UNIVERSITY OF MARYLAND
BALTIMORE, MARYLAND

EROSION AND SEDIMENT CONTROL PLANS
MDE NO. 19-SF-0030

PERMIT MODIFICATION #1

INDEX

CONSTRUCTION ENTRANCE NOTE:

WHERE NO CONSTRUCTION ENTRANCE IS PROVIDED CONTRACTOR SHALL MAINTAIN THE SITE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED OUTSIDE THE LOD BY VACUUMING, SCRAPING, AND/OR SWEEPING. CONTRACTOR MUST CLEAN CONSTRUCTION EQUIPMENT PRIOR TO LEAVING THE LOD TO MINIMIZE SEDIMENT TRACK OUT. WASHING EQUIPMENT AND SUFACES TO REMOVE SEDIMENT IS ONLY ACCEPTABLE WHEN, SEDIMENT LADEN WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

SAME-DAY STABILIZATION NOTE:

FOR UTILITY TRENCHES OUTSIDE THE DRAINAGE AREA LIMITS OF EROSION AND SEDIMENT CONTROL (ESC) DEVICES, THE CONTRACTOR SHALL OPEN ONLY A SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKDAY. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT. ANY EXCESS STOCKPILE MATERIAL THAT CANNOT BE STABILIZED WITHIN THE ESC CONTROLS SHALL BE REMOVED FROM THE SITE AT THE END OF EACH WORKDAY. FOR ADDITIONAL DETAIL SEE NOTE 8 OF THE MARYLAND GENERAL EROSION AND SEDIMENT CONTROL NOTES SHEET ESC-13

STANDARD STABILIZATION NOTE:

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

NOTE TO CONTRACTOR:

"EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED."

Site Information:

A.	Area Disturbed	0.770	Acres
B.	Total Cut	1,537±	Cubic Yards
C.	Total Fill	1,537±	Cubic Yards

1

MAINTENANCE OF SEDIMENT CONTROL

CONTRACTOR SHALL, WITHOUT EXTRA COST TO THE PROJECT, REPAIR AND MAINTAIN EXISTING SEDIMENT CONTROL DEVICES UNTIL ALL AREAS WITHIN LIMITS OF CONSTRUCTION ARE STABILIZED. ALL SEDIMENT CONTROL MEASURES REFERRED TO ON THESE PLANS SHALL BE IN ACCORDANCE WITH THE PUBLICATION ENTITLED "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL".

DESIGN CERTIFICATION

I DO HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENT A PRACTICAL AND WORKABLE PLAN BASED UPON PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF BALTIMORE CITY OFFICE OF COMPLIANCE AND LABORATORY SERVICES DIVISION.

10/09/2018 — DATE
Judith A. Carroll — DESIGNER'S SIGNATURE

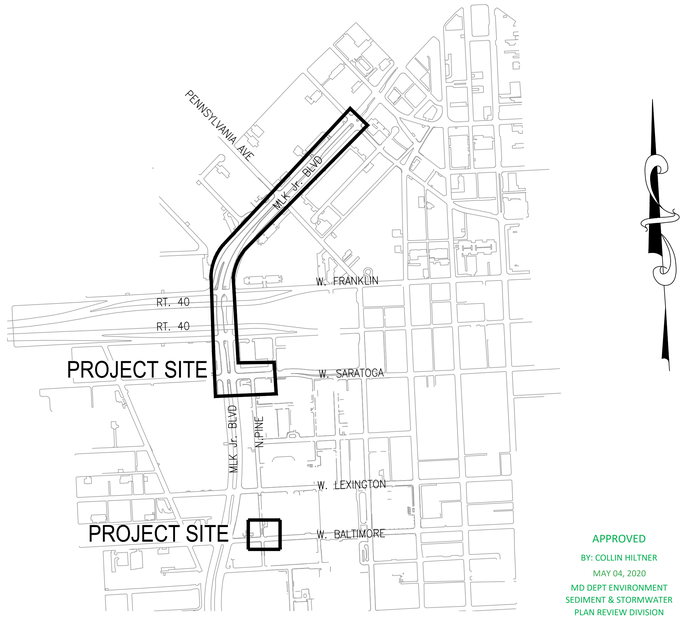
MD REGISTRATION NO. 14446 — JUDITH A. CARROLL
(P.E.), R.L.S., RLA, OR R.A. (CIRCLE ONE) — PRINTED NAME

OWNER'S/DEVELOPER'S CERTIFICATION

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

10/9/18 — DATE
OWNER/DEVELOPER SIGNATURE

RPC 013935 — RESPONSIBLE PERSONNEL CERTIFICATION NO.
Patrick J. Wolfe — PRINTED NAME AND TITLE



VICINITY MAP
NOT TO SCALE

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

ESC KEY PLAN

100' 0 100' 200'
SCALE: 1"=100'

UNIVERSITY of MARYLAND

ADMINISTRATION & FINANCE
OFFICE OF FACILITIES MANAGEMENT
DESIGN AND CONSTRUCTION
220 ARCH STREET, OFFICE LEVEL 3
BALTIMORE, MARYLAND 21201
PHONE NO. (410) 706-7740
FAX NO. (410) 706-8547

KEY PLAN

A/E CONSULTANTS

RMF ENGINEERING, INC.
5520 RESEARCH PARK DR, 3RD FLR
BALTIMORE, MD 21228
P: 410.576-0505
F: 410.385-0327

Gaudreau, Inc. ARCHITECTS | PLANNERS
Harris-Kupfer Architects, Inc.

INDES FIRE PROTECTION LLC

CARROLL ENGINEERING, INC.

PROFESSIONAL CERTIFICATION. I HERE BY 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. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND — JUDITH A. CARROLL — No. 14446 — REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

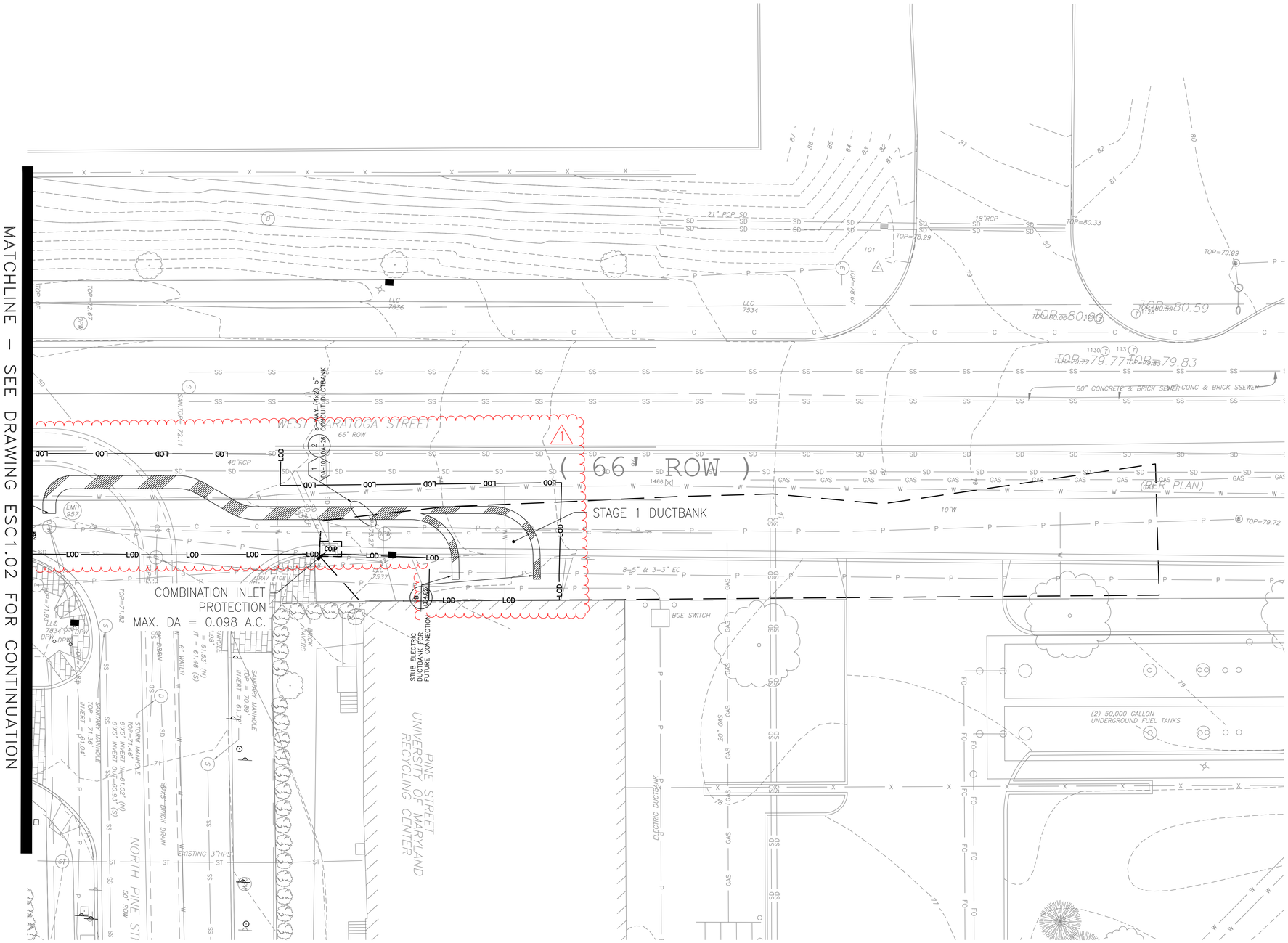
UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

SHEET TITLE :
EROSION & SEDIMENT CONTROL
TITLE SHEET

REVISIONS

NO	DATE	ITEM
1	03/20/20	00 MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.00



ESC PLAN
SCALE: 1" = 10'

ESC LEGEND

- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA
- COMBINATION INLET PROTECTION
- CURB INLET PROTECTION
- AT-GRADE INLET PROTECTION

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

SAME-DAY STABILIZATION NOTE:

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DRAWING LEGEND

EXISTING CONDITIONS LEGEND

SYMBOL	DESCRIPTION
	EXISTING BUILDING
	EX. BOLLARD
	EX. CURB AND GUTTER
	EX. GRANITE CURB
X	EX. FENCE
	EX. ASPHALT PAVEMENT
EX. PROPERTY LINE	EX. PROPERTY LINE
ROW	EX. RIGHT-OF-WAY
	EXISTING STREAM
	EX. WALL
	EX. BRICK SIDEWALK
	EX. CONCRETE SIDEWALK
	EX. INTERMEDIATE CONTOUR
450	EX. INDEX CONTOUR
456	EX. SPOT ELEVATION
	EX. TREE
	EX. TREELINE
	EX. SHRUBS/BUSHES
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	EX. SIGN
	EX. LIGHT POLE
	EX. STAIRS
	EX. CHILLED WATER VALVE
12" CHWS CHW CHW 12" CHWR	EX. CHILLED WATER SUPPLY / RETURN
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	EX. UTILITY TUNNEL
	EX. TUNNEL VAULT
24" RCP SD SD	EX. STORM DRAIN
D	EX. STORM DRAIN MANHOLE
	EX. STORM DRAIN INLET
SD-6	EX. STORM DRAIN MANHOLE CALLOUT
24" DIP SAN SS	EX. SANITARY SEWER
S	EX. SANITARY SEWER MANHOLE
S-2	EX. SANITARY SEWER MANHOLE CALLOUT
4-WAY 4" COMM. C	EX. COMMUNICATIONS DUCTBANK
2" PVC COMM. c	EX. COMMUNICATIONS CONDUIT
FO	EX. FIBER OPTIC
C	EX. COMMUNICATIONS STRUCTURE
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2" PVC POWER P	EX. POWER CONDUIT
P	EX. POWER STRUCTURE
UP	EX. UTILITY POLE
2" GAS GAS	EX. GAS PIPING
	EX. GAS VALVE
6" WATER W	EX. WATER PIPING

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

GRAPHIC SCALE
10 5 0 10 20
SCALE: 1"=10'
UNIT OF MEASURE: FEET

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ADMINISTRATION & FINANCE
OFFICE OF FACILITIES MANAGEMENT
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LICENSE No. 14446
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CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

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UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

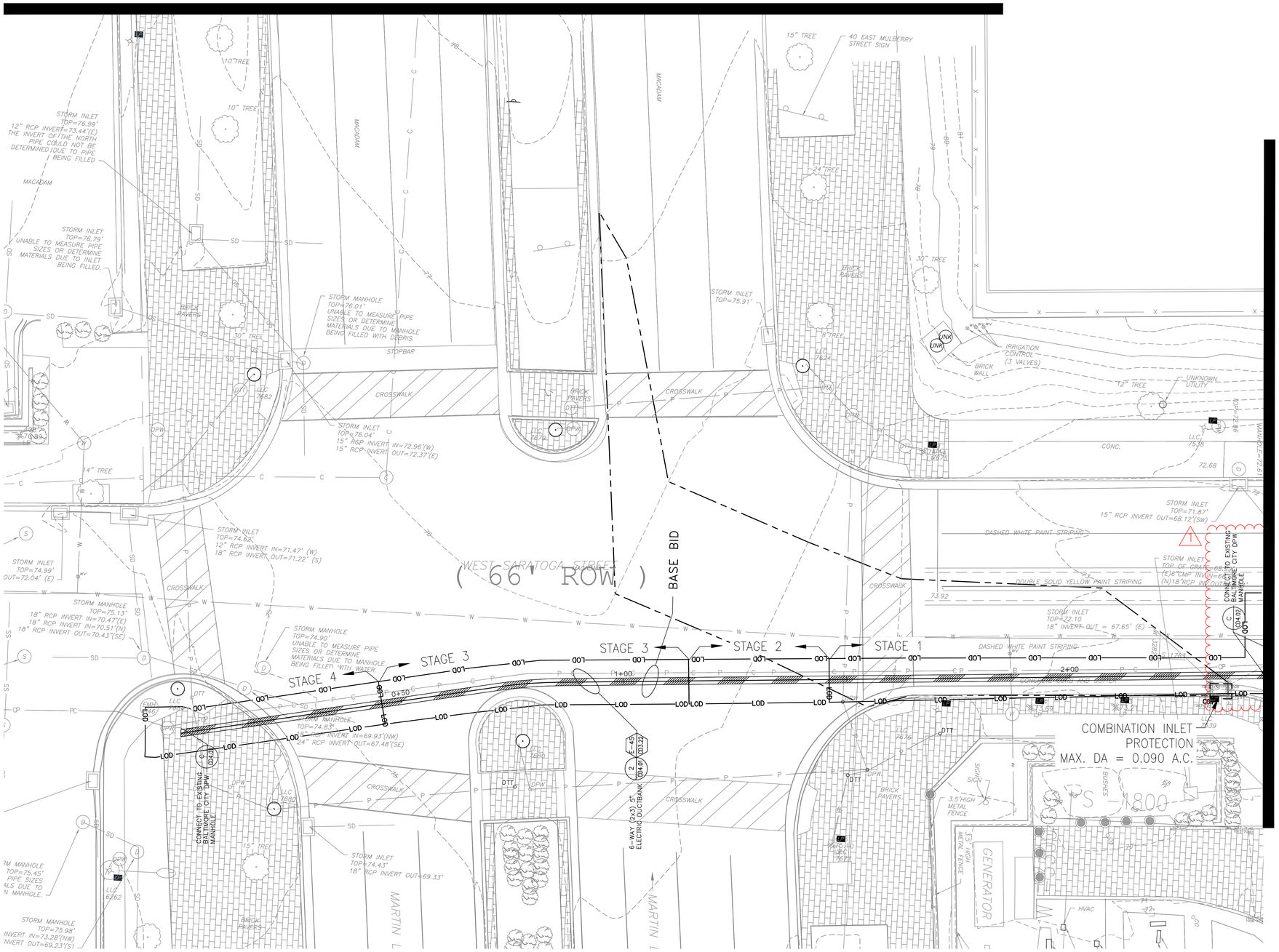
SHEET TITLE :
EROSION & SEDIMENT CONTROL PLAN

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.01

MATCHLINE – SEE DRAWING ESC1.03 FOR CONTINUATION



ESC PLAN
SCALE: 1" = 10'

ESC LEGEND

- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA
- COMBINATION INLET PROTECTION
- CURB INLET PROTECTION
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PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

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MATCHLINE – SEE DRAWING ESC1.01 FOR CONTINUATION

DRAWING LEGEND

EXISTING CONDITIONS LEGEND

SYMBOL	DESCRIPTION
	EXISTING BUILDING
	EX. BOLLARD
	EX. CURB AND GUTTER
	EX. GRANITE CURB
X	EX. FENCE
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P	EX. POWER STRUCTURE
UP	EX. UTILITY POLE
2" GAS GAS	EX. GAS PIPING
	EX. GAS VALVE
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APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

GRAPHIC SCALE
10 5 0 10 20
SCALE: 1"=10'
UNIT OF MEASURE: FEET

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LICENSE No. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND · JOSEPH A. CARROLL · No. 14446 · REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

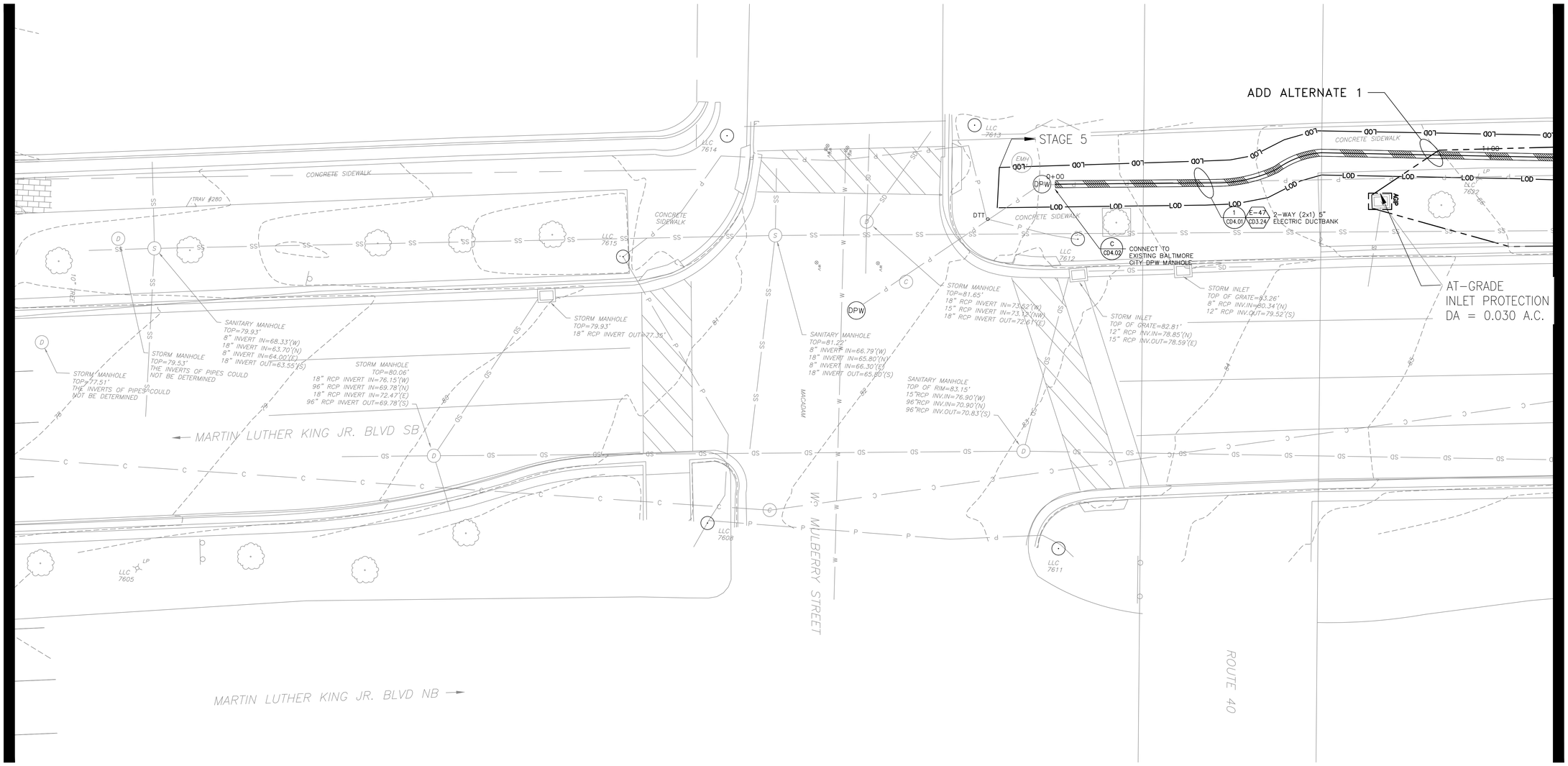
SHEET TITLE :
EROSION & SEDIMENT CONTROL PLAN

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.02

MATCHLINE – SEE DRAWING ESC1.02 FOR CONTINUATION



MATCHLINE – SEE DRAWING ESC1.04 FOR CONTINUATION

ESC PLAN
SCALE: 1" = 10'

ESC LEGEND

- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA
- COIP — COMBINATION INLET PROTECTION
- CIP — CURB INLET PROTECTION
- AGIP — AT-GRADE INLET PROTECTION

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DRAWING LEGEND

EXISTING CONDITIONS LEGEND

SYMBOL	DESCRIPTION
	EXISTING BUILDING
	EX. BOLLARD
	EX. CURB AND GUTTER
	EX. GRANITE CURB
X	EX. FENCE
	EX. ASPHALT PAVEMENT
EX. PROPERTY LINE	EX. PROPERTY LINE
ROW	EX. RIGHT–OF–WAY
	EXISTING STREAM
	EX. WALL
	EX. BRICK SIDEWALK
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450	EX. INDEX CONTOUR
456	EX. SPOT ELEVATION
	EX. TREE
	EX. TREELINE
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	EX. LIGHT POLE
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12" CHWS / CHW / CHW / 12" CHWR	EX. CHILLED WATER SUPPLY / RETURN
12" CDWS / CDW / CDW / 12" CDWR	EX. CONDENSER WATER SUPPLY / RETURN
8" HPS ST / ST / 4" PC	EX. HIGH PRESSURE STEAM & PUMPED CONDENSATE PIPING
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FO	EX. FIBER OPTIC
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4–WAY 6" POWER / P	EX. POWER DUCTBANK
2" PVC POWER / P	EX. POWER CONDUIT
P	EX. POWER STRUCTURE
UP	EX. UTILITY POLE
2" GAS / GAS	EX. GAS PIPING
	EX. GAS VALVE
6" WATER / W	EX. WATER PIPING
	EX. WATER VALVE
	EX. SIAMESE CONNECTION
FH	EX. FIRE HYDRANT
SB–01 / RP–01	SOIL BORING / ROCK PROBE
TH–01	TEST HOLE

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19–SF–0030

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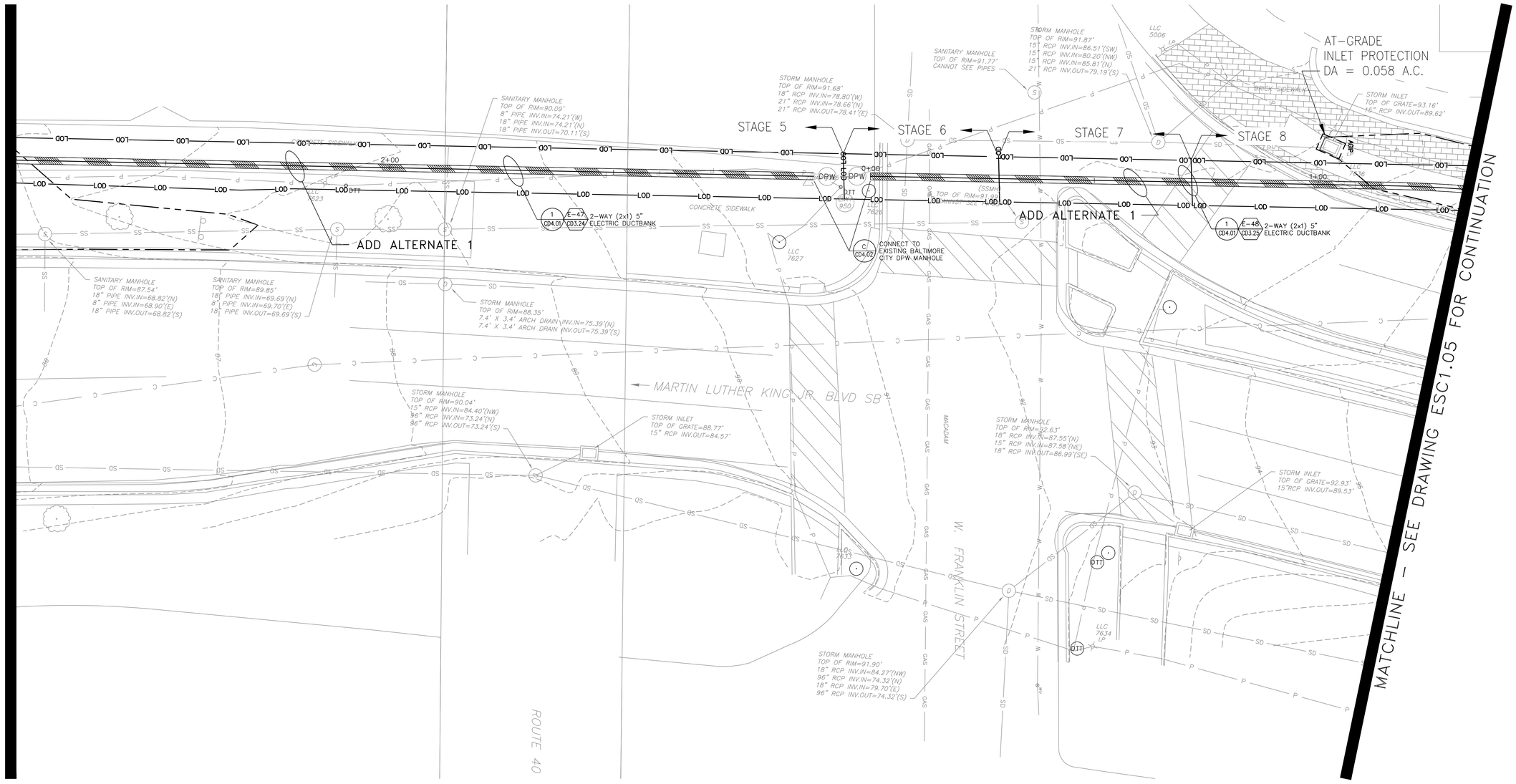
REVISIONS

NO	DATE	ITEM
1	03/20/2020	LOD MODIFICATION–DUCTBANK REALIGNMENT

SHEET NO.
ESC1.03



ESC PLAN
SCALE: 1" = 10'

ESC LEGEND
- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA
- COMBINATION INLET PROTECTION
- CURB INLET PROTECTION
- AT-GRADE INLET PROTECTION

CONSTRUCTION ENTRANCE NOTE:

WHERE NO CONSTRUCTION ENTRANCE IS PROVIDED CONTRACTOR SHALL MAINTAIN THE SITE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED OUTSIDE THE LOD BY VACUUMING, SCRAPING, AND/OR SWEEPING. CONTRACTOR MUST CLEAN CONSTRUCTION EQUIPMENT PRIOR TO LEAVING THE LOD TO MINIMIZE SEDIMENT TRACK OUT. WASHING EQUIPMENT AND SUFACES TO REMOVE SEDIMENT IS ONLY ACCEPTABLE WHEN, SEDIMENT LADEN WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

SAME-DAY STABILIZATION NOTE:

FOR UTILITY TRENCHES OUTSIDE THE DRAINAGE AREA LIMITS OF EROSION AND SEDIMENT CONTROL (ESC) DEVICES, THE CONTRACTOR SHALL OPEN ONLY A SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKDAY. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT. ANY EXCESS STOCKPILE MATERIAL THAT CANNOT BE STABILIZED WITHIN THE ESC CONTROLS SHALL BE REMOVED FROM THE SITE AT THE END OF EACH WORKDAY. FOR ADDITIONAL DETAIL SEE NOTE 8 OF THE MARYLAND GENERAL EROSION AND SEDIMENT CONTROL NOTES SHEET ESC-14.

STANDARD STABILIZATION NOTE:

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

DRAWING LEGEND

EXISTING CONDITIONS LEGEND

SYMBOL	DESCRIPTION
	EXISTING BUILDING
	EX. BOLLARD
	EX. CURB AND GUTTER
	EX. GRANITE CURB
X	EX. FENCE
	EX. ASPHALT PAVEMENT
EX. PROPERTY LINE	EX. PROPERTY LINE
ROW	EX. RIGHT-OF-WAY
	EXISTING STREAM
	EX. WALL
	EX. BRICK SIDEWALK
	EX. CONCRETE SIDEWALK
450	EX. INTERMEDIATE CONTOUR
450	EX. INDEX CONTOUR
× 456	EX. SPOT ELEVATION
	EX. TREE
	EX. TREELINE
	EX. SHRUBS/BUSHES
	EX. SHRUB/BUSH
	EX. SIGN
	EX. LIGHT POLE
	EX. STAIRS
	EX. CHILLED WATER VALVE
12" CHWS / CHW / 12" CHWR	EX. CHILLED WATER SUPPLY / RETURN
12" CDWS / CDW / 12" CDWR	EX. CONDENSER WATER SUPPLY / RETURN
8" HPS ST / ST / 4" PC	EX. HIGH PRESSURE STEAM & PUMPED CONDENSATE PIPING
12" HTHW / HTHW	EX. HEATING WATER
HMH	EX. HEATING WATER MANHOLE
	EX. STEAM STRUCTURE
	EX. UTILITY TUNNEL
	EX. TUNNEL VAULT
24" RCP SD / SD	EX. STORM DRAIN
D	EX. STORM DRAIN MANHOLE
	EX. STORM DRAIN INLET
SD-6	EX. STORM DRAIN MANHOLE CALLOUT
24" DIP SAN / SS	EX. SANITARY SEWER
S	EX. SANITARY SEWER MANHOLE
S-2	EX. SANITARY SEWER MANHOLE CALLOUT
4-WAY 4" COMM. / C	EX. COMMUNICATIONS DUCTBANK
2" PVC COMM. / c	EX. COMMUNICATIONS CONDUIT
FO	EX. FIBER OPTIC
C	EX. COMMUNICATIONS STRUCTURE
4-WAY 6" POWER / P	EX. POWER DUCTBANK
2" PVC POWER / p	EX. POWER CONDUIT
P	EX. POWER STRUCTURE
UP	EX. UTILITY POLE
2" GAS / GAS	EX. GAS PIPING
	EX. GAS VALVE
6" WATER / W	EX. WATER PIPING
	EX. WATER VALVE
	EX. SIAMESE CONNECTION
FH	EX. FIRE HYDRANT
SB-01 BP-01	SOIL BORING / ROCK PROBE
TH-01	TEST HOLE

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

GRAPHIC SCALE
10 5 0 10 20
SCALE: 1"=10'
UNIT OF MEASURE: FEET

UNIVERSITY of MARYLAND

ADMINISTRATION & FINANCE
OFFICE OF FACILITIES MANAGEMENT
DESIGN AND CONSTRUCTION
220 ARCH STREET, OFFICE LEVEL 3
BALTIMORE, MARYLAND 21201
PHONE NO. (410) 706-7740
FAX NO. (410) 706-8547

KEY PLAN

A/E CONSULTANTS

RMF ENGINEERING, INC.
5520 RESEARCH PARK DR, 3RD FLR
BALTIMORE, MD 21228
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F: 410.385-0327

Gaudreau, Inc. ARCHITECTS | PLANNERS
Harris-Kupfer Architects, Inc.

ANDES FIRE PROTECTION LLC

CARROLL ENGINEERING, INC.

PROFESSIONAL CERTIFICATION. I HERE BY 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. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND — JUDITH A. GIBSON — REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

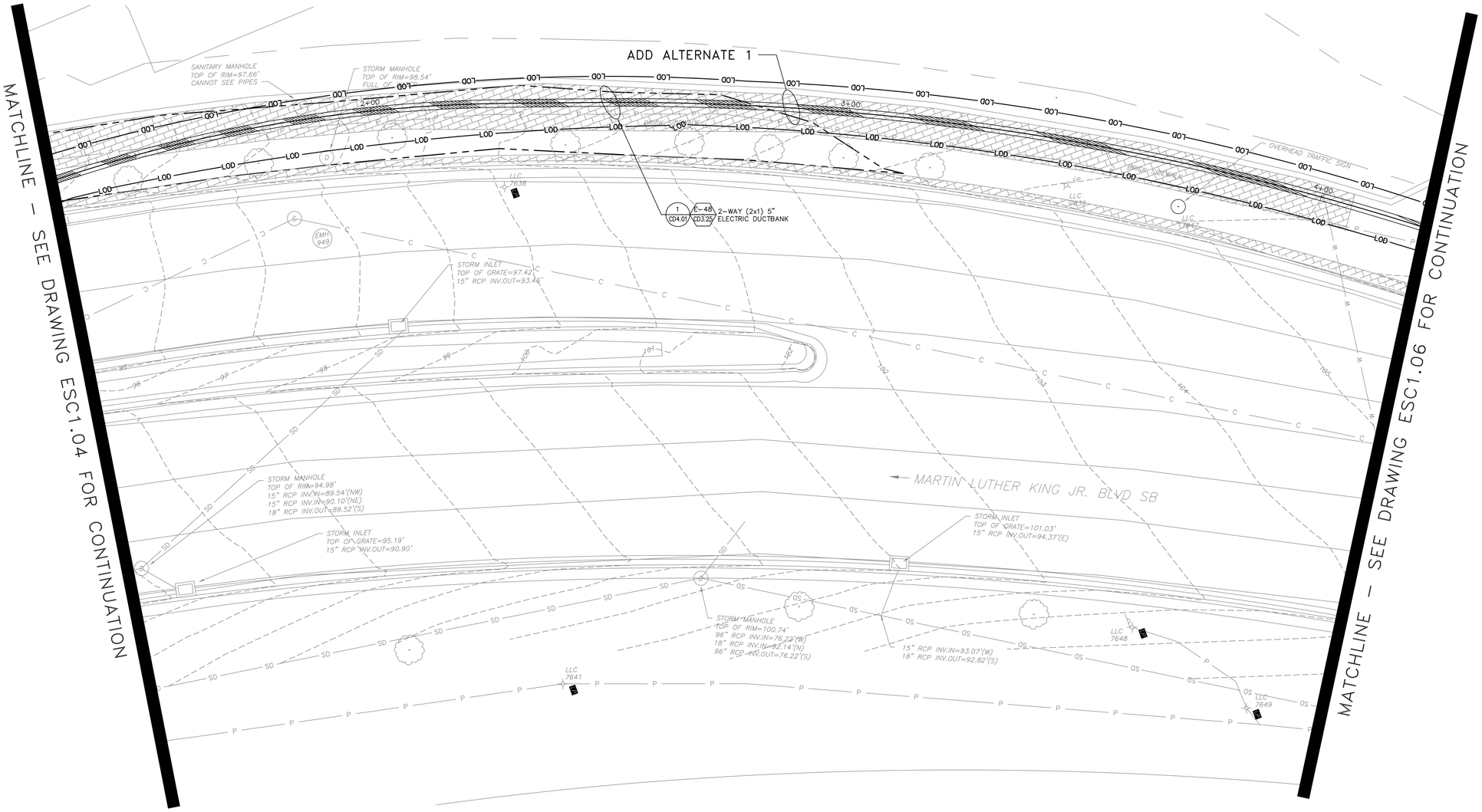
UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

SHEET TITLE :
EROSION & SEDIMENT CONTROL PLAN

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.04



ESC PLAN
SCALE: 1" = 10'

ESC LEGEND

- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA
- CDIP — COMBINATION INLET PROTECTION
- DIP — CURB INLET PROTECTION
- AGIP — AT-GRADE INLET PROTECTION

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DRAWING LEGEND

EXISTING CONDITIONS LEGEND

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	EXISTING BUILDING
	EX. BOLLARD
	EX. CURB AND GUTTER
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	EX. WALL
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	EX. TREE
	EX. TREELINE
	EX. SHRUBS/BUSHES
	EX. SHRUB/BUSH
	EX. SIGN
	EX. LIGHT POLE
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12" CHWS / CHW / 12" CHWR	EX. CHILLED WATER SUPPLY / RETURN
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	EX. UTILITY TUNNEL
	EX. TUNNEL VAULT
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D	EX. STORM DRAIN MANHOLE
	EX. STORM DRAIN INLET
SD-6	EX. STORM DRAIN MANHOLE CALLOUT
24" DIP SAN / SS	EX. SANITARY SEWER
S	EX. SANITARY SEWER MANHOLE
S-2	EX. SANITARY SEWER MANHOLE CALLOUT
4-WAY 4" COMM. / C	EX. COMMUNICATIONS DUCTBANK
2" PVC COMM. / C	EX. COMMUNICATIONS CONDUIT
FO	EX. FIBER OPTIC
C	EX. COMMUNICATIONS STRUCTURE
4-WAY 6" POWER / P	EX. POWER DUCTBANK
2" PVC POWER / P	EX. POWER CONDUIT
P	EX. POWER STRUCTURE
UP	EX. UTILITY POLE
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	EX. GAS VALVE
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SB-01 RP-01	SOIL BORING / ROCK PROBE
TH-01	TEST HOLE

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

GRAPHIC SCALE
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LICENSE No. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND · JUDITH A. CARROLL · 14446 · REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

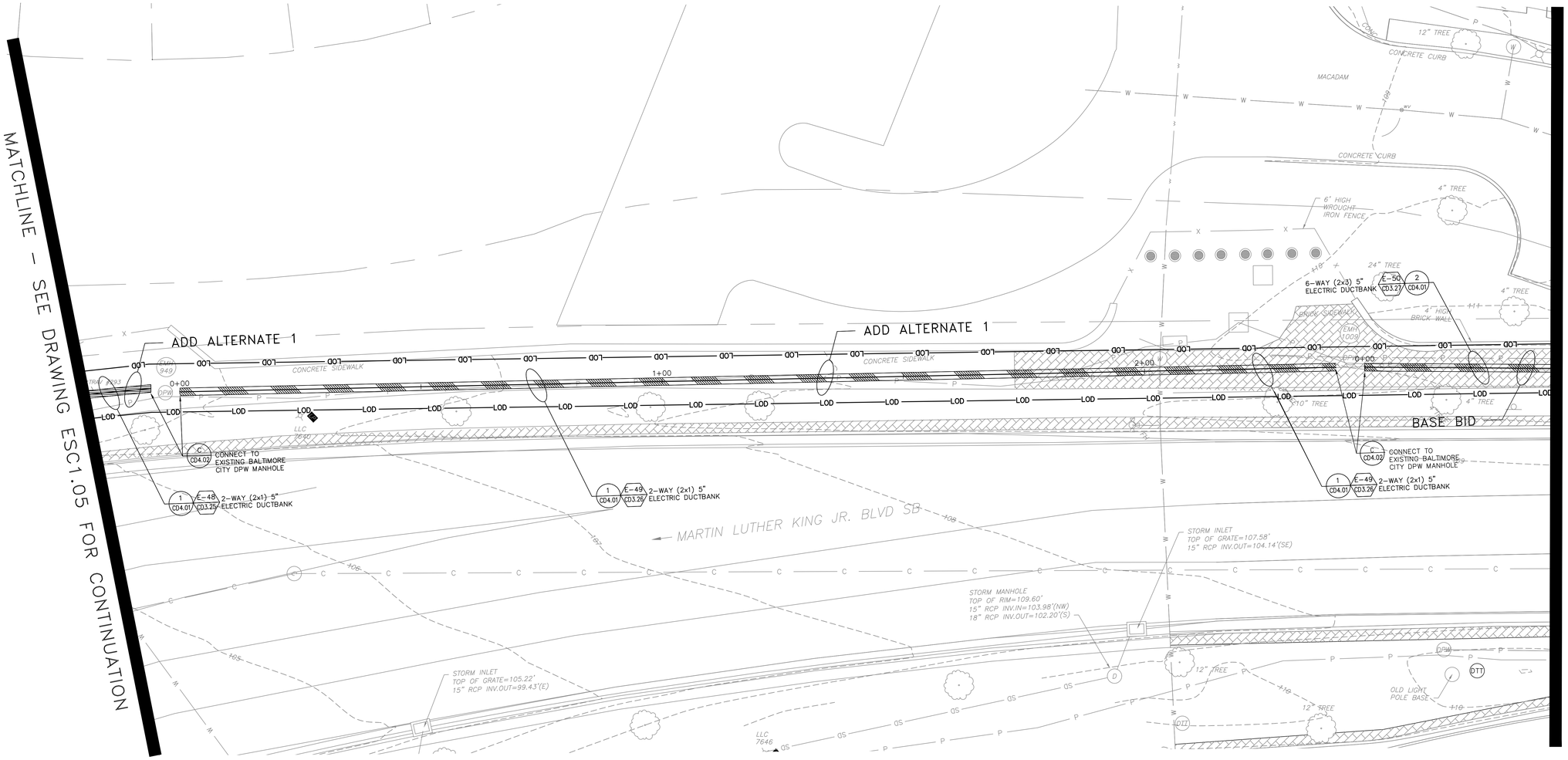
UMB BUILDING NO. :	VARIOUS
UMB Project No. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

SHEET TITLE :
EROSION & SEDIMENT CONTROL PLAN

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.05



ESC PLAN
SCALE: 1" = 10'

ESC LEGEND

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DRAWING LEGEND

EXISTING CONDITIONS LEGEND

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	EX. SIGN
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	EX. STAIRS
⊗	EX. CHILLED WATER VALVE
12" CHWS / CHW / CHW / 12" CHWR	EX. CHILLED WATER SUPPLY / RETURN
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	EX. GAS VALVE
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	EX. SIAMESE CONNECTION
FH	EX. FIRE HYDRANT
SB-01 / RP-01	SOIL BORING / ROCK PROBE
TH-01	TEST HOLE

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

GRAPHIC SCALE
10 5 0 10 20
SCALE: 1"=10'
UNIT OF MEASURE: FEET

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REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

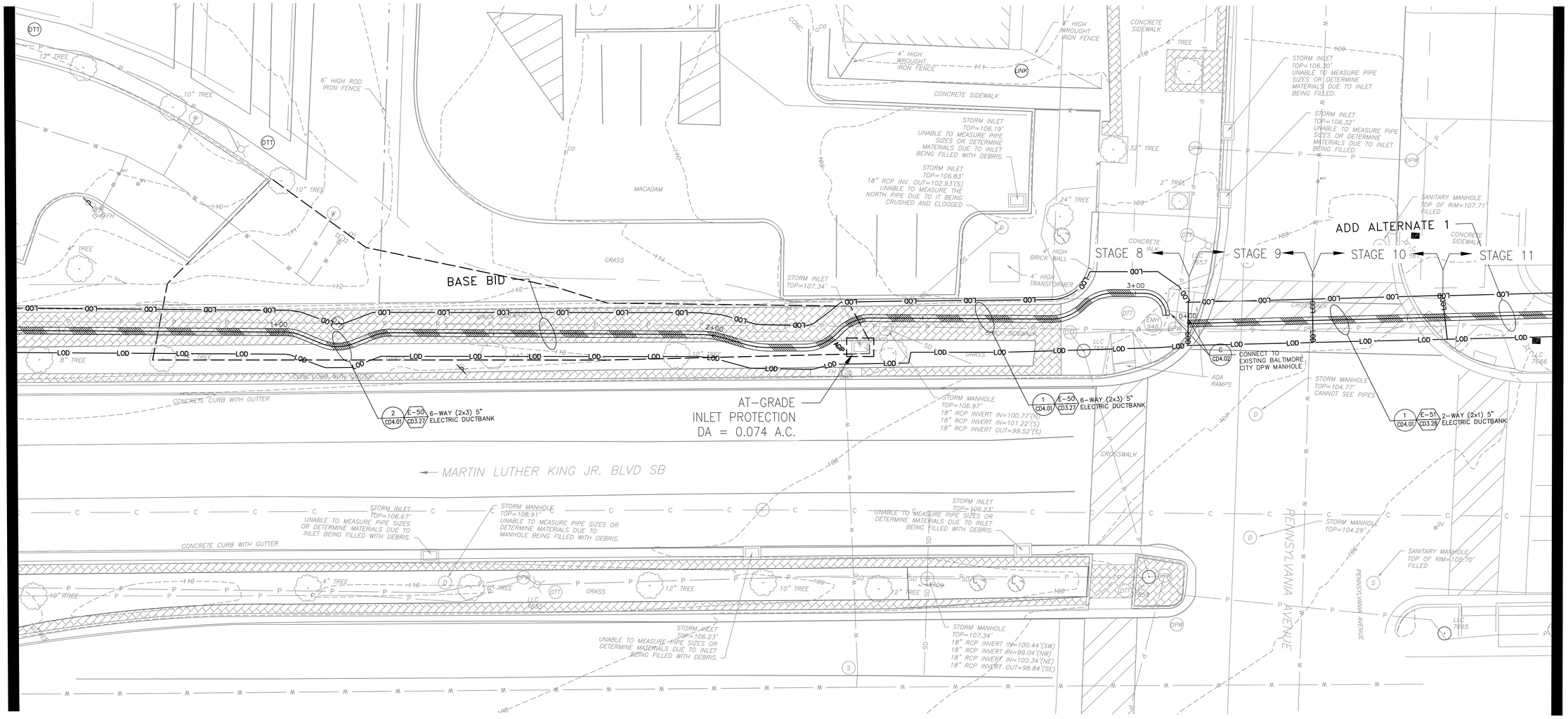
SHEET TITLE :
EROSION & SEDIMENT CONTROL PLAN

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.06

MATCHLINE – SEE DRAWING ESC1.06 FOR CONTINUATION



MATCHLINE – SEE DRAWING ESC1.08 FOR CONTINUATION

ESC PLAN
SCALE: 1" = 10'

ESC LEGEND

- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA
- COMBINATION INLET PROTECTION
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SYMBOL	DESCRIPTION
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	EX. CURB AND GUTTER
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SB-01 RP-01	SOIL BORING / ROCK PROBE
TH-01	TEST HOLE

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
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A/E CONSULTANTS

RMF ENGINEERING, INC.
5520 RESEARCH PARK DR, 3RD FLR
BALTIMORE, MD 21228
P: 410.576-0505
F: 410.385-0327

Gaudreau, Inc. ARCHITECTS | PLANNERS
Harris-Kupfer Architects, Inc.
ANDES FIRE PROTECTION LLC
CARROLL ENGINEERING, INC.

PROFESSIONAL CERTIFICATION. I HERE BY 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. 14446
EXPIRATION DATE: MAY 25TH, 2021

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

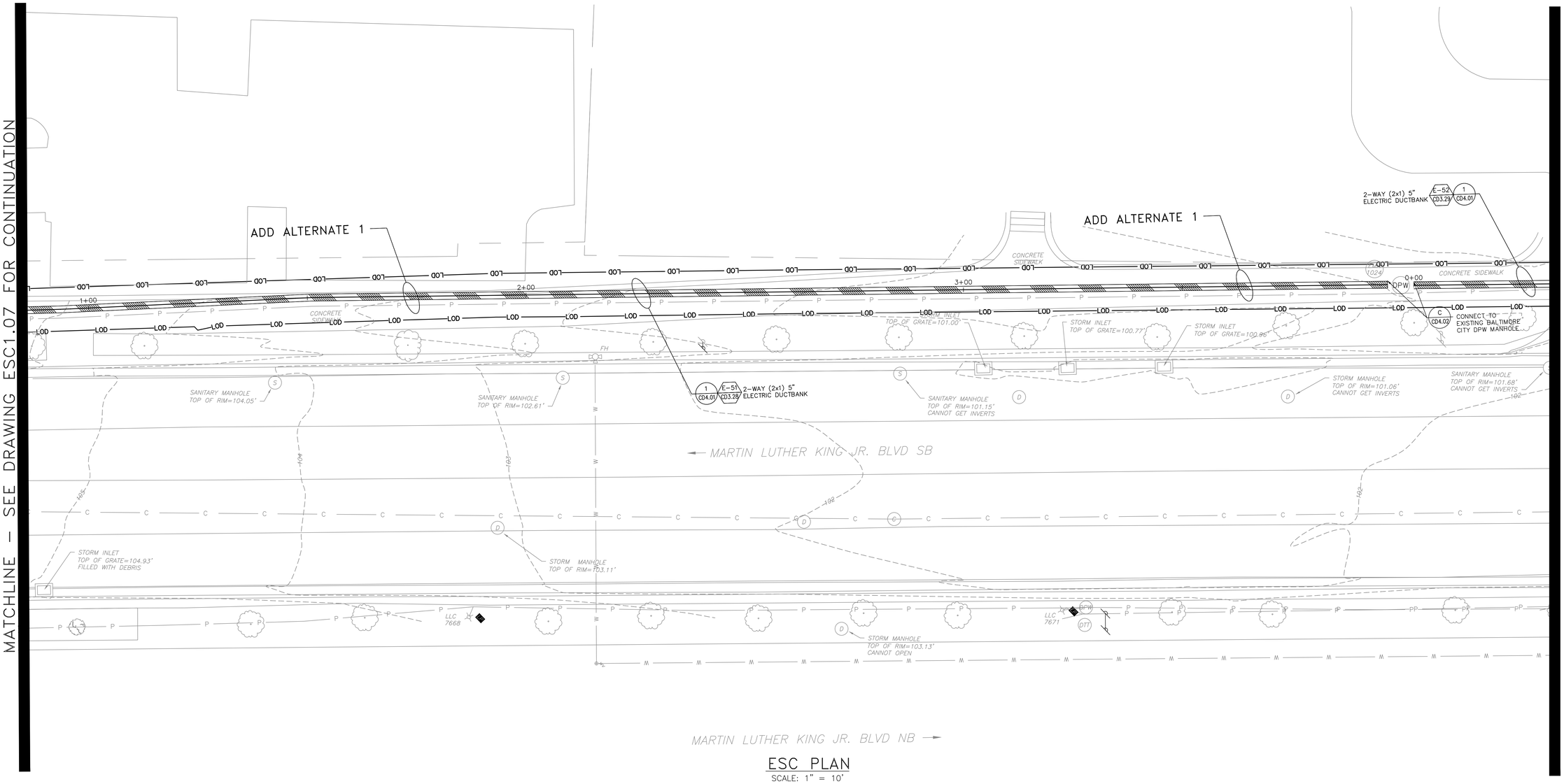
SHEET TITLE :
EROSION & SEDIMENT CONTROL PLAN

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.07

MATCHLINE – SEE DRAWING ESC1.07 FOR CONTINUATION



MATCHLINE – SEE DRAWING ESC1.09 FOR CONTINUATION

ESC PLAN

SCALE: 1" = 10'

ESC LEGEND

- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA
- COMBINATION INLET PROTECTION
- CURB INLET PROTECTION
- AT-GRADE INLET PROTECTION

CONSTRUCTION ENTRANCE NOTE:

WHERE NO CONSTRUCTION ENTRANCE IS PROVIDED CONTRACTOR SHALL MAINTAIN THE SITE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED OUTSIDE THE LOD BY VACUUMING, SCRAPING, AND/OR SWEEPING. CONTRACTOR MUST CLEAN CONSTRUCTION EQUIPMENT PRIOR TO LEAVING THE LOD TO MINIMIZE SEDIMENT TRACK OUT. WASHING EQUIPMENT AND SUFACES TO REMOVE SEDIMENT IS ONLY ACCEPTABLE WHEN, SEDIMENT LADEN WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

SAME–DAY STABILIZATION NOTE:

FOR UTILITY TRENCHES OUTSIDE THE DRAINAGE AREA LIMITS OF EROSION AND SEDIMENT CONTROL (ESC) DEVICES, THE CONTRACTOR SHALL OPEN ONLY A SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKDAY. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT. ANY EXCESS STOCKPILE MATERIAL THAT CANNOT BE STABILIZED WITHIN THE ESC CONTROLS SHALL BE REMOVED FROM THE SITE AT THE END OF EACH WORKDAY. FOR ADDITIONAL DETAIL SEE NOTE 8 OF THE MARYLAND GENERAL EROSION AND SEDIMENT CONTROL NOTES SHEET ESC–14.

STANDARD STABILIZATION NOTE:

FOLLOWING INITIAL SOIL DISTURBANCE OR RE–DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

DRAWING LEGEND

EXISTING CONDITIONS LEGEND

SYMBOL	DESCRIPTION
	EXISTING BUILDING
	EX. BOLLARD
	EX. CURB AND GUTTER
	EX. GRANITE CURB
X	EX. FENCE
	EX. ASPHALT PAVEMENT
EX. PROPERTY LINE	EX. PROPERTY LINE
ROW	EX. RIGHT–OF–WAY
	EXISTING STREAM
	EX. WALL
	EX. BRICK SIDEWALK
	EX. CONCRETE SIDEWALK
	EX. INTERMEDIATE CONTOUR
450	EX. INDEX CONTOUR
456	EX. SPOT ELEVATION
	EX. TREE
	EX. TREELINE
	EX. SHRUBS/BUSHES
	EX. SHRUB/BUSH
	EX. SIGN
	EX. LIGHT POLE
	EX. STAIRS
	EX. CHILLED WATER VALVE
12" CHWS / CHW / CHW / 12" CHWR	EX. CHILLED WATER SUPPLY / RETURN
12" CDWS / CDW / CDW / 12" CDWR	EX. CONDENSER WATER SUPPLY / RETURN
8" HPS / ST / ST / 4" PC	EX. HIGH PRESSURE STEAM & PUMPED CONDENSATE PIPING
12" HTHW / HTHW	EX. HEATING WATER
HMH	EX. HEATING WATER MANHOLE
	EX. STEAM STRUCTURE
	EX. UTILITY TUNNEL
	EX. TUNNEL VAULT
24" RCP SD / SD	EX. STORM DRAIN
D	EX. STORM DRAIN MANHOLE
	EX. STORM DRAIN INLET
SD–6	EX. STORM DRAIN MANHOLE CALLOUT
24" DIP SAN / SS	EX. SANITARY SEWER
S	EX. SANITARY SEWER MANHOLE
S–2	EX. SANITARY SEWER MANHOLE CALLOUT
4–WAY 4" COMM. / C	EX. COMMUNICATIONS DUCTBANK
2" PVC COMM. / c	EX. COMMUNICATIONS CONDUIT
FO	EX. FIBER OPTIC
C	EX. COMMUNICATIONS STRUCTURE
4–WAY 6" POWER / P	EX. POWER DUCTBANK
2" PVC POWER / p	EX. POWER CONDUIT
P	EX. POWER STRUCTURE
UP	EX. UTILITY POLE
2" GAS / GAS	EX. GAS PIPING
	EX. GAS VALVE
6" WATER / W	EX. WATER PIPING
	EX. WATER VALVE
	EX. SIAMESE CONNECTION
FH	EX. FIRE HYDRANT
SB–01 RP–01	SOIL BORING / ROCK PROBE
TH–01	TEST HOLE

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19–SF–0030

GRAPHIC SCALE
10 5 0 10 20
SCALE: 1"=10'
UNIT OF MEASURE: FEET

UNIVERSITY of MARYLAND

ADMINISTRATION & FINANCE
OFFICE OF FACILITIES MANAGEMENT
DESIGN AND CONSTRUCTION
220 ARCH STREET, OFFICE LEVEL 3
BALTIMORE, MARYLAND 21201
PHONE NO. (410) 706–7740
FAX NO. (410) 706–8547

KEY PLAN

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LICENSE No. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND · JUDITH A. GAUDREAU · 14446 · REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

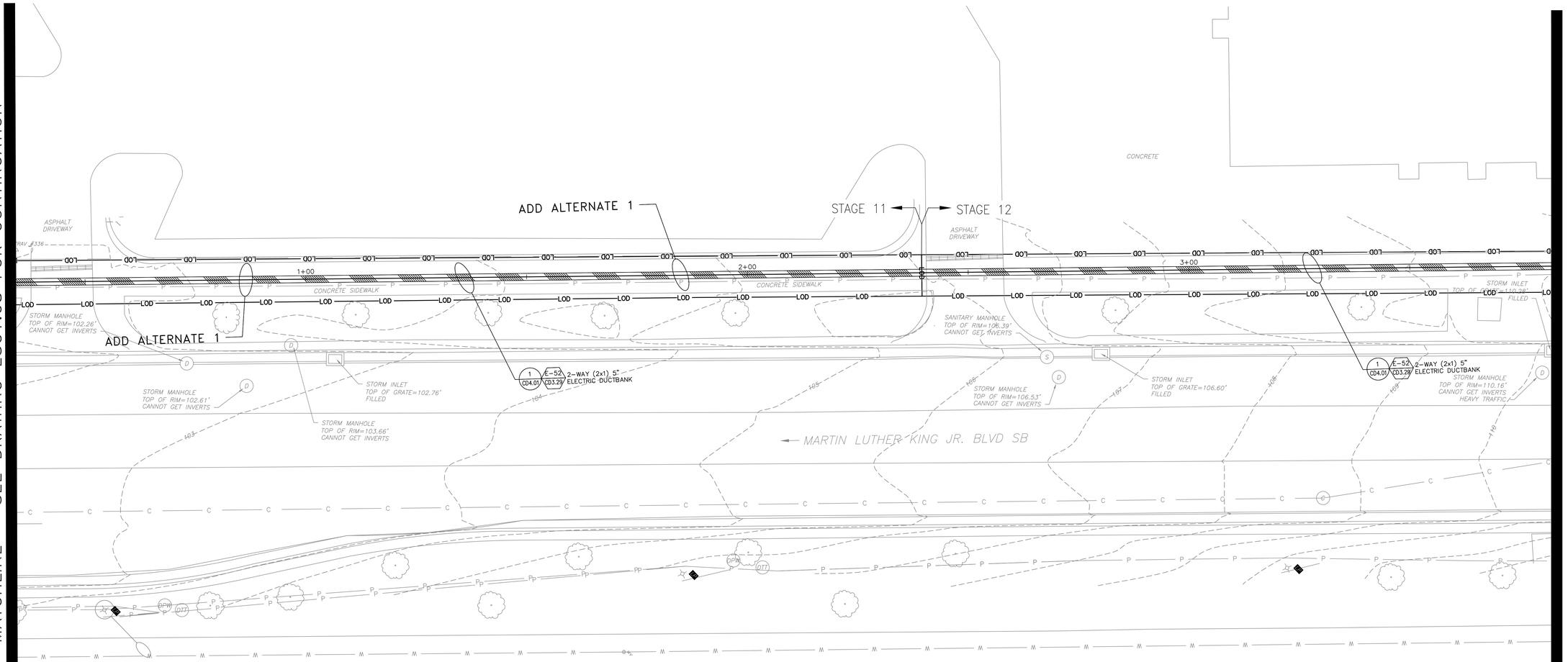
UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

SHEET TITLE :
EROSION & SEDIMENT CONTROL PLAN

REVISIONS		
NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION–DUCTBANK REALIGNMENT

SHEET NO.
ESC1.08

MATCHLINE – SEE DRAWING ESC1.08 FOR CONTINUATION



MATCHLINE – SEE DRAWING ESC1.10 FOR CONTINUATION

ESC PLAN
SCALE: 1" = 10'

ESC LEGEND

- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA
- CDI — COMBINATION INLET PROTECTION
- CIP — CURB INLET PROTECTION
- AGP — AT-GRADE INLET PROTECTION

CONSTRUCTION ENTRANCE NOTE:

WHERE NO CONSTRUCTION ENTRANCE IS PROVIDED CONTRACTOR SHALL MAINTAIN THE SITE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED OUTSIDE THE LOD BY VACUUMING, SCRAPING, AND/OR SWEEPING. CONTRACTOR MUST CLEAN CONSTRUCTION EQUIPMENT PRIOR TO LEAVING THE LOD TO MINIMIZE SEDIMENT TRACK OUT. WASHING EQUIPMENT AND SUFACES TO REMOVE SEDIMENT IS ONLY ACCEPTABLE WHEN, SEDIMENT LADEN WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

SAME-DAY STABILIZATION NOTE:

FOR UTILITY TRENCHES OUTSIDE THE DRAINAGE AREA LIMITS OF EROSION AND SEDIMENT CONTROL (ESC) DEVICES, THE CONTRACTOR SHALL OPEN ONLY A SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKDAY. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT. ANY EXCESS STOCKPILE MATERIAL THAT CANNOT BE STABILIZED WITHIN THE ESC CONTROLS SHALL BE REMOVED FROM THE SITE AT THE END OF EACH WORKDAY. FOR ADDITIONAL DETAIL SEE NOTE 8 OF THE MARYLAND GENERAL EROSION AND SEDIMENT CONTROL NOTES SHEET ESC-14.

STANDARD STABILIZATION NOTE:

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DRAWING LEGEND

EXISTING CONDITIONS LEGEND

SYMBOL	DESCRIPTION
	EXISTING BUILDING
	EX. BOLLARD
	EX. CURB AND GUTTER
	EX. GRANITE CURB
X	EX. FENCE
	EX. ASPHALT PAVEMENT
EX. PROPERTY LINE	EX. PROPERTY LINE
ROW	EX. RIGHT-OF-WAY
	EXISTING STREAM
	EX. WALL
	EX. BRICK SIDEWALK
	EX. CONCRETE SIDEWALK
	EX. INTERMEDIATE CONTOUR
450	EX. INDEX CONTOUR
×456	EX. SPOT ELEVATION
	EX. TREE
	EX. TREELINE
	EX. SHRUBS/BUSHES
	EX. SHRUB/BUSH
	EX. SIGN
	EX. LIGHT POLE
	EX. STAIRS
⊗	EX. CHILLED WATER VALVE
12" CHWS / CHW / CHW / 12" CHWR	EX. CHILLED WATER SUPPLY / RETURN
12" CDWS / CDW / CDW / 12" CDWR	EX. CONDENSER WATER SUPPLY / RETURN
8" HPS / ST / ST / 4" PC	EX. HIGH PRESSURE STEAM & PUMPED CONDENSATE PIPING
12" HTHW / HTHW	EX. HEATING WATER
HMH	EX. HEATING WATER MANHOLE
	EX. STEAM STRUCTURE
	EX. UTILITY TUNNEL
	EX. TUNNEL VAULT
24" RCP SD / SD	EX. STORM DRAIN
D	EX. STORM DRAIN MANHOLE
	EX. STORM DRAIN INLET
SD-6	EX. STORM DRAIN MANHOLE CALLOUT
24" DIP SAN / SS	EX. SANITARY SEWER
S	EX. SANITARY SEWER MANHOLE
S-2	EX. SANITARY SEWER MANHOLE CALLOUT
4-WAY 4" COMM. / C	EX. COMMUNICATIONS DUCTBANK
2" PVC COMM. / c	EX. COMMUNICATIONS CONDUIT
FO	EX. FIBER OPTIC
C	EX. COMMUNICATIONS STRUCTURE
4-WAY 6" POWER / P	EX. POWER DUCTBANK
2" PVC POWER / P	EX. POWER CONDUIT
P	EX. POWER STRUCTURE
UP	EX. UTILITY POLE
2" GAS / GAS	EX. GAS PIPING
	EX. GAS VALVE
6" WATER / W	EX. WATER PIPING
⊗	EX. WATER VALVE
	EX. SIAMESE CONNECTION
FH	EX. FIRE HYDRANT
SB-01 RP-01	SOIL BORING / ROCK PROBE
TH-01	TEST HOLE

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

GRAPHIC SCALE
10 5 0 10 20
SCALE: 1"=10'
UNIT OF MEASURE: FEET

UNIVERSITY of MARYLAND
ADMINISTRATION & FINANCE
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KEY PLAN

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LICENSE No. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND · JOSEPH A. CARROLL · No. 14446 · REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

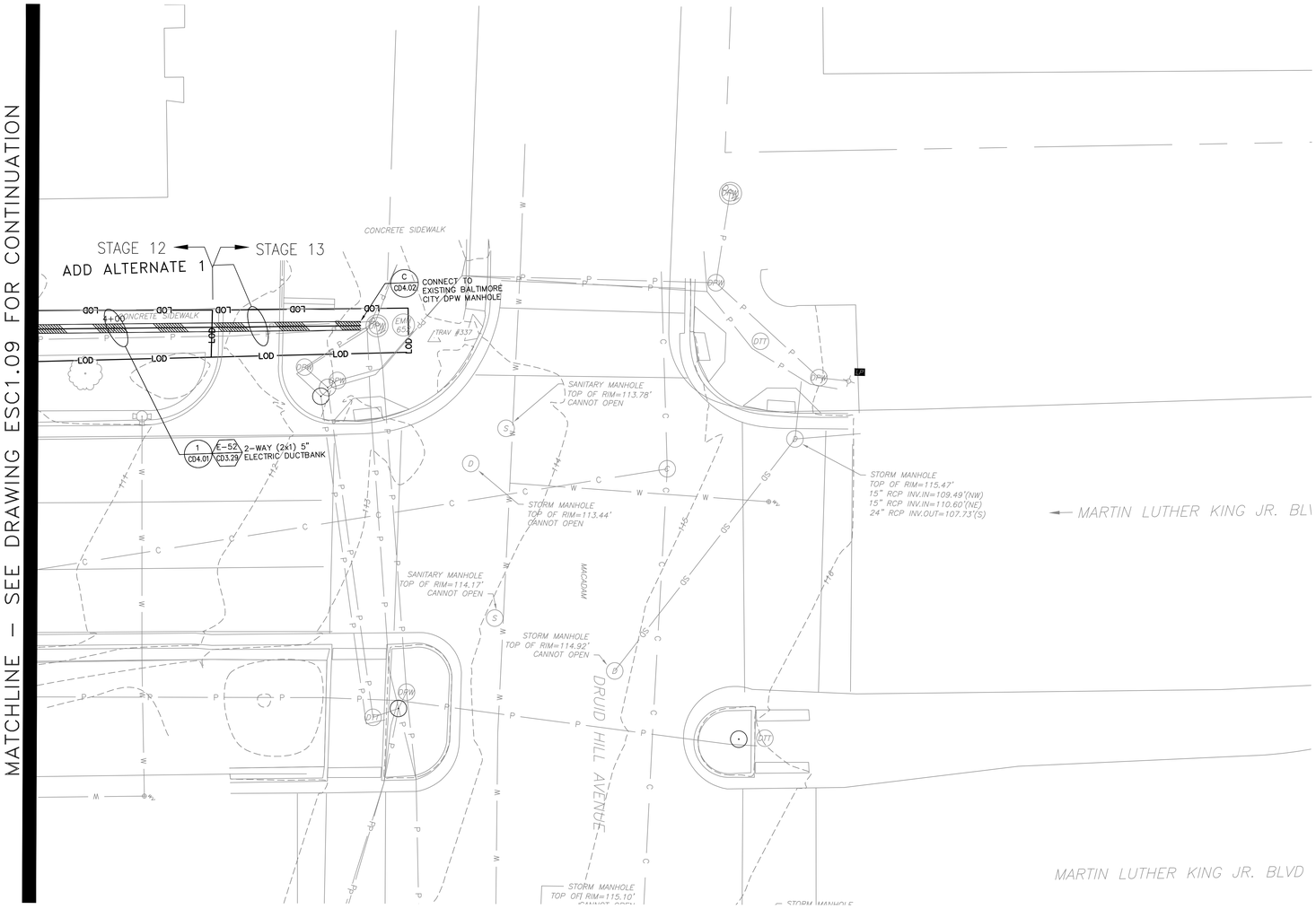
SHEET TITLE :
EROSION & SEDIMENT CONTROL PLAN

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.09

MATCHLINE – SEE DRAWING ESC1.09 FOR CONTINUATION



ESC PLAN
SCALE: 1" = 10'

ESC LEGEND

- LOD — LIMIT OF DISTURBANCE
- DRAINAGE AREA
- COMBINATION INLET PROTECTION
- CURB INLET PROTECTION
- AT-GRADE INLET PROTECTION

CONSTRUCTION ENTRANCE NOTE:

WHERE NO CONSTRUCTION ENTRANCE IS PROVIDED CONTRACTOR SHALL MAINTAIN THE SITE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED OUTSIDE THE LOD BY VACUUMING, SCRAPING, AND/OR SWEEPING. CONTRACTOR MUST CLEAN CONSTRUCTION EQUIPMENT PRIOR TO LEAVING THE LOD TO MINIMIZE SEDIMENT TRACK OUT. WASHING EQUIPMENT AND SUFACES TO REMOVE SEDIMENT IS ONLY ACCEPTABLE WHEN, SEDIMENT LADEN WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

SAME-DAY STABILIZATION NOTE:

FOR UTILITY TRENCHES OUTSIDE THE DRAINAGE AREA LIMITS OF EROSION AND SEDIMENT CONTROL (ESC) DEVICES, THE CONTRACTOR SHALL OPEN ONLY A SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKDAY. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT. ANY EXCESS STOCKPILE MATERIAL THAT CANNOT BE STABILIZED WITHIN THE ESC CONTROLS SHALL BE REMOVED FROM THE SITE AT THE END OF EACH WORKDAY. FOR ADDITIONAL DETAIL SEE NOTE 8 OF THE MARYLAND GENERAL EROSION AND SEDIMENT CONTROL NOTES SHEET ESC-14.

STANDARD STABILIZATION NOTE:

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DRAWING LEGEND

EXISTING CONDITIONS LEGEND

SYMBOL	DESCRIPTION
	EXISTING BUILDING
	EX. BOLLARD
	EX. CURB AND GUTTER
	EX. GRANITE CURB
X	EX. FENCE
	EX. ASPHALT PAVEMENT
EX. PROPERTY LINE	EX. PROPERTY LINE
ROW	EX. RIGHT-OF-WAY
	EXISTING STREAM
	EX. WALL
	EX. BRICK SIDEWALK
	EX. CONCRETE SIDEWALK
	EX. INTERMEDIATE CONTOUR
450	EX. INDEX CONTOUR
456	EX. SPOT ELEVATION
	EX. TREE
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	EX. SHRUBS/BUSHES
	EX. SHRUB/BUSH
	EX. SIGN
	EX. LIGHT POLE
	EX. STAIRS
	EX. CHILLED WATER VALVE
12" CHWS / CHW / CHW / 12" CHWR	EX. CHILLED WATER SUPPLY / RETURN
12" CDWS / CDW / CDW / 12" CDWR	EX. CONDENSER WATER SUPPLY / RETURN
8" HPS / ST / ST / 4" PC	EX. HIGH PRESSURE STEAM & PUMPED CONDENSATE PIPING
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S	EX. SANITARY SEWER MANHOLE
S-2	EX. SANITARY SEWER MANHOLE CALLOUT
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FO	EX. FIBER OPTIC
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4-WAY 6" POWER / P	EX. POWER DUCTBANK
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	EX. WATER VALVE
	EX. SIAMESE CONNECTION
FH	EX. FIRE HYDRANT
SB-01 RP-01	SOIL BORING / ROCK PROBE
TH-01	TEST HOLE

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

GRAPHIC SCALE
10 5 0 10 20
SCALE: 1"=10'
UNIT OF MEASURE: FEET

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STATE OF MARYLAND · JUDITH A. GAUDREAU · 14446 · REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

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UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

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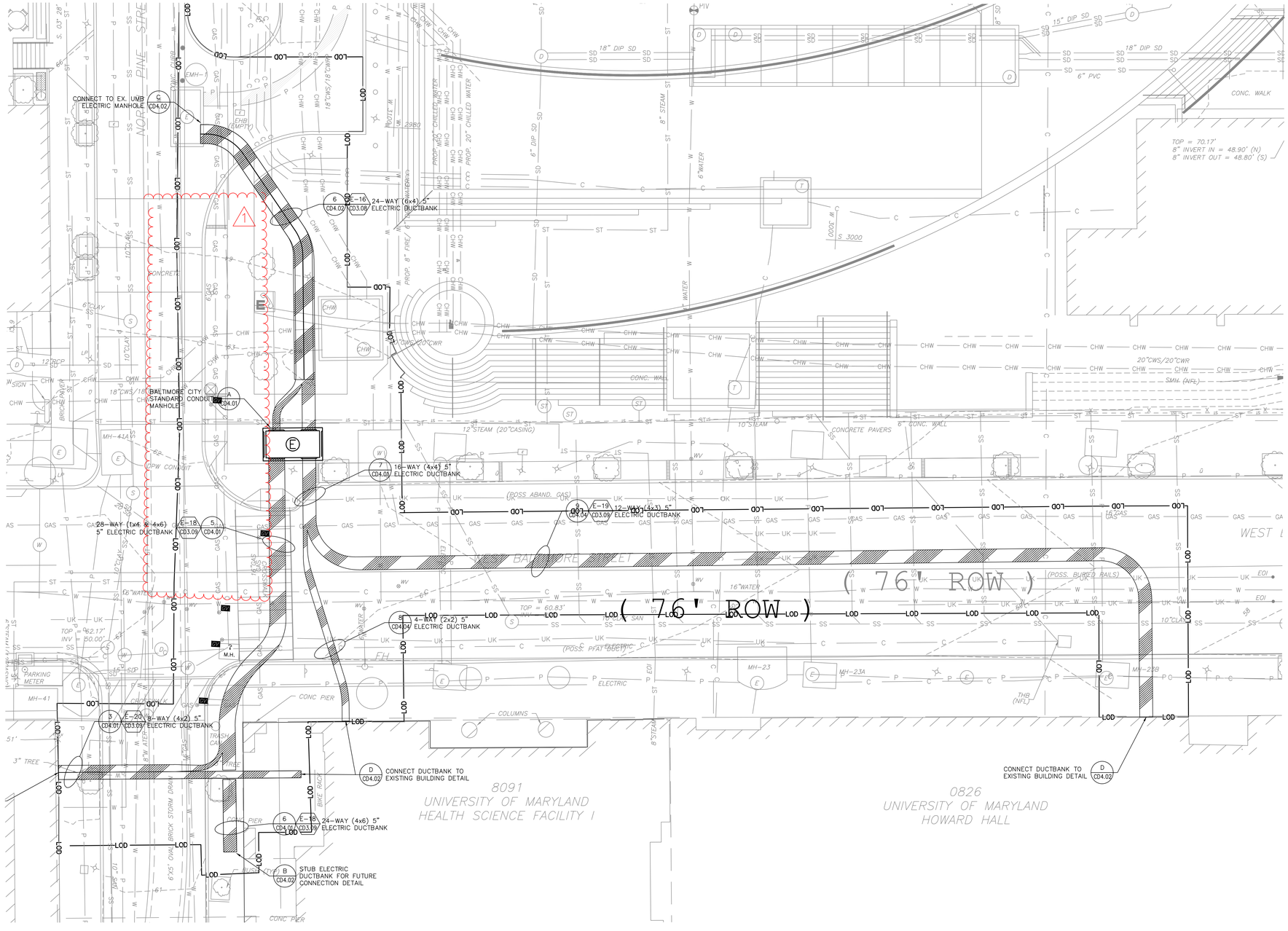
EROSION & SEDIMENT CONTROL PLAN

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.10



ESC PLAN
SCALE: 1" = 10'

ESC LEGEND

- LOD —— LIMIT OF DISTURBANCE
- —— —— DRAINAGE AREA
- COMBINATION INLET PROTECTION
- CIP CURB INLET PROTECTION
- AGIP AT-GRADE INLET PROTECTION

PROPOSED UTILITIES LEGEND

SYMBOL	DESCRIPTION
	ELECTRIC DUCTBANK

SAME-DAY STABILIZATION NOTE:

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MAINTENANCE OF TRAFFIC NOTE:

DUCTBANK CONSTRUCTION WITHIN WEST BALTIMORE STREET AND NORTH PINE STREET TO UTILIZE TYPICAL TRAFFIC CONTROL PLAN.

CONSTRUCTION ENTRANCE NOTE:

WHERE NO CONSTRUCTION ENTRANCE IS PROVIDED CONTRACTOR SHALL MAINTAIN THE SITE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED OUTSIDE THE LOD BY VACUUMING, SCRAPING, AND/OR SWEEPING. CONTRACTOR MUST CLEAN CONSTRUCTION EQUIPMENT PRIOR TO LEAVING THE LOD TO MINIMIZE SEDIMENT TRACK OUT. WASHING EQUIPMENT AND SUFACES TO REMOVE SEDIMENT IS ONLY ACCEPTABLE WHEN, SEDIMENT LADEN WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

DRAWING LEGEND

EXISTING CONDITIONS LEGEND

SYMBOL	DESCRIPTION
	EXISTING BUILDING
	EX. BOLLARD
	EX. CURB AND GUTTER
	EX. GRANITE CURB
X	EX. FENCE
	EX. ASPHALT PAVEMENT
EX. PROPERTY LINE	EX. PROPERTY LINE
ROW	EX. RIGHT-OF-WAY
	EXISTING STREAM
	EX. WALL
	EX. BRICK SIDEWALK
	EX. CONCRETE SIDEWALK
	EX. INTERMEDIATE CONTOUR
450	EX. INDEX CONTOUR
456	EX. SPOT ELEVATION
	EX. TREE
	EX. TREELINE
	EX. SHRUBS/BUSHES
	EX. SHRUB/BUSH
	EX. SIGN
	EX. LIGHT POLE
	EX. STAIRS
	EX. CHILLED WATER VALVE
12" CHWS / CHW / 12" CHWR	EX. CHILLED WATER SUPPLY / RETURN
12" CDWS / CDW / 12" CDWR	EX. CONDENSER WATER SUPPLY / RETURN
8" HPS / ST / 4" PC	EX. HIGH PRESSURE STEAM & PUMPED CONDENSATE PIPING
12" HTHW / HTHW	EX. HEATING WATER
HMH	EX. HEATING WATER MANHOLE
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	EX. UTILITY TUNNEL
	EX. TUNNEL VAULT
24" RCP SD / SD	EX. STORM DRAIN
D	EX. STORM DRAIN MANHOLE
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24" DIP SAN / SS	EX. SANITARY SEWER
S	EX. SANITARY SEWER MANHOLE
S-2	EX. SANITARY SEWER MANHOLE CALLOUT
4-WAY 4" COMM. / C	EX. COMMUNICATIONS DUCTBANK
2" PVC COMM. / C	EX. COMMUNICATIONS CONDUIT
FO	EX. FIBER OPTIC
C	EX. COMMUNICATIONS STRUCTURE
4-WAY 6" POWER / P	EX. POWER DUCTBANK
2" PVC POWER / P	EX. POWER CONDUIT
P	EX. POWER STRUCTURE
UP	EX. UTILITY POLE
2" GAS / GAS	EX. GAS PIPING
	EX. GAS VALVE
6" WATER / W	EX. WATER PIPING

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

GRAPHIC SCALE
10 5 0 10 20
SCALE: 1"=10'
UNIT OF MEASURE: FEET

UNIVERSITY of MARYLAND

ADMINISTRATION & FINANCE
OFFICE OF FACILITIES MANAGEMENT
DESIGN AND CONSTRUCTION
220 ARCH STREET, OFFICE LEVEL 3
BALTIMORE, MARYLAND 21201
PHONE NO. (410) 706-7740
FAX NO. (410) 706-8547

KEY PLAN

A/E CONSULTANTS

RMF ENGINEERING, INC.
5520 RESEARCH PARK DR, 3RD FLR
BALTIMORE, MD 21228
P: 410.576-0505
F: 410.385-0327

Gaudreau, Inc. ARCHITECTS | PLANNERS
Harris-Kupfer Architects, Inc.
ANDES FIRE PROTECTION LLC
CARROLL ENGINEERING, INC.

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. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND · JOSEPH A. CARROLL · No. 14446 · REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES - PHASE 1A

UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

SHEET TITLE :
EROSION & SEDIMENT CONTROL PLAN

REVISIONS

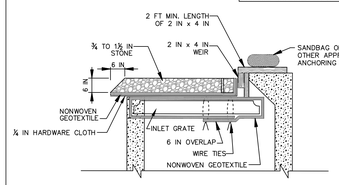
NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.11

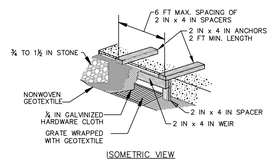
DETAIL E-9-6 COMBINATION INLET PROTECTION

STANDARD SYMBOL: COIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



SECTION



ISOMETRIC VIEW

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 E-9-6 COMBINATION INLET PROTECTION

STANDARD SYMBOL: COIP

CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. LIFT GRATE, AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS, THEN SET GRATE BACK IN PLACE.
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2X4 WEIR, EXTENDING 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH IT TO THE WEIR.
6. NAIL THE 2X4 WEIR TO THE TOP OF A 9 INCH LONG VERTICAL SPACER TO BE LOCATED BETWEEN THE WEIR AND THE INLET FACE (MAXIMUM 4 FEET APART).
7. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2X4 ANCHORS (MINIMUM 2 FOOT LENGTHS OF 2x4 INCH TO THE TOP OF THE WEIR AT SPACER LOCATIONS). EXTEND 2X4 ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
8. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND BOTH ENDS OF THE THROAT OPENING.
9. FORM THE ¼ INCH HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB ON BOTH SIDES OF THE INLET. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE OVER THE HARDWARE CLOTH AND GEOTEXTILE IN SUCH A MANNER TO PREVENT WATER FROM ENTERING THE INLET UNDER OR AROUND THE GEOTEXTILE.
10. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
11. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

2 OF 2

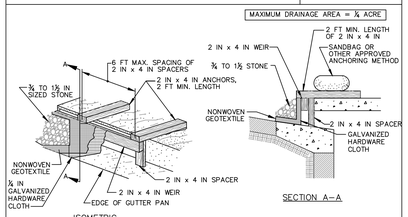
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



ISOMETRIC

SECTION A-A

CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

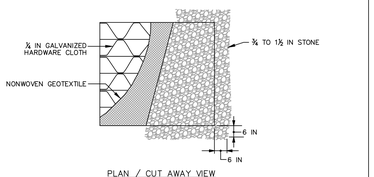
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

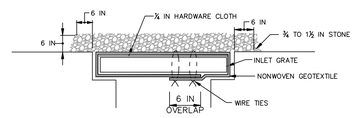
DETAIL E-9-2 AT-GRADE INLET PROTECTION

STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE



PLAN / CUT AWAY VIEW



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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

SEQUENCE OF CONSTRUCTION

1. PROVIDE ALL PROPER PERMITS PRIOR TO THE START OF CONSTRUCTION.
2. NOTIFY MDE AT LEAST 72 HOURS PRIOR TO START OF CONSTRUCTION STATING TO COORDINATE AND PROVIDE THE FOLLOWING:
   - A. A REQUEST FOR A PRE-CONSTRUCTION MEETING,
   - B. WHEN CONTRACTOR INTENDS TO BEGIN CONSTRUCTION,
   - C. SOURCE OF BORROW MATERIAL,
   - D. LOCATION OF DISPOSAL AREA WITH AN ACTIVE PERMIT,
   - E. CONTRACTOR'S TENTATIVE CLOSING DATE.
3. IMPLEMENT MAINTENANCE OF TRAFFIC AROUND PROPOSED CONSTRUCTION ZONE.
4. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, INSTALL SEDIMENT CONTROL MEASURES WITHIN PROJECT WORK AREA.
5. WITH ESC INSPECTOR'S WRITTEN PERMISSION BEGIN DUCTBANK CONSTRUCTION.
   - 5.1. ANY EXCAVATED MATERIAL NOT DIRECTLY LIFTED TO TRUCK MUST BE PLACED ON THE HIGH SIDE OF THE TRENCH AND REMOVED PRIOR TO COMPLETION OF THE WORK DAY. SEE MDE GENERAL ESC NOTE 8. SITE MUST BE FULLY STABILIZED AT THE END OF EACH WORKING DAY.
   - 5.2. CONTRACTOR SHALL WORK WITHIN THE LOD PROGRESSING UP/DOWN MARTIN LUTHER KING BLVD. PROVIDING FINAL STABILIZATION AS DUCTBANK IS CONSTRUCTED. WORK WITHIN THE NORTH PINE AND WEST BALTIMORE STREET INTERSECTION IS INDEPENDENT OF MLK BLVD AND MAY PROCEED WITH OR WITHOUT DUCTBANK CONSTRUCTION WITHIN MLK BLVD.
6. AFTER THE SITE HAS BEEN STABILIZED AND WITH PERMISSION OF THE MDE SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROLS, AND IMMEDIATELY STABILIZE ANY DISTURBANCE CREATED.
7. REMOVE REMAINING MAINTENANCE OF TRAFFIC AROUND CONSTRUCTION SITE.

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

EROSION & SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED

UNIVERSITY of MARYLAND

ADMINISTRATION & FINANCE
OFFICE OF FACILITIES MANAGEMENT
DESIGN AND CONSTRUCTION
220 ARCH STREET, OFFICE LEVEL 3
BALTIMORE, MARYLAND 21201
PHONE NO. (410) 706-7740
FAX NO. (410) 706-8547

KEY PLAN

A/E CONSULTANTS

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LICENSE No. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND · JUDITH A. GAUDREAU · 14446 · REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES - PHASE 1A

UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

SHEET TITLE :
EROSION & SEDIMENT CONTROL DETAILS

REVISIONS

NO	DATE	ITEM
1	03/20/2020	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.12

B-3 STANDARDS AND SPECIFICATIONS FOR LAND GRADING

Definition

Reshaping the existing land surface to provide suitable topography for building facilities and other site improvements.

Purpose

To provide erosion control and vegetative establishment for extreme changes in grade.

Conditions Where Practice Applies

Earth disturbances or extreme grade modifications on steep or long slopes.

Design Criteria

The grading plan should be based on the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surroundings to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, adjacent properties, drainage patterns, measures for water removal, and vegetative treatment, etc.

Many jurisdictions have regulations and design procedures already established for land grading that must be followed. The plan must show existing and proposed contours for the area(s) to be graded including practices for erosion control, slope stabilization, and safe conveyance of runoff (e.g., waterways, lined channels, reverse benches, grade stabilization structures). The grading/construction plans are to include the phasing of these practices and consideration of the following:

1. Provisions to safely convey surface runoff to storm drains, protected outlets or stable water courses to ensure that surface runoff will not damage slopes or other graded areas.
2. Cut and fill slopes, stabilized with grasses, no steeper than 2:l. (Where the slope is to be mowed, the slope should be no steeper than 3:l, but 4:l is preferred because of safety factors related to mowing steep slopes.) Slopes steeper than 2:l require special design and stabilization considerations to be shown on the plans.
3. Benching per Detail B-3-1 whenever the vertical interval (height) of any 2:l slope exceeds 20 feet; for 3:l slopes, when it exceeds 30 feet; and for 4:l slopes, when it exceeds 40 feet. Locate benches to divide the slope face as equally as possible and to convey the water to a stable outlet. Soils, seeps, rock outcrops, etc. are to be taken into consideration when designing benches.
   a. Provide benches with a minimum width of six feet for ease of maintenance.
   b. Design benches with a reverse slope of 6:l or flatter to the toe of the upper slope and with a minimum of one foot in depth. Grade the longitudinal slope of the bench between 2 percent and 3 percent, unless accompanied by appropriate design and computations.
   c. The maximum allowable flow length within a bench is 800 feet unless accompanied by appropriate design and computations.
4. Diversion of surface water from the face of all cut and fill slopes using earth dikes or swales. Convey surface water down slope using a designed structure, and:
   a. Protect the face of all graded slopes from surface runoff until they are stabilized.
   b. Do not subject the slope's face to any concentrated flow of surface water such as from natural drainage ways, graded swales, downspouts, etc.
   c. Protect the face of the slope by special erosion control materials to include, but not be limited to, approved vegetative stabilization practices, riprap or other approved stabilization methods.
5. Serrated slope as shown in Detail B-3-2. The steepest allowable slope for ripable rock is 1.5:1. For non rock surfaces, the slopes are to be 2:1 or flatter. These steps will weather and act to hold moisture, lime, fertilizer and seed thus producing a much quicker and longer lived vegetative cover and better slope stabilization.
6. Subsurface drainage provisions. Provide subsurface drainage where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.
7. Proximity to adjacent property. Slopes must not be created close to property lines without adequate protection against sedimentation, erosion, slippage, settlement, subsidence, or other related damages.
8. Quality of fill material. Fill material must be free of brush, rubbish, logs, stumps, building debris, and other objectionable material. Do not place frozen materials in the fill nor place the fill material on a frozen foundation.
9. Stabilization. Stabilize all disturbed areas structurally or vegetatively in compliance with Section B4 Standards and Specifications for Stabilization Practices.

Maintenance

The line, grade, and cross section of benching and serrated slopes must be maintained. Benches and serrated slopes must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative 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.

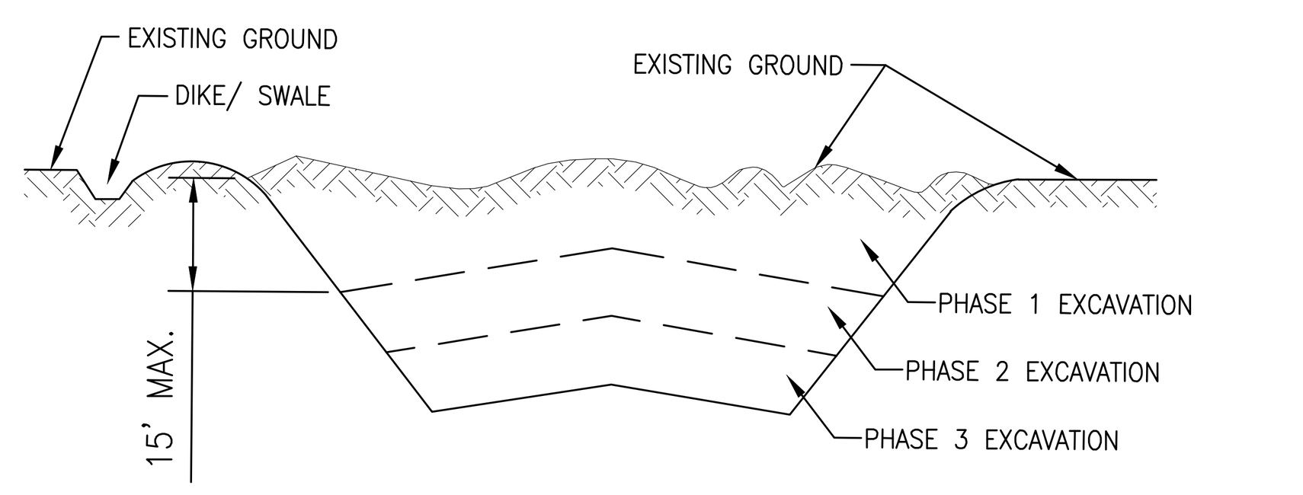

Figure B.1: Incremental Stabilization – Cut

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.

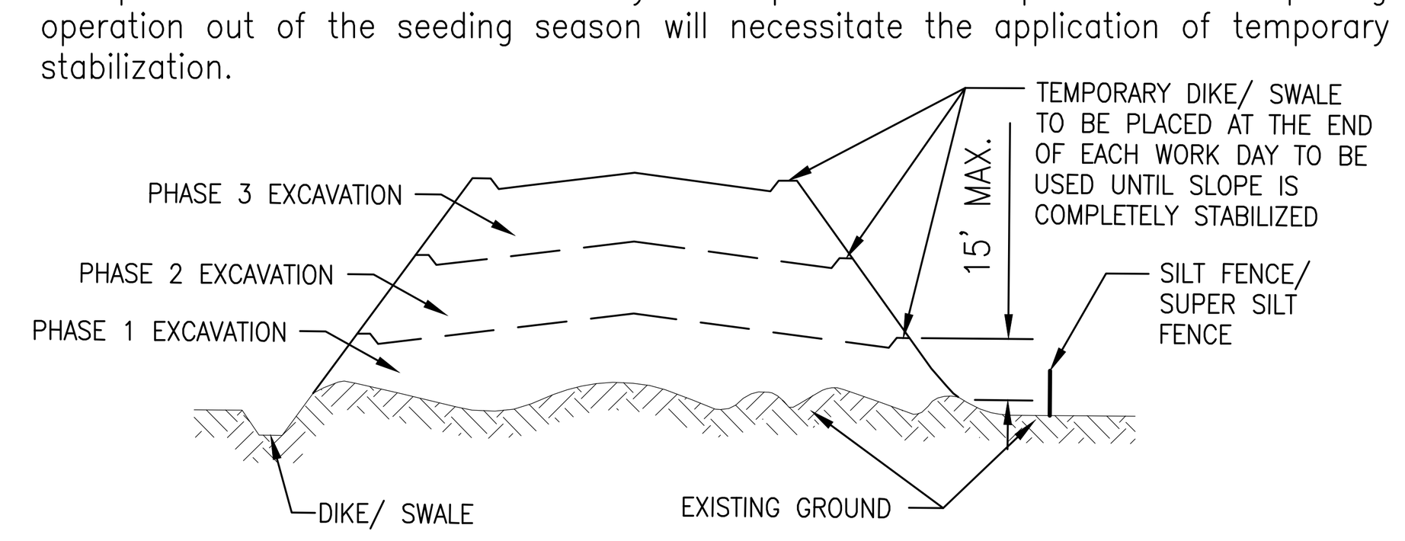

Figure B.2: Incremental Stabilization – Fill

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 necessary 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-4-3 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; K2O (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

Hardiness Zone (from Figure B.3): 7B Seed Mixture (from Table B.1): ____________					Fertilizer Rate (10-20-20)	Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths		
	Annual Ryegrass	40	FEB 15 TO APR 30; AUG 15 TO NOV 30	0.5	436 lb/ac (10 lb/1000sf)	2 tons/ac (90 lb/1000sf)
	Barley	96	FEB 15 TO APR 30; AUG 15 TO NOV 30	1.0		
	Foxtail Millet	30	MAY 1 TO AUG 14	0.5		

H-5 STANDARD AND SPECIFICATIONS FOR DUST CONTROL

Definition

Controlling dust blowing and movement on construction sites and roads.

Purpose

To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.

Conditions Where Practice Applies

This practice is applicable to areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

Specifications

Temporary Methods:

1. Mulches: See standards and specifications Section B-4-2, soil Amendments, Seeding, Mulching and topsoiling and Section B-4-3, Temporary Stabilization. Mulch should be crimped or tacked to prevent blowing.
2. Vegetative Cover: See standards and specifications Section B-4-3, Temporary Stabilization.
3. Tillage: To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.
4. Irrigation: This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. At no time should the site be irrigated to the point that runoff begins to flow.
5. Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
6. Calcium Chloride: Apply at rates that will keep surface moist and may need retreatment.

Permanent Methods:

1. Permanent Vegetation: See standard and specifications section B-4-4, Permanent Stabilization. Existing trees or large shrubs may afford valuable protection in lift in place.
2. Topsoiling: Covering with less erosive soil materials. See standards and specifications Section B-4-2, soil Amendments, Seeding, Mulching and Topsoiling.
3. Stone: Cover surface with crushed stone or course gravel.

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MD DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

EROSION & SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED

UNIVERSITY of MARYLAND

ADMINISTRATION & FINANCE
OFFICE OF FACILITIES MANAGEMENT
DESIGN AND CONSTRUCTION
220 ARCH STREET, OFFICE LEVEL 3
BALTIMORE, MARYLAND 21201
PHONE NO. (410) 706-7740
FAX NO. (410) 706-8547

KEY PLAN

A/E CONSULTANTS

rmf
RMF ENGINEERING, INC.
5520 RESEARCH PARK DR, 3RD FLR
BALTIMORE, MD 21228
P: 410.576-0505
F: 410.385-0327

Gaudreau, Inc. ARCHITECTS | PLANNERS
HKA
Harris-Kupfer Architects, Inc.
ANDES FIRE PROTECTION LLC
CARROLL ENGINEERING, INC.

PROFESSIONAL CERTIFICATION. I HERE BY 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. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND JUDITH A. CARROLL NO. 14446 REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

SHEET TITLE :
EROSION & SEDIMENT CONTROL NOTES

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.13

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 1 to June 1, August 1 to October 1 (Hardiness Zone: 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 Zone: 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.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 7b Seed Mixture (from Table B.3):					Fertilizer Rate (10–20–20)			Lime Rate
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N	P_2O_5	K_2O	
	Tall Fescue	60	FEB 15 TO APR 30; AUG 15 TO NOV 30	1/4–1/2 inch	45 lb/ac (1.0 lb/1000sf)	90 lb/ac (2.0 lb/1000sf)	90 lb/ac (2.0 lb/1000sf)	2 tons/ac (90 lb/1000sf)
	Kentucky Bluegrass	40	FEB 15 TO APR 30; AUG 15 TO NOV 30	1/4–1/2 inch				
	Perennial Ryegrass	20	FEB 15 TO APR 30; AUG 15 TO NOV 30	1/4–1/2 inch				

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 ¾ 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 ⅓ 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.

B-4-6 STANDARDS AND SPECIFICATIONS FOR SOIL STABILIZATION MATTING

Definition

Material used to temporarily or permanently stabilize channels or steep slopes until groundcover is established.

Purpose

To protect the soils until vegetation is established.

Conditions Where Practice Applies

On newly seeded surfaces to prevent the applied seed from washing out; in channels and on steep slopes where the flow has erosive velocities or conveys clear water; on temporary swales, earth dikes, and perimeter dike swales as required by the respective design standard; and, on stream banks where moving water is likely to wash out new vegetative plantings.

Design Criteria

1. The soil stabilization matting that is used must withstand the flow velocities and shear stresses determined for the area, based on the 2-year, 24-hour frequency storm for temporary applications and the 10-year, 24-hour frequency storm for permanent applications. Designate on the plan the type of soil stabilization matting using the standard symbol and include the calculated shear stress for the respective treatment area.
2. Matting is required on permanent channels where the runoff velocity exceeds two and half feet per second (2.5 fps) or the shear stress exceeds two pounds per square foot (2 lbs/ft2). On temporary channels discharging to a sediment trapping practice, provide matting where the runoff velocity exceeds four feet per second (4 fps).
3. Temporary soil stabilization matting is made with degradable (lasts 6 months minimum), natural, or manmade fibers of uniform thickness and distribution of fibers throughout and is smolder resistant. The maximum permissible velocity for temporary matting is 6 feet per second.
4. Permanent soil stabilization matting is an open weave, synthetic material consisting of nondegradable fibers or elements of uniform thickness and distribution of weave throughout. The maximum permissible velocity for permanent matting is 8.5 feet per second.
5. Calculate channel velocity and shear stress using the following procedure:

   Shear Stress (τ) is a measure of the force of moving water against the substrate and is calculated as:

   $\tau = \gamma \times R \times Sw$ where:
   τ = shear stress (lb/ft2)
   γ = weight density of water (62.4 lb/ft3)
   R = average water depth (hydraulic radius) (ft)
   Sw = water surface slope (ft/ft)

   Velocity (v) measures the rate of flow through a defined area and is calculated as:

   $$v = \frac{1.48 R^{\frac{2}{3}} s^{\frac{1}{2}}}{n}$$

   where: v = velocity (ft/sec)
   n = Manning's roughness coefficient
   R = hydraulic radius (ft)
   s = channel slope (ft/ft)

6. Use Table B.7 to assist in selecting the appropriate soil stabilization matting for slope applications based on the slope, the slope length, and the soil-erodibility K factor.

Table B.7: Soil Stabilization on Slopes

Slope	20:1 Flatter (≥5%)			20:1 Flatter (≥5%)			20:1 Flatter (≥5%)			20:1 Flatter (≥5%)			20:1 Flatter (≥5%)		
Slope Length (feet)*	0–30	30–60	60–120	0–30	30–60	60–120	0–30	30–60	60–120	0–30	30–60	60–120	0–30	30–60	60–120
Straw Mulch/Wood Cellulose Fiber	■	■	■	for K ≥ 0.35*** ■	■	■	■	■	■						
Temporary Matting with Design Shear Stress ≥ 1.5 lb/sf	■	■	■	■	■	■	■	■	■						
Temporary Matting with Design Shear Stress ≥ 1.75 lb/sf	■	■	■	■	■	■	■	■	■	■	■				
Temporary Matting with Design Shear Stress ≥ 2.0 lb/sf	■	■	■	■	■	■	■	■	■	■	■	■	■		
Temporary Matting with Design Shear Stress ≥ 2.25 lb/sf	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

■ Effective range for all K values unless otherwise specified

* Slope length includes contributing flow length.
** Slopes steeper than 2:1 must be engineered.
*** Soil having a K value less than or equal to 0.35 can be stabilized effectively with straw mulch or wood cellulose fiber when located on slopes steeper than 5%. Soil stabilization matting is required on all slopes steeper than 5% that have soil with a K factor greater than 0.35. K factor ratings are published in the NRCS Soil Survey Http://Websoilsurvey.nrcs.usda.gov/app. During construction or reclamation, the soilerodibility K value should represent the upper 6 inches of the final fill material re-spread as the last lift. Only the effects of rock fragments within the soil profile are considered in the estimation of the K value. Do not adjust K values to account for rocks on the soil surface or increases in soil organic matter related to management activities.

Maintenance

Vegetation must be established and maintained so that the requirements for Adequate Vegetative Establishment are continuously met in accordance with Section B-4 Vegetative Stabilization.

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 diversion fence. 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.

H-1 STANDARDS AND SPECIFICATIONS FOR MATERIALS

Table H.1: Geotextile Fabrics

		WOVEN SLIT FILM GEOTEXTILE		WOVEN MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MINIMUM AVERAGE ROLL VALUE					
PROPERTY	TEST METHOD	MD	CD	MD	CD	MD	CD
GRAB TENSILE STRENGTH	ASTM D-4632	200lb	200lb	370lb	250lb	200lb	200lb
GRAB TENSILE ELONGATION	ASTM D-4632	15%	10%	15%	15%	50%	50%
TRAPEZOIDAL TEAR STRENGTH	ASTM D-4533	75 lb	75 lb	100 lb	60 lb	80 lb	80 lb
PUNCTURE STRENGTH	ASTM D-6241	450 lb		900 lb		450 lb	
APPARENT OPENING SIZE [2]	ASTM D-4751	U.S. Sieve 30 (0.59 mm)		U.S. Sieve 70 (0.21 mm)		U.S. Sieve 70 (0.21 mm)	
PERMITTIVITY	ASTM D-4491	0.05 sec		0.28 sec		1.1 sec	
ULTRAVIOLET RESISTANCE RETAINED AT 500 HOURS	ASTM D-4355	70% strength		70% strength		70% strength	

1 All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.

2 Values for AOS represent the average maximum opening.

Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPEP) and conform to the values in Table H.1.

The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including selvages.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.

Table H.2: Stone Size

TYPE	SIZE RANGE	d	d	AASHTO	MIDSIZE WEIGHT [3]
NUMBER 57 [1]	3/8 TO 1 1/2INCH	1 1/2 IN	1 1/2 IN	M-43	N/A
NUMBER 57	2 TO 3 INCH	2 1/2 IN	3 IN	M-43	N/A
RIPRAP [2] (CLASS 0)	4 TO 7 INCH	5 1/2 IN	7 IN	N/A	N/A
CLASS I	N/A	9 1/2 IN	15 IN	N/A	40 lb
CLASS II	N/A	16 IN	24 IN	N/A	200 lb
CLASS III	N/A	23 IN	34 IN	N/A	600 lb

1 This classification is to be used on the upstream face of stone outlets and check dams.

2 This classification is to be used for gabions.

3 Optimum gradation is 50 percent of the stone being above and 50 percent below the midsize.

Stone must be composed of a well graded mixture of stone sized so that fifty (50) percent of the pieces by weight are larger than the size determined by using the charts. A well graded mixture, as used herein, is defined as a mixture composed primarily of larger stone sizes but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone in such a mixture must not exceed the respective d100 selected from Table H.2. The d50 refers to the median diameter of the stone. This is the size for which 50 percent, by weight, will be smaller and 50 percent will be larger.

Note: Recycled concrete equivalent may be substituted for all stone classifications for temporary control measures only. Concrete broken into the sizes meeting the appropriate classification, containing no steel reinforcement, and having a minimum density of 150 pounds per cubic foot may be used as an equivalent.

EROSION AND SEDIMENT CONTROL GENERAL NOTES

The Water Management Administration requires that these notes, in their entirety, be included on the erosion and sediment control plan. It is recognized that every note may not apply to all projects. The requirement of any individual note not applicable to the subject project is not binding upon the applicant or the applicant's contractor.

1. The contractor shall notify MDE at (410) 537-3510 seven (7) days before commencing any land disturbing activity and, unless waived by MDE, shall be required to hold a pre-construction meeting between project representatives and a representative of MDE.
2. The contractor shall notify MDE in writing and by telephone at the following points:
   A. The required pre-construction meeting.
   B. Following installation of sediment control measures.
   C. During the installation of sediment basins (to be converted into permanent stormwater management structures) at the required inspection points (see Inspection Checklist on plan). Notification prior to commencing construction of each step is mandatory.
   D. Prior to removal or modification of any sediment control structure(s).
   E. Prior to removal of all sediment control devices.
   F. Prior to final acceptance.
3. The plan approval letter, approved erosion and sediment control plans, daily log books, and test reports shall be available at the site for inspection by duly authorized officials of MDE and the agency responsible for the project.
4. The contractor shall construct all erosion and sediment control measures per the approved plan and construction sequence and shall have them inspected and approved by the MDE inspector prior to beginning any other land disturbances. Minor sediment control device location adjustments may be made in the field with the approval of the MDE inspector. The contractor shall ensure that all runoff from disturbed areas is directed to the sediment control devices and shall not remove any erosion or sediment control measure without prior permission from the MDE inspector. The contractor shall obtain prior agency and MDE approval for modifications to the erosion and sediment control plan and/or sequence of construction.
5. The MDE inspector has the option of requiring additional safety or sediment control measures, if deemed necessary.
6. The contractor shall protect all points of construction ingress and egress to prevent the deposition of materials onto public roads. All materials deposited onto public roads shall be removed immediately.
7. The contractor shall inspect daily and maintain continuously in an effective operating condition all erosion and sediment control measures until such time as they are removed with prior permission from the MDE inspector.
8. Erosion and sediment control for utility construction shall be provided in accordance with approved plans. Utility construction shall only be for areas within the delineated limit of disturbance. Call "Miss Utility" at 1-800-257-7777 48 hours prior to the start of work. When same day stabilization is approved:
   A. Excavated trench material shall be placed on the high side of the trench.
   B. Trenches for utility installation shall be backfilled, compacted, and stabilized at the end of each working day. No more trench shall be opened than can be completed the same day.
9. All water removed from excavated areas shall be passed through an MDE approved dewatering practice or pumped to a sediment trap or basin prior to discharge to a functional storm drain system or to stable ground surface.
10. Concrete washout structures shall be used when concrete trucks, drums, pumps, chutes, or other equipment is rinsed or cleaned on-site.
11. Construction activities producing dust shall implement control measures to avoid the suspension of dust particles and/or prevent dust from blowing off-site or to areas without treatment.
12. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization shall 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 3 horizontal to 1 vertical (3:1); and
   B. Seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading.
13. Vegetative stabilization shall be performed in accordance with the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. Refer to appropriate specifications for temporary seeding, permanent seeding, mulching, sodding, and ground covers.
14. When seeding, all disturbed areas with slopes flatter than 2:1 shall be stabilized with 4 inches of topsoil, seed, and mulch. All disturbed areas with slopes 2:1 or steeper shall be stabilized with matting over 2 inches of topsoil and seed.
15. All sediment basins, trap embankments and slopes, perimeter dikes, swales and all disturbed slopes steeper or equal to 3:1 shall be stabilized with seed and anchored straw mulch, sod, or other approved stabilization measures, as soon as possible but no later than three (3) calendar days after establishment. All areas disturbed outside of the perimeter sediment control system shall be minimized. Maintenance shall be performed as necessary to ensure continued stabilization.
16. Permanent swales or other points of concentrated water flow shall be stabilized with seed and an approved erosion control matting, sod, rip-rap, or other approved stabilization measures.
17. For stockpile slopes steeper than 3 horizontal to 1 vertical (3:1), the contractor shall apply seed and anchored straw mulch, sod, or other approved stabilization measures to the face of the stockpile within three (3) calendar days of activity having ceased on the respective face. For slopes 3:1 or flatter, the contractor shall apply stabilization measures to the face of the stockpile within seven (7) calendar days of activity having ceased on the respective face. Maintenance shall be performed as necessary to ensure continued stabilization.
18. For finished grading, the contractor shall provide adequate gradients to prevent water from ponding for more than twenty-four (24) hours after the end of a rainfall event. Drainage courses and swale flow areas may take as long as forty-eight (48) hours after the end of a rainfall event to drain. Areas designed to have standing water shall not be required to meet this requirement.
19. Where deemed appropriate by the engineer or inspector, sediment basins and traps may need to be surrounded with an approved safety fence. The fence must conform to local ordinances and regulations. The developer or owner shall check with local building officials on applicable safety requirements. Where safety fence is deemed appropriate and local ordinances do not specify fencing sizes and types, the following shall be used as a minimum standard: The safety fence shall be made of welded wire and at least 42 inches high, have posts spaced no farther apart than 8 feet, have mesh openings no greater than 2 inches in width and 4 inches in height with a minimum of 14 gauge wire. Safety fence shall be maintained and in good condition at all times.
20. All sediment trap depth dimensions are relative to the outlet elevation. All traps shall have a stable outfall. All traps and basins shall have stable inflow points.
21. Sediment shall be removed and the trap or basin restored to its original dimensions when the sediment has accumulated to one quarter of the total depth of the trap or basin. Total depth shall be measured from the trap or basin bottom to the crest of the outlet.
22. Sediment removed from traps (and basins) shall be placed and stabilized in approved areas, but not within a floodplain, wetland or tree-save area. When pumping sediment laden water, the discharge shall be directed to an MDE approved sediment trapping device prior to release from the site. A sump pit may be used if sediment traps themselves are being pumped out.
23. Prior to removal of sediment control measures, the contractor shall stabilize and have established permanent stabilization for all contributory disturbed areas using sod or an approved permanent seed mixture with required soil amendments and an approved anchored mulch. Wood fiber mulch may only be used in seeding season where the slope does not exceed 10% and grading has been done to promote sheet flow drainage. Areas brought to finished grade during the seeding season shall be permanently stabilized as soon as possible, but not later than three (3) calendar days after establishment for slopes steeper than 3 horizontal to 1 vertical (3:1) and seven (7) calendar days for flatter slopes. When property is brought to finished grade during the months of November through February, and permanent stabilization is found to be impractical, temporary seed and anchored straw mulch shall be applied to disturbed areas. The final permanent stabilization of such property shall be applied by March 15 or earlier if ground and weather conditions allow.
24. Temporary sediment control devices shall be removed with permission of the MDE inspector within thirty (30) calendar days following establishment of permanent stabilization in all contributory drainage areas. Upon removal of sediment control devices, the area disturbed by removal shall be stabilized with topsoil, seed, and mulch, or as specified, within 24 hours of said removal. Stormwater management structures used temporarily for sediment control shall be converted to the permanent configuration within this time period as well.
25. Off-site spoil or borrow areas on State or federal property shall have prior approval by MDE and other applicable State, federal, and local agencies; otherwise approval shall be granted by the local authorities. All waste and borrow areas off-site shall be protected by sediment control measures and stabilized.
26. Site Information:
   A. Area Disturbed 0.770 Acres
   B. Total Cut 1,537± Cubic Yards
   C. Total Fill 1,537± Cubic Yards

1 (revision)

TABLE 5.1 NATURAL RESOURCES AND THE CORRESPONDING REGULATORY AUTHORITIES:

FEDERAL	STATE	LOCAL
WETLANDS X MAJOR WATERWAYS X FLOODPLAINS X	TIDAL AND NON-TIDAL WETLANDS X WETLANDS OF SPECIAL STATE CONCERN X WETLAND BUFFERS X STREAM BUFFERS X PERENNIAL STREAMS X FLOODPLAINS X FORESTS X FOREST BUFFERS X CRITICAL AREAS X	STEEP SLOPES X HIGHLY ERODIBLE SOILS X ENHANCED STREAM BUFFERS X TOPOGRAPHY/SLOPES √ SPRINGS X SEEPS X INTERMITTENT STREAMS X VEGETATIVE COVER √ SOILS √ BEDROCK/GEOLOGY X EXISTING DRAINAGE AREAS √

*NOTES:
1. Cut/ fill totals are for mde review only. contractor is responsible for calculating cut/ fill quantities for estimation purposes. Engineer offers no guarantee to quantities actually encountered during construction.
2. Area disturbed is negligibly different than that used for swm calculations due to linear utility installation.

APPROVED
BY: COLLIN HILTNER
MAY 04, 2020
MDE DEPT ENVIRONMENT
SEDIMENT & STORMWATER
PLAN REVIEW DIVISION

MDE No. 19-SF-0030

EROSION & SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED

UNIVERSITY of MARYLAND

ADMINISTRATION & FINANCE
OFFICE OF FACILITIES MANAGEMENT
DESIGN AND CONSTRUCTION
220 ARCH STREET, OFFICE LEVEL 3
BALTIMORE, MARYLAND 21201
PHONE NO. (410) 706-7740
FAX NO. (410) 706-8547

KEY PLAN

A/E CONSULTANTS

rmf

RMF ENGINEERING, INC.
5520 RESEARCH PARK DR, 3RD FLR
BALTIMORE, MD 21228
P: 410.576-0505
F: 410.385-0327

Gaudreau, Inc. ARCHITECTS | PLANNERS

HKA
Harris-Kupfer Architects, Inc.

ANDES FIRE PROTECTION LLC

CARROLL ENGINEERING, INC.

PROFESSIONAL CERTIFICATION. I HERE BY 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. 14446
EXPIRATION DATE: MAY 25TH, 2021

STATE OF MARYLAND · JUDITH A. CARROLL · NO. 14446 · REGISTERED PROFESSIONAL ENGINEER

REGISTRATION/STAMP

PROJECT TITLE :
CAMPUS ELECTRICAL DISTRIBUTION UPGRADES – PHASE 1A

UMB BUILDING NO. :	VARIOUS
UMB Project NO. :	17-317
A/E PROJECT NO. :	117081.A0
CAD FILE NO. :	
DATE :	03-20-2020

SHEET TITLE :
EROSION & SEDIMENT CONTROL NOTES

REVISIONS

NO	DATE	ITEM
1	03/20/20	LOD MODIFICATION-DUCTBANK REALIGNMENT

SHEET NO.
ESC1.14