SHEET INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PRELIMINARY EQUIVALENT SKETCH PLAN & LANDSCAPE PLAN
3	SCHEMATIC GRADING AND SEDIMENT CONTROL PLAN
4	PRELIMINARY FOREST CONSERVATION PLAN
5-8	STORMWATER MANAGEMENT

PRELIMINARY EQUIVALENT SKETCH PLAN

WINTERS LANE INVESTMENTS LLC

BUILDABLE LOTS 1 THRU 8 & OPEN SPACE LOT 9

(A RESUBDIVISION OF LOT 2, NORRIS E. POOL SUBDIVISION, PLAT No. 3342)

ZONING: R-12

TAX MAP No. 38 GRID No. 15 PARCEL No. 868

COORDINATE TABLE

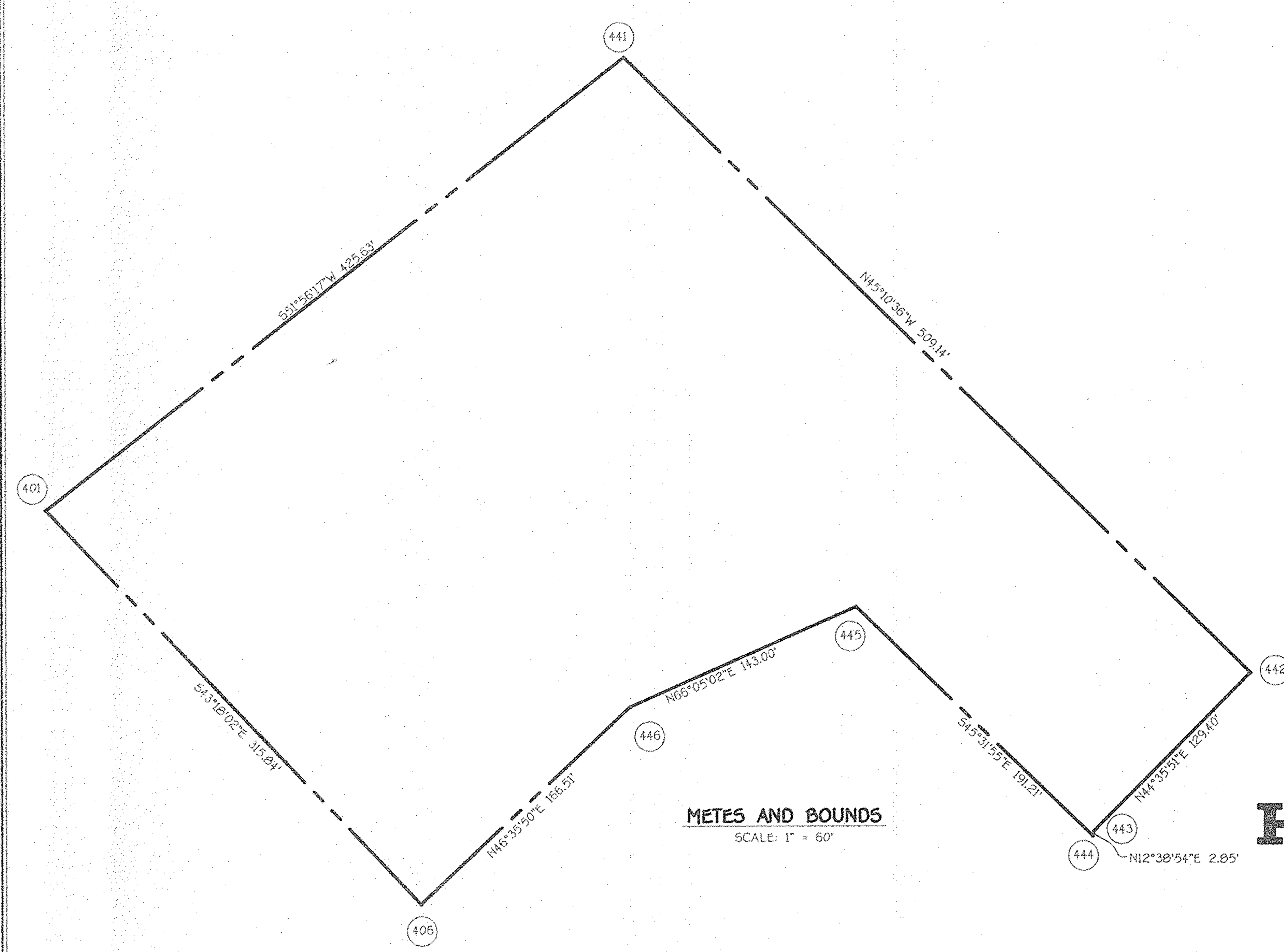
Point	North	East
401	N 557491.66	E 1390363.31
441	N 557754.07	E 1390698.42
442	N 557395.16	E 1391059.55
443	N 557303.02	E 1390968.69
444	N 557300.25	E 1390968.07
445	N 557434.19	E 1390831.62
446	N 557376.22	E 1390700.89
406	N 557261.81	E 1390579.92

ROADWAY INFORMATION CHART

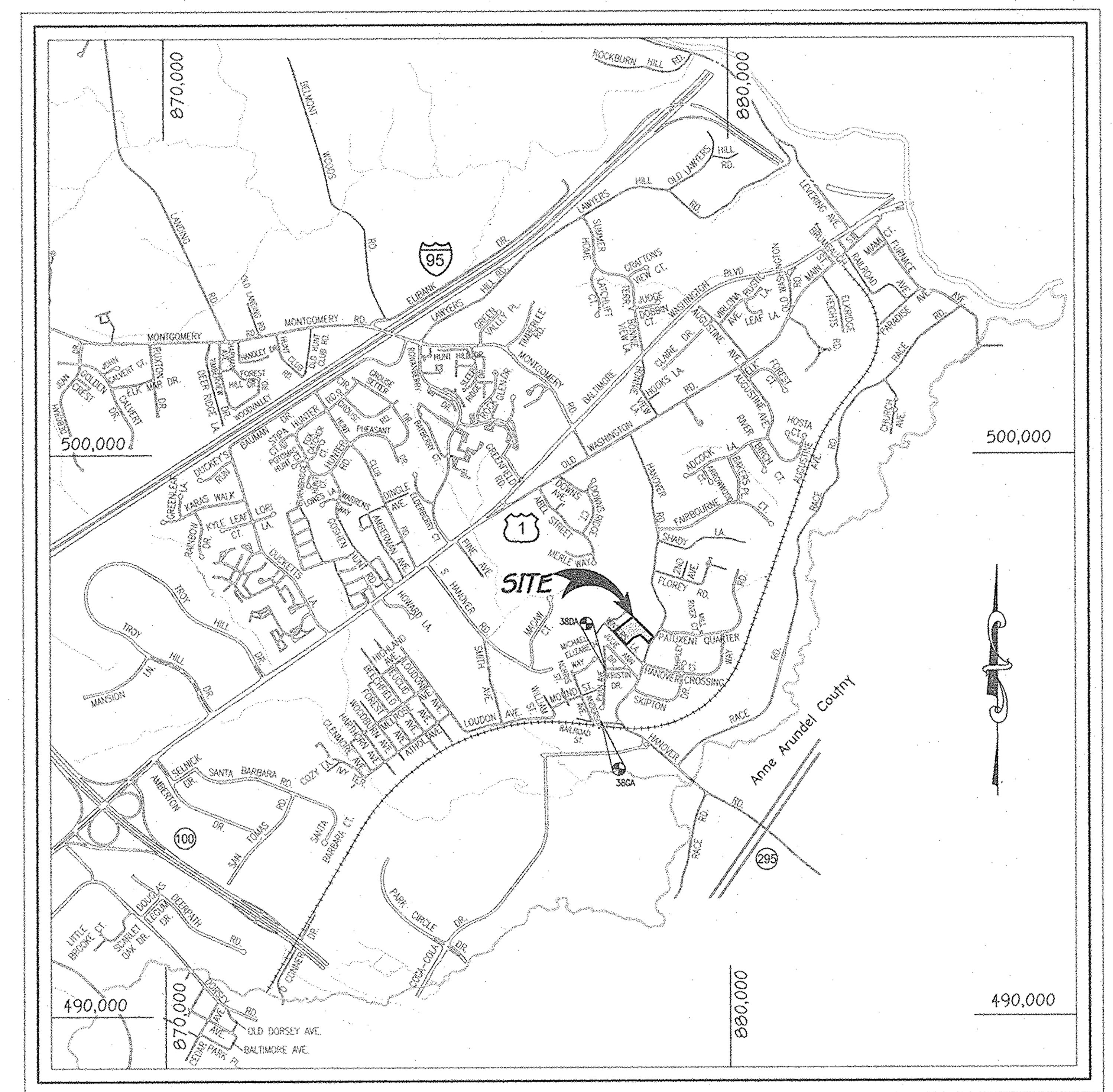
ROAD NAME	CLASSIFICATION	DESIGN SPEED	EASEMENT WIDTH
N/A	U.I.C. DRIVEWAY	15 M.P.H.	24'

MINIMUM LOTS SIZE CHART

LOT No.	GROSS AREA	PIPESTEM AREA	MINIMUM LOT SIZE
2	9790 SQ.FT.±	352 SQ.FT.±	9438 SQ.FT.±
3	9490 SQ.FT.±	634 SQ.FT.±	8856 SQ.FT.±
4	17101 SQ.FT.±	2156 SQ.FT.±	14945 SQ.FT.±
5	20826 SQ.FT.±	1003 SQ.FT.±	19823 SQ.FT.±
6	9118 SQ.FT.±	997 SQ.FT.±	8121 SQ.FT.±
7	9842 SQ.FT.±	583 SQ.FT.±	9259 SQ.FT.±



METES AND BOUNDS
SCALE: 1" = 60'



ADC MAP No. 17, H9

VICINITY MAP
SCALE: 1" = 2000'

FIRST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

GENERAL NOTES

1. AS A CONSEQUENCE OF THIS PLAN'S SUBMISSION AFTER MAY 22, 2003, THIS SUBDIVISION PLAN WILL BE SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
2. SUBJECT PROPERTY ZONED R-12 PER 02-02-04 COMPREHENSIVE ZONING PLAN AND "COMPLITE" AMENDMENTS EFFECTIVE ON 07-28-06.
3. a. GROSS AREA OF TRACT = 3.697 AC.±
   b. AREA OF FLOODPLAIN = 0.00 AC.±
   c. AREA OF 25% OR GREATER SLOPES = 0.418 AC.±
   d. AREA OF WETLANDS = 0.00 AC.±
   e. NET AREA OF TRACT = 3.279 AC.
4. a. AREA OF PROPOSED ROAD R/W = 0.00 AC.±
5. a. AREA OF PROPOSED BUILDABLE LOTS = 2.205 AC.±
   b. AREA OF PROPOSED OPEN SPACE LOTS = 1.492 AC.±
6. NUMBER OF LOTS PROPOSED:
   a. BUILDABLE = 8
   b. OPEN SPACE LOTS = 1
7. OPEN SPACE TABULATION:
   a. GROSS AREA OF TRACT = 3.697 AC.±
   REQUIRED OPEN SPACE = (8,400 SQ.FT. OPTION) = 30% x GROSS = 1.109 AC.±
   PROVIDED OPEN SPACE = 1.492 AC.±
   b. RECREATIONAL OPEN SPACE REQUIRED = N/A (LESS THAN 10 UNITS)
8. PRIOR CASE NUMBERS WITH THIS PROJECT ARE F-75-018, NORRIS POOL SUBDIVISION.
9. PUBLIC WATER AND SEWER SHALL BE UTILIZED WITHIN THIS DEVELOPMENT. EXISTING UTILITIES ARE BASED ON CONT. Nos. 44-1937 & 10-3041.
10. SOILS INFORMATION TAKEN FROM SOIL MAP No. 34, SOIL SURVEY, HOWARD COUNTY, MARYLAND, JULY, 1968 ISSUE.
11. THE EXISTING DWELLING (CIRCA 1969) LOCATED ON PROPOSED LOT 5 IS TO REMAIN.
12. BOUNDARY OUTLINE BASED ON FIELD RUN SURVEY PREPARED BY FISHER, COLLINS & CARTER, INC. DATED NOVEMBER, 2005.
13. TOPOGRAPHIC CONTOURS BASED ON FIELD RUN TOPOGRAPHY PREPARED BY FISHER, COLLINS & CARTER, INC. DATED MARCH, 2006.
14. THERE ARE AREAS OF STEEP SLOPES LOCATED ON THIS PROPERTY AS DEFINED BY THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, SECTION 16.116.b.
15. STORMWATER MANAGEMENT WILL BE PROVIDED IN ACCORDANCE WITH HOWARD COUNTY AND MARYLAND 378 SPECIFICATIONS. RECHARGE VOLUME WILL BE PROVIDED THROUGH THE USE OF A SURFACE SAND FILTER. WATER QUALITY WILL BE PROVIDED VIA A SURFACE SAND FILTER AND THREE (3) BIO-RETENTION FACILITIES. CHANNEL PROTECTION IS NOT REQUIRED SINCE THE ONE YEAR PEAK DISCHARGE IS LESS THAN 2 c.f.s. THESE FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE H.O.A.
16. THE LOTS SHOWN HEREON COMPLY WITH THE MINIMUM OWNERSHIP, WIDTH AND LOT AREA AS REQUIRED BY THE MARYLAND STATE DEPARTMENT OF THE ENVIRONMENT.
17. THERE IS NO FLOODPLAIN AND NO WETLANDS ON-SITE FOR THIS PROJECT.
18. THE TRAFFIC STUDY FOR THIS PROJECT WAS PREPARED BY THE MARS GROUP DATED APRIL, 2007.
19. THE FOREST CONSERVATION REQUIREMENTS PER SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL FOR THIS SUBDIVISION WILL BE FULFILLED BY 0.78 AC. OF ON-SITE RETENTION AND 0.34 ACRES OF ON-SITE REFORESTATION. THIS CONSERVATION PLAN IS SUBJECT TO CHANGE BASED ON HOWARD COUNTY POLICY REGARDING FOREST CONSERVATION ADJACENT TO UTILITY LINES.
20. THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY GEO-TECHNOLOGY ASSOC., INC. DATED MARCH, 2007.
21. THE FOREST STAND DELINEATION AND WETLAND DELINEATION FOR THIS PROJECT WAS PREPARED BY ESA, INC. DATED JULY, 2007.
22. THIS PROPERTY IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
23. 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.
24. NO CEMETERIES EXIST WITHIN THIS SUBDIVISION.
25. THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
26. SIGN POSTS: ALL SIGN POST USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 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."
27. DRIVEWAY (S) 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 (16 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 (H25 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
28. DRIVEWAYS SHALL BE PROVIDED IN ACCORDANCE WITH HOWARD COUNTY STANDARD DETAIL R-6.06 IN THE VOL. IV DESIGN MANUAL.
29. NO NOISE STUDY IS REQUIRED FOR THIS PROJECT.
30. 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 Nos. 38DA AND 38 GA WERE USED FOR THIS PROJECT.

HOWARD COUNTY MONUMENT No. 38DA	N 556,796.3031 E 1,390,221.4773	ELEV. = 126.133
HOWARD COUNTY MONUMENT No. 38GA	N 555,897.3246 E 1,390,132.1179	ELEV. = 80.848

31. THE OVERHEAD ELECTRIC LINES LOCATED ON OPEN SPACE LOT 9 WILL BE RELOCATED TO AN AREA OUTSIDE THE PROPOSED FOREST CONSERVATION EASEMENT.
32. DOCUMENTATION OF THE PROPER ABANDONMENT OF SEPTIC SYSTEMS WILL BE SUBMITTED TO THE HOWARD COUNTY HEALTH DEPARTMENT PRIOR TO SUBMISSION OF FINAL PLAN ORIGINALS FOR SIGNATURE APPROVAL.

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

STATE OF MARYLAND REGISTERED PROFESSIONAL ENGINEER
43-08

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

PLANNING DIRECTOR — DATE 4/10/08

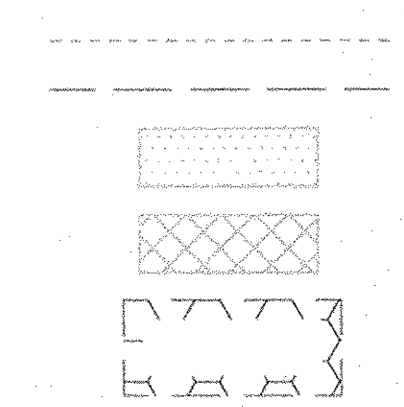
OWNER/DEVELOPER
WINTERS LANE INVESTMENTS, LLC
6420 AUTUMN SKY WAY
COLUMBIA, MARYLAND 21044
(443) 324-4732

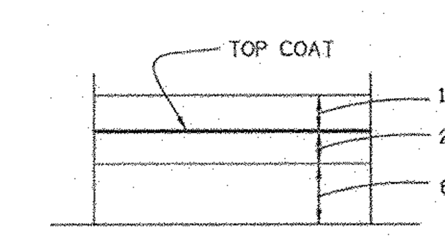
PRELIMINARY EQUIVALENT SKETCH PLAN
WINTERS LANE INVESTMENTS LLC
BUILDABLE LOTS 1 THRU 8 AND OPEN SPACE LOT 9
(A RESUBDIVISION OF LOT 2, NORRIS E. POOL SUBDIVISION, PLAT No. 3342)
ZONED: R-12
TAX MAP No. 38 PARCEL No. 868 GRID No. 15
FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN
DATE: APRIL 03, 2008

SP 08-003

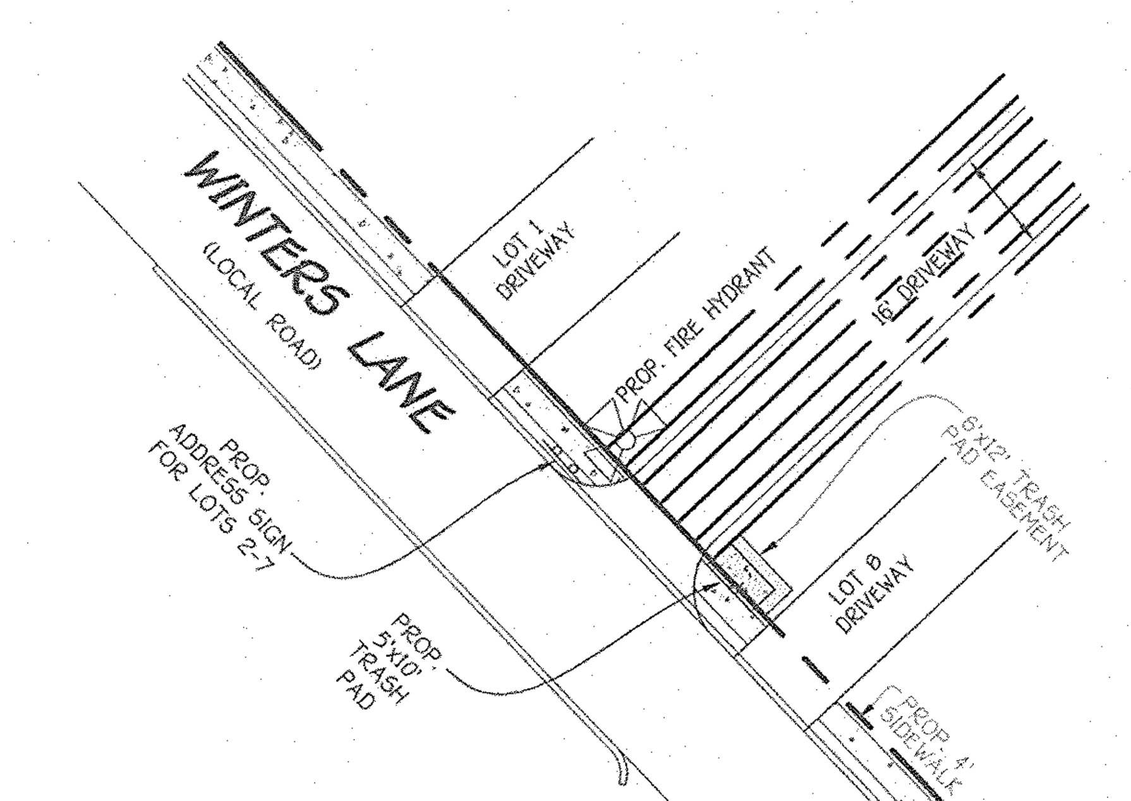
I:\2005\05129\dwg\NEW PRELIMINARY EQUIV. SKETCH PLAN\05129-3001 6301 SHT 1 TITLE SHEET.dwg, TITLE SHEET, 1:1

LEGEND





DRIVEWAY PAVING DETAIL
NO SCALE



DETAIL
SCALE: 1" = 30'

SCHEDULE A PERIMETER LANDSCAPE EDGE

PERIMETER	CATEGORY (PROPERTIES/ ROADWAYS)	LANDSCAPE TYPE	LINEAR FEET OF OF ROADWAY FRONTAGE PERIMETER	CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NUMBER OF PLANTS REQUIRED: SHADE TREES	EVERGREEN TREES	SHRUBS
P-1	FRONT TO ROADWAY	N/A	204'	NO	NO	-	-	-
P-2	ADJACENT TO PERIMETER	A	426'	NO	NO	7	-	-
P-3	ADJACENT TO PERIMETER	A	509'	YES (245') & 11 TREES	NO	0	-	-
P-4	ADJACENT TO ROADWAY	B	129'	YES (100%)	NO	0	-	-
P-5	ADJACENT TO PERIMETER	A	191'	YES (100%)	NO	0	-	-
P-6	ADJACENT TO PERIMETER	A	168'	YES (72')	NO	2	-	-
					TOTAL	9	0	0

SCHEDULE D STORMWATER MANAGEMENT AREA LANDSCAPING

LINEAR FEET OF TYPE 'B' PERIMETER	D1: 506'
CREDIT FOR EXISTING VEGETATION (NO, YES AND %)	NO
CREDIT FOR OTHER LANDSCAPING (NO, YES AND %)	NO
REMAINING PERIMETER	506'
NUMBER OF TREES REQUIRED: SHADE TREES / EVERGREEN TREES	10 / 13

4308

FISHER, COLLINS & CARTER, INC.
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TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

PLANNING DIRECTOR 4/10/08 DATE

OWNER/DEVELOPER

WINTERS LANE INVESTMENTS, LLC
6420 AUTUMN SKY WAY
COLUMBIA, MARYLAND 21044
(443) 324-4732

PRELIMINARY EQUIVALENT SKETCH & LANDSCAPE PLAN

WINTERS LANE INVESTMENTS LLC

BUILDABLE LOTS 1 THRU 8 AND OPEN SPACE LOT 9

(A RESUBDIVISION OF LOT 2, NORRIS E. POOL SUBDIVISION, PLAT No. 3342)
ZONED: R-12
TAX MAP No. 38 PARCEL No. 868 GRID No. 15
FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1" = 40'
DATE: APRIL 03, 2008

SP 08-003

LEGEND

- - - - - -	EXISTING 2-FOOT CONTOURS
— — — —	EXISTING 10-FOOT CONTOURS
(dotted pattern)	15% TO 24.9% SLOPES
(crosshatch pattern)	25% OR GREATER SLOPES
(hexagon border)	FOREST CONSERVATION EASEMENT

4-3-08

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SCHEMATIC GRADING & SEDIMENT CONTROL PLAN

WINTERS LANE INVESTMENTS LLC

BUILDABLE LOTS 1 THRU 8 AND OPEN SPACE LOT 9

(A RESUBDIVISION OF LOT 2, NORRIS E. POOL SUBDIVISION, PLAT No. 3342)
ZONED: R-12
TAX MAP No. 38 PARCEL No. 868 GRID No. 15
FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1" = 40'
DATE: APRIL 03, 2008
SHEET 3 OF 8

SP 08-003

SOILS LEGEND

SOIL	NAME	CLASS
ClC3	Chillum gravelly loam, 5 to 10 percent slopes, severely eroded	C
ClD2	Chillum gravelly loam, 10 to 15 percent slopes, moderately eroded	C
CmC2	Chillum silt loam, 5 to 10 percent slopes, moderately eroded	C
ScB	Sandy and slayey land, gently sloping	B
SlC2	Sassafras loam, 5 to 10 percent slopes, moderately eroded	B
SsE	Sassafras soils, 15 to 40 percent slopes	B
** Fa	Fallingston loam	D

NOTES:

* Hydric soils and/or contains hydric inclusions

** May contain hydric inclusions

† Generally only within 100-year floodplain areas

FOREST CONSERVATION WORKSHEET VERSION 2.2

BASIC SITE DATA:

A. TOTAL TRACT AREA =	3.69
B. AREA WITHIN 100 YEAR FLOODPLAIN =	–
C. AREA TO REMAIN IN AGRICULTURAL PRODUCTION =	–
D. NET TRACT AREA =	3.69
LAND USE CATEGORY: HDR	
INFORMATION FOR CALCULATIONS:	
E. AFFORESTATION THRESHOLD 15% x D =	0.55
F. FOREST CONSERVATION THRESHOLD 20% x D =	0.74
EXISTING FOREST COVER:	
G. EXISTING FOREST COVER (EXCLUDING FLOODPLAIN) =	2.29
H. AREA OF FOREST ABOVE CONSERVATION THRESHOLD =	1.55
I. BREAK EVEN POINT: =	1.05
J. FOREST CLEARING PERMITTED WITHOUT MITIGATION: =	1.24
PROPOSED FOREST CLEARING:	
K. FOREST TO BE CLEARED =	1.51
L. FOREST TO BE RETAINED =	0.78
PLANTING REQUIREMENTS:	
M. REFORESTATION FOR CLEARING ABOVE THE CONSERVATION THRESHOLD =	0.38
N. REFORESTATION FOR CLEARING BELOW THE CONSERVATION THRESHOLD =	0.00
O. CREDIT FOR RETENTION ABOVE THE CONSERVATION THRESHOLD =	0.04
P. TOTAL REFORESTATION REQUIRED =	0.34
Q. TOTAL AFFORESTATION REQUIRED =	0.00
R. TOTAL PLANTING REQUIREMENT =	0.34

LEGEND

- Property Boundary
- Ex. Topography
- 15-25% Steep Slopes
- 25% Steep Slopes and Greater
- Area of Forest To Be Retained: 0.78 Acres
- Soils Line
- Existing Tree Line
- Existing Fence
- Proposed Tree Protection Fence
- Forest Stand Boundary
- Forest Data Station
- LOD
- Proposed Grading
- Tree Protection Signage

FCP NOTES

THIS PRELIMINARY FOREST CONSERVATION PLAN DOCUMENTS THE PROPOSED FOREST TO BE CLEARED AND TO BE RETAINED. ACCORDING TO MARYLAND DEPARTMENT OF NATURAL RESOURCES GUIDELINES, THE REQUIRED REFORESTATION FOR THIS CLEARING IS 0.34 ACRES (MD DNR FOREST CONSERVATION WORKSHEET). A PROPOSED FEE-IN-LIEU WILL COMPENSATE FOR ANY MITIGATION REQUIRED.

PLEASE NOTE THAT NO 100-YEAR FLOODPLAIN, WETLANDS, STREAMS OR SPECIMEN TREES WERE IDENTIFIED ON THE PROPERTY.

ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.

THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO FULFILL THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE, FOREST CONSERVATION ACT. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.

FORESTED AREAS OCCURRING OUTSIDE OF THE FCE SHALL NOT BE CONSIDERED PART OF THE FCE AND SHALL NOT BE SUBJECT TO PROTECTIVE LAND COVENANTS.

LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.

THERE SHALL BE NO CLEARING, GRADING, CONSTRUCTION OR DISTURBANCE OF VEGETATION IN THE FOREST CONSERVATION EASEMENT, EXCEPT AS PERMITTED BY HOWARD COUNTY DPZ.

NO STOCKPILES, PARKING AREAS, EQUIPMENT CLEANING AREAS, ETC. SHALL OCCUR WITHIN AREAS DESIGNATED AS FOREST CONSERVATION EASEMENTS.

TEMPORARY FENCING SHALL BE USED TO PROTECT FOREST RESOURCES DURING CONSTRUCTION. THE FENCING SHALL BE PLACED ALONG ALL FCE BOUNDARIES WHICH OCCUR WITHIN 15 FEET OF THE PROPOSED LIMITS OF DISTURBANCE.

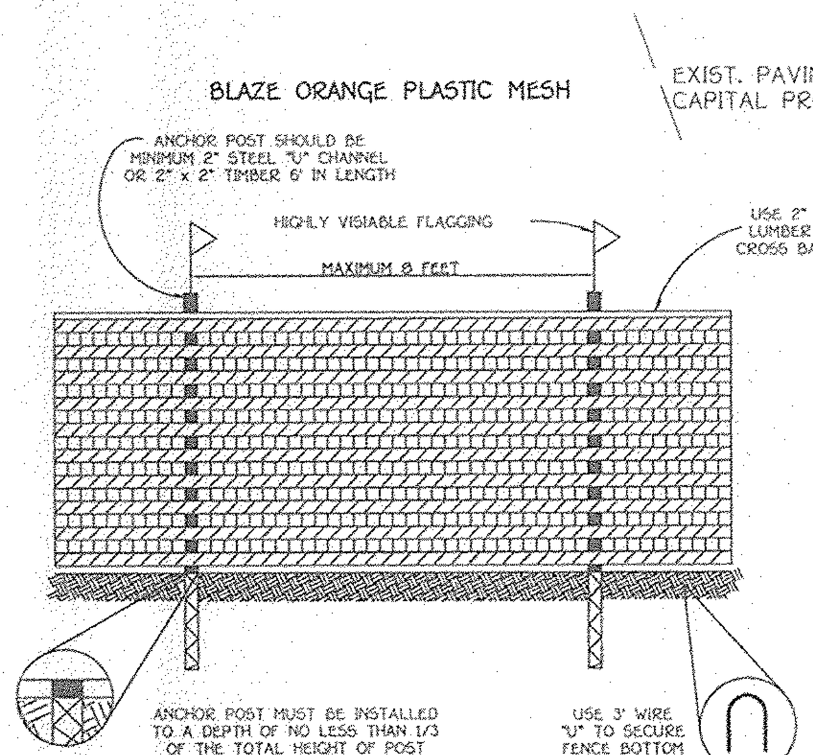
PERMANENT SIGNAGE SHALL BE PLACED 50' – 100' APART ALONG BOUNDARIES OF ALL AREAS INCLUDED IN FOREST CONSERVATION EASEMENTS.

AREA OF FOREST TO BE CLEARED

STAND 1: 0.58 ACRES
STAND 2: 0.93 ACRES
STAND 3: 0.00 ACRES

TOTAL AREA OF FOREST TO BE CLEARED: 1.51 ACRES

NOTE: THE OVERHEAD ELECTRIC LINES LOCATED ON OPEN SPACE LOT 9 WILL BE RELOCATED TO AN AREA OUTSIDE THE PROPOSED FOREST CONSERVATION EASEMENT.



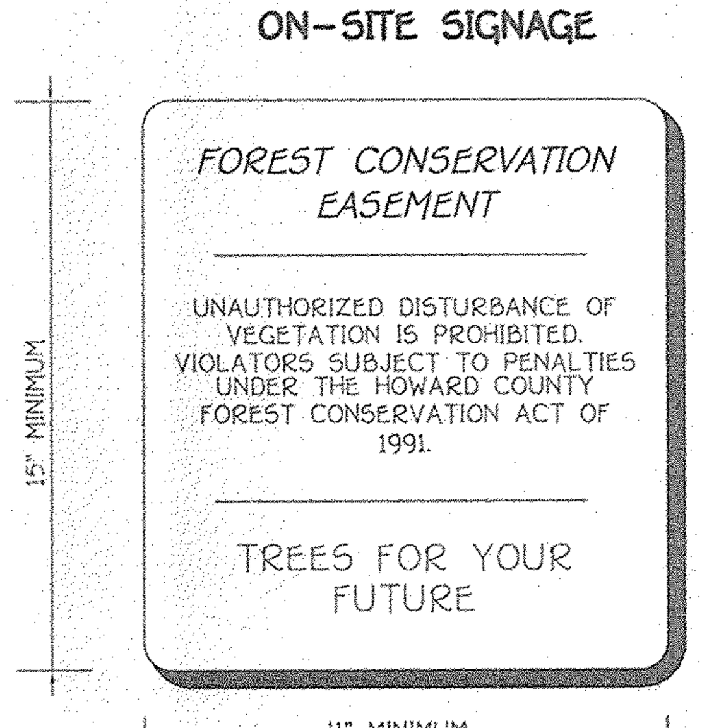
NOTES:

1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE MAY ALSO BE USED.
6. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION DETAIL

NOT TO SCALE

ON-SITE SIGNAGE



Benjamin Carr 7/18/07
Benjamin Carr Date
Qualified Professional as per the 1991 Maryland Forest Conservation Act Issued November 1, 2006

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

PLANNING DIRECTOR DATE 4/10/08

FISHER, COLLINS & CARTER, INC.
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PRELIMINARY FOREST CONSERVATION PLAN

WINTERS LANE INVESTMENTS LLC

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(A RESUBDIVISION OF LOT 2, NORRIS E. POOL SUBDIVISION, PLAT No. 3342)
ZONED: R-12
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FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1" = 40'
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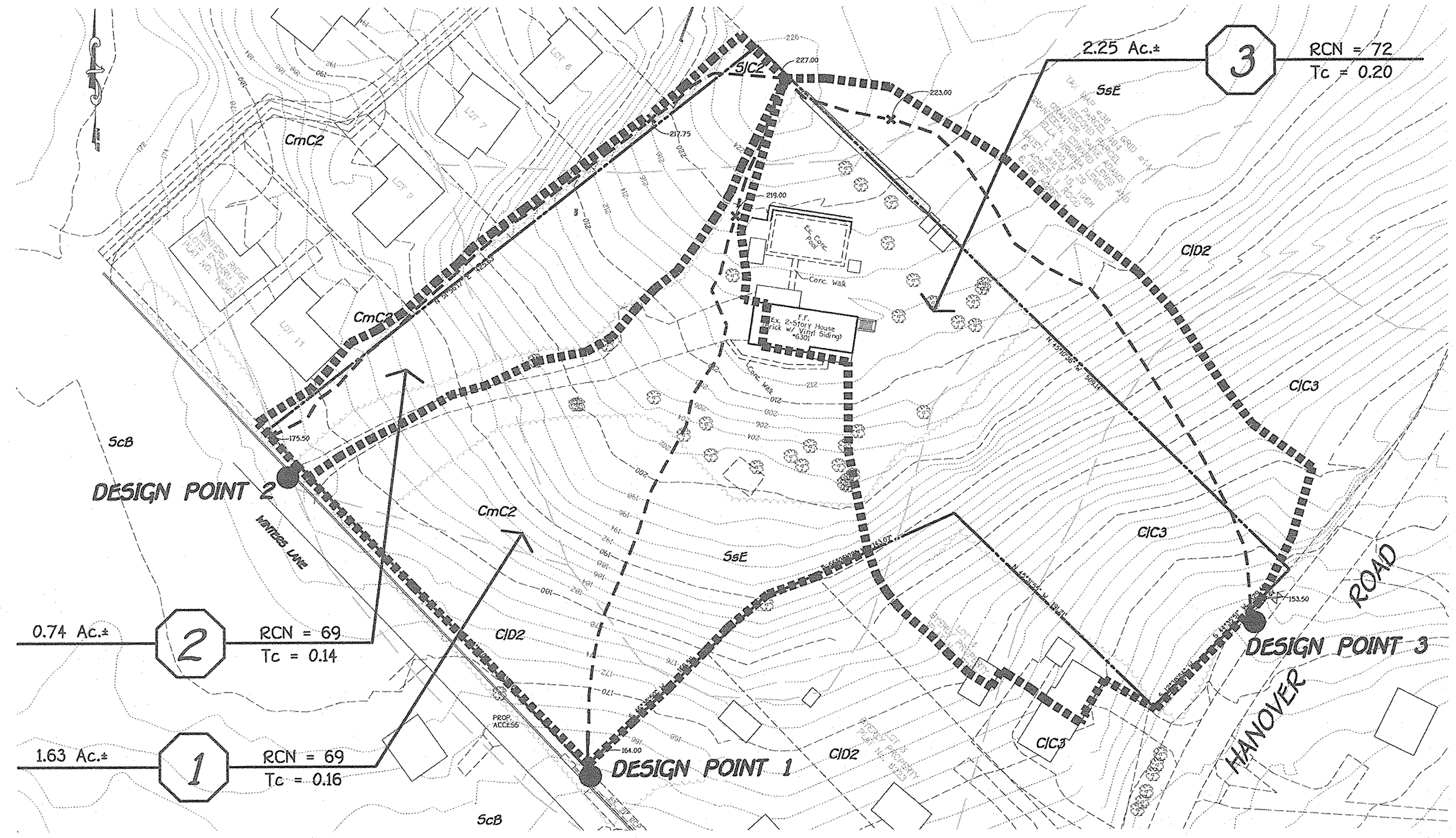
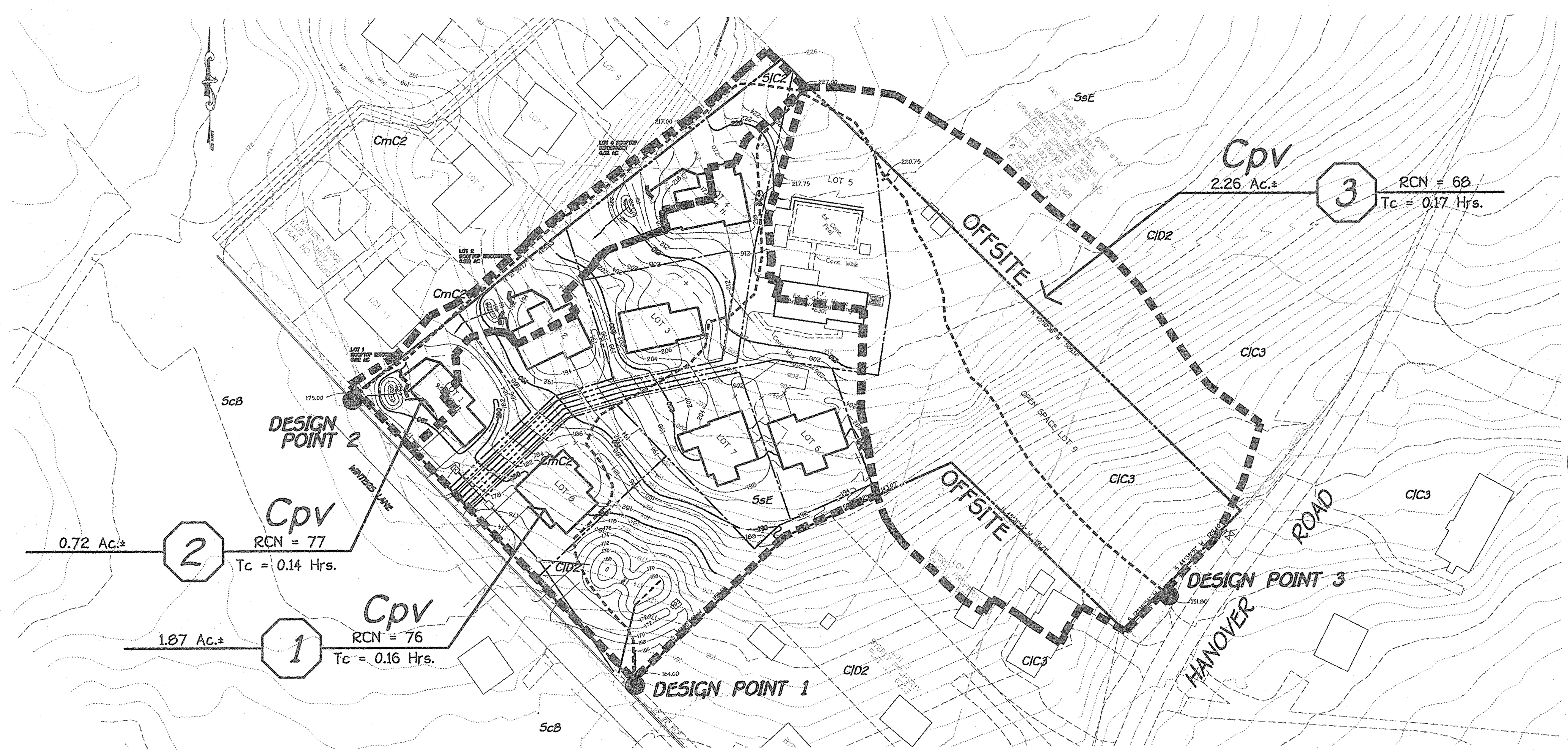
SHEET 4 OF 8

SP 08-003





LEGEND

- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- GLB2 / MLC2 — SOIL LINES AND TYPES
- LIMIT OF DRAINAGE AREA
- 492.0 — TIME OF CONCENTRATION PATH
- PROPOSED CONTOUR
- DESIGN POINT

SOILS LEGEND

SOIL	NAME	CLASS
ClC3	Chillum gravelly loam, 5 to 10 percent slopes, severely eroded	C
ClD2	Chillum gravelly loam, 10 to 15 percent slopes, moderately eroded	C
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** Fa	Fallingston loam	D

NOTES:

* Hydric soils and/or contains hydric inclusions

** May contain hydric inclusions

† Generally only within 100-year floodplain areas

SWM REQUIREMENTS SUMMARY

	Rev VOLUME	Rev AREA	WQv	Cpv qi
DESIGN PT 1	0.011 ac/ft	0.129 ac	0.051 ac/ft	1.943 cfs
DESIGN PT 2	0.005 ac/ft	0.053 ac	0.021 ac/ft	0.817 cfs
DESIGN PT 3	0.004 ac/ft	0.032 ac	0.023 ac/ft	1.058 cfs

Rev is addressed with gravel storage beneath the sand filter underdrain. WQv is addressed with one sand filter and 3 rain gardens. Cpv is Exempt because the qi is less than 2 cfs for each drainage area.

1-YR DISCHARGE SUMMARY

	EXISTING	PROPOSED
DESIGN PT 1	0.9 cfs	1.8 cfs
DESIGN PT 2	<0.1 cfs	0.8 cfs
DESIGN PT 3	1.5 cfs	1.1 cfs

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

PLANNING DIRECTOR — DATE 4/10/08

STORMWATER MANAGEMENT
EXISTING AND PROPOSED DRAINAGE AREA MAPS

WINTERS LANE INVESTMENTS LLC

BUILDABLE LOTS 1 THRU 8 AND OPEN SPACE LOT 9

(A RESUBDIVISION OF LOT 2, NORRIS E. POOL SUBDIVISION, PLAT No. 3342)
ZONED: R-12
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COLUMBIA, MARYLAND 21044
(443) 324-4732

STATE OF MARYLAND — REGISTERED PROFESSIONAL ENGINEER
4-3-08

FISHER, COLLINS & CARTER, INC.
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS
CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE
ELLICOTT CITY, MARYLAND 21042
(410) 461 - 2855

APPLIED STORMWATER
T/A T. E. SCOTT & ASSOCIATES, INC.
128 COCKEYSVILLE ROAD, SUITE 300
HUNT VALLEY, MARYLAND 21030
tes@MdSWM.com
Phone: 410.458.2051
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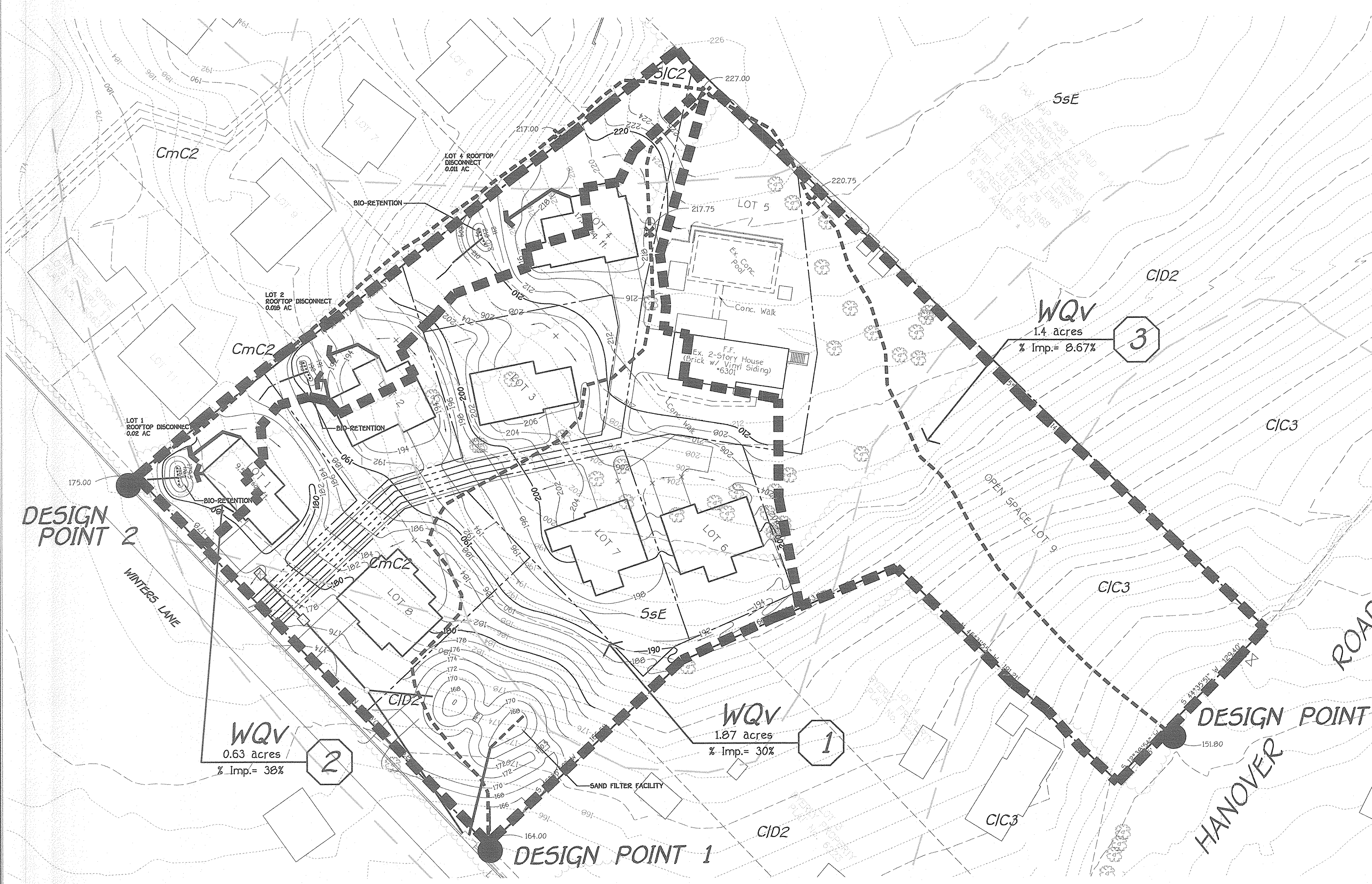
www.MdSWM.com



SITE ONLY DRAINAGE AREA MAP

1"=30'

LEGEND

- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- GLB2 / MLC2 — SOIL LINES AND TYPES
- LIMIT OF DRAINAGE AREA
- TIME OF CONCENTRATION PATH
- PROPOSED CONTOUR
- DESIGN POINT

SOILS LEGEND

SOIL	NAME	CLASS
ClC3	Chillum gravelly loam, 5 to 10 percent slopes, severely eroded	C
ClD2	Chillum gravelly loam, 10 to 15 percent slopes, moderately eroded	C
CmC2	Chillum silt loam, 5 to 10 percent slopes, moderately eroded	C
ScB	Sandy and slayey land, gently sloping	B
SlC2	Sassafras loam, 5 to 10 percent slopes, moderately eroded	B
SsE	Sassafras soils, 15 to 40 percent slopes	B
** Fa	Fallingston loam	D

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

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6420 AUTUMN SKY WAY
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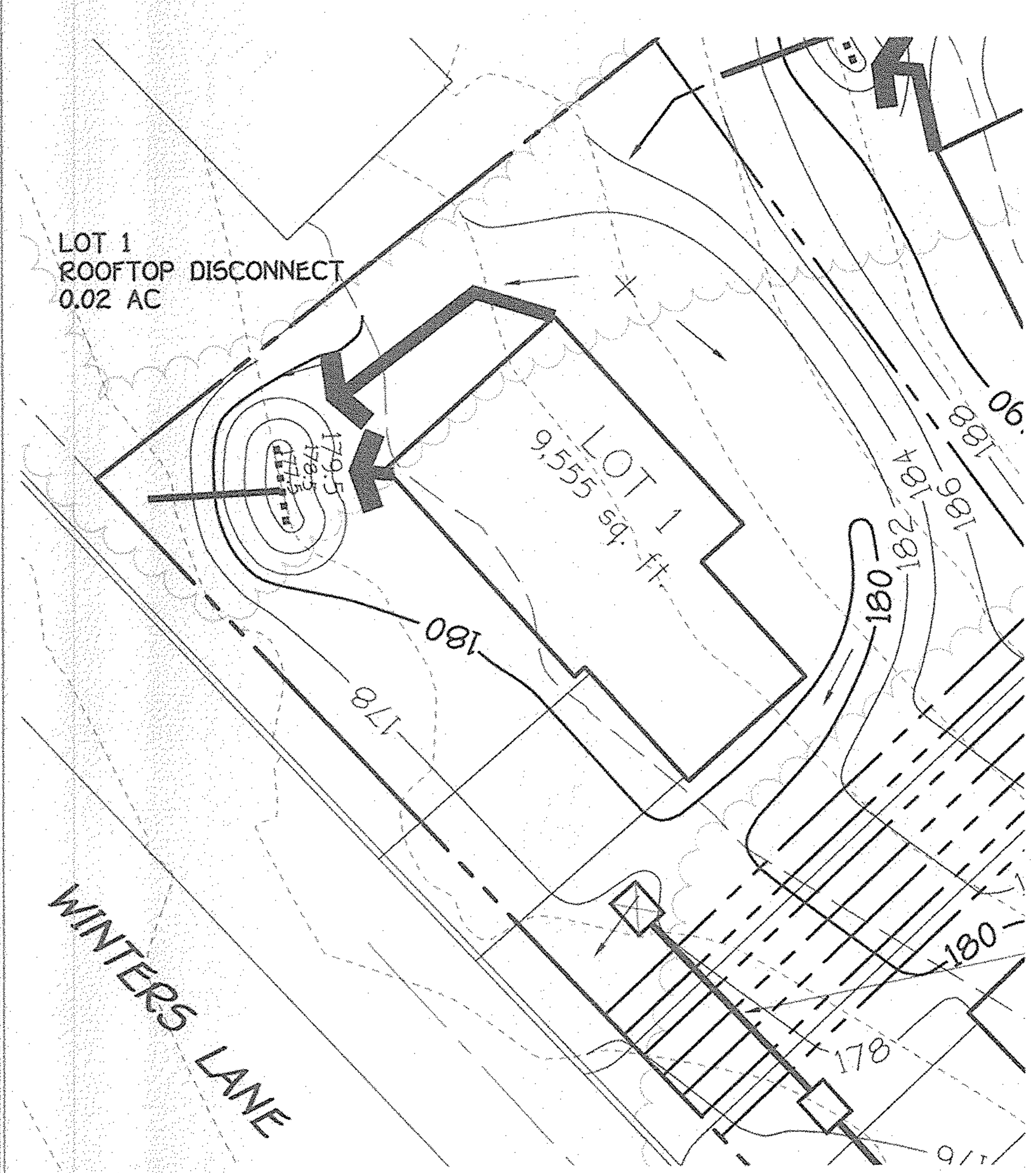
STORMWATER MANAGEMENT
SITE ONLY DRAINAGE AREA MAP

WINTERS LANE INVESTMENTS LLC

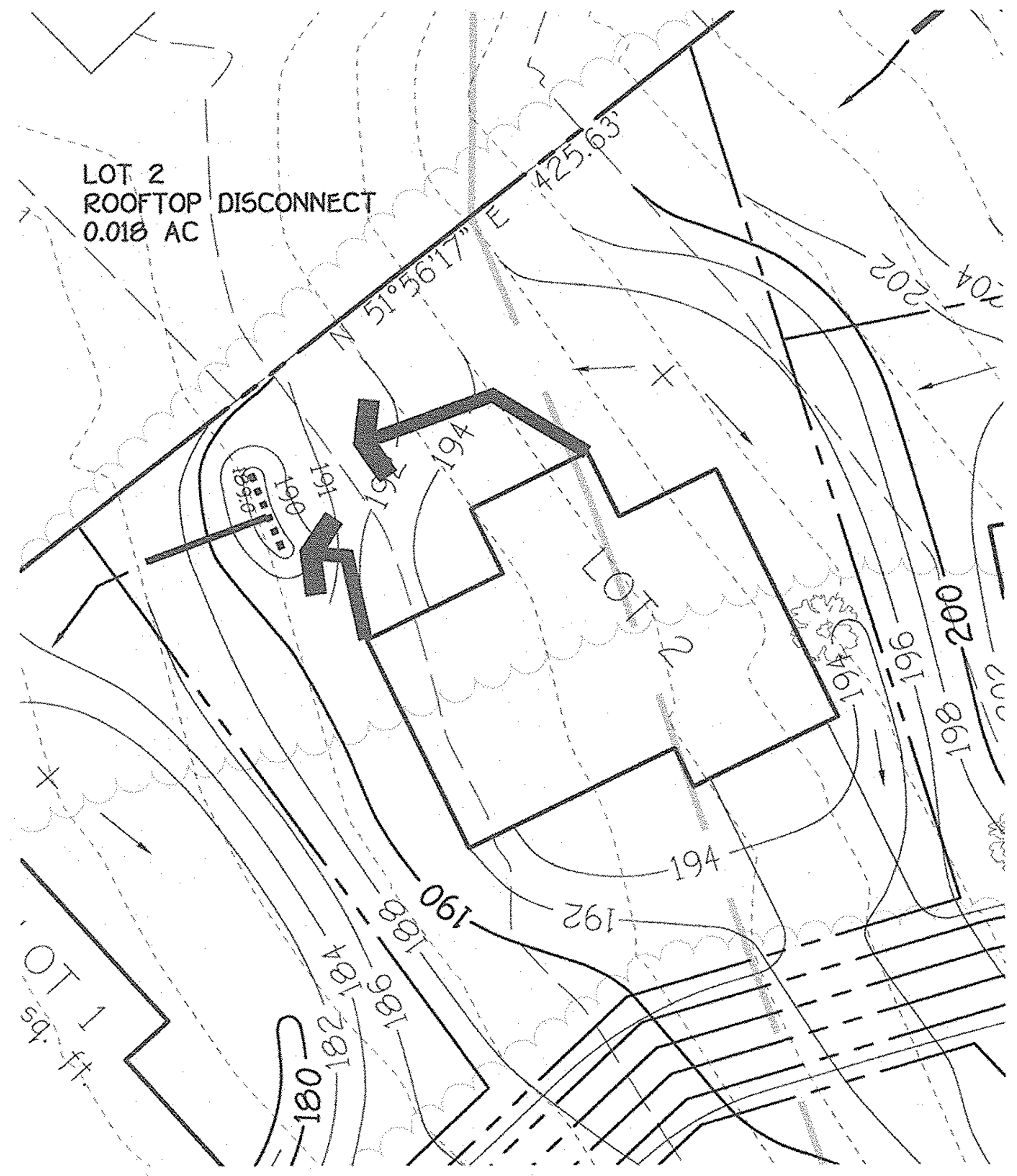
BUILDABLE LOTS 1 THRU 8 AND OPEN SPACE LOT 9

(A RESUBDIVISION OF LOT 2, NORRIS E. POOL SUBDIVISION, PLAT No. 3342)
ZONED: R-12
TAX MAP No. 38 PARCEL No. 868 GRID No. 15
FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: 1"=30'
DATE: APRIL 03, 2008
SHEET 6 OF 8

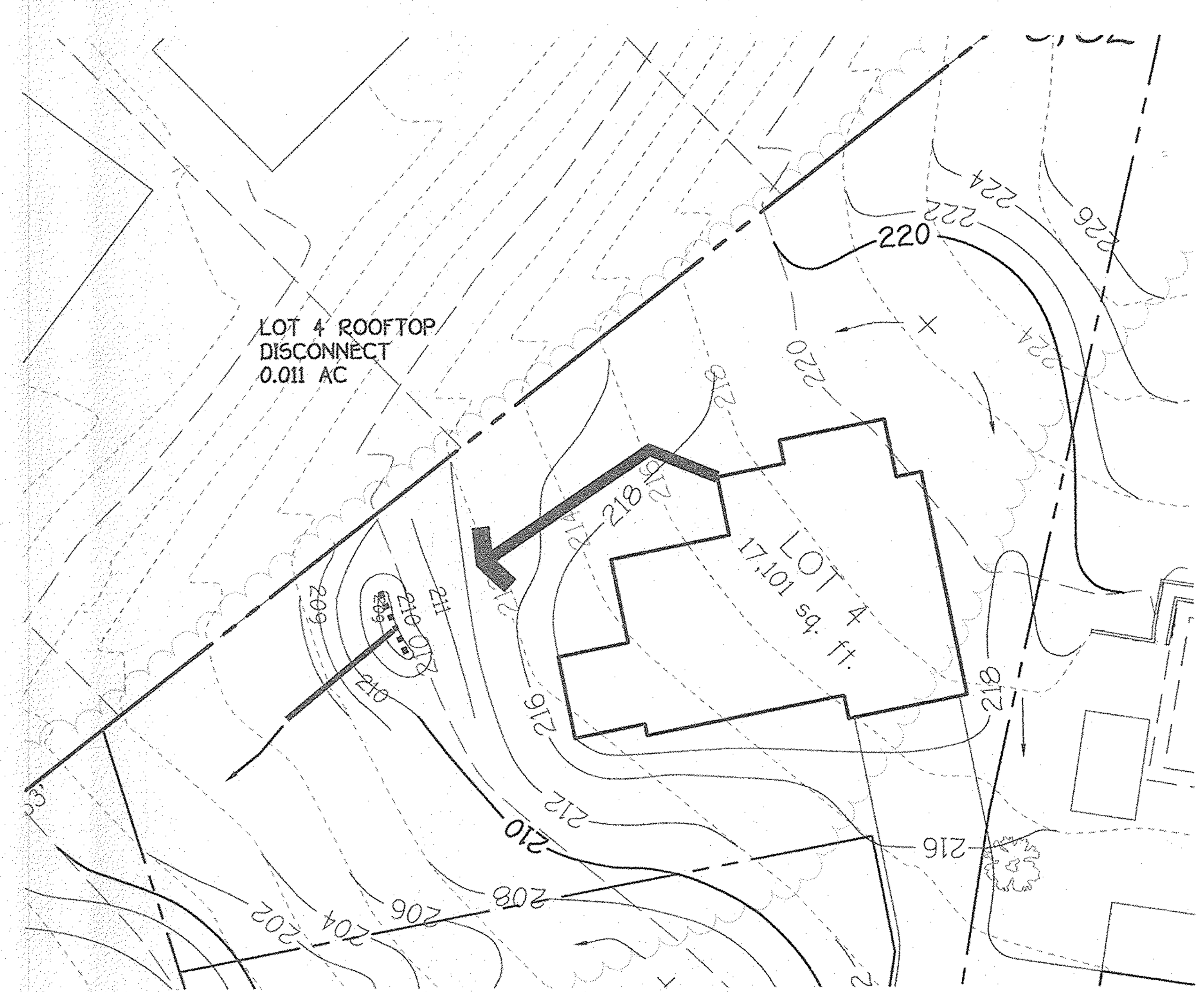
SP 08-003



LOT 1 BIO-RETENTION
1"=20'



LOT 2 BIO-RETENTION
1"=20'



LOT 3 BIO-RETENTION
1"=20'

BIO-RETENTION DATA

	LOT #1	LOT #2	LOT #3
INVERT ELEV	175.00	186.50	206.50
FILTER BED ELEV	177.50	189.00	209.00
TOP ELEV	178.50	190.00	210.00
FILTER BED WIDTH (@ Max)	3.5'	3.5'	3.5'
FILTER BED LENGTH (@ Max)	13.5'	13.5'	13.5'

LEGEND

EXISTING 2' CONTOURS
EXISTING 10' CONTOURS
PROPOSED CONTOUR
ROOF LEADER
ROOFTOP DISCONN. FLOW PATH

BIO-RETENTION 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, 1986).

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 tilling operation such as a Chisel Plow, Ripper, or Subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before 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". MDSHA C-33 sand is acceptable.

GEOTEXTILE

Geotextile fabric should meet ASTM D-751 (puncture strength - 125 LB), ASTM D-1117 (Mullen burst strength - 400 PSI), 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 SQ. 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

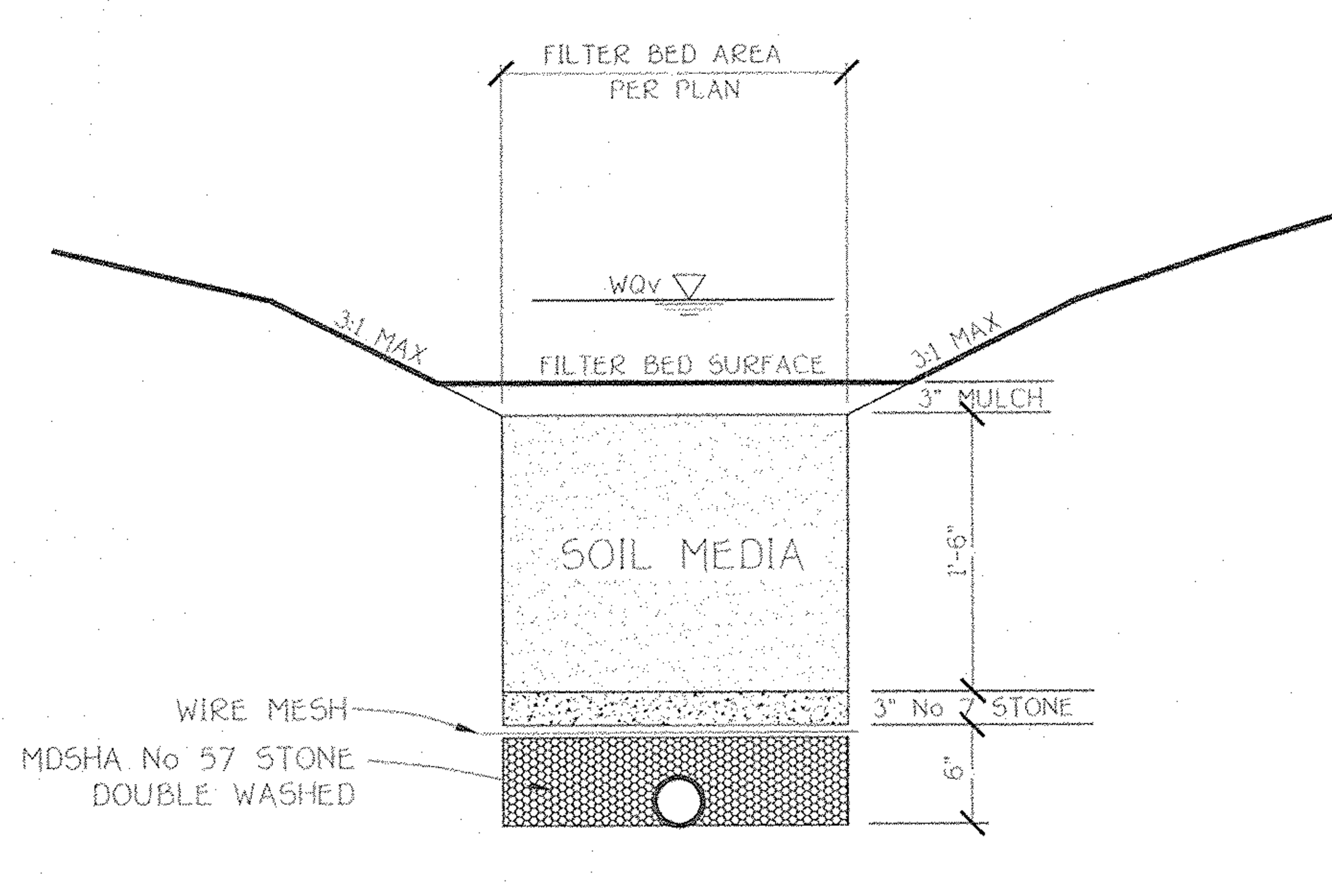
The following criteria shall apply for plastic pipe:

1. 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 S, and 12" through 24" inch shall meet the requirement of AASHTO M294 Type S.

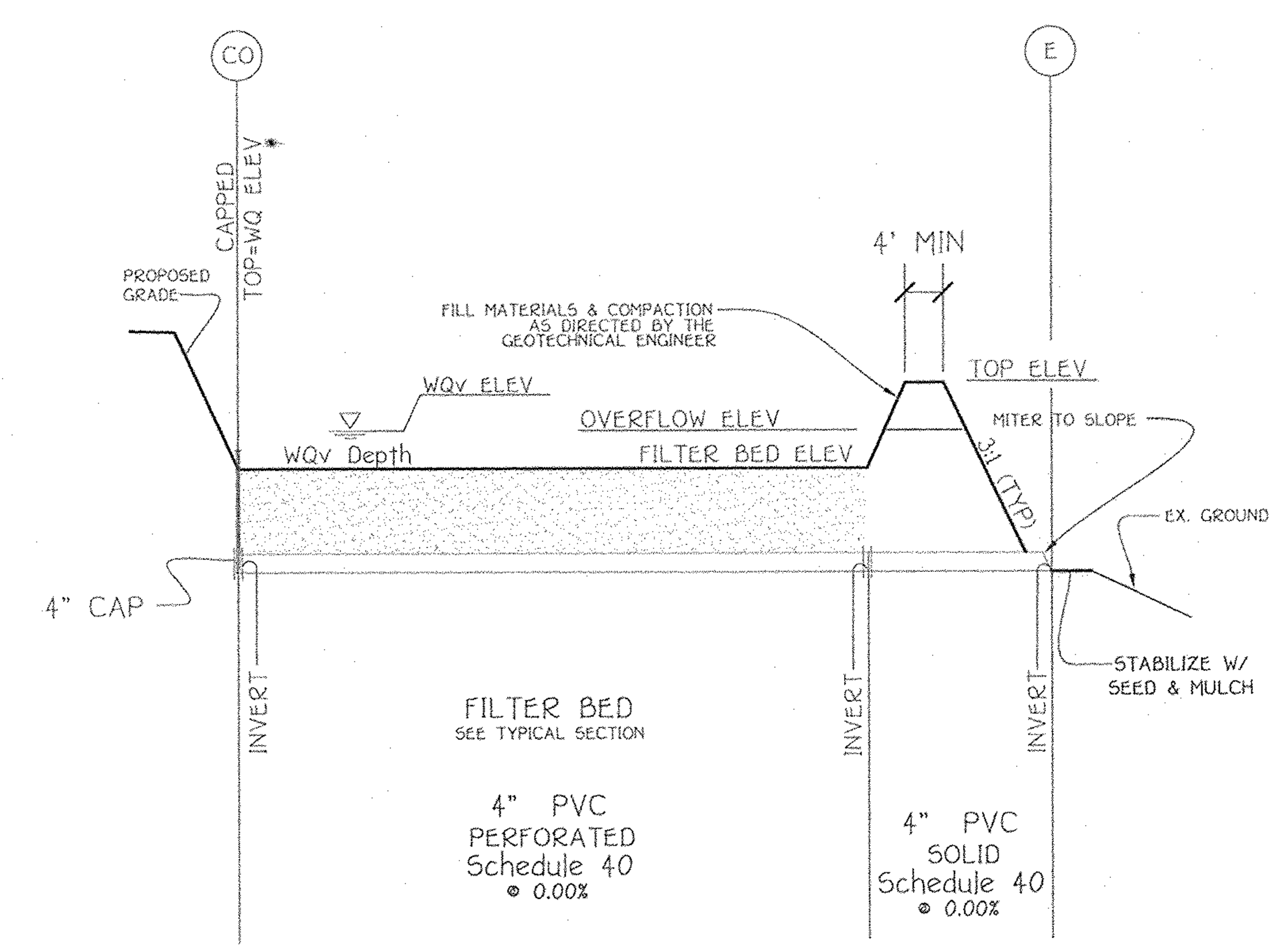
2. Joints and connections to anti-seep collars shall be completely watertight.

3. 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.

4. Backfilling shall conform to "Structure Backfill".



TYPICAL BIO-RETENTION SECTION
NOT TO SCALE



TYPICAL BIO-RETENTION PROFILE
NOT TO SCALE

TENTATIVELY APPROVED
DEPARTMENT OF PLANNING AND ZONING
HOWARD COUNTY

PLANNING DIRECTOR — 7/10/08 DATE

OWNER/DEVELOPER

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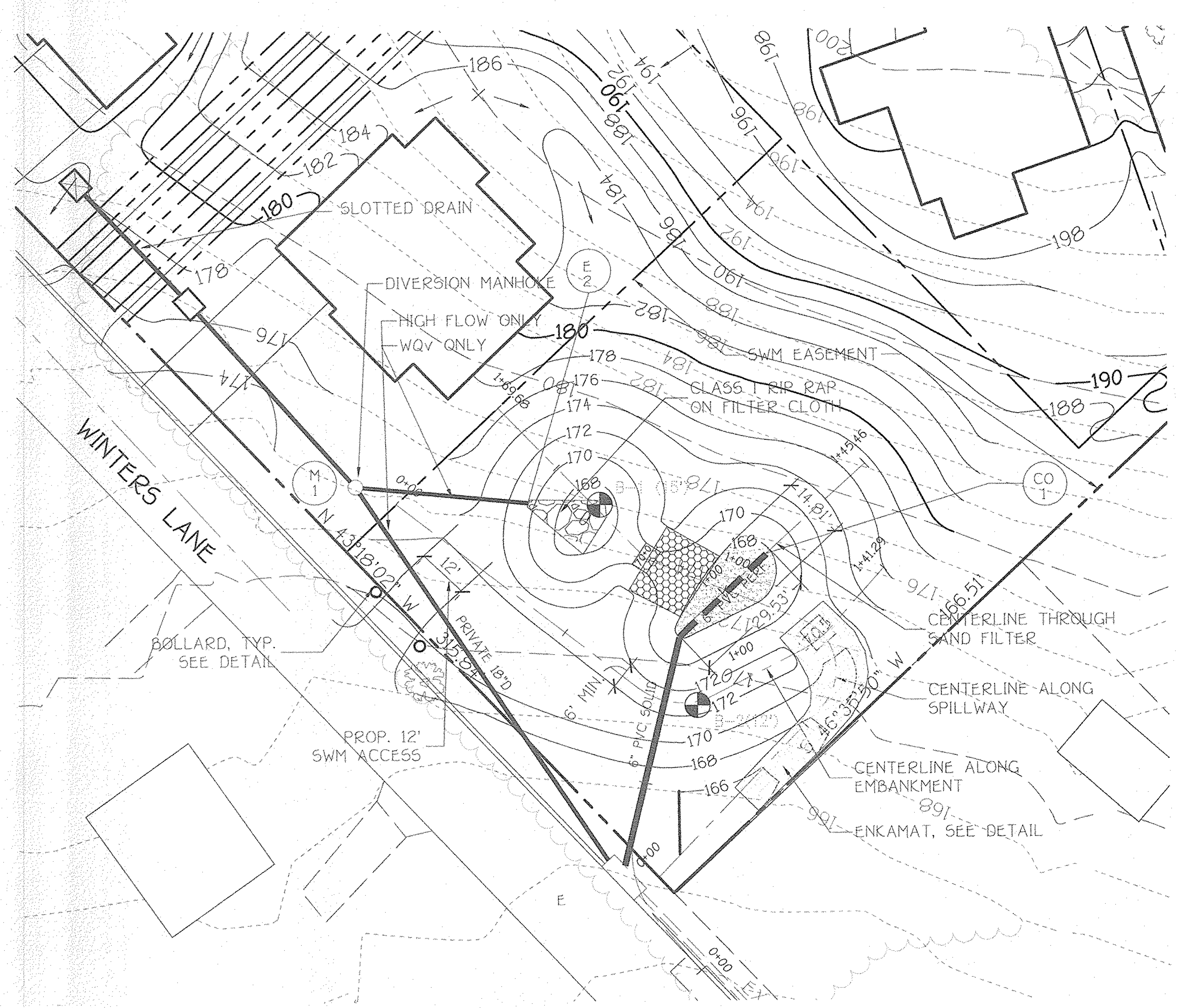
STORMWATER MANAGEMENT
BIO-RETENTION PLANS AND DETAILS

WINTERS LANE INVESTMENTS LLC

BUILDABLE LOTS 1 THRU 8 AND OPEN SPACE LOT 9

(A RESUBDIVISION OF LOT 2, NORRIS E. POOL SUBDIVISION, PLAT No. 3342)
ZONED: R-12
TAX MAP No. 38 PARCEL No. 868 GRID No. 15
FIRST ELECTION DISTRICT HOWARD COUNTY, MARYLAND
SCALE: AS SHOWN
DATE: APRIL 03, 2008
SHEET 7 OF 8

SP 08-003



SAND FILTER FACILITY

1"=20'

FACILITY SUMMARY

	WQv	10 YEAR	100 YEAR
Developed Outflow (cfs)	N/A	6.5	11.16
Water Surface Elevation	169.74	170.98	171.75
Storage (ac. ft.)	0.043	N/A	N/A

Watershed	Little Patuxent River
Structure Type	Surface Sand Filter (F-1)
Structure Classification	LOW HAZARD A - 378 Exempt
Structure Location	Urban
Storage Height Product	N/A
Watershed Area to Facility	1.86 acres
Minimum Top Width Provided	6.0 feet
Maximum Height of Fill	3.3 feet
Maximum 10-Year Impoundment Depth	3.24 foot
Freeboard Provided Above 10 Year	1.02 foot

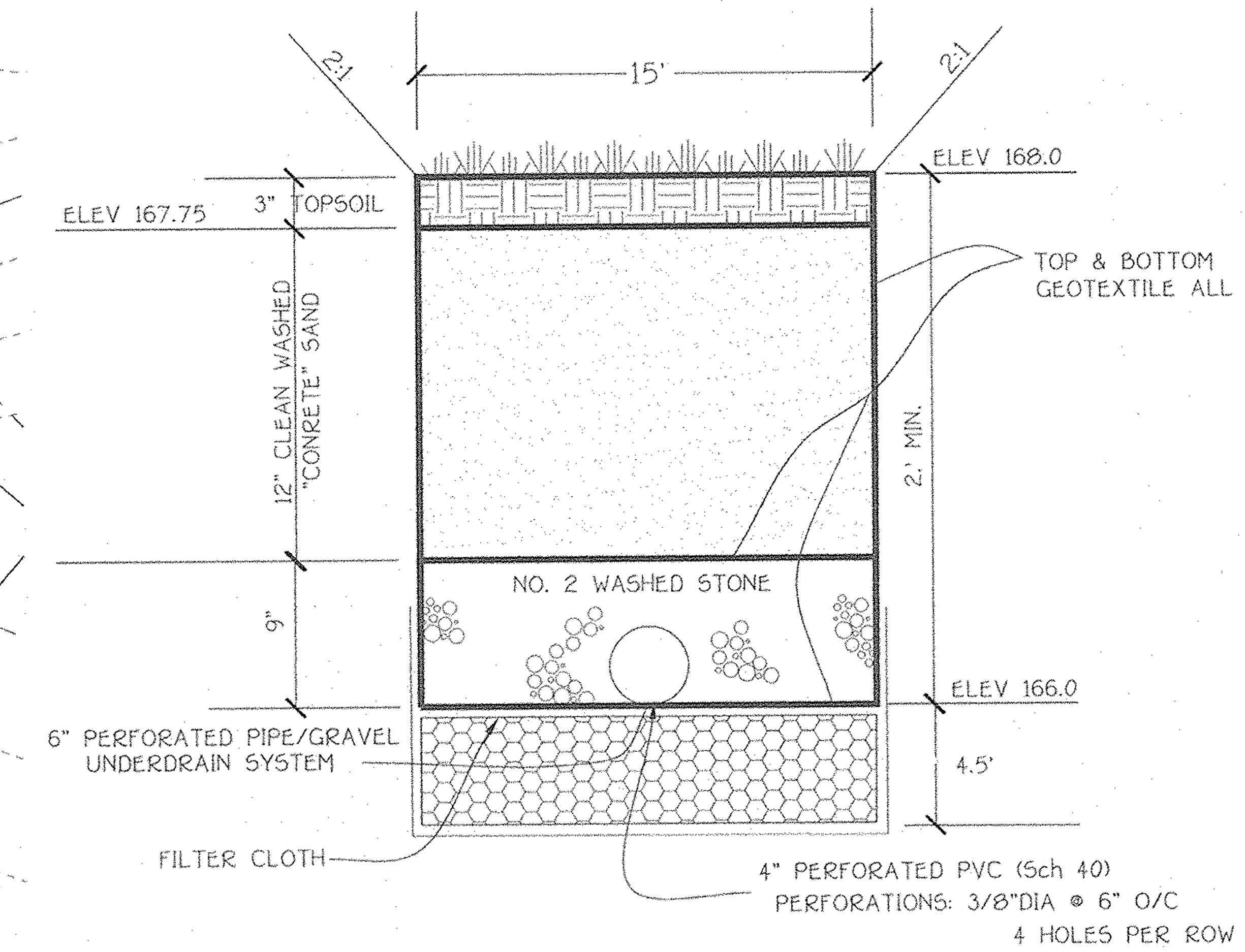
FACILITY WILL BE PRIVATELY OWNED AND MAINTAINED.
MANAGEMENT PROVIDED: Rev & WQv

LEGEND

EXISTING 2' CONTOURS

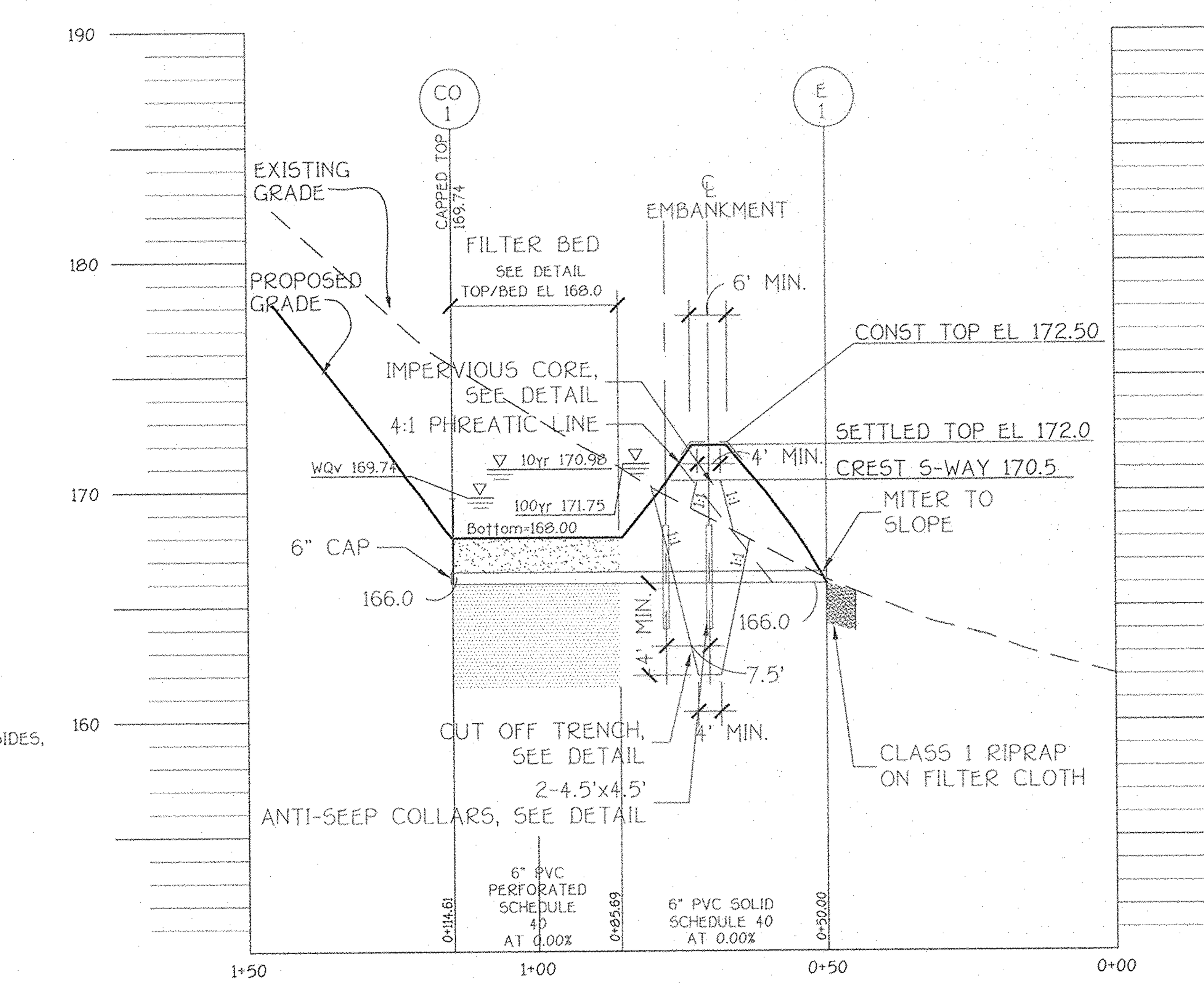
EXISTING 10' CONTOURS

492.0 PROPOSED CONTOUR



SAND FILTER TYPICAL CROSS SECTION

NOT TO SCALE



PROFILE ALONG CENTERLINE THROUGH SAND FILTER

H: 1"=20'
V: 1"=5'

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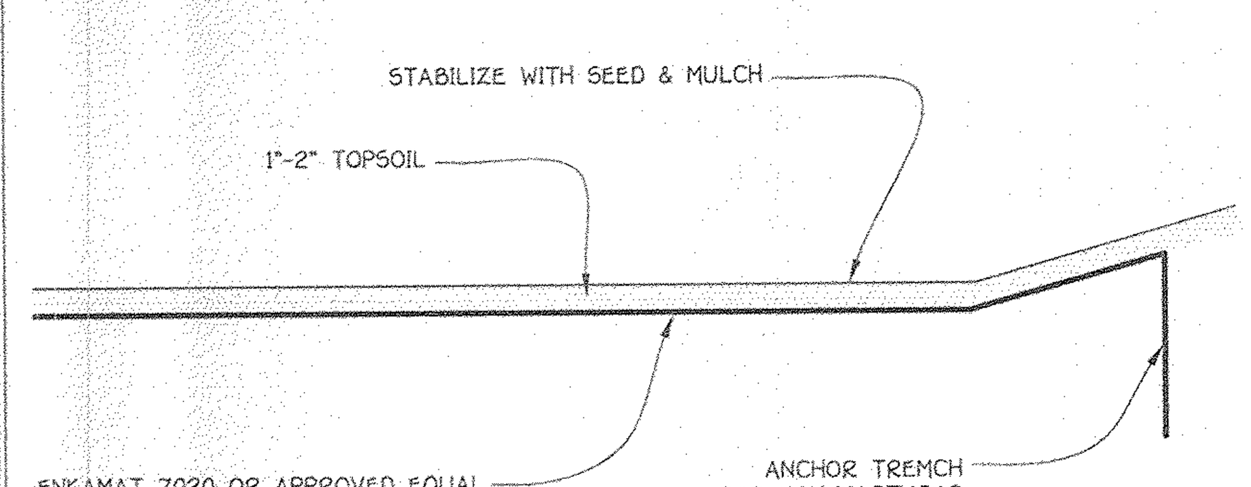
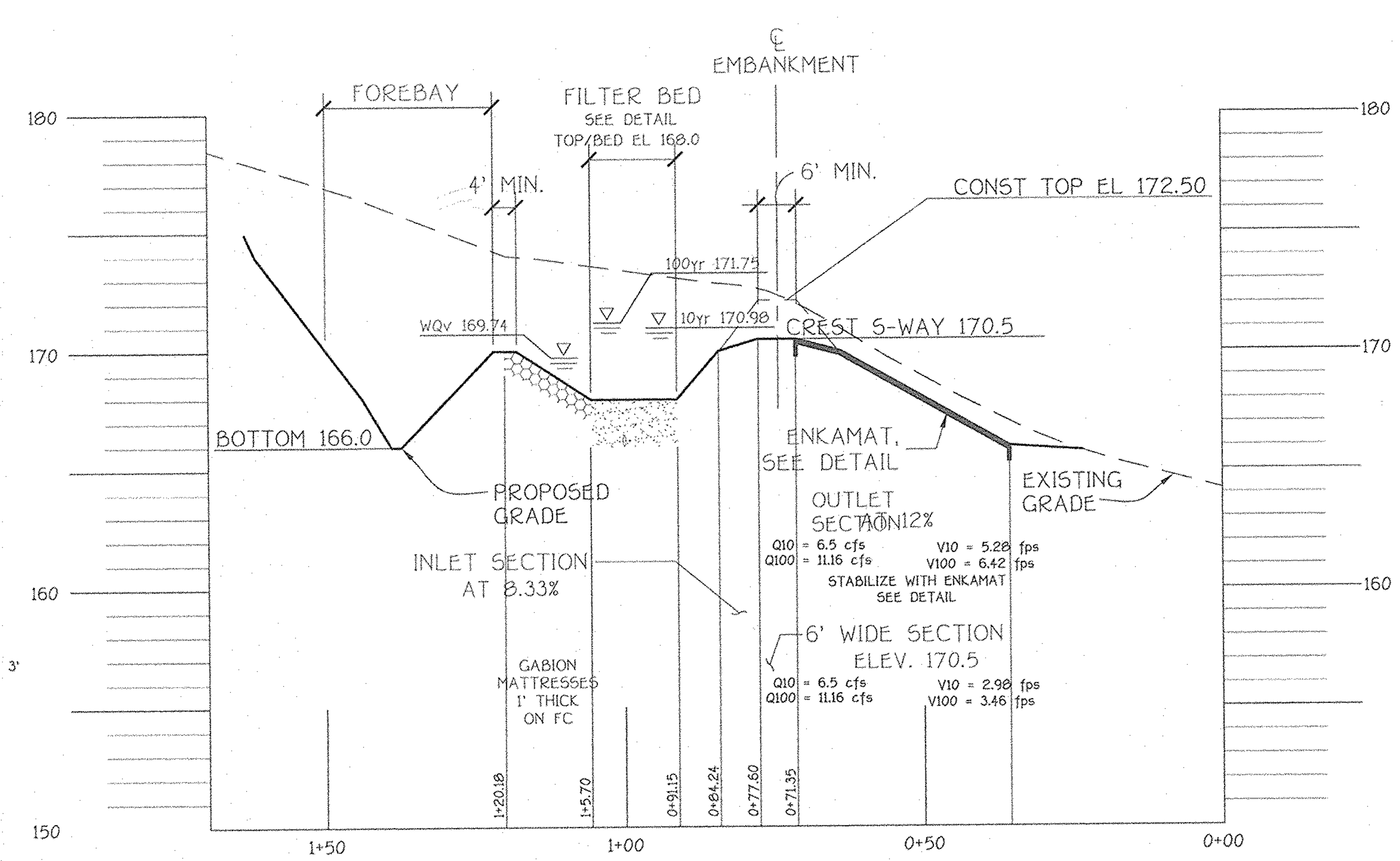


NOTES:
1. ENKAMAT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION DOCUMENTATION.
2. ALL JOINTS SHALL BE PARALLEL TO FLOW AND SHALL HAVE 1' MIN. OVERLAP.
3. 18" "J" SHAPED REBAR STAPLES SHALL BE EVENLY SPACED AT 4 PER SQ. YD. AND 3' O/C ALONG ANCHOR TRENCH.

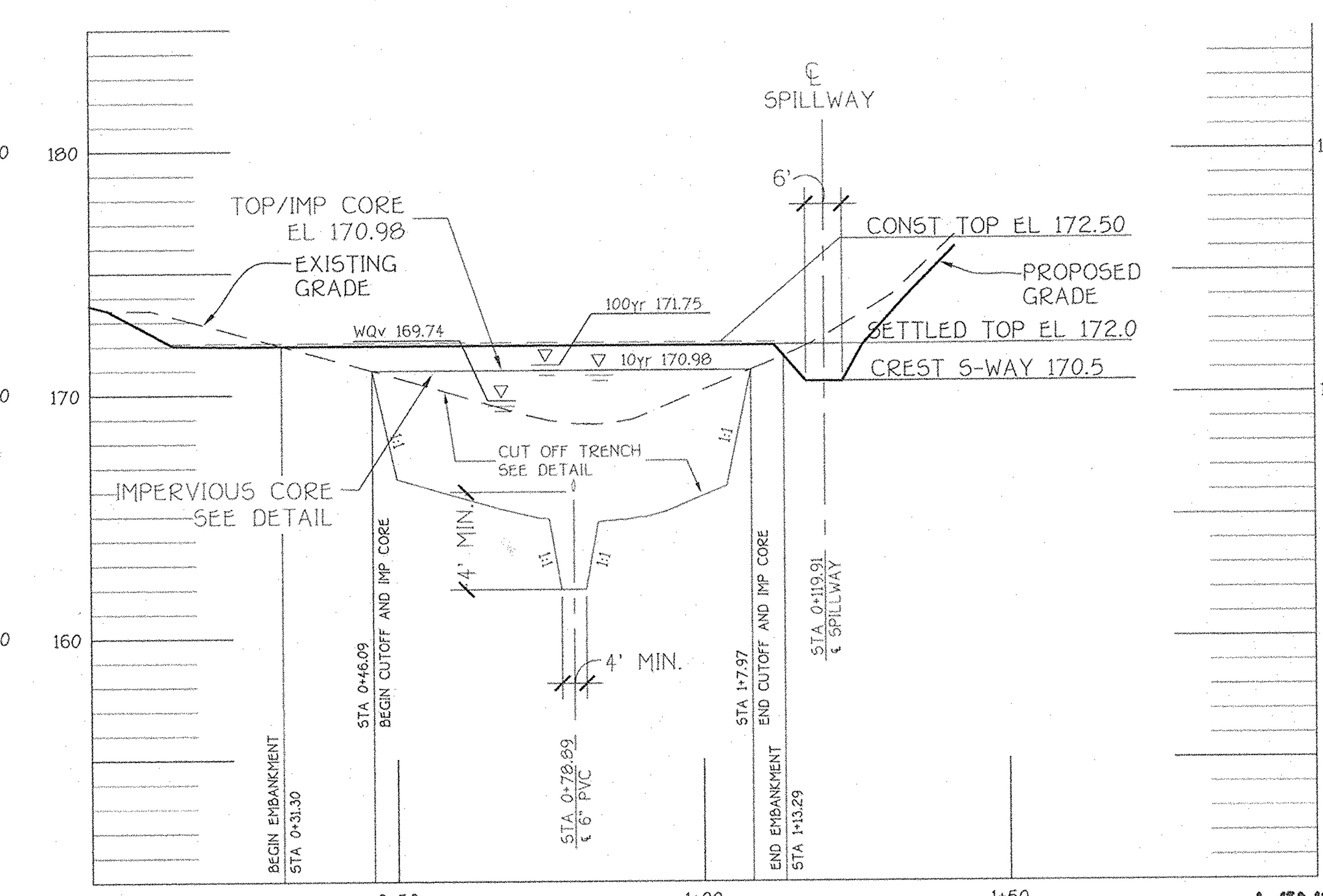
ENKAMAT DETAIL

NOT TO SCALE



PROFILE THROUGH EMERGENCY SPILLWAY AND FACILITY

H: 1"=20'
V: 1"=5'



PROFILE ALONG CENTERLINE OF EMBANKMENT

H: 1"=20'
V: 1"=5'

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SAND FILTER FACILITY PLAN AND DETAILS

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