

STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL- SITE INVESTIGATION AND RESTORATION SECTION (DNREC-SIRS)

NVF YORKLYN SITE (DE-0071) HOCKESSIN, DELAWARE

BID DOCUMENTS OU-1 WETLAND PROJECT

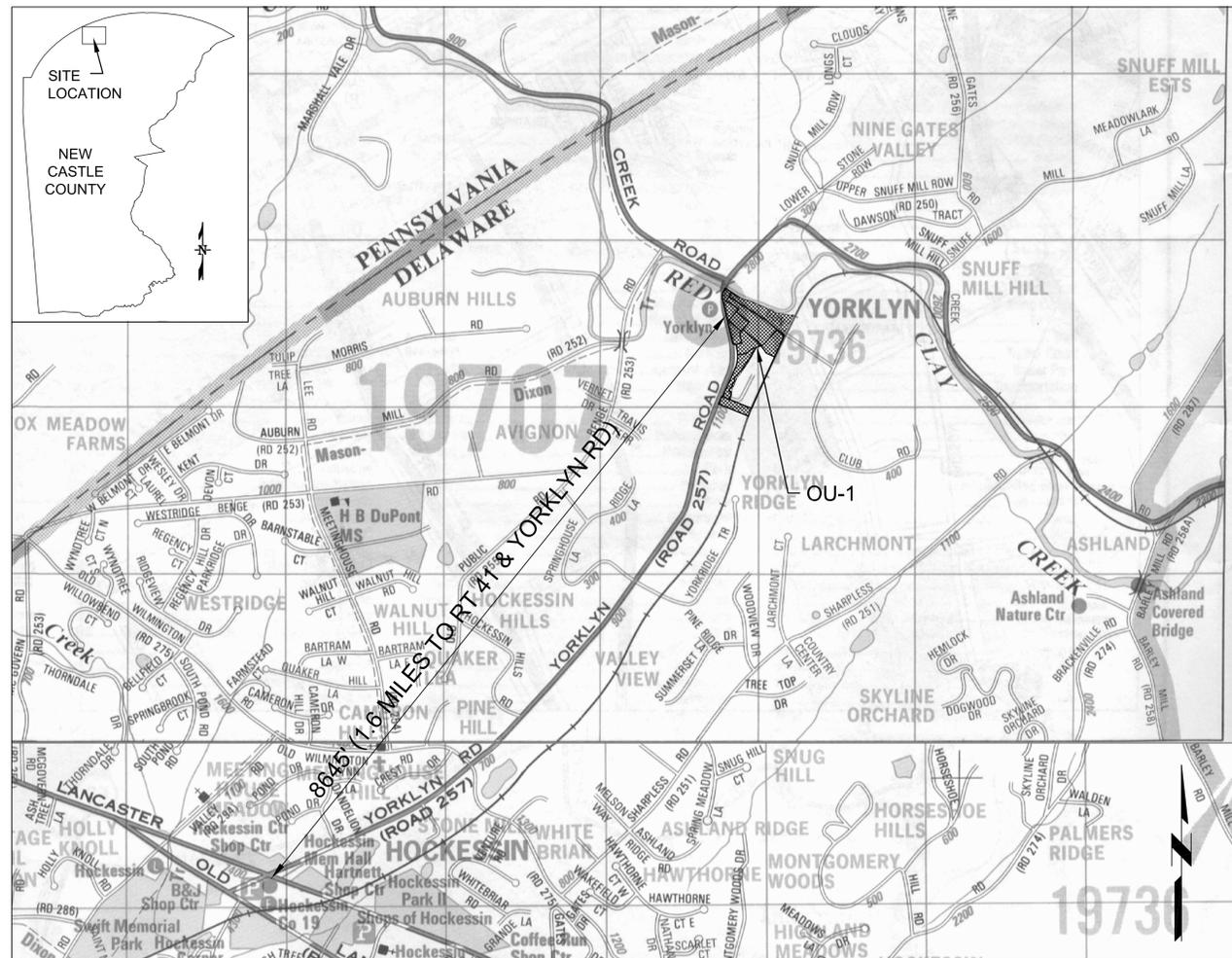
JUNE 2016

SITE DATA

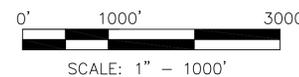
1. Owners: Parcel # 0700900027, 0800100022
State of Delaware
89 Kings Highways, Dover, DE 19901
(302) 739-9231

Parcel #s 0800100023, 0800100024, 0800400270, 0800400272, 0800400272
Auburn Village LLC
3200 Lancaster Pike Wilmington, DE 19805

Parcel # 0800400271
JGR LLC
3200 Lancaster Avenue Wilmington, DE 19805
2. Land Developer: DNREC-SIRS
3. Engineer/Consultant: Black & Veatch
4. Applicant: DNREC-SIRS
5. Names of adjacent property owners: See Plan
6. Total OU-1 area: 11.03 acres
Total OU-1 limit of disturbance: 7.21 acres
7. Existing topography and survey features have been provided by DNREC Division of Parks and Recreation (April 2010). The data was generated by Duffield Associates and the US Army Corps of Engineers, Philadelphia District.
8. Map Projection: NAD83 Delaware State Planes, US Foot -Horizontal
NAVD88 - Vertical
9. Wetlands and streams have been delineated by AD Marble (June, 2010).
10. Existing 100 Year floodplain referenced from the FEMA delineated data and Duffield Associates "Red Clay Creek H&H Modeling" Report dated Dec. 2 2008.
11. Proposed 100 Year floodplain referenced from the FEMA delineated data and AD Marble & Company's "Hydrologic and Hydraulic Report, NVF Yorklyn Site Remediation Project" Report Dated November 2012. It shows the flood plain for the completed Gun Club Road and Wetland Projects.
12. Soils data referenced from the NRCS Soil Survey database.
13. Project Benchmark: 2146 N: 583200.6330
187.1 E: 657181.3710



NEW CASTLE COUNTY ADC MAP
#1 AND #6 (12TH EDITION)



INDEX OF SHEETS

- C-100 CIVIL LEGEND AND GENERAL NOTES
- C-102 EXISTING SITE SURVEY
- C-103 CONSTRUCTION LIMITS
- C-104 DEMOLITION PLAN
- C-115 PHASE 1: EXCAVATION GRADING PLAN
- C-116 PHASE 2: EXCAVATION GRADING PLAN
- C-120 FINAL GRADING PLAN
- C-125 WETLAND CROSS SECTIONS
- C-130 TEMPORARY E&S PLAN
- C-131 PERMANENT E&S PLAN
- C-140 LANDSCAPING AND PLANTING PLAN
- C-150 CONSTRUCTION DETAILS SHEET 1
- C-151 CONSTRUCTION DETAILS SHEET 2
- C-152 CONSTRUCTION DETAILS SHEET 3
- C-153 CONSTRUCTION DETAILS SHEET 4
- C-154 CONSTRUCTION DETAILS SHEET 5
- C-155 CONSTRUCTION DETAILS SHEET 6
- A-100 ALTERNATE BID ITEMS



Rev.	Date	Description
1	07/21/16	BBU Set
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STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-
SITE INVESTIGATION AND RESTORATION SECTION
NVF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT

COVER SHEET

DRAWING NO.
COVER



CIVIL LEGEND

EXISTING

PROPOSED

WETLAND PHASE

1. Notify DNREC, Sediment and Stormwater Program, in writing a minimum of 5 days before any land disturbing activity and to schedule a pre-construction meeting.
2. Contact Delaware Miss Utility prior to any site work. Additionally the contractor shall employ a professional utility locator to field locate existing utilities, many of which are privately owned.
3. Clearing and grubbing for those areas necessary for installation of perimeter controls.
4. Construction of perimeter controls: Includes super silt fence, stabilized construction entrance as shown.
5. Remaining clearing and grubbing.
6. Prepare site for demolition: Remove electric, water, and sewer.
7. Demolition and removal of all items within the LOD as per Demolition Plan (sheet C-104). Materials should be hauled offsite following local, State, and Federal regulations.
8. Phase 1 and Phase 2 Excavation:
 - 8.1. Phase 1 is shown on first Excavation Grading Plan (sheet C-115). Remove soils from the site and realign the tributary centerline and side slopes. The area to the east and south of the tributary will also be excavated in Phase 1.
 - 8.2. Phase 2 is shown on the second Excavation Grading Plan (sheet C-116). This area includes the remainder of the Site.
 - 8.3. Excavation grades will be 18 inches below final grades in order to accommodate the placement of the clean soil cap. All excavated material is considered contaminated and cannot remain onsite. All materials shall be hauled offsite in accordance to the approved NVF Site "Contaminated Materials Management Plan (CMMP)", dated January 2015. Contractor shall keep all sediment within the LOD with construction means and methods.
9. Place a clean soil cap in all excavated areas. The soil cap will consist of 12 inches of DelDOT Type F fill and 6 inches of topsoil (sheet C-153).
10. Grade site according to Final Grading Plan (sheet C-120).
11. Install silt fence around the wetland as shown on C-130.
12. Install landscaping and site stabilization to the landscaping and planting plan (sheet C-140).
13. Remove all erosion and sediment controls after receiving final approval for DNREC, Sediment and Stormwater.

GENERAL NOTES

1. Prior to beginning any work, contractor to verify all existing elevations and site conditions. Any variation from existing elevations shown must be verified by a PLS licensed in the State of Delaware.
2. All disturbed areas within the State right-of-way, but not in the pavement, shall be top-soiled (6" minimum), fertilized, seeded and mulched.
3. Miss Utility of Delaware shall be notified three (3) consecutive working days prior to excavation, at 1-800-282-8555.
4. The contractor is responsible for securing areas of open excavations to prevent public access until excavations are filled or otherwise no longer present a hazard to the public. The contractor's procedure/method shall be review by, and coordinated with, the owner's representative prior to the start of the work.
5. The contractor shall protect all features not designated to be removed. Damaged items shall be repaired or replaced as directed by the owner.
6. 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 48-hours 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 Delaware (See Note #3).
7. No landscaping shall be permitted within the DelDOT right-of-way. Any disturbed area within the DelDOT right-of-way will be stabilized as specified in Note #2.
8. Final grades may deviate from what is shown on the plans in order to promote drainage. All areas in which this occurs ensure that the 18 inch soil cap remains intact. The contractor shall regrade and restore areas as necessary to provide a uniform, gradual transition where proposed final grades meet existing grades to the satisfaction of the owner at no additional cost to the owner.
9. The contractor is responsible for removal of abandoned items, trash, and debris that are on site at the time of bid opening, regardless of whether or not specifically shown in the bid documents. No trash or debris shall be buried or burned on site.
10. Unless otherwise noted, all objects (pipes, tanks, concrete walls, fences, etc..) within the construction limits shall be removed from the site and legally disposed of.
11. These drawings do not include necessary elements of construction safety. All construction must be completed in accordance with the rules and regulations of the Occupational Safety and Health Act, and all Federal, State, and local rules, regulations, and requirements.
12. Prior to the start of work the contractor shall submit a Site Specific Health and Safety Plan for approval by the owner or owner's representative.
13. The Limit of Disturbance (LOD) shall be as shown on the plans. The contractor shall not work or trespass outside the limit of disturbance as shown on the plans. The contractor shall delineate the limits of disturbance by erecting fencing where indicated.
14. Issued For Construction
The contractor shall be responsible for any design, design progression and integration required to accommodate the actual equipment, materials and components purchased for this project where the contractor supplied items differ from the design basis as shown on these documents. The contractor provided design shall be performed by qualified professional engineer(s) with relevant experience to, and normally engaged in the design work provided.

E

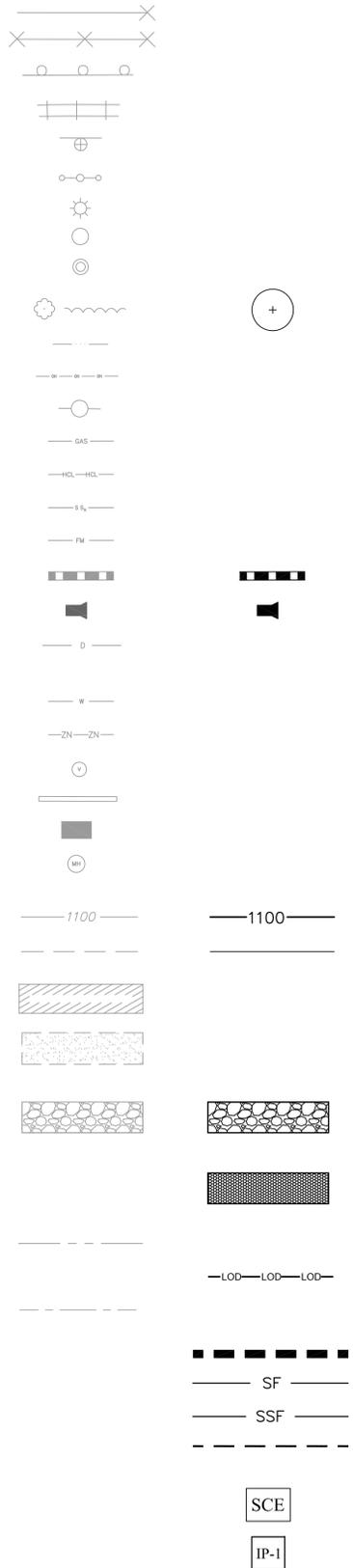
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B

A

- GATE
- FENCE
- GUARDRAIL
- RAILROAD
- SIGN
- SIGN - MULTI
- LIGHT POLE
- POLE
- METAL COVER
- SHRUB / TREE / BRUSH
- STREAM
- OVERHEAD PIPE
- UTILITY POLE
- GAS LINE
- HYDROCHLORIC ACID LINE
- SANITARY SEWER GRAVITY LINE
- SANITARY SEWER FORCE MAIN
- STORM CULVERT
- FLARED END SECTION
- PERFORATED HDPE UNDERDRAIN
- WATER LINE
- ZINC - RECYCLE
- VALVE
- CONCRETE DRAIN
- CATCH BASIN
- MANHOLE
- MAJOR CONTOUR LINE
- MINOR CONTOUR LINE
- BUILDINGS
- UNPAVED ROAD/PARKING
- RIPRAP
- COIR FIBER MATTING
- PROPERTY LINE
- CONSTRUCTION LIMITS
- ROADWAY CENTERLINE
- OU-1 BOUNDARY
- SILT FENCE
- SUPER SILT FENCE
- LIVE WATTLE
- STABILIZED CONSTRUCTION ENTRANCE
- INLET PROTECTION - TYPE 1



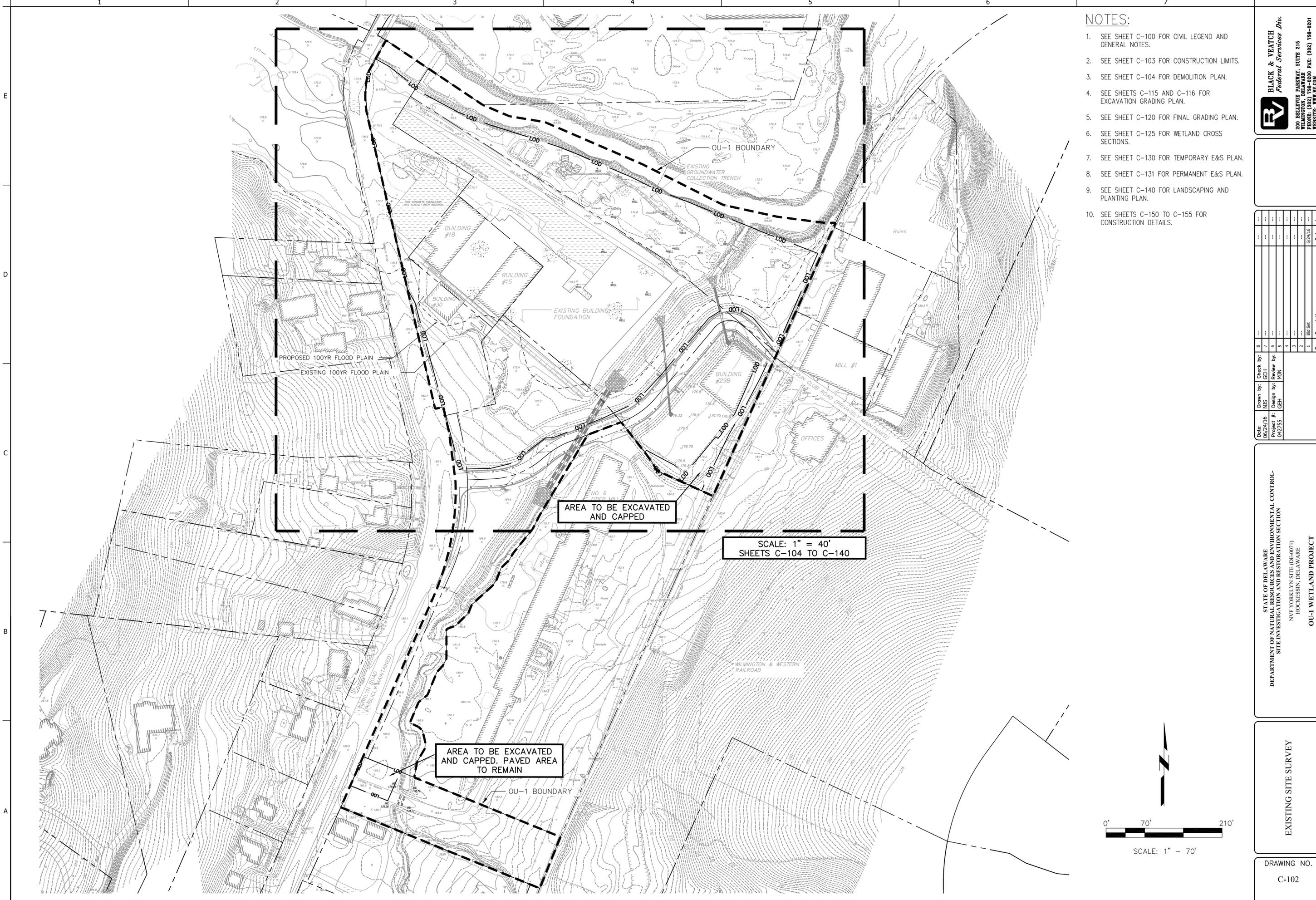
BLACK & VEATCH
Federal Services Div.
200 BELLEVUE PARKWAY, SUITE 215
WILMINGTON, DELAWARE
PHONE: (302) 798-0200 FAX: (302) 798-0201
WEBSITE: WWW.BV.COM

Date	Drawn By	Check By	Rev.	Description
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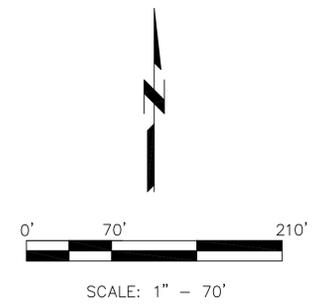
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NVE YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT

**CIVIL LEGEND AND
GENERAL NOTES**

DRAWING NO.
C-100



- NOTES:**
- SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
 - SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
 - SEE SHEET C-104 FOR DEMOLITION PLAN.
 - SEE SHEETS C-115 AND C-116 FOR EXCAVATION GRADING PLAN.
 - SEE SHEET C-120 FOR FINAL GRADING PLAN.
 - SEE SHEET C-125 FOR WETLAND CROSS SECTIONS.
 - SEE SHEET C-130 FOR TEMPORARY E&S PLAN.
 - SEE SHEET C-131 FOR PERMANENT E&S PLAN.
 - SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
 - SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.



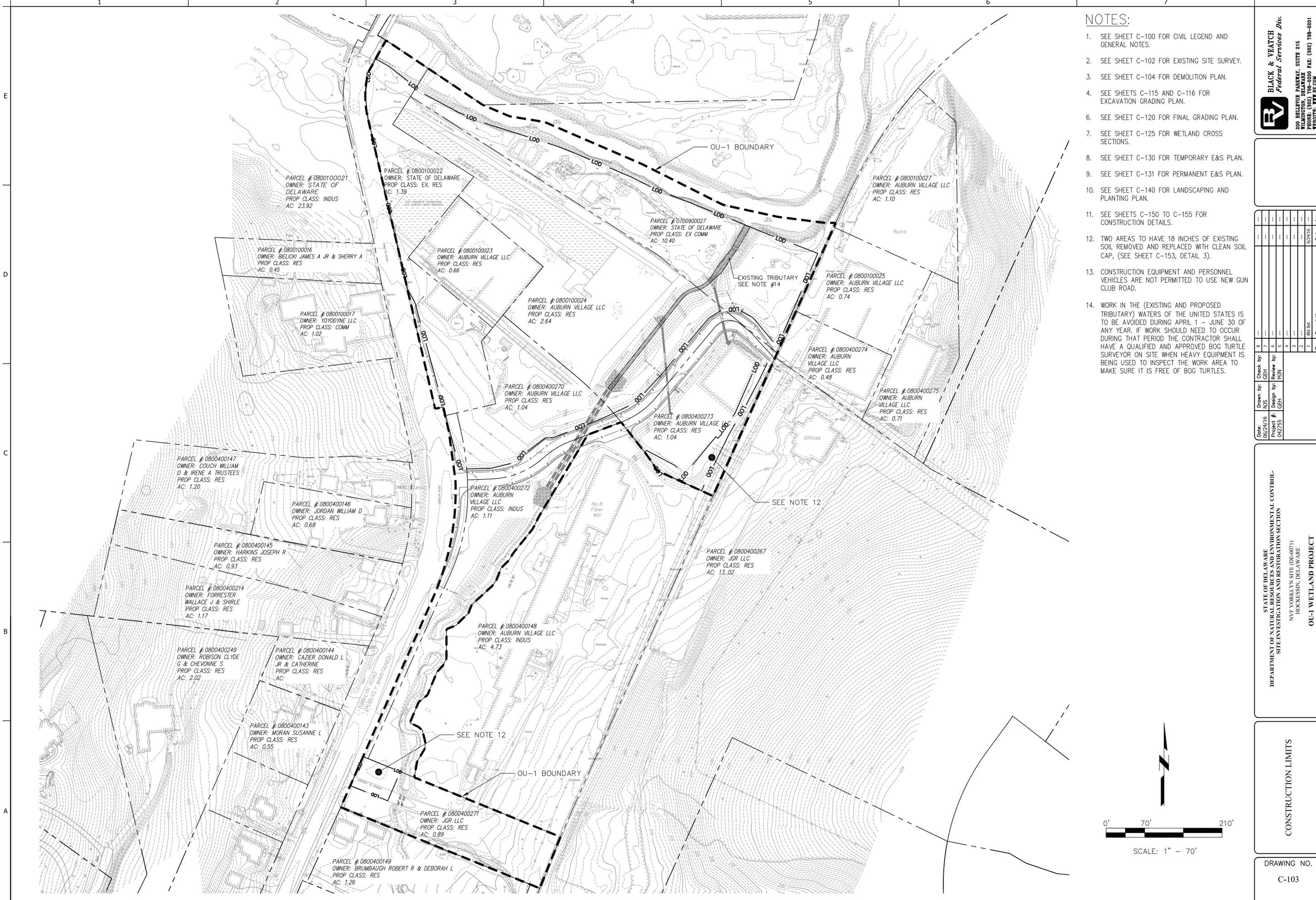
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200 BELLEVUE PARKWAY, SUITE 215
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OU-1 WETLAND PROJECT

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EXISTING SITE SURVEY

DRAWING NO.
C-102



- NOTES:**
- SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
 - SEE SHEET C-102 FOR EXISTING SITE SURVEY.
 - SEE SHEET C-104 FOR DEMOLITION PLAN.
 - SEE SHEETS C-115 AND C-116 FOR EXCAVATION GRADING PLAN.
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 - SEE SHEET C-131 FOR PERMANENT E&S PLAN.
 - SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
 - SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.
 - TWO AREAS TO HAVE 18 INCHES OF EXISTING SOIL REMOVED AND REPLACED WITH CLEAN SOIL CAP, (SEE SHEET C-153, DETAIL 3).
 - CONSTRUCTION EQUIPMENT AND PERSONNEL VEHICLES ARE NOT PERMITTED TO USE NEW GUN CLUB ROAD.
 - WORK IN THE (EXISTING AND PROPOSED TRIBUTARY) WATERS OF THE UNITED STATES IS TO BE AVOIDED DURING APRIL 1 - JUNE 30 OF ANY YEAR. IF WORK SHOULD NEED TO OCCUR DURING THAT PERIOD THE CONTRACTOR SHALL HAVE A QUALIFIED AND APPROVED BOG TURTLE SURVEYOR ON SITE WHEN HEAVY EQUIPMENT IS BEING USED TO INSPECT THE WORK AREA TO MAKE SURE IT IS FREE OF BOG TURTLES.

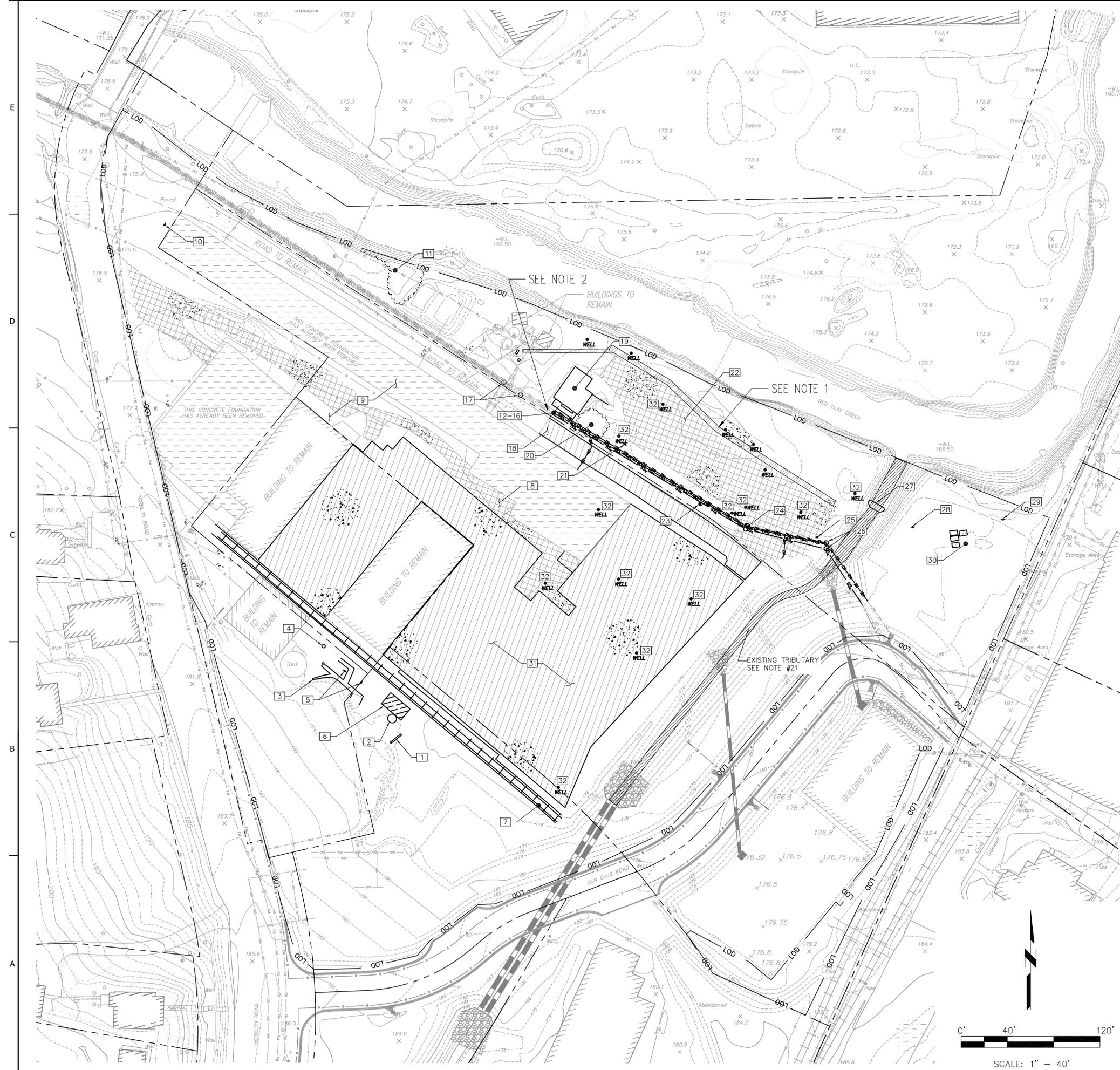
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CONSTRUCTION LIMITS

DRAWING NO.
C-103



NOTES:

1. SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
2. SEE SHEET C-102 FOR EXISTING SITE SURVEY.
3. SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
4. SEE SHEETS C-115 AND C-116 FOR EXCAVATION GRADING PLAN.
5. SEE SHEET C-120 FOR FINAL GRADING PLAN.
6. SEE SHEET C-125 FOR WETLAND CROSS SECTIONS.
7. SEE SHEET C-130 FOR TEMPORARY E&S PLAN.
8. SEE SHEET C-131 FOR PERMANENT E&S PLAN.
9. SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
10. SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.

DEMOLITION NOTES:

1. THE EXISTING GROUNDWATER COLLECTION TRENCH IS TO REMAIN IN PLACE. NO GRADING OR DEMOLITION IS TO TAKE PLACE WITHIN 2 FT OF THE COLLECTION TRENCH. IT SHALL BE FLAGGED PRIOR TO DEMO/EXCAVATION.
2. PROPOSED SITE SEWER AND UTILITIES TO BE INSTALLED BY OTHERS.
3. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING ALL PERMITS APPLICABLE TO DEMOLITION AND IS RESPONSIBLE FOR OBTAINING ALL PERMITS APPLICABLE TO DEMOLITION.
4. THE CONTRACTOR IS RESPONSIBLE FOR SECURING AREAS OF OPEN EXCAVATIONS TO PREVENT PUBLIC ACCESS UNTIL EXCAVATIONS ARE FILLED OR OTHERWISE NO LONGER PRESENT A HAZARD TO THE PUBLIC. THE CONTRACTOR'S PROCEDURE/METHOD SHALL BE REVIEWED BY, AND COORDINATED WITH, THE OWNER'S REPRESENTATIVE PRIOR TO THE START OF WORK.
5. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ABANDONED ITEMS, TRASH, AND DEBRIS THAT ARE ON SITE AT THE TIME OF BID OPENING, REGARDLESS OF WHETHER OR NOT SPECIFICALLY SHOWN IN THE BID DOCUMENTS. NO TRASH OR DEBRIS SHALL BE BURIED OR BURNED ON SITE.
6. THE CONTRACTOR SHALL PROTECT ALL FEATURES NOT DESIGNATED TO BE REMOVED. DAMAGED ITEMS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE OWNER AT THE CONTRACTOR'S EXPENSE.
7. BEFORE WORK IS STARTED, THE CONTRACTOR SHALL NOTIFY 'MISS UTILITY' TEL. (800) 282-8555. THE CONTRACTOR IS ADVISED THAT MANY UTILITIES ON SITE ARE PRIVATELY OWNED AND MISS UTILITY MAY REFUSE TO LOCATE THEM. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL ACTIVE AND TENTATIVE UTILITIES IN THE FIELD BY EMPLOYING A PROFESSIONAL UTILITY LOCATOR TO FIELD LOCATE EXISTING ACTIVE UTILITIES PRIOR TO ANY EXCAVATION. EXISTING UTILITIES ARE SHOWN ON THESE DRAWINGS BASED ON THE BEST INFORMATION AVAILABLE, HOWEVER THIS INFORMATION HAS NOT BEEN FIELD VERIFIED AND IS NOT GUARANTEED. ALL EXISTING UTILITIES, NOT DESIGNATED TO BE DEMOLISHED OR ABANDONED, SHALL BE PROTECTED AND TEMPORARILY SUPPORTED OR RELOCATED AS NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH THE OWNER AND PERTINENT UTILITY COMPANY REQUIREMENTS. ANY UTILITIES NOT TO BE ABANDONED OR DEMOLISHED THAT ARE DAMAGED BY THE CONTRACTOR SHALL BE PROMPTLY AND FULLY RESTORED TO THE SATISFACTION OF THE OWNER AND THE UTILITY COMPANY. ALL COSTS SHALL BE INCIDENTAL TO THE CONTRACTOR.
8. FOR ALL UTILITY POLES DESIGNATED FOR DEMOLITION, CONTRACTOR SHALL REMOVE ADJACENT OVERHEAD ELECTRICAL POWER LINES AND REMOVE POLES TO A MINIMUM 36" BELOW PROPOSED GRADE.
9. WITHIN THE LIMIT OF DISTURBANCE, REMOVE OVERHEAD PIPE SUPPORT POSTS, AND ELECTRICAL POWER SUPPORT POLES, AND BOLLARDS/POSTS AT VARIOUS LOCATIONS ON SITE TO A MIN. 36" BELOW PROPOSED GRADE.
10. THESE DRAWINGS DO NOT INCLUDE NECESSARY ELEMENTS OF CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE COMPLETED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT, AND ALL FEDERAL, STATE, AND LOCAL RULES, REGULATIONS, AND REQUIREMENTS.
11. THE LIMIT OF DISTURBANCE SHALL BE AS SHOWN ON PLANS. THE CONTRACTOR SHALL NOT WORK OR TRESPASS OUTSIDE THE LIMIT OF DISTURBANCE AS SHOWN ON THE PLANS.
12. AFTER REMOVING UTILITIES WITHIN THE LIMITS OF DISTURBANCE, ALL UNDERGROUND PIPES WHICH ARE CURRENTLY INACTIVE OR TO BECOME AS PART OF THE WORK ARE TO REMAIN IN PLACE AND BE PLUGGED WITH A MINIMUM 36" OF 3000 PSI CONCRETE AT THE EXPOSED END UNLESS NOTED OTHERWISE. SEE SHEET C-154, DETAIL 2.
13. ALL ITEMS INDICATED TO BE REMOVED IN THE DEMOLITION PLAN SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR TESTING OF ALL ITEMS TO BE REMOVED THAT MAY CONTAIN MATERIALS HAZARDOUS TO PUBLIC HEALTH.
15. CONTRACTOR SHALL REMOVE ALL CONCRETE STRUCTURES AND FOUNDATIONS TO A MINIMUM 36" BELOW PROPOSED GRADE. CONCRETE STRUCTURES AND FOUNDATIONS GREATER THAN 36" BELOW PROPOSED GRADE MAY REMAIN IN PLACE PROVIDED THEY ARE DESTROYED TO A CONDITION THAT WILL NOT IMPEDE THE FLOW OF GROUND OR SURFACE WATER EXCEPT AS OTHERWISE NOTED. OWNER'S REPRESENTATIVE TO APPROVE PRIOR TO BACKFILLING.
16. KNOWN HAZARDOUS WASTE MATERIALS HAVE BEEN REMOVED FROM THE BUILDINGS AND PORTIONS OF THE BUILDINGS BEING DEMOLISHED AS PART OF THIS WORK. CONTRACTOR SHALL BE AWARE OF POTENTIAL FOR ADDITIONAL HAZARDOUS WASTE MATERIALS TO BE ENCOUNTERED DURING DEMOLITION.
17. ALL PERSONNEL INVOLVED WITH DEMOLITION WORK MUST HAVE RECEIVED OSHA 40 HOUR 1910.120 TRAINING, WITH CURRENT 8 HOURS REFRESHER COURSES AND MEDICAL MONITORING.
18. THE CONTRACTOR SHALL FOLLOW THE APPROVED EROSION AND SEDIMENT CONTROL PLAN (DATED 02-21-14) AND DNREC STANDARDS PRIOR TO DEMOLITION, DURING DEMOLITION, AND REMOVE E&S CONTROLS AFTER RECEIVING DNREC, SEDIMENT AND STORMWATER, APPROVAL.
19. PRIOR TO DE-ENERGIZING AND REMOVING THE OVERHEAD ELECTRICAL LINES, THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND DELMARVA POWER TO ENSURE THAT THE NEW POWER SUPPLIES TO THE FACILITIES ALONG RED CLAY CREEK ARE OPERATIONAL AND THAT ANY POWER OUTAGES SCHEDULED ARE TO HAVE MINIMAL IMPACT. EXISTING ELECTRICAL POLES SHOWN ON EXISTING SITE SURVEY (SHEET C-102).
20. ACTIVE WATER, GAS, AND ELECTRIC LINES WILL BE REMOVED AND CAPPED AT THE LOD. ALL OTHER UTILITIES WILL BE CAPPED AND ABANDONED IN PLACE UNLESS NOTED OTHERWISE IN THE UTILITY DEMOLITION LEGEND. THE EXISTING SANITARY SEWER WILL REMAIN IN PLACE.
21. WORK IN THE (EXISTING AND PROPOSED TRIBUTARY) WATERS OF THE UNITED STATES IS TO BE AVOIDED DURING APRIL 1 - JUNE 30 OF ANY YEAR. IF WORK SHOULD NEED TO OCCUR DURING THAT PERIOD THE CONTRACTOR SHALL HAVE A QUALIFIED AND APPROVED BOG TURTLE SURVEYOR ON SITE WHEN HEAVY EQUIPMENT IS BEING USED TO INSPECT THE WORK AREA TO MAKE SURE IT IS FREE OF BOG TURTLES.

DEMOLITION LEGEND:

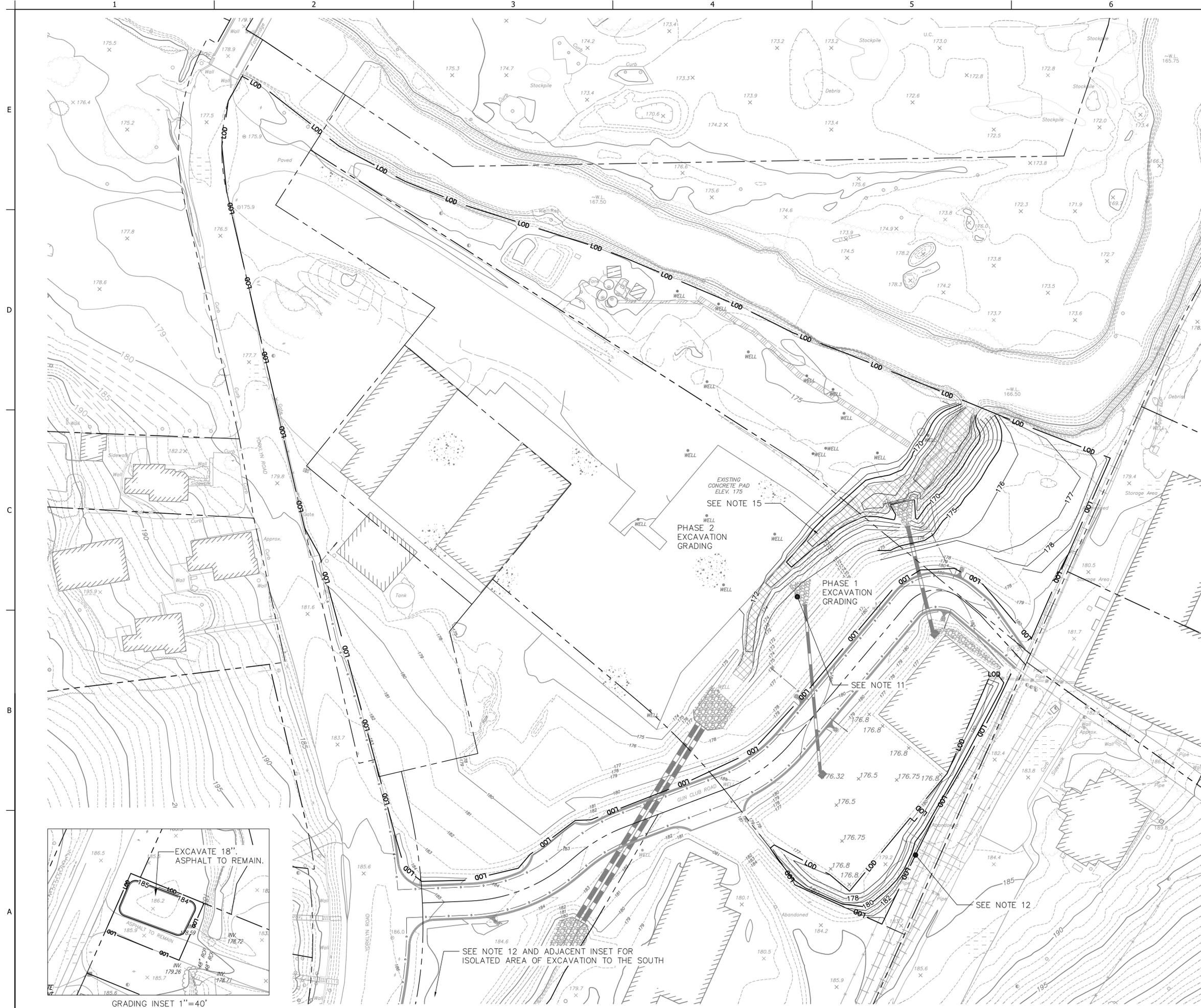
1. CONCRETE WALL - REMOVE IN ITS ENTIRETY
2. TANK - REMOVE IN ITS ENTIRETY PER LOCAL, STATE, AND FEDERAL REGULATIONS
3. SIDEWALK - REMOVE 359 SF
4. POST - REMOVE IN ITS ENTIRETY
5. TWO (2) UTILITY POLES - REMOVE IN THEIR ENTIRETY
6. BUILDING AND HISTORIC PUMP - REMOVE BUILDING ROOF AND WALLS FIRST. REMOVE HISTORIC PUMP FROM BUILDING TO AN APPROVED LOCATION ON SITE. DEMOLISH REMAINDER OF BUILDING AND FOUNDATION.
7. ELEVATED RAILROAD TRACK - REMOVE ENTIRETY OF RAILROAD, INCLUDING ABUTMENTS AND ALL CONNECTED STRUCTURES NOT INTEGRAL TO ADJACENT "BUILDINGS TO REMAIN"
8. UNPAVED AREA - REMOVE (9,400 SF) ENTIRE DEPTH OF GRAVEL/STONE AREA (12 INCH DEPTH)
9. DEMOLITION DEBRIS - CLEAR AND REMOVE ALL DEBRIS AND RUBBLE LOCATED ON THE NORTHEAST SIDE OF "BUILDINGS TO REMAIN" AND REMOVE FROM SITE
10. SIGN - REMOVE IN ITS ENTIRETY
11. TRELISE - REMOVE TRELISE WITHIN AREA TO BE GRADED
12. ZINC LINE - REMOVE (384 LF WITHIN WETLANDS EXCAVATION) AND PLUG PER NOTE 12
13. RECLAIMED ZINC LINE - REMOVE (50 LF WITHIN WETLANDS EXCAVATION) AND PLUG PER NOTE 12
14. HYDROCHLORIC ACID LINE - REMOVE (265 LF WITHIN WETLANDS EXCAVATION) AND PLUG PER NOTE 12
15. ZINC INFLUX LINE - REMOVE (50 LF WITHIN WETLANDS EXCAVATION) AND PLUG PER NOTE 12
16. SANITARY SEWER - REMOVE (322 LF WITHIN WETLANDS EXCAVATION) AND PLUG PER NOTE 12
17. TWO (2) UTILITY MANHOLES - REMAIN IN PLACE
18. PAVED ROAD - REMOVE (3,600 SF) CONCRETE SURFACE AND SUBBASE LAYERS IN THEIR ENTIRETY
19. CONCRETE FOUNDATION - REMOVE CONCRETE RETAINING WALL, STEPS, AND BUILDING FOUNDATION IN THEIR ENTIRETY
20. TRELISE - REMOVE TRELISE
21. SIGN - REMOVE IN ITS ENTIRETY
22. UNPAVED AREA - REMOVE (12,000 SF) ENTIRE DEPTH OF GRAVEL/STONE AREA
23. UTILITY POLE - REMOVE IN ITS ENTIRETY
24. TWO (2) UTILITY MANHOLES - REMOVE IN THEIR ENTIRETY
25. UTILITY POLE - REMOVE IN ITS ENTIRETY
26. TWO (2) UTILITY MANHOLES - REMOVE IN THEIR ENTIRETY
27. CONCRETE WEIR - REMOVE IN ITS ENTIRETY (SEE NOTE #21)
28. UTILITY POLE - REMOVE IN ITS ENTIRETY
29. UTILITY POLE - REMOVE IN ITS ENTIRETY
30. FOUR (4) CONCRETE PADS - REMOVE IN THEIR ENTIRETY
31. CONCRETE FOUNDATION - REMOVE CONCRETE FOUNDATION INCLUDING SLAB AND FOOTINGS (53,000 SF)
32. (12) GROUNDWATER MONITORING WELLS - (VARYING DEPTHS, SIZES, AND MATERIALS) REMOVE WELLS DOWN TO EXCAVATION GRADES AND ABANDON IN PLACE ACCORDING TO ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS. REMOVE WELLS DOWN TO EXCAVATION GRADES. ALL WELLS THAT WILL REMAIN SHALL BE MARKED PRIOR TO DEMOLITION.

BLACK & VEATCH
Federal Services Div.
200 BELLEVUE PARKWAY, SUITE 215
WILMINGTON, DELAWARE 19801
PHONE: (302) 788-0000 FAX: (302) 788-0201
WEBSITE: WWW.BV.COM

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STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-
SITE INVESTIGATION AND RESTORATION SECTION
NAVE YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OUI-1 WETLAND PROJECT

DEMOLITION PLAN
DRAWING NO. C-104



NOTES:

- SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
- SEE SHEET C-102 FOR EXISTING SITE SURVEY.
- SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
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- SEE SHEET C-120 FOR FINAL GRADING PLAN.
- SEE SHEET C-125 FOR WETLAND CROSS SECTIONS.
- SEE SHEET C-130 FOR TEMPORARY E&S PLAN.
- SEE SHEET C-131 FOR PERMANENT E&S PLAN.
- SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
- SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.
- CONCRETE PIPE TO BE EXTENDED.
- TWO AREAS (SEE OVERALL SITE VIEW ON SHEET C-102/103) TO HAVE 18 INCHES OF EXISTING SOIL REMOVED AND REPLACED WITH CLEAN SOIL CAP (SEE SHEET C-153, DETAIL 3).
- ALL EXCAVATION GRADES ARE 18 INCHES BELOW FINAL GRADES EXCEPT FOR WITHIN THE WETLAND AREA.
- CONTRACTOR IS REQUIRED TO KEEP ALL SEDIMENT WITHIN THE LOD BY CONSTRUCTION MEANS AND METHODS.
- WORK IN THE (EXISTING AND PROPOSED TRIBUTARY) WATERS OF THE UNITED STATES IS TO BE AVOIDED DURING APRIL 1 - JUNE 30 OF ANY YEAR. IF WORK SHOULD NEED TO OCCUR DURING THAT PERIOD THE CONTRACTOR SHALL HAVE A QUALIFIED AND APPROVED BOG TURTLE SURVEYOR ON SITE WHEN HEAVY EQUIPMENT IS BEING USED TO INSPECT THE WORK AREA TO MAKE SURE IT IS FREE OF BOG TURTLES.

BLACK & VEATCH
Federal Services Div.

200 BELLEVUE PARKWAY, SUITE 216
PHOENIX, ARIZONA 85004
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Rev.	Description	Date
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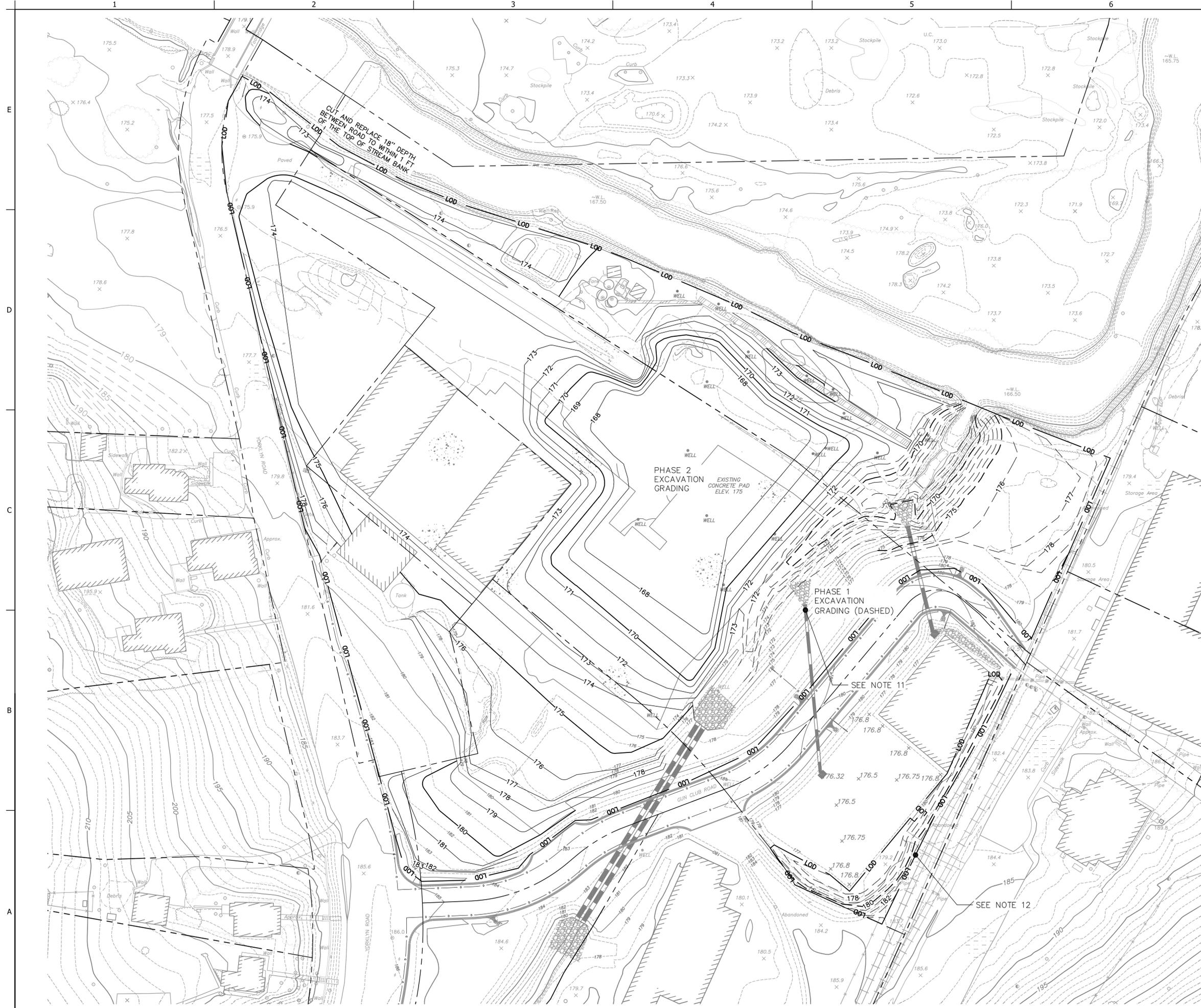
STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
SITE INVESTIGATION AND RESTORATION SECTION

NVF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE

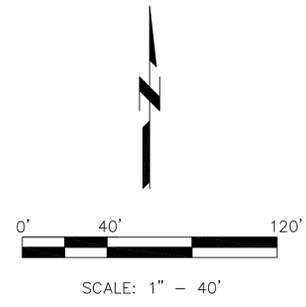
OU-1 WETLAND PROJECT

PHASE 1: EXCAVATION GRADING PLAN

DRAWING NO.
C-115



- NOTES:**
- SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
 - SEE SHEET C-102 FOR EXISTING SITE SURVEY.
 - SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
 - SEE SHEET C-104 FOR DEMOLITION PLAN.
 - SEE SHEET C-120 FOR FINAL GRADING PLAN.
 - SEE SHEET C-125 FOR WETLAND CROSS SECTIONS.
 - SEE SHEET C-130 FOR TEMPORARY E&S PLAN.
 - SEE SHEET C-131 FOR PERMANENT E&S PLAN.
 - SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
 - SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.
 - CONCRETE PIPE TO BE EXTENDED.
 - TWO AREAS (SEE OVERALL SITE VIEW ON SHEET C-102 AND C-103) TO HAVE 18 INCHES OF EXISTING SOIL REMOVED AND REPLACED WITH CLEAN SOIL CAP (SEE SHEET C-153, DETAIL 3).
 - ALL EXCAVATION GRADES ARE 18 INCHES BELOW FINAL GRADES EXCEPT FOR WITHIN THE WETLAND AREA.
 - CONTRACTOR IS REQUIRED TO KEEP ALL SEDIMENT WITHIN THE LOD BY CONSTRUCTION MEANS AND METHODS.



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Federal Services Div.
200 BELLEVUE PARKWAY, SUITE 216
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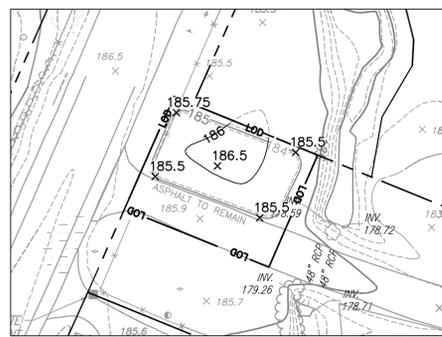
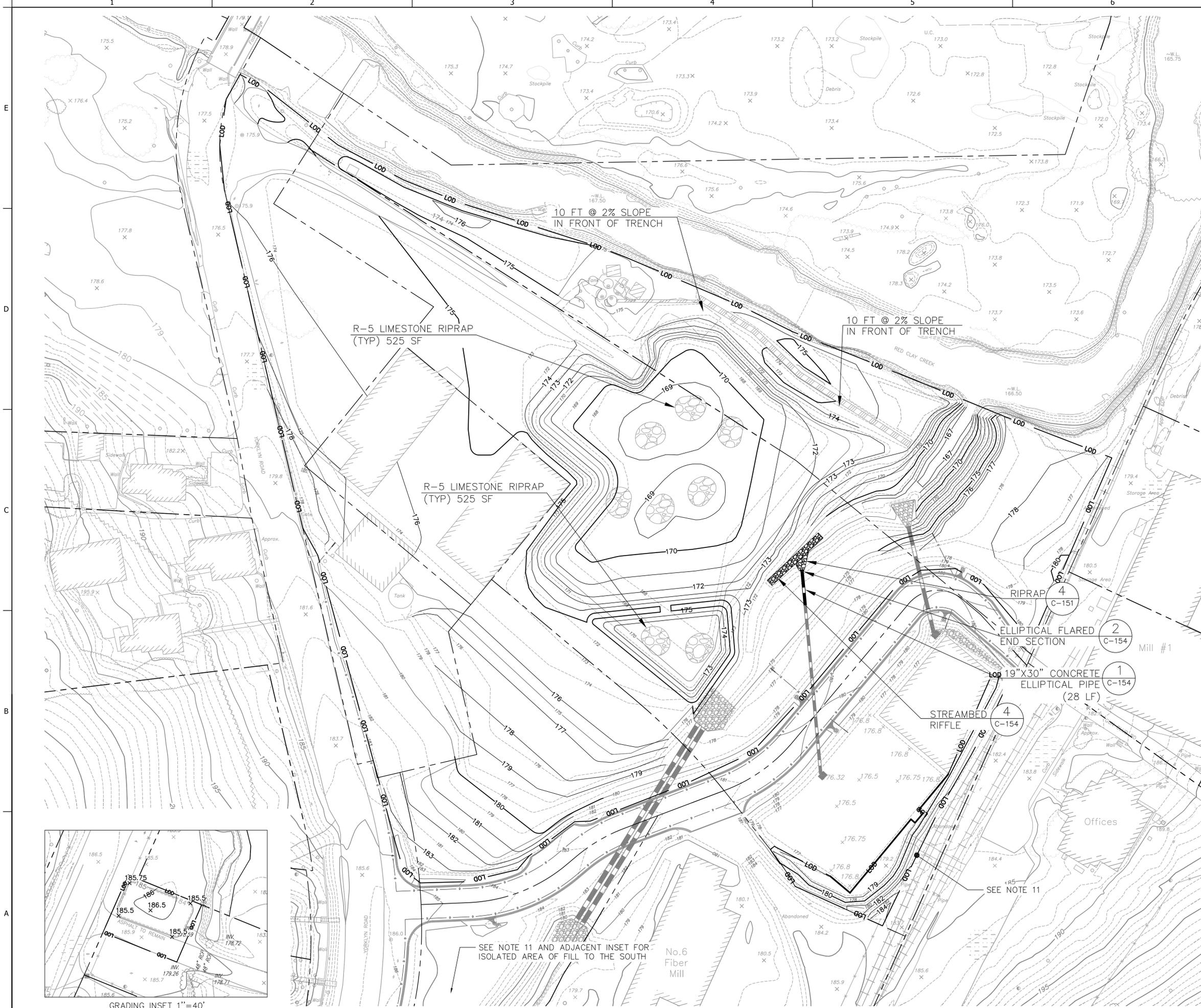
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3	1801/16	06/24/16
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SITE INVESTIGATION AND RESTORATION SECTION
NYF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT

PHASE 2: EXCAVATION GRADING PLAN

DRAWING NO.
C-116



- NOTES:**
- SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
 - SEE SHEET C-102 FOR EXISTING SITE SURVEY
 - SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
 - SEE SHEET C-104 FOR DEMOLITION PLAN.
 - SEE SHEETS C-115 AND C-116 FOR EXCAVATION GRADING PLAN.
 - SEE SHEET C-125 FOR WETLAND CROSS SECTIONS.
 - SEE SHEET C-130 FOR TEMPORARY E&S PLAN.
 - SEE SHEET C-131 FOR PERMANENT E&S PLAN.
 - SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
 - SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.
 - TWO AREAS TO HAVE 18 INCHES OF EXISTING SOIL REMOVED AND REPLACED WITH CLEAN SOIL CAP (SEE SHEET C-153, DETAIL 3).
 - GRADES SHOWN ARE TOP OF SOIL CAP (SEE SHEET C-153, DETAIL 3).
 - R-5 LIMESTONE RIPRAP TOTAL AREA: 4,200 SF
 - WORK IN THE (EXISTING AND PROPOSED TRIBUTARY) WATERS OF THE UNITED STATES IS TO BE AVOIDED DURING APRIL 1 - JUNE 30 OF ANY YEAR. IF WORK SHOULD NEED TO OCCUR DURING THAT PERIOD THE CONTRACTOR SHALL HAVE A QUALIFIED AND APPROVED BOG TURTLE SURVEYOR ON SITE WHEN HEAVY EQUIPMENT IS BEING USED TO INSPECT THE WORK AREA TO MAKE SURE IT IS FREE OF BOG TURTLES.

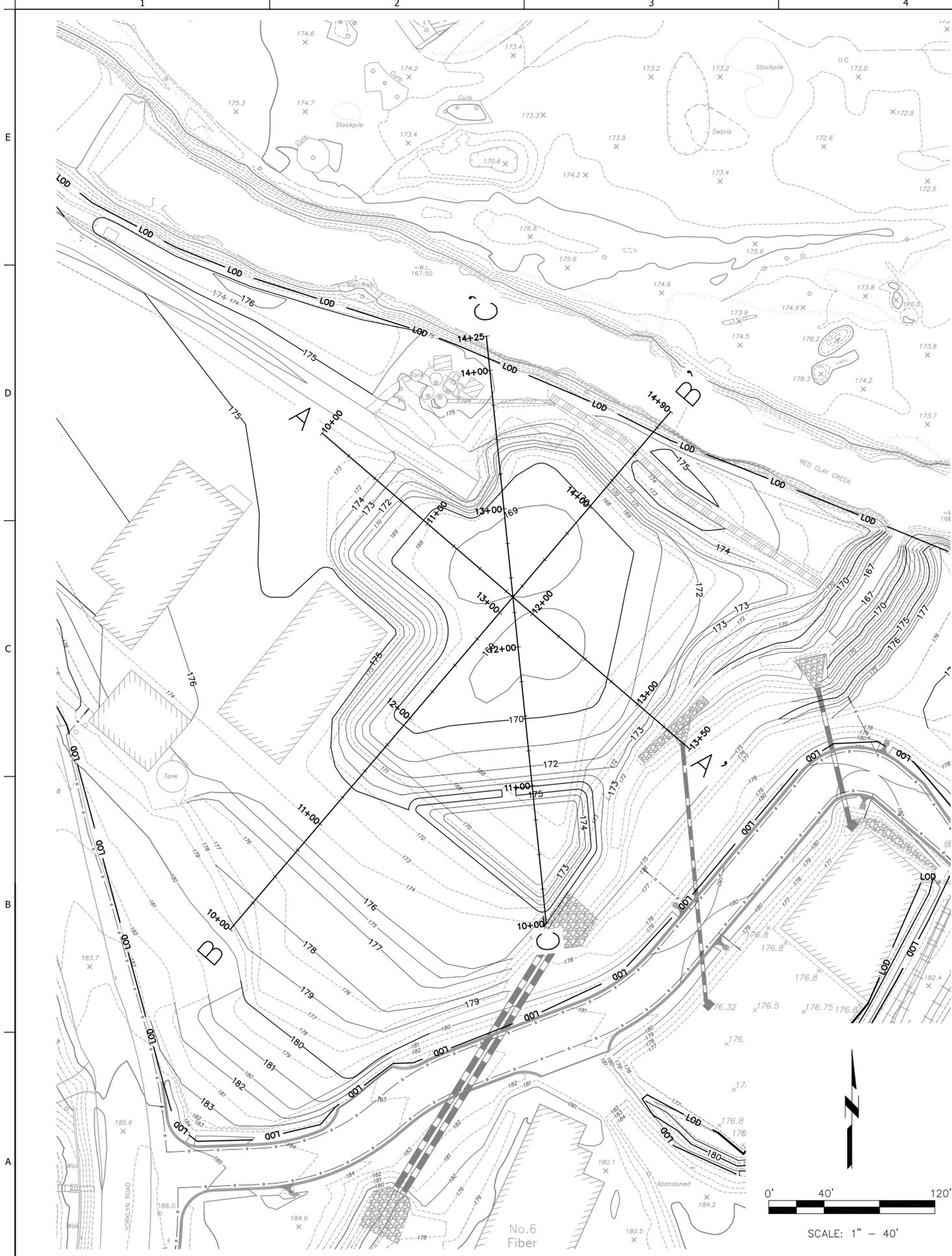
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Date	Drawn By	Check By	Project #	Design By	Review By	Rev.	Description	Date	Apr.
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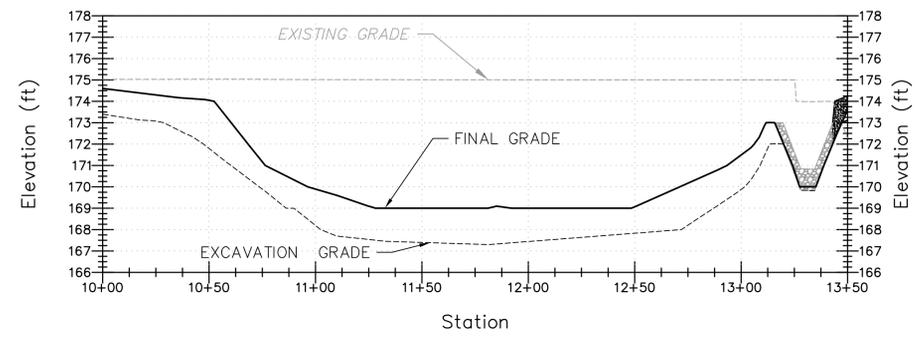
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NWF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT

FINAL GRADING PLAN

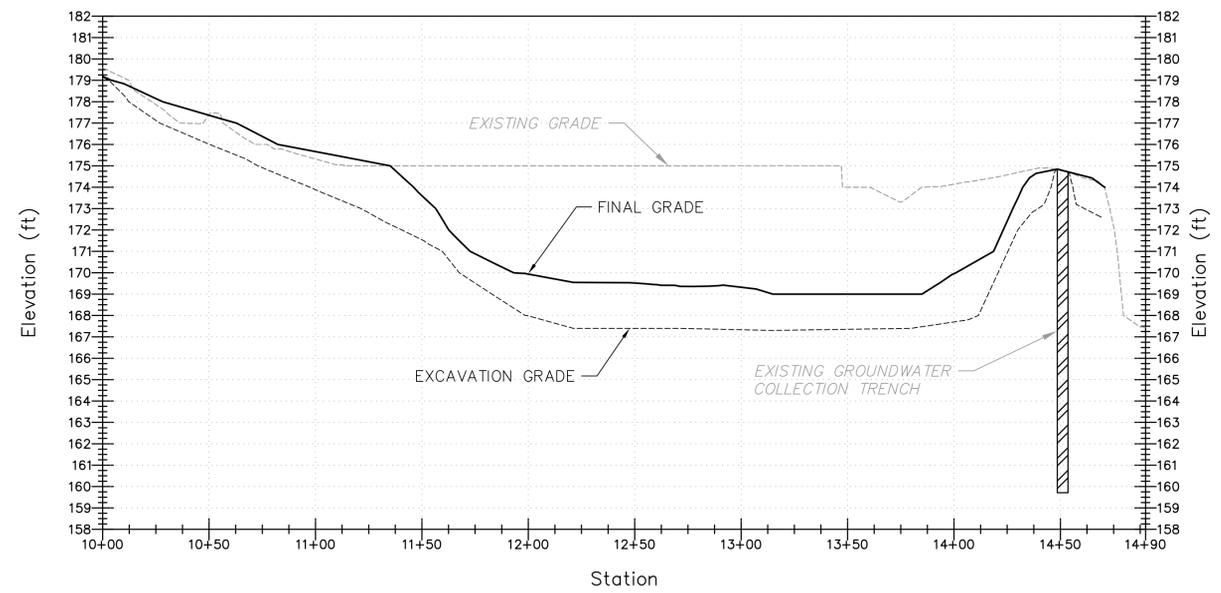
DRAWING NO.
C-120



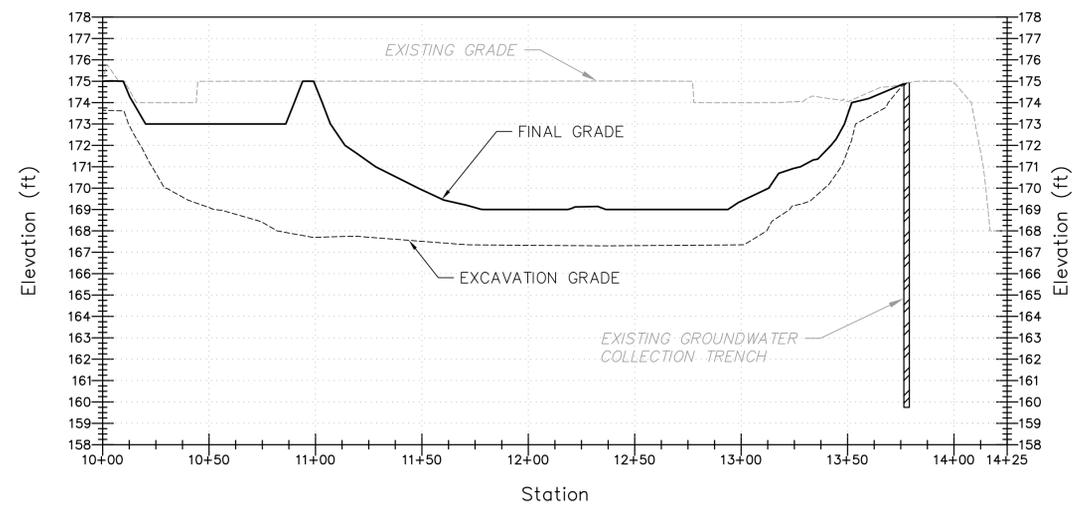
Section A-A' Alignment



Section B-B' Alignment



Section C-C' Alignment



NOTES:

1. SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
2. SEE SHEET C-102 FOR EXISTING SITE SURVEY
3. SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
4. SEE SHEET C-104 FOR DEMOLITION PLAN.
5. SEE SHEETS C-115 AND C-116 FOR EXCAVATION GRADING PLAN.
6. SEE SHEET C-120 FOR FINAL GRADING PLAN.
7. SEE SHEET C-130 FOR TEMPORARY E&S PLAN.
8. SEE SHEET C-131 FOR PERMANENT E&S PLAN.
9. SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
10. SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.

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Date	Project #	Design by	Review by	Check by	Rev.	Description
02/24/16	042/15	GEH	NUN	GEH	1	E&S Set
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STATE OF DELAWARE
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SITE INVESTIGATION AND RESTORATION SECTION
NWF YORKLYN SITE (DE-0071)
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OU-1 WETLAND PROJECT

WETLAND CROSS SECTIONS

DRAWING NO.
C-125



SILT FENCE AROUND WETLAND WILL BE INSTALLED AFTER WETLAND HAS BEEN EXCAVATED AND FINAL GRADED

PORTION OF SUPER SILT FENCE SHALL BE REMOVED AFTER WETLAND HAS BEEN INSTALLED

NOTES:

1. SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
2. SEE SHEET C-102 FOR EXISTING SITE SURVEY
3. SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
4. SEE SHEET C-104 FOR DEMOLITION PLAN.
5. SEE SHEETS C-115 AND C-116 FOR EXCAVATION GRADING PLAN.
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7. SEE SHEET C-125 FOR WETLAND CROSS SECTIONS.
8. SEE SHEET C-131 FOR PERMANENT E&S PLAN.
9. SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
10. SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.

Date	Drawn by	Check by	Rev.	Description
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STATE OF DELAWARE
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 SITE INVESTIGATION AND RESTORATION SECTION
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OU-1 WETLAND PROJECT

TEMPORARY E&S PLAN

DRAWING NO.
C-130

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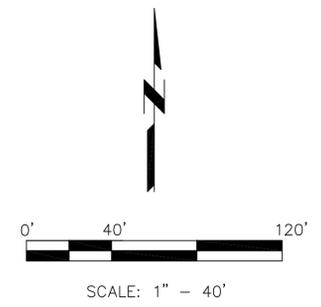


- NOTES:**
- SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
 - SEE SHEET C-102 FOR EXISTING SITE SURVEY
 - SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
 - SEE SHEET C-104 FOR DEMOLITION PLAN.
 - SEE SHEETS C-115 AND C-116 FOR EXCAVATION GRADING PLAN.
 - SEE SHEET C-120 FOR FINAL GRADING PLAN.
 - SEE SHEET C-125 FOR WETLAND CROSS SECTIONS.
 - SEE SHEET C-130 FOR TEMPORARY E&S PLAN.
 - SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
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Date	Drawn By	Check By	Rev.	Description
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STATE OF DELAWARE
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SITE INVESTIGATION AND RESTORATION SECTION
NWF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT



PERMANENT E&S PLAN

DRAWING NO.
C-131

PLANT LIST TABULATION

QUANTITY	KEY	COMMON NAME	SCIENTIFIC NAME	PLANT SIZE AND ROOT	DENSITY
21	QP	PIN OAK	QUERCUS PALUSTRIS	1' CAL., B&B	20-25' O.C.
16	BN	RIVER BIRCH	BETULA NIGRA	1' CAL., B&B	20-25' O.C.
9	LS	SWEETGUM	LIQUIDAMBAR STYRACIFLUA	1' CAL., B&B	20-25' O.C.
14	PO	EASTERN COTTONWOOD	POPULUS DELOIDES	1' CAL., B&B	20-25' O.C.
35	VD	SOUTHERN ARROWOOD	VIBURNUM DENTATUM	3' HT., B&B	3-5' O.C.
44	AA	DOWNY SERVICEBERRY	AMELANCHIER ARBOREA	3' HT., B.R.	3-5' O.C.
43	BH	GROUNDSEL BUSH	BACCHARIS HALIMIFOLIA	3' HT., B.R.	3-5' O.C.
18	SD	PUSSY WILLOW	SALIX DISCOLOR	3' HT., B.R.	3-5' O.C.
86	---	BUTTONBUSH	CEPHALANTHUS OCCIDENTALIS	4"-5" DIA. WATTLE (8' LENGTH)	AS SHOWN

NOTES:

- SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
- SEE SHEET C-102 FOR EXISTING SITE SURVEY
- SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
- SEE SHEET C-104 FOR DEMOLITION PLAN.
- SEE SHEETS C-115 AND C-116 FOR EXCAVATION GRADING PLAN.
- SEE SHEET C-120 FOR FINAL GRADING PLAN.
- SEE SHEET C-125 FOR WETLAND CROSS SECTIONS.
- SEE SHEET C-130 FOR TEMPORARY E&S PLAN.
- SEE SHEET C-131 FOR PERMANENT E&S PLAN.
- SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.
- FOR WETLAND LANDSCAPING SEED MIX DETAILS SEE SHEET C-155, DETAIL 1.

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Federal Services Div.
200 BELLEVUE PARKWAY, SUITE 215
WILMINGTON, DELAWARE
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Date	Project #	Design by	Review by	Rev.	Description	Date	Appr.
02/25/16	042755	GEH	NUN	1	DESIGN	02/25/16	
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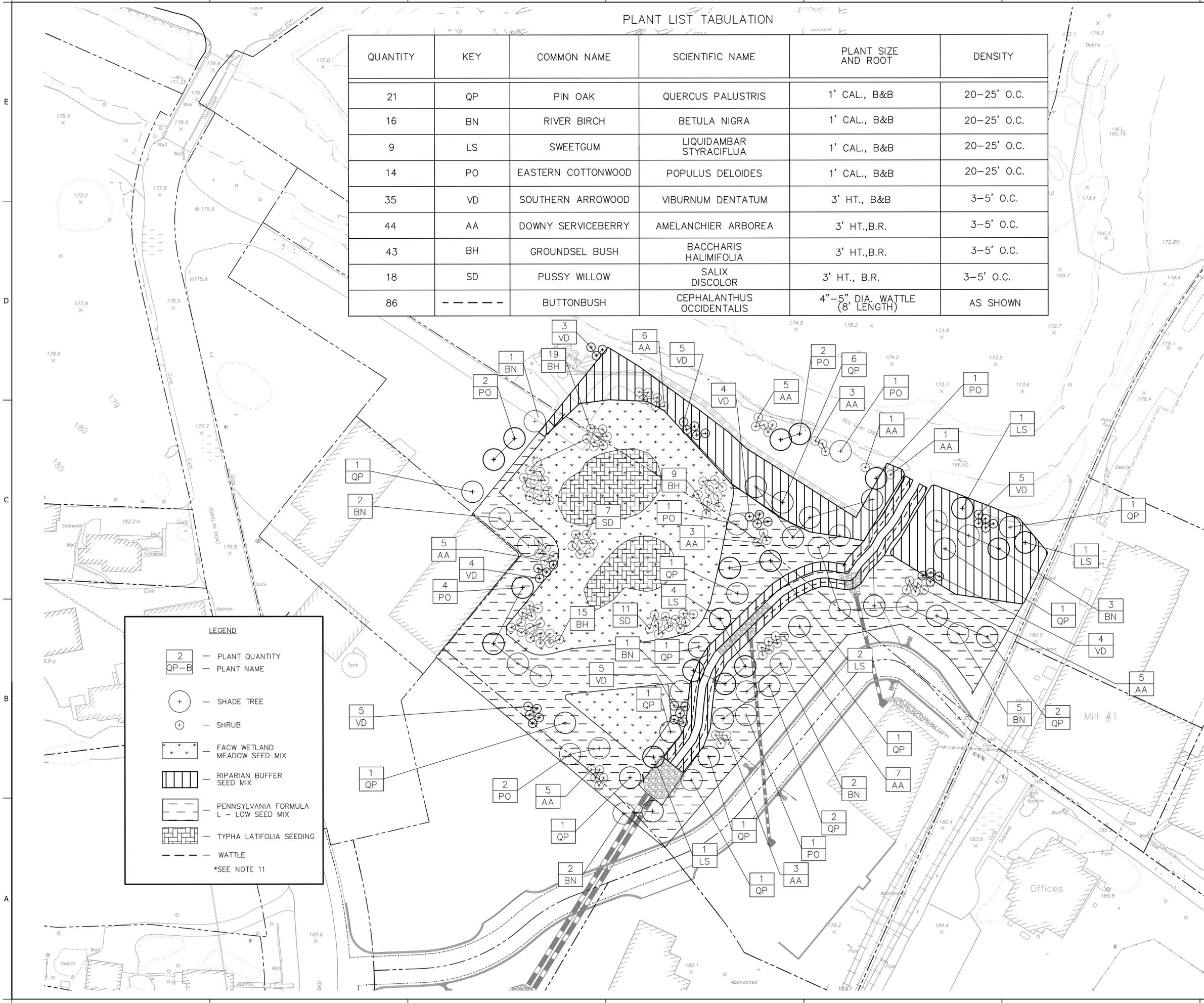
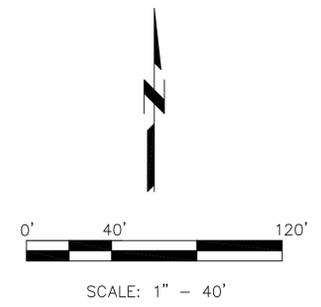
LANDSCAPING AND PLANTING PLAN

DRAWING NO.
C-140

LEGEND

- 2 — PLANT QUANTITY
- QP-B — PLANT NAME
- + — SHADE TREE
- ⊕ — SHRUB
- ▭ (with dots) — FACW WETLAND MEADOW SEED MIX
- ▭ (with vertical lines) — RIPARIAN BUFFER SEED MIX
- ▭ (with horizontal lines) — PENNSYLVANIA FORMULA L - LOW SEED MIX
- ▭ (with grid) — TYPHA LATIFOLIA SEEDING
- — WATTLE

*SEE NOTE 11



Standard Detail & Specifications Silt Fence

Section

Plan

Source: Adapted from MD Stds. & Specs. for ESC
Symbol: **SF**
Detail No. **DE-ESC-3.1.2.1**
Sheet 1 of 2
Date: 6/05

Standard Detail & Specifications Silt Fence

Construction Detail

Method for joining continuous sections

Construction Notes:

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

Materials:

- Stakes: Steel (either T or U) or 2" x 2" hardwood
- Geosynthetic Fabric: Type GD-1
- Reinforcing strip: Wooden lath, plastic strip or other approved equivalent
- Prefabricated Unit: Geofab, Envirofence, or approved equivalent

Source: Adapted from MD Stds. & Specs. for ESC
Symbol: **SF**
Detail No. **DE-ESC-3.1.2.1**
Sheet 2 of 2
Date: 6/05

Standard Detail & Specifications Stabilized Construct. Entrance

Plan

Profile

Section A-A (Std.)

Section A-A (Opt.)

Source: Adapted from VA ESC Handbook
Symbol: **SCE**
Detail No. **DE-ESC-3.4.7**
Sheet 1 of 2
Date: 12/03

Standard Detail & Specifications Stabilized Construct. Entrance

Section A-A (Opt.)

Source: Adapted from VA ESC Handbook
Symbol: **SCE**
Detail No. **DE-ESC-3.4.7**
Sheet 2 of 2
Date: 12/03

Construction Notes:

- Stone size - Use DE #3 stone.
- Length - As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum length would apply).
- Thickness - Not less than size (6) inches.
- Width - Ten (10) foot minimum, but not less than the full width at points where ingress or egress occurs.
- Geotextile - Type GS-1; placed over the entire area prior to placing of stone.
- 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.
- 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 cleanup of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
- 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.
- Inspection - Periodic inspection and needed maintenance shall be provided after each rain.

1 SILT FENCE
C-150 N.T.S.

2 STABILIZED CONSTRUCTION ENTRANCE
C-150 N.T.S.

Standard Detail & Specifications Super Silt Fence

Perspective

Section

Source: Adapted from MD Stds. & Specs. for ESC
Symbol: **SSF**
Detail No. **DE-ESC-3.1.2.3**
Sheet 1 of 2
Date: 12/03

Standard Detail & Specifications Super Silt Fence

Construction Notes:

- The poles do not need to be set in concrete.
- Chain link fence shall be fastened securely to the fence posts with wire ties or staples.
- Geotextile fabric shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.
- Geotextile fabric shall be embedded a minimum of 8" into the ground.
- When two sections of geotextile fabric adjoin each other, they shall be overlapped by 6" and folded.
- Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence.

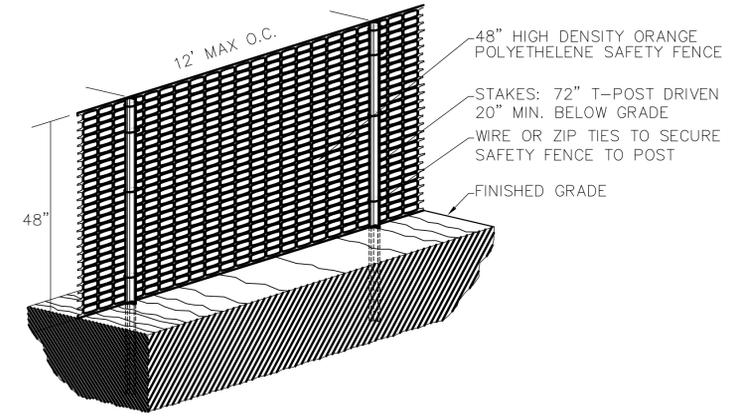
Materials:

- Fencing: Fencing shall be 42 inches in height and constructed in accordance with the latest Delaware Department of Transportation (Del-DOT) Specifications for Chain Link Fencing (Section 728). The Del-DOT specification for a 6 foot fence shall be used, substituting 42 inch fabric and 6 foot length posts.
- Geosynthetic Fabric: Type GD-1

Source: Adapted from MD Stds. & Specs. for ESC
Symbol: **SSF**
Detail No. **DE-ESC-3.1.2.3**
Sheet 2 of 2
Date: 12/03

3 SUPER SILT FENCE
C-150 N.T.S.

4 ORANGE BARRIER FENCE
C-150 N.T.S.



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

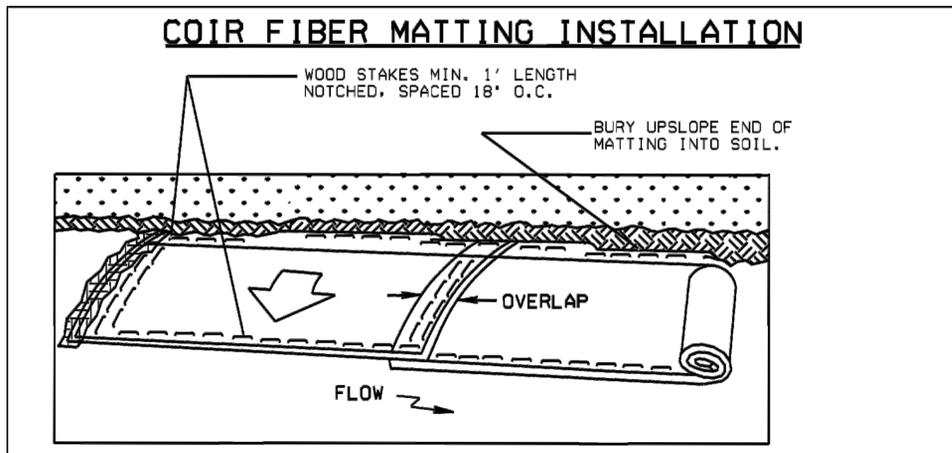
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Federal Services Div.
200 BELLEVUE PARKWAY, SUITE 216
WILMINGTON, DELAWARE
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Date	Drawn by	Check by	Rev.	Description
02/21/16	NUS	GEH	1	ES-SET
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STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-
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NWF YORKLYN SITE (DE-0071)
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OU-1 WETLAND PROJECT

CONSTRUCTION DETAILS
SHEET 1

DRAWING NO.
C-150



COIR FIBER MAT NOTES: KEY-IN THE MATTING BY PLACING THE TOP ENDS OF THE MATTING IN A 6" TRENCH, 6" IN DEPTH. BACKFILL THE TRENCH AND TAMP FIRMLY TO CONFORM TO THE CHANNEL CROSS-SECTION. SECURE WITH A ROW OF STAKES ABOUT 1" DOWN SLOPE FROM THE TRENCH.

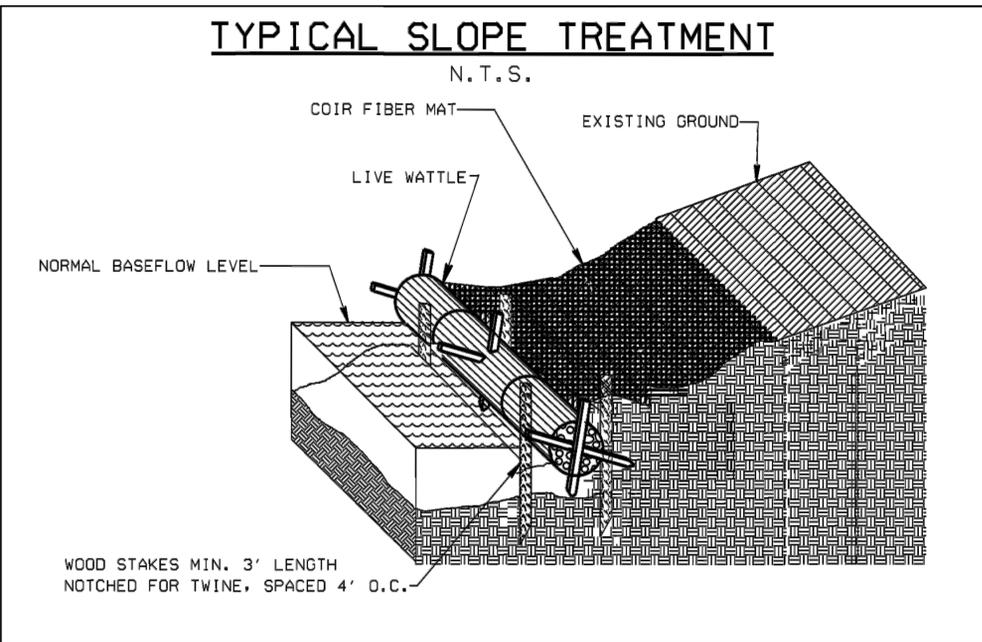
PLACE COIR FIBER MATTING AFTER THE SLOPE OR SWALE HAS BEEN DRESSED TO DEFINE THE FLOW AND THE DESIGNATED SEEDING, AND SOIL SUPPLEMENTS, HAVE BEEN APPLIED. PLACE COIR FIBER MATTING TO CONFORM TO THE SHAPE OF THE SOIL SURFACE.

SPREAD THE MAT EVENLY AND SMOOTHLY, WITHOUT STRETCHING, AND ENSURE CONTACT WITH SOIL AT ALL POINTS. UNROLL FABRIC PARALLEL TO THE FLOW DIRECTION. DRIVE ALL STAKES FLUSH WITH THE SOIL SURFACE.

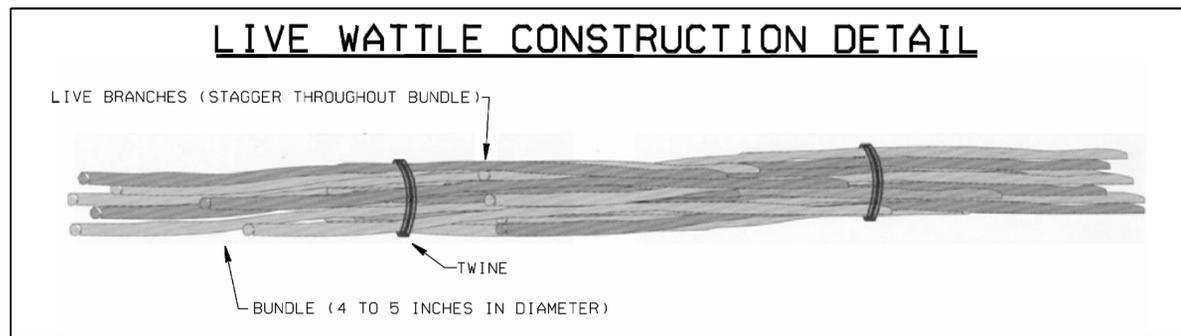
6" OVERLAP OF MATTING WHERE TWO OR MORE STRIP WIDTHS ARE REQUIRED STAKE ON 18" CENTERS.

WHERE ONE ROLL OF MATTING ENDS AND ANOTHER BEGINS, THE END OF THE TOP STRIP SHALL OVERLAP THE UPPER END OF THE LOWER STRIP BY 6", SHIPLAP FASHION. REINFORCE THE OVERLAP WITH A DOUBLE ROW OF STAKES SPACED 6" APART IN A STAGGERED PATTERN ON EITHER SIDE.

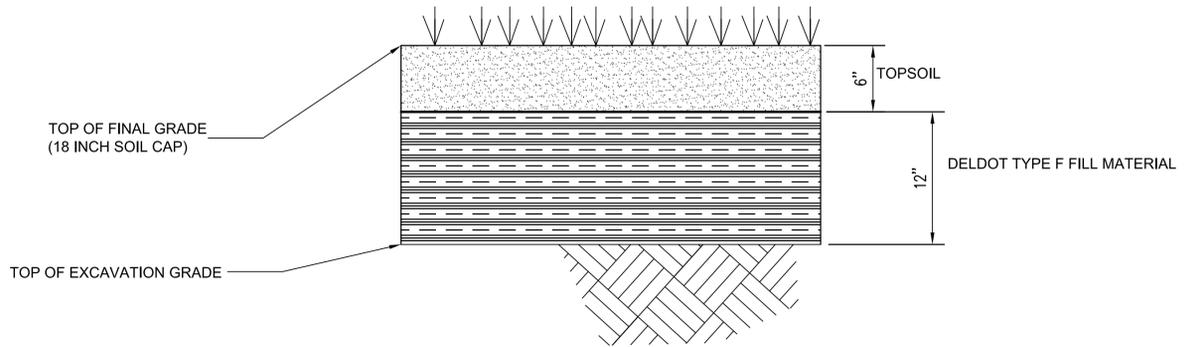
TERMINATE MAT INSTALLATION BY TRENCHING UNDER AT LEAST 6" OF FABRIC AND STAKING SECURELY ALONG THE TRENCH.



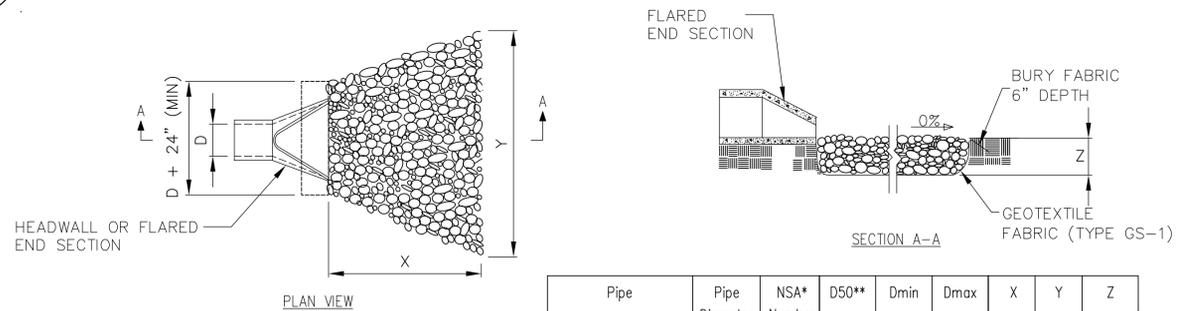
1 COIR FIBER MATTING
C-151 CONTROL MAT OCR 30 OR APPROVED EQUIVALENT
N.T.S.



2 LIVE WATTLE
C-151 (CEPHALANTHUS OCCIDENTALIS) BUTTONBUSH 4"-5" DIAMETER WATTLE (8' LENGTH) OR APPROVED EQUIVALENT
N.T.S.



3 CLEAN SOIL CAP
C-151 N.T.S.



Pipe	Pipe Diameter (inches)	NSA* Number	D50** (inches)	Dmin (inches)	Dmax (inches)	X (ft)	Y (ft)	Z (inches)
Storm Drain Line 01	19 X 30	R-5	9	5	18	22	22	22

NOTES

- RIPRAP TO BE PLACED PRIOR TO PLACING PIPE.
- PLACE DELAWARE #3 STONE UNDER PIPE.
- TOP OF RIPRAP SHALL NOT BE HIGHER THAN PIPE INVERT.

* National Stone Association
** 50% of pieces, by weight, should be larger than this size.
Dimensions may vary depending upon equipment availability.

4 RIPRAP
C-151 N.T.S.

Standard Detail & Specifications Inlet Protection - Type 1

Plan

Section A-A

Standard Detail & Specifications Inlet Protection - Type 1

Construction Notes:

- Excavate completely around inlet to a depth of 18" below grate elevation.
- 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.
- Stretch wire mesh tightly around frame and fasten securely. Ends must meet at post.
- 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.
- Backfill around inlet in compacted 6" layers until at least 12" of geotextile fabric is buried.
- 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).
- This structure must be inspected frequently and the filter fabric replaced when clogged.

Materials:

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

Source: Adapted from Erosion Draw Manual J. McCullah & Assoc.	Symbol: IP-1	Detail No. DE-ESC-3.1.5.1 Sheet 1 of 2 Date: 12/03	Source: Adapted from Erosion Draw Manual J. McCullah & Assoc.
			Detail No. DE-ESC-3.1.5.1 Sheet 2 of 2 Date: 12/03

5 INLET PROTECTION - TYPE 1
C-151 N.T.S.

BLACK & VEATCH
Federal Services Div.
200 BELLEVUE PARKWAY, SUITE 215
WILMINGTON, DELAWARE
PHONE: (302) 798-0000 FAX: (302) 798-0201
WEBSITE: WWW.BV.COM

Date	Drawn by	Check by	Project #	Design by	Review by	Rev.	Description	Date
02/25/16	NUS	GEH	02/25	GEH	NUN	1	Bas Set	02/24/16

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-
SITE INVESTIGATION AND RESTORATION SECTION
NWF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT

CONSTRUCTION DETAILS
SHEET 2

DRAWING NO.
C-151

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 at 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
		Date: 12/03



Standard Detail & Specifications

Topsoiling

Construction Notes (cont.)

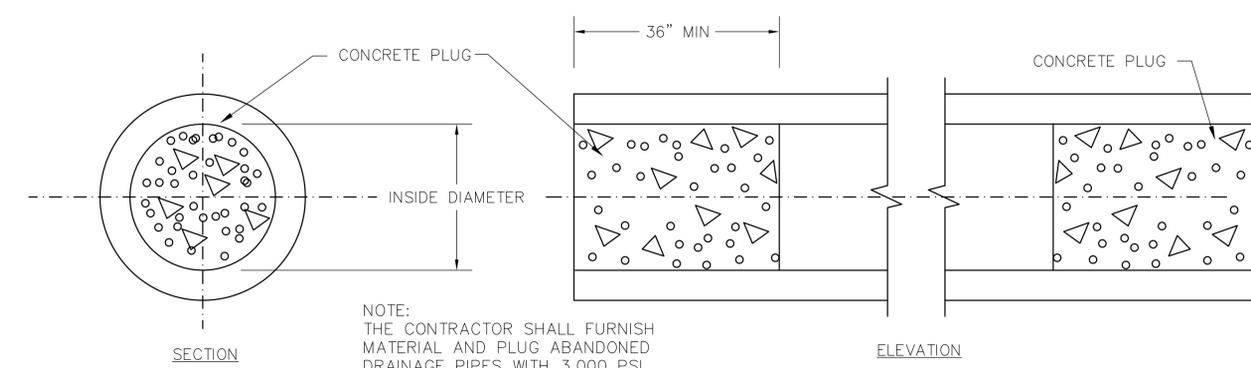
- a. Materials - Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand or other soil as approved by an agronomist or soil scientist. It shall not have a mixture of contrasting textured subsoil and contain no more than 5 percent by volume of cinders, stones, slag, coarse 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.

Source:	Symbol:	Detail No.
USDA - NRCS		DE-ESC-3.4.1 Sheet 2 of 2
		Date: 12/03



NOTE: THE CONTRACTOR SHALL FURNISH MATERIAL AND PLUG ABANDONED DRAINAGE PIPES WITH 3,000 PSI CONCRETE AS DIRECTED BY THE ENGINEER.

2 PIPE PLUGGING
C-152 DELAWARE CONSTRUCTION DETAILS SHEET D-10 (2011)
N.T.S.

Standard Detail & Specifications

Vegetative Stabilization

Mix #	Species ⁴	Seeding Rate	Optimum Seeding Dates ¹										Planting Depth ³
			Optimum Seeding Dates ¹										
			Coastal Plain			Piedmont			All ¹				
1	Barley	125	4	O	A	O	O	O	A	O	O	1-2 inches	
2	Oats	125	4	O	A	A	O	A	A	O	1-2 inches		
3	Rye	125	4	O	A	O	O	A	O	A	2-3" sandy soils		
4	Perennial Ryegrass	125	4	O	A	O	O	A	O	O	1-2 inches		
5	Annual Ryegrass	125	4	O	A	O	O	A	O	A	0.5 inches		
6	Winter Wheat	125	4	O	A	O	O	A	O	A	1-2 inches		
7	Foxtail Millet	30 PLS	0.7	O				O			0.5 inches		
8	Pearl Millet	20 PLS	0.5	O				O			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 throughout summer at a depth of 0.5".

CONTRACTOR TO USE HIGHLIGHTED SEED

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 1 of 4
		Date: 12/03



Standard Detail & Specifications

Vegetative Stabilization

Mix No.	Certified Seed ¹	Seeding Rate ¹	Optimum Seeding Dates ²										Remarks
			Optimum Seeding Dates ²										
			Coastal Plain			Piedmont			All ¹				
1	Tall Fescue Weeping Lovegrass	140 10	3.2 0.23	A	O	A	O	A	O	A	O	Add 100 lbs./ac. Winter Rye. Good erosion control mix. Tolerant of low fertility soils. Lovegrass very difficult to mow. Lomatolins only in hot weather.	
2	Bentgrass Sheep Fescue Common Lespedeza ³	30 30 15	0.69 0.69 0.35	A	O	A	O	A	O	A	O	Add 100 lbs./ac. Winter Rye. Good erosion control mix. Good wildlife cover and food.	
3	Tall Fescue (Turf-type) or Strong Creeping Red Fescue or Perennial Ryegrass	50 50 50	1.15 1.15 1.15	O	A	O	O	A	O	A	O	Good erosion control mix. Tall Fescue for droughty conditions. Creeping Red Fescue for heavy shade. Flatpea to suppress woody vegetation.	
4	String Creeping Red Fescue Kentucky Bluegrass Perennial Ryegrass or Redtop Blue White Clover ⁵	100 70 15 5 3	2.3 1.61 0.35 0.11 0.07	O	A	O	O	A	O	A	O	Shade tolerant mix. Canada Bluegrass more drought tolerant. Use Redtop for increased drought tolerance.	
5	Switchgrass ⁶ or Coastal Pangrass Big Bluestem Little Bluestem ⁷ Indian Grass	10 10 5 8 3	0.23 0.23 0.11 0.18 0.09	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	A	O	Managed filter strip for nutrient uptake.	
7	Tall Fescue Ryegrass (Blend) Perennial Ryegrass	150 20 20	3.5 0.46 0.46	O	A	O	O	A	O	A	O	Three cultivars of Kentucky Bluegrass. Traffic tolerant.	
8	Big Bluestem ⁷ Indian Grass Little Bluestem ⁷ Creeping Red Fescue Blue one of: Partridge Pea Buck Clover Wild Indigo Showy Tick-Traffoi	10 10 8 30 10 5 3 2	0.23 0.23 0.18 0.09 0.11 0.07 0.07 0.05	O	A	O	O	A	O	A	O	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.	

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 2 of 4
		Date: 12/03



Standard Detail & Specifications

Vegetative Stabilization

Mix No.	Certified Seed ¹	Seeding Rate ¹	Optimum Seeding Dates ²										Remarks
			Optimum Seeding Dates ²										
			Coastal Plain			Piedmont			All ¹				
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	A	O	Add 100 lbs./ac. Winter Rye. Quick stabilization of disturbed sites and waterways.	
10	Seed Canarygrass ³	10	0.23	A		O	A	O		O		Good erosion control, wildlife cover and wetland revegetation.	
Residential Lawns													
11	Tall Fescue Perennial Ryegrass Kentucky Bluegrass Blend	100 25 30	2.3 0.67 0.69	O	A	O	O	A	O	A	O	High value, high maintenance, low maintenance, traffic tolerant. Wet drained soils, full sun.	
12	Tall Fescue Perennial Ryegrass Sheep Fescue	100 25 25	2.3 0.67 0.57	O	A	O	O	A	O	A	O	Moderate value, low maintenance, traffic tolerant.	
13	Creeping Red Fescue Sheep Fescue Rough Bluegrass Kentucky Bluegrass	50 50 20 20	1.15 1.15 0.4 0.4	O	A	O	O	A	O	A	O	Shade tolerant, moderate traffic tolerance, moderate maintenance.	
14	Creeping Red Fescue Sheep Fescue or Owens Fescue	50 90	1.15 2.1	O	A	O	O	A	O	A	O	Shade tolerant, moisture tolerant.	
15	K-31 Tall Fescue	150	3.5	O	A	O	O	A	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.

Source:	Symbol:	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 3 of 4
		Date: 12/03



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.

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.

- 2. Seedbed Preparation
- 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.
 - 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.

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
		Date: 12/03



3 VEGETATIVE STABILIZATION (OUTSIDE AREAS DESIGNATED ON SHEET C-140)
C-152

BLACK & VEATCH
Federal Services Div.
200 BELLEVUE PARKWAY, SUITE 215
WILMINGTON, DELAWARE
PHONE: (302) 798-0000 FAX: (302) 798-0201
WEBSITE: WWW.BV.COM

Date	Drawn By	Check By	Rev.	Description
02/25/16	NUS	GEH	1	ES-SET
02/25/16	GEH	GEH	2	
	GEH	GEH	3	
	GEH	GEH	4	
	GEH	GEH	5	
	GEH	GEH	6	
	GEH	GEH	7	
	GEH	GEH	8	

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-
SITE INVESTIGATION AND RESTORATION SECTION
NWF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT

CONSTRUCTION DETAILS
SHEET 3

DRAWING NO.
C-152

Standard Detail & Specifications Site Pollution Prevention

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

- Material Inventory**
Document the storage and use of the following materials:
 - Concrete
 - Detergents
 - Paints (enamel and latex)
 - Cleaning solvents
 - Pesticides
 - Wood scraps
 - Fertilizers
 - Petroleum based products
- Good housekeeping practices**
 - Store only enough product required to do the job.
 - All materials shall be stored in a neat, orderly manner in their original labeled containers and covered.
 - Substances shall not be mixed.
 - When possible, all of a product shall be used up prior to disposal of the container.
 - Manufacturers' instructions for disposal shall be strictly adhered to.
 - The site foreman shall designate someone to inspect all BMPs daily.
- Waste management practices**
 - All waste materials shall be collected and stored in securely lidded dumpsters in a location that does not drain to a waterbody.
 - Waste materials shall be salvaged and/or recycled whenever possible.
 - 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: Adapted from USEPA Pub. 840-B-92-002	Symbol:	Detail No. DE-ESC-3.6.1 Sheet 1 of 3 Date: 6/05
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Standard Detail & Specifications Site Pollution Prevention

Notes (cont.)

- Trash shall be disposed of in accordance with all applicable Delaware laws.
- Trash cans shall be placed at all lunch spots and littering is strictly prohibited. Recycle bins shall be placed near the construction trailer.
- 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.

- Equipment maintenance practices**
 - If possible, equipment should be taken to off-site commercial facilities for washing and maintenance.
 - If performed on-site, vehicles shall be washed with high-pressure water spray without detergents in an area contained by an impervious berm.
 - Drip pans shall be used for all equipment maintenance.
 - Equipment shall be inspected for leaks on a daily basis.
 - Washout from concrete trucks shall be disposed of in a temporary pit for hardening and proper disposal.
 - Fuel nozzles shall be equipped with automatic shut-off valves.
 - 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.
- Spill prevention practices**
 - Potential spill areas shall be identified and contained in covered areas with no connection to the storm drain system.
 - Warning signs shall be posted in hazardous material storage areas.
 - Preventive maintenance shall be performed on all tanks, valves, pumps, pipes and other equipment as necessary.
 - Low or non-toxic substances shall be prioritized for use.

Source: Adapted from USEPA Pub. 840-B-92-002	Symbol:	Detail No. DE-ESC-3.6.1 Sheet 2 of 3 Date: 6/05
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Standard Detail & Specifications Site Pollution Prevention

Notes (cont.)

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

- Education**
 - Best management practices for construction site pollution control shall be a part of regular progress meetings.
 - 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 Branch 302-739-9403

Source: Adapted from USEPA Pub. 840-B-92-002	Symbol:	Detail No. DE-ESC-3.6.1 Sheet 3 of 3 Date: 6/05
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Standard Detail & Specifications Dust Control

Temporary Methods:

- Mulches - See **DE-ESC-3.4.5**, Standard Detail and Specifications for Mulching.
- Vegetative cover - See **DE-ESC-3.4.3**, Std. Detail and Specifications for Vegetative Stabilization.
- 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-traffic)	7:1	Coarse spray	450
Acrylic emulsion (traffic)	3.5:1	Coarse spray	350

- 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.
- Sprinkling - Sprinkle site with water until the surface is moist. Repeat as needed.
- 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.
- Barriers - Place barriers such as solid board fences, snow fences, hay bales, etc. at right angles to the prevailing air currents at intervals of approx. 10X their height.

Permanent Methods:

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

Source: Adapted from VA ESC Handbook	Symbol:	Detail No. DE-ESC-3.4.8 Sheet 1 of 1 Date: 12/03
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1 SITE POLLUTION PREVENTION
C-153

2 DUST CONTROL
C-153

Standard Detail & Specifications Mulching

- Materials and Amounts**
 - 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.
 - 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).
 - Hydraulically applied mulch** - The following conditions apply to hydraulically applied mulch:
 - Definitions:**
 - 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.
 - 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.
 - 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.
 - Refer to **Figure 3.4.5a** for conditions and limitations of use for each of the above categories of hydraulic mulch.
 - 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.
 - Hydraulic mulches shall be applied with a viable seed and at manufacturer's recommended rates. Increased rates may be necessary based on site conditions.
 - Hydraulically applied mulches and additives shall be mixed according to manufacturers recommendations.
 - 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: Delaware ESC Handbook	Symbol:	Detail No. DE-ESC-3.4.5 Sheet 1 of 3 Date: 6/05
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Standard Detail & Specifications Mulching

- Application:
 - Apply product to geotechnically stable slopes that have been designed and constructed to divert runoff away from the face of the slope.
 - Do not apply to saturated soils, or if precipitation is anticipated within 24-48 hours.
 - 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.
 - 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.
 - 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.
- 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.

- 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.
 - 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.
 - 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 clear marks running across the slope.
 - 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.
 - 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.
 - Nettings** - Synthetic or organic nettings may be used to secure straw mulch. Install and secure according to the manufacturers recommendations.

Source: Delaware ESC Handbook	Symbol:	Detail No. DE-ESC-3.4.5 Sheet 2 of 3 Date: 6/05
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Standard Detail & Specifications Mulching

Percent Slope Less than 2%	Type of Mulch / App. Rate	MULCHING MATERIAL SELECTION GUIDE			
		Dec. 1 to Feb. 28/29	March 1 to May 31	June 1 to Aug. 31	Sept. 1 to Nov. 30
2% to 5.9%	Wood Fiber @ 2000 lbs/ac. minimum	OK	OK	OK	OK
	Wood Fiber @ 2000 lbs/ac. Min	OK	OK	OK	OK
	Straw @ 2 Tons/acre Min	OK	OK	OK	OK
	Substitution Method**	OK	OK	OK	OK
6% to 14.9%	BPM @ 3000-3500 lbs/ac. min	OK	OK	OK	OK
	Straw @ 2 Tons/acre min	OK	OK	OK	OK
	Wood Fiber @ 2000-2500 lbs/ac. min	OK	OK	OK	OK
	Substitution Method**	OK	OK	OK	OK
15% to 24.9%	Wood Fiber @ 2500-3000 lbs/ac. min	OK	OK	OK	OK
	Straw @ 2 Tons/acre min	OK	OK	OK	OK
	Substitution Method**	OK	OK	OK	OK
	BPM @ 4000 lbs/ac. min	OK	OK	OK	OK
25% to 33%	Wood Fiber @ 3000-4000 lbs/ac. min	OK	OK	OK	OK
	Straw @ 2 Tons/acre min	OK	OK	OK	OK
	Substitution Method**	OK	OK	OK	OK
	BPM @ 4000-4500 lbs/ac. min	OK	OK	OK	OK
33% and up	Wood Fiber @ 4000-4500 lbs/ac. min	OK	OK	OK	OK
	Substitution Method**	OK	OK	OK	OK

* - Note: Manufacturer Recommended Rates for informational purposes only. Performance standard requires 100% soil coverage.
** - Note: Straw applied on slopes greater than 3:1% must be retained (this does not apply to topsoil stabilization).
OK - Acceptable to use during this time period.
Not OK - Not acceptable to use during this time period.
All application rates are minimums.

Source:	Symbol:	Detail No. DE-ESC-3.4.5 Sheet 3 of 3 Date: 6/05
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3 MULCHING
C-153

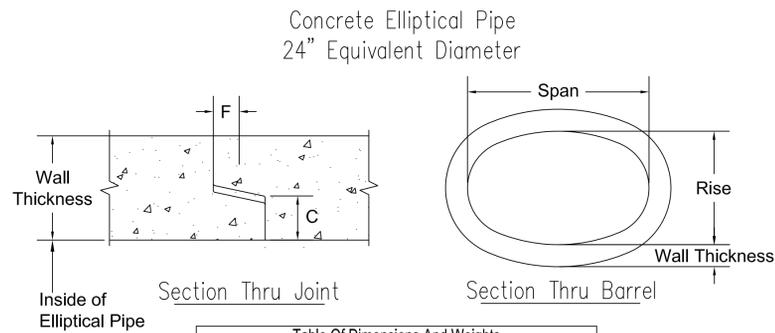
STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL -
SITE INVESTIGATION AND RESTORATION SECTION
NWF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT

CONSTRUCTION DETAILS
SHEET 4

DRAWING NO.
C-153

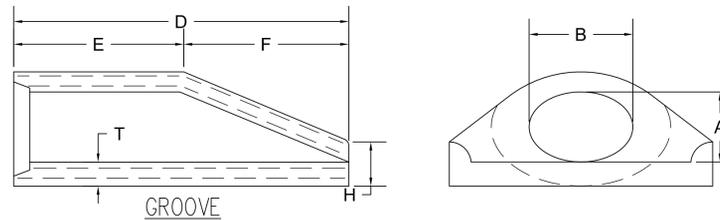
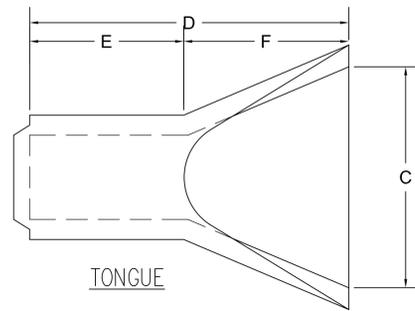
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Federal Services Div.
200 BELLEVUE PARKWAY, SUITE 215
WILMINGTON, DELAWARE
PHONE: (302) 798-0300 FAX: (302) 798-0201
WEBSITE: WWW.BV.COM

Date:	06/28/16	Project #:	042755	Drawn by:	NUS	Design by:	GEH	Check by:	GEH	Rev.:	1	Date:	07/27/16	Description:	ESC Set
											2				
											3				
											4				
											5				
											6				
											7				
											8				



Round Equivalent (inches)	Inside Dimension (inches)	Wall Thickness (inches)	C (inches)	F (inches)	Full Flow Water Area (Sq. Ft.)	Approx. Weight (Lbs / Ft.)
24	19	3 1/4	1 1/4	2	3.28	310

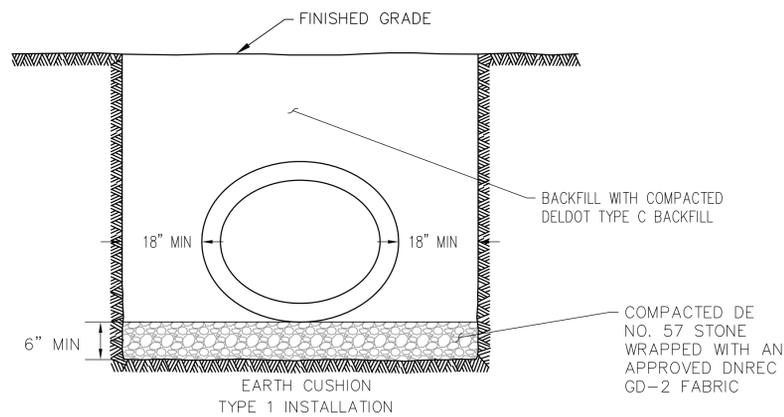
Notes:
1. Produced to meet ASTM Specifications.



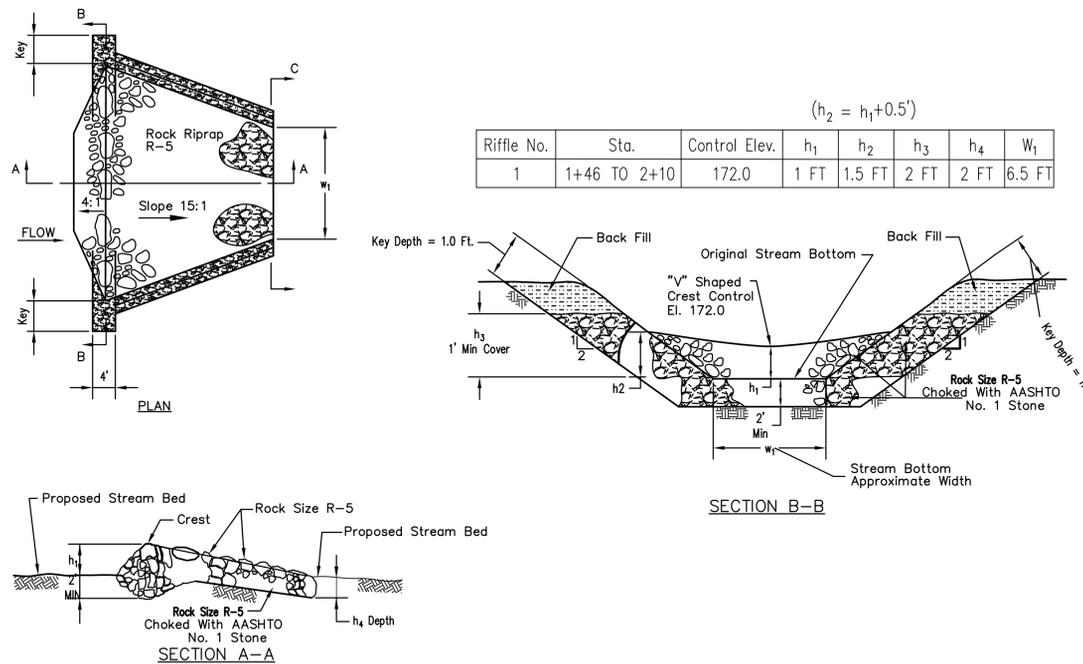
Equi.	A	B	C	D	E	F	T	H
in.	in.	in.	in.	in.	in.	in.	in.	in.
24	19	30	48	72	42	30	3	12

1 CONCRETE ELLIPTICAL PIPE
C-154

2 ELLIPTICAL FLARED END SECTION
C-154



3 PIPE BEDDING - STORM DRAIN
C-154
REFERENCE: RINKER MATERIALS TYPE 1 STANDARD
INSTALLATION TRENCH OR APPROVED EQUAL
N.T.S.



4 STREAMBED RIFFLE
C-154
N.T.S.

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200 BELLEVUE PARKWAY, SUITE 215
WILMINGTON, DELAWARE
PHONE: (302) 798-0000 FAX: (302) 798-0201
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Date	Project #	Drawn By	Check By	Rev.	Description
06/29/16	042/155	NUS	GEH	1	ISS SET
		GEH	NUN	2	
				3	
				4	
				5	
				6	
				7	
				8	
				9	
				10	

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-
SITE INVESTIGATION AND RESTORATION SECTION
NWF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT

CONSTRUCTION DETAILS
SHEET 5

DRAWING NO.
C-154

TABLE 1 - PERMANENT SEEDING AND SOIL SUPPLEMENT MIXTURES

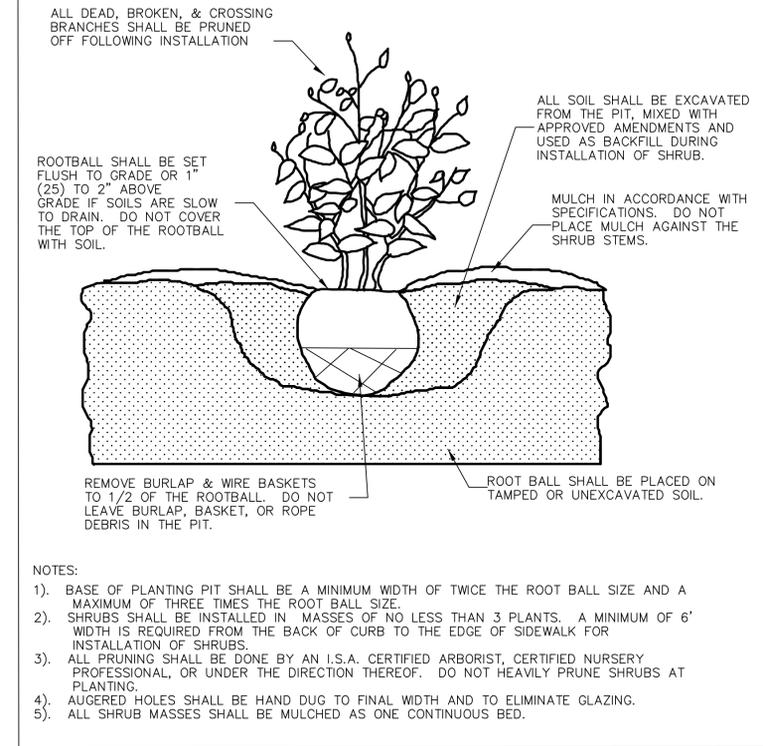
Riparian Buffer Mix					
Scientific Name	Common Name	% Weight	LBS.	Rate	Dates
<i>Panicum Virgatum</i>	Switch Grass	7%	1.050	15 Lbs. per Acre	Planting Dates: Sept. 1-Oct. 15 or March 15- June 1
<i>Elymus riparius</i>	Riverbank Wild Rye	6%	0.900		
<i>Elymus virginicus</i>	Virginia Wild Rye	6%	0.900		
<i>Setaria italica</i>	German Foxtail Millet	6%	0.900		
<i>Andropogon gerardii, Niagara</i>	Niagara Big Bluestem	5%	0.750		
<i>Andropogon scoparius</i>	Little Bluestem	5%	0.750		
<i>Lolium multiflorum</i>	Annual Ryegrass	5%	0.750		
<i>Cornus amomum</i>	Silky Dogwood	4%	0.600		
<i>Rudbeckia hirta</i>	Black Eyed Susan	4%	0.600		
<i>Sorghastrum nutans</i>	Indian Grass	4%	0.600		
<i>Verbena hastata</i>	Blue Vervain	4%	0.600		
<i>Heliopsis helianthoides</i>	Ox Eyed Sunflower/False	3.50%	0.525		
<i>Chamaecrista fasciculata</i>	Partridge Pea	3%	0.450		
<i>Glyceria striata</i>	Fowl Mannagrass	3%	0.450		
<i>Hamamelis virginiana</i>	Witch Hazel	3%	0.450		
<i>Rhus typhina</i>	Staghorn Sumac	3%	0.450		
<i>Vernonia gigantea</i>	Giant Ironweed	3%	0.450		
<i>Viburnum dentatum</i>	Arrow Wood	3%	0.450		
<i>Helenium autumnale</i>	Common Sneezeweed	2.50%	0.375		
<i>Asclepias syriaca</i>	Common Milkweed	2%	0.300		
<i>Carex vulpinoidea</i>	Fox Sedge	2%	0.300		
<i>Desmodium canadense</i>	Showy Tick Trefoil	2%	0.300		
<i>Eupatorium fistulosum</i>	Joe Pye Weed	2%	0.300		
<i>Juncus effusus</i>	Soft Rush	2%	0.300		
<i>Penstemon digitalis</i>	Tall White Beard Tongue	2%	0.300		
<i>Sambucus canadensis</i>	Elderberry	2%	0.300		
<i>Eupatorium perfoliatum</i>	Boneset	1.50%	0.225		
<i>Asclepias incarnata</i>	Swamp Milkweed	1%	0.150		
<i>Aster Prenanthoides</i>	Zigzag Aster	1%	0.150		
<i>Baptisia australis</i>	Blue False Indigo	1%	0.150		
<i>Monarda fistulosa</i>	Wild Bergamot	1%	0.150		
<i>Euthamia graminifolia</i>	Grass Leaved Goldenrod	0.50%	0.075		

FACW Wetland Meadow Mix					
Scientific Name	Common Name	% Weight	LBS.	Rate	Dates
<i>Elymus virginicus</i>	Virginia Wild Rye	20%	3.000	15 Lbs. per Acre	Planting Dates: Sept. 1-Oct. 15 or March 15- June 1
<i>Carex vulpinoidea</i>	Fox Sedge	19%	2.850		
<i>Scirpus atrovirens</i>	Green Bulrush	7%	1.050		
<i>Verbena hastata</i>	Blue Vervain	5.50%	0.825		
<i>Heliopsis helianthoides</i>	Ox-Eye Sunflower	5%	0.750		
<i>Eupatorium perfoliatum</i>	Boneset	4%	0.600		
<i>Glyceria grandis</i>	American Mannagrass	4%	0.600		
<i>Carex lurida</i>	Lurid/Shallow Sedge	3%	0.450		
<i>Eupatorium maculatum</i>	Spotted Joe Pye Weed	3%	0.450		
<i>Juncus effusus</i>	Soft Rush	3%	0.450		
<i>Scirpus polyphyllus</i>	Many Leaved Bulrush	3%	0.450		
<i>Carex scoparia</i>	Blunt Broom Grass	2.50%	0.375		
<i>Asclepias incarnata</i>	Swamp Milkweed	2%	0.300		
<i>Carex comosa</i>	Cosmos/Bristly Sedge	2%	0.300		
<i>Carex lupulina</i>	Hop Sedge	2%	0.300		
<i>Helenium autumnale PA</i>	Common Sneezeweed PA	2%	0.300		
<i>Iris versicolor</i>	Blue Flag	2%	0.300		
<i>Vernonia gigantea</i>	Giant Ironweed	2%	0.300		
<i>Aster novae-angliae</i>	New England Aster	1%	0.150		
<i>Bromus altissima</i>	Wild Brome Grass	1%	0.150		
<i>Carex stipata</i>	Awl Sedge	1%	0.150		
<i>Glyceria canadensis</i>	Rattlesnake Grass	1%	0.150		
<i>Glyceria striata</i>	Fowl Mannagrass	1%	0.150		
<i>Juncus tenuis, PA Ecotype</i>	Path Rush, PA Ecotype	1%	0.150		
<i>Zizia aurea</i>	Golden Alexanders	1%	0.150		
<i>Aster umbellatus</i>	Flat Topped White Aster	0.50%	0.075		
<i>Lilium superbum</i>	Turk's Cap Lilly	0.50%	0.075		
<i>Mimulus ringens</i>	Square Stemmed Monkey Flower	0.50%	0.075		
<i>Penthorum sedoides</i>	Ditch Stonecrop	0.50%	0.075		

Pennsylvania Formula 1- Low Mix					
Scientific Name	Common Name	% Weight	LBS.	Rate	Dates
<i>Festuca longifolia and Festuca trachyphylla</i>	hard fescue mixture	55%	27.500	50 Lbs. per Acre	Planting Dates: As Needed
<i>Festuca rubra</i>	creeping red fescue	35%	17.500		
<i>Lolium multiflorum</i>	annual rye grass	10%	5.000		
<i>Typha latifolia</i> seeding					
<i>Typha latifolia</i>	Broadleaf cattail			0.5 Lbs. per Acre/Fall	

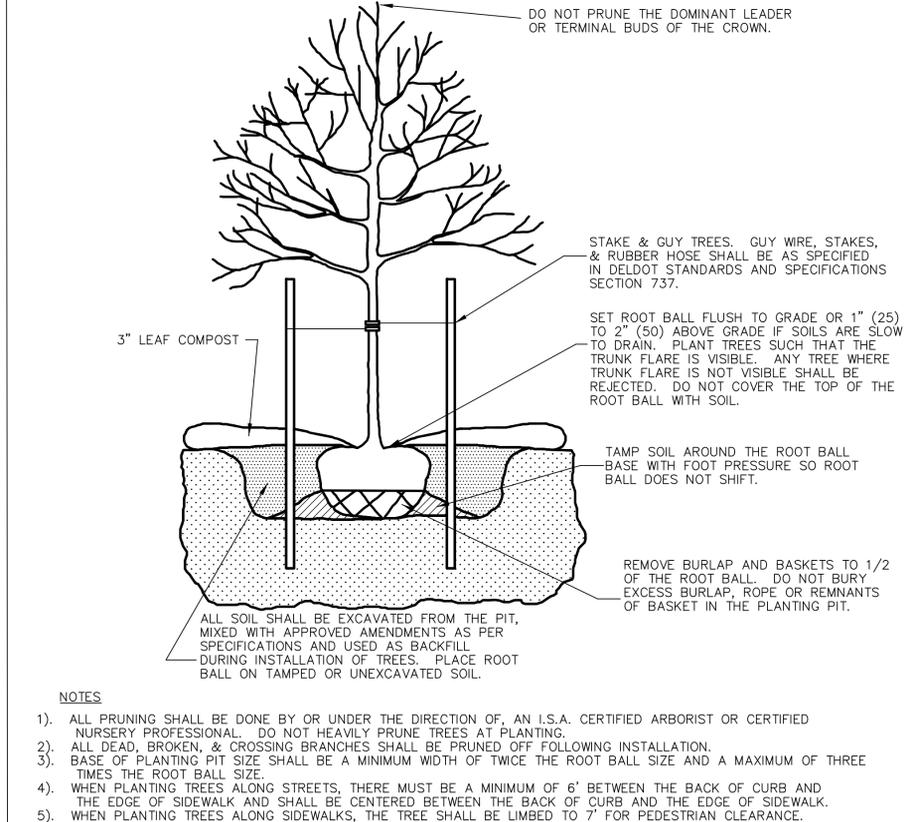
1 WETLAND LANDSCAPING SEED MIXES
C-155

SHRUB PLANTING DETAIL



2 SHRUB PLANTING DETAIL
C-155 N.T.S.

TREE PLANTING DETAIL



3 TREE PLANTING DETAIL
C-155 N.T.S.

BLACK & VEATCH
Federal Services Div.
200 BELLEVUE PARKWAY, SUITE 216
WILMINGTON, DELAWARE
PHONE: (302) 798-0000 FAX: (302) 798-0201
WEBSITE: WWW.BV.COM

Date	Drawn by	Check by	Rev.	Description
06/29/16	NUS	GEH	1	Rev. Set
04/25/16	GEH	NUN	2	
	GEH	NUN	3	
	GEH	NUN	4	
	GEH	NUN	5	
	GEH	NUN	6	
	GEH	NUN	7	
	GEH	NUN	8	

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL-
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NWF YORKLYN SITE (DE-0071)
HOCKESSIN, DELAWARE
OU-1 WETLAND PROJECT

CONSTRUCTION DETAILS
SHEET 6

DRAWING NO.
C-155



- NOTES:**
1. SEE SHEET C-100 FOR CIVIL LEGEND AND GENERAL NOTES.
 2. SEE SHEET C-103 FOR CONSTRUCTION LIMITS.
 3. SEE SHEET C-104 FOR DEMOLITION PLAN.
 4. SEE SHEETS C-115 AND C-116 FOR EXCAVATION GRADING PLAN.
 5. SEE SHEET C-120 FOR FINAL GRADING PLAN.
 6. SEE SHEET C-125 FOR WETLAND CROSS SECTIONS.
 7. SEE SHEET C-130 FOR TEMPORARY E&S PLAN.
 8. SEE SHEET C-131 FOR PERMANENT E&S PLAN.
 9. SEE SHEET C-140 FOR LANDSCAPING AND PLANTING PLAN.
 10. SEE SHEETS C-150 TO C-155 FOR CONSTRUCTION DETAILS.

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Federal Services Div.

 200 BELLEVUE PARKWAY, SUITE 215
 WILMINGTON, DELAWARE 19801
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Date	Drawn by	Check by	Rev.	Description
06/24/16	NJS	GEH	8	
04/27/15	GEH	MIN	7	
			6	
			5	
			4	
			3	
			2	
			1	Bldg Set

SCALE: 1" = 200'

200' 100' 0' 200'

STATE OF DELAWARE
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 NAVE YORKLYN SITE (DE-0071)
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OU-1 WETLAND PROJECT

**ALTERNATE BID ITEMS
 WETLAND CUT AND
 FILL LOCATIONS**

DRAWING NO.
 A-100