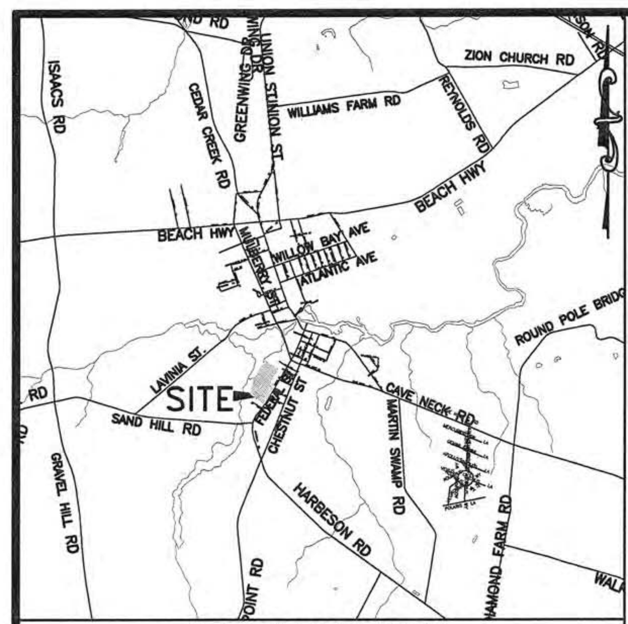

LOCATION MAP
1" = 1 MILE

MILTON ELEMENTARY SCHOOL

RENOVATIONS AND ADDITIONS
SEDIMENT AND STORMWATER MANAGEMENT PLANS
BROADKILL RIVER WATERSHED
TOWN OF MILTON,
BROADKILL HUNDRED, SUSSEX COUNTY, DELAWARE

TAX MAP ID: 235-20.11-3.00, 235-20.07-19.00
DBF # 0774A026.B01
REVISED JULY 22, 2019

LEGEND

Symbol	Description
——SF——	SILT FENCE
——LOD——	LIMIT OF DISTURBANCE
——LOD/SF——	LIMIT OF DISTURBANCE / SILT FENCE
DI 103, MH 103, P 103	CATCH BASIN, STORM DRAIN, FLOW ARROW, MANHOLE & LABELS
SP — TEMPORARY STOCKPILE AREA	TEMPORARY STOCKPILE AREA
IP1	INLET PROTECTION TYPE-1
IP2	INLET PROTECTION TYPE-2
CIP	CULVERT INLET PROTECTION
SCE	STABILIZED CONSTRUCTION ENTRANCE
CW	CONCRETE WASHOUT STATION
ROP-2	RIPRAP OUTLET PROTECTION TYPE-2
SM-S	STABILIZATION MATTING - SLOPE
SM-C	STABILIZATION MATTING - CHANNEL
PP-1	PUMPING PIT
GB	GEOTEXTILE DEWATERING BAGS

DATA COLUMN

TAX MAP NUMBER: 235-20.11-3.00, 235-20.07-19.00
SITE AREA: 17.51 AC.±
ZONING: R-1
PLUS NUMBER: 2015-11-05

LAND USE:
EXISTING: SCHOOL
PROPOSED: SCHOOL

FRONT YARD SETBACK: 30'
SIDE YARD SETBACK: 10'
REAR YARD SETBACK: 15'

SURFACE COVERAGE
EXISTING
PAVING: 138,808 SF±
BUILDINGS: 64,016 SF±
TOTAL IMPERVIOUS: 202,024 SF± (26.5%)
OPEN SPACE: 560,799 SF±
PROPOSED
PAVING: 178,117 SF±
BUILDINGS: 63,052 SF±
TOTAL IMPERVIOUS: 241,169 SF± (31.6%)
OPEN SPACE: 521,654 SF±

MAX. BUILDING HEIGHT:
SCHOOL BUILDING: 40' (EX. ROOF)
MAINT. BUILDING: 25'
BUILDING CONSTRUCTION: NFPA TYPE III (200)/TYPE II (000)
BUILDING AREA:
SCHOOL BUILDING: 97,081 SF
MAINT. BUILTING: 600 SF
GROSS BUILDING AREA: 97,681 SF

BUILDING WILL BE PROTECTED BY AUTOMATIC SPRINKLERS AND EQUIPPED WITH A LOCK BOX SYSTEM FOR FIRE DEPARTMENT ACCESSIBILITY.

PARKING
REQUIRED
1 SPACE/3.5 SEATS IN ASSEMBLY ROOMS
300 SEATS/3.5: 86
1 SPACE PER FACULTY MEMBER x 58: 58
TOTAL REQUIRED SPACES: 133

PROVIDED SPACES: 160
REQUIRED ACCESSIBLE SPACES (ADA TABLE 208.2): 6
PROVIDED ACCESSIBLE SPACES: 9

UTILITIES:
CENTRAL WATER (TOWN OF MILTON)
CENTRAL SEWER (TIDEWATER UTILITIES, INC.)

VERTICAL DATUM: NAVD 88
HORIZONTAL DATUM: DELAWARE GRID, NAD 83

NUMBER OF PERMANENT MONUMENTS: 3

ALL FIRE LANES, FIRE HYDRANTS, EXITS, AND STANDPIPE WILL BE MARKED IN ACCORDANCE WITH STATE FIRE PREVENTION REGULATIONS.

OWNER:
CAPE HENLOPEN SCHOOL DISTRICT
BRIAN BASSETT, DIRECTOR OF ADMIN. SERVICES
1270 KINGS HIGHWAY
LEWES, DE 19958
302-645-6686

PREPARED BY:
DAVIS, BOWEN, & FRIEDEL, INC.
23 NORTH WALNUT STREET
MILFORD, DE 19963
DNREC SSM PROGRAM NUMBER: XXXX-XX
302-424-1441

AGENCY CONTACT:
DNREC SEDIMENT & STORMWATER PROGRAM
RANDY GREER
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
302-739-9921

SITE ADDRESS:
512 FEDERAL STREET
MILTON, DELAWARE 19968

SCALE: 1" = 300'

SHEET INDEX

SHEET NUMBER	SHEET TITLE
C-002	COVERSHEET AND GENERAL NOTES
C-005	CIVIL NOTES & LEGEND
C-111	DEMOLITION & PRE CONSTRUCTION STORM PLAN
C-131	CONSTRUCTION SITE SWM PLAN
C-231	STORMWATER PROFILES
C-431 TO C-432	STORMWATER FACILITY DETAILS
C-531 TO C-536	SEDIMENT & STORMWATER DETAILS
C-631	STORMWATER SCHEDULES

EROSION AND SEDIMENT CONTROL NOTES

1. The DNREC Sediment and Stormwater Program must be notified in writing five (5) days prior to commencing with construction. Failure to do so constitutes a violation of the approved Sediment and Stormwater Management Plan.
2. Review and or approval of the Sediment and Stormwater Management Plan shall not relieve the contractor from his or her responsibilities for compliance with the requirements of the Delaware Sediment and Stormwater Regulations, nor shall it relieve the contractor from errors or omissions in the approved plan.
3. If the approved plan needs to be modified, additional sediment and stormwater control measures may be required as deemed necessary by DNREC or the Delegated Agency.
4. Following soil disturbance or redisturbance, permanent or temporary stabilization shall be completed for all perimeter sediment controls, soil stockpiles, and all other disturbed or graded areas on the project site within 14 calendar days unless more restrictive Federal requirements apply.
5. All erosion and sediment control practices shall comply with the Delaware Erosion and Sediment Control Handbook, latest edition.
6. At any time a dewatering operation is used, it shall be previously approved by the Agency Construction Site Reviewer for a non-erosive point of discharge, and a dewatering permit shall be approved by the DNREC Well Permitting Branch.
7. Approved plans remain valid for 5 years from the date of approval.
8. Post construction verification documents are to be submitted to the DNREC Sediment and Stormwater Program within 60-days of stormwater management facility completion.
9. Approval of a Sediment and Stormwater Management Plan does not grant or imply a right to discharge stormwater runoff. The owner/developer is responsible for acquiring any and all agreements, easements, etc., necessary to comply with State drainage and other applicable laws.
10. The Notice of Intent for Storm Water Discharges Associated with Construction Activity under a NPDES General Permit for this project is #5987. At any time the ownership for this project changes, a Transfer of Authorization or a Co-Permittee Application must be submitted to DNREC. The permittee of record shall not be relieved of their responsibilities until a Notice of Termination has been processed by the Department.
11. The owner shall be familiar with and comply with all aspects of the NPDES Construction General Permit.
12. The contractor shall at all times protect against sediment or debris laden runoff or wind from leaving the site. Perimeter controls shall be checked daily and adjusted and/or repaired to fully contain and control sediment from leaving the site. Accumulated sediment shall be removed when it has reached half of the effective capacity of the control. In addition, the contractor may need to adjust or alter measures in times of adverse weather conditions, or as directed by the Agency Construction Site Reviewer.
13. Before any earthwork or excavation takes place, the contractor shall call Miss Utility at 811 or 1-800-282-8555 at least 48 hours prior to construction, to have all existing utilities marked onsite.
14. Best available technology (BAT) shall be employed to manage turbid discharges in accordance with requirements of 7 Del.C. Ch. 60 and the current Delaware Construction General Permit (CGP).
15. Documentation of soil testing and materials used for temporary or permanent stabilization including but not limited to soil test results, seed tags, soil amendment tags, etc. shall be provided to the Department or Delegated Agency to verify that the permanent or temporary stabilization has been completed in accordance with the approved plan.
16. The Department or Delegated Agency may require additional soil testing and reapplication of permanent or temporary stabilization in accordance with specifications provided in the Delaware Erosion and Sediment Control Handbook, or alternative measures that provide functional equivalency.
17. It shall be the sole responsibility of the contractor to maintain and repair all erosion, sediment control and stormwater management practices during utility installation and site construction.
18. It shall be the sole responsibility of the owner to maintain and repair all erosion, sediment control and stormwater management practices after completion and approval of all stormwater management practices.
19. Unless otherwise specified, temporary vegative stablilization shall use seed mix no. 5 and permanent vegatvie stabilization shall use seed mix no. 7 per details on sheet C-533.
20. Temporary vegetative cover, mulching and/or sprinkling with water shall be the methods used as necessary to control dust.
21. Stabilization matting shall be North American Green SC150BN or DNREC type SSM-III.
22. All Riprap shall be underlain with Mirafi 600X Geotextile or DNREC type GS-1.
23. Excess soil to be relocated off-site and stabilized in accordance with the Delaware Erosion and Sediment Control Handbook.

OWNER'S CERTIFICATION

"I, THE UNDERSIGNED, CERTIFY THAT ALL LAND CLEARING, CONSTRUCTION AND DEVELOPMENT SHALL BE DONE PURSUANT TO THE APPROVED PLAN AND THAT RESPONSIBLE PERSONNEL (I.E., BLUE CARD HOLDER) INVOLVED IN THE LAND DISTURBANCE WILL HAVE A CERTIFICATION OF TRAINING PRIOR TO INITIATION OF THE PROJECT, AT A DNREC SPONSORED OR APPROVED TRAINING COURSE FOR THE CONTROL OF EROSION AND SEDIMENT DURING CONSTRUCTION. IN ADDITION, I GRANT THE DNREC SEDIMENT AND STORMWATER PROGRAM AND/OR THE RELEVANT DELEGATED AGENCY THE RIGHT TO CONDUCT ON-SITE REVIEWS, AND I UNDERSTAND MY RESPONSIBILITIES UNDER THE NPDES CONSTRUCTION GENERAL PERMIT, AS REFERENCED ON THIS COVERSHEET."

[signature] DATE 7/23/19

BRIAN BASSETT
DIRECTOR OF ADMINISTRATIVE SERVICES,
CAPE HENLOPEN SCHOOL DISTRICT,

dbf
DAVIS, BOWEN & FRIEDEL, INC.
ENGINEERS & SURVEYORS
SALISBURY, MARYLAND (410) 543-9091
MILFORD, DELAWARE (302) 424-1441
EASTON, MARYLAND (410) 770-4744

ENGINEER'S STATEMENT

I hereby certify that this plan has been prepared under my supervision and to the best of my knowledge complies with the applicable state and local regulations and ordinances

[signature] 7.23.2019
DAVIS, BOWEN & FRIEDEL, INC.
by W. ZACHARY CROUCH, P.E.
DATE

W. ZACHARY CROUCH REGISTERED No. 12734 DELAWARE PROFESSIONAL ENGINEER

State of Delaware DNREC
Sediment and Stormwater Management Plan
No.: 2019-023
By: [signature]
Title: E-VI
Approval Date: 07/29/2019
Expiration Date: 07/29/2024

DISTURBED AREA
9.46 AC.

DNREC APPROVAL BOX

CIVIL PLAN GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING TWO WEEKS PRIOR TO THE START OF CONSTRUCTION AND SHALL APPRISE AND COORDINATE DURING ALL PHASES OF CONSTRUCTION:
   1.1 TOWN OF MILTON PUBLIC WORKS 302-462-1775
   1.2 DAVIS, BOWEN & FRIEDEL, INC. 302-424-1441
   1.3 DNREC DIVISION OF WATERSHED STEWARDSHIP 302-739-9921
   1.4 TIDEWATER UTILITIES, INC. 302-453-6900
   1.5 DEPARTMENT OF TRANSPORTATION, SOUTH DISTRICT PERMITS SUPERVISOR 302-853-1342
2. MISS UTILITY OF DELAWARE SHALL BE NOTIFIED THREE (3) CONSECUTIVE WORKING DAYS PRIOR TO EXCAVATION, AT 1-800-282-8555.
3. BOUNDARY SURVEY BASED ON PLAT BY DAVIS, BOWEN & FRIEDEL INC. BASE TOPOGRAPHY PREPARED BY DAVIS, BOWEN & FRIEDEL INC.
4. CONTRACTOR SHALL PROVIDE STAKEOUT NECESSARY FOR THE INSTALLATION OF UTILITIES, STORM DRAINS, PAVING AND ALL OTHER SITE WORK INCLUDED IN THESE PLANS. ALL STAKEOUT WORK IS TO BE PERFORMED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE STATE OF DELAWARE.
5. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY DEVIATION FROM THESE PLANS UNLESS WRITTEN APPROVAL HAS BEEN PROVIDED BY THE ENGINEER.
6. ACCORDING TO FEMA FLOOD INVENTORY MAP #10005C0164J & #10005C0164K, DATED JANUARY 6, 2005, THE SITE IS NOT IMPACTED BY THE 100 YEAR FLOODPLAIN.

DRAINAGE, GRADING AND SEDIMENT CONTROL GENERAL NOTES

1. THE DNREC SEDIMENT AND STORMWATER PROGRAM MUST BE NOTIFIED IN WRITING FIVE (5) DAYS PRIOR TO COMMENCING WITH CONSTRUCTION. FAILURE TO DO SO CONSTITUTES A VIOLATION OF THE APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLAN.
2. REVIEW AND OR APPROVAL OF THE SEDIMENT AND STORMWATER MANAGEMENT PLAN SHALL NOT RELIEVE THE CONTRACTOR FROM HIS OR HER RESPONSIBILITIES FOR COMPLIANCE WITH THE REQUIREMENTS OF THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS, NOR SHALL IT RELIEVE THE CONTRACTOR FROM ERRORS OR OMISSIONS IN THE APPROVED PLAN.
3. IF THE APPROVED PLAN NEEDS TO BE MODIFIED, ADDITIONAL SEDIMENT AND STORMWATER CONTROL MEASURES MAY BE REQUIRED AS DEEMED NECESSARY BY DNREC OR THE DELEGATED AGENCY.
4. FOLLOWING SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED FOR ALL PERIMETER SEDIMENT CONTROLS, SOIL STOCKPILES, AND ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE WITHIN 14 CALENDAR DAYS UNLESS MORE RESTRICTIVE FEDERAL REQUIREMENTS APPLY.
5. ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL COMPLY WITH THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
6. AT ANY TIME A DEWATERING OPERATION IS USED, IT SHALL BE PREVIOUSLY APPROVED BY THE AGENCY CONSTRUCTION SITE REVIEWER FOR A NON-EROSIVE POINT OF DISCHARGE, AND A DEWATERING PERMIT SHALL BE APPROVED BY THE DNREC WELL PERMITTING BRANCH.
7. APPROVED PLANS REMAIN VALID FOR 3 YEARS FROM THE DATE OF APPROVAL.
8. POST CONSTRUCTION VERIFICATION DOCUMENTS ARE TO BE SUBMITTED TO THE DNREC SEDIMENT AND STORMWATER PROGRAM WITHIN 60-DAYS OF STORMWATER MANAGEMENT FACILITY COMPLETION.
9. APPROVAL OF A SEDIMENT AND STORMWATER MANAGEMENT PLAN DOES NOT GRANT OR IMPLY A RIGHT TO DISCHARGE STORMWATER RUNOFF. THE OWNER/DEVELOPER IS RESPONSIBLE FOR ACQUIRING ANY AND ALL AGREEMENTS, EASEMENTS, ETC., NECESSARY TO COMPLY WITH STATE DRAINAGE AND OTHER APPLICABLE LAWS.
10. THE NOTICE OF INTENT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER A NPDES GENERAL PERMIT FOR THIS PROJECT IS #4960. AT ANY TIME THE OWNERSHIP FOR THIS PROJECT CHANGES, A TRANSFER OF AUTHORIZATION OR A CO-PERMITTEE APPLICATION MUST BE SUBMITTED TO DNREC. THE PERMITTEE OF RECORD SHALL NOT BE RELIEVED OF THEIR RESPONSIBILITIES UNTIL A NOTICE OF TERMINATION HAS BEEN PROCESSED BY DNREC.
11. THE OWNER SHALL BE FAMILIAR WITH AND COMPLY WITH ALL ASPECTS OF THE NPDES CONSTRUCTION GENERAL PERMIT ASSOCIATED WITH THE PROJECT, INCLUDING, BUT NOT LIMITED TO, PERFORMING WEEKLY SITE INSPECTIONS DURING CONSTRUCTION AND AFTER RAIN EVENTS, AND MAINTAINING WRITTEN LOGS OF THESE INSPECTIONS.
12. BEFORE ANY EARTHWORK OR EXCAVATION TAKES PLACE, THE CONTRACTOR SHALL CALL MISS UTILITY AT 811 OR 1.800.282.8555 AT LEAST THREE WORKING DAYS PRIOR TO CONSTRUCTION, TO HAVE ALL EXISTING UTILITIES MARKED ONSITE.
13. THE CONTRACTOR SHALL AT ALL TIMES PROTECT AGAINST SEDIMENT OR DEBRIS LADEN RUNOFF OR WIND FROM LEAVING THE SITE. PERIMETER CONTROLS SHALL BE CHECKED DAILY AND ADJUSTED AND/OR REPAIRED TO FULLY CONTAIN AND CONTROL SEDIMENT FROM LEAVING THE SITE. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED HALF OF THE EFFECTIVE CAPACITY OF THE CONTROL. IN ADDITION, THE CONTRACTOR MAY NEED TO ADJUST OR ALTER MEASURES IN TIMES OF ADVERSE WEATHER CONDITIONS, OR AS DIRECTED BY THE AGENCY CONSTRUCTION SITE REVIEWER.
14. BEST AVAILABLE TECHNOLOGY (BAT) SHALL BE EMPLOYED TO MANAGE TURBID DISCHARGES IN ACCORDANCE WITH REQUIREMENTS OF 7. DEL C. CH 60, REGULATIONS GOVERNING THE CONTROL OF WATER POLLUTION, SECTION 9.1.02, KNOWN AS SPECIAL CONDITIONS FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES, AND DEPARTMENT POLICIES, PROCEDURES, AND GUIDANCE.
15. DOCUMENTATION OF SOIL TESTING AND MATERIALS USED FOR TEMPORARY OR PERMANENT STABILIZATION INCLUDING BUT NOT LIMITED TO SOIL TEST RESULTS, SEED TAGS, SOIL AMENDMENT TAGS, ETC. SHALL BE PROVIDED TO THE DEPARTMENT OR DELEGATED AGENCY TO VERIFY THAT THE PERMANENT OR TEMPORARY STABILIZATION HAS BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED PLAN. THE DEPARTMENT OR DELEGATED AGENCY MAY REQUIRE ADDITIONAL SOIL TESTING AND REAPPLICATION OF PERMANENT OR TEMPORARY STABILIZATION IN ACCORDANCE WITH SPECIFICATIONS PROVIDED IN THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK, OR ALTERNATIVE MEASURES THAT PROVIDE FUNCTIONAL EQUIVALENCY.
16. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN AND REPAIR ALL EROSION, SEDIMENT CONTROL AND STORMWATER MANAGEMENT PRACTICES DURING UTILITY INSTALLATION AND SITE CONSTRUCTION.
17. IT SHALL BE THE SOLE RESPONSIBILITY OF THE OWNER TO MAINTAIN AND REPAIR ALL EROSION, SEDIMENT CONTROL AND STORMWATER MANAGEMENT PRACTICES AFTER COMPLETION AND APPROVAL OF ALL STORMWATER MANAGEMENT PRACTICES.
18. TEMPORARY VEGETATIVE COVER, MULCHING AND/OR SPRINKLING WITH WATER SHALL BE THE METHODS USED AS NECESSARY TO CONTROL DUST.
19. STABILIZATION MATTING SHALL BE NORTH AMERICAN GREEN SC150BN OR DNREC TYPE SSM-III.
20. ALL RIPRAP SHALL BE UNDERLAIN WITH MIRAFI 600X GEOTEXTILE OR DNREC TYPE GS-1.
21. THERE IS AN ESTIMATED 5,000 CY. OF SPOIL MATERIAL. EXCESS MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A DNREC APPROVED MANNER.
22. ALL STORM DRAIN PIPING, INLET, MANHOLE, AND END SECTION INSTALLATION SHALL BE IN ACCORDANCE WITH SUSSEX COUNTY CONSTRUCTION STANDARDS.
23. ALL STORM DRAIN DESIGNATED AS RCP IS TO BE REINFORCED CONCRETE PIPE, MEETING AASHTO M 170 SPECIFICATIONS, STORM DRAIN SEE PIPE SCHEDULE FOR PIPE CLASSIFICATION. ALL STORM PIPE DESIGNATED AS HDPE SHALL COMPLY WITH AASHTO M252 AND M294, ASTM D3212 AND F1417.
24. PIPE SPAN LENGTHS ARE MEASURED FROM C/L OF STRUCTURE TO C/L OF STRUCTURE, WHERE APPLICABLE ARE ROUNDED TO THE NEAREST FOOT.
25. ALL SEALS MUST BE WATERTIGHT WITH NON SHRINK GROUT OR RUBBER GASKETS AND CONCRETE STRUCTURES MUST BE PRECAST OR POURED IN PLACE.
26. CONTRACTOR SHALL GRADE, TOPSOIL, SEED AND MULCH ALL DISTURBED AREAS OF CONSTRUCTION, INCLUDING PIPE INSTALLATION OR DITCH CONSTRUCTION. EROSION CONTROL MATTING SHALL BE PROVIDED ON ALL SLOPES GREATER THAN 3:1.
27. THE CONTRACTOR SHALL PROVIDE SEDIMENT CONTROL MEASURES TO PROTECT STOCKPILE AREAS AND STORAGE AREAS. ALL AREAS USED BY THE CONTRACTOR FOR STAGING OPERATIONS SHALL BE FULLY RESTORED BY THE CONTRACTOR UPON COMPLETION OF THE PROJECT. IF THE STAGING AREA IS PAVED, IT SHALL BE RESTORED TO ITS ORIGINAL CONDITION. IF THE STAGING AREA IS UNPAVED, IT SHALL BE RE-GRADED, TOPSOILED, SEEDED AND MULCHED TO THE SATISFACTION OF THE ENGINEER. ALL COSTS ASSOCIATED WITH RESTORATION OF THE STAGING AREA SHALL BE AT THE CONTRACTOR'S EXPENSE. IF THE ENGINEER DETERMINES THAT A SATISFACTORY STAND OF GRASS DOES NOT EXIST AT THE TIME OF FINAL INSPECTION, ALL COSTS ASSOCIATED WITH RE-ESTABLISHING A SATISFACTORY STAND OF GRASS SHALL BE AT THE CONTRACTOR'S EXPENSE.
28. EQUIPMENT AND/OR STOCKPILE MATERIAL SHALL NOT BE STORED IN THE DRIPLINE AREA OF ANY TREE.
29. IF THE APPROVED PLAN NEEDS TO BE MODIFIED, ADDITIONAL SEDIMENT AND STORMWATER CONTROL MEASURES MAY BE REQUIRED AS DEEMED NECESSARY BY DNREC.
30. CORRUGATED POLYETHYLENE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH DelDOT SPECIAL PROVISIONS 6125XX,
31. STABILIZATION MATTING SHALL BE NORTH AMERICAN GREEN SC150BN OR APPROVED EQUIVALENT.

DEMOLITION AND SAFETY GENERAL NOTES

1. MISS UTILITY OF DELMARVA SHALL BE NOTIFIED THREE CONSECUTIVE WORKING DAYS PRIOR TO EXCAVATION, AT 1-800-282-8555.
2. EXISTING UTILITIES ARE SHOWN IN ACCORDANCE WITH THE BEST AVAILABLE INFORMATION. COMPLETENESS OR CORRECTNESS THEREOF IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE UTILITY COMPANIES INVOLVED IN ORDER TO SECURE THE MOST ACCURATE INFORMATION AVAILABLE AS TO UTILITY LOCATION AND ELEVATION. NO CONSTRUCTION AROUND OR ADJACENT TO UTILITIES SHALL BEGIN WITHOUT NOTIFYING THEIR OWNERS AT LEAST THREE WORKING DAYS IN ADVANCE. THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE AND ANY DAMAGE DONE TO THEM DUE TO HIS/HER NEGLIGENCE SHALL BE IMMEDIATELY AND COMPLETELY REPAIRED AT THE CONTRACTOR'S EXPENSE. TO LOCATE EXISTING UTILITIES IN THE FIELD PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONTACT MISS UTILITY OF DELMARVA.
3. THE CONTRACTOR SHALL REMOVE AND IMMEDIATELY REPLACE, RELOCATE, RESET OR RECONSTRUCT ALL OBSTRUCTIONS IN THE ROAD WAY, INCLUDING, BUT NOT LIMITED TO, MAILBOXES, SIGNS, LANDSCAPING, LIGHTING, PLANTERS, CULVERTS, DRIVEWAYS, PARKING AREAS, CURBS, GUTTERS, FENCES, OR OTHER NATURAL OR MAN-MADE OBSTRUCTIONS. TRAFFIC CONTROL, REGULATORY, WARNING AND INFORMATIONAL SIGNS SHALL REMAIN FUNCTIONAL AND VISIBLE TO THE APPROPRIATE LANES OF TRAFFIC AT ALL TIMES, WITH THEIR RELOCATION KEPT TO A MINIMUM DISTANCE. THE COST SHALL BE INCLUDED IN THE COST OF ITEMS BID.
4. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION. THE CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR SAFETY AND PROTECTION.
5. DELAWARE REGULATIONS PROHIBIT THE BURIAL OF CONSTRUCTION DEMOLITION DEBRIS, INCLUDING TREES AND STUMPS ON CONSTRUCTION SITES. ANY SOLID WASTE FOUND DURING THE EXCAVATION FOR STRUCTURES AND UTILITY LINES ON AND OFF SITE MUST BE REMOVED AND PROPERLY DISCARDED. ANY REMEDIAL ACTION REQUIRED IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM. ADDITIONAL COSTS WILL BE NEGOTIATED WITH THE OWNER.
6. DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL WORK MUST BE DONE IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AS AMENDED AND ALL RULES AND REGULATIONS THERETO APPURTENANT.

FIRE PROTECTION GENERAL NOTES

1. ALL FIRE LANES, FIRE HYDRANTS, STAND PIPES, SPRINKLER CONNECTIONS, EXITS, ETC., SHALL BE MARKED AND/OR PROTECTED IN ACCORDANCE WITH STATE FIRE PROTECTION REGULATIONS AS EVIDENCED IN SECTION 705, CHAPTER 5, STANDARD FOR THE MARKING, IDENTIFICATION, AND ACCESSIBILITY OF FIRE LANES, EXITS, FIRE HYDRANTS, SPRINKLER, AND STANDPIPE CONNECTIONS.

INTERNAL PAVING / CONCRETE NOTES

1. HOT MIX ASPHALT SHALL BE INSTALLED IN ACCORDANCE WITH THE 2001 DelDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION INCLUDING SPECIAL PROVISIONS:
2. ALL DISTURBED AREAS NOT COVERED WITH IMPERVIOUS MATERIAL, SHALL BE TOPSOILED (6" MINIMUM), FERTILIZED, SEEDED AND MULCHED.
3. ALL SIGNING AND MAINTENANCE OF TRAFFIC IS THE CONTRACTOR'S RESPONSIBILITY AND SHALL FOLLOW THE 2011 DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION).
4. DESIGN, FABRICATION, AND INSTALLATION OF ALL PERMANENT SIGNING SHALL BE AS OUTLINED IN THE 2011 DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION).
5. FOR FINAL PERMANENT PAVEMENT MARKINGS, EPOXY RESIN PAINT SHALL BE REQUIRED FOR LONG LINE STRIPING AND THERMO WILL BE REQUIRED FOR SHORT LINE STRIPING, i.e. SYMBOLS/LEGENDS.
6. ALL TRAFFIC CONTROL DEVICES SHALL BE IN NEW OR REFURBISHED CONDITION, SHALL COMPLY WITH THE 2011 DELAWARE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION), AND SHALL BE NCHRP - 350 APPROVED AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN GOOD CONDITION FOR DURATION OF USE.
7. BREAKAWAY POSTS SHALL BE USED WHEN INSTALLING ALL SIGNS. DETAIL CAN BE FOUND IN DELDOT'S STANDARD CONSTRUCTION DETAILS.
8. PLAN LOCATION AND DIMENSIONS SHALL BE STRICTLY ADHERED TO UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT PAVING IS INSTALLED TO THE ELEVATIONS SHOWN AND THAT NO PONDING OF WATER EXISTS AFTER PAVING IS COMPLETE. PONDING IS DEFINED AS WATER STANDING IN AN AREA MORE THAN 1 HOUR AFTER A RAINFALL EVENT THAT PRODUCES RUNOFF. ELIMINATION OF PONDING WILL BE COMPLETED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
10. SUPERPAVE HOT-MIX SHALL BE USED IN ACCORDANCE WITH DelDOT SPECIAL PROVISIONS.
11. OPEN-CUT TRENCHES AND PROVIDE PAVEMENT RESTORATION IN ACCORDANCE WITH DelDOT STANDARDS AND SPECIFICATIONS. SEE DETAIL SHEETS.
12. CONCRETE SHALL BE PLACED IN ACCORDANCE WITH DelDOT STANDARD SPECIFICATIONS.

SANITARY SEWER GENERAL NOTES

1. MISS UTILITY OF DELMARVA SHALL BE NOTIFIED THREE CONSECUTIVE WORKING DAYS PRIOR TO EXCAVATION, AT 1-800-282-8555.
2. CONTRACTOR SHALL PROVIDE STAKEOUT SURVEY NECESSARY FOR THE INSTALLATION OF UTILITY WORK AND APPURTENANCES AS REQUIRED PER THE SUSSEX COUNTY STANDARDS AND SPECIFICATIONS.
3. SANITARY SEWER CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH SUSSEX COUNTY STANDARDS AND SPECIFICATIONS AND DETAILS.
4. ALL SANITARY SEWER MATERIALS AND APPURTENANCES SHALL MEET OR EXCEED THOSE REQUIRED BY SUSSEX COUNTY STANDARDS AND SPECIFICATIONS AND DETAILS.
3. USE ONLY SUITABLE GRANULAR MATERIAL APPROVED BY SUSSEX COUNTY FOR BACKFILLING TRENCHES.
4. SANITARY SEWER LATERAL SHALL BE 6" SDR-35 PVC. SEWER LATERAL SHALL INCLUDE A 6" CLEANOUT, WYE, AND CAP JUST BEHIND THE RIGHT-OF-WAY LINE.
5. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
6. TOP OF MANHOLE ELEVATIONS ARE TOP OF MANHOLE FRAME AND COVER.
7. PIPE SPAN LENGTHS ARE MEASURED FROM C/L OF STRUCTURE TO C/L OF STRUCTURE, WHERE APPLICABLE ARE ROUNDED TO THE NEAREST FOOT.
8. THE CONTRACTOR SHALL FIELD VERIFY INVERTS AND LOCATION OF EXISTING SANITARY SEWER MAINS OR MANHOLES TO WHICH NEW CONSTRUCTION WILL CONNECT.
9. THE SEWER LATERAL SHALL HAVE A MINIMUM COVER OF 3 FEET FROM PROPOSED GRADE, AS MEASURED FROM THE TOP OF PIPE.
10. THE CONTRACTOR SHALL OPEN ONLY THAT SECTION OF TRENCH OR ACCESS PITS WHICH CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKING DAY. STEEL PLATES SHALL BE USED ON ANY TRENCH OR ACCESS PITS WHICH MUST REMAIN OPEN OVERNIGHT. THIS REQUIREMENT DOES NOT APPLY TO AREAS COMPLETELY CLOSED AND SECURE FROM VEHICULAR OR PEDESTRIAN TRAFFIC.
11. FINAL APPROVED SET OF PLANS AND SPECIFICATIONS SHALL BE MAINTAINED ON THE JOB SITE. FAILURE TO COMPLY WITH THIS PROVISION SHALL BE CONSIDERED CAUSE TO STOP THE WORK.
12. THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF CONTRACT DRAWINGS ON WHICH HE SHALL NOTE, IN RED, THE ALIGNMENTS AND INVERTS OF ALL UNDERGROUND UTILITIES INSTALLED OR ENCOUNTERED DURING THE PROSECUTION OF THE WORK. ALL DISCREPANCIES BETWEEN THE PLAN LOCATIONS AND ELEVATIONS OF BOTH THE EXISTING AND PROPOSED UTILITIES SHALL BE SHOWN ON THE AS-BUILT DRAWINGS TO BE MAINTAINED BY THE CONTRACTOR IN THE FIELD.
13. TIDEWATER UTILITIES, INC. WILL INSPECT ALL MATERIALS, CONSTRUCTION AND TESTING, AS NECESSARY. INSPECTIONS SHALL BE REQUESTED AND PERFORMED IN ACCORDANCE WITH TIDEWATER UTILITIES, INC. STANDARDS AND SPECIFICATIONS.
14. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO LOCATE PROPERTY LINES, EASEMENTS, AND RIGHT-OF-WAY LINES PRIOR TO CONSTRUCTION AND AVOID CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY AND/OR RIGHTS OF WAYS WHERE SAID CONSTRUCTION IS PROHIBITED. THE CONTRACTOR MAY CONDUCT CONSTRUCTION ACTIVITIES ON PRIVATE PROPERTY PROVIDED HE HAS OBTAINED PRIOR WRITTEN PERMISSION FROM THE PROPERTY OWNER AND HAS SUBMITTED A COPY OF SAID WRITTEN PERMISSION TO SUSSEX COUNTY. ANY DISTURBED AREAS BEYOND THE RIGHT-OF-WAY OR EASEMENT LINES SHALL BE RESTORED IMMEDIATELY TO THEIR ORIGINAL CONDITION. PAYMENT FOR THIS WORK SHALL BE INCLUDED IN THE COST OF ITEMS BID.
15. DIFFERING SITE CONDITIONS AND/OR DIFFERING MATERIAL PROPERTIES SHALL REQUIRE SUSSEX COUNTY APPROVAL OF SPECIAL DESIGN DETAILS PREPARED BY THE DESIGN ENGINEER PRIOR TO INITIATING OR RESUMING CONSTRUCTION ACTIVITIES.
16. ALL TESTING AND INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH THE SUSSEX COUNTY STANDARDS AND SPECIFICATIONS.
17. ALL SANITARY SEWER PIPE AND FITTINGS SHALL BE POLYVINYL CHLORIDE (PVC), SDR 35 OR DUCTILE IRON PIPE (DIP), CLASS 52. ALL DIP SHALL HAVE AN BITUMINOUS COATING ON THE OUTSIDE SURFACE.
18. ALL PIPE SHALL HAVE DETECTOR TAPE AS REQUIRED BY TIDEWATER UTILITIES, INC. STANDARDS AND SPECIFICATIONS.
19. SEWER AND FORCE MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM WATER MAINS. SEWER CROSSING WATER MAINS SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 18" TO OUTSIDE OF PIPES. IF AN 18" CLEARANCE CANNOT BE OBTAINED, A 10 LINEAR FOOT CONCRETE ENCASEMENT SHALL BE USED ON THE SEWER MAIN.
20. THE SUSSEX COUNTY STANDARDS AND SPECIFICATIONS ARE THE SUSSEX COUNTY WASTEWATER STANDARDS AND SPECIFICATIONS DATED 6/19/2012. COPIES CAN BE OBTAINED FROM SUSSEX COUNTY.

POTABLE WATER DISTRIBUTION GENERAL NOTES

1. MISS UTILITY OF DELMARVA SHALL BE NOTIFIED THREE CONSECUTIVE WORKING DAYS PRIOR TO EXCAVATION, AT 1-800-282-8555.
2. ALL WORK MUST BE IN CONFORMANCE WITH THE TOWN OF MILTON STANDARDS AND SPCIFICATIONS.
3. ALL WORK MUST BE HYDROSTATICALLY TESTED AND THEN DISINFECTED. CONTRACTOR SHALL SUPPLY ALL MATERIALS TO TEST AND DISINFECT THE SYSTEM. CONTRACTOR IS REQUIRED TO OBTAIN A CERTIFICATE TO OPERATE FROM DHSS OFFICE OF DRINKING WATER.
4. ALL AREAS DISTURBED SHALL BE RESTORED TO THEIR ORIGINAL CONDITION. IF ADDITIONAL WORK IS REQUIRED IN THE FUTURE THEN THE AREA SHALL BE STABILIZED IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL PLANS.
5. WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM SEWER MAINS. WATER CROSSING SEWER MAINS SHALL HAVE A MINIMUM VERTICAL CLEARANCE OF 18" TO OUTSIDE OF PIPES. IF AN 18" CLEARANCE CANNOT BE OBTAINED, A 10 LINEAR FOOT CONCRETE ENCASEMENT SHALL BE USED ON THE SEWER MAIN.
6. THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF CONTRACT DRAWINGS ON WHICH HE SHALL NOTE, IN RED, THE ALIGNMENTS AND INVERTS OF ALL UNDERGROUND UTILITIES INSTALLED OR ENCOUNTERED DURING THE PROSECUTION OF THE WORK. ALL DISCREPANCIES BETWEEN THE PLAN LOCATIONS AND ELEVATIONS OF BOTH THE EXISTING AND PROPOSED UTILITIES SHALL BE SHOWN ON THE AS-BUILT DRAWINGS TO BE MAINTAINED BY THE CONTRACTOR IN THE FIELD.
7. PLAN LOCATIONS AND DIMENSIONS SHALL BE STRICTLY ADHERED TO UNLESS OTHERWISE SPECIFIED BY THE ENGINEER. THE CONTRACTOR SHALL ADJUST WATERLINE LOCATIONS AS REQUIRED TO AVOID CONFLICTS WITH OTHER UTILITIES.
8. ALL WATER MAINS SHALL BE C900 OR C-909 CL235 PVC.

LEGEND

EXISTING	PROPOSED
BOUNDARY LINE	RIGHT-OF-WAY / BOUNDARY LINE
ADJACENT PROPERTY OWNER	PROPERTY LINE
EASEMENT	EASEMENT
CONTOUR ELEVATION AND LABEL (33)	SETBACK
UTILITY POLE	CONTOUR ELEVATION AND LABEL (33)
MAILBOX (MB)	CATCH BASIN, STORM PIPE, STORM MANHOLE, LABELS FLOW DIRECTION (DI NUM, MH NUM, P NUM)
TELEPHONE BOX	ROOF DRAIN, SIZE, CLEANOUT (10")
SIGN	SANITARY SEWER IDENTIFICATION, MANHOLE, PIPE, FLOW ARROW, PIPE SIZE (SMH NUM, 8SS)
FENCE	SANITARY SEWER LATERAL
SWALE	WATER MAIN, TEE W/ VALVES, PIPE SIZE (8W)
SANITARY SEWER, MANHOLE (EX-8SS)	FIRE HYDRANT ASSEMBLY
WATER MAIN, VALVES, HYDRANT (EX-W)	WATER LATERAL
CATCHBASIN, STORM PIPE, STORM MANHOLE	SIGN
ELEVATION (1086 EP:44.70)	FENCE
TREE	SWALE
TREE LINE	ELEVATION, SURFACE FLOW DIRECTION (44.83)
PAVEMENT	TREE LINE
SIDEWALK	PAVEMENT / HEAVY DUTY
	PAVEMENT / LIGHT DUTY
	CONCRETE PAVEMENT
	SIDEWALK
	POLE LIGHTS
	IRON ROD WITH CAP SET
	CONCRETE MONUMENT SET

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EASTON, MARYLAND (410) 770-4744

WILLIAM ZACHARY CROUCH REGISTERED No. 12734 PROFESSIONAL ENGINEER 07/24/2019

CIVIL NOTES & LEGEND

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

REVISED
05/07/19 STORMWATER SUBMITTAL
05/20/19 TOWN COMMENTS
05/24/19 RET. WALL, DOCK RAMP
05/28/19 FIRE PROT. PLAN LABELS
06/21/19 DNREC SSM, FIRE MARSHAL
07/10/19 ADA, FIRE PROT. COMMENTS

Date:	APRIL 05, 2019
Scale:	
Dwn.By:	TPS/
Proj.No.:	0774A026.B01
Dwg.No.:	C-005

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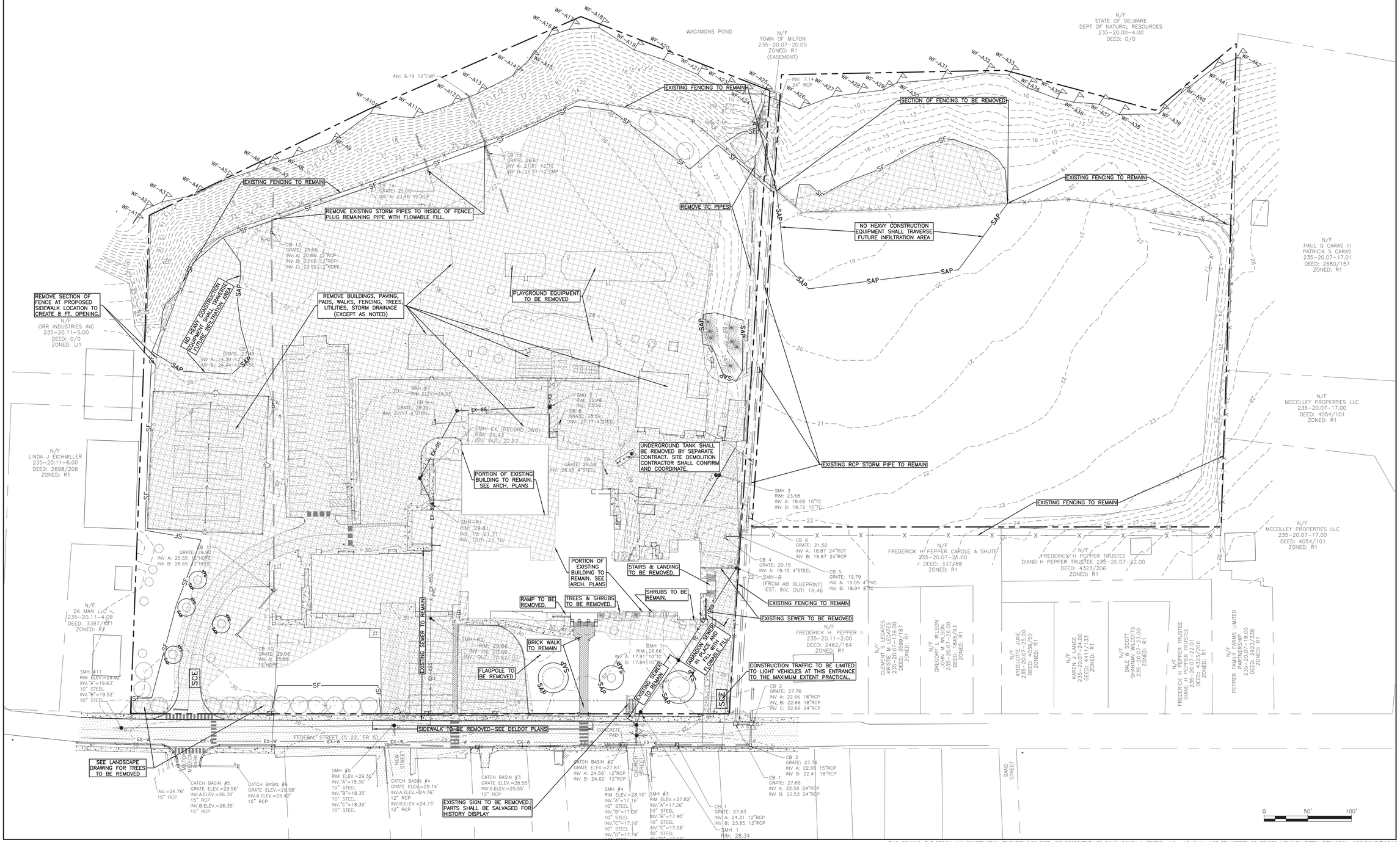
SEQUENCE OF DEMOLITION

(8.07 AC.)

1. THE CONTRACTOR SHALL NOTIFY THE TOWN & AGENCIES AS NOTED ON SHEET C-005.
2. THE CONTRACTOR SHALL CONTACT MISS UTILITY OF DELMARVA AT 1-800-282-8555 FOR UTILITY LOCATIONS WITHIN AND SURROUNDING CONSTRUCTION AREAS NOT LESS THAN 3 DAYS BEFORE PERFORMING ANY EXCAVATION.
3. SEE ADDITIONAL DEMOLITION NOTES ON SHEET C-005 AND COORDINATE ALL ACTIVITY WITH SEDIMENT & STORMWATER AND UTILITY PLANS.
4. INSTALL ORANGE SAFETY FENCE AROUND ALL INFILTRATION AREAS AND TREES AS DESIGNATED ON THE PLANS. NO HEAVY CONSTRUCTION EQUIPMENT SHALL TRAVERSE THE FUTURE INFILTRATION AREAS.
5. MINIMIZE CLEARING AND GRADING OPERATIONS TO AREAS NECESSARY FOR IMMEDIATE CONSTRUCTION ACTIVITY.
6. CONSTRUCT SECURITY FENCE AND INSTALL PERIMETER SILT FENCE.
7. ESTABLISH STABILIZED CONSTRUCTION ENTRANCES.
8. REMOVE ALL ATHLETIC AND PLAYGROUND EQUIPMENT, & TREES AS SHOWN.
9. CONSTRUCT SEDIMENT TRAPS AS INDICATED ON THE SEDIMENT AND STORMWATER PLANS.
10. REMOVE BUILDINGS AS SHOWN. SEE ARCHITECTURAL DEMOLITION PLANS FOR ADDITIONAL INFORMATION.
12. SAWCUT PAVING AND REMOVE DESIGNATED AREAS.
13. REMOVE STORMWATER PIPE & STRUCTURES AS SHOWN.



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DEMOLITION & PRE CONSTRUCTION STORM PLAN

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

REVISED
05/07/19 STORMWATER SUBMITTAL
05/20/19 TOWN COMMENTS
05/24/19 RET. WALL, DOCK RAMP
05/28/19 FIRE PROT. PLAN LABELS
06/21/19 DNREC SSM, FIRE MARSHAL
07/10/19 ADA, FIRE PROT. COMMENTS

Date:	APRIL 05, 2019
Scale:	
Dwn.By:	TPS/
Proj.No.:	0774A026.B01
Dwg.No.:	C-111

SEQUENCE OF CONSTRUCTION

LIMIT OF DISTURBANCE AREA = 10.50 AC.± APPROX. VOLUME OF SPOIL=900 CY (EXPORT)

A. NOTIFY THE DNREC SEDIMENT AND STORMWATER PROGRAM IN WRITING AT LEAST FIVE (5) DAYS PRIOR TO THE START OF CONSTRUCTION. FAILURE TO DO SO CONSTITUTES A VIOLATION OF THE APPROVED SEDIMENT AND STORMWATER MANAGEMENT PLAN.
B. PRIOR TO ANY CLEARING, INSTALLATION OF SEDIMENT CONTROL MEASURES OR GRADING, A PRECONSTRUCTION MEETING MUST BE SCHEDULED AND CONDUCTED WITH THE AGENCY CONSTRUCTION SITE REVIEWER. THE LANDOWNER/DEVELOPER, CONTRACTOR, AND CERTIFIED CONSTRUCTION REVIEWER ARE REQUIRED TO BE IN ATTENDANCE AT THE PRE-CONSTRUCTION MEETING; THE DESIGNER IS RECOMMENDED TO ATTEND.

1. THE CONTRACTOR SHALL CONTACT MISS UTILITY OF DELMARVA AT 1-800-282-8555 FOR UTILITY LOCATIONS WITHIN AND SURROUNDING CONSTRUCTION AREAS NOT LESS THAN 3 DAYS BEFORE PERFORMING ANY EXCAVATION.
2. ESTABLISH STABILIZED CONSTRUCTION ENTRANCE AND INSTALL ORANGE SAFETY FENCE AROUND ALL INFILTRATION AREAS. NO HEAVY CONSTRUCTION EQUIPMENT SHALL TRAVERSE THE FUTURE INFILTRATION AREAS.
3. ESTABLISH CONSTRUCTION STAGING AREA, AND INSTALL PERIMETER SILT FENCE.
4. ALL PERIMETER CONTROLS ARE TO BE REVIEWED BY THE AGENCY CONSTRUCTION SITE REVIEWER AND APPROVED PRIOR TO PROCEEDING WITH FURTHER SITE DISTURBANCE OR CONSTRUCTION.
5. MINIMIZE CLEARING AND GRADING OPERATIONS TO AREAS NECESSARY FOR IMMEDIATE CONSTRUCTION ACTIVITY.
6. THE CONTRACTOR SHALL AT ALL TIMES PROTECT AGAINST SEDIMENT OR DEBRIS LADEN RUNOFF OR WIND FROM LEAVING THE SITE. PERIMETER CONTROLS SHOULD BE CHECKED DAILY AND ADJUSTED AND/OR REPAIRED TO FULLY CONTAIN AND CONTROL SEDIMENTATION ON THE SITE. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED HALF OF THE EFFECTIVE CAPACITY OF THE CONTROL. IN ADDITION, THE CONTRACTOR MAY NEED TO ADJUST OR REPAIR MEASURES IN TIMES OF ADVERSE WEATHER CONDITIONS, OR AS DIRECTED BY THE AGENCY CONSTRUCTION SITE REVIEWER.
7. BEGIN DEMOLITION IN ACCORDANCE WITH THE DEMOLITION PLAN AND THESE SEDIMENT AND STORMWATER PLANS. AS INDICATED IN THE SEQUENCE OF DEMOLITION:
8. EXCAVATE INFILTRATION AREAS TO TEMPORARY SEDIMENT BASIN ELEVATIONS ONLY. (REFER TO SHEETS C-431 AND C-432 FOR MORE DETAILED SEQUENCE FOR EACH FACILITY.)
9. ROUGH GRADE SITE.
10. INSTALL UTILITIES AS NOTED.
11. INSTALL STORM DRAIN SYSTEM. INSTALL INLET PROTECTION ON ALL STORM INLETS.
    11.1. INLET PROTECTION WITH BOTH TYPE 1 AND TYPE 2 DESIGNATIONS
        11.1.1. INITIALLY CONSTRUCTED AS TYPE 1 INLETS.
        11.1.2. CONVERT TO TYPE 2 INLETS UPON INSTALLATION OF ADJACENT CURB AND BASE COURSE.
12. FINE GRADE BUILDING AND PAVED AREAS.
15. BEGIN BUILDING CONSTRUCTION.
16. INSTALL AGGREGATE BASE COURSE, CURB, AND SIDEWALKS.
17. STABILIZE ALL DISTURBED AREAS IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL NOTES.
18. INSTALL BASE PAVING IN ROADWAYS.
19. INSPECT STORM DRAIN SYSTEMS AND SEDIMENT TRAPS FOR MAINTENANCE. REMOVE SEDIMENT AS NECESSARY.

C. CONTACT DNREC FOR INSPECTION.
D. CONVERT SEDIMENT TRAPS TO INFILTRATION BASINS (SEE SHEETS C-431 & C-432).
E. EROSION AND SEDIMENT CONTROL DEVICES SHOULD BE REMOVED ONLY AFTER WORK IN AN AREA HAS BEEN COMPLETED AND STABILIZED, WITH WRITTEN APPROVAL FROM THE AGENCY CONSTRUCTION SITE REVIEWER.
F. THE TERMINATION OF THE CONSTRUCTION GENERAL PERMIT WILL REQUIRE SUBMISSION AND ACCEPTANCE OF THE POST CONSTRUCTION VERIFICATION DOCUMENTS, INCLUDING FINAL STABILIZATION THROUGHOUT THE SITE, ALL ELEMENTS OF THE SEDIMENT AND STORMWATER MANAGEMENT PLAN IMPLEMENTED, AND ACCEPTANCE OF THE FINAL OPERATION AND MAINTENANCE PLAN.

ROP DATA TABLE

LABEL	PIPE SIZE (Do)	APRON LENGTH (Lo)	APRON WIDTH (W)	RIPRAP SIZE (R No.)	RIPRAP THICKNESS (T)
FE-00	24"	14'	16'	R-4 (6")	14"
FE-20	12"	6'	7'	R-4 (6")	14"
FE-30	12"	6'	7'	R-4 (6")	14"
FE-40	12"	6'	7'	R-4 (6")	14"
FE-50	24"	14'	16'	R-4 (6")	14"
FE-60	15"	8'	9.5'	R-4 (6")	14"
FE-70	12"	6'	7'	R-4 (6")	14"

ALL RIPRAP SHALL BE UNDERLAIN WITH MIRAFI 600X GEOTEXTILE OR DNREC TYPE GS-1.

SEDIMENT BASIN DATA

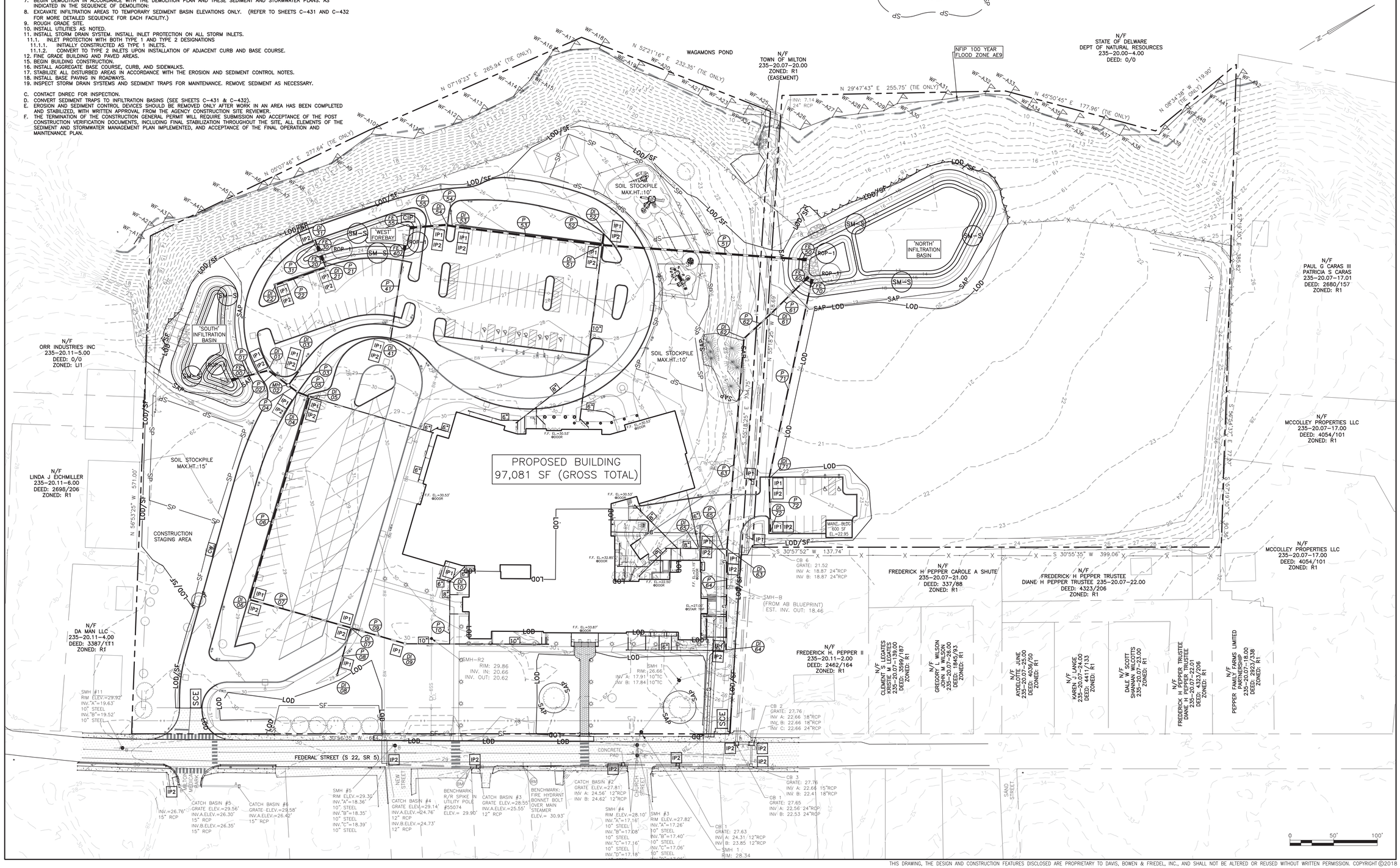
ID	Drainage Area	Required Storage	Provided Storage	Top of Trap El.	Bottom of Trap El.	Storage Provided El.	Cleanout El.
NORTH	13.20 AC.	47,520 CF	47,729 CF	18.0'	15.0'	17.6'	16.4'
SOUTH	2.73 AC.	9,828 CF	9,931 CF	27.5'	24.5'	26.2'	25.5'

1. SEDIMENT BASIN AREAS ARE FUTURE INFILTRATION AREAS AND SHALL BE SURROUNDED WITH ORANGE SAFETY FENCE.
2. NO HEAVY CONSTRUCTION EQUIPMENT SHALL TRAVERSE THE FUTURE INFILTRATION AREA.
3. SEDIMENT BASINS SHALL BE EXCAVATED FROM THE PERIMETER OF THE BASIN SO THAT EQUIPMENT DOES NOT TRAVERSE THE BASIN AREA.
4. SEDIMENT BASINS SHALL NOT BE EXCAVATED BELOW THE BOTTOM ELEVATIONS NOTED IN THE SCHEDULE ON THIS SHEET.
5. SIDE SLOPES ARE TO BE STABILIZED WITH NORTH AMERICAN GREEN SC150BN OR APPROVED EQUIVALENT.

LEGEND

SILT FENCE
LIMIT OF DISTURBANCE
LIMIT OF DISTURBANCE / SILT FENCE
CATCH BASIN, STORM DRAIN, FLOW ARROW, MANHOLE & LABELS
ROOF DRAIN, SIZE, CLEANOUT
TEMPORARY STOCKPILE AREA

IP1 INLET PROTECTION TYPE-1
IP2 INLET PROTECTION TYPE-2
CIP CULVERT INLET PROTECTION
SCE STABILIZED CONSTRUCTION ENTRANCE
CW CONCRETE WASHOUT STATION
ROP-2 RIPRAP OUTLET PROTECTION TYPE-2
SM-S STABILIZATION MATTING - SLOPE
SM-C STABILIZATION MATTING - CHANNEL
PP-1 PUMPING PIT
GB GEOTEXTILE DEWATERING BAGS



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REGISTERED PROFESSIONAL ENGINEER ZACHARY CROUCH No. 12794 STATE OF MARYLAND
07/24/2019

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CONSTRUCTION SITE STORMWATER PLAN

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

REVISED
05/07/19 STORMWATER SUBMITTAL
05/20/19 TOWN COMMENTS
05/24/19 RET. WALL, DOCK RAMP
05/28/19 FIRE PROT. PLAN LABELS
06/21/19 DNREC SSM, FIRE MARSHAL
07/10/19 ADA, FIRE PROT. COMMENTS

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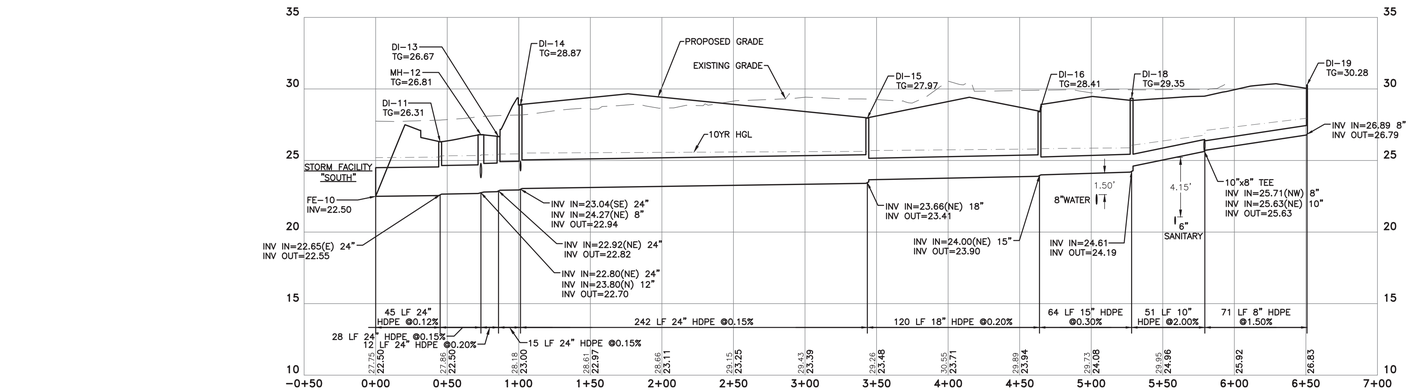
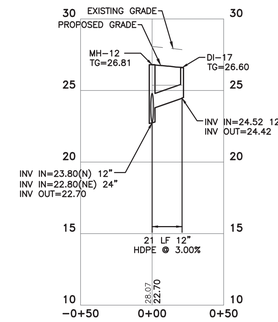
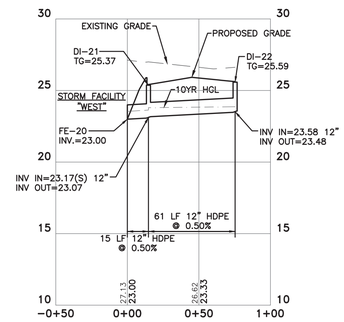
Dwg.No.:	C-131



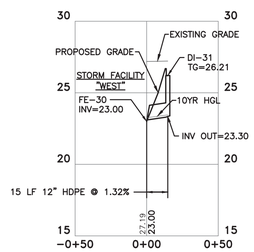
FE-10 TO DI-19



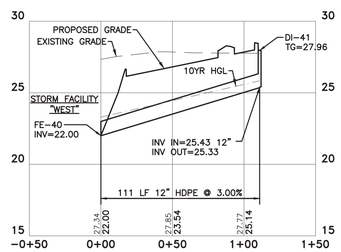
MH-12 TO DI-17



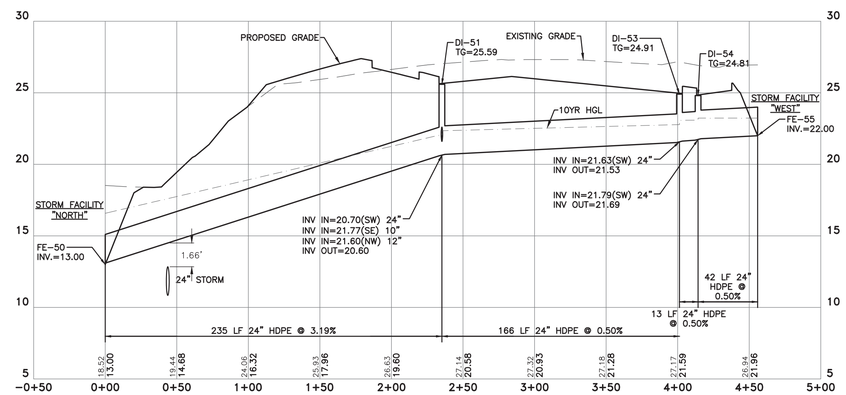
FE-20 TO DI-22



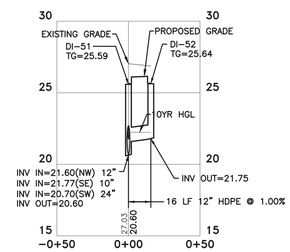
FE-30 TO DI-31



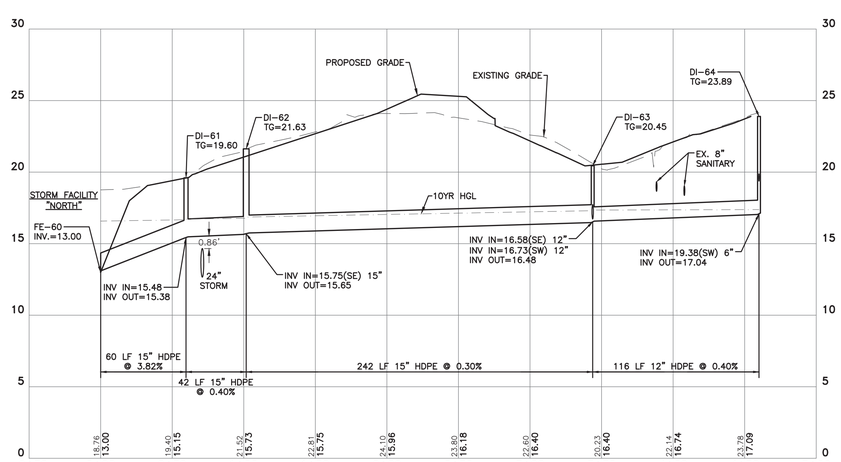
FE-40 TO DI-41



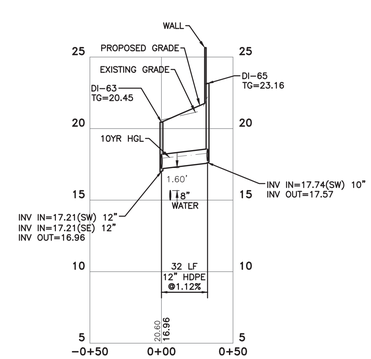
FE-50 TO FE-55



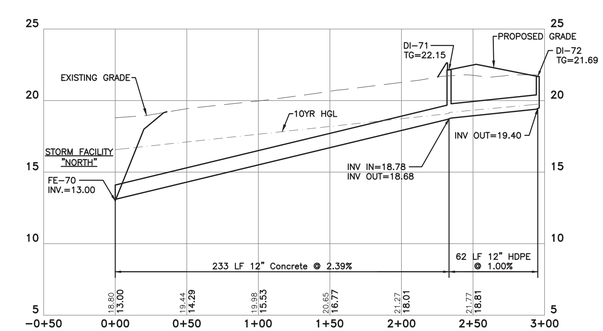
DI-51 TO DI-52



FE-60 TO DI-64



DI-63 TO DI-65



FE-70 TO DI-72

0 50' 100'

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07/24/2019

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STORMWATER PROFILES

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

REVISED
05/07/19 STORMWATER SUBMITTAL
05/20/19 TOWN COMMENTS
05/24/19 RET. WALL, DOCK RAMP
05/28/19 FIRE PROT. PLAN LABELS
06/21/19 DNREC SSM, FIRE MARSHAL
07/10/19 ADA, FIRE PROT. COMMENTS

Date: APRIL 05, 2019
Scale:
Dwn.By: TPS/
Proj.No.: 0774A026.B01
Dwg.No.: C-231

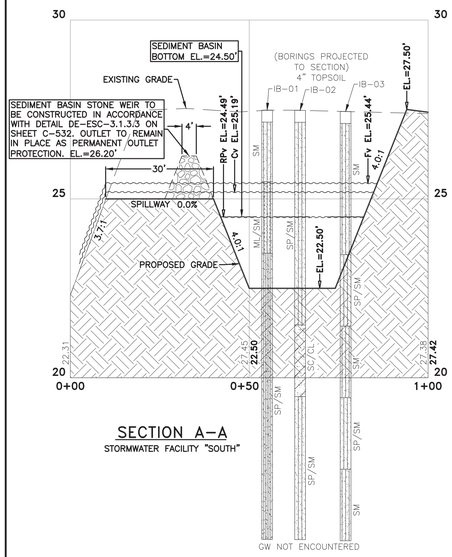
ROP DATA TABLE

LABEL	PIPE SIZE (Do)	APRON LENGTH (La)	APRON WIDTH (W)	RIPRAP SIZE (R No.)	RIPRAP THICKNESS (T)
FE-10	24"	14'	16'	R-4 (6")	14"
FE-20	12"	6'	7'	R-4 (6")	14"
FE-30	12"	6'	7'	R-4 (6")	14"
FE-40	12"	6'	7'	R-4 (6")	14"

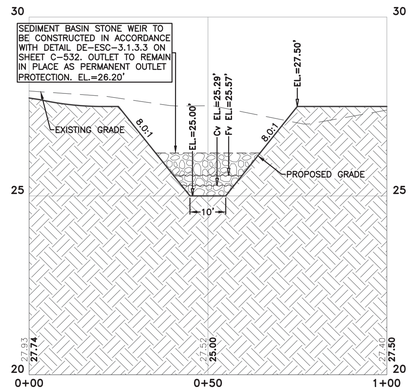
ALL RIPRAP SHALL BE UNDERLAIN WITH MIRAFI 600X GEOTEXTILE OR DNREC TYPE GS-1.

STORM DRAINAGE PIPE SCHEDULE

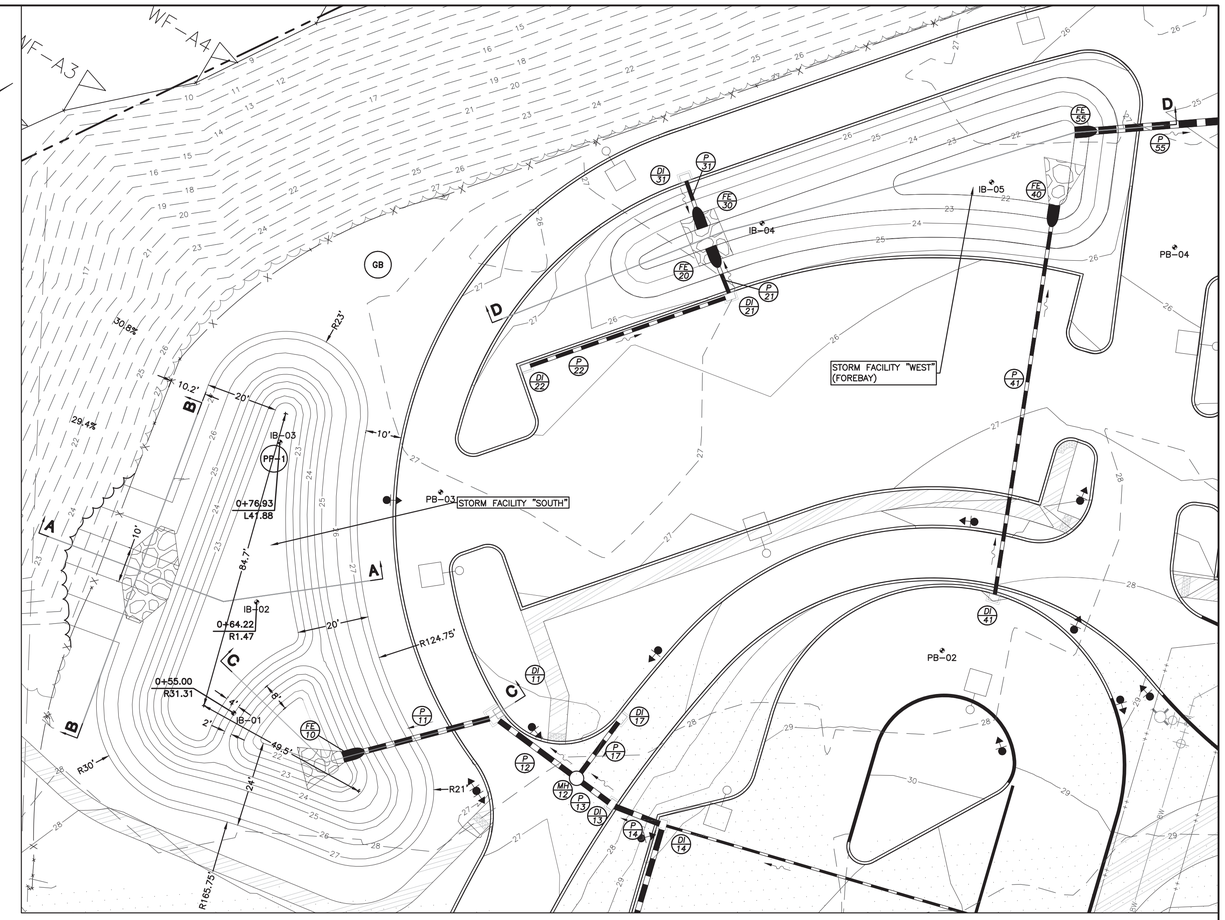
DESCRIPTION								INVERT ELEVATION	
PIPE #	FROM	TO	SIZE	TYPE	LENGTH	CLASS	SLOPE (%)	IN	OUT
P-11	DI-11	FE-10	24"	HDPE	20'	*	0.25	22.55	22.50
P-12	MH-12	DI-11	24"	HDPE	28'	*	0.18	22.70	22.65
P-13	DI-13	MH-12	24"	HDPE	12'	*	0.17	22.82	22.80
P-14	DI-14	DI-13	24"	HDPE	15'	*	0.13	22.94	22.92
P-17	DI-17	MH12	12"	HDPE	21'	*	2.95	24.42	23.80
P-21	DI-21	FE-20	12"	HDPE	15'	*	0.47	23.07	23.00
P-22	DI-22	DI-21	12"	HDPE	61'	*	0.51	23.48	23.17
P-31	DI-31	FE-30	12"	HDPE	15'	*	2.00	23.30	23.00
P-41	DI-41	FE-40	12"	HDPE	111'	*	3.15	25.50	22.00
P-55	FE-55	DI-54	24"	HDPE	42'	*	0.50	22.00	21.79



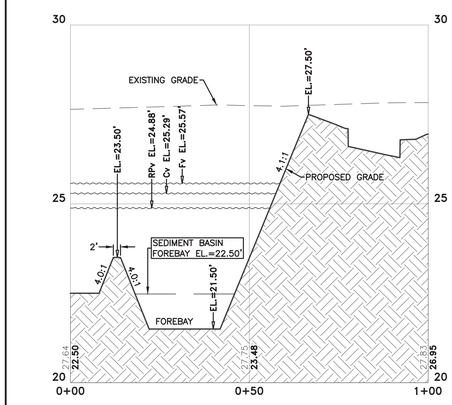
SECTION A-A
STORMWATER FACILITY "SOUTH"



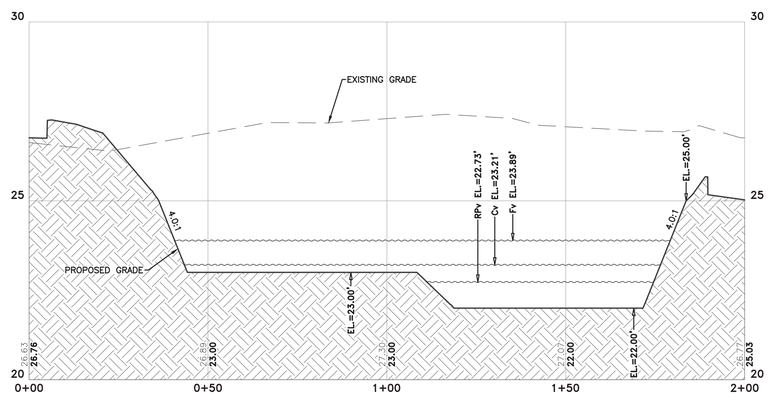
SECTION B-B
STORMWATER FACILITY "SOUTH"



STORM WATER FACILITY SOUTH & WEST
SCALE: 1" = 20'



SECTION C-C
STORMWATER FACILITY "SOUTH"



SECTION D-D
STORMWATER FACILITY "WEST"

GENERAL OPERATION AND MAINTENANCE NOTES

1. THE DNREC SEDIMENT AND STORMWATER PROGRAM AND/OR THE RELEVANT DELEGATED AGENCY RESERVES THE RIGHT TO ENTER PRIVATE PROPERTY FOR PURPOSES OF PERIODIC SITE REVIEWS.
2. THE DNREC SEDIMENT AND STORMWATER PROGRAM SHALL BE NOTIFIED WITHIN 30 BUSINESS DAYS IF THE PROPERTY OWNERSHIP IS TRANSFERRED TO A NEW PERSON OR ENTITY.
3. THE DNREC SEDIMENT AND STORMWATER PROGRAM AND/OR THE RELEVANT DELEGATED AGENCY MAY SEEK ENFORCEMENT ACTION AGAINST ANY OWNER DEEMED NEGLIGENT IN FULFILLING THE OPERATION AND MAINTENANCE REQUIREMENTS OF THE DELAWARE SEDIMENT AND STORMWATER REGULATIONS.
4. THE DNREC SEDIMENT AND STORMWATER PROGRAM SHALL BE CONTACTED IF A CONCERN ARISES REGARDING A STORMWATER MANAGEMENT FACILITY, BEFORE ANY NON-ROUTINE MAINTENANCE, OR IF MODIFICATIONS TO THE FACILITY ARE DESIRED.
5. ANY DESIGN MODIFICATIONS MADE TO THE STORMWATER SYSTEM SHALL REQUIRE THE CREATION OF A NEW POST CONSTRUCTION STORMWATER MANAGEMENT PLAN AND/OR OPERATIONS AND MAINTENANCE PLAN, WITH APPROVAL OF THE PLAN(S) BY THE DNREC SEDIMENT AND STORMWATER PROGRAM.
6. FOR ALL STORMWATER EASEMENT AREAS (I.E., ACCESS, MAINTENANCE, OR OFFSITE) AND THE MINIMUM 10-FOOT WIDE ACCESSWAYS TO ALL STORMWATER FACILITIES AND THEIR STRUCTURAL COMPONENTS, REGULAR MOWING SHALL BE PERFORMED TO KEEP THE GRASS 6" OR LESS; NO TREES OR SHRUBS SHALL BE PLANTED, AND ANY FOUND GROWING SHALL BE REMOVED; AND NO PERMANENT STRUCTURES, SUCH AS FENCES OR SHEDS, SHALL BE LOCATED WITHIN THE EASEMENT OR ACCESSWAY.
7. TREES SHALL NOT BE PLANTED, AND SHALL BE REMOVED IF FOUND GROWING, ON AND WITHIN 15 FEET OF ALL POND EMBANKMENTS, ON POND SLOPES OR SAFETY BENCHES, AND WITHIN 10 FEET OF STRUCTURAL COMPONENTS, SUCH AS PIPE INLETS.
8. WHEN THE FACILITY IS EXCAVATED TO REMOVE ACCUMULATED SEDIMENT, THE DISPOSAL AREA SHALL BE PERMANENTLY STABILIZED SO THAT IT DOES NOT RECREATE AN EROSION PROBLEM. ANY MATERIAL TAKEN OFF-SITE SHALL STILL BE UTILIZED OR DISPOSED OF IN AN APPROVED DNREC MANNER.
9. BEFORE ANY EARTHWORK OR EXCAVATION TAKES PLACE, THE CONTRACTOR SHALL CALL MISS UTILITY AT 811 OR 1.800.282.8555 AT LEAST 3 WORKING DAYS PRIOR TO CONSTRUCTION, TO HAVE ALL EXISTING UTILITIES MARKED ONSITE.
10. THE OWNER SHALL BE RESPONSIBLE FOR OPERATION & MAINTENANCE OF POST CONSTRUCTION STORMWATER FACILITIES.

MAINTENANCE ACTIVITIES FOR INFILTRATION PRACTICES

Maintenance Activity	Schedule
Replace topsoil and top surface filter fabric (when clogged)	As needed
Mow vegetated filter strips as necessary and remove the clippings.	
Ensure that the contributing drainage area, inlets, and facility surface are clear of debris.	Quarterly
Ensure that the contributing drainage area is stabilized. Perform spot-reseeding if where needed.	
Remove sediment and oil/grease from inlets, pretreatment devices, flow diversion structures, and overflow structures.	
Repair undercut and eroded areas at inflow and outflow structures.	
Check inspection ports 3 days after a storm event in excess of 1/2 inch in depth. Standing water observed in the observation port after three days is a clear indication of clogging.	Semi-annual inspection
Inspect pretreatment devices and diversion structures for sediment build-up and structural damage.	
Remove trees that start to grow in the vicinity of the infiltration facility that may drop leaf litter, fruits and other vegetative materials that could clog the infiltration device.	
Clean out accumulated sediments from the pretreatment cell.	Annually

SOUTH SWM FACILITY SEQUENCE OF CONSTRUCTION

(SEE COMPLETE SEQUENCE ON SHEET C-131)

8. CONSTRUCT SEDIMENT TRAP NORTH.
   - 8.1. NOTIFY THE PERSON RESPONSIBLE FOR STORMWATER SYSTEM CONSTRUCTION REVIEW AT LEAST THREE (3) DAYS PRIOR TO THE START OF THE STORMWATER SYSTEM CONSTRUCTION; STORMWATER FACILITIES MUST BE REVIEWED THROUGHOUT THEIR CONSTRUCTION.
   - 8.2. CLEAR AND GRUB SEDIMENT TRAP AREA.
   - 8.3. EXCAVATE TRAP.
     - 8.3.1. SEDIMENT TRAP SHALL BE EXCAVATED FROM OUTSIDE OF THE PERIMETER OF THE BASIN SO THAT EQUIPMENT DOES NOT TRAVERSE THE TRAP AREA.
     - 8.3.2. SEDIMENT TRAP SHALL NOT BE EXCAVATED BELOW THE BOTTOM ELEVATIONS NOTED IN THE SEDIMENT TRAP SCHEDULE.
   - 8.4. STOCKPILE EXCAVATED MATERIAL IN DESIGNATED STOCKPILE AREAS AND SURROUND WITH SILT FENCE.
   - 8.5. INSTALL ROCK OUTLET PROTECTION AT SEDIMENT TRAP INLET LOCATIONS.
   - 8.6. STABILIZE TRAP IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL NOTES.
   - 8.7. ONCE SIDE SLOPES ARE STABILIZED, PROVIDE SILT FENCE AROUND PERIMETER.

D. CONVERT SEDIMENT TRAP IB-FRONT TO INFILTRATION BASIN

1. CONVERSION FROM SEDIMENT TRAP TO INFILTRATION BASIN SHALL NOT PROCEED WITHOUT AUTHORIZATION FROM THE DNREC CONSTRUCTION REVIEWER AND VERIFICATION THAT ALL CONTRIBUTING AREAS HAVE BEEN ADEQUATELY STABILIZED.
2. INSPECT STORM DRAIN SYSTEMS AND FOREBAYS FOR MAINTENANCE. REMOVE SEDIMENT AS NECESSARY.
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     - 2.4.1. PROVIDE INFILTRATION TESTING PER APPENDIX A-1 OF THE STORMWATER MANAGEMENT BMP STANDARDS & SPECIFICATIONS OR AS DIRECTED BY DNREC.
     - 2.4.2. SUBMIT REPORT TO DNREC & DESIGN ENGINEER FOR APPROVAL. IF NOT APPROVED OR INFILTRATION RATES ARE NOT PER DESIGN RATES, OTHER REQUIREMENTS MAY BE NEEDED AT DNREC'S DISCRETION.
   - 2.5. INSPECT AND REPAIR OUTLET PROTECTION AT BASIN INLET LOCATIONS.
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     - 2.6.1. BOTTOM OF INFILTRATION FACILITY SHALL REMAIN NATIVE SOIL.
     - 2.6.2. STABILIZE SIDE SLOPES OF BASIN WITH PERMANENT SEED MIX NO. 4 (SHEET C-533).
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DAVIS, BOWEN & FRIEDEL, INC.
ARCHITECTS ENGINEERS SURVEYORS
SALISBURY, MARYLAND (410) 543-9091
WILMINGTON, DELAWARE (302) 571-8801
EASTON, MARYLAND (410) 770-4744

STORMWATER FACILITY DETAILS

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

REVISED
05/07/19 STORMWATER SUBMITTAL
05/20/19 TOWN COMMENTS
05/24/19 RET. WALL, DOCK RAMP
05/28/19 FIRE PROT. PLAN LABELS
06/21/19 DNREC SSM, FIRE MARSHAL
07/10/19 ADA, FIRE PROT. COMMENTS

Date: APRIL 05, 2019
Scale:
Dwn.By: TPS/
Proj.No.: 0774A026.B01
Dwg.No.: C-431

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GENERAL OPERATION AND MAINTENANCE NOTES

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NORTH SWM FACILITY SEQUENCE OF CONSTRUCTION

(SEE COMPLETE SEQUENCE ON SHEET C-131)

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   - 2.7. CONTACT DNREC FOR INSPECTION.
   - 2.8. SUBMIT AS-BUILT SURVEY OF FACILITY TO DNREC.

MAINTENANCE ACTIVITIES FOR INFILTRATION PRACTICES

Maintenance Activity	Schedule
Replace topsoil and top surface filter fabric (when clogged)	As needed
Mow vegetated filter strips as necessary and remove the clippings.	
Ensure that the contributing drainage area, inlets, and facility surface are clear of debris.	Quarterly
Ensure that the contributing drainage area is stabilized. Perform spot-reseeding if where needed.	
Remove sediment and oil/grease from inlets, pretreatment devices, flow diversion structures, and overflow structures.	
Repair undercut and eroded areas at inflow and outflow structures.	
Check inspection ports 3 days after a storm event in excess of 1/2 inch in depth. Standing water observed in the observation port after three days is a clear indication of clogging.	Semi-annual inspection
Inspect pretreatment devices and diversion structures for sediment build-up and structural damage.	
Remove trees that start to grow in the vicinity of the infiltration facility that may drop leaf litter, fruits and other vegetative materials that could clog the infiltration device.	
Clean out accumulated sediments from the pretreatment cell.	Annually

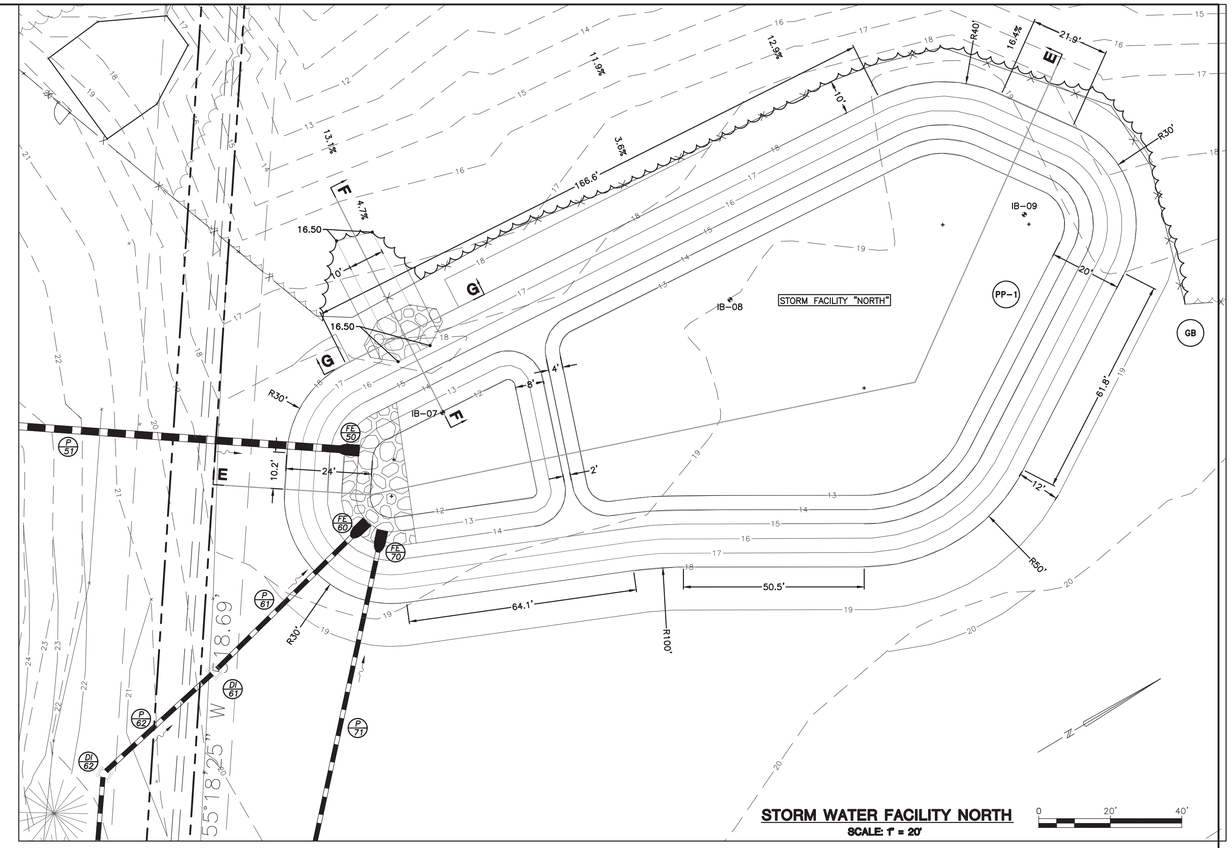
STORM DRAINAGE PIPE SCHEDULE

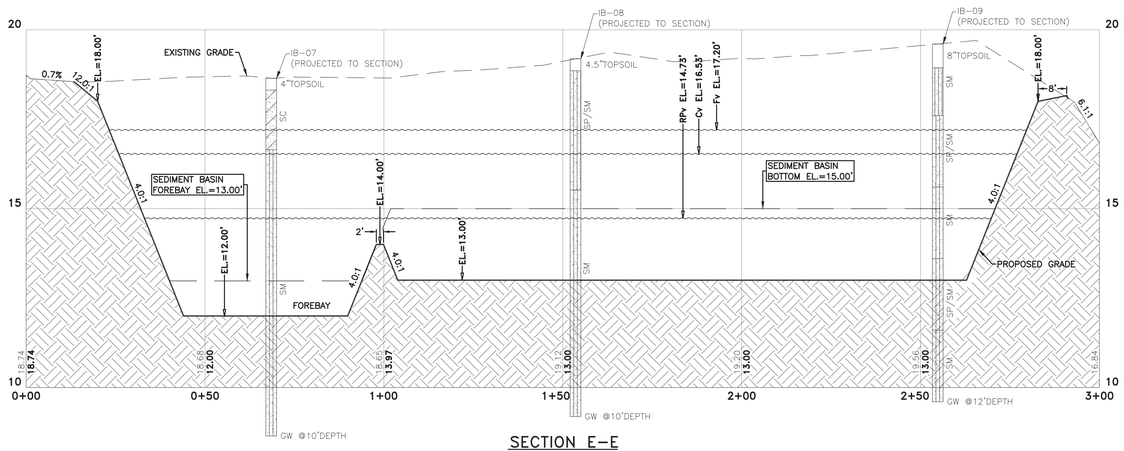
PIPE #	FROM	TO	SIZE	TYPE	LENGTH	CLASS	SLOPE (%)	INVERT ELEVATION IN	INVERT ELEVATION OUT
P-51	DI-51	FE-50	24"	HDPE	235'	*	3.23	20.60	13.00
P-61	DI-61	FE-60	15"	HDPE	60'	*	3.97	15.38	13.00
P-62	DI-62	DI-63	15"	HDPE	42'	*	0.40	15.65	15.48
P-71	DI-71	FE-70	12"	HDPE	233'	*	2.44	18.68	13.00

ROP DATA TABLE

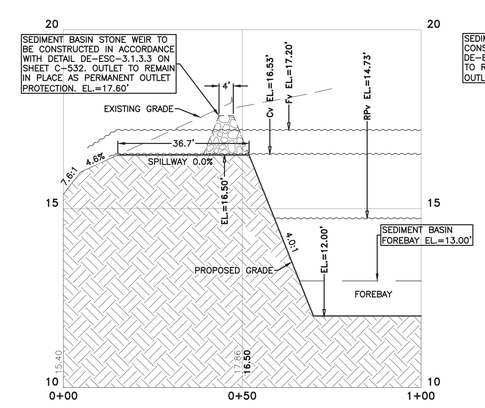
LABEL	PIPE SIZE (Do)	APRON LENGTH (La)	APRON WIDTH (W)	RIPRAP SIZE (R No.)	RIPRAP THICKNESS (T)
FE-50	24"	14'	16'	R-4 (6")	14"
FE-60	15"	8'	9.5'	R-4 (6")	14"
FE-70	12"	6'	7'	R-4 (6")	14"

ALL RIPRAP SHALL BE UNDERLAIN WITH MIRAFI 600X GEOTEXTILE OR DNREC TYPE GS-1.

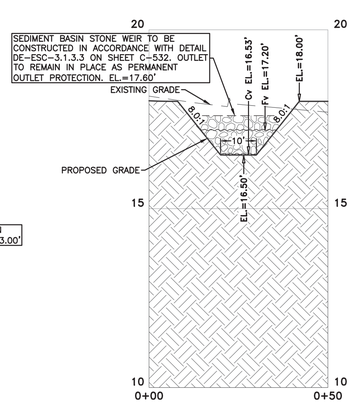




SECTION E-E
STORMWATER FACILITY "NORTH"



SECTION F-F
STORMWATER FACILITY "NORTH"



SECTION G-G
STORMWATER FACILITY "NORTH"

DAVIS, BOWEN & FRIEDEL, INC.
ARCHITECTS ENGINEERS SURVEYORS
SALISBURY, MARYLAND (410) 543-9091
OCEAN CITY, MARYLAND (410) 524-7441
EASTON, MARYLAND (410) 770-4744

REGISTERED PROFESSIONAL ENGINEER W. ZACHARY CROUCH No. 12734 07/24/2019

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

STORMWATER FACILITY DETAILS

REVISED
05/07/19 STORMWATER SUBMITTAL
05/20/19 TOWN COMMENTS
05/24/19 RET. WALL, DOCK RAMP
05/28/19 FIRE PROT. PLAN LABELS
06/21/19 DNREC SSM, FIRE MARSHAL
07/10/19 ADA, FIRE PROT. COMMENTS

Date: APRIL 05, 2019
Scale:
Dwn.By: TPS/
Proj.No.: 0774A026.B01
Dwg.No.: C-432

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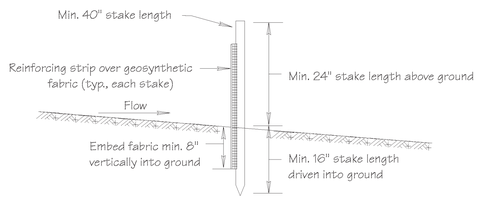
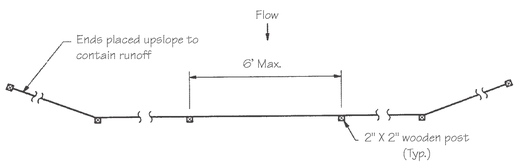
Standard Detail & Specifications
Silt Fence



Section



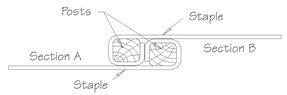
Plan

DATA
Max. controlled slope

Source:	Symbol:	Detail No.
Adapted form MD Stds. & Specs. for ESC	SF	DE-ESC-3.1.2.1 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications
Silt Fence

Construction Detail



Top

Method for joining continuous sections

Construction Notes:

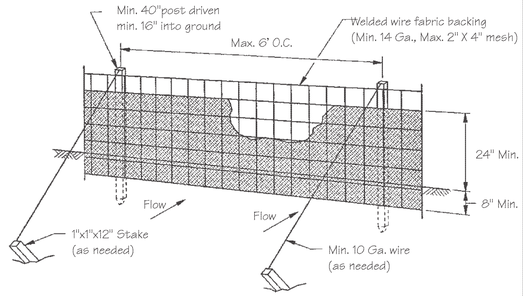
1. Geosynthetic fabric to be fastened securely to fence posts with wire ties or staples.
2. When two sections of filter cloth adjoin each other they shall be overlapped by six inches and folded.
3. Maintenance shall be performed as needed and material removed when "bulges" develop in the silt fence.

Materials:

1. Stakes: Steel (either T or U) or 2" x 2" hardwood
2. Geosynthetic Fabric: Type GD-I
3. Reinforcing strip: Wooden lath or plastic strip

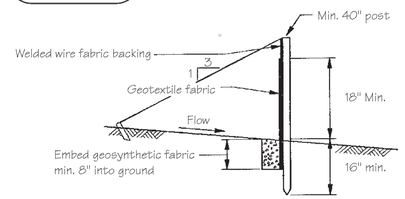
Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	SF	DE-ESC-3.1.2.1 Sheet 2 of 2 Effective FEB 2019

Standard Detail & Specifications
Reinforced Silt Fence



Perspective

DATA
Max. controlled slope



Cross-section

Source:	Symbol:	Detail No.
Adapted from Transco, Inc.	RSF	DE-ESC-3.1.2.2 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications
Reinforced Silt Fence

Construction Notes:

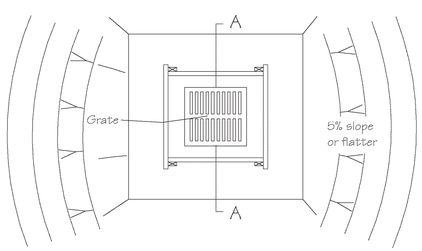
1. Welded wire fabric to be fastened securely to the fence posts with wire ties or staples.
2. Filter cloth to be fastened securely to woven wire fence with ties spaced every 24 inches at top and mid-section.
3. When two sections of fabric adjoin each other, they shall be overlapped by six inches and folded.
4. Maintenance shall be performed as needed and material removed when "bulges" develop in the silt fence.

Materials:

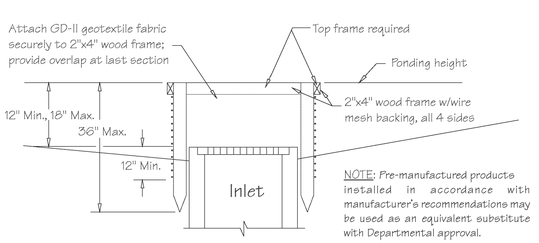
1. Posts: Steel either T or U or 2" x 2" hardwood
2. Geotextile Fabric: Type GD-I
3. Backing: Woven welded wire, 14 Ga., 2" X 4" mesh opening

Source:	Symbol:	Detail No.
Adapted from Transco, Inc.	RSF	DE-ESC-3.1.2.2 Sheet 2 of 2 Effective FEB 2019

Standard Detail & Specifications
Inlet Protection - Type 1



Plan



Section A-A

Source:	Symbol:	Detail No.
Adapted from Erosion Draw Manual J. McCullah & Assoc.	IP-1	DE-ESC-3.1.5.1 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications
Inlet Protection - Type 1

Construction Notes:

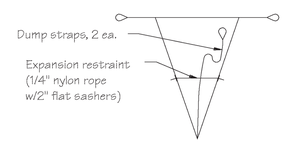
1. Excavate completely around inlet to a depth of 18" below grate elevation.
2. Drive 2" x 4" post 1' into ground at four corners of inlet. Place nail strips between posts on ends of inlet. Assemble top portion of 2" x 4" frame using overlap joint shown. Top of frame (weir) must be 6" below edge of roadway adjacent to inlet.
3. Stretch wire mesh tightly around frame and fasten securely. Ends must meet at post.
4. Stretch geotextile fabric tightly over wire mesh, the cloth must extend from top of frame to 18" below inlet grate elevation. Fasten securely to frame. Ends must meet at post, be overlapped and folded, then fastened down.
5. Backfill around inlet in compacted 6" layers until at least 12" of geotextile fabric is buried.
6. If the inlet is not in a low point, construct a compacted earth dike in the ditchline below it. The top of this dike is to be at least 6" higher than the top of frame (weir).
7. This structure must be inspected frequently and the filter fabric replaced when clogged.

Materials:

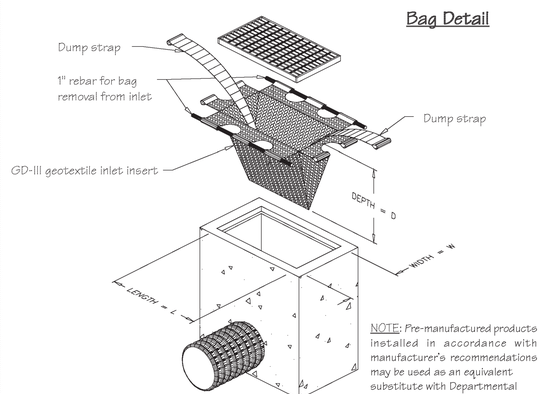
1. Wooden frame is to be constructed of 2" x 4" construction grade lumber.
2. Wire mesh must be of sufficient strength to support filter fabric with water fully impounded against it.
3. Geotextile fabric: Type GD-II

Source:	Symbol:	Detail No.
Adapted. from Erosion Draw Manual J. McCullah & Assoc.	IP-1	DE-ESC-3.1.5.1 Sheet 2 of 2 Effective FEB 2019

Standard Detail & Specifications
Inlet Protection - Type 2



Bag Detail



Perspective

Source:	Symbol:	Detail No.
Adapted from ACF Products, Inc.	IP-2	DE-ESC-3.1.5.2 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications
Inlet Protection - Type 2

Notes:

1. This practice shall only be used in situations in which Inlet Protection - Type 1 cannot be used due to site constraints. These include, but are not limited to partially completed parking areas, streets, roads, etc.
2. It may be necessary to transition from Type 1 to Type 2 Inlet Protection as construction proceeds.
3. For areas where there is a concern for oil run-off or spills, insert shall meet one of the above specifications with an oil-absorbant pillow or shall be made completely from an oil-absorbant material with a woven pillow.

Materials:

The geotextile inlet insert shall meet or exceed the specifications of Type GD-III geotextile in accordance with Appendix A-3 of the Delaware Erosion & Sediment Control Handbook.

Source:	Symbol:	Detail No.
Adapted from ACF Products, Inc.	IP-2	DE-ESC-3.1.5.2 Sheet 2 of 2 Effective FEB 2019

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SEDIMENT & STORMWATER DETAILS

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

REVISED
05/07/19 STORMWATER SUBMITTAL
05/20/19 TOWN COMMENTS
05/24/19 RET. WALL, DOCK RAMP
05/28/19 FIRE PROT. PLAN LABELS
06/21/19 DNREC SSM, FIRE MARSHAL
07/10/19 ADA, FIRE PROT. COMMENTS

Date: APRIL 05, 2019
Scale:
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Dwg.No.: C-531

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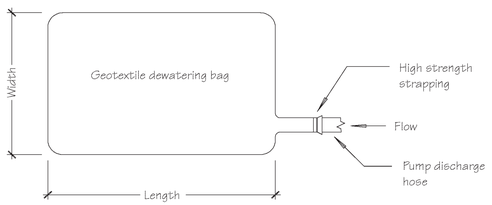
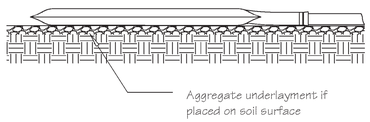
Standard Detail & Specifications

Geotextile Dewatering Bag



Plan



Profile

NOTE: Pre-manufactured products installed in accordance with manufacturer's recommendations may be used as an equivalent substitute with Departmental approval.

Source:	Symbol:	Detail No.
Adapted from ACF Products, Inc.	GB	DE-ESC-3.2.1.2 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications

Geotextile Dewatering Bag

Construction Notes:

1. The dewatering bag should be placed so the incoming water flows into and through the bag, and then flow off the site without creating more erosion. The neck should be tied off tightly to stop the water from flowing out of the bag without going through the walls. The dewatering bag should be placed on a gravel bed to allow water to flow in all directions.
2. The dewatering bag is considered full and should be disposed when it is impractical for the bag to filter the sediment out at a reasonable flow rate. At this point, it should be replaced with a new bag.
3. Disposal may be accomplished as directed by the construction reviewer. If the site allows, the bag may be buried on site and seeded, visible fabric removed and seeded or removed from site to a proper disposal area.

Materials:

1. The geotextile fabric shall be a Type GD-IV.
2. The dewatering bag shall be sewn with a double needle machine using high strength thread. All structural seams will be sewn with high strength, double stitched "J" type. Seam strength test will have the following minimum average roll values:

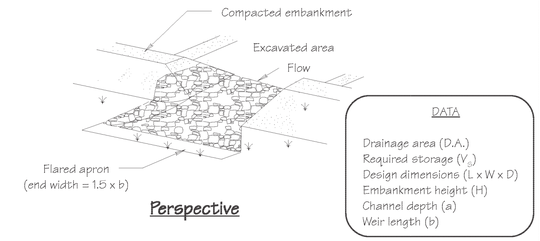
Type	TEST METHOD	TEST RESULT
Heavy duty	ASTM D-4884	100 lb / in

3. The dewatering bag shall have an opening large enough to accommodate a four (4) inch discharge hose with attached strap to tie off the hose to prevent the pumped water from escaping from the bag without being filtered.

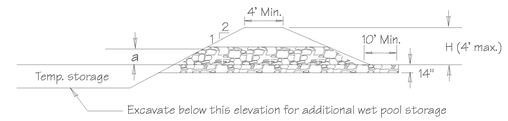
Source:	Symbol:	Detail No.
Adapted from ACF Products, Inc.	GB	DE-ESC-3.2.1.2 Sheet 2 of 2 Effective FEB 2019

Standard Detail & Specifications

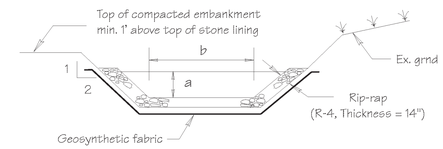
Riprap Outlet Sediment Trap



Perspective



Profile thru Outlet



Cross-section of Outlet

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	RST	DE-ESC-3.1.3.3 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications

Riprap Outlet Sediment Trap

Construction Notes:

1. The area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots or other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by traversing with equipment while it is being constructed. Maximum height of embankment shall be four (4) feet, measured at centerline of the embankment.
3. All fill slopes shall be 2:1 or flatter; cut slopes 1:1 or flatter.
4. Elevation of the top of any dike directing water into trap must equal or exceed the height of embankment.
5. Storage area provided shall be figured by computing the volume available behind the outlet channel up to the elevation of the crest of the outlet weir channel.
6. Filter cloth shall be placed over the bottom and sides of the outlet channel prior to placement of stone. Sections of fabric must overlap at least one (1) foot with section nearest the entrance placed on top. Fabric shall be embedded at least six (6) inches into existing ground at entrance of outlet channel.
7. Stone used in the outlet shall be R-4 riprap with a thickness of 14".
8. **An approved dewatering device shall be considered an integral part of the trap. Dewatering operations shall be conducted in accordance with any and all regulatory requirements.**
9. Sediment shall be removed and trap restored to its original dimensions when the sediment has accumulated to 1/2 the design depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.
10. The structure shall be inspected after each rain and repaired as needed.
11. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized. Disturbed areas shall be stabilized in accordance with the Standards and Specifications for vegetative Stabilization contained in this Handbook.
12. The structure shall be removed and the area stabilized when the contributing drainage area has been properly stabilized.

MAXIMUM DRAINAGE AREA: 15 ACRES

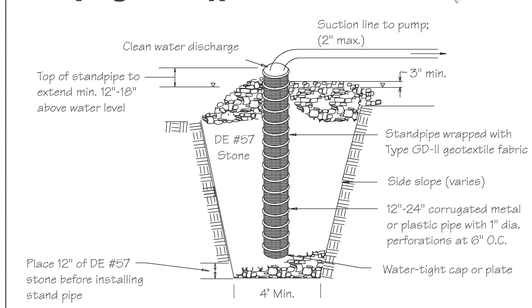
Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	RST	DE-ESC-3.1.3.3 Sheet 2 of 2 Effective FEB 2019

SEDIMENT BASIN WEIR DATA

ID	a	b
NORTH	1.1'	10'
SOUTH	1.2'	10'

Standard Detail & Specifications

Pumping Pit - Type 1



Section

Construction Notes:

1. Pit dimensions are variable.
2. The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. The perforations shall be 1/2" X 6" slits or 1" diameter holes 6" on center.
3. A base of DE #57 aggregate should be placed in the pit to a depth of 12". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with DE #57 aggregate.
4. The standpipe should extend 12" to 18" above the lip of the pit or riser crest elevation (basin dewatering).

NOTE: If discharge will be pumped directly to a storm drainage system, the standpipe must be wrapped with Type GD-II geotextile fabric before installation. If desired, 1/2" hardware cloth may be placed around the standpipe, prior to attaching the geotextile fabric. This will increase the rate of water seepage into the pipe.

Source:	Symbol:	Detail No.
Adapted from MD Stds. & Specs. for ESC	PP-1	DE-ESC-3.2.2.1 Sheet 1 of 1 Effective FEB 2019

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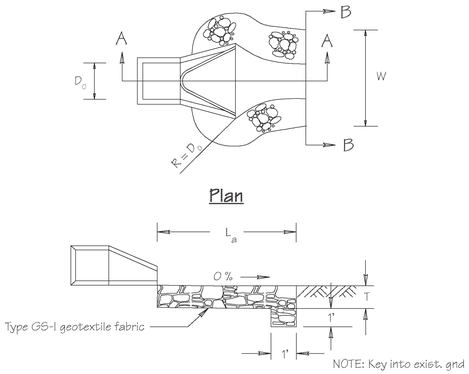
Standard Detail & Specifications

Riprap Outlet Protection - 2



Source:	Symbol:	Detail No.
Adapted from MD E&S Manual	ROP-2	DE-ESC-3.3.10.2 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications

Riprap Outlet Protection - 2

DATA

Pipe diameter (D_o)
Apron length (L_a)
Apron width (W)
Bottom width (b)
Riprap depth (d)
Riprap size (R No.)
Riprap thickness (T)

Construction Notes:

1. The subgrade for the riprap shall be prepared to the required lines and grades as shown on the plan. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The riprap shall conform to the grading limits as shown on the plan.
3. Filter cloth shall be protected from punching, cutting or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged area. All connecting joints should overlap a minimum of 1 ft. If the damage is extensive, replace the entire filter cloth.
4. Stone for the riprap or gabion outlets may be placed by equipment. Riprap shall be placed in a manner to prevent damage to the filter cloth. Hand placement will be required to the extent necessary to prevent damage to the conduits, structures, etc.

Source:	Symbol:	Detail No.
Adapted from MD E&S Manual	ROP-2	DE-ESC-3.3.10.2 Sheet 2 of 2 Effective FEB 2019

Standard Detail & Specifications

Topsoiling

Construction Notes:

1. **Site Preparation** (Where Topsoil is to be added)

Note: When topsoiling, maintain needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, waterways and sediment basins.

a. Grading - Grades on the areas to be topsoiled which have been previously established shall be maintained.

b. Liming - Where the topsoil is either highly acid or composed of heavy clays, ground limestone shall be spread at the rate of 4-8 tons/acre (200-400 pounds per 1,000 square feet). Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

c. Tilling - After the areas to be topsoiled have been brought to grade, and immediately prior to dumping and spreading the topsoil, the subgrade shall be loosened by discing or by scarifying to a depth of a least 3 inches to permit bonding of the topsoil to the subsoil. Pack by passing a bulldozer up and down over the entire surface area of the slope to create horizontal erosion check slots to prevent topsoil from sliding down the slope.

2. **Topsoil Material and Application**

Note:Topsoil salvaged from the existing site may often be used but it should meet the same standards as set forth in these specifications. The depth of topsoil to be salvaged shall be no more than the depth described as a representative profile for that particular soil type as described in the soil survey published by USDA-SCS in cooperation with Delaware Agricultural Experimental Station.

Source:	Symbol:	Detail No.
USDA - NRCS		DE-ESC-3.4.1 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications

Topsoiling

Construction Notes (cont.)

a. Materials - Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand or other soil as approved by an agronomist or soil scientist. It shall not have a mixture of contrasting textured subsoil and contain no more than 5 percent by volume of cinders, stones, slag, coarse fragment, gravel, sticks, roots, trash or other extraneous materials larger than 1-1/2 inches in diameter. Topsoil must be free of plants or plant parts of bermudagrass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistles, or others as specified. All topsoil shall be tested by a reputable laboratory for organic matter content, pH and soluble salts. A pH of 6.0 to 7.5 and an organic content of not less than 1.5 percent by weight is required. If pH value is less than 6.0 lime shall be applied and incorporated with the topsoil to adjust the pH to 6.5 or higher. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

Note: No sod or seed shall be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed to permit dissipation of toxic materials.

b. Grading - The topsoil shall be uniformly distributed and compacted to a minimum of four (4) inches. Spreading shall 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 shall be corrected in order to prevent the formation of depressions or water pockets. Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

Note:Topsoil substitutes or amendments as approved by a qualified agronomist or soil scientist, may be used in lieu of natural topsoil. Compost material used to improve the percentage of organic matter shall be provided by a certified supplier.

Compost amendments that are intended to meet specific post-construction stormwater management goals shall further meet the requirements of **Appendix 3.06.2 Post Construction Stormwater Management BMP Standards and Specifications, Section 14.0 Soil Amendments.**

Source:	Symbol:	Detail No.
USDA - NRCS		DE-ESC-3.4.1 Sheet 2 of 2 Effective FEB 2019

Standard Detail & Specifications

Vegetative Stabilization

TEMPORARY SEEDING BY RATES, DEPTHS AND DATES

Mix #	Species[6]	Seeding Rate		Optimum Seeding Dates [1] O = Optimum Planting Period; A = Acceptable Planting Period						Planting Depth[3]
				Coastal Plain			Piedmont			All
	Certified Seed	lb/Ac[5]	lb/1000 sq.ft.	2/1-4/30	[2] 5/1-8/14	8/15-10/31	3/1-4/30	[2] 5/1-7/31	8/1-10/31	10/31-2/1
1	Barley	125	4	O	A	O	O	A	O	1-2 inches 2-3" sandy soils
2	Oats	125	4	O	A	A	O	A	A	1-2 inches 2-3" sandy soils
3	Rye	125	4	O	A	O	O	A	O	A 1-2 inches 2-3" sandy soils
4	Perennial Ryegrass	125	4	O	A	O	O	A	O	0.5 inches 1-2" sandy soils
5	Annual Ryegrass	125	4	O	A	O	O	A	O	A 0.5 inches 1-2" sandy soils
6	Winter Wheat	125	4	O	A	O	O	A	O	A 1-2 inches 2-3" sandy soils
7	Foxtail Millet	30 PLS	0.7		O			O		0.5 inches 1-2" sandy soils
8	Pearl Millet	20 PLS	0.5		O			O		0.5 inches 1-2" sandy soils

1. Winter seeding requires 3 tons per acre of straw mulch for proper stabilization.
2. May be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
3. Applicable on slopes 3:1 or less.
4. Fifty pounds per acre of Annual Lespedeza may be added to 1/2 the seeding rate of any of the above species.
5. Use varieties currently recommended for Delaware. Contact a County Extension Office for information.
6. Warm season grasses such as Millet or Weeping Lovegrass may be used between 5/1 and 9/1 if desired. Seed at 3-5 lbs. per acre. Good on low fertility and acid areas. Seed after frost through summer at a depth of 0.5".

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 1 of 4 Effective FEB 2019

Standard Detail & Specifications

Vegetative Stabilization

PERMANENT SEEDING AND SEEDING DATES

Mix No.	Seeding Mixtures: Certified Seed[7] / Well Drained Soils	Seeding Rate[1] lb/Ac	lb/1000 sq.ft.	Optimum Seeding Dates [2] O = Optimum Planting Period A = Acceptable Planting Period: Coastal Plain 2/1-4/30	Coastal Plain 5/1-8/14	Coastal Plain 8/15-10/31	Piedmont 3/1-4/30	Piedmont 5/1-7/31	Piedmont 8/1-10/31	All[8] 10/31-2/1	Remarks
1	Tall Fescue Weeping Lovegrass	140 10	3.2 0.23	A	O	A	A	O	A	Add 100 lbs./ac Winter Rye	Good erosion control mix Tolerant of low fertility soils Lovegrass very difficult to mow; Germinates only in hot weather
2	Deertongue Sheep Fescue Common Lespedeza[5] Inoculated	30 30 15	0.69 0.69 0.35	A	O	A	A	O	A	Add 100 lbs./ac Winter Rye	Good erosion control mix Tolerant of low fertility soils Good wildlife cover and food
3	Tall Fescue (Turf-type) **or** Strong Creeping Red Fescue **or** Perennial Ryegrass **plus** Flatpea[5]	50 50 50 15	1.15 1.15 1.15 0.34	O	A	O	O	A	O	Add 100 lbs./ac Winter Rye	Good erosion control mix Tall Fescue for droughty conditions. Creeping Red Fescue for heavy shade. Flatpea to suppress woody vegetation.
4	Strong Creeping Red Fescue Kentucky Bluegrass Perennial Ryegrass **or** Redtop **plus** White Clover[5]	100 70 15 5 3	2.3 1.61 0.35 0.11 0.07	O	A	O	O	A	O	Add 100 lbs./ac Winter Rye	Suitable waterway mix. Canada Bluegrass more drought tolerant. Use Redtop for increased drought tolerance.
5	Switchgrass[5,7] **or** Coastal Panicgrass Big Bluestem Little Bluestem Indian Grass	10 10 5 5 5	0.23 0.23 0.11 0.11 0.11		O			O			Native warm-season mixture. Tolerant of low fertility soils. Drought tolerant. Poor shade tolerance. N fertilizer discouraged - weeds
6	Tall Fescue (turf-type) (Blend of 3 cultivars)	150	3.5	O	A	O	O	A	O		Managed filter strip for nutrient uptake.
7	Tall Fescue Ky. Bluegrass (Blend) Perennial Ryegrass	150 20 20	3.5 0.46 0.46	O	A	O	O	A	O		Three cultivars of Kentucky Bluegrass. Traffic tolerant.
8	Big Bluestem[7] Indian Grass[7] Little Bluestem[7] Creeping Red Fescue **plus one of:** Partridge Pea Bush Clover Wild Indigo Showy Tick-Trefoil	10 10 8 30 5 3 3 2	0.23 0.23 0.18 0.69 0.11 0.07 0.07 0.05	O	A		O	A			All species are native. Indian Grass and Bluestem have fluffy seeds. Plant with a specialized native seed drill. Creeping Red Fescue will provide erosion protection while the warm season grasses get established.

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 2 of 4 Effective FEB 2019

Standard Detail & Specifications

Vegetative Stabilization

PERMANENT SEEDING AND SEEDING DATES (cont.)

Mix No.	Seeding Mixtures: Certified Seed[7] / Poorly Drained Soils	Seeding Rate[1] lb/Ac	lb/1000 sq.ft.	Optimum Seeding Dates [2] O = Optimum Planting Period A = Acceptable Planting Period: Coastal Plain 2/1-4/30	Coastal Plain 5/1-8/14	Coastal Plain 8/15-10/31	Piedmont 3/1-4/30	Piedmont 5/1-7/31	Piedmont 8/1-10/31	All[8] 10/31-2/1	Remarks
9	Redtop Creeping Bentgrass Sheep Fescue Rough Bluegrass	75 35 30 45	1.72 0.8 0.69 1	O	A	O	O	A	O	Add 100 lbs./ac Winter Rye	Quick stabilization of disturbed sites and waterways
10	Reed Canarygrass[8]	10	0.23	A		O	A		O		Good erosion control; wildlife cover and wetland revegetation.
	Residential Lawns										
11	Tall Fescue Perennial Ryegrass Kentucky Bluegrass Blend	100 25 30	2.3 0.57 0.69	O	A	O	O	A	O		High value, high maintenance, light traffic, irrigation necessary. Well drained soils, full sun.
12	Tall Fescue Perennial Ryegrass Sheep Fescue	100 25 25	2.3 0.57 0.57	O	A	O	O	A	O		Moderate value; low maintenance; traffic tolerant.
13	Creeping Red Fescue Chewings Fescue Rough Bluegrass Kentucky Bluegrass	50 50 20 20	1.15 1.15 0.4 0.4	O	A	O	O	A	O		Shade tolerant, moderate traffic tolerance, moderate maintenance.
14	Creeping Red Fescue Rough Bluegrass **or** Chewings Fescue	50 90	1.15 2.1	O	A	O	O	A	O		Shade tolerant, moisture tolerant.
15	K-31 Tall Fescue	150	3.5	O	A	O	O	A	O		Monoculture; but performs well alone in lawns. Discouraged.

1. When hydroseeding is the chosen method of application, the total rate of seed should be increased by 25%.
2. Winter seeding requires 3 tons per acre of straw mulch. Planting dates listed above are average for Delaware. These dates may require adjustment to reflect local conditions.
3. All seed shall meet the minimum purity and minimum germination percentages recommended by the Delaware Department of Agriculture. The maximum % of weed seeds shall be in accordance with Section 1, Chapter 24, Title 3 of the Delaware Code.
4. Cool season species may be planted throughout summer if soil moisture is adequate or seeded area can be irrigated.
5. All leguminous seed must be inoculated.
6. Warm season grass mix and Reed Canary Grass cannot be mowed more than 4 times per year.
7. Warm season grasses require a soil temperature of at least 50 degrees in order to germinate, and will remain dormant until then.

NOTE: Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 3 of 4 Effective FEB 2019

Standard Detail & Specifications

Vegetative Stabilization

Construction Notes:

1. Site Preparation

a. Prior to seeding, install needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, grassed waterways, and sediment basins.

b. Final grading and shaping is not necessary for temporary seedings.

2. Seedbed Preparation

It is important to prepare a good seedbed to insure the success of establishing vegetation. The seedbed should be well prepared, loose, uniform, and free of large clods, rocks, and other objectionable material. The soil surface should not be compacted or crusted.

3. Soil Amendments

a. Lime - Apply liming materials based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply dolomitic limestone at the rate of 1 to 2 tons per acre. Apply limestone uniformly and incorporate into the top 4 to 6 inches of soil.

b. Fertilizer - Apply fertilizer based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply a formulation of 10-10-10 at the rate of 600 pounds per acre. Apply fertilizer uniformly and incorporate into the top 4 to 6 inches of soils.

4. Seeding

a. For **temporary stabilization**, select a mixture from **Sheet 1 .** For a **permanent stabilization**, select a mixture from **Sheet 2** or **Sheet 3** depending on the conditions. Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.

b. Apply seed uniformly with a broadcast seeder, drill, cultipacker seeder or hydroseeder. All seed will be applied at the recommended rate and planting depth.

c. Seed that has been broadcast should be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used and the seed and fertilizer is mixed, they will be mixed on site and the seeding shall be done immediately and without interruption.

5. Mulching

All mulching shall be done in accordance with detail **DE-ESC-3.4.5**.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 4 of 4 Effective FEB 2019

07/24/2019

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SEDIMENT & STORMWATER DETAILS

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

REVISED
05/07/19 STORMWATER SUBMITTAL
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05/24/19 RET. WALL, DOCK RAMP
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07/10/19 ADA, FIRE PROT. COMMENTS

Date: APRIL 05, 2019
Scale:
Dwn.By: TPS/
Proj.No.: 0774A026.B01
Dwg.No.: C-533

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Standard Detail & Specifications
Mulching

1. Materials and Amounts

a. *Straw* - Straw shall be unrotted small grain straw applied at the rate of 1-1/2 to 2 tons per acre, or 70 to 90 pounds (two bales) per 1,000 square feet. Mulch materials shall be relatively free of weeds and shall be free of noxious weeds such as; thistles, Johnsongrass, and quackgrass. Spread mulch uniformly by hand or mechanically. For uniform distribution of hand spread mulch, divide area into approximately 1,000 square feet sections and place 70-90 pounds (two bales) of mulch in each section.

b. *Wood chips* - Apply at the rate of approximately 6 tons per acre or 275 pounds per 1,000 square feet when available and when feasible. These are particularly well suited for utility and road rights-of-way. If wood chips are used, increase the application rate of nitrogen fertilizer by 20 pounds of N per acre (200 pounds of 10-10-10 or 66 pounds of 30-0-0 per acre).

c. *Hydraulically applied mulch* -The following conditions apply to hydraulically applied mulch:

i. Definitions:

a. Wood fiber mulch shall consist of specially prepared wood that has been processed to a uniform state, is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment, and consists of a minimum of 70% virgin or recycled wood fiber combined with 30% paper fiber and additives.

b. Blended fiber mulch shall consist of any hydraulic mulch that contains greater than 30% paper fiber. The paper component must consist of specially prepared paper that has been processed to a uniform fibrous state and is packaged for sale as a hydraulic mulch for use with hydraulic seeding equipment.

c. A bonded fiber matrix (BFM) consists of long strand, specially prepared wood fibers that have been processed to a uniform state held together by a water resistant bonding agent. BFMs shall contain no paper (cellulose) mulch but may contain small percentages of synthetic fibers to enhance performance.

d. Refer to **Figure 3.4.5a** for conditions and limitations of use for each of the above categories of hydraulic mulch.

ii. All components of the hydraulically applied mulches shall be pre-packaged by the manufacturer to assure material performance. Field mixing of the mulch components is acceptable, but must be done per manufacturers recommendations to ensure the proper results.

iii. Hydraulic mulches shall be applied with a viable seed and at manufacturer's recommended rates. Increased rates may be necessary based on site conditions.

iv. Hydraulically applied mulches and additives shall be mixed according to manufacturers recommendations.

iv. Materials within this category shall only be used when hydraulically applied mulch has been specified for use on the approved Sediment and Stormwater Plan, or supplemental approval from the plan approval agency has been obtained in writing for a specific area.

Source:	Symbol:	Detail No.
Delaware ESC Handbook & Filtrexx™ International		**DE-ESC-3.4.5** Sheet 1 of 3 Effective FEB 2019

Standard Detail & Specifications
Mulching

v. Application:

a. Apply product to geotechnically stable slopes that have been designed and constructed to divert runoff away from the face of the slope.

b. Do not apply to saturated soils, or if precipitation is anticipated within 24-48 hours.

c. During the spring (March 1 to May 31) and fall (September 1 to November 30) seasons, hydraulic mulches may be applied in a one-step process where all components are mixed together in single-tank loads. It is recommended that the product be applied from opposing directions to achieve optimum soil coverage.

d. During the summer (June 1 to August 31) and winter (December 1 to February 28) seasons, the following two-step process is required:

Step One– Mix and apply seed and soil amendments with a small amount of mulch for visual metering.

Step Two – Mix and apply mulch at manufacturers recommended rates over freshly seeded surfaces. Apply from opposing directions to achieve optimum soil coverage.

e. Minimum curing temperature is 40° F (4° C). The best results and more rapid curing are achieved at temperatures exceeding 60° F (15° C). Curing times may be accelerated in high temperature, low humidity conditions on dry soils.

vi. Recommended application rates are for informational purposes only. Conformance with this standard and specification shall be performance-based and requires **100% soil coverage**. Any areas with bare soil showing shall be top dressed until full coverage is achieved.

d. *Compost blanket (CB)* - Loosely applied with a pneumatic blower so that a 1" compost blanket uniformly covers the **soil with 100% coverage**. This application can be used with seed to promote germination by applying the approved seed mix directly into the loosely blown compost. The compost blanket performs best on slopes less than 2:1 and requires no mulch anchoring.

2. Anchoring mulch - Mulch must be anchored immediately to minimize loss by wind or water. This may be done by one of the following methods, depending upon size of area, erosion hazard, and cost.

a. *Crimping* - A crimper is a tractor drawn implement designed to punch and anchor mulch into the top two (2) inches of soil. This practice affords maximum erosion control but is limited to flatter slopes where equipment can operate safely. On sloping land, crimping should be done on the contour whenever possible.

b. *Tracking* - Tracking is the process of cutting mulch (usually straw) into the soil using a bulldozer or other equipment that runs on cleated tracks. Tracking is used primarily on slopes 3:1 or steeper and should be done up and down the slope with cleat marks running across the slope.

c. *Liquid mulch binders* - Applications of liquid mulch binders should be heavier at edges, in valleys, and at crests of banks and other areas where the mulch will be moved by wind or water. All other areas should have a uniform application of binder. The use of synthetic binders is the preferred method of mulch binding and should be applied at the rates recommended by the manufacturer.

d. *Paper fiber* - The fiber binder shall be applied at a net dry weight of 750 lbs/ac. The wood cellulose fiber shall be mixed with water, and the mixture shall contain a maximum of 50 lbs. of wood cellulose fiber per 100 gallons.

e. *Nettings* - Synthetic or organic nettings may be used to secure straw mulch. Install and secure according to the manufacturers recommendations.

Source:	Symbol:	Detail No.
Delaware ESC Handbook & Filtrexx™ International		**DE-ESC-3.4.5** Sheet 2 of 3 Effective FEB 2019

Standard Detail & Specifications
Mulching

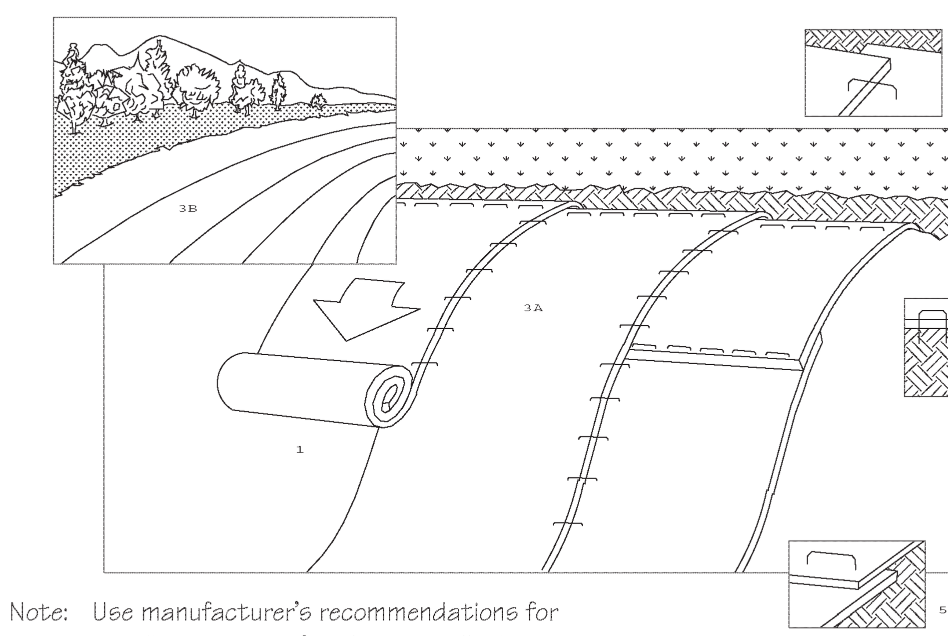
MULCHING MATERIAL SELECTION GUIDE

Percent Slope	Type of Mulch / App. Rate*	Dec. 1 to Feb. 28(29)	March 1 to May 31	June 1 to Aug. 31	Sept. 1 to Nov. 30
Less than 2%	Blended Fiber @ 2000 lbs/ac. minimum	xxxxxxxxxxxxxxxx	OK (≤1 ac.)	xxxxxxxxxxxxxxxx	OK (≤1 ac.)
	Wood Fiber @ 2000 lbs/ac. min.	xxxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxxx	OK
	BFM @ 3000 lbs/ac. min.	OK	OK	OK	OK
	Straw @ 2 Tons/ac. Min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
2% to 5.9%	Wood Fiber @ 2000 lbs/ac. min.	xxxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxxx	OK
	BFM @ 3000-3500 lbs/ac. min	OK	OK	OK	OK
	Straw @ 2 Tons/ac. min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
6% to 10.9%	Wood Fiber @ 2000-2500 lbs/ac. min.	xxxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxxx	OK
	BFM @ 3500-4000 lbs/ac. min.	OK	OK	OK	OK
	Straw @ 2 Tons/ac. min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
11% to 24.9%	Wood Fiber @ 2500-3000 lbs/ac. min.	xxxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxxx	OK
	BFM @ 3500-4000 lbs/ac. min.	OK	OK	OK	OK
	Straw @ 2 Tons/ac. min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
25% to 33%	Wood Fiber @ 2500-3000 lbs/ac. min.	xxxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxxx	OK
	BFM @ 4000 lbs/ac. min.	xxxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxxx	OK
	Straw @ 2 Tons/ac. min.	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	OK	OK	OK	OK
33% and up	BFM @ 4000-4500 lbs/ac. min.	xxxxxxxxxxxxxxxx	OK	xxxxxxxxxxxxxxxx	OK
	Straw @ 2 Tons/ac. min.***	OK	OK	OK	OK
	Stabilization Matting**	OK	OK	OK	OK
	1" Compost Blanket (CB)	2:1 Max.	2:1 Max.	2:1 Max.	2:1 Max.

* Note: Manufacturers Recommended Rates for informational purposes only. Performance standard requires 100% soil coverage.
** Note: Stabilization Matting must be applied in accordance with Section 3.4.6 of the Delaware ESC Handbook.
***Note: Straw applied on slopes greater than 33% must be netted (this does not apply to topsoil stockpiles).
OK = Acceptable to use during this time period.
xx = Not acceptable to use during this time period.
All application rates are minimums

Source:	Symbol:	Detail No.
Delaware ESC Handbook & Filtrexx™ International		**DE-ESC-3.4.5** Sheet 3 of 3 Effective FEB 2019

Standard Detail & Specifications
Stabilization Matting - Slope



Note: Use manufacturer's recommendations for stapling patterns for slope installations.

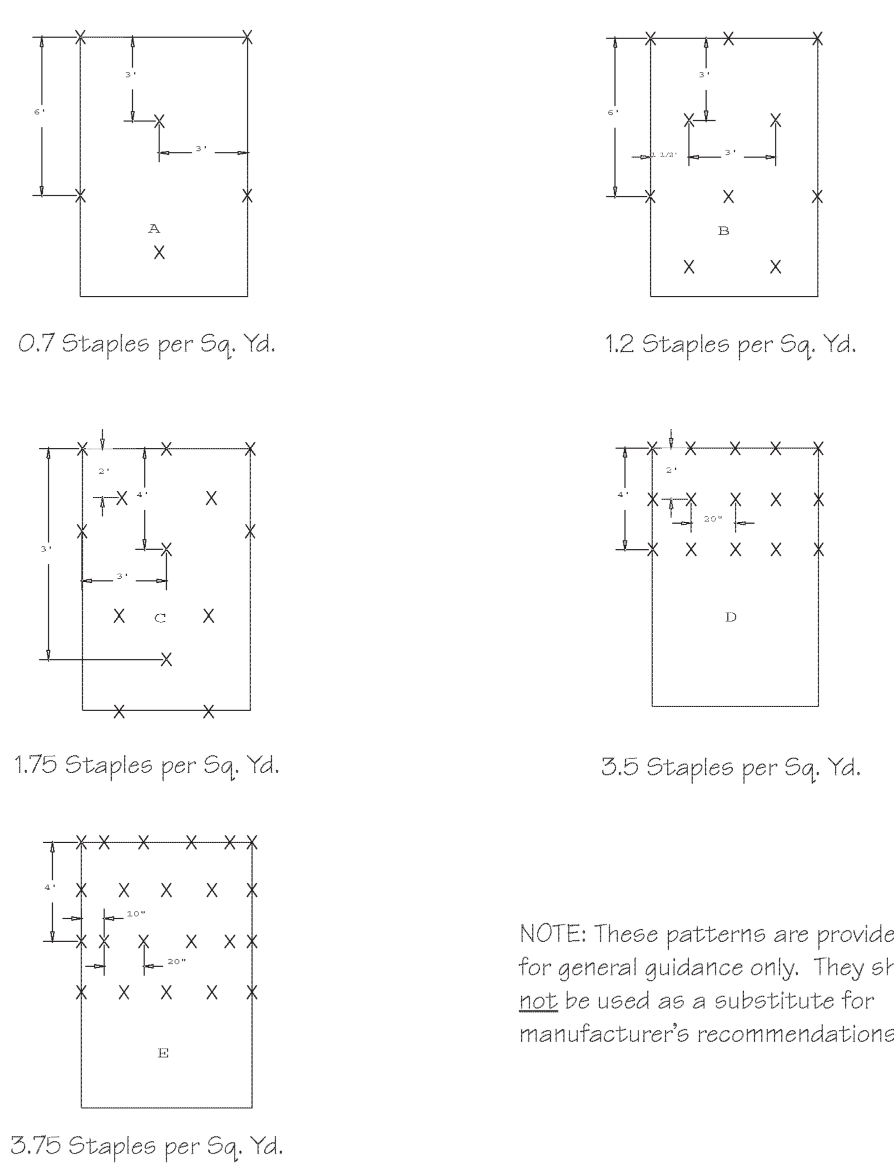
Perspective

Construction Notes:

1. Prepare soil before installing matting, including application of lime, fertilizer, and seed.
2. Begin at the top of the slope by anchoring the mat in a 6" deep X 6" wide trench. Backfill and compact trench after stapling.
3. Roll the mats (A) down or (B) horizontally across the slope.
4. The edges of parrallel mats must be stapled with approx. 2" overlap.
5. When mats must be spliced down the slope, place mats end over end (shingle style) with approx. 4" overlap. Staple through overlapped area, approx. 12" apart.

Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-S	**DE-ESC-3.4.6.1** Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications
Stabilization Matting - Slope

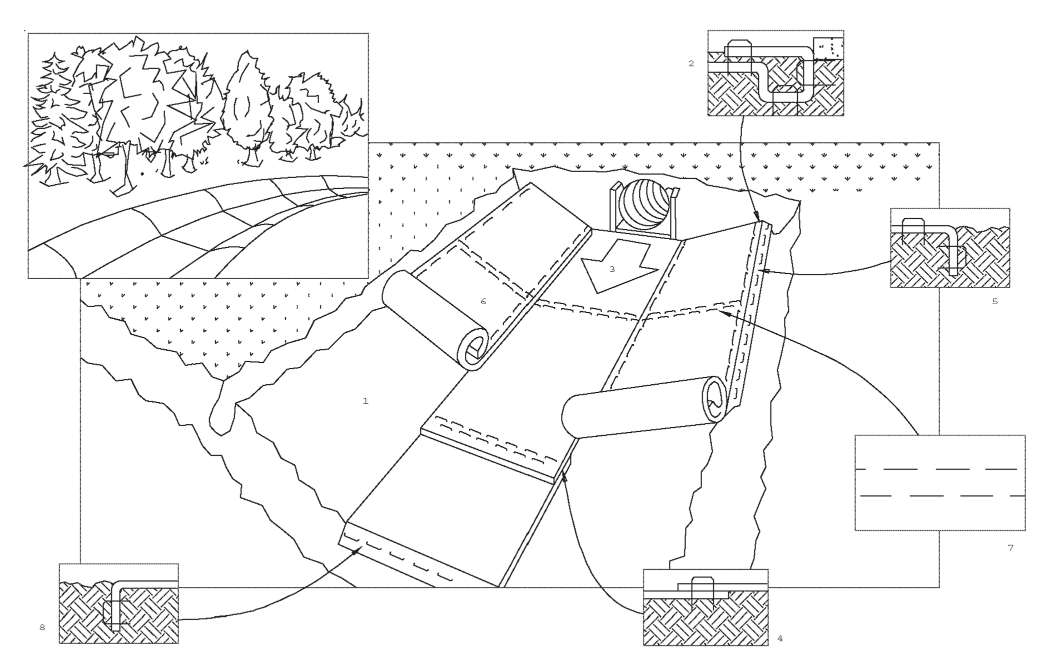


NOTE: These patterns are provided for general guidance only. They shall not be used as a substitute for manufacturer's recommendations.

Stapling Patterns

Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-S	**DE-ESC-3.4.6.1** Sheet 2 of 2 Effective FEB 2019

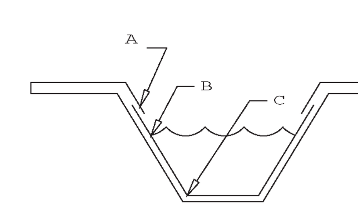
Standard Detail & Specifications
Stabilization Matting - Channel



Perspective

CRITICAL POINTS

A. Overlaps and seams
B. Projected waterline
C. Channel bottom/side slope vertices



Note: Horizontal staple spacing should be altered if necessary to allow staples to secure the critical points along the channel surface.

Use manufacturer's recommendations for stapling patterns for channel installations.

Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-C	**DE-ESC-3.4.6.2** Sheet 1 of 3 Effective FEB 2019

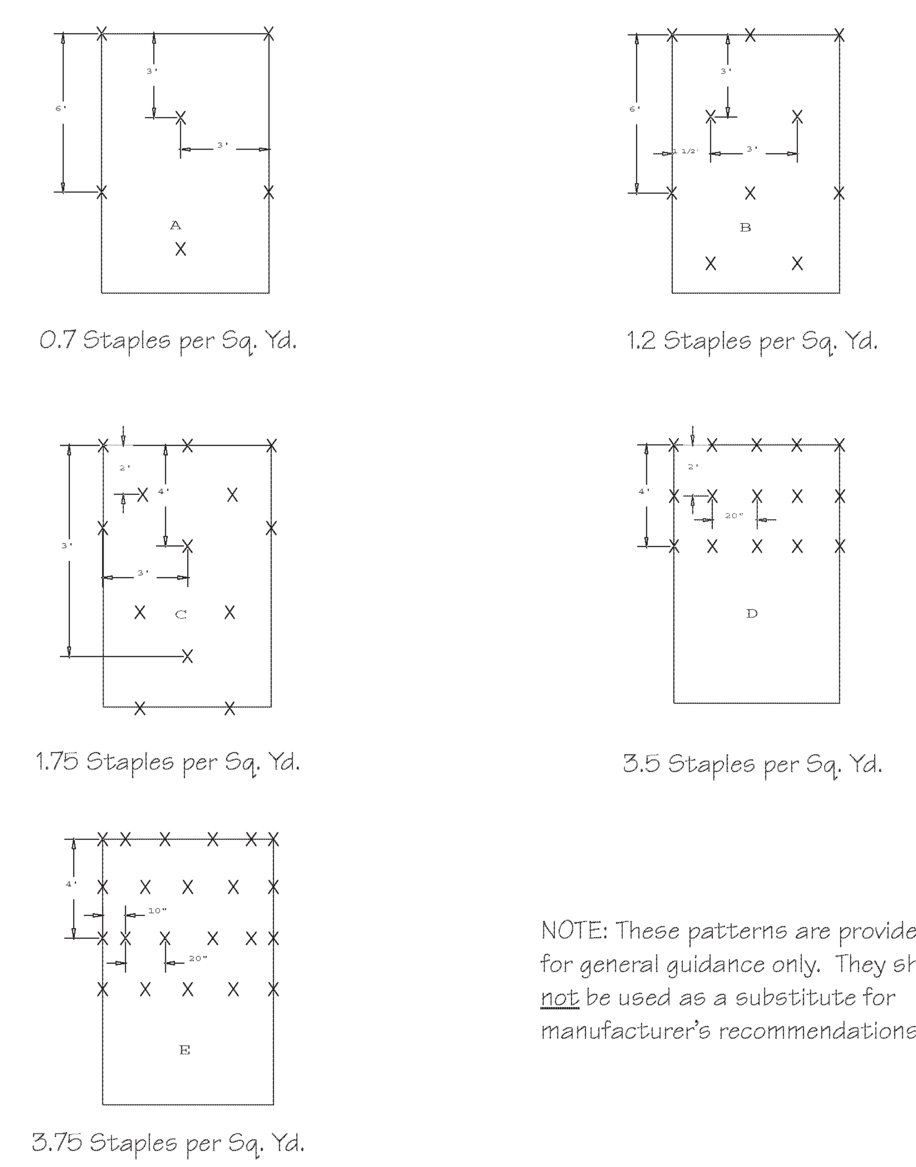
Standard Detail & Specifications
Stabilization Matting - Channel

Construction Notes:

1. Prepare soil before installing matting, including application of lime, fertilizer, and seed.
2. Begin at the top of the channel by anchoring the mat in a 6" deep X 6" wide trench. Backfill and compact the trench after stapling.
3. Roll center mat in direction of water flow on bottom of channel.
4. Place mats end over end (shingle style) with a 6" overlap, use a double row of staggered staples 4" apart to secure mats.
5. Full Length edge of mats at top of side slopes must be anchored in 6" deep X 6" wide trench; backfill and compact the trench after stapling.
6. Mats on side slopes must be overlapped 4" over the center mat and stapled.
7. In high flow channel applications, a staple check slot is recommended at 30 to 40 foot intervals. Use a row of staples 4" apart over entire width of the channel. Place a second row 4" below the first row in a staggered pattern.
8. The terminal end of the mats must be anchored in a 6" X 6" wide trench. Backfill and compact the trench after stapling.

Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-C	**DE-ESC-3.4.6.2** Sheet 2 of 3 Effective FEB 2019

Standard Detail & Specifications
Stabilization Matting - Channel



NOTE: These patterns are provided for general guidance only. They shall not be used as a substitute for manufacturer's recommendations.

Stapling Patterns

Source:	Symbol:	Detail No.
Adapted from North American Green, Inc.	SM-C	**DE-ESC-3.4.6.2** Sheet 3 of 3 Effective FEB 2019

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SEDIMENT & STORMWATER DETAILS

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

REVISED
05/07/19 STORMWATER SUBMITTAL
05/20/19 TOWN COMMENTS
05/24/19 RET. WALL, DOCK RAMP
05/28/19 FIRE PROT. PLAN LABELS
06/21/19 DNREC SSM, FIRE MARSHAL
07/10/19 ADA, FIRE PROT. COMMENTS

Date: APRIL 05, 2019
Scale:
Dwn.By: TPS/
Proj.No.: 0774A026.B01
Dwg.No.: C-534

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Standard Detail & Specifications

Dust Control

Temporary Methods:

1. Mulches - See **DE-ESC-3.4.5**, Standard Detail and Specifications for Mulching.
2. Vegetative cover - See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative Stabilization.
3. Adhesives - Use on mineral soils only (not effective on muck soils). Keep traffic off these areas. The following table may be used for general guidance.

Type of Emulsion	Water Dilution	Type of Nozzle	Apply Gal/Ac.
Latex emulsion	12.5:1	Fine spray	235
Resin-in-water emulsion	4.1	Fine spray	300
Acrylic emulsion (non-trafffic)	7:1	Coarse spray	450
Acrylic emulsion (traffic)	3.5:1	Coarse spray	350

4. Tillage - For emergency temporary treatment, scarify the soil surface to prevent or reduce the amount of blowing dust until a more appropriate solution can be implemented. Begin the tillage operation on the windward side of the site using a chisel-type plow for best results.
5. Sprinkling - Sprinkle site with water until the surface is moist . Repeat as needed.
6. Calcium Chloride - Apply as flakes or granular material with a spreader at a rate that will keep the soil surface moist. Re-apply as necessary.
7. Barriers - Place barriers such as soild board fences, snow fences, hay bales, etc. at right angles to the prevailing air currents at intervals of approx. 10X their height.

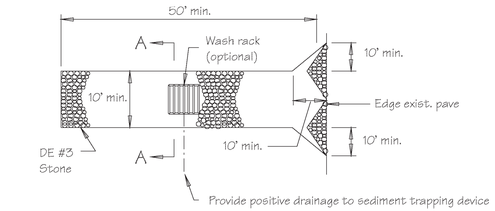
Permanent Methods:

1. Vegetative cover - See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative Stabilization.
2. Stone - Apply layer of crushed stone or coarse gravel to protect soil surface.

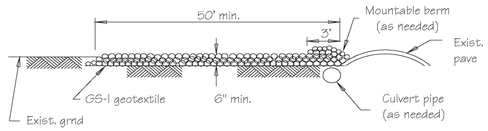
Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook		**DE-ESC-3.4.8** Sheet 1 of 1 Effective FEB 2019

Standard Detail & Specifications

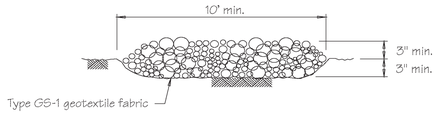
Stabilized Construct. Entrance



Plan



Profile

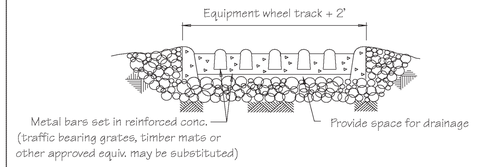


Section A-A (Std.)

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SCE	**DE-ESC-3.4.7** Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications

Stabilized Construct. Entrance



Section A-A (Opt.)

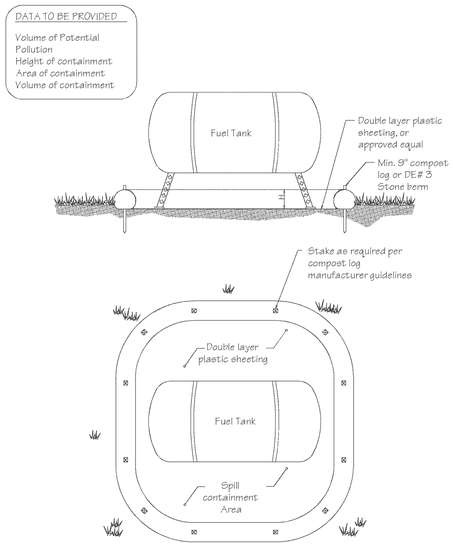
Construction Notes:

1. Stone size - Use DE #3 stone.
2. Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
3. Thickness - Not less than size (6) inches.
4. Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
5. Geotextile - Type GS-I; placed over the entire area prior to placing of stone.
6. Surface Water - All surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Vehicle wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Inspection - Periodic inspection and needed maintenance shall be provided after each rain.

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SCE	**DE-ESC-3.4.7** Sheet 2 of 2 Effective FEB 2019

Standard Detail & Specifications

Construction Site Waste Mgt & Spill Control



Source:	Symbol:	Detail No.
Delaware ESC Handbook		**DE-ESC-3.6.1** Sheet 1 of 5 Effective FEB 2019

Standard Detail & Specifications

Construction Site Waste Mgt & Spill Control

Pollution Prevention – Spill Prevention

1. Fueling should only take place in signed designated areas, away from downstream drainage facilities and watercourses.
2. Fueling must be with nozzles equipped with automatic shut-off to control drips. Do not top off.
3. Protect the areas where equipment or vehicles are being repaired, maintained, fueled or parked from storm water run-on and runoff.
4. Use barriers such as berms to prevent storm water run-on and runoff, and to contain spills.
5. Place a "Fueling Area" sign next to each fueling area.
6. Store hazardous materials such as fuel, solvents, oil and chemicals in secondary containment.
7. Inspect vehicles and equipment for leaks on each day of use. Repair fluid and oil leaks immediately.
8. Absorbent spill clean-up materials and spill kits must be available in fueling areas and on fuel trucks.
9. If fueling is to take place at night, make sure the fueling area is sufficiently illuminated.
10. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.

CLEAN UP SPILLS

1. If it is safe to do so, immediately contain and clean up any chemical and/or hazardous material spills.
2. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.
3. Do not bury spills or wash them down with water.

LEAKS AND DRIPS

1. Use drip pans or absorbent pads at all times. Place under and around leaky equipment.
2. Do not allow oil, grease, fuel or chemicals to drip onto the ground.
3. Have spill kits and clean up material on-site.
4. Repair leaky equipment promptly or remove problem vehicles and equipment from the site. Clean up contaminated soil immediately.
5. Store contaminated waste in sealed containers constructed of suitable material. Label these containers properly.
6. Clean up all spills and leaks. Promptly dispose of waste and spent clean up materials.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		**DE-ESC-3.6.1** Sheet 2 of 5 Effective FEB 2019

Standard Detail & Specifications

Construction Site Waste Mgt & Spill Control

Notes:

The Construction Site Pollution Prevention Plan should include the following elements:

1. Material Inventory

Document the storage and use of the following materials:

a. Concrete
b. Detergents
c. Paints (enamel and latex)
d. Cleaning solvents
e. Pesticides
f. Wood scraps
g. Fertilizers
h. Petroleum based products

2. Good housekeeping practices

a. Store only enough product required to do the job.
b. All materials shall be stored in a neat, orderly manner in their original labeled containers and covered.
c. Substances shall not be mixed.
d. When possible, all of a product shall be used up prior to disposal of the container.
e. Manufacturers' instructions for disposal shall be strictly adhered to.
f. The site foreman shall designate someone to inspect all BMPs daily.

3. Waste management practices

a. All waste materials shall be collected and stored in securely lidded dumpsters in a location that does not drain to a waterbody.
b. Waste materials shall be salvaged and/or recycled whenever possible.
c. The dumpsters shall be emptied a minimum of twice per week, or more if necessary. The licensed trash hauler is responsible for cleaning out dumpsters.

Source:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		**DE-ESC-3.6.1** Sheet 3 of 5 Effective FEB 2019

Standard Detail & Specifications

Construction Site Waste Mgt & Spill Control

Notes (cont.)

d. Trash shall be disposed of in accordance with all applicable Delaware laws.
e. Trash cans shall be placed at all lunch spots and littering is strictly prohibited. Recycle bins shall be placed near the construction trailer.
f. If fertilizer bags can not be stored in a weather-proof location, they shall be kept on a pallet and covered with plastic sheeting which is overlapped and anchored.

4. Equipment maintenance practices

a. If possible, equipment should be taken to off-site commercial facilities for washing and maintenance.
b. If performed on-site, vehicles shall be washed with high-pressure water spray without detergents in an area contained by an impervious berm.
c. Drip pans shall be used for all equipment maintenance.
d. Equipment shall be inspected for leaks on a daily basis.
e. Washout from concrete trucks shall be disposed of in a temporary pit for hardening and proper disposal.
f. Fuel nozzles shall be equipped with automatic shut-off valves.
g. All used products such as oil, antifreeze, solvents and tires shall be disposed of in accordance with manufacturers' recommendations and local, state and federal laws and regulations.

5. Spill prevention practices

a. Potential spill areas shall be identified and contained in covered areas with no connection to the storm drain system.
b. Warning signs shall be posted in hazardous material storage areas.
c. Preventive maintenance shall be performed on all tanks, valves, pumps, pipes and other equipment as necessary.
d. Low or non-toxic substances shall be prioritized for use.

Source:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		**DE-ESC-3.6.1** Sheet 4 of 5 Effective FEB 2019

Standard Detail & Specifications

Construction Site Waste Mgt & Spill Control

Notes (cont.)

e. Contact information for reporting spills through the DNREC 24-Hour Toll Free Number shall be prominently posted.

6. Education

a. Best management practices for construction site pollution control shall be a part of regular progress meetings.
b. Information regarding waste management, equipment maintenance and spill prevention shall be prominently posted in the construction trailer.

CONTACT INFORMATION

DNREC 24-Hour Toll Free Number	**800-662-8802**
DNREC Solid & Hazardous Waste Management Section	**302-739-9403**

Source:	Symbol:	Detail No.
Adapted from USEPA Pub. 840-B-92-002		**DE-ESC-3.6.1** Sheet 5 of 5 Effective FEB 2019

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SEDIMENT & STORMWATER DETAILS

MILTON ELEMENTARY SCHOOL
RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
TOWN OF MILTON, SUSSEX COUNTY, DELAWARE

REVISED
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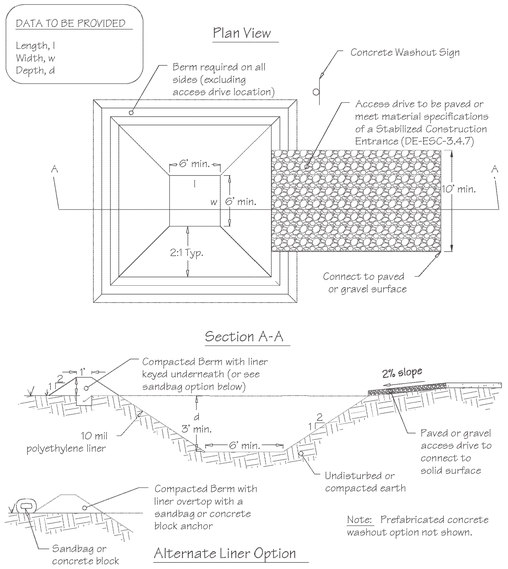
Standard Detail & Specifications

Concrete Washout



Source:	Symbol:	Detail No.
Adapted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	CW	DE-ESC-3.6.2 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications

Concrete Washout

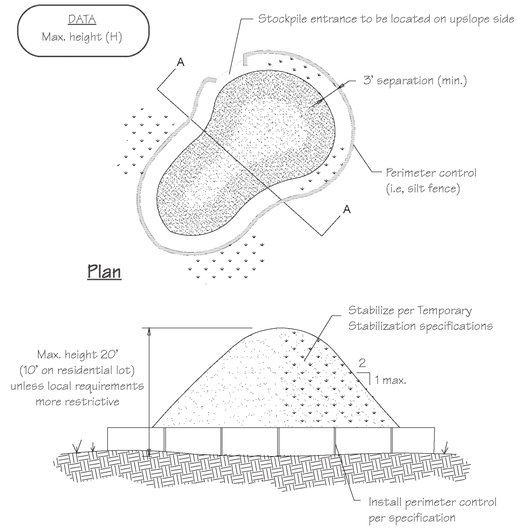
Construction Notes:

1. Locate washout area a minimum of 50 feet from open channels, stormdrain inlets, wetlands or waterbodies.
2. Locate washout area so that it is accessible to concrete equipment (service with a minimum 10 foot wide gravel accessway), but so it is not in a highly active construction area causing accidental damage.
3. Minimum dimensions for prefabricated units are 4 feet by 4 feet by 1 foot deep with a minimum 4mil polyethylene plastic liner. Minimum dimensions for constructed concrete washout areas are 6 feet by 6 feet by 3 feet deep, with a minimum 10mil polyethylene liner, 2:1 side slopes, and a 1 foot high by 1 foot wide compacted fill berm.
4. The liner must be free of tears or holes and placed over smooth surfaces to prevent puncturing. For excavated washouts, anchor the liner underneath the berm or overtop with sandbags or concrete blocks to hold in place.
5. Provide a sign designating the washout area, and for large construction sites, provide signs throughout directing traffic to its location.
6. Allow washed out concrete mixture to harden through evaporation of the wastewater. Once the facility has reached 75 percent of its capacity, remove the hardened concrete by reusing the broken aggregate onsite, recycling, or disposing of offsite. The hardened material can be buried on site with minimum of 1 foot of clean, compacted fill.
7. Apply a new liner before reusing the station for additional washouts after maintenance has occurred.

Source:	Symbol:	Detail No.
Adapted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	CW	DE-ESC-3.6.2 Sheet 2 of 2 Effective FEB 2019

Standard Detail & Specifications

Soil Stockpile



Source:	Symbol:	Detail No.
Adapted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	SP	DE-ESC-3.7.3 Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications

Soil Stockpile

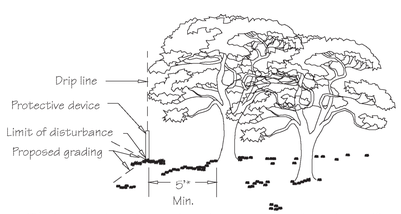
Construction Notes:

1. Locate stockpiles so that they are 50 feet from any storm drain inlet, open channel, wetland or waterbody. Redirect any concentrated flow around the stockpile using an approved erosion and sediment control measure.
2. Secure the perimeter of the stockpile with an approved erosion and sediment control perimeter device.
3. If stockpile is to remain inactive for more than 14 calendar days, the stockpile must be vegetated. Follow the temporary vegetation specifications. The vegetation chosen shall last the duration of the stockpile; the stockpile shall be restabilized if the temporary vegetation dies or erosion results.

Source:	Symbol:	Detail No.
Adapted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	SP	DE-ESC-3.7.3 Sheet 2 of 2 Effective FEB 2019

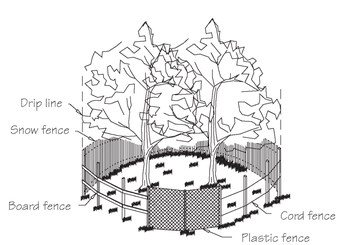
Standard Detail & Specifications

Sensitive Area Protection



*5' min. setback applies to all sensitve areas covered by this specification.

Location of Sensitive Area Protection



Methods of Sensitive Area Protection

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SAP	DE-ESC-3.7.2 Sheet 1 of 3 Effective FEB 2019

Standard Detail & Specifications

Sensitive Area Protection

Construction Notes:

Fencing shall be installed at the extents of all sensitive areas. For trees, the fencing shall be installed outside the dripline (mature canopy) and at no time within 5 feet of the trunk. Personnel must be instructed to honor protective devices. The devices described are suggested only, and are not intended to exclude the use of other devices which will protect the trees to be retained. If silt fence is to be used for demarcation purposes, appropriate signage shall be provided a minimum of every 20 feet denoting the area as a sensitive area protection zone.

Materials:

1. Snow Fence - Standard 40-inch high snow fence shall be placed at the limits of clearing or construction on standard steel posts set 6 feet apart.
2. Board Fence - Board fencing consisting of 4-inch square posts set securely in the ground and protruding at least 4 feet above the ground shall be placed at the limits of clearing with a minimum of two horizontal boards between posts. For tree proteciton, if it is not practical to erect a fence at the drip line, construct a triangular fence nearer the trunk. The limits of clearing will still be located at the drip line, since the root zone within the drip line will still require protection.
3. Plastic Fencing - 40-inch high "international orange" plastic (polyethylene) web fencing secured to conventional metal "T" or "U" posts driven to a minimum depth of 18 inches on 6-foot minimum centers shall be installed at the limits of clearing. The fence should have the following minimum physical qualities:

a.	Tensile yield:	Average 2,000 lbs. per 4-foot width (ASTM D638)
b.	Ultimate tensile yield:	Average 2,900 lbs. per 4-foot width (ASTM D638)
c.	Elongation at break (%):	Greater than 1000% (ASTM D638)
d.	Chemical resistance:	Inert to most chemicals and acids

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SAP	DE-ESC-3.7.2 Sheet 2 of 3 Effective FEB 2019

Standard Detail & Specifications

Sensitive Area Protection

4. Cord Fence - Posts with a minimum size of 2 inches square or 2 inches in diameter set securely in the ground and protruding at least 4 feet above the ground shall be placed at the limits of clearing with two rows of cord 1/4-inch or thicker at least 2 feet apart running between posts with strips of colored surveyor's flagging tied securely to the string at intervals no greater than 3 feet.
5. Earth Berms - Temporary earth berms shall be constructed according to specifications for a Temporary Earth Dike with the base of the berm on the sensitive area side located along the limits of clearing. Earth berms may not be used for this purpose if their presence will conflict with drainage patterns.
6. Trunk Armoring (Tree Protection Only) - As a last resort, a tree trunk can be armored with burlap wrapping and 2-inch studs wired vertically no more than 2 inches apart to a height of 5 feet encircling the trunk. If this alternative is used, the root zone within the drip line will still require protection. Nothing should ever be nailed to a tree.

Maintenance:

Fencing and armoring devices shall be in place before any excavation or grading is begun, shall be kept in good repair for the duration of construction activities, and shall be the last items removed during the final cleanup after the completion of the project.

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook	SAP	DE-ESC-3.7.2 Sheet 3 of 3 Effective FEB 2019

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RENOVATIONS & ADDITIONS - CAPE HENLOPEN SCHOOL DISTRICT
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DRAINAGE STRUCTURE SCHEDULE

LABEL	DESCRIPTION			T.G. ELEV.	INVERT IN	INVERT IN	INVERT IN	INVERT OUT	PIPE ANGLE	
	BOX	TOP UNIT	GRATE						(L)	(W)
DI–01	48"x30"	C	TYPE 1	26.31			22.65	22.55	16.9	20.94
MH–02	48"x48"	MH	MH	26.80		23.80	22.80	22.70	0	
DI–03	34"x24"	C	TYPE 1	26.60				24.42	–	0
DI–04	34"x24"	C	TYPE 1	26.67			22.92	22.82	12.96	–
DI–05	34"x24"	C	TYPE 1	28.87		24.27	23.04	22.94	0	0
DI–06	48"x48"	C	TYPE 1	27.97			23.66	23.41	0	0
DI–07	34"x24"	C	TYPE 1	28.41			24.00	23.90	0	–
DI–08	2818AG03N*	18" H–20	18" H–20	28.77				25.52	0	
DI–09	34"x24"	A	TYPE 3	29.35			24.61	24.19	16.1	
DI–10	2818AG03N*	18" H–20	18" H–20	30.28		26.79	26.79	26.79	0	
DI–21	34"x24"	C	TYPE 1	25.37			23.17	23.07	0	0
DI–22	34"x24"	C	TYPE 1	25.59				23.48	–	0
DI–31	34"x24"	C	TYPE 1	26.21				23.30	0	
DI–41	34"x24"	C	TYPE 1	27.96				25.50	0	
DI–51	34"x24"	C	TYPE 1	25.59	21.77	21.60	20.70	20.60	3.2	0
DI–52	34"x24"	C	TYPE 1	25.64				21.75	35.59	–
DI–53	34"x24"	C	TYPE 1	24.91			21.63	21.53	–	0
DI–54	34"x24"	C	TYPE 1	24.81			21.79	21.69	11.81	–
DI–61	34"x24"	A	TYPE 3	19.60				15.38	0	–
DI–62	34"x24"	A	TYPE 3	21.63			15.75	15.65	21.63	–
DI–63	34"x24"	A	TYPE 1	19.60		17.21	17.21	16.96	4.19	3.53
DI–64	34"x24"	A	TYPE 1	20.45			19.38	18.63	0	0
DI–65	34"x24"	A	TYPE 1	23.16		18.07	17.74	17.57	0	12.29
DI–71	34"x24"	C	TYPE 1	22.15			18.78	18.68	12.22	–
DI–72	34"x24"	C	TYPE 1	21.69				19.40	0	–

*NYLOPLAST DRAIN BASIN (877–745–3120)

STORM DRAINAGE PIPE SCHEDULE

Description								Invert Elevation	
Pipe #	From	To	Size	Type	Length	Class	Slope (%)	In	Out
P–01	DI–01	FE–00	24"	HDPE	20'	*	0.25	22.55	22.50
P–02	MH–02	DI–01	24"	HDPE	28'	*	0.18	22.70	22.65
P–04	DI–04	MH–02	24"	HDPE	12'	*	0.17	22.82	22.80
P–05	DI–05	DI–04	24"	HDPE	15'	*	0.13	22.94	22.92
P–06	DI–06	DI–05	24"	HDPE	242'	*	0.15	23.41	23.04
P–07	DI–07	DI–06	18"	HDPE	120'	*	0.20	23.90	23.66
P–03	DI–03	MH–02	12"	HDPE	21'	*	2.95	24.42	23.80
P–09	DI–09	DI–07	15"	HDPE	64'	*	0.30	24.19	24.00
P–10	DI–10	T–18A	12"	HDPE	71'	*	1.52	26.79	25.71
P–21	DI–21	FE–20	12"	HDPE	15'	*	0.47	23.07	23.00
P–22	DI–22	DI–21	12"	HDPE	61'	*	0.51	23.48	23.17
P–08	DI–08	DI–07	12"	HDPE	56'	*	2.00	25.52	24.40
P–31	DI–31	FE–30	12"	HDPE	15'	*	2.00	23.30	23.00
P–41	DI–41	FE–40	12"	HDPE	111'	*	3.15	25.50	22.00
P–51	DI–51	FE–50	24"	HDPE	235'	*	3.23	20.60	13.00
P–52	DI–52	DI–51	12"	HDPE	16'	*	0.94	21.75	21.60
P–53	DI–53	DI–51	24"	HDPE	166'	*	0.50	21.53	20.70
P–54	DI–54	DI–53	24"	HDPE	13'	*	0.46	21.69	21.63
P–55	FE–55	DI–54	24"	HDPE	42'	*	0.50	22.00	21.79
P–61	DI–61	FE–60	15"	HDPE	60'	*	3.97	15.38	13.00
P–62	DI–62	DI–63	15"	HDPE	42'	*	0.40	15.65	15.48
P–63	DI–63	DI–62	15"	HDPE	242'	*	0.50	16.96	15.75
P–64	DI–64	DI–63	15"	HDPE	116'	*	1.22	18.63	17.21
P–65	DI–65	DI–64	15"	HDPE	32'	*	1.13	17.57	17.21
P–71	DI–71	FE–70	12"	HDPE	233'	*	2.44	18.68	13.00
P–72	DI–72	DI–71	12"	HDPE	62'	*	1.00	19.40	18.78

FLARED END SCHEDULE

ID	SIZE	TYPE	INV.
FE–10	24"	HDPE	22.50
FE–20	15"	HDPE	23.00
FE–30	15"	HDPE	23.00
FE–40	12"	HDPE	22.00
FE–50	24"	HDPE	13.00
FE–55	24"	HDPE	22.00
FE–60	15"	HDPE	13.00
FE–70	12"	HDPE	13.00

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