

EXISTING SYMBOLS

DRAINAGE	
	DITCH OR STREAM CENTERLINE
	DIRECTIONAL STREAM FLOW ARROW
	DRAINAGE INLET
	DRAINAGE JUNCTION BOX
	DRAINAGE MANHOLE
	DRAINAGE PIPE AND FLOW ARROW
	DRAINAGE PIPE HEADWALL
	RIPRAP - AREA FEATURE
	RIPRAP - LINEAR FEATURE
MANMADE ROADSIDE FEATURES	
	BOLLARD - STEEL POLE
	BOLLARD - WOOD POST
	CURB
	CURB AND GUTTER
	FENCE - CHAINLINK OR STRANDED
	FENCE - STOCKADE OR SPLIT RAIL
	FLAG POLE
	GUARDRAIL - STEEL BEAM
	GUARDRAIL - WIRE ROPE
	LAMP AND POST - RESIDENTIAL
	MAILBOX
	PARKING METER AND POST
	PAVEMENT - FLEXIBLE
	PAVEMENT - RIGID
	PILE - BRIDGE
	PILLAR OR MISCELLANEOUS POST
	TRAFFIC SIGN AND POST
	WALL - BRICK OR BLOCK
	WALL - STONE
NATURAL ROADSIDE FEATURES	
	GRASS LAWN
	HEDGEROW OR THICKET
	MARSH BOUNDARY LINE
	TREE - CONIFEROUS
	TREE - DECIDUOUS
	TREE STUMP
	SHRUBBERY
	USACE WETLAND BOUNDARY
	DNREC STATE MAPPED WETLAND
	USACE WETLAND AND DNREC STATE MAPPED WETLAND
	WOODS LINE BOUNDARY
RIGHT-OF-WAY SYMBOLS	
	PROPERTY MARKER - CONCRETE MON.
	PROPERTY MARKER - IRON PIPE
	HISTORIC RIGHT-OF-WAY BASELINE
	EXISTING RIGHT-OF-WAY
	EXISTING PROPERTY LINE
	EXISTING EASEMENT
	EXISTING DENIAL OF ACCESS
	EXISTING R/W & DENIAL OF ACCESS

SURVEY CONTROL & MONUMENTATION	
	SURVEY BENCHMARK LOCATION
	SURVEY TIE POINT LOCATION
	SURVEY TRAVERSE POINT
	POINT OF CURVATURE OR TANGENCY
	POINT OF INTERSECTING TANGENTS
UTILITY	
	SOIL BORING LOCATION
	UTILITY TEST HOLE LOCATION
	CABLE TV DISTRIBUTION BOX
	ELECTRIC MANHOLE
	ELECTRIC METER
	ELECTRIC TRANSFORMER
	POLE MOUNTED LUMINAIRE
	GAS MANHOLE
	GAS METER
	GAS VALVE
	GAS PUMP - SERVICE STATION
	RAILROAD TRACKS
	SANITARY SEWER MANHOLE
	SANITARY SEWER VALVE
	SANITARY SEWER VENT OR CLEANOUT
	SEPTIC DRAIN FIELD
	TELEPHONE BOOTH
	TELEPHONE MANHOLE
	TELEPHONE TEST POINT
	TRAFFIC - CONDUIT JUNCTION WELL
	TRAFFIC - LIGHT POLE AND BASE
	TRAFFIC - PEDESTRIAN POLE & BASE
	TRAFFIC - SIGNAL CABINET & BASE
	TRAFFIC - SIGNAL POLE AND BASE
	UTILITY BOX
	UTILITY POLE GUY WIRE ANCHOR
	UTILITY POLE
	WATER - FIRE HYDRANT
	WATER METER
	WATER VALVE
	WELL HEAD
	MANHOLE - UNDETERMINED OWNER
UTILITY COMPANY FACILITIES	
	CITY OF WILMINGTON SEWER
	CITY OF WILMINGTON COMBINED SEWER
	CITY OF WILMINGTON STORM DRAIN
	CITY OF WILMINGTON WATER
	DELMARVA POWER-ELECTRIC
	DELMARVA POWER-ELECTRIC OVERHEAD
	DELMARVA POWER-GAS
	VERIZON
	AT&T FIBER OPTIC
	COMCAST
	NEW CASTLE COUNTY SEWER

PROPOSED SYMBOLS

CONSTRUCTION	
	CONCRETE SAFETY BARRIER - PERMANENT
	BIOFILTRATION SWALE
	BRICK PATTERNED SURFACE
	BUTT JOINT
	CONSTRUCTION BASELINE
	CONSTRUCTION SAFETY FENCE
	CURB, TYPE 1 & TYPE 3
	CURB, TYPE 2
	CURB & GUTTER, TYPE 1
	CURB & GUTTER, TYPE 2
	CURB & GUTTER, TYPE 3
	CURB & GUTTER, TYPE 4
	CLEAR ZONE
	DRAINAGE INLET
	DITCH
	FENCE - METAL
	FENCE - WOOD
	FLARED END SECTION
	GUARDRAIL, TYPE 1
	GUARDRAIL, TYPE 2
	GUARDRAIL, TYPE 3
	GUARDRAIL END ANCHORAGE
	GUARDRAIL END TREATMENT, TYPE 1
	GUARDRAIL END TREATMENT, TYPE 2
	GUARDRAIL END TREATMENT, TYPE 3
	IMPACT ATTENUATOR
	JUNCTION BOX - DRAINAGE
	LATERAL OFFSET
	LIMIT OF CONSTRUCTION
	MAILBOX
	MANHOLE
	PAVEMENT PATCH
	PAVEMENT REMOVAL - TOPSOIL, SEED AND MULCH
	PIPE & DIRECTIONAL FLOW ARROW
	RIPRAP
	P.C.C. SIDEWALK - 4"
	P.C.C. SIDEWALK - 6" (USE 8" DEPTH FOR CHANNELIZATION ISLANDS.)
	UNDERDRAIN
	UNDERDRAIN OUTLET
RIGHT-OF-WAY SYMBOLS	
	PROPOSED RIGHT-OF-WAY MONUMENT
	PROPOSED DENIAL OF ACCESS
	PROPOSED PERMANENT EASEMENT
	PROPOSED RIGHT-OF-WAY
	PROPOSED R/W & DENIAL OF ACCESS
	TEMPORARY CONSTRUCTION EASEMENT
	PROPOSED RIGHT-OF-WAY BASELINE

IDENTIFIERS	
	ADJUST BY CONTRACTOR
	ADJUST BY OTHERS
	CONCRETE SAFETY BARRIER
	CURB OR CURB & GUTTER
	CONVERT TO JUNCTION BOX
	CONVERT TO DRAINAGE MANHOLE
	CURB OPENING
	CURB RAMP / TYPE
	CURB RAMP / TYPE - WITHOUT SIDEWALK SURFACE DETECTABLE WARNING SYSTEM
	CONSTRUCTION SAFETY FENCE
	DRAINAGE INLET
	DO NOT DISTURB
	ENERGY DISSIPATOR
	FENCE
	FLARED END SECTION
	FILL WITH FLOWABLE FILL
	FILTRATION STRUCTURE
	GUARDRAIL
	JUNCTION BOX
	MANHOLE
	MONUMENT - RIGHT-OF-WAY
	PIPE
	RELOCATE BY CONTRACTOR
	RELOCATE BY OTHERS
	REMOVE BY CONTRACTOR
	REMOVE BY OTHERS
	UNDERDRAIN / LENGTH
	UNDERDRAIN OUTLET PIPE
TRAFFIC	
	ITMS CONDUIT
	SIGNAL CONDUIT
	CONDUIT JUNCTION WELL
	LUMINAIRE
	PAVEMENT MARKINGS
	PAVEMENT STRIPING
	TRAFFIC SIGN
MISCELLANEOUS SYMBOLS	
	PROPOSED ENHANCEMENT BOUNDARY

ADDENDUMS / REVISIONS

NO.	DESCRIPTION

NOT TO SCALE

WETLAND MITIGATION AT
PETERSON WILDLIFE REFUGE

CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NLB
	CHECKED BY: JTR

LEGEND

LG-01

SHEET NO.	2
TOTAL SHTS.	22

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	SHT: 1 STA. 10+00 TO STA. 26+98	PROJECT TOTALS
EXCAVATION - ITEM 202000 (CY) [NEED = '-' / EXCESS = '+']		
EX01 : FROM CROSS SECTIONS / MODELS (+)	18535	18535
EX02 : BITUMINOUS PAVEMENT REMOVED IN FILL SECTIONS (+)	0	0
EX03 : TOPSOIL REMOVED UNDER FILL SECTIONS (+)	0	0
EX04 : TOPSOIL PLACED IN CUT SECTIONS (+)	0	0
EX05 : ROOT MAT REMOVED IN CUT SECTIONS (-)	0	0
EX06 : CURB AND/OR CURB AND GUTTER EXCAVATION (-)	0	0
EX07 : UNDERDRAIN EXCAVATION (-)	0	0
EX08 : ROCK EXCAVATION (-)	0	0
EX09 : REMOVAL OF PCC PAVEMENT, CURBS, SIDEWALK, ETC. (-)	0	0
EXTOTAL : TOTAL EXCAVATION	18535	18535
STORMWATER MANAGEMENT POND EXCAVATION - ITEM 271000 (CY) [NEED = '-' / EXCESS = '+']		
SWEX01 : FROM CROSS SECTIONS / MODELS (+)	0	0
SWEX02 : TOPSOIL REMOVED UNDER FILL SECTIONS (+)	0	0
SWEX03 : TOPSOIL PLACED IN CUT SECTIONS (+)	0	0
SWEX04 : ROOT MAT REMOVED (-)	0	0
SWEX05 : ROCK EXCAVATION (-)	0	0
SWEXTOTAL : TOTAL STORMWATER MANAGEMENT POND EXCAVATION	0	0
EXCAVATION AVAILABLE FOR EMBANKMENT (CY) [NEED = '-' / EXCESS = '+']		
EXTOTAL : TOTAL EXCAVATION (+) [ITEM 202000]	18535	18535
SWEXTOTAL : TOTAL STORMWATER MANAGEMENT POND EXCAVATION (+) [ITEM 271000]	0	0
AVEX01 : EXCAVATION AND BACKFILLING FOR STRUCTURES (+) [ITEM 207000]	227	227
AVEX02 : EXCAVATION AND BACKFILLING FOR PIPE TRENCHES (+) [ITEM 208000 + PIPES < 24" IN DIAMETER]	0	0
AVEX03 : CHANNEL EXCAVATION (+) [ITEM 203000]	0	0
AVEX04 : EXCAVATION FROM LATERAL OR LONGITUDINAL DITCHING (+) [ITEM 714000]	0	0
AVEX05 : EXCAVATION FROM CURBS AND/OR CURB AND GUTTER (+)	0	0
AVEX06 : EXCAVATION FROM UNDERDRAINS (+) [ITEM 71500X]	0	0
AVEX07 : MISCELLANEOUS EXCAVATIONS (+)	0	0
AVEX08 : TOPSOIL REMOVED IN CUT AND/OR FILL SECTIONS (-)	0	0
AVEX09 : TOPSOIL REMOVED IN CUT AND/OR FILL SECTIONS FOR STORMWATER MANAGEMENT PONDS (-)	0	0
AVEX10 : UNSUITABLE MATERIALS (-)	18762	18762
AVEXTOTAL : TOTAL EXCAVATION AVAILABLE FOR EMBANKMENT	0	0
EMBANKMENT AND BORROW, TYPE 'F' REQUIRED (CY) [NEED = '-' / EXCESS = '+']		
EMRF01 : FROM CROSS SECTIONS / MODEL (+) [EMBANKMENT REQUIRED BELOW SUBGRADE OR CAPPING]	0	0
EMRF02 : TOPSOIL REMOVED UNDER FILL (+)	0	0
EMRF03 : ROOT MAT REMOVED UNDER FILL (+)	0	0
EMRF04 : UNSUITABLE MATERIAL REMOVED UNDER FILL (+)	0	0
EMRF05 : PCC REMOVED UNDER FILL (+)	0	0
EMRF06 : BITUMINOUS PAVEMENT REMOVED UNDER FILL (+)	0	0
EMRF07 : TOPSOIL TO BE PLACED IN FILL (+)	0	0
EMRF08 : SUBTOTAL OF EMBANKMENT AND BORROW, TYPE 'F' REQUIRED	0	0
EMRF09 : COMPACTION FACTOR APPLIED TO THE SUBTOTAL (%)	1.2	
EMRFTOTAL : TOTAL EMBANKMENT AND BORROW, TYPE 'F' REQUIRED	0	0
TOPSOIL SUMMARY (CY) [NEED = '-' / EXCESS = '+']		
TOP01 : TOPSOIL SALVAGED FROM CUT SECTIONS (+)	0	0
TOP02 : TOPSOIL SALVAGED FROM FILL SECTIONS (+)	0	0
TOP03 : TOPSOIL SALVAGED FROM STORMWATER MANAGEMENT PONDS (+)	0	0
TOP04 : TOPSOIL REQUIRED (-)	5	5
TOPTOTAL : TOTAL TOPSOIL	-5	-5
MATERIAL BALANCE (CY) [NEED = '-' / EXCESS = '+']		
BORROW, TYPE 'A'	0	0
BORROW, TYPE 'B'	0	0
BORROW, TYPE 'C'	-145	-145
BORROW, TYPE 'F'	0	0
TOPSOIL	-5	-5
UNSUITABLE MATERIAL	18762	18762

ADDENDUMS / REVISIONS	

NOT TO SCALE

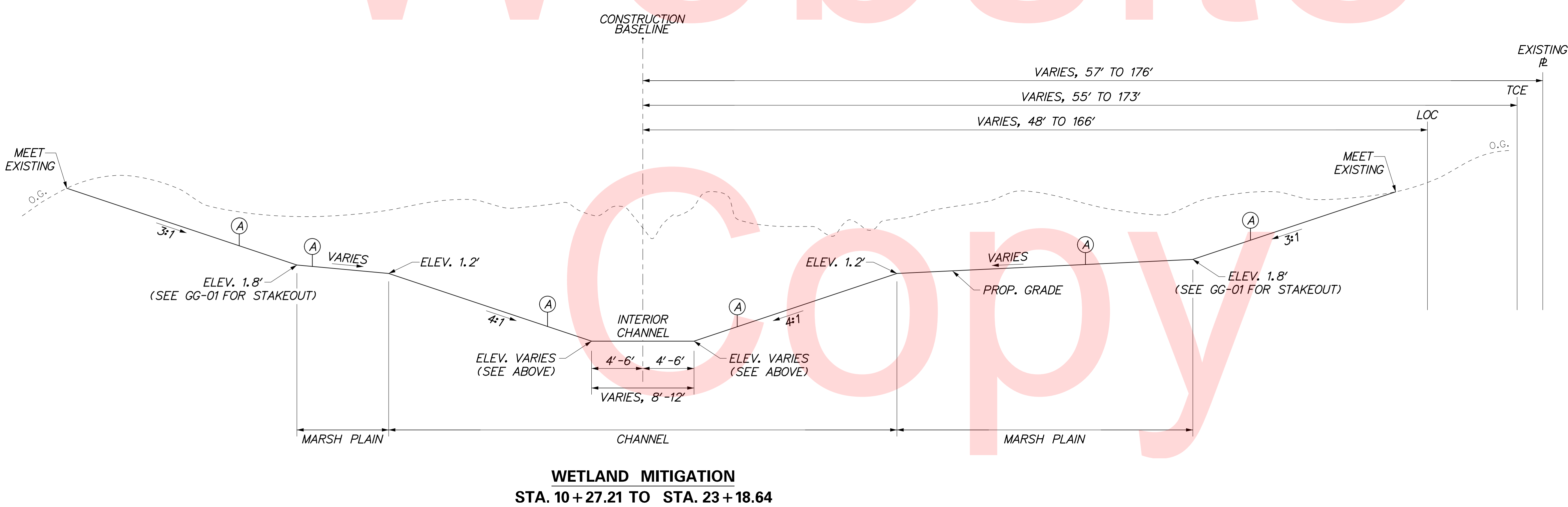
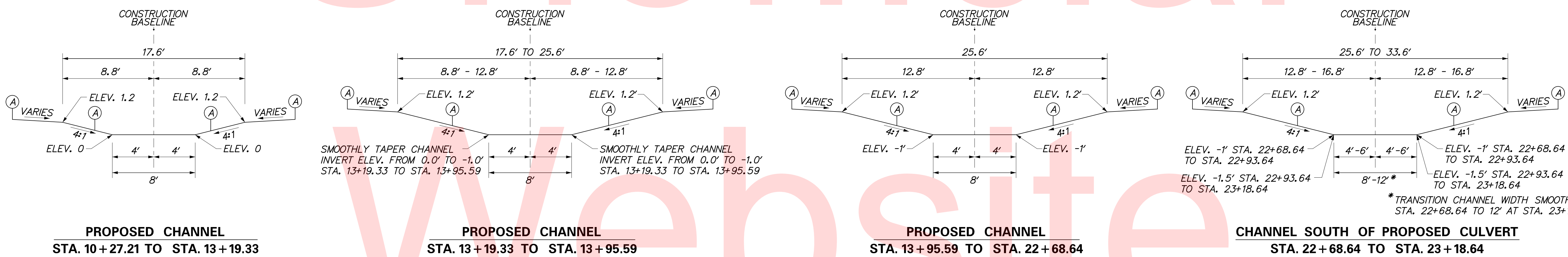
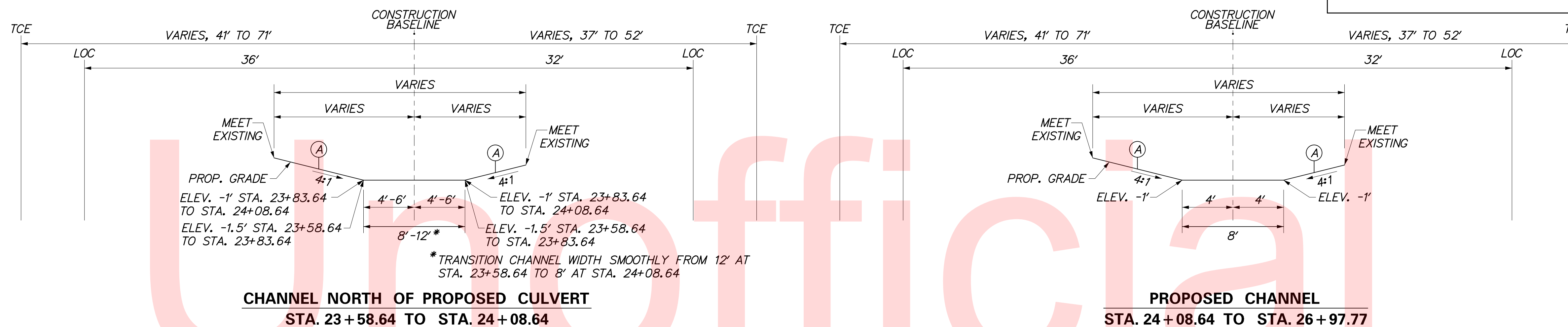
**WETLAND MITIGATION AT
PETERSON WILDLIFE REFUGE**

CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NLB
	CHECKED BY: JTR

NOTES	PN-02
	SHEET NO. 4
	TOTAL SHTS. 22

LEGEND

(A) ITEM 908512 - TEMPORARY GRASS SEEDING - WET GROUND



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ADDENDUMS / REVISIONS

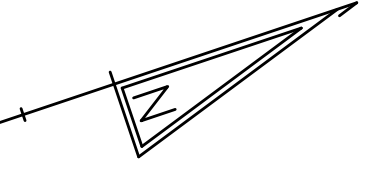
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WETLAND MITIGATION AT PETERSON WILDLIFE REFUGE

CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NLB
	CHECKED BY: JTR

TYPICAL SECTIONS

TS-01
SHEET NO. 5
TOTAL SHTS. 22

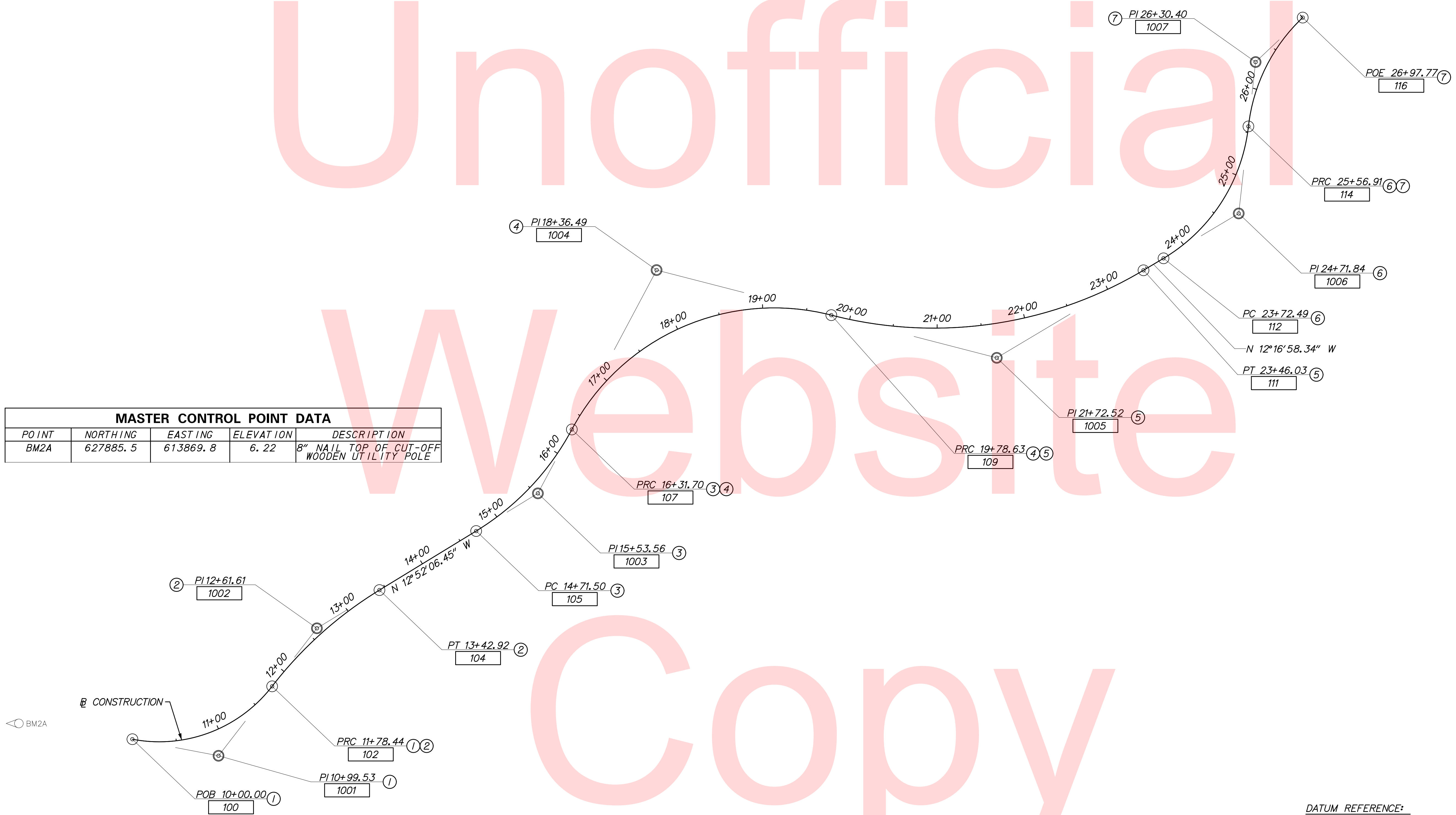


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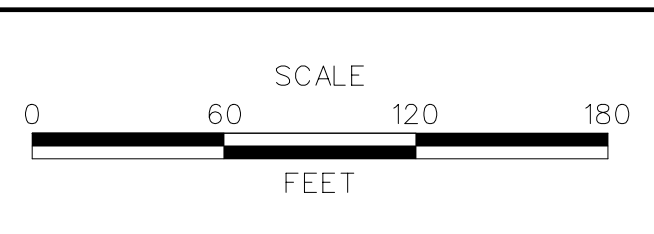
MASTER CONTROL POINT DATA				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM2A	627885.5	613869.8	6.22	8" NAIL TOP OF CUT-OFF WOODEN UTILITY POLE



DATUM REFERENCE:
 HORIZONTAL - THIS PROJECT IS REFERENCED TO THE DELAWARE STATE PLANE COORDINATE SYSTEM (NAD 83/91).
 VERTICAL - THIS PROJECT IS REFERENCED TO NAVD 88.

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ADDENDUMS / REVISIONS	



CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: MCK
	CHECKED BY: JTR

CHANNEL CENTERLINE

CIRCULAR CURVE NO. ①			
	STATION	NORTHING	EASTING
ELEMENT: CIRCULAR			
PC (100)	10+00.00	628001.9706	613942.1325
PI (1001)	10+99.53	628088.6725	613991.0159
CC (101)	628081.3904	613801.2699	
PRC (102)	11+78.44	628171.3728	613935.6312
RADIUS:	161.7090		
DELTA:	63° 13' 30.5268" LEFT		
DEGREE OF CURVATURE(ARC):	35° 25' 53.1022"		
LENGTH:	178.4437		
TANGENT:	99.5329		
CHORD:	169.5269		
MIDDLE ORDINATE:	23.9957		
EXTERNAL:	28.1768		
TANGENT DIRECTION:	N 29° 24' 53.1212" E		
RADIAL DIRECTION:	S 60° 35' 06.8788" E		
CHORD DIRECTION:	N 2° 11' 52.1422" W		
RADIAL DIRECTION:	N 56° 11' 22.5943" E		
TANGENT DIRECTION:	N 33° 48' 37.4057" W		

CIRCULAR CURVE NO. ②			
	STATION	NORTHING	EASTING
ELEMENT: CIRCULAR			
PC (102)	11+78.44	628171.3728	613935.6312
PI (1002)	12+61.61	628240.4747	613889.3534
CC (103)	628421.7736	614309.5288	
PT (104)	13+42.92	628321.5526	613870.8310
RADIUS:	450.0000		
DELTA:	20° 56' 30.9546" RIGHT		
DEGREE OF CURVATURE(ARC):	12° 43' 56.6236"		
LENGTH:	164.4775		
TANGENT:	83.1667		
CHORD:	163.5635		
MIDDLE ORDINATE:	7.4938		
EXTERNAL:	7.6207		
TANGENT DIRECTION:	N 33° 48' 37.4057" W		
RADIAL DIRECTION:	N 56° 11' 22.5943" E		
CHORD DIRECTION:	N 23° 20' 21.9283" W		
RADIAL DIRECTION:	N 77° 07' 53.5490" E		
TANGENT DIRECTION:	N 12° 52' 06.4510" W		

CIRCULAR CURVE NO. ③			
	STATION	NORTHING	EASTING
ELEMENT: CIRCULAR			
PC (105)	14+71.50	628446.9024	613842.1947
PI (1003)	15+53.56	628526.9022	613823.9186
CC (106)	628380.0883	613549.7295	
PRC (107)	16+31.70	628586.4616	613767.4680
RADIUS:	300.0000		
DELTA:	30° 35' 47.4816" LEFT		
DEGREE OF CURVATURE(ARC):	19° 05' 54.9354"		
LENGTH:	160.2030		
TANGENT:	82.0609		
CHORD:	158.3063		
MIDDLE ORDINATE:	10.6304		
EXTERNAL:	11.0209		
TANGENT DIRECTION:	N 12° 52' 06.4510" W		
RADIAL DIRECTION:	N 77° 07' 53.5490" E		
CHORD DIRECTION:	N 28° 10' 00.1919" W		
RADIAL DIRECTION:	N 46° 32' 06.0673" E		
TANGENT DIRECTION:	N 43° 27' 53.9327" W		

CIRCULAR CURVE NO. ④			
	STATION	NORTHING	EASTING
ELEMENT: CIRCULAR			
PC (107)	16+31.70	628586.4616	613767.4680
PI (1004)	18+36.49	628735.0966	613626.5912
CC (108)	628765.3185	613956.1747	
PRC (109)	19+78.63	628906.8735	613738.0871
RADIUS:	260.0000		
DELTA:	76° 27' 05.5333" RIGHT		
DEGREE OF CURVATURE(ARC):	22° 02' 12.6178"		
LENGTH:	346.9261		
TANGENT:	204.7892		
CHORD:	321.7561		
MIDDLE ORDINATE:	55.7495		
EXTERNAL:	70.9662		
TANGENT DIRECTION:	N 43° 27' 53.9327" W		
RADIAL DIRECTION:	N 46° 32' 06.0673" E		
CHORD DIRECTION:	N 5° 14' 21.1660" W		
RADIAL DIRECTION:	S 57° 00' 48.3994" E		
TANGENT DIRECTION:	N 32° 59' 11.6006" E		

CHANNEL CENTERLINE

CIRCULAR CURVE NO. ⑤			
	STATION	NORTHING	EASTING
ELEMENT: CIRCULAR			
PC (109)	19+78.63	628906.8735	613738.0871
PI (1005)	21+72.52	629069.5093	613843.6498
CC (110)	629160.0392	613348.0459	
PT (111)	23+46.03	629258.9625	613802.4017
RADIUS:	465.0000		
DELTA:	45° 16' 09.9407" LEFT		
DEGREE OF CURVATURE(ARC):	12° 19' 18.0228"		
LENGTH:	367.3968		
TANGENT:	193.8914		
CHORD:	357.9148		
MIDDLE ORDINATE:	35.8156		
EXTERNAL:	38.8044		
TANGENT DIRECTION:	N 32° 59' 11.6006" E		
RADIAL DIRECTION:	S 57° 00' 48.3994" E		
CHORD DIRECTION:	N 10° 21' 06.6302" E		
RADIAL DIRECTION:	N 77° 43' 01.6599" E		
TANGENT DIRECTION:	N 12° 16' 58.3401" W		

CIRCULAR CURVE NO. ⑥			
	STATION	NORTHING	EASTING
ELEMENT: CIRCULAR			
PC (112)	23+72.49	629284.8191	613796.7721
PI (1006)	24+71.84	629381.8984	613775.6358
CC (113)	629242.2714	613601.3503	
PRC (114)	25+56.91	629423.7042	613685.5058
RADIUS:	200.0000		
DELTA:	52° 50' 00.3803" LEFT		
DEGREE OF CURVATURE(ARC):	28° 38' 52.4031"		
LENGTH:	184.4235		
TANGENT:	99.3536		
CHORD:	177.9586		
MIDDLE ORDINATE:	20.8836		
EXTERNAL:	23.3185		
TANGENT DIRECTION:	N 12° 16' 58.3401" W		
RADIAL DIRECTION:	N 77° 43' 01.6599" E		
CHORD DIRECTION:	N 38° 41' 58.5303" W		
RADIAL DIRECTION:	N 24° 53' 01.2796" E		
TANGENT DIRECTION:	N 65° 06' 58.7204" W		

CIRCULAR CURVE NO. ⑦			
	STATION	NORTHING	EASTING
ELEMENT: CIRCULAR			
PC (114)	25+56.91	629423.7042	613685.5058
PI (1007)	26+30.40	629454.6281	613618.8363
CC (115)	629605.1370	613769.6613	
POE (116)	26+97.77	629521.3622	613588.0524
RADIUS:	200.0000		
DELTA:	40° 21' 10.1331" RIGHT		
DEGREE OF CURVATURE(ARC):	28° 38' 52.4031"		
LENGTH:	140.8579		
TANGENT:	73.4922		
CHORD:	137.9647		
MIDDLE ORDINATE:	12.2730		
EXTERNAL:	13.0753		
TANGENT DIRECTION:	N 65° 06' 58.7204" W		
RADIAL DIRECTION:	N 24° 53' 01.2796" E		
CHORD DIRECTION:	N 44° 56' 23.6539" W		
RADIAL DIRECTION:	N 65° 14' 11.4127" E		
TANGENT DIRECTION:	N 24° 45' 48.5873" W		

Official Website

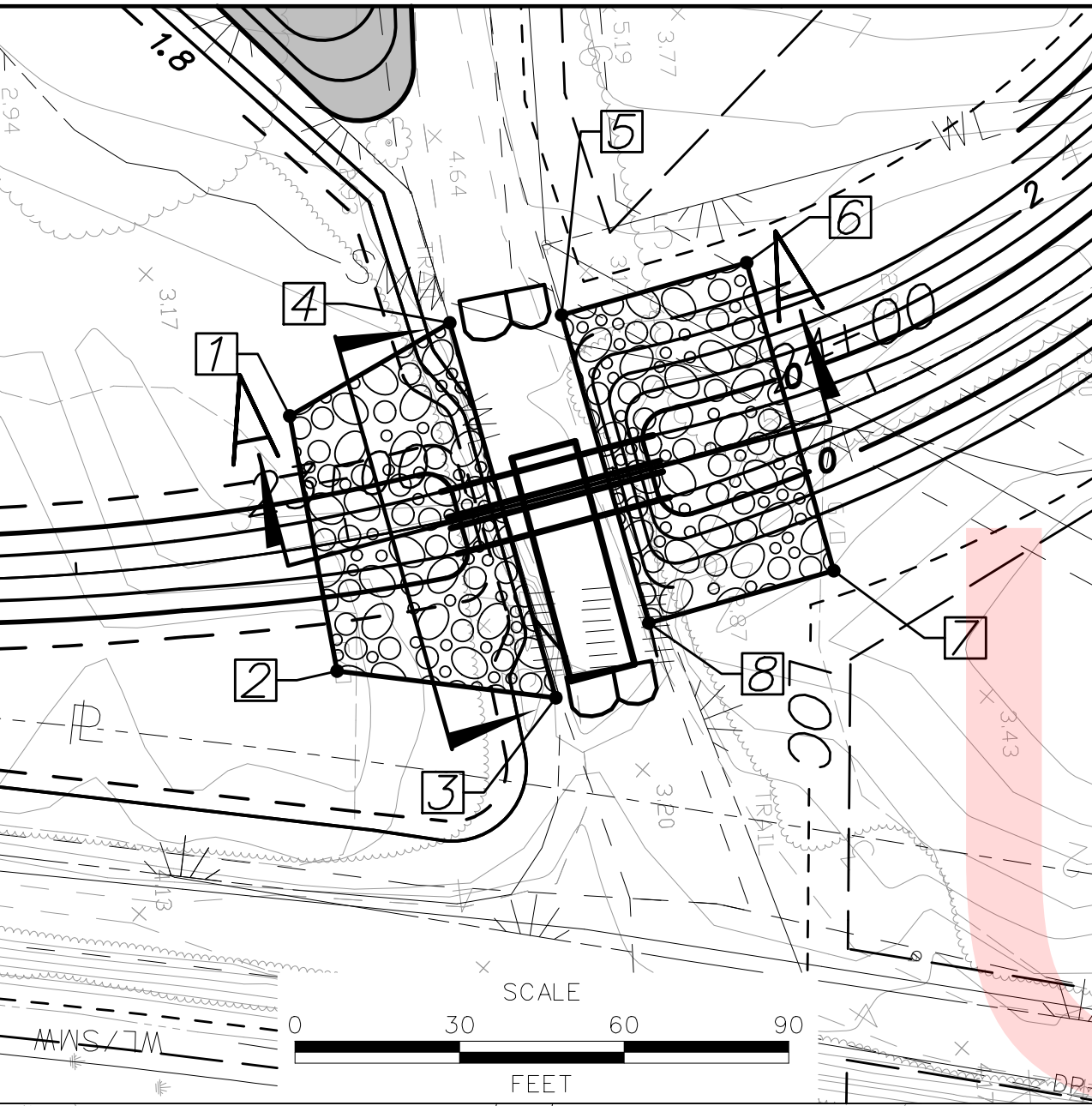
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DATUM REFERENCE:
 HORIZONTAL - THIS PROJECT IS REFERENCED TO THE DELAWARE STATE PLANE COORDINATE SYSTEM (NAD 83/91).
 VERTICAL - THIS PROJECT IS REFERENCED TO NAVD 88.

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 DELAWARE DEPARTMENT OF TRANSPORTATION	ADDENDUMS / REVISIONS	NOT TO SCALE	WETLAND MITIGATION AT PETERSON WILDLIFE REFUGE	CONTRACT	BRIDGE NO.	HORIZONTAL AND VERTICAL CONTROL	HV-02
				T201503701			SHEET NO.
				COUNTY	DESIGNED BY: MCK		7
				NEW CASTLE	CHECKED BY: JTR		TOTAL SHTS.
						22	

NOTE: SEE CD-01 FOR SECTIONS A-A AND B-B



07-043.40-054
RIVERFRONT DEVELOPMENT CORPORATION OF DELAWARE
INSTR. NO.: 20090911-0059590

RIPRAP COORDINATES

NO.	NORTHING	EASTING
1	629204.2824	613786.6264
2	629210.0235	613833.5599
3	629249.5584	613840.8802
4	629234.4436	613771.5062
5	629254.8760	613771.3377
6	629289.1223	613763.8763
7	629301.5423	613820.8814
8	629267.2960	613828.3428

SUPER SILT FENCE (RM C)

APPROXIMATE DISPOSAL SITE GRADES

SOIL DISPOSAL AREA

PREVIOUS RESTORATION AREA PER AS-BUILT DATED 12/21/05

POINT OF POSSIBLE UTILITY CONFLICT WITH UNDERGROUND AT&T FIBER OPTIC LINE. CONTRACTOR SHALL EXCAVATE TEST PITS TO DETERMINE IF A CONFLICT EXISTS. ANY CONFLICTS SHALL BE COORDINATED BY THE CONTRACTOR WITH THE ENGINEER INVOLVED. THE ENGINEER SHALL ULTIMATELY DETERMINE THE SOLUTION TO THE UTILITY CONFLICT. TEST HOLES SHALL BE PAID UNDER ITEM 202573.

ACCESS TO EXISTING BENCHMARK

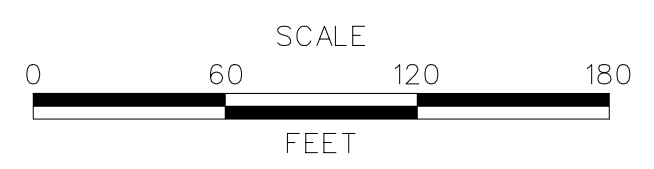
RIPRAP SCHEDULE

NO.	TYPE	AREA (SY)
1	R-5	230
2	R-5	227

DRAINAGE PIPE SCHEDULE

NO.	SIZE / TYPE	CLASS	LENGTH	SLOPE	INT. EL.	DIS. EL.
1	48" RCP	V	40'	0.00	-2.00	-2.00
2	48" RCP	V	40'	0.00	-2.00	-2.00

ADDENDUMS / REVISIONS



WETLAND MITIGATION AT PETERSON WILDLIFE REFUGE

CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NLB
	CHECKED BY: JTR

CONSTRUCTION PLAN

CP-01

SHEET NO.	8
TOTAL SHTS.	22

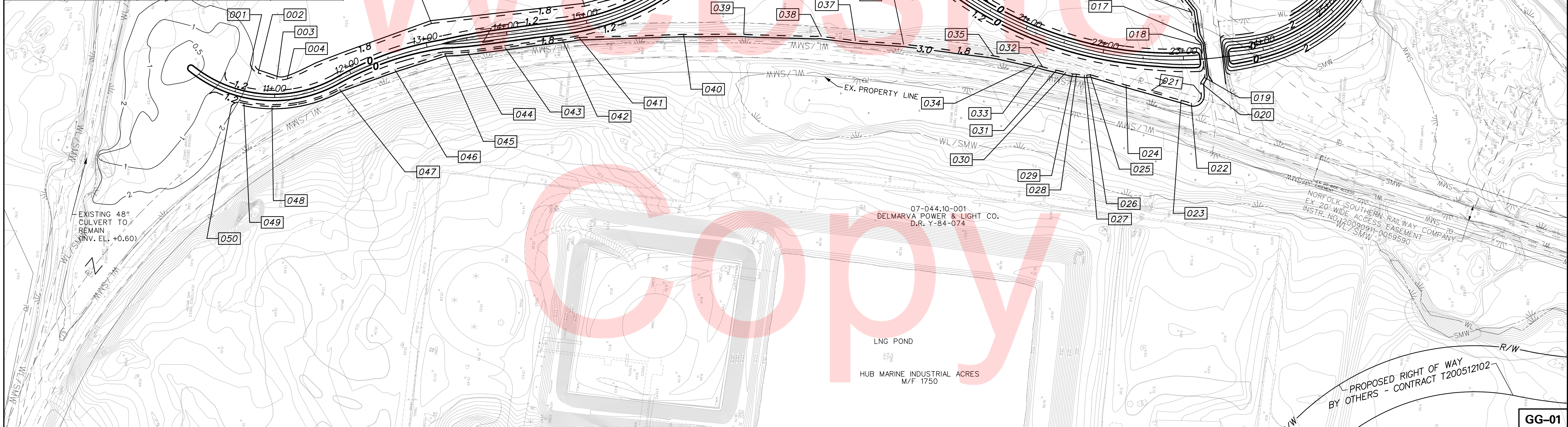


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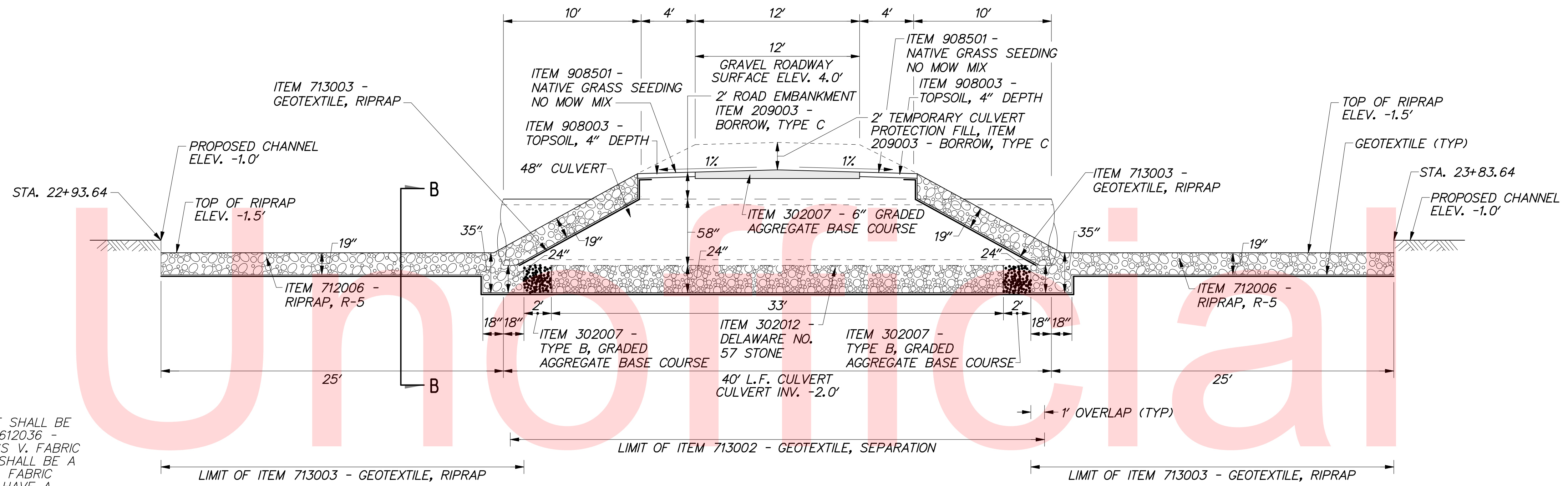
POINT NO.	STATION	OFFSET	NORTHING	EASTING
001	10+60.83	-37.96	628064.4668	613923.8558
002	10+75.33	-28.99	628075.0856	613933.8441
003	11+03.23	-22.49	628098.7439	613939.3986
004	11+18.42	-22.01	628111.7254	613937.6355
005	13+11.29	-27.49	628283.0025	613852.6519
006	15+02.00	-21.44	628469.3687	613813.5956
007	15+31+18	-20.62	628494.9099	613804.4208
008	15+73.43	-29.62	628524.7088	613778.1771
009	15+79.07	-34.76	628526.1475	613771.1302
010	19+08.55	-166.09	628893.7554	613549.9075
011	21+07.27	-240.52	629093.8983	613562.5650
012	21+58.12	-247.53	629119.0291	613561.6103
013	21+70.43	-244.26	629124.1620	613565.8542
014	22+34.09	-134.04	629151.3235	613678.8951
015	22+53.51	-115.83	629165.4184	613697.1742
016	23+12.68	-58.50	629217.8345	613750.4122
017	23+16.02	-27.63	629225.3310	613780.5132
018	23+23.38	-17.56	629233.8297	613789.3573
019	23+24.17	22.60	629241.2656	613828.8340
020	23+19.64	29.07	629237.5982	613835.9872
021	23+19.46	43.79	629239.7132	613850.5614
022	23+07.65	53.56	629228.2117	613862.1005
023	22+96.41	49.90	629215.3697	613859.9619
024	22+33.21	34.73	629145.9276	613847.5725
025	21+90.17	29.56	629100.4465	613839.0011
026	21+86.16	31.09	629096.0150	613839.9844
027	21+83.59	31.71	629093.2101	613840.2375
028	21+74.48	32.97	629083.3892	613840.0818
029	21+70.01	33.73	629078.5341	613840.0756
030	21+62.18	34.14	629070.1885	613839.0352
031	21+51.04	34.84	629058.3108	613837.4265
032	21+34.76	36.19	629040.9211	613834.8723
033	21+29.63	36.36	629035.5201	613833.6921
034	21+25.34	37.14	629030.8452	613833.2829
035	20+78.75	46.97	628979.4855	613827.1175
036	19+89.38	93.18	628867.0441	613823.1446
037	19+09.11	121.77	628807.2685	613824.4660
038	18+28.03	127.04	628764.8513	613823.2109
039	16+59.68	100.79	628668.8434	613829.5302
040	15+96.81	58.31	628594.7248	613836.6352
041	14+87.34	15.14	628466.3852	613852.8242
042	14+67.32	15.00	628446.1627	613857.7490
043	13+95.65	14.96	628376.2931	613873.6734
044	13+49.11	14.71	628330.8599	613883.7985
045	13+20.02	12.37	628302.7317	613888.4015

NOTE: ALL POINTS ARE AT PROPOSED ELEVATION 1.8.

POINT NO.	STATION	OFFSET	NORTHING	EASTING
046	12+53.21	15.69	628243.1146	613913.6661
047	11+78.57	11.00	628177.5996	613944.7000
048	10+96.67	11.00	628095.9569	613973.3635
049	10+63.99	11.00	628061.1134	613972.7844
050	10+50.92	18.51	628045.8491	613977.9481
051	21+88.63	-213.83	629128.9464	613597.2835



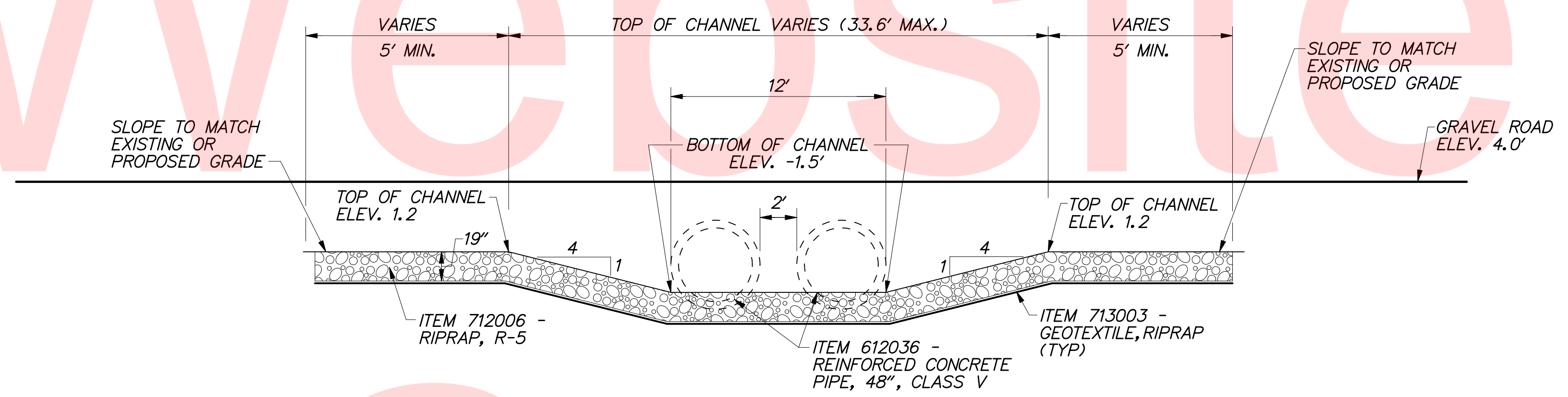
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**CULVERT LONGITUDINAL PROFILE
SECTION A-A**

NOTES

- ITEM 713001 - STABILIZATION GEOTEXTILE SHALL BE WRAPPED AROUND ALL JOINTS IN ITEM 612036 - REINFORCED CONCRETE PIPE, 48", CLASS V. FABRIC JOINTS PERPENDICULAR TO THE PIPES SHALL BE A MINIMUM OF 24" FROM THE PIPE JOINT. FABRIC JOINTS PARALLEL TO THE PIPES SHALL HAVE A MINIMUM OF 24" OF OVERLAPPING MATERIAL.
- THE 48" REINFORCED CONCRETE PIPES WILL BE ADDED TO THE DELDOT BRIDGE SECTION INVENTORY AS 1-681.



**SCOUR PROTECTION CROSS SECTION
SECTION B-B**

\\BALSRV01\2012\2012\12146_DELDOT1565\60-PETERSON_REFUGE_MITIGATION\CADD\CONTRACT\PLANS\DT01_PRW.DGN

ADDENDUMS / REVISIONS	

NOT TO SCALE

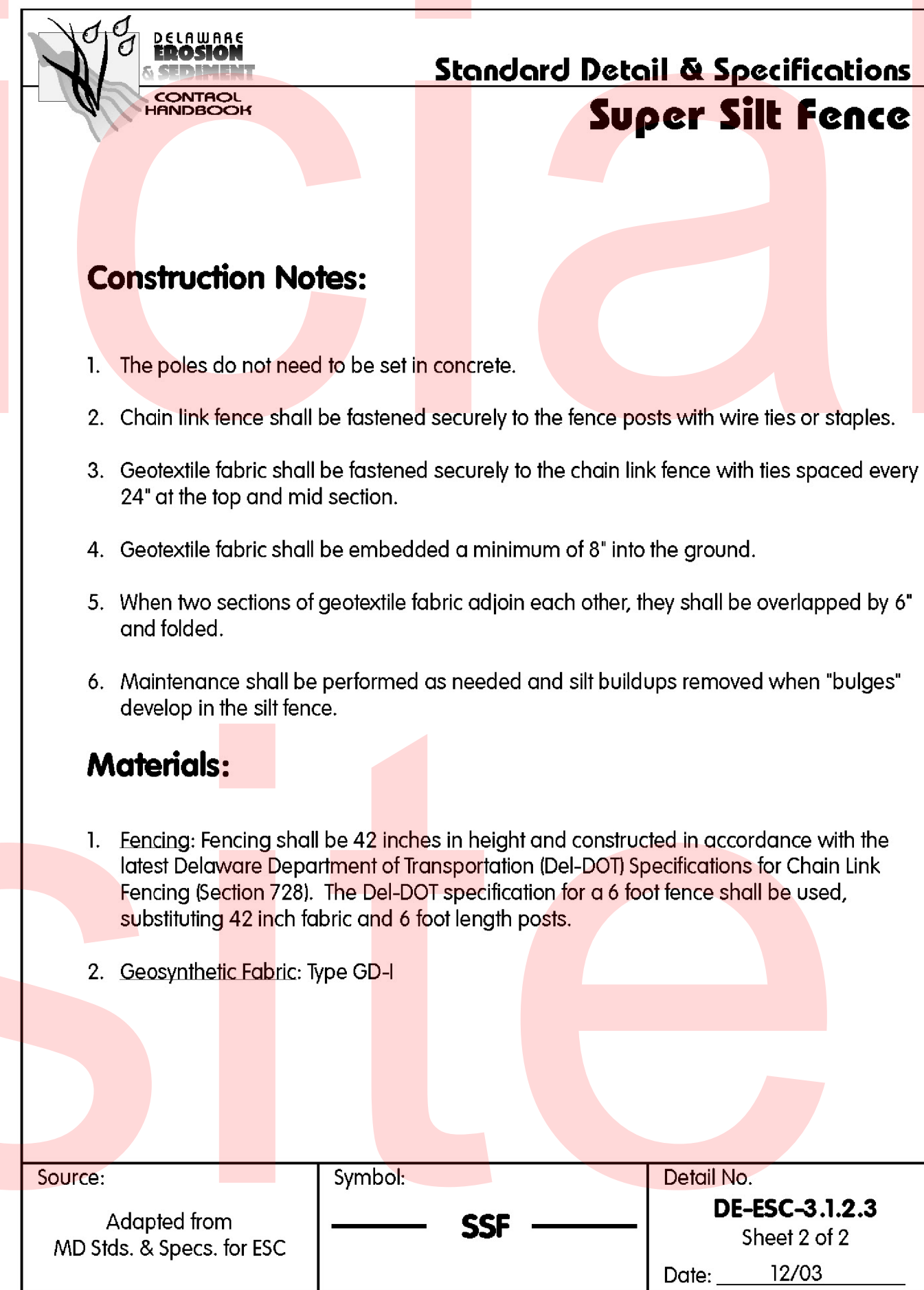
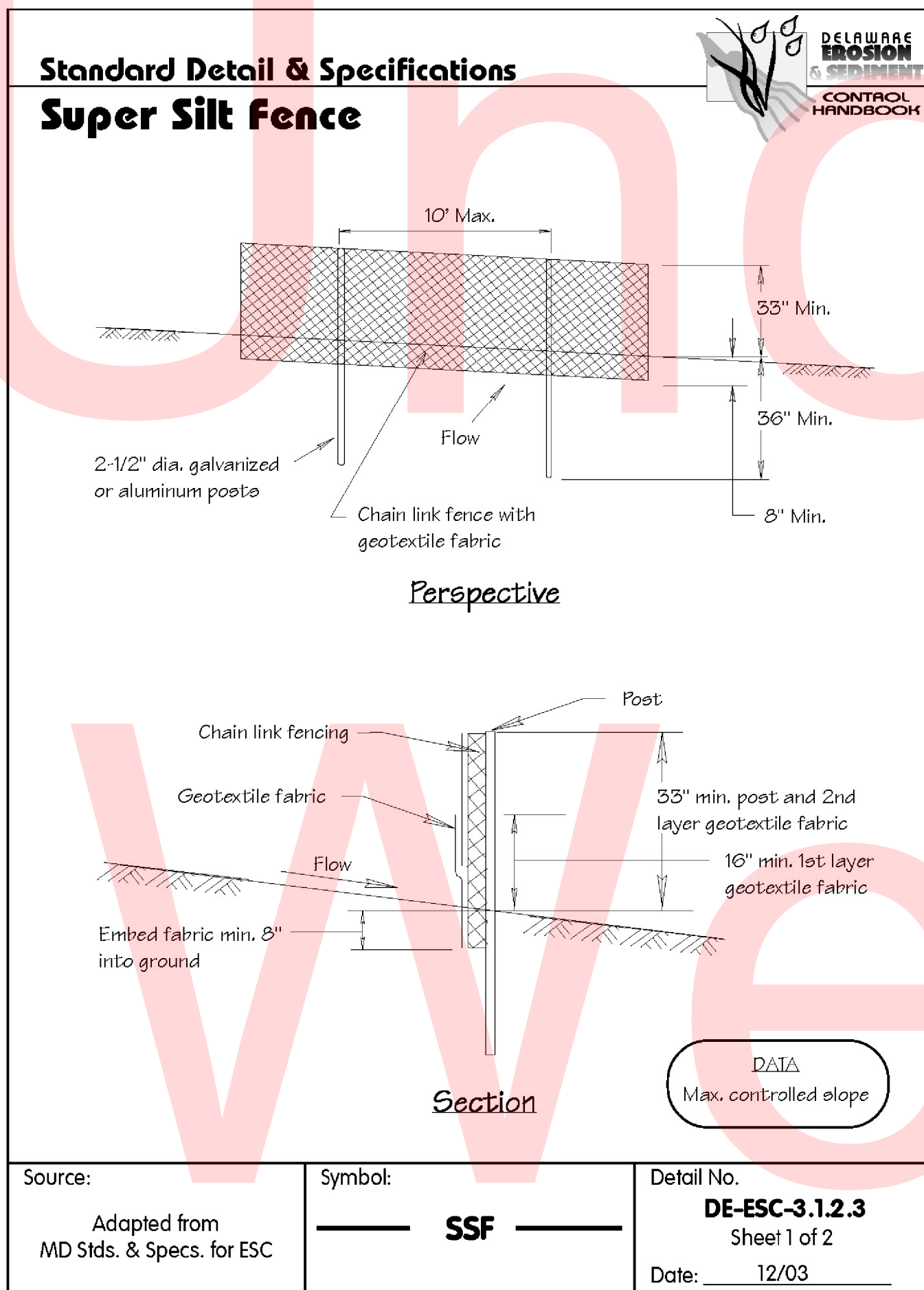
**WETLAND MITIGATION AT
PETERSON WILDLIFE REFUGE**

CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NLB
	CHECKED BY: JTR

CONSTRUCTION DETAILS

CD-01
SHEET NO. 10
TOTAL SHTS. 22

\\BAL.SRV01\2012\2012_12_146_DELDOT1685\60-PETERSON_REFUGE_MITIGATION\CADD\CONTRACT\PLANS\DT02_PRM.DGN



Copy

ENVIRONMENTAL COMPLIANCE NOTES

1. GENERAL NOTES:

- A. THE PURPOSE OF THESE SHEETS AND MITIGATION SUMMARY TABLES IS TO IDENTIFY THOSE ITEMS ASSOCIATED WITH ENVIRONMENTAL COMPLIANCE. IMPACT CALCULATIONS ARE FOR THE AGENCY PERMIT REPORTING PURPOSES ONLY AND ARE NOT TO BE USED FOR BIDDING PURPOSES.
- B. IF A DEPARTURE FROM THE APPROVED PLANS (WHICH WOULD AFFECT ANY NATURAL AND/OR CULTURAL RESOURCES) IS NECESSARY, THE ENVIRONMENTAL STUDIES SECTION SHALL BE CONTACTED AT (302)760-2264 TO ALLOW FOR COORDINATION WITH THE APPROPRIATE RESOURCE AGENCIES AND APPROVAL.
- C. USE OF THESE SHEETS DOES NOT ALLEVIATE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL CONDITIONS SET FORTH IN THE ENVIRONMENTAL STATEMENT AND PERMITS.
- D. THE IDENTIFIED PERMANENT AND TEMPORARY IMPACTS TO JURISDICTIONAL RESOURCES SHOWN ON THE ENVIRONMENTAL COMPLIANCE SHEETS ARE THE ONLY AUTHORIZED IMPACTS.

2. PROTECTION OF RESOURCES:

A. PERMIT REQUIREMENTS / APPROVALS*

USACE NATIONWIDE PERMIT 27 CENAP-OP-R-2015-00627, EXPIRES 3/18/18**
 DNREC WETLAND PERMIT AND MEMORANDUM OF AGREEMENT - APPROVED 5/2/17**
 NEW CASTLE COUNTY FLOODPLAIN APPROVED SEPTEMBER 21, 2015; EXPIRES 3/21/2018**

- * THE PERMITS/APPROVALS LISTED ARE THOSE REQUIRED FOR THIS PROJECT. THE ENVIRONMENTAL STUDIES SECTION IS RESPONSIBLE FOR COORDINATING/OBTAINING THESE PERMITS/APPROVALS.
- ** THE CONTRACTOR MUST ENSURE THAT THESE PERMITS/APPROVALS ARE IN THEIR POSSESSION PRIOR TO THE BEGINNING OF CONSTRUCTION AND ENSURE THESE PERMITS/APPROVALS ARE DISPLAYED ON-SITE DURING THE ENTIRE CONSTRUCTION PERIOD.

B. CONSTRUCTION RESTRICTIONS:

ENDANGERED SPECIES: NONE
 FISHERIES: NONE
 MIGRATORY BIRDS: NONE

C. PROTECTION OF RESOURCES:

- I KEEP CLEARING IN WETLAND AREAS TO A MINIMUM ABSOLUTELY NECESSARY FOR CONSTRUCTION ACCESS. IN WETLAND AREAS THAT ARE CLEARED, NO GRUBBING EXCEPT WHERE NECESSARY TO CONSTRUCT PROJECT COMPONENTS SUCH AS FOUNDATIONS AND RIPRAP PROTECTION IS PERMITTED. IN TEMPORARY WETLAND IMPACT AREAS, CUT VEGETATION FLUSH WITH THE GROUND (I.E. NO DISTURBANCE OF THE ROOT MAT). ALL EQUIPMENT TRAVERSING WETLANDS AND SUBAQUEOUS LAND SHALL BE LOW GROUND-CONTACT PRESSURE EQUIPMENT OR SHALL BE SUPPORTED ON MATS. PAYMENT FOR TRAVERSING WETLANDS WITH LOW GROUND-CONTACT PRESSURE EQUIPMENT OR MATS WILL BE INCIDENTAL TO ITEM 202000 - EXCAVATION AND EMBANKMENT. SEE PROJECT NOTE 3 FOR ADDITIONAL DETAILS. RESTORE TEMPORARILY DISTURBED WETLAND AREAS TO GRADE AND SEED WITH ITEM 908512 - TEMPORARY GRASS SEEDING - WET GROUND.
- II CONTRACTOR ACCESS BEYOND THE LOC IS STRICTLY PROHIBITED. LOC LIMITS HAVE BEEN FLAGGED IN AREAS WHERE SUPER SILT FENCE AND TURBIDITY CURTAIN ARE NOT UTILIZED.

D. CULTURAL RESOURCES:

IF ANY UNANTICIPATED DISCOVERIES OF ARCHAEOLOGICAL OR HUMAN REMAINS OCCUR DURING CONSTRUCTION, ALL WORK SHALL BE IMMEDIATELY SUSPENDED IN THE AREA OF THE DISCOVERY AND THE ENVIRONMENTAL MONITOR SHALL BE CONTACTED. THE ENVIRONMENTAL MONITOR WILL CONTACT DELDOT CULTURAL RESOURCES, SHPO AND USACE TO COMMENCE THE NECESSARY FEDERAL AND STATE COORDINATION. WORK SHALL NOT RESUME UNTIL APPROPRIATE RESOURCE AGENCY COORDINATION, INVESTIGATION AND/OR RECOVERY IS COMPLETE.

TABLES FOR ENTIRE PROJECT

PERMANENT WETLAND IMPACT AREA SCHEDULE				
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	JURISDICTION
2-W-01	FILL FOR SOIL DISPOSAL	6,652.41	0.1527	USACE
TOTAL PERMANENT WETLAND IMPACT AREAS		6,652.41	0.1527	USACE
TOTAL PERMANENT WETLAND IMPACT AREAS		0000.00	0.0000	DNREC

TEMPORARY WETLAND IMPACT AREA SCHEDULE				
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	JURISDICTION
2-WT-01	CONSTRUCTION ACCESS/ E&S	8,508.66	0.1953	USACE/DNREC
2-WT-02	CONSTRUCTION ACCESS/ E&S	213.82	0.0049	USACE
2-WT-03	CONSTRUCTION ACCESS/ E&S	9,183.96	0.2108	USACE/DNREC
2-WT-04	CONSTRUCTION ACCESS/ E&S	150.95	0.0035	USACE
2-WT-05	CONSTRUCTION ACCESS/ E&S	1,161.87	0.0267	USACE
2-WT-06	CONSTRUCTION ACCESS/ E&S	1,108.83	0.0255	USACE
2-WT-07	CONSTRUCTION ACCESS/ E&S	3,031.35	0.0696	USACE/DNREC
2-WT-08	CONSTRUCTION ACCESS/ E&S	694.95	0.0160	USACE/DNREC
2-WT-09	CONSTRUCTION ACCESS/ E&S	7,488.74	0.1719	USACE/DNREC
2-WT-10	CONSTRUCTION ACCESS/ E&S	7,577.07	0.1739	USACE/DNREC
2-WT-11	CONSTRUCTION ACCESS/ E&S	33.24	0.0008	USACE
2-WT-12	CULVERT REPLACEMENT	3,414.03	0.0784	DNREC
2-WT-13	CONSTRUCTION ACCESS/ E&S	4265.39	0.0979	USACE
2-WT-14	CONSTRUCTION ACCESS/ E&S	2170.60	0.0498	USACE/DNREC
2-WT-15	CONSTRUCTION ACCESS/ E&S	899.75	0.0207	USACE/DNREC
2-WT-16	CONSTRUCTION ACCESS/ E&S	222.02	0.0051	USACE
2-WT-17	CONSTRUCTION ACCESS/ E&S	15.07	0.0003	USACE
4-WT-1	CONSTRUCTION ACCESS/ E&S	222.67	0.0051	USACE
4-WT-2	CONSTRUCTION ACCESS/ E&S	563.99	0.0129	USACE/DNREC
4-WT-3	CONSTRUCTION ACCESS/ E&S	6,445.93	0.1480	USACE
4-WT-4	CONSTRUCTION ACCESS/ E&S	132.40	0.0030	USACE
TOTAL TEMPORARY WETLAND IMPACT AREAS		54,091.26	1.2417	USACE
TOTAL TEMPORARY WETLAND IMPACT AREAS		43,533.10	0.9993	DNREC

COMPENSATORY MITIGATION PROVIDED		
TYPE	USACE (AC)	DNREC (AC)
CREATION	0.0157	0.5080
ENHANCEMENT	4.4634	3.9711
TOTAL	4.4791	4.4791

WETLAND CREATION AREA SCHEDULE				
ID	DESCRIPTION	AREA (SF)	AREA (AC)	JURISDICTION
2-WC-01	TIDAL WETLAND	364.44	0.0084	USACE/DNREC
2-WC-02	TIDAL WETLAND	9,851.49	0.2262	DNREC
2-WC-03	TIDAL WETLAND	4,800.46	0.1102	DNREC
2-WC-04	TIDAL WETLAND	318.62	0.0073	USACE/DNREC
2-WC-05	TIDAL WETLAND	6,789.95	0.1559	DNREC
TOTAL WETLAND CREATION AREAS		683.06	0.0157	USACE
TOTAL WETLAND CREATION AREAS		22,124.96	0.5080	DNREC

USACE COMPENSATORY MITIGATION TABLE				
IMPACT LOCATION	IMPACTS (AC)	RATIO	MITIGATION REQUIRED (AC)	PETERSON MITIGATION LOCATION **
BR 1-675	0.9550	4:1	3.8200	WC-01, WE-01, WE-02
BR 1-678	0.1266	4:1	0.5064	WC-04, WE-03, WE-04, WE-05, WE-06
PETERSON (FILL FOR SPOIL AREA)*	0.1527	1:1	0.1527	WE-07

* FILL FOR SPOIL AREA WILL BE INCLUDED IN THE BR 1-678 PERMIT APPLICATION

DNREC COMPENSATORY MITIGATION TABLE				
IMPACT LOCATION	IMPACTS (AC)	RATIO	MITIGATION REQUIRED (AC)	PETERSON MITIGATION LOCATION **
BR 1-675 & BR 1-678	1.3044	3.43:1	4.4791	WC-01, WC-02, WC-03, WC-04, WC-05, WE-01, WE-05, WE-06, WE-07

** DUE TO DIFFERING USACE AND DNREC WETLAND BOUNDARIES, MITIGATION AREAS MAY PRESENT MULTIPLE IDENTIFIERS (E.G., WE-03 AND WC-03 ON EC-02)

WETLAND ENHANCEMENT AREA SCHEDULE				
ID	DESCRIPTION	AREA (SF)	AREA (AC)	JURISDICTION
2-WE-01	TIDAL WETLAND	156,180.02	3.5854	USACE/DNREC
2-WE-02	TIDAL WETLAND	9,851.49	0.2262	USACE
2-WE-03	TIDAL WETLAND	4,800.46	0.1102	USACE
2-WE-04	TIDAL WETLAND	6,789.95	0.1559	USACE
2-WE-05	TIDAL WETLAND	1,868.66	0.0429	USACE/DNREC
2-WE-06	TIDAL WETLAND	8,280.76	0.1901	USACE/DNREC
2-WE-07	TIDAL WETLAND	6,652.41	0.1527	USACE/DNREC
TOTAL WETLAND ENHANCEMENT AREAS		194,423.75	4.4634	USACE
TOTAL WETLAND ENHANCEMENT AREAS		172,981.85	3.9711	DNREC

SHEETS PREPARED BY JUSTIN REEL, RKK
 DATE: 5-12-2015
 LAST REVISED: 9-26-2017

WETLANDS DELINEATED BY ERI DATE: 12-23-2014
 DNREC MAP REVISION DATE: 12-2-2015



ADDENDUMS / REVISIONS

NOT TO SCALE

WETLAND MITIGATION AT
 PETERSON WILDLIFE REFUGE

CONTRACT	BRIDGE NO.	ENVIRONMENTAL COMPLIANCE NOTES
T201503701	DESIGNED BY: NLB	
COUNTY	CHECKED BY: JTR	
NEW CASTLE		

EC-01

SHEET NO.

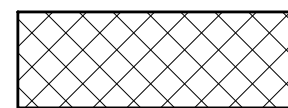
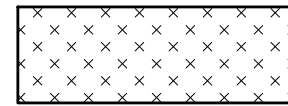



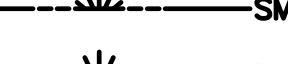
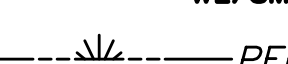
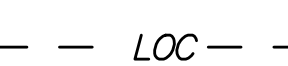

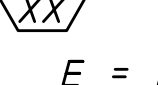
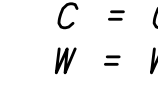

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TOTAL SHTS.

22

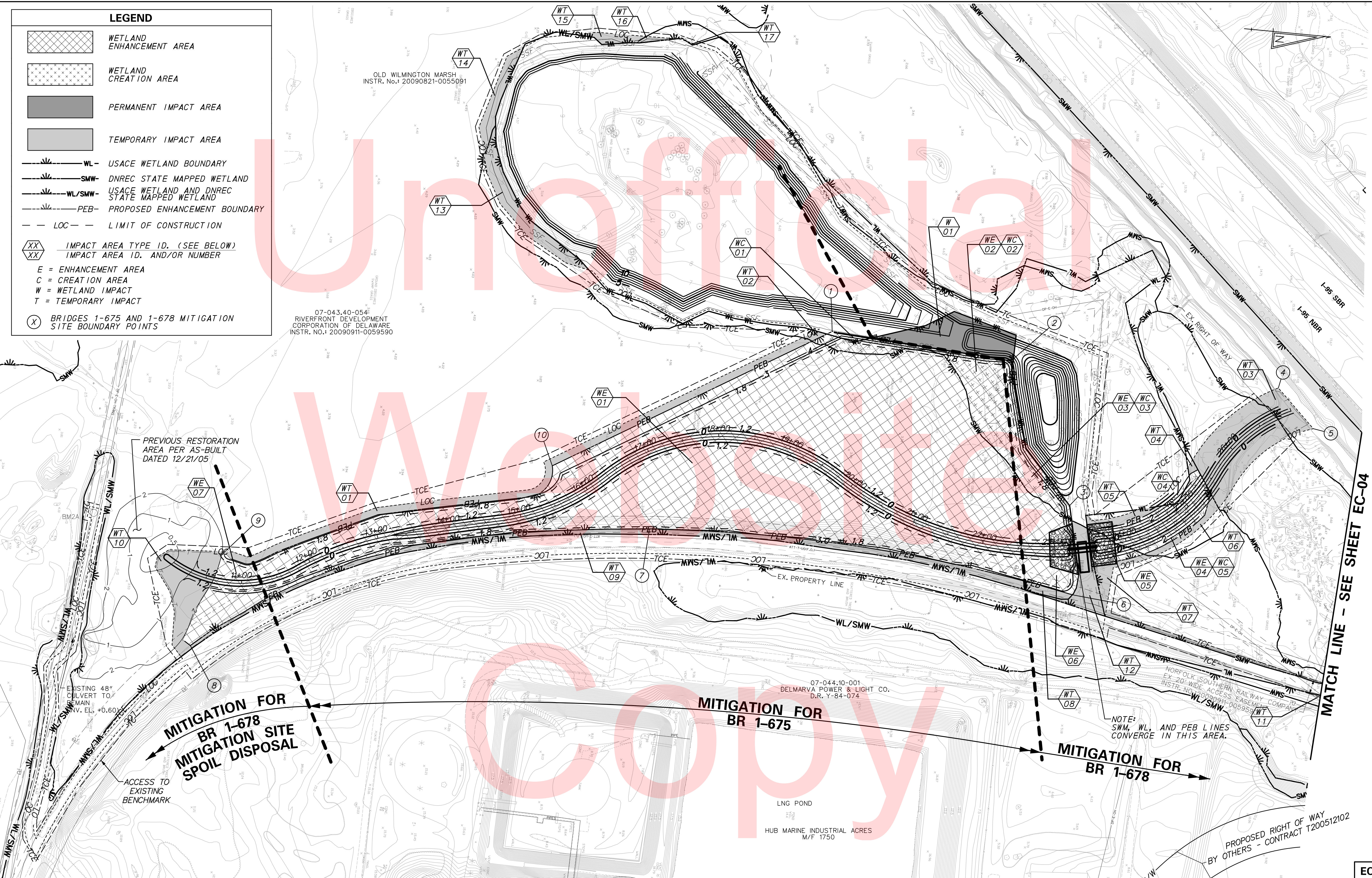
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LEGEND

-  WETLAND ENHANCEMENT AREA
-  WETLAND CREATION AREA
-  PERMANENT IMPACT AREA
-  TEMPORARY IMPACT AREA
-  WL - USACE WETLAND BOUNDARY
-  SMW - DNREC STATE MAPPED WETLAND
-  WL/SMW - USACE WETLAND AND DNREC STATE MAPPED WETLAND
-  PEB - PROPOSED ENHANCEMENT BOUNDARY
-  LOC - LIMIT OF CONSTRUCTION
-  XX - IMPACT AREA TYPE ID. (SEE BELOW)
-  XX - IMPACT AREA ID. AND/OR NUMBER
- E = ENHANCEMENT AREA
- C = CREATION AREA
- W = WETLAND IMPACT
- T = TEMPORARY IMPACT
-  X - BRIDGES 1-675 AND 1-678 MITIGATION SITE BOUNDARY POINTS

07-043.40-054
RIVERFRONT DEVELOPMENT CORPORATION OF DELAWARE
INSTR. NO.: 20090911-0059590

OLD WILMINGTON MARSH
INSTR. No.: 20090821-0055091



PREVIOUS RESTORATION AREA PER AS-BUILT DATED 12/21/05

**MITIGATION FOR BR 1-678
MITIGATION SITE SPOIL DISPOSAL**

MITIGATION FOR BR 1-675

MITIGATION FOR BR 1-678

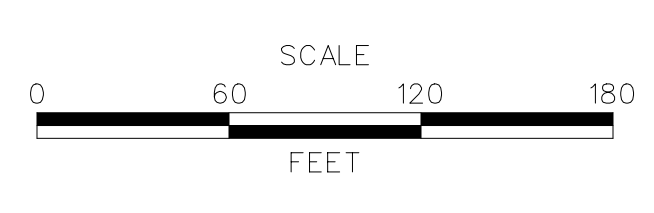
NOTE: SWM, WL, AND PEB LINES CONVERGE IN THIS AREA.

PROPOSED RIGHT OF WAY BY OTHERS - CONTRACT T200512102

MATCH LINE - SEE SHEET EC-04

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ADDENDUMS / REVISIONS	



CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NLB
	CHECKED BY: JTR

EC-02
SHEET NO. 13
TOTAL SHTS. 22

TABLES FOR EC-02

TEMPORARY WETLAND IMPACT AREA SCHEDULE				
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	JURISDICTION
2-WT-01	CONSTRUCTION ACCESS/ E&S	8,508.66	0.1953	USACE/DNREC
2-WT-02	CONSTRUCTION ACCESS/ E&S	213.82	0.0049	USACE
2-WT-03	CONSTRUCTION ACCESS/ E&S	9,183.96	0.2108	USACE/DNREC
2-WT-04	CONSTRUCTION ACCESS/ E&S	150.95	0.0035	USACE
2-WT-05	CONSTRUCTION ACCESS/ E&S	1,161.87	0.0267	USACE
2-WT-06	CONSTRUCTION ACCESS/ E&S	1,108.83	0.0255	USACE
2-WT-07	CONSTRUCTION ACCESS/ E&S	3031.35	0.0696	USACE/DNREC
2-WT-08	CONSTRUCTION ACCESS/ E&S	694.95	0.0160	USACE/DNREC
2-WT-09	CONSTRUCTION ACCESS/ E&S	7,488.74	0.1719	USACE/DNREC
2-WT-10	CONSTRUCTION ACCESS/ E&S	7,577.07	0.1739	USACE/DNREC
2-WT-11	CONSTRUCTION ACCESS/ E&S	33.24	0.0008	USACE
2-WT-12	CULVERT REPLACEMENT	3,414.03	0.0784	DNREC
2-WT-13	CONSTRUCTION ACCESS/ E&S	4265.39	0.0979	USACE
2-WT-14	CONSTRUCTION ACCESS/ E&S	2170.60	0.0498	USACE/DNREC
2-WT-15	CONSTRUCTION ACCESS/ E&S	899.75	0.0207	USACE/DNREC
2-WT-16	CONSTRUCTION ACCESS/ E&S	222.02	0.0051	USACE
2-WT-17	CONSTRUCTION ACCESS/ E&S	15.07	0.0003	USACE
TOTAL TEMPORARY WETLAND IMPACT AREAS		46,726.27	1.0727	USACE
TOTAL TEMPORARY WETLAND IMPACT AREAS		42,969.11	0.9864	DNREC

BRIDGES 1-675 AND 1-678 MITIGATION SITE BOUNDARY POINTS		
POINT NO.	NORTHING	EASTING
1	628878.9452	613538.3180
2	629129.0650	613555.6363
3	629228.7369	613747.1320
4	629500.8748	613557.9412
5	629554.4348	613609.4949
6	629244.1219	613869.6533
7	628653.0170	613834.5149
8	628035.7969	614054.4025
9	628067.3211	613925.0386
10	628510.9403	613759.7795

PERMANENT WETLAND IMPACT AREA SCHEDULE				
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	JURISDICTION
2-W-01	FILL	6,652.41	0.1527	USACE
TOTAL PERMANENT WETLAND IMPACT AREAS		6,652.41	0.1527	USACE
TOTAL PERMANENT WETLAND IMPACT AREAS		0000.00	0.0000	DNREC


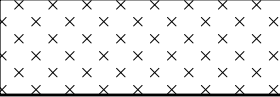






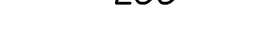


WETLAND CREATION AREA SCHEDULE				
ID	DESCRIPTION	AREA (SF)	AREA (AC)	JURISDICTION
2-WC-01	TIDAL WETLAND	364.44	0.0084	USACE/DNREC
2-WC-02	TIDAL WETLAND	9,851.49	0.2262	DNREC
2-WC-03	TIDAL WETLAND	4,800.46	0.1102	DNREC
2-WC-04	TIDAL WETLAND	318.62	0.0073	USACE/DNREC
2-WC-05	TIDAL WETLAND	6,789.95	0.1559	DNREC
TOTAL WETLAND CREATION AREAS		683.06	0.0157	USACE
TOTAL WETLAND CREATION AREAS		22,124.96	0.5080	DNREC

WETLAND ENHANCEMENT AREA SCHEDULE				
ID	DESCRIPTION	AREA (SF)	AREA (AC)	JURISDICTION
2-WE-01	TIDAL WETLAND	156,180.02	3.5854	USACE/DNREC
2-WE-02	TIDAL WETLAND	9,851.49	0.2262	USACE
2-WE-03	TIDAL WETLAND	4,800.46	0.1102	USACE
2-WE-04	TIDAL WETLAND	6,789.95	0.1559	USACE
2-WE-05	TIDAL WETLAND	1,868.66	0.0429	USACE/DNREC
2-WE-06	TIDAL WETLAND	8,280.76	0.1901	USACE/DNREC
2-WE-07	TIDAL WETLAND	6,652.41	0.1527	USACE/DNREC
TOTAL WETLAND ENHANCEMENT AREAS		194,423.75	4.4634	USACE
TOTAL WETLAND ENHANCEMENT AREAS		172,981.85	3.9711	DNREC

UNOFFICIAL
Wetland site
Copy

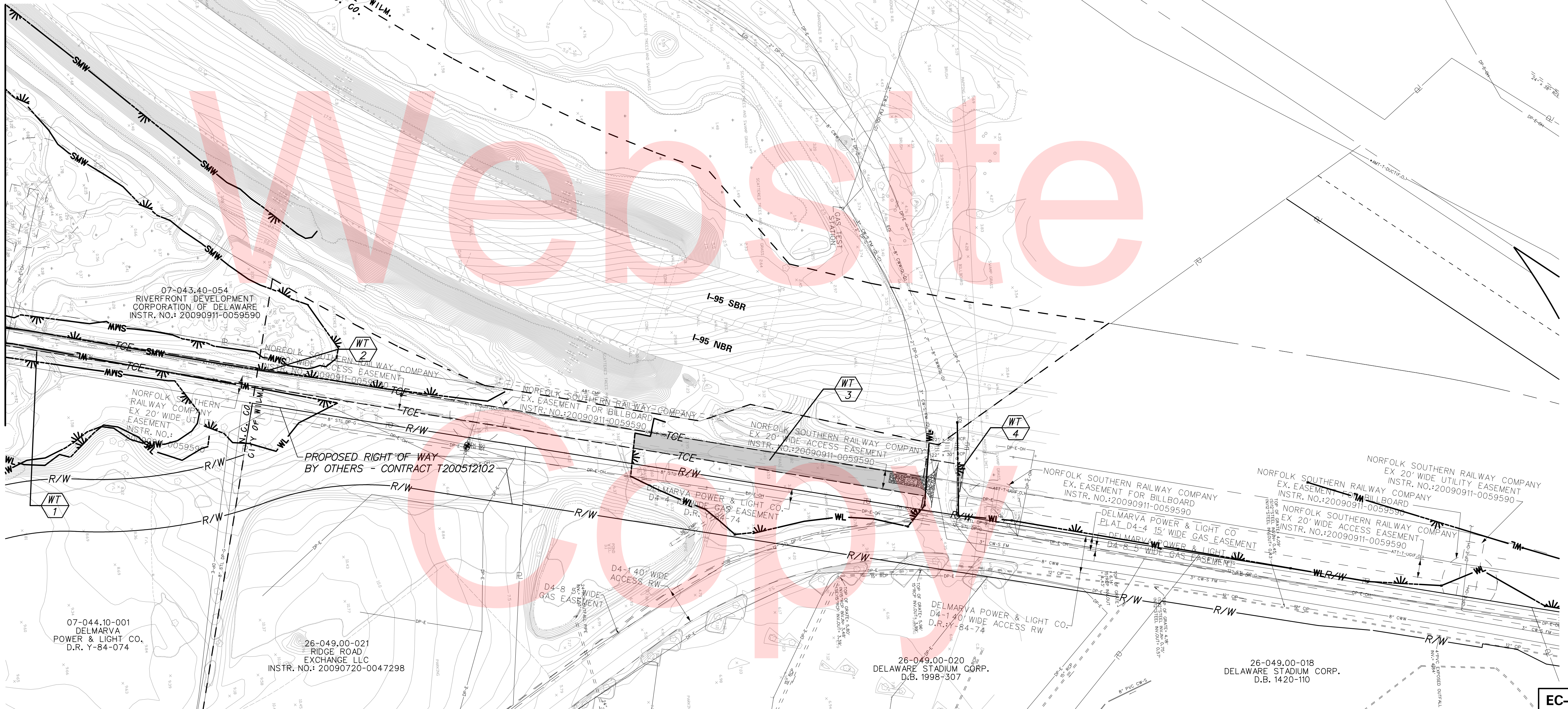
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LEGEND

-  WETLAND ENHANCEMENT AREA
-  WETLAND CREATION AREA
-  PERMANENT IMPACT AREA
-  TEMPORARY IMPACT AREA
-  WL- USACE WETLAND BOUNDARY
-  SMW- DNREC STATE MAPPED WETLAND
-  WL/SMW- USACE WETLAND AND DNREC STATE MAPPED WETLAND
-  PEB- PROPOSED ENHANCEMENT BOUNDARY
-  LOC- LIMIT OF CONSTRUCTION
-  IMPACT AREA TYPE ID. (SEE BELOW)
-  IMPACT AREA ID. AND/OR NUMBER
- E = ENHANCEMENT AREA
- C = CREATION AREA
- W = WETLAND IMPACT
- T = TEMPORARY IMPACT

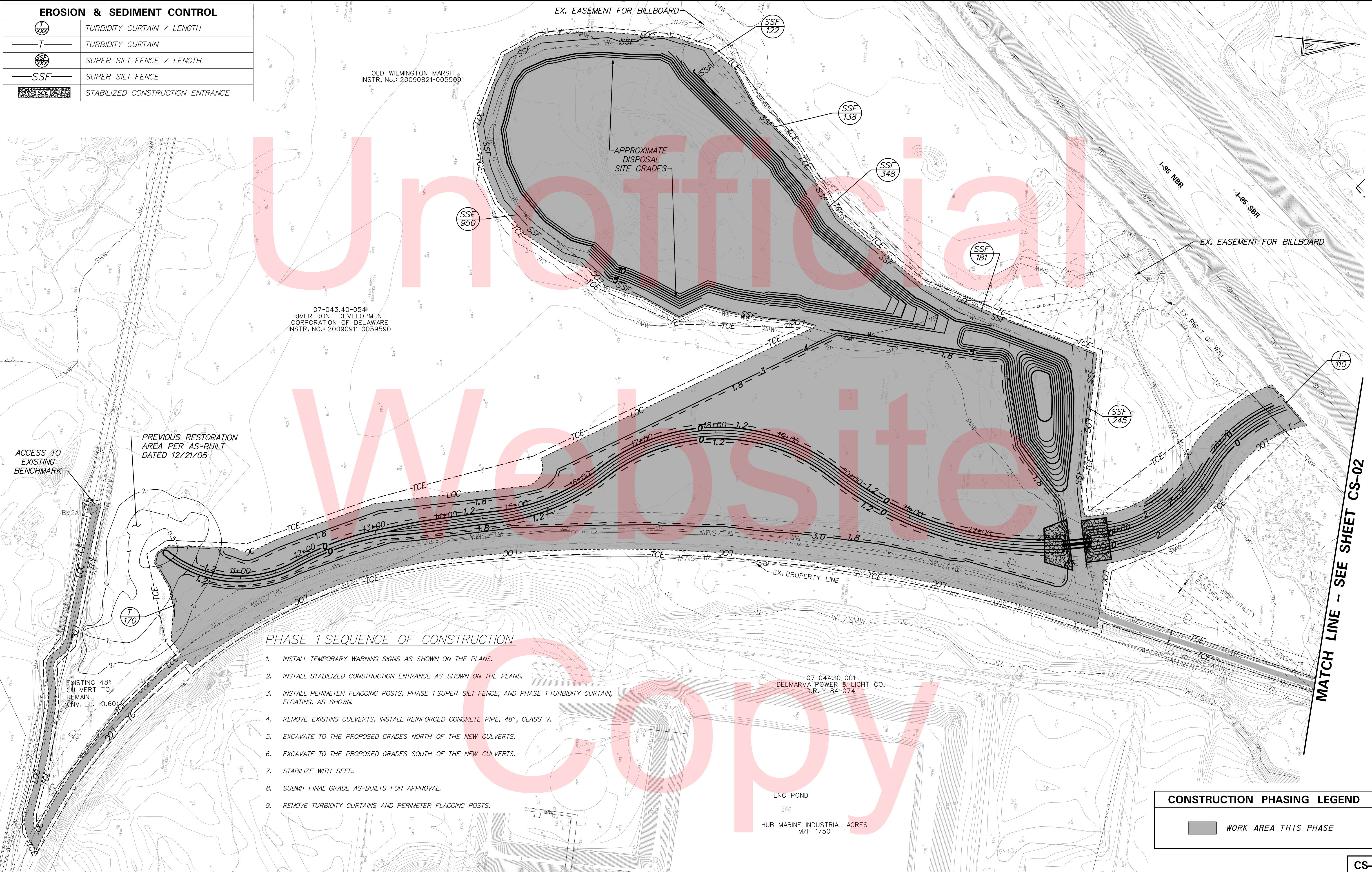
TEMPORARY WETLAND IMPACT AREA SCHEDULE				
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	JURISDICTION
4-WT-1	CONSTRUCTION ACCESS/ E&S	222.67	0.0051	USACE
4-WT-2	CONSTRUCTION ACCESS/ E&S	563.99	0.0129	USACE/DNREC
4-WT-3	CONSTRUCTION ACCESS/ E&S	6,445.93	0.1480	USACE
4-WT-4	CONSTRUCTION ACCESS/ E&S	132.40	0.0030	USACE
TOTAL TEMPORARY WETLAND IMPACT AREAS		7,364.99	0.1690	USACE
TOTAL TEMPORARY WETLAND IMPACT AREAS		563.99	0.0129	DNREC

MATCH LINE - SEE SHEET EC-02



11/21/2016 3:46:00 PM \\balsrv01\2012\2012\12146_DeIDOT1585\60-Peterson_Refuge_Mitigation\Cadd\Contract\Plans\ec04_RampsFG_prr_mit.dgn

EROSION & SEDIMENT CONTROL	
	TURBIDITY CURTAIN / LENGTH
	TURBIDITY CURTAIN
	SUPER SILT FENCE / LENGTH
	SUPER SILT FENCE
	STABILIZED CONSTRUCTION ENTRANCE



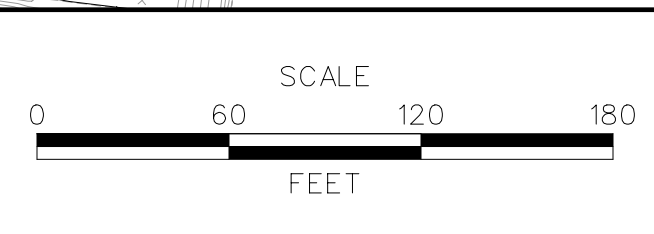
PHASE 1 SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY WARNING SIGNS AS SHOWN ON THE PLANS.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.
3. INSTALL PERIMETER FLAGGING POSTS, PHASE 1 SUPER SILT FENCE, AND PHASE 1 TURBIDITY CURTAIN, FLOATING, AS SHOWN.
4. REMOVE EXISTING CULVERTS. INSTALL REINFORCED CONCRETE PIPE, 48", CLASS V.
5. EXCAVATE TO THE PROPOSED GRADES NORTH OF THE NEW CULVERTS.
6. EXCAVATE TO THE PROPOSED GRADES SOUTH OF THE NEW CULVERTS.
7. STABILIZE WITH SEED.
8. SUBMIT FINAL GRADE AS-BUILTS FOR APPROVAL.
9. REMOVE TURBIDITY CURTAINS AND PERIMETER FLAGGING POSTS.

CONSTRUCTION PHASING LEGEND	
	WORK AREA THIS PHASE

6/16/2017 3:34:54 PM \\balsrv01\2012\2012\12146_DelDOT1585\60-Peterson_Refuge_Mitigation\Cadd\Contract\Plans\cs01_RampsFC_prm_mit.dgn

ADDENDUMS / REVISIONS



CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NLB
	CHECKED BY: JTR

MATCH LINE - SEE SHEET CS-02

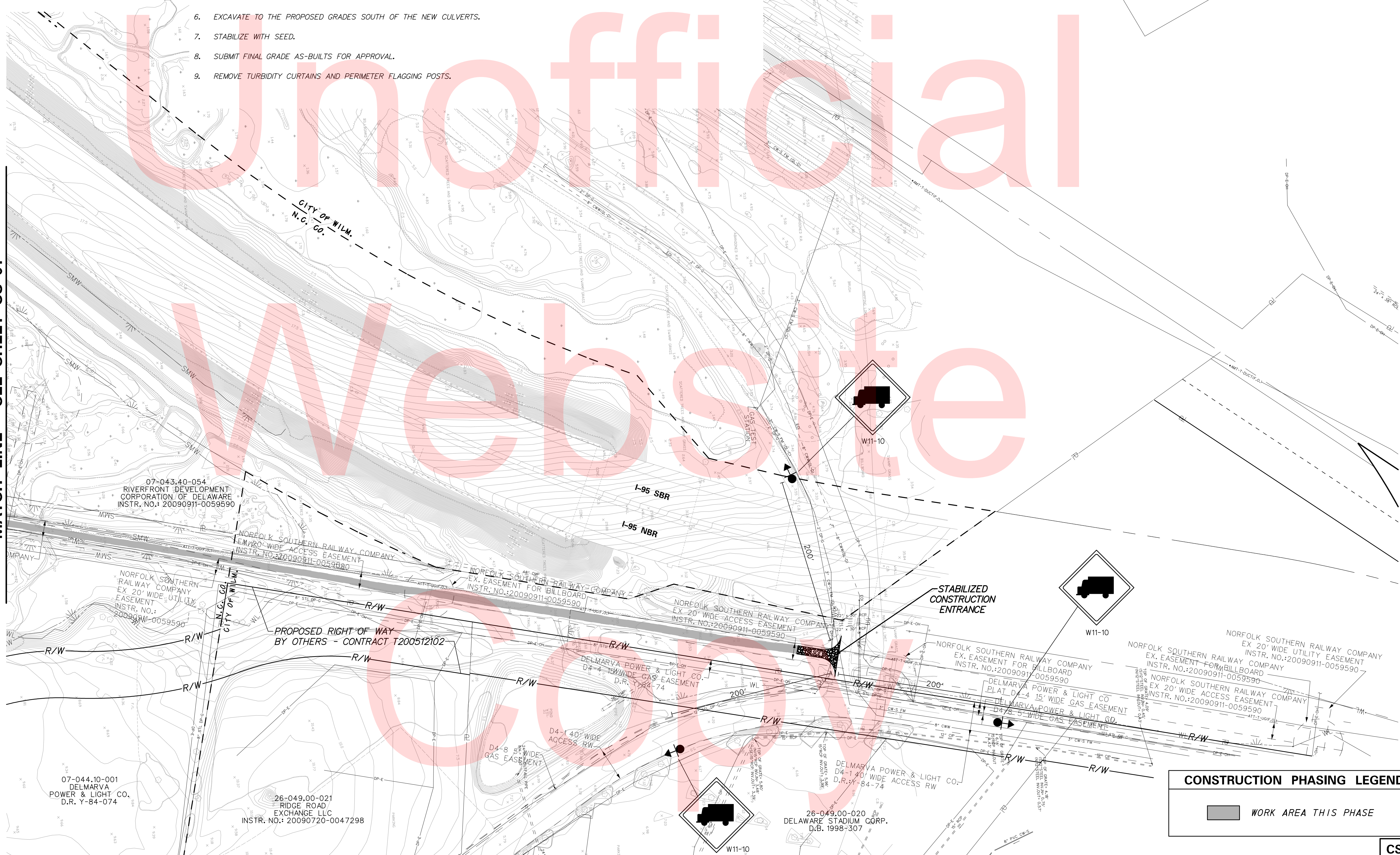
EROSION & SEDIMENT CONTROL

	TURBIDITY CURTAIN / LENGTH
	TURBIDITY CURTAIN
	SUPER SILT FENCE / LENGTH
	SUPER SILT FENCE
	STABILIZED CONSTRUCTION ENTRANCE

PHASE 1 SEQUENCE OF CONSTRUCTION

1. INSTALL TEMPORARY WARNING SIGNS AS SHOWN ON THE PLANS.
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.
3. INSTALL PERIMETER FLAGGING POSTS, PHASE 1 SUPER SILT FENCE, AND PHASE 1 TURBIDITY CURTAIN, FLOATING, AS SHOWN.
4. REMOVE EXISTING CULVERTS. INSTALL REINFORCED CONCRETE PIPE, 48", CLASS V.
5. EXCAVATE TO THE PROPOSED GRADES NORTH OF THE NEW CULVERTS.
6. EXCAVATE TO THE PROPOSED GRADES SOUTH OF THE NEW CULVERTS.
7. STABILIZE WITH SEED.
8. SUBMIT FINAL GRADE AS-BUILTS FOR APPROVAL.
9. REMOVE TURBIDITY CURTAINS AND PERIMETER FLAGGING POSTS.

MATCH LINE - SEE SHEET CS-01



CONSTRUCTION PHASING LEGEND	
	WORK AREA THIS PHASE

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CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NLB
	CHECKED BY: JTR

EROSION & SEDIMENT CONTROL	
	TURBIDITY CURTAIN / LENGTH
	TURBIDITY CURTAIN
	SUPER SILT FENCE / LENGTH
	SUPER SILT FENCE
	STABILIZED CONSTRUCTION ENTRANCE

OLD WILMINGTON MARSH
INSTR. No.: 20090821-0055091

07-043.40-054
RIVERFRONT DEVELOPMENT
CORPORATION OF DELAWARE
INSTR. NO.: 20090911-0059590

07-044.10-001
DELMARVA POWER & LIGHT CO.
D.R. Y-84-074

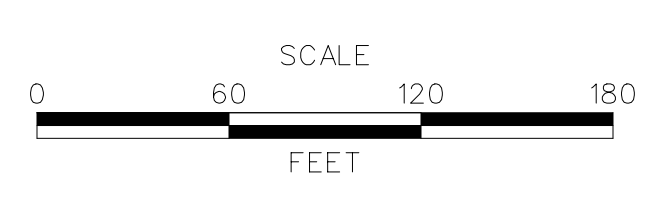
PHASE 2 SEQUENCE OF CONSTRUCTION

- UPON APPROVAL OF THE FINAL GRADE BY THE ENGINEER, MOVE PHASE 1 SUPER SILT FENCE AND PLACE ADDITIONAL SUPER SILT FENCE AS NECESSARY PER THE PHASE 2 CONSTRUCTION PHASING, M.O.T., AND EROSION CONTROL PLANS.
- RESTORE EXISTING DIRT/GRAVEL ROADWAYS IF NECESSARY AS DIRECTED BY THE ENGINEER.
- REMOVE STABILIZED CONSTRUCTION ENTRANCE.
- REMOVE TEMPORARY WARNING SIGNS.

CONSTRUCTION PHASING LEGEND	
	WORK AREA THIS PHASE



ADDENDUMS / REVISIONS



**WETLAND MITIGATION AT
PETERSON WILDLIFE REFUGE**

CONTRACT T201503701	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NLB
	CHECKED BY: JTR

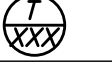
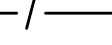

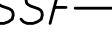

**CONSTRUCTION PHASING,
M.O.T., AND EROSION
CONTROL PLAN
PHASE 2**

CS-03
SHEET NO. 18
TOTAL SHTS. 22

6/16/2017 3:35:58 PM \\balsrv01\2012\2012\12146_DelDOT1585\60-Peterson_Refuge_Mitigation\Cadd\Contract\Plans\cs03_RampsFG_prr_mit.dgn

MATCH LINE - SEE SHEET CS-04

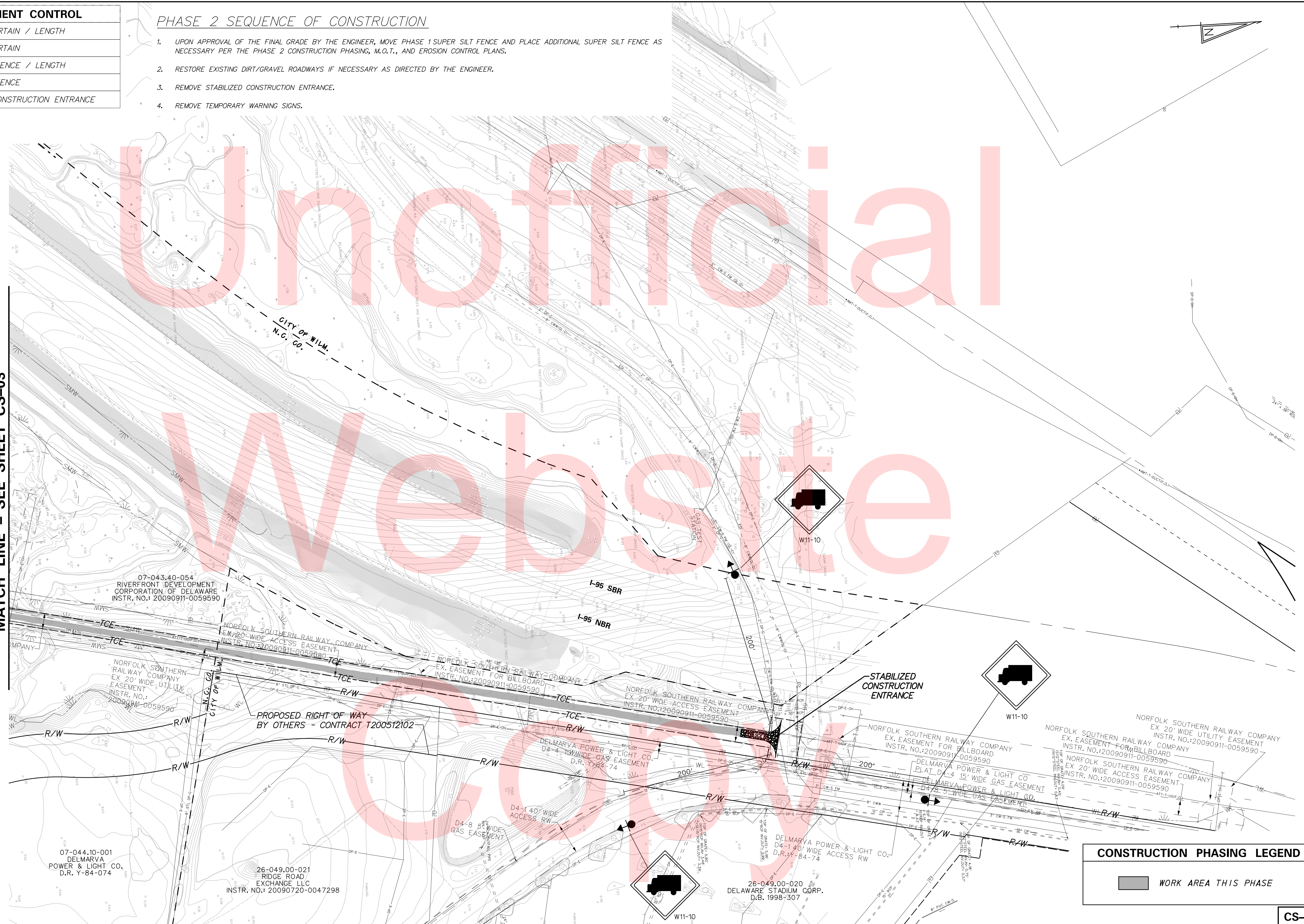
EROSION & SEDIMENT CONTROL


	TURBIDITY CURTAIN / LENGTH
	TURBIDITY CURTAIN
	SUPER SILT FENCE / LENGTH
	SUPER SILT FENCE
	STABILIZED CONSTRUCTION ENTRANCE

PHASE 2 SEQUENCE OF CONSTRUCTION

1. UPON APPROVAL OF THE FINAL GRADE BY THE ENGINEER, MOVE PHASE 1 SUPER SILT FENCE AND PLACE ADDITIONAL SUPER SILT FENCE AS NECESSARY PER THE PHASE 2 CONSTRUCTION PHASING, M.O.T., AND EROSION CONTROL PLANS.
2. RESTORE EXISTING DIRT/GRAVEL ROADWAYS IF NECESSARY AS DIRECTED BY THE ENGINEER.
3. REMOVE STABILIZED CONSTRUCTION ENTRANCE.
4. REMOVE TEMPORARY WARNING SIGNS.

MATCH LINE - SEE SHEET CS-03

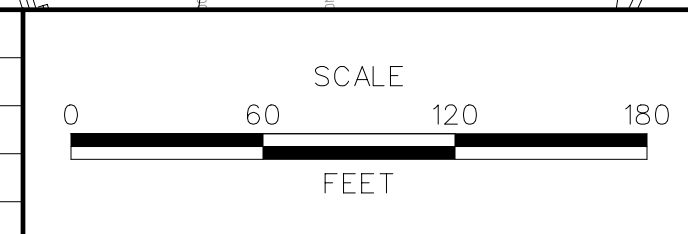


CONSTRUCTION PHASING LEGEND	
	WORK AREA THIS PHASE

9/16/2016 7:56:13 AM \\balsrv01\2012\2012\12146_DelDOT1585\60-Peterson_Refuge_Mitigation\Cadd\Contract\Plans\cs04_RampsFG_prm_mit.dgn

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS



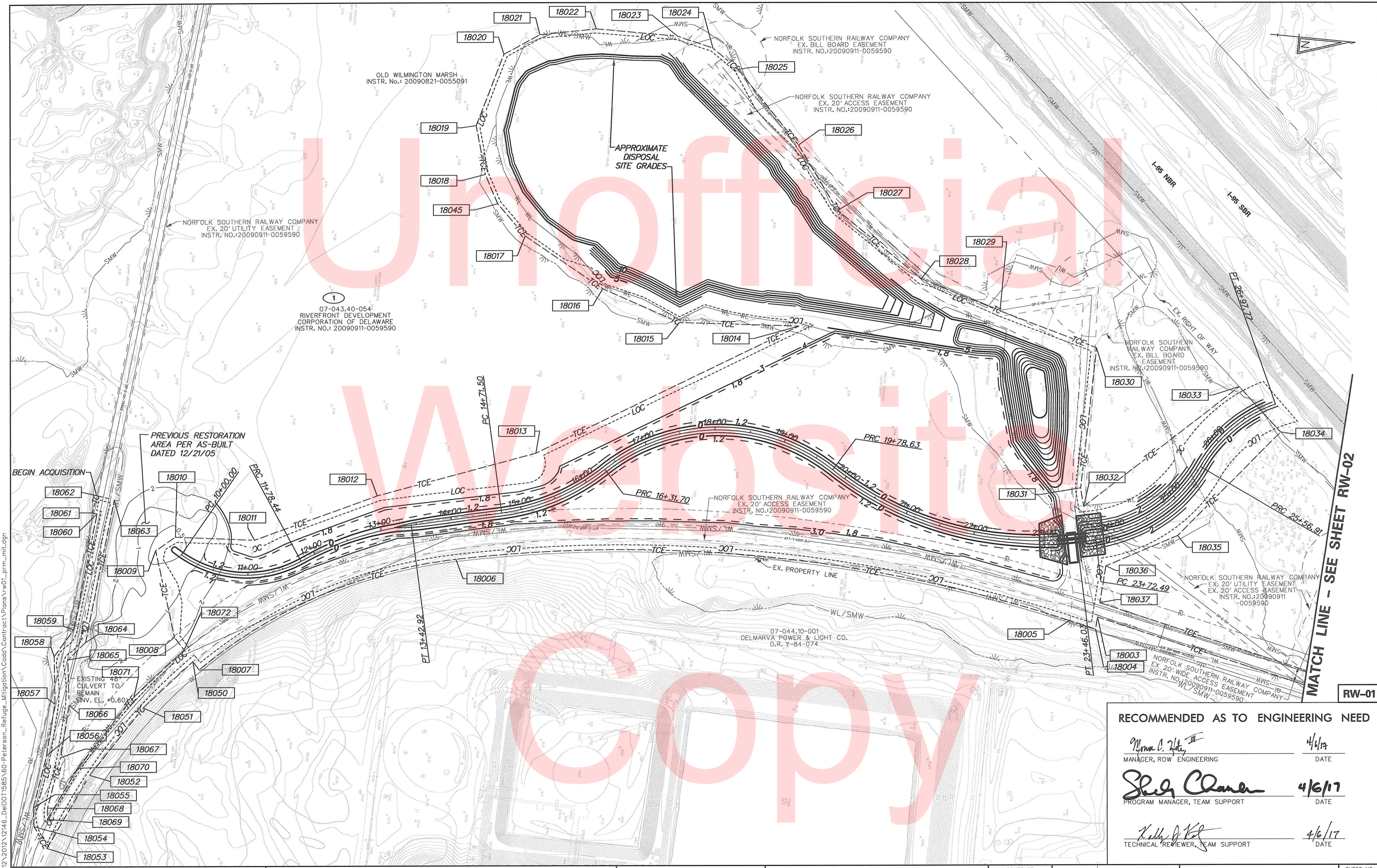
WETLAND MITIGATION AT PETERSON WILDLIFE REFUGE

CONTRACT	T201503701	BRIDGE NO.	
COUNTY	NEW CASTLE	DESIGNED BY:	NLB
		CHECKED BY:	JTR

CONSTRUCTION PHASING, M.O.T., AND EROSION CONTROL PLAN PHASE 2

CS-04
SHEET NO.
TOTAL SHTS.
22

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Wetland Mitigation Site

MATCH LINE - SEE SHEET RW-02

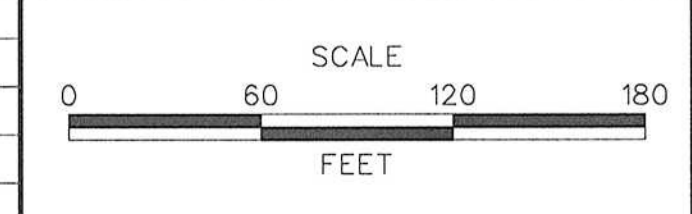
RW-01

RECOMMENDED AS TO ENGINEERING NEED

<i>Mona C. Zlaty III</i>	4/6/17
MANAGER, ROW ENGINEERING	DATE
<i>Shelby Chaner</i>	4/6/17
PROGRAM MANAGER, TEAM SUPPORT	DATE
<i>Kelly J. Kel</i>	4/6/17
TECHNICAL REVIEWER, TEAM SUPPORT	DATE

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS



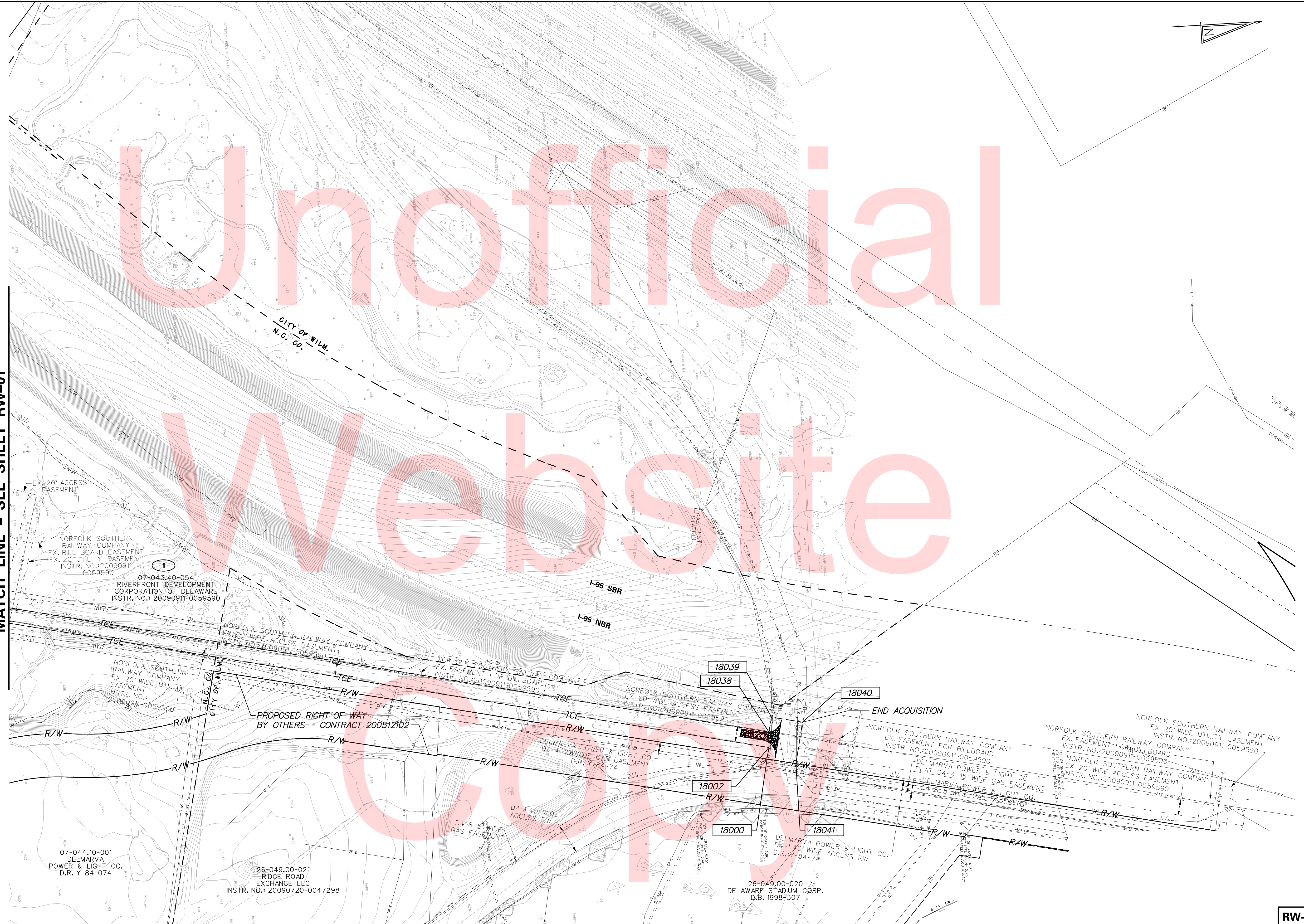
WETLAND MITIGATION AT PETERSON WILDLIFE REFUGE

CONTRACT	BRIDGE NO.
T201503701	DESIGNED BY: DVW
COUNTY	CHECKED BY: JCF
NEW CASTLE	

RIGHT OF WAY PLAN	SHEET NO.
	20
	TOTAL SHTS.
	22

Unofficial Website

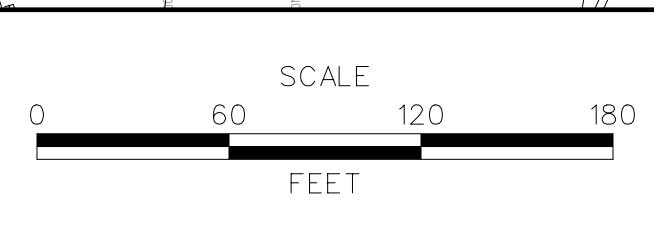
MATCH LINE - SEE SHEET RW-01



11/21/2016 3:18:42 PM \\balsrv01\2012\2012\12146_DelDOT1585\60-Peterson_Refuge_Mitigation\Cadd\Plans\RW02_prm_mit.dgn

DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS	



WETLAND MITIGATION AT PETERSON WILDLIFE REFUGE

CONTRACT	BRIDGE NO.
T201503701	DESIGNED BY: DWV
COUNTY	CHECKED BY: JCF
NEW CASTLE	

RIGHT OF WAY PLAN

RW-02
SHEET NO.
21
TOTAL SHTS.
22

COUNTY ASSESSMENT PARCEL NUMBER	PLAN SHEET NUMBER	OWNERSHIP OF RECORD	TITLE SOURCE	PROPERTY AREA BEFORE ACQUISITION (ACRE) D=DEED C=CALCULATED A=ASSESSMENT	ACQUISITION CODE FEE, R/W, P/E, TCE	AREA TO BE ACQUIRED				PROPERTY AREA REMAINING (SQ. FEET /ACRES)	DEED RECORD OF ACQUISITION	REMARKS
						ACQUISITION (SQ. FEET /ACRES)	AREA OCCUPIED BY EXISTING RIGHT OF WAY (SQ. FEET /ACRES)	EASEMENT				
								PERMANENT (SQ. FEET /ACRES)	TEMPORARY (SQ. FEET /ACRES)			
07-043.40-054	20, 21	(1) RIVERFRONT DEVELOPMENT CORPORATION OF DELAWARE	20090911-0059590	A - 73.58	TCE				556686.8353 / 12.78	3205144.80 / 73.58		TCE TO BE PROVIDED FREE OF CHARGE AS PROJECT WILL ENHANCE THE PETERSON WILDLIFE REFUGE

ACQUISITION CODES
 FEE - ACQUISITION
 R/W - AREA OCCUPIED BY EXISTING R/W
 P/E - PERMANENT EASEMENT
 TCE - TEMPORARY EASEMENT

ASSESSMENT NUMBER	OWNERSHIP OF RECORD					TYPE OF ACQUISITION	TITLE SOURCE	PARCEL AREA (ACRES)			
07-043.40-054	(1) RIVERFRONT DEVELOPMENT CORPORATION OF DELAWARE					TCE	20090911-0059590	73.580			
ALIGNMENT NUMBER & DESCRIPTION: - , 17000 - CHANNEL CENTERLINE											
PT. NO.	ALIGN. NO.	STATION	OFFSET *	NORTH	EAST	BEARING	DISTANCE	CHORD BEARING	CHORD LENGTH	ARC LENGTH	RADIUS **
18000				630582.2756	614217.7721	N 77°34' 07.92" W	15.35				
18002				630585.5794	614202.7844	S 12°48' 51.05" W	1320.01				
18003	17000	23+61.71	113.55	629298.4411	613910.0187	S 85°57' 53.05" E	17.08				
18004	17000	23+56.91	129.94	629297.2393	613927.0543	S 12°39' 52.59" W	38.75				
18005	17000	23+26.55	114.11	629259.4349	613918.5592			S 0°22' 24.78" W	870.67	877.36	-2048.22
18006	17000	13+99.10	55.97	628388.7828	613912.8827			S 28°30' 08.22" E	394.41	399.99	-690.00
18007	17000	10+61.99	140.67	628042.1749	614101.0933	S 47°21' 13.52" W	14.68				
18050	17000	10+55.78	131.47	628032.2319	614090.2978	S 48°12' 03.04" E	96.02				
18051	17000	10+33.85	216.23	627968.2349	614161.8767	S 56°52' 25.56" E	121.25				
18052	17000	10+23.14	334.05	627901.9731	614263.4204	S 64°48' 30.86" E	119.40				
18053	17000	10+20.96	453.22	627851.1500	614371.4669	S 54°11' 20.83" W	35.48				
18054	17000	10+12.82	435.06	627830.3873	614342.6903	S 82°49' 28.19" W	26.66				
18055	17000	10+08.84	412.64	627827.0577	614316.2423	N 81°07' 02.48" W	75.54				
18056	17000	10+01.57	341.07	627838.7219	614241.6079	N 85°58' 43.00" W	73.87				
18057				627843.9023	614167.9211	S 83°33' 29.99" W	67.00				
18058				627836.3850	614101.3401	N 58°58' 39.32" W	46.67				
18059				627860.4361	614061.3478	N 83°54' 29.82" W	166.53				
18060				627878.1085	613895.7558	S 8°38' 05.45" W	6.96				
18061				627871.2242	613894.7103	N 81°23' 49.76" W	24.99				
18062				627874.9628	613869.9981	N 8°36' 10.24" E	25.86				
18063				627900.5365	613873.8671	S 83°54' 46.49" E	204.82				
18064				627878.8171	614077.5348	S 49°48' 24.93" E	35.11				
18065				627856.1561	614104.3571	N 83°03' 07.03" E	64.03				
18066				627863.9023	614167.9208	S 86°00' 31.43" E	74.64				
18067	17000	10+07.42	332.42	627858.7071	614242.3781	S 80°47' 47.95" E	73.23				
18068	17000	10+13.76	402.66	627846.9952	614314.6628	N 85°33' 41.76" E	16.06				
18069	17000	10+15.93	416.76	627848.2377	614330.6706	N 64°48' 30.86" W	83.73				
18070	17000	10+16.61	333.06	627883.8753	614254.9076	N 56°47' 43.96" W	127.82				
18071	17000	10+26.02	207.69	627953.8734	614147.9573	N 48°26' 36.46" W	97.20				
18072	17000	10+46.44	119.41	628018.3494	614075.2252	S 47°21' 13.53" W	22.41				
18008	17000	10+35.32	107.39	628003.1703	614058.7448	S 72°24' 46.05" W	124.89				
18009				627965.4334	613939.6909	N 39°46' 25.10" W	33.64				
18010				627991.2871	613918.1706	N 3°04' 14.85" W	111.84				
18011	17000	11+14.09	-48.72	628102.9677	613912.1793	N 25°03' 09.43" W	184.15				
18012	17000	13+04.73	-49.03	628269.7970	613834.1989	N 20°17' 38.26" W	231.99				
18013	17000	15+49.38	-69.50	628487.3901	613753.7348	N 31°02' 20.76" W	412.62				
18014	17000	18+75.77	-162.02	628840.9259	613540.9806	S 3°39' 24.90" E	169.04				
18015	17000	17+70.12	-154.99	628672.2313	613551.7622	S 18°22' 58.00" W	118.30				
18016	17000	17+15.80	-227.12	628559.9652	613514.4537	S 28°48' 05.43" W	132.34				
18017	17000	16+81.72	-338.96	628443.9960	613450.6952	S 44°11' 10.55" W	59.66				
18045	17000	16+76.26	-397.15	628401.2182	613409.1156	S 61°29' 42.43" W	44.85				
18018	17000	16+77.75	-441.82	628379.8164	613369.7064	S 74°09' 44.39" W	69.77				
18019	17000	16+84.84	-508.65	628360.7763	613302.5884	N 73°59' 04.67" W	107.79				
18020	17000	17+09.44	-584.88	628390.5162	613198.9781	N 33°45' 10.94" W	57.74				
18021	17000	17+26.88	-594.26	628438.5211	613166.8985	N 11°21' 19.56" W	80.16				
18022	17000	17+51.19	-582.45	628517.1148	613151.1148	N 0°14' 34.55" W	115.00				
18023	17000	17+86.33	-556.49	628632.1129	613150.6273	N 13°08' 12.06" E	52.91				
18024	17000	18+02.27	-537.71	628683.6413	613162.6531	N 34°50' 59.52" E	46.63				
18025	17000	18+14.24	-508.10	628721.9115	613189.3010	N 45°59' 09.83" E	136.44				
18026	17000	18+48.88	-410.72	628816.7140	613287.4241	N 53°44' 07.70" E	107.35				
18027	17000	18+79.60	-333.42	628880.2143	613373.9815	N 33°44' 35.27" E	152.16				
18028	17000	19+46.37	-293.14	629006.7427	613458.5031	N 16°53' 10.39" E	119.91				
18029	17000	21+25.72	-314.68	629121.4826	613493.3336	N 15°34' 03.51" E	146.08				

FIGURE 18000 CONTINUED FROM THIS SHEET

18030	17000	25+91.05	-216.93	629262.2011	613532.5373	S 88°45' 58.32" E	198.51				
18031	17000	23+60.20	-69.99	629257.9268	613730.9999	N 75°31' 41.64" E	26.69				
18032	17000	23+61.22	-43.32	629264.5958	613756.8397	N 42°48' 08.37" W	277.15				
18033	17000	26+64.49	-43.47	629467.9398	613568.5258	N 42°07' 48.58" E	86.49				
18034	17000	26+89.82	39.32	629532.0828	613626.5448	S 50°22' 30.82" E	206.43				
18035	17000	24+71.51	42.78	629400.4295	613785.5462	S 28°04' 54.23" E	109.78				
18036	17000	23+80.47	43.71	629303.5766	613837.2212	S 85°57' 58.36" E	52.74				
18037	17000	23+67.40	94.13	629299.8668	613889.8285	N 12°48' 51.05" E	1320.01				
18038				630587.0051	614182.5942	N 77°07' 07.76" W	20.00				
18039				630591.4636	614163.0975	N 12°52' 52.24" E	41.36				
18040				630631.7869	614172.3188	S 77°24' 23.98" E	55.13				
18041				630619.7660	614226.1265	S 12°33' 45.41" W	38.41				
18000				630582.2756	614217.7721						

FIGURE 18000 AREA = 556686.8353 SQ. FT. (12.7798 ACRES)

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ADDENDUMS / REVISIONS

NOT TO SCALE

WETLAND MITIGATION AT PETERSON WILDLIFE REFUGE

CONTRACT T201503701
 COUNTY NEW CASTLE
 BRIDGE NO.
 DESIGNED BY: DVW
 CHECKED BY: JCF

RIGHT-OF-WAY DATA & TABULATION SHEET
 SHEET NO. 22
 TOTAL SHTS. 22

LEGEND
 FEE AREA OF ACQUISITION
 RW AREA OCCUPIED BY EXISTING RW
 PE PERMANENT EASEMENT
 TCE TEMPORARY CONSTRUCTION EASEMENT
 * - - - OFFSET IS LEFT OF BASELINE
 ** - - - CURVE TURNS TO THE LEFT