Kent County
MARYLAND

Historic Preservation Commission
Department of Planning, Housing, and Zoning

County Commissioners Hearing Room
400 High Street
Chestertown, Maryland

AGENDA
August 30, 2023
6:00 p.m.

Members of the public are welcome to attend meetings in person or via conference call.

Public participation and audio-only call-in number:

1. Dial **1-872-239-8359**
2. Enter Conference ID: **776 015 466#**

Members of the public are asked to mute their phones/devices, until the Commission Chair opens the floor for comment.

MINUTES

Request a motion to adopt the minutes of June 22, 2023, as presented.

GENERAL DISCUSSION

Cypress Branch Dam Removal Project

APPLICATIONS FOR REVIEW

John Kennedy House – Certificate of Appropriateness Application (Revised Submittal) – Installation of Solar Panels
11943 Augustine Herman Hwy, Kennedyville

STAFF REPORTS

ADJOURN

Meetings are conducted in Open Session unless otherwise indicated. All or part of the Historic Preservation Commission meetings can be held in closed session under the authority of the MD Open Meetings Law by vote of the members. Breaks are at the call of the Chairman. Meetings are subject to audio and video recordings. All applications will be given the time necessary to assure full public participation and a fair and complete review of all projects. Agenda items are subject to change due to cancellations.

Kent County Historic Preservation Commission
Meeting Summary

The Kent County Historic Preservation Commission (HPC) met on Thursday, June 22, 2023, at 6:00 p.m. in the County Commissioners' Hearing Room at 400 High Street, Chestertown, Maryland. It was a hybrid meeting, and the following HPC members were in attendance: Jeremy Rothwell (remotely), Max Ruehrmund (remotely), Jennifer Moore (remotely), and Melinda Zupon (remotely). Staff in attendance were William Mackey, DPHZ Director; Carla Gerber, DPHZ Deputy Director; Mark Carper, Associate Planner; and Campbell Safian, Planning Specialist.

Jeremy Rothwell called the meeting to order at 6:00 p.m.

MINUTES

Mr. Ruehrmund moved to accept the minutes of April 6, 2023, as presented. Ms. Moore seconded the motion, and the motion passed with all in favor.

APPLICATIONS FOR REVIEW

John Kennedy House – Certificate of Appropriateness Application – Installation of Solar Panels
11943 Augustine Herman Hwy, Kennedyville

- All four Commission members that were present spoke in opposition to the installation of solar panels on the front gable side of the roof that faces Maryland Route 213.
- Mr. Rothwell noted that solar panels are not advised on the front face of the side gabled roof according to the Secretary of the Interior's Standards for Rehabilitation.
- Mr. Rothwell cited a Preservation Brief from the National Park Service, which states that "solar panels installed on a historic property in a location that cannot be seen from the ground will generally meet the Secretary of the Interior's Standards for Rehabilitation. Conversely, an installation that negatively impacts the historic character of a property will not meet the Standards."
- Mr. Ruehrmund moved that the Certificate of Appropriateness would not allow solar panels on the front gable side facing Maryland Route 213. It is recommended that the panel boxes be moved to the side rear section of the house, as far back away from the street as possible. It is requested that updated drawings be submitted, which reflect these changes to the project. The motion was seconded by Ms. Moore, and the motion passed unanimously, 4-0.

GENERAL DISCUSSION

Discussion about the invitation to serve as a consulting party in the Cypress Branch Dam Removal Project:

- The purpose of the dam removal is to restore Cypress Branch to riverine conditions to ensure fish and aquatic species can pass upstream and downstream without impediments.
- The Cypress Branch Mill Pond Dam has been determined eligible for listing in the National Register of Historic Places (NRHP).
- The Commission is interested in participating in the Cypress Branch Dam Removal Project.

Discussion of member appointments:

- Ms. Beckley and Mr. Ruehrmund are both interested in continuing to serve.
- Mr. Rothwell recommended Darius Johnson and Joan Horsey.
- Mr. Ruehrmund recommended John Hutchison.
- Ms. Moore recommended A. Elizabeth Watson.

ADJOURNMENT

Mr. Ruehrmund moved to adjourn the meeting. The motion received a second from Ms. Zupon. The meeting adjourned at approximately 6:55 p.m.

Jeremy Rothwell, Acting Chair

Campbell Safian, Planning Specialist

cs

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Maryland Fishery Resources Office
177 Admiral Cochrane Dr.
Annapolis, MD 21401

RE: Cypress Branch Dam Removal Project in Kent County, Millington, Maryland, NHPA Section 106 Compliance, Invite to Potential Consulting Parties

Dear Mr. Carper and Ms. Gerber,

The purpose of this letter is to inform you of the Cypress Branch Dam Removal Project in Kent County, Millington, Maryland, and to invite you to become a consulting party in the Section 106 consultation process in accordance with the National Historic Preservation Act (NHPA). The U.S. Fish and Wildlife invites the Kent County Historic Preservation Commission to consult in the removal of the Cypress Branch Dam Removal Project, considered an undertaking under the National Historic Preservation Act (NHPA).

The United States Fish and Wildlife Service (USFWS), acting as the lead federal agency is entering into the Section 106 consultation process in accordance with the NHPA with the State of Maryland – Maryland Department of Natural Resources (dam owner) and the Maryland Historical Trust with additional consultation partners including American Rivers.

Cypress Branch Mill Pond Dam is located on Maryland Department of Natural Resources (MD DNR), Maryland Park Service land in Millington, MD. The GPS coordinates for the project are 39.261159, -75.827442. The Cypress Branch Mill Pond Dam Removal project is a cooperative effort by the MD Department of Natural Resources, the U.S. Fish and Wildlife Service, and American Rivers. Primary funding for the project is from the USFWS from the Hurricane Sandy Resilience Fund. Through a grant agreement with the USFWS, the design and construction of the project will be administered by American Rivers. The purpose of the dam removal is to restore Cypress Branch to riverine conditions to ensure fish and aquatic species can pass upstream and downstream without impediments (see attached USGS Site Location Maps and Aerial Overview Map). The priority species for this dam removal project are Blueback Herring and Alewife, two migratory species that move upstream to spawn each spring and return downstream after they have spawned.

The Cypress Branch Mill Pond Dam has been determined eligible for listing on the National Register of Historic Places (NRHP) under criterion A due to its significance to the Historic District. The exact construction date of the Cypress Mill Dam is unknown, there is a history of dams and mill ponds in the area starting in the eighteenth century. However, based on the aggregate in the concrete, H&P estimates that the Dam was constructed 1900 c. Eligibility was determined due to trends in history related to the mill history of the area and the Town of Millington. Based on the deed and historical research conducted for the project, it appears that

the Cypress Mill Pond and Dam funneled water to mill races that powered mills in the Town of Millington. Since the dam is eligible for the NRHP, removal will cause an Adverse Effect and will require a Memorandum of Agreement (MOA). USFWS is collaboratively working with the State of Maryland, Maryland Historic Trust, and interested parties to determine appropriate mitigation measures and will collaboratively develop the MOA these parties. Please note that the project team, in concurrence with the Maryland Historic Trust, believe that the undertaking will have no effect on significant archeological resources and that no further archeological investigations are warranted for this undertaking.

We respectfully request your response to me by June 23, 2023, if your organization would like to serve as a consulting party in the section 106 consultation. It is assumed that if USFWS is not contacted by this date that your organization is not interested in serving as a consulting party. Please call (410-852-6201) or email me (alexander_vidal@fws.gov) of your interest to participate or if you have questions about this request.

Sincerely,

Alexander Vidal
Fish and Wildlife Biologist
US Fish and Wildlife Service
Maryland Fish and Wildlife Conservation Office

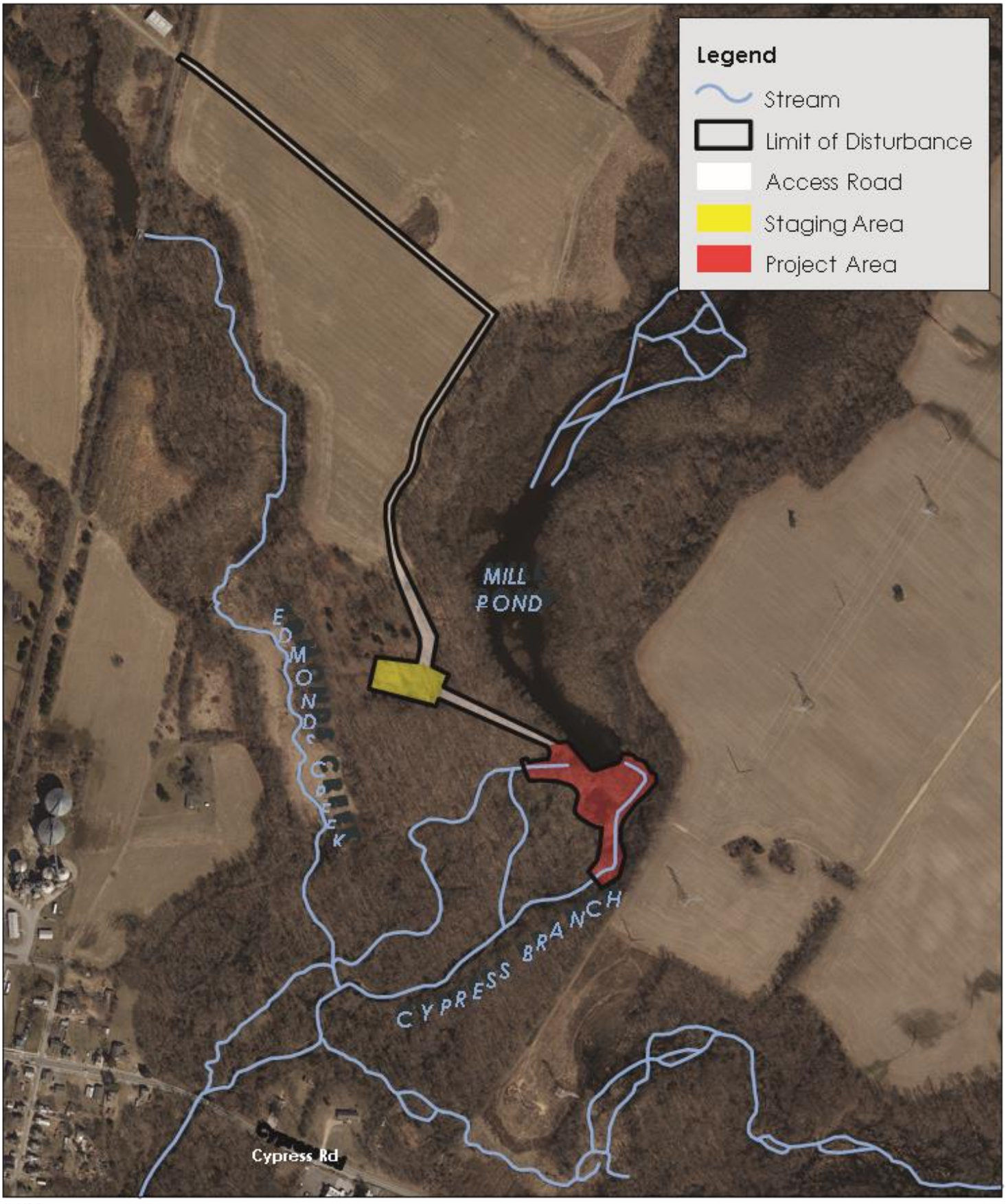
CC: Ms. Jessie Thomas-Blate, American Rivers
Mr. Mark Secrist, US Fish and Wildlife Service
Mr. Jim Thompson, MD Department of Natural Resources
Ms. Becky Roman, Maryland Historical Trust
Mr. Shane Johnston, MD Department of Natural Resources

Figure 1. Top of the Earthen Dam at Cypress Branch

Figure 2. cement spillway on Cypress Branch to be removed looking upstream toward Mill Pond

Figure 3. Side view of cement spillway looking upstream toward the Mill Pond

Figure 4. Rubble and cement at breach in earthen dam looking upstream toward Mill Pond



NOTES:
1. Limit of disturbance is approximate.
2. Streams digitized using 2019 orthoimagery.
3. 2019 orthoimagery obtained from MD IMAP website: imap.maryland.gov/

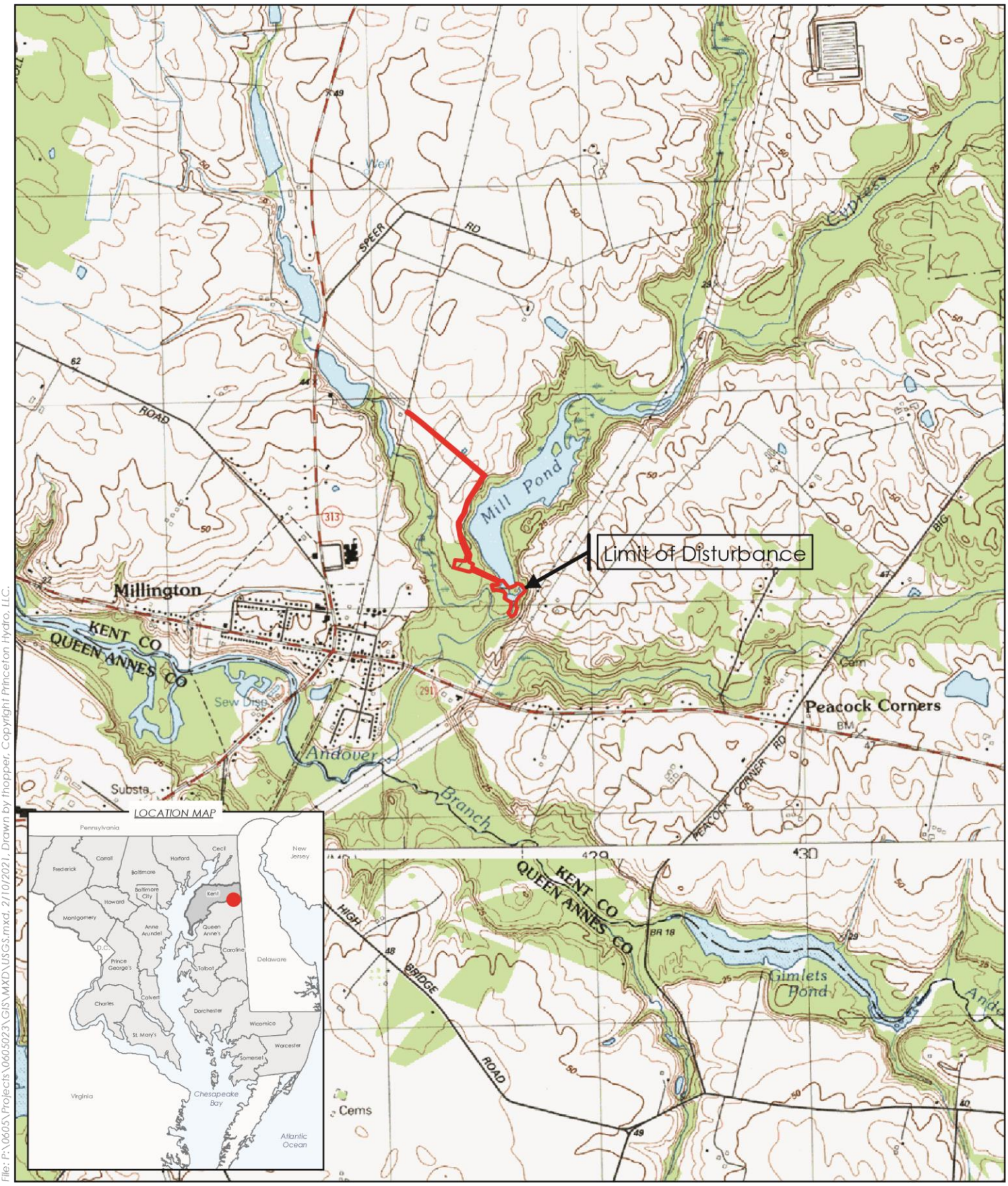
0 250 500 Feet

Map Projection: NAD 1983 2011 StatePlane Maryland FIPS 1900 Ft US

AERIAL OVERVIEW MAP

CYPRESS BRANCH DAM REMOVAL
AMERICAN RIVERS
KENT COUNTY, MARYLAND

PRINCETON HYDRO
SCIENCE DESIGN ENGINEERING
www.PrincetonHydro.com



File: P:\0605\Projects\0605023\GIS\MXD\USGS.mxd, 2/10/2021, Drawn by thopper, Copyright Princeton Hydro, LLC.

NOTES:
1. Limit of disturbance is approximate.
2. USGS topographic digital raster graphics obtained from Terrain Navigator Pro, Millington and Sudlersville, MD quadrangles.

0 1,000 2,000 Feet

Map Projection: NAD 1983 2011 StatePlane Maryland FIPS 1900 Ft US

USGS SITE LOCATION MAP

CYPRESS BRANCH DAM REMOVAL
AMERICAN RIVERS
KENT COUNTY, MARYLAND

PRINCETON HYDRO
SCIENCE DESIGN ENGINEERING
www.PrincetonHydro.com

CYPRESS BRANCH
DAM REMOVAL PROJECT
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND

GENERAL NOTES:

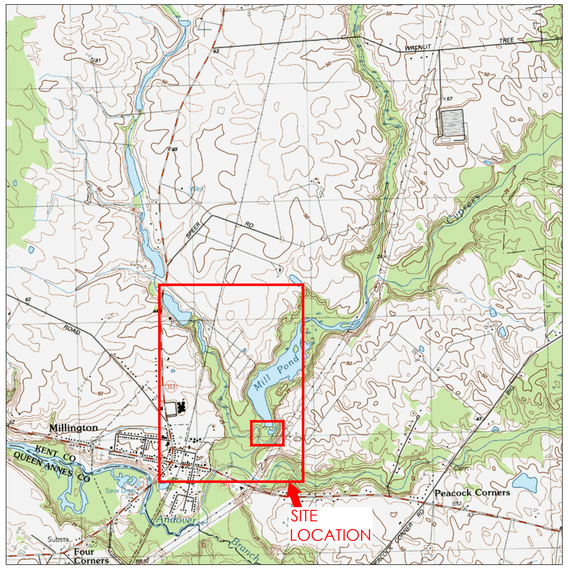
1. ALL ELEVATIONS AND QUANTITIES ARE BASED ON IN-SITU CONDITIONS. ONCE DISTURBED, MATERIAL CONDITIONS CAN VARY SIGNIFICANTLY.
2. THE APPROVAL AND USE OF THESE PLANS ARE FOR THE PROJECT APPLICANT AS DEPICTED ON THIS SHEET. THIS PLAN IS NOT TO BE UTILIZED IN THE PREPARATION OF ANY OTHER PROJECTS.
3. AS FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO PROPOSED TOPOGRAPHIC ELEVATIONS AND FACILITY LOCATIONS, THESE PLANS ARE NOT TO BE UTILIZED AS AS-BUILTS.
4. THESE PLANS ARE NOT TO BE UTILIZED FOR CONSTRUCTION, UNTIL ALL REQUIRED LOCAL, STATE, AND FEDERAL PERMITS ARE OBTAINED.

CONSTRUCTION NOTES:

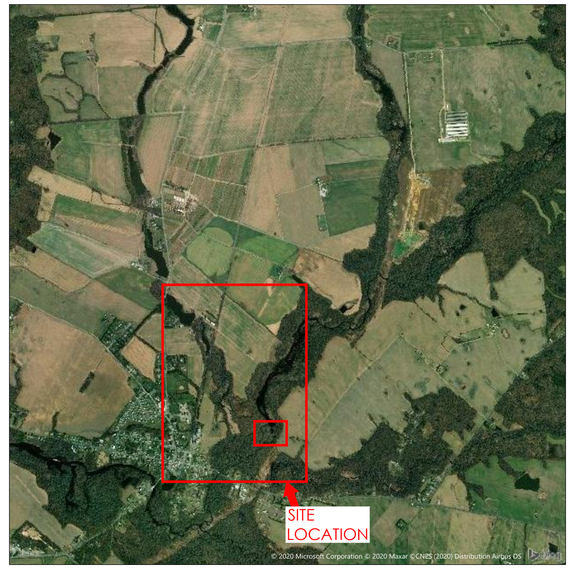
1. CONTRACTOR TO USE AREAS WITHIN THE LIMIT OF DISTURBANCE ONLY.
2. SOILS AND/OR OTHER MATERIALS TO BE UTILIZED FOR FILLING OR BACKFILLING SHALL BE APPROVED BY THE PROJECT ENGINEER OR ECOLOGIST AND BE FREE OF DEBRIS AND DELETERIOUS MATERIALS.
3. ALL MATERIALS SHALL CONFORM TO THEIR RESPECTIVE LATEST AMERICAN STANDARDS FOR TESTING AND MATERIALS SPECIFICATIONS (ASTM).
4. PROXIMITY OF STOCKPILES TO THE EDGE OF EXCAVATIONS SHALL BE SUCH THAT THE INFLUENCE OF THE STOCKPILE SURCHARGE ON THE MODIFIED OR EXISTING SLOPE IS REDUCED. WHERE POSSIBLE, STOCKPILES WILL BE PLACED AT A DISTANCE FROM THE EDGE OF EXCAVATION EQUAL TO (OR GREATER THAN) THE HEIGHT (DEPTH) OF THE EXCAVATION.
5. ALL UTILITIES KNOWN AND UNKNOWN WITHIN THE PROJECT LIMIT OF DISTURBANCE SHALL BE LOCATED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
6. NECESSARY PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO PROTECT EXISTING SERVICES, MAINS, AND SITE IMPROVEMENTS AND INFRASTRUCTURE. ANY DAMAGE TO EXISTING SERVICES OR MAINS SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S OWN EXPENSE AND THE RESPECTIVE UTILITY COMPANY SHALL BE NOTIFIED IMMEDIATELY.
7. EXCAVATIONS AND STOCKPILES IN NO WAY SHALL HAVE SLOPES STEEPER THAN 2:1 UNLESS ACTIONS HAVE BEEN TAKEN TO STABILIZE THE SLOPE.
8. THE CONTRACTOR SHALL NOTE THAT IN THE CASE OF A DISCREPANCY BETWEEN THE SCALED AND THE FIGURED DIMENSIONS SHOWN ON THESE PLANS, THE FIGURED DIMENSIONS SHALL APPLY.
9. IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK THAT WOULD NORMALLY BE REQUIRED TO COMPLETE THE PROJECT, SHALL NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM THAT WORK.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR AND REPLACEMENT OF FENCES, SIGNS, STRUCTURES, VEGETATION, IRRIGATION, LANDSCAPING COMPONENTS, AND ANY OTHER PROPERTY ITEMS THAT ARE REMOVED OR DAMAGED FOR THE PURPOSES OF THE PROJECT LOGISTICS AND/OR ACCIDENTS WHICH MAY OCCUR.
11. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND PROPER DISPOSAL OF ALL STOCKPILED SOIL, TRASH, CONSTRUCTION MATERIALS AND DEBRIS AFTER THE COMPLETION OF CONSTRUCTION. ALL DISPOSAL SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE MUNICIPAL, COUNTY, AND STATE REGULATIONS.
12. THE CONTRACTOR IS RESPONSIBLE TO RESTORE ALL GRASSY AREAS, DRIVEWAYS AND CURBING DISTURBED DURING CONSTRUCTION TO THEIR PRE-CONSTRUCTION CONDITION AFTER COMPLETION OF CONSTRUCTION AND PRIOR TO FINAL ACCEPTANCE OF THE PROJECT.
13. THE CONTRACTOR SHALL TEMPORARILY STABILIZE ALL BARE AND STOCKPILED MATERIALS STORED ON SITE PRIOR TO PLANTING OR PERMANENT STABILIZATION MEASURES.
14. CONTRACTOR TO AVOID TREES WHERE POSSIBLE DURING INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE AND CONSTRUCTION ACCESS ROAD. CONTRACTOR SHALL TAKE EXTRA PRECAUTIONS FOR SPECIMEN TREES AND THEIR CRITICAL ROOT ZONES.

CONSTRUCTION SAFETY AND SECURITY:

1. ALL CONSTRUCTION SHALL ADHERE TO OSHA STANDARDS AND REGULATIONS.



A PROJECT VICINITY
SCALE: 1" = 2000'



B ORTHOPHOTOGRAPHY
SCALE: 1" = 2000'

PROJECT APPLICANT
MARYLAND DEPARTMENT OF
NATURAL RESOURCES
580 TAYLOR AVE
ANNAPOLIS, MD 21401

PROJECT ENGINEER
PRINCETON HYDRO
1108 OLD YORK ROAD
SUITE 1
RINGOES, NJ 08551

PROJECT PARTNERS
AMERICAN RIVERS
1101 14TH STREET NW
SUITE 1400
WASHINGTON, DC 20005

SHEET LIST TABLE	
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4	PROPOSED CONDITIONS
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14	SOIL EROSION AND SEDIMENT CONTROL DETAILS AND NOTES
15	SOIL EROSION AND SEDIMENT CONTROL NOTES 1
16	SOIL EROSION AND SEDIMENT CONTROL NOTES 2
17	PLANTING PLAN OVERVIEW
18	PLANTING PLAN VIEWPORT 1
19	PLANTING PLAN VIEWPORT 2

PREPARED BY
STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
ENGINEERING & CONSTRUCTION

ENG & CON P.H.	PROJ COOR.	USING AGENCY	DRAWN BY P.H.

ENGINEERING & CONST DIRECTOR DATE

CALL BEFORE YOU DIG!
MARYLAND LAW REQUIRES
2 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE
- STOP CALL
REFERENCE MARYLAND STATE LAW ON
UNDERGROUND UTILITY DRAINAGE PREVENTION LAW
(MARYLAND STATE LAW TITLE 12)
1-800-257-7777

PROJECT NOTES

1. HORIZONTAL DATUM IS MARYLAND STATE PLANE NAD83, FEET. VERTICAL DATUM BASED ON NAVD88, FEET.
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DATE	DESCRIPTION
06/15/2021	PLANS REVISED PER CLIENT COMMENTS
01/23/2023	PLANS REVISED PER CLIENT COMMENTS
07/12/2023	PLANS REVISED PER MDE COMMENTS

REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
31645
PROFESSIONAL ENGINEER
DATE

PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:
TITLE SHEET

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
1 OF 19

Drawing name: P:\0605\Projects\0605023\CAD\SHEETS\CYPRESS_OVERVIEW.dwg Plotted on: Jul 12, 2023 - 5:15pm

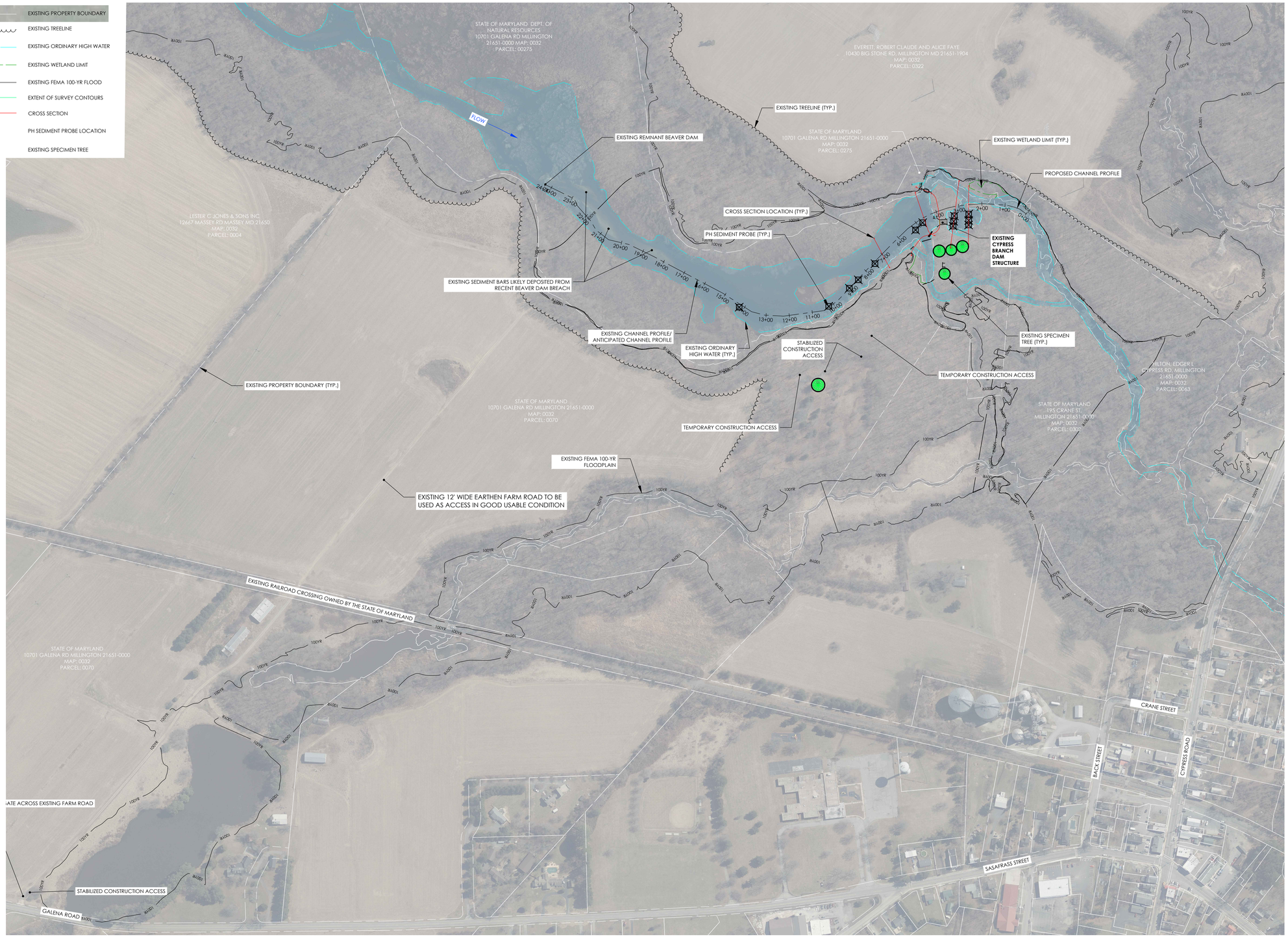
LEGEND

- EXISTING CONTOUR - MINOR
- EXISTING CONTOUR - MAJOR
- EXISTING PROPERTY BOUNDARY
- EXISTING TREELINE
- EXISTING ORDINARY HIGH WATER
- EXISTING WETLAND LIMIT
- 100YR — EXISTING FEMA 100-YR FLOOD
- EXTENT OF SURVEY CONTOURS
- CROSS SECTION
- PH SEDIMENT PROBE LOCATION
- ST2 — EXISTING SPECIMEN TREE

GRAPHIC SCALE

0 50 100 150 200 400 600 800 FEET

SCALE: 1" = 200'



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REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
GEOFFREY MICHAEL GOLL
31645
PROFESSIONAL ENGINEER
DATE: 7/12/2023

PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:

CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:

OVERVIEW SHEET

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DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.

2 OF 19

Drawing name: P:\0605\Projects\0605023\CAD\SHEETS\CYPRESS_PLANVIEWS.dwg Plotted on: Jul 12, 2023 - 5:17pm

STATE OF MARYLAND DEPT OF NATURAL RESOURCES
MILLINGTON-SMYRNA RD
MAP: 0032
PARCEL: 0275

EVERETT, ROBERT CLAUDE AND ALICE FAYE
10430 BIG STONE RD, MILLINGTON MD 21651-1904
MAP: 0032
PARCEL: 0322

STATE OF MARYLAND
10701 GALENA RD
MILLINGTON 21651-0000
MAP: 0032
PARCEL: 0275

STATE OF MARYLAND
10701 GALENA RD MILLINGTON 21651-0000
MAP: 0032
PARCEL: 0070

STATE OF MARYLAND
195 CRANE ST, MILLINGTON 21651-0000
MAP: 0032
PARCEL: 0302

HILTON, EDGER L
CYPRESS RD, MILLINGTON 21651-0000
MAP: 0032
PARCEL: 0063

FLOW

ANTICIPATED CHANNEL ALIGNMENT - SEE SHEET 5

MILL POND

PH SEDIMENT PROBE LOCATION (TYP.)

EXTENT OF CONTOURS GENERATED FROM PROFESSIONAL LAND SURVEY. ALL CONTOURS OUTSIDE OF BOUNDARY WERE GENERATED FROM LIDAR. SEE PROJECT NOTES

EXISTING FEMA 100-YR FLOODPLAIN

PROPOSED 100-YR FLOODPLAIN

EXISTING IMPOUNDMENT OUTLET COMPOSED OF DEBRIS

EXISTING WOOD DOCK

EXISTING RUBBLE REMAINS

EXISTING ORDINARY HIGH WATER (TYP.)

EXISTING WALL

EXISTING SPECIMEN TREE CRITICAL ROOT ZONE (TYP.)

EXISTING SPECIMEN TREE (TYP.)

EXISTING STREAM SETBACK (TYP.)

CROSS SECTION (TYP.)
SEE SHEET 6 FOR CROSS SECTIONS

EXISTING METAL PILES SPANNING THE UPSTREAM EXTENT OF THE DAM. VERTICAL EXTENTS UNKNOWN.

EXISTING CONCRETE RETAINING WALL. TOP ELEVATION = 17.5 FT

EXISTING CONCRETE PAD. UPSTREAM ELEVATION OF PAD: 9.5 FT DOWNSTREAM ELEVATION OF PAD: 9.3 FT

PROPOSED ALIGNMENT

EXISTING GUARDRAIL DEBRIS

EXISTING RUBBLE SPILLWAY

EXISTING INTERMITTENT STREAM

EXISTING CONTOUR - MINOR (TYP.)

EXISTING CONTOUR - MAJOR (TYP.)

ELEVATIONS ESTIMATED - TOO DEEP FOR MERESTONE SURVEY

25' NONTIDAL WETLAND BUFFER (TYP.)

EXISTING WETLAND LIMIT (TYP.)

EXISTING WETLAND FLAG (TYP.)

EXISTING PROPERTY BOUNDARY (TYP.)

XS1' XS2' XS3' XS4' XS1 XS2 XS3 XS4

LEGEND

- EXISTING CONTOUR - MINOR
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GRAPHIC SCALE

0 10 20 30 60 90 120 FEET

SCALE: 1" = 30'

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3 OF 19

Drawing name: P:\0605\Projects\0605023\CAD\SHEETS\CYPRESS_PLANVIEWS.dwg Plotted on: Jul 12, 2023 - 5:18pm

PROPOSED ACCESS ROAD TO ULTIMATELY BE LEFT AS THE RIVER RIGHT CHANNEL BLOCK. SEE DETAIL B ON SHEET 11. PROPOSED ACCESS ROAD TO BE INSTALLED AS A TEMPORARY CULVERT ACCESS (SEE DETAIL H-4-2 ON SHEET 12) PIPES TO BE PULLED UPON PROJECT COMPLETION. (2) 36" CULVERTS TO BE INSTALLED

PROPOSED ORDINARY HIGH WATER (TYP.)

POTENTIAL ALTERNATIVE FLOWPATH

FORMER MILL POND

EXISTING IMPOUNDMENT OUTLET TO BE PLUGGED. DEBRIS AND ANY REMNANT MATERIAL MUST BE REMOVED. CONCRETE REMOVED FROM THE STRUCTURE, IF ANY, MAY BE BURIED A MINIMUM DEPTH OF 3-FT BELOW PROPOSED GRADES AND SHALL BE BROKEN TO PIECES NO GREATER THAN 18-IN. ALL NON-CONCRETE DEBRIS, INCLUDING THE EXISTING METAL POSTS ASSOCIATED WITH THE STRUCTURE, SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF.

ANTICIPATED CHANNEL ALIGNMENT - SEE SHEET 5

PROPOSED RIVER LEFT CHANNEL BLOCK (TYP.). SEE DETAIL A ON SHEET 11.

EXISTING INTERMITTENT STREAM

RIVERBED SHALL BE ALLOWED TO ADJUST NATURALLY AS IMPOUNDED SEDIMENT GRADUALLY TRANSPORTS DOWNSTREAM

EXTENT OF CONTOURS GENERATED FROM PROFESSIONAL LAND SURVEY. ALL CONTOURS OUTSIDE OF BOUNDARY WERE GENERATED FROM LIDAR. SEE PROJECT NOTES

LIMIT OF DISTURBANCE (TYP.)

PROPOSED BANK STABILIZATION WITH LARGE WOODY DEBRIS (SEE DETAILS A AND B ON SHEET 10)

EXISTING CONTOUR - MINOR (TYP.)

EXISTING CONTOUR - MAJOR (TYP.)

PROPOSED RIVER RIGHT CHANNEL BLOCK AND TIMBER PIN. SEE DETAIL C ON SHEET 11.

EXISTING FEMA 100-YR FLOODPLAIN

PROPOSED 100-YR FLOODPLAIN

EXISTING RUBBLE REMAINS TO BE REMOVED

EXISTING WOOD DOCK TO BE REMOVED

EXISTING RUBBLE SPILLWAY TO BE REMOVED. CONCRETE REMOVED FROM THE STRUCTURE MAY BE BURIED A MINIMUM DEPTH OF 3-FT BELOW PROPOSED GRADES AND SHALL BE BROKEN INTO PIECES NO GREATER THAN 18-IN. ALL NON-CONCRETE DEBRIS, INCLUDING THE EXISTING METAL POSTS ASSOCIATED WITH THE STRUCTURE, SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF.

EXISTING ORDINARY HIGH WATER (TYP.)

EXISTING WALL TO REMAIN

EXISTING SPECIMEN TREE TO BE REMOVED

PROPOSED DRAINAGE PATH ALONG FILL FOR INTERMITTENT STREAM. MINIMUM 2-FT WIDE AND DEPTH NO GREATER THAN 6-IN

EXISTING SPECIMEN TREE CRITICAL ROOT ZONE (TYP.)

PROPOSED CHANNEL

PROPOSED CONTOUR - MINOR (TYP.)

PROPOSED CONTOUR - MAJOR (TYP.)

EXISTING SPECIMEN TREE TO REMAIN

MAX POOL DEPTH 5.5'

EXISTING CONTOUR TO REMAIN (TYP.)

PROPOSED DISPERSED WOODY DEBRIS PLACEMENT TO ACT AS A CHANNEL BLOCK

25' NONTIDAL WETLAND BUFFER (TYP.)

CROSS SECTION (TYP.) SEE SHEET 6 FOR CROSS SECTIONS

EXISTING WETLAND LIMIT (TYP.)

EXISTING WETLAND FLAG (TYP.)

INTERMITTENT CHANNEL CONFLUENCE TO BE INTEGRATED INTO TOE WOOD BANK STABILIZATION USING ROCK AND WOOD AT THE DIRECTION OF THE PROJECT ENGINEER

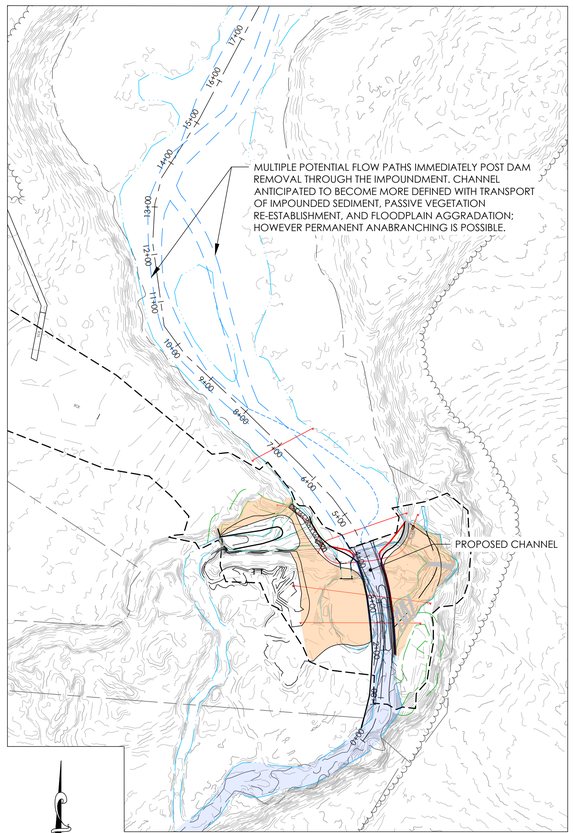
ASSUME CONCRETE REINFORCING OF ANY TYPE (I.E. REBAR, SHEETPILE, ETC.), FULL VERTICAL EXTENT OF SPILLWAY, INCLUDING ANY FOUNDATION, AND ABUTMENTS, SHALL BE REMOVED. ALL NON-CONCRETE DEBRIS, INCLUDING THE EXISTING METAL POSTS ASSOCIATED WITH THE STRUCTURE, SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF. RIVERBED TO BE EXCAVATED TO AN ELEVATION NO HIGHER THAN 4'. RIVERBED TO BE REGRADED IN THE FOOTPRINT OF THE DAM. CONCRETE REMOVED FROM THE STRUCTURE MAY BE BURIED A MINIMUM DEPTH OF 3-FT BELOW PROPOSED GRADES AND SHALL BE BROKEN INTO PIECES NO GREATER THAN 18-IN.

EXISTING SCOUR HOLE TO BE FILLED

FINAL PROPOSED GRADES ABOVE 11 FEET TO BE COVERED WITH NEDIA KOIRWRAP 1000 OR APPROVED EQUIVALENT (TYP.) SEE SHEET 11 FOR TECHNICAL SPECIFICATIONS

EXISTING PROPERTY BOUNDARY (TYP.)

EXISTING ORDINARY HIGH WATER (TYP.)



B ANTICIPATED ALIGNMENT: IMPOUNDMENT VIEW
1" = 150'

GRAPHIC SCALE
0 30 60 90 120 150 300 450 600 FEET
SCALE: 1" = 150'

A PROPOSED CONDITIONS: PROJECT AREA
1" = 30'

NOTE: FINAL FLOODPLAIN GRADING SHOULD NOT BE SMOOTH AND UNIFORM. FINAL GRADES SHALL BE ROUGHENED AT THE DIRECTION OF THE ENGINEER, LEAVING HUMMOCKS AND HOLLOWS. FOR FLOODPLAIN HUMMOCK - HOLLOW DETAIL SEE DETAIL E ON SHEET 10.

GRAPHIC SCALE
0 10 20 30 60 90 120 FEET
SCALE: 1" = 30'

LEGEND

- EXISTING CONTOUR - MINOR
- EXISTING CONTOUR - MAJOR
- EXISTING PROPERTY BOUNDARY
- EXISTING TREELINE
- EXISTING ORDINARY HIGH WATER
- EXISTING 25' STREAM SETBACK
- EXISTING WETLAND LIMIT
- EXISTING WETLAND SETBACK
- 100YR EXISTING FEMA 100-YR FLOOD
- EXTENT OF SURVEY CONTOURS
- CROSS SECTION
- PH SEDIMENT PROBE LOCATION
- ST2 EXISTING SPECIMEN TREE
- EXISTING ORDINARY HIGH WATER
- LIMIT OF DISTURBANCE
- PROPOSED ORDINARY HIGH WATER
- ANTICIPATED FLOW PATHS
- EXISTING CONTOUR TO REMAIN
- PROPOSED CONTOUR - MINOR
- PROPOSED CONTOUR - MAJOR
- 100YR PROPOSED 100 YEAR FLOOD
- PROPOSED BANK STABILIZATION
- PROPOSED NEDIA KOIRWRAP 1000

CALL BEFORE YOU DIG!
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REFERENCE MARYLAND STATE LAW ON UNDERGROUND UTILITY DRAINAGE PREVENTION LAW (MARYLAND STATE LAW TITLE 12)
1-800-257-7777

PROJECT NOTES

1. HORIZONTAL DATUM IS MARYLAND STATE PLANE NAD83, FEET. VERTICAL DATUM BASED ON NAVD88, FEET.
2. USGS TOPOGRAPHIC DIGITAL RASTER GRAPHIC OBTAINED FROM TERRAIN NAVIGATOR PRO, MILLINGTON, MD QUADRANGLE
3. SURVEY OBTAINED FROM MATHEW LOWE, PLS OF MERESTONE CONSULTANTS, INC. ON 01/11/2021.
4. WETLAND DELINEATION COMPLETED BY PRINCETON HYDRO, LLC ON 11/17/2020.
5. ALL DRAWING SCALES ACCURATE WHEN PRINTED ON 24" BY 36" PAPER.
6. 2019 ORTHOIMAGERY OBTAINED FROM MD IMAP WEBSITE: IMAP.MARYLAND.GOV/
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DATE	DESCRIPTION
06/15/2021	PLANS REVISED PER CLIENT COMMENTS
01/23/2023	PLANS REVISED PER CLIENT COMMENTS
07/12/2023	PLANS REVISED PER MDE COMMENTS

REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
31645
PROFESSIONAL ENGINEER
DATE

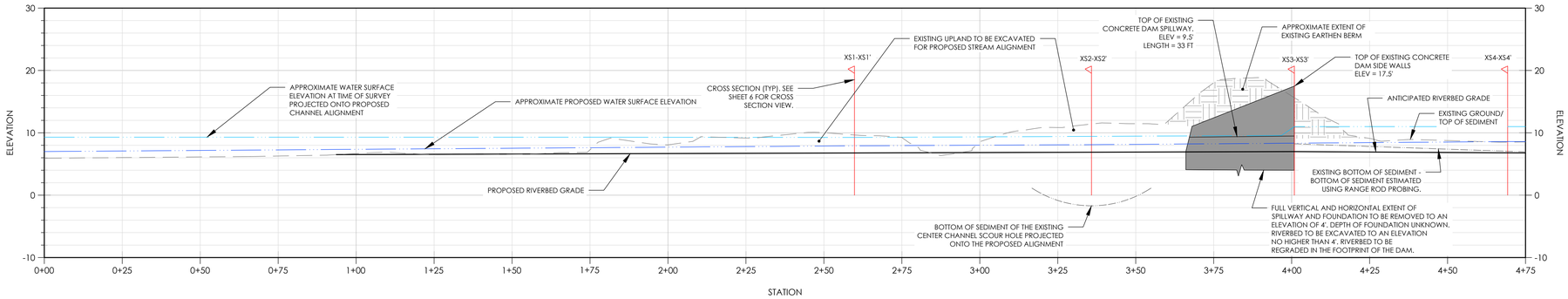
PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

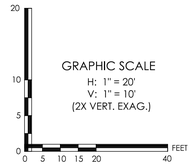
DRAWING NAME:
PROPOSED CONDITIONS

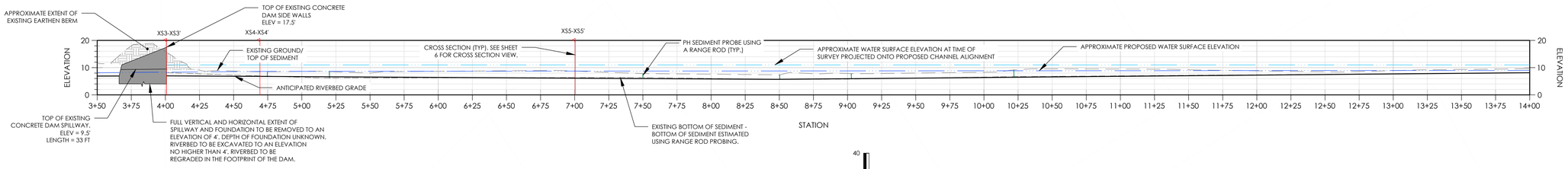
DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
4 OF 19

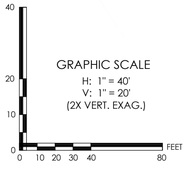


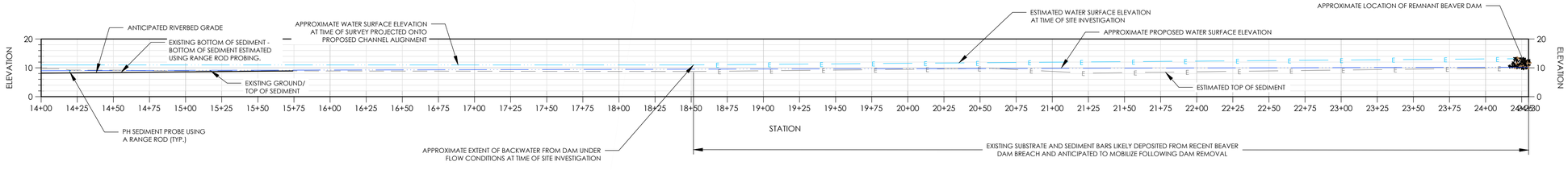
A PROFILE - STA 0+00 TO 4+75
SCALE AS SHOWN



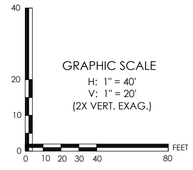


B PROFILE - STA 3+50 TO 14+00
SCALE AS SHOWN





C PROFILE - STA 14+00 TO 24+30
SCALE AS SHOWN



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REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
37645
PROFESSIONAL ENGINEER
DATE: 7/12/2023

PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
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MDE# 23-SF-0124

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PROFILE

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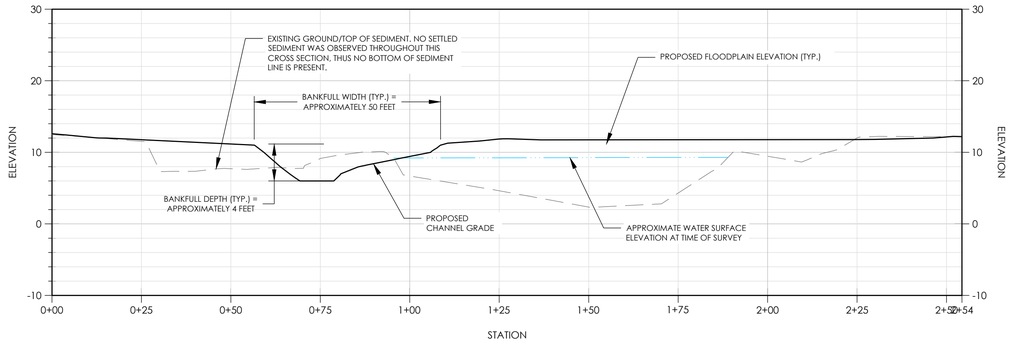
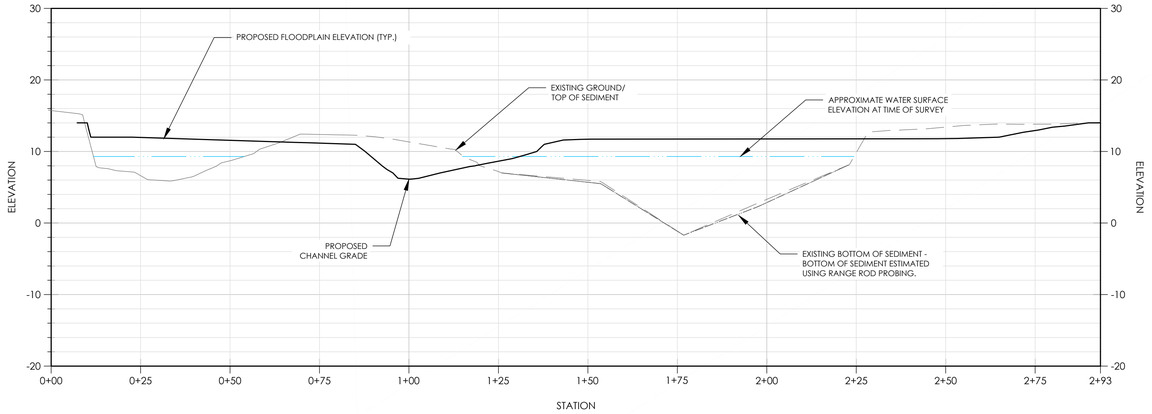
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
5 OF 19

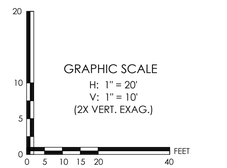
Drawing name: P:\0605\Projects\0605023\CAD\SHEETS\CYPRESS_PROFILE_XS.dwg Plotted on: Jul 12, 2023 - 5:19pm

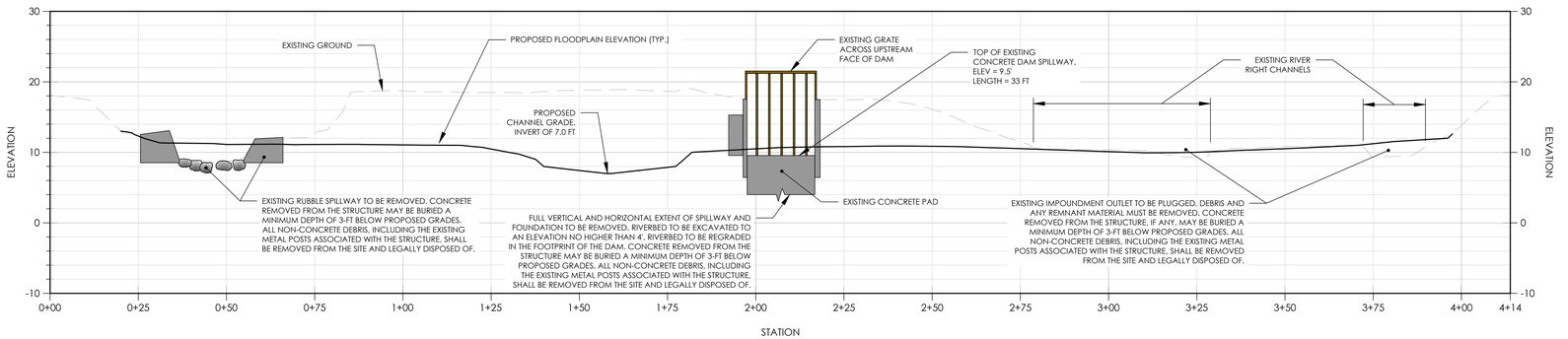


A XS1-XS1'
SCOUR HOLE CROSS SECTION

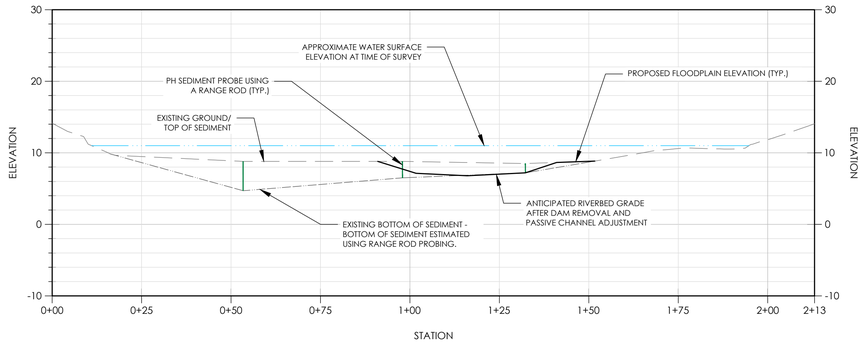


B XS2-XS2'
SCOUR HOLE CROSS SECTION

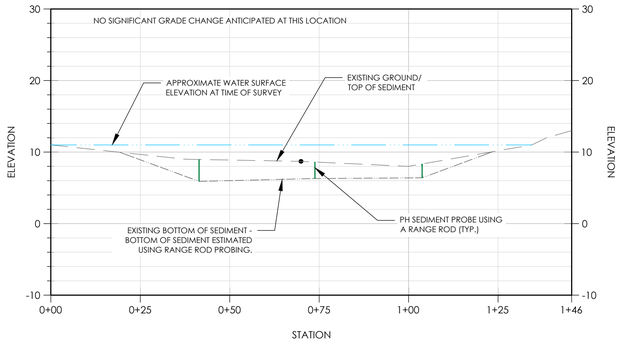




C XS3-XS3'
IMPOUNDMENT OUTLETS CROSS SECTION



D XS4-XS4'
IMPOUNDMENT CROSS SECTION



E XS5-XS5'
IMPOUNDMENT CROSS SECTION

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GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
31645
PROFESSIONAL ENGINEER
DATE

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CHECKED BY:	LC, JD, GMG, PW

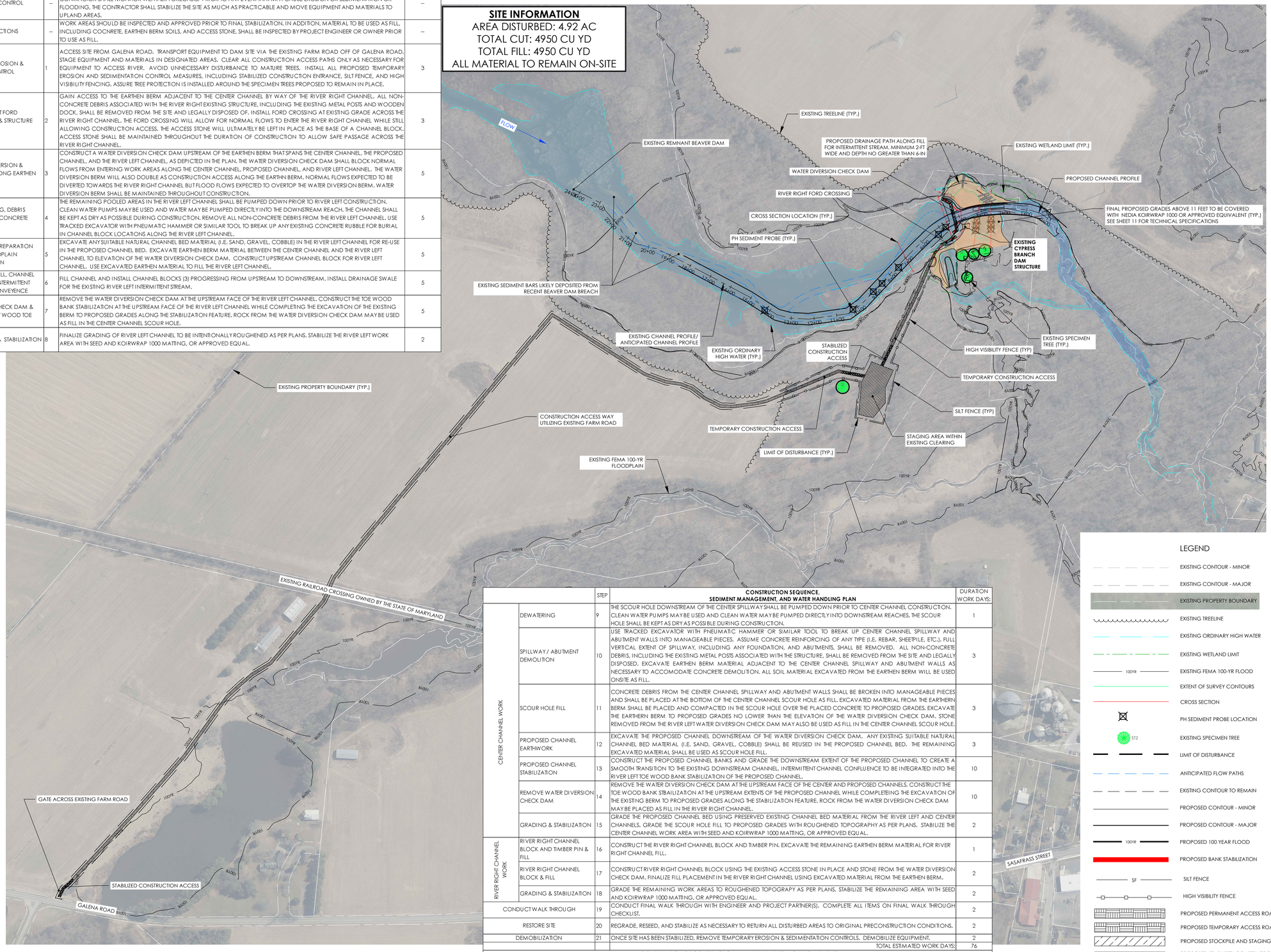
SHEET NO.
6 OF 19

		STEP	CONSTRUCTION SEQUENCE, SEDIMENT MANAGEMENT, AND WATER HANDLING PLAN	DURATION WORK DAYS:
SEDIMENT MANAGEMENT		--	DUE TO LIMITED QUANTITY OF IMPOUNDED SEDIMENTS AND LACK OF CONTAMINATION, IMPOUNDED SEDIMENTS ARE PROPOSED FOR PASSIVE, IN-STREAM MANAGEMENT BY NATURAL RELEASE FOLLOWING DAM REMOVAL.	--
TIMING RESTRICTIONS		--	ALL TREE CLEARING AND IN-STREAM WORK SHALL BE SCHEDULED AS PER PERMIT CONDITIONS.	
GENERAL WATER CONTROL		--	WORK SHALL BE PERFORMED DURING LOW FLOW CONDITIONS TO MINIMIZE RIVER HAZARDS AND EROSION & SEDIMENTATION. CONTRACTOR SHALL MONITOR WEATHER FORECASTS. PRIOR TO ANY EVENT THAT MAY CAUSE EROSION OR SEDIMENTATION OR FLOODING, THE CONTRACTOR SHALL STABILIZE THE SITE AS MUCH AS PRACTICABLE AND MOVE EQUIPMENT AND MATERIALS TO UPLAND AREAS.	--
GENERAL INSPECTIONS		--	WORK AREAS SHOULD BE INSPECTED AND APPROVED PRIOR TO FINAL STABILIZATION. IN ADDITION, MATERIAL TO BE USED AS FILL, INCLUDING COONCRETE, EARTHEN BERM SOILS, AND ACCESS STONE, SHALL BE INSPECTED BY PROJECT ENGINEER OR OWNER PRIOR TO USE AS FILL.	--
MOBILIZATION, EROSION & SEDIMENT CONTROL		1	ACCESS SITE FROM GALENA ROAD. TRANSPORT EQUIPMENT TO DAM SITE VIA THE EXISTING FARM ROAD OFF OF GALENA ROAD. STAGE EQUIPMENT AND MATERIALS IN DESIGNATED AREAS. CLEAR ALL CONSTRUCTION ACCESS PATHS ONLY AS NECESSARY FOR EQUIPMENT TO ACCESS RIVER. AVOID UNNECESSARY DISTURBANCE TO MATURE TREES. INSTALL ALL PROPOSED TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES, INCLUDING STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE, AND HIGH VISIBILITY FENCING. ASSURE TREE PROTECTION IS INSTALLED AROUND THE SPECIMEN TREES PROPOSED TO REMAIN IN PLACE.	3
ACCESS & WATER DIVERSION	RIVER RIGHT FORD CROSSING & STRUCTURE REMOVAL	2	GAIN ACCESS TO THE EARTHEN BERM ADJACENT TO THE CENTER CHANNEL BY WAY OF THE RIVER RIGHT CHANNEL. ALL NON-CONCRETE DEBRIS ASSOCIATED WITH THE RIVER RIGHT EXISTING STRUCTURE, INCLUDING THE EXISTING METAL POSTS AND WOODEN DOCK, SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF. INSTALL FORD CROSSING AT EXISTING GRADE ACROSS THE RIVER RIGHT CHANNEL. THE FORD CROSSING WILL ALLOW FOR NORMAL FLOWS TO ENTER THE RIVER RIGHT CHANNEL WHILE STILL ALLOWING CONSTRUCTION ACCESS. THE ACCESS STONE WILL ULTIMATELY BE LEFT IN PLACE AS THE BASE OF A CHANNEL BLOCK. ACCESS STONE SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION TO ALLOW SAFE PASSAGE ACROSS THE RIVER RIGHT CHANNEL.	3
	WATER DIVERSION & ACCESS ALONG EARTHEN BERM	3	CONSTRUCT A WATER DIVERSION CHECK DAM UPSTREAM OF THE EARTHEN BERM THAT SPANS THE CENTER CHANNEL. THE PROPOSED CHANNEL, AND THE RIVER LEFT CHANNEL, AS DEPICTED IN THE PLAN. THE WATER DIVERSION CHECK DAM SHALL BLOCK NORMAL FLOWS FROM ENTERING WORK AREAS ALONG THE CENTER CHANNEL, PROPOSED CHANNEL, AND RIVER LEFT CHANNEL. THE WATER DIVERSION BERM WILL ALSO DOUBLE AS CONSTRUCTION ACCESS ALONG THE EARTHN BERM. NORMAL FLOWS EXPECTED TO BE DIVERTED TOWARDS THE RIVER RIGHT CHANNEL BUT FLOOD FLOWS EXPECTED TO OVERTOP THE WATER DIVERSION BERM. WATER DIVERSION BERM SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.	5
RIVER LEFT CHANNEL WORK	DEWATERING, DEBRIS REMOVAL, CONCRETE BREAKUP	4	THE REMAINING POOLED AREAS IN THE RIVER LEFT CHANNEL SHALL BE PUMPED DOWN PRIOR TO RIVER LEFT CONSTRUCTION. CLEAN WATER PUMPS MAY BE USED AND WATER MAY BE PUMPED DIRECTLY INTO THE DOWNSTREAM REACH. THE CHANNEL SHALL BE KEPT AS DRY AS POSSIBLE DURING CONSTRUCTION. REMOVE ALL NON-CONCRETE DEBRIS FROM THE RIVER LEFT CHANNEL. USE TRACKED EXCAVATOR WITH PNEUMATIC HAMMER OR SIMILAR TOOL TO BREAK UP ANY EXISTING CONCRETE RUBBLE FOR BURIAL IN CHANNEL BLOCK LOCATIONS ALONG THE RIVER LEFT CHANNEL.	5
	CHANNEL PREPARATION AND FLOODPLAIN EXCAVATION	5	EXCAVATE ANY SUITABLE NATURAL CHANNEL BED MATERIAL (I.E. SAND, GRAVEL, COBBLE) IN THE RIVER LEFT CHANNEL FOR RE-USE IN THE PROPOSED CHANNEL BED. EXCAVATE EARTHEN BERM MATERIAL BETWEEN THE CENTER CHANNEL AND THE RIVER LEFT CHANNEL TO ELEVATION OF THE WATER DIVERSION CHECK DAM. CONSTRUCT UPSTREAM CHANNEL BLOCK FOR RIVER LEFT CHANNEL. USE EXCAVATED EARTHEN MATERIAL TO FILL THE RIVER LEFT CHANNEL.	5
	CHANNEL FILL, CHANNEL BLOCK, & INTERMITTENT STREAM CONVEYENCE	6	FILL CHANNEL AND INSTALL CHANNEL BLOCKS (3) PROGRESSING FROM UPSTREAM TO DOWNSTREAM. INSTALL DRAINAGE SWALE FOR THE EXISTING RIVER LEFT INTERMITTENT STREAM.	5
	REMOVE CHECK DAM & CONSTRUCT WOOD TOE	7	REMOVE THE WATER DIVERSION CHECK DAM AT THE UPSTREAM FACE OF THE RIVER LEFT CHANNEL. CONSTRUCT THE TOE WOOD BANK STABILIZATION AT THE UPSTREAM FACE OF THE RIVER LEFT CHANNEL WHILE COMPLETING THE EXCAVATION OF THE EXISTING BERM TO PROPOSED GRADES ALONG THE STABILIZATION FEATURE. ROCK FROM THE WATER DIVERSION CHECK DAM MAY BE USED AS FILL IN THE CENTER CHANNEL SCOUR HOLE.	5
	GRADING & STABILIZATION	8	FINALIZE GRADING OF RIVER LEFT CHANNEL TO BE INTENTIONALLY ROUGHENED AS PER PLANS. STABILIZE THE RIVER LEFT WORK AREA WITH SEED AND KOIRWRAP 1000 MATTING, OR APPROVED EQUAL.	2

MARYLAND DEPARTMENT OF THE ENVIRONMENT
COMPLIANCE CONTACT: 410-901-4020
A 14 DAY NOTIFICATION MUST BE GIVEN PRIOR TO THE BEGINNING OF CONSTRUCTION

SITE INFORMATION
AREA DISTURBED: 4.92 AC
TOTAL CUT: 4950 CU YD
TOTAL FILL: 4950 CU YD
ALL MATERIAL TO REMAIN ON-SITE

GRAPHIC SCALE
0 50 100 150 200 400 600 800 FEET
SCALE: 1" = 200'



		STEP	CONSTRUCTION SEQUENCE, SEDIMENT MANAGEMENT, AND WATER HANDLING PLAN	DURATION WORK DAYS:
CENTER CHANNEL WORK	DEWATERING	9	THE SCOUR HOLE DOWNSTREAM OF THE CENTER SPILLWAY SHALL BE PUMPED DOWN PRIOR TO CENTER CHANNEL CONSTRUCTION. CLEAN WATER PUMPS MAY BE USED AND CLEAN WATER MAY BE PUMPED DIRECTLY INTO DOWNSTREAM REACHES. THE SCOUR HOLE SHALL BE KEPT AS DRY AS POSSIBLE DURING CONSTRUCTION.	1
	SPILLWAY / ABUTMENT DEMOLITION	10	USE TRACKED EXCAVATOR WITH PNEUMATIC HAMMER OR SIMILAR TOOL TO BREAK UP CENTER CHANNEL SPILLWAY AND ABUTMENT WALLS INTO MANAGEABLE PIECES. ASSUME CONCRETE REINFORCING OF ANY TYPE (I.E. REBAR, SHEETPILE, ETC.), FULL VERTICAL EXTENT OF SPILLWAY, INCLUDING ANY FOUNDATION, AND ABUTMENTS, SHALL BE REMOVED. ALL NON-CONCRETE DEBRIS, INCLUDING THE EXISTING METAL POSTS ASSOCIATED WITH THE STRUCTURE, SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED. EXCAVATE EARTHEN BERM MATERIAL ADJACENT TO THE CENTER CHANNEL SPILLWAY AND ABUTMENT WALLS AS NECESSARY TO ACCOMODATE CONCRETE DEMOLITION. ALL SOIL MATERIAL EXCAVATED FROM THE EARTHEN BERM WILL BE USED ONSITE AS FILL.	3
	SCOUR HOLE FILL	11	CONCRETE DEBRIS FROM THE CENTER CHANNEL SPILLWAY AND ABUTMENT WALLS SHALL BE BROKEN INTO MANAGEABLE PIECES AND SHALL BE PLACED AT THE BOTTOM OF THE CENTER CHANNEL SCOUR HOLE AS FILL. EXCAVATED MATERIAL FROM THE EARTHERN BERM SHALL BE PLACED AND COMPACTED IN THE SCOUR HOLE OVER THE PLACED CONCRETE TO PROPOSED GRADES. EXCAVATE THE EARTHERN BERM TO PROPOSED GRADES NO LOWER THAN THE ELEVATION OF THE WATER DIVERSION CHECK DAM. STONE REMOVED FROM THE RIVER LEFT WATER DIVERSION CHECK DAM MAY ALSO BE USED AS FILL IN THE CENTER CHANNEL SCOUR HOLE.	3
	PROPOSED CHANNEL EARTHWORK	12	EXCAVATE THE PROPOSED CHANNEL DOWNSTREAM OF THE WATER DIVERSION CHECK DAM. ANY EXISTING SUITABLE NATURAL CHANNEL BED MATERIAL (I.E. SAND, GRAVEL, COBBLE) SHALL BE REUSED IN THE PROPOSED CHANNEL BED. THE REMAINING EXCAVATED MATERIAL SHALL BE USED AS SCOUR HOLE FILL.	3
	PROPOSED CHANNEL STABILIZATION	13	CONSTRUCT THE PROPOSED CHANNEL BANKS AND GRADE THE DOWNSTREAM EXTENT OF THE PROPOSED CHANNEL TO CREATE A SMOOTH TRANSITION TO THE EXISTING DOWNSTREAM CHANNEL. INTERMITTENT CHANNEL CONFLUENCE TO BE INTEGRATED INTO THE RIVER LEFT TOE WOOD BANK STABILIZATION OF THE PROPOSED CHANNEL.	10
	REMOVE WATER DIVERSION CHECK DAM	14	REMOVE THE WATER DIVERSION CHECK DAM AT THE UPSTREAM FACE OF THE CENTER AND PROPOSED CHANNELS. CONSTRUCT THE TOE WOOD BANK STBAILIZATION AT THE UPSTREAM EXTENTS OF THE PROPOSED CHANNEL WHILE COMPLETEING THE EXCAVATION OF THE EXISTING BERM TO PROPOSED GRADES ALONG THE STABILIZATION FEATURE. ROCK FROM THE WATER DIVERSION CHECK DAM MAY BE PLACED AS FILL IN THE RIVER RIGHT CHANNEL.	10
	GRADING & STABILIZATION	15	GRADE THE PROPOSED CHANNEL BED USING PRESERVED EXISTING CHANNEL BED MATERIAL FROM THE RIVER LEFT AND CENTER CHANNELS. GRADE THE SCOUR HOLE FILL TO PROPOSED GRADES WITH ROUGHENED TOPOGRAPHY AS PER PLANS. STABILIZE THE CENTER CHANNEL WORK AREA WITH SEED AND KOIRWRAP 1000 MATTING, OR APPROVED EQUAL.	2
RIVER RIGHT CHANNEL WORK	RIVER RIGHT CHANNEL BLOCK AND TIMBER PIN & FILL	16	CONSTRUCT THE RIVER RIGHT CHANNEL BLOCK AND TIMBER PIN. EXCAVATE THE REMAINING EARTHEN BERM MATERIAL FOR RIVER RIGHT CHANNEL FILL.	1
	RIVER RIGHT CHANNEL BLOCK & FILL	17	CONSTRUCT RIVER RIGHT CHANNEL BLOCK USING THE EXISTING ACCESS STONE IN PLACE AND STONE FROM THE WATER DIVERSION CHECK DAM. FINALIZE FILL PLACEMENT IN THE RIVER RIGHT CHANNEL USING EXCAVATED MATERIAL FROM THE EARTHEN BERM.	2
	GRADING & STABILIZATION	18	GRADE THE REMAINING WORK AREAS TO ROUGHENED TOPOGRAPHY AS PER PLANS. STABILIZE THE REMAINING AREA WITH SEED AND KOIRWRAP 1000 MATTING, OR APPROVED EQUAL.	2
CONDUCT WALK THROUGH		19	CONDUCT FINAL WALK THROUGH WITH ENGINEER AND PROJECT PARTNER(S). COMPLETE ALL ITEMS ON FINAL WALK THROUGH CHECKLIST.	2
RESTORE SITE		20	REGRADE, RESEED, AND STABILIZE AS NECESSARY TO RETURN ALL DISTURBED AREAS TO ORIGINAL PRECONSTRUCTION CONDITIONS.	2
DEMOBILIZATION		21	ONCE SITE HAS BEEN STABILIZED, REMOVE TEMPORARY EROSION & SEDIMENTATION CONTROLS. DEMOBILIZE EQUIPMENT.	2
			TOTAL ESTIMATED WORK DAYS:	76
NOTE: DURATION OF CONSTRUCTION MAY VARY DUE TO HIGH FLOW EVENTS.				

LEGEND
- EXISTING CONTOUR - MINOR
- EXISTING CONTOUR - MAJOR
- EXISTING PROPERTY BOUNDARY
- EXISTING TREELINE
- EXISTING ORDINARY HIGH WATER
- EXISTING WETLAND LIMIT
- 100YR — EXISTING FEMA 100-YR FLOOD
- EXTENT OF SURVEY CONTOURS
- CROSS SECTION
- PH SEDIMENT PROBE LOCATION
- ST2 — EXISTING SPECIMEN TREE
- LIMIT OF DISTURBANCE
- ANTICIPATED FLOW PATHS
- EXISTING CONTOUR TO REMAIN
- PROPOSED CONTOUR - MINOR
- PROPOSED CONTOUR - MAJOR
- 100YR — PROPOSED 100 YEAR FLOOD
- PROPOSED BANK STABILIZATION
- SF — SILT FENCE
- HIGH VISIBILITY FENCE
- PROPOSED PERMANENT ACCESS ROAD
- PROPOSED TEMPORARY ACCESS ROAD
- PROPOSED STOCKPILE AND STAGING AREA
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE

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REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
GEOFFREY MATTHEW GOLL
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PROFESSIONAL ENGINEER
07/12/2023
SIGNATURE DATE

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PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:
CONSTRUCTION AND SESC OVERVIEW

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
7 OF 19

Drawing name: P:\0605\Projects\0605023\CAD\SHEETS\CYPRESS_PLANVIEWS.dwg Plotted on: Jul 12, 2023 - 5:25pm

CONSTRUCTION ACCESS WAY, SEE SHEET 7 FOR FULL EXTENT

EXISTING IMPOUNDMENT OUTLET TO BE PLUGGED. DEBRIS AND ANY REMNANT MATERIAL MUST BE REMOVED. CONCRETE REMOVED FROM THE STRUCTURE, IF ANY, MAY BE BURIED A MINIMUM DEPTH OF 3-FT BELOW PROPOSED GRADES AND SHALL BE BROKEN TO PIECES NO GREATER THAN 18-IN. ALL NON-CONCRETE DEBRIS, INCLUDING THE EXISTING METAL POSTS ASSOCIATED WITH THE STRUCTURE, SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF.

PROPOSED ACCESS ROAD TO ULTIMATELY BE LEFT AS THE RIVER RIGHT CHANNEL BLOCK. SEE DETAIL B ON SHEET 11. PROPOSED ACCESS ROAD TO BE INSTALLED AS A TEMPORARY CULVERT ACCESS (SEE DETAIL H-4-2 ON SHEET 12) PIPES TO BE PULLED UPON PROJECT COMPLETION. (2) 36" CULVERTS TO BE INSTALLED

PROPOSED ORDINARY HIGH WATER (TYP.)

POTENTIAL ALTERNATIVE FLOWPATH

MILL POND

FLOW

ANTICIPATED CHANNEL ALIGNMENT - SEE SHEET 5

PROPOSED RIVER LEFT CHANNEL BLOCK (TYP.), SEE DETAIL A ON SHEET 11.

EXISTING INTERMITTENT STREAM

RIVERBED SHALL BE ALLOWED TO ADJUST NATURALLY AS IMPOUNDED SEDIMENT GRADUALLY TRANSPORTS DOWNSTREAM

EXTENT OF CONTOURS GENERATED FROM PROFESSIONAL LAND SURVEY. ALL CONTOURS OUTSIDE OF BOUNDARY WERE GENERATED FROM LIDAR. SEE PROJECT NOTES

LIMIT OF DISTURBANCE (TYP.)

PROPOSED BANK STABILIZATION WITH LARGE WOODY DEBRIS (SEE DETAILS A AND B ON SHEET 10)

EXISTING CONTOUR - MINOR (TYP.)

EXISTING CONTOUR - MAJOR (TYP.)

PROPOSED RIVER RIGHT CHANNEL BLOCK AND TIMBER PIN. SEE DETAIL C ON SHEET 11.

EXISTING FEMA 100-YR FLOODPLAIN

PROPOSED 100-YR FLOODPLAIN

EXISTING RUBBLE REMAINS TO BE REMOVED

EXISTING WOOD DOCK TO BE REMOVED

EXISTING RUBBLE SPILLWAY TO BE REMOVED. CONCRETE REMOVED FROM THE STRUCTURE MAY BE BURIED A MINIMUM DEPTH OF 3-FT BELOW PROPOSED GRADES AND SHALL BE BROKEN INTO PIECES NO GREATER THAN 18-IN. ALL NON-CONCRETE DEBRIS, INCLUDING THE EXISTING METAL POSTS ASSOCIATED WITH THE STRUCTURE, SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF.

EXISTING ORDINARY HIGH WATER (TYP.)

EXISTING WALL TO REMAIN

EXISTING SPECIMEN TREE TO BE REMOVED

EXISTING SPECIMEN TREE CRITICAL ROOT ZONE (TYP.)

TEMPORARY WATER DIVERSION CHECK DAM WHICH WILL DOUBLE AS CONSTRUCTION ACCESS. SEE DETAILS C AND I

PROPOSED CHANNEL

PROPOSED CONTOUR - MINOR (TYP.)

PROPOSED CONTOUR - MAJOR (TYP.)

PROPOSED DRAINAGE PATH ALONG FILL FOR INTERMITTENT STREAM. MINIMUM 2-FT WIDE AND DEPTH NO GREATER THAN 6-IN

EXISTING SPECIMEN TREE TO REMAIN

EXISTING CONTOUR TO REMAIN (TYP.)

MAX POOL DEPTH 5.5'

PROPOSED DISPERSED WOODY DEBRIS PLACEMENT TO ACT AS A CHANNEL BLOCK

25' NONTIDAL WETLAND BUFFER (TYP.)

CROSS SECTION (TYP.) SEE SHEET 6 FOR CROSS SECTIONS

EXISTING WETLAND LIMIT (TYP.)

EXISTING WETLAND FLAG (TYP.)

INTERMITTENT CHANNEL CONFLUENCE TO BE INTEGRATED INTO TOE WOOD BANK STABILIZATION USING ROCK AND WOOD AT THE DIRECTION OF THE PROJECT ENGINEER

ASSUME CONCRETE REINFORCING OF ANY TYPE (I.E. REBAR, SHEETPILE, ETC.), FULL VERTICAL EXTENT OF SPILLWAY, INCLUDING ANY FOUNDATION, AND ABUTMENTS, SHALL BE REMOVED. ALL NON-CONCRETE DEBRIS, INCLUDING THE EXISTING METAL POSTS ASSOCIATED WITH THE STRUCTURE, SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF. RIVERBED TO BE EXCAVATED TO AN ELEVATION NO HIGHER THAN 4'. RIVERBED TO BE REGRADED IN THE FOOTPRINT OF THE DAM. CONCRETE REMOVED FROM THE STRUCTURE MAY BE BURIED A MINIMUM DEPTH OF 3-FT BELOW PROPOSED GRADES AND SHALL BE BROKEN INTO PIECES NO GREATER THAN 18-IN.

EXISTING SCOUR HOLE TO BE FILLED

FINAL PROPOSED GRADES ABOVE 11 FEET TO BE COVERED WITH NEDIA KOIRWRAP 1000 OR APPROVED EQUIVALENT (TYP.) SEE SHEET 11 FOR TECHNICAL SPECIFICATIONS

PROPOSED LOCATION OF DEWATERING SUMP (TYP.) SEE DETAILS F-1 AND F-2 ON SHEET 13 FOR SUMP OPTIONS. CONTRACTOR TO DETERMINE THE BEST METHOD BASED UPON SITE CONDITIONS. IN THE EVENT OF A STORM, SUMP MUST BE REMOVED.

PROPOSED LOCATION OF DEWATERING PUMP (TYP.) IN THE EVENT OF A STORM, PUMP MUST BE REMOVED FROM SITE.

PROPOSED LOCATION OF SEDIMENT MANAGEMENT DEVICE (TYP.) SEE DETAILS F-3 AND F-4 ON SHEET 13 FOR SUMP OPTIONS. CONTRACTOR TO DETERMINE THE BEST METHOD BASED UPON SITE CONDITIONS. IN THE EVENT OF A STORM, FILTER DEVICE MUST BE REMOVED FROM SITE.

PROPOSED LOCATION OF COFFERDAM (TYP.) SEE DETAILA ON SHEET 13 FOR SUMP OPTIONS. CONTRACTOR TO DETERMINE THE BEST LOCATION BASED UPON SITE CONDITIONS. IN THE EVENT OF A STORM, SAND BAGS MUST BE REMOVED.

EXISTING PROPERTY BOUNDARY (TYP.)

A PROPOSED WORK AREA
1" = 30'

GRAPHIC SCALE
0 10 20 30 60 90 120 FEET
SCALE: 1" = 30'

HIGH VISIBILITY FENCE (TYP.) SEE SHEET 7 FOR FULL EXTENT

TEMPORARY CONSTRUCTION ACCESS WAY (TYP.) SEE SHEET 7 FOR FULL EXTENT.

EXISTING SPECIMEN TREE CRITICAL ROOT ZONE (TYP.)

EXISTING SPECIMEN TREE TO REMAIN

STABILIZED CONSTRUCTION ACCESS (TYP.) SEE SHEET 7 FOR FULL EXTENT.

SILT FENCE (TYP.)

LIMIT OF DISTURBANCE (TYP.)

PROPOSED STAGING AND STOCKPILE AREA.

EXTENT OF CONTOURS GENERATED FROM PROFESSIONAL LAND SURVEY. ALL CONTOURS OUTSIDE OF BOUNDARY WERE GENERATED FROM LIDAR. SEE PROJECT NOTES

GRAPHIC SCALE
0 10 20 30 40 50 100 150 200 FEET
SCALE: 1" = 50'

B STAGING AND STOCKPILE AREA
1" = 50'

LEGEND

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- EXISTING CONTOUR - MAJOR
- EXISTING PROPERTY BOUNDARY
- EXISTING TREELINE
- EXISTING ORDINARY HIGH WATER
- EXISTING 25' STREAM SETBACK
- EXISTING WETLAND LIMIT
- EXISTING WETLAND SETBACK
- 100YR EXISTING FEMA 100-YR FLOOD
- EXTENT OF SURVEY CONTOURS
- CROSS SECTION
- PH SEDIMENT PROBE LOCATION
- ST2 EXISTING SPECIMEN TREE
- EXISTING ORDINARY HIGH WATER
- LIMIT OF DISTURBANCE
- PROPOSED ORDINARY HIGH WATER
- ANTICIPATED FLOW PATHS
- EXISTING CONTOUR TO REMAIN
- PROPOSED CONTOUR - MINOR
- PROPOSED CONTOUR - MAJOR
- 100YR PROPOSED 100 YEAR FLOOD
- PROPOSED BANK STABILIZATION
- PROPOSED NEDIA KOIRWRAP 1000
- SF SILT FENCE
- HIGH VISIBILITY FENCE
- PROPOSED PERMANENT ACCESS ROAD
- PROPOSED TEMPORARY ACCESS ROAD
- PROPOSED STOCKPILE AND STAGING AREA
- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED COFFERDAM
- PROPOSED DEWATERING SUMP LOCATION
- PROPOSED SEDIMENT MANAGEMENT DEVICE
- P PROPOSED PUMP LOCATION

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REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
GEOFFREY MICHAEL GOLL
31645
PROFESSIONAL ENGINEER
07/12/2023
DATE

PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:
CONSTRUCTION AND SESC PLAN

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	1" = 30'
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

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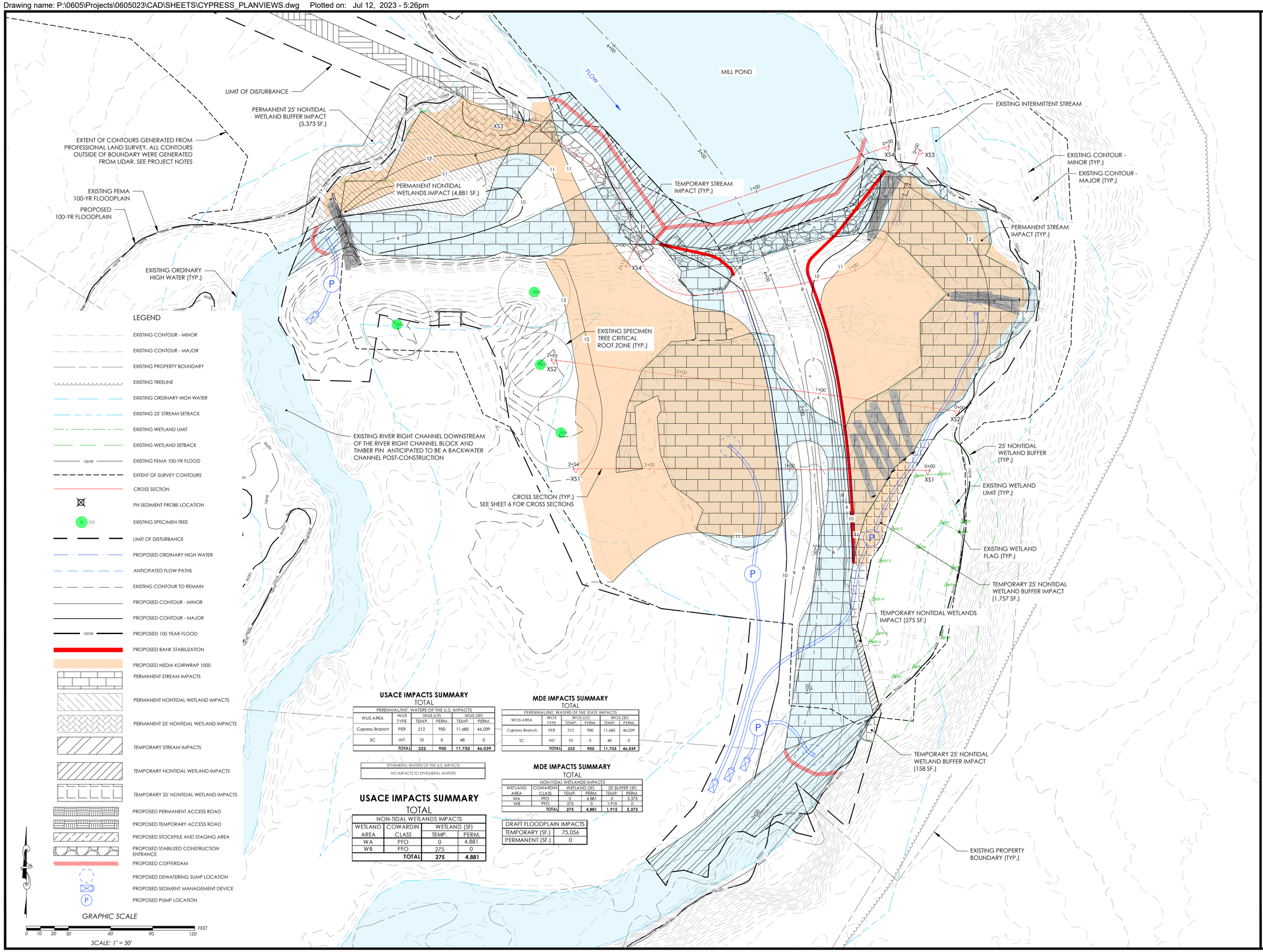
8 OF 19



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- PROPOSED NEDIA KOIRWRAP 1000
- PERMANENT STREAM IMPACTS
- PERMANENT NONTIDAL WETLAND IMPACTS
- PERMANENT 25' NONTIDAL WETLAND IMPACTS
- TEMPORARY STREAM IMPACTS
- TEMPORARY NONTIDAL WETLAND IMPACTS
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- PROPOSED STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED COFFERDAM
- PROPOSED DEWATERING SUMP LOCATION
- PROPOSED SEDIMENT MANAGEMENT DEVICE
- P — PROPOSED PUMP LOCATION

GRAPHIC SCALE

0 10 20 30 60 90 120 FEET

SCALE: 1" = 30'

USACE IMPACTS SUMMARY
TOTAL

PERENNIAL/INT. WATERS OF THE U.S. IMPACTS					
WUS AREA	WUS TYPE	WUS (LF)		WUS (SF)	
		TEMP.	PERM.	TEMP.	PERM.
Cypress Branch	PER	212	900	11,685	46,039
SC	INT	10	0	48	0
	TOTAL	222	900	11,733	46,039

EPHEMERAL WATERS OF THE U.S. IMPACTS
NO IMPACTS TO EPHEMERAL WATERS

USACE IMPACTS SUMMARY
TOTAL

NON-TIDAL WETLANDS IMPACTS			
WETLAND AREA	COWARDIN CLASS	WETLAND (SF)	
		TEMP.	PERM.
WA	PFO	0	4,881
WB	PFO	275	0
	TOTAL	275	4,881

MDE IMPACTS SUMMARY
TOTAL

PERENNIAL/INT. WATERS OF THE STATE IMPACTS					
WOS AREA	WOS TYPE	WOS (LF)		WOS (SF)	
		TEMP.	PERM.	TEMP.	PERM.
Cypress Branch	PER	212	900	11,685	46,039
SC	INT	10	0	48	0
	TOTAL	222	900	11,733	46,039

MDE IMPACTS SUMMARY
TOTAL

NON-TIDAL WETLANDS IMPACTS					
WETLAND AREA	COWARDIN CLASS	WETLAND (SF)		25' BUFFER (SF)	
		TEMP.	PERM.	TEMP.	PERM.
WA	PFO	0	4,881	0	5,373
WB	PFO	275	0	1,915	0
	TOTAL	275	4,881	1,915	5,373

DRAFT FLOODPLAIN IMPACTS	
TEMPORARY (SF.)	75,056
PERMANENT (SF.)	0

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PROJECT NAME/LOCATION:

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TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:

REGULATORY PLAN

DATE:	06/15/2021
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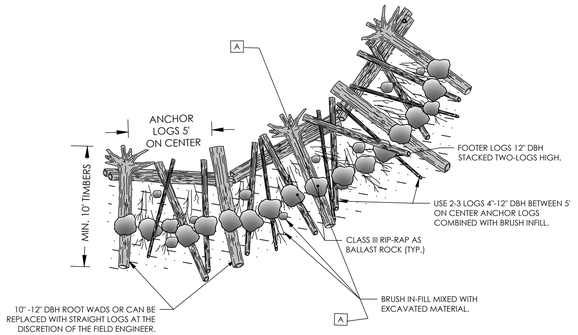
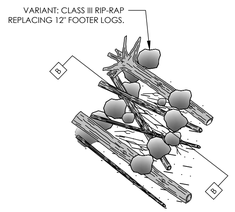
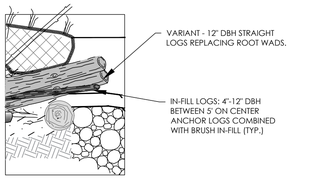


PLAN VIEW

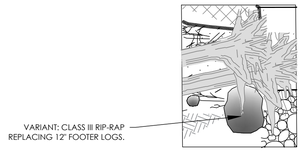


PLAN VIEW - MODIFIED FOOTER

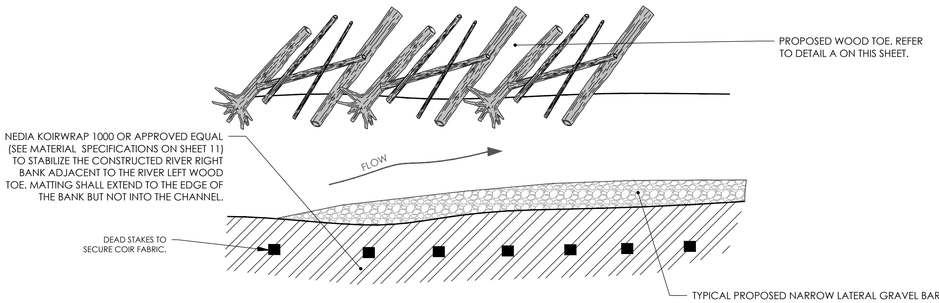
RIPRAP FOOTER TO BE USED IN PLACE OF LOG FOOTER DEPENDING ON AVAILABILITY OF ON-SITE WOOD.



CROSS SECTION A



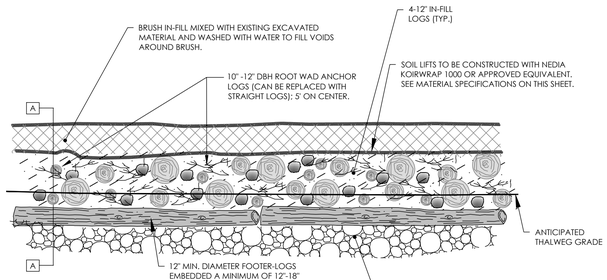
CROSS SECTION B



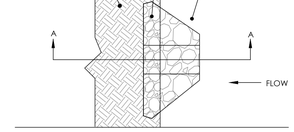
PLAN VIEW

CROSS SECTION VIEW OF RIVER RIGHT BANK

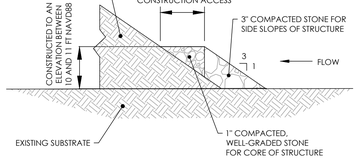
B PROPOSED RIVER RIGHT STABILIZATION
NOT TO SCALE



PROFILE VIEW



PLAN VIEW



SECTION A - A

NOTES:
1. THE WIDTH OF THE CHECK DAM DAM SHALL BE A MINIMUM OF 10 FT TO ALLOW FOR CONSTRUCTION ACCESS ALONG THE BERM.
2. HEIGHT OF THE WATER DIVERSION CHECK DAM SHALL BE BETWEEN 10 AND 11 FT NAVD88 TO ALLOW FOR WATER DIVERSION INTO THE RIVER RIGHT CHANNEL DURING NORMAL FLOWS BUT ALLOW FOR OVERTOPPING DURING STORM EVENTS.
3. THE WATER DIVERSION CHECK DAM SHALL BE CONSTRUCTED OF 1" COMPACTED STONE AS THE CORE TO PREVENT WATER INFILTRATION. SIDE SLOPES MAY BE CONSTRUCTED OF 3" STONE.

C WATER DIVERSION CHECK DAM DETAIL A
ALONG BERM
NOT TO SCALE

PLAN VIEW

SECTION A - A

NOTES:
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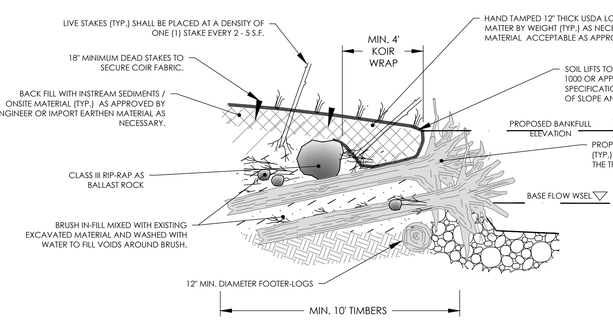
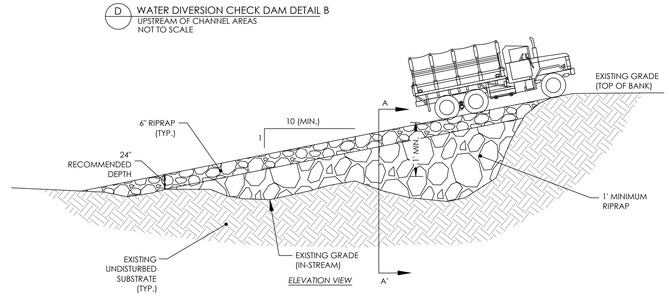
2. HEIGHT OF THE WATER DIVERSION CHECK DAM SHALL BE BETWEEN 10 AND 11 FT NAVD88 TO ALLOW FOR WATER DIVERSION INTO THE RIVER RIGHT CHANNEL DURING NORMAL FLOWS BUT ALLOW FOR OVERTOPPING DURING STORM EVENTS.
3. THE WATER DIVERSION CHECK DAM SHALL BE CONSTRUCTED OF 1" COMPACTED STONE AS THE CORE TO PREVENT WATER INFILTRATION. SIDE SLOPES MAY BE CONSTRUCTED OF 3" STONE.

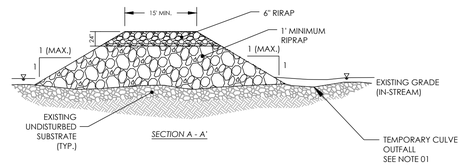
D WATER DIVERSION CHECK DAM DETAIL B
UPSTREAM OF CHANNEL AREAS
NOT TO SCALE



CROSS SECTION VIEW



ELEVATION VIEW



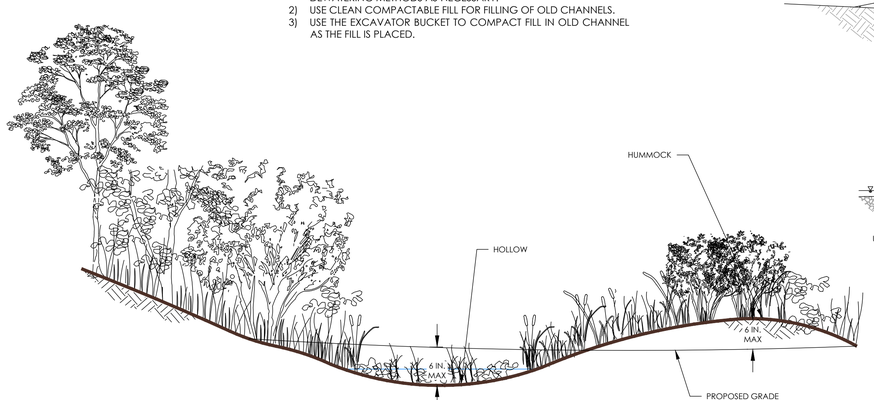
SECTION A - A'

NOTES:
1. TEMPORARY CULVERT OUTFALLS SHALL BE MONITORED DAILY FOR SCOUR. OUTFALL SHALL BE ARMORED WITH ROCK OR CONCRETE RUBBLE IF SCOUR IS NOTED DURING INSPECTIONS OR IF DIRECTED BY FIELD ENGINEER.
2. ALL FOREIGN MATERIALS SHALL BE REMOVED FROM THE SCOUR HOLE LOCATION AND THE EXISTING STREAM SUBSTRATE SHALL BE USED TO RETURN THE AREA TO EXISTING GRADE DURING REMOVAL OF ACCESS RAMP.

E ROCK ACCESS RAMP
AS NECESSARY
NOT TO SCALE

GUIDANCE ON FILING OLD CHANNELS

1) ASSURE THE CHANNEL TO BE FILLED IS AS DRY AS POSSIBLE. USE DEWATERING METHODS AS NECESSARY.
2) USE CLEAN COMPACTABLE FILL FOR FILLING OF OLD CHANNELS.
3) USE THE EXCAVATOR BUCKET TO COMPACT FILL IN OLD CHANNEL AS THE FILL IS PLACED.



E FLOODPLAIN HUMMOCK - HOLLOW DETAIL
NOT TO SCALE

NOTES:
1. HUMMOCKS AND HOLLOWS SHALL BE NO MORE THAN 6 INCHES GREATER OR LESS THAN PROPOSED ELEVATIONS.

NOTES:
1. ROOTWADS FANS 3-6 FT. DIAMETER, TRUNKS AT LEAST 10 to 12 IN. DIAMETER.
2. GAPS BELOW AND BETWEEN "ROOTS WADS AND STRAIGHT ANCHOR LOGS" SHALL BE FILLED WITH A COMBINATION OF 4 TO 12 IN. DIAMETER "IN-FILL LOGS" MIXED WITH A LAYER OF APPROXIMATELY 12 IN. BRUSH, TIMBER PIECES AND WOODY DEBRIS LAYING PARALLEL TO ROOTWADS. THE WOODY AND BRUSH MATERIAL SHOULD BE BACKFILLED WITH NATIVE OR IMPORTED FILL MATERIAL AND WASHED WITH WATER TO FILL VOIDS.
3. FOOTER LOGS MAY BE REPLACED BY CLASS III RIPRAP AS NEEDED AND APPROVED BY PROJECT ENGINEER.

A WOOD TOE BANK STABILIZATION
NOT TO SCALE

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REFERENCE MARYLAND STATE LAW ON
UNDERGROUND UTILITY DRAINAGE PREVENTION LAW
(MARYLAND STATE LAW TITLE 12)
1-800-257-7777

PROJECT NOTES

1. HORIZONTAL DATUM IS MARYLAND STATE PLANE NAD83, FEET. VERTICAL DATUM BASED ON NAVD88, FEET.
2. USGS TOPOGRAPHIC DIGITAL RASTER GRAPHIC OBTAINED FROM TERRAIN NAVIGATOR PRO, MILLINGTON, MD QUADRANGLE
3. SURVEY OBTAINED FROM MATHEW LOWE, PLS OF MERESTONE CONSULTANTS, INC. ON 01/11/2021.
4. WETLAND DELINEATION COMPLETED BY PRINCETON HYDRO, LLC ON 11/17/2020.
5. ALL DRAWING SCALES ACCURATE WHEN PRINTED ON 24" BY 36" PAPER.
6. 2019 ORTHOIMAGERY OBTAINED FROM MD IMAP WEBSITE: IMAP.MARYLAND.GOV/
7. PROPERTY BOUNDARIES OBTAINED FROM MARYLAND DEPARTMENT OF PLANNING FOR KENT COUNTY, 2020. WEBSITE: HTTPS://PLANNING.MARYLAND.GOV/PAGES/OURPRODUCTS/DOWNLOADFILES.ASPX

DATE	DESCRIPTION
06/15/2021	PLANS REVISED PER CLIENT COMMENTS
01/23/2023	PLANS REVISED PER CLIENT COMMENTS
07/12/2023	PLANS REVISED PER MDE COMMENTS

REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
37645
PROFESSIONAL ENGINEER
DATE: 07/12/2023

PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:

CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

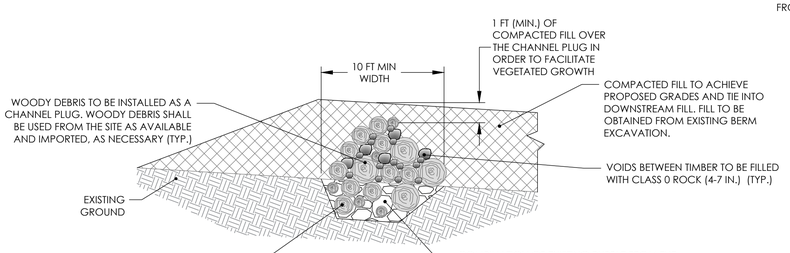
DRAWING NAME:

CONSTRUCTION DETAILS 1

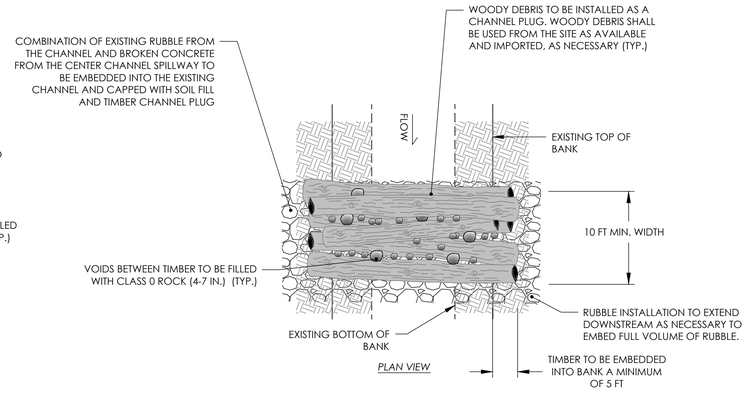
DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.

10 OF 19



A RIVER LEFT CHANNEL BLOCK
NOT TO SCALE



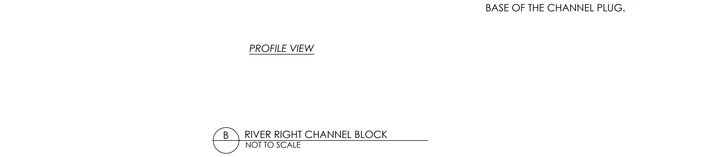
Technical Specifications for

Nedia KoirWrap™ 1000

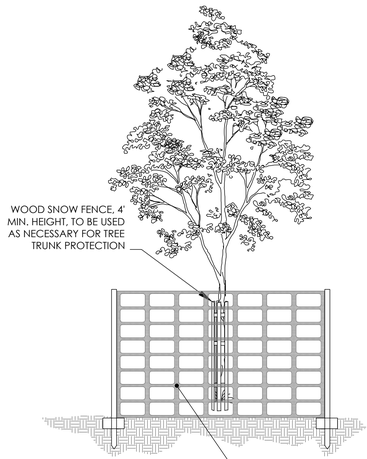
Nedia KoirWrap™ 1000 is a double layered biodegradable erosion control fabric made up of an outer layer of high strength coir fabric and an inner layer of lightweight jute fabric tied together at regular intervals. Ideal for fabric encapsulated soil lifts; this product effectively replaces the traditional use of a coir fiber matting in combination with a non-woven coir blanket.

Property	Test Method	Typical Value	
		English Units	Metric Units
Thickness	ASTM D 5199	0.35 in	0.90 cm
Mass per unit area	ASTM D 5261	33.3 oz/sq.yd	1130 g/sq.m
Wide Width Tensile Strength MD x TD (Primary Layer)	ASTM D 4595	1008 x 938 lbs/ft	14.7 x 13.7 kN/m
Maximum Elongation MD x TD (Primary Layer)	ASTM D 4595	30% x 28%	
Wide Width Tensile Strength MD x TD (Secondary Layer)	ASTM D 4595	612 x 468 lbs/ft	8.94 x 6.83 kN/m
Maximum Elongation MD x TD (Secondary Layer)	ASTM D 4595	8% x 9%	
Puncture Strength (Secondary Layer)	GRI GS1	553 lbs	2,461 N
Flexural Rigidity (Stiffness)	ASTM D 1388	0.692 x 0.690 oz-in	49.8 x 49.7 g-cm
Water Absorption	ASTM D 1117	146%	
Shear Stress (Recommended)	Flume Test	4.5 psf	215 Pa
Water Velocity (Recommended)	Flume Test	12 ft/sec	3.7 m/sec
Functional Longivity	Observed	3 to 5 years	
Permittivity	ASTM D 4491	3.07/sec	
Permeability	ASTM D 4491	1.03 in/sec	2.61 cm/sec
Flow Rate	ASTM D 4491	229 gal/min/sq.ft	9.36 cu.m/min/sq.m

Standard Roll Size: 13.1'x 83' (4m x 25m) – 120 sy/roll



B RIVER RIGHT CHANNEL BLOCK
NOT TO SCALE



D TREE TRUNK PROTECTION DETAIL
NOT TO SCALE

NOTES:

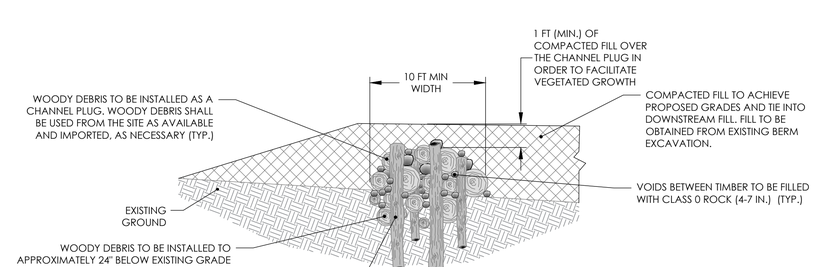
1. TO PREVENT GENERAL MECHANICAL DAMAGE TO TREES INSTALL TREE TRUNK PROTECTION AS INDICATED IN DETAIL.

2. BOX TREES WITHIN 25 FEET OF BUILDINGS SITE TO PREVENT MECHANICAL INJURY. FENCING OR OTHER BARRIER SHOULD BE INSTALLED AT THE DRIP LINE OF THE TREE BRANCHES OR BEYOND. TREE ROOT SYSTEMS COMMONLY EXTEND WELL BEYOND THE DRIP LINE.

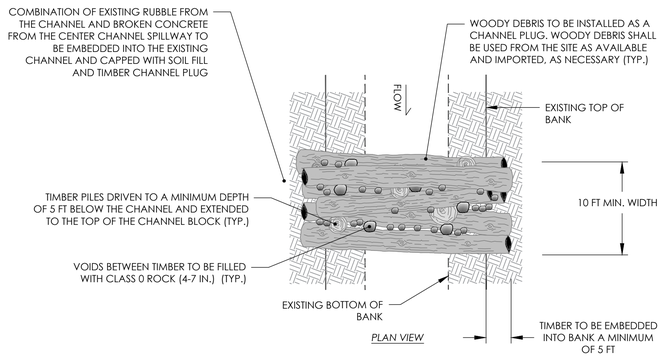
3. BOARDS WILL NOT BE NAILED TO TREES DURING CONSTRUCTION.

4. FEEDER ROOTS SHOULD NOT BE CUT IN AN AREA INSIDE THE DRIP LINE OF THE TREE BRANCHES

5. DAMAGED TRUNKS OR EXPOSED ROOTS SHOULD HAVE DAMAGED BARK REMOVED IMMEDIATELY AND NO PAINT SHALL BE APPLIED. EXPOSED ROOTS SHOULD BE COVERED WITH TOPSOIL IMMEDIATELY AFTER EXCAVATION IS COMPLETE. ROOTS SHALL BE PRUNED TO GIVE A CLEAN, SHARP SURFACE AMENABLE TO HEALING. ROOTS EXPOSED DURING HOT WEATHER SHOULD BE IRRIGATED TO PREVENT PERMANENT TREE INJURY. CARE FOR SERIOUS INJURY SHOULD BE PRESCRIBED BY A PROFESSIONAL FORESTER OR CERTIFIED TREE EXPERT.



C RIVER RIGHT CHANNEL BLOCK AND TIMBER PIN
NOT TO SCALE



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REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
31645
PROFESSIONAL ENGINEER
DATE

PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:

CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

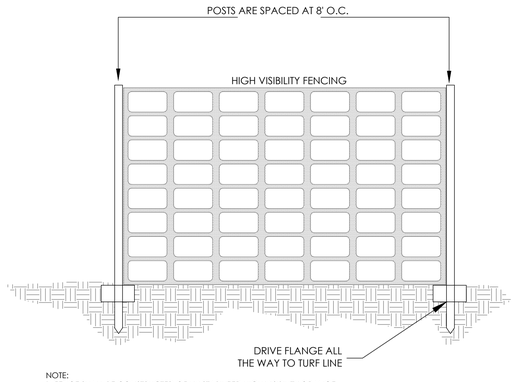
DRAWING NAME:

CONSTRUCTION DETAILS 2

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

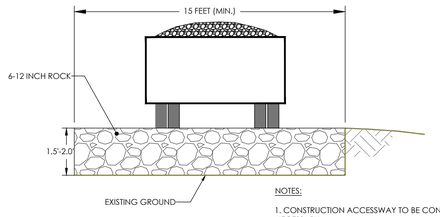
SHEET NO.

11 OF 19



NOTE:
1. FENCE SHALL BE CONSTRUCTED OF UV STABILIZED HIGH VISIBILITY ORANGE POLYETHYLENE SAFETY FENCE.
2. THE FENCE SHALL BE A MINIMUM OF 4 FEET HIGH AND STAKED AT 8 FOOT ON CENTER.
3. THE FENCE SHALL BE ATTACHED TO EACH STAKE WITH A MINIMUM OF THREE (3) ZIP TIES OR APPROVED EQUAL.
4. STAKES SHOULD BE DRIVE 6 TO 12 INCHES BELOW GRADE.

A HIGH VISIBILITY FENCE
NOT TO SCALE

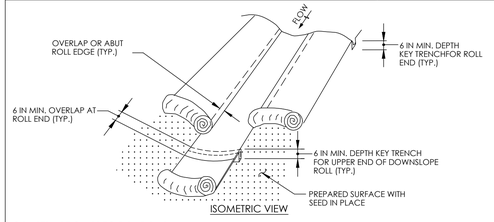


B CONSTRUCTION ACCESS ROAD
NOT TO SCALE

NOTES:
1. CONSTRUCTION ACCESSWAY TO BE CONSTRUCTED AS NECESSARY.
2. THE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSION BY ADDING ROCK.
3. ALL SEDIMENT DEPOSITED ON ACCESS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE.
4. ACCESSWAY TO BE ADJUSTED AS NECESSARY TO AVOID TREES AND OTHER PERMANENT STRUCTURES.
4. GEOTEXTILE FABRIC TO BE USED AT THE CONTRACTOR'S DISCRETION.

DETAIL B-4-6-ATEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL
TSSMC - * lb/ft²
(* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

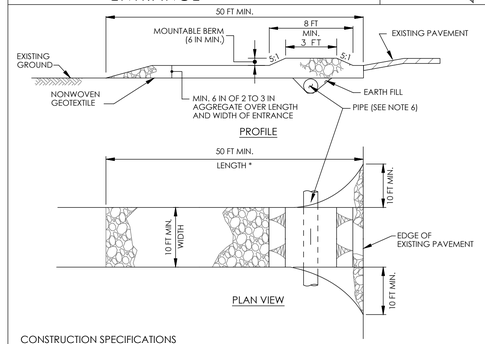
CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY-IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL
SCE



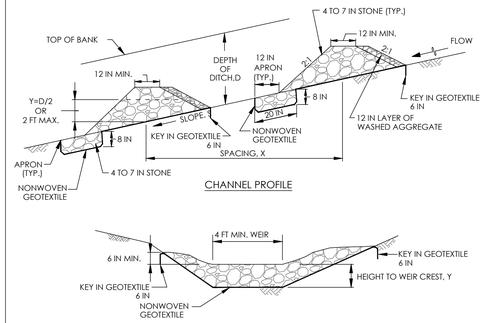
CONSTRUCTION SPECIFICATIONS

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

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

DETAIL D-2 STONE CHECK DAM

STANDARD SYMBOL
CD



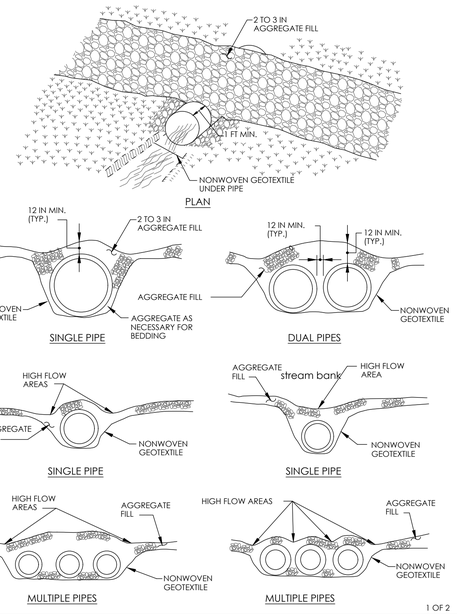
CONSTRUCTION SPECIFICATIONS

1. PREPARE SWALES IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS DESCRIBED IN SECTION C-2, STANDARDS AND SPECIFICATIONS FOR TEMPORARY SWALE, OR AS SPECIFIED ON PLAN.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND SIDES OF THE DAM PRIOR TO PLACEMENT OF STONE. CONSTRUCT THE CHECK DAM WITH WASHED 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) WITH SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM TOP WIDTH OF 12 INCHES. PLACE THE STONE SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL AND CHANNEL BANKS, FORM THE WEIR SO THAT TOP OF THE OUTLET CREST IS APPROXIMATELY 6 INCHES LOWER THAN THE OUTER EDGES. LINE THE UPSTREAM FACE OF THE DAM WITH A 1 FOOT THICK LAYER OF WASHED AGGREGATE (¾ TO 1½ INCH).
3. SET THE HEIGHT FOR THE WEIR CREST EQUAL TO ONE-HALF THE DEPTH OF THE CHANNEL OR DITCH. TO AVOID SCOUR THE MAXIMUM HEIGHT OF THE WEIR CREST MUST NOT EXCEED 2.0 FEET.
4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF OF THE HEIGHT OF THE WEIR CREST. MAINTAIN LINE, GRADE, AND CROSS SECTION.

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 H-4-2 TEMPORARY ACCESS CULVERT

STANDARD SYMBOL
TAC



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 H-4-2 TEMPORARY ACCESS CULVERT

STANDARD SYMBOL
TAC

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCTION OR REMOVAL OF A TEMPORARY ACCESS CULVERT WILL NOT BE PERMITTED DURING THE FOLLOWING PERIODS:

USE I AND IP	MARCH 1 - JUNE 15
USE II	JUNE 1 - SEPTEMBER 30 AND DECEMBER 16 - MARCH 14
USE III AND IIIP	OCTOBER 1 - APRIL 30
USE IV	MARCH 1 - MAY 31
SAV* (ALL FLOWING STREAMS)	APRIL 15 - OCTOBER 15
*SUBMERGED AQUATIC VEGETATION	

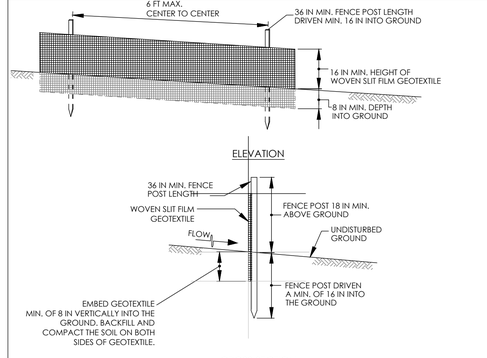
2. EXTEND THE CULVERT(S) A MINIMUM OF ONE FOOT BEYOND THE UPSTREAM AND DOWNSTREAM TOE OF THE AGGREGATE PLACED AROUND THE CULVERT.
3. PLACE NONWOVEN GEOTEXTILE ON THE STREAM BED AND STREAM BANKS PRIOR TO PLACEMENT OF THE PIPE CULVERT(S) AND AGGREGATE. COVER THE STREAM BED WITH THE GEOTEXTILE AND EXTEND IT A MINIMUM SIX INCHES AND A MAXIMUM OF ONE FOOT BEYOND THE END OF THE CULVERT AND BEDDING MATERIAL. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. GEOTEXTILE REDUCES SETTLEMENT AND IMPROVES CROSSING STABILITY.
4. PLACE CULVERT(S) ON THE NATURAL STREAM BED GRADE TO MINIMIZE INTERFERENCE WITH FISH PASSAGE.
5. COVER THE CULVERT WITH A MINIMUM OF ONE FOOT OF WASHED AGGREGATE. FOR MULTIPLE CULVERTS PROVIDE AT LEAST 12 INCHES OF COMPACTED AGGREGATE FILL BETWEEN CULVERTS.
6. STABILIZE ALL AREAS DISTURBED DURING CULVERT INSTALLATION WITHIN 24 HOURS OF THE DISTURBANCE IN ACCORDANCE WITH STANDARDS FOR PERMANENT STABILIZATION, SECTION B-4-5, OR TEMPORARY STABILIZATION, SECTION B-4-4, AS APPLICABLE.
7. STABILIZE APPROACH TO CROSSING AND KEEP FREE OF EROSION. REPLACE DISPLACED STONE, AND MAINTAIN HIGH FLOW AREAS. REMOVE DEBRIS TRAPPED BY CULVERT. REPLACE DAMAGED PIPE(S). MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING CULVERT REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE CULVERT AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

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-1 SILT FENCE

STANDARD SYMBOL
SF



JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP 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-1 SILT FENCE

STANDARD SYMBOL
SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1½ X 1½ ± 1/8 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN; OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

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

CALL BEFORE YOU DIG!
MARYLAND LAW REQUIRES
2 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE
- STOP CALL -
REFERENCE MARYLAND STATE LAW ON UNDERGROUND UTILITY DRAINAGE PREVENTION LAW (MARYLAND STATE LAW TITLE 12)
1-800-257-7777

PROJECT NOTES

1. HORIZONTAL DATUM IS MARYLAND STATE PLANE NAD83, FEET. VERTICAL DATUM BASED ON NAVD88, FEET.
2. USGS TOPOGRAPHIC DIGITAL RASTER GRAPHIC OBTAINED FROM TERRAIN NAVIGATOR PRO, MILLINGTON, MD QUADRANGLE
3. SURVEY OBTAINED FROM MATHEW LOWE, PLS OF MERESTONE CONSULTANTS, INC. ON 01/11/2021.
4. WETLAND DELINEATION COMPLETED BY PRINCETON HYDRO, LLC ON 11/17/2020.
5. ALL DRAWING SCALES ACCURATE WHEN PRINTED ON 24" BY 36" PAPER.
6. 2019 ORTHOIMAGERY OBTAINED FROM MD IMAP WEBSITE: IMAP.MARYLAND.GOV/
7. PROPERTY BOUNDARIES OBTAINED FROM MARYLAND DEPARTMENT OF PLANNING FOR KENT COUNTY, 2020. WEBSITE: HTTPS://PLANNING.MARYLAND.GOV/PAGES/OURPRODUCTS/DOWNLOADFILES.ASPX

DATE	DESCRIPTION
06/15/2021	PLANS REVISED PER CLIENT COMMENTS
01/23/2023	PLANS REVISED PER CLIENT COMMENTS
07/12/2023	PLANS REVISED PER MDE COMMENTS

REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
31645
PROFESSIONAL ENGINEER
DATE

PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
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RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

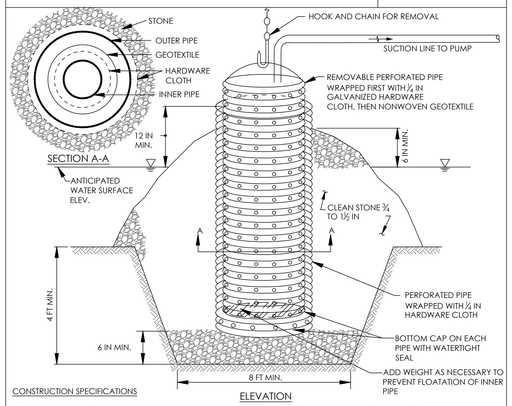
DRAWING NAME:
SOIL EROSION AND SEDIMENT CONTROL DETAILS 1

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
12 OF 19

DETAIL F-1 REMOVABLE PUMPING STATION

STANDARD SYMBOL: ☒RPS



CONSTRUCTION SPECIFICATIONS

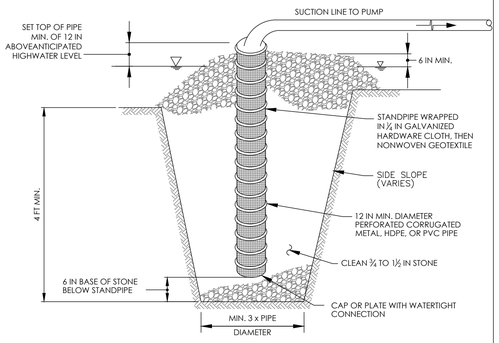
1. USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
2. USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
3. WRAP EACH PIPE WITH ½ INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
4. EXCAVATE 8 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
5. SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DEWATERING A BASIN).
6. BACKFILL PIT AROUND THE OUTER PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
7. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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 F-2 SUMP PIT

STANDARD SYMBOL: ☒SP



CONSTRUCTION SPECIFICATIONS

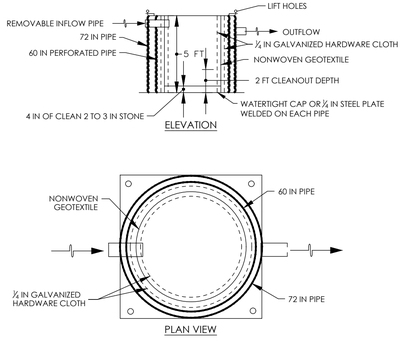
1. USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL, HDPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
2. WRAP PIPE WITH ½ INCH GALVANIZED HARDWARE CLOTH AND WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
3. EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
4. SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
5. BACKFILL PIT AROUND THE PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
6. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
7. A SUMP PIT REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, REMOVE PERFORATED PIPE AND REPLACE GEOTEXTILE AND STONE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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 F-3 PORTABLE SEDIMENT TANK

STANDARD SYMBOL: ☒PST



CONSTRUCTION SPECIFICATIONS

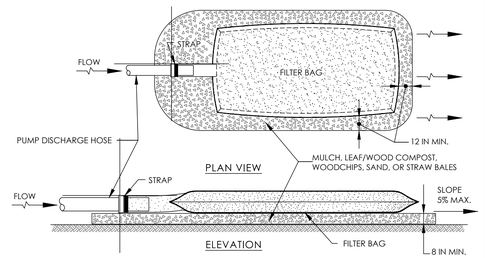
1. PROVIDE 1 CUBIC FOOT OF STORAGE FOR EACH GALLON PER MINUTE OF PUMP CAPACITY. REQUIRED STORAGE VOLUME MAY BE ATTAINED BY PLACEMENT OF TANKS IN PARALLEL WITH INFLOW EVENLY DISTRIBUTED AMONG TANKS. OVERTOPPING OF TANKS IS NOT PERMITTED.
2. USE 60 INCH CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER FOR THE INNER PIPE. LINE PIPE WITH NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS. SANDWICHED BETWEEN, AND ATTACHED TO, ½ INCH HARDWARE CLOTH.
3. OVERLAP GEOTEXTILE 8 INCHES MINIMUM AT VERTICAL SEAM AND AT THE BOTTOM PLATE.
4. ANCHOR GEOTEXTILE AT BOTTOM OF TANK WITH 4 INCHES OF 2 TO 3 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE.
5. USE 72 INCH CORRUGATED METAL OR PLASTIC OUTER PIPE WITH PERMANENT OUTFLOW PIPE WITH INVERT LOWER THAN INFLOW PIPE
6. INFLOW PIPE MUST DISCHARGE INTO INNER PIPE AND BE REMOVABLE.
7. PLACE TANK ON LEVEL SURFACE AND DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
8. A PORTABLE SEDIMENT TANK REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT FROM INNER PIPE WHEN IT REACHES TWO FEET IN DEPTH. IF SYSTEM CLOGS, PULL OUT INNER PIPE, REMOVE ACCUMULATED SEDIMENT, AND REPLACE GEOTEXTILE, KEEP POINT OF DISCHARGE FREE OF EROSION.

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 F-4 FILTER BAG

STANDARD SYMBOL: ☒FB



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC^{-1})	1.2 SEC^{-1}	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

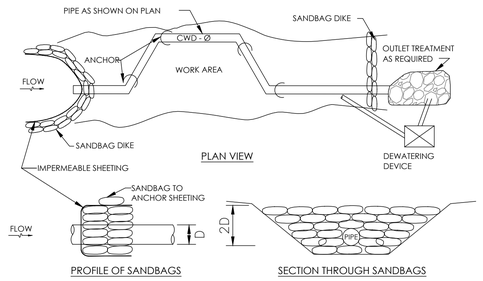
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL C-6 CLEAR WATER DIVERSION PIPE

STANDARD SYMBOL: CWD - 12

DESIGNATION CWD-12 REFERS TO 12 INCH CLEAR WATER DIVERSION.

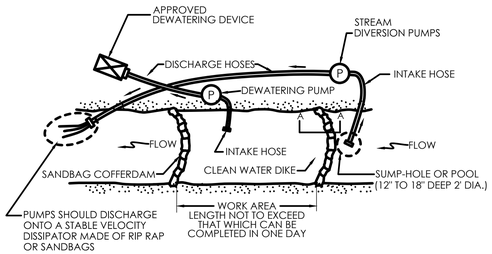


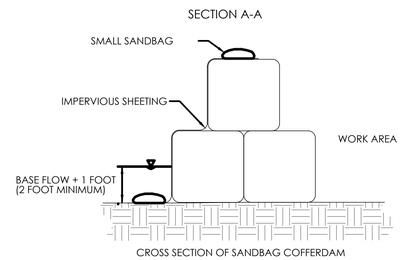
CONSTRUCTION SPECIFICATIONS

1. FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATERTIGHT.
2. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLENT RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
3. USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNTURING AND TEARING.
4. PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.
5. SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.
6. AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.
7. SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.
8. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
9. DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.
10. KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

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





A PUMP AROUND & COFFERDAM DETAIL
NOT TO SCALE

CALL BEFORE YOU DIG!
MARYLAND LAW REQUIRES
2 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE
- STOP CALL
REFERENCE MARYLAND STATE LAW ON
UNDERGROUND UTILITY DRAINAGE PREVENTION LAW
(MARYLAND STATE LAW TITLE 12)
1-800-257-7777

PROJECT NOTES

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2. USGS TOPOGRAPHIC DIGITAL RASTER GRAPHIC OBTAINED FROM TERRAIN NAVIGATOR PRO, MILLINGTON, MD QUADRANGLE
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DATE	DESCRIPTION
06/15/2021	PLANS REVISED PER CLIENT COMMENTS
01/23/2023	PLANS REVISED PER CLIENT COMMENTS
07/12/2023	PLANS REVISED PER MDE COMMENTS

REVISIONS

GEOFFREY M. GOLL
Professional Engineer
STATE OF MARYLAND
GEOFFREY MICHAEL GOLL
No. 31645
PROFESSIONAL ENGINEER
07/27/2023
DATE

PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:

CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:

SOIL EROSION AND SEDIMENT CONTROL DETAILS 2

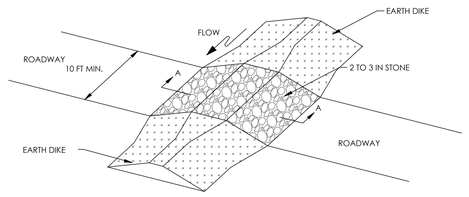
DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.

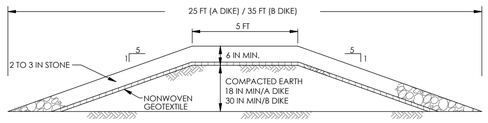
13 OF 19

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL: MB



ISOMETRIC VIEW



SECTION A-A

CONSTRUCTION SPECIFICATIONS

1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

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

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

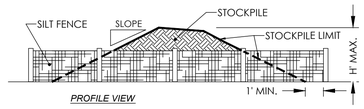
DEFINITION
A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

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 WITH A MOUNTABLE BERM.
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.



PROFILE VIEW

STOCKPILE SPECIFICATION

SLOPE	H (MAX)
2:01	20 FT
3:01	30 FT
4:01	40 FT

NOTES:
1. SILT FENCE MUST BE PLACED AROUND THE PERIMETER OF ALL STOCKPILES.
2. IMMEDIATELY APPLY TEMPORARY SEEDING TO ALL STOCKPILES.
3. ANY STOCKPILE WHICH EXCEEDS THE MAXIMUM SPECIFIED HEIGHT WITH ASSOCIATED SLOPE MUST BE BENCHED IN ACCORDANCE WITH MDE SESC SECTION B-3, AS SHOWN IN DETAIL B-3-1, B.7 OF THE THE MDE SESC MANUAL.
4. REFER TO MDE SESC STANDARD B-4-8 FOR ADDITIONAL NOTES AND REQUIREMENTS.

A STOCKPILE DETAIL
NOT TO SCALE

B-1 STANDARDS AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE

DEFINITION
A LAYER OF AGGREGATE THAT IS UNDERLAIN WITH NONWOVEN GEOTEXTILE AT POINTS OF INGRESS AND EGRESS OF THE CONSTRUCTION SITE.

PURPOSE
TO REDUCE TRACKING OF SEDIMENT ONTO ROADWAYS AND PROVIDE A STABLE AREA FOR ENTRANCE TO OR EXIT FROM THE CONSTRUCTION SITE.

CONDITIONS WHERE PRACTICE APPLIES
STABILIZED CONSTRUCTION ENTRANCES MUST BE LOCATED AT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS.

DESIGN CRITERIA
1. WHERE POSSIBLE, LOCATE THE STABILIZED CONSTRUCTION ENTRANCES AT THE HIGH SIDE OF THE PROJECT AREA.
2. FOR SINGLE FAMILY RESIDENTIAL LOTS, LOCATE THE ENTRANCE AT THE PERMANENT DRIVEWAY.
3. STABILIZED CONSTRUCTION ENTRANCES CANNOT BE INSTALLED OVER PAVEMENT.
4. MINIMUM LENGTH IS 50 FEET (30 FEET FOR SINGLE FAMILY RESIDENTIAL LOTS).
5. MINIMUM WIDTH IS 10 FEET. FLARE ENTRANCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
6. THE ORIENTATION OF THE STABILIZED CONSTRUCTION ENTRANCE MAY VARY FROM A STRAIGHT LINE TO A CURVE OR "T" SHAPE DEPENDING ON THE TOPOGRAPHY AND RIGHT-OF-WAY.
7. ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE STABILIZED CONSTRUCTION ENTRANCE (SCE) MUST BE PIPED UNDER THE ENTRANCE. SIZE THE PIPE TO CONVEY THE RUNOFF GENERATED BY THE 2-YEAR, 24-HOUR FREQUENCY STORM AT MINIMUM. THE MINIMUM PERMISSIBLE PIPE SIZE IS 6 INCHES. WHEN THE ENTRANCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY.

MAINTENANCE
THE SCE MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. THIS MAY REQUIRE ADDING STONE OR MAKING OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN A CLEAN SURFACE, THE MOUNTABLE BERM, AND THE SPECIFIED DIMENSIONS. ALL STONE OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO THE ADJACENT ROADWAY MUST BE REMOVED IMMEDIATELY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING THE ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS THE WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

BEST MANAGEMENT PRACTICES FOR PROTECTION OF THE ENVIRONMENT

1. NO CONSTRUCTION SHALL PROCEED UNTIL PROPER SEDIMENTATION AND EROSION CONTROL METHODS HAVE BEEN INSTALLED AS THE SEQUENCE OF CONSTRUCTION NECESSITATES.
2. EQUIPMENT, MATERIALS, AND MACHINERY SHALL BE STORED, CLEANED, REFUELED, MAINTAINED, AND REPAIRED IN UPLAND AREAS ONLY.
3. NO CONSTRUCTION SHALL PROCEED UNTIL A METHOD TO PREVENT CONSTRUCTION DEBRIS OR OTHER MATERIALS FROM ENTERING THE WETLAND OR WATERCOURSE HAS BEEN IMPLEMENTED AS THE SEQUENCE OF CONSTRUCTION NECESSITATES. THESE MATERIALS SHALL BE COLLECTED AND DISPOSED OF IN AN ENVIRONMENTALLY SAFE MANNER AS DETERMINED BY FEDERAL, STATE, AND LOCAL LAWS AT NO ADDITIONAL COST TO THE OWNER. THE APPLICANT SHALL MONITOR WIND VELOCITIES AND STORM EVENTS DURING THE CONDUCT OF SUCH WORK, AND SHALL CAUSE SUCH ACTIVITY TO CEASE IF STORM OR WIND CONDITIONS THREATEN TO CAUSE DEPOSITS OF MATERIALS IN THE WATERWAY.
4. NO OBJECTIONABLE MATERIALS RESULTING FROM ANY CLEARING ACTIVITY SHALL BE DISPOSED OF IN ANY WETLAND OR WATERCOURSE. THIS INCLUDES BUT IS NOT LIMITED TO: STUMPS, TREE ROOTS, MATTED ROOTS, WOOD CHIPS, AND OTHER DEBRIS, UNLESS SPECIFIED ON THE CONTRACT DRAWINGS .
5. NO FILL OR MATERIAL SHALL BE DEPOSITED IN SURROUNDING WETLANDS OR WATERCOURSES, UNLESS SPECIFIED ON THE CONTRACT DRAWINGS.
6. A WATER HANDLING PLAN INCLUDING A CONTINGENCY PLAN FOR FLOOD EVENTS SHALL BE IMPLEMENTED AS SEQUENCE OF CONSTRUCTION NECESSITATES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION IN THE WATERWAY.
7. WORK WITHIN AND ADJACENT TO WATERCOURSES SHALL BE CONDUCTED DURING PERIODS OF LOW FLOW, WHENEVER POSSIBLE. THE APPLICANT SHALL REMAIN AWARE OF FLOW CONDITIONS DURING THE CONDUCT OF SUCH WORK, AND SHALL CAUSE SUCH ACTIVITY TO CEASE SHOULD FLOW CONDITIONS THREATEN TO CAUSE EXCESSIVE EROSION, SILTATION OR TURBIDITY. DURING STORMS EVERY EFFORT SHALL BE TAKEN TO SECURE THE WORK SITE.
8. ALL TEMPORARY FILL, SUCH AS THAT USED FOR PERMITTED ACCESS ROADS AND/OR COFFERDAMS, SHALL BE PROPERLY STABILIZED DURING USE TO PREVENT EROSION, AND, WHEN NO LONGER NEEDED, MUST BE DISPOSED OF AT AN UPLAND SITE, AND SUITABLY CONTAINED TO PREVENT TURBID RUNOFF FROM REENTERING A WETLAND OR WATERCOURSE, UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL AREAS AFFECTED BY TEMPORARY FILLS MUST BE RESTORED TO THEIR ORIGINAL CONTOURS, AND REVEGETATED WITH SUITABLE VEGETATION. THE AREA EXTENT OF TEMPORARY FILL OR EXCAVATION SHALL BE MINIMIZED TO THAT AREA NECESSARY TO PERFORM THE REQUIRED WORK.
9. DUMPING OF OIL OR OTHER DELETERIOUS MATERIALS ON THE GROUND IS FORBIDDEN. THE APPLICANT SHALL PROVIDE A MEANS OF CATCHING, RETAINING, AND PROPERLY DISPOSING OF DRAINED OIL, REMOVED OIL FILTERS, OR OTHER DELETERIOUS MATERIAL. ALL OIL SPILLS SHALL BE REPORTED IMMEDIATELY TO THE MDE OFFICE OF EMERGENCY PREPAREDNESS AND RESPONSE AT ((866) 633-4686. **SPILL KITS INCLUSIVE OF EXTRA ABSORBENT BOOMS MUST BE PROVIDED ON SITE.**
10. EVERY PRECAUTION SHALL BE USED WHILE WORKING IN THE VICINITY OF A WATERWAY TO PREVENT AND MINIMIZE DEGRADATIONS OF THE EXISTING WATER QUALITY. ALL ACTIVITIES SHALL CONFORM AND BE AT ALL TIMES CONSISTENT WITH APPLICABLE WATER QUALITY STANDARDS, AND MANAGEMENT PRACTICES OF THE FEDERAL CLEAN WATER ACT (1972), MARYLAND'S WATER QUALITY STANDARDS AND OTHER APPLICABLE STATE LAWS.
11. ALL EQUIPMENT BEING USED IN OR AROUND THE WATER SHALL BE FREE OF LEAKS INCLUDING BUT NOT LIMITED TO OIL, HYDRAULIC FLUIDS, RADIATOR FLUIDS, GREASE, AND FUEL. ALL EQUIPMENT TO BE USED IN THE WATER SHALL BE APPROVED BY THE ENGINEER. THE ENGINEER HAS THE AUTHORITY TO ORDER THE CONTRACTOR TO REMOVE ANY EQUIPMENT FROM THE WATER THAT THE ENGINEER FEELS IS DETRIMENTAL TO THE ENVIRONMENT.
12. SHOULD ANY EQUIPMENT BREAKDOWN IN THE WATER, THE CONTRACTOR SHALL HAVE A PLAN TO IMMEDIATELY REMOVE THE EQUIPMENT.

EMERGENCY OPERATION / FLOOD CONTINGENCY PLAN DURING CONSTRUCTION

1. THIS EMERGENCY OPERATION PLAN IS DESIGNED TO PROVIDE THE CONTRACTOR GUIDELINES DURING A FLOOD OR A THREATENING FLOOD PERIOD IN ORDER TO PROTECT THE SURROUNDING COMMUNITY.
2. THE CONTRACTOR SHALL MONITOR THE WEATHER FORECASTS AND PLAN CONSTRUCTION ACCORDINGLY.
3. IF THE WEATHER FORECASTS SHOULD INDICATE THE POSSIBILITY OF A MAJOR STORM SYSTEM WITHIN 24 TO 48 HOURS, THE CONTRACTOR SHOULD PLAN FOR THE POSSIBILITY OF HIGH WATER LEVELS AT THE SITE. ALSO, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER.
4. IF A SIGNIFICANT RAINFALL OCCURS, THE CONTRACTOR SHOULD CONTACT THE CLIENT, MAINTAIN SURVEILLANCE OF THE SITE.
5. IF THE WATER LEVELS ON SITE RISE TO POTENTIALLY UNSAFE LEVELS, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT, CONSTRUCTION MATERIALS (I.E. FUELS, SOLVENTS, HYDRAULIC FLUIDS, EXPLOSIVES, ETC.) AND STOCKPILES FROM THE FLOODPLAIN AND ALERT THE APPROPRIATE PROJECT PERSONNEL AND LOCAL AUTHORITIES OF A POTENTIAL EMERGENCY.
6. THE CONTRACTOR SHALL MAINTAIN SUFFICIENT EQUIPMENT AND MANPOWER AT THE SITES IN ORDER TO REACT TO A FLOODING EMERGENCY.
7. COMPENSATION: IN CASE OF EMERGENCY, AS DETERMINED BY THE ENGINEER OR OWNER, THE CONTRACTOR SHALL BE COMPENSATED FOR THE EXTRA WORK BY MEANS OF A CHANGE ORDER PER CONTRACT CONDITIONS.
8. ALL STEPS MUST BE FOLLOWED TO QUALIFY THE CONTRACTOR FOR COMPENSATION AND THE FLOOD EVENT MUST BE IN EXCESS OF WHAT IS TYPICALLY ANTICIPATED DURING THE CONSTRUCTION PERIOD BASED ON A REVIEW OF HISTORIC FLOW GAGE DATA.

DEMOLITION

1. CONTRACTOR WILL HAVE PREVIOUSLY INSTALLED SOIL EROSION AND SEDIMENTATION CONTROL MEASURES, REMOVED SEDIMENT AND ANY MATERIAL FROM BOTH SIDES OF THE DAM STRUCTURE. INSTALLED ACCESS ROAD, AND DE-WATERED CONSTRUCTION AREA AS NECESSARY AND INDICATED ON THE PLAN.
2. CONTRACTOR SHALL EXCAVATE, REMOVE, AND DISPOSE OF EXISTING DAM STRUCTURES INCLUDING BUT NOT LIMITED TO CONCRETE STRUCTURES, REINFORCEMENT, GROUTED RIPRAP, RETAINING WALLS AND ANY REMAINS OF A HISTORIC DAM THAT MAY EXIST IMMEDIATELY UPSTREAM OR BENEATH THE EXISTING DAM.
3. THE TOTAL VERTICAL SECTION OF THE DAM SHALL BE REMOVED USING CONVENTIONAL DEMOLITION TOOLS. SAWCUTING TOOLS SHALL BE USED AS NECESSARY.
4. ALL NON-CONCRETE STRUCTURE ASSOCIATED WITH THE DAM AND THE DAM FRAGMENTS, WITH THE EXCEPTION OF EXCAVATION FROM THE EARTHEN BERM, SHALL BE REMOVED AND DISPOSED OF OFF SITE. EXCAVATION FROM THE EARTHEN BERM WILL BE REUSED ON SITE IN AREAS WHERE FILL IS PROPOSED.
5. MEASUREMENT AND PAYMENT FOR DEMOLITION WILL BE AT A CONTRACT LUMP SUM AND SHALL INCLUDE THE REMOVAL AND DISPOSAL OF ALL DEBRIS INCLUDING CONCRETE STRUCTURES, REINFORCING, AND STONE MASONRY.

MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION WETLAND AND WATERWAYS PROGRAM
BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

1) NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
2) PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
3) DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.
4) PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.
5) REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.
6) RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.
7) ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. **KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS.** THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.
8) AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.
9) TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:

USE I WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
USE III WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD OCTOBER 1 THROUGH APRIL 30, INCLUSIVE, DURING ANY YEAR.
USE IV WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR.

10) STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.
11) CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.

PRINCETON HYDRO SUPPLEMENTARY NOTES TO
MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION WETLAND AND WATERWAYS PROGRAM
BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

1) EXCEPTION TO THE ABOVE APPLY TO THE NONTIDAL WETLAND AND WATERWAY AREAS CALLED OUT ON THE PLAN TO BE FILLED AS PART OF THE PROPOSED CONDITIONS.
2) THE PROJECT SITE IS A USE I WATERWAY, THUS IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH JUNE 15, INCLUSIVE, DURING ANY YEAR.
3) NO SERVICEABLE STRUCTURES ARE REQUIRED TO BE MAINTAINED ON THE PROJECT SITE; THEREFORE NOTE 5 WILL NOT APPLY TO THE PROJECT.
4) ACCESS PATH RIPRAP WILL BE PLACED WITH THE INTENTION TO IMPOUND WATER DURING CERTAIN DESIGN PHASES, WITH AT LEAST ONE CHANNEL BEING MAINTAINED AS WATER DIVERSION; THEREFORE, NOTE 11 WILL NOT APPLY TO THE PROJECT.

SOIL EROSION AND SEDIMENT CONTROL GENERAL NOTES

1. THE DEVELOPER IS RESPONSIBLE FOR THE ACQUISITION OF ALL REQUIRED EASEMENT, RIGHT AND/OR RIGHTS-OF-WAY PURSUANT TO THE DISCHARGE FROM THE EROSION AD SEDIMENT CONTROL PRACTICES, STORMWATER MANAGEMENT PRACTICES AND THE DISCHARGE OF STORMWATER ONTO OR ACROSS AND GRADING OR OTHER WORK TO BE PERFORMED ON ADJACENT OR DOWNSTREAM PROPERTIES AFFECTED BY THIS PLAN.
2. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, 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 GREATER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1) AND B) SEVEN (7) CALENDAR DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING. THE IN-PLACE SEDIMENT CONTROL MEASURES WILL BE MAINTAINED ON A CONTINUING BASIS UNTIL THE SITE IS PERMANENTLY STABILIZED AND ALL PERMIT REQUIREMENTS ARE MET.
3. THE OWNER/DEVELOPER OR REPRESENTATIVE SHALL REQUEST THAT THE INSPECTION AUTHORITY APPROVE WORK COMPLETED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN, THE GRADING OR BUILDING PERMIT AND SHALL OBTAIN WRITTEN INSPECTION APPROVALS BY THE INSPECTOR AT THE FOLLOWING STAGES IN THE DEVELOPMENT OF THE SITE:
   - 3.1. PRIOR TO THE START OF EARTH DISTURBANCE;
   - 3.2. UPON COMPLETION OF INSTALLATION OF TREE PROTECTION DEVICES, FOLLOW BY THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, PRIOR TO PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL INITIAL APPROVAL BY THE INSPECTOR IS MADE.
   - 3.3. UPON COMPLETION OF STRIPPING, THE STOCKPILING OF TOPSOIL, THE CONSTRUCTION OF TEMPORARY SEDIMENT AND EROSION CONTROL FACILITIES, DISPOSAL OF ALL WASTE MATERIAL AND PREPARATION OF THE GROUND;
   - 3.4. UPON COMPLETION OF ROUGH GRADING, BUT PRIOR TO PLACING OF TOPSOIL, PERMANENT DRAINAGE OR OTHER SITE DEVELOPMENT IMPROVEMENTS AND GROUND COVER.
   - 3.5. PRIOR TO THE START DATE OF ANOTHER PHASE OF CONSTRUCTION.
   - 3.6. PRIOR TO THE REMOVAL OF SEDIMENT CONTROL PRACTICES; AND
   - 3.7. UPON COMPLETION OF FINAL GRADING, REFORESTING, PERMANENT DRAINAGE AND EROSION CONTROL FACILITIES INCLUDING ESTABLISHED GROUND COVERS AND PLANTING, AND ALL OTHER WORK OF THE BUILDING PERMITS.
4. APPROVAL SHALL BE REQUESTED UPON FINAL STABILIZATION OF ALL SITES WITH DISTURBED AREAS IN EXCESS OF TWO ACRES BEFORE REMOVAL OF CONTROLS.
5. ALL PERMITS UNDER AN EROSION AND SEDIMENT CONTROL PLAN MUST AND CAN ONLY BE ISSUED TO THE OWNER /DEVELOPER THAT SIGNS THE CERTIFICATION ON THE PLAN. THE OWNER/DEVELOPER THAT SIGNS THE CERTIFICATION ON AN EROSION AND SEDIMENT CONTROL PLAN IS THE RESPONSIBLE PARTY REGARDLESS OF ANY SALE OF THE PROPERTY OF WORK OF SUBCONTRACTORS. EROSION AND SEDIMENT CONTROL PLANS ARE APPROVED FOR ONE OWNER/DEVELOPER ONLY.
6. ANY CHANGES OR MODIFICATIONS TO AN APPROVED EROSION AND SEDIMENT CONTROL PLAN, NOT APPROVED BY THE STATE OF MD, SHALL INVALIDATE THE PLAN APPROVAL.
7. OFFSITE BORROW OR SPOIL AREAS MUST HAVE AN APPROVED AND ACTIVE EROSION AND SEDIMENT CONTROL PLAN.
8. NO BASE MATERIAL IS PROPOSED FOR STAGING AND STOCKPILE AREA.

CALL BEFORE YOU DIG!
MARYLAND LAW REQUIRES
2 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE
- STOP CALL
REFERENCE MARYLAND STATE LAW ON
UNDERGROUND UTILITY DRAINAGE PREVENTION LAW
(MARYLAND STATE LAW TITLE 12)
1-800-257-7777

PROJECT NOTES

1. HORIZONTAL DATUM IS MARYLAND STATE PLANE NAD83, FEET. VERTICAL DATUM BASED ON NAVD88, FEET.
2. USGS TOPOGRAPHIC DIGITAL RASTER GRAPHIC OBTAINED FROM TERRAIN NAVIGATOR PRO, MILLINGTON, MD QUADRANGLE
3. SURVEY OBTAINED FROM MATHEW LOWE, PLS OF MERESTONE CONSULTANTS, INC. ON 01/11/2021.
4. WETLAND DELINEATION COMPLETED BY PRINCETON HYDRO, LLC ON 11/17/2020.
5. ALL DRAWING SCALES ACCURATE WHEN PRINTED ON 24" BY 36" PAPER.
6. 2019 ORTHOIMAGERY OBTAINED FROM MD IMAP WEBSITE: IMAP.MARYLAND.GOV/
7. PROPERTY BOUNDARIES OBTAINED FROM MARYLAND DEPARTMENT OF PLANNING FOR KENT COUNTY, 2020. WEBSITE: HTTPS://PLANNING.MARYLAND.GOV/PAGES/OURPRODUCTS/DOWNLOADFILES.ASPX

DATE	DESCRIPTION
06/15/2021	PLANS REVISED PER CLIENT COMMENTS
01/23/2023	PLANS REVISED PER CLIENT COMMENTS
07/12/2023	PLANS REVISED PER MDE COMMENTS

REVISIONS

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PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:
SOIL EROSION AND SEDIMENT CONTROL DETAILS AND NOTES

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
14 OF 19

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 2:1. (WHERE THE SLOPE IS TO BE MOWED, THE SLOPE SHOULD BE NO STEEPER THAN 3:1, BUT 4:1 IS PREFERRED BECAUSE OF SAFETY FACTORS RELATED TO MOWING STEEP SLOPES.) SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL DESIGN AND STABILIZATION CONSIDERATIONS TO BE SHOWN ON THE PLANS.

3. BENCHING PER DETAIL B-3-1 (REFER TO 2011 MDE SESC MANUAL, B.7) WHENEVER THE VERTICAL INTERVAL (HEIGHT) OF ANY 2:1 SLOPE EXCEEDS 20 FEET; FOR 3:L SLOPES, WHEN IT EXCEEDS 30 FEET; AND FOR 4:1 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 6:1 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 (REFER TO 2011 MDE SESC MANUAL, B.8). 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 B- 4 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-4-4 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, 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 (TABLE B.1)

HARDINESS ZONE: 7A SEED MIXTURE: AS SHOWN							
NO.	SPECIES	BOTANICAL NAME	APPLICATION RATE (LB./AC.)	SEEDING DATES	SEEDING DEPTH (INCHES)	FERTILIZER RATE (10-20-20)	LIME RATE
COOL-SEASON GRASSES							
1	ANNUAL RYGRASS	LOLIUM PERENNE SSP. MULTIFLORUM	40	MAR 1 TO MAY 15; AUG 1 TO OCT 15	0.5	436 LB./A.C.	2 TONS/A.C.
	BARLEY	HORDEUM VULGARE	96	MAR 1 TO MAY 15; AUG 1 TO OCT 15	1.0		
	OATS	AVENA SATIVA	72	MAR 1 TO MAY 15; AUG 1 TO OCT 15	1.0		
	WHEAT	TRITICUM AESTIVUM	120	MAR 1 TO MAY 15; AUG 1 TO OCT 15	1.0		
	CEREAL RYE	SECALE CEREALE	112	MAR 1 TO MAY 15; AUG 1 TO OCT 15	1.0		
WARM-SEASON GRASSES							
2	FOXTAIL MILLET	SETARIA ITALICA	30	MAY 16 TO JUL 31	0.5	436 LB./A.C.	2 TONS/A.C.
	PEARL MILLET	PENNISETUM GLAUCUM	20	MAY 16 TO JUL 31	0.5		

NOTES:

1. SEEDING RATES FOR THE WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES. SEEDING RATES LISTED ABOVE ARE FOR TEMPORARY SEEDINGS, WHEN PLANTED ALONE. WHEN PLANTED AS A NURSE CROP WITH PERMANENT SEED MIXES, USE 1/3 OF THE SEEDING RATE LISTED ABOVE FOR BARLEY, OATS, AND WHEAT. FOR SMALLER-SEEDED GRASSES (ANNUAL RYEGRASS, PEARL MILLET, FOXTAIL MILLET), DO NOT EXCEED MORE THAN 5% (BY WEIGHT) OF THE OVERALL PERMANENT SEEDING MIX. CEREAL RYE GENERALLY SHOULD NOT BE USED AS A NURSE CROP, UNLESS PLANTING WILL OCCUR IN VERY LATE FALL BEYOND THE SEEDING DATES FOR OTHER TEMPORARY SEEDINGS. CEREAL RYE HAS ALLELOPATHIC PROPERTIES THAT INHIBIT THE GERMINATION AND GROWTH OF OTHER PLANTS. IF IT MUST BE USED AS A NURSE CROP, SEED AT 1/3 OF THE RATE LISTED ABOVE. OATS ARE THE RECOMMENDED NURSE CROP FOR WARM-SEASON GRASSES.

2. FOR SANDY SOILS, PLANT SEEDS AT TWICE THE DEPTH LISTED ABOVE.

3. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

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. DRESS, PREPARE, SEED
AND MULCH 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, DRESS, AND STABILIZE.
c. PERFORM PHASE 2 EXCAVATION, DRESS, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
d. PERFORM FINAL PHASE EXCAVATION, DRESS, 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.

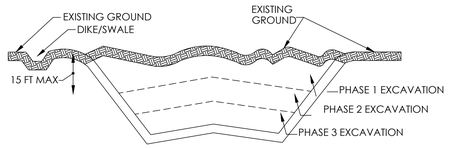

FIGURE B.1 INCREMENTAL STABILIZATION - CUT

B. INCREMENTAL STABILIZATION - FILL SLOPES
1. CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. DRESS, PREPARE, SEED
AND MULCH 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, DRESS, AND STABILIZE.
d. PLACE PHASE 2 FILL, DRESS, AND STABILIZE.
e. PLACE FINAL PHASE FILL, DRESS, 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.

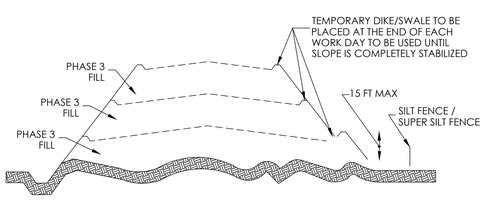

FIGURE B.2 INCREMENTAL STABILIZATION - FILL

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. B.13
D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
E. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION, TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B. TOPSOILING
1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION, THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
A. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1½ INCHES IN DIAMETER.
B. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
C. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
6. TOPSOIL APPLICATION
A. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
B. UNIFORMLY DISTRIBUTE TOPSOIL IN AN 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 B.14 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.

CALL BEFORE YOU DIG!
MARYLAND LAW REQUIRES
2 WORKING DAYS NOTICE FOR
CONSTRUCTION PHASE
- STOP CALL
REFERENCE MARYLAND STATE LAW ON
UNDERGROUND UTILITY DRAINAGE PREVENTION LAW
(MARYLAND STATE LAW TITLE 12)
1-800-257-7777

PROJECT NOTES

1. HORIZONTAL DATUM IS MARYLAND STATE PLANE NAD83, FEET. VERTICAL DATUM BASED ON NAVD88, FEET.
2. USGS TOPOGRAPHIC DIGITAL RASTER GRAPHIC OBTAINED FROM TERRAIN NAVIGATOR PRO, MILLINGTON, MD QUADRANGLE
3. SURVEY OBTAINED FROM MATHEW LOWE, PLS OF MERESTONE CONSULTANTS, INC. ON 01/11/2021.
4. WETLAND DELINEATION COMPLETED BY PRINCETON HYDRO, LLC ON 11/17/2020.
5. ALL DRAWING SCALES ACCURATE WHEN PRINTED ON 24" BY 36" PAPER.
6. 2019 ORTHOIMAGERY OBTAINED FROM MD IMAP WEBSITE: IMAP.MARYLAND.GOV/
7. PROPERTY BOUNDARIES OBTAINED FROM MARYLAND DEPARTMENT OF PLANNING FOR KENT COUNTY, 2020. WEBSITE: HTTPS://PLANNING.MARYLAND.GOV/PAGES/OURPRODUCTS/DOWNLOADFILES.ASPX

DATE	DESCRIPTION
06/15/2021	PLANS REVISED PER CLIENT COMMENTS
01/23/2023	PLANS REVISED PER CLIENT COMMENTS
07/12/2023	PLANS REVISED PER MDE COMMENTS

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Professional Engineer
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PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:
SOIL EROSION AND SEDIMENT CONTROL NOTES 1

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
15 OF 19

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.
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.16
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. B.17
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-4-5 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.
C. IDEAL TIMES OF SEEDING FOR TURF GRASS:
WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A)
CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)
SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)
D. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1½ INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDLINGS 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 SEEDLINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

HARDINESS ZONE (FROM FIGURE B.3): 7A SEED MIXTURE (FROM TABLE B.3): AS SHOWN					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P_2O_5	K_2O	
1	SWITCH GRASS	10	3/1 - 5/15; 5/16 - 6/15	1/4 - 1/2 IN	45 POUNDS PER ACRE (1.0 LB/1000 SF)	90 POUNDS PER ACRE (2.0 LB/1000 SF)	90 POUNDS PER ACRE (2.0 LB/1000 SF)	2 TONS PER ACRE (90 LB/1000 SF)
	CREEPING RED FESCUE	15	3/1 - 5/15; 5/16 - 6/15	1/4 - 1/2 IN				
	PARTRIDGE PEA	4	3/1 - 5/15; 5/16 - 6/15	1/4 - 1/2 IN				

* SEED MIXTURE TO BE USED TO PERMANENTLY STABILIZE ANY DISTURBED AREA THAT HAS NOT BEEN DEPICTED ON THE PLANTING PLAN.

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.

E-1 STANDARDS AND SPECIFICATIONS FOR SILT FENCE

DEFINITION
A TEMPORARY BARRIER OF WOVEN GEOTEXTILE USED TO INTERCEPT, RETAIN, AND FILTER SURFACE RUNOFF FROM DISTURBED AREAS.
PURPOSE
TO INTERCEPT SEDIMENT-LADEN SHEET FLOW RUNOFF ALLOWING THE DEPOSITION OF SEDIMENT TRANSPORTED FROM UPSLOPE. SILT FENCE IS NOT TO BE USED AS A VELOCITY CHECK IN SWALES OR PLACED WHERE IT WILL INTERCEPT CONCENTRATED FLOW.
CONDITIONS WHERE PRACTICE APPLIES
SILT FENCE IS LIMITED TO INTERCEPTING SHEET FLOW RUNOFF FROM SMALL DISTURBED AREAS. THE USE OF SILT FENCE IS BASED ON SLOPE LENGTH AND STEEPNESS OF THE CONTRIBUTING DRAINAGE AREA.

DESIGN CRITERIA

TABLE E.1: SILT FENCE DESIGN CONSTRAINTS
AVERAGE SLOPE STEEPNESS MAXIMUM SLOPE LENGTH MAXIMUM SILT FENCE LENGTH

AVERAGE SLOPE STEEPNESS	MAXIMUM SLOPE LENGTH	MAXIMUM SILT FENCE LENGTH
FLATTER THAN 50:1 (< 2%)	300 FEET	UNLIMITED
50:1 TO 10:1 (2-10%)	125 FEET	1,000 FEET
< 10:1 TO 5:1 (>10 - 20%)	100 FEET	750 FEET
< 5:1 (> 20%)	40 FEET	250 FEET

* MAXIMUM SLOPE LENGTH IS UNLIMITED ON HYDROLOGIC SOIL GROUP (HSG) "A" SOILS.

1. THE USE OF SILT FENCE MUST CONFORM TO THE DESIGN CONSTRAINTS LISTED IN TABLE E.1 ABOVE.
2. THE AREA DOWNGRADE OF THE SILT FENCE MUST BE UNDISTURBED GROUND.
3. SILT FENCE IS TO BE PLACED ON THE CONTOUR.
4. SILT FENCE SHOULD BE USED WITH CAUTION IN AREAS WHERE ROCKY SOILS MAY PREVENT TRENCHING.
5. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM FIVE (5) FEET HORIZONTALLY UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.

MAINTENANCE
ACCUMULATED SEDIMENT AND DEBRIS MUST BE REMOVED WHEN BULGES DEVELOP IN THE SILT FENCE OR WHEN SEDIMENT REACHES 25 PERCENT OF THE FENCE HEIGHT. THE GEOTEXTILE MUST BE REPLACED IF TORN, IF UNDERMINING OCCURS, REINSTALL FENCE.

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 (T) IS A MEASURE OF THE FORCE OF MOVING WATER AGAINST THE SUBSTRATE AND IS CALCULATED AS:
$$T = \Gamma * R * SW$$
WHERE:
T = 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:
$$V = 1.48 * R^{0.66} * S^{0.5} \div N$$
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

CE	20:1 OR FLATTER (< 5%)			<20:1 TO 4:1 (>5 - 25%)			<4:1 TO 3:1 (>25 - 33%)			<3:1 TO 2.5:1 (>33 T 40%)			<2.5:1 TO 2:1** (>40-50%)		
SLOPE LENGTH (FT.)*	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 NOTED

* 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.

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PROJECT NOTES
1. HORIZONTAL DATUM IS MARYLAND STATE PLANE NAD83, FEET. VERTICAL DATUM BASED ON NAVD88, FEET.
2. USGS TOPOGRAPHIC DIGITAL RASTER GRAPHIC OBTAINED FROM TERRAIN NAVIGATOR PRO, MILLINGTON, MD QUADRANGLE
3. SURVEY OBTAINED FROM MATHEW LOWE, PLS OF MERESTONE CONSULTANTS, INC. ON 01/11/2021.
4. WETLAND DELINEATION COMPLETED BY PRINCETON HYDRO, LLC ON 11/17/2020.
5. ALL DRAWING SCALES ACCURATE WHEN PRINTED ON 24" BY 36" PAPER.
6. 2019 ORTHOIMAGERY OBTAINED FROM MD IMAP WEBSITE: IMAP.MARYLAND.GOV/
7. PROPERTY BOUNDARIES OBTAINED FROM MARYLAND DEPARTMENT OF PLANNING FOR KENT COUNTY, 2020. WEBSITE: HTTPS://PLANNING.MARYLAND.GOV/PAGES/OURPRODUCTS/DOWNLOADFILES.ASPX

DATE	DESCRIPTION
06/15/2021	PLANS REVISED PER CLIENT COMMENTS
01/23/2023	PLANS REVISED PER CLIENT COMMENTS
07/12/2023	PLANS REVISED PER MDE COMMENTS

REVISIONS

GEOFFREY M. GOLL
PROFESSIONAL ENGINEER
STATE OF MARYLAND
31645
PROFESSIONAL ENGINEER
DATE

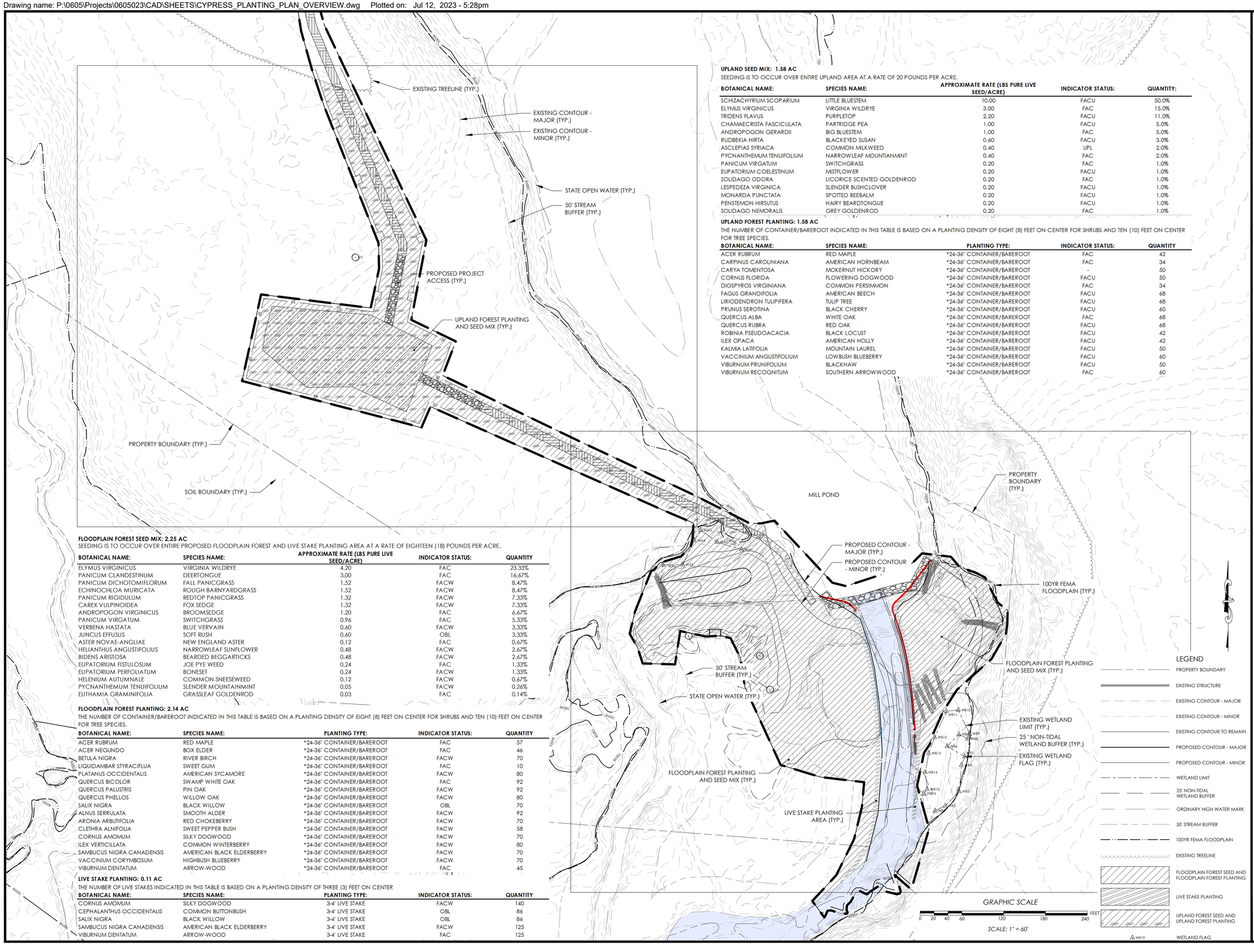
PRINCETON HYDRO
SCIENCE ENGINEERING DESIGN
1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:
SOIL EROSION AND SEDIMENT CONTROL NOTES 2

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
16 OF 19



UPLAND SEED MIX: 1.58 AC

SEEDING IS TO OCCUR OVER ENTIRE UPLAND AREA AT A RATE OF 20 POUNDS PER ACRE.

BOTANICAL NAME:	SPECIES NAME:	APPROXIMATE RATE (LBS PURE LIVE SEED/ACRE)	INDICATOR STATUS:	QUANTITY:
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	10.00	FACU	50.0%
ELYMUS VIRGINICUS	VIRGINIA WILDRYE	3.00	FAC	15.0%
TRIDENS FLAVUS	PURPLETOP	2.20	FACU	11.0%
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	1.00	FACU	5.0%
ANDROPOGONI GERARDII	BIG BLUESTEM	1.00	FAC	5.0%
RUDBEKIA HIRTA	BLACKEYED SUSAN	0.60	FACU	3.0%
ASCLEPIAS SYRIACA	COMMON MILKWEED	0.40	UPL	2.0%
PYCNANTHEMUM TENUIFOLIUM	NARROWLEAF MOUNTIANMINT	0.40	FAC	2.0%
PANICUM VIRGATUM	SWITCHGRASS	0.20	FAC	1.0%
EUPATORIUM COELESTINUM	MISTFLOWER	0.20	FACU	1.0%
SOLIDAGO ODORA	LICORICE SCENTED GOLDENROD	0.20	FAC	1.0%
LESPEDEZA VIRGINICA	SLENDER BUSHCLOVER	0.20	FACU	1.0%
MONARDA PUNCTATA	SPOTTED BEEBALM	0.20	FACU	1.0%
PENSTEMON HIRSUTUS	HAIRY BEARDTONGUE	0.20	FACU	1.0%
SOLIDAGO NEMORALIS	GREY GOLDENROD	0.20	FAC	1.0%

UPLAND FOREST PLANTING: 1.58 AC

THE NUMBER OF CONTAINER/BAREROOT INDICATED IN THIS TABLE IS BASED ON A PLANTING DENSITY OF EIGHT (8) FEET ON CENTER FOR SHRUBS AND TEN (10) FEET ON CENTER FOR TREE SPECIES.

BOTANICAL NAME:	SPECIES NAME:	PLANTING TYPE:	INDICATOR STATUS:	QUANTITY
ACER RUBRUM	RED MAPLE	*24-36" CONTAINER/BAREROOT	FAC	42
CARPINUS CAROLINIANA	AMERICAN HORNBEAM	*24-36" CONTAINER/BAREROOT	FAC	34
CARYA TOMENTOSA	MOKERNUT HICKORY	*24-36" CONTAINER/BAREROOT	-	50
CORNUS FLORIDA	FLOWERING DOGWOOD	*24-36" CONTAINER/BAREROOT	FACU	50
DIOSPYROS VIRGINIANA	COMMON PERSIMMON	*24-36" CONTAINER/BAREROOT	FAC	34
FAGUS GRANDIFOLIA	AMERICAN BEECH	*24-36" CONTAINER/BAREROOT	FACU	68
LIRIODENDRON TULIPIFERA	TULIP TREE	*24-36" CONTAINER/BAREROOT	FACU	68
PRUNUS SEROTINA	BLACK CHERRY	*24-36" CONTAINER/BAREROOT	FACU	60
QUERCUS ALBA	WHITE OAK	*24-36" CONTAINER/BAREROOT	FAC	68
QUERCUS RUBRA	RED OAK	*24-36" CONTAINER/BAREROOT	FACU	68
ROBINIA PSEUDOACACIA	BLACK LOCUST	*24-36" CONTAINER/BAREROOT	FACU	42
ILEX OPACA	AMERICAN HOLLY	*24-36" CONTAINER/BAREROOT	FACU	42
KALMIA LATIFOLIA	MOUNTAIN LAUREL	*24-36" CONTAINER/BAREROOT	FACU	50
VACCINIUM ANGUSTIFOLIUM	LOWBUSH BLUEBERRY	*24-36" CONTAINER/BAREROOT	FACU	60
VIBURNUM PRUNIFOLIUM	BLACKHAW	*24-36" CONTAINER/BAREROOT	FACU	50
VIBURNUM RECOGNITUM	SOUTHERN ARROWWOOD	*24-36" CONTAINER/BAREROOT	FAC	60

FLOODPLAIN FOREST SEED MIX: 2.25 AC

SEEDING IS TO OCCUR OVER ENTIRE PROPOSED FLOODPLAIN FOREST AND LIVE STAKE PLANTING AREA AT A RATE OF EIGHTEEN (18) POUNDS PER ACRE.

BOTANICAL NAME:	SPECIES NAME:	APPROXIMATE RATE (LBS PURE LIVE SEED/ACRE)	INDICATOR STATUS:	QUANTITY
ELYMUS VIRGINICUS	VIRGINIA WILDRYE	4.20	FAC	23.33%
PANICUM CLANDESTINUM	DEERTONGUE	3.00	FAC	16.67%
PANICUM DICHOTOMIFLORUM	FALL PANICGRASS	1.52	FACW	8.47%
ECHINOCHLOA MURICATA	ROUGH BARNYARDGRASS	1.52	FACW	8.47%
PANICUM RIGIDULUM	REDTOP PANICGRASS	1.32	FACW	7.33%
CAREX VULPINOIDEA	FOX SEDGE	1.32	FACW	7.33%
ANDROPOGON VIRGINICUS	BROOMSEDGE	1.20	FAC	6.67%
PANICUM VIRGATUM	SWITCHGRASS	0.96	FAC	5.33%
VERBENA HASTATA	BLUE VERVAIN	0.60	FACW	3.33%
JUNCUS EFFUSUS	SOFT RUSH	0.60	OBL	3.33%
ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	0.12	FAC	0.67%
HELIANTHUS ANGUSTIFOLIUS	NARROWLEAF SUNFLOWER	0.48	FACW	2.67%
BIDENS ARISTOSA	BEARDED BEGGARTICKS	0.48	FACW	2.67%
EUPATORIUM FISTULOSUM	JOE PYE WEED	0.24	FAC	1.33%
EUPATORIUM PERFOLIATUM	BONESET	0.24	FACW	1.33%
HELENIUM AUTUMNALE	COMMON SNEESEWEED	0.12	FACW	0.67%
PYCNANTHEMUM TENUIFOLIUM	SLENDER MOUNTAINMINT	0.05	FACW	0.26%
EUTHAMIA GRAMINIFOLIA	GRASSLEAF GOLDENROD	0.03	FAC	0.14%

FLOODPLAIN FOREST PLANTING: 2.14 AC

THE NUMBER OF CONTAINER/BAREROOT INDICATED IN THIS TABLE IS BASED ON A PLANTING DENSITY OF EIGHT (8) FEET ON CENTER FOR SHRUBS AND TEN (10) FEET ON CENTER FOR TREE SPECIES.

BOTANICAL NAME:	SPECIES NAME:	PLANTING TYPE:	INDICATOR STATUS:	QUANTITY
ACER RUBRUM	RED MAPLE	*24-36" CONTAINER/BAREROOT	FAC	57
ACER NEGUNDO	BOX ELDER	*24-36" CONTAINER/BAREROOT	FAC	46
BETULA NIGRA	RIVER BIRCH	*24-36" CONTAINER/BAREROOT	FACW	70
LIQUIDAMBAR STYRACIFLUA	SWEET GUM	*24-36" CONTAINER/BAREROOT	FAC	10
PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	*24-36" CONTAINER/BAREROOT	FACW	80
QUERCUS BICOLOR	SWAMP WHITE OAK	*24-36" CONTAINER/BAREROOT	FAC	92
QUERCUS PALUSTRIS	PIN OAK	*24-36" CONTAINER/BAREROOT	FACW	92
QUERCUS PHELLOS	WILLOW OAK	*24-36" CONTAINER/BAREROOT	FACW	80
SALIX NIGRA	BLACK WILLOW	*24-36" CONTAINER/BAREROOT	OBL	70
ALNUS SERRULATA	SMOOTH ALDER	*24-36" CONTAINER/BAREROOT	FACW	92
ARONIA ARBUTIFOLIA	RED CHOKEBERRY	*24-36" CONTAINER/BAREROOT	FACW	70
CLETHRA ALNIFOLIA	SWEET PEPPER BUSH	*24-36" CONTAINER/BAREROOT	FACW	58
CORNUS AMOMUM	SILKY DOGWOOD	*24-36" CONTAINER/BAREROOT	FACW	70
ILEX VERTICILLATA	COMMON WINTERBERRY	*24-36" CONTAINER/BAREROOT	FACW	80
SAMBUCUS NIGRA CANADENSIS	AMERICAN BLACK ELDERBERRY	*24-36" CONTAINER/BAREROOT	FACW	70
VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	*24-36" CONTAINER/BAREROOT	FACW	70
VIBURNUM DENTATUM	ARROW-WOOD	*24-36" CONTAINER/BAREROOT	FAC	45

LIVE STAKE PLANTING: 0.11 AC

THE NUMBER OF LIVE STAKES INDICATED IN THIS TABLE IS BASED ON A PLANTING DENSITY OF THREE (3) FEET ON CENTER

BOTANICAL NAME:	SPECIES NAME:	PLANTING TYPE:	INDICATOR STATUS:	QUANTITY
CORNUS AMOMUM	SILKY DOGWOOD	3-4' LIVE STAKE	FACW	140
CEPHALANTHUS OCCIDENTALIS	COMMON BUTTONBUSH	3-4' LIVE STAKE	OBL	86
SALIX NIGRA	BLACK WILLOW	3-4' LIVE STAKE	OBL	86
SAMBUCUS NIGRA CANADENSIS	AMERICAN BLACK ELDERBERRY	3-4' LIVE STAKE	FACW	125
VIBURNUM DENTATUM	ARROW-WOOD	3-4' LIVE STAKE	FAC	125

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1-800-257-7777

PROJECT NOTES

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REVISIONS

GEOFFREY M. GOLL
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STATE OF MARYLAND
31645
PROFESSIONAL ENGINEER

PRINCETON HYDRO
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1108 OLD YORK RD, SUITE 1
RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:

CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

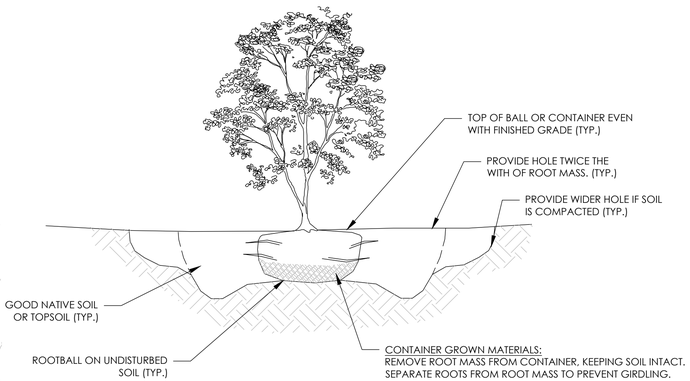
DRAWING NAME:

PLANTING PLAN OVERVIEW

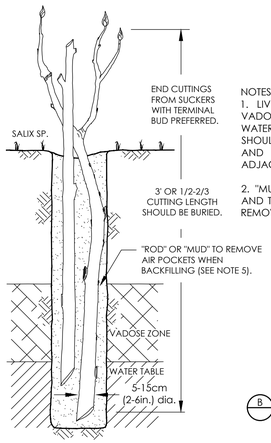
DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.

17 OF 19



A TREE AND SHRUB CONTAINER MATERIAL PLANTING DETAIL
NOT TO SCALE



NOTES:
1. LIVE STAKES SHOULD EXTEND THROUGH THE VADOSE ZONE AND INTO THE PERMANENT WATER TABLE. AT LEAST 1/2 TO 2/3 OF THE POLE SHOULD BE BELOW THE GROUND, AT LEAST 3 FT., AND LONG ENOUGH TO EMERGE ABOVE ADJACENT VEGETATION.

2. "MUDDYING" - FILLING THE HOLE WITH WATER AND THEN SOIL TO MAKE A MUD SLURRY CAN REMOVE AIR POCKETS.

B LIVE STAKE PLANTING DETAIL
NOT TO SCALE

EXISTING CONTOUR - MAJOR (TYP.)
EXISTING CONTOUR - MINOR (TYP.)
SPECIMEN TREE (TYP.)
ST1: FAGUS GRANDIFOLIA
DBH: 38.1"
LIMIT OF DISTURBANCE (TYP.)
ACCESS ROAD (TYP.)
UPLAND SEED MIX AND UPLAND PLANTING AREA (TYP.)

LEGEND

- PROPERTY BOUNDARY
- PROJECT AREA BOUNDARY
- EXISTING STRUCTURE
- EXISTING CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
- EXISTING CONTOUR TO REMAIN
- PROPOSED CONTOUR - MAJOR
- PROPOSED CONTOUR - MINOR
- WETLAND LIMIT
- 25' NON-TIDAL WETLAND BUFFER
- ORDINARY HIGH WATER MARK
- 50' STREAM BUFFER
- 100YR FEMA FLOODPLAIN
- EXISTING TREELINE
- FLOODPLAIN FOREST SEED AND FLOODPLAIN FOREST PLANTING
- LIVE STAKE PLANTING
- UPLAND FOREST SEED AND UPLAND FOREST PLANTING
- SPECIMEN TREE
- CRITICAL ROOT ZONE
- WB10 WETLAND FLAG

PLANT LIST LOCATED ON SHEET 16

GRAPHIC SCALE
0 5 10 15 20 40 60 80 FEET
SCALE: 1" = 20'

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UNDERGROUND UTILITY DRAINAGE PREVENTION LAW
(MARYLAND STATE LAW TITLE 12)
1-800-257-7777

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REVISIONS

GEOFFREY M. GOLL
Professional Engineer
31645
PROFESSIONAL ENGINEER
STATE OF MARYLAND
DATE: 07/12/2023

PRINCETON HYDRO
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RINGOES, NEW JERSEY 08551
PHONE: 908.237.5660
PRINCETONHYDRO.COM

PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:
PLANTING PLAN 1

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
18 OF 19

Drawing name: P:\0605\Projects\0605023\CAD\SHEETS\CYPRESS_PLANTING_PLANVIEWS.dwg Plotted on: Jul 12, 2023 - 5:30pm

UPLAND SEED MIX AND
UPLAND PLANTING AREA (TYP.)

STATE OPEN WATER (TYP.)

MILL POND

PROPOSED CONTOUR - MAJOR (TYP.)

PROPOSED CONTOUR - MINOR (TYP.)

PROPOSED BANK
STABILIZATION (TYP.)

PROPERTY
BOUNDARY
(TYP.)

EXISTING CONTOUR -
MAJOR (TYP.)

EXISTING CONTOUR -
MINOR (TYP.)

LIMIT OF DISTURBANCE (TYP.)

SURVEY BOUNDARY

SPECIMEN TREE (TYP.)
ST5: ACER RUBRUM
DBH: 32"

50' STREAM
BUFFER (TYP.)

SPECIMEN TREE (TYP.)
ST3: LIQUIDAMBAR
STYRACIFLUA
DBH: 30.8"

SPECIMEN TREE (TYP.)
ST4: LIRIODENDRON
TULIPIFERA
DBH: 34.3"

FLOODPLAIN FOREST SEED MIX AND
FLOODPLAIN FOREST PLANTING AREA (TYP.)

FLOODPLAIN FOREST SEED MIX AND
LIVE STAKE PLANTING AREA (TYP.)

EXISTING WETLAND
LIMIT (TYP.)

EXISTING WETLAND
FLAG (TYP.)

25 ' NON-TIDAL
WETLAND
BUFFER (TYP.)

GRAPHIC SCALE
0 5 10 15 20 40 60 80 FEET
SCALE: 1" = 20'

PLANT LIST LOCATED ON SHEET 16

LEGEND
- PROPERTY BOUNDARY
- PROJECT AREA BOUNDARY
- EXISTING STRUCTURE
- EXISTING CONTOUR - MAJOR
- EXISTING CONTOUR - MINOR
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PROJECT NAME/LOCATION:
CYPRESS BRANCH DAM REMOVAL
TOWN OF MILLINGTON
KENT COUNTY, MARYLAND
MDE# 23-SF-0124

DRAWING NAME:
PLANTING PLAN 2

DATE:	06/15/2021
PROJECT NO.:	0605.023
SCALE:	AS SHOWN
DRAWN BY:	SP, CS, DS
CHECKED BY:	LC, JD, GMG, PW

SHEET NO.
19 OF 19

MARYLAND HISTORICAL TRUST
DETERMINATION OF ELIGIBILITY FORM

NR Eligible: yes ___
no ___

Property Name: Cypress Branch Dam and Mill Pond Inventory Number: K-708

Address: Located off MD 291, 0.5 miles northeast of Millington, within Cypress Branch State Park Historic district: ___ yes X no

City: Millington Zip Code: 21651 County: Kent

USGS Quadrangle(s): Millington

Property Owner: MD Dept. of Natural Resources Tax Account ID Number: ___

Tax Map Parcel Number(s): ___ Tax Map Number: ___

Project: Cypress Mill Dam Removal Agency: American Rivers, Inc.

Agency Prepared By: ___

Preparer's Name: Sarah Clarke Date Prepared: 1/27/2023

Documentation is presented in: Cypress Mill Pond and Dam Architecture Survey

Preparer's Eligibility Recommendation: X Eligibility recommended ___ Eligibility not recommended

Criteria: X A ___B ___C ___D Considerations: ___A ___B ___C ___D ___E ___F ___G

Complete if the property is a contributing or non-contributing resource to a NR district/property:

Name of the District/Property: ___

Inventory Number: ___ Eligible: ___ yes Listed: ___ yes

Site visit by MHT Staff ___ yes X no Name: ___ Date: ___

Description of Property and Justification: *(Please attach map and photo)*

The Cypress Mill Dam is an obsolete dam composed of an earthen berm with a concrete spillway. The dam is breached and in an advanced state of disrepair. The remaining parts of the spillway consists of a water control structure with concrete apron walls and vertical metal posts for removable panels to control the flow of water. The water flow comes from the large mill pond to the north into the smaller pond to the south, which then fed the mill races in the Town of Millington. Currently, there are no boards in place to control the flow of the water; however, debris often accumulates between the metal posts.

The exact construction date of the Cypress Mill Dam is unknown, there is a history of dams and mill ponds in the area starting in the eighteenth century. However, based on the aggregate in the concrete, H&P estimates that the Dam was constructed 1900 c.

Historic Context
Chestertown, the county seat of Kent County, was founded in 1706 along the Chester River on land belonging to Thomas Joyce. Chestertown and Kent County grew quickly, and it was during this time that farmers abandoned tobacco cultivation. The farmers in Kent County realized that the soils in the area were better suited for grain cultivation. Strong business relationships with Quaker

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended ___ **Eligibility not recommended** ___

Criteria: ___A ___B ___C ___D **Considerations:** ___A ___B ___C ___D ___E ___F ___G

MHT Comments:

Reviewer, Office of Preservation Services **Date**

Reviewer, National Register Program **Date**

merchants in Philadelphia facilitated the construction of mills in the County. By the eighteenth century, Kent County was home to many mills and the county participated in the trade of both grain and timber. Trade was further supported by Kent County's position along water routes to Philadelphia and Annapolis (Bourne 1998).

What would become the Town of Millington, is referred to as "head of Chester" in the deeds. Millington was part of a large parcel of land called London Bridge Renewed that belonged to Daniel Massey. Massey began selling off smaller parcels of property, and eventually the land that currently contains Cypress Mill Pond and Dam (K-708) was purchased by Thomas Gilpin. Thomas Gilpin was a merchant in Philadelphia, and in the mid-eighteenth century he began purchasing multiple parcels of land in what would become Millington. In 1763 Gilpin bought land from John Jones, in 1764 from Daniel Massey, and in 1765 from Gilbert Falconer and Henry Clarke. The property that Gilpin bought did not mention mills or mill races; however, the property descriptions all reference Gilpin's contiguous property, which contained a mill (Kent County Land Records).

No conflicts occurred within Kent County during the Revolutionary War. However, it did contribute to the massive amounts of wheat and corn delivered to the Continental Army. The Delmarva Peninsula supplied one-fifth of the wheat and flour, and one-half of the corn received in Philadelphia in 1774. In fact, wheat shipments from the Chester River region were equal to those of the western shore above Annapolis. Chestertown exported two-and-a-half times more wheat than what was produced on the rest of the Eastern Shore (Historical Society of New Kent). In spite of the robust agricultural market during the Revolutionary War, the Cypress Mill Pond and Dam property did not change hands during this time (Kent County Land Records).

Millington was chartered in 1798; though it appears the official name change did not occur until around 1818. In 1807, Millington was described as "a small post town situated on the Chester River. It contains about 40 houses." The turn-of-the-nineteenth century brought an end to Kent County as a hub for the grain trade in Maryland. Baltimore was now the primary port for agricultural goods, and poor cultivation methods had depleted the soil in Kent County (Emory 1950 and Bourne 1998).

Beginning in 1813, the War of 1812 had a profound impact on the citizens of Kent County. The theater of war shifted from the north and Canada to the Chesapeake Bay, and the British began a series of raids in Kent County. Raids at Howell Point and Georgetown, had the citizens of Chestertown on edge. The British army returned in 1814, and had several encounters with the residents of Kent County. All of this culminated in the Battle at Caulk's Field, which resulted in a resounding victory for the United States (Historical Society of Kent County).

The Cypress Mill Pond and Dam property changed hands several times during the antebellum years. The property eventually transferred from Thomas Gilpin to his sons Thomas and Joshua Gilpin. In 1813, Thomas and Joshua Gilpin sold the property to William Farrell and Thomas Seeger. The deed stated that though Farrell and Seeger owned the property, Thomas and Joshua Gilpin retained the right to use the mill races, dams, and appurtenances on the property as needed for their own businesses, as well as the pasture land for their cattle. However, by 1827 Seeger and Farrell lost the property due to an unpaid mortgage and the property was sold by Ezekiel F. Chambers, Trustee, to Samuel Cacy. Samuel Cacy's son, John E. Cacy received the property via his father's will in 1834 (Kent County Land Records).

There were no Civil War battles fought in Kent County. However, Union soldier occupation of the area caused considerable tension with the citizens (Historical Society of Kent County). John E. Cacy still owned the Cypress Mill Pond and Dam property. However, in 1865 George Vickers, Trustee, is charged with selling and disposing of Cacy's real estate for the payment of debts. John Hanna purchases the property from Vickers for $6500 and it included a mill, mill seat, buildings, a meadow, ponds, races, sluices, and premises, at or near Millington (Kent County Land Records).

Martenet's Map of Kent County, Maryland, c 1860 is the first clear map of the area. The property was owned by Cacy at this time

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended _____ **Eligibility not recommended** _____

Criteria: ___A ___B ___C ___D **Considerations:** ___A ___B ___C ___D ___E ___F ___G

MHT Comments:

_____ _____

Reviewer, Office of Preservation Services **Date**

_____ _____

Reviewer, National Register Program **Date**

and there is a residence identified for Cacy; however there is another dot to the west called Cacy, but it is not clear what kind of building it may be.

Kent County experienced major changes in technology and agriculture after the Civil War. First among these was the railroad. Though first chartered in 1856, the Civil War and a lack of investors delayed its completion until 1872. At that time the railroad was leased to the Philadelphia, Wilmington, and Baltimore Railroad. The railroad greatly expanded the market for the produce and grain crops of Kent County. Many Kent County farmers began to grow orchard crops, and by the early-twentieth century peaches were an important crop in the County. But by the 1920s, the peaches were replaced by wheat due to a virus that killed the peach trees. Wheat production continued to increase, particularly during the 1920s (Sutton 1983).

Industry in Kent County was also greatly influenced by the use of steamships to connect the Eastern Shore with the urban markets to the west. Steamships not only carried goods and produce, they carried people and brought tourism to Kent County. The County was now becoming a vacation spot and had two resorts, Betterton and Tolchester. These two institutions of tourism continued to operate into the mid-twentieth century (Historical Society of Kent County 2013). In 1904, a fire destroyed over four acres of Millington. This was a devastating loss for the Town with the destruction of every store, hotel, the Episcopal Chapel, the railroad depot, warehouses, over 100 homes, and almost all businesses (Alexander 1990).

The Cypress Mill Pond and Dam property changed hands many times during this time period. In March 1866, Wesley Jarman purchased the property from John Hanna for $10,500. Jarman sold the property to William Reese in August 1889. The deed stated that the conveyance included a grist mill in Millington, adjacent brick dwelling, and frame house near the brick house, between the house and mill. In November 1892, Reese sold the property to Edwin W. Spear for $7000, it consisted of 16 acres and included a grist mill at Millington. Spear sold the property to James E. Higman in 1905 (Kent County Land Records).

The 1877 Kent and Queen Anne Counties map provides a clear image of the project area from the late-nineteenth century. There does not appear to be any structures in the vicinity of the project area. The deeds from this time also provide a lot more information, specifically that the mill conveyed with the property was located in the Town of Millington. The 1899 and 1906 topographic maps do not show any structures in the vicinity of the project area either.

Agriculture changed considerably in the years after World War II. Corn replaced wheat as the primary crop grown in the County. Previously, corn was considered a more labor intensive crop, and therefore, it did not make economic sense to grow corn over wheat. However, the invention of the corn picker in the 1950s changed the dynamic, and corn became the dominant crop in Kent County (Sutton 1983). As local canneries closed, farmers turned to truck crops like corn, soybeans, and other grains that were milled into feed (Historical Society of Kent County 2013).

The Cypress Mill Pond and Dam property changed hands multiple times during this period. John W. Higman received the property from his mother Catherine Higman in June 1942. In August 1946, J. Karl Bauer purchased the property from John W. Higman. In August 1948, the property conveyed from J. Karl Bauer to Robert G. O'Dell. The deed stated that the property included all those lands known as Higman Mill including the mill, lying and being in and near the Town of Millington, bounded in part by Sassafras Street in said town, other lands owned by J. Karl Bauer, the Queen Anne and Kent Railroad Company, and the waters of the Chester River containing 10 ½ acres of land. Robert G. O'Dell sold the land to Claude and Evelyn Everett in March 1952. The transfer included two mill ponds and mill pond properties formally called Gilpin's Mill Pond, Cacy's Mill Pond, Jarmin's Mill Pond, Higman's Mill Pond, Big Pond, and Little Pond. In March 1962, Claude and Evelyn Everett sold the property to John and Dorothy Burns. In January 1994, Burns sold the land to the Maryland Department of Natural Resources. The deed described the property as consisting of the Mill Pond and Mill Pond property situated to the northeast of the Town of Millington. The conveyance of the land included the water in the pond, canals, ways, rights, appurtenances, dams, banks, gates, sluices, and

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended _____ **Eligibility not recommended** _____

Criteria: ___A ___B ___C ___D **Considerations:** ___A ___B ___C ___D ___E ___F ___G

MHT Comments:

_____ _____

Reviewer, Office of Preservation Services **Date**

_____ _____

Reviewer, National Register Program **Date**

mill races. The property is now part of the Cypress Mill State Park (Kent County Land Records).

As a result of the survey, H&P recommends that Cypress Mill Pond and Dam are eligible for the NRHP under Criterion A for trends in history related to the mill history of the area and the Town of Millington. Based on the deed and historical research conducted for the project, it appears that the Cypress Mill Pond and Dam funneled water to mill races that powered mills in the Town of Millington. The Cypress Mill Pond and Dam is not recommended eligible under Criterion B, there is no known connection with important people. It is not recommended eligible under Criterion C for architecture, the dam has been breached and is in an advanced state of disrepair. In addition, the dam is of a common design and composed of stock materials. Finally, the Cypress Mill Pond and Dam is not recommended eligible under Criterion D, pedestrian survey and map research indicate that the area has a low potential for archaeological resources. Background research and field survey indicates that mills and related structures were located some distance away at Millington and that the project area is badly disturbed by flooding.

MARYLAND HISTORICAL TRUST REVIEW

Eligibility recommended _____ **Eligibility not recommended** _____

Criteria: ___A ___B ___C ___D **Considerations:** ___A ___B ___C ___D ___E ___F ___G

MHT Comments:

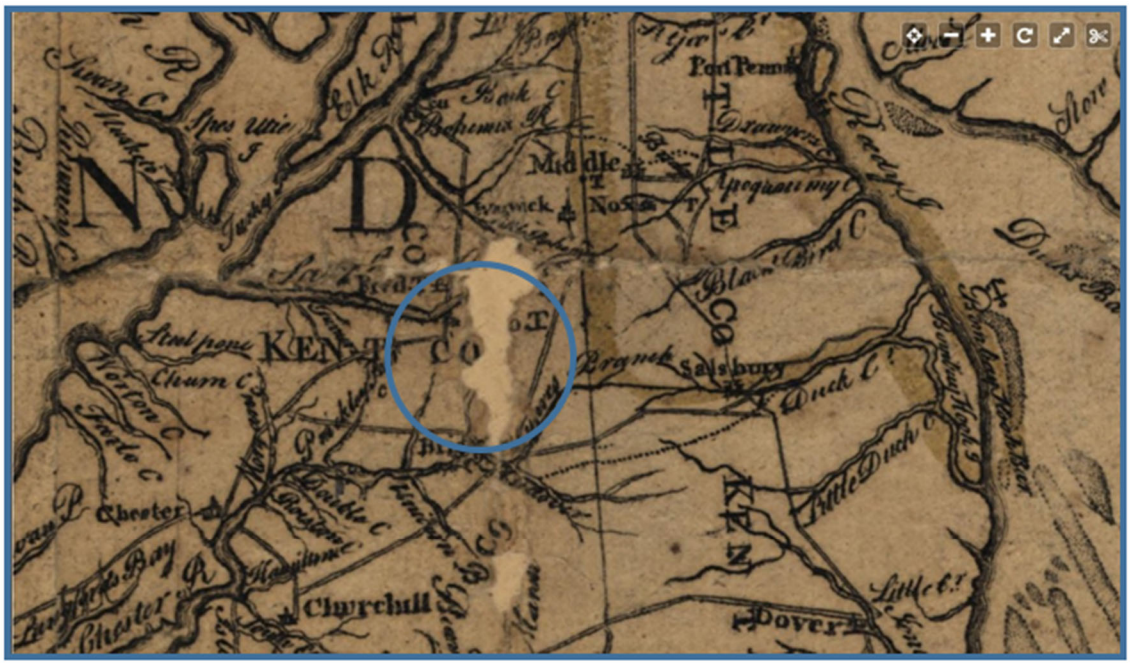
_____ _____

Reviewer, Office of Preservation Services **Date**

_____ _____

Reviewer, National Register Program **Date**

Cypress Mill Pond and Dam (K-708)
Kent County
Historic Maps



Map of the Peninsula between Delaware and Chesopeak Bay, with said bays and shores adjacent drawn from the most accurate surveys, 1770. Available at the Library of Congress. Project area outlined in blue.

Cypress Mill Pond and Dam (K-708)
Kent County
Historic Maps

A Map of the State of Delaware and the Eastern Shore of Maryland; with the surroundings of the Bay of Delaware, 1801. Available at the Library of Congress. Project area outlined in blue.

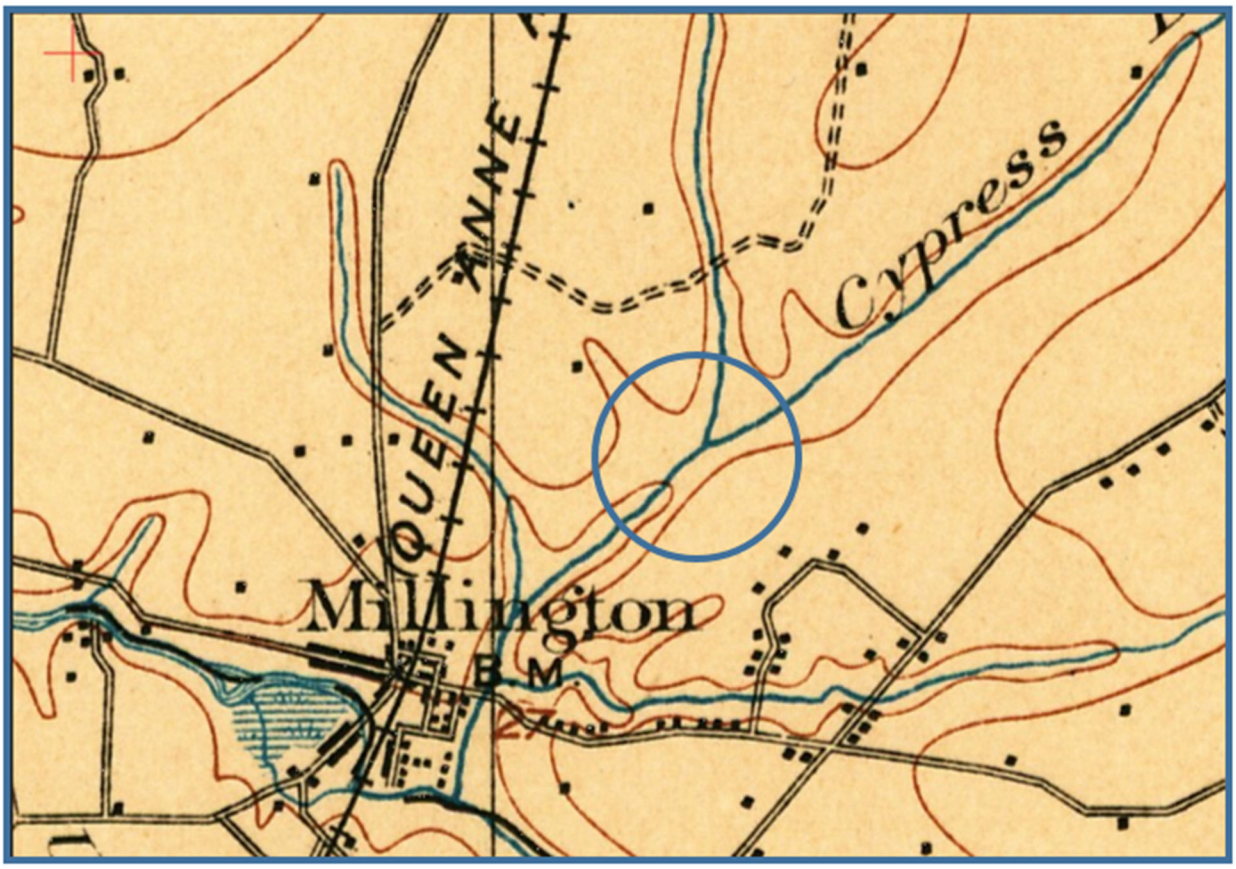
Cypress Mill Pond and Dam (K-708)
Kent County
Historic Maps

Martenet's Map of Kent County, Maryland, shorelines and surroundings from U.S. Coast Survey, roads and inland from actual surveys by C.H. Baker, county surveyor, under the direction, and drawn, and published by Simon J. Martenet, c 1860. Available at the Library of Congress. Project area outlined in blue.

Cypress Mill Pond and Dam (K-708)
Kent County
Historic Maps

Kent and Queen Anne Counties. Lake, Griffing, and Stevenson, 1877. Available at historicmapworks.com. Project area outlined in blue.

Cypress Mill Pond and Dam (K-708)
Kent County
Historic Maps

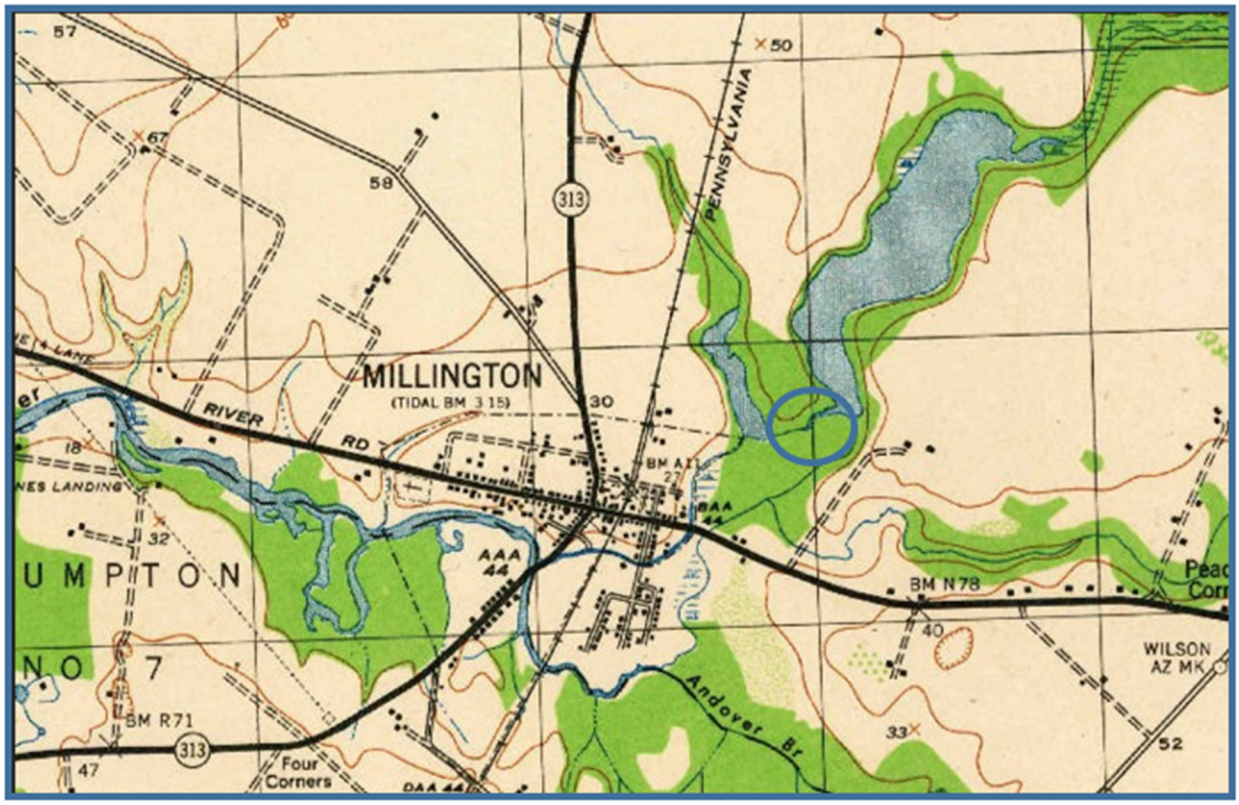


USGS Topographic map, Dover quad, 1899. Available at usgs.gov. Project area outlined in blue.

Cypress Mill Pond and Dam (K-708)
Kent County
Historic Maps

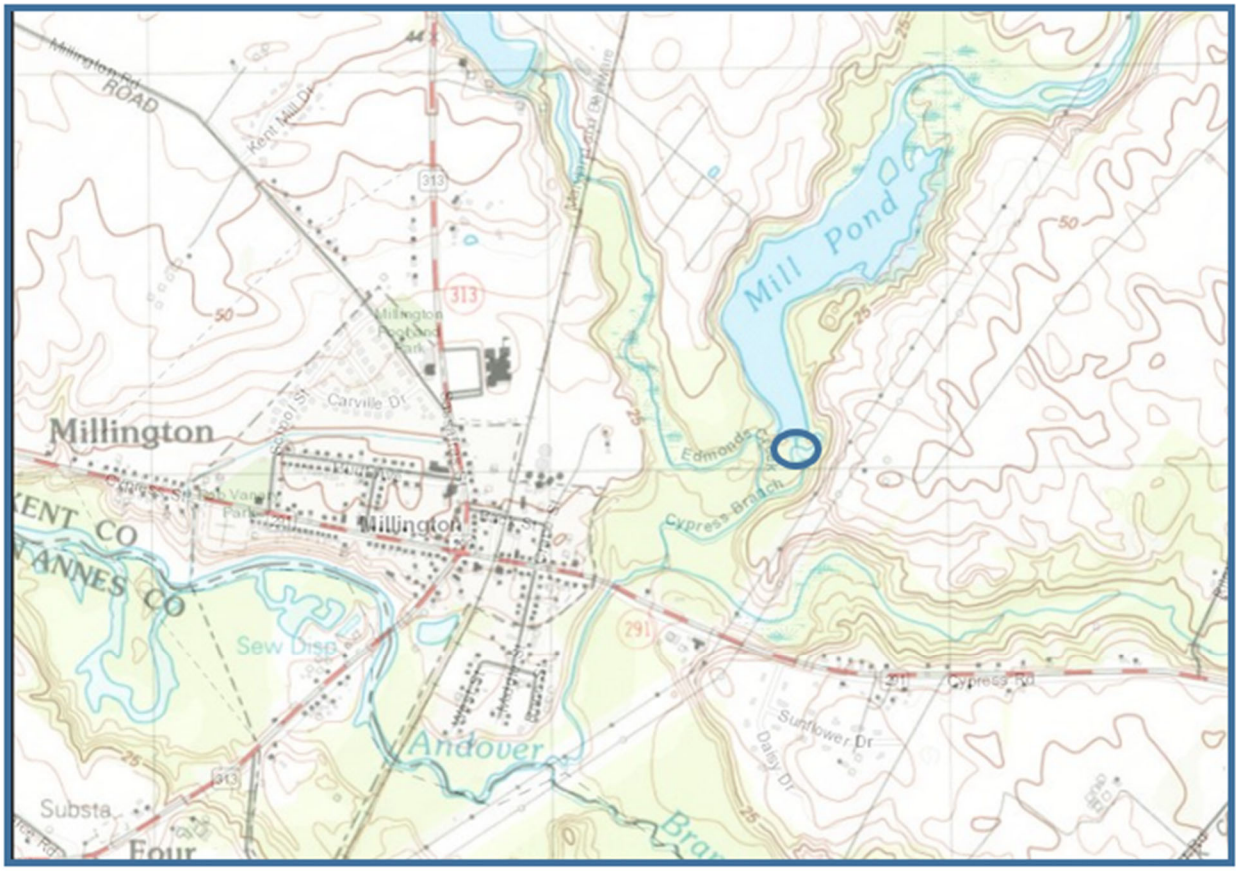
USGS Topographic map, Dover Quad 1906. Available usgs.gov. Project area outlined in blue.

Cypress Mill Pond and Dam (K-708)
Kent County
Historic Maps



USGS Topographic map, Millington MD-DE Quad 1944. Available at usgs.gov. Project area outlined in blue.

Cypress Mill Pond and Dam (K-708)
Kent County
Historic Maps



USGS Topographic map. Millington Quad 1993. Available at usgs.gov.
Project area outlined in blue.

Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the Northeast
Photo 1 of 11

Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the North
Photo 2 of 11

Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the Northwest
Photo 3 of 11

Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the West
Photo 4 of 11

Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the West
Photo 5 of 11

Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the East
Photo 6 of 11

Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the East
Photo 7 of 11

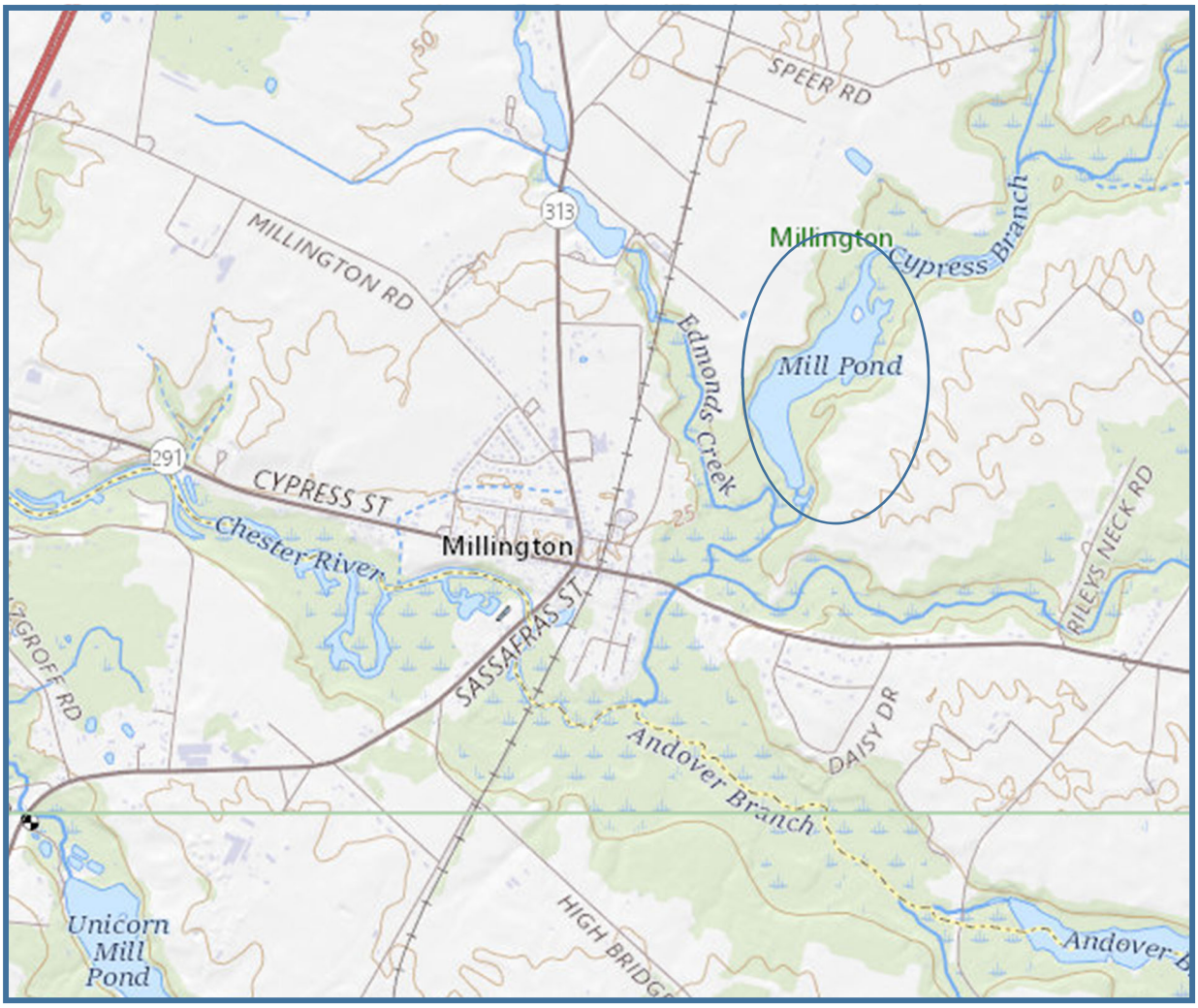
Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the Northwest
Photo 8 of 11

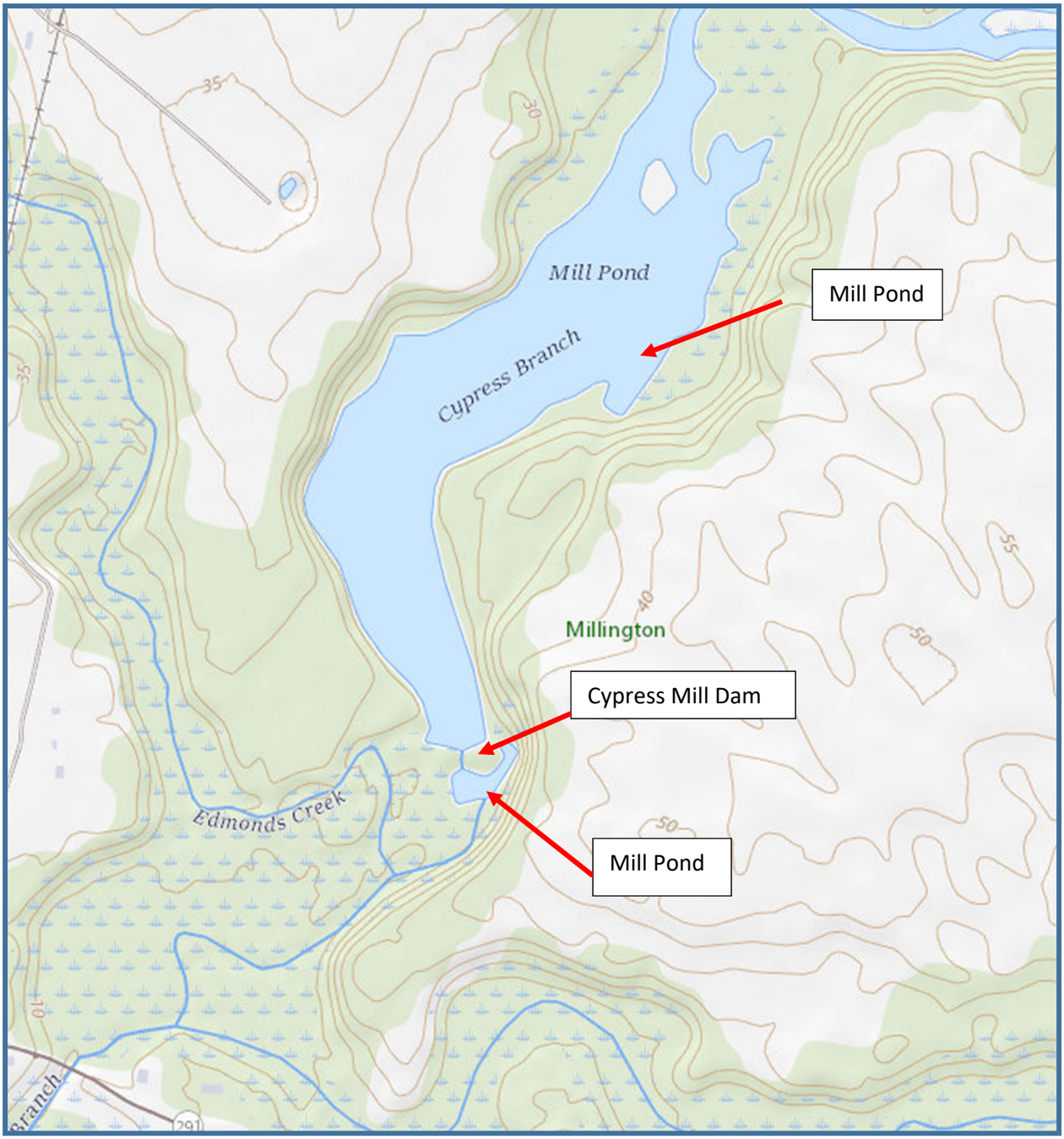
Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the Southeast
Photo 9 of 11

Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the Northeast
Photo 10 of 11

Cypress Mill Pond and Dam (K-708)
Kent County
Sarah Clarke 12/2022
View to the Southeast
Photo 11 of 11

Cypress Mill Pond and Dame
Millington, MD 21651
Millington Quad
39.261420; -75.828350




Mill Pond
Cypress Branch
Mill Pond
Millington
Cypress Mill Dam
Edmonds Creek
Mill Pond
35
30
35
40
50
55
50
10
291

Kent County Historic Preservation Commission

Certificate of Appropriateness Application

For Office Use Only

Building Permit # (if applies):_____ Certificate Application #: _____ Date Received: ____/____/____

HPC Hearing Date: ____/____/____ Application Accepted as Complete: ____/____/____

HPC/Staff Decision: Certificate of Appropriateness Granted: ____/____/____

Rejected: ____/____/____

Deferred for Information/Consultation: ____/____/____

Please print or type. Applications must be received at least 10 days prior to the hearing.

1. APPLICANT

Name: Power Factor - Cary Shank

Address: 8240 Beachwood Road
Baltimore, Md. 21222

Home Phone: (____) _____ - _____ Work Phone: (443) 559 - 0174

Owner Name and Address (if other than applicant): Francis Bonass, 11943 Augustine Herman Hwy Kennedyville, Md 21645

2. HISTORIC PROPERTY

Name (as listed in Kent Co. Register of Historic Places): Dolly E Baker

Street Address: 11943 Augustine Herman Hwy

Tax Map & Parcel Number: 0021 / 0056 Zoning Classification: _____

3. TYPE OF CHANGE (check all that apply)

☐ Fence/Wall	☐ Windows	☐ Excavation/Grading	☐ Porch/Deck	☐ Addition
☐ Utilities	☐ Siding	☐ Accessory Building	☐ New Construction	☐ Relocation
☐ Landscaping	☐ Roofing	☐ Restoration/Repair	☐ In-kind Replacement	☐ Demolition

☒ Other: Solar Panel Installation

☒ Visible from public way ☐ Not visible from public way

4. FOR PROPERTIES UNDER EASEMENT FROM A HISTORIC PRESERVATION ORGANIZATION:

Please provide written approval of requested change from easement holder.

5. WORK BEING PERFORMED BY:

Architect or Engineer: _____

Building Contractor: Power Factor - 8240 Beachwood Road Baltimore Md. 21222

Other: Electrician - George Lang - Same as Above

6. REQUIRED ATTACHMENTS TO THIS APPLICATION:

☒ Site Plan ☐ Elevation ☐ Detail Drawing(s) or Sketch(es)

☐ Materials Sample(s) ☐ Photographs (4x6 or larger) ☒ Other

(Please discuss appropriate photographs/materials with Staff prior to application submission.)

7. TAX CREDITS:

A. I plan to apply for a Federal tax credit for this project:

☒ Yes ☐ No

B. I plan to apply for a State tax credit for this project:

☒ Yes ☐ No

8. I have applied for another Kent County permit, approval or license regarding this property:

☒ Yes ☐ No

9. DESCRIPTION OF PROPOSED WORK: (Attach extra sheets as needed. Please provide information on the feature, approximate date of feature, existing condition, and impact of proposed work.)

Install (44) rooftop modules 17.60KW

11. PLEASE READ AND INITIAL THE FOLLOWING STATEMENTS:

CD I am the owner of this property, or

____ I am acting on behalf of the owner(s) and have attached a letter from the owner(s) indicating their knowledge of this application.

____ The information on this application represents an accurate description of the proposed work. I have omitted nothing that might affect the decision of the Historic Preservation Commission.

____ I understand that the approval of this application by the Kent County Historic Preservation Commission does **not** constitute approval of other required federal, state, or local permit applications.

____ I agree to supply two additional photographs of the appropriate representative views of the proposed work when the job is completed.

____ I will attend (or send a representative to attend) the public hearing of this application before the Historic Preservation Commission.

____ I understand that issuance of a Certificate of Appropriateness is **not** an authorization to begin work.

05/02/2023

Signature of Applicant *Date*

PHOTOVOLTAIC ROOF MOUNT SYSTEM

12 MODULES-ROOF MOUNTED - 4.800 kWDC, 4.188 kWAC

11943 AUGUSTINE HERMAN HWY, KENNEDYVILLE, MD 21645, USA

SYSTEM SUMMARY:
(N) 12 - HANWHA SOLAR Q.PEAK DUO BLK ML-G10+ 400 (400W) MODULES
(N) 12 - ENPHASE ENERGY IQ8A-72-2-US MICRO-INVERTERS [240V]
(N) 01 - JUNCTION BOX
(E) 200A MAIN SERVICE PANEL WITH NO MAIN BREAKER
(N) 150A MAIN SERVICE DISCONNECT
(N) 30A FUSED AC DISCONNECT
(N) ENPHASE IQ COMBINER BOX 4

INTERCONNECTION METHOD : LINE SIDE TAP

DESIGN CRITERIA:
ROOF TYPE: - ASPHALT SHINGLE
NUMBER OF LAYERS: - 01
ROOF FRAME: - 2"X4" RAFTERS @ 24" O.C.
STORY: - TWO STORY
SNOW LOAD : - 25 PSF
WIND SPEED :- 112 MPH
WIND EXPOSURE:- C
RISK CATEGORY:- II

GOVERNING CODES:
2018 INTERNATIONAL CODE COUNCIL (ICC)
2018 INTERNATIONAL BUILDING CODE (IBC)
2018 INTERNATIONAL RESIDENTIAL CODE (IRC)
2018 INTERNATIONAL MECHANICAL CODE (IMC)
2018 INTERNATIONAL FIRE CODE (IFC)
2017 NATIONAL ELECTRICAL CODE (NEC)

SHEET INDEX

GENERAL NOTES
- THE CONTRACTOR/INSTALLER OF THE SOLAR PV SYSTEM OVER EXISTING ROOF SHALL CONFORM TO OSHA REQUIREMENTS DURING THE CONSTRUCTION PHASE. JOB SAFETY AND CONSTRUCTION PROCEDURES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR/INSTALLER.
- REFER TO ELECTRICAL DRAWING PV-4 FOR PANEL DETAILED INFORMATION.
- IN CASE OF CONFLICT BETWEEN STRUCTURAL DRAWINGS AND ELECTRICAL DRAWINGS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.
- THE CONTRACTOR/INSTALLER SHALL VERIFY ALL EXISTING BUILDING INFORMATION SHOWN (DIMENSIONS, ROOF TOP PROJECTIONS, ETC.) AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO INSTALLATIONS OF PV SYSTEM.
- THE CONTRACTOR/INSTALLER SHALL VERIFY AND COORDINATE EXISTING OPENINGS, ROOF TOP UNITS, VENT PIPES, ETC. SHOWN ON DRAWINGS. IF THERE IS A DISCREPANCY BETWEEN DRAWINGS, IT IS THE CONTRACTORS/INSTALLER'S RESPONSIBILITY TO NOTIFY ENGINEER PRIOR TO PERFORMING THE WORK.
- ALL CONSTRUCTION IS TO BE PERFORMED IN STRICT CONFORMANCE WITH ALL APPLICABLE TOWN, COUNTY & STATE REGULATIONS AND/OR ANY OTHER GOVERNING BODIES.
- DO NOT SCALE THESE DRAWINGS, USE DIMENSIONS. CONTRACTOR MUST CONDUCT ROOF SURVEY TO VERIFY DIMENSIONS SHOWN ON PLAN PRIOR TO INSTALLATION. IF THERE IS A DISCREPANCY IT IS CONTRACTOR/INSTALLER'S RESPONSIBILITY TO NOTIFY THE ENGINEER IMMEDIATELY.

ELECTRICAL NOTES
- ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 & 75 DEGREE C WET ENVIRONMENT.
- WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER E.G.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

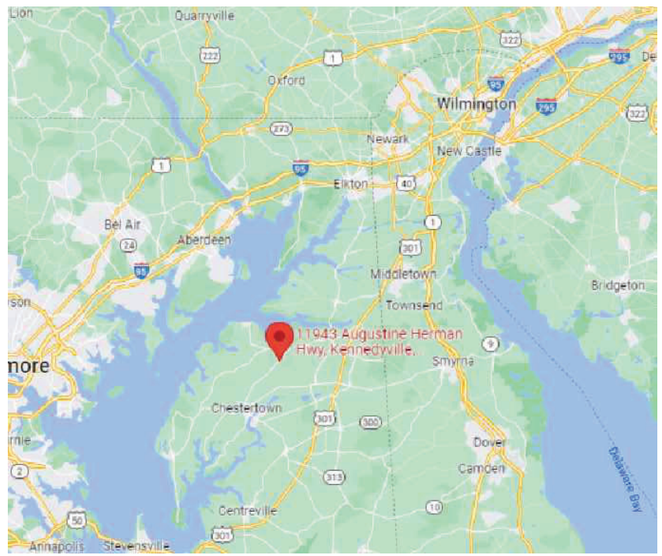
STATE OF MARYLAND
ROBERT A. LADE
54037
PROFESSIONAL ENGINEER

STAMPED 08/02/2023

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. 54037
EXPIRATION DATE: 3/6/2025

STRUCTURAL NOTES :
1. THESE PLANS ARE STAMPED FOR STRUCTURAL CODE COMPLIANCE OF THE ROOF FRAMING SUPPORTING THE PROPOSED PV INSTALLATION ONLY.
2. . THESE PLANS ARE NO STAMPED FOR WATER LEAKAGE.
3. . PV MODULES, RACKING, AND ATTACHMENT COMPONEN MUST FOLLOW MANUFACTURER GUIDELINES AND REQUIREMENTS.
4. PLEASE SEE THE ACCOMPANYING STRUCTURA CALCULATIONS REPORT FOR ADDITIONAL INFORMATION.
5. PRIOR TO COMMENCEMENT OF WORK, THE SOLA INSTALLER SHALL VERIFY THE ROOF FRAMING INFO BEFORE INSTALLATION AND NOTIFY THE E.O.R. IF THERE IS ANY INCONSISTENCY BETWEEN SITE VERIFICATION AND FOLLOWING: **2x4 RAFTERS @ 24" OC SPACING WITH MAX UNSUPPORTED SPAN EQUAL OR LESS THAN 8 FT.**

1 AERIAL PHOTO
PV-0 SCALE: NTS



2 VICINITY MAP
PV-0 SCALE: NTS

N W E S

powur®
DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL: CHAT.POWUR.COM

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	01/11/2023	UR

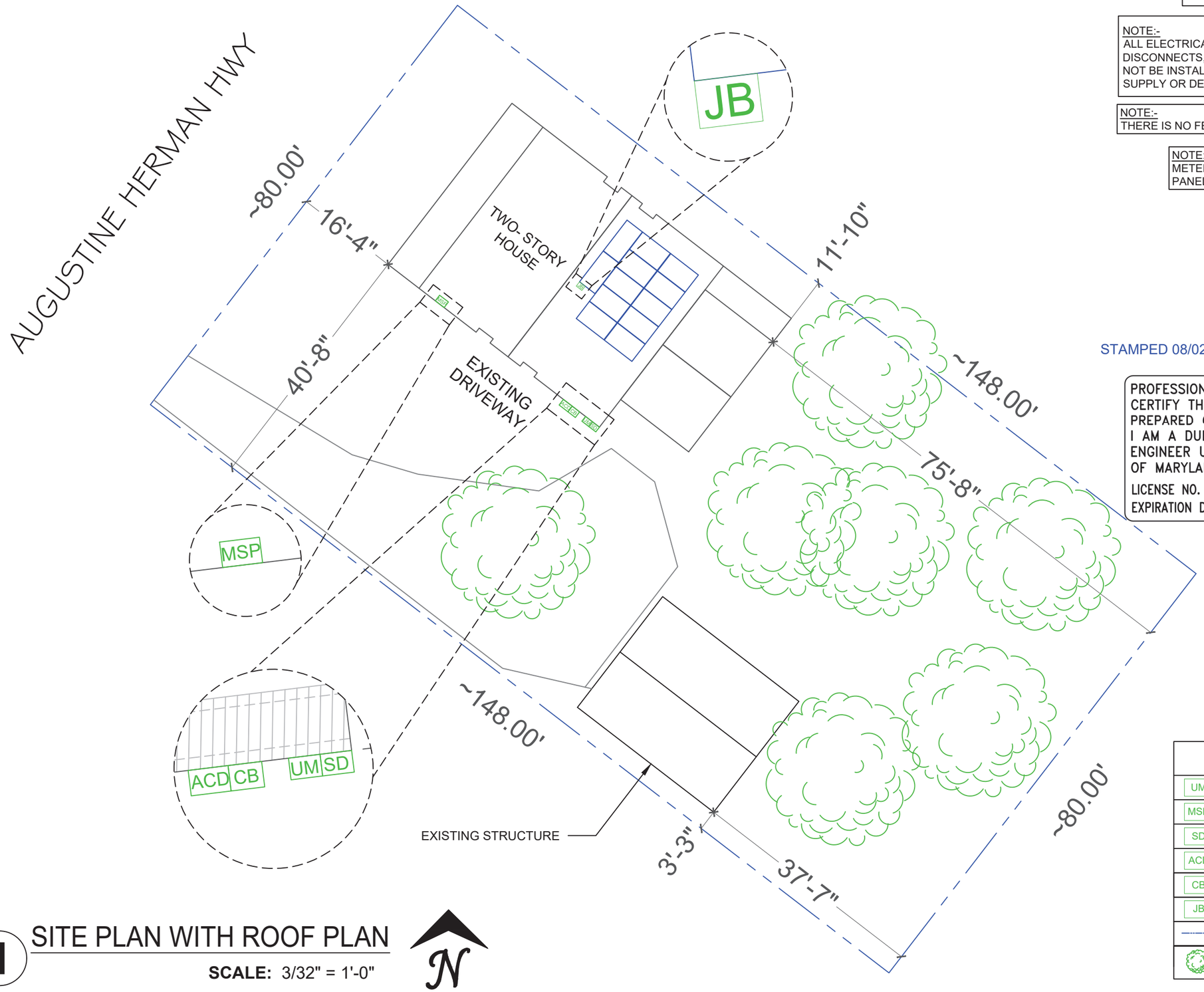
PROJECT NAME
FRANCIS BONASS 262346
11943 AUGUSTINE HERMAN HWY,
KENNEDYVILLE,MD 21645 USA
APN# 1502003538
UTILITY: DELMARVA POWER
AHJ: KENT COUNTY

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-0

● **ROOF ACCESS POINT** SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.



NOTE:
3/4" OR GREATER EMT CONDUIT RUN (7/8 INCHES ABOVE ROOF)

NOTE:-
ALL ELECTRICAL EQUIPMENT, COMBINERS, DISCONNECTS, MAIN SERVICE PANELS, ETC. SHALL NOT BE INSTALLED WITHIN 3' OF THE GAS METERS' SUPPLY OR DEMAND PIPING.

NOTE:-
THERE IS NO FENCE AND GATE IN THIS PROPERTY

NOTE:-
METER AND MAIN SERVICE DISCONNECT PANEL ARE TO BE RELOCATED

STATE OF MARYLAND
ROBERT A. LADE
54037
PROFESSIONAL ENGINEER

STAMPED 08/02/2023

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. 54037
EXPIRATION DATE: 3/6/2025

LEGEND	
UM	UTILITY METER
MSP	MAIN SERVICE PANEL
SD	MAIN SERVICE DISCONNECT
ACD	AC DISCONNECT
CB	ENPHASE IQ COMBINER 4
JB	JUNCTION BOX
----------	PROPERTY LINE
	TREES

1 SITE PLAN WITH ROOF PLAN

SCALE: 3/32" = 1'-0"

N

powur®
DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
CHAT.POWUR.COM

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	01/11/2023	UR

PROJECT NAME
FRANCIS BONASS 262346
11943 AUGUSTINE HERMAN HWY
KENNEDYVILLE,MD 21645 USA
APN# 1502003538
UTILITY: DELMARVA POWER
AHJ: KENT COUNTY

SHEET NAME
SITE PLAN WITH ROOF PLAN

SHEET SIZE
ANSI B
11" X 17"

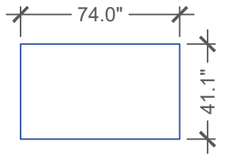
SHEET NUMBER
PV-1

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 12 MODULES
MODULE TYPE = HANWHA SOLAR Q.PEAK DUO BLK ML-G10+ 400 (400W) MODULES
MODULE WEIGHT = 48.5 LBS / 22.0 KG.
MODULE DIMENSIONS = 74.0"X 41.1" = 21.12 SF
UNIT WEIGHT OF ARRAY = 2.30 PSF

DISTRIBUTED DEAD LOAD = 2.57 PSF
AVERAGE ROOF POINT DEAD LOAD = 21.02 LBS
TOTAL SYSTEM WEIGHT: 651.74 LBS

PHOTOVOLTAIC MODULES
HANWHA SOLAR Q.PEAK DUO BLK ML-G10+ 400 (400W)



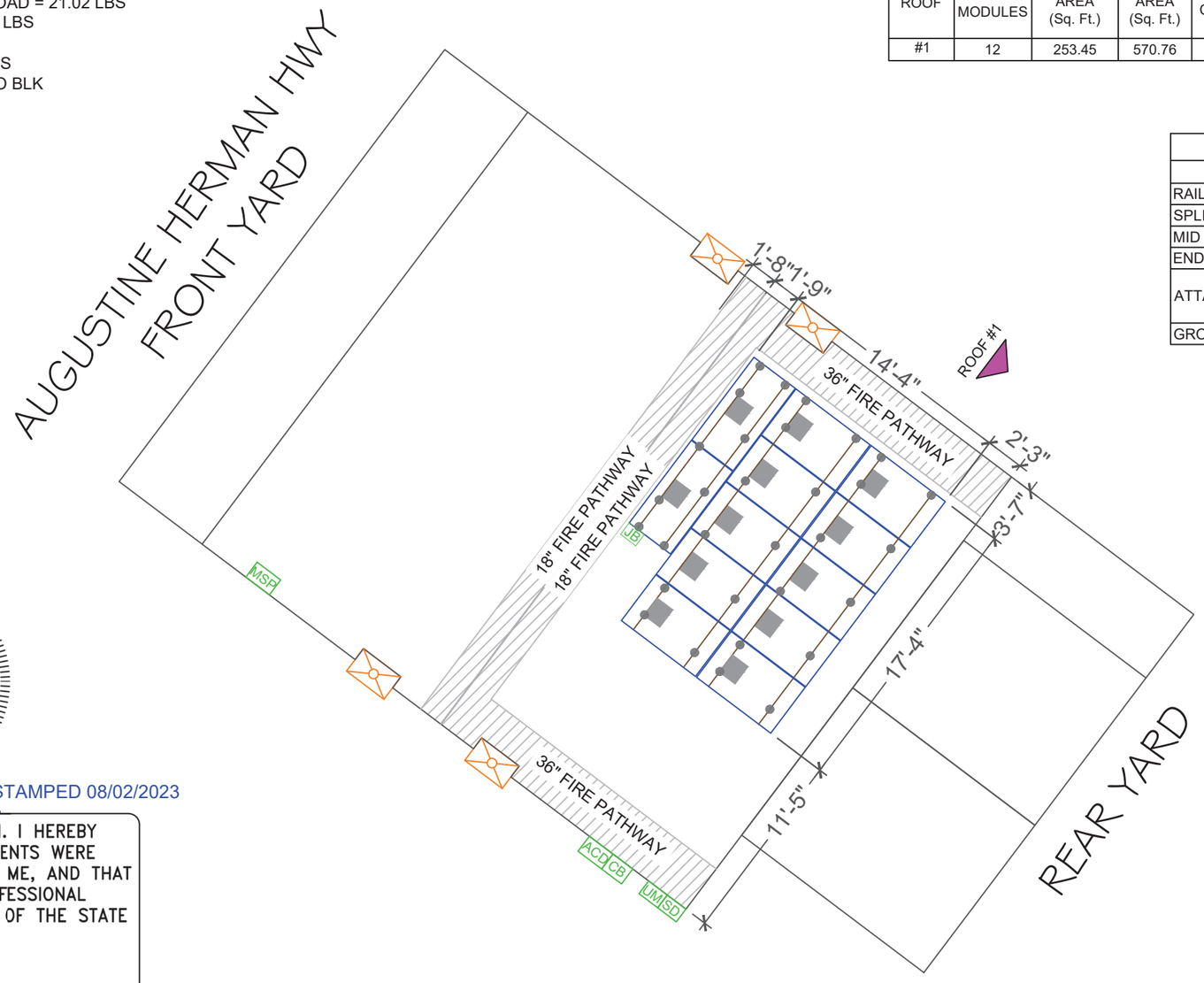
ARRAY AREA & ROOF AREA CALC'S		
AREA OF NEW ARRAY (Sq. Ft.)	AREA OF ROOF(PLAN VIEW) (Sq. Ft.)	TOTAL ROOF AREA COVERED BY ARRAY %
253.45	1722.12	15%
15%	ROOF AREA (ARRAY <33% OF ROOF AREA)	

NOTE:
3/4" OR GREATER EMT CONDUIT RUN (7/8 INCHES ABOVE ROOF)

ARRAY AREA & ROOF AREA CALC'S		
AREA OF NEW ARRAY (Sq. Ft.)	AREA OF ROOF(PLAN VIEW) (Sq. Ft.)	TOTAL ROOF AREA COVERED BY ARRAY %
253.45	1722.12	15%
15%	ROOF AREA (ARRAY >33% OF ROOF AREA)	

ARRAY AREA & ROOF AREA CALC'S				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	12	253.45	570.76	44.41

ROOF DESCRIPTION			
ROOF TYPE		ASPHALT SHINGLE ROOF	
ROOF	# OF MODULES	ROOF TILT	AZIMUTH
#1	12	26°	128°



BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
RAIL	07	UNIRAC SM LIGHT RAIL 168" MILL
SPLICE	04	BND SPLICE BAR PRO SERIES MILL
MID CLAMP	18	UNIVERSAL AF SERIES MID CLAMP
END CLAMP	12	UNIVERSAL AF SERIES END CLAMP
ATTACHMENT	31	UNIRAC FLASHLOC DUO ATTACHMENTS
GROUNDING LUG	03	GROUND LUG

NOTE:-
METER AND MAIN SERVICE DISCONNECT PANEL ARE TO BE RELOCATED

LEGEND	
UM	UTILITY METER
MSP	MAIN SERVICE PANEL
SD	MAIN SERVICE DISCONNECT
CB	ENPHASE IQ COMBINER 4
ACD	AC DISCONNECT
JB	JUNCTION BOX
	SM LIGHT RAIL
	MICRO-INVERTER
	ROOF ATTACHMENT @ 48" O.C.
	VENT, ATTIC FAN (ROOFOBSTRUCTION)
	CHIMNEY

STATE OF MARYLAND
ROBERT A. JADE
54037
PROFESSIONAL ENGINEER
STAMPED 08/02/2023

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. 54037
EXPIRATION DATE: 3/6/2025

1 ROOF PLAN WITH MODULES

SCALE: 1/8" = 1'-0"

N

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DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
CHAT.POWUR.COM

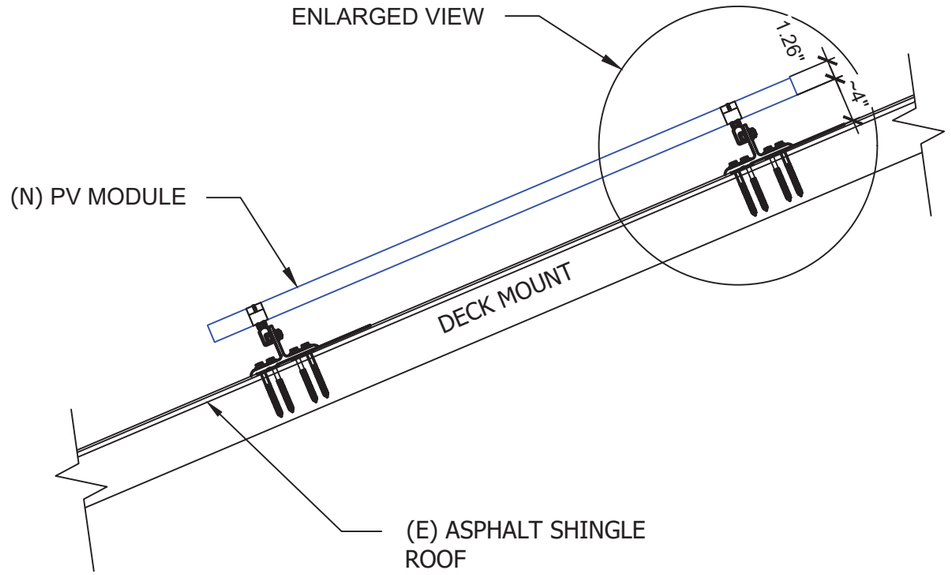
VERSION		
DESCRIPTION	DATE	REV
INITIAL RELEASE	01/11/2023	UR

PROJECT NAME
FRANCIS BONASS 262346
11943 AUGUSTINE HERMAN HWY,
KENNEDYVILLE,MD 21645 USA
APN# 1502003538
UTILITY: DELMARVA POWER
AHJ: KENT COUNTY

SHEET NAME
ROOF PLAN WITH MODULES

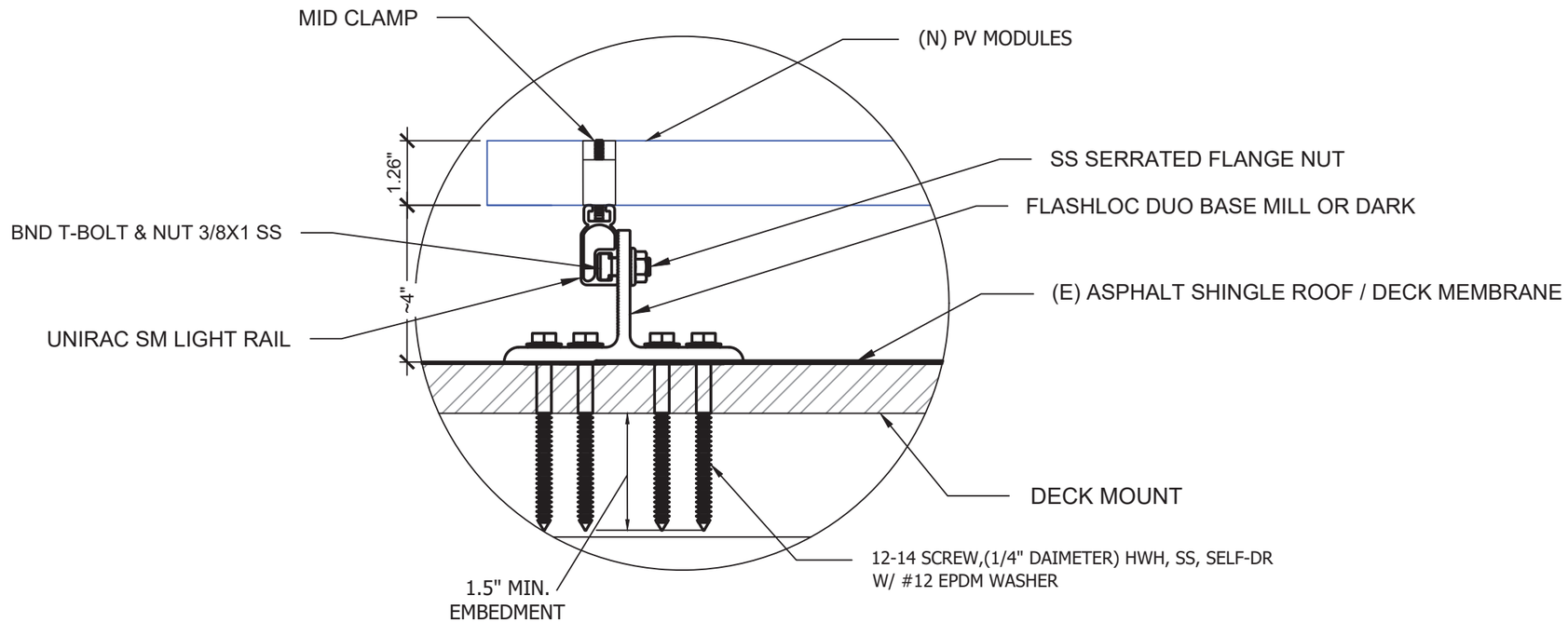
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2



1 ATTACHMENT DETAIL

SCALE: NTS



2 ATTACHMENT DETAIL (ENLARGED VIEW)

SCALE: NTS

STATE OF MARYLAND
ROBERT A. LADE
54037
PROFESSIONAL ENGINEER

STAMPED 08/02/2023

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PROJECT NAME

FRANCIS BONASS 262346
11943 AUGUSTINE HERMAN HWY,
KENNEDYVILLE,MD 21645 USA
APN# 1502003538
UTILITY: DELMARVA POWER
AHJ: KENT COUNTY

SHEET NAME
ATTACHMENT DETAIL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

SERVICE INFO.	
UTILITY PROVIDER:	DELMARVA POWER
MAIN SERVICE VOLTAGE:	240V
MAIN PANEL BRAND:	SQUARE D
MAIN SERVICE PANEL:	(E) 200A
MAIN CIRCUIT BREAKER RATING:	(N) 150A
MAIN SERVICE LOCATION:	SOUTH-WEST
SERVICE FEED SOURCE:	OVERHEAD

AMBIENT TEMPERTURE SPECIFICATIONS

RECORD LOW TEMP	AMBIENT TEMP (HIGH TEMP 2%)	CONDUIT HEIGHT	CONDUCTOR TEMPERATURE RATE (ON ROOF)	CONDUCTOR TEMPERATURE RATE (OFF ROOF)
-13°	33°	7/8 "	90°	75°

SYSTEM SIZE:- 12 x 400W = 4.800 kWDC

SYSTEM SIZE:- 12 x 349W = 4.188 kWAC

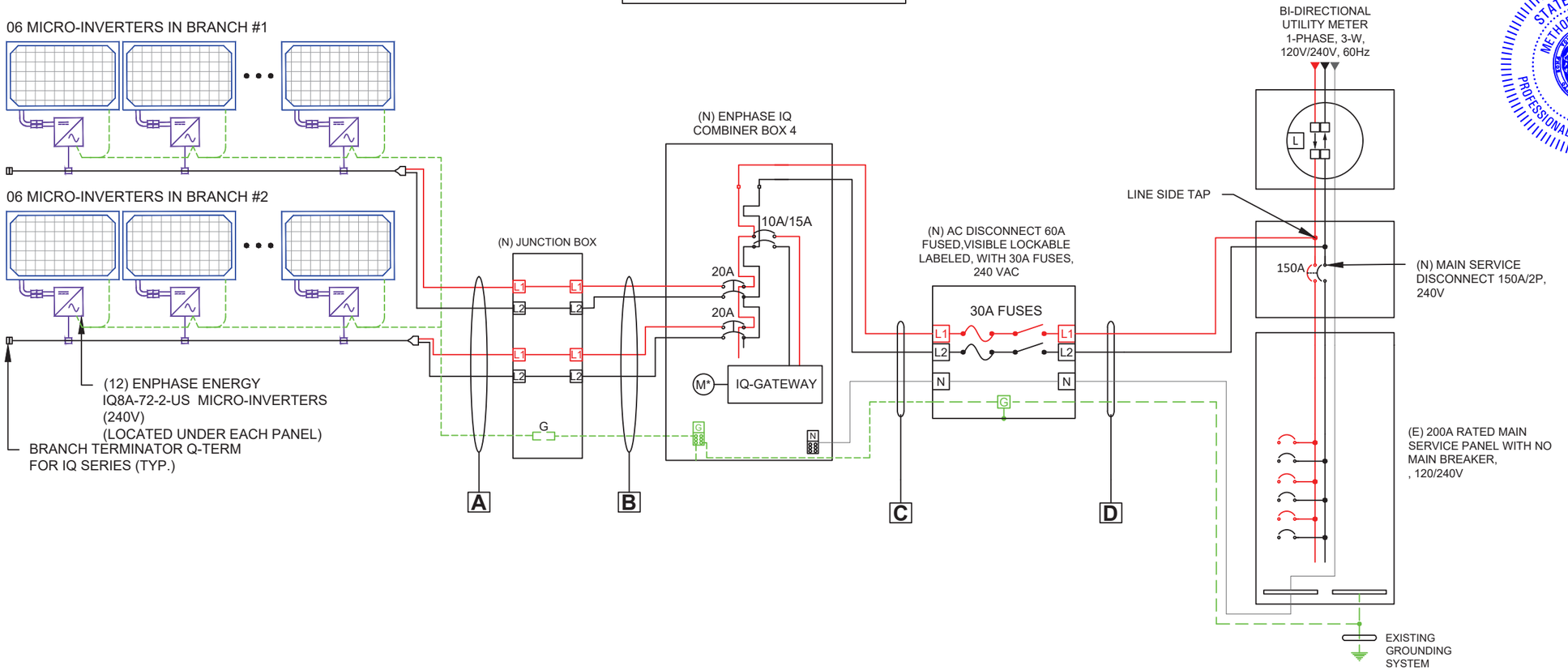
NOTE:-
METER AND MAIN SERVICE DISCONNECT PANEL ARE TO BE RELOCATED

SOLAR MODULE SPECIFICATIONS

MANUFACTURER / MODEL #	VMP	IMP	VOC	ISC	TEMPERATURE COEFFICIENT OF Voc	# OF MODULES
HANWHA SOLAR Q.PEAK DUO BLK ML-G10+ 400 (400W)	37.13	10.77	45.30	11.14	-0.27%/°C	12
MODULE DIMENSION	74.0" L x 41.1" W x 1.26" D					

INVERTER SPECIFICATIONS

MANUFACTURER / MODEL #	QUANTITY	NOMINAL OUTPUT VOLTAGE	NOMINAL OUTPUT CURRENT
ENPHASE ENERGY IQ8A-72-2-US	12	240 VAC	1.45A



WIRE TAG	CONDUIT	WIRE QTY	WIRE GAUGE	WIRE TYPE	TEMP. RATING	WIRE AMPACITY (A)	TEMP. DERATE	CONDUIT FILL DERATE	DERATED AMPACITY (A)	INVERTER QTY.	DESIGN CURRENT (A)	GROUND SIZE	GROUND WIRE TYPE
A	OPEN AIR	2	12 AWG	Q-CABLES	90°C	30	0.96	1.0	28.80	11	15.95	06 AWG	BARE CU GND
B	3/4" EMT	4 2	10 AWG 12 AWG	THWN-2 NM-B CABLES WHERE RUN INDOORS	90°C	40 30	0.96	0.8	30.72 23.04	11	15.95	10 AWG	THWN-2
C	3/4" EMT	3	10 AWG	THWN	75°C	35	0.94	1.0	32.90	12	17.40	10 AWG	THWN-2
D	3/4" EMT	3	6 AWG	THWN	75°C	65	0.94	1.0	61.10	12	17.40	8 AWG	THWN-2

1 ELECTRICAL LINE DIAGRAM WITH CALCULATION

SCALE: NTS

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. 52692
Expiration Date: 05/24/2024

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11943 AUGUSTINE HERMAN HWY,
KENNEDYVILLE,MD 21645 USA
APN# 1502003538
UTILITY: DELMARVA POWER
AHJ: KENT COUNTY

SHEET NAME
ELECTRICAL LINE DIAGRAM WITH CALCULATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-4

⚠ WARNING

ELECTRIC SHOCK HAZARD

TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION:
MAIN SERVICE PANEL
(PER CODE: NEC 690.13(B))

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:
MAIN SERVICE PANEL & NET METER
(PER CODE: NEC 705.12(D)(3), NEC 705.12(B)(3-4) & NEC 690.59)

PHOTOVOLTAIC

AC DISCONNECT

LABEL LOCATION:
AC DISCONNECT
NEC 690.13(B)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL LOCATION:
RAPID SHUTDOWN
(PER CODE: NEC 690.56(C)(3)

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 31.90 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT & INVERTER
(PER CODE: NEC690.54)

WARNING:PHOTOVOLTAIC POWER SOURCE

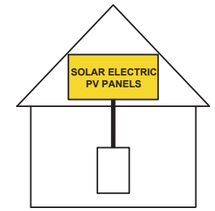
LABEL LOCATION:
CONDUIT, COMBINER BOX
(PER CODE: NEC 690.31(G)(3)

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

LABEL LOCATION:
MAIN SERVICE DISCONNECT / UTILITY METER
(PER CODE: NEC 690.13(B))

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

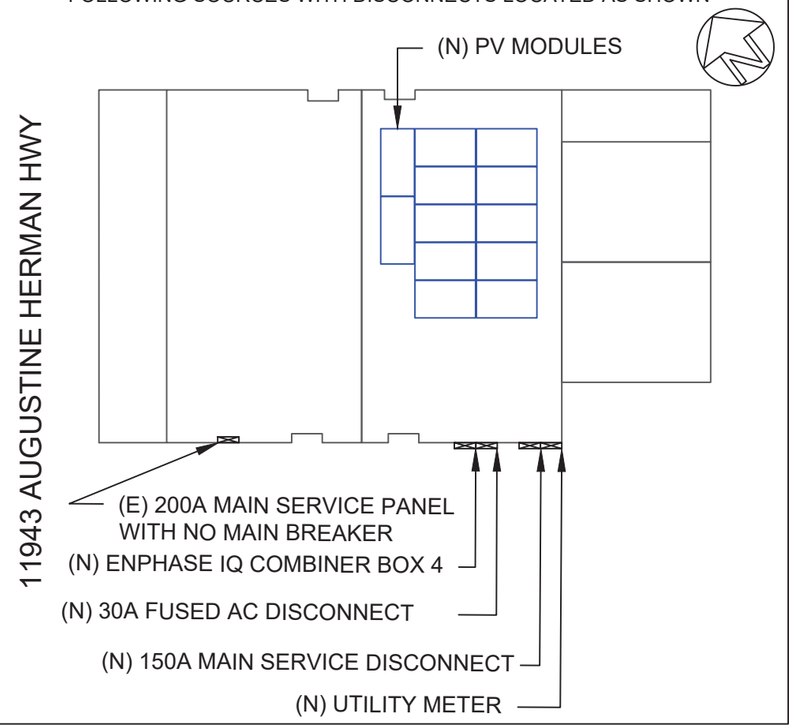
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN ARRAY



LABEL LOCATION:
AC DISCONNECT, DC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: 605.11.3.1(1) & 690.56(C)(1)(a))

CAUTION !

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



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. 52692
Expiration Date: 05/24/2024

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PROJECT NAME

FRANCIS BONASS 262346
11943 AUGUSTINE HERMAN HWY,
KENNEDYVILLE,MD 21645 USA

APN# 1502003538
UTILITY: DELMARVA POWER
AHJ: KENT COUNTY

SHEET NAME
WARNING LABELS & PLACARD

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

Q.PEAK DUO BLK ML-G10+

385-405

ENDURING HIGH PERFORMANCE

25 YR Warranty Product & Performance

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2021

Q CELLS Yield Security

BREAKING THE 20% EFFICIENCY BARRIER

Q.ANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY

Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015, method A (–1500 V, 96 h)
[2] See data sheet on rear for further information.

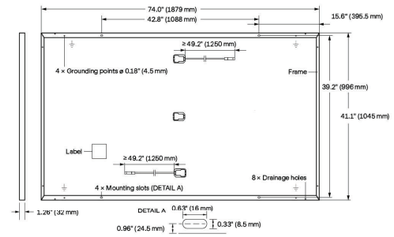
THE IDEAL SOLUTION FOR:

Rooftop arrays on residential buildings

Engineered in Germany

MECHANICAL SPECIFICATION

Format	74.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
Weight	48.5 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodized aluminum
Cell	6 × 22 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥ 49.2 in (1250 mm), (–) ≥ 49.2 in (1250 mm)
Connector	Stäubli MC4; IP68

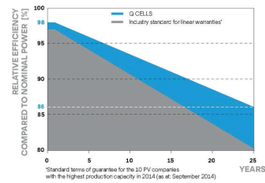


ELECTRICAL CHARACTERISTICS

POWER CLASS				385	390	395	400	405
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] (POWER TOLERANCE +5 W / –0 W)								
Minimum	Power at MPP[1]	P_{MPP}	[W]	385	390	395	400	405
	Short Circuit Current[1]	I_{SC}	[A]	11.04	11.07	11.10	11.14	11.17
	Open Circuit Voltage[1]	V_{OC}	[V]	45.19	45.23	45.27	45.30	45.34
	Current at MPP	I_{MPP}	[A]	10.59	10.65	10.71	10.77	10.83
	Voltage at MPP	V_{MPP}	[V]	36.36	36.62	36.88	37.13	37.39
	Efficiency[1]	η	[%]	≥19.6	≥19.9	≥20.1	≥20.4	≥20.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]								
Minimum	Power at MPP	P_{MPP}	[W]	288.8	292.6	296.3	300.1	303.8
	Short Circuit Current	I_{SC}	[A]	8.90	8.92	8.95	8.97	9.00
	Open Circuit Voltage	V_{OC}	[V]	42.62	42.65	42.69	42.72	42.76
	Current at MPP	I_{MPP}	[A]	8.35	8.41	8.46	8.51	8.57
	Voltage at MPP	V_{MPP}	[V]	34.59	34.81	35.03	35.25	35.46

[1] Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², 25±2 °C, AM 1.5 according to IEC 60904-3 • [2] 800 W/m², NMOT, spectrum AM 1.5

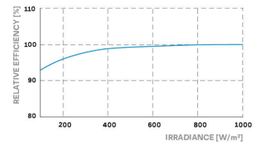
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93.5% of nominal power up to 10 years. At least 86% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	–0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	–0.34	Nominal Module Operating Temperature	NMOT	[°F]	109±5.4 (43±3 °C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 2
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa) / 55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	–40 °F up to +185 °F (–40 °C up to +85 °C)
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)		

[3] See Installation Manual

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, Quality Controlled PV - TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells), QCPV Certification ongoing.

PACKAGING INFORMATION

Horizontal packaging	76.4 in 1940 mm	43.3 in 1100 mm	48.0 in 1220 mm	1656 lbs 751 kg	24 pallets	24 pallets	32 modules

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

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DESIGN SUPPORT DAY OF INSTALL:
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VERSION

DESCRIPTION	DATE	REV
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PROJECT NAME

FRANCIS BONASS 26234
11943 AUGUSTINE HERMAN H
KENNEDYVILLE,MD 21645 U
APN# 1502003538
UTILITY: DELMARVA POWE
AHJ: KENT COUNTY

SHEET NAME
SPEC SHEETS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

ENPHASE

DATA SHEET

IQ8M and IQ8A Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has superfast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the IQ Battery, IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL listed as PV Rapid Shutdown Equipment and conform with various regulations, when installed according to manufacturer's instructions.

*Only when installed with IQ System Controller 2, meets UL 1741.
**IQ8M and IQ8A support split-phase, 240V installations only.

Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Complies with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) and IEEE 1547:2018 (UL 1741-SB)

Note:

IQ8 Microinverters cannot be mixed together with previous generations of Enphase microinverters (IQ7 Series, IQ6 Series, etc) in the same system.

IQ8M and IQ8A Microinverters

INPUT DATA (DC)		IQ8M-72-2-US	IQ8A-72-2-US
Commonly used module pairings[1]	W	260 – 460	295 – 500
Module compatibility		54-cell / 108 half-cell, 60-cell / 120 half-cell, 66-cell / 132 half-cell and 72-cell / 144 half-cell	
MPPT voltage range	V	30 – 45	32 – 45
Operating range	V	16 – 58	
Min. / Max. start voltage	V	22 / 58	
Max. input DC voltage	V	60	
Max. continuous input DC current	A	12	
Max. input DC short-circuit current	A	25	
Max. module I_{sc}	A	20	
Overvoltage class DC port		II	
DC port backfeed current	mA	0	
PV array configuration		1 x 1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		**IQ8M-72-2-US**	**IQ8A-72-2-US**
Peak output power	VA	330	366
Max. continuous output power	VA	325	349
Nominal (L-L) voltage / range[2]	V	240 / 211 – 264	
Max. continuous output current	A	1.35	1.45
Nominal frequency	Hz	60	
Extended frequency range	Hz	47 – 68	
AC short circuit fault current over 3 cycles	Arms	2	
Max. units per 20 A (L-L) branch circuit[3]		11	
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	
Peak efficiency	%	97.8	97.7
CEC weighted efficiency	%	97.5	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (H x W x D)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
Weight		1.08 kg (2.38 lbs)	
Cooling		Natural convection – no fans	
Approved for wet locations		Yes	
Pollution degree		PD3	
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, IEEE 1547:2018 (UL 1741-SB), FCC Part 15 Class B, ICES-0003 Class B, CAN / CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shutdown Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.	

(1) Pairing PV modules with wattage above the limit may result in additional clipping losses. See the compatibility calculator at https://link.enphase.com/module-compatibility. (2) Nominal voltage range can be extended beyond nominal if required by the utility. (3) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

IQ8MA-12A-DS-0069-02-EN-US-2022-12-02

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DEL MAR, CA 92014, USA

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PROJECT NAME

FRANCIS BONASS 262346
11943 AUGUSTINE HERMAN HWY
KENNEDYVILLE,MD 21645 USA
APN# 1502003538
UTILITY: DELMARVA POWER
AHJ: KENT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-7

Data Sheet
Enphase Networking

Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4
X-IQ-AM1-240-4C

X-IQ-AM1-240-4C

X-IQ-AM1-240-4

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed

LISTED

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE

Enphase IQ Combiner 4/4C

MODEL NUMBER	
IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.
ACCESSORIES AND REPLACEMENT PARTS	(not included, order separately)
Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers
MECHANICAL DATA	
Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
COMPLIANCE	
Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE

POWUR®
DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
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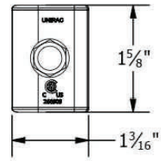
ANSI B
11" X 17"

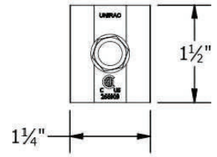
SHEET NUMBER
PV-8

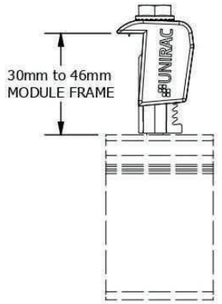
PART # TABLE	
P/N	DESCRIPTION
302045M	UNIVERSAL AF MID CLAMP - MILL
302045D	UNIVERSAL AF MID CLAMP - DRK
302050M	UNIVERSAL AF END CLAMP - MILL
302050D	UNIVERSAL AF END CLAMP - DRK

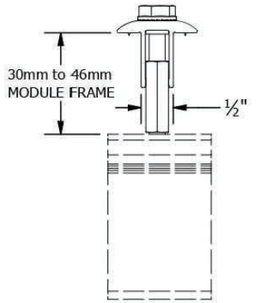
UNIVERSAL AF END CLAMP



UNIVERSAL AF MID CLAMP

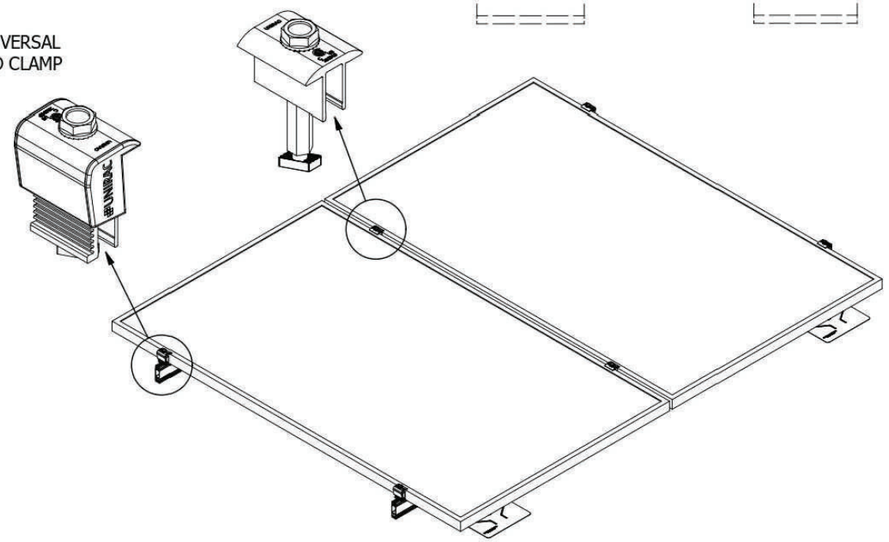






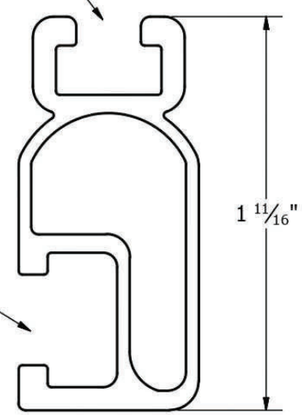
UNIVERSAL MID CLAMP

UNIVERSAL END CLAMP

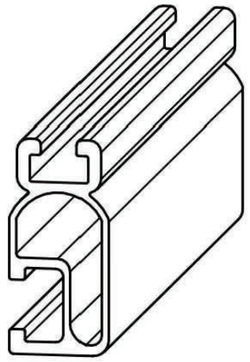


UNIRAC 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	
PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART & ASSEMBLY
DESCRIPTION:	UNIVERSAL AF CLAMPS
REVISION DATE:	9/28/2020
DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL	
PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	
SM-A01B SHEET	

¼" BOLT LOCATION



⅜" BOLT LOCATION



PART # TABLE		
P/N	DESCRIPTION	LENGTH
315168M	SM LIGHT RAIL 168" MILL	168"
315168D	SM LIGHT RAIL 168" DRK	168"
315240M	SM LIGHT RAIL 240" MILL	240"
315240D	SM LIGHT RAIL 240" DRK	240"

UNIRAC 1411 BROADWAY BLVD. NE ALBUQUERQUE, NM 87102 USA PHONE: 505.242.6411 WWW.UNIRAC.COM	
PRODUCT LINE:	SOLARMOUNT
DRAWING TYPE:	PART DETAIL
DESCRIPTION:	LIGHT RAIL
REVISION DATE:	9/11/2017
DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL	
PRODUCT PROTECTED BY ONE OR MORE US PATENTS LEGAL NOTICE	
SM-P02 SHEET	

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FLASHLOC™ DUO

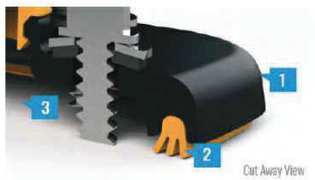
THE MOST VERSATILE DIRECT TO DECK ATTACHMENT

UNIRAC
BETTER SOLAR STARTS HERE

FLASHLOC™ **DUO** is the most versatile direct to deck and rafter attachment for composition shingle and rolled comp roofs. The all-in-one mount installs fast — no kneeling on hot roofs to install flashing, no prying or cutting shingles, no pulling nails. Simply drive the required number of screws to secure the mount and inject sealant into the base. **FLASH**LOC's patented TRIPLE SEAL technology preserves the roof and protects the penetration with a permanent pressure seal. Kitted with two rafter screws, sealant and hardware for maximum convenience (deck screws sold separately). Don't just divert water, **LOC it out!**

PROTECT THE ROOF

Install a high-strength waterproof attachment without lifting, prying or damaging shingles.



LOC OUT WATER

With an outer shield 1 contour-conforming gasket 2 and pressurized sealant chamber 3 the Triple Seal technology delivers a 100% waterproof connection.

HIGH-SPEED INSTALL

Simply drive the required number of screws and inject sealant into the port 4 to create a permanent pressure seal.

JUNE2021_FLASHLOCDUO_V2

FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

FLASHLOC™ DUO

INSTALLATION GUIDE

UNIRAC
BETTER SOLAR STARTS HERE

PRE-INSTALL: CLEAN SURFACE AND MARK LOCATION

Ensure existing roof structure is capable of supporting loads prescribed in Flashloc Duo D&E Guide. Clean roof surface of dirt, debris, snow and ice.

Snap chalk lines for attachment rows. On shingle roofs, snap lines 1/4" below upslope edge of shingle coarse. This line will be used to align the upper edge of the mount.

NOTE: Space mounts per span charts found in FLASHLOC DUO state certification letters.

STEP ONE: SECURE

ATTACHING TO A RAFTER: Place FLASHLOC DUO over rafter location and align upper edge of mount with horizontal chalk line. Secure mount with the two (2) provided rafter screws. BACKFILL ALL PILOT HOLES WITH SEALANT.

ATTACHING TO SHEATHING: Place FLASHLOC DUO over desired location and align upper edge of mount with horizontal chalk line. Secure mount with the two (2) provided rafter screws. Next, secure mount with four (4) deck screws by drilling through the FLASHLOC DUO deck mount hole locations. Unirac recommends using a drill as opposed to an impact gun to prevent over-tightening or stripping roof sheathing.

IMPORTANT: SECURELY ATTACH MOUNT BUT DO NOT OVERTIGHTEN SCREWS.

STEP TWO: SEAL

Insert tip of UNIRAC approved sealant into port and inject until sealant exits vent. Continue array installation, attaching rails to mounts with provided T-bolts. Follow sealant manufacturer's instructions. Follow sealant manufacturer's cold weather application guidelines, if applicable.

NOTE: When FLASHLOC DUO is installed over gap between shingle tabs or vertical joints, fill gap/joint with sealant between mount and upslope edge of shingle course.

CUT SHINGLES AS REQUIRED: DO NOT INSTALL THE FLASHLOC SLIDER ACCROSS THICKNESS VARIATIONS GREATER THAN 1/8" SUCH AS THOSE FOUND IN HIGH DEFINITION SHINGLES.

NOTE: When installing included rail attachment hardware, torque T-bolt nut to 30 ft-lbs.
NOTE: If an exploratory hole falls outside of the area covered by the sealant, flash hole accordingly.
NOTE: Read and comply with the Flashloc Duo Design & Engineering Guide prior to design and installation of the system.

USE ONLY UNIRAC APPROVED SEALANTS. PLEASE CONTACT UNIRAC FOR FULL LIST OF COMPATIBLE SEALANTS.

FASTER INSTALLATION. 25-YEAR WARRANTY.

FOR QUESTIONS OR CUSTOMER SERVICE VISIT UNIRAC.COM OR CALL (505) 248-2702

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SM SOLAR MOUNT — CODE COMPLIANCE NOTES — INSTALLATION GUIDE — C PAGE

SYSTEM LEVEL FIRE CLASSIFICATION

The system fire class rating requires installation in the manner specified in the SOLARMOUNT Installation Guide. SOLARMOUNT has been classified to the system level fire portion of UL2703. SOLARMOUNT has achieved system level performance for steep sloped roofs. The fire classification rating is only valid on roof pitches greater than 2:12 (slopes ⩾ 2 inches per foot, or 9.5 degrees). The system is to be mounted over fire resistant roof covering rated for the application. There is no required minimum or maximum height limitation above the roof deck to maintain the system fire rating for SOLARMOUNT. Module Types, System Level Fire Ratings, and Mitigation Requirements are listed below:

Rail Type	Module Fire Types	System Level Fire Rating	Rail Direction	Module Orientation	Mitigation Required
Standard & HD Rails	1, 2, 3 with Metal Frame, 10 with Metal Frame, 19, 22, 25, 29, & 30	Class A, Class B & Class C	East-West	Landscape OR Portrait	None Required
			North-South	Landscape OR Portrait	None Required
Light Rail	1 & 2	Class A, Class B & Class C	East-West	Landscape OR Portrait	None Required
			North-South	Landscape OR Portrait	None Required
Standard, Light, & HD Rails	4 & 5	Class A, Class B & Class C	East-West	Landscape OR Portrait	Trim installation per Solar Mount Installation Guide
			North-South	Landscape OR Portrait	

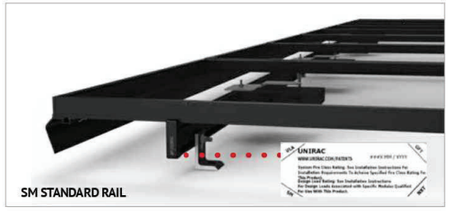
This racking system may be used to ground and/or mount a PV module complying with UL1703 or UL61730 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

UL2703 CERTIFICATION MARKING LABEL

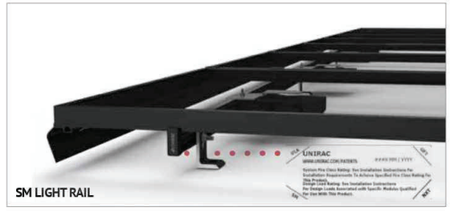
Unirac SOLARMOUNT is listed to UL 2703. Certification marking is embossed on all mid clamps as shown. Labels with additional information will be provided . After the racking system is fully assembled, a single label should be applied to the SOLARMOUNT rail at the edge of the array. **Before applying the label, the corners of the label that do not pertain to the system being installed must be removed so that only the installed system type is showing.**

Note: The sticker label should be placed such that it is visible, but not outward facing.

UNIRAC C SA US 266909

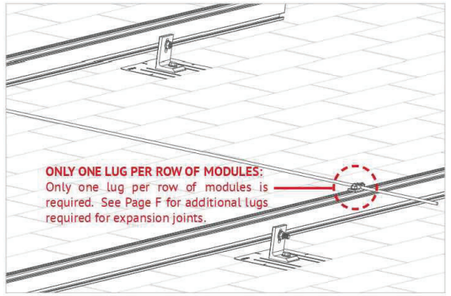


SM STANDARD RAIL



SM LIGHT RAIL

SM SOLAR MOUNT — STANDARD SYSTEM GROUNDING — INSTALLATION GUIDE — K PAGE



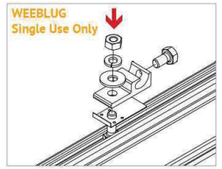
GROUNDING LUG MOUNTING DETAILS:

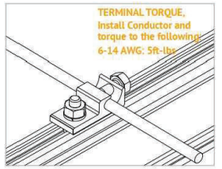
Details are provided for both the WEEB and Ilsco products. The WEEBLug has a grounding symbol located on the lug assembly. The Ilsco lug has a green colored set screw for grounding indication purposes. Installation must be in accordance with NFPA NEC 70, however the electrical designer of record should refer to the latest revision of NEC for actual grounding conductor cable size.

Required if not using approved integrated grounding microinveters

GROUNDING LUG - BOLT SIZE & DRILL SIZE		
GROUND LUG	BOLT SIZE	DRILL SIZE
WEEBLug	1/4"	N/A - Place In Top SM Rail Slot
ILSCO Lug	#10-32	7/32"

- Torque value depends on conductor size.
- See product data sheet for torque value.



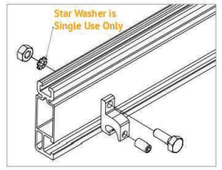


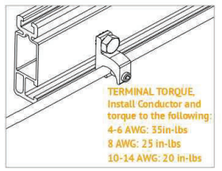
WEEBLUG CONDUCTOR - UNIRAC P/N 008002S:

Apply Anti Seize and insert a bolt in the aluminum rail and through the clearance hole in the stainless steel flat washer. Place the stainless steel flat washer on the bolt, oriented so the dimples will contact the aluminum rail. Place the lug portion on the bolt and stainless steel flat washer. Install stainless steel flat washer, lock washer and nut. Tighten the nut until the dimples are completely embedded into the rail and lug.

TORQUE VALUE 10 ft lbs. (See Note on PG. A)

See product data sheet for more details, Model No. WEEB-LUG-6.7





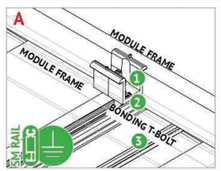
ILSCO LAY-IN LUG CONDUCTOR - UNIRAC P/N 008009P: Alternate Grounding Lug - Drill, deburr hole and bolt thru both rail walls per table.

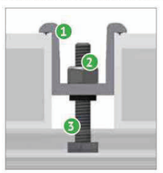
TORQUE VALUE 5 ft lbs. (See Note on PG. A)

See ILSCO product data sheet for more details, Model No. GBL-4DBT.

NOTE: ISOLATE COPPER FROM ALUMINUM CONTACT TO PREVENT CORROSION

SM SOLAR MOUNT — BONDING CONNECTION GROUND PATHS — INSTALLATION GUIDE — 0 PAGE

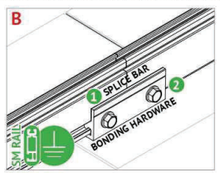




BONDING MIDCLAMP ASSEMBLY

BONDING MIDCLAMP ASSEMBLY

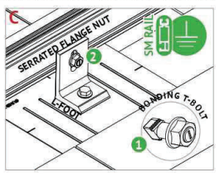
1. Aluminum mid clamp with stainless steel bonding pins that pierce module frame anodization to bond module to module through clamp
2. Stainless steel nut bonds aluminum clamp to stainless steel T-bolt
3. Serrated T-bolt head penetrates rail anodization to bond T-bolt, nut, clamp, and modules to SM rail



BONDING RAIL SPLICE BAR

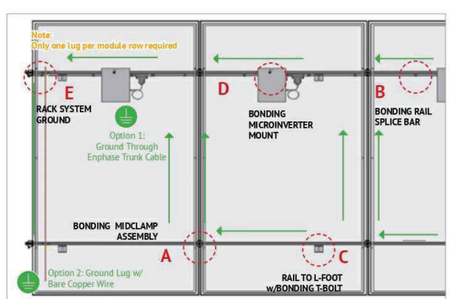
1. Bonding Hardware creates bond between splice bar and each rail section
2. Aluminum splice bar spans across rail gap to create rail to rail bond. Rail on at least one side of splice will be grounded.

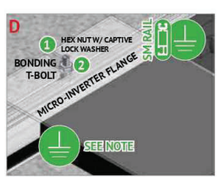
Note: Splice bar and bolted connection are non-structural. The splice bar function is rail alignment and bonding.



RAIL TO L-FOOT w/BONDING T-BOLT

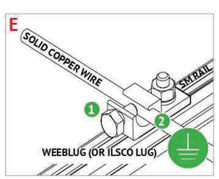
1. Serrated flange nut removes L-foot anodization to bond L-Foot to stainless steel T-bolt
2. Serrated T-bolt head penetrates rail anodization to bond T-bolt, nut, and L-Foot to grounded SM rail





BONDING MICROINVERTER MOUNT

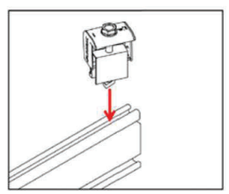
1. Hex nut with captive lock washer bonds metal microinverter flange to stainless steel T-bolt
2. Serrated T-bolt head penetrates rail anodization to bond T-bolt, nut, and L-foot to grounded SM rail System ground including racking and modules may be achieved through the trunk cable of approved microinverter systems. See page J for details



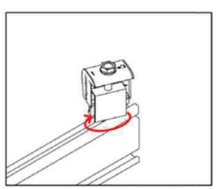
RACK SYSTEM GROUND

1. WEEB washer dimples pierce anodized rail to create bond between rail and lug
2. Solid copper wire connected to lug is routed to provide final system ground connection. NOTE: Ilsco lug can also be used when secured to the side of the rail. See page K for details

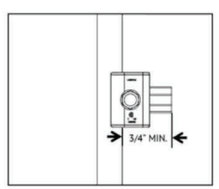
SM SOLAR MOUNT — APPENDIX C — UNIVERSAL AF ENDCLAMP INSTALLATION GUIDE — A PAGE



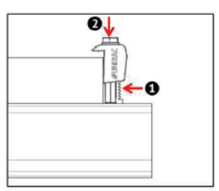
1. Position clamp to align T-bolt with rail slot. Lower clamp and Insert T-bolt into rail slot.



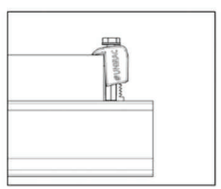
2. Rotate clamp clockwise 2/3 of a turn to engage T-bolt inside rail slot.



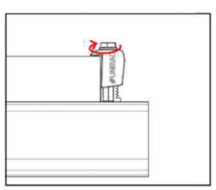
3. Place module at least 3/4" from end of rail and position clamp against module frame.



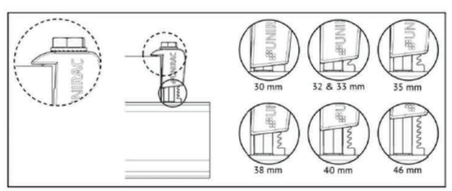
4. While applying pressure to hold the clamp against the module, push down on the module side of the clamp cap.



5. When the cap contacts the module frame, release and it will re-engage to the clamp base.



6. Tighten bolt and torque to 15 ft-lbs.



7. Confirm clamp is engaged in correct module height position and that the top of the cap is sitting level with the module frame.

NOTE: When installing 46mm modules, loosen bolt by 1 turn before positioning clamp against module frame. Do not force clamp onto module frame as this may damage the bonding pin.

powur®

DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL: CHAT.POWUR.COM

VERSION

DESCRIPTION	DATE	REV
INITIAL RELEASE	01/11/2023	UR

PROJECT NAME

FRANCIS BONASS 262346
11943 AUGUSTINE HERMAN HWY
KENNEDYVILLE,MD 21645 USA
APN# 1502003538
UTILITY: DELMARVA POWER
AHJ: KENT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-11

Certificate of Compliance

Certificate: 70131735 **Master Contract:** 266909

Project: 80128750 **Date Issued:** 2022-06-08

Issued To: **Unirac**
1411 Broadway NE
Albuquerque, New Mexico, 87102
United States

Attention: Rob D'Anastasio

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Issued by: Michael Hoffnagle
Michael Hoffnagle

C US

PRODUCTS

CLASS - C531302 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems
CLASS - C531382 - POWER SUPPLIES - PHOTOVOLTAICS-PV Racking and clamping systems - Certified to US Standards

Models:	SM	-	SOLARMOUNT Flush-to-Roof is an extruded aluminum rail PV racking system that is installed parallel to the roof in landscape or portrait orientations.
	ULA	-	Unirac Large Array is a ground mount system using the SolarMount (SM) platform for the bonding and grounding of PV modules.

Solarmount

The system listed is designed to provide bonding/grounding, and mechanical stability for photovoltaic modules. The system is secured to the roof with the L-Foot components through the roofing material to building structure. Modules are secured to the racking system with stainless steel or aluminum mid clamps and Aluminum end clamps. The modules are bonded to the racking system with the stainless-steel bonding mid clamps with piercing points. The system is grounded with 10 AWG copper wire to bonding/grounding lugs. Fire ratings of Class A with Type 1, 2, 3 (with metallic frame), 4 (with trim), 5 (with trim), 10(with metallic frame), 19, 22, 25, 29, or 30 for steep slope. Tested at 5" interstitial gap which allows installation at any stand-off height.

The grounding of the system is intended to comply with the latest edition of the National Electrical Code, to include NEC 250 & 690. Local codes compliance is required, in addition to national codes. All grounding/bonding connections are to be torqued in accordance with the Installation Manual and the settings used during the certification testing for the current edition of the project report.

The system may employ optimizers/micro-inverters and used for grounding when installed per installation instructions.

UL 2703 Mechanical Load ratings:

Downward Design Load (lb/ft²)	113.5
Upward Design Load (lb/ft²)	50.7
Down-Slope Load (lb/ft²)	16.13

Test Loads:

Downward Load (lb/ft²)	170.20
Upward Load (lb/ft²)	76.07
Down-Slope Load (lb/ft²)	24.2

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DEL MAR, CA 92014, USA

DESIGN SUPPORT DAY OF INSTALL:
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VERSION

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11943 AUGUSTINE HERMAN HWY,
KENNEDYVILLE,MD 21645 USA
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UTILITY: DELMARVA POWER
AHJ: KENT COUNTY

SHEET NAME

SPEC SHEETS

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-12