

# BENCHMARK NOTE

THE HORIZONTAL AND VERTICAL DATUM SHOWN HEREON IS BASED ON ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS, HORIZONTAL - NAD83; VERTICAL - NAVD 88

BENCHMARK DESCRIPTION				
NAME	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM-1	316,543.82	1,431,755.19	116.74	NORTHEAST CORNER OF INLET ON OLD FIELD LANE
BM-2	316,163.82	1,431,542.36	118.75	NORTHEAST CORNER OF CONCRETE TRANSFORMER PAD ALONG MD ROUTE 214

## MDSA STANDARDS NOTE

THE FOLLOWING STANDARDS (CONSTRUCTION AND TEMPORARY TRAFFIC CONTROL) ARE REQUIRED FOR THIS PROJECT:

- A. MD-104.02-01 - SHOULDER WORK
- B. MD-620.02 - CURB

FOR ALL STANDARDS REFERRED TO ON THE PLANS THE CONTRACTOR MUST GO TO THE BOOK OF STANDARDS WHICH WILL HAVE THE MOST CURRENT VERSION. THE BOOK OF STANDARDS CAN BE ACCESSED AT:

HTTP://APPS.ROADS.MARYLAND.GOV/BUSINESSWITHSHAW/BIZSTDSSPECS/DESIGNMANUALSTDPUB/PUBLICATIONSONLINE/CHD/BOOKSTD/INDEX.ASP

ALL ITEMS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF THE REFERENCED STANDARD AT THE TIME OF CONSTRUCTION.

NOTE: ALL ROAD WORK CONDUCTED ALONG THIS SECTION OF MD 214 IS RESTRICTED TO NIGHTTIME HOURS.

## GENERAL NOTES

- EXISTING TOPOGRAPHY AND FEATURES SHOWN HEREON WERE TAKEN FROM A COMBINATION OF A SURVEY PERFORMED BY BAY ENGINEERING, INC. DATED JULY 2017 AND CALVERT COUNTY AERIAL TOPOGRAPHY. THE REMAINING SITE AREA, EXISTING UTILITIES AND FEATURES OF SURROUNDING PROPERTIES AND ROADS WERE TAKEN FROM A COMBINATION OF SURVEY DATA, EXISTING COUNTY PUBLIC DRAWINGS AND SITE RECORDS. ALL HORIZONTAL DATUMS ARE REFERENCED TO MARYLAND STATE PLANE (NAD 83/91) AND THE VERTICAL DATUM IS REFERENCE TO NAVD 88.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION BOOK OF STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES LATEST EDITION, AND THE STANDARD SPECIFICATION FOR CONSTRUCTION & MATERIALS, MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION, LATEST EDITION.
- CONTRACTOR IS RESPONSIBLE FOR CONTACTING "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- THE EXISTING UTILITIES AND OBSTRUCTIONS SHOWN ARE FROM THE BEST AVAILABLE RECORDS AND SHALL BE VERIFIED BY THE CONTRACTOR TO HIS OWN SATISFACTION BEFORE STARTING CONSTRUCTION. NEITHER THE OWNER NOR CALVERT COUNTY DEPARTMENT OF PUBLIC WORKS WARRANT OR GUARANTEE THE COMPLETENESS OR THE CORRECTNESS OF THE INFORMATION GIVEN.
- NECESSARY PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO PROTECT EXISTING SERVICES AND MAINS AND ANY DAMAGE TO THEM DUE TO THEIR NEGLIGENCE SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- ANY DISCREPANCIES WITHIN THESE DRAWINGS OR BETWEEN THESE DRAWINGS AND ANY APPLICABLE SPECIFICATIONS AND/OR REGULATIONS SHOULD BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. THE ENGINEER SHALL BE THE FINAL AUTHORITY IN THE INTERPRETATION OF THE DRAWING AND/OR THE RESOLUTION OF ANY CONFLICTS.
- THE CONTRACTOR SHALL NOTIFY THE CALVERT COUNTY DEPARTMENT OF ENGINEERING, PROJECT MANAGEMENT (410) 535-1600 FIVE (5) DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS.
- TRASH AND DEBRIS SHALL BE REMOVED FROM THE CONSTRUCTION SITE AS OFTEN AS NECESSARY TO MAINTAIN A FIRESAFE CONSTRUCTION SITE.
- THIS SITE IS NOT WITHIN THE CRITICAL AREA. THERE ARE WETLANDS, FLOOD PLAINS AND ADJACENT STREAMS ON SITE THAT WILL REMAIN UNDISTURBED. THE SITE IS LOCATED IN FEMA FLOOD ZONE X, AS SHOWN ON FIRM PANEL 24009C0140 F, DATED DECEMBER 16, 2011. WETLANDS STUDY WAS COMPLETED BY MCCARTHY & ASSOCIATES, INC.
- ANY WORK WITHIN THE COUNTY R/W FOR PAVING REPLACEMENT SHALL BE DONE IN ACCORDANCE WITH THE CALVERT COUNTY DEPARTMENT OF ENGINEERING AS APPROVED WITH THE TOWN CENTER ROAD CROSS SECTION.
- STORAGE OR RECREATIONAL VEHICLES, BOATS, AND TRAILERS ON THIS SITE IS PROHIBITED.
- EXTERIOR LIGHTING WILL BE INSTALLED SO THAT IT DOES NOT ADVERSELY IMPACT NEIGHBORING PROPERTIES AND ROADWAYS, AND THE FIXTURES ARE TO BE DESIGNATED AS "DARK SKY FRIENDLY."
- AS BUILT DRAWINGS SHOWING BUILDING FLOOR PLANS, FIRE PROTECTION SYSTEMS, AND ITEMS OF FIRE SUPPRESSION INTEREST SUCH AS STANDPIPE CONNECTIONS, SPRINKLER CONNECTIONS, HYDRANTS, ETC. SHALL BE SUBMITTED TO THE DEPARTMENT PRIOR TO ISSUANCE OF USE AND OCCUPANCY PERMIT UPON COMPLETION OF THE PROJECT.
- ALL CURRENTLY INTENDED ANCILLARY ITEMS HAVE BEEN SHOWN ON THIS PLAN. ANY NEW ITEMS WILL REQUIRE A REVISION TO THIS SITE PLAN.
- IF ARCHAEOLOGICAL MATERIALS ARE DISCOVERED DURING SITE WORK, THE CONTRACTOR OR DEVELOPER WILL CEASE WORK IN THE EFFECTED AREA AND CONTACT THE OFFICE OF PLANNING AND ZONING IMMEDIATELY SO THAT THE REMAINS / FINDINGS MAY BE EVALUATED AND THE INFORMATION RECORDED IN THE INTEREST OF DOCUMENTING THE HERITAGE OF CALVERT COUNTY.
- FIRE DEPARTMENT VEHICULAR ACCESS TO ALL STRUCTURES UNDER CONSTRUCTION SHALL BE PROVIDED AT ALL TIMES. IN AREAS WHERE GROUND SURFACES ARE SOFT OR LIKELY TO BECOME SOFT, HARD ALL-WEATHER ACCESS SHALL BE PROVIDED.
- ALL PROPOSED SIDEWALKS ARE DESIGNED TO MEET ADA SPECIFICATIONS AND REQUIREMENTS.
- UTILITY NOTES:  
WATER: MAP 24 - USE W-1 (CURRENT)  
SEWER: MAP 24 - USE S-1 (CURRENT)
- A BUFFER ZONE OF 50-FEET ADJACENT TO NON-TIDAL WETLANDS AND 100-FEET ADJACENT TO TIDAL WETLANDS SHALL BE MAINTAINED. THESE AREAS ARE TO BE LEFT UNDISTURBED IN PERPETUITY AND TO SERVE FOR WATER QUALITY BENEFITS.
- WHEN ANY DISTURBANCE IS PROPOSED WITHIN 100-FEET OF THE EDGE OF THE WETLAND BUFFER, PROTECTIVE SNOW FENCING SHALL BE PLACED AT THE EDGE OF THE BUFFER OR ALONG THE LIMITS OF DISTURBANCE (LOD) WHERE IT FALLS WITHIN 50-FEET OF THE BUFFER.
- A 10-FOOT BUILDING SETBACK SHALL BE MAINTAINED FROM THE EDGE OF THE WETLAND BUFFER.
- THE ISSUANCE OF COUNTY PERMITS OR APPROVALS IS A LOCAL PROCESS AND DOES NOT IMPLY THAT THE APPLICANT HAS MET STATE AND FEDERAL REQUIREMENTS FOR WETLANDS UNDER COMAR; THE FEDERAL WATER POLLUTION CONTROL ACT; OR THE RIVERS AND HARBORS ACT.
- THIS SITE PLAN MEETS THE REQUIREMENTS FOR FOREST CONSERVATION THROUGH AN EXEMPTION IN ACCORDANCE WITH SECTION 8-3.02.L, REDEVELOPMENT WITHIN A PRIORITY FUNDING AREA (PFA). NO ON-SITE RETENTION OR MITIGATION IS REQUIRED AT THIS TIME.
- THE PROPOSED BUILDING HAS UNDERGONE REVIEW AND APPROVAL FROM THE ARCHITECTURAL REVIEW COMMITTEE ON MARCH 7, 2018. SEE SHEET 12A FOR LIST OF WHAT WAS APPROVED.
- IN ACCORDANCE WITH PFTCO, NO CLEARING, GRADING, OR BUILDING PERMITS MAY BE ISSUED PRIOR TO FINAL SITE PLAN APPROVAL.
- THE CONCEPT SITE PLAN WAS APPROVED UNDER CSPP 2017-092.
- THE SITE PLAN NUMBER IS SPR2018-272.
- A VARIANCE REQUEST WAS MADE TO THE BOARD OF APPEALS REGARDING THE VARIANCE REQUEST FOR THE HEIGHT OF THE BUILDING. A DECISION WAS RENDERED ON JUNE 14, 2018. THE DECISION IS AS FOLLOWS "IT IS HEREBY ORDERED, BY A UNANIMOUS DECISION, THAT THE VARIANCE IN THE HEIGHT LIMITATION FROM 36' TO 40' TO CONSTRUCT A REPLACEMENT PFVD FIRE STATION BE GRANTED SUBJECT TO THE CONDITION THAT THE APPLICANT SUCCESSFULLY COMPLETE THE PERMIT PROCESS."
- IF THE EXISTING SIGN IS REPLACED, IT MUST MEET ALL CURRENT SIGN REGULATIONS AND RECEIVE ARCHITECTURAL APPROVAL.

## ZONING NOTES

- THE SITE IS LOCATED ON TAX MAP 24, GRID 16, PARCEL 294. THE ADDRESS FOR THIS SITE IS AS FOLLOWS:  
P. 294 - 450 S. SOLOMONS ISLAND ROAD, PRINCE FREDERICK, MD 20678  
TAX ACCOUNT NO. 02-036126;
- APPLICANT / OWNER:  
CALVERT COUNTY VFD INC  
C/O CJ JONES  
410-535-1600  
stephen.jones@calvertcountymd.gov  
P.O. BOX 978  
PRINCE FREDERICK, MD 20678
- ZONING: PRINCE FREDERICK TOWN CENTER - OLD TOWN DISTRICT
- TOTAL SITE AREA: 193,380 S.F. (4.44 AC.)
- LIMIT OF DISTURBANCE: 105,294 S.F. (2.42 AC.)
- LAND USE: FIRE DEPARTMENT (PERMITTED USE UNDER INSTITUTIONAL USE 7, PG. Z.O. 51)
- SETBACKS:  
BUILDING SETBACKS FROM ALL RIGHTS-OF-WAY - 35 FEET  
BUILDING SETBACKS FROM ADJACENT PARCELS - 20 FEET

30. THE WETLAND BUFFER REQUEST FOR A REDUCTION WAS APPROVED NOVEMBER 20, 2018 IN ACCORDANCE WITH PFTCO SECT. 1.B.2.a

# SITE PLANS

FOR

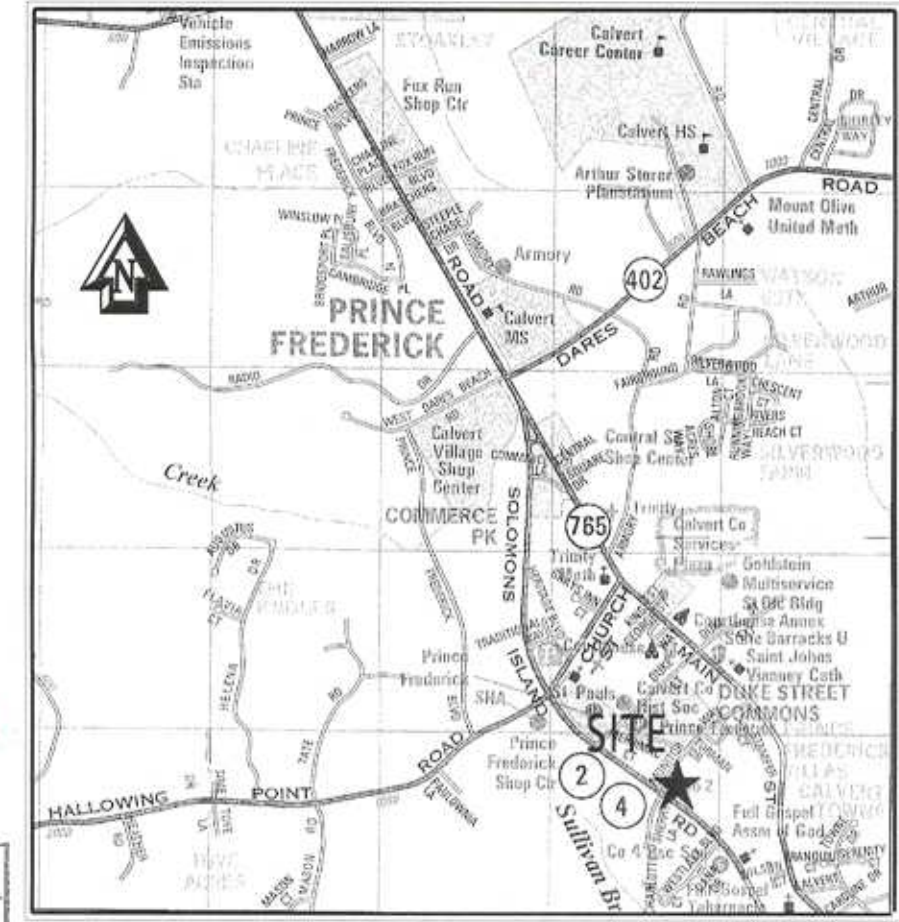
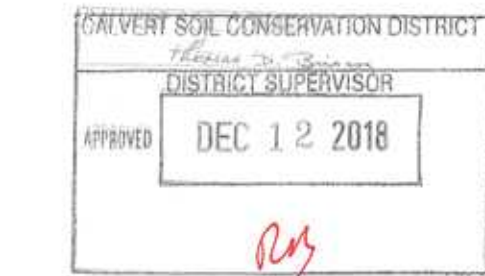
# PRINCE FREDERICK VOLUNTEER FIRE DEPARTMENT CO. #2

SPR-2018-272

TAX MAP 24, GRID 16, PARCELS 294

PRINCE FREDERICK, MARYLAND 20678

SECOND DISTRICT CALVERT COUNTY ZONING: TOWN CENTER - OLD TOWN



VICINITY MAP  
SCALE: 1"=2000'  
COPYRIGHT ADC THE MAP PEOPLE  
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## SIGHT CERTIFICATION

I HEREBY CERTIFY THAT ALL SUBDIVISION STREET INTERSECTIONS WILL MEET OR EXCEED AASHTO SIGHT DISTANCE CRITERIA FOR THE INTENDED POSTED SPEEDS OF THE ROAD, AND THAT INTENDED ENTRANCE LOCATIONS PROPOSED ON THE PLATS WILL ALSO MEET OR EXCEED AASHTO SIGHT DISTANCE CRITERIA FOR THE INTENDED POSTED SPEEDS.

*Isabel Arcocho*  
NELSON ARCOCHO, P.E.  
MD No. 38268  
DATE: 12/3/18

## OWNER'S/DEVELOPER'S CERTIFICATION

WE HEREBY CERTIFY THAT WE HAVE REVIEWED THESE DEVELOPMENT AND EROSION & SEDIMENT CONTROL PLANS AND THAT ALL CLEARING, GRADING, CONSTRUCTION, AND DEVELOPMENT WILL BE PERFORMED PURSUANT TO THESE PLANS; AND THAT RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION OF THIS PROJECT WILL HOLD A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION, BEFORE THE BEGINNING OF THE PROJECT.

SIGNATURE: *Stephen Jones* DATE: 5/31/18  
NAME: STEPHEN JONES, INC. TITLE: Capital Projects Supervisor

## PROFESSIONAL CERTIFICATION

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

NAME: *Isabel Arcocho* LICENSE NO: 38268 DATE: 12/3/18

## ENGINEER'S CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL, AND THE DEVELOPMENT PLANS, MEET THE REQUIREMENTS, STANDARDS, AND SPECIFICATIONS, OF THE CALVERT SOIL CONSERVATION DISTRICT, AND THAT ALL PROPOSED GRADING AND OTHER WORK MEET THE REQUIREMENTS OF THE APPROPRIATE CALVERT COUNTY GRADING AND EROSION & SEDIMENT CONTROL ORDINANCES.

ENGINEER: *Isabel Arcocho* DATE: 12/3/18

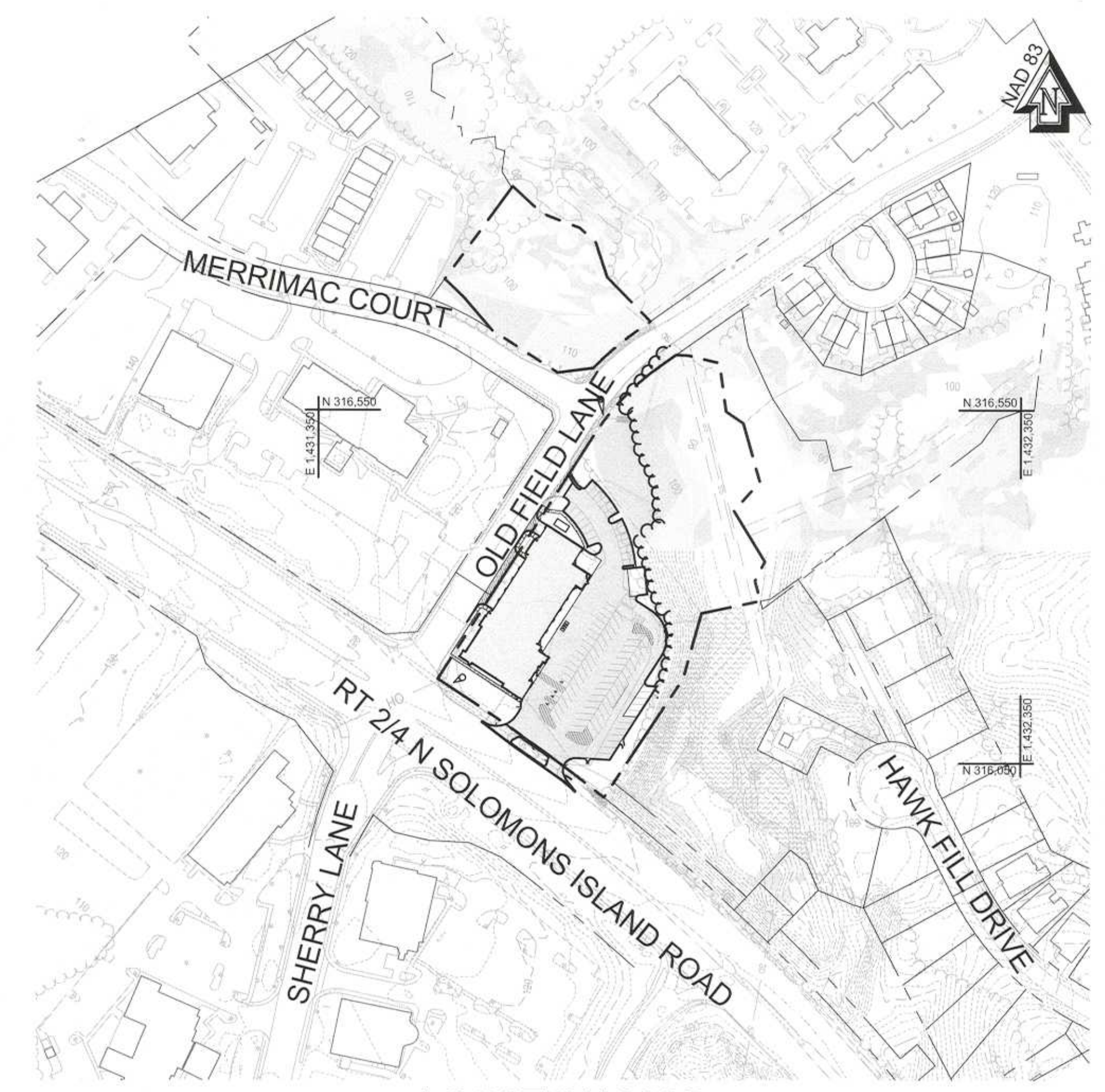
## INDEX OF DRAWINGS

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DPW APPROVAL SIGNIFIES A FINDING OF COMPLIANCE TO THE CALVERT COUNTY ROAD AND STORMWATER MANAGEMENT ORDINANCES. REGARDLESS OF SUCH APPROVAL, THE DESIGN PROFESSIONAL, DEVELOPER, AND CONTRACTOR REMAIN SOLELY RESPONSIBLE FOR THE DESIGN AND FOR CORRECTING ANY AND ALL ERRORS, PROBLEMS, AND CODE VIOLATIONS PRIOR TO ANY ACCEPTANCE OF A FACILITY OR STRUCTURE BY THE COUNTY. THE APPROVAL OF DPW IS NOT A WAIVER OR RELEASE FOR DEFECTS OR DEVIATION IN DESIGN OR CONSTRUCTION.

CALVERT PLANNING COMMISSION  
APPROVED 12/18/18  
SECRETARY, PLANNING COMMISSION

DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION  
APPROVED  
DEC 12 2018



## LOCATION MAP SCALE: 1"=150'

## SITE LEGEND

PROPERTY LINE / RIGHT-OF-WAY		PROPOSED CONCRETE SIDEWALK	
EXISTING CONTOUR		PROPOSED HEAVY DUTY PAVEMENT	
EXISTING WOODS		PROPOSED SHA PAVEMENT	
EXISTING FENCE		PROPOSED MILL & OVERLAY	
EXISTING UTILITY POLE W/ OVERHEAD WIRE		PROPOSED STONE (SEE SWM DTLS FOR SPECIFICS)	
EXISTING WATER		PROPOSED CONTOUR	
EXISTING SEWER		PROPOSED SPOT ELEVATION	
EXISTING STORM DRAIN		PROPOSED # OF PARKING SPACES	
EXISTING NON-TIDAL WETLANDS & BUFFER		PROPOSED WOODS	
EXISTING CONCRETE		PROPOSED STORMWATER MANAGEMENT	
EXISTING RIPRAP		PROPOSED LIGHT POLE	
EXISTING STREAM AND STREAM BUFFER		PROPOSED CURB AND GUTTER	
EXISTING SOILS		PROPOSED WATER AND FIRE HYDRANT	
EXISTING SPECIMEN TREE W/ CRITICAL ROOT ZONE		PROPOSED SEWER	
		PROPOSED STORM DRAIN	
		PROPOSED SUPER SILT FENCE	
		PROPOSED LIMIT OF DISTURBANCE	
		PROPOSED GAURDRAIL	

Revisions

Rev. #	Date	By	Description

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Annapolis, Maryland 21401  
410.897.5255 fax  
email: info@bayengineering.com  
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Date: DECEMBER, 2018  
Job Number: 17-5965  
Scale: AS SHOWN  
Drawn By: AL  
Approved By: NA  
Folder Reference: BVH PRINCE FREDERICK VFD

COVER SHEET FOR PRINCE FREDERICK VOLUNTEER FIRE DEPARTMENT CO. #2  
SPR-2018-272  
450 S SOLOMONS ISLAND ROAD  
PRINCE FREDERICK, MARYLAND 20678  
TAX ID # 02-036126  
TAX MAP 24, GRID 16, PARCEL 294  
SECOND DISTRICT - CALVERT COUNTY

Sheet No. 1 OF 18

PLOTTED: Nov 30, 2018 - 4:22pm  
INCLUDED XREFS & IMAGES: 17-5965 C-SITE.dwg 17-5965 C-EXISTING.dwg 17-5965 C-TOPO.dwg 17-5965 FORM.dwg Professional Seal - Nelson Arcocho.dwg VMAP.dwg

C:\Users\atlutrell\appdata\local\temp\AcPublish\_12040117-5965 01 COVER.dwg







# PARKING SPACE SUMMARY

BAY AREA AND MEETING ROOMS  
 CATEGORY D = 1 SPACE / 200 SQ. FT. = 9,997 SQ. FT. = 50 SPACES  
 REMAINING APPLICABLE AREAS  
 CATEGORY B = 1 SPACE / 300 SQ. FT. = 8,215 SQ. FT. = 28 SPACES  
 TWO PARKING SPACES PER BAY = 5 BAYS = 10 SPACES  
 TOTAL PARKING SPACES REQUIRED = 88 SPACES  
 TOTAL PARKING SPACES PROVIDED = 98 SPACES

# IMPERVIOUS AREA SUMMARY

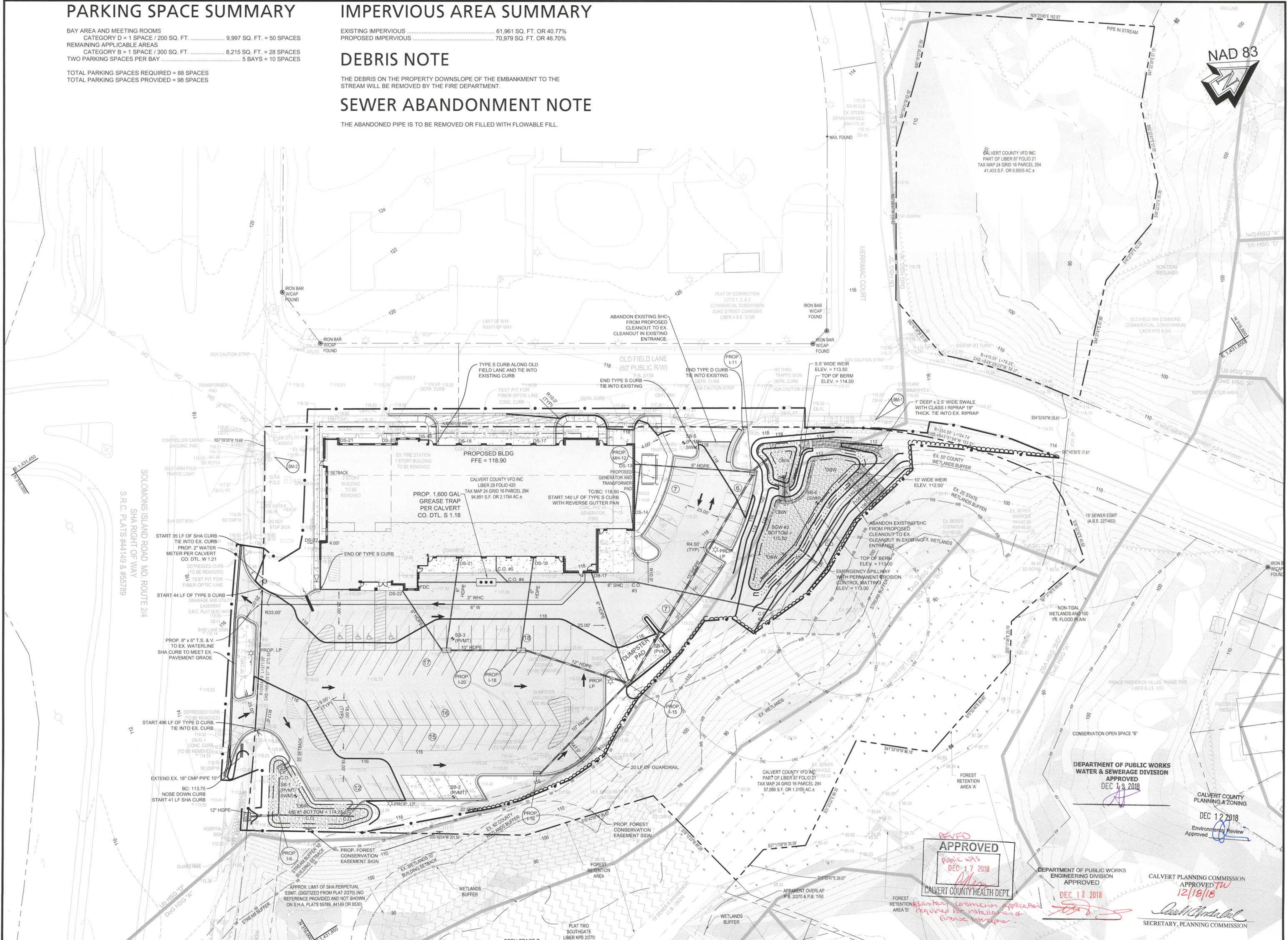
EXISTING IMPERVIOUS = 61,961 SQ. FT. OR 40.77%  
 PROPOSED IMPERVIOUS = 70,979 SQ. FT. OR 46.70%

# DEBRIS NOTE

THE DEBRIS ON THE PROPERTY DOWNSLOPE OF THE EMBANKMENT TO THE STREAM WILL BE REMOVED BY THE FIRE DEPARTMENT.

# SEWER ABANDONMENT NOTE

THE ABANDONED PIPE IS TO BE REMOVED OR FILLED WITH FLOWABLE FILL.



Rev. #	By	Date	Description

**PROPOSED SITE PLAN**  
 FOR  
**PRINCE FREDERICK VOLUNTEER**  
**FIRE DEPARTMENT CO. #2**

DATE: DECEMBER 2018  
 JOB NUMBER: 17-5965  
 SCALE: 1" = 30'  
 DRAWN BY: AL  
 APPROVED BY: NA  
 FOLDER REFERENCE: BWV PRINCE FREDERICK VFD

**PRINCE FREDERICK VOLUNTEER FIRE DEPARTMENT CO. #2**  
 2061 Riva Road, Building 800  
 Annapolis, Maryland 21401  
 410.897.9290 fax  
 email: info@bayengineering.com  
 www.bayengineering.com

**APPROVED**  
 DEC 12 2018  
 CALVERT COUNTY HEALTH DEPT.

**APPROVED**  
 DEC 12 2018  
 DEPARTMENT OF PUBLIC WORKS WATER & SEWERAGE DIVISION

**APPROVED**  
 DEC 12 2018  
 CALVERT PLANNING COMMISSION

SECRETARY, PLANNING COMMISSION

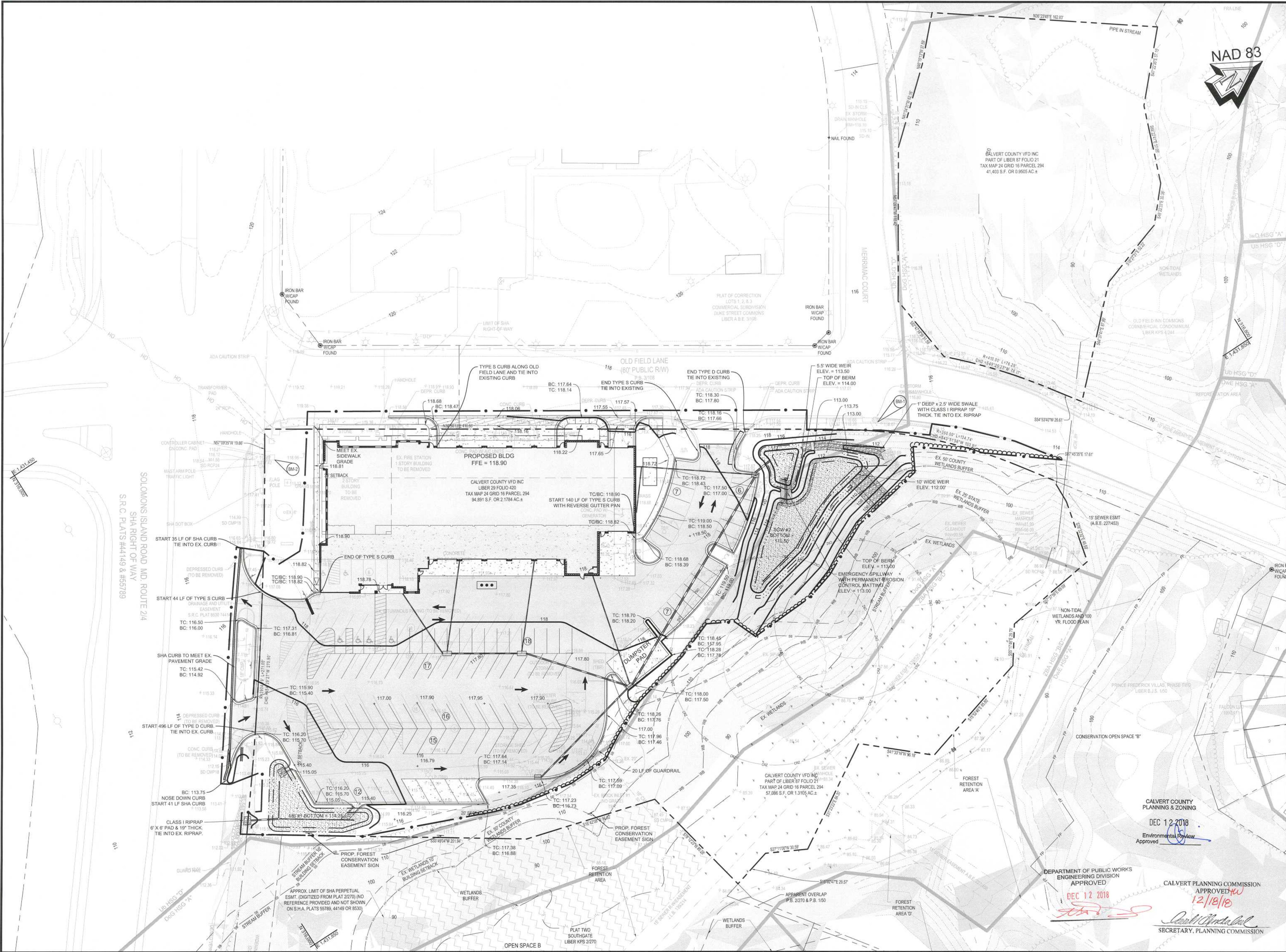
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Date: DECEMBER 2018  
 Job Number: 17-5965  
 Scale: 1" = 30'  
 Drawn By: AL  
 Approved By: NA  
 Folder Reference: BWH PRINCE FREDERICK VFD

PROPOSED GRADING PLAN  
 SITE PLAN FOR  
**PRINCE FREDERICK VOLUNTEER  
 FIRE DEPARTMENT CO. #2**  
 SPR-2018-272  
 450 S SOLOMONS ISLAND ROAD  
 PRINCE FREDERICK, MARYLAND 20678  
 TAX ID # 02-036126  
 TAX MAP 24, GRID 16, PARCEL 294  
 SECOND DISTRICT - CALVERT COUNTY

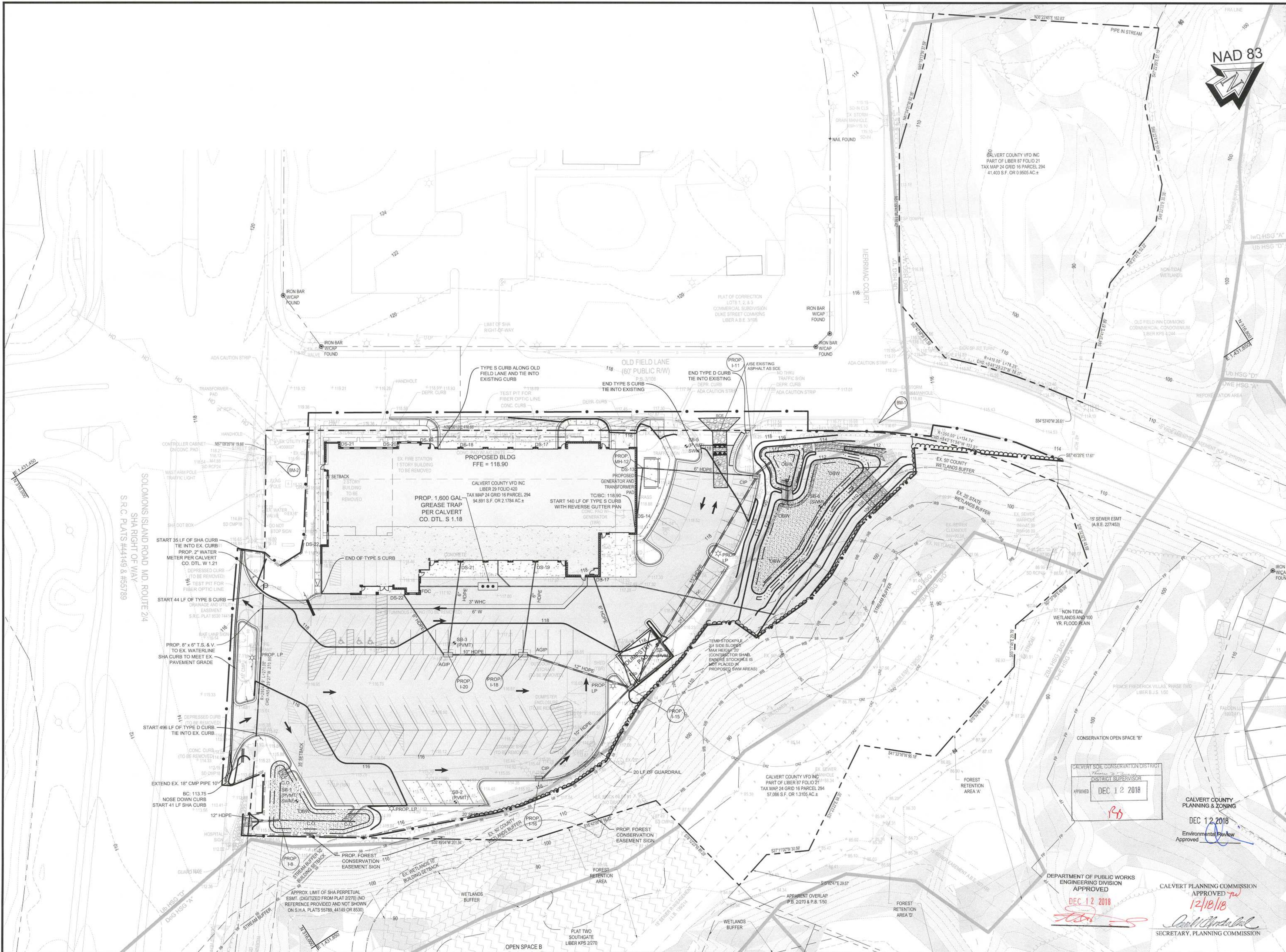
CALVERT COUNTY PLANNING & ZONING  
 DEC 12 2018  
 Environmental Review Approved

DEPARTMENT OF PUBLIC WORKS  
 ENGINEERING DIVISION  
 APPROVED  
 DEC 12 2018

CALVERT PLANNING COMMISSION  
 APPROVED  
 12/18/18  
 SECRETARY, PLANNING COMMISSION



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Date: DECEMBER 2018  
 Job Number: 17-5965  
 Scale: 1" = 30'  
 Drawn By: [Signature]  
 Approved By: [Signature]  
 Folder Reference: BWH PRINCE FREDERICK VFD

**SEDIMENT AND EROSION CONTROL PLAN**  
 SITE PLAN FOR  
**PRINCE FREDERICK VOLUNTEER  
 FIRE DEPARTMENT CO. #2**  
 SPR-2018-18-272  
 450 S SOLOMONS ISLAND ROAD  
 PRINCE FREDERICK, MARYLAND 20678  
 TAX ID # 02-036126  
 TAX MAP 24, GRID 16, PARCEL 294  
 SECOND DISTRICT - CALVERT COUNTY

APPROVED  
 DEC 12 2018  
 CALVERT COUNTY PLANNING & ZONING  
 DEC 12 2018  
 Environmental Review Approved

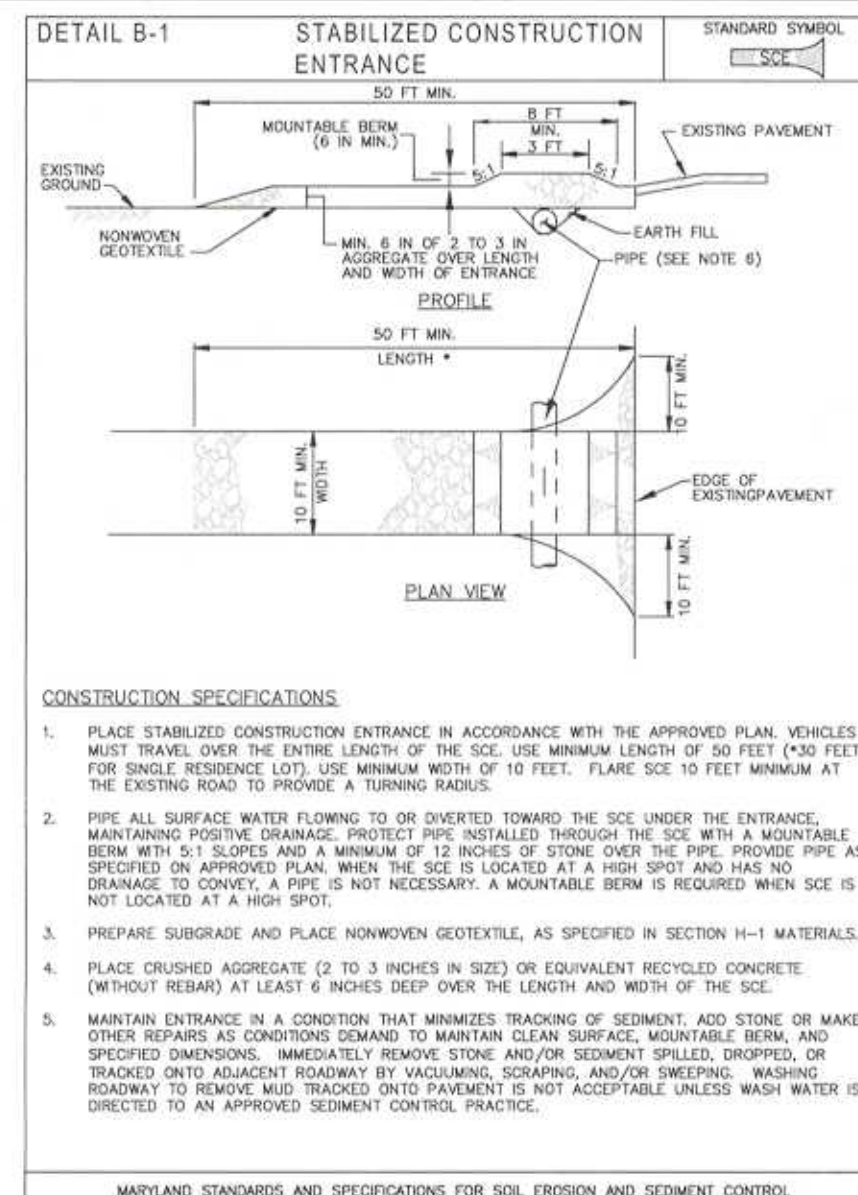
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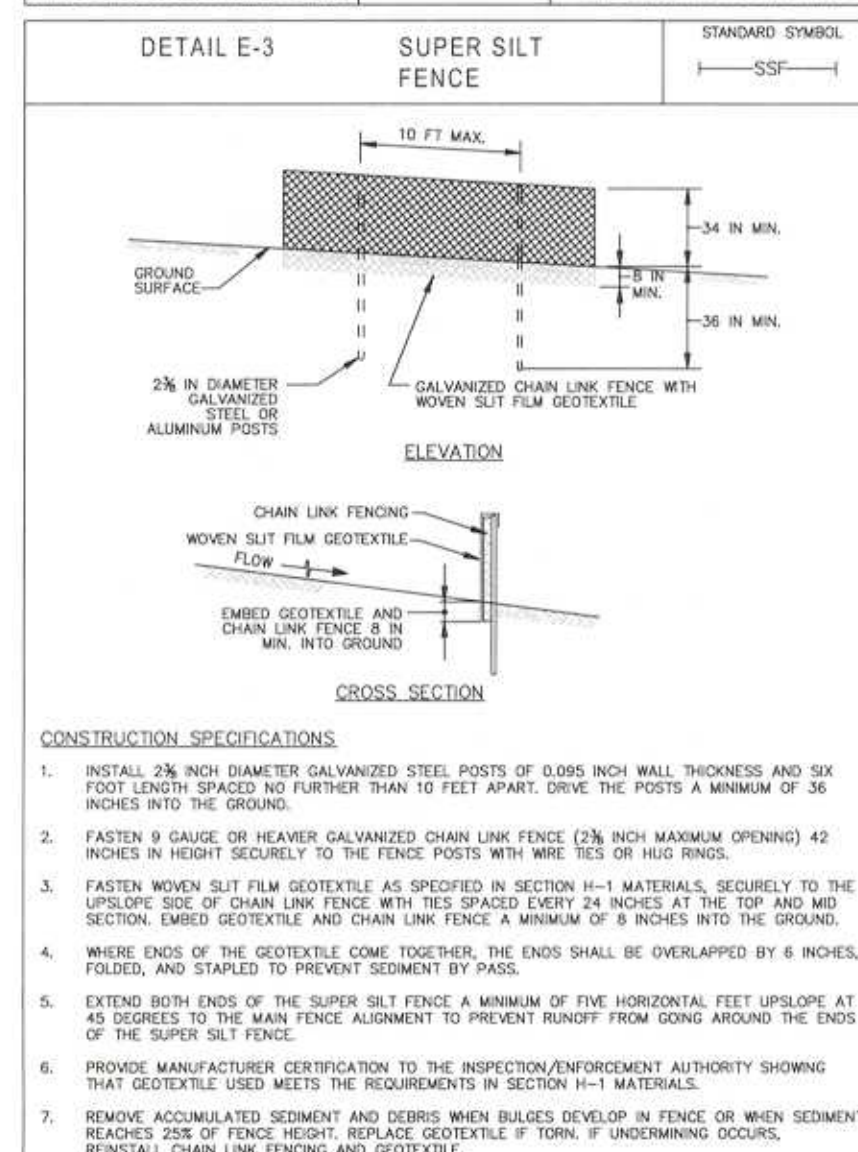
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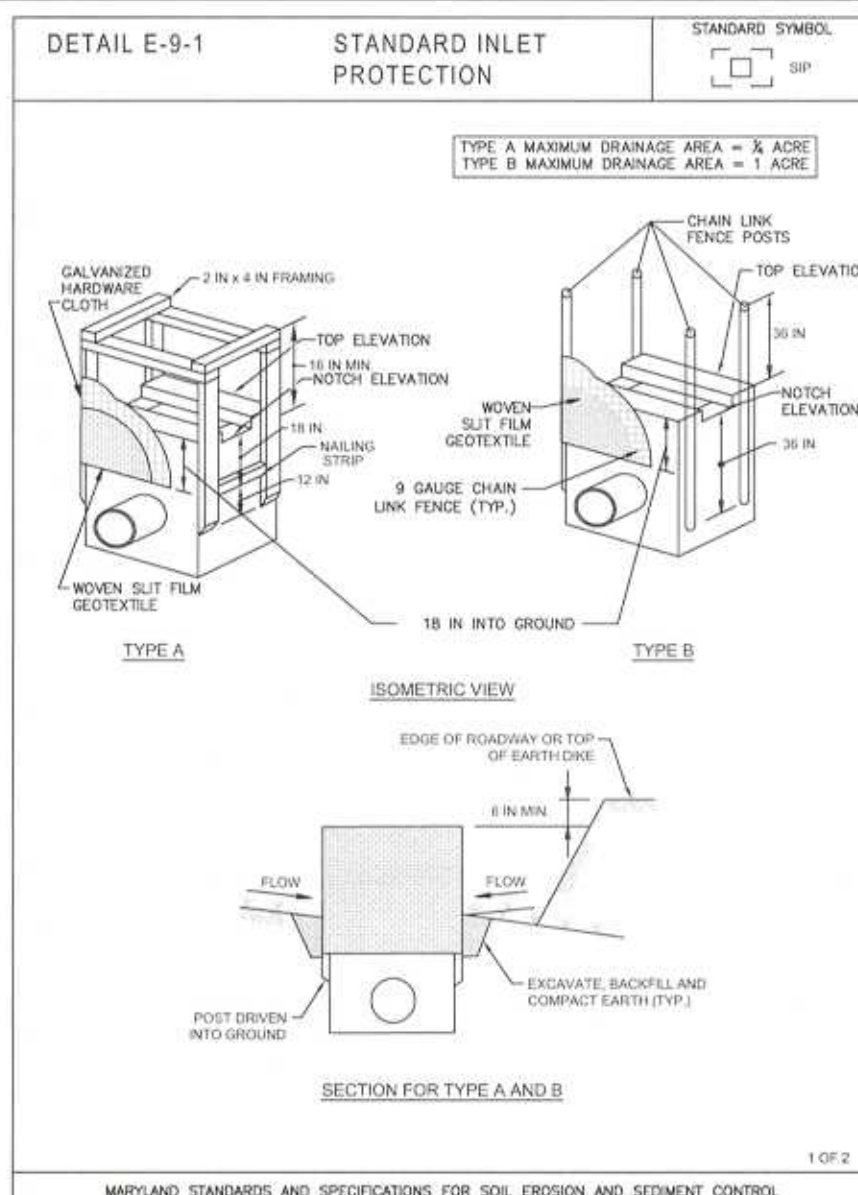




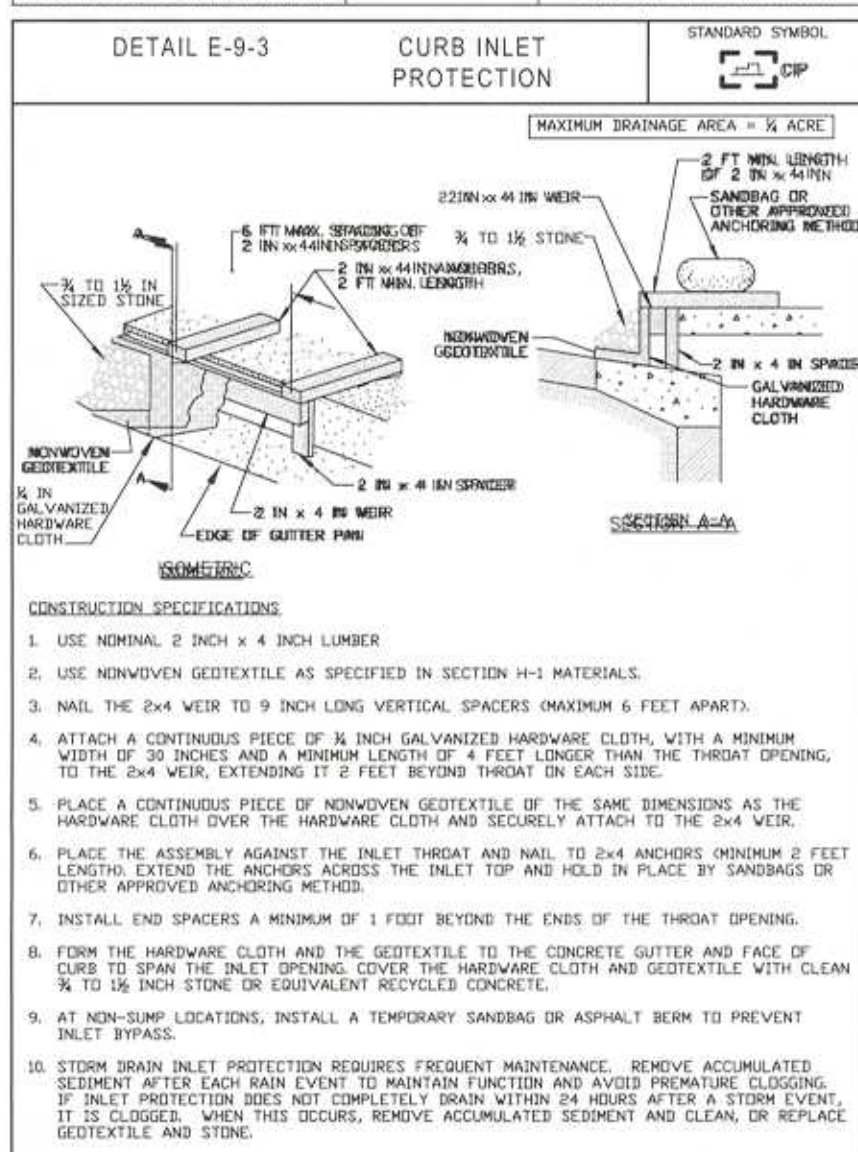
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL  
 U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION



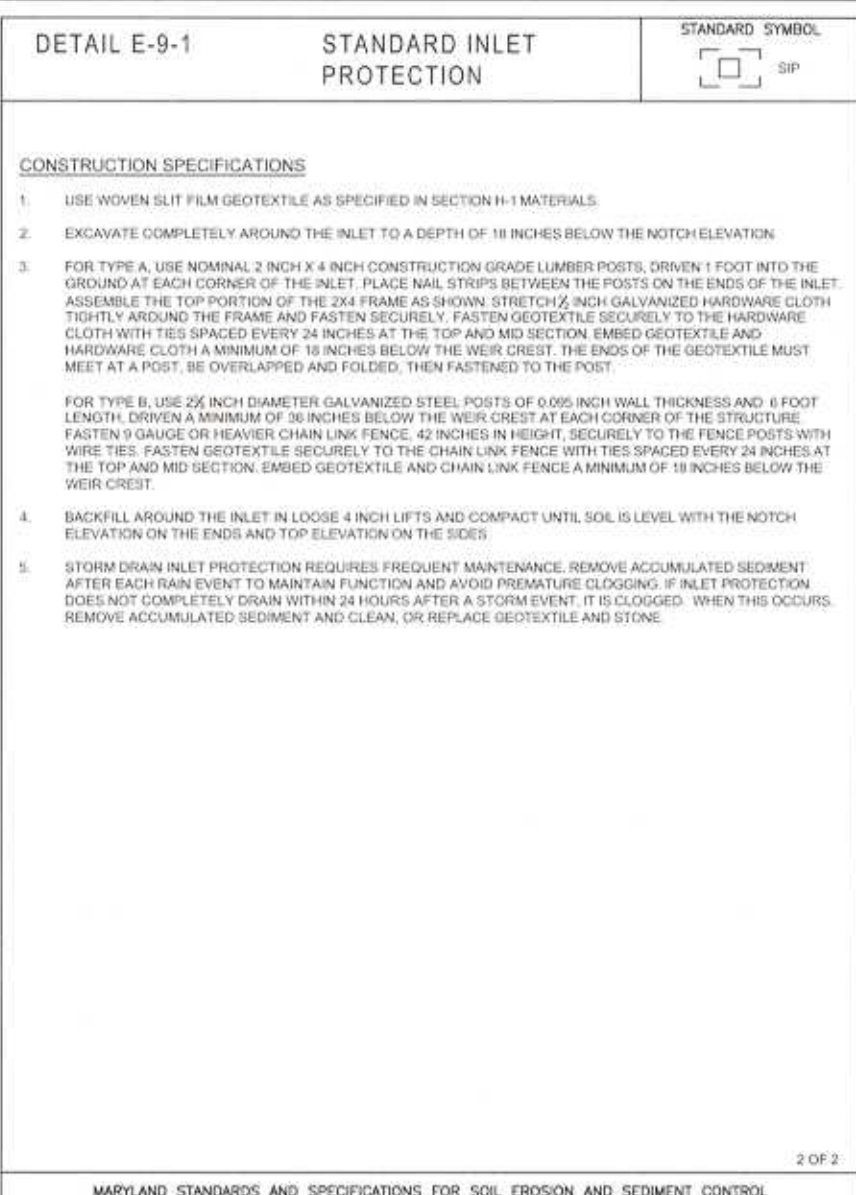
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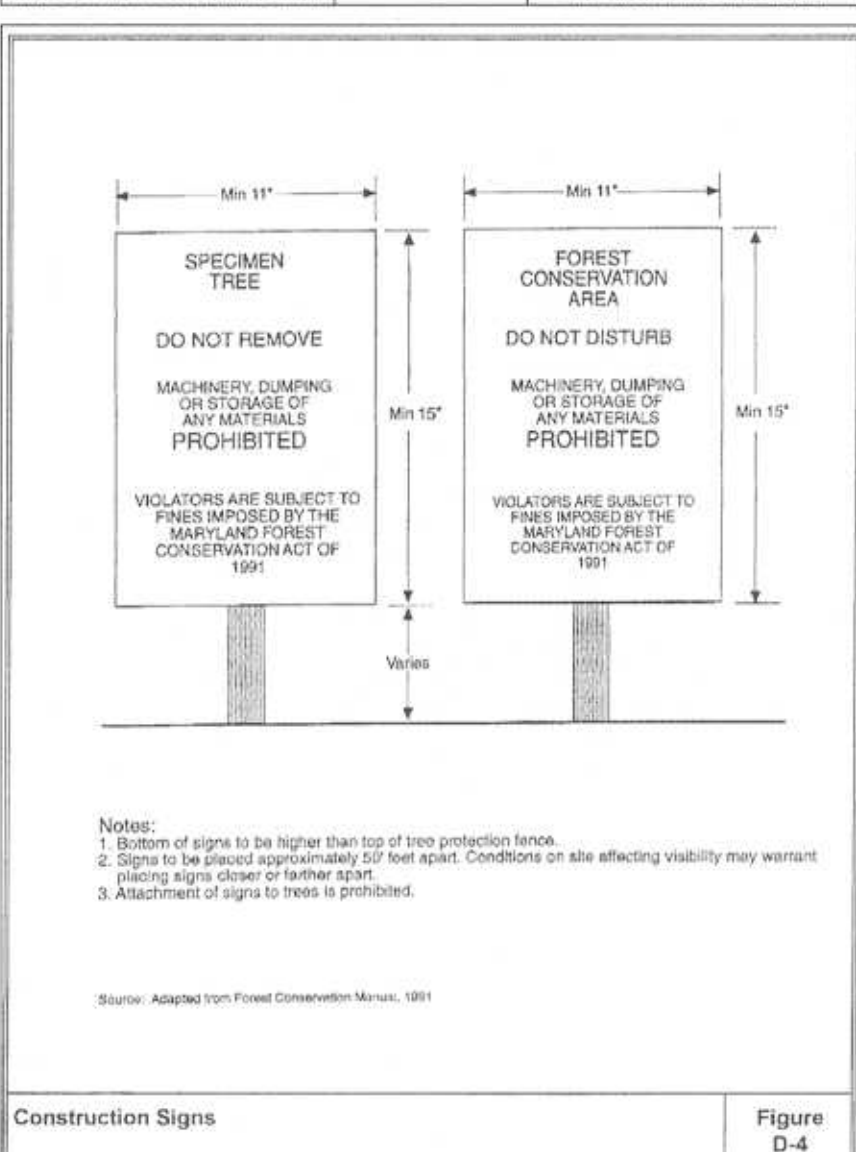
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 U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION

## VEGETATIVE ESTABLISHMENT

FOLLOWING INITIAL SOIL DISTURBANCES OR REDISTRIBUTION, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE CALENDAR DAYS FOR THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND SEVEN DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

1. PERMANENT SEEDING:  
 A. SOIL TESTS: LIME AND FERTILIZER WILL BE APPLIED PER SOIL TESTS RESULTS FOR SITES GREATER THAN 5 ACRES. SOIL TESTS WILL BE DONE AT COMPLETION OF INITIAL ROUGH GRADING OR AS RECOMMENDED BY THE SEDIMENT CONTROL INSPECTOR. RATES AND ANALYSES WILL BE PROVIDED TO THE GRADING INSPECTOR AS WELL AS THE CONTRACTOR.

OCCURRENCE OF ACID SULFATE SOILS (GRAYISH BLACK COLOR) WILL REQUIRE COVERING WITH A MINIMUM OF 12 INCHES OF CLEAN SOIL WITH 6 INCHES MINIMUM CAPPING OF TOP SOIL. NO STOCKPILING OF MATERIAL IS ALLOWED. IF NEEDED, SOIL TESTS SHOULD BE DONE BEFORE AND AFTER A 6-WEEK INCUBATION PERIOD TO ALLOW OXIDATION OF SULFATES.

THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

- a. SOIL pH SHALL BE BETWEEN 6.0 AND 7.0.
- b. SOLUBLE SALTS SHALL BE LESS THAN 500 PARTS PER MILLION (PPM).
- c. THE SOIL SHALL CONTAIN LESS THAN 40% CLAY BUT ENOUGH FINE GRAINED MATERIAL (> 30% SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION IS IF LOVEGRASS OR SERICIA LESPEDEZA IS TO BE PLANTED, THEN A SANDY SOIL (< 30% SILT PLUS CLAY) WOULD BE ACCEPTABLE.
- d. SOIL SHALL CONTAIN 1.5% MINIMUM ORGANIC MATTER BY WEIGHT.
- e. SOIL MUST CONTAIN SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
- f. IF THESE CONDITIONS CANNOT BE MET BY SOILS ON SITE, ADDING TOPSOIL IS REQUIRED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS FROM THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR AMENDMENTS MADE AS RECOMMENDED BY A CERTIFIED AGRONOMIST.

B. SEEDBED PREPARATION: AREA TO BE SEEDBED SHALL BE LOOSE AND FRIABLE TO A DEPTH OF AT LEAST 3-5 INCHES. THE TOP LAYER SHALL BE LOOSENED BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING OCCURS. FOR SITES LESS THAN 5 ACRES, APPLY 100 POUNDS DOLOMITE LIMESTONE AND 21 POUNDS OF 10-10-10 FERTILIZER PER 1,000 SQUARE FEET. HARROW OR DISK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF AT LEAST 3-5 INCHES ON SLOPES FLATTER THAN 3:1.

C. SEEDING: APPLY 5-6 POUNDS PER 1,000 SQUARE FEET OF TALL FESCUE BETWEEN FEBRUARY 1 AND APRIL 30 OR BETWEEN AUGUST 15 AND OCTOBER 31. APPLY SEED UNIFORMLY ON A MOIST FIRM SEEDBED WITH A CYCLONE SEEDER, CULTIPACKER SEEDER OR HYDROSEEDER (SLURRY INCLUDES SEEDS AND FERTILIZER, RECOMMENDED ON STEEP SLOPES ONLY). MAXIMUM SEED DEPTH SHOULD BE 1/2 INCH IN CLAYEY SOILS AND 1/4 INCH IN SANDY SOILS WHEN USING OTHER THAN THE HYDROSEEDER METHOD. IRRIGATE WHERE NECESSARY TO SUPPORT ADEQUATE GROWTH UNTIL VEGETATION IS FIRMLY ESTABLISHED. IF OTHER SEED MIXES ARE TO BE USED, SELECT FROM TABLE B3 AND B5 OF THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

D. MULCHING: MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING. DURING THE TIME PERIODS WHEN SEEDING IS NOT PERMITTED, MULCH SHALL BE APPLIED IMMEDIATELY AFTER GRADING. MULCH SHALL BE UNFLOTTED, UNCHOPPED, SMALL GRAIN STRAW APPLIED AT A RATE OF 2 TONS PER ACRE OR 90 POUNDS PER 1,000 SQUARE FEET (2 BALES). IF A MULCH-ANCHORING TOOL IS USED, APPLY 2.5 TONS PER ACRE. MULCH MATERIALS SHALL BE RELATIVELY FREE OF ALL KINDS OF WEEDS AND SHALL BE COMPLETELY FREE OF PROHIBITED NOXIOUS WEEDS. SPREAD MULCH UNIFORMLY, MECHANICALLY OR BY HAND, TO A DEPTH OF 1-2 INCHES.

E. SECURING STRAW MULCH: STRAW MULCH SHALL BE SECURED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE MOVEMENT BY WIND OR WATER. THE FOLLOWING METHODS ARE PERMITTED:

- (i) LIQUID BINDERS MAY BE USED. APPLY AT HIGHER RATES AT THE EDGES WHERE WIND UNIFORMS MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF SLOPES. THE REMAINDER OF THE AREA SHOULD APPEAR UNIFORM AFTER BINDER APPLICATION. BINDERS LISTED IN THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR APPROVED EQUAL SHALL BE APPLIED AT RATES RECOMMENDED BY THE MANUFACTURERS.
- (ii) WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. IF MIXED WITH WATER, USE 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
- (iii) LIGHTWEIGHT PLASTIC NETTING MAY BE USED TO SECURE MULCH. THE NETTING WILL BE STAPLED TO THE GROUND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

2. TEMPORARY SEEDING:  
 LIME: 100 POUNDS OF DOLOMITE LIMESTONE PER 1,000 SQUARE FEET.  
 FERTILIZER: 15 POUNDS OF 10-10-10 PER 1,000 SQUARE FEET.  
 SEED: PERENNIAL RYE - 0.92 POUNDS PER 1,000 SQUARE FEET (FEBRUARY 1 THROUGH APRIL 30 OR AUGUST 15 THROUGH NOVEMBER 1).  
 MILLET - 0.92 POUNDS PER 1,000 SQUARE FEET (MAY 1 THROUGH AUGUST 15).  
 MULCH: SAME AS 1 D AND E ABOVE.

3. NO FILLS MAY BE PLACED ON FROZEN GROUND. ALL FILLS TO BE PLACED IN APPROXIMATELY HORIZONTAL LAYERS, EACH LAYER HAVING A LOOSE THICKNESS OF NOT MORE THAN 8 INCHES. ALL COMPACTION REQUIREMENTS ARE IN ACCORDANCE TO ANNE ARUNDEL COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION AS WELL AS THE AA COUNTY DESIGN MANUAL AND STANDARD DETAILS. FILLS FOR POND EMBANKMENTS SHALL BE COMPACTED AS PER MD-378 CONSTRUCTION SPECIFICATIONS. ALL OTHER FILLS SHALL BE COMPACTED SUFFICIENTLY SO AS TO BE STABLE AND PREVENT EROSION AND SLIPPAGE.

4. PERMANENT SOD:  
 INSTALLATION OF SOD SHOULD FOLLOW PERMANENT SEEDING DATES. SEEDBED PREPARATION FOR SOD SHALL BE AS NOTED IN SECTION (B) ABOVE. PERMANENT SOD IS TO BE TALL FESCUE, STATE APPROVED SOD, LIME AND FERTILIZER PER PERMANENT SEEDING SPECIFICATIONS AND LIGHTLY IRRIGATE SOIL PRIOR TO LAYING SOD. SOD IS TO BE LAID ON THE CONTOUR WITH ALL ENDS TIGHTLY ABUTTING. JOINTS ARE TO BE STAGGERED BETWEEN ROWS. WATER AND ROLL OR TAMM SOD TO INSURE POSITIVE ROOT CONTACT WITH THE SOIL. ALL SLOPES STEEPER THAN 3:1, AS SHOWN, ARE TO BE PERMANENTLY SODDED OR PROTECTED WITH AN APPROVED EROSION CONTROL NETTING. ADDITIONAL WATERING FOR ESTABLISHMENT MAY BE REQUIRED. SOD IS NOT TO BE INSTALLED ON FROZEN GROUND. SOD SHALL NOT BE TRANSPORTED WHEN MOISTURE CONTENT (DRY OR WET) AND/OR EXTREME TEMPERATURE MAY ADVERSELY AFFECT ITS SURVIVAL. IN THE ABSENCE OF ADEQUATE RAINFALL, IRRIGATION SHOULD BE PERFORMED TO ENSURE ESTABLISHMENT OF SOD.

5. MINING OPERATIONS:  
 SEDIMENT CONTROL PLANS FOR MINING OPERATIONS MUST INCLUDE THE FOLLOWING SEEDING DATES AND MIXTURES:  
 FOR SEEDING DATES OF FEBRUARY 1 THROUGH APRIL 30 AND AUGUST 15 THROUGH OCTOBER 31, USE SEED MIXTURE OF TALL FESCUE AT THE RATE OF 2 POUNDS PER 1,000 SQUARE FEET AND SERICIA LESPEDEZA AT THE MINIMUM RATE OF 0.5 POUNDS PER 1,000 SQUARE FEET.

6. TOPSOIL SHALL BE APPLIED AS PER THE STANDARD AND SPECIFICATION FOR SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS FROM THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

## B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

DEFINITION  
 THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE  
 TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS  
 WHERE PRACTICE APPLIES WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA  
 A. SOIL PREPARATION

1. TEMPORARY STABILIZATION

A. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWERS OR RIPPER MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.

B. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.

C. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

2. PERMANENT STABILIZATION

A. SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:

- I. SOIL PH BETWEEN 6.0 AND 7.0.
- II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
- III. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION IS IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
- IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
- V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.

B. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.

C. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.

D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.

E. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE. REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B. TOPSOILING

1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NITROGEN LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.

3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:

- A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
- B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
- C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
- D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.

5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:

- A. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2 INCHES IN DIAMETER.
- B. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
- C. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.

6. TOPSOIL APPLICATION

A. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.

B. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

C. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSES MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.

2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.

3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.

4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.

5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 6 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

DEPARTMENT OF PUBLIC WORKS  
 ENGINEERING DIVISION  
 APPROVED  
 DEC 12 2018

CALVERT COUNTY  
 PLANNING & ZONING  
 APPROVED  
 DEC 12 2018

CALVERT PLANNING COMMISSION  
 APPROVED  
 12/18/18

Environmental Review  
 Approved

SECRETARY, PLANNING COMMISSION

Revisions	Description
Rev. #	Date
By	

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 License No. Exp. (Renewal) Date

DATE: DECEMBER 2018  
 JOB NUMBER: 17-5965  
 SCALE: AS SHOWN  
 DRAWN BY: AL  
 APPROVED BY: N/A  
 FOLDER REFERENCE: BWH PRINCE FREDERICK VFD

SEDIMENT AND EROSION CONTROL DETAILS

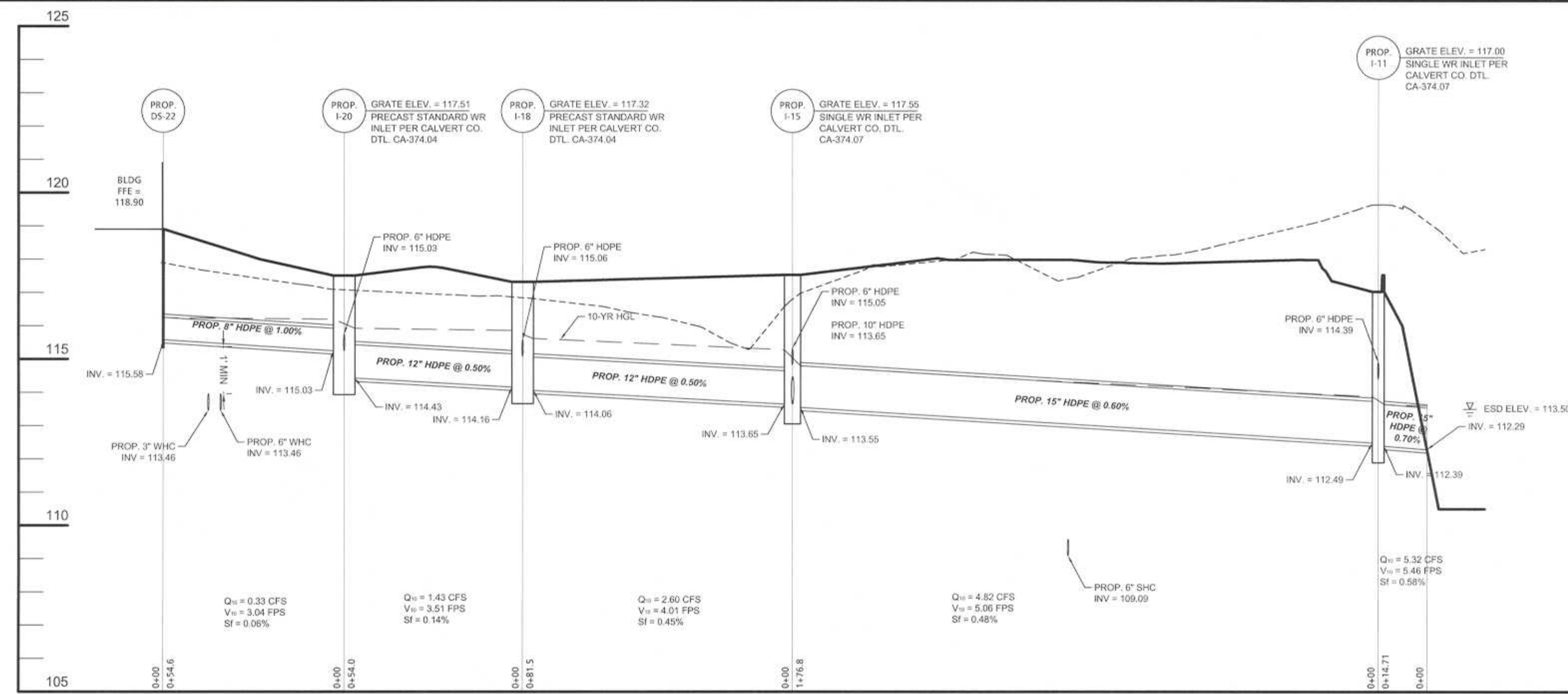
SITE PLAN FOR  
 PRINCE FREDERICK VOLUNTEER  
 FIRE DEPARTMENT CO. #2

SPR-2018-272  
 450 S SOLOMONS ISLAND ROAD  
 PRINCE FREDERICK, MARYLAND 20678  
 TAX ID # 02-036126  
 TAX MAP #24 GRID 16, PARCEL 294  
 SECOND DISTRICT - CALVERT COUNTY

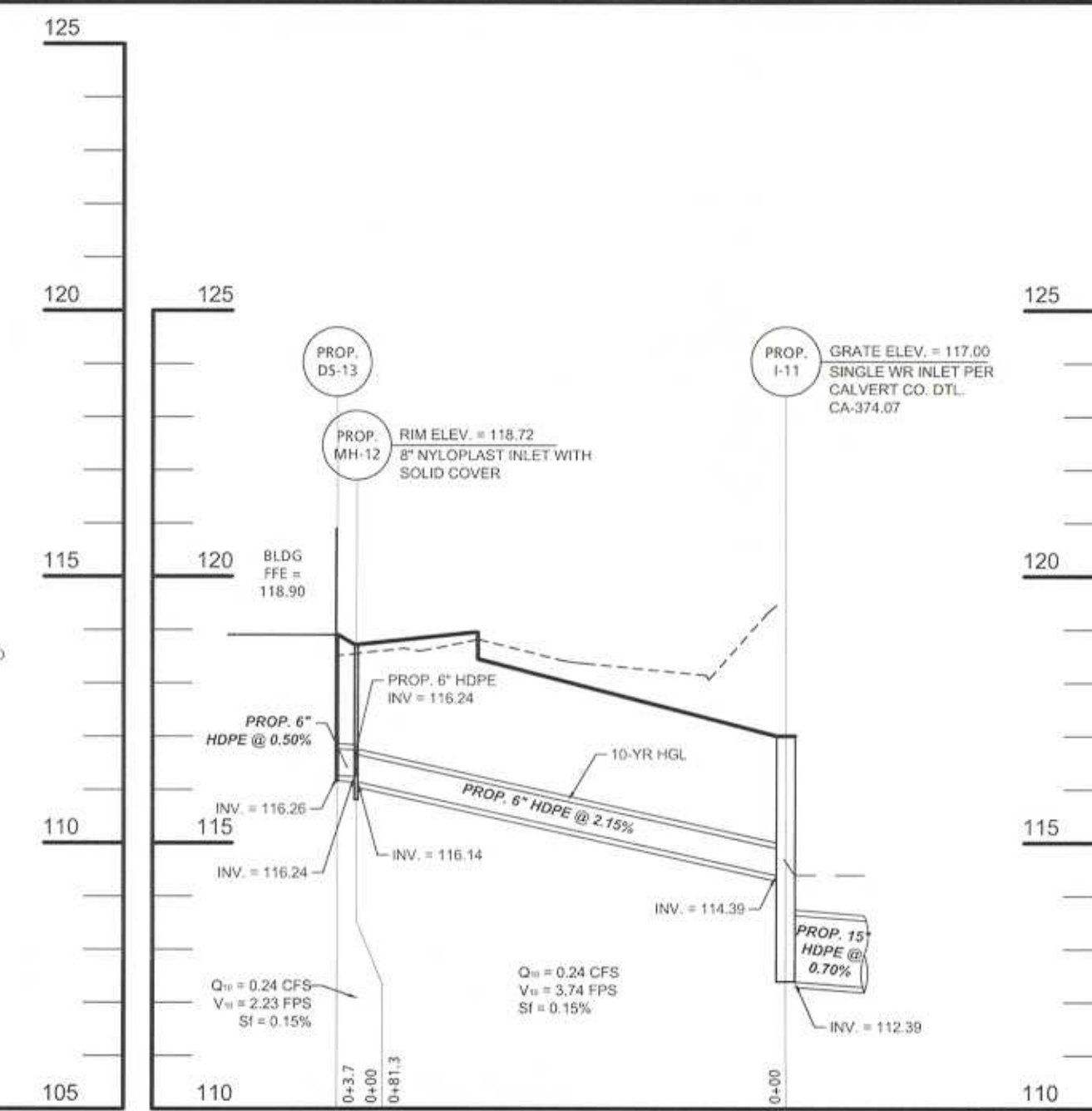
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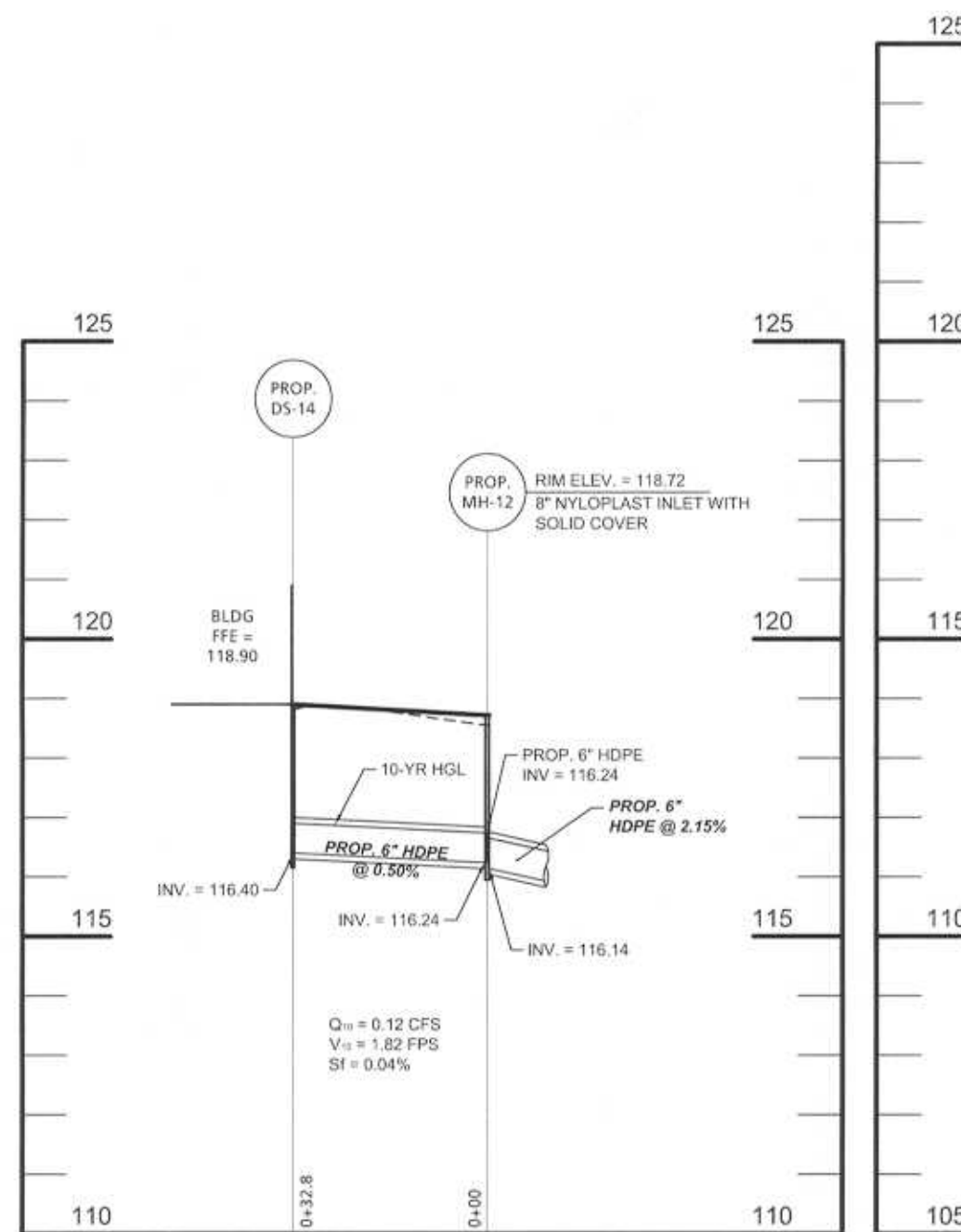
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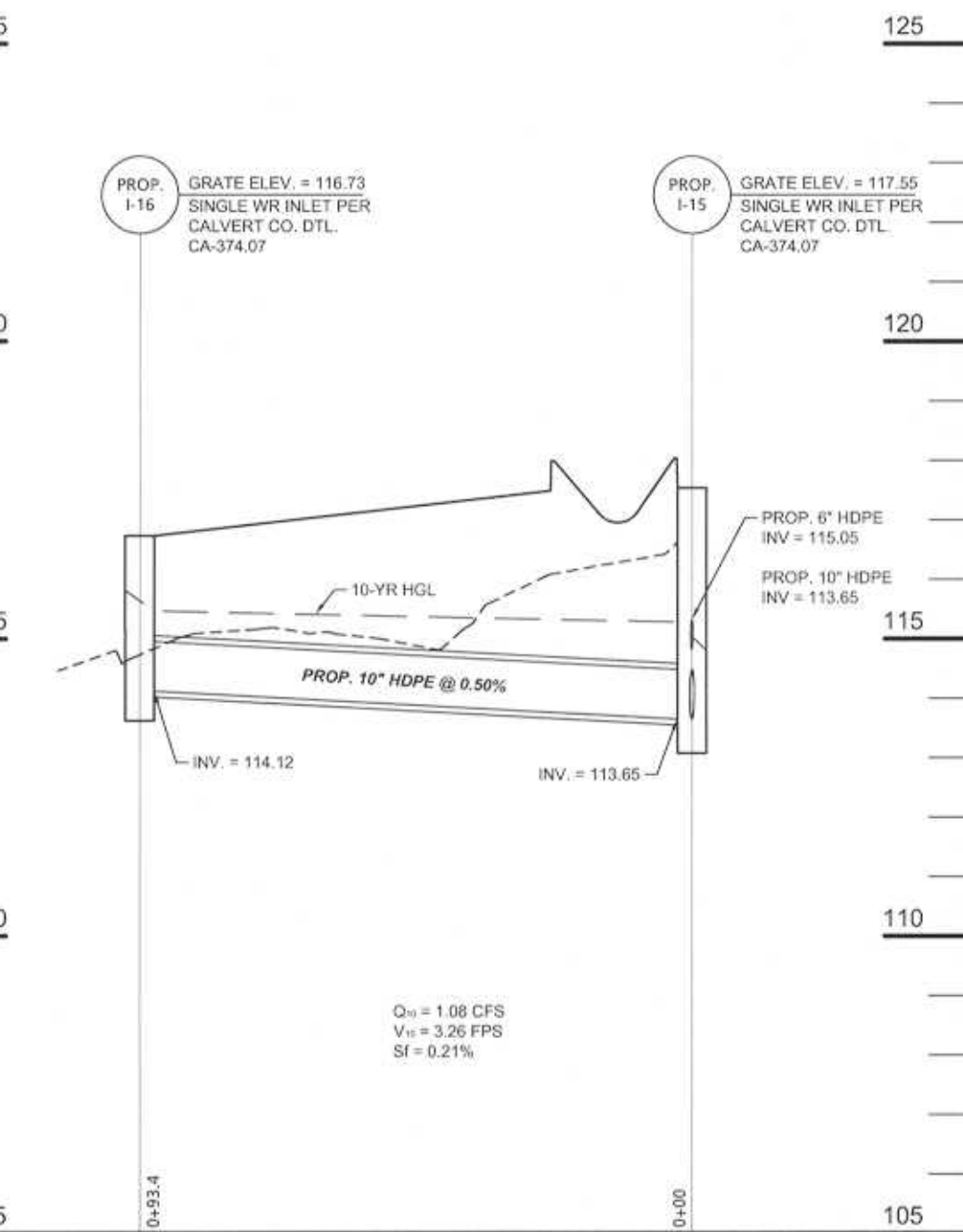
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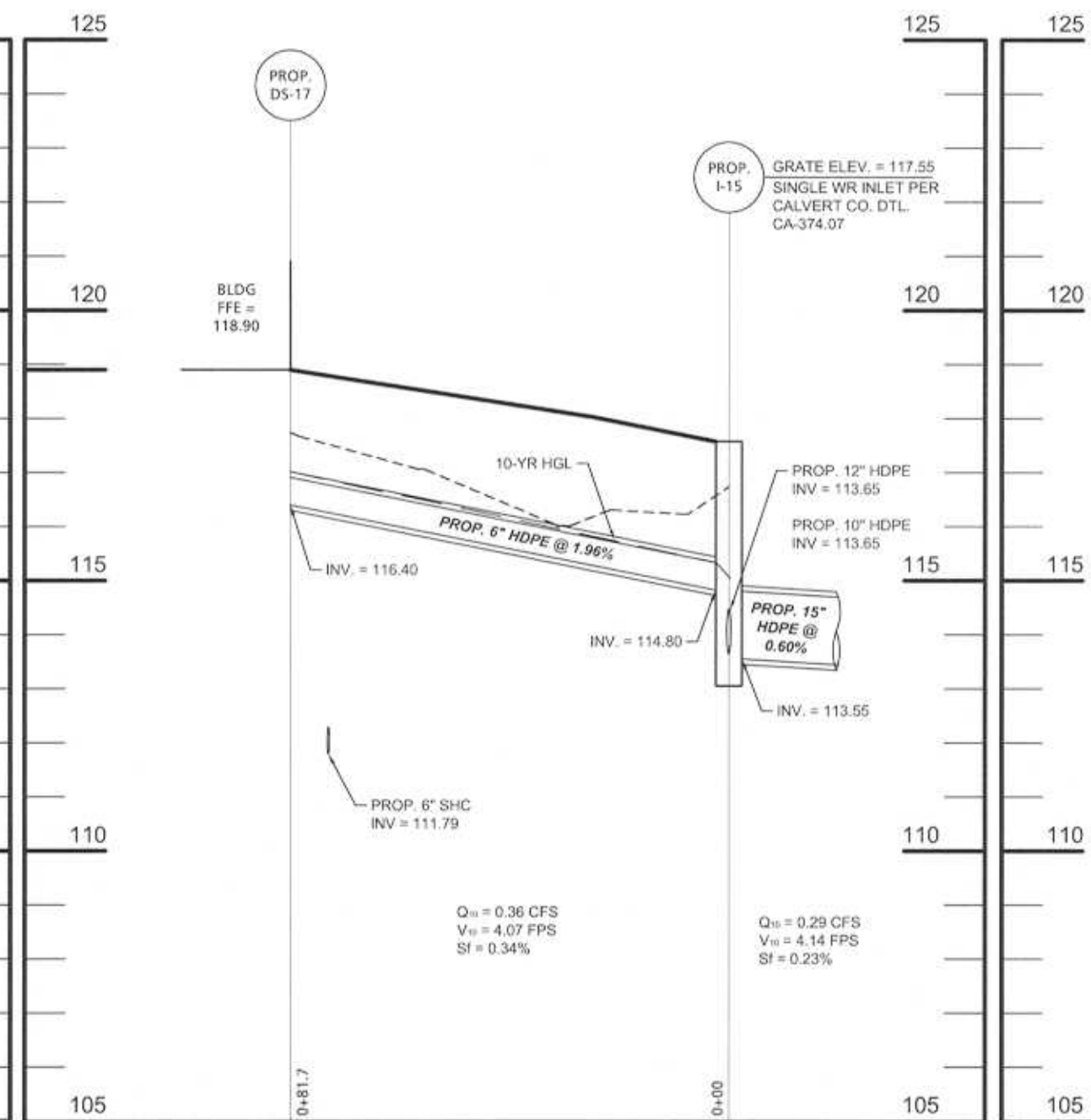
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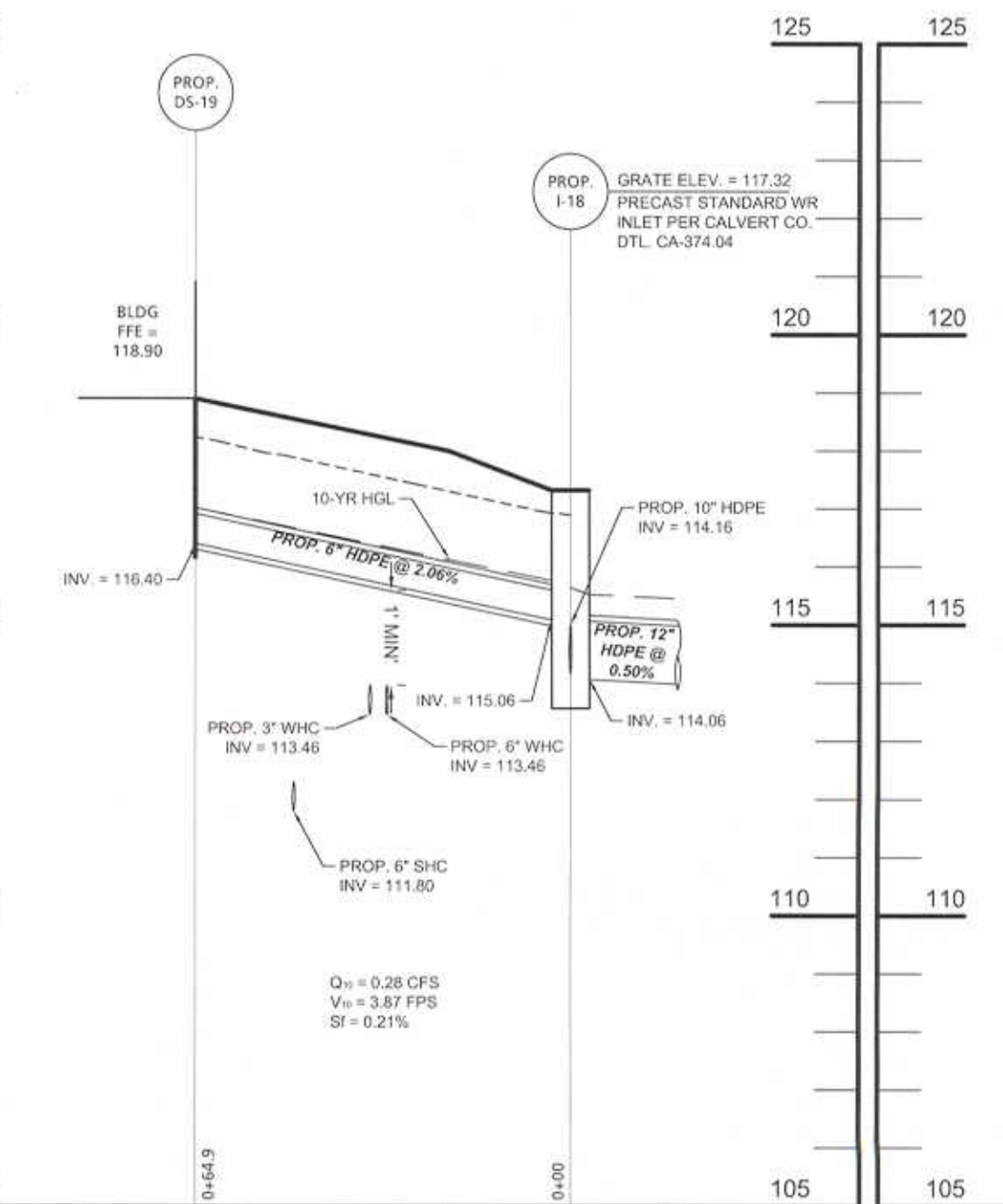
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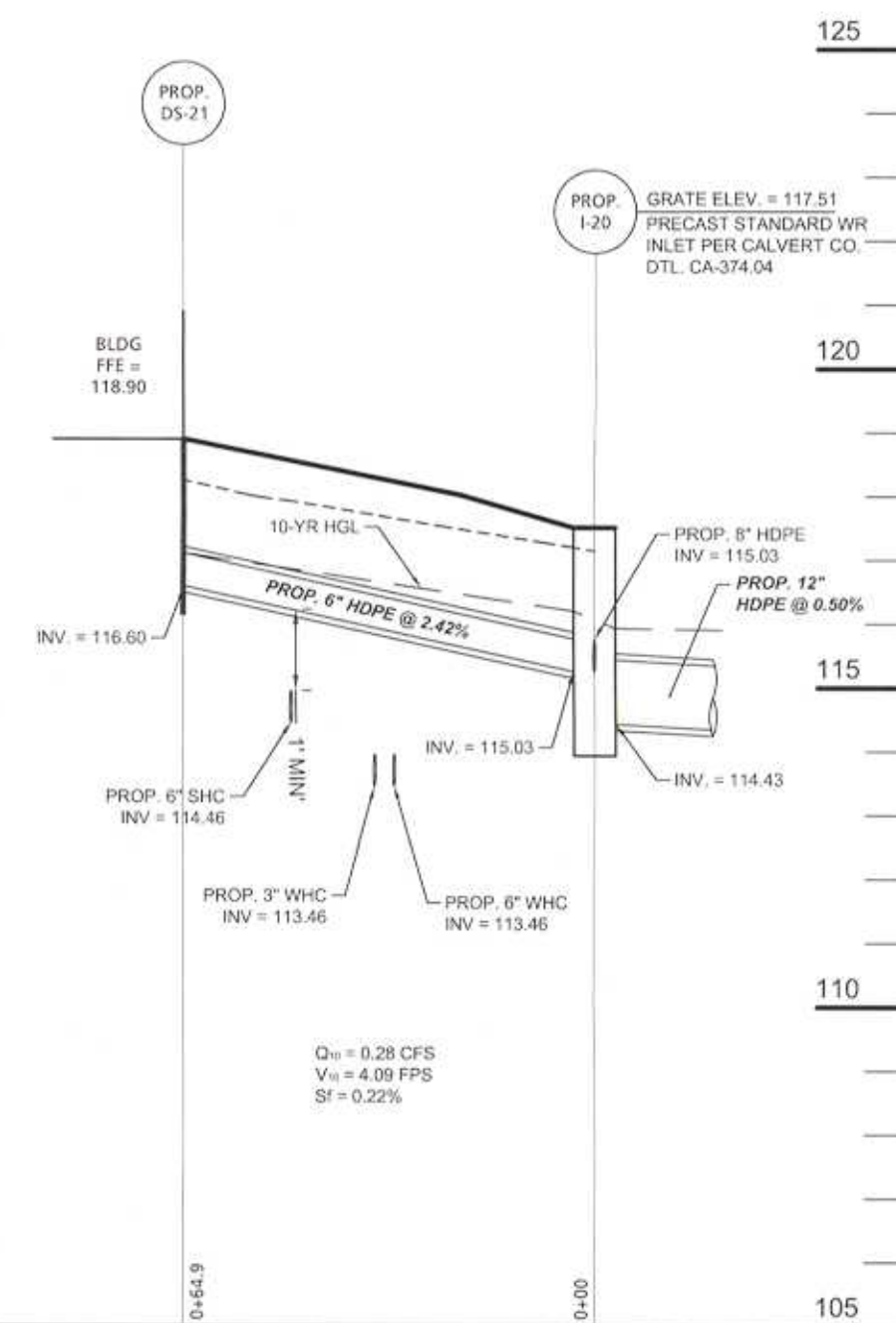
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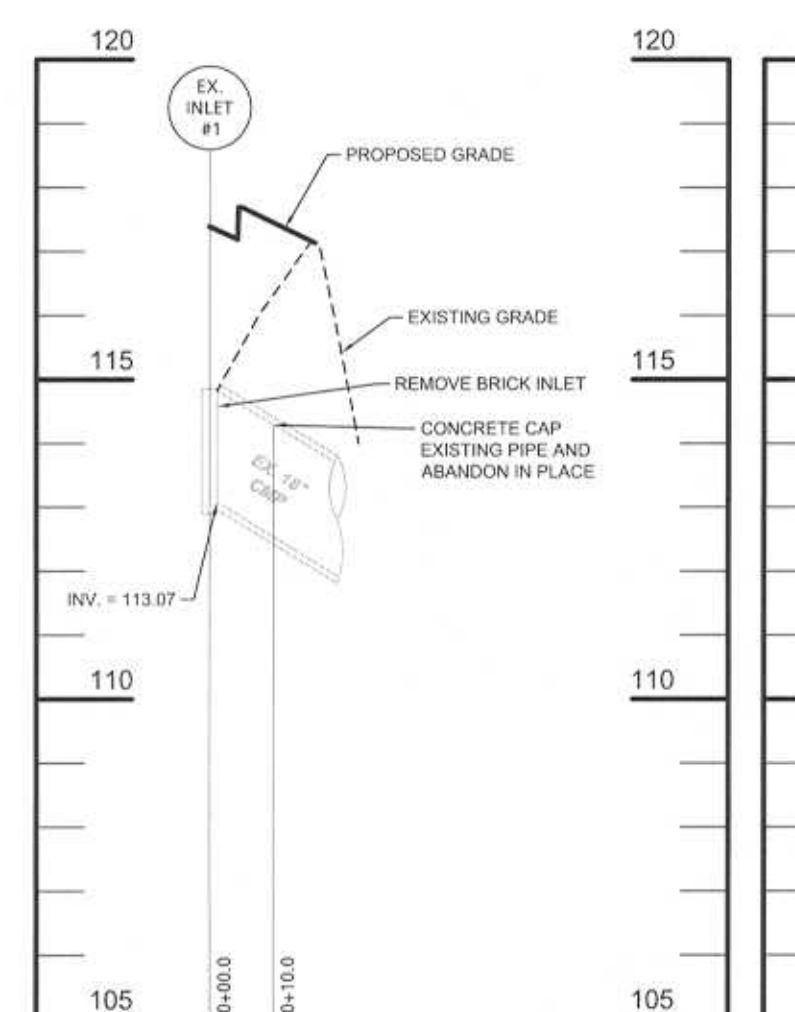
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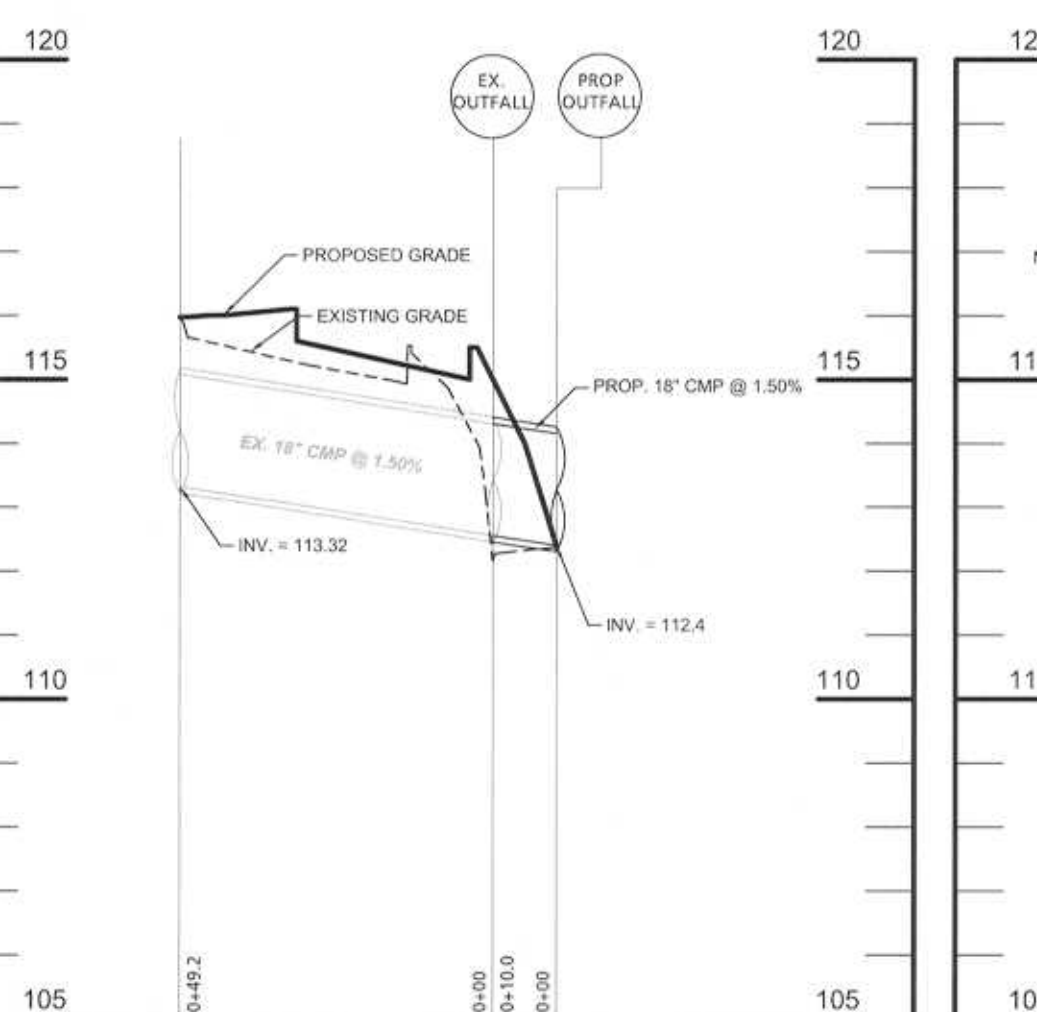
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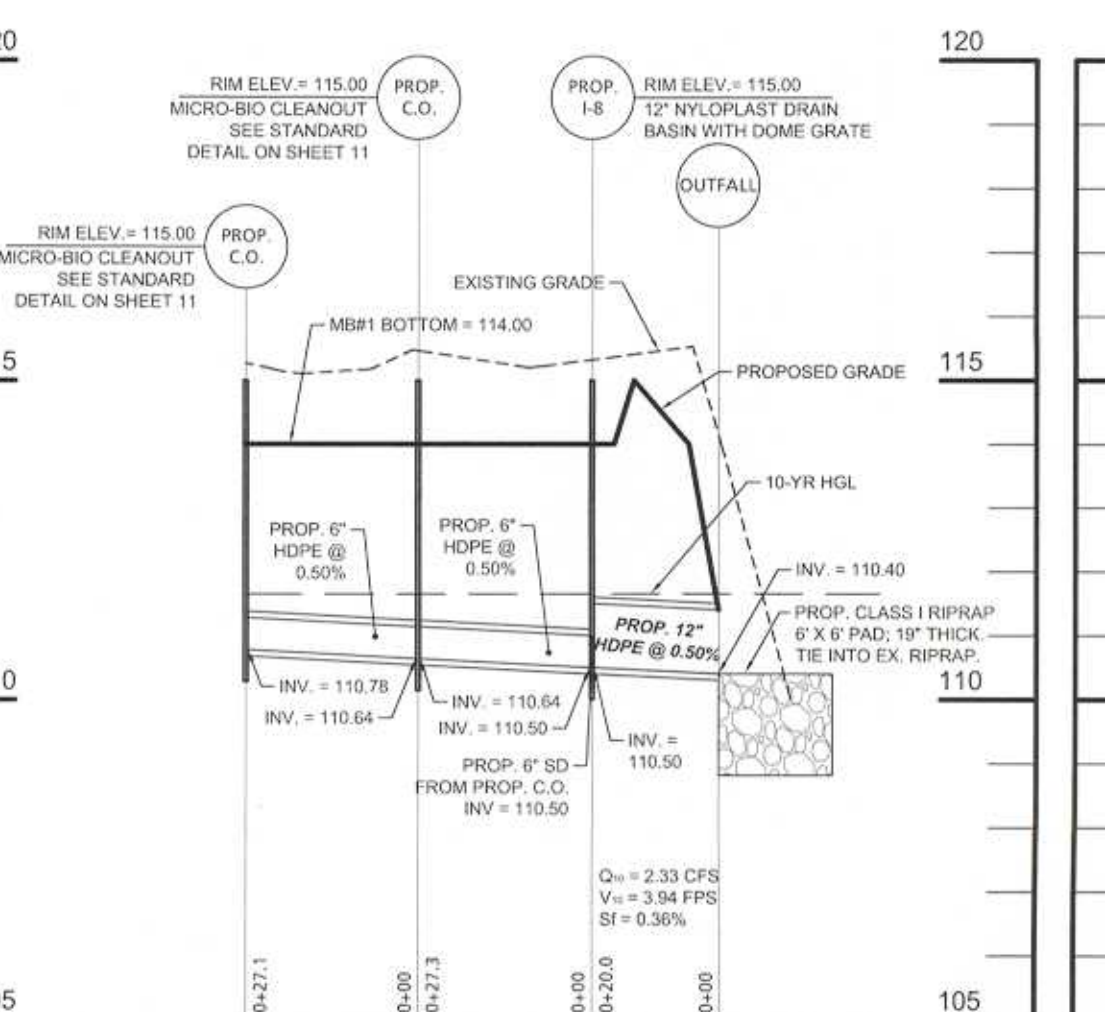
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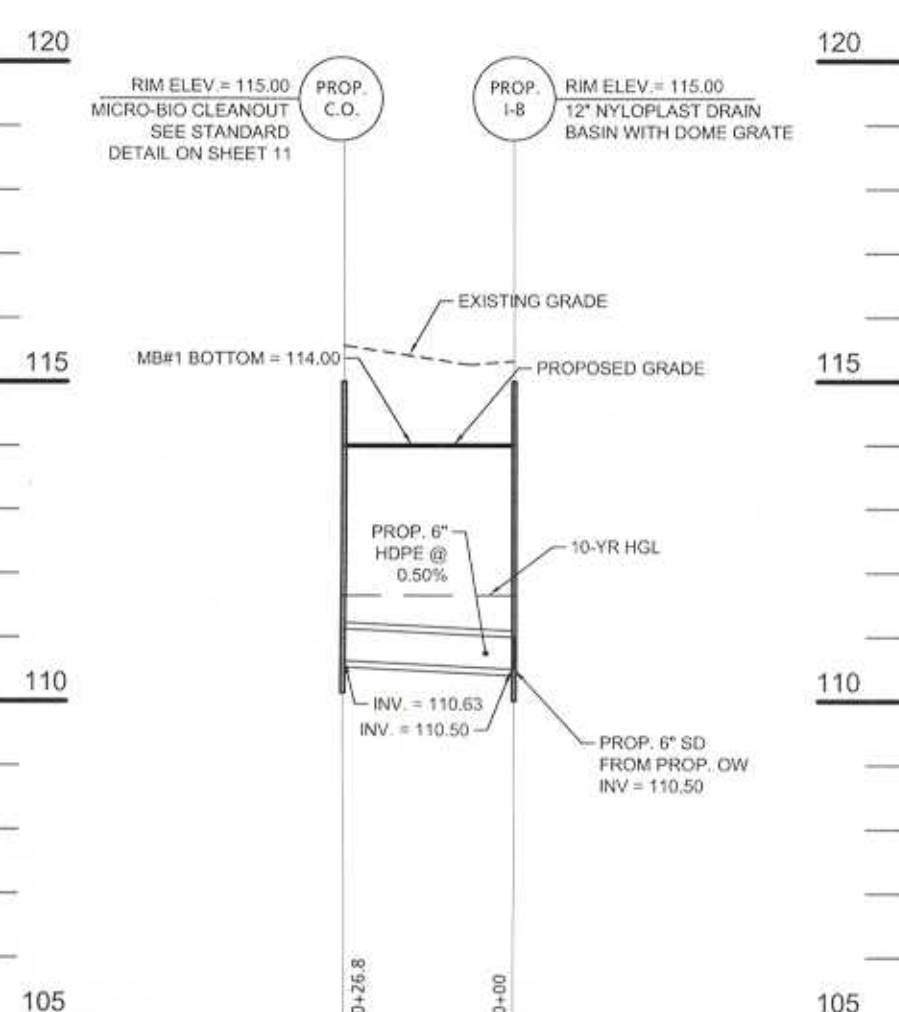
EX. INLET TBR  
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EX. PIPE EXTENSION  
SCALE: 1"=3' VERTICAL; 1"=30' HORIZONTAL



PROP. C.O. (MB-1) TO OUTFALL  
SCALE: 1"=3' VERTICAL; 1"=30' HORIZONTAL



PROP. C.O. TO I-8  
SCALE: 1"=3' VERTICAL; 1"=30' HORIZONTAL

PRIVATE STORM DRAIN STRUCTURE SCHEDULE

NO.	DESCRIPTION	STD. DETAIL NO.	RIM ELEV.	PIPE SIZE INV. IN	PIPE SIZE INV. IN	PIPE SIZE INV. OUT	PIPE SIZE INV. OUT
I-8	12" NYLOPLAST DRAIN BASIN W/ DOME	374.07	115.00	6" / 110.50	6" / 110.50	-	12" / 110.50
I-11	SINGLE WR INLET	374.07	117.00	6" / 114.39	15" / 112.49	-	15" / 112.39
MH-12	8" NYLOPLAST INLET W/ SOLID COVER	374.07	118.72	6" / 116.24	6" / 116.24	-	8" / 116.14
I-15	SINGLE WR INLET	374.07	117.55	6" / 115.05	10" / 113.65	12" / 113.65	15" / 113.55
I-16	SINGLE WR INLET	374.07	116.73	-	-	-	10" / 114.12
I-18	PRECAST STANDARD WR INLET	374.04	117.32	6" / 115.06	12" / 114.16	-	12" / 114.06
I-20	PRECAST STANDARD WR INLET	374.04	117.51	6" / 115.03	8" / 115.03	-	12" / 114.43

NOTE: SEE SHEET 12 FOR ALL STORM DRAIN DETAILS

SHA STORM DRAIN STRUCTURE SCHEDULE

DESCRIPTION	LENGTH OF PIPE
18" CMP	10'

**Revisions**

Rev. #	Date	Description

I hereby certify that these documents were prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
**Nelson Arocho**  
 License No. 38268  
 Exp./Renewal Date 1/11/20

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Date: DECEMBER 2018  
 Job Number: 17-5965  
 Scale: AS SHOWN  
 Drawn By: AL  
 Approved By: BWH  
 Folder Reference: PRINCE FREDERICK VFD

STORM DRAIN PROFILES AND DETAILS

SITE PLAN FOR  
**PRINCE FREDERICK VOLUNTEER FIRE DEPARTMENT CO. #2**  
 SPR-2018-272  
 450 S SOLOMONS ISLAND ROAD  
 PRINCE FREDERICK, MARYLAND 20678  
 TAX ID # 02-036126  
 PARCEL 294  
 SECOND DISTRICT - CALVERT COUNTY

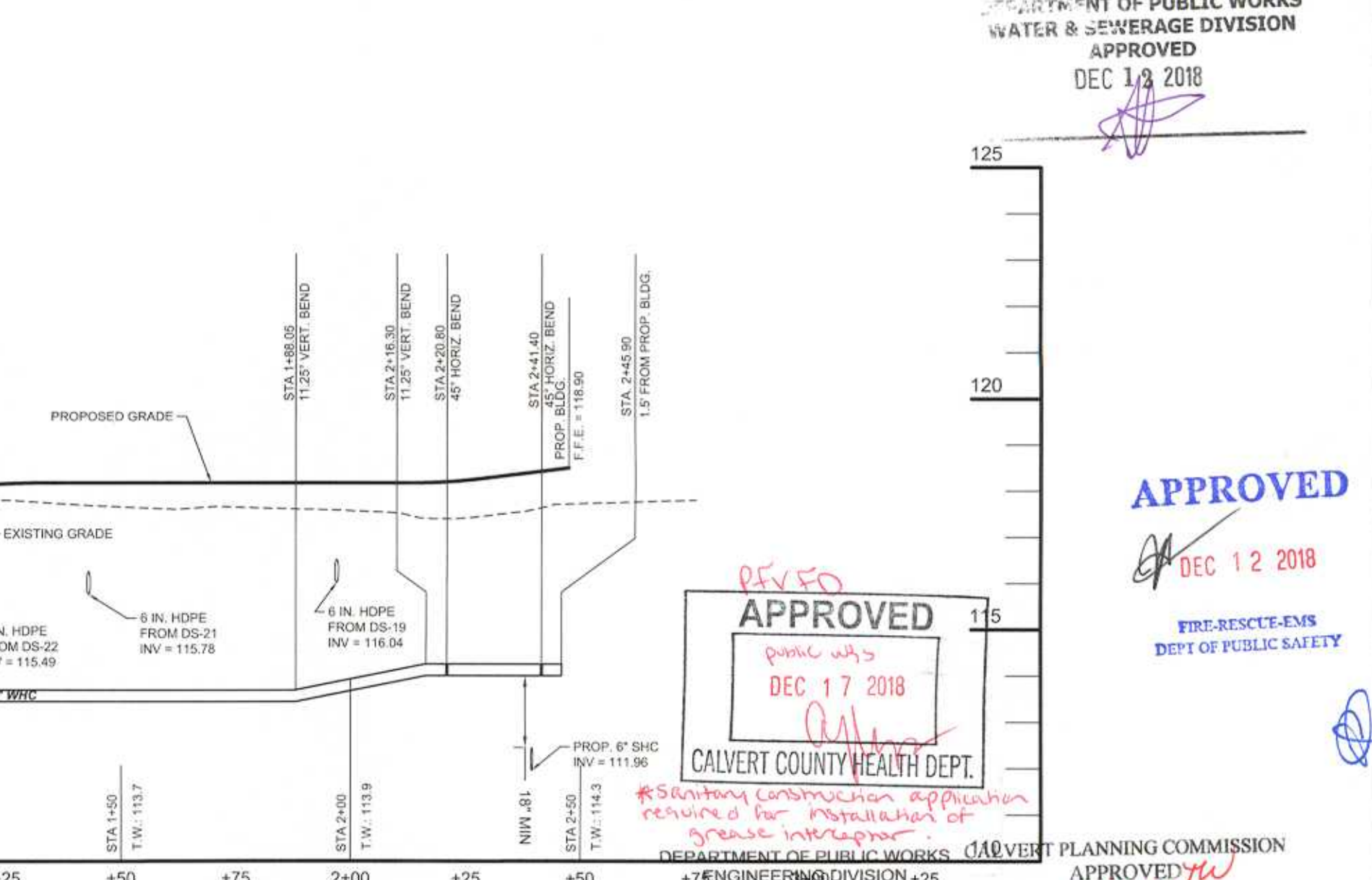
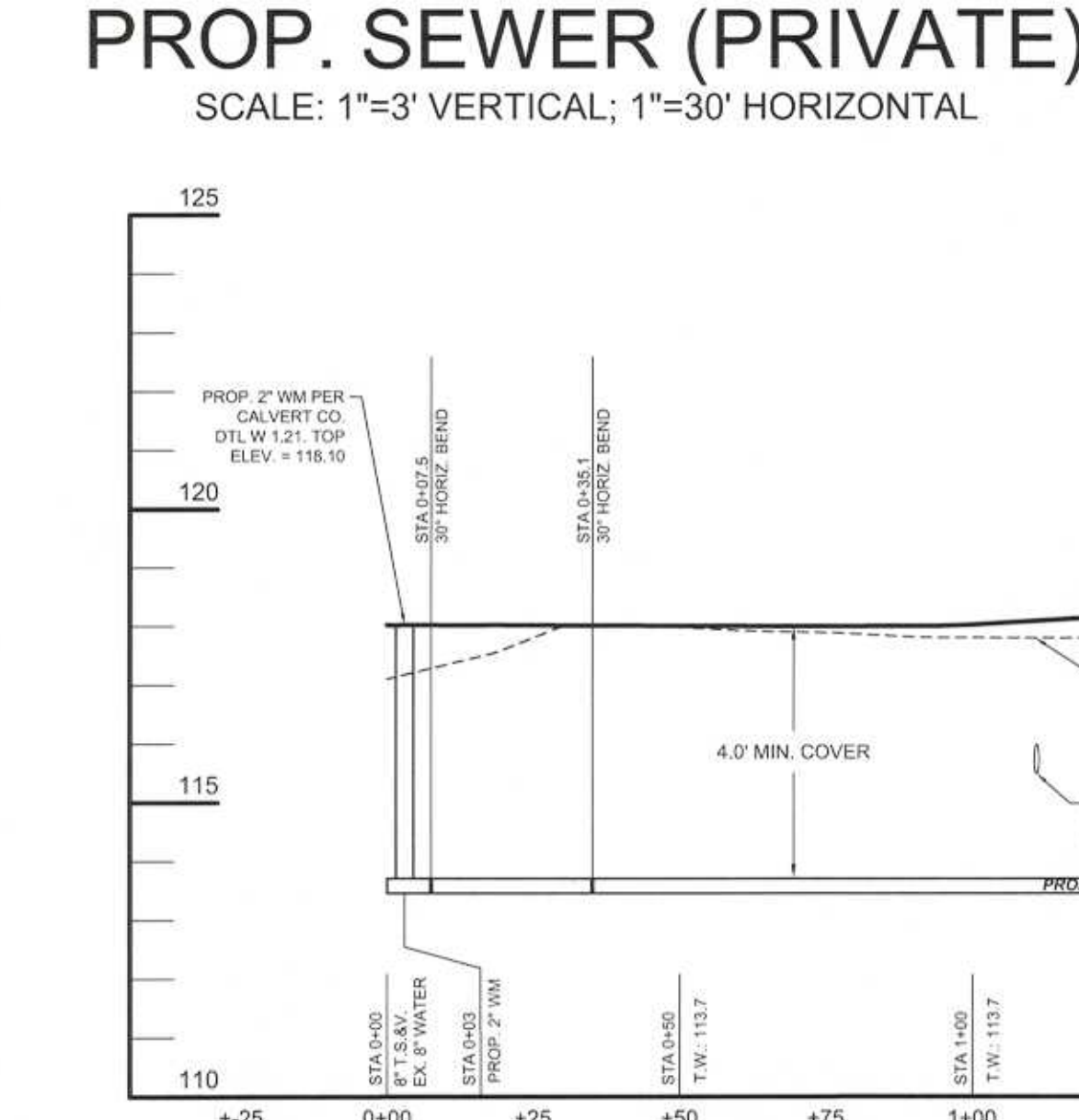
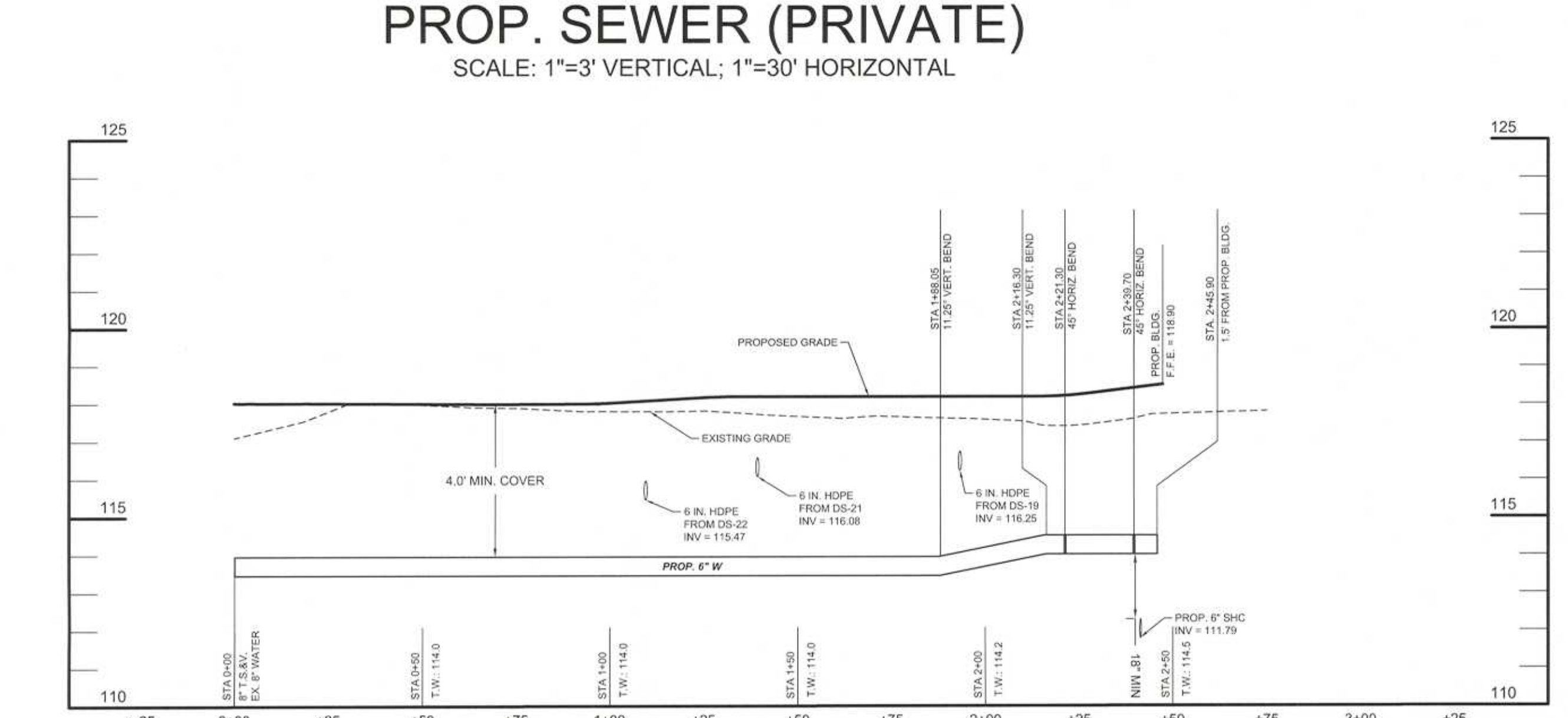
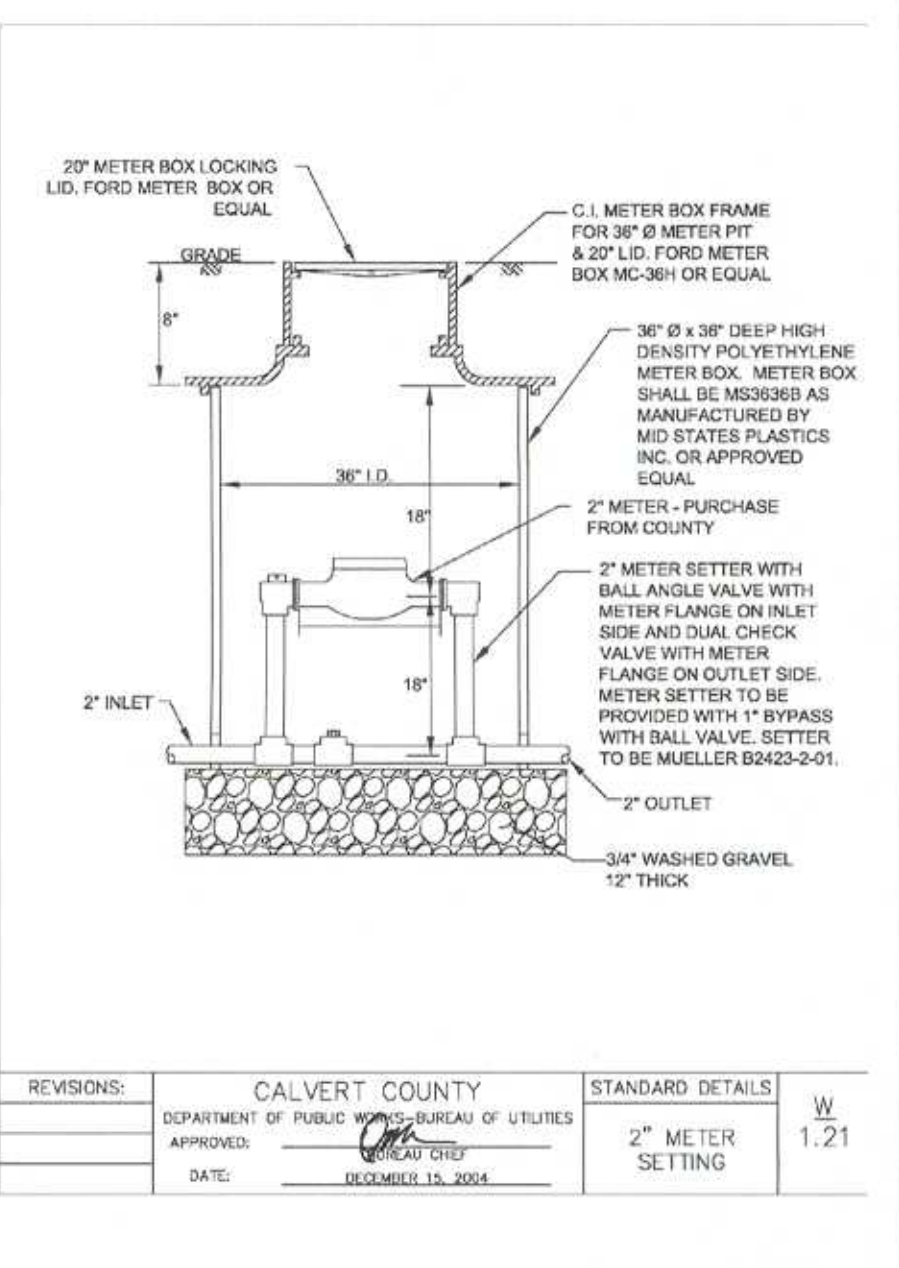
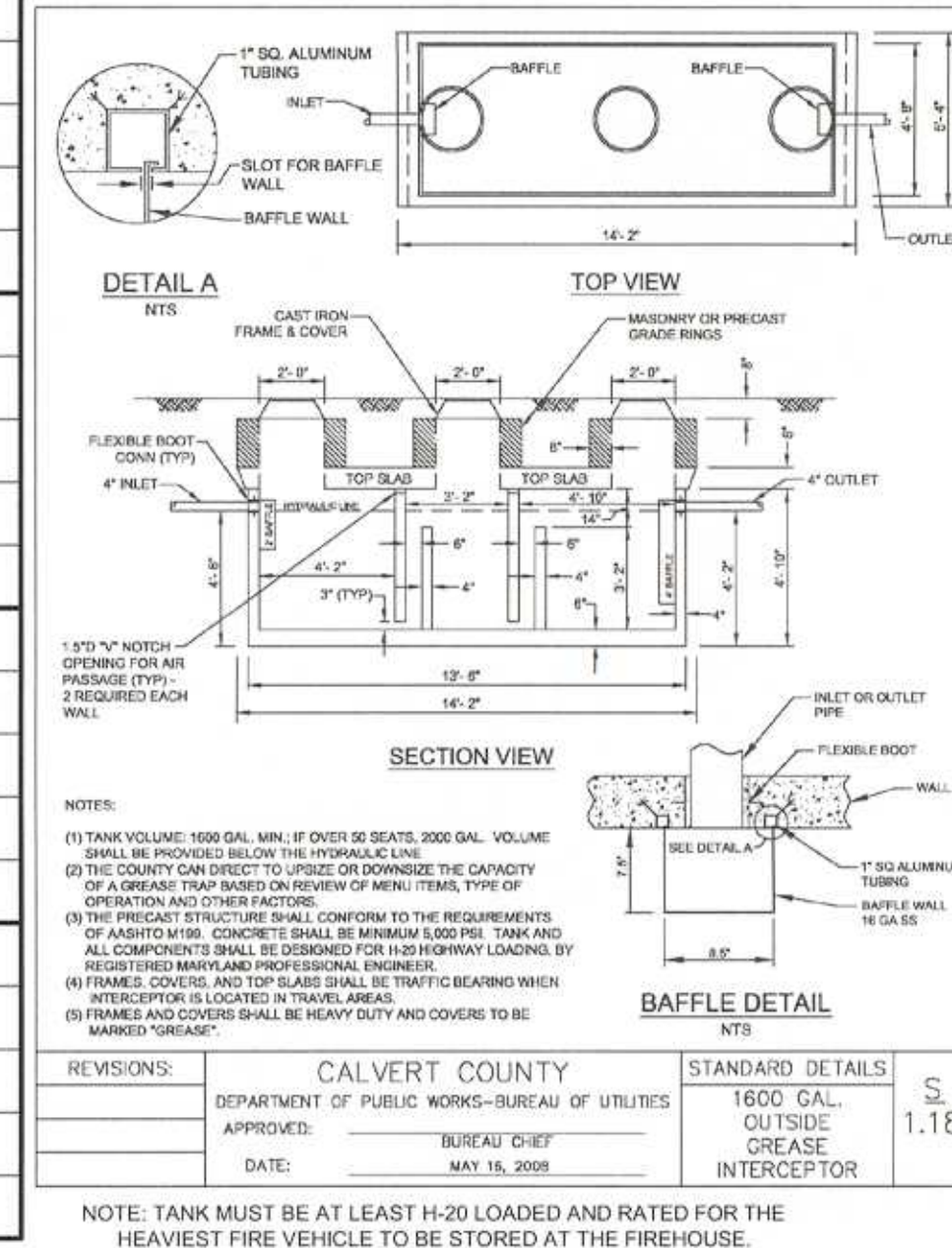
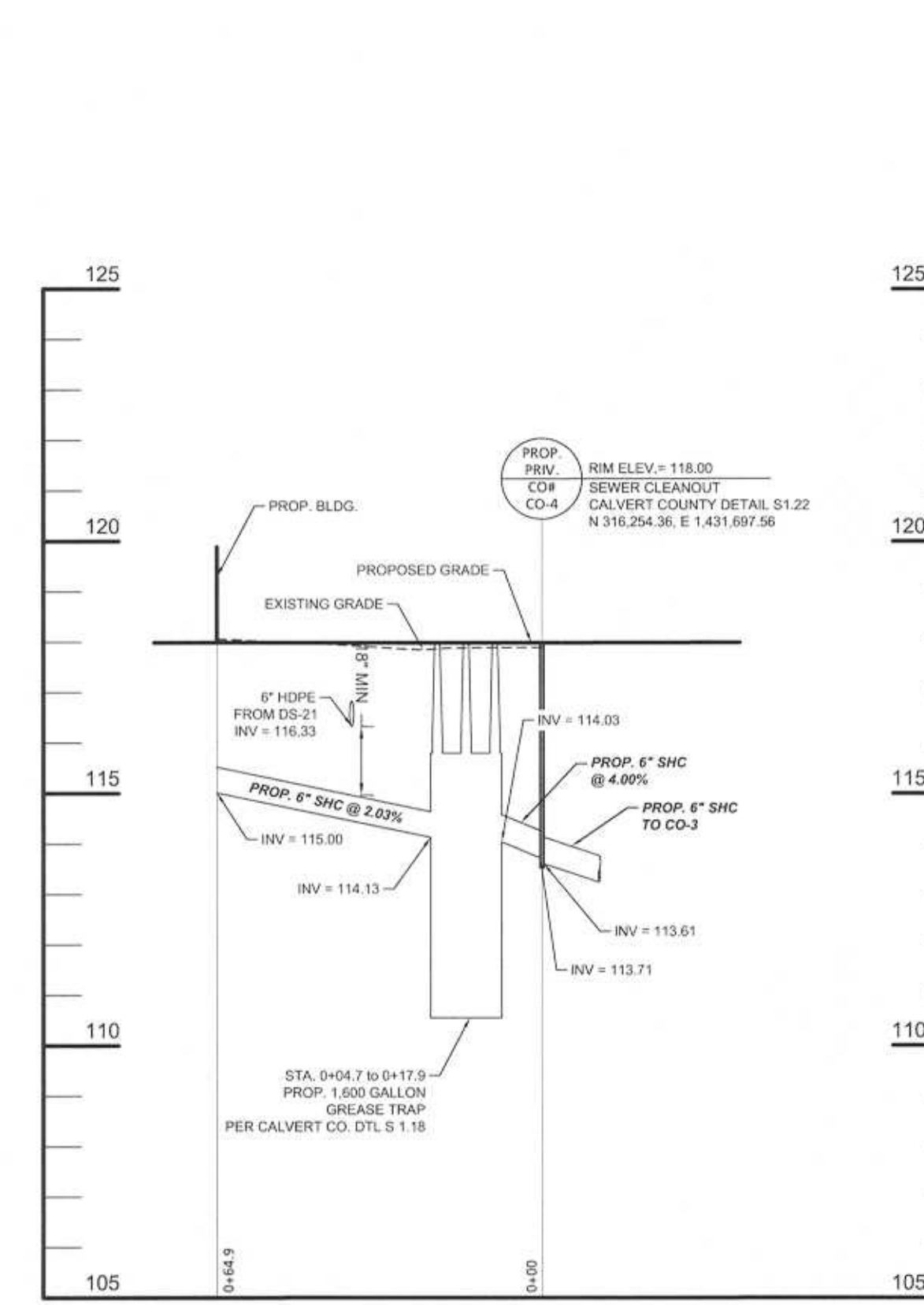
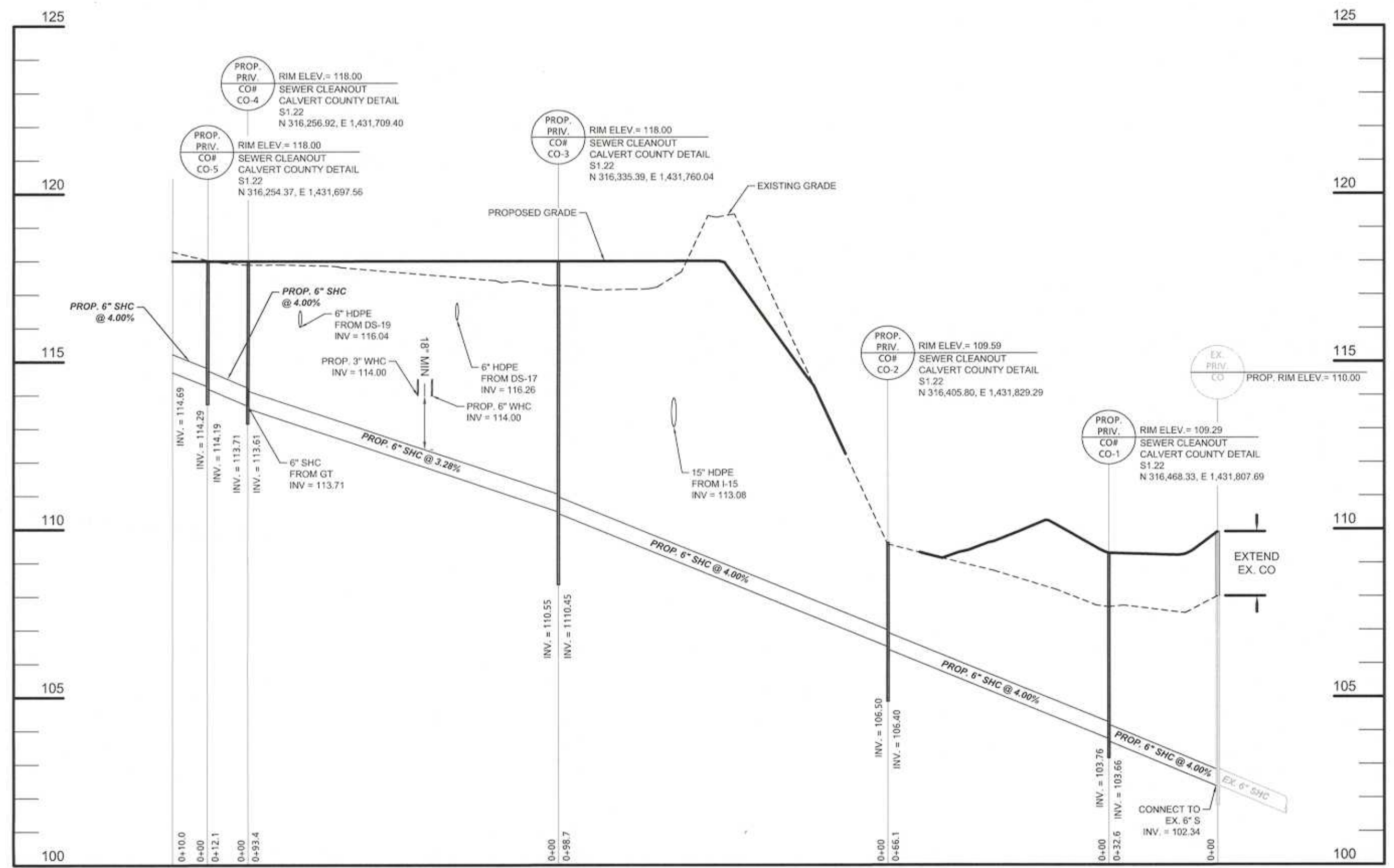
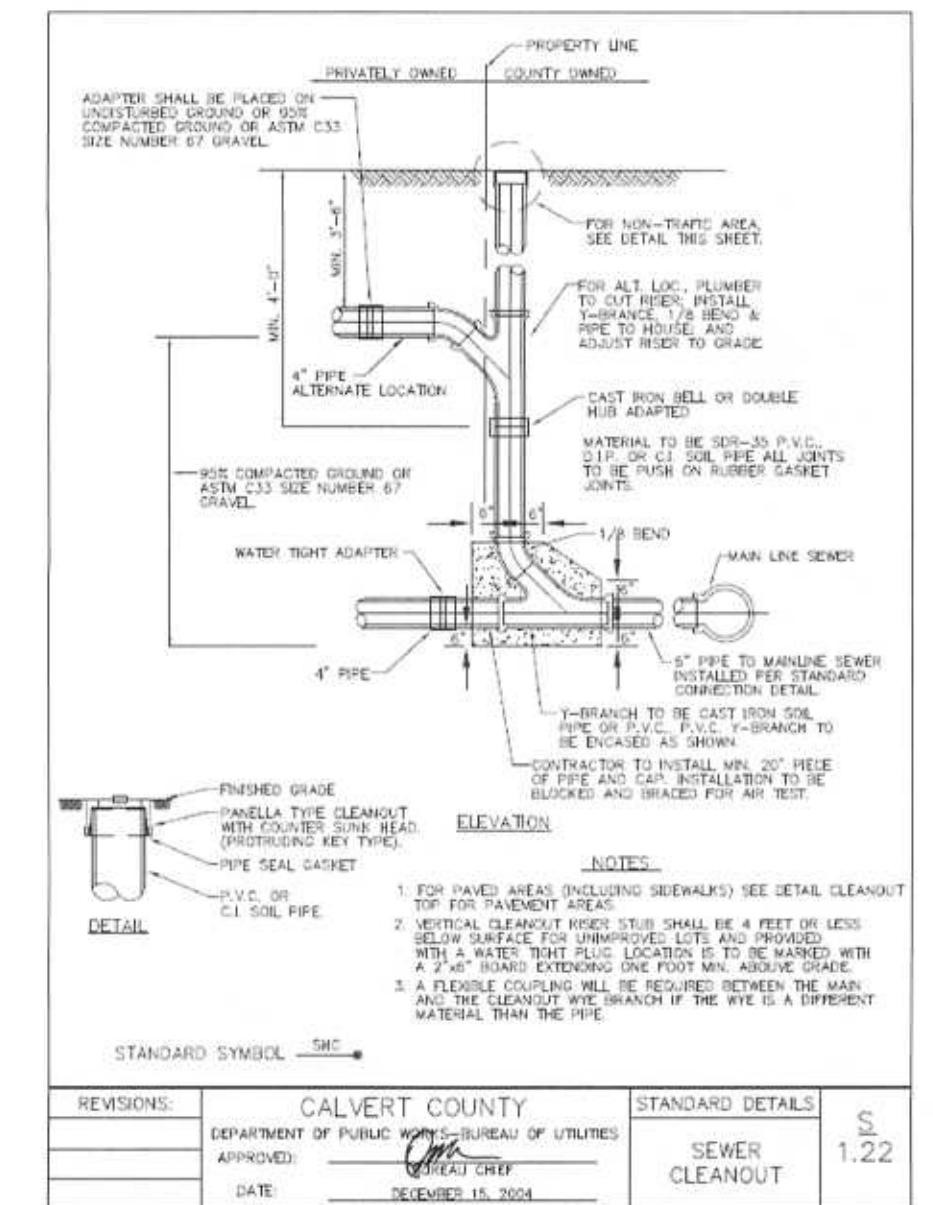
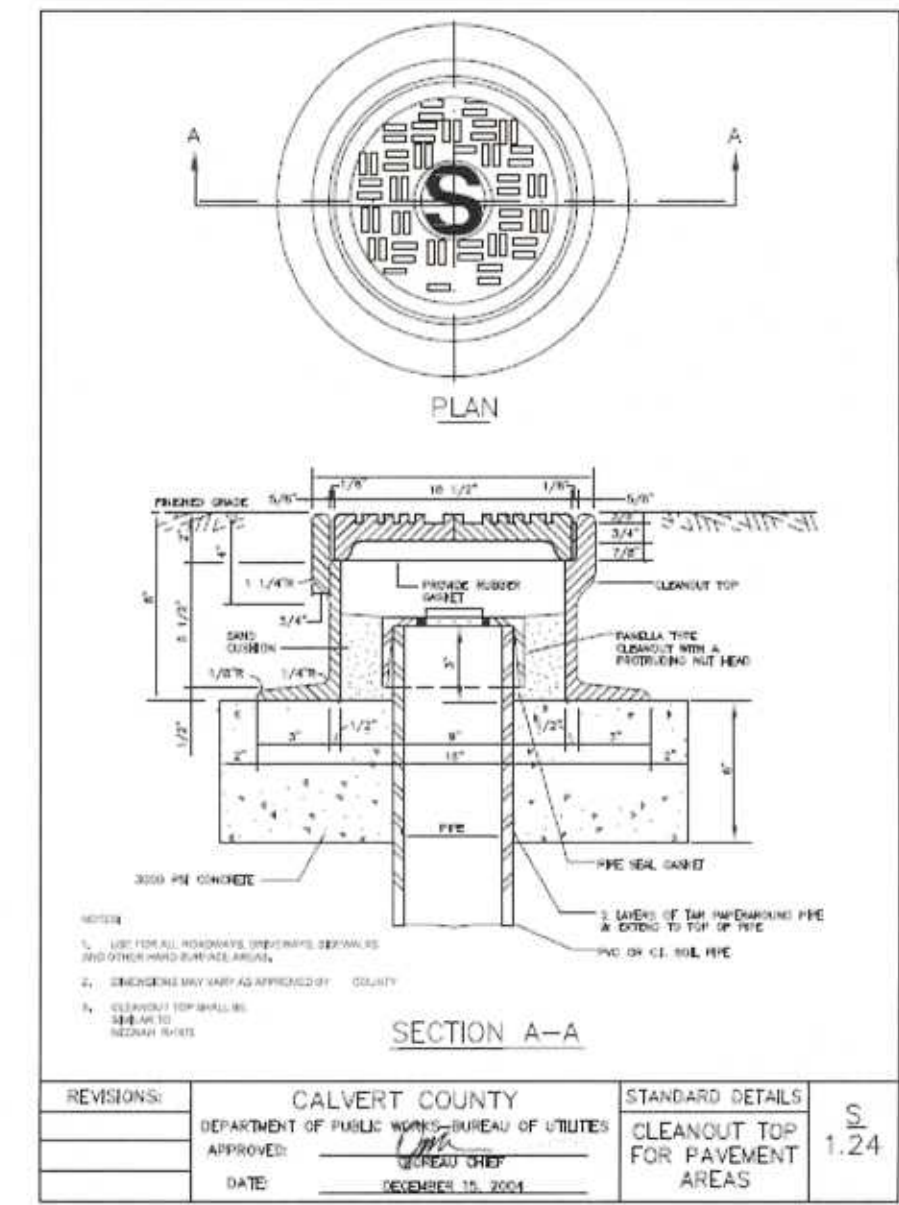
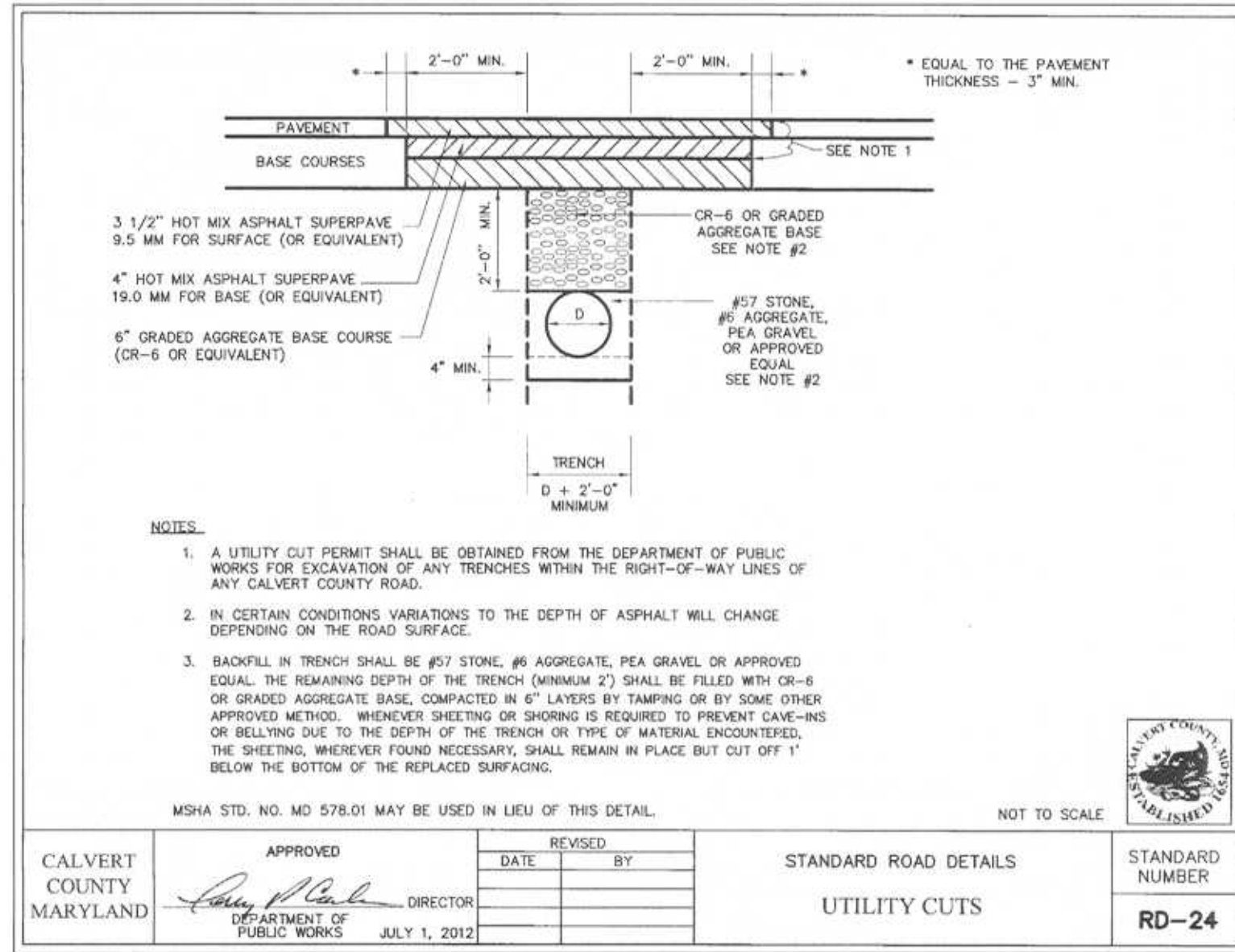
DEPARTMENT OF PUBLIC WORKS  
 CALVERT PLANNING COMMISSION  
 APPROVED 12/18/18  
 DEC-17-2018  
 SECRETARY, PLANNING COMMISSION

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PLOTTED: Dec 04, 2018 - 10:04am  
 INCLUDED XREFS & IMAGES: 17-5965 C-TOPO.dwg 17-5965 C-EXISTING.dwg 17-5965 FORM.dwg Professional Seal - Nelson Arocho.dwg DTL S1.18.tiff DTL W-1.21.tiff

SEWER STRUCTURE TABLE				
NO.	DESCRIPTION / STD. DETAIL NO.	RIM ELEV.	PIPE SIZE INV. IN	PIPE SIZE INV. OUT
CO-1	SEWER CLEANOUT CALVERT COUNTY DETAIL S1.22	109.29	6" / 103.76	6" / 103.66
CO-2	SEWER CLEANOUT CALVERT COUNTY DETAIL S1.22	109.59	6" / 106.50	6" / 106.40
CO-3	SEWER CLEANOUT CALVERT COUNTY DETAIL S1.22	118.00	6" / 110.55	6" / 110.45
CO-4	SEWER CLEANOUT CALVERT COUNTY DETAIL S1.22	118.00	6" / 113.71	6" / 113.61
CO-5	SEWER CLEANOUT CALVERT COUNTY DETAIL S1.22	118.00	6" / 114.29	6" / 114.19



**Revisions**

Rev. #	By	Date	Description

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**DATE**  
 DECEMBER 2018

**JOB NUMBER**  
 17-5965

**SCALE**  
 AS SHOWN

**DRAWN BY**  
 AL

**APPROVED BY**  
 NA

**FOLDER REFERENCE**  
 BWH  
 PRINCE FREDERICK VFD

**UTILITY PROFILES AND DETAILS**

**PRINCE FREDERICK VOLUNTEER FIRE DEPARTMENT CO. #2**  
 SFR-2018-272  
 450 S SOLOMONS ISLAND ROAD  
 PRINCE FREDERICK, MARYLAND 20678  
 TAX ID # 02-036126  
 TAX MAP 24, GRID 16, PARCEL 294  
 SECOND DISTRICT - CALVERT COUNTY

Sheet No. 7 OF 18

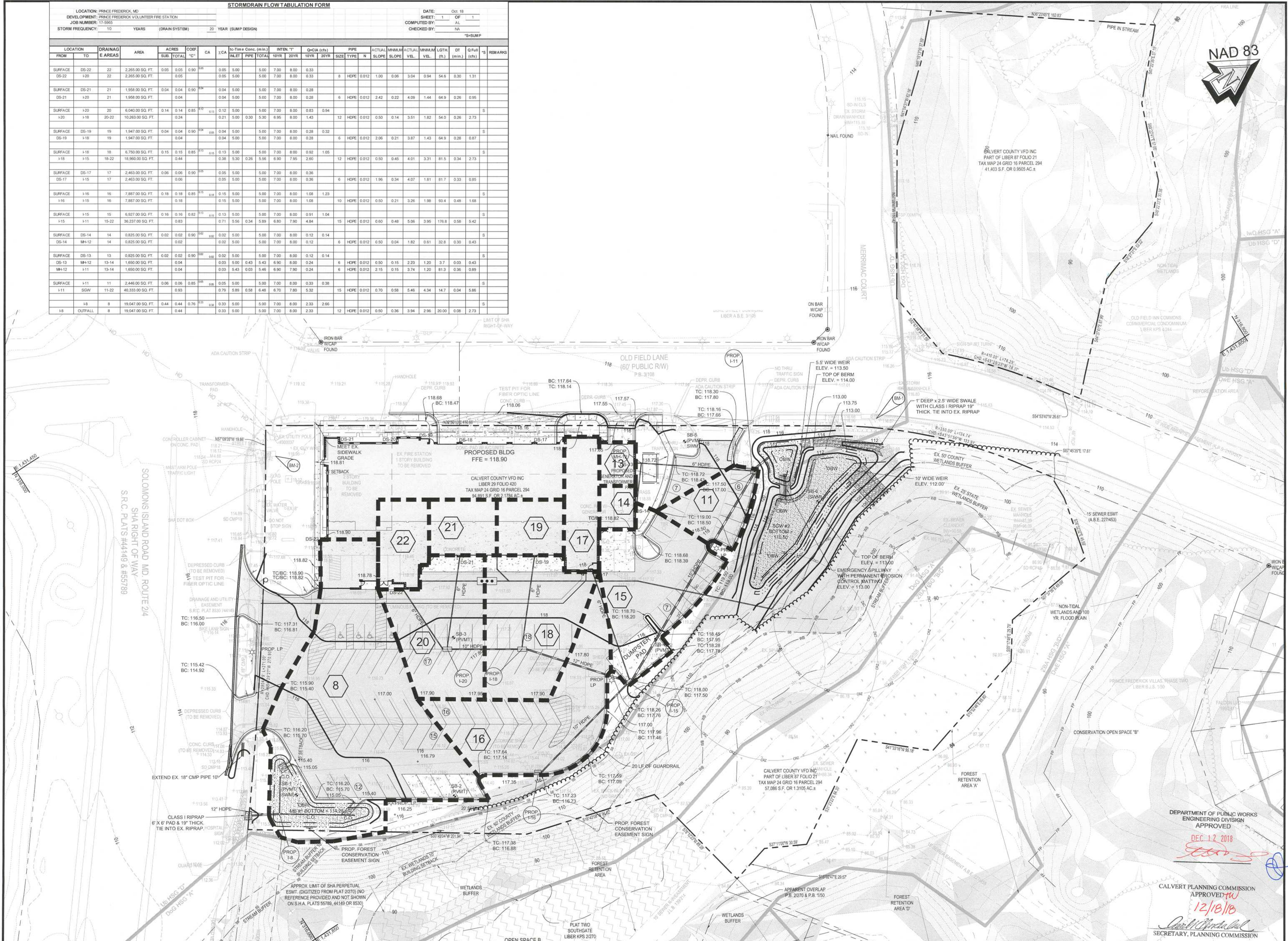






PLOTTED: Nov 30, 2018 - 4:26pm  
 INCLUDED XREFS & IMAGES: 17-5965 C-SITE.dwg 17-5965 C-TOPO.dwg 17-5965 FORM.dwg Professional Seal - Nelson Arcoho.dwg

STORMDRAIN FLOW TABULATION FORM															
LOCATION: PRINCE FREDERICK, MD										DATE: Oct 18		SHEET: 1 OF 1			
DEVELOPMENT: PRINCE FREDERICK VOLUNTEER FIRE STATION										COMPUTED BY: NA		CHECKED BY: NA			
JOB NUMBER: 17-5965										STORM FREQUENCY: 10 YEARS		(DRAIN SYSTEM) 20 YEAR (SUMP DESIGN)			
LOCATION FROM TO	DRAINAGE AREAS	AREA	ACRES	CONF	CA	CA	CA	CA	CA	CA	CA	CA	CA	CA	REMARKS
SURFACE DS-22	22	2,265.00 SQ. FT.	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SURFACE DS-21	21	1,958.00 SQ. FT.	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
SURFACE DS-20	20	6,040.00 SQ. FT.	0.14	0.14	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
SURFACE DS-19	19	1,947.00 SQ. FT.	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
SURFACE DS-18	18	6,750.00 SQ. FT.	0.15	0.15	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
SURFACE DS-17	17	2,463.00 SQ. FT.	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
SURFACE DS-16	16	7,887.00 SQ. FT.	0.18	0.18	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
SURFACE DS-15	15	6,927.00 SQ. FT.	0.16	0.16	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
SURFACE DS-14	14	8,825.00 SQ. FT.	0.20	0.20	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
SURFACE DS-13	13	8,825.00 SQ. FT.	0.20	0.20	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
SURFACE DS-12	12	1,650.00 SQ. FT.	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
SURFACE DS-11	11	2,446.00 SQ. FT.	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
SURFACE DS-10	10	40,333.00 SQ. FT.	0.93	0.93	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79		
SURFACE DS-9	9	19,047.00 SQ. FT.	0.44	0.44	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33		
SURFACE DS-8	8	19,047.00 SQ. FT.	0.44	0.44	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33		



Revisions	
Rev. #	Description

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Date: DECEMBER, 2018  
 Job Number: 17-5965  
 Scale: 1" = 30'  
 Drawn By: AL  
 Approved By: NA  
 Folder Reference: BWH PRINCE FREDERICK VFD

STORM DRAIN DRAINAGE AREA MAP  
 SITE PLAN FOR  
**PRINCE FREDERICK VOLUNTEER  
 FIRE DEPARTMENT CO. #2**  
 SPR-2018-272  
 450 S SOLOMONS ISLAND ROAD  
 PRINCE FREDERICK, MARYLAND 20678  
 TAX ID # 02-036126  
 TAX MAP 24, GRID 16, PARCEL 294  
 SECOND DISTRICT - CALVERT COUNTY

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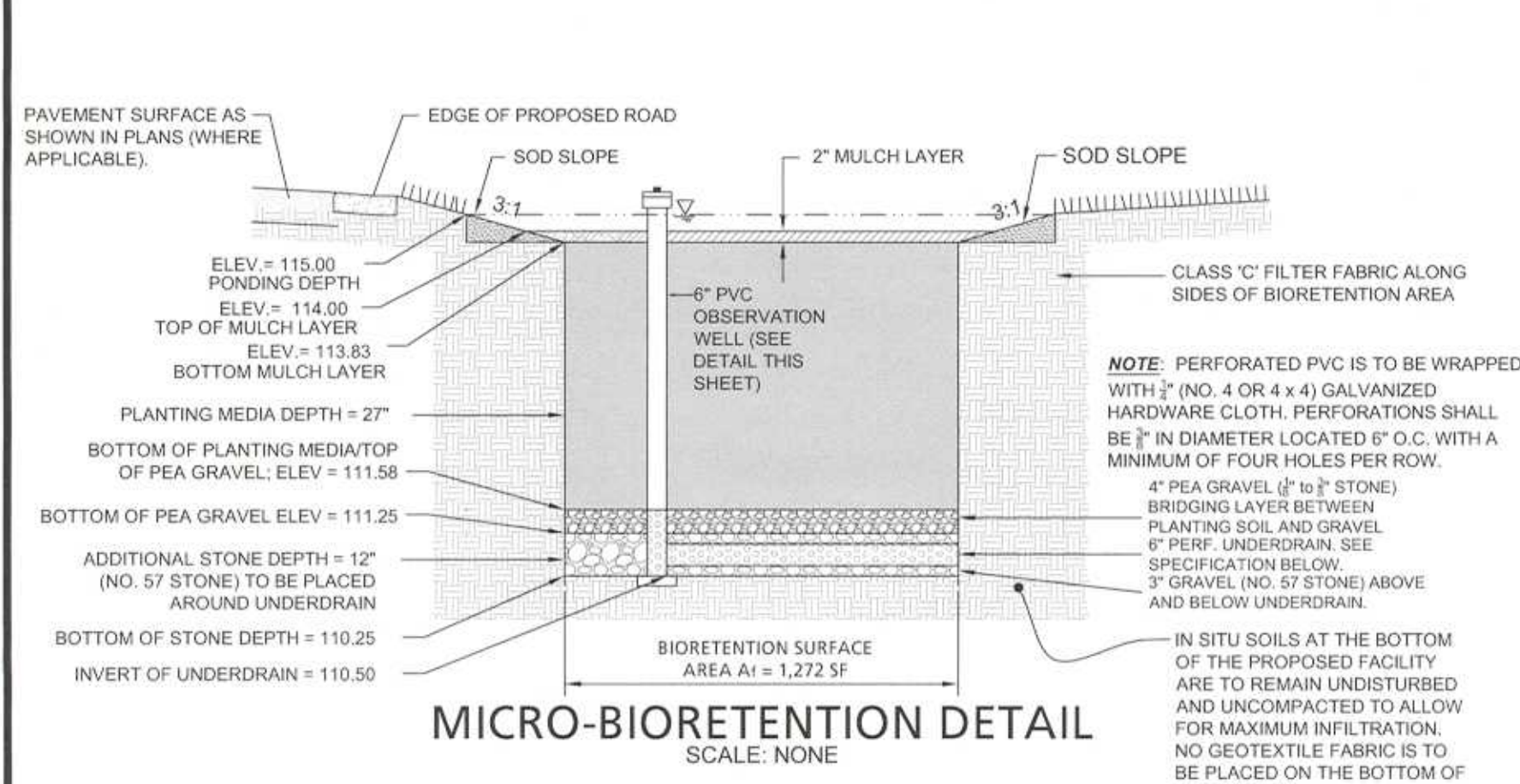
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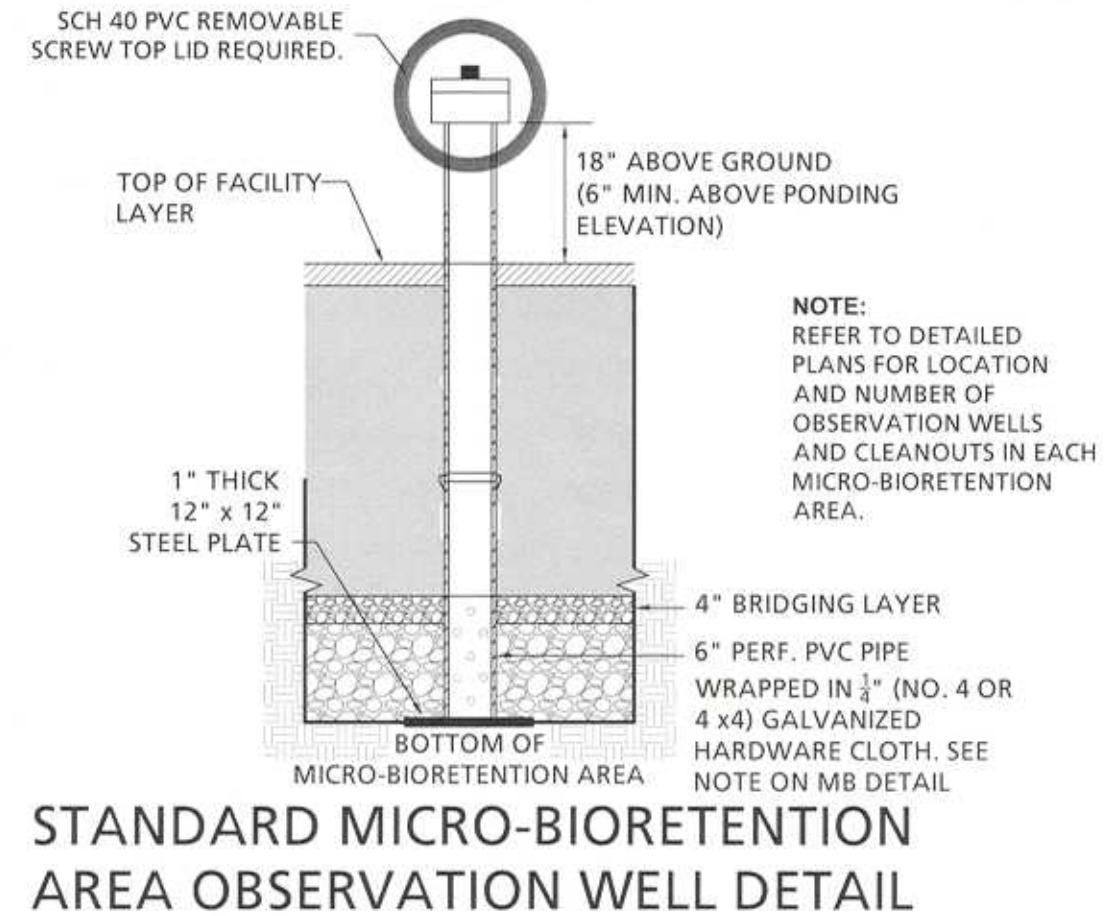








MICRO-BIORETENTION DETAIL  
SCALE: NONE



STANDARD MICRO-BIORETENTION  
AREA OBSERVATION WELL DETAIL

**B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS, LANDSCAPE INFILTRATION & INFILTRATION BERMS**

**1. MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

**2. FILTERING MEDIA OR 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 MICRO-BIORETENTION PRACTICE 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:  
- SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)  
- ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (20%), AND COMPOST (40%).  
- CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.  
- PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH.  
THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, 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 TOPSOIL WAS EXCAVATED.

**3. COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES 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 REFRACATURE 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 MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3. SEE LANDSCAPE PLANS.

**5. PLANT INSTALLATION**  
COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED 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.  
ROOTSTOCK 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.  
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.

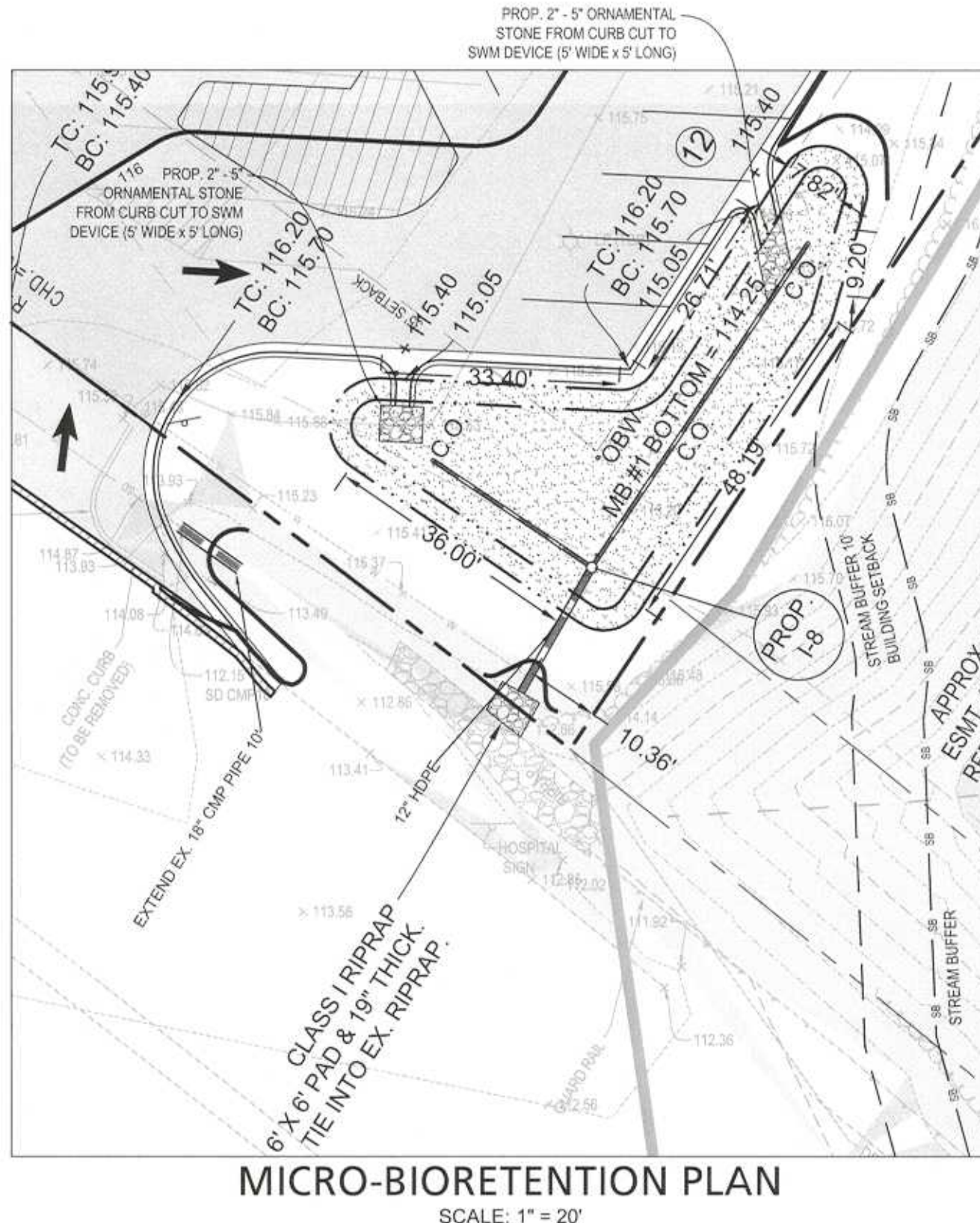
**6. MISCELLANEOUS**  
THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

**MICRO-BIORETENTION - CONSTRUCTION CRITERIA, INSPECTION NOTES & MAINTENANCE NOTES**

**CONSTRUCTION CRITERIA:**  
THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH A MICRO-BIORETENTION:  
- EROSION AND SEDIMENT CONTROL: MICRO-BIORETENTION PRACTICES SHOULD NOT BE CONSTRUCTED UNTIL THE CONTRIBUTING DRAINAGE AREA IS STABILIZED. IF THIS IS IMPRACTICAL, RUNOFF FROM DISTURBED AREAS SHALL BE DIVERTED AWAY AND NO SEDIMENT CONTROL PRACTICES SHALL BE USED NEAR THE PROPOSED LOCATION.  
- SOIL COMPACTION: EXCAVATION SHOULD BE CONDUCTED IN DRY CONDITIONS WITH EQUIPMENT LOCATED OUTSIDE OF THE PRACTICE TO MINIMIZE BOTTOM AND SIDEWALL COMPACTION. ONLY LIGHTWEIGHT, LOW GROUND-CONTACT EQUIPMENT SHOULD BE USED WITHIN MICRO-BIORETENTION PRACTICES AND THE BOTTOM SCARIFIED BEFORE INSTALLING UNDERDRAINS AND FILTERING MEDIA.  
- UNDERDRAIN INSTALLATION: GRAVEL FOR THE UNDERDRAIN SYSTEM SHOULD BE CLEAN, WASHED, AND FREE OF FINES. UNDERDRAIN PIPES SHOULD BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS. THE UPSTREAM ENDS OF THE UNDERDRAIN PIPE SHOULD BE CAPPED PRIOR TO INSTALLATION.  
- FILTER MEDIA INSTALLATION: BIO-RETENTION SOILS MAY BE MIXED ON SITE BEFORE PLACEMENT. HOWEVER, SOILS SHOULD NOT BE PLACED UNDER SATURATED CONDITIONS. THE FILTER MEDIA SHOULD BE PLACED AND GRADED USING EXCAVATORS OR BACKHOES OPERATING ADJACENT TO THE PRACTICE AND BE PACED IN HORIZONTAL LAYERS (12 INCHES PER LIFT MAXIMUM). PROPER COMPACTION OF THE MEDIA WILL OCCUR NATURALLY. SPRAYING OR SPRINKLING WATER ON EACH LIFT SATURATED MAY QUICKEN SETTLING TIMES.  
- LANDSCAPE INSTALLATION: THE OPTIMUM PLANTING TIME IS DURING THE FALL. SPRING PLANTING IS ALSO ACCEPTABLE BUT MAY REQUIRE WATERING.

**INSPECTION NOTES:**  
REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:  
- DURING EXCAVATION TO SUBGRADE AND PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEMS.  
- DURING PLACEMENT OF FILTER MEDIA.  
- DURING CONSTRUCTION OF APPURTENANT CONVEYANCE.  
- UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.  
**NOTE: ENGINEER WILL NEED TO CERTIFY THE INSTALLATION OF ALL THESE COMPONENTS.**

**MAINTENANCE NOTES:**  
THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER MAINTENANCE AND LONG-TERM PERFORMANCE OF MICRO-BIORETENTION PRACTICES:  
- PRIVATELY OWNED PRACTICES SHALL HAVE A MAINTENANCE PLAN AND SHALL BE PROTECTED BY EASEMENT, DEED RESTRICTION, ORDINANCE, OR OTHER LEGAL MEASURES PREVENTING ITS NEGLECT, ADVERSE ALTERATION, AND REMOVAL.  
- THE TOP FEW INCHES OF FILTER MEDIA SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAN 48 HOURS. SILTS AND SEDIMENT SHOULD BE REMOVED FROM THE SURFACE OF THE FILTER BED WHEN ACCUMULATION EXCEED ONE INCH.  
- WHEN PRACTICES ARE USED TO TREAT AREAS WITH HIGHER CONCENTRATIONS OF HEAVY METALS (E.G., PARKING LOTS, ROADS), MULCH SHOULD BE REPLACED ANNUALLY. OTHERWISE, THE TOP TWO TO THREE INCHES SHOULD BE REPLACED AS NECESSARY.  
- OCCASIONAL PRUNING AND REPLACEMENT OF DEAD VEGETATION IS NECESSARY. IF SPECIFIC PLANTS ARE NOT SURVIVING, MORE APPROPRIATE SPECIES SHOULD BE USED. WATERING MAY BE REQUIRED DURING PROLONGED DRY PERIODS.



MICRO-BIORETENTION PLAN  
SCALE: 1" = 20'

**MICRO-BIORETENTION FACILITY MAINTENANCE SCHEDULE**

DESCRIPTION	METHOD	FREQUENCY	TIME OF YEAR
<b>SOIL</b>			
INSPECT AND REPAIR EROSION	VISUAL	MONTHLY	MONTHLY
<b>ORGANIC LAYER</b>			
RE MULCH ANY VOID AREAS	BY HAND	WHENEVER NEEDED	WHENEVER NEEDED
REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER (OPTIONAL)	BY HAND	ONCE EVERY TWO TO THREE YEARS	SPRING
ANY ADDITIONAL MULCH ADDED (OPTIONAL)	BY HAND	ONCE A YEAR	SPRING
<b>PLANTS</b>			
REMOVAL AND REPLACEMENT OF ALL DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT	SEE PLANTING SPECIFICATIONS	TWICE A YEAR	3/15 TO 4/30 AND 10/1 TO 11/30
TREAT ALL DISEASED TREES AND SHRUBS	MECHANICAL OR BY HAND	N/A	VARIABLES, DEPENDS ON INSECT OR DISEASE INFESTATION
WATERING OF PLANT MATERIAL SHALL TAKE PLACE AT THE END OF EACH DAY FOR FOURTEEN CONSECUTIVE DAYS AFTER PLANTING HAS BEEN COMPLETED	BY HAND	IMMEDIATELY AFTER COMPLETION OF PROJECT	N/A
REPLACE STAKES AFTER ONE YEAR	BY HAND	ONCE A YEAR	ONLY REMOVE STAKES IN THE SPRING
REPLACE ANY DEFICIENT STAKES OR WIRES	BY HAND	N/A	WHENEVER NEEDED

**MATERIAL SPECIFICATIONS FOR MICRO-BIORETENTION AREAS**

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE LANDSCAPE PLANS FOR PLANTINGS IN MICRO-BIO AREA	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2" TO 4" DEEP)	LOAMY SAND (60-65%) & COMPOST (35-40%) OR SANDY LOAM (30%), COARSE SAND (30%) & COMPOST (40%)	N/A	
ORGANIC CONTENT	MIN. 10% BY DRY WEIGHT (ASTM D 2974)		
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM; NO PINE OR WOOD CHIPS
PEA GRAVEL DIAPHRAGM	PEA GRAVEL: ASTM D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
CURTAIN DRAIN	ORNAMENTAL STONE: WASHED COBBLES	STONE: 2" TO 5"	
GEOTEXTILE		N/A	PE TYPE 1 NONWOVEN
*GRAVEL UNDERDRAINS AND INFILTRATION BERMS)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35 (SEE PLAN VIEW)	SLOTTED OR PERFORATED PIPE; 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW, MINIMUM OF 3" OF GRAVEL (NO. 57 STONE) ABOVE AND BELOW UNDERDRAIN. PERFORATED PIPE SHALL BE WRAPPED WITH 1/4-INCH GALVANIZED HARDWARE CLOTH
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; Fc = 3500 PSI @ 28 DAYS, NOMINAL 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 309 R189; VERTICAL LOADING (H-10 OR H-20); ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND	AASHTO-M-6 OR ASTM-C-33	0.02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.

DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION  
APPROVED  
DEC 12 2018  
CALVERT PLANNING COMMISSION  
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email: info@bayengineering.com  
www.bayengineering.com

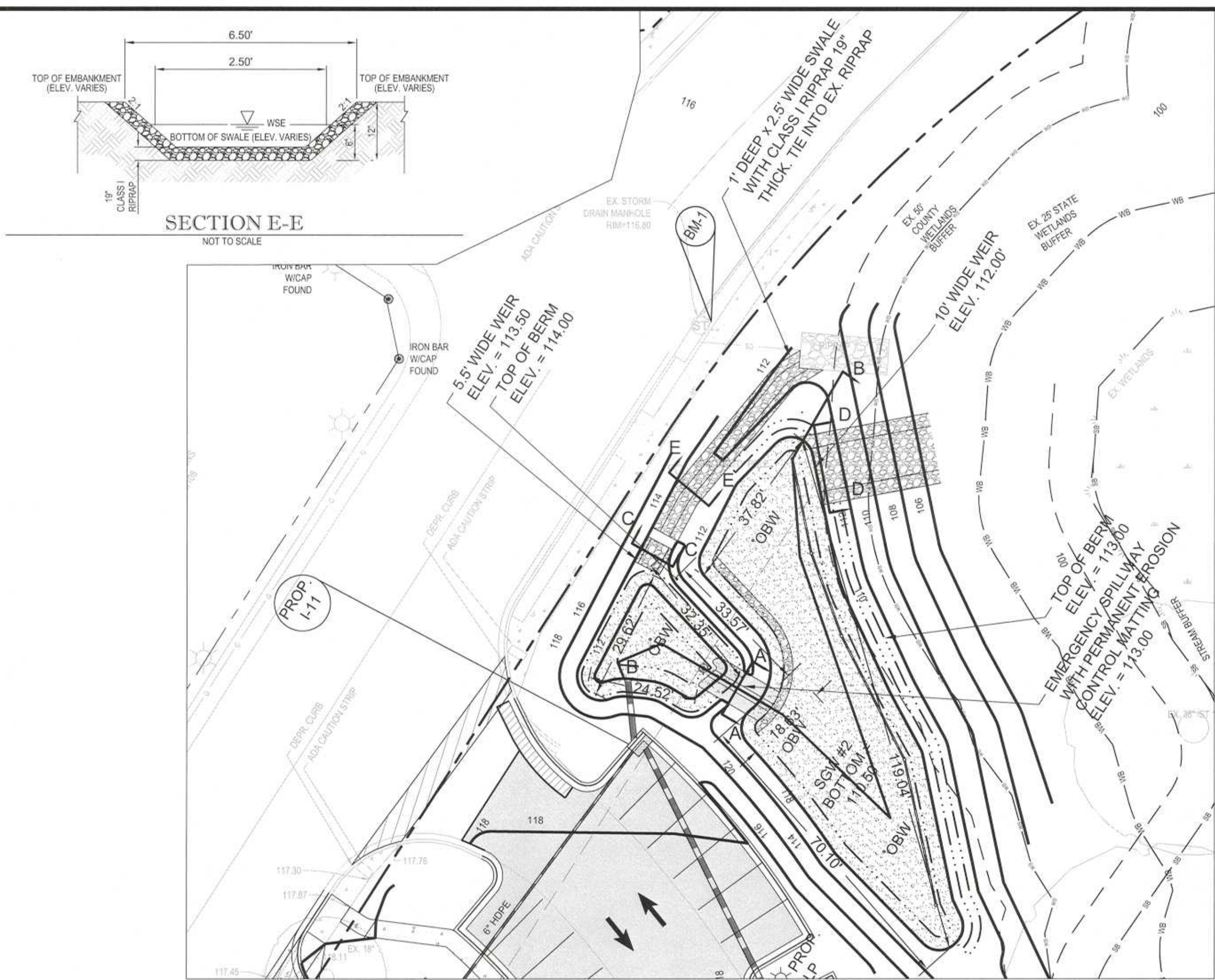
DATE: DECEMBER 2018  
JOB NUMBER: 17-5965  
SCALE: 1" = 30'  
DRAWN BY: AL  
APPROVED BY: NA  
FOLDER REFERENCE: BWH PRINCE FREDERICK VFD

ESD DETAILS  
FOR  
PRINCE FREDERICK VOLUNTEER  
FIRE DEPARTMENT CO. #2  
SPR-2018-272  
450 S SOLOMONS ISLAND ROAD  
PRINCE FREDERICK, MARYLAND 20678  
TAX ID # 02-036128  
PARCEL 294  
SECOND DISTRICT - CALVERT COUNTY

Sheet No. 11 OF 18



PLOTTED: Dec 03, 2018 - 2:03pm  
INCLUDED XREFS & IMAGES: 17-5965 C-SITE.dwg 17-5965 C-EXISTING.dwg 17-5965 FORM.dwg Professional Seal - Nelson Arocho.dwg 17-5965 C-TOPO.dwg SWMM-2A.dwg SWMM-2B.dwg



SUBMERGED GRAVEL WETLANDS PLAN  
SCALE: 1" = 20'

**CONSTRUCTION SPECIFICATION**  
30-7A EARTH/INF - CLASS A

**1. Slope**  
The work will consist of the construction of earth fills with the degree of compaction to be measured by standard compaction tests by permeating testing of compacted clay strips.

**2. Materials**  
All materials shall be obtained from approved suppliers and designed to meet the following specifications:  
a. All materials shall be obtained from approved suppliers and designed to meet the following specifications:  
b. All materials shall be obtained from approved suppliers and designed to meet the following specifications:  
c. All materials shall be obtained from approved suppliers and designed to meet the following specifications:

**3. Foundation Preparation**  
All foundation excavation surfaces shall be checked one hour prior to the start of concrete placement to ensure that the foundation is free of debris and is ready for concrete placement.

**4. Placement**  
Placement and compaction methods shall be as specified in the approved design. The contractor shall be responsible for ensuring that the concrete is placed and compacted in accordance with the approved design.

**5. Control of Moisture Content**  
During placement and compaction of earth, the moisture content of the material being placed shall be maintained within the specified range. Unless otherwise specified, the moisture content shall be maintained within the specified range.

**6. Material to be used shall either be obtained from the approved suppliers or be obtained from the approved suppliers.**

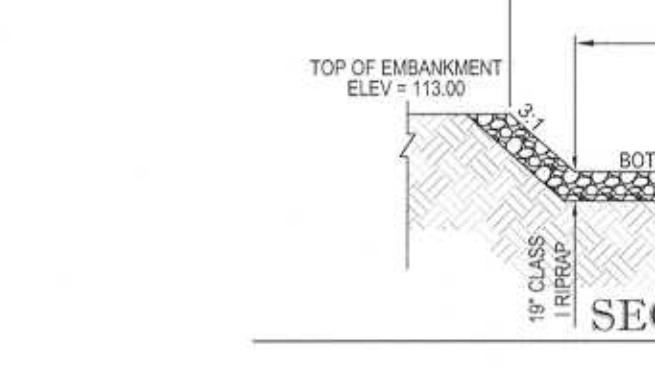
**USDA**  
Natural Resources Conservation Service  
CONSERVATION PRACTICE STANDARD  
POND SEALING OR LINING - COMPACTED SOIL TREATMENT  
Code 505  
(S)

**DEFINITION**  
This practice is intended to reduce seepage losses from impoundments constructed for water conservation and environmental protection.

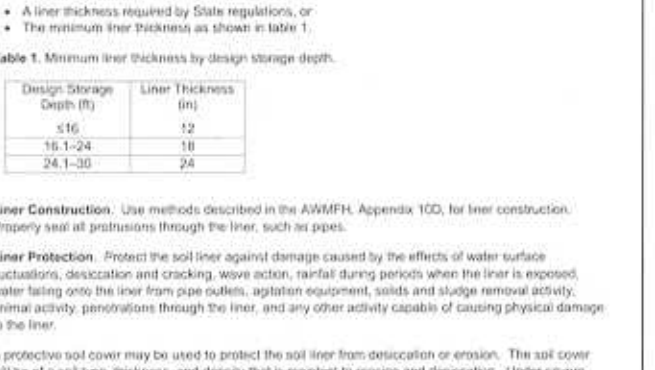
**PURPOSE**  
This practice is intended to reduce seepage losses from impoundments constructed for water conservation and environmental protection.

**CONDITIONS AND PRACTICE APPLIES**  
This practice applies to:  
• In-situ natural soils with adequate clay content, and  
• An adequate quantity of soil to be placed in a compacted soil layer without amendments is available, or  
• An adequate quantity of soil to be placed in a compacted soil layer without amendments is available, or  
• An adequate quantity of soil to be placed in a compacted soil layer without amendments is available, or

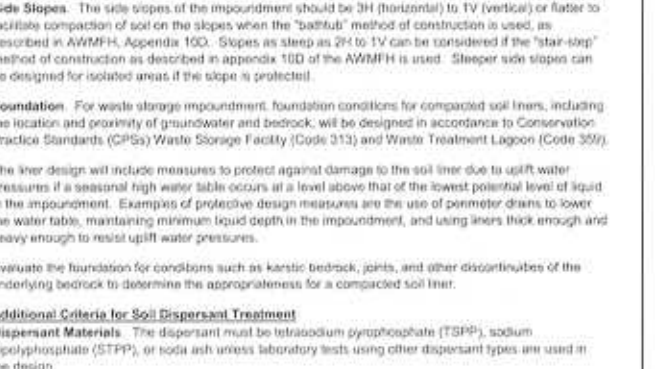
**CRITERIA**  
Design Specifications:  
• The liner design shall be based on the design of the impoundment to be sealed.  
• The liner design shall be based on the design of the impoundment to be sealed.  
• The liner design shall be based on the design of the impoundment to be sealed.



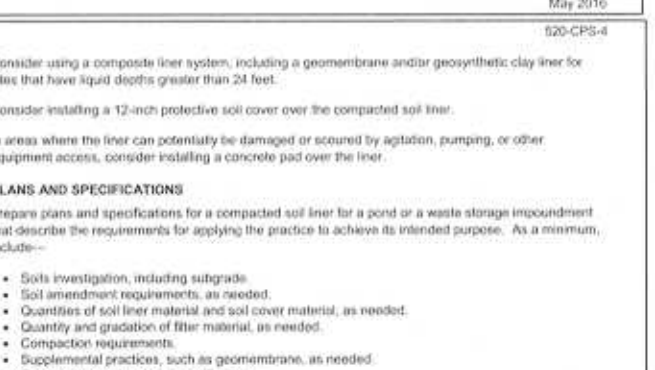
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NOT TO SCALE



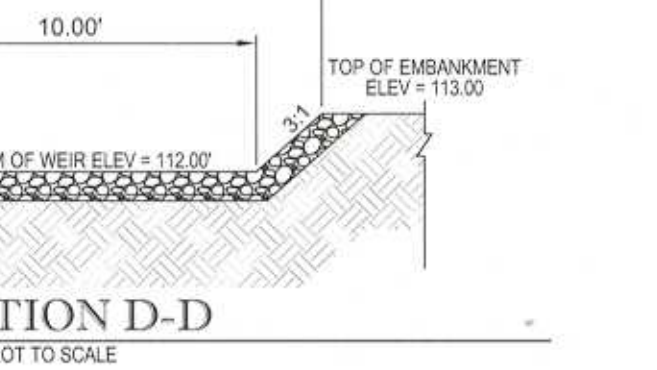
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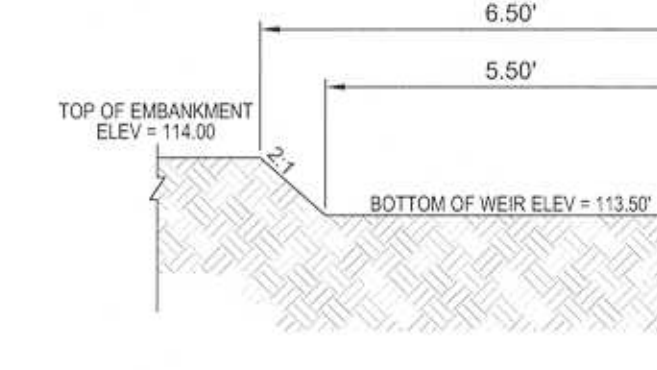
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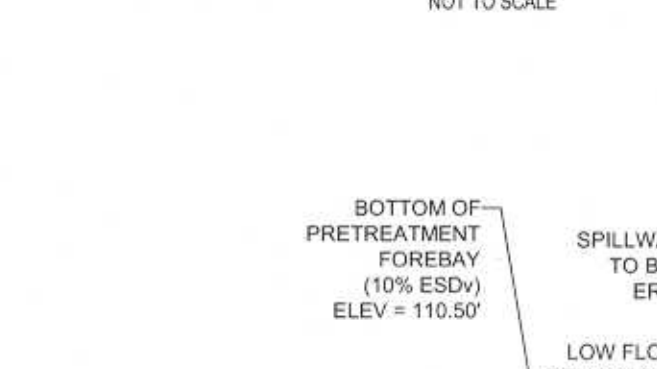
SECTION B-B  
NOT TO SCALE



SECTION D-D  
NOT TO SCALE



SECTION C-C  
NOT TO SCALE



SECTION A-A  
NOT TO SCALE



SECTION B-B  
NOT TO SCALE

**MICRO-BIORETENTION - CONSTRUCTION CRITERIA, INSPECTION NOTES & MAINTENANCE NOTES**

**CONSTRUCTION CRITERIA:**  
THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH A MICRO-BIORETENTION:  
• EROSION AND SEDIMENT CONTROL: MICRO-BIORETENTION PRACTICES SHOULD NOT BE CONSTRUCTED UNTIL THE CONTRIBUTING DRAINAGE AREA IS STABILIZED. IF THIS IS IMPRACTICAL, RUNOFF FROM DISTURBED AREAS SHALL BE DIVERTED AWAY AND NO SEDIMENT CONTROL PRACTICES SHALL BE USED NEAR THE PROPOSED LOCATION.  
• SOIL COMPACTION: EXCAVATION SHOULD BE CONDUCTED IN DRY CONDITIONS WITH EQUIPMENT LOCATED OUTSIDE OF THE PRACTICE TO MINIMIZE BOTTOM AND SIDEWALL COMPACTION. ONLY LIGHT CONTACT EQUIPMENT SHOULD BE USED WITHIN THE PRACTICE. MICRO-BIORETENTION PRACTICES AND THE BOTTOM SCARIFIED BEFORE INSTALLING UNDERDRAINS AND FILTERING MEDIA.  
• UNDERDRAIN INSTALLATION: GRAVEL FOR THE UNDERDRAIN SYSTEM SHOULD BE CLEAN, WASHED, AND FREE OF FINES. UNDERDRAIN PIPES SHOULD BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS. THE UPSTREAM ENDS OF THE UNDERDRAIN PIPES SHOULD BE CAPPED PRIOR TO INSTALLATION.  
• FILTER MEDIA INSTALLATION: BIO-RETENTION SOILS MAY BE MIXED ON-SITE BEFORE PLACEMENT. HOWEVER, SOILS SHOULD NOT BE PLACED UNDER SATURATED CONDITIONS. THE FILTER MEDIA SHOULD BE PLACED AND GRADED USING EXCAVATORS OR BACKHOES OPERATING ADJACENT TO THE PRACTICE AND BE PLACED IN HORIZONTAL LAYERS 1/2 INCHES PER LIFT MAXIMUM. PROPER COMPACTION OF THE MEDIA WILL OCCUR NATURALLY. SPRINKLING OR SPRINKLING WATER ON EACH LIFT SATURATED MAY QUICKEN SETTLING TIMES.  
• LANDSCAPE INSTALLATION: THE OPTIMUM PLANTING TIME IS DURING THE FALL. SPRING PLANTING IS ALSO ACCEPTABLE BUT MAY REQUIRE WATERING.

**INSPECTION NOTES:**  
REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:  
• DURING EXCAVATION TO SURGRADE AND PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEMS.  
• DURING PLACEMENT OF FILTER MEDIA.  
• DURING CONSTRUCTION OF APPURTENANCES CONVEYANCE.  
• UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

**NOTE: ENGINEER WILL NEED TO CERTIFY THE INSTALLATION OF ALL THESE COMPONENTS.**

**MAINTENANCE NOTES:**  
THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER MAINTENANCE AND LONG-TERM PERFORMANCE OF MICRO-BIORETENTION PRACTICES:  
• PRIVATELY OWNED PRACTICES SHALL HAVE A MAINTENANCE PLAN AND SHALL BE PROTECTED BY EASEMENT, DEED RESTRICTION, ORDINANCE, OR OTHER LEGAL MEASURES PREVENTING ITS NEGLECT, ADVERSE ALTERATION, AND REMOVAL.  
• THE TOP FEW INCHES OF FILTER MEDIA SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAN 48 HOURS. SILTS AND SEDIMENT SHOULD BE REMOVED FROM THE SURFACE OF THE FILTER BED WHEN ACCUMULATION EXCEEDS ONE INCH.  
• WHEN PRACTICES ARE USED TO TREAT AREAS WITH HIGHER CONCENTRATIONS OF HEAVY METALS (E.G., PARKING LOTS, ROADS), MULCH SHOULD BE REPLACED ANNUALLY. OTHERWISE, THE TOP TWO TO THREE INCHES SHOULD BE REPLACED AS NECESSARY.  
• OCCASIONAL PRUNING AND REPLACEMENT OF DEAD VEGETATION IS NECESSARY. IF SPECIFIC PLANTS ARE NOT SURVIVING, MORE APPROPRIATE SPECIES SHOULD BE USED. WATERING MAY BE REQUIRED DURING PROLONGED DRY PERIODS.

**SUBMERGED GRAVEL WETLANDS - CONSTRUCTION CRITERIA, INSPECTION NOTES & MAINTENANCE NOTES**

**CONSTRUCTION CRITERIA:**  
THE FOLLOWING ITEMS SHOULD BE ADDRESSED DURING CONSTRUCTION OF PROJECTS WITH SUBMERGED GRAVEL WETLANDS:  
• SITE DISTURBANCE: ALL ON-SITE DISTURBED AREAS SHOULD BE STABILIZED PRIOR TO ALLOWING RUNOFF TO ENTER THE NEWLY CONSTRUCTED WETLAND.  
• EROSION AND SEDIMENT CONTROL: THE PROPOSED LOCATION OF A SUBMERGED GRAVEL WETLAND SHALL BE PROTECTED DURING CONSTRUCTION. SURFACE RUNOFF SHALL BE DIVERTED AWAY FROM THE PRACTICE DURING GRADING OPERATIONS. FLOW SPLITTERS AND OTHER CONVEYANCE INFRASTRUCTURE SHALL BE BUILT.  
• WETLAND CONSTRUCTION SHALL BE PERFORMED WITH LIGHTWEIGHT, WIDE-TRACKED EQUIPMENT TO MINIMIZE DISTURBANCE AND COMPACTION. EXCAVATED MATERIALS SHALL BE PLACED IN A CONTAINED AREA. ANY PUMPING OPERATIONS SHALL DISCHARGE FILTERED WATER TO A STABLE OUTLET.  
• GRAVEL MEDIA: THE AGGREGATE SHALL BE COMPOSED OF AN 18 TO 48 INCH LAYER OF CLEAN WASHED, UNIFORM GRAVEL MATERIAL WITH A POROSITY OF 40%. WASHED GRAVEL SHALL BE USED.

**INSPECTION NOTES:**  
REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:  
• DURING EXCAVATION TO SUBGRADE.  
• DURING PLACEMENT OF BACKFILL OF PERFORATED INLET PIPE AND OBSERVATION WELLS.  
• DURING PLACEMENT OF GEOTEXTILES AND ALL FILTER MEDIA.  
• DURING CONSTRUCTION OF ANY APPURTENANCES CONVEYANCE SYSTEMS SUCH AS DIVERSION STRUCTURES, INLETS, OUTLETS AND FLOW DISTRIBUTION STRUCTURES.  
• UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION, AND BEFORE ALLOWING RUNOFF TO ENTER THE WETLAND.

**NOTE: ENGINEER WILL NEED TO CERTIFY THE INSTALLATION OF ALL THESE COMPONENTS.**

**MAINTENANCE NOTES:**  
THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER MAINTENANCE AND LONG-TERM PERFORMANCE OF SUBMERGED GRAVEL WETLANDS:  
• PRIVATELY OWNED PRACTICES SHALL HAVE A MAINTENANCE PLAN AND SHALL BE PROTECTED BY EASEMENT, DEED RESTRICTION, ORDINANCE, OR OTHER LEGAL MEASURES PREVENTING ITS NEGLECT, ADVERSE ALTERATION, AND REMOVAL.  
• DURING THE FIRST YEAR OF OPERATION, INSPECTIONS SHOULD BE CONDUCTED AFTER EVERY MAJOR STORM AND POORLY ESTABLISHED AREAS REVEGETATED.  
• SEDIMENT ACCUMULATION IN THE PRETREATMENT AREAS SHOULD BE REMOVED AS NECESSARY.  
• SIGNS OF UNIFORM FLOW DISTRIBUTION WITHIN WETLANDS MAY MEAN THAT THE GRAVEL OR UNDERDRAIN IS CLOGGED. THE GRAVEL AND/OR UNDERDRAIN MAY NEED TO BE REMOVED, CLEANED, AND REPLACED.  
• A DENSE STAND OF WETLAND VEGETATION SHOULD BE MAINTAINED THROUGH THE LIFE OF THE FACILITY WITH PLANTINGS REPLACED AS NEEDED.  
• INLETS AND OUTLETS TO EACH SUBMERGED GRAVEL WETLAND CELL SHALL BE FREE FROM DEBRIS TO PREVENT CLOGGING.  
• EROSION AT INFLOW POINTS SHOULD BE REPAIRED. FLOW SPLITTERS SHOULD BE FUNCTIONAL TO PREVENT BYPASSING OF THE FACILITY.

**B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDENS, LANDSCAPE INFILTRATION & INFILTRATION BERMS**

**1. MATERIAL SPECIFICATIONS**  
THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

**2. FILTERING MEDIA OR 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 MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH. OR PROVE A HURDLE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERKHAID 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:  
• SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)  
• ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2074). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).  
• CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.  
• PH RANGE - SHOULD BE BETWEEN 5.5 - 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, 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 TOPSOIL WAS EXCAVATED.

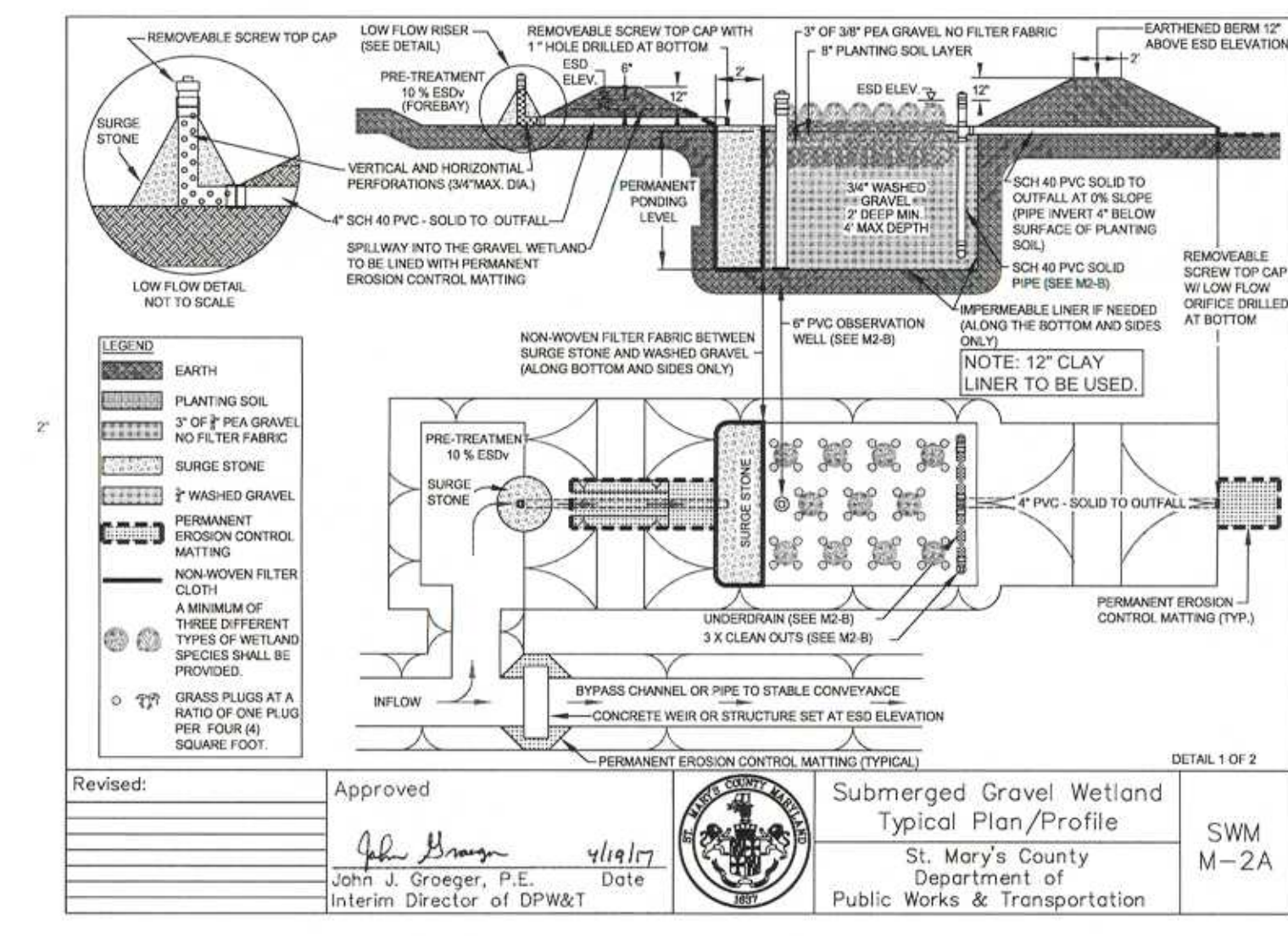
**3. COMPACTION**  
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR 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 FLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACURE 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.

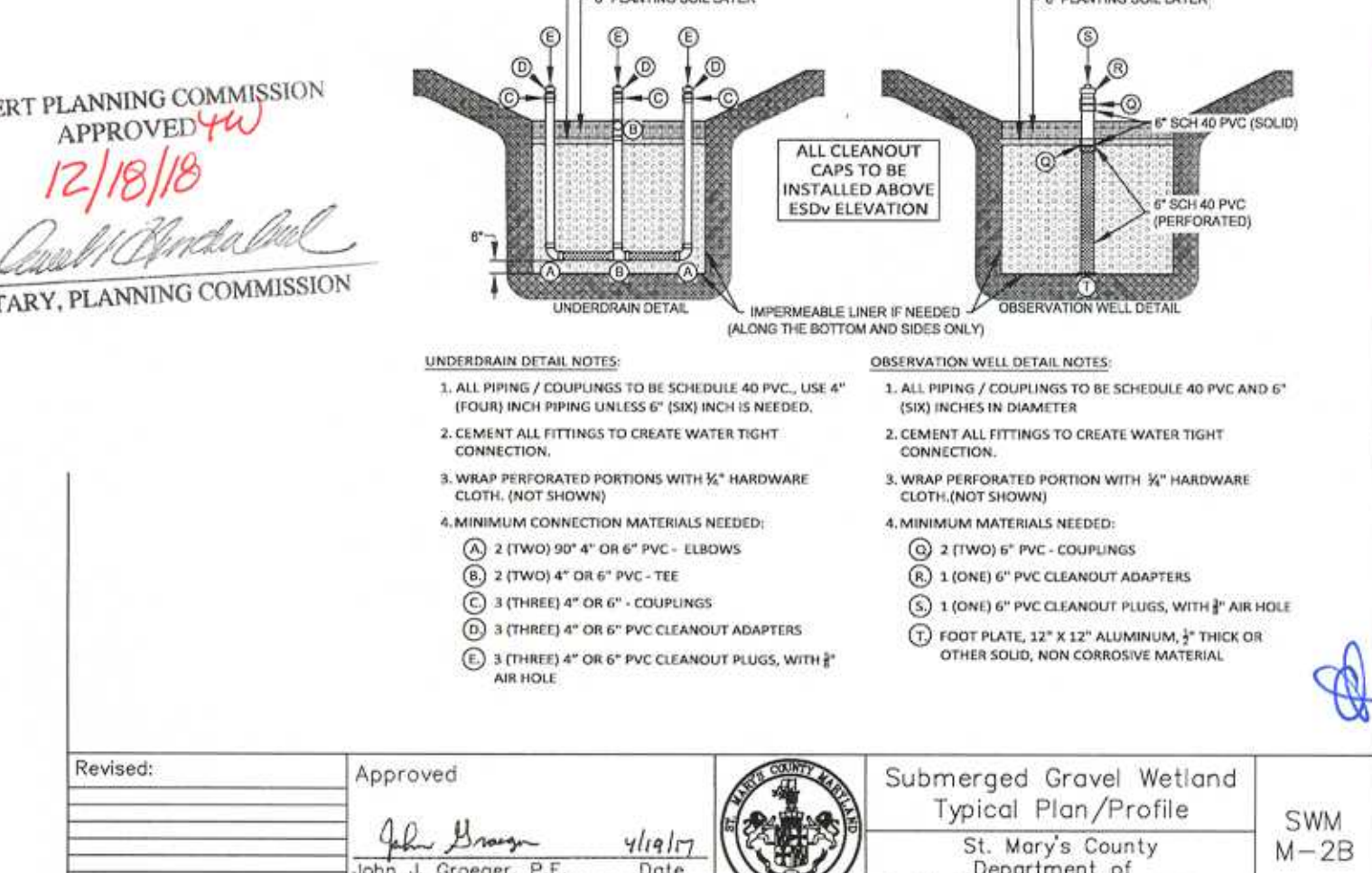
ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDING WATER BEFORE PREPARING (ROTOTILLING) BASE.

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\"/>



SUBMERGED GRAVEL WETLAND  
Typical Plan/Profile  
SWM M-2A



SUBMERGED GRAVEL WETLANDS DETAILS  
SWM M-2B

**Revisions**

Rev. #	Date	By	Description
1	1/11/20	Nelson Arocho	Initial Design

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**DATE**  
DECEMBER, 2018

**JOB NUMBER**  
17-5965

**SCALE**  
1" = 30'

**DRAWN BY**  
N/A

**APPROVED BY**  
FREDERICK VOLUNTEER

**FOR**  
PRINCE FREDERICK VOLUNTEER  
FIRE DEPARTMENT CO. #2

**DATE**  
12/18/18

**SECRETARY, PLANNING COMMISSION**

**DATE**  
DECEMBER, 2018

**JOB NUMBER**  
17-5965

**SCALE**  
1" = 30'

**DRAWN BY**  
N/A

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FIRE DEPARTMENT CO. #2

**DATE**  
12/18/18

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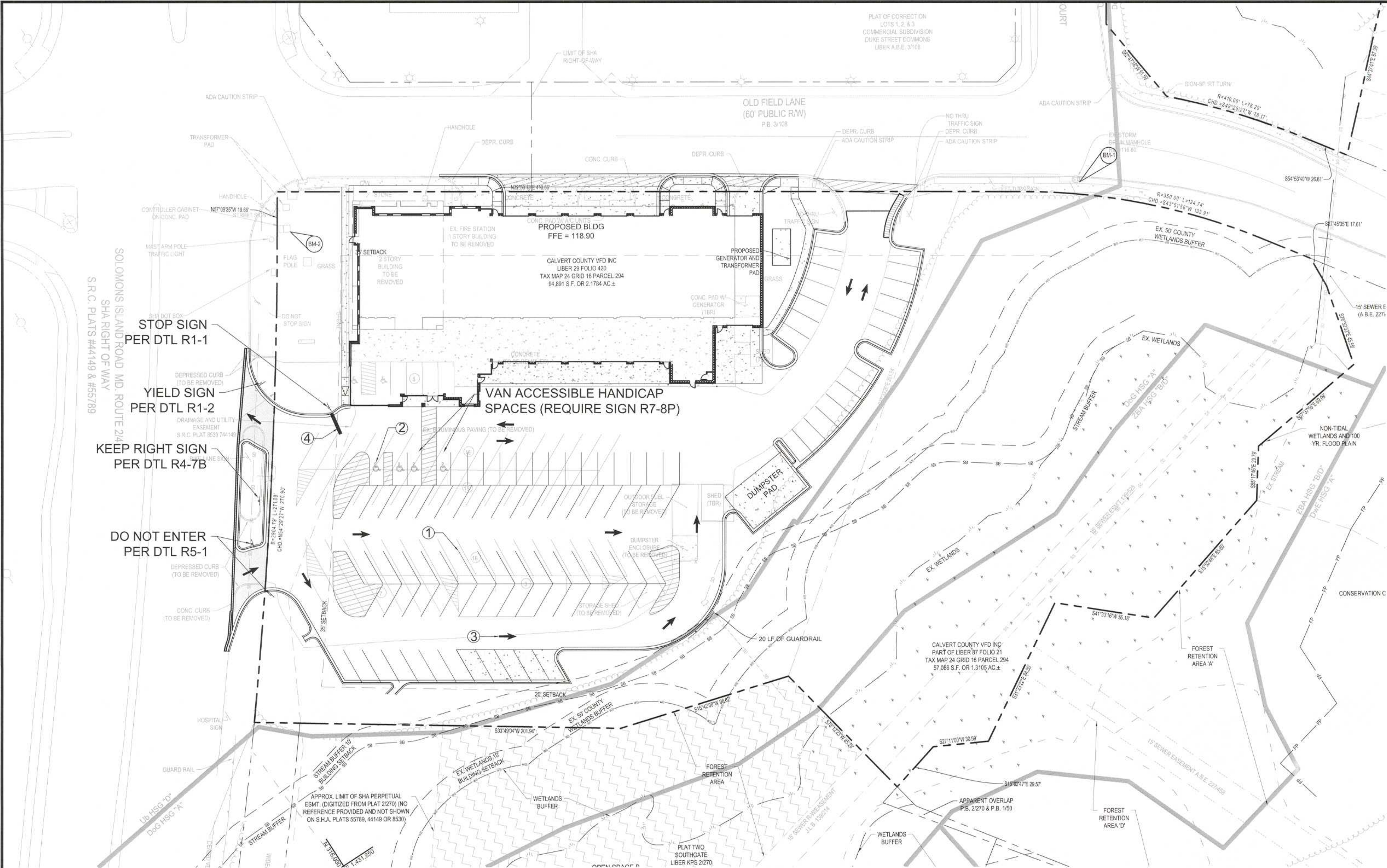








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**PAINT STRIPING PLAN**  
 SCALE: 1"=30'



R1-2  
 R1-2 SHALL BE 36" x 36" x 36"



R4-7b  
 R4-7B SHALL BE 24" x 30"



R5-1  
 R5-1 SHALL BE 30" x 30"



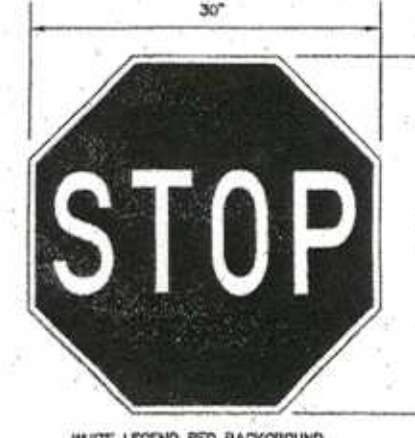
R7-8(3)



R7-8P

DEPARTMENT OF PUBLIC WORKS  
 ENGINEERING DIVISION  
 APPROVED  
 DEC 12 2018

CALVERT PLANNING COMMISSION  
 APPROVED  
 12/18/18  
 SECRETARY, PLANNING COMMISSION



R1-1 REFER TO SECTION 2B.10

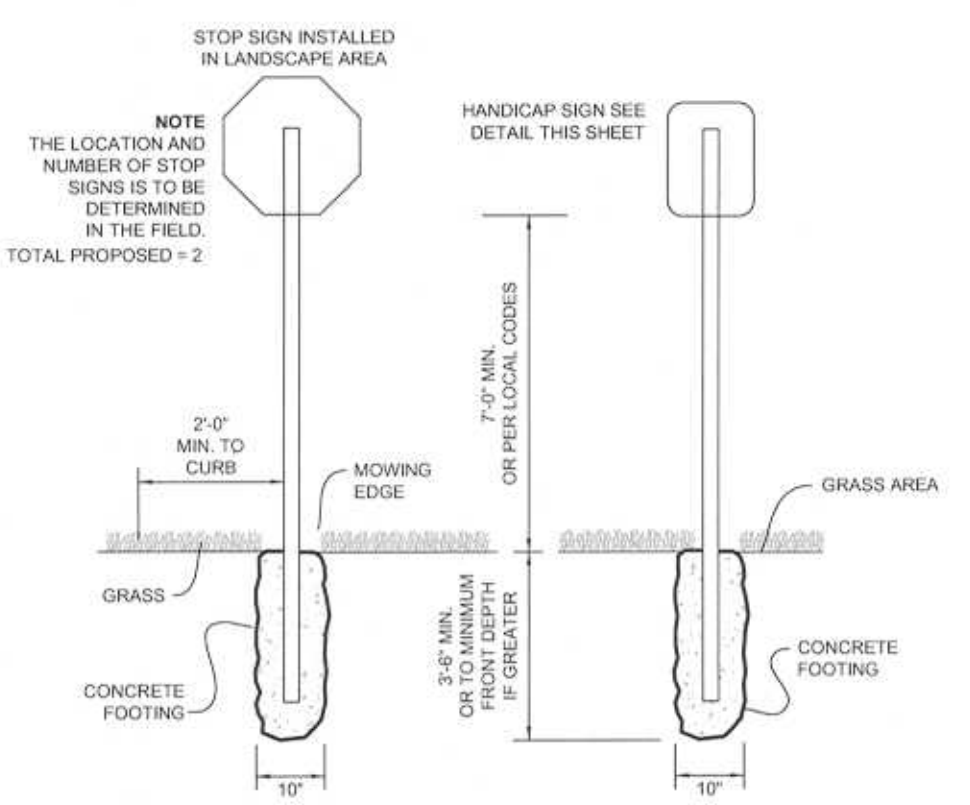
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NOTE: THE ABOVE DETAILS WERE TAKEN FROM THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS 2011 EDITION (MSHA).



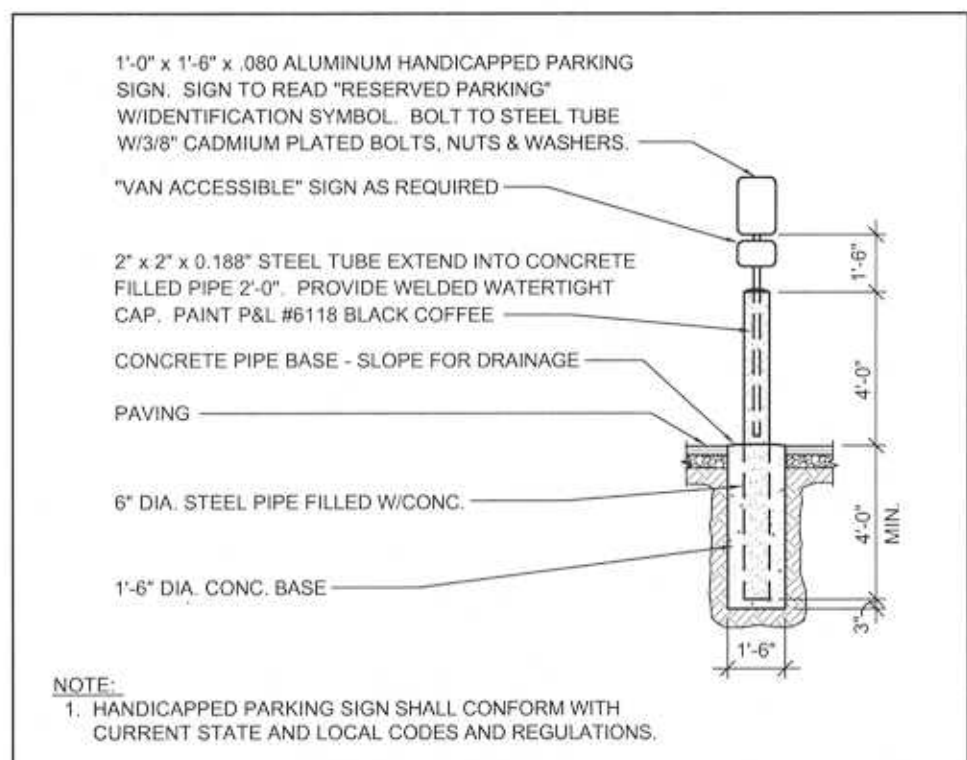
**HANDICAP SIGNAGE DETAIL**  
 SCALE: NONE

\*THIS DETAIL WAS TAKEN FROM THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS 2011 EDITION (MSHA).



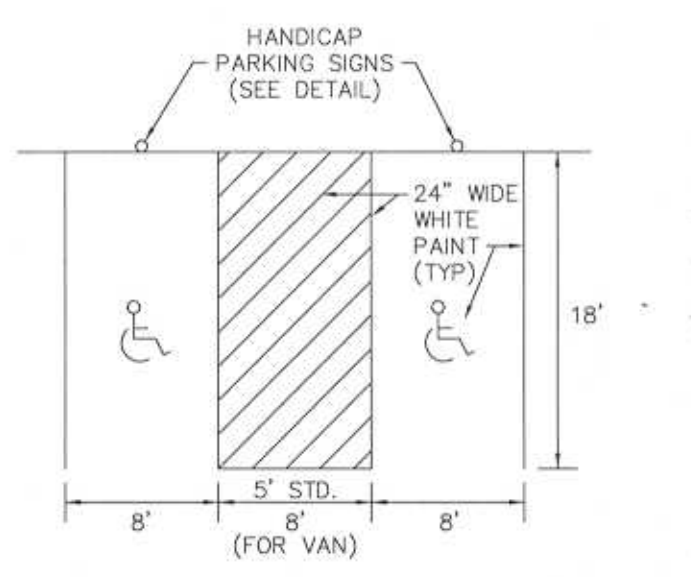
**TRAFFIC SIGNAGE DETAIL**  
 SCALE: NONE

TRAFFIC SIGNAGE NOTES  
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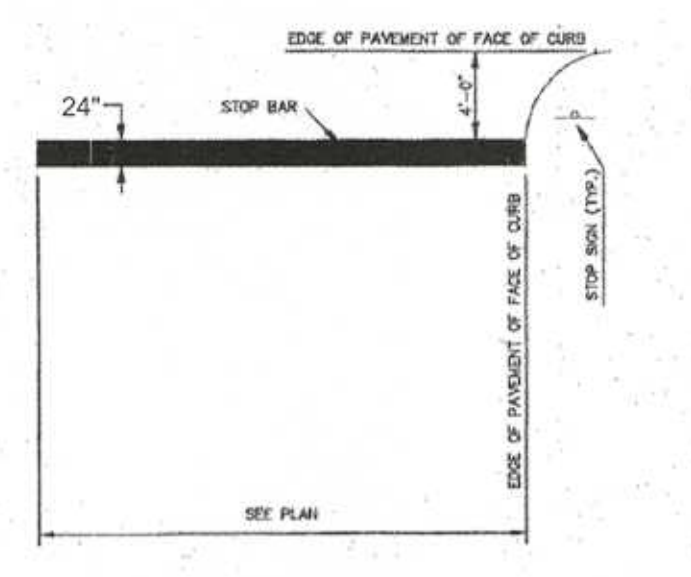


**HANDICAPPED PKG SIGN**  
 HANDICAPPED PKG SIGN 9/29/04 SCALE: N.T.S.

- ① 4" WIDE WHITE PAINT PER SECTION 3B.19 & 21 OF THE 2011 MD-MUTCD
- ② INTERNATIONAL SYMBOL OF ACCESSIBILITY PARKING SPACE MARKING PER FIGURE 3B-22 OF MUTCD
- ③ DIRECTIONAL ARROW MARKING PER SECTION 3B.20 & 24 OF THE 2011 MD-MUTCD
- ④ 24" WIDE WHITE PAINT PER SECTION 3B.16 OF THE 2011 MD-MUTCD



**HANDICAP PARKING DETAIL**  
 SCALE: NONE



**STOP BAR DETAIL**  
 SCALE: NONE

Revisions	Description	Date	By

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Neilon Arango  
 1/11/20  
 38268  
 Exp./Renewal Date

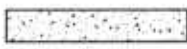

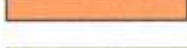


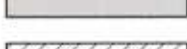
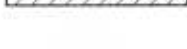
**PAINT STRIPING PLAN**  
 SITE PLAN FOR  
**PRINCE FREDERICK VOLUNTEER  
 FIRE DEPARTMENT CO. #2**  
 SPR-2018-272  
 450 S SOLOMONS ISLAND ROAD  
 PRINCE FREDERICK, MARYLAND 20678  
 TAX ID # 02-036126  
 TAX MAP 24, GRID 16, PARCEL 284  
 SECOND DISTRICT - CALVERT COUNTY

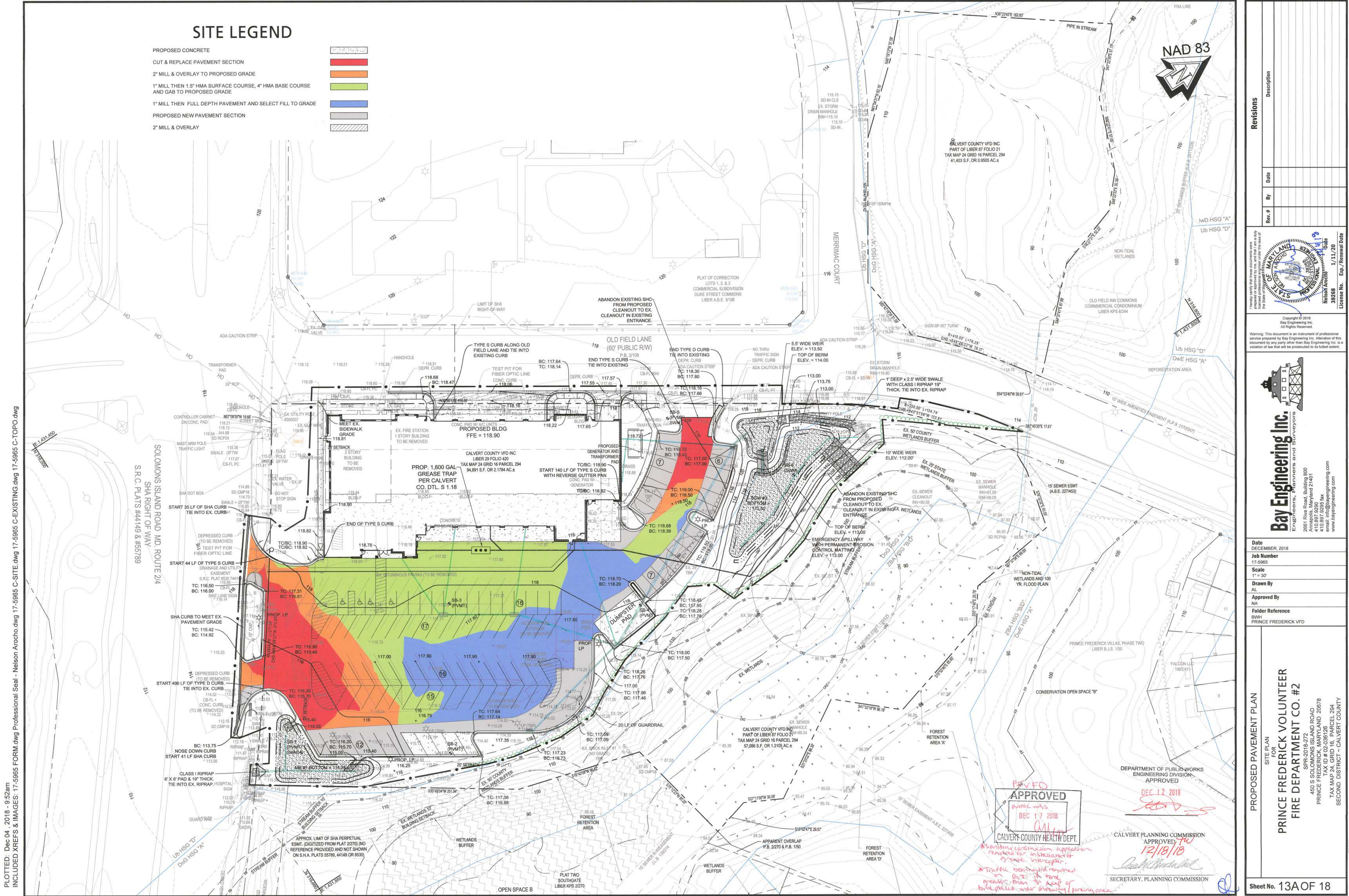
DATE: DECEMBER, 2018  
 JOB NUMBER: 17-5965  
 SCALE: AS SHOWN  
 DRAWN BY: AL  
 APPROVED BY: NA  
 FOLDER REFERENCE: BWH PRINCE FREDERICK VFD

Sheet No. 13 OF 18



# SITE LEGEND

- PROPOSED CONCRETE 
- CUT & REPLACE PAVEMENT SECTION 
- 2" MILL & OVERLAY TO PROPOSED GRADE 
- 1" MILL THEN 1.5" HMA SURFACE COURSE, 4" HMA BASE COURSE AND GAB TO PROPOSED GRADE 
- 1" MILL THEN FULL DEPTH PAVEMENT AND SELECT FILL TO GRADE 
- PROPOSED NEW PAVEMENT SECTION 
- 2" MILL & OVERLAY 



Rev. #	By	Date	Description

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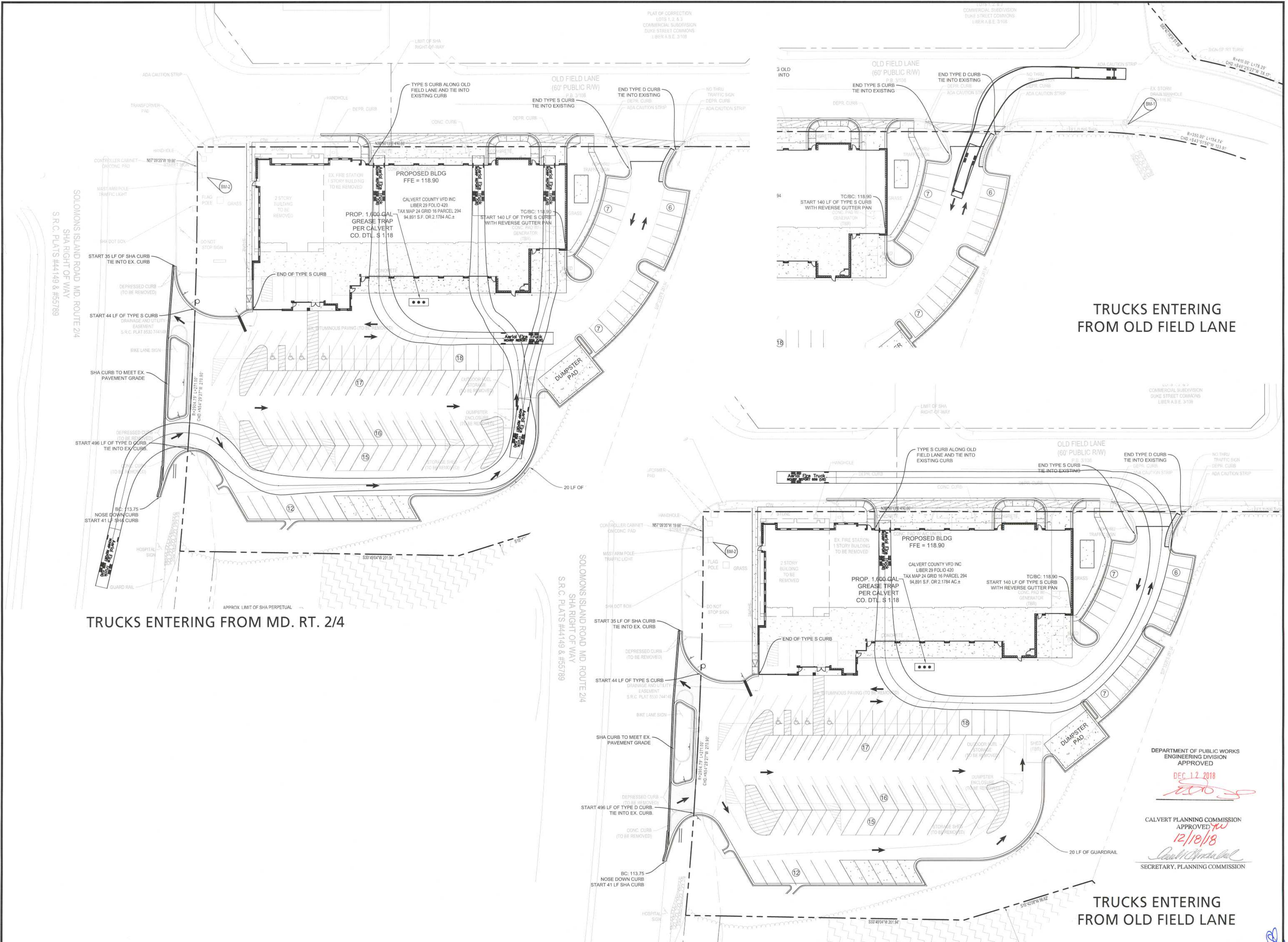
Date	DECEMBER 2016
Job Number	17-5965
Scale	1" = 30'
Drawn By	AL
Approved By	NA
Folder Reference	BWH PRINCE FREDERICK VFD

**PROPOSED PAVEMENT PLAN**  
 FOR  
**PRINCE FREDERICK VOLUNTEER  
 FIRE DEPARTMENT CO. #2**  
 450 S SOLOMONS ISLAND ROAD  
 PRINCE FREDERICK, MARYLAND 20678  
 TAX MAP 24, GRID 16, PARCEL 294  
 SECOND DISTRICT - CALVERT COUNTY

PLOTTED: Dec 04, 2018 - 9:52am  
 INCLUDED XREFS & IMAGES: 17-5965 FORM.dwg Professional Seal - Nelson, Arocho.dwg 17-5965 C-SITE.dwg 17-5965 C-EXISTING.dwg 17-5965 C-TOPO.dwg

F:17-5965 BWH - Prince Frederick VFD\Drawing Files\Site Plans\17-5965 13A PVMT.dwg





Rev. #	Date	Description

Nelson Arocho  
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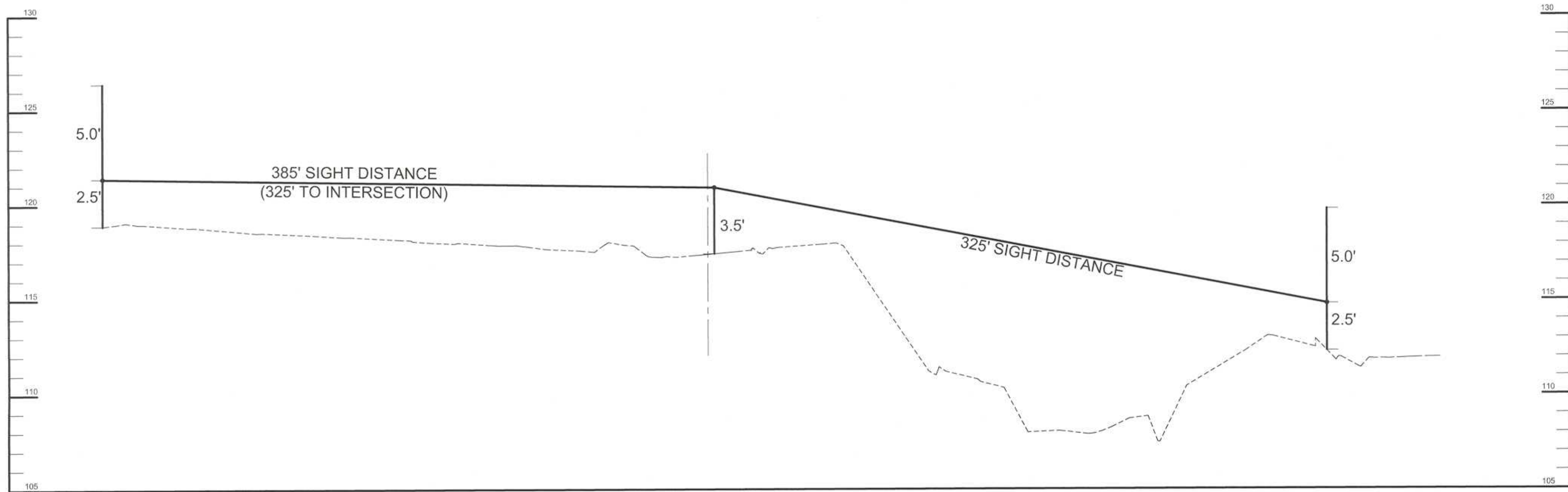
Date	DECEMBER 2018
Job Number	17-5965
Scale	1" = 30'
Drawn By	AL
Approved By	NA
Folder Reference	BWH PRINCE FREDERICK VFD

TRUCK TURN EXHIBIT  
 SITE PLAN FOR  
**PRINCE FREDERICK VOLUNTEER  
 FIRE DEPARTMENT CO. #2**  
 SPR-2018-272  
 450 S SOLOMONS ISLAND ROAD  
 PRINCE FREDERICK, MARYLAND 20678  
 TAX ID # 02-036126  
 TAX MAP 24, GRID 16, PARCEL 294  
 SECOND DISTRICT - CALVERT COUNTY

DEPARTMENT OF PUBLIC WORKS  
 ENGINEERING DIVISION  
 APPROVED  
  
 DEC 12 2018

CALVERT PLANNING COMMISSION  
 APPROVED  
  
 12/10/18  
 SECRETARY, PLANNING COMMISSION





**OLD FIELD LANE (PUBLIC)**  
SCALE: 1"=4' VERTICAL; 1"=40' HORIZONTAL

Design speed (km/h)	Stopping sight distance (m)	Intersection sight distance for passenger cars		Design speed (mph)	Stopping sight distance (ft)	Intersection sight distance for passenger cars	
		Calculated (m)	Design (m)			Calculated (ft)	Design (ft)
20	20	36.1	40	15	80	143.3	145
30	35	54.2	55	20	115	191.1	195
40	50	72.3	75	25	155	238.9	240
50	65	90.4	95	30	200	286.7	290
60	85	108.4	110	35	250	334.4	335
70	105	126.5	130	40	305	382.2	385
80	130	144.8	145	45	360	430.0	430
90	160	162.6	165	50	425	477.8	480
100	185	180.7	185	55	495	525.5	530
110	220	198.8	200	60	570	573.3	575
120	250	216.8	220	65	645	621.1	625
130	285	234.9	235	70	730	668.9	670
				75	820	716.6	720
				80	910	764.4	765

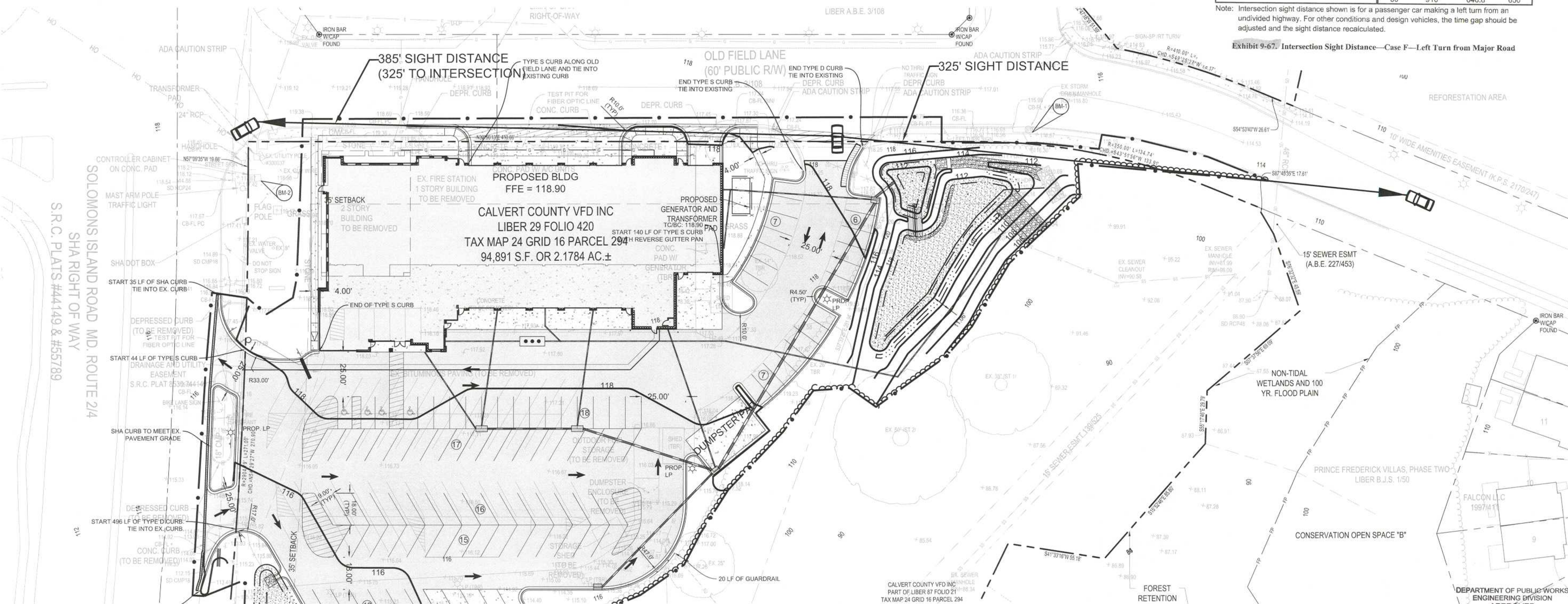
Note: Intersection sight distance shown is for a stopped passenger car to turn right onto or cross a two-lane highway with no median and grades 3 percent or less. For other conditions, the time gap must be adjusted and required sight distance recalculated.

Exhibit 9-58. Design Intersection Sight Distance—Case B2—Right Turn from Stop and Case B3—Crossing Maneuver

Design speed (km/h)	Stopping sight distance (m)	Intersection sight distance for passenger cars		Design speed (mph)	Stopping sight distance (ft)	Intersection sight distance for passenger cars	
		Calculated (m)	Design (m)			Calculated (ft)	Design (ft)
20	20	30.6	35	15	80	121.3	125
30	35	45.9	50	20	115	161.7	165
40	50	61.2	65	25	155	202.1	205
50	65	76.5	80	30	200	242.6	245
60	85	91.7	95	35	250	283.0	285
70	105	107.0	110	40	305	323.4	325
80	130	122.3	125	45	360	363.8	365
90	160	137.6	140	50	425	404.3	405
100	185	152.9	155	55	495	444.7	445
110	220	168.2	170	60	570	485.1	490
120	250	183.5	185	65	645	525.5	530
130	285	198.8	200	70	730	568.0	570
				75	820	606.4	610
				80	910	646.8	650

Note: Intersection sight distance shown is for a passenger car making a left turn from an undivided highway. For other conditions and design vehicles, the time gap should be adjusted and the sight distance recalculated.

Exhibit 9-67. Intersection Sight Distance—Case F—Left Turn from Major Road



**SIGHT DISTANCE PLAN**  
SCALE: 1" = 30'  
OLD FIELD LN. POSTED SPEED = 30 MPH  
OLD FIELD LN. DESIGN SPEED = 40 MPH

Revisions

Rev. #	Date	By	Description

Exp./Renewal Date  
1/11/20

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Date: DECEMBER 2018  
Job Number: 17-5965  
Scale: 1" = 30'  
Drawn By: AL  
Approved By: BW  
Folder Reference: BWH-FREDERICK VFD

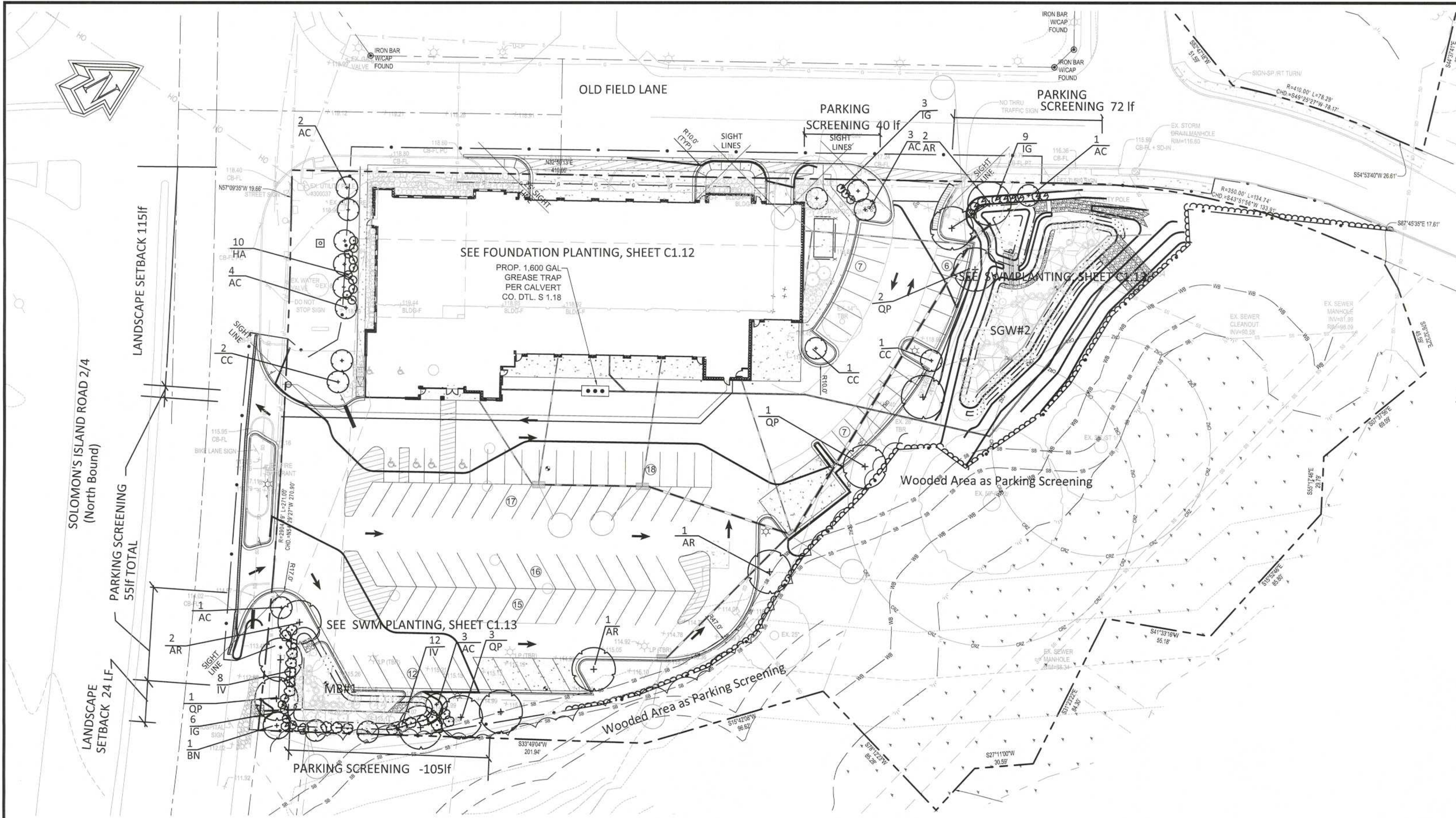
SIGHT DISTANCE PLAN  
FOR  
**PRINCE FREDERICK VOLUNTEER  
FIRE DEPARTMENT CO. #2**  
SPR-2018-272  
450 S SOLOMONS ISLAND ROAD  
PRINCE FREDERICK, MARYLAND 20678  
TAX ID # 02-036126  
TAX MAP 24, GRID 16, PARCEL 294  
SECOND DISTRICT - CALVERT COUNTY

DEC 12 2018  
*[Signature]*

CALVERT PLANNING COMMISSION  
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12/18/18  
*[Signature]*  
SECRETARY, PLANNING COMMISSION

Sheet No. 15 OF 18





### SITE LEGEND

PROPERTY LINE	---
EXISTING CONTOUR	--- 142 ---
EXISTING UTILITY POLE W/ OVERHEAD WIRE	--- 142 ---
EXISTING SEWER	---
EXISTING STORM DRAIN	---
EXISTING WATER	---
EXISTING GAS	---
EXISTING ELECTRIC	---
EXISTING CONCRETE	---
PROPOSED CURB AND GUTTER	---
PROPOSED WATER	---
PROPOSED SEWER	---
PROPOSED STORM DRAIN	---
PROPOSED CONCRETE	---
PROPOSED CONTOUR	--- 142 ---

### LANDSCAPE TABULATIONS

SCREENING OF PARKING AREAS	
<b>PARKING ADJACENT TO OLD FIELD ROAD</b>	
Adjacent property use: Public Right of Way	
Length of Buffer:	112 lf
Planting Required:	
Shade Trees :	3
Flowering Trees :	3
Shrubs :	4
Planting Provided:	
Shade Trees :	1
Flowering Trees :	5
Shrubs :	12
(reduction in shade trees per approval of county)	
<b>PARKING ADJACENT TO SOLOMON'S ISLAND ROAD</b>	
Adjacent property use: Public Right of Way	
Length of Buffer:	55 lf
Planting Required:	
Shade Trees :	2
Flowering Trees :	2
Shrubs :	8
Planting Provided:	
Shade Trees :	2
Flowering Trees :	2
Shrubs :	8
<b>EAST PARKING SCREENING (non-Wooded portion)</b>	
Adjacent property use: Open Space	
Length of Buffer:	105 lf
Planting Required:	
Shade Trees :	3
Flowering Trees :	3
Shrubs :	12
Planting Provided:	
Shade Trees :	3
Flowering Trees :	3
Shrubs :	12

#### PLANT LIST - PARKING SCREEN - TO OLD FIELD ROAD

QTY	KEY	BOTANICAL NAME	COMMON NAME	MIN. SIZE	ROOT	SPC'G
1	AR	Acer rubrum	Red Maple	2" cal.	B & B	Shown
<b>TOTAL</b>	<b>1</b>					
3	AC	Amelanchier canadensis	Serviceberry	1-2" cal.	Cont.	Shown
2	CC	Cercis canadensis	Redbud	1-2" cal.	Cont.	Shown
<b>TOTAL</b>	<b>5</b>					
12	IG	Ilex glabra 'Shamrock'	Shamrock Inkberry	24"	3 Gal.	3.5'o.c.
<b>TOTAL</b>	<b>12</b>					

### LANDSCAPE PLAN

SCALE: 1" = 30'

#### PLANT LIST - PARKING SCREEN - TO SOLOMON'S ISLAND ROAD

QTY	KEY	BOTANICAL NAME	COMMON NAME	MIN. SIZE	ROOT	SPC'G
2	AR	Acer rubrum	Red Maple	2" cal.	B & B	Shown
<b>TOTAL</b>	<b>2</b>					
2	AC	Amelanchier canadensis	Serviceberry	1-2" cal.	Cont.	Shown
<b>TOTAL</b>	<b>2</b>					
8	IV	Ilex verticillata (include 2 males)	Winterberry	24"	3 Gal.	6'o.c.
<b>TOTAL</b>	<b>8</b>					

#### PLANT LIST - SOUTH LANDSCAPE SETBACK - TO SOLOMON'S ISLAND ROAD

QTY	KEY	BOTANICAL NAME	COMMON NAME	MIN. SIZE	ROOT	SPC'G
2	AR	Acer rubrum	Red Maple	2" cal.	B & B	Shown
1	BN	Betula nigra	River Birch	2" cal.	B & B	Shown
1	QP	Quercus phellos	Willow Oak	2" cal.	B & B	Shown
<b>TOTAL</b>	<b>4</b>					
4	AC	Amelanchier canadensis	Serviceberry	1-2" cal.	Cont.	Shown
<b>TOTAL</b>	<b>4</b>					
10	HA	Hydrangea arborescens	Smooth Hydrangea	24"	3 Gal.	4'o.c.
6	IG	Ilex glabra 'Shamrock'	Shamrock Inkberry	24"	3 Gal.	3.5'o.c.
<b>TOTAL</b>	<b>16</b>					

#### PLANT LIST - EAST PARKING SCREEN (non-wooded portion)

QTY	KEY	BOTANICAL NAME	COMMON NAME	MIN. SIZE	ROOT	SPC'G
3	QP	Quercus phellos	Willow Oak	2" cal.	B & B	Shown
<b>TOTAL</b>	<b>4</b>					
3	AC	Amelanchier canadensis	Serviceberry	1-2" cal.	Cont.	Shown
<b>TOTAL</b>	<b>3</b>					
12	IV	Ilex verticillata (include 2 males)	Winterberry	24"	3 Gal.	6'o.c.
<b>TOTAL</b>	<b>12</b>					

#### PLANT LIST - INTERIOR PARKING

QTY	KEY	BOTANICAL NAME	COMMON NAME	MIN. SIZE	ROOT	SPC'G
1	AR	Acer rubrum	Red Maple	2" cal.	B & B	Shown
3	QP	Quercus phellos	Willow Oak	2" cal.	B & B	Shown
<b>TOTAL</b>	<b>4</b>					
1	AC	Amelanchier canadensis	Serviceberry	1-2" cal.	Cont.	Shown
2	CC	Cercis canadensis	Redbud	1-2" cal.	Cont.	shown
<b>TOTAL</b>	<b>3</b>					

### GENERAL NOTES:

- Check location of all underground utilities. Call "MISS UTILITY" at 1-800-257-7777 at least 5 days prior to any excavation.
- Contractor is required to carry any/all Workman's Compensation and other liability insurances as required by the General Contractor / Owner.
- Contractor is required to comply with any/all codes, regulations and ordinances that apply to the work performed on this project.
- Contractor shall co-ordinate the execution of all work performed with the General Contractor / Owner and shall complete all work in a timely fashion.
- General Contractor / Owner is responsible for obtaining site permits and paying applicable fees unless otherwise specified.
- All clearing, grubbing, rough and fine grading, installation and maintenance of erosion control devices, sodding and seeding are separate operations and not included in this Landscape Plan. Except as specifically stated or in areas to be landscaped, all disturbed areas shall be sodded or seeded per Grading or Erosion Control Plan by others.
- These plans are to be used for landscape purposes only.
- If stockpile areas are required on-site, locations will be designated by the General Contractor / Owner.

DEPARTMENT OF PUBLIC WORKS  
ENGINEERING DIVISION  
APPROVED

DEC 12 2018

CALVERT PLANNING COMMISSION  
APPROVED  
12/10/18

SECRETARY, PLANNING COMMISSION

### PLAN NOTES:

- This plan is to be used for Landscaping purposes only.
- See Sheet C1.13 for SWM planting information.
- All known utilities have been shown.
- There are no known historic features on site.
- For further site information, see plans by Bay Engineering, Inc.

### Revisions

Rev. #	Date	By	Description

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Date	NOVEMBER 30, 2018
Job Number	DMS#2018-001
Scale	1" = 30'
Drawn By	Imm
Approved By	DMS
Folder Reference	BAY ENG

LANDSCAPE PLAN FOR  
PRINCE FREDERICK  
VOLUNTEER FIRE  
DEPARTMENT CO. #2  
450 S SOLOMON'S ISLAND ROAD  
PRINCE FREDERICK, MARYLAND 20678  
TAX ID# 02-08125  
TAX MAP 24, GRID 16, PARCEL 294  
SECOND DISTRICT - CALVERT COUNTY







**PLANTING NOTES:**

**GENERAL**

- All planting shall conform to currently approved horticultural practice. See PLANTING DETAILS. Planting shall take place between March 15 – June 1 or September 15 – November 15.
- All plants shall conform to current standards as defined by the American Nurseryman's Association and each shall be clearly tagged with its botanical name. No substitutions shall be permitted after bid is accepted. No plants shall be pruned other than to remove a damaged branch. No plant with a dead, damaged or pruned out central leader will be accepted.
- All plants shall be certified by the Contractor to be free of pests, fungi and diseases and/or deformities or damage.
- If any conflicts are found between the information on the Landscape Plan and that shown on the plant lists, notify the landscape architect prior to submission of bid.
- Landscape architect shall be notified in writing five work days in advance for inspection and approval of all plants prior to any installation.
- Planting beds and pits shall be rendered free of all rocks over 2" and any debris found during the tilling and preparation process. All plants spaced at 6' on center (o.c.) or less shall be planted in hand-edged planting beds.
- Planting beds shall be tilled to a minimum depth of 8". If any unsuitable conditions, such as extreme compaction or high water table are encountered, the Landscape Architect shall be notified immediately.
- A minimum of 2" depth 'Leaf-Gro' or equivalent and 2" clean loamy topsoil shall be spread evenly over all planting beds and incorporated by tilling. In compacted or clay conditions, a minimum of 1" depth of sand shall also be incorporated.
- A suitable slow-release fertilizer shall be used in accordance with the manufacturer's recommendations and based on soil samples taken on-site after grading has been completed. Submit fertilizer information to the Landscape Architect for approval prior to commencing planting operations. Composted cow manure may be substituted for slow-release fertilizer, applied at a minimum depth of 1/2" and tilled in with other soil amendments.
- Soil mix for planting pits shall consist of 3 parts by volume of existing on-site soil, one part 'Leaf Gro', or equivalent and slow-release fertilizer combined per manufacturer's recommendations. In compacted conditions or clay, also add 1 part clean sand. This mix shall be prepared prior to use as backfill Planting Mix.
- If any underground obstructions or other site conditions are encountered that conflict with the planned plantings, notify the Landscape Architect immediately.
- All planting beds shall be neatly hand edged unless otherwise specified.
- All planting beds and pits shall be provided with a 2" minimum, 3" maximum depth of composted, aged, shredded bark mulch, spread evenly, unless otherwise specified. In addition, planting pits shall have a 6" high rim or 'saucer' provided. No mulch shall be placed on the crown of a plant or on the root flare or trunk of a tree or shrub.
- Any plantings to occur in formerly paved or compacted areas shall be in conformance with planting detail entitled 'Landscape Island Planting Bed'.

**WATERING**

- A water source for planting and maintenance operations will be provided by the Owner / Client. If a source is not available on-site, Contractor will include a water supply cost in his / her bid. 'Gator-bags' or equivalent slow drip watering devices are recommended for trees in times of low rainfall. Also, install soaker hose with connections left uncovered for ease or watering plant beds. Loop hose around any trees that do not have watering bags installed. A minimum of 1" depth of water shall be applied any week where that amount of rainfall has not occurred after a 2 month period of installation. During the first two months all plants shall be watered daily for two weeks, 3 times a week for 4 weeks and 2 times a week for 2 weeks.

**CONTRACTOR / WARRANTY REQUIREMENTS**

- Any lawn, paving or other surfaces damaged by the Contractor's operations shall be repaired in kind before the project will be accepted for final approval and payment.
- The Owner's property and any affected abutting property shall be left clean and free of any debris or excess materials resulting from any phase of the landscape operations.
- The Contractor is responsible for repairing or replacing as necessary, any property of the Owner / Client or any affected abutting property that is damaged by the Contractor's operations, equipment or crew. Any such repair or replacement shall take place in a timely fashion and in a manner that meets with the approval of the Owner / Client.
- Contractor shall notify the Landscape Architect or Owner / Client at the completion of landscape installation for a project acceptance inspection. All plants must be in accordance with specifications and be in healthy, vigorous conditions for acceptance.
- All plant material shall be warranted for one year starting from the date of installation acceptance. This shall include one replacement to match the original. If the Contractor is of the opinion that a specified plant will not survive its planned location, the Landscape Architect shall be notified prior to bid. A tree shall be replaced if the main leader has died back or if the canopy is 25% or greater dead. A shrub shall be replaced if the crown is 25% or greater dead.
- Contractor is responsible for all maintenance for a three month period following project acceptance. Maintenance shall include but not be limited to watering, herbicide, pesticide, fungicide or fertilizer applications, patching or reapplying mulch to maintain depth, pruning, adjusting stakes, weeding and repairing bed edges. This shall be included as a separate bid item. During the entire warranty period, the Contractor is responsible for checking the project and making maintenance suggestions to the Owner / Client.

**STORMWATER MANAGEMENT PLANTING**

- Stormwater management plans shall be built in accordance with plans by others. A soil sample with lab results shall be submitted to the landscape architect prior to installation. No planting shall be done until the site has been stabilized. The landscape architect shall be notified one week prior to installation to inspect the plantings for approval. New plantings shall be protected from flooding conditions for two weeks minimum for establishment. Within two days after the first rain event, the plantings shall be inspected by the contractor. Any dislodged plants shall be replanted. Any silt, sediment or debris which may have entered the stormwater planting area shall be removed. Redistribute mulch, if needed.

- NOTE: PLANT IDENTIFICATION TAGS SHALL REMAIN ON PLANTS UNTIL FINAL INSPECTION OF THE AS-BUILT PLANTING.

