

SHEET INDEX	
SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PRELIMINARY EQUIVALENT SKETCH PLAN AND LANDSCAPE PLAN
3	SCHEMATIC GRADING, SEDIMENT CONTROL & FOREST CONSERVATION PLAN
4	STORMWATER MANAGEMENT - EXISTING DRAINAGE AREA MAP & SOILS MAP
5	STORMWATER MANAGEMENT - PROPOSED DRAINAGE AREA MAP
6	STORMWATER MANAGEMENT - BIO-RETENTION DETAILS
7	STORMWATER MANAGEMENT - BIO-RETENTION DETAILS

PRELIMINARY EQUIVALENT SKETCH PLAN

CENTENNIAL MEADOWS

U.S. Equivalent Coordinate Table			Metric Coordinate Table		
POINT	NORTH	EAST	POINT	NORTH	EAST
400	576510.0091	1354695.0080	400	175720.602227	412911.864310
401	576512.0655	1354700.0438	401	175721.229314	412913.399204
402	576513.3341	1354537.4391	402	175813.095987	413138.156525
403	576517.1351	1355381.8760	403	175662.277710	413121.222095
404	576519.1345	1355372.0692	404	175869.687941	413118.232958
405	576513.4447	1354595.6443	405	175776.422069	412881.578179
406	576513.3646	1354591.1274	406	175775.879491	412880.20431

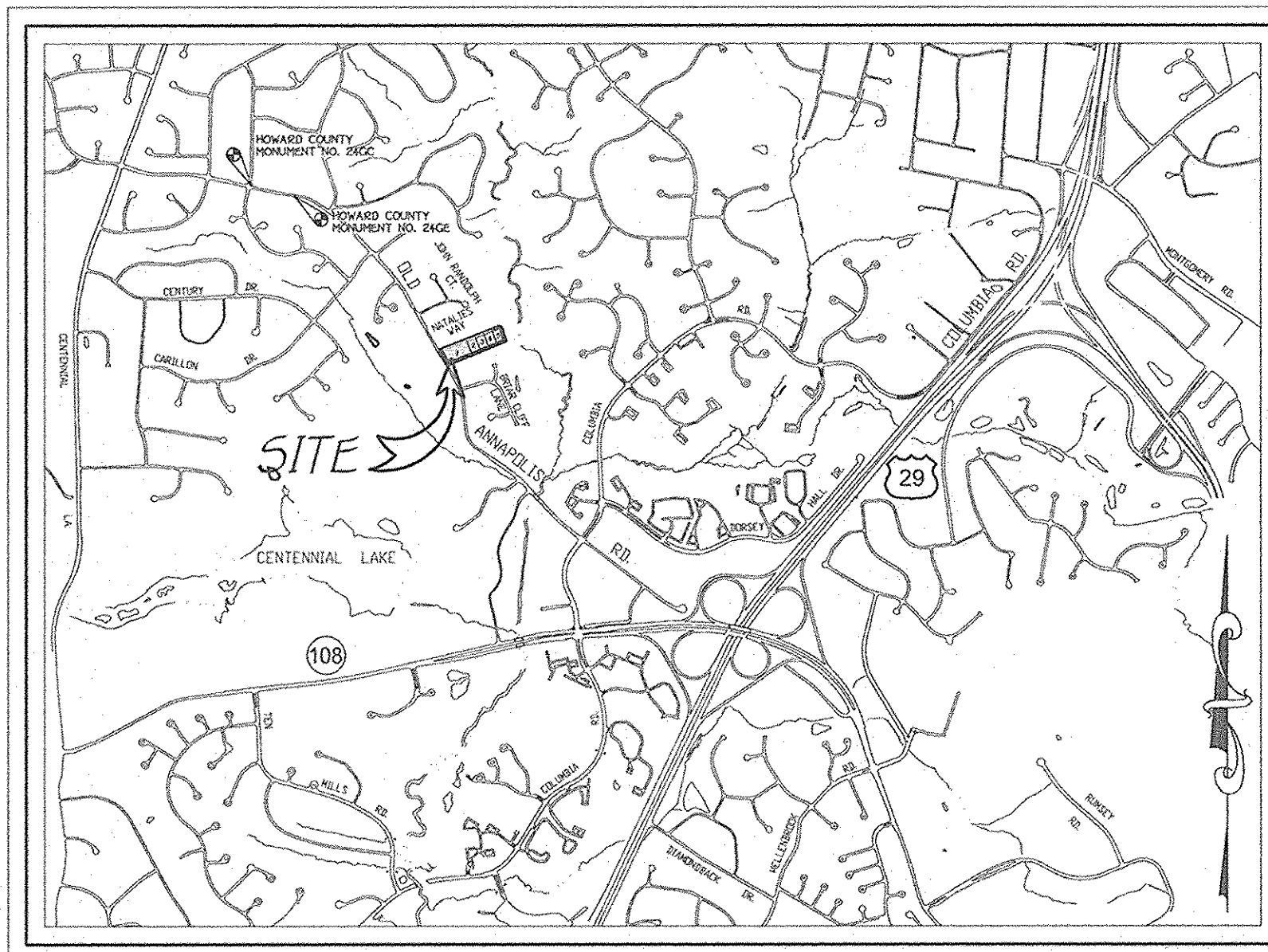
MINIMUM LOTS SIZE CHART			
LOT No.	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE
2	24,637 Sq.Ft.	2,137 Sq.Ft.	22,500 Sq.Ft.
3	25,376 Sq.Ft.	2,876 Sq.Ft.	22,500 Sq.Ft.
4	26,099 Sq.Ft.	3,599 Sq.Ft.	22,500 Sq.Ft.
5	26,805 Sq.Ft.	4,304 Sq.Ft.	22,501 Sq.Ft.

LOTS 1 THRU 5

A RESUBDIVISION OF LOT 6 AND PART OF LOT 5, GWYNN DEVELOPMENT

ZONING: R-20

TAX MAP NO. 30 GRID No. 3 PARCEL No. 112



REFER TO ADC MAP PAGE 11-H 12

VICINITY MAP

SCALE: 1" = 2000'

SECOND ELECTION DISTRICT

HOWARD COUNTY, MARYLAND

GENERAL NOTES

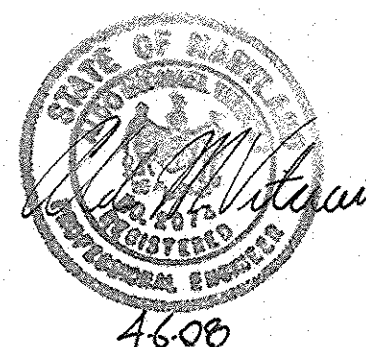
- THIS SUBDIVISION PLAN IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE ZONING REGULATIONS PER COUNCIL BILL NO. 45-2003 AND THE ZONING REGULATIONS AS AMENDED BY COUNCIL BILL NO. 75-2003. DEVELOPMENT OR CONSTRUCTION ON THESE LOTS OR PARCELS MUST COMPLY WITH THE ZONING AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF A BUILDING OR GRADING PERMIT APPLICATION.
- SUBJECT PROPERTY ZONED R-20 PER THE 2004 ZONING REGULATIONS.
- a. GROSS AREA OF TRACT = 3.831 AC.
b. AREA OF 25% OR GREATER SLOPES = 0.00 AC.
c. AREA OF ROAD RIGHT OF WAY = 0.010 AC.
NET AREA OF TRACT = 3.831 AC.
- AREA OF PROPOSED BUILDABLE LOTS = 3.783 AC.
- NUMBER OF LOTS PROPOSED
- BUILDABLE = 5% PROPOSED AND 1 EX. DWELLING TO REMAIN.
- PUBLIC WATER AND SEWER SHALL BE UTILIZED WITHIN THIS DEVELOPMENT.
- SOILS INFORMATION TAKEN FROM SOIL MAP NO. 16, SOIL SURVEY, HOWARD COUNTY, MARYLAND, JULY, 1968 ISSUE.
- BOUNDARY OUTLINE BASED ON FIELD RUN SURVEY PERFORMED BY SHANKS & LANE DATED APRIL, 2005.
- TOPOGRAPHIC CONTOURS BASED ON FIELD RUN SURVEY BY FISHER COLLINS AND CARTER INC DATED JULY 2006.
- STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH THE CRITERIA CONTAINED IN THE 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUMES I & II, CHAPTER 5 "STORMWATER CREDITS FOR INNOVATIVE SITE PLANNING". WAY AND ROW WILL BE PROVIDED AND MAINTAINED BY UTILIZING THE CREDITS FOUND IN SECTION 5.2 "DISCONNECTION OF ROOFTOP RUNOFF CREDIT", SECTION 5.3 "DISCONNECTION OF NON ROOFTOP RUNOFF CREDIT" ALONG WITH THE CRITERIA FOUND IN APPENDIX C2 SECTION C.2.41 "BIORETENTION SYSTEM". CRY WAS NOT REQUIRED BECAUSE THE 1 YEAR STORM IS LESS THAN THE 2.0% IS MANDATED BY THE FOREMENTIONED MANUAL. ANY FURTHER SUBDIVISION INCLUDING WHERE L.O.D. IS LESS THAN 5000 S.F.3 SHALL REQUIRE ADDITIONAL SURVEY AND RE-EVALUATION BY CIVIL ENGINEERS FOR THE ENTIRE LOT (LOTS 1-5).
- TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY MAR'S GROUP, DATED NOVEMBER 2005.
- THE FOREST STAND DELINEATION AND WETLAND DELINEATION FOR THIS PROJECT WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC., DATED NOVEMBER, 2006.
- THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- FOR FLAG OR PIPESTEM LOTS, REFUSE COLLECTION, SNOW REMOVAL AND ROAD MAINTENANCE ARE PROVIDED TO THE JUNCTION OF THE FLAG OR PIPESTEM AND THE ROAD R/W LINE AND NOT THE PIPESTEM LOT DRIVEWAY.
- THE EXISTING DWELLING LOCATED ON LOT 1 IS TO REMAIN. DWELLING IS A TWO STORY FRAME.
- NO CEMETERIES EXIST WITHIN THIS SUBDIVISION.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NO. 24GC & 24GE WERE USED FOR THIS PROJECT. HORIZONTAL AND VERTICAL CONTROL DATUM IS BASED ON HOWARD COUNTY GEODETIC CONTROL STATIONS:
HOWARD COUNTY MONUMENT NO. 24GC N 578,868.583 ELEV. = 439.58
E 1,352,020.690
HOWARD COUNTY MONUMENT NO. 24GE N 578,705.480 ELEV. = 445.44
E 1,352,099.690
- NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE WETLANDS, STREAM OR THEIR REQUIRED BUFFERS.
- THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL, AND THE FOREST CONSERVATION OBLIGATION OF 0.07 AC. OF AFFORESTATION FOR THIS PROPOSED RESUBDIVISION SHALL BE MET/PROVIDED AT THE RESUBDIVISION PLAN STAGE OF PROCESSING BY PROVIDING AN OFFSITE AFFORESTATION FEE TO BE LOCATED ON THE TALLEY PROPERTY, PARCEL No. 2, RE-03-02 D52, P.N. 15816, TAX MAP No. B, GRID No. 13, PARCEL No. 392.
- LANDSCAPING AND STREET TREES FOR THIS SUBDIVISION WILL BE PROVIDED ON THE FINAL PLANS IN ACCORDANCE WITH SECTION 16.54 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE HOWARD COUNTY LANDSCAPE MANUAL.
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- THERE IS NO FLOODPLAIN ON THIS SITE.
- NO NOISE STUDY IS REQUIRED FOR THIS PROJECT PER HOWARD COUNTY DESIGN MANUAL, VOL. III, SECTION 5.2.5.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO RESIDENTIAL OCCUPANCY TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
A) WIDTH - 12 FEET (6 FEET SERVING MORE THAN ONE RESIDENCE)
B) SURFACE - SIX (6) INCHES OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING
C) GEOMETRY - MAXIMUM 15% GRADE, MAXIMUM 10% GRADE CHANGE AND MINIMUM OF 45 FOOT TURNING RADIUS
D) STRUCTURES (CULVERTS/BRIDGES) CAPABLE OF SUPPORTING 25 GROSS TONS (RS) LOADING
E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE.
F) STRUCTURE CLEARANCES - MINIMUM 12 FEET
G) MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
- EXISTING UTILITIES ARE BASED ON CONTRACT No. 801 - W & S, CONTRACT No. 24-3226-D & CONTRACT No. 24-4377-D, DATED JANUARY, 2007.
- THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY GEOTECHNICAL LABORATORIES, INC., DATED JANUARY, 2007.
- APFD REQUIREMENTS FOR TRAFFIC HAVE BEEN MET VIA PAYMENT OF A FEE-IN-LIEU IN THE AMOUNT OF \$23,572.00 FOR ROAD IMPROVEMENTS AND WILL BE CONTRIBUTED TO CAPITAL PROJECT N-395. THIS WILL BE PART OF THE DEVELOPER'S AGREEMENT FOR ROAD IMPROVEMENTS AT FINAL PLAN STAGE.

STREET LIGHT CHART			
STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
OLD ANNAPOLIS ROAD	29+60	28' RT	150-WATT H.P.S. VAPOR PIREMER POST-TOP MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE.

TRAFFIC CONTROL SIGNS				
STREET NAME	STATION	OFFSET	POSTED SIGN	SIGN CODE
U.I.C. DRIVEWAY	0+40	13'	STOP	R1-1

NOTE: ALL SIGN POSTS USED FOR TRAFFIC CONTROLS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (4 GAUGE) INSERTED INTO A 2 1/2" GALVANIZED STEEL, PERFORATED SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.

LEGEND	
SYMBOL	DESCRIPTION
-368--	EXISTING CONTOUR 2' INTERVAL
-370--	EXISTING CONTOUR 10' INTERVAL
-368--	PROPOSED CONTOUR 2' INTERVAL
-370--	PROPOSED CONTOUR 10' INTERVAL
+380.50	SPOT ELEVATION
-SF--SF-	SILT FENCE
FF	FIRST FLOOR ELEVATION
BE	BASEMENT ELEVATION
L.O.D.	LIMIT OF DISTURBANCE
U-I-C	USE-IN-COMMON
(Tree Symbol)	PROPOSED STREET TREE
15-24.99%	SLOPE



FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL FREE
ELICOTT CITY, MARYLAND 21042
4101 442 - 2855

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY
Janet D. Wajda 4/14/08
PLANNING DIRECTOR DATE

OWNERS
LOWELL D. BAU
9780 OLD ANNAPOLIS ROAD
ELICOTT CITY, MARYLAND 21042-6237
4101 730-8954

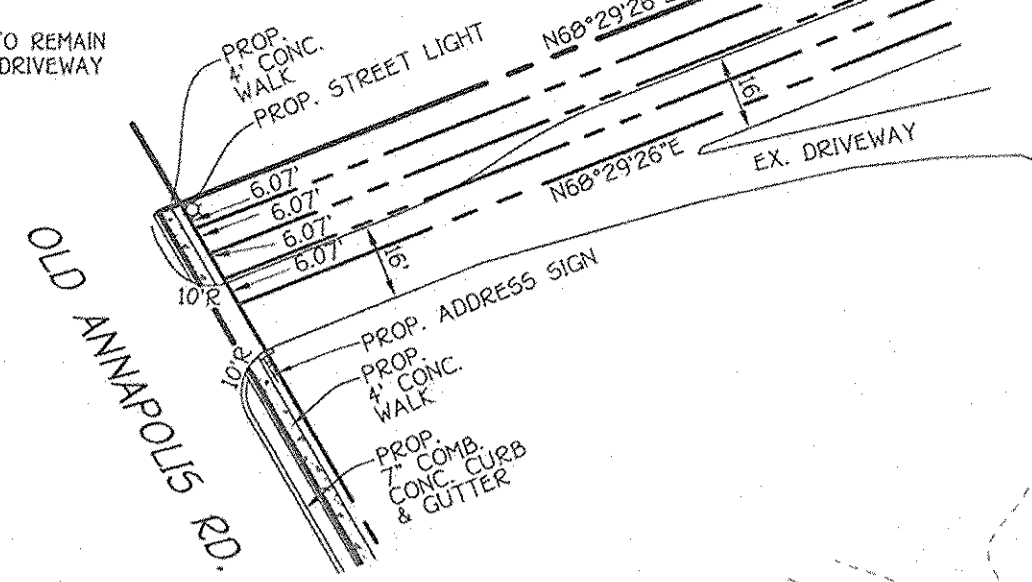
DEVELOPER
CORNESTONE HOLDINGS, LLC
9595 NORFOLK AVENUE
LAUREL, MARYLAND 20723
4101 792-2565

TITLE SHEET
CENTENNIAL MEADOWS
LOTS 1 THRU 5
A RESUBDIVISION OF LOT 6 AND PART OF LOT 5, GWYNN DEVELOPMENT
PLAT BOOK 4, FOLIO 77
ZONED: R-20
TAX MAP No. 30 GRID No. 3 PARCEL No. 112
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 04, 2008
SHEET 1 OF 7

SCHEDULE A - PERIMETER LANDSCAPE EDGE

PERIMETER CATEGORY	P-1 FRONT TO ROADWAY	P-2 ADJACENT TO PERIMETER PROPERTIES	P-3 ADJACENT TO PERIMETER PROPERTIES	P-4 ADJACENT TO PERIMETER PROPERTIES
LANDSCAPE TYPE	N/A	A	A	A
LINEAR FEET OF PERIMETER	209.02 L.F.	834.54 L.F.	197.02 L.F.	796.56 L.F.
CREDIT FOR EXISTING VEGETATION	N/A	11 TREES (36", 36", 32", 28", 32", 26", 36", 26", 28", 36" & 16")	1 TREE (20")	1 TREE (32")
SMALL/MEDIUM DECIDUOUS TREES (21 SUBSTITUTION)		0	0	0
NUMBER OF PLANTS REQUIRED	N/A	3	2	12
SHADE TREES				
EVERGREEN				
SHRUBS				

NOTE: EXISTING DRIVEWAY ENTRANCE TO REMAIN AND BROUGHT UP TO THE STD. DRIVEWAY DETAIL R-6-01



DETAIL

SCALE: 1" = 40'

NOTE: THE REQUIRED STREET TREES ALONG THE PUBLIC ROAD, OLD ANNAPOLIS ROAD, SHALL BE PROVIDED AND INDICATED ON THE FINAL PLANS FOR THIS RESUBDIVISION.

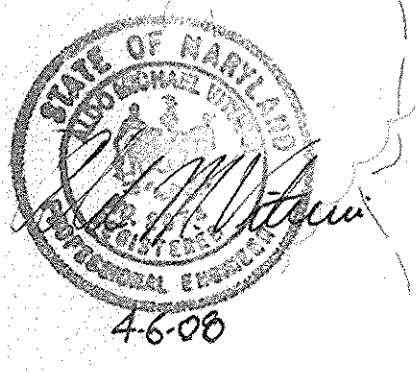


LEGEND	
---368---	EXISTING CONTOUR 2' INTERVAL
---370---	EXISTING CONTOUR 10' INTERVAL
-368-	PROPOSED CONTOUR 2' INTERVAL
-370-	PROPOSED CONTOUR 10' INTERVAL
+380.50	SPOT ELEVATION
-SF--SF-	SILT FENCE
FF	FIRST FLOOR ELEVATION
BE	BASEMENT ELEVATION
L.O.D.	LIMIT OF DISTURBANCE
U-I-C	USE-IN-COMMON
(Tree Symbol)	PROPOSED STREET TREE
15% - 24.9% SLOPES	

PRELIMINARY EQUIVALENT SKETCH PLAN AND LANDSCAPE PLAN
CENTENNIAL MEADOWS
 LOTS 1 THRU 5
 A RESUBDIVISION OF LOT 6 AND PART OF LOT 5, GWYNNE DEVELOPMENT
 PLAT BOOK 4, FOLIO 77
 ZONED: R-20
 TAX MAP No. 30 GRID No. 3 PARCEL No. 112
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 DATE: APRIL 04, 2008
 SHEET 2 OF 7

PLAN
 SCALE: 1" = 40'

FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 CENTENNIAL SQUARE OFFICE PARK - 16272 BALTIMORE NATIONAL FIC
 ELLICOTT CITY, MARYLAND 21114
 410.468.2855



TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY
Janice D. Lough
 PLANNING DIRECTOR 4/14/08 DATE

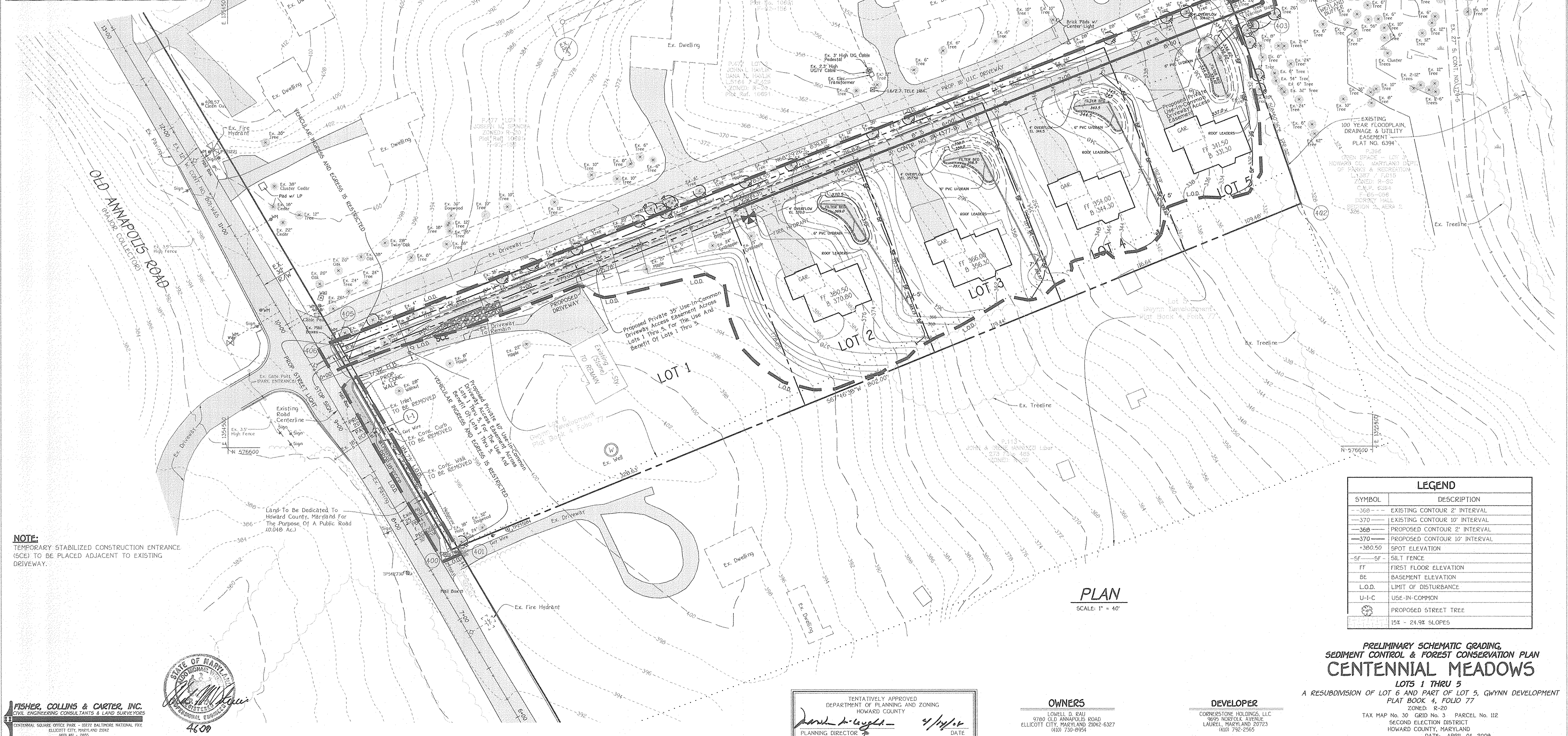
OWNERS
 LOWELL D. RAU
 9780 OLD ANNAPOLIS ROAD
 ELLICOTT CITY, MARYLAND 21114-6327
 (410) 732-8954

DEVELOPER
 CORNESTONE HOLDINGS, LLC
 9695 NORTOLK AVENUE
 LAUREL, MARYLAND 20723
 (410) 732-2965

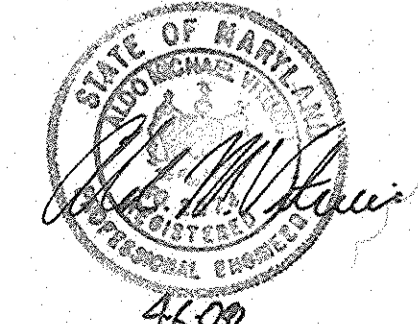
FOREST CONSERVATION WORKSHEET
Version 1.0

Project: Rau Property
Date: November 17, 2006

NET TRACT AREA		Acres			
A. Total tract area	3.83				
B. Area within 100 Year Floodplain	0				
C. Area to remain in agricultural production	0				
D. Net Tract Area	3.83				
LAND USE CATEGORY: (from table 3.2.1, page 43, Manual)					
ARA	MDR	IDA	HDR	MPD	CIA
E. Afforestation Threshold (percentage)	0.15	0.57			
F. Conservation Threshold (percentage)	0.2	0.77			
EXISTING FOREST COVER:					
G. Existing forest cover (excluding floodplain)	0				
H. Area of forest above afforestation threshold					
I. Area of forest above conservation threshold					
BREAK-EVEN POINT:					
J. Forest retention above threshold with no mitigation	Break-Even Point				
K. Clearing permitted without mitigation	0.0				
PROPOSED FOREST CLEARING:					
L. Total area of forest to be cleared or retained Outside FCE	0.0				
M. Total area of forest to be retained in FCE					
PLANTING REQUIREMENTS:					
N. Reafforestation for clearing above Conservation Threshold					
O. Reafforestation for clearing below Conservation Threshold					
P. Credits for retention above conservation threshold					
Q. Total reforestation required					
R. Total afforestation required	0.57				
T. Total reforestation and afforestation required	0.57				



NOTE:
TEMPORARY STABILIZED CONSTRUCTION ENTRANCE (SCE) TO BE PLACED ADJACENT TO EXISTING DRIVEWAY.



FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10772 BALTHORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21042
410.481.2895

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY
Paula A. Wright
PLANNING DIRECTOR
DATE: 04/14/07

OWNERS
LOWELL D. RAU
9780 OLD ANNAPOLIS ROAD
ELLCOTT CITY, MARYLAND 21042-6327
410.732-9954

DEVELOPER
CORNSTONE HOLDINGS, LLC
9895 NORTOLK AVENUE
LAUREL, MARYLAND 20723
410.732-2565

LEGEND	
SYMBOL	DESCRIPTION
---368---	EXISTING CONTOUR 2' INTERVAL
---370---	EXISTING CONTOUR 10' INTERVAL
---368---	PROPOSED CONTOUR 2' INTERVAL
---370---	PROPOSED CONTOUR 10' INTERVAL
+380.50	SPOT ELEVATION
-5' -5'	SILT FENCE
FF	FIRST FLOOR ELEVATION
BE	BASEMENT ELEVATION
L.O.D.	LIMIT OF DISTURBANCE
U-I-C	USE-IN-COMMON
(Tree Symbol)	PROPOSED STREET TREE
	15% - 24.9% SLOPES

PLAN
SCALE: 1" = 40'

**PRELIMINARY SCHEMATIC GRADING,
SEDIMENT CONTROL & FOREST CONSERVATION PLAN**
CENTENNIAL MEADOWS
LOTS 1 THRU 5
A RESUBDIVISION OF LOT 6 AND PART OF LOT 5, GWYNN DEVELOPMENT
PLAT BOOK 4, FOLIO 77
ZONED: R-20
TAX MAP No. 30 GRID No. 3 PARCEL No. 112
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
DATE: APRIL 04, 2008
SHEET 3 OF 7

SP-07-006



OLD ANNAPOLIS ROAD

Lot 1
Terra Di Spinola
Lots 1, 2, 3 & 4
Plat Ref. 10681

Lot 2
Terra Di Spinola
Lots 1, 2, 3 & 4
Plat Ref. 10681

Lot 3
Terra Di Spinola
Lots 1, 2, 3 & 4
Plat Ref. 10681

Lot 4
Terra Di Spinola
Lots 1, 2, 3 & 4
Plat Ref. 10681

#1
GIC2

Ex. 3' High UG Cable Pedestal
Ex. 2.5' High UGTV Cable
Ex. Elec. Transformer
357.13
356.99
358.16
1.6/2.7 TEIE HBX

GIB2

Brick Pads w/ Center Light

331.00

397.00

402.00

2.92 Ac.±

1

RCN = 65
Tc = 0.20

PROPOSED PROPERTY LINE

LEGEND

- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- SOIL LINES AND TYPES
- LIMIT OF DRAINAGE AREA
- TIME OF CONCENTRATION PATH
- DESIGN POINT

SOIL	NAME	CLASS
GIB2	Glenelg loam, 3 to 8 percent slopes, moderately eroded	B
GIC2	Glenelg loam, 8 to 15 percent slopes, moderately eroded	B
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MIC2	Manor loam, 8 to 15 percent slopes, moderately eroded	B
MIC3	Manor loam, 8 to 15 percent slopes, severely eroded	B
MID3	Manor loam, 15 to 25 percent slopes, severely eroded	B

NOTES:
 * Hydric soils and/or contains hydric inclusions
 ** May contain hydric inclusions
 † Generally only within 100-year floodplain areas

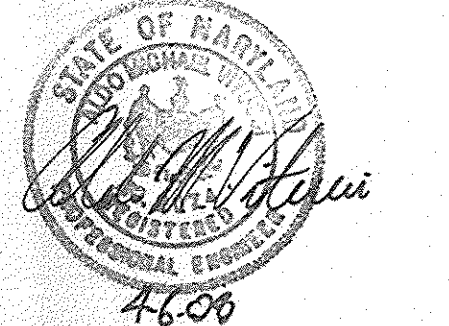
TENTATIVELY APPROVED
 DEPARTMENT OF PLANNING AND ZONING
 HOWARD COUNTY

 PLANNING DIRECTOR DATE 4/14/08

OWNERS
 LOWELL D. RAU
 9780 OLD ANNAPOLIS ROAD
 ELLICOTT CITY, MARYLAND 21042-6327
 (410) 730-8954

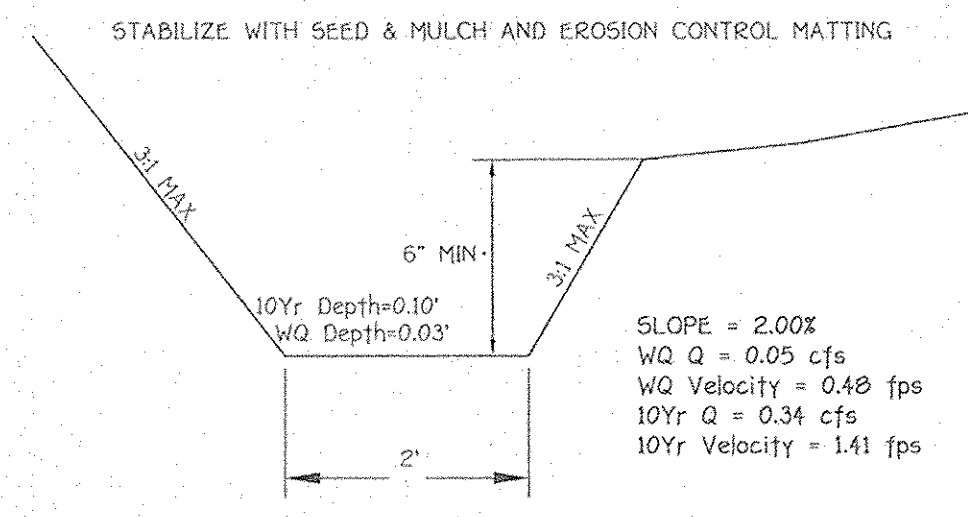
DEVELOPER
 CORNERSTONE HOLDINGS, LLC
 9699 NORFOLK AVENUE
 LAUREL, MARYLAND 20723
 (410) 792-2565

STORMWATER MANAGEMENT
 EXISTING DRAINAGE AREA MAP
 LOTS 1 THRU 5
CENTENNIAL MEADOWS
 LOTS 1 THRU 5
 A RESUBDIVISION OF LOT 6 AND PART OF LOT 5, GWYNN DEVELOPMENT
 PLAT BOOK 4, FOLIO 77
 ZONED: R-20
 TAX MAP No. 30 GRID No. 3 PARCEL No. 112
 SECOND ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND
 SCALE: AS SHOWN DATE: APRIL 04, 2008
 SHEET 4 OF 7



FISHER, COLLINS & CARTER, INC.
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
 129 Cockeysville Road Hunt Valley, MD 21030
 phone: 410.458.2651
 fax: 443.269.0216
 tes@mdswm.com www.mdswm.com

APPLIEDSTORMWATER
 DESIGN, MAINTENANCE, CONSTRUCTION
 dba T.E. Scott & Associates, Inc.
 129 Cockeysville Road Hunt Valley, MD 21030
 phone: 410.458.2651
 fax: 443.269.0216
 tes@mdswm.com www.mdswm.com



GRASS CHANNEL DETAIL
NOT TO SCALE

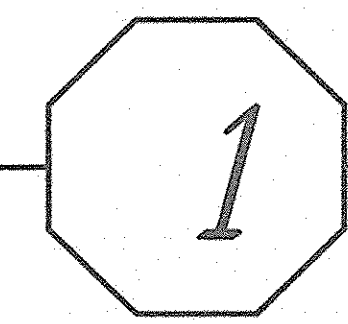
NON ROOFTOP DISCONNECT
0.10 ACRES

GRASS CHANNEL CREDIT
2' BOTTOM WIDTH
2% SLOPE

GRASS CHANNEL CREDIT
DA = 0.138 ACRES

OFFSITE

WQV
2.50 Ac.±
% Imp. = 25%



Cpv
2.93 Ac.±
RCN = 70
Tc = 0.19 Hrs.

LEGEND

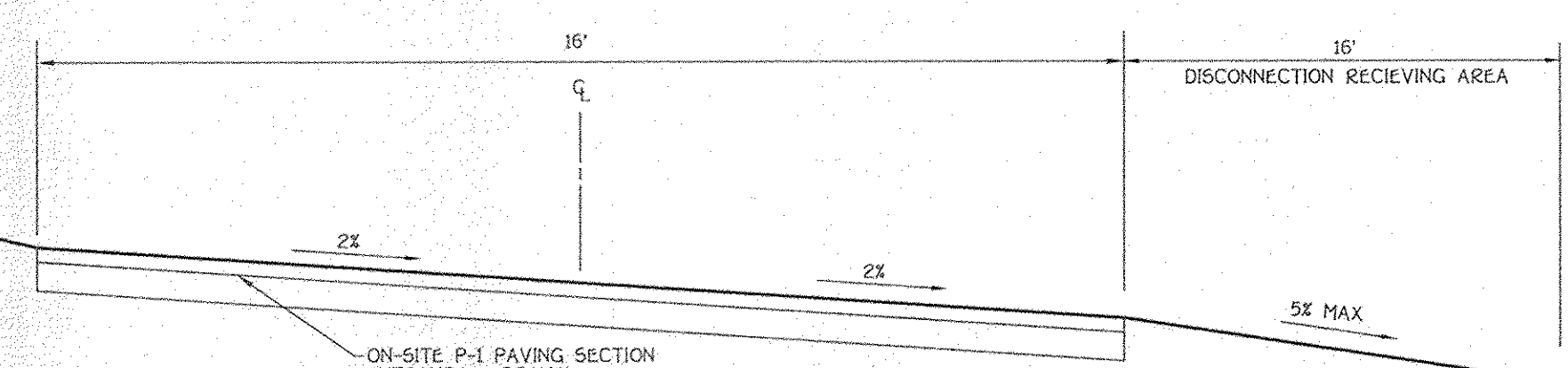
- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- SOIL LINES AND TYPES
- LIMIT OF DRAINAGE AREA
- TIME OF CONCENTRATION PATH
- PROPOSED CONTOUR
- DESIGN POINT
- DISCONNECTED IMPERVIOUS AREA
- DISCONNECTION RECEIVING AREA

SWM REQUIREMENTS SUMMARY			
Subarea	Rev VOLUME	Rev AREA	WQV
SUBAREA 001	0.015 ac/ff	0.163 ac	0.057 ac/ff
			1.644 cfs

1-YR DISCHARGE SUMMARY		
Subarea	EXISTING	PROPOSED
SUBAREA 001	0.83 cfs	1.49 cfs

SOILS LEGEND		
SOIL	NAME	CLASS
GLB2	Glenelg loam, 3 to 8 percent slopes, moderately eroded	B
GIC2	Glenelg loam, 8 to 15 percent slopes, moderately eroded	B
MIB2	Manor loam, 3 to 8 percent slopes, moderately eroded	B
MIC2	Manor loam, 8 to 15 percent slopes, moderately eroded	B
MIC3	Manor loam, 8 to 15 percent slopes, severely eroded	B
MID3	Manor loam, 15 to 25 percent slopes, severely eroded	B

NOTES:
* Hydric soils and/or contains hydric inclusions
** May contain hydric inclusions
† Generally only within 100-year floodplain areas



TYPICAL PRIVATE DRIVE CROSS SLOPE SECTION
NOT TO SCALE

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10712 BALTIMORE NATIONAL FREE
ELLCOTT CITY, MARYLAND 21034
4105 461 - 2855

APPLIEDSTORMWATER
DESIGN, MAINTENANCE, CONSTRUCTION
dba T.E. Scott & Associates, Inc.
129 Cockeysville Road phone: 410.458.2651
Hunt Valley, MD 21030 fax: 443.269.0216
tes@mdswm.com www.mdswm.com

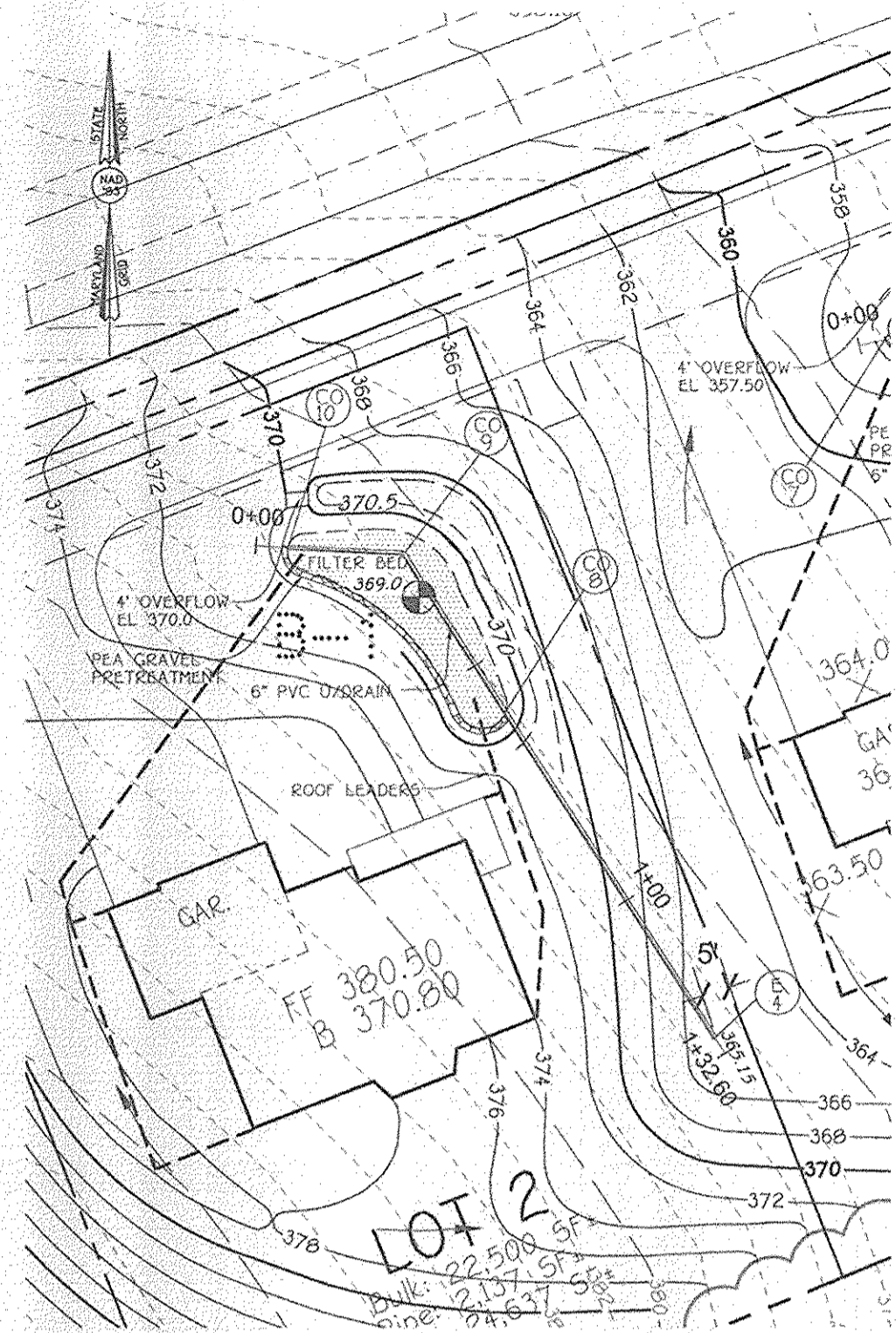


TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY
Franklin D. Cuyler
PLANNING DIRECTOR DATE 4/14/08

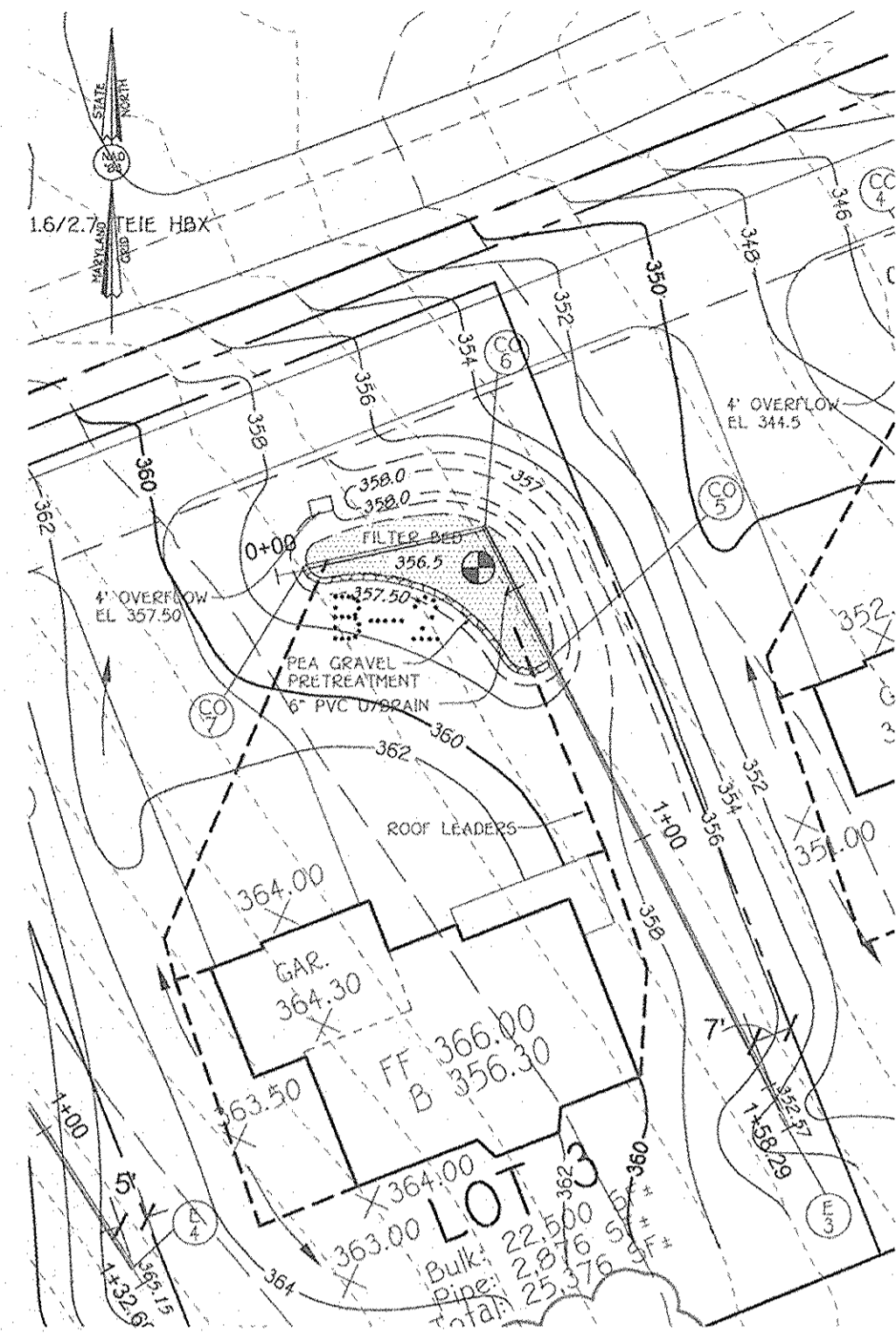
OWNERS
LONELL D. BAU
9780 OLD ANNAPOLIS ROAD
ELLCOTT CITY, MARYLAND 21042-6327
410-730-8954

DEVELOPER
CORNERSTONE HOLDINGS, LLC
9895 NORFOLK AVENUE
LAUREL, MARYLAND 20723
410-792-2965

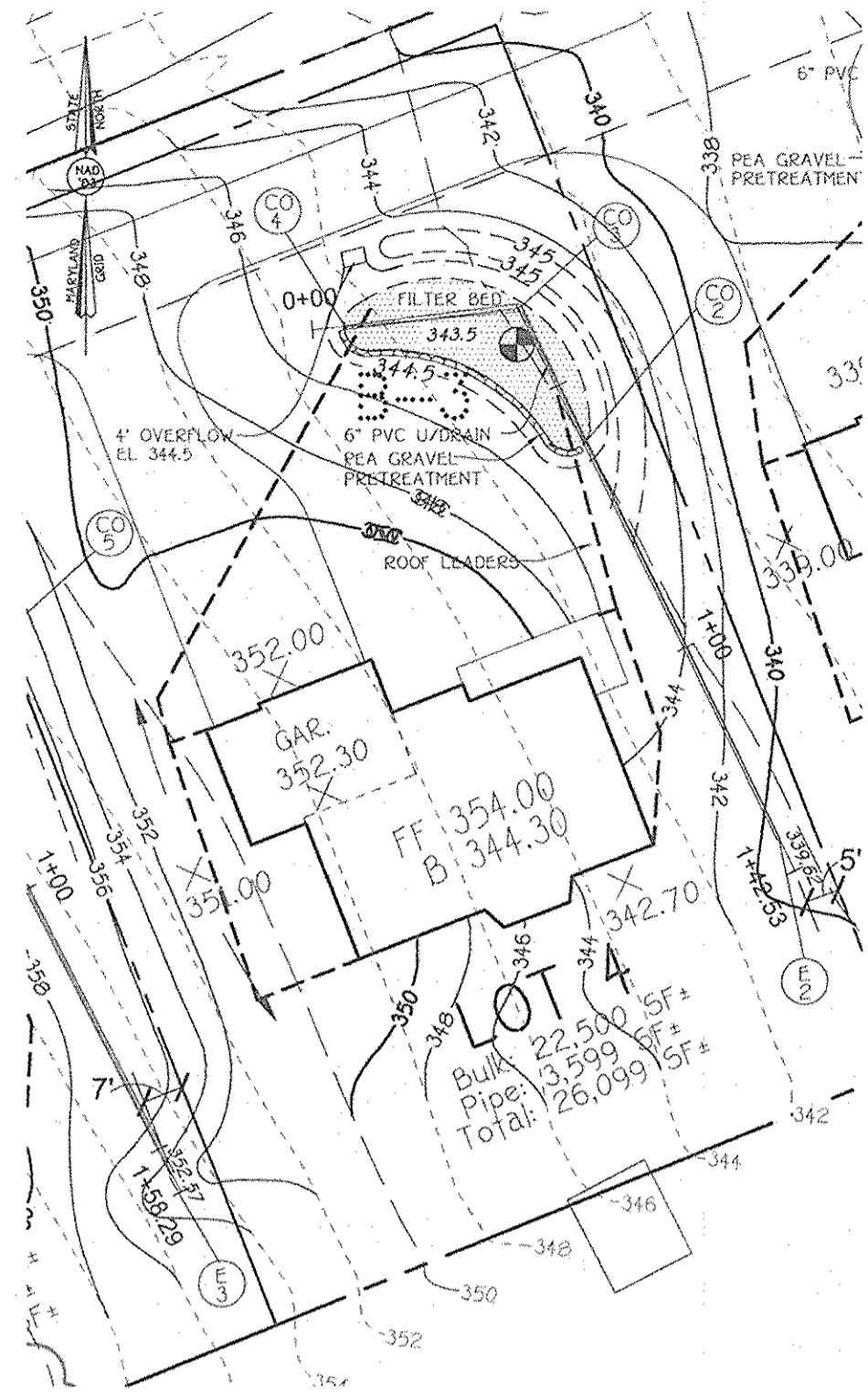
STORMWATER MANAGEMENT
DRAINAGE AREA MAP
LOTS 1 THRU 5
CENTENNIAL MEADOWS
LOTS 1 THRU 5
A RESUBDIVISION OF LOT 6 AND PART OF LOT 5, GWYNN DEVELOPMENT
PLAT BOOK 4, FOLIO 77
ZONED: R-20
TAX MAP No. 30 GRID No. 3 PARCEL No. 112
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 04, 2008
SHEET 5 OF 7



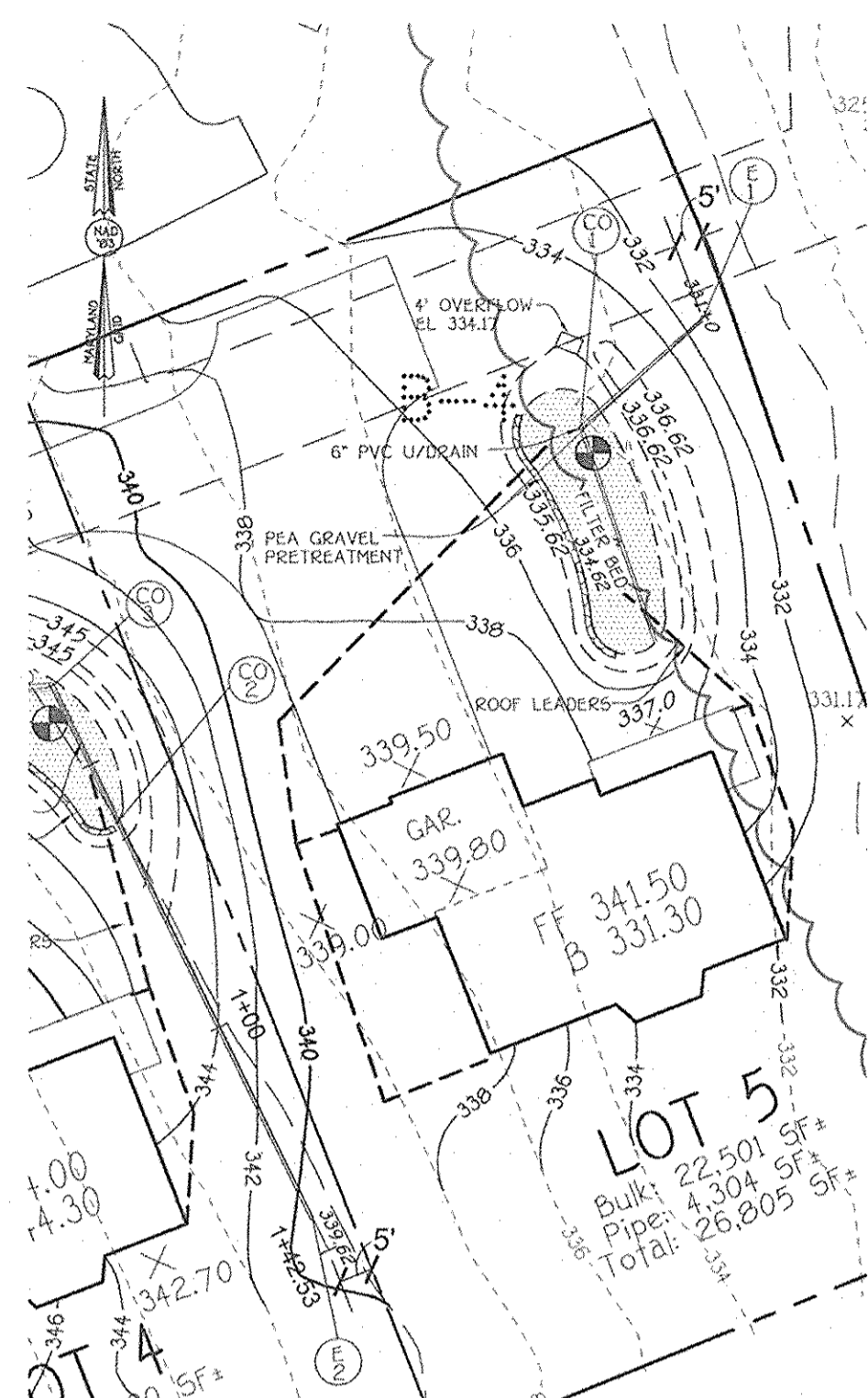
LOT #2 BIORETENTION PLAN
1"=30'



LOT #3 BIORETENTION PLAN
1"=30'



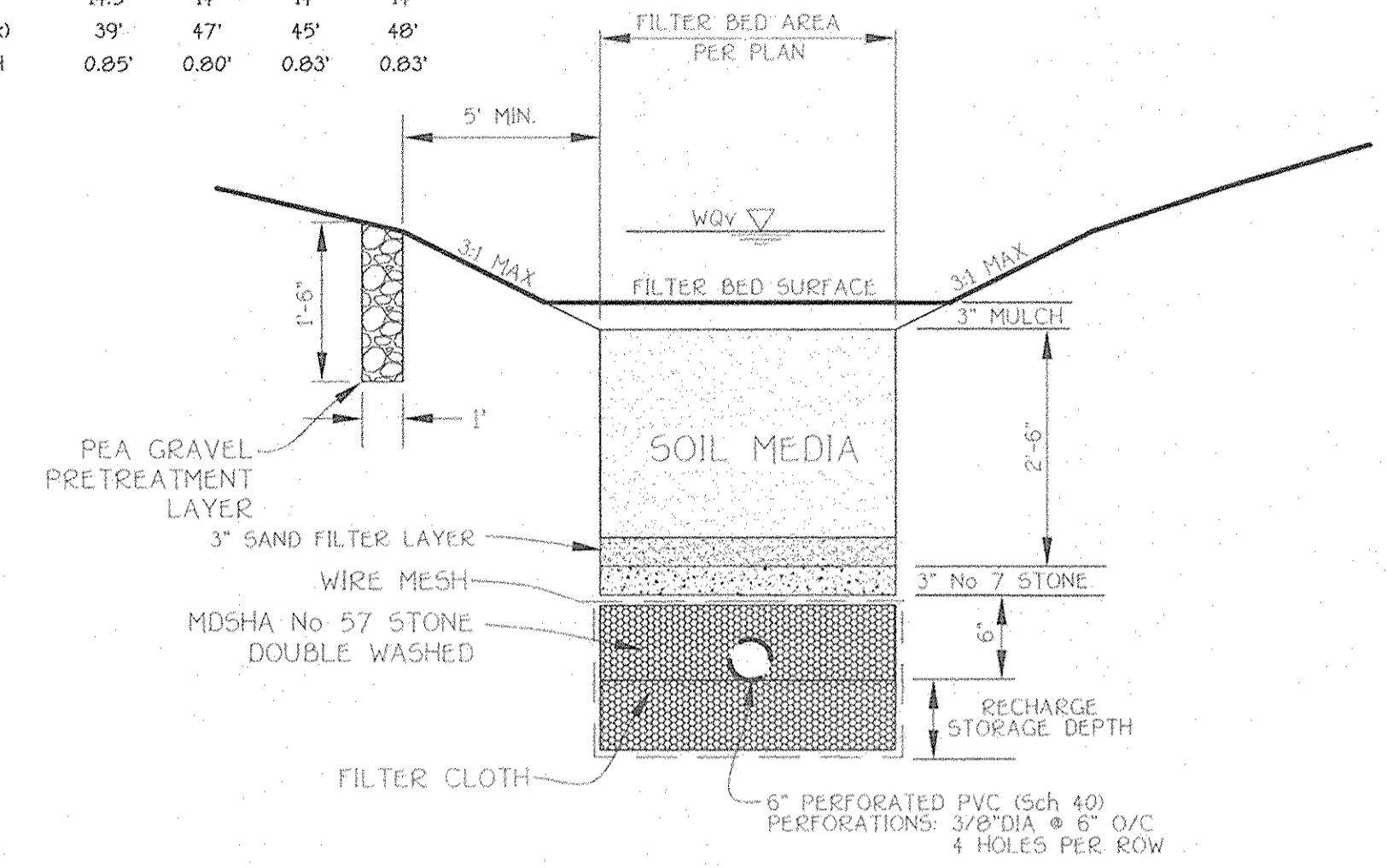
LOT #4 BIORETENTION PLAN
1"=30'



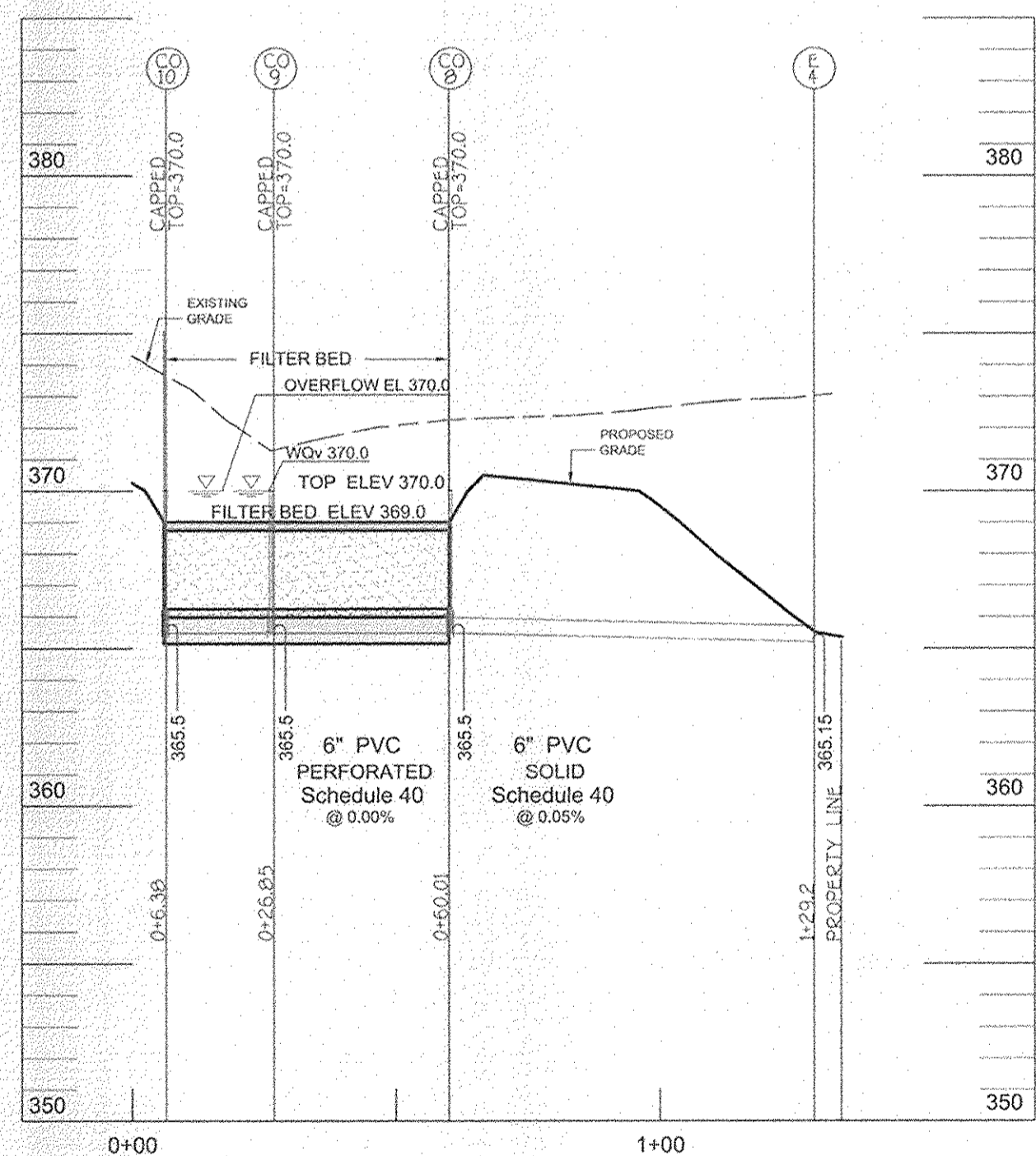
LOT #5 BIORETENTION PLAN
1"=30'

BIORETENTION DATA

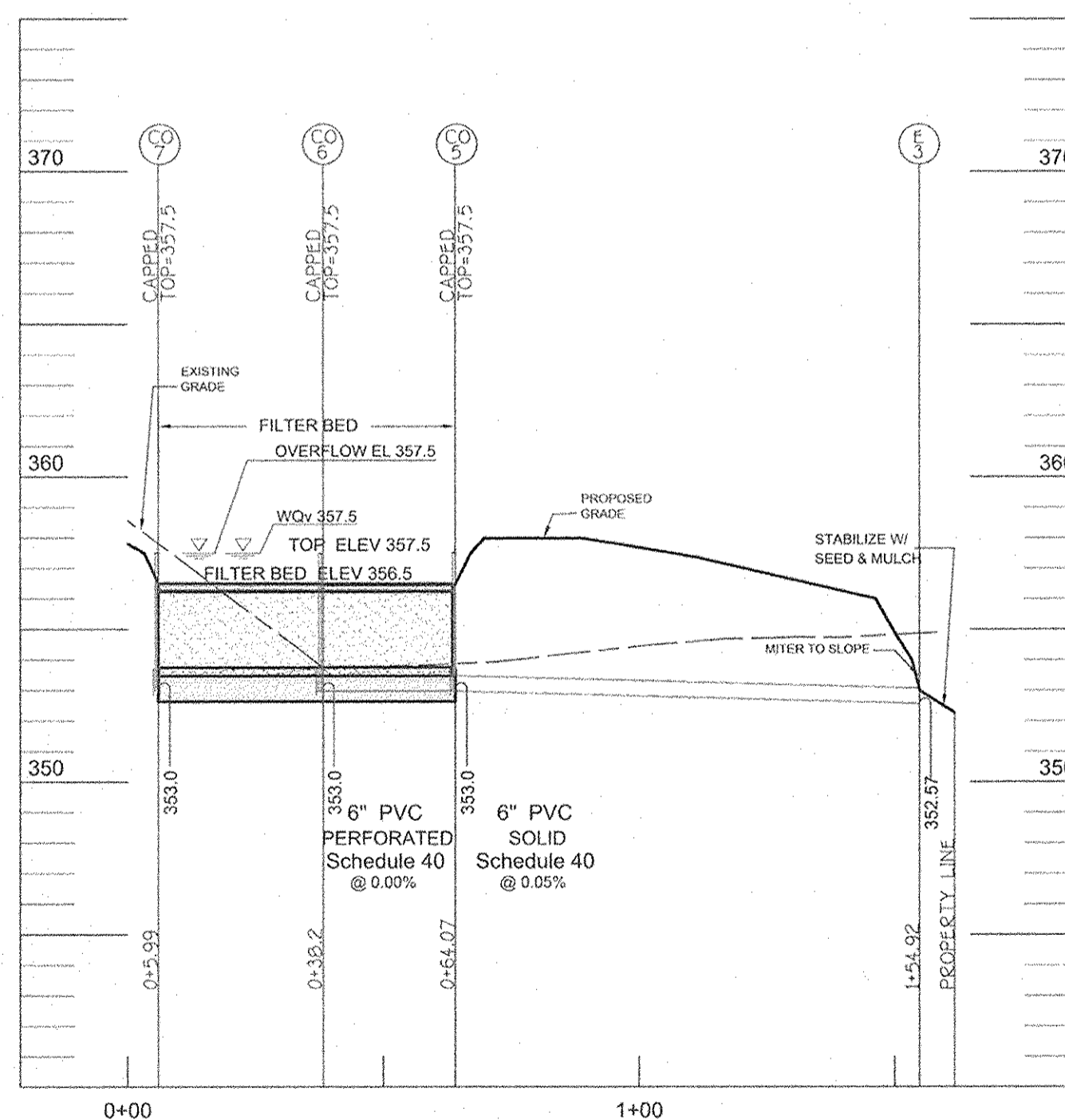
	LOT #2	LOT #3	LOT #4	LOT #5
INVERT ELEV	365.50	353.00	340.00	331.00
FILTER BED ELEV	369.00	356.50	343.50	334.62
OVERFLOW ELEV	370.00	357.17	344.50	335.62
WQV ELEV	370.00	357.17	344.50	335.62
TOP ELEV	370.50	357.67	345.00	336.62
FILTER BED WIDTH (ø Max)	14.5'	14'	14'	14'
FILTER BED LENGTH (ø Max)	39'	47'	45'	48'
RECHARGE STORAGE DEPTH	0.85'	0.80'	0.83'	0.83'



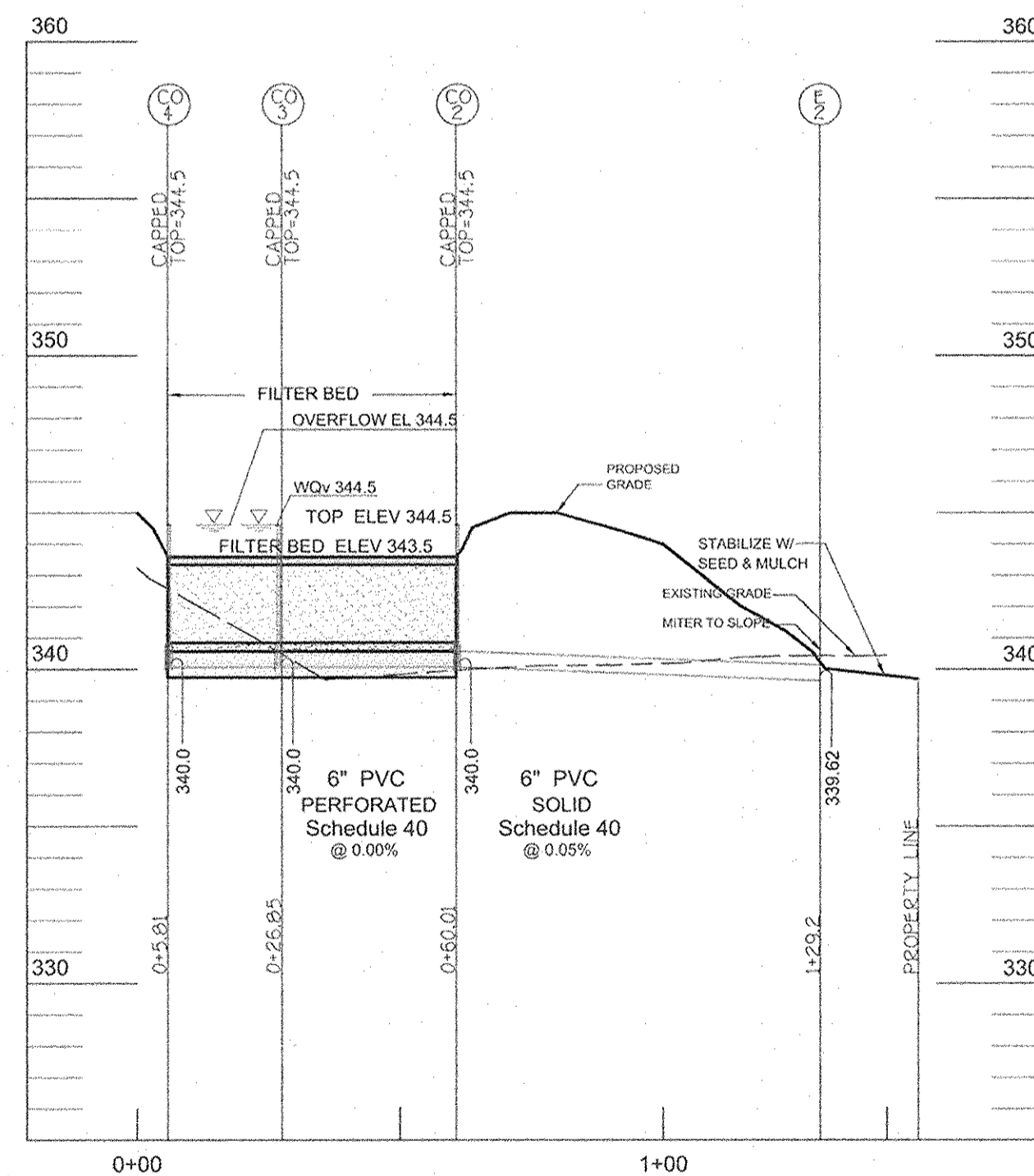
TYPICAL BIORETENTION SECTION
NOT TO SCALE



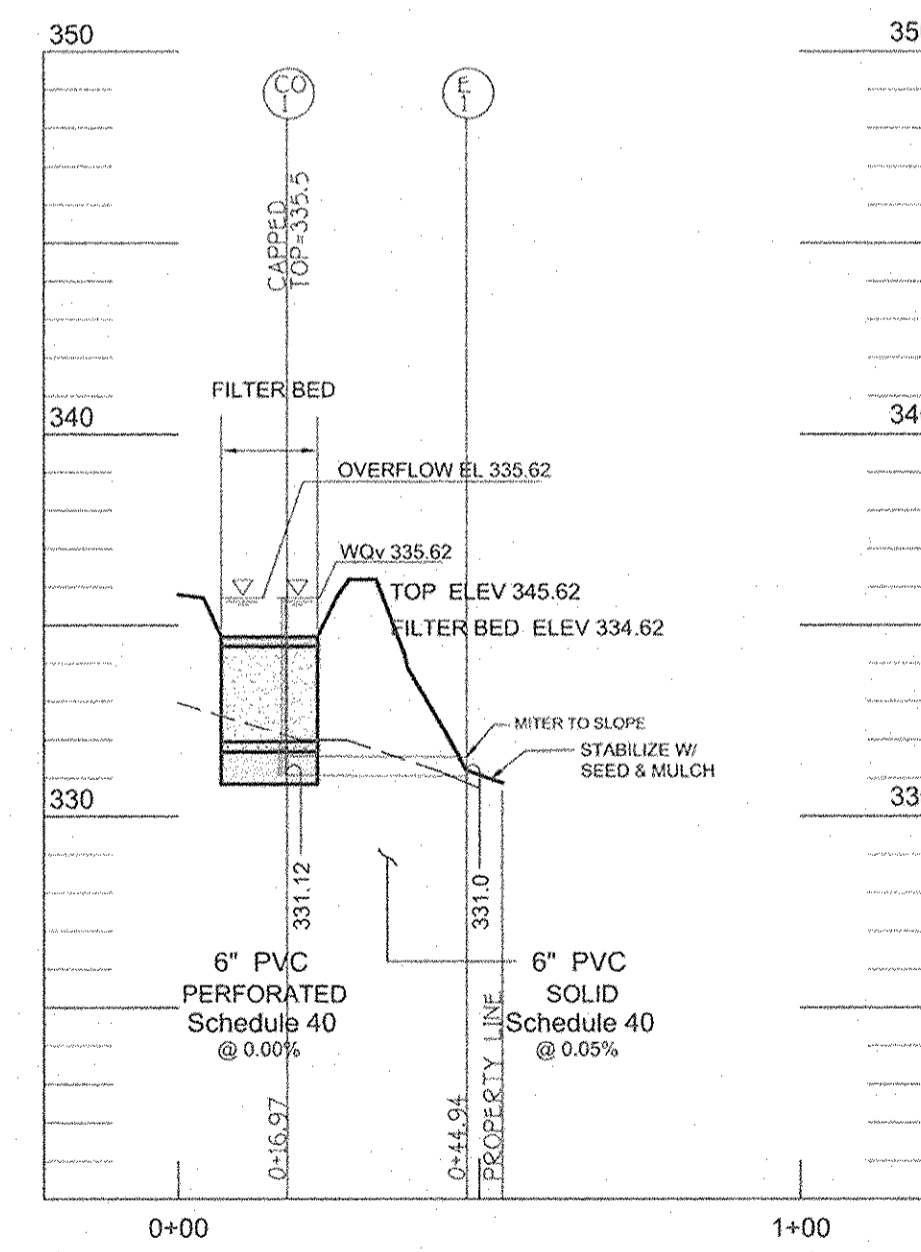
LOT #2 BIORETENTION PROFILE
H1"=30'
V1"=5'



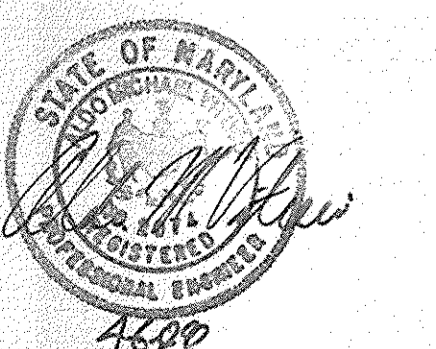
LOT #3 BIORETENTION PROFILE
H1"=30'
V1"=5'



LOT #4 BIORETENTION PROFILE
H1"=30'
V1"=5'



LOT #5 BIORETENTION PROFILE
H1"=30'
V1"=5'



FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10777 BALTIMORE NATIONAL PIKE
ELLCOTT CITY, MARYLAND 21032
410 481-2899

APPLIEDSTORMWATER
DESIGN, MAINTENANCE, CONSTRUCTION
dba T.E. Scott & Associates, Inc.
129 Cockeysville Road Hunt Valley, MD 21030
phone: 410.458.2651
fax: 443.269.0216
tes@mdswm.com www.mdswm.com

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY
PLANNING DIRECTOR
DATE

OWNERS
LOWELL D. BAU
9780 OLD ANNAPOLIS ROAD
ELLCOTT CITY, MARYLAND 21042-6327
410 738-0954

DEVELOPER
CORNESTONE HOLDINGS, LLC
9895 NORFOLK AVENUE
LAUREL, MARYLAND 20723
410 738-2565

STORMWATER MANAGEMENT
BIORETENTION DETAILS
LOTS 1 THRU 5
CENTENNIAL MEADOWS
LOTS 1 THRU 5
A RESUBDIVISION OF LOT 6 AND PART OF LOT 5, GWYNN DEVELOPMENT
PLAT BOOK 4, FOLIO 77
ZONED: R-20
TAX MAP No. 30 GRID No. 3 PARCEL No. 112
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 04, 2008
SHEET 6 OF 7

SPECIFICATIONS

SOIL TEXTURE AND STRUCTURE

Soil shall have a sandy loam, loamy sand, or loam texture per USDA textural triangle. Maximum clay content shall be 5%. Soil mixture shall be 50-60% sand; 20-30% leaf compost; and 20-30% topsoil. The soil shall be a uniform mix, free of stones, stumps, roots, or other similar objects larger than two inches. No other materials or substances should be mixed or dumped within the bioretention soil that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil must be free of plant or seed material of non-native, invasive species, or noxious weeds.

SOIL TESTING

Planting soil for bioretention areas must be tested prior to installation for PH and organic matter. The soil should meet the following criteria (Landscape Contractors Association, 1996).

PH Range: 5.5 - 6.5

Organic Matter: 1.5 - 4.0%

Sieve analysis, PH and organic matter tests shall be performed for each bioretention area.

SOIL PREPARATION

Soil preparation can be performed onsite or offsite and transported to the facility location when ready for installation. Prior to transport, the soil mix should be certified as meeting the criteria established for the soil medium and approved by the site inspector.

Soil preparation can be accomplished by thoroughly mixing soil components, amendments and additives, as needed utilizing a backhoe or front-end loader.

SOIL PLACEMENT

Placement of the planting soil in the bioretention area should be after scarifying the invert area of the proposed facility and installing the underdrain and/or recharge area (if applicable), in lifts of 12 to 18 inches and lightly compacted. Minimal compaction effort can be applied to the soil by tamping with a bucket from a dozer or backhoe. Lifts are not to be compacted but are performed in order to reduce the possibility of excessive settlement. Installation of soils must be done in a manner that will ensure adequate filtration.

SOIL COMPACTION

Avoid over compaction by allowing time for natural compaction and settlement. No additional manual compaction of soil is necessary. Rake soil material as needed to level out. Overfill above the proposed surface invert to accommodate natural settlement to proper grade. Depending upon the soil material, up to 20% natural compaction may occur. For facilities designed with a liner, no scarification of the invert area is required.

It is very important to minimize compaction of both the base of the bioretention area and the required backfill. When possible, use excavation hoes to remove original soil. If bioretention areas are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf-type tires.

SOIL COMPACTION (cont)

Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reducing infiltration rates and storage volumes and is not acceptable. Compaction will significantly contribute to design failure. Compaction can be alleviated at the base of the bioretention facility by using a primary filling operation such as a Chisel Plow, Ripper, or Subsoiler. These filling operations are to restructure the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not fill deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before back filling the facility and placement of underdrain. Pump any ponded water before preparing (rototilling) base.

When back filling the bioretention facility, do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

SOIL PRESOAK

In order to speed up the natural compaction process, presoaking the placed soil may be performed. Significant settlement can occur after the first presoak, and additional settlement may occur subsequent to the initial wetting. If time and construction scheduling permits, it is preferable to allow natural settlement to occur with the help of rain events to presoak the soil medium.

MULCH

Areas should be mulched once trees and shrubs have been planted. Any ground cover specified as plugs may be installed once mulch has been applied.

The mulch layer shall consist of either a standard landscape fine shredded hardwood mulch (preferred) or hardwood chips. The mulch may be either aged or fresh to maximize nitrogen and metal uptake by the facility. Mulch shall be free of weed seeds, soil, roots, or any other substance not consisting of either bole or branch wood and bark. The mulch should be uniformly applied approximately 2 to 3 inches in depth. Mulch applied any deeper than three inches reduces proper oxygen and carbon dioxide cycling between the soil and the atmosphere, and keeps plant roots from making good contact with the soil.

SAND

Sand shall be clean and free of deleterious materials, meeting AASHTO M-6 or ASTM C-33 with grain size of 0.02" - 0.04". MSHA C-33 sand is acceptable.

GEOTEXTILE

Geotextile fabric should meet ASTM D-751 (puncture strength - 125 LB), ASTM D-1117 (Mullen burst strength - 400 PSF), and ASTM D-1682 (Tensile strength - 300 LB). Fabric should have 0.08" thick E.O.S. of #80 sieve, and maintain 125 GPM per 50 FT. flow rate.

Structure Backfill

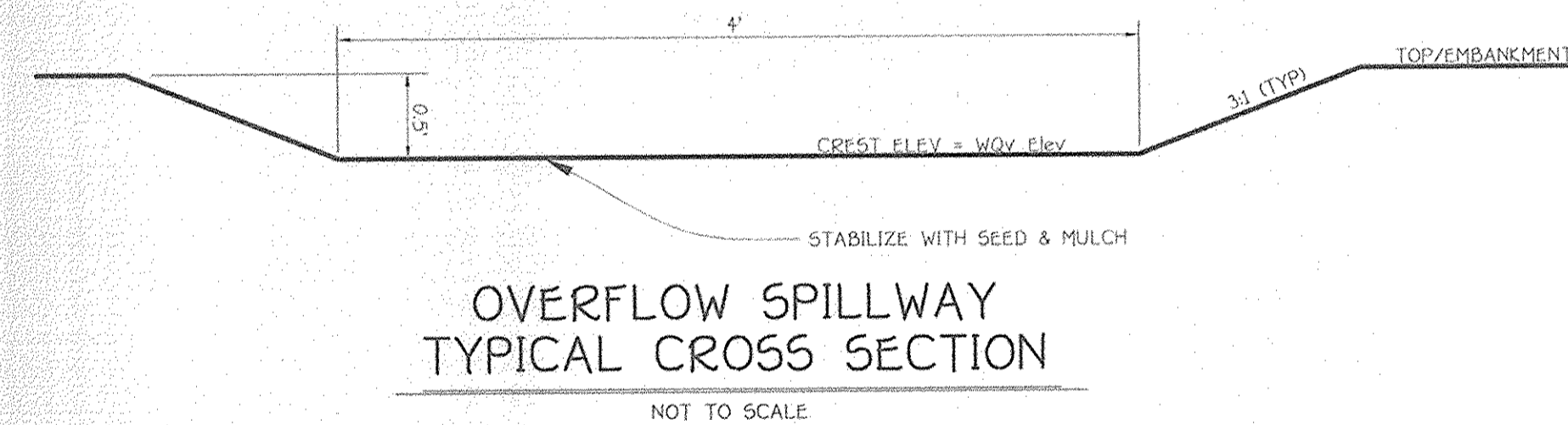
Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under bedding, over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to the specified for the core of the embankment or other embankment materials.

Plastic Pipe

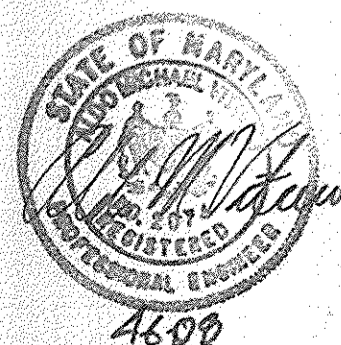
The following criteria shall apply for plastic pipe:

- Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" - 10" inch pipe shall meet the requirement of AASHTO M252 Type 5, and 12" through 24" inch shall meet the requirement of AASHTO M294 Type 5.
- Joints and connections to anti-seep collars shall be completely watertight.
- Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
- Backfilling shall conform to "Structure Backfill".



OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED BIORETENTION FACILITIES

- Annual maintenance of plant material, mulch layer, and soil layer is required. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation. Maintenance will also address dead material and pruning.
- Schedule of plant inspection will be twice a year in spring and fall. This inspection will include removal of dead and diseased vegetation considered beyond treatment, treatment of all diseased trees and shrubs and replacement of all deficient stakes and wires.
- Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer once every 2 to 3 years.
- Soil erosion to be addressed on an as-needed basis, minimum once a month and after heavy storm events.



FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 12777 BALTIMORE NATIONAL PIKE
ELICOTT CITY, MARYLAND 21042
410-461-2895

APPLIEDSTORMWATER
DESIGN, MAINTENANCE, CONSTRUCTION
dba T.E. Scott & Associates, Inc.
129 Cockeysville Road phone: 410.458.2651
Hunt Valley, MD 21030 fax: 443.269.0216
tes@midswm.com www.midswm.com

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY
Patrick J. Laughlin
PLANNING DIRECTOR 4/11/08 DATE

OWNERS

LOWELL D. RAU
9780 OLD ANNAPOLIS ROAD
ELICOTT CITY, MARYLAND 21042-6327
(410) 730-8954

DEVELOPER

CORNERSTONE HOLDINGS, LLC
9699 NORTFOLK AVENUE
LAUREL, MARYLAND 20723
(410) 792-2595

STORMWATER MANAGEMENT
BIORETENTION DETAILS
LOTS 1 THRU 5
CENTENNIAL MEADOWS
LOTS 1 THRU 5
A RESUBDIVISION OF LOT 6 AND PART OF LOT 5, GWYNN DEVELOPMENT
PLAT BOOK 4, FOLIO 77
ZONED: R-20
TAX MAP No. 30 GRID No. 3 PARCEL No. 112
SECOND ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN DATE: APRIL 04, 2008
SHEET 7 OF 7

5P-07-006