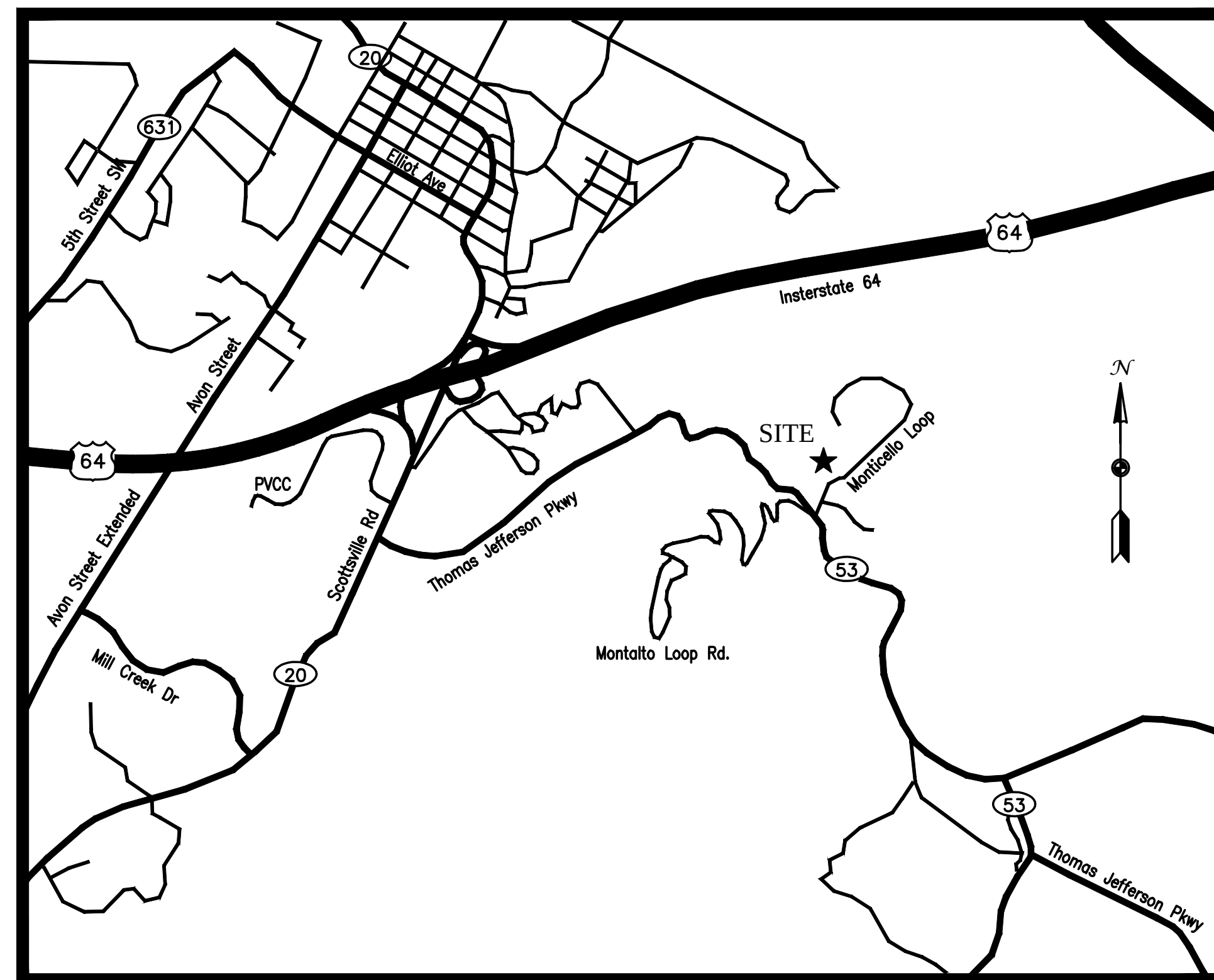


ALBEMARLE COUNTY, VIRGINIA

<u>SHEET NO.</u>	<u>DRAWING NO.</u>	<u>TITLE</u>
1 OF 25	C-1	COVER SHEET
3 OF 25	C-3	SHEET INDEX
19 OF 25	ESC-1	EROSION AND SEDIMENT CONTROL NARRATIVE
20 OF 25	ESC-2	NEW MONTALTO WATER STORAGE TANK EROSION AND SEDIMENT CONTROL PLAN
21 OF 25	ESC-3	NEW WATER BOOSTER PUMP STATION "A" EROSION AND SEDIMENT CONTROL PLAN
22 OF 25	ESC-4	NEW "MAIN" SANITARY SEWER PUMP STATION EROSION AND SEDIMENT CONTROL PLAN
23 OF 25	ESC-5	NEW WATER BOOSTER PUMP STATION "B" EROSION AND SEDIMENT CONTROL PLAN
24 OF 25	ESC-6	EROSION AND SEDIMENT CONTROL DETAILS
25 OF 25	ESC-7	CALCULATIONS AND PROFILES



VICINITY MAP
SCALE: 1"=2000'

NOTES:

1. THESE DRAWINGS PRESENT CRITICAL SLOPE DISTURBANCE PLANS FOR THE WATER AND WASTEWATER IMPROVEMENTS PART II PROJECT FOR THE THOMAS JEFFERSON FOUNDATION FACILITIES.
2. COORDINATE WORK ASSOCIATED WITH THIS PLAN WITH THE PLANS ENTITLED "THOMAS JEFFERSON FOUNDATION, WATER AND WASTEWATER IMPROVEMENTS PART I, ALBEMARLE COUNTY VIRGINIA" AND "THOMAS JEFFERSON FOUNDATION, WATER AND WASTEWATER IMPROVEMENTS PART II, ALBEMARLE COUNTY VIRGINIA"

SITE DATA

OWNER INFORMATION:
NAME: THOMAS JEFFERSON FOUNDATION, INC
CONTACT: KEN MITCHELL
ASSISTANT VICE PRESIDENT OF FACILITIES
ADDRESS: P.O. BOX 316
CHARLOTTEVILLE, VA 22902

ENGINEER INFORMATION:
NAME: WW ASSOCIATES, INC.
CONTACT: HERBERT F. WHITE, III, P.E.
ADDRESS: 3040 AVMORE SQUARE PLACE
CHARLOTTESVILLE, VA 22911
TELEPHONE: (434) 984-2700
FAX: (434) 978-1444
E-MAIL: HWHITE@WWASSOCIATES.NET

TOWN, STATE: ALBEMARLE COUNTY, VA

TAX MAP REFERENCES: 77-31, 78-22, 78-23, 78-25 AND 92-1

SETBACK & YARD REQUIREMENTS:
PARCELS 77-31, 78-22, 78-23, 78-25
STRUCTURES TO BE A MINIMUM OF 30 FEET FROM PUBLIC RIGHT-OF-WAYS.
STRUCTURES TO BE A MINIMUM OF 50 FEET FROM RESIDENTIAL AND RURAL AREA DISTRICTS.
CONSTRUCTION ACTIVITY INCLUDING CLEARING AND GRADING TO BE A MINIMUM OF 20 FEET FROM RESIDENTIAL AND RURAL AREA DISTRICTS.

PARCELS:
TMP 77-31
TMP 78-22
TMP 78-23
TMP 78-25
TMP 92-1

UTILITY CONTACTS

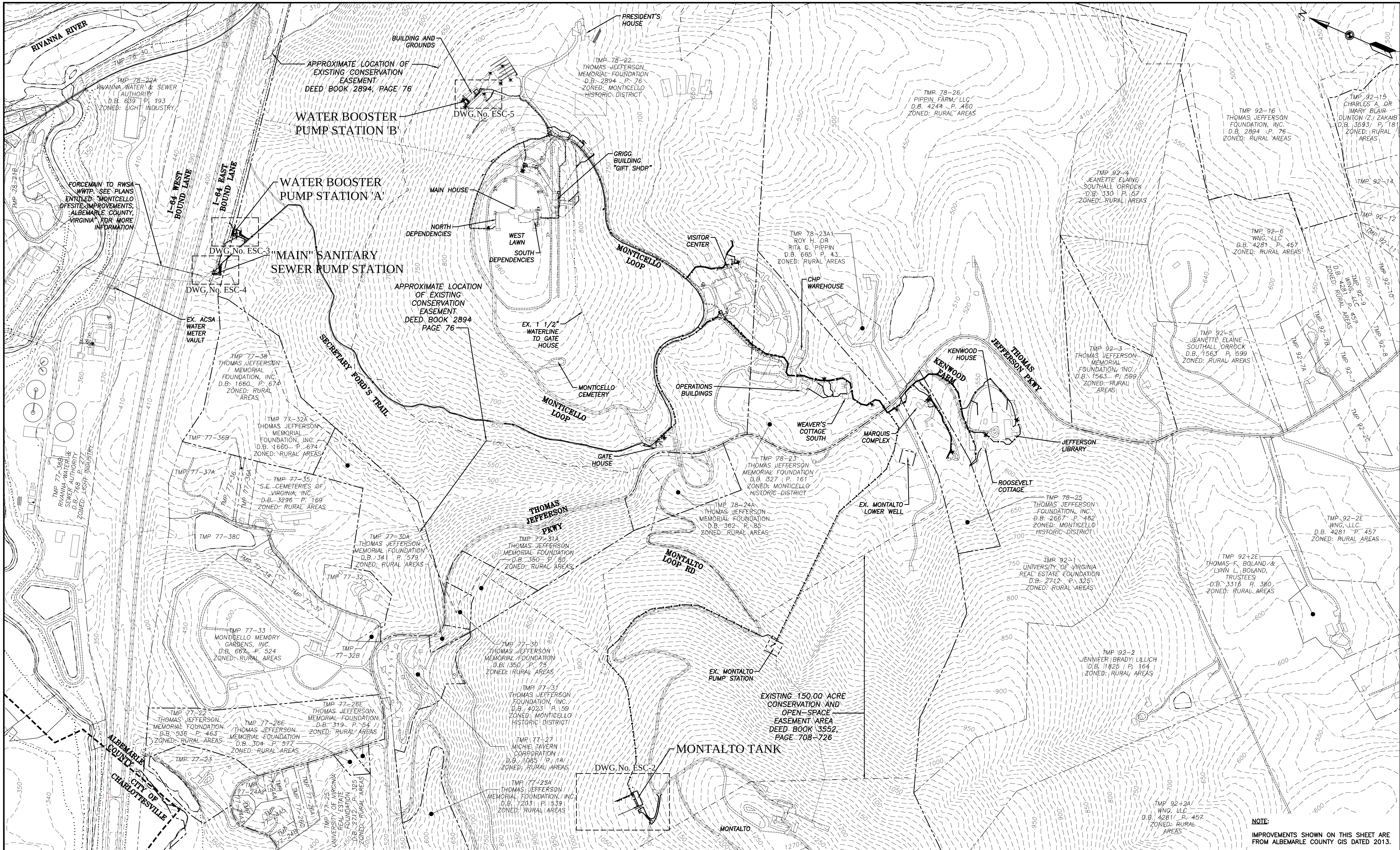
TELEPHONE: CENTURYLINK
ATTN: USIC LOCATING SERVICE
CONTACT: 1-800-778-9140
NO CONFLICTS; PUBLIC UTILITIES ARE OUTSIDE OF STATED WORK AREA.

ELECTRICITY: DOMINION VIRGINIA POWER
ATTN: DEAN RASMUSSEN
CONTACT: 1-804-608-5446
NO CONFLICTS; PUBLIC UTILITIES ARE OUTSIDE OF STATED WORK AREA.

CABLE: COMCAST
ATTN: DEAN RASMUSSEN
CONTACT: 1-804-608-5446
NO CONFLICTS; PUBLIC UTILITIES ARE OUTSIDE OF STATED WORK AREA.

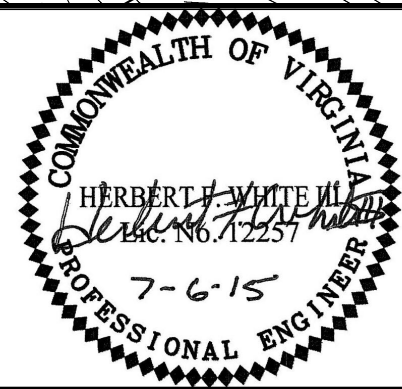
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M:\215015 TJF-Water & Sewer Improvements\215015.02B Phase II\501502B_OV-1_VSMP.dwg



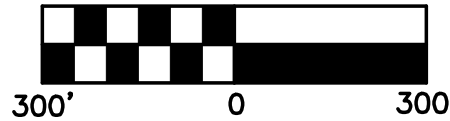
NOTE:
IMPROVEMENTS SHOWN ON THIS SHEET ARE
FROM ALBEMARLE COUNTY GIS DATED 2013.

NO.	SHEET REVISION	BY	DATE	NO.	SHEET REVISION	BY	DATE



IF THIS DRAWING IS A REDUCTION
GRAPHIC SCALE MUST BE USED

SCALE: 1" = 300'



DESIGNED BY:
SAR
DRAWN BY:
KTM
DIHR BY:
HFW
WWA NUMBER:
215015.02B

PROJECT:
THOMAS JEFFERSON FOUNDATION
WATER AND WASTEWATER IMPROVEMENTS PART II
ALBEMARLE COUNTY, VIRGINIA
TITLE:
SHEET INDEX
FILE NAME:
501502B_OV-1_VSMP.dwg
DISCIPLINE:
CIVIL
SCALE:
H: 1" = 300'
V: N/A
DATE:
07/06/15

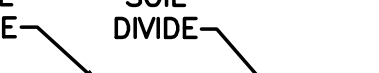
SET REV. NO.
—
DRAWING NUMBER:
C-3
SHEET NUMBER:
3 of 25

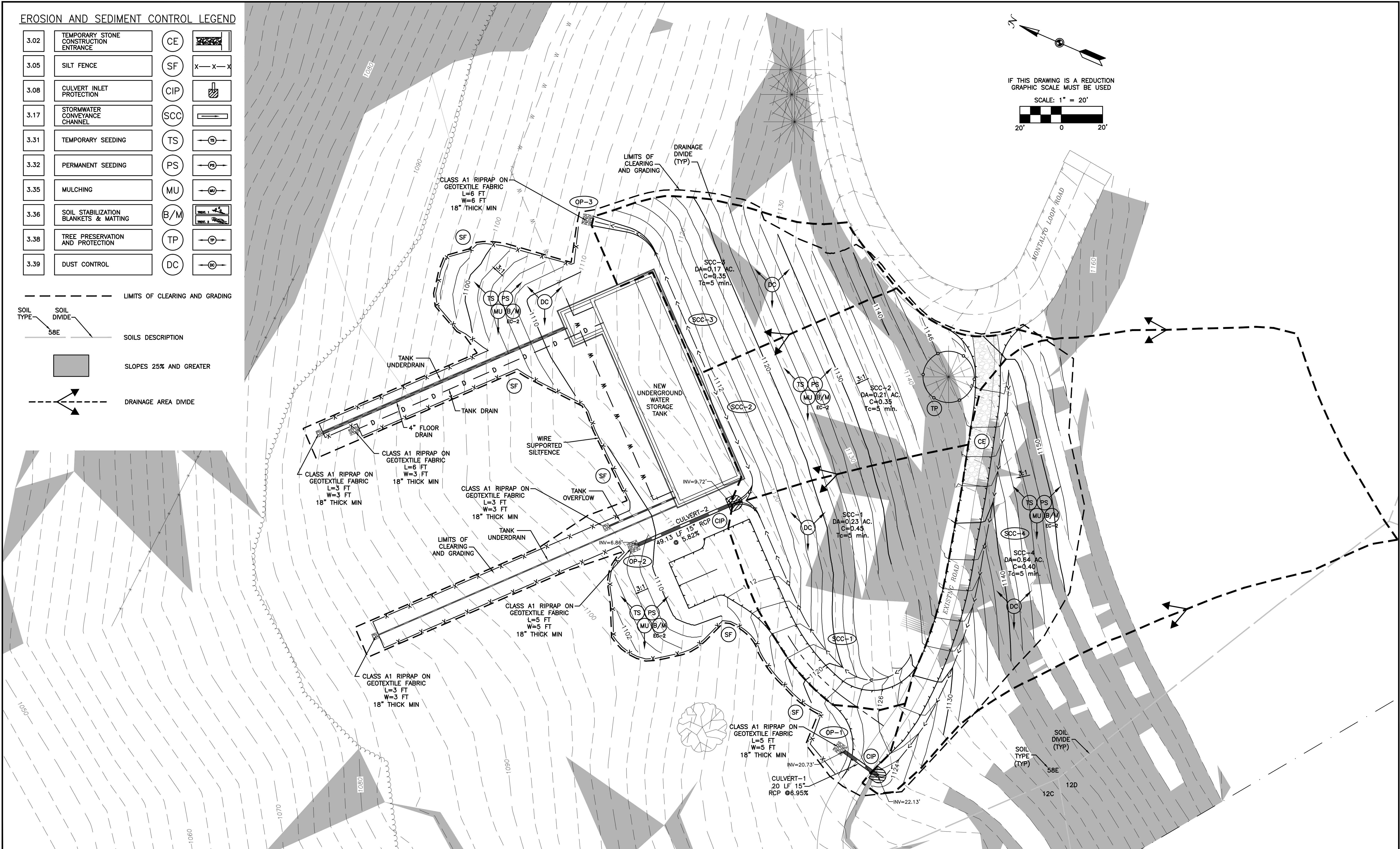
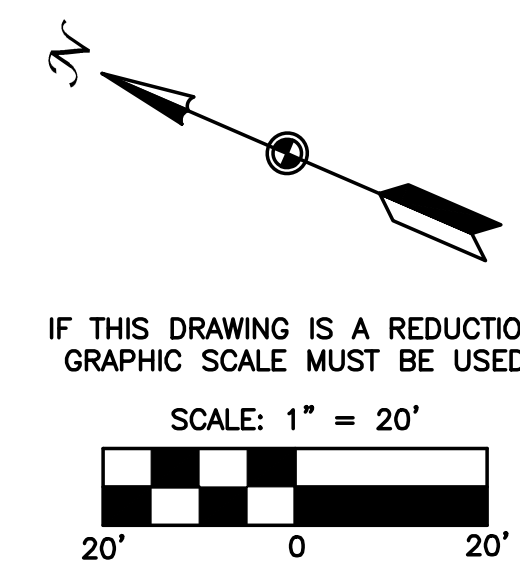
COMMONWEALTH OF VIRGINIA
HERBERT A. WHITE
Lic. No. 712257
7-6-15
PROFESSIONAL ENGINEER



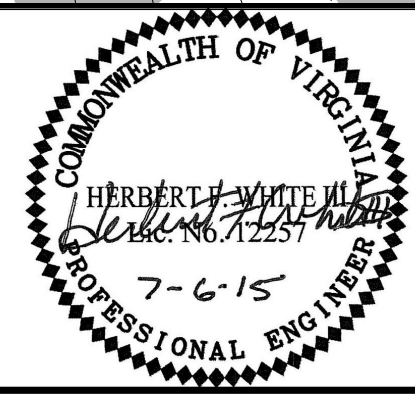
DESIGNED BY: SAR	PROJECT: THOMAS JEFFERSON FOUNDATION WATER AND WASTEWATER IMPROVEMENTS PART II ALBEMARLE COUNTY, VIRGINIA			SET REV. NO. —
DRAWN BY: KTM				DRAWING NUMBER: ESC-1
DIHR BY: HFH	TITLE: EROSION AND SEDIMENT CONTROL NARRATIVE			SHEET NUMBER: 19 of 25
WWA NUMBER: 215015.02B	FILE NAME: 501502B_ESC-1.dwg	DISCIPLINE: CIVIL	SCALE: H: N/A	DATE: 07/06/15

3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SILT FENCE	SF	
3.08	CULVERT INLET PROTECTION	CIP	
3.17	STORMWATER CONVEYANCE CHANNEL	SCC	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS & MATTING	B/M	
3.38	TREE PRESERVATION AND PROTECTION	TP	
3.39	DUST CONTROL	DC	

	LIMITS OF CLEARING AND GRADING
	SOILS DESCRIPTION
	SLOPES 25% AND GREATER
	DRAINAGE AREA DIVIDE



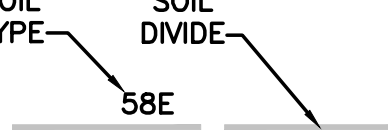
NO.	SHEET REVISION	BY	DATE	NO.	SHEET REVISION	BY	DATE		

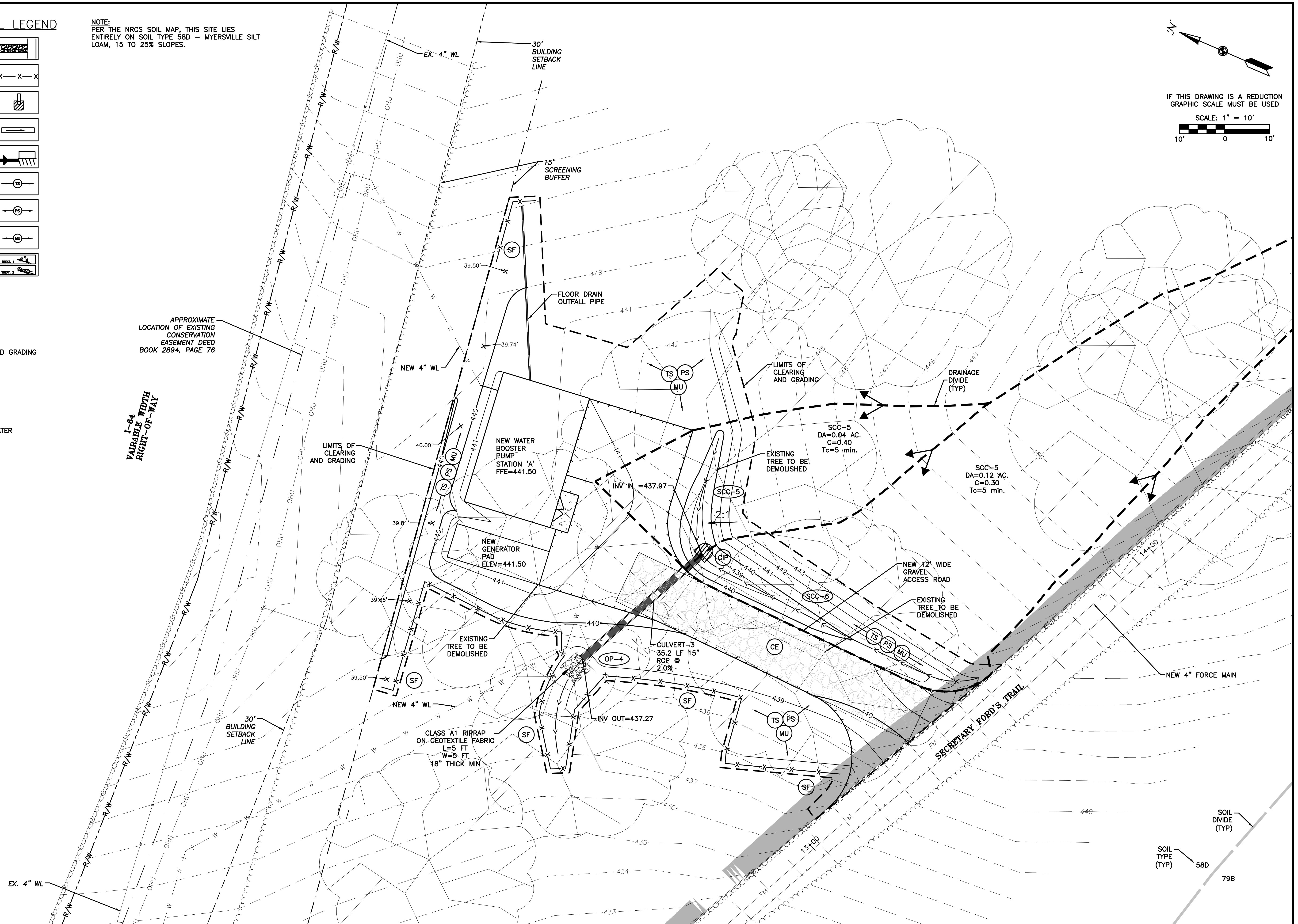


DESIGNED BY: SAR	PROJECT: THOMAS JEFFERSON FOUNDATION			SET REV. NO. -
DRAWN BY: KTM	WATER AND WASTEWATER IMPROVEMENTS PART II			DRAWING NUMBER: ESC-2
	ALBEMARLE COUNTY, VIRGINIA			
DIHR BY: HFV	TITLE: NEW MONTALTO WATER STORAGE TANK			SHEET NUMBER: 20 of 25
	EROSION AND SEDIMENT CONTROL PLAN			
WVA NUMBER: 215015.02B	FILE NAME: 501502B_ESC-2.dwg	DISCIPLINE: CIVIL	SCALE: H: 1"=20' V: N/A	DATE: 07/06/15

M:\215015 TUF-Water & Sewer Improvements\215015.02B Phase II\501502B_ESC-2.dwg

3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SILT FENCE	SF	
3.08	CULVERT INLET PROTECTION	CIP	
3.17	STORMWATER CONVEYANCE CHANNEL	SCC	
3.21	LEVEL SPREADER	LS	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS & MATTING	B/M	

	LIMITS OF CLEARING AND GRADING
	SOILS DESCRIPTION
	SLOPES 25% AND GREATER
	DRAINAGE AREA DIVIDE



COMMONWEALTH OF VIRGINIA
HERBERT J. WHITE III
Lic. No. 17257
7-6-15
PROFESSIONAL ENGINEER



PROJECT: THOMAS JEFFERSON FOUNDATION WATER AND WASTEWATER IMPROVEMENTS PART II ALBEMARLE COUNTY, VIRGINIA			
TITLE: NEW WATER BOOSTER PUMP STATION "A" EROSION AND SEDIMENT CONTROL PLAN			
FILE NAME: 501502B_ESC-3.dwg	DISCIPLINE: CIVIL	SCALE: H: 1/8" = 1'-0" V: N/A	DATE: 07/06/15

ET REV. NO.
—

DRAWING NUMBER:
ESC-3

SHEET NUMBER:
21 of 25

NOTE:
PER THE NRCS SOIL MAP, THIS SITE LIES ENTIRELY ON SOIL TYPE 58D - MYERSVILLE SILT LOAM, 15 TO 25% SLOPES.

IF THIS DRAWING IS A REDUCTION GRAPHIC SCALE MUST BE USED
SCALE: 1" = 10'

3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	(CE)	[Symbol]
3.05	SILT FENCE	(SF)	X—X—X
3.31	TEMPORARY SEEDING	(TS)	[Symbol]
3.32	PERMANENT SEEDING	(PS)	[Symbol]
3.35	MULCHING	(MU)	[Symbol]
3.36	SOIL STABILIZATION BLANKETS & MATTING	(B/M)	[Symbol]

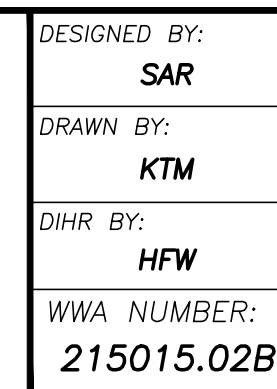
- LIMITS OF CLEARING AND GRADING
- SOIL TYPE — SOIL DIVIDE —
- SOIL DESCRIPTION
- SLOPES 25% AND GREATER

3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SILT FENCE	SF	
3.31	TEMPORARY SEEDING	TS	
3.32	PERMANENT SEEDING	PS	
3.35	MULCHING	MU	
3.36	SOIL STABILIZATION BLANKETS & MATTING	B/M	

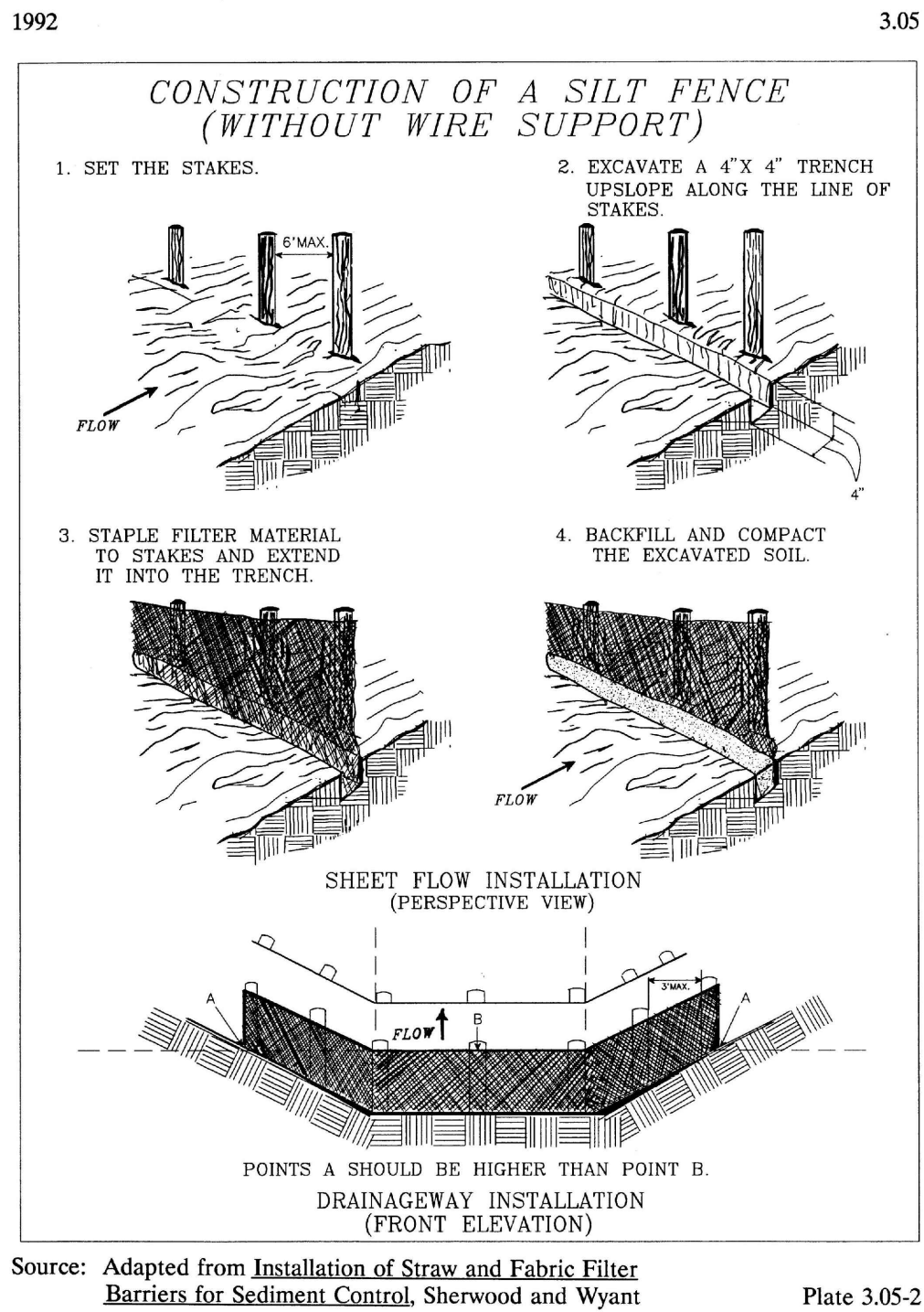
Diagram illustrating map symbols:

- LIMITS OF CLEARING AND GRADING**: Represented by a dashed line.
- SOIL TYPE**: Represented by a line with a label (e.g., 58E) pointing to it.
- SOIL DIVIDE**: Represented by a line with a label pointing to it.
- SOILS DESCRIPTION**: Represented by a solid line.
- SLOPES 25% AND GREATER**: Represented by a shaded gray area.

COMMONWEALTH OF VIRGINIA
HERBERT F. WHITE III
Lic. No. 112251
7-6-15
PROFESSIONAL ENGINEER

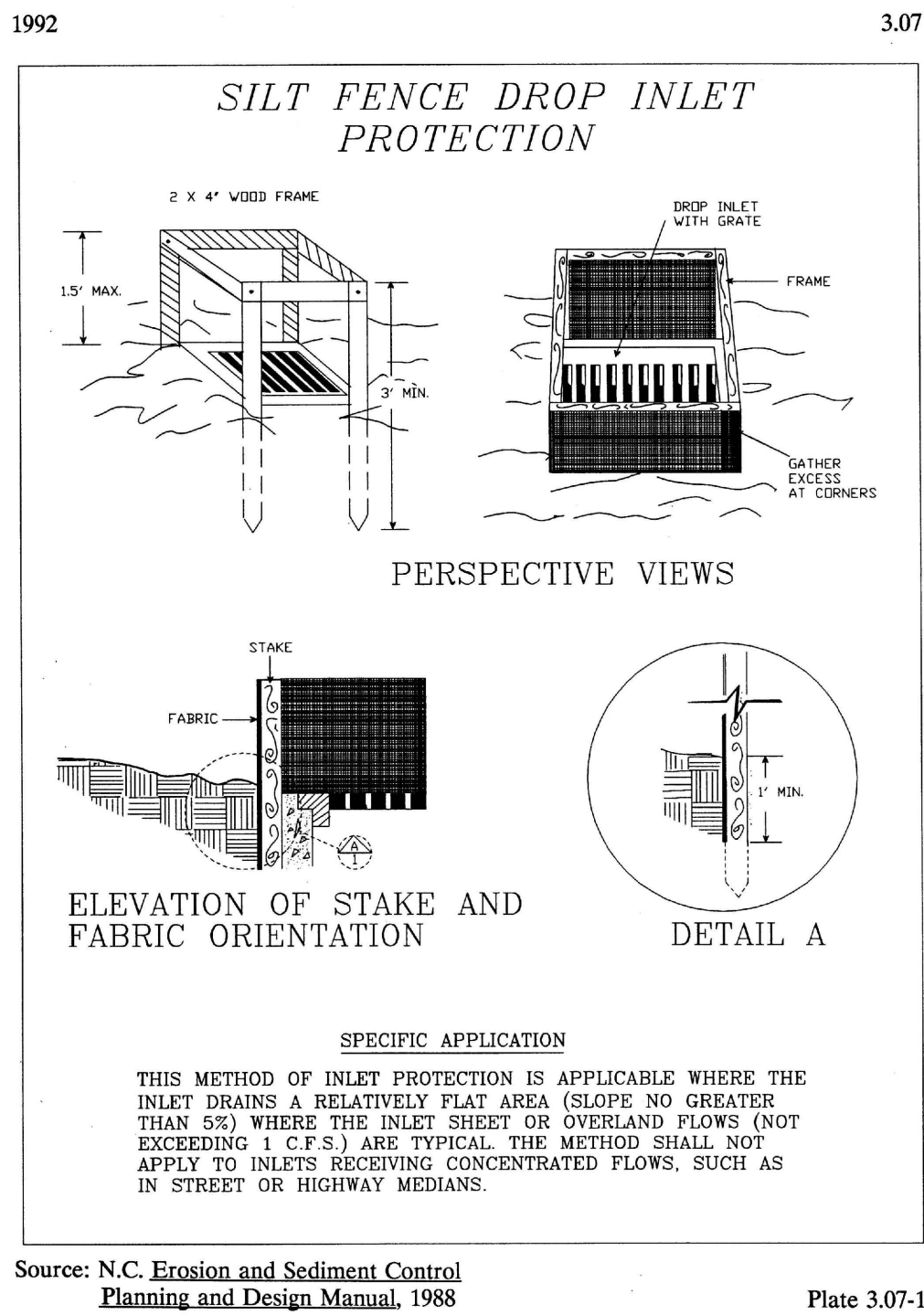


SET REV. NO.
—
DRAWING NUMBER:
ESC-4
SHEET NUMBER:
22 of 25



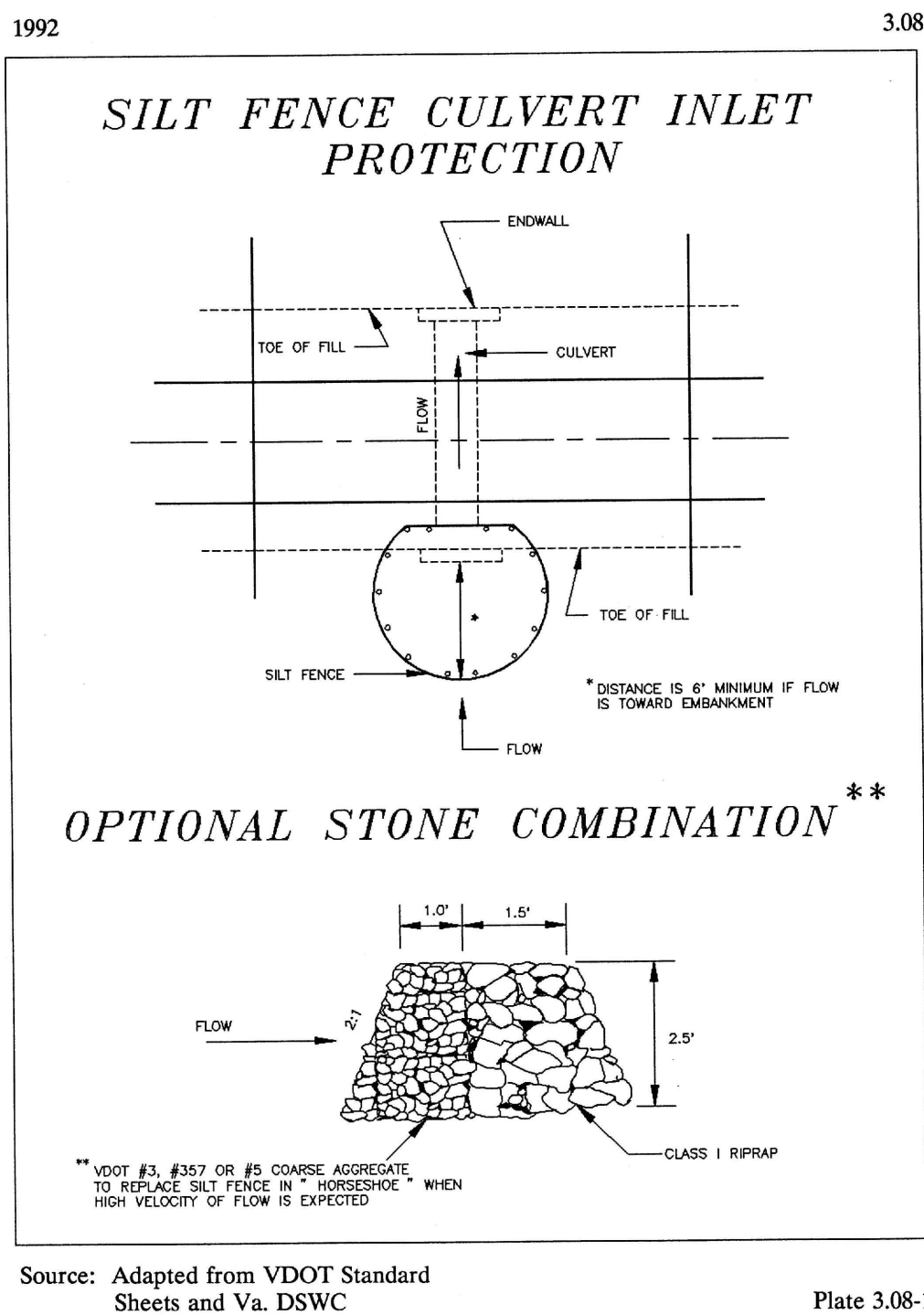
III - 25

(SF)



III - 35

(IP)



III - 49

(CIP)

TABLE 3.32-D
(Revised June 2003)
PERMANENT SEEDING SPECIFICATIONS FOR PIEDMONT AREA

LAND USE	SEED ¹	APPLICATION PER ACRE
Minimum Care Lawn (Commercial or Residential)	Tall Fescue ¹	95-100%
	Perennial Ryegrass	0-5%
	Kentucky Bluegrass ¹	0-5%
High-Maintenance Lawn	Tall Fescue ¹	TOTAL: 175-200 lbs.
		TOTAL: 200-250 lbs.
General Slope (3:1 or less)	Tall Fescue ¹	128 lbs.
	Red Top Grass or Creeping Red Fescue	2 lbs.
	Seasonal Nurse Crop ²	20 lbs.
Low-Maintenance Slope (Steeper than 3:1)	Tall Fescue ¹	108 lbs.
	Red Top Grass or Creeping Red Fescue	2 lbs.
	Seasonal Nurse Crop ²	20 lbs.
	Crownvetch ³	20 lbs.
		TOTAL: 150 lbs.

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4984 or at <http://sudan.ces.vt.edu/html/Turf/turf/publications/publications2.html>

2 - Use seasonal nurse crop in accordance with seeding dates as stated below:

February 16 th - April	Annual Rye
May 1 st - August 15 th	Foxtail Millet
August 16 th - October	Annual Rye
November - February 15 th	Winter Rye

3 - Substitute Sericea lespedeza for Crownvetch east of Farmville, VA (May through September use hulled seed, all other periods, use unhulled Sericea). If Flatpea is used, increase rate to 30 lbs./acre. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30-40

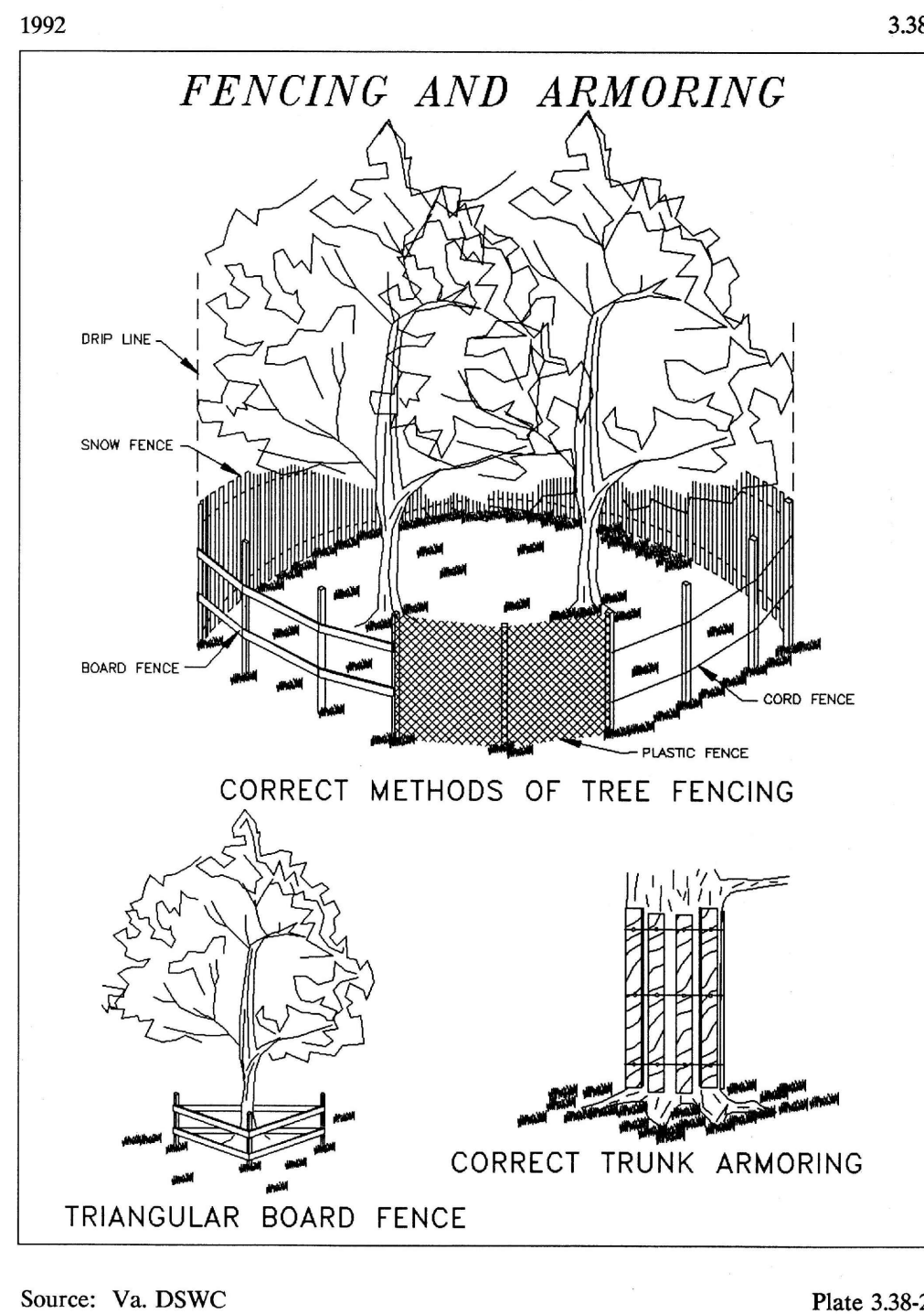
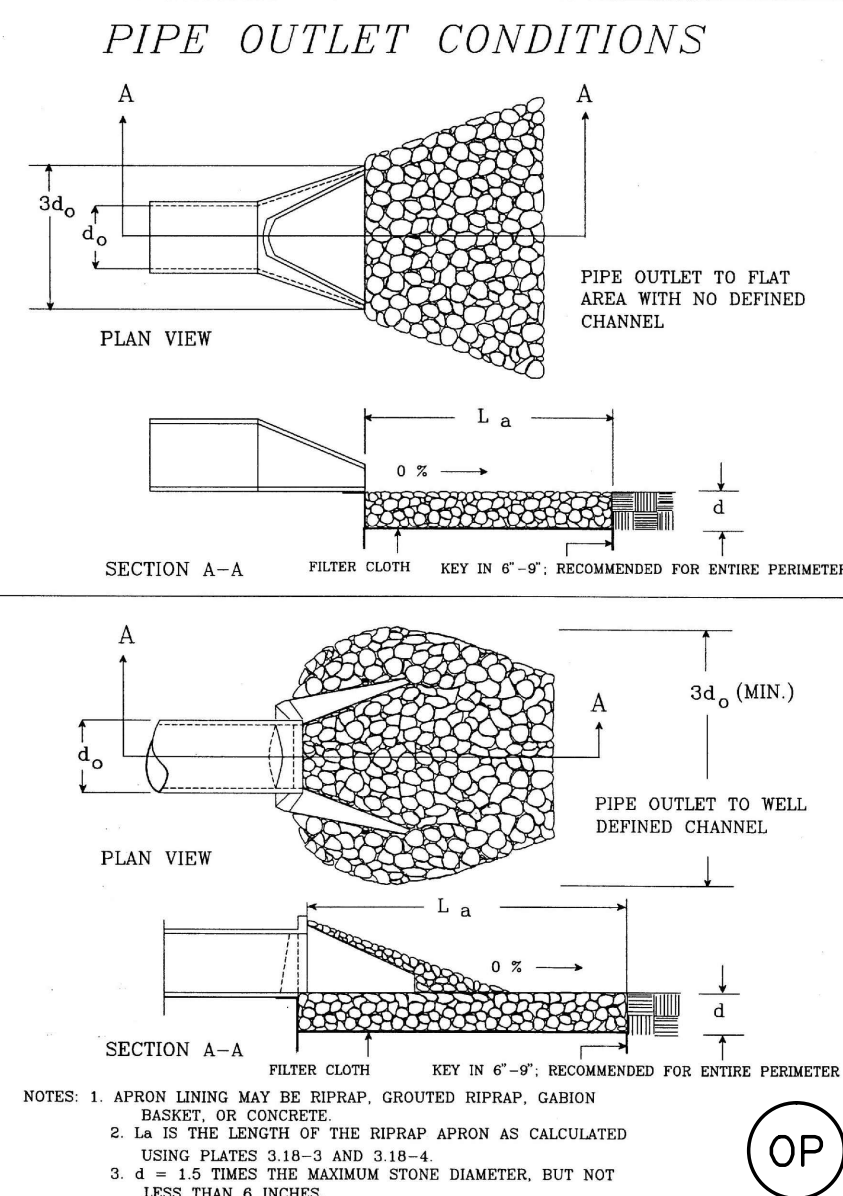
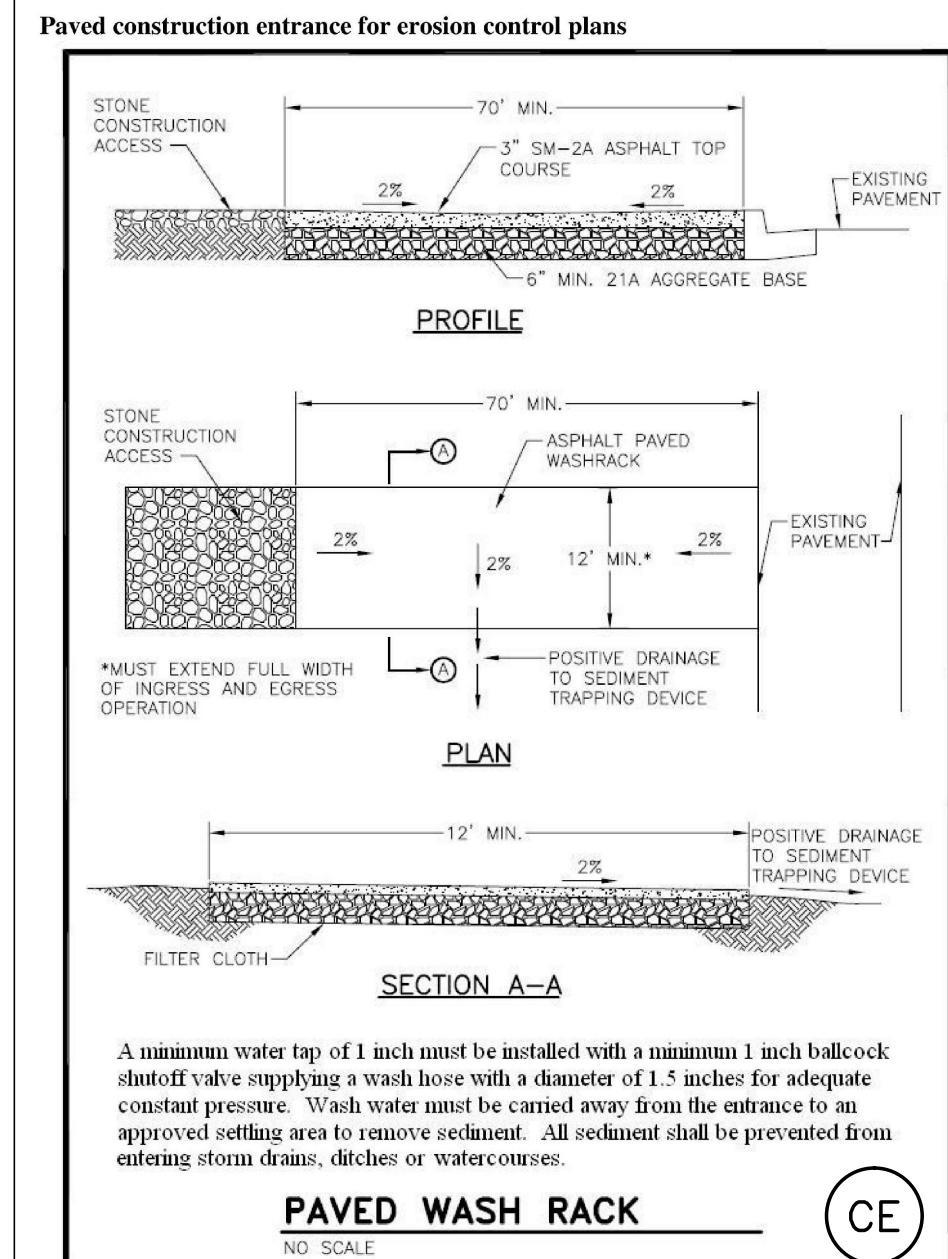
FERTILIZER & LIME

- Apply 10-20-10 fertilizer at a rate of 500 lbs. / acre (or 12 lbs. / 1,000 sq. ft.)
- Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:

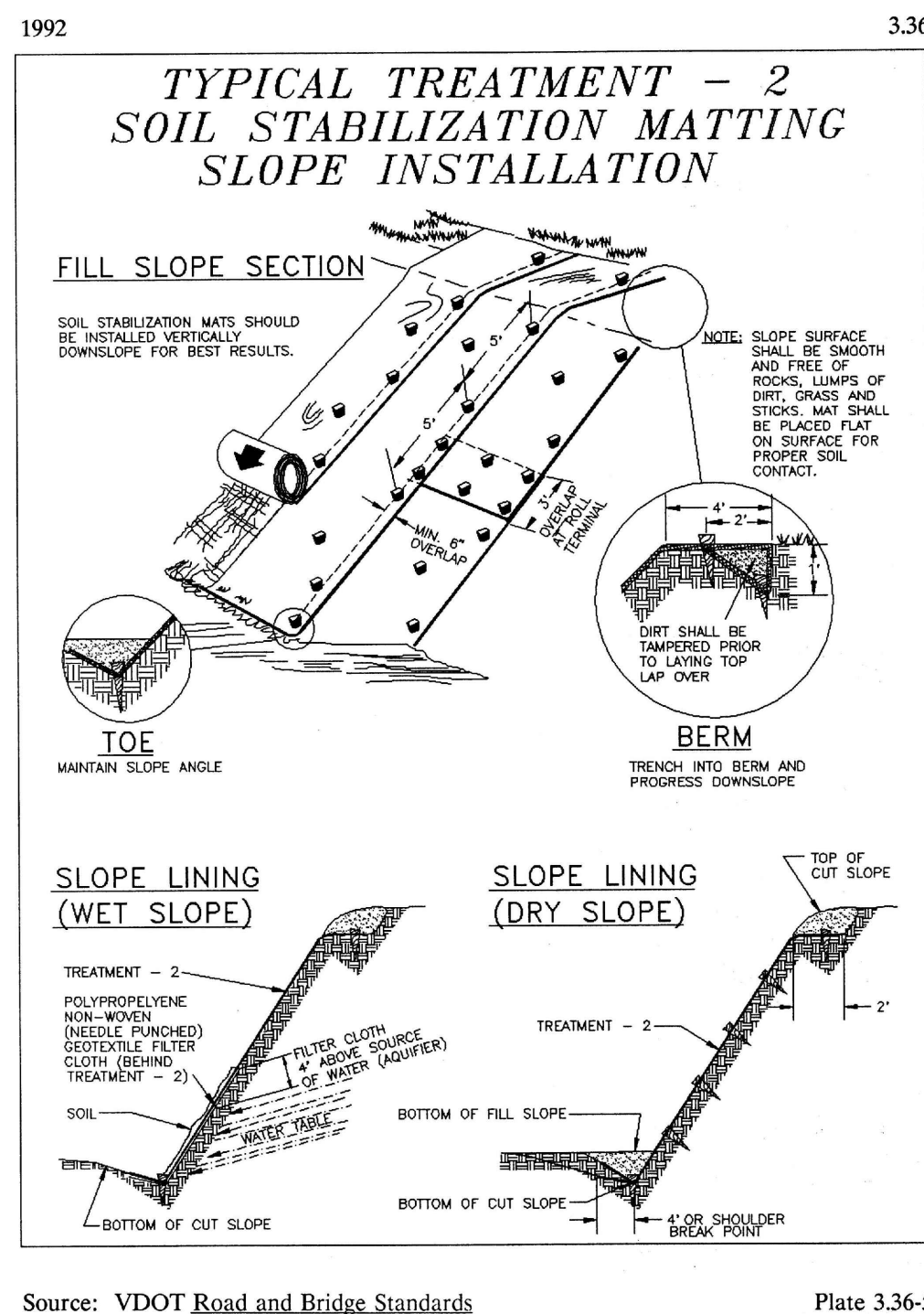
- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at <http://www.dcr.state.va.us/sw/e&s.htm#pubs>

(PS)



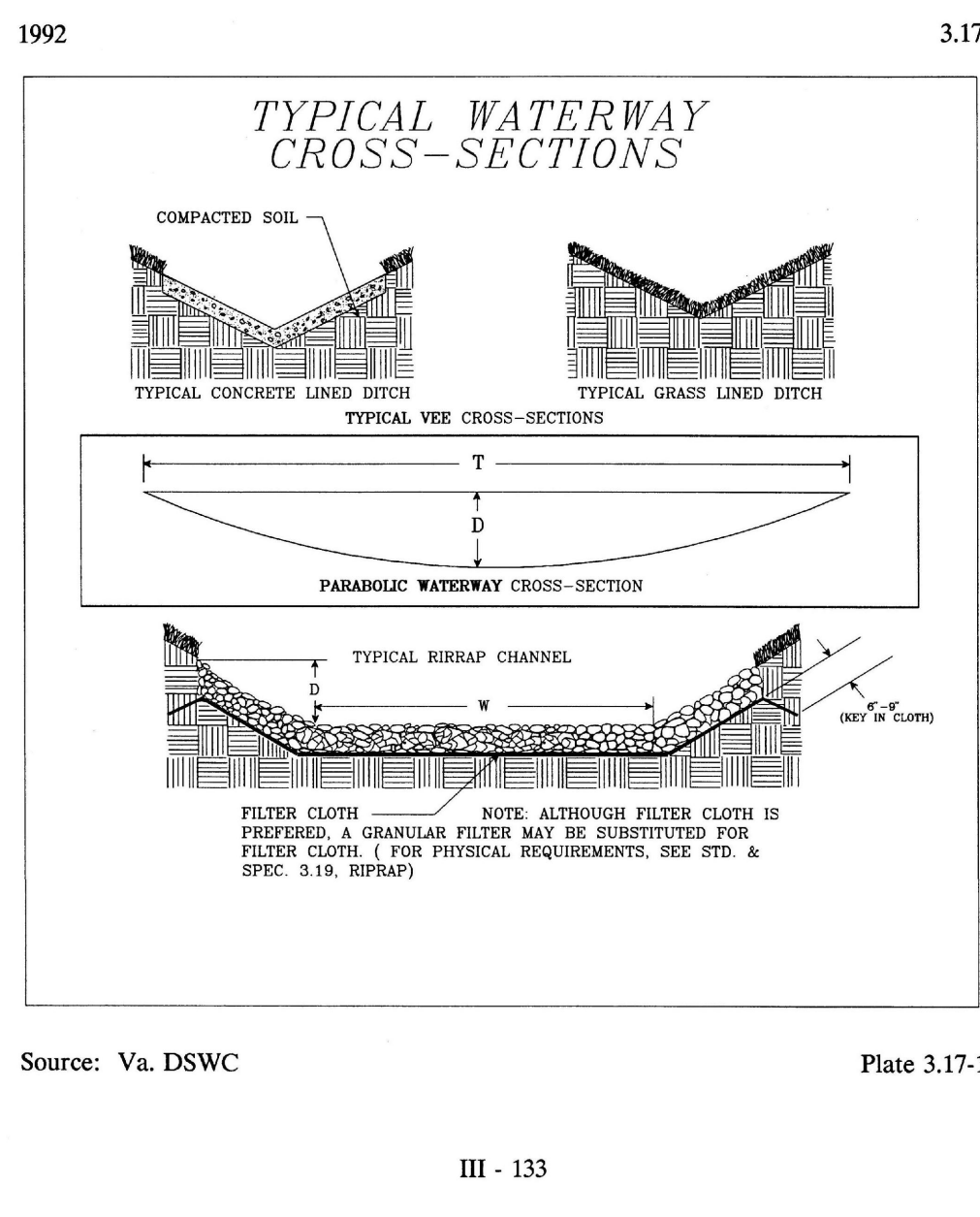
III - 401

(TP)



III - 367

(B/M)



III - 133

(SCC)

TABLE 3.31-B
(Revised June 2003)
TEMPORARY SEEDING SPECIFICATIONS QUICK REFERENCE FOR ALL REGIONS

APPLICATION DATES	SEED	APPLICATION RATES
Sept. 1 - Feb. 15	50/50 Mix of Annual Ryegrass (lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50 - 100 (lbs/acre)
Feb. 16 - Apr. 30	Annual Ryegrass (lolium multi-florum)	60 - 100 (lbs/acre)
May 1 - Aug. 31	German Millet	50 (lbs/acre)

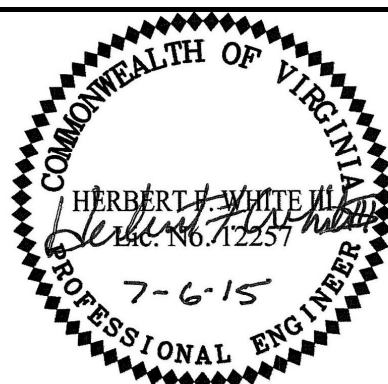
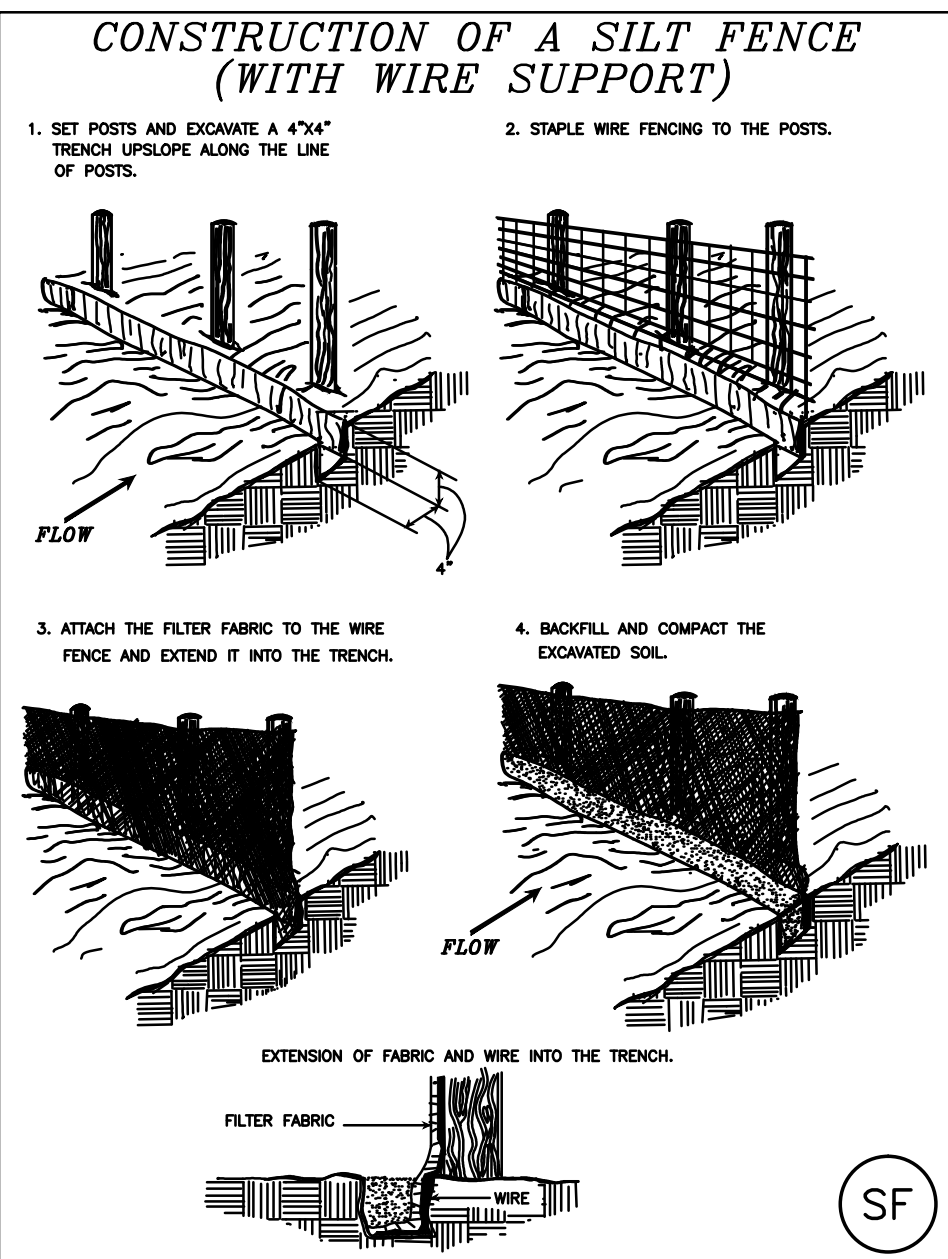
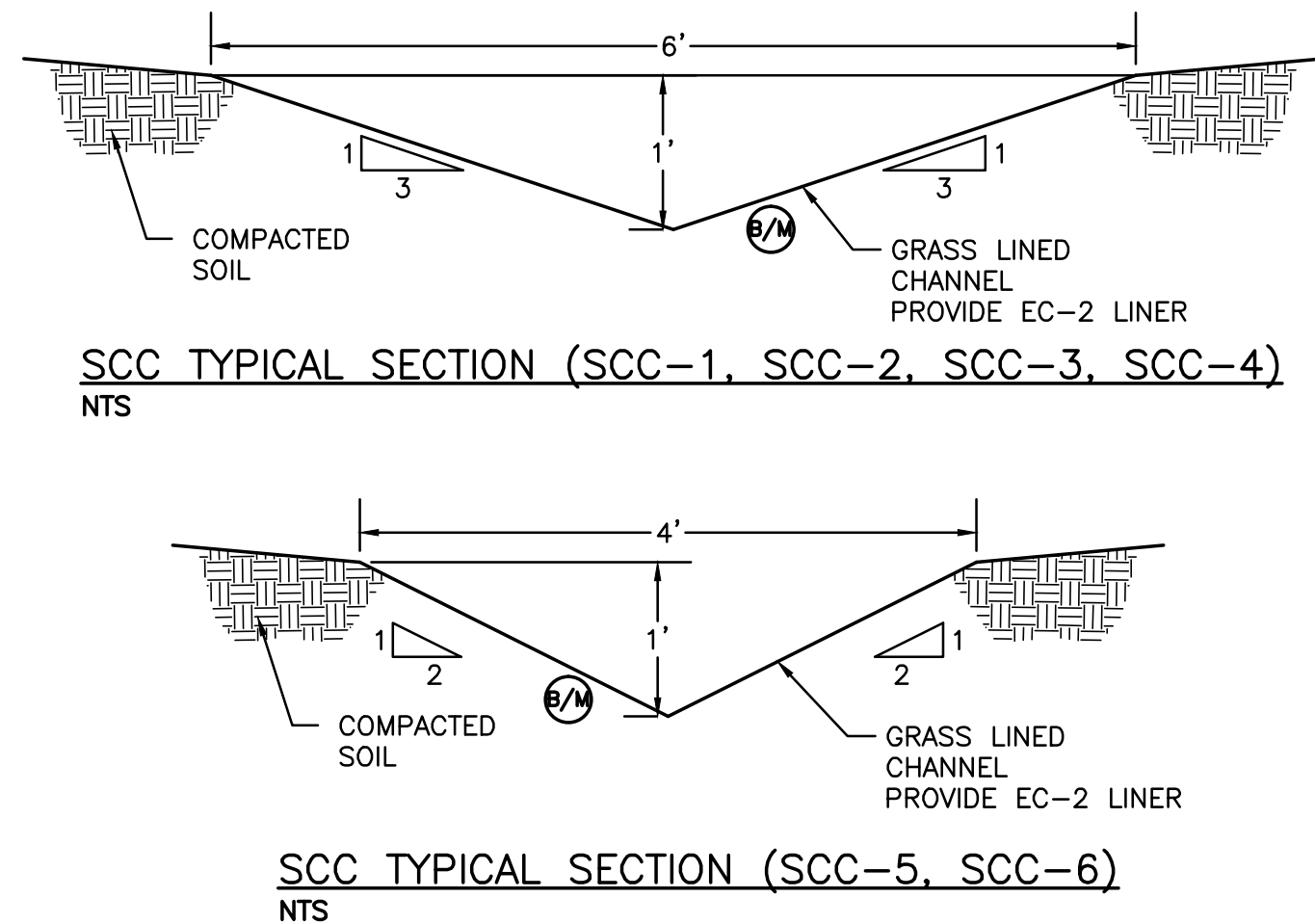
FERTILIZER & LIME

- Apply 10-10-10 fertilizer at a rate of 450 lbs. / acre (or 10 lbs. / 1,000 sq. ft.)
- Apply Pulverized Agricultural Limestone at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

NOTE:

- 1 - A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- 2 - Incorporate the lime and fertilizer into the top 4 - 6 inches of the soil by disking or by other means.
- 3 - When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at <http://www.dcr.state.va.us/sw/e&s.htm#pubs>

(TS)



DESIGNED BY: SAR	PROJECT: THOMAS JEFFERSON FOUNDATION WATER AND WASTEWATER IMPROVEMENTS PART II ALBEMARLE COUNTY, VIRGINIA	SET REV. NO. -
DRAWN BY: KTM	TITLE: EROSION AND SEDIMENT CONTROL DETAILS	DRAWING NUMBER: ESC-6
DIHR BY: HFW	FILE NAME: 501502B_ESC-6.dwg	SHEET NUMBER: 24 of 25
WWA NUMBER: 215015.02B	DISCIPLINE: CIVIL	
	SCALE: H: N/A V: N/A	
	DATE: 07/06/15	

WATER BOOSTER PUMP STATION "A":
PER THE ALBEMARLE COUNTY WATER PROTECTION ORDINANCE, STORMWATER MANAGEMENT IS NOT REQUIRED FOR THE IMPROVEMENTS PROPOSED WITH WATER BOOSTER PUMP STATION "A" BECAUSE THE SITE DISTURBANCE IS LESS THAN 10,000 SQ.FT.. EROSION AND SEDIMENT CONTROL MEASURES FOR BOTH SITES ARE SHOWN AS PART OF THIS PLAN.

WATER BOOSTER PUMP STATION "B":
PER THE ALBEMARLE COUNTY WATER PROTECTION ORDINANCE, STORMWATER MANAGEMENT IS NOT REQUIRED FOR THE IMPROVEMENTS PROPOSED WITH WATER BOOSTER PUMP STATION "B" BECAUSE THE SITE DISTURBANCE IS LESS THAN 10,000 SQ.FT.. EROSION AND SEDIMENT CONTROL MEASURES FOR BOTH SITES ARE SHOWN AS PART OF THIS PLAN.

PER THE ALBEMARLE COUNTY WATER PROTECTION ORDINANCE, STORMWATER MANAGEMENT IS NOT REQUIRED FOR THE IMPROVEMENTS PROPOSED WITH THE MAIN SANITARY SEWER PUMP STATION BECAUSE THE SITE DISTURBANCE IS LESS THAN 10,000 SQ.FT.. EROSION AND SEDIMENT CONTROL MEASURES FOR BOTH SITES ARE SHOWN AS PART OF THIS PLAN.

MONTALTO WATER TANK:
A STORMWATER MANAGEMENT PLAN FOR THE MONTALTO TANK SITE IS NOT REQUIRED BASED ON ALBEMARLE COUNTY INPUT. A STORMWATER MANAGEMENT AGREEMENT WILL BE REQUIRED TO BE SUBMITTED BY THE CONTRACTOR PRIOR TO THE START OF THE PROJECT.

					Open Channel Design Worksheet																		 ENGINEERS SURVEYORS PLANNERS ASSOCIATES	
Project: TJF Water and Sewer VSPM																								
WWA Project Number: 215015.02																								
By: SAR																								
Date: 6/19/2015																								
Segment ID	Incremental c	Incremental Drainage Area (Ac.)	c A		Tc (min)	I ₂ (in/hr)	Q ₂ (cfs)	Slope (ft/ft)	Channel Geometry			Liner Material	V ₂ x R ₂	n	Allowable Velocity (fps)	2-Year Velocity (fps)	I ₁₀ (in/hr)	Q ₁₀ (cfs)	10-Year Depth (ft)	Maximum Channel Depth (ft)	Remarks			
			Incremental	Accumulated					b	Z ₁	Z ₂													
SCC-1	0.45	0.10	0.05	0.05	5.00	5.18	0.23	0.200	0.0	3.0	3.0	EC-2	0.21	0.050	4.00	2.46	6.67	0.30	0.19	1.00	Velocity OK	Depth OK		
SCC-1	0.45	0.23	0.10	0.10	5.00	5.18	0.54	0.020	0.0	3.0	3.0	EC-2	0.23	0.050	4.00	1.30	6.67	0.69	0.41	1.00	Velocity OK	Depth OK		
SCC-2	0.35	0.21	0.07	0.07	5.00	5.18	0.38	0.020	0.0	3.0	3.0	EC-2	0.18	0.050	4.00	1.19	6.67	0.49	0.36	1.00	Velocity OK	Depth OK		
SCC-3	0.35	0.17	0.06	0.06	5.00	5.18	0.31	0.020	0.0	3.0	3.0	EC-2	0.16	0.050	4.00	1.12	6.67	0.40	0.33	1.00	Velocity OK	Depth OK		
SCC-4	0.40	0.64	0.26	0.26	5.00	5.18	1.33	0.120	0.0	3.0	3.0	EC-2	0.57	0.050	4.00	3.22	6.67	1.71	0.41	1.00	Velocity OK	Depth OK		
SCC-5	0.40	0.04	0.02	0.02	5.00	5.18	0.08	0.057	0.0	2.0	2.0	EC-2	0.10	0.050	4.00	1.21	6.67	0.11	0.20	1.00	Velocity OK	Depth OK		
SCC-6	0.30	0.12	0.04	0.04	5.00	5.18	0.19	0.052	0.0	2.0	2.0	EC-2	0.17	0.050	4.00	1.50	6.67	0.24	0.27	1.00	Velocity OK	Depth OK		

STORM SEWER DESIGN COMPUTATIONS														WVA PROJECT NUMBER 215015.02													
														COUNTY Alameda													
														DISTRICT													
														DESCRIPTION TJF Water and Sewer Improvements VSMF													
														SHEET 1 OF 1													
FROM POINT	TO POINT	AREA DRAIN "A" OFF COEF	AREA DRAIN "B" OFF COEF	ACCUMULATION	INLET TIME (T ₀)	RAIN FALL (I ₀)	RUNOFF Q	INVERT ELEVATIONS	LENGTH	SLOPE	DIA	MANNING'S n	CAPACITY (FUL)	VEL (FUL)	FLOW TIME	REMARKS	TOP INLET ELEVATIONS	INLET DEPTH (H)	INLET No.	EXHIBMENT WIDTH REQ							
		ACRES	C	INCRE- MENT	CU MIN	IN/HR	CFS	UPPER END	LOWER END	FT	FT/FT	IN	CFS	PPS	SEC		FT	FT		FT							
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)					
YD-6	YD-5	0.00	0.00	0.00	0.00	5.00	6.67	0.00	742.18	741.67	10.0	0.0510	12	0.010	10.49	13.35	0.75		746.63	4.45	YD-6	20.00					
YD-5	4	0.05	0.78	0.04	0.04	5.01	6.66	0.26	739.62	738.81	16.2	0.0500	12	0.010	10.38	13.22	1.23	Includes Drainage from YD-5 and RD-1	745.64	6.02	YD-5	20.00					
YD-3	YD-2	0.05	0.90	0.05	0.05	5.00	6.67	0.30	744.52	743.02	30.0	0.0500	12	0.010	10.38	13.22	2.27	Includes Drainage from YD-3	748.61	4.09	YD-3	20.00					
YD-2	1	0.01	0.85	0.01	0.05	5.04	6.65	0.36	741.14	740.92	10.9	0.0202	12	0.010	6.60	8.40	1.30	Includes Drainage from YD-2	746.88	5.74	YD-2	20.00					

3.18						
Outlet Protection						
ID (OP-1, OP-2, etc)	OP-1	OP-2	OP-3	OP-4	OP-5	OP-6
Design Flow (cfs)	1.71	1.13	0.40	0.35	0.36	0.26
Tailwater Depth (ft)	0.0	0.0	0.0	0.0	0.0	0.0
Discharge Velocity (fps)	1.84	1.30	1.20	0.46	4.47	5.59
Rip Rap Gradation	Class A Dry Riprap	Class A Dry Riprap	Class A Dry Riprap	Class A Dry Riprap	Class A Dry Riprap	Class A Dry Riprap
Apron Length (ft)	5.0	5.0	6.0	5.0	4.0	4.0
Apron Width(s) (ft)	5.0	5.0	6.0	5.0	4.0	4.0
Side Slopes (H:V)	n/a	n/a	n/a	n/a	n/a	n/a
Apron Depth (in)	18	18	18	18	18	18

Table 6: Sump Inlet Design Table

[illegible]

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

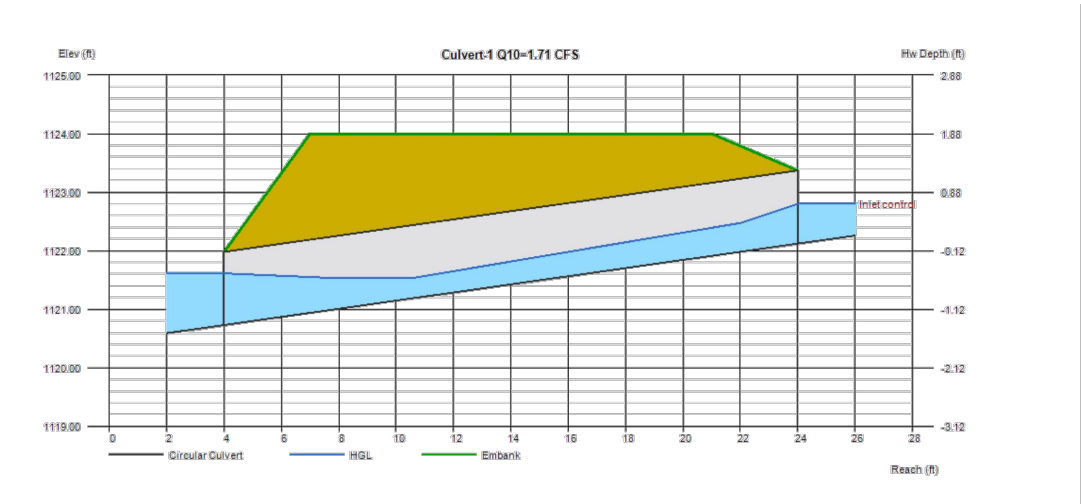
Monday, Jun 22 2015

Culvert-1 Q10=1.71 CFS

Invert Elev Dn (ft)	=	1120.73
Pipe Length (ft)	=	20.00
Slope (%)	=	6.95
Invert Elev Up (ft)	=	1122.12
Rise (in)	=	15.0
Shape	=	Circular
Span (in)	=	15.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K,M,c,Y,k	=	0.0045, 2, 0.0317, 0.69, 0.2

Calculations

Qmin (cfs)	= 0.71
Qmax (cfs)	= 5.00
Tailwater Elev (ft)	= (dc+D)/2
Hydraulic	
Qtotal (cfs)	= 1.71
Qpipe (cfs)	= 1.71
Qoverflow (cfs)	= 0.00
Veloc Dn (ft/s)	= 1.85
Veloc Up (ft/s)	= 3.54
HGL Dn (ft)	= 1121.61
HGL Up (ft)	= 1122.64
Hw Elev (ft)	= 1122.80
HwD (ft)	= 0.54
Flow Regime	= Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

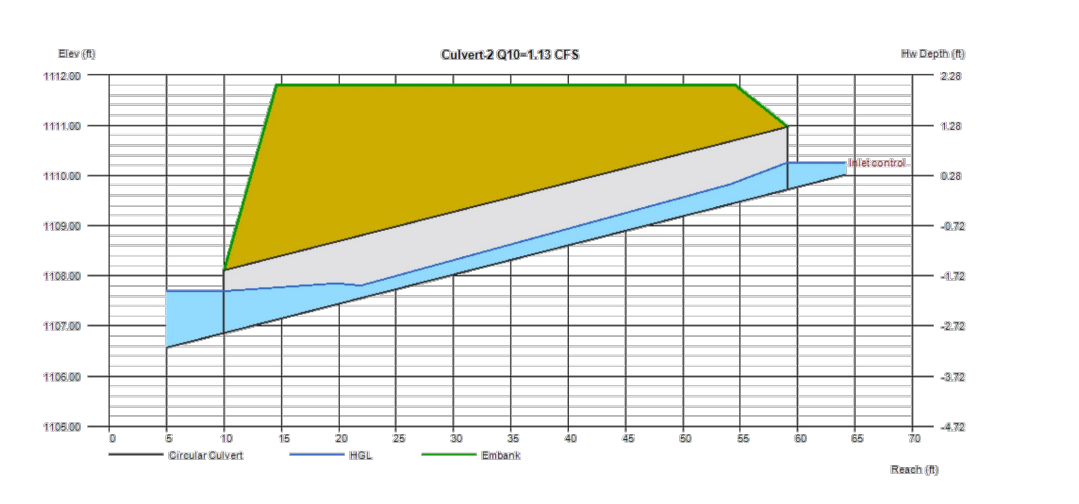
Monday, Jun 22 2015

Culvert-2 Q10=1.13 CFS

Invert Elev Dn (ft)	=	1106.86
Pipe Length (ft)	=	49.13
Slope (%)	=	5.82
Invert Elev Up (ft)	=	1109.72
Rise (in)	=	15.0
Shape	=	Circular
Span (in)	=	15.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K, M, C, Y, k	=	0.0045, 2, 0.0317, 0.69, 0.2

Calculations

Qmin (cfs)	= 0.13
Qmax (cfs)	= 5.00
Tailwater Elev (ft)	= (dc+D)/2
Highlighted	
Qtotal (cfs)	= 1.13
Qpipe (cfs)	= 1.13
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 1.30
Veloc Up (ft/s)	= 3.14
HGL Dn (ft)	= 1107.69
HGL Up (ft)	= 1110.14
Hw Elev (ft)	= 1110.26
Hw/D (ft)	= 0.43
Flow Regime	= Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

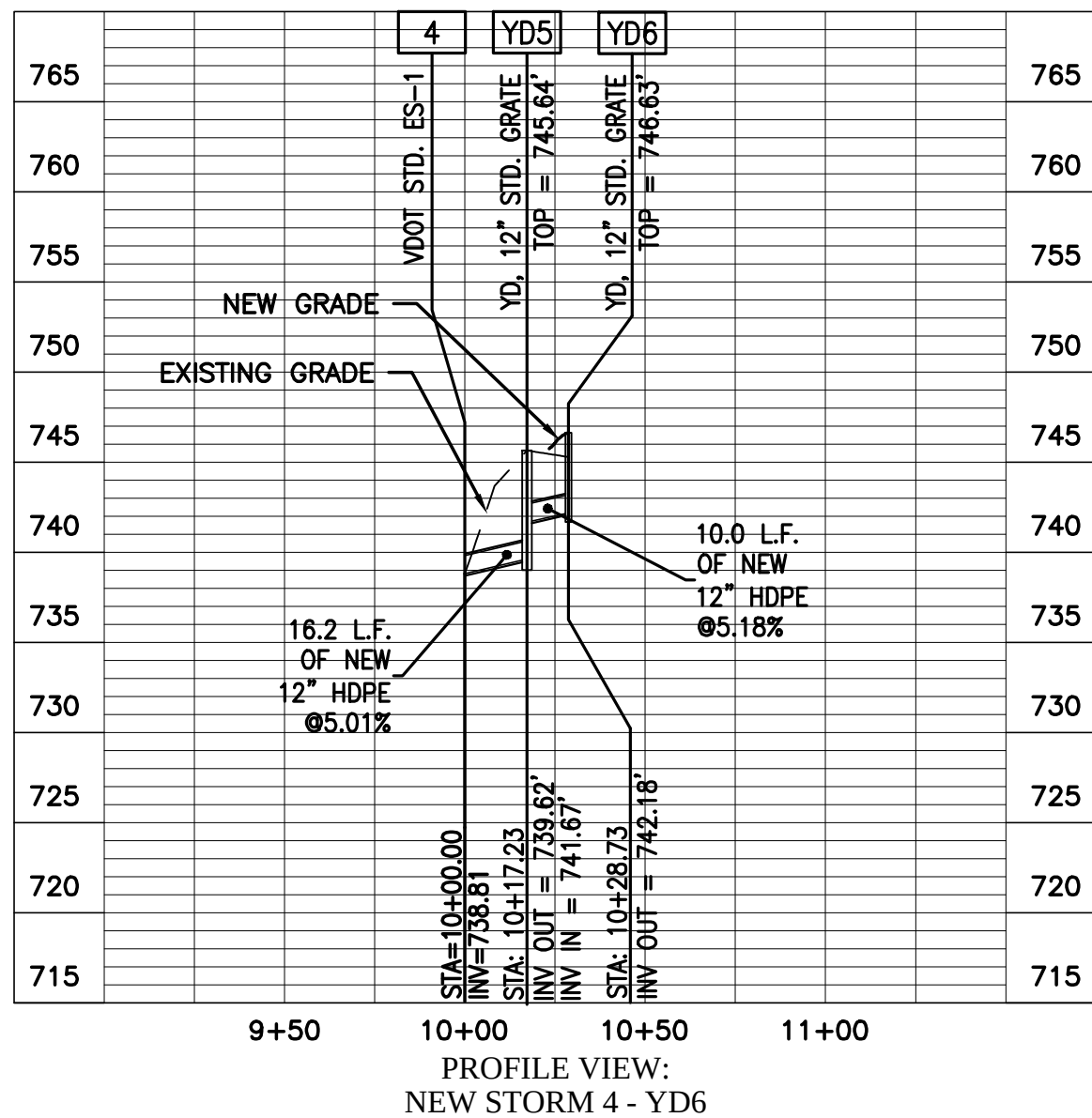
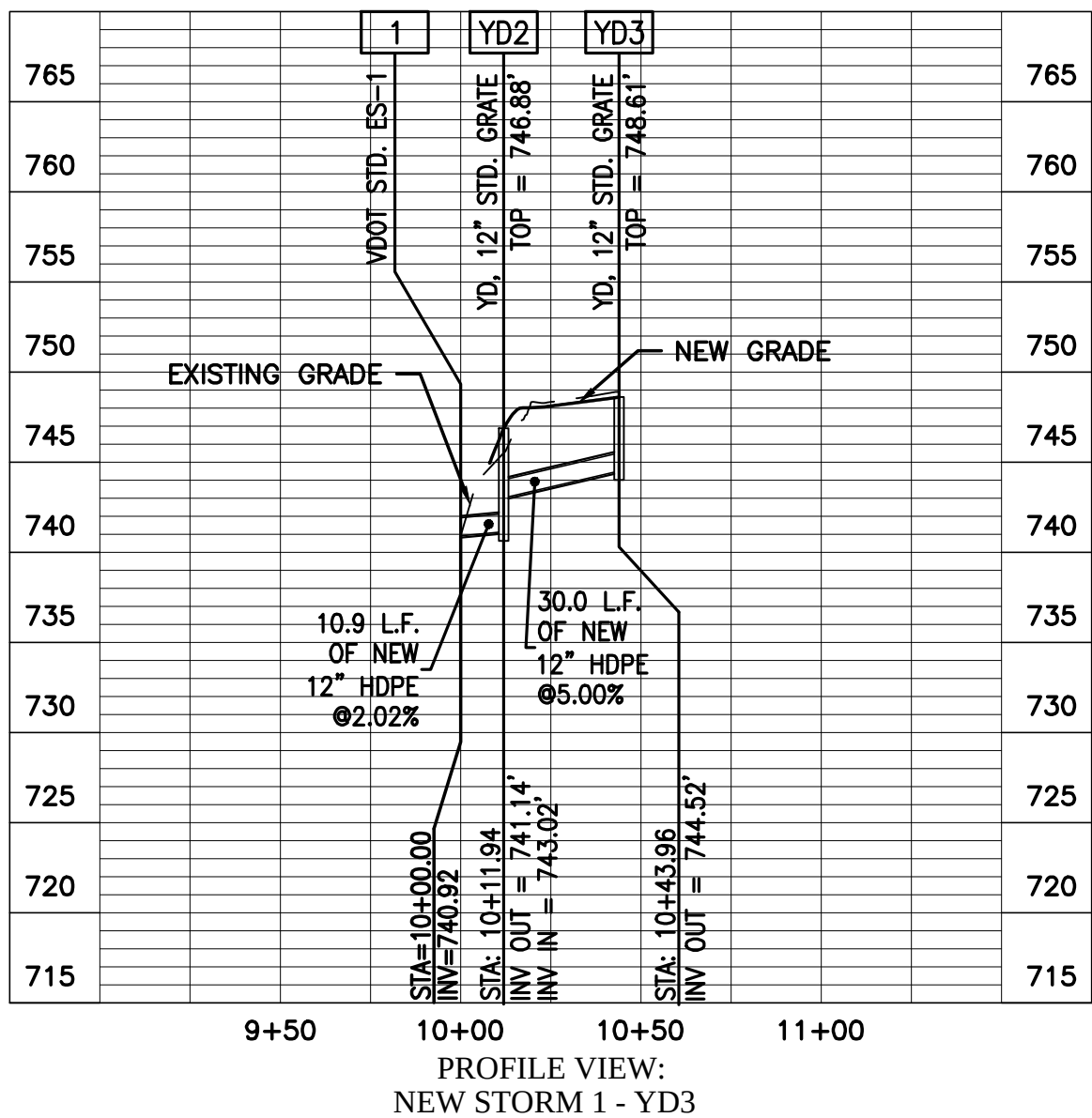
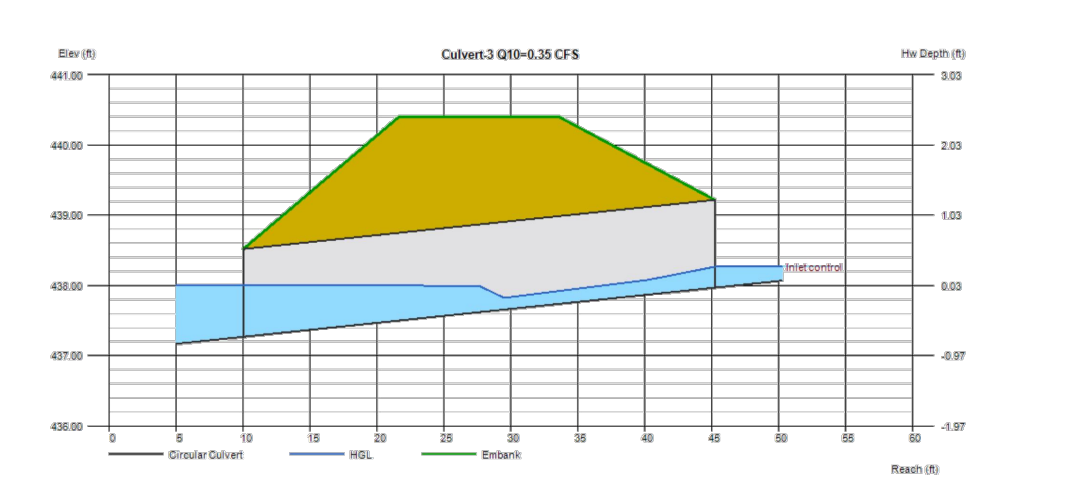
Monday, Jun 22 2015

Culvert-3 Q10=0.35 CFS

Invert Elev Dn (ft)	=	437.27
Pipe Length (ft)	=	35.23
Slope (%)	=	1.99
Invert Elev Up (ft)	=	437.97
Rise (in)	=	15.0
Shape	=	Circular
Span (in)	=	15.0
No. Barrels	=	1
n-Value	=	0.013
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K _{M,C,Y,k}	=	0.0045, 2, 0.0317, 0.69, 0.2

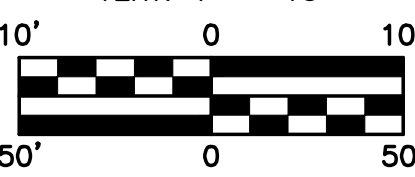
Calculations

Qmin (cfs)	= 0.05
Qmax (cfs)	= 2.00
Tailwater Elev (ft)	= (dc+D)/2
Highlighted	
Qtotal (cfs)	= 0.35
Qpipe (cfs)	= 0.35
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 0.46
Veloc Up (ft/s)	= 2.27
HGL Dn (ft)	= 438.01
HGL Up (ft)	= 438.20
Hw Elev (ft)	= 438.27
Hw/D (ft)	= 0.24
Flow Regime	= Inlet Control



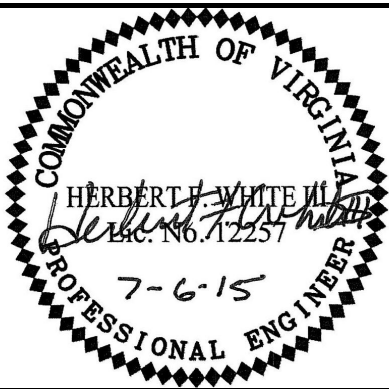
IF THIS DRAWING IS A REDUCTION
GRAPHIC SCALE MUST BE USED

VERT: 1" = 10'



HORZ: 1" = 50'

NO.	SHEET REVISION	BY	DATE	NO.	SHEET REVISION	BY	DATE		



DESIGNED BY: SAR	PROJECT: THOMAS JEFFERSON FOUNDATION WATER AND WASTEWATER IMPROVEMENTS PART II ALBEMARLE COUNTY, VIRGINIA				SET REV. NO. -
DRAWN BY: TLB					DRAWING NUMBER: ESC-7
DIHR BY: HFW	TITLE: CALCULATIONS AND PROFILES				SHEET NUMBER: 25 of 25
WWA NUMBER: 215015.02B	FILE NAME: 501502B_ESC-7.dwg	DISCIPLINE: CIVIL	SCALE: H:AS SHOWN V:N/A	DATE: 07/06/15	

M:\215015 TJF-Water & Sewer Improvements\215015.02B Phase II\501502B_ESC-7.dwg