRAINAGE AREA MAP
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
 TAX MAP NO.: 30 GRID NO.: 01 PARCEL NOS.: 04, 05, & 174
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 14 OF 15



TOTAL AREA OF THIS SUBMISSION

- PARCEL 4 = 0.76 AC.
- PARCEL 5 (FIRST PARCEL) = 4.12 AC.
- PARCEL 5 (SECOND PARCEL) = 2.28 AC.
- PART OF LOT 1 - PARCEL 174 = 0.52 AC.
- 20' RIGHT-OF-WAY STRIP = 0.45 AC.
- = 8.13 AC.**

OPEN SPACE TABULATION:

- OPEN SPACE REQUIRED = 4.065 AC. +/- (0.13 AC x 50%)
- TOTAL OPEN SPACE PROVIDED = 4.165 AC. +/-
- NON-CREDITED = 4,306 Sq. Ft. (0.1 AC)
- CREDITED = 177,089 Sq. Ft. (4.065 AC)
- RECREATION OPEN SPACE TABULATION:
- RECREATION REQUIRED 300 Sq. Ft. PER UNIT X 17 UNITS = 5,100 S.F.
- TOTAL RECREATION SPACE PROVIDED = 5,168 S.F.
- AMENITY CREDITS:
- ASPHALT PATHWAY @ 550 S.F. X 3 = 1,674 S.F. (1.674 CREDITED)
- TOTAL PROVIDED = 6.842 S.F.**

LIMITS OF CENTENNIAL RESERVE

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL FILE
 ELLICOTT CITY, MARYLAND 21042
 (410) 461-2995

TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
Nalanda
 PLANNING DIRECTOR
 DATE: 6-25-19

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. 36366, EXPIRATION DATE: 01/12/2020.
Stephan Smith 6/3/19
 SIGNATURE OF PROFESSIONAL ENGINEER DATE



OWNERS

- PARCEL 04: LENNIS HARRICK, 4489 CENTENNIAL LANE, ELLICOTT CITY, MD 21042
- PARCEL 05: ROBERT & HELEN SPEDDEN, 5710 SAN GABRIEL DRIVE, PENSACOLA, FL 32504

DEVELOPER

- CENTENNIAL RESERVE, LLC, 309 MACDOTHY ROAD, SEVERNA PARK, MARYLAND 21146
- DAVE WOESSNER, 410-461-0837

BOUNDARY DELINEATION
CENTENNIAL RESERVE
 LOTS 1 THRU 17, OPEN SPACE LOT 18
 4509 & 4489 CENTENNIAL LANE & 10202 MAXINE STREET
 TAX MAP NO.: 30 GRID NO.: 01 PARCEL NOS.: 04, 05, & 174
 ZONED R-20
 SECOND ELECTION DISTRICT HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL, 2019
 SHEET 15 OF 15