

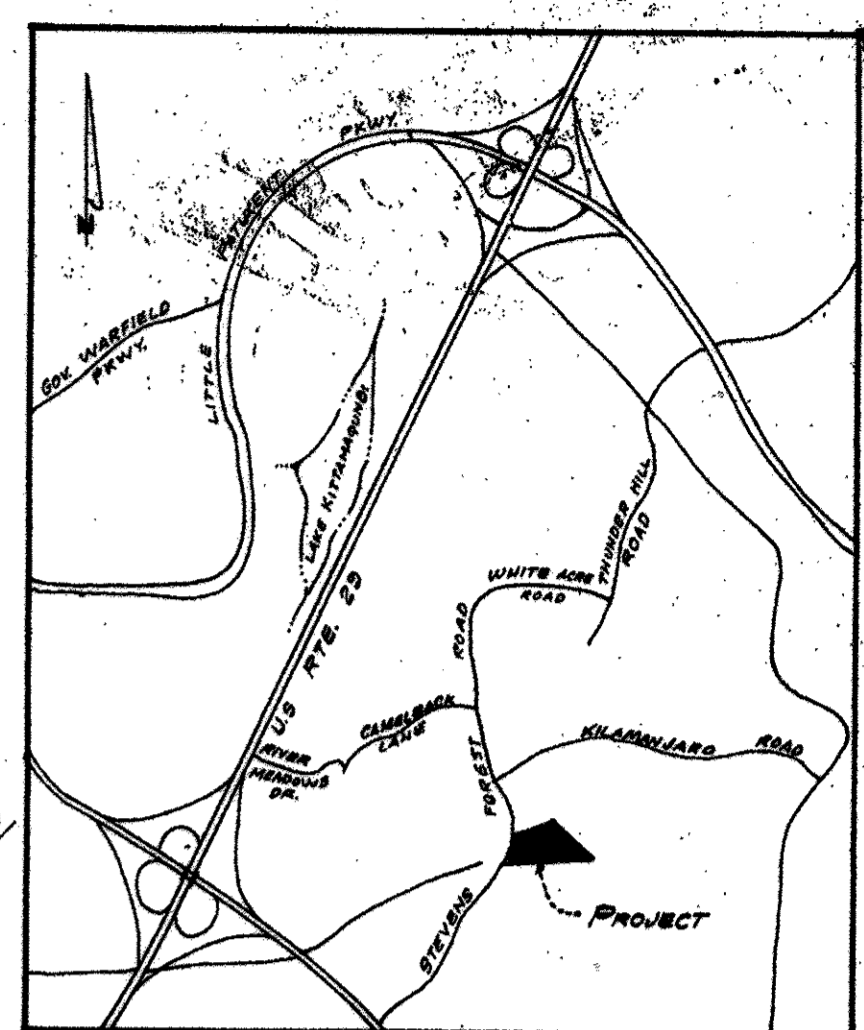
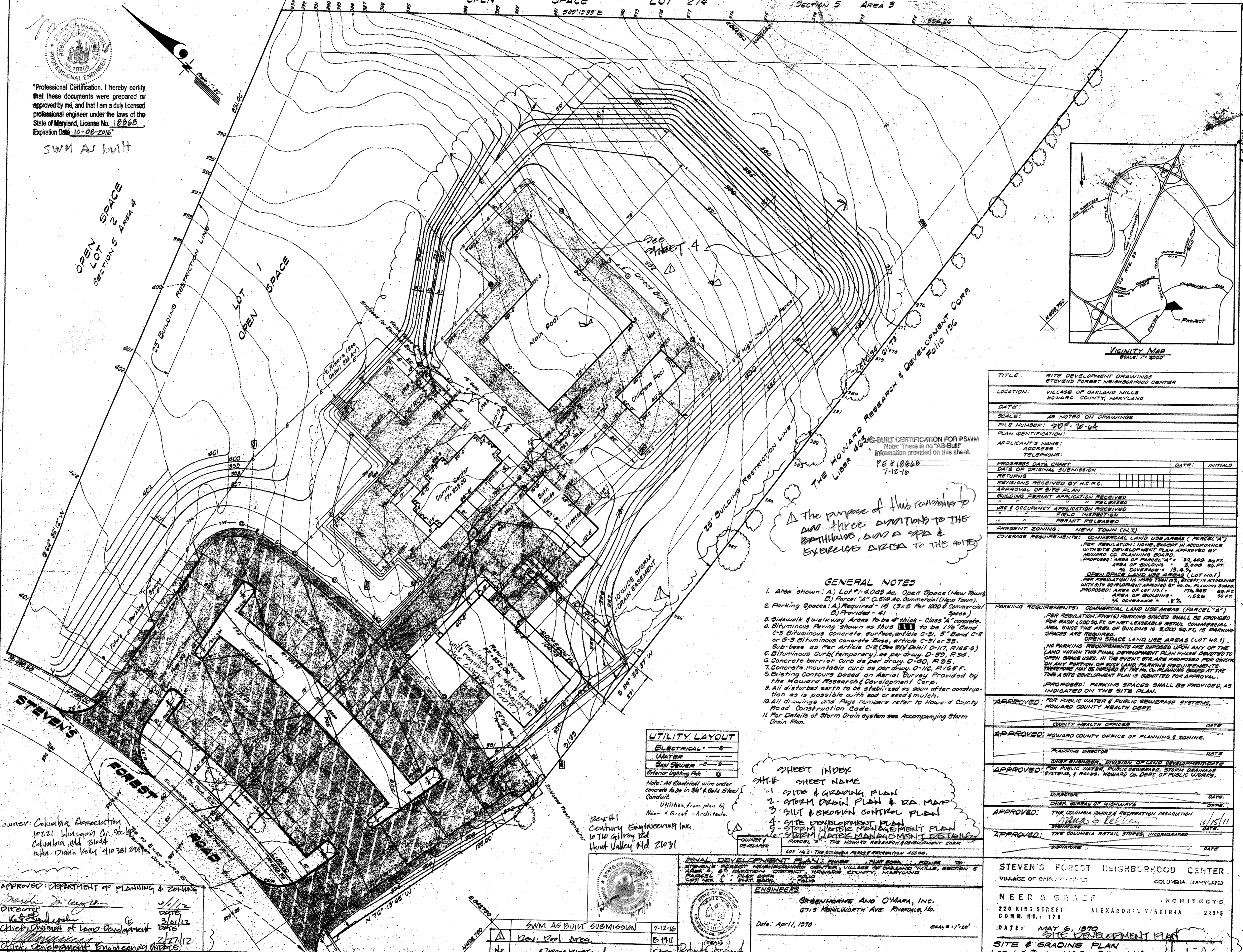


*Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 18868. Expiration Date 10-08-2016

SWM AS BUILT

OPEN SPACE 2
OPEN LOT SPACE
SECTION 5 AREA 4

LOT 1
OPEN SPACE



VICINITY MAP
SCALE: 1" = 200'

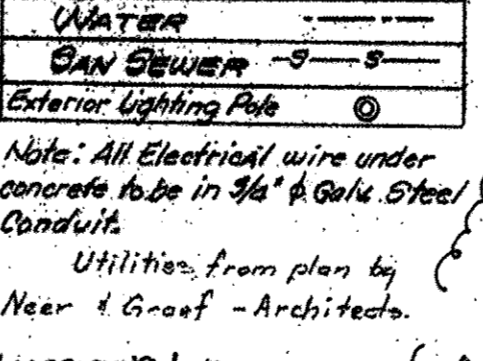
TITLE:	SITE DEVELOPMENT DRAWINGS STEVENS FOREST NEIGHBORHOOD CENTER		
LOCATION:	VILLAGE OF OAKLAND MILLS HOWARD COUNTY, MARYLAND		
DATE:			
SCALE:	AS NOTED ON DRAWINGS		
FILE NUMBER:	SDP-10-64		
PLAN IDENTIFICATION:			
APPLICANT'S NAME:	THE HOWARD RESEARCH & DEVELOPMENT CORP.		
ADDRESS:	10710 GILROY RD HUNT VALLEY MD 21031		
TELEPHONE:	7-12-16		
PROGRESS DATA CHART:	DATE:	INITIALS:	
RETURNS:			
REVISIONS RECEIVED BY H.C.R.C.:			
APPROVAL OF SITE PLAN:			
BUILDING PERMIT APPLICATION RECEIVED:			
USE & OCCUPANCY APPLICATION RECEIVED:			
FIELD INSPECTION:			
PERMIT RELEASED:			

The purpose of this revision is to add three additions to the bathroom, add a spa & exercise area to the site.

GENERAL NOTES

- Area shown: A) Lot #1: 0.049 Ac. Open Space (New Town)
B) Parcel "A" 0.514 Ac. Commercial (New Town)
- Parking Spaces: A) Required - 15 (3x5 Per 1000 Commercial Space)
B) Provided - 41
- Sidewalk & walkway Areas to be 4" thick - Class "A" concrete.
4. Bituminous Paving shown as thus [symbol] to be 1 1/2" Sand C-3 Bituminous concrete surface, article C-31, 5" Sand C-2 or C-3 Bituminous concrete base, article C-31 or 33.
Sub-base as per article C-8 (See 514 Detail C-17, R165-0)
- Bituminous Curb (temporary) see per draw. D-33, R39.
- Concrete barrier curb as per draw. D-40, R35.
- Concrete mountable curb as per draw. D-16, R165-F.
- Existing contours based on Aerial Survey Provided by The Howard Research & Development Corp.
- All disturbed earth to be stabilized as soon after construction as is possible with sod or seed & mulch.
- All drawings and Page numbers refer to Howard County Road Construction Code.
- For Details of Storm Drain system see Accompanying Storm Drain Plan.

UTILITY LAYOUT



Note: All Electrical wire under concrete tube in 3/4" & Galv. Steel Conduit.
Utilities from plan by Neer & Graef - Architects.

SHEET INDEX

- | CHIT.# | SHEET NAME |
|--------|--------------------------------|
| 1 | GRADE & GRADING PLAN |
| 2 | STORM DRAIN PLAN & D.A. MAP |
| 3 | SILT & EROSION CONTROL PLAN |
| 4 | SITE DEVELOPMENT PLAN |
| 5 | STORM WATER MANAGEMENT PLAN |
| 6 | STORM WATER MANAGEMENT DETAILS |

owner: Columbia Association
10221 Wincomin Cr. Ste 101
Columbia, Md 21044
Attn: Diana Kelly 410 381 2944

Rev. H1
Century Engineering Inc.
10710 Gilroy Rd
Hunt Valley Md 21031

APPROVED: DEPARTMENT OF PLANNING & ZONING
Director
Chief, Division of Land Development
Chief, Development Engineering

No.	DESCRIPTION	DATE
	SWM AS BUILT SUBMISSION	7-12-16
1	Rev. Pool Area	6-19-11
2	DESIGNATION	DATE



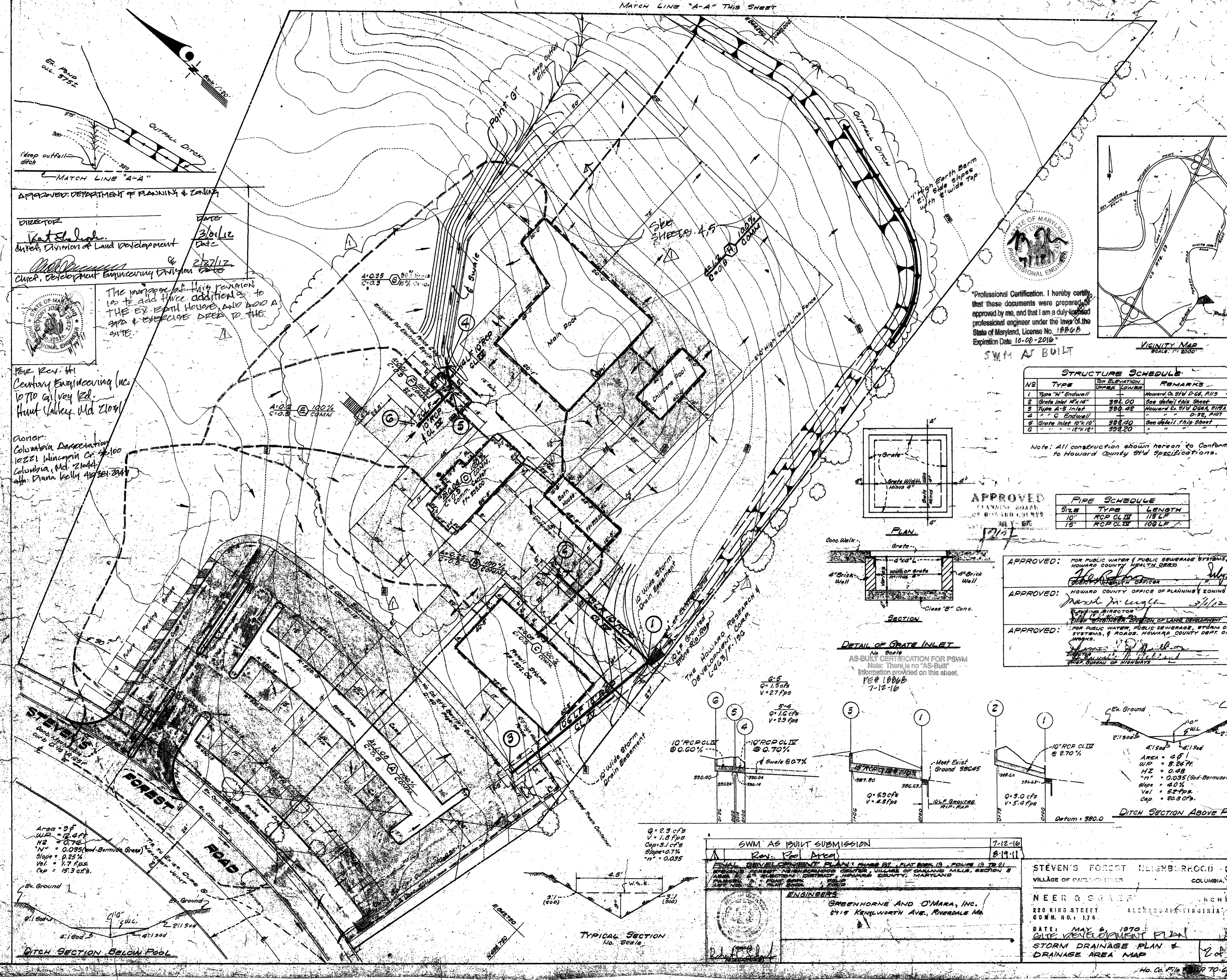
ENGINEERS
GREENHORNE AND O'MARA, INC.
6715 KENILWORTH AVE. RIVERDALE, MD.
Date: April, 1970

STEVEN'S FOREST NEIGHBORHOOD CENTER
VILLAGE OF OAKLAND MILLS
COLUMBIA, MARYLAND

NEER & GRAEF ARCHITECTS
220 KING STREET
COMM. NO. 178
ALEXANDRIA, VIRGINIA 22304

DATE: MAY 6, 1970
SITE DEVELOPMENT PLAN
SITE & GRADING PLAN
LOT 1 & PARCEL "A", SEC. 5, AREA 4, COLUMBIA

MATCH LINE "A-A" THIS SHEET



APPROVED: DEPARTMENT OF PLANNING & ZONING

DIRECTOR
Kat E. Leach
Chief, Division of Land Development

DATE
3/31/12
DATE
2/27/12

Chief, Development Engineering Division

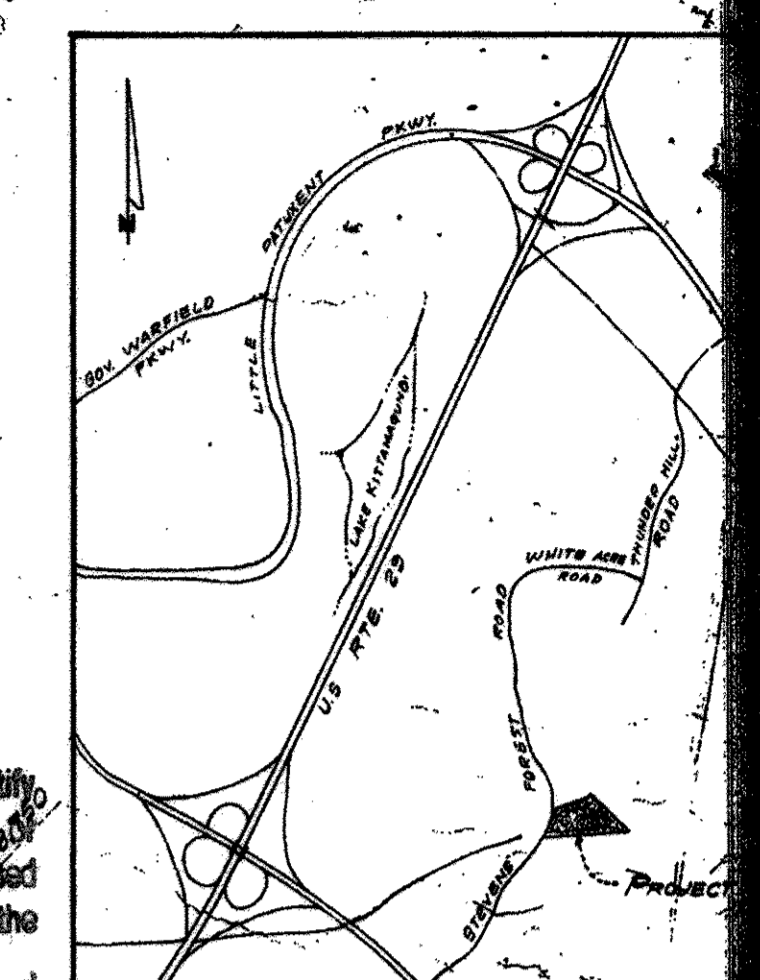
The purpose of this revision is to add three additional lots to the EX. EXIST. HOUSE, AND ADD A SWD & EXERCISE AREA TO THE SITE.

For Rev. #1
Century Engineering Inc.
10710 Calvey Rd.
Hunt Valley, Md. 21084

Owner:
Columbia Association
10221 Mancipin Cr #100
Columbia, Md. 21044
Attn: Diana Kelly 410-321-2844

Professional Certification. I hereby certify that these documents were prepared, approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 18866, Expiration Date 10-02-2016.

PROFESSIONAL ENGINEER



Professional Certification. I hereby certify that these documents were prepared, approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 18866, Expiration Date 10-02-2016.

PROFESSIONAL ENGINEER

STRUCTURE SCHEDULE

NO.	TYPE	TOP ELEVATION	REMARKS
1	Type "H" Endwall	391.00	Howard Co. SWD D.C. #119
2	Grate Inlet 14"x14"	390.00	See detail this sheet
3	Type A-3 Inlet	390.00	Howard Co. SWD D.C. #119
4	Type "C" Endwall	388.00	See detail this sheet
5	Grate Inlet 10"x10"	388.20	See detail this sheet
6	Grate Inlet 14"x14"	388.20	See detail this sheet

Note: All construction shown hereon to conform to Howard County SWD Specifications.

FIRE SCHEDULE

SIZE	TYPE	LENGTH
10"	RCP CLIX	118 LF
15"	RCP CLIX	108 LF

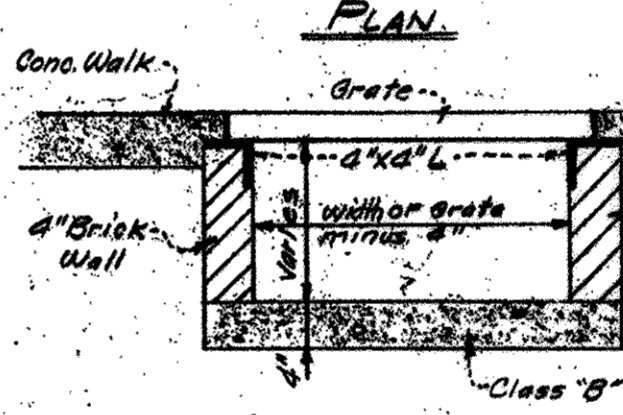
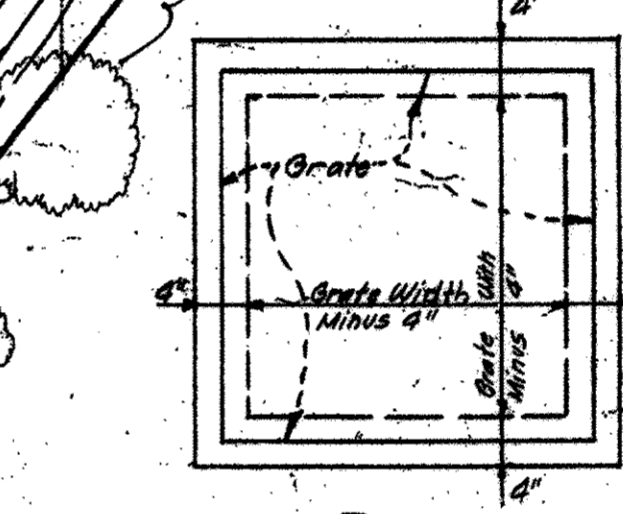
APPROVED
PLANNING BOARD
OF HOWARD COUNTY

APPROVED: [Signature]
HOWARD COUNTY HEALTH DEPT.

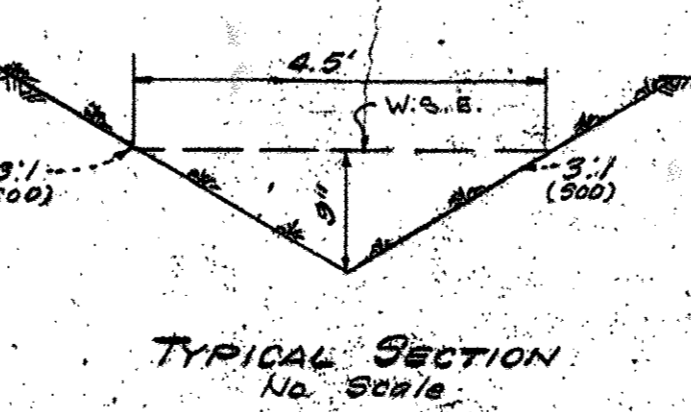
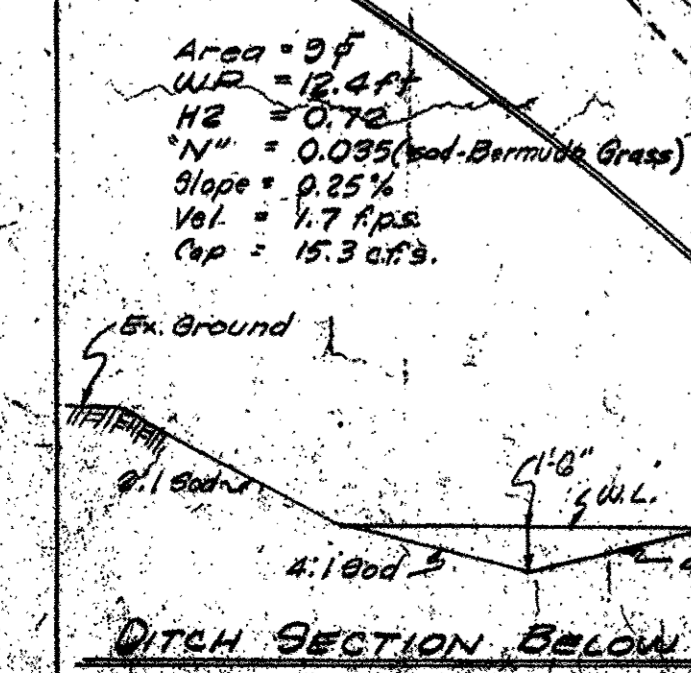
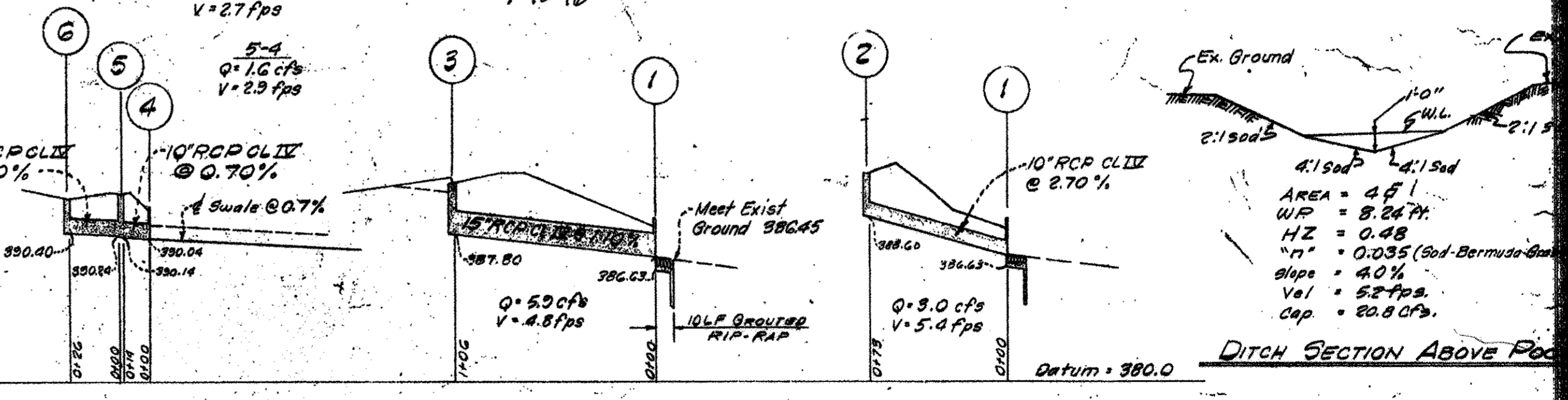
APPROVED: [Signature]
HOWARD COUNTY OFFICE OF PLANNING & ZONING

APPROVED: [Signature]
DIVISION OF LAND DEVELOPMENT

APPROVED: [Signature]
FOR PUBLIC WATER, PUBLIC SEWERAGE, STORM DRAIN SYSTEMS, & ROADS, HOWARD COUNTY DEPT. OF HIGHWAYS



DETAIL OF GRATE INLET
No Scale
AS-BUILT CERTIFICATION FOR PSWM
Note: There is no "AS-Built" information provided on this sheet.
PE # 18866
7-12-10



SWM AS BUILT SUBMISSION
Rev. Pool Area
7-12-10
8-19-11

FINAL DEVELOPMENT PLAN'S ISSUE BY: PLAT BOOK 19, POLICE 19 28 21
VILLAGE OF OAKLAND HILLS, SECTION 5
DISTRICT OF MONTGOMERY COUNTY, MARYLAND

ENGINEERS
GREENHORNE AND O'MARA, INC.
6415 KENLWORTH AVE., RIVERDALE MD

STEVEN'S FOREST NEIGHBORHOOD
VILLAGE OF OAKLAND HILLS
COLUMBIA, MD

NEER & GRAFF
220 KING STREET
ALEXANDRIA, VIRGINIA
COMM. NO. 1, 176

DATE: MAY 6, 1970
SITE DEVELOPMENT PLAN
STORM DRAINAGE PLAN &
DRAINAGE AREA MAP

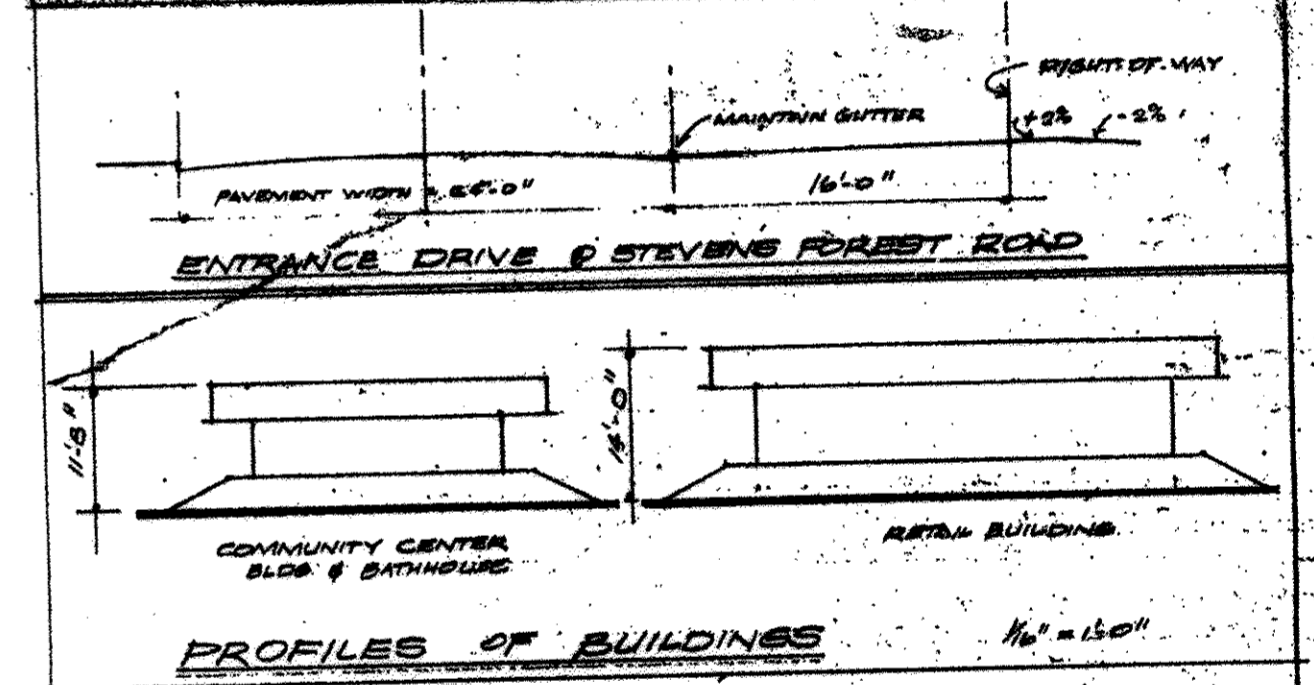
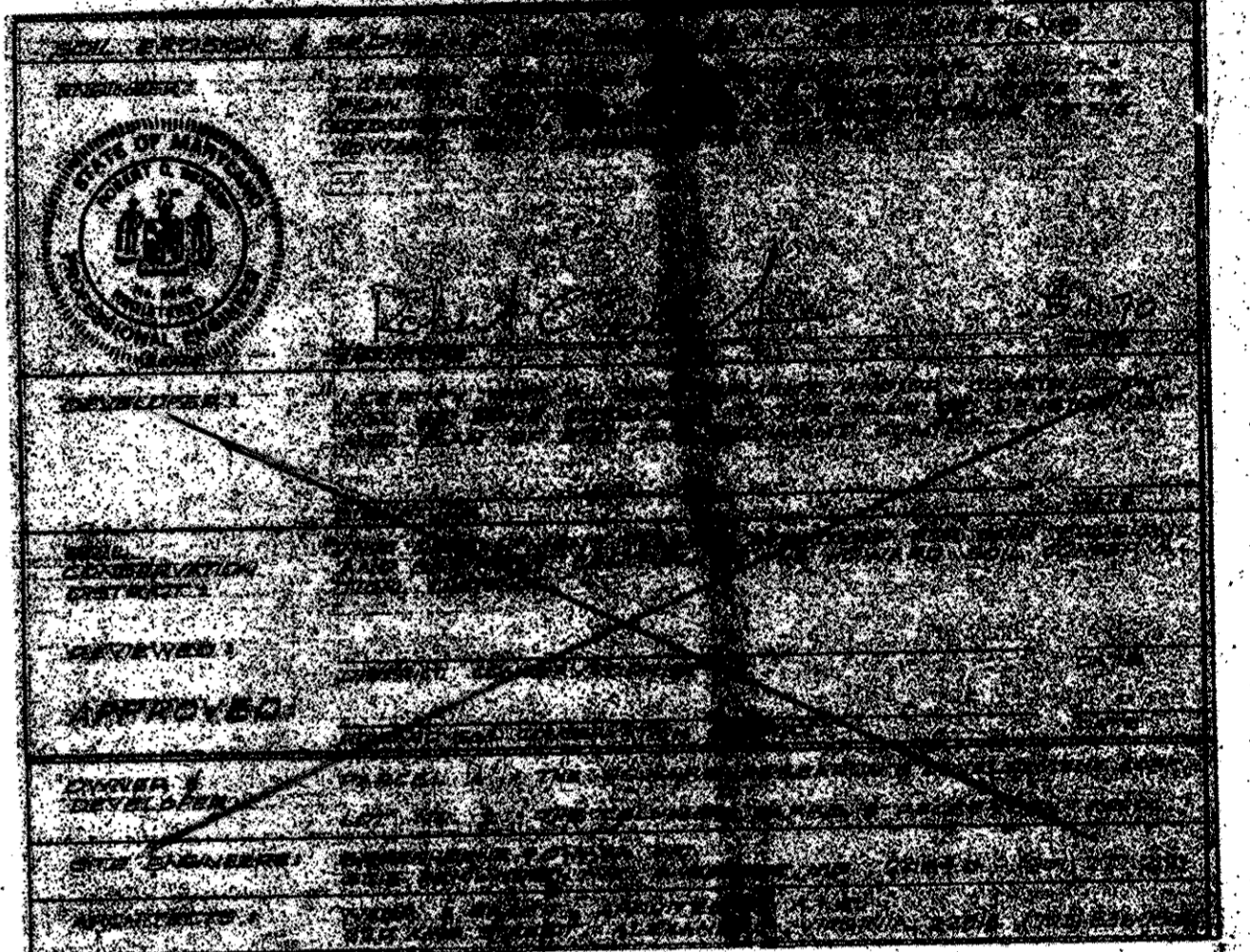
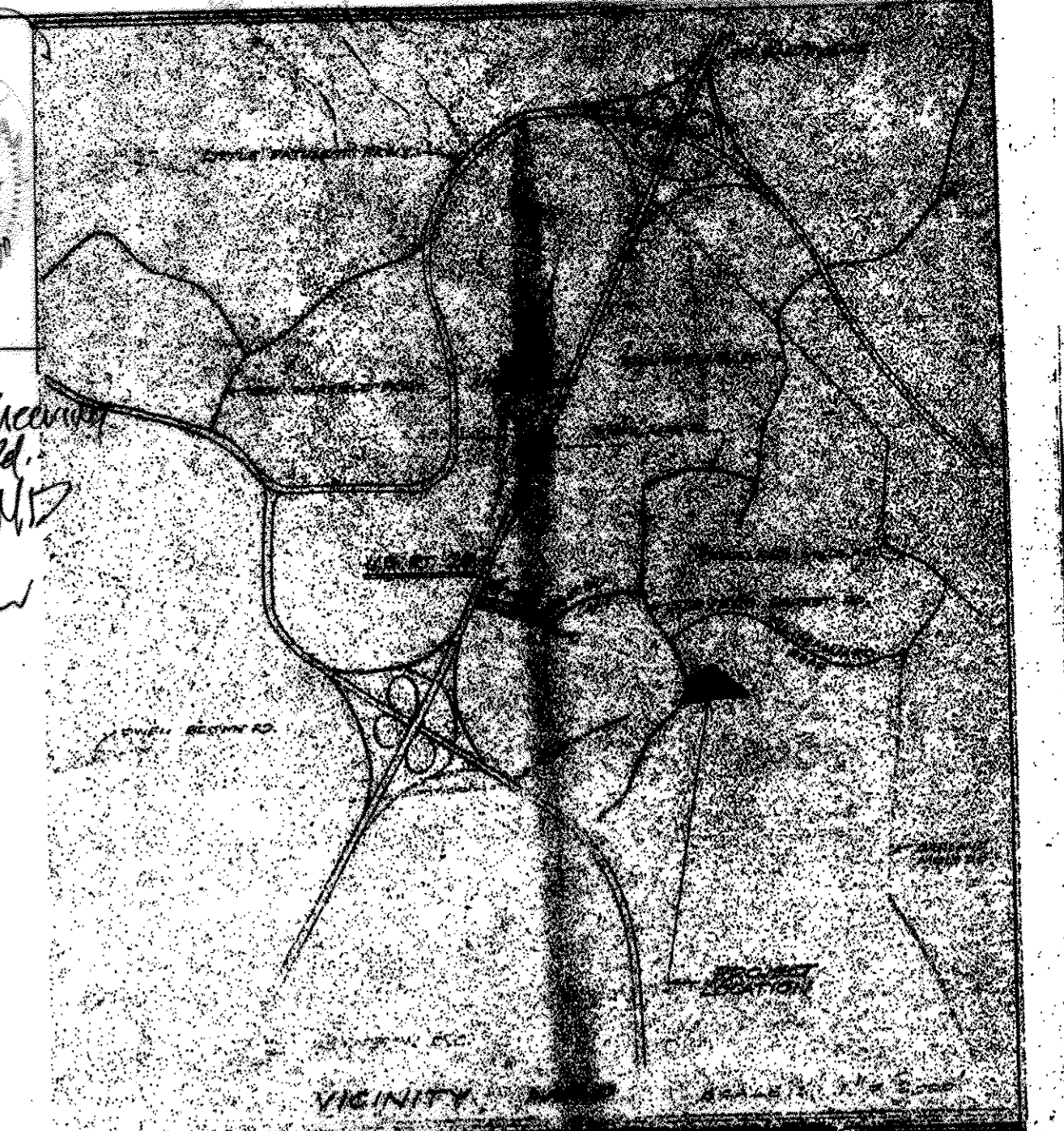
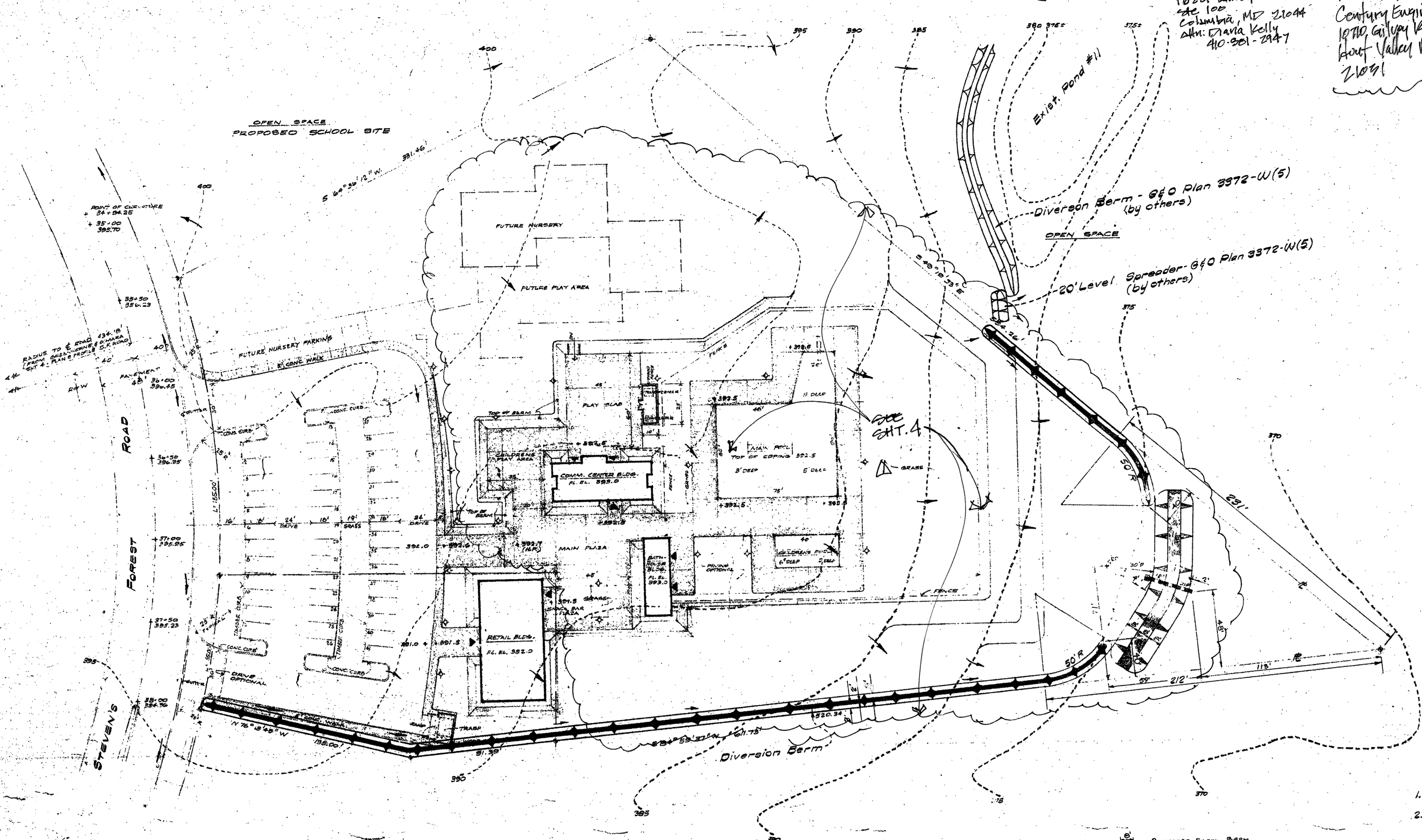
The purpose of this revision is to add three additions to the ex. bath house and add a spa & exercise area to the site.

APPROVED: DEPARTMENT OF PLANNING & ZONING
 Director
 Chief, Division of Land Development
 Chief, Development Engineering & O&M



owner: Belknap Association
 10321 Wincomin Cr.
 Columbia, MD 21044
 attn: Diana Kelly
 410-301-2447

For Rev. #1
 Century Engineering
 10710 Guilford Rd.
 Hunt Valley, MD
 21091



GENERAL NOTES

1. Diversion Berms & Sediment Trap to be constructed prior to the beginning of grading on these parcels.
2. Diversion Berms & Sediment Trap to be constructed in accordance with "The Erosion & Sediment Control Technical Hand Book", As Published by the Howard Soil Conservation District and shall be stabilized by seeding W/Rye Grass & Kentucky 31 Fescue as soon as they are constructed.
3. A. disturbed areas are to be stabilized as soon after construction as is practical, with seed, or seed & mulch of a semipermanent type. Seed to be used shall be rye, rye grass or Sudan grass.
4. Permanent seeding area uniform to Howard Soil Conservation District Specifications using:
 - A) 40-70 lbs. tall fescue (Ky-31)
 2 lbs. of white clover seed
 - B) 20-40 lbs. tall fescue (Ky-31)
 25 lbs. sericea lespedeza for spring seedings or may be overseeded the following spring or fall seedings.
 - C) On special areas the following lawn grass mixture may be seeded at the rate of 2 to 2 1/2 lbs. per 1,000 square feet.
 15-25% Mezan bluegrass, 15-25% Common bluegrass, 45-55% Creeping red fescue.
5. Sediment Trap to be cleaned as directed by Howard Soil Conservation District.
6. All control facilities to remain in place until removal is approved by Howard Soil Conservation District.

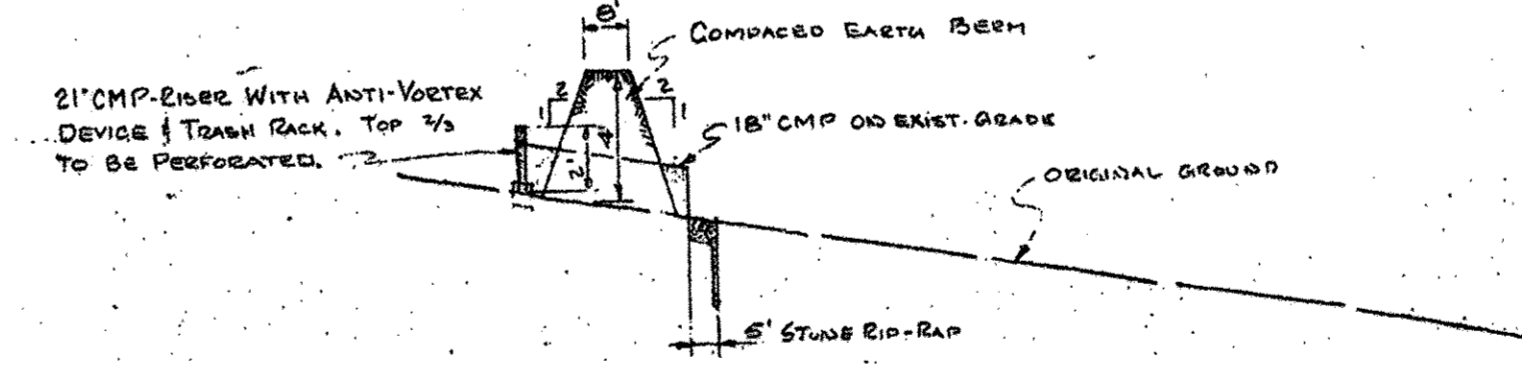
EXISTING CONTOURS
 NEW CONTOURS
 EXTERIOR LIGHTING FIXES

SITE PLAN
 1" = 30'-0"

CONTOURS TAKEN FROM 'PRELIMINARY SUBDIVISION PLAN' VILLAGE OF OAKLAND MILLS, SECTION 5 STEVENS FOREST, AREA 4, DATED, SEPT. 1988, BY GREENHORNE & O'MARA.

STEVENS FOREST ROAD INFORMATION TAKEN FROM 'PLAN & PROFILES' STEVENS FOREST RD, SHEET 4, DATED FEB. 1969, BY GREENHORNE & O'MARA.

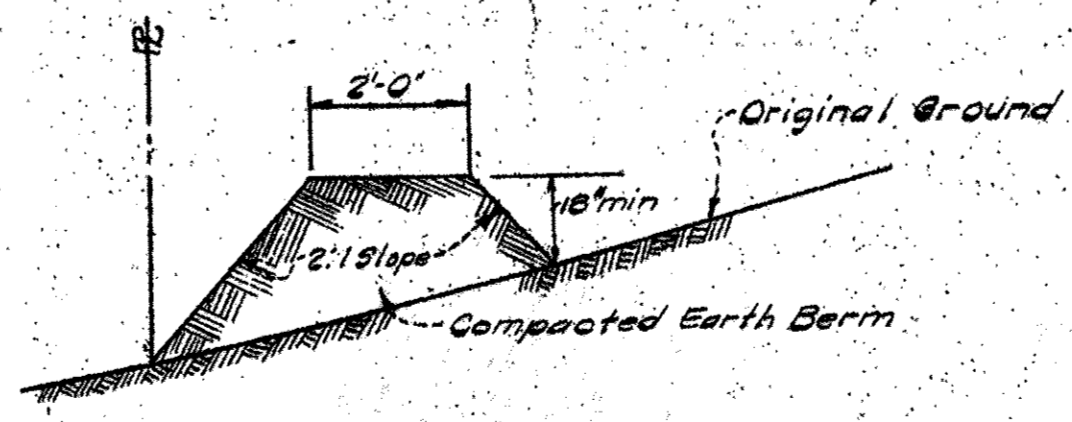
SITE BOUNDARIES ARE TAKEN FROM DRAWING TITLED 'VILLAGE OF OAKLAND MILLS, STEVENS FOREST' SUBMITTED FOR RECORD, DATED OCT. 1969, BY GREENHORNE & O'MARA.



SECTION THREE DAM PIPE SPILLWAY
 SCALE: HOR. 1" = 50'
 VERT. 1" = 5'



NOTE: EARTH BERM @ SEDIMENT TRAP SHALL BE MATERIAL TAKEN FROM APPROVED BORROW AREAS & SHALL BE FREE OF ROOTS, VEGETATION, ROCKS & OTHER OBSTRUCTIVE MATERIAL. A MINIMUM OF 10% SETTLEMENT SHALL BE ALLOWED.

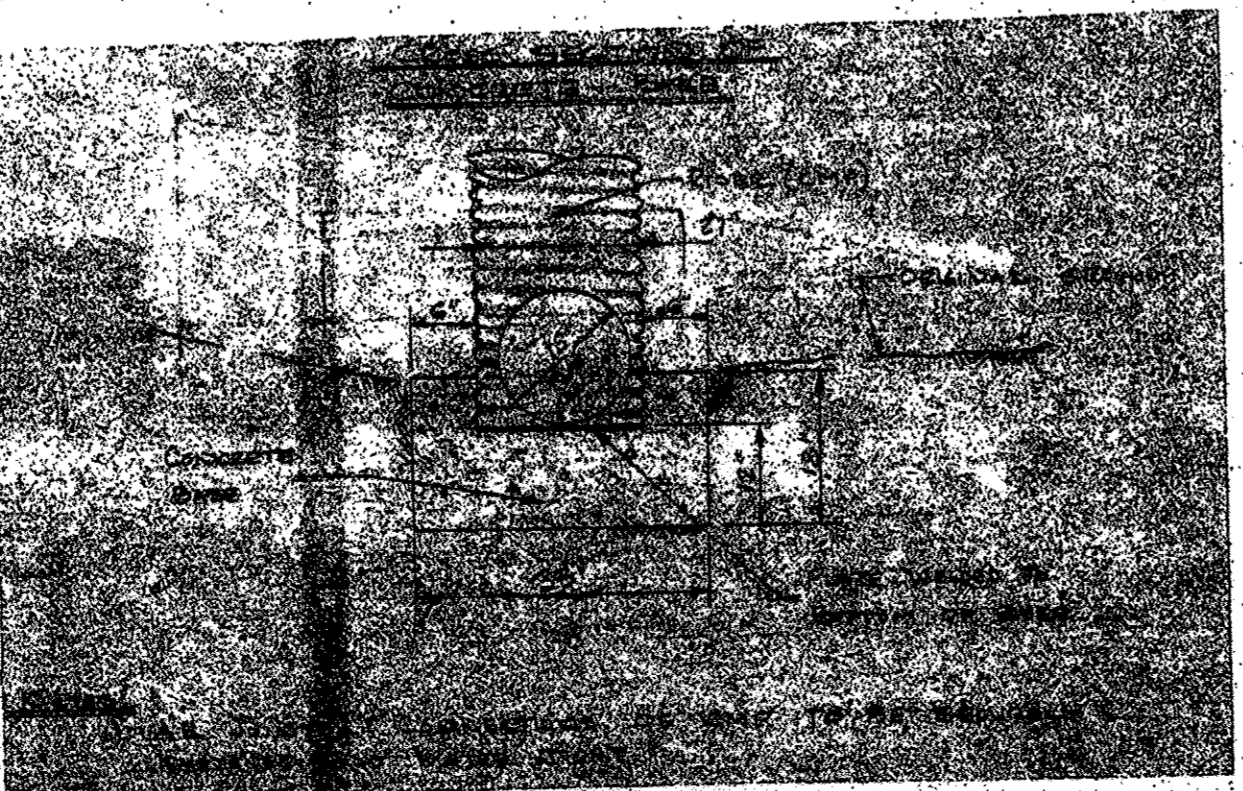
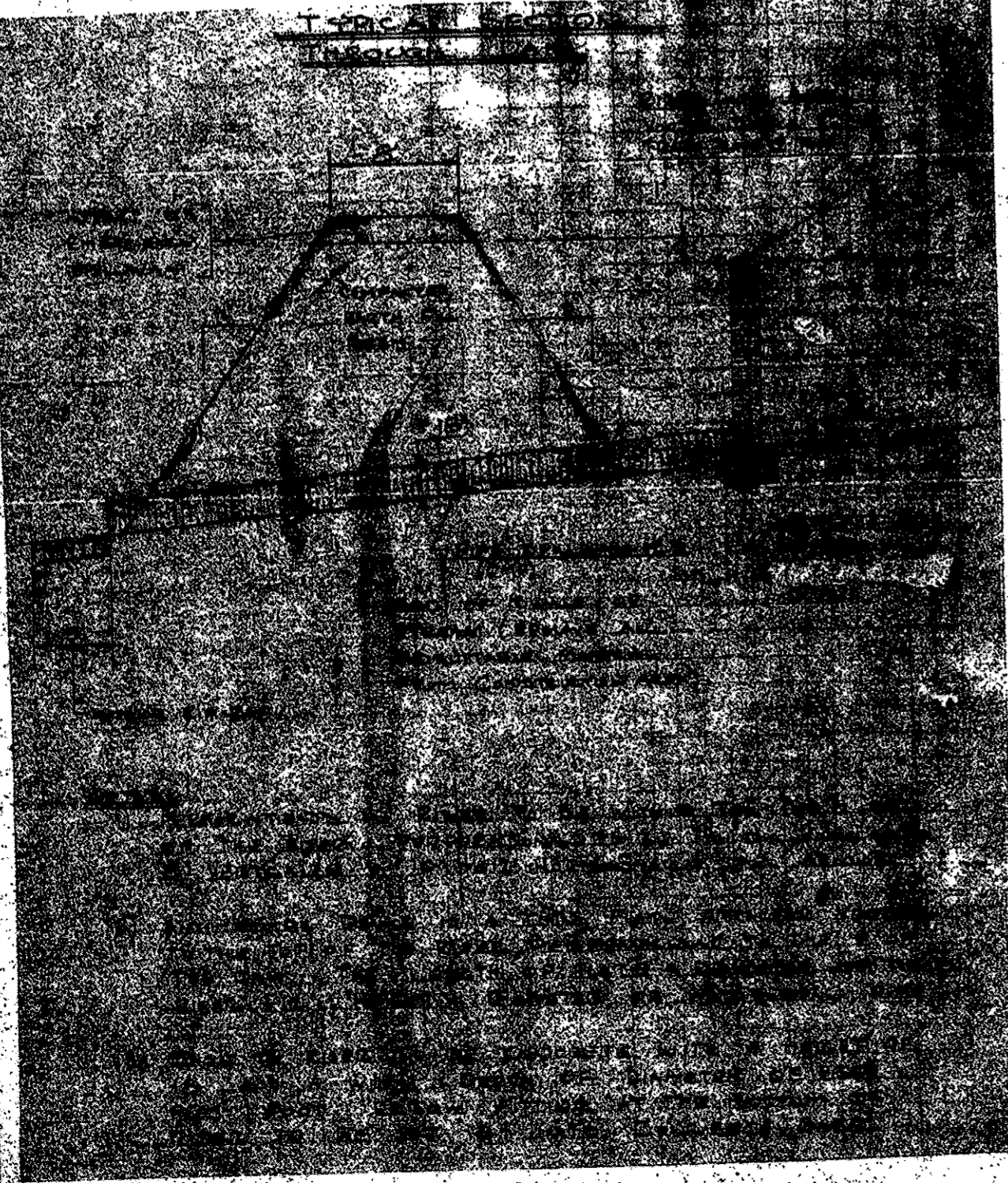


TYPICAL SECTION DIVERSION BERM
 No Scale

"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. 10868, Expiration Date 10-8-2016."

SWM AS BUILT

AS-BUILT CERTIFICATION FOR PSWM
 Note: There is no "AS-Built" information provided on this sheet.
 PE# 10868
 7-12-16



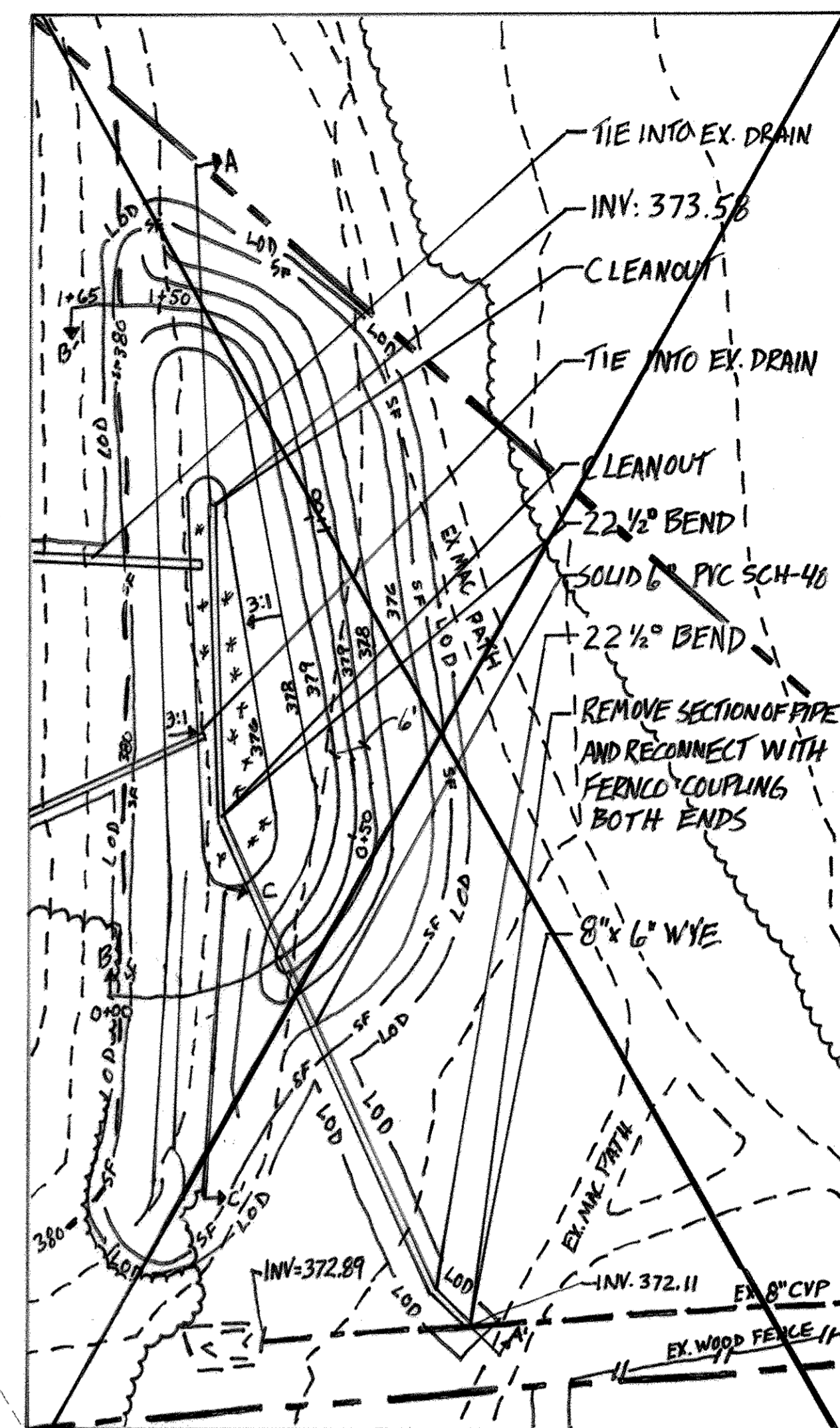
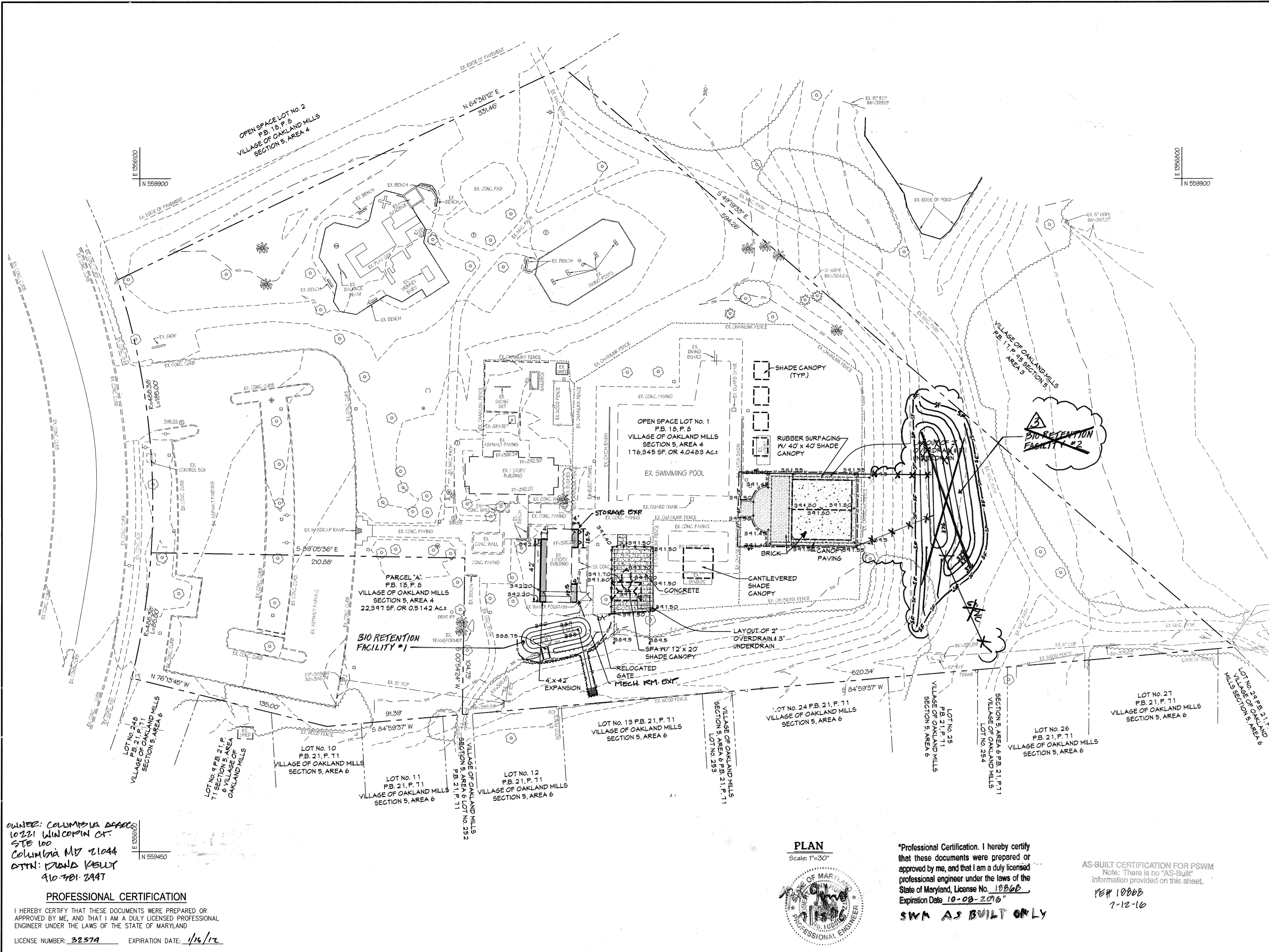
SWM AS BUILT SUBMISSION	7-12-16
Rev. Pool Area	8-19-11

STEVENS FOREST NEIGHBORHOOD CENTER
 VILLAGE OF OAKLAND MILLS COLUMBIA, MARYLAND

NEER & GRAEF ARCHITECTS
 200 KING STREET ALEXANDRIA, VIRGINIA 22304
 COMM. 701 116
 DATE: 10 MAR 10 - PARKING AREA DESIGN
 REV. 11 MAR 10 - ADDITION OF 2ND & 3RD LVL
 REV. 8 MAY 10 - S.D.L. & EROSION CONTROL DATA

SILT & EROSION CONTROL PLAN
 SITE DEVELOPMENT PLAN 3 of 6
 200-70-004

The purpose of this revision is to add three additions to the ex. bath house and add a spa & exercise area to the site.



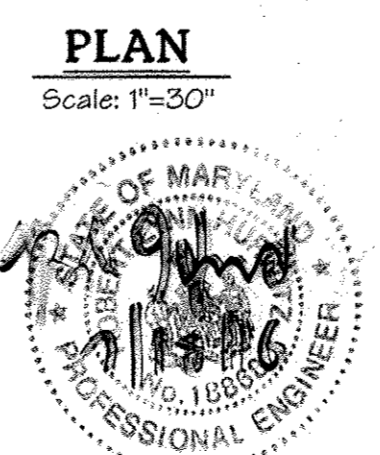
BIO RETENTION #2 PLAN VIEW
SCALE: 1"=20'-0"

- LEGEND**
- PROPOSED CANOPY OUTLINE
 - LAYOUT OF 2" OVERDRAIN & 3" UNDERDRAIN
 - SILT FENCE
 - NEW ROOFTOP/IMPERVIOUS SURFACE
 - NEW CONCRETE PAVERS
 - NEW BRICK PAVERS
 - NEW CONCRETE PAVEMENT

IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.
30' 15' 0' 30'
SCALE: 1"=30'-0"

OWNER: COLUMBIA ADAMS
10221 WINDCOPIN CT.
STE 100
COLUMBIA MD 21044
ATTN: JANA KELLY
410-381-2447

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 NUMBER: 32574 EXPIRATION DATE: 1/16/12



*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. 18866, Expiration Date 7-12-16.
SWM AS BUILT ONLY

AS-BUILT CERTIFICATION FOR PSWM
Note: There is no "AS-Built" information provided on this sheet.
PE# 18866
7-12-16

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Director: *[Signature]* Date: 8/1/12
Chief, Division of Land Development: *[Signature]* Date: 3/21/12
Chief, Development Engineering Division: *[Signature]* Date: 2/27/12



DESIGN BY:	MP	ADD STORMWATER BIORETENTION #2	10-17-12
M.J.P.	MP	DELETE BIO-RETENTION #2	6-13-13
DRAWN BY:	M.C.A.	SWM AS BUILT SUBMISSION	7-12-16
CHECKED BY:	J.W.R.		
DATE:			
BY	NO.	REVISION	DATE

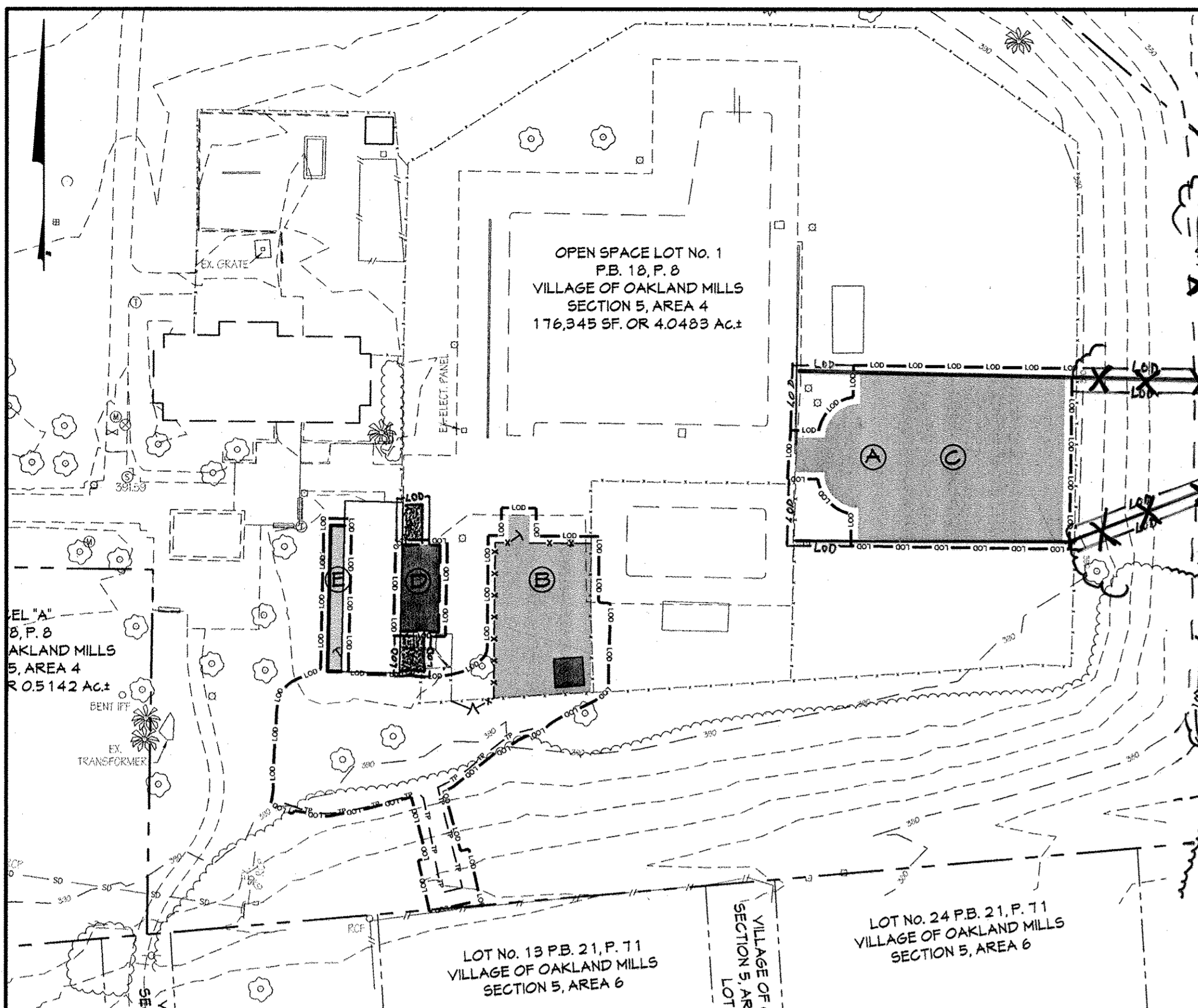
STEVENS FOREST NEIGHBORHOOD CENTER
COLUMBIA VILLAGE OF OAKLAND MILLS

REVISED SITE DEVELOPMENT PLAN

STEVENS FOREST POOL
V.O.O.M. 5/4 OPEN SPACE LOT 1, PARCEL A
PLAT BOOK 18 FOLIO 8 6th ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SHEET 4 OF 6

C.E.I. PROJECT NUMBER: 101226.00
SCALE: AS SHOWN

SDP-70-GA



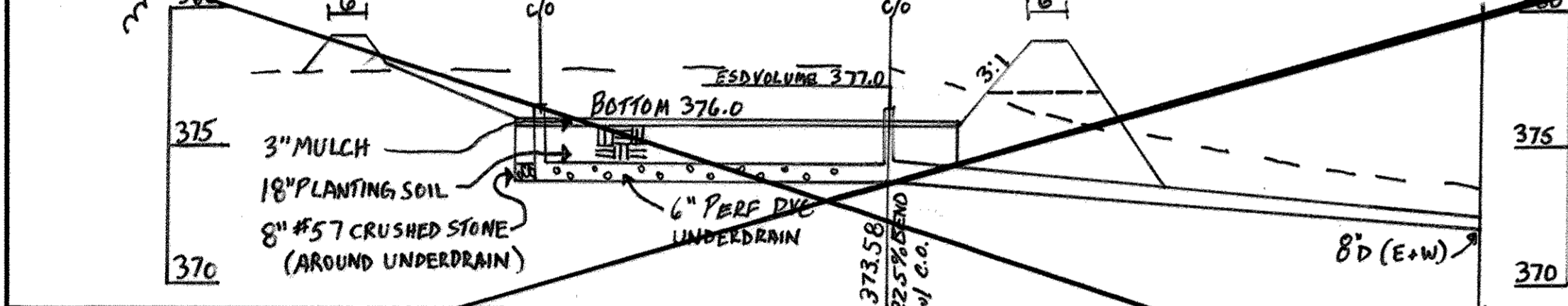
IF THIS DRAWING IS A REDUCTION,
GRAPHIC SCALE MUST BE USED.

30' 15' 0' 30'

SCALE: 1"=30'-0"

IMPERVIOUS AREA SUMMARY (WITHIN LOD)

	EXISTING IMPERVIOUS AREA (343.2 SF)	(443.2)
	EXISTING LAWN AREA (4544.13 SF)	(11,954 SF)
---	LIMIT OF DISTURBANCE	
PERCENT IMPERVIOUS = $\frac{343.2}{2697} = 12.7\% < 40\%$		
QUALIFIES AS NEW DEVELOPMENT		



The purpose of this revision is to add three additional to the site, a bath house and add a spa & exercise area to the site.

OWNER: COLUMBIA ASSOC
10221 WINCOPIN CR.
COLUMBIA MD 21044
ATTN: DIANA KELLY
410.381.4447

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 NUMBER: 32574 EXPIRATION DATE: 1/16/12

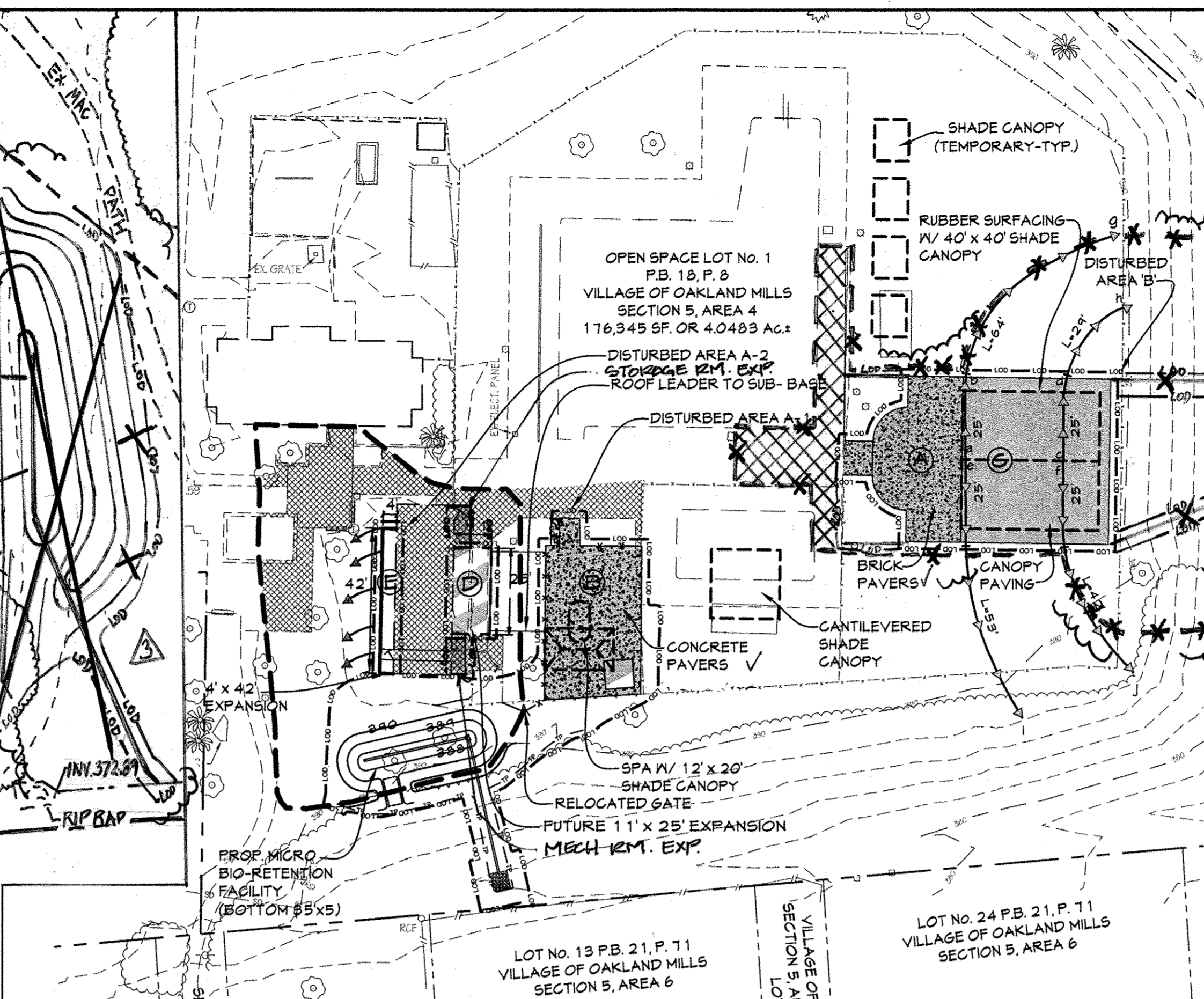
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 18863, Expiration Date 10-08-2018.

SWM AJ BUIH

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 NUMBER: 32574 EXPIRATION DATE: 1/16/12



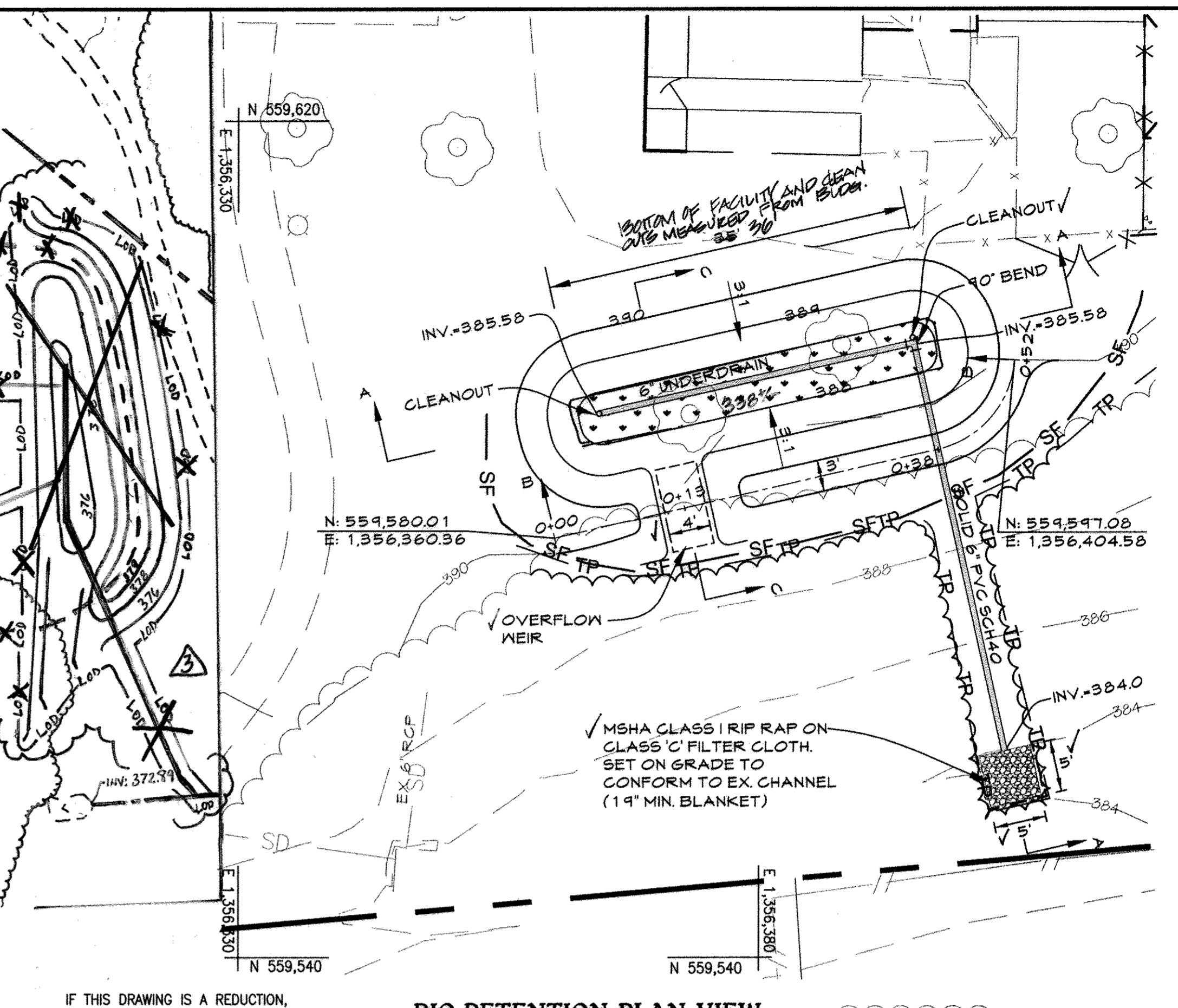
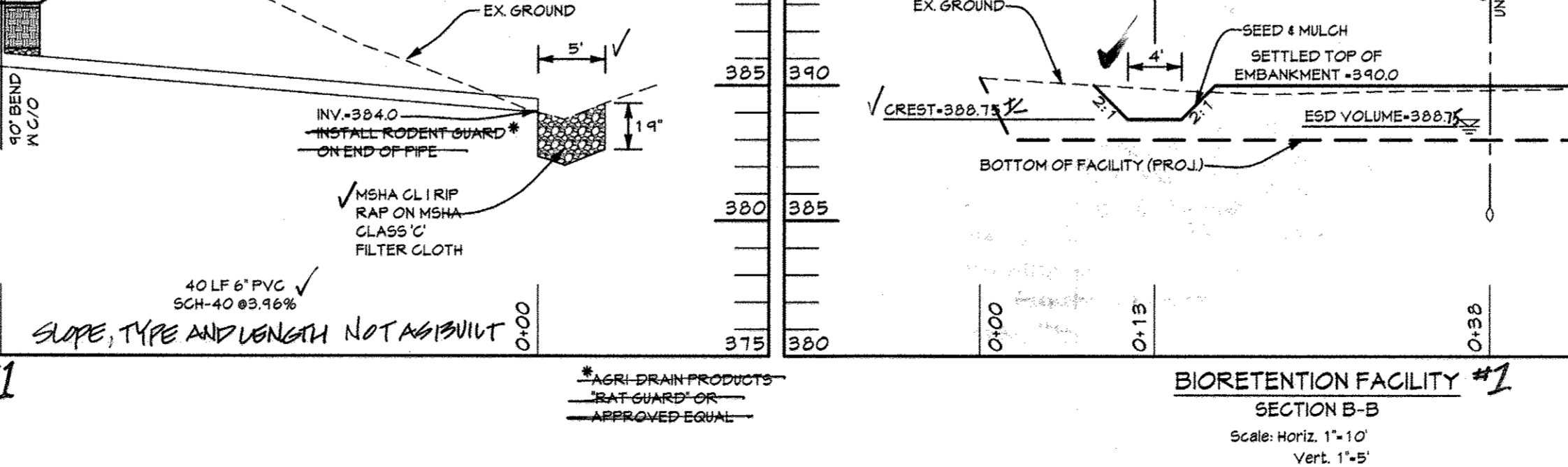
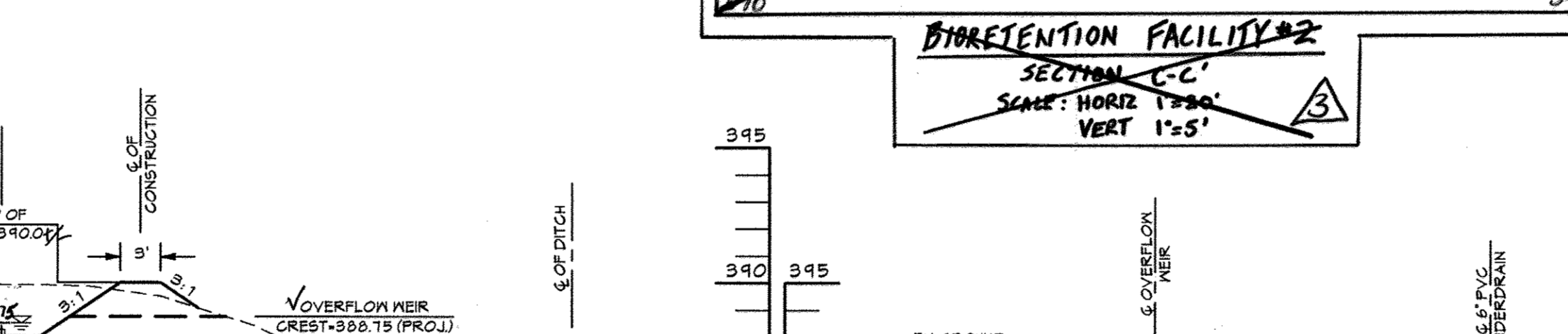
IF THIS DRAWING IS A REDUCTION,
GRAPHIC SCALE MUST BE USED.

30' 15' 0' 30'

SCALE: 1"=30'-0"

IMPERVIOUS AREA SUMMARY (WITHIN LOD)

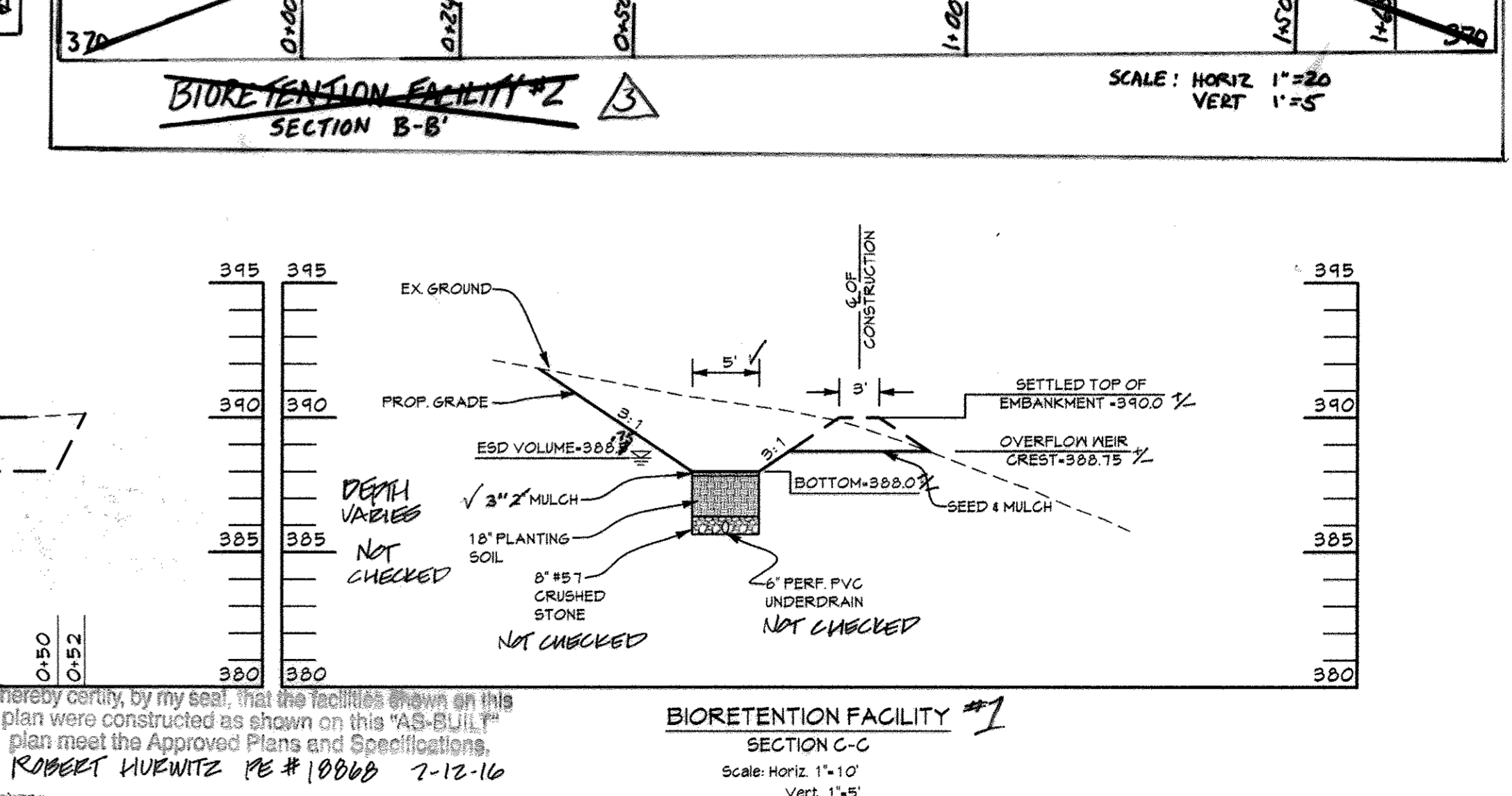
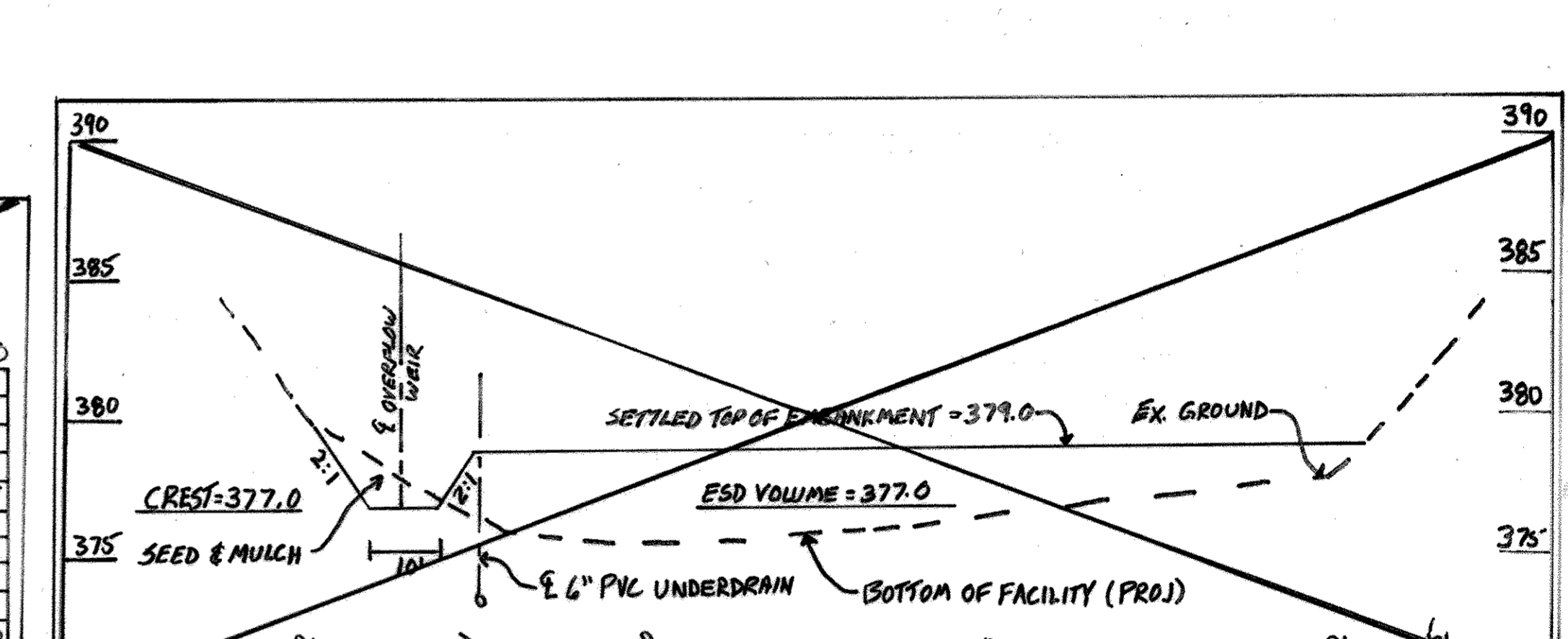
	EXISTING IMPERVIOUS
	NEW IMPERVIOUS OVER EXIST. IMPERVIOUS
	NEW IMPERVIOUS
---	LIMIT OF DISTURBANCE
---	DRAINAGE AREA TO PROPOSED MICRO-BIO RETENTION FACILITY
---	NON-ROOFTOP DISCONNECT PATH
(A)	IMPERVIOUS AREA I.D.
SF	SILT FENCE
TP	TREE PROTECTION FENCE



IF THIS DRAWING IS A REDUCTION,
GRAPHIC SCALE MUST BE USED.

10' 5' 0' 10'

SCALE: 1"=10'-0"



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Director: *Mark McCaughy* Date: 5/1/12

Chief, Division of Land Development: *V. J. ...* Date: 3/6/12

Chief, Development Engineering Division: *...* Date: 2/27/12

CENTURY ENGINEERING

CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 Fax: 443.589.2401

DESIGN BY:	MP	ADD STORMWATER BIORETENTION #2	10-17-12
M.J.P.	MP	REMOVE BIORETENTION #2	5-13-13
DRAWN BY:	RMH	SWM AS BUILT SUBMISSION	
M.C.A.			
CHECKED BY:	J.W.R.		
J.W.R.			
DATE:			
BY	NO.	REVISION	DATE

STEVENS FOREST NEIGHBORHOOD CENTER
COLUMBIA VILLAGE OF OAKLAND MILLS

REVISED SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT PLAN
STEVENS FOREST POOL
V.O.O.M. 5/4 OPEN SPACE LOT 1, PARCEL A

PLAT BOOK 18 FOLIO 8 6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

SHEET 5 OF 6

C.E.I. PROJECT NUMBER: 101226.00

SCALE: AS SHOWN

3/20/12

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

B.3.B Specifications for Bioretention

1. Material Specifications

The allowable materials to be used in bioretention area are detailed in Table B.3.2.

2. Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the bioretention area that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:

pH range	5.2 - 7.0
organic matter	1.5 - 4% (by weight)
magnesium	35 lb./ac
phosphorus (phosphate - P ₂ O ₅)	75 lb./ac
potassium (potash - K ₂ O)	85 lb./ac
soluble salts	not to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional tests of organic matter, and soluble salts. A textual analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the top soil was excavated.

Since different labs calculate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

3. Compaction

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

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

areas are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as 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 backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material

Recommended plant material for bioretention areas can be found in Appendix A, Section A.2.3.

5. Plant Installation

Mulch should be placed to a uniform thickness of 2" to 3". Shredded hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Root stock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8" of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

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

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains

Underdrains are to be placed on a 3'-0" wide section of filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of underdrain pipes not terminating in an observation well shall be capped.

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

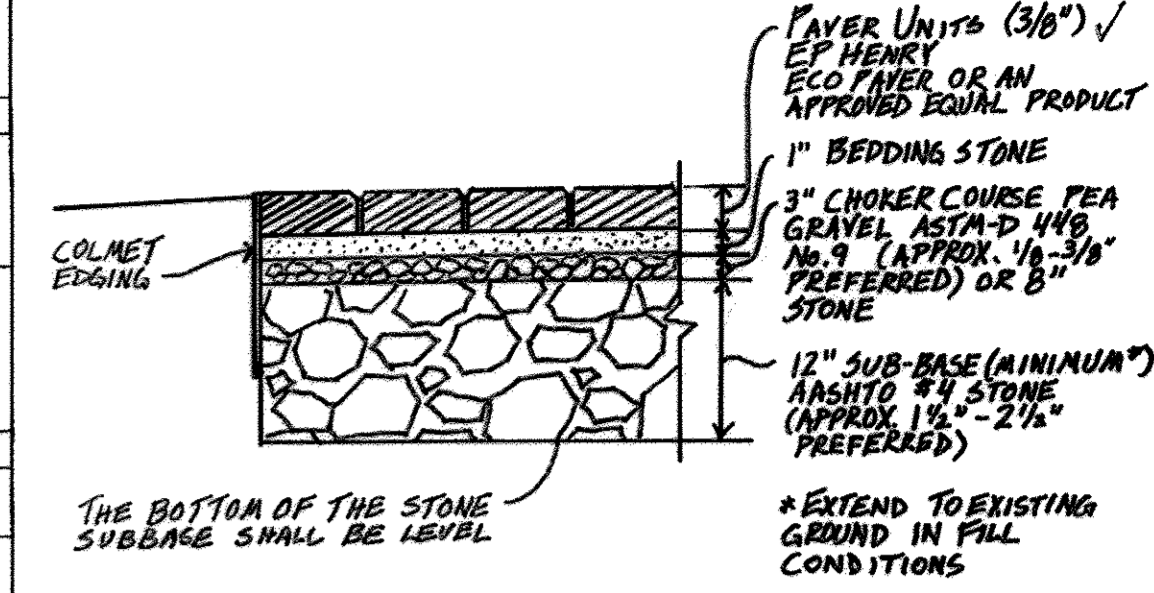
7. Miscellaneous

The bioretention facility may not be constructed until all contributing drainage area has been stabilized.

Table B.3.2 Materials Specifications for Bioretention

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
planting soil [2.5' to 4' deep]	sand 35 - 60% silt 30 - 55% clay 10 - 25%	n/a	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood		aged 6 months, minimum
pea gravel (diaphragm and curtain drain)	pea gravel: ASTM-D-448	pea gravel: No. 6 stone: 2" to 5"	
gravel	ornamental stone: washed cobbles		
geotextile	Class "C" - apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-4833)	n/a	for use as necessary beneath underdrains only
underdrain gravel	AASHTO M-43	0.375" to 0.75"	
underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes
poured in place concrete (if required)	MSHA Mix No. 3; f _c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading (H-10 or H-20); allowable horizontal loading (based on soil pressures); and analysis of potential cracking
sand [1' deep]	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

The purpose of this revision is to add three additional to the ex. bath house and add a spa & exercise area to the site.



PREVIOUS PAVERS NOT TO SCALE STONE IS PRESENT UNDER PAVERS, TOTAL DEPTH AND TYPE IS UNKNOWN

B.3.4

OPERATION AND MAINTENANCE SCHEDULE FOR BIORETENTION

- THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER, AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
- THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
- THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
- THE OWNER SHALL CORRECT SOIL EROSION ON AN AS-NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT

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

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

OWNER: THE COLUMBIA ASSOCIATION
10231 WINCOPIN CT.
STE 100
COLUMBIA MD 21044
ATTN: DIANA KELLY
410 781 2047

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Date: 3/1/12
Date: 3/01/12
Date: 2/27/12

M CENTURY ENGINEERING
CONSULTING ENGINEERS - PLANNERS
10710 Gilroy Road, Hunt Valley, MD 21031
Phone: 443.589.2400 Fax: 443.589.2401



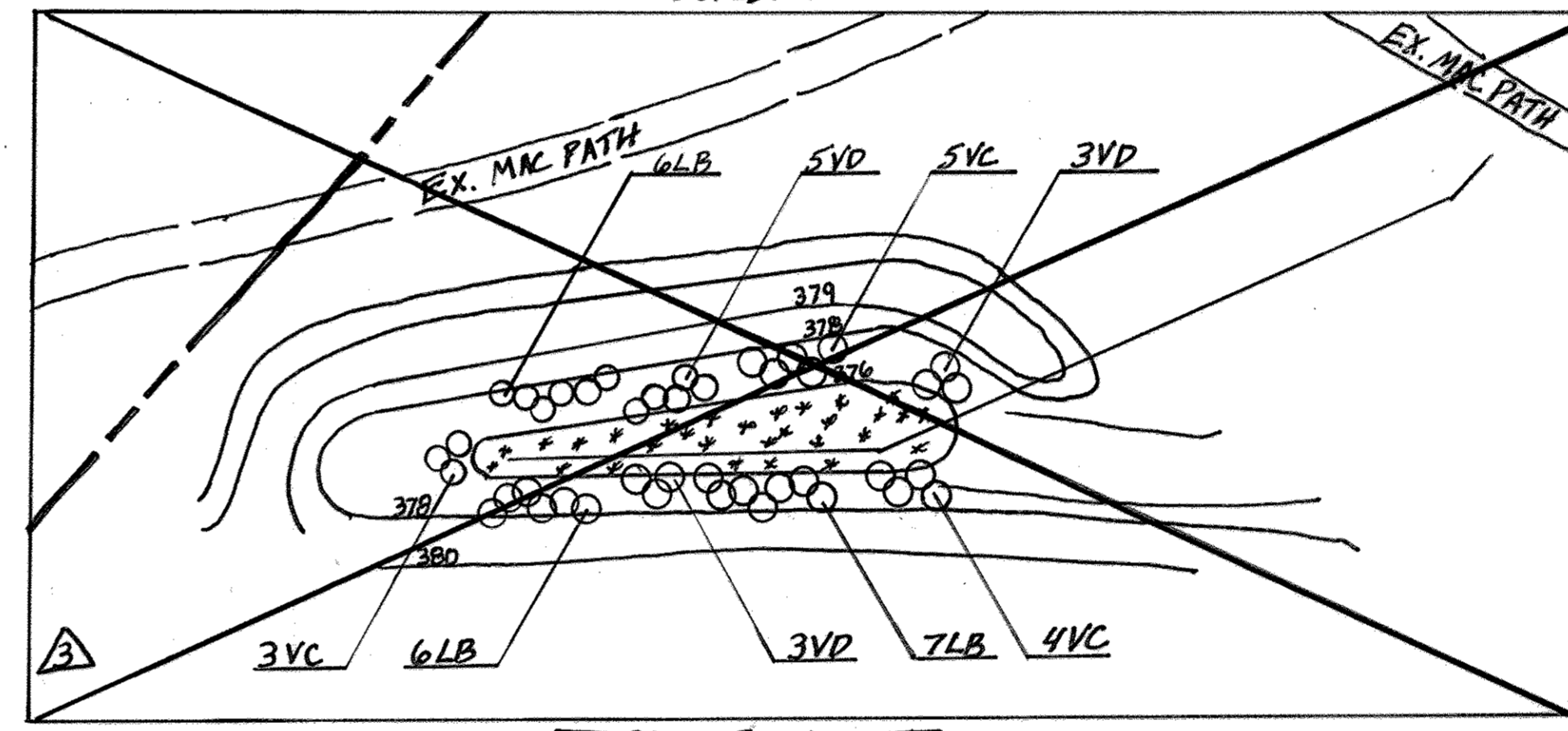
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DRAWN BY:	MP	DELETE PLANTING PLAN FOR BIORETENTION #2	5-13-12
CHECKED BY:	RHM	SWM AS BUILT SUBMISSION	7-12-16
DATE:			
BY	NO.	REVISION	DATE

STEVENS FOREST NEIGHBORHOOD CENTER
COLUMBIA VILLAGE OF OAKLAND MILLS

REVISED SITE DEVELOPMENT PLAN
STORMWATER MANAGEMENT NOTES
STEVENS FOREST POOL
V.O.O.M. 5/4 OPEN SPACE LOT 1, PARCEL A
PLAT BOOK 18 FOLIO 8 6TH ELECTION DISTRICT
HOWARD COUNTY, MARYLAND
SHEET 6 OF 6

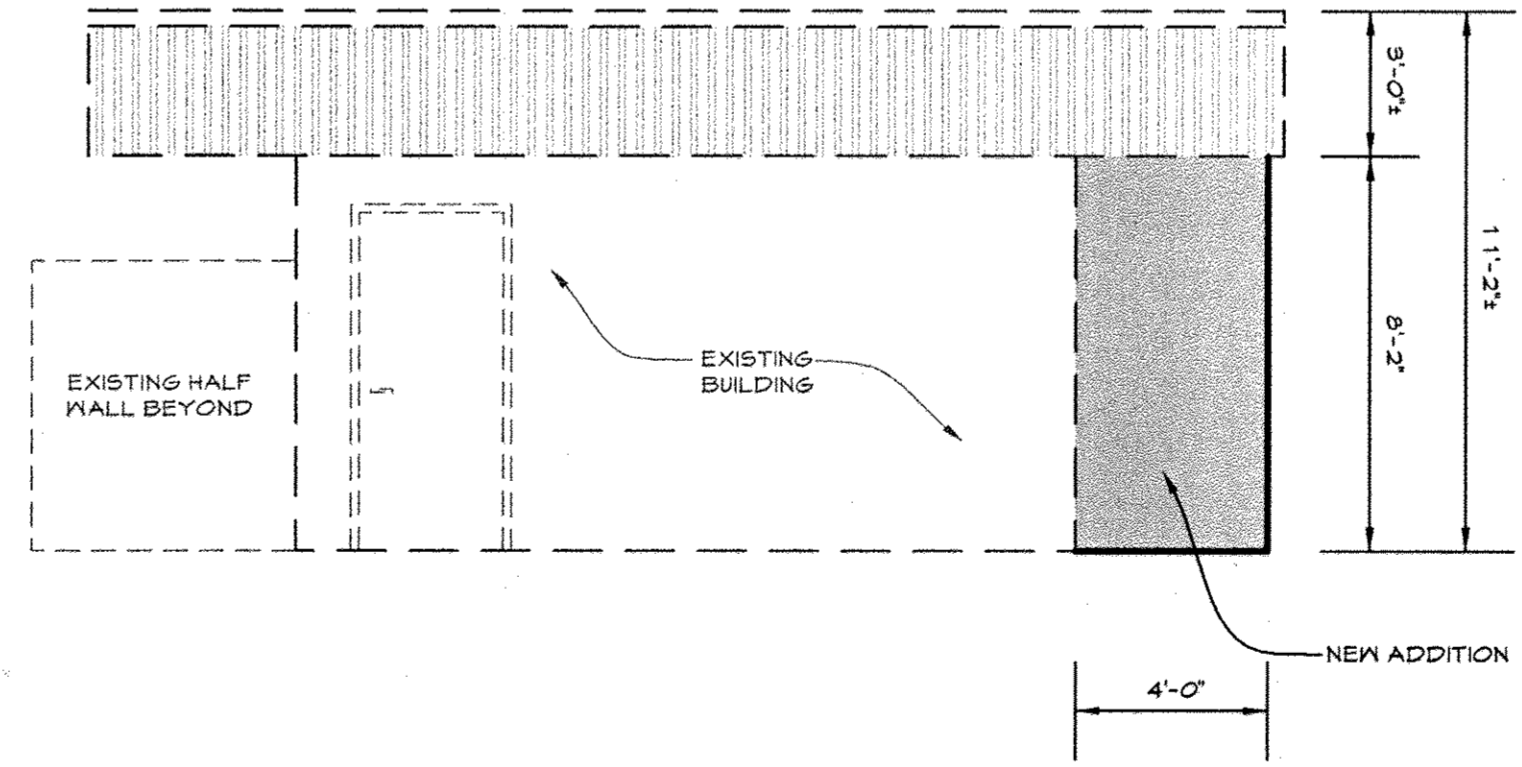
C.E.I. PROJECT NUMBER 101226.00
SCALE: AS SHOWN

PLANTING PLAN SCALE: 1" = 20'



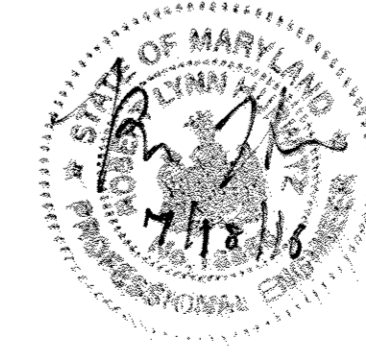
PLANT LIST

14 LB	LINDERA BENZOIN (NORTHERN SPICEBUSH)	24" HT.	3 GAL. CONT.	5' O.C.
12 VC	VACCINIUM CORYMBOSUM (ARROWWOOD VIBURNUM)	24" HT.	3 GAL. CONT.	5' O.C.
11 VD	VIBURNUM DENTATUM (ARROWWOOD VIBURNUM)	24" HT.	3 GAL. CONT.	5' O.C.

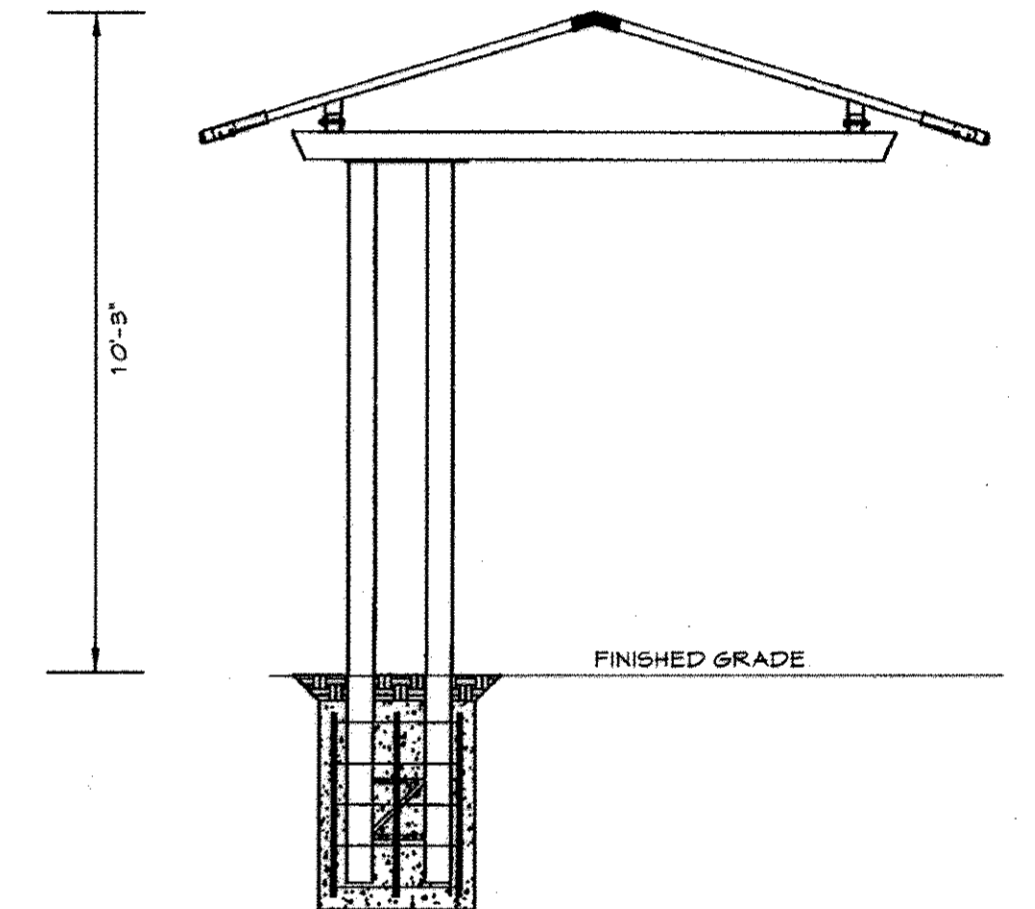


ELEVATION-PROPOSED BUILDING ADDITION NOT TO SCALE

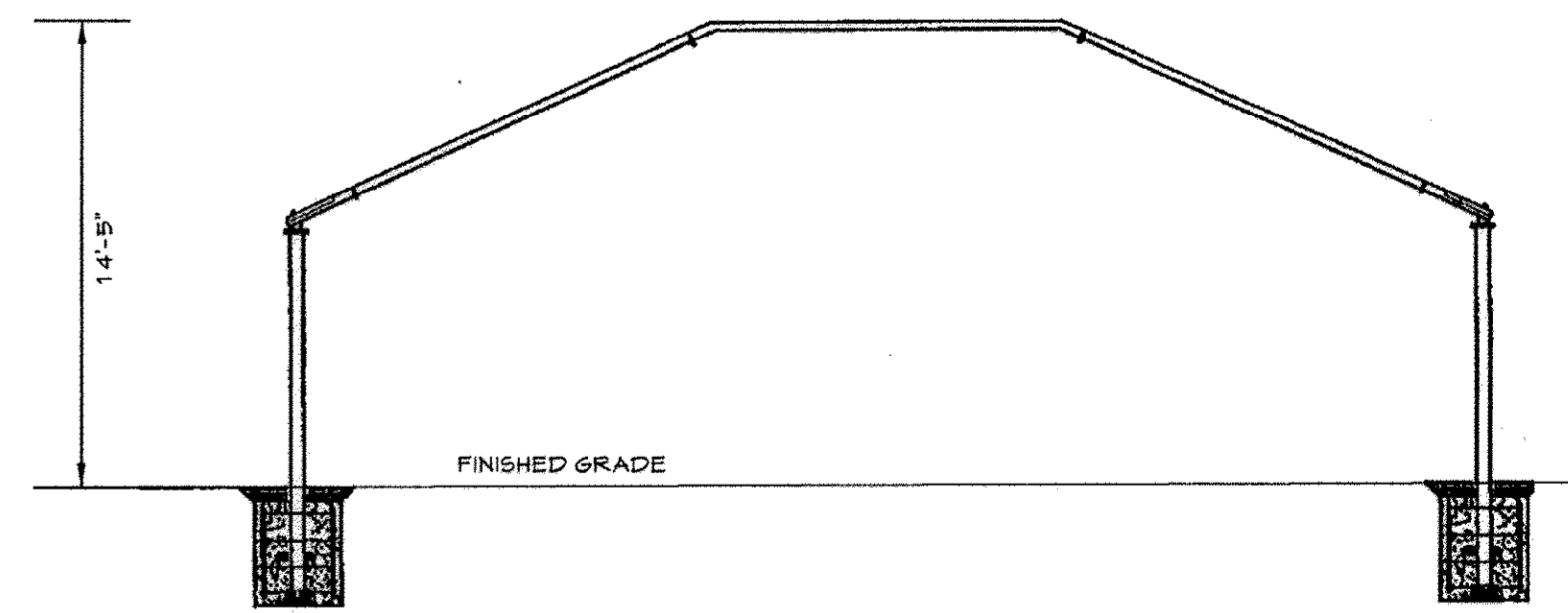
*Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 10068, Expiration Date 10-08-2016



I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this "AS-BUILT" plan meet the Approved Plans and Specifications.
ROBERT HURWITZ PE # 10068 7-12-16



ELEVATION PROPOSED SPA SHADE CANOPY NOT TO SCALE



ELEVATION PROPOSED EXERCISE AREA SHADE CANOPY NOT TO SCALE