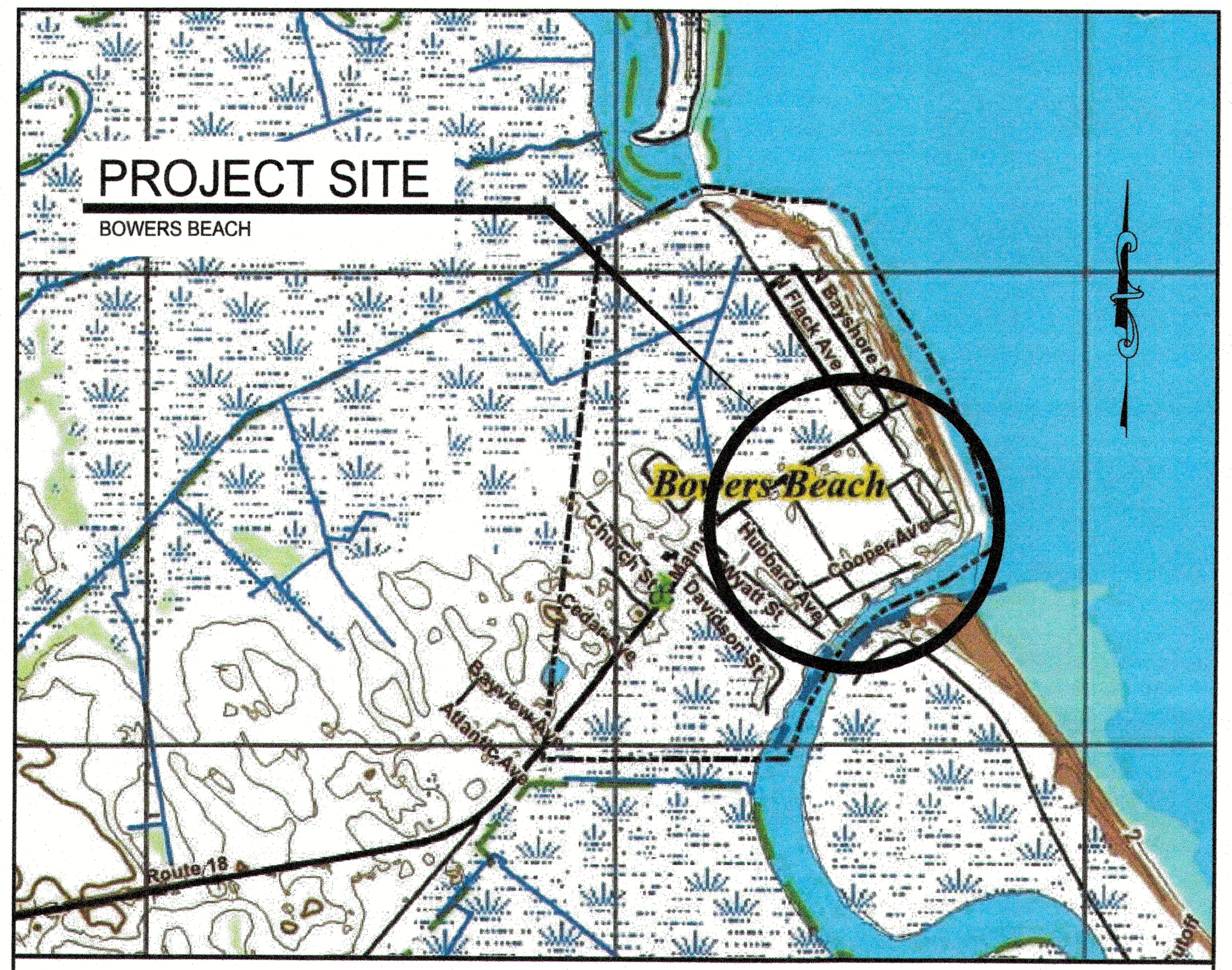
CONSTRUCTION PLANS
FOR
STATE OF DELAWARE
DIVISION OF FISH & WILDLIFE

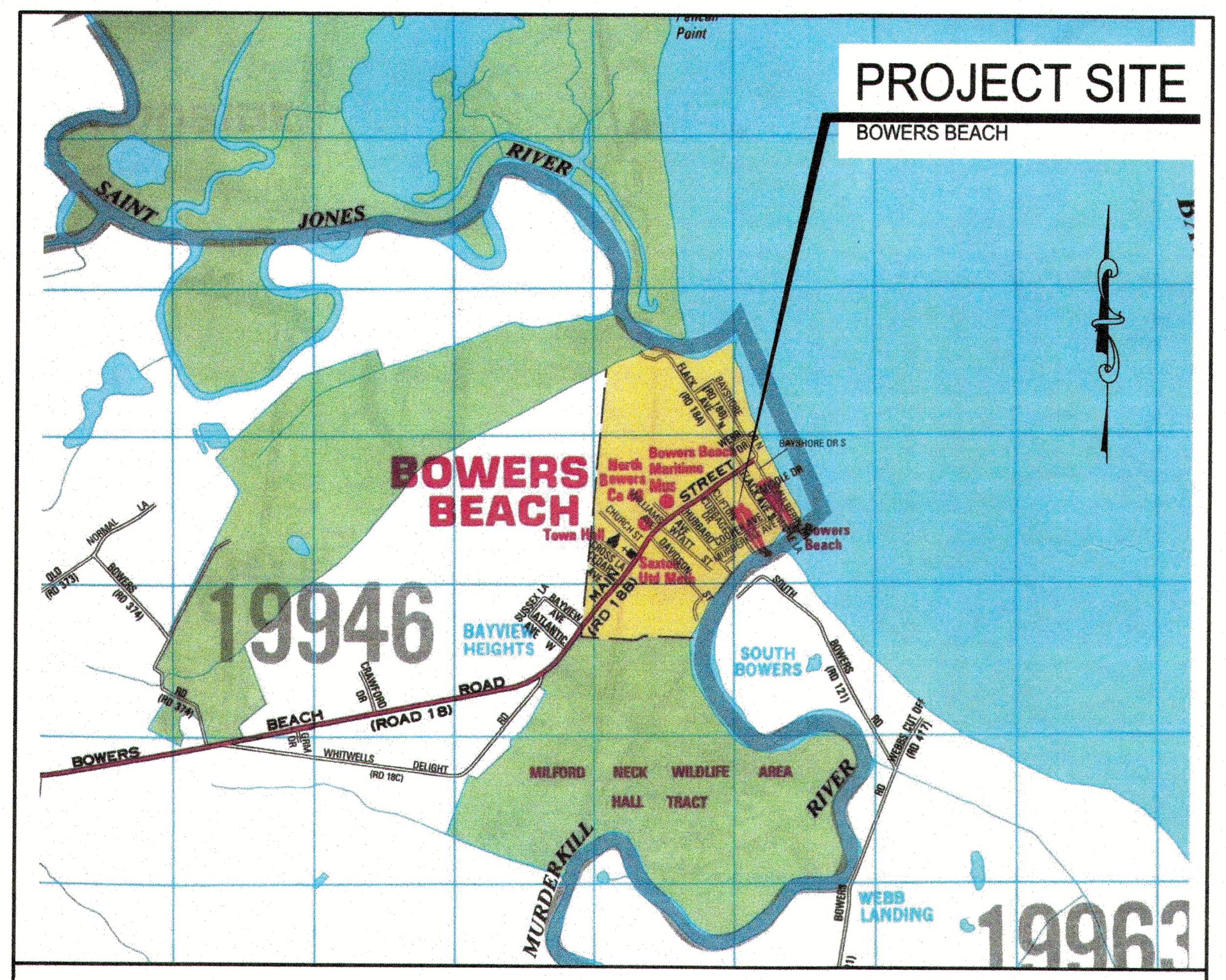
BOWERS BEACH PARKING AREA IMPROVEMENTS PROJECT - PHASE 1

DFW CONTRACT NO.: NAT19001-BOWERS

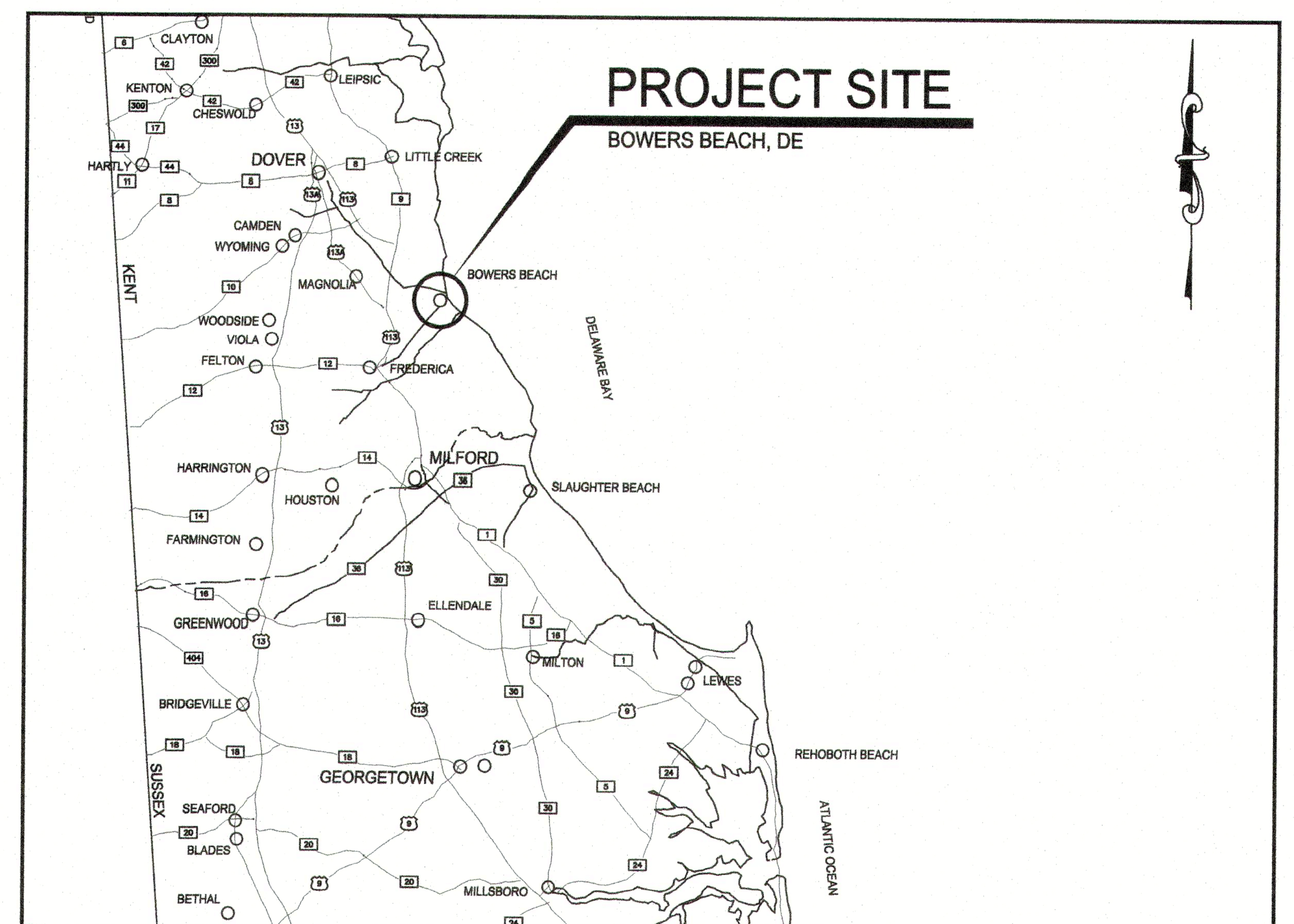
CEI PROJECT NO. 175013.36



USGS QUAD MAP NOT TO SCALE



LOCATION MAP NOT TO SCALE



VICINITY MAP NOT TO SCALE

100% CONSTRUCTION DOCUMENT SUBMISSION

DATA COLUMN:

1. KENT COUNTY PARCEL NUMBERS: SM-01-115.17-02-06.00; SM-01-115.17-02-22.00
2. DFW PROJECT NUMBER: NAT19001-BOWERS
3. DNREC SEDIMENT & SWM PROGRAM NUMBER: ________
4. NOTICE OF INTENT (NOI) ID#: 6033
5. ADDRESS OF SITE: SOUTH FLACK AVE, FREDERICA, DE 19946
6. WATERSHED: MURDERKILL RIVER
7. HUNDRED(S): SOUTH MURDERKILL
8. SITE COORDINATES AT CENTER OF PROJECT SITE: LATITUDE: 39.0599 N; LONGITUDE: -75.4014 W
9. DATUM: HORIZONTAL = NAD 83; VERTICAL = NAVD 88

   BENCHMARK DATA TO BE PROVIDED ON INDIVIDUAL SITE PLANS.
10. ZONING: EXISTING: N/A; PROPOSED: NO PROPOSED ZONING CHANGES TO ANY PARCEL
11. LOT AREA:

TAX PARCEL NO.	EXISTING	PROPOSED
SM-01-115.17-02-06.00	6.20 ACS.	6.20 ACS.
SM-01-115.17-02-22.00	2.80 ACS.	2.80 ACS.

10. EXISTING USE: PARKING AREA
11. PROPOSED USE: PARKING AREA & OPEN SPACE
12. SITE CONDITIONS WITHIN LIMITS OF DISTURBANCE:

	EXISTING CONDITIONS		PROPOSED CONDITIONS
PAVEMENT	1.63 ACRES	PAVEMENT	0.10 ACRES
OPEN SPACE	0.21 ACRES	OPEN SPACE	1.74 ACRES
TOTAL	1.84 ACRES	TOTAL	1.84 ACRES

   IMPERVIOUS COVER: EXISTING = 88.6% PROPOSED = 5.4%
13. FLOOD PLAIN MAP

   PER FIRM MAP NUMBER 10001C0267J, DATED JULY 7, 2014, THE ENTIRE SITE LIES WITHIN ZONE AE. AREAS WITHIN ZONE AE ARE SUBJECT TO INUNDATION BY THE 1.0% ANNUAL CHANCE FLOOD EVENT DETERMINED BY FEMA. BASE FLOOD ELEVATIONS VARY BETWEEN 10.0' AND 11.0' AT THE PROJECT SITE.
14. TOTAL LAND DISTURBANCE

   THE TOTAL LAND DISTURBANCE PROPOSED BY THIS PLAN IS 1.84± ACRES (80,150± S.F.)
15. WETLANDS

   THE TOTAL WETLANDS EXISTING WITHIN THE LIMITS OF DISTURBANCE IS 0± ACRES (0± S.F.)
16. PROPOSED DISCHARGE LOCATIONS

   1.) POA 1 – MURDERKILL RIVER: CONTRIBUTING LOD AREA = 1.84 ACRES
17. OWNER/DEVELOPER: STATE OF DELAWARE, DIVISION OF FISH & WILDLIFE, 89 KINGS HIGHWAY, DOVER, DE 19901, ANTHONY GONZON, JR., PHONE: 302-735-8673, EMAIL: ANTHONY.GONZON@DELAWARE.GOV
18. CIVIL ENGINEER: CENTURY ENGINEERING, INC., 550 BAY ROAD, DOVER, DE 19901, ALEX SCHMIDT, P.E., PHONE: (302) 734-9188, FAX: (302) 734-4589, EMAIL: ASCHMIDT@CENTURYENG.COM

INDEX OF SHEETS

OWNER/DEVELOPER CERTIFICATION

I, ANTHONY GONZON, ON BEHALF OF THE STATE OF DELAWARE, 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.

SEPT 5 2019
DATE

ANTHONY GONZON, JR.
STATE OF DELAWARE
DIVISION OF FISH & WILDLIFE
89 KINGS HIGHWAY, DOVER, DE 19901
PHONE: 302-735-8673
EMAIL: ANTHONY.GONZON@DELAWARE.GOV

WETLAND CERTIFICATION

THIS PROPERTY, TAX MAP #'S SM-01-115.17-02-06.00, AND SM-01-115.17-02-22.00 HAVE BEEN EXAMINED BY CENTURY ENGINEERING, INC WITHIN THE PROPOSED LIMITS OF DISTURBANCE FOR THE PRESENCE OF WATERS OF THE UNITED STATES, INCLUDING WETLANDS (SECTION 404 AND SECTION 10), STATE SUBAQUEOUS LANDS AND STATE REGULATED WETLANDS AS ESTABLISHED BY THE REVIEWING AGENCIES IN THE FORM OF MANUALS, POLICIES AND PROCEDURES IN PLACE AT THE TIME THAT THE INVESTIGATION WAS CONDUCTED. THE WETLAND INFORMATION CONTAINED IN THIS PLAN SET IS IN ACCORDANCE WITH THIS CRITERIA.

SWS PCP PWS TELPHOR LEE AUSTIN JR 2889 PROFESSIONAL WETLAND SCIENTIST

SEPT. 4 2019
DATE

TJ AUSTIN, PWS
ENVIRONMENTAL SCIENTIST
CENTURY ENGINEERING, INC.
550 BAY ROAD, DOVER, DELAWARE 19901
PHONE: (302) 734-9188
FAX: (302) 734-4589

CERTIFICATION OF PLAN ACCURACY

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.

ALEXANDER E. SCHMIDT LICENSE DELAWARE PROFESSIONAL ENGINEER

4-SEPT-2019
DATE

ALEX SCHMIDT, P.E., DE NO. 16139
CENTURY ENGINEERING, INC.
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EMAIL: cei@centuryeng.com

REVISIONS

ADDENDUM

DESCRIPTION	DATE

PROJECT: CONSTRUCTION PLANS FOR DELAWARE DIVISION OF FISH & WILDLIFE BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1, SOUTH FLACK AVENUE, FREDERICA, DELAWARE 19946

SHEET TITLE: COVER SHEET

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

DRAWN	CHK'D/DESIGNER
DFS / MDS	AES
SCALE	SHEET NO.
NONE	C100

PROJECT NO. 175013.36

PROJECT NOTES

1. THE INTENT OF THIS PROJECT IS TO CONSTRUCT THE FOLLOWING IMPROVEMENTS AT THE BOWERS BEACH PARKING LOT:
   - 1.1. RESURFACING OF DETERIORATING PARKING SURFACE
   - 1.2. NEW ENTRANCES ALONG CLIFTON CUBBAGE DRIVE AND SOUTH FLACK AVENUE
   - 1.3. CREATION OF OPEN SPACE AREAS SURROUNDING THE PARKING LOT
   - 1.4. PAVEMENT REMOVAL
   - 1.5. PLACEMENT OF PLANTINGS AND SEED MIXTURES
   - 1.6. DRAINAGE GRADING IMPROVEMENTS
2. PARCEL AND BOUNDARY LINES TAKEN FROM GIS INFORMATION. NO BOUNDARY SURVEY WAS REQUESTED OR PERFORMED FOR THIS PROJECT.
3. DELAWARE DIVISION OF FISH & WILDLIFE IS RESPONSIBLE FOR SECURING ALL TRESPASS RIGHTS ON PRIVATE PROPERTY.
4. THESE PLANS WERE DEVELOPED FROM SURVEY PROVIDED BY THE OWNER, AERIAL IMAGERY, AND FIELD VISITS. THE ACCURACY OF THE SURVEY HAS NOT BEEN CONFIRMED AND THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE SURVEY AS IT RELATES TO THE PROPOSED WORK. ANY DISCREPANCIES THAT MAY IMPACT THE PROPOSED WORK SHALL BE IDENTIFIED TO THE OWNER BY THE CONTRACTOR IMMEDIATELY TO DETERMINE A RESOLUTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL ADDITIONAL PHYSICAL CONTROL AS REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
5. ALL LAYOUT IS PROVIDED USING THE STATE PLANE COORDINATE SYSTEM AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND CONFIRMING ALL LINES AND GRADES.
6. EXISTING UTILITIES SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME THIS PLAN WAS DEVELOPED. COMPLETENESS OR CORRECTNESS OF THE UTILITIES SHOWN THEREOF IS NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR EMPLOYING AN UNDERGROUND UTILITY LOCATOR TO LOCATE AND MARK EXISTING UTILITIES WITHIN THE LIMIT OF DISTURBANCE PRIOR TO BEGINNING CONSTRUCTION.
7. IF UTILITIES ARE ENCOUNTERED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RELOCATION OF ELECTRICAL AND COMMUNICATION LINES, AND ELECTRICAL/COMMUNICATION PEDESTALS THAT CONFLICT WITH EXISTING FEATURES TO REMAIN, AT NO ADDITIONAL COST TO THE PROJECT, AS DIRECTED BY THE ENGINEER. WORK SHALL INCLUDE, BUT IS NOT LIMITED TO, EXCAVATION/TRENCHING, MATERIALS, AND ALL LABOR.

MAINTENANCE OF TRAFFIC NOTES

1. TRAFFIC CONTROL ON SOUTH FLACK AVENUE SHALL BE PER TOWN OF BOWERS BEACH STANDARDS.
2. TRAFFIC CONTROL ON CLIFTON CUBBAGE DRIVE SHALL BE PER DELAWARE DIVISION OF FISH & WILDLIFE STANDARDS.

PROJECT SPECIFICATION HIERARCHY

ELEMENTS UNDER THIS CONTRACT SHALL BE CONSTRUCTED UTILIZING THE FOLLOWING INFORMATION IN THE HIERARCHY LISTED BELOW:

1. CONTRACT AGREEMENT BETWEEN OWNER AND CONTRACTOR.
2. APPROVED PLANS.
3. PROJECT MANUAL AND ENCLOSED TECHNICAL SPECIFICATIONS.
4. STATE OF DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL EROSION AND SEDIMENT CONTROL HANDBOOK, FEBRUARY 2019 OR MOST CURRENT AT DATE OF ADVERTISEMENT.
5. DELAWARE DEPARTMENT OF TRANSPORTATION STANDARD CONSTRUCTION DETAILS, 2018, OR MOST CURRENT AT ADVERTISEMENT.
6. DELAWARE DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS FOR BRIDGE AND ROAD CONSTRUCTION, 2016, OR MOST CURRENT AT DATE OF ADVERTISEMENT. THE FIRST THREE (3) DIGITS IN EACH ITEM NUMBER LISTED IN THIS PLAN SET IDENTIFY THE CORRESPONDING SECTION OF THE DELDOT STANDARD SPECIFICATIONS.

APPLICABLE PERMITS

1. DNREC DIVISION OF WATERSHED STEWARDSHIP – PENDING
2. ARCHITECTURAL ACCESSIBILITY BOARD – PENDING
3. DIVISION OF FACILITIES MANAGEMENT – PENDING

GENERAL NOTES

1. THE TERM "ENGINEER", "OWNER", "STATE," AND/OR "ARCHITECT" NOTED THROUGHOUT THE CONTRACT PLANS AND SPECIFICATIONS SHALL REFER TO DELAWARE DIVISION OF FISH & WILDLIFE OR THEIR APPOINTED REPRESENTATIVE.
2. THE CONTRACTOR SHALL PROTECT ALL FEATURES NOT DESIGNATED TO BE REMOVED. ITEMS DAMAGED BY THE FAULT OF THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE OWNER, AT NO COST TO THE OWNER.
3. THE CONTRACTOR SHALL RESTORE ALL AREAS AFFECTED BY THE CONSTRUCTION SHOWN HEREON AS REQUIRED BY THE PROJECT DOCUMENTS, TO A CONDITION COMPARABLE TO THAT EXISTING PRIOR TO CONSTRUCTION, AND TO THE SATISFACTION OF THE OWNER.
4. THE CONTRACTOR SHALL PROVIDE NECESSARY FACILITIES, INCLUDING BUT NOT LIMITED TO, RESTROOMS AND CONSTRUCTION TRAILERS DURING CONSTRUCTION. DELAWARE DIVISION OF FISH & WILDLIFE FACILITIES SHALL NOT BE USED.
5. THE CONTRACTOR SHALL NOTE THAT IN CASE OF DISCREPANCY BETWEEN THE SCALED AND THE FIGURED DIMENSIONS SHOWN ON THE PLANS, THE FIGURED DIMENSIONS SHALL GOVERN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING ALL DIMENSIONS.
6. BEFORE EXCAVATION IS STARTED, THE CONTRACTOR SHALL CONTACT MISS UTILITY AT 1-800-282-8555 TO VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES TWO (2) CONSECUTIVE WORKING DAYS PRIOR TO ANY EXCAVATION. ALL EXISTING UTILITIES SHALL BE PROTECTED AND TEMPORARILY SUPPORTED OR RELOCATED AS NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH THE PERTINENT OWNER/UTILITY COMPANY REQUIREMENTS. ANY UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE PROMPTLY AND FULLY RESTORED TO THE SATISFACTION OF THE OWNER.
7. THE CONTRACTOR SHALL DESIGNATE A PERSON WHO SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING THE EROSION AND SEDIMENT CONTROL PLANS, A PERSON WHO SHALL BE RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING THE TRAFFIC CONTROL, AND A PERSON WHO SHALL BE RESPONSIBLE FOR WORKER SAFETY. THE PERSON RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING THE EROSION AND SEDIMENT CONTROL PLANS SHALL BE CERTIFIED BY DNREC FOR EROSION AND SEDIMENT CONTROL RESPONSIBILITY (CERTIFIED CONSTRUCTION REVIEWER).
8. THE CONTRACTOR IS RESPONSIBLE FOR SECURING THE AREA WITHIN THE LIMITS OF CONSTRUCTION TO PROHIBIT PUBLIC ACCESS UNTIL COMPLETION OF THE PROJECT. THE CONTRACTOR'S PROCEDURE/METHOD FOR LIMITING ACCESS SHALL BE APPROVED BY THE OWNER PRIOR TO THE START OF WORK. THE COST TO INSTALL, RELOCATE, AND MAINTAIN SITE SECURITY SHALL BE INCIDENTAL TO THE CONTRACT.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR OBTAINING OFF-SITE SPOIL AREAS FOR LEGAL DISPOSAL OF EXCESS MATERIAL NOT ACCEPTED BY DELAWARE DIVISION OF FISH & WILDLIFE OR UNSUITABLE MATERIALS AS NECESSARY IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS. ALL COST FOR RECYCLING, TRANSPORTING TO, PROCURING AND UTILIZING THE OFF-SITE SPOIL AREAS ARE TO BE INCIDENTAL TO THE CONTRACT.
10. IN CASE OF CONFLICT BETWEEN THE "MANUFACTURER'S RECOMMENDATIONS" FOR AN APPROVED MATERIAL AND THE GOVERNING "CONTRACT SPECIFICATIONS" FOR THE MATERIAL, THE MORE RESTRICTIVE OF THE TWO SHALL PREVAIL, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
11. ANY REVISION TO THE DETAILS OR SEQUENCE SHOWN ON THE CONSTRUCTION PLANS SHALL BE PREPARED BY THE CONTRACTOR ON STANDARD DNREC PLAN SHEETS AND SUBMITTED FOR REVIEW AND APPROVAL BY THE ENGINEER. THE PLANS SHALL BE PREPARED IN ACCORDANCE WITH APPLICABLE STANDARDS FOR TRAFFIC CONTROL, EROSION AND SEDIMENT CONTROL, STORM WATER MANAGEMENT, ETC. AND SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF DELAWARE. ALL REQUIRED CALCULATIONS, REPORTS, ETC. SHALL ALSO ACCOMPANY THE SUBMISSION. THE NUMBER OF COPIES REQUIRED TO BE SUBMITTED FOR REVIEW SHALL BE DETERMINED BY THE OWNER. DEPENDING ON THE NATURE OF THE PROPOSED REVISION, THE CONTRACTOR SHALL NOTE THAT THE REVISIONS TO THE CONSTRUCTION PLANS, AS WELL AS REVIEW TIME BY THE OWNER, WILL NOT JUSTIFY A DELAY IN THE CONSTRUCTION SCHEDULE. REVISIONS INVOLVING UTILITIES WILL REQUIRE THE SUBMITTAL OF A UTILITY STATEMENT APPROVED BY THE RESPECTIVE UTILITIES AS PART OF THE PLAN DOCUMENTS. ALL COSTS INVOLVED IN PREPARING THE PLAN REVISIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
12. THESE DRAWINGS DO NOT INCLUDE NECESSARY ELEMENTS OF CONSTRUCTION SAFETY. ALL CONSTRUCTION, INCLUDING EXCAVATION, MUST BE COMPLETED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT, CFR §1926.652(b)(2), AND ALL FEDERAL, STATE AND LOCAL REQUIREMENTS. CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL SITE SAFETY.
13. NO DEBRIS SHALL BE BURIED OR BURNED ON THE SITE UNLESS SPECIFICALLY DIRECTED BY THE OWNER.
14. DNREC WETLANDS AND SUBAQUEOUS LANDS SECTION HAS REVIEWED THE PROJECT AREA AND PROVIDED CONCURRENCE THAT NO JURISDICTIONAL TIDAL WETLANDS ARE PRESENT WITHIN THE PROJECT LIMITS.

LEGEND:

	EXISTING	PROPOSED
PARCELS		N/A
LIMIT OF CONSTRUCTION	N/A	LOC
CONTOUR (MAJOR)	3	N/A
CONTOUR (MINOR)	10	N/A
DRAINAGE DITCH		X
EDGE OF PAVE		
CURB		N/A
UTILITY POLE		N/A
UTILITY POLE GUY		N/A
STORMWATER PIPE		
SAWCUT	N/A	SAW
DEMOLITION	N/A	
FULL DEPTH PAVEMENT	N/A	
PATCH & OVERLAY	N/A	
LANDSCAPED AREA	N/A	
TREE	N/A	
SIGN		

IDENTIFIERS:

- RM / C — REMOVE BY CONTRACTOR
- RL / C — RELOCATE BY CONTRACTOR
- DND — DO NOT DISTURB
- P / # — PROPOSED DRAINAGE PIPE

EROSION & SEDIMENT CONTROL:

- LIMIT OF DISTURBANCE — LOD
- STOCK PILE — SP
- SILT FENCE — SF
- COMPOST FILTER LOG — CFL
- STABILIZED CONSTRUCTION ENTRANCE — SCE
- CULVERT INLET PROTECTION — CIP
- INLET PROTECTION, TYPE 2 — IP-2
- STABILIZATION MATTING — SM-S

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REVISIONS

ADDENDUM

DESCRIPTION	DATE

PROJECT

CONSTRUCTION PLANS
FOR
DELAWARE DIVISION OF FISH & WILDLIFE
BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

SHEET TITLE

PROJECT NOTES & LEGEND

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

DRAWN	CHK'D/DESIGNER
DFS / MDS	AES
SCALE	SHEET NO.
NONE	C101

PROJECT NO.
175013.36

DEMOLITION NOTES:

1. DISPOSE OF ALL DEMOLISHED MATERIALS OFFSITE AND IN ACCORDANCE WITH ALL DNREC & STATE OF DELAWARE REGULATIONS.
2. SEE CONSTRUCTION LAYOUT PLAN FOR COORDINATE DATA ON SAWCUT LIMITS.

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ADDENDUM

DESCRIPTION	DATE

CONSTRUCTION PLANS

FOR

DELAWARE DIVISION OF FISH & WILDLIFE

BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1

SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

PROJECT

SHEET TITLE

EXISTING CONDITIONS & DEMOLITION PLAN

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

DRAWN	CHK'D/DESIGNER
DFS / MDS	AES
SCALE	SHEET NO.
1" = 50'	C102

PROJECT NO. 175013.36

GENERAL NOTES:

1. PARCEL LINES REFERENCED FROM STATE OF DELAWARE (FIRSTMAP.DELAWARE.GOV).
2. TOPOGRAPHY PROVIDED BY DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL.
3. EXISTING CONTOURS SHOWN, PROPOSED SLOPES AND SPOT ELEVATIONS SHALL GOVERN IN ANY AREAS OF PROPOSED GRADING.
4. THE TOWN OF BOWERS SHALL OBTAIN APPROVAL FROM ADJACENT LAND OWNERS TO SECURE TRESPASS RIGHTS PRIOR TO CONSTRUCTION.
5. SEE LANDSCAPING PLANS FOR PROPOSED PLANTING LAYOUT.

CONSTRUCTION NOTES:

1. CONTRACTOR SHALL REVIEW OVERLAY PAVEMENT AREA W/ OWNER TO DETERMINE AREAS FOR FULL DEPTH PATCHING, PRIOR TO DEMO OR OVERLAY PAVEMENT.
2. ALL IDENTIFIED AREAS FOR PATCHING SHALL BE SAWCUT AND ALL BITUMINOUS MATERIAL SHALL BE REMOVED. PLACE BORROW, TYPE B AS NEEDED BELOW EXISTING PAVEMENT SECTION. PLACE 2" MIN LIFT OF BITUMINOUS TYPE C TO MEET SURROUNDING GRADES, PRIOR TO OVERLAY LIFT.
3. TOPSOIL GRADES SHALL MEET EDGE OF PAVEMENT.
4. BASE BID AREA FOR FULL DEPTH PATCHING = 326 SY.
5. FINAL PAVEMENT GRADES SHALL PROVIDE A SLOPE OF 2% OR LESS IN ALL DIRECTIONS

LIMITS OF SAWCUT BOUNDARY

POINT NO.	NORTHING	EASTING	DESCRIPTION	ELEVATION
300	385910.4912	661623.5007	POB	4.590
301	385999.3860	661637.5827	RADIUS: 90.00'	
302	385943.1679	661567.2967	PT	4.680
303	386258.7923	661357.8023	PC	5.040
304	386242.2018	661332.8071		
305	386267.4903	661316.6673	PT	5.340
306	386154.7824	661140.0730	PC	6.050
307	386104.2055	661172.3527	RADIUS: 60.00'	
308	386071.0247	661122.3624	PT	5.770
309	385980.5249	661182.4313	PC	5.120
310	385939.0488	661119.9434	RADIUS: 75.00'	
311	385876.5610	661161.4195	PT	4.430
312	385811.9980	661064.1490	PC	4.720
313	385832.8273	661050.3236	RADIUS: 25.00'	
314	385818.7603	661029.6567	PT	5.580
315	385790.1830	661078.6286	SAWCUT	0.000
316	385775.3912	661056.7568	SAWCUT	

DITCH LAYOUT

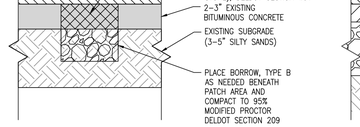
POINT NO.	NORTHING	EASTING	ELEVATION
400	386029.5721	660907.6790	2.930
401	386001.5517	660925.7843	2.670
402	385959.5546	660952.9208	2.270
403	385917.5572	660980.0573	1.870
404	385875.5588	661007.1945	1.470
405	385821.2130	661042.3100	0.970
406	386319.9396	661364.8223	2.550
407	386278.4467	661392.7211	2.400

WESTERN PARKING AREA LAYOUT

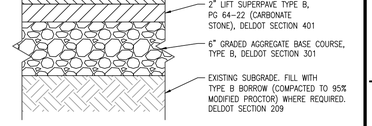
POINT NO.	NORTHING	EASTING	ELEVATION
201	386349.5112	661292.7626	5.800
202	386295.5625	661327.1942	5.280
203	386104.7234	660909.2212	5.590
204	386050.7748	660943.6529	5.410

DRAINAGE PIPE SCHEDULE (DELDOT SECTION 601)

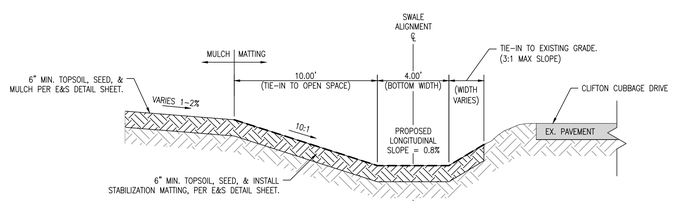
NO.	SIZE / TYPE	CLASS	LENGTH	SLOPE	INLET EL.	DIS. EL.
1	15" RCP	V	64'	0.30%	2.74	2.55
2	15" RCP	V	64'	0.42%	3.20	2.93



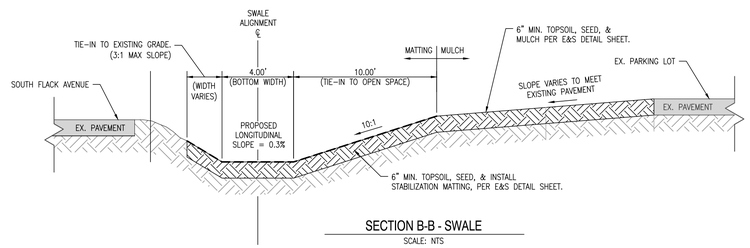
OVERLAY PAVEMENT SECTION
SCALE: NTS



FULL DEPTH PAVEMENT SECTION
SCALE: NTS



SECTION A-A - SWALE
SCALE: NTS



SECTION B-B - SWALE
SCALE: NTS

0 50' 100' 150'
SCALE: 1" = 50'

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REVISIONS

ADDENDUM

DESCRIPTION	DATE

PROJECT

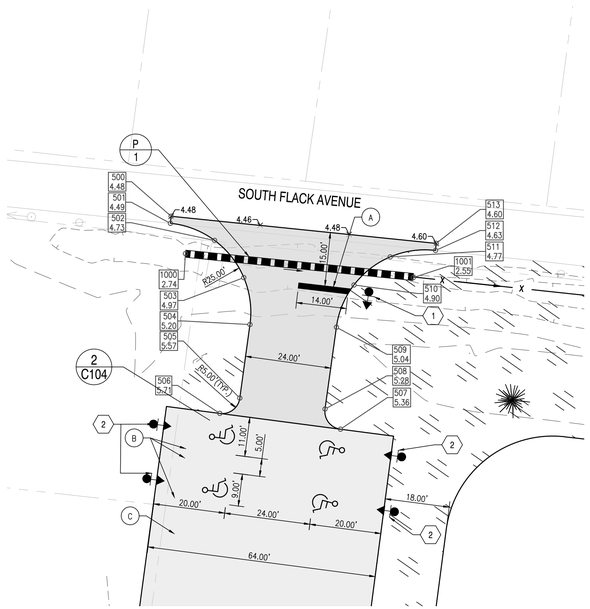
CONSTRUCTION PLANS
FOR
DELAWARE DIVISION OF FISH & WILDLIFE
BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

SHEET TITLE

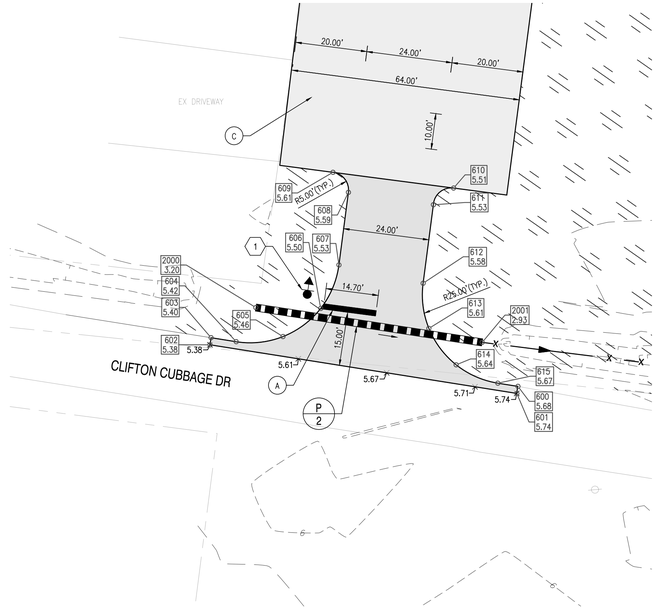
SITE LAYOUT PLAN

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

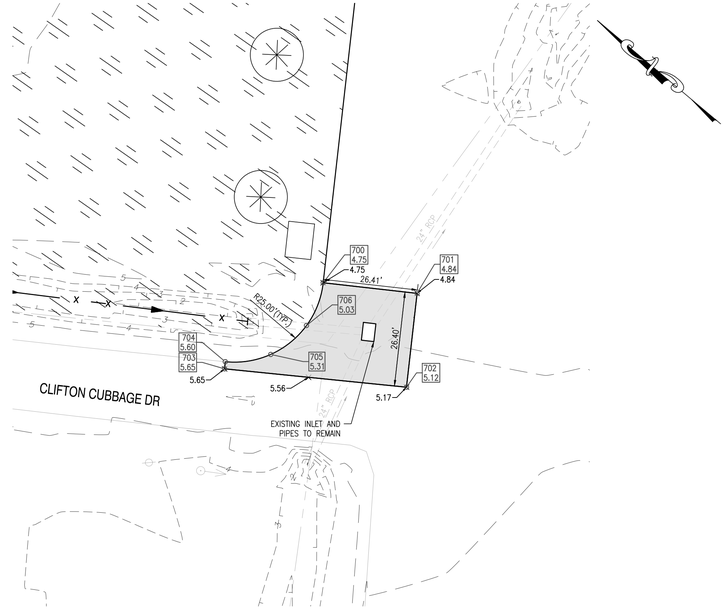
DRAWN	CHK'D/DESIGNER
DFS / MDS	AES
SCALE	SHEET NO.
1" = 50'	C103
PROJECT NO.	
175013.36	



SOUTH FLACK AVENUE
ENTRANCE DETAIL
SCALE: 1" = 20'



CLIFTON CUBBAGE DRIVE - NORTH
ENTRANCE DETAIL
SCALE: 1" = 20'



CLIFTON CUBBAGE DRIVE - SOUTH
ENTRANCE DETAIL
SCALE: 1" = 20'

SOUTH FLACK AVENUE ENTRANCE PIPE				
POINT NO.	NORTHING	EASTING	DESCRIPTION	INVERT
1000	386372.9004	661328.8897	P–1 INLET	2.740
1001	386319.8251	661364.7077	P–1 OUTLET	2.550

SOUTH FLACK AVENUE ENTRANCE			
POINT NO.	NORTHING	EASTING	ELEVATION
500	386382.6845	661334.3358	4.480
501	386381.5616	661332.6808	4.490
502	386369.0470	661336.9498	4.730
503	386356.1053	661334.2384	4.970
504	386346.3568	661325.3049	5.200
505	386335.2977	661307.7272	5.570
506	386336.8398	661300.8498	5.710
507	386308.1735	661319.1455	5.360
508	386315.0992	661320.7035	5.280
509	386327.3611	661340.2527	5.040
510	386331.1915	661352.4624	4.900
511	386328.4787	661364.9679	4.770
512	386319.9335	661374.4929	4.630
513	386321.0564	661376.1479	4.600

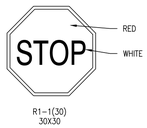
CLIFTON CUBBAGE DRIVE ENTRANCE PIPE				
POINT NO.	NORTHING	EASTING	DESCRIPTION	INVERT
2000	386084.2860	660874.4766	P–2 INLET	3.200
2001	386029.5721	660907.6790	P–2 OUTLET	2.930

CLIFTON CUBBAGE DRIVE - NORTH ENTRANCE			
POINT NO.	NORTHING	EASTING	ELEVATION
600	386014.0054	660904.6834	5.680
601	386012.9760	660902.9696	5.740
602	386087.4215	660858.2524	5.380
603	386088.4513	660859.9668	5.400
604	386082.3596	660863.6260	5.420
605	386073.2600	660873.1320	5.460
606	386070.2483	660885.9420	5.500
607	386074.1589	660898.5068	5.530
608	386085.1745	660915.7664	5.590
609	386092.0792	660917.2912	5.610
610	386063.4190	660935.5830	5.510
611	386064.7507	660928.3759	5.530
612	386052.8472	660909.7251	5.580
613	386043.4992	660901.0954	5.610
614	386031.1145	660898.1837	5.640
615	386018.9006	660901.7440	5.670

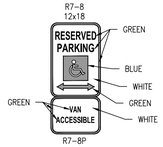
CLIFTON CUBBAGE DRIVE - SOUTH ENTRANCE			
POINT NO.	NORTHING	EASTING	ELEVATION
700	385811.9980	661064.1490	4.750
701	385789.9925	661078.7550	4.840
702	385775.3912	661056.7568	5.120
703	385817.6350	661028.0034	5.650
704	385818.7603	661029.6567	5.600
705	385810.3539	661039.3718	5.310
706	385807.8822	661051.9789	5.030

PAVEMENT MARKINGS LEGEND (DELDOT SECTION 817)	
SYMBOL	ITEM
A	16" SOLID WHITE ALKYD THERMOPLASTIC PAINT PAVEMENT STRIPING
B	4" SOLID BLUE ALKYD PAVEMENT STRIPING
C	4" SOLID WHITE ALKYD PAVEMENT STRIPING

SIGNING LEGEND (DELDOT SECTION 819)	
SYMBOL	ITEM
1	STOP SIGN
2	ACCESSIBLE PARKING SIGN DETAIL

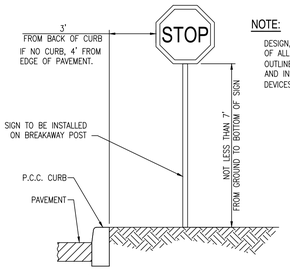


1 STOP SIGN DETAIL
NOT TO SCALE



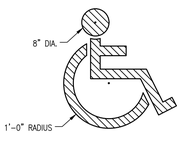
NOTE:
•1. PLACE ON "VAN ACCESSIBLE" SIGN ON VAN ACCESSIBLE SPOTS ONLY (2)

2 ACCESSIBLE PARKING SIGN DETAIL
NOT TO SCALE



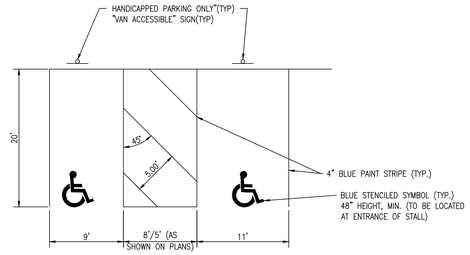
NOTE:
DESIGN, FABRICATION AND INSTALLATION OF ALL PERMANENT SIGNING SHALL BE AS OUTLINED IN THE 'GUIDE FOR FABRICATION AND INSTALLATION OF TRAFFIC CONTROL DEVICES' LATEST EDITION.

1 C104 TYPICAL STOP SIGN DETAIL
SCALE: NTS

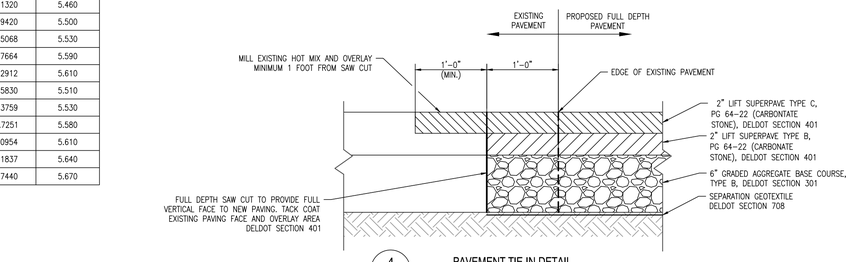


NOTES:
1. SYMBOL STRIPING SHALL BE 3" WIDE (MIN.) AND PAINTED ON EACH HANDICAPPED SPACE.
2. HANDICAPPED SPACES SHALL BE MIN 8'–0" WIDE.

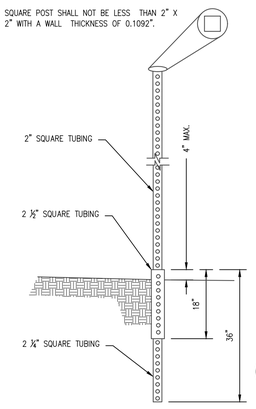
2 C104 HANDICAPPED SYMBOL DETAIL
SCALE: NTS



3 C104 TYPICAL ACCESSIBLE PARKING DETAIL
SCALE: NTS



4 C104 PAVEMENT TIE-IN DETAIL
SCALE: NONE



NOTES:
1. SQUARE TUBES ARE TO BE FORMED FROM GALVANIZED SHEET STRUCTURAL (PHYSICAL) QUALITY, ASTM A 446, GRADE A, COATING DESIGNATION G 90, REGULAR SPANGLE, OR HOT ROLLED CARBON SHEET STEEL STRUCTURAL (PHYSICAL) QUALITY, ASTM A 570, GRADE 33.
   A. NOMINAL OUTSIDE DIMENSION, (INCHES):
      2 X 2
      2 1/4 X 2 1/4
      2 1/2 X 2 1/2
   B. ALL FOUR SIDES ARE TO HAVE EVENLY SPACED 7/16" DIAMETER HOLES ON 1" CENTERS THE ENTIRE LENGTH OF THE TUBE.
   C. TOLERANCE ON HOLE SIZE IS ± 1/64". TOLERANCE ON HOLE SPACING IS ± 1/8" IN 20 FEET.
   D. STANDARD CORNER RADIUS SHALL BE 5/32" ± 1/64".
   E. THE FASTENERS TO BE SUPPLIED UNDER THIS SPECIFICATION SHALL BE 5/16" GRADE 5 UNC CORNER BOLTS WITH CADMIUM OR ZINC PLATING, INSTALLATION OF SIGNS SHALL BE WITH 3/8" X 2 1/2" BOLT WITH LOCKNUT AND WASHER.
2. REGULATORY SIGNS WIDER THAN 30" SHALL BE MOUNTED ON TWO POSTS. WHEN MORE THAN ONE REGULATORY SIGN IS TO BE INSTALLED ON THE SAME POST ASSEMBLY, THE MOUNTING HOLES SHALL BE DRILLED IN THE FIELD AS THE ASSEMBLY IS BEING CONSTRUCTED.
3. DEVELOPMENT SIGNS THAT ARE GREATER THAN 36" WIDE SHALL BE DISPLAYED ON TWO POSTS.
   A. DEVELOPMENT SIGN FACE BACKGROUNDS SHALL BE GREEN; LEGENDS SHALL BE SILVER (WHITE).
   B. LEGEND SHALL BE 5" SERIES "C" LETTERS.
   C. NO BORDER ON DEVELOPMENT SIGN PANELS.
   D. MAXIMUM DEVELOPMENT SIGN WIDTH OF 36" FOR SINGLE LINE SIGNS, 54" FOR TWO OR MORE LINES.
   E. DEVELOPMENT SIGNS SHALL BE INSTALLED WITHIN THE RIGHT-OF-WAY OF THE HIGHWAY ON WHICH THE ENTRANCE(S) IS (ARE) LOCATED. THE SIGNS SHALL BE PLACED WITHIN 750 FEET OF THE CENTERLINE OF THE ENTRANCE(S).

5 C104 TELESCOPING STEEL SIGN POST BREAKAWAY ASSEMBLY
SCALE: NTS

0 20' 40' 60'
SCALE: 1" = 20'

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REVISIONS

ADDENDUM

△ DESCRIPTION	DATE

PROJECT
CONSTRUCTION PLANS
FOR
DELAWARE DIVISION OF FISH & WILDLIFE
BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

SHEET TITLE
ENTRANCE & CONSTRUCTION DETAILS

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

DRAWN	CHK'D/DESIGNER
DFS / MDS	AES

SCALE	SHEET NO.
1" = 20'	C104

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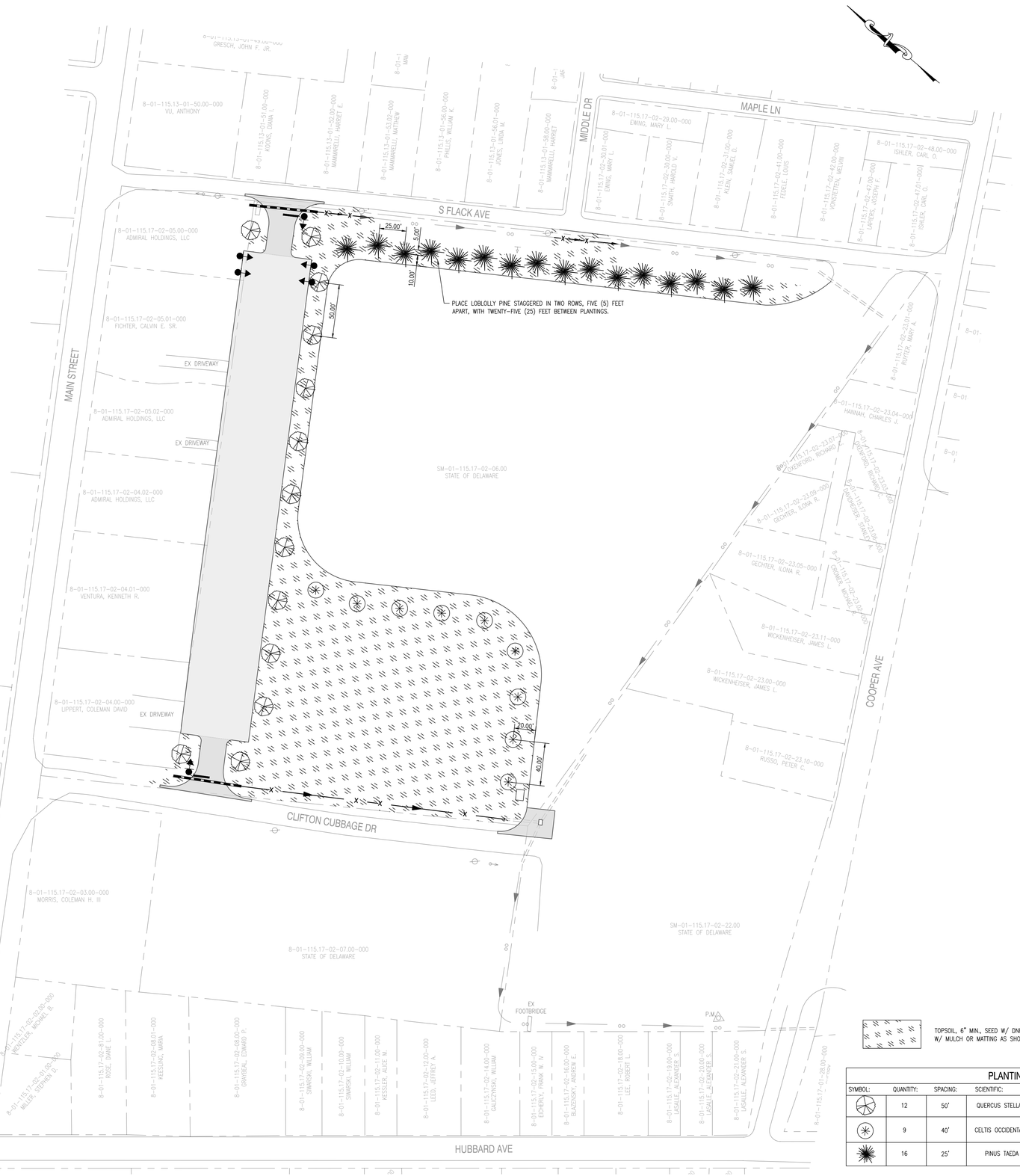
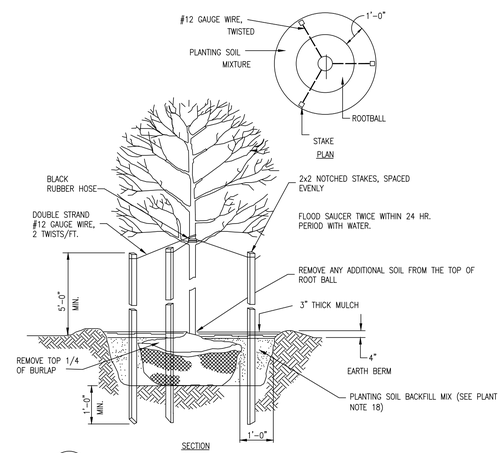
175013.36



PLANTING NOTES

1. THE CONTRACTOR SHALL FURNISH AND PLANT ALL PLANTS SHOWN ON THE DRAWINGS AS SPECIFIED AND IN QUANTITIES INDICATED ON THE PLANT LIST.
2. ALL PLANTS SHALL BE FRESHLY DUG AND NURSERY GROWN. THEY SHALL HAVE BEEN GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE AT THE SITE OR PROPERLY ACCLIMATED TO LOCAL CONDITIONS.
3. ALL PLANTS SHALL BE IN ACCORDANCE WITH ANSI Z60.1–2004.
4. ALL PLANTS SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY AND SHALL HAVE A NORMAL HABIT OF GROWTH. THEY SHALL BE SOUND, HEALTHY, AND VIGOROUS, WELL BRANCHED AND DENSELY FOLIATED WHEN IN LEAF. EXCEPT FOR CERTAIN PLANTS WITH UNUSUAL HABIT, THEY SHALL HAVE A STRAIGHT SINGLE CENTRAL LEADER. THE TRUCK SHALL HAVE ON FROST SPLITS. THEY SHALL BE FREE OF DISEASE AND INSECT PESTS, EGGS, OR LARVAE. THEY SHALL HAVE HEALTHY, WELL–DEVELOPED ROOT SYSTEMS.
5. THE CONTRACTOR SHALL SUBMIT A LIST OF THE NURSERY SOURCES FOR ALL PLANT MATERIALS. THE OWNER RESERVES THE RIGHT TO REQUIRE THE TAGGING OF ALL TREES PRIOR TO DIGGING FOR INSTALLATION.
6. SUBSTITUTIONS: WHEN PLANTS OF A SPECIFIED KIND OR SIZE ARE NOT AVAILABLE WITHIN A REASONABLE DISTANCE, SUBSTITUTIONS MAY BE MADE UPON REQUEST BY THE CONTRACTOR, BUT MUST BE PRIOR APPROVED BY THE OWNER AND THE REGULATING PLANNING REVIEW AGENCY.
7. MEASUREMENT: DIMENSIONS OF TREES AND SHRUBS SHALL CONFORM TO ANSI Z60.1–2004.
8. SIZE: ALL PLANTS SHALL CONFORM TO THE MEASUREMENTS SPECIFIED ON THIS SHEET.
9. BALLED AND BURLAPPED PLANTS SHALL BE DUG WITH FIRM NATURAL BALLS OF EARTH, OF DIAMETER AND DEPTH TO INCLUDE MOST OF THE FIBROUS ROOTS. CONTAINER GROWN STOCK SHALL HAVE BEEN GROWN IN A CONTAINER LONG ENOUGH FOR THE ROOT SYSTEM TO HAVE DEVELOPED SUFFICIENTLY TO HOLD ITS SOIL TOGETHER FIRM AND WHOLE. NO PLANTS SHALL BE LOOSE IN THE CONTAINER.
10. ROOT BALLS OF ALL PLANTS SHALL BE ADEQUATELY PROTECTED AT ALL TIMES FROM SUN AND DRYING WINDS OR FROST.
11. WHEN PLANTING TREES, THE CONTRACTOR SHALL REMOVE EXCESS SOIL FROM THE TOP OF THE ROOT BALL EXPOSING THE ROOT CROWN AND STRUCTURAL ROOTS. EACH TREE SHOULD HAVE A MINIMUM OF 3 STRUCTURAL ROOTS EQUALLY SPACED AROUND THE ROOT BALL, OTHERWISE IT SHOULD BE REJECTED AND SENT BACK TO NURSERY. THE ROOT CROWN MUST BE PLANTED A MAXIMUM OF 2" BELOW FINISHED GRADE. THE TOP OF THE STRUCTURAL ROOTS SHALL BE NO GREATER THAN 5" BELOW FINISHED GRADE.
12. THE OWNER SHALL BE NOTIFIED PRIOR TO BEGINNING PLANTING OPERATIONS.
13. PLANTS WITH BROKEN ROOT BALLS OR EXCESSIVE DAMAGE TO THE CROWN SHALL BE REPLACED PRIOR TO PLANTING.
14. ALL TREES SHALL BE STAKED AND GUYED ACCORDING TO ACCEPTED INDUSTRY PRACTICE.
15. EACH TREE AND SHRUB SHALL BE PRUNED IN ACCORDANCE WITH THE ANSI Z60.1–2004 TO PRESERVE THE NATURAL CHARACTER OF THE PLANT. DO NOT PRUNE MAIN LEADERS. ALL DEAD WOOD, "SUCKERS", AND ALL BROKEN OR BADLY BRUISED BRANCHES SHALL BE REMOVED.
16. MULCH FOR TREES, SHRUBS, AND GROUND COVER SHALL BE FINELY SHREDDED OAK BARK, DARK BROWN IN COLOR, AGED AT LEAST ONE YEAR, AND CLEAN AND FREE OF WEEDS. PRE–EMERGENT WEED KILLER SHALL BE TREFLAN OR APPROVED EQUAL. APPLY WEED KILLER TO TOPSOIL PRIOR TO MULCHING BED PLANTING.
17. TREES IN LEAF WHEN SHIPPED SHALL BE TREATED WITH ANTI–DESICCANT BEFORE LEAVING THE NURSERY.
18. PREPARATION OF PLANTING SOIL – BEFORE MIXING, CLEAN TOPSOIL OF ROOTS, PLANTS, STONES, CLAY LUMPS, AND OTHER EXTRANEOUS MATERIALS HARMFUL OR TOXIC TO PLANT GROWTH. SOIL BACKFILL FOR TREES, SHRUBS, AND GROUND COVER SHALL BE A MIXTURE BY VOLUME OF THE FOLLOWING MATERIALS IN QUANTITIES SPECIFIED: 25 PERCENT COMPOST AND 75 PERCENT TOPSOIL. MIX IN 2 LBS OF 6–1–1 ORGANIC FERTILIZER PER TREE OR SHRUB, WITH BACKFILL MIX, UNDER AND AROUND THE ROOTBALLS OF TREES AND SHRUBS. OR MIX ORGANIC FERTILIZER WITH COMPOST AT A RATE OF 15 LBS PER CUBIC YD. BEFORE ADDING TO PLANT BACKFILL MIX. OTHER SOIL CONDITIONERS MAY BE REQUIRED PER SOIL TESTING OF FURNISHED TOPSOIL.
19. THE CONTRACTOR SHALL PROVIDE A REPLACEMENT WARRANTY PER DELDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 911 – PLANTINGS (AUGUST 2016, OR LATEST EDITION).
20. ALL PLANTINGS SHALL BE AT THE LOCATIONS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING AT THE CORRECT GRADES, ALIGNMENT, AND TO THE INDICATED LAYOUT OF THE PLANTING BEDS. MINOR ADJUSTMENTS TO TREE LOCATION MAY BE NECESSARY DUE TO FIELD CONDITIONS AND FINAL GRADING. THE CONTRACTOR SHALL NOTIFY THE OWNER IF MAJOR ADJUSTMENTS ARE REQUIRED. COORDINATE PLANT MATERIAL LOCATIONS WITH SITE UTILITIES. SEE SITE LAYOUT, GRADING, LIGHTING, AND/OR UTILITY PLANS FOR STORM, SANITARY, WATER, ELECTRIC AND GAS LINES. EXERCISE CARE WHEN DIGGING IN AREAS OF POTENTIAL CONFLICT WITH UNDERGROUND OR OVERHEAD UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DUE TO CONTRACTOR'S NEGLIGENCE AND SHALL REPLACE OR REPAIR ANY DAMAGE AT CONTRACTOR'S EXPENSE.
21. CONDITIONS DETRIMENTAL TO PLANTS: THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING OF ALL SOIL OR DRAINAGE CONDITIONS WHICH THE CONTRACTOR CONSIDERS DETRIMENTAL TO THE GROWTH OF PLANTS. HE SHALL STATE THE CONDITIONS AND SUBMIT A PROPOSAL FOR CORRECTING THE CONDITIONS, INCLUDING ANY CHANGE IN COST FOR REVIEW AND ACCEPTANCE BY THE PROJECT REPRESENTATIVE.
22. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADEQUATELY AND PROPERLY MAINTAIN THE LANDSCAPED AREAS, WHICH RESPONSIBILITY SHALL INCLUDE WATERING, CLEANING OF WEEDS AND DEBRIS, PRUNING AND TRIMMING, REPLACEMENT OF DEAD OR DISEASED PLANTINGS AND FERTILIZING TO MAINTAIN HEALTHY GROWTH.
23. THE LANDSCAPE PLAN IS FOR LANDSCAPING INFORMATION ONLY. PLEASE REFER TO THE OTHER SHEETS IN THE CONSTRUCTION PLANS FOR ALL OTHER INFORMATION.
24. ANY DISTURBED AREAS NOT SHOWN AS HATCHED SHALL BE SEEDED W/ DNREC PERMANENT SEED MIX #2 PER THE E&S DETAIL SHEETS.



1 C105 DECIDUOUS TREE
SCALE: N.T.S.

TOPSOIL, 6" MIN., SEED W/ DNREC PERMANENT SEED MIX #2, STABILIZE W/ MULCH OR MATTING AS SHOWN ON THE SITE LAYOUT PLAN.

PLANTING SCHEDULE

SYMBOL:	QUANTITY:	SPACING:	SCIENTIFIC:	COMMON:	PLANTING SIZE:	NOTES:
	12	50'	QUERCUS STELLATA	POST OAK	6' MIN. HEIGHT	40'–50' HEIGHT AT MATURITY, 25'–50' CROWN SPREAD, BALL & BURLAP
	9	40'	CELTIS OCCIDENTALIS	HACKBERRY	6' MIN. HEIGHT	30'–50' HEIGHT AT MATURITY, 25'–50' CROWN SPREAD, BALL & BURLAP
	16	25'	PINUS TAEDA	LOBLOLLY PINE	3' MIN. HEIGHT	60'–100' HEIGHT AT MATURITY, 20'–30' CROWN SPREAD, BALL & BURLAP

0 50' 100' 150'
SCALE: 1" = 50'

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BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
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FREDERICA, DELAWARE 19946

SHEET TITLE

LANDSCAPING PLAN

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

DRAWN	CHK'D/DESIGNER
DFS / MDS	AES

SCALE	SHEET NO.
1" = 50'	C105

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175013.36

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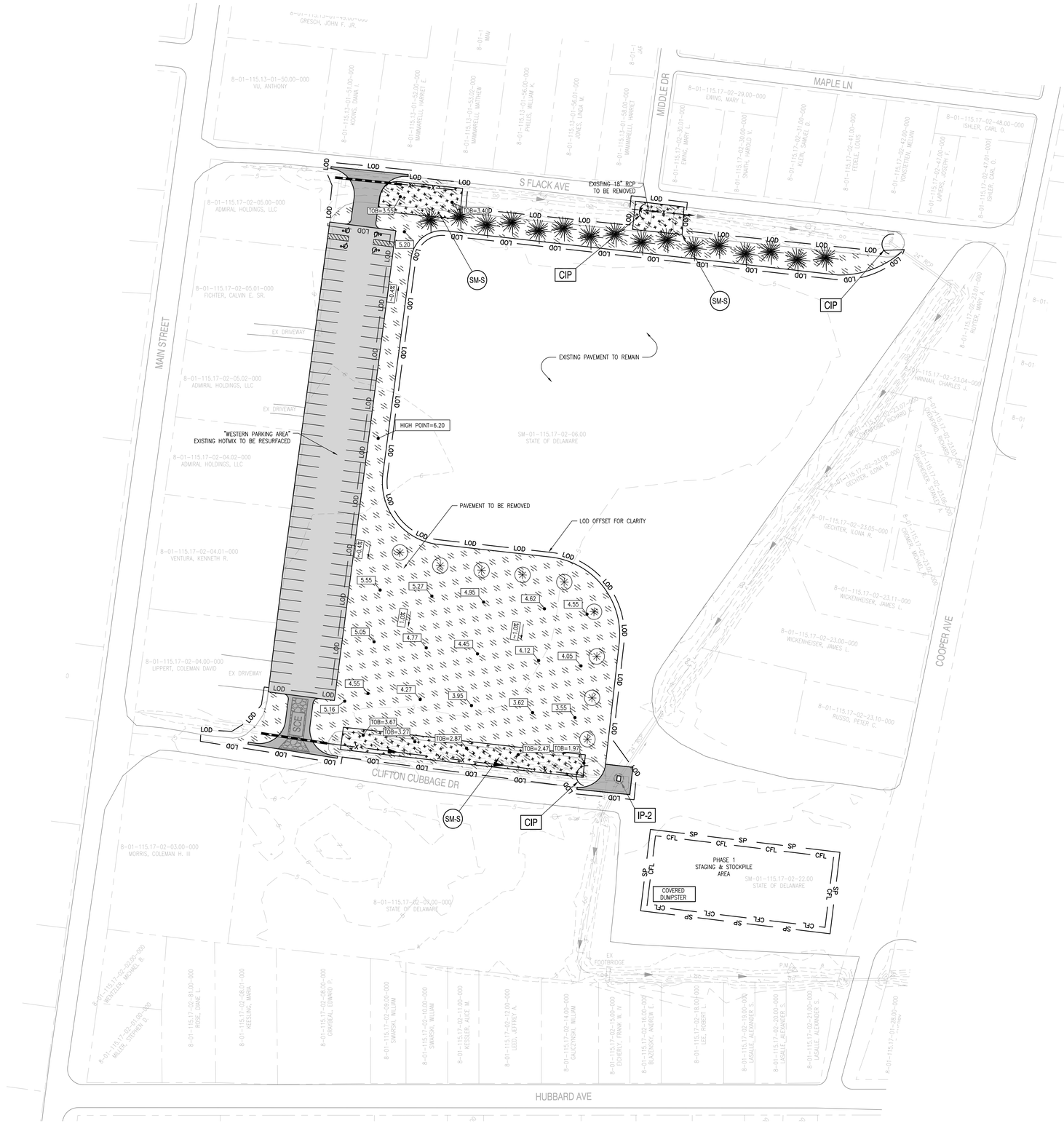

SEQUENCE OF CONSTRUCTION:

1. PRIOR TO ANY CLEARING, INSTALLATION OF SEDIMENT CONTROL MEASURES OR GRADING, A PRECONSTRUCTION MEETING MUST BE SCHEDULED AND CONDUCTED. THE LANDOWNER/DEVELOPER AND CONTRACTOR ARE REQUIRED TO BE IN ATTENDANCE AT THE PRE-CONSTRUCTION MEETING; THE DESIGNER IS RECOMMENDED TO ATTEND.
2. 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.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE. INSTALL CULVERT INLET PROTECTIONS AND COMPOST FILTER LOGS. INSTALL SITE POLLUTION PREVENTION DEVICES PER DNREC STANDARD DETAILS & SPECIFICATIONS.
4. PERFORM CLEARING AND GRUBBING AS NEEDED.
5. THE CONTRACTOR SHALL REVIEW THE EXISTING CONDITION OF THE PARKING AREA WITH THE OWNER TO DETERMINE THE EXTENT OF AREAS REQUIRED TO BE PATCHED PRIOR TO PLACING THE OVERLAY HOT MIX.
6. SAW CUT EXISTING PAVEMENT AS SHOWN ON THE EXISTING CONDITIONS AND DEMOLITION SHEET AS WELL AS ALL AREAS IDENTIFIED FOR PATCHING BY THE OWNER. MILL AREAS FOR PAVEMENT TIE-INS. REMOVE ALL PAVEMENT DEBRIS AND MILLINGS. THE CONTRACTOR SHALL ENSURE THAT ALL TEMPORARY STABILIZATION IS COMPLETED AS CONSTRUCTION PROGRESSES SUCH THAT NO MORE THAN 1.0 ACRE OF AREA IS DISTURBED AT ANY POINT IN TIME.
7. COMPLETE ROUGH SITE GRADING.
8. INSTALL ENTRANCE PIPES. PLACE BORROW TYPE B (AS NEEDED), GABC, AND BITUMINOUS TYPE B FOR FULL DEPTH PAVEMENT SECTIONS AT ENTRANCES AND PATCHING AREAS.
9. COMPLETE BITUMINOUS TYPE C OVERLAY OF ALL PAVED AREAS.
10. PLACE TOPSOIL, PERFORM FINAL GRADING, SEED, AND MULCH ALL DISTURBED AREAS. STABILIZATION MATTING SHALL BE USED ALONG DRAINAGE SWALES AS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN. COMPLETE LANDSCAPING PLANTINGS PER THE LANDSCAPING PLAN.
11. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE REMOVED ONLY AFTER ALL WORK IN AN AREA HAS BEEN COMPLETED AND STABILIZED, WITH WRITTEN APPROVAL FROM THE AGENCY CONSTRUCTION SITE REVIEWER.
12. THE TERMINATION OF THE CONSTRUCTION GENERAL PERMIT WILL REQUIRE SUBMISSION AND ACCEPTANCE OF ALL POST CONSTRUCTION VERIFICATION DOCUMENTS AND FINAL STABILIZATION THROUGHOUT THE SITE.

EROSION & SEDIMENT CONTROL GENERAL NOTES

1. REVIEW AND 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.
2. 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.
3. FOLLOWING THE SOIL DISTURBANCE OR RE-DISTURBANCE, 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 FOURTEEN (14) CALENDAR DAYS UNLESS MORE RESTRICTIVE FEDERAL REQUIREMENTS APPLY.
4. ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL COMPLY WITH THE DELAWARE EROSION AND SEDIMENT CONTROL HANDBOOK, LATEST EDITION.
5. 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.
6. APPROVED PLANS REMAIN VALID FOR FIVE (5) YEARS FROM THE DATE OF APPROVAL.
7. POST CONSTRUCTION VERIFICATION DOCUMENTS ARE TO BE SUBMITTED TO THE DNREC SEDIMENT AND STORMWATER PROGRAM WITHIN SIXTY (60) DAYS OF STORMWATER MANAGEMENT FACILITY COMPLETION.
8. APPROVAL OF A SEDIMENT AND STORMWATER 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.
9. THE NOTICE OF INTENT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER NPDES GENERAL PERMIT FOR THIS PROJECT IS # 6033 . AT ANY TIME THE OWNERSHIP FOR THIS PROJECT CHANGES, A TRANSFER OF AUTHORIZATION OR A CO-PERMITEE 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.
10. 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.
11. 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.
12. BEST AVAILABLE TECHNOLOGY (BAT) SHALL BE EMPLOYED TO MANAGE TURBID DISCHARGES IN ACCORDANCE WITH REQUIREMENTS OF 7 DEL C. CHAPTER 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.
13. 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.

EROSION & SEDIMENT CONTROL PROJECT NOTES

1. TOTAL LOD: 1.84 AC
2. NOTICE OF INTENT (NOI) ID#: 6033
3. ALL SOILS WITHIN THE PROPOSED LIMITS OF DISTURBANCE ARE CLASSIFIED AS:
   SuA, SUNKEN MUCKY SILT LOAM, 0-2% SLOPES, HSG = C/D
   FOR STORMWATER MANAGEMENT PURPOSES, SOILS WILL BE CONSIDERED HSG = C, DUE TO THE OPEN DRAINAGE SYSTEM SURROUNDING THE PROJECT SITE.
4. THE CONTRACTOR SHALL PROVIDE TEMPORARY STABILIZATION AS WORK PROGRESSES SUCH THAT NO MORE THAN 1.0 AC IS DISTURBED AT ANY POINT IN TIME.
5. ALL DISTURBED AREAS WITHIN THE LOD SHALL BE STABILIZED WITH 6" MIN TOPSOIL, SEED, AND MULCH/STABILIZATION MATTING.
6. TEMPORARY SEEDING SHALL MEET SPECIFICATIONS OF DNREC TEMPORARY SEED MIX #3. TOPSOIL SHALL NOT BE REQUIRED FOR TEMPORARY SEEDING.
7. MULCH SHALL BE BLOWN STRAW MULCHING PER THE MULCHING DETAIL ON THE EROSION AND SEDIMENT CONTROL DETAIL SHEETS.
8. SLOPE STABILIZATION MATTING SHALL BE TYPE SSM-1.
   EXAMPLE PRODUCTS INCLUDE:
   NORTH AMERICAN GREEN S75BN
   EAST COAST EROSION BLANKETS ECS-1B
9. GEOTEXTILE FOR THE STABILIZED CONSTRUCTION ENTRANCES SHALL MEET DNREC TYPE GS-1 SPECIFICATIONS.
   EXAMPLE PRODUCTS INCLUDE:
   MIRAFI 600X
   AMOCO 2006
   GEOTEX 315ST
10. SPRINKLING SHALL BE THE STABILIZATION MEASURE INITIATED IF DUST CONTROL BECOMES A PROBLEM.
11. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN AND REPAIR ALL EROSION AND SEDIMENT CONTROL PRACTICES DURING CONSTRUCTION.
12. LOCATIONS OF THE DUMPSTER AND STAGING AREAS ARE SHOWN ON THIS SHEET. IF THESE LOCATIONS MUST BE MOVED, THE NEW LOCATION SHALL BE APPROVED BY THE AGENCY CONSTRUCTION SITE REVIEWER.
13. CULVERT INLET PROTECTION AT PIPE INLETS SHALL BE 3MIL HDPE COMPOST FILTER LOGS, INSTALLED PER DNREC CULVERT INLET PROTECTION STANDARD DETAIL.
14. PER FIRM MAP NUMBER 10001C0267J, DATED JULY 7, 2014, THE ENTIRE SITE LIES WITHIN ZONE AE. AREAS WITHIN ZONE AE ARE SUBJECT TO INUNDATION BY THE 1.0% ANNUAL CHANCE FLOOD EVENT DETERMINED BY FEMA. BASE FLOOD ELEVATIONS VARY BETWEEN 10.0' AND 11.0' AT THE PROJECT SITE.

0 50' 100' 150'
SCALE: 1" = 50'

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REVISIONS

ADDENDUM

DESCRIPTION	DATE

PROJECT

CONSTRUCTION PLANS
FOR
DELAWARE DIVISION OF FISH & WILDLIFE
BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

SHEET TITLE

EROSION & SEDIMENT CONTROL PLAN

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

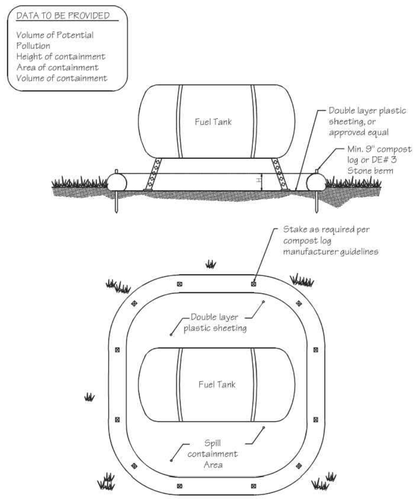
DRAWN	CHK'D/DESIGNER
DFS / MDS	AES

SCALE	SHEET NO.
1" = 50'	C106

PROJECT NO. 175013.36

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.

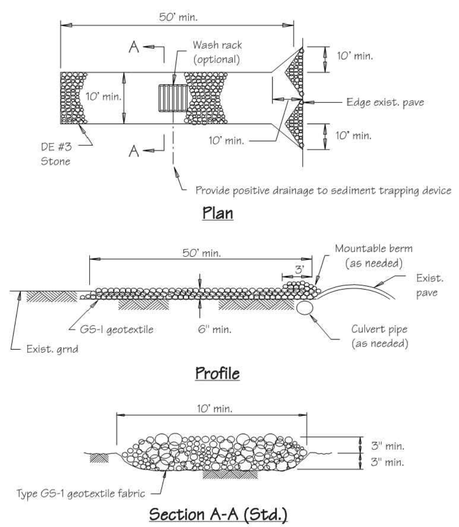
CONTACT INFORMATION

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

Standard Detail & Specifications

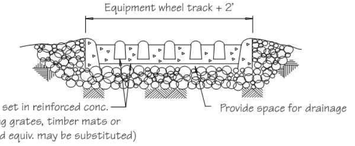
Stabilized Construct. Entrance



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

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REVISIONS

ADDENDUM

DESCRIPTION	DATE

PROJECT

CONSTRUCTION PLANS
FOR
DELAWARE DIVISION OF FISH & WILDLIFE
BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

SHEET TITLE

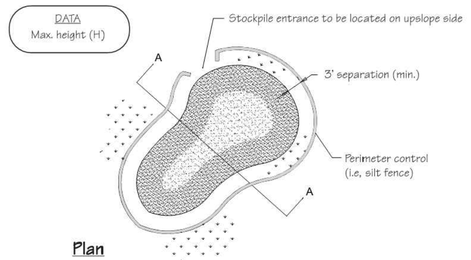
EROSION & SEDIMENT CONTROL DETAILS

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

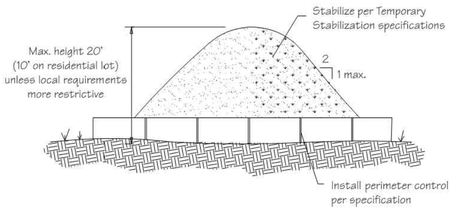
DRAWN	CHK'D/DESIGNER
DFS / MDS	AES
SCALE	SHEET NO.
NONE	C107

PROJECT NO. 175013.36

Standard Detail & Specifications
Soil Stockpile



Plan



Section A-A

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

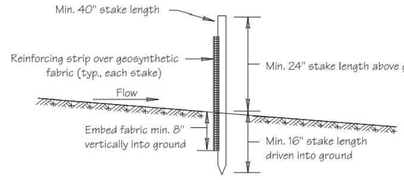
Standard Detail & Specifications
Soil Stockpile

Construction Notes:

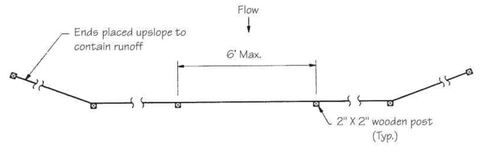
1. Locate stockpiles so that they are 50 feet from any storm drain inlet, open channel, wetland or waterbody. Redirect any concentrated flow around the stockpile using an approved erosion and sediment control measure.
2. Secure the perimeter of the stockpile with an approved erosion and sediment control 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
Silt Fence



Section

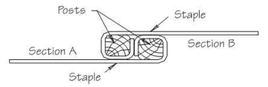


Plan

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



Method for joining continuous sections

Top

Construction Notes:

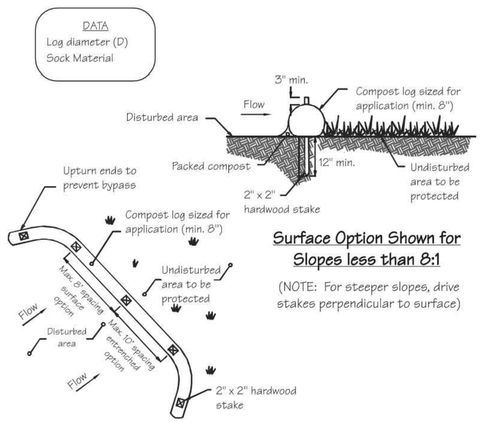
1. Geosynthetic fabric to be fastened securely to fence posts with wire ties or staples.
2. When two sections of filter cloth adjoin each other they shall be overlapped by six inches and folded.
3. Maintenance shall be performed as needed and material removed when "bulges" develop in the silt fence.

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
Compost Filter Log



Surface Option Shown for Slopes less than 8:1

(NOTE: For steeper slopes, drive stakes perpendicular to surface)

Plan

NOTE: Manufacturer's recommendations supersede any installation details shown for this practice

Source:	Symbol:	Detail No.
Adapted from MD Stds & Specs for ESC & Filtrexx™ International	CFL	**DE-ESC-3.1.7** Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications
Compost Filter Log

Construction Notes:

1. Prior to installation, clear bedding area of obstructions including rocks or debris larger than 1 inch and fill in any sharp depression areas.
2. If socks are prepared on-site, fill the sock fabric using a pneumatic blower so that the logs are rigid and do not deform. Terminate at the desired length.
3. For trenched applications, excavate 2 to 4 inches below grade along the width and length of the compost filter log.
4. Install the compost filter logs perpendicular to the flow direction and parallel to the slope with the beginning and end of the installation pointing up the slope a minimum of 1 foot elevation difference. On sites where this is not possible, upturn at a minimum length of 10' at a 30 degree angle to prevent runoff bypass.
5. For untrenched applications, blow or hand pack soil, mulch, or compost on the upslope side of the log, filling the bottom void area.
6. Stake the filled log every 10 feet maximum through the center of the sock for trenched applications, or every 8 feet for untrenched. The stake shall be a 2" by 2" hardwood. It should extend 12" below grade and protrude at least 3" above the top of the sock. If located on a slope greater than 8:1, the stake shall be angled downslope at a 45 degree angle to prevent the force of the water from dislodging to log.
7. When the length of the compost filter log needed exceeds the available compost filter sock length, the next sock shall be overlapped a minimum of 12" before being filled, and a stake placed through both socks at the overlap.
8. Remove accumulated sediment when it has reached half of the effective height of the log.
9. Inspect weekly and after rain event. If sock is degrading or the sock is failing, vegetate to secure the compost, replace the log, or reinforce with an additional log. If the log has been crushed due to construction equipment, it can be "fluffed" back to its effective height. If the effective height can no longer be restored, the log shall be replaced or reinforced with an additional compost filter log.

Source:	Symbol:	Detail No.
Adapted from MD Stds & Specs for ESC & Filtrexx™ International	CFL	**DE-ESC-3.1.7** 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

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REVISIONS

ADDENDUM

DESCRIPTION	DATE

CONSTRUCTION PLANS
FOR
DELAWARE DIVISION OF FISH & WILDLIFE
BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

PROJECT

SHEET TITLE

EROSION & SEDIMENT CONTROL DETAILS

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

DRAWN	CHK'D/DESIGNER
DFS / MDS	AES

SCALE	SHEET NO.
NONE	C108

PROJECT NO. 175013.36

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											
Seeding Mixtures		Seeding Rate[1]		Optimum Seeding Dates [2] O = Optimum Planting Period A = Acceptable Planting Period							Remarks
Mix No.	Certified Seed[3]			Coastal Plain			Piedmont			All[4]	
	Well Drained Soils	lb/Ac	lb/1000 sq.ft.	2/1-4/30	5/1-8/14	8/15-10/31	3/1-4/30	5/1-7/31	8/1-10/31	10/31-2/1	
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[6,7] **or** Coastal Panicgrass Big Bluestem Little Bluestem Indian Grass	10 10 5 5 5	0.23 0.23 0.11 0.11 0.1		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.)											
Seeding Mixtures		Seeding Rate[1]		Optimum Seeding Dates [2] O = Optimum Planting Period A = Acceptable Planting Period							Remarks
Mix No.	Certified Seed[3]			Coastal Plain			Piedmont			All[4]	
	Poorly Drained Soils	lb/Ac	lb/1000 sq.ft.	2/1-4/30	5/1-8/14	8/15-10/31	3/1-4/30	5/1-7/31	8/1-10/31	10/31-2/1	
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	Add 100 lbs./ac. Winter Rye	Quick stabilization of disturbed sites and waterways
10	Reed Canarygrass[6]	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

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 ($\leq$1 ac.)	xxxxxxxxxxxxxxxx	OK ($\leq$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.
xxx = 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
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

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REVISIONS

ADDENDUM

DESCRIPTION | DATE

PROJECT

CONSTRUCTION PLANS
FOR
DELAWARE DIVISION OF FISH & WILDLIFE
BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

SHEET TITLE

EROSION & SEDIMENT CONTROL DETAILS

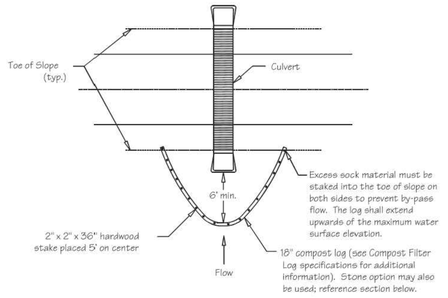
100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

DRAWN	CHK'D/DESIGNER
DFS / MDS	AES
SCALE	SHEET NO.
NONE	C109
PROJECT NO.	
175013.36	

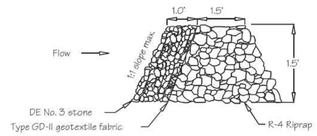
G:\PROJECTS\175013.00 (DNREC 2017 Engineering OE)\175013.36 Bowers Beach Parking Area Phase I\CADD FILES\Sheets\C-107,108,109,110 - E&S DETAILS.dwg, 8/27/2019 1:01 PM

Standard Detail & Specifications

Culvert Inlet Protection



Plan View - Compost Log Option



Section View - Stone Option

Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook & Filtrexx™ International	CIP	**DE-ESC-3.1.6** Sheet 1 of 2 Effective FEB 2019

Standard Detail & Specifications

Culvert Inlet Protection

Construction Notes

1. Compost logs shall be designed and installed in accordance with the Standard Detail and Specifications for Compost Logs (DE-ES-3.1.7).
2. If compost logs can not be installed properly or flow conditions exceed the design capabilities of the compost logs, the stone option shall be employed. Additional filtration may be provided by using a Type GD-II geotextile incorporated into the design as an option.
3. Placement of the compost log or stone barrier should be in a "horseshoe" shape and provide a minimum of 6 feet of clearance from the culvert inlet.

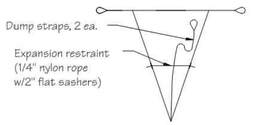
Materials

1. Stakes: 2" x 2" x 36" hardwood.
2. Compost media : See requirements in Standard Detail and Specifications for Compost Logs (DE-ES-3.1.7).
3. Filter sock: See requirements in Standard Detail and Specifications for Compost Logs (DE-ES-3.1.7).
4. Geotextile: Type GD-II for stone/riprap option.
5. Stone: DE No. 3 for stone/riprap option.
6. Riprap: R-6 for stone/riprap option.

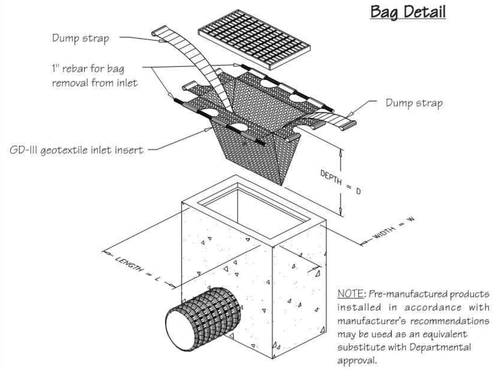
Source:	Symbol:	Detail No.
Adapted from VA ESC Handbook & Filtrexx™ International	CIP	**DE-ESC-3.1.6** Sheet 2 of 2 Effective FEB 2019

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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REVISIONS

ADDENDUM

DESCRIPTION	DATE

PROJECT

CONSTRUCTION PLANS
FOR
DELAWARE DIVISION OF FISH & WILDLIFE
BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

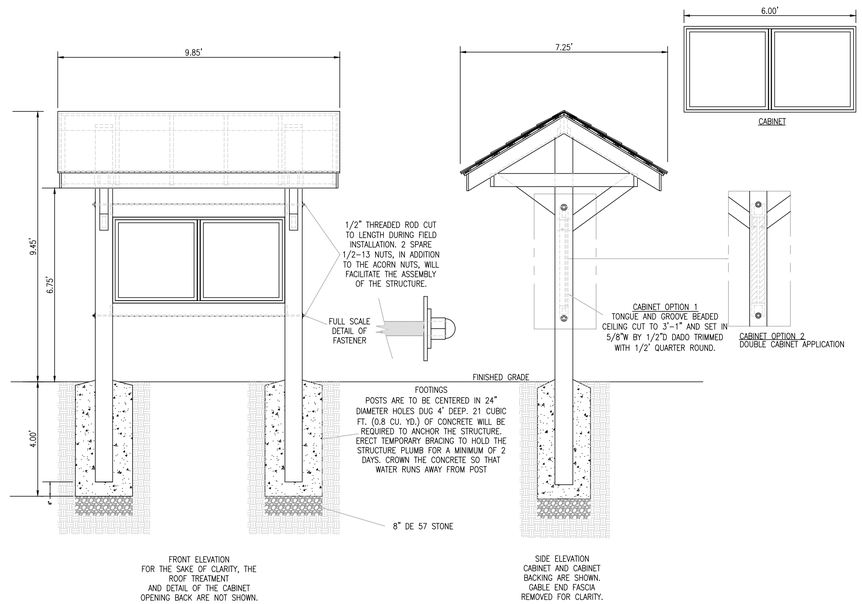
SHEET TITLE

EROSION & SEDIMENT CONTROL DETAILS

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

DRAWN	CHK'D/DESIGNER
DFS / MDS	AES
SCALE	SHEET NO.
NONE	C110

PROJECT NO. 175013.36



NOTES:
1. FISH AND WILDLIFE TACKBOARD DETAILS PROVIDED BY DNREC.

1 / C111 FISH AND WILDLIFE TACKBOARD
SCALE: N.T.S.

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REVISIONS

ADDENDUM

DESCRIPTION	DATE

PROJECT
CONSTRUCTION PLANS
FOR
DELAWARE DIVISION OF FISH & WILDLIFE
BOWERS BEACH PARKING AREA IMPROVEMENTS - PHASE 1
SOUTH FLACK AVENUE
FREDERICA, DELAWARE 19946

SHEET TITLE
CONSTRUCTION DETAILS

100% CONSTRUCTION DOCUMENT SUBMISSION
AUGUST, 2019

DRAWN	CHK'D/DESIGNER
DFS / MDS	AES
SCALE	SHEET NO.
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