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 it 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

Ms. Adler May 18, 2009 Page 2

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. Owene

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,

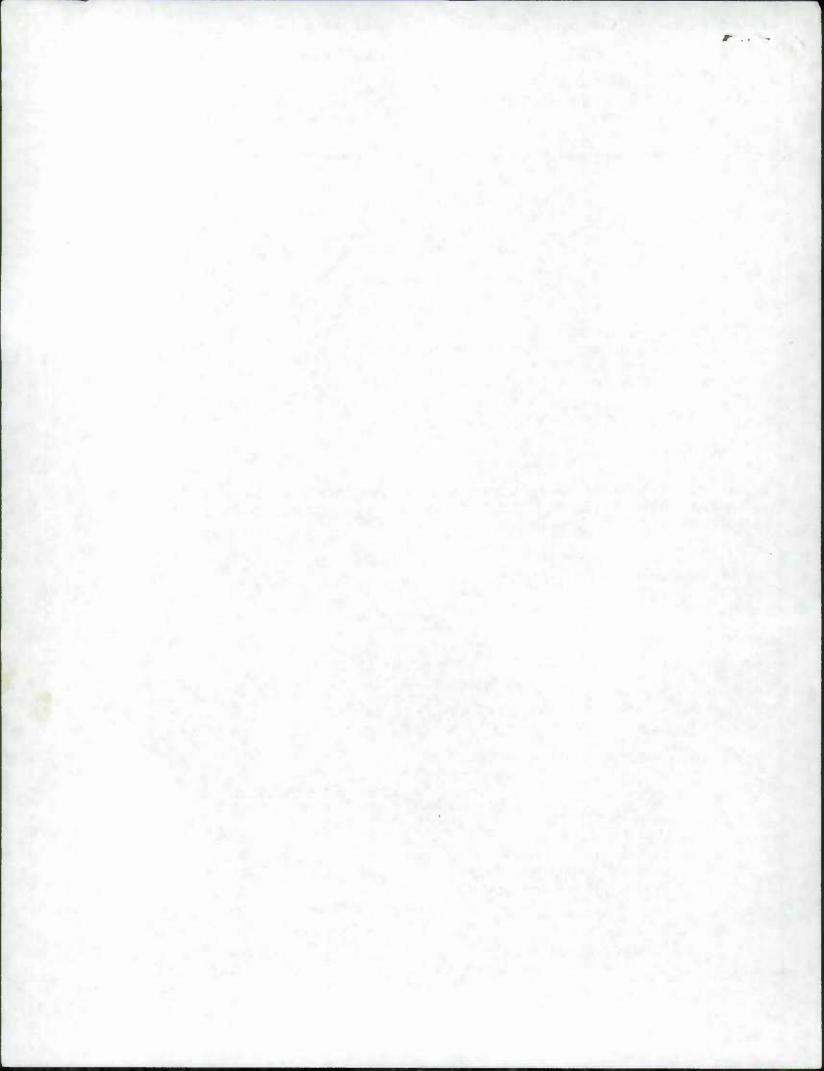
BOARD OF COUNTY COMMISSIONERS FOR ST. MARY'S COUNTY, MARYLAND

Francis Sal Runtle Francis Jack Russell, President

gmb

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

P.O. BOX 653 * GOVERNMENTAL CENTER * 23115 LEONARD HALL DRIVE, LEONARDTOWN, MD 20650 PHONE 301.475.4200 x1352 + FAX 301.475.4935 + www.co.saint-marys.md.us



670-08

CRITICAL AREA PLANTING AGREEMENT

Case #: 17-08 A Site Location: St. Mary's Ryter

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 # 17-08 A which consists of the following elements:

Site Plan with Critical Area Inventory.

2 Planting Plan for mitigation for:

1.

3:1 Area of Disturbance x = Total sq. ft. for mitigation

x 3 =

1 tree = 400 sq. ft.1 shrub = 200 sq. ft.

Silt Fence

* 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.

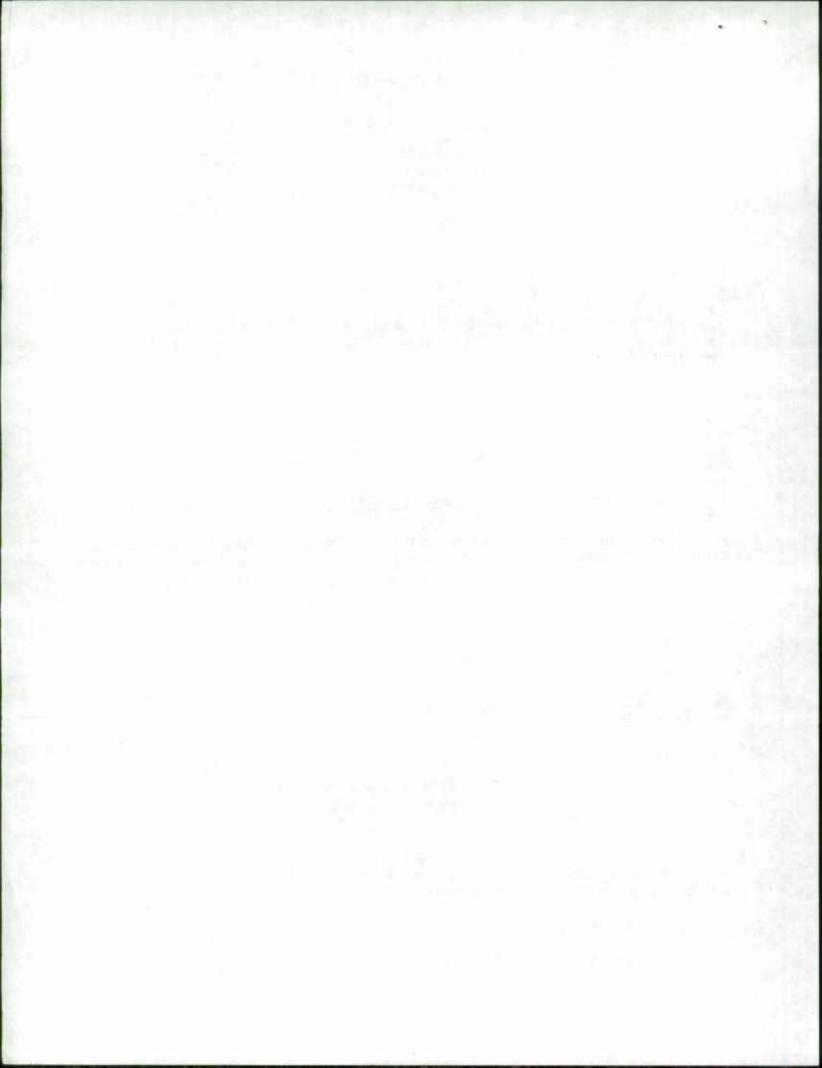
The Town seeks to ensure that adequate conservation measures are performed under the terms of this agreement by the Applicant for the installation, maintenance, and preservation of the natural environment in St. Mary's County.

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:

The Applicant agrees to mitigate the adverse impact of the development incurred by the proposed 1. 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;



 $\underline{80}$ () three gallon nursery shrubs,

B) Required plantings shall be installed by no later than $\underline{at 440}$ 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 Q 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.

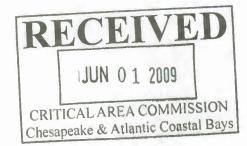
5. It is expressly agreed by all parties that it is the purpose and intent of this agreement to insure the installation, maintenance, and performance of conservation measures provided for by the approved plans or revisions or modifications thereof, in the designated Critical Area Program or on a specific 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.

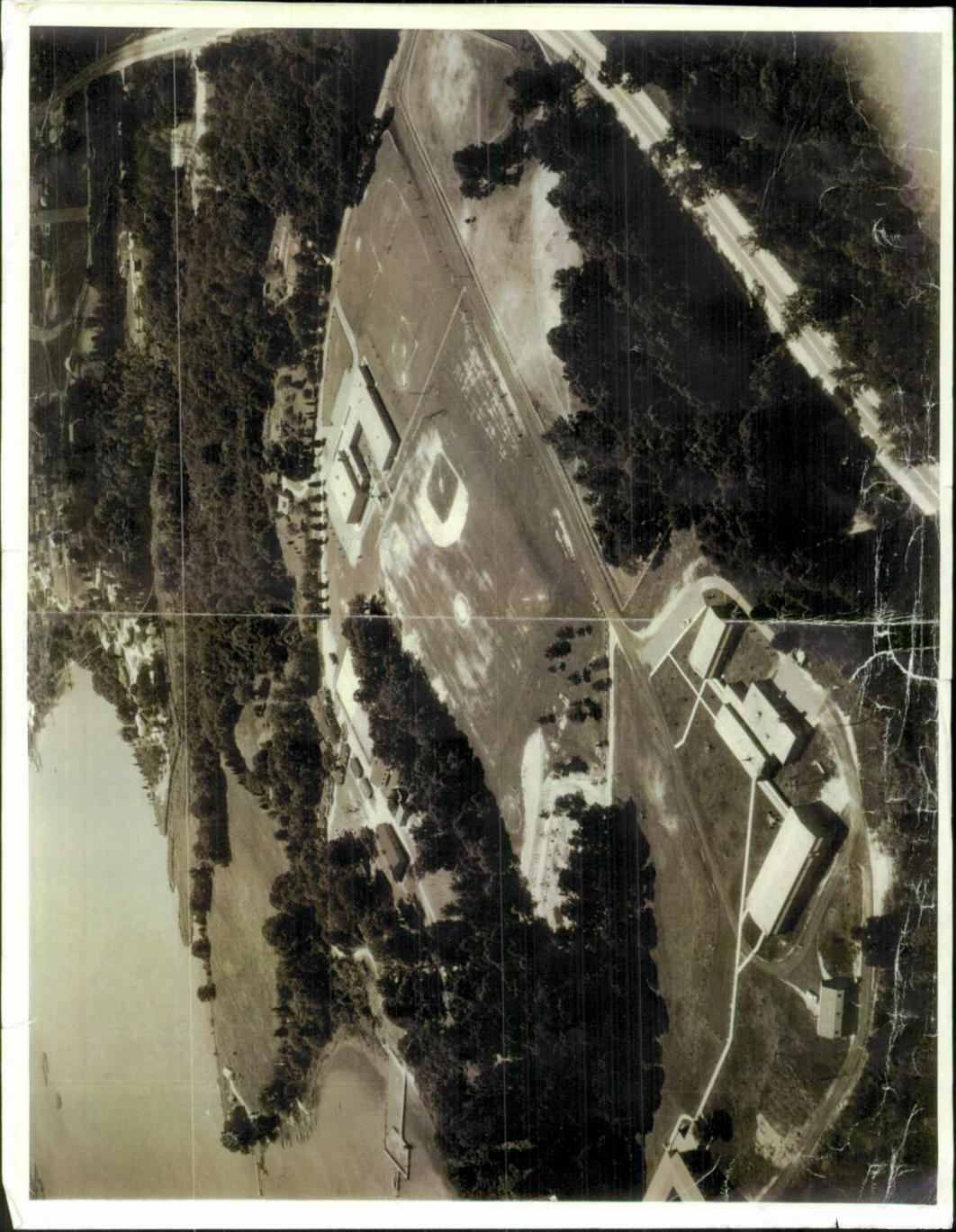
IN WITNESS, the parties have caused this agreement to be executed.

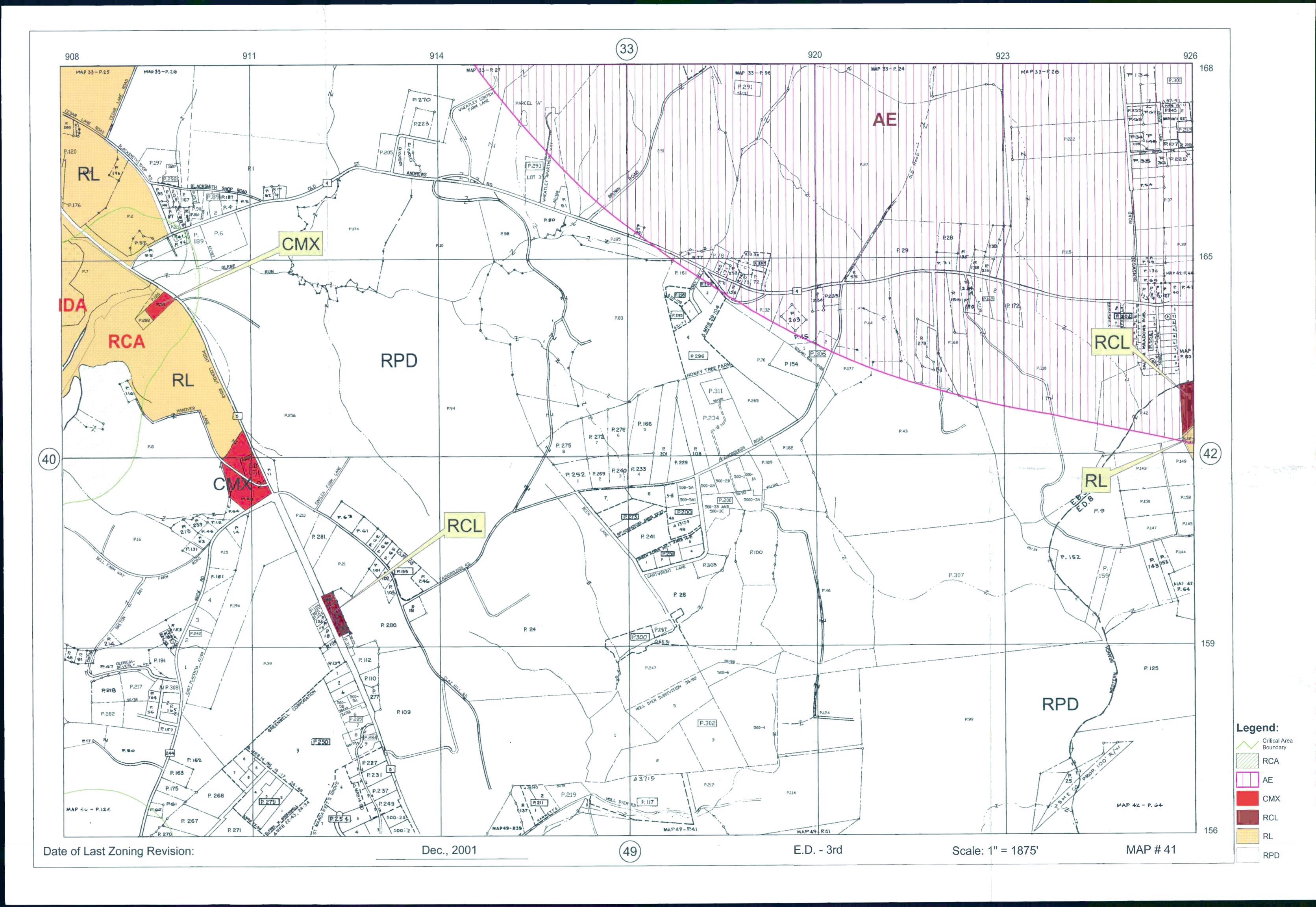
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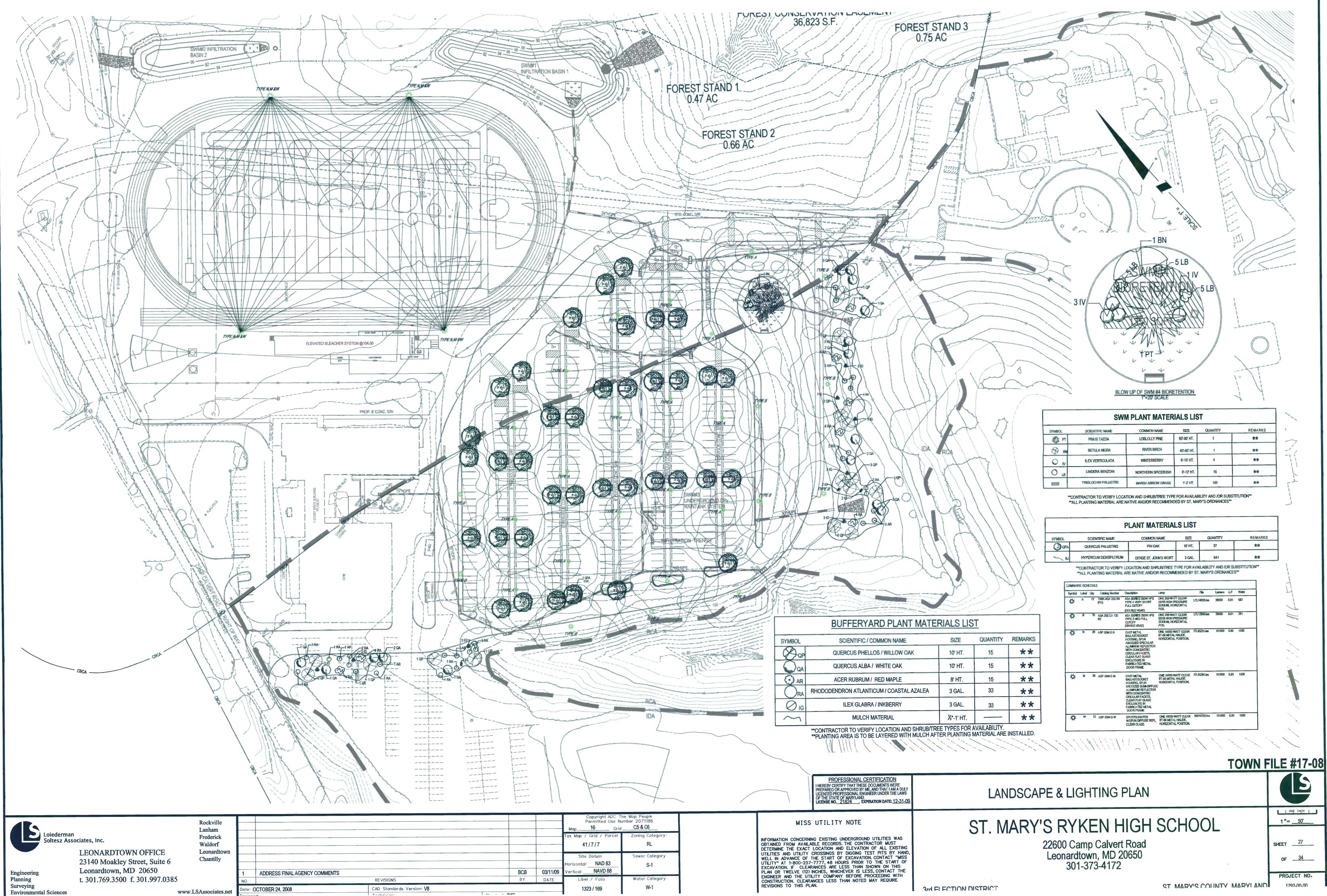
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Date: 1007









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SHEET INDEX

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BENCHMARK NO. & LOCATION
EX. STORMORAIN
PROP. STORMDRAIN
LIMITS OF DISTURBANCE
SOILS TYPE DIVISION LINE

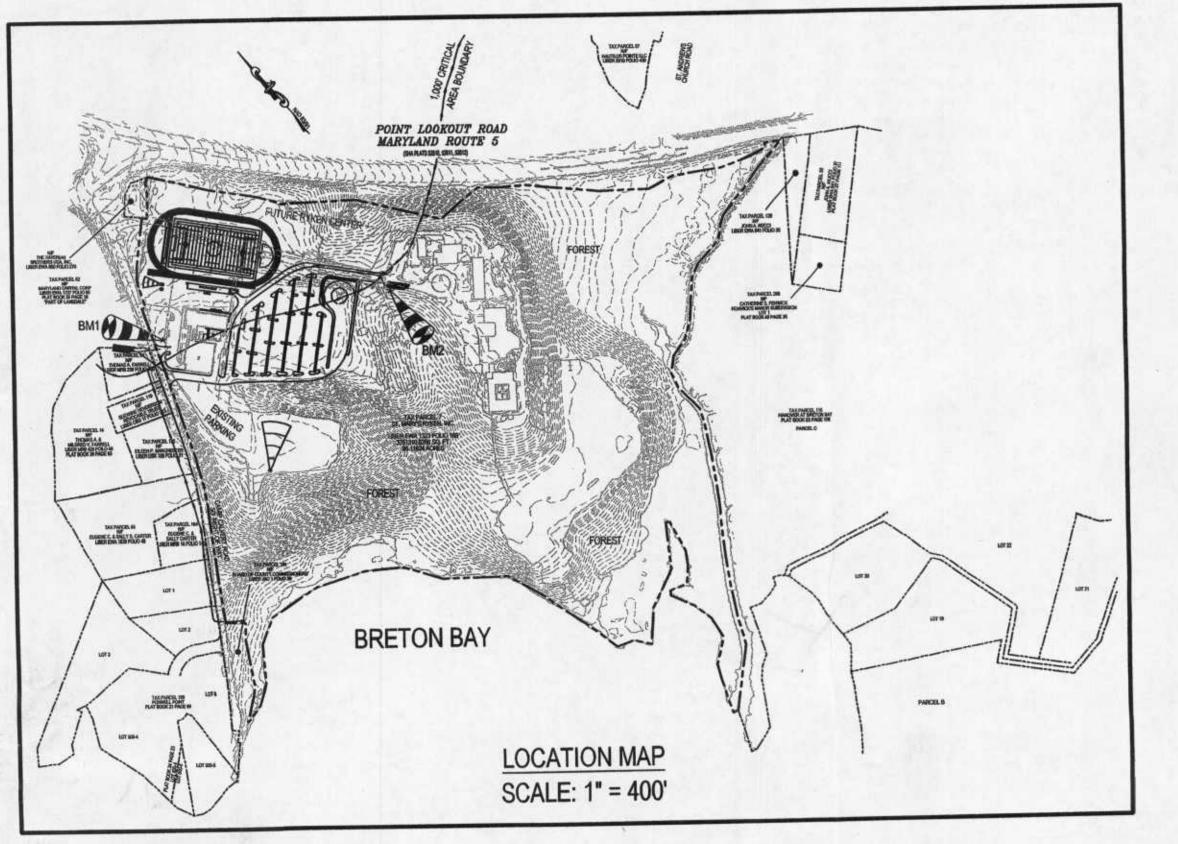
PROPERTY LINE

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LOD	
SOIL	

ABBREV/IATIONS

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CMP	 CORRUGATED METAL PIPE	YR		YEAR
СМРА	 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
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D=	 DELTA	E.E.=		ELBOW ELEVATION
R=	 - RADIUS	GRD. E	EL.=	- GROUND ELEVATION
A=	 - ARC	D.O.B.	=	- DEPTH OF BURY (FIRE HYD.)
T=	 - TANGENT			

ST. MARY'S **RYKEN HIGH SCHOOL**



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: Mille MD. LICENSE No. NAME: MICHAEL A. PIERCE

	OWNER'S CERTIFIC
"I/WE HEREBY CERTIFY TH DEVELOPMENT WILL BE DONE DERSONNEL INVOLVED IN THE ATTENDANCE AT A MARYLAND PROGRAM FOR THE CONTROL PROJECT. I HEREBY AUTHOR! BY THE STATE OF MARYLAND,	PURSUANT TO THIS CONSTRUCTION PR DEPARTMENT OF T OF SEDIMENT AND ZE THE RIGHT OF ER
SIGNATURE:	

NAME (printed):	MARY JOY HURLBERT
ORGANIZATION	ST. MARY'S RYKEN HIGH S
ADDRESS: 22	600 CAMP CALVERT ROAD, LEON
	5-2814
PHONE:	5-2814

	ENGINEERS CERTIFICATION							
I HEREBY CERTIFY TO THE BEST OF THE PLANS SHOWN HEREIN ARE CO	MY PROFESSIONAL KNOWLEDGE, INFORMATION, AND BE RRECT AND CONFORM TO THE TOWN OF LEONARDTOWN	LIEF THAT	RDINANCE			The state of the state		
MICHAEL'A. PIERCE, P.E. MD. REG. P.E. NO. 29920	DATE		TOV	VN OF LEONARDTO) WN	SOIL CONSERVATION	DISTRICT	1
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Engineering

Planning

Surveying

Environmental Sciences

S Loiederman Soltesz Associates, Inc. LEONARDTOWN OFFICE 23140 Moakley Street, Suite 6 Leonardtown, MD 20650 t. 301.769.3500 f. 301.997.0385

Rockville	
Lanham	
Frederick	
Waldorf	
Leonardtow	n
Chantilly	

www.LSAssociates.net

Date: OCTOBER 24, 2008 ioned: BCB

DATE: 1/15/09 ATION

GRADING, CONSTRUCTION AND/OR S PLAN AND THAT ANY RESPONSIBLE ROJECT WILL HAVE A CERTIFICATE OF HE ENVIRONMENT APPROVED TRAINING EROSION BEFORE BEGINNING THE NTRY FOR PERIODIC ON-SITE EVALUATION HE ENVIRONMENT, COMPLIANCE INSPECTORS." DATE: TITLE: PRESIDENT CHOOL

VERTICAL CONTROL REFERENCES NAVD 1988 HORIZONTAL CONTROL REFERENCES NAD 1983

BENCHMARK DATA

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BM1	TOP OF SEWER MANHOLE LOCATED IN FRONT OF GYMNASIUM North 226436	105.87			
Program.	East 1419439				
BM2	TOP OF SEWER MANHOLE LOCATED BEHIND GYMNASIUM	90.29			
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16.	THE TOWN INSPECTORS ARE T
17.	THE EXISTING DATA SHOWN O THIS PROJECT. THE ENGINEER SHALL VERIFY THIS INFORMAT
	ICAL AREA NOTES:
1.	APPROXIMATELY 73.59 ACRES WITHIN THIS AREA ARE SUBJE
2.	AND FEDERAL AGENCIES HAV THE CRITICAL AREA BUFFER M OF THE LEONARDTOWN MUNIC
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5.	LEONARDTOWN MUNICIPLE CO THERE ARE NO LOCATIONS OF PLANTS OR WILDLIFE IDENTIF
6.	EXISTING IMPERVIOUS SURFA
7. 8.	AREA OF SLOPES 15% OR GRI
9. 10.	EXISTING TREES OR FORESTI PROPOSED AREAS OF VEGET
10.	PROPOSED AREAS OF SOIL D

GENERAL NOTES:

EXISTING UTILITIES:

SOILS:

ENVIRONMENTAL:

PROPOSED CONSTRUCTION:

SITE TABULATION		PARKING TABULATION (RETAIL SAI	LES,GENERAL)
TOTAL SITE AREA	86.12 AC	SPACES REQUIREMENTS	300
TOTAL DISTURBED AREA	14.6 AC	SPACES PROVIDED	359
TOTAL PROPOSED IMPERVIOUS AREA	8.43 AC	HANDICAP SPACES REQUIREMENTS	8 SPACES
TOTAL EXISTING IMPERVIOUS AREA	8.76 AC	HANDICAP SPACES PROVIDED	9 SPACES
			4 VAN SPACES
			350 STD SPACE

CAD Standards Version: V8

Technician: NHL

RDTOWN, MARYLAND 20650

Checked: MAP

ALL EXISTING UTILITIES HAVE BEEN LOCATED FROM THE BEST AVAILABLE INFORMATION. HOWEVER, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION WORK, BY CALLING "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO CONSTRUCTION.

ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF THE LEONARDTOWN DEPARTMENT OF PUBLIC WORKS. CONTRACTOR SHALL CONTACT THE TOWN OF LEONARDTOWN AT 301-475-4200 AND SCD AT 301-475-8402 5 DAYS PRIOR TO CONSTRUCTION.

SOILS INDICATED ARE PER THE ST. MARY'S COUNTY SOIL SURVEY, USDA, SCD. SOILS FOUND TO BE UNSUITABLE FOR THE CONSTRUCTION SHALL BE EXCAVATED & REMOVED AS ENCOUNTERED DURING CONSTRUCTION AND TAKEN TO A SITE WITH AN APPROVED SCD PLAN. ALL AREAS ARE TO BE REPLACED WITH SUITABLE SOILS.

THE SUBJECT SITE LIES IN FLOOD ZONES 'AE' AND 'X', PER THE F.I.R.M. MAP 24037C0186E; DATED 10/19/2004, HOWEVER NO VITHIN THE AE ZONE.

ED AS "RCP" SHALL BE SMOOTH INTERIOR PIPE, CLASS IV REINFORCED CONCRETE PIPE (RCP).

OF THESE PLANS SHALL BE ON SITE AT ALL TIMES.

ED BASED ON AVAILABLE RECORDS, BUT WITHOUT THE BENEFIT OF A TITLE REPORT. THERE YANCES, EASEMENTS, COVENANTS, RIGHT-OF-WAY, OR BUILDING RESTRICTION LINES NOT

WILL NOT BE PAVED, SODDED, OR LANDSCAPED WILL BE STABILIZED BY TOPSOILING, SEEDING, ICE WITH CHAPTER G-20, SECTION III OF THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS IENT CONTROL, UNLESS OTHERWISE NOTED HEREON.

R MANAGEMENT, AND/OR STORM DRAIN CONSTRUCTION, INSPECTIONS ARE REQUIRED IN ROVED PLANS AND ORDINANCES. AS BUILT DRAWINGS ARE REQUIRED THIRTY (30) DAYS PRIOR DING PERMIT.

ARTH QUANTITIES, ETC. ARE TO BE VERIFIED BY THE CONTRACTOR. NO ALLOWANCE HAS BEEN ERIAL ENCOUNTERED DURING CONSTRUCTION. SUITABILITY OF SOIL USE IN FILL AREAS OR MPACTIONS, ETC. SHOULD BE DETERMINED BY A PROFESSIONAL SOILS ENGINEER. SOILS FOUND STRUCTION SHALL BE EXCAVATED AND REMOVED AS ENCOUNTERED DURING THE ROADBED AS WITH UNSUITABLE SOILS ARE TO BE REPLACED WITH SUITABLE SOILS. THE CONTRACTOR OR THE CONSTRUCTION MEANS, METHODS, AND TECHNIQUES OF EXECUTING ITS WORK,

CH WILL BE OPENED IN A DAY THAT CAN BE WORKED AND STABILIZED AT THE END OF THE WORK NOT OCCUR AT THE END OF THE WORK DAY, THEN APPROPRIATE EROSION AND SEDIMENT

T BE GREATER THAN THREE (3) FEET HORIZONTAL TO ONE (1) FOOT VERTICAL EXCEPTIONS IN OPES ARE REQUIRED TO MINIMIZE IMPACT TO WETLANDS, BUFFER AREAS OR OTHER ADVERSE ZATION OF AREAS STEEPER THAN 3:1 SHALL BE IN ACCORDANCE WITH THE STATE OF SPECIFICATIONS FOR SEDIMENT AND EROSION CONTROL" A WAIVER TO THE GRADING ED FOR SLOPES GREATER THAN 3:1.

AY FROM THE CURB, REVERSE SLOPED GUTTER CONFORMING TO THE PAVEMENT CROSS SLOPE

INSTRUCTION MEETS EXISTING PAVEMENT, THE LINE AND GRADE OF THE PROPOSED ROAD JUSTED AS REQUIRED TO ENSURE POSITIVE DRAINAGE AND TO PROVIDE A SMOOTH AND VERTICALLY TO MEET THE EXISTING ROAD SECTION. IF SUBSTANTIAL ADJUSTMENTS ARE R SHALL CONTACT THE ENGINEER PRIOR TO PROCEEDING.

M DRAINAGE PIPES AND CULVERT SHALL BE SHAPED AND COMPACTED IN ACCORDANCE WITH MSHA "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS".

TO HAVE DAILY ACCESS TO ALL COMPACTION TEST DATA, RESULTS, PROCTORS, ETC.

ON THESE PLANS IS FROM THE BEST SOURCES AVAILABLE AT THE TIME OF DESIGN FOR ER DOES NOT GUARANTEE THE EXISTING INFORMATION SHOWN AND THE CONTRACTOR TION, TO HIS SATISFACTION. PRIOR TO BEGINNING ANY WORK ON THIS PROJECT.

S OF THIS SITE LIE WITHIN MARYLAND'S CRITICAL AREA. ANY AND ALL DEVELOPMENT ACTIVITIES PROPOSED ECT TO CRITICAL AREA REGULATIONS AND WILL NOT BE PERMITTED UNTIL ALL APPROPRIATE LOCAL, STATE, VE CONDUCTED A THOROUGH ENVIRONMENTAL REVIEW AND HAVE APPROVED THE DEVELOPMENT PLAN. MUST REMAIN IN NATURAL VEGETATION AND MAY NOT BE DISTURBED EXCEPT AS PROVIDED UNDER CHAPTER 60

TTED IN WETLANDS WITHOUT PRIOR APPROVAL FROM THE APPROPRIATE LOCAL, STATE, AND FEDERAL AGENCIES. WN HEREON SHALL REMAIN UNDISTURBED EXCEPT AS PERMITTED UNDER THE PROVISIONS OF CHAPTER 60 VICIPLE CODE. ALL AFFORESTED OR REFORESTED AREAS CREATED UNDER THE PROVISIONS OF CHAPTER 60 OF THE CODE DESIGNATED ON THIS PLAT SHALL BE PRESERVED FROM FUTURE DISTURBANCE. OF NATURAL HERITAGE AREAS, HABITATS OF THREATENED OR ENDANGERED SPECIES, AND HABITATS OF SIGNIFICANT

FIED ON THIS PLAT. FACE WITHIN 100 FOOT CHESAPEAKE BAY CRITICAL AREA BUFFER IS 0 SQUARE FEET. FACE WITHIN 1000 FOOT CHESAPEAKE BAY CRITICAL AREA BOUNDARY IS 306, 157 SQUARE FEET (7.03 AC.).

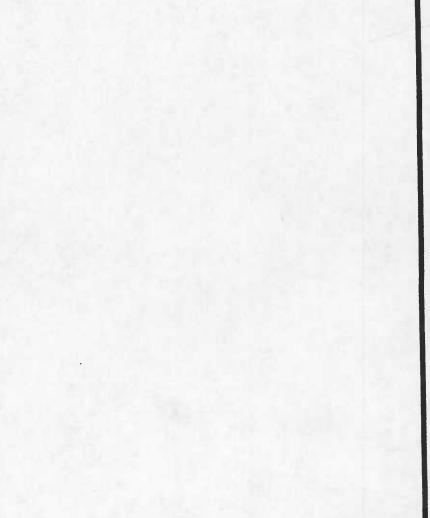
REATER IS 563,160 SQUARE FEET (12.93 AC.).

ED AREA IS 2,222,698 SQUARE FEET (51.03 AC.). TATION CLEARING IS 2,310 SQUARE FEET.

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

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



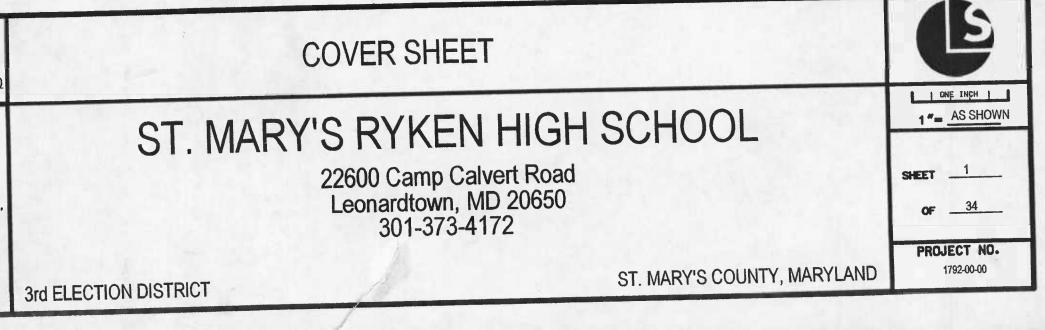
BRENTON

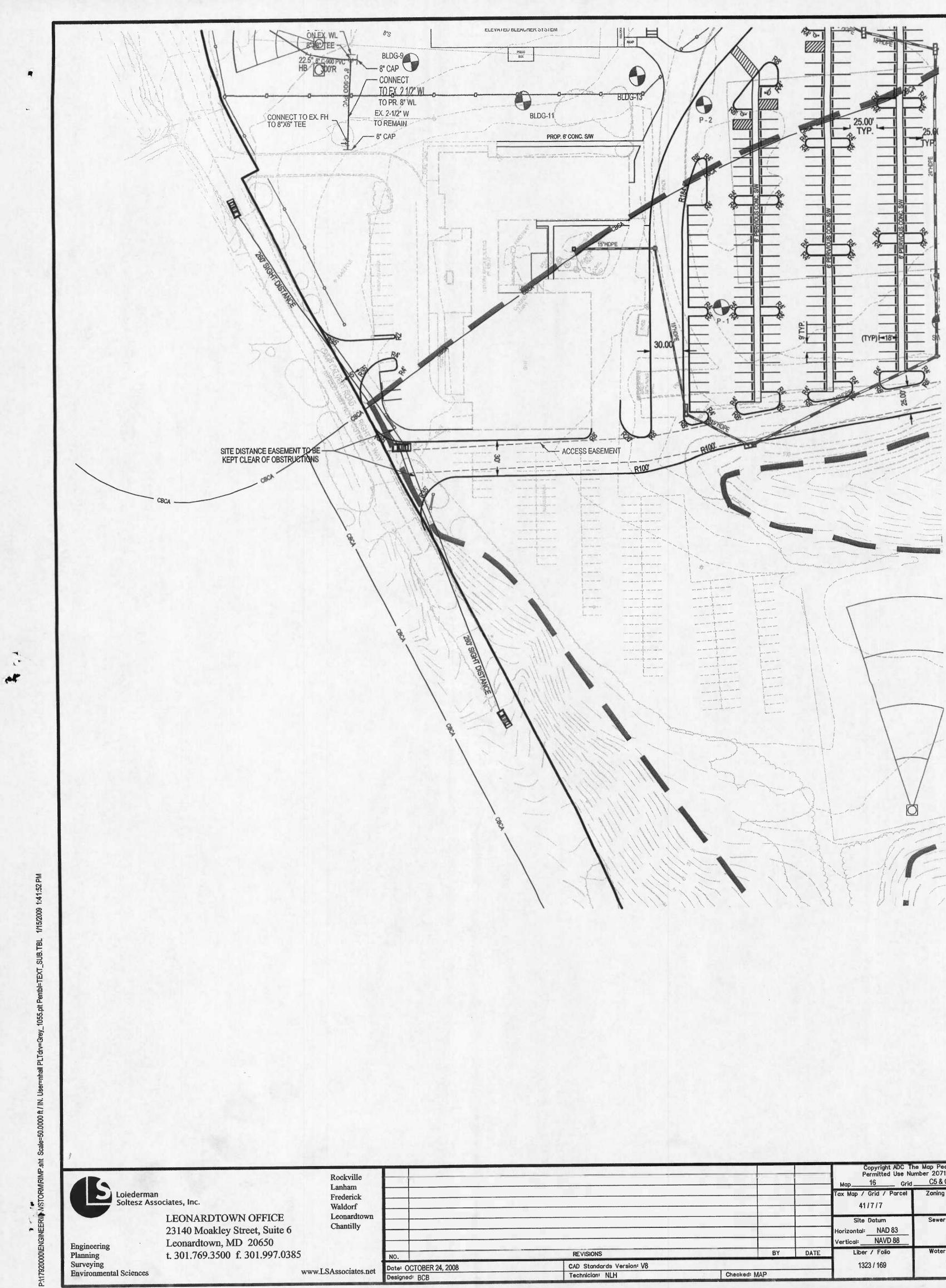
VICINITY MAP

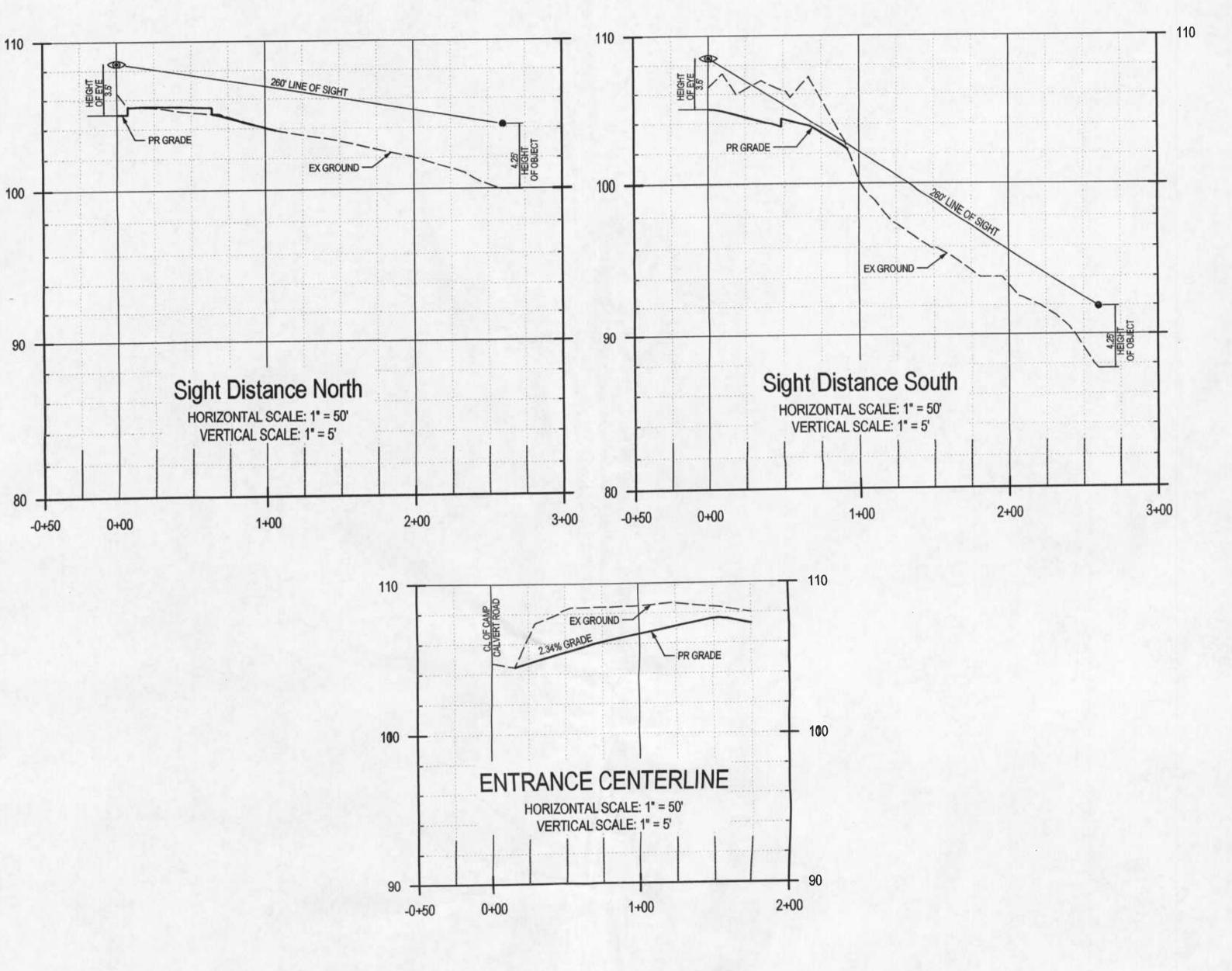
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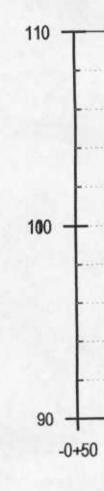


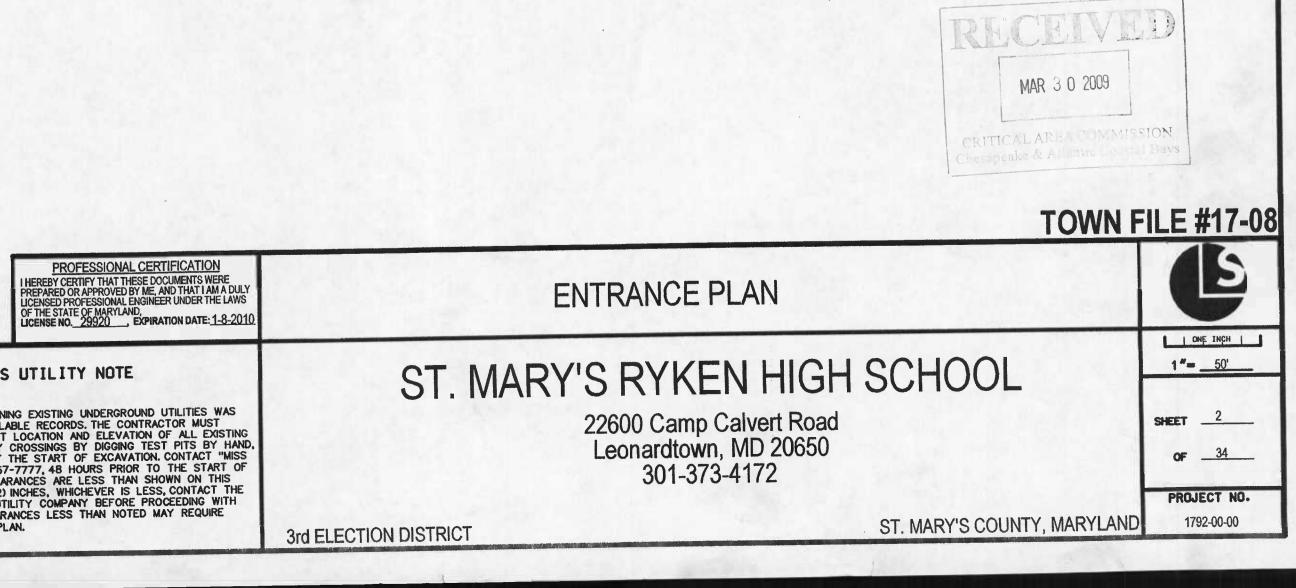










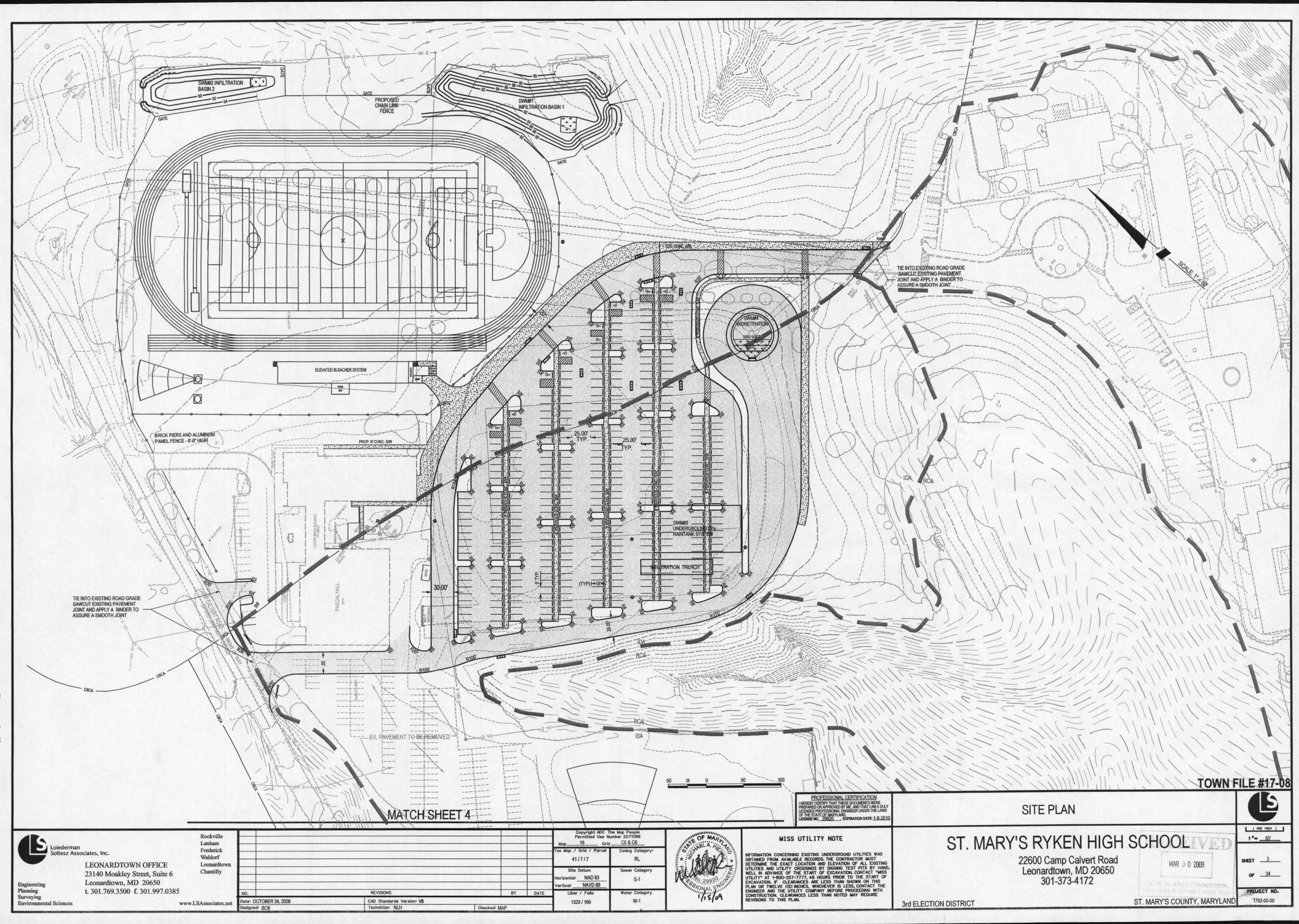


MISS UTILITY NOTE

				Copyright ADC The Map People Permitted Use Number 20711186 Map 16 Grid C5 & C6		
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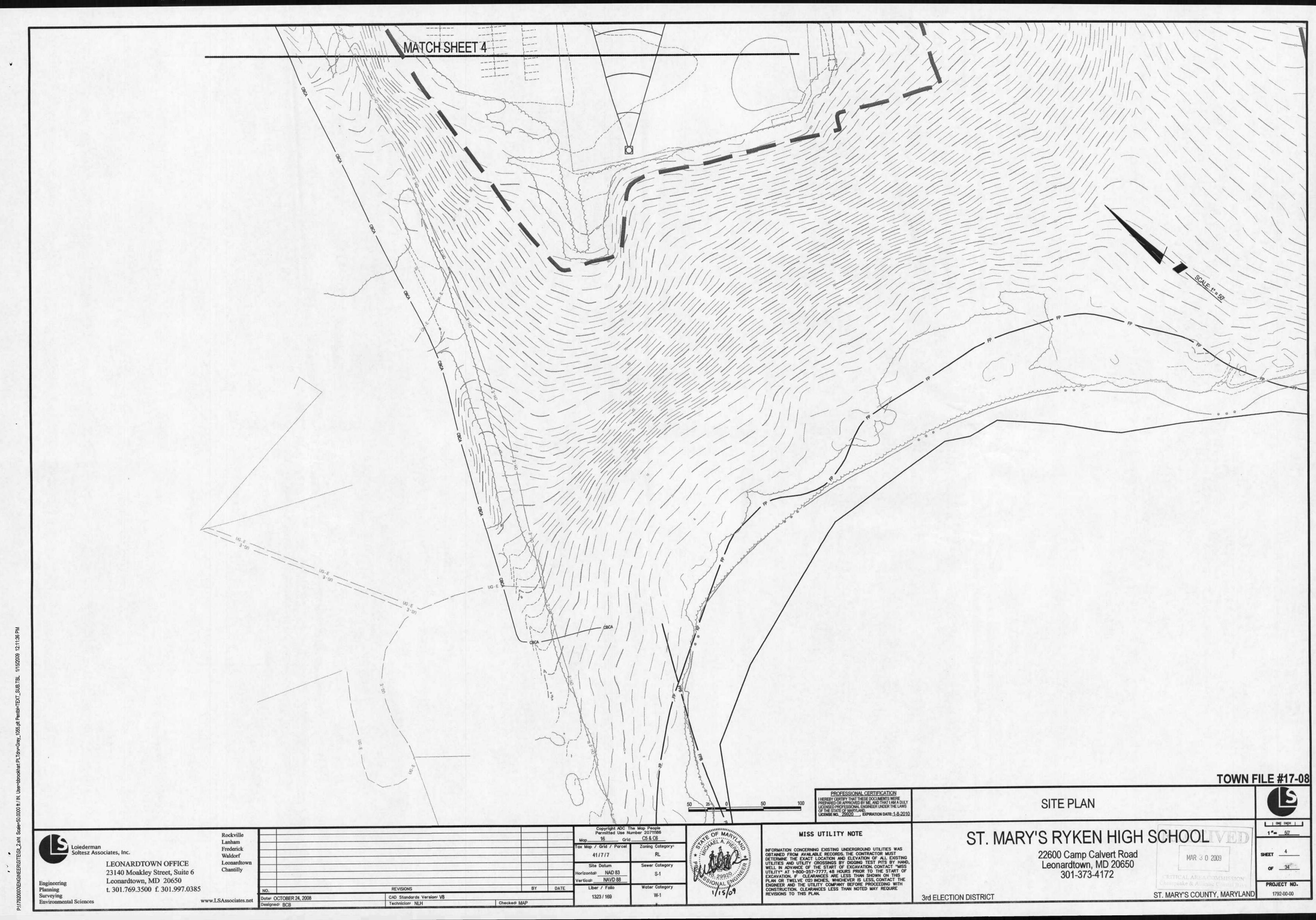


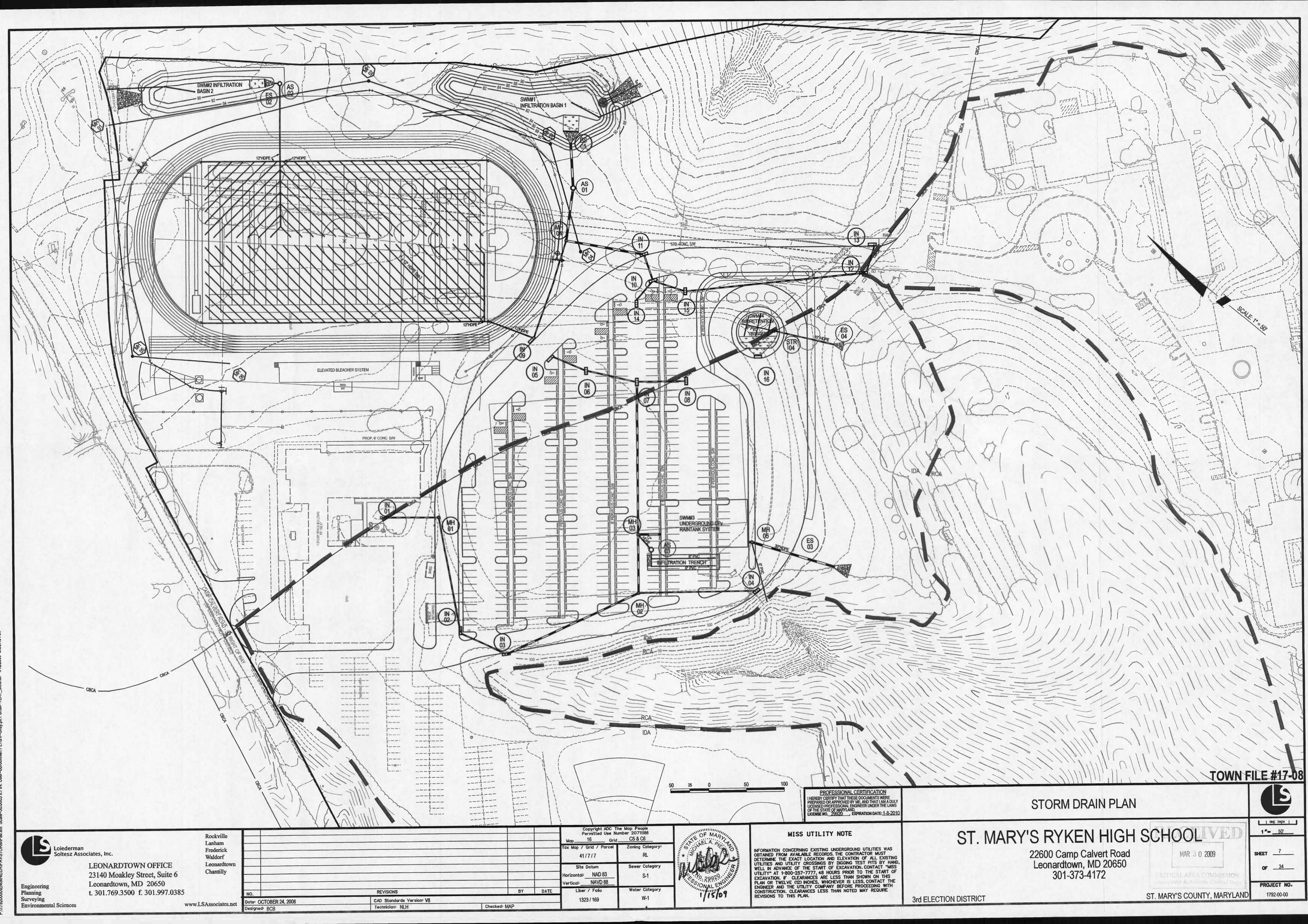
INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITY CROSSINGS BY DIGGING TEST PITS BY HAND. WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT "MISS UTILITY" AT 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.



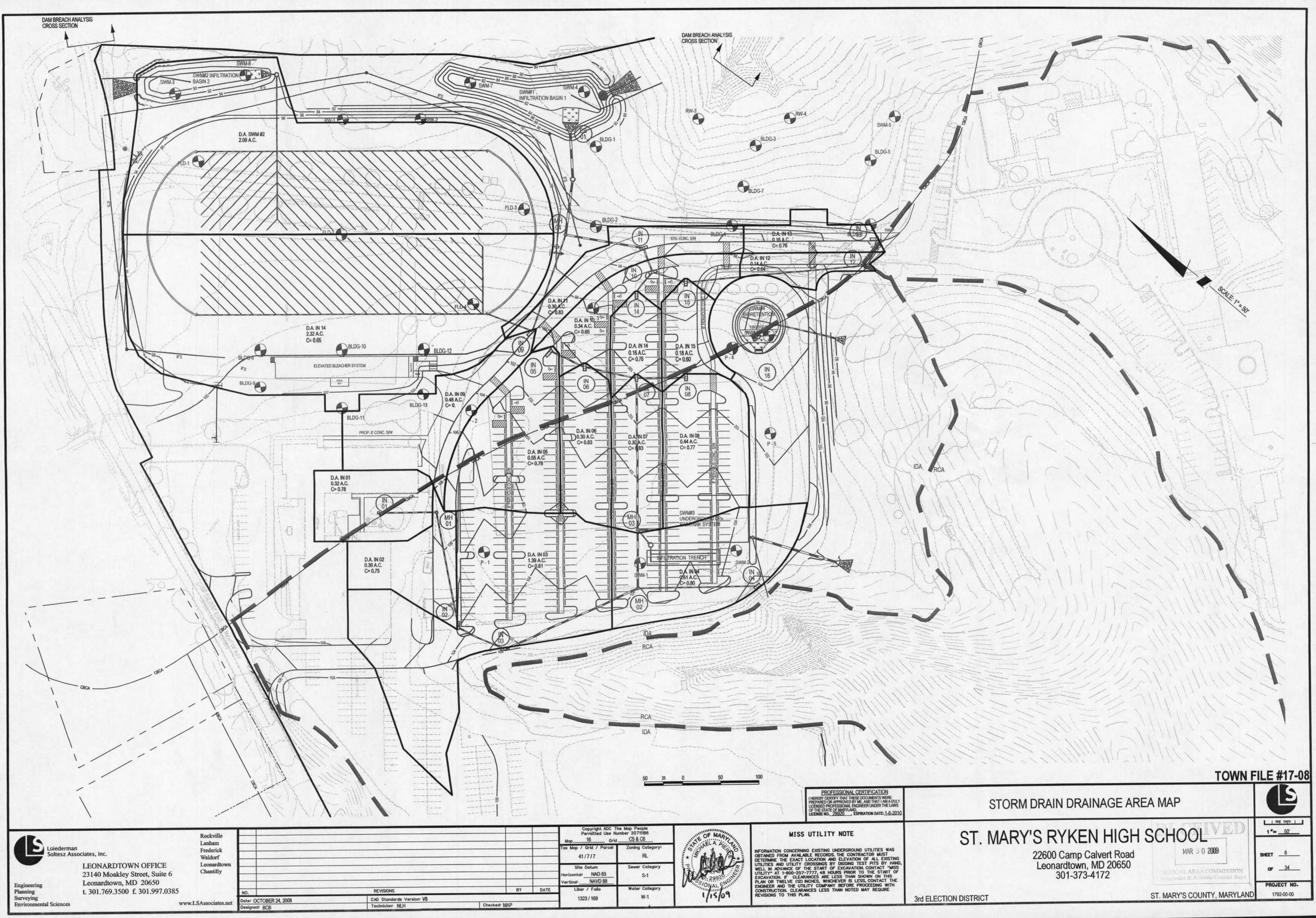
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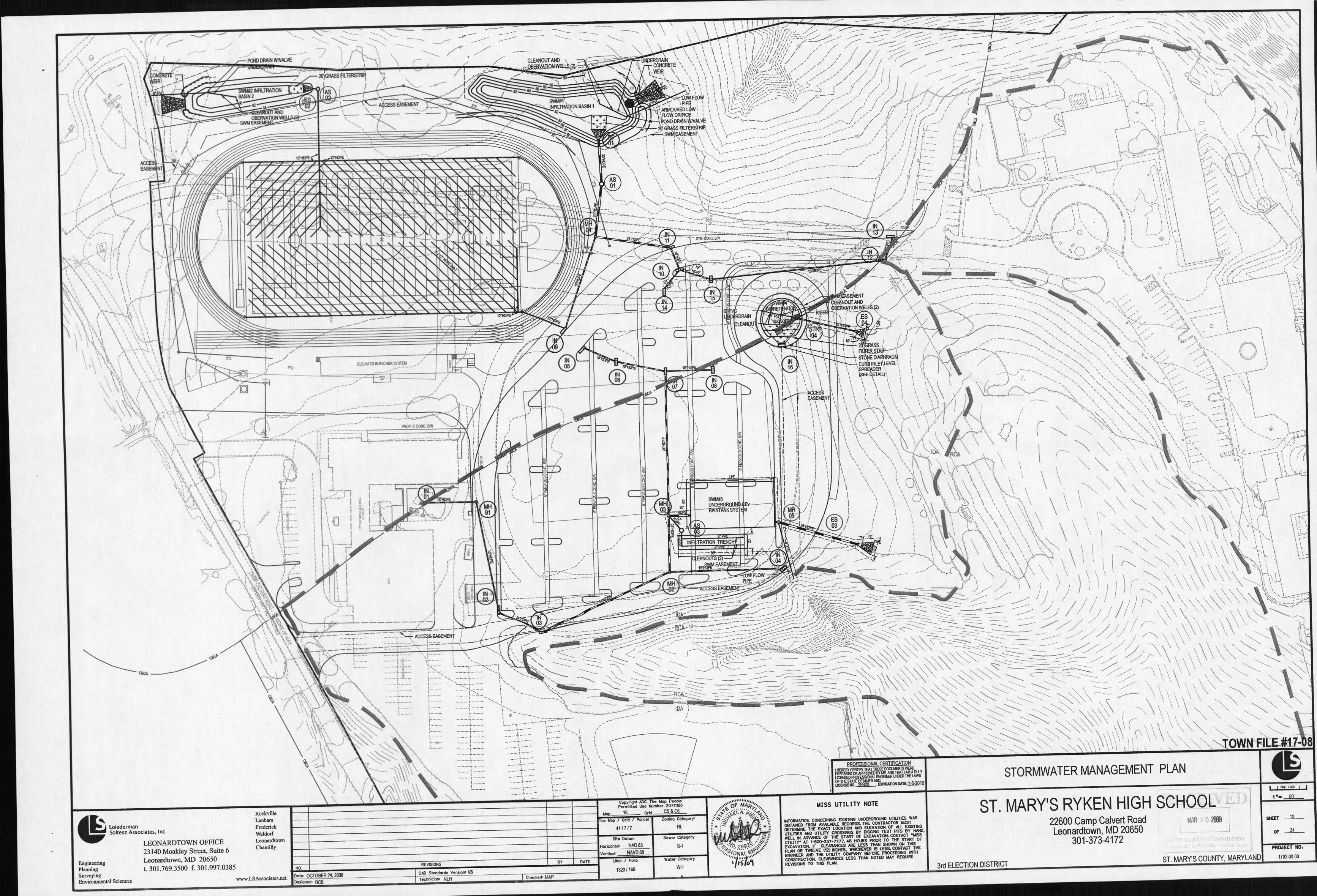
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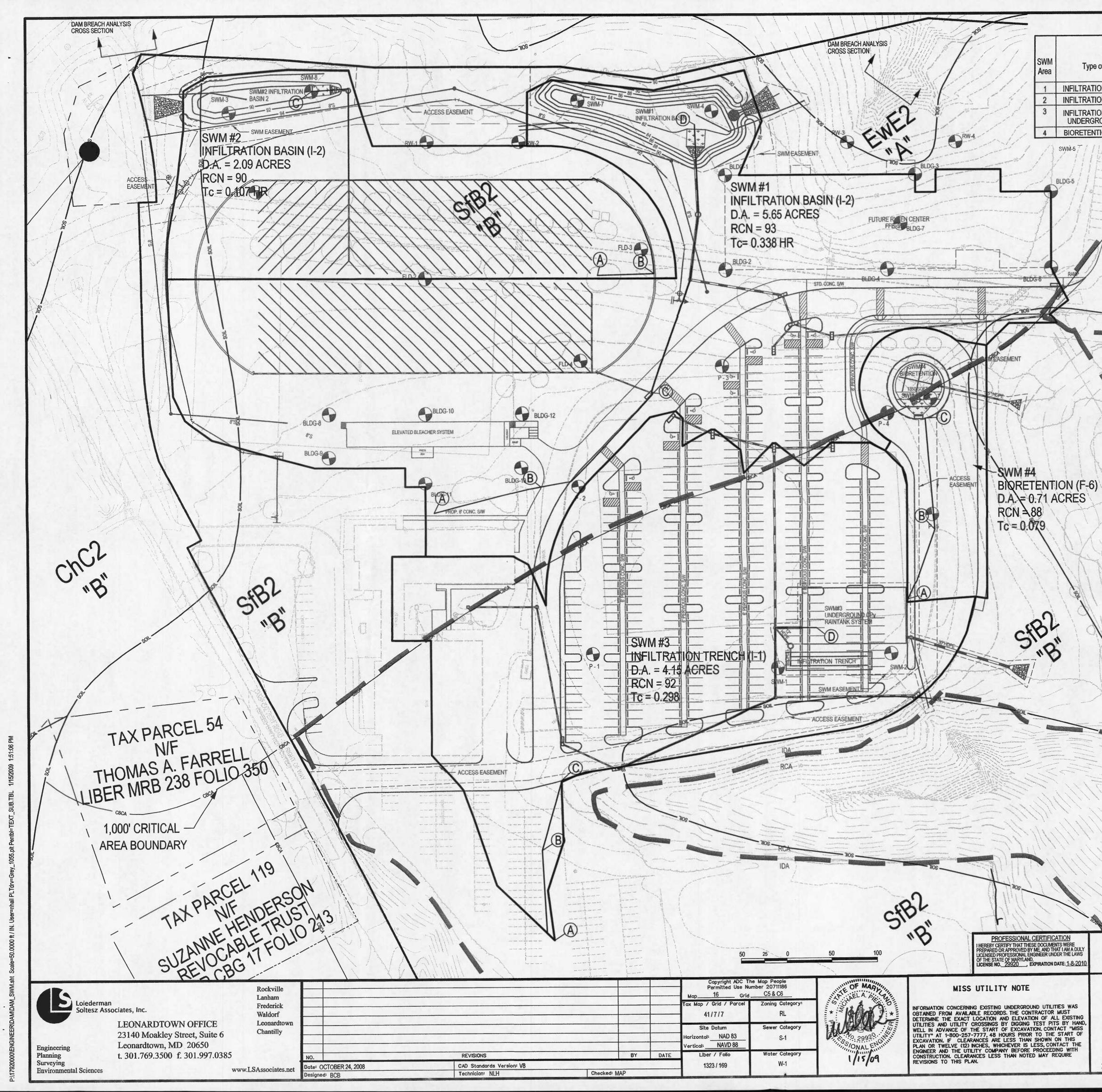




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		STOR	MWATER	MANAGE	MENT S	UMMARY	TABLE				
ype of SWM Facilty Area (Ac.)		%		Water Quality Volume (WQv) "cubic feet"	'		Groundwate echarge Volu Structurally REv) "cubic fe	me	Cha	annel Protect Volume (CPv) "cubic feet"	ion
	Imp.	Required	Provided	As-Built	Required	Provided	As-Built	Required	Provided	As-Built	
RATION BASIN	5.66	86.75%	17,068	17,068		4,438	4,438		27,278	27,278	
RATION BASIN	2.09	77.51%		5,672		1,475	1,475		8,970	8,970	
RATION TRENCH/ RGROUND CPv	4.15	84.10%	12,155	12,155		3,160	3,160		19,182	19,452	
TENTION	0.71	71.83%	1,795	1,795		467	467		0	0	

SFBZ

EX. CONTOURS PROP. CONTOURS EX. TREELINE EX. EDGE OF PAVEMENT PROP. EDGE OF PAVEMENT CRITICAL AREA EX. STORMDRAIN PROP. STORMDRAIN LIMITS OF DISTURBANCE SOILS TYPE DIVISION LINE PROPERTY LINE FLOODPLAINS

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PROJECT NO.

1792-00-00

SWM DRAINAGE AREA MAP

ST. MARY'S RYKEN HIGH SCHOOL 22600 Camp Calvert Road Leonardtown, MD 20650 301-373-4172 MAR 3 0 2009

ST. MARY'S COUNTY, MARYLAND

3rd ELECTION DISTRICT

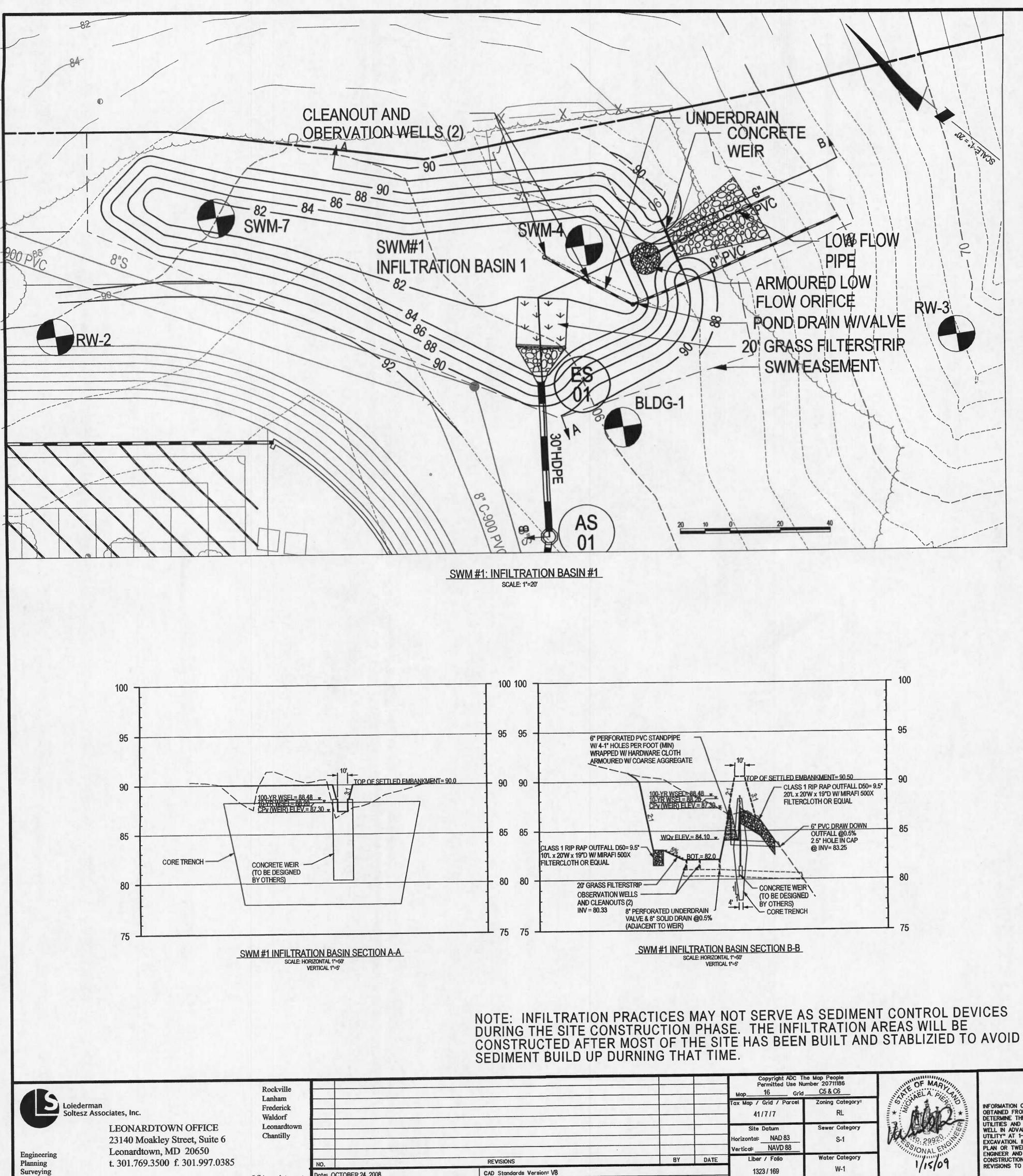
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Technician: NLH

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				Site Datum Horizontal: NAD 83 Vertical: NAVD 88	Sewer Category S-1
: V8		BY	DATE	Liber / Folio 1323 / 169	Water Category W-1
. 40	Checked: M	AP			

AQUA-SWIRL GENERAL NOTES:

1. System shall be designed for the following capacities:

Peak Treatment Flow: 1.8 cfs Sediment Storage: 20 cubic feet

Oil/Debris Storage: 110 gal. 2. Manufacturer shall be responsible for complete assembly of Swirl Concentrator. 3. Swirl Concentrator shall be fabricated from High-Density Polyethylene (HDPE) ASTM F 714 Cell Class 345464C per ASTM D 3350. Structures shall be fabricated from profile wall HDPE ASTM F 894 RSC

4. HDPE Stubouts and internal components shall be extrusion welded using accepted welding practices. Stubouts shall be supplied by

Manufacturer and welded on inside and outside. 5. If Lifting Eye disturbs Grade Elevation (Rim) or Concrete Pad Rebar alignment, it may be cut in field after installation of Swirl Concentrator by Contractor. 6. Manufacturer shall supply direct access to Swirl Concentrator via one (1)28-inch HDPE risers which shall be field cut to match finished grade by Contractor. Foundry Rim and Perforated Cover by Manufacturer. (see note 9) 7. Contractor shall supply Pipe couplings to and

from Swirl Concentrator which shall be Fernco or Mission style neoprene boot with stainless steel tension bands provided.

8. Contractor shall prepare excavation and off-load Swirl Concentrator. Contractor is responsible for bedding and backfill around

Swirl Concentrator as detailed on site plan. (see notes 13 and 14)

9. Manufacturer shall supply standard 30-inch OD-28-inch ID perforated manway frame and cover. (Traffic rated H20/H30) 10. Where traffic loading (H-20) is required on

anticipated, a reinforced concrete pad must be placed over the entire Swirl Concentrator exceeding 12 inches from OD of Swirl. 11. Bollards shall be placed around access risers in

non-traffic areas to prevent inadvertent loading by maintenance vehicles. 12. Where high groundwater elevations are present,

Contractor shall supply concrete anti-floatation pad poured over the at base of Swirl Concentrator Calculated by Engineer.

13. Excavation and Bedding - The trench and trench bottom shall be prepared in accordance with ASTM D-2321, Section 6, Trench Excavation, and Section 7, Installation. The HDPE Swirl Concentrator shall be installed on a stable base consisting of 12-inches of Class I materials (angular, crushed stone or rock, crushed gravel; large void content, contains little or no fines) compacted to 95% proctor density

per ASTM F 1759, Section 4.2. All required safety precautions for Swirt Concentrator installation are the responsibility of the contractor. 14. Backfill Requirements - Backfill materials shall be Class I Stone materials, (angular, crushed stone or rock, crushed gravel; large void content,

contains little or no fines). Backfill and bedding materials shall be free of debris. Backfilling shall conform to ASTM 1759, Section 4.2, "Design Assumptions". This specification indicates that backfill shall extend at least 3.5 feet beyond the edge and for the full height of the Swirl Concentrator extend laterally to undisturbed soils. Compaction shall be to 90% proctor density.

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. 29920, EXPIRATION DATE: 1-8-2010

3rd ELECTION DISTRICT

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 IN AN OR TWELVE (12) INCHES WHICHEVER IS LESS. CONTACT THE 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.

IMPORTANT: THESE INSTALLATION INSTRUCTIONS ASSUME ACCEPTED CONSTRUCTION CONDITIONS AND PROCEDURES AND ASPHALT TRUCKS THAT DO NOT EXCEED SPECIFIED DOT LOAD LIMITS. UNCUSTOMARY LOADS OR IMPROPER LOAD DISTRIBUTIONS IN VEHICLES MAY REQUIRE ADDITIONAL COVER. CONTACT HYDROLOGIC SOLUTIONS FOR INSTALLATION UNDER ABNORMAL CONDITIONS.

"CONTACT HYDROLOGIC SOLUTIONS FOR TECHNICAL ASSISTANCE AT 703-492-0686 OR EMAIL US AT HYDROLOGICSOLUTIONS COM.

AQUA-SWIRL INSPECTION & MAINTENANCE PROCEDURE THE SYSTEM CAN BE INSPECTED AND MAINTAINED COMPLETELY FROM THE SURFACE TO ELIMINATE THE NEED FOR CONFINED SPACE ENTRY.

FREE-FLOATING OIL AND FLOATABLE DEBRIS CAN BE DIRECTLY OBSERVED AND MAINTAINED THROUGH THE 28-INCH MANHOLE ACCESS DIRECTLY OVER THE CENTER OF THE SWIRL CHAMBER.

CLEANOUT OF ACCUMULATED SEDIMENT ONLY NEEDS TO BE PERFORMED WHEN THE USABLE SEDIMENT STORAGE VOLUME HAS BEEN OCCUPIED. SEDIMENT DEPTHS CAN EASILY BE DETERMINED BY MEASURING THE DISTANCE FROM THE TOP OF THE SEDIMENT PILE TO THE WATER'S SURFACE BY LOWERING A MEASURING DEVICE (I.E. STADIA ROD), AND DETERMINING THE DIFFERENCE IN ELEVATIONS. SPECIFICALLY, WHEN THE SEDIMENT PILE IS WITHIN 24 INCHES OF THE WATER SURFACE, THE SYSTEM SHOULD BE PUMPED CLEAN.

NORMALLY, A HIGH VELOCITY VACUUM TRUCK IS USED TO CLEAN THE COLLECTED POLLUTANTS WITHIN THE SYSTEM. AFTER RECORDING THE MEASUREMENTS ON THE SUPPLIED INSPECTION DATA SHEET, THE VACUUM HOSE IS LOWERED THROUGH THE ACCESS OPENING AND THE FLOATING DEBRIS AND OIL ARE REMOVED. THE VACUUM HOSE CAN THEN BE EASILY LOWERED INTO THE SEDIMENT PILE FOR ITS REMOVAL. HANDLING AND DISPOSAL OF ALL MATERIALS IS TO BE ACCOMPLISHED ACCORDING TO APPLICABLE LOCAL, STATE AND FEDERAL REQUIREMENTS.

AQUA-SWIRL INSPECTION & MAINTENANCE SCHEDULE: THIS FACILITY SHOULD BE INSPECTED AT LEAST ONCE A YEAR AND AFTER A MAJOR STORM EVENT. MAINTENANCE INSPECTION REPORTS SHALL BE MAINTAINED BY THE OWNER IN ACCORDANCE WITH THE STORMWATER MANAGEMENT ORDINANCE ON ALL DETENTION STRUCTURES AND SHALL

- INCLUDE THE FOLLOWING: A. THE DATE OF INSPECTION:
- **B. NAME OF INSPECTOR:**
- C. THE CONDITION OF: 1. STRUCTURES,
- 2. PIPES, 3. OUTLETS,
- . STONE FILTER MEDIA.
- 5. RESERVIOR AREA, 6. OUTLET CHANNELS.
- UNDERGROUND DRAINAGE,
- 8. SEDIMENT LOAD, OR 9. ANY OTHER ITEM THAT COULD EFFECT THE PROPER FUNCTION OF THE STORMWATER MANAGEMENT SYSTEM.
- D. DESCRIPTION OF NEEDED MAINTENANCE.
- 1. GENERAL SITE CONDITION (A.) VISIBLE EVIDENCE OF SPILLS/ RELEASES
- (OILS, GREASE, FUELS, PAINTS, CHEMICALS) (B) VISIBLE EVIDENCE OF HEAVY SEDIMENT DEPOSITION 2. SWIRL CONCENTRATOR
- (A.) CONDITION OF SWIRL CONCENTRATOR (B.) CONDITION OF BAFFLE
- (C.) DISTANCE TO SEDIMENT (D.) DISTANCE TO WATER
- **NOTE: IF SEDIMENT IS LESS THAN 30" TO 36" BELOW WATER SURFACE, SEDIMENT SHOULD BE REMOVED

I ONE INCH |

1 "= 50'

SHEET _____14____

OF ______34

PROJECT NO.

1792-00-00

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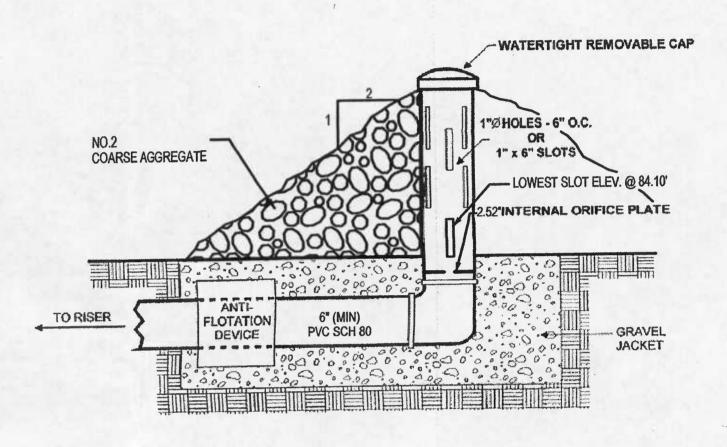
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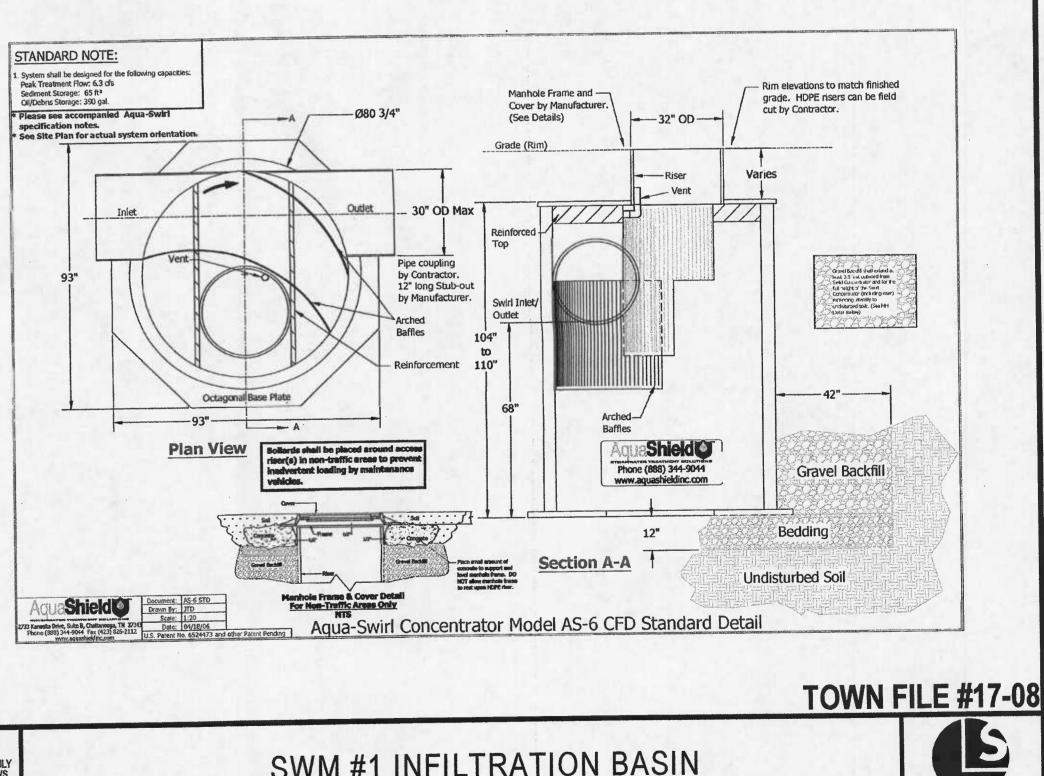
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ST. MARY'S COUNTY, MARYLAND

Detail 3 Internal Control for Orifice Protection



INTERNALLY CONTROLLED ORIFICE (NTS)



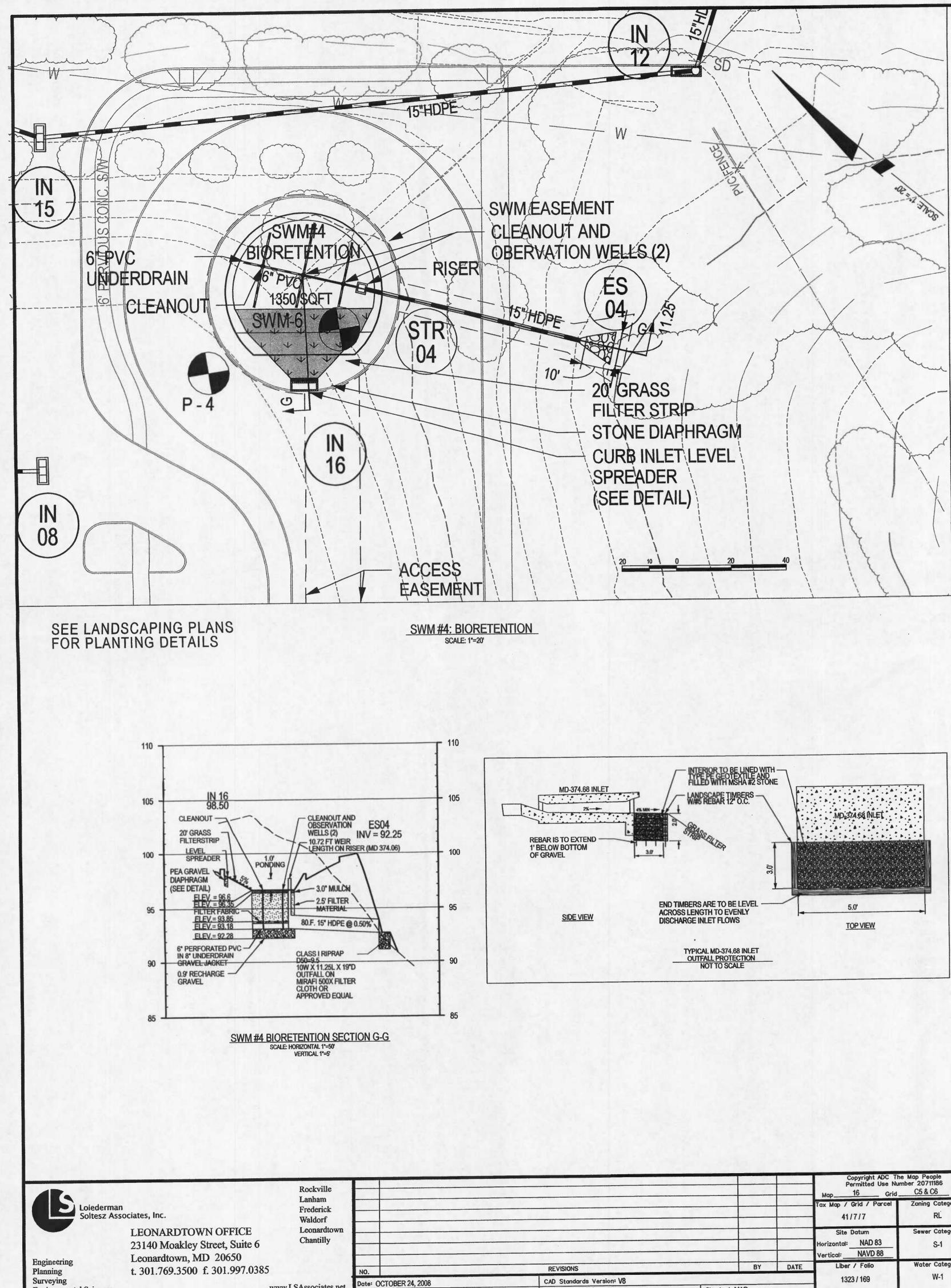
SWM #1 INFILTRATION BASIN

ST. MARY'S RYKEN HIGH SCHOOL

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

Surveying Environmental Sciences

Date: OCTOBER 24, 2008 www.LSAssociates.net igned: BCB



www.LSAssociates.net

signed: BCB

Environmental Sciences

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:

oH range	5.2 - 7.0
organic matter	1.5 - 4% (by weight)
magnesium	35 lb./ac
phosphorus (phosphate - P2O5)	75 lb./ac
potassium (potash - K2O)	85 lb./ac
soluble salts	not to exceed 500 pp

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 textural 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

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

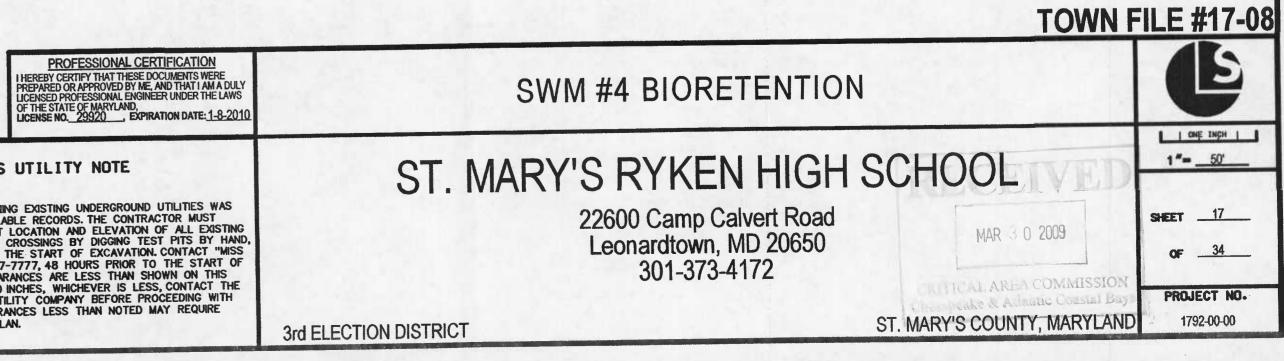
Underdrains are to be placed on a 3'-0" wide section of filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of underdrain pipes not terminating in an observation well shall be capped.

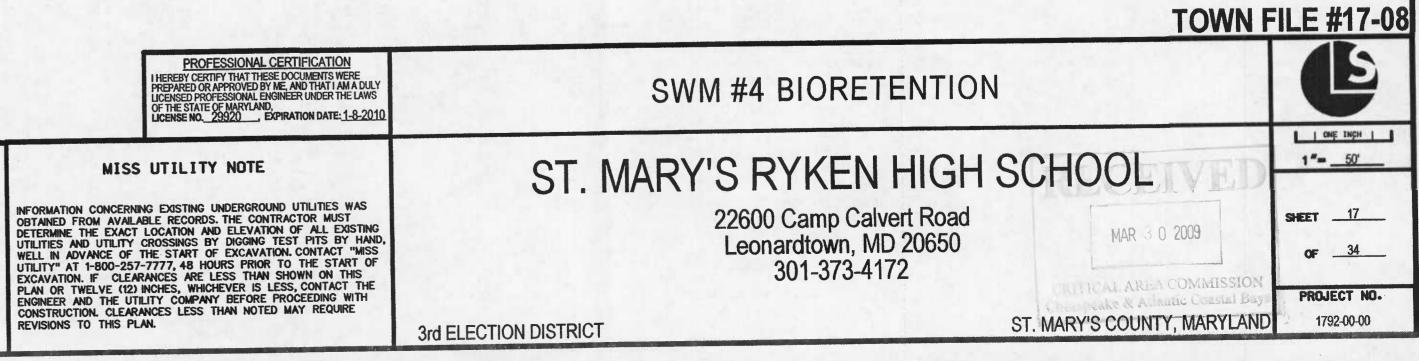
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

Miscellaneo

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

B.3.6





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		Copyright ADC Th Permitted Use Nur Map <u>16</u> Grid	e Map People mber 20711186 C5 & C6	ATE OF MARY
		- Tax Map / Grid / Parcel - 41/7/7	Zoning Category: RL	1. And
		Site Datum Horizontal: NAD 83 Vertical: NAVD 88	Sewer Category S-1	29920 S S/ONAL ENGINE
BY	DATE	Liber / Folio 1323 / 169	Water Category W-1	1/15/09
	BY	BY DATE	Map 16 Grid Tax Map / Grid / Parcel 41/7/7 Site Datum 41/7/7 Horizontal: NAD 83 Vertical: NAVD 88 BY DATE	Mup One Tax Map / Grid / Parcel Zoning Category: 41/7/7 RL Site Datum Sewer Category Horizontal: NAD 83 Vertical: NAVD 88 BY DATE

Checked: MAP

Technician: NLH

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.

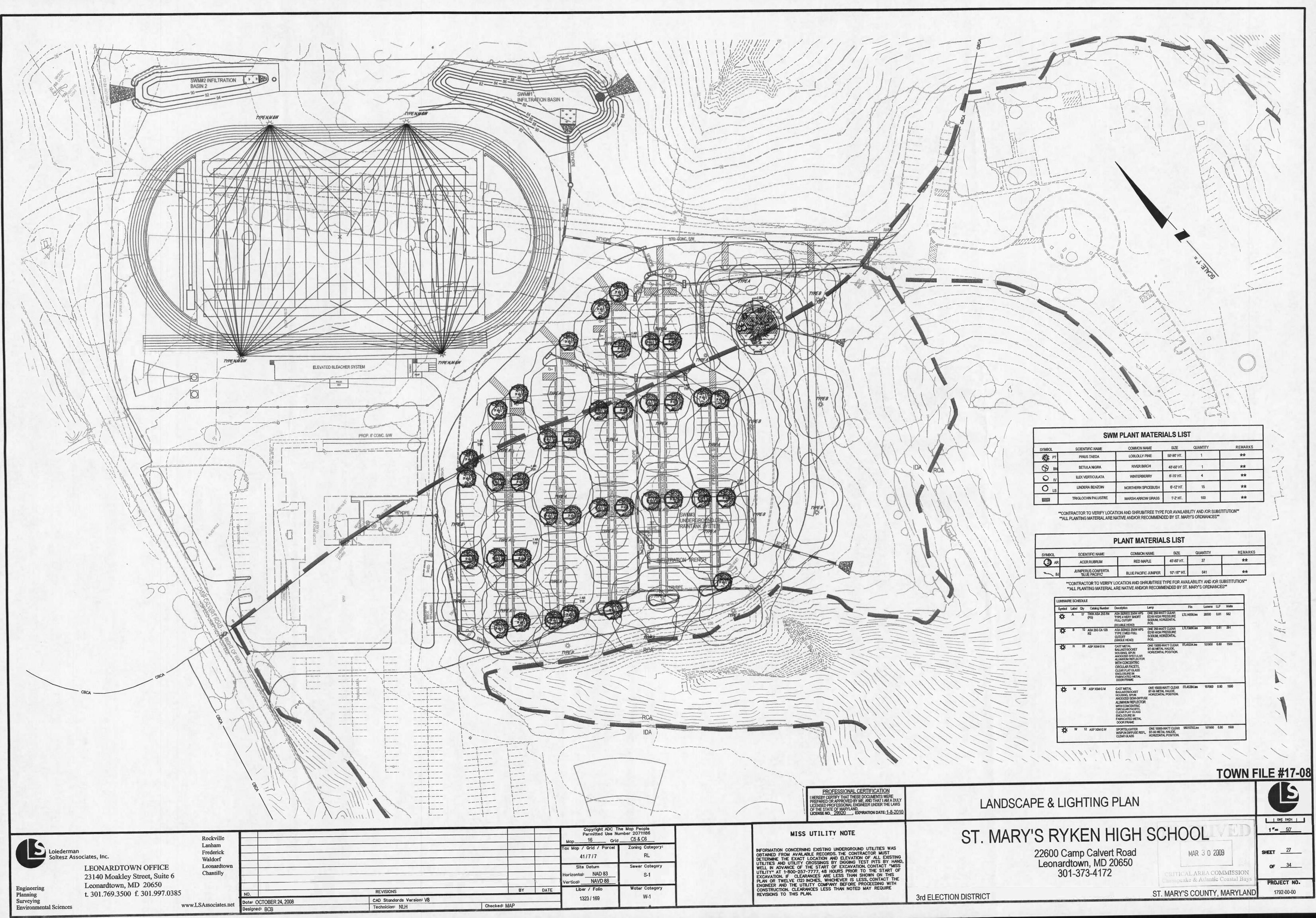
Root stock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain 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

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	
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-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	0.25" 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° = 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 shump 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 AC1 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.



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	SWM	PLANT MATER	IALS LIS	Г	
SYMBOL	SCIENTIFIC NAME	COMMON NAME	SIZE	QUANTITY	REMARKS
🇱 РТ	PINUS TAEDA	LOBLOLLY PINE	50'-90' HT.	1	**
B BN	BETULA NIGRA	RIVER BIRCH	40'-60' HT.	1	**
O IV	ILEX VERTICULATA	WINTERBERRY	6'-15' HT.	4	**
O LB	LINDERA BENZOIN	NORTHERN SPICEBUSH	6'-12' HT.	15	**
	TRIGLOCHIN PALUSTRE	MARSH ARROW GRASS	1'-2' HT.	100	**

PLANT MATERIALS LIST					
SYMBOL	SCIENTIFIC NAME	COMMON NAME	SIZE	QUANTITY	REMARK
AR	ACER RUBRUM	RED MAPLE	40'-60' HT.	37	**
BJ BJ	JUNIPERUS CONFERTA 'BLUE PACIFIC'	BLUE PACIFIC JUNIPER	10*-18*' HT.	641	**

Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	ШF	Watts
*	A	17	TWIN ASA 25S R4 (FG)	TYPE & VERY SHORT FULL CUTOFF	ONE 250-WATT CLEAR ED18 HIGH PRESSURE SODIUM, HORIZONTAL POS.	LTL14056.ies	28500	0.81	582
*	B	10	ASA 25S CA 120 R2	ASA SERIES 250W HPS TYPE 2 MED FULL CUTOFF	ONE 250-WATT CLEAR ED18 HIGH PRESSURE SODIUM, HORIZONTAL POS.	LTL13990.les	28500	0.81	291
*	N	28	ASP X5M G N	BALLAST/SOCKET	ONE 15000-WATT CLEAR BT-56 METAL HALIDE, HORIZONTAL POSITION.	TTL45224.ies	151900	0.80	1500
*	М	38	ASP X5M G M	CAST METAL BALLAST/SOCKET HOUSING, SPUN ANDOIZED SEMI-DIFFUSE ALLIMINUM REFLECTOR WITH CONCENTRIC CIRCULAR FACETS, CLEAR FLAT GLASS ENCLOSURE IN FABRICATED METAL DOOR FRAME	ONE 15000-WATT CLEAR BT-56 METAL HALIDE, HORIZONTAL POSITION.	ITL45284.ies	151900	0.80	1500
*	W	12	ASP X5M G W	SPORTSLIGHTER W/SPUN DIFFUSE REFL, CLEAR GLASS	ONE 15000-WATT CLEAR BT-56 METAL HALIDE, HORIZONTAL POSITION.	98010702.ies	151900	0.80	1500

LANDSCAPE SPECIFICATIONS

A. MATERIALS

1. Plants shall be nursery grown in accordance with good horticultural practice, and grown under climatic conditions similar to those in the locality of the project. They shall have been root pruned, preferably within the last year.

They shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, pest, eggs or larvae, and shall have a healthy developed root system.

Plants shall not be pruned before delivery. Trees with a damaged or crooked leader or multiple leaders, abrasions on the bark, sunscaled, disfiguring knots or fresh cuts over 11/2" will be rejected.

No change in quantity, size, kind or quality of plant specified will be permitted without approval of the landscape architect.

- 2. Topsoil shall be fertile, friable and typical of the locality; it shall be free of stones, lumps, plants, roots, sticks and shall not be delivered in a frozen or muddy condition.
- 3. Planting soil (backfill mix) shall be five-parts topsoil and one-part wet loose peat moss.
- 4. Staking materials: Guys wire shall be pliable #12 gauge galvanized twisted two-strand wire. Hose shall be a suitable length of two-ply rubber hose 3/4 inch diameter, stakes shall conform to the detail on this sheet.
- 5. Wrapping material shall be a standard manufactured tree wrapping paper with crinkled surface and fastened by an approved method. B. APPLICABLE SPECIFICATIONS AND STANDARDS
- 1. "Standard Plant Names," latest edition American Joint Committee on Horticulture Nominclature.
- 2. "American Standard of Nursery Stock," latest edition, American Association of Nurseryman.
- C. DIGGING AND HANDLING OF PLANT MATERIALS
 - 1. Immediately before digging, spray all evergreen or deciduous plant material in full leaf with anti-dessicant, applying an adequate film over trunks, branches, twigs and/or foliage.
 - 2. Dig balled and burlapped (B&B) plants with firm natural balls of earth. of a diameter not less than that recommended by American Standard for Nursery Stock, and of sufficient depth to include the fibrous and feeding roots. Plants moved with a ball will not be excepted if the ball is cracked or broken before or during planting operations.
- D. EXCAVATING OF PLANTING AREA
 - 1. Stake out on the ground locations for plants and outlines of area to be planted, and obtain approval of the landscape architect before excavation is begun. Landscaped areas to be thoroughly weeded prior to planting operations.
- E. PLANTING OPERATIONS
 - 1. Set plants at same relationship to finished grade as they bore to the ground from which they were dug. Use planting soil to backfill approximately 2/3 full, water thoroughly before installing remainder of the planting soil to top of pits. eliminating all air pockets.
 - 2. Set planting plumb and brace rigidly in position until the planting soil has been stamped solidly around the ball and roots. Cut ropes or strings from the top of ball after plant has been set. Leave burlap or cloth wrapping intact around balls. Turn under and bury portions of burlap at top of ball.
 - 3. Protect plants at all times from sun or drying winds. Plants that can not be planted immediately on delivery shall be kept in the shade, well protected with soil, peat moss or other exceptable material and shall be kept well watered. Plants shall not remain unplanted for longer than three days after delivery.
 - 4. Plants shall not be bound with wire or rope at any time so as to damage the bark or break branches. Plants shall be lifted and handled from the bottom of the ball only.
 - 5. Mulch all pits and beds with a two inch layer of bark, mulch immediately after planting and work into the top three inches of the planting soil. Form a 3" earth saucer around each plant. Water all plants immediately after planting. Add additional mulch.
- F. STAKING, WRAPPING AND PRUNING
 - 1. Staking shall be completed immediately after planting. Plants shall stand plumb after staking. Stakes and guy wire shall be removed at the end of the guarantee peroid and disposed of off-site by the contractor.
- 2. Wrap deciduous tree trunks starting at the base of the tree up to the second branch. Remove wrapping at the end of the guarantee period.
- 3. Prune plants at the time of planting as directed by the landscape architect to remove 1/5 or 1/3 of the foliage. Remove all dead wood, suckers or broken branches and preserve the natural charactor of the plant.
- G. GUARANTEE
- 1. All plant material shall be guaranteed by the contractor to be in a healthy and vigorous condition at the beginning of the second growing season following acceptance by the landscape architect.
- H. TREE PRESERVATION
- 1. Snow fencing shall be erected around all areas where existing vegetation is to be preserved.
- 2. Individual trees and groups of trees shall be protected by fencingaround a perimeter of their branches using standard, 48" high snow fence securely mounted to standard steel posts set not more than 6' apart.
- 3. Fencing shall be installed prior to the start of any construction activity.

Engineering	Sociates, Inc. LEONARDTOWN OFFICE 23140 Moakley Street, Suite 6 Leonardtown, MD 20650	Rockville Lanham Frederick Waldorf Leonardtown Chantilly		
Planning	t. 301.769.3500 f. 301.997.0385		NO.	REVISIONS
Surveying Environmental Sciences	www	v.L.SAssociates.net	Date: OCTOBER 24, 2008 Designed: BCB	CAD Standards Version: V Technician: NLH

1. Cutting or clearing of woodland not in conformance with this plan or without the expressed written consent of the Planning Director or designee, shall be subject to a \$1.50 per square foot mitigation fee.

2. Property owners shall be notified by the developer or contractor of any Woodland Conservation Areas (Tree Save Areas, Reforestation Areas, Afforestation Areas, or Selective Clearing Areas) located on their lot or parcel of land and the associated fines for unauthorized disturbances to these areas. Upon the sale of the property the owner/developer or owners representative shall notify the purchaser of the property of any Woodland Conservation Areas.

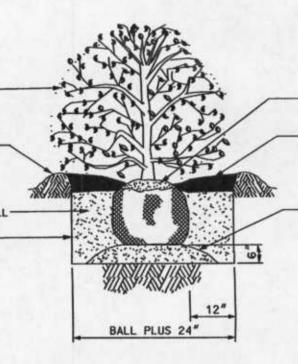
3. The location of all Tree Protective Devices (TDP's) shown on this plan shall be flagged or staked in the field prior to the pre-construction meeting with the Forest Resources Unit of DER and the Sediment and Erosion Control Inspector from DER. Upon approval of the flagged or staked TDP locations by the Forest Resources Unit, installation of the TDP's may begin. TDP installation shall be completed prior to installation of initial Sediment Controls. No cutting or clearing of trees may begin before final approval of TDP installation. TDP's may include continuous flagging along the limits of disturbance or any other standard TDP. TDP's are not required, since the LOD is 50-feet from the Woodland Conservation Area. Should the LOD be moved to less than 50-feet from the Woodland Conservation Area, a revision of the TCP will be required.

PRUNE BACK 1/3 -

4" EARTH SAUCER -----

SPECIFIED BACKFILL-SCARIFY SIDES ----

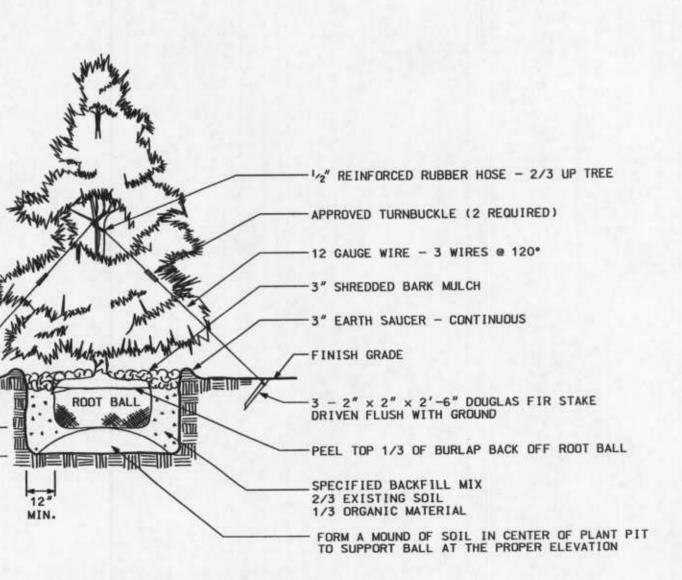
12" MIN-



CUT & REMOVE BURLAP FROM TOP 1/3 OF BALL 3" LAYER SHREDDED HARDWOOD BARK MULCH 2"-3" BACK FROM TRUNK

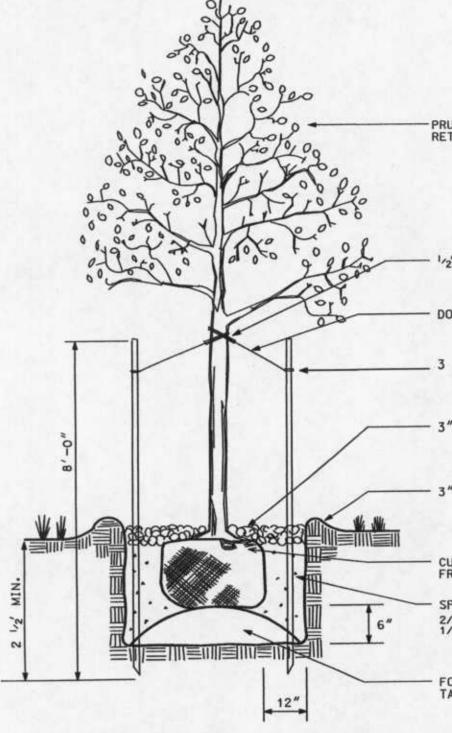
TAMP TO PREVENT SETTLEMENT



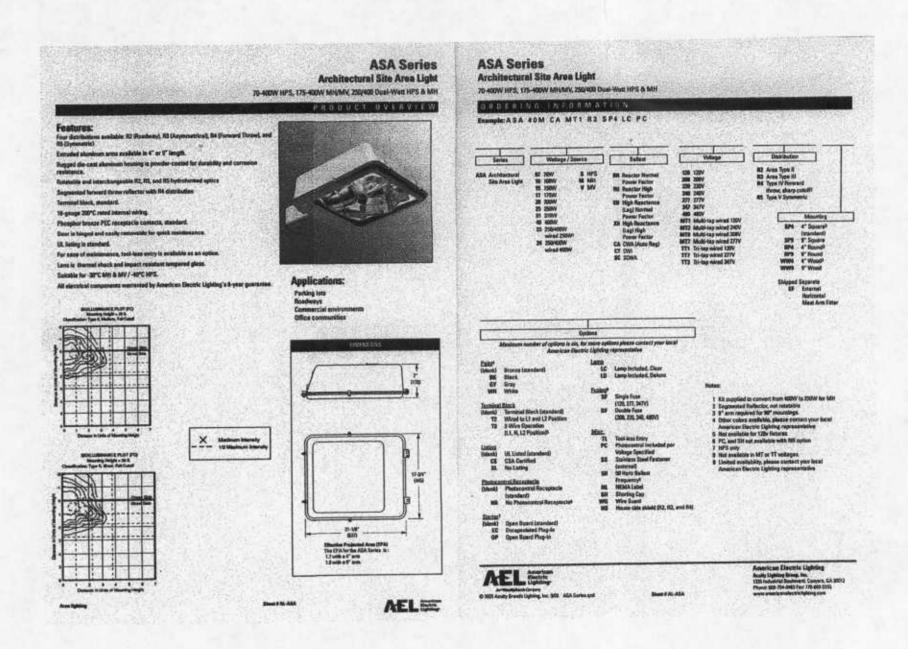


TREE PLANTING DETAIL - EVERGREEN TREE NOT TO SCALE

Tax Map / Grid / Parce	Testes Colonomit
41/7/7	Zoning Category RL
Site Datum Horizontal: NAD 83 Vertical: NAVD 88	Sewer Category S-1
	Water Category W-1
	41/7/7 Site Datum Horizontal: NAD 83 Vertical: NAVD 88



TREE PLANTING DETAIL NOT TO SCALE



	PROFESSIONAL CERTIFICATION
IHE	REBY CERTIFY THAT THESE DOCUMENTS WERE PARED OR APPROVED BY ME, AND THAT I AM A DULY INSED PROFESSIONAL ENGINEER UNDER THE LAWS
OF	HE STATE OF MARYLAND, INSE NO. 29920 , EXPIRATION DATE: 1-8-201



PRUNE 1/3 LEAF AREA, RETAIN NATURAL FORM OF TREE

- 1/2" REINFORCED RUBBER HOSE

DOUBLE STRAND 12 GA. WIRE - TWISTED

3 - 2" x 2" x 8' HARDWOOD STAKES

3" LAYER SHREDDED HARDWOOD BARK MULCH

- 3" EARTH SAUCER

CUT AND REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL SPECIFIED BACKFILL MIX 2/3 EXISTING SOIL 1/3 ORGANIC MATERIAL

FORM MOUND OF SOIL TAMP TO PREVENT SETTLEMENT

PLANT AT SAME LEVEL AS GROWN IN NURSERY - TAMP SOIL TO SECURE PLANT 1757055 SPREAD ROOTS DIG PLANTING HOLE SLIGHTLY LARGER THAN NURSERY POT

HERBACEOUS PLANTING DETAIL NOT TO SCALE