

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor



Margaret G. McHale
Chair

Ren Serey
Executive Director

STATE OF MARYLAND
CRITICAL AREA COMMISSION
CHESAPEAKE AND ATLANTIC COASTAL BAYS

1804 West Street, Suite 100, Annapolis, Maryland 21401

(410) 260-3460 Fax: (410) 974-5338

www.dnr.state.md.us/criticalarea/

May 18, 2009

Ms. DeAnn Adler
Commissioners of Leonardtown
P.O. Box 1
Leonardtown, Maryland 20650

**RE: SM 20-08
St. Mary's Ryken High School Expansion**

Dear Ms. Adler:

Thank you for providing the revised plans and pollutant removal calculations for the referenced project. I have reviewed the information, and I have the following comments:

1. The pollutant removal calculations have been correctly revised to address the entire area of the site (10.79 acres) that is designated as an Intensely Developed Area (IDA). The area of the sidewalks has been included in the area of the parking lot for a total impervious area of 3.35 acres. Two structural stormwater treatment practices are proposed, an infiltration trench and a bioretention area, and they will address 2.46 pounds of the total 2.8 pounds of pollutant removal required. The remaining 0.34 pounds will be addressed by planting 48 trees and 61 shrubs adjacent to the entrance road and between the stormwater outfalls. (At a removal rate equivalency of 2.0 pounds of phosphorus per acre of planting per year, the proposed plantings equate to 0.17 acres and will provide the 0.34 pounds of removal required and also stabilize the slope between the outfalls.)
2. It is my understanding that the 100-foot Buffer and Expanded Buffer have been shown on the plans; however, it does not appear that these areas have been labeled. These should be clearly labeled on all construction documents.
3. It is my understanding that the Limits of Disturbance (LOD) along the new entrance and parking lot have been delineated so that they are just outside the Expanded Buffer and the boundary between the RCA and the new IDA. The proposed elevations of the new roadway match the existing grade; therefore, no substantive grading will be required in

TTY for the Deaf

Annapolis: (410) 974-2609 D.C. Metro: (301) 586-0450



this area. During the pre-construction meeting, the contractor should be reminded that no disturbance, no stockpiling of materials, or employee parking should take place outside of the specified LOD.

4. The proposed parking lot plantings are native species and should adapt well to that environment. The proposed bioretention area plantings are native species and are acceptable for that location. The proposed supplemental pollutant removal plantings (identified on the "Bufferyard Planting List") are native species and appear to be suitable to the site conditions. All plantings should be covered by a maintenance agreement and a replacement guarantee for two years. The plantings in the bioretention area and provided as supplemental removal plantings are "required plantings" and must be permanently maintained. This means that if the plants die, they must be replaced in kind or with another native plant species, unless sufficient natural regeneration has taken place to maintain the water quality function provided by the original design. It is recommended that the maintenance officials at St. Mary's-Ryken High School retain a copy of the "Landscape Plan" for their records.

The proposed plans with the minor modifications included in this letter address the Critical Area Commission staff comments set forth in the letter from Marshall Johnson to the Town dated November 24, 2008. The Commission has no objection to the Town moving forward with the local approvals necessary for construction to begin. Please provide a copy of the maintenance agreement and replacement guarantee for the plantings to the Commission for our records. Thank you for allowing me to work directly with the staff of Loiederman Soltesz Associates to expedite the review of this project. If you have any questions, please do not hesitate to call me at (410) 260-3480.

Sincerely,



Mary R. Owens
Education and Conservation Coordinator

cc: Jim Gotsch, P.E., LSA
Mary Joy Hurlburt, St. Mary's-Ryken High School

**ST. MARY'S COUNTY GOVERNMENT
BOARD OF COUNTY COMMISSIONERS**

*Francis Jack Russell,
President*



Francis Jack Russell, President
Kenneth R. Dement, Commissioner
Lawrence D. Jarboe, Commissioner
Thomas A. Mattingly, Sr., Commissioner
Daniel H. Raley, Commissioner

April 2, 2007

Mr. Ren Serey, Director
Critical Area Commission-Chesapeake and Atlantic Coastal Bays
1804 West Street, Suite 100,
Annapolis, MD 21401

Re: St. Mary's - Ryken High School Mapping Mistake


Dear Mr. Serey,

The St. Mary's County Board of County Commissioners requests a continuance of the "St. Mary's - Ryken High School Mapping Mistake" case which is scheduled before the Commission for a vote on April 4, 2007.

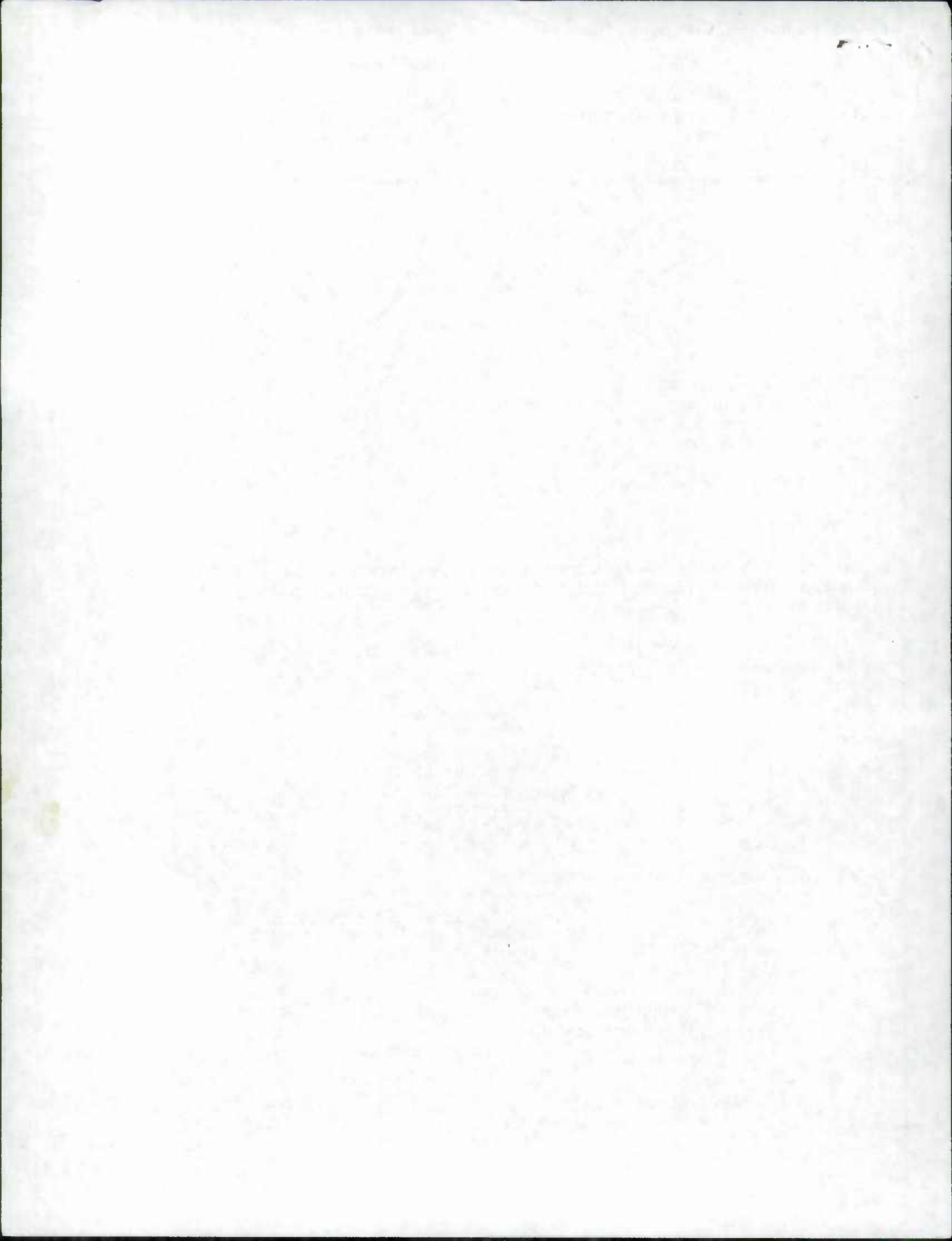
If you have any questions, please contact me at 301-475-4200 extension 1320. Thank you very much for your consideration.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS
FOR ST. MARY'S COUNTY, MARYLAND


Francis Jack Russell, President

gmb
cc: Dennis Canavan, LUGM
Mary Joy Hurlburt, President
St. Mary's Ryken High School



CRITICAL AREA PLANTING AGREEMENT

Case #: 17-08A

Site Location: St. Mary's Ryker

The parties have expressly entered into this agreement to protect and preserve the fish, plant, and wildlife habitats, to improve the water quality, and to mitigate the adverse impacts of development in the designated area(s) pursuant to Leonardtown Chesapeake Bay Critical Area Program.

WITNESSETH:

The Applicant seeks approval of the Critical Area Planting Agreement submitted and attached hereto as case # 17-08A which consists of the following elements:



1. Site Plan with Critical Area Inventory.

2. Planting Plan for mitigation for:

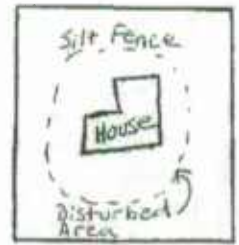
3 : 1

Area of Disturbance x 3 = Total sq. ft. for mitigation

_____ x 3 = _____

1 tree = 400 sq. ft.

1 shrub = 200 sq. ft.



* use trees if less than 15% of parcel is covered with trees/shrubs

3. Erosion and Sediment Control Plan or signed waiver.

4. Stormwater Management Plan or signed waiver.

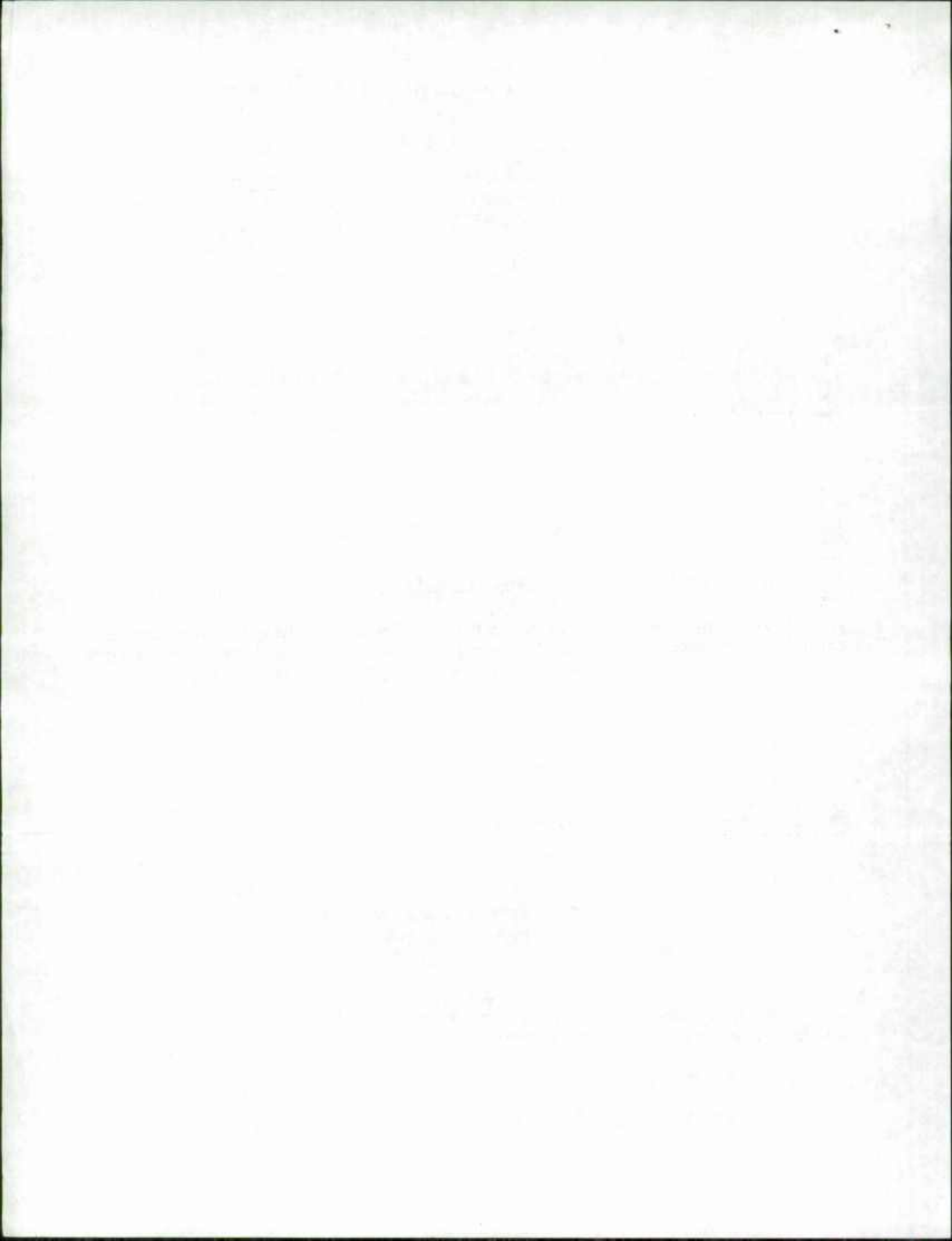
The Town seeks to ensure that adequate conservation measures are performed under the terms of this agreement by the Applicant for the installation, maintenance, and preservation of the natural environment in St. Mary's County.

IN CONSIDERATION of the mutual promises of the parties and the following terms and conditions, and in further consideration of the attached Critical Area Planting Agreement, and other applicable plans as enumerated herein and the issuance of permits for the work proposed to be done by the Applicant, the parties agree as follows:

1. The Applicant agrees to mitigate the adverse impact of the development incurred by the proposed project by including the following elements in the Planting Plan:

A) Plant the following:

50 () six foot (6') tall x one and a half inch (1.5) in diameter standard B & B nursery trees and;



80 () three gallon nursery shrubs,
as mitigation for .17ac sq. ft.

B) Required plantings shall be installed by no later than at U+O or prior to the issuance of a Certificate of Occupancy whichever comes first. Upon completion of the planting, the applicant shall notify the Town Office of Planning & Zoning for an inspection.

C) A 80% survival rate after 2 year must be guaranteed by the undersigned, this agreement includes replanting after one year if necessary to achieve the required survival rate.

D) ALL revegetation MUST be installed as indicated on the approved Planting Plan.

2. In the event that the conservation measures as practiced in the filed are inadequate, the Town shall require revisions to the Critical Area Planting Agreement before any further work may be done on the project. The Town may issue a stop work order, where appropriate, to insure that the conservation measures of the Applicant are in conformity with the approved terms of this Agreement.

3. If there are deficiencies at the time of the final inspection, a stop work order will be posted and no further work shall be done nor shall a Certificate of Occupancy be issued on the project until such deficiencies are corrected to the terms of this Agreement.

4. The Town shall have the right to enter upon the land and inspect at any time during the project.

5. It is expressly agreed by all parties that it is the purpose and intent of this agreement to insure the installation, maintenance, and performance of conservation measures provided for by the approved plans or revisions or modifications thereof, in the designated Critical Area Program or on a specific project approved herein. The parties further agree that this Critical Area Planting Agreement shall be governed by the and construed by the laws of the State of Maryland.

IN WITNESS, the parties have caused this agreement to be executed.

Mary Jo Skullant, President
APPLICANT
St. Mary's Ryken High School, Inc.

Laschelle E. Miller
Laschelle E. Miller, Town Administrator

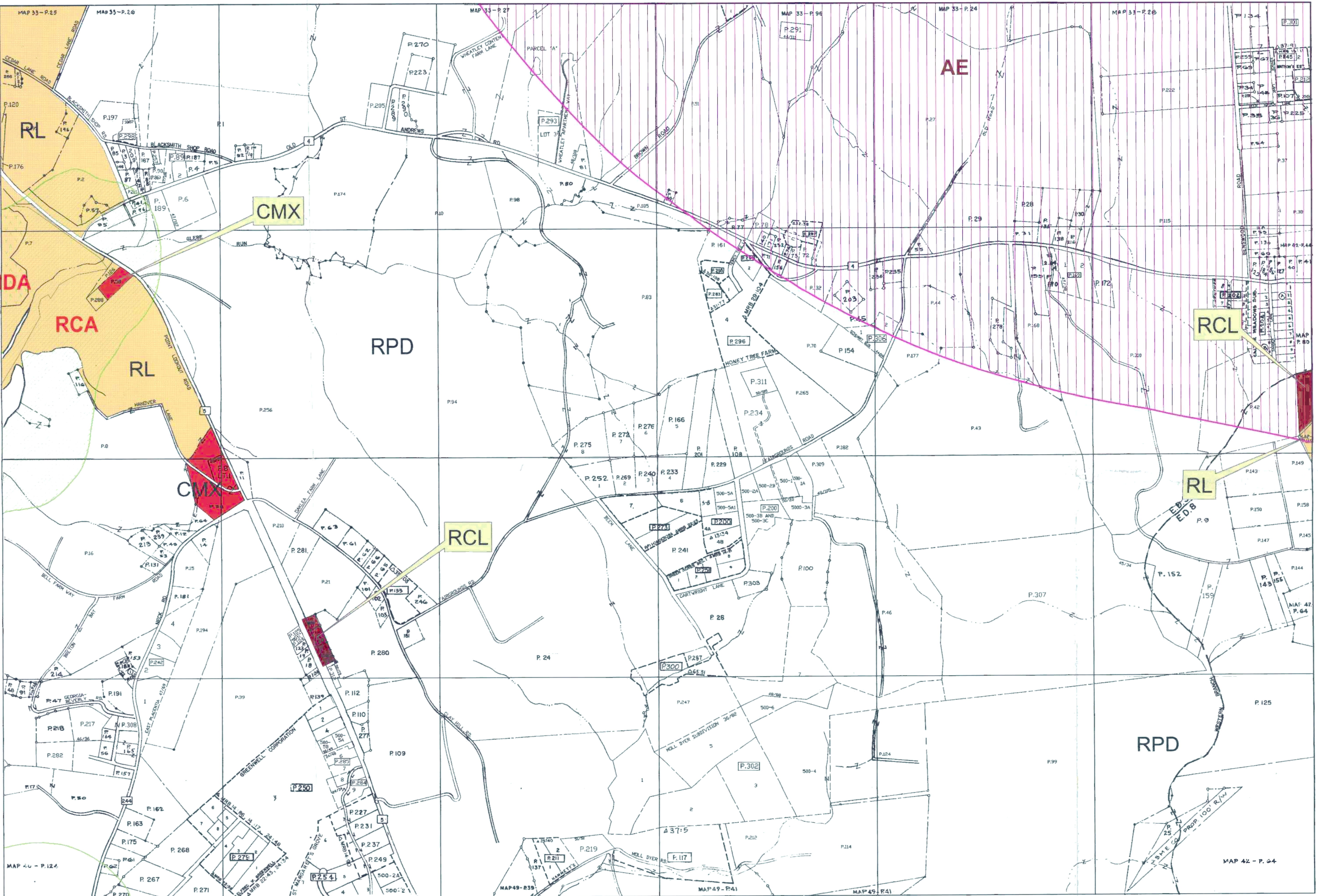
Date: May 21, 2009

RECEIVED

JUN 01 2009

CRITICAL AREA COMMISSION
Chesapeake & Atlantic Coastal Bays





40

42

33

49

Date of Last Zoning Revision:

Dec., 2001

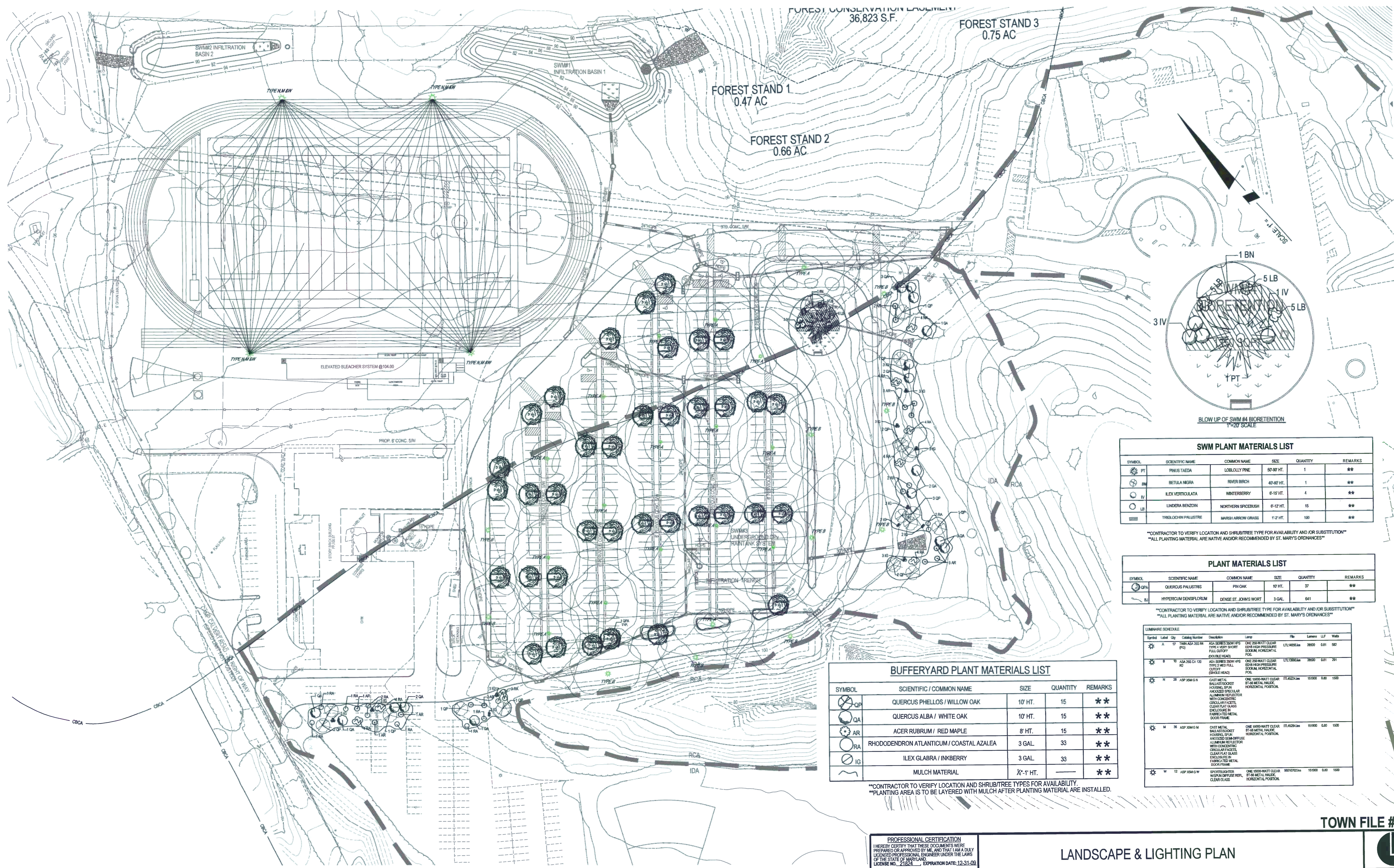
E.D. - 3rd

Scale: 1" = 1875'

MAP # 41

Legend:

- Critical Area Boundary
- RCA
- AE
- CMX
- RCL
- RL
- RPD



SWM PLANT MATERIALS LIST

SYMBOL	SCIENTIFIC NAME	COMMON NAME	SIZE	QUANTITY	REMARKS
PT	PINUS TAEDA	LOBLODY PINE	50-60 HT.	1	**
RB	RIVER BIRCH	RIVER BIRCH	40-45 HT.	1	**
IV	ILEX VERTICILLATA	WINTERBERRY	6-15 HT.	4	**
LB	LINDERA BENZONI	NORTHERN SPICEBUSH	6-12 HT.	15	**
TR	TRICHORIN PALUSTRE	MARSH ARROW GRASS	1'-2' HT.	100	**

PLANT MATERIALS LIST

SYMBOL	SCIENTIFIC NAME	COMMON NAME	SIZE	QUANTITY	REMARKS
OP	QUERCUS PHELLOS	WILLOW OAK	10' HT.	37	**
QA	QUERCUS ALBA	WHITE OAK	10' HT.	15	**
AR	ACER RUBRUM	RED MAPLE	8' HT.	15	**
RA	RHODODENDRON ATLANTICUM	COASTAL AZALEA	3 GAL.	33	**
IG	ILEX GLABRA	INKBERRY	3 GAL.	33	**
	MULCH MATERIAL		1/2'-1' HT.		**

BUFFERYARD PLANT MATERIALS LIST

SYMBOL	SCIENTIFIC / COMMON NAME	SIZE	QUANTITY	REMARKS
OP	QUERCUS PHELLOS / WILLOW OAK	10' HT.	15	**
QA	QUERCUS ALBA / WHITE OAK	10' HT.	15	**
AR	ACER RUBRUM / RED MAPLE	8' HT.	15	**
RA	RHODODENDRON ATLANTICUM / COASTAL AZALEA	3 GAL.	33	**
IG	ILEX GLABRA / INKBERRY	3 GAL.	33	**
	MULCH MATERIAL	1/2'-1' HT.		**

LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LF	Watts
A	17	1	ADA 200W	ADA SERIES 200W 1'0" TYPE A VERY SHORT FLOODLIGHT (DOUBLE HEAD)	ONE 200WATT CLEAR LED HIGH PRESSURE SODIUM HORIZONTAL POOL	L7L140500	2800	0.81	502
B	10	10	ADA 300W CA 100	ADA SERIES 300W 1'0" TYPE B METALL CLIFFTOP (DOUBLE HEAD)	ONE 300WATT CLEAR LED HIGH PRESSURE SODIUM HORIZONTAL POOL	L7L109000	2800	0.81	201
H	30	30	ASP 300W G R	CAST METAL BALLAST/ROOF HOUSING SPAL ANGLE/300W OFFICE ALUMINUM REFLECTOR WITH CONCENTRIC CIRCULAR FACETS CLEAR GLASS ENCLOSURE IN FABRICATED METAL DOOR FRAME	ONE 300WATT CLEAR LED HIGH PRESSURE SODIUM HORIZONTAL POSITION	ITL46300	15000	0.80	1500
M	36	36	ASP 300W G M	CAST METAL BALLAST/ROOF HOUSING SPAL ANGLE/300W OFFICE ALUMINUM REFLECTOR WITH CONCENTRIC CIRCULAR FACETS CLEAR GLASS ENCLOSURE IN FABRICATED METAL DOOR FRAME	ONE 300WATT CLEAR LED HIGH PRESSURE SODIUM HORIZONTAL POSITION	ITL46300	15000	0.80	1500
W	12	12	ASP 300W G W	SPOTS/LIGHTER HOUSING OFFICE REFL. CLEAR GLASS	ONE 300WATT CLEAR LED HIGH PRESSURE SODIUM HORIZONTAL POSITION	W010702	15000	0.80	1000

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. 21624 EXP. DATE 12-31-09

LANDSCAPE & LIGHTING PLAN
ST. MARY'S RYKEN HIGH SCHOOL
 22600 Camp Calvert Road
 Leonardtown, MD 20650
 301-373-4172

MISS UTILITY NOTE
 INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITY CROSSINGS BY DIGGING TEST PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF EXCAVATION. CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHICHEVER IS LESS. CONTACT THE ENGINEER AND THE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION. CLEARANCES LESS THAN NOTED MAY REQUIRE REVISIONS TO THIS PLAN.

Loiederman Soltész Associates, Inc.
 Rockville
 Lanham
 Frederick
 Waldorf
 Leonardtown
 Chantilly

LEONARDTOWN OFFICE
 23140 Moakley Street, Suite 6
 Leonardtown, MD 20650
 t. 301.769.3500 f. 301.997.0385

Engineering
 Planning
 Surveying
 Environmental Sciences

www.LSAssociates.net

Copyright ADC The Map People Permitted Use Number 2071186		Map: 16 Grid: C5 & C6	
Tax Map / Grid / Parcel: 41717	Zoning Category: RL	Site Datum: NAD 83	Sewer Category: S-1
Vertical: NAVD 88	Water Category: W-1	Liber / Folio: 1323 / 169	
1 ADDRESS FINAL AGENCY COMMENTS		BCB	03/11/09
Date: OCTOBER 24, 2008		CAD Standards Version: V8	

TOWN FILE #17-08

LS

1" = 50'

SHEET 27
 OF 34

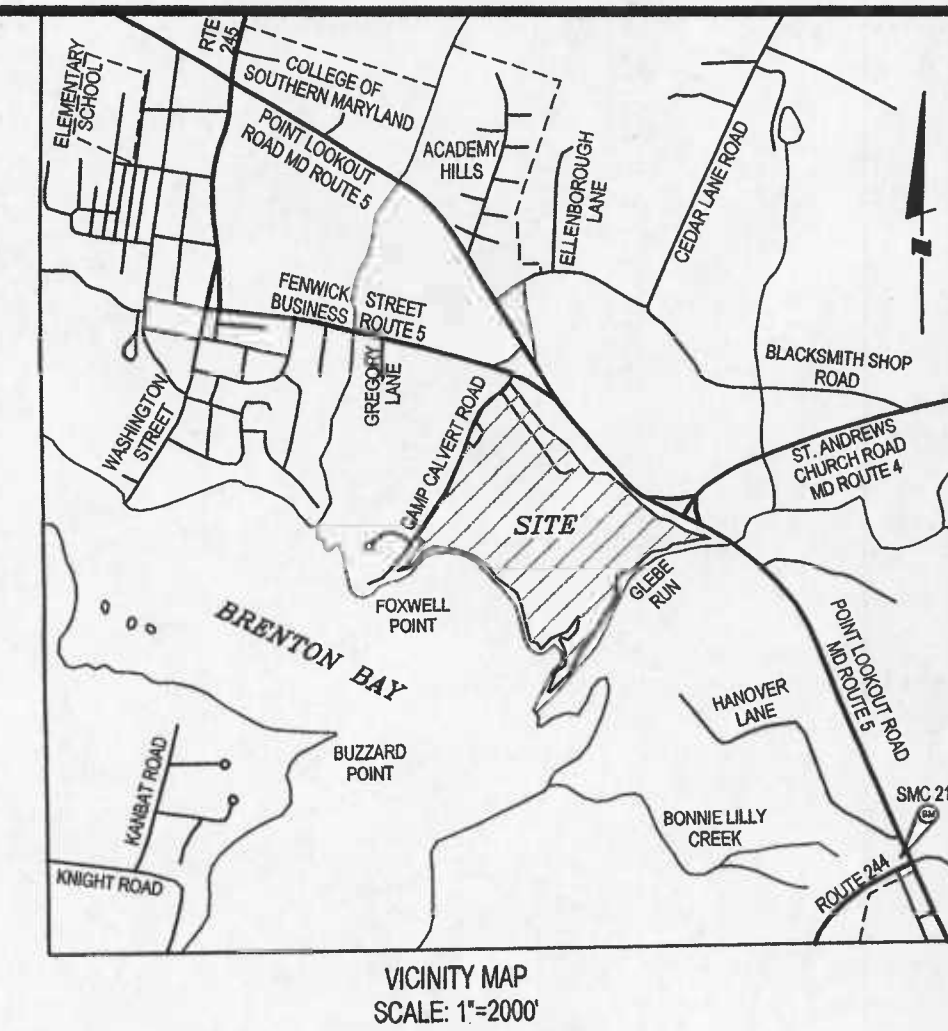
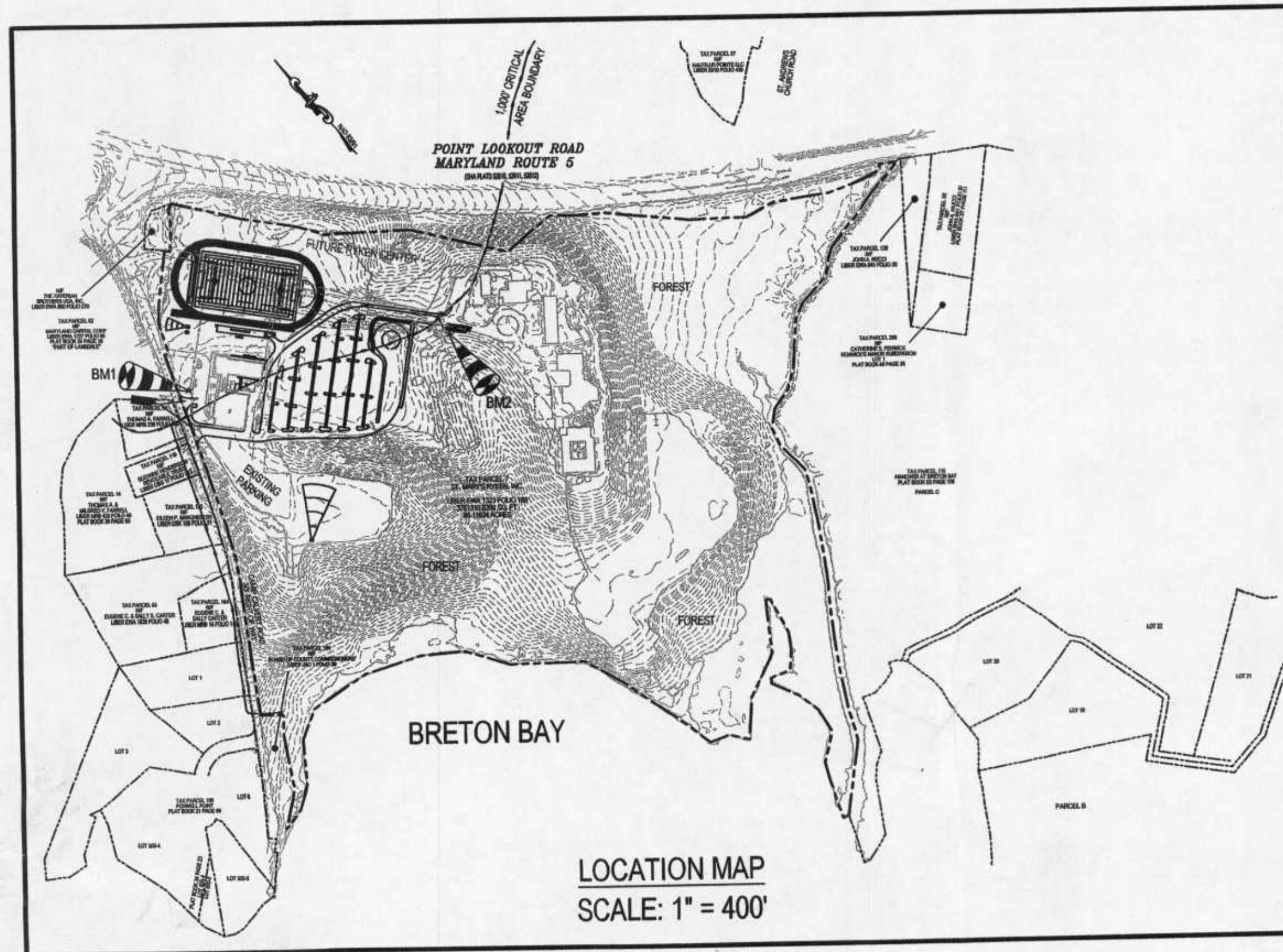
PROJECT NO. 1702.00.00

17292000ENGINEERLANDSCAPEPLAN.dwg Scale=50.0000 ft. User=jleeman P:\Drawings\PL\Drawings\PDF_Gray_BD.dwg Pentab\TEXT_SUB_TBL_5/14/2009 3:57:29 PM

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- SHEET 33 OF 34 TRACK AND FIELD DETAILS
- SHEET 34 OF 34 TRACK AND FIELD DETAILS

ST. MARY'S RYKEN HIGH SCHOOL



LEGEND

EX CONTOURS	---
PROP. CONTOURS	---
EX TREE LINE	---
EX EDGE OF PAVEMENT	---
PROP. EDGE OF PAVEMENT	---
BENCHMARK NO. & LOCATION	BM1
EX STORM DRAIN	---
PROP. STORM DRAIN	---
LIMITS OF DISTURBANCE	---
SOILS TYPE DIVISION LINE	---
PROPERTY LINE	---

ABBREVIATIONS

CMP	CORRUGATED METAL PIPE	YR	YEAR
CMPA	CORRUGATED METAL PIPE ARCH	BRL	BUILDING RESTRICTION LINES
RCP	REINFORCED CONCRETE PIPE	TYP.	TYPICAL
GM	GABION MAT	SHA	STATE HIGHWAY ADMINISTRATION
LF	LINEAR FEET	ESMT.	EASEMENT
LPS	LOW PRESSURE SEWER	PUE	PUBLIC UTILITY EASEMENT
SF	SQUARE FEET	SD	STORM DRAIN
ELEV.	ELEVATION	DIP	DUCTILE IRON PIPE
INV.	INVERT		
HP.	HIGH POINT	PVC	POINT OF VERTICAL CURVATURE
LP.	LOW POINT	PVI	POINT OF VERTICAL INVERSE
STA.	STATION	PVT	POINT OF VERTICAL TANGENCY
TC.	TOP OF CURB	PC.	POINT OF HORIZONTAL CURVATURE
FC.	FACE OF CURB	PT.	POINT OF HORIZONTAL TANGENCY
VERT.	VERTICAL	AC.	ACRE
HORZ.	HORIZONTAL	SCD	SOIL CONSERVATION DISTRICT
VC.	VERTICAL CURVE	CL	CENTER LINE
SRMP	SPIRAL RIB METAL PIPE	CB	CHORD BEARING
NTS	NOT TO SCALE	CH	CHORD DISTANCE
D=	DELTA	E.E.	ELBOW ELEVATION
R=	RADIUS	GRD. EL.	GROUND ELEVATION
A=	ARC	D.O.B.	DEPTH OF BURY (FIRE HYD.)
T=	TANGENT		

CONSULTANT'S CERTIFICATION

I CERTIFY THAT THIS PLAN OF EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ST. MARY'S COUNTY SOIL CONSERVATION DISTRICT AND THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

SIGNATURE: *Michael A. Pierce* MD. LICENSE No. 29820
 NAME: MICHAEL A. PIERCE DATE: 1/15/09

OWNER'S CERTIFICATION

I HEREBY CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I HEREBY AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION BY THE STATE OF MARYLAND, DEPARTMENT OF THE ENVIRONMENT, COMPLIANCE INSPECTORS.

SIGNATURE: *Mary Joy Hurlbert* DATE: _____
 NAME (printed): MARY JOY HURLBERT TITLE: PRESIDENT
 ORGANIZATION: ST. MARY'S RYKEN HIGH SCHOOL
 ADDRESS: 22600 CAMP CALVERT ROAD, LEONARDTOWN, MARYLAND 20650
 PHONE: 301-475-2814

ENGINEER'S CERTIFICATION

I HEREBY CERTIFY TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BELIEF THAT THE PLANS SHOWN HEREIN ARE CORRECT AND CONFORM TO THE TOWN OF LEONARDTOWN ZONING ORDINANCE.

SIGNATURE: *Michael A. Pierce* DATE: 1/15/09
 MICHAEL A. PIERCE, P.E.
 MD. REG. P.E. NO. 29820

VERTICAL CONTROL REFERENCES
 NAVD 1988

HORIZONTAL CONTROL REFERENCES
 NAD 1983

BENCHMARK DATA

Number	Description	Elevation
BM1	TOP OF SEWER MANHOLE LOCATED IN FRONT OF GYMNASIUM	105.87
Location:	North 226436 East 1419439	
BM2	TOP OF SEWER MANHOLE LOCATED BEHIND GYMNASIUM	90.29
Location:	North 225965 East 1420285	

SITE TABULATION

TOTAL SITE AREA	86.12 AC
TOTAL DISTURBED AREA	14.6 AC
TOTAL PROPOSED IMPERVIOUS AREA	8.43 AC
TOTAL EXISTING IMPERVIOUS AREA	8.76 AC

PARKING TABULATION (RETAIL SALES, GENERAL)

SPACES REQUIREMENTS	300
SPACES PROVIDED	359
HANDICAP SPACES REQUIREMENTS	8 SPACES
HANDICAP SPACES PROVIDED	9 SPACES
	4 VAN SPACES
	350 STD SPACES

- CRITICAL AREA NOTES:**
- APPROXIMATELY 73.59 ACRES OF THIS SITE LIE WITHIN MARYLAND'S CRITICAL AREA. ANY AND ALL DEVELOPMENT ACTIVITIES PROPOSED WITHIN THIS AREA ARE SUBJECT TO CRITICAL AREA REGULATIONS AND WILL NOT BE PERMITTED UNTIL ALL APPROPRIATE LOCAL, STATE, AND FEDERAL AGENCIES HAVE CONDUCTED A THOROUGH ENVIRONMENTAL REVIEW AND HAVE APPROVED THE DEVELOPMENT PLAN.
 - THE CRITICAL AREA BUFFER MUST REMAIN IN NATURAL VEGETATION AND MAY NOT BE DISTURBED EXCEPT AS PROVIDED UNDER CHAPTER 60 OF THE LEONARDTOWN MUNICIPAL CODE.
 - NO DEVELOPMENT IS PERMITTED IN WETLANDS WITHOUT PRIOR APPROVAL FROM THE APPROPRIATE LOCAL, STATE, AND FEDERAL AGENCIES.
 - ALL EXISTING FOREST SHOWN HEREON SHALL REMAIN UNDISTURBED EXCEPT AS PERMITTED UNDER THE PROVISIONS OF CHAPTER 60 OF THE LEONARDTOWN MUNICIPAL CODE. ALL AFFORESTED OR REFORESTED AREAS CREATED UNDER THE PROVISIONS OF CHAPTER 60 OF THE LEONARDTOWN MUNICIPAL CODE DESIGNATED ON THIS PLAN SHALL BE PRESERVED FROM FUTURE DISTURBANCE.
 - THERE ARE NO LOCATIONS OF NATURAL HERITAGE AREAS, HABITATS OF THREATENED OR ENDANGERED SPECIES, AND HABITATS OF SIGNIFICANT PLANTS OR WILDLIFE IDENTIFIED ON THIS PLAN.
 - EXISTING IMPERVIOUS SURFACE WITHIN 100 FOOT CHESAPEAKE BAY CRITICAL AREA BOUNDARY IS 306,157 SQUARE FEET (7.03 AC).
 - AREA OF SLOPES 15% OR GREATER IS 563,160 SQUARE FEET (12.83 AC).
 - EXISTING TREES OR FORESTED AREA IS 2,222,698 SQUARE FEET (51.08 AC).
 - PROPOSED AREAS OF VEGETATION CLEARING IS 2,310 SQUARE FEET.
 - PROPOSED AREAS OF SOIL DISTURBANCE IS 247,527 SQUARE FEET (5.68 AC).
 - PROPOSED AREAS OF IMPERVIOUS SURFACE IS 88,061 SQUARE FEET (2.02 AC).
 - REQUIRED AREAS OF REFORESTATION OR AFFORESTATION IS 2,310 SQUARE FEET.

TOWN OF LEONARDTOWN

DATE: _____

DIRECTOR: _____

SOIL CONSERVATION DISTRICT

DATE: _____

DIRECTOR: _____

SCD DATA BLOCK

TOWN FILE # _____

-EARTHWORK QUANTITIES
 CUT = 24,880 CUBIC YARDS
 FILL = 27,120 CUBIC YARDS
 -DISTURBED AREA = 14.6 ACRES
 -AREA TO BE VEGETATIVELY STABILIZED = 4.7 AC

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO. 29820 - EXPIRATION DATE: 1-8-2010

SMECO UTILITY NOTE:

CONTRACTOR TO CONTACT ST. MARY'S DISTRICT OFFICE TO COORDINATE THE RELOCATION OF UTILITY BOXES AND OR CONDUITS. SMECO REQUIRES AN EASEMENT PRIOR TO THE INSTALLATION OF ANY EQUIPMENT.



TOWN FILE #17-08

COVER SHEET

ST. MARY'S RYKEN HIGH SCHOOL

22600 Camp Calvert Road
 Leonardtown, MD 20650
 301-373-4172

3rd ELECTION DISTRICT

ST. MARY'S COUNTY, MARYLAND

Loiederman Soltesz Associates, Inc.

Rockville
 Lanham
 Frederick
 Waldorf
 Leonardtown
 Chantilly

LEONARDTOWN OFFICE
 23140 Meakley Street, Suite 6
 Leonardtown, MD 20650
 t. 301.769.3500 f. 301.997.0385
 www.LSAssociates.net

Engineering
 Planning
 Surveying
 Environmental Sciences

REVISIONS

NO.	DATE	BY	DATE
1	OCTOBER 24, 2008		

CAD Standards Version: V8
 Technician: NHE
 Checked: MAP

Copyright ADC The Map People
 Permitted Use Number: 2071186

Map / Grid / Parcel
 16 C5 & C6
 411717

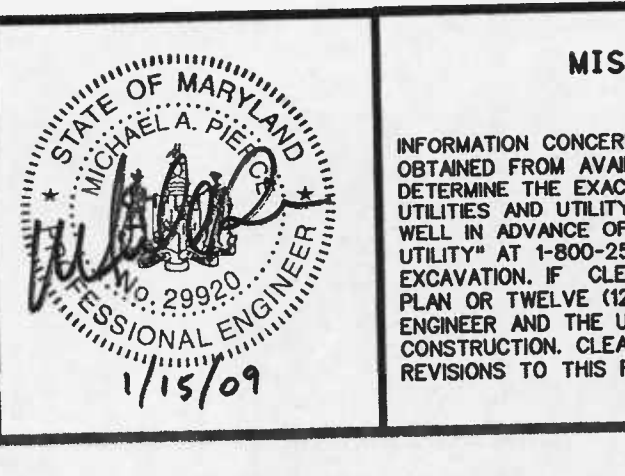
Site Datum
 Horizontal: NAD 83
 Vertical: NAVD 88

Liber / Folio
 EWA 1323 / 169

Zoning Category:
 I-O / RCA AND IDA OVERLAYS (PART)
 S-1

Sewer Category
 S-1

Water Category
 W-1



MISS UTILITY NOTE

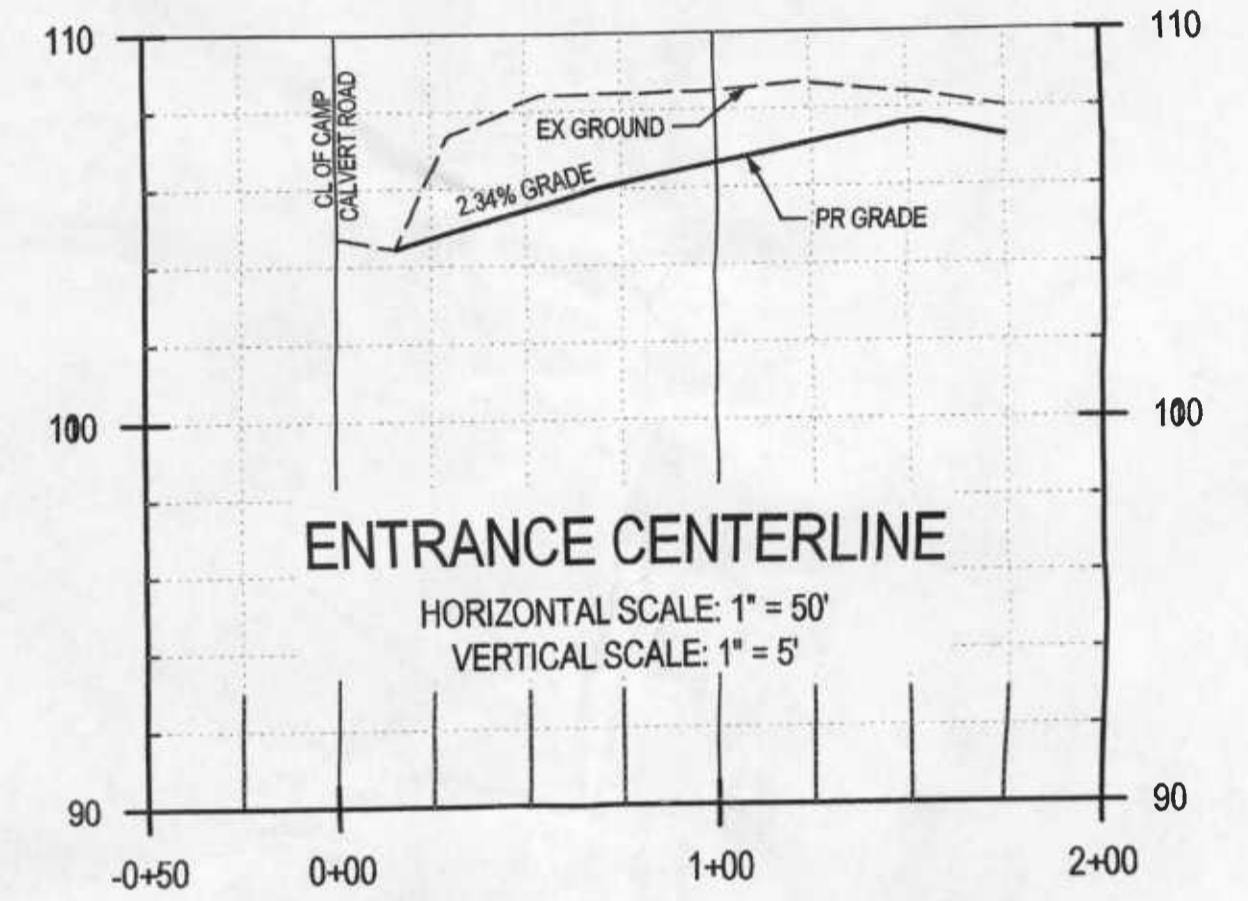
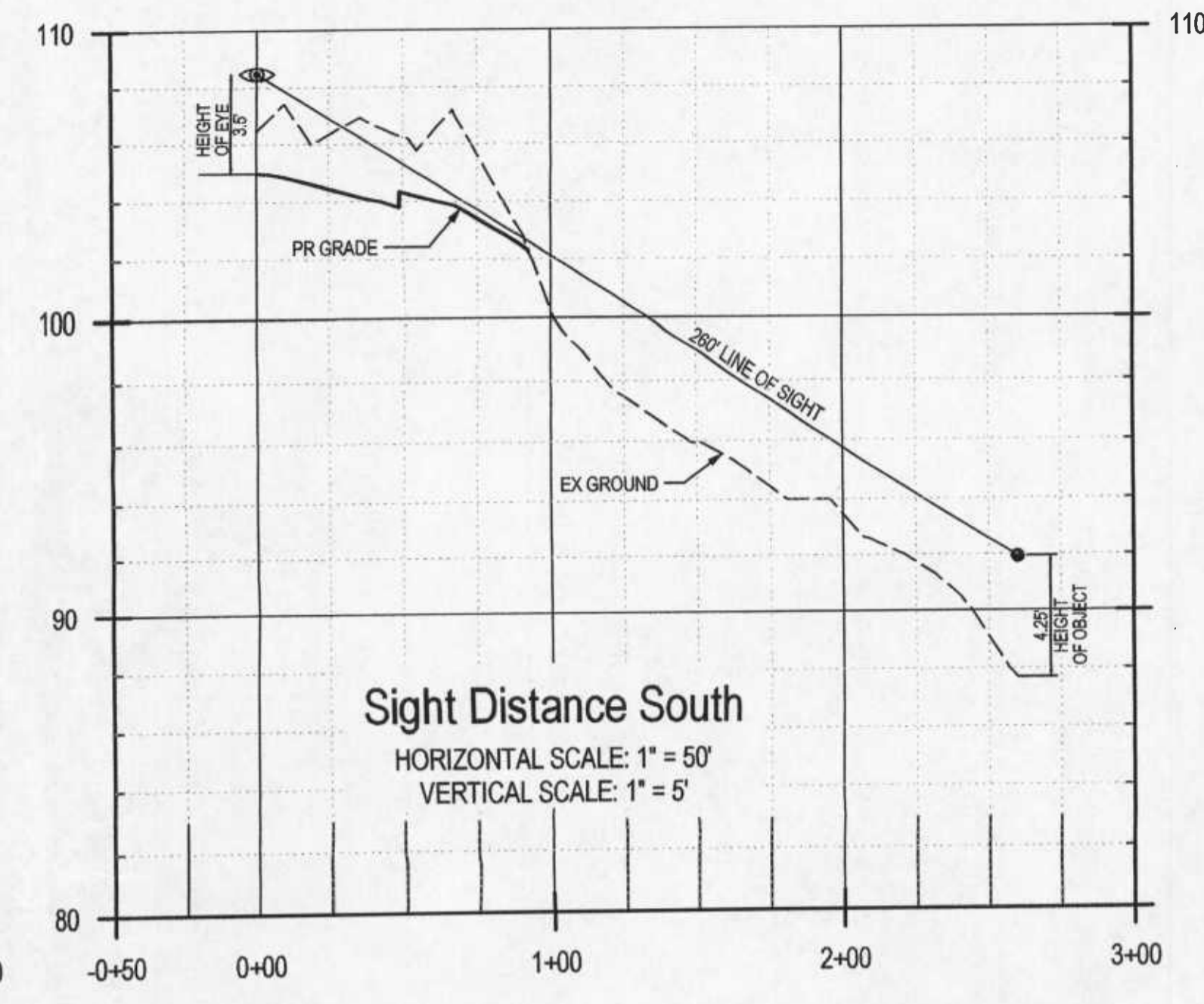
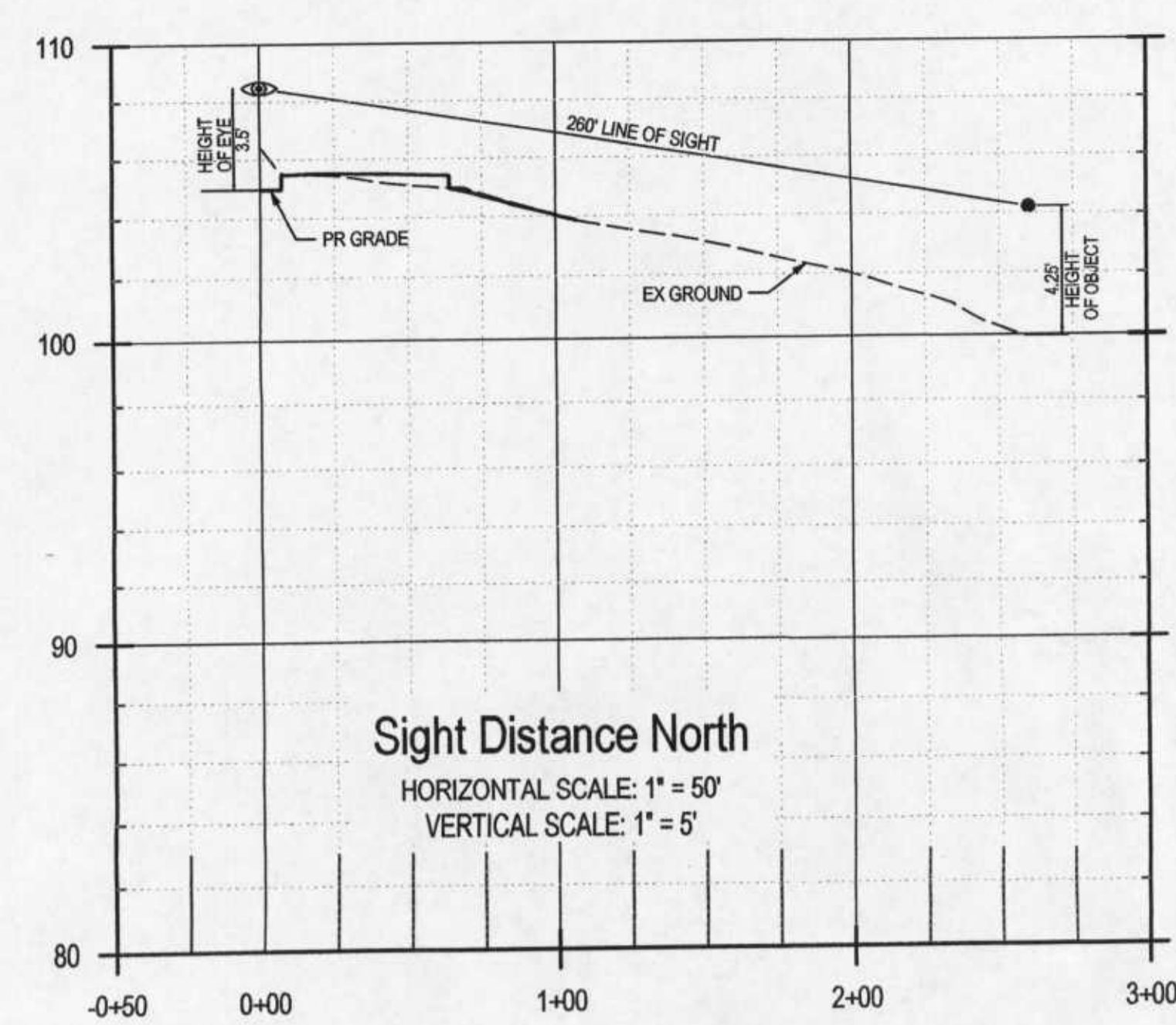
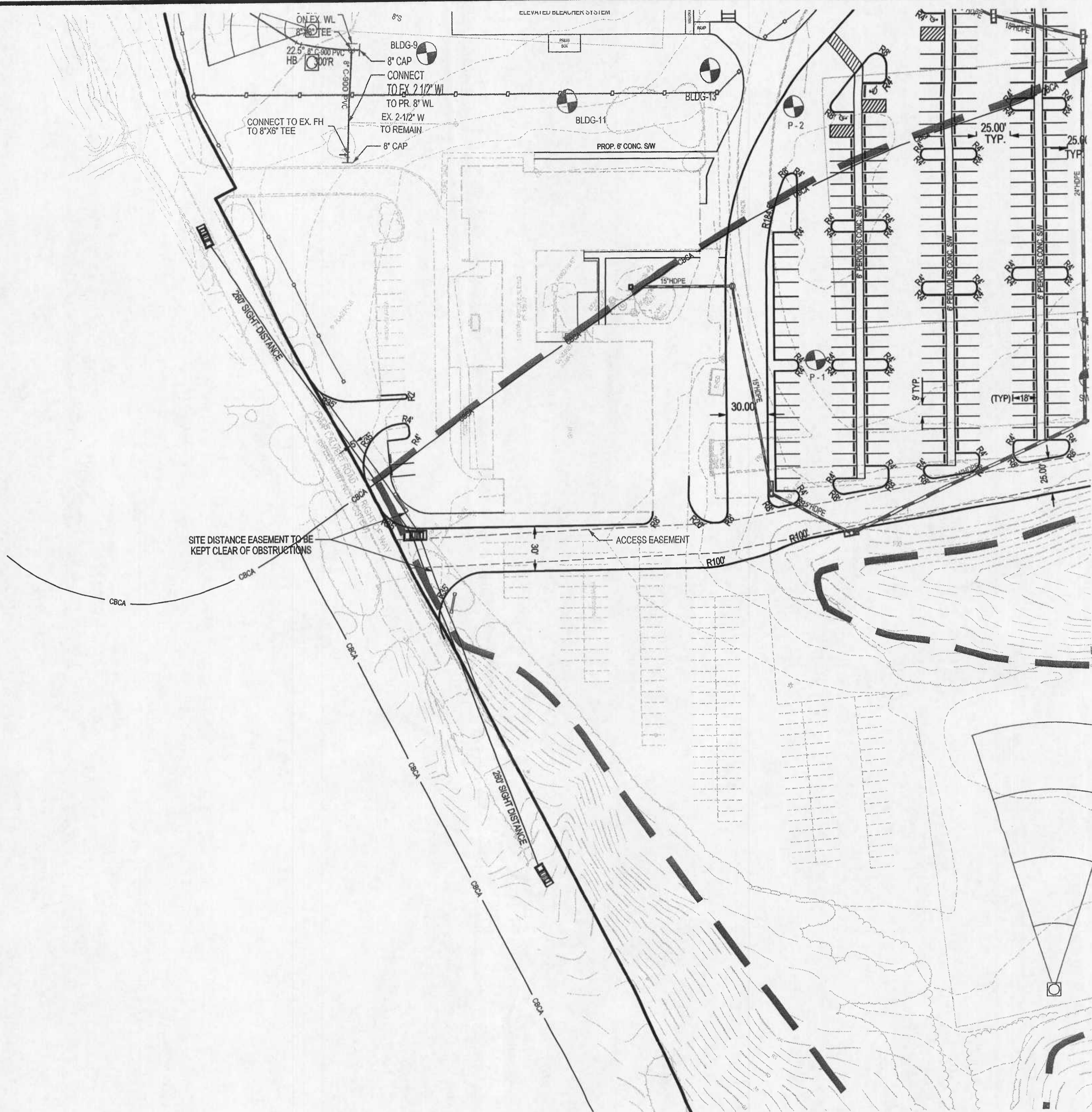
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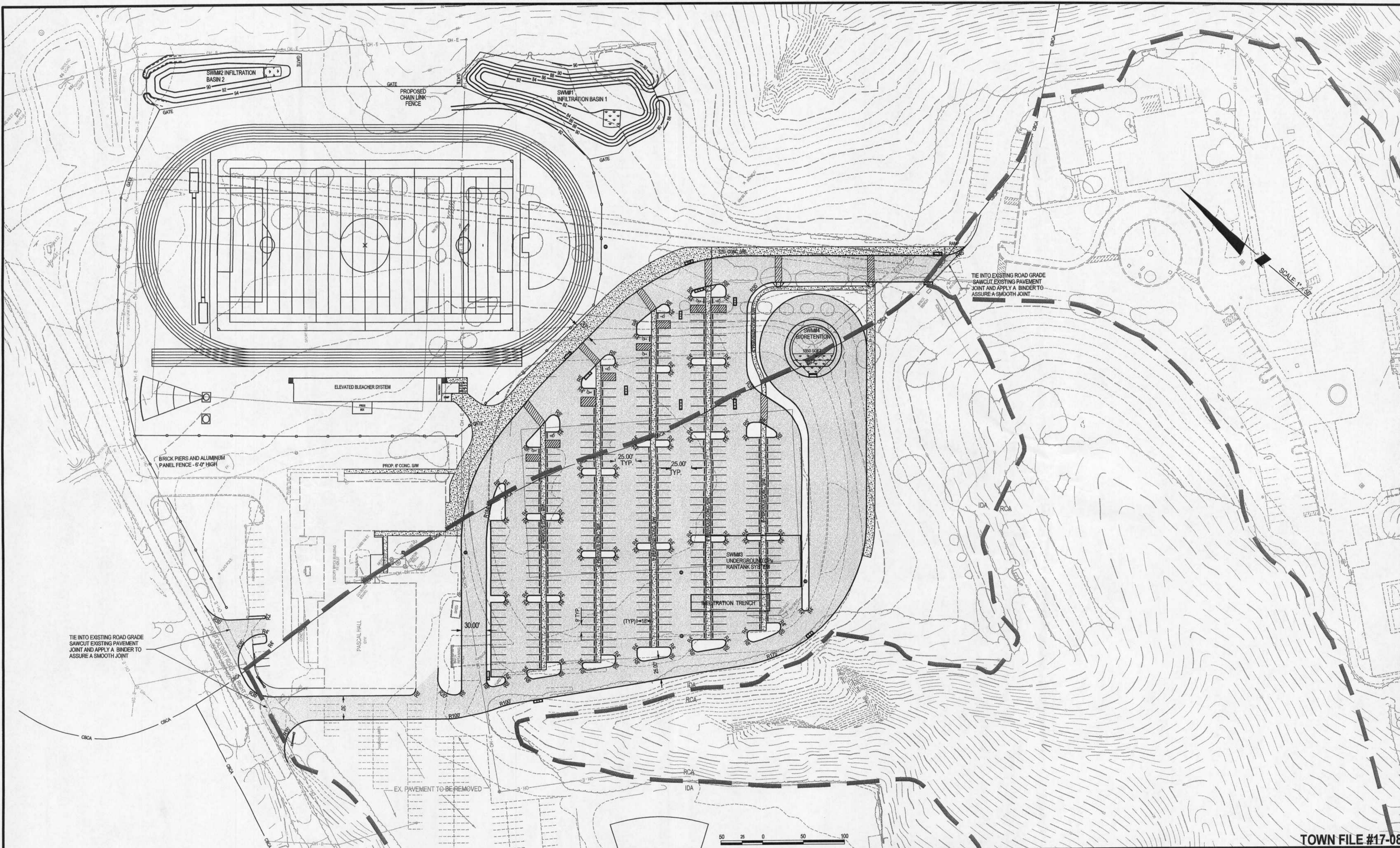
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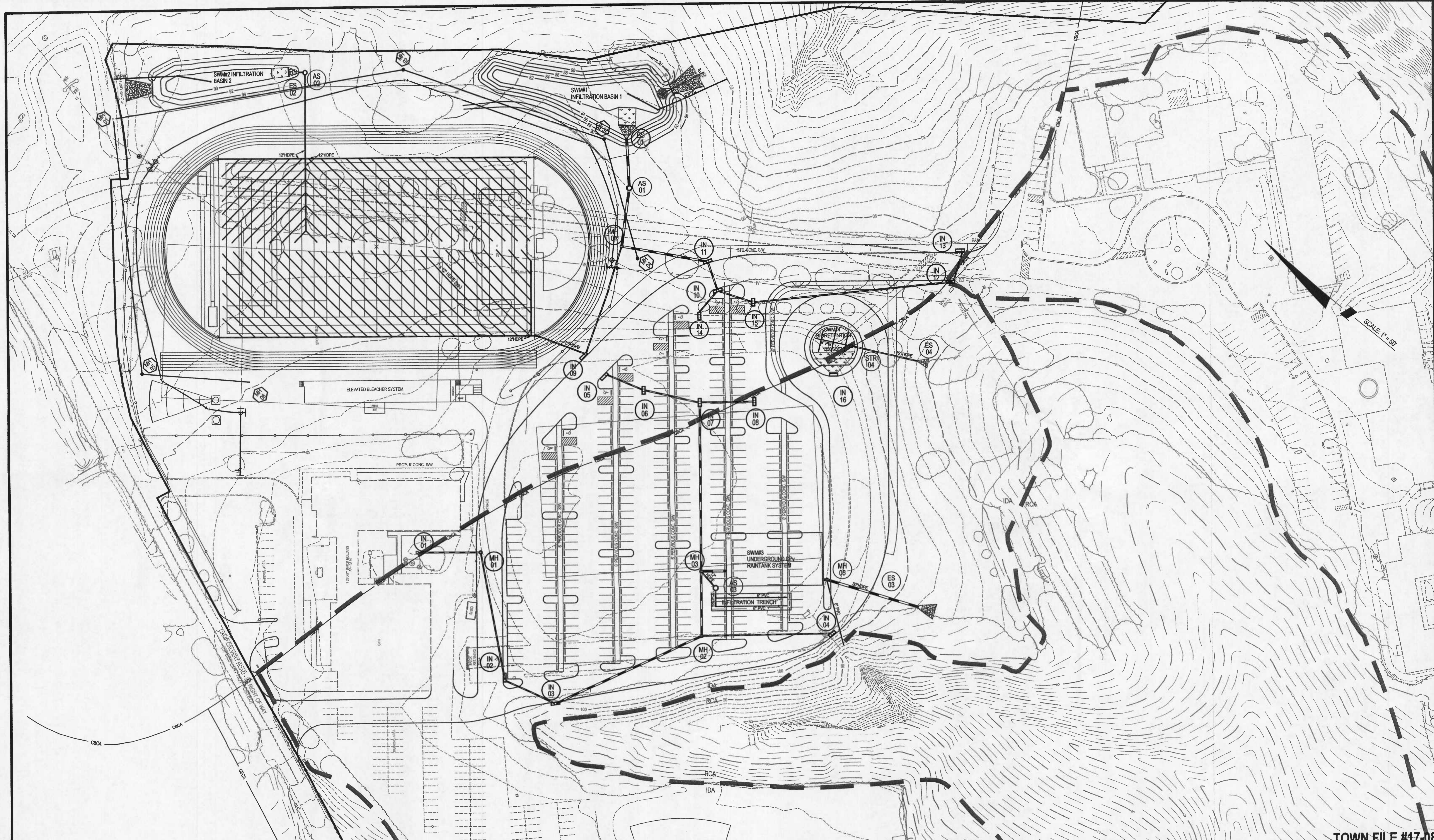
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STORM DRAIN PLAN

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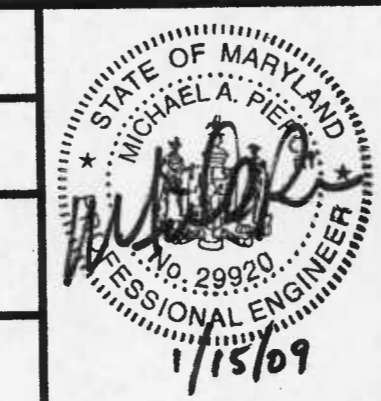
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Vertical	NAVD 88	Water Category	W-1
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DAM BREACH ANALYSIS CROSS SECTION

DAM BREACH ANALYSIS CROSS SECTION

SCALE: 1" = 50'



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STORM DRAIN DRAINAGE AREA MAP

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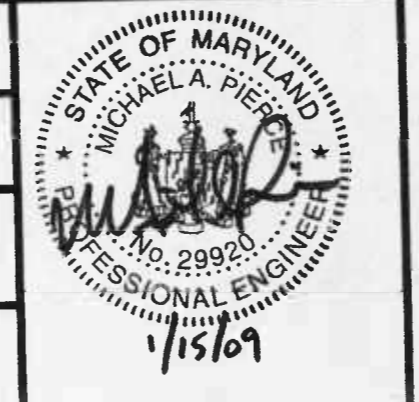
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STORMWATER MANAGEMENT PLAN

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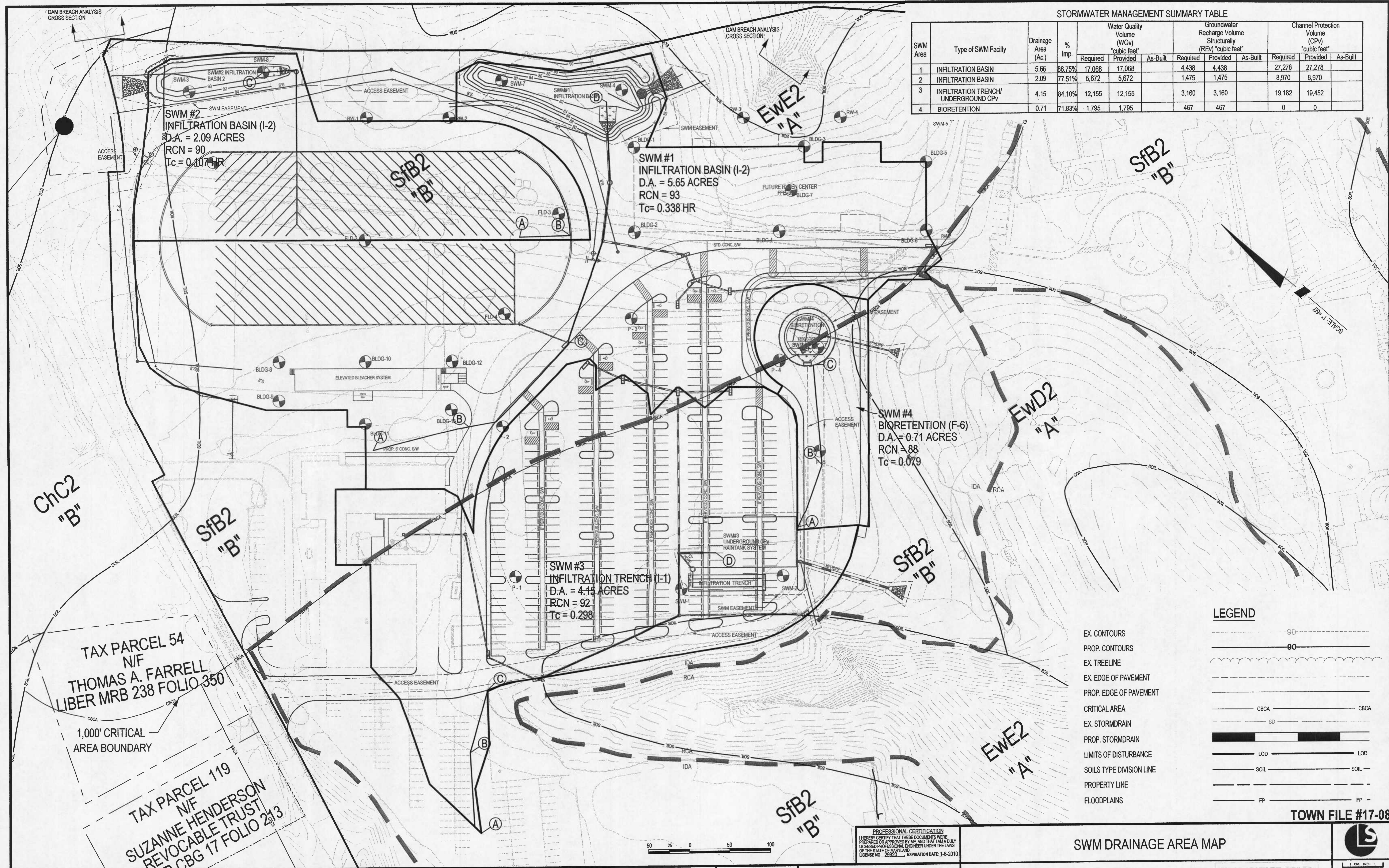


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OF 34
PROJECT NO. 1792-00-00

3rd ELECTION DISTRICT

STORMWATER MANAGEMENT SUMMARY TABLE

SWM Area	Type of SWM Facility	Drainage Area (Ac.)	% Imp.	Water Quality Volume (WQV) "cubic feet"			Groundwater Recharge Volume Structurally (REV) "cubic feet"			Channel Protection Volume (CPV) "cubic feet"		
				Required	Provided	As-Built	Required	Provided	As-Built	Required	Provided	As-Built
1	INFILTRATION BASIN	5.66	86.75%	17,068	17,068		4,438	4,438		27,278	27,278	
2	INFILTRATION BASIN	2.09	77.51%	5,672	5,672		1,475	1,475		8,970	8,970	
3	INFILTRATION TRENCH/ UNDERGROUND CPV	4.15	84.10%	12,155	12,155		3,160	3,160		19,182	19,452	
4	BIORETENTION	0.71	71.83%	1,795	1,795		467	467		0	0	



TAX PARCEL 54
N/F
THOMAS A. FARRELL
LIBER MRB 238 FOLIO 350

TAX PARCEL 119
N/F
SUZANNE HENDERSON
REVOCABLE TRUST
CBG 17 FOLIO 243

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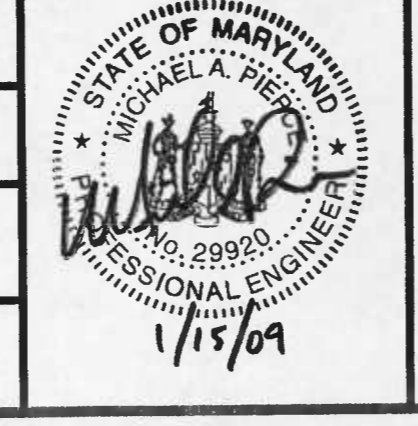
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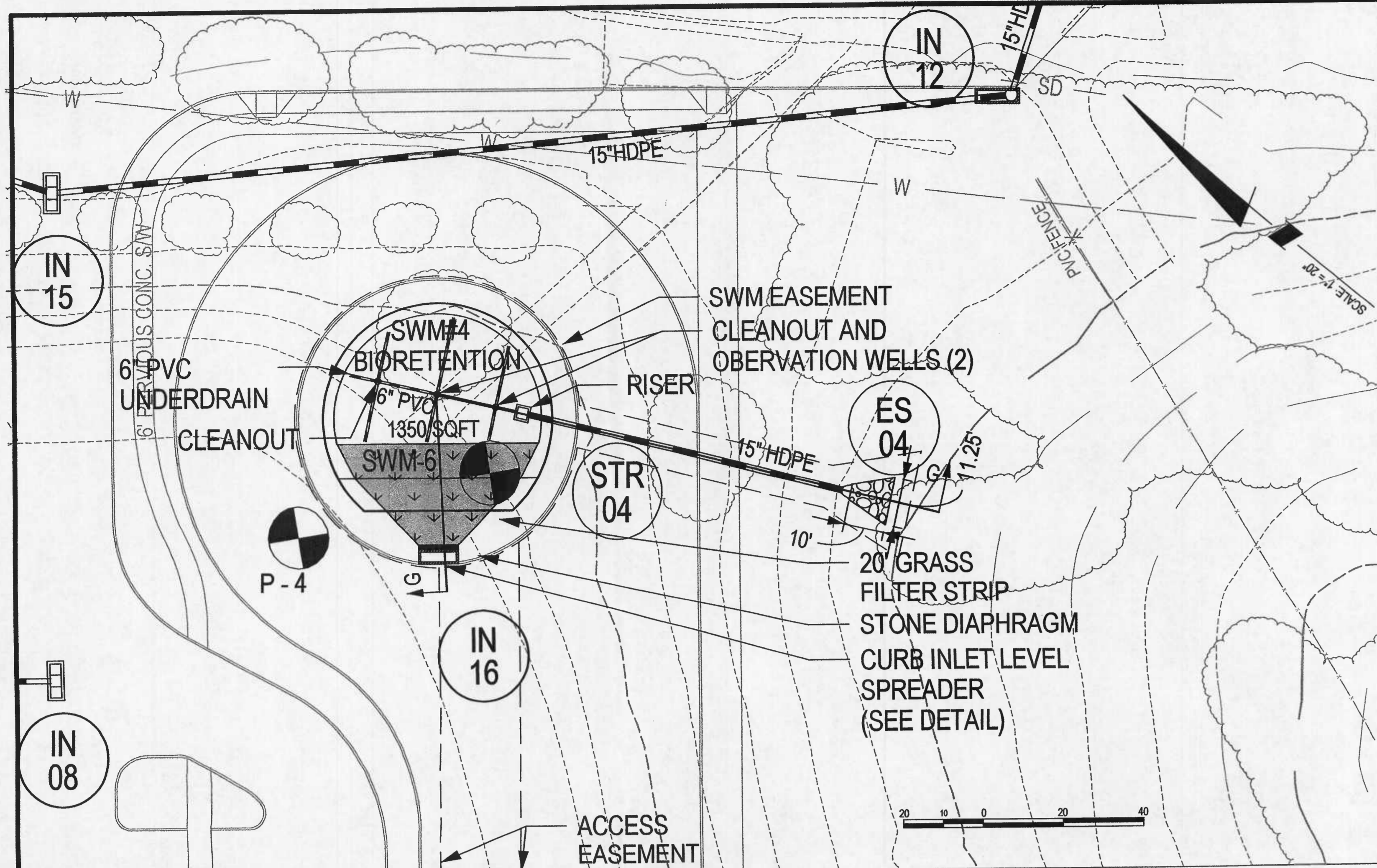
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Horizontal	NAD 83	Water Category	W-1
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Liber / Folio	1323 / 169		



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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 calibrate 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

B.3.4

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 required 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.

B.3.5

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).

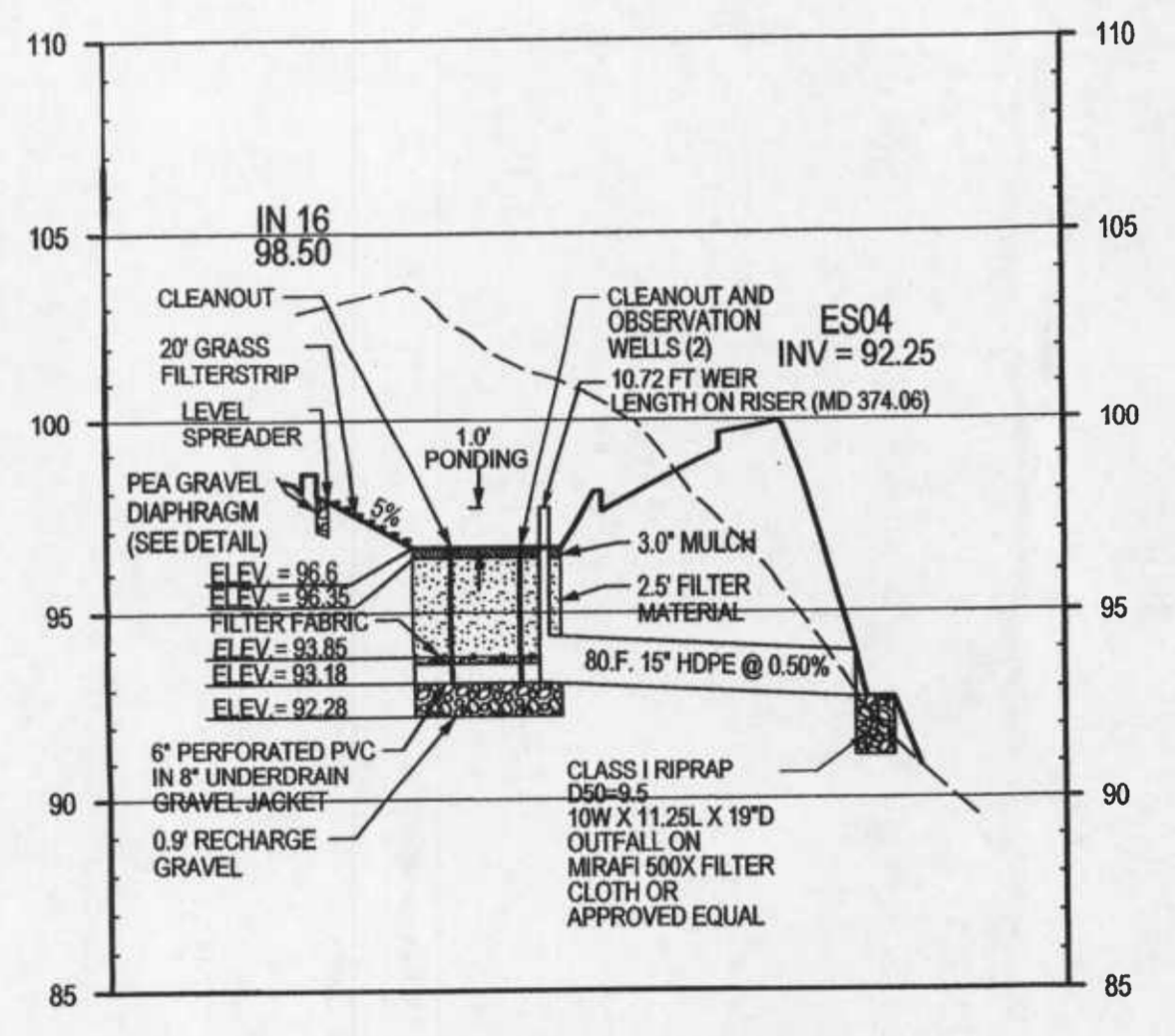
7. Miscellaneous

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

B.3.6

SEE LANDSCAPING PLANS FOR PLANTING DETAILS

SWM #4: BIORETENTION SCALE: 1"=20'



SWM #4 BIORETENTION SECTION G-G SCALE: HORIZONTAL 1"=50' VERTICAL 1"=5'

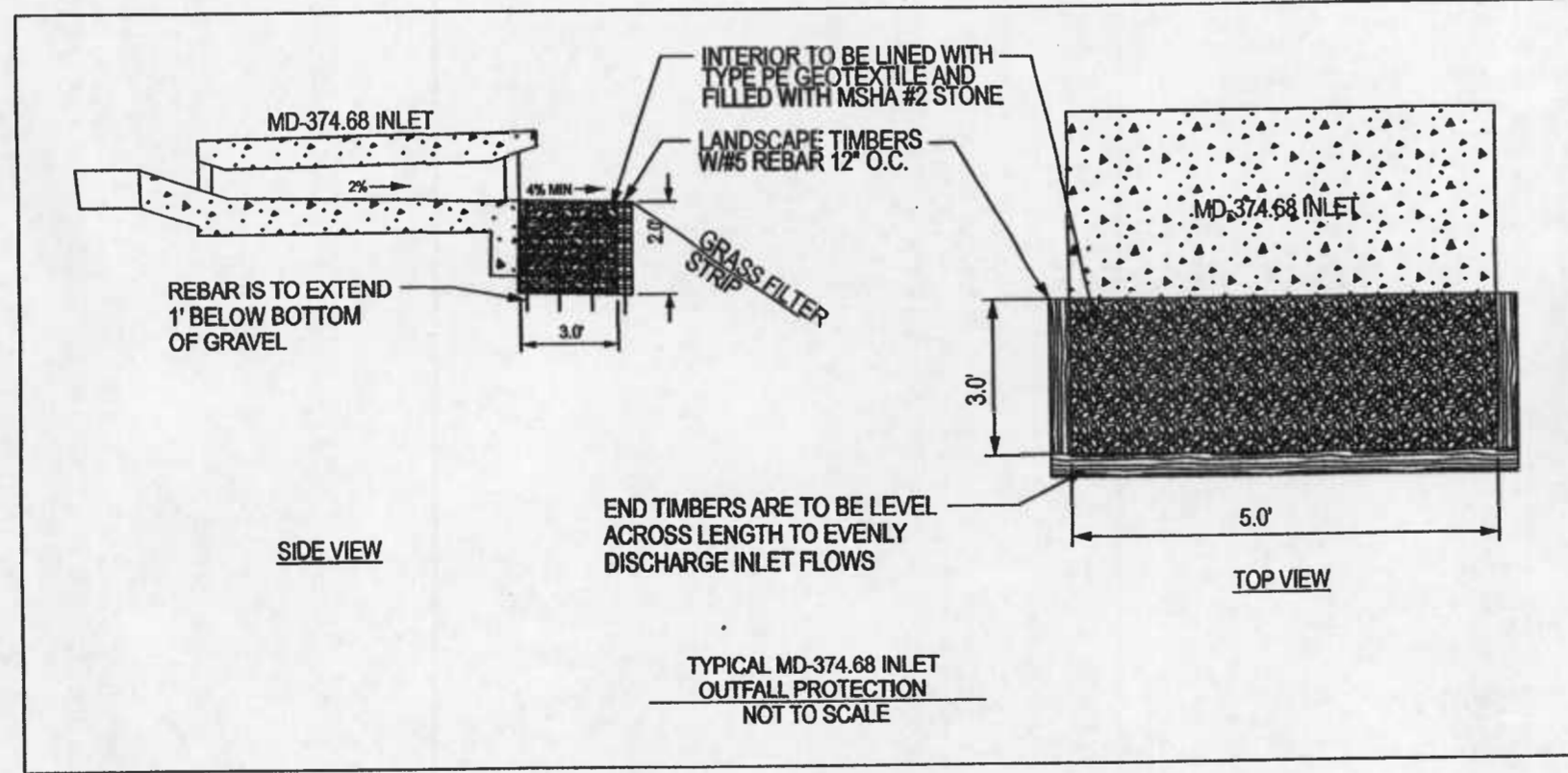


Table B.3.2 Materials Specifications for Bioretention

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
planting soil (2'-3" to 4" deep)	sand 35 - 60% silt 30 - 55% clay 10 - 25%	n/a	
mulch	shredded hardwood		aged 6 months, minimum
pea gravel diaphragm and curtain drain	pea gravel: ASTM-D-448 ornamental stone: washed cobbles	pea gravel: No. 6 stone: 2" to 5"	
geotextile	Class "C" - apparent opening size (ASTM-D-4753), grab tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-4833)	n/a	for use as necessary beneath underdrain only
underdrain gravel	AASHTO M-43	0.25" to 0.75"	
underdrain piping	1/2" 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 underdrain 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 308.6R; 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 Gneiss #10 are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

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

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Liber / Folio	1323 / 169		



MISS UTILITY NOTE

INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITY CROSSINGS BY DIGGING TEST PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF EXCAVATION. IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHICHEVER IS LESS, CONTACT THE ENGINEER AND THE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION. CLEARANCES LESS THAN NOTED MAY REQUIRE REVISIONS TO THIS PLAN.

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. 29923, EXPIRATION DATE: 1-8-2010

SWM #4 BIORETENTION

ST. MARY'S RYKEN HIGH SCHOOL
 22600 Camp Calvert Road
 Leonardtown, MD 20650
 301-373-4172

3rd ELECTION DISTRICT

ST. MARY'S COUNTY, MARYLAND

TOWN FILE #17-08

RECEIVED
 MAR 30 2009
 CRITICAL AREA COMMISSION
 Aesthetic & Adm. Control Dept.

1" = 50'

SHEET 17 OF 34

PROJECT NO. 1792-00-00

