CONCEPT EROSION and SEDIMENT CONTROL and STORMWATER MANAGEMENT PLAN for "CHAPTICO SUBSTATION"

SEQUENCE OF CONSTRUCTION

1. DELINEATE LIMITS OF DISTURBANCE.
2. THE CONTRACTOR SHALL NOTIFY THE ST. MARY'S COUNTY DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION (301-475-4200) AND THE MARYLAND DEPARTMENT OF THE ENVIRONMENT SEDIMENT CONTROL INSPECTOR (410-901-4020) AT LEAST 48 HOURS PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES AND, UNLESS WAIVED BY SEDIMENT CONTROL INSPECTOR, SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING AT THE PROJECT SITE. THE CONTRACTOR MUST PROVIDE THE NAME OF THE PERSON ON THE SITE WHO IS RESPONSIBLE FOR INSPECTION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES, AND A COPY OF THEIR GREEN CARD TO THE SEDIMENT CONTROL INSPECTOR.
3. CLEAR & GRUB LIMITS OF DISTURBANCE. — 10 DAYS
4. INSTALL ALL SEDIMENT & EROSION CONTROL DEVICES SPECIFIED ON THIS PLAN IN ACCORDANCE WITH THE "2011 MD STANDARDS AND SPECIFICATIONS..." TO INCLUDE STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE, AND SUPER SILT FENCE. — 2 DAYS
5. ROUGH GRADE SITE. — 5 DAYS
6. FINE GRADE AS SHOWN ON THE PLAN DURING INSTALLATION OF SUBSTATION AND GRAVEL ACCESS ROAD. PLACE 4" OF TOPSOIL, PERMANENT SEED, AND STRAW MULCH FOR STABILIZATION. — 5 DAYS
7. CONSTRUCT INFILTRATION BERM IN ACCORDANCE WITH THE APPROVED STORMWATER MANAGMENT PLANS. NOTIFY THE ENGINEER IN CHARGE, 410-768-7700, AT LEAST 5 DAYS PRIOR TO BEGINNING SAID CONSTRUCTION OF INFITRATION BERM TO ENSURE THAT KEY COMPONENTS WILL BE INSPECTED DURING CONSTRUCTION AND THAT THE "AS-BUILT" MAY BE ACCOMPLISHED FOLLOWING COMPLETION. — 5 DAYS
8. UPON COMPLETION OF CONSTRUCTION, STABILIZE ALL REMAINING DISTURBED AREAS WITH PERMANENT SEED MIXTURE, PAVE SHA SECTION, AND REMOVE ALL TEMPORARY SEDIMENT CONTROL DEVICES WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR. — 2 DAYS

STANDARD NOTES FOR UTILITY INSTALLATION

1. Call "Miss Utility" at 1-800-257-7777 48 hours prior to the start of work.
2. Only enough trench should be excavated which can be backfilled daily.
3. Excavated trench materials should be placed on the high side of the trench.
4. Immediately following utility installation, the trench shall be backfilled, compacted and stabilized at the end of each working day. No more trench shall be opened than can be completed in the same day.
5. Full trench compaction is required.
6. Mulching to St. Mary's SCD specifications of all disturbed areas and daily on backfill will be required.
7. Any sediment control practices which are disturbed during utility construction shall be repaired or replaced at the end of each working day.
8. Any ditches or drainage ways disturbed during construction will be restored to original condition.

TOTAL SITE ANALYSIS

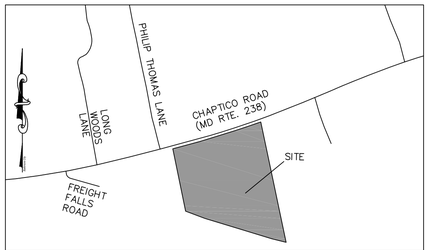
TOTAL SITE AREA:	9.65 ac.
DISTURBED AREA:	4.16 ac.
NEW IMPERVIOUS AREA:	0.04 ac.
EXISTING IMPERVIOUS AREA:	0.00 ac.
AREA TO BE VEGET. STABILIZED:	1.86 ac.
ESTIMATED CUT VOLUME:	6,910c.y. *
ESTIMATED FILL VOLUME:	6,840c.y. *
SURPLUS / DEFICIT:	70c.y.

* ALL EXCAVATION QUANTITIES ARE APPROXIMATE. CONTRACTOR SHALL COMPUTE VOLUMES TO HIS OWN SATISFACTION.

NOTE: EXCESS CUT MUST BE EXPORTED TO AND BORROW MATERIAL SHALL BE IMPORTED FROM A SITE WITH A VALID EROSION AND SEDIMENT CONTROL PLAN.

SEDIMENT CONTROL QUANTITIES

DESCRIPTION	QUANTITY
SILT FENCE	940'
SUPER SILT FENCE	570'
STONE CONSTRUCTION ENTRANCE	1



VICINITY MAP Scale: 1" = 500'

PROJECT DATA

1. OWNER: Southern Maryland Electric Cooperative Inc.
   15045 Burnt Store Road
   Hughesville, Maryland 20637
   Attn.: HUGH VOEHL
   Tele: 301-274-4487
2. PROPERTY: Tax Map 17, Grid 18, Parcels 49-52, 78, & 89
   AREA: 9.65 ac. ±
   DEED REF.: L. 1889 F. 727
3. ZONING: RPD (Rural Preservation District)
4. CRITICAL AREA: The site is not located within the Chesapeake Bay Critical Area.
5. FLOODPLAIN: The site is not located within a 100-year Floodplain.

ENGINEER'S DESIGN CERTIFICATION

I HEREBY CERTIFY THAT ALL SEDIMENT AND EROSION CONTROL AND STORMWATER MANAGEMENT MEASURES SHOWN ON THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH BOTH THE "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" AND THE "2009 MARYLAND STORMWATER DESIGN MANUAL."

K. C. Anderson, P.E. — 10/30/20

DESIGNER'S SIGNATURE — DATE

KEVIN C. ANDERSON, P.E. for KCW ENGINEERING TECHNOLOGIES, Inc. — P.E. # 27016

NAME AND TITLE — MD REGISTRATION

SHEET INDEX

OWNER'S/ DEVELOPER'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ANY CLEARING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PERSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT BEFORE BEGINNING THE PROJECT. I/WE HEREBY AUTHRORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION BY APPROPRIATE INSPECTION AND ENFORCEMENT AUTHORITY OR THE STATE OF MARYLAND, DEPARTMENT OF THE ENVIRONMENT.

Hugh Voehl — 10/30/2020

OWNER/DEVELOPER SIGNATURE — DATE

HUGH VOEHL, TRANSMISSION & SUBSTATION ENGINEERING MANAGER
SOUTHERN MARYLAND ELECTRIC COOPERATIVE

NAME AND TITLE

OWNER'S/ DEVELOPER'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ALL WORK SHOWN ON THESE CONSTRUCTION DRAWINGS WILL BE ACCOMPLISHED PURSUANT TO THESE PLANS. I ALSO UNDERSTAND THAT IT IS MY RESPONSIBILITY TO HAVE THE CONSTRUCTION SUPERVISED AND CERTIFIED, INCLUDING THE SUBMITTAL OF "AS BUILT" PLANS UPON COMPLETION, BY A REGISTERED PROFESSIONAL ENGINEER.

Hugh Voehl — 10/30/2020

OWNER/DEVELOPER SIGNATURE — DATE

HUGH VOEHL, TRANSMISSION & SUBSTATION ENGINEERING MANAGER
SOUTHERN MARYLAND ELECTRIC COOPERATIVE

NAME AND TITLE

SCOPE OF WORK

IT IS PROPOSED TO CONSTRUCT A SMECO SUBSTATION WITH STORMWATER MANAGEMENT PROVIDED BY AN INFILTRATION BERM.

811 Know what's below. Call before you dig.

SOILS TABLE

MAP UNIT SYMBOL	MAP UNIT NAME	SLOPE	K-FACTOR	HYDRO. SOIL GROUP (HSG)	HYDRIC RATING
BrB2	Bourne fine sandy loam	2 - 5%	0.28	C	NO

✳ HIGHLY ERODIBLE SOILS CRITERIA:(PER COMAR 26.17.01.01)
K-FACTOR>0.35 AND SLOPES >5%, OR SLOPES >15%

St. Mary's
Soil Conservation District
Plan Sheets_____
Approved _____
By _____
Plan expires ____ years from approval date

CONSULTANTS CERTIFICATION

"I certify that this Concept Erosion and Sediment Control and Stormwater Management Plan represents all significant natural resources based on my personal knowledge of the site, and that this plan was prepared in accordance with the requirements of the review agencies. I have reviewed this Concept Plan with the owner/developer".

SIGNATURE _____ MD LICENSE # _____

PRINT NAME _____ DATE _____

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 27016, EXPIRATION DATE: 01/31/2022."

KCW ENGINEERING TECHNOLOGIES
KCW Engineering Technologies, Inc.
808 Landmark Drive, Suite 217
Glen Burnie, MD 21061
Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com

STATE OF MARYLAND — KEVIN CHARLES ANDERSON — No. 27016 — PROFESSIONAL ENGINEER
10-30-2020

OWNER: **Southern Maryland Electric Cooperative Inc.**
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

DEVELOPER: **Southern Maryland Electric Cooperative Inc.**
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

REVISIONS

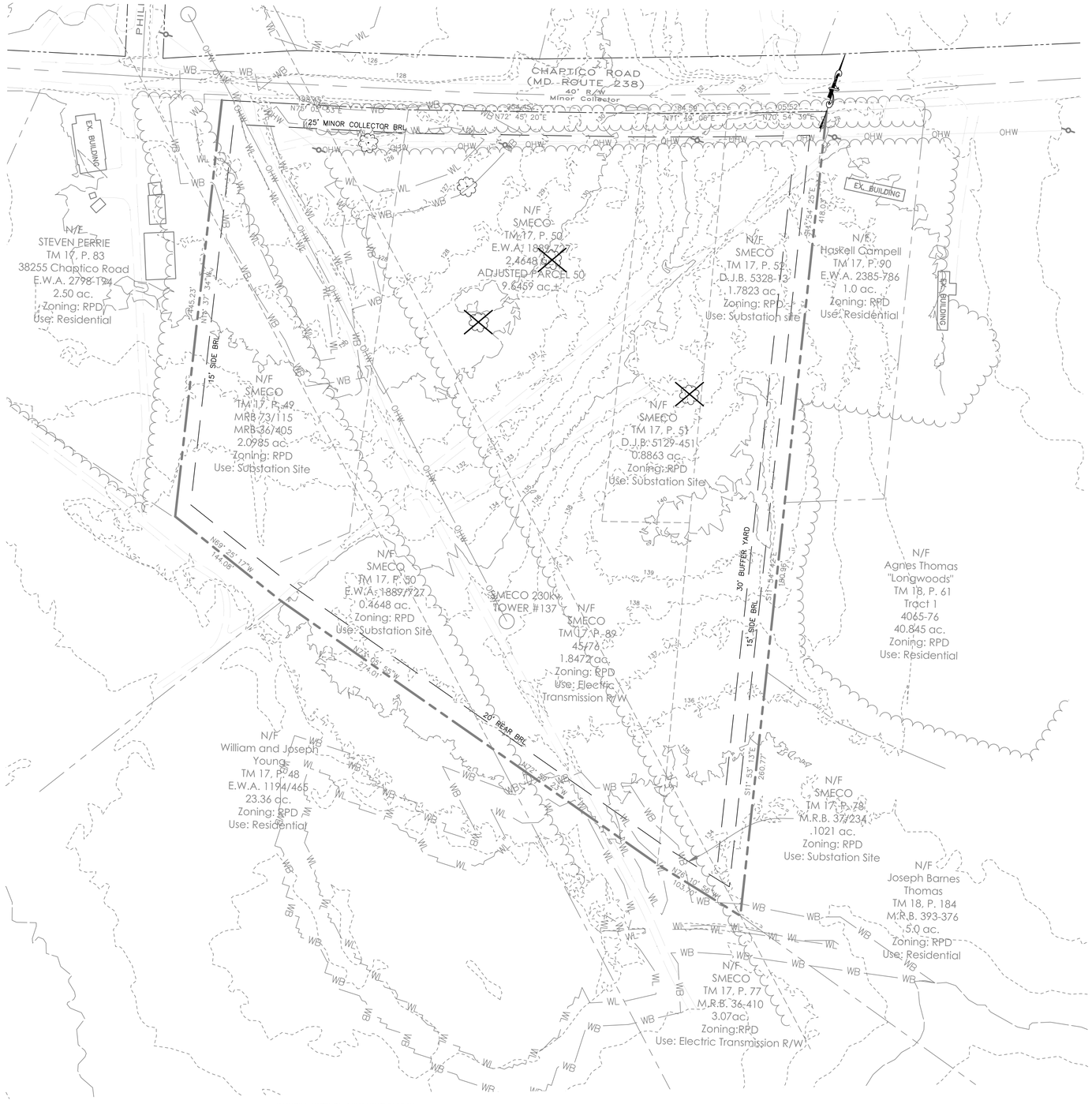
DATE	DESCRIPTION

KCW J.O.: 2201228
SCALE: AS SHOWN
DESIGNED: LAG
DRAWN: LAG
CHECKED: KCA
DATE: OCTOBER 30, 2020
DWG NO.: **C-100**

TITLE SHEET

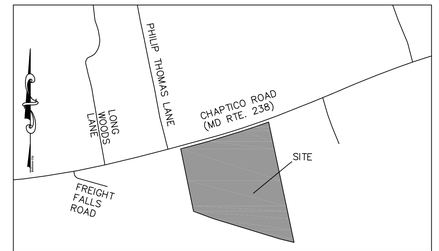
CHAPTICO SUBSTATION

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
ST. MARY'S COUNTY, MARYLAND
ZONING: RPD — CHAPTICO ROAD — ZIP: 20659
MARYLAND NAD 83



LEGEND

- PROPERTY BOUNDARY
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY
- ADJACENT RIGHT-OF-WAY
- PROPERTY LINE TO BE ABANDONED
- OHW — EX. OVERHEAD ELECTRIC
- 183 — EX. CONTOURS (2')
- EX. UTILITY POLE
- EX. TREELINE
- WL — EX. WETLANDS
- WB — EX. 25' WETLAND BUFFER
- EX. SPECIMEN TREE
- EX. SPECIMEN TREE TO BE REMOVED



VICINITY MAP Scale: 1" = 500'

60 0 60 120 180

Scale 1" = 60'

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KCW Engineering Technologies, Inc.
808 Landmark Drive, Suite 217
Glen Burnie, MD 21061
Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com

STATE OF MARYLAND — KEVIN CHANDLER ANDERSON — No. 27016 — PROFESSIONAL ENGINEER
10-30-2020

OWNER: Southern Maryland Electric Cooperative Inc.
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

DEVELOPER: Southern Maryland Electric Cooperative Inc.
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

REVISIONS

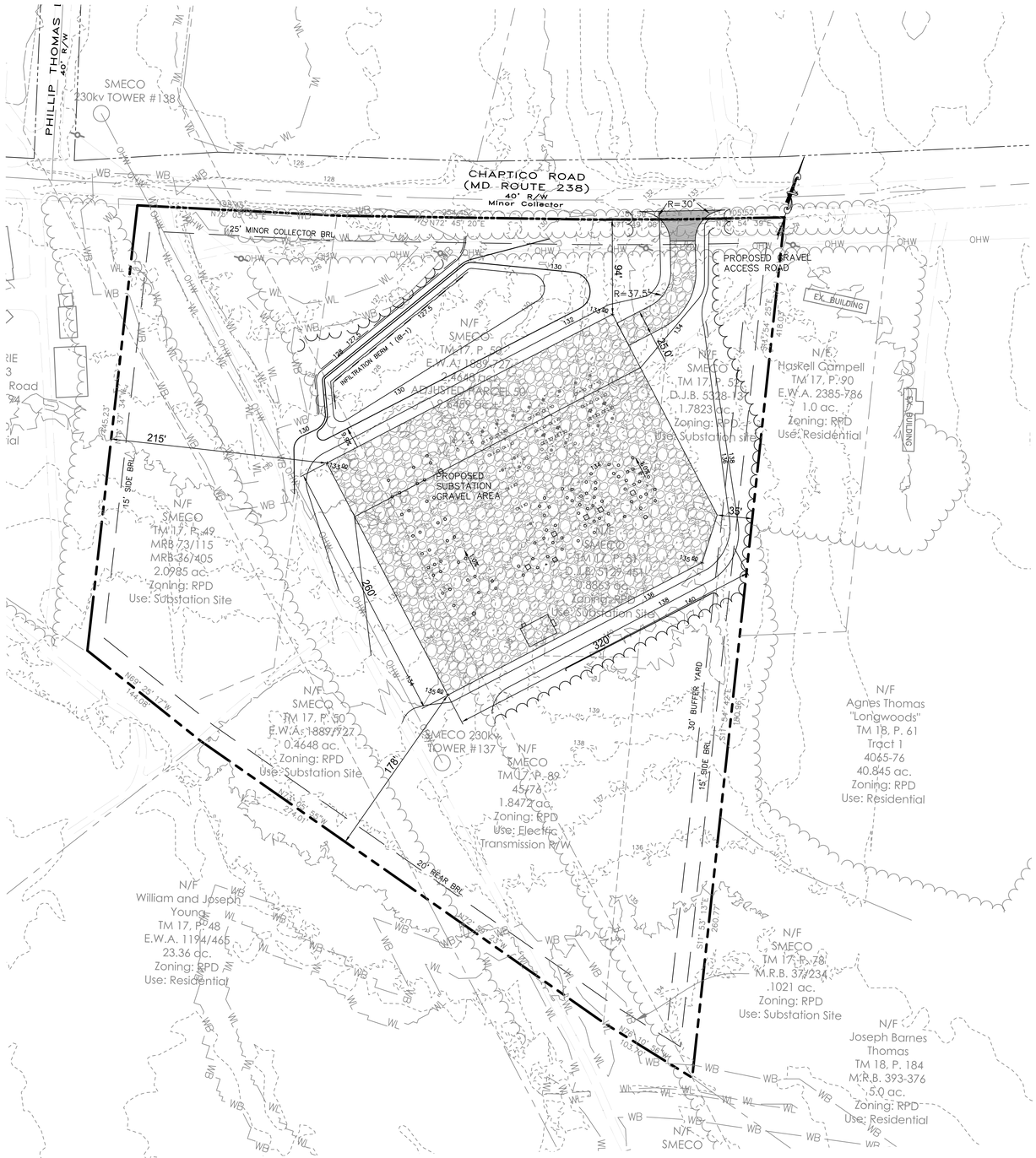
DATE	DESCRIPTION

KCW J.O.:	2201228
SCALE:	AS SHOWN
DESIGNED:	LAG
DRAWN:	LAG
CHECKED:	KCA
DATE:	OCTOBER 30, 2020
DWG NO.:	C-101

EXISTING CONDITIONS

CHAPTICO SUBSTATION

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
ST. MARY'S COUNTY, MARYLAND
ZONING: RPD CHAPTICO ROAD ZIP: 20659
MARYLAND NAD 83



LEGEND

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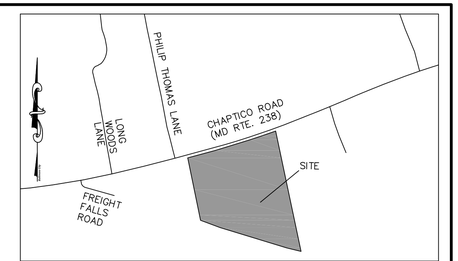
- PROP. TREELINE
- PROP. GRAVEL ROAD / PAD
- PROP. CONCRETE FOUNDATION
- FUTURE CONCRETE FOUNDATION
- PROP. SHA PAVING

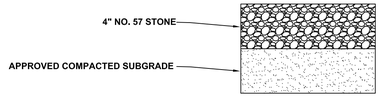


VICINITY MAP Scale: 1" = 500'

1. OWNER: Southern Maryland Electric Cooperative Inc.
   15045 Burnt Store Road, Hughesville, Maryland 20637
   DEVELOPER: Southern Maryland Electric Cooperative Inc.
   15045 Burnt Store Road, Hughesville, Maryland 20637
   Attn: Hugh Voehl Tele: 301-274-4487
2. AREA OF LOT: 9.65 ac.±
3. DEED REFERENCE: L. 5328 F. 13, L. 5129 F. 451, L. 45 F. 76, & L. 1889 F. 727
4. PROPERTY LOCATION: Tax Map 17, Grid 18, Parcels 49-52, 78, & 89
   TAX ACCOUNT No.: 04-003454, 04-007069, 04-012445, 04-012461, 04- 026497
   ADDRESS: Chaptico Road
5. ZONING: RPD (Rural Preservation District)
6. EXISTING USE: Vacant partially wooded lot with overhead SMECO lines.
7. PROPOSED USE: Major Utility (Power Substation)
8. MAXIMUM HEIGHT: PRINCIPAL: 40'
   H = XX', (per SMCCZO Article 3 Schedule 32.1),
9. BUILDING SETBACKS: (per AACZC 18-4-1001)

PRINCIPAL:	Min. Reqr.	Existing	Proposed
Minor Collector	35'	n/a	69'
Side	15'	n/a	20'
Rear	20'	n/a	164'

10. **ENVIRONMENTAL CONSTRAINTS:** PROJECT IS NOT WITHIN CHESAPEAKE BAY CRITICAL AREA. WETLANDS EXIST ON-SITE.
11. **FOREST CONSERVATION:** THE SITE IS SUBJECT TO FOREST CONSERVATION REQUIREMENTS AND SIMPLIFIED FOREST STAND DELINEATION. A FOREST CONSERVATION PLAN WILL BE SUBMITTED TO ANNE ARUNDEL COUNTY FOR APPROVAL.
12. **STORMWATER MANAGEMENT:** SHALL BE PROVIDED IN ACCORDANCE WITH MARYLAND DEPARTMENT OF THE ENVIRONMENT'S ENVIRONMENTAL SITE DESIGN FOR NEW DEVELOPMENT. STORMWATER WILL BE DESIGNED USING ENVIRONMENTAL SITE DESIGN (ESD) PRACTICES TO THE MAXIMUM EXTENT PRACTICABLE (MEP). IF OVERBANK FLOOD PROTECTION IS REQUIRED IT WILL BE PROVIDED ON SITE USING ENHANCED ESD PRACTICES.
13. **EROSION AND SEDIMENT CONTROL:** SHALL BE PROVIDED IN ACCORDANCE WITH ST. MARY'S COUNTY REGULATIONS, WHILE USING THE 2011 STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION. CARE WILL BE TAKEN TO MINIMIZE EXPOSED SOIL CONDITIONS, AND ACCESS TO THE SITE WILL BE LIMITED TO AN AREA WITH APPROVED SEDIMENT CONTROL MEASURES IN PLACE.
14. **EXISTING OVERHEAD LINES:** CONSTRUCTION ACTIVITY TO BE CAUTIOUS AND MINDFUL OF EXISTING OVERHEAD LINES RUNNING PARALLEL TO RIGHT-OF-WAY ON-SITE.



TYPICAL SECTION FOR SUBSTATION PAD & GRAVEL ACCESS ROAD
NOT TO SCALE

SHA RIGHT-OF-WAY PER SHA LIGHT DUTY PAVEMENT SECTION A
FURNISH AND PLACE BITUMINOUS CONCRETE PAVING FOR SHA IMPROVEMENTS.

SURFACE COURSE:	1.5" BITUMINOUS CONCRETE (HMA SUPERPAVE 9.5mm PG 64S-22, LEVEL 2)
BASE COURSE:	6" BITUMINOUS CONCRETE (HMA SUPERPAVE 19.0 mm PG 64S-22, LEVEL 2) (2 3" LIFTS)
SUB-BASE:	6" GRADED AGGREGATE BASE
COMPACTED SUBGRADE:	TO BE APPROVED BY GEOTECHNICAL ENGINEER.

60 0 60 120 180
Scale 1" = 60'

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SITE PLAN

CHAPTICO SUBSTATION

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
ST. MARY'S COUNTY, MARYLAND
ZONING: RPD CHAPTICO ROAD ZIP: 20659
MARYLAND NAD 83

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808 Landmark Drive, Suite 217
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Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com

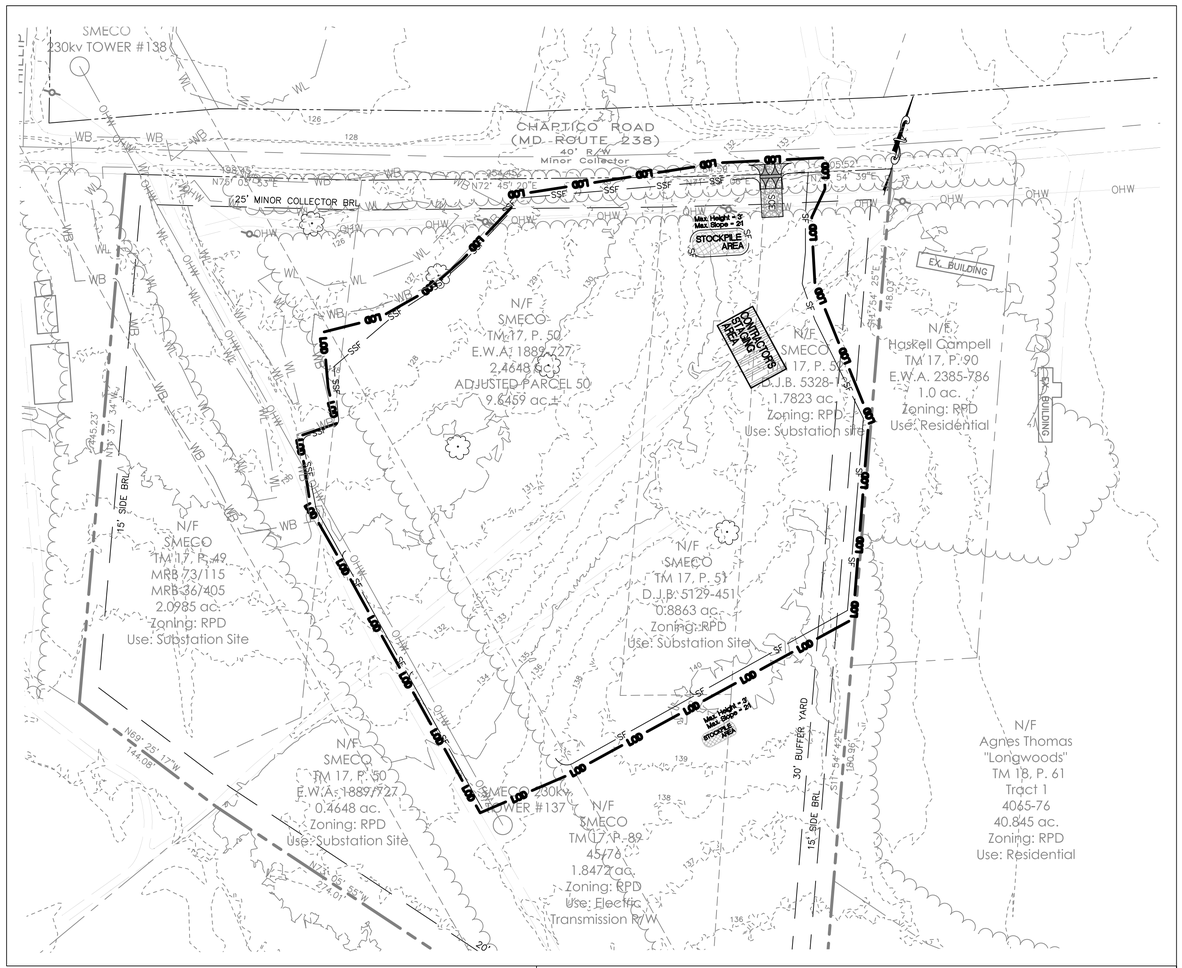
STATE OF MARYLAND — KEVIN CHARLES ANDERSON — No. 27016 — PROFESSIONAL ENGINEER
10-30-2020

OWNER: **Southern Maryland Electric Cooperative Inc.**
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

DEVELOPER: **Southern Maryland Electric Cooperative Inc.**
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

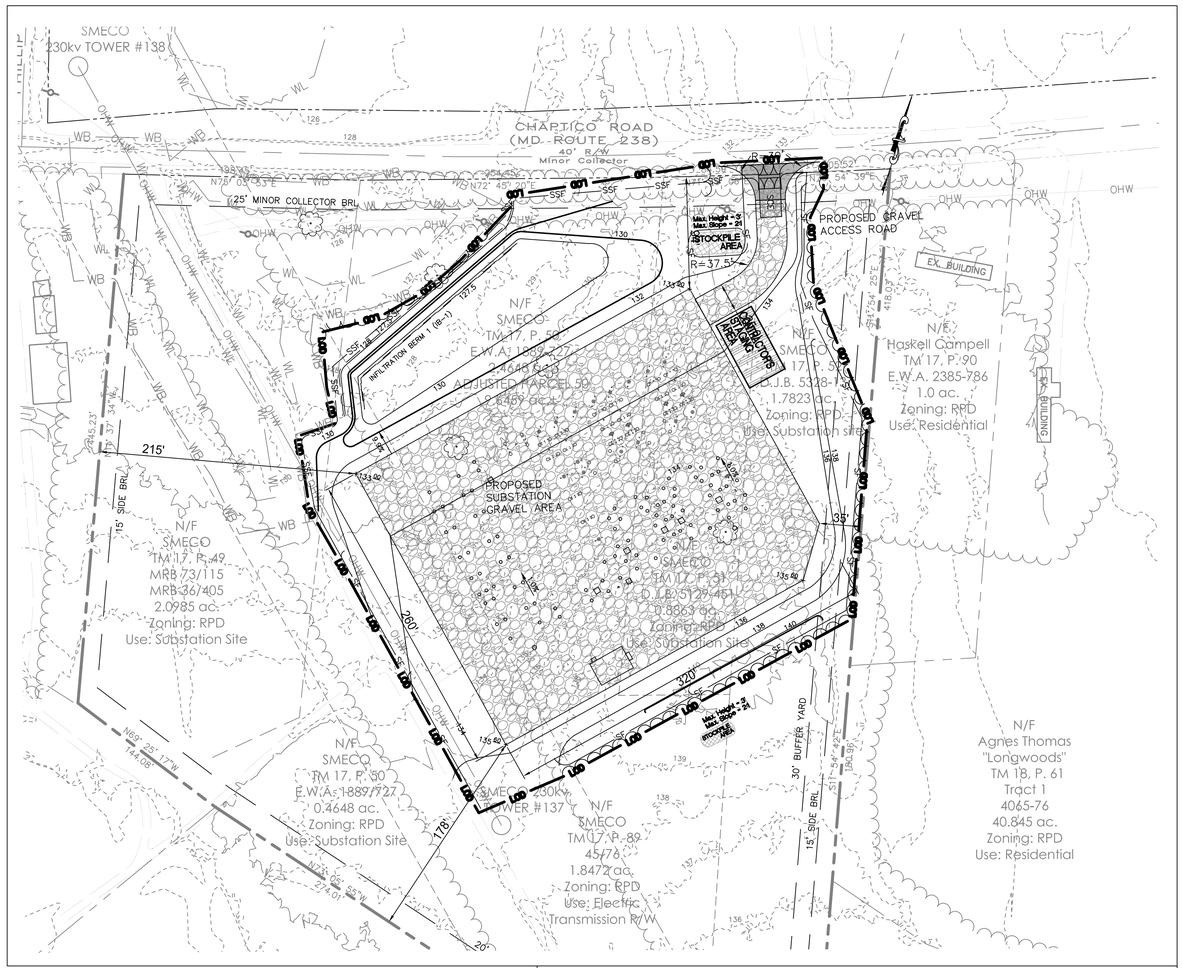
REVISIONS	
DATE	DESCRIPTION

KCW J.O.:	2201228
SCALE:	AS SHOWN
DESIGNED:	LAG
DRAWN:	LAG
CHECKED:	KCA
DATE:	OCTOBER 30, 2020
DWG NO.:	C-102



ESC PLAN - EXISTING CONDITIONS

WICOMICO RIVER & ST. CLEMENTS BAY WATERSHEDS Scale 1" = 60'



ESC PLAN - DEVELOPED CONDITIONS

WICOMICO RIVER & ST. CLEMENTS BAY WATERSHEDS Scale 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY
- ADJACENT RIGHT-OF-WAY
- PROPERTY LINE TO BE ABANDONED
- OHW — OHW — EX. OVERHEAD ELECTRIC
- 183 — EX. CONTOURS (2')
- EX. UTILITY POLE
- WL — EX. WETLANDS
- WB — EX. 25' WETLAND BUFFER
- EX. SPECIMEN TREE
- EX. TREELINE
- PROP. TREELINE
- PROP. GRAVEL ROAD / PAD
- PROP. CONCRETE FOUNDATION
- FUTURE CONCRETE FOUNDATION
- PROP. SHA PAVING

SEDIMENT CONTROL LEGEND

- LOD — LIMIT OF DISTURBANCE
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE
- SSF — SSF — SUPER SILT FENCE
- STOCKPILE AREA
- CONTRACTOR'S STAGING AREA

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO, 27016, EXPIRATION DATE: 01/31/2022."

SOILS TABLE

KEY	SOIL NAME	HSG	SLOPE	K-FACTOR
BrB2	BOURE FINE SANDY LOAM	C	2 - 5 %	0.28

* COMAR Highly erodible soils criteria: K factor > 0.35 and slopes >5%, or slopes > 15%

TEMPORARY STOCKPILE NOTES

TEMPORARY STOCKPILES SHOULD BE:
1. LOCATED WITHIN THE LIMITS DISTURBANCE (LOD).
2. DRAIN TO A FUNCTIONING SEDIMENT CONTROL DEVICE.
3. POSITIONED TO NOT IMPEDE UPON, OR IMPAIR THE FUNCTION OF SAID DEVICE.
4. POSITIONED TO NOT ALTER DRAINAGE DIVIDES.

UTILITY CONSTRUCTION NOTES

1. CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWNSLOPE) THE TRENCH.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

DAILY STABILIZATION NOTE

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY. STABILIZATION SHALL BE AS FOLLOWS:
1. FOR AREAS TO BE PAVED, THE APPLICATION OF STONE BASE.
2. FOR AREAS TO BE VEGETATIVELY STABILIZED:
   a. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES.
   b. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWNSLOPE SIDE.

MAINTENANCE NOTE

CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SEDIMENT CONTROL MEASURES AND DEVICES FOLLOWING EACH STORM EVENT. MAINTENANCE SHALL INCLUDE, BUT NOT LIMITED TO REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO MAINTAIN PROPER FUNCTION.

60 30 0 60 120 180
SCALE 1" = 60'

EROSION and SEDIMENT CONTROL PLAN

CHAPTICO SUBSTATION

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
ST. MARY'S COUNTY, MARYLAND
ZONING: RPD CHAPTICO ROAD ZIP: 20659
MARYLAND NAD 83

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STATE OF MARYLAND — CHARLES ANDERSON — 27016 — PROFESSIONAL ENGINEER
10-30-2020

OWNER: **Southern Maryland Electric Cooperative Inc.**
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
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DEVELOPER: **Southern Maryland Electric Cooperative Inc.**
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Email: hugh.voehl@SMECO.coop

REVISIONS	
DATE	DESCRIPTION

KCW J.O.:	2201228
SCALE:	AS SHOWN
DESIGNED:	LAG
DRAWN:	LAG
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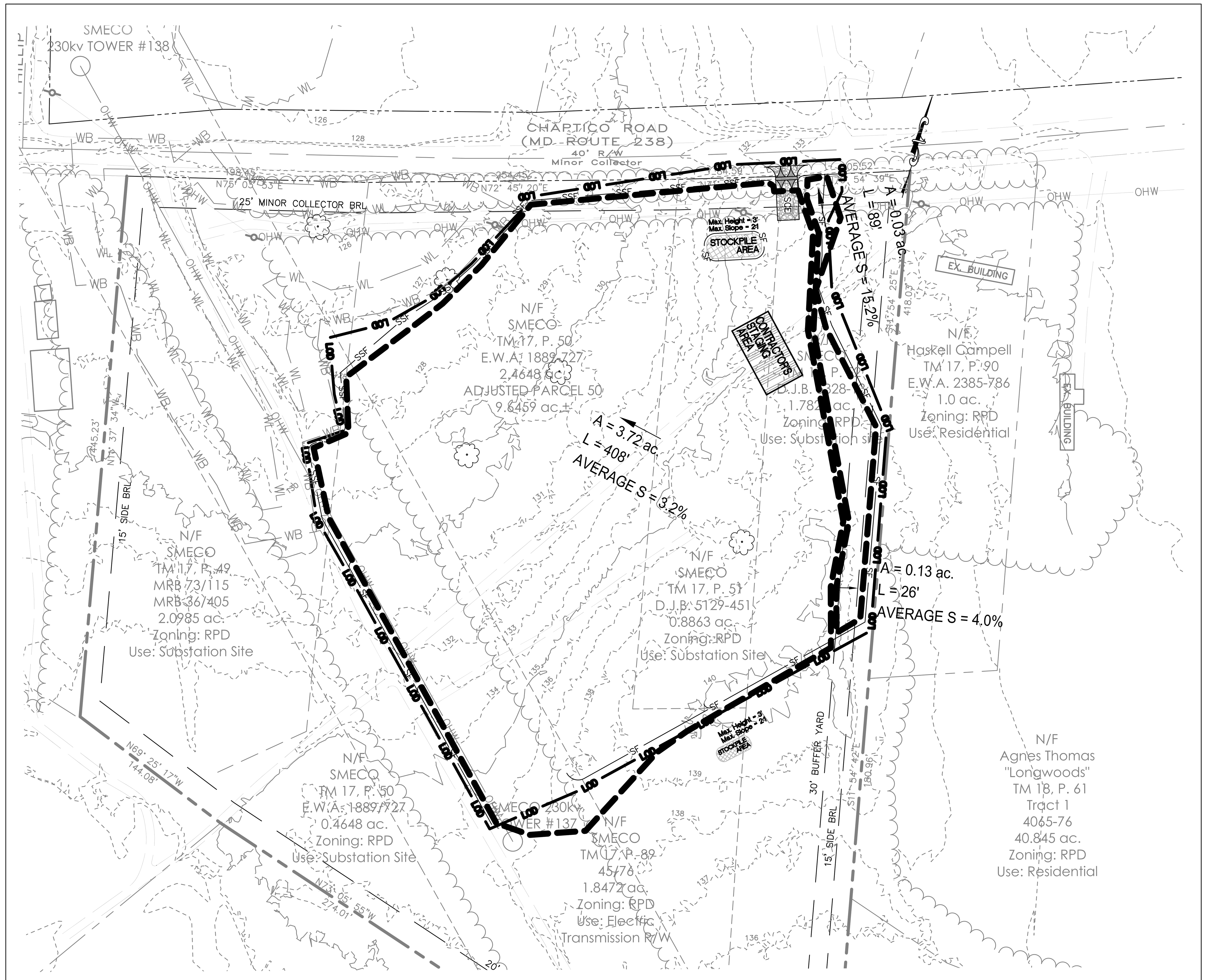
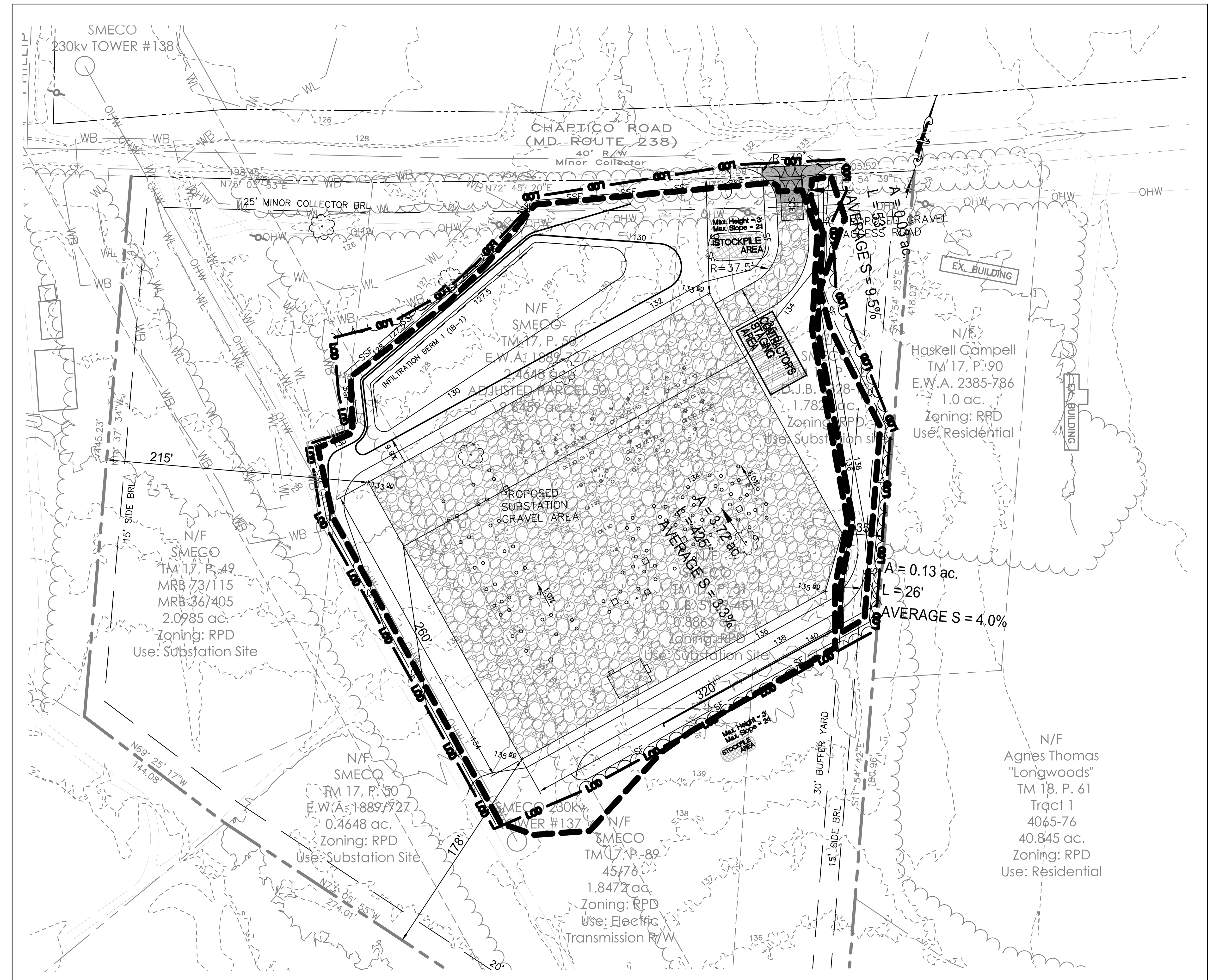
DATE:	OCTOBER 30, 2020
DWG NO.:	C-103



ESC DRAINAGE AREA MAP - EXISTING CONDITIONS

WICOMICO RIVER & ST. CLEMENTS BAY WATERSHEDS Scale 1" = 60'



ESC DRAINAGE AREA MAP - DEVELOPED CONDITIONS

WICOMICO RIVER & ST. CLEMENTS BAY WATERSHEDS Scale 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY
- ADJACENT RIGHT-OF-WAY
- PROPERTY LINE TO BE ABANDONED
- OHW — EX. OVERHEAD ELECTRIC
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SEDIMENT CONTROL LEGEND

- LOD — LIMIT OF DISTURBANCE
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- STOCKPILE AREA
- CONTRACTOR'S STAGING AREA

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 27016, EXPIRATION DATE: 01/31/2022."

SOILS TABLE

KEY	SOIL NAME	HSG	SLOPE	K-FACTOR
BrB2	BOURE FINE SANDY LOAM	C	2 - 5 %	0.28

* COMAR Highly erodible soils criteria: K factor > 0.35 and slopes >5%, or slopes > 15%

TEMPORARY STOCKPILE NOTES

TEMPORARY STOCKPILES SHOULD BE:
1. LOCATED WITHIN THE LIMITS DISTURBANCE (LOD).
2. DRAIN TO A FUNCTIONING SEDIMENT CONTROL DEVICE.
3. POSITIONED TO NOT IMPEDE UPON, OR IMPAIR THE FUNCTION OF SAID DEVICE.
4. POSITIONED TO NOT ALTER DRAINAGE DIVIDES.

UTILITY CONSTRUCTION NOTES

1. CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY. IF TRENCH MUST REMAIN OPEN LONGER THAN ONE DAY, SILT FENCE SHALL BE PLACED BELOW (DOWNSLOPE) THE TRENCH.
2. PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
3. ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

DAILY STABILIZATION NOTE

CONTRACTOR SHALL ONLY DISTURB THAT AREA WHICH CAN BE COMPLETED AND STABILIZED BY THE END OF EACH WORKING DAY. STABILIZATION SHALL BE AS FOLLOWS:
1. FOR AREAS TO BE PAVED, THE APPLICATION OF STONE BASE.
2. FOR AREAS TO BE VEGETATIVELY STABILIZED:
   a. PERMANENT SEED AND SOIL STABILIZATION MATTING OR SOD FOR ALL STEEP SLOPES, CHANNELS OR SWALES.
   b. PERMANENT SEED AND MULCH FOR ALL OTHER AREAS.

ANY AREAS WHICH CAN NOT BE STABILIZED BY THE END OF EACH WORKING DAY MUST HAVE SILT FENCE INSTALLED ON THE DOWNSLOPE SIDE.

MAINTENANCE NOTE

CONTRACTOR SHALL INSPECT AND MAINTAIN ALL SEDIMENT CONTROL MEASURES AND DEVICES FOLLOWING EACH STORM EVENT. MAINTENANCE SHALL INCLUDE, BUT NOT LIMITED TO REMOVAL OF ALL ACCUMULATED SEDIMENT. GEOTEXTILE FABRIC SHALL BE REPLACED AS NEEDED TO MAINTAIN PROPER FUNCTION.

60 30 0 60 120 180
SCALE 1" = 60'

EROSION and SEDIMENT CONTROL DRAINAGE AREAS

CHAPTICO SUBSTATION

KCW ENGINEERING TECHNOLOGIES
KCW Engineering Technologies, Inc.
808 Landmark Drive, Suite 217
Glen Burnie, MD 21061
Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com

STATE OF MARYLAND — KEVIN CHARLES ANDERSON — No. 27016 — PROFESSIONAL ENGINEER
10-30-2020

OWNER: **Southern Maryland Electric Cooperative Inc.**
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

DEVELOPER: **Southern Maryland Electric Cooperative Inc.**
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

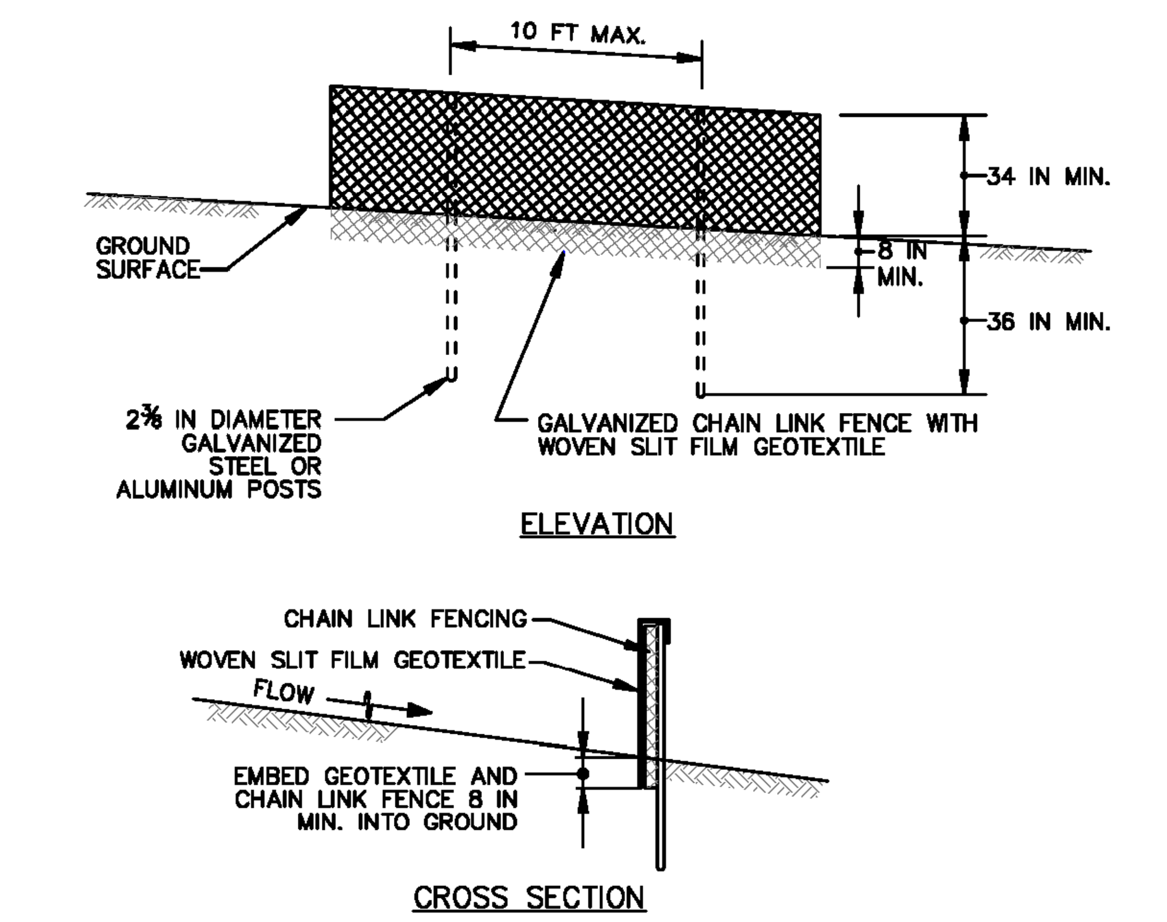
REVISIONS	
DATE	DESCRIPTION

KCW J.O.:	2201228
SCALE:	AS SHOWN
DESIGNED:	LAG
DRAWN:	LAG
CHECKED:	KCA
DATE:	OCTOBER 30, 2020
DWG NO.:	C-104

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
ST. MARY'S COUNTY, MARYLAND
ZONING: RPD CHAPTICO ROAD ZIP: 20659
MARYLAND NAD 83

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: ├──SSF──┤



CONSTRUCTION SPECIFICATIONS

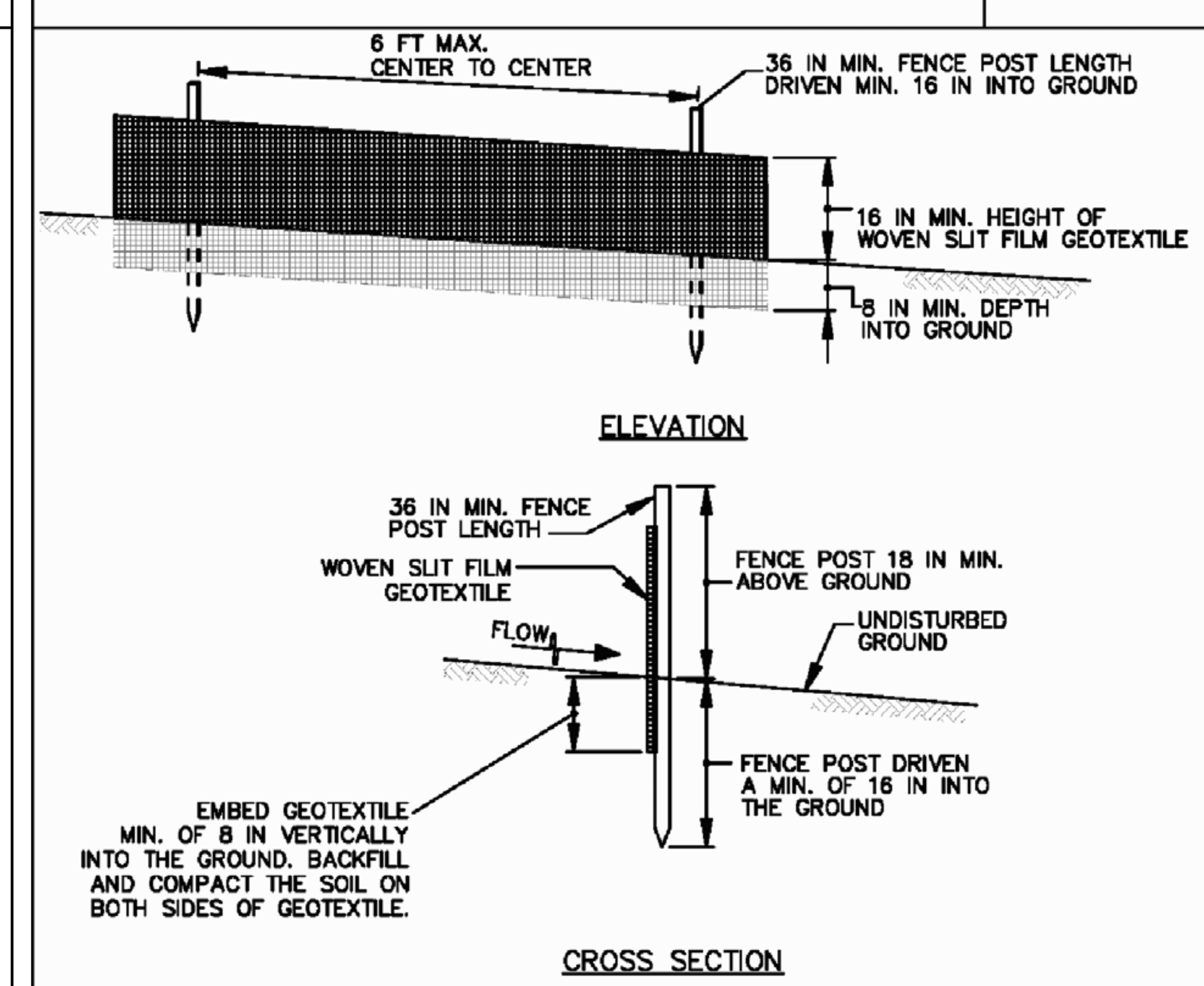
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

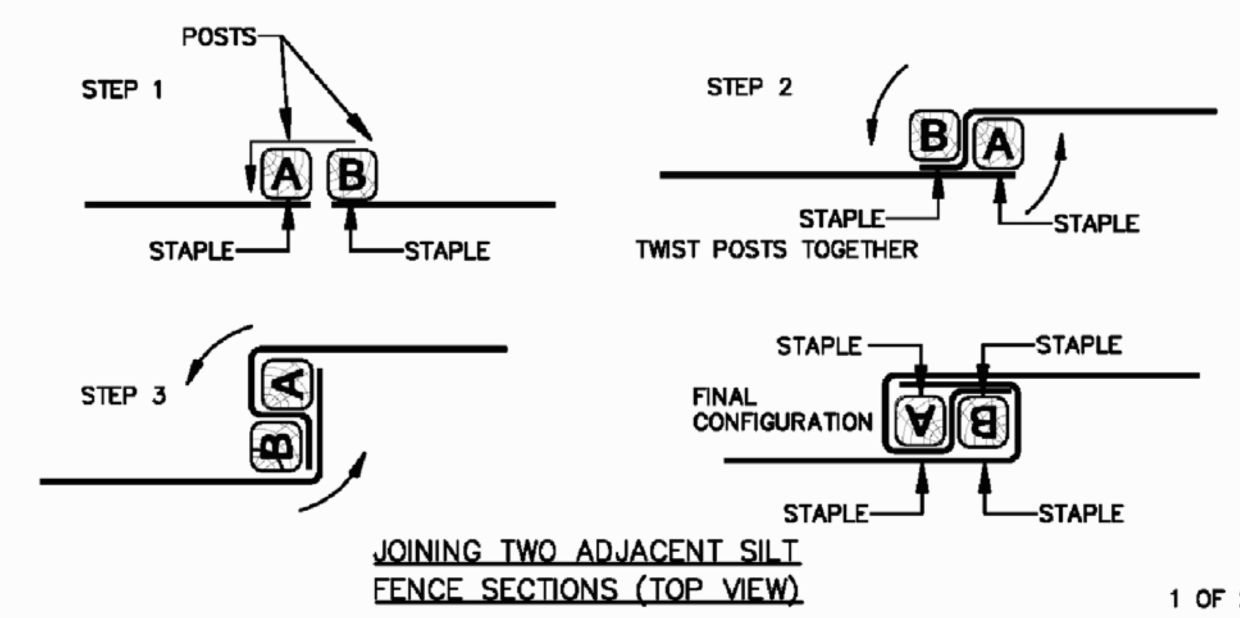
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: ├──SF──┤





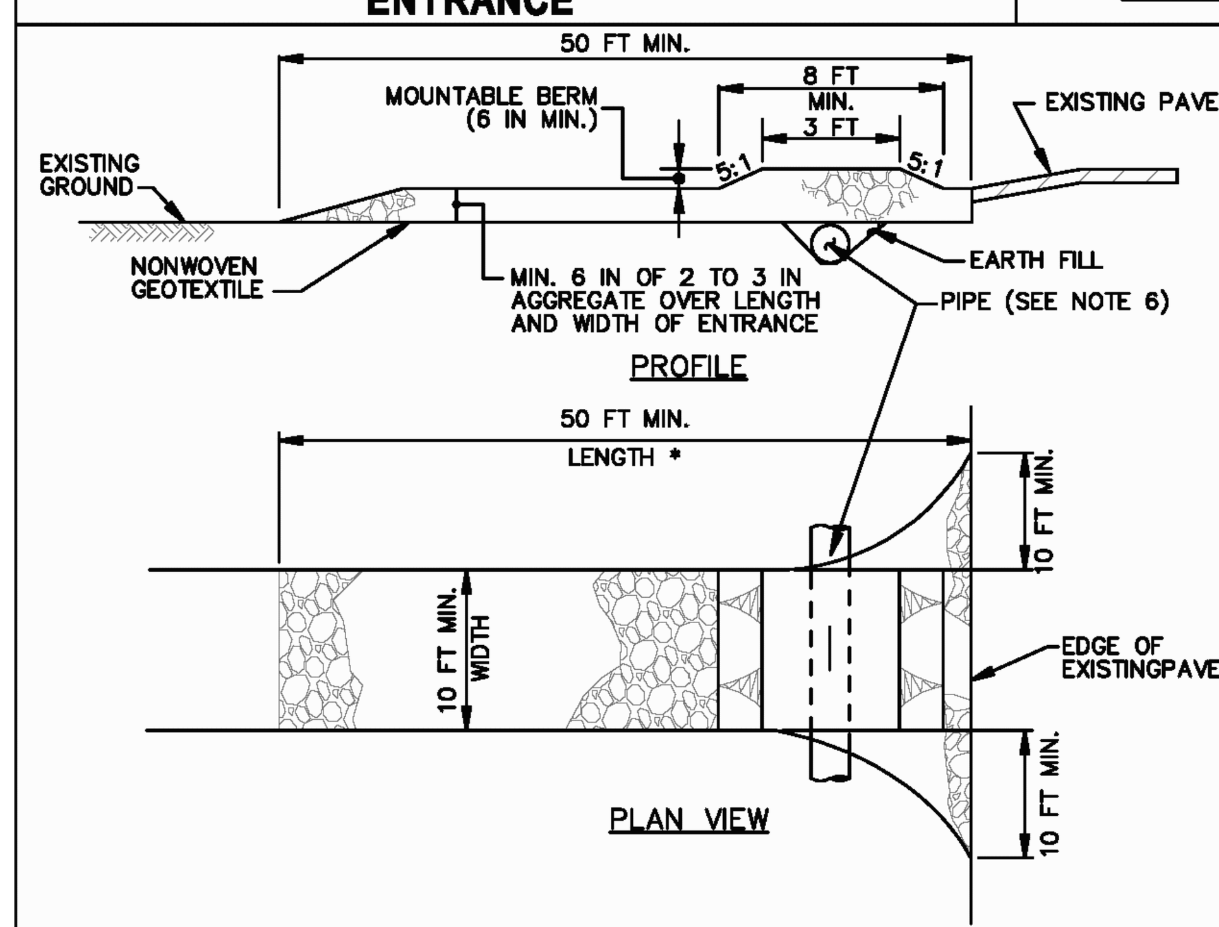
1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: ├──SF──┤

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1⁄16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID–SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

SEDIMENT AND EROSION CONTROL PLAN NOTES

1. REFER TO "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN.
2. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, MINOR FIELD ADJUSTMENTS CAN AND WILL BE MADE TO INSURE THE CONTROL OF ANY SEDIMENT. CHANGES IN SEDIMENT CONTROL PRACTICES REQUIRE PRIOR APPROVAL OF THE SEDIMENT CONTROL INSPECTOR AND THE ST. MARY'S COUNTY SOIL CONSERVATION DISTRICT.
3. AT THE END OF EACH WORKING DAY, ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT IN OPERATIONAL CONDITION.
4. FOLLOWING INITIAL SOIL DISTURBANCE OR RE–DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:
   A. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1),
   B. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.
5. ANY CHANGE TO THE GRADING PROPOSED ON THIS PLAN REQUIRES RE–SUBMISSION TO ST. MARY'S COUNTY SOIL CONSERVATION DISTRICT FOR APPROVAL.
6. DUST CONTROL WILL BE PROVIDED FOR ALL DISTURBED AREAS. REFER TO "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", PG. H.22, FOR ACCEPTABLE METHODS AND SPECIFICATIONS FOR DUST CONTROL.
7. ANY VARIATIONS FROM THE SEQUENCE OF OPERATIONS STATED ON THIS PLAN REQUIRES THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR AND THE ST. MARY'S COUNTY SOIL CONSERVATION DISTRICT PRIOR TO THE INITIATION OF THE CHANGE.
8. EXCESS CUT OR BORROW MATERIAL SHALL GO TO, OR COME FROM, RESPECTIVELY, A SITE WITH AN OPEN GRADING PERMIT AND APPROVED SEDIMENT CONTROL PLAN.
9. THE FOLLOWING ITEM MAY BE USED AS APPLICABLE: REFER TO "MARYLAND'S GUIDELINES TO WATERWAY CONSTRUCTION" BY THE WATER MANAGEMENT ADMINISTRATION OF THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, REVISED NOVEMBER 2000, FOR STANDARD DETAILS AND DETAILED SPECIFICATIONS OF EACH PRACTICE SPECIFIED HEREIN FOR WATERWAY CONSTRUCTION.
10. PUMPING SEDIMENT–LADEN WATER INTO WATERS OF THE STATE IS STRICTLY PROHIBITED. ANY PORTABLE DEWATERING DEVICE MUST BE LOCATED WITHIN THE LIMIT OF DISTURBANCE.

COMPACTED FILL

1. All fill materials shall be inspected, tested and approved by the Geotechnical Engineer prior to use. Material considered suitable for controlled fill should consist of predominately sandy or mixed sandy low–plastic soil (USCS: SW, SP, or SM) or better. Soils that are imported from an offsite source may require some moisture adjustment to facilitate their use as structural or controlled fill, depending upon weather conditions at the time of construction. Fill should be free of organic materials, trash, muck, roots, frost and other deleterious materials.
2. Primarily silty or clayey (non–plastic to low or moderately plastic, USCS: ML/CL) soils and clayey SAND (USCS: SC) may also be used as controlled fill in non–structural areas ("green areas"), however, these materials are inherently more moisture–sensitive than predominately sandy materials. Control of moisture with primarily fine–grained fill soils is imperative for achieving the required placement and compaction. High plastic clay (USCS: CH) and elastic silt (USCS: MH) soils are not recommended for use as fill for this project.
3. Prior to placing fill, the ground surface should be cleared of all refuse, brush, grass, roots, ice and frozen material. All organic matter and otherwise unsuitable soils shall be removed from the surface to be filled.
4. Fill placement should be in relatively level layers, eight to nine inches in loose thickness and compacted uniformly with heavy duty equipment.
5. Fill required to support shallow footing elements and the building pad should be compacted to 95 percent of its maximum dry density as established by ASTM D–1557 / AASHTO T–180 (Modified Proctor) specifications. Fill areas within the parking lot should be compacted to 97 percent of its maximum dry density as established by ASTM D–1557 / AASHTO T–180 (Modified Proctor).
6. Additionally, for best placement and compaction results, controlled fill should have a moisture content within +/– 2 percentage points of its optimum moisture content.
7. The density of the fill should be checked on each lift by an experienced soils technician. Should utility construction be performed after earthwork, the contractor should be responsible for achieving the appropriate compaction of the Modified Proctor maximum dry density in all trench backfill.
8. A sufficient number of in–place density tests should be performed by an engineering technician to verify that the proper degree of compaction is being obtained on all fill soils. As a minimum, each lift should be tested and one test per 2500 square feet of fill.
9. The fill should be constructed in such a manner that the surface will be sloped to drain at all times, and fill shall be deposited to prevent excessive moisture accumulation from rainwater.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 27016, EXPIRATION DATE: 01/31/2022."

EROSION And SEDIMENT CONTROL DETAILS 1

KCW ENGINEERING TECHNOLOGIES
KCW Engineering Technologies, Inc.
808 Landmark Drive, Suite 217
Glen Burnie, MD 21061
Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com

10–30–2020

OWNER: **Southern Maryland Electric Cooperative Inc.**
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14950 Cooperative Place
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Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

REVISIONS

DATE	DESCRIPTION

KCW J.O.:	2201228
SCALE:	AS SHOWN
DESIGNED:	LAG
DRAWN:	LAG
CHECKED:	KCA
DATE:	OCTOBER 30, 2020
DWG NO.:	**C-105**

CHAPTICO SUBSTATION

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
ST. MARY'S COUNTY, MARYLAND
ZONING: RPD — CHAPTICO ROAD — ZIP: 20659
MARYLAND NAD 83

2011 VEGATIVE STABILIZATION

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

Definition
Using vegetation as cover to protect exposed soil from erosion.

Purpose
To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies
On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

Effects on Water Quality and Quantity
Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment
Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

1. Adequate vegetative stabilization requires 95 percent groundcover.
2. If an area has less than 40 percent groundcover, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

Definition
Establishment of vegetative cover on cut and fill slopes.

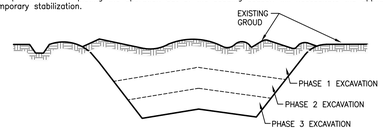
Purpose
To provide timely vegetative cover on cut and fill slopes as work progresses.

Conditions Where Practice Applies
Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria
A. Incremental Stabilization – Cut Slopes

1. Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
2. Construction sequence example (Refer to Figure B.1):
   a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
   b. Perform Phase 1 excavation, prepare seedbed, and stabilize.
   c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
   d. Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

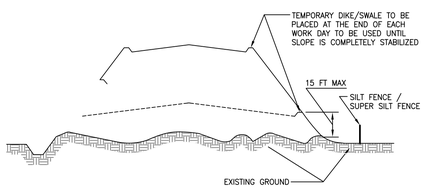
Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.



B. Incremental Stabilization – Fill Slopes

1. Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
3. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
4. Construction sequence example (Refer to Figure B.2):
   a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
   b. At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
   c. Place Phase 1 fill, prepare seedbed, and stabilize.
   d. Place Phase 2 fill, prepare seedbed, and stabilize.
   e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.



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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 plows or rippers 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. 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: 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 nutrient 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 1½ 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 analysis 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 8 tons/acre (200–400 pounds per 1,000 square feet) prior to the placement of topsoil.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

Definition
A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose
To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies
Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria
1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or PERIMETER DIKE/SWALE. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

Maintenance
The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

Definition
The application of seed and mulch to establish vegetative cover.

Purpose
To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies
To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria
A. Seeding

1. Specifications
a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

2. Application
a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorous), 200 pounds per acre; K20 (potassium), 200 pounds per acre.
ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
iii. Mix seed and fertilizer on site and seed immediately and without interruption.
iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

1. Mulch Materials (in order of preference)
a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.

b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

2. Application
a. Apply mulch to all seeded areas immediately after seeding.
b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre.
c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
3. Anchoring
a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited.
iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

Definition
To stabilize disturbed soils with vegetation for up to 6 months.

Purpose
To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies
Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria
1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.

2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.

3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

TEMPORARY SEEDING SUMMARY

SEED MIXTURE FOR HARDINESS ZONE 6b (From Table B.1)					FERTILIZER RATE * (10-20-20)	LIME RATE *
SPECIES	SEEDING RATES lbs/ acre	SEEDING RATES lbs/ 1000 sf	SEEDING DATES	SEEDING DEPTHS		
ANNUAL RYEGRASS	40	1.0	Mar. 1 to May 15 and Aug. 1 to Oct. 15	1/2"	436 lbs/acre or 10 lbs/ 1000 sf	2 tons/acre or 90 lbs/ 1000 sf
CEREAL RYE	112	2.8	Mar. 1 to May 15 and Aug. 1 to Nov. 15	1"		
FOXTAIL MILLET	30	0.7	May 16 to Jul. 31	1/2"		

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

Definition
To stabilize disturbed soils with permanent vegetation.

Purpose
To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies
Exposed soils where ground cover is needed for 6 months or more.

Criteria
A. Seed Mixtures

1. General Use
a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA–NRCS Technical Field Office Guide, Section 342 – Critical Area Planting.
c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.
d. For areas receiving low maintenance, apply urea form fertilizer (46–0–0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary .

2. Turfgrass Mixtures
a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.

i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.

iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.

iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1½ to 3 pounds per 1000 square feet.

Notes:
Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland" Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line

c. Ideal Times of Seeding for Turf Grass Mixtures

Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6a)

Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b)

Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)

d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

1. General Specifications
a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
b. Sod must be machine cut at a uniform soil thickness of 3/4 inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

2. Sod Installation
a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance
a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

PERMANENT SEEDING SUMMARY

SEED MIXTURE FOR HARDINESS ZONE 6b (From Table B.3)					FERTILIZER RATE* (10-20-20)			LIME RATE*
NO.	SPECIES	APPLIC. RATE lbs/ acre	SEEDING DATES	SEEDING DEPTHS	N	P2Os	K2O	
8	SEED MIXTURE: TALL FESCUE (100%)	100	Mar. 1 to May 15 and Aug. 1 to Oct. 15	1/4" to 1/2"	45 lbs/ acre or 1.0 lbs/ 1000 sf	90 lbs/ acre or 2.0 lbs/ 1000 sf	90 lbs/ acre or 2.0 lbs/ 1000 sf	2 tons/ acre or 90 lbs/ 1000 sf
iii	TURFGRASS MIXTURE: TALL FESCUE (95%) KENTUCKY BLUEGRASS (5%)	250 13	March 1 to May 15 and Aug. 15 to Oct. 15	1/4" to 1/2"				

* FERTILIZER AND LIME RATES FOR FINAL STABILIZATION SHALL BE BASED ON SOIL TEST. A COPY OF THE RECOMMENDED RATES SHALL BE FURNISHED TO THE SEDIMENT CONTROL INSPECTOR.

KCW Engineering Technologies, Inc.
808 Landmark Drive, Suite 217
Glen Burnie, MD 21061
Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com

STATE OF MARYLAND — KEVIN CHARLES ANDERSON — No. 27018 — PROFESSIONAL ENGINEER
10-30-2020

OWNER: Southern Maryland Electric Cooperative Inc.
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

DEVELOPER: Southern Maryland Electric Cooperative Inc.
14950 Cooperative Place
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REVISIONS

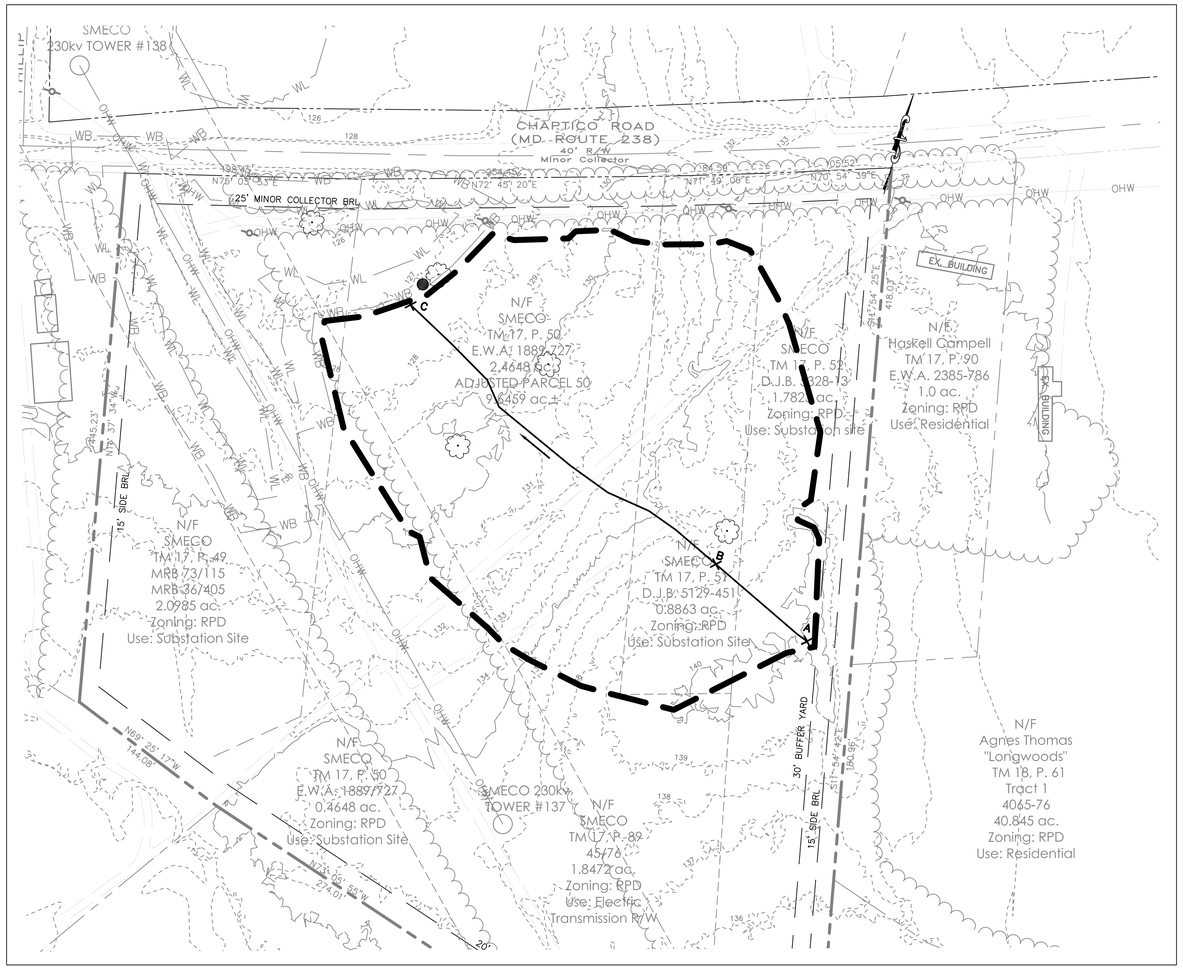
DATE	DESCRIPTION

KCW J.O.: 2201228
SCALE: AS SHOWN
DESIGNED: LAG
DRAWN: LAG
CHECKED: KCA
DATE: OCTOBER 30, 2020
DWG NO.: C-106

EROSION and SEDIMENT CONTROL DETAILS 2

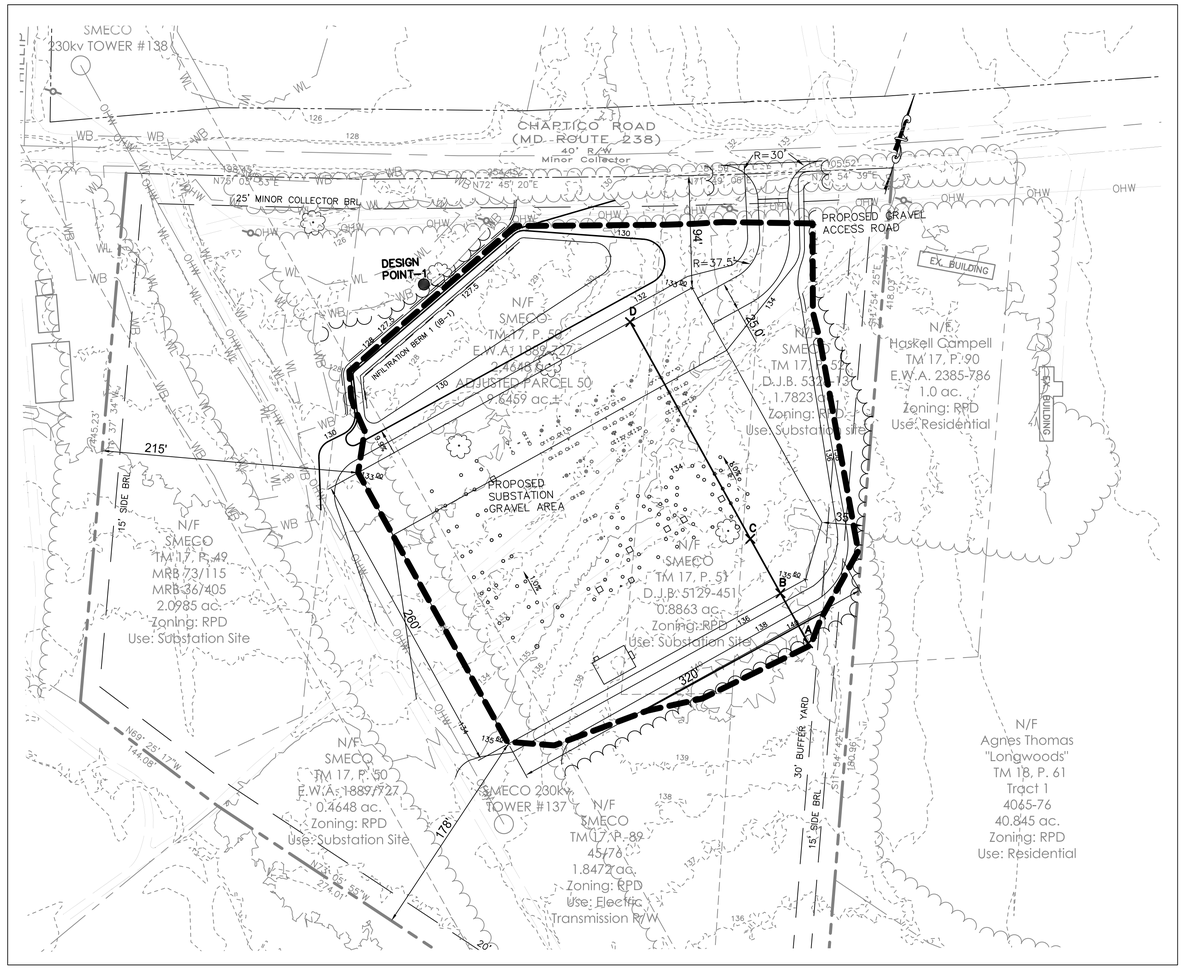
CHAPTICO SUBSTATION

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
ST. MARY'S COUNTY, MARYLAND
ZONING: RPD CHAPTICO ROAD ZIP: 20659
MARYLAND NAD 83



EXISTING SWM DRAINAGE AREA MAP

Scale 1" = 60'



PROPOSED SWM DRAINAGE AREA MAP

Scale 1" = 60'

LEGEND

- PROPERTY BOUNDARY
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY
- ADJACENT RIGHT-OF-WAY
- PROPERTY LINE TO BE ABANDONED
- EX. OVERHEAD ELECTRIC
- EX. CONTOURS (2')
- EX. UTILITY POLE
- EX. WETLANDS
- EX. 25' WETLAND BUFFER
- EX. SPECIMEN TREE
- EX. TREELINE
- PROP. TREELINE
- PROP. GRAVEL ROAD / PAD
- PROP. CONCRETE FOUNDATION
- FUTURE CONCRETE FOUNDATION
- PROP. SHA PAVING

SWM HYDROLOGIC ANALYSIS

DESIGN POINT	DRAINAGE AREA	D.A. (ac.)	RCN	STORAGE ADJUSTED RCN	Tc (hrs.)	10-yr Q (cfs)
DP-1	DA-EX. 1	0.30	70	N/A	0.23	7.1
DP-1	DA-PROP. 1	0.25	89	63	0.13	6.7

STORMWATER MANAGEMENT SITE REQUIREMENTS

	REQUIREMENT	VOLUME REQUIRED (cf)	VOLUME PROVIDED (cf)	EXISTING DISCHARGE (cfs)	PROPOSED DISCHARGE (cfs)	NOTES
	ESD_V, (cf)	13,012 cf	18,136 cf	N/A	N/A	SEE NOTE # 1.
	Re_V, (cf)	940 cf	940 cf	N/A	N/A	SEE NOTE # 2.
POI 1	Cp_V, (cf)	13,012 cf	18,136 cf	N/A	N/A	
POI 1	Q_{10}, (cfs)	N/A	N/A	7.1	6.7	0.4 cfs DECREASE IN 10-Yr. Q. SEE NOTE # 3.

SOILS TABLE

KEY	SOIL NAME	HSG	SLOPE	K-FACTOR
BrB2	BOURE FINE SANDY LOAM	C	2 - 5 %	0.28

* COMAR Highly erodible soils criteria: K factor > 0.35 and slopes >5%, or slopes > 15%

NOTE 1: ENVIRONMENTAL SITE DESIGN VOLUME (ESDv) IS PROVIDED BY 1 INFILTRATION BERM.

NOTE 2: Rev IS PROVIDED BY THE INFILTRATION BERM STORAGE AREA.

NOTE 3: 10-YEAR PEAK DISCHARGE TO THE DESIGN POINT IS LESS THAN EXISTING CONDITIONS USING THE STORAGE PROVIDED TO ACCOUNT FOR AN ADJUSTED RCN.

60 30 0 60 120 180

SCALE 1" = 60'

ENVIRONMENTAL SITE DESIGN SUMMARY TABLE

PRACTICE	DIMENSIONS	DRAINAGE AREA (sf)	IMPERVIOUS AREA (sf)	STORAGE VOLUME REQUIRED, ESDv (cf)	STORAGE VOLUME PROVIDED, ESDv (cf)	TREATMENT VOLUME CREDITED, ESDv (cf)	Pe REQUIRED (in)	Pe PROVIDED (in)
SWMP # 1: (IB-1) INFILTRATION BERM	2.5' HIGH 2' WIDE CREST	141,218	85,158	13,024	24,655	18,136	1.8	2.6

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 27016, EXPIRATION DATE: 01/31/2022."

KCW ENGINEERING TECHNOLOGIES

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808 Landmark Drive, Suite 217
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Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com

STATE OF MARYLAND
CHARLES ANDERSON
KEVIN
No. 27016
PROFESSIONAL ENGINEER

10-30-2020

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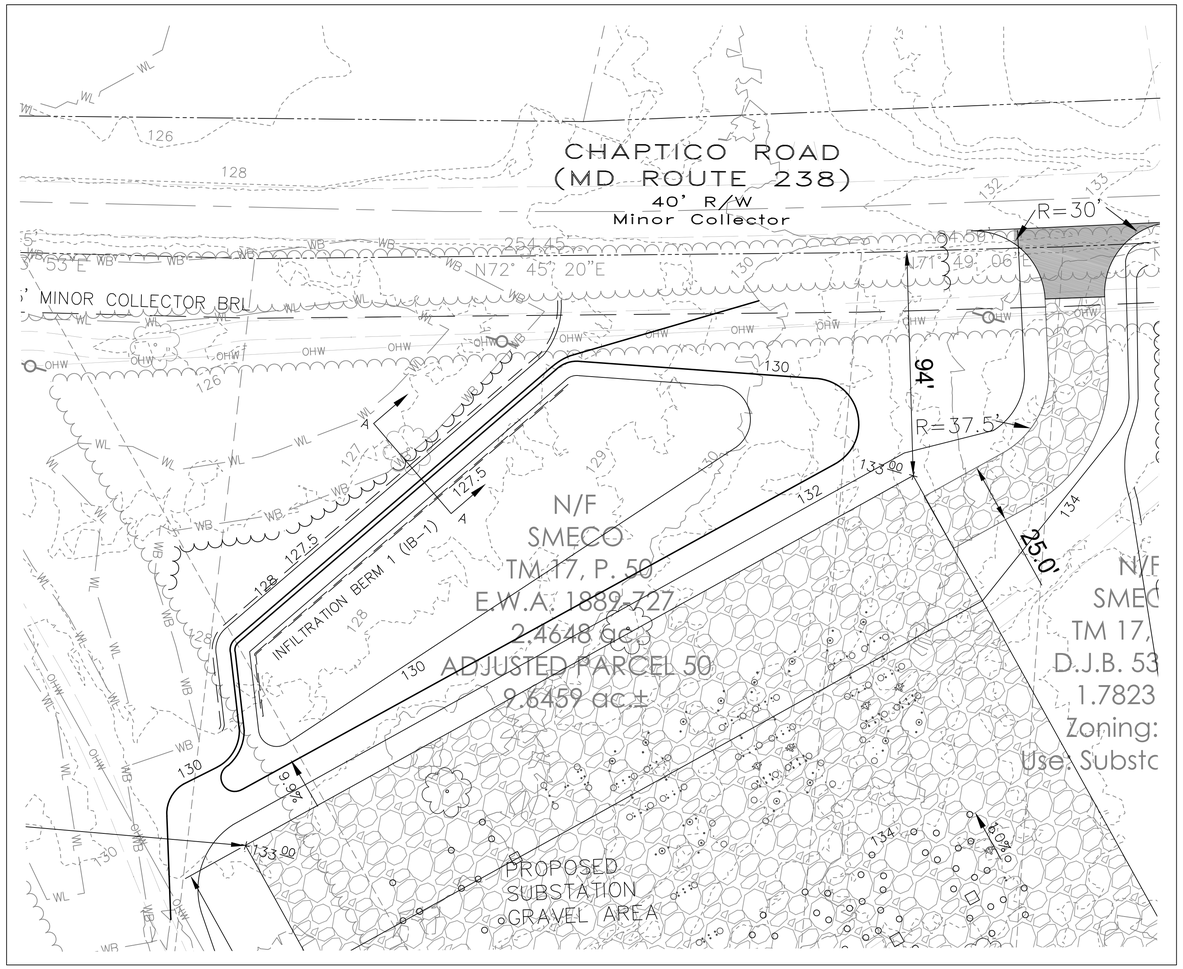
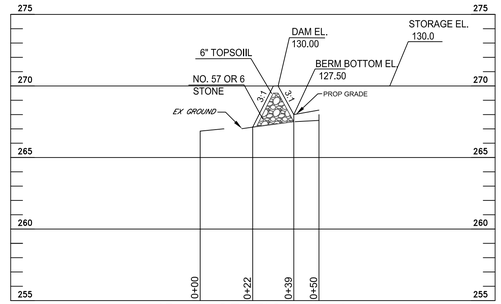
STORMWATER MANAGEMENT DRAINAGE AREA

CHAPTICO SUBSTATION

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
ST. MARY'S COUNTY, MARYLAND
ZONING: RPD CHAPTICO ROAD ZIP: 20659
MARYLAND NAD 83



STORMWATER MANAGEMENT GRADING PLAN
Scale 1" = 30'



IB-1 SECTION A-A
SCALE: HORIZ: 1" = 30'
VERT.: 1" = 5'

AS-BUILT DATA FOR INFILTRATION BERM		
FACILITY ID: INFILTRATION BERM #1		
FEATURE	DESIGN	*AS-BUILT
STORAGE AREA ELEV / AREA	130 / 19,740 SQ FT	
TOP WIDTH BERM	2 FT	
TOPSOIL COMPOSTION	ACCORDING TO SPECS	
AGGREGATE	NO. 57 OR 6 STONE	

LEGEND

- PROPERTY BOUNDARY
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY
- ADJACENT RIGHT-OF-WAY
- PROPERTY LINE TO BE ABANDONED
- OHW — OHW — EX. OVERHEAD ELECTRIC
- 183 — EX. CONTOURS (2')
- EX. UTILITY POLE
- WL — EX. WETLANDS
- WB — EX. 25' WETLAND BUFFER
- EX. SPECIMEN TREE
- EX. TREELINE
- PROP. TREELINE
- PROP. GRAVEL ROAD / PAD
- PROP. CONCRETE FOUNDATION
- FUTURE CONCRETE FOUNDATION
- PROP. SHA PAVING

30 15 0 30 60 90
SCALE 1" = 30'

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CHECKED: KCA
DATE: OCTOBER 30, 2020
DWG NO.: **C-108**

STORMWATER MANAGEMENT PLAN, PROFILE, and SECTIONS
CHAPTICO SUBSTATION

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
ST. MARY'S COUNTY, MARYLAND
ZONING: RPD CHAPTICO ROAD ZIP: 20659
MARYLAND NAD 83

- **Storage Capacity:** Infiltration berms have relatively limited capacity to meet ESD_v requirements as a stand-alone practice. They may provide storage for pretreatment, address Re_v, or be incorporated within the design of other practices.

Design Guidance:

The following conditions should be considered when designing infiltration berms:

- **Conveyance:** Stormwater discharges greater than the 2-year, 24 hour design storm or other storm specified by the approval authority shall flow over the berm at non-erosive velocities. Stormwater runoff from impervious areas is intercepted by infiltration berms that are placed on the contour to prevent erosive, concentrated runoff patterns. Runoff flows to a depressed area immediately above the berm where velocities are reduced, stormwater flows through the berm, and sheetflows downslope.

- **Treatment:** Infiltration berms shall meet the following conditions:

  - *Berms shall be installed along the contour at a constant elevation and be level.*
  - *When used in a series along a slope, the elevation at the downstream toe of each berm shall be the same elevation as the crest of the next berm downslope.*
  - *The berm shall be asymmetric in shape.* The crest should be two feet wide.
  - *The berm shall be graded so that a concave shape is provided at the up gradient toe.*
  - *The design shall consider soils suitable to resist slope failure and slumping.* Side slopes should be very shallow and a ratio of 3:1 is recommended for mowed berms.
  - A berm will consist of a six-inch layer of compacted topsoil with a gravel or aggregate interior.
  - The storage volume created behind and up to the crest of the berm may be used to address pretreatment, or Re_v, or contribute to ESD_v requirements.

- **Soils:** *Subsurface soils shall be uncompacted and may need to be scarified in order to encourage infiltration.*

- **Plant Materials:** Berms should be planted with native meadow vegetation and shrubs. Turf grass may be used on berms that are to be mown.

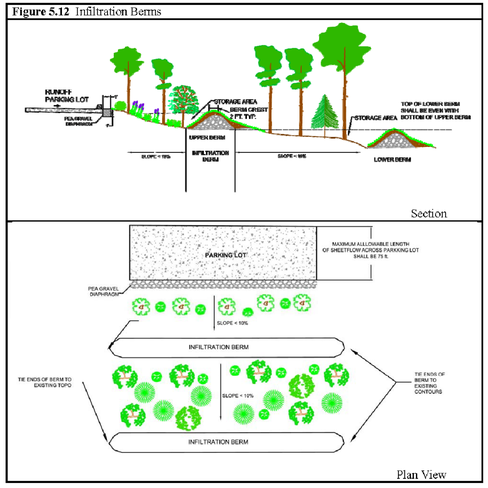
Construction Criteria:

The following items should be addressed during construction of projects with infiltration berms:

- **Erosion and Sediment Control:** Final grading for infiltration berms should not take place until the surrounding site is stabilized. *If this cannot be accomplished, runoff from disturbed areas shall be diverted around proposed locations.*

- **Soil Compaction:** *Soils within storage areas shall not be compacted.*

Figure 5.12 Infiltration Berms



Soil Compaction: *Excavation should be conducted in dry conditions with equipment located outside of the practice to minimize bottom and sidewall compaction. Construction shall be performed with lightweight, wide-tracked equipment to minimize disturbance and compaction.* Existing soils in the location of proposed berms should be scarified to maximize infiltration.

- **Gravel and Soil Media:** See Appendix B.4.B for material specification for the gravel and planting soil media.

- **Landscape Installation:** The optimum planting time is during the Fall. Spring is also acceptable but may require watering.

- **Implementation with Other Practices:** *When infiltration berms are incorporated into a system using other practices (e.g., Disconnection of Non-Rooftop Runoff), the Construction Criteria for that practice shall also be considered.*

Inspection:

- Regular inspections shall be made during the following stages of construction:

  - *During placement of gravel media, and soil.*
  - *Upon completion of final grading and establishment of permanent stabilization.*

Maintenance Criteria:

The following items should be addressed to ensure proper maintenance and long-term performance of infiltration berms:

- Berms should be inspected regularly to ensure that ponding water does not create nuisance conditions.

- Signs of concentrated flow and other surface erosion should be repaired to promote sheetflow.

- A dense mat of vegetation should be present at all times. Vegetation should be replaced as needed.

- *When infiltration berms are incorporated in a system using other practices, the Maintenance Criteria for that practice shall also be considered.*

MATERIAL SPECIFICATIONS FOR MICRO–BIORETENTION, RAIN GARDENS, & LANDSCAPE INFILTRATION PRACTICES

MATERIAL	SPECIFICATIONS / TEST METHOD	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE SPECIFIC
PLANTING SOIL (2' TO 4' DEEP)	See SHA Specifications for Bioretention Soil Mix (BSM)	N/A	SEE MSHA SPECIFICATION 920.01.05
TOPSOIL	See SHA Specifications for Bioretention Soil Mix (BSM)	N/A	THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN 1"
ORGANIC CONTENT	See SHA Specifications for Bioretention Soil Mix (BSM)		
MULCH	SHREDDED HARDWOOD		AGED 6 MONTHS, MINIMUM; NO PINE, NO WOOD CHIPS
PEA GRAVEL DIAPHRAGM, BRIDGING LAYER	PEA GRAVEL, ASTM–D–448	NO 8 OR NO 9 (1/8" TO 3/8")	
ORNAMENTAL STONE	WASHED COBBLES	1" TO 3"	RIVER JACK STONE
GEOTEXTILE FABRIC	ASTM–D–4833 (PUNCTURE STRENGTH – 130 lb.) ASTM–D–4632 (TENSILE STRENGTH – 205 lb.)	0.08" THICK EQUIVALENT OPENING SIZE OF #80 SIEVE	90 G/MIN/SF FLOW RATE. PE TYPE I NON–WOVEN
GRAVEL (UNDERDRAINS & INFILTRATION BERMS)	AASHTO–M–43	NO 57 OR NO 6 AGGREGATE	
UNDERDRAIN PIPING	F 758, TYPE PS 28 OR AASHTO–M–278	4"–6" RIGID SCHEDULE 40 PVC OR HDPE	SLOTTED OR PERFORATED PIPE; 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" GRAVEL OVER PIPES; NOT NECESSARY UNDERNEATH PIPES. PIPE SHALL BE WRAPPED TWICE WITH 1/4 – INCH GALVANIZED HARDWARE CLOTH
CONCRETE (CAST–IN PLACE)	MSHA STANDARDS AND SPECS, SECTION 902, MIX NO 3, F'c = 3500 psi, NORMAL WEIGHT, AIR–ENTRAINED; RE–INFORCING TO MEET ASTM–615–60	N/A	ON–SITE TESTING OF POURED–IN–PLACE CONCRETE REQUIRED; 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST–IN–PLACE OR PRE–CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND. DESIGN TO INCLUDE MEETING ACI CODE 350.R/89; VERTICAL LOADING (H10 OR H20); ALLOWABLE HORIZONTAL LOADING (BASED ON SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING
SAND	CLEAN AASHTO–M–6 OR ASTM–C–33 CONCRETE SAND	0..02" TO 0.04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.

"PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 27016, EXPIRATION DATE: 01/31/2022."

STORMWATER MAINTENANCE SCHEDULE
INFILTRATION BERM

MONTHLY INSPECTION		
Inspection Item	**Inspection Requirements**	**Remedial Action**
Debris and Trash	Check for trash and/or debris.	Remove all trash and debris and dispose in an acceptable manner.
Plant Composition and Health	Compare plant composition with approved plans. Check for invasive species or weeds. Check for dead or dying vegetation.	Remove invasive species and weeds. Replace dead plants in accordance with approved landscaping plan.
Vegetative Cover	Check for channelizing, erosion, and bare spots.	Re-seed or re-plant in accordance with approved landscaping plans. Mow berms if vegetated with grass, but do not mow landscaped areas.
SEASONAL INSPECTION AND AFTER A MAJOR STORM		
Inspection Item	**Inspection Requirements**	**Remedial Action**
Dewatering	Check for ponded water. Ponded water should not create nuisance conditions. Runoff should drain through berm within 48 hours of rainfall.	Remove and replace top few inches of soil along upgrade face of berm. Confirm adequate dewatering with follow up inspections. If the facility does not drain as intended, the entire berm may need refurbishing.
Erosion	Check that sheet flow is being maintained into and out of practice. Check for erosion, rills, gullies, and channelization.	Re-grade if concentrated flow is causing rills or gullying through the facility. Grade, vegetate, and/or armor to provide stable conveyance in accordance with approved plans.
Sediment Accumulation	Check for accumulated sediment.	When sediment accumulates to 2 inches in depth, remove sediment and dispose of in an acceptable location.
ANNUAL INSPECTION		
Inspection Item	**Inspection Requirements**	**Remedial Action**
Maintenance Access	Check for accessibility to facility.	Prevent excessive vegetative growth, erosion, and obstructions on access way.
Overall Function of Facility	Check that flow conveyance and bypasses are functioning as designed.	Repair to good condition according to specifications on the approved plans.

SWM IB-1
SEQUENCE OF CONSTRUCTION

1. THE ST. MARY'S COUNTY CONSTRUCTION AND INSPECTIONS DIVISION MUST BE NOTIFIED OF THE VARIOUS STAGES OF WORK TO BE DONE ON THE FACILITY. CALL 301–475–4200 EXT. 3527 A MINIMUM OF (48) HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY TO ARRANGE FOR THE INSPECTION. CONTACT ENGINEER IN–CHARGE RESPONSIBLE FOR AS–BUILT (KCW ENGINEERING TECHNOLOGIES, INC. ATTN. KEVIN C. ANDERSON, P.E. 410–768–7700) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK.
   NO WORK SHALL PROCEED UNTIL THE DEPARTMENT INSPECTS AND APPROVES THE WORK PREVIOUSLY COMPLETED AND FURNISHES THE DEVELOPER WITH THE RESULTS OF THE INSPECTION REPORTS AS SOON AS POSSIBLE AFTER COMPLETION OF EACH REQUIRED INSPECTION. INSPECTIONS ARE REQUIRED AFTER THE INITIAL STAKE–OUT OF THE FACILITY, EXCAVATION, ROUGH GRADING, PLACEMENT OF GRAVEL MEDIA AND SOIL, AND FINAL GRADING/STABILIZATION.
2. PRECONSTRUCTION MEETING: AN OPPORTUNITY TO REVIEW SITE PLANS, DISCUSS THE PURPOSE OF THE FACILITY AND TO ANSWER QUESTIONS REGARDING CONSTRUCTION AND/OR INSPECTION PROCEDURES.
3. CONSTRUCTION SEQUENCE:
   a) ALL CONTRIBUTING DRAINAGE AREA MUST BE PERMANENTLY STABILIZED PRIOR TO CONSTRUCTION OF THE SWM INFILTRATION BERM FACILITY.
   b) EXCAVATION TO SUBGRADE
   c) ROUGH GRADING
   c) PLACEMENT OF GRAVEL MEDIA AND SOIL
   d) FINAL GRADING, LANDSCAPING AND ESTABLISHMENT OF PERMANENT STABILIZATION.
4. AS–BUILT PLANS MUST BE COMPLETED AND SUBMITTED TO ST. MARY'S COUNTY WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION.

KCW ENGINEERING TECHNOLOGIES
KCW Engineering Technologies, Inc.
808 Landmark Drive, Suite 217
Glen Burnie, MD 21061
Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com

STATE OF MARYLAND — KEVIN CHARLES ANDERSON — 27016 — REGISTERED PROFESSIONAL ENGINEER
10–30–2020

OWNER: **Southern Maryland Electric Cooperative Inc.**
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

DEVELOPER: **Southern Maryland Electric Cooperative Inc.**
14950 Cooperative Place
Hughesville, MD 20637
Attn: Hugh Voehl
Tele: 301-274-4487
Email: hugh.voehl@SMECO.coop

REVISIONS	
DATE	DESCRIPTION

KCW J.O.: 2201228
SCALE: AS SHOWN
DESIGNED: LAG
DRAWN: LAG
CHECKED: KCA
DATE: OCTOBER 30, 2020
DWG NO.: **C-109**

STORMWATER MANAGEMENT DETAILS and SPECIFICATIONS
CHAPTICO SUBSTATION

TAX MAP 17, GRID 18, PARCELS 49, 50, 51, 52, 78, & 89
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ZONING: RPD CHAPTICO ROAD ZIP: 20659
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