Maryland
Department of the Environment

Wes Moore, Governor
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary
Suzanne E. Dorsey, Deputy Secretary

March 7, 2024

Howard County Department of Public Works
Stormwater Management Division
9801 Broken Land Parkway
Columbia, MD 21046
Attn. Avinash Dewani
Via email: adewani@howardcountymd.gov

Re: Agency Interest Number: 172325
Tracking Number: 202360416
Water Quality Certification Number: 23-WQC-0011

Dear Mr. Dewani:

After examination and consideration of the documents received and evidence in the file and record for the South Meadow Court Pond Retrofit and Stream Stabilization, the Water and Science Administration has determined that the project meets the statutory and regulatory criteria necessary for issuance of an individual Water Quality Certification (WQC).

The individual WQC for this project issued by the Maryland Department of the Environment (Department) is attached. Please read and review the WQC for this project to ensure that you understand the limits of the certified project and all of the general and special conditions. The attached WQC is a final agency decision. Any person aggrieved by the Department's decision to issue this WQC may appeal such a decision in accordance with COMAR 26.08.02.10F(4). A request for appeal shall be filed with the Department within 30 days of publication of the final decision and specify in writing the reason why the final decision should be reconsidered. A request for appeal shall be submitted to: Secretary of the Environment, Maryland Department of the Environment, 1800 Washington Boulevard, Baltimore, MD 21230. Any request for an appeal does not stay the effectiveness of this WQC.

You should not begin any work until you have obtained all necessary State, local, and federal authorizations. Please do not hesitate to contact me at danielle.spendiff1@maryland.gov or 410-537-4023 with any questions.

Sincerely,

Danielle A. Spendiff, Chief
Regulatory and Customer Service Division

STATE OF MARYLAND

DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION
WATER QUALITY CERTIFICATION
23-WQC-0011

EFFECTIVE DATE: **March 4, 2024**

CERTIFICATION HOLDER: **Howard County Department of Public Works**
Stormwater Management Division
9801 Broken Land Parkway
Columbia, MD 21046
Attn: Avinash Dewani

PROJECT LOCATION: **South Meadow Court, Ellicott City, Maryland**
Howard County

UNDER AUTHORITY OF SECTION 401 OF THE FEDERAL WATER POLLUTION CONTROL ACT AND ITS AMENDMENTS AND IN ACCORDANCE WITH §9-313 THROUGH §9-323, INCLUSIVE, OF THE ENVIRONMENT ARTICLE, ANNOTATED CODE OF MARYLAND, THE WATER AND SCIENCE ADMINISTRATION ("ADMINISTRATION") HAS DETERMINED THAT THE REGULATED ACTIVITY DESCRIBED IN THE REQUEST FOR CERTIFICATION FOR SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION ASSOCIATED WITH US ARMY CORPS AUTHORIZATION NAB-2021-61285-M49, WILL NOT VIOLATE MARYLAND'S WATER QUALITY STANDARDS, IF CONDUCTED IN ACCORDANCE WITH THE CONDITIONS OF THIS CERTIFICATION AND WITH ALL TERMS AND CONDITIONS OF THIS CERTIFICATION.

THIS CERTIFICATION DOES NOT RELIEVE THE APPLICANT OF RESPONSIBILITY FOR OBTAINING ANY OTHER APPROVALS, LICENSES, OR PERMITS IN ACCORDANCE WITH FEDERAL, STATE, OR LOCAL REQUIREMENTS AND DOES NOT AUTHORIZE COMMENCEMENT OF THE PROPOSED PROJECT. A COPY OF THIS REQUIRED CERTIFICATION HAS BEEN SENT TO THE CORPS OF ENGINEERS. THE CERTIFICATION HOLDER SHALL COMPLY WITH THE CONDITIONS LISTED BELOW.

PROJECT DESCRIPTION

The purpose of the project is to retrofit an existing pond to comply with MD Code 378, decommission an existing stormwater management (SWM) pond, and to stabilize an ephemeral stream located east of the cul-de-sac of South Meadow Court in Ellicott City, Howard County, Maryland. The proposed work includes decommissioning the existing South Meadow Court SWM pond and replace the lost water quality volume through the retrofit of an existing downstream sediment basin, permanently impacting 235 linear feet of a perennial waterway and temporarily impacting 11 linear feet of a perennial waterway. Perennial waterway impacts are associated with the pond retrofit and outfall stabilization. The proposed action is needed because the existing SWM pond does not comply with MD Code 378. The SWM pond will be replaced with a combination of constructed riffles, boulder/log sills and new storm drains to safely convey water from to the retrofitted pond, which will be sized to both treat the impervious surface to the SWM pond and the additional impervious surfaces flowing to the sediment basin. The retrofitted sediment basin will be designed to meet current SWM requirements and classified as a low hazard dam. The project will also restore 359 feet of an

eroded ephemeral tributary of the pond. The project is located along a tributary of Centennial Lake, a Use IV-P waterway, which is located within the Little Patuxent River watershed.

The Administration satisfied statutory and regulatory public notice requirements by placing this WQC request on Public Notice from May 1, 2023 to May 30, 2023 on the Maryland Department of the Environment's Public Notice webpage. A virtual public hearing was held on July 31, 2023; notice of the hearing was placed in the Maryland Register on June 16, 2023, and provided via email to interested persons and placed on the Department's website on July 1, 2023.

SPECIAL CONDITIONS

1. The Certification Holder may not conduct in-stream work from March 1 through May 31, inclusive, of any year, to protect important aquatic species. Activities within stream channels are prohibited as determined by the classification of the stream (COMAR 26.08.02.08): Centennial Lake is a Use IV-P waterway.

2. The Certification Holder shall monitor the restored channel for three (3) out of five (5) years, in years one, three, and five following the completion of construction of the project. The monitoring shall identify and evaluate changes in 1) channel cross-section, pattern and profile; 2) bed materials; 3) channel stability; 4) structure stability and condition; and 5) vegetation viability. The monitoring effort may include topographic surveys of monumented cross-sections within the realigned channel segment, visual field observations, photographic documentation, vegetation viability measurements, and identify any necessary corrective measures. The Certification Holder shall submit annual reports on the results of the monitoring efforts for the stream restoration project to the Department by the end of each year. The Certification Holder shall coordinate with the Department concerning applicable remedial measures for any identified project failures and shall correct any project failures within one year of their identification.

GENERAL CONDITIONS

1. The Certification Holder shall meet all water quality-related performance standards and conditions required by the Department in any state issued authorization for activities in Waters of the United States to ensure that any discharges will not result in a failure to comply with water quality standards in COMAR 26.08.02 or other water quality requirements of state law or regulation.

2. Structures and activities may not interfere with movement of aquatic life, fish, and other wildlife nor cause their entanglement.

3. When operating an intake structure, the Certification Holder shall use a screen having a nominal mesh size of 1 mm and an intake velocity not to exceed 0.5 ft/sec. during the Time of Year Restriction specified in the applicable Department authorization.

4. Non-native species may not be introduced with adverse effects on the aquatic ecosystem.

5. The proposed project shall be constructed in accordance with the approved final plan by the Department, or, if Department approval is not required, the plan approved by the Corps; and its approved revisions.

6. Activities which result in an earth disturbance subject to the requirements in Annotated Code of Maryland, Environment Article, Title 4 and COMAR 26.17.01 shall have an erosion and sediment control plan approved by the appropriate approval authority, including following the

stabilization requirements set forth in COMAR 26.17.01.07 and "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control," as may be amended.

7. The disturbance of the bottom of the waterway and sediment transport into adjacent State waters shall be minimized.

8. All fill and construction materials not used in the project shall be removed and disposed of in a manner which will prevent their entry into waters of this State.

9. The Certification Holder shall adhere to the construction time of year restrictions, unless waived or amended by the Department.

10. The Certification Holder shall obtain any and all additional authorizations or approvals, including self-certifying General Permits issued by the Department, and shall comply with all conditions of such authorizations.

11. This Certification does not obviate the need to obtain required authorizations or approvals from other State, federal or local agencies as required by law.

12. This Certification does not authorize any injury to private property, any invasion of rights, or any infringement of federal, state, or local laws or regulations.

13. The Certification Holder shall allow authorized representatives of the Department access to the site of authorized activities during normal business hours to conduct inspections and evaluations of the operations and records necessary to assure compliance with this Certification.

14. This Certification is valid for the project identified herein and the associated U.S. Army Corps of Engineers authorization NAB-2021-61285-M49 until such time that it expires.

STATEMENTS OF NECESSITY AND CITATIONS

1. Statement of Necessity for Special Condition 1 and General Conditions 1, 5, 10, 11: The condition is necessary to ensure that water quality standards are met, and designated uses are maintained.

   Citations: Federal and state laws which authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.02B(1); 26.08.02.03B(1)(b); 26.08.02.03B(2)(e); COMAR 26.08.03.03-3.D; COMAR 26.17.04; COMAR 26.23; COMAR 26.23.02.06

2. Statement of Necessity for Special Condition 1 and General Condition 9: Restrictions on instream construction are necessary to protect designated uses for propagation and growth of fish, other aquatic life, and wildlife.

   Citations: Federal and state laws which authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.03-3.D; COMAR 26.23.02.06

3. Statement of Necessity for Special Condition 1 and General Condition 9: The time of year restriction is necessary to maintain the designated use- support of water contact, recreation, protection of nontidal aquatic life, fishing, protection of waters which have the potential for or are suitable for supporting adult trout for a put and take fishery and water supply.

   Citations: COMAR 26.08; COMAR 26.08.02.02; COMAR 26.08.02.08

4. Statement of Necessity for Special Condition 2 and General Condition 13: Conditions of certification involve precise actions to comply with water quality standards. Site inspection and monitoring may be necessary to ensure that limits, methods, and other requirements are met to ensure that water quality standards are met and designated uses are maintained. These conditions are necessary to ensure that the activity was conducted and project completed according to terms of the authorization/ certification, while allowing for review of in-field modifications which may have resulted in discharges to ensure that water quality standards were met.

   Citation: Federal and state laws which authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.02.B(5); COMAR 26.08.02.03B(1)(b); COMAR 26.08.02.03B(2); COMAR 26.08.03.03-3.D; COMAR 26.23.02.06; COMAR 26.23; COMAR 26.17.04

5. Statement of Necessity for General Conditions 2, 3: Movement of aquatic life and passage of flows is essential for growth and propagation of aquatic life, fish, and other wildlife to meet these designated uses.

   Citation: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.10E; COMAR 26.08.02.02B(1); 26.08.02.03B(1)(b); 26.08.02.03B(2)(e); COMAR 26.17.01; COMAR 26.23.02.06; COMAR 26.23; COMAR 26.17.04

6. Statement of Necessity for General Condition 4: Nuisance or non-native species may spread and disrupt and dislodge native species from their habitat, leading to declines in distribution, density, growth and propagation. This may result in failure to support native species; and growth, propagation of fish, other aquatic life, and wildlife. Limitations on loss will sustain habitat for a variety of aquatic species. In addition to direct loss, turbidity created by construction or ongoing operation must be limited for support of aquatic life and to meet water quality standards. The conditions ensure that discharges will not result in failure to support designated uses.

   Citations: COMAR 26.08; COMAR 26.08.02.02.B(5); COMAR 26.08.03.03-3.D; COMAR 26.23.02.06; COMAR 26.23; COMAR 26.17.04

7. Statement of Necessity for General Condition 6, 7, 8: Fill or construction material within or adjacent to regulated resources or other earth disturbance may result in discharges that result in impacts to water quality, clarity, growth and propagation of fish, other aquatic life, wildlife, potable water; and other designated uses; and fail to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be unsightly or create a nuisance.

   Citations: Federal and state laws which authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.10E;

COMAR 26.08.02.02B(1); 26.08.02.03B(1)(b); 26.08.02.03B(2)(e); COMAR 26.17.01; COMAR 26.23.02.06; COMAR 26.23; COMAR 26.17.04

8. Statement of Necessity for General Condition 8: Material within or adjacent to regulated resources may result in discharges that result in impacts to water quality and designated uses.

   Citations: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.02B(1); 26.08.02.03B(1)(b); 26.08.02.03B(2)(e); COMAR 26.23.02.06; COMAR 27.17.04; COMAR 26.23

9. Statement of Necessity for General Condition 12: The condition is necessary to clarify the scope of this certification to ensure compliance with water quality regulations, without limiting restrictions through other requirements.

   Citation: Federal and state laws which authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08, COMAR 26.08.02.10E; COMAR 26.23.02.06; COMAR 26.17.04; COMAR 26.23

10. Statement of Necessity for General Condition 14: This condition is necessary to qualify the period of applicability of the terms and conditions of this Certification to be protective of Maryland water quality standards.

    Citations: Federal and state laws which authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; 40 C.F.R. 121, 15 C.F.R. 930, Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.23.02.06; COMAR 26.23; COMAR 26.17.04

CERTIFICATION APPROVED

3/7/2024

D. Lee Currey, Director
Water and Science Administration

Date

Tracking Number: 202360416

Agency Interest Number: 172325

Effective Date: March 4, 2024

Att: 100% Design Plans

cc: WSA Inspection & Compliance Program
U.S. Army Corps of Engineers

HOWARD COUNTY

Capital Project #D-1159

South Meadow Court Pond Retrofit and Stream Stabilization

STORMWATER MANAGMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES

100% SUBMITTAL

JANUARY 19, 2024

SHEET INDEX

LEGEND

- SS — EXISTING SANITARY LINE AND MANHOLE
- W — EXISTING WATER LINE
- EXISTING TRAVERSE POINT
- X — X — EXISTING FENCE
- EXISTING STORMWATER PIPE
- SD — EXISTING STORMWATER MANHOLE
- PROPERTY BOUNDARY
- EXISTING RIGHT-OF-WAY
- EXISTING EASEMENT
- TREELINE
- EXISTING SPECIMEN TREE
- EXISTING SIGNIFICANT TREE
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- 450 — EXISTING 5' MAJOR CONTOUR
- EXISTING 1' MINOR CONTOUR
- 100 YR — EXISTING FLOODPLAIN BOUNDARY
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- WATERWAY CENTERLINE
- WUS — SURVEYED WATERS OF THE US
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- D — HYDROLOGIC SOIL GROUP
- HIGHLY ERODIBLE SOILS (>5% SLOPES AND K>0.35)
- HIGHLY ERODIBLE SOILS (>15% SLOPES)
- STEEP (>20%) SLOPES
- TREE REMOVAL
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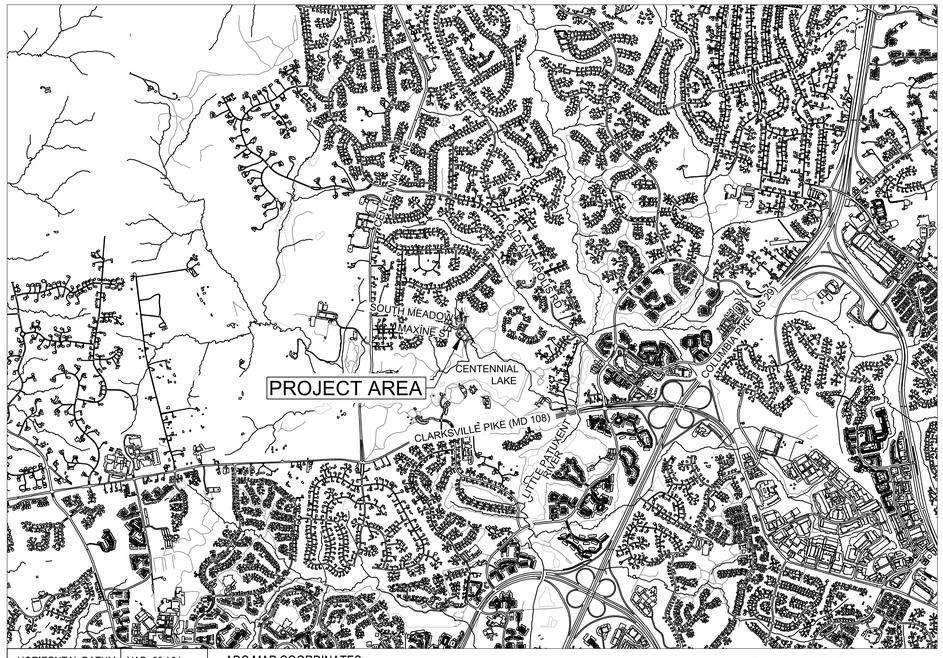
- PROPOSED MANHOLE/DROP STRUCTURE
- S — SAN — PROPOSED SANITARY SEWER AND MANHOLE
- SB — STREAM BUFFER
- SOIL BORING
- SAME DAY STABILIZATION



HORIZONTAL DATUM	NAD 83 / 91
VERTICAL DATUM	NAVD 88

ADC MAP COORDINATES
HOWARD COUNTY MAP 11
COLUMN G, ROW 13

0 2000 4000 Feet
SCALE: 1"=2000'

DESIGN NARRATIVE

THE EXISTING SOUTH MEADOW COURT STORMWATER MANAGEMENT (SWM) POND IS NOT CURRENTLY FUNCTIONING AS DESIGNED AND WOULD REQUIRE SIGNIFICANT UPGRADES TO BE MD CODE 378 COMPLIANT. HOWEVER, HOWARD COUNTY HAS OPTED TO DECOMMISSION THE SWM POND. THE STANTEC / STRAUGHAN JOINT VENTURE (JV TEAM) HAS BEEN TASKED WITH PROVIDING A DESIGN FOR THE DECOMMISSIONING OF THE SWM POND. AS PART OF THE DECOMMISSIONING, 700 LF OF STREAM FROM THE DITCH UPSTREAM FROM THE SWM POND THROUGH THE DOWNSTREAM END OF THE OUTFALL CHANNEL WILL BE RESTORED AND STABILIZED. THE JV TEAM WILL ALSO RESTORE 200 LF OF THE TRIBUTARY THAT RECEIVES THE OUTFALL CHANNEL. LASTLY, THE JV TEAM WILL PREPARE A RETROFIT DESIGN FOR THE EXISTING SEDIMENT BASIN BETWEEN THE SWM POND AND CENTENNIAL LAKE, IDENTIFIED HEREIN AS THE RETROFIT POND. THE RETROFIT POND WILL PROVIDE QUALITATIVE AND QUANTITATIVE WATER QUALITY TREATMENT FOR ITS CONTRIBUTING DRAINAGE AREA AND REDUCE EROSION IN THE OUTFALL CHANNEL BETWEEN THE EXISTING SEDIMENT BASIN AND CENTENNIAL LAKE. AN EXISTING SEWER LINE IS PROPOSED TO BE RELOCATED AND RETROFIT TO AVOID CONFLICTS WITH THE RETROFIT POND AND APPURTENANCES.

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY AND MDOT SHA IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY WORK BEING DONE.
3. THIS PLAN IS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
4. 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 START OF ANY WORK.
5. SURVEY OF THIS SITE WAS PERFORMED BY MERCADO CONSULTANTS (MERCADO) IN AUGUST 2019.
6. THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. BENCHMARKS SHOWN HEREON WERE PROVIDED BY MERCADO.
7. WETLANDS AND WATERS OF THE US WERE DELINEATED BY THE JOINT VENTURE TEAM IN JULY 2019.
8. OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND MERCADO OR THE JOINT VENTURE TEAM DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY SUCH INFORMATION ON ITS OWN.
9. THE EXISTING INFORMATION SHOWN ON THESE PLANS WAS TAKEN FROM THE BEST AVAILABLE SOURCES AND SHALL BE VERIFIED BEFORE STARTING CONSTRUCTION. HOWARD COUNTY DOES NOT GUARANTEE THE COMPLETENESS OR CORRECTNESS OF THE SHOWN INFORMATION.
10. THE CONTRACTOR 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 SIX (6) INCHES VERTICALLY AND A MINIMUM OF FIVE (5) FEET HORIZONTALLY. PLEASE NOTE THAT MORE RESTRICTIVE CLEARANCES SHALL BE ADHERED TO WHEN APPROPRIATE.
11. SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE CONTRACTOR SHALL NOTIFY THE DESIGNER IMMEDIATELY TO RESOLVE THE SITUATION.
12. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
13. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
14. THE JOINT PERMIT APPLICATION PRE-APPLICATION MEETING TRACKING NUMBER FOR THE PROJECT IS 21-NT-3137.
15. PROJECT IMPACTS INCLUDE WORK IN A USE IV-P STREAM. WORK MAY NOT BE CONDUCTED DURING THE PERIOD FROM MARCH 1 AND MAY 31, INCLUSIVE OF ANY YEAR, WITHOUT SPECIAL APPROVAL THROUGH THE APPROPRIATE AGENCIES.
16. THE SITE IS LOCATED IN THE LITTLE PATUXENT RIVER WATERSHED. THIS PORTION OF THE WATERSHED IS IMPAIRED BY UNKNOWN BIOLOGICAL CONTAMINANTS, ZINC, NITROGEN, PHOSPHORUS, AND TOTAL SUSPENDED SOLIDS. THE RECEIVING WATERS ARE NOT CLASSIFIED UNDER TIER II HIGH QUALITY WATERS.
17. FEMA FIRM PANEL NO 24027C0160D. THERE IS NO FEMA REGULATED FLOODPLAIN LOCATED WITHIN THE PROJECT BOUNDARY.
18. CONTRACTOR SHALL CONTINUOUSLY MONITOR FORECASTS DURING WORK ACTIVITIES AND SCHEDULE WORK DURING FAVORABLE CONDITIONS.
19. THE CONTRACTOR SHALL EXERCISE CARE IN ACTIVITIES INVOLVING EITHER CUT AND FILL OR GRADING IN THE VICINITY OF TREES THAT ARE TO REMAIN. ACTIVITIES NEAR TREES THAT ARE TO REMAIN SHALL BE DONE IN A MANNER THAT DOES NOT DISTURB THE CRITICAL ROOT ZONE OR WITHIN THE DRIPLINE OF THE TREES. ORANGE FENCING SHALL BE INSTALLED AROUND THE PERIMETER OF THE CRITICAL ROOT ZONE PRIOR TO CONSTRUCTION. THE LOCATION OF THE PROTECTIVE ORANGE FENCE SHALL BE APPROVED BY THE HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS PRIOR TO CONSTRUCTION.
20. CONTRACTOR SHALL NOT STORE EQUIPMENT, MATERIALS, AND/OR SUPPLIES BEYOND THE ORANGE FENCING SHOWN ON THE PLANS.
21. UPON COMPLETION OF WORK BUT PRIOR TO DE-MOBILIZATION, THE CONTRACTOR SHALL REMOVE REMNANTS OF CONSTRUCTION MATERIAL FROM THE SITE. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITIONS.
22. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.
23. ALL MATERIAL SHALL BE REMOVED AND DISPOSED OF OFFSITE. REMOVED TREES AND BRUSH MAY BE REDISTRIBUTED ON SITE AT THE DISCRETION OF THE ENGINEER OR HIS/HER REPRESENTATIVE.
24. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN EXITING THE PROJECT SITE AND PAY CLOSE ATTENTION TO TRAFFIC NEAR THE SITE.
25. WORKING HOURS ARE 7 A.M. TO 5 P.M. MONDAY THROUGH FRIDAY, WITH ADVANCED PERMISSION FROM THE COUNTY, CONTRACTORS MAY WORK ON WEEKENDS 9 A.M. TO 3 P.M. NO WORK IS ALLOWED ON SUNDAY.
26. THE CONTRACTOR SHALL AVOID TRACKING HEAVY EQUIPMENT OVER CRITICAL ROOT ZONE OF SPECIMEN TREES. IF UNAVOIDABLE, LOAD MATS SHOULD BE USED WHEN TRACKING OVER THE CRITICAL ROOT ZONES.
27. A WAIVER PETITION FOR ALTERNATIVE COMPLIANCE SHALL BE SUBMITTED TO THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING FOR THIS PROJECT FOR THE FOLLOWING SUBSECTIONS:
    - 27.1. SECTION 16.155(a)(1)(ii) - WAIVER OF REQUIREMENTS FOR SITE DEVELOPMENT PLAN
    - 27.2. SECTION 16.1201(V) - ALLOW THE LOD TO SERVE AS THE NET TRACT AREA
    - 27.3. SECTION 16.1205(a)(3) - REMOVAL OF SPECIMEN TREES
    - 27.4. SECTION 16.115(c)(2) - GRADING AND VEGETATIVE DISTURBANCE TO FLOODPLAIN
    - 27.4. SECTION 16.116(a)(1) - GRADING AND VEGETATIVE DISTURBANCE WITHIN WETLAND
    - 27.4. SECTION 16.116(a)(2) - GRADING AND VEGETATIVE DISTURBANCE WITHIN STREAM BANK

Approvals/Permits

Agency	Permit #	Date Applied	Date Approved
MDE Wetlands/Waterway Authorization	21-NT-3137	7/13/2021	
Howard Soil Conservation District	EP-19-37	5/14/2019	
Howard County DPZ Alternative Compliance	TBD		
MDE General Discharge Permit	TBD		

DEPARTMENT OF RECREATION AND PARKS, HOWARD COUNTY, MD

DEPARTMENT OF RECREATION AND PARKS — DATE

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS

THIS PLAN IS APPROVED FOR SMALL POND CONSTRUCTION, AND SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT

HOWARD SOIL CONSERVATION DISTRICT

BMP MS4/TMDL Pollutant Load Reduction and Equivalent Impervious Acre Credit Summary

Stream	EOS TN Removal (lbs/yr)	EOS TP Removal (lbs/yr)	EOS TSS Removal (lbs/yr)	Impervious Acre Equivalent Credit (ac)
Western Tributary Stabilization	21.20	0.04	41,560	2.12
Pond Retrofit	67.32	11.65	33,533	10.67

OWNERS/DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ANY CLEARING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVE EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THAT CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION PRIOIR TO THE BEGINNING OF THE PROJECT. I SHALL ENGAGE A MARYLAND REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION, AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

OWNERS/DEVELOPER SIGNATURE — DATE

PRINTED NAME & TITLE

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. 42822, EXPIRATION DATE: 11/2024

DESIGN CERTIFICATE

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

DESIGNER'S SIGNATURE — DATE

SERENA STAFFORD, P.E.
PRINTED NAME

MD REGISTRATION NO., 42822
P.E., R.L.S., OR R.L.A.

100% DESIGN

TI-01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS — DATE

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES — DATE

CHIEF, STORMWATER MANAGEMENT DIVISION — DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

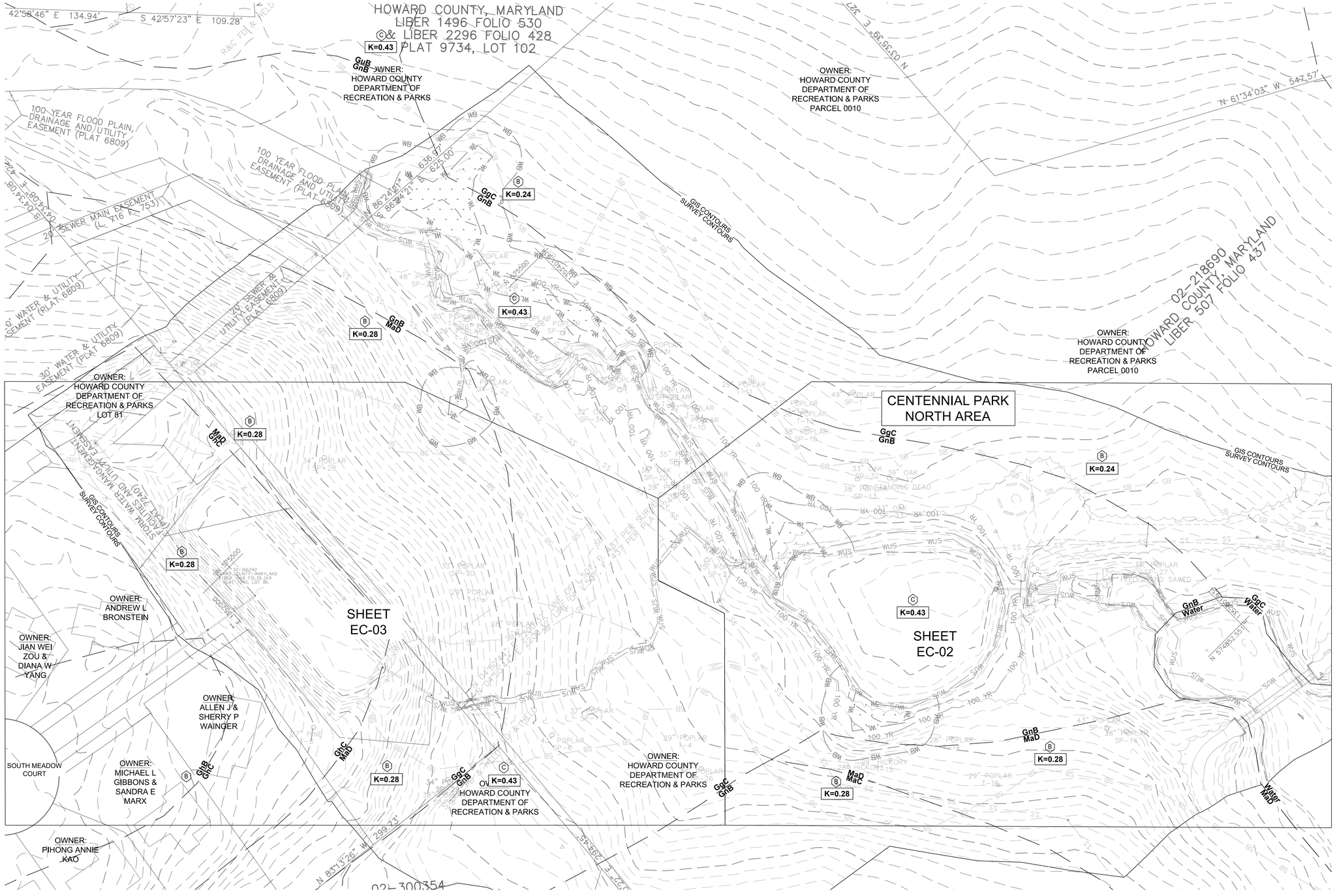
BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE AS SHOWN
DESIGNED BY AS/JC/CB/PC
DRAWN BY AS/JC/CB/PC
CHECKED BY SS
DATE JAN 2024 SHEET NO. 01 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

TITLE SHEET

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 34 GRID NO. 0060



100% DESIGN

EC-01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:

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LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

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COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
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HOWARD COUNTY
MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

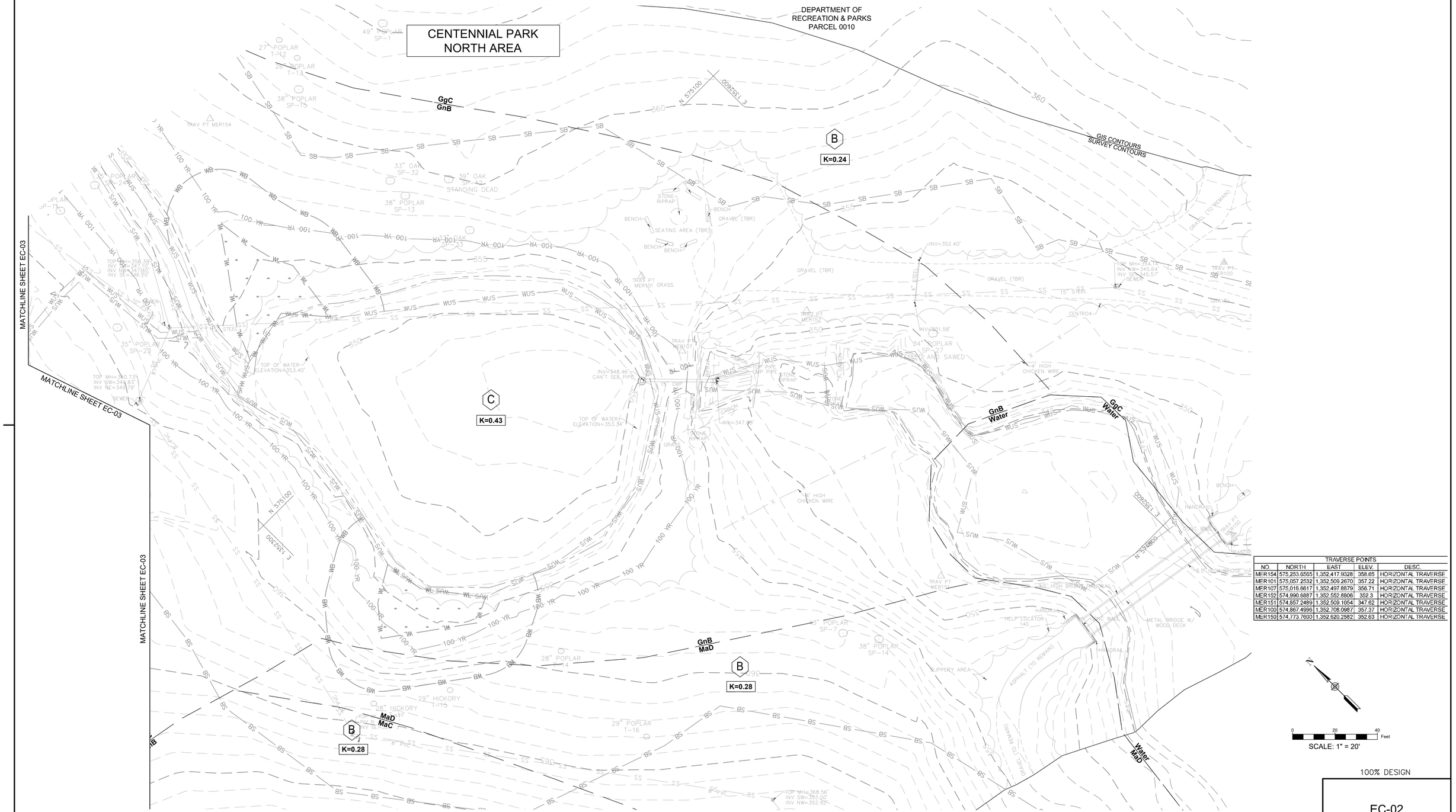
ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=40'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 02 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EXISTING CONDITIONS KEY MAP

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



TRAVERSE POINTS				
NO.	NORTH	EAST	ELEV.	DESC.
MER154	575,253.6565	1,352,417.9328	358.65	HORIZONTAL TRAVERSE
MER101	575,057.2532	1,352,509.2670	357.22	HORIZONTAL TRAVERSE
MER107	575,018.6617	1,352,497.8879	356.71	HORIZONTAL TRAVERSE
MER152	574,990.6887	1,352,552.8806	352.3	HORIZONTAL TRAVERSE
MER151	574,857.2489	1,352,509.1054	347.62	HORIZONTAL TRAVERSE
MER100	574,867.4996	1,352,708.0987	357.37	HORIZONTAL TRAVERSE
MER150	574,773.7600	1,352,820.2582	352.63	HORIZONTAL TRAVERSE

100% DESIGN

EC-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
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HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 03 OF 59

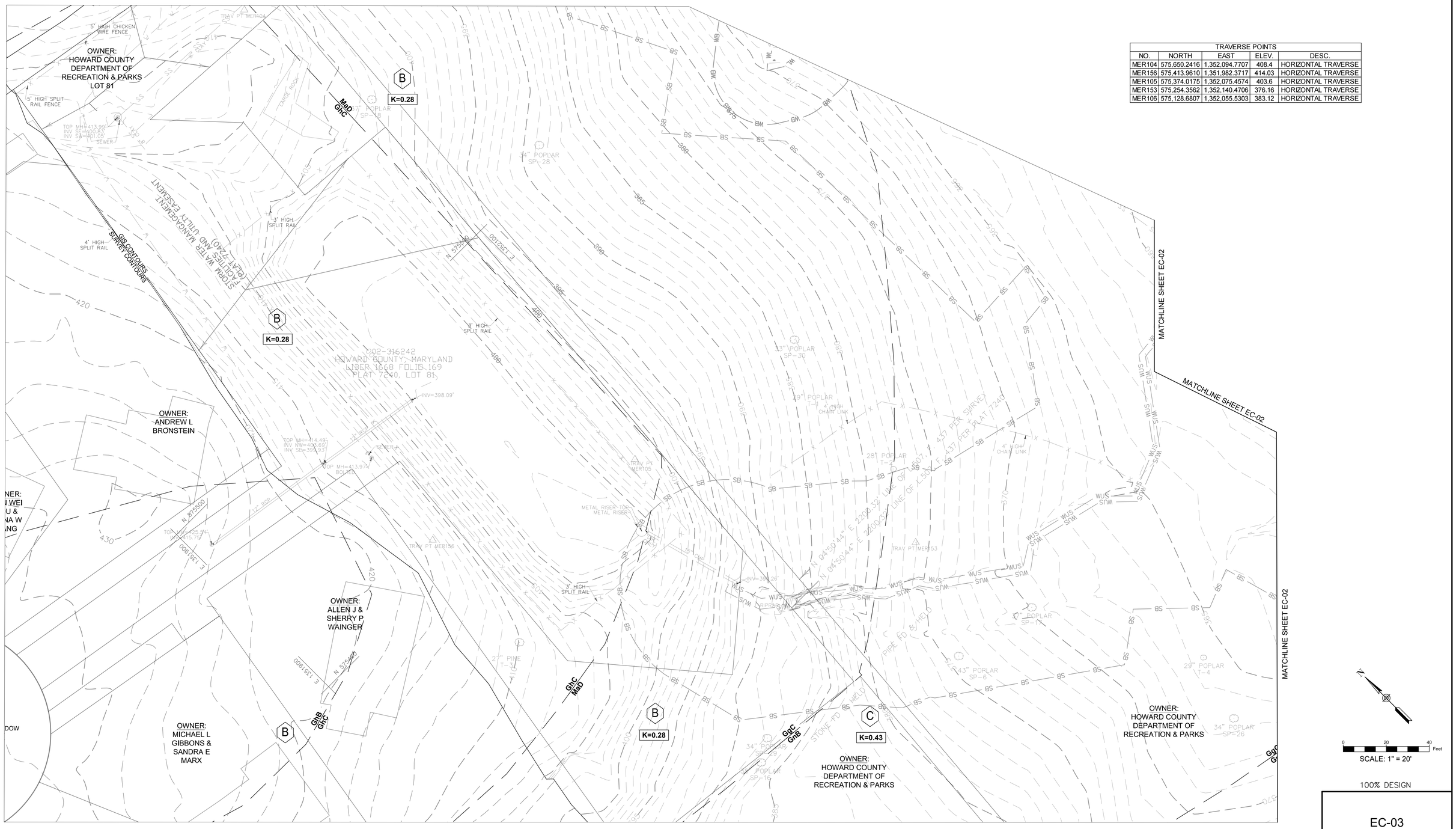
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EXISTING CONDITIONS PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

TRAVERSE POINTS				
NO.	NORTH	EAST	ELEV.	DESC.
MER104	575,650.2416	1,352,094.7707	408.4	HORIZONTAL TRAVERSE
MER156	575,413.9610	1,351,982.3717	414.03	HORIZONTAL TRAVERSE
MER105	575,374.0175	1,352,075.4574	403.6	HORIZONTAL TRAVERSE
MER153	575,254.3562	1,352,140.4706	376.16	HORIZONTAL TRAVERSE
MER106	575,128.6807	1,352,055.5303	383.12	HORIZONTAL TRAVERSE



0 20 40 Feet

SCALE: 1" = 20'

100% DESIGN

EC-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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a joint venture

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LAUREL, MD 20707
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HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

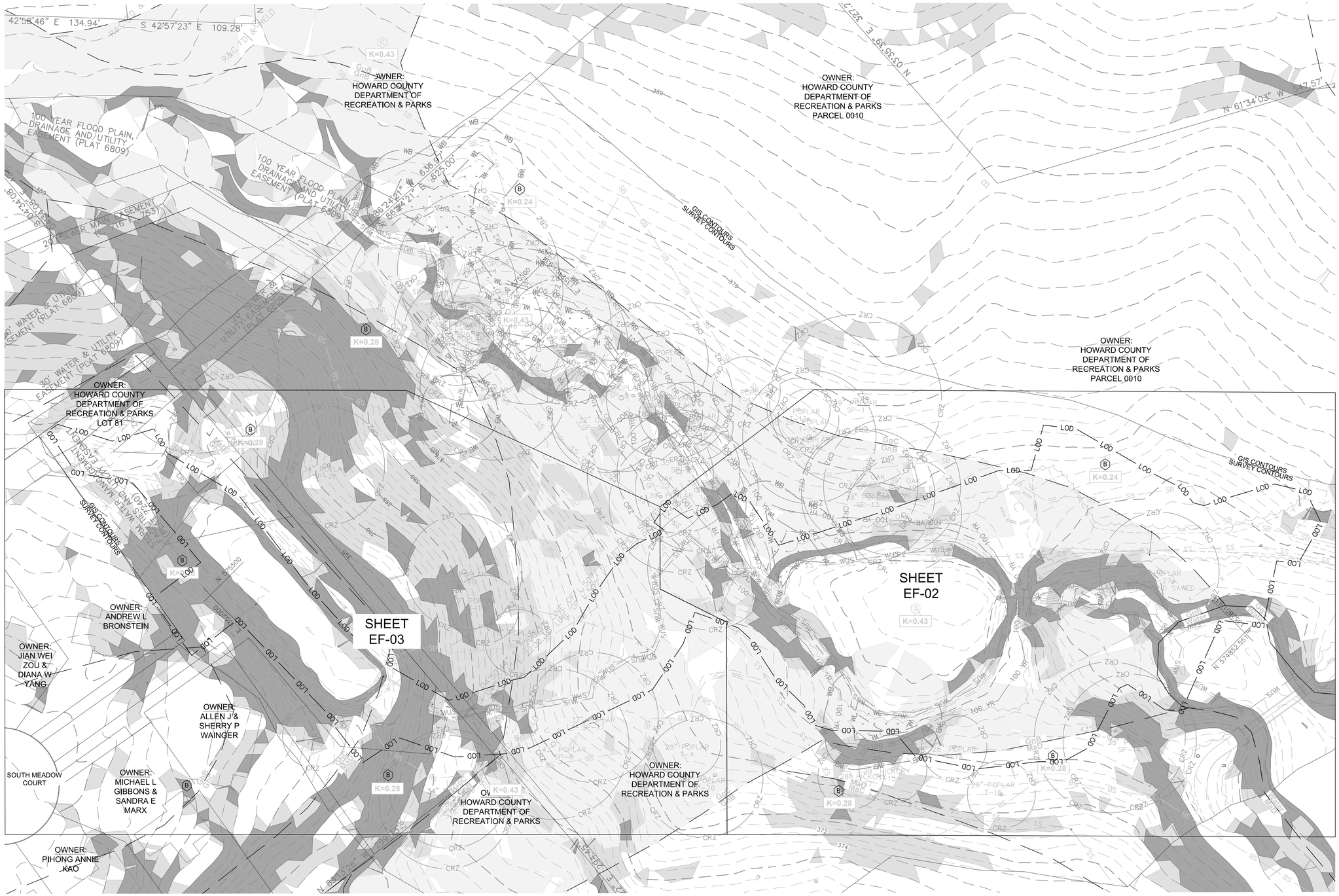
ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 04 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EXISTING CONDITIONS PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



LEGEND

- WATERWAY CENTERLINE
- SURVEYED WATERS OF THE US
- SURVEYED WETLAND
- 25' WETLAND BUFFER
- SOIL BOUNDARY (LoB, WcB)
- HYDROLOGIC SOIL GROUP
- HIGHLY ERODIBLE SOILS (>5% SLOPES AND K>0.35)
- HIGHLY ERODIBLE SOILS (>15% SLOPES)
- STEEP (>20%) SLOPES
- CRITICAL ROOT ZONE
- 100' STREAM BUFFER
- LIMIT OF DISTURBANCE

NOTE:

1. L.O.D. IS A COMPOSITE OF THE L.O.D. PHASES, L.O.D. OF EACH PHASE SHALL GOVERN PROJECT.

SCALE: 1" = 40'

100% DESIGN

EF-01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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HOWARD COUNTY MARYLAND

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BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
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BY	NO.	REVISIONS	DATE

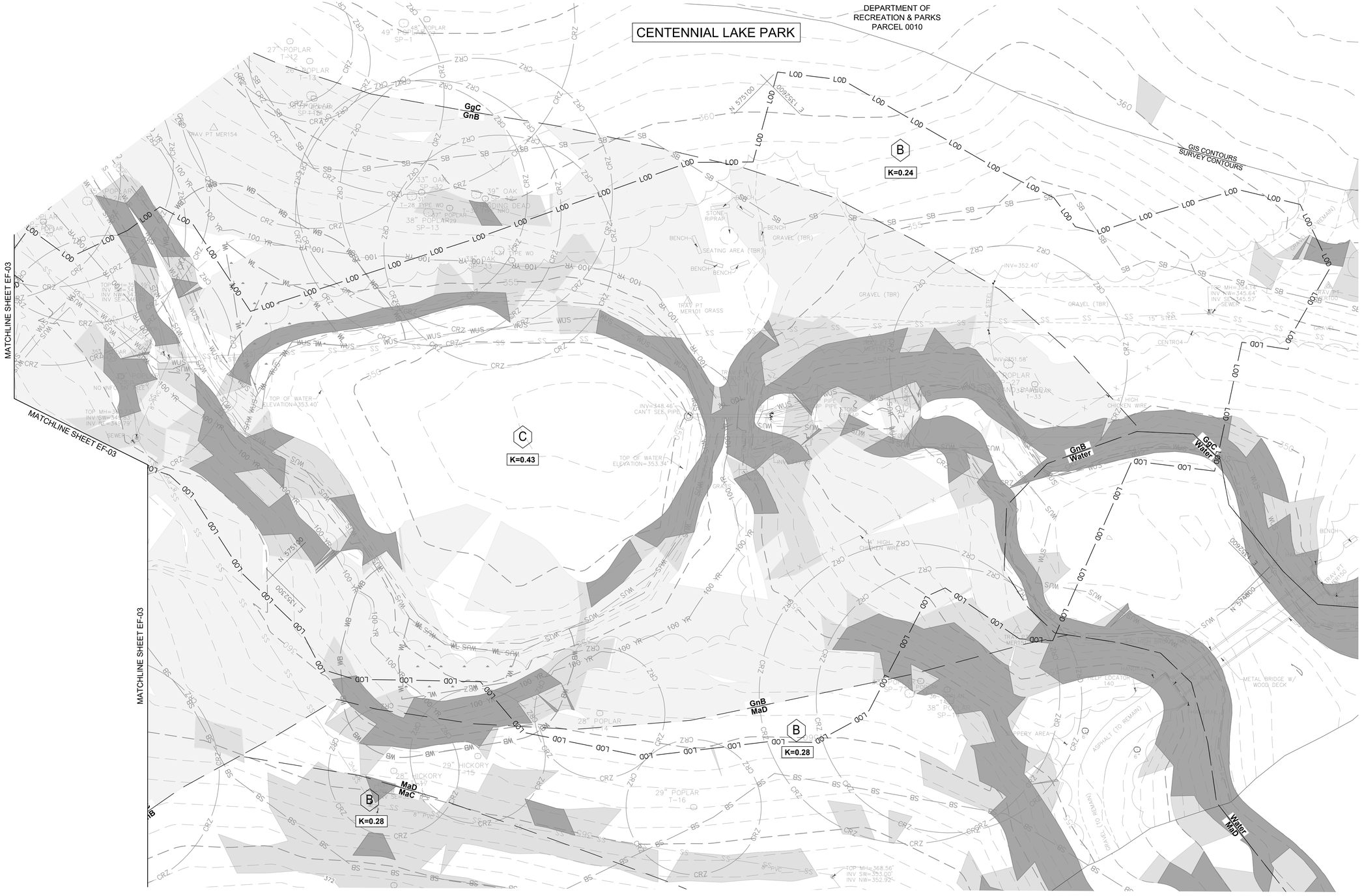
ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=40'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 05 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

ENVIRONMENTAL FEATURES KEY MAP

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



LEGEND

- WATERWAY CENTERLINE
- SURVEYED WATERS OF THE US
- SURVEYED WETLAND
- 25' WETLAND BUFFER
- SOIL BOUNDARY (LoB / WcB)
- HYDROLOGIC SOIL GROUP (D)
- HIGHLY ERODIBLE SOILS (>5% SLOPES AND K>0.35)
- HIGHLY ERODIBLE SOILS (>15% SLOPES)
- STEEP (>20%) SLOPES
- CRITICAL ROOT ZONE
- 100' STREAM BUFFER
- LIMIT OF DISTURBANCE

NOTE:

1. L.O.D. IS A COMPOSITE OF THE L.O.D. PHASES, L.O.D. OF EACH PHASE SHALL GOVERN PROJECT.

100% DESIGN

EF-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
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BY	NO.	REVISIONS	DATE

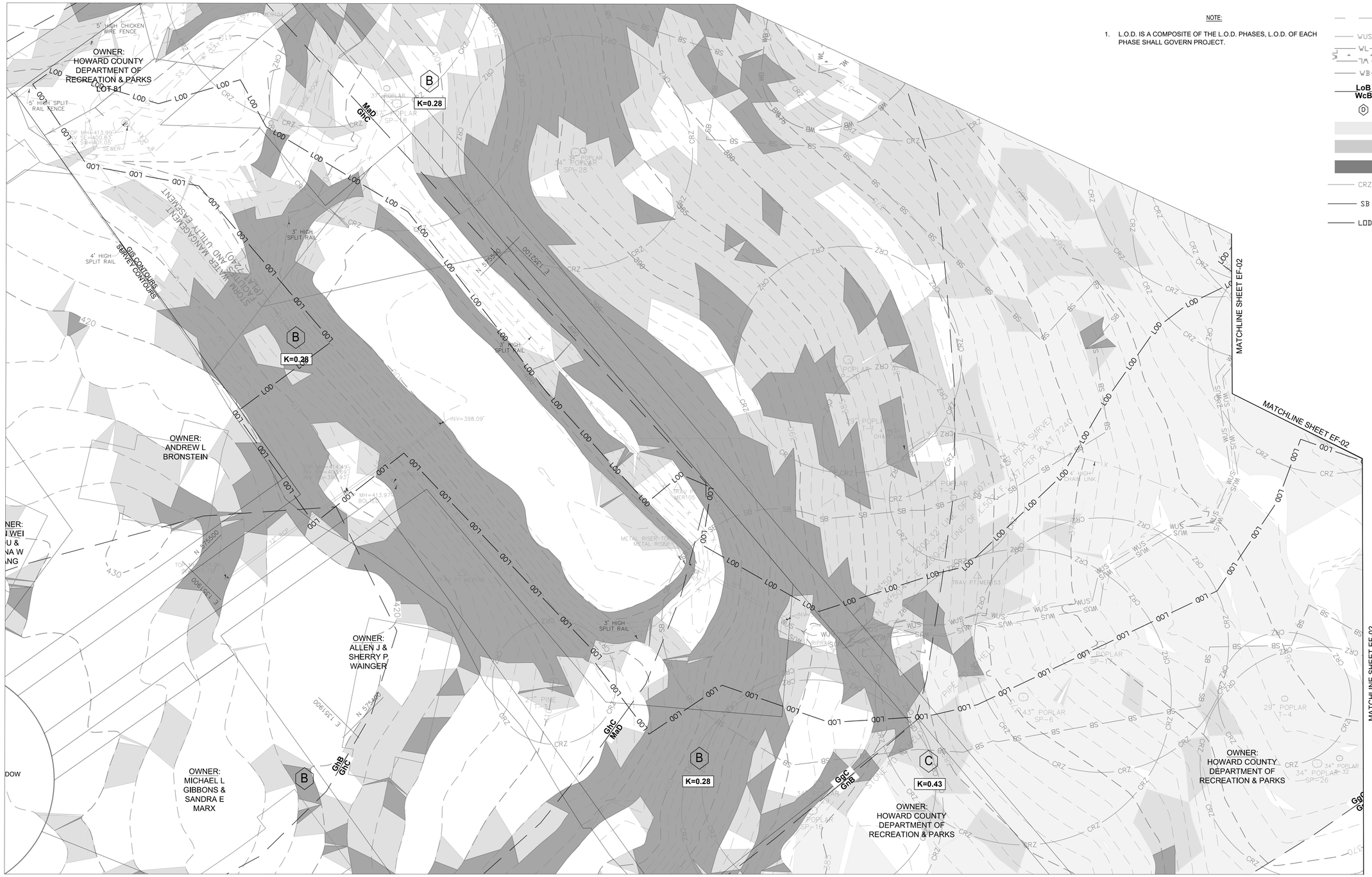
ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 06 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

ENVIRONMENTAL FEATURES MAP

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



NOTE:

1. L.O.D. IS A COMPOSITE OF THE L.O.D. PHASES, L.O.D. OF EACH PHASE SHALL GOVERN PROJECT.

LEGEND

- WATERWAY CENTERLINE
- WUS — SURVEYED WATERS OF THE US
- WL — SURVEYED WETLAND
- WB — 25' WETLAND BUFFER
- LoB / WcB — SOIL BOUNDARY
- (D) — HYDROLOGIC SOIL GROUP
- HIGHLY ERODIBLE SOILS (>5% SLOPES AND K>0.35)
- HIGHLY ERODIBLE SOILS (>15% SLOPES)
- STEEP (>20%) SLOPES
- CRZ — CRITICAL ROOT ZONE
- SB — 100' STREAM BUFFER
- LOD — LIMIT OF DISTURBANCE

N

0 20 40 Feet

SCALE: 1" = 20'

100% DESIGN

EF-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

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CONTRACT NO. X-XX-XXX
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DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 07 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

ENVIRONMENTAL FEATURES MAP

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

CENTENNIAL PARK
NORTH AREA

CENTENNIAL LAKE PARK

MAINSTEM CHANNEL
LINING WITH CLASS I
RIPRAP PROTECTION
ARMOR CHANNEL TO TOP
OF BANK
APPROXIMATELY 2.5'
D50 = 9.5' THICKNESS = 19'
CHANNEL Q = 119.60 CFS
CHANNEL V = 4.21 FPS

12' ACCESS ROAD
WITH CELLULAR CONFINEMENT
LOAD SUPPORT

SOIL BORING SB-1

PR. WEST TRIB.
STREAM STABILIZATION
TIES INTO PR. FOREBAY

REFER TO SEWER
RELOCATION PLANS

REMOVE EX. FIRE RING

PR. EMBANKMENT
TOP WIDTH = 16'
CONSTRUCTED TOP ELEV. = 360.00
SETTLED TOP ELEV. = 359.10

SANITARY SEWER RELOCATION ALIGNMENT
REFER TO SEWER RELOCATION PLANS

GIS CONTOURS
SURVEY CONTOURS

REFER TO SEWER
RELOCATION PLANS

PR. TYPE 'C' ENDWALL
SEE DETAIL D-5.21

PROP. 18" DIP

LV-09

LV-08

BS-11

PR. MIX 3 CONCRETE CUTOFF

FOREBAY
BOTTOM ELEV. = 351.00
PERM POOL. = 353.00

MATCHLINE SHEET SR-01

REMOVE EX.
RISER AND PIPE

SOIL BORING SB-2

PR. TRASH RACK (TYP.)
2+00

PR. RISER
WITH TRASH RACK
TOP ELEV. = 355.50
WEIR CREST ELEV. = 350.00
POND DRAIN ELEV. = 347.64

72" RCP

PR. MIX 3 CONCRETE CUTOFF
FOREBAY WEIR
WITH CLASS II
RIPRAP PROTECTION
D50 = 16", THICKNESS = 32"
Q10 = 171.7 CFS, V10 = 5.66 FPS
PR. MIX 3 CONCRETE CUTOFF
SOIL BORING SB-5

PR. 72" CLASS IV RCP
ASTM C-361 CLASS C25
WITH CONCRETE CRADLE
INV. IN = 347.64
INV. OUT = 345.00

MAIN BASIN
BOTTOM ELEV. = 347.00
PERM POOL. = 350.00
MAIN BASIN
NORMAL WSEL = 350.00

SOIL BORING SB-4

SOIL BORING SB-3

REMOVE EX. PIPE

PR. 12" CLASS IV RCP
INV. IN = 350.00
INV. OUT = 348.00

TIE PR. ACCESS ROAD
WITH CELLULAR CONFINEMENT
LOAD SUPPORT
INTO EX. GRAVEL ROAD

REMOVE CHICKEN WIRE FENCE

PR. 12" CONCRETE END SECTION
WITH FOOTER, SEE DETAIL D-5.51

PR. CLASS I RIPRAP
D50 = 9.5", THICKNESS = 19"
WITH 6' APRON @ 0%
Q10 = 3.60 CFS, V10 = 8.79 FPS

PR. ROCK BOULDER TOE
AND CLASS II RIPRAP
D50 = 16", THICKNESS = 32"
Q10 = 151.60 CFS, V10 = 4.12 FPS

PR. OUTFALL PLUNGE POOL
WITH CLASS II RIPRAP
SEE DETAIL & DIMENSION SW-07
APPROX. CENTENNIAL LAKE
NORMAL WSEL = 344.50

PR. 72" TYPE 'A' HEADWALL
SEE DETAIL D-5.11

PR. 6' CHAIN LINK FENCE
AROUND END SECTION
SEE DETAIL G-7.21

15' NO WOODY
VEGETATION

PEDESTRIAN BRIDGE

NOTE:

1. L.O.D. IS A COMPOSITE OF THE L.O.D. PHASES, L.O.D. OF EACH PHASE SHALL GOVERN PROJECT.

0 20 40 Feet
SCALE: 1" = 20'

100% DESIGN

SW-01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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LAUREL, MD 20707
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HOWARD COUNTY MARYLAND
STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

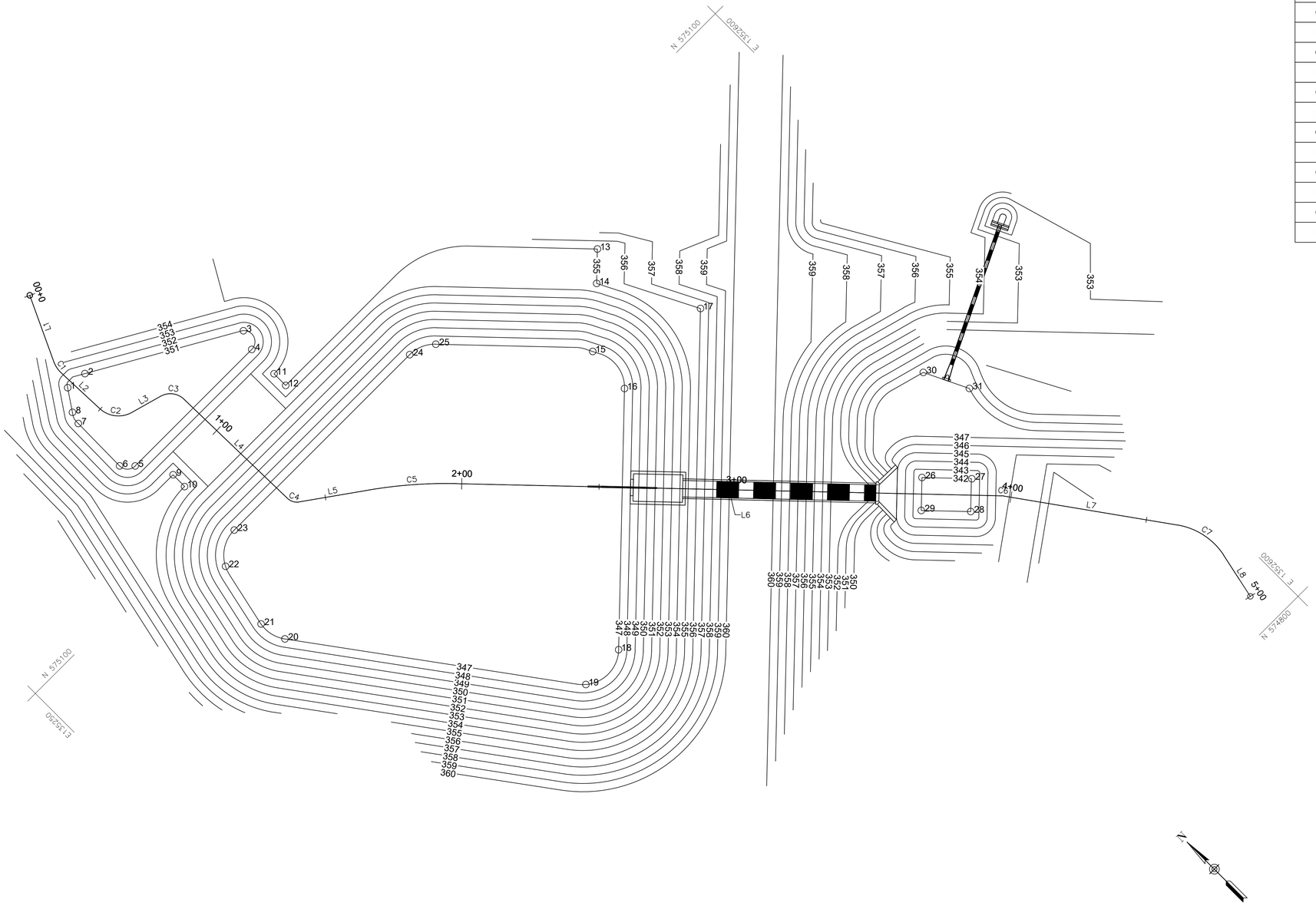
BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 08 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

POND RETROFIT PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



POND RETROFIT BASELINE

NUMBER	LENGTH	RADIUS	LINE/CHORD DIRECTION	START NORTHING	START EASTING
L1	7.86 FT		S25° 01' 32.62"W	575203.94	1352351.02
C1	4.73 FT	10.00 FT	S11° 28' 12.03"W	575180.57	1352340.11
L2	5.85 FT		S02° 05' 08.56"E	575175.97	1352339.18
C2	12.61 FT	10.00 FT	S38° 13' 01.89"E	575156.80	1352339.87
L3	3.66 FT		S74° 20' 55.22"E	575147.53	1352347.17
C3	9.19 FT	7.20 FT	S37° 47' 13.98"E	575144.29	1352358.74
L4	15.90 FT		S01° 13' 32.75"E	575137.51	1352363.99
C4	4.67 FT	5.00 FT	S27° 57' 56.86"E	575085.37	1352365.11
L5	7.76 FT		S54° 42' 20.97"E	575081.39	1352367.22
C5	32.28 FT	168.34 FT	S49° 12' 44.58"E	575066.68	1352388.00
L6	60.50 FT		S43° 43' 08.19"E	575045.63	1352412.41
C6	0.72 FT	5.00 FT	S39° 36' 56.46"E	574902.16	1352549.60
L7	19.56 FT		S35° 30' 44.73"E	574901.61	1352550.05
C7	20.76 FT	25.00 FT	S11° 43' 14.00"E	574849.38	1352587.32
L8	5.41 FT		S12° 04' 16.74"W	574829.63	1352591.42

POND RETROFIT GEOMETRY STAKEOUT POINTS

POINT #	ELEVATION	NORTHING	EASTING	DESCRIPTION
1	351.00	575170.41	1352337.01	FOREBAY BOTTOM
2	351.00	575169.61	1352345.06	FOREBAY BOTTOM
3	351.00	575139.85	1352396.90	FOREBAY BOTTOM
4	351.00	575132.88	1352394.23	FOREBAY BOTTOM
5	351.00	575132.88	1352334.24	FOREBAY BOTTOM
6	351.00	575136.94	1352330.24	FOREBAY BOTTOM
7	351.00	575158.46	1352330.53	FOREBAY BOTTOM
8	351.00	575162.84	1352331.90	FOREBAY BOTTOM
9	355.00	575120.88	1352341.72	FOREBAY WEIR
10	355.00	575114.88	1352341.61	FOREBAY WEIR
11	355.00	575120.88	1352393.72	FOREBAY WEIR
12	355.00	575114.88	1352393.72	FOREBAY WEIR
13	355.00	575069.76	1352509.07	ACCESS ROAD
14	355.00	575061.10	1352500.01	ACCESS ROAD
15	347.00	575044.59	1352481.48	POND BOTTOM
16	347.00	575026.87	1352480.12	POND BOTTOM
17	356.00	575027.91	1352520.28	POND GRADE BREAK
18	347.00	574961.13	1352411.38	POND BOTTOM
19	347.00	574960.61	1352393.98	POND BOTTOM
20	347.00	575049.83	1352328.24	POND BOTTOM
21	347.00	575059.80	1352325.94	POND BOTTOM
22	347.00	575083.80	1352331.64	POND BOTTOM
23	347.00	575090.88	1352343.21	POND BOTTOM
24	347.00	575090.88	1352433.57	POND BOTTOM
25	347.00	575086.86	1352442.97	POND BOTTOM
26	342.00	574927.37	1352533.79	PLUNGE POOL
27	-2.00	574914.22	1352546.28	PLUNGE POOL
28	342.00	574906.07	1352537.56	PLUNGE POOL
29	342.00	574919.08	1352525.12	PLUNGE POOL
30	348.00	574954.12	1352561.19	CULVERT OUTLET
31	348.00	574938.15	1352568.91	CULVERT OUTLET

100% DESIGN

SW-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS/HM
CHECKED BY SS
DATE JAN 2024 SHEET NO. 09 OF 59

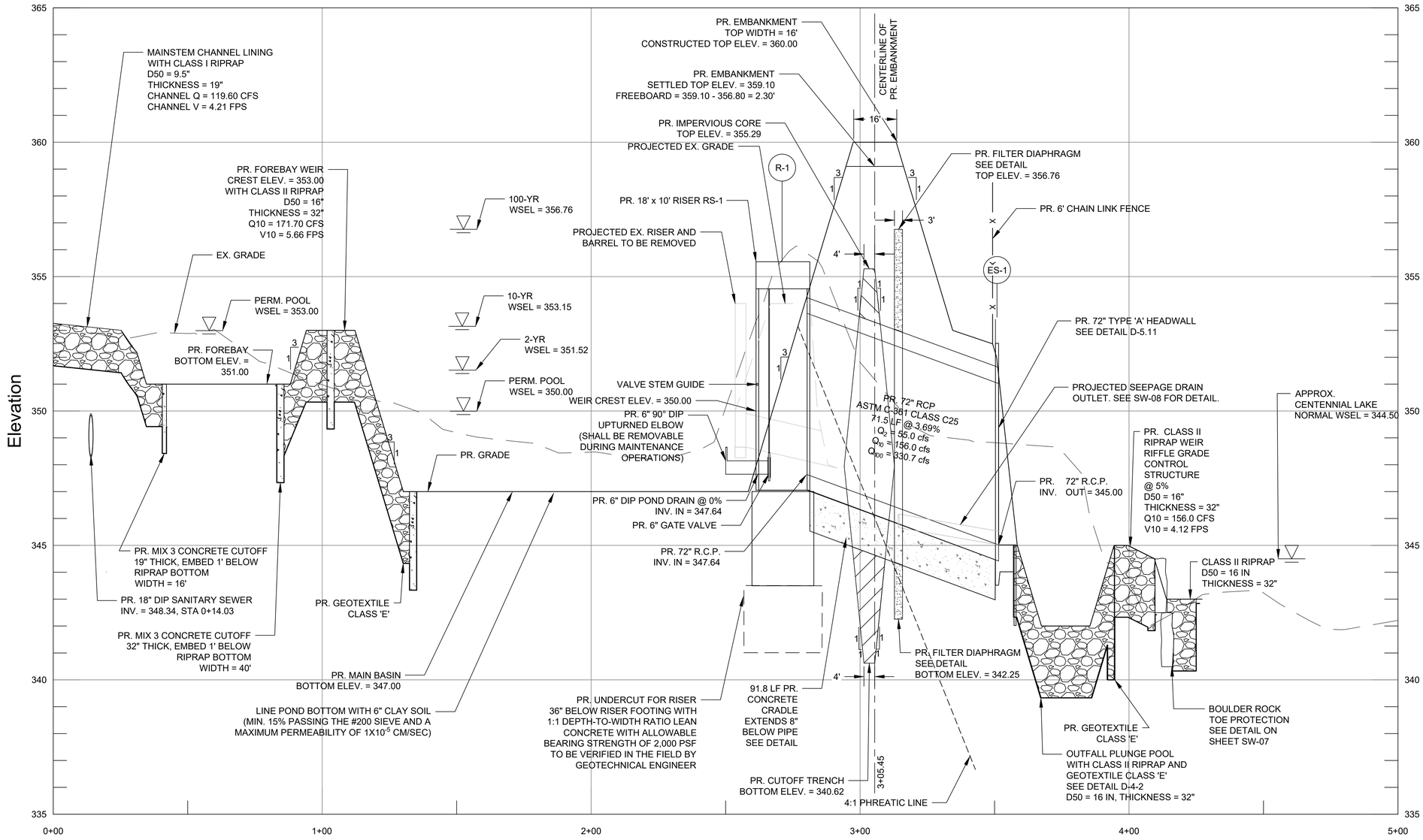
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

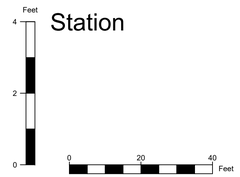
CAPITAL PROJECT D-1159

POND RETROFIT GEOMETRY PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

SECTION A-A'
SWM POND PROFILE





HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

100% DESIGN

SW-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
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COLUMBIA, MD 21046
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FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

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BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

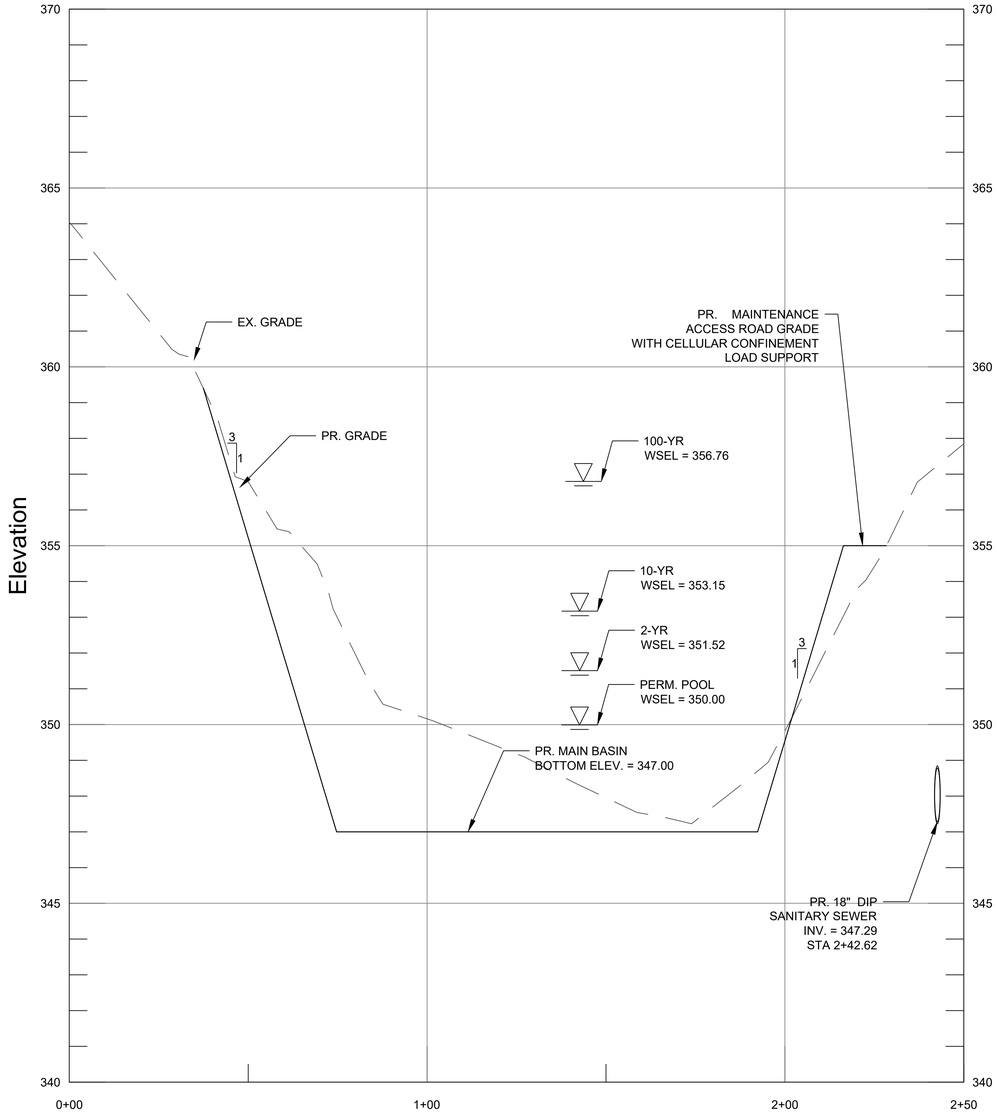
ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 10 OF 59

SOUTH MEADOW COURT POND
RETROFIT AND STREAM
STABILIZATION PROJECT
CAPITAL PROJECT D-1159

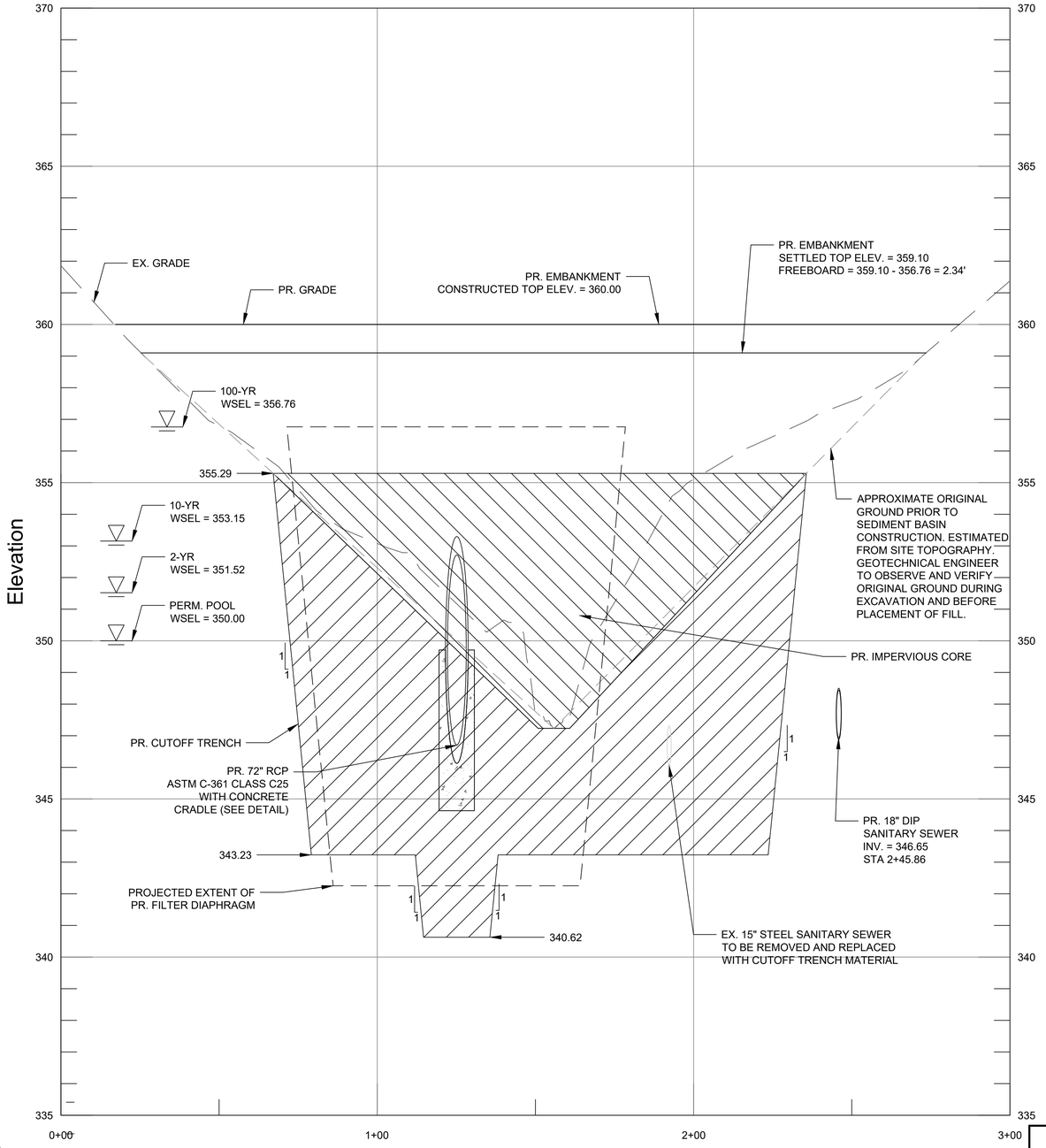
POND RETROFIT PROFILE

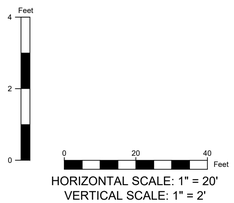
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

SECTION B-B'
SWM POND CROSS SECTION



SECTION C-C'
EMBANKMENT CROSS SECTION





HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

100% DESIGN

SW-04

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture
6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com
10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND
STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 11 OF 59

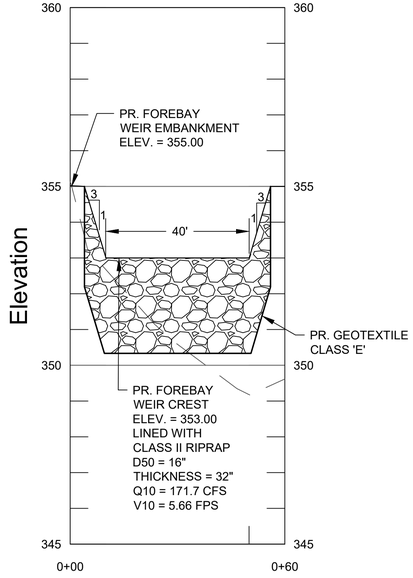
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

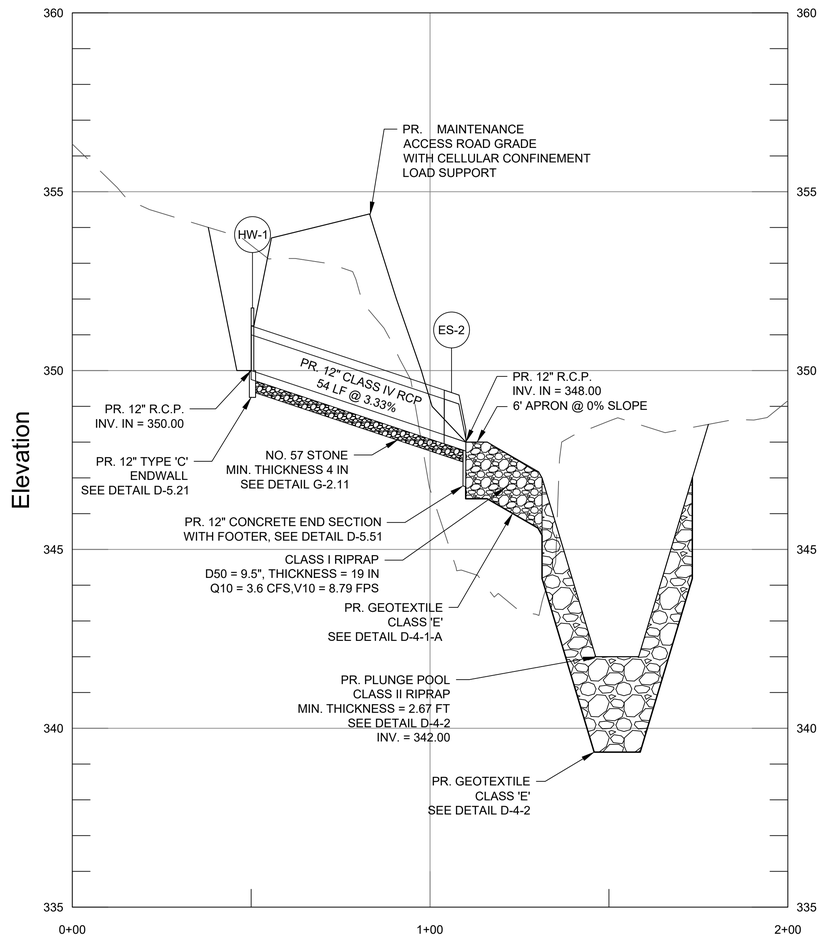
POND RETROFIT SECTIONS

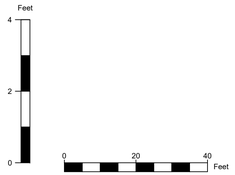
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

SECTION D-D'
FOREBAY WEIR CROSS SECTION



SECTION E-E'
12" STORM DRAIN PROFILE





HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

100% DESIGN

SW-05

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
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HOWARD COUNTY MARYLAND

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HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

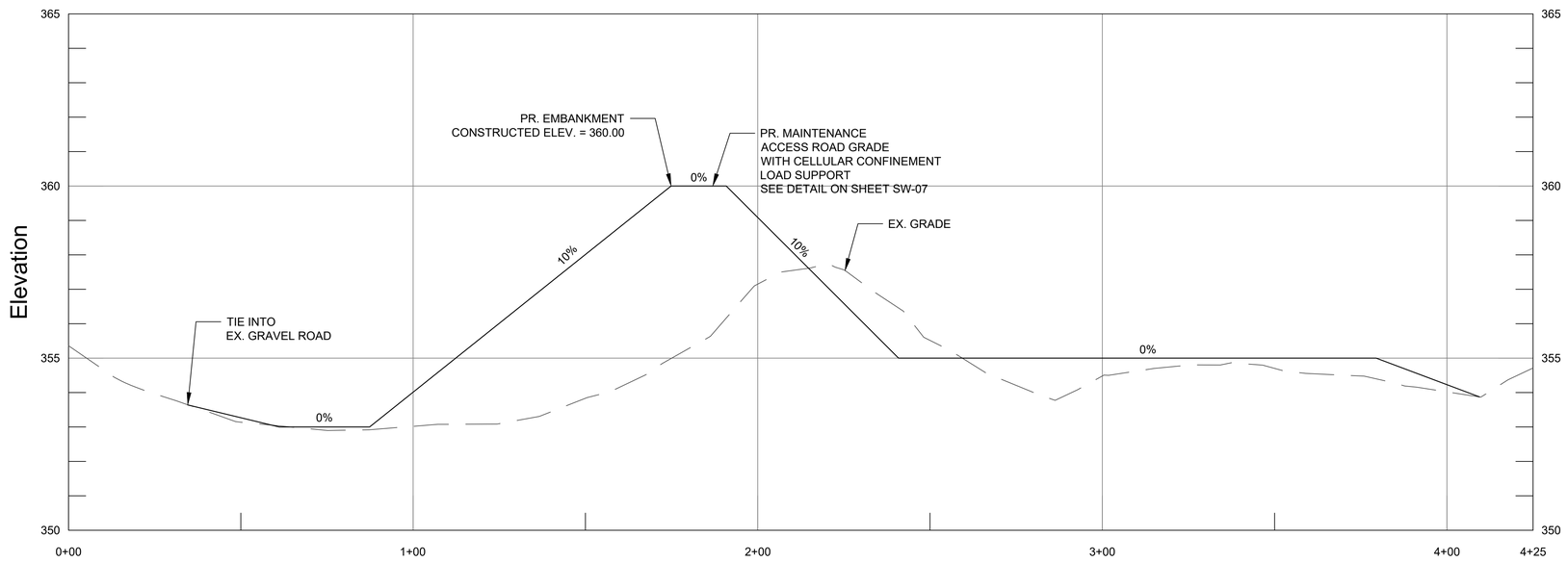
ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 12 OF 59

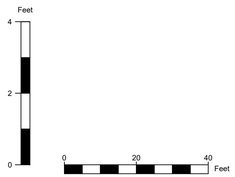
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

POND RETROFIT SECTIONS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

SECTION F-F'
POND ACCESS ROAD PROFILE





HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

100% DESIGN

SW-06

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
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9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

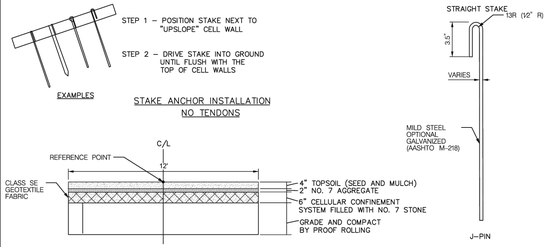
BY	NO.	REVISIONS	DATE

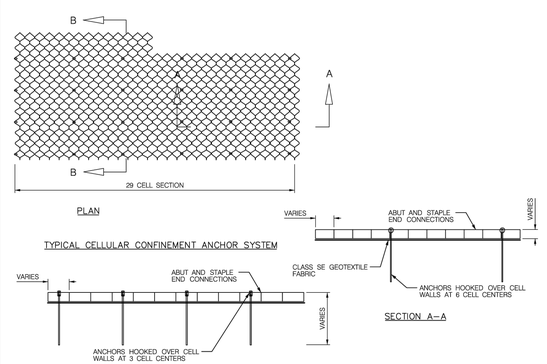
ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 13 OF 59

SOUTH MEADOW COURT POND
RETROFIT AND STREAM
STABILIZATION PROJECT
CAPITAL PROJECT D-1159

POND RETROFIT SECTIONS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

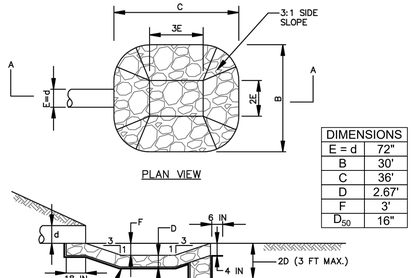




ACCESS ROAD CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM

DETAIL D-4-2 PLUNGE POOL

STANDARD SYMBOL: PP



DIMENSIONS	
E = d	72"
B	30'
C	36'
D	2.67'
F	3'
D_{50}	16"

CONSTRUCTION SPECIFICATIONS

1. USE SPECIFIED CLASS OF RIPRAP.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS, AND PROTECT FROM PUNCHING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING TWO PIECES OF GEOTEXTILE.
3. PREPARE THE SUBGRADE FOR THE PLUNGE POOL TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EMBED THE GEOTEXTILE A MINIMUM OF 4 INCHES AND EXTEND THE GEOTEXTILE A MINIMUM OF 6 INCHES BEYOND THE EDGE OF THE SCOUR HOLE.
5. STONE FOR THE PLUNGE POOL MAY BE PLACED BY EQUIPMENT. CONSTRUCT TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. AT THE PLUNGE POOL OUTLET, PLACE THE STONE SO THAT IT MEETS THE EXISTING GRADE.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

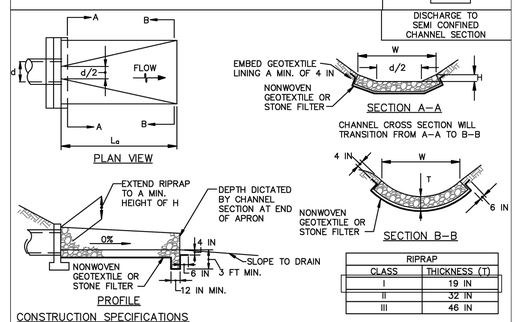
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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

STANDARD SYMBOL: ROP1

DISCHARGE TO SEMI CONFINED CHANNEL SECTION



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

CONSTRUCTION SPECIFICATIONS

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

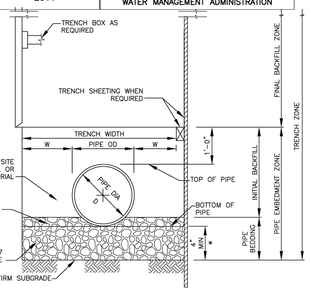
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DIP		
PIPE DIA "D"	"W"	TRENCH PAYMENT WIDTH
4	12	28
6	11	28
8	10	28
10	9	28
12	8	28
14	8	30
16	8	32
18	8	34
20	8	36
24	12	48

RCP		
PIPE DIA "D"	"W"	TRENCH PAYMENT WIDTH
4	12	28
6	11	28
8	10	28
10	9	28
12	8	28
15	8	31
18	8	34
21	8	37
24	12	48
27	12	51
30	12	54
33	15	63
36	15	66
42	15	72
48	18	84
54	18	90
60	18	96
66	18	102
72	18	108
78	18	114
84	18	120
90	18	126
96	18	132
102	18	138
108	18	144

ALL DIMENSIONS IN INCHES

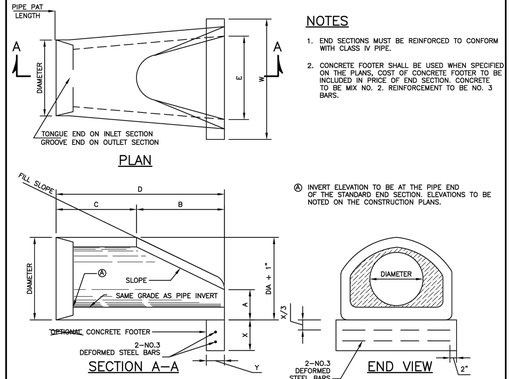


* FOR TRENCHES IN ROCK, MINIMUM BEDDING DEPTH IS 6 INCHES. FOR RCP 96 INCHES AND GREATER, MINIMUM BEDDING DEPTH IS 12 INCHES.

NOTES:

1. THE "W" DIMENSION SHALL BE USED TO CALCULATE MAXIMUM TRENCH PAY WIDTH.
2. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS NOT REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN.
3. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN PLUS 24 INCHES.
4. THE MAXIMUM WIDTH OF THE TRENCH EXCAVATED ON-SITE FOR RCP, SHALL NOT EXCEED THE TRENCH PAYMENT WIDTH PLUS 12 INCHES.
5. MINIMUM SPACING BETWEEN PARALLEL CULVERT PIPES SHALL BE TWICE THE "W" DIMENSION.
6. SPECIAL DESIGN IS REQUIRED AND SHALL BE SPECIFIED OR DETAILED IN THE CONTRACT DOCUMENTS FOR THE FOLLOWING PIPES:
   - RCP STORM DRAINS LARGER THAN 108 INCHES
   - RCP GRAVITY SANITARY SEWERS LARGER THAN 48 INCHES
   - DIP LARGER THAN 24 INCHES
   - STREAM CROSSINGS SEE S–3.11 AND S–3.12
7. WATERMAIN SHALL BE SPECIAL THICKNESS CLASS 54 DIP MINIMUM.

5/30/2017 Approved 6/30/2011 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas L. Smith Chief, Bureau of Engineering	Pipe Trench DIP & RCP	Detail G-2.11



NOTES

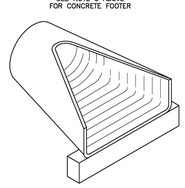
1. END SECTIONS MUST BE REINFORCED TO CONFORM WITH CLASS IV PIPE.
2. CONCRETE FOOTER SHALL BE USED WHEN SPECIFIED ON THE PLANS. COST OF CONCRETE FOOTER TO BE INCLUDED IN PRICE OF END SECTION. CONCRETE TO BE MIX NO. 2. REINFORCEMENT TO BE NO. 3 BARS.

Ⓐ INVERT ELEVATION TO BE AT THE PIPE END OF THE STANDARD END SECTION. ELEVATIONS TO BE NOTED ON THE CONSTRUCTION PLANS.

QUANTITIES FOR ESTIMATING PURPOSES ONLY

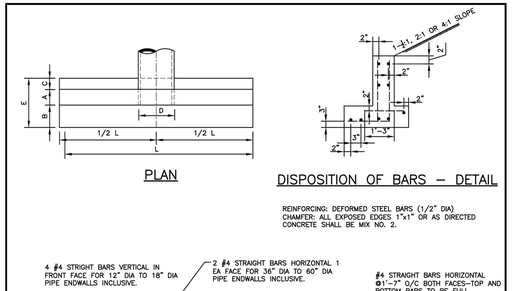
DIMENSIONS											QUANTITIES	
CONCRETE END SECTION							CONCRETE FOOTER					
DIA	SLOPE	A	B	C	D	E	W	X	Y		CONC CY	STEEL LBS
12"	3:1	4"	2'–0"	4'–0⅝"	6'–0⅝"	2'–0"	3'–0"	12"	9"		0.08	24.00
15"	3:1	6¾"	2'–4"	3'–10"	6'–2"	2'–3"	3'–6"	12"	9"		0.10	28.50
18"	3:1	10⅜"	2'–2"	4'–0"	6'–2"	3'–0"	4'–0"	12"	9"		0.11	33.00
21"	3:1	9"	3'–0"	3'–1½"	6'–1½"	3'–6"	4'–6"	12"	9"		0.13	37.50
24"	3:1	11"	3'–7"	2'–8"	6'–3"	4'–0"	5'–0"	15"	9"		0.17	42.00
27"	3:1	10⅜"	4'–1½"	2'–0"	6'–1½"	4'–6"	5'–6"	15"	9"		0.19	46.50
30"	3:1	1'–1"	4'–5"	1'–10"	6'–3"	5'–0"	6'–0"	15"	9"		0.21	51.00
33"	3:1	1'–2"	4'–7"	2'–2"	6'–9"	5'–6"	6'–6"	15"	9"		0.23	55.50
36"	3:1	1'–3½"	5'–3"	3'–1"	8'–1½"	6'–0"	7'–3"	15"	9"		0.25	62.25
42"	3:1	1'–6⅜"	5'–5"	2'–10"	8'–3"	6'–6"	7'–9"	15"	9"		0.27	66.75
48"	3:1	2'–1"	6'–0"	2'–2"	8'–3"	7'–0"	8'–6"	18"	12"		0.47	73.50
54"	2.4:1	2'–5"	5'–2"	2'–10"	8'–3"	8'–0"	7'–6"	9'–0"	18"	12"	0.50	78.00
60"	3:1	2'–7"	4'–11"*	3'–8½"	8'–7½"	8'–0"	9'–6"	18"	12"		0.53	82.50
66"	3:1	2'–4"	6'–6"	1'–9"	8'–3"	8'–6"	10'–0"	18"	12"		0.56	87.00
72"	3:1	2'–10"	6'–6"	1'–9"	8'–3"	9'–0"	10'–9"	18"	12"		0.60	93.75

SEE NOTE 3 ABOVE FOR CONCRETE FOOTER

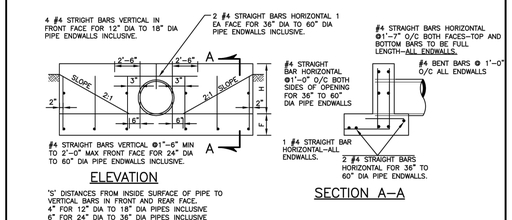


ISOMETRIC VIEW

5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas L. Smith Chief, Bureau of Engineering	Concrete End Section Circular Concrete Pipe	Detail D-5.51



REINFORCING: DEFORMED STEEL BARS (1/2" DIA)
CHAMFER: ALL EXPOSED EDGES 1"x1" OR AS DIRECTED
CONCRETE SHALL BE MIX NO. 2.

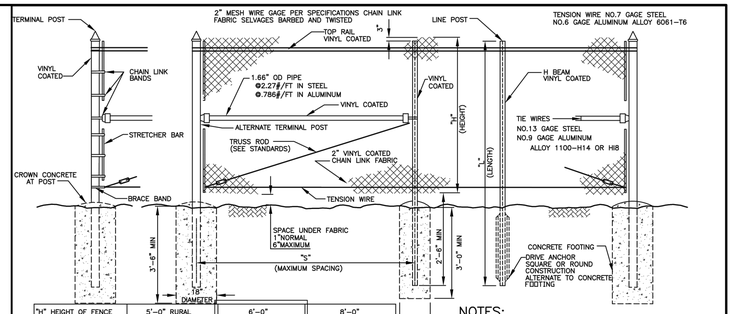


"S" DISTANCES FROM INSIDE SURFACE OF PIPE TO VERTICAL BARS IN FRONT AND REAR FACE.
4" FOR 12" DIA TO 18" DIA PIPES INCLUSIVE
6" FOR 24" DIA TO 36" DIA PIPES INCLUSIVE
8" FOR 42" DIA TO 60" DIA PIPES INCLUSIVE

QUANTITIES FOR ESTIMATION PURPOSES ONLY

OPENING		DIMENSIONS						QUANTITIES	
D	AREA	A	B	E	F	H	L	CONC. CY	STEEL LBS.
INCHES	SQ. FT.								
12	0.79	9"	6"	1'–9"	9"	1'–9"	6'–6"	0.61	41
15	1.23	9"	6"	1'–9"	9"	2'–0"	7'–9"	0.77	47
18	1.77	9"	6"	1'–9"	9"	2'–3"	9'–0"	0.95	54
21	2.40	9"	6"	1'–9"	9"	2'–6"	10'–3"	1.14	70
24	3.14	9"	6"	2'–5"	9"	2'–9"	11'–6"	1.56	80
27	3.98	9"	14"	6"	2'–5"	9"	3'–0"	12'10"	1.82	88
30	4.91	9"	14"	6"	2'–5"	12"	3'–6"	14'–2"	2.22	98
33	5.94	9"	14"	6"	2'–5"	12"	3'–9"	15'–5"	2.48	105
36	7.07	12"	16"	10"	3'–2"	12"	4'–0"	16'–8"	4.16	182
42	9.62	12"	16"	10"	3'–2"	12"	4'–6"	19'–2"	5.07	206
48	12.57	12"	16"	10"	3'–2"	12"	5'–0"	21'–8"	6.09	244
54	15.90	12"	20"	12"	3'–8"	12"	5'–8"	24'–2"	7.62	275
60	19.64	12"	20"	12"	3'–8"	12"	6'–0"	26'–8"	8.82	304
72	28.27	12"	20"	12"	3'–8"	12"	7'–0"	31'–8"	11.46	377

5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas L. Smith Chief, Bureau of Engineering	Type 'C' Endwall Circular Pipe	Detail D-5.21

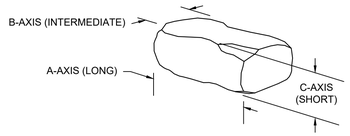


	5'–0" RURAL	6'–0"	8'–0"	
"H" HEIGHT OF FENCE	5'–0" RURAL	6'–0"	8'–0"	
"S" POST SPACING MAX	12'–0"	10'–0"	10'–0"	
"L" LENGTH OF H BEAM	7'–8" MIN	8'–8" MIN	10'–8" MIN	
H BEAM – STEEL	1.875"x1.65"Φ2.70"/FT	2.25"x1.95"Φ4.10"/FT	2.25"x1.95"Φ4.10"/FT	
H BEAM – ALUMINUM	1.875"x1.625"Φ0.91"/FT	2.25"x1.95"Φ1.25"/FT	2.25"x1.95"Φ1.25"/FT	
TERM POST STEEL	2.375"ODΦ3.65"/FT	2.875"ODΦ5.79"/FT	2.875"ODΦ5.79"/FT	
TERM POST ALUMINUM	2.375"ODΦ1.26"/FT	2.875"ODΦ2.00"/FT	2.875"ODΦ2.00"/FT	
ALT TERM POST STEEL	2.00"SQ Φ3.85"/FT	2.50"SQ Φ5.70"/FT	2.50"SQ Φ5.70"/FT	HOG RING – STEEL: 18" ± O/C 12.5 GA GALVANIZED STEEL WIRE
ALT TERM POST ALUMINUM	2.50"SQ Φ1.26"/FT	3.00"SQ Φ2.00"/FT	3.00"SQ Φ2.00"/FT	HOG RING – ALUMINUM: 18" ± O/C 110 0 ALUMINUM WIRE ALLOY 5058 – H38

NOTES:

1. ALL POSTS (TERMINAL AND LINE) TO BE SAME LENGTH (L).
2. TENSION WIRE CLIP AT 18"± O/C 12 1/2 GA. GALVANIZED STEEL WIRE .110 DIAMETER ALUMINUM WIRE ALLOY 5058–H38.
3. MATERIALS TO MEET REQUIREMENTS OF AASHTO M181.
4. VINYL CLAD STEEL IF SPECIFIED BY ENGINEER SHALL BE COLORED BLACK UNLESS OTHERWISE SPECIFIED.

5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas L. Smith Chief, Bureau of Engineering	CHAIN LINK FENCE 5'–0" RURAL & 6'–0"	Detail G-7.21



BOULDER DIMENSIONS (IN)				
	A-AXIS	B-AXIS	C-AXIS	UNIT WEIGHT, LBS/FT³*
WEDGE BOULDERS & CASCADE BOULDERS	24–36"	24–36"	12–24"	
FOOTER AND ENERGY DISSIPATION BOULDERS	24–36"	24–36"	12–24"	

*DESIGNER TO PROVIDE ALLOWABLE UNIT WEIGHT. TYPICAL UNIT WEIGHT FOR GRANITE IS 165 LBS/FT³, AND SANDSTONE IS 145 LBS/FT³

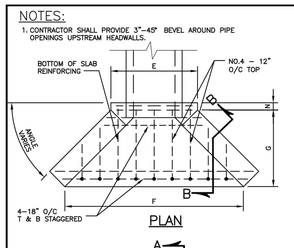
NOTES:

1. THE MEDIAN A-AXIS DIMENSION AVERAGED ACROSS THE FULL STRUCTURE SHALL EQUAL A MINIMUM OF 30".
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SELECT MATERIAL THAT IS APPROPRIATELY SIZED TO ALLOW FOR ECONOMICAL CONSTRUCTION OF CASCADE WEIR STRUCTURES MEETING THE DESIGN DIMENSIONS DESCRIBED IN THIS PLAN.

SELECT BOULDER DIMENSIONS
NOT TO SCALE

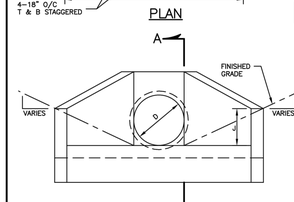
NOTES:

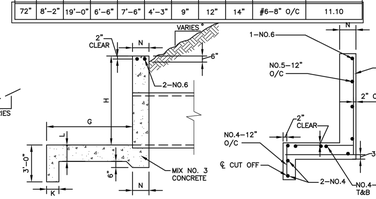
1. CONTRACTOR SHALL PROVIDE 3"–45° BEVEL AROUND PIPE OPENINGS UPSTREAM HEADWALLS.



D	E	F	G	H	J	K	L	N	R	Δ VOL. CY
12" 15"	2'–8" 2'–11"	7'–2" 7'–5"	3'–0" 3'–0"	2'–6" 2'–6"	2'–0" 2'–0"	8"	8"	8"	#5–12" O/C	1.50 1.60
18" 21"	3'–0" 3'–4"	7'–6" 7'–9"	3'–0"	3'–0" 3'–3"	2'–0" 2'–0"	8"	8"	8"	#5–12" O/C	1.70 1.80
24" 27"	3'–8" 3'–11"	8'–0" 8'–3"	3'–0"	3'–6" 3'–9"	2'–0" 2'–0"	8"	8"	8"	#5–12" O/C	1.90 2.00
30"	4'–2"	8'–6"	3'–0"	4'–0"	2'–1½"	8"	8"	10"	#5–12" O/C	2.85
36"	4'–8"	10'–0"	3'–6"	4'–6"	2'–3"	8"	10"	10"	#5–12" O/C	3.15
42"	5'–3"	11'–6"	4'–0"	5'–0"	2'–9"	8"	10"	10"	#5–12" O/C	3.87
48"	5'–10"	13'–0"	4'–6"	5'–6"	3'–0"	8"	10"	12"	#5–12" O/C	5.08
54"	6'–5"	14'–6"	5'–0"	6'–0"	3'–3"	9"	12"	12"	#6–8" O/C	6.50
60"	7'–0"	16'–0"	5'–6"	6'–6"	3'–6"	9"	12"	12"	#6–8" O/C	7.98
66"	7'–7"	17'–6"	6'–0"	7'–0"	3'–9"	9"	12"	14"	#6–8" O/C	9.14
72"	8'–2"	19'–0"	6'–6"	7'–6"	4'–3"	9"	12"	14"	#6–8" O/C	11.10

Δ – BASED ON 2:1 CHANNEL SIDE SLOPES AND 45 ANGLE





5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas L. Smith Chief, Bureau of Engineering	TYPE 'A' Headwall Circular Pipe	Detail D-5.11

100% DESIGN

SW-07

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture
6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com
10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND
STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313–6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X–XX–XXX
SCALE AS SHOWN
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 14 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D–1159

POND RETROFIT DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

CONSTRUCTION SPECIFICATIONS

These specifications are appropriate to all ponds within the scope of the Standard for practice MD-378. All references to ASTM and AASHTO specifications apply to the most recent version.

Site Preparation

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1. All trees shall be cleared and grubbed within 15 feet of the toe of the embankment.

Areas to be covered by the reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush, and stumps shall be cut approximately level with the ground surface. For dry stormwater management ponds, a minimum of a 25-foot radius around the inlet structure shall be cleared.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

Earth Fill

Material - The fill material shall be taken from approved designated borrow areas. It shall be free of roots, stumps, wood, rubbish, stones greater than 6", frozen or other objectionable materials. Fill material for the center of the embankment, and cut off trench shall conform to Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the #200 sieve. Consideration may be given to the use of other materials in the embankment if designed by a geotechnical engineer. Such special designs must have construction supervised by a geotechnical engineer.

Materials used in the outer shell of the embankment must have the capability to support vegetation of the quality required to prevent erosion of the embankment.

Placement - Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maximum 8 inch thick (before compaction) layers which are to be continuous over the entire length of the fill. The most permeable borrow material shall be placed in the downstream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

Compaction - The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of heavy equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot, rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction will be obtained with the equipment used. The fill material shall contain sufficient moisture so that if formed into a ball it will not crumble, yet not be so wet that water can be squeezed out.

When required by the reviewing agency the minimum required density shall not be less than 95% of maximum dry density with a moisture content within ± 2% of the optimum. Each layer of fill shall be compacted as necessary to obtain that density, and is to be certified by the Engineer at the time of construction. All compaction is to be determined by AASHTO Method T-99 (Standard Proctor).

Cut Off Trench - The cutoff trench shall be excavated into impervious material along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be governed by the equipment used for excavation, with the minimum width being four feet. The depth shall be at least four feet below existing grade or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density

Embankment Core - The core shall be parallel to the centerline of the embankment as shown on the plans. The top width of the core shall be a minimum of four feet. The height shall extend up to at least the 10 year water elevation or as shown on the plans. The side slopes shall be 1 to 1 or flatter. The core shall be compacted with construction equipment, rollers, or hand tampers to assure maximum density and minimum permeability. In addition, the core shall be placed concurrently with the outer shell of the embankment.

Structure Backfill

Backfill adjacent to pipes or structures shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material needs to fill completely all spaces under and adjacent to the pipe. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe, unless there is a compacted fill of 24" or greater over the structure or pipe.

Structure backfill may be flowable fill meeting the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 313 as modified. The mixture shall have a 100-200 psi; 28 day unconfined compressive strength. The flowable fill shall have a minimum pH of 4.0 and a minimum resistivity of 2,000 ohm-cm. Material shall be placed such that a minimum of 6" (measured perpendicular to the outside of the pipe) of flowable fill shall be under (bedding), over and, on the sides of the pipe. It only needs to extend up to the spring line for rigid conduits. Average slump of the fill shall be 7" to assure flowability of the material. Adequate measures shall be taken (sand bags, etc.) to prevent floating the pipe. When using flowable fill, all metal pipe shall be bituminous coated. Any adjoining soil fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other manually directed compaction equipment. The material shall completely fill all voids adjacent to the flowable fill zone. At no time during the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a structure or pipe unless there is a compacted fill of 24" or greater over the structure or pipe. Backfill material outside the structural backfill (flowable fill) zone shall be of the type and quality conforming to that specified for the core of the embankment or other embankment materials.

Pipe Conduits

All pipes shall be circular in cross section.

Corrugated Metal Pipe - All of the following criteria shall apply for corrugated metal pipe:

1. Materials - (Polymer Coated steel pipe) - Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. This pipe and its appurtenances shall conform to the requirements of AASHTO Specifications M-245 & M-246 with watertight coupling bands or flanges.

   Materials - (Aluminum Coated Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274 with watertight coupling bands or flanges. Aluminum Coated Steel Pipe, when used with flowable fill or when soil and/or water conditions warrant the need for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Any aluminum coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt.

   Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Aluminum Pipe, when used with flowable fill or when soil and/or water conditions warrant for increased durability, shall be fully bituminous coated per requirements of AASHTO Specification M-190 Type A. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer or two coats of asphalt. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be between 4 and 9.

2. Coupling bands, anti-seep collars, end sections, etc., must be composed of the same material and coatings as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness.

3. Connections - All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Anti-seep collars shall be connected to the pipe in such a manner as to be completely watertight. Dimple bands are not considered to be watertight.

   All connections shall use a rubber or neoprene gasket when joining pipe sections. The end of each pipe shall be re-rolled an adequate number of corrugations to accommodate the bandwidth. The following type connections are acceptable for pipes less than 24 inches in diameter: flanges on both ends of the pipe with a circular 3/8 inch closed cell neoprene gasket, prepunched to the flange bolt circle, sandwiched between adjacent flanges; a 12-inch wide standard lap type band with 12-inch wide by 3/8-inch thick closed cell circular neoprene gasket; and a 12-inch wide hugger type band with o-ring gaskets having a minimum diameter of 1/2 inch greater than the corrugation depth. Pipes 24 inches in diameter and larger shall be connected by a 24 inch long annular corrugated band using a minimum of 4 (four) rods and lugs, 2 on each connecting pipe end. A 24-inch wide by 3/8-inch thick closed cell circular neoprene gasket will be installed with 12 inches on the end of each pipe. Flanged joints with 3/8 inch closed cell gaskets the full width of the flange is also acceptable.

   Helically corrugated pipe shall have either continuously welded seams or have lock seams with internal caulking or a neoprene bead.

4. Bedding - The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

5. Backfilling shall conform to "**Structure Backfill**".

6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe - All of the following criteria shall apply for reinforced concrete pipe:

1. Materials - Reinforced concrete pipe shall have bell and spigot joints with rubber gaskets and shall equal or exceed ASTM C-361.

2. Bedding - Reinforced concrete pipe conduits shall be laid in a concrete bedding / cradle for their entire length. This bedding / cradle shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 50% of its outside diameter with a minimum thickness of 6 inches. Where a concrete cradle is not needed for structural reasons, flowable fill may be used as described in the "Structure Backfill" section of this standard. Gravel bedding is not permitted.

3. Laying pipe - Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the pipe. The first joint must be located within 4 feet from the riser.

4. Backfilling shall conform to "**Structure Backfill**".

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Plastic Pipe - The following criteria shall apply for plastic pipe:

1. Materials - PVC pipe shall be PVC-1120 or PVC-1220 conforming to ASTM D-1785 or ASTM D-2241. Corrugated High Density Polyethylene (HDPE) pipe, couplings and fittings shall conform to the following: 4" – 10" inch pipe shall meet the requirements of AASHTO M252 Type S, and 12" through 24" inch shall meet the requirements of AASHTO M294 Type S.

2. Joints and connections to anti-seep collars shall be completely watertight.

3. Bedding -The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered, all such material shall be removed and replaced with suitable earth compacted to provide adequate support.

4. Backfilling shall conform to "**Structure Backfill**".

5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Drainage Diaphragms - When a drainage diaphragm is used, a registered professional engineer will supervise the design and construction inspection.

Concrete

Concrete shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 414, Mix No. 3.

Rock Riprap

Rock riprap shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 311.

Geotextile shall be placed under all riprap and shall meet the requirements of Maryland Department of Transportation, State Highway Administration Standard Specifications for Construction and Materials, Section 921.09, Class C.

Care of Water during Construction

All work on permanent structures shall be carried out in areas free from water. The Contractor shall construct and maintain all temporary dikes, levees, cofferdams, drainage channels, and stream diversions necessary to protect the areas to be occupied by the permanent works. The contractor shall also furnish, install, operate, and maintain all necessary pumping and other equipment required for removal of water from various parts of the work and for maintaining the excavations, foundation, and other parts of the work free from water as required or directed by the engineer for constructing each part of the work. After having served their purpose, all temporary protective works shall be removed or leveled and graded to the extent required to prevent obstruction in any degree whatsoever of the flow of water to the spillway or outlet works and so as not to interfere in any way with the operation or maintenance of the structure. Stream diversions shall be maintained until the full flow can be passed through the permanent works. The removal of water from the required excavation and the foundation shall be accomplished in a manner and to the extent that will maintain stability of the excavated slopes and bottom required excavations and will allow satisfactory performance of all construction operations. During the placing and compacting of material in required excavations, the water level at the locations being refilled shall be maintained below the bottom of the excavation at such locations which may require draining the water sumps from which the water shall be pumped.

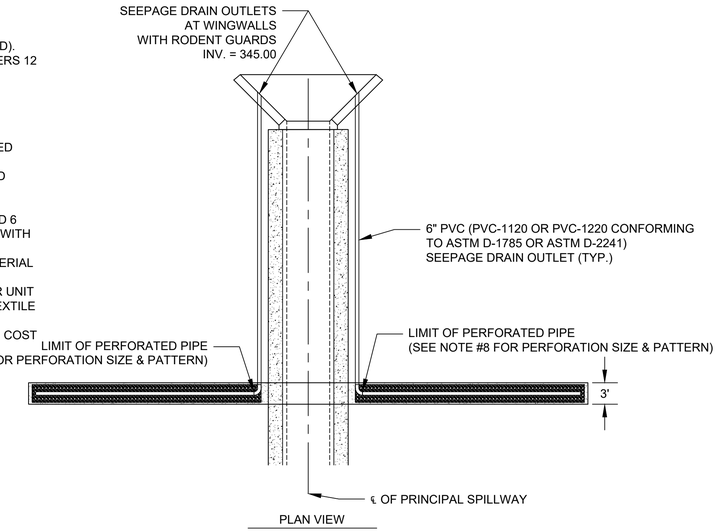
Stabilization

All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching in accordance with the Natural Resources Conservation Service Standards and Specifications for Critical Area Planting (MD-342) or as shown on the accompanying drawings.

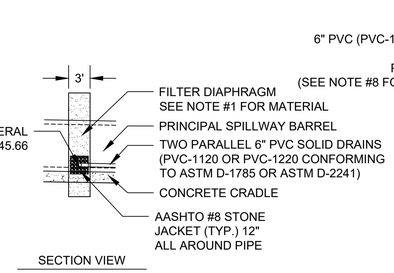
Erosion and Sediment Control

Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures.

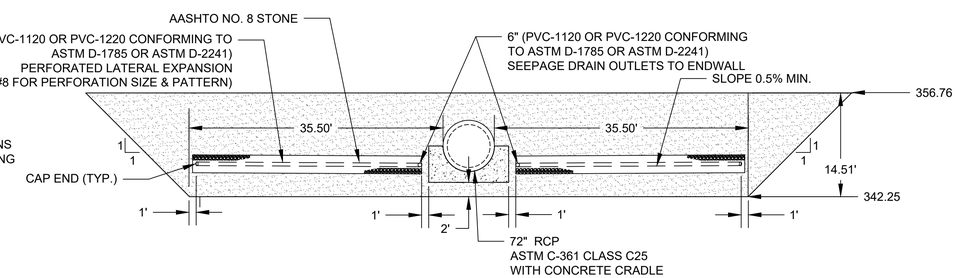
FILTER DIAPHRAGM NOTES:
1. FILTER MATERIAL SHALL CONFORM TO ASTM C-33 (CONCRETE SAND).
2. FILTER DIAPHRAGM SHALL BE CONSTRUCTED IN HORIZONTAL LAYERS 12 INCHES THICK (BEFORE COMPACTION).
3. EACH LAYER SHALL BE HYDROCOMPACTED USING A SPRINKLER. MATERIAL MUST BE SATURATED.
4. CARE SHALL BE TAKEN SO THAT THE FILTER MATERIAL IS NOT CONTAMINATED.
5. ANY CONTAMINATED SOIL SAND SHALL BE REMOVED AND REPLACED WITH APPROVED MATERIAL.
6. PROTECTIVE COVERING OVER THE SAND FILTER MAY BE REQUIRED BETWEEN LIFTS.
7. ELBOWS SHALL BE USED FOR PVC INTERCONNECTIONS.
8. PERFORATE PIPE WITH 1/8 INCH DIAMETER PERFORATIONS SPACED 6 INCHES APART LONGITUDINALLY AND RADIALLY OR IN ACCORDANCE WITH APPROVED PLAN.
9. GEOTECHNICAL ENGINEER TO SPECIFY AND APPROVE FILTER MATERIAL AND PLACEMENT IN THE FIELD.
10. FILTER DIAPHRAGM SHALL NOT BE MEASURED, BUT PAID FOR PER UNIT CONTRACT LUMP SUM PRICE. 6" PVC PIPE, NO. 8 AGGREGATE, GEOTEXTILE AND ALL MATERIAL, LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK SHALL BE INCIDENTAL TO THE COST OF THE FILTER DIAPHRAGM.



PLAN VIEW

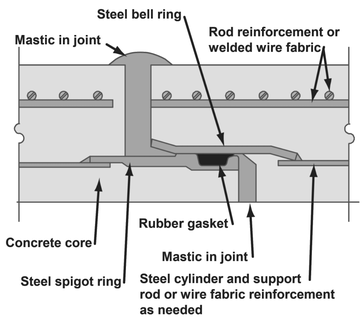


SECTION VIEW



ELEVATION VIEW

FILTER DIAPHRAGM
SCALE: 1" = 10'



HOWARD COUNTY SOIL CONSERVATION DISTRICT
BARREL JOINT SEAL DETAIL

AS-BUILT CERTIFICATION

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

_____ PE No. _____
Signature Date: _____

OPERATION, MAINTENANCE AND INSPECTION

Inspection of the pond(s) shown hereon shall be performed at least annually, in accordance with the checklist and requirements contained within USDA, NRCS "Standards And Specifications For Ponds" (MD-378). The pond owner(s) and any heirs, successors, or assigns shall be responsible for the safety of the pond and the continued operations, surveillance, inspection, and maintenance thereof. The pond owner(s) shall promptly notify the Soil Conservation District of any unusual observations that may be indications of distress such as excessive seepage, turbid seepage, sliding or slumping.

100% DESIGN

SW-08

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture
6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com
10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND
STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

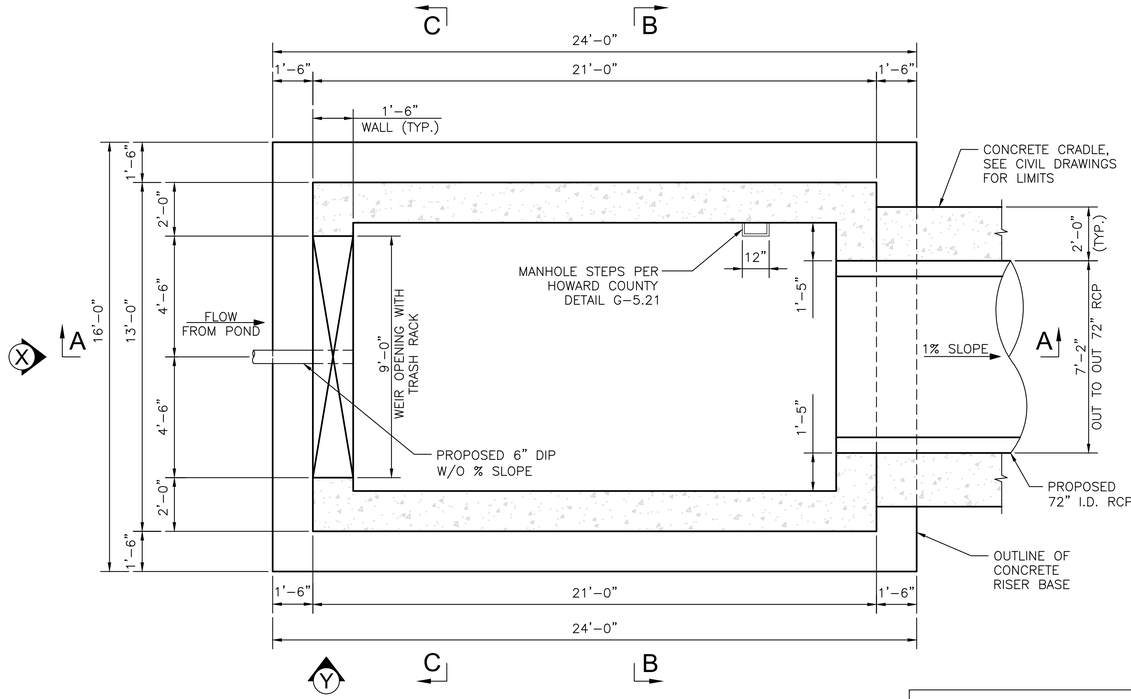
BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE AS SHOWN
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 15 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

POND RETROFIT DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

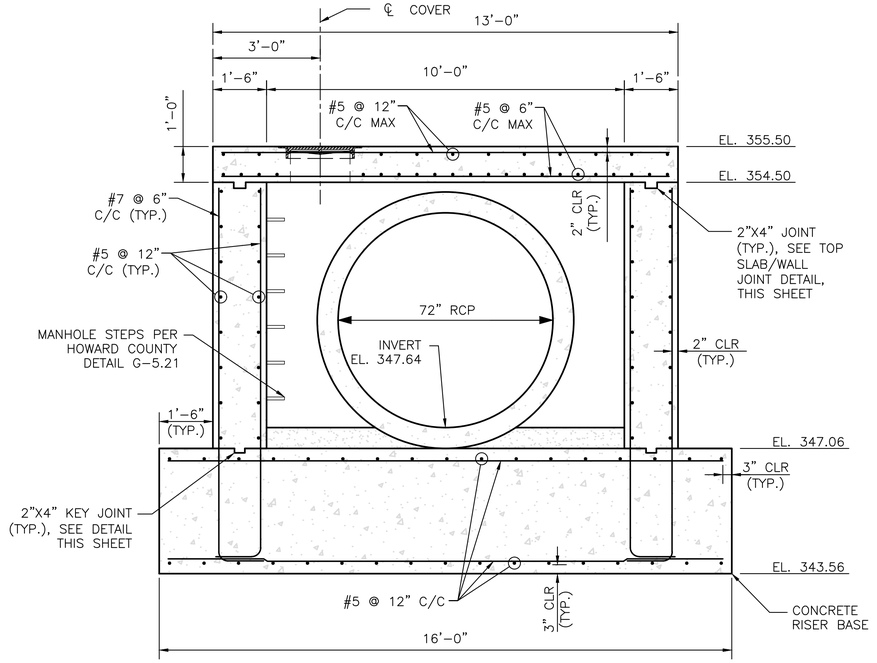


RISER PLAN VIEW

SCALE: ⅜"=1'-0"
(TOP SLAB REMOVED)

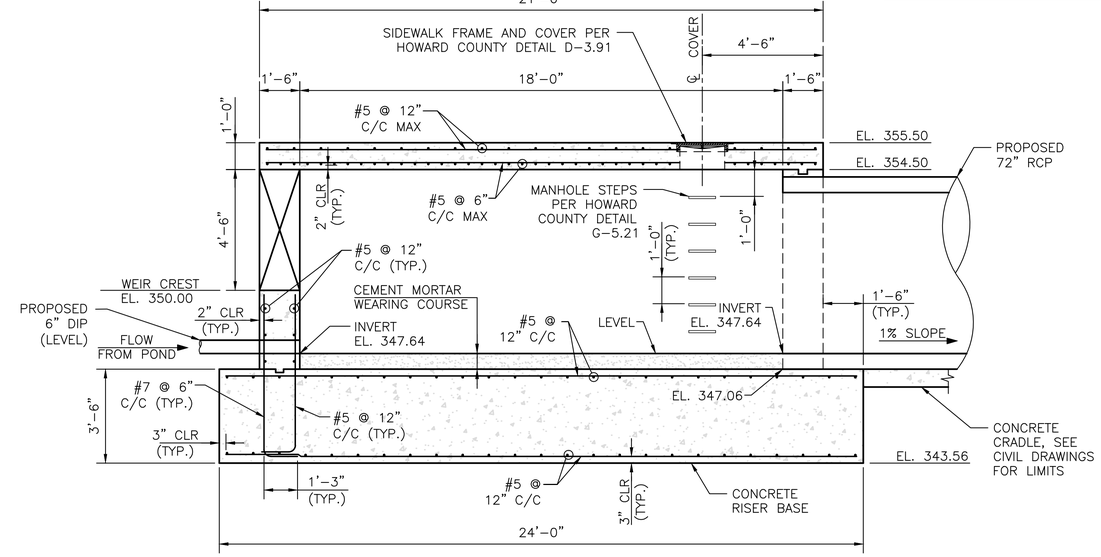
REINFORCED CONCRETE PIPE (RCP) NOTES

1. THE PROPOSED 72" RCP PIPE SHALL CONFORM TO ASTM C361 CLASS C-25.
2. THE PROPOSED 72" RCP FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM C361.



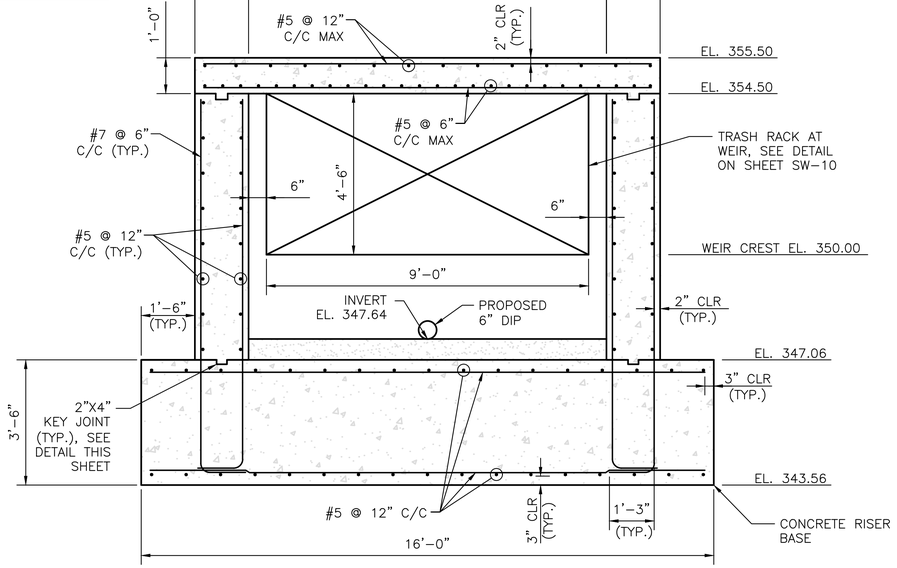
RISER SECTION B-B

SCALE: ½"=1'-0"



RISER SECTION A-A

SCALE: ⅜"=1'-0"

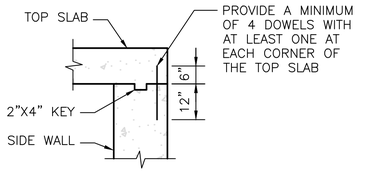


RISER SECTION C-C

SCALE: ½"=1'-0"

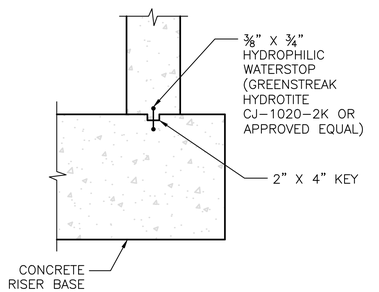
RISER CONSTRUCTION NOTES:

1. CONCRETE SHALL BE MIX NO. 6 (4500 PSI), UNLESS NOTED OTHERWISE.
2. REINFORCING STEEL SHALL BE DEFORMED AND CONFORM TO ASTM A615, GRADE 60.
3. RISER SHALL BE CONSTRUCTED AS A CAST-IN-PLACE, MONOLITHIC STRUCTURE.
4. LOOSE MATERIAL WAS ENCOUNTERED AT THE ANTICIPATED RISER FOOTING DEPTH. THIS MATERIAL SHALL BE UNDERCUT ON THE ORDER OF 36 INCHES BELOW THE BOTTOM OF THE FOOTING AND REPLACED WITH LEAN CONCRETE TO ESTABLISH A STRUCTURAL FOUNDATION. A 1:1 DEPTH-TO-WIDTH RATIO SHALL BE USED FOR THE SOIL IMPROVEMENTS. NO GRAVEL SHALL BE USED FOR THE RISER SUBBASE. A GEOTECHNICAL ENGINEER SHALL VERIFY THAT A SUITABLE SUBBASE IS PROVIDED FOR THE RISER AND THAT THE BEARING CAPACITY AT THE FINAL FOOTING ELEVATION IS A MINIMUM OF 2,000 PSF.
5. USE NON-SHRINK GROUT TO PARGE THE PIPE CONNECTION INSIDE THE RISER.
6. LIVE LOAD ON RISER TOP SLAB = 300 PSF
7. ALL KEYS ARE NOMINAL SIZE.
8. THE RISER WILL BE MEASURED AND PAID FOR AT THE LUMP SUM CONTRACT UNIT PRICE PER RISER. THE PAYMENT WILL BE FULL COMPENSATION FOR ALL EXCAVATION, CONCRETE, REINFORCEMENT, LADDER RUNGS, FRAME, COVER, GRADE AND SLOPE ADJUSTMENTS, BACKFILL, GASKETS, TRASH RACKS, AND FOR ALL MATERIAL, LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.



TOP SLAB / WALL JOINT DETAIL

SCALE: N.T.S.



KEY JOINT DETAIL

SCALE: N.T.S.

100% DESIGN

SW-09

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
AB CONSULTANTS, INC.
9450 ANNAPOLIS ROAD
LANHAM, MARYLAND 20706
PHONE: (301) 306-3091
FAX: (301) 306-3092

HOWARD COUNTY MARYLAND
STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

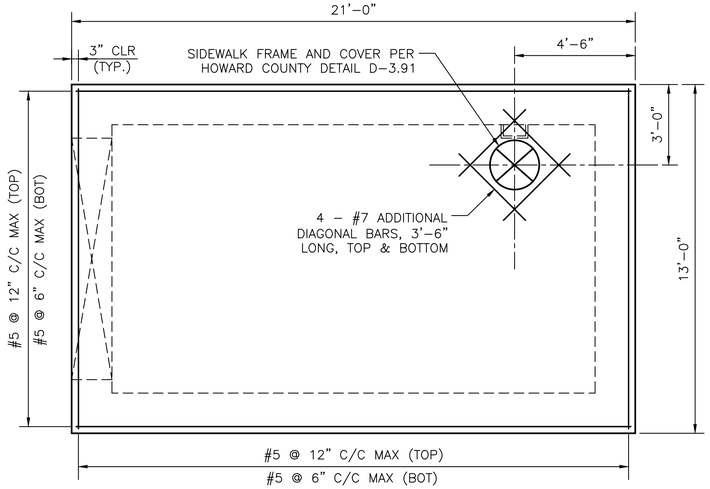
BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE AS SHOWN
DESIGNED BY CP
DRAWN BY CP
CHECKED BY PPP
DATE JAN 2024 SHEET NO. 16 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

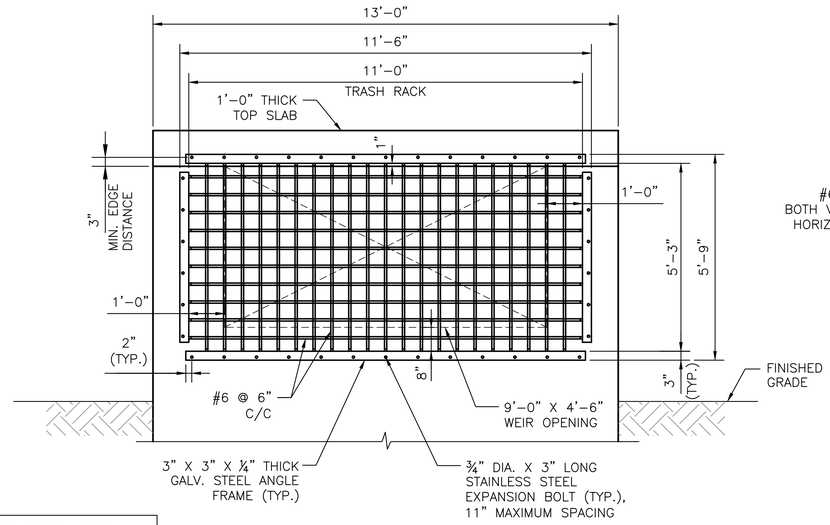
POND RETROFIT STRUCTURAL DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



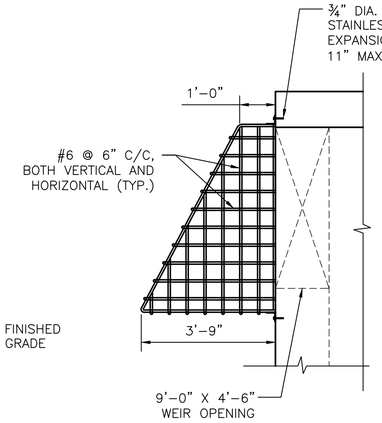
TOP SLAB DETAIL

SCALE: ⅜"=1'-0"



TRASH RACK ELEVATION "X"

SCALE: ½"=1'-0"



TRASH RACK ELEVATION "Y"

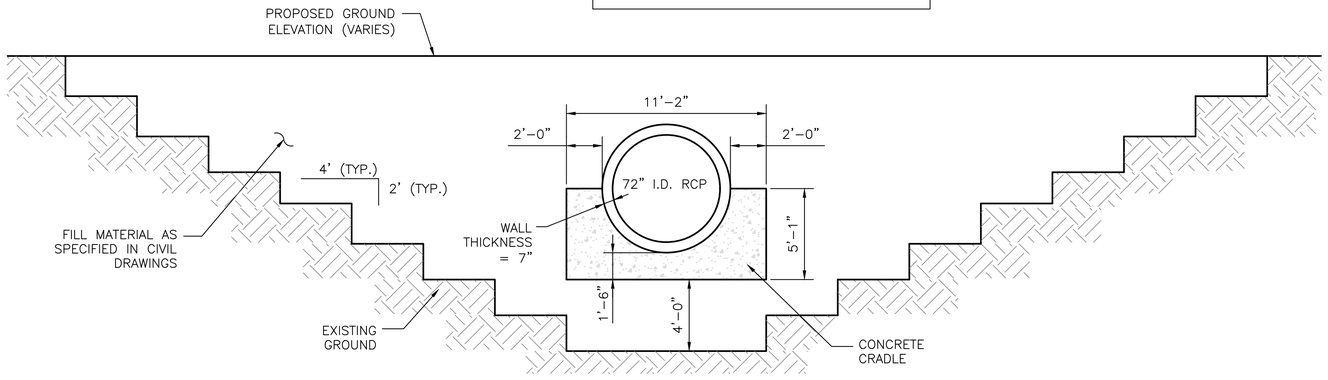
SCALE: ½"=1'-0"

TRASH RACK CONSTRUCTION NOTES:

1. ENTIRE TRASH RACK ASSEMBLY SHALL BE SHOP FABRICATED AND HOT-DIPPED GALVANIZED PER ASTM A123 AFTER FABRICATION.
2. ALL STEEL ANGLES SHALL CONFORM TO ASTM A36.
3. REINFORCING STEEL SHALL BE DEFORMED AND CONFORM TO ASTM A615, GRADE 60.
4. TRASH RACK SHALL BE CENTERED OVER THE OPENING.
5. REBAR SHALL BE WELDABLE STEEL CONFORMING TO ASTM A706.
6. SHOP DRAWING OF TRASH RACK SHALL BE SUBMITTED TO AND APPROVED BY MDE DAM SAFETY DIVISION AND THE ENGINEER BEFORE CONSTRUCTION.

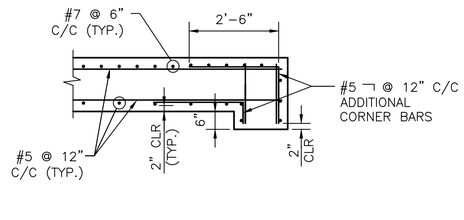
REINFORCED CONCRETE PIPE (RCP) NOTES

1. THE PROPOSED 72" RCP PIPE SHALL CONFORM TO ASTM C361 CLASS C-25.
2. THE PROPOSED 72" RCP FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM C361.



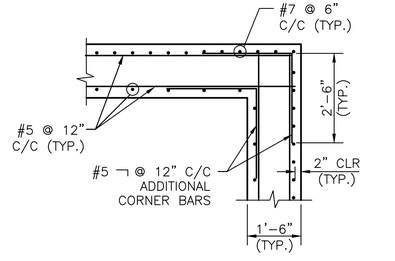
PIPE TRENCH AND CONCRETE CRADLE DETAIL

SCALE: N.T.S.



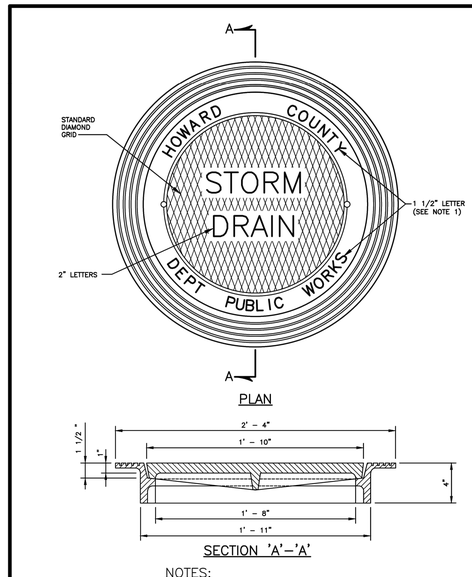
ADDITIONAL CORNER REBAR DETAIL ABOVE WEIRS

SCALE: N.T.S.



ADDITIONAL CORNER REBAR DETAIL BELOW WEIRS

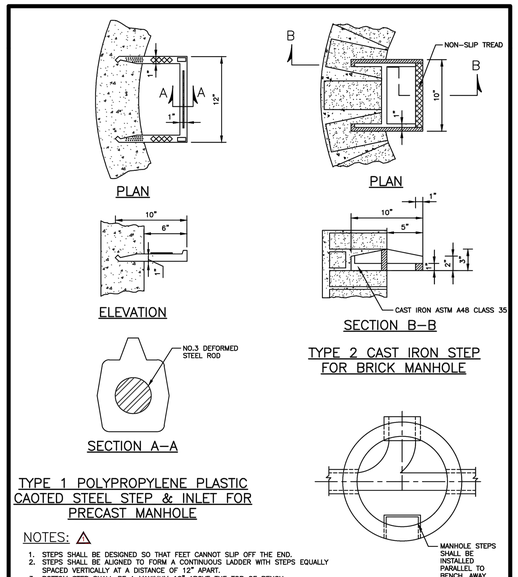
SCALE: N.T.S.



NOTES:

1. THIS LETTERING NOT REQUIRED IN PRIVATE AREAS.
2. COVER TO BE PROVIDED WITH TWO 3/4" HOLES OPPOSITE EACH OTHER.
3. TOTAL WEIGHT OF FRAME AND COVER TO BE NO LESS THAN 185 LBS.

Revised 5/30/2017 Approved 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	Sidewalk Frame & Cover	Detail D-3.91



NOTES:

1. STEPS SHALL BE DESIGNED SO THAT FEET CANNOT SLIP OFF THE END.
2. STEPS SHALL BE ALIGNED TO FORM A CONTINUOUS LADDER WITH STEPS EQUALLY SPACED VERTICALLY AT A DISTANCE OF 12" APART.
3. BOTTOM STEP SHALL BE A MAXIMUM 12" ABOVE THE TOP OF BENCH.
4. THE TOP STEP SHALL BE 2'-0" BELOW THE TOP OF MANHOLE FRAME AND COVER FOR BRICK MANHOLES AND 6" BELOW TOP OF THE PRECAST SECTION OF THE MANHOLE.
5. LINE UP FRAME AND COVER WITH STEPS.
6. STEPS ARE REQUIRED IF THE VERTICAL DISTANCE FROM OPENING TO THE LOWEST PIPE INVERT IS GREATER OR EQUAL TO 3.5'.

Revised 5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	MANHOLE & INLET Steps	Detail G-5.21

100% DESIGN

SW-10

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:

AB CONSULTANTS, INC.
9450 ANNAPOLIS ROAD
LANHAM, MARYLAND 20706
PHONE: (301) 306-3091
FAX: (301) 306-3092

HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE AS SHOWN
DESIGNED BY CP
DRAWN BY CP
CHECKED BY PPP
DATE JAN 2024 SHEET NO. 17 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

POND RETROFIT STRUCTURAL DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

LOG OF BOREHOLE SB- 1

Project No. 2018037.008 | Sheet 1 of 1

CLIENT: STRAUGHAN Environmental
PROJECT: S. Meadow Ct Stormwater Management Pond
ARCHITECT/ENGINEER:
SITE: Howard County, Maryland

SURFACE ELEV.: **357.0** ft.

DEPTH (FT)	GRAPHIC LOG	SAMPLES: BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	TESTS: MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.3										3" Topsoil
0.5										Moist, Firm, Brown, SANDY CLAY (CL), with mica
3.0		3-3-4 N=7	1	SS	18/18 100%	20				
3.0										Moist, Medium Dense to Loose, Brown and Tan, SILTY SAND (SM), with mica
5		6-6-9 N=15	2	SS	18/18 100%	17			22	
		3-4-3 N=7	3	SS	10/18 56%	16				
8.0										Wet, Loose to Medium Dense, Greenish-Gray, Brown and Tan, SILTY SAND (SM), with gravel and mica
10		2-2-2 N=4	4	SS	16/18 89%	28			24	
15.0		7-8-10 N=18	5	SS	15/18 83%	19				
15										End of Boring @ 15 ft
										Borehole was backfilled after 24-hour water level reading

WATER LEVEL OBSERVATIONS

WL	▽ 7.5	@ Drilling	
WL	▼ 6.5	@ 24 hr	

AB Consultants, Inc.
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/6/21	FINISHED:	12/6/21
DRILL CO.:	ABC	DRILL RIG:	CME 550
DRILLER:	AE	ASST DRILLER:	
LOGGED BY:		APPROVED:	

SOILS LOG ABB 20180037.008 S. MEADOW CT POND.GPJ AB_CORE.GDT 12/7/22

LOG OF BOREHOLE SB- 2

Project No. 2018037.008 | Sheet 1 of 1

CLIENT: STRAUGHAN Environmental
PROJECT: S. Meadow Ct Stormwater Management Pond
ARCHITECT/ENGINEER:
SITE: Howard County, Maryland

SURFACE ELEV.: **350.0** ft.

DEPTH (FT)	GRAPHIC LOG	SAMPLES: BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	TESTS: MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.3										3" Topsoil
0.5										Moist, Loose to Very Loose, Brown and Gray, CLAYEY SAND (SC), with mica and gravel
		3-3-4 N=7	1	SS	16/18 89%	20				LL = 38 PL = 19 PI = 19
		2-3-5 N=8	2	SS	2/18 11%	30				
5		WOH-1-1 N=2	3	SS	15/18 83%	24			46	
11.0		1-2-1 N=3	4	SS	16/18 89%	26				
11.0										Moist, Loose, Gray, SILTY SAND (SM), with mica
10										
15.0		4-5-4 N=9	5	SS	16/18 89%	14				
15										End of Boring @ 15 ft
										Borehole was backfilled after 24-hour water level reading

WATER LEVEL OBSERVATIONS

WL	Dry	@ Drilling	
WL	Dry, caved-in at 10.5	@ 24 hr	

AB Consultants, Inc.
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/6/21	FINISHED:	12/6/21
DRILL CO.:	ABC	DRILL RIG:	CME 550
DRILLER:	AE	ASST DRILLER:	
LOGGED BY:		APPROVED:	

SOILS LOG ABB 20180037.008 S. MEADOW CT POND.GPJ AB_CORE.GDT 12/7/22

LOG OF BOREHOLE SB- 3

Project No. 2018037.008 | Sheet 1 of 1

CLIENT: STRAUGHAN Environmental
PROJECT: S. Meadow Ct Stormwater Management Pond
ARCHITECT/ENGINEER:
SITE: Howard County, Maryland

SURFACE ELEV.: **354.0** ft.

DEPTH (FT)	GRAPHIC LOG	SAMPLES: BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	TESTS: MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.3										3" Topsoil
0.5										Moist, Loose, Dark Brown and Greenish-Gray, SANDY SILT (ML), with mica
		3-3-3 N=6	1	SS	18/18 100%	36				
		2-3-3 N=6	2	SS	3/18 17%	40				
5.5										Moist, Firm, Tan, SANDY CLAY (CL), with mica
5		4-7-8 N=15	3	SS	8/18 44%	25				LL = 54 PL = 26 PI = 28
8.0										Wet, Loose to Medium Dense, Gray, SILTY SAND (SM), with mica and gravel
10		3-4-5 N=9	4	SS	10/18 56%	18			17	
15		3-3-4 N=7	5	SS	12/18 67%	22				
20.0		6-9-7 N=16	6	SS	13/18 72%	20				
20										End of Boring @ 20 ft
										Borehole was backfilled after 24-hour water level reading

WATER LEVEL OBSERVATIONS

WL	▽ 12	@ Drilling	
WL	▼ 9.5	@ 24 hr	

AB Consultants, Inc.
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/6/21	FINISHED:	12/6/21
DRILL CO.:	ABC	DRILL RIG:	CME 550
DRILLER:	AE	ASST DRILLER:	
LOGGED BY:		APPROVED:	

SOILS LOG ABB 20180037.008 S. MEADOW CT POND.GPJ AB_CORE.GDT 12/7/22

LOG OF BOREHOLE SB- 4

Project No. 2018037.008 | Sheet 1 of 1

CLIENT: STRAUGHAN Environmental
PROJECT: S. Meadow Ct Stormwater Management Pond
ARCHITECT/ENGINEER:
SITE: Howard County, Maryland

SURFACE ELEV.: **360.5** ft.

DEPTH (FT)	GRAPHIC LOG	SAMPLES: BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	TESTS: MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.3										3" Topsoil
0.5										Moist, Loose, Tan, SILTY SAND (SM), with mica and gravel
		2-2-3 N=5	1	SS	18/18 100%	23				LL = NP PL = NP PI = 0
3.0										Moist, Loose, Brown and Dark Brown, SILTY SAND (SM), with mica
5		2-2-3 N=5	2	SS	18/18 100%	23				
		2-1-3 N=4	3	SS	18/18 100%	36			24	
		2-3-4 N=7	4	SS	16/18 89%	25				
10										
15.0		4-3-5 N=8	5	SS	18/18 100%	25				
15										End of Boring @ 15 ft
										Borehole was backfilled after 24-hour water level reading

WATER LEVEL OBSERVATIONS

WL	▽ 12	@ Drilling	
WL	Dry, caved-in at 7.5	@ 24 hr	

AB Consultants, Inc.
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/6/21	FINISHED:	12/6/21
DRILL CO.:	ABC	DRILL RIG:	CME 550
DRILLER:	AE	ASST DRILLER:	
LOGGED BY:		APPROVED:	

SOILS LOG ABB 20180037.008 S. MEADOW CT POND.GPJ AB_CORE.GDT 12/7/22

LOG OF BOREHOLE SB- 5

Project No. 2018037.008 | Sheet 1 of 1

CLIENT: STRAUGHAN Environmental
PROJECT: S. Meadow Ct Stormwater Management Pond
ARCHITECT/ENGINEER:
SITE: Howard County, Maryland

SURFACE ELEV.: **356.0** ft.

DEPTH (FT)	GRAPHIC LOG	SAMPLES: BLOWS/6" N-VALUE RQD	NUMBER	TYPE	IN. RECOVERED IN. DRIVEN	TESTS: MOISTURE (%)	DRY DENSITY (PCF)	Qu (TSF)	% PASSING #200 SIEVE	REMARKS/ ADDITIONAL DATA
0.3										3" Topsoil
0.5										Moist, Very Loose, Brown, SANDY SILT (ML), with mica
		2-2-2 N=4	1	SS	4/18 22%	25				
3.0										Moist, Very Loose to Loose, Brown and Tan, CLAYEY SAND (SC), with mica
5		2-1-2 N=3	2	SS	15/18 83%	21			40	
		1-2-7 N=9	3	SS	18/18 100%	27				
		2-2-3 N=5	4	SS	16/18 89%	25				
10										
12.0										Moist to Wet, Loose to Medium Dense, Dark Brown and Tan, SILTY SAND (SM), with mica
		2-3-4 N=7	5	SS	15/18 83%	25			24	
15										
20.0		6-8-18 N=26	6	SS	15/18 83%	23				
20										End of Boring @ 20 ft
										Borehole was backfilled after 24-hour water level reading

WATER LEVEL OBSERVATIONS

WL	▽ 14	@ Drilling	
WL	Dry, caved-in at 9.5	@ 24 hr	

AB Consultants, Inc.
9450 Annapolis Road
Lanham, MD 20706
Phone: 301-306-3091
Fax: 301-306-3092

STARTED:	12/6/21	FINISHED:	12/6/21
DRILL CO.:	ABC	DRILL RIG:	CME 550
DRILLER:	AE	ASST DRILLER:	
LOGGED BY:		APPROVED:	

SOILS LOG ABB 20180037.008 S. MEADOW CT POND.GPJ AB_CORE.GDT 12/7/22

100% DESIGN

SW-11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION — DATE

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FAX. 301.220.2619
www.stantec.com

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COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

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CONTRACT NO. X-XX-XXX
SCALE AS SHOWN
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DRAWN BY AS/HM
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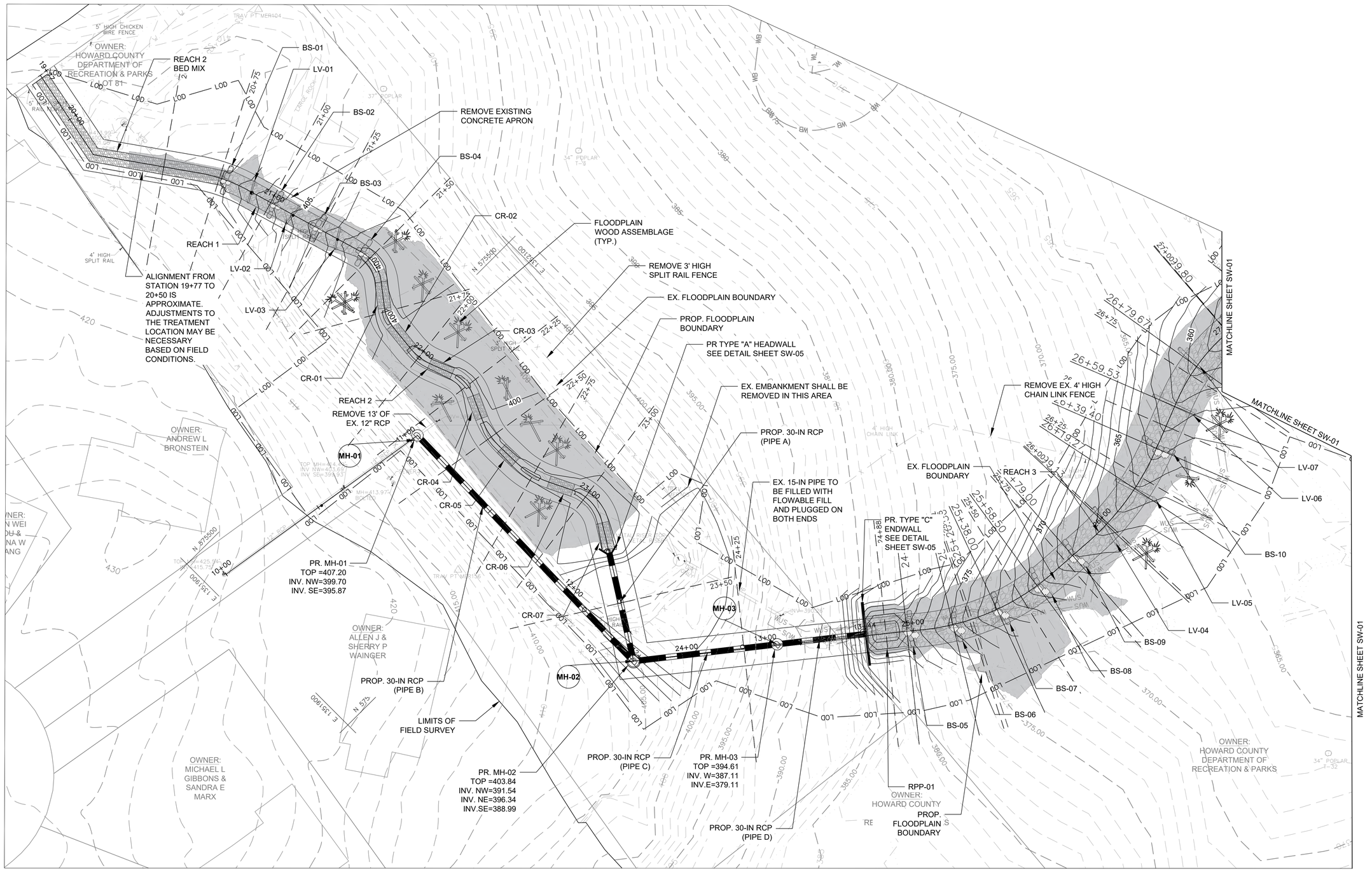
DATE JAN 2024 SHEET NO. 18 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

SOIL BORING LOGS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



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SR-01

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6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

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CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY JC
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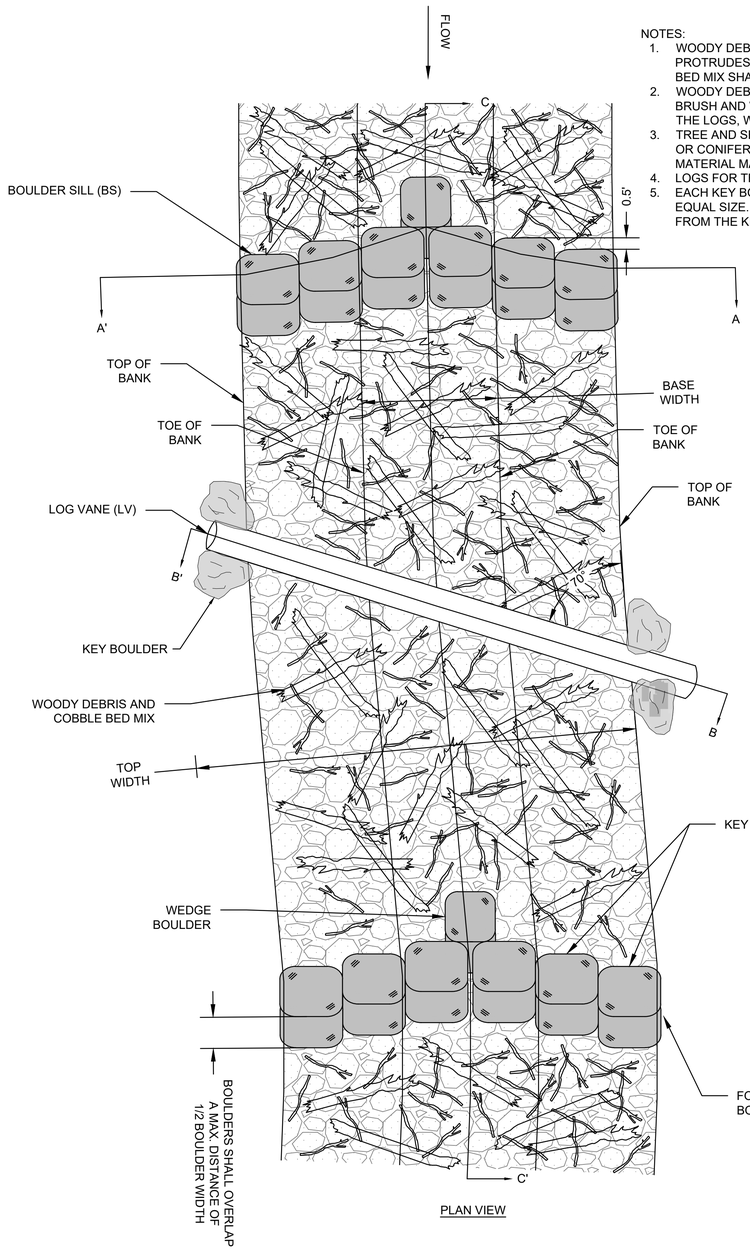
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

WESTERN TRIBUTARY PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



PLAN VIEW

NOTES:

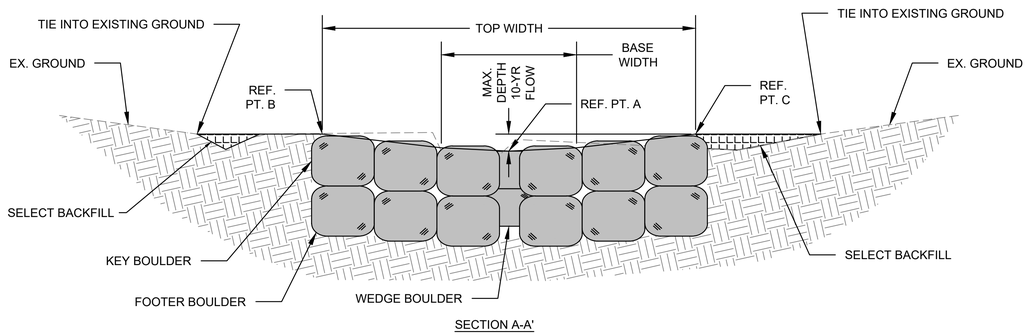
1. WOODY DEBRIS SHALL BE INCORPORATED INTO BED MIX SUCH THAT IT PROTRUDES A MAX. OF 0.3 FT ABOVE THE BED MIX TO CREATE ROUGHNESS. BED MIX SHALL CONSIST OF 20% WOODY DEBRIS.
2. WOODY DEBRIS SHALL CONSIST OF LARGE DEAD BRANCHES, TREE TOPS, BRUSH AND WOODY SHRUBS, OR LIMBS CUT FROM TREES HARVESTED FOR THE LOGS, WITH A 1 IN. MIN MINIMUM AND 5 IN. MAXIMUM DIAMETER.
3. TREE AND SHRUB SPECIES FOR THE WOODY DEBRIS SHALL BE HARDWOODS OR CONIFERS, WITH OR WITHOUT LEAVES OR NEEDLES ATTACHED, AND THE MATERIAL MAY BE A VARIETY OF SIZES.
4. LOGS FOR THE LOG VANES SHALL BE 12-18" IN DIAMETER.
5. EACH KEY BOULDER SHALL BE PLACED ON TOP OF A FOOTER BOULDER OF EQUAL SIZE. THE FOOTER BOULDER SHOULD BE OFFSET DOWNSTREAM FROM THE KEY BOULDER NO MORE THAN 0.5 THE WIDTH OF THE BOULDER.

TABLE 1. CHANNEL SIZING

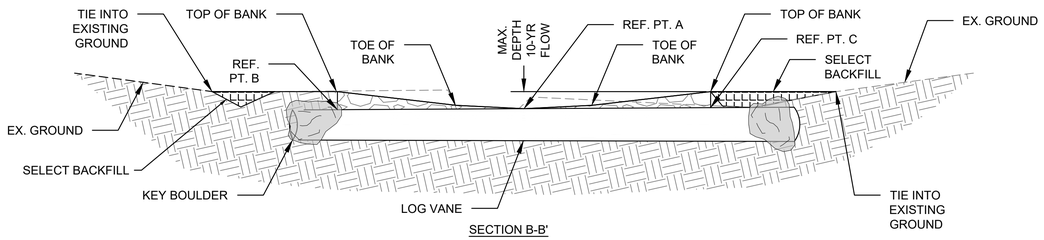
PARAMETER	REACH 1	REACH 3
TOP WIDTH	9.30	14.90
BASE WIDTH	2.20	5.40
MAX. DEPTH	0.43	0.68

TABLE 2. BED MIX/BOULDER SIZING

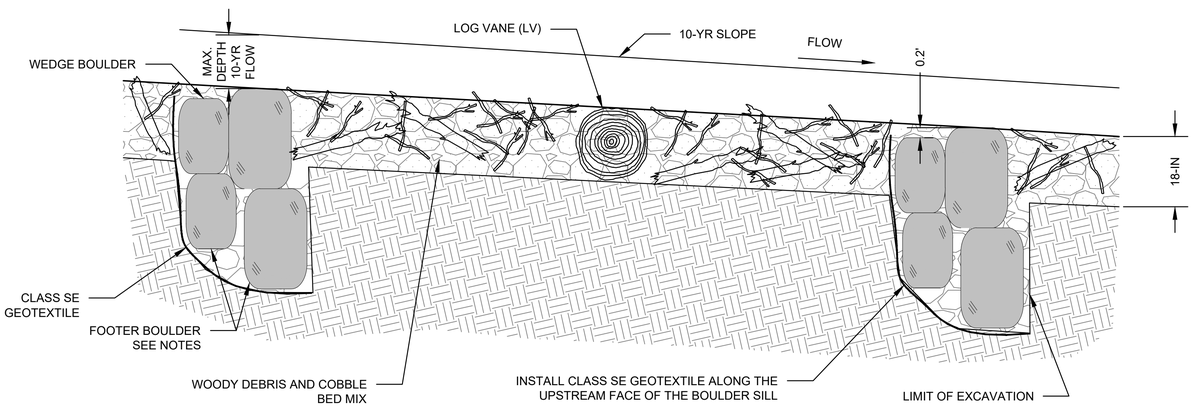
PARAMETER	REACH 1	REACH 3
BRUSH/COBBLE BED MIX (PERCENT BY VOLUME)	30% -10 IN. STONE 30% - 3 IN. STONE 20% - WOOD DEBRIS 20% - TOPSOIL	30% -10 IN. STONE 30% - 3 IN. STONE 20% - WOOD DEBRIS 20% - TOPSOIL
# KEY BOULDERS/SILL	4	6
KEY BOULDER	3 FT X 2.5 FT X 2 FT	3 FT X 2.5 FT X 2 FT
FOOTER BOULDER	3 FT X 2.5 FT X 2 FT	3 FT X 2.5 FT X 2 FT
WEDGE BOULDER	2.5 FT X 2.0 FT X 1.5 FT	2.5 FT X 2.0 FT X 1.5 FT
MAX. ALLOWABLE SHEAR (10-YR)	2.36 PSF	4.42 PSF
MAX. ALLOWABLE VELOCITY (10-YR)	4.42 FPS	4.44 FPS



SECTION A-A'



SECTION B-B'



DETAIL - BOULDER SILL/LOG VANE CASCADE

100% DESIGN

SR-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION — DATE

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LAUREL, MD 20707
TEL. 301.982.2800
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DATE JAN 2024 SHEET NO. 20 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

STREAM DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

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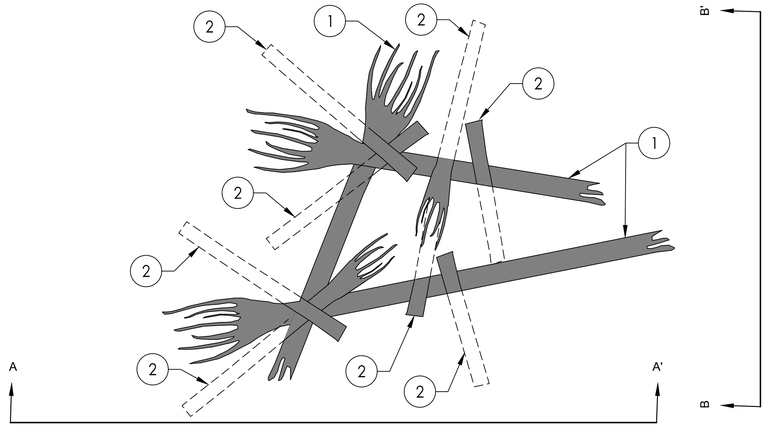
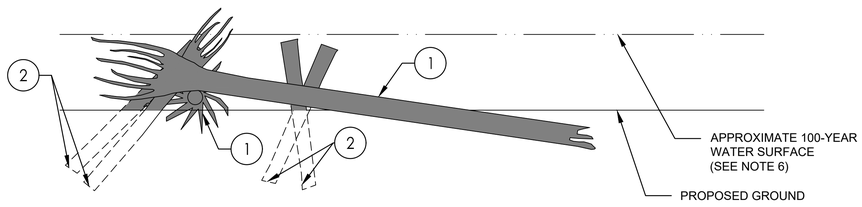
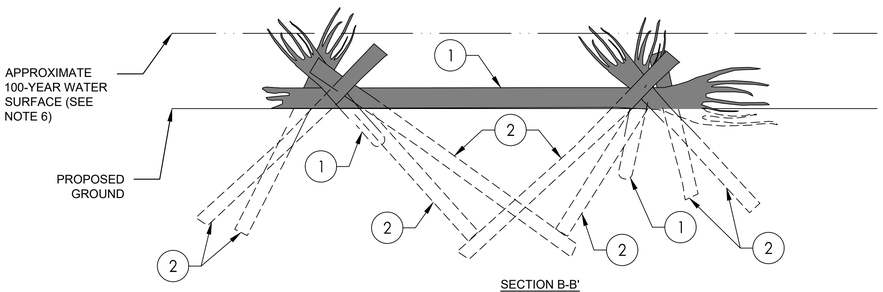


PLAN VIEW



SECTION A-A'



SECTION B-B'

LOG/WOOD SCHEDULE			
LOG NUMBER	LOG TYPE	LOG SIZE	QUANTITY PER STRUCTURE
1	KEY	18-28" DIA. X 10-20' LONG, WITH ROOTWAD	3
2	PILE	12-18" DIA. X 6-12' LONG, WITH ROOTWAD WHENEVER POSSIBLE	8

NOTES:

1. ALL LOG AND WOOD MATERIALS SHALL BE SUPPLIED BY THE CONTRACTOR.
2. ALL KEY LOGS SHALL BE PLACED ON THE FLOODPLAIN SURFACE. NO EXCAVATION OR BURIAL OF LOGS SHALL BE CONDUCTED.
3. PILES SHALL BE DRIVEN OR PUSHED INTO THE GROUND WITHOUT EXCAVATION.
4. ALL EXPOSED LOG ENDS SHALL HAVE BROKEN ENDS RATHER THAN SAW CUT ENDS.
5. FLOODPLAIN WOOD ASSEMBLAGE DETAIL IS TYPICAL AND IS INTENDED TO BE CONFIGURED IN MULTIPLE ORIENTATIONS AS DIRECTED BY THE ENGINEER.
6. 100-YEAR WATER SURFACE ELEVATION IS APPROXIMATELY 0.5 FEET ABOVE PROPOSED FLOODPLAIN GROUND SURFACE, DEPENDING ON LOCATION WITHIN THE PROJECT AREA.

DETAIL - FLOODPLAIN WOOD ASSEMBLAGE

100% DESIGN

SR-03

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HOWARD COUNTY, MARYLAND

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LAUREL, MD 20707
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FAX. 301.220.2619
www.stantec.com

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COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
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SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

STREAM DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

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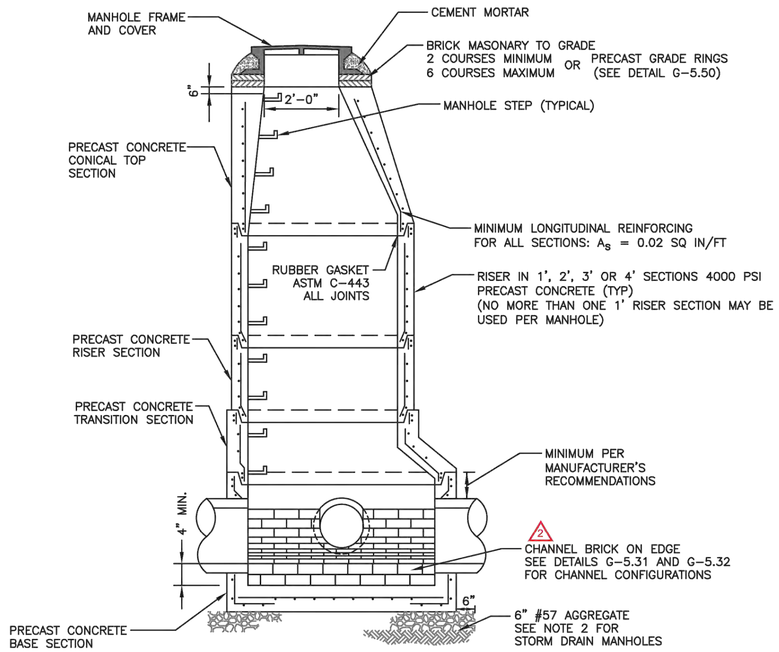


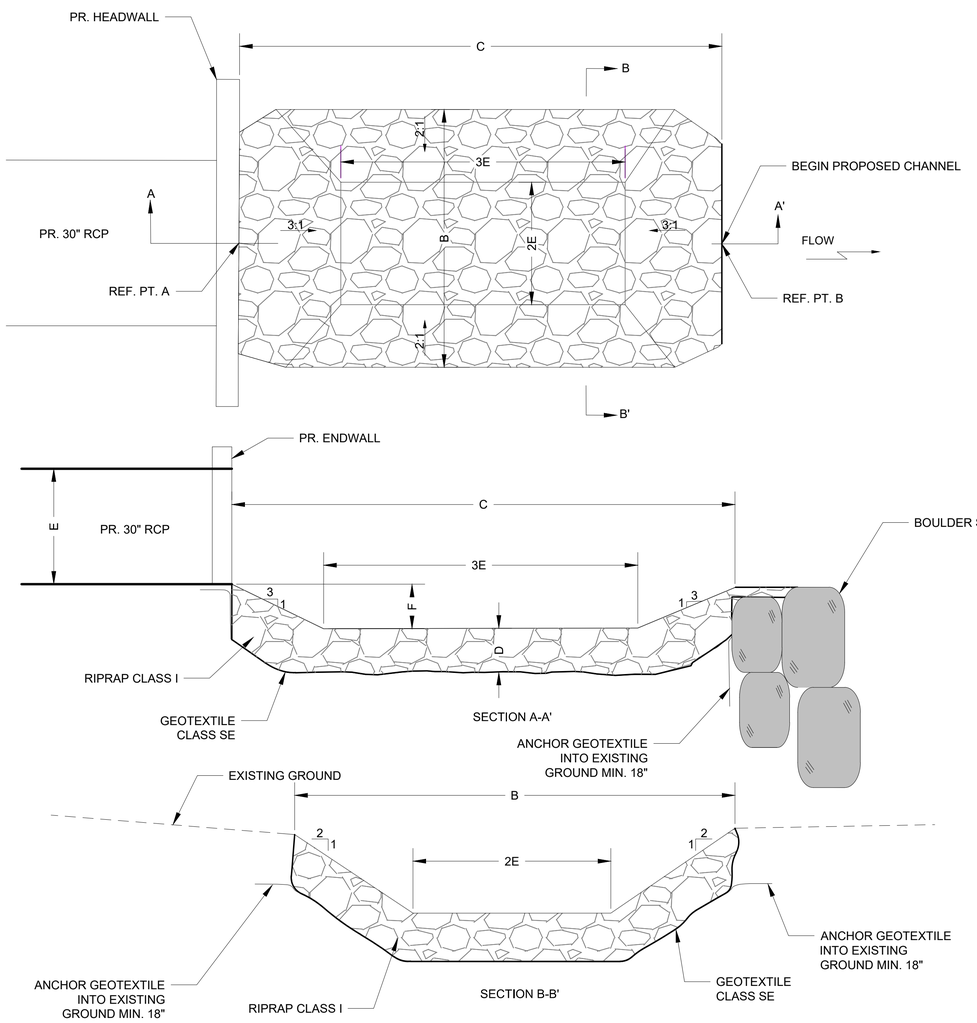
2 SECTION

GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES

1. MANHOLE BASE SECTION SHALL BE BEDDED ON 6-INCH #57 AGGREGATE ON FIRM SUBGRADE.
2. #57 AGGREGATE MATERIAL SHALL BE EXTENDED FROM 6-INCHES UNDERNEATH BOTTOM OF STRUCTURE TO SUBGRADE (STORM ONLY).
3. CONNECTION BETWEEN MANHOLE WALL AND PIPE BE NON-SHRINK GROUT (STORM) OR COMPRESSION TYPE RUBBER GASKET (SANITARY SEWER).
4. MANHOLE STEPS SHALL BE AS INDICATED ON DETAIL G-5.21.
5. MANHOLE COVER SHALL BE AS SPECIFIED ON DETAIL G-5.51, G-5.52, & G-5.53.
6. PROVIDE TWO APPLICATIONS OF BITUMINOUS MATERIAL (MINIMUM 16 MILS DFT) COATING ON EXTERIOR SURFACE OF MANHOLES (SANITARY SEWER ONLY).
2. 7. MANHOLE CHANNELS SHALL BE FORMED TO PROVIDE A SMOOTH HYDRAULIC TRANSITION BETWEEN PIPES. BENCH SHALL BE TO TOP OF PIPE OR AS SHOWN ON CONTRACT DOCUMENTS. SANITARY SEWER MANHOLE CHANNEL AND BENCH SHALL BE PRECAST OR FORMED FROM SEWER BRICK SET ON EDGE. STORM DRAIN MANHOLE CHANNELS SHALL BE SEWER BRICK SET ON EDGE.
8. MANHOLE SHALL BE IN ACCORDANCE WITH ASTM C-478 EXCEPT AS INDICATED.
2. 9. MAXIMUM SANITARY SEWER INVERT DIFFERENTIAL IS 6 INCHES WITHOUT A DROP CONNECTION. SEE DETAIL S-1.32 FOR DROP CONNECTION DETAILS.
10. THE MINIMUM DISTANCE BETWEEN PIPE OPENINGS IN THE WALL OF THE MANHOLE SHALL BE 12 INCHES.
11. A MINIMUM OF 4" SHALL BE PROVIDED BETWEEN MANHOLE FLOOR AND LOWEST PIPE INVERT.
12. PRECAST RINGS MAY BE SUPPLIED IN PLACE OF BRICK MASONRY COURSES. SEE DETAIL G-5.50.
13. MANHOLE INTERMEDIATE LANDINGS SHALL BE AS INDICATED ON DETAIL G-5.16.
2. 14. SEE DETAIL D-4.01 FOR GRANITE BOTTOM WHEN INVERT DIFFERENTIAL IS EQUAL OR GREATER THAN 6' FOR STORM DRAIN MANHOLES.

2. 5/30/2017 Revised 5/1/2014 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	PRECAST MANHOLE Notes	Detail G-5.11

TABLE 1. RIPRAP PLUNGE POOL DIMENSIONS					
STRUCTURE	B	C	D	E	F
RPP-01	15 Ft	18 Ft	19 IN.	30 IN.	1.25 Ft



DETAIL - RIPRAP PLUNGE POOL

NTS

100% DESIGN

SR-04

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

STREAM DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

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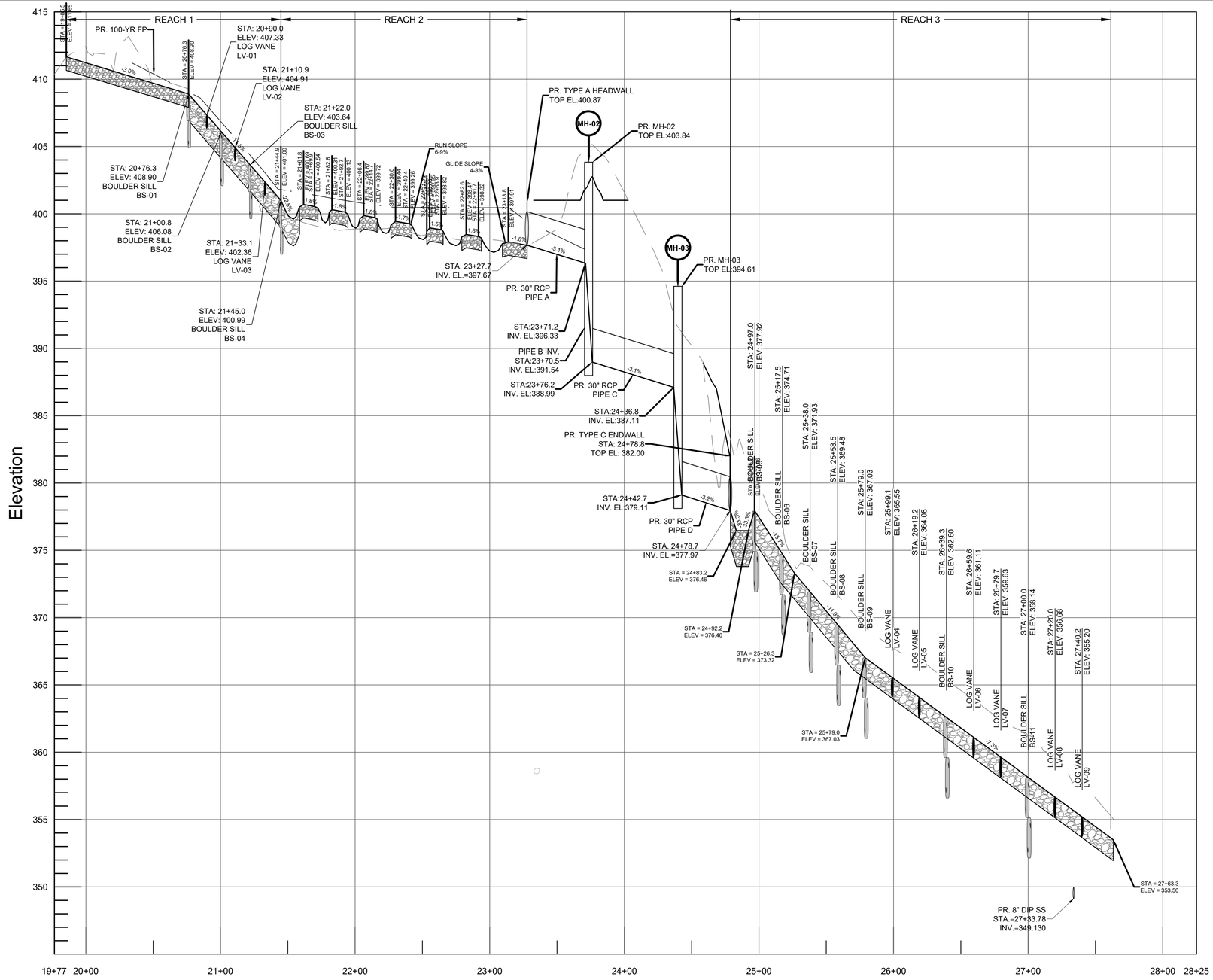

0 4 8 FEET

VERT. SCALE: 1" = 4'

HOR. SCALE: 1" = 40'

100% DESIGN

SR-05

DEPARTMENT OF PUBLIC WORKS
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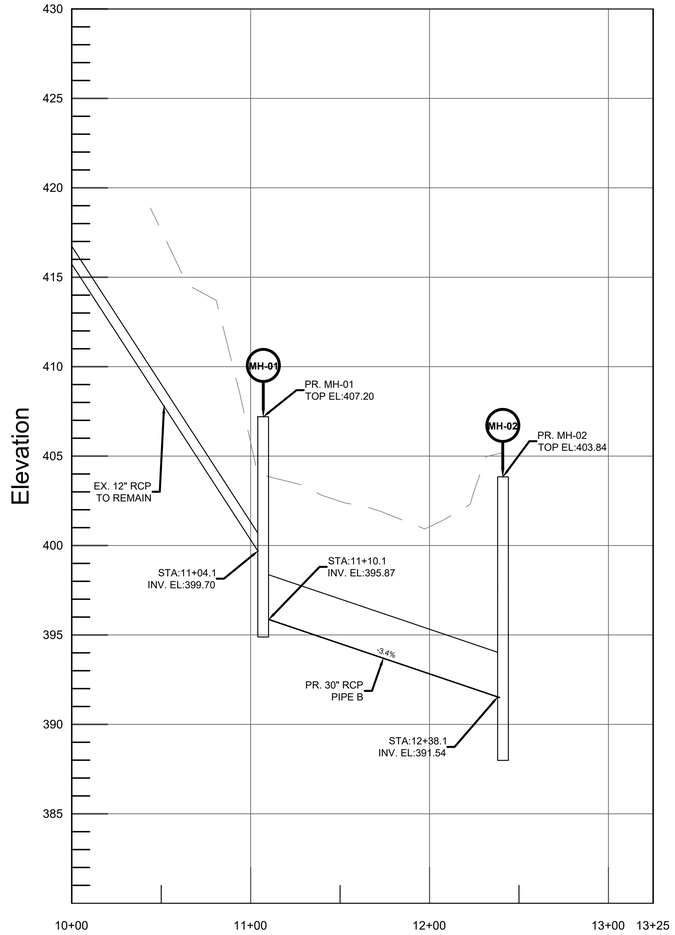
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

WESTERN TRIBUTARY STREAM PROFILE

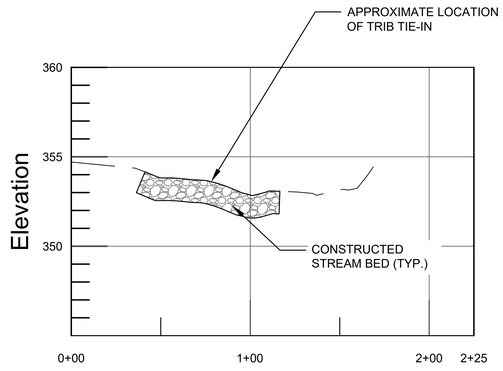
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



STORM DRAIN PROFILE

0 4 8 FEET
VERT. SCALE: 1" = 4'

0 40 80 Feet
SCALE: 1" = 40'



MAINSTEM PROFILE

0 4 8 FEET
VERT. SCALE: 1" = 4'

0 40 80 Feet
SCALE: 1" = 40'

STRUCTURE TABLES

BOULDER SILL (BS)									
	REF. PT. A			REF. PT. B			REF. PT. C		
NO.	STA.	OFF.	EL.	STA.	OFF.	EL.	STA.	OFF.	EL.
BS-01	20+76.3	0	408.9	20+76.8	-4.65	409.33	20+76.8	4.65	409.33
BS-02	21+00.8	0	406.08	21+01.3	-4.65	406.51	21+01.3	4.65	406.51
BS-03	21+22.0	0	403.64	21+22.5	-4.65	404.07	21+22.5	4.65	404.07
BS-04	21+45.0	0	400.99	21+45.5	-4.65	401.42	21+45.5	4.65	401.42
BS-05	24+97.0	0	377.92	24+98.0	-7.45	378.6	24+98.0	7.45	378.6
BS-06	25+17.5	0	374.71	25+18.5	-7.45	375.39	25+18.5	7.45	375.39
BS-07	25+38.0	0	371.93	25+39.0	-7.45	372.61	25+39.0	7.45	372.61
BS-08	25+58.5	0	369.48	25+59.5	-7.45	370.16	25+59.5	7.45	370.16
BS-09	25+79.0	0	367.03	25+80.0	-7.45	367.71	25+80.0	7.45	367.71
BS-10	26+39.3	0	362.6	26+40.3	-7.45	363.28	26+40.3	7.45	363.28
BS-11	27+00.0	0	358.14	27+01.0	-7.45	358.82	27+01.0	7.45	358.62

LOG VANE (LV)									
	REF. PT. A			REF. PT. B			REF. PT. C		
NO.	STA.	OFF.	EL.	STA.	OFF.	EL.	STA.	OFF.	EL.
LV-01	20+90.0	0	407.33	20+88.3	-4.65	407.33	20+91.7	4.65	407.33
LV-02	21+10.9	0	404.91	21+12.6	-4.65	404.91	21+09.2	4.65	404.91
LV-03	21+33.1	0	402.36	21+31.4	-4.65	402.36	21+34.8	4.65	402.36
LV-04	25+99.1	0	365.55	26+00.8	-7.45	365.55	25+97.4	7.45	365.55
LV-05	26+19.2	0	364.08	26+17.5	-7.45	364.08	26+20.9	7.45	364.08
LV-06	26+59.6	0	361.11	26+61.3	-7.45	361.11	26+57.9	7.45	361.11
LV-07	26+79.7	0	359.63	26+78.0	-7.45	359.63	26+81.4	7.45	359.63
LV-08	27+20.0	0	356.68	27+21.7	-7.45	356.68	27+18.3	7.45	356.68
LV-09	27+40.2	0	355.2	27+38.5	-7.45	355.2	27+41.9	7.45	355.2

CONSTRUCTED RIFFLE (CR)												
	REF. PT. A			REF. PT. B			REF. PT. C			REF. PT. D		
NO.	STA.	OFF.	EL.	STA.	OFF.	EL.	STA.	OFF.	EL.	STA.	OFF.	EL.
CR-01	21+58.7	0	400.5	21+61.8	0	400.69	21+69.9	0	400.54	21+72.3	0	400.43
CR-02	21+80.9	0	400.14	21+82.8	0	400.31	21+92.7	0	400.13	21+94.7	0	399.97
CR-03	22+03.5	0	399.62	22+06.4	0	399.87	22+14.7	0	399.72	22+16.4	0	399.62
CR-04	22+26.6	0	399.17	22+30.0	0	399.44	22+40.4	0	399.26	22+42.2	0	399.15
CR-05	22+53.3	0	398.68	22+55.4	0	398.95	22+63.9	0	398.82	22+65.4	0	398.71
CR-06	22+79.3	0	398.28	22+82.6	0	398.47	22+91.7	0	398.32	22+93.8	0	398.21
CR-07	23+09.4	0	397.78	23+13.8	0	397.91	23+27.7	0	397.67	N/A	N/A	N/A

RIPRAP PLUNGE POOL (RPP)						
	REF. PT. A			REF. PT. B		
NO.	STA.	OFF.	EL.	STA.	OFF.	EL.
RPP-01	24+78.7	0	377.97	24+96.8	0	377.97

100% DESIGN

SR-06

DEPARTMENT OF PUBLIC WORKS
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SOUTH MEADOW COURT POND
RETROFIT AND STREAM
STABILIZATION PROJECT
CAPITAL PROJECT D-1159

STORM DRAIN
PROFILE

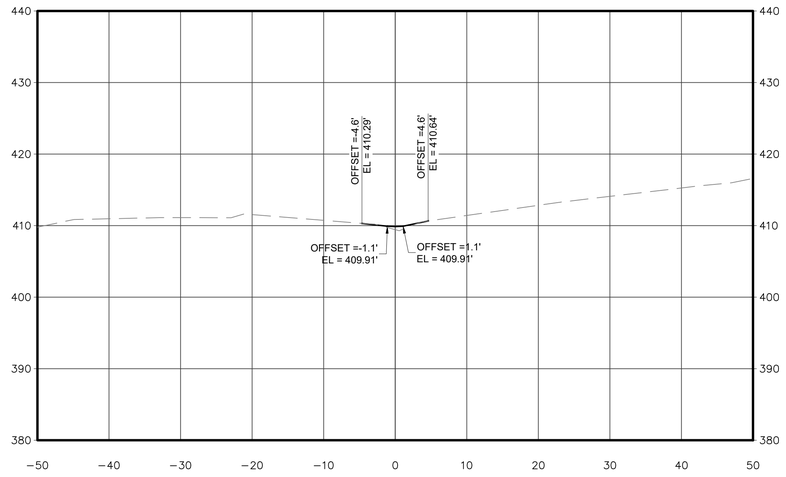
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

LEGEND

EXISTING GROUND

PROPOSED GROUND

STA. 20+50



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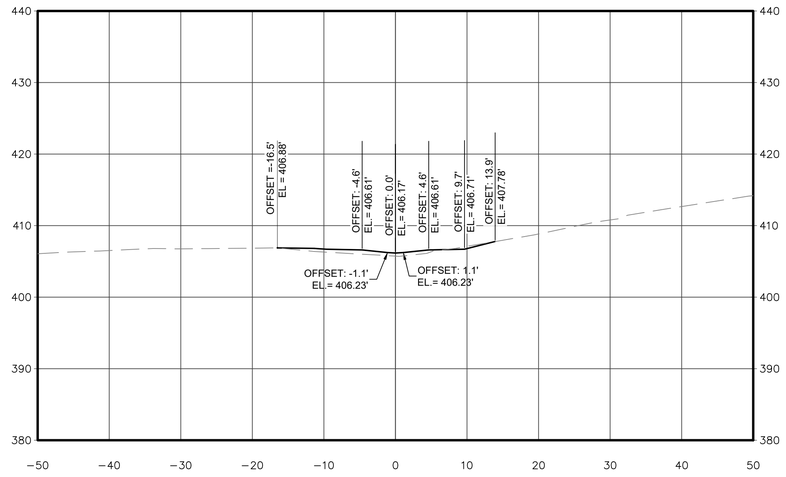

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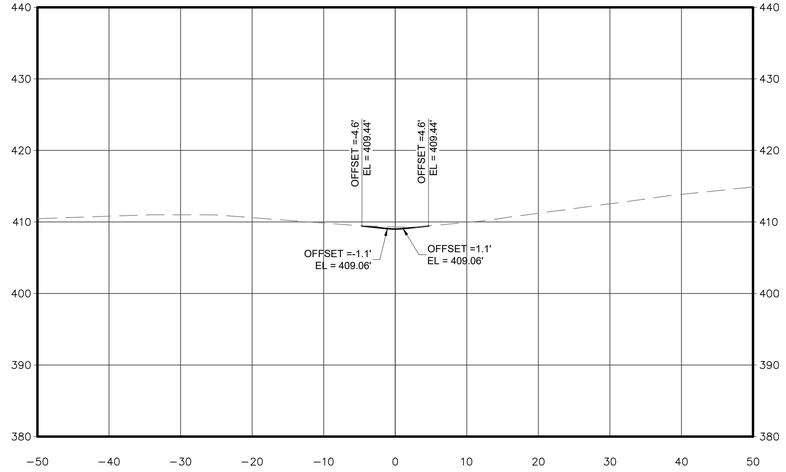

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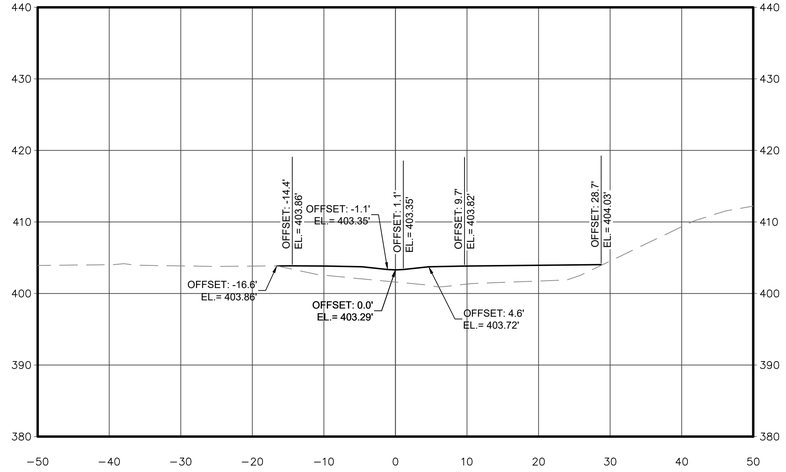

0 10 20 FEET

SCALE: 1" = 10'

100% DESIGN

SR-07

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
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COLUMBIA, MD 21046
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BY	NO.	REVISIONS	DATE

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CONTRACT NO. X-XX-XXX
SCALE 1"=10'
DESIGNED BY
DRAWN BY
CHECKED BY SS
DATE JAN 2024 SHEET NO. 25 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

WESTERN TRIBUTARY CROSS SECTIONS

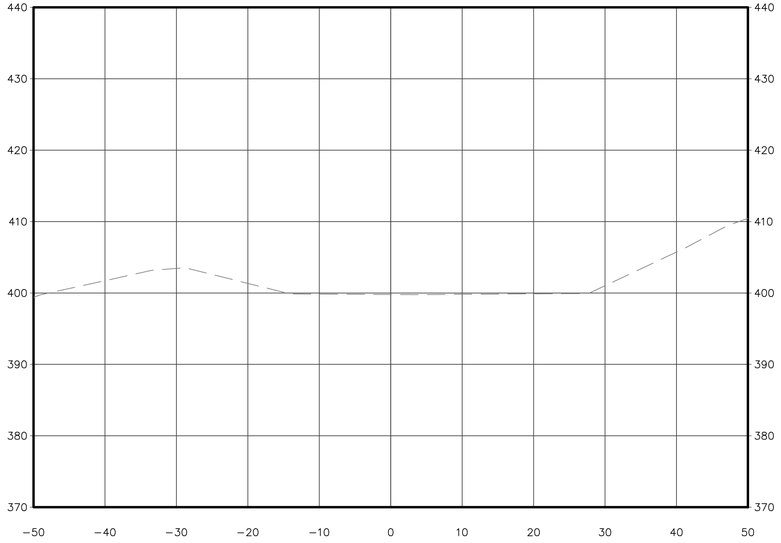
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

LEGEND

EXISTING GROUND

PROPOSED GROUND

STA. 21+50



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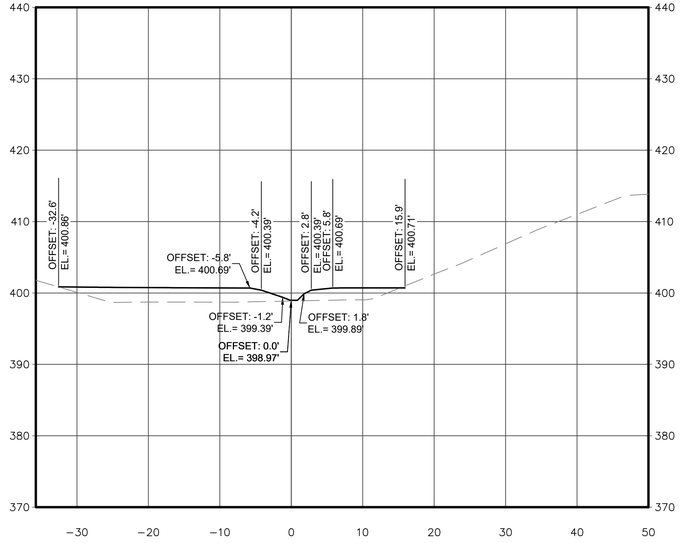

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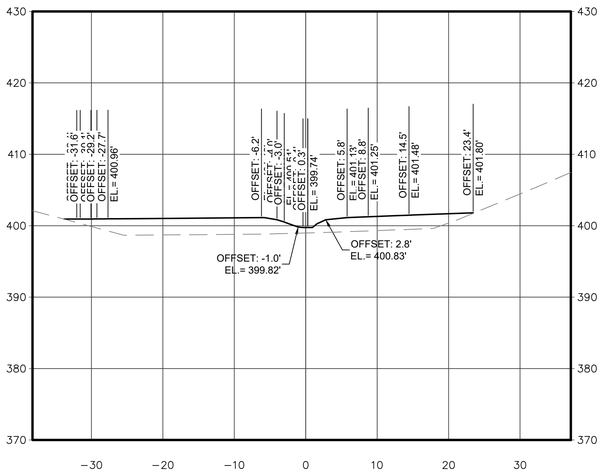

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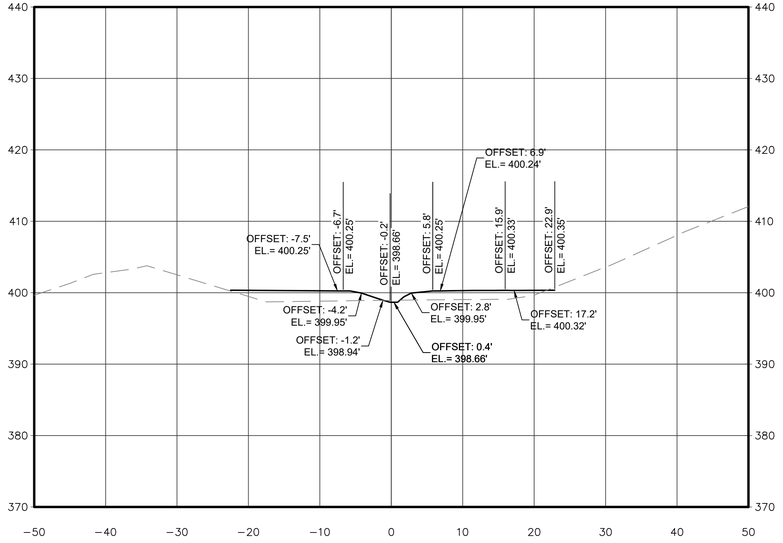

0 10 20 Feet

SCALE: 1" = 10'

100% DESIGN

SR-08

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

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STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
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SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

WESTERN TRIBUTARY CROSS SECTIONS

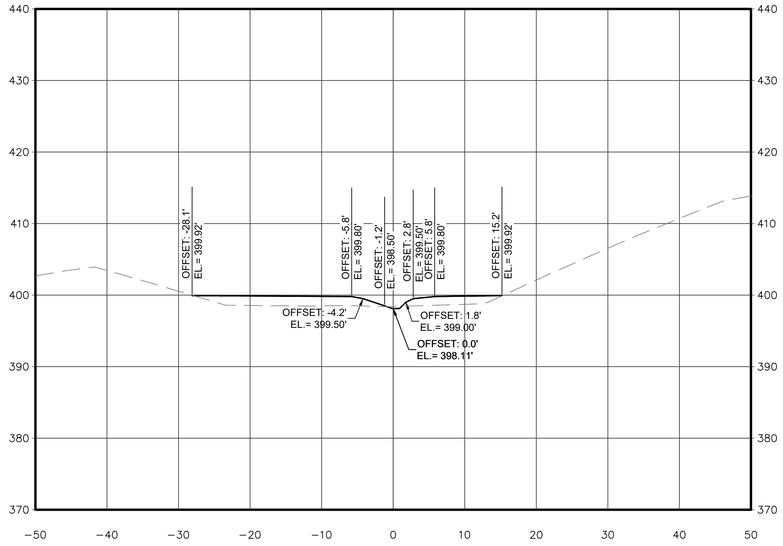
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

LEGEND

EXISTING GROUND

PROPOSED GROUND

STA. 22+50



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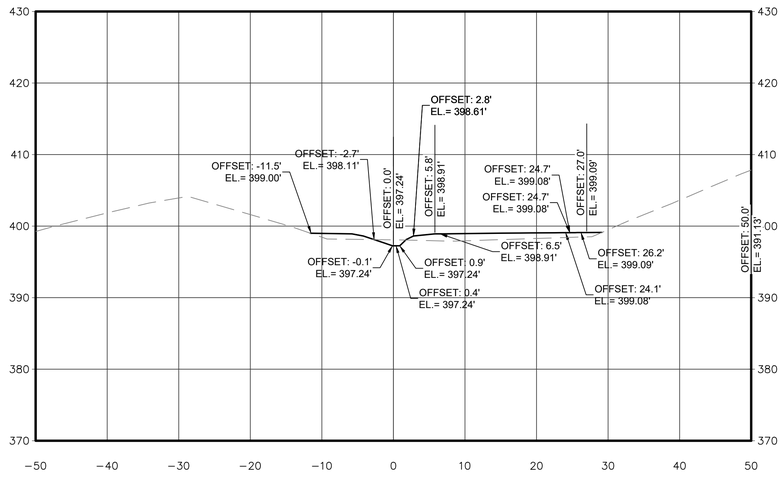

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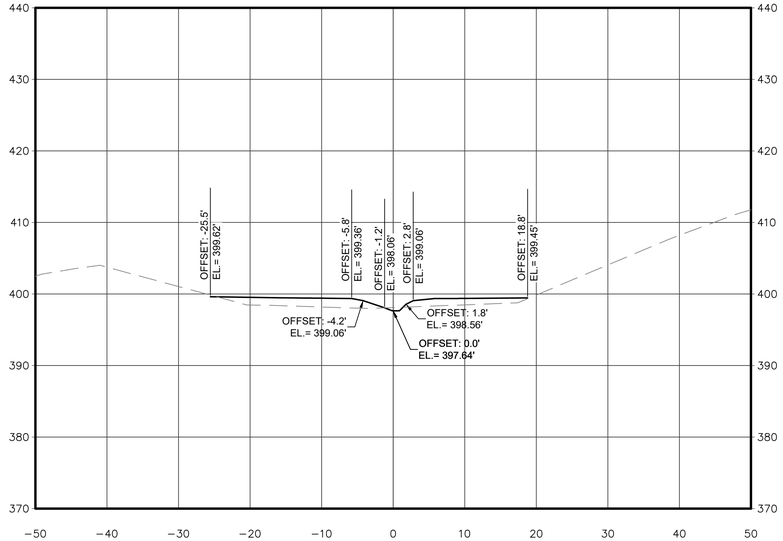

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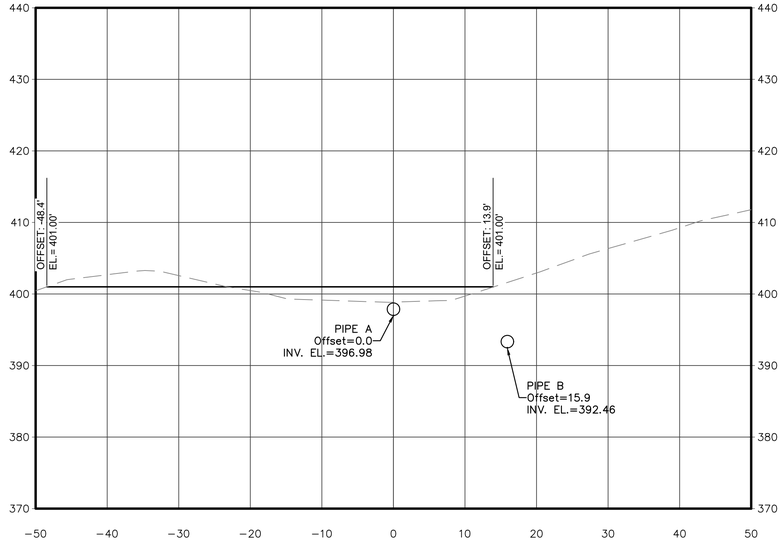

0 10 20 Feet

SCALE: 1" = 10'

100% DESIGN

SR-09

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

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STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
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SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

WESTERN TRIBUTARY CROSS SECTIONS

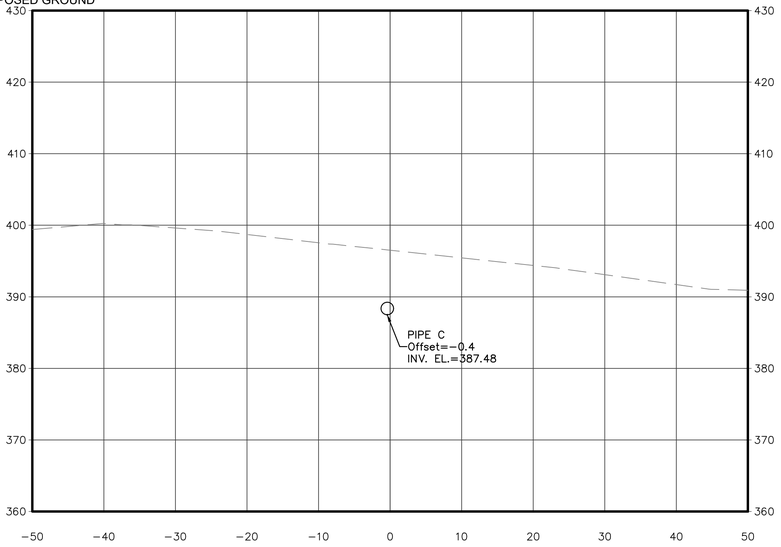
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

LEGEND

EXISTING GROUND

PROPOSED GROUND

STA. 24+25



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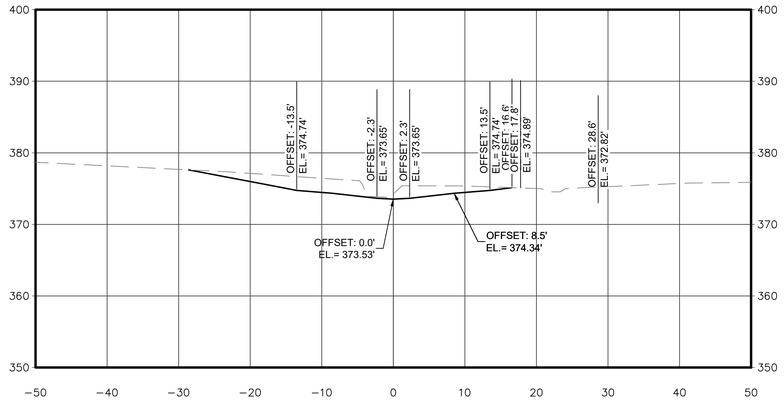

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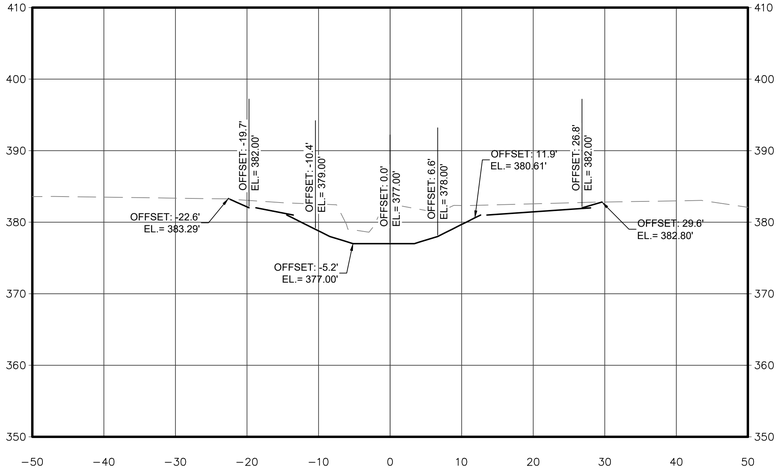

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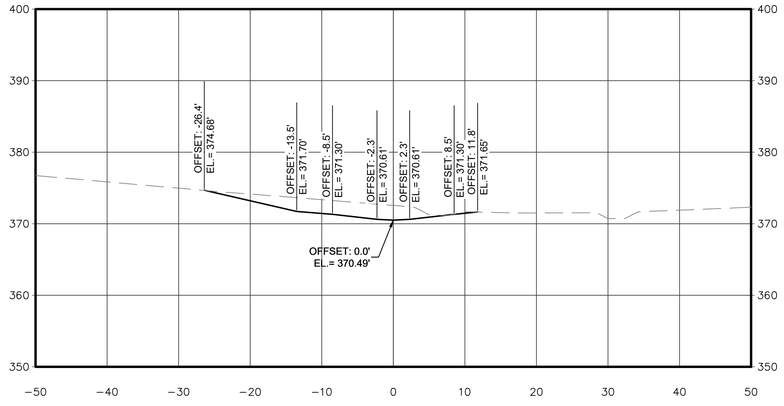

SCALE: 1" = 10'

100% DESIGN

SR-10

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
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TEL. 301.362.9200
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STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
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DATE JAN 2024 SHEET NO. 28 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

WESTERN TRIBUTARY CROSS SECTIONS

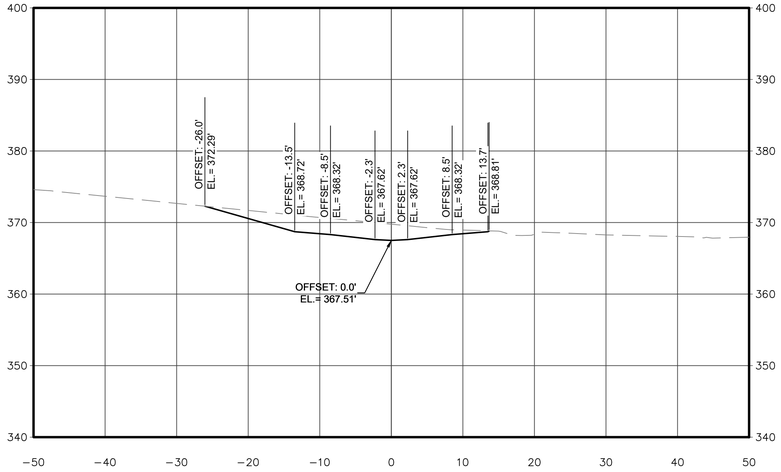
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

LEGEND

EXISTING GROUND

PROPOSED GROUND

STA. 25+75



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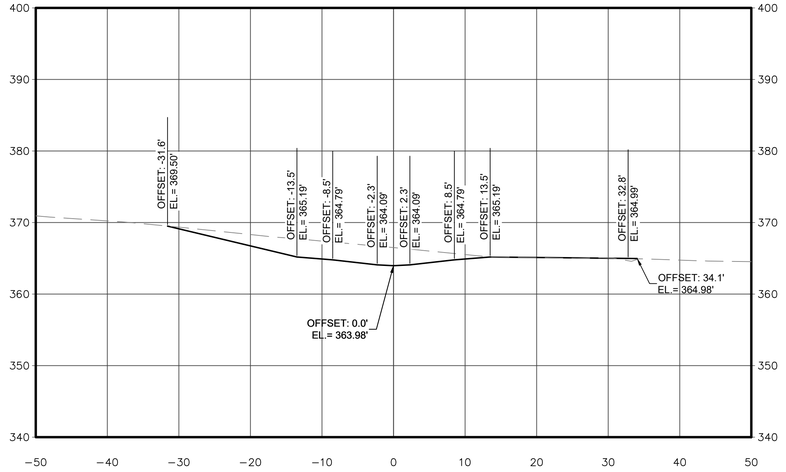

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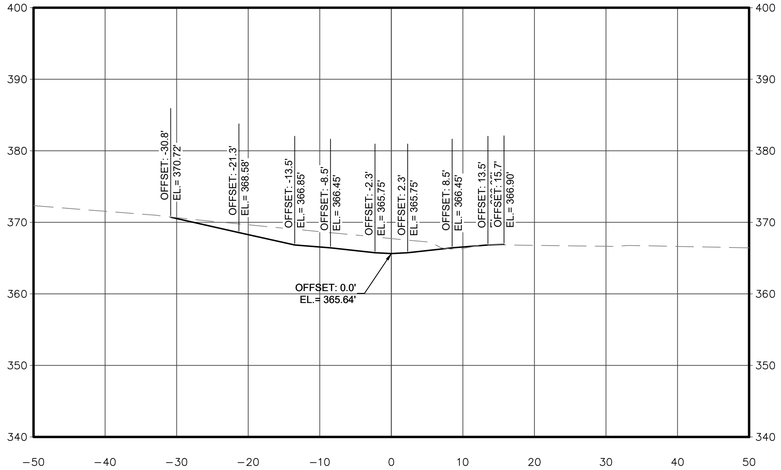

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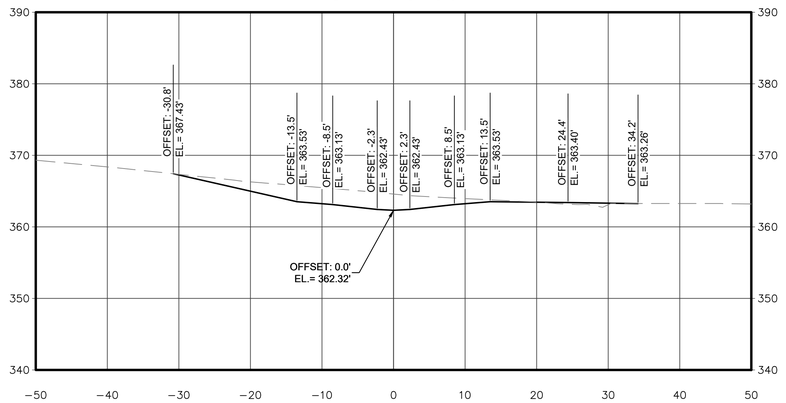

0 10 20 Feet

SCALE: 1" = 10'

100% DESIGN

SR-11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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6110 FROST PLACE
LAUREL, MD 20707
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FAX. 301.220.2619
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BUREAU OF ENVIRONMENTAL SERVICES
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9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
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SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

WESTERN TRIBUTARY CROSS SECTIONS

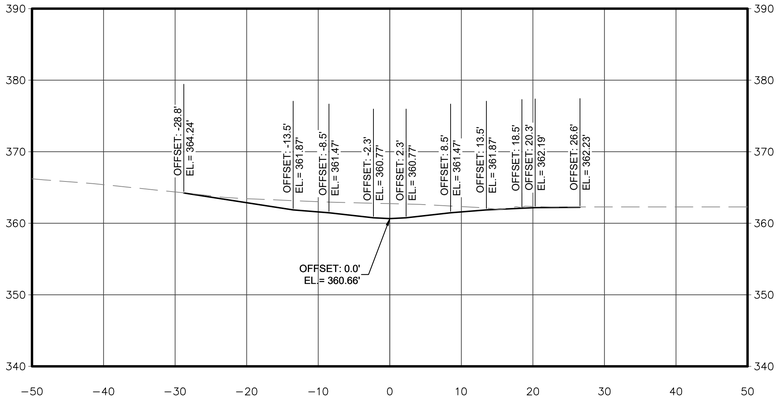
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

LEGEND

EXISTING GROUND

PROPOSED GROUND

STA. 26+75



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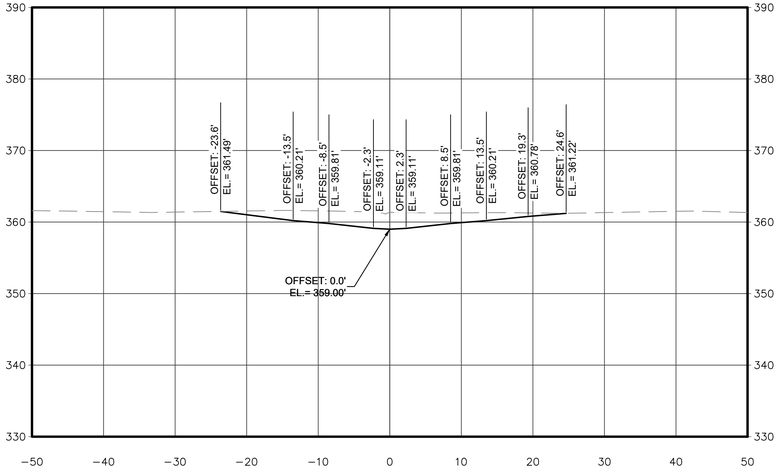

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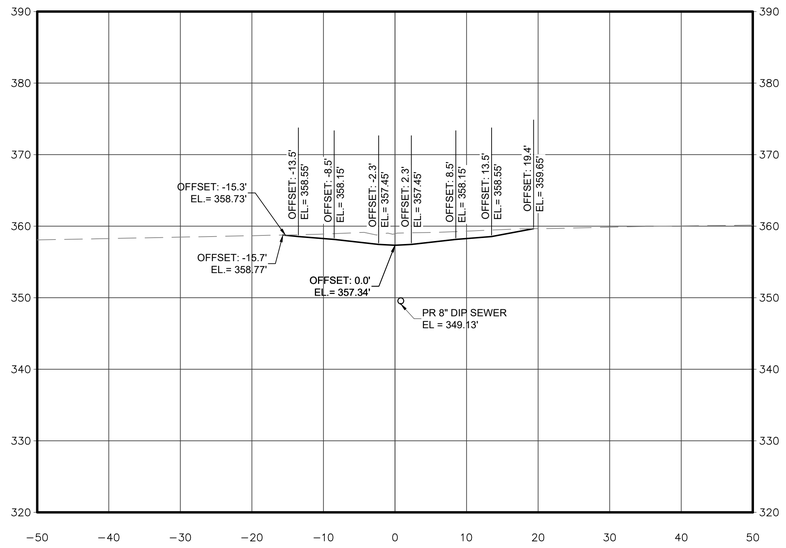
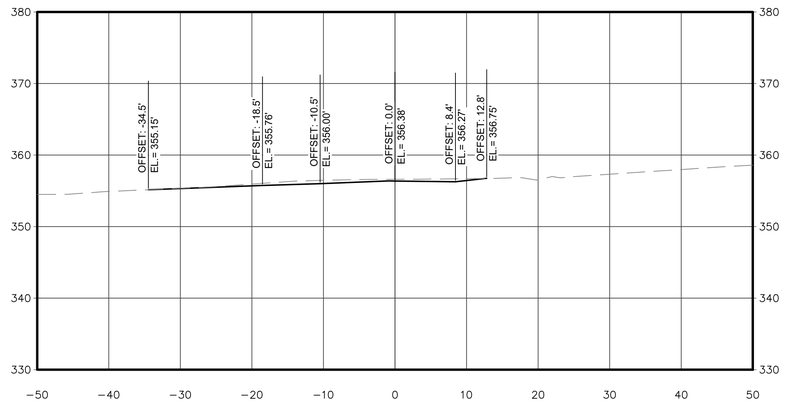


STA. 27+50



SCALE: 1" = 10'

100% DESIGN

SR-12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
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TEL. 301.362.9200
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COLUMBIA, MD 21046
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SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

WESTERN TRIBUTARY CROSS SECTIONS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

HOWARD SOIL CONSERVATION DISTRICT (HSCD)
STANDARD SEDIMENT CONTROL NOTES

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 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:

   a. Prior to the start of earth disturbance,
   b. Upon completion of the installation 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.

   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.

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 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.

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 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).

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:	3.20	Acres
Area Disturbed:	3.20	Acres
Area to be roofed or paved:	0.00	Acres
Area to be vegetatively stabilized:	2.30	Acres
Total Cut:	4,638	Cu. Yds.
Total Fill:	3,682	Cu. Yds.
Offsite waste/borrow area location:	Site with an 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 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).

9. 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.

10. 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 allowed by the CID per the list of HSCD-approved field changes.

11. 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.

12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.

13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.

14. 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.

15. 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

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 and available when the site is active.

B-4-5 STANDARDS AND SPECIFICATIONS

FOR

PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

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

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures

1. General Use

   a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.

   b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.

   c. For sites having disturbed area over 5 acres, use and show the rates recommended by the soil testing agency.

   d. For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary .

2. Turfgrass Mixtures

   a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

   b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.

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

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

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

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

      Notes:
      Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland"

      Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line

c. Ideal Times of Seeding for Turf Grass Mixtures

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

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

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

d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1½ inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

Permanent Seeding Summary

Hardiness Zone (from Figure B.3): 6b **Seed Mixture** (from Table B.3): 1					**Fertilizer Rate (10-20-20)**			**Lime Rate**
No.	**Species**	**Application Rate (lb/ac)**	**Seeding Dates**	**Seeding Depths**	**N**	**P_2O_5**	**K_20**	
1	Switch Grass	10	3/1 TO 6/15	¼- ½ in	45 pounds per acre (1.0 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	90 lb/ac (2 lb/ 1000 sf)	2 tons/ac (90 lb/ 1000 sf)
	Creeping Red Fescue	15	3/1 TO 6/15	¼- ½ in				
	Partridge Pea	2	3/1 TO 6/15	¼- ½ in				

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

1. General Specifications

   a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.

   b. Sod must be machine cut at a uniform soil thickness of ¾ inch, plus or minus ¼ inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.

   c. Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.

   d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

   e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

2. Sod Installation

   a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.

   b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.

   c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.

   d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance

   a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.

   b. After the first week, sod watering is required as necessary to maintain adequate moisture content.

   c. Do not mow until the sod is firmly rooted. No more than ⅓ of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

B-4-4 STANDARDS AND SPECIFICATIONS

FOR

TEMPORARY STABILIZATION

Definition

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

Purpose

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

Conditions Where Practice Applies

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

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

Temporary Seeding Summary

Hardiness Zone (from Figure B.3): 6b **Seed Mixture** (from Table B.1):					**Fertilizer Rate (10-20-20)**	**Lime Rate**
No.	**Species**	**Application Rate (lb/ac)**	**Seeding Dates**	**Seeding Depths**		
	Annual Ryegrass	**40 LB/AC**	**03/15-05/15; 08/01-10/15**	**0.5"**	436 lb/ac (10 lb/1000 sf)	2 tons/ac (90 lb/1000 sf)
	Pearl Millet	**30 LB/AC**	**05/16-07/31**	**0.5"**		
	Cereal Rye	**112 LB/AC**	**03/01-05/15; 08/01-11/15**	**0.5"**		

SEQUENCE OF CONSTRUCTION

NOTES:

1. REFER TO NPDES PERMIT. OBTAIN HOWARD COUNTY GRADING PERMIT PRIOR TO CONSTRUCTION. THERE CAN BE NO IN-STREAM CONSTRUCTION BETWEEN MARCH 1st AND MAY 31st OF EACH YEAR. OBTAIN MDE PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL SCHEDULE AN ON-SITE MEETING WITH THE MDE SEDIMENT CONTROL INSPECTOR, THE COUNTY PROJECT MANAGER, PARKS PROJECT MANAGER, AND THE DESIGN ENGINEER AT LEAST SEVEN (7) DAYS PRIOR TO THE BEGINNING OF DISTURBANCE ACTIVITIES.
2. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO THE BEGINNING OF EXCAVATION WORK.
3. THE CONTRACTOR SHALL STAY WITHIN THE LIMIT OF DISTURBANCE AS SHOWN ON THE PLANS AND MINIMIZE DISTURBANCE WITHIN THE WORKING AREA WHENEVER POSSIBLE.
4. CONTRACTOR SHALL TAKE EXTRA PRECAUTION WHEN TRANSPORTING MATERIALS FROM THE STORAGE AREA TO THE CONSTRUCTION SITE. CONTRACTOR SHALL MINIMIZE IMPACT ON THE EXISTING TREES, WETLANDS, WATER OF THE U.S., EXISTING UTILITIES AND OTHER EXISTING FEATURES.
5. WITH THE APPROVAL OF THE INSPECTOR, PHASES/TASKS CAN BE WORKED ON CONCURRENTLY WITH OTHER PHASES/TASKS PROVIDED THE SEDIMENT AND EROSION CONTROLS FUNCTION AS INTENDED AND THE PROJECT ENGINEER HAS APPROVED OF THE CHANGE.
6. PROVIDE A COPY OF THE POND AS-BUILT APPROVAL LETTER FROM HSCD TO THE CID INSPECTOR.

PHASE I - SEWER RELOCATION - DURATION: 12 DAYS

7. INSTALL STABILIZED CONSTRUCTION ENTRANCE, SILT FENCE AND TEMPORARY ACCESS BRIDGE. DURATION: 3 DAYS
8. CLEAR AND GRUB AS NECESSARY TO PROVIDE ACCESS TO EXISTING SANITARY SEWER FOR LINING. MINIMIZE EARTH DISTURBANCE AND IMPACTS TO EXISTING TREES TO THE MAXIMUM EXTENT PRACTICABLE. DURATION: 2 DAYS
9. LINE EXISTING SEWER AND INSTALL NEW SANITARY SEWER. STORE ALL SPOILS ON THE UPSTREAM SIDE OF THE TRENCH AND PERFORM SAME DAY STABILIZATION. INSTALL THE PUMP AROUND AND SAND BAGS BEFORE INSTALLING THE NEW SANITARY SEWER CROSSING THE MAINSTEM STREAM AND REMOVE PUMP AROUND AND SANDBAGS AFTER INSTALLATION AND STABILIZATION IS COMPLETED WITH THE PERMISSION OF THE MDE INSPECTOR. THE PUMP AROUND PRACTICE SHALL ONLY BE IN PLACE DURING THE WORKDAY, AND THE STREAM SHALL BE STABILIZED AT THE END OF EACH WORK DAY. DURATION: 7 DAYS.

PHASE II - EXISTING SWM POND DECOMMISSIONING & WESTERN TRIBUTARY STREAM RESTORATION - DURATION: 70 DAYS

10. INSTALL EARTH DIKE, PIPE SLOPE DRAIN, ROCK OUTLET PROTECTION, AND ADDITIONAL SILT FENCE NEAR THE CONSTRUCTION ENTRANCE. PERFORM SAME DAY STABILIZATION WHILE INSTALLING EROSION AND SEDIMENT CONTROL MEASURES. DURATION: 2 DAYS
11. CLEAR AND GRUB AS NECESSARY TO INSTALL THE PHASE II ACCESS ROAD. DURATION: 10 DAYS
12. INSTALL THE ACCESS ROAD FROM THE END OF THE EXISTING GRAVEL ROAD TO THE WORK AREA AROUND THE EXISTING SWM POND. WHEN THE ACCESS ROAD REACHES THE EXISTING SWM POND, DRAIN THE POND, IF ANY WATER IS PRESENT, AND REMOVE FENCE AS NECESSARY TO ALLOW THE ACCESS ROAD TO CROSS THE POND EMBANKMENT AND RUN ALONG THE POND BOTTOM. DURATION: 7 DAYS
13. CLEAR AND GRUB AS NECESSARY TO INSTALL ALL OTHER PHASE II EROSION AND SEDIMENT CONTROL MEASURES AND STOCKPILE AREA. INSTALL EROSION AND SEDIMENT CONTROL MEASURES ONCE THE CLEARING AND GRUBBING ARE COMPLETE. DURATION: 2 DAYS
14. BEGINNING FROM THE UPSTREAM END OF THE PHASE II WORK AREA AND WORKING DOWNSTREAM, BEGIN THE PHASE II STREAM STABILIZATION WORK. STABILIZE THE WORK AREA AT THE END OF EACH DAY. DO NOT DISTURB MORE THAN CAN BE STABILIZED IN ONE DAY. DURATION: 10 DAYS
15. ONCE THE STREAM STABILIZATION WORK REACHES THE SOUTHERN EMBANKMENT FOR THE EXISTING SWM POND, THE PROPOSED STORM DRAIN SYSTEM MUST BE INSTALLED PRIOR TO DECOMMISSIONING THE SWM POND BY REMOVING THE SOUTHERN EMBANKMENT AND OUTFALL STRUCTURE. REMOVE ACCESS ROAD AS NECESSARY TO ACCOMMODATE THE WORK. STABILIZE ALL WORK AREAS SAME DAY. REMOVE STOCKPILE AREA AND EROSION AND SEDIMENT CONTROL MEASURES ADJACENT TO THE DECOMMISSIONED SWM POND AFTER DECOMMISSIONING AND STABILIZATION OF THE AREA ARE COMPLETE. DURATION: 15 DAYS
14. CONTINUE THE PHASE II STREAM STABILIZATION WORK TO THE END OF THE PHASE II WORK AREA. AS WORK PROGRESSES, REMOVE ACCESS ROAD AS NECESSARY. REMOVE TREES AS NEEDED TO SUPPORT THE GRADING WORK. STABILIZE ALL WORK AREAS SAME DAY. DURATION: 20 DAYS
15. ONCE THE WESTERN TRIBUTARY IS STABILIZED, INSTALL PUMP AROUND PRACTICE IN THE MAINSTEM CHANNEL. INSTALL RIPRAP LINING IN THE CHANNEL INSIDE OF THE SANDBAG DIKES. REMOVE TEMPORARY PUMP AROUND PRACTICE AFTER CHANNEL LINING IS COMPLETE AND THE AREA IS STABILIZED. DURATION: 2 DAYS
16. PERMANENTLY STABILIZE ALL DISTURBED AREAS. DURATION: 2 DAYS

PHASE III - POND RETROFIT - DURATION: 54 DAYS

17. CLEAR AND GRUB AS NECESSARY THEN INSTALL THE PHASE III EROSION ACCESS ROAD. DURATION: 5 DAYS
18. INSTALL CLEAR WATER DIVERSION PIPE FROM THE CONFLUENCE WITH THE WESTERN TRIBUTARY TO CENTENNIAL LAKE DOWNSTREAM FROM THE PHASE III WORK AREA. GRADE THE PROPOSED SLOPE ON THE WEST SIDE OF THE POND AND WHERE NEEDED WHILE INSTALLING THE CLEAR WATER DIVERSION PIPE TO ALLOW THE PIPE TO BE INSTALLED AND MAINTAIN PROPER DRAINAGE. INSTALL THE ROCK OUTLET PROTECTION AND STABILIZE THE CLEAR WATER DIVERSION OUTFALL DURATION: 7 DAYS
19. INSTALL THE SANDBAG DAM AND TURBIDITY CURTAIN IN CENTENNIAL LAKE DOWNSTREAM FROM THE POND OUTFALL. DEWATER THE EXISTING POND. DURATION: 3 DAYS
20. REMOVE THE EXISTING EMBANKMENT, RISER, AND SPILLWAY PIPE. CONSTRUCT THE PROPOSED EMBANKMENT AN ELEVATION OF 352' ALONG WITH THE PROPOSED RISER, PRINCIPAL SPILLWAY, AND PLUNGE POOL OUTFALL. REMOVE THE REMAINING EXISTING ABANDONED SEWER AS THE POND RETROFIT IS CONSTRUCTED MOVE REMOVABLE PUMPING STATIONS AS NEEDED DURING PHASE III CONSTRUCTION WORK. DURATION: 20 DAYS
21. CONSTRUCT THE REMAINDER OF THE PROPOSED POND INCLUDING THE FOREBAY, AND COMPLETE THE DOWNSTREAM SIDE OF THE EMBANKMENT INCLUDING THE PROPOSED 12 INCH RCP CULVERT. DURATION: 15 DAYS
22. WITH PERMISSION OF THE MDE SEDIMENT CONTROL INSPECTOR, REMOVE THE CLEAR WATER DIVERSION PIPES AND STAGING/STOCKPILE AREA. STABILIZE ALL AREAS DISTURBED BY THE REMOVAL OF THE EROSION AND SEDIMENT CONTROL MEASURES. DURATION: 3 DAYS
23. OPEN THE POND DRAIN TO ALLOW THE POND TO PASSIVELY DEWATER UNTIL ALL CONSTRUCTION IS COMPELTE. DURATION: 1 DAY

PHASE IV - EMBANKMENT TOP & ACCESS ROAD CONSTRUCTION - DURATION: 26 DAYS

24. INSTALL SILT FENCE AROUND THE POND AND THE EMBANKMENT AND MOUNTABLE BERM. DURATION: 1 DAY
25. CONSTRUCT REMAINDER OF EMBANKMENT TO PROPOSED TOP ELEVATION. DURATION: 10 DAYS
26. GRADE THE PROPOSED ACCESS TO THE EXISTING TRAIL WEST OF THE FOOTBRIDGE. DURATION: 5 DAYS
27. INSTALL CELLULAR CONFINEMENT ACCESS ROAD. DURATION: 4 DAYS
28. PERMANENTLY STABILIZE ALL DISTURBED AREAS. DURATION: 2 DAYS
29. WITH THE PERMISSION OF THE MDE SEDIMENT CONTROL INSPECTOR, REMOVE ALL EROSION AND SEDIMENT CONTROL MEASURES DURATION: 2 DAYS
30. STABILIZE ALL AREAS DISTURBED BY THE REMOVAL OF THE EROSION AND SEDIMENT CONTROL MEASURES. CLOSE THE POND DRAIN. DURATION: 2 DAYS

100% DESIGN

EN-01

Rev. 8.2016

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE AS SHOWN
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 31 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL NOTES

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

B-1 STANDARDS AND SPECIFICATIONS

FOR

STABILIZED CONSTRUCTION ENTRANCE

Definition

A layer of aggregate that is underlain with nonwoven geotextile at points of ingress and egress of the construction site.

Purpose

To reduce tracking of sediment onto roadways and provide a stable area for entrance to or exit from the construction site.

Conditions Where Practice Applies

Stabilized construction entrances must be located at all points of construction ingress and egress.

Design Criteria

1. Where possible, locate the stabilized construction entrances at the high side of the project area.
2. For single family residential lots, locate the entrance at the permanent driveway.
3. Stabilized construction entrances cannot be installed over pavement.
4. Minimum length is 50 feet (30 feet for single family residential lots).
5. Minimum width is 10 feet. Flare entrance 10 feet minimum at the existing road to provide a turning radius.
6. The orientation of the stabilized construction entrance may vary from a straight line to a curve or "T" shape depending on the topography and right-of-way.
7. All surface water flowing to or diverted toward the stabilized construction entrance (SCE) must be piped under the entrance. Size the pipe to convey the runoff generated by the 2-year, 24-hour frequency storm at minimum. The minimum permissible pipe size is 6 inches. When the entrance is located at a high spot and has no drainage to convey, a pipe is not necessary.

Maintenance

The SCE must be maintained in a condition that minimizes tracking of sediment. This may require adding stone or making other repairs as conditions demand to maintain a clean surface, the mountable berm, and the specified dimensions. All stone or sediment spilled, dropped, or tracked onto the adjacent roadway must be removed immediately by vacuuming, scraping, and/or sweeping. Washing the roadway to remove mud tracked onto pavement is not acceptable unless the wash water is directed to an approved sediment control practice.

B-2 STANDARDS AND SPECIFICATIONS

FOR

WASH RACK OPTION

Definition

A system used in conjunction with a stabilized construction entrance (SCE) for washing mud off construction vehicle wheels.

Purpose

To reduce tracking wherever conditions require washing the construction vehicle wheels prior to exiting the site.

Conditions Where Practice Applies

SCE with wash racks are located at points of ingress and egress where tracking of mud and sediment cannot be removed through the use of conventional maintenance practices (e.g., sweeping, vacuuming, etc.).

Design Criteria

1. SCE with wash rack must drain to an approved sediment trapping device.
2. SCE with wash rack cannot be installed over existing pavement.
3. Wash rack must be designed of material that is constructed and manufactured to withstand the anticipated traffic loads. Wash racks may be of concrete, steel, or other materials.

Maintenance

The area under the wash rack must be maintained free of accumulated sediment. If damaged, the wash rack must be repaired or replaced.

B-3 STANDARDS AND SPECIFICATIONS

FOR

LAND GRADING

Definition

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

Purpose

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

Conditions Where Practice Applies

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

Design Criteria

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

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

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

Maintenance

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

B-4 STANDARDS AND SPECIFICATIONS

FOR

VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

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

Effects on Water Quality and Quantity

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

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

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

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

Adequate Vegetative Establishment

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

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

B. Incremental Stabilization - Fill Slopes

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

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

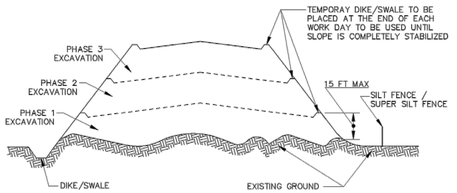

Figure B.2: Incremental Stabilization – Fill

B. Incremental Stabilization - Fill Slopes

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

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

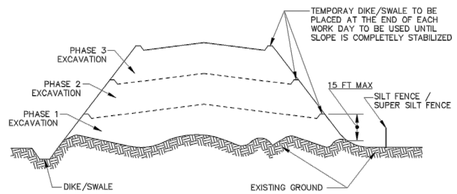

Figure B.2: Incremental Stabilization – Fill

B-4-2 STANDARDS AND SPECIFICATIONS

FOR

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to sustain adequate vegetative stabilization.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

A. Soil Preparation

1. Temporary Stabilization
   a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
   b. Apply fertilizer and lime as prescribed on the plans.
   c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
   a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      i. Soil pH between 6.0 and 7.0.
      ii. Soluble salts less than 500 parts per million (ppm).
      iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      iv. Soil contains 1.5 percent minimum organic matter by weight.
      v. Soil contains sufficient pore space to permit adequate root penetration.
   b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
   c. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.
   d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
   e. Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

Topsoiling

1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
2. Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
3. Topsoiling is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.
4. Areas having slopes steeper than 2:1 require special consideration and design.
5. Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
   a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
   b. Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
   c. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
6. Topsoil Application
   a. Erosion and sediment control practices must be maintained when applying topsoil.
   b. Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
   c. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
3. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
5. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

NOTE:

1. ALL LOD IS TO BE STABILIZED WITH SOIL STABILIZATION MATTING OVER SEED, EXCEPT WHERE NOTED, PER SENSITIVE AREAS (FLOODPLAINS, WETLANDS, STREAMS, BUFFERS, ETC.) PRESENT.
2. DISTURBANCE IS LIMITED TO THAT WHICH CAN AND SHALL BE STABILIZED BY THE END OF EACH DAY.

B-4-3 STANDARDS AND SPECIFICATIONS

FOR

SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

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

Conditions Where Practice Applies

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

Criteria

A. Seeding

1. Specifications
   a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
   b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
   c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
   d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.
2. Application
   a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
      i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
   b. Drill or Cultipacker Seeding: Mechanized seeders that apply and cover seed with soil.
      i. Cultipacking seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
      ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
   c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
      i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P_2O_5 (phosphorous), 200 pounds per acre; K_2O (potassium), 200 pounds per acre.
      ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
      iii. Mix seed and fertilizer on site and seed immediately and without interruption.
      iv. When hydroseeding do not incorporate seed into the soil.

B. Mulching

1. Mulch Materials (in order of preference)
   a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty. **Note: Use only sterile straw mulch in areas where one species of grass is desired.**
   b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
      i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
      ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
      iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
      iv. WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
      v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

100% DESIGN

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

HOWARD SOIL CONSERVATION DISTRICT _____ DATE _____

EN-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture
6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com
10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND
STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
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SCALE AS SHOWN
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DATE JAN 2024 SHEET NO. 32 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL NOTES

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

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

B-4-6 STANDARDS AND SPECIFICATIONS

FOR

SOIL STABILIZATION MATTING

Definition

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

Purpose

To protect the soils until vegetation is established.

Conditions Where Practice Applies

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

Design Criteria

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

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

   $\tau = \gamma \cdot R \cdot S_w$ where:

   τ = shear stress (lb/ft^2)
   γ = weight density of water (62.4 lb/ft^3)
   R = average water depth (hydraulic radius) (ft)
   S_w = water surface slope (ft/ft)

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

   $$v = \frac{1.486 R^{2/3} s^{1/2}}{n}$$

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

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

Table B.7: Soil Stabilization on Slopes

Slope	20:1 or Flatter (≤5%)			<20:1 to 4:1 (>5 - 25%)			<4:1 to 3:1 (>25 - 33%)			<3:1 to 2.5:1 (>33 - 40%)			<2.5:1 to 2:1** (>40 - 50%)		
Slope Length (feet)*	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120	0-30	30-60	60-120
Straw Mulch/Wood Cellulose Fiber				for K ≤ 0.35***											
Temporary Matting with Design Shear Stress ≥ 1.5 lb/sf															
Temporary Matting with Design Shear Stress ≥ 1.75 lb/sf															
Temporary Matting with Design Shear Stress ≥ 2.0 lb/sf															
Temporary Matting with Design Shear Stress ≥ 2.25 lb/sf															

Effective range for all K values unless otherwise specified

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

Maintenance

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

B-4-7 STANDARDS AND SPECIFICATIONS

FOR

HEAVY USE AREA PROTECTION

Definition

The stabilization of areas frequently and intensively used by surfacing with suitable materials (e.g., mulch and aggregate).

Purpose

To provide a stable, non-eroding surface for areas frequently used and to improve the water quality from the runoff of these areas.

Conditions Where Practice Applies

This practice applies to intensively used areas (e.g., equipment and material storage, staging areas, heavily used travel lanes).

Criteria

1. A minimum 4-inch base course of crushed stone or other suitable materials including wood chips over nonwoven geotextile should be provided as specified in Section H-1 Materials.
2. Select the stabilizing material based on the intended use, desired maintenance frequency, and runoff control.
3. The transport of sediments, nutrients, oils, chemicals, particulate matter associated with vehicular traffic and equipment, and material storage needs to be considered in the selection of material. Additional control measures may be necessary to control some of these potential pollutants.
4. Surface erosion can be a problem on large heavy use areas. In these situations, measures to reduce the flow length of runoff or erosive velocities need to be considered.

Maintenance

The heavy use areas must be maintained in a condition that minimizes erosion. This may require adding suitable material, as specified on the approved plans, to maintain a clean surface.

B-4-8 STANDARDS AND SPECIFICATIONS

FOR

STOCKPILE AREA

Definition

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

Purpose

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

Conditions Where Practice Applies

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

Criteria

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

Maintenance

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

B-4-1 STANDARDS AND SPECIFICATIONS

FOR

INCREMENTAL STABILIZATION

Definition

Establishment of vegetative cover on cut and fill slopes.

Purpose

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

Conditions Where Practice Applies

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

Criteria

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

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

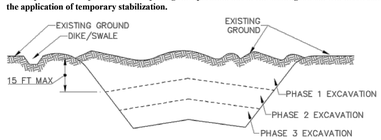

Figure B.1: Incremental Stabilization – Cut

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

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

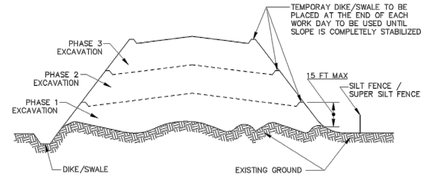

Figure B.2: Incremental Stabilization – Fill

NOTE:

1. ALL LOD IS TO BE STABILIZED WITH SOIL STABILIZATION MATTING OVER SEED, EXCEPT WHERE NOTED, PER SENSITIVE AREAS (FLOODPLAINS, WETLANDS, STREAMS, BUFFERS, ETC.) PRESENT.
2. DISTURBANCE IS LIMITED TO THAT WHICH CAN AND SHALL BE STABILIZED BY THE END OF EACH DAY.

100% DESIGN

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

HOWARD SOIL CONSERVATION DISTRICT _____ DATE _____

EN-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

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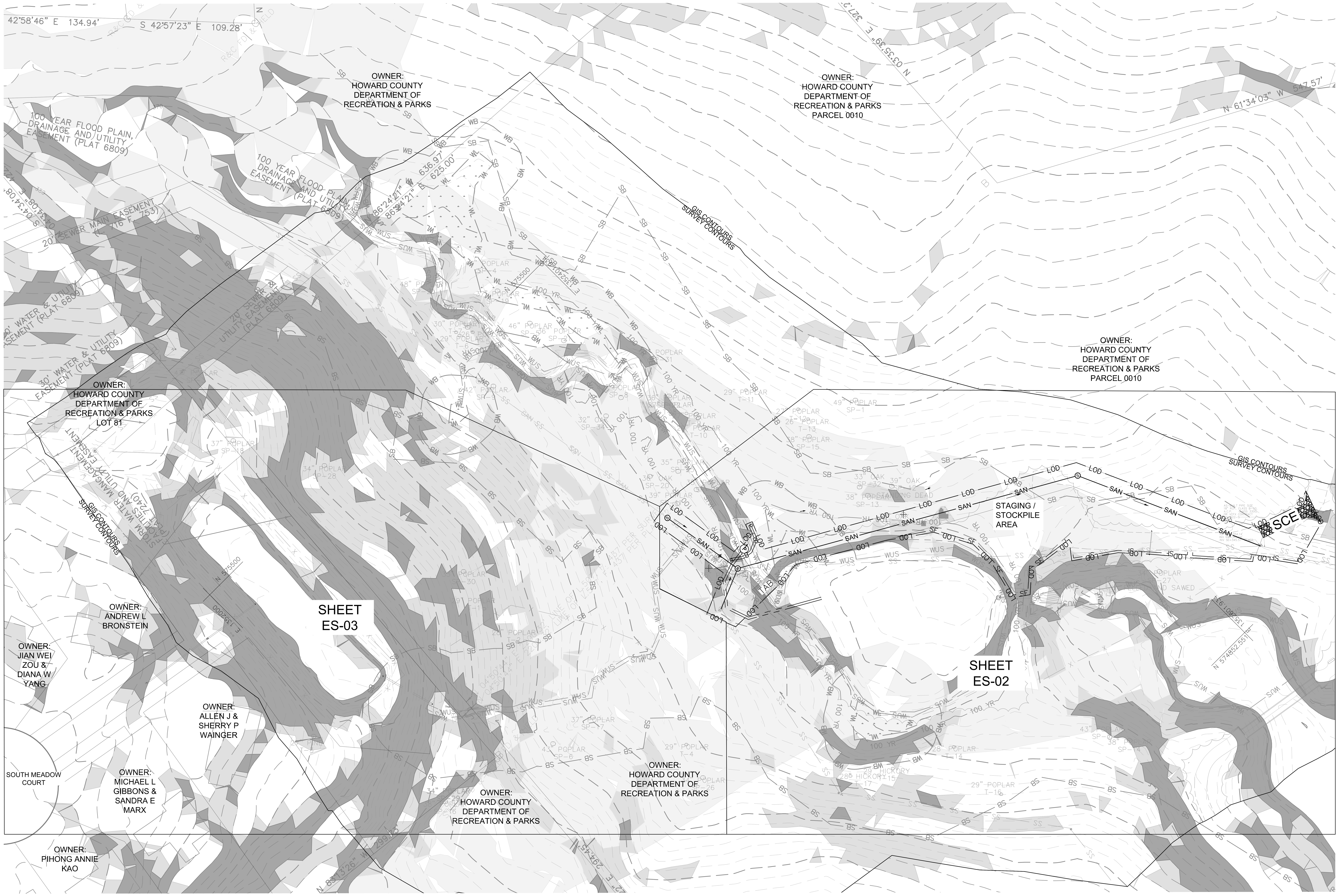
DATE JAN 2024 SHEET NO. 33 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

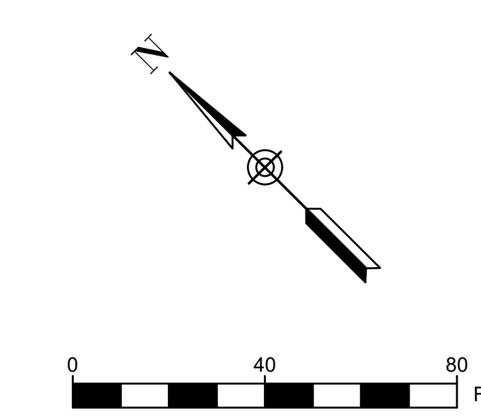
EROSION & SEDIMENT CONTROL NOTES

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



STANDARD SYMBOLS

- TREE
- EDGE OF WATER
- FENCE
- SURVEYED 5' MAJOR CONTOURS
- SURVEYED 1' MINOR CONTOURS
- GIS 10' MAJOR CONTOURS
- GIS 2' MINOR CONTOURS
- EXISTING PROPERTY BOUNDARY
- SHREDDED HARDWOOD BARK ACCESS ROAD
- LOD — LIMIT OF DISTURBANCE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- ED-1 — EARTH DIKE
- CWD-48 — CLEAR WATER DIVERSION PIPE
- T — TURBIDITY CURTAIN
- TREE REMOVAL
- SB — 100' STREAM BUFFER
- SAND BAG DIKE/DAM
- P — PUMP FOR DEWATERING
- DEWATERING / DIVERSION PIPE
- RPS — REMOVABLE PUMPING STATION
- FB — FILTER BAG
- STAGING/STOCKPILE AREA
- MOUNTABLE BERM
- RIPRAP
- HIGHLY ERODIBLE SOILS (>5% SLOPES AND K>0.35)
- HIGHLY ERODIBLE SOILS (>15% SLOPES)
- STEEP (>20%) SLOPES
- STABILIZED CONSTRUCTION ENTRACE
- SOIL STABILIZATION MATTING (TYPE D)
- TAB — TEMPORARY ACCESS BRIDGE
- SAME DAY STABILIZATION



SCALE: 1" = 40'

100% DESIGN

ES-01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
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info@straughanenvironmental.com

HOWARD COUNTY MARYLAND
STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

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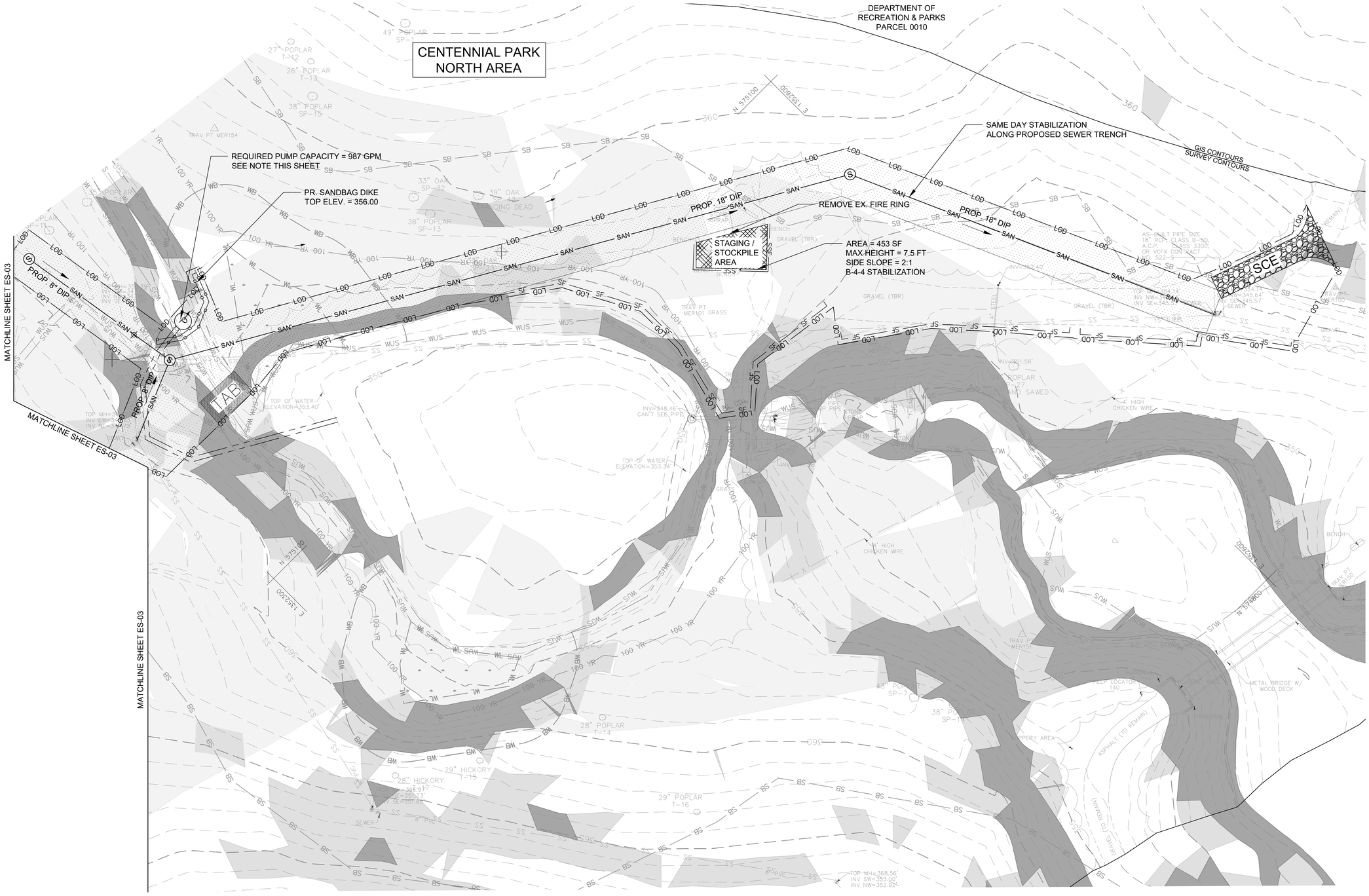
SOUTH MEADOW COURT POND
RETROFIT AND STREAM
STABILIZATION PROJECT
CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL
PHASE I KEY MAP

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



STANDARD SYMBOLS

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- FENCE
- SURVEYED 5' MAJOR CONTOURS
- SURVEYED 1' MINOR CONTOURS
- GIS 10' MAJOR CONTOURS
- GIS 2' MINOR CONTOURS
- EXISTING PROPERTY BOUNDARY
- SHREDDED HARDWOOD BARK ACCESS ROAD
- LIMIT OF DISTURBANCE
- SILT FENCE
- SUPER SILT FENCE
- EARTH DIKE
- CLEAR WATER DIVERSION PIPE
- TURBIDITY CURTAIN
- TREE REMOVAL
- 100' STREAM BUFFER
- SAND BAG DIKE/DAM
- PUMP FOR DEWATERING
- DEWATERING / DIVERSION PIPE
- REMOVABLE PUMPING STATION
- FILTER BAG
- STAGING/STOCKPILE AREA
- MOUNTABLE BERM
- RIPRAP
- HIGHLY ERODIBLE SOILS (>5% SLOPES AND K>0.35)
- HIGHLY ERODIBLE SOILS (>15% SLOPES)
- STEEP (>20%) SLOPES
- STABILIZED CONSTRUCTION ENTRACE
- SOIL STABILIZATION MATTING (TYPE D)
- TEMPORARY ACCESS BRIDGE
- SAME DAY STABILIZATION

NOTE:

1. REGRESSION EQUATIONS OUTLINED IN "REGRESSION EQUATIONS FOR ESTIMATING LOW FLOWS FOR SMALL STREAMS IN MARYLAND" INDICATED THAT THE 90% EXCEEDANCE OF THE MEAN FLOW IN THE FALL MONTHS FOR BOTH THE MAINSTEM AND TRIBUTARIES WILL NOT EXCEED 1 CFS (449 GPM). ASSUMING A FACTOR OF SAFETY OF 2.2, THE CONTRACTOR SHALL ENSURE MINIMUM PUMP CAPACITY IS PROVIDED TO MAINTAIN A BASEFLOW OF 2.2 CFS (987 GPM).

0 20 40 Feet

SCALE: 1" = 20'

100% DESIGN

ES-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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Stantec / STRAUGHAN ENVIRONMENTAL
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6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
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HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
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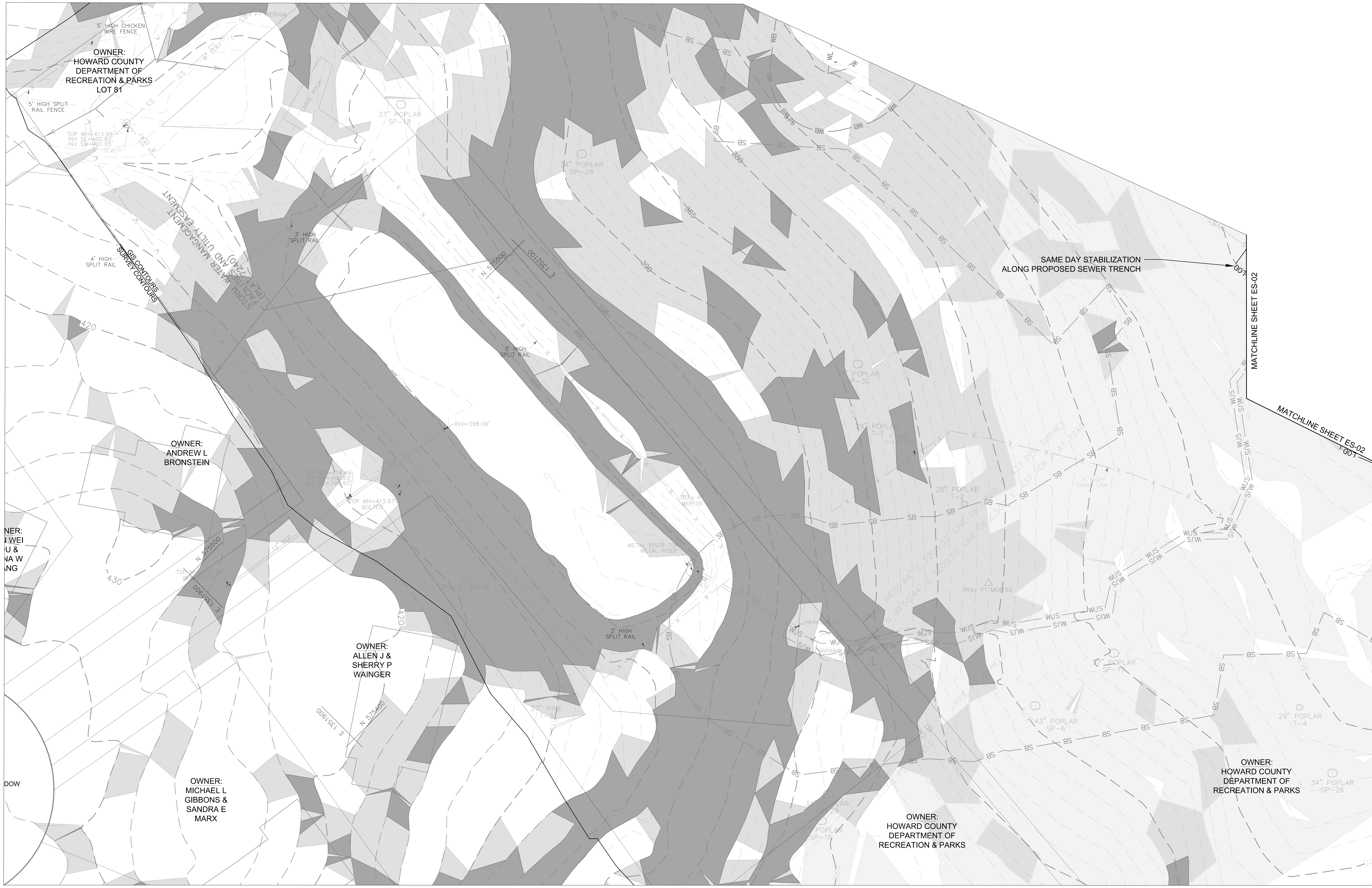
DATE JAN 2024 SHEET NO. 35 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE I PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



STANDARD SYMBOLS

- TREE
- EDGE OF WATER
- FENCE
- SURVEYED 5' MAJOR CONTOURS
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- TAB — TEMPORARY ACCESS BRIDGE
- SAME DAY STABILIZATION

N

0 20 40 Feet

SCALE: 1" = 20'

100% DESIGN

ES-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION — DATE

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a joint venture

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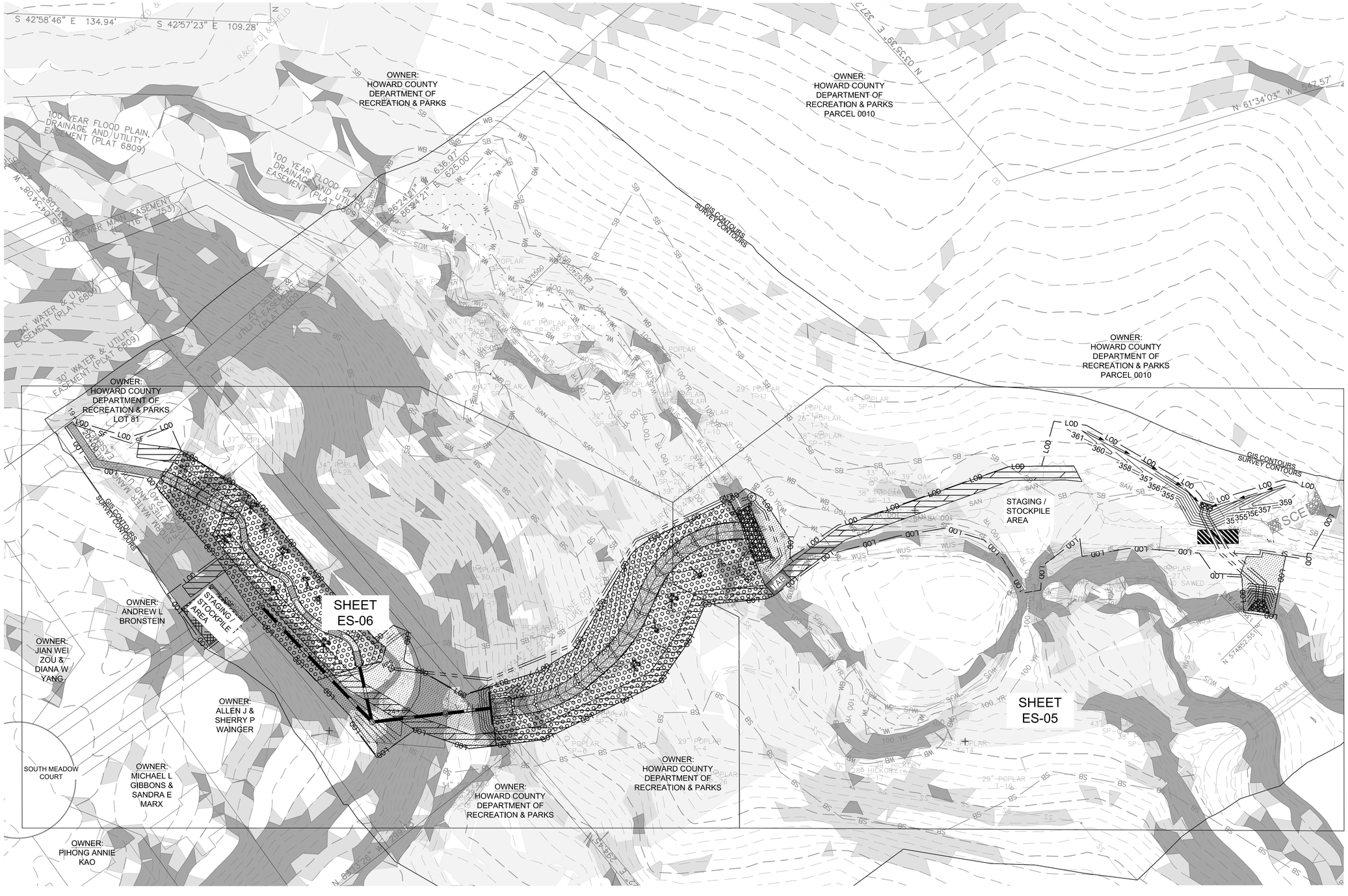
CHECKED BY SS
DATE. JAN 2024 SHEET NO. 36 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE I PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD — TAX MAP 30 — GRID NO. 0002



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- TAB — TEMPORARY ACCESS BRIDGE
- SAME DAY STABILIZATION

0 40 80 Feet

SCALE: 1" = 40'

100% DESIGN

ES-04

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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BY	NO.	REVISIONS	DATE

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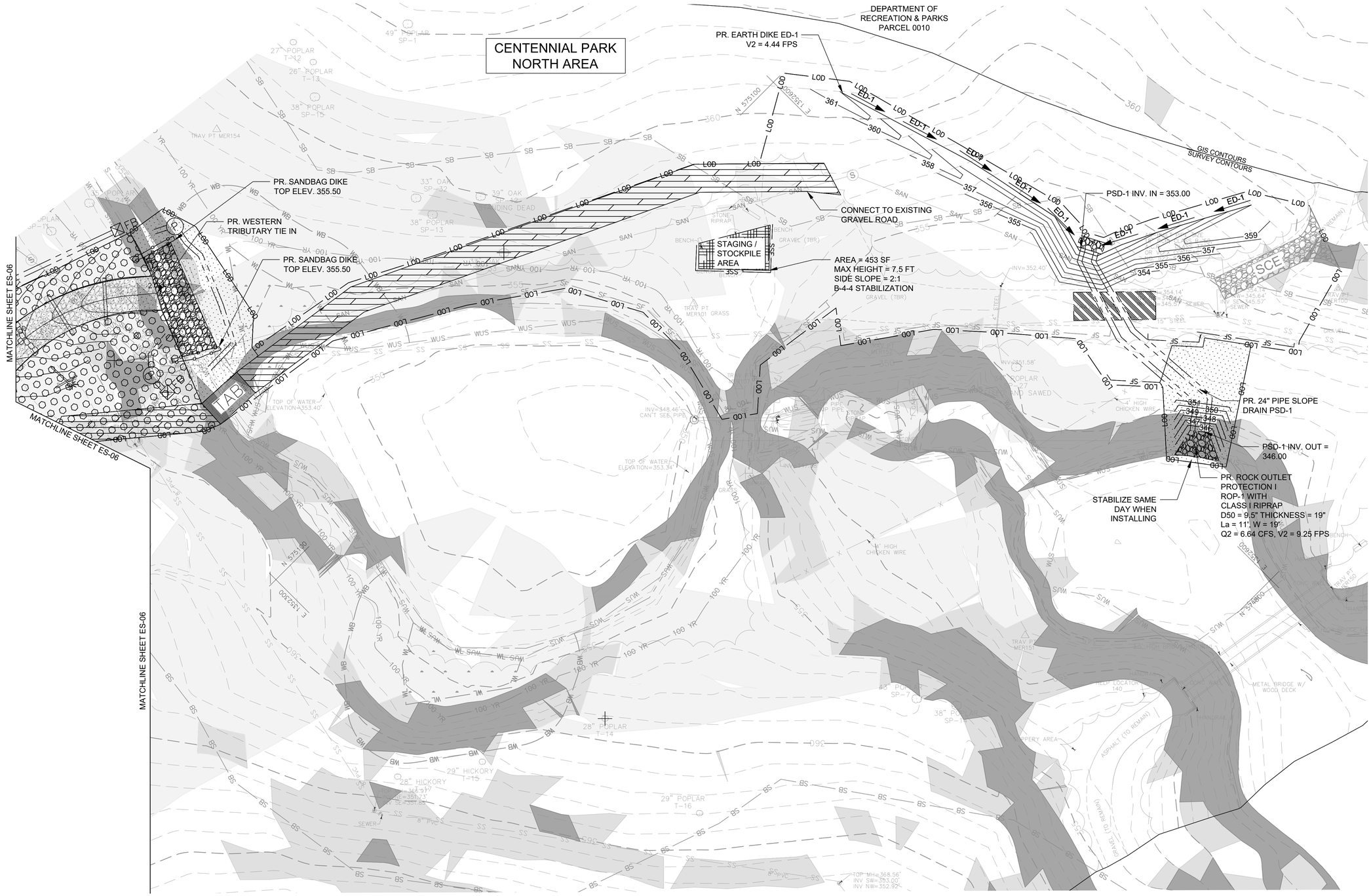
DATE JAN 2024 SHEET NO. 37 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE II KEY MAP

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



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100% DESIGN

ES-05

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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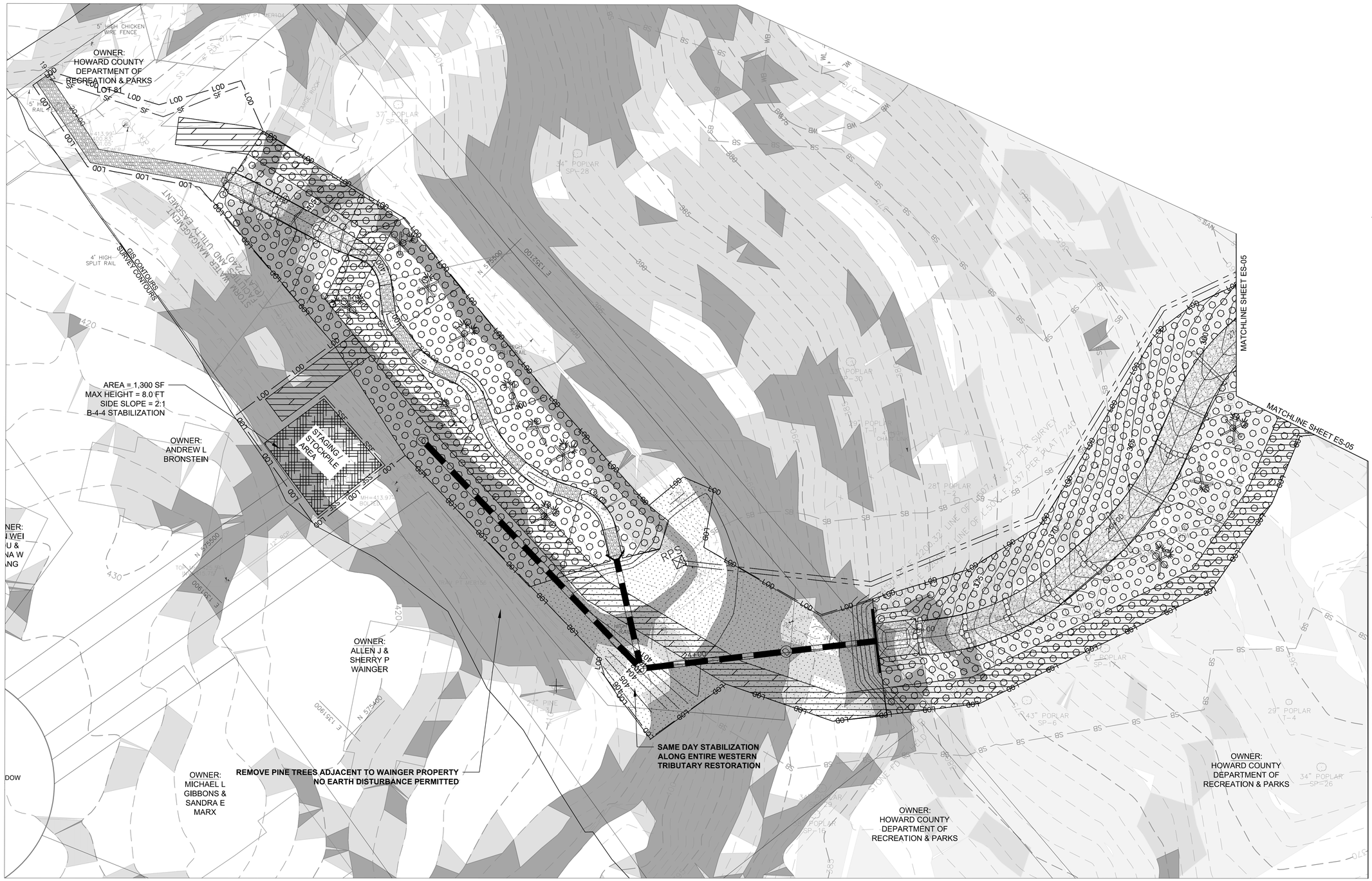
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE II PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



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- TAB — TEMPORARY ACCESS BRIDGE
- SAME DAY STABILIZATION

N

0 20 40 Feet

SCALE: 1" = 20'

100% DESIGN

ES-06

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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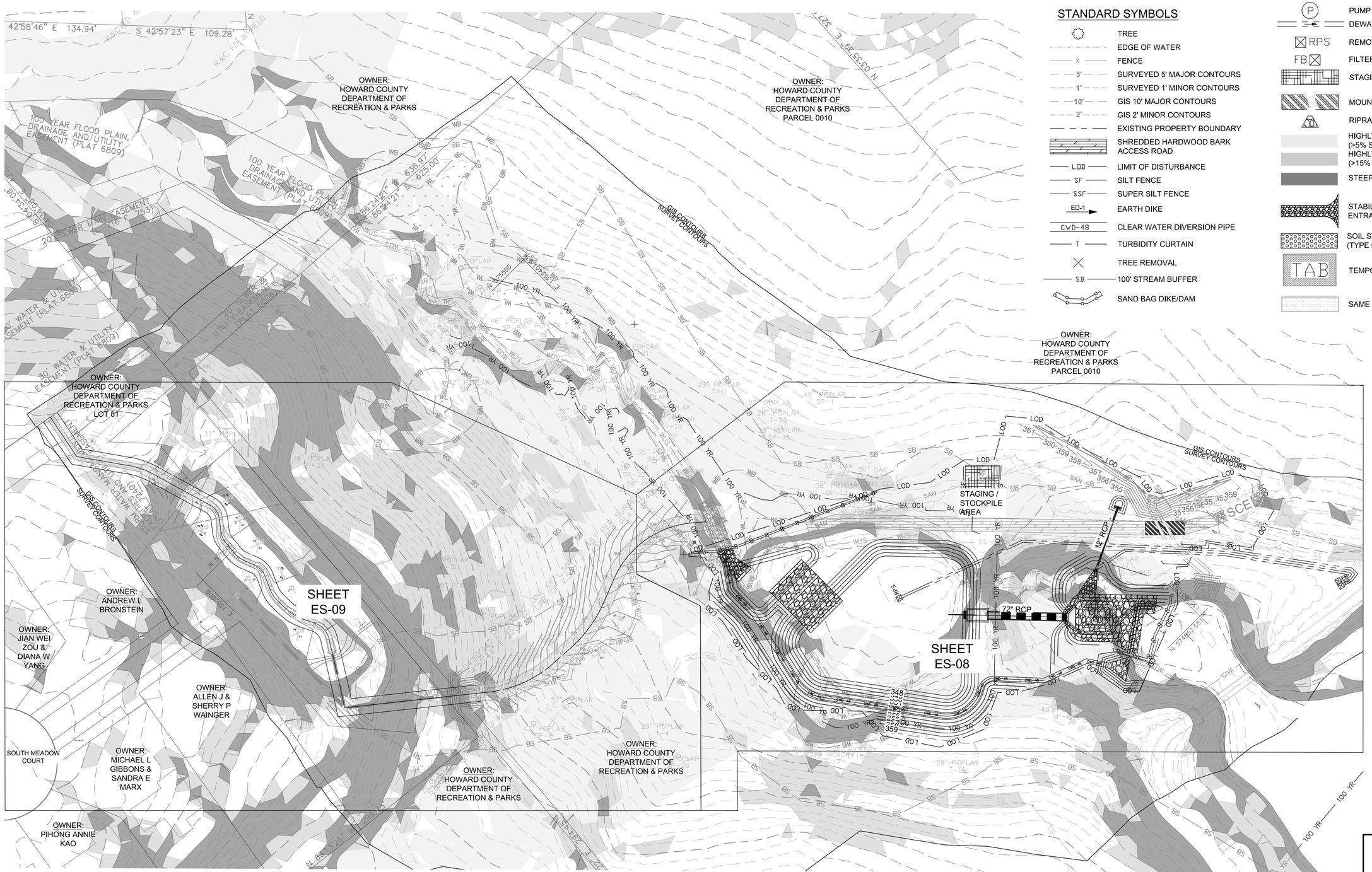
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE II PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



100% DESIGN

ES-07

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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HOWARD COUNTY MARYLAND

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BY	NO.	REVISIONS	DATE

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SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE III KEY MAP

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

CENTENNIAL PARK NORTH AREA

DEPARTMENT OF RECREATION & PARKS PARCEL 0010

PR. EARTH DIKE ED-1

GIS CONTOURS
SURVEY CONTOURS

PR. 48" SANDBAG DIKE
TOP ELEV. = 357.83

PR. 48" CWD
INV. IN = 353.00
SEE ED-04 FOR CWD PROFILE

STAGING / STOCKPILE AREA

AREA = 1,193 SF
MAX HEIGHT = 7.5 FT
SIDE SLOPE = 2:1
B-4-4 STABILIZATION

72" RCP

72" RCP

PR. SANDBAG DAM
TOP ELEV. = 347.00

STABILIZE SAME DAY WHEN INSTALLING ROP-2

PR. 48" CWD-1
INV. = 344.00

PR. 48" CWD-1
INV. = 352.00

PR. ROCK OUTLET PROTECTION II
ROP-2 WITH
CLASS II RIPRAP
D50 = 16" THICKNESS = 32"
La = 18', W = 22'
Q2 = 64.00 CFS, V10 = 20.24 FPS

PR. 48" CWD-1 INV. OUT = 344.00

MATCHLINE SHEET ES-09

MATCHLINE SHEET ES-09

STANDARD SYMBOLS

- TREE
- EDGE OF WATER
- FENCE
- SURVEYED 5' MAJOR CONTOURS
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SCALE: 1" = 20'

100% DESIGN

ES-08

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE III PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

NO WORK ON
THIS SHEET

OWNER:
HOWARD COUNTY
DEPARTMENT OF
RECREATION & PARKS
LOT 81

OWNER:
ANDREW L
BRONSTEIN

OWNER:
ALLEN J &
SHERRY P
WAINGER

OWNER:
MICHAEL L
GIBBONS &
SANDRA E
MARX

OWNER:
HOWARD COUNTY
DEPARTMENT OF
RECREATION & PARKS

OWNER:
HOWARD COUNTY
DEPARTMENT OF
RECREATION & PARKS

MATCHLINE SHEET ES-08

MATCHLINE SHEET ES-08

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N

0 20 40 Feet

SCALE: 1" = 20'

100% DESIGN

ES-09

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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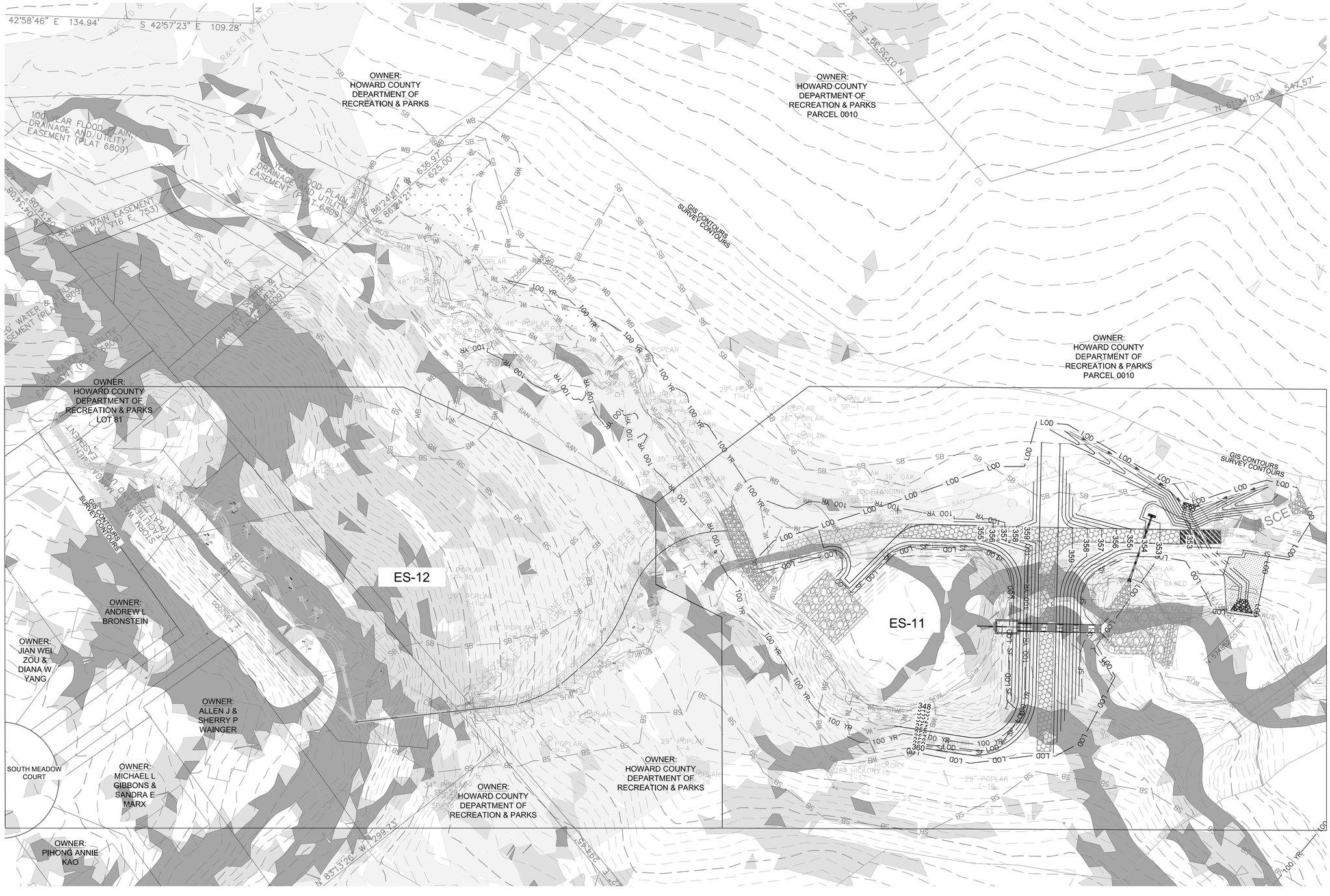
CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE III PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



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ES-10

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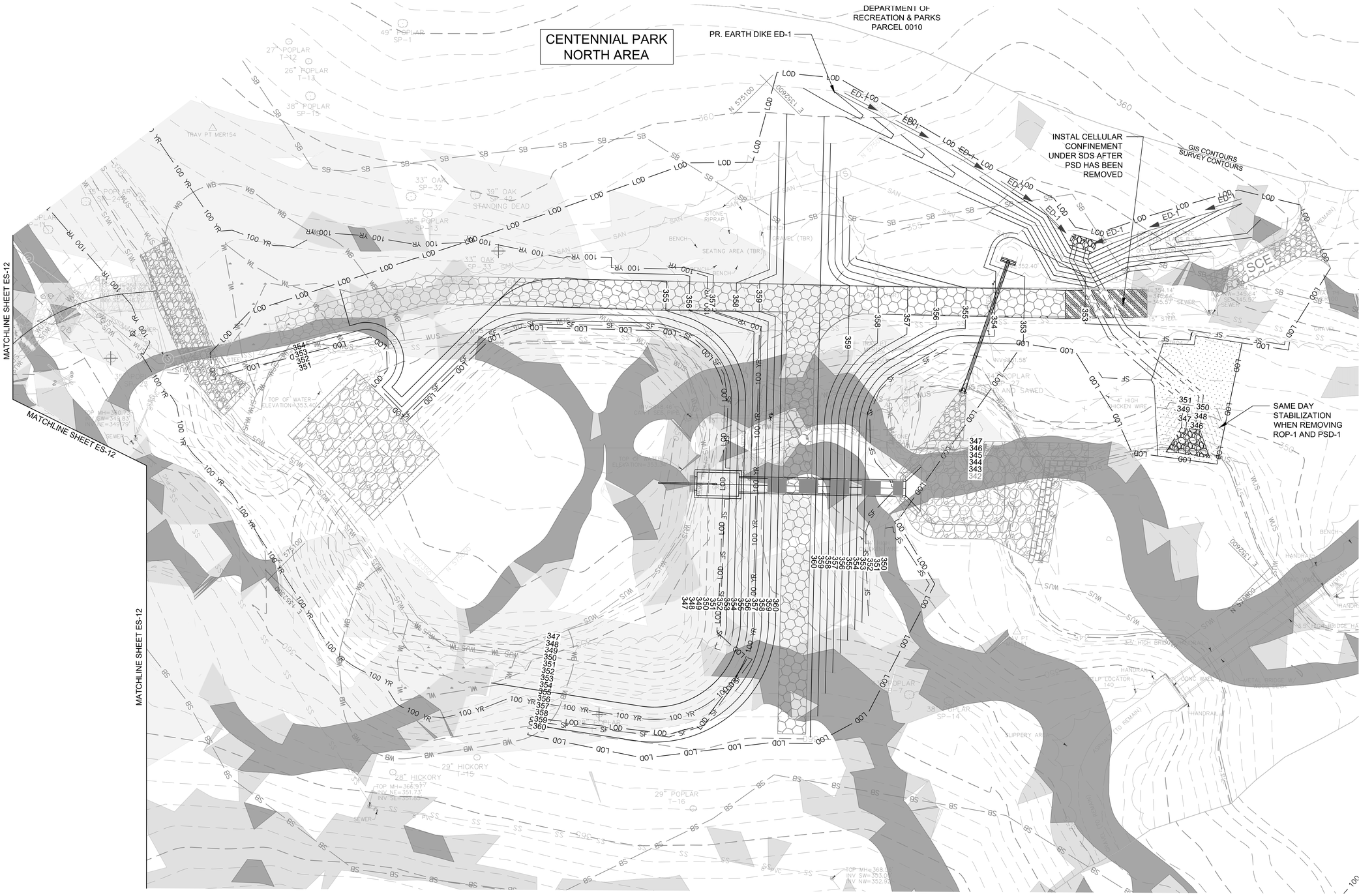
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE IV KEY MAP

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



STANDARD SYMBOLS

- TREE
- EDGE OF WATER
- FENCE
- SURVEYED 5' MAJOR CONTOURS
- SURVEYED 1' MINOR CONTOURS
- GIS 10' MAJOR CONTOURS
- GIS 2' MINOR CONTOURS
- EXISTING PROPERTY BOUNDARY
- SHREDDED HARDWOOD BARK ACCESS ROAD
- LOD — LIMIT OF DISTURBANCE
- SF — SILT FENCE
- SSF — SUPER SILT FENCE
- ED-1 — EARTH DIKE
- CWD-48 — CLEAR WATER DIVERSION PIPE
- T — TURBIDITY CURTAIN
- TREE REMOVAL
- SB — 100' STREAM BUFFER
- SAND BAG DIKE/DAM
- P — PUMP FOR DEWATERING
- DEWATERING / DIVERSION PIPE
- RPS — REMOVABLE PUMPING STATION
- FB — FILTER BAG
- STAGING/STOCKPILE AREA
- MOUNTABLE BERM
- RIPRAP
- HIGHLY ERODIBLE SOILS (>5% SLOPES AND K>0.35)
- HIGHLY ERODIBLE SOILS (>15% SLOPES)
- STEEP (>20%) SLOPES
- STABILIZED CONSTRUCTION ENTRACE
- SOIL STABILIZATION MATTING (TYPE D)
- TAB — TEMPORARY ACCESS BRIDGE
- SAME DAY STABILIZATION

100% DESIGN

ES-11

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:

Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY
MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 44 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE IV PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

NO WORK ON THIS SHEET

OWNER: HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS LOT 81

OWNER: ANDREW L BRONSTEIN

OWNER: ALLEN J & SHERRY P WAINGER

OWNER: MICHAEL L GIBBONS & SANDRA E MARX

OWNER: HOWARD COUNTY DEPARTMENT OF RECREATION & PARKS

MATCHLINE SHEET ES-11

MATCHLINE SHEET ES-11

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- TREE
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- SOIL STABILIZATION MATTING (TYPE D)
- TAB — TEMPORARY ACCESS BRIDGE
- SAME DAY STABILIZATION

N

0 20 40 Feet

SCALE: 1" = 20'

100% DESIGN

ES-12

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

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BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE 1"=20'
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DATE JAN 2024 SHEET NO. 45 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL PHASE IV PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

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):

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

6. 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.

MGWC 1.2: PUMP-AROUND PRACTICE

7. 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.

8. 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*).

9. 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.

10. 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.

11. 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.

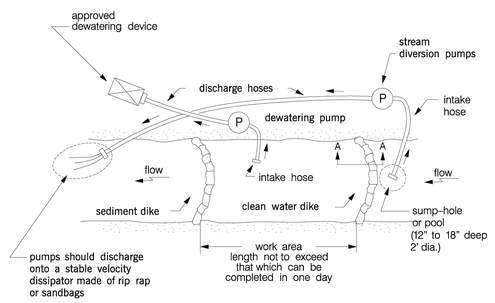
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction 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.

13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.

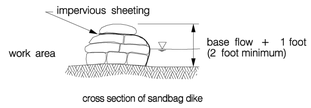
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

Maryland's Guidelines To Waterway Construction
DETAIL 1.2: PUMP–AROUND PRACTICE

PLAN VIEW



SECTION A–A



cross section of sandbag dike

SEDIMENT CONTROL AND POND

Owners/Developer Certification:

"I/We hereby certify that any clearing, grading, construction, or development will be done pursuant to this approved erosion and sediment control plan, including inspecting and maintaining controls, and that the responsible personnel involved in the construction project will have a Certificate of Training at a Maryland Department of the Environment (MDE) approved training program for the control on erosion and sediment prior to beginning the project. I shall engage a Maryland registered professional engineer to supervise pond construction, and provide the Howard Soil Conservation District with an "As-built" plan of the pond within 30 days of completion. I certify right-of-entry for periodic on-site evaluation by Howard County, the Howard Soil Conservation District and/or MDE."

_____ _____
Owner's/ Developer's Signature Date

_____
Printed Name & Title

Design Certification:

"I hereby certify that this plan has been designed in accordance with current Maryland erosion and sediment control laws, regulations, and standards, that it represents a practical and workable plan based on my personal knowledge of the site, and that it was prepared in accordance with the requirements of the Howard Soil Conservation District. I have notified the developer that he/she must engage a registered professional engineer to supervise pond construction and provide the Howard Soil Conservation District with an "As-built" plan of the pond within 30 days of completion."

_____ _____
Designer's Signature Date

_____ MD Registration No._____
Printed Name P.E., R.L.S., or R.L.A. (circle one)

Professional Certification:

"I hereby certify these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State Of Maryland,

License No._____, Expiration Date:_____ "

(Title block, certification, seal, and signature shall appear close to each other)

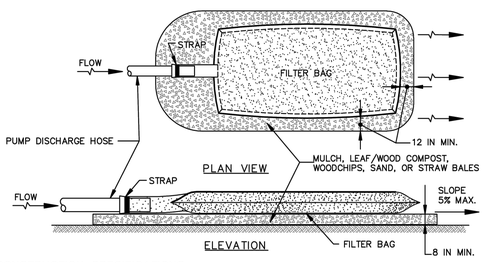
Howard SCD Signature Block:

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

_____ _____
Howard Soil Conservation District Date

DETAIL F-4 FILTER BAG

STANDARD SYMBOL: ☒FB



CONSTRUCTION SPECIFICATIONS

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

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

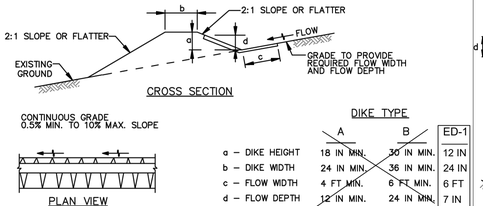
6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL: A–1 — PLACE DESIGNATION (e.g. A–1) ON FLOW CHANNEL SIDE OF DIKE.



DIKE TYPE	A	B	ED-1
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.	12 IN
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.	24 IN
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.	6 FT
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.	7 IN

FLOW CHANNEL STABILIZATION

~~A–1~~ ~~SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)~~
A–2/B–2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
A–3/B–3 ~~4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.~~
ED-1 SEED WITH SOIL STABILIZATION MATTING V2 = 4.44 FPS

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

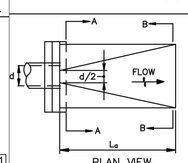
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

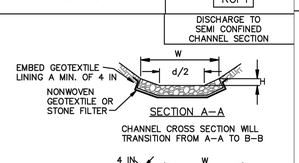
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

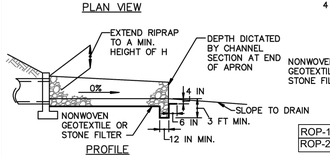
DETAIL D-4-1-A ROCK OUTLET PROTECTION I

STANDARD SYMBOL: ROP1

DISCHARGE TO SEMI CONFINED CHANNEL SECTION







RIPRAP		
	CLASS	THICKNESS (T)
ROP-1	I	19 IN
ROP-2	II	32 IN
	III	46 IN

CONSTRUCTION SPECIFICATIONS

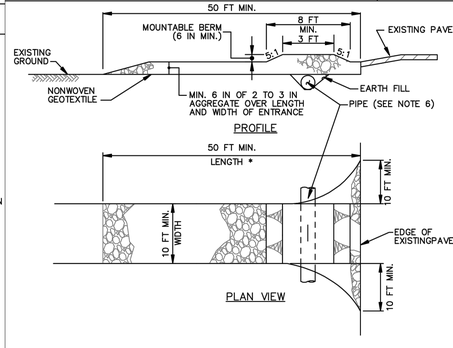
1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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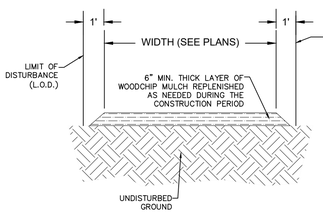

NOTES:
1. ACCESS ROUTES TO BE VERIFIED BY THE ENGINEER AT THE PRE-CONSTRUCTION MEETING. REVISIONS TO THE ALIGNMENT THAT MINIMIZE TREE DISTURBANCE ARE ENCOURAGED AND REQUIRE REVIEW AND APPROVAL BY THE ENGINEER.
2. CONTRACTOR SHALL MAINTAIN TEMPORARY ACCESS ROAD THROUGHOUT CONSTRUCTION PERIOD.

TEMPORARY MULCH ACCESS ROAD

100% DESIGN

ED-01

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

_____
CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
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HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313–6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X–XX–XXX
SCALE AS SHOWN
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 46 OF 59

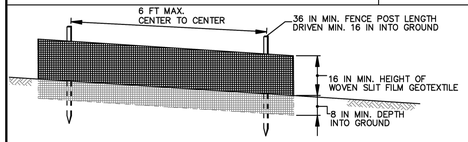
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D–1159

EROSION & SEDIMENT CONTROL DETAILS

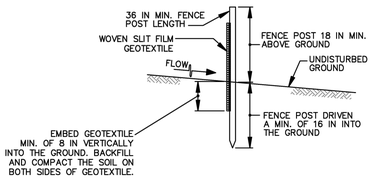
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

DETAIL E-1 SILT FENCE

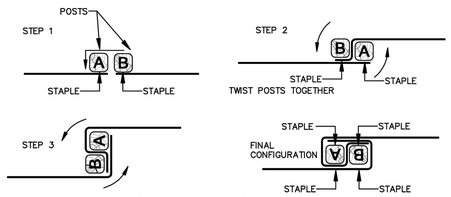
STANDARD SYMBOL: SF



ELEVATION



CROSS SECTION



JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

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

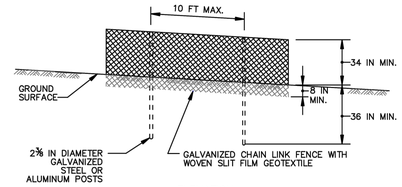
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

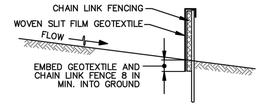
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



ELEVATION



CROSS SECTION

CONSTRUCTION SPECIFICATIONS

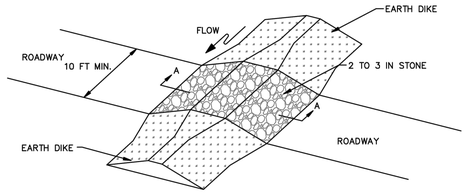
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

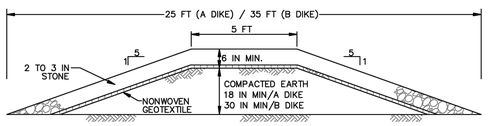
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL: MB



ISOMETRIC VIEW



SECTION A–A

CONSTRUCTION SPECIFICATIONS

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

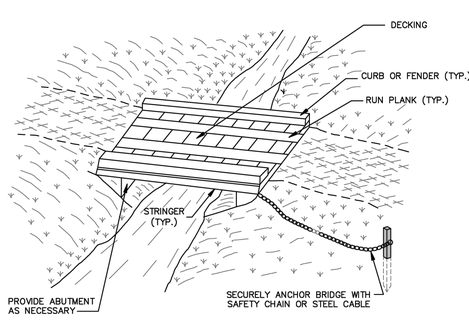
1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL: TB



LOCATION PLAN

NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL: TB

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TEMPORARY BRIDGE STRUCTURE AT OR ABOVE THE BANK ELEVATION TO PREVENT IMPACTS FROM FLOATING MATERIALS AND DEBRIS.
2. PLACE ABUTMENTS PARALLEL TO, AND ON, STABLE BANKS.
3. CONSTRUCT BRIDGE TO SPAN ENTIRE CHANNEL UNLESS OTHERWISE INDICATED ON APPROVED PLAN.
4. USE STRINGERS CONSISTING OF LOGS, SAWN TIMBER, PRESTRESSED CONCRETE BEAMS, METAL BEAMS, OR OTHER APPROVED MATERIALS.
5. SELECT DECKING MATERIALS TO PROVIDE SUFFICIENT STRENGTH TO SUPPORT THE ANTICIPATED LOAD. PLACE ALL DECKING MEMBERS PERPENDICULAR TO THE STRINGERS, BUTT TIGHTLY, AND SECURELY FASTEN. DECKING MATERIALS MUST BE BUTTED TIGHTLY TO PREVENT ANY SOIL MATERIAL TRACKED ONTO THE BRIDGE FROM FALLING INTO THE WATERWAY BELOW.
6. SECURELY FASTEN OPTIONAL RUN PLANKING FOR THE LENGTH OF THE SPAN. PROVIDE A RUN PLANK FOR EACH TRACK OF THE EQUIPMENT WHEELS. ALTHOUGH RUN PLANKS ARE OPTIONAL, THEY MAY BE NECESSARY TO PROPERLY DISTRIBUTE LOADS.
7. INSTALL CURBS THE ENTIRE LENGTH OF THE OUTER SIDES OF THE DECK TO PREVENT SEDIMENT FROM ENTERING THE STREAM CHANNEL.
8. ANCHOR BRIDGE SECURELY AT ONLY ONE END USING STEEL CABLE OR CHAIN. ANCHORING AT ONLY ONE END WILL PREVENT CHANNEL OBSTRUCTION IN THE EVENT THAT FLOODWATERS FLOAT THE BRIDGE. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL POSTS. ANCHOR MUST BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.
9. AREAS DISTURBED DURING BRIDGE INSTALLATION AND\OR REMOVAL MUST NOT BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
10. STABILIZE APPROACH TO BRIDGE AND KEEP FREE OF EROSION. CLEAN SEDIMENT FROM DECKING AND CURBS DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. ENSURE THAT DECKING AND CURBS REMAIN TIGHTLY BUTTED WITHOUT GAPS. REMOVE DEBRIS TRAPPED BY BRIDGE. MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.
11. AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING BRIDGE REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

100% DESIGN

ED-02

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:

Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313–6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X–XX–XXX
SCALE AS SHOWN
DESIGNED BY AS
DRAWN BY AS
CHECKED BY SS
DATE JAN 2024 SHEET NO. 47 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

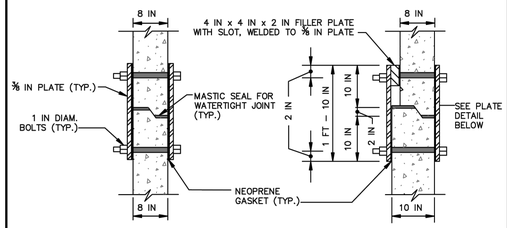
CAPITAL PROJECT D–1159

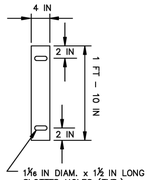
EROSION & SEDIMENT CONTROL DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

DETAIL G-2-8 PRECAST RISER CONNECTOR

STANDARD SYMBOL





PLATE

CONSTRUCTION SPECIFICATIONS

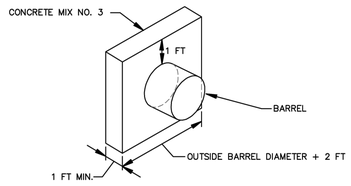
1. FABRICATE PLATE CONNECTORS FROM STAINLESS STEEL CONFORMING TO ASTM A666–72, GRADE A OR B.
2. USE TYPE 304 STAINLESS STEEL FOR BOLTS.
3. PROVIDE CONNECTORS AT CENTERLINE OF EACH PRECAST BOX FACE. FOR MANHOLES PROVIDE FOUR PLATES SPACED AT 90°.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

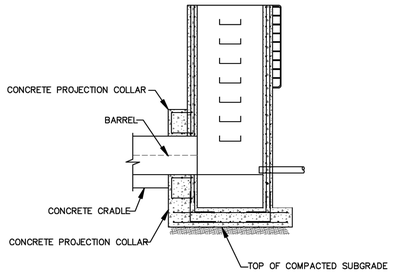
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL G-2-9 PROJECTION COLLAR

STANDARD SYMBOL



CONCRETE COLLAR DETAIL



ELEVATION

CONSTRUCTION SPECIFICATIONS

1. CAST 1 FOOT THICK CONCRETE COLLAR TO OUTLET STRUCTURE WITH FOUR #4 U–SHAPED REBARS.

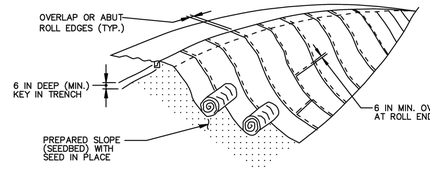
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL

TSSMS – * 1.5 lb/ft² (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

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

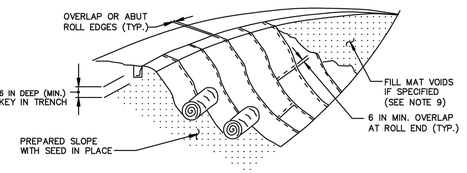
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL

PSSMS – * 2 lb/ft² (* INCLUDE SHEAR STRESS)



ISOMETRIC VIEW

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON–DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON–LEACHING AND NON–TOXIC TO VEGETATION AND SEED GERMINATION AND NON–INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE TOP OF SLOPE 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.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

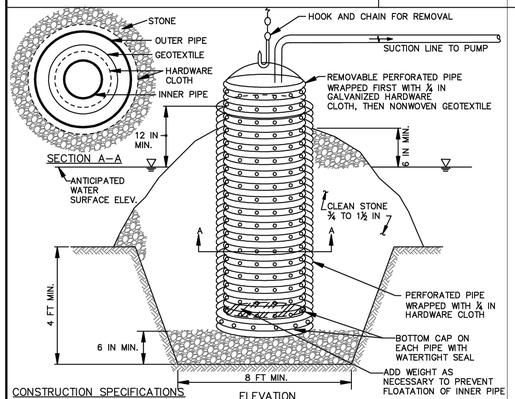
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL F-1 REMOVABLE PUMPING STATION

STANDARD SYMBOL

☒RPS



ELEVATION

CONSTRUCTION SPECIFICATIONS

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

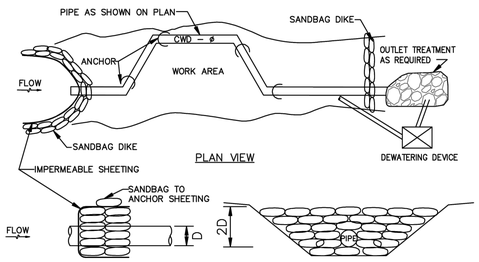
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL C-6 CLEAR WATER DIVERSION PIPE

STANDARD SYMBOL

CWD – 12

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



PLAN VIEW

PROFILE OF SANDBAGS

SECTION THROUGH SANDBAGS

CONSTRUCTION SPECIFICATIONS

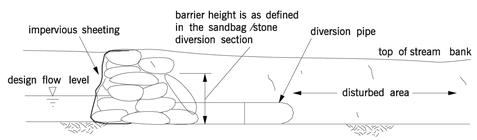
1. FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATERTIGHT.
2. FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA–VIOLENT RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
3. USE 10 MIL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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

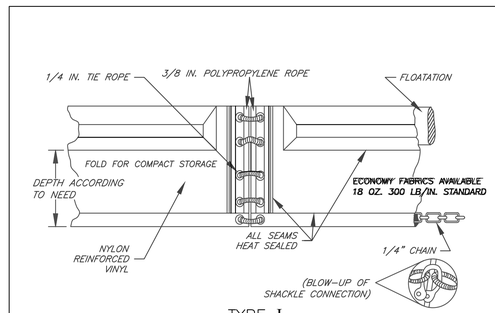
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SANDBAG DAM DETAIL

LONGITUDINAL SECTION VIEW



TEMPORARY INSTREAM CONSTRUCTION MEASURES	*REVISED NOVEMBER 2000 PAGE 1.4 – 2*	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



TYPE I

DRAWING NOT TO SCALE

EROSION CONTROL MANUAL	TURBIDITY CURTAIN CONNECTIONS

100% DESIGN

ED-03

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com

10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND

STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
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DATE JAN 2024 SHEET NO. 48 OF 59

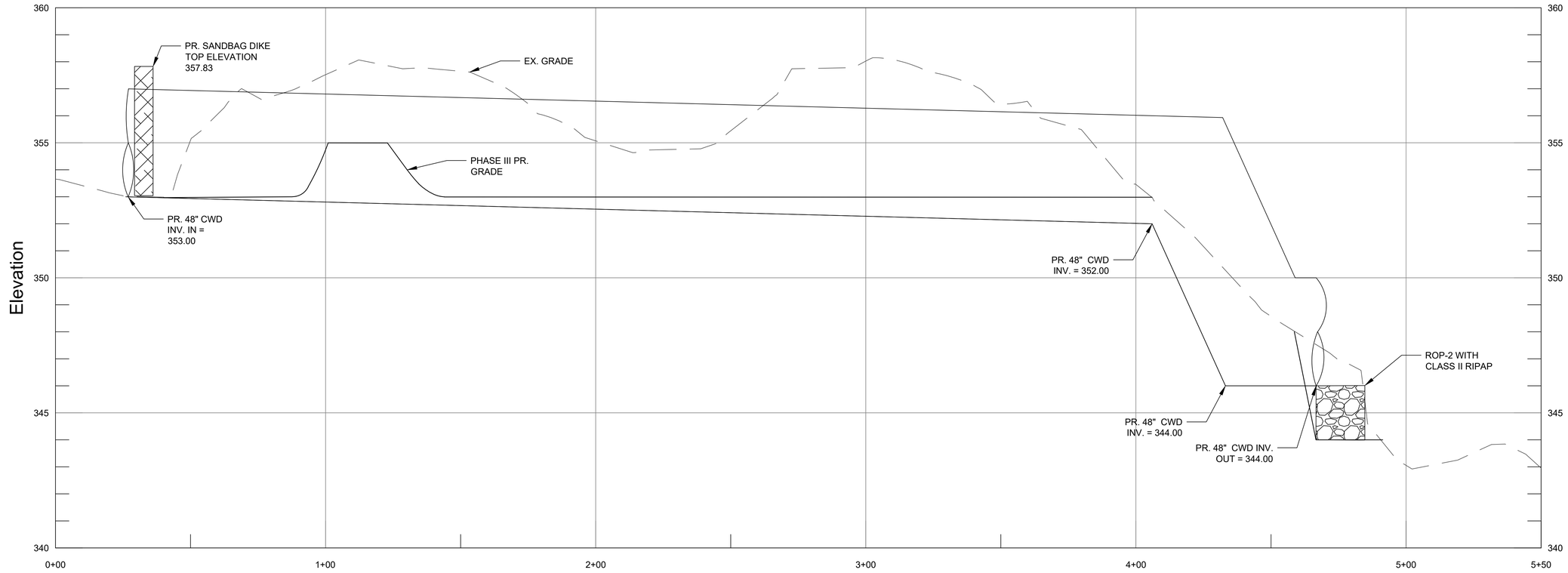
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D–1159

EROSION & SEDIMENT CONTROL DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

PROFILE VIEW OF CWD-1



Feet
4
2
0

0 20 40 Feet

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

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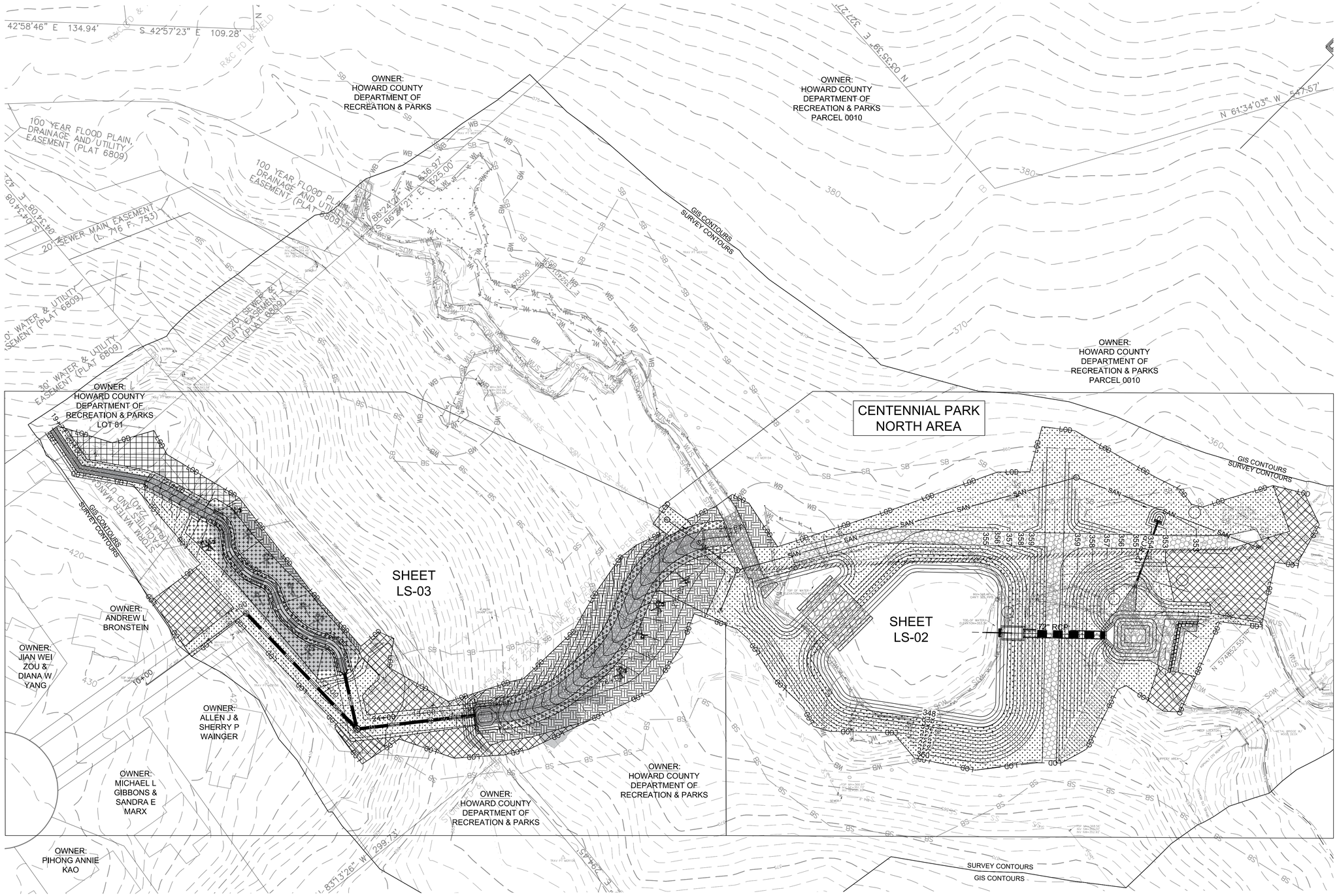
SOUTH MEADOW COURT POND
RETROFIT AND STREAM
STABILIZATION PROJECT
CAPITAL PROJECT D-1159

EROSION & SEDIMENT CONTROL
DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



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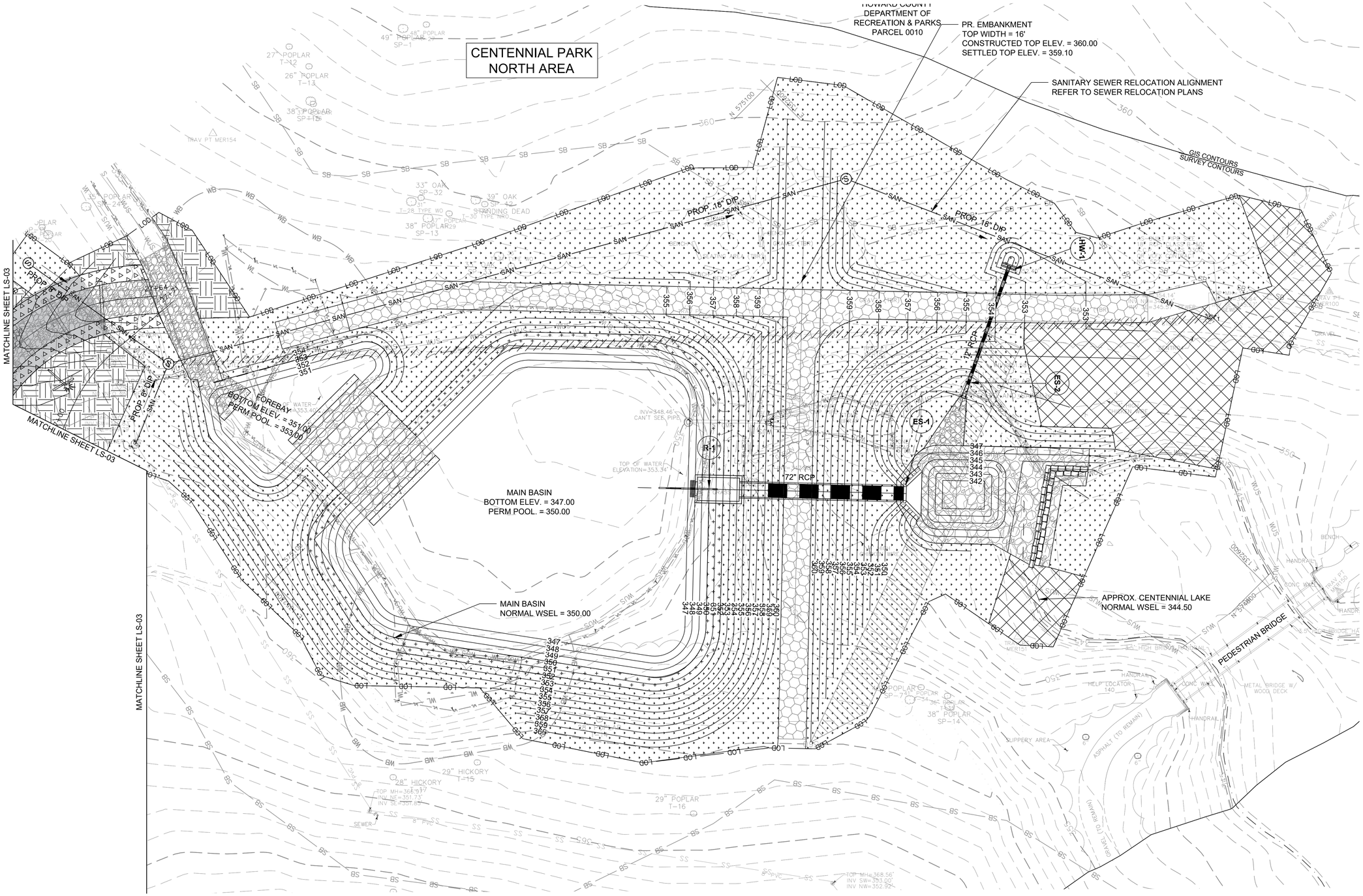
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

LANDSCAPING PLAN KEY MAP

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



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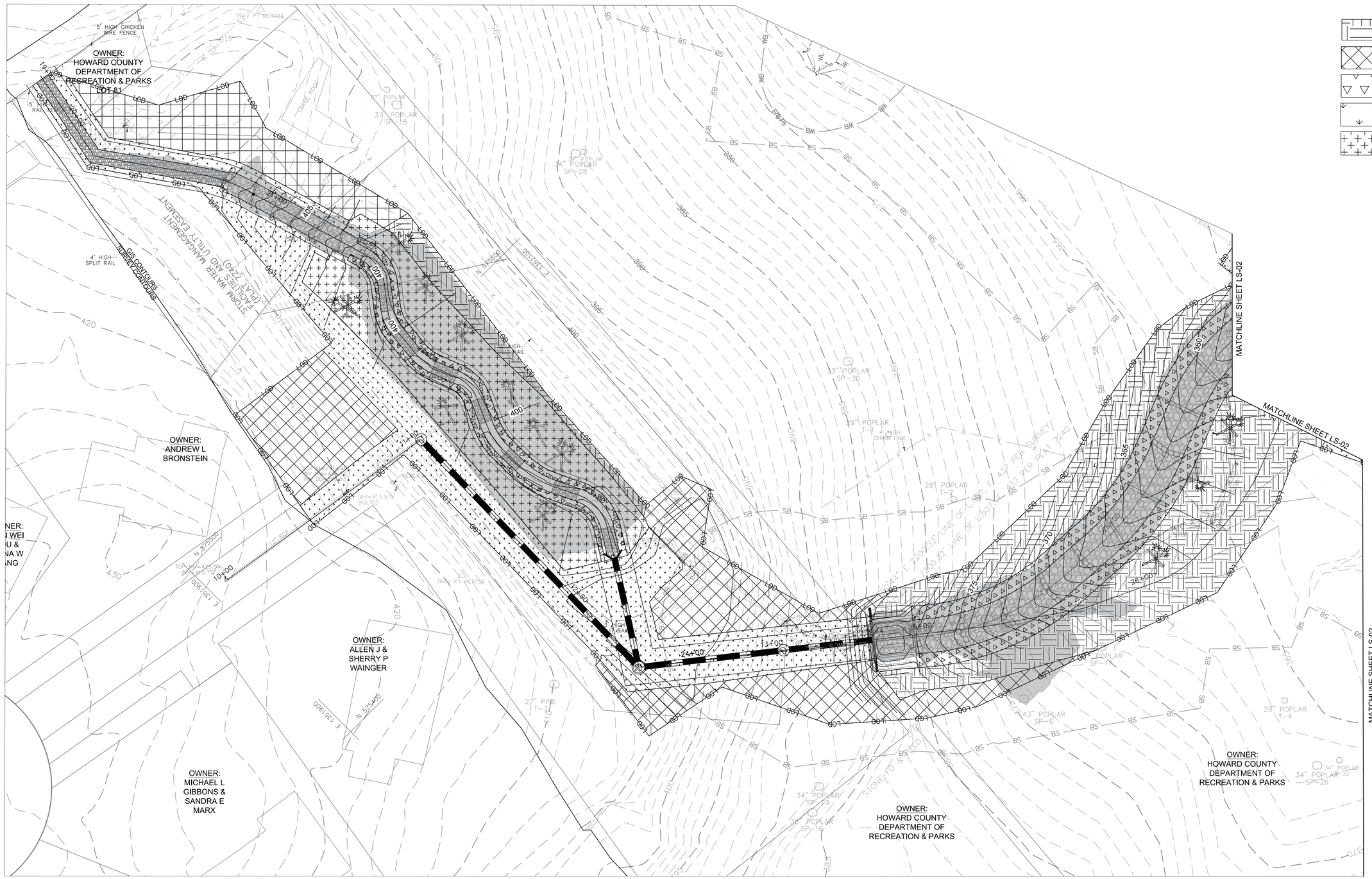
SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

LANDSCAPING PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



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SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

CAPITAL PROJECT D-1159

LANDSCAPING PLAN

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

PLANT SCHEDULE UPLAND TREE ZONE					OVERALL QTY. TREES / SHRUBS PER ACRE: TOTAL ZONE SIZE: 27,342 SF/43,560 =		194 / 436 0.63 ACRES	
TOTAL QUANTITY	DESCRIPTION		ROOT TYPE	MINIMUM CONTAINER SIZE	WETLAND INDICATOR STATUS	MINIMUM SIZE / HEIGHT	APPROXIMATE SPACING	COMMENTS
	BOTANICAL NAME	COMMON NAME						
73	**CANOPY TREES (@60%)**							
19	*Carya glabra*	Pignut Hickory	CONT.	#7	FACU	1" CAL.	15 FT. ON CENTER	
18	*Liriodendron tulipifera*	Tulip Poplar	CONT.	#7	FACU	1" CAL.	15 FT. ON CENTER	
18	*Quercus alba*	White Oak	CONT.	#7	FACU	1" CAL.	15 FT. ON CENTER	
18	*Quercus velutina*	Black Oak	CONT.	#7	NI	1" CAL.	15 FT. ON CENTER	
49	**UNDERSTORY TREES (@ 40%)**							
13	*Cornus florida*	Flowering Dogwood	CONT.	#5	FACU	6 FT. HT.	15 FT. ON CENTER	
12	*Ilex opaca*	American Holly	CONT.	#5	FACU	6 FT. HT.	15 FT. ON CENTER	
12	*Prunus serotina*	Black Cherry	CONT.	#5	FACU	6 FT. HT.	15 FT. ON CENTER	
12	*Robinia pseudoacacia*	Black Locusst	CONT.	#5	FACU	6 FT. HT.	15 FT. ON CENTER	
275	**SHRUBS**							
92	*Lindera benzoin*	Spicebush	CONT.	#3	FAC	3 FT. HT.	10 FT. ON CENTER	
92	*Sambucus racemosa*	Red Elderberry	CONT.	#3	FACU	3 FT. HT.	10 FT. ON CENTER	
91	*Viburnum prunifolium*	Smooth Blackhaw	CONT.	#3	FACU	3 FT. HT.	10 FT. ON CENTER	

PLANT SCHEDULE STREAMBANK RIPARIAN FOREST ZONE					OVERALL QTY. TREES / SHRUBS PER ACRE: TOTAL ZONE SIZE: 10,669 SF/43,560 =		194 / 436 0.24 ACRES	
TOTAL QUANTITY	DESCRIPTION		ROOT TYPE	MINIMUM CONTAINER SIZE	WETLAND INDICATOR STATUS	MINIMUM SIZE / HEIGHT	APPROXIMATE SPACING	COMMENTS
	BOTANICAL NAME	COMMON NAME						
28	**CANOPY TREES (@60%)**							
6	*Acer rubrum*	Red Maple	CONT.	#7	FAC	1" CAL.	15 FT. ON CENTER	Plant along wetland edges
6	*Acer saccharinum*	Silver Maple	CONT.	#7	FACW	1" CAL.	15 FT. ON CENTER	Plant closer to stream
6	*Nyssa sylvatica*	Black Gum	CONT.	#7	FAC	1" CAL.	15 FT. ON CENTER	Plant further from stream
5	*Platanus occidentalis*	American Sycamore	CONT.	#7	FACW	1" CAL.	15 FT. ON CENTER	Plant closer to stream
5	*Quercus bicolor*	Swamp White Oak	CONT.	#7	FACW	1" CAL.	15 FT. ON CENTER	Plant closer to stream
19	**UNDERSTORY TREES (@ 40%)**							
4	*Amelanchier canadensis*	Shadbush Serviceberry	CONT.	#5	FAC	6 FT. HT.	15 FT. ON CENTER	Plant further from stream
4	*Carpinus caroliniana*	American Hornbeam	CONT.	#5	FAC	6 FT. HT.	15 FT. ON CENTER	Plant closer to stream
4	*Cercis canadensis*	Eastern Redbud	CONT.	#5	FACU	6 FT. HT.	15 FT. ON CENTER	
4	*Hamamelis virginiana*	Witchhazel	CONT.	#5	FACU	6 FT. HT.	15 FT. ON CENTER	
3	*Ulmus rubra*	Slippery Elm	CONT.	#5	FAC	6 FT. HT.	15 FT. ON CENTER	Plant closer to stream
105	**SHRUBS**							
21	*Aronia melanocarpa*	Black Chokeberry	CONT.	#3	FAC	3 FT. HT.	10 FT. ON CENTER	Plant further from stream
21	*Cornus amomum*	Silky Dogwood	CONT.	#3	FACW	3 FT. HT.	10 FT. ON CENTER	Plant closer to stream
21	*Ilex verticillata*	Common Winterberry	CONT.	#3	FACW	3 FT. HT.	10 FT. ON CENTER	Plant closer to stream
21	*Vaccinium corymbosum*	Highbush Blueberry	CONT.	#3	FACW	3 FT. HT.	10 FT. ON CENTER	Plant closer to stream
21	*Viburnum dentatum*	Southern Arrowwood	CONT.	#3	FAC	3 FT. HT.	10 FT. ON CENTER	Plant further from stream

PLANT SCHEDULE LIVE STAKE ZONE					OVERALL QTY. LIVE STAKES PER ACRE: TOTAL ZONE SIZE: 7,223 SF/43,560 =		10,890 0.17 ACRES	
TOTAL QUANTITY	DESCRIPTION		ROOT TYPE [1]	MINIMUM CONTAINER SIZE	WETLAND INDICATOR STATUS	SIZE / HEIGHT [1]	APPROXIMATE SPACING	COMMENTS
	BOTANICAL NAME	COMMON NAME						
1,851	**LIVE STAKES**							
264	*Alnus serrulata*	Smooth Alder	LS	NA	OBL	3 FT. HT.	2 FT. ON CENTER	Plant in wetter portions of zone
264	*Cephalanthus occidentalis*	Buttonbush	LS	NA	OBL	3 FT. HT.	2 FT. ON CENTER	Plant in wetter portions of zone
265	*Cornus amomum*	Silky Dogwood	LS	NA	FACW	3 FT. HT.	2 FT. ON CENTER	
264	*Cornus sericea (C. stolonifera)*	Red Osier Dogwood	LS	NA	FACW	3 FT. HT.	2 FT. ON CENTER	
265	*Salix sericea*	Silky Willow	LS	NA	OBL	3 FT. HT.	2 FT. ON CENTER	
265	*Sambucus nigra (S. canadensis)*	Common Elderberry	LS	NA	FACW	3 FT. HT.	2 FT. ON CENTER	
264	*Viburnum dentatum*	Southern Arrowwood	LS	NA	FAC	3 FT. HT.	2 FT. ON CENTER	

[1] TUBELINGS MEASURING A MINIMUM OF 1–FT. HEIGHT MAY BE SUBSTITUTED FOR LIVE STAKES.

EMERGENT NONTIDAL WETLAND ZONE			OVERALL QTY. LIVE STAKE/TUBELINGS PER ACRE: 10,890 OVERALL QTY. FERNS PER ACRE: 4,840 TOTAL ZONE SIZE: 9,366 SF/43,560 = 0.22 ACRES		
TOTAL QUANTITY	DESCRIPTION		WETLAND INDICATOR STATUS	APPROXIMATE SPACING	COMMENTS
	BOTANICAL NAME	COMMON NAME			
Permanently Saturated / Regularly to Intermittently Inundated Zone					
150	*Carex crinita*	Fringed Sedge	OBL	2 FT. ON CENTER	
150	*Carex stricta*	Upright Sedge	OBL	2 FT. ON CENTER	
150	*Carex vulpinoidea*	Fox Sedge	OBL	2 FT. ON CENTER	
150	*Chelone glabra*	White Turtlehead	OBL	2 FT. ON CENTER	
150	*Eleocharis acicularis*	Needle Spikerush	OBL	2 FT. ON CENTER	
150	*Eleocharis obtusa*	Blunt Spikerush	OBL	2 FT. ON CENTER	
150	*Glyceria striata*	Fowl Mannagrass	OBL	2 FT. ON CENTER	
150	*Iris versicolor*	Harelquin Blueflag	OBL	2 FT. ON CENTER	
149	*Juncus effusus*	Common Rush	FACW	2 FT. ON CENTER	
149	*Mimulus ringens*	Allegheny Monkeyflower	OBL	2 FT. ON CENTER	
1,065	*Onoclea sensibilis*	Sensitive Fern	FACW	2 FT. ON CENTER	
Seasonally Saturated / Irregularly Inundated Zone					
150	*Andropogon virginicus*	Broomsedge Bluestem	FACU	2 FT. ON CENTER	
150	*Aster novae-angliae*	New England Aster	FACW	2 FT. ON CENTER	
150	*Carex crinita*	Fringed Sedge	OBL	2 FT. ON CENTER	
150	*Carex lurida*	Shallow Sedge	OBL	2 FT. ON CENTER	
149	*Eupatorium perfoliatum*	Boneset	FACW	3 FT. ON CENTER	
149	*Juncus tenuis*	Poverty Rush	FAC	2 FT. ON CENTER	

UPLAND TREE ZONE SEED			SEEDING RATE/ACRE: 40 lbs TOTAL ZONE SIZE: 27,342 SF/43,560 = 0.63 ACRES			
TOTAL QTY. (lbs)	FREQUENCY %	BOTANICAL NAME	COMMON NAME	REGIONAL INDICATOR STATUS	ROOT TYPE	COMMENTS
		GRASS SPECIES				
3.78	15.0%	*Agrostis perennans*	Autumn Bentgrass	FACU	seed	Pure Live Seed
3.53	14.0%	*Chasmanthium latifolium*	River Oats	FACU	seed	Pure Live Seed
1.26	5.0%	*Elymus hystrix*	Bottlebrush Grass	UPL	seed	Pure Live Seed
4.79	19.0%	*Panicum virgatum, 'Shawnee'*	Switchgrass, 'Shawnee'	FAC	seed	Pure Live Seed
		GRASS-LIKE SPECIES				
2.77	11.0%	*Juncus tenuis*	Path Rush	FAC	seed	Pure Live Seed
0.25	1.0%	*Tradescantia virginiana*	Virginia Spiderwort	FACU	seed	Pure Live Seed
		HERBACEOUS FLOWERING SPECIES (FORBS)				
0.76	3.0%	*Anemone virginiana*	Thimbleweed	FACU	seed	Pure Live Seed
0.25	1.0%	*Apocynum cannabinum*	Indianhemp (Dogbane)	FACU	seed	Pure Live Seed
0.25	1.0%	*Aquilegia canadensis*	Eastern Columbine	FAC	seed	Pure Live Seed
0.76	3.0%	*Asclepias syriaca*	Common Milkweed	FACU	seed	Pure Live Seed
0.76	3.0%	*Asclepias tuberosa*	Butterfly Milkweed	NI	seed	Pure Live Seed
0.25	1.0%	*Aster divaricatus (Eurybia divaricata)*	White Wood Aster	NI	seed	Pure Live Seed
0.25	1.0%	*Aster macrophyllus (Eurybia macrophylla)*	Bigleaf Aster	UPL	seed	Pure Live Seed
0.25	1.0%	*Aster sagittifolius (Symphyotrichum urophyllum)*	Arrowleaf (Sagittate) Aster	NI	seed	Pure Live Seed
0.25	1.0%	*Coreopsis tripteris*	Tall Coreopsis	FAC	seed	Pure Live Seed
0.76	3.0%	*Desmodium paniculatum*	Paniclediеaf Ticktrefoil	FACU	seed	Pure Live Seed
0.25	1.0%	*Eupatorium rugosum (Ageratina altissima)*	White Snakeroot	FACU	seed	Pure Live Seed
0.13	0.5%	*Euthamia graminifolia (Solidago g.)*	Grassleaf Goldenrod	FAC	seed	Pure Live Seed
0.38	1.5%	*Geum canadense*	White Avens	FACU	seed	Pure Live Seed
0.50	2.0%	*Heliopsis helianthoides*	Oxeye Sunflower	FACU	seed	Pure Live Seed
0.76	3.0%	*Liatris spicata*	Marsh (Dense) Blazing Star (Spiked Gayfeather)	FAC	seed	Pure Live Seed
0.50	2.0%	*Monarda fistulosa*	Wild Bergamot	UPL	seed	Pure Live Seed
0.13	0.5%	*Penstemon hirsutus*	Hairy Beardtongue	NI	seed	Pure Live Seed
0.13	0.5%	*Pycnanthemum virginianum*	Virginia Mountainmint	FAC	seed	Pure Live Seed
0.50	2.0%	*Silphium perfoliatum*	Cup Plant	FAC	seed	Pure Live Seed
0.25	1.0%	*Solidago flexicaulis*	Zigzag Goldenrod	FACU	seed	Pure Live Seed
0.76	3.0%	*Verbesina alternifolia*	Wingstem	FAC	seed	Pure Live Seed
25.20	**100.0%**	**= Total**				
18.90	Companion Cover Crop	*Aven sativa or Hordeum effusus*	Common Oat (Spring/Summer) or Grain Barley (Fall/Winter)	NA	seed	Pure Live Seed

NOTES:
1–COMPANION COVER CROP TO BE APPLIED AT A RATE OF 30 LBS/AC WITH CUSTOM SEED MIXES
2–THE RATES SHOWN ARE PURE LIVE SEED. USE GERMINATION AND PURITY DATA FROM THE SEED TAG TO CALCULATE THE ACTUAL SEEDING RATE NEEDED TO OBTAIN THE SEEDING RATE IN PURE LIVE SEED.

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LS-04

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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DATE JAN 2024 SHEET NO. 53 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D–1159

PLANT SCHEDULE

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

STREAMBANK RIPARIAN FOREST ZONE AND LIVE STAKE ZONE SEED		SEEDING RATE/ACRE: 50 lbs TOTAL ZONE SIZE: 17,892 SF/43,560 = 0.41 ACRES				
TOTAL QTY. (lbs)	**FREQUENCY %**	**BOTANICAL NAME**	**COMMON NAME**	**REGIONAL INDICATOR STATUS**	**ROOT TYPE**	**COMMENTS**
		GRASS SPECIES				
0.62	3.0%	*Cinna arundinacea*	Wood Reedgrass	FACW	seed	Pure Live Seed
5.13	25.0%	*Dichanthelium clandestinum, 'Tioga' (Panicum c.)*	Deertongue, 'Tioga'	FAC	seed	Pure Live Seed
3.08	15.0%	*Elymus riparius*	Riverbank Wildrye	FACW	seed	Pure Live Seed
3.08	15.0%	*Elymus virginicus*	Virginia Wildrye	FACW	seed	Pure Live Seed
0.21	1.0%	*Glyceria striata*	Fowl Mannagrass	OBL	seed	Pure Live Seed
		GRASS-LIKE SPECIES				
0.41	2.0%	*Carex frankii*	Frank's Sedge	OBL	seed	Pure Live Seed
0.62	3.0%	*Carex intumescens*	Bladder (Star) Sedge	FACW	seed	Pure Live Seed
0.62	3.0%	*Carex squarrosa*	Squarrose Sedge	FACW	seed	Pure Live Seed
1.03	5.0%	*Juncus tenuis*	Path Rush	FAC	seed	Pure Live Seed
0.21	1.0%	*Veratrum viride*	False Hellebore	FACW	seed	Pure Live Seed
		HERBACEOUS FLOWERING SPECIES (FORBS)				
0.41	2.0%	*Aster umbellatus (Doellingeria umbellata)*	Flat Topped White Aster	FACW	seed	Pure Live Seed
0.21	1.0%	*Chelone glabra*	Turtlehead	OBL	seed	Pure Live Seed
0.82	4.0%	*Desmodium canadense*	Showy Ticktrefoil	FAC	seed	Pure Live Seed
0.41	2.0%	*Eupatorium perfoliatum*	Boneset	FACW	seed	Pure Live Seed
0.10	0.5%	*Gentiana clausa*	Meadow Bottle Gentian	FACW	seed	Pure Live Seed
0.21	1.0%	*Lobelia cardinalis*	Cardinal Flower	FACW	seed	Pure Live Seed
0.41	2.0%	*Lobelia siphilitica*	Great Blue Lobelia	FACW	seed	Pure Live Seed
1.03	5.0%	*Penstemon digitalis*	Tall White Beardtongue	FAC	seed	Pure Live Seed
0.10	0.5%	*Pycnanthemum muticum*	Bigleaf Mountainmint	FACW	seed	Pure Live Seed
0.21	1.0%	*Solidago rugosa*	Wrinkleleaf Goldenrod	FAC	seed	Pure Live Seed
0.41	2.0%	*Thalictrum pubescens (T. polygamum)*	Tall Meadow Rue	FACW	seed	Pure Live Seed
0.82	4.0%	*Verbena hastata*	Blue Vervain	FACW	seed	Pure Live Seed
0.41	2.0%	*Zizia aurea*	Golden Alexanders	FAC	seed	Pure Live Seed
20.50	**100.0%**	**= Total**				
12.30	Companion Cover Crop	*Aven sativa or Hordeum effusus*	Common Oat (Spring/Summer) or Grain Barley (Fall/Winter)	NA	seed	Pure Live Seed

NOTES:
1–COMPANION COVER CROP TO BE APPLIED AT A RATE OF 30 LBS/AC WITH CUSTOM SEED MIXES
2–THE RATES SHOWN ARE PURE LIVE SEED. USE GERMINATION AND PURITY DATA FROM THE SEED TAG TO CALCULATE THE ACTUAL SEEDING RATE NEEDED TO OBTAIN THE SEEDING RATE IN PURE LIVE SEED.

EMERGENT NONTIDAL WETLAND ZONE SEED ZONE		SEEDING RATE/ACRE: 50 lbs TOTAL ZONE SIZE: 9,366 F/43,560 = 0.22 ACRES				
TOTAL QTY. (lbs)	**FREQUENCY %**	**BOTANICAL NAME**	**COMMON NAME**	**REGIONAL INDICATOR STATUS**	**ROOT TYPE**	**COMMENTS**
		GRASS SPECIES				
2.20	20.0%	*Elymus virginicus*	Virginia Wildrye	FACW	seed	Pure Live Seed
2.75	25.0%	*Panicum rigidulum*	Redtop Panicgrass	FACW	seed	Pure Live Seed
		GRASS-LIKE SPECIES				
1.65	15.0%	*Carex lurida*	Lurid or Shallow Sedge	OBL	seed	Pure Live Seed
0.88	8.0%	*Carex lupulina*	Hop Sedge	OBL	seed	Pure Live Seed
0.55	5.0%	*Carex scoparia*	Blunt Broom Sedge	FACW	seed	Pure Live Seed
0.55	5.0%	*Carex squarrosa*	Squarrose Sedge	OBL	seed	Pure Live Seed
0.33	3.0%	*Sparganium eurycarpum*	Giant Bur Reed	OBL	seed	Pure Live Seed
0.11	1.0%	*Carex crinita*	Fringded Sedge	FACW	seed	Pure Live Seed
0.44	4.0%	*Juncus effusus*	Soft Rush	FACW	seed	Pure Live Seed
0.22	2.0%	*Scirpus cyperinus*	Woolgrass	FACW	seed	Pure Live Seed
		HERBACEOUS FLOWERING SPECIES (FORBS)				
0.22	2.0%	*Bidens cernua*	Nodding Bur Marigold	OBL	seed	Pure Live Seed
0.22	2.0%	*Eupatorium perfoliatum*	Boneset	FACW	seed	Pure Live Seed
0.11	1.0%	*Eupatorium maculatum*	Spotted Joe Pye Weed	FACW	seed	Pure Live Seed
0.11	1.0%	*Aster umbellatus*	Flat Topped White Aster	FACW	seed	Pure Live Seed
0.11	1.0%	*Mimulus ringens*	Square-Stemmed Monkeyflower	OBL	seed	Pure Live Seed
0.11	1.0%	*Verbena hastata*	Blue Vervain	OBL	seed	Pure Live Seed
0.11	1.0%	*Vernonia noveboracensis*	New york Ironweed	FACW	seed	Pure Live Seed
0.06	0.5%	*Penthorum sedoides*	Ditch Stonecrop	FACW	seed	Pure Live Seed
0.11	1.0%	*Aster prenanthoides*	Zigzag Aster	FACW	seed	Pure Live Seed
0.06	0.5%	*Iris versicolor*	Blueflag	FACW	seed	Pure Live Seed
0.06	0.5%	*Lobelia siphilitica*	Great Blue Lobelia	FACW	seed	Pure Live Seed
0.06	0.5%	*Ludwigia alternifolia*	Seedbox	FACW	seed	Pure Live Seed
11.00	**100.0%**	**= Total**				
6.60	Companion Cover Crop	*Aven sativa or Hordeum effusus*	Common Oat (Spring/Summer) or Grain Barley (Fall/Winter)	NA	seed	Pure Live Seed

NOTES:
1–COMPANION COVER CROP TO BE APPLIED AT A RATE OF 30 LBS/AC WITH CUSTOM SEED MIXES
2–MIX EQUIVALENT TO ERNST CONSERVATION SEED MIX ERNMX–713– MD UPPER MIDLAND FACW MIX / ERNMX–714 – MD UPPER MIDLAND OBL MIX
3 – THE RATES SHOWN ARE PURE LIVE SEED. USE GERMINATION AND PURITY DATA FROM THE SEED TAG TO CALCULATE THE ACTUAL SEEDING RATE NEEDED TO OBTAIN THE SEEDING RATE IN PURE LIVE SEED.

TURF GRASS SEED MIX	
NAME	**AREA (SF)**
MDSHA STANDARD TURF GRASS SEED MIX	73,930

NOTES:
1 – APPLY PERMANENT SEED MIX SHOWN ON THE EROSION AND SEDIMENT CONTROL NOTES SHEET THROUGHOUT THIS ZONE AT RATES SPECIFIED.

100% DESIGN

LS-05

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture
6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com
10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL. 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND
STORMWATER MANAGEMENT DIVISION
BUREAU OF ENVIRONMENTAL SERVICES
HOWARD COUNTY GOVERNMENT
9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313–6444

BY	NO.	REVISIONS	DATE

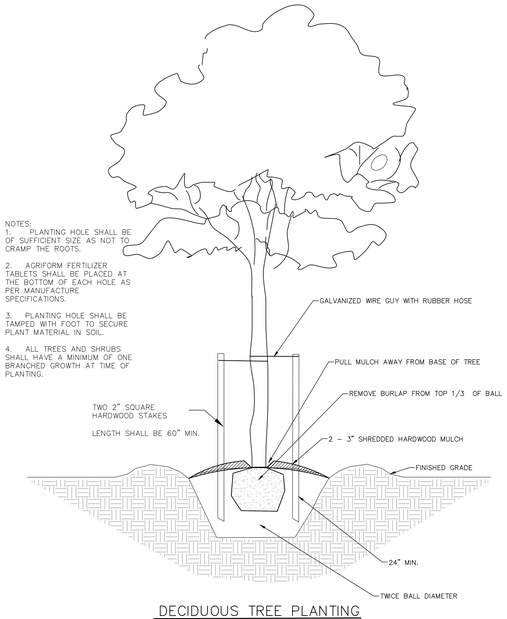
ADVERTISED DATE XX/XX/XX
CONTRACT NO. X–XX–XXX
SCALE N/A
DESIGNED BY AS/CB
DRAWN BY AS/CB
CHECKED BY SS
DATE JAN 2024 SHEET NO. 54 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

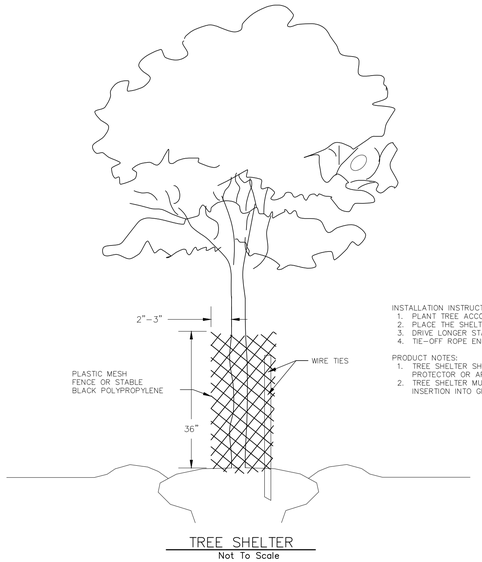
CAPITAL PROJECT D–1159

PLANT SCHEDULE

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



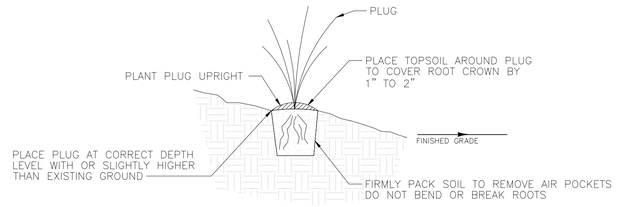
DECIDUOUS TREE PLANTING
Not To Scale



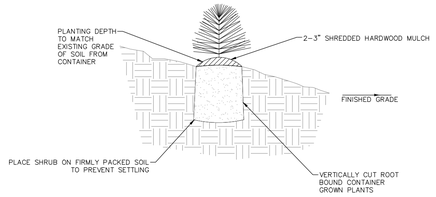
TREE SHELTER
Not To Scale

INSTALLATION INSTRUCTIONS:
1. PLANT TREE ACCORDING TO STANDARD SPECIFICATIONS.
2. PLACE THE SHELTER AROUND THE TREE.
3. DRIVE LONGER STAKES INTO THE GROUND.
4. TIE-OFF ROPE ENDS AROUND THE TREE.

PRODUCT NOTES:
1. TREE SHELTER SHALL BE A.M. LEONARD TREE BARK PROTECTOR OR APPROVED EQUAL.
2. TREE SHELTER MUST HAVE LONGER, HARDY STAKES FOR INSERTION INTO GROUND TO PROVIDE SUPPORT.

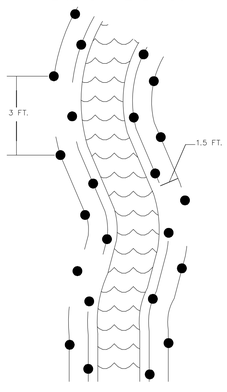


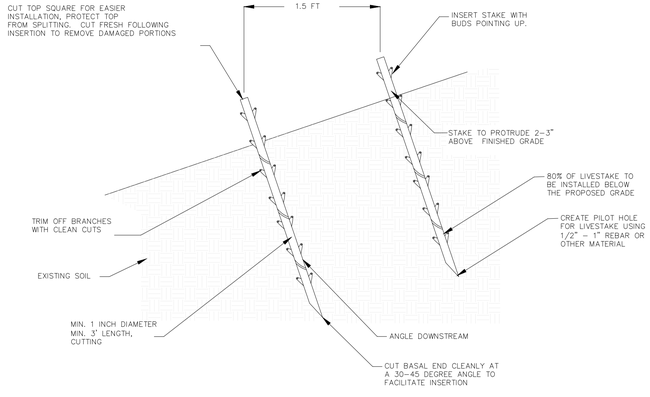
2" PERENNIAL PLUG DETAIL
Not To Scale



NOTES:
1. PLANTING HOLE SHALL BE OF SUFFICIENT SIZE AS NOT TO CRAMP THE ROOTS.
2. AGRIFORM FERTILIZER TABLETS SHALL BE PLACED AT THE BOTTOM OF EACH HOLE AS PER MANUFACTURE SPECIFICATIONS.
3. PLANTING HOLE SHALL BE TAMPED WITH FOOT TO SECURE PLANT MATERIAL IN SOIL.
4. ALL TREES AND SHRUBS SHALL HAVE A MINIMUM OF ONE BRANCHED GROWTH AT TIME OF PLANTING.
5. BACKFILL MIX 3:1 RATIO TOPSOIL FOR ORIGINAL SOIL.

SHRUB DETAIL
Not To Scale

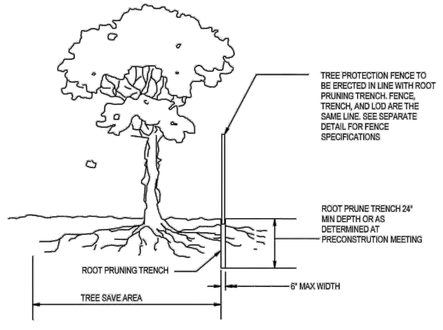




LIVE STAKE INSTALLATION
NOT TO SCALE

NOTES:
LIVESTAKES MUST BE INSTALLED WHILE DORMANT (LATE FALL TO EARLY SPRING). DO NOT ALLOW LIVE STAKES TO DESSICATE. KEEP LIVE STAKES MOIST AND COOL DURING STORAGE AND TRANSPORT.

Figure E-9:
Root Pruning



Notes:
1. Retention areas to be established as part of the Forest Conservation Plan review process.
2. Stake, flag and/or fence boundaries of Retention Areas prior to trenching.
3. Exact location of trench to be identified on site.
4. Immediately backfill trench with excavated soil or replace with organic soil.
5. Cut roots cleanly using vibratory knife or other acceptable equipment.

Source: Adapted from Steve Clark & Associates/ACRT, Inc. and State Forest Conservation Technical Manual 1991

100% DESIGN

LS-06

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, STORMWATER MANAGEMENT DIVISION DATE

PREPARED BY:
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a joint venture

6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
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HOWARD COUNTY MARYLAND

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9801 BROKEN LAND PARKWAY
COLUMBIA, MD 21046
(410) 313-6444

BY	NO.	REVISIONS	DATE

ADVERTISED DATE XX/XX/XX
CONTRACT NO. X-XX-XXX
SCALE N.T.S.
DESIGNED BY AS/CB
DRAWN BY AS/CB
CHECKED BY SS
DATE JAN 2024 SHEET NO. 55 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT
CAPITAL PROJECT D-1159

LANDSCAPING DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002

HOWARD COUNTY

South Meadow Court Pond Retrofit and Stream Restoration Sewer Plans

Capital Project #D-1159

Contract No. 522-S-ADD1

NOT FOR CONSTRUCTION

100% SUBMITTAL

DECEMBER 18, 2023

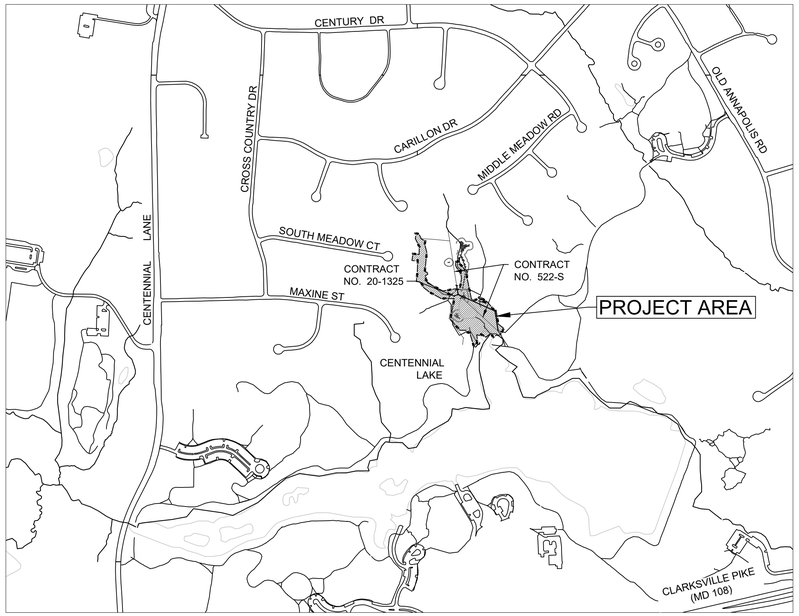
SHEET INDEX

LEGEND

- EXISTING SANITARY LINE & MANHOLE
- EXISTING TRAVERSE POINT
- EXISTING FENCE
- EXISTING STORMWATER PIPE
- EXISTING STORMWATER MANHOLE
- TREELINE
- EXISTING TREE
- EXISTING PATH
- EXISTING 5' MAJOR CONTOUR
- EXISTING 1' MINOR CONTOUR
- SURVEYED WATERS OF THE US
- SURVEYED WETLAND
- 25' WETLAND BUFFER
- ROCK SILL
- IMBRICATED WALL/BANK PROTECTION
- RIFFLE GRADE CONTROL
- BOULDER CASCADE
- LIMIT OF DISTURBANCE
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- PROPOSED STORM DRAIN
- LIMIT OF GRADING
- PROPOSED SANITARY SEWER AND MANHOLE
- FLOODPLAIN BUFFER
- 100 YEAR FLOODPLAIN

ABBREVIATIONS

DIP	DUCTILE IRON PIPE
EA	EACH
EX	EXISTING
INV	INVERT
LF	LINEAR FEET
PR	PROPOSED
STA	STATION



HORIZONTAL DATUM	NAD 83 / 91
VERTICAL DATUM	NAVD 88

ADC MAP COORDINATES
HOWARD COUNTY MAP 11
COLUMN G, ROW 13

VICINITY MAP

0 600 1200 Feet

SCALE: 1"=600'

QUANTITIES				
ITEM	UNIT	ESTIMATE	AS-BUILT	MATERIAL SUPPLIER
PRECAST DOGHOUSE MH (WT)	EA	1		
PRECAST 5FT MH (WT)	EA	2		
8" DIP, CL 54	LF	37		
8" DIP, CL 54	LF	73.90		
18" DIP, CL 54	LF	467.75		
NAME OF UTILITY CONTRACTOR				
			AS-BUILT DATE	

SEWER NOTES

1.ALL SEWER MAINS SHALL BE D.I.P. UNLESS OTHERWISE NOTED.

2.ALL MANHOLES SHALL BE 5' - 0" INSIDE DIAMETER UNLESS OTHERWISE NOTED.

3.FORCE MAINS SHALL BE D.I.P. ONLY.

4.MANHOLES SHOWN WITH 12" AND 16" WALLS ARE FOR BRICK MANHOLES ONLY.

5.MANHOLES DESIGNATED W.T. IN PLAN AND PROFILE SHALL HAVE WATERTIGHT FRAME AND COVER. STANDARD DETAIL G5.52. WHERE WATERTIGHT MANHOLE FRAMES AND COVERS ARE USED, SET TOP OF FRAME 1'- 6" ABOVE FINISHED GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS.

6.HOUSE(S) WITH THE SYMBOL "C.N.S." INDICATES THAT THE CELLAR CANNOT BE SERVED.

OWNERS/DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ANY CLEARING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVE EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THAT CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION PRIOIR TO THE BEGINNING OF THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE."

OWNER/DEVELOPER SIGNAURE _____ DATE _____

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPOVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 39966, EXPIRATION DATE: 1-17-23

GENERAL NOTES

1.APPROXIMATE LOCATIONS OF EXISTING MAINS ARE SHOWN. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT EXISTING MAINS AND SERVICES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED SHALL BE REPAIRED IMMEDIATELY TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
2.SURVEY OF THIS SITE WAS PERFORMED BY MERCADO CONSULTANTS (MERCADO) IN AUGUST 2019.
3.THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. BENCHMARKS SHOWN HEREON WERE PROVIDED BY MERCADO.
4.ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE NOTED ON THE PLANS.
5.CLEAR ALL UTILITIES BY A MINIMUM OF 12 INCHES. CLEAR ALL POLES BY 5'- 0" MINIMUM OR TUNNEL AS REQUIRED UNLESS OTHERWISE NOTED. THE OWNER HAS CONTACTED THE UTILITY COMPANIES AND HAS MADE ARRANGEMENTS FOR BRACING OF POLES AS SHOWN ON THE DRAWINGS. IN THE EVENT THE CONTRACTOR'S WORK REQUIRES THE BRACING OF ADDITIONAL POLES, ANY COST INCURRED BY THE OWNER FOR THE BRACING OF ADDITIONAL POLES OR DAMAGES SHALL BE DEDUCTED FROM MONIES OWED THE CONTRACTOR. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANIES TO SCHEDULE THE BRACING OF THE POLES
6.FOR DETAILS NOT SHOWN ON THE DRAWING, AND FOR MATERIALS AND CONSTRUCTION METHODS, USE HOWARD COUNTY DESIGN MANUAL, VOLUME IV, STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION (LATEST EDITION). THE CONTRACTOR SHALL HAVE A COPY OF VOLUME IV ON THE JOB.
7.WHERE TEST PITS HAVE BEEN MADE ON EXISTING UTILITIES, THEY ARE NOTED BY THE SYMBOL AT THE LOCATIONS OF THE TEST PITS. A NOTE OR NOTES CONTAINING THE RESULTS OF THE TEST PIT OR PITS ARE INCLUDED ON THE DRAWINGS. EXISTING UTILITIES IN THE VICINITY OF THE PROPOSED WORK FOR WHICH TEST PITS HAVE NOT BEEN DUG SHALL BE LOCATED BY THE CONTRACTOR TWO WEEKS IN ADVANCE OF CONSTRUCTION OPERATIONS AT HIS OWN EXPENSE.
8.THE CONTRACTOR SHALL NOTIFY THE FOLLOWING UTILITY COMPANIES OR AGENCIES AT LEAST FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE PLANS

AT&T	800-252-1133
BGE (CONTRACTOR SERVICES)	410-637-8713
BGE (EMERGENCY)	410-685-0123
BUREAU OF UTILIIIES	410-313-4900
COLONIAL PIPELINE co	410-795-1390
MISS UTILITY	800-257-7777
STATE HIGHWAY ADMINISTRATION	410-531-5533
VERIZON	800-743-0033

9.TREES ANS SHRUBS ARE TO BE PROTECTED FROM DAMAGE TO THE MAXIMUM EXTENT, TREES AND SHRUBS LOCATED WITHIN THE CONSTRUCTION STRIP ARE NOT TO BE REMOVED OR DAMAGED BY THE CONTRACTOR.
10.THE CONTRACTOR SHALL REMOVE TREES, STUMPS AND ROOTS ALONG THE LINE OF EXCAVATION. PAYMENT FOR SUCH REMOVAL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONSTRUCTION OF THE MAIN.
11.THE CONTRACTOR SHALL NOTIFY THE BUREAU OF HIGHWAYS, HOWARD COUNTY, AT (410)-313-7450 AT LEAST FIVE WORKING DAYS BEFORE OPEN CUTTING OR BORING/ JACKING OF ANY COUNTY ROAD FOR LAYING WATER/ SEWER MAINS OR HOUSE CONNECTIONS. THE APPROVAL OF THESE DRAWINGS WILL CONSTITUTE COMPLIANCE WITH DPW REQUIREMENTS PER SECTION 18.114(a) OF THE HOWARD COUNTY CODE.

CORROSION CONTROL GENERAL NOTES (DIP)

1. EXTERNALLY COAT ALL DUCTILE IRON PIPE AND FITTINGS IN ACCORDANCE WITH THE SPECIFICATIONS.

2. POLYETHYLENE ENCASEMENT SHALL NOT BE INSTALLED ON NEW DUCTILE IRON WATER PIPE.

3. BOND ALL NEW DUCTILE IRON PIPE JOINTS EXCEPT THOSE THAT ARE SPECIFIED TO BE ELECTRICALLY ISOLATED, SEE DETAILS C-3.01 AND C-3.02.

4. FOR HORIZONTAL THERMITE WELDS TO DUCTILE IRON PIPE, SEE DETAIL C-3.04. FOR VERTICAL THERMITE WELDS TO DUCTILE IRON PIPE, SEE DETAIL C-3.05.

5. ELECTRICAL ISOLATION IS REQUIRED FOR ALL CONNECTIONS TO EXISTING PIPING.

6. FOR PLACEMENT OF ANODES, SEE DETAIL C-1.01.

7. INSTALL SEPARATOR MESH ON WATER MAIN AT EXISTING UTILITY CROSSING IF THERE IS LESS THAN 12 INCHES OF SPACING BETWEEN THEM. SEE DETAIL C-4.06.

8. DUCTILE IRON PIPE THAT WILL BE IN DIRECT CONTACT WITH POURED CONCRETE, SUCH AS AT THRUST BLOCKS, ETC., SHALL BE FIELD COATED WITH 20 MILS OF MASTIC (ROYSTON R28 OR APPROVED EQUAL). THE MASTIC COATING SHALL BE APPLIED IN TWO COATS, EACH COAT TO BE A MINIMUM OF 10 MILS IN THICKNESS.

9. DO NOT SET TEST STATIONS IN ROADWAY. PLACE TEST BOX IN NON-PAVED AREA NEXT TO ROADWAY. ROUTE ALL WIRES THROUGH PVC CONDUIT TO FINAL TEST BOX LOCATION.

10. CONTRACTOR TO NOTIFY ENGINEER 72 HOURS PRIOR TO INSTALLATION OF CORROSION CONTROL COMPONENTS.

11. EROSION AND SEDIMENT CONTROL FOR THE SEWER IS PART OF OVERALL EROSION AND SEDIMENT CONTROL FOR PROJECT EP#19-037.

THE PURPOSE OF THIS PROJECT IS TO RELOCATE A SECTION OF THE EXISTING SEWER LINE AND REPLACE IT WITH A NEW SEWER LINE AND MANHOLES IN COORDINATION WITH THE RETROFIT AND STREAM RESTORATION,CAPITAL PROJECT D-1159.

100% DESIGN

UT-01 OF 4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE _____ CHIEF, BUREAU OF ENGINEERING DATE _____

CHIEF BUREAU OF UTILITIES DATE _____ CHIEF, UTILITY DESIGN DIVISION DATE _____

PREPARED BY:

Stantec / STRAUGHAN ENVIRONMENTAL
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6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
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HOWARD COUNTY MARYLAND

UTILITY DESIGN DIVISION
BUREAU OF ENGINEERING
HOWARD COUNTY GOVERNMENT
9801 BROKEN LANDING PARKWAY
COLUMBIA, MD 21046

BY	NO.	REVISIONS	DATE

CONTRACT NO. 522-S-ADD1
SCALE AS SHOWN
DESIGNED BY CC
DRAWN BY CC
CHECKED BY FB
DATE 12/18/23 SHEET NO. 56 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM RESTORATION PROJECT
CAPITAL PROJECT D-1159

SEWER RELOCATION TITLE SHEET

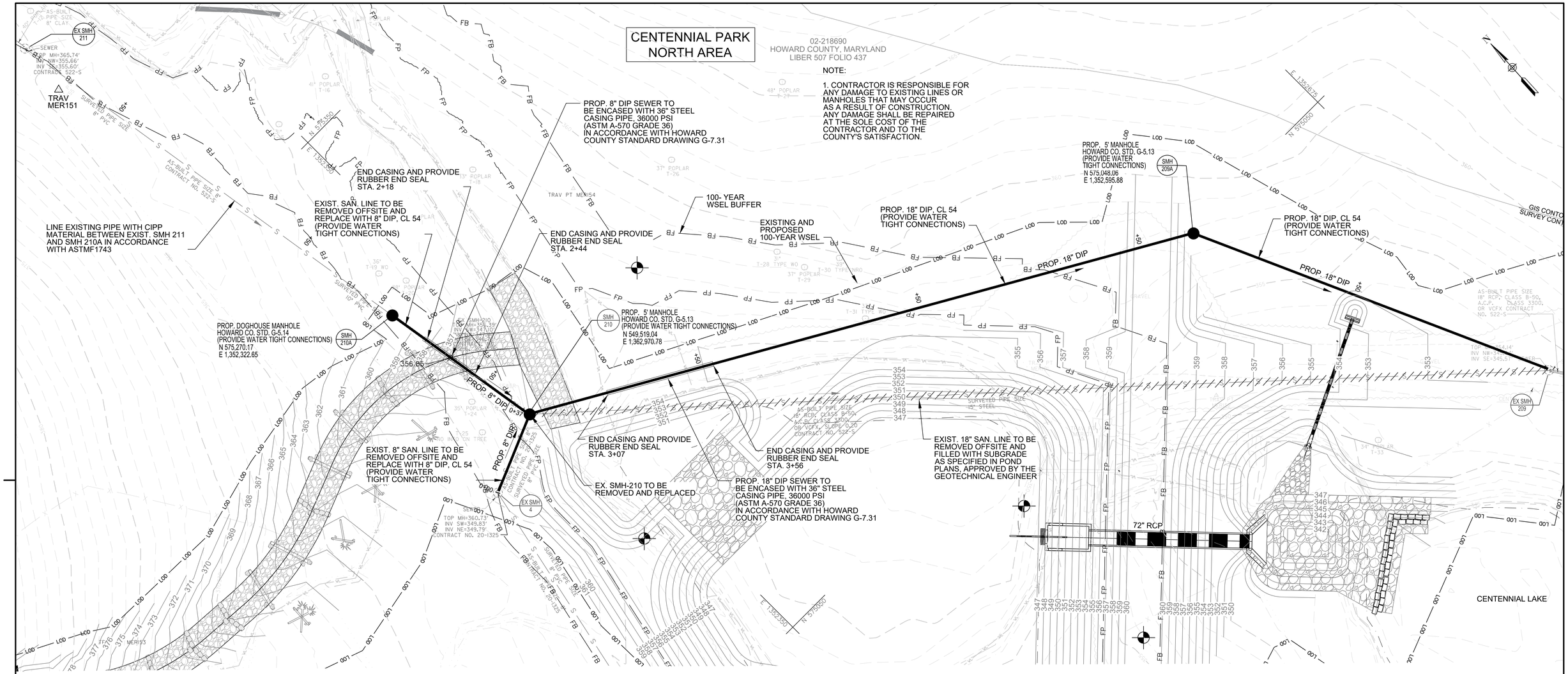
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 34 GRID NO. 0060

CENTENNIAL PARK NORTH AREA

02-218690
HOWARD COUNTY, MARYLAND
LIBER 507 FOLIO 437

NOTE:

1. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING LINES OR MANHOLES THAT MAY OCCUR AS A RESULT OF CONSTRUCTION. ANY DAMAGE SHALL BE REPAIRED AT THE SOLE COST OF THE CONTRACTOR AND TO THE COUNTY'S SATISFACTION.



SEWER RELOCATION SEQUENCE

1. PHASE 1- PROPOSED MANHOLE 209A AND 18" DIP INSTALLATION.

a. CONSTRUCT PROPOSED MANHOLE SMH-209A.
b. CONSTRUCT PROPOSED 18" DIP FROM SMH-209A TO EX-SMH-209. DO NOT MAKE CONNECTION TO THE MANHOLE 209. TEMPORARILY PLUG END OF NEW 18" DIP UNTIL IT IS READY FOR FINAL CONNECTION.
c. CONSTRUCT PROPOSED 18" DIP AND ENCASEMENT FROM SMH-209A TO SMH-210. DO NOT MAKE THE CONNECTION TO MANHOLE E SMH-210. TEMPORARILY PLUG END OF NEW 18" DIP UNTIL IT IS READY FOR FINAL CONNECTION.
d. KEEP THE EXISTING 18" RCP IN SERVICE FOR AS LONG AS REQUIRED.

2. PHASE 2 - PROPOSED 8" DIP INSTALLATION-(EX-SMH-4 AND PROPOSED SMH-210) & (SMH210A AND SMH210)

a. INSTALL BYPASS SYSTEM BETWEEN EX SMH-4 TO EX SMH-209 AND EXSMH-211 TO SMH 209.
b. REMOVE EX SMH-210, EXISTING 18" RCP BETWEEN EX SMH-210 AND EX SMH-209,EXISTING 8" CLAY PIPE BETWEEN SMH-210A AND EX SMH-210, EXISTING 8" PVC PIPE BETWEEN EX SMH-4 AND EX SMH-210. GROUT HOLE IN EX SMH-209.
c. CONSTRUCT DOGHOUSE SMH-210A, INSTALL SMH-210 AND FINALIZE CONNECTIONS OF NEW 18" DIP AT EXSMH-209 AND SMH- 210, MAKE CONNECTION FROM EX-SMH-4 TO SMH-210 AND SMH-210A TO SMH-210.
d. WITH INSPECTORS APPROVAL, REMOVE REMAINING BYPASS SYSTEMS AND OPEN NEW SYSTEM FOR SERVICE.

3. PROJECT COMPLETE.

GENERAL NOTES:

1. CONTRACTOR TO VERIFY SANITARY SEWER INVERTS PRIOR TO CONSTRUCTION.
2. ALL WORK INVOLVED IN THE REMOVAL, SALVAGE OR DISPOSAL OF EXISTING SEWER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. SEWER RELOCATION SHALL BE DONE WHEN THE DITCH IS DRY, OTHERWISE ADDITIONAL EROSION AND SEDIMENT CONTROL AND DEWATERING MEASURES WILL BE REQUIRED.
FOR ADDITIONAL INFORMATION SEE SOUTH MEADOW COURT POND RETROFIT AND STREAM RESTORATION PLAN SW-01 AND SR-01.
3. CONTRACTOR TO FOLLOW SEQUENCE OF CONSTRUCTION IN STREAM RESTORATION PLANS FOR UTILITY WORK.
4. CONTRACTOR SHALL MAINTAIN UNITERUPTED SERVICE OF THE EXISTING SEWER LINE WITH A BYPASS SYSTEM CAPABLE OF HANDLING 270,000 GPD. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF THE BYPASS SYSTEM OR CONNECTION TO THE COUNTY FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION.
5. REFER TO STREAM RESTORATION EROSION AND SEDIMENT CONTROL PLAN SHEETS FOR ALL E&S CONTROLS FOR SEWER WORK.
6. EXISTING PIPES THAT HAVE MATERIAL AND SIZE DISCREPANCIES BETWEEN FIELD AND AS-BUILTS ARE SHOWN ON THIS PLAN.
7. CONTRACTOR SHALL CONSTRUCT SEWER IN ACCORDANCE WITH HOWARD COUNTY STANDARD DRAWING G-2.11, G-5.11, G-5.13, G-5.14, G-5.52, G-5.53, G-7.31, S-3.11.
8. REFER TO AS BUILT DRAWINGS CONTRACT NO. 20-1325, DATED 4-4-86 AND CONTRACT NO. 522-S, DATED 1-8-74.
9. SEE SHEET UT-01 FOR ADDITIONAL NOTES.

PROPOSED SEWER PIPE SCHEDULE

FROM	TO	DIA. (IN)	QTY. (LF)	REMARKS
EX SMH-4	SMH-210	8	37	DIP, CL 54
SMH-210A	SMH-210	8	73.90	DIP, CL 54
SMH-210	SMH-209A	18	301.04	DIP, CL 54
SMH-209A	EX SMH-209	18	166.71	DIP, CL 54

PROPOSED SEWER STRUCTURES

ID	QTY (EA)	REMARKS
SMH-209A (WT)	1	PRECAST 5FT MH - G-5.11,G-5.13,G-5.52,G-5.53
SMH-210 (WT)	1	PRECAST 5FT MH - G-5.11,G-5.13,G-5.52,G-5.53
SMH-210A (WT)	1	PRECAST DOGHOUSE MH - G-5.11,G-5.14,G-5.52,G-5.53

(WT) = WATER TIGHT

REMOVE EXISTING SEWER PIPE

FROM	TO	DIA. (IN)	QTY. (LF)	REMARKS
EX SMH-4	SMH-210	8	37	PVC
SMH-210A	SMH-210	8	73.90	CLAY
SMH-210	EX SMH-209	18	446.40	RCP

0 20 40 Feet
SCALE: 1" = 20'

100% DESIGN

UT-02 OF 4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE
CHIEF, BUREAU OF ENGINEERING DATE
CHIEF BUREAU OF UTILITIES DATE
CHIEF, UTILITY DESIGN DIVISION DATE

PREPARED BY:
Stantec / STRAUGHAN ENVIRONMENTAL
a joint venture
6110 FROST PLACE
LAUREL, MD 20707
TEL. 301.982.2800
FAX. 301.220.2619
www.stantec.com
10245 OLD COLUMBIA ROAD
COLUMBIA, MD 21046
TEL 301.362.9200
FAX. 301-362-9245
info@straughanenvironmental.com

HOWARD COUNTY MARYLAND
UTILITY DESIGN DIVISION
BUREAU OF ENGINEERING
HOWARD COUNTY GOVERNMENT
9801 BROKEN LANDING PARKWAY
COLUMBIA, MD 21046

BY	NO.	REVISIONS	DATE

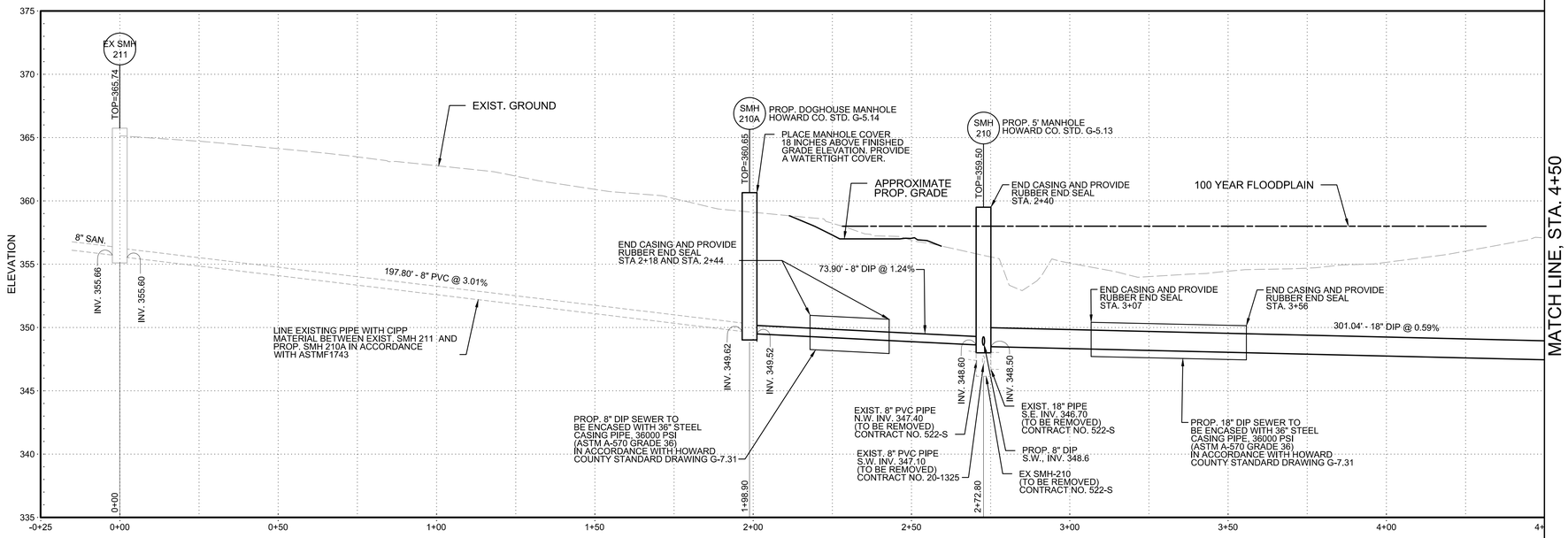
CONTRACT NO. 522-S-ADD1
SCALE 1"=20'
DESIGNED BY CC
DRAWN BY CC
CHECKED BY FB
DATE JAN 2024 SHEET NO. 57 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM STABILIZATION PROJECT

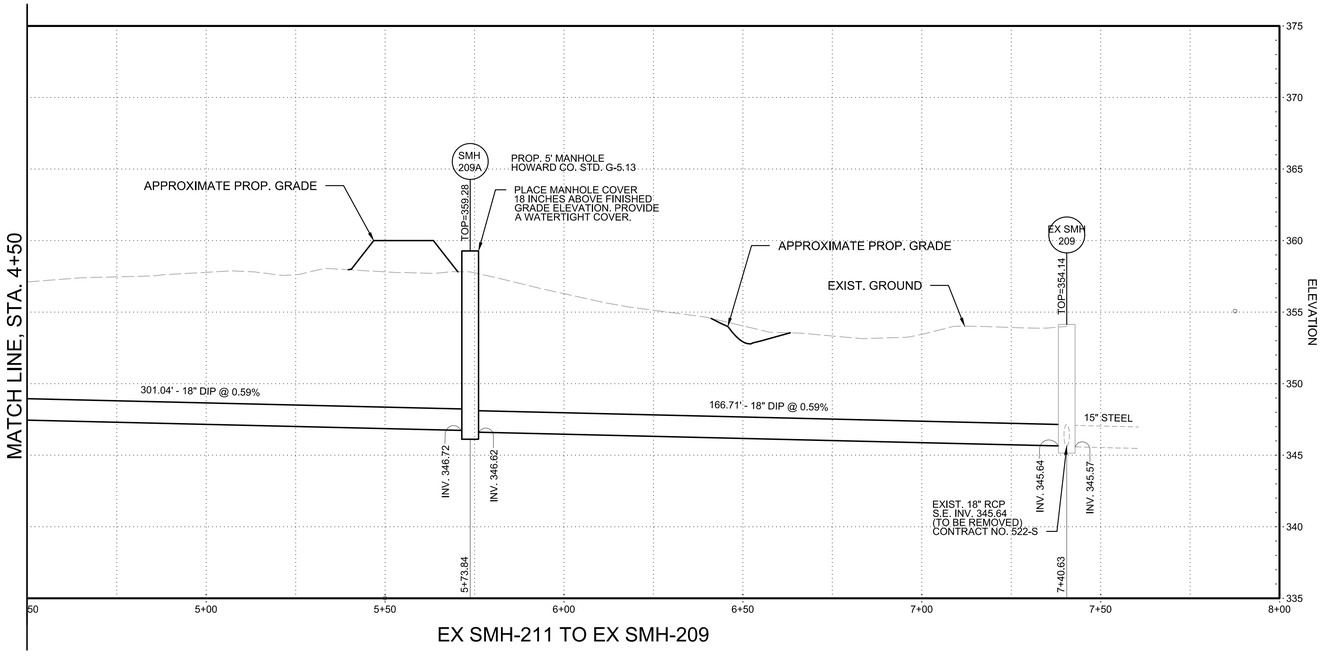
CAPITAL PROJECT D-1159

SEWER RELOCATION PLAN

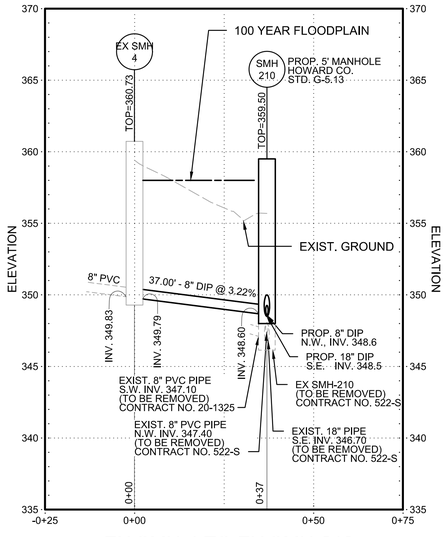
ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 30 GRID NO. 0002



EX SMH-211 TO EX SMH-209



EX SMH-211 TO EX SMH-209



EX SMH-4 TO EX SMH-210

HORZ. SCALE: 1" = 20'

VERT. SCALE: 1" =5'

100% DESIGN

UT-03 OF 4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE

CHIEF, BUREAU OF ENGINEERING DATE

CHIEF BUREAU OF UTILITIES DATE

CHIEF, UTILITY DESIGN DIVISION DATE

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BUREAU OF ENGINEERING
HOWARD COUNTY GOVERNMENT
9801 BROKEN LANDING PARKWAY
COLUMBIA, MD 21046

BY	NO.	REVISIONS	DATE

CONTRACT NO. 522-S-ADD1
SCALE AS SHOWN
DESIGNED BY CC
DRAWN BY CC
CHECKED BY FB
DATE 12/18/23 SHEET NO. 58 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM RESTORATION PROJECT

CAPITAL PROJECT D-1159

SEWER RELOCATION PROFILES

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 34 GRID NO. 0060

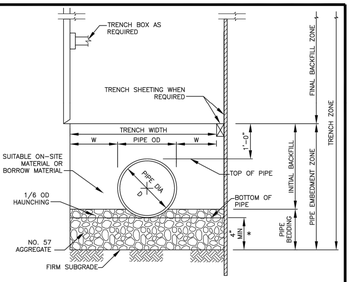
DIP

PIPE DIA "D"	"W"	TRENCH PAYMENT WIDTH
4	12	28
6	11	28
8	10	28
10	9	28
12	8	28
14	8	30
16	8	32
18	8	34
20	8	36
24	12	48

RCP

PIPE DIA "D"	"W"	TRENCH PAYMENT WIDTH
4	12	28
6	11	28
12	8	28
15	8	31
18	8	34
21	8	37
24	12	48
27	12	51
30	12	54
33	15	63
36	15	66
42	15	72
48	18	84
54	18	90
60	18	96
66	18	102
72	18	108
78	18	114
84	18	120
90	18	126
96	18	132
102	18	138
108	18	144

ALL DIMENSIONS IN INCHES

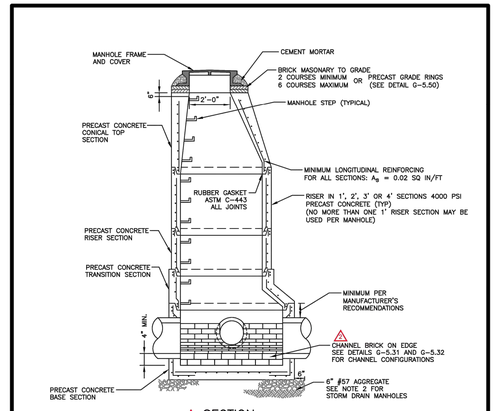


* FOR TRENCHES IN ROCK, MINIMUM BEDDING DEPTH IS 6 INCHES. FOR RCP 96 INCHES AND GREATER, MINIMUM BEDDING DEPTH IS 12 INCHES.

NOTES:

1. THE "W" DIMENSION SHALL BE USED TO CALCULATE MAXIMUM TRENCH PAY WIDTH.
2. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS NOT REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN.
3. FOR TRENCHES WHERE TRENCH BOX OR TRENCH SHEETING IS REQUIRED, MEASUREMENT FOR CONTINGENT BORROW MATERIALS WILL BE BASED ON THE TRENCH WIDTH SHOWN PLUS 24 INCHES.
4. THE MAXIMUM WIDTH OF THE TRENCH EXCAVATED ON-SITE FOR RCP, SHALL NOT EXCEED THE TRENCH PAYMENT WIDTH PLUS 12 INCHES.
5. MINIMUM SPACING BETWEEN PARALLEL CULVERT PIPES SHALL BE TWICE THE "W" DIMENSION.
6. SPECIAL DESIGN IS REQUIRED AND SHALL BE SPECIFIED OR DETAILED IN THE CONTRACT DOCUMENTS FOR THE FOLLOWING PIPES:
   - RCP STORM DRAINS LARGER THAN 108 INCHES
   - RCP GRAVITY SANITARY SEWERS LARGER THAN 48 INCHES
   - DIP LARGER THAN 24 INCHES
   - STREAM CROSSINGS SEE S-3.11 AND S-3.12
7. WATERMAIN SHALL BE SPECIAL THICKNESS CLASS 54 DIP MINIMUM.

5/30/2007 Approved 6/20/2011 Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	Pipe Trench DIP & RCP	Detail G-2.11



⚠ SECTION

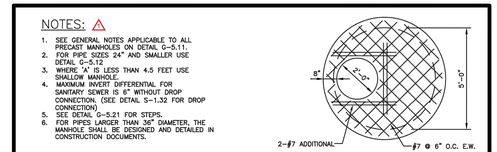
GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES

1. MANHOLE BASE SECTION SHALL BE BEDDED ON 6-INCH #57 AGGREGATE ON FIRM SUBGRADE.
2. #57 AGGREGATE MATERIAL SHALL BE EXTENDED FROM 6-INCHES UNDERNEATH BOTTOM OF STRUCTURE TO SUBGRADE (STORM ONLY).
3. CONNECTION BETWEEN MANHOLE WALL AND PIPE BE NON-SHRINK GROUT (STORM) OR COMPRESSION TYPE RUBBER GASKET (SANITARY SEWER).
4. MANHOLE STEPS SHALL BE AS INDICATED ON DETAIL G-5.21.
5. MANHOLE COVER SHALL BE AS SPECIFIED ON DETAIL G-5.51, G-5.52, & G-5.53.
6. PROVIDE TWO APPLICATIONS OF BITUMINOUS MATERIAL (MINIMUM 16 MILS DFT) COATING ON EXTERIOR SURFACE OF MANHOLES (SANITARY SEWER ONLY).
7. ⚠ MANHOLE CHANNELS SHALL BE FORMED TO PROVIDE A SMOOTH HYDRAULIC TRANSITION BETWEEN PIPES. BENCH SHALL BE TO TOP OF PIPE OR AS SHOWN ON CONTRACT DOCUMENTS. SANITARY SEWER MANHOLE CHANNEL AND BENCH SHALL BE PRECAST OR FORMED FROM SEWER BRICK SET ON EDGE. STORM DRAIN MANHOLE CHANNELS SHALL BE SEWER BRICK SET ON EDGE.
8. MANHOLE SHALL BE IN ACCORDANCE WITH ASTM C-478 EXCEPT AS INDICATED.
9. ⚠ MAXIMUM SANITARY SEWER INVERT DIFFERENTIAL IS 6 INCHES WITHOUT A DROP CONNECTION. SEE DETAIL S-1.32 FOR DROP CONNECTION DETAILS.
10. THE MINIMUM DISTANCE BETWEEN PIPE OPENINGS IN THE WALL OF THE MANHOLE SHALL BE 12 INCHES.
11. A MINIMUM OF 4" SHALL BE PROVIDED BETWEEN MANHOLE FLOOR AND LOWEST PIPE INVERT.
12. PRECAST RINGS MAY BE SUPPLIED IN PLACE OF BRICK MASONRY COURSES. SEE DETAIL G-5.50.
13. MANHOLE INTERMEDIATE LANDINGS SHALL BE AS INDICATED ON DETAIL G-5.16.
14. ⚠ SEE DETAIL D-4.01 FOR GRANITE BOTTOM WHEN INVERT DIFFERENTIAL IS EQUAL OR GREATER THAN 6' FOR STORM DRAIN MANHOLES.

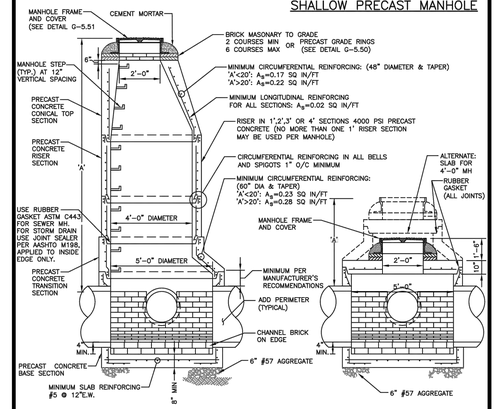
⚠ 5/30/2017 Revised 5/1/2014 Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	PRECAST MANHOLE Notes	Detail G-5.11

NOTES: ⚠

1. SEE GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES ON DETAIL G-5.11.
2. FOR PIPE SIZES 24" AND SMALLER USE DETAIL G-5.12.
3. WHERE 'A' IS LESS THAN 4.5 FEET USE SHALLOW MANHOLE.
4. MAXIMUM INVERT DIFFERENTIAL FOR SANITARY SEWER IS 6" WITHOUT DROP CONNECTION. (SEE DETAIL S-1.32 FOR DROP CONNECTION)
5. SEE DETAIL G-5.21 FOR STEPS.
6. FOR PIPES LARGER THAN 36" DIAMETER, THE MANHOLE SHALL BE DESIGNED AND DETAILED IN CONSTRUCTION DOCUMENTS.

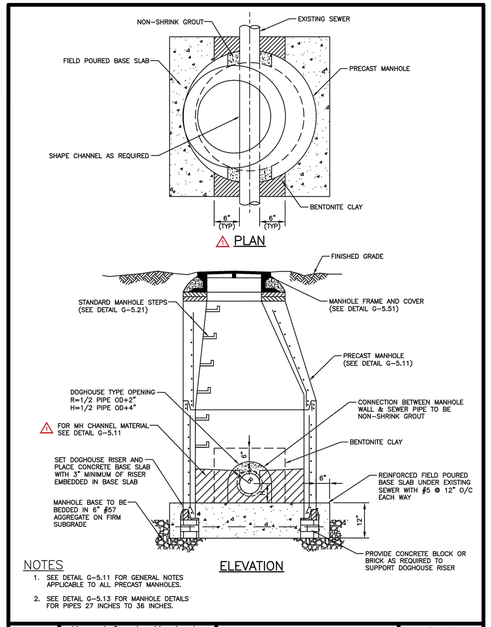


SLAB REINFORCING
SHALLOW PRECAST MANHOLE



⚠ STANDARD PRECAST MANHOLE ⚠ SHALLOW PRECAST MANHOLE

⚠ 5/30/2017 Revised 5/1/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	PRECAST MANHOLE Standard and Shallow 5'-0" for 27" to 36" Pipe	Detail G-5.13



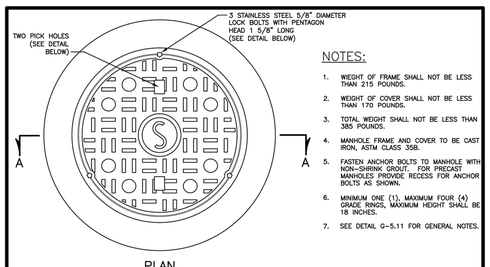
⚠ PLAN

NOTES

1. SEE DETAIL G-5.11 FOR GENERAL NOTES APPLICABLE TO ALL PRECAST MANHOLES.
2. SEE DETAIL G-5.13 FOR MANHOLE DETAILS FOR PIPES 27 INCHES TO 36 INCHES.

ELEVATION

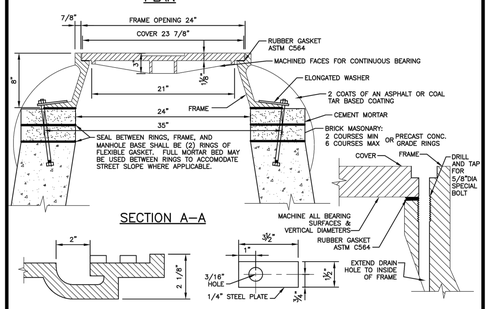
⚠ 5/30/2017 Revised 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	PRECAST MANHOLE Doghouse Over Existing Sewer 24" Pipe and Smaller	Detail G-5.14



NOTES:

1. WEIGHT OF FRAME SHALL NOT BE LESS THAN 215 POUNDS.
2. WEIGHT OF COVER SHALL NOT BE LESS THAN 170 POUNDS.
3. TOTAL WEIGHT SHALL NOT BE LESS THAN 385 POUNDS.
4. MANHOLE FRAME AND COVER TO BE CAST IRON, ASTM CLASS 35B.
5. FASTEN ANCHOR BOLTS TO MANHOLE WITH NON-SHRINK GROUT. FOR PRECAST MANHOLES PROVIDE RECESS FOR ANCHOR BOLTS AS SHOWN.
6. MINIMUM ONE (1), MAXIMUM FOUR (4) GRADE RINGS, MAXIMUM HEIGHT SHALL BE 18 INCHES.
7. SEE DETAIL G-5.11 FOR GENERAL NOTES.

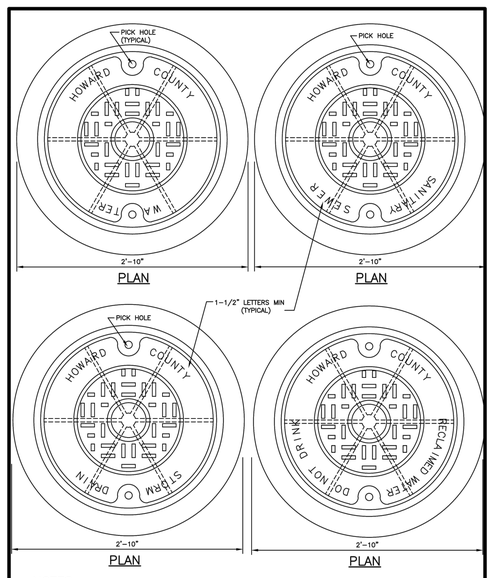
PLAN



SECTION A–A

WATERTIGHT PICKHOLE ELONGATED WASHER TAP AND GASKET

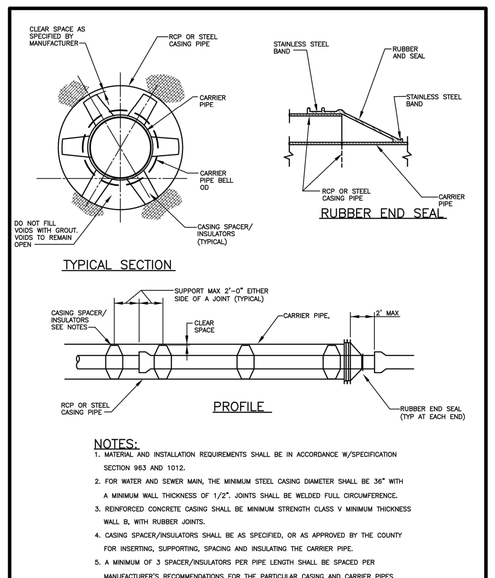
Revised 5/30/2017 Approved 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	Manhole Watertight Frame & Cover	Detail G-5.52



NOTES:

1. FOR FRAME AND COVER ASSEMBLY, AND NOTES SEE DETAIL G-5.51.

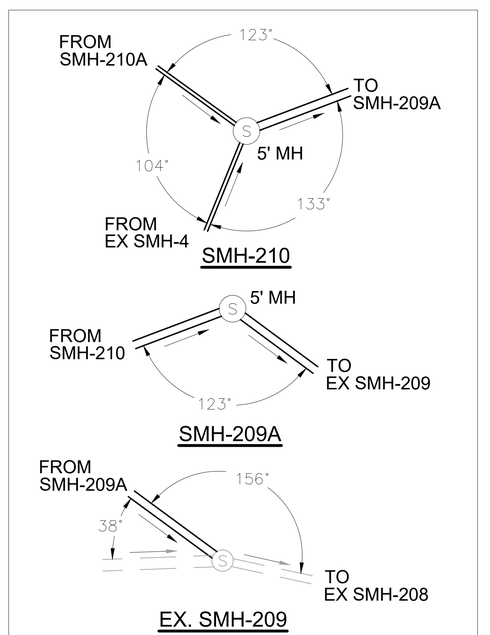
Revised 5/30/2017 Approved 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	Manhole Cover Lettering	Detail G-5.53



NOTES:

1. MATERIAL AND INSTALLATION REQUIREMENTS SHALL BE IN ACCORDANCE W/SPECIFICATION SECTION 963 AND 1012.
2. FOR WATER AND SEWER MAIN, THE MINIMUM STEEL CASING DIAMETER SHALL BE 36" WITH A MINIMUM WALL THICKNESS OF 1/2". JOINTS SHALL BE WELDED FULL CIRCUMFERENCE.
3. REINFORCED CONCRETE CASING SHALL BE MINIMUM STRENGTH CLASS V MINIMUM THICKNESS WALL B, WITH RUBBER JOINTS.
4. CASING SPACER/INSULATORS SHALL BE AS SPECIFIED, OR AS APPROVED BY THE COUNTY FOR INSERTING, SUPPORTING, SPACING AND INSULATING THE CARRIER PIPE.
5. A MINIMUM OF 3 SPACER/INSULATORS PER PIPE LENGTH SHALL BE SPACED PER MANUFACTURER'S RECOMMENDATIONS FOR THE PARTICULAR CASING AND CARRIER PIPES SPECIFIED.
6. A JOINT IN THE CARRIER PIPE SHALL BE PROVIDED WITHIN 2 FEET OF EACH OUTSIDE END OF CASING.

Revised 5/30/2017 Approved 5/7/2007 Approved	Howard County, Maryland Department of Public Works Approved: Thomas E. Butler Chief, Bureau of Engineering	Jack and Bore Casing with Casing Spacers	Detail G-7.31



PIPE ANGLE INSTALLATION DETAIL

100% DESIGN

UT-04 OF 4

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE

CHIEF, BUREAU OF ENGINEERING DATE

CHIEF BUREAU OF UTILITIES DATE

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CONTRACT NO. 522-S-ADD1
SCALE N.T.S.
DESIGNED BY CC
DRAWN BY CC
CHECKED BY FB
DATE 12/18/23 SHEET NO. 59 OF 59

SOUTH MEADOW COURT POND RETROFIT AND STREAM RESTORATION PROJECT
CAPITAL PROJECT D-1159

SEWER RELOCATION DETAILS

ELECTION DISTRICT NO. 02, HOWARD CO. MD TAX MAP 34 GRID NO. 0060