UPDATE

APPENDIX B: SIGNATURE BLOCK

The following approval signature block must appear on each set of stormwater management plans and water quality management plans which are to be reviewed and approved by the Department.

Harford County Stormwater Management Billing # 99994

THESE PLANS HAVE BEEN REVIEWED BY HARFORD COUNTY AND MEET THE TECHNICAL REQUIREMENTS FOR STORWMATER QUANTITY AND/OR QUALITY MANAGEMENT ONLY.

REVIEWED FOR TECHNICAL SUFFICIENCY

STORMWATER MANAGEMENT

REVIEW AND APPROVAL RECOMMENDED

CHIEF ENGINEER

APPROVAL RECOMMENDED

DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVED

DIRECTOR OF PUBLIC WORKS

HARFORD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

UPDATE

HARFORD SOIL CONSERVATION DISTRICT SMALL POND APPROVAL

DISTRICT OFFICIAL DATE

TECHNICAL REVIEW FOR DISTRICT

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS DATE

BID NO. 21-048

CHURCH CREEK E.S.

100% SWM AND STREAM RESTORATION

HARFORD SOIL CONSERVATION DISTRICT
SMALL POND APPROVAL

William R. Hope 5/13/19
DISTRICT OFFICIAL DATE

TECHNICAL REVIEW FOR DISTRICT

Michael L. Rief 5/7/19
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS DATE

Appendix A: Certifications

The following statements of certification must be placed on the Stormwater Management Quantity and/or Quality plans and signed/dated at the appropriate stage of plan submittal.

DEVELOPER'S/LANDOWNER'S CERTIFICATION

I/We hereby certify that all proposed work shown on these construction drawing(s) will be accomplished pursuant to these plans. I/We also understand that it is my/our responsibility to have the construction supervised and certified, including the submittal of "As-Built" plans within 30 days of completion, by a Registered Professional Engineer.

Signed:
Print Name: JOSEPH J. SIEMEK, PE, DIRECTOR OF DPW
Date: 5.13.19

ENGINEER'S CERTIFICATION

I hereby certify that this plan has been prepared by me, or under my supervision, and meets the minimum standards of the Harford County Department of Public Works and/or the United States Department of Agriculture, Soil Conservation Service, and/or the Maryland Department of the Environment, Water Management Administration.

Signed:
Print Name: GREGORY FOX
Date: ~~03.07.2019~~ 02-16-2022 GWF
P.E. No.: 31177

AS-BUILT CERTIFICATION

I hereby certify that the facility shown on this plan was constructed as shown on the "As-Built" plans and meets the approved plans and specifications.

Signed:
Print Name:
Date:
P.E. No.:

Certify means to state or declare a professional opinion based upon on-site inspections and material tests which are conducted during construction. The on-site inspections and material tests are those inspections and tests deemed sufficient and appropriate by commonly accepted engineering standards. Certify does not mean or imply a guarantee by the engineer nor does an engineer's certification relieve any other party from meeting requirements imposed by contract, employment, or other means, including meeting commonly accepted industry practices.

APPENDIX B: SIGNATURE BLOCK

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Harford County Stormwater Management Billing # 99994

THESE PLANS HAVE BEEN REVIEWED BY HARFORD COUNTY AND MEET THE TECHNICAL REQUIREMENTS FOR STORWMATER QUANTITY AND/OR QUALITY MANAGEMENT ONLY.

REVIEWED FOR TECHNICAL SUFFICIENCY
R. Bruce Appell 5/14/19
STORMWATER MANAGEMENT

REVIEW AND APPROVAL RECOMMENDED
Michael L. Rief 5/14/19
CHIEF ENGINEER

APPROVAL RECOMMENDED
5/15/19
DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVED
5.17.19
DIRECTOR OF PUBLIC WORKS

FIELD VERIFICATION CERTIFICATION

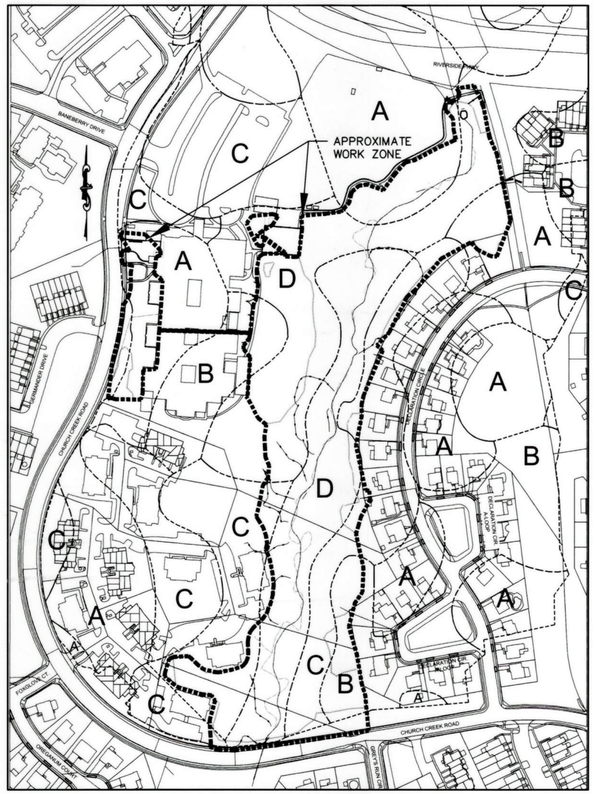
I HEREBY CERTIFY THAT I COMPLETED A FIELD VERIFICATION TO THE INFORMATION SHOWN ON THE PLANS ON ~~[illegible]~~ AND THAT THE INFORMATION SHOWN ON THE PLANS IS IN AGREEMENT WITH THE ACTUAL FIELD CONDITIONS. DECEMBER 1, 2021

GREGORY FOX
PRINTED NAME

SIGNED ~~3.7.19~~ 02-16-2022 GWF
DATE

STORMWATER MANAGEMENT SUMMARY TABLE (BUSH RIVER WATERSHED)

FACILITY	DRAINAGE AREA (ac.)	DISTURBED AREA (ac.)	IMPERVIOUS AREA (ac.)	EX. IMPERVIOUS AREA (ac.)
GRAVEL WELTLAND	5.99	0.73	3.82	N/A
INFILTRATION TRENCH	0.95	0.23	0.42	N/A



LOCATION/ SOILS MAP

SCALE: 1" =200'

SHEET INDEX

LEGEND

SOIL BOUNDARY

D SOIL GROUP LABEL

PROJECT WORK ZONE

GENERAL NOTES

1. SPECIFICATIONS: ALL WORK IS TO BE PERFORMED IN ACCORDANCE MARYLAND STATE HIGHWAY ADMINISTRATIONS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED MAY 2017 AND THE MOST RECENT REVISIONS THEREOF AND ADDITIONS THERETO.
2. UTILITIES: UTILITY LOCATIONS SHOWN ON THE PLANS ARE BASED ON LIMITED INFORMATION AVAILABLE. HOWEVER, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF THIS INFORMATION. THE COST OF REPAIR OR REPLACEMENT OF ANY SUCH FACILITIES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE BORNE BY HIM.
3. CONTACT "MISS UTILITY" PHONE 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THERE SHOULD BE NO EXCAVATION UNTIL THE LOCATIONS OF UNDERGROUND UTILITIES HAVE BEEN DETERMINED.
4. STANDARD DETAILS: REFERENCE MADE TO STANDARDS ARE TAKEN FROM THE HARFORD COUNTY ROAD CODE "BOOK OF STANDARD DETAILS" AND FROM "THE MARYLAND STATE HIGHWAY ADMINISTRATION'S BOOK OF STANDARDS-HIGHWAY AND INCIDENTAL STRUCTURES", IT WILL BE THE CONTRACTOR'S RESPONSIBILITY THAT THE STANDARD DRAWINGS IN HIS POSSESSION ARE THE LATEST REVISED STANDARDS UP TO AND INCLUDING THE DATE OF THE ADVERTISEMENT OF THIS CONTRACT.
5. RIGHT-OF-WAY LINES: RIGHT-OF-WAY LINES SHOWN ON THESE PLANS DO NOT INCLUDE EASEMENTS. THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS ONLY. THESE LINES DO NOT REPRESENT THE OFFICIAL PROPERTY ACQUISITION LINES. FOR OFFICIAL FEE RIGHT-OF-WAY AND EASEMENT INFORMATION,SEE THE APPROPRIATE RIGHT-OF-WAY PLATS.
6. EXISTING MAILBOXES & EXISTING SIGNS: THE CONTRACTOR SHALL NOT DISTURB EXISTING MAILBOXES AND EXISTING SIGNS; ALL EXISTING MAILBOXES, SIGNS AND PAPER BOXES DISTURBED DURING CONSTRUCTION SHALL BE TEMPORARILY RESET IMMEDIATELY AND PERMANENTLY RESET AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE INCIDENTAL TO ALL OTHER ITEMS IN THE CONTRACT.
7. SURVEYS:
   THE HORIZONTAL DATUM FOR THIS SURVEY IS THE MARYLAND COORDINATE SYSTEM, NAD83 (2011). AS ESTABLISHED VIA THE LEICA SMARTNET REAL-TIME GPS NETWORK. PRIMARY NGS REFERENCE STATION USED FOR THIS SURVEY:

   DESIGNATION: LOYR
   NGS PID: DL1384
   STATE/COUNTY: MD/ CECIL
   NORTH: 694448.67
   EAST: 1597774.51

   THE VERTICAL DATUM FOR THIS SURVEY IS THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). SURVEY CONTROL STATION ELEVATIONS WERE ESTABLISHED BY GPS, BASED ON THE ELEVATION OF THE NGS CONTROL STATION LISTED ABOVE.

   THE US SURVEY FOOT IS THE UNIT OF MEASUREMENT FOR THIS SURVEY.
8. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE EXISTENCE OF PROPERTY MARKERS, PIPES, MONUMENTS, STAKES, ETC. THAT SHALL NOT BE DISTURBED. IN THE EVENT THESE MARKERS ARE REMOVED, DAMAGED, OR DESTROYED BY THE CONTRACTOR, THEY SHALL BE REPLACED IN KIND BY A MARYLAND LICENSED SURVEYOR AT THE CONTRACTORS EXPENSE.

TRAVERSE DATA:

NO	NORTHING	EASTING	ELEV	DESCRIPTION
100	658469.5033	1524984.6483	60.98	R/C
101	658484.0492	1524730.5550	51.53	R/C
102	658642.3406	1524732.5610	51.98	R/C
103	658823.1044	1524763.6413	56.85	R/C
104	658933.2043	1524829.5145	59.77	R/C
105	659010.6618	1524791.3713	62.39	R/C
106	659151.0165	1524793.4414	66.31	R/C
107	659264.7288	1524856.6399	68.67	R/C
108	659359.7180	1524884.5522	71.81	R/C
109	659493.3762	1524936.9774	74.22	R/C
110	659664.4176	1524974.9723	78.53	R/C
111	659831.8269	1524950.7970	89.36	R/C
112	659909.0366	1525148.7332	89.52	R/C
113	660018.9577	1525303.1449	95.75	R/C
114	660297.4212	1525291.6815	99.50	R/C
115	660341.9809	1524827.5467	106.56	R/C

Owner:
CONTACT: GLEN HEBEL P.E.
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
BUREAU OF WATER RESOURCES
212 S. BOND ST.
BEL AIR, MD 21014
PH: 410-638-3545 EXT. 1344

Prepared By :
A. MORTON THOMAS AND ASSOCIATES
800 KING FARM BOULEVARD, FOURTH FLOOR
ROCKVILLE, MD 20850
PH: 301-881-2545

UPDATE

STATE OF MARYLAND GREGORY W. FOX No. 31177 PROFESSIONAL ENGINEER

02-16-2022
EXPIRATION DATE: 02/01/2023

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. 31177
Expiration Date 02/01/2021

Seal:

STATE OF MARYLAND GREGORY W. FOX No. 31177 PROFESSIONAL ENGINEER
3-7-19

S/C PLAN # 59832
GRADING PERMIT # 9386-2017
EG-SWMENG-000747-2016

REVIEWED AND APPROVAL RECOMMENDED:
Michael L. Rief 6/17/2019
PROJECT ENGINEER

REVIEWED AND APPROVAL RECOMMENDED:
R. Bruce Appell 6/17/19
CHIEF ENGINEER

APPROVAL RECOMMENDED:
6/17/19
DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVED:
6.20.19
DIRECTOR OF PUBLIC WORKS

ADC MAP :

TAX MAP :

HCG BILLING ID No.: 99994 190653

HCG DWG ID No.: 19176

SHEET 1 OF

CV-01

ABBREVIATIONS

AHD	Ahead
APPROX.	Approximate
B/L	Baseline
BK	Back / Book
BIT.	Bituminous
B.C.	Bituminous Concrete
B.M.	Bench Mark
BOT.	Bottom
C.C.	Center of Curve
CAP	Corrugated Aluminum Pipe
CAPA	Corrugated Aluminum Pipe Arch
CATV	Cable Television
C/L	Centerline
CL.	Class
CLF	Chainlink Fence
CMP	Corrugated Metal Pipe
C.O.	Cleanout
COMB.	Combination
CONC.	Concrete
CONSTR.	Construction
COR.	Corner
CORR.	Correction
CPP-S	Corrugated Polyethylene Pipe - Type 'S'
CSP	Corrugated Steel Pipe - Aluminized Type 2
CSPA	Corrugated Steel Pipe Arch - Aluminized Type 2
DATR	Data According to Records
DC	Degree of Curve
D.H.V.	Design Hourly Volume
D.I.	Drop Inlet
DIA.	Diameter
D.O.	Double Opening
E	East
E	Electric
EA	Each
ELEV	Elevation
ES	End Section
EX or EXIST	Existing
FT	Feet
F or FL	Flowline
F.B.D.	Flat Bottom Ditch
F.H.	Fire Hydrant
FWD.	Forward
G	Gas
G.V.	Gas Valve
H.B.	Handbox
HDPE	High Density Polyetheylene
HDWL.	Headwall
HERCP	Horizontal Ellipitical Reinforced Concrete Pipe
HP	High Point
IN	Inch
I.S.T	Inlet Sediment Trap
INV.	Invert
J.B.	Junction Box
K	K Inlet
L	Length
LF	Linear Feet
L.L.	Liquid Limit
LP	Low Point
L.P.	Light Pole
LT.	Left
MAC.	Macadam
MAX.	Maximum
MOD.	Modified
MIN.	Minimum
N	North
NB	Northbound
NE	Northeast
N.P.	Non-Plastic
O.C.	On Center
OHE	Overhead Electric

PAV'T.	Pavement
PC	Point of Curvature
PCC	Point of Compound Curvature
P/C	Point of Crown
P/GE	Profile Grade Elevation
P.G.E.	Profile Ground Elevation
P.G.L.	Profile Grade Line
P/GL	Profile Ground Line
P.I.	Plasticity Index
PI	Point of Intersection
POC	Point On Curve
POT	Point On Tangent
PPWP	Polyvinyl Chloride Profile Wall Pipe
PROP	Proposed
PRC	Point of Reverse Curve
PT	Point
PT	Point of Tangency
PVC	Polyvinyl Chloride
R	Radius
R.F.	Rock Fragments
RT	Right
RW OR R/W	Right of Way
RCP	Reinforced Concrete Pipe
RCPP	Reinforced Concrete Pressure Pipe
R.Q.D.	Rock Quality Designation
R.M.	Rootmat
S	South
SAN.	Sanitary Sewer
SB OR S/B	Southbound
S.D.	Storm Drain
S.D.D.	Surface Drain Ditch
SF	Silt Fence
SF	Square Feet
SHT.	Sheet
S.P.T.	Standard Penetration Testing
SRP	Steel Spiral Rib Pipe - Aluminized Type 2
SRPA	Steel Spiral Rib Pipe arch - Aluminized Type 2
SSF	Super Silt Fence
STD.	Standard
STA.	Station
SO.	Single Opening
SY	Square Yards
SWM	Stormwater Management
T	Tangent
T	Telephone
T.C.	Top of Cover
T.G.	Top of Grate
T OR TL	Traverse Line
T.M.	Top of Manhole
TRAV.	Traverse
TS	Temporary Swale
T.S.	Top of Slab
T.S.	Topsoil
TYP.	Typical
U.D.	Under Drain
U.G.	Underground
U.P.	Utility Pole
USDA	United States Department of Agriculture
W	Water
W	West
WB	Westbound
WB	Wetland Buffer
W.M.	Water Meter
W.S.	Wrapped Steel
WSE	Water Surface Elevation
WUS	Waters of the United States
W.V.	Water Valve

STORMWATER MANAGEMENT AS-BUILT CERTIFICATION REQUIREMENTS:

1. THE CONSTRUCTION OF ALL STORMWATER MANAGEMENT FACILITIES SHALL CONFORM TO THE APPROVED CONTRACT DOCUMENTS AND MDE STORMWATER DESIGN MANUAL VOLUMES I&II.
2. THE CONTRACTOR IS RESPONSIBLE FOR FULLY UNDERSTANDING THE DESIGN AND FUNCTION OF THE PROPOSED FACILITIES AND FOR CONSTRUCTING FACILITIES IN FULL COMPLIANCE WITH DESIGN STANDARDS.
3. THE CONTRACTOR SHALL ENSURE THAT ALL OF THE REQUIRED PLAN CHECKLISTS ARE SIGNED BY THE APPROPRIATE INDIVIDUALS AT THE REQUIRED STAGES OF CONSTRUCTION.
4. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 7-DAYS ADVANCED NOTICE OF CONSTRUCTION OF THE STORMWATER MANAGEMENT FACILITY(S) TO THE OWNER AND CERTIFYING ENGINEER.
5. THE CONTRACTOR SHALL VERIFY ALL CRITICAL INVERTS AND ELEVATIONS THROUGHOUT CONSTRUCTION TO VERIFY CONFORMANCE WITH THE DESIGN AND STANDARDS. THIS INFORMATION SHALL BE PROVIDED TO THE OWNER AND THE CERTIFYING ENGINEER IN THE FORM OF RED-LINED CONTRACT DRAWINGS AT THE END OF THE PROJECT.
6. THE CONTRACTOR OBTAIN THE SERVICES OF A MARYLAND LICENSED SURVEYOR TO CONDUCT AN AS-BUILT SURVEY OF THE STORMWATER MANAGEMENT FACILITY(S) PRIOR TO FINAL PLANTING LANDSCAPING.
7. ANY ADJUSTMENTS TO THE CONSTRUCTION OF THE FACILITIES SHALL BE REVIEWED AND APPROVED BY THE CERTIFYING ENGINEER AND OWNER. APPROVAL OF THE MODIFICATIONS IS REQUIRED PRIOR TO PROCEEDING WITH CONSTRUCTION.
8. THE CONTRACTOR SHALL MAKE ANY CORRECTIONS AND ADJUSTMENTS REQUIRED TO FULLY PROVIDE REQUIRED DESIGN VOLUMES, FUNCTION, AND STRUCTURAL INTEGRITY OF FACILITIES AT NO ADDITIONAL COST TO THE OWNER.
9. THE CONTRACTOR SHALL ALSO VERIFY THAT ALL SITE IMPROVEMENTS, FLOW PATHS, AND DRAINAGE AREAS TO EACH FACILITY ARE IN CONFORMANCE WITH THE APPROVED DESIGN PLANS.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AS-BUILT PLANS AND APPROPRIATE SUPPORT DOCUMENTATION TO THE OWNER AND CERTIFYING ENGINEER.
11. THE CONTRACTOR SHALL MAKE ANY AND ALL REPAIRS AND/OR MODIFICATIONS REQUIRED TO OBTAIN AS-BUILT APPROVAL BY HARFORD COUNTY AT NO ADDITIONAL COSTS TO THE OWNER.
12. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTENANCE OF ALL STORMWATER-RELATED FACILITIES UNTIL FINAL ACCEPTANCE OF THE FACILITIES BY OWNER, AND SHALL PERFORM FULL CLEANOUT AND/OR DREDGING OF FACILITIES PRIOR TO TURN OVER TO THE OWNER.

GROUND COVERS

ZONE 1: LIVESTAKE PLANTING AND STREAMSIDE SEEDING AREA

ZONE 2: STREAMSIDE TREE, SHRUB AND SEED PLANTING AREA

ZONE 3: WETLAND TREE, SHRUB AND SEEDING AREA

ZONE 4: RIPARIAN TREE, SHRUB AND SEED PLANTING

ZONE 5: TURF SOD

COIR FIBER MATTING

EROSION CONTROL MATTING

EROSION & SEDIMENT CONTROL

LOD — LIMIT OF DISTURBANCE

SF — SILT FENCE

SSF — SUPER SILT FENCE

DF — DIVERSION FENCE

TP — TREE PROTECTION FENCE

TPA — TEMPOR. PUMP AROUND PIPE

SANDBAG DIKE

FB — DEWATERING FILTER BAG

RPS — REMOVABLE PUMPING STATION

SCREENING BASKET

ROP1 — ROCK OUTLET PROTECTION

P — TEMPORARY PUMP

SCE — STABILIZED CONSTR. ENTRANCE

TB — TEMPORARY ACCESS BRIDGE

OCF — ORANGE CONSTRUCTION FENCE

RP — ROOT PRUNING

LEGEND

425 — PROPOSED MAJOR CONTOUR

424 — PROPOSED MINOR CONTOUR

PROPOSED THALWEG

WATER SURFACE

TOP OF BANK

EXISTING 100 YEAR FLOODPLAIN

100YR — PROPOSED 100 YEAR FLOODPLAIN

WL — WETLAND

WB — WETLAND BUFFER

WUS — WATERS OF THE US

EXISTING THALWEG

TREE

TREE REMOVAL

TREE PLANKING

TEMPORARY ACCESS ROAD-HEAVY DUTY MULCH MATTING

TEMPORARY ACCESS ROAD-WETLAND PROTECTION MATTING

STREAM BED MIX (SBM)

RIPRAP

RIFFLE GRADE CONTROL

COMPACTED FILL

IMBRICATED RIPRAP

EXISTING GABION

SOIL LIFT

ROCK SILL/TOE

STEP POOL SYSTEM

CROSS VANE

J-HOOK

STOCKPILE/ STAGING AREA

100 — EXISTING MAJOR CONTOUR

EXISTING MINOR CONTOUR

SS — SANITARY SEWER

SD — STORM DRAIN

W — WATER SUPPLY

E — ELECTRIC

G — GAS

C — COMMUNICATION

TREELINE

PROPERTY LINE

X — CHAIN-LINK FENCE

WOOD FENCE

GUARDRAIL

BENCHMARK

TRAVERSE POINT

TFP — TRAFFIC POLE

EJB — ELECTRIC JUNCTION BOX

STORMDRAIN MANHOLE

GAS METER

GAS VALVE

WATER METER

WATER VALVE

FIRE HYDRANT

SEWER MANHOLE

SEWER CLEAN OUT

TELCO MANHOLE

TRI — TELCO RISER

SIGN

LIGHT POLE

UTILITY POLE

GUY WIRE

ELECTRIC MANHOLE

T — TRANSFORMER

RIPRAP

A/C UNIT

GRATE INLET (ROUND)

GRATE INLET

TELEPHONE JUNCTION BOX

LIGHT POLE

POWER POLE

CLEAN OUT

BOLLARD

WETLAND FLAGGING

NOTE:

ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL MEET CURRENT HARFORD COUNTY STANDARDS AND DIRECTIVES.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

GENERAL NOTES & ABBREVIATIONS

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : NO SCALE
Sheet 02 Of 78
Date : 2/17/2022

GN-01

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SCALE 1 inch

MATCHLINE SEE SHEET 04

MATCHLINE SEE SHEET 04

MATCHLINE SEE SHEET 08

MATCHLINE SEE SHEET 07

EXISTING ASPHALT ACCESS ROAD

EXISTING THALWEG

EXISTING THALWEG

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE REMOVED

DAMAGED PIPE INV=86.36

12" CMP

REPLACE EXISTING ASPHALT PATH WHERE DAMAGED.ASPHALT THICKNESS TO MEET EXISTING ASPHALT PATH

EX. WALK

EX. WALK

JACOB WILLIAM BAYS
1372 STOCKETT SQUARE
BELCAMP MD 21017
TAX MAP 0062 GRID 9 PARCEL 0739
LIBER 12288
FOLIO 289
PLAT 41/64

BOARD OF EDUCATION OF HARFORD COUNTY
4299 CHURCH CREEK ROAD
BELCAMP MD 21017
TAX MAP 0062 LOT 1 PARCEL 0813
LIBER 01858
FOLIO 0954
PLAT 77/72

GENERAL NOTES:

1.) DEAD TREES THAT ARE CLASSIFIED AS A HAZARD TO CONSTRUCTION ACTIVITY MAY BE REMOVED OUTSIDE OF THE LOD FOR SAFETY REASONS. THE CONTRACTOR MUST NOTIFY AND GET APPROVAL FROM THE COUNTY PRIOR TO REMOVING DEAD HAZARD TREES OUTSIDE OF THE LOD.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

EXISTING CONDITIONS AND DEMOLITION PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 03 Of 78
Date : 2/22/2022

EC-A1

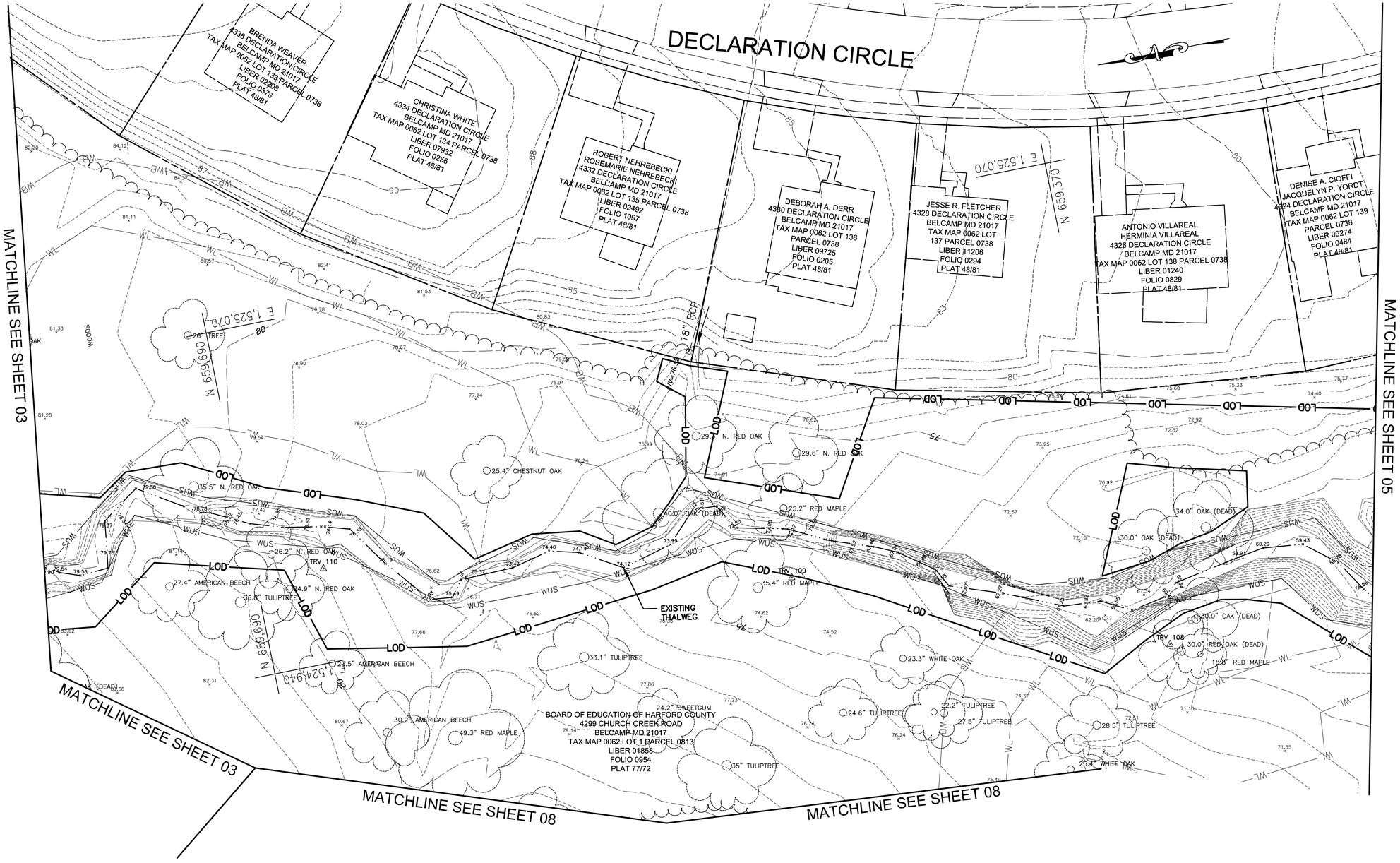
ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SCALE 1 inch



EG–SWMENG–000747–2016

GENERAL NOTES:

1.) DEAD TREES THAT ARE CLASSIFIED AS A HAZARD TO CONSTRUCTION ACTIVITY MAY BE REMOVED OUTSIDE OF THE LOD FOR SAFETY REASONS. THE CONTRACTOR MUST NOTIFY AND GET APPROVAL FROM THE COUNTY PRIOR TO REMOVING DEAD HAZARD TREES OUTSIDE OF THE LOD.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Revisions

HARFORD COUNTY, MARYLAND

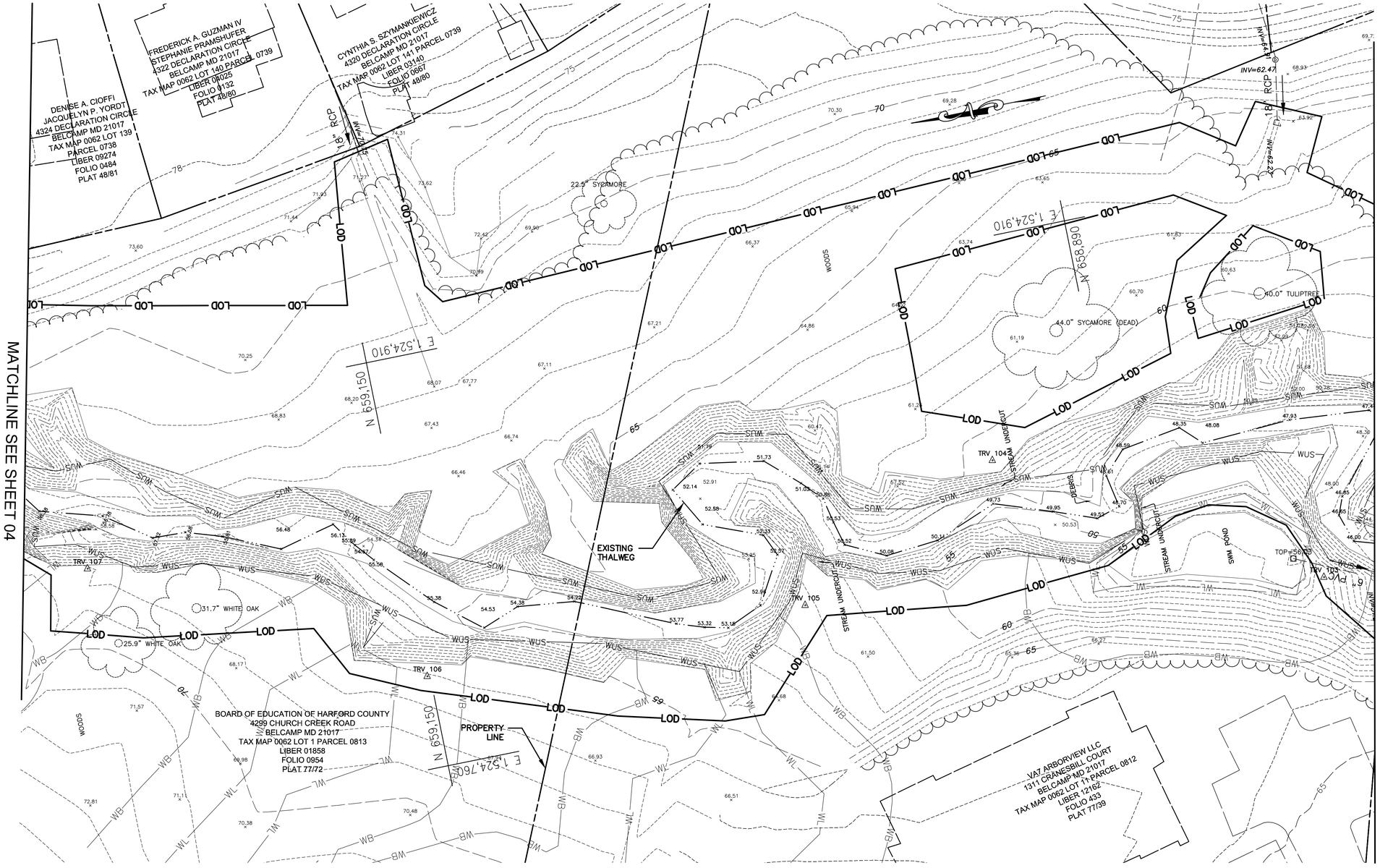
EXISTING CONDITIONS AND DEMOLITION PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 04 Of 78
Date : 2/22/2022

EC-A2

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch



GENERAL NOTES:

1.) DEAD TREES THAT ARE CLASSIFIED AS A HAZARD TO CONSTRUCTION ACTIVITY MAY BE REMOVED OUTSIDE OF THE LOD FOR SAFETY REASONS. THE CONTRACTOR MUST NOTIFY AND GET APPROVAL FROM THE COUNTY PRIOR TO REMOVING DEAD HAZARD TREES OUTSIDE OF THE LOD.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

EXISTING CONDITIONS AND DEMOLITION PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 05 Of 78
Date : 2/22/2022

EC-A3

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch

MATCHLINE SEE SHEET 05

TAX MAP :

ADC MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

EG-SWMENG-000747-2016

GENERAL NOTES:

1.) DEAD TREES THAT ARE CLASSIFIED AS A HAZARD TO CONSTRUCTION ACTIVITY MAY BE REMOVED OUTSIDE OF THE LOD FOR SAFETY REASONS. THE CONTRACTOR MUST NOTIFY AND GET APPROVAL FROM THE COUNTY PRIOR TO REMOVING DEAD HAZARD TREES OUTSIDE OF THE LOD.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Revisions	HARFORD COUNTY, MARYLAND
	EXISTING CONDITIONS AND DEMOLITION PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 06 Of 78
Date : 2/22/2022

EC-A4

SCALE: 1 inch

RIVERSIDE PARKWAY
MD RT 543

REMOVE 39 LF OF W-BEAM GUARDRAIL. SEE SHEET MT-A4 FOR DETAILS.

39'

REPLACE EXISTING ASPHALT PATH WHERE DAMAGED.

EX. PAVING

EX. PAVING

MATCHLINE SEE SHEET 03

N 660,400
E 1,525,390

N 660,180
E 1,525,060

TRV 114

48" RCP

CHAPELGATE CT & PLACE
BELCAMP MD 21017
TAX MAP 0062 LOT 1
LIBER 01834
FOLIO 1010
PLAT 73/6

PARCEL 0769

BOARD OF EDUCATION OF HARFORD COUNTY
4299 CHURCH CREEK ROAD
BELCAMP MD 21017
TAX MAP 0062 LOT 1 PARCEL 0813
LIBER 01858
FOLIO 0954
PLAT 77/72

GENERAL NOTES:

1.) DEAD TREES THAT ARE CLASSIFIED AS A HAZARD TO CONSTRUCTION ACTIVITY MAY BE REMOVED OUTSIDE OF THE LOD FOR SAFETY REASONS. THE CONTRACTOR MUST NOTIFY AND GET APPROVAL FROM THE COUNTY PRIOR TO REMOVING DEAD HAZARD TREES OUTSIDE OF THE LOD.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

EXISTING CONDITIONS AND DEMOLITION PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 07 Of 78
Date : 2/22/2022

EC-A5

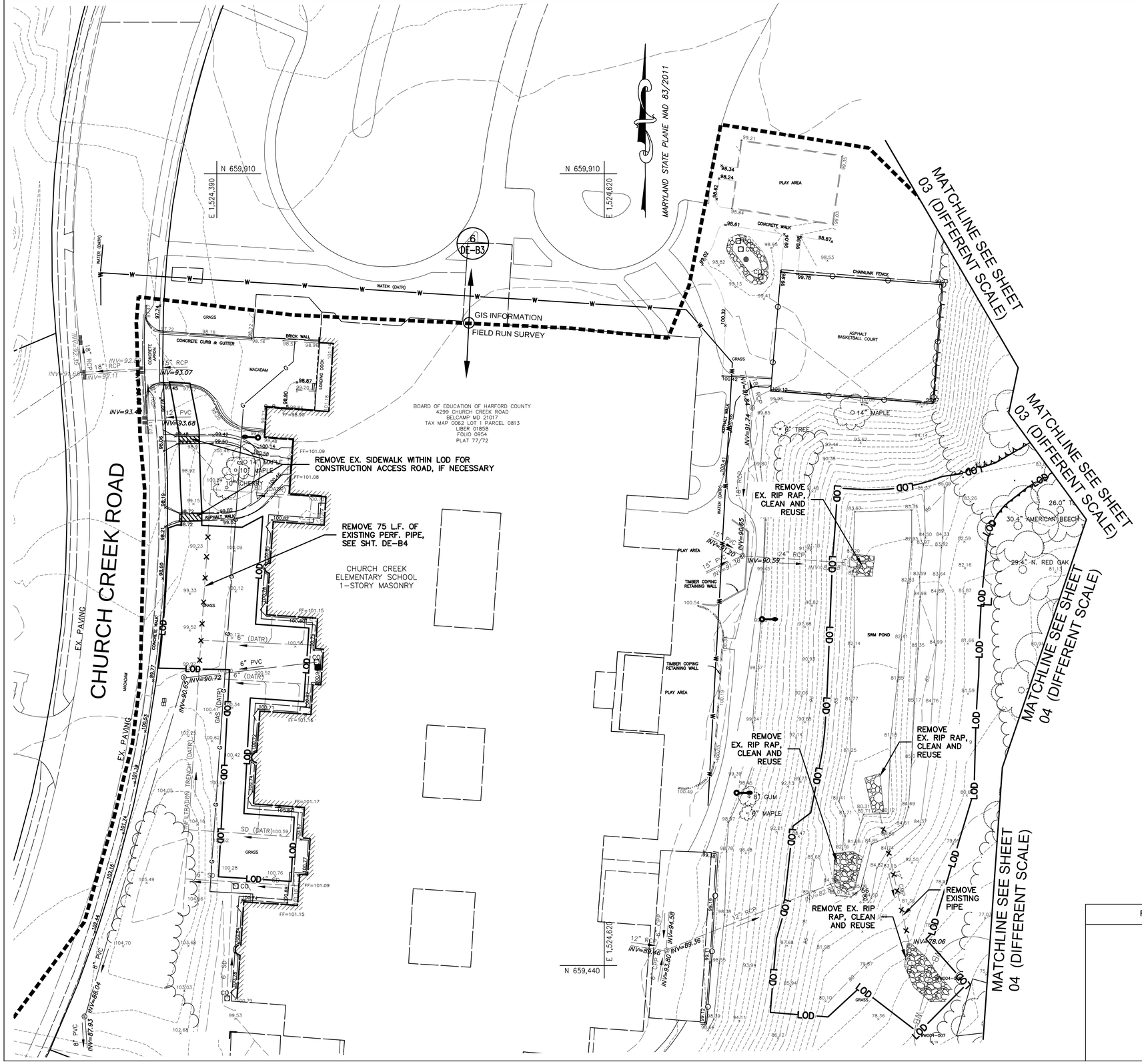
ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SCALE 1 inch



DEMOLITION NOTES:

1. THE CONTRACTOR SHALL TAKE PROPER PRECAUTIONS SO AS NOT TO DAMAGE EXISTING ADJACENT FACILITIES AND STRUCTURES. THE CONTRACTOR SHALL RESTORE DISTURBED AREAS TO THEIR ORIGINAL CONDITION OR BETTER UNLESS NOTED OTHERWISE.
2. LIVE UNDERGROUND AND OVERHEAD UTILITIES MAY EXIST WITHIN THE WORK AREA. CONTRACTOR SHALL USE EXTREME CAUTION AND SHALL COMPLY WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
3. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTRACT AN INDEPENDENT FIRM TO LOCATE "ALL" UNDERGROUND UTILITIES AND INFRASTRUCTURE INCLUDING BUT NOT LIMITED TO : PIPES, DRAINS, CABLE, ETC., IN ANY PROPOSED EXCAVATION AREA. THE CONTRACTOR IS ALERTED TO THE FACT THAT "MISS UTILITY" MUST BE CONTACTED AT 1-800-257-7777 A MINIMUM OF 48 HOURS PRIOR TO EXCAVATION. NOTE: "MISS UTILITY" WILL NOT LOCATE PRIVATE INFRASTRUCTURE.
4. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL MEET CURRENT HARFORD COUNTY STANDARDS AND DIRECTIVES.
5. EXISTING SIGNS, BOLLARDS, AND MINOR SITE FEATURES IN THE WAY OF PROPOSED CONSTRUCTION, WHETHER OR NOT SHOWN ON THESE PLANS, SHALL BE REMOVED AND REINSTALLED AT NO ADDITIONAL COST TO THE OWNER.
6. ALL TRENCHES AND PITS RESULTING FROM THE REMOVAL OF EXISTING PIPES, FOUNDATIONS, INLETS, MANHOLES, UTILITIES, ETC. SHALL BE BACK FILLED WITH SELECT BACK FILL MATERIAL AND COMPACTED IN 6 INCH MAXIMUM LIFTS.
7. ANY UNCHARTED SUBSURFACE FOOTINGS, STRUCTURES, UTILITIES, ETC. ENCOUNTERED DURING EXCAVATION WORK SHALL BE REMOVED AS DIRECTED BY THE PROJECT MANAGER. THE CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER IMMEDIATELY IF THIS SITUATION OCCURS.
8. THE CONTRACTOR IS OBLIGATED TO REMOVE ALL EXISTING FEATURES AS NECESSARY TO CONSTRUCT PROJECT. THIS PLAN IN NO WAY LIMITS THE EXTENT OF DEMOLITION REQUIRED.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

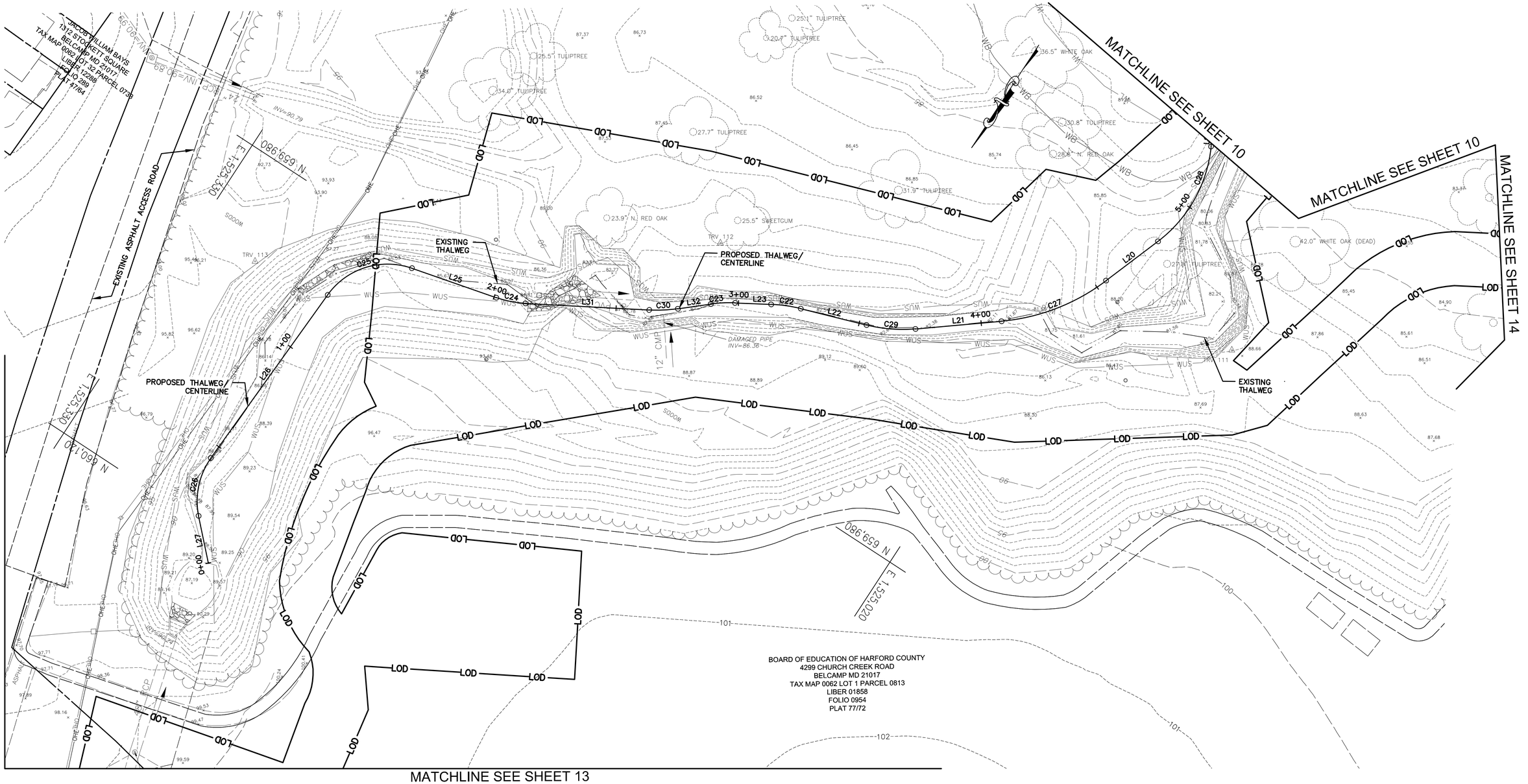
EXISITNG CONDITIONS AND DEMOLITION PLAN - SWM

Drawn By : JS / MTB
Designed By : JS / MTB
Reviewed By : MAE

Contract No : DP1602779
Scale : 1"=30'
Sheet 08 Of 78
Date : 2/16/2022

EC-B1

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch



ALIGNMENT TABLE

NUMBER	STATION	LENGTH	LINE/CHORD DIRECTION	NORTHING	EASTING	RADIUS
L27	0+00.00	19.60	S44° 52' 02.26"E	660132.1144	1525251.8714	
C26	0+19.60	24.75	S21° 13' 45.74"E	660118.2198	1525265.7018	30.00
L26	0+44.36	81.66	S2° 24' 30.77"W	660095.7950	1525274.4130	
C25	1+26.01	38.57	S39° 14' 09.95"W	660014.2110	1525270.9815	30.00
L25	1+64.58	36.37	S76° 03' 49.13"W	659986.3548	1525248.2333	
C24	2+00.95	12.14	S67° 58' 21.20"W	659977.5963	1525212.9378	42.97
L31	2+13.08	50.39	S59° 52' 53.27"W	659973.0599	1525201.7251	
C30	2+63.47	11.69	S54° 17' 57.77"W	659947.7749	1525158.1388	60.00
L32	2+75.16	13.54	S48° 43' 02.27"W	659940.9634	1525148.6597	
C23	2+88.70	9.90	S53° 57' 42.84"W	659932.0315	1525138.4866	54.07

ALIGNMENT TABLE

NUMBER	STATION	LENGTH	LINE/CHORD DIRECTION	NORTHING	EASTING	RADIUS
L23	2+98.60	14.69	S59° 12' 23.40"W	659926.2159	1525130.4934	
C22	3+13.29	12.20	S65° 02' 01.70"W	659918.6947	1525117.8731	60.00
L22	3+25.50	27.54	S70° 51' 40.00"W	659913.5522	1525106.8279	
C29	3+53.04	20.09	S61° 16' 15.20"W	659904.5215	1525080.8059	60.00
L21	3+73.13	35.14	S51° 40' 50.40"W	659894.9119	1525063.2748	
C27	4+08.27	46.24	S35° 38' 56.97"W	659873.1236	1525035.7052	82.62
L20	4+54.50	26.52	S19° 37' 03.53"W	659836.0406	1525009.1082	
C28	4+81.02	45.47	S3° 56' 03.34"E	659811.0611	1525000.2047	55.31

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

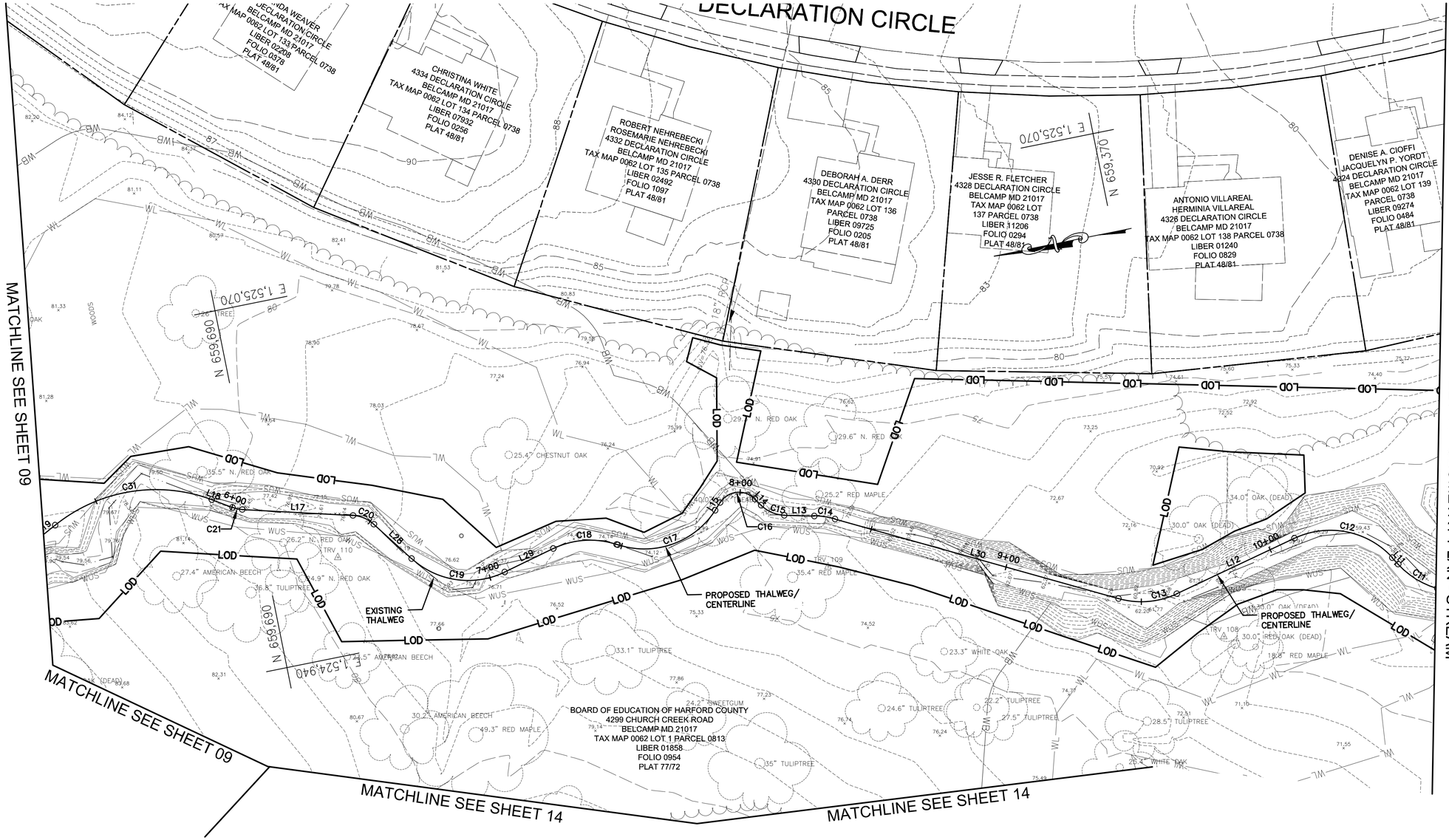
GEOMETRY PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1" =20'
Sheet 09 Of 78
Date : 2/17/2022

GE-A1

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:



ALIGNMENT TABLE

NUMBER	STATION	LENGTH	LINE/CHORD DIRECTION	NORTHING	EASTING	RADIUS
L19	5+26.49	6.51	S27° 29' 10.21"E	659766.9644	1525003.2374	
C31	5+33.00	59.29	S2° 09' 16.56"W	659761.1914	1525006.2409	57.31
L18	5+92.29	7.90	S31° 47' 43.34"W	659704.5490	1525004.1099	
C21	6+00.20	3.61	S23° 11' 11.73"W	659697.8303	1524999.9448	12.00
L17	6+03.80	39.63	S14° 34' 40.12"W	659694.5280	1524998.5304	
C20	6+43.43	8.19	S34° 08' 12.88"W	659656.1760	1524988.5563	12.00
L28	6+51.62	18.24	S53° 41' 45.65"W	659649.5257	1524984.0475	
C19	6+69.86	35.69	S19° 37' 03.78"W	659638.7287	1524969.3512	30.00
L29	7+05.54	19.28	S14° 27' 38.09"E	659607.0606	1524958.0637	
C18	7+24.83	23.27	S7° 45' 52.73"W	659588.3889	1524962.8788	30.00
C17	7+48.49	39.83	S8° 02' 36.27"E	659565.5613	1524959.6159	30.00
L15	7+88.32	3.23	S46° 04' 36.11"E	659528.9578	1524964.7885	

ALIGNMENT TABLE

NUMBER	STATION	LENGTH	LINE/CHORD DIRECTION	NORTHING	EASTING	RADIUS
C16	7+91.56	14.40	S5° 29' 30.06"W	659526.7156	1524967.1166	8.00
L14	8+05.96	3.08	S57° 03' 36.23"W	659514.2395	1524965.9171	
C15	8+09.04	9.29	S34° 52' 46.86"W	659512.5633	1524963.3300	12.00
L13	8+18.33	10.69	S12° 41' 57.49"W	659505.1304	1524958.1487	
C14	8+29.02	7.53	S19° 53' 23.63"W	659494.7045	1524955.7993	30.00
L30	8+36.55	105.18	S27° 04' 49.77"W	659487.6423	1524953.2442	
C13	9+41.72	21.41	S6° 38' 05.24"W	659393.9975	1524905.3639	30.00
L12	9+63.13	46.39	S13° 48' 39.29"E	659373.1787	1524902.9423	
C12	10+09.53	38.13	S22° 35' 59.70"W	659328.1256	1524914.0175	30.00
L11	10+47.66	3.18	S59° 00' 38.69"W	659295.2461	1524900.3312	
C11	10+50.84	16.66	S43° 06' 18.53"W	659293.6069	1524897.6018	30.00

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

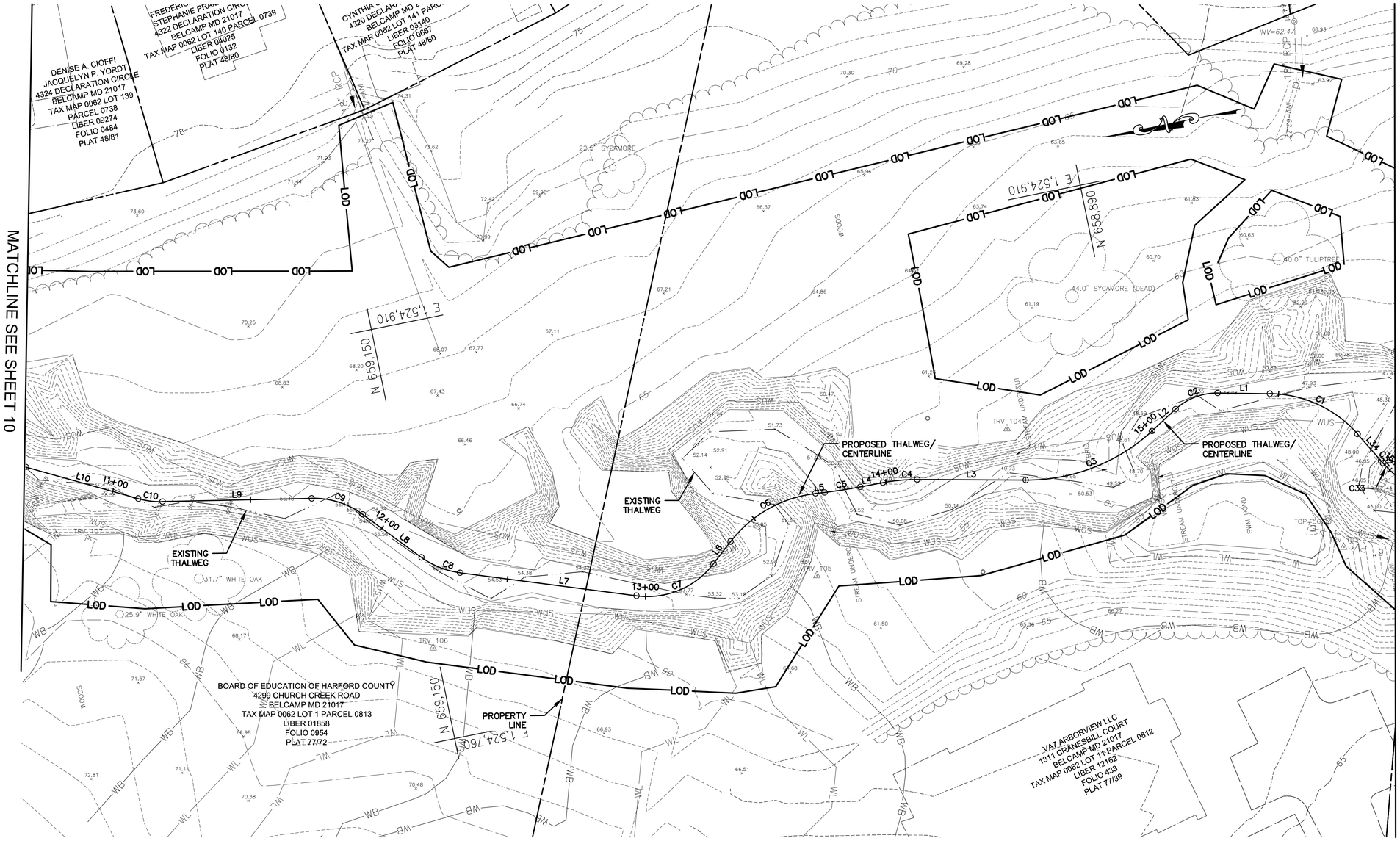
Revisions	HARFORD COUNTY, MARYLAND
	GEOMETRY PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 10 Of 78
Date : 2/17/2022

GE-A2

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch



ALIGNMENT TABLE

NUMBER	STATION	LENGTH	LINE/CHORD DIRECTION	NORTHING	EASTING	RADIUS
L10	10+67.50	41.96	S27° 11' 58.37"W	659281.6017	1524886.3655	
C10	11+09.46	8.88	S18° 43' 01.94"W	659244.2775	1524867.1838	30.00
L9	11+18.34	53.57	S10° 14' 05.50"W	659235.8952	1524864.3438	
C9	11+71.92	19.61	S28° 57' 37.98"W	659183.1753	1524854.8249	30.00
L8	11+91.53	26.18	S47° 41' 10.47"W	659166.3218	1524845.4980	
C8	12+17.71	15.06	S33° 18' 05.85"W	659148.6974	1524826.1383	30.00
L7	12+32.77	63.95	S18° 55' 01.23"W	659136.2392	1524817.9544	
C7	12+96.72	31.33	S11° 00' 11.34"E	659075.7440	1524797.2222	30.00
L6	13+28.05	10.08	S40° 55' 23.91"E	659046.3666	1524802.9342	
C6	13+38.13	36.04	S18° 04' 19.41"E	659038.7538	1524809.5341	45.18
L5	13+74.16	3.30	S4° 46' 45.09"W	659005.3972	1524820.4187	
C5	13+77.46	12.94	S2° 47' 35.86"W	659002.1079	1524820.1437	186.64

ALIGNMENT TABLE

NUMBER	STATION	LENGTH	LINE/CHORD DIRECTION	NORTHING	EASTING	RADIUS
L4	13+90.40	8.36	S0° 48' 26.62"W	658989.1878	1524819.5133	
C4	13+98.77	12.35	S6° 17' 35.03"W	658980.8240	1524819.3954	64.51
L3	14+11.12	38.99	S11° 46' 43.44"W	658968.5652	1524818.0435	
C3	14+50.11	49.83	S9° 41' 23.66"E	658930.3956	1524810.0843	66.49
L2	14+99.93	11.56	S31° 09' 30.77"E	658882.4220	1524818.2758	
C2	15+11.50	16.56	S9° 30' 09.29"E	658872.5255	1524824.2596	21.91
L1	15+28.06	18.76	S12° 09' 12.19"W	658856.5780	1524826.9290	
C1	15+46.82	35.73	S36° 10' 43.50"W	658838.2339	1524822.9785	42.61
L34	15+82.56	12.72	S60° 12' 14.81"W	658810.2305	1524802.4991	
C32	15+95.27	1.19	S60° 02' 00.14"W	658803.9106	1524791.4621	200.00
C33	15+96.47	21.33	S45° 46' 05.80"W	658803.3152	1524790.4295	43.35

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions	HARFORD COUNTY, MARYLAND
	GEOMETRY PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 11 Of 78
Date : 2/17/2022

GE-A3

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 Inch

ALIGNMENT TABLE

NUMBER	STATION	LENGTH	LINE/CHORD DIRECTION	NORTHING	EASTING	RADIUS
C33	15+96.47	21.33	S45° 46' 05.80"W	658803.3152	1524790.4295	43.35
L37	16+17.79	32.87	S31° 04' 31.52"W	658788.5887	1524775.3026	
C34	16+50.67	18.30	S18° 35' 30.58"W	658760.4327	1524758.3342	42.00
L38	16+68.97	41.87	S6° 06' 29.63"W	658743.2228	1524752.5452	
C35	17+10.84	20.83	S8° 05' 50.50"E	658701.5905	1524748.0899	42.00
L39	17+31.66	30.78	S22° 18' 10.63"E	658681.1822	1524750.9935	

ALIGNMENT TABLE

NUMBER	STATION	LENGTH	LINE/CHORD DIRECTION	NORTHING	EASTING	RADIUS
C36	17+62.45	32.61	S0° 03' 36.75"E	658652.7017	1524762.6759	42.00
C37	17+95.06	2.30	S22° 10' 58.53"W	658620.9049	1524762.7092	171972.22
C38	17+97.35	30.93	S1° 04' 58.58"W	658618.7776	1524761.8419	42.00
L41	18+28.29	9.22	S20° 01' 02.73"E	658588.5433	1524761.2703	
C39	18+37.50	46.63	S11° 47' 11.08"W	658579.8848	1524764.4248	42.00
L35	18+84.13	31.53	S43° 35' 24.86"W	658536.5491	1524755.3822	

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

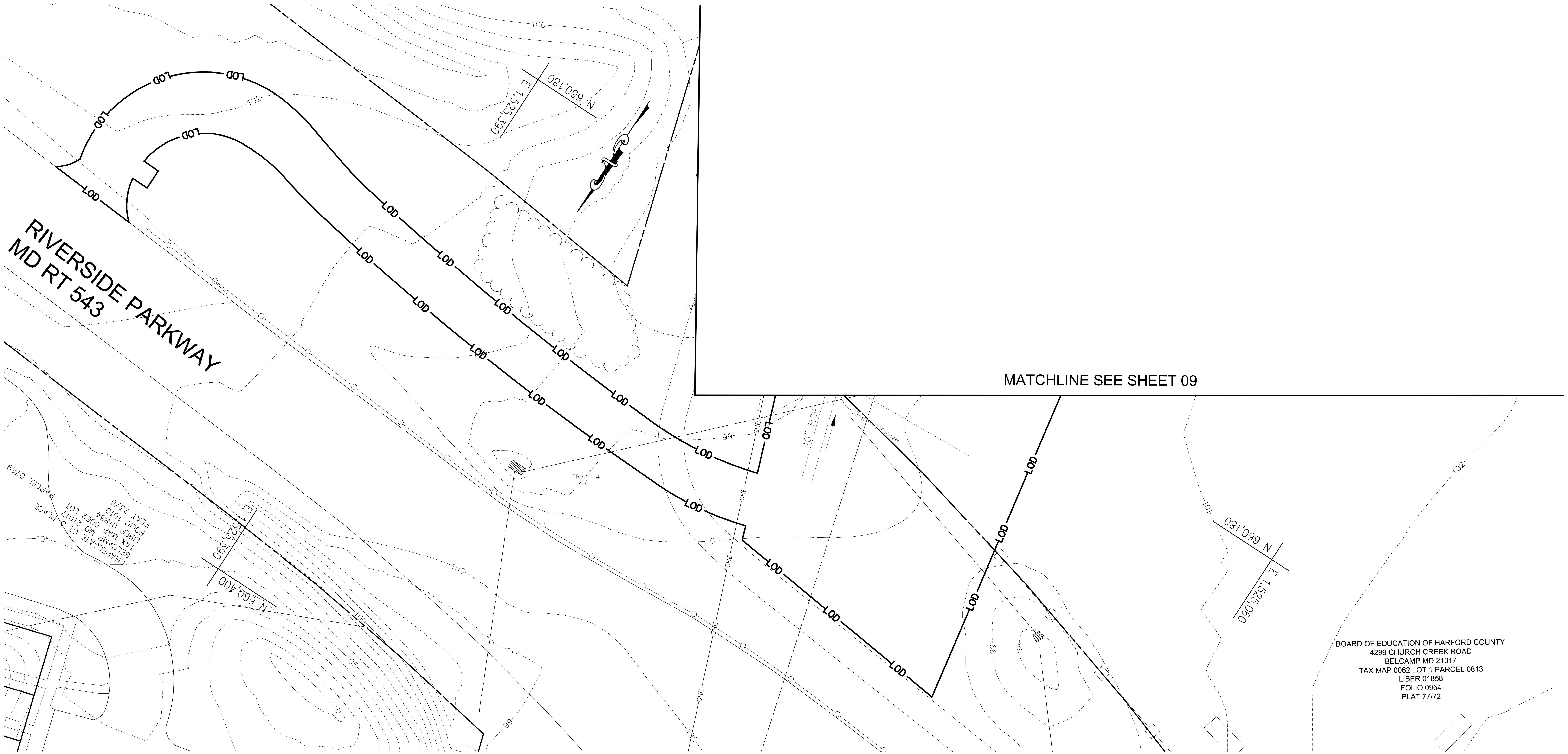
GEOMETRY PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 12 Of 78
Date : 2/17/2022

GE-A4

TAX MAP :
ADC MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch



EG–SWMENG–000747–2016

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Revisions	HARFORD COUNTY, MARYLAND	
	GEOMETRY PLAN - STREAM	
	Drawn By : LBT	Contract No : DP1602779
	Designed By : MCB	Scale : 1"=20'
	Reviewed By : GWF	Sheet 13 Of 78
		Date : 2/16/2022

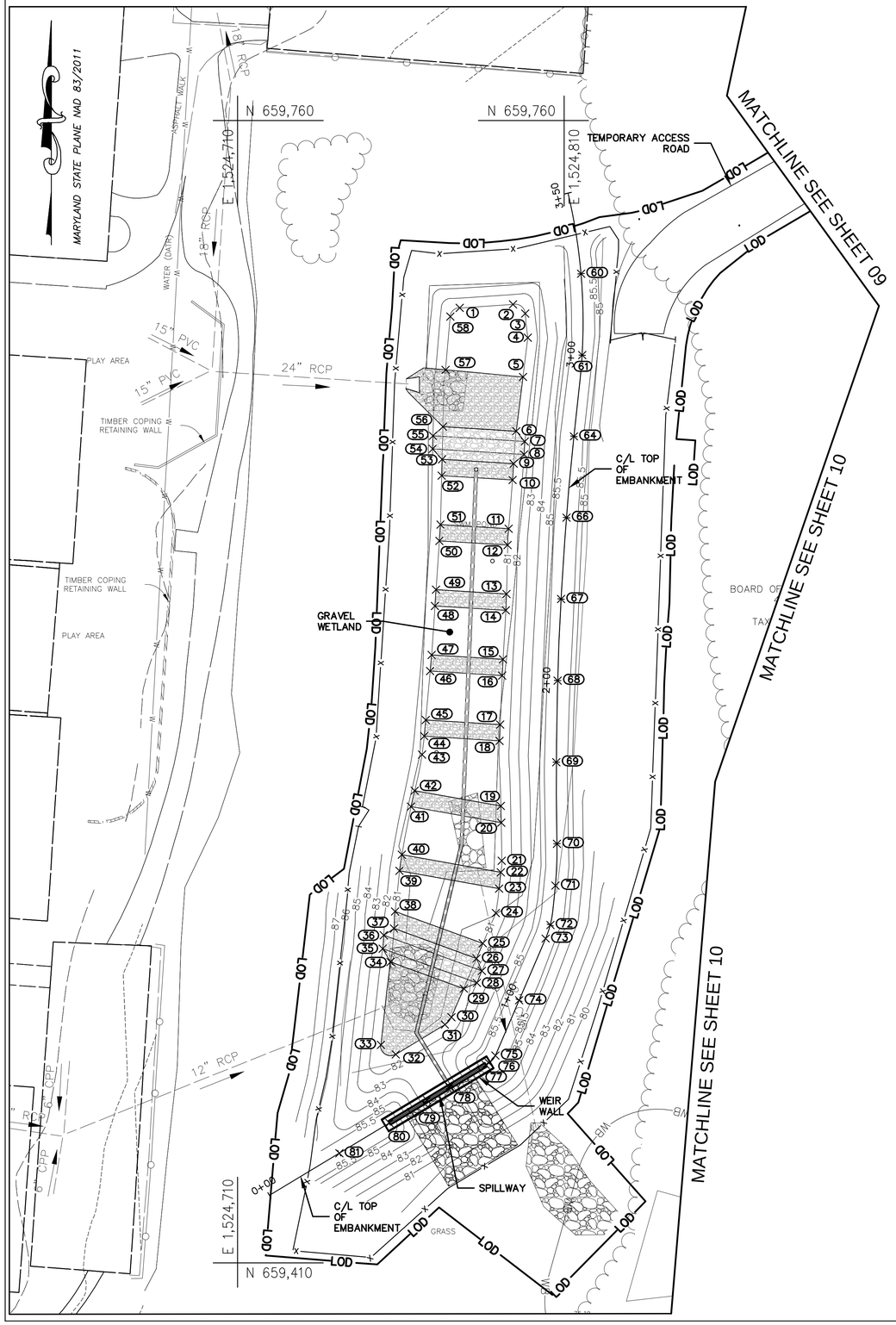
GE-A5

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:



POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
1	659702.57	1524777.98	TOP OF FACILITY
2	659703.62	1524794.35	TOP OF FACILITY
3	659700.86	1524798.05	TOP OF FACILITY
4	659693.42	1524798.88	TOP OF FACILITY
5	659681.41	1524797.38	TOP OF FACILITY
6	659664.81	1524795.32	TOP OF FACILITY
7	659661.65	1524797.97	TOP OF CHECKDAM
8	659657.67	1524797.72	TOP OF CHECKDAM
9	659654.84	1524794.55	TOP OF FACILITY
10	659649.87	1524794.20	TOP OF FACILITY
11	659634.91	1524792.99	TOP OF FACILITY
12	659629.91	1524792.70	TOP OF FACILITY
13	659614.90	1524792.33	TOP OF FACILITY
14	659609.90	1524792.14	TOP OF FACILITY
15	659594.93	1524791.30	TOP OF FACILITY
16	659589.94	1524791.03	TOP OF FACILITY
17	659574.94	1524790.44	TOP OF FACILITY
18	659569.95	1524790.24	TOP OF FACILITY
19	659549.97	1524790.60	TOP OF FACILITY
20	659544.87	1524790.72	TOP OF FACILITY
21	659533.16	1524790.91	TOP OF FACILITY
22	659529.64	1524790.64	TOP OF FACILITY
23	659524.66	1524790.10	TOP OF FACILITY
24	659517.20	1524789.06	TOP OF FACILITY
25	659507.89	1524785.09	TOP OF FACILITY
26	659503.23	1524783.18	TOP OF FACILITY
27	659499.44	1524784.82	TOP OF CHECKDAM
28	659495.76	1524783.26	TOP OF CHECKDAM
29	659494.02	1524779.26	TOP OF FACILITY
30	659485.28	1524775.49	TOP OF FACILITY
31	659482.96	1524773.47	TOP OF FACILITY
32	659473.87	1524758.40	TOP OF FACILITY
33	659476.78	1524753.87	TOP OF FACILITY
34	659502.18	1524756.85	TOP OF FACILITY
35	659506.26	1524754.42	TOP OF CHECKDAM
36	659510.40	1524754.75	TOP OF CHECKDAM
37	659512.44	1524757.91	TOP OF FACILITY
38	659517.64	1524758.22	TOP OF FACILITY
39	659530.11	1524759.57	TOP OF FACILITY
40	659535.06	1524760.30	TOP OF FACILITY
41	659549.79	1524763.10	TOP OF FACILITY
42	659554.67	1524764.22	TOP OF FACILITY

POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
43	659565.74	1524766.51	TOP OF FACILITY
44	659571.37	1524767.14	TOP OF FACILITY
45	659576.35	1524767.60	TOP OF FACILITY
46	659591.29	1524768.98	TOP OF FACILITY
47	659596.27	1524769.43	TOP OF FACILITY
48	659611.24	1524770.45	TOP OF FACILITY
49	659616.23	1524770.78	TOP OF FACILITY
50	659631.19	1524771.78	TOP OF FACILITY
51	659636.18	1524772.12	TOP OF FACILITY
52	659651.19	1524772.51	TOP OF FACILITY
53	659656.19	1524772.63	TOP OF FACILITY
54	659659.37	1524769.72	TOP OF CHECKDAM
55	659663.38	1524769.82	TOP OF CHECKDAM
56	659666.19	1524772.88	TOP OF FACILITY
57	659683.61	1524773.71	TOP OF FACILITY
58	659699.92	1524775.13	TOP OF FACILITY
60	659713.06	1524815.18	C/L TOP OF EMBANKMENT
61	659688.08	1524815.52	C/L TOP OF EMBANKMENT
64	659663.22	1524812.98	C/L TOP OF EMBANKMENT
66	659638.32	1524810.71	C/L TOP OF EMBANKMENT
67	659613.37	1524809.06	C/L TOP OF EMBANKMENT
68	659588.40	1524808.02	C/L TOP OF EMBANKMENT
69	659563.40	1524807.61	C/L TOP OF EMBANKMENT
70	659538.40	1524807.81	C/L TOP OF EMBANKMENT
71	659525.61	1524807.34	C/L TOP OF EMBANKMENT
72	659513.53	1524805.79	C/L TOP OF EMBANKMENT
73	659509.35	1524804.35	C/L TOP OF EMBANKMENT
74	659490.45	1524796.22	C/L TOP OF EMBANKMENT
75	659473.54	1524788.95	C/L TOP OF EMBANKMENT
76	659471.23	1524786.94	C/L TOP OF EMBANKMENT
77	659470.68	1524786.02	WEIR WALL
78	659463.97	1524774.89	SPILLWAY
79	659459.83	1524768.04	SPILLWAY
80	659452.86	1524756.48	WEIR WALL
81	659443.61	1524741.14	C/L TOP OF EMBANKMENT

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

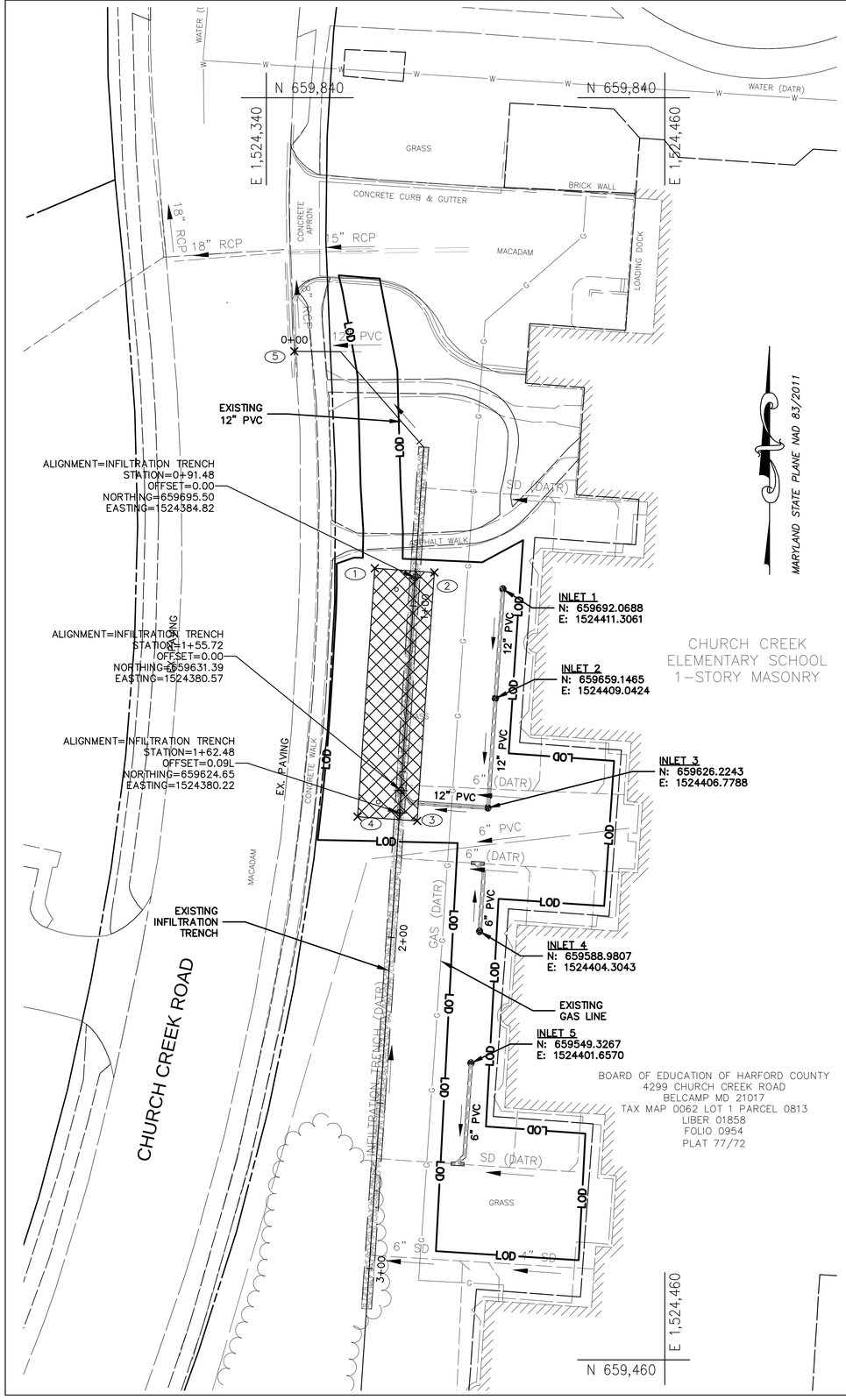
GEOMETRY PLAN - SWM

Drawn By : JS / MTB
Designed By : JS / MTB
Reviewed By : MAE

Contract No : DP1602779
Scale : 1"=20'
Sheet 14 Of 78
Date : 2/16/2022

GE-B1

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch



POINT TABLE			
POINT #	NORTHING	EASTING	DESCRIPTION
1	659,698.33	1,524,372.68	CORNER OF NEW INFILTRATION TRENCH
2	659,697.09	1,524,390.64	CORNER OF NEW INFILTRATION TRENCH
3	659,622.27	1,524,385.45	CORNER OF NEW INFILTRATION TRENCH
4	659,623.51	1,524,367.50	CORNER OF NEW INFILTRATION TRENCH
5	659,754.24	1,524,362.48	EXISTING 12" PVC CONNECTION TO THE EXISTING INLET

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

GEOMETRY PLAN - SWM

Drawn By : JS / MTB
Designed By : JS / MTB
Reviewed By : MAE

Contract No : DP1602779
Scale : 1"=20'
Sheet 15 Of 78
Date : 2/16/2022

GE-B2

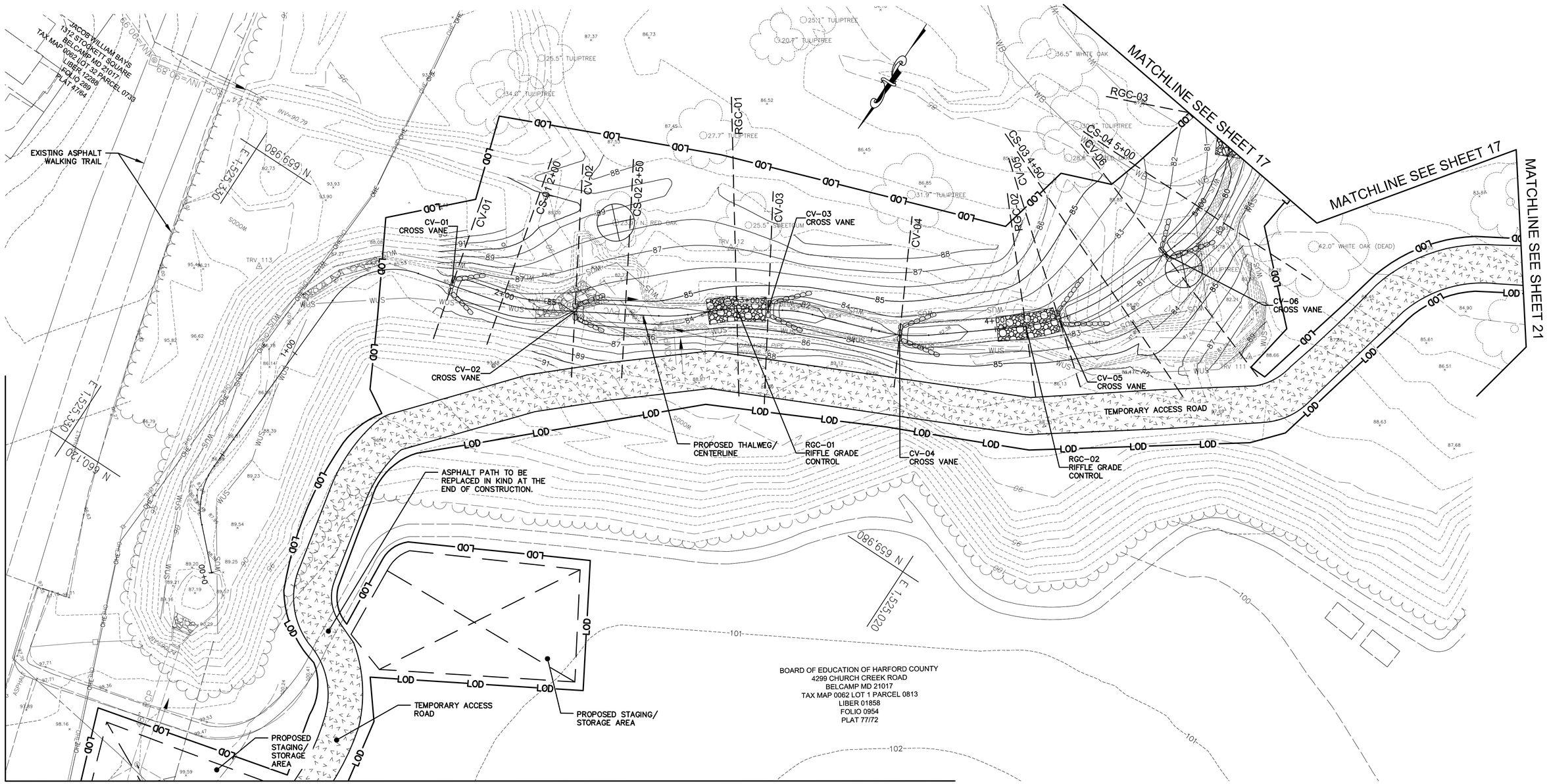
ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SALE 1 Tech



BASELINE CONTROL COORDINATES					
BL CONSTRUCTION	STRUCTURE	STATION	NORTHING	EASTING	OFFSET
CROSS VANE	CV-01	1+79	659982.8939	1525234.2863	0.0
CROSS VANE	CV-02	2+30	659964.6408	1525187.2122	0.0
RIFFLE GRADE CONTROL	RGC-01	2+95	659928.1599	1525133.5214	0.0
CROSS VANE	CV-03	3+08	659921.5823	1525122.7184	0.0

BASELINE CONTROL COORDINATES					
BL CONSTRUCTION	STRUCTURE	STATION	NORTHING	EASTING	OFFSET
CROSS VANE	CV-04	3+61	659901.2117	1525073.0688	0.0
RIFFLE GRADE CONTROL	RGC-02	4+12	659870.5465	1525032.6031	0.0
CROSS VANE	CV-05	4+26	659860.7472	1525023.0924	0.0
CROSS VANE	CV-06	4+76	659815.7803	1525001.8868	0.0

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG–SWMENG–000747–2016

Revisions

HARFORD COUNTY, MARYLAND

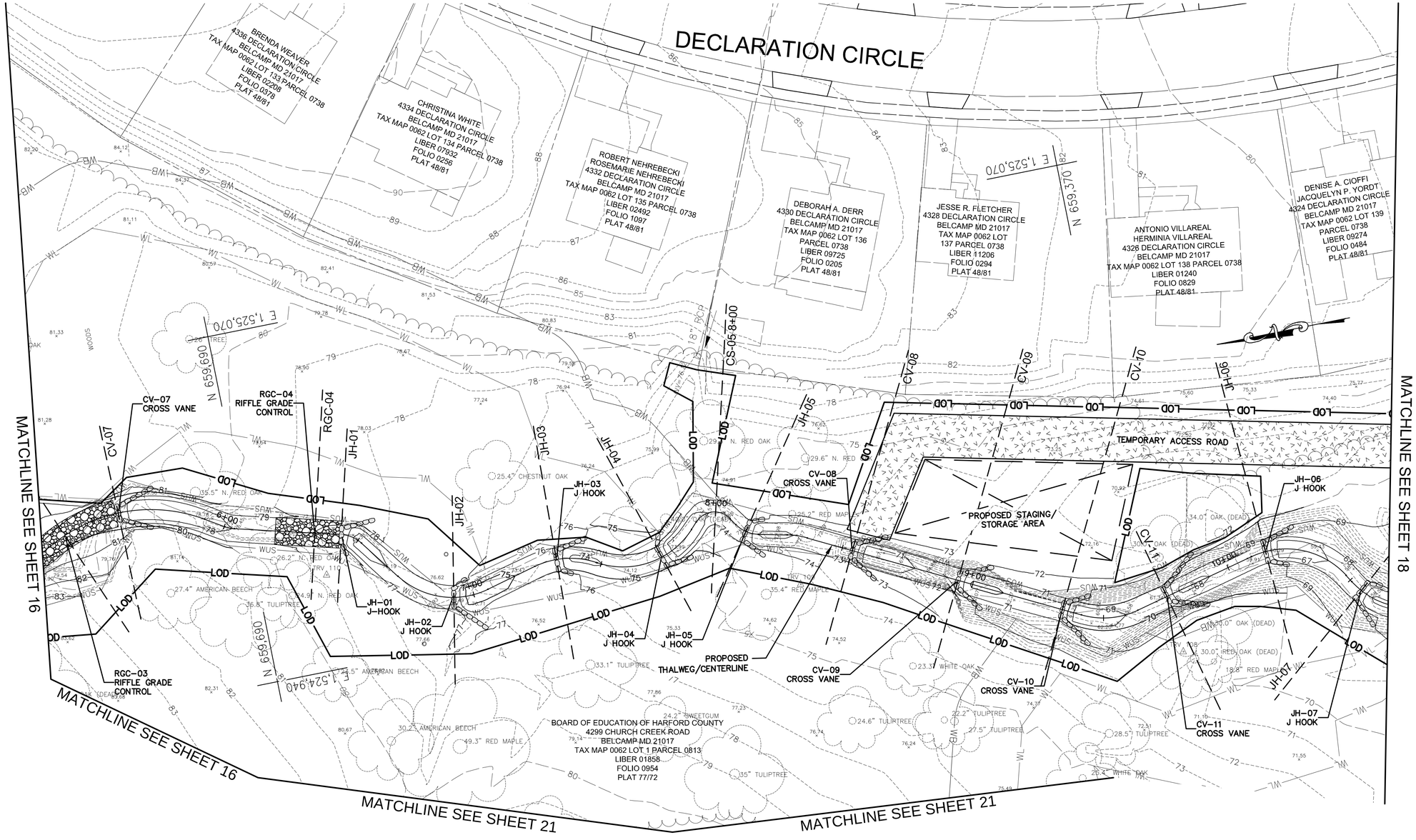
GRADING PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 16 Of 78
Date : 2/17/2022

GR-A1

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch



GENERAL NOTE:
THE CONTRACTOR MUST NOTIFY THE ENGINEER AND OBTAIN APPROVAL FROM THE ENGINEER PRIOR TO PERFORMING ALL STREAM WORK BETWEEN STATIONS 7+50 AND 9+00 TO ADDRESS CHANGES IN TOPOGRAPHY AFTER THE SURVEY WAS FINALIZED.

BASELINE CONTROL COORDINATES

BL CONSTRUCTION	STRUCTURE	STATION	NORTHING	EASTING	OFFSET
RIFFLE GRADE CONTROL	RGC-03	5+38	659756.3631	1525008.4745	0.0
CROSS VANE	CV-07	5+60	659735.4019	1525012.7057	0.0
RIFFLE GRADE CONTROL	RGC-04	6+34	659665.6716	1524991.0258	0.0
J-HOOK	JH-01	6+43	659656.1760	1524988.5563	0.0
J HOOK	JH-02	6+92	659620.0047	1524957.6129	0.0
J HOOK	JH-03	7+33	659580.0664	1524963.8177	0.0
J HOOK	JH-04	7+73	659541.7171	1524956.9340	0.0

BASELINE CONTROL COORDINATES

BL CONSTRUCTION	STRUCTURE	STATION	NORTHING	EASTING	OFFSET
J HOOK	JH-05	8+14	659509.4236	1524960.0593	0.0
CROSS VANE	CV-08	8+54	659472.2630	1524945.3808	0.0
CROSS VANE	CV-09	8+94	659436.1230	1524926.9025	0.0
CROSS VANE	CV-10	9+34	659400.4993	1524908.6883	0.0
CROSS VANE	CV-11	9+75	659361.6549	1524905.7752	0.0
J HOOK	JH-06	10+15	659322.6820	1524914.8356	0.0
J HOOK	JH-07	10+56	659290.8115	1524893.6946	0.0

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

GRADING PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

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Scale : 1"=20'
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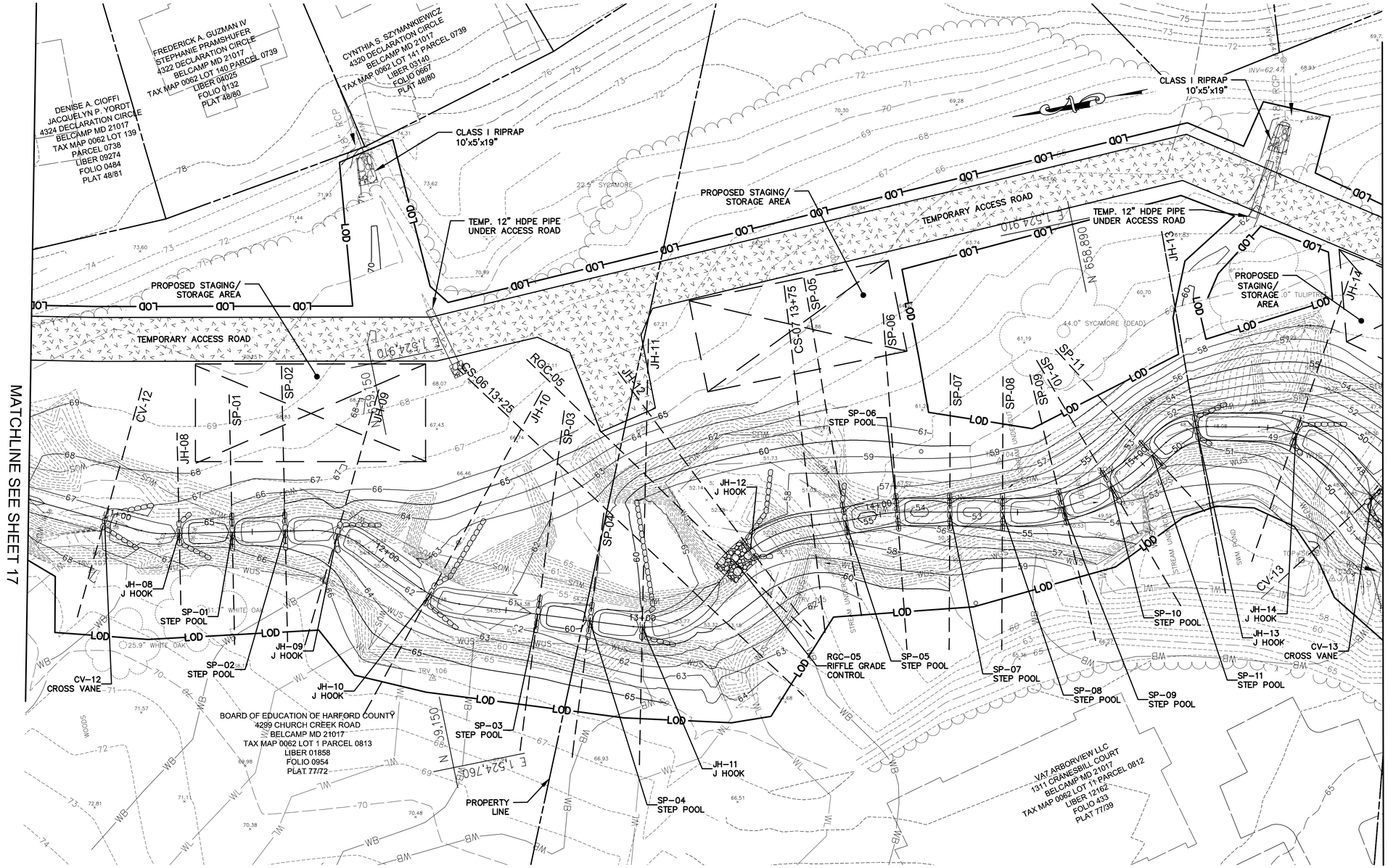
GR-A2

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch

BASELINE CONTROL COORDINATES					
BL CONSTRUCTION	STRUCTURE	STATION	NORTHING	EASTING	OFFSET
CROSS VANE	CV-12	10+96	659256.5529	1524873.4924	0.0
J HOOK	JH-08	11+23	659230.8807	1524863.4384	0.0
STEP POOL	SP-01	11+43	659211.9271	1524860.0162	0.0
STEP POOL	SP-02	11+62	659192.9638	1524856.5922	0.0
J HOOK	JH-09	11+81	659174.5973	1524851.8833	0.0
J HOOK	JH-10	12+22	659145.9353	1524823.4695	0.0
STEP POOL	SP-03	12+62	659108.9287	1524808.5948	0.0
STEP POOL	SP-04	12+81	659090.8697	1524802.4059	0.0
J HOOK	JH-11	13+00	659072.6276	1524796.3390	0.0
RIFFLE GRADE CONTROL	RGC-05	13+43	659034.6186	1524812.7199	0.0
J HOOK	JH-12	13+51	659028.3912	1524816.2786	0.0
STEP POOL	SP-05	13+87	658992.5080	1524819.5896	0.0
STEP POOL	SP-06	14+06	658973.3832	1524818.8591	0.0
STEP POOL	SP-07	14+25	658954.6228	1524815.1362	0.0
STEP POOL	SP-08	14+45	658935.8663	1524811.2250	0.0
STEP POOL	SP-09	14+67	658914.0608	1524808.7417	0.0
STEP POOL	SP-10	14+86	658895.3330	1524812.2531	0.0
STEP POOL	SP-11	15+05	658878.1981	1524820.8297	0.0
J HOOK	JH-13	15+24	658860.5731	1524827.4113	0.0
J HOOK	JH-14	15+60	658825.5858	1524818.0417	0.0
CROSS VANE	CV-13	15+97	658803.0236	1524789.9346	0.0



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

GRADING PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 18 Of 78
Date : 2/17/2022

GR-A3

SCALE: 1 Inch

BASELINE CONTROL COORDINATES					
BL CONSTRUCTION	STRUCTURE	STATION	NORTHING	EASTING	OFFSET
J-HOOK	JH-15	16+51	658759.8335	1524757.9799	0.0
CROSS VANE	CV-14	16+86	658726.5054	1524750.7562	0.0
STEP POOL	SP-12	17+26	658686.5414	1524749.2059	0.0
STEP POOL	SP-13	17+47	658666.8082	1524756.8896	0.0
CROSS VANE	CV-15	17+76	658639.9455	1524765.6972	0.0
CROSS VANE	CV-16	18+13	658603.9849	1524758.7466	0.0
CROSS VANE	CV-17	18+53	658564.9752	1524766.9587	0.0
IMBRICATED RIP RAP WALL	IRR-02	18+74	658549.3868	1524753.8518	8.9 R
IMBRICATED RIP RAP WALL	IRR-01	18+78	658536.1286	1524766.1569	8.6 L
STEP POOL	SP-14	18+89	658532.6890	1524751.7075	0.0
ROCK SILL	RS-01	19+04	658521.8464	1524741.3858	0.0
RIFFLE GRADE CONTROL	RGC-06	19+08	658518.9406	1524738.6196	0.0

PIPE TABLE									
FROM	TO	SIZE	MATERIAL	CLASS	LENGTH (FT)	INV. IN	INV. OUT	SLOPE	NOTES
MH-01	EW-02	30"	RCP	IV	39.15'	48.10	47.81	0.75%	NEW PIPE

STORM DRAIN STRUCTURE SCHEDULE									
STRUCTURE NO.	STRUCTURE TYPE	℄ INLET STATION	OFFSET (FT)	NORTHING	EASTING	TOP ELEV.	INVERT IN	INVERT OUT	NOTES
EW-02	TYPE C ENDWALL	16+62.07	20.89	658755.58	1524733.71	51.30	47.81 (30")		SEE DETAIL SHEET DE-A4
MH-01	TYPE A MANHOLE	16+58.11	59.30	658774.92	1524699.68	60.29	53.97 (30")	48.10 (30")	SEE DETAIL SHEET DE-A4

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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Revisions

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Sheet 19 Of 78
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GR-A4

SCALE 1 inch

RIVERSIDE PARKWAY
MD RT 543

MATCHLINE SEE SHEET 16

TEMPORARY ACCESS ROAD

PROPOSED STAGING/ STORAGE AREA

EX. PAVING

SCE

LOD

N 660,180
E 1,525,590

N 660,400
E 1,525,390

N 660,180
E 1,525,060

TRV 114

48" RCP

ORE

CHAPELGATE CT & PLACE
BEL CAMP MD 21017
TAX MAP 0062 LOT
LIBER 01834
FOLIO 1010
PLAT 73/6
PARCEL 0769

BOARD OF EDUCATION OF HARFORD COUNTY
4299 CHURCH CREEK ROAD
BELCAMP MD 21017
TAX MAP 0062 LOT 1 PARCEL 0813
LIBER 01858
FOLIO 0954
PLAT 77/72

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

GRADING PLAN - STREAM

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Scale : 1"=20'
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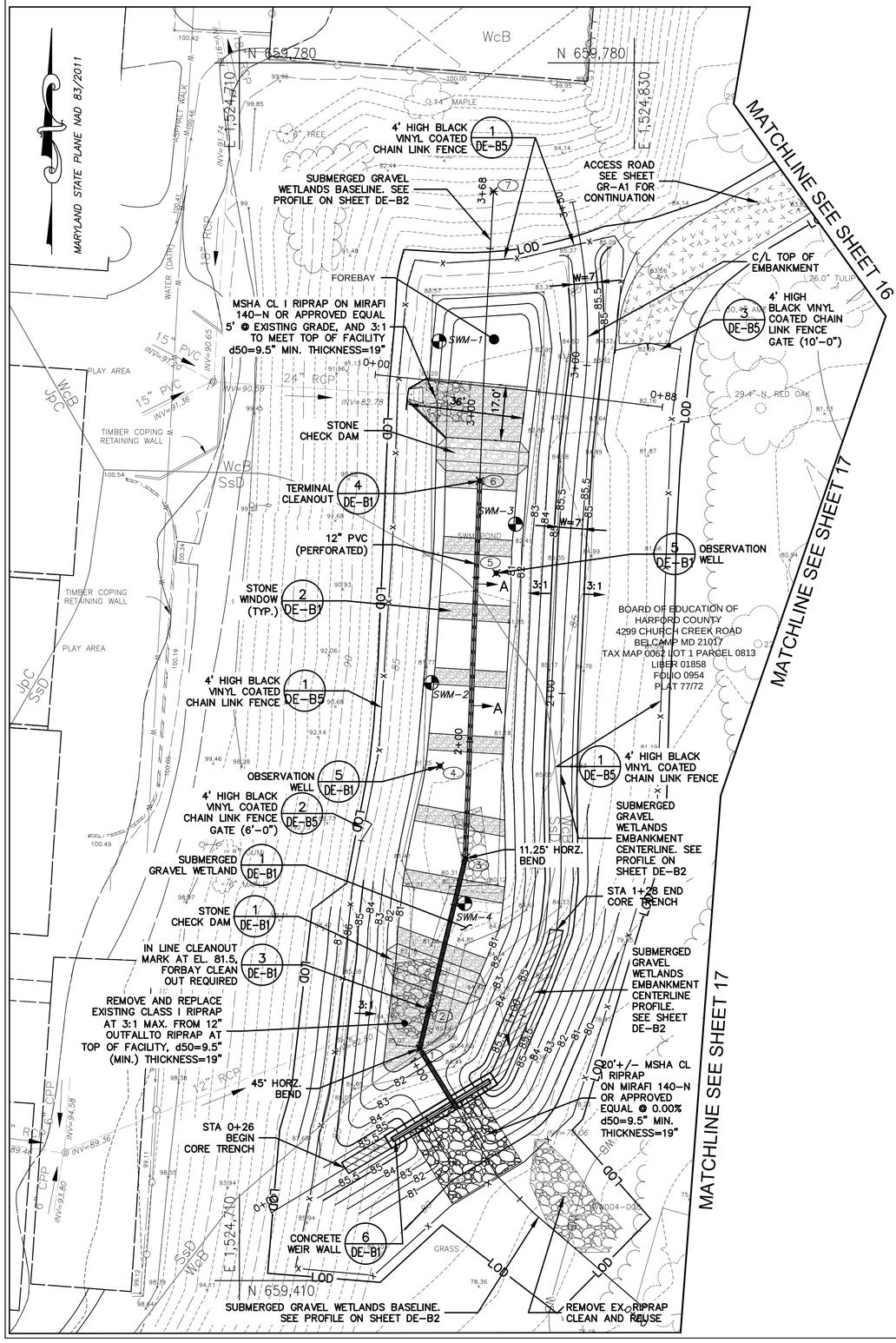
Date : 2/16/2022

GR-A5

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 Inch



MAINTENANCE SCHEDULE FOR SUBMERGED GRAVEL WETLANDS

FREQUENCY OF INSPECTION	INSPECTION REQUIREMENTS	REMEDIAL ACTION
SEASONALLY AND AFTER A MAJOR STORM	YES	REMOVE ANY DEAD OR DYING VEGETATION AND REVEGETATE.
SEASONALLY AND AFTER A MAJOR STORM	YES	REMOVE ACCUMULATED SEDIMENT FROM PRETREATMENT AREAS.
SEASONALLY AND AFTER A MAJOR STORM	YES	CLEAN INLETS AND OUTLETS OF SEDIMENT, DEBRIS, AND TRASH.
SEASONALLY AND AFTER A MAJOR STORM	YES	REPAIR EROSION AT INFLOW POINTS.
SEASONALLY AND AFTER A MAJOR STORM	N/A	CHECK THAT FLOW SPLITTERS ARE FUNCTIONING AS DESIGNED.
SEASONALLY AND AFTER A MAJOR STORM	YES	SIGNS OF UNEVEN FLOW DISTRIBUTION MAY INDICATE THAT THE GRAVEL OR UNDERDRAIN IS CLOGGED, REMOVE, CLEAN, AND REPLACE GRAVEL

AT A MINIMUM, REGULAR INSPECTIONS SHALL BE MADE AND DOCUMENTED AT THE FOLLOWING SPECIFIED STAGES OF CONSTRUCTION:

SUBMERGED GRAVEL WETLAND:

(A) DURING EXCAVATION TO SUBGRADE.
(B) DURING PLACEMENT OF BACKFILL OF PERFORATED INLET PIPE AND OBSERVATION WELLS.
(C) DURING PLACEMENT OF GEOTEXTILES AND ALL FILTER MEDIA.
(D) DURING CONSTRUCTION OF ANY APPURTENANT CONVEYANCE SYSTEMS SUCH AS DIVERSION STRUCTURES, INLETS, OUTLETS, AND FLOW DISTRIBUTION STRUCTURES.
(E) UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION, AND BEFORE ALLOWING RUNOFF TO ENTER WETLAND.

SPECIFICATIONS FOR SUBMERGED GRAVEL WETLANDS

1. WETLANDS VEGETATION ESTABLISHMENT
USE OF NATIVE WETLAND PLANT STOCK OBTAINED FROM A LOCAL AQUATIC PLANT NURSERY IS RECOMMENDED FOR ESTABLISHING VEGETATION. DESIGN VARIATIONS MAY USE WETLAND MULCH OR TOPSOIL ON TOP OF THE GRAVEL, WHICH MAY ALLOW FOR SUCCESSFUL SEED GERMINATION. HOWEVER, USE OF THE ROCK MEDIA FOR ESTABLISHING WETLAND CONDITIONS REQUIRES SPECIFIC PLANTING STOCK. FREQUENT INSPECTION AND MAINTENANCE WILL BE NECESSARY UNTIL WETLAND PLANTINGS ARE WELL ESTABLISHED.

2. WETLAND SOIL MEDIA
TO CREATE GRAVEL WETLAND SOIL MEDIA, CONTRACTOR SHALL AMEND STOCKPILED ON-SITE TOPSOIL TO MEET THE FOLLOWING REQUIREMENTS:

- SOIL TEXTURE SHALL BE SILT LOAM
- CLAY CONTENT OF SOIL MIX SHALL NOT EXCEED 15%
- ORGANIC CONTENT SHALL BE 15%-20% OF SOIL MIX BY MASS. ORGANIC MATTER SHALL CONSIST OF PROPERLY MATURED LEAF COMPOST.
- CATION EXCHANGE CAPACITY (CEC) SHALL BE 20 MEQ/100 G OF SOIL MIX OR GREATER
- PH SHALL BE 6.5-7.5.
- CONTRACTOR SHALL SUBMIT ONE 2 LB SAMPLE PER 40 CUBIC YARDS MIXED, TO A MARYLAND CERTIFIED LABORATORY. THE TEST RESULTS FOR EACH SAMPLE SHALL BE SUBMITTED TO THE COUNTY. THE LABORATORY RESULTS SHALL CONFIRM THAT THE SOIL MIX MEETS THE REQUIREMENTS LISTED ABOVE.

3. PEA GRAVEL
PEA GRAVEL TO BE WASHED, UNCRUSHED NATURAL PEA GRAVEL, SIZE NO. 8.

4. GRAVEL MEDIA
THE AGGREGATE SHALL BE COMPOSED OF CLEAN WASHED, UNIFORMLY GRADED MATERIAL WITH A POROSITY OF 40% ROUNDED BANK RUN GRAVEL IS RECOMMENDED. AGGREGATE SHALL BE ASTM D448 #4, #5, OR #6 STONE (OR AN APPROVED EQUAL).

5. PIPE
ALL FACILITY PIPING (SURFACE DRAIN, UNDERDRAIN, RISER, CLEAN-OUT, ETC.) IS TO BE 6" DIAMETER SCHEDULE 40 OR STRONGER PVC, PERFORATIONS TO BE AS SPECIFIED ON PLANS.

ALL OTHER PIPE TO BE SCHEDULE 40 OR STRONGER PVC OR ADS N-12 HDPE AS SPECIFIED ON PLANS.

6. GEOTEXTILE FABRIC
CONTRACTOR TO PROVIDE CLASS PE, TYPE III NON-WOVEN GEOTEXTILE FABRIC ALONG ALL SIDES OF FACILITIES.

AS-BUILT DATA FOR STORMWATER MANAGEMENT FACILITY #2 (SUBMERGED GRAVEL WETLAND #1)

* TO BE COMPLETED BY THE CERTIFYING ENGINEER

TYPE OF FACILITY: SUBMERGED GRAVEL WETLAND	DESIGN	*AS-BUILT
ESD STORAGE VOLUME (CF)	14,023	
TOP OF BERM EMBANKMENT	85.50 (MIN.)	
SURFACE ELEVATION	81.0	
SURFACE AREA (SF) / SURFACE DIMENSIONS (L x W)	5435 / 226'x 24'	
WETLAND SOIL DEPTH/BOTTOM ELEVATION	8"	
PEA GRAVEL DEPTH/BOTTOM ELEVATION	N/A	
BANK RUN GRAVEL DEPTH/BOTTOM ELEVATION	24"	
BOTTOM AREA (SF) / BOTTOM DIMENSIONS (L x W)	5435 / 226' X 24'	
INFLOW SURFACE DRAIN # 1 SIZE/ELEVATION/LENGTH	EX.24"/82.78/59 LF +/-	
INFLOW SURFACE DRAIN # 2 SIZE/ELEVATION/LENGTH	EX.12"/82.80/104 LF+/-	
INFLOW WEIR WALL OPENING	8' WEIR OPENING	
INFLOW UNDERDRAIN SIZE/ELEVATION/LENGTH	12"/78.17/191 LF	
OUTFLOW UNDERDRAIN SIZE/ELEVATION/LENGTH	12"/80.67/2 LF	
OUTFLOW CLEAN OUT SIZE/HEIGHT/PROVIDED (#)	6"/3.83'/2	
OBSERVATION WELL SIZE/HEIGHT/PROVIDED (#)	6"/4.33'/2	
OUTFLOW PIPE SIZE/ELEVATION/LENGTH	N/A	
DATE AS-BUILT ACCEPTED:		

POINT TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
1	659,489.06	1,524,745.76	12" PVC 45° HORZ. BEND
2	659,490.04	1,524,754.45	CLEANOUT
3	659,537.68	1,524,775.37	12" PVC 11 ¼° HORZ. BEND
4	659,565.80	1,524,770.95	CLEANOUT
5	659,624.89	1,524,789.19	CLEANOUT
6	659,671.29	1,524,785.06	CLEANOUT
7	659,714.04	1,524,787.21	STA. 3+68 END OF BASELINE

LEGEND:

SWM-1 — SOIL BORING

BeB / JpC — SOIL TYPE AND SOIL BOUNDARY

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

AS BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

NAME _____ SIGNATURE _____

MARYLAND REGISTRATION NUMBER _____ DATE _____

SUBMERGED GRAVEL WETLAND
FACILITY IDENTIFICATION
(NUMBER AND/OR TYPE)

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

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. _____, EXPIRATION DATE _____

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

GRADING PLAN - SWM

Drawn By : JS / MTB
Designed By : JS / MTB
Reviewed By : MAE

Contract No : DP1602779
Scale : 1"=20'
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Date : 2/16/2022

GR-B1

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
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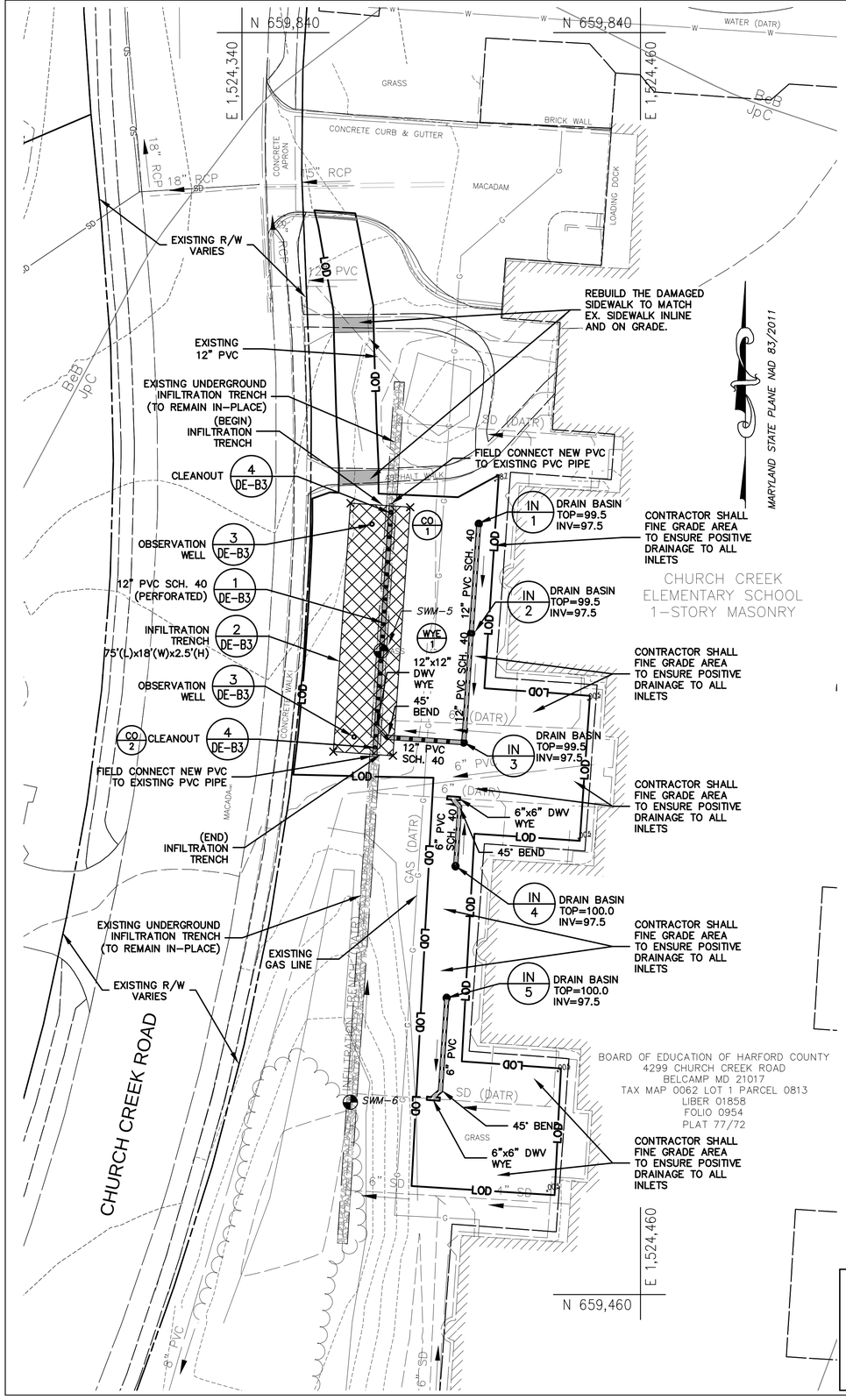
SCALE 1 inch



AS-BUILT DATA FOR LANDSCAPE INFILTRATION FACILITIES TO BE COMPLETED BY THE CERTIFYING ENGINEER		
TYPE OF FACILITY: INFILTRATION	INFILTRATION TRENCH	
	DESIGN	*AS-BUILT
FACILITY AREA (LxW)/ SURFACE AREA (SF)	**(AVG.) 7.33'X260 LF/1,906	
FACILITY SURFACE ELEVATION	98.5	
WATER VOLUME (CF)	1,905	
AGGREGATE THICKNESS (IN)	2.0'	
PEA GRAVEL THICKNESS (IN)	N/A	
SAND THICKNESS (IN)	6"	
GRAVEL THICKNESS (IN)	N/A	
GEOTEXTILE FABRIC INSTALLATION (SIDES AND TOP)	YES	
DATE AS-BUILT ACCEPTED:		

AT A MINIMUM, REGULAR INSPECTIONS SHALL BE MADE AND DOCUMENTED AT THE FOLLOWING SPECIFIED STAGES OF CONSTRUCTION:

INFILTRATION TRENCHES:

(A) DURING EXCAVATION TO SUBGRADE AND PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEMS AND GRAVEL LAYERS.
(B) DURING PLACEMENT OF PIPING.
(C) DURING CONSTRUCTION OF APPURTENANT CONVEYANCE. (OVERFLOW INLET)
(D) UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

**NEW TRENCH AREA 18' x 75'

STORMWATER MAINTENANCE SCHEDULE
INFILTRATION TRENCH

Inspection Item	Frequency of Inspection	Inspection Requirements	Remedial Action
Filter Surface	Seasonally and after a major storm		
Dewatering		Facility must dewater within 48 hours of rainfall. Noticeable odors, stained water on the filter surface or at the outlet, or the presence of algae or aquatic vegetation are indicators of anaerobic conditions and inadequate dewatering of the facility.	Remove the top three to six inches of stone and replace with stone material per plan specifications. Follow up inspections must confirm adequate dewatering. If the facility does not function as intended after the above action, the entire facility may need maintenance. Contact MDE.
Cleanouts/ Observation wells		Check operation. Check sediment accumulation.	Repair in accordance with the approved plans.
Sediment Accumulation		Check for sediment accumulation on the trench surface.	Silt/sediment must be removed from the stone when accumulation exceeds 1 inch.
Debris and Trash Cleanout	Monthly	Check that the facility is clean of trash and debris. Inlets, outlets, and contributing areas around the facility must be checked.	Trash and debris must be disposed of in an acceptable manner according to current regulations.
Structural Components	Annually	Check for evidence of structural deterioration, spalling, or cracking. Inlet and outlet structures must be in good condition.	Repair to good condition in accordance with specifications on the approved plans.
Outlets	Seasonally and after a major storm	Check for evidence of erosion, rills, or gullying.	Stabilize all eroded areas and grade to provide stable conveyance.
		Check that Riprap outlet is in good functional condition.	Repair in accordance with approved plans.
Pretreatment Forebays	Seasonally and after a major storm		
Sediment Accumulation		Check for sediment accumulation in the forebay.	When the forebay depth is less than half the proposed design, sediment must be removed and the forebay restored in accordance with the approved design.
Grass Channel Conveyance Systems	Seasonally and after a major storm	Check for erosion, flow blockages, and stable conveyance.	Stabilize and grade in accordance with the approved plan.
Overall Function of the Facility	Annually	Check that flow splitters are functioning as designed and that bypass is operating as designed.	Construction must be in accordance with approved plans.

STORM DRAIN STRUCTURE SCHEDULE

STRUCT.	TYPE	TOP ELEV.	INV. IN	INV. OUT	STANDARD DETAIL	STATION (OR NORTH)*	STATION (OR EAST)*
IN-1	DRAIN BASIN	99.50	97.50	97.50	PVC (SCH 40) DRAIN BASIN	659692.07	1524411.31
IN-2	DRAIN BASIN	99.50	97.50	97.50	PVC (SCH 40) DRAIN BASIN	659659.15	1524409.04
IN-3	DRAIN BASIN	99.50	97.50	97.50	PVC (SCH 40) DRAIN BASIN	659626.22	1524406.78
IN-4	DRAIN BASIN	100.00	97.50	97.50	PVC (SCH 40) DRAIN BASIN	659588.98	1524404.30
IN-5	DRAIN BASIN	100.00	97.50	97.50	PVC (SCH 40) DRAIN BASIN	659549.33	1524401.66

* ALL STATION OR COORDINATES (UNLESS OTHERWISE NOTED) ARE:
MANHOLES/INLETS-CENTER OF THE STRUCTURE
CURB INLETS-MIDDLE OF THE FRONT FACE

STORM DRAIN PIPE SCHEDULE

FROM	TO	SIZE	TYPE	LENGTH (L.F.)
IN-1	IN-2	12"	PVC SCH. 40	33
IN-2	IN-3	12"	PVC SCH. 40	33
IN-3	(1)	12"	PVC SCH. 40	28
IN-4	(2)	6"	PVC SCH. 40	24
IN-5	(2)	6"	PVC SCH. 40	34

(1) UNDERDRAIN INFILTRATION DRAIN, SEE DETAIL PLANS SHEET DE-B3 AND DE-B4
(2) EXISTING UNDERDRAIN PIPE

STORM DRAIN PIPE SUMMARY

SIZE	TYPE	CLASS	LENGTH (L.F.)
6"	PVC	SCH. 40	58
12"	PVC	SCH. 40	94

LEGEND:
SWM-5 — SOIL BORING
BeB / JpC — SOIL TYPE AND SOIL BOUNDARY

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

AS BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

NAME _____ SIGNATURE _____

MARYLAND REGISTRATION NUMBER _____ DATE _____

INFILTRATION TRENCH
FACILITY IDENTIFICATION (NUMBER AND/OR TYPE)

CERTIFY MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON-SITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ON-SITE INSPECTIONS AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERING STANDARDS. CERTIFY DOES NOT MEAN OR IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

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. _____, EXPIRATION DATE _____

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND
GRADING PLAN
LID BMP'S

Drawn By : JS / MTB
Designed By : JS / MTB
Reviewed By : MAE

Contract No : DP1602779
Scale : 1"=20'
Sheet 22 Of 78
Date : 2/16/2022

GR-B2

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch

GRAVEL WETLAND

KIM KIM ENGINEERING, INC.
Consulting Geotechinical Engineers
Beltsville, Maryland

BORING NUMBER SWM-1

PAGE 1 OF 1

CLIENT A. Morton Thomas & Associates, Inc.
PROJECT NAME Church Crook Elementary School
PROJECT NUMBER G16048
PROJECT LOCATION 4299 Church Crook Rd, Belcamp, MD
DATE STARTED 8/16/16 **COMPLETED** 8/16/16
GROUND ELEVATION (±)82 **HOLE SIZE** 8
DRILLING CONTRACTOR Kim Engineering Inc.
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
▽ **AT TIME OF DRILLING** 5.0 ft
LOGGED BY WS **CHECKED BY** DS
▼ **AT END OF DRILLING** 3.0 ft
NOTES
24hrs AFTER DRILLING 2.2 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ PL MC LL ☐ FINES CONTENT (%) ☐ 20 40 60 80
		4" Topsoil.						
		Brown, moist, loose to very dense, silty SAND (SM) with trace of root and clay, mica and gravel.	SS 1	56	2-2-4 (6)			
2.5			SS 2	100	19-40-50 (90)			
5.0		Brown, moist, stiff, sandy SILT (ML) with trace of clay and mica.	SS 3	89	18-7-8 (15)			
7.5			SS 4	89	7-9-13 (22)			
10.0		Bottom of hole at 10.0 feet.						

GEOTECH BH PLOTS C:\DOCH CHURCHES.GPJ \ GINT.US.GDT 9/6/16

GRAVEL WETLAND

KIM KIM ENGINEERING, INC.
Consulting Geotechinical Engineers
Beltsville, Maryland

BORING NUMBER SWM-2

PAGE 1 OF 1

CLIENT A. Morton Thomas & Associates, Inc.
PROJECT NAME Church Crook Elementary School
PROJECT NUMBER G16048
PROJECT LOCATION 4299 Church Crook Rd, Belcamp, MD
DATE STARTED 8/16/16 **COMPLETED** 8/16/16
GROUND ELEVATION (±)82 **HOLE SIZE** 8
DRILLING CONTRACTOR Kim Engineering Inc.
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
▽ **AT TIME OF DRILLING** 3.0 ft
LOGGED BY WS **CHECKED BY** DS
▼ **AT END OF DRILLING** 5.0 ft
NOTES
24hrs AFTER DRILLING 1.7 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ PL MC LL ☐ FINES CONTENT (%) ☐ 20 40 60 80
		5" Topsoil.						
		Brown, dark brown, grayish brown, moist to damp, very loose to medium dense, poorly graded SAND (SP) or silty SAND (SM) with gravel and varying amounts of mica.	SS 1	44	1-1-2 (3)			
2.5		A thin layer of sandy SILT (ML) encountered at 2.5 to 3.0 feet.	SS 2	89	8-10-16 (26)			
5.0			SS 3	89	11-13-16 (29)			
7.5			SS 4	89	6-5-5 (10)			
10.0		Bottom of hole at 10.0 feet.						

GEOTECH BH PLOTS C:\DOCH CHURCHES.GPJ \ GINT.US.GDT 9/6/16

GRAVEL WETLAND

KIM KIM ENGINEERING, INC.
Consulting Geotechinical Engineers
Beltsville, Maryland

BORING NUMBER SWM-3

PAGE 1 OF 1

CLIENT A. Morton Thomas & Associates, Inc.
PROJECT NAME Church Crook Elementary School
PROJECT NUMBER G16048
PROJECT LOCATION 4299 Church Crook Rd, Belcamp, MD
DATE STARTED 8/16/16 **COMPLETED** 8/16/16
GROUND ELEVATION (±)86 **HOLE SIZE** 8
DRILLING CONTRACTOR Kim Engineering Inc.
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING Dry
LOGGED BY WS **CHECKED BY** DS
AT END OF DRILLING Dry
NOTES
24hrs AFTER DRILLING 5.8 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ PL MC LL ☐ FINES CONTENT (%) ☐ 20 40 60 80
		5" Topsoil.						
		Brown, moist, loose to very dense, silty SAND (SM) with gravel and trace of clay and organic materials.	SS 1	44	1-2-2 (4)			
5			SS 2	100	4-6-17 (23)			
			SS 3	100	30-30-26 (56)			
10		Brownish purple, moist, stiff, sandy SILT (ML) with trace of clay and mica.	SS 4	89	12-13-15 (28)			
		Light gray, moist to damp, medium dense, silty SAND (SM) with trace of clay and mica.	SS 5	100	7-11-13 (24)			
15		Bottom of hole at 15.0 feet.	SS 6	100	6-8-10 (18)			

GEOTECH BH PLOTS C:\DOCH CHURCHES.GPJ \ GINT.US.GDT 9/6/16

GRAVEL WETLAND

KIM KIM ENGINEERING, INC.
Consulting Geotechinical Engineers
Beltsville, Maryland

BORING NUMBER SWM-4

PAGE 1 OF 1

CLIENT A. Morton Thomas & Associates, Inc.
PROJECT NAME Church Crook Elementary School
PROJECT NUMBER G16048
PROJECT LOCATION 4299 Church Crook Rd, Belcamp, MD
DATE STARTED 8/16/16 **COMPLETED** 8/16/16
GROUND ELEVATION (±)86 **HOLE SIZE** 8
DRILLING CONTRACTOR Kim Engineering Inc.
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
▽ **AT TIME OF DRILLING** 7.5 ft
LOGGED BY WS **CHECKED BY** DS
▼ **AT END OF DRILLING** 8.5 ft
NOTES
24hrs AFTER DRILLING 5.8 ft

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ PL MC LL ☐ FINES CONTENT (%) ☐ 20 40 60 80
		5" Topsoil.						
		Brown, tanish gray, moist to damp, loose to very dense, silty SAND (SM) or poorly graded SAND with silt (SP-SM) with varying amounts of gravel and trace of clay and mica.	SS 1	56	4-5-4 (9)			
5			SS 2	78	5-10-16 (26)			
			SS 3	100	18-26-31 (57)			
10			SS 4	89	14-15-13 (28)			
			SS 5	89	9-12-11 (23)			
15		Bottom of hole at 15.0 feet.	SS 6	33	9-9-9 (18)			

GEOTECH BH PLOTS C:\DOCH CHURCHES.GPJ \ GINT.US.GDT 9/6/16

INFILTRATION TRENCH

KIM KIM ENGINEERING, INC.
Consulting Geotechinical Engineers
Beltsville, Maryland

BORING NUMBER SWM-5

PAGE 1 OF 1

CLIENT A. Morton Thomas & Associates, Inc.
PROJECT NAME Church Crook Elementary School
PROJECT NUMBER G16048
PROJECT LOCATION 4299 Church Crook Rd, Belcamp, MD
DATE STARTED 8/16/16 **COMPLETED** 8/16/16
GROUND ELEVATION (±)103 **HOLE SIZE** 8
DRILLING CONTRACTOR Kim Engineering Inc.
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING Dry
LOGGED BY WS **CHECKED BY** DS
AT END OF DRILLING Dry
NOTES
24hrs AFTER DRILLING Dry

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ PL MC LL ☐ FINES CONTENT (%) ☐ 20 40 60 80
		5" Topsoil.						
		Brown, light brown, purple, moist, medium dense to dense, silty SAND (SM) or poorly graded SAND with silt (SP-SM) with varying amounts of gravel and trace of clay and mica.	SS 1	78	6-11-12 (23)			
2.5			SS 2	100	15-19-21 (40)			
5.0			SS 3	89	16-19-14 (33)			
7.5			SS 4	100	9-15-23 (38)			
10.0		Bottom of hole at 10.0 feet.						

GEOTECH BH PLOTS C:\DOCH CHURCHES.GPJ \ GINT.US.GDT 9/6/16

INFILTRATION TRENCH

KIM KIM ENGINEERING, INC.
Consulting Geotechinical Engineers
Beltsville, Maryland

BORING NUMBER SWM-6

PAGE 1 OF 1

CLIENT A. Morton Thomas & Associates, Inc.
PROJECT NAME Church Crook Elementary School
PROJECT NUMBER G16048
PROJECT LOCATION 4299 Church Crook Rd, Belcamp, MD
DATE STARTED 8/16/16 **COMPLETED** 8/16/16
GROUND ELEVATION (±)103 **HOLE SIZE** 8
DRILLING CONTRACTOR Kim Engineering Inc.
GROUND WATER LEVELS:
DRILLING METHOD Hollow Stem Auger
AT TIME OF DRILLING Dry
LOGGED BY WS **CHECKED BY** DS
AT END OF DRILLING Dry
NOTES
24hrs AFTER DRILLING Dry

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	▲ SPT N VALUE ▲ PL MC LL ☐ FINES CONTENT (%) ☐ 20 40 60 80
		4" Topsoil.						
		Brown, tanish brown, moist, medium dense, silty SAND (SM) or poorly graded SAND with silt (SP-SM) with varying amounts of gravel and trace of clay and mica.	SS 1	67	3-4-8 (12)			
2.5			SS 2	78	10-11-11 (22)			
5.0			SS 3	100	7-10-12 (22)			
7.5			SS 4	100	8-11-15 (26)			
10.0		Bottom of hole at 10.0 feet.						

GEOTECH BH PLOTS C:\DOCH CHURCHES.GPJ \ GINT.US.GDT 9/6/16

ADC MAP :

TAX MAP :

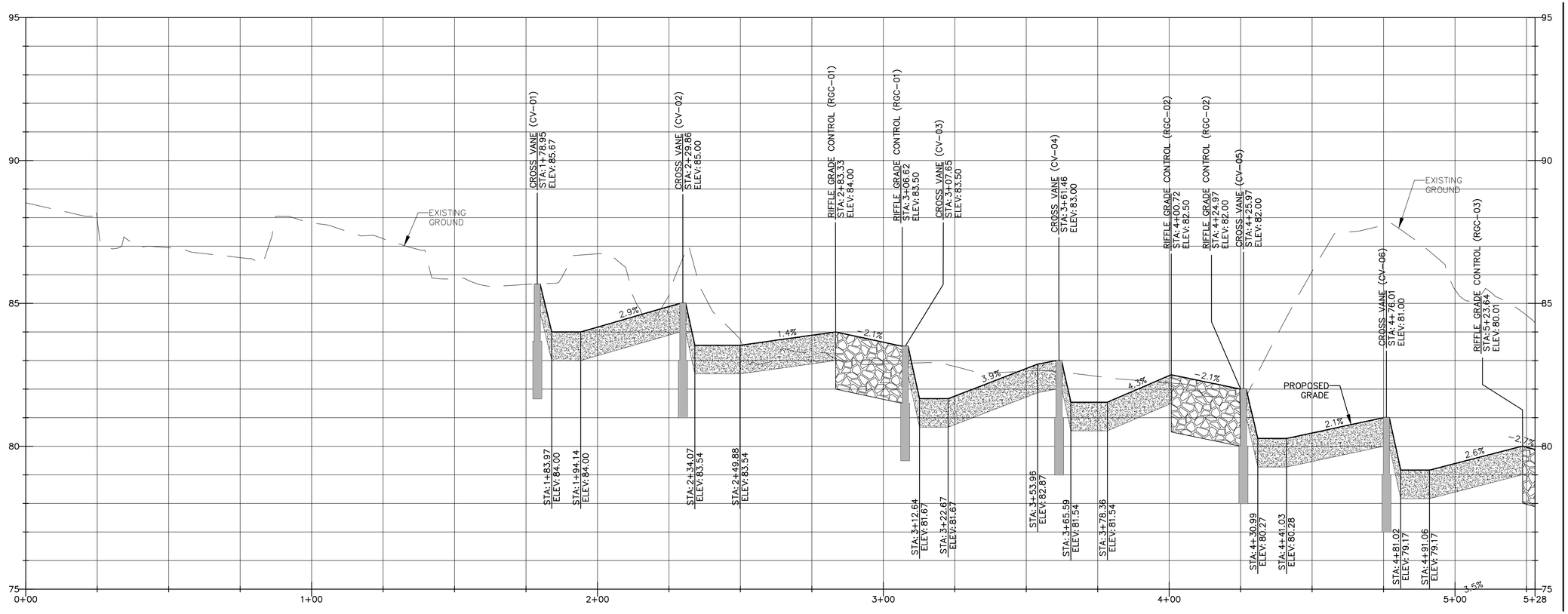
HCG BILLING ID No.:

HCG DWG ID No.:

EG-SWMENG-000747-2016

Revisions	HARFORD COUNTY, MARYLAND
	SOIL BORING LOG - SWM
	Drawn By : JS / MTB — Contract No : DP1602779
	Designed By : JS / MTB — Scale : N/A
	Reviewed By : MAE — Sheet 23 Of 78
	Date : 2/16/2022 — SB-B1

SCALE: 1 inch



MATCHLINE SEE SHEET 25 STA. 5+28

SCALE: HORZ: 1"=20'
VERT: 1"=2'

GRAPHIC SCALE
(IN FEET)
1 inch = 2 ft.

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

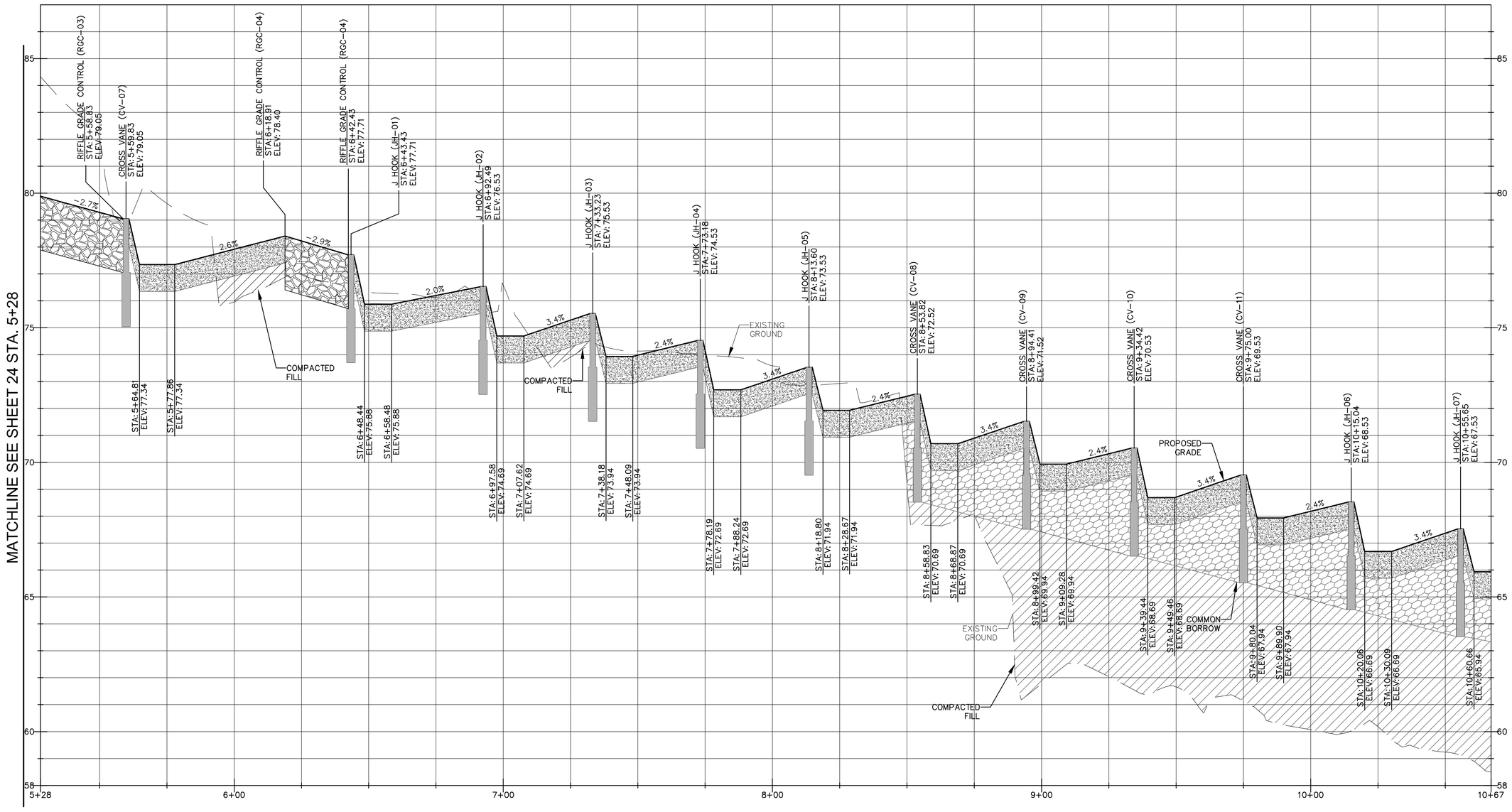
Revisions	HARFORD COUNTY, MARYLAND
	PROFILE - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 24 Of 78
Date : 2/16/2022

PR-A1

TAX MAP :
ADC MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch



SCALE: HORZ: 1"=20'
VERT: 1"=2'

VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 2 ft.

HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

PROFILE - STREAM

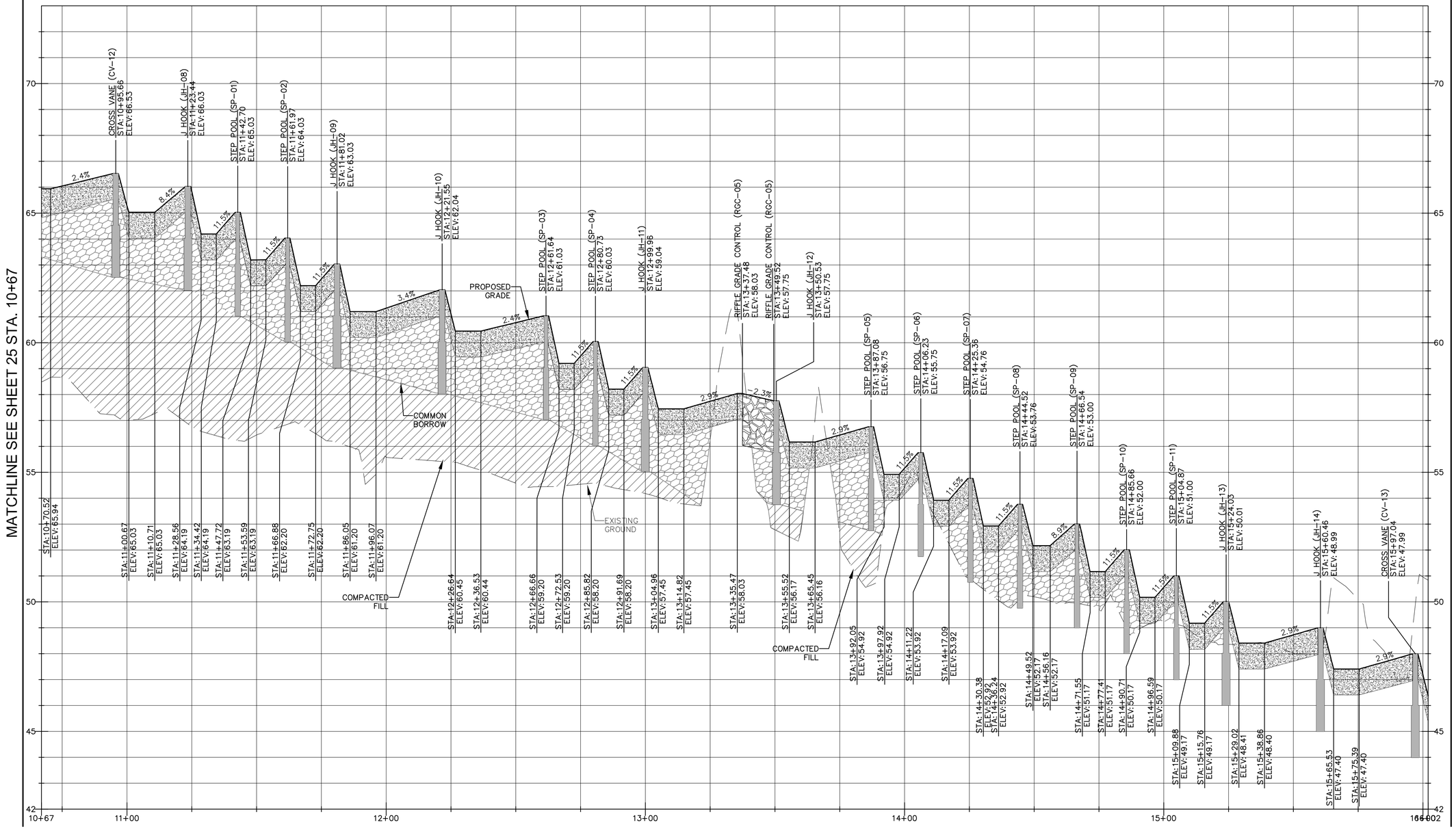
Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 25 Of 78
Date : 2/16/2022

PR-A2

TAX MAP :
ADC MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch

MATCHLINE SEE SHEET 25 STA. 10+67



MATCHLINE SEE SHEET 27 STA. 16+02

SCALE: HORZ: 1"=20'
VERT: 1"=2'

VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 2 ft.

HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

PROFILE - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 26 Of 78
Date : 2/16/2022

PR-A3

TAX MAP :

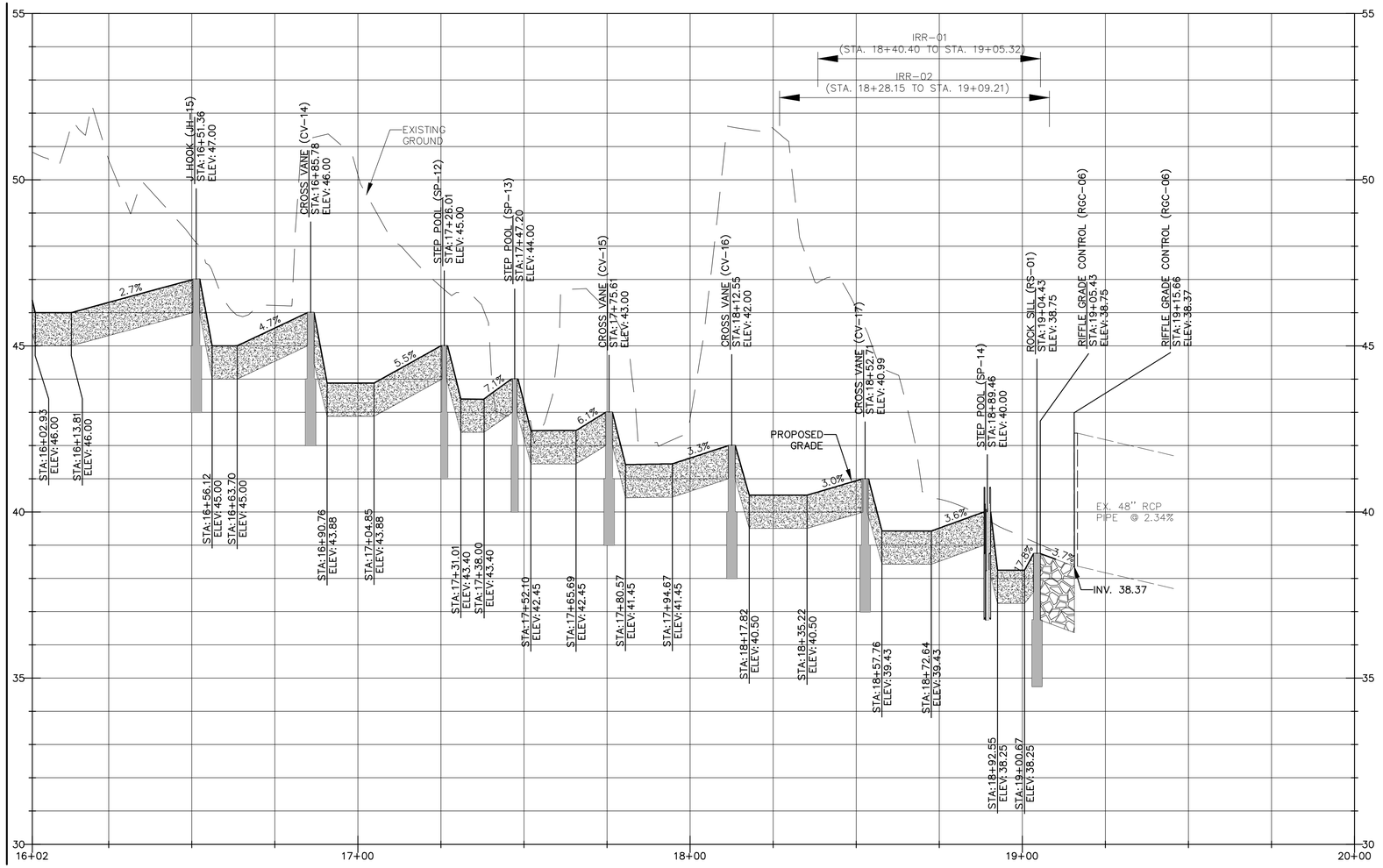
ADC MAP :

HCG BILLING ID No.:

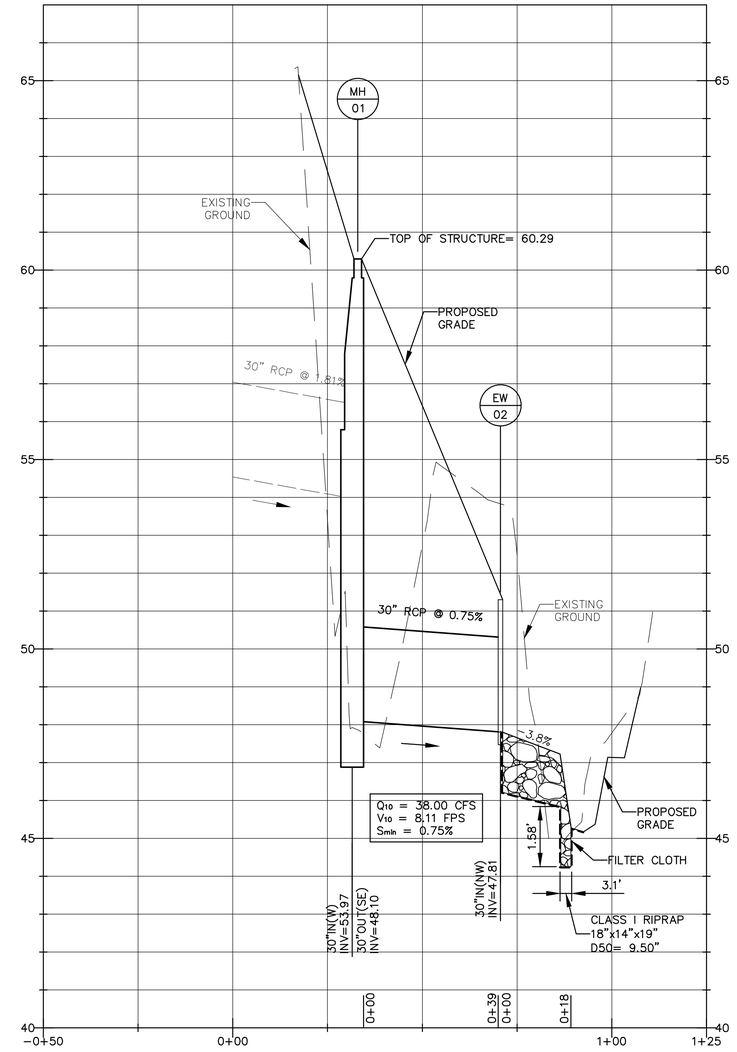
HCG DWG ID No.:

SCALE: 1 Inch

MATCHLINE SEE SHEET 26 STA. 16+02

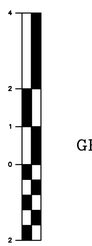


SCALE: HORZ: 1"=20'
VERT: 1"=2'

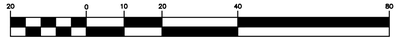


MH-01 TO EW-02

SCALE: HORZ: 1"=20'
VERT: 1"=2'



VERTICAL
GRAPHIC SCALE
(IN FEET)
1 inch = 2 ft.



HORIZONTAL
GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

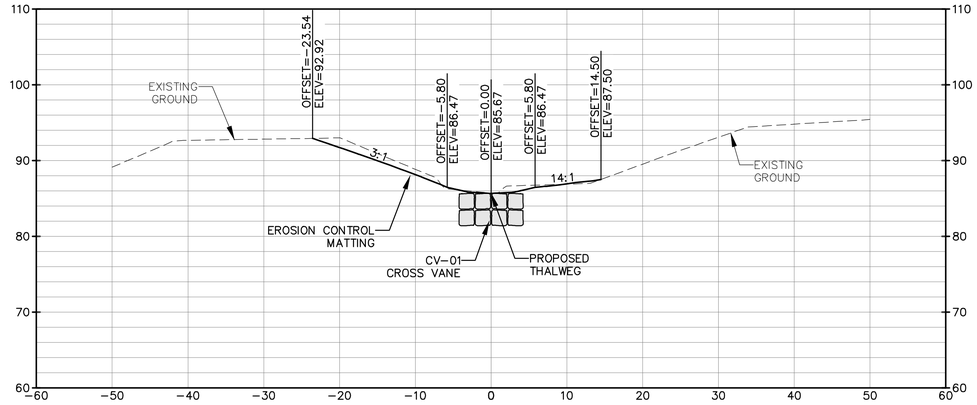
PROFILE - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

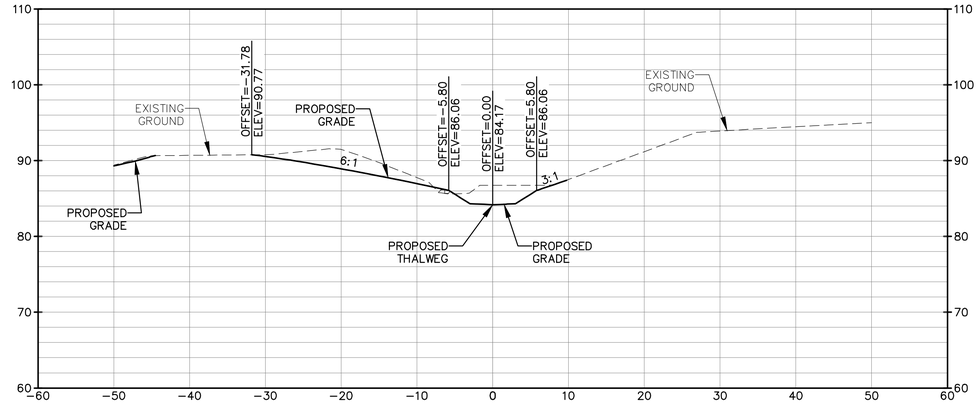
Contract No : DP1602779
Scale : 1"=20'
Sheet 27 Of 78
Date : 2/16/2022

PR-A4

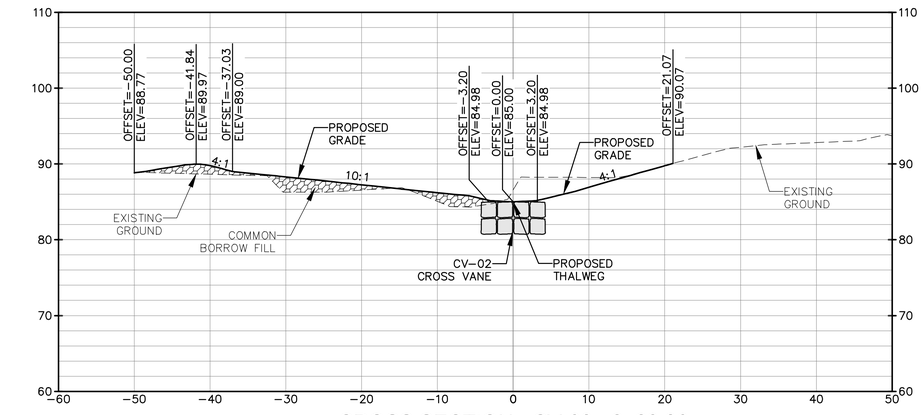
TAX MAP :
ADC MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch



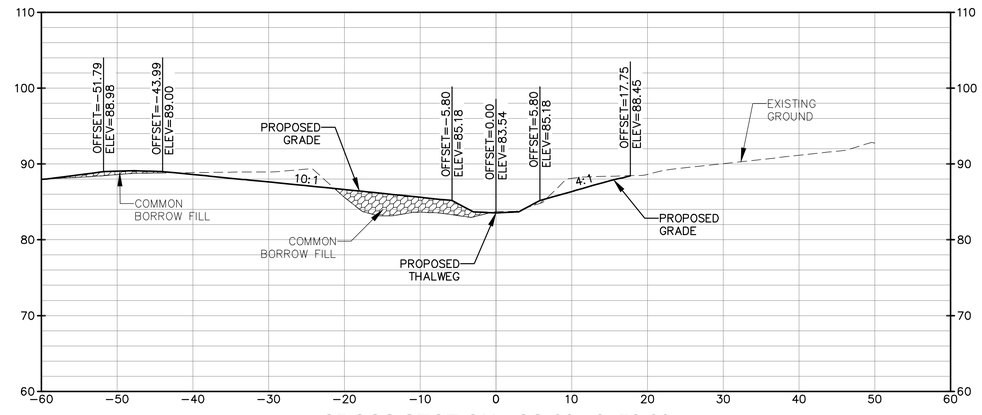
CROSS SECTION - CV-01 - 1+78.95



CROSS SECTION - CS-01 - 2+00.00



CROSS SECTION - CV-02 - 2+29.86

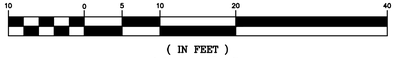


CROSS SECTION - CS-02 - 2+50.00

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.

VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 28 Of 78
Date : 2/16/2022

CS-A1

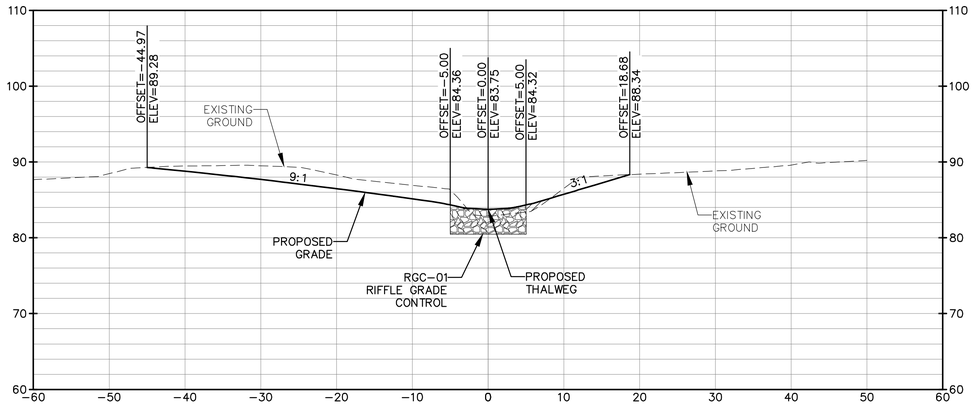
ADC MAP :

TAX MAP :

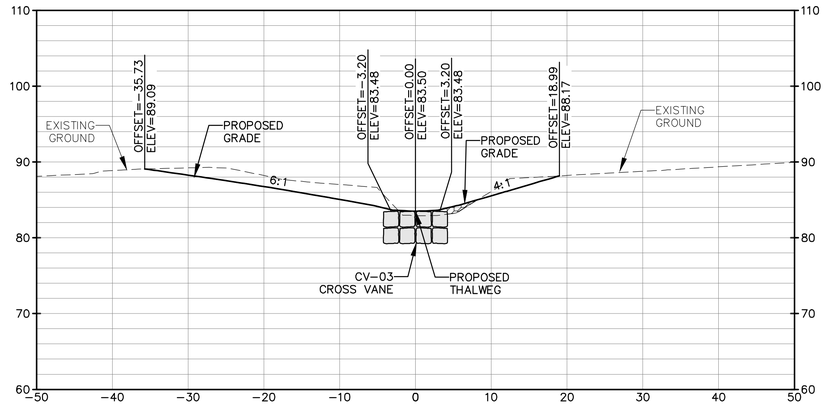
HCG BILLING ID No.:

HCG DWG ID No.:

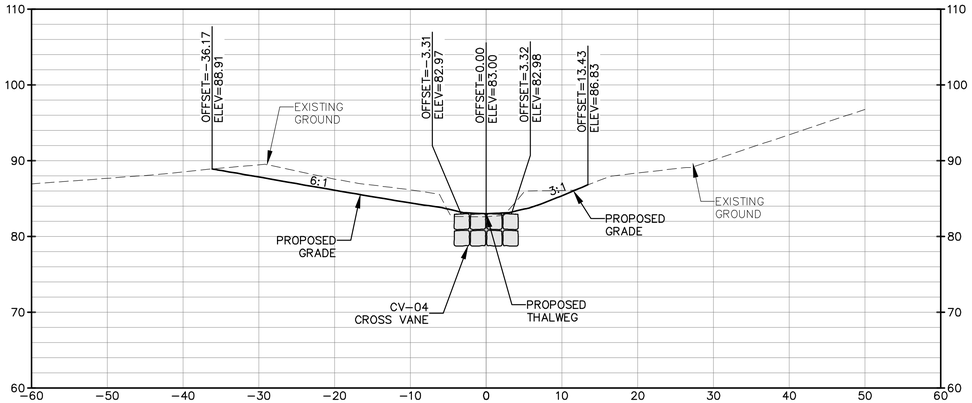
SCALE: 1 inch



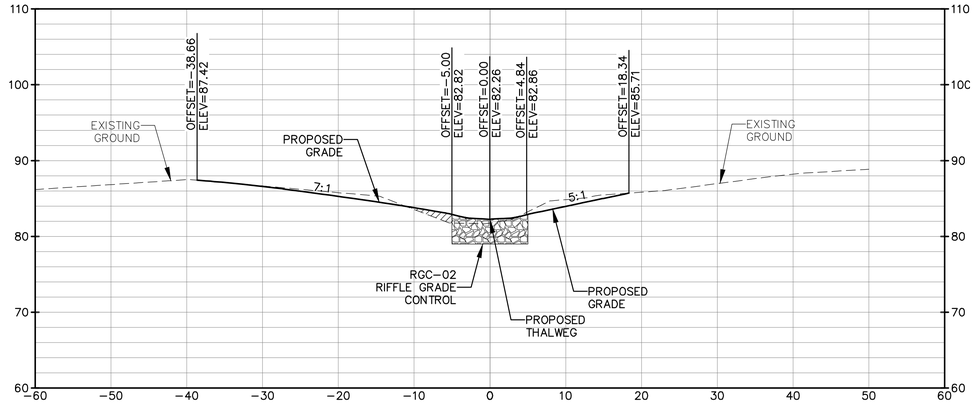
CROSS SECTION - RGC-01 - 2+95.00



CROSS SECTION - CV-03 - 3+07.65



CROSS SECTION - CV-04 - 3+61.46



CROSS SECTION - RGC-02 - 4+12.30

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.

VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 29 Of 78
Date : 2/16/2022

CS-A2

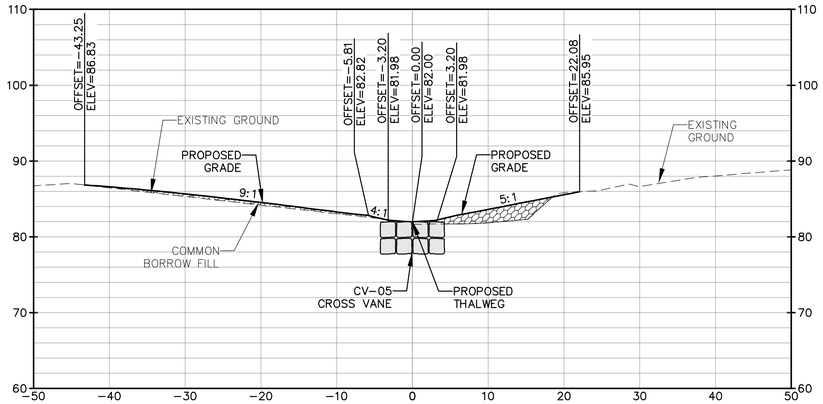
ADC MAP :

TAX MAP :

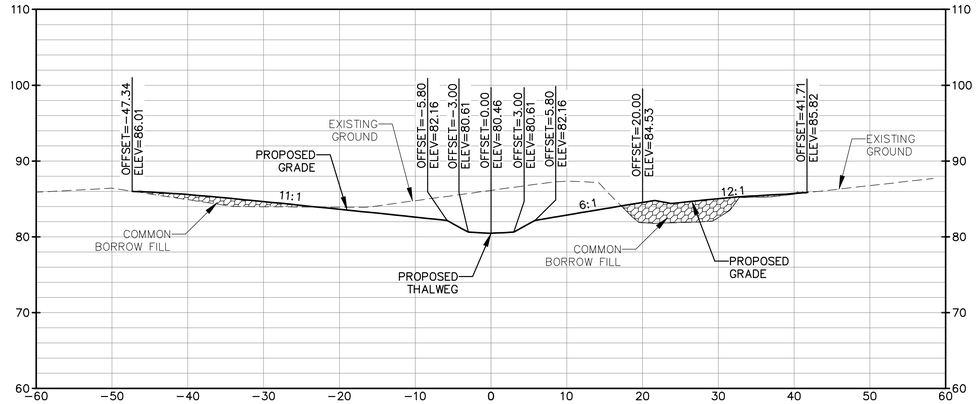
HCG BILLING ID No.:

HCG DWG ID No.:

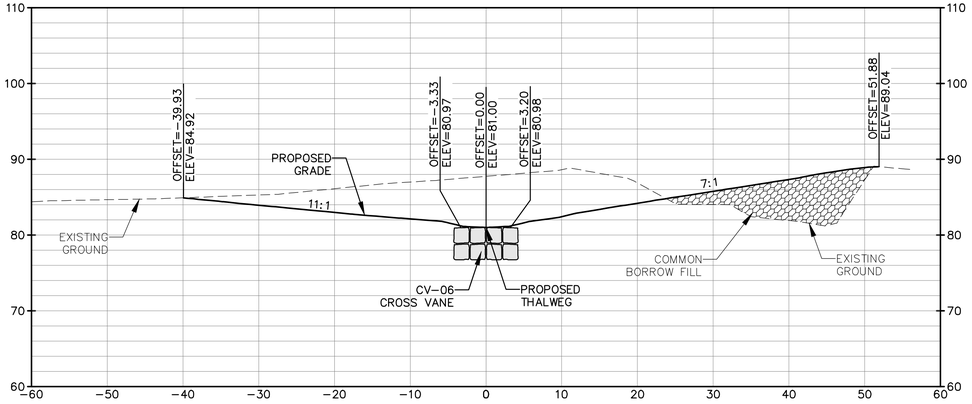
SCALE: 1 inch



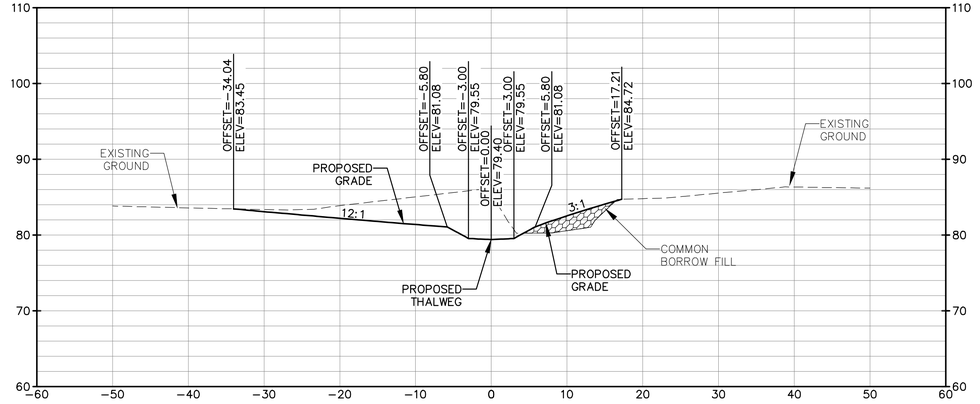
CROSS SECTION - CV-05 - 4+25.97



CROSS SECTION - CS-03 - 4+50.00



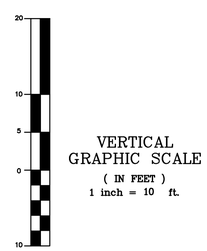
CROSS SECTION - CV-06 - 4+76.01



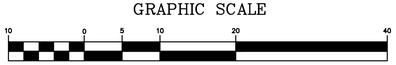
CROSS SECTION - CS-04 - 5+00.00

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 30 Of 78
Date : 2/16/2022

CS-A3

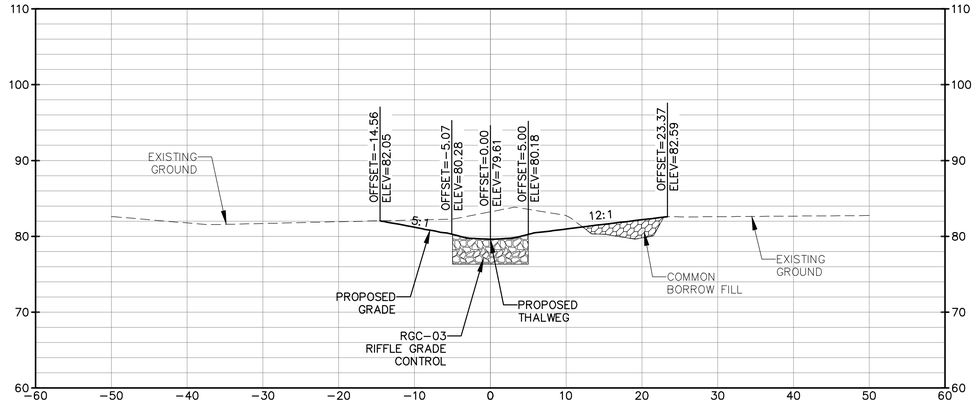
ADC MAP :

TAX MAP :

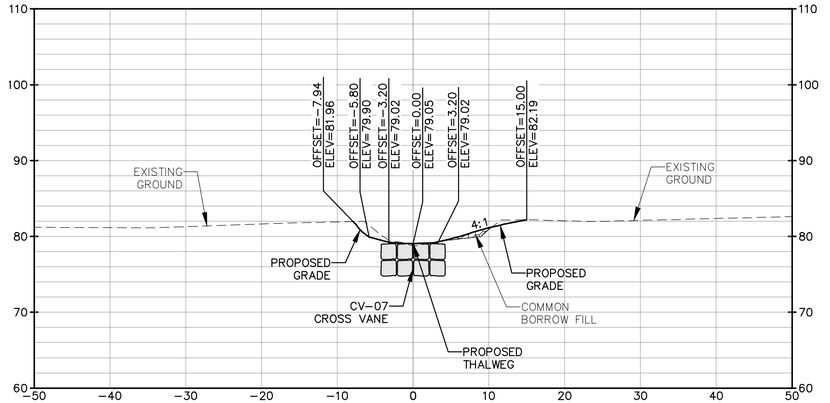
HCG BILLING ID No.:

HCG DWG ID No.:

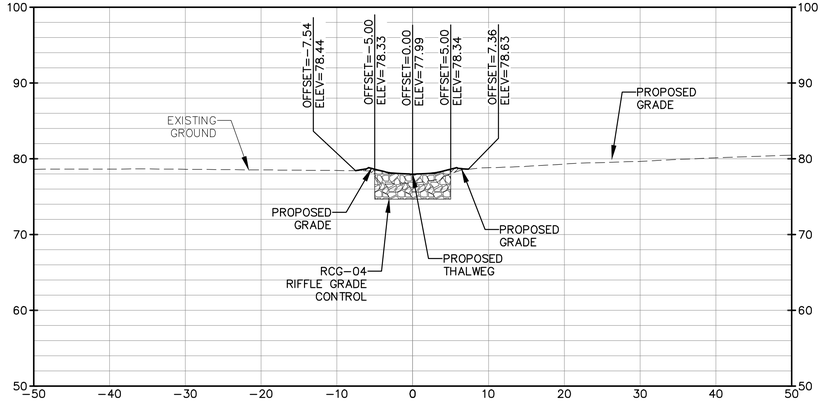
SCALE: 1 inch



CROSS SECTION - RGC-03 - 5+38.32



CROSS SECTION - CV-07 - 5+59.83

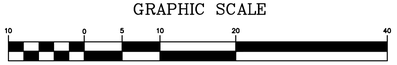


CROSS SECTION - RGC-04 - 6+33.62

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.

VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 31 Of 78
Date : 2/16/2022

CS-A4

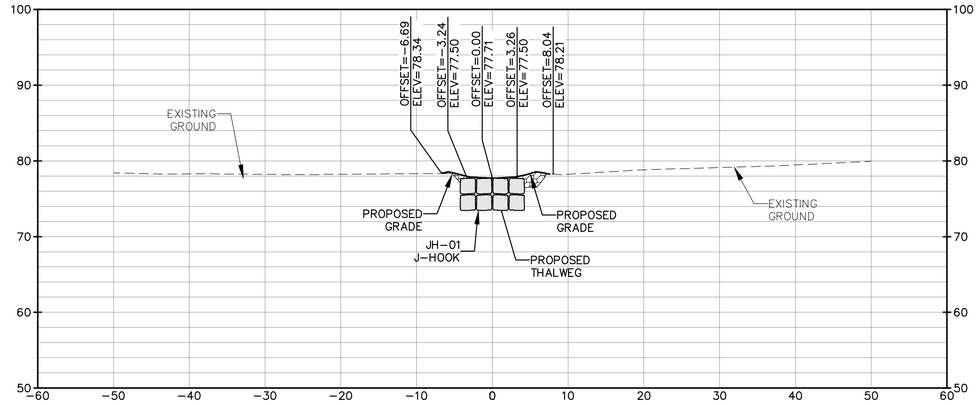
ADC MAP :

TAX MAP :

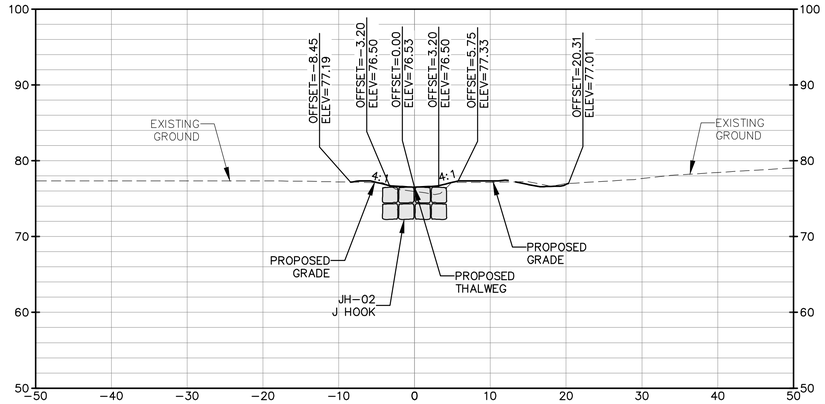
HCG BILLING ID No.:

HCG DWG ID No.:

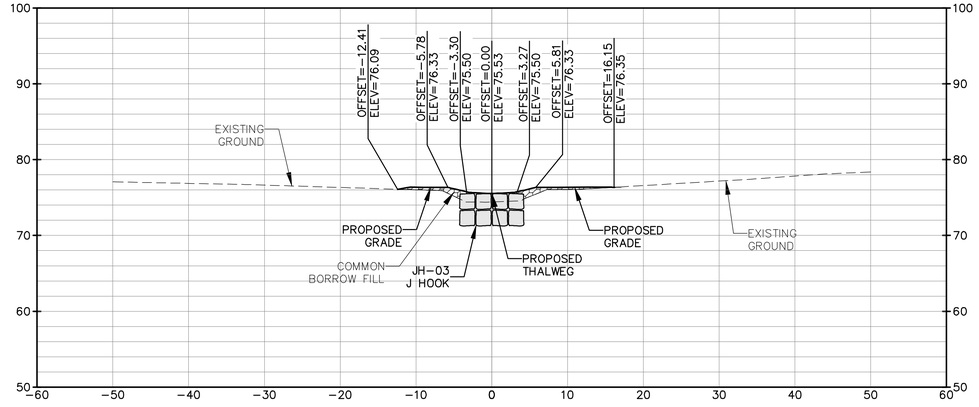
SCALE: 1 inch



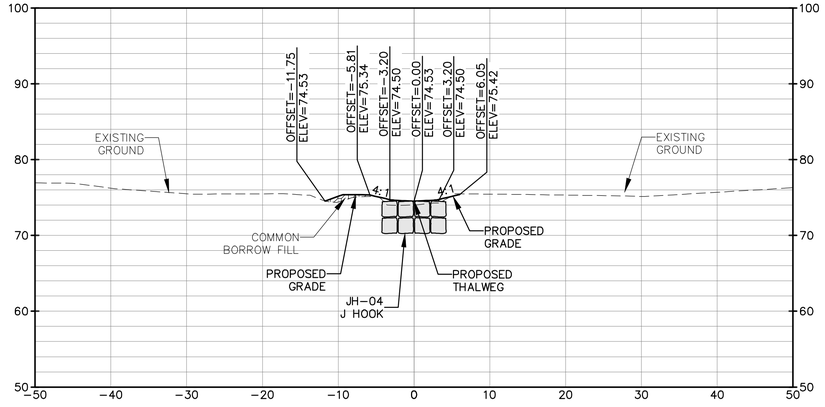
CROSS SECTION - JH-01 - 6+43.43



CROSS SECTION - JH-02 - 6+92.49



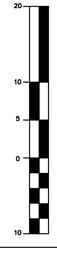
CROSS SECTION - JH-03 - 7+33.23



CROSS SECTION - JH-04 - 7+73.18

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 32 Of 78
Date : 2/16/2022

CS-A5

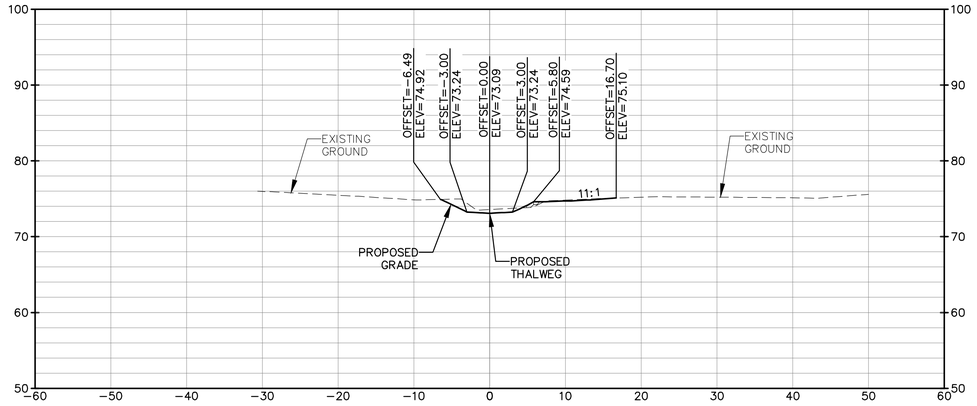
ADC MAP :

TAX MAP :

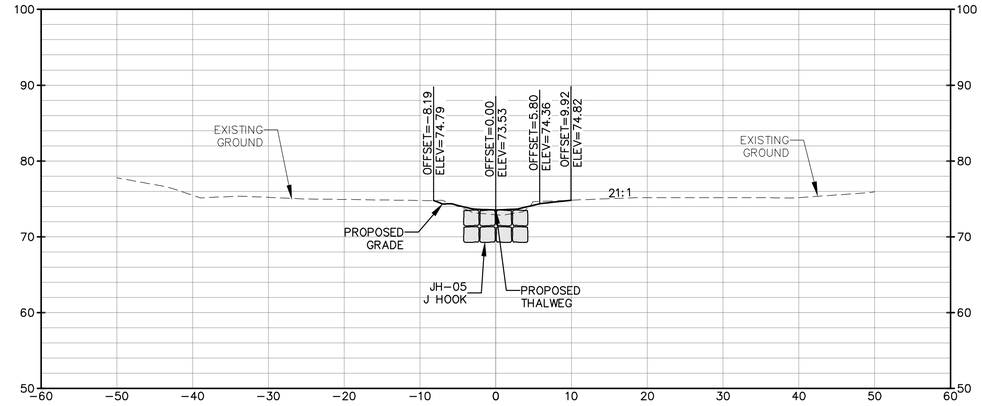
HCG BILLING ID No.:

HCG DWG ID No.:

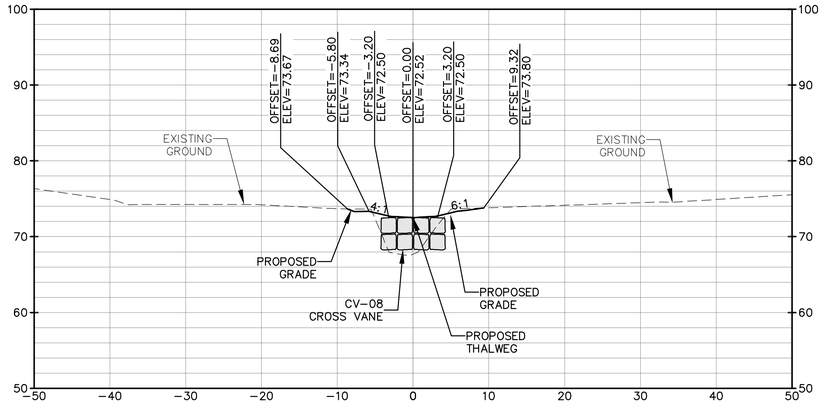
SCALE: 1 inch



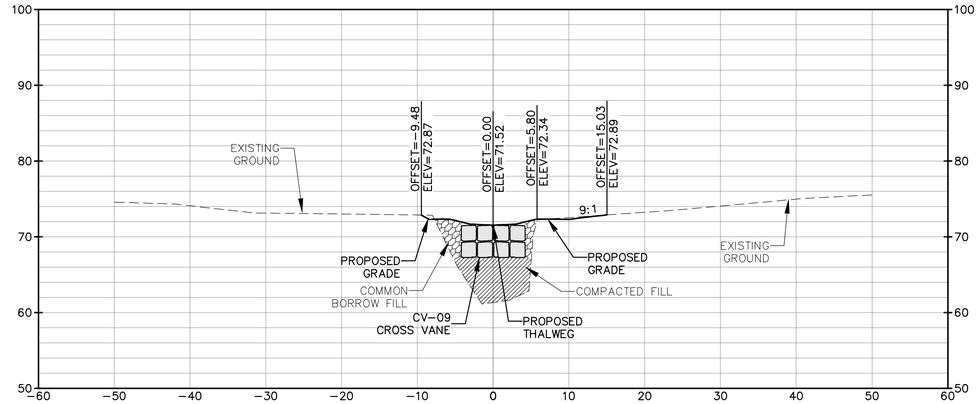
CROSS SECTION - CS-05 - 8+00.00



CROSS SECTION - JH-05 - 8+13.60



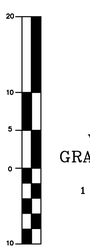
CROSS SECTION - CV-08 - 8+53.82



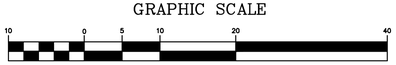
CROSS SECTION - CV-09 - 8+94.41

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 33 Of 78
Date : 2/16/2022

CS-A6

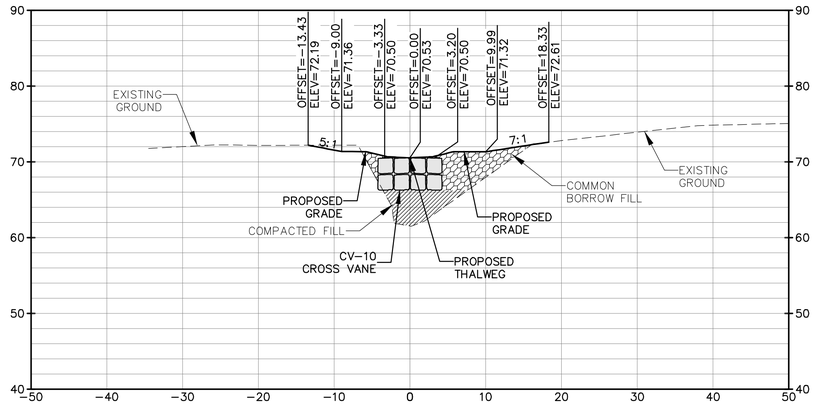
ADC MAP :

TAX MAP :

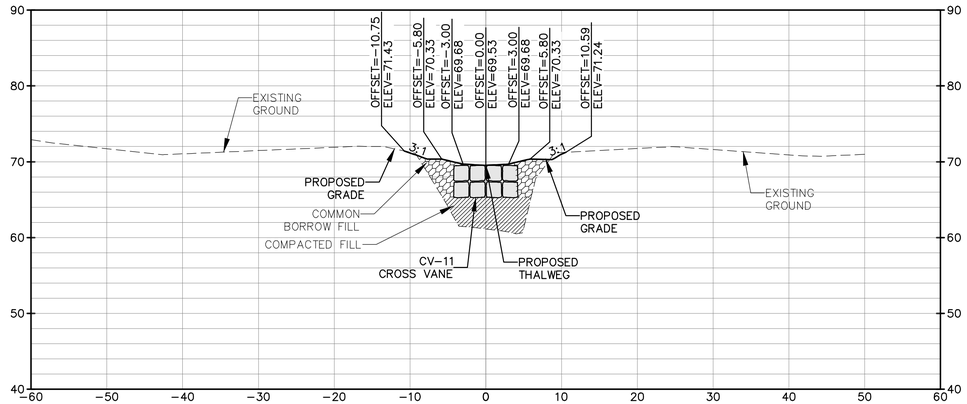
HCG BILLING ID No.:

HCG DWG ID No.:

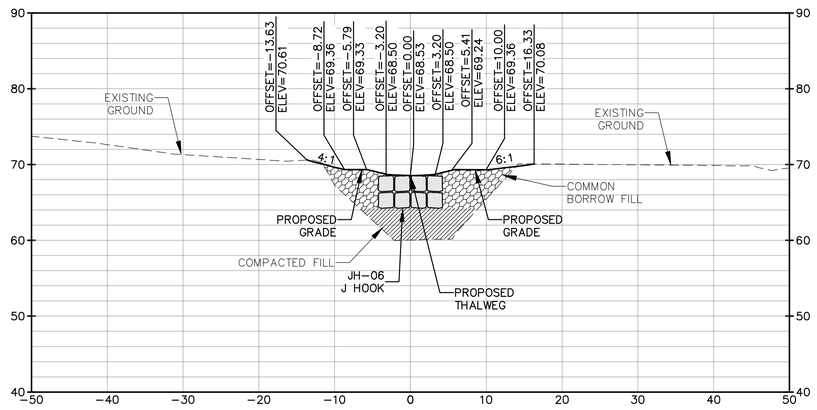
SCALE: 1 inch



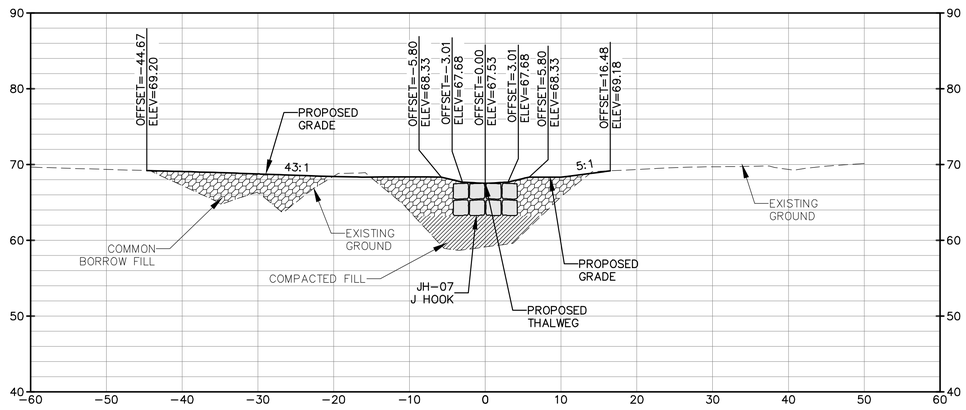
CROSS SECTION - CV-10 - 9+34.42



CROSS SECTION - CV-11 - 9+75.00



CROSS SECTION - JH-06 - 10+15.04

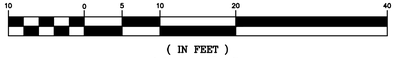


CROSS SECTION - JH-07 - 10+55.65

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.

VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 34 Of 78
Date : 2/16/2022

CS-A7

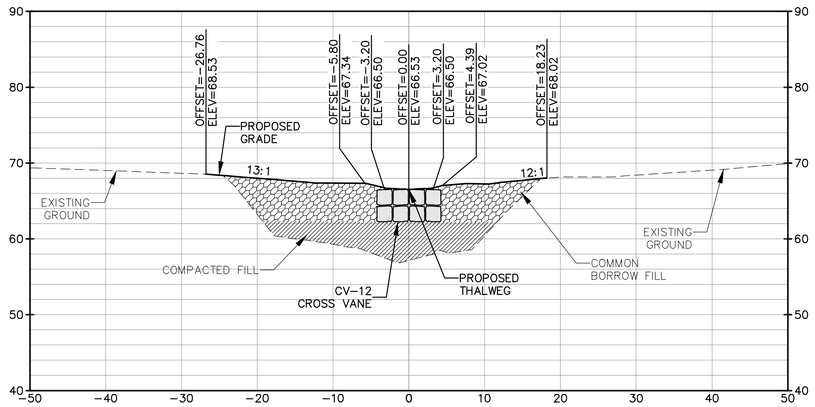
ADC MAP :

TAX MAP :

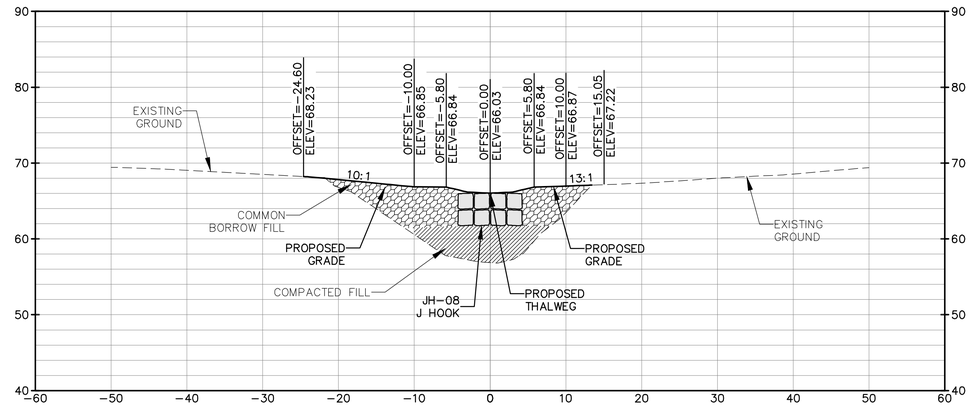
HCG BILLING ID No.:

HCG DWG ID No.:

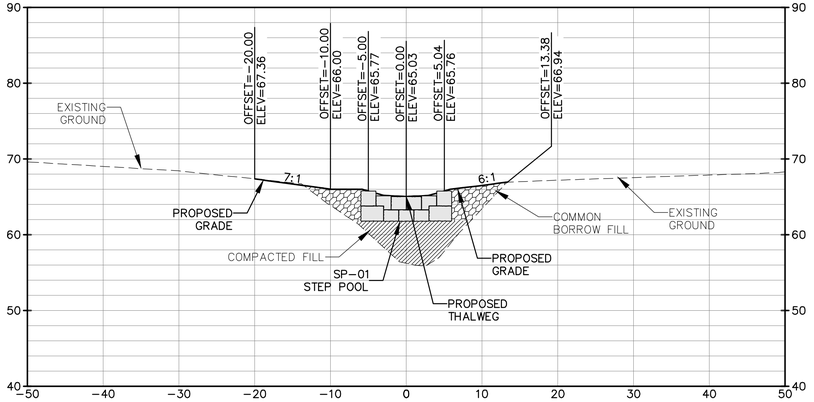
SCALE: 1 inch



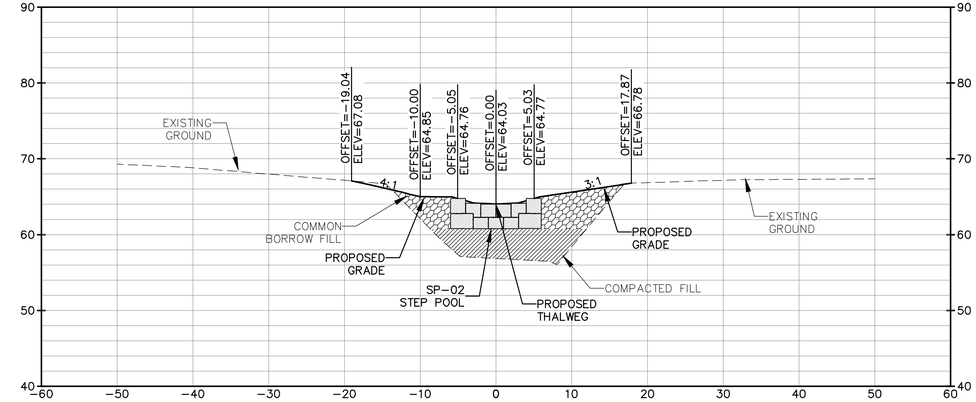
CROSS SECTION - CV-12 - 10+95.66



CROSS SECTION - JH-08 - 11+23.44



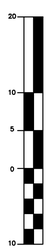
CROSS SECTION - SP-01 - 11+42.70



CROSS SECTION - SP-02 - 11+61.97

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 35 Of 78
Date : 2/16/2022

CS-A8

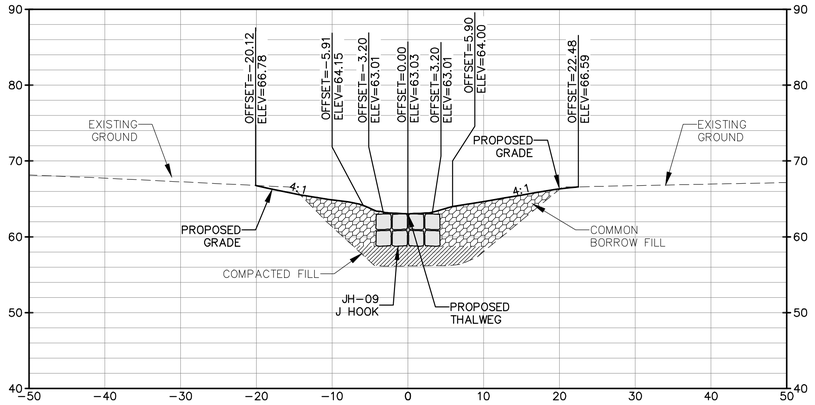
ADC MAP :

TAX MAP :

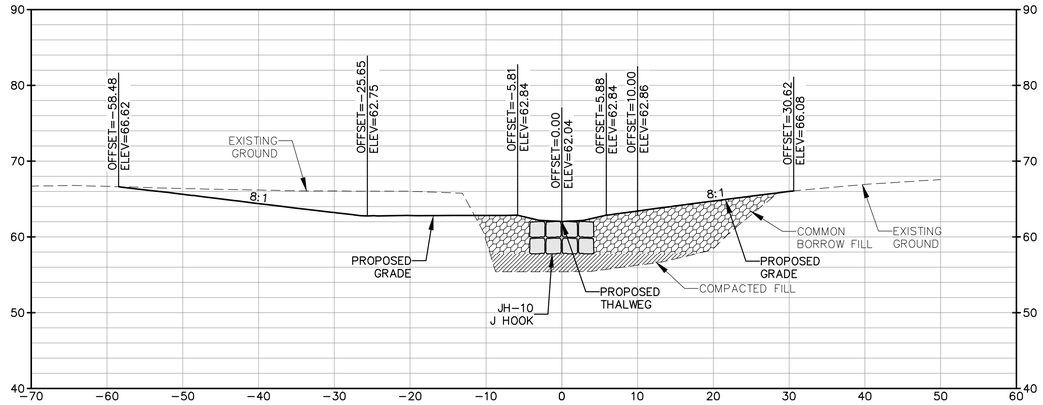
HCG BILLING ID No.:

HCG DWG ID No.:

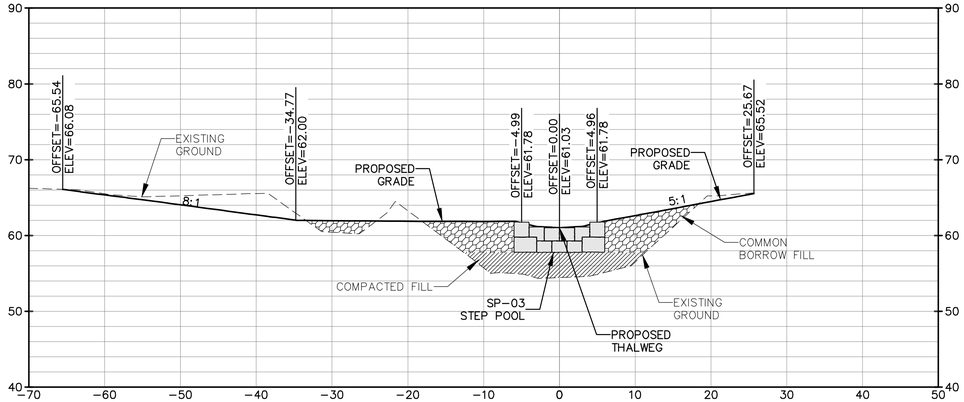
SCALE: 1 inch



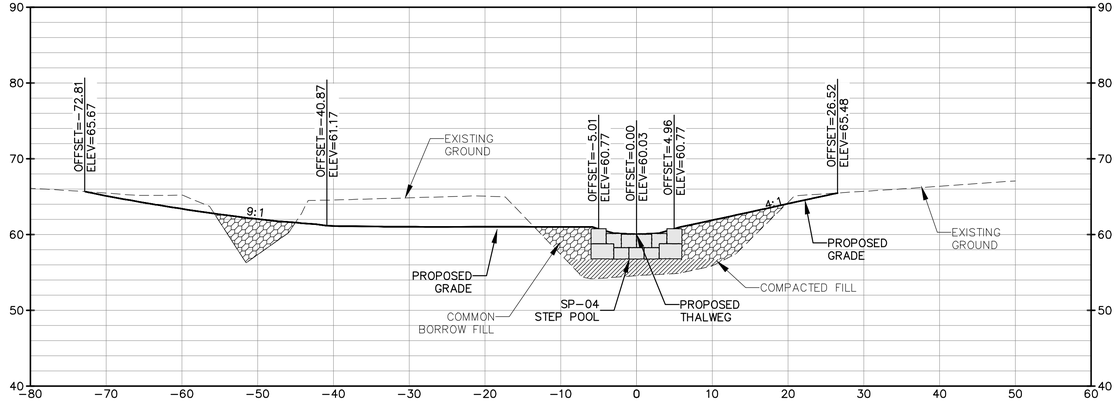
CROSS SECTION - JH-09 - 11+81.02



CROSS SECTION - JH-10 - 12+21.55



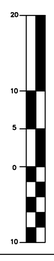
CROSS SECTION - SP-03 - 12+61.64



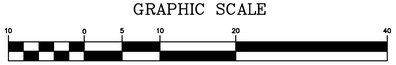
CROSS SECTION - SP-04 - 12+80.73

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 36 Of 78
Date : 2/16/2022

CS-A9

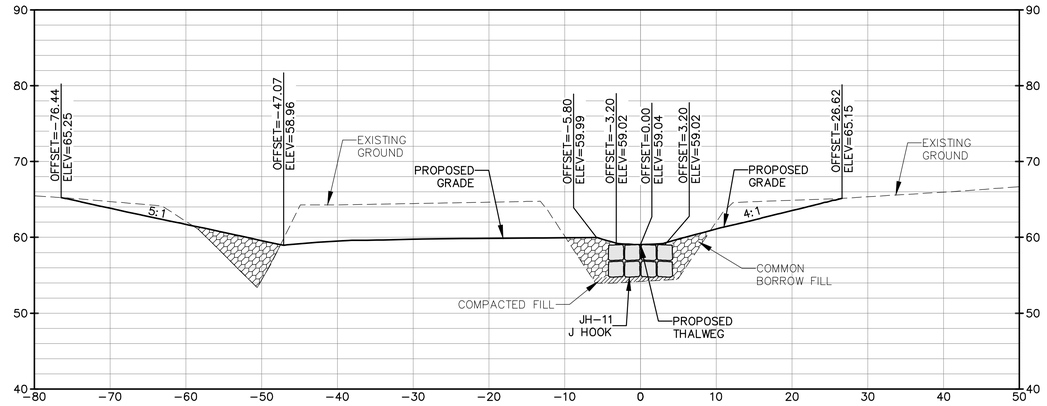
ADC MAP :

TAX MAP :

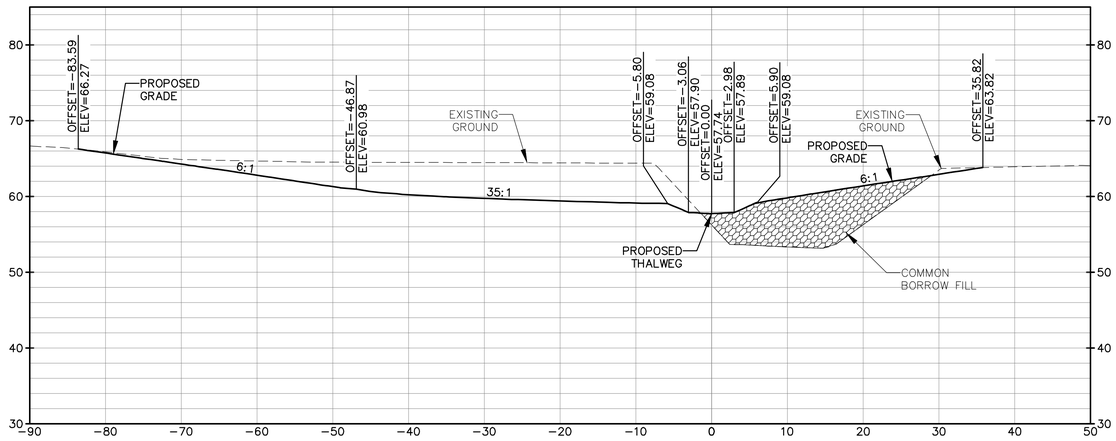
HCG BILLING ID No.:

HCG DWG ID No.:

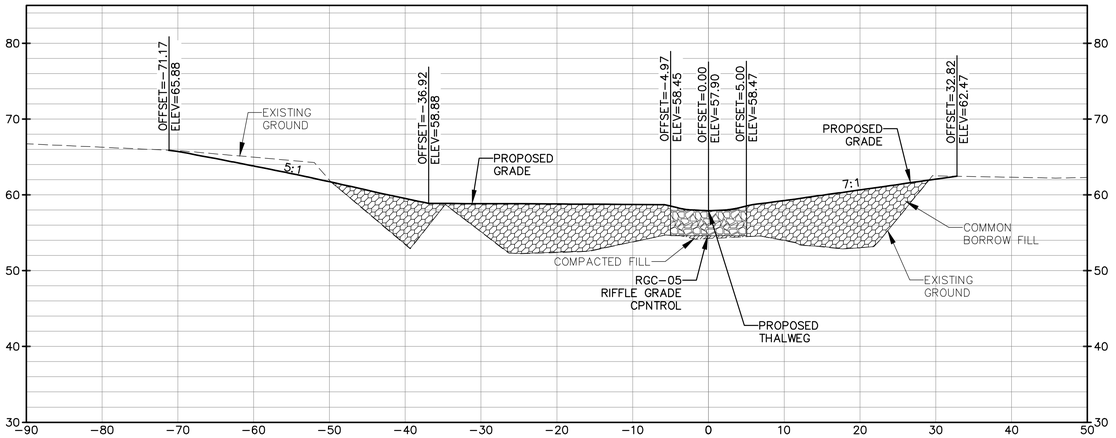
SCALE: 1 Inch



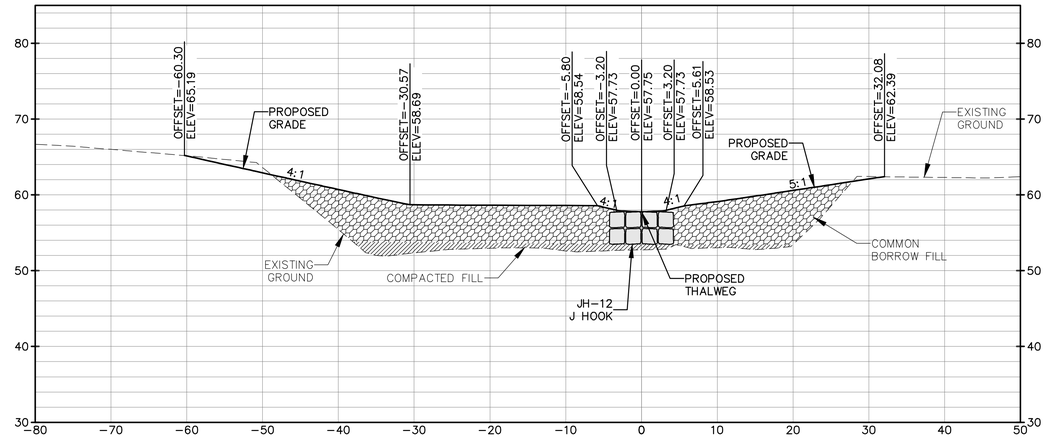
CROSS SECTION - JH-11 - 12+99.96



CROSS SECTION - CS-06 - 13+25.00



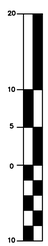
CROSS SECTION - RGC-05 - 13+43.35



CROSS SECTION - JH-12 - 13+50.53

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 37 Of 78
Date : 2/16/2022

CS-A10

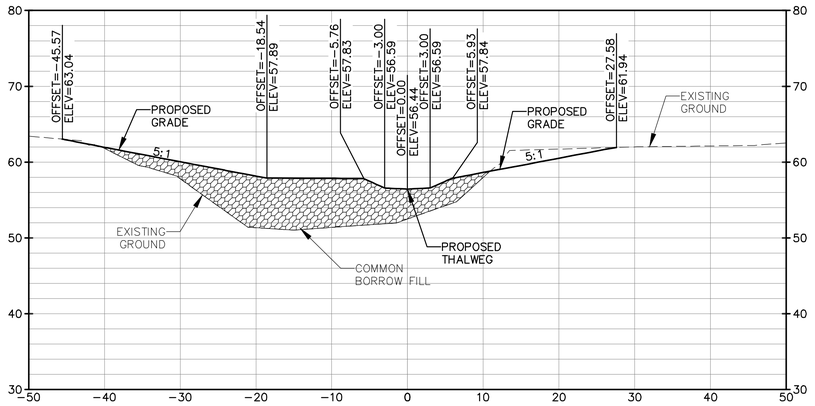
ADC MAP :

TAX MAP :

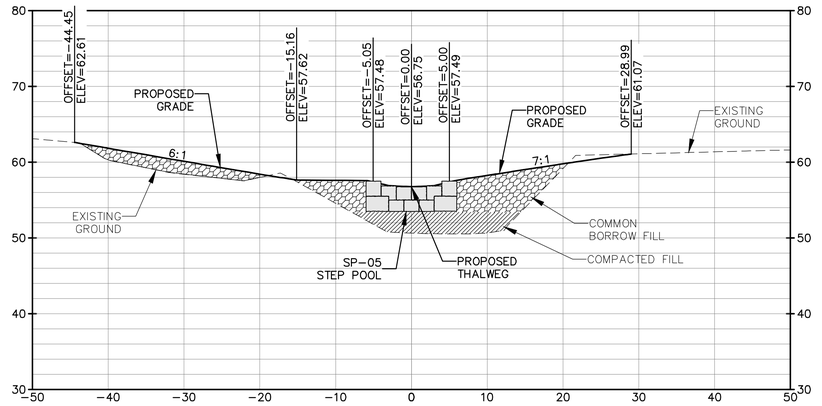
HCG BILLING ID No.:

HCG DWG ID No.:

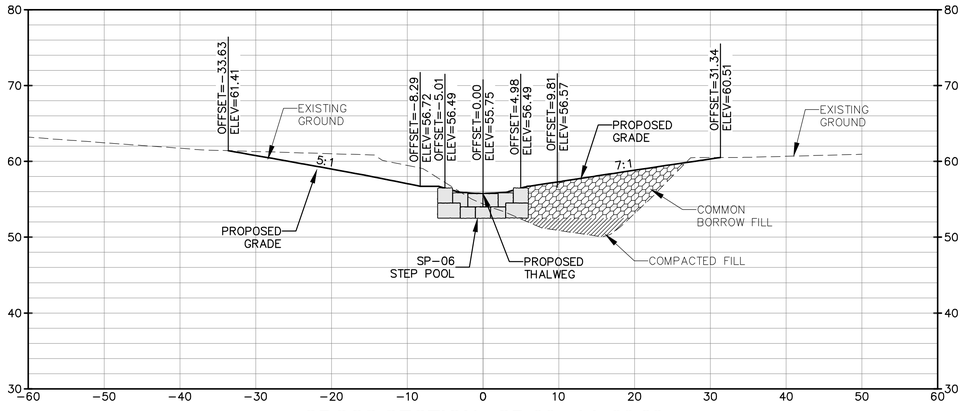
SCALE: 1 inch



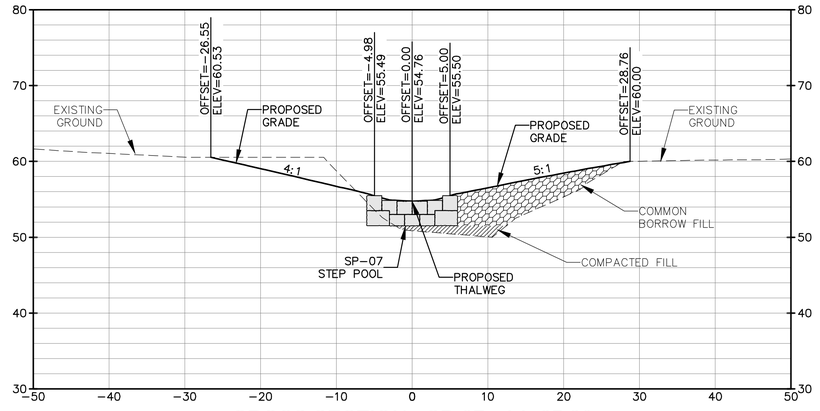
CROSS SECTION - CS-07 - 13+75.00



CROSS SECTION - SP-05 - 13+87.08



CROSS SECTION - SP-06 - 14+06.23

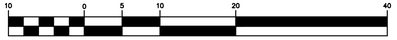


CROSS SECTION - SP-07 - 14+25.36

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.

VERTICAL
GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



HORIZONTAL
GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 38 Of 78
Date : 2/16/2022

CS-A11

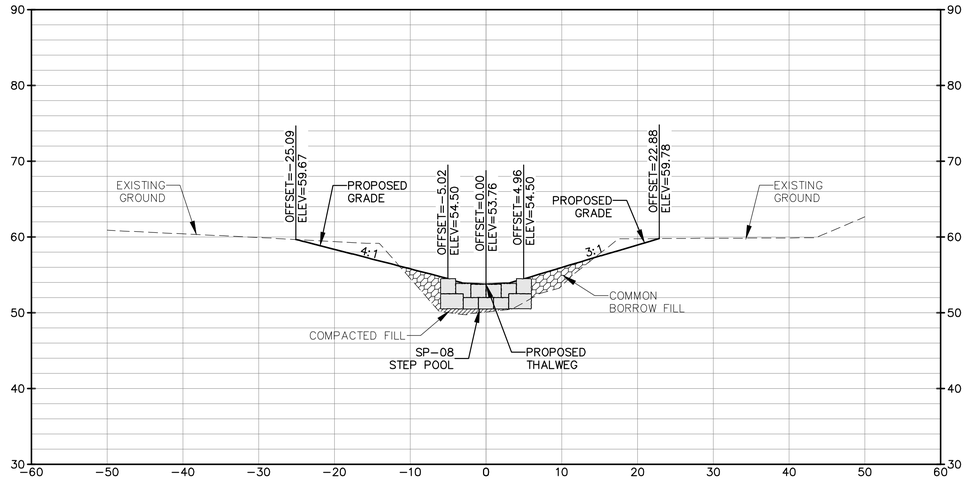
ADC MAP :

TAX MAP :

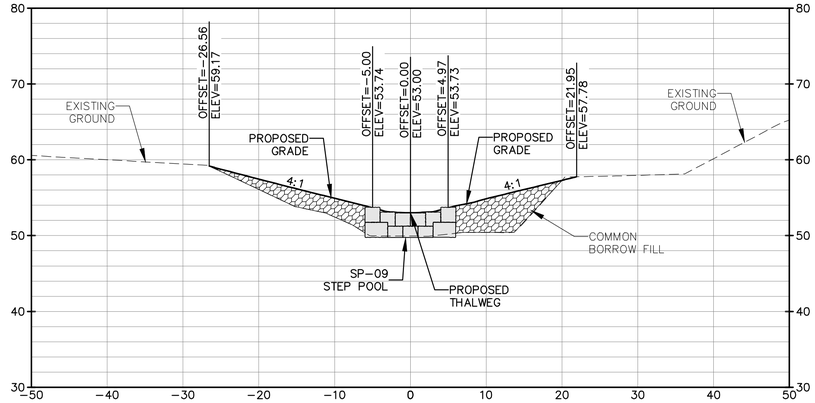
HCG BILLING ID No.:

HCG DWG ID No.:

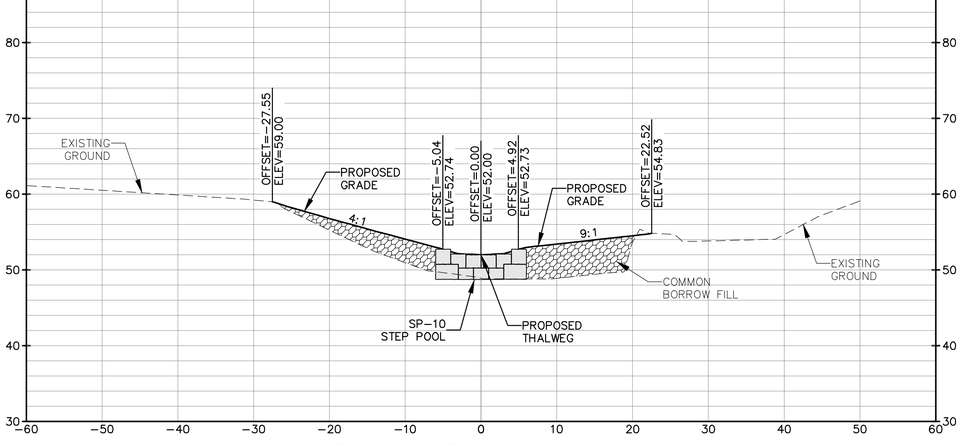
SCALE: 1 inch



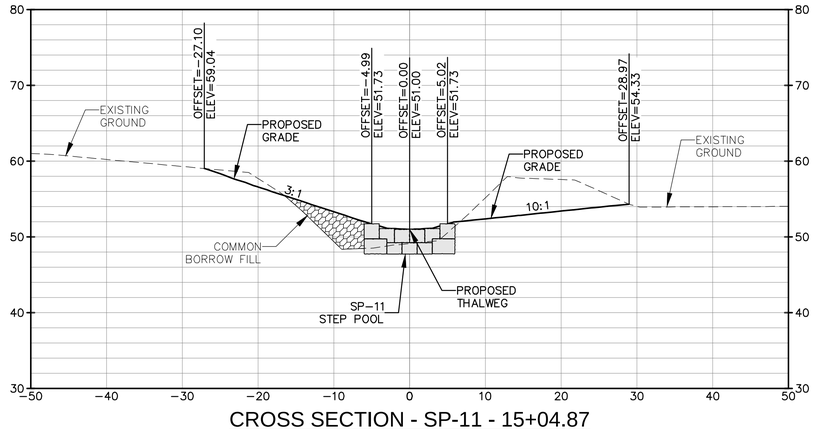
CROSS SECTION - SP-08 - 14+44.52



CROSS SECTION - SP-09 - 14+66.54



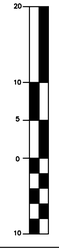
CROSS SECTION - SP-10 - 14+85.66



CROSS SECTION - SP-11 - 15+04.87

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 39 Of 78
Date : 2/16/2022

CS-A12

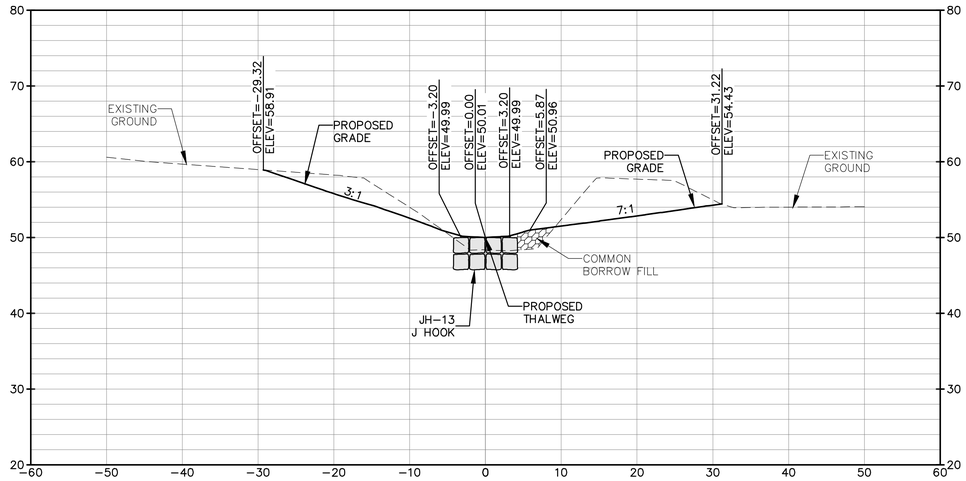
ADC MAP :

TAX MAP :

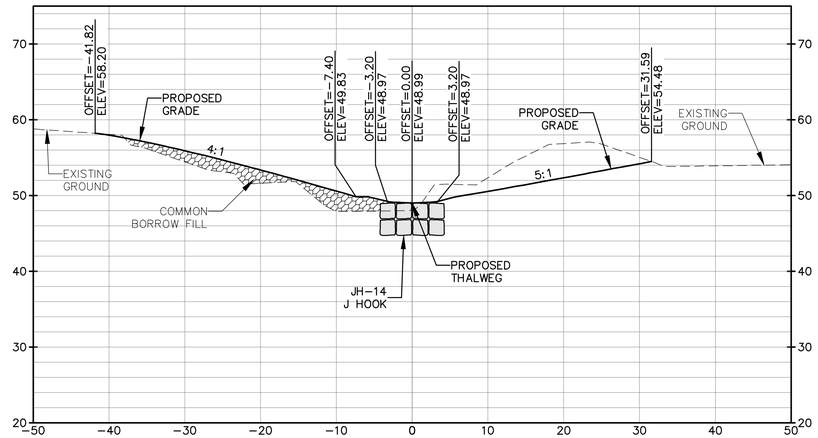
HCG BILLING ID No.:

HCG DWG ID No.:

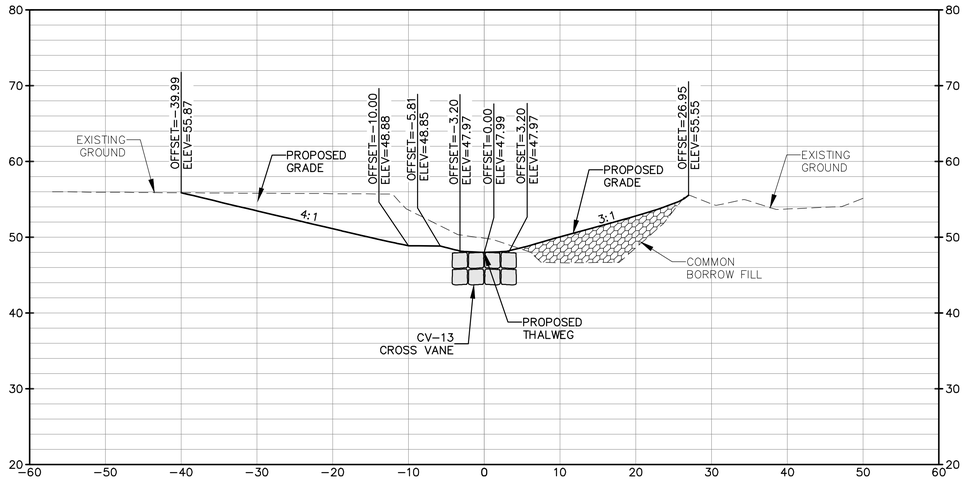
SCALE: 1 inch



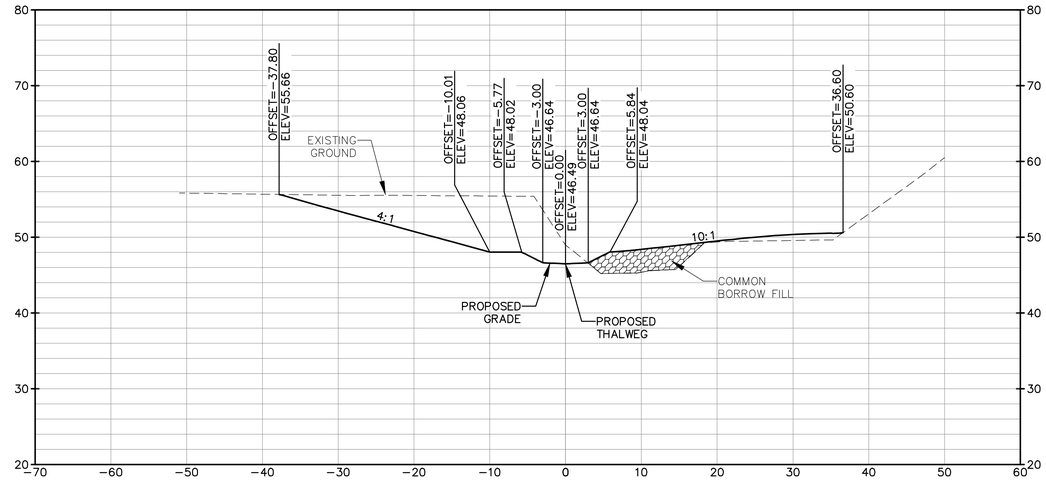
CROSS SECTION - JH-13 - 15+24.03



CROSS SECTION - JH-14 - 15+60.46



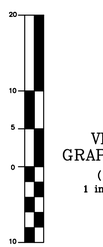
CROSS SECTION - CV-13 - 15+97.04



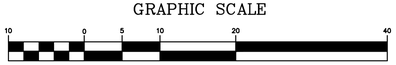
CROSS SECTION - CS-08 - 16+31.65

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 40 Of 78
Date : 2/16/2022

CS-A13

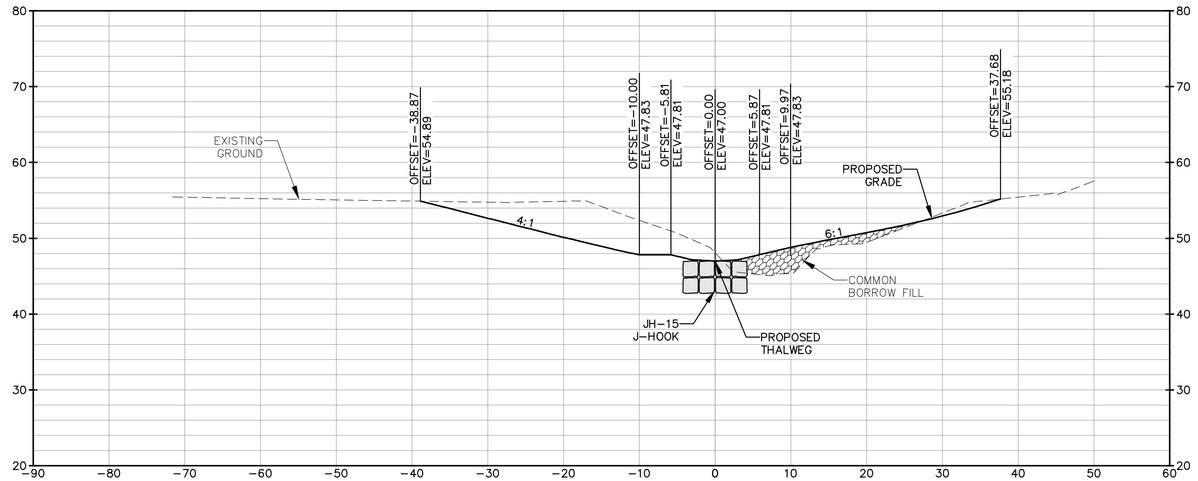
ADC MAP :

TAX MAP :

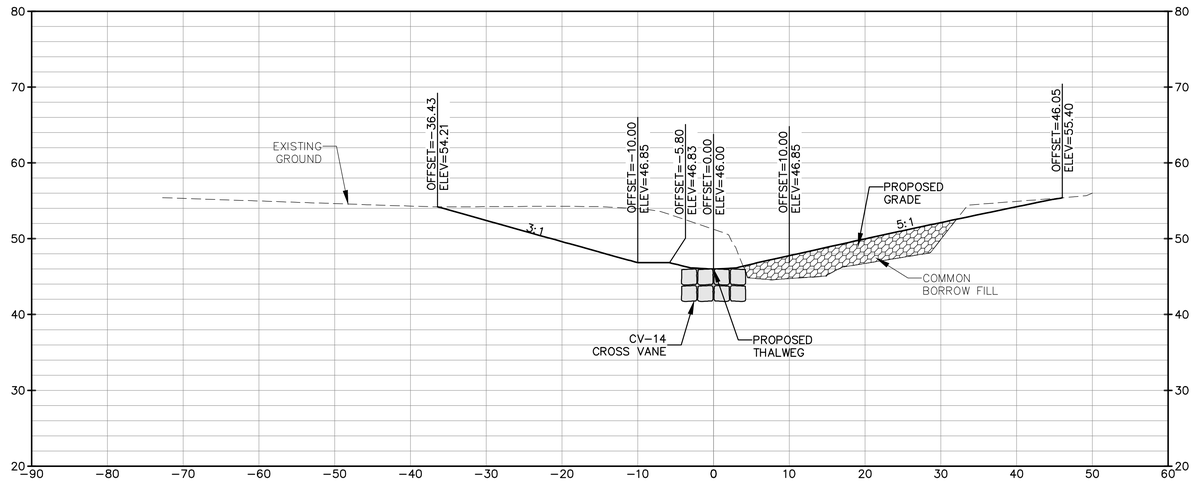
HCG BILLING ID No.:

HCG DWG ID No.:

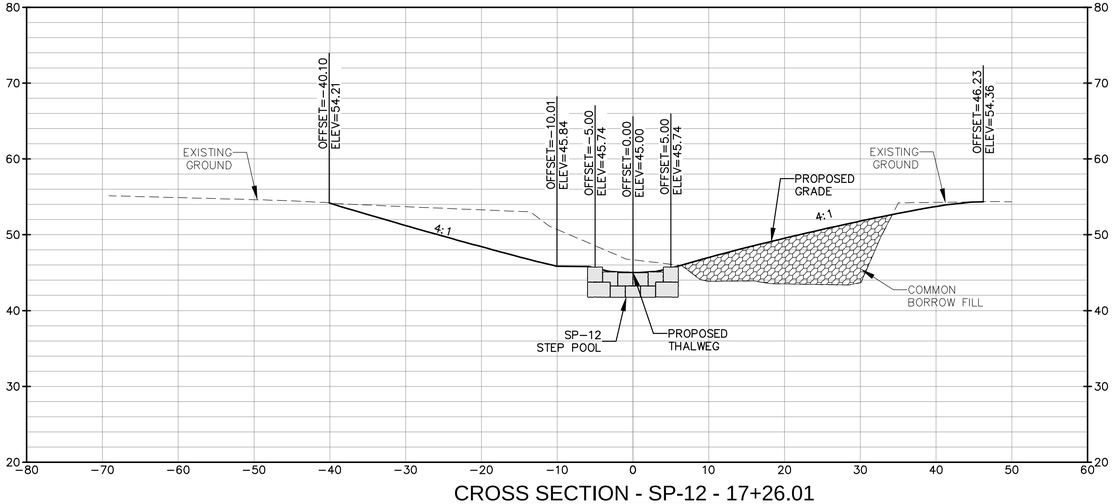
SCALE 1 inch



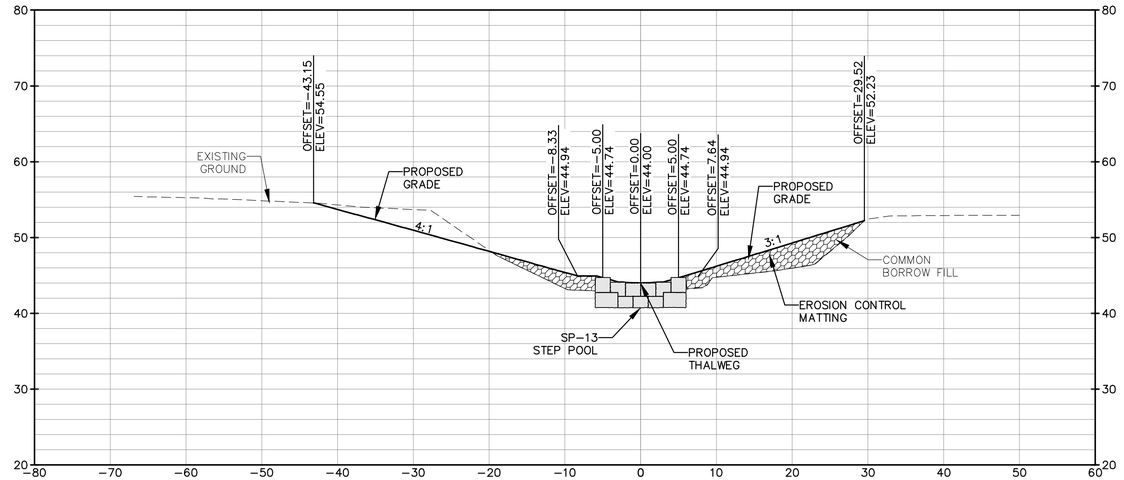
CROSS SECTION - JH-15 - 16+51.36



CROSS SECTION - CV-14 - 16+85.78



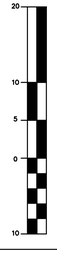
CROSS SECTION - SP-12 - 17+26.01



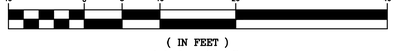
CROSS SECTION - SP-13 - 17+47.20

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 41 Of 78
Date : 2/16/2022

CS-A14

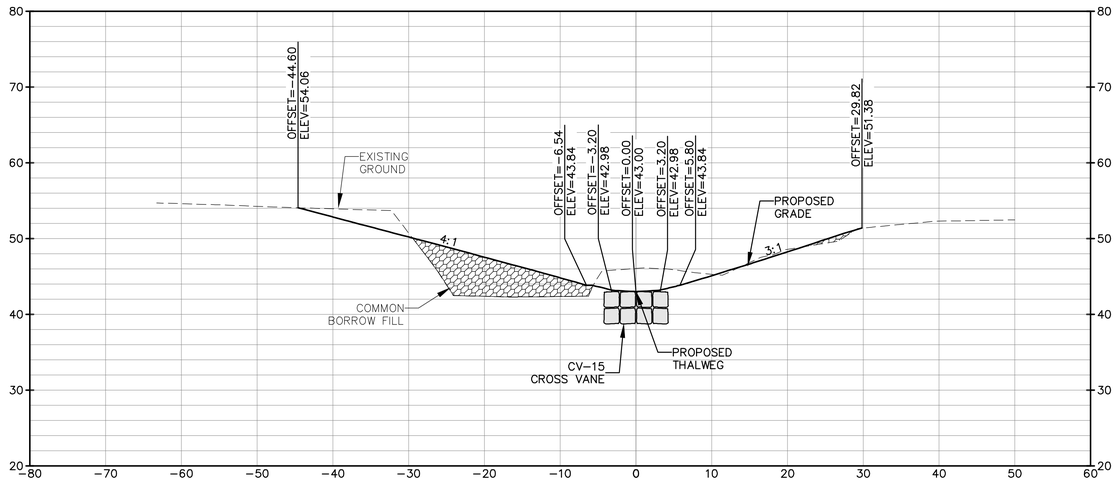
ADC MAP :

TAX MAP :

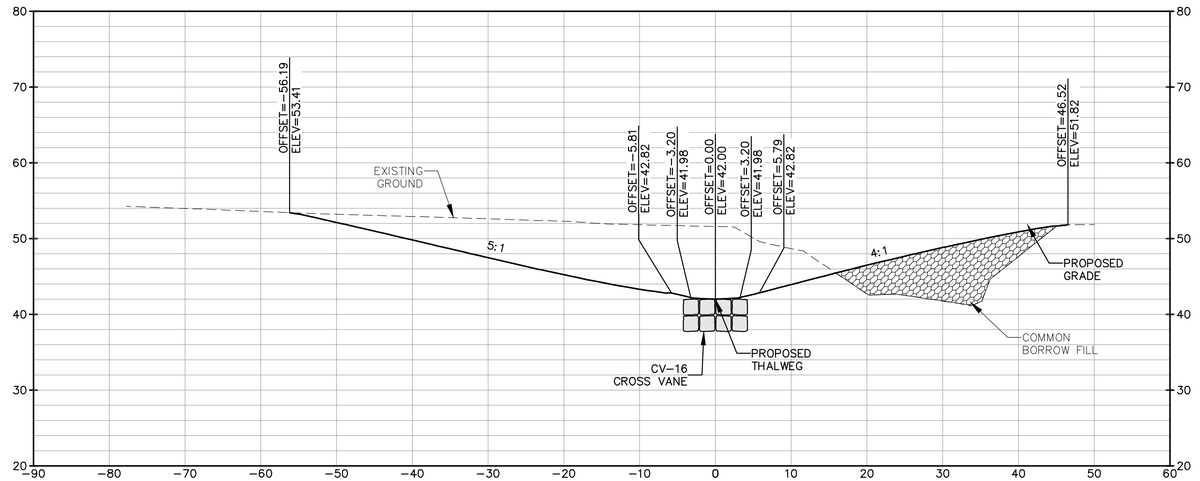
HCG BILLING ID No.:

HCG DWG ID No.:

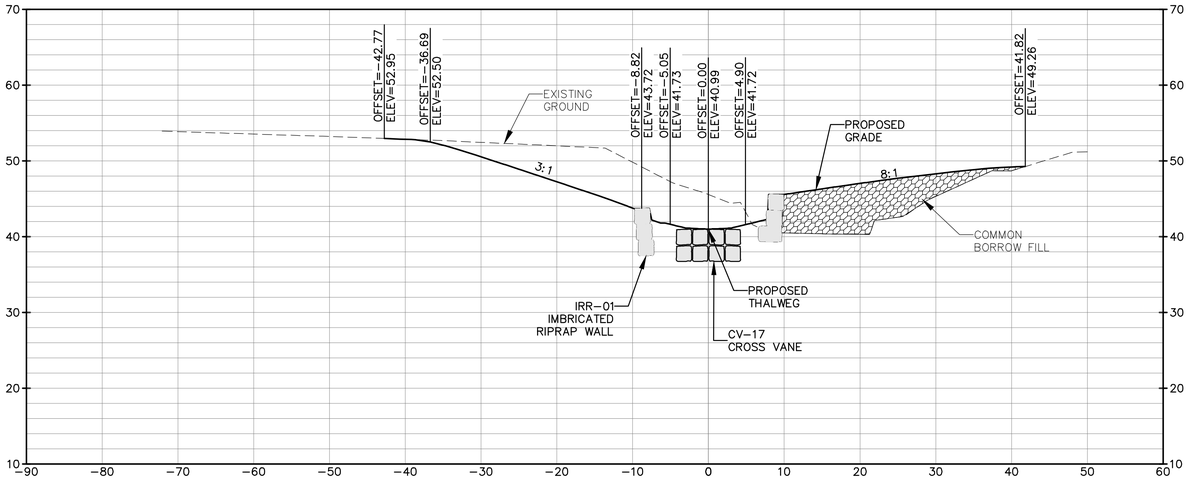
SCALE: 1 inch



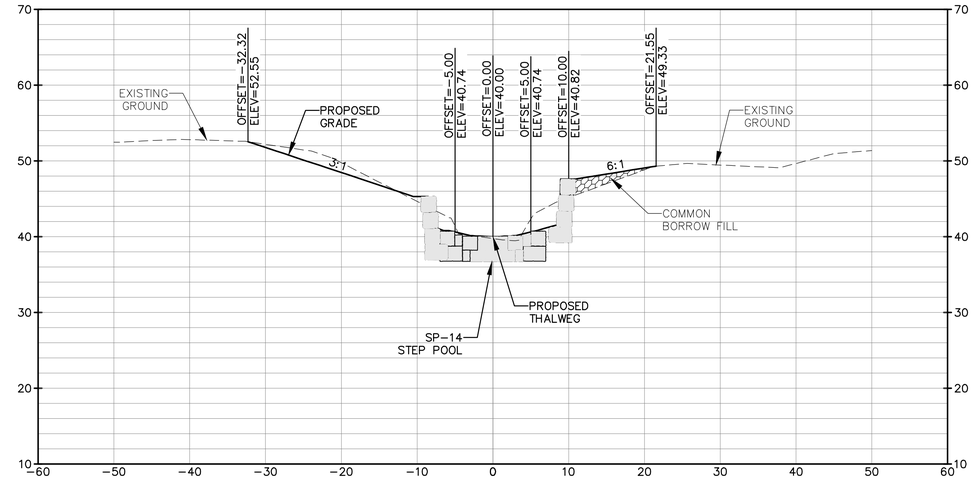
CROSS SECTION - CV-15 - 17+75.61



CROSS SECTION - CV-16 - 18+12.55



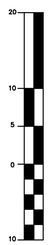
CROSS SECTION - CV-17 - 18+52.71



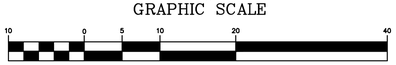
CROSS SECTION - SP-14 - 18+89.46

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.



VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.



HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 42 Of 78
Date : 2/16/2022

CS-A15

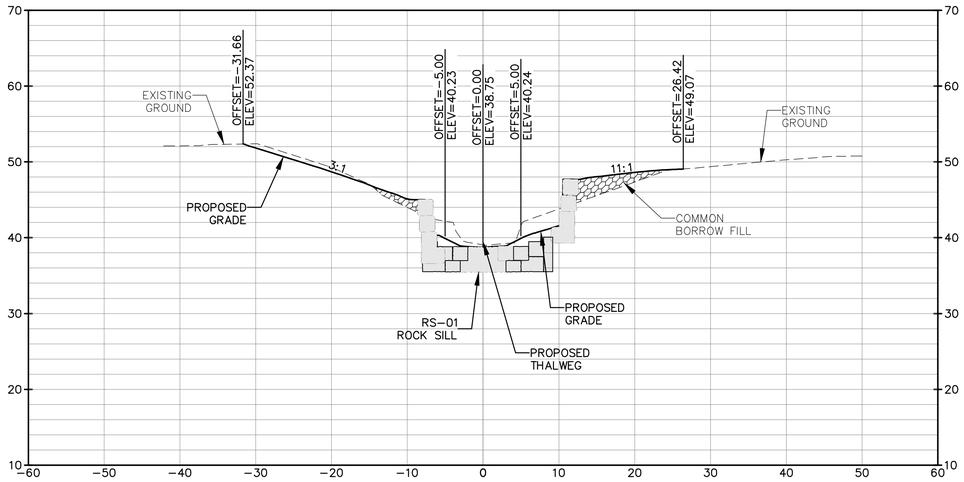
ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SCALE: 1 inch



CROSS SECTION - RS-01 - 19+04.43

NOTES

1. ALL CROSS SECTIONS ARE LOOKING DOWNSTREAM.
2. CONTRACTOR TO STABILIZE SOILS WITH SHA SOIL STABILIZATION MATTING (SSM), TYPE D AS DIRECTED BY THE FIELD ENGINEER. ALL POINTS WITHIN THE ACTIVE CHANNEL WILL BE MATTED WITH SOIL STABILIZATION MATTING, TYPE D. ON SLOPES RANGING FROM 5:1 TO 10:1 OUTSIDE THE ACTIVE CHANNEL, TEMPORARY SEED AND MULCH MAY BE USED FOR TEMPORARY STABILIZATION UNTIL FINAL LANDSCAPE PLANTINGS ARE IN PLACE.

VERTICAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

HORIZONTAL GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

CROSS SECTIONS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=10'
Sheet 43 Of 78
Date : 2/16/2022

CS-A16

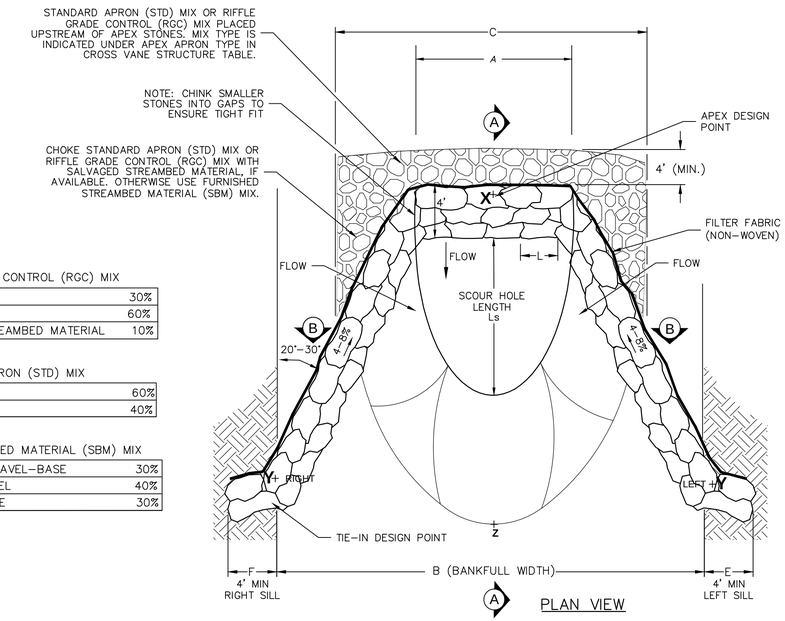
ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SCALE: 1 inch



PLAN VIEW

RIFFLE GRADE CONTROL (RGC) MIX

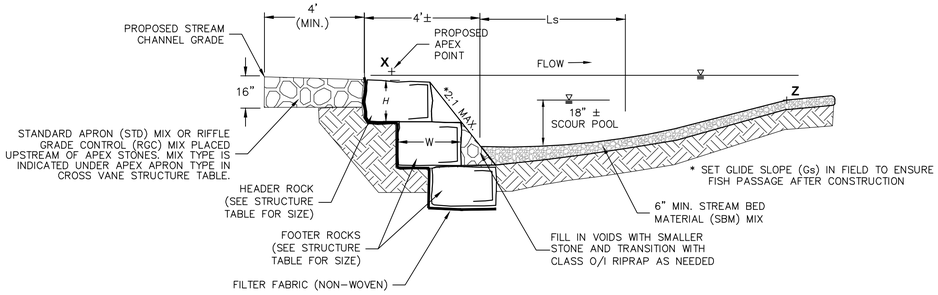
% MIX		
	SHA CLASS 0	30%
	SHA CLASS 1	60%
	SALVAGED STREAMBED MATERIAL	10%

STANDARD APRON (STD) MIX

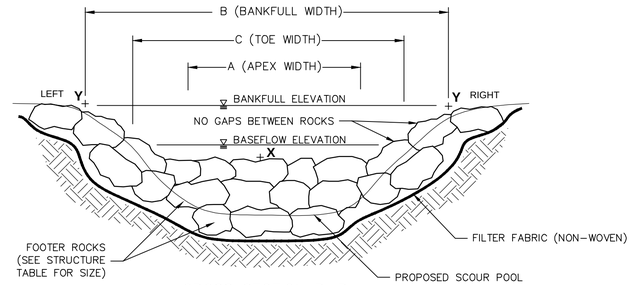
% MIX		
	SHA CLASS 0	60%
	SHA CLASS 1	40%

FURNISHED STREAMBED MATERIAL (SBM) MIX

% MIX		
	SHA BANK RUN GRAVEL-BASE	30%
	1"-2" RIVER GRAVEL	40%
	3"-7" RIVER STONE	30%



SECTION A-A
PROFILE VIEW



CROSS SECTION B-B

NOTE: CROSS VANE STONE SHOWN IN THIS VIEW IS FOR PERSPECTIVE

NOTES:
1. ALL DIMENSION/ELEVATIONS TO BE FIELD ADJUSTED TO ENSURE STABLE INSTALLATION, FISH PASSAGE, AND TIE-IN TO BANKS.
2. ROCK SHALL BE RECTANGULAR BLOCK SHAPE.
3. THE MINIMUM ELEVATION DIFFERENCE BETWEEN ELEVATION "X" AND ELEVATION "Y" IS 4-INCHES.
4. HEADER AND FOOTER ROCKS SHALL BE APPROVED IN THE FIELD BY THE ENGINEER PRIOR TO INSTALLATION.
5. STONE PLACEMENT SHALL BE FIELD ADJUSTED TO CREATE BOWL SHAPE AND TO ENSURE STONE WILL REMAIN IN PLACE OVER FULL RANGE OF FLOW CONDITIONS.
6. REPLACEMENT OF HEADER ROCKS MAY BE REQUIRED BASED UPON INSPECTION OF COMPLETED INSTALLATION TO MEET DESIGN INTENT AND PERMIT REQUIREMENTS.
7. TIE IN SILLS SHALL EXTEND 4' MINIMUM INTO STABLE CHANNEL BANK.
8. ROCKS SHALL BE TIGHT FITTING WITH NO VOIDS/GAPS LARGER THAN 4 INCHES. VOIDS ALONG APEX AND VANE ARMS SHALL BE CHINKED IN WITH SMALLER NON-WEATHERING STONE.
9. UNLESS OTHERWISE NOTED, SALVAGED STREAMBED MATERIAL SHALL BE USED IF AVAILABLE. OTHERWISE USE FURNISHED STREAMBED MATERIAL (SBM) MIX AS NECESSARY.
10. STATION REFERENCE POINT "X" IS LOCATED AT CENTER OF CHANNEL UNLESS SPECIFIED OTHERWISE.

CROSS VANE DETAIL (1.1)
NOT TO SCALE

CROSS VANE STRUCTURE SCHEDULE

STR. I.D.	STA.	OFFSET	A	B	C	E (LEFT BANK)	F (RIGHT BANK)	Ls	X	Y (LEFT BANK)			Y (RIGHT BANK)			Z	APEX APRON TYPE	HEADER ROCK DIMENSIONS			FOOTER ROCK DIMENSIONS		
										ELEV	STA.	OFFSET	ELEV	STA.	OFFSET			LENGTH	HEIGHT	WIDTH	LENGTH	HEIGHT	WIDTH
		(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	(MSL)	(MSL)		(FT)	(MSL)		(FT)	(MSL)		(L)	(H)	(W)	(L)	(H)	(W)
CV-01	1+78.95	0.0	6.0	11.45	12.0	4.0	4.0	10.17	85.67	86.74	1+90.60	-7.75	86.65	1+90.83	8.20	85.00	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-02	2+29.86	0.0	6.0	15.52	12.0	4.0	4.0	15.81	85.00	85.53	2+41.70	-7.45	85.80	2+42.00	7.36	84.00	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-03	3+07.65	0.0	6.0	13.95	12.0	4.0	4.0	10.03	83.50	84.52	3+23.40	-8.60	84.45	3+22.80	7.50	83.00	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-04	3+61.46	0.0	6.0	15.85	12.0	4.0	4.0	12.77	83.00	83.90	3+76.80	-8.13	84.11	3+76.75	8.60	82.50	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-05	4+25.97	0.0	6.0	14.95	12.0	4.0	4.0	10.04	82.00	82.90	4+42.20	-11.32	83.00	4+43.25	10.15	81.00	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-06	4+76.01	0.0	6.0	15.07	12.0	4.0	4.0	10.04	81.00	81.73	4+87.25	-9.95	82.40	4+93.00	9.95	80.01	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-07	5+59.83	0.0	6.0	15.07	12.0	4.0	4.0	13.05	79.05	81.22	5+72.25	-8.11	80.60	5+73.12	6.75	78.40	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-08	8+53.82	0.0	6.0	14.45	12.0	4.0	4.0	10.04	72.52	73.10	8+65.00	-8.30	73.10	8+65.12	8.30	71.52	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-09	8+94.41	0.0	6.0	14.45	12.0	4.0	4.0	9.86	71.52	72.00	9+06.41	-8.75	72.00	9+05.76	8.21	70.53	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-10	9+34.42	0.0	6.0	15.00	12.0	4.0	4.0	10.02	70.53	71.00	9+43.64	-7.56	71.00	9+46.26	10.70	69.53	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-11	9+75.00	0.0	6.0	14.75	12.0	4.0	4.0	9.86	69.53	71.00	9+90.45	-10.85	70.50	9+88.30	9.46	68.53	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-12	10+95.66	0.0	6.0	14.50	12.0	4.0	4.0	10.04	66.53	67.00	11+12.42	-10.05	67.00	11+10.00	6.75	66.03	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-13	15+97.04	0.0	6.0	15.15	12.0	4.0	4.0	10.84	47.99	48.50	16+10.04	-8.15	49.45	16+11.10	10.00	47.00	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-14	16+85.78	0.0	6.0	14.00	12.0	4.0	4.0	14.09	46.00	46.60	16+98.55	-10.75	47.00	16+99.21	9.12	45.00	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-15	17+75.61	0.0	6.0	16.20	12.0	4.0	4.0	14.10	43.00	44.06	17+87.65	-9.11	43.80	17+83.77	6.74	42.00	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-16	18+12.55	0.0	6.0	16.70	12.0	4.0	4.0	17.40	42.00	42.80	18+20.03	-7.97	44.50	18+26.18	8.70	40.99	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
CV-17	18+52.71	0.0	6.0	14.30	12.0	4.0	4.0	14.88	40.99	41.60	18+61.32	-6.70	41.92	18+63.28	7.56	40.00	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

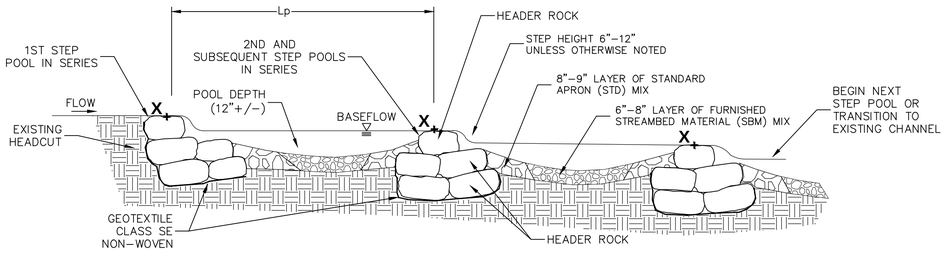
DETAILS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

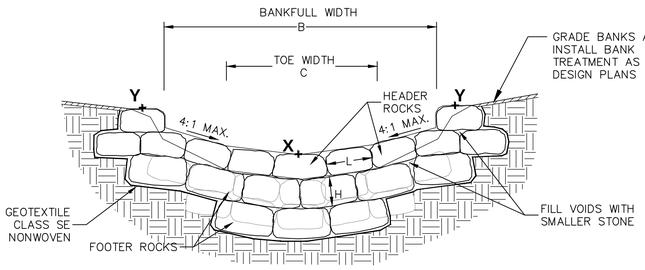
Contract No : DP1602779
Scale : ----
Sheet 44 Of 78
Date : 2/16/2022

DE-A1

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch



THALWEG PROFILE



SECTION L–L

NOTES:

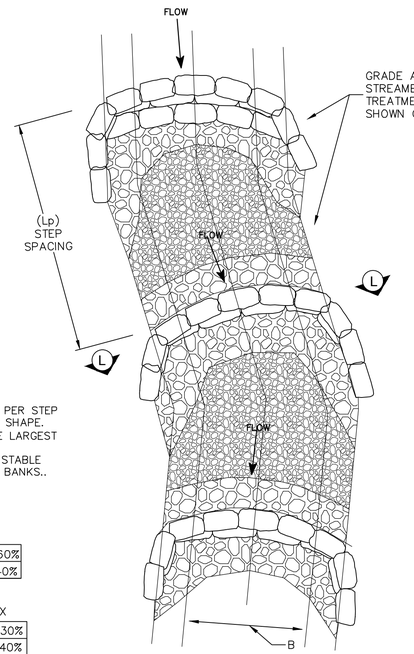
1. HEADER AND FOOTER ROCK SIZES TO BE AS PER STEP POOL STRUCTURE TABLE AND WITH ANGULAR SHAPE.
2. SELECT HEADER ROCKS AT INVERT (X) TO BE LARGEST OF THE HEADER ROCKS.
3. FIELD ADJUST ROCK PLACEMENT TO ENSURE STABLE FLOW PATH AND TRANSITION INTO ADJACENT BANKS..

STANDARD APRON (STD) MIX

% MIX	SHA CLASS 0	60%
	SHA CLASS 1	40%

FURNISHED STREAMBED MATERIAL (SBM) MIX

% MIX	SHA BANK RUN GRAVEL–BASE	30%
	1"–2" RIVER GRAVEL	40%
	3"–7" RIVER STONE	30%

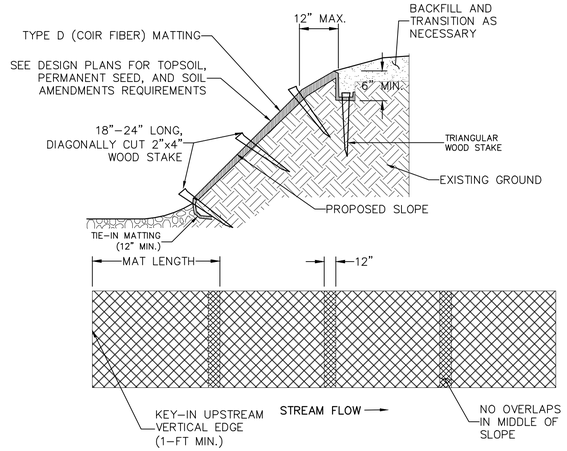


PLAN VIEW – STEP POOL

STEP POOL DETAIL 2.1

NOT TO SCALE

1. BEGIN AT THE BOTTOM OF THE SLOPE, WORKING FROM DOWNSTREAM UP, AND ANCHOR FIBER MATTING IN A 12" DEEP INITIAL ANCHOR TRENCH. BACKFILL TRENCH AND TAMP EARTH FIRM
2. OVERLAP EDGES OF ADJACENT PARALLEL ROLLS 12" AND ANCHOR AT 12" CENTERS WITH THE UPPER ROLL OVERLAPPING THE TOP OF THE LOWER ROLL.
3. WHEN FIBER MAT MUST BE SPLICED, PLACE END OVER END (SHINGLE STYLE IN DIRECTION OF FLOW) WITH 12" OVERLAP AND ANCHOR USING WOODEN STAKES AT 24" INTERVALS. ADDITIONAL FASTENING MAY BE REQUIRED WHERE MATTING IS CUT TO INSTALL PLANTINGS.
4. LAY FIBER MAT LOOSELY AND ANCHOR SUFFICIENTLY TO MAINTAIN DIRECT CONTACT WITH THE SOIL – DO NOT STRETCH.
5. FOR SLOPES 2:1 AND STEEPER, PLACE WOODEN STAKES IN ALTERNATING ROWS AT THREE (3') FOOT INTERVALS ACROSS THE MATTING AND FOR SLOPES FLATTER THAN 2:1, PLACE WOODEN STAKES IN ALTERNATING ROWS AT FOUR (4') FOOT INTERVALS ACROSS THE MATTING.
6. WOOD STAKES SHALL BE ANGLED SUCH THAT EXPOSED PORTION (2"X4") FACES UPSTREAM.
7. ANCHOR, FILL, AND COMPACT END OF FIBER MATTING IN 6"x6" TERMINAL ANCHOR TRENCH ANCHORING DIMENSIONS TO BE REDUCED IN AREAS OF NATURAL RESOURCES TO BE PROTECTED.



TYPE D SOIL STABILIZATION MATTING (BIO-D 70, OR EQUAL) 2.2

NOT TO SCALE

STEP POOL STRUCTURE SCHEDULE

STR. #	STA.	OFFSET	X (TOP ELEV.)	Lp (STEP SPACING)	"B" BANKFULL WIDTH (FT)	"C" TOE WIDTH (FT)	LEFT BANK TIE IN "Y"		RIGHT BANK TIE IN "Y"		TOP ROCK DIMENSIONS			FOOTER ROCK DIMENSIONS		
							OFFSET	ELEV.	OFFSET	ELEV.	LENGTH (L)	HEIGHT (H)	WIDTH (W)	LENGTH (L)	HEIGHT (H)	WIDTH (W)
SP-01	11+42.70	0.0	65.03	19.27	13.50	6.0	-6.75	66.00	6.75	66.00	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-02	11+61.97	0.0	64.03	19.05	13.50	6.0	-6.75	65.00	6.75	65.00	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-03	12+61.64	0.0	61.03	19.09	13.50	6.0	-6.75	61.80	6.75	62.00	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-04	12+80.73	0.0	60.03	19.23	13.50	6.0	-6.75	61.00	6.75	61.00	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-05	13+87.08	0.0	56.75	19.15	20.35	6.0	-13.60	57.75	6.75	57.75	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-06	14+06.23	0.0	55.75	19.13	13.50	6.0	-6.75	56.75	6.75	56.75	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-07	14+25.36	0.0	54.76	19.16	13.50	6.0	-6.75	56.00	6.75	56.00	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-08	14+44.52	0.0	53.76	22.02	13.50	6.0	-6.75	55.00	6.75	55.00	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-09	14+66.54	0.0	53.00	19.12	13.50	6.0	-6.75	54.15	6.75	54.15	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-10	14+85.66	0.0	52.00	19.21	13.50	6.0	-6.75	53.15	6.75	53.15	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-11	15+04.87	0.0	51.00	19.16	13.50	6.0	-6.75	52.15	6.75	52.15	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-12	17+26.01	0.0	45.00	21.19	13.50	6.0	-6.75	45.85	6.75	46.10	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-13	17+47.20	0.0	44.00	28.41	13.50	6.0	-6.75	44.95	6.75	45.20	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"
SP-14	18+89.46	0.0	40.00	14.97	16.90	6.0	-8.15	41.50	8.75	41.5	18"-24"	12"-18"	18"-24"	30"-36"	12"-18"	24"-30"

EG–SWMENG–000747–2016

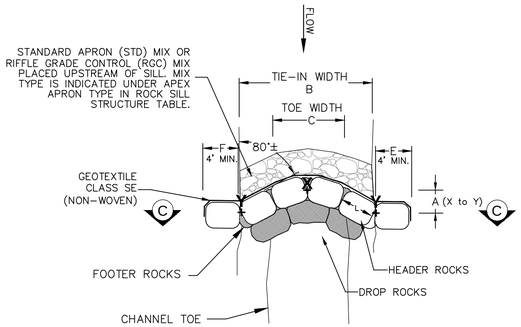
Revisions	HARFORD COUNTY, MARYLAND
	DETAILS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : ----
Sheet 45 Of 78
Date : 2/16/2022

DE-A2

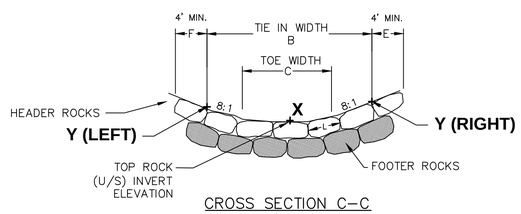
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch



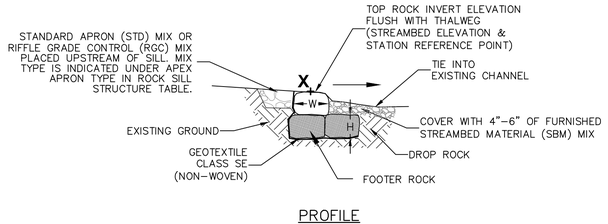
PLAN VIEW

NOTES:

1. SILL SHALL BE CONSTRUCTED BY EXCAVATING A TRENCH SLIGHTLY LARGER THAN THE SILL DIMENSIONS.
2. TOP ROCKS SHALL BE SUPPORTED BY A FOOTER ROCK AND SHINGLED UPSTREAM AND INTO STREAM BANK. ALL ROCKS SHALL BE INTERLOCKED MINIMIZING OR ELIMINATING GAPS WITH NO VOIDS/GAPS LARGER THAN 4 INCHES.
3. PLACE GEOTEXTILE (NON-WOVEN) ON UPSTREAM SIDE OF SILL. FABRIC SHALL COVER THE UPSTREAM FACE OF THE ENTIRE SILL.
5. DISTURBED STREAMBED UPSTREAM OF SILL SHALL BE BACKFILLED WITH 10" MIN. OF STANDARD APRON (STD) MIX OR RIFFLE GRADE CONTROL (RGC) MIX TO MEET EXISTING GRADE.
6. STREAM BANK AROUND STRUCTURE SHALL BE BACKFILLED AND HAND COMPACTED.
7. SEE STRUCTURE TABLE, PROFILE, AND GRADING SHEET FOR ALL DIMENSIONS AND ELEVATIONS.
8. SILL ROCKS SHALL BE FLUSH WITH FINISHED GRADE AND CUTOFF ROCKS SHALL EXTEND A MINIMUM OF 4 FEET INTO STREAMBANK UNLESS SILL IS REPLACED WITH IMBRICATED ROCK WALL.
9. PROVIDE DROP ROCKS DOWNSTREAM OF SILL PER DETAIL.



CROSS SECTION C-C



PROFILE

ROCK SILL DETAIL (6.1)

NO SCALE

ROCK SILL STRUCTURE SCHEDULE																	
STR. #	STA.	OFFSET	INVERT ELEV. "X"	SILL LENGTH "A"	TIE IN WIDTH "B"	TOE WIDTH "C"	TIE-IN ELEV. (LEFT) "Y"	TIE-IN ELEV. (RIGHT) "Y"	BANKFULL ELEV.	APEX APRON TYPE	DROP ROCK TOP ELEV.	HEADER ROCK DIMENSIONS			FOOTER ROCK DIMENSIONS		
												LENGTH (L)	HEIGHT (H)	WIDTH (W)	LENGTH (L)	HEIGHT (H)	WIDTH (W)
RS-01	19+04.43	0	38.75	0.75	18.50	6.0	40.67	41.66	0.99	STD	37.3	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"

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Revisions

HARFORD COUNTY, MARYLAND

DETAILS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : ----
Sheet 46 Of 78
Date : 2/16/2022

DE-A3

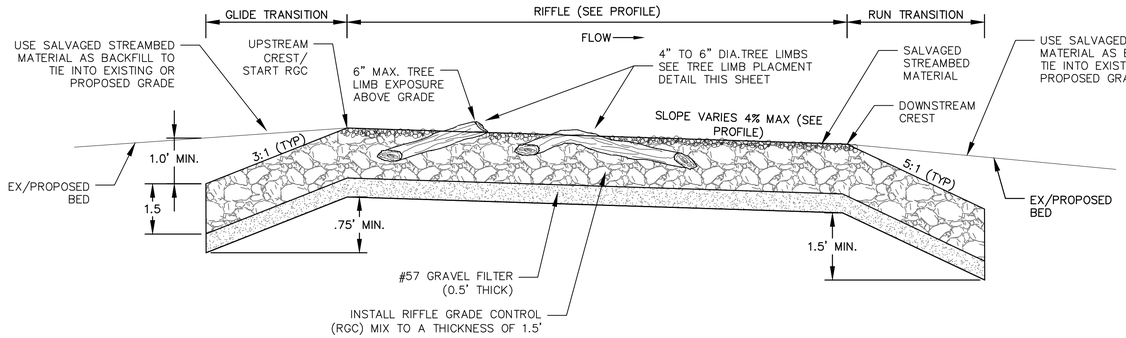
ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SCALE 1 inch



PROFILE VIEW

NOTES:

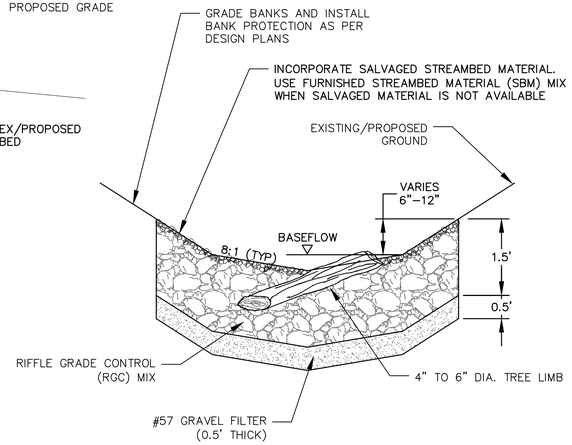
1. COMPACT SALVAGED STREAMBED MATERIAL BACKFILL TO MATCH PRE-CONSTRUCTION GRADE UNLESS OTHERWISE SPECIFIED.
2. RIFFLE GRADE CONTROL STRUCTURE FEATURES SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN IN THIS DETAIL UNLESS OTHERWISE NOTED ON THE STRUCTURE TABLE, CROSS SECTION, AND PROFILES PLAN SHEETS.
3. CROSS-SECTIONAL DIMENSIONS AND LONGITUDINAL SPACING OF FEATURES VARY. SEE STRUCTURE TABLES, CROSS SECTIONS, AND PROFILES FOR DIMENSIONS OF EACH INDIVIDUAL STRUCTURE.
4. RIFFLE GRADE CONTROL (RGC) MIX MUST BE PLACED IN A MANNER TO PROMOTE INTERLOCKING. DUMPING OF RIPRAP SHALL NOT BE PERMITTED.
5. RIFFLE GRADE CONTROL (RGC) MIX SHALL BE PLACED IN TWO SEPARATE LIFTS. VOIDS BETWEEN SMALLER AND LARGER STONES SHALL BE MINIMIZED.
6. AFTER PLACEMENT OF FIRST LIFT, BACKWASH WITH SALVAGED STREAMBED MATERIAL AND WATER.
7. THE SECOND LIFT SHALL BE BACKWASHED AND CHOKED WITH SALVAGED STREAMBED MATERIAL IF AVAILABLE AND SUPPLEMENTED WITH FURNISHED STREAMBED MATERIAL (SBM) MIX WHEN SALVAGED MATERIAL IS NOT AVAILABLE.
8. THALWEG MAY BE MODIFIED IN FIELD PER DIRECTION OF THE ENGINEER.

RIFFLE GRADE CONTROL (RGC) MIX

% MIX	SHA CLASS 0	30%
	SHA CLASS 1	60%
	SALVAGED STREAMBED MATERIAL	10%

FURNISHED STREAMBED MATERIAL (SBM) MIX

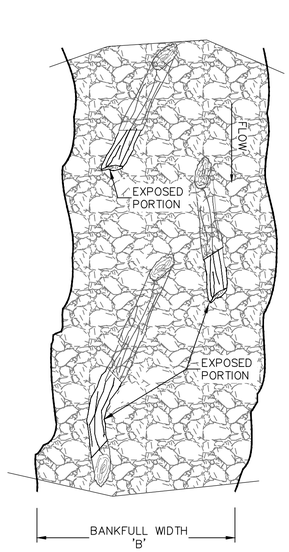
% MIX	SHA BANK RUN GRAVEL-BASE	30%
	1"-2" RIVER GRAVEL	40%
	3"-7" RIVER STONE	30%



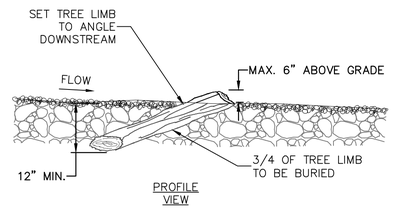
RIFFLE GRADE CONTROL SECTION VIEW

RIFFLE GRADE CONTROL (RGC) WITH WOOD DETAIL 4.1

NOT TO SCALE



PLAN VIEW



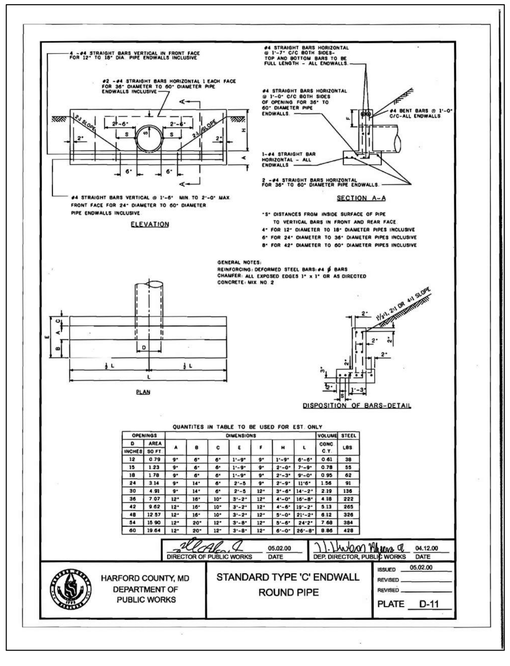
PROFILE VIEW

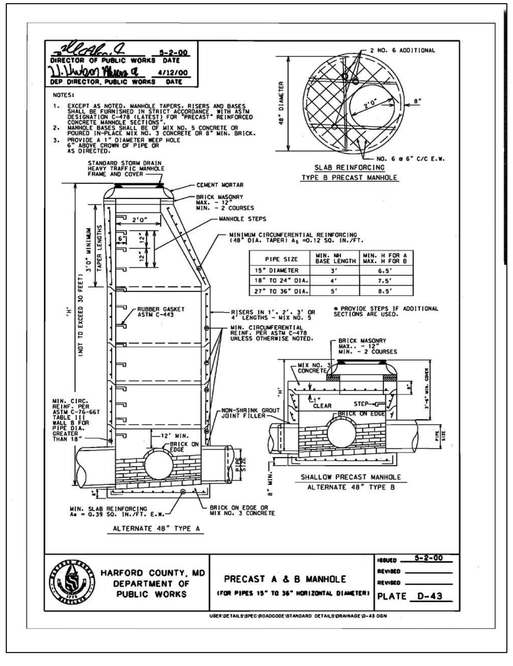
INSTALLATION NOTES

1. TREE LIMBS SHALL RANGE FROM 4" TO 6" IN DIAMETER. LARGER DIAMETER LIMBS NAY BE USED AT THE DISCRETION OF THE ENGINEER. LENGTH MAY VARY AS LONG 3/4 OF LIMB LENGTH IS EMBEDDED IN THE RIFFLE GRADE CONTROL (RGC) MIX.
2. UPSTREAM END OF LIMB MUST BE EMBEDDED TO A DEPTH OF AT LEAST 12" INTO THE RIFFLE GRADE CONTROL (RGC) MIX.
3. TREE LIMBS SHOULD BE PLACED WITHIN A 15 DEGREE ANGLE OF THE THALWEG.
4. PLACE TREE LIMBS IN AN ALTERNATING PATTERN TO DEFLECT FLOW AWAY FROM STREAMBANKS. THE SUBSTRATE IN WHICH TREE LIMBS ARE PLACED SHOULD BE COMPETENT ENOUGH TO RESTRAIN MOVEMENT OF THE TREE LIMB.
5. TREE LIMBS SHOULD NOT BE PLACED IN A MANNER THAT REDUCES THE STABILITY OF THE RIFFLE GRADE CONTROL (RGC) STRUCTURE.

SMALL TREE LIMB PLACEMENT DETAIL 4.2

NOT TO SCALE





RIFFLE GRADE CONTROL STRUCTURE SCHEDULE

STR. #	UPSTREAM STA.	UPSTREAM OFFSET	UPSTREAM ELEV.	DOWNSTREAM STA.	DOWNSTREAM OFFSET	DOWNSTREAM ELEV.	WIDTH (FT)	LENGTH (FT)	AREA (FT^2)	SLOPE (FT/FT)
RGC-01	2+83.33	0.00	84	3+06.62	0.00	83.5	10.0	23.29	232.90	0.021
RGC-02	4+00.72	0.00	82.5	4+24.97	0.00	82	10.0	24.25	242.50	0.021
RGC-03	5+23.64	0.00	80.01	5+58.83	0.00	79.05	10.0	35.19	351.90	0.027
RGC-04	6+18.91	0.00	78.4	6+42.43	0.00	77.71	10.0	23.52	235.20	0.029
RGC-05	13+37.48	0.00	58.03	13+49.52	0.00	57.75	10.0	12.04	120.40	0.023
RGC-06	19+05.43	0.00	38.75	19+15.66	0.00	38.37	10.0	10.23	102.30	0.037

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Revisions	HARFORD COUNTY, MARYLAND
	DETAILS - STREAM

Drawn By : LBT
Designed By : MCB
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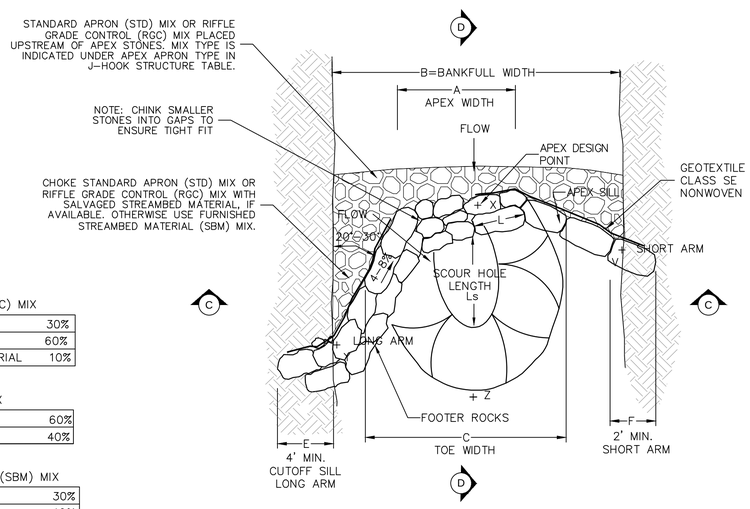
Contract No : DP1602779
Scale : ----
Sheet 47 Of 78
Date : 2/16/2022

DE-A4

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 Inch



PLAN VIEW
(NOT TO SCALE)

RIFFLE GRADE CONTROL (RGC) MIX

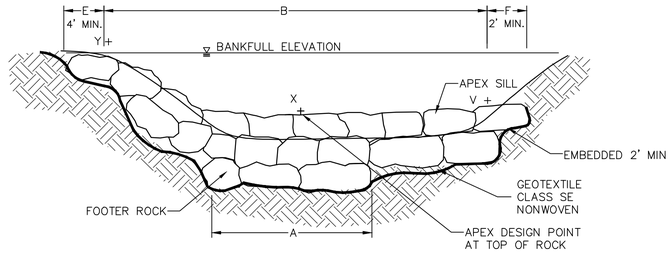
% MIX		
	SHA CLASS 0	30%
	SHA CLASS 1	60%
	SALVAGED STREAMBED MATERIAL	10%

STANDARD APRON (STD) MIX

% MIX		
	SHA CLASS 0	60%
	SHA CLASS 1	40%

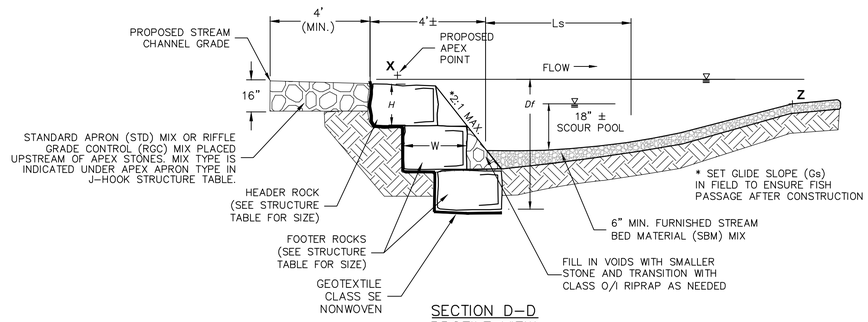
FURNISHED STREAMBED MATERIAL (SBM) MIX

% MIX		
	SHA BANK RUN GRAVEL–BASE	30%
	1"–2" RIVER GRAVEL	40%
	3"–7" RIVER STONE	30%



NOTE: J–HOOK STONE SHOWN IN THIS VIEW IS FOR PERSPECTIVE

CROSS SECTION C–C
(NOT TO SCALE)



SECTION D–D
PROFILE VIEW
(NOT TO SCALE)

J-HOOK DETAIL 5.1
NOT TO SCALE

J-HOOK STRUCTURE SCHEDULE

STR. #	STA.	OFFSET	A (FT)	B (FT)	C (FT)	F (SHORT ARM) (FT)	E (LONG ARM) (FT)	Ls (FT)	X (MSL)	V (Short Arm) ELEV (MSL)	V (Short Arm) STA.	V (Short Arm) OFFSET (FT)	Y (Long Arm) ELEV (MSL)	Y (Long Arm) STA.	Y (Long Arm) OFFSET (FT)	Z (MSL)	APEX APRON TYPE	HEADER ROCK DIMENSIONS LENGTH (L)	HEADER ROCK DIMENSIONS HEIGHT (H)	HEADER ROCK DIMENSIONS WIDTH (W)	FOOTER ROCK DIMENSIONS LENGTH (L)	FOOTER ROCK DIMENSIONS HEIGHT (H)	FOOTER ROCK DIMENSIONS WIDTH (W)
JH-01	6+43.43	0.0	6.0	12.0	8.0	2.0	4.0	10.04	77.71	78.15	6+51.81	7.3	78.17	6+50.30	-9.53	76.53	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-02	6+92.49	0.0	6.0	12.0	8.0	2.0	4.0	10.04	76.53	77.00	6+99.55	-6.15	77.00	7+01.30	13.85	75.53	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-03	7+33.23	0.0	6.0	12.0	8.0	2.0	4.0	9.91	75.53	76.04	7+39.70	5.81	76.00	7+43.15	-8.06	74.53	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-04	7+73.18	0.0	6.0	12.0	8.0	2.0	4.0	10.05	74.53	75.20	7+77.25	-8.01	75.13	7+81.60	6.75	73.53	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-05	8+13.60	0.0	6.0	12.0	8.0	2.0	4.0	9.87	73.53	74.00	8+20.60	-5.70	74.50	8+21.01	8.31	72.52	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-06	10+15.04	0.0	6.0	12.0	8.0	2.0	4.0	10.03	68.53	69.00	10+23.14	5.97	69.00	10+23.81	-8.20	67.53	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-07	10+55.65	0.0	6.0	12.0	8.0	2.0	4.0	9.86	67.53	68.00	10+61.85	-5.65	68.00	10+65.40	10.02	66.53	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-08	11+23.44	0.0	6.0	12.0	8.0	2.0	4.0	5.86	66.03	66.75	11+26.60	-6.50	66.45	11+34.70	9.43	65.03	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-09	11+81.02	0.0	6.0	12.0	8.0	2.0	4.0	10.02	63.03	64.00	11+84.75	7.34	63.42	11+92.30	-10.10	62.04	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-10	12+21.55	0.0	6.0	12.0	8.0	25.3	4.0	9.89	62.04	62.72	12+25.50	-8.30	63.00	12+33.45	9.20	61.03	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-11	12+99.96	0.0	6.0	12.0	8.0	39.0	4.0	9.86	59.04	59.70	13+05.75	-7.09	60.15	13+09.80	8.34	58.03	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-12	13+50.53	0.0	6.0	12.0	8.0	2.0	16.5	9.93	57.75	58.50	13+56.35	6.57	58.20	13+60.75	-8.80	56.75	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-13	15+24.03	0.0	6.0	12.0	8.0	2.0	4.0	9.84	50.01	50.85	15+28.50	6.50	51.32	15+35.00	-8.50	48.99	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-14	15+60.46	0.0	6.0	12.0	8.0	2.0	4.0	9.86	48.99	49.80	15+66.00	6.42	50.35	15+73.22	-11.40	47.99	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"
JH-15	16+51.36	0.0	6.0	12.0	8.0	2.0	4.0	7.58	47.00	47.75	16+55.09	-6.94	48.06	16+56.50	9.11	46.00	STD	18"-24"	12"-18"	18"-24"	24"-36"	18"-24"	24"-30"

EG–SWMENG–000747–2016

Revisions

HARFORD COUNTY, MARYLAND

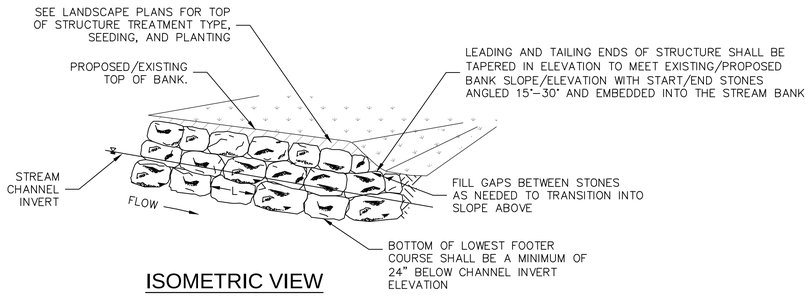
DETAILS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

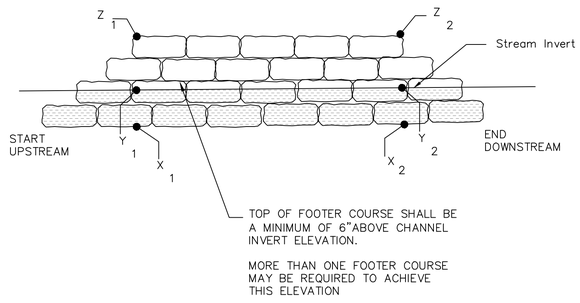
Contract No : DP1602779
Scale : ----
Sheet 48 Of 78
Date : 2/16/2022

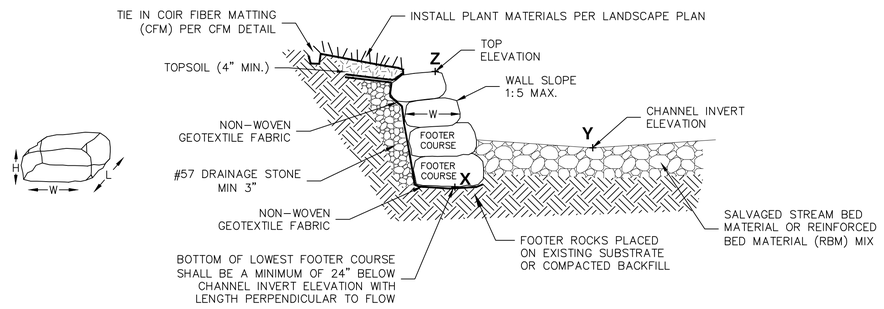
DE-A5

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

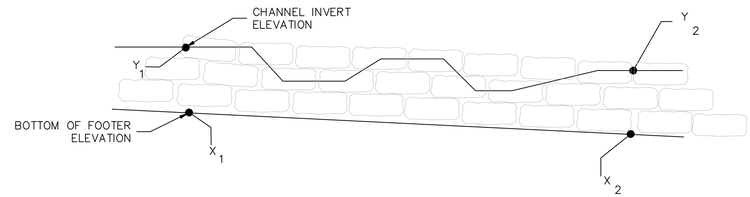


ISOMETRIC VIEW





TYPICAL SECTION



IMBRICATED RIPRAP WALL DETAIL 6.2

NOT TO SCALE

IMBRICATED RIPRAP WALL STRUCTURE SCHEDULE

STR. #	UPSTREAM								DOWNSTREAM								WALL LENGTH	WALL SLOPE	HEADER ROCK DIMENSIONS			FOOTER ROCK DIMENSIONS		
	Y1 (CHANNEL INVERT)			Z1 (TOP OF WALL)			X1 (BOTTOM OF FOOTER)		Y2 (CHANNEL INVERT)			Z2 (TOP OF WALL)			X2 (BOTTOM OF FOOTER)									
	STA.	OFFSET	INVERT ELEV.	STA.	OFFSET	TOP ELEV.	FOOTER BOTTOM ELEV.	BANKFULL DEPTH (FT)	STA.	OFFSET	INVERT ELEV.	STA.	OFFSET	TOP ELEV.	FOOTER BOTTOM ELEV.	BANKFULL DEPTH (FT)			LENGTH (L)	HEIGHT (H)	WIDTH (W)	LENGTH (L)	HEIGHT (H)	WIDTH (W)
IRR-01	18+54.08	-7.21	40.50	18+54.08	-9.70	44.00	38.50	0.99	18+87.47	-7.93	38.75	18+87.47	-10.55	45.42	36.8	0.99	78.0	1:6	30"-36"	18"-24"	24"-30"	36"-48"	18"-24"	24"-30"
IRR-02	18+54.41	7.70	40.50	18+54.41	10.03	45.73	38.50	0.99	19+03.18	10.07	38.65	19+03.18	12.65	47.87	36.7	0.99	74.0	1:6	30"-36"	18"-24"	24"-30"	36"-48"	18"-24"	24"-30"

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Revisions

HARFORD COUNTY, MARYLAND

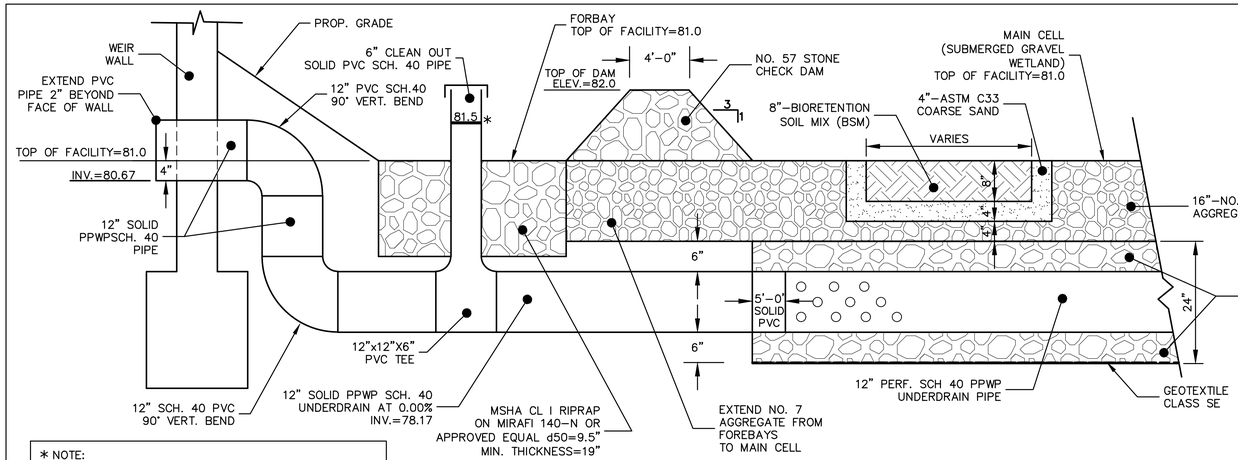
DETAILS - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : ----
Sheet 49 Of 78
Date : 2/16/2022

DE-A6

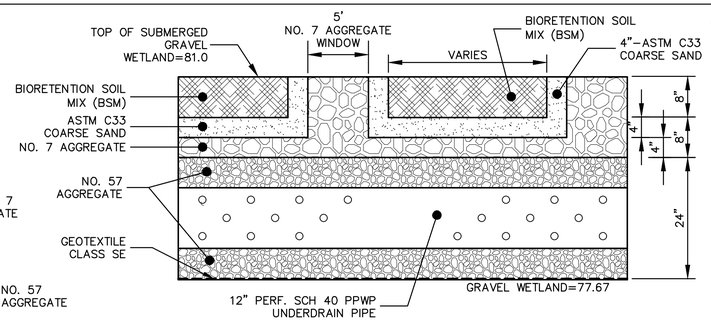
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch



* NOTE:
AT ELEV. 81.5 MARK THE C.O. PVC SCH 40 PIPE WITH PAINT TO INDICATE FORBAY REQUIRED CLEANING.

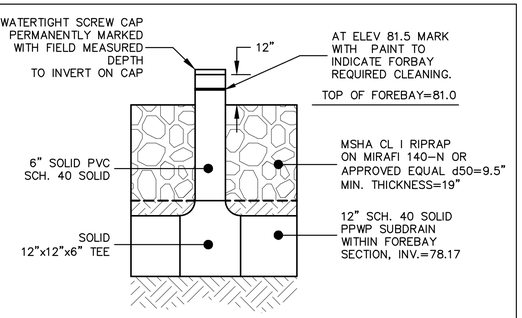
SUBMERGED GRAVEL WETLAND SECTION (UNDERDRAIN TO WEIR WALL) 1

NOT TO SCALE



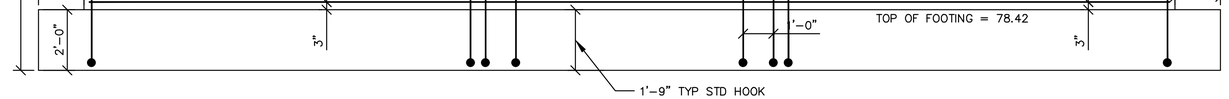
SUBMERGED GRAVEL WETLAND TYPICAL SECTION (A-A) 2

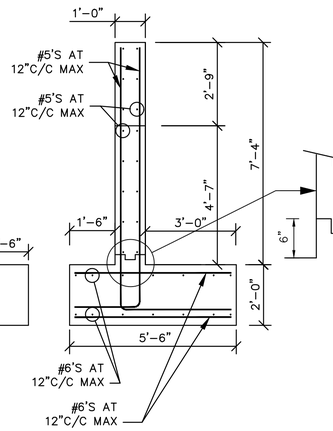
NOT TO SCALE



IN-LINE CLEANOUT DETAIL AT SOUTH FORBAY 3

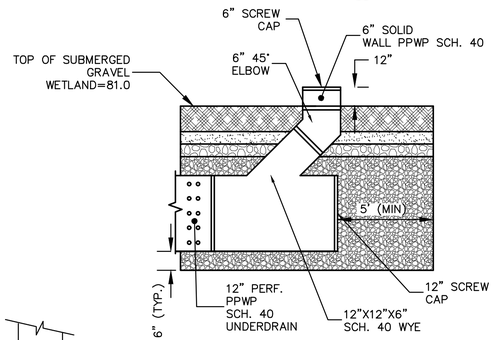
NOT TO SCALE





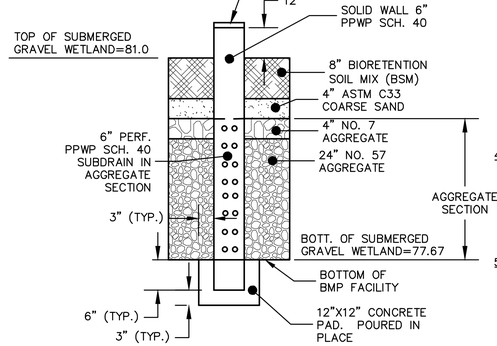
WEIR WALL DETAIL 6

NOT TO SCALE



TERMINAL CLEANOUT DETAIL 4

NOT TO SCALE



OBSERVATION WELL DETAIL WITHIN (SGW) 5

NOT TO SCALE

STRUCTURAL NOTES

1. DESIGN CODES
ALL CONSTRUCTION SHALL CONFORM WITH THE 2012 INTERNATIONAL BUILDING CODE AND ALL SUBSEQUENT SUPPLEMENTS, IN ADDITION TO ACI 318-#5 AND ACI 350-06.

2. CAST IN PLACE CONCRETE
A. ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES (ACI 350-06 AND ACI 318-#5).
B. ALL CONCRETE, UNLESS OTHERWISE NOTED, SHALL BE STONE AGGREGATE CONCRETE HAVING A MINIMUM 28 DAY CONCRETE COMPRESSIVE STRENGTH OF 4,000 PSI (SHA MIX NO. 6) . ALL CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED FOR SEVERE EXPOSURE.
C. ALL REINFORCING STEEL BARS SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A 615 GRADE 60. UNLESS OTHERWISE NOTED, THE MINIMUM TYPICAL LAP SPLICES ARE AS SHOWN BELOW:

#4	2'-0"
#5	2'-6"
#6	3'-0"
#7	3'-6"
#8	3'-11"

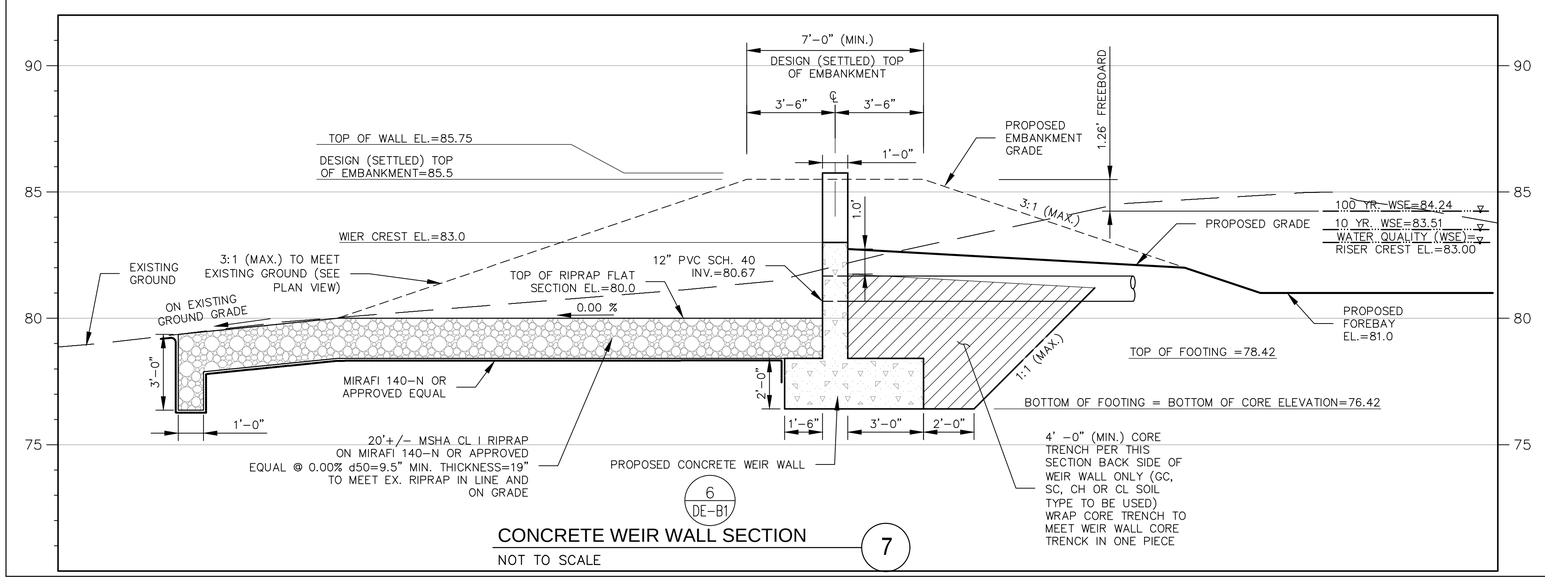
D. MINIMUM COVER FOR ALL REINFORCING STEEL SHALL BE AS FOLLOWED UNLESS OTHERWISE NOTED:

CONCRETE CAST AGAINST SOIL	3"
ELESEWHERE	2"

3. FOUNDATIONS
A. ALL FOUNDATIONS HAVE BEEN DESIGNED FOR AN ASSUMED NET ALLOWABLE SOIL BEARING PRESSURE OF 2,000 PSF. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE LESS THAN 2,000 PSF THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
B. SPILLWAY MUST BE CONSTRUCTED ON SUBGRADE APPROVED BY GEOTECHNICAL ENGINEER. A GRAVEL SUBGRADE IS NOT ALLOWABLE, USE MUDMAT IF NECESSARY.

4. SPILLWAY DESIGN
A. SPILLWAY HAS BEEN DESIGNED WITH BACKFILL MATERIAL HAVING THE FOLLOWNG CHARACTERISTICS: EARTH PRESSURE CALCULATED BASED ON EQUIVALENT FLUID PRESSURE OF 60 H SOIL WEIGHT = 120 PCF.
B. SPILLWAY HAS BEEN DESIGNED FOR THE MINIMUM FACTOR OF SAFETY OF 1.2 FOR BUOYANCY AT THE PERMANENT CONDITION.

5. MISCELLANEOUS
A. ALL CONNECTIONS SHALL BE WATER TIGHT. PROVIDE PVC TYPE WATERSTOP IN THE CONSTRUCTION JOINT BETWEEN THE SPILLWAY BASE AND WALLS.
B. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS SHOWN ON THE CONTRACT DRAWINGS BEFORE PROCEEDING WITH CONSTRUCTION. ALL DISCREPANCIES AND OMISSIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
C. CONTRACTOR SHALL NOT SUBMIT REPRODUCTIONS OF THE STRUCTURAL CONTRACT DOCUMENTS AS SHOP DRAWINGS. CONTRACTOR SHALL SUBMIT REINFORCEMENT STEEL DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO PROCURING OR FABRICATING STEEL.



CONCRETE WEIR WALL SECTION 7

NOT TO SCALE

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

DETAILS - SWM

Drawn By :	JS / MTB	Contract No :	DP1602779
Designed By :	JS / MTB	Scale :	AS SHOWN
Reviewed By :	MAE	Sheet	50 Of 78
		Date :	2/16/2022

DE-B1

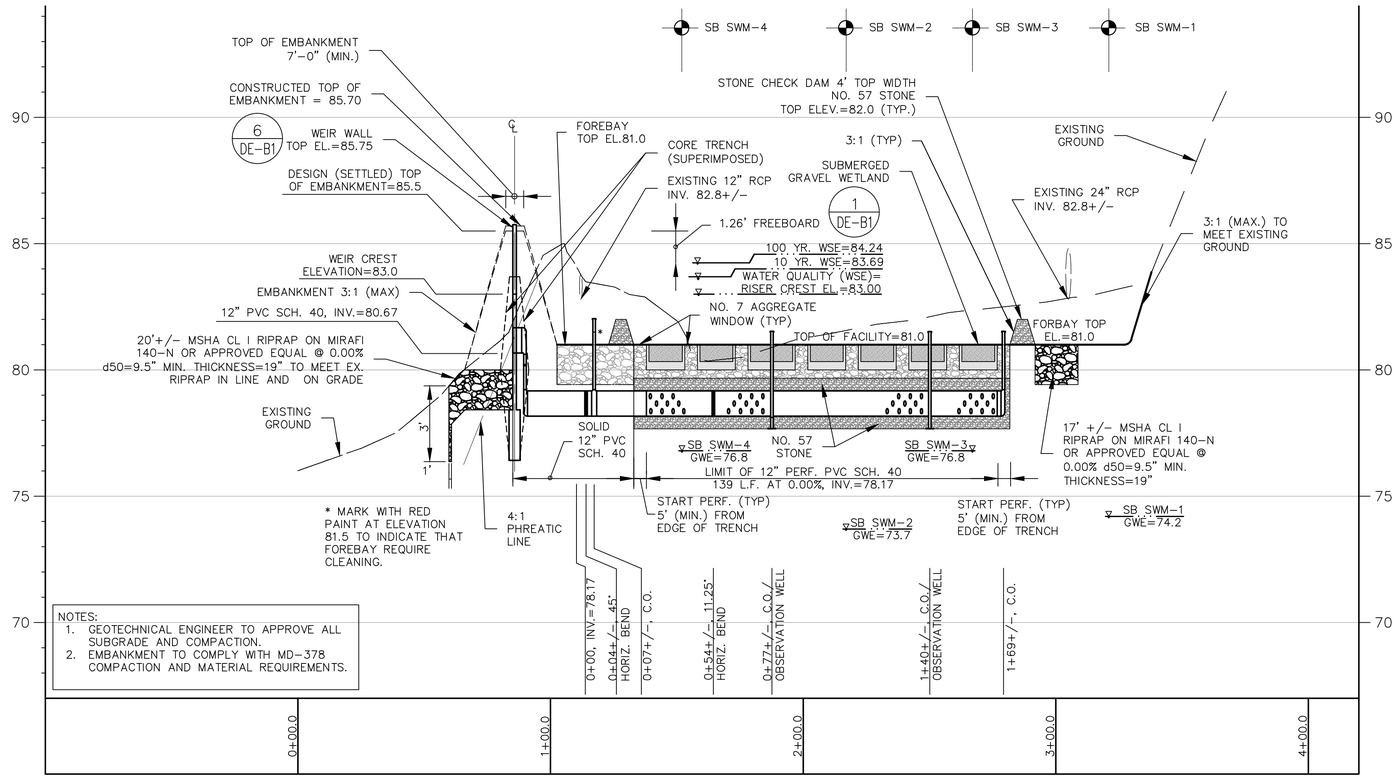
SCALE 1 inch

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

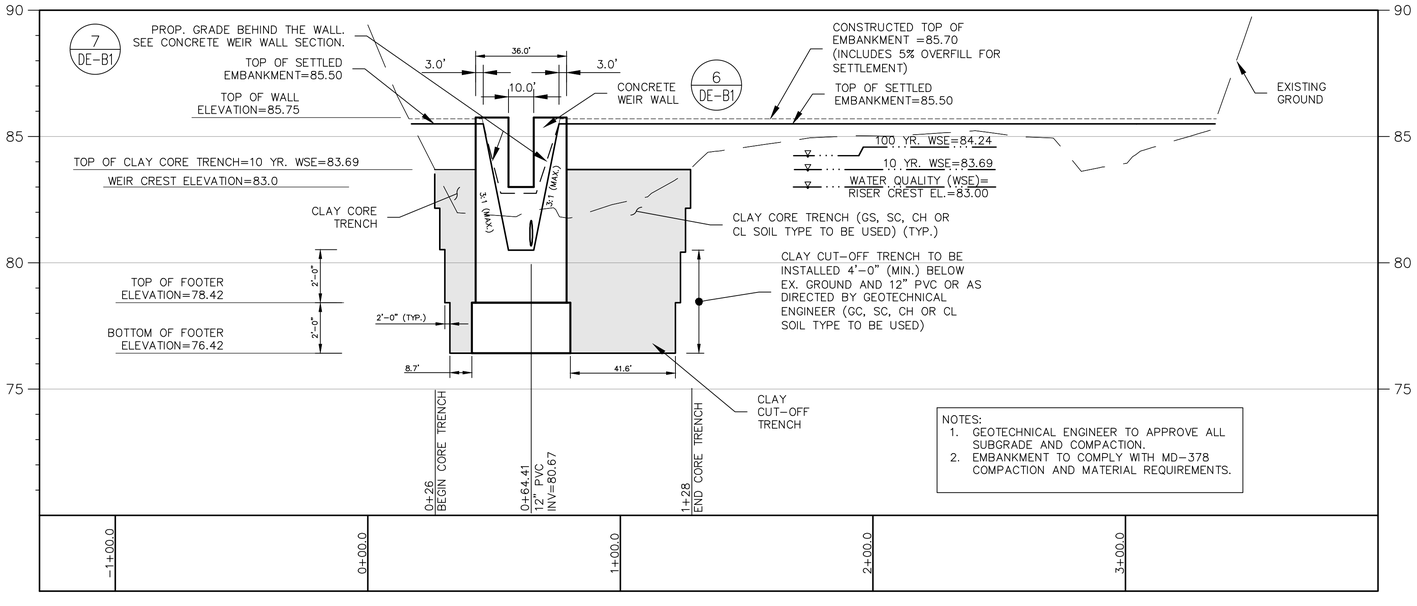
HCG DWG ID No.:



NOTES:
1. GEOTECHNICAL ENGINEER TO APPROVE ALL SUBGRADE AND COMPACTION.
2. EMBANKMENT TO COMPLY WITH MD-378 COMPACTION AND MATERIAL REQUIREMENTS.

EXISTING SUBMERGED GRAVEL WETLAND BASELINE PROFILE

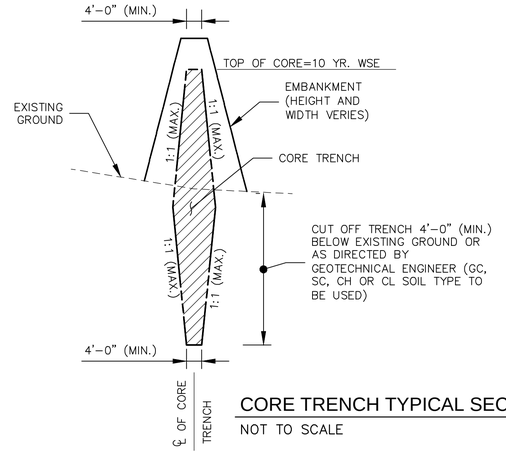
SCALE: HORZ 1" = 30'
VERT. 1" = 3'



NOTES:
1. GEOTECHNICAL ENGINEER TO APPROVE ALL SUBGRADE AND COMPACTION.
2. EMBANKMENT TO COMPLY WITH MD-378 COMPACTION AND MATERIAL REQUIREMENTS.

EXISTING SUBMERGED GRAVEL WETLAND EMBANKMENT CENTERLINE PROFILE

SCALE: HORZ 1" = 30'
VERT. 1" = 3'

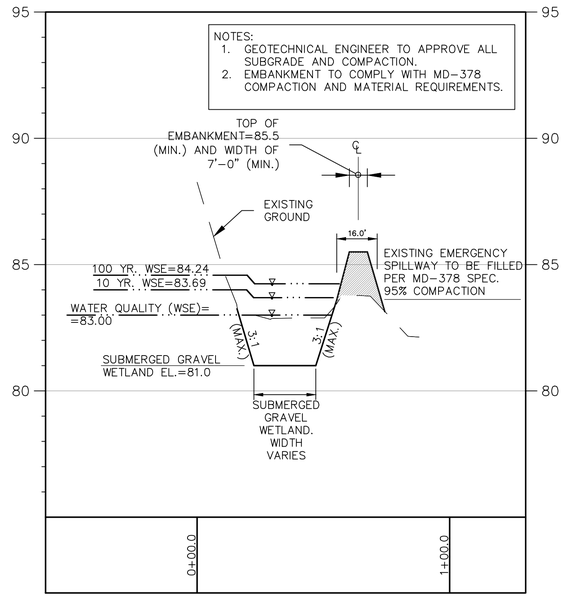


CORE TRENCH TYPICAL SECTION

NOT TO SCALE

1

SUBMERGED GRAVEL WETLANDS (SGW) SUMMARY TABLE								
DRAINAGE AREA CONTRIBUTING	STRUCTURE CLASSIFICATION	Q10 AND Q100 MANAGEMENT	STORAGE VOLUME AT TOP OF DAM	STORAGE VOLUME AT OUTFALL WEIR	EFFECTIVE HEIGHT OF EMBANKMENT	TOP WIDTH OF EMBANKMENT	Q IN AND OUT FOR 10 YR. STORM EVENT	Q IN AND OUT FOR 100 YR. STORM EVENT	FREEBOARD PROVIDED
5.99 ac.	CLASS "a" 12,904 cu.ft	N/A & N/A	40,280 cu.ft	12,904 cu.ft	6.58'	7'-0" (min.)	(IN) 35.98 cfs (OUT) 28.19 cfs	(IN) 66.39 cfs (OUT) 60.36 cfs	1.26'



EXISTING EMERGENCY SPILLWAY CENTERLINE PROFILE

SCALE: HORZ 1" = 30'
VERT. 1" = 3'

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

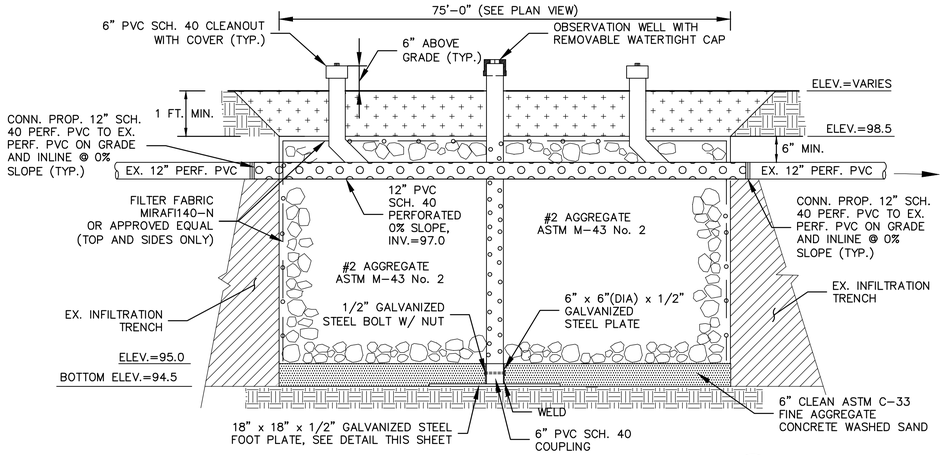
DETAILS - SWM

Drawn By : JS / MTB
Designed By : JS / MTB
Reviewed By : MAE

Contract No : DP1602779
Scale : AS SHOWN
Sheet 51 Of 78
Date : 2/16/2022

DE-B2

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch



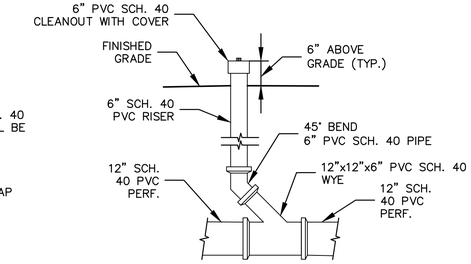
INFILTRATION TRENCH ELEVATION VIEW

NOT TO SCALE

1

NOTES:

1. ALL PVC TO BE SCH. 40 PERFORATIONS SHALL BE 3/8" AT 4" O.C. 90° ALL AROUND PIPE.
2. INSTALL REMOVABLE WATER TIGHT PVC CAP ON TOP OF 6" PVC CLEANOUTS.
3. USE MIRAF 140-N FILTER FABRIC OR APPROVED EQUIVALENT. DO NOT PLACE FABRIC ON BOTTOM OF TRENCH.
4. BOTTOM EXCAVATION IS TO BE IN NATURAL UNCOMPACTED EARTH.
5. ALL UNDERDRAIN PIPES TO BE WRAPPED TWICE WITH 4" HARDWARE CLOTH.



IN-LINE CLEANOUT

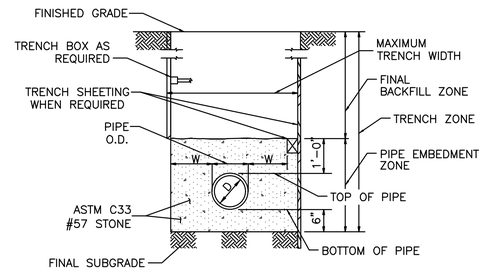
NOT TO SCALE

CLEANOUT TYPICAL DETAILS

NOT TO SCALE

4

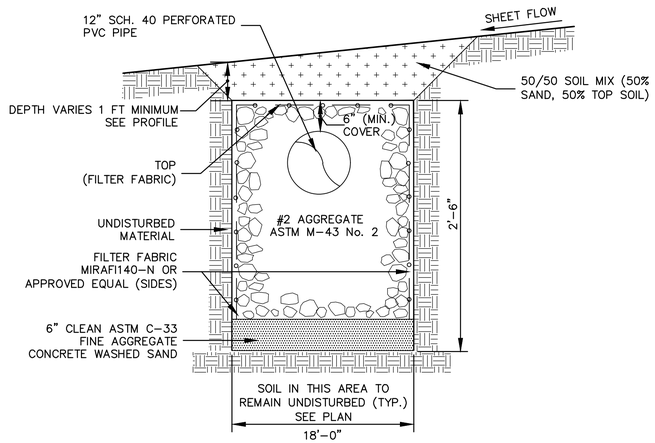
D DIAMETER	W
4"	12"
6"	11"
8"	10"
10"	9"
12"	8"
15"	8"
18'	8"
21"	8"
24	12"
27"	12"
30"	12"
36"	15'
42"	15'
48"	18"



PVC PIPE TRENCH DETAIL

NOT TO SCALE

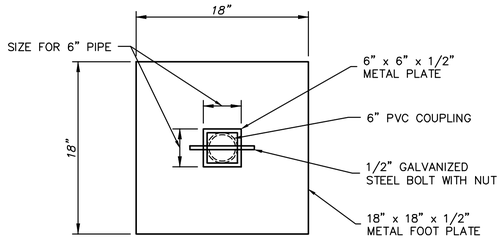
5



INFILTRATION TRENCH TYPICAL SECTION

NOT TO SCALE

2

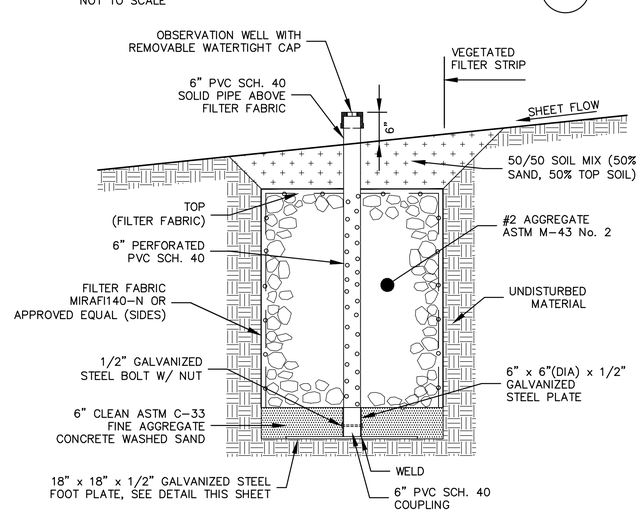


NOTES:

1. PROVIDE PERFORATED PVC PIPE ONLY WITHIN THE STONE/GRAVEL LAYER.
2. CONTRACTOR SHALL PERMANENTLY MARK THE FIELD MEASURED DEPTH TO THE BOTTOM OF THE WELL ON THE INSIDE OF THE CAP AFTER FACILITY AND WELL ARE INSTALLED.
3. THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP LID SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRA-VIOLET RAYS

FOOT PLATE DETAIL

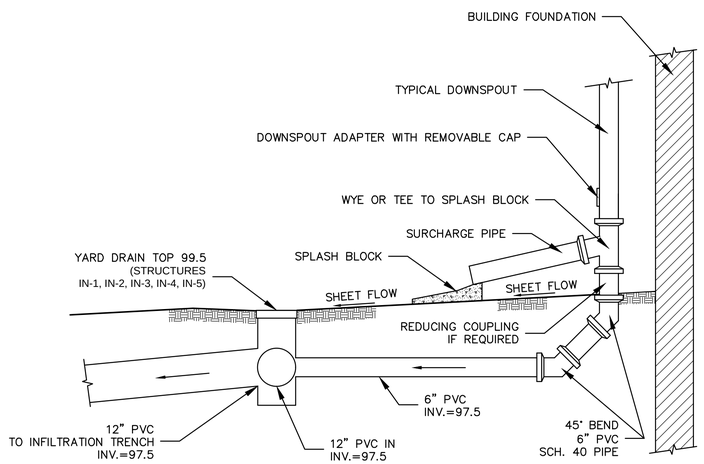
N.T.S.



OBSERVATION WELL TYPICAL DETAIL

NOT TO SCALE

3



PRETREATMENT DETAIL FOR DRAIN BASINS STRUCTURES: IN-1, IN-2, IN-3, IN-4, IN-5

NOT TO SCALE

8

EG-SWMENG-000747-2016

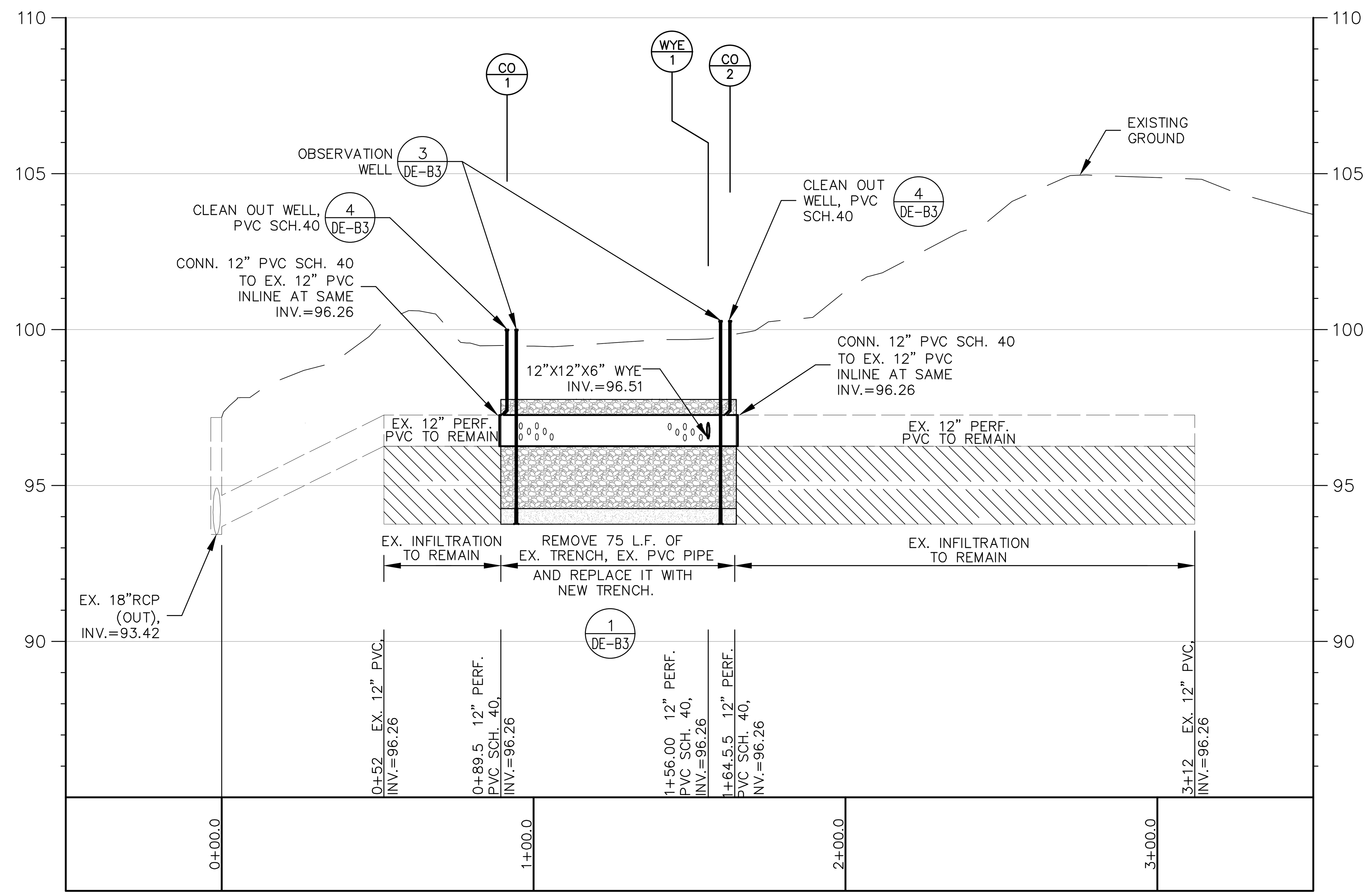
Revisions	HARFORD COUNTY, MARYLAND
	DETAILS - SWM
	Drawn By : JS / MTB — Contract No : DP1602779
	Designed By : JS / MTB — Scale : AS SHOWN
	Reviewed By : MAE — Sheet 52 Of 78
	Date : 2/16/2022 — DE-B3

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

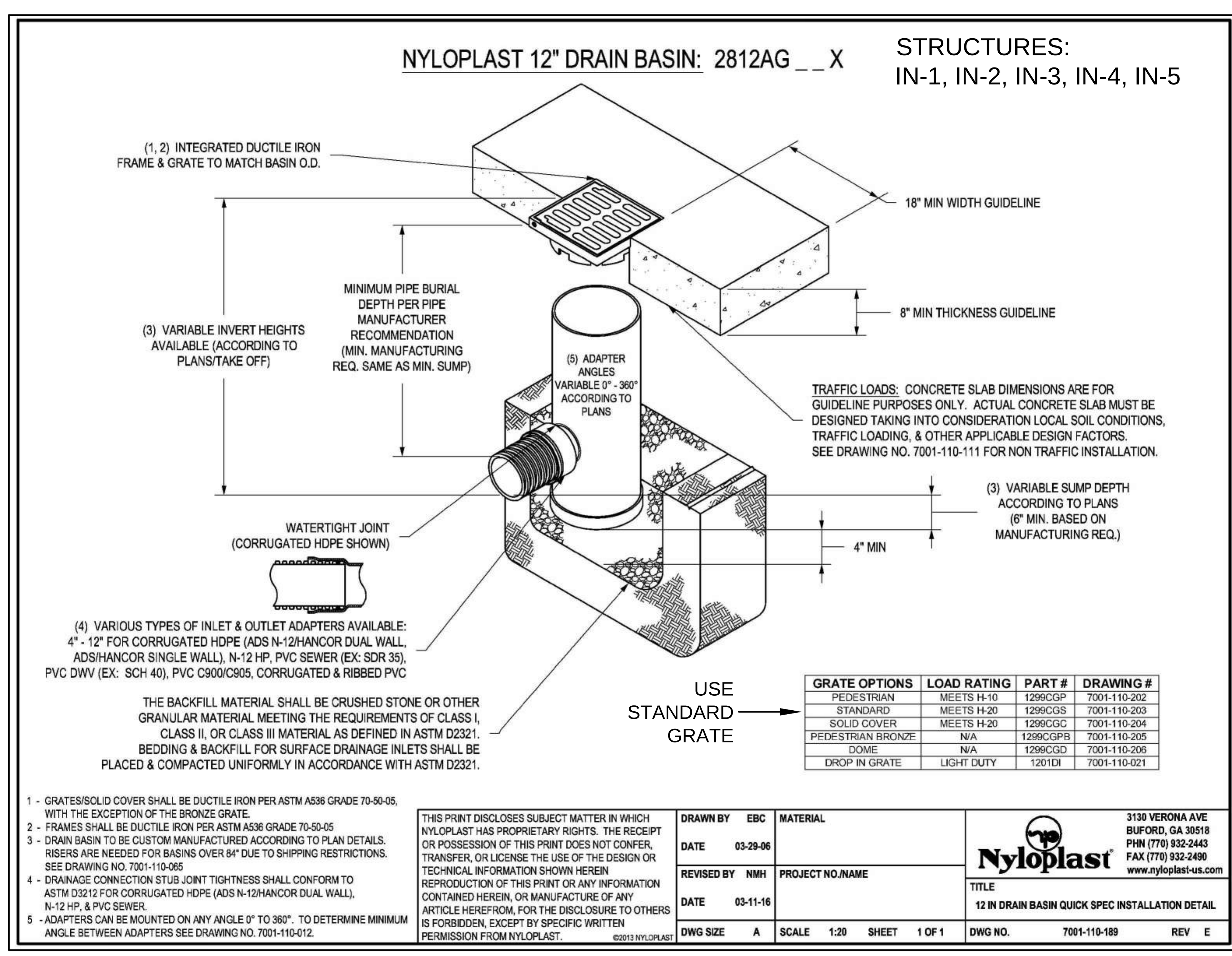
HCG DWG ID No.:



110
105
100
95
90
CO 1
WYE 1
CO 2
OBSERVATION WELL 3 DE-B3
CLEAN OUT WELL, PVC SCH.40 4 DE-B3
CONN. 12" PVC SCH. 40 TO EX. 12" PVC INLINE AT SAME INV.=96.26
CLEAN OUT WELL, PVC SCH.40 4 DE-B3
EXISTING GROUND
12"X12"X6" WYE INV.=96.51
CONN. 12" PVC SCH. 40 TO EX. 12" PVC INLINE AT SAME INV.=96.26
EX. 12" PERF. PVC TO REMAIN
EX. 12" PERF. PVC TO REMAIN
EX. INFILTRATION TO REMAIN
REMOVE 75 L.F. OF EX. TRENCH, EX. PVC PIPE AND REPLACE IT WITH NEW TRENCH.
EX. INFILTRATION TO REMAIN
1 DE-B3
EX. 18"RCP (OUT), INV.=93.42
0+52 EX. 12" PVC. INV.=96.26
0+89.5 12" PERF. PVC SCH. 40, INV.=96.26
1+56.00 12" PERF. PVC SCH. 40, INV.=96.26
1+64.5 12" PERF. PVC SCH. 40, INV.=96.26
3+12 EX. 12" PVC. INV.=96.26
0+00.0
1+00.0
2+00.0
3+00.0

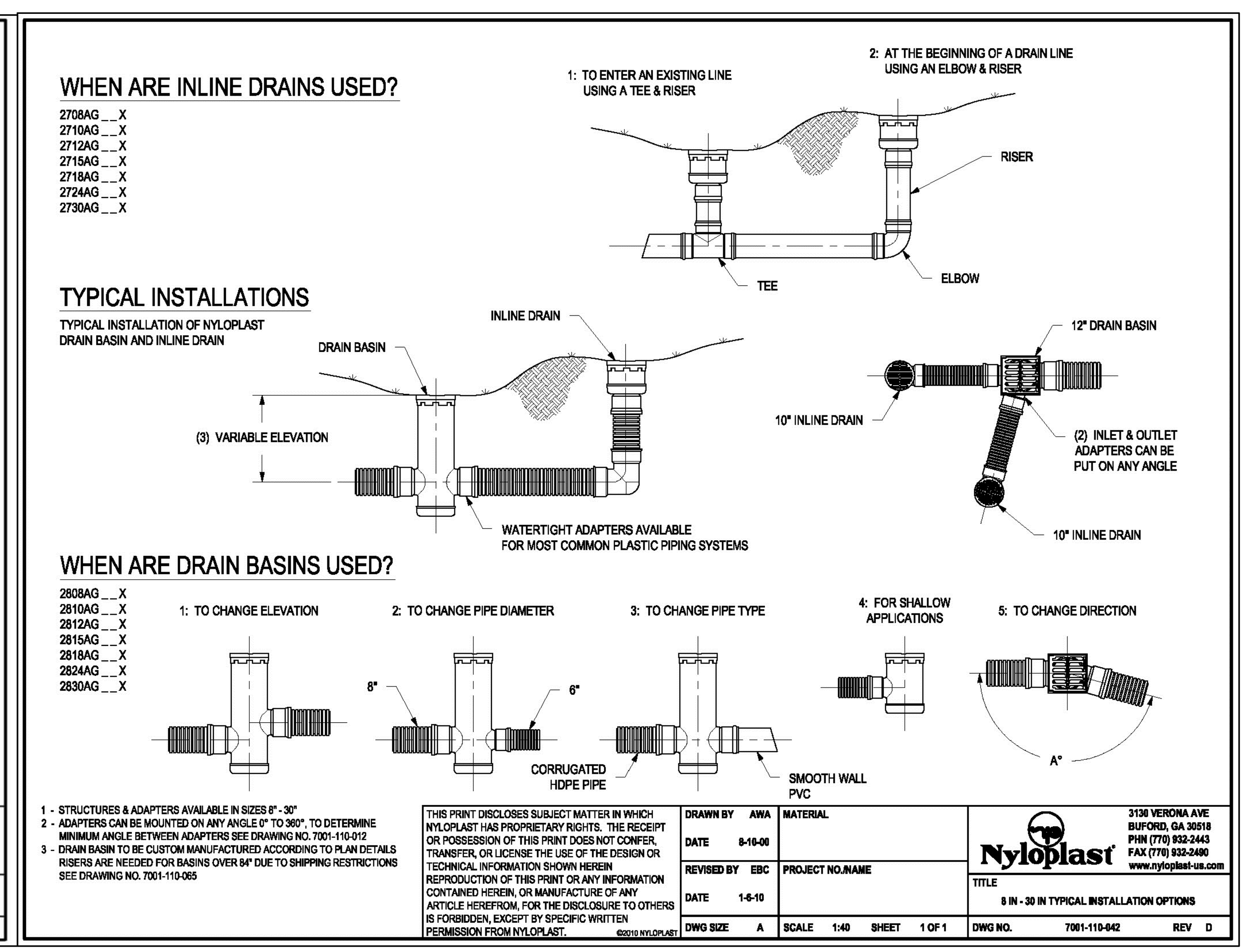
INFILTRATION TRENCH PROFILE

SCALE: HORZ 1" = 30'
VERT. 1" = 3'



NYLOPLAST 12" DRAIN BASIN: 2812AG _ _ X
STRUCTURES: IN-1, IN-2, IN-3, IN-4, IN-5
(1, 2) INTEGRATED DUCTILE IRON FRAME & GRATE TO MATCH BASIN O.D.
18" MIN WIDTH GUIDELINE
8" MIN THICKNESS GUIDELINE
(3) VARIABLE INVERT HEIGHTS AVAILABLE (ACCORDING TO PLANS/TAKE OFF)
MINIMUM PIPE BURIAL DEPTH PER PIPE MANUFACTURER RECOMMENDATION (MIN. MANUFACTURING REQ. SAME AS MIN. SUMP)
(5) ADAPTER ANGLES VARIABLE 0° - 360° ACCORDING TO PLANS
TRAFFIC LOADS: CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, & OTHER APPLICABLE DESIGN FACTORS. SEE DRAWING NO. 7001-110-111 FOR NON TRAFFIC INSTALLATION.
(3) VARIABLE SUMP DEPTH ACCORDING TO PLANS (6" MIN. BASED ON MANUFACTURING REQ.)
4" MIN
WATERTIGHT JOINT (CORRUGATED HDPE SHOWN)
(4) VARIOUS TYPES OF INLET & OUTLET ADAPTERS AVAILABLE: 4" - 12" FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL, ADS/HANCOR SINGLE WALL), N-12 HP, PVC SEWER (EX: SDR 35), PVC DWV (EX: SCH 40), PVC C900/C905, CORRUGATED & RIBBED PVC
THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.
USE STANDARD GRATE
Nyloplast
12 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL
7001-110-189

GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1299CGP	7001-110-202
STANDARD	MEETS H-20	1299CGS	7001-110-203
SOLID COVER	MEETS H-20	1299CGC	7001-110-204
PEDESTRIAN BRONZE	N/A	1299CGPB	7001-110-205
DOME	N/A	1299CGD	7001-110-206
DROP IN GRATE	LIGHT DUTY	1201DI	7001-110-021



WHEN ARE INLINE DRAINS USED?
2708AG _ _X
2710AG _ _X
2712AG _ _X
2715AG _ _X
2718AG _ _X
2724AG _ _X
2730AG _ _X
1: TO ENTER AN EXISTING LINE USING A TEE & RISER
2: AT THE BEGINNING OF A DRAIN LINE USING AN ELBOW & RISER
RISER
TEE
ELBOW
TYPICAL INSTALLATIONS
TYPICAL INSTALLATION OF NYLOPLAST DRAIN BASIN AND INLINE DRAIN
INLINE DRAIN
DRAIN BASIN
(3) VARIABLE ELEVATION
WATERTIGHT ADAPTERS AVAILABLE FOR MOST COMMON PLASTIC PIPING SYSTEMS
12" DRAIN BASIN
10" INLINE DRAIN
(2) INLET & OUTLET ADAPTERS CAN BE PUT ON ANY ANGLE
10" INLINE DRAIN
WHEN ARE DRAIN BASINS USED?
2808AG _ _X
2810AG _ _X
2812AG _ _X
2815AG _ _X
2818AG _ _X
2824AG _ _X
2830AG _ _X
1: TO CHANGE ELEVATION
2: TO CHANGE PIPE DIAMETER
3: TO CHANGE PIPE TYPE
4: FOR SHALLOW APPLICATIONS
5: TO CHANGE DIRECTION
CORRUGATED HDPE PIPE
SMOOTH WALL PVC
Nyloplast
8 IN - 30 IN TYPICAL INSTALLATION OPTIONS
7001-110-042

DRAIN BASIN DETAILS (1)

NOT TO SCALE

NOTE:
USE PVC SCH. 40 FOR ALL PIPES IN AND OUT OF NYLOPLAST OR (APPROVE EQUAL) DRAIN BASIN.

EG–SWMENG–000747–2016

Revisions	HARFORD COUNTY, MARYLAND	
	DETAILS - SWM	
	Drawn By : JS / MTB	Contract No : DP1602779
	Designed By : JS / MTB	Scale : AS SHOWN
	Reviewed By : MAE	Sheet 53 Of 78
		Date : 2/16/2022

DE-B4

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

MD POND 378 CONSTRUCTION SPECIFICATIONS

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD–378. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR SHALL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25–FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DIS POSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL SHALL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

EARTH FILL

MATERIAL–THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER.

MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

PLACEMENT–AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXI MUM 8–INCH–THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWN STREAM PORTIONS OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION–THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION SHALL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN 0102% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T–99 (STANDARD PROCTOR).

CUT OFF TRENCH–THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

EMBANKMENT CORE–THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CON CURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

STRUCTURE BACKFILL

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100–200 PSI; 28 DAY UN CONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM–CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BED DING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

PIPE CONDUITS

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE – ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS–(POLYMER COATED STEEL PIPE) – STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CON FORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M–245 & M–246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.

   MATERIALS–(ALUMINUM COATED STEEL PIPE) – THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M–274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR IN CREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M–190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COM POUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.

   MATERIALS–(ALUMINUM PIPE) – THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M–196 OR M–211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR IN CREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M–190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CON TACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI–SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS–ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI–SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

   ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE–ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE–PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12–INCH WIDE STANDARD LAP TYPE BAND WITH 12–INCH WIDE BY 3/8–INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12–INCH WIDE HUGGER TYPE BAND WITH O RING GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24–INCH–LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END. A 24–INCH WIDE BY 3/8–INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET SHALL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE.

   HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING–THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
6. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE – ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS–REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C–361.
2. BEDDING–REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING I CRADLE FOR THEIR ENTIRE LENGTH. THIS BED DING I CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUT SIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOW ABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.
3. LAYING PIPE – BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.
4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
5. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

PLASTIC PIPE–THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

1. MATERIALS–PVC PIPE SHALL BE PVC–1120 OR PVC–1220 CONFORMING TO ASTM D– 1785 OR ASTM D–2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4" – 10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.
2. JOINTS AND CONNECTIONS TO ANTI–SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.
3. BEDDING –THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
5. OTHER DETAILS (ANTI–SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

DRAINAGE DIAPHRAGMS – WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER SHALL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

GEOTEXTILE SHALL BE PLACED UNDER ALL RIPRAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

CARE OF WATER DURING CONSTRUCTION

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED AND GRADED TO THE EXTENT REQUIRED TO PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT SHALL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM REQUIRED EXCAVATIONS AND SHALL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS, THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD–342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

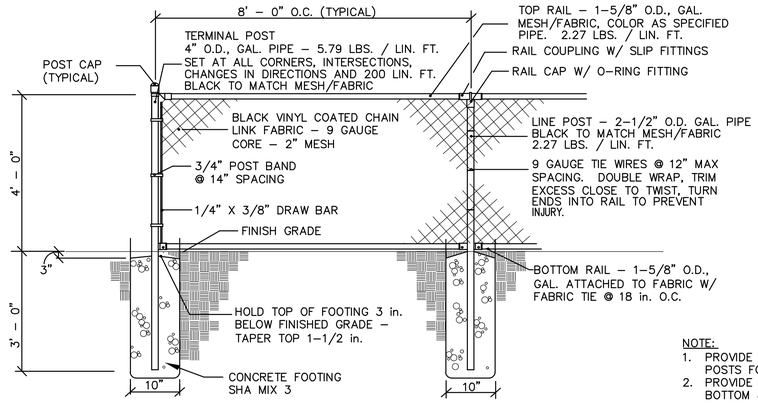
EROSION AND SEDIMENT CONTROL

CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION SHALL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT SHALL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.

COMPACTED CLAY LINER

PLACE 12" THICK CLAY BLANKET ON UPSTREAM SLOPE OF EMBANKMENT. INSTALL IN 8–INCH LIFTS AND COMPACT WITH TWO COMPLETE PASSES OF A SHEEPSFOOT ROLLER. COMPACT FINISH SURFACE WITH TWO PASSES OVER THE ENTIRE SURFACE WITH HEAVY EQUIPMENT. PLACE CLAY WITHIN 2% OF OPTIMUM MOISTURE CONTENT AND COMPACT TO MINIMUM DENSISTY OF 90% OF STANDARD PROCTOR. KEY CLAY LINER INTO EXISTING SLOPE. ALL COMPACTION TO BE IN ACCORDANCE WITH ASTM D698.

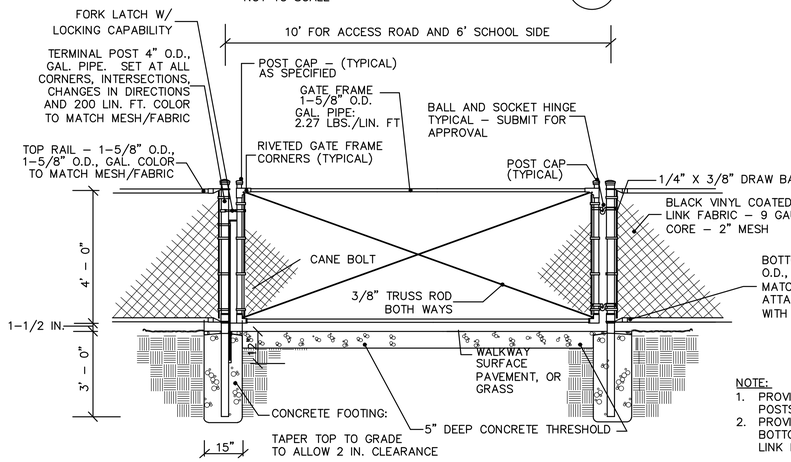
PLACE 6" OF LOW PLASTICITY SOIL (ONSITE GRAVEL) OVER THE COMPACTED CLAY LINER.



CHAIN LINK FENCE DETAIL 1

NOT TO SCALE

NOTE:
1. PROVIDE 6" TERMINAL & CORNER POSTS FOR ALL FENCING
2. PROVIDE KNUCKLED SELVAGE FOR BOTTOM & TOP OF CHAIN LINK FABRIC



CHAIN LINK FENCE GATE DETAIL 2

NOT TO SCALE

NOTE:
1. PROVIDE 4" TERMINAL & CORNER POSTS FOR ALL FENCING
2. PROVIDE KNUCKLED SELVAGE FOR BOTTOM & TOP RAIL OF CHAIN LINK FABRIC

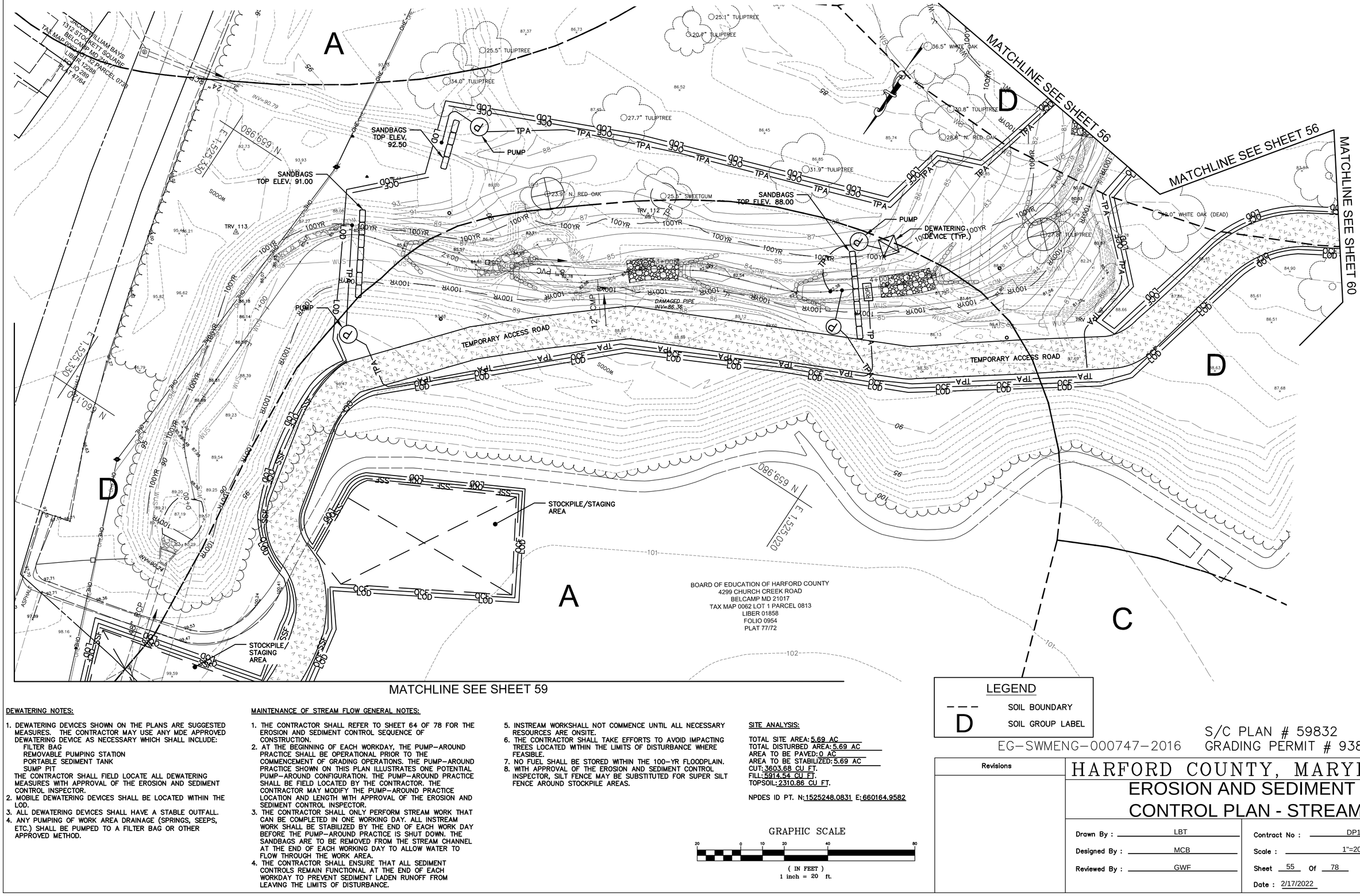
STORMWATER MANAGEMENT AS-BUILT CERTIFICATION REQUIREMENTS:

1. THE CONSTRUCTION OF ALL STORMWATER MANAGEMENT FACILITIES SHALL CONFORM TO THE APPROVED CONTRACT DOCUMENTS AND MDE STORMWATER DESIGN MANUAL VOLUMES I&II.
2. THE CONTRACTOR IS RESPONSIBLE FOR FULLY UNDERSTANDING THE DESIGN AND FUNCTION OF THE PROPOSED FACILITIES AND FOR CONSTRUCTING FACILITIES IN FULL COMPLIANCE WITH DESIGN STANDARDS.
3. THE CONTRACTOR SHALL ENSURE THAT ALL OF THE REQUIRED PLAN CHECKLISTS ARE SIGNED BY THE APPROPRIATE INDIVIDUALS AT THE REQUIRED STAGES OF CONSTRUCTION.
4. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 7–DAYS ADVANCED NOTICE OF CONSTRUCTION OF THE STORMWATER MANAGEMENT FACILITY(S) TO THE OWNER AND CERTIFYING ENGINEER.
5. THE CONTRACTOR SHALL VERIFY ALL CRITICAL INVERTS AND ELEVATIONS THROUGHOUT CONSTRUCTION TO VERIFY CONFORMANCE WITH THE DESIGN AND STANDARDS. THIS INFORMATION SHALL BE PROVIDED TO THE OWNER AND THE CERTIFYING ENGINEER IN THE FORM OF RED–LINED CONTRACT DRAWINGS AT THE END OF THE PROJECT.
6. THE CONTRACTOR OBTAIN THE SERVICES OF A MARYLAND LICENSED SURVEYOR TO CONDUCT AN AS–BUILT SURVEY OF THE STORMWATER MANAGEMENT FACILITY(S) PRIOR TO FINAL PLANTING LANDSCAPING.
7. ANY ADJUSTMENTS TO THE CONSTRUCTION OF THE FACILITIES SHALL BE REVIEWED AND APPROVED BY THE CERTIFYING ENGINEER AND OWNER. APPROVAL OF THE MODIFICATIONS IS REQUIRED PRIOR TO PROCEEDING WITH CONSTRUCTION.
8. THE CONTRACTOR SHALL MAKE ANY CORRECTIONS AND ADJUSTMENTS REQUIRED TO FULLY PROVIDE REQUIRED DESIGN VOLUMES, FUNCTION, AND STRUCTURAL INTEGRITY OF FACILITIES AT NO ADDITIONAL COST TO THE OWNER.
9. THE CONTRACTOR SHALL ALSO VERIFY THAT ALL SITE IMPROVEMENTS, FLOW PATHS, AND DRAINAGE AREAS TO EACH FACILITY ARE IN CONFORMANCE WITH THE APPROVED DESIGN PLANS.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AS–BUILT PLANS AND APPROPRIATE SUPPORT DOCUMENTATION TO THE OWNER AND CERTIFYING ENGINEER.
11. THE CONTRACTOR SHALL MAKE ANY AND ALL REPAIRS AND/OR MODIFICATIONS REQUIRED TO OBTAIN AS–BUILT APPROVAL BY HARFORD COUNTY AT NO ADDITIONAL COSTS TO THE OWNER.
12. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MAINTENANCE OF ALL STORMWATER–RELATED FACILITIES UNTIL FINAL ACCEPTANCE OF THE FACILITIES BY OWNER, AND SHALL PERFORM FULL CLEANOUT AND/OR DREDGING OF FACILITIES PRIOR TO TURN OVER TO THE OWNER.

EG–SWMENG–000747–2016

Revisions	HARFORD COUNTY, MARYLAND
	DETAILS - SWM
	Drawn By : JS / MTB — Contract No : DP1602779
	Designed By : JS / MTB — Scale : AS SHOWN
	Reviewed By : MAE — Sheet 54 Of 78
	Date : 2/16/2022 — DE-B5

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SALE 1 Tech



DEWATERING NOTES:

1. DEWATERING DEVICES SHOWN ON THE PLANS ARE SUGGESTED MEASURES. THE CONTRACTOR MAY USE ANY MDE APPROVED DEWATERING DEVICE AS NECESSARY WHICH SHALL INCLUDE:
   - FILTER BAG
   - REMOVABLE PUMPING STATION
   - PORTABLE SEDIMENT TANK
   - SUMP PIT

   THE CONTRACTOR SHALL FIELD LOCATE ALL DEWATERING MEASURES WITH APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR.
2. MOBILE DEWATERING DEVICES SHALL BE LOCATED WITHIN THE LOD.
3. ALL DEWATERING DEVICES SHALL HAVE A STABLE OUTFALL.
4. ANY PUMPING OF WORK AREA DRAINAGE (SPRINGS, SEEPS, ETC.) SHALL BE PUMPED TO A FILTER BAG OR OTHER APPROVED METHOD.

MAINTENANCE OF STREAM FLOW GENERAL NOTES:

1. THE CONTRACTOR SHALL REFER TO SHEET 64 OF 78 FOR THE EROSION AND SEDIMENT CONTROL SEQUENCE OF CONSTRUCTION.
2. AT THE BEGINNING OF EACH WORKDAY, THE PUMP-AROUND PRACTICE SHALL BE OPERATIONAL PRIOR TO THE COMMENCEMENT OF GRADING OPERATIONS. THE PUMP-AROUND PRACTICE SHOWN ON THIS PLAN ILLUSTRATES ONE POTENTIAL PUMP-AROUND CONFIGURATION. THE PUMP-AROUND PRACTICE SHALL BE FIELD LOCATED BY THE CONTRACTOR. THE CONTRACTOR MAY MODIFY THE PUMP-AROUND PRACTICE LOCATION AND LENGTH WITH APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR.
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7. NO FUEL SHALL BE STORED WITHIN THE 100-YR FLOODPLAIN.
8. WITH APPROVAL OF THE EROSION AND SEDIMENT CONTROL INSPECTOR, SILT FENCE MAY BE SUBSTITUTED FOR SUPER SILT FENCE AROUND STOCKPILE AREAS.

SITE ANALYSIS:

TOTAL SITE AREA: 5.69 AC
TOTAL DISTURBED AREA: 5.69 AC
AREA TO BE PAVED: 0 AC
AREA TO BE STABILIZED: 5.69 AC
CUT: 3603.68 CU FT.
FILL: 5914.54 CU FT.
TOPSOIL: 2310.86 CU FT.

NPDES ID PT. N: 1525248.0831 E: 660164.9582

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

LEGEND

SOIL BOUNDARY

D SOIL GROUP LABEL

EG-SWMENG-000747-2016

S/C PLAN # 59832
GRADING PERMIT # 9386-2017

Revisions

HARFORD COUNTY, MARYLAND

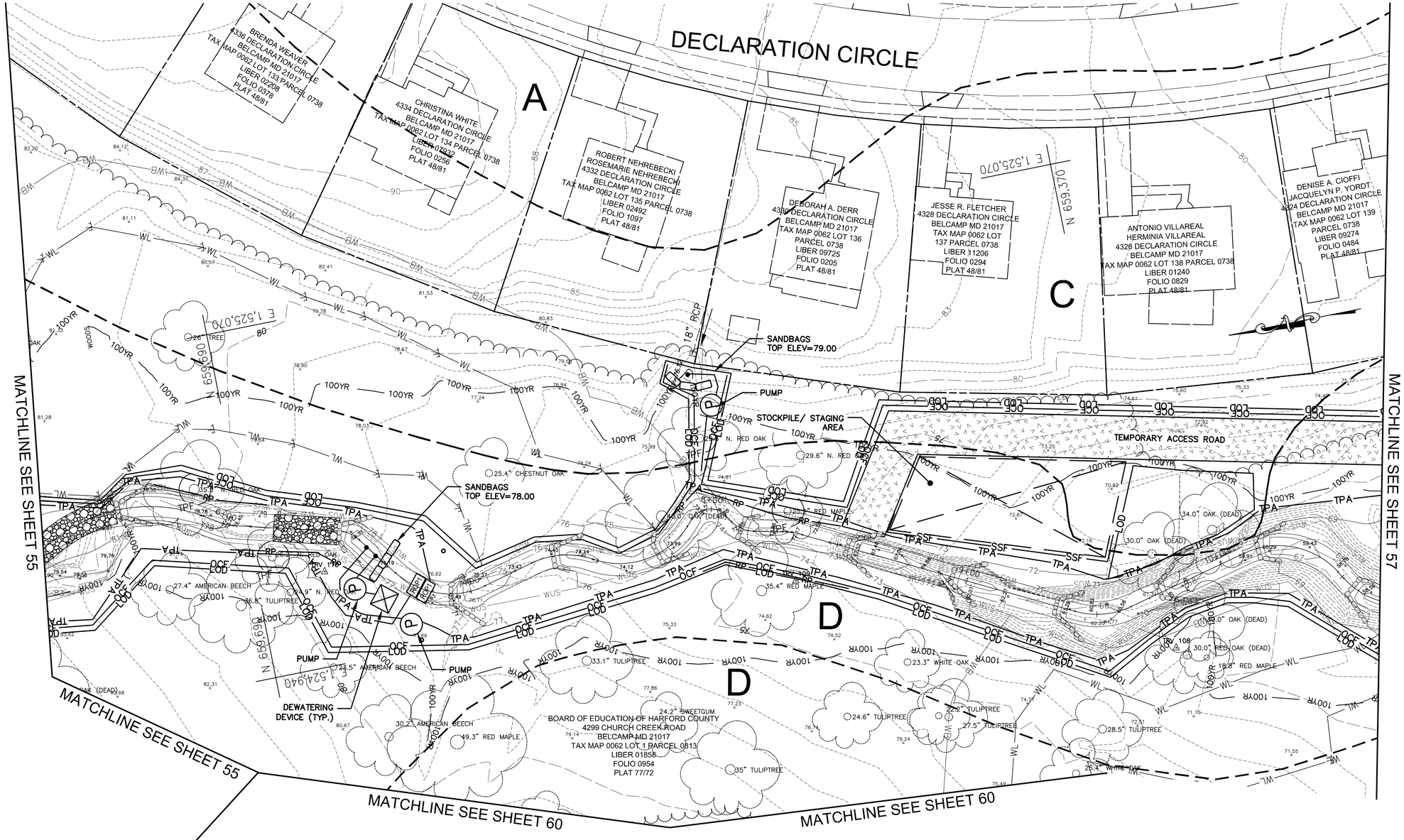
EROSION AND SEDIMENT CONTROL PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 55 Of 78
Date : 2/17/2022

EP-A1

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 Inch



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LEGEND

SOIL BOUNDARY

D SOIL GROUP LABEL

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

S/C PLAN # 59832
GRADING PERMIT # 9386-2017

Revisions

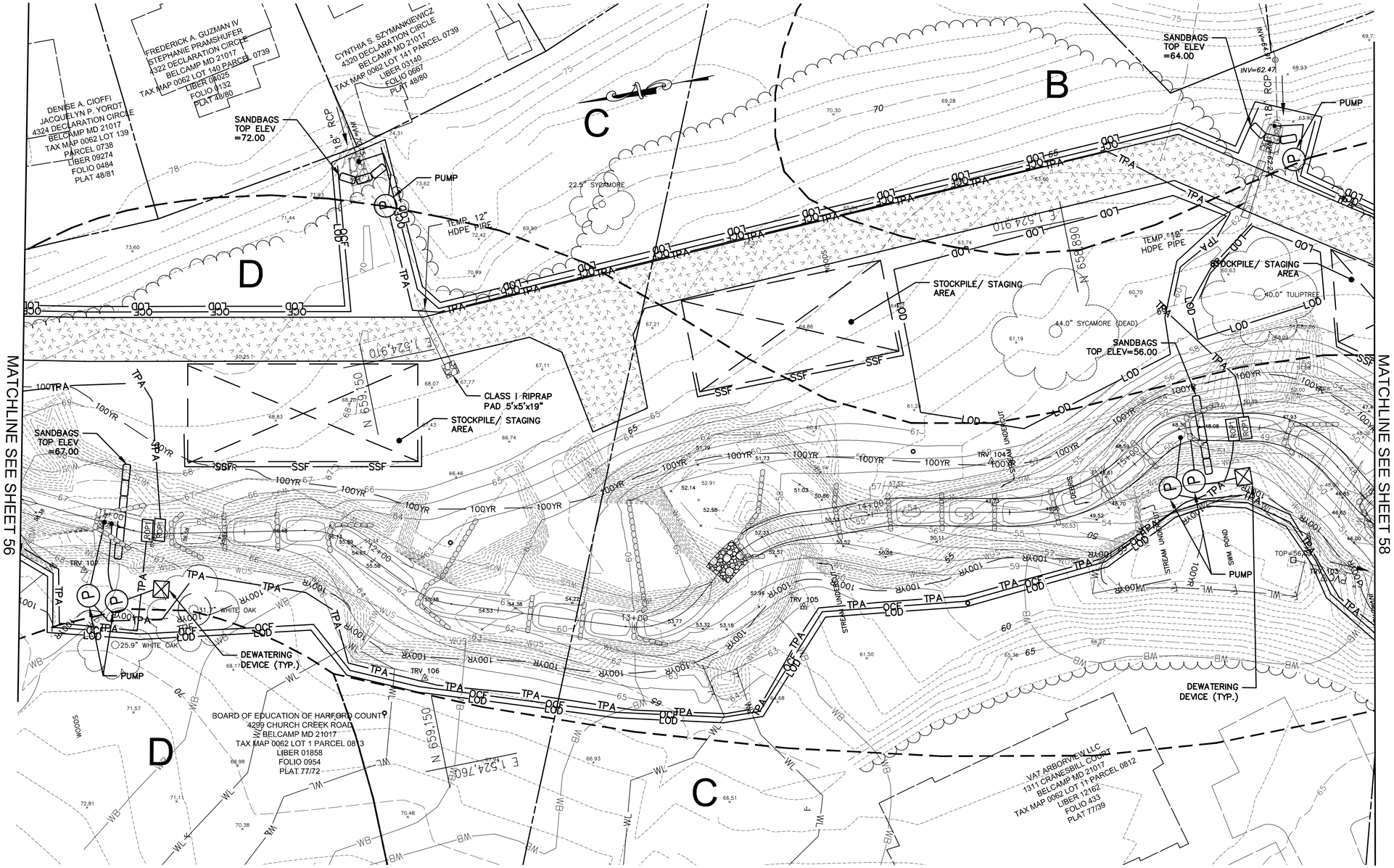
HARFORD COUNTY, MARYLAND

EROSION AND SEDIMENT CONTROL PLAN - STREAM

Drawn By :	LBT	Contract No :	DP1602779
Designed By :	MCB	Scale :	1"=20'
Reviewed By :	GWF	Sheet	56 Of 78
		Date :	2/17/2022

EP-A2

SCALE 1 inch



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LEGEND

D — SOIL GROUP LABEL

--- SOIL BOUNDARY

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
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EG-SWMENG-000747-2016

S/C PLAN # 59832
GRADING PERMIT # 9386-2017

Revisions

HARFORD COUNTY, MARYLAND

EROSION AND SEDIMENT CONTROL PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 57 Of 78
Date : 2/17/2022

EP-A3

TAX MAP :
ADC MAP :
HCG BILLING ID No.:
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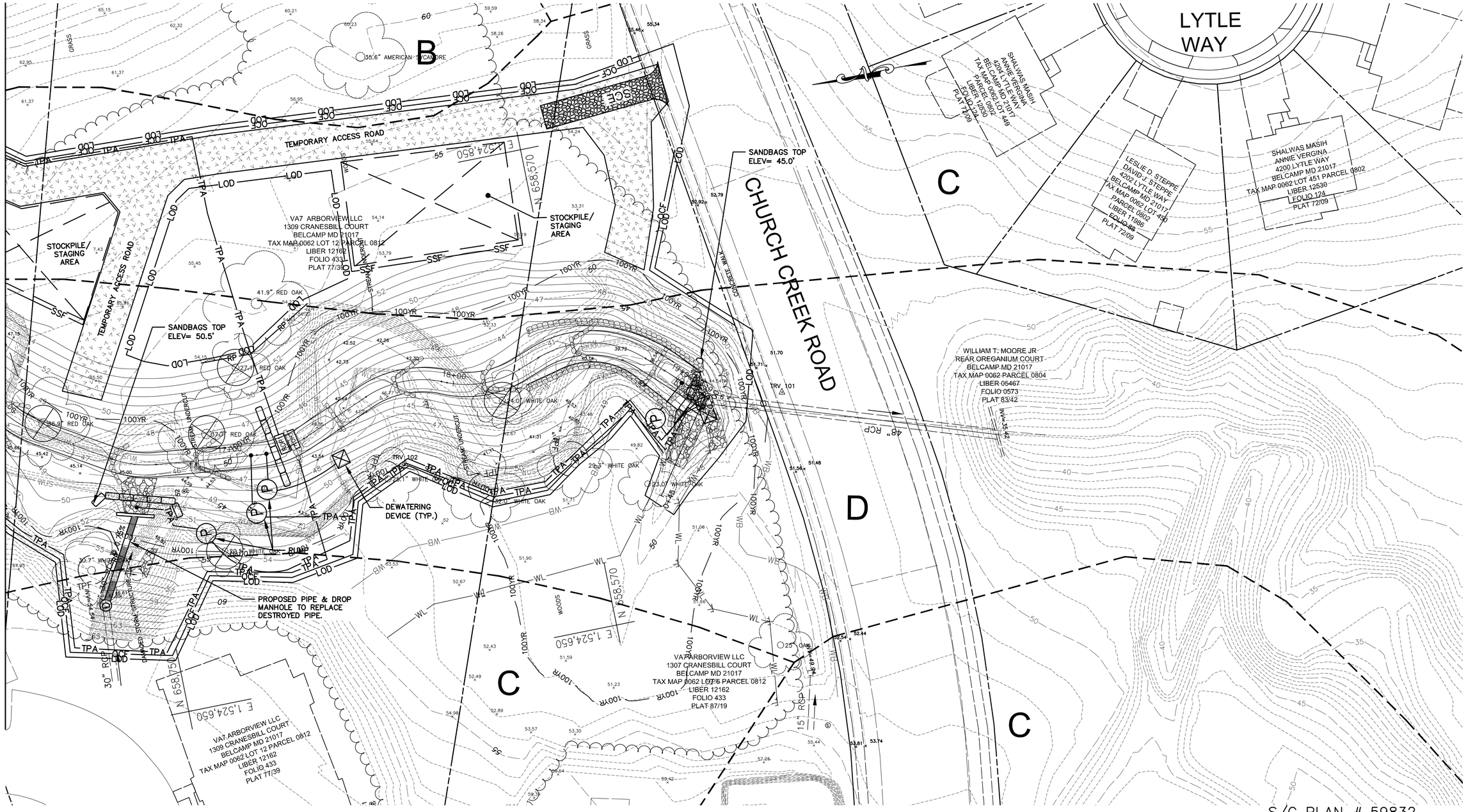
SCALE: 1 inch



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LEGEND

D — SOIL BOUNDARY / SOIL GROUP LABEL

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
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EG-SWMENG-000747-2016

S/C PLAN # 59832
GRADING PERMIT # 9386-2017

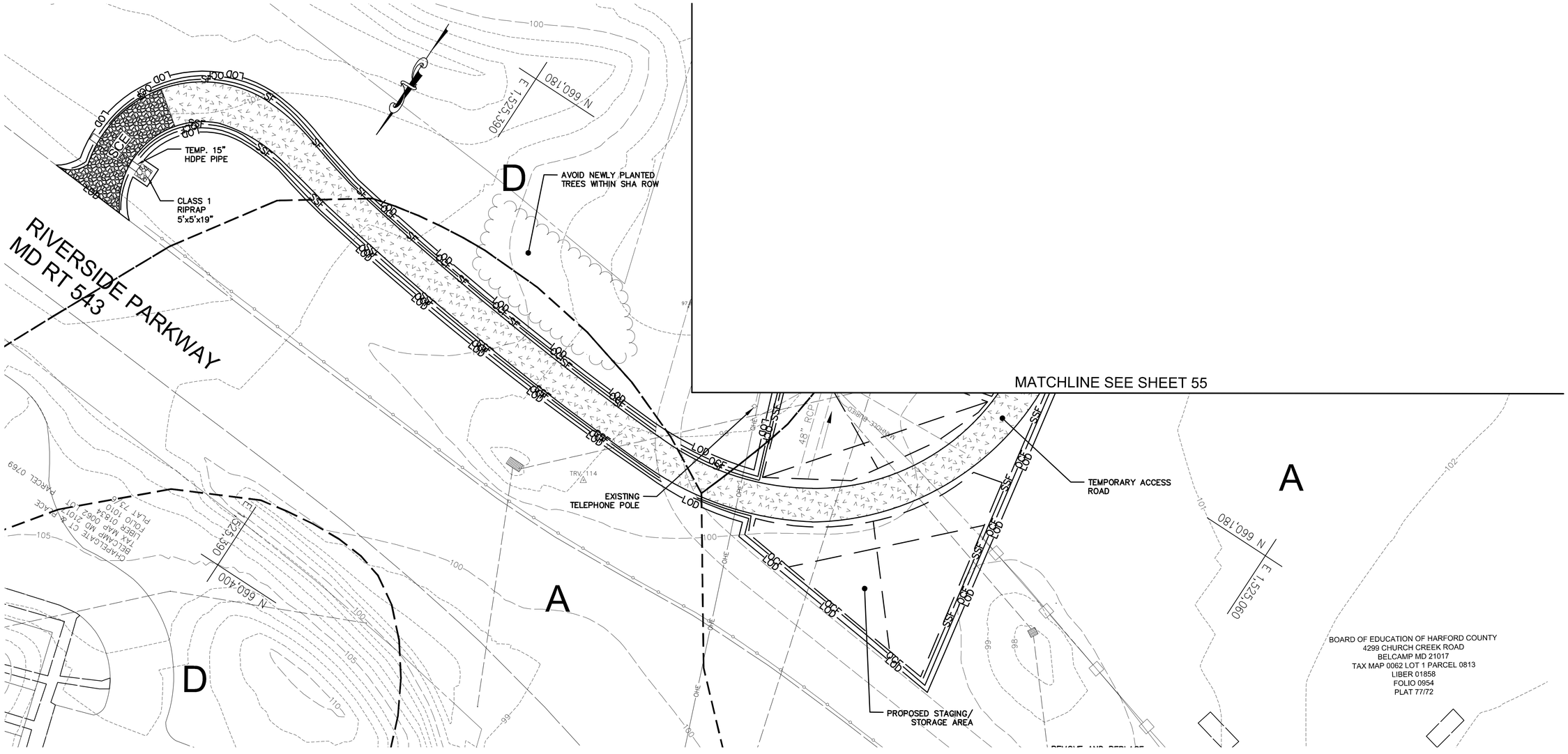
Revisions

HARFORD COUNTY, MARYLAND

EROSION AND SEDIMENT CONTROL PLAN - STREAM

Drawn By :	LBT	Contract No :	DP1602779
Designed By :	MCB	Scale :	1"=20'
Reviewed By :	GWF	Sheet	58 Of 78
		Date :	2/17/2022

EP-A4



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LEGEND

SOIL BOUNDARY

D — SOIL GROUP LABEL

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG–SWMENG–000747–2016

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Revisions

HARFORD COUNTY, MARYLAND

EROSION AND SEDIMENT CONTROL PLAN - STREAM

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Designed By : MCB
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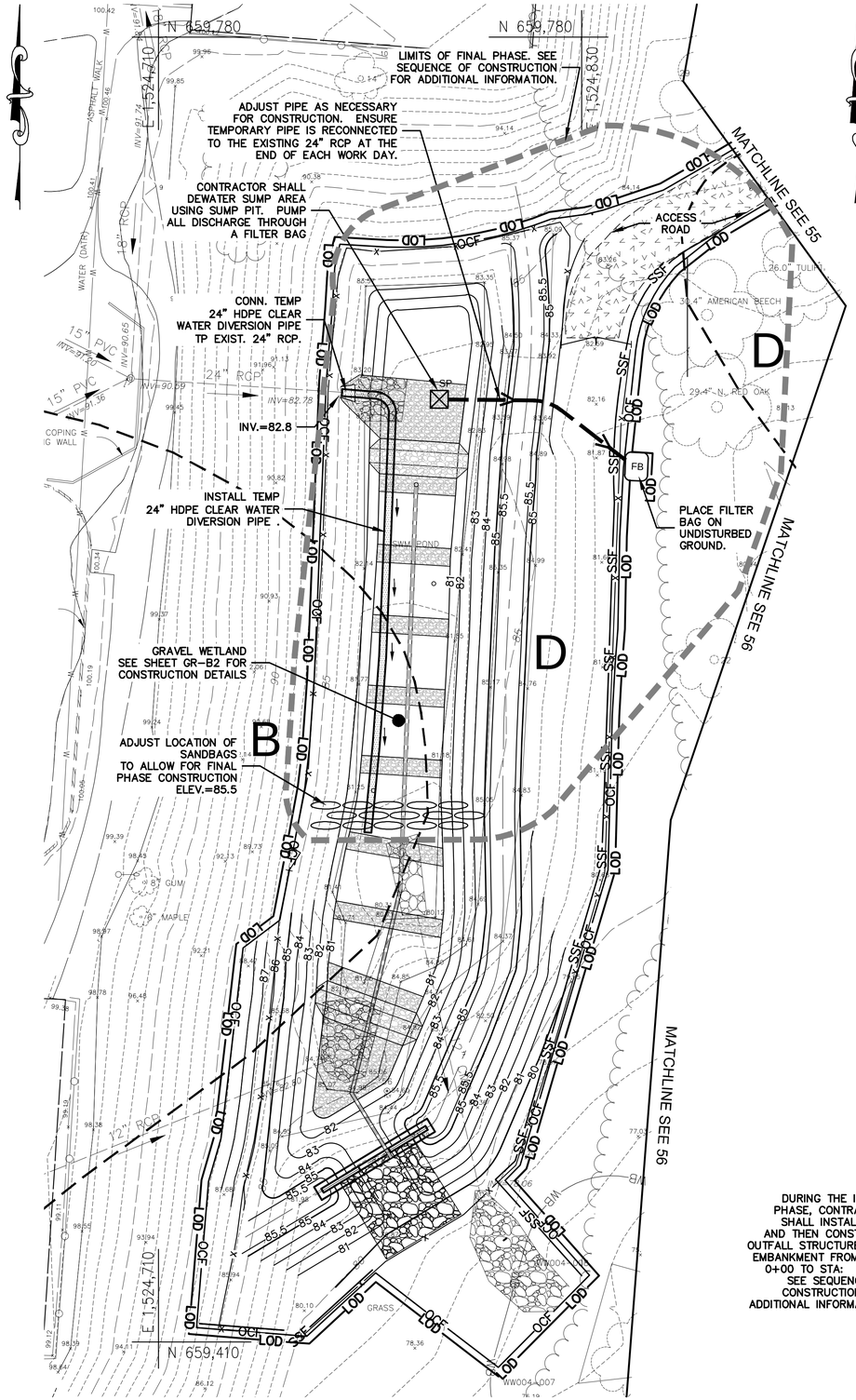
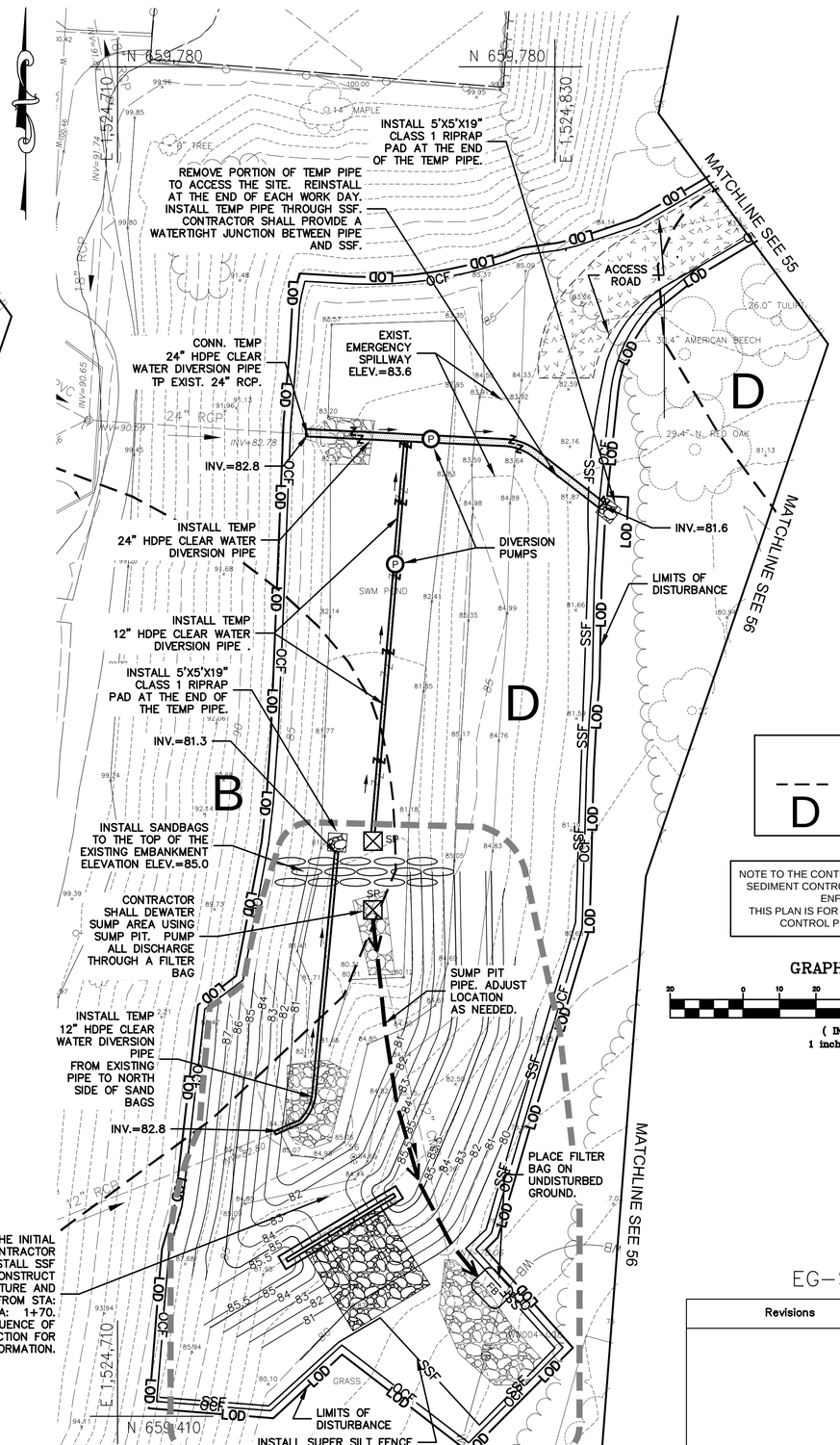
Contract No : DP1602779
Scale : 1"=20'
Sheet 59 Of 78
Date : 2/16/2022

EP-A5

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch





SEQUENCE OF CONSTRUCTION – GRAVEL WETLAND

GENERAL NOTES:

A. THE CONTRACTOR SHALL NOTIFY THE HARFORD COUNTY INSPECTOR AT LEAST SEVEN (7) DAYS PRIOR TO THE INSTALLATION OF WORK.

B. THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.

C. SEE SHEET ER-A3 FOR ADDITIONAL GENERAL NOTES AND SEQUENCE OF CONSTRUCTION FOR THE STREAM RESTORATION PORTION OF THE PROJECT.

D. THE CONTRACTOR SHALL NOTIFY THE CERTIFYING ENGINEER 1-WEEK IN ADVANCE OF CONSTRUCTION TO COORDINATE NECESSARY SWM AS-BUILT CERTIFICATION SITE VISITS.

GRAVEL WETLAND – INITIAL PHASE

1. INSTALL SSF ALONG THE EASTERN SIDE OF THE GRAVEL WETLAND AS SHOWN ON THIS SHEET.
2. ONCE SUPER SILT FENCE IS INSTALLED, INSTALL CLEAR WATER TEMPORARY DIVERSION PIPES AND SANDBAGS, SUMP PIT AND SUMP PIT PIPE, AND FILTER BAG AS INDICATED.
3. ONCE INSTALLATION OF ALL EROSION CONTROL MEASURES IS COMPLETED, BEGIN WITH GRADING FOR REMOVAL OF 12" CMP AND ASSOCIATED RIP-RAP.
4. WITH THE APPROVAL FROM THE SEDIMENT CONTROL INSPECTION, DEMOLISH EXISTING OUTFALL PIPE AND RIPRAP.
5. ONCE ITEMS ARE DEMOLISHED, CONTINUE WITH GRADING FOR GRAVEL WETLAND FACILITY AND WEIR WALL CONSTRUCTION.
6. CONSTRUCT CLAY CUT-OFF TRENCH, CLAY CORE TRENCH, WEIR WALL, OUTFALL PIPE, AND EMBANKMENT FROM STATION 0+00 TO STATION 1+70.
7. ONCE ITEM 6 CONSTRUCTION IS COMPLETE, CONTRACTOR CAN PROCEED TO THE FINAL PHASE.

GRAVEL WETLAND – FINAL PHASE

8. ADJUST LOCATION OF SANDBAGS TO ALLOW FOR FINAL PHASE OF CONSTRUCTION. INSTALL / ADJUST SUMP PIT, SUMP PIT PIPES LOCATION AND FILTER BAG LOCATION OF CLEAR WATER DIVERSION PIPES AS SHOWN ON FINAL PHASE PLAN.. ENSURE POSITIVE DRAINAGE IN CLEAR WATER DIVERSION PIPES. INSTALL PUMP AS NECESSARY TO ENSURE CLEAR WATER DIVERSION PIPE FUNCTIONING.
9. REMOVE PORTION OF SUPER SILT FENCE DOWNSTREAM OF NEW OUTFALL. NEW OUTFALL STRUCTURE SHALL BE UTILIZED DURING FINAL PHASE TO CONVEY CLEAR WATER FROM THE SITE.
10. CONTRACTOR CAN BEGIN CONSTRUCTION OF THE REMAINING GRAVEL WETLAND. THE CONTRACTOR SHALL PROTECT INSTALLED MATERIALS FROM GETTING CONTAMINATED WITH SEDIMENT. INSTALL TEMPORARY FILTER CLOTH MATERIAL OVER THE NEWLY INSTALLED WORK AT THE END OF EACH WORK DAY.
11. ONCE THE GRAVEL WETLAND IS CONSTRUCTED, THE CONTRACTOR SHALL PREPARE AN AS-BUILT SURVEY OF THE COMPLETED CONSTRUCTION AND PROVIDE TO THE OWNER AND CERTIFYING ENGINEER FOR REVIEW. THE CONTRACTOR SHALL MAKE ALL NECESSARY ADJUSTMENTS TO THE CONSTRUCTION TO ENSURE IT COMPLIES WITH THE APPROVED PLANS. THE CONTRACTOR SHALL RESURVEY ANY UPDATED ITEMS.
12. WITH THE APPROVAL FROM THE OWNER, CERTIFYING ENGINEER AND SEDIMENT CONTROL INSPECTOR, CONTRACTOR CAN PROCEED WITH THE FINAL LANDSCAPE INSTALLATION, CHAIN LINK FENCE INSTALLATION AND SITE RESTORATION.
13. ONCE ALL CONSTRUCTION IS COMPLETE, STABILIZE ALL DISTURBED AREAS.
14. CONTRACTOR SHALL OBTAIN APPROVAL FROM INSPECTOR PRIOR TO THE REMOVAL OF ANY SEDIMENT CONTROL DEVICES AND DIVERSION PIPES.
15. WITH THE APPROVAL OF SEDIMENT CONTROL INSPECTOR, REMOVE ALL SEDIMENT CONTROL DEVICES AND PERMANENTLY STABILIZE ALL DISTURBED AREAS.

LEGEND

SOIL BOUNDARY

D SOIL GROUP LABEL

NOTE TO THE CONTRACTOR: "EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED". THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

a. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

b. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

EG-SWMENG-000747-2016

S/C PLAN # 59832
GRADING PERMIT # 9386-2017

Revisions

HARFORD COUNTY, MARYLAND

EROSION AND SEDIMENT CONTROL PLAN - SWM

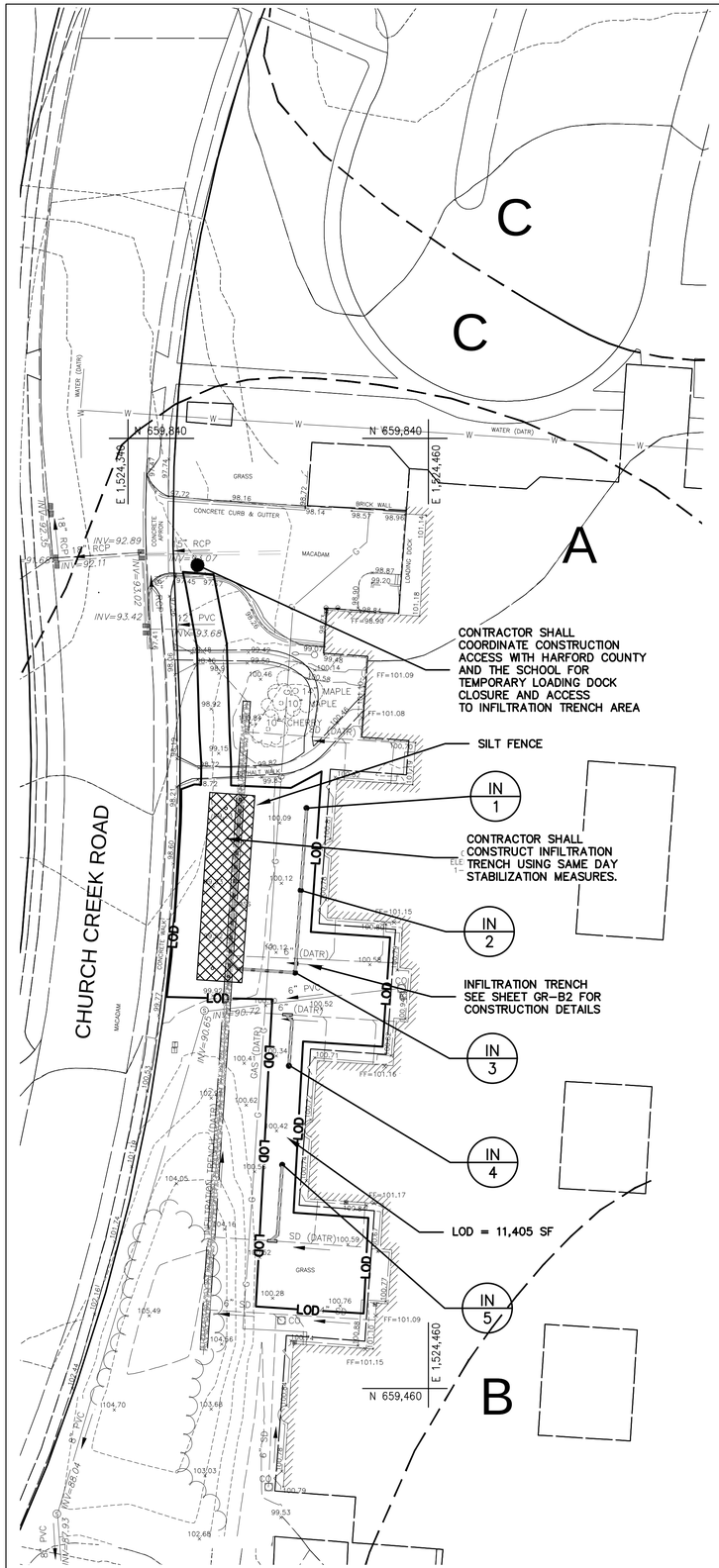
Drawn By : JS / MTB
Designed By : JS / MTB
Reviewed By : MAE

Contract No : DP1602779
Scale : 1"=30'
Sheet 60 Of 78
Date : 2/16/2022

EP-B1

SCALE: 1 Inch

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:



LEGEND

– – –	SOIL BOUNDARY
D	SOIL GROUP LABEL

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

a. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

b. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING

EROSION CONTROL NOTES:

1. CONTRACTOR SHALL CLEAR ALL STREETS FREE OF SEDIMENT AT THE END OF EACH WORK DAY. ALL EFFORTS ARE TO BE MADE TO PREVENT SEDIMENT FROM GETTING ON THE STREETS. ALL SEDIMENT SPILLED, DROPPED OR TRACKED ONTO THE ROAD MUST BE REMOVED IMMEDIATELY BY VACUUMING, SCRAPING OR SWEEPING. WHEN WASHING WATER IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE THAT DRAINS TO AN APPROVED SEDIMENT CONTROL DEVICE.

2. ALL AREAS SHALL BE STABILIZED AT THE END OF EACH WORK DAY WITH SOIL STABILIZATION MATTING UNLESS THE RUNOFF DRAINS TO AN APPROVED EROSION CONTROL DEVICE.

SEQUENCE OF CONSTRUCTION –LID/BMP'S

GENERAL NOTES:

A. THE CONTRACTOR SHALL NOTIFY THE HARFORD COUNTY INSPECTOR AT LEAST SEVEN (7) DAYS PRIOR TO THE INSTALLATION OF WORK.

B. THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.

C. SEE SHEET ER-A3 FOR ADDITIONAL GENERAL NOTES AND SEQUENCE OF CONSTRUCTION FOR THE STREAM RESTORATION PORTION OF THE PROJECT.

D. THE CONTRACTOR SHALL NOTIFY THE CERTIFYING ENGINEER 1-WEEK IN ADVANCE OF CONSTRUCTION TO COORDINATE NECESSARY SWM AS-BUILT CERTIFICATION SITE VISITS.

LID BMP'S

1. INSTALL MOT MEASURES AND COORDINATE LOADING DOCK CLOSURE WITH COUNTY.
2. DEMOLISH ITEMS INDICATED AND CONSTRUCT INFILTRATION TRENCH, ASSOCIATED STORM DRAINAGE DRAIN BASIN, PIPING AND FINE GRADE THE AREAS INDICATED.
3. STABILIZE ALL DISTURBED AREAS AT THE END OF EACH WORK DAY.
4. THE CONTRACTOR SHALL PREPARE AN AS-BUILT SURVEY OF THE COMPLETED CONSTRUCTION AND PROVIDE TO THE OWNER AND CERTIFYING ENGINEER FOR REVIEW. THE CONTRACTOR SHALL MAKE ALL NECESSARY ADJUSTMENTS TO THE CONSTRUCTION TO ENSURE IT COMPLIES WITH THE APPROVED PLANS. THE CONTRACTOR SHALL RESURVEY ANY UPDATED ITEMS.
10. WITH THE APPROVAL FROM THE OWNER, CERTIFYING ENGINEER AND SEDIMENT CONTROL INSPECTOR, CONTRACTOR CAN PROCEED WITH THE FINAL LANDSCAPE INSTALLATION AND SITE RESTORATION.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft

NOTE TO THE CONTRACTOR: "EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED"
THIS PLAN IS FOR EROSION & SEDIMENT CONTROL PURPOSES ONLY.

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

EG-SWMENG-000747-2016

S/C PLAN # 59832
GRADING PERMIT # 9386-2017

Revisions

HARFORD COUNTY, MARYLAND

EROSION AND SEDIMENT CONTROL PLAN - SWM

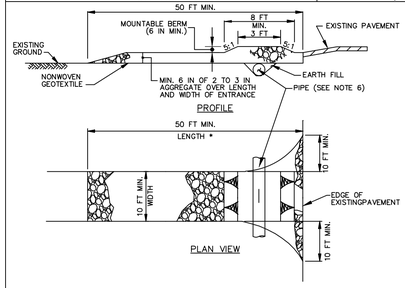
Drawn By :	JS / MTB	Contract No :	DP1602779
Designed By :	JS / MTB	Scale :	1"=30'
Reviewed By :	MAE	Sheet	61 Of 78
		Date :	2/16/2022

EP-B2

SCALE: 1 inch

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

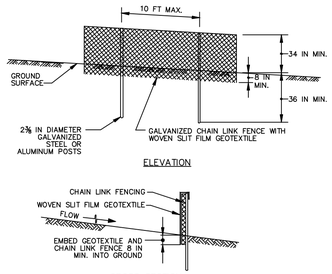
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

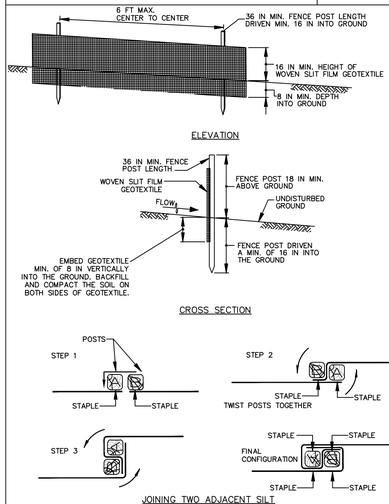
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF



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

2 OF 2

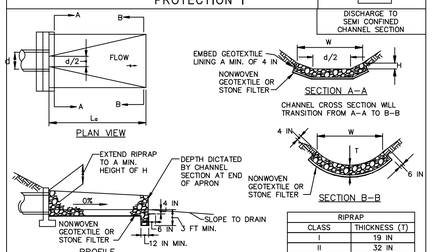
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL D-4-1-A ROCK OUTLET PROTECTION I

STANDARD SYMBOL: ROP1

DISCHARGE TO SEMI CONFINED CHANNEL SECTION



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

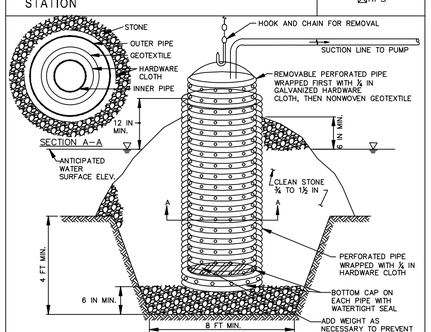
1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF THE RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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-1 REMOVABLE PUMPING STATION

STANDARD SYMBOL: RPS



CONSTRUCTION SPECIFICATIONS

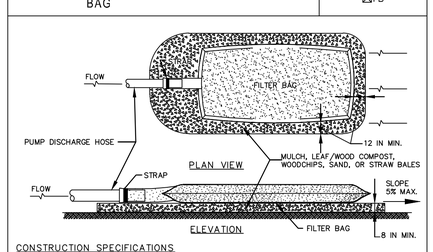
1. USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
2. USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
3. WRAP EACH PIPE WITH ½ INCH GALVANIZED HARDWARE 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-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

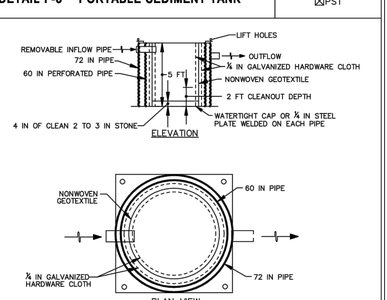
6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

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 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, ¼ 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

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

EG-SWMENG-000747-2016

S/C PLAN # 59832

GRADING PERMIT # 9386-2017

Revisions

HARFORD COUNTY, MARYLAND

SEDIMENT CONTROL NOTES AND DETAILS - STREAM

Drawn By : LBT

Designed By : MCB

Reviewed By : GWF

Contract No : DP1602779

Scale : NOT TO SCALE

Sheet 62 Of 78

Date : 2/16/2022

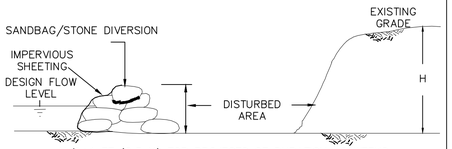
ER-A1

SCALE: 1 inch

MARYLANND'S GUIDELINES TO WATERWAY CONSTRUCTION

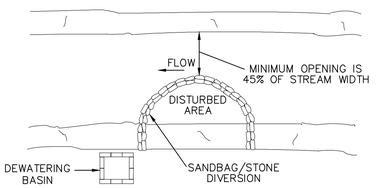
DETAIL 1.5: SANDBAG/STONE DIVERSION

TRANSVERSE SECTION VIEW

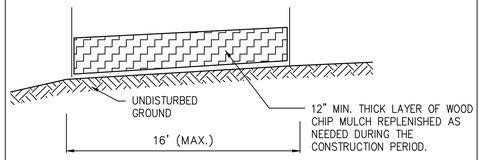


H/2+1 FT (0.3 M) FOR PROJECTS OF DURATION 2 WEEKS;
2-YEAR FLOOD ELEVATION FOR PROJECTS OF LONGER DURATION

PLAN VIEW



TEMPORARY INSTREAM CONSTRUCTION MEASURES	*REVISED NOVEMBER 2000 PAGE 1.5 - 3*	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



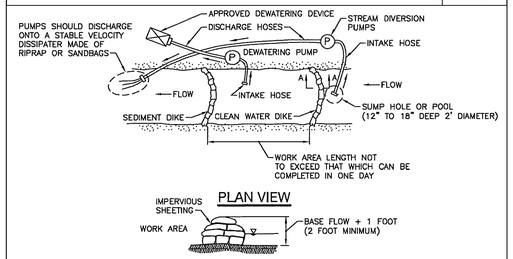
ACCESS WAY
CROSS-SECTION

NOTES:
1. ACCESS ROUTES TO BE FIELD LOCATED WITH HARFORD COUNTY INSPECTORS AT PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL SEQUENCE CONSTRUCTION SUCH THAT NO EQUIPMENT WILL IMPACT AREAS TO BE PROTECTED PRIOR TO MULCH PLACEMENT.
3. CONTRACTOR SHALL MAINTAIN MULCH MAT THROUGHOUT CONSTRUCTION PERIOD.

MULCH MAT DETAIL
NOT TO SCALE

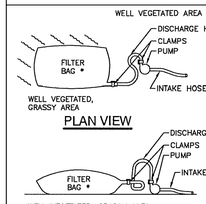
DETAIL 3.5

DETAIL: 4.1



SECTION A-A

PUMP-AROUND PRACTICE DETAIL
NOT TO SCALE

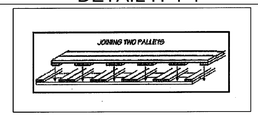


ELEVATION VIEW

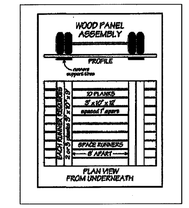
PUMPED WATER FILTER BAG DETAIL
NOT TO SCALE

NOTES:
1. FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
2. A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME ½ FULL. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED.
3. BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREAS, AND DISCHARGED ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE FLOW PATH SHALL BE PROVIDED. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%.
4. THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED.
5. THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR ½ THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHOULD BE FLOATING AND SCREENED.
6. FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

DETAIL H-4-4



1. MINIMIZE SPACING BETWEEN PANELS OR PALLETS. CONNECT WITH QUICK LINKS OR OTHER HEAVY-DUTY CONNECTORS FOR EXTRA STABILITY. (SOME WOOD PALLETS ARE DESIGNED TO INTERCONNECT DURING INSTALLATION.
2. IF ADDITIONAL TRACTION IS NEEDED, USE EXPANDED METAL GRATING OR SIMILAR MATERIALS ON TOP OF THE WOOD PANELS OR PALLETS.
3. SIZE WOOD PANELS AND PALLETS TO MEET ANTICIPATED LOADS, SOIL STRENGTH, AND INSTALLATION EQUIPMENT. YOU MAY NEED ADDITIONAL SIZE ON VERY WEAK SOILS WITH LOW BEARING STRENGTH (E.G., MUCK OR PEAT) TO SPREAD WEIGHT OVER A LARGER AREA.



1. USE 3-INCH THICK BY 10-INCH WIDE BY 12-FEET LONG LUMBER FOR PLANKS. ALIGN PLANKS PARALLEL TO EACH OTHER.
2. NAIL 2 OR 3 BOARDS, EACH MEASURING 3 INCHES BY 10 INCHES BY 9 FEET, PERPENDICULAR TO THE PLANKS (USE RING-SHANK OR SPIRAL SPIKES). THESE ARE RUNNERS.
3. LEAVE A 1-INCH GAP BETWEEN THE PLANKS TO ALLOW WATER TO RUN THROUGH. USE AN AIR GUN OR COUNTERSUNK BOLTS TO REDUCE NAIL WITHDRAWAL DURING USE.
4. ADD EYE HOOKS AND LOOPED CABLES OR OTHER MATERIALS TO THE WOOD PANEL. THIS FACILITATES LIFTING AND INTERCONNECTION ONCE THEY ARE INSTALLED.
5. SMOOTH OUT HIGH SPOTS AND FILL RUTS. LEAVE ROOTS AND VEGETATION MATS IN PLACE TO ADD STABILITY.
6. COVER ENTIRE CROSSING AREA WITH NONWOVEN GEOTEXTILE.

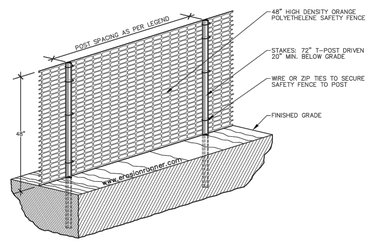
WETLAND PROTECTION MATTING DETAIL
SCALE: NONE

DETAIL H-4-5 ORANGE CONSTRUCTION FENCING

48" Safety Fence, 72" T-Posts

LEGEND

SAF12	48" ORANGE FENCE, 12 FEET O.C.
SAF11	48" ORANGE FENCE, 11 FEET O.C..
SAF10	48" ORANGE FENCE, 10 FEET O.C.
SAF9	48" ORANGE FENCE, 9 FEET O.C.
SAF8	48" ORANGE FENCE, 8 FEET O.C..
SAF7	48" ORANGE FENCE, 7 FEET O.C.
SAF6	48" ORANGE FENCE, 6 FEET O.C.



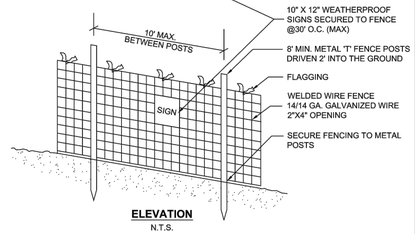
www.erosionrunner.com

1. ALL SENSITIVE AREAS SHALL BE PROTECTED AS PER PLAN.
2. ALL TREES IN THE CONSTRUCTION AREA NOT SPECIFICALLY DESIGNATED FOR REMOVAL SHALL BE PRESERVED AND PROTECTED WITH HIGH VISIBILITY FENCE AS PER PLAN.
3. WHEN PRACTICABLE, INSTALL HIGH VISIBILITY 3 FEET OUTSIDE OF THE DRIP LINE OF THE TREE.
4. SAFETY FENCE SHOULD BE FASTENED SECURELY TO THE T-POSTS.
5. THE FENCING MUST REMAIN IN PLACE DURING ALL PHASES OF CONSTRUCTION; ANY CHANGE OF THE PROTECTIVE FENCING MUST BE APPROVED.

TREE PROTECTION AREA
NO DISTURBANCE PERMITTED BEYOND THIS POINT

AREA DE PROTECCION DE ARBOLES
NO SE PERMITE TRABAJAR NI DEJAR MATERIALES EN EL AREA ATRAS DE ESTE ROTULO

STANDARD SYMBOL
OCF



ELEVATION
N.T.S.

NOTES:

1. PRACTICE MAY BE COMBINED WITH SEDIMENT CONTROL FENCING.
2. LOCATION AND LIMITS OF FENCING SHALL BE COORDINATED IN FIELD WITH ARBORIST.
3. BOUNDARIES OF PROTECTION AREA SHOULD BE STAKED PRIOR TO INSTALLING PROTECTIVE DEVICE.
4. ROOT DAMAGE SHOULD BE AVOIDED.
5. PROTECTIVE SIGNAGE IS REQUIRED.
6. FENCING SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION FENCE
The Maryland-National Capital Park and Planning Commission
Montgomery County Department of Parks
Detail No.
JUNE 2007

TAX MAP :
ADC MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

EG-SWMENG-000747-2016
S/C PLAN # 59832
GRADING PERMIT # 9386-2017

Revisions	HARFORD COUNTY, MARYLAND
	SEDIMENT CONTROL NOTES AND DETAILS - STREAM
	Drawn By : LBT — Contract No : DP1602779
	Designed By : MCB — Scale : NOT TO SCALE
	Reviewed By : GWF — Sheet 63 Of 78
	Date : 2/16/2022 — ER-A2

SCALE 1 inch

HARFORD COUNTY STANDARD EROSION & SEDIMENT CONTROL NOTES

1. A GRADING UNIT OF 20 ACRES IS THE MAXIMUM CONTIGUOUS AREA ALLOWED TO BE GRADED AT A GIVEN TIME.
2. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PROCEEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY DPW. NO MORE THAN THIRTY ACRES CUMULATIVELY MAY BE DISTURBED AT ANY GIVEN TIME.
3. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. FURTHER, NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL REQUIRED PERMITS HAVE BEEN OBTAINED.
4. THE LIMITS OF DISTURBANCE SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO GRADING OF THE SITE TO ENSURE COMPLIANCE WITH APPROVED PLANS. ALL FOREST RETENTION AREAS WILL BE DELINEATED WITH BLAZE ORANGE FENCE AS WELL AS ANY SWM INFILTRATION PRACTICE PRIOR TO ANY CLEARING. WORK BEYOND THE LIMITS OF DISTURBANCE AND IN ANY AREA INSIDE THE FOREST RETENTION AND SWM INFILTRATION AREA IS CONSIDERED TO BE A VIOLATION OF THIS PLAN.
5. ALL SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. UPON COMPLETION OF THE INSTALLATION OF PERIMETER SEDIMENT CONTROL PRACTICES THE SITE MUST BE INSPECTED BY THE DEPARTMENT OF PUBLIC WORKS (DPW). NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT THE APPROVAL FROM DPW.
6. ALL POINTS OF INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT TRACKING OF MUD INTO PUBLIC WAYS. DURING CONSTRUCTION, EVERY MEANS WILL BE TAKEN TO CONTROL SOIL EROSION AND SILTATION. IF NECESSARY A WASH RACK MAY NEED TO BE ESTABLISHED.
7. EARTH DIKES, SEDIMENT TRAPS, ETC. WILL BE LOCATED AS SHOWN ON THESE DRAWINGS. FIELD CHANGES AND MINOR ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. THE SITE INSPECTOR PRIOR TO INSTALLATION MUST APPROVE ALL SUCH CHANGES. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE RE-APPROVAL BY THE HARFORD SOIL CONSERVATION DISTRICT.
8. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
   a) THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
   b) SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT SITE.
9. DUST CONTROL MUST BE MANAGED AS PART OF ALL SEDIMENT CONTROL PLANS. FAILURE TO DO SO IS A VIOLATION OF THIS PLAN.
10. SEDIMENT BASINS MUST BE BUILT TO DESIGN SPECIFICATIONS SHOWN ON THE PLAN. IF THE BASIN IS TO BE USED AS A FUTURE SWM FACILITY, THE BASIN WILL BE BUILT IN ACCORDANCE WITH THE LATEST MD-378 STANDARDS AND SPECIFICATIONS. SPECIFIED MATERIALS MUST BE USED. NO CHANGES OR MODIFICATIONS WILL BE MADE WITHOUT WRITTEN AUTHORIZATION OF THE HARFORD SOIL CONSERVATION DISTRICT.
11. TEMPORARY FENCING SHALL BE PLACED AROUND ALL SEDIMENT BASINS, TRAPS, AND PONDS DURING CONSTRUCTION AND SITE GRADING.
12. AT THE END OF EACH WORKING DAY ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT OPERATIONAL. A WEEKLY LOG WILL BE KEPT IN ACCORDANCE WITH NOI/NPDES REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES.
13. ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS DURING ALL PHASES OF ROAD CONSTRUCTION TO ENSURE POSITIVE FLOW TO TRAPS AND OR BASINS.
14. CUT AND/OR FILL SHALL BE DONE IN CONFORMANCE WITH 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR LAND GRADING.
15. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.
16. OFF-SITE WASTE OR BORROW AREAS SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE IMPORT OR EXPORT OF MATERIAL TO/FROM THE PROJECT SITE.
17. ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON THE PUBLIC RIGHT-OF-WAY SHALL BE IMMEDIATELY REMOVED.
18. STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
19. TOPSOIL, LIMING, FERTILIZING, SEEDING, MULCHING, SOD, ETC. ARE ALL ESSENTIAL PARTS OF THE SEDIMENT CONTROL PLAN AND MUST BE COMPLETED ALONG WITH ALL OTHER PRACTICES.
20. TRAPS TO BE REMOVED SHALL BE DEWATERED AS PER THE 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
21. PRIOR TO REMOVAL OF TRAPS OR CONVERSION OF SEDIMENT BASINS TO SWM FACILITIES, THE STORM DRAINS WILL BE FLUSHED.
22. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS FOR WHICH THE PRACTICES WERE INSTALLED HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF THE DPW INSPECTOR. ALL DISTURBED AREAS RESULTING FROM THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL PRIOR TO INSPECTOR'S APPROVAL CONSTITUTES A VIOLATION.

SEQUENCE OF CONSTRUCTION

REFER TO 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR STANDARD NOTES, DETAILS, AND FOR THE INITIAL SEQUENCE OF CONSTRUCTION NOT SPECIFICALLY IDENTIFIED IN THE SEQUENCE OF CONSTRUCTION BELOW.

CHURCH CREEK STREAM RESTORATION:

PRIOR TO CLEARING TREES, INSTALLING SEDIMENT CONTROL MEASURES, OR GRADING, A PRE-CONSTRUCTION MEETING MUST BE CONDUCTED ON-SITE WITH THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS, SEDIMENT CONTROL INSPECTOR (48 HOURS NOTICE) THE OWNERS REPRESENTATIVE, AND THE SITE ENGINEER.

1. THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO CLEARING OF TREES, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.
2. WITH APPROVAL OF DEPARTMENT OF PUBLIC WORKS AND MD STATE HIGHWAY ADMINISTRATION, INSTALL THE STABILIZED CONSTRUCTION ENTRANCES OFF OF RIVERSIDE PARKWAY AND CHURCH CREEK ROAD AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLANS AND MAINTENANCE OF TRAFFIC PLANS. CONTRACTOR SHALL USE FLAGGERS AS NECESSARY FOR WALKING AND BIKE PATH TRAFFIC.
3. INSTALL PERIMETER EROSION AND SEDIMENT CONTROL DEVICES (SSF, SF, SCE, TEMP. PIPES, TEMP. RIPRAP, SANDBAGS, PUMPS AND FILTER BAGS) AS SHOWN ON THE ESC PLANS AND SPECIFIED IN GENERAL NOTES.
4. ONCE THE SEDIMENT CONTROL DEVICES ARE INSTALLED, THE CONTRACTOR MUST OBTAIN WRITTEN APPROVAL FROM SEDIMENT CONTROL INSPECTOR BEFORE PROCEEDING WITH ANY GRADING OR CONSTRUCTION.
5. GRADE FOR AND INSTALL TEMPORARY ACCESS ROADS AND STAGING AREAS.
6. THE STREAM RESTORATION, GRAVEL WETLAND AND STORMWATER MANAGEMENT FACILITIES CAN BE CONSTRUCTED INDEPENDENTLY AND IN ANY ORDER PREFERED BY THE CONTRACTOR FOLLOWING THE EROSION AND SEDIMENT CONTROL AND MAINTENANCE OF TRAFFIC PLANS.

GRAVEL WETLAND:

7. ACCESS IS FROM RIVERSIDE PARKWAY AND IS SHARED WITH THE UPSTREAM RESTORATION ACCESS.
8. SEE SHEET EP-B1 FOR DETAILED SEQUENCE OF CONSTRUCTION FOR THE LID/ BMP'S.

SWM/ESD SITES:

9. ACCESS TO THESE SITES ARE FROM CHURCH CREEK ROAD AND THE SCHOOL LOADING DOCK AREA. THE OVERALL DISTURBANCE IN THESE AREAS IS LESS THAN 5000 SF AND A STABILIZED CONSTRUCTION ENTRANCE IS NOT NECESSARY FOR WORK IN THIS AREA. THE CONTRACTOR IS RESPONSIBLE TO KEEP ALL SEDIMENT AND SEDIMENT LADEN RUNOFF FROM REACHING THE ROADWAY OR STORM DRAIN SYSTEM. SEE SHEET EP-B1 FOR DETAILED SEQUENCE OF CONSTRUCTION FOR THE LID/ BMP'S.

STREAM RESTORATION:

10. THERE ARE 2 PROPOSED CONSTRUCTION ENTRANCES FOR THE STREAM PORTION OF CONSTRUCTION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT THE APPROPRIATE PUMP AROUND AND SEDIMENT CONTROL PRACTICES. THE CONTRACTOR SHALL SEQUENCE THE WORK TO BALANCE THE CUT/FILL AND MINIMIZE THE AMOUNT OF SOIL MATERIAL THAT HAS TO BE REMOVED AND BROUGHT ONTO THE SITE.
11. THE UPSTREAM REACH ACCESS IS OFF OF RIVERSIDE PARKWAY AND IS SHARED WITH THE LID/ BMP'S ACCESS. INSTALL SANDBAG DIKES, PUMPS, OUTFALL DIVERSION PIPES AND DEWATERING DEVICES FROM STATION 1+50 TO 6+64 INCLUDING ALL TRIBUTARIES UPSTREAM OF STA. 6+64 WITHIN THE DRY WORKING ZONE.
12. BEGIN STREAM REPAIRS AS SHOWN ON STREAM RESTORATION PLANS, PROFILES, AND DETAILS. UTILIZE DEWATERING PUMP TO DEWATER EXCAVATED AREAS.
13. AFTER COMPLETION OF ALL PROPOSED IMPROVEMENTS, PERMANENTLY STABILIZE ALL DISTURBED AREAS.
14. INSTALL PROPOSED TREES, SHRUBS AND OTHER PLANTINGS AS PER THE PLANTING PLANS AND DETAILS.
15. CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM SEDIMENT CONTROL INSPECTOR PRIOR TO THE REMOVAL OF SEDIMENT CONTROL DEVICES INCLUDING STREAM DIVERSION PUMPS AND STRUCTURES.
16. WITH THE APPROVAL OF SEDIMENT CONTROL INSPECTOR, REMOVE ALL REMAINING SEDIMENT CONTROL DEVICES. REMOVE STREAM DIVERSION PUMPS AND STRUCTURES AND PERMANENTLY STABILIZE ALL DISTURBED AREAS.
17. THE DOWNSTREAM ACCESS IS OFF OF CHURCH CREEK ROAD. INSTALL SANDBAG DIKES, PUMPS, OUTFALL DIVERSION PIPES AND DEWATERING DEVICES FROM STATION 6+64 TO 19+16 INCLUDING ALL TRIBUTARIES UPSTREAM OF STA. 19+16 WITHIN THE DRY WORKING ZONE.
18. REPEAT STEPS 12-16 FOR THIS PORTION OF THE STREAM WORK. BE ADVISED THAT FROM STATION 5+00 THROUGH 8+50 ACCESS TO THE STREAM WILL BE ACHIEVED BY IN-STREAM ROUTING.
19. REMOVE TEMPORARY ACCESS ROAD AND ALL ASSOCIATED STRUCTURES. COMPLETE GRADING AFTER REMOVAL.
20. PERMANENTLY STABILIZE DISTURBED AREAS AFTER ACCESS ROAD REMOVAL.

ENGINEER'S CERTIFICATION

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE 2011 MARYLAND STANDARD AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

DESIGN ENGINEER SIGNATURE

GREGORY FOX
PRINTED NAME

~~02-01-19~~ 02-16-22 GWF
EXPIRATION DATE

31177
REGISTRATION NUMBER

OWNER'S CERTIFICATION

"I/WE HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HARFORD SOIL CONSERVATION DISTRICT OR THEIR AUTHORIZED AGENT(S) OR AS DEEMED NECESSARY."

OWNER / DEVELOPER SIGNATURE

2/24/8
DATE

JOSEPH J. SIEMEK - DIRECTOR DPW
PRINTED NAME AND TITLE

EROSION AND SEDIMENT CONTROL PLAN# 59832

RECOMMENDED FOR APPROVAL:

HARFORD COUNTY, DPW
3-27-18

TECHNICAL CONCURRENCE:

HARFORD SOIL CONSERVATION DISTRICT
2.14.18

APPROVED:

HARFORD SOIL CONSERVATION DISTRICT
3/15/18

UPDATE

EROSION AND SEDIMENT CONTROL PLAN# 59832

RECOMMENDED FOR APPROVAL:

HARFORD COUNTY, DPW

TECHNICAL CONCURRENCE:

HARFORD SOIL CONSERVATION DISTRICT

APPROVED:

HARFORD SOIL CONSERVATION DISTRICT

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

EG-SWMENG-000747-2016

S/C PLAN # 59832 P/80273
GRADING PERMIT # 9386-2017

Revisions	HARFORD COUNTY, MARYLAND
	SEDIMENT CONTROL NOTES AND DETAILS - STREAM
	Drawn By : LBT — Contract No : DP1602779
	Designed By : MCB — Scale : NOT TO SCALE
	Reviewed By : GWF — Sheet 64 Of 78
	Date : 2/16/2022 — ER-A3

PLANTING ZONES

ZONE 1: LIVESTAKE PLANTING AND STREAMSIDE SEEDING AREA

ZONE 4: RIPARIAN TREE, SHRUB AND SEED PLANTING

ZONE 5: TURF SOD

MATCHLINE SEE SHEET 66

MATCHLINE SEE SHEET 66

MATCHLINE SEE SHEET 70

MATCHLINE SEE SHEET 69

BOARD OF EDUCATION OF HARFORD COUNTY
4299 CHURCH CREEK ROAD
BELCAMP MD 21017
TAX MAP 0062 LOT 1 PARCEL 0813
LIBER 01858
FOLIO 0954
PLAT 77/72

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

EG-SWMENG-000747-2016

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

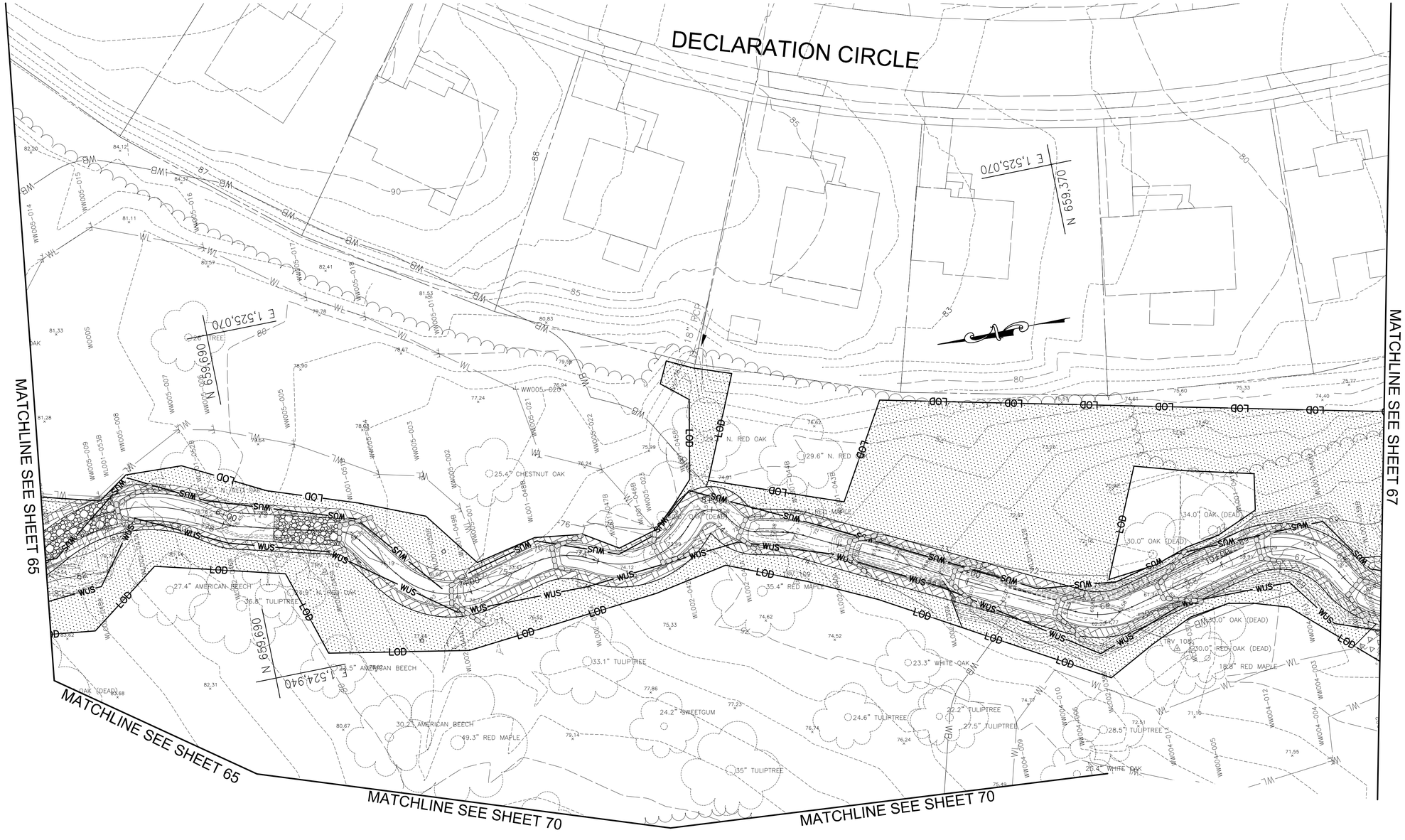
Revisions	HARFORD COUNTY, MARYLAND
	LANDSCAPE PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 65 Of 78
Date : 2/17/2022

LS-A1

SCALE 1 inch



PLANTING ZONES

ZONE 1: LIVESTAKE PLANTING AND STREAMSIDE SEEDING AREA

ZONE 2: STREAMSIDE TREE, SHRUB & SEED PLANTING AREA

ZONE 3: WETLAND TREE, SHRUB AND SEEDING AREA

ZONE 4: RIPARIAN TREE, SHRUB AND SEED PLANTING

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

LANDSCAPE PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 66 Of 78
Date : 2/17/2022

LS-A2

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SCALE: 1 inch

MATCHLINE SEE SHEET 66

MATCHLINE SEE SHEET 68

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

PLANTING ZONES

ZONE 1: LIVESTAKE PLANTING AND STREAMSIDE SEEDING AREA

ZONE 2: STREAMSIDE TREE, SHRUB & SEED PLANTING AREA

ZONE 3: WETLAND TREE, SHRUB AND SEEDING AREA

ZONE 4: RIPARIAN TREE, SHRUB AND SEED PLANTING

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

LANDSCAPE PLAN - STREAM

Drawn By : LBT

Designed By : MCB

Reviewed By : GWF

Contract No : DP1602779

Scale : 1"=20'

Sheet 67 Of 78

Date : 2/17/2022

LS-A3

SCALE: 1 Inch

GROUND COVERS

- ZONE 1: LIVESTAKE PLANTING AND STREAMSIDE SEEDING AREA
- ZONE 3: WETLAND TREE, SHRUB AND SEEDING AREA
- ZONE 4: RIPARIAN TREE, SHRUB AND SEED PLANTING
- ZONE 5: TURF SOD

EG-SWMENG-000747-2016

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Revisions	HARFORD COUNTY, MARYLAND
	LANDSCAPE PLAN - STREAM

Drawn By : LBT	Contract No : DP1602779
Designed By : MCB	Scale : 1"=20'
Reviewed By : GWF	Sheet 68 Of 78
	Date : 2/17/2022

LS-A4

SCALE: 1 inch

RIVERSIDE PARKWAY
MD RT 543

LOD

N 660,180
E 1,525,390

N 660,400
E 1,525,060

MATCHLINE SEE SHEET 65

TRV. 114

OHE

BOARD OF EDUCATION OF HARFORD COUNTY
4299 CHURCH CREEK ROAD
BELCAMP MD 21017
TAX MAP 0062 LOT 1 PARCEL 0813
LIBER 01858
FOLIO 0954
PLAT 77/72

PLANTING ZONES

ZONE 5: TURF SOD

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

EG-SWMENG-000747-2016

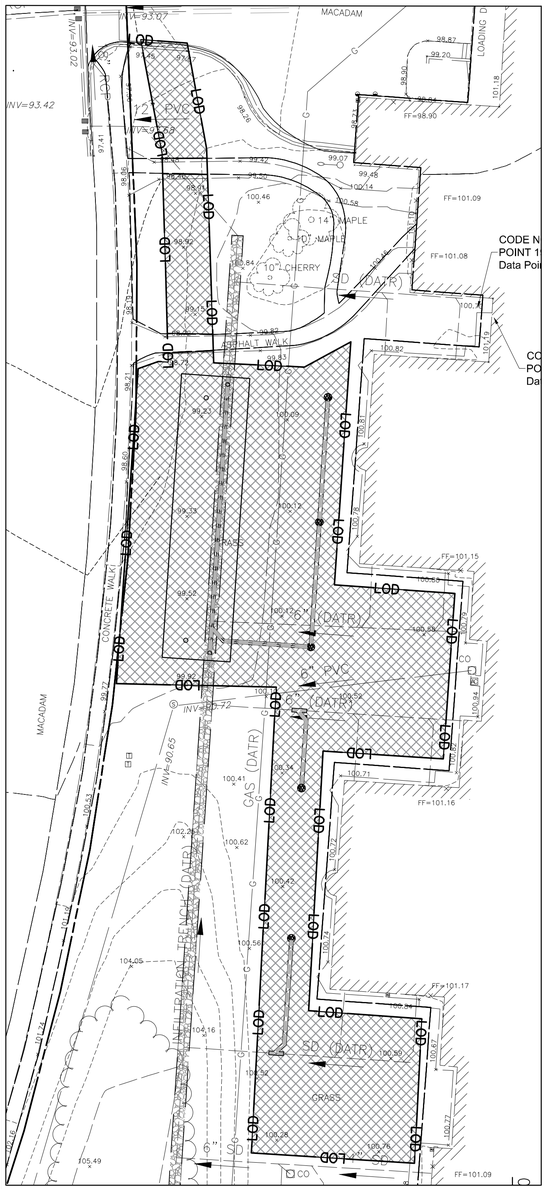
Revisions	HARFORD COUNTY, MARYLAND
	LANDSCAPE PLAN - STREAM

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : 1"=20'
Sheet 69 Of 78
Date : 2/16/2022

LS-A5

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch



INFILTRATION TRENCH

SUBMERGED GRAVEL WETLAND

PLANT SCHEDULE

GROUND COVERS	CODE	QTY	PLANT MATERIAL	CONT	SPACING
▨	UNM	14,556 SF	ERNMX-172 UPLAND NATIVE SEED MIX	SEED	
▦	RNM	2,103	RIPARIAN NATIVE PLANT MIX SEE PLANT LIST THIS SHEET	1 QT	24" o.c.
⬡	WNM	803	WETLAND NATIVE PLANT MIX SEE PLANT LIST THIS SHEET	2.25"X5" PLUG	24" o.c.
▩	SOD	9,836 SF	TURFGRASS ESTABLISHMENT SEE PLANT LIST THIS SHEET	SEED	

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

UNM - ERNMX-172 / UPLAND NATIVE SEED MIX*

71.9%	Schizachyrium scoparium	Little Bluestem
15.0%	Elymus virginicus	Virginia Wildrye
3.0%	Asclepias tuberosa	Butterfly Milkweed
3.0%	Rudbeckia hirta	Blackeyed Susan
2.0%	Chamaecrista fasciculata	Partridge Pea
1.0%	Aster laevis	Smooth Blue Aster
1.0%	Lespedeza virginica	Slender Lespedeza
0.5%	Aster novae-angliae	New England Aster
0.5%	Monarda fistulosa	Wild Bergamot
0.4%	Senna hebecarpa	Wild Senna
0.3%	Chamaecrista nictitans	Sensitive Pea
0.3%	Senna marilandica	Maryland Senna
0.3%	Solidago juncea	Early Goldenrod
0.3%	Solidago nemoralis	Gray Goldenrod
0.3%	Vernonia noveboracensis	New York Ironweed
0.2%	Baptisia tinctoria	Yellow False Indigo
100%	TOTAL	

* SEEDING RATE: 20 LBS/ACRE

WNM - WETLAND NATIVE PLANT MIX

13%	Acorus americanus	Sweet Flag
13%	Alisma subcordatum	Water Plantain
13%	Hibiscus moscheutos	Marsh Hibiscus
13%	Iris versicolor	Blue Flag Iris
13%	Peltandra virginica	Arrow Arum
13%	Pontederia cordata	Pickerelweed
11%	Saururus cernuus	Lizard's Tail
11%	Scirpus fluviatilis	River Bulrush
100%	TOTAL	

PLANT EACH SPECIES IN RANDOM GROUPS OF 13 TO 25 PLANTS.
PLANTS SHALL BE INSTALLED INTO INUNDATED CONDITIONS.

RNM - RIPARIAN NATIVE PLANT MIX

20%	Andropogon gerardii	Big Bluestem
14%	Asclepias incarnata	Swamp Milkweed
14%	Eupatorium dubium	Joe-pye Weed
20%	Juncus effusus	Soft Rush
12%	Liatris spicata	Blazingstar
20%	Sorghastrum nutans	Indiangrass
100%	TOTAL	

PLANT EACH SPECIES IN RANDOM GROUPS OF 13 TO 25 PLANTS.

TURFGRASS ESTABLISHMENT SEED MIX*

33%	Poa pretensis	Kentucky Bluegrass
34%	Schedonoris pheonix	Tall Fescue
33%	Lolium perenne	Perennial Rye Grass
100%	TOTAL	

*SEEDING RATE: 25 LBS/ACRE

PLANT SPACING (NTS)

SPACING "D"	ROW "A"	PLANTS PER 10 SQ. FT.
8" O.C.	6.93"	26
12" O.C.	10.4"	11.5
18" O.C.	15.6"	5.12
20" O.C.	17.3"	2.42
24" O.C.	20.8"	2.9
36" O.C.	30.0"	1.28

NOTE:
QUANTITY OF PERENNIALS AND SPACING AS NOTED IN PLANT SCHEDULE

① HERBACEOUS & GRASS PLANTING DETAIL

NOT TO SCALE

329301-05

GENERAL PLANTING NOTES:

1. THIS PLAN IS FOR PLANTING PURPOSES ONLY, AND ANY OTHER INFORMATION SHOWN IS **FOR REFERENCE ONLY.** SEE SITE PLAN FOR INFORMATION ABOUT ALL LAYOUT, GRADING AND OTHER SITE IMPROVEMENTS.
2. CALL MISS UTILITY AT 811 OR 1-800-257-7777 TO MARK UTILITIES AT LEAST 48 HOURS BEFORE DIGGING.
3. All materials and planting procedures except as otherwise noted shall conform to the latest edition of "LANDSCAPE SPECIFICATION GUIDELINES" by the Landscape Contractors Association MD-DC-VA.
4. Plants shall conform to the current edition of the American Standard for Nursery Stock. (ANSI z60.1)
5. Plant names shall be those given in the latest edition of Standard Plant Names, American Committee on Horticultural Nomenclature.
6. Topsoil shall meet specifications as per the 2011 MD Standards and Specifications for Soil Erosion and Sediment Control.
7. The Contractor shall submit representative soil samples from both in-situ soils and soils brought in from off-site to a state licensed testing laboratory. The Contractor shall incorporate or apply soil amendments and fertilization based upon results of the soil tests and recommendations by the test lab.
8. The Contractor shall apply grass according to the 2011 MD Standard and Specifications for Soil Erosion and Sediment Control. Do not use Kentucky 31 tall fescue.
9. The Contractor shall stake out all planting beds and tree locations for approval by the Landscape Architect or Owner and representative before digging. It is the Contractor's responsibility to locate and coordinate plantings with all existing utilities. If discrepancies occur because of utility locations or other existing conditions the Contractor shall notify the Landscape Architect and Owner's representative immediately to coordinate any necessary adjustments.
10. All plant material shall be labeled by the nursery and delivered with labels in place for inspection. Substitutions in plant species or size will not be permitted except with the approval of the Landscape Architect and Owner. Do not prune until plant material has been planted but as soon thereafter as is advisable under standard horticultural practices. For tree pruning and care methods please refer to ANSI A-300, latest edition.
11. It is of utmost importance that all plant material be set slightly higher in relation to grade than it was grown in the nursery and with good earth to root contact. Any materials or work may be rejected by the Landscape Architect if it does not meet this or any other requirement of the specifications. Rejected materials shall be removed from the site by the Contractor at Contractor's expense.
12. The Contractor shall mulch and water all plants well on the day they are planted. Individual planting shall be mulched. Acceptable mulch shall be hardwood only. Mulch must be well aged, uniform in color, and free of foreign material including plant material. Well aged mulch is defined as mulch that has been stockpiled or stored for at least twelve (12) months. The Contractor shall apply the mulch uniformly to a 2 to 3 inch depth. Bark shall be kept 3 to 4 inches away from all trunks and woody stems.
13. In case of discrepancies between quantities on the plant list and the plan, the plan shall govern.
14. Seed or sod bare areas as directed by Owner for all disturbed areas to be stabilized that are not landscaped or covered.
16. Wetland plants must be wet cultured for a minimum of 3 months and supplied by a recognized wetland nursery which will provide certification of the culture process. Upland plants can be supplied from standard upland grown nursery operations. See the following list for suggested wetland plant sources:

Signature Horticultural Services
19960 Gore Mill Road
Freeland, MD 21053
TEL: 410-329-6466
FAX: 410-329-2156

Environmental Concern
P.O. Box P
201 Boundary Lane
St. Michaels, MD 21663
TEL: 410-745-9620

Octoraro Native Plant Nursery
6126 Street Road
Kirkwood, PA 17536
TEL: 717-529-3160
FAX: 717-529-4099

Wicklein's Water Gardens
1820 Cromwell Bridge Road
Baltimore, MD 21234
TEL: 410-823-1335
FAX: 410-823-1427

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

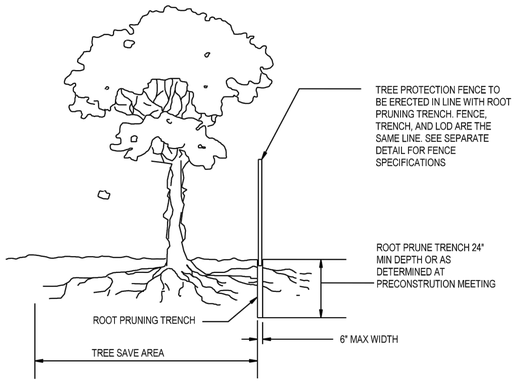
LANDSCAPE PLAN - SWM

Drawn By : JS / MTB
Designed By : JS / MTB
Reviewed By : MAE

Contract No : DP1602779
Scale : 1"=20'
Sheet 70 Of 78
Date : 2/16/2022

LS-B1

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE : 1 inch



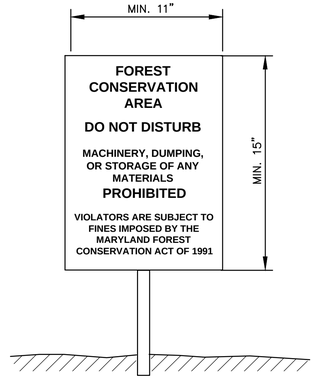
NOTES:

1. RETENTION AREAS WILL BE SET AS PART OF THE REVIEW PROCESS AND PRECONSTRUCTION MEETING.
2. BOUNDARIES OF RETENTION AREAS MUST BE STAKED AT THE PRECONSTRUCTION MEETING AND FLAGGED PRIOR TO TRENCHING.
3. EXACT LOCATION OF TRENCH SHALL BE DETERMINED IN THE FIELD IN COORDINATION WITH THE FOREST CONSERVATION (FC) INPECTOR .
4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH EXCAVATED SOIL OR OTHER ORGANIC SOIL AS SPECIFIED PER PLAN OR BY THE FC INSPECTOR.
5. ROOTS SHALL BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.
6. ALL PRUNING MUST BE EXECUTED WITH LOD SHOWN ON PLANS OR AS AUTHORIZED IN WRITING BY THE FC INSPECTOR.

ROOT PRUNING DETAIL

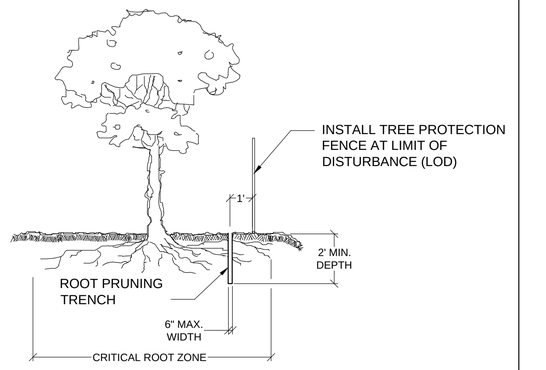
NTS

TREE PROTECTION SIGNAGE



1. ATTACHMENT TO TREES IS PROHIBITED
2. SIGNS MUST BE PROPERLY MAINTAINED
3. AVOID INJURYING ROOTS WHEN PLACING POSTS FOR SIGNS.
4. SIGNS MUST BE POSTED TO BE VISIBLE TO ALL CONSTRUCTION PERSONNEL FROM ALL DIRECTIONS

STRESS REDUCTION MEASURE
ROOT PRUNING WITH FENCE

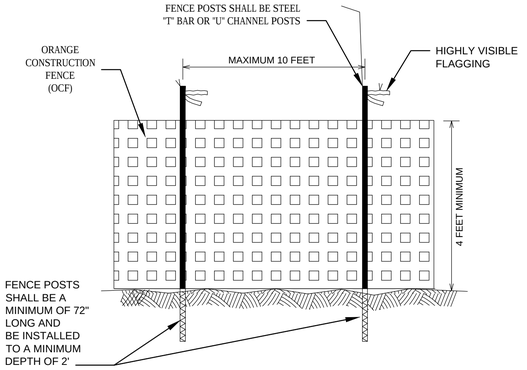


NOTES:

1. RETENTION AREAS WILL BE SET AS PART OF THE REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS SHOULD BE STAKED AND FLAGGED PRIOR TO TRENCHING
3. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED.
4. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.
5. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR OTHER HIGH ORGANIC SOIL.

NOT TO SCALE

TREE PROTECTION FENCING
ORANGE CONSTRUCTION FENCE (OCF)

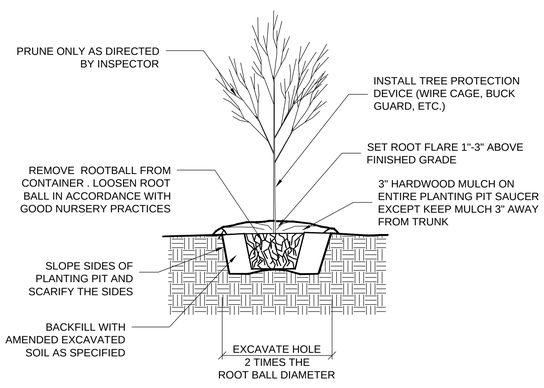


NOTES:

1. FOREST PROTECTION DEVICE ONLY.
2. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLATION OF DEVICE.
3. AVOID ROOT DAMAGE WHEN PLACING POSTS.
4. PROTECTIVE SIGNAGE IS REQUIRED.
5. DEVICE MUST BE MAINTAINED THROUGHOUT DURATION OF CONSTRUCTION.
6. TREE PROTECTION FENCING MAY BE COMBINED WITH SUPER SILT FENCE

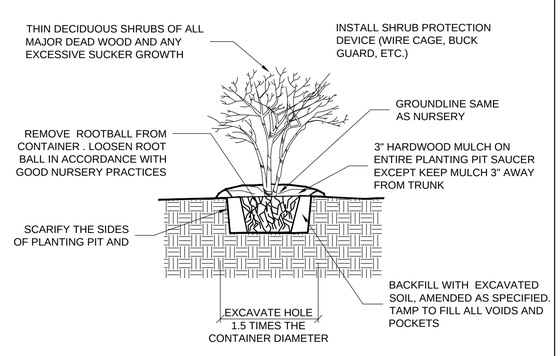
NOT TO SCALE

CONTAINER GROWN TREE PLANTING DETAIL



NOT TO SCALE

CONTAINER GROWN SHRUB DETAIL



NOTES:

1. REMOVE ALL NON-ORGANIC MATERIAL FROM THE SOIL PIT AND HAND TAMP LOOSE SOIL AT BOTTOM OF THE PIT
2. PLANT EVERGREEN AND DECIDUOUS SHRUBS USING THE SAME METHOD

NOT TO SCALE

ZONES 1 & 2: STREAMSIDE/STREAMBANK SEED MIX		
ERNST MIX ERNMX-723 OR APPROVED EQUAL (15 lbs/acre)		
SCIENTIFIC NAME	COMMON NAME	% OF MIX
Carex vulpinoidea	Fox Sedge	20%
Elymus virginicus	Virginia Wildrye	12%
Carex squarrosa	Squarrose Sedge	8%
Carex lurida	Lurid (Shallow) Sedge	8%
Carex scoparia	Blunt Broom Sedge	8%
Panicum rigidulum (P. stipitatum)	Redtop Panicgrass	5%
Carex lupulina	Hop Sedge	4%
Juncus effusus	Soft Rush	4%
Helenium autumnale	Common Sneezeweed	4%
Eupatorium maculatum	Spotted Joe Pye Weed	3%
Bidens cernua	Nodding Bur Marigold	3%
Scirpus cyperinus	Woolgrass	2%
Carex baileyi	Bailey's Sedge	2%
Euthamia graminifolia (Solidago g.)	Grassleaf Goldenrod	2%
Eupatorium perfoliatum	Boneset	2%
Verbena hastata	Blue Vervain	2%
Panicum anceps	Beaked Panicgrass	2%
Aster prenanthoides (Symphyotrichum p.)	Zigzag Aster	1%
Onoclea sensibilis	Sensitive Fern	1%
Glyceria canadensis	Rattlesnake Grass	1%
Ludwigia alternifolia	Seedbox	1%
Vernonia noveboracensis	New York Ironweed	1%
Carex crinita	Fringed (Nodding) Sedge	1%
Asclepias incarnata	Swamp Milkweed	1%
Aster puniceus (Symphyotrichum puniceum)	Purplestem Aster	1%
Mimulus ringens	Square Stemmed Monkeyflower	1%
	TOTAL (lbs)	2.31

ZONE 3: WETLAND SEED MIX		
ERNST MIX ERNMX-724 OR APPROVED EQUAL (15 lbs/acre)		
SCIENTIFIC NAME	COMMON NAME	% OF MIX
Carex vulpinoidea	Fox Sedge	20%
Sparganium eurycarpum	Giant Bur Reed	18%
Carex lurida	Lurid (Shallow) Sedge	8%
Carex scoparia	Blunt Broom Sedge	7%
Panicum rigidulum (P. stipitatum)	Redtop Panicgrass	5%
Carex squarrosa	Squarrose Sedge	5%
Juncus effusus	Soft Rush	4%
Helenium autumnale	Common Sneezeweed	4%
Carex lupulina	Hop Sedge	4%
Eupatorium perfoliatum	Boneset	3%
Eupatorium maculatum (Eupatoriadelphus maculatus)	Spotted Joe Pye Weed	3%
Bidens cernua	Nodding Bur Marigold	3%
Carex comosa	Cosmos (Bristly) Sedge	2%
Mimulus ringens	Square Stemmed Monkeyflower	2%
Carex baileyi	Bailey's Sedge	2%
Scirpus cyperinus	Woolgrass	2%
Verbena hastata	Blue Vervain	2%
Glyceria canadensis	Rattlesnake Grass	1%
Ludwigia alternifolia	Seedbox	1%
Vernonia noveboracensis	New York Ironweed	1%
Asclepias incarnata	Swamp Milkweed	1%
Aster puniceus (Symphyotrichum puniceum)	Purplestem Aster	1%
Carex crinita	Fringed (Nodding) Sedge	1%
	TOTAL (lbs)	3.03

ZONE 4: RIPARIAN BUFFER SEED MIX		
ERNST MIX ERNMX-722 OR APPROVED EQUAL (15 lbs/acre)		
SCIENTIFIC NAME	COMMON NAME	% OF MIX
Elymus riparius	Riverbank Wildrye	20%
Panicum clandestinum (Dichanthelium c.)	Deertongue	15%
Schizachyrium scoparium	Little Bluestem	12%
Elymus virginicus	Virginia Wildrye	10%
Andropogon gerardii	Big Bluestem	10%
Sorghastrum nutans	Indiangrass	10%
Senna marilandica (Cassia m.)	Maryland Senna	5%
Chasmanthium latifolium (Uniola latifolia)	River Oats	5%
Senna hebecarpa (Cassia h.)	Wild Senna	5%
Panicum rigidulum (P. stipitatum)	Redtop Panicgrass	4%
Agrostis perennans	Autumn Bentgrass	2%
Panicum anceps	Beaked Panicgrass	2%
	TOTAL (lbs)	43.70

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

LANDSCAPE NOTES AND DETAILS

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : NOT TO SCALE
Sheet 71 Of 78
Date : 2/17/2022

LD-A1

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch

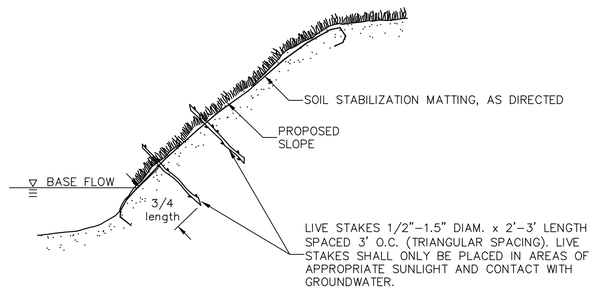
ZONE 1: LIVE STAKE PLANTING SCHEDULE				
(SPACED 3 FT ON CENTER)				
SCIENTIFIC NAME	COMMON NAME	SIZE	RATIO	APPROX #
Cornus sericea cardinal	Red Osier Dogwood	2'-3'	25%	419
Cornus amomum	Silky Dogwood	2'-3'	50%	839
Salix sericra	Silky Willow	2'-3'	25%	419
			TOTAL	1677

ZONE 2: STREAMSIDE TREES & SHRUBS				
SHRUBS (SPACED 15 FT ON CENTER)				
SCIENTIFIC NAME	COMMON NAME	MINIMUM SIZE/CONTAINER	PERCENT OF TOTAL	QUANTITY
Lindera benzoin	Spicebush	18"-24" / #2	*25%*	10
Viburnum dentatum	Arrow-Wood Viburnum	18"-24" / #2	*20%*	8
Cornus Amomum	Silky Dogwood	18"-24" / #2	*20%*	8
Amelanchier arborea	Serviceberry	18"-24" / #2	*10%*	4
Clethra alnifolia	Sweet Pepperbush	18"-24" / #2	*25%*	10
			TOTAL	40
TREES (SPACED 20 FT ON CENTER)				
Betula nigra	River Birch	1" CAL. / #5	50%	5
Platanus occidentalis	American Sycamore	1" CAL. / #5	50%	5
			TOTAL	10

ZONE 3: WETLAND TREES & SHRUBS SCHEDULE				
SHRUBS (SPACED 15 FT ON CENTER)				
SCIENTIFIC NAME	COMMON NAME	MINIMUM SIZE/CONTAINER	PERCENT OF TOTAL	QUANTITY
Cornus amomum	Silky Dogwood	18"-24" / #2	*25%*	12
Sambucus canadensis	Elderberry	18"-24" / #2	*25%*	12
Viburnum dentatum	Arrowwood Viburnum	18"-24" / #2	*25%*	12
Clethra alnifolia	Sweet Pepperbrush	18"-24" / #2	*25%*	12
			TOTAL	48
TREES (SPACED 20 FT ON CENTER)				
SCIENTIFIC NAME	COMMON NAME		PERCENT OF TOTAL	QUANTITY
Nyssa sylvatica	Black Gum	1" CAL. / #5	20%	4
Quercus Phellos	Willow Oak	1" CAL. / #5	20%	4
Quercus Bicolor	Swamp White Oak	1" CAL. / #5	20%	4
Liquidambar styraciflua	Sweet Gum	1" CAL. / #5	20%	4
Platanus occidentalis	Sycamore	1" CAL. / #5	20%	4
			TOTAL	20

ZONE 4: RIPARIAN TREES & SHRUBS				
SHRUBS (SPACED 15 FT ON CENTER)				
SCIENTIFIC NAME	COMMON NAME	MINIMUM SIZE/CONTAINER	PERCENT OF TOTAL	QUANTITY
Lindera benzoin	Spicebush	18"-24" / #2	*20%*	144
Ilex Opaca	American Holly	18"-24" / #2	*25%*	180
Viburnum prunifolium	Blackhaw Viburnum	18"-24" / #2	*20%*	144
Amelanchier arborea	Serviceberry	18"-24" / #2	*15%*	108
Hamamellis virginiana	Witch Hazel	18"-24" / #2	*20%*	144
			TOTAL	720
TREES (SPACED 20 FT ON CENTER)				
Fagus grandifolia	American Beech	1" CAL. / #5	20%	81
Liriodendron tulipifera	Tulip Poplar	1" CAL. / #5	20%	81
Nyssa sylvatica	Black Gum	1" CAL. / #5	20%	81
Quercus Phellos	Willow Oak	1" CAL. / #5	20%	81
Quercus rubra	Red Oak	1" CAL. / #5	20%	81
			TOTAL	405

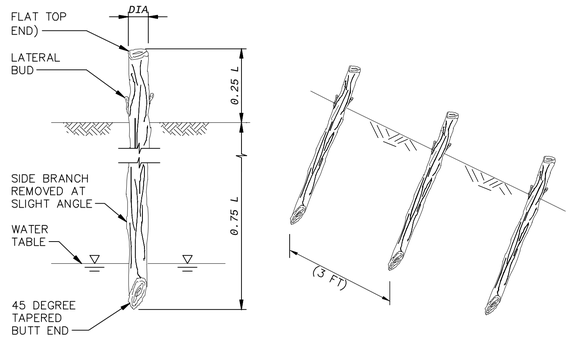
ZONE 5: TURF SOD	
AREA	UNITS
25,786	Square Feet



- SOAK LIVE STAKES UPON ARRIVAL TO SITE FOR 24 HOURS MIN. AND RECUT ENDS AT 45° ANGLES PRIOR TO INSTALLATION.
- USE 1/2"–3/4" REBAR FOR PILOT HOLES PRIOR TO DRIVING LIVE STAKES INTO GROUND.

RECUT ANY LIVE STAKE TIPS DAMAGED BY INSTALLATION.

SPECIES SHOWN ON PLANTING DETAILS



LIVE STAKING DETAIL

NO SCALE

CHURCH CREEK SWM AND STREAM RESTORATION EXISTING TREE INVENTORY AND REMOVAL TABLE						
TREE NUMBER	DBH (IN.)	SPECIES	CONDITION	NOTES	TREE TO BE REMOVED	TREE TO BE RE-USED ONSITE
01	34.0	Tuliptree	Fair	Vines into the canopy		
02	25.5	Tuliptree	Fair	Vines		
03	20.7	Tuliptree	Good			
04	25.1	Tuliptree	Fair	Vines		
05	27.7	Tuliptree	Good			
06	25.5	Sweetgum	Good			
07	36.5	White Oak	Fair	Vines		
08	30.8	Tuliptree	Fair	Vines/Dead Branches		
09	28.8	N. Red Oak	Good			
10	27.8	Tuliptree	Good		Yes	Yes
11	35.5	N. Red Oak	Good			
12	25.4	Chestnut Oak	Fair	Vines		
13	0.0	DEAD	Dead			
14	29.3	N. Red Oak	Good			
15	29.6	N. Red Oak	Good			
16	25.2	Red Maple	Good			
17	0.0	DEAD	Dead			
18	0.0	DEAD	Dead			
19	22.5	Sycamore	Fair	Vines/Treehouse		
20	0.0	Sycamore	Dead			
21	40.0	Tuliptree	Poor	Many Vines/Rotting Heartwood		
22	36.9	Red Oak	Good	On TOB	Yes	Yes
23	37.7	Red Oak	Fair	Vines/Dead Branches	Yes	Yes
24	27.1	Red Oak	Poor/Dead	Very Poor/Vines/Many Dead Branches	Yes	Yes
25	41.9	Red Oak	Good			
26	35.6	American Sycamore	Good			
27	24.0	White Oak	Good		Yes	Yes
28	23.0	White Oak	Good			
29	29.3	White Oak	Good			
30	32.0	White Oak	Good			
31	25.1	White Oak	Fair	Vines/Dead Branches		
32	30.7	White Oak	Good			
33	31.7	White Oak	Fair			
34	0.0	NA	Dead	Has fallen in the stream		
35	0.0	Red Oak	Dead			
36	18.8	Red Maple	Good			
37	28.5	Tuliptree	Good			
38	25.4	White Oak	Good	Some vines		
39	27.5	Tuliptree	Good			
40	22.2	Tuliptree	Good			
41	23.3	White Oak	Good			
42	24.6	Tuliptree	Good			
43	35.4	Red Maple	Good			
44	35.0	Tuliptree	Good			
45	24.2	Sweetgum	Good			
46	33.1	Tuliptree	Good			
47	49.3	Red Maple	Good			
48	30.2	American Beech	Good			
49	23.5	American Beech	Good			
50	24.9	N. Red Oak	Good			
51	26.2	N. Red Oak	Good			
52	36.8	Tuliptree	Good			
53	27.4	American Beech	Good			
54	0.0	DEAD (White Oak)	Dead	Dead		
55	29.8	American Beech	Good			
56	30.2	American Beech	Good			
57	0.0	DEAD (Tuliptree)	Dead	Vines		
58	30.4	American Beech	Good			
59	29.4	N. Red Oak	Good			
60	22.5	N. Red Oak	Good			
61	22.5	White Oak	Good		Yes	Yes
62	25.9	White Oak	Good			
63	31.9	Tuliptree	Good			
64	23.9	N. Red Oak	Good		Yes	Yes

EG–SWMENG–000747–2016

Revisions

HARFORD COUNTY, MARYLAND

LANDSCAPE NOTES AND DETAILS

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : NOT TO SCALE
Sheet 72 Of 78
Date : 2/17/2022

LD-A2

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

GENERAL REQUIREMENTS:

1. THE CONTRACTOR SHALL REFER TO THE MAINTENANCE OF TRAFFIC PLAN (MT) DRAWINGS TO SELECT THE APPROPRIATE WORK ZONE TEMPORARY TRAFFIC CONTROLS FOR EACH PHASE OF CONSTRUCTION. WORK ZONE SITUATIONS WHICH ARE NOT ADDRESSED IN THE MT SHALL CONFORM TO THE GUIDELINES SET FORTH IN PART 6 OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES OF STREETS AND HIGHWAY (MDMUTCD) AND CATEGORY 1 OF THE MDSHA BOOK OF STANDARDS.
2. THE CONTRACTOR MUST HAVE A "CERTIFIED" TRAFFIC CONTROL MANAGER ON SITE DURING ALL PHASES OF CONSTRUCTION AT ALL TIMES.
3. EACH PHASE OF CONSTRUCTION, INCLUDING THE FOLLOW UP RESTORATION OPERATIONS SHALL BE PROVIDED WITH APPROPRIATE WORK ZONE TRAFFIC CONTROLS.
4. SIDEWALK CLOSURES SHALL BE LIMITED TO OCCUR ONLY DURING THE ACTUAL WORK ACTIVITY. DURING CLOSURE, APPROPRIATE PEDESTRIAN DETOURS SHALL BE POSTED. DURING ALL OTHER TIMES, PROVISIONS FOR SAFE PEDESTRIAN ACCESS THROUGH THE WORK AREA, VIA A TEMPORARY WALKWAY SHALL BE PROVIDED.
5. ANY WORK WITHIN THE TRAVELED PORTION OF ROADWAYS SHALL BE RESTRICTED TO THE HOURS OF 9:00 AM TO 3:00 PM, MONDAY THROUGH FRIDAY. WORK ON HOLIDAYS AND WEEKENDS SHALL NOT OCCUR UNLESS AN EXCEPTION IS GRANTED IN WRITING BY HARFORD COUNTY AND MDSHA INSPECTOR.
.
6. CONSTRUCTION ACTIVITY, LOADING OR UNLOADING OF EQUIPMENT SHALL NOT BLOCK ANY TRAFFIC LANE OTHER THAN THOSE DELINEATED WITHIN THE WORK ZONE.
7. EXCLUSIVE OF EMERGENCY WORK, THE CONTRACTOR SHALL CONTACT OCCUPANTS OF ALL ADJOINING PROPERTIES AND INFORM THEM OF THE SCOPE AND THE TIMING OF CONSTRUCTION. A MINIMUM OF 24 HOURS NOTIFICATION SHALL BE REQUIRED PRIOR TO THE COMMENCEMENT OF ANY ACTIVITY ON THE SITE.
8. ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS UNLESS PERMISSION FOR CLOSURE IS GRANTED BY THE PROPERTY OWNER/MANAGER. HOWEVER, ACCESSIBILITY FOR EMERGENCY VEHICLES SHALL BE MAINTAINED AT ALL TIMES
.
9. PAVEMENT EXCAVATION SHALL BE LIMITED TO A MAXIMUM OF ONE TRAVEL LANE AT ANY TIME UNLESS OTHERWISE SPECIFIED ON THE TTCP.
10. IF ANY TEMPORARY TRAFFIC CONTROL SIGNS ARE TO BE PLACED ALONG A MSHA ROADWAY OR WITHIN THE LIMITS OF AN INCORPORATED AREA, THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE AGENCY OF SIGNAGE TO BE INSTALLED.
11. NO HAZARDOUS MATERIALS SHALL BE STORED WITHIN PUBLIC RIGHT-OF-WAY. NO MATERIALS OR EQUIPMENT SHALL BE STORED ON THE ROADWAY SURFACES OR SIDEWALK DURING NON-WORK HOURS.
12. ALL EXISTING TRAFFIC CONTROL DEVICES (I.E. SIGNS, MARKING, ETC.) THAT MUST BE REMOVED SHALL BE REPLACED IN THEIR PROPER LOCATION PRIOR TO THE COMPLETION OF THE PROJECT. COST FOR THE REPLACEMENT AND/OR REPAIR OF DEVICES DAMAGED AS A RESULT OF THE PROJECT SHALL BE ASSESSED TO THE CONTRACTOR.
13. FOR MERGING, SHIFTING, SHOULDER TAPER, THE MAXIMUM SPACING BETWEEN DEVICES EQUALS THE POSTED SPEED IN FEET.
14. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MOST RECENT EDITION OF THE MDMUTCD. ALL SIGNS, TRAFFIC DRUMS AND CONES SHALL BE FULLY REFLECTORIZED WITH HIGH INTENSITY, REFLECTIVE SHEETING AS PER THE MDMUTCD.
15. PROVISION SHALL BE MADE FOR SAFE MAINTENANCE OF PEDESTRIAN AND BICYCLE TRAFFIC, SUBJECT TO APPROVAL OF THE HARFORD COUNTY AND MDSHA INSPECTOR. AT LEAST ONE 10-FOOT TRAVEL LANE SHALL BE AVAILABLE FOR TRAFFIC AT ALL TIMES.
16. THE CONTRACTOR WILL BE SOLELY RESPONSIBLE FOR ALL ACCIDENTS AND/OR DAMAGE TO PERSONS AND/OR PROPERTY DAMAGE RESULTING FROM HIS OPERATIONS.
17. ALL TEMPORARY TRAFFIC CONTROL (TTC) DEVICES SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME, TTC DEVICES THAT ARE NO LONGER APPROPRIATE SHALL BE REMOVED OR COVERED.
18. AT THE COMPLETION OF WORK ACTIVITIES, CONDITIONS WITHIN THE PUBLIC SPACE SHALL BE FULLY RESTORED TO THOSE THAT EXISTED PRIOR TO THE WORK ACTIVITY.
19. THE HARFORD COUNTY AND MDSHA INSPECTOR HAS THE AUTHORITY TO MODIFY THE TTCP AS DEEMED NECESSARY. THE INSPECTOR HAS THE AUTHORITY TO ORDER THE CONTRACTOR TO STOP WORK AND VACATE THE PUBLIC RIGHT-OF-WAY IF THE TTCP IS NOT COMPLIED WITH.

TRAFFIC CONTROL SEQUENCE

	DESCRIPTION	DURATION
1.	INSTALL AFTER 9:00 AM AND MAINTAIN MOT TEMPORARY TRAFFIC CONTROL DEVICES PER SHEET MT-A2 DURING WORKING HOURS AND MUST BE REMOVED BY 3:00 PM DAILY.	90 DAYS
2.	REMOVE ALL MOT TEMPORARY TRAFFIC CONTROL DEVICES. RESTORE DISTURBED AREA.	1 DAY
	TOTAL ESTIMATED DURATION OF WORK	10-15 WKS

TRAFFIC CONTROL SEQUENCE

	DESCRIPTION	DURATION
1.	INSTALL AFTER 9:00 AM AND MAINTAIN MOT TEMPORARY TRAFFIC CONTROL DEVICES PER SHEET MT-A3 DURING WORKING HOURS AND REMOVE BY 3:00 PM DAILY.	90 DAYS
2.	REMOVE ALL MOT TEMPORARY TRAFFIC CONTROL DEVICES. RESTORE DISTURBED AREA.	1 DAY
	TOTAL ESTIMATED DURATION OF WORK	10-15 WKS

TRAFFIC CONTROL SEQUENCE

	DESCRIPTION	DURATION
1.	INSTALL AFTER 9:00 AM AND MAINTAIN MOT TEMPORARY TRAFFIC CONTROL DEVICES PER SHEET MT-A4 AND MT- A5 DURING WORKING HOURS AND REMOVE BY 3:00 PM DAILY.	90 DAYS
2.	REMOVE ALL MOT TEMPORARY TRAFFIC CONTROL DEVICES. RESTORE DISTURBED AREA.	1 DAY
	TOTAL ESTIMATED DURATION OF WORK	10-15 WKS

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

MAINTENANCE OF TRAFFIC NOTES

Drawn By : LBT

Designed By : MCB

Reviewed By : GWF

Contract No : DP1602779

Scale : ----

Sheet 73 Of 78

Date : 2/16/2022

MT-A1

SCALE: 1 inch

NOTE:
WORK LIMITED FROM 9:00 AM TO 3:00 PM.

MAINTENANCE OF TRAFFIC NOTE

UPON COMPLETION OF SCE ENTRANCE, CONTRACTOR SHALL INSTALL W11-10(1)-TRUCK CROSSING (SYMBOL) SIGNS (48"X48") IN BOTH DIRECTIONS OF CHURCH CREEK ROAD 100' PRIOR TO THE ENTRANCE

LEGEND:

- TEMPORARY WORK ZONE
- TEMPORARY SIGN
- TEMPORARY BARREL
- FLAGGER
- TRAFFIC FLOW

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

EG–SWMENG–000747–2016

Revisions

HARFORD COUNTY, MARYLAND

MAINTENANCE OF TRAFFIC

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : ----
Sheet 74 Of 78
Date : 2/16/2022

MT-A2

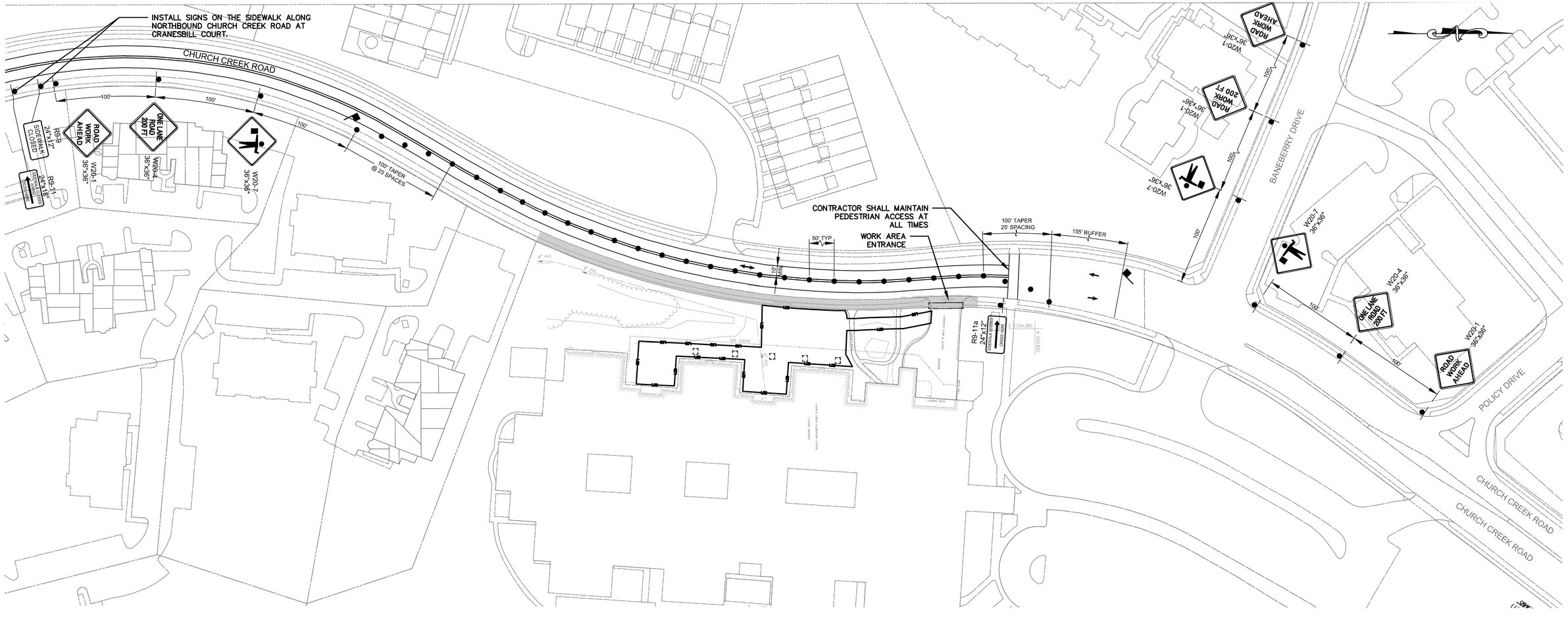
ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SCALE: 1 inch



NOTE:
WORK LIMITED FROM 9:00 AM TO 3:00 PM.

LEGEND:

- TEMPORARY WORK ZONE
- TEMPORARY SIGN
- TEMPORARY BARREL
- FLAGGER
- TRAFFIC FLOW

NOTE:

SEE ACCESS PLAN SHEETS AP-01 AND AP-02 FOR CONTINUING LIMIT OF DISTURBANCE AND ACCESS ROAD.

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

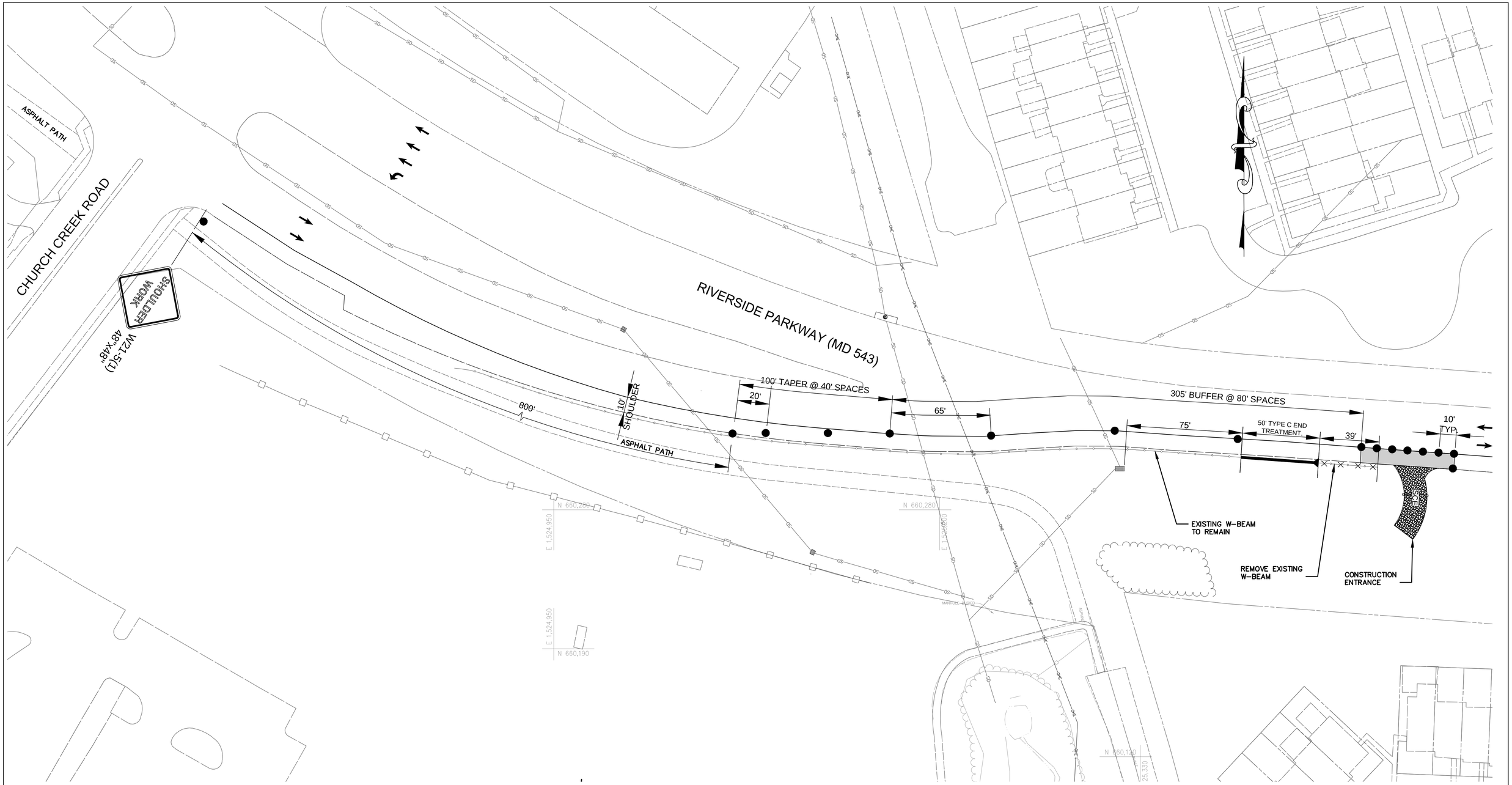
MAINTENANCE OF TRAFFIC

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : ----
Sheet 75 Of 78
Date : 2/16/2022

MT-A3

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 Inch



EG-SWMENG-000747-2016

LEGEND:

- TEMPORARY WORK ZONE
- TEMPORARY SIGN
- TEMPORARY BARREL
- TRAFFIC FLOW

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

Revisions	HARFORD COUNTY, MARYLAND
	MAINTENANCE OF TRAFFIC

Drawn By : LBT
Designed By : MCB
Reviewed By : GWF

Contract No : DP1602779
Scale : ----
Sheet 76 Of 78
Date : 2/16/2022

MT-A4

SCALE: 1 Inch

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

CHURCH CREEK ROAD

RIVERSIDE PARKWAY (MD 543)

ASPHALT PATH

ROAD WORK 1500 FT

W20-1(1) 48"x48"

500'

500'

500'

500'

W11-10(1) 48"x48"

W20-1(1) 48"x48"

ROAD WORK 1500 FT

SHOULDER WORK

W21-5(1) 48"x48"

N 660,280

E 1,524,950

N 660,280

E 1,524,950

N 660,190

N 660,120

E 1,525,330

MAINTENANCE OF TRAFFIC NOTE

TRUCKS WILL ONLY BE ALLOWED TO ENTER AND EXIT THE CONSTRUCTION ENTRANCE BETWEEN THE HOURS OF 9 AM TO 3 PM.

LEGEND:

TEMPORARY SIGN

TRAFFIC FLOW

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

1 inch = 30 ft.

EG-SWMENG-000747-2016

Revisions	HARFORD COUNTY, MARYLAND
	MAINTENANCE OF TRAFFIC

Drawn By : LBT

Designed By : MCB

Reviewed By : GWF

Contract No : DP1602779

Scale : ----

Sheet 77 Of 78

Date : 2/16/2022

MT-A5

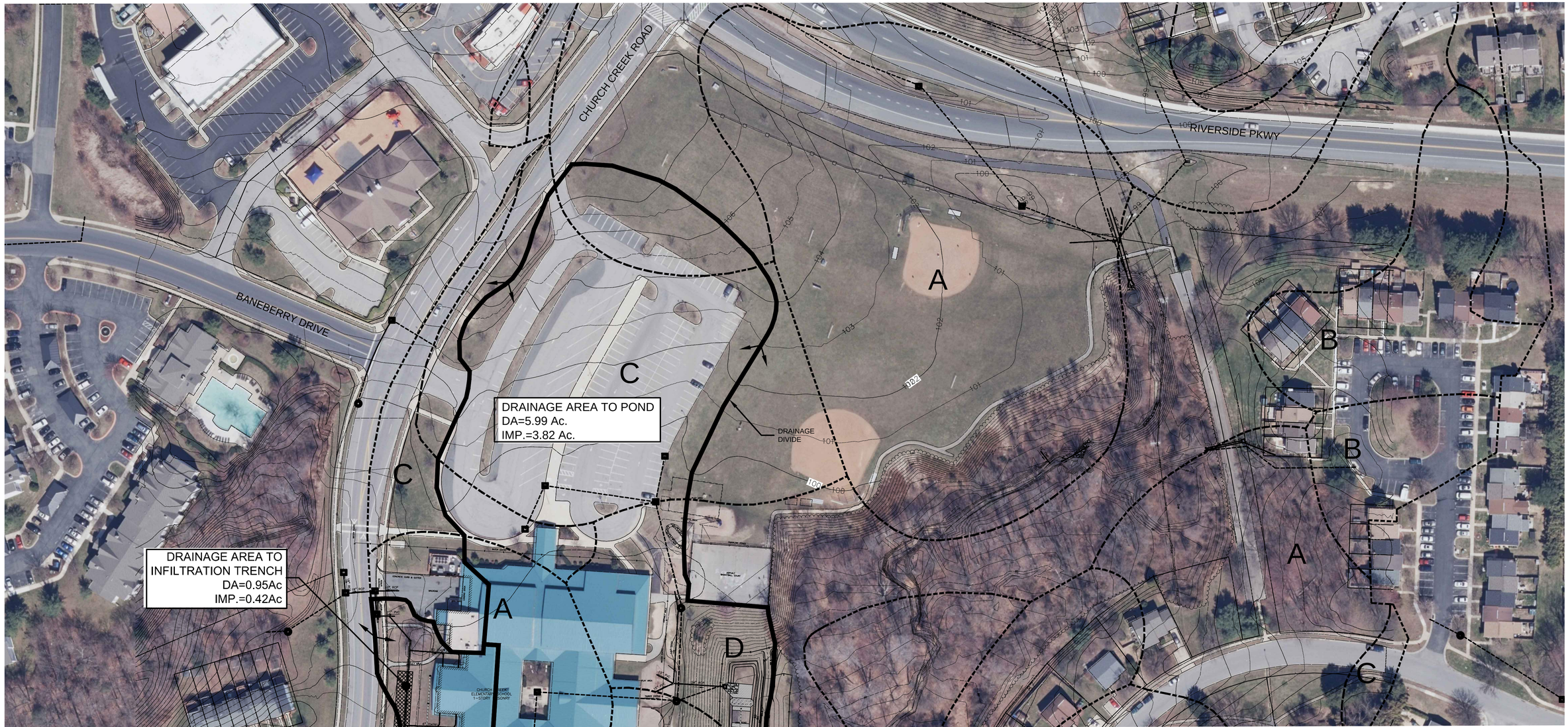
SCALE: 1 inch

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:



LEGEND:

STORM DRAIN

INLET

MANHOLE

SOIL BOUNDARY

SOIL TYPE

DRAINAGE DIVIDE

FACILITY TYPE	DRAINAGE AREA Ac.	IMPERVIOUS DRAINAGE AREA Ac.
POND	5.99	3.82
INFILTRATION TRENCH	0.95	0.42

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

EG-SWMENG-000747-2016

Revisions

HARFORD COUNTY, MARYLAND

DRAINAGE AREA MAP

Drawn By : NS

Designed By : JS

Reviewed By : MAE

Contract No : DP1602779

Scale : 60'

Sheet 78 Of 78

Date : 02/14/2018

DA-B1

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.: