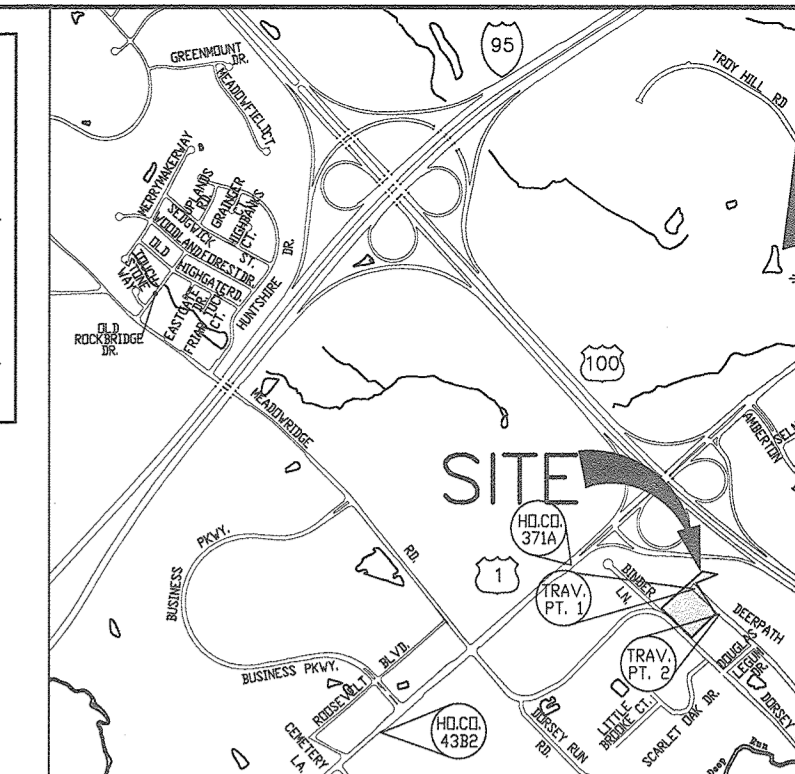


| SHEET INDEX | |
|-------------|---|
| SHEET | TITLE |
| 1 | EXISTING CONDITION PLANS AND SOILS MAP |
| 2 | GRADING, SEDIMENT AND EROSION CONTROL PLAN PHASE 1 STORM DRAIN CONSTRUCTION |
| 3 | GRADING, SEDIMENT AND EROSION CONTROL PLAN PHASE 2 SITE FILL |
| 4 | SEDIMENT AND EROSION CONTROL NOTES AND DETAILS |
| 5 | STORM DRAIN PROFILES |
| 6 | 100 YEAR STORM DRAIN DRAINAGE AREA MAP |
| 7 | FINAL GRADING PLAN |
| 8-14 | STREAM MITIGATION PLANS |

SITE DEVELOPMENT PLAN DORSEY CENTER, PARCEL R STREAM DIVERSION CONSTRUCTION AND OFFSITE STREAM MITIGATION 1ST ELECTION DISTRICT HOWARD COUNTY, MARYLAND

| BENCH MARKS--(NAD 83) | |
|-----------------------|---|
| TRAV. PT. 1 | EL.157.73 (NGVD 29) |
| TRV. MAG. 18.0' | NORTHEAST OF CONC. CURB OF SOUTHEASTBOUND LANE OF DEERPATH ROAD; 20.3' NORTH OF EX. INLET |
| N 553,149.12 | E 1,381,844.44 |
| TRAV. PT. 2 | EL.154.64 (NGVD 29) |
| TRV. MAG. 3.1' | NORTHEAST OF CONC. CURB OF SOUTHEASTBOUND LANE OF DEERPATH ROAD; 20.3' NORTH OF EX. INLET |
| N 553,037.81 | E 1,381,953.46 |



LEGEND

- EXISTING CONTOURS
 - EXISTING TREELINE
 - PROPOSED TREELINE
 - EXISTING STREAM
 - EXISTING STRUCTURE
 - EXISTING STREAM BUFFER
 - APPROXIMATE 100 YEAR FLOODPLAIN LIMIT (PLAT 6729)
 - SOIL DELINEATION
 - SOILS DELINEATION
 - STEEP SLOPES * 15% - 20% - 25%+
 - ERODIBLE SOILS
- * STEEP SLOPES ARE ALSO ERODIBLE SOILS

SITE ANALYSIS DATA CHART

| | |
|--------------------------------------|---|
| A. TOTAL PROJECT AREA | 4.18± AC. |
| B. AREA OF THIS PLAN SUBMISSION | 4.18± AC. |
| C. APPROXIMATE LIMIT OF DISTURBANCE | 2.78± AC. |
| D. PRESENT ZONING | TOD |
| E. PROPOSED USE OF SITE | APARTMENTS (FUTURE) |
| F. TOTAL NUMBER OF UNITS ALLOWED | N/A |
| G. NUMBER OF PARKING SPACES REQ'D | N/A |
| H. BUILDING COVERAGE OF SITE | N/A |
| I. APPLICABLE DPZ FILE REFERENCES: | SDP-05-28, F-86-109, F-07-80, SDP-07-016, WP-15-131, ECP-15-017, S-17-004 |
| J. PROPOSED WATER AND SEWER SYSTEMS: | X. PUBLIC _____ PRIVATE |

GENERAL NOTES

- THE EXISTING TOPOGRAPHY IS TAKEN FROM FROM FIELD RUN TOPOGRAPHIC SURVEYS AT 2' INTERVALS PREPARED BY BENCHMARK ENGINEERING, INC., ON OR ABOUT JUNE, 2006.
 - THE COORDINATES SHOWN HEREON ARE BASED ON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 371A AND 43B2 WERE USED FOR THIS PROJECT.
 - THIS PROPERTY IS WITHIN THE METROPOLITAN WATER AND SEWER DISTRICT.
 - NO WATER OR SEWER CONNECTIONS ARE PROPOSED UNDER THIS SITE DEVELOPMENT PLAN. WATER AND SEWER SERVICE FOR THIS SUBDIVISION WILL BE PUBLIC. THE PUBLIC SEWER CONNECTION WILL BE TO CONTRACT 14-1521-D. THE PUBLIC WATER WILL BE TO CONTRACT 24-W. THIS SUBDIVISION FALLS WITHIN THE PATAPSCO DRAINAGE AREA.
 - EXISTING UTILITIES SHOWN WERE LOCATED BY RECORD DRAWINGS AND FIELD LOCATIONS.
 - THE BOUNDARY SHOWN HEREON IS TAKEN FROM THE BOUNDARY SURVEY PREPARED BY BENCHMARK ENGINEERING, INC., ON OR ABOUT JUNE, 2006.
 - PREVIOUS DEPARTMENT OF PLANNING AND ZONING REFERENCE NUMBERS: SDP-05-29, F-86-109 & F-07-80, SDP-07-016, WP-15-131; ECP-15-017, S-17-004.
 - THE FOREST CONSERVATION ACT REQUIREMENTS FOR 1.09 ACRES OF REQUIRED REFORESTATION HAVE BEEN MET THROUGH THE PAYMENT OF \$35,610.30, PAID UNDER SDP-07-016. NO ADDITIONAL REFORESTATION IS WARRANTED WITH THIS STREAM DIVERSION PROJECT. THE OFF-SITE STREAM RESTORATION DOES NOT HAVE A FOREST CONSERVATION EASEMENT BECAUSE THE LIMIT OF DISTURBANCE IS WITHIN THE FLOODPLAIN AREA. THE FOREST CONSERVATION EASEMENT LOCATED ON PARCEL H-1 WILL BE ABANDONED AS PART OF THE DEEP RUN SEWER INTERCEPTOR PROJECT (CAPITAL PROJECT NO. S-6284).
 - WP-15-131 WAS APPROVED MAY 21, 2015 TO WAIVE SECTION 16.116(c)(2)(i) PROHIBITING GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW CONSTRUCTION WITHIN 50' OF AN INTERMITTENT STREAM BANK BUFFER, AND SECTION 16.115(c)(2) PROHIBITING CLEARING, EXCAVATION, FILLING, ALTERING DRAINAGE OR IMPERVIOUS PAVING IN A FLOODPLAIN, FOR CONSTRUCTION OF AN APARTMENT BUILDING, RELATED PARKING AND AMENITIES AREA. APPROVAL OF THE REQUESTED WAIVERS IS SUBJECT TO THE FOLLOWING CONDITIONS:
 - MARYLAND DEPARTMENT OF THE ENVIRONMENT AND ARMY CORP. OF ENGINEERS PERMIT APPROVALS ARE REQUIRED FOR THE DISTURBANCE OF THE INTERMITTENT STREAMS, 50' INTERMITTENT STREAM BANK BUFFERS AND FILLING OF THE 100 YEAR FLOOD PLAIN AREA ON PARCEL R OF THE DORSEY CENTER SUBDIVISION. ALL OTHER COUNTY AND STATE PERMITS ARE REQUIRED AS APPLICABLE. A NOTE SHALL BE ADDED TO THE SITE DEVELOPMENT PLAN INDICATING ALL PERMIT NUMBERS, DATE AND ACTION TAKEN.
 - PROVIDING SAFE CONVEYANCE, WITHOUT ADVERSELY IMPACTING DOWNSTREAM PROPERTIES, OF THE 100 YEAR DISCHARGE OF 307 CFS TO THE EXISTING DOWNSTREAM STORMWATER MANAGEMENT POND. THE 100 YEAR CFS IS BASED ON THE COMPUTATIONS RECEIVED AT THE ENVIRONMENTAL CONCEPT PLAN: Q=CIA=0.89x12.75x35=397.2.
 - SKETCH PLAN COMPLIANCE WITH THE COMMENTS DATED MAY 20, 2015 FROM THE DEVELOPMENT ENGINEERING DIVISION.
 - ALL CONSTRUCTION ON PARCEL R SHALL BE SUBJECT TO REQUIREMENTS OF THE HOWARD COUNTY BUILDING CODE.
 - MITIGATION OF THE APPROVAL OF THE WAIVER REQUESTS FOR THE PROPOSED ON-SITE STREAM DIVERSION VIA A STORM DRAIN BYPASS SYSTEM WILL INCLUDE THE RESTORATION OF THE SECTION OF DEEP RUN STREAM SEGMENT BY THE APPLICANT AS INDICATED IN THE WAIVER PETITION APPLICATION JUSTIFICATION. A SITE DEVELOPMENT PLAN SHALL BE SUBMITTED FOR THE OFF-SITE STREAM RESTORATION PROJECT PRIOR TO FINAL SIGNATURE APPROVAL OF THE SITE DEVELOPMENT PLAN FOR PARCEL R.
 - ENVIRONMENTAL PERMIT REFERENCES. DEPARTMENT OF THE ARMY PERMIT NUMBER CENAB-OPR-M (PARKWAY ROCK LLC/DORSEY CENTER/STREAM CHANNELIZATION), MDE AUTHORIZATION NUMBER 201561093/15-NI-3197 WAS ISSUED JULY 17, 2019.
 - THERE ARE NO WETLANDS ON THIS SITE, BASED ON THE WETLAND STUDY PROVIDED BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC. DATED JULY 12, 2004 AND VERIFIED BY ECO-SCIENCE PROFESSIONALS, INC. DATED AUGUST 2014.
 - NO STORMWATER MANAGEMENT IS CURRENTLY PROPOSED, AS THERE ARE NO IMPERVIOUS SURFACES PROPOSED. STORMWATER MANAGEMENT WILL BE PROVIDED UNDER A SEPARATE SITE DEVELOPMENT PLAN FOR BUILDING CONSTRUCTION.
 - A PRE-SUBMISSION COMMUNITY MEETING FOR THIS PROJECT WAS HELD ON NOVEMBER 28, 2015 IN ACCORDANCE WITH SECTION 16.128 AND 16.147(B)(1) OF THE SUBDIVISION REGULATIONS.
 - THIS PLAN WAS PRESENTED TO DESIGN ADVISORY PANEL ON OCTOBER 26, 2016, REFERENCE REVIEW PROJECT #16-15.
- DESIGN ADVISORY PANEL RECOMMENDATION:**
- THE APPLICANT RECONSIDER THE PRIMARY ENTRANCE TO THE MOTOR COURT AND HOW THAT CAN BE DEALT WITH IN A BETTER SCALE WITH ENTRY WALLS AND PYLONS OR SOME METHOD THAT RESOLVES THE ISSUE WITH THE LARGE MOUTH GARAGE.

THE EXTERIOR BUILDING ELEVATION AT THE GARAGE ENTRY WILL BE REDUCED IN SCALE AND PROMINENCE BY LOWERING THE PARAPET WALL AND EXPLORING OTHER MATERIAL COMBINATIONS SO ONES EYE WILL BE DRAWN INSTEAD TO THE MAIN BUILDING ELEVATION ON THE RIGHT SIDE OF THE MOTOR COURT.
 - TAKE ANOTHER LOOK AT THE ELEVATIONS AND SEE IF YOU CAN ACCENT THE COURTYARDS AND MAYBE BREAK THE VERTICAL ELEMENTS DOWN A LITTLE BIT BASED ON WHETHER IT IS A COURTYARD OR A STREET TO HELP YOU GET SOME VARIETY AND DEFINITION.

THE TWO MAIN BUILDINGS WING FACADES CLOSEST TO DORSEY ROAD WILL BE RE-EXAMINED WITH THE INTENT TO DISTINGUISH THEM ARCHITECTURALLY FROM THE COURTYARD EXTERIOR FACADES THEREBY CREATING A BUILDING HIERARCHY THAT ADDS IDENTITY, INTEREST AND FURTHER VARIETY TO THE OVERALL BUILDING ELEVATION AND OUTDOOR SPACES THE DEFINE.
 - THAT THE APPLICANT SEND A LETTER TO THE COUNTY LOBBYING FOR BETTER A CONNECTION AND IDENTIFICATION TO THE MARC STATION.

DOCUMENTS WILL ACCOMPANY ELECTRONIC PLAN SUBMISSIONS TO REQUEST THAT HOWARD COUNTY REVIEW THE NEED FOR A BETTER CONNECTION AND IDENTIFICATION FOR THE MARC STATION WITHIN THE T.O.D ZONING DISTRICT.
- THE SUBJECT PROPERTY IS ZONED TOD PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
 - ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
 - THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410)-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
 - THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-297-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
 - TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
 - EXISTING UTILITIES ARE BASED ON FIELD SURVEY AND RECORD PLANS. CONTRACTOR SHALL VERIFY DEPTHS AND LOCATIONS OF EXISTING UTILITIES.
 - DISTURBED AREAS ON ADJACENT PARCEL "B" SHALL BE STABILIZED WITH SOIL AND WATERED UNTIL GROWTH IS ESTABLISHED. ANY TREES REMOVED ON PARCEL "B" SHALL BE REPLACED TO REESTABLISH A VEGETATIVE BUFFER BETWEEN THE PROPERTIES.
 - THE DISTURBANCES TO THE 100-YEAR FLOODPLAIN, STREAM AND BUFFERS ASSOCIATED WITH THE STREAM RESTORATION ACTIVITIES HAVE BEEN DETERMINED BY DPZ TO BE "NECESSARY DISTURBANCES" IN A LETTER DATED APRIL 15, 2019. THE APPROVAL IS SUBJECT TO UTILIZATION OF SPECIFIED MITIGATION METHODS, AND ISSUANCE OF THE MDE/ACOE AUTHORIZATION LETTER.
 - RIGHT OF ENTRY SHALL BE ACQUIRED FROM MTA FOR STREAM RESTORATION PRIOR TO APPROVAL OF ANY SDP TO CONSTRUCT RESIDENCES ON THIS PARCEL.**
 - THE DISTURBANCE REFERENCED IN NOTE 22 WAS RE-EVALUATED AND REAPPROVED IN A LETTER DATED FEB 27, 2020.
 - WP-20-03 OF 03/14/2020 HAD UPDATED THE REQUEST TO WORK IN THE STREAM AND BUFFERS, AS APPROVED IN WP-15-131 (SEE NOTE #1). THE ALTERNATIVE COMPLIANCE WAS APPROVED WITH THE CONDITIONS NEEDED IN GENERAL NOTE 9, AN ADDITIONAL REVISION REQUEST THAT THE OFF-SITE STREAM RESTORATION MUST BE COMPLETED BEFORE USING OCCUPANCY PERMITS MAY BE ISSUED FOR THE APARTMENT BUILDING ON PARCEL R.



EXISTING CONDITIONS PLAN

| SOILS LEGEND | | | |
|--------------|---|---------|-------|
| SYMBOL | NAME/DESCRIPTION | K VALUE | GROUP |
| RuB | RUSSETT AND BELTSVILLE SOIL, 2 TO 5 PERCENT SLOPES | 0.37 | C |
| RuC | RUSSETT AND BELTSVILLE SOIL, 5 TO 10 PERCENT SLOPES* | 0.37 | C |
| RuB | RUSSETT FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES | 0.37 | C |
| UFA | URBAN LAND-FALLSINGTON COMPLEX, 0 TO 5 PERCENT SLOPES | 0.20 | D |
| UHD | URBAN LAND-UDORTHEMUS COMPLEX, 0 TO 15 PERCENT SLOPES | 0.28 | D |

OBTAINED FROM USDA NRCS WEB SOIL NATIONAL COOPERATIVE SOIL SURVEY, NOVEMBER 2018. SEE HOWARD COUNTY SOIL SURVEY MAP NO. 25.
*HIGHLY ERODIBLE SOILS K>0.35 AND 5% OR GREATER SLOPES, OR 15% AND GREATER SLOPES.

| ADDRESS CHART | |
|------------------|--------|
| STREET ADDRESS | PARCEL |
| 6771 DORSEY ROAD | 375 |

| PERMIT INFORMATION CHART | | | | | |
|--------------------------|----------|------|---------|-------------------|--------------|
| PLAT | BLOCK No | ZONE | TAX MAP | ELECTION DISTRICT | CENSUS TRACT |
| 19440 | 0024 | TOD | 37 | 1 | 6012.03 |
| DEED: L.16837 | F.00055 | | | | |

APPROVED: DEPARTMENT OF PLANNING AND ZONING

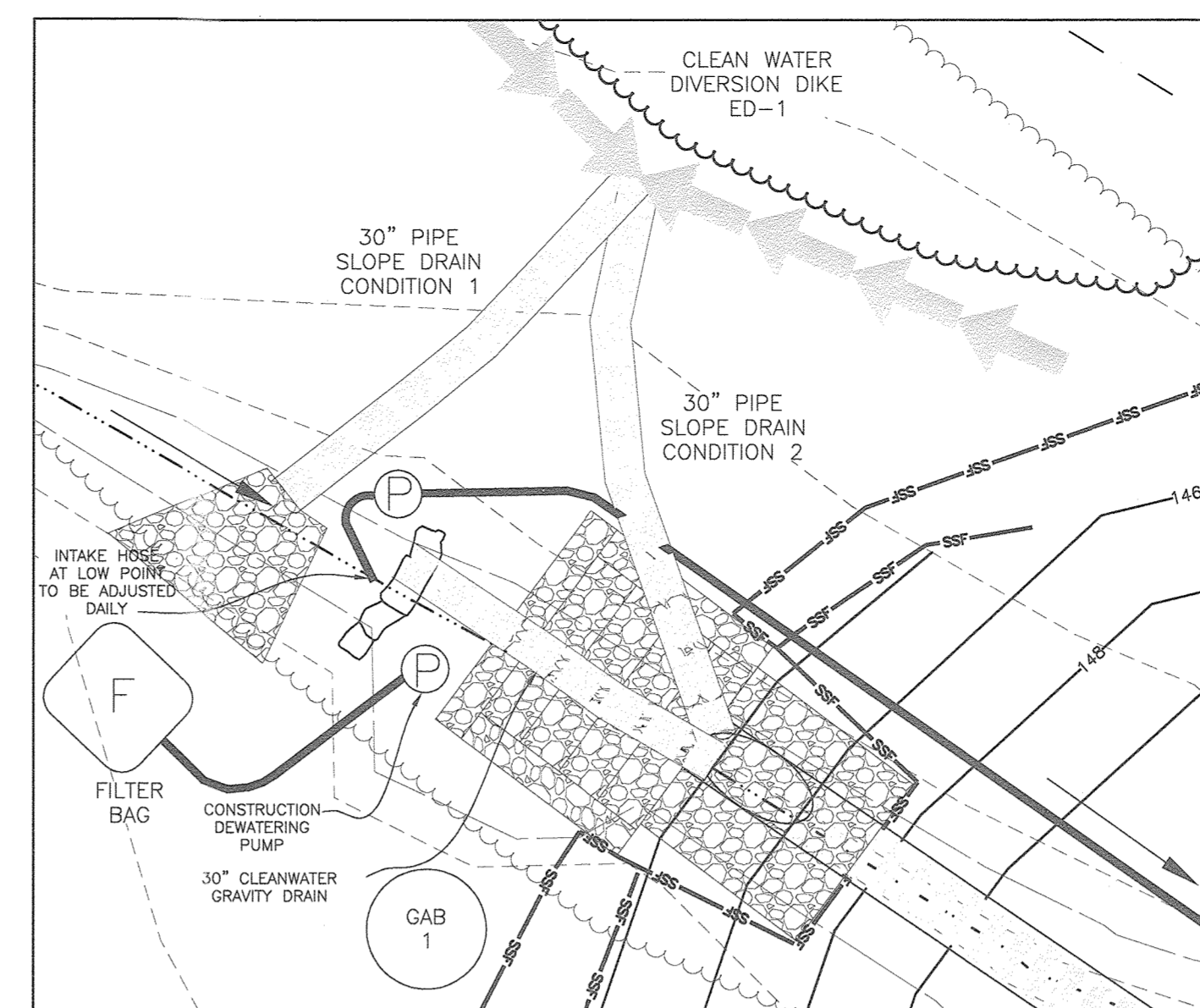
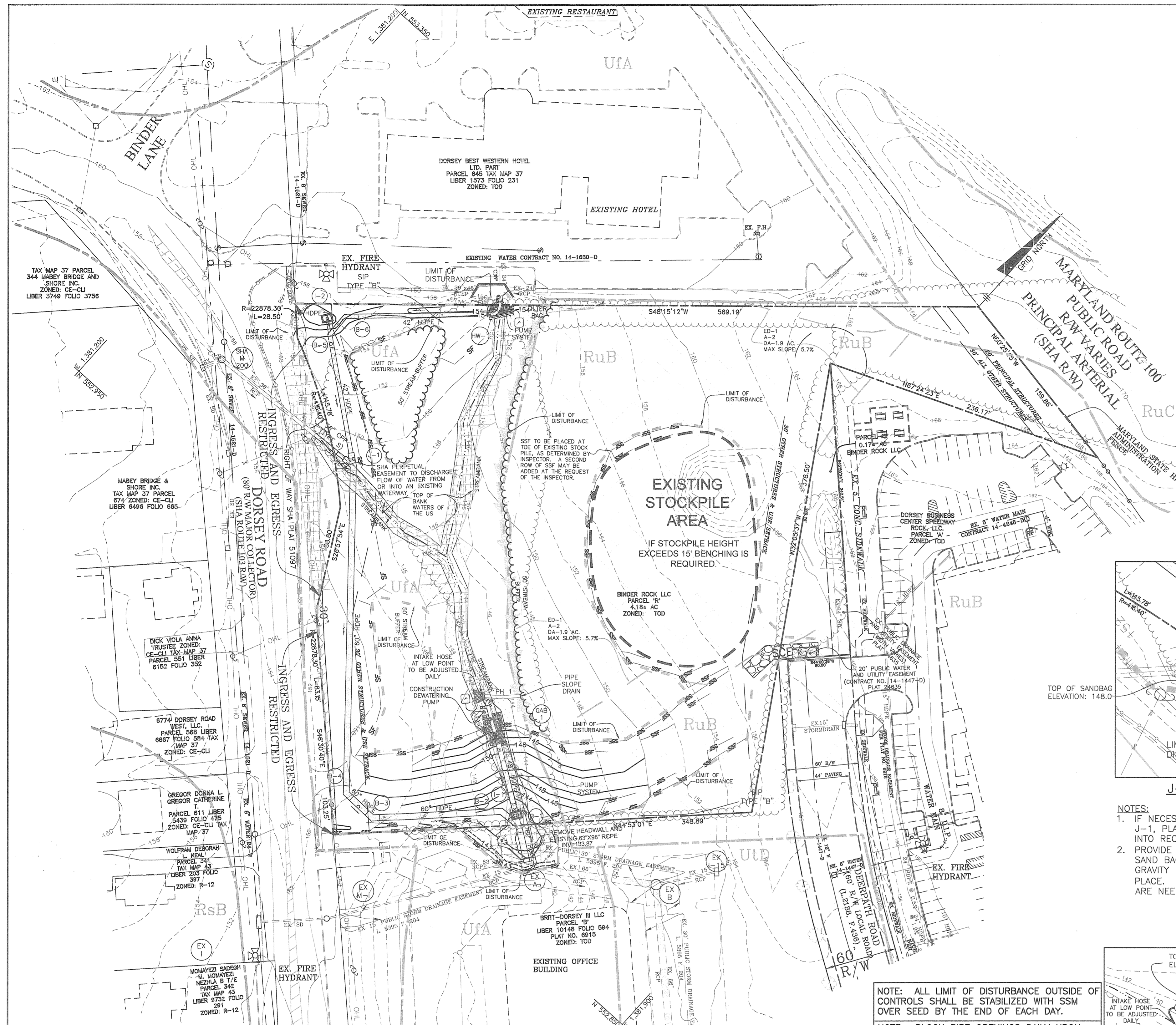
John J. Williams, Jr. 2/13/20
CHIEF DEVELOPMENT ENGINEERING DIVISION

Bl. Williams 12-17-19
CHIEF, DIVISION OF LAND DEVELOPMENT

John J. Williams, Jr. 3-4-2020
DIRECTOR

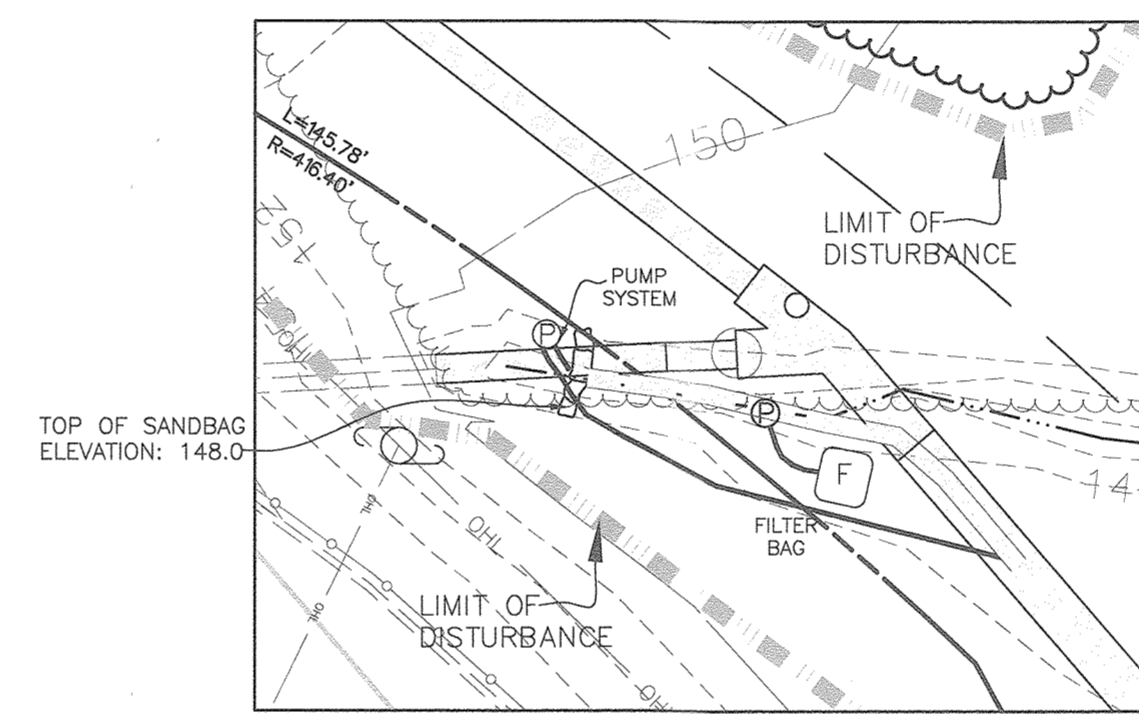
BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE SUITE 315 & ELLICOTT CITY, MARYLAND 21043
(P) 410-485-8105 (F) 410-485-8644
WWW.BD-CIVLENGINEERING.COM

| | |
|---|--|
| OWNER/DEVELOPER: | PROJECT: |
| BINDER ROCK LLC C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKDRIDGE, MARYLAND 21075 410.579.2242 | DORSEY CENTER PARCEL R - STREAM DIVERSION AND OFFSITE STREAM MITIGATION |
| LOCATION: | TITLE: |
| DORSEY CENTER; TAX MAP 37 PARCEL 375 - GRID 24 1st ELECTION DISTRICT HOWARD COUNTY, MARYLAND OFFSITE: SEE ABOVE | EXISTING CONDITIONS PLAN AND SOILS MAP |
| DATE: NOVEMBER 2019 | PROJECT NO. 1959 |
| SCALE: AS SHOWN | DRAWING 1 OF 14 |
| Design: AAM | Draft: AAM |
| Check: CAM | |



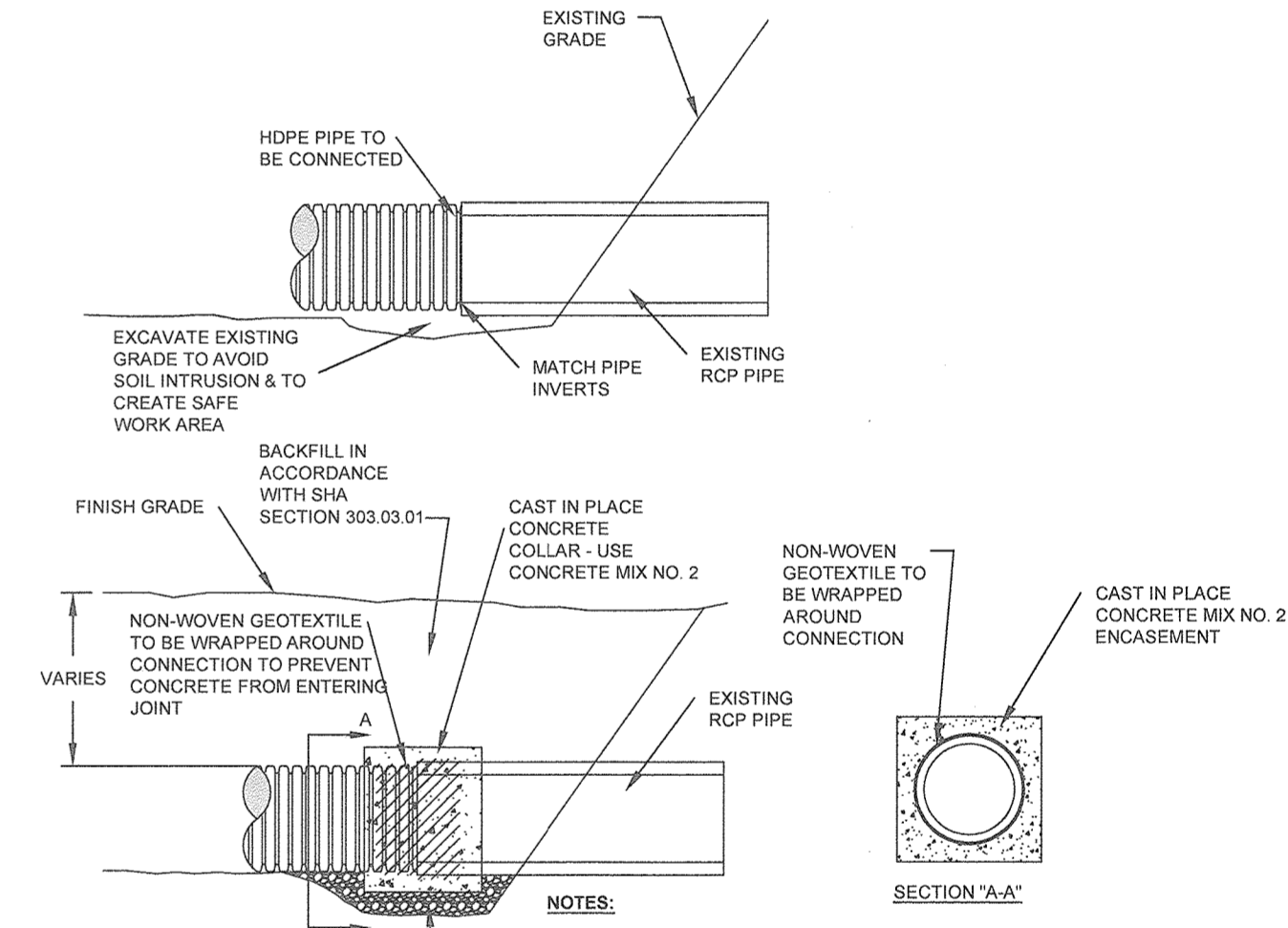
GAB-1 PH 1 SSF/GAB AND SLOPE DRAIN CONDITIONS DETAIL
SCALE: 1" = 10'

NOTES:
CONTRACTOR SHALL EXTEND CLEANWATER PIPE OUTFALL TO THE CURRENT STORM DRAIN PIPE LOCATION FOR GRAVITY DRAINAGE WHEN PUMPING IS NOT TAKING PLACE.
PROVIDE 30" CLEANWATER GRAVITY DRAIN PIPE THROUGH SAND BAG DIKE TO THE STORM DRAIN PIPE FOR GRAVITY DRAINAGE WHEN PUMPING IS NOT TAKING PLACE. SANDBAG 30" PIPE WHEN PUMPING OPERATIONS ARE NEEDED.

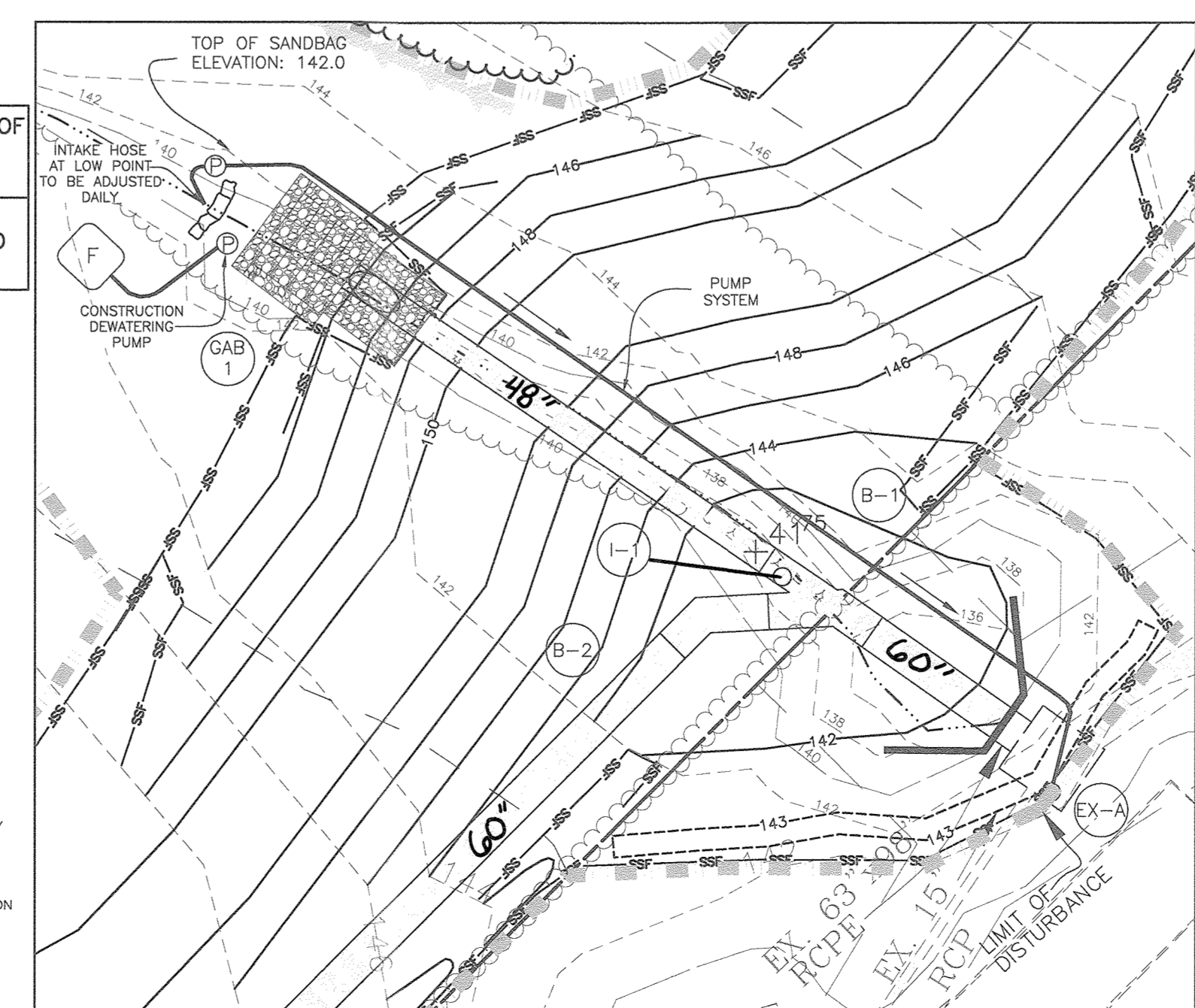


J-1 PUMP AROUND PLAN
SCALE: 1" = 20'

NOTES:
1. IF NECESSARY FOR STORM DRAIN CONSTRUCTION TO J-1, PLACE PUMP AROUND SYSTEM AND DISCHARGE INTO RECENTLY COMPLETED STORM DRAIN PIPES.
2. PROVIDE 24" CLEANWATER GRAVITY DRAIN PIPE THROUGH SAND BAG DIKE TO THE STORM DRAIN PIPE FOR GRAVITY DRAINAGE WHEN PUMPING IS NOT TAKING PLACE. SANDBAG 24" PIPE WHEN PUMPING OPERATIONS ARE NEEDED.

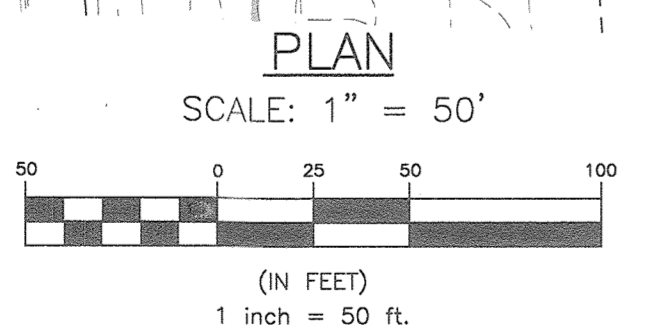


NOTES:
1. EXCAVATE BELOW INVERT OF EXISTING PIPE AND PREPARE BEDDING BELOW EXISTING AND PROPOSED PIPE ALIGNMENT IN ACCORDANCE WITH SHA SECTION 303.03.01.
2. PLACE DOWNSTREAM PIPE WITH INVERTS MATCHED.
3. SD TYPE I NON-WOVEN GEOTEXTILE TO BE WRAPPED AROUND CONNECTION WITH FULL BEAM OVERLAP (MINIMUM OVERLAP LENGTH = DIAMETER) TO PROVIDE FULL PROTECTION FROM SOIL AND CONCRETE INTRUSION.
4. CAST PIPE COLLAR WITH SHA CONCRETE MIX NO. 2.
5. CONNECTION AND PIPE TO BE BACKFILLED PER SHA SECTION 303.03.01.



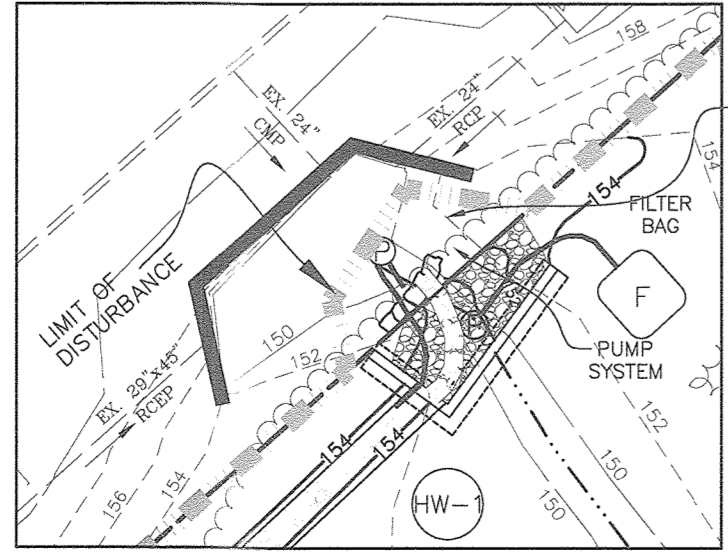
GAB-1 PUMP AROUND PLAN
SCALE: 1" = 20'

NOTE: ALL LIMIT OF DISTURBANCE OUTSIDE OF CONTROLS SHALL BE STABILIZED WITH SSM OVER SEED BY THE END OF EACH DAY.
NOTE: BLOCK PIPE OPENINGS DAILY UPON COMPLETION OF DAY'S WORK, TO ENSURE NO SEDIMENT OR FLOWS ENTER PIPES.



CPP TRENCH DETAIL

| PIPE DIAM. | MIN. TRENCH WIDTH |
|---------------|-------------------|
| 36" (900 mm) | 64" (1626 mm) |
| 42" (1050 mm) | 72" (1828 mm) |
| 48" (1200 mm) | 80" (2032 mm) |
| 60" (1500 mm) | 96" (2438 mm) |



NOTES:
SCALE: 1" = 20'
PROVIDE 24" CLEANWATER GRAVITY DRAIN PIPE THROUGH SAND BAG DIKE TO THE STORM DRAIN PIPE FOR GRAVITY DRAINAGE WHEN PUMPING IS NOT TAKING PLACE. SANDBAG 24" PIPE WHEN PUMPING OPERATIONS ARE NEEDED.

ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
ALICE A. MILLER, P.E. DATE: 11-25-19

DEVELOPER'S CERTIFICATE
I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
DATE: 11/23/19

APPROVED: DEPARTMENT OF PLANNING AND ZONING
DATE: 12-17-19

DATE: 3-4-20

| | | |
|-----|------|----------|
| NO. | DATE | REVISION |
| | | |

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BE-CIVILENGINEERING.COM

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. 28376, Expiration Date: 1-1-21.

OWNER/DEVELOPER: BINDER ROCK LLC
C/O H & H ROCK COMPANIES
6800 DEERPATH ROAD
SUITE 100
ELKRIDGE, MARYLAND 21075
410.579.2242

PROJECT: DORSEY CENTER
PARCEL R - STREAM DIVERSION

LOCATION: TAX MAP 37
PARCEL 375 - GRID 24
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: GRADING, SEDIMENT AND EROSION CONTROL PLAN
PHASE 1, STORM DRAIN CONSTRUCTION

DATE: NOVEMBER 2019 PROJECT NO. 1959

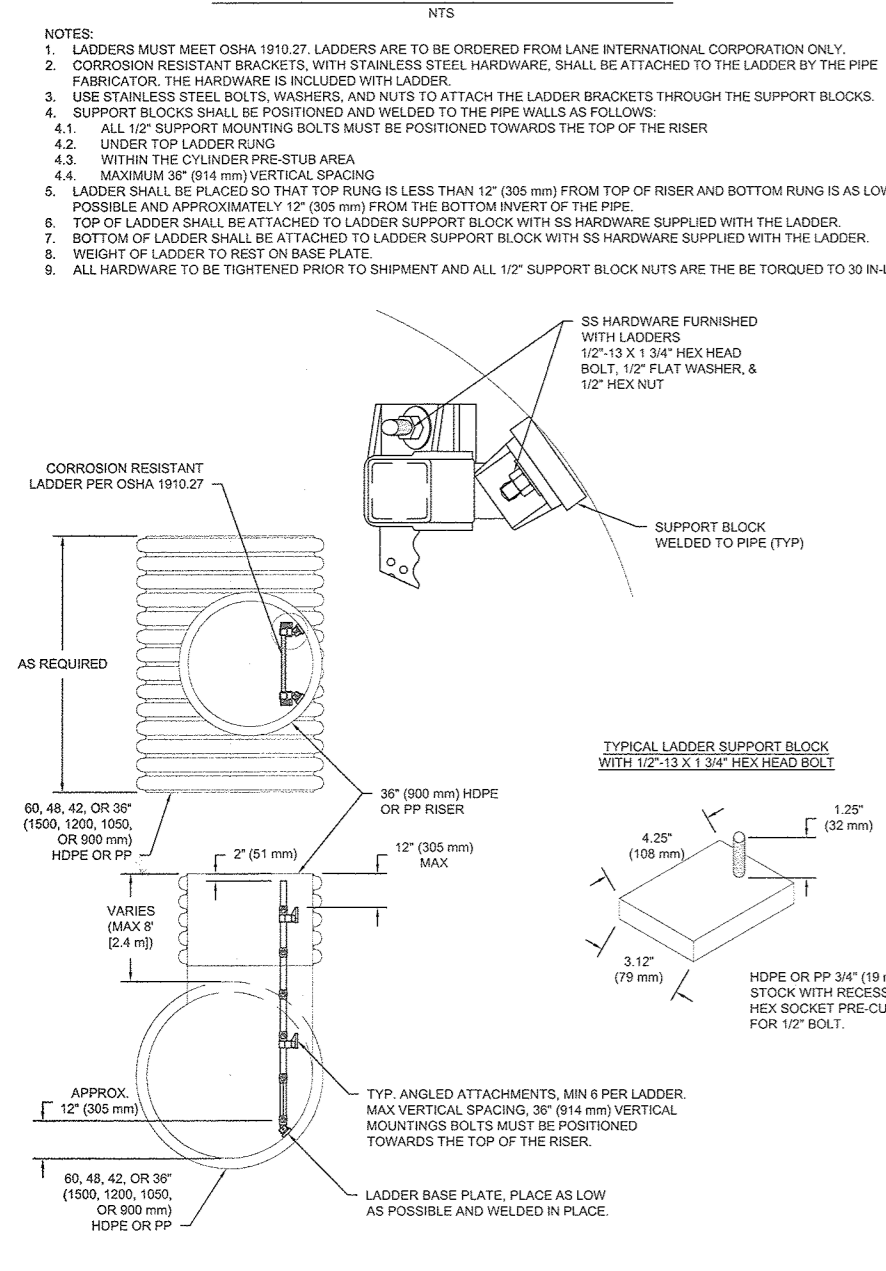
SCALE: AS SHOWN DRAWING NO. OF 14

Design: AAM Draft: AAM Check: SCALE: AS SHOWN DRAWING NO. OF 14

LEGEND

- EXISTING CONTOURS 452
450
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING STREAM
- EXISTING STRUCTURE
- EXISTING STREAM BUFFER
- SOIL DELINEATION
- SOILS DELINEATION
- STEEP SLOPES *
15% - 20% - 25%+
- ERODIBLE SOILS
- * STEEP SLOPES ARE ALSO ERODIBLE SOILS
- LIMIT OF DISTURBANCE
- STORM DRAIN DRAINAGE DIVIDE
- SUPER SILT FENCE
- CLEANWATER DIVERSION
- EROSION CONTROL MAT
- SEC DRAINAGE AREA
- TGOS CONTOURS

60, 48, 42, OR 36 X 36" (1500, 1200, 1050, OR 900 X 900 mm) RISER TEE WITH LADDER FOR HDPE AND PP STRUCTURES



MANWAYS AND I-PER THIS DETAIL. I-1 TO INCLUDE 30IN STANDARD GRATE ASSEMBLY WITH 1.5" CONCRETE RING. I-2 IS CONSTRUCTED IN A SIMILAR MANNER WITHOUT MAN ACCESS, AND WITH 24" STANDARD GRATE AND 1.5" CONCRETE RING.

ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Alice A. Miller, P.E. 11-25-19 DATE

DEVELOPER'S CERTIFICATE
"WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."

John P. Blanton 11/20/19 DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

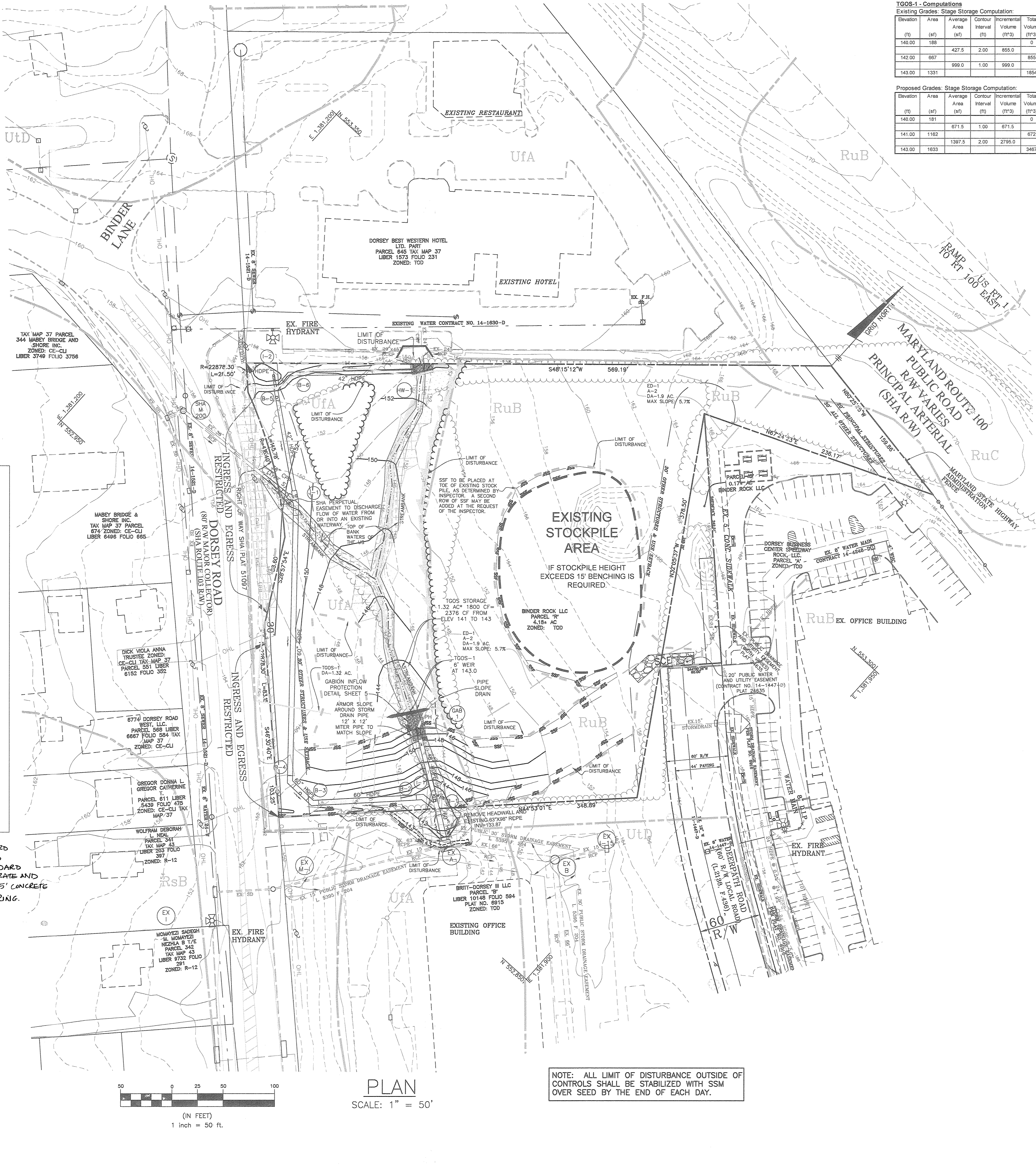
John P. Blanton 12/10/19 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

John P. Blanton 12-17-19 DATE
CHIEF DEVELOPMENT ENGINEERING DIVISION

John P. Blanton 2/13/20 DATE
CHIEF CIVIL ENGINEER

John P. Blanton 3-4-2020 DATE
DIRECTOR



NOTE: ALL LIMIT OF DISTURBANCE OUTSIDE OF CONTROLS SHALL BE STABILIZED WITH SSM OVER SEED BY THE END OF EACH DAY.

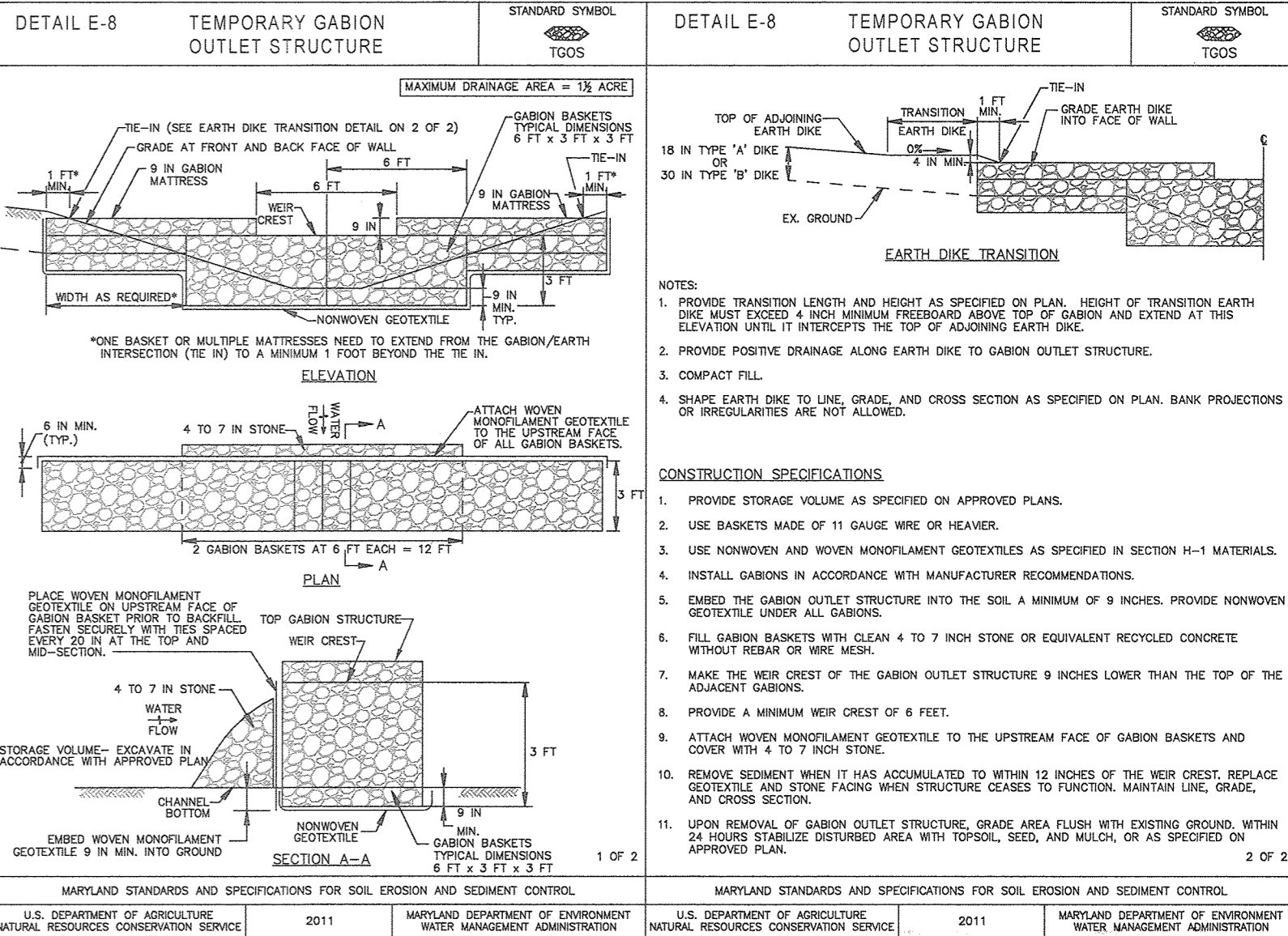
TGOS-1 - Computations

Existing Grades: Stage Storage Computation:

| Elevation (ft) | Area (sf) | Average (sf) | Contour Interval (ft) | Incremental Volume (ft³) | Total Volume (ft³) |
|----------------|-----------|--------------|-----------------------|--------------------------|--------------------|
| 140.00 | 188 | | 427.5 | 2.00 | 855.0 |
| 142.00 | 667 | | 699.0 | 1.00 | 999.0 |
| 143.00 | 1331 | | | | 1854 |

Proposed Grades: Stage Storage Computation:

| Elevation (ft) | Area (sf) | Average (sf) | Contour Interval (ft) | Incremental Volume (ft³) | Total Volume (ft³) |
|----------------|-----------|--------------|-----------------------|--------------------------|--------------------|
| 140.00 | 181 | | 671.5 | 1.00 | 671.5 |
| 141.00 | 1162 | | 1367.5 | 2.00 | 2795.0 |
| 143.00 | 1633 | | | | 3467 |



DUAL WALL FABRICATED REDUCERS
60"x24" - 60"x48" DIAMETER

| PART # | PIPE SIZE | A | B | C | JOINT |
|-----------|-----------------------------|------------------|------------------|------------------|-------|
| 6077AN | 60 x 24 in (1524 x 609 mm) | 33.6 in (857 mm) | 18.0 in (457 mm) | 15.6 in (396 mm) | - |
| 6077AN8SB | 60 x 24 in (1524 x 609 mm) | 16.6 in (421 mm) | 9.6 in (243 mm) | 7.0 in (178 mm) | ST |
| 6077AN6SB | 60 x 24 in (1524 x 609 mm) | 16.6 in (421 mm) | 9.6 in (243 mm) | 7.0 in (178 mm) | WT |
| 6078AN | 60 x 30 in (1524 x 762 mm) | 34.5 in (876 mm) | 18.0 in (457 mm) | 16.5 in (419 mm) | - |
| 6078AN8SB | 60 x 30 in (1524 x 762 mm) | 21.9 in (556 mm) | 9.6 in (243 mm) | 11.8 in (299 mm) | ST |
| 6078AN6SB | 60 x 30 in (1524 x 762 mm) | 21.9 in (556 mm) | 9.6 in (243 mm) | 11.8 in (299 mm) | WT |
| 6079AN | 60 x 36 in (1524 x 914 mm) | 38.6 in (978 mm) | 18.0 in (457 mm) | 20.6 in (523 mm) | - |
| 6079AN8SB | 60 x 36 in (1524 x 914 mm) | 20.9 in (530 mm) | 9.6 in (243 mm) | 11.3 in (287 mm) | ST |
| 6079AN6SB | 60 x 36 in (1524 x 914 mm) | 20.9 in (530 mm) | 9.6 in (243 mm) | 11.3 in (287 mm) | WT |
| 6042AN | 60 x 42 in (1524 x 1066 mm) | 38.7 in (978 mm) | 18.0 in (457 mm) | 20.7 in (526 mm) | - |
| 6042AN8SB | 60 x 42 in (1524 x 1066 mm) | 21.6 in (549 mm) | 9.6 in (243 mm) | 12.0 in (305 mm) | ST |
| 6042AN6SB | 60 x 42 in (1524 x 1066 mm) | 21.6 in (549 mm) | 9.6 in (243 mm) | 12.0 in (305 mm) | WT |
| 6048AN | 60 x 48 in (1524 x 1219 mm) | 37.8 in (960 mm) | 18.0 in (457 mm) | 20.7 in (526 mm) | - |
| 6048AN8SB | 60 x 48 in (1524 x 1219 mm) | 18.9 in (478 mm) | 9.6 in (243 mm) | 8.8 in (223 mm) | ST |
| 6048AN6SB | 60 x 48 in (1524 x 1219 mm) | 18.9 in (478 mm) | 9.6 in (243 mm) | 8.8 in (223 mm) | WT |

NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY.

BENCHMARK ENGINEERING, INC.
ENGINEERS • LAND SURVEYORS • PLANNERS

8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

DORSEY CENTER
PARCEL R - STREAM DIVERSION

LOCATION: TAX MAP 37 PARCEL 375 - GRID 24 1st ELECTION DISTRICT HOWARD COUNTY, MARYLAND

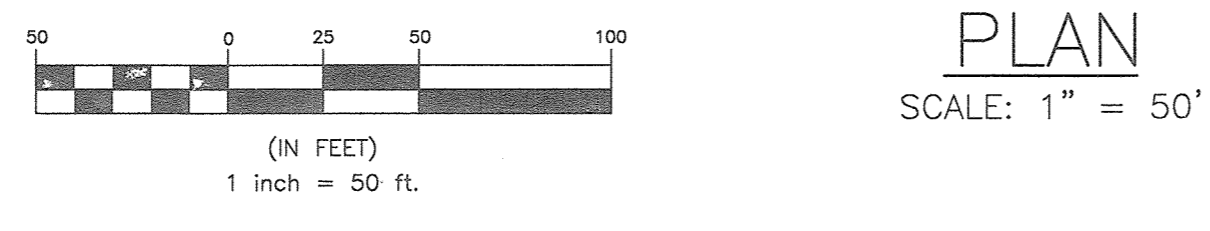
TITLE: GRADING, SEDIMENT AND EROSION CONTROL PLAN PHASE 2, SITE FILL

DATE: NOVEMBER 2019 PROJECT NO. 1959

Design: AAM Draft: AAM Check: SCALE: AS SHOWN DRAWING 3 OF 14

OWNER/DEVELOPER: BINDER ROCK LLC C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKCRIDGE, MARYLAND 21075 410.579.2242

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. 28376, Expiration Date: 1-1-21.



HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES FOR PARCEL 'R'

- 1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future L.O.D and protected areas are marked clearly in the field. A minimum of 48 hours notice to CID must be given at the following stages:
a. Prior to the start of earth disturbance,
b. Upon completion of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading,
c. Prior to the start of another phase of construction or opening of another grading unit,
d. Prior to the removal or modification of sediment control practices.
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days or as to the surface of all performance controls, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1) and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.
4. All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL (or topsoil) (Sec. B-4-4-2), permanent seeding (Sec. B-4-4-5), temporary seeding (Sec. B-4-4-6) and mulching (Sec. B-4-4-7). Temporary stabilization with much stone only will be applied between the fall clearing and the start of the growing season. Incremental stabilization (Sec. B-4-4-1) specifications shall be enforced in areas with >15% of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 feet must be benched with stable outfall. All concentrated flow, steep slopes, and highly erodible areas shall receive silt stabilization matting (Sec. B-4-8-6).
5. All sediment control structures are to remain in place, and are to be maintained in operative condition until permission for their removal has been obtained from the CID.
6. Site Analysis:
Total Area of Site: 4.18 Acres
Area Disturbed: 2.38 Acres
Area to be roofed or paved: 0 Acres
Area to be vegetatively stabilized: 2.38 Acres
Total cut: 458 Cu Yds
Total fill: 4341 Cu Yds
Off-site water/borrow area location: A SITE WITH AN APPROVED SEDIMENT CONTROL PLAN AND ACTIVE GRADING PERMIT
7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
8. Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and control record.
9. Inspection date:
Inspection type (routine, pre-storm event, during rain event)
Name and title of inspector
Weather information (current conditions as well as time and on-mountain of last recorded precipitation)
Brief description of project's status (e.g. percent complete) and/or current activities
10. Compliance with sediment control requirements:
Identification of plan deficiencies
Identification of sediment controls that require maintenance
Existence of sediment control structures that require maintenance
Compliance status regarding the sequence of construction and stabilization requirements
11. Photographs
12. Monitoring/inspections:
Maintenance on/off corrective action performed
Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).
13. Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back filled and stabilized by the end of each work day.
14. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be allowed by the CID per the list of HSCD-approved field changes.
15. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.
16. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
17. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
18. All fill and super silt fence shall be placed on-the-contour, and be implicated at 25' minimum intervals, with lower ends curved uphill by 2" in elevation.
19. Stream channels must not be disturbed during the following restricted time periods (inclusive):
• Use I and IP March 1 - June 15
• Use II and IP October 1 - April 30
• Use III and IP March 1 - May 31
16. A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site at all times during construction.

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2. HOLD ON-SITE PRE-CONSTRUCTION MEETING. (DAY 2)
3. CLEAR GRUB AND NECESSARY TO INSTALL STABILIZED CONSTRUCTION ENTRANCE AND PERIMETER CONTROLS (I.E. EARTH DIKES, TEMPORARY SLOPE DRAIN, SILT FENCE, SUPER SILT FENCE, ETC.) (DAY 3-8)
4. PHASE I: BEGINNING DURING EXPECTED DRY WEATHER (5-DAY SPAN OF NO PRECIPITATION FROM THE NATIONAL WEATHER SERVICE) AND WITH THE INSPECTOR'S PERMISSION, INSTALL PUMP-AROUND PRACTICE NEAR GABION INFLOW BAG-1, DISCHARGING INTO EX-A THROUGH MANHOLE COVER. CLEAN WATER SLOPE DRAIN SHOULD DISCHARGE BEHIND THE SAND BAG NEAR, AND ANY DISCHARGE SHOULD BE PART OF THE PUMP-AROUND SYSTEMS (CONDITION 1 PER DETAIL SHEET 2). FOR END OF DAY PUMP REMOVE SAND BAGS THROUGH SAND BAG DIKES (DAY 7-8)
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6. CONSTRUCT EMBANKMENT FILL OVER STORM DRAIN, AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE PUMP-AROUND SYSTEM. CLEAN WATER SLOPE DRAIN SHOULD BE RELOCATED TO DISCHARGE TO GAB-1 (CONDITION 2 PER DETAIL SHEET 2). (DAY 16-21)
7. CONSTRUCT STORM DRAIN FROM B-3 TO LOCATION OF J-1. (DAY 21-28)
8. UNDER DRY WEATHER CONDITIONS (6-DAY SPAN OF NO PRECIPITATION FROM THE NATIONAL WEATHER SERVICE) AND WITH THE INSPECTOR'S PERMISSION, REMOVE THE EXISTING 36" END SECTION, FILL TO THE EXISTING INVERT OF THE 36" OUTFALL, AND INSTALL 36" OUTFALL EXTENSION TO WYE STRUCTURE J-1 AND CONNECT TO STORM DRAIN. (DAY 29-31)
9. CONSTRUCT STORM DRAIN FROM J-1 TO HW-1, INCLUDING I-2. (DAY 32-34)
10. UNDER DRY WEATHER CONDITIONS (5-DAY SPAN OF NO PRECIPITATION FROM THE NATIONAL WEATHER SERVICE) AND WITH THE INSPECTOR'S PERMISSION, INSTALL PUMP-AROUND ABOVE HW-1, PUMPING INTO INSTALLED STORM DRAIN, AND CONSTRUCT HW-1. UPON COMPLETION OF HW-1, AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE PUMP-AROUND SYSTEM. (DAY 35-49)
11. UNDER DRY WEATHER CONDITIONS (5-DAY SPAN OF NO PRECIPITATION FROM THE NATIONAL WEATHER SERVICE) AND WITH THE INSPECTOR'S PERMISSION, INSTALL PHASE 2-1 CLEANWATER DIVERSION SLOPE DRAIN SHOULD DISCHARGE DIRECTLY INTO GAB-1, AND SHOULD NOT RELEASE INTO TCGS-1. BEGIN STREAM FILL OPERATIONS PLACING PERIMETER CONTROL, AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, PROCEED TO TCGS-1. (DAY 50-64)
12. PHASE 2-2 UPON APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, AND WITH STORM DRAIN SYSTEM FULLY OPERATIONAL, CONSTRUCT TCGS-2. CLEANWATER DIVERSION SLOPE DRAIN SHOULD DISCHARGE DIRECTLY INTO GAB-1, AND SHOULD NOT RELEASE INTO TCGS-1. BEGIN STREAM FILL OPERATIONS PLACING PERIMETER CONTROL, AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, PROCEED TO TCGS-2. (DAY 65-68)
13. UPON APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, REMOVE SEDIMENT CONTROL DEVICES AND STABILIZE ANY REMAINING DISTURBED AREAS WITH THE PERMANENT SEEDBED NOTES. (DAY 65)
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12. PHASE 2-2 UPON APPROVAL FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, AND WITH STORM DRAIN SYSTEM FULLY OPERATIONAL, CONSTRUCT TCGS-2. CLEANWATER DIVERSION SLOPE DRAIN SHOULD DISCHARGE DIRECTLY INTO GAB-1, AND SHOULD NOT RELEASE INTO TCGS-1. BEGIN STREAM FILL OPERATIONS PLACING PERIMETER CONTROL, AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, PROCEED TO TCGS-2. (DAY 65-68)
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SEQUENCE OF CONSTRUCTION (PLEASE REFER TO SHEET 8 FOR SOC FOR STREAM RESTORATION WORK - NOTE THAT THIS WORK MAY PROCEED INDEPENDENTLY FROM THE STREAM RESTORATION WORK)

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NOTE: SEPARATE SEDIMENT CONTROL AND SEQUENCE OF CONSTRUCTION SHALL BE PROVIDED FOR THE OFFSITE STREAM RESTORATION SHEETS 8-13 OF THIS PLAN.

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NOTE: TEMPORARY OR PERMANENT SEEDING AND STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE TIME FRAME REQUIRED BY THE 2011 MARYLAND STANDARDS & SPECIFICATIONS, SOIL EROSION AND SEDIMENT CONTROL WHICH EVER IS MORE STRINGENT.
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NOTE: SEPARATE SEDIMENT CONTROL AND SEQUENCE OF CONSTRUCTION SHALL BE PROVIDED FOR THE OFFSITE STREAM RESTORATION SHEETS 8-13 OF THIS PLAN.

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. 28376, Expiration Date: 1-1-21.
BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE SUITE 315 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BE-CIVLENGINEERING.COM

OWNER/DEVELOPER: BINDER ROCK LLC, C/O H & H ROCK COMPANIES, 8800 DEERPATH ROAD, SUITE 100, ELK RIDGE, MARYLAND 21075, 410.579.2242
PROJECT: DORSEY CENTER PARCEL R - STREAM DIVERSION
LOCATION: TAX MAP 37, PARCEL 375 - GRID 24, 1ST ELECTION DISTRICT, HOWARD COUNTY, MARYLAND
TITLE: SEDIMENT AND EROSION CONTROL NOTES AND DETAILS
DATE: NOVEMBER 2019 PROJECT NO: 1959
Design: AAM Draft: AAM Check: SCALE: AS SHOWN DRAWING 4 OF 14
SDP-19-038

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION
Using vegetation as cover to stabilize exposed soil from erosion.
Purpose: To promote the stabilization of exposed soil on eroded soil.
Conditions Where Practice Applies: On all disturbed areas not stabilized by other methods...
Stabilization practices are used to stabilize soil on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall.
B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION
Establishment of vegetative cover on cut and fill slopes.
Purpose: To provide timely vegetative cover on cut and fill slopes.
Conditions Where Practice Applies: Any cut or fill slope greater than 15 feet in height.
B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS
The process of preparing the soil to sustain adequate vegetative stabilization.
Purpose: To provide a suitable soil medium for vegetative growth.

B-4 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS
Soil Preparation
1. Temporary Stabilization
a. Seeded preparation consists of loosening soil to a depth of 3 to 5 inches by means of available agricultural or construction equipment.
b. Topsoiling consists of spreading topsoil to a depth of 2 to 4 inches over the prepared soil.
2. Permanent Stabilization
a. Soil preparation consists of loosening soil to a depth of 3 to 5 inches by means of available agricultural or construction equipment.
b. Topsoiling consists of spreading topsoil to a depth of 2 to 4 inches over the prepared soil.
c. Soil amendment consists of adding organic matter to the soil to improve its structure and fertility.
d. Fertilization consists of adding nutrients to the soil to promote plant growth.
e. Mulching consists of covering the soil with a layer of organic or inorganic material to reduce erosion and retain moisture.
f. Seeding consists of sowing seeds of suitable vegetation into the soil.

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Table B.1: Temporary Seeding for Site Stabilization
Plant Species, Seeding Rate (lb/acre), Seeding Depth (inches), Recommended Seeding Dates by Plant Hardiness Zone (I-VI), and Mating Proposed.

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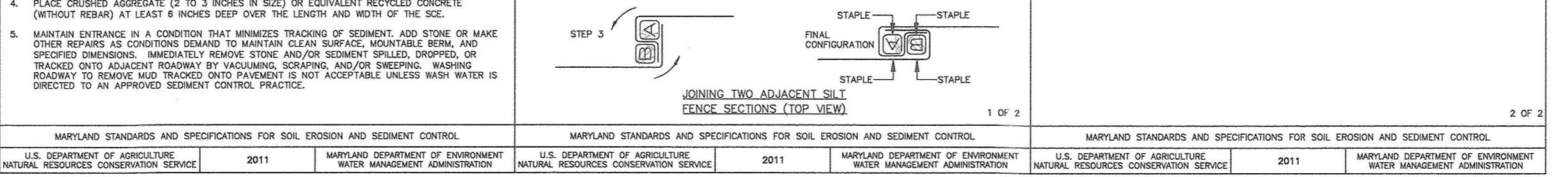
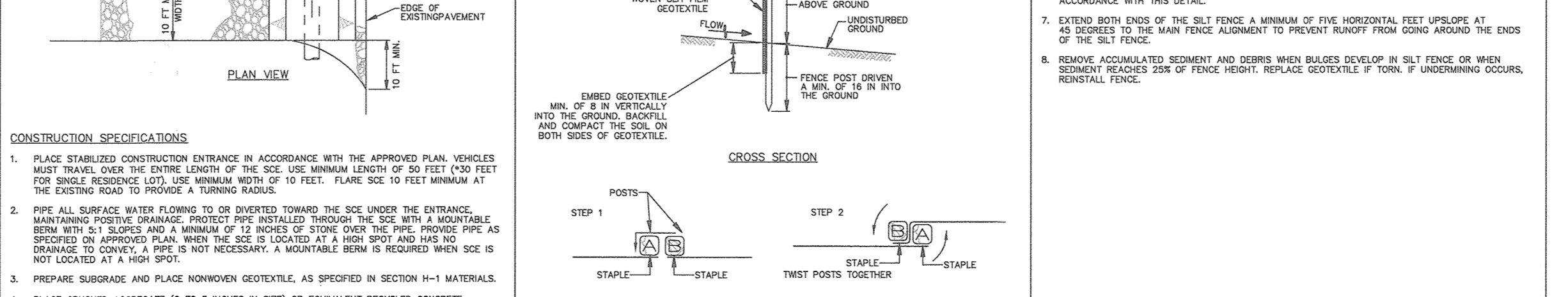
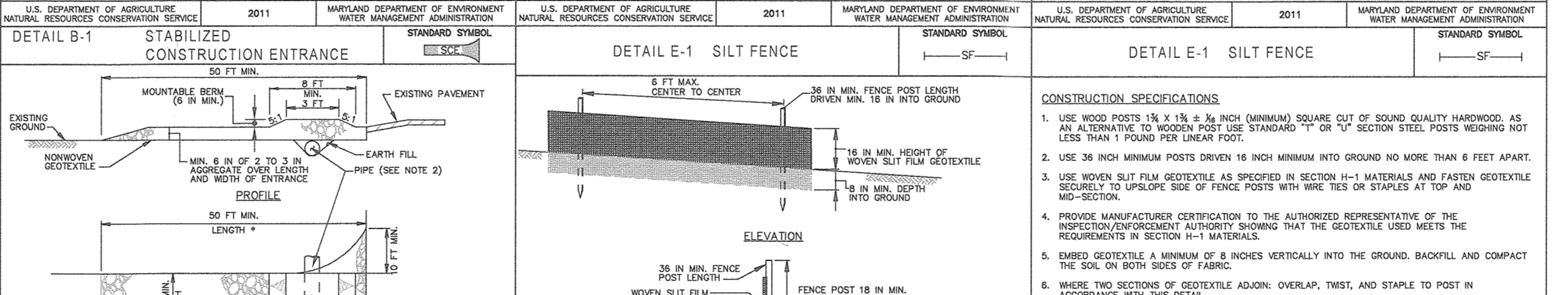
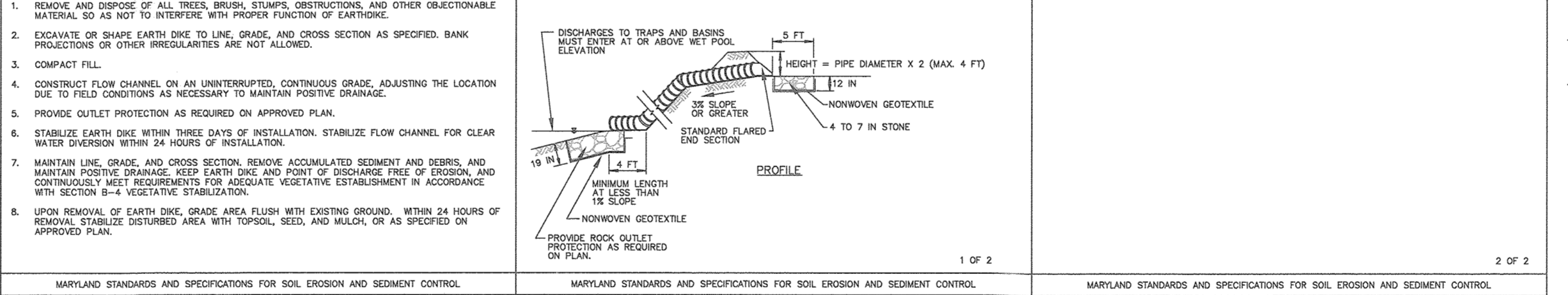
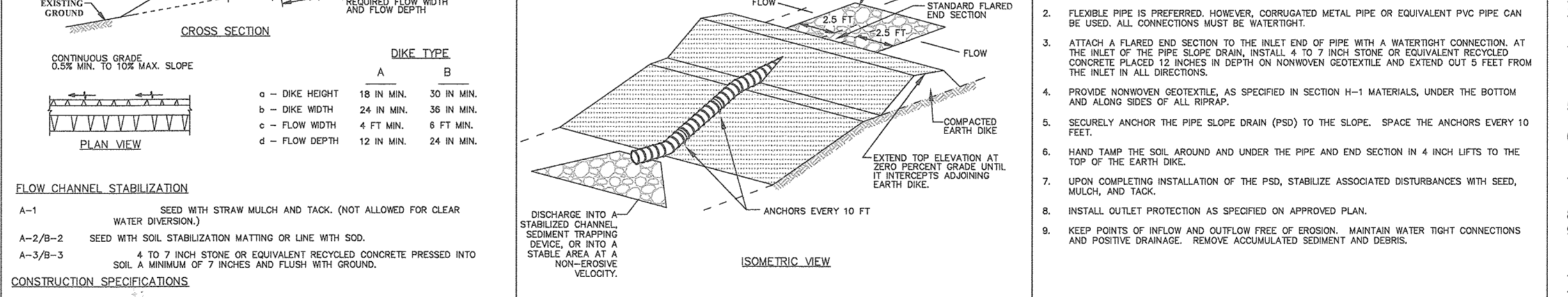
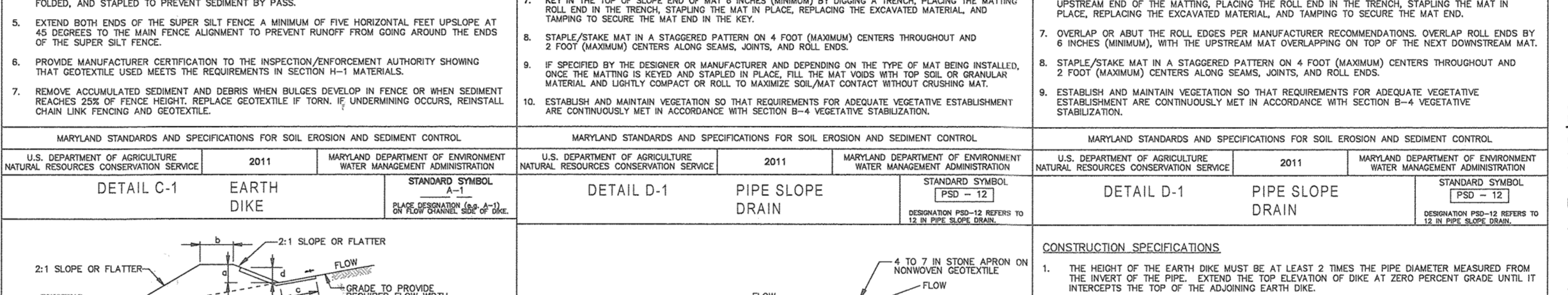
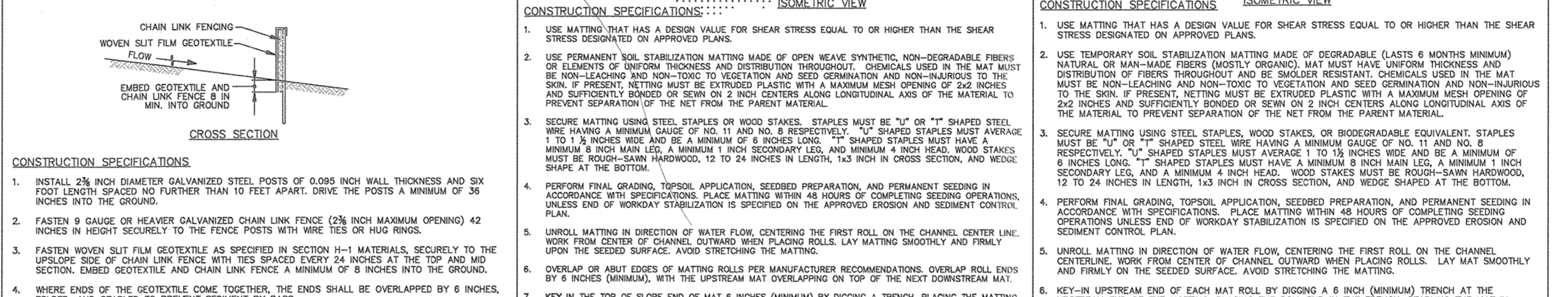
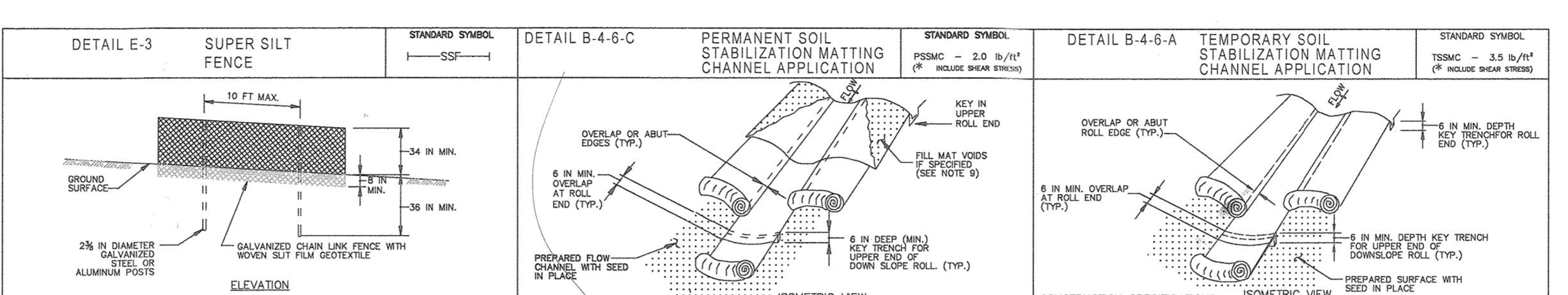
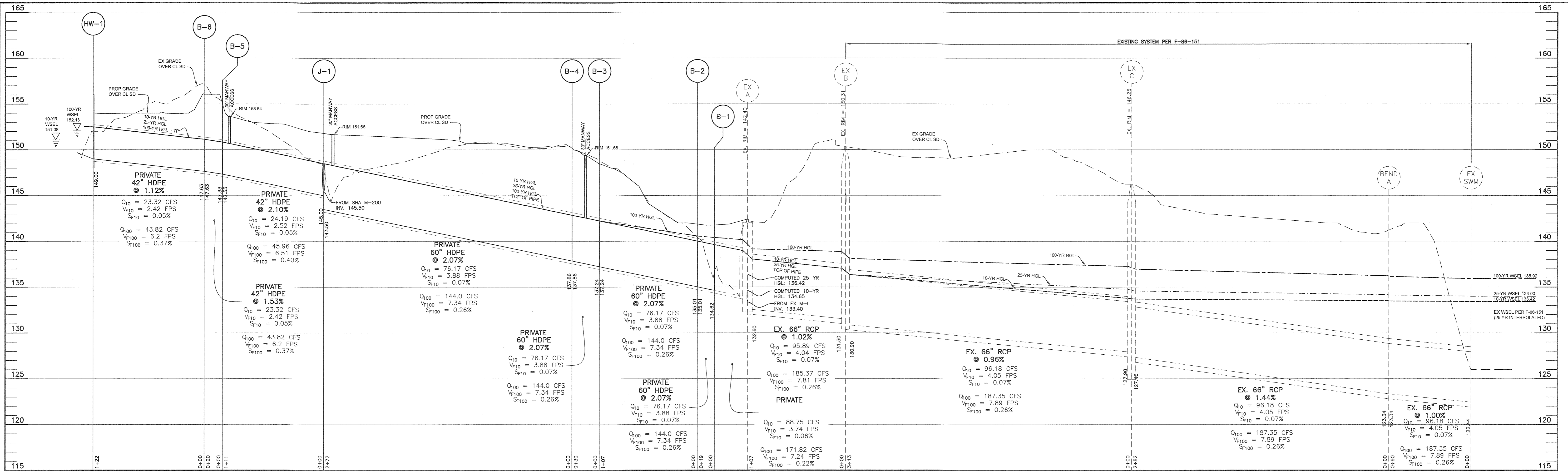
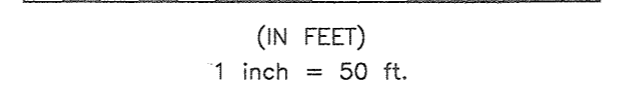


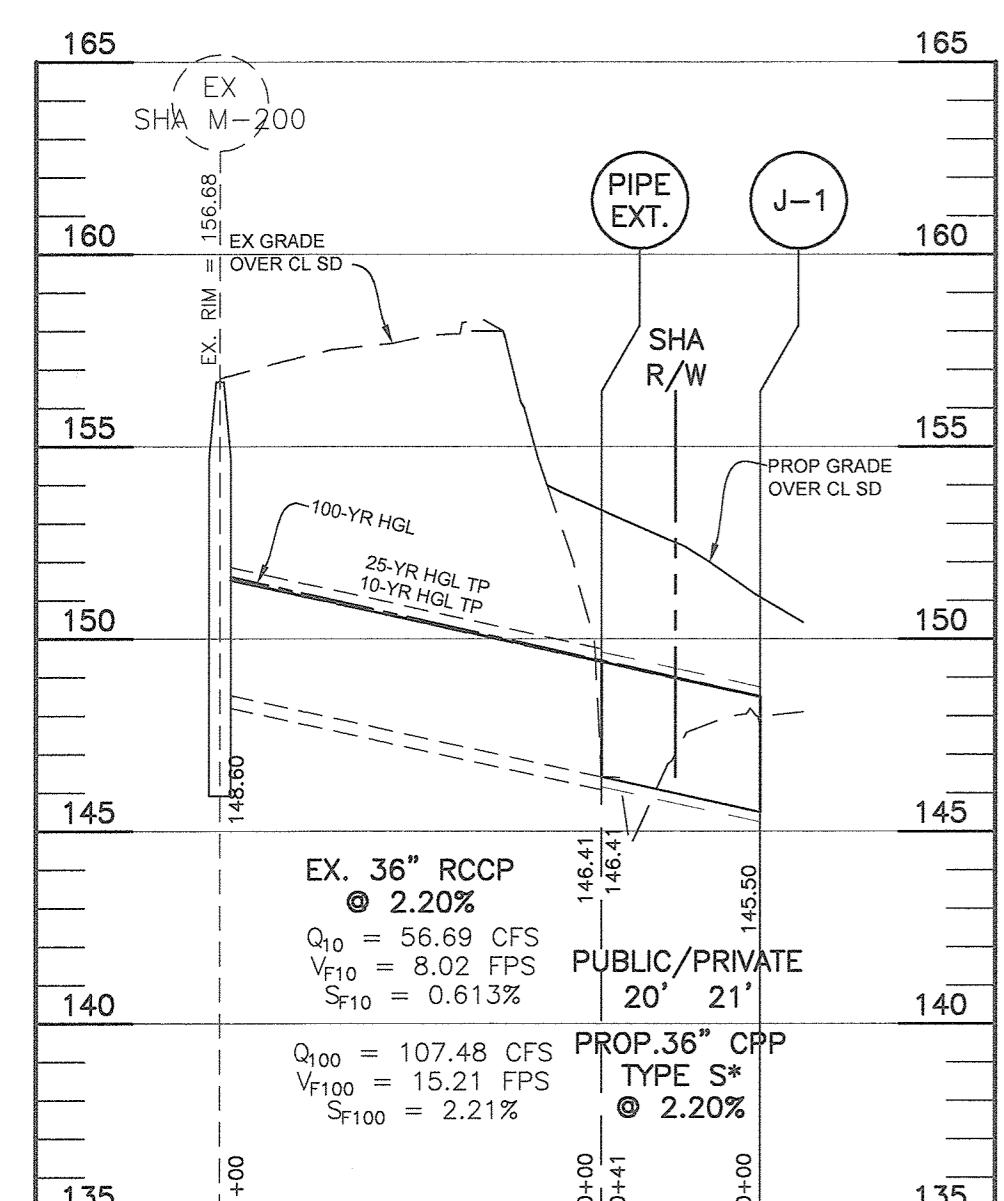
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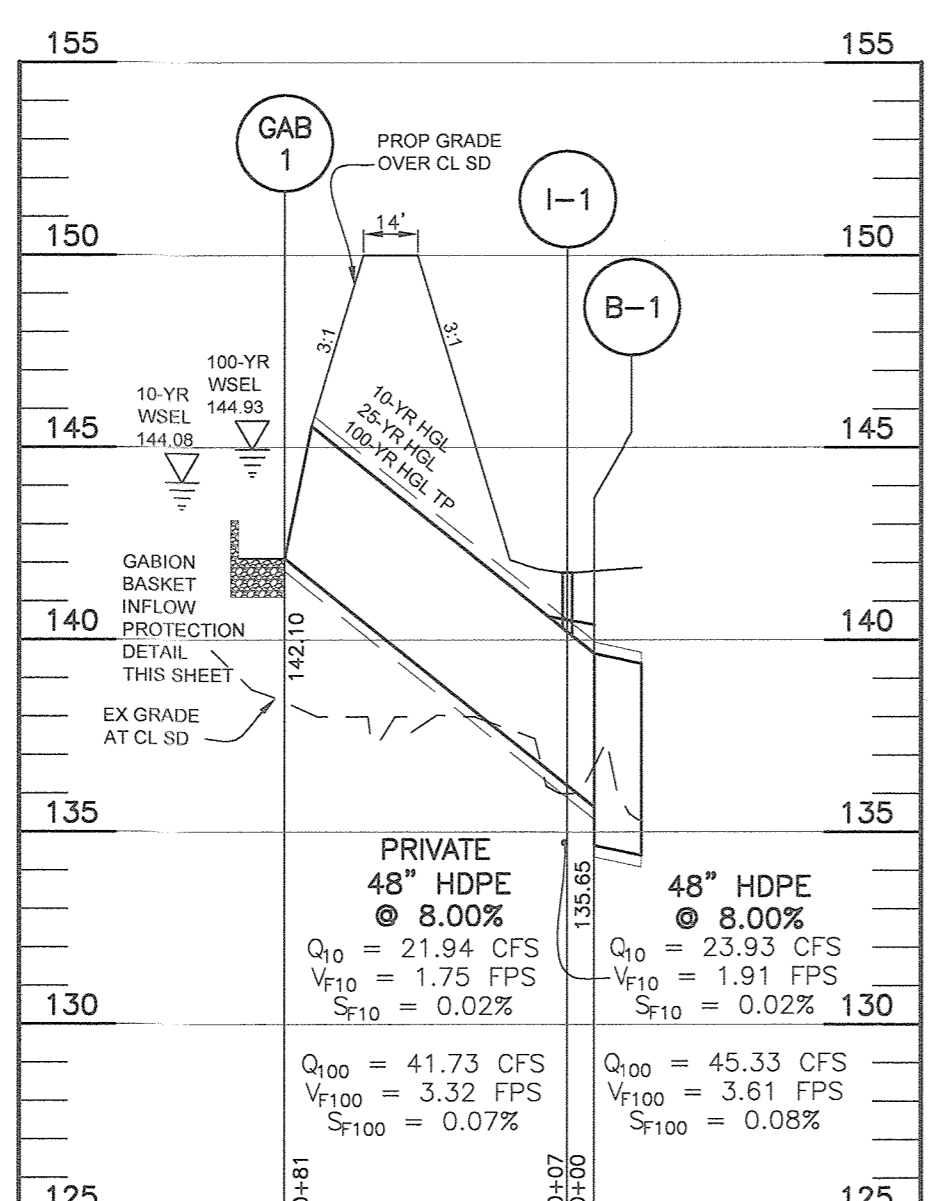
STREAM DIVERSION - SWM POND TO UPSTREAM HEADWALL
SCALE: 1"=50' HORIZ., 1"=5' VERT.



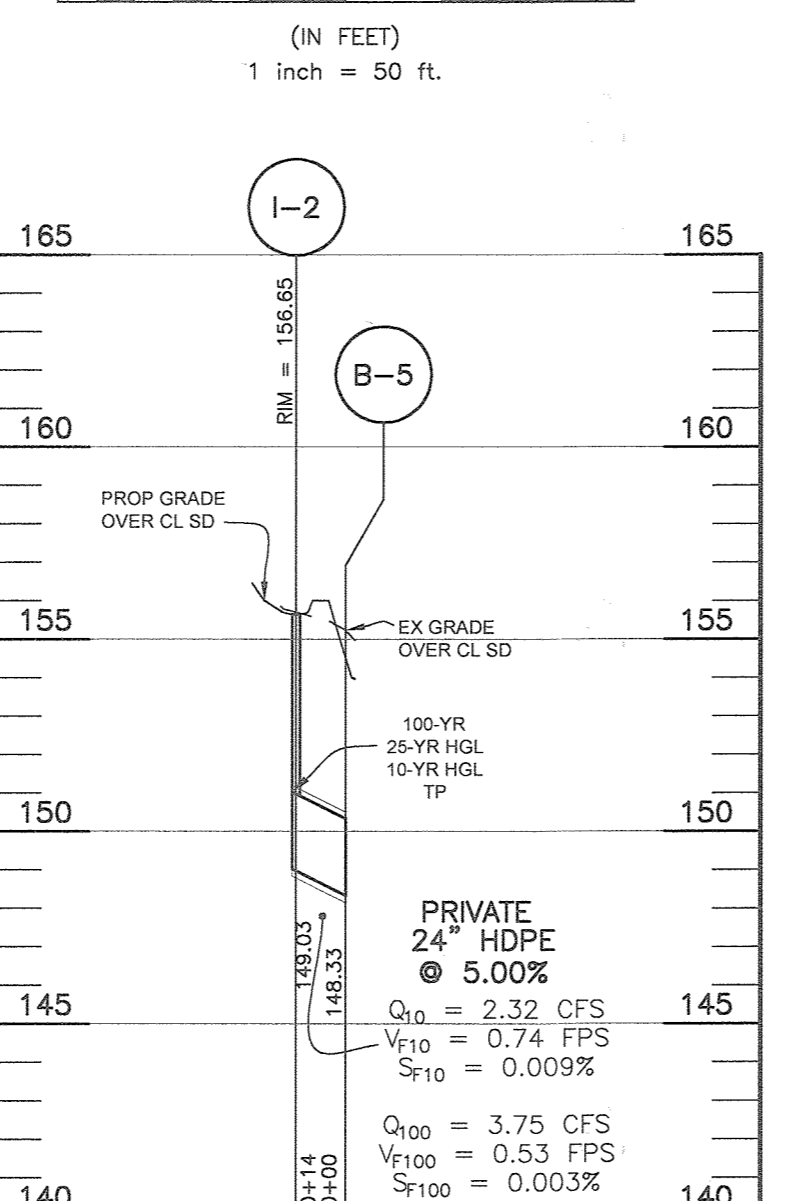
NOTE: BLOCK PIPE OPENINGS DAILY UPON COMPLETION OF DAY'S WORK, TO ENSURE NO SEDIMENT OR FLOWS ENTER PIPES.



SHA M-200
SCALE: 1"=50' HORIZ., 1"=5' VERT.
* TO BE INSTALLED PER SECTION 303 OF MDOT SHA JULY 2018 STANDARD SPECIFICATION FOR CONSTRUCTION AND MATERIALS.



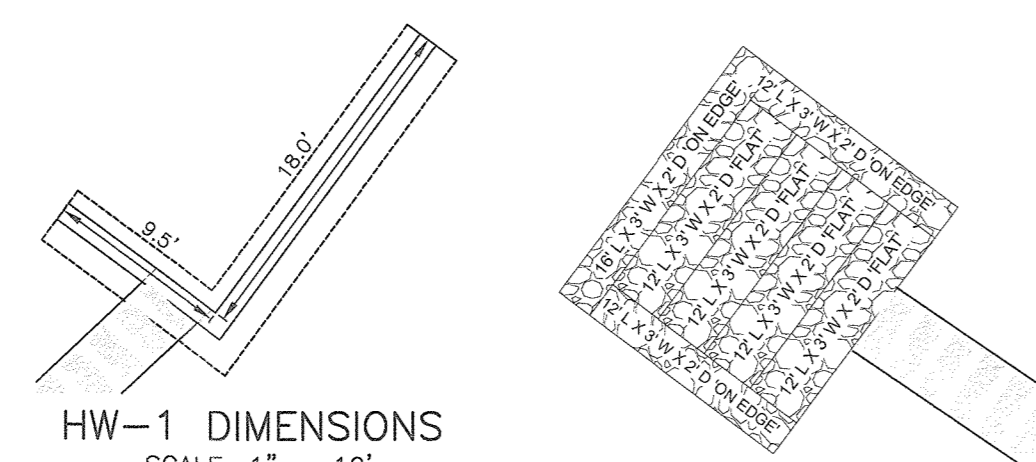
ONSITE HEADWALL
SCALE: 1"=50' HORIZ., 1"=5' VERT.



I-2
SCALE: 1"=50' HORIZ., 1"=5' VERT.

| PIPE DIAMETER (IN) | LENGTH (FT) | TYPE | OWNERSHIP |
|--------------------|-------------|------|-----------|
| 36 | 20 | CPP | PUBLIC |
| 36 | 21 | HDPE | PRIVATE |
| 42 | 411 | HDPE | PRIVATE |
| 48 | 65 | HDPE | PRIVATE |
| 60 | 229 | HDPE | PRIVATE |

NOTE: ALL HDPE (CPP) PIPE SHALL BE SMOOTH WALL.



HW-1 DIMENSIONS
SCALE: 1" = 10'

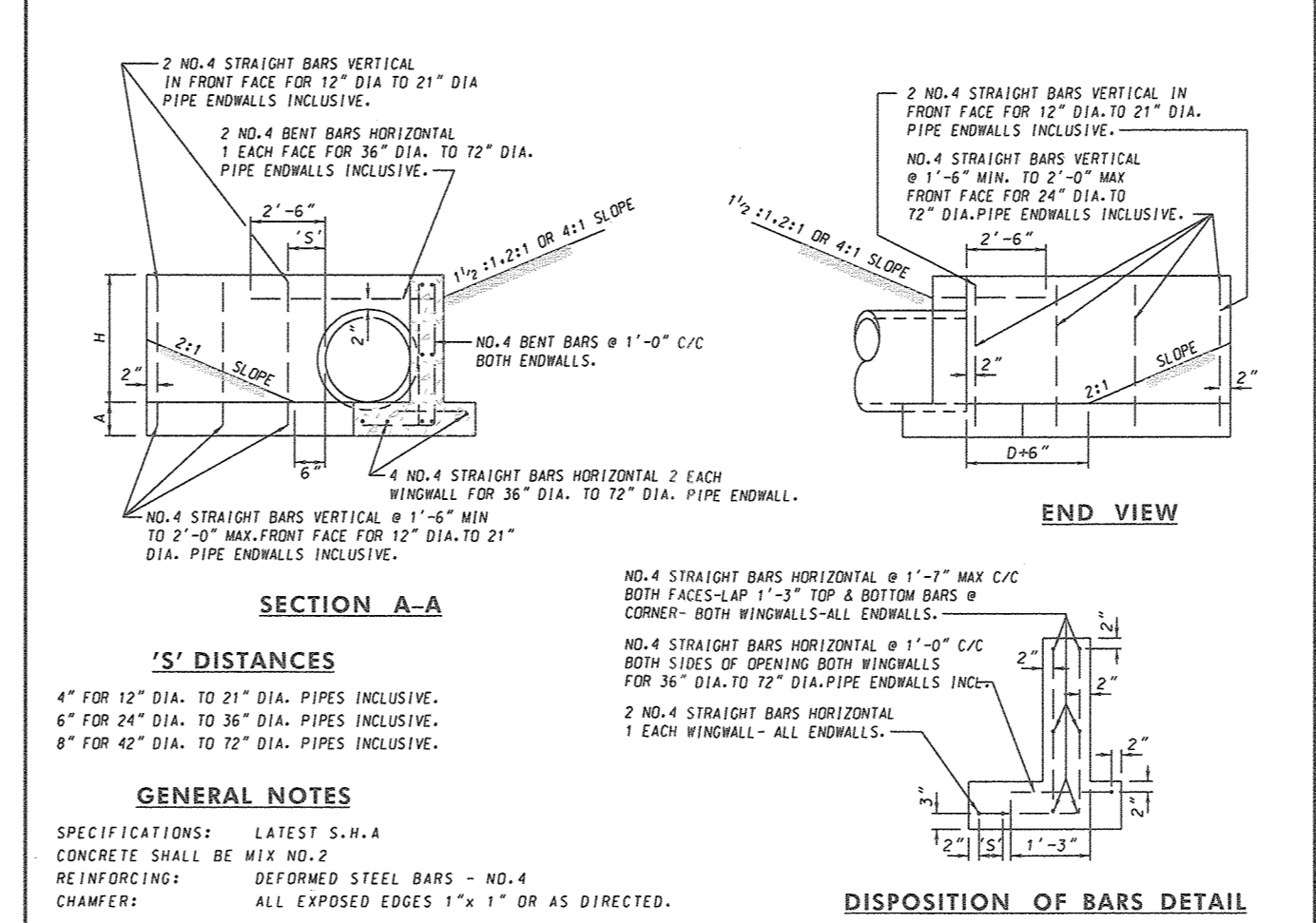
GAB-1 GABION INFLOW PROTECTION
SCALE: 1" = 10'

METHODOLOGY:
ALL HYDROLOGIC AND HYDRAULIC COMPUTATIONS HAVE BEEN PERFORMED IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME I, STORM DRAINAGE. THE RATIONAL METHOD WAS USED TO DETERMINE RUNOFF RATES. THE RUNOFF COEFFICIENTS WERE DETERMINED USING ULTIMATE LAND USE CONDITIONS FOR THE CONTRIBUTING DRAINAGE AREAS. A RATE OF RUNOFF WAS THEN DETERMINED FOR EACH DRAINAGE AREA FOR THE 10-, 25- AND 100-YEAR STORM EVENTS. INTENSITIES FOR THESE EVENTS WERE BASED ON COMPUTED TIMES OF CONCENTRATION, BASED ON THE EXISTENCE OF LARGE DRAINAGE AREAS WITH DIVERSE CONDITIONS, AND BY REQUEST OF SHA.

ONSITE AND OFFSITE CONNECTING STORM DRAINS WERE PROFILED, AND FLOWS AND HYDRAULIC GRADE LINES WERE COMPUTED. THE COMPUTATIONS ARE INCLUDED IN THIS REPORT. ONSITE PROFILES AND THE DOWNSTREAM SYSTEM ARE INCLUDED ON THE SFP PLANS. THE PROFILES FOR THE DOWNSTREAM STORM DRAIN LATERALS ARE PROVIDED AT THE END OF THIS REPORT. THESE WERE NOT DOCUMENTED ON THE SFP, AS NO DISTURBANCE TO THESE FACILITIES IS PROPOSED. THE DOCUMENTATION AND METHODS CAN BE UTILIZED DURING THE ULTIMATE SITE DEVELOPMENT DESIGN TO ENSURE THESE FACILITIES ARE NOT NEGATIVELY IMPACTED.

QUANTITIES FOR ESTIMATING PURPOSES ONLY

| OPENING | DIMENSIONS | | | | | CONC. C.Y. | STEEL LBS. |
|---------|------------|-----|-----|-----|-------|------------|------------|
| | D | A | B | C | E | | |
| 12 | 0.79 | 9" | 6" | 6" | 1'-9" | 0.76 | 55 |
| 15 | 1.23 | 9" | 6" | 6" | 1'-9" | 0.99 | 67 |
| 18 | 1.77 | 9" | 6" | 6" | 1'-9" | 1.17 | 88 |
| 21 | 2.40 | 9" | 6" | 6" | 1'-9" | 1.38 | 111 |
| 24 | 3.14 | 9" | 6" | 6" | 1'-9" | 1.64 | 136 |
| 27 | 3.98 | 9" | 6" | 6" | 1'-9" | 1.94 | 163 |
| 30 | 4.91 | 9" | 6" | 6" | 1'-9" | 2.27 | 192 |
| 33 | 5.94 | 9" | 6" | 6" | 1'-9" | 2.63 | 223 |
| 36 | 7.07 | 12" | 16" | 10" | 3'-2" | 4.99 | 335 |
| 42 | 9.62 | 12" | 16" | 10" | 3'-2" | 6.12 | 303 |
| 48 | 12.57 | 12" | 16" | 10" | 3'-2" | 7.34 | 341 |
| 54 | 15.90 | 12" | 16" | 10" | 3'-2" | 8.69 | 386 |
| 60 | 19.64 | 12" | 16" | 10" | 3'-2" | 10.06 | 496 |
| 72 | 28.27 | 12" | 16" | 10" | 3'-2" | 12.69 | 597 |

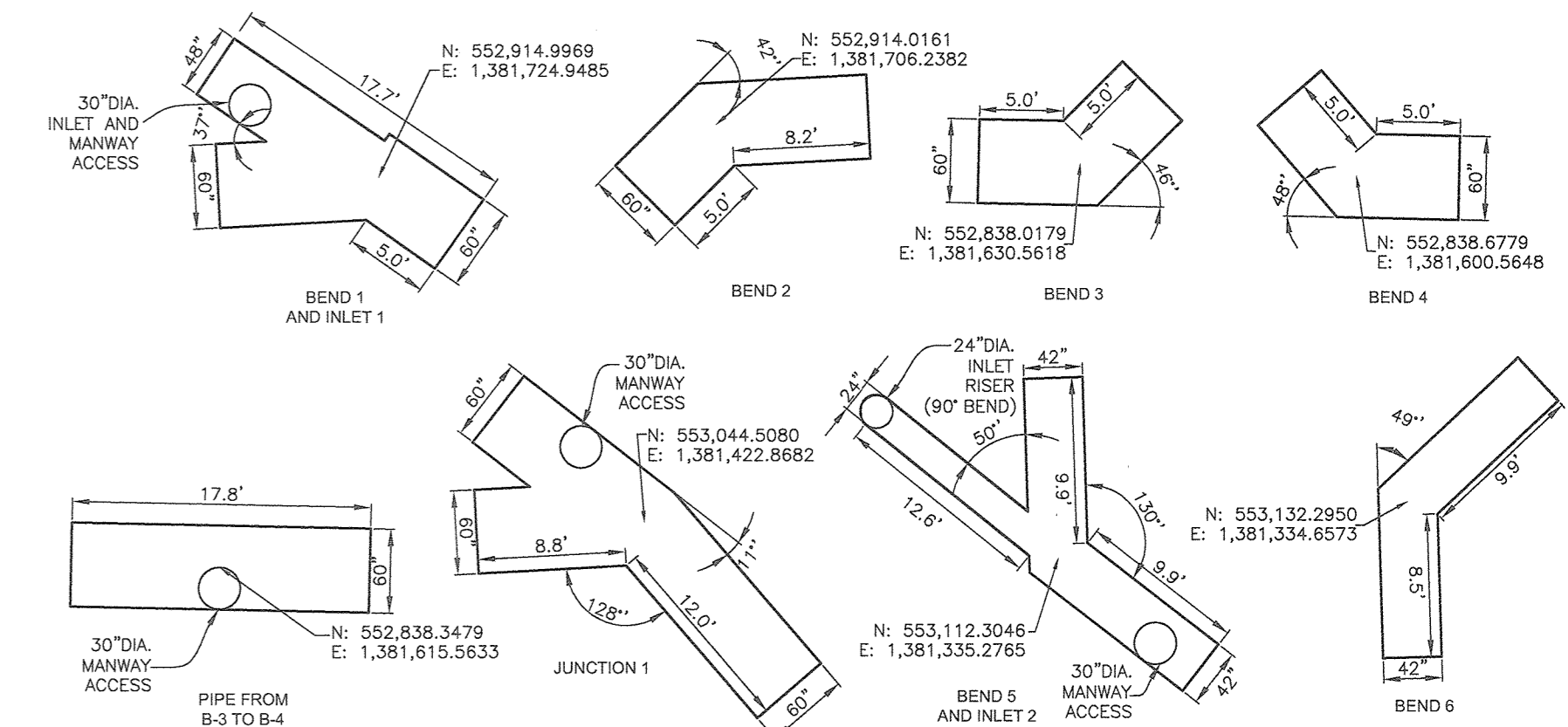


SECTION A-A

'S' DISTANCES

GENERAL NOTES

DISPOSITION OF BARS DETAIL



BEND AND FITTING DETAILS
SCALE: 1" = 10'

- NOTES:
- PIPE AND FITTINGS SHALL BE WATER TIGHT.
 - DETAILED FITTINGS MAY BE PREFABRICATED BY SUPPLIER, OR CONSTRUCTED FROM FITTINGS IN THE FIELD.
 - ANGLES MAY BE CUSTOM FORMED BY MANUFACTURER, OR ACCOMPLISHED BY A COMBINATION OF STANDARD FITTINGS AND PIPE DEFLECTION (WHERE APPROPRIATE), IN ACCORDANCE WITH MANUFACTURER'S CRITERIA.
 - SHOP DRAWING SHALL BE REVIEWED BY THE DESIGN ENGINEER.
 - CONTRACTOR SHALL USE ADS OR APPROVED EQUAL.
 - FOR MANWAY ACCESS DETAIL, SEE SHEET 3.

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 12-17-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 2/13/20
CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 3-4-2020
DIRECTOR

NOTES:

- HW-1 SHALL BE IN GENERAL CONFORMANCE WITH MD 356.1, SIZED FOR 72" DIAMETER PIPE, BUT UTILIZING A 42" OUTFLOW PIPE.
- WING DIMENSIONS SHALL BE AS SHOWN ON DIMENSION DETAIL.
- TOP OF WALL ELEVATION: 156.0

FOUR 12X32 GABIONS SHALL BE PLACED 'FLAT' IN A 12X12 SQUARE, TWO 12X32 AND ONE 16X32 GABIONS SHALL BE PLACED ON EDGE TO FORM A 1" BARRIER AROUND THE UPSTREAM AND SIDE EDGES. ARMOR SLOPE AROUND PIPE WITH 19" THICK CLASS 1 RIPRAP UNDERLAIN WITH FILTER FABRIC. MITER PIPE TO MATCH SLOPE.

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- WING DIMENSIONS SHALL BE AS SHOWN ON DIMENSION DETAIL.
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APPROVED: *[Signature]*
CHIEF, DIVISION OF LAND DEVELOPMENT

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

STANDARD TYPE E ENDWALL
METAL OR CONCRETE ROUND PIPE
STANDARD NO. MD 356.01

NO. DATE REVISION

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE # SUITE 315 ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6644
WWW.BEI-CIVILENGINEERING.COM

OWNER/DEVELOPER: BINDER ROCK LLC
C/O H & H ROCK COMPANIES
6800 DEERPATH ROAD
SUITE 100
ELKRIDGE, MARYLAND 21075
410.579.2242

PROJECT: DORSEY CENTER
PARCEL R - STREAM DIVERSION

LOCATION: TAX MAP 37
PARCEL 375 - GRID 24
1ST ELECTION DISTRICT
HOWARD COUNTY, MARYLAND

TITLE: STORM DRAIN PROFILES

DATE: NOVEMBER 2019 PROJECT NO. 1959
SCALE: AS SHOWN DRAWING NO. OF 14

Design: AAM Draft: AAM Check: []

SDP-19-038

| SOILS LEGEND | | | |
|--------------|---|---------|-------|
| SYMBOL | NAME/DESCRIPTION | K VALUE | GROUP |
| RuB | RUSSETT AND BELTSVILLE SOIL, 2 TO 5 PERCENT SLOPES | 0.37 | C |
| RuC | RUSSETT AND BELTSVILLE SOIL, 5 TO 10 PERCENT SLOPES* | 0.37 | C |
| RuB | RUSSETT FINE SANDY LOAM, 2 TO 5 PERCENT SLOPES* | 0.37 | C |
| UfA | URBAN LAND-FALLSINGTON COMPLEX, 0 TO 5 PERCENT SLOPES | 0.20 | D |
| UfD | URBAN LAND-UDORTHENTS COMPLEX, 0 TO 15 PERCENT SLOPES | 0.28 | D |

OBTAINED FROM USDA NRCS WEB SOIL NATIONAL COOPERATIVE SOIL SURVEY, NOVEMBER 2018. SEE HOWARD COUNTY SOIL SURVEY MAP NO. 25. *HIGHLY ERODIBLE SOILS K>0.35 AND 5% OR GREATER SLOPES, OR 15% AND GREATER SLOPES.

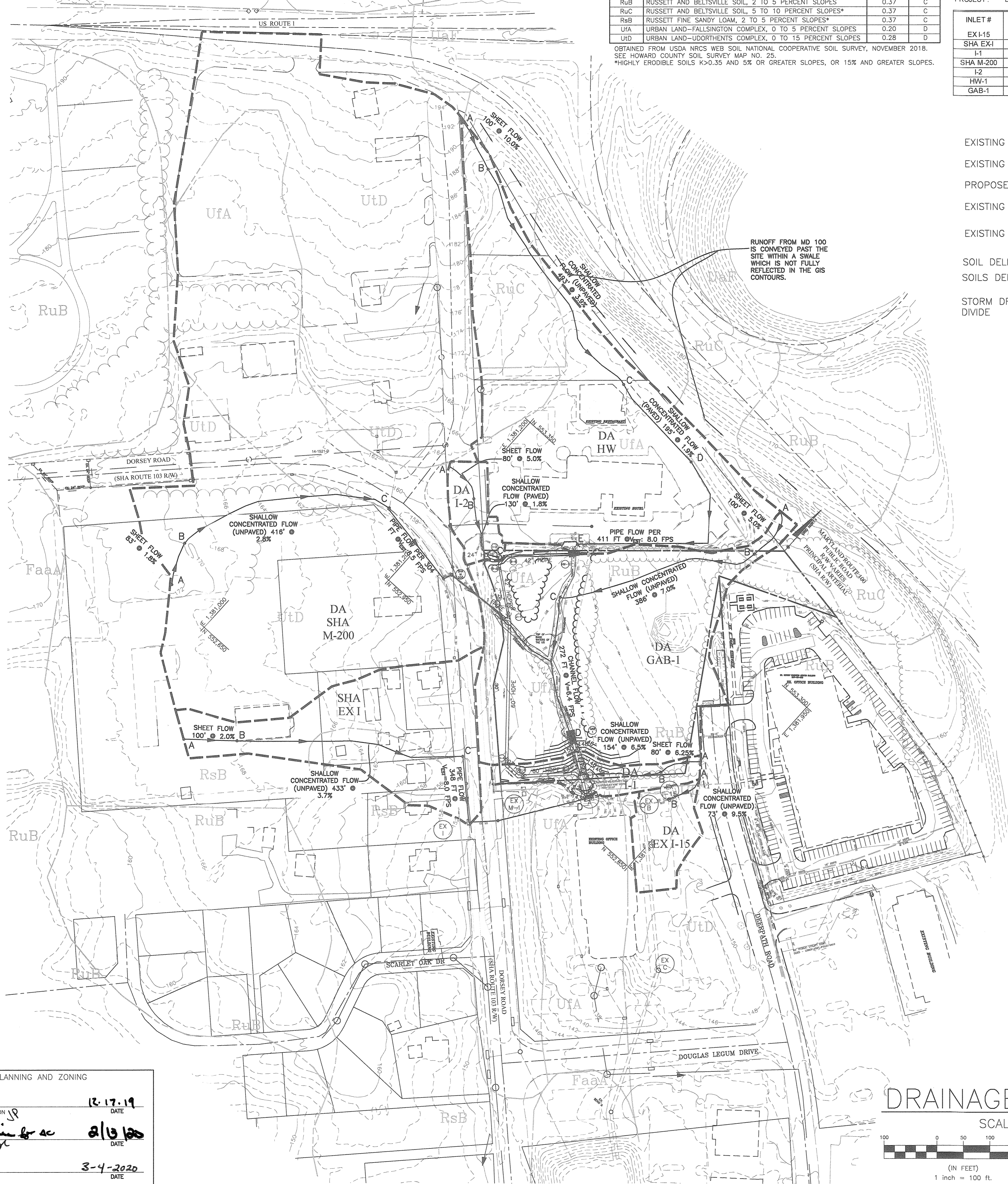
AREA AND "C" FACTOR TABULATION

PROJECT: Binder Property DATE: 12/13/18

| INLET # | ZONING (Z) | AREA (Ac) (A) | "C" <25 YR (C) | | % IMPERVIOUS (P) |
|-----------|------------|---------------|----------------|------------|------------------|
| | | | <25 YR (C) | >25 yr (C) | |
| EX I-15 | TOD | 0.47 | 0.72 | 0.89 | 90 |
| SHA EX I | CE-CLI | 2.09 | 0.72 | 0.89 | 90 |
| I-1 | TOD | 0.44 | 0.72 | 0.89 | 90 |
| SHA M-200 | CE-CLI | 15.23 | 0.72 | 0.89 | 90 |
| I-2 | TOD | 0.34 | 0.72 | 0.89 | 90 |
| HW-1 | TOD | 4.84 | 0.72 | 0.89 | 90 |
| GAB-1 | TOD | 4.29 | 0.72 | 0.89 | 90 |

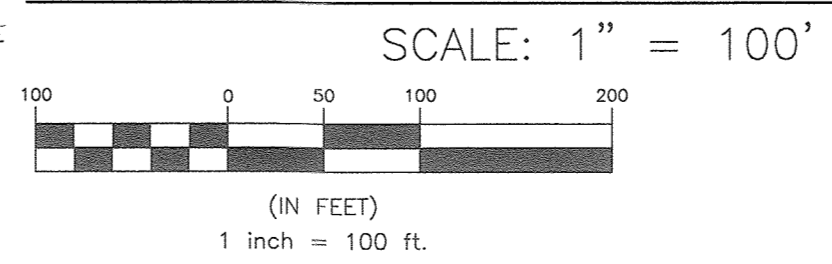
LEGEND

- EXISTING CONTOURS
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING STREAM
- EXISTING STRUCTURE
- SOIL DELINEATION
- SOILS DELINEATION
- STORM DRAIN DRAINAGE DIVIDE



RUNOFF FROM MD 100 IS CONVEYED PAST THE SITE WITHIN A SWALE WHICH IS NOT FULLY REFLECTED IN THE GIS CONTOURS.

DRAINAGE AREA MAP



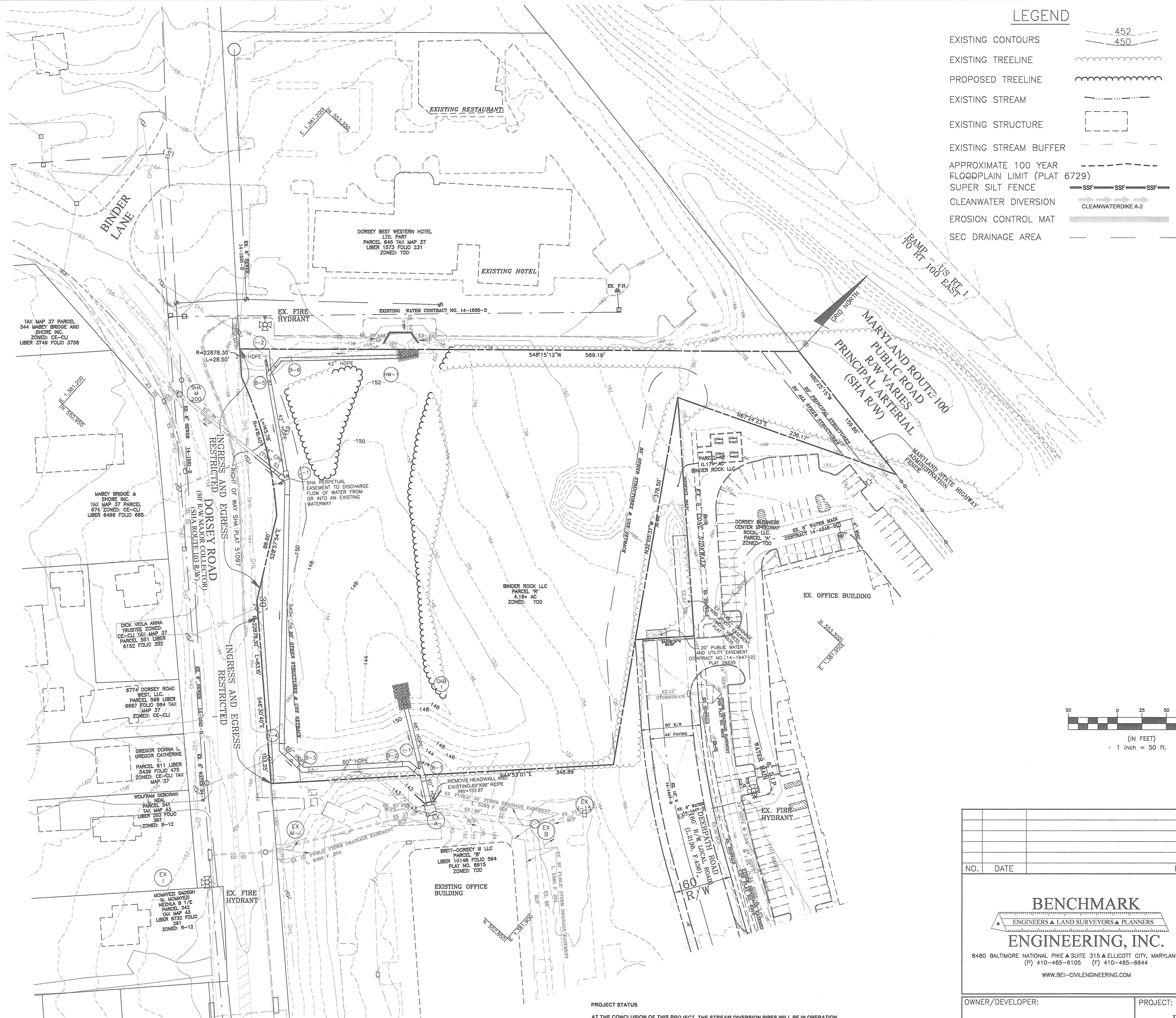
APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Clarke 12-17-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION

Jill Martin 2/19/20
CHIEF, DEPARTMENT OF PLANNING AND ZONING

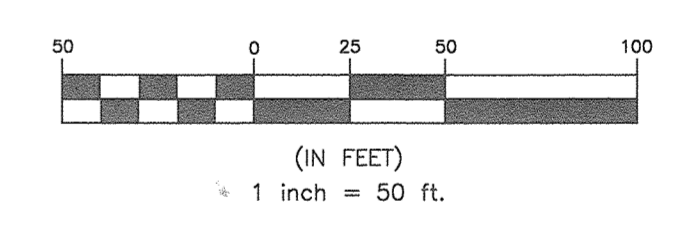
Angie Gonia 3-4-2020
DIRECTOR

| | | |
|---|--|------------------|
| NO. | DATE | REVISION |
| | | |
| BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CVLENGINEERING.COM | | |
| 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. 28376, Expiration Date: 1-1-21. | | |
| | | |
| OWNER/DEVELOPER: | PROJECT: DORSEY CENTER PARCEL R - STREAM DIVERSION | |
| BINDER ROCK LLC C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELK RIDGE, MARYLAND 21075 410.579.2242 | LOCATION: TAX MAP 37 PARCEL 375 - GRID 24 1st ELECTION DISTRICT HOWARD COUNTY, MARYLAND | |
| TITLE: | STORM DRAIN DRAINAGE AREA MAP | |
| DATE: | NOVEMBER 2019 | PROJECT NO. 1959 |
| Design: AM | Draft: AM | Check: CAM |
| SCALE: AS SHOWN | DRAWING 6 OF 14 | |



LEGEND

- EXISTING CONTOURS 452
450
- EXISTING TREELINE
- PROPOSED TREELINE
- EXISTING STREAM
- EXISTING STRUCTURE
- EXISTING STREAM BUFFER
- APPROXIMATE 100 YEAR FLOODPLAIN LIMIT (PLAT 6729)
- SUPER SILT FENCE SSF SSF SSF
- CLEANWATER DIVERSION CLEANWATERDIKE A-2
- EROSION CONTROL MAT
- SEC DRAINAGE AREA



PROJECT STATUS
 AT THE CONCLUSION OF THIS PROJECT, THE STREAM DIVERSION PIPES WILL BE IN OPERATION, AND THE STREAM VALLEY WILL BE FILLED. THE EMBANKMENT AREA AND THE GABION INFLOW PROTECTION ON THE DOWNEAST END OF THE PROPERTY ARE TEMPORARY AND WILL BE REMOVED UPON FINAL DEVELOPMENT OF THIS SITE. ADDITIONAL STORM DRAIN CONNECTIONS WILL BE REQUIRED FOR THE FINAL DEVELOPMENT. THESE CONNECTIONS WILL BE MADE IN THE FORM OF FIELD CONNECTIONS WHERE NECESSARY, AND MAY UTILIZE THE PIPE CONNECTION WHICH EXTENDS TO THE GABION INLET.

PLAN
 SCALE: 1" = 50'

APPROVED: DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 12-17-19

 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 2/13/20

 DIRECTOR
 DATE: 3-4-2020

| | | | | | | | | | | |
|---|--|---------------|--|--|--|------|--|--------|--|----|
| | | | | | | | | | | |
| NO. | | DATE | | REVISION | | | | | | |
| <p>BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE SUITE 315 ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CVLENGINEERING.COM</p> | | | | | | | | | | |
| <p>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. 28376, Expiration Date: 1-1-21.</p> | | | | | | | | | | |
| OWNER/DEVELOPER: | | | | PROJECT: | | | | | | |
| BINDER ROCK LLC C/O H & H ROCK COMPANIES 6800 DEERPATH ROAD SUITE 100 ELKRIDGE, MARYLAND 21075 410.579.2242 | | | | DORSEY CENTER PARCEL R - STREAM DIVERSION | | | | | | |
| LOCATION: | | | | TITLE: | | | | | | |
| TAX MAP 37 PARCEL 375 - GRID 24 1st ELECTION DISTRICT HOWARD COUNTY, MARYLAND | | | | FINAL GRADING PLAN | | | | | | |
| DATE: | | NOVEMBER 2019 | | PROJECT NO. | | 1959 | | | | |
| Design: | | AAM | | Draft: | | AAM | | Check: | | 14 |
| SCALE: AS SHOWN | | | | DRAWING 7 OF 14 | | | | | | |

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS

- No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.
- Place heavy equipment on mats or suitably operate the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.
- Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill. Rectify any nontidal wetlands, wetland buffers, waterways, or 100-year floodplain temporarily impacted by any construction.
- All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (*Lolium multiflorum*), Millet (*Setaria italica*), Barley (*Hordeum sp.*), Oats (*Uniola sp.*), and/or Rye (*Secale cereale*). These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-persistent vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division. **Kentucky 31 fescue shall not be utilized in wetland or buffer areas.** The area should be seeded and mulched to reduce erosion after construction activities have been completed.
- After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.
- To protect aquatic species, in-stream work is prohibited as determined by the classification of the stream:

Use I waters: In-stream work shall not be conducted during the period March 1 through June 15 inclusive, during any year.
 Use III waters: In-stream work shall not be conducted during the period October 1 through April 30, inclusive, during any year.
 Use IV waters: In-stream work shall not be conducted during the period March 1 through May 31, inclusive, during any year.

- Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.
- Culverts shall be constructed and any riprap placed so as not to obstruct the movement of aquatic species, unless the purpose of the activity is to impound water.
- A dewatering pump will be utilized in conjunction with a dirt bag (see detail this sheet) to remove standing water in the project area during construction. The dirt bag will be placed on a vegetated area a sufficient distance from subject reach so that any sediment leaving the dirt bag has time/distance to settle out before reaching the waterway.

SEDIMENT CONTROL NOTES

- Refer to "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control" for standard details and detailed specifications of each practice specified herein.
- With the approval of the sediment control inspector, minor field adjustments can and will be made to insure the control of any sediment. Changes in sediment control practices require prior approval of the sediment control inspector and the Howard Soil Conservation District.
- At the end of each working day, all sediment control practices will be inspected and left in operational condition.
- Following initial soil disturbance or redistribution, permanent or temporary stabilization shall be completed within:
 - Three calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes greater than three horizontal to one vertical (3:1), and
 - Seven days as to all other disturbed or graded areas on the project site which will remain idle over fourteen days.
- Any change to the grading proposed on this plan requires resubmission to Howard Soil Conservation District for approval.
- Dust control will be provided for all disturbed areas. Refer to "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control", pg. H-30-1, for acceptable methods and specifications for dust control.
- Any variations from the sequence of operations stated on this plan require the approval of the sediment control inspector and the Howard Soil Conservation District prior to the initiation of the change.
- Excess cut or borrow material shall go to, or come from, respectively, a site with an open grading permit or approved agricultural ground.
- The following item may be used as applicable: refer to "Maryland's Guidelines to Waterway Construction" by the Water Management Administration of the Maryland Department of the Environment, revised November, 2000, for standard details and detailed specifications of each practice specified herein for waterway construction.
- All work is to be completed "in the dry", see sequence of operations. After rainfall events during construction, the site is to be fully dewatered prior to proceeding with grading.
- Ingress and egress to the site shall be from Dorsey Road.
- The contractor must adhere to "Best Management Practices for Working in Nontidal Wetlands, Wetland Buffers, Waterways, and the 100-year Floodplain".

GENERAL NOTES

- All construction shall be in accordance with the latest standards and specifications of Howard County plus MDSA standards and specifications if applicable.
- The contractor shall notify "Miss Utility" at 1-800-257-7777 at least five (5) working days prior to any work being done.
- This plan is prepared in accordance with the provisions of section 16.124 of the Howard County code and the landscape manual.
- The contractor shall notify the Department of Public Works / Bureau of Engineering Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to the start of work.
- Survey of the site was performed by C.F. Kreutter & Associates Inc. in June 2017.
- The coordinates shown hereon are based on Howard County Geodetic Control, which is based upon the Maryland state plane coordinate system.
- Obstructions shown on this drawing are for the convenience of the contractor only and Ecotone does not warrant or guarantee the correctness or completeness of the information given. The contractor must verify such information to his own satisfaction.
- The existing information shown on the plans was taken from the best available sources and shall be verified before starting construction. Howard County does not guarantee the completeness or the correctness of the shown information.
- The contractors shall take all necessary precautions to protect the existing utilities and maintain uninterrupted service. Any damage incurred due to the contractor's operation shall be repaired immediately. All utilities shall have a clearance by a minimum of 6 inches vertically and a minimum of 5 feet horizontally.
- Should the contractor discover discrepancies between the plans and field conditions, the contractor shall notify Ecotone immediately to resolve the situation.
- All pipe elevations shown are invert elevations.
- The contractor is solely responsible for construction means, methods, techniques, sequences, procedures, and safety precautions and programs.
- Joint Permit Tacking Number (MDE/GOE) 2015-61093-M02
- Impairment status: nutrients/metals listing Categories 2, 4b, 4c, and 5. Project area is not located in a Tier II catchment. Deep Run in the project area has the following impairments: E. coli, selenium, channelization, chloridane, chlorides, sulfates, cadmium, arsenic, chromium, copper, lead, mercury, nickel, zinc, nitrogen, phosphorus, and total suspended solids.

SEQUENCE OF CONSTRUCTION - STREAM RESTORATION

(SEE SHEET 4 FOR SOC, PHASE 1 & PHASE 2. NOTE: THIS WORK MAY PROGRESS INDEPENDENTLY FROM PHASE 1 & PHASE 2.

- Contractor shall notify owner and Howard County CIS inspector at least 48 hours prior to beginning any work and the Maryland Department of the Environment Inspection and Compliance Program (410 537-3510) at least 5 days prior to beginning any work. Miss Utility must be contacted at least 72 hours prior to beginning work. A pre-construction meeting is required with the landowner, contractor, and Howard County CID inspector prior to construction starting.
- County grading permit, and other necessary approvals and permits must be obtained prior to start of construction.
- Clear and grub for the installation of sediment and erosion control measures or devices (1 Day).
- Install stabilized construction entrances and all sediment control devices (1 Day).
- Notify Howard County CID inspector upon completion of said installation.
- With the approval of Howard County CID inspector, clear and grub for in-stream work. The stream is in the Patapsco River watershed, designated as Use I by the Maryland Department of the Environment. No in-stream work shall be conducted during the period March 1 through June 15 (1 Day).
- Install pump around practices in the unnamed tributaries. All pump around diversions shall be set up and running before in-stream work will be permitted to start. See Pump-Around Note, this Sheet (1 Day).
- Begin stream work starting at the upstream end of the project and work downstream. Complete installation of all in-stream structures. Remove any accumulated sediment in the stream channel at the end of each working day and prior to the removal of the pump around practice (7 Days).
- Stabilize all disturbed areas at the end of each working day.
- Once stream restoration is complete, seed and stabilize any remaining work areas (1 Day).
- Upon stabilization of site with established vegetation and with permission of the Howard County CID inspector, remove sediment control measures and stabilize those areas disturbed by this process, including any spoils areas (1 Day).
- Install plant material during appropriate planting dates (1 Day).

PUMP-AROUND NOTE

Pump around shows the maximum extents of stream to be diverted. Actual pump around length will be the length which can be completed in a working day. Pump around only to be used when flow is present in the channel.

100-YEAR FLOODPLAIN NOTE

FEMA mapped floodplain is present on-site according to FEMA mapping and County GIS data. FIRM panel #24027C0170D and #24027C0190D.

SOIL STABILIZATION MATTING NOTE

All disturbed areas shall be stabilized with soil stabilization matting and seed mix immediately after disturbance. See detail on Sheet 12.

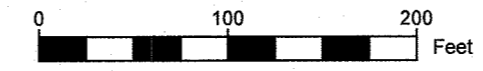
| OWNER | ADDRESS | TAX MAP | PARCEL |
|----------------------------|-----------------------|---------|------------------------|
| GREGOR, EDWIN O & WF | 6937 DORSEY RD | 43 | 280 |
| MCCLUNG, VIRGIL | 6941 DORSEY RD | 43 | 281 |
| DORSEY EMMANUEL EVANG CH | 6951 DORSEY RD | 43 | 466, LOT 385 |
| EMMANUEL UNITED EVANGEL CH | 6951 DORSEY RD | 43 | 282, LOT 387 |
| ELKRIDGE ROCK LLC | 6965 DORSEY RD | 43 | 283 |
| MOSAIC CHRISTIAN CHURCH | 6845 DEERPATH RD | 37 | 634, LOT J |
| 6865-DEERPATH-NO-ENT-LLC | 6865 DEERPATH RD | 37 | 634, LOT I |
| WHALEN PROPERTIES LLC | 6865 DEERPATH RD | 37 | 704, LOT H1 |
| STATE RAILROAD ADMIN | 7129 STATION HOUSE RD | 43 | 634, LOT G |
| ROBERT WILLOUT, III ET AL | 7132 STATION HOUSE RD | 43 | 284, LOT 266 |
| KEELA D. CLAUGGETT | 7134 STATION HOUSE RD | 43 | 284, LOT 255 |
| HANDA ANITA | 7134 STATION HOUSE RD | 43 | 284, LOT 254 |
| BAHW BELINDA | 7140 STATION HOUSE RD | 43 | 284, LOT 252 |
| GREEK ANCHORS ROCK LLC | | 43 | 284, LOT 249, 250, 251 |

DEEP RUN OFF-SITE STREAM RESTORATION

DORSEY ROAD, ELKRIDGE, MD 21075



OVERALL PLAN
SCALE: 1" = 100'



Howard SCD Signature Block:
 This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.
[Signature] 12/11/19
 Date

ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
[Signature] 11/26/19
 ENGINEER

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
[Signature] 12/3/19
 DEVELOPER

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 12.17.19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 3/2/20
 CHIEF, DIVISION OF LAND DEVELOPMENT
[Signature] 3-4-2020
 DIRECTOR

COORDINATE NOTE
 PLAN IS IN NAD 83 MARYLAND STATE PLANE FIPS 1900 COORDINATE SYSTEM.

UTILITY NOTIFICATION
 "Ecotone, Inc. makes no representation as to the existence or non-existence of any utilities at the construction site. Shown on these construction drawings are those utilities which have been identified. It is the responsibility of the landowners or operators and contractors to assure themselves that no hazard exists or damage will occur to utilities. It is suggested that Miss Utility be contacted at: 1-800-257-7777."

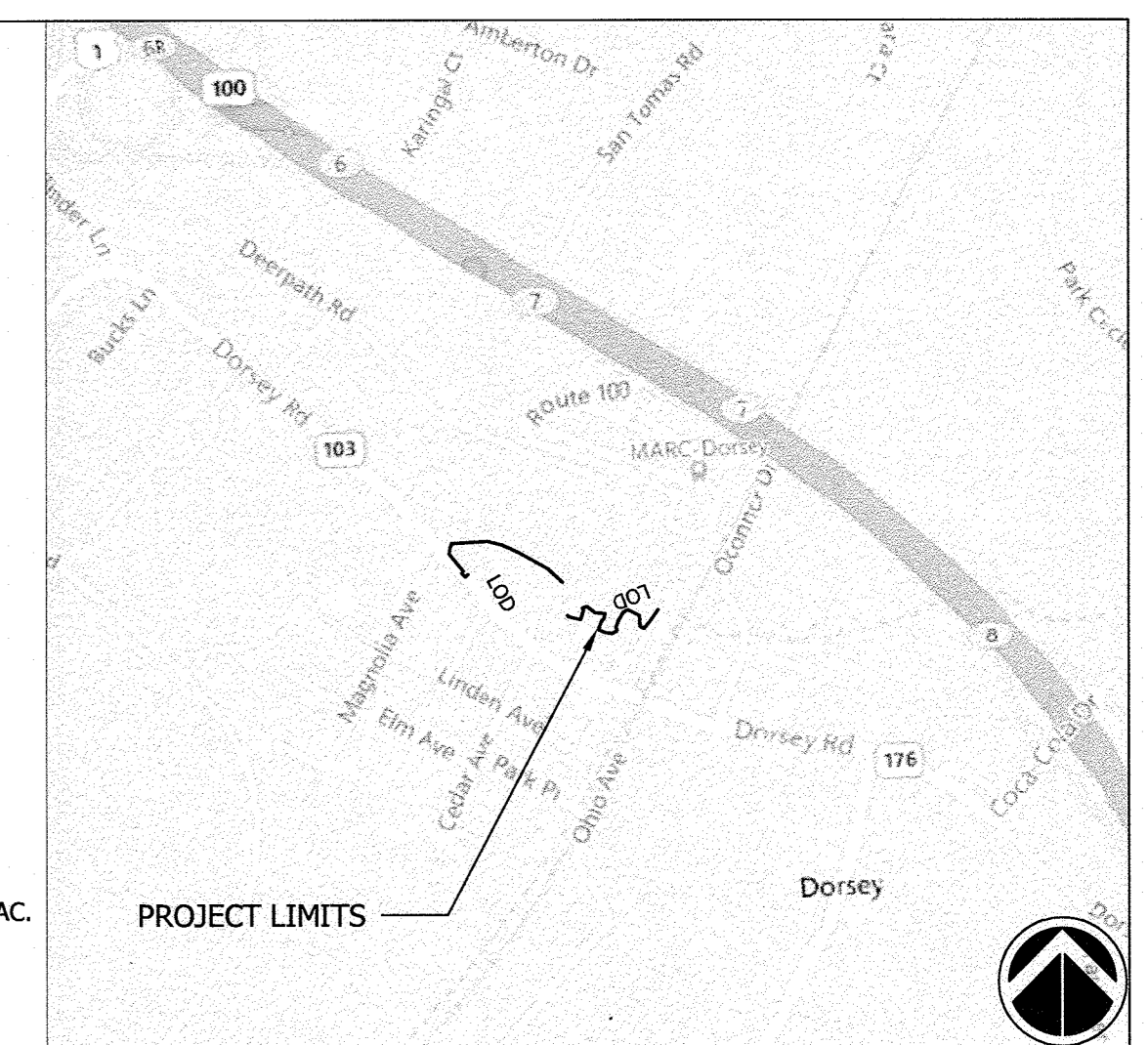
| TEMPORARY BENCHMARKS | | |
|----------------------|---------|-------------|
| TBM 101 | 126.18' | MAG NAIL |
| TBM 102 | 103.06' | REBAR & CAP |
| TBM 150 | 123.12' | MAG NAIL |

MITIGATION USER INFORMATION

BINDER ROCK, LLC
 6800 DEERPATH ROAD, SUITE 100
 ELKRIDGE, MD 21075
 HOWARD COUNTY

SITE DATA
 DEED REF: 10525/00451
 MAP: 43, GRID: 06, PARCEL: 283
 ELECTION DISTRICT: 1
 EXISTING ZONING: RESIDENTIAL
 SITE ACREAGE: 40.69 AC.
 8 DIGIT HUC: 02060003
 MD 8 DIGIT BASIN: 02130906
 (PATAPSCO RIVER L N BR)

SITE ANALYSIS
 LIMIT OF DISTURBANCE: 4152,326 SF. / 3.50 AC.
 NEW IMPERVIOUS AREA: NONE
 TOTAL AREA TO BE STABILIZED: 3.50 AC.
 APPROXIMATE CUT: 1545 CY.
 APPROXIMATE FILL: 737 CY.
 APPROXIMATE NET: 808 CY. (CUT)



VICINITY MAP
SCALE: 1" = 1000'

DESIGN NARRATIVE - STREAM RESTORATION

Deep Run will be restored between Dorsey Road (MD-103) and the MARC Train overpass in Howard County, MD. The proposed restoration is offered as mitigation for the proposed impact of 460 feet of stream channel for Dorsey Center, Parcel R (See "Design Narrative - Dorsey Center, Parcel R", Sheet 1) The stream channel at the proposed restoration site has been impacted by urbanization and development in the watershed leading to channel incision and bank erosion.

The proposed restoration approach will address bank erosion by grading bankfull benches and installing toe wood bank protection. In-stream structures will be added to diversify channel profile and deflect water away from eroding banks. Log vanes will provide grade control to prevent headcuts and to develop deep habitat pools. The design life of logs is estimated to be at least 15 years. This will vary based on the amount of flow and the amount of log submerged. The logs are designed to be transient structures that provide grade control short term and assist in developing stable riffles which when combined with vegetation will provide long-term stability. Where existing rubble has been used to stabilize banks, the rubble will be removed and replaced with bioengineering and hardened structures. Where the channel is over-widened, it will be narrowed to promote aquatic species passage. The riparian buffer will consist of planted trees and shrubs to provide shade, habitat, and vegetative stabilization.

In the years following construction, the Deep Run stream corridor will closely resemble a stable, natural mid-order stream ecosystem with in-stream habitat, stable channel conditions, and an established vegetated buffer. The stream channel will be a C4 stream system with bankfull benches that improve floodplain attenuation.

STORM WATER MANAGEMENT DIVISION
 BUREAU OF ENVIRONMENTAL SERVICES
 6751 COLUMBIA GATEWAY DRIVE, SUITE 514
 COLUMBIA, MARYLAND 21046-3143
 (410) 313-6444



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. 50819, expiration date: 4/17/21
[Signature] 11/26/19
 Signature Date

DEEP RUN OFF-SITE STREAM RESTORATION COVER

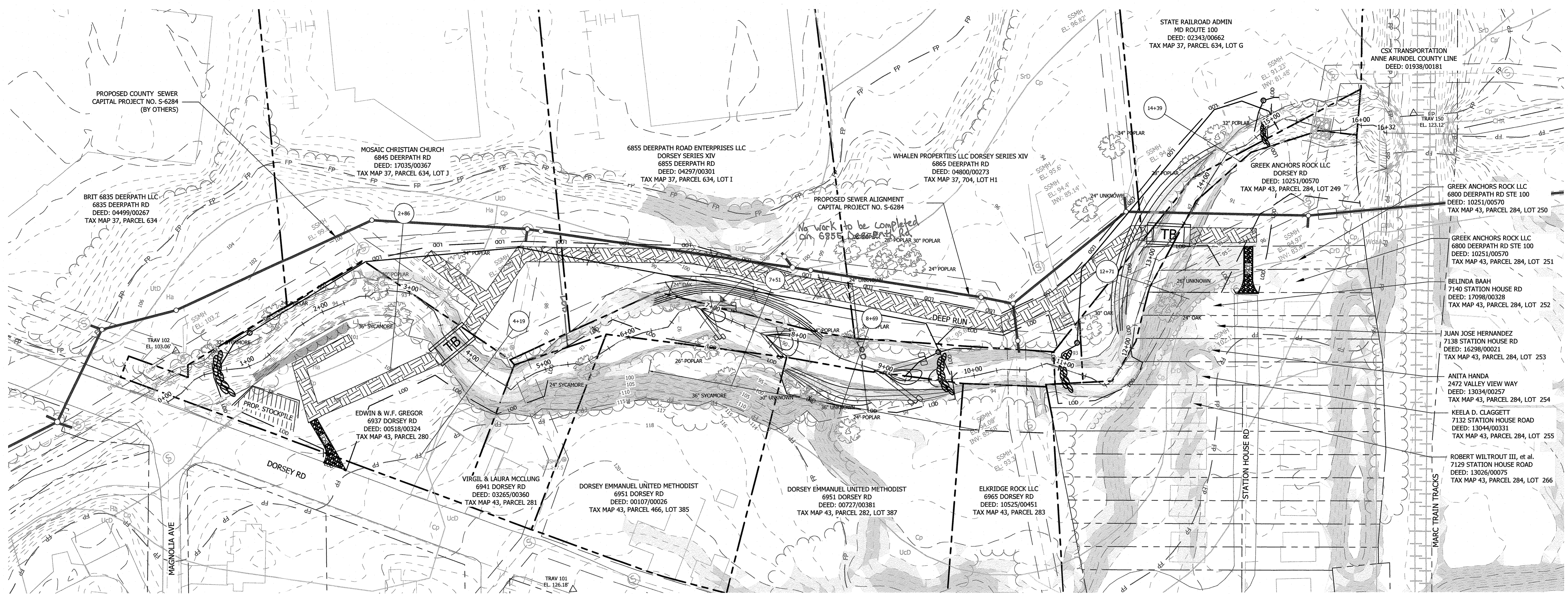
DORSEY ROAD, ELKRIDGE, MD 21075

| REVISIONS | | | |
|-----------|---------|---------------------------------|---------|
| No. | DATE | DESCRIPTION | REV. BY |
| 1 | 2-13-20 | Remove Work on 6855 Deerpath Rd | CSM |

CHECKED BY: GRH
 DESIGNED: CSM
 DRAWN: SDC
 PROJECT No.: 17-06-011
 DATE: 11/25/2019
 SHEET:



X:\Projects\2017\Project\17-06-011 - Deep Run Stream Restoration Design\CAD\171-LAYOUT-071909.dwg OKCELL



SITE PLAN
SCALE: 1" = 50'

| SOILS LEGEND | | |
|--------------|--|---------|
| SYMBOL | SOIL DESCRIPTION | K-VALUE |
| Cp | Codorus and Hatboro soils, 0-2% slopes, frequently flooded | 0.32 |
| CrD | Chillum loam, 5-10% slopes | 0.37 |
| Ha | Hatboro-Codorus silt loams, 0-3% slopes | 0.43 |
| SrD | Sassafras and Croom soils, 10-15% slopes | 0.37 |
| UcD | Urban land-Chillum-Beltsville complex, 5-15% slopes | |
| UdD | Urban land-Udorthents complex, 0-15% slopes | |
| WdaA | Woodstown sandy loam, 0-2% slopes, Northern Coastal Plain | 0.32 |

LEGEND

- PROPERTY BOUNDARY
- - - ADJ. PROPERTY BOUNDARY
- - - EX. CONTOURS
- - - EX. STREAM CENTERLINE
- - - EX. TOP OF BANK
- FP EX. ROADS
- GeC EX. FLOODPLAIN - 100 YR
- EX. SOIL BOUNDARY
- EX. TREELINE
- EX. TREE
- EX. FLOODPLAIN & DRAINAGE EASEMENT
- ⊙ EX. SEWER MANHOLE COVER
- EX. SEWERLINE
- EX. SEWERLINE EASEMENT
- EX. SLOPE 15-25%
- EX. SLOPE 25%+
- PROP. TOE WOOD
- PROP. BANKFULL BENCH
- PROP. DEBRIS REMOVAL & BANK STABILIZATION
- PROP. IMBRICATED WALL
- ▲ PROP. LOG CROSS VANE
- LOD --- LIMIT OF DISTURBANCE
- SF --- PROP. SILT FENCE
- PROP. STOCKPILE AREA
- PROP. MULCH ACCESS PATH
- ⊙ PUMP AROUND PRACTICE
- PROP. SANDBAG DIVERSION
- PROP. FILTER BAG

OFFSITE STREAM RESTORATION PARCELS (FIRST ELECTION DISTRICT):

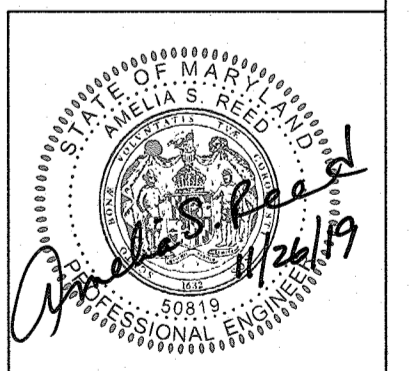
| OWNER | ADDRESS | TAX MAP | PARCEL |
|----------------------------|-----------------------|---------|------------------------|
| GREGOR, EDWIN O & WF | 6937 DORSEY RD | 43 | 280 |
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| 6855-DEERPARK RD-ENT-LLC | 6855-DEERPARK RD | 37 | 634, LOT J |
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| STATE RAILROAD ADMIN | | 37 | 634, LOT G |
| ROBERT WILTROUT, III ET AL | 7129 STATION HOUSE RD | 43 | 284, LOT 266 |
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| HANDA ANITA | 7134 STATION HOUSE RD | 43 | 284, LOT 254 |
| BAAH BELINDA | 7140 STATION HOUSE RD | 43 | 284, LOT 252 |
| GREEK ANCHORS ROCK LLC | 7140 STATION HOUSE RD | 43 | 284, LOT 249, 250, 251 |

Howard SCD Signature Block:
This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.
John R. Robertson 12/10/19
Howard Soil Conservation District Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING
John R. Robertson 12-13-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
John R. Robertson 3/2/20
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
John R. Robertson 3-4-2020
DIRECTOR DATE

ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Amelia S. Reed 11/26/19
ENGINEER DATE

DEVELOPER'S CERTIFICATE
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
John R. Robertson 12/3/19
DEVELOPER DATE

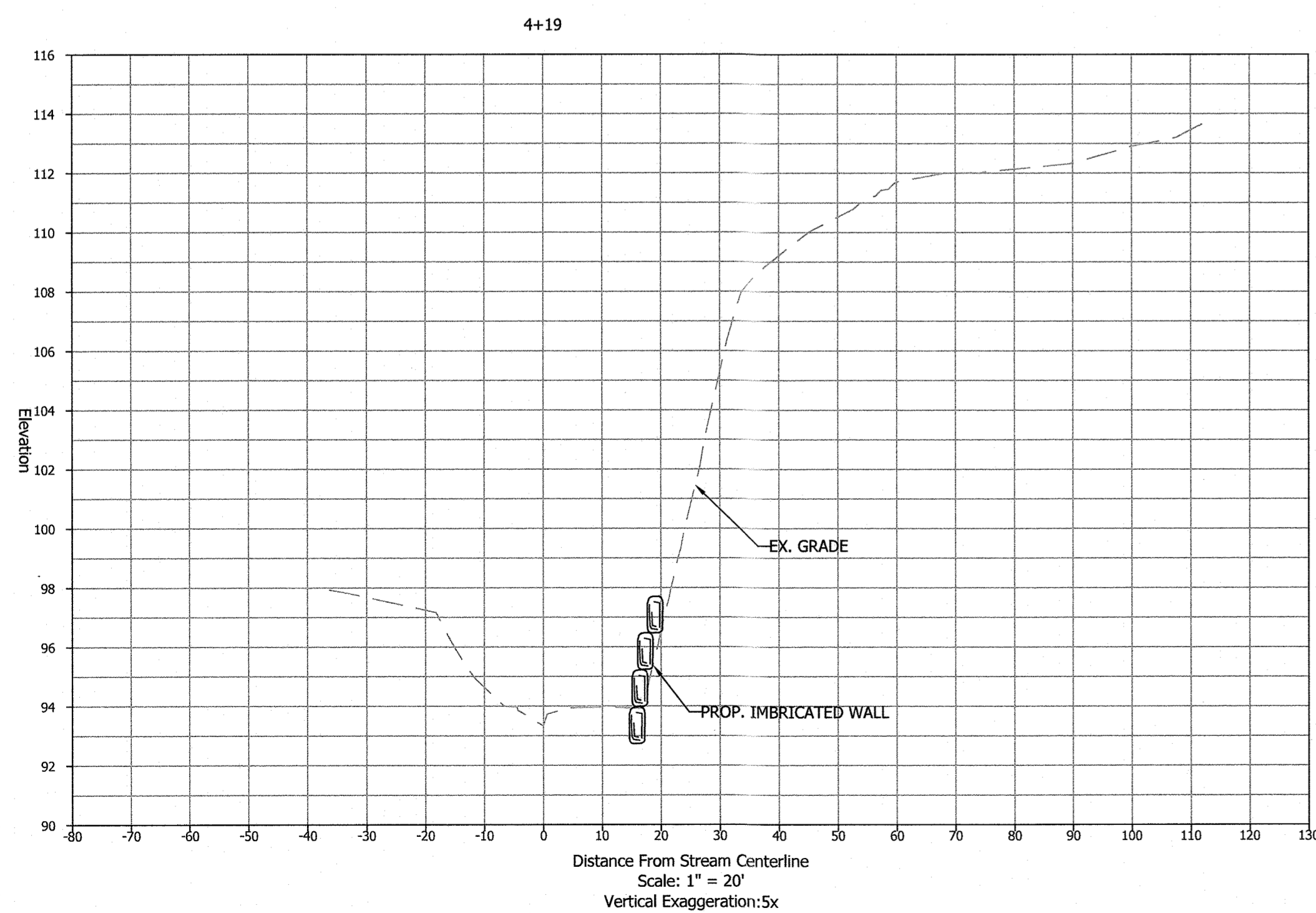
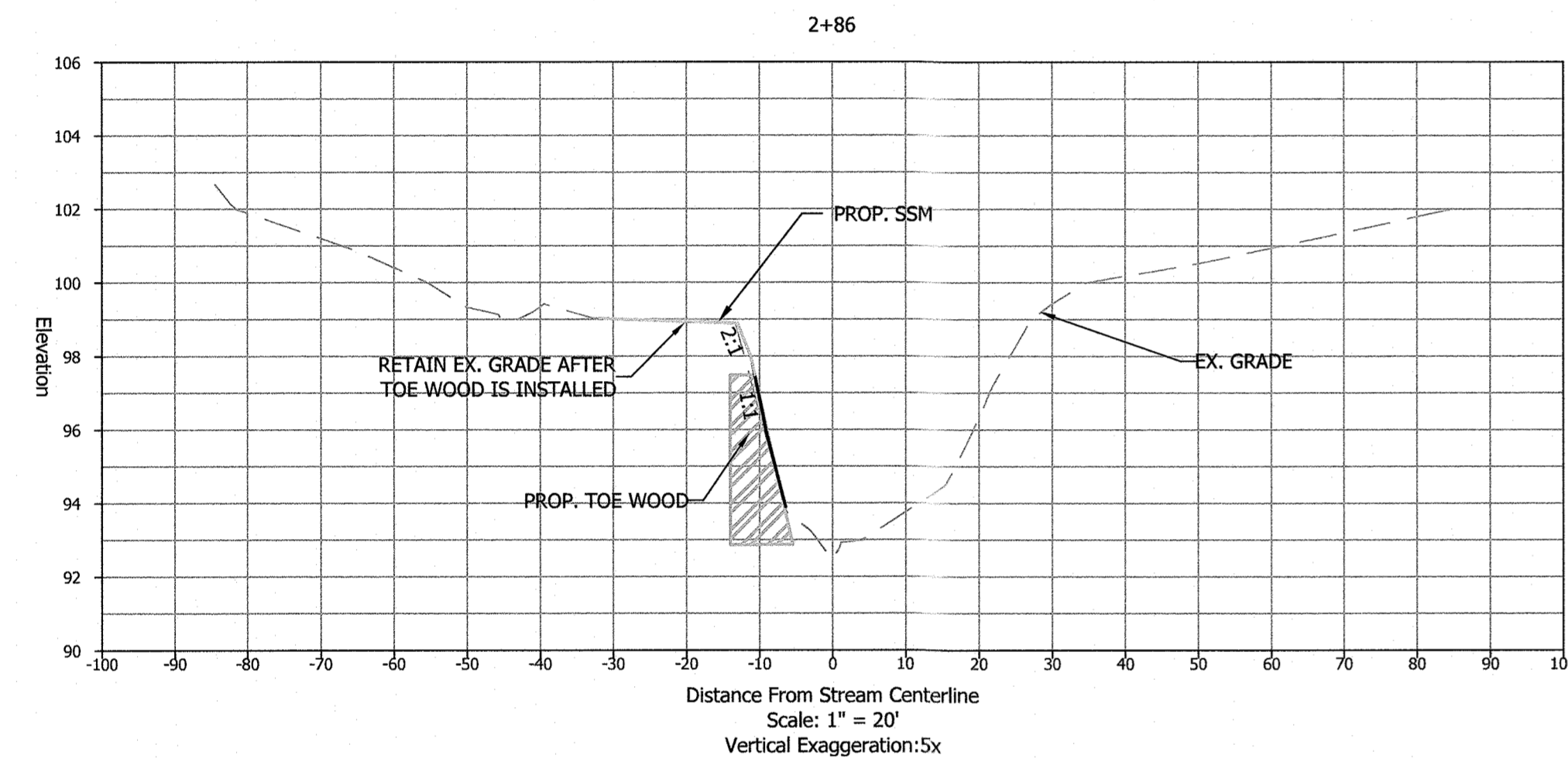
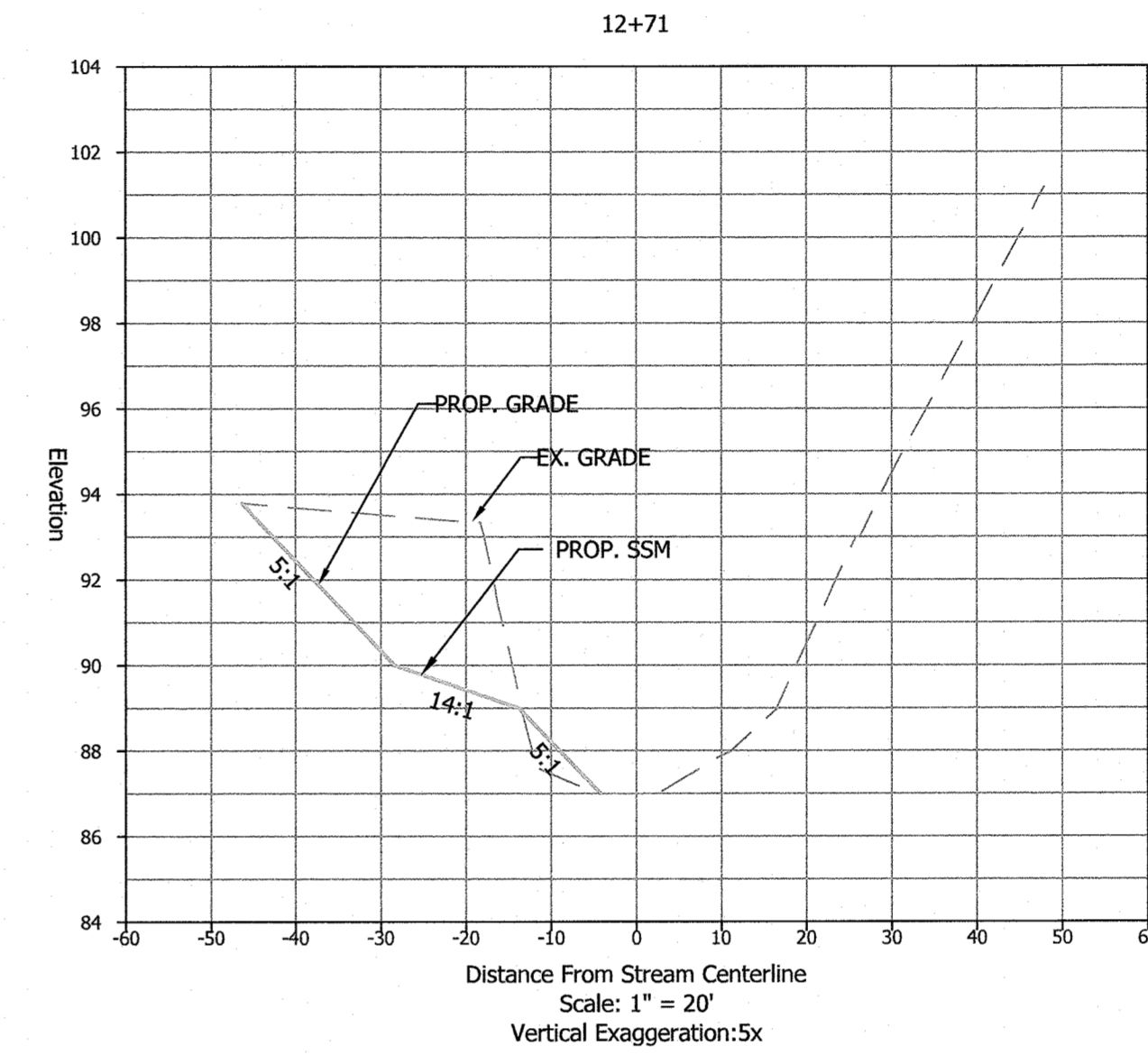
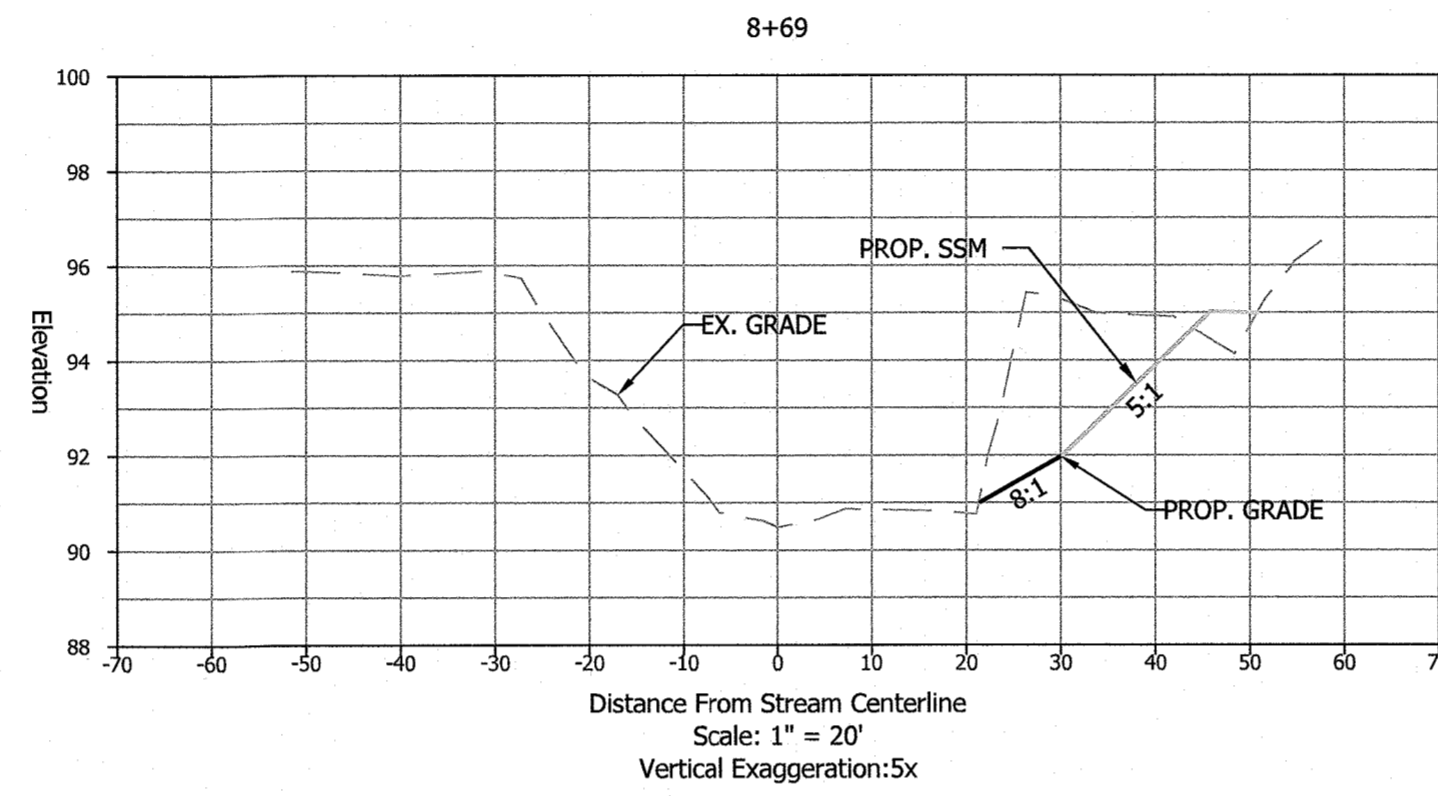
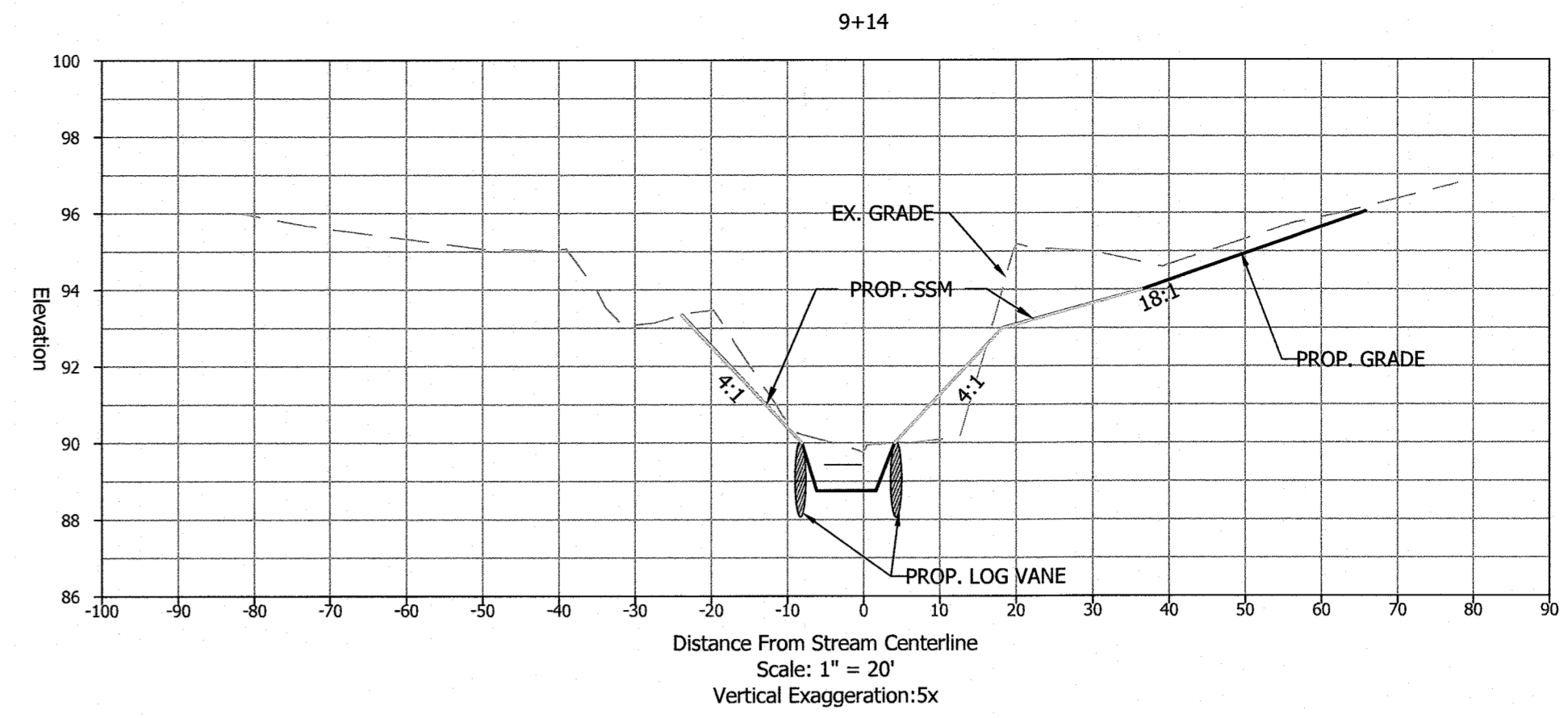
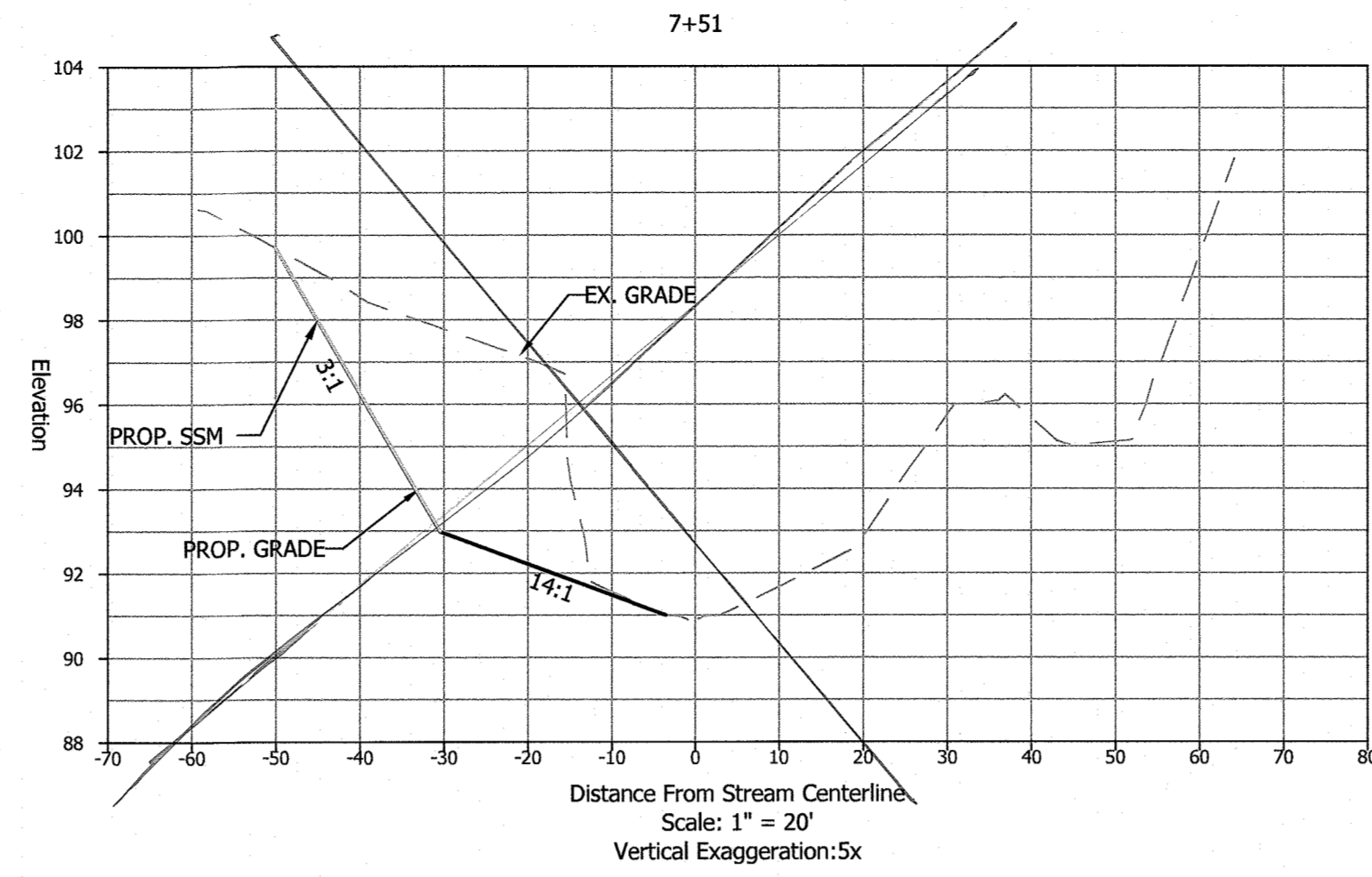
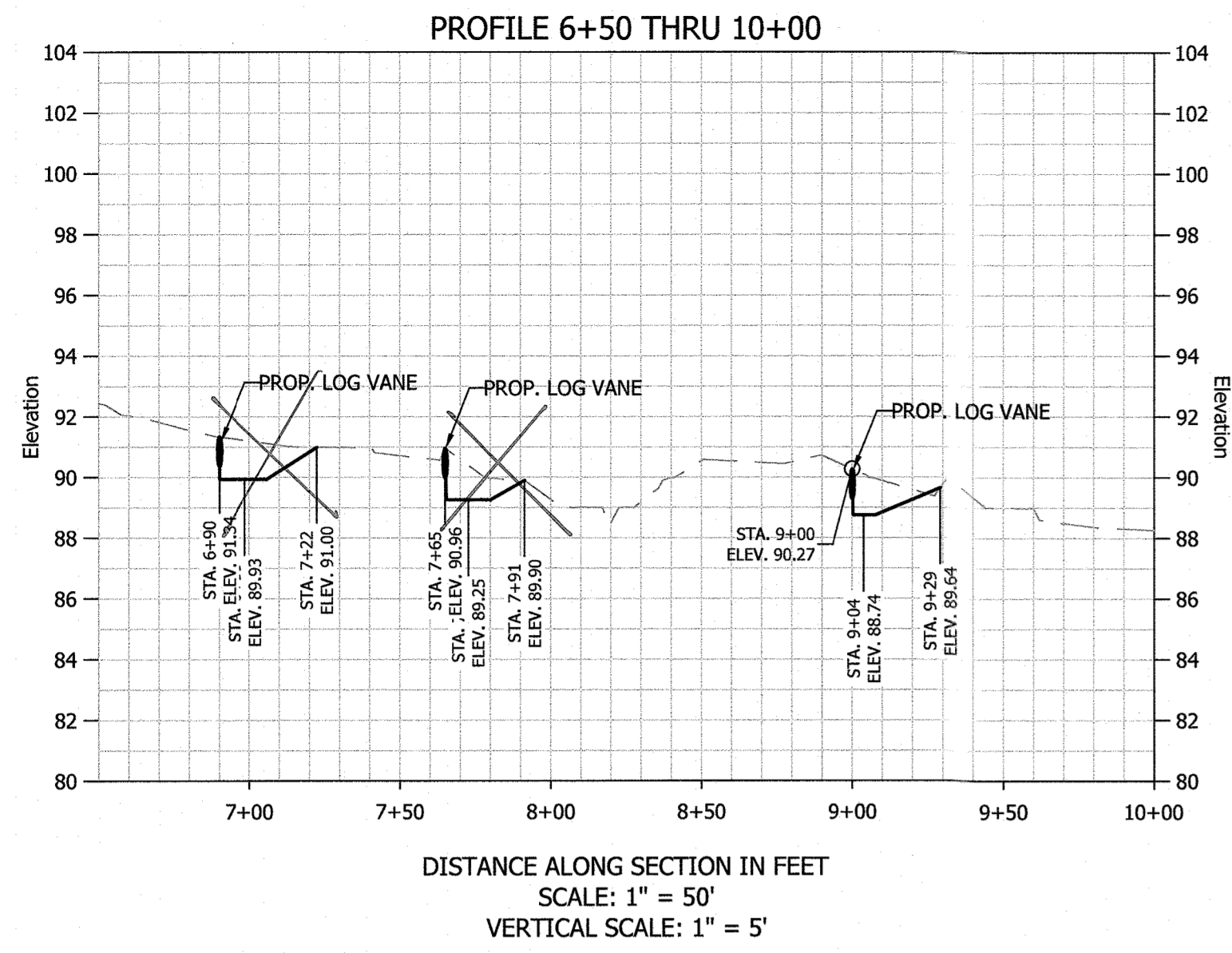


DEEP RUN
OFF-SITE STREAM RESTORATION
EROSION & SEDIMENT CONTROL & DESIGN
DORSEY ROAD, ELKRIDGE, MD 21075

ecotone
ecological restoration
129 Industry Lane - Forest Hill, Maryland 21050
(410) 420 2600 - www.ecotoneinc.com

| REVISIONS | | | |
|-----------|----------|---------------------------------|---------|
| No. | DATE | DESCRIPTION | REV. BY |
| 1 | 12-13-20 | Remove work on 6855 Deerpark Rd | ASR |

CHECKED BY: GRH
DESIGNED: CSM
DRAWN: SDG
PROJECT No.: 17-05-011
DATE: 11/25/2019
SHEET: 9 of 14
SDP-19-038



OFFSITE STREAM RESTORATION PARCELS (FIRST ELECTION DISTRICT):

| OWNER | ADDRESS | TAX MAP | PARCEL |
|----------------------------|-----------------------|---------|------------------------|
| GREGOR, EDWIN O & WF | 6937 DORSEY RD | 43 | 280 |
| MCCLEUNG, VIRGIL | 6941 DORSEY RD | 43 | 281 |
| DORSEY EMMANUEL EVANG CH | 6951 DORSEY RD | 43 | 466, LOT 385 |
| EMMANUEL UNITED EVANGEL CH | 6951 DORSEY RD | 43 | 282, LOT 387 |
| ELKRIDGE ROCK LLC | 6965 DORSEY RD | 43 | 283 |
| MOSAIC CHRISTIAN CHURCH | 6845 DEERPATH RD | 37 | 634, LOT J |
| 6856-DEERPATH RD-ENT.-LLC | 6856-DEERPATH RD | 37 | 634, LOT F |
| WHALEN PROPERTIES LLC | 6865 DEERPATH RD | 37 | 704, LOT H1 |
| STATE RAILROAD ADMIN | | 37 | 634, LOT G |
| ROBERT WILTROUT, III ET AL | 7129 STATION HOUSE RD | 43 | 284, LOT 266 |
| KEELA D. CLAGGETT | 7132 STATION HOUSE RD | 43 | 284, LOT 255 |
| HANDA ANITA | 7134 STATION HOUSE RD | 43 | 284, LOT 254 |
| BAAH BELINDA | 7140 STATION HOUSE RD | 43 | 284, LOT 252 |
| GREEK ANCHORS ROCK LLC | | 43 | 284, LOT 249, 250, 251 |

ENGINEER'S CERTIFICATE

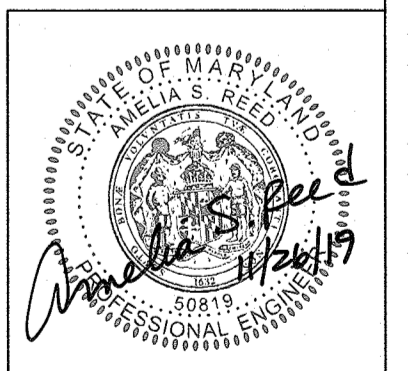
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Amelia S. Reed 11/26/19
ENGINEER DATE

DEVELOPER'S CERTIFICATE

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[Signature] 12/3/19
DEVELOPER DATE



Howard SCD Signature Block:

This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.

[Signature] 12/1/19
Howard Soil Conservation District Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 12-17-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 3/2/20
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 2-4-2020
DIRECTOR DATE

DEEP RUN

OFF-SITE STREAM RESTORATION

EROSION & SEDIMENT CONTROL & DESIGN

DORSEY ROAD, ELKRIDGE, MD 21075



| REVISIONS | | | |
|-----------|----------|---------------------------------|---------|
| No. | DATE | DESCRIPTION | REV. BY |
| 1 | 12-15-20 | Remove work on 6855 Deerpath Rd | CSM |

CHECKED BY: CRH

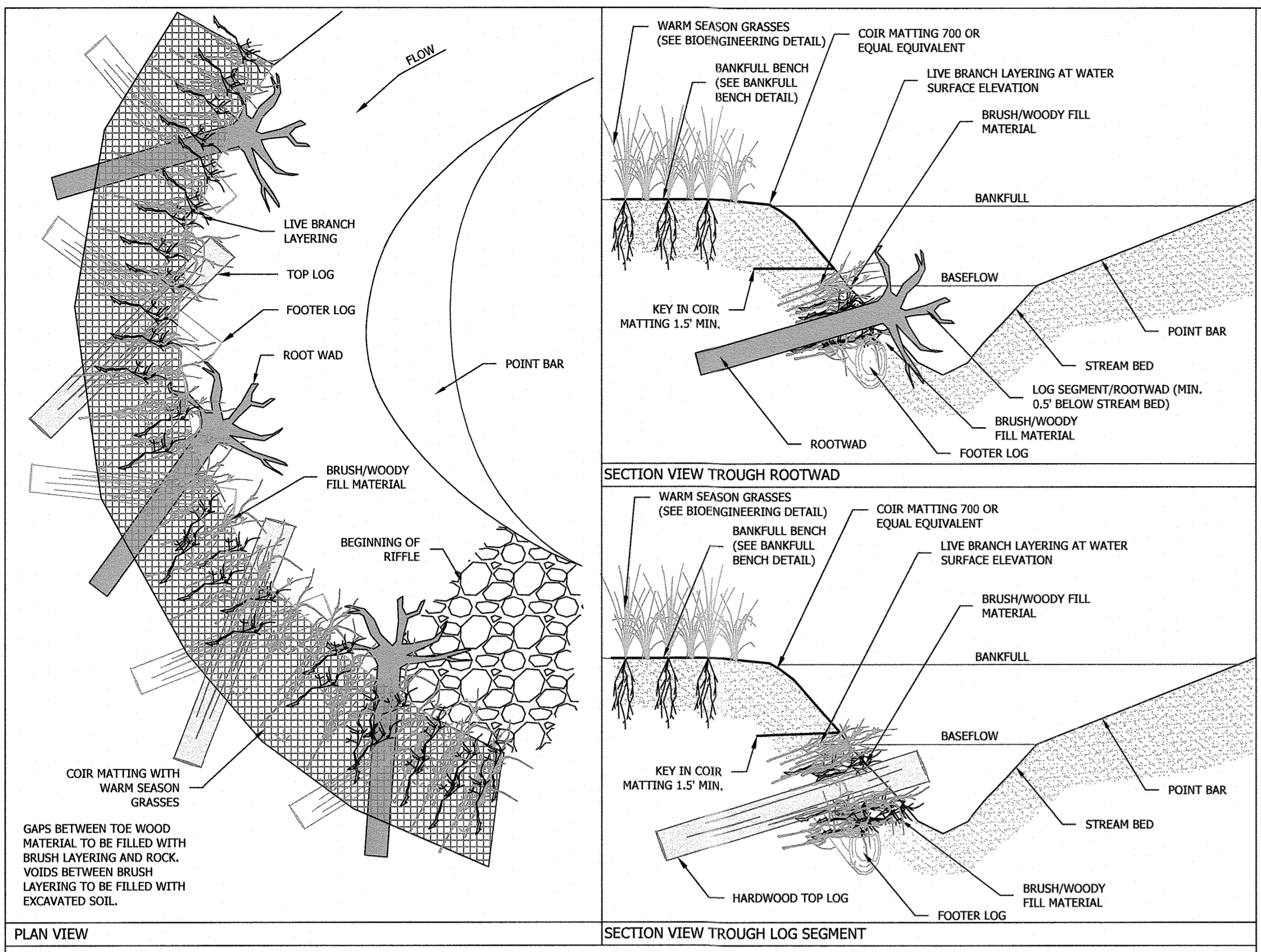
DESIGNED: CSM

DRAWN: SDC

PROJECT No.: 17-05-011

DATE: 11/25/2019

SHEET: 10 of 14
SDP-19-038



TOE WOOD WITH BIOENGINEERING N.T.S.

TOE WOOD WITH BIOENGINEERING INSTALLATION

DESCRIPTION
This work shall consist of installing toe wood structure to provide bank stability, minimize near bank stress, maintain low width/depth ratio, and enhance aquatic habitat.

MATERIALS
Woody Material
Material shall consist of woody material such as large limbs, branches, brush, logs and rootwads. Logs and rootwads shall be solid hardwood with minimum trunk diameter of 10 inches. Logs shall have a minimum length of 10 feet. All material shall be free of rot and evidence of pests.

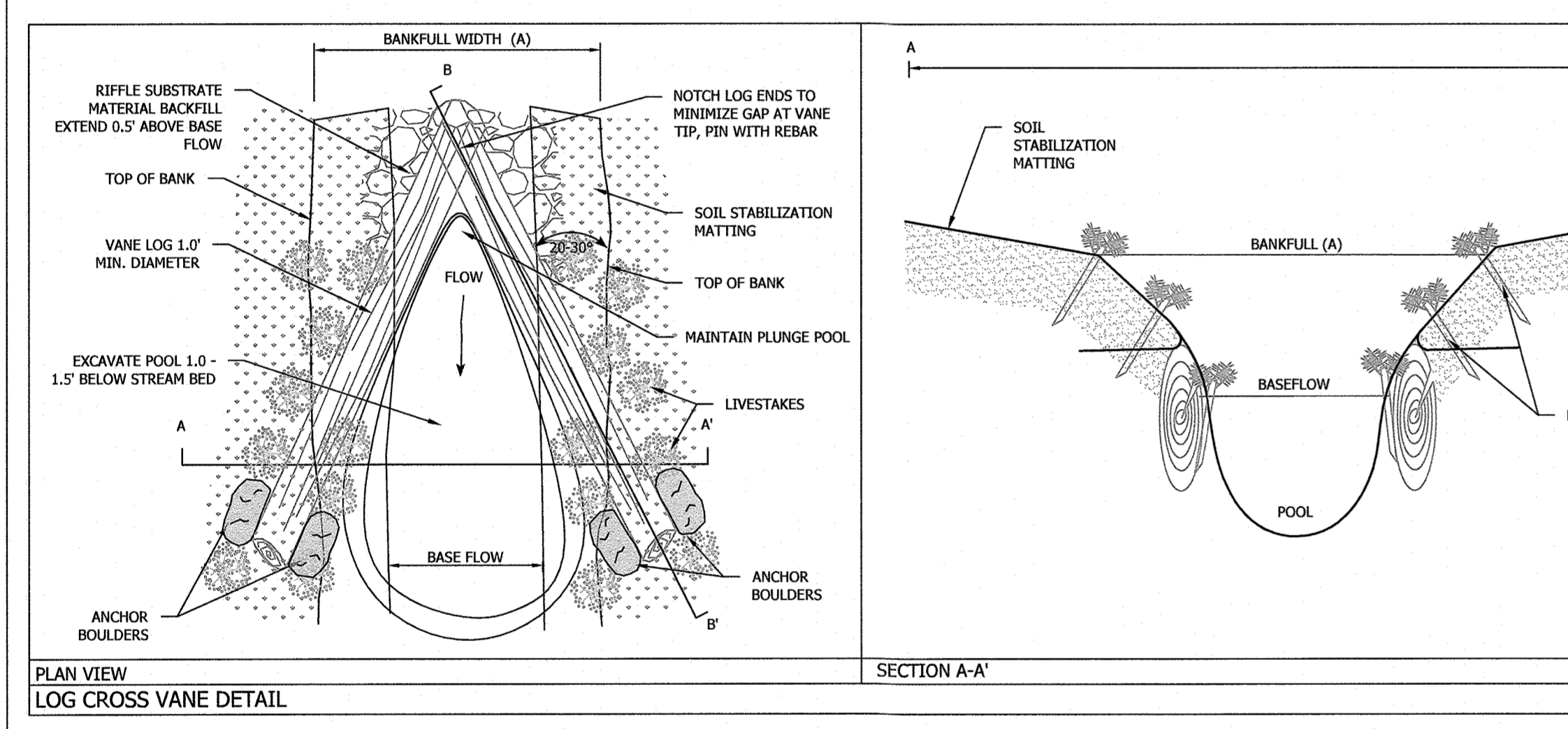
Live Branch Material
1. Live branch cuttings shall be approximately 1.5 inch in diameter.
2. Cuttings shall be 24-36" in length and long enough to extend a minimum of 1 foot and maximum of 18 inches from the rebuilt slope face. Side branches and bark shall remain intact prior to installation.
3. Live branch cuttings shall consist of a mix of three or more of the following species as shown on the "Live Branch Plant List" shown on Planting Plan, with at least one willow (*salix*) and one dogwood (*cornus*) species included. Each species shall comprise no more than 50% and no less than 20% of the mix.
NOTE: When not in dormancy period (Dec. 1 to Apr.1), livestock shall be substituted with tubelings spaced 1 per foot.

Soil
Soil material shall consist of top soil salvaged from within the construction limits or supplied topsoil that meets the specifications for topsoil in the Sediment and Erosion Control Plans.

Soil Stabilization Matting
1. Matting shall be woven machine spun bristle coir twine made of coir fiber obtained from fresh water cured coconut husks.
2. Soil stabilization matting (Coir700 or equivalent) shall conform to the "Soil Stabilization Chart".

CONSTRUCTION
Live Material Preparation:
1. All cuts shall be smooth and the cut surface kept small. The use of large pruning shears or power saws may be required.
2. Live materials not installed within 6 hours of harvesting shall be protected against drying out and overheating. Protection against drying out shall be accomplished by keeping the material covered, transported in unheated vehicles, moistened and/or kept in soak pits.
3. Storage of live materials shall include continuous shade by covering with evergreen branches or plastic sheeting. Proper storage shall also include sheltering live plant material from the wind and protection from drying by being heeled into moist soils and/or sprayed with anti-transpirant chemicals. Where water is available, live branch cuttings shall be sprayed or immersed.
4. Live materials shall be installed the same day that the cuttings are harvested. If installation of live materials cannot be accomplished on the same day and storage is required, live materials shall be stored for a period no longer than 2 days in cold storage.

Toe Wood and Branch Layering Installation
1. Excavate channel bed and outside bank to a subgrade depth that allows for the thickness of footer logs and stacked rootwads and top log segments (when complete, Baseflow water height should match or be slightly higher than height of the rootwad and top log.) Excavation into the bank shall be at least wide enough to place log sections and rootwads at a 20-30° angle.
2. Place footer logs into expanded area so that log ends face downstream at approximately a 20-30° angle. Logs shall be spaced roughly 8-10 feet apart and the ends shall protrude proposed past the toe no more than 2'.



LOG CROSS VANE DETAIL N.T.S.

DESCRIPTION
This work shall consist of installing a log cross vane structure to provide grade control, bank stability, and minimize near bank stress.

MATERIALS
Logs
Logs shall be hardwood species, have a minimum length as indicated on the "Log Cross Vane Chart", and a minimum diameter of 12 inches. All material shall be free of rot and evidence of pests. All branches and root mass shall be removed.

Backfill Substrate Material
Backfill material shall conform to riffle substrate specifications.

Anchor Boulders
Anchor boulders shall consist of Class II Riprap or equivalent salvaged boulders found on site.

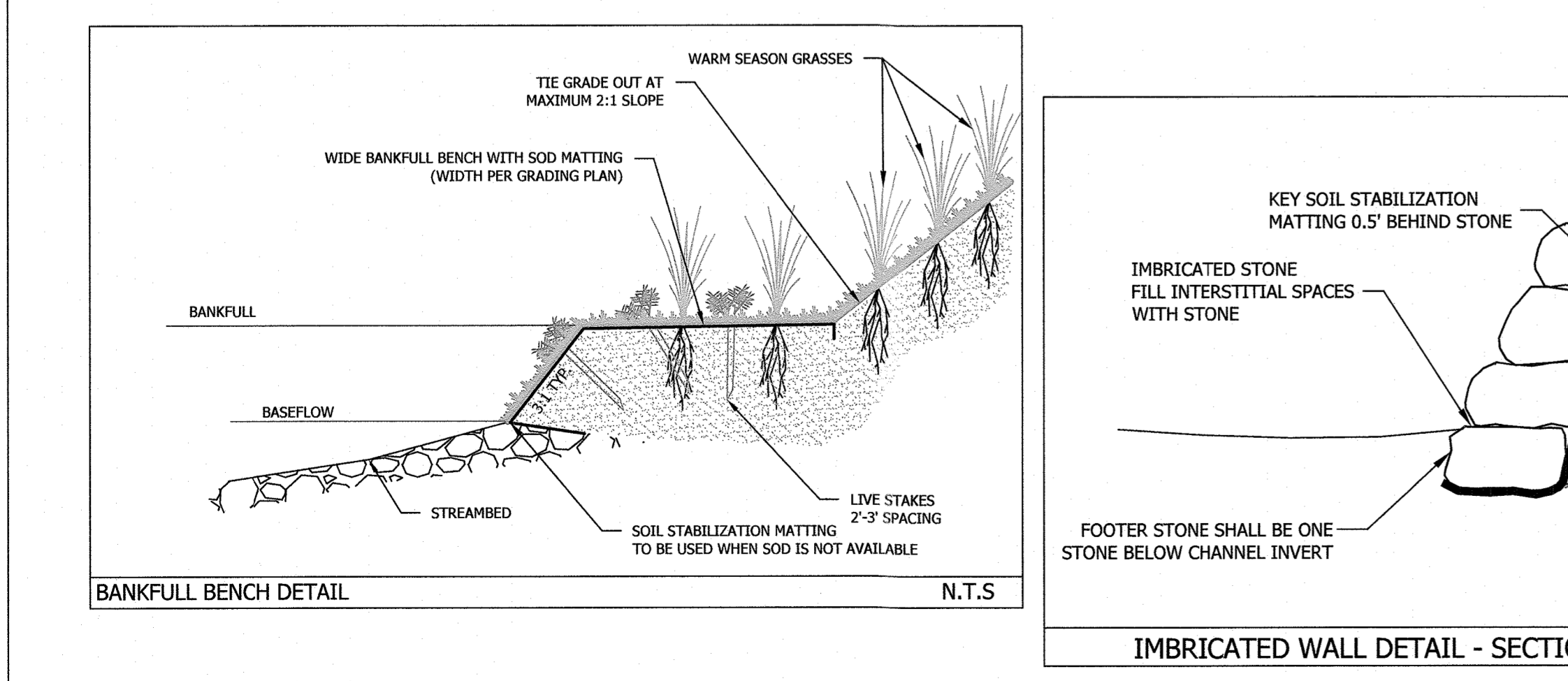
Soil Stabilization Matting
1. Matting shall be woven machine spun bristle coir twine made of coir fiber obtained from fresh water cured coconut husks.
2. Soil stabilization matting shall conform to the "Soil Stabilization Matting Specifications" chart.

CONSTRUCTION
1. Rough grade channel and floodplain areas prior to installing logs.
2. Excavate trench for vane log so that tip of log will be flush with proposed stream bed elevation at thalweg and log ties into the bank at approximately 0.5' below bankfull elevation.
3. Install vane log and backfill with riffle substrate material. Ensure that all voids have been filled on the upstream side of log and beneath.
4. Excavate trench for opposing vane log.
5. Install log with tip at same elevation as previously installed log and bank tie in point at same elevation as first log. Logs shall be notched so that the lowest point is at the tip where the logs meet. Secure log tips with a 3 foot section of rebar.
6. Backfill remaining areas with riffle substrate material, ensuring that all voids have been filled.
7. Grade banks, seed and mulch per bank treatment specifications and details.

BANKFULL BENCH INSTALLATION

Bankfull Bench Installation:
1. Grade stream bank to a subgrade elevation that allows for the placement of sod matting (0.5' - 0.75' typ.). Bank face slope and bench width to match grading plan and typical cross sections.
2. Install sod matting starting at edge of base flow and continue up bank and over the bankfull bench.
3. If sod matting is not available, utilize soil stabilization matting making sure to key in all edges a minimum of 6".
4. When using stabilization matting, subgrade elevations are not needed, however topsoil must be placed on bank and bench at a minimum of 3". Utilize salvaged topsoil whenever possible.

Bioengineering:
1. See "Bioengineering Detail" for installation sequence.



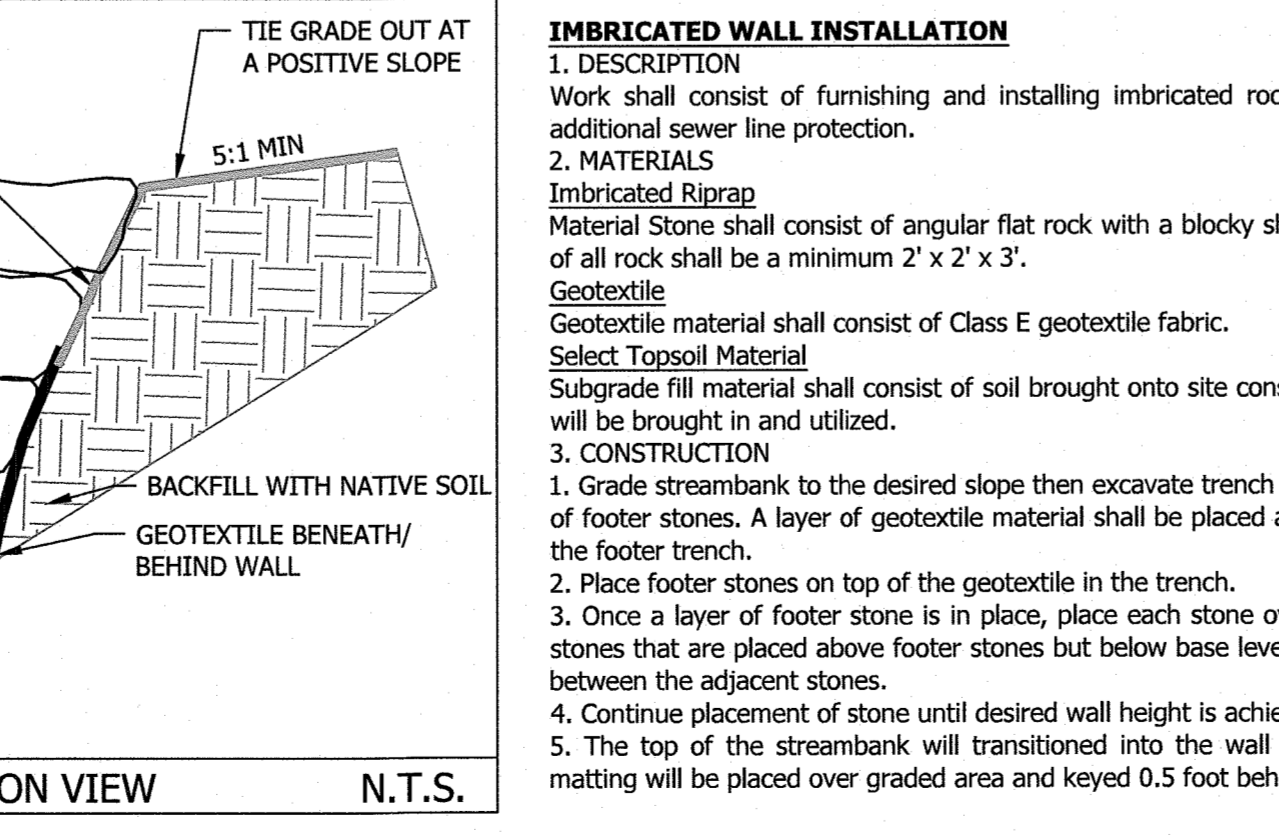
BANKFULL BENCH DETAIL N.T.S.

IMBRICATED WALL INSTALLATION

DESCRIPTION
Work shall consist of furnishing and installing imbricated rock to stabilize the streambank and provide additional sewer line protection.

MATERIALS
Imbricated Riprap
Material Stone shall consist of angular flat rock with a blocky shape so that it is easily stacked. Dimensions of all rock shall be a minimum 2' x 2' x 3'.
Geotextile
Geotextile material shall consist of Class E geotextile fabric.
Select Topsoil Material
Subgrade fill material shall consist of soil brought onto site consisting of no more than 2% organic material will be brought in and utilized.

CONSTRUCTION
1. Grade streambank to the desired slope then excavate trench along the toe of the bank for the placement of footer stones. A layer of geotextile material shall be placed and secured from the top of bank down into the footer trench.
2. Place footer stones on top of the geotextile in the trench.
3. Once a layer of footer stone is in place, place each stone overlapping the one underneath by half. The stones that are placed above footer stones but below base level should be set so as to create a void space between the adjacent stones.
4. Continue placement of stone until desired wall height is achieved.
5. The top of the streambank will transition into the wall by grading at a 5:1 slope. Erosion control matting will be placed over graded area and keyed 0.5 foot behind top of imbricated wall.



IMBRICATED WALL DETAIL - SECTION VIEW N.T.S.

OFFSITE STREAM RESTORATION PARCELS (FIRST ELECTION DISTRICT):

| OWNER | ADDRESS | TAX MAP | PARCEL |
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| ELKRIDGE ROCK LLC | 6965 DORSEY RD | 43 | 283 |
| MOZAC CHRISTIAN CHURCH | 6845 DEERPATH RD | 37 | 634, LOT J |
| 6855-DEERPATH-RD-ENT-LLC | 6855-DEERPATH RD | 37 | 634, LOT-1 |
| WHALEN PROPERTIES LLC | 6865 DEERPATH RD | 37 | 704, LOT H1 |
| STATE RAILROAD ADMIN | | | 634, LOT G |
| ROBERT WILTROUT, III ET AL | 7129 STATION HOUSE RD | 43 | 284, LOT 266 |
| KEELA D. CLAGGETT | 7132 STATION HOUSE RD | 43 | 284, LOT 255 |
| HANDA ANITA | 7134 STATION HOUSE RD | 43 | 284, LOT 254 |
| BAKH BELINDA | 7140 STATION HOUSE RD | 43 | 284, LOT 252 |
| GREEK ANCHORS ROCK LLC | | 43 | 284, LOT 249, 250, 251 |

ENGINEER'S CERTIFICATE
I, THE ENGINEER, CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Amelia S. Reed 11/26/19
ENGINEER DATE

DEVELOPER'S CERTIFICATE
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M. J. [Signature] 12/13/19
DEVELOPER DATE

Howard SCD Signature Block:
This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.

John [Signature] 12/10/19
Howard Soil Conservation District Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 12-17-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 3/2/20
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 3-4-2020
DIRECTOR DATE

DEEP RUN

OFF-SITE STREAM RESTORATION

EROSION & SEDIMENT CONTROL

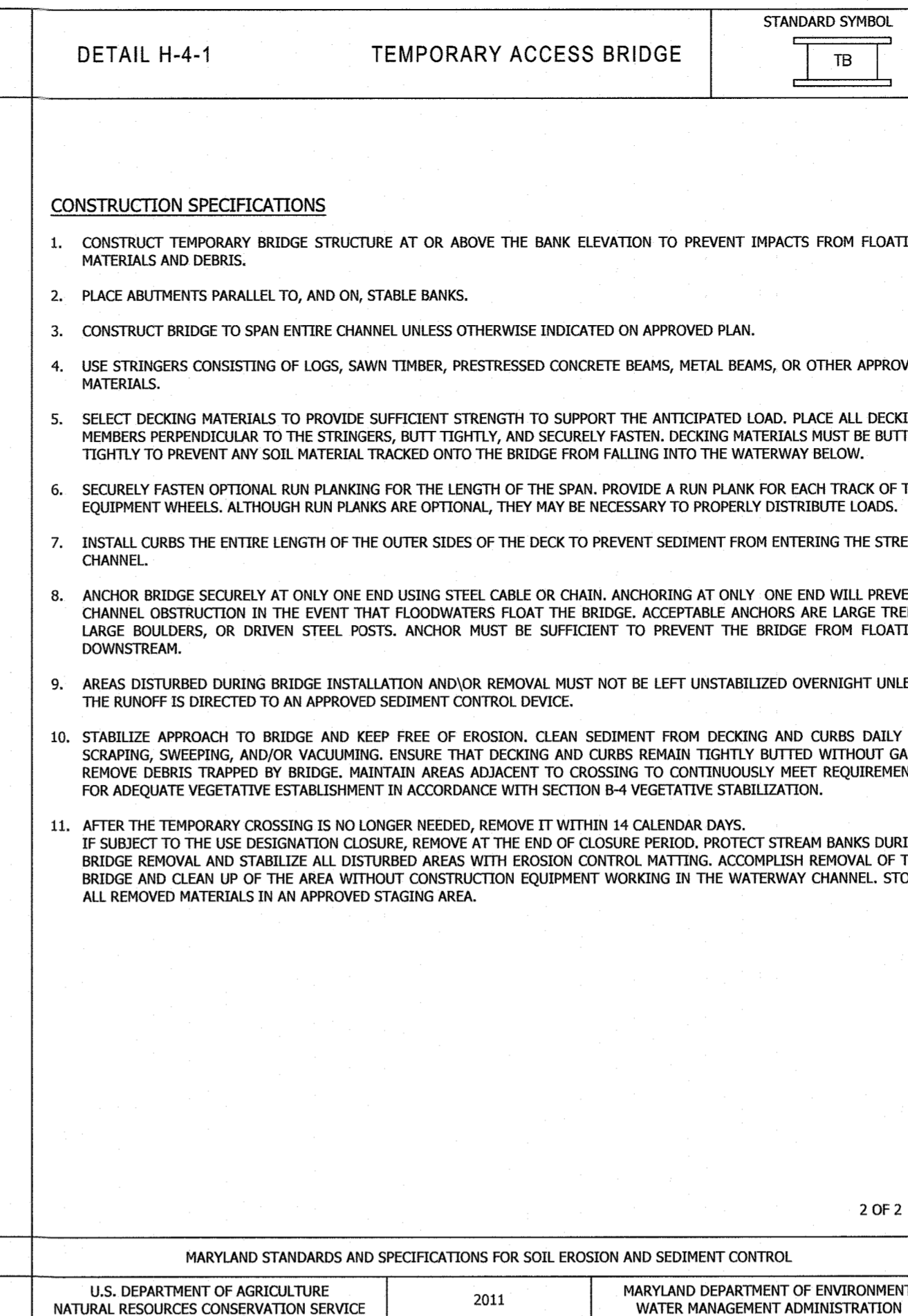
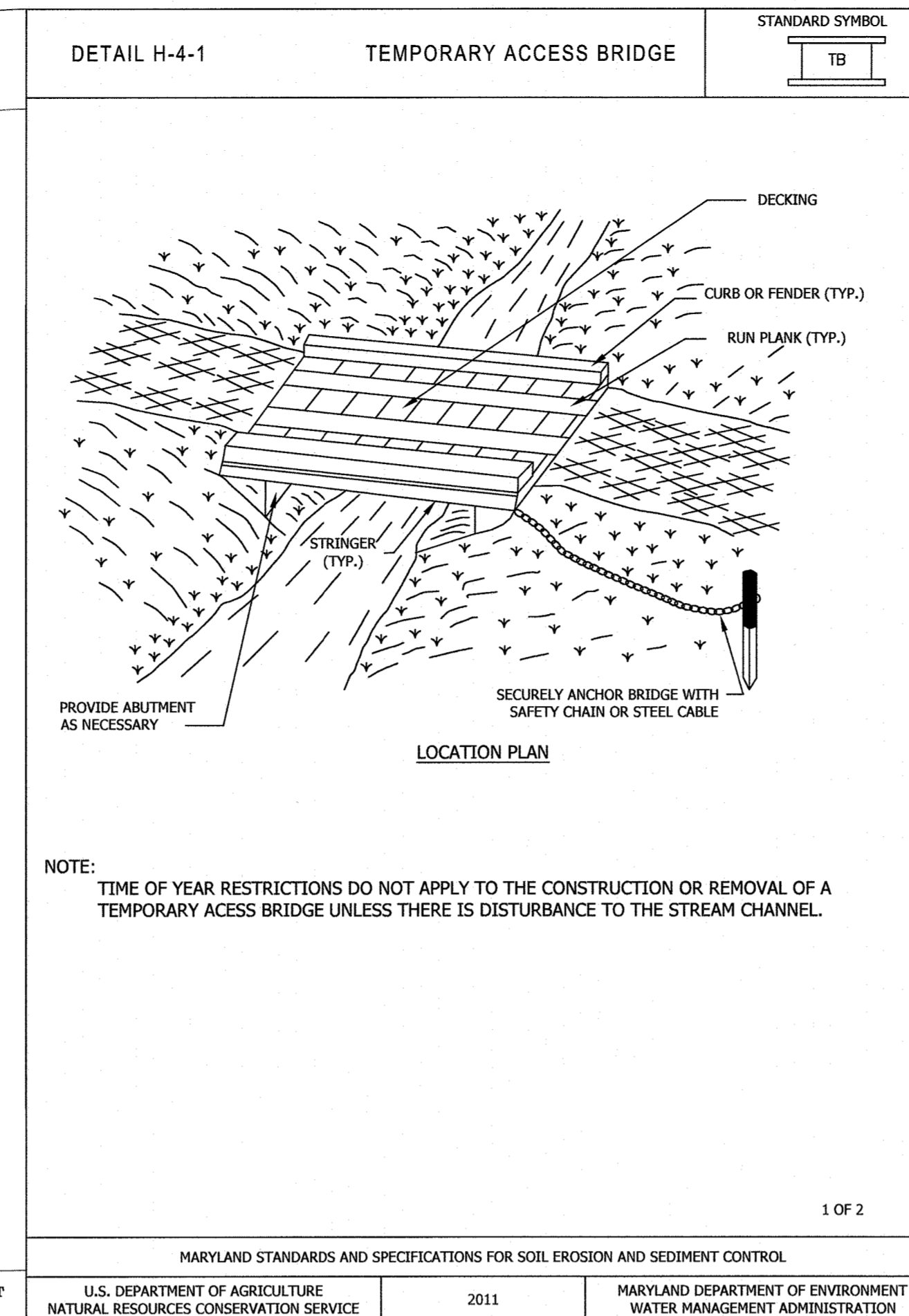
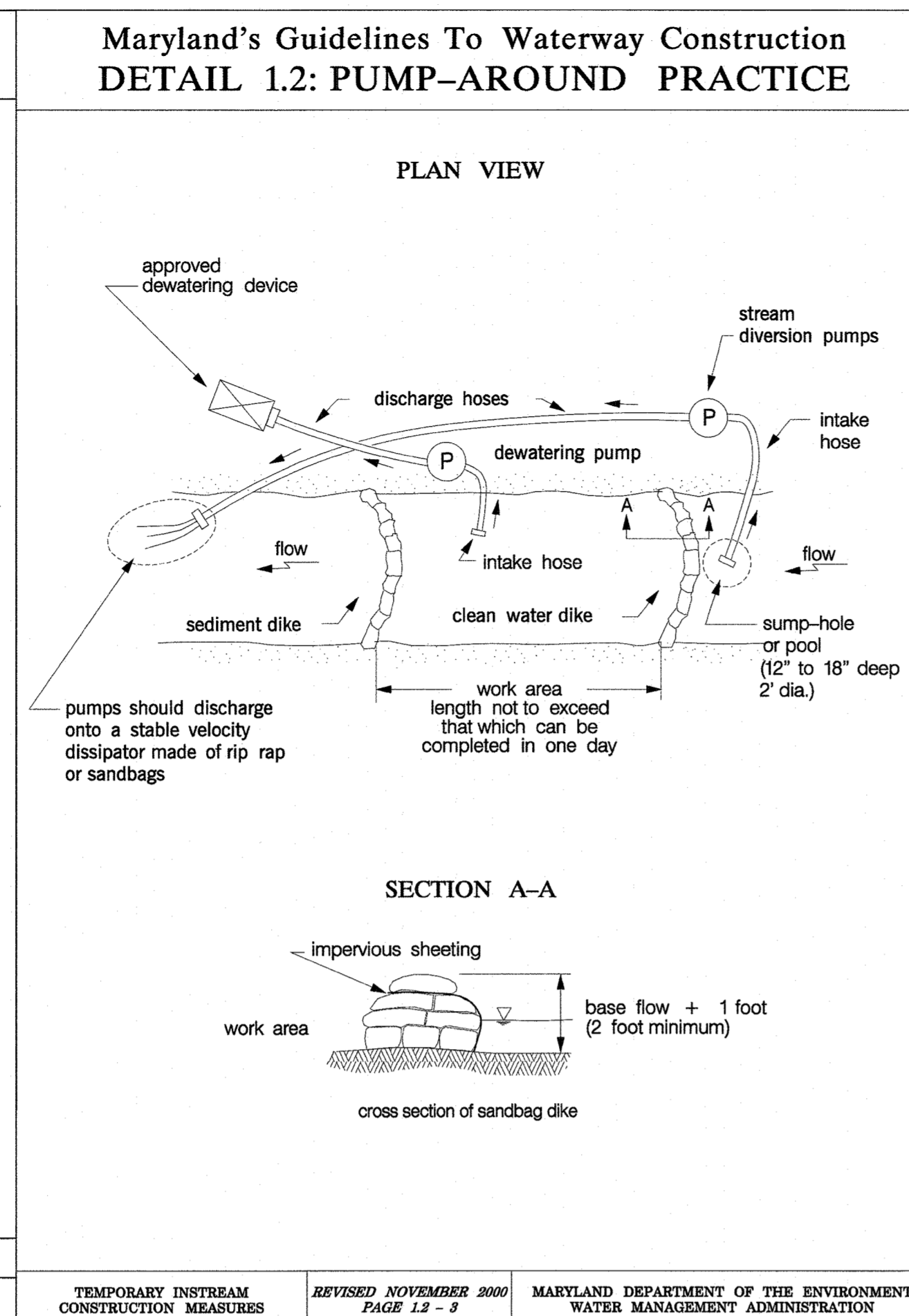
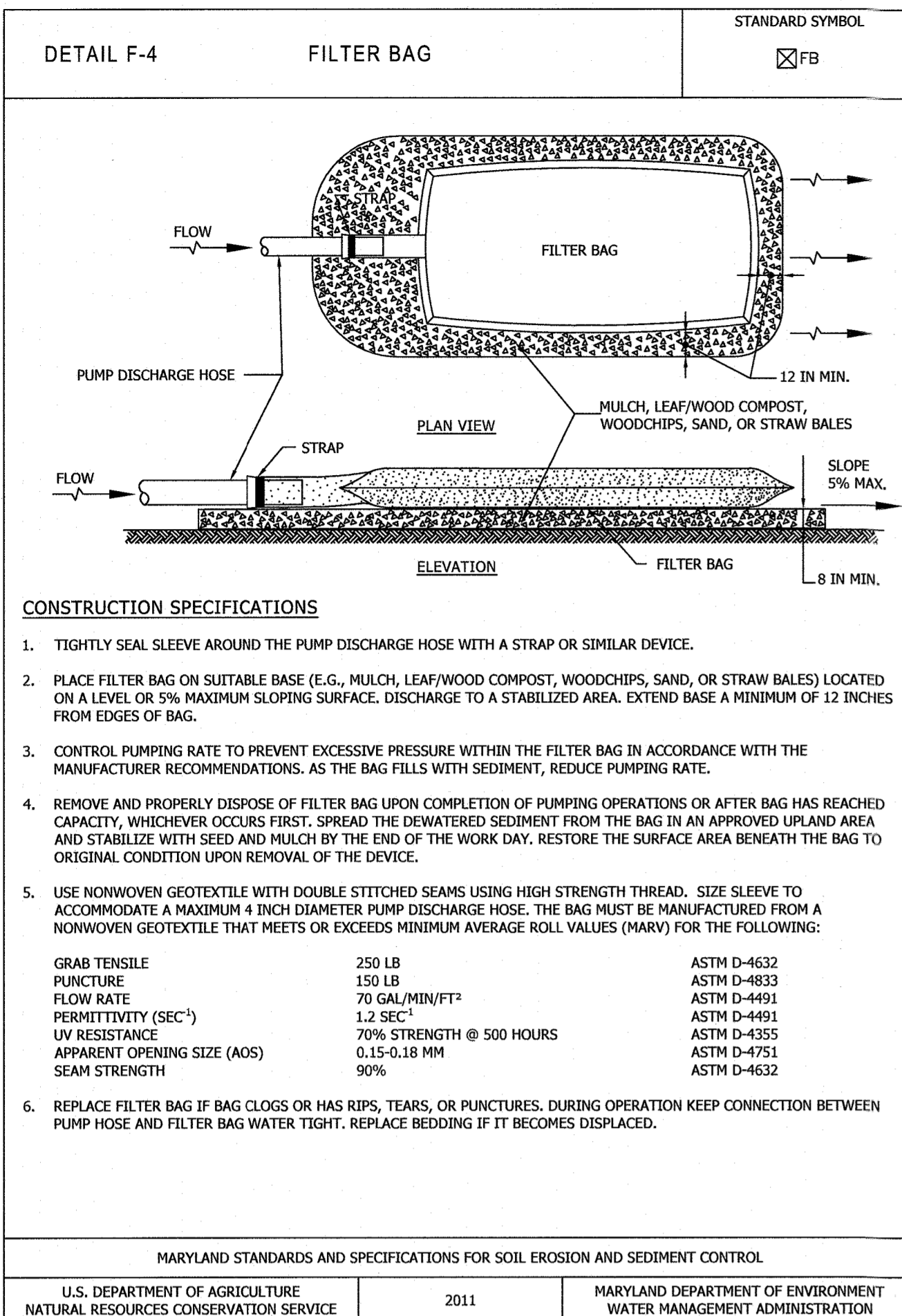
NOTES & DETAILS

DORSEY ROAD, ELKRIDGE, MD 21075

| REVISIONS | | | |
|-----------|---------|---------------------------------|---------|
| No. | DATE | DESCRIPTION | REV. BY |
| 1 | 2-13-20 | Remove work on 6855 Deerpath Rd | CSM |

CHECKED BY: GRH
DESIGNED: CSM
DRAWN: SDG
PROJECT No.: 17-05-011
DATE: 11/25/2019
SHEET: 11 of 14
SDP-19-038

ecotone
ecological restoration
129 Industry Lane - Forest Hill, Maryland 21050
(410) 420 2600 - www.ecotoneinc.com



MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

- Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
- The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
- The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
- Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
- Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
- Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

TEMPORARY INSTREAM CONSTRUCTION MEASURES **MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES**
REVISED NOVEMBER 2000

PAGE 1.2 - 1

| | | |
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| 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 |

| | | |
|---|------------------------------------|--|
| MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL | | |
| TEMPORARY INSTREAM CONSTRUCTION MEASURES | REVISED NOVEMBER 2000 PAGE 1.2 - 1 | MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |

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MGWC 1.2: PUMP-AROUND PRACTICE

- Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
- Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
- All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
- After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
- A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
- If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
- The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
- After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

OFFSITE STREAM RESTORATION PARCELS (FIRST ELECTION DISTRICT):

| OWNER | ADDRESS | TAX MAP | PARCEL |
|----------------------------|-----------------------|---------|------------------------|
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| MCCLELLIN, VIRGIL | 6941 DORSEY RD | 43 | 281 |
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| ELKRIDGE ROCK LLC | 6965 DORSEY RD | 43 | 283 |
| MOASIC CHRISTIAN CHURCH | 6845 DEERPATH RD | 37 | 634, LOT J |
| 6855 DEERPATH RD ENT. LLC | 6855 DEERPATH RD | 37 | 634, LOT I |
| WHALEN PROPERTIES LLC | 6865 DEERPATH RD | 37 | 704, LOT H1 |
| STATE RAILROAD ADMIN | | | 634, LOT G |
| ROBERT WILTROUT, III ET AL | 7129 STATION HOUSE RD | 43 | 284, LOT 286 |
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| HANDA ANITA | 7134 STATION HOUSE RD | 43 | 284, LOT 254 |
| BAAH BELINDA | 7140 STATION HOUSE RD | 43 | 284, LOT 252 |
| GREEK ANCHORS ROCK LLC | | | 284, LOT 249, 250, 251 |

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Amelia S. Reed 11/26/19
ENGINEER DATE

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[Signature] 12/3/19
DEVELOPER DATE

Howard SCD Signature Block:

This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.

[Signature] 12/11/19
Howard Soil Conservation District Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 12.17.19
CHIEF, DEPARTMENT ENGINEERING DIVISION DATE

[Signature] 3/8/20
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 3-4-2020
DIRECTOR DATE

SEE SHEET 4 FOR ADDITIONAL DETAILS

DEEP RUN
OFF-SITE STREAM RESTORATION
EROSION & SEDIMENT CONTROL
NOTES & DETAILS
DORSEY ROAD, ELKRIDGE, MD 21075

| REVISIONS | | | |
|-----------|---------|---------------------------------|---------|
| No. | DATE | DESCRIPTION | REV. BY |
| 1 | 2-13-20 | Remove work on 6855 Deerpark Rd | CSM |

CHECKED BY: CRH
DESIGNED: CSM
DRAWN: SDG
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ecological restoration
129 Industry Lane - Forest Hill, Maryland 21050
(410) 420 2600 - www.ecotoneinc.com

12 of 14
SDP-19-038

| | | |
|---|------|---|
| DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION | | STANDARD SYMBOL TSSMS 1.97 lb./ft ² (* INCLUDE SHEAR STRESS) |
| <p>OVERLAP OR ABUT ROLL EDGES (TYP.)</p> <p>6 IN DEEP (MIN.) KEY IN TRENCH</p> <p>6 IN MIN. OVERLAP AT ROLL END (TYP.)</p> <p>PREPARED SLOPE (SEEDBED) WITH SEED IN PLACE</p> <p>ISOMETRIC VIEW</p> | | |
| CONSTRUCTION SPECIFICATIONS | | |
| <ol style="list-style-type: none"> USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOOTHER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2/32 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. | | |
| MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL | | |
| U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE | 2011 | MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION |

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES (STREAM RESTORATION)

- A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:
 - Prior to the start of earth disturbance,
 - Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading.
 - Prior to the start of another phase of construction or opening of another grading unit,
 - Prior to the removal or modification of sediment control practices.
 Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.
 - All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.
- Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.
- All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).
- All sediment control structures are to remain in place, and are to be maintained in operative condition until permission for their removal has been obtained from the CID.
- Site Analysis:
 - Total Area of Site: XX Acres
 - Area Disturbed: 3.72 Acres
 - Area to be roofed or paved: 0.0 Acres
 - Area to be vegetatively stabilized: 3.72 Acres
 - Total Cut: Cu. Yds.
 - Total Fill: Cu. Yds. UNEXPECTED WASTE TO BE DISPOSED AT SITE WITH ACTIVE
 - Offsite waste/borrow area location: GRADING PERMIT, AS APPROVED BY HC CID INSPECTOR
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly, and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:
 - Inspection date
 - Inspection type (routine, pre-storm event, during rain event)
 - Name and title of inspector
 - Weather information (current conditions as well as time and amount of last recorded precipitation)
 - Brief description of project's status (e.g., percent complete) and/or current activities
 - Evidence of sediment discharges
 - Identification of plan deficiencies
 - Identification of sediment controls that require maintenance
 - Identification of missing or improperly installed sediment controls
 - Compliance status regarding the sequence of construction and stabilization requirements
 - Photographs
 - Monitoring/sampling
 - Maintenance and/or corrective action performed
 - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).
- Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.
- Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be allowed by the CID per the list of HSCD-approved field changes.
- Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum distance of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.
- Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
- Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
- All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.
- Stream channels must not be disturbed during the following restricted time periods (inclusive):
 - Use I and IP March 1 - June 15
 - Use III and IIIP October 1 - April 30
 - Use IV March 1 - May 31
- A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

SOIL STABILIZATION MATTING INSTALLATION

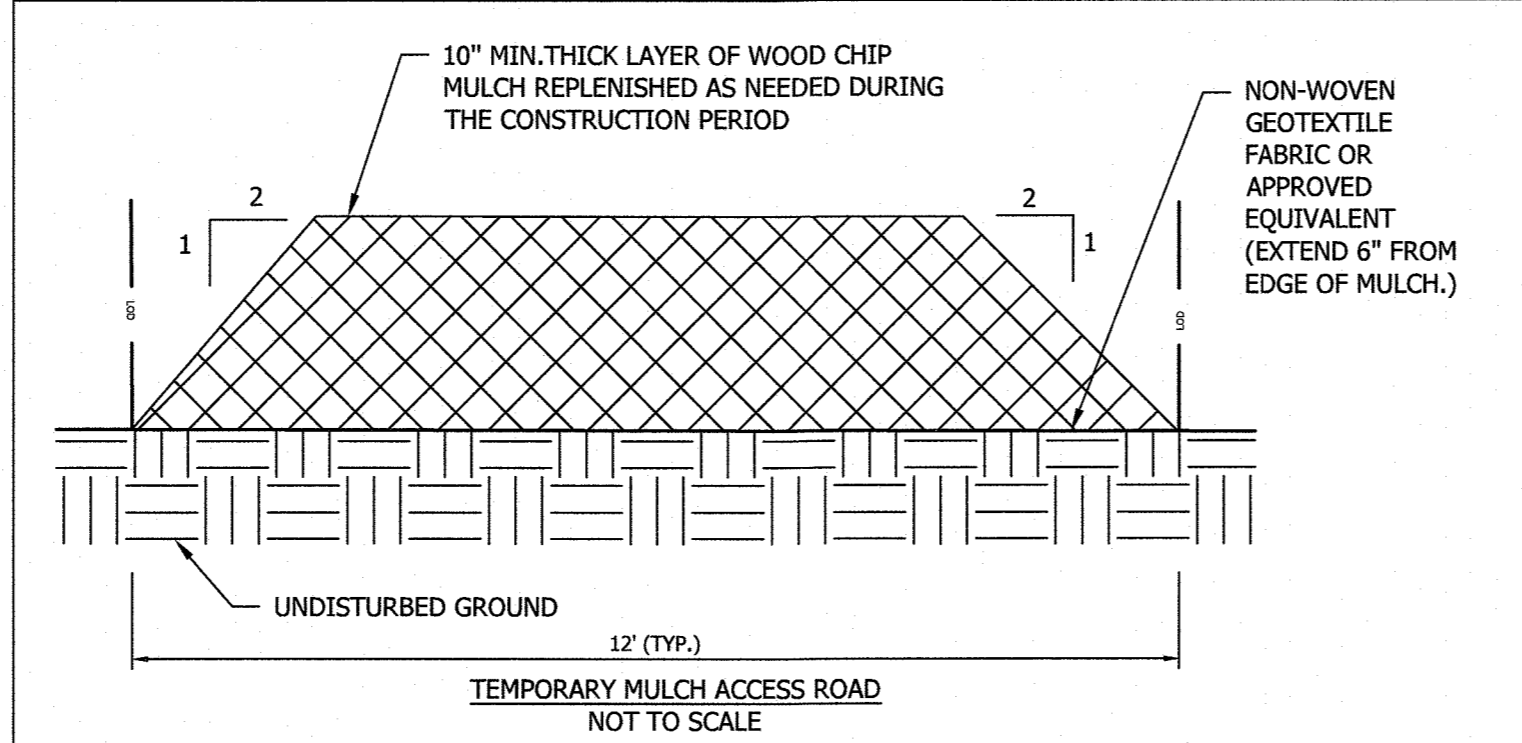
DESCRIPTION
This work shall consist of installing soil stabilization matting. Soil stabilization matting is to be installed concurrently with installation of Riffle Grade Control Structure.

MATERIALS
Soil Stabilization Matting
Matting shall be woven machine spun bristle coir twine made of coir fiber obtained from fresh water cured coconut husks. Soil stabilization matting shall conform to the "Soil Stabilization Chart".

CONSTRUCTION
Soil Stabilization Matting:

- Final grade stream banks to proposed dimension and slope per the grading plan.
- Seed streambank areas with proposed permanent and temporary seed mix per the planting plan.
- Matting shall be laid smoothly and firmly upon the seeded bed in the direction of the water flow. Excessive stretching shall be avoided.
- Where more than one width of matting is required, the ends of each strip shall overlap at least 1 foot for both vertical and horizontal overlaps. Overlapping shall be done with the up-slope matting overlapping the down-slope matting and the upstream matting overlapping the downstream matting.
- Matting shall be firmly fastened in place with stakes driven vertically into the soil and flush with the surface. Stakes shall be placed on 4-foot centers throughout the matting and along the edges of the matting.
- The contractor shall excavate a shallow trench along the up-slope, down-slope, and vertical edges of the matting at both the upstream and downstream edges of the matting. The matting shall be keyed into the trench a minimum of 6 inches. Following the installation of the stakes, the matting trenches shall be backfilled with soil (or stream bed material if keying in within the channel) and tamped firmly.

| Soil Stabilization Matting Specifications | | |
|---|-------------|-------------|
| Property | Test Method | CoirMat 700 |
| Weight | ASTM D 3776 | 20.6 oz/SY |
| Thickness | ASTM D 1777 | 0.3 inch |
| Dry Tensile Strength | | |
| Machine Direction | | 1512 lbs/sf |
| Cross Direction | ASTM D 4595 | 1032 lbs/sf |
| Wet Tensile Strength | | |
| Machine Direction | | 924 lbs/sf |
| Cross Direction | ASTM D 4595 | 684 lbs/sf |
| Open Area | Calculated | 50% |



- ACCESS ROUTES TO BE VERIFIED BY ENGINEER AT PRE-CONSTRUCTION MEETING. REVISIONS TO THE ALIGNMENT THAT MINIMIZE TREE DISTURBANCE ARE ENCOURAGED AND REQUIRE REVIEW AND APPROVAL BY THE ENGINEER.
- NON-WOVEN GEOTEXTILE OR APPROVED EQUIVALENT SHALL BE PLACED WITH SEAMS PARALLEL TO THE FLOW OF TRAFFIC. OVERLAP FABRIC BY 18" MIN. AT SEAMS.
- CONTRACTOR SHALL MAINTAIN TEMPORARY ACCESS ROAD THROUGHOUT CONSTRUCTION PERIOD.

| PERMANENT SEEDING SUMMARY | | | | | | | |
|---------------------------|--|---|------------------------------------|----------------------------|----------|-------------------------------|------------------|
| Hardiness Zone = 7a | | Seed Mixture = Cool Season (FEB 15 - APR 30; AUG 15 - OCT 31) | | Fertilizer Rate (10-20-20) | | Lime Rate | |
| No. | Species* | Application Rate (lb/ac) | Seeding Dates | Seeding Depths | N | P ₂ O ₅ | K ₂ O |
| 9 | Tall Fescue (<i>Lolium arundinaceum</i>) | 60 lb/ac (1.38 lb /1000 sf) | Feb 15 - Apr 30 Aug 15 - Oct 31 | 1/4 - 1/2 in. | 45 lb/ac | 90 lb/ac | 90 lb/ac |
| | Kentucky Bluegrass (<i>Poa pratensis</i>) | 40 lb/ac (0.92 lb /1000 sf) | | | 2 lb | 2 lb | 2 lb |
| | Perennial Ryegrass (<i>Lolium perenne</i>) | 20 lb/ac (0.46 lb /1000 sf) | | | 0 sf | 0 sf | 0 sf |

| PROPERTY | TEST METHOD | WOVEN SLIT FILM GEOTEXTILE | | WOVEN MONOFILAMENT GEOTEXTILE | | NONWOVEN GEOTEXTILE | |
|--|-------------|----------------------------|--------|-------------------------------|--------|-------------------------|--------|
| | | MD | CD | MD | CD | MD | CD |
| Grab Tensile Strength | ASTM D-4632 | 200 lb | 200 lb | 370 lb | 250 lb | 200 lb | 200 lb |
| Grab Tensile Elongation | ASTM D-4632 | 15% | 10% | 15% | 15% | 50% | 50% |
| Trapezoidal Tear Strength | ASTM D-4533 | 75 lb | 75 lb | 100 lb | 60 lb | 80 lb | 80 lb |
| Puncture Strength | ASTM D-6241 | 450 lb | | 900 lb | | 450 lb | |
| Apparent Opening Size | ASTM D-4751 | U.S. Sieve 30 (0.59 mm) | | U.S. Sieve 70 (0.21 mm) | | U.S. Sieve 70 (0.21 mm) | |
| Permeability | ASTM D-4491 | 0.05 sec ⁻¹ | | 0.28 sec ⁻¹ | | 1.1 sec ⁻¹ | |
| Ultraviolet Resistance Retained at 500 hours | ASTM D-4355 | 70% strength | | 70% strength | | 70% strength | |

- All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.
 - Values for AOS represent the average maximum opening.
- Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPPEP) and conform to the values in Table H.1.
- The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including selvages.
- When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.

| TEMPORARY SEEDING SUMMARY | | | | | | |
|--|--|-----------------------------|-------------------------------------|----------------|----------------------------|----------------------------|
| NO. | SPECIES | APPLICATION RATE (LB/AC) | SEEDING DATES | SEEDING DEPTHS | FERTILIZER RATE (10-20-20) | LIME RATE |
| HARDINESS ZONE = 7a SEED MIXTURE = COOL SEASON (FEB 15 - APR 30; AUG 15 - NOV 30) | | | | | | |
| | ANNUAL RYEGRASS (<i>LOLIUM PERENNE</i>) | 40 LB/AC (1.0 LB /1000 SF) | FEB 15 - APR 30; AUG 15 - NOV 30 | 0.5 IN. | 436 LB/AC (10 LB /1000 SF) | 2 TONS/AC (90 LB /1000 SF) |
| | BARLEY (<i>HORDEUM VULGARE</i>) | 96 LB/AC (2.2 LB /1000 SF) | FEB 15 - APR 30; AUG 15 - NOV 30 | 1.0 IN. | | |
| | OATS (<i>AVENA SATIVA</i>) | 72 LB/AC (1.7 LB /1000 SF) | FEB 15 - APR 30; AUG 15 - NOV 30 | 1.0 IN. | | |
| | WHEAT (<i>TRITICUM AESTIVUM</i>) | 120 LB/AC (2.8 LB /1000 SF) | FEB 15 - APR 30; AUG 15 - NOV 30 | 1.0 IN. | | |
| | CEREAL RYE (<i>SECALE CEREALE</i>) | 112 LB/AC (2.8 LB /1000 SF) | FEB 15 - APR 30; AUG 15 - DEC 15 | 1.0 IN. | | |
| HARDINESS ZONE = 7a SEED MIXTURE = WARM SEASON (MAY 1 - AUG 14) | | | | | | |
| | FOXTAIL MILLET (<i>SETARIA ITALICA</i>) | 30 LB/AC (0.7 LB /1000 SF) | MAY 1 - AUG 14 | 0.5 IN. | | |
| | PEARL MILLET (<i>Pennisetum glaucum</i>) | 20 LB/AC (0.5 LB /1000 SF) | MAY 1 - AUG 14 | 0.5 IN. | | |

OFFSITE STREAM RESTORATION PARCELS (FIRST ELECTION DISTRICT):

| OWNER | ADDRESS | TAX MAP | PARCEL |
|----------------------------|---------------------------|---------|------------------------|
| GREGOR, EDWIN O & WF | 6937 DORSEY RD | 43 | 280 |
| MCCLEUNG, VIRGIL | 6941 DORSEY RD | 43 | 281 |
| DORSEY EMMANUEL EVANG CH | 6951 DORSEY RD | 43 | 466, LOT 385 |
| EMMANUEL UNITED EVANG CH | 6951 DORSEY RD | 43 | 282, LOT 387 |
| ELKRIDGE ROCK LLC | 6965 DORSEY RD | 43 | 283 |
| MOSAIC CHRISTIAN CHURCH | 6945 DEERPATH RD | 37 | 634, LOT J |
| WHALEN PROPERTIES LLC | 6855 DEERPATH RD ENT. LLC | 37 | 634, LOT I |
| STATE RAILROAD ADMIN | 6865 DEERPATH RD | 37 | 704, LOT H1 |
| ROBERT WILTROUT, III ET AL | 7129 STATION HOUSE RD | 43 | 284, LOT 266 |
| KEELA D. CLAGGETT | 7132 STATION HOUSE RD | 43 | 284, LOT 255 |
| HANDA ANITA | 7134 STATION HOUSE RD | 43 | 284, LOT 254 |
| BAAH BELINDA | 7140 STATION HOUSE RD | 43 | 284, LOT 252 |
| GREEK ANCHORS ROCK LLC | | 43 | 284, LOT 249, 250, 251 |

ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Amelia S. Reed 11/26/19
ENGINEER DATE

DEVELOPER'S CERTIFICATE
I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Amelia S. Reed 12/3/19
DEVELOPER DATE

Howard SCD Signature Block:
This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.

John M. Reuter 12/14/19
Howard Soil Conservation District Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Edmondson 12-17-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Qui B. Man for A.C 3/9/20
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Ang Gow 3-4-2020
DIRECTOR DATE

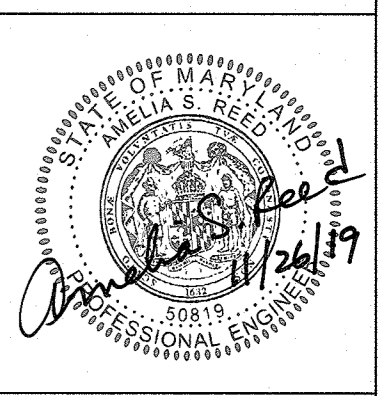
DEEP RUN OFF-SITE STREAM RESTORATION EROSION & SEDIMENT CONTROL NOTES & DETAILS
DORSEY ROAD, ELKRIDGE, MD 21075

ecotone
ecological restoration
128 Industry Lane • Forest Hill, Maryland 21050
(410) 420 2600 • www.ecotoneinc.com

13 of 14
SDP-19-038

CHECKED BY: CRH
DESIGNED: CSM
DRAWN: SDC
PROJECT No.: 17-05-011
DATE: 11/25/2019
SHEET:

REVISIONS
No. DATE DESCRIPTION REV. BY
1 2-13-20 Remove Mark of SDC's Deep-run Rd. SDC





No work to be completed on 6855 Deerpath Rd

DEEP RUN

MARC TRAIN OVERPASS

DORSEY ROAD

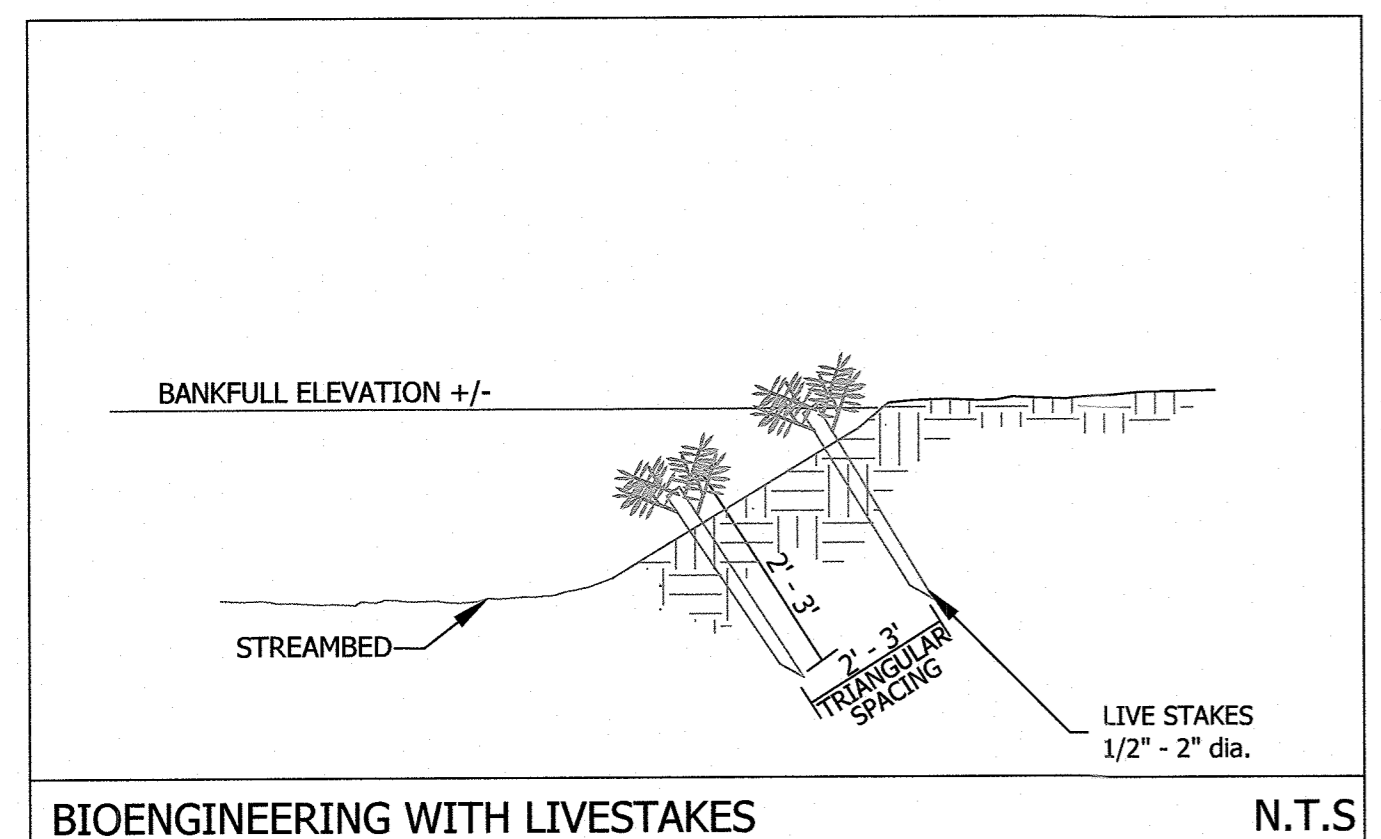
MAGNOLIA AVE

LIVE STAKE PLANT LIST

| Botanical Name | Common Name | Spacing | Quantity |
|-----------------|----------------|-----------------|----------|
| Salix interior | Sandbar Willow | 2-3' triangular | 146 |
| Cornus amomomum | Silky Dogwood | 2-3' triangular | 146 |
| Salix nigra | Black Willow | 2-3' triangular | 146 |

LEGEND

PROPOSED LIVESTAKES



BIOENGINEERING WITH LIVESTAKES N.T.S

PERMANENT SEEDING NOTES:
 1. ALL STREAM BANKS AND OTHER SPECIFIC AREAS NOTED ON THIS PLAN WILL BE SEEDED WITH WARM SEASON GRASS STABILIZATION SEED.
 2. ALL OTHER DISTURBED AREAS WILL BE SEEDED WITH THE PERMANENT SEED MIX ON THE STREAM RESTORATION PLAN SET

BIOENGINEERING WITH LIVE STAKES INSTALLATION

- 1. DESCRIPTION**
- This work shall consist of harvesting, transporting, installing and maintaining live staking materials.
 - Harvesting, transporting, and installation of live stakes shall take place when plants are dormant (December 1 through April 1).
 - Live stakes are to be installed after bank grading has been completed.

2. MATERIALS

- Live Stakes**
- Live stakes shall be between 0.5 inches and 2 inches in diameter.
 - Stakes shall be 3 to 5 feet in length and all side branches shall be clipped flush with stem.
 - Live stakes shall consist of the species and quantity per the "Live Stake Planting List" table found on this sheet.

3. CONSTRUCTION

- Live Staking:**
- Live stakes shall be installed two to three (2-3) feet apart using random, triangular spacing. The density of the spacing will range from two (2) to four (4) stakes per square yard. Site variations may require spacing adjustments.
 - The basal end of the live stake shall be cleanly cut at an angle immediately before insertion into the soil. The top of the stake shall be cut square for tamping.
 - Install the live stakes top side up, with any buds pointing upward. The live stakes shall be tamped into the ground for approximately four-fifths (4/5) of their length. The stakes shall be tamped into the ground at vertical angle of ninety (90) degrees to the slope and at a horizontal angle of forty-five (45) degrees downstream. A three-eighths (3/8) of an inch iron bar can be used to make a pilot hole in compacted or rocky soils, or between imbricated rip rap boulders.
 - Foot compact around each live stake after it has been installed. Any live stakes that split during tamping shall be pulled out and replaced.
 - The top of the live stake shall be cut square again after installation, to remove the damaged mushroom top.
 - See "Live Stake Planting List", on this sheet for species and quantity specifications.

OFF-SITE STREAM RESTORATION PARCELS (FIRST ELECTION DISTRICT):

| OWNER | ADDRESS | TAX MAP | PARCEL |
|----------------------------|-----------------------|---------|------------------------|
| GREGOR, EDWIN O & WF | 6937 DORSEY RD | 43 | 280 |
| MICHLING, VIRGIL | 6941 DORSEY RD | 43 | 281 |
| DORSEY EMMANUEL EVANG CH | 6951 DORSEY RD | 43 | 466, LOT 385 |
| EMMANUEL UNITED EVANGEL CH | 6951 DORSEY RD | 43 | 282, LOT 387 |
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| 6855 DEERPATH RD ENT. LLC | 6855 DEERPATH RD | 37 | 634, LOT I |
| WHALEN PROPERTIES LLC | 6865 DEERPATH RD | 37 | 704, LOT H1 |
| STATE RAILROAD ADMIN | | 37 | 634, LOT G |
| ROBERT WILTROUT, III ET AL | 7129 STATION HOUSE RD | 43 | 284, LOT 266 |
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| GREEK ANCHORS ROCK LLC | | 43 | 284, LOT 249, 250, 251 |

ENGINEER'S CERTIFICATE
 I, CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
 Amelia S. Reed 11/26/19
 ENGINEER

DEVELOPER'S CERTIFICATE
 I, WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
 [Signature] 12/3/19
 DEVELOPER

Howard SCD Signature Block:
 This plan is approved for soil erosion and sediment control by the Howard Soil Conservation District.
 [Signature] 12/4/19
 Date

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 12-17-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION JP
 [Signature] 3/6/20
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] 3-4-2020
 DIRECTOR

DEEP RUN
OFF-SITE STREAM RESTORATION
EROSION & SEDIMENT CONTROL & DESIGN
 DORSEY ROAD, ELKRIDGE, MD 21075

ecotone
 ecological restoration
 129 Industry Lane • Forest Hill, Maryland 21050
 (410) 420-2800 • www.ecotoneinc.com

| REVISIONS | | |
|-----------|----------|---------------------------------|
| No. | DATE | DESCRIPTION |
| 1 | 12-13-20 | Remove work on 6855 Deerpath Rd |

CHECKED BY: CRH
 DESIGNED: CSM
 DRAWN: SDC
 PROJECT No.: 17-05-011
 DATE: 11/25/2019
 SHEET: 14 of 14
 SDP-19-038