

October 18, 2023

Submitted electronically via Digital DNREC ePermitting System upload

RE: DNREC Wetlands and Subaqueous Lands Permit T202109101 - I-295 NB, SR 141 to US 13 New Castle County, Delaware

Dear Sir or Madam:

On behalf of the Delaware Department of Transportation (DelDOT), JMT, Inc. is pleased to submit this Wetlands and Subaqueous Lands Permit Application for your review and authorization of the above referenced project. A brief description of the proposed work is provided below and the following documents are enclosed for your review:

- Wetlands and Subaqueous Lands Permit Application
- Location, Topographic, and Aerial Maps
- Adjacent Property Owner Addresses & Property Addresses within 1,000 Feet
- Approved Categorical Exclusion with Agency Correspondence
- Aquatic Resource Identification & Delineation Report
- Construction Plans and Environmental Compliance Sheets

Project Description

The I-295 NB, SR 141 to US 13 Project consists of capacity improvements for northbound I-295 from the northbound I-95/I-295 diverge through the I-295/SR 141 Interchange and northbound to US 13 in New Castle County, Delaware. The I-95 to I-295 Interchange and ramps are critical to the I-95 corridor and interstate travel in the northeast. This project will help alleviate the congestion associated with the northbound I-95 to I-295 ramps. Please see the enclosed mapping for the project limits. Proposed work includes the addition of a sixth northbound I-95 travel lane between the Christina River Bridge and the Airport Road Exit, adding a third northbound I-295 travel lane at its split with I-95, and continuing the three travel lanes to the US 13 Interchange. The existing Exit 5A Airport Road Ramp will be reconfigured from a stop-controlled intersection to a single lane roundabout. Proposed construction work is anticipated to be completed in four separate phases. A portion of the I-295 improvements fall within the maintenance responsibility of the Delaware River & Bay Authority (DRBA).

In consideration of this project's scope, the Department is submitting a Wetlands and Subaqueous Permit Application for DNREC's review and authorization of the above referenced DelDOT project. In addition to the requested permit authorization, the Department is applying concurrently for a USACE Nationwide permit #23 (Approved Categorical Exclusion), New Castle County Floodplain Review, and a National Pollutant Discharge Elimination System Construction Permit.

If you have any questions or need further information, please do not hesitate to contact me at (717) 741-6243 or kaiosa@jmt.com.

Very truly yours,

JOHNSON, MIRMIRAN & THOMPSON, INC.

Kristin J. Aiosa

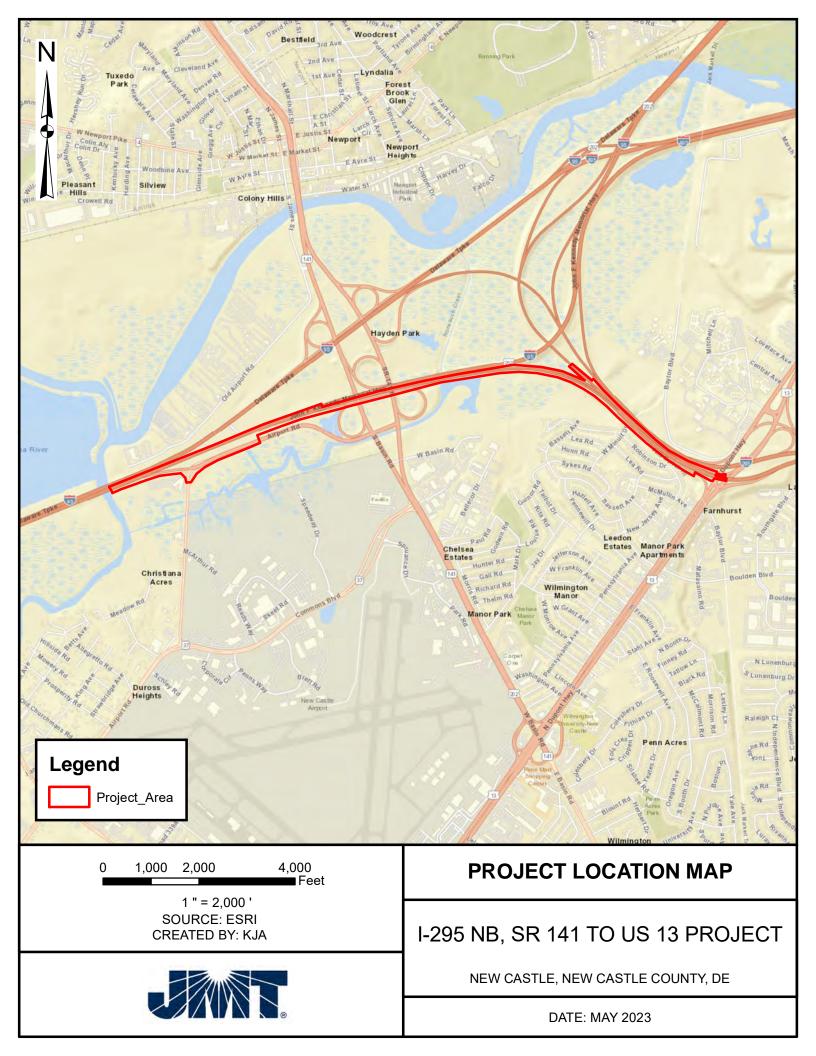
Senior Environmental Scientist

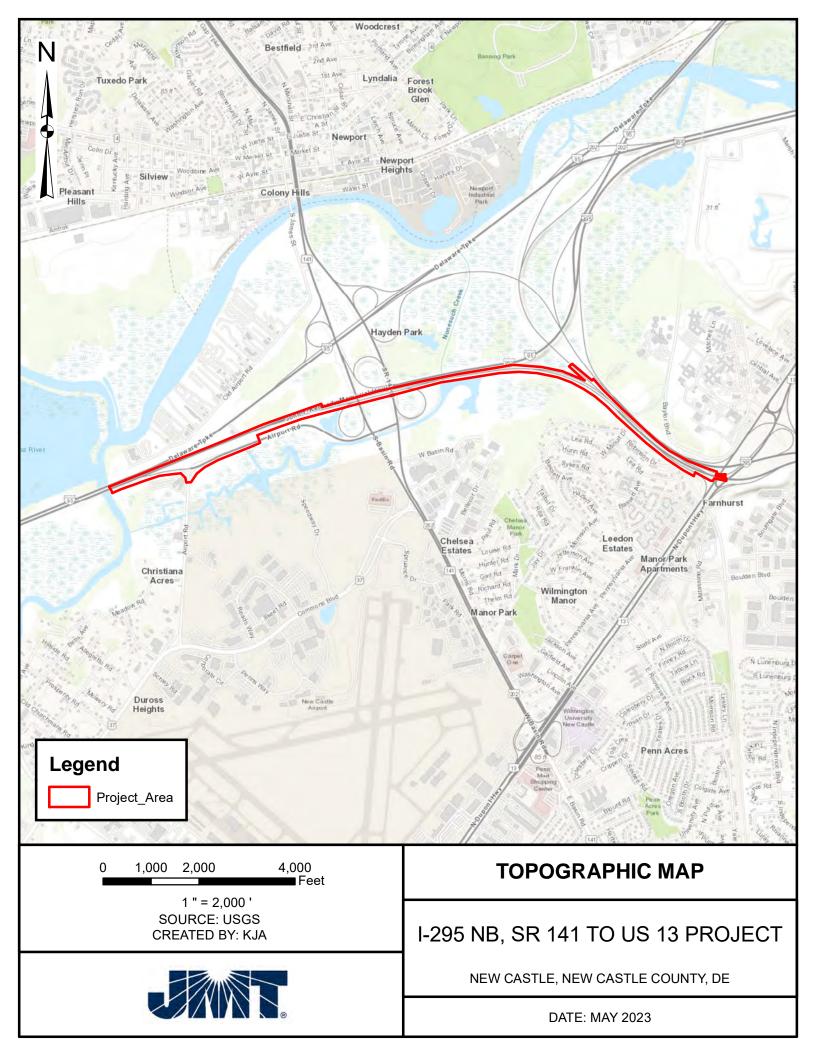
Enclosures

Cc: Anna Smith, DelDOT

Jerry Lovell, P.E., DelDOT Matthew Goudy, P.E., DelDOT Brad herb, P.E., JMT, Inc. Charles Gabel, P.E., JMT, Inc.

PROJECT MAPPING







0 1,000 2,000 4,000 Feet

1 " = 2,000 ' SOURCE: ESRI CREATED BY: KJA



AERIAL MAP

I-295 NB, SR 141 TO US 13 PROJECT

NEW CASTLE, NEW CASTLE COUNTY, DE

DATE: MAY 2023

ADJACENT PROPERTY OWNER ADDRESS LIST & ADDITIONAL PROPERTY ADDRESSES WITHIN 1,000 FEET

Adjacent Property Owners			
Property Owner Name	Mailing Address		
State of Delaware	Box 8 Bear, DE 19701		
New Castle County	365 Airport Road, New Castle, DE 19720		
State of Delaware			
Department of			
Transportation C/O Wayne			
Rizzo	800 Bay Road Dover, DE 19901		
State of Delaware	800 Bay Road Dover, DE 19901, ATTN: Real Estate Section		
Delmarva Power & Light Co			
C/O Ernst & Young LLP	PO Box 340014 Nashville, TN 37203		
City of New Castle - Mayor &	,		
c	No mailing address listed		
State of Delawate	· ·		
Department of Trans Div of			
Highways	250 Bear Christ Road Bear, DE 19701		
New Castle County	800 North French St Wilmington, DE 19801 -3590		
New Castel County C/O	5 /		
DRBA ATTN Michelle			
Griscom	PO Box 71 New Castle, DE 19720		
Common Boulevard LP	405 E Marsh Lane Suite 1, Newport, DE 19804		
New Castel County C/O	, , , , , , , , , , , , , , , , , , , ,		
DRBA ATTN Michelle			
Griscom	800 North French St Wilmington, DE 19801 -3590		
Messatesta Paul (L.E.)	84-83 Dana Court Unit 4A Middle Village, NY 11379		
State of Delaware	21 The Green Dover, DE 19901-3611		
John P Healy	60 Robinson Drive, New Castle, DE 19720		
Dorman Donna	58 Robinson Drive, New Castle, DE 19720		
Norris Kaleb	56 Robinson Drive, New Castle, DE 19720		
Matthew and Susan Thomas Denna C Breining Pauleet R Annane	502 Beaver Valley Road, Wilmington, Delaware 19808 52 Robinson Drive, New Castle, DE 19720 50 Robinson Drive New Castle, De 19720		
Big T Properties Delaware	30 NOSINSON SINC NEW Castle, BC 13720		
LLC	880 Harrison St SE Leesburg, VA 20175		
Reyes Juan	46 Robinson Drive New Castle, DE 19720		
Alber F Perrone Jr and L	10 NOSINSON SINC NEW Castle, BE 13720		
Diane Lomonaco	893 Port Penn Road Middletown, DE 19709		
State of Delaware	21 The Green Dover, DE 19901-3611		
Delaware River and Bay	21 1110 010011 50101 5011		
Authority	PO Box 71 New Castle, DE 19720		
State of Delaware C/O	1 0 55x 71 New Custie, 52 13720		
DSAMH	1901 North Dupont Highway Main Buidling, 183, New Castle, DE 19720 At		
State of Delaware	1901 North Dupont Highway Main Buidling, 183, New Castle, DE 19720		
Delmarva Power & Light Co	2502 North Dapone inghway Main Dalaing, 103, New Castle, DE 19720		
C/O Ernst & Young LLP	PO Box 340014 Nashville, TN 37203		
C/O LITISE & TOUTING LLF	I O DON 340014 INASIIVIIIC, IIN 3/203		

State of Delaware Bureau of	
Prisons	80 Monrovia AV Smyrna, DE 19977
New Castle County	87 Reads Way, New Castle, Delaware 19720
Kelter Inc	405 E Marsh Lane Newport, DE 19804
Kelter Inc	·
	405 E Marsh Lane Newport, DE 19804
Town of Newport - Comm	205 N Marshall St, Wilmington, DE 19804
Town of Newport- Comm	226 N James St, Newport, DE 19804
State of Delaware	Box 8 Bear, DE 19701
The Chemours Company FC	
LLC	1007 Market Street, Wilmington, DE 19898-1100
Dominick A Necastro Estate	495 Old Airport Road, New Castle, DE 19720
Vincent A Necastro Jr &	
Charles E Wahl III	601 Swallow Hollow Road, Greenville, DE 19807
D A Necastro	495 Old Airport Road, New Castle, DE 19720
475 Airport Road LLC	761 Grantham Lane, New Castle, DE 19720
415 Old Airport LLC	4 Star Point Suite 204, Stamford, CT 06902
Susan A, Tyler W, and Ryan	
M Fitzwater	100 S Broad Street, Middletown, Delaware 19709
KB Enterprises LLC	461 Old Airport Rd, New Castle, DE 19720
Interest Holdings Inc	3101 N Nebraska Ave, Tampa, Florida 33603
Crescenzo Holdings LLC	3101 N Nebraska Ave, Tampa, Florida 33603
John E Filipkowski	112 Reamer Ave, Wilmington, DE 19804
B & F Towing and Salvage Co	
In	449 Old Airport Road, New Castle, DE 19720
415 Old Airport LLC	4 Star Point Suite 204, Stamford, CT 06902
335 Airport Road Property	
Holding LLC	445 Old Airport Road, New Castle, DE 19720
431 Old Airport LLC	4 Star Point Suite 204, Stamford, CT 06902
B & F Towing and Salvage Co	
In	449 Old Airport Road, New Castle, DE 19720
PJH Ventures Inc	PO Box 311, Montchanin, DE 19710
MB Properties LLC C/O Gary	
Morgan	450 McGrady Road Rising Sun, MD 21911
Crown Atlantic Company LLC	
PMB 353 - 806822	4017 Washington Road McMurray, PA 15317 -2520
Patricia A Breitenbach	915 Cyldesdale Drive, Bear, De 19701
Steel and Metal Services	, ,
Center Newcastle DE LLC	407 Old Airport Road, Newcastle, DE 19720
State of Delaware	PO Box 778, Dover DE 19903
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Joyce & Owen G Davis United Cerebral Palsy of Delaware Inc. 700A River Rd Wilmington, DE 19809 Elizabeth C Parziale 115 Robinson Dr New Castle, DE 19720 Dawn A Sheridan 113 Robinson Dr New Castle, DE 19720 Michael H Brown Jose Colon & Aixa Roman & Benito Paboin 109 Robinson Dr New Castle, DE 19720 William E & Dianne Layer 107 Robinson Dr New Castle, DE 19720 Andre C & Jocelyn F Brown Dorotea Castro Hidalgo 19 W Minuit Dr New Castle, DE 19720 Keith D Sharpe 17 W Minuit Dr New Castle, DE 19720 George Q & Geraldyne C Young 15 W Minuit Dr New Castle, DE 19720 Joe M Calderon 102 Lea Rd New Castle, DE 19720 Amy Lynn Powley 104 Lea Rd New Castle, DE 19720 John C & Maureen A Mitchell 131 Monroe St Franklin Square, NY 11010 Lauren M Hageman 112 Lea Rd New Castle, DE 19720 Linda M Brown 114 Lea Rd New Castle, DE 19720 Linda M Brown 114 Lea Rd New Castle, DE 19720 Linda M Brown 114 Lea Rd New Castle, DE 19720 Linda M Brown 114 Lea Rd New Castle, DE 19720 Linda M Brown 114 Lea Rd New Castle, DE 19720 Linda M Brown 115 Lea Rd New Castle, DE 19720 Linda M Brown 116 Lea Rd New Castle, DE 19720 Linda M Brown 117 Lea Rd New Castle, DE 19720 Linda M Brown 118 Lea Rd New Castle, DE 19720 Linda M Brown 119 Lea Rd New Castle, DE 19720 Linda M Brown 119 Lea Rd New Castle, DE 19720 Linda M Brown 110 Lea Rd New Castle, DE 19720 Linda M Brown 111 Lea Rd New Castle, DE 19720 Linda M Brown 112 Lea Rd New Castle, DE 19720	Additio	nal Property Owners Within 1,000 Feet
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326 Bassett Av New Castle, DE 19720
121 Lea Rd New Castle, DE 19720
833 Salem Church Rd Newark, DE 19702
2 Newark Union Public Rd Wilmington, DE 19803
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APPROVED CATEGORICAL EXCLUSION



STATE OF DELAWARE

DEPARTMENT OF TRANSPORTATION

800 BAY ROAD P.O. BOX 778 DOVER, DELAWARE 19903

NICOLE MAJESKI SECRETARY

October 12, 2023

Mr. Doug Atkin Division Administrator FHWA – Delaware Division 1201 College Park Road, Suite 102 Dover, Delaware 19904

Dear Mr. Atkin:

The attached information supports the Department's environmental determination for the following project.

Contract No. T202109101 FAP No. EIM-N056(46) I-295 NB, SR 141 to US 13 Project

This project will be administered under the FHWA Stewardship Agreement. Your approval in this determination is requested as per 23 CFR Part 771. This project has been processed and approved in accordance with the DelDOT/FHWA Programmatic Agreement regarding the processing of certain Categorical Exclusions Actions. <u>Please provide a copy of the signed approval form to Environmental Stewardship at DelDOT</u>. Thank you.

Sincerely,

John L. Caruano, P.E.

Chief of Environmental & Administrative Support

JC: hb
Attachments

cc: Federal Highway Administration

Maureen Kelley, Deputy Director Design, DOTS

Wendy March, Environmental Specialist Supervisor, Environmental Stewardship, DOTS

Matthew Vincent, P.E., Chief of Project Development North, DOTS

Jerry Lovell, P.E., Project Manager, Project Development North, DOTS

Christie Bonniwell, Interim Environmental NEPA Specialist, Environmental Stewardship, DOTS

Anna Smith, Environmental Manager, Environmental Stewardship, DOTS

Christine Levely, External Audit Supervisor, DOTS

Helen Banks, Administrative Assistant, Engineering Support, DOTS

Finance Team

ROW Team



CATEGORICAL EXCLUSION PROJECT INITIATION FORM

	S	TATE			F	EDER.	AL
PROJECT NO:	T202109101			PROJECT NO:	EIM-N056(46)		
YEAR:	2023		ı	FUNDING	Y001		
COUNTY.	New Castle			PERCENT:	00/10		
DISTRICT:	North			PERCENT:	90/10		
PROJECT TITLE	E: I-295 NB, SR 14	1 to US 13 Project	4				
DETAILED LOC	CATION: The project and continuous Interchange R.K. DESCRIPTION of CON: This project in northbound to bridge and the	ct area consists of an approximues along I-295 northbound to ac occurs in the central portion to the control of	o the east and so n of the project ts for I-295 NB des the addition hird northbound	outheast and ends area. from the I-95/I-29 of a sixth northbod I-295 travel lane	s at the I-295/US 13 95 NB diverge thro pund I-95 travel lar e at its split with I-6	3 Intercha ough the Ine betwee	6-295/SR 141 Interchange and on the Christina River
PROJECT JUSTI. Project Assigned t	roundabout. E mounted signs VFICATION: The I-allevia season for Lethe I-2 operatifurther	stating overhead sign structures. 95 to I-295 Interchange and rate the congestion associated we during the weekend peak how vel of Service (LOS) and capa 195 NB diverge from I-95 NB, ions along I-95 NB to the SR impact operations along I-95	amps are critica with the I-95 NF urs starting from acity deficiencie . These deficien 1 Interchange. 1	l to the I-95 corrie to I-295 NB ran the I-295 diverg s were identified acies create extens By 2040, these qu	dor and interstate tr nps. I-95 NB experie e at the SR 141 Int for both existing (2 sive queuing along	d supplem ravel in the iences conterchange 2017) and I-295 NE pected to	ne northeast. This project will help ingestion throughout the Summer The project area was evaluated
Eautal.							
Environmental:	Class I.	=		□4(f)	de minimis	4((f) Evaluation Required
Public Involveme		<i>11</i> , (3)					
		Public Hearing		Meeting with a	djacent Property		No Public Involvement
		Public Workshop		Public Meeting	by Sponsor		Public notification and MOT will follow the DE MUTCD
		"If" Notice	/	Virtual Worksh	юр		
	has no substantial pu Forms to current CTP	ublic or agency controversy on P, STIP and TIP_	environmental	grounds.			
96	2 C						

CATEGORICAL EXCLUSION EVALUATION PROJECT CHECKLIST AND PROJECT LEVEL DETERMINATION FORM

Project Title: I-295 NB, SR 141 to US 13 Project

State Contract No.: T202109101

Federal Aid Project No.: EIM-N056(46)

Right-of-Way (RW) Requirements:			
A. Private	None	COMMENTS	
71. I Tivate	rtone	The proposed project construction occurs entirely within the existing right-of-way. There are no	
B. Public	None	right-of-way acquisitions or temporary/permanent easements needed for the project.	
C. 4(f)	None		
D. 6(f)	None		

COMMENTS
No relocations are proposed.
]

Social Impacts:		
A. Local	None	COMMENTS
i. Local	TTOME	The proposed project will improve the traffic conditions within the northbound I-95 and I-295 corridors in
B. Regional	None	northeastern New Castle County, which are important interstates providing access to the City of Wilmington and the state of New Jersey, respectively. In addition, increased operational capacity on northbound I-295 should also improve traffic flow on SR 141, which is a critical link for local traffic and regional commercial and employment centers to the I-95 and I-295 corridors. The proposed project construction will occur entirely within the existing right-of-way; therefore, there will be no land use changes on adjacent properties.

Environmental Justice (EJ):			
A. Minority	Possible	COMMENTS	
B. Low-Income	Possible	EJ Populations are present in the vicinity of the project area; however, impacts to these Populations will not be disproportionately high or adverse Therefore, in accordance with the provisions of Executive Order 12898 and Federal Highway Administration (FHWA) Order 6640.23, no further EJ analysis is required. Please see the narrative for additional detail.	

CATEGORICAL EXCLUSION EVALUATION PROJECT CHECKLIST AND PROJECT LEVEL DETERMINATION FORM

Jackson State		Economic Impacts:
A. Local	None	COMMENTS
B. Regional	None	No economic impacts are anticipated as a result of the proposed project.
		
C. Statewide	None	
		Cultural Resources:
A. National Register	None	COMMENTS
B. State Listing		DelDOT Qualified Staff reviewed the project on 3/27/2023 and determined that in accordance with Stipulation III.B.1 or III.B.2.a.i. of the 2018 Programmatic Agreement for the Federal Aid Highway
_	None	Program in Delaware, no historic properties will be affected.
C. Other	None	
		Air Quality (AQ):
A T 1		COMMENTS
A. Local B. Statewide	None	The purpose of the project is to improve capacity along I-295 NB between the I-95/I-295 NB diverge and US 13. The project will not result in any meaningful changes that would cause an increase in emissions impacts. The increased capacity on I-295 NB is expected to alleviate congestion and may reduce localized vehicle pollutant emissions.
		Noise:
A. Residential	None	COMMENTS
B. Commercial	None	Detailed noise analysis is warranted for the I-295 NB, SR 141 to US 13 Project. The proposed work meets the criteria of a Type 1 project (those types of projects that would require a noise analysis) under the
C. Sensitive Receptors	None	conditions of the 23 CFR 772, Procedures for Abatement of Highway Traffic Noise and Construction Noiand DelDOT's Transportation Noise Policy (P.I. Number D-03, 3/1/21). A Preliminary Noise Analysis was completed for the project in September 2023 to determine if the proposed project would result in traffic
-		noise impacts to the adjacent Noise Sensitive Receptors, and if so, determine if noise abatement would me DelDOT feasibility and reasonableness criteria for mitigation. The impact analysis determined that there
D. Other	None	will be no impacts by predicted future build noise levels and that noise abatement is not required.
	1	Hazardous Material:
A. Hazardous Material	None	COMMENTS
		DelDOT's Hazardous Waste Program Manager reviewed the project limits for potentially contaminated sites. No sites were discovered within the project limits. Please see the Hazardous Materials Checklist attached to the narrative for more detail.

CATEGORICAL EXCLUSION EVALUATION PROJECT CHECKLIST AND PROJECT LEVEL DETERMINATION FORM

Water Quality:			
A. Surface Water	Probable	COMMENTS	
B. Ground Water	None	Impacts to hydrology and water quality during construction will be addressed with erosion and sediment control devices per the DNREC Sediment and stormwater regulations. Stream impacts are anticipated to include 0.0099 acre of permanent impacts and 0.0144 acre of temporary impacts to USACE and DNREC regulated waters. The proposed project will require a NPDES General Construction Permit for disturbance over 1 acre and an approved ESC Plan.	

Hydrological Impacts:			
A. Stream Relocation	None	COMMENTS	
		Stream impacts are anticipated to include 0.0099 acre of permanent impacts and 0.0144 acre of temporary	
B. Stream Channelization	None	impacts to USACE and DNREC regulated waters. These impacts are associated with a minor culvert extension along an existing stream channel. The FEMA FIRM Maps indicate that a large portion of the	
C. Stream Stabilization	None	project area occurs within a Zone AE 100-Year Floodplain and that the western end of the project encroaches on a FEMA-delineated floodway. Proposed roadway widening and associated overhead sign structure replacements will result in minor fill within the floodplain.	
D. Flood Plain	Probable		

A. Endangered Species B. Habitat	None	COMMENTS		
	None	Delaware Department of Natural Resources and Environmental Control (DNREC) Species Conservation and Research Program (SCRP) and DNREC Fisheries commented on the project in a letter dated 3/9/2023 indicating that this project does not lie within a State Natural Heritage Site or a Delaware National Estuarine Research Reserve. SCRP has no records of state-rare or federally listed species or natural communities at this site; however, the project area has not been surveyed for the presence of nesting migratory birds. See the narrative for additional details on required avoidance measures for migratory bird. The US Fish and Wildlife Service (USFWS) reviewed the project on 4/14/2023, stating that the project as proposed will have "No Effect" on the endangered, threatened, or candidate species.		

A. Project Area	Probable	COMMENTS		
B. Up and Down Stream	None	Wetlands were field delineated by JMT in September 2021. Sixteen (16) palustrine wetlands (W1 through W16) were identified and delineated within the study area. Unavoidable impacts to wetlands under USACE jurisdiction will result in 0.0598 acre of permanent impacts and 0.0933 acre of temporary impact. Unavoidable impacts to DNREC jurisdictional wetlands will result in 0.0051 acre of permanent impacts and 0.0018 acre of temporary impacts.		

Land Use:					
A. Direct B. Secondary	None	COMMENTS All proposed work will occur within the existing right-of-way; therefore, no land use changes are anticipated to result from the proposed project.			

CATEGORICAL EXCLUSION EVALUATION PROJECT CHECKLIST AND PROJECT LEVEL DETERMINATION FORM

Natural Resources:					
A. Farm Lands	None	COMMENTS			
B. Woodlands	Probable	Minimal impacts to existing woodlands and trees within the project area are anticipated. A tree survey has been completed in compliance with the Delaware Landscaping and Reforestation Act. A Mitigation and Needs Analysis Plan was developed for the proposed project, which identified 143 trees within the existing			
C. Conservation Areas	None	right-of-way that will be removed by the proposed project. This plan requires 0.74 acre of reforestation (148 native tree species), which will take place within the project limits. Landscaping plans will be prepared following construction to provide Tree Mitigation for the proposed project.			
D. Coastal Zone	None				

Modal Choice:					
A. Maintenance of Traffic	Probable	COMMENTS			
B. Pedestrian	None	Project construction is proposed to be completed in 4 phases, with work associated with the Airport Road exit and roundabout occurring during Phase 1. Temporary and permanent MOT signage will be used throughout the project duration; however, long-term detours will not be required. A temporary detour will			
C. Bicycle	None	be required during a portion of the Airport Road work and is proposed to last for 8 calendar days. The public will be notified in accordance with the public notification requirements outlined in the Delaware Manual on Uniform Traffic Control Devices (MUTCD). Emergency services will be notified of the			
D. Mass Transit	None	temporary road closure and detour.			
E. Public Transit	None				
F. Handicapped	None				

Permits:				
A. ACOE	Probable	COMMENTS		
		USACE Nationwide Permit (NWP) # 23 with Preconstruction Notification (PCN)		
B. Coast Guard	None	DNREC - Wetlands & Subaqueous Lands Permit		
C. DNREC	Probable	DNREC - Section 401 Water Quality Certification and Coastal Zone Consistency is already issued for projects verified under the USACE NWP # 23		
D. County	Probable	DNREC NPDES General Construction Permit and approval of the project ESC Plan		
E. City or Municipality	None	New Castle County (NCC) - NCC Floodplain Permit.		
F. Other	None			

Categorical Exclusion Recommendation 117(d)(13) per 23CFR771

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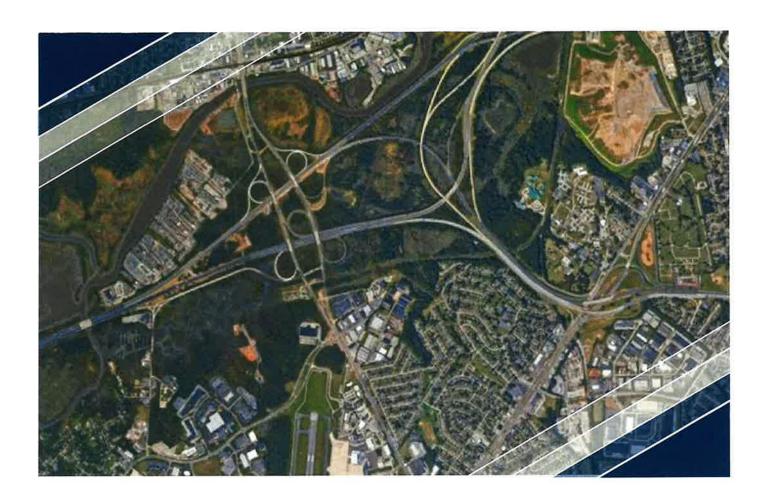
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CATEGORICAL EXCLUSION EVALUATION

I-295 NB, SR 141 TO US 13 PROJECT NEW CASTLE COUNTY, DELAWARE

CONTRACT NUMBER: T202109101 FEDERAL AID NUMBER: EIM-N056(46)



CATEGORICAL EXCLUSION EVALUATION

I-295 NB, SR 141 to US 13 Project New Castle County, Delaware Contract Number: T202109101 Federal Aid Number: EIM-N056(46)

The following Categorical Exclusion Evaluation was prepared by JMT, Inc. at the request of the Delaware Department of Transportation (DelDOT) for the I-295 NB, SR 141 to US 13 Project in New Castle County, Delaware. The I-95 to I-295 Interchange and ramps are critical to the I-95 corridor and interstate travel in the northeast. This project will help alleviate the congestion associated with the northbound I-95 to I-295 ramps.

Project Purpose: This project is proposed to help alleviate the congestion associated with the I-95 NB to I-295 NB ramps and to reduce crash rates associated with I-295 NB within the project corridor.

Project Need: The I-95 to I-295 Interchange and ramps are critical to the I-95 corridor and interstate travel in the northeast. The northbound I-295 and I-95 split has experienced congestion during weekday peak hours and on weekends for many years. A needs study was completed in April 2020, which identified operational capacity as the principal need for the I-295 NB, SR 141 to US 13 Project. Northbound I-95, north of the SR 1 Interchange, experiences congestion throughout the summer season during the weekend peak hours starting from the I-295 diverge at the SR 141 Interchange. The project area was evaluated for Level of Service (LOS) and capacity deficiencies were identified for both existing (2017) and future (2040) traffic conditions at the northbound I-295 diverge from northbound I-95. These deficiencies create extensive queueing along northbound I-295 that extends and impacts operations along northbound I-95 to the SR 1 Interchange. By 2040, these queue lengths are expected to extend an additional distance and further impact operations along northbound I-95 and SR 1.

Project Description: This project includes capacity improvements for northbound I-295 from the northbound I-95/I-295 diverge through the I-295/SR 141 Interchange and northbound to US 13. See Figure 1 below for the project limits in red. Proposed work includes the addition of a sixth northbound I-95 travel lane between the Christina River Bridge and the Airport Road Exit, adding a third northbound I-295 travel lane at its split with I-95, and continuing the three travel lanes to the US 13 Interchange. The existing Exit 5A Airport Road Ramp will be reconfigured from a stop-controlled intersection to a single lane roundabout. Existing overhead sign structures will be replaced throughout the project limits and supplemented with additional ground mounted signs. Proposed construction work is anticipated to be completed in four separate phases. A portion of the I-295 improvements fall within the maintenance responsibility of the Delaware River & Bay Authority (DRBA).



Figure 1. I-295 NB, SR 141 to US 13 Project Limits

Public Outreach: A DelDOT Virtual Workshop was completed for the proposed project. The Virtual Workshop was posted on 8/8/2023 and remained open for comment for 45 days. Information that was included in the Workshop included a project overview, summary of proposed temporary detour plans, proposed improvements board, detour plans, and a survey to solicit feedback from the public. No public comments/feedback were received from the Workshop.

Right-of-Way/Relocations: The proposed project construction will occur entirely within the existing roadway rights-of-way. There are no right-of-way acquisitions, temporary easements, or permanent easements needed for the project. There will be no displacements/relocations required for the project.

Access/Maintenance of Traffic: Several roadways are expected to experience a change in traffic patterns during project construction, including I-95, I-295, Airport Road, SR 141, and US 13. Temporary lane and ramp closures will be required during construction. Work will be performed in a manner to assure the least practicable obstruction to the traveling public. Lane or ramp closures and detours shall not be permitted during holidays and major events. A detailed breakdown of when detours are allowed will be included in the construction phasing and maintenance of traffic (MOT) plans developed for the Project. The public will be notified of the start of construction, construction and schedule details, as well as contact information. MOT and public notification requirements will comply with the current Delaware Manual on Uniform Traffic Control Devices (DE MUTCD). Specific MOT plan details, in conformance with the DE MUTCD, will be submitted by the contractor prior to the start of work at any location. Emergency services will be notified of the proposed temporary road closure and detours. The majority of project construction will be completed without the need for roadway detours. Based on the current design, a minor detour will be required for approximately 8



calendar days during a portion of the construction associated with Airport Road. Final lane closures and detours will be posted on the DelDOT web site.

Modal Choice: No State or regional bicycle facilities occur within the project limits and no designated pedestrian facilities currently exist within the project corridor. The roadways in the project vicinity are classified as interstates (I-95 and I-295), Other Principal Arterial roads (SR 141 and US 13), and a major collector (Airport Road). Given the existing land use and nature of these roadways, no designated bicycle or pedestrian facilities are proposed. In the proposed condition, a minimum of 10-foot-wide shoulders are being provided throughout most of the project limits. No existing DART First State public transit bus stop locations will be impacted by the proposed work. DelDOT will coordinate with DART First State, the public transit operator, regarding any temporary traffic impacts that may impact existing bus routes in the project vicinity.

Social and Economic Impacts/Environmental Justice: Minimal social and economic impacts are anticipated as a result of the proposed project. During construction, temporary impacts from lane closures and minor detours, as well as increased noise, vibration, and air quality impacts are anticipated. Beyond these temporary impacts, permanent impacts to nearby residents and travelers through the project area are expected to be positive and beneficial in nature. This type of capacity improvement project will positively impact the local community through improved traffic flow and a safer travel corridor. In addition, there will be no displacements as part of this project, and no work is proposed outside the existing roadway rights-of-way.

Executive Order 12898, Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations, and the US Department of Transportation Order 5610.2(C) and Order 6640.23 direct Federal agencies to identify and address disproportionately high and adverse human health or environmental effects that their programs, policies and activities may have on minority and low-income populations to the greatest extent practicable while ensuring EJ communities are proactively provided meaningful opportunities for public participation in project development and decision-making.

EPA's EJSCREEN mapping tool, which uses 2016-2020 American Community Survey 5-year Estimates data from the U.S. Census Bureau, was used to identify whether census block groups with high percentages of people of color and/or high percentages of families with low income are located in vicinity of the project. EJSCREEN identified a total population of 3,434 within the three Blockgroups that the project takes place in, Blockgroups 100030150001, 100030152001, and 100030152005. An EJ community is present within the project area. A summary of the data provided by EJSCREEN for low-income families and people of color in each block group is provided in Table 1 below. For comparison, the State average of these populations is also provided in Table 1. Blockgroup 100030150001, which contains the eastern half of the project area, has a small population of 362 and is lower than the state averages for low-income population and people of color. Blockgroups 100030152001 and 100030152005 contain the western half of the project area and these Blockgroups both exceed the state average for low-income population and people of color, as shown in Table 1 below.



Table 1. EJSCREEN Socioeconomic Indicator Data for T202109101 I-295 NB, SR 141 to US 13 Project

Location	Population	Low-Income (%)	People of Color (%)	
State Average	-	26	38	
Blockgroup 100030150001	362	5	12	
Blockgroup 100030152001	1,218	34	70	
Blockgroup 100030152005	1,854	30	53	

It is anticipated that there will be minor positive and negative impacts to the identified EJ community as a result of the proposed project. Temporary travel impacts may occur for EJ communities during construction similar to other motorists. EJ communities often use transit facilities. Although no DART First State bus stop locations will be affected by this project, temporary traffic impacts may occur for public buses moving through the project vicinity during construction. The proposed project takes place within limited access highways; therefore, there will be no impacts to pedestrians or bicyclists as a result of the construction activities. The proposed project will alleviated congestion, which will be a benefit to all motorists that travel I-295 NB through the project corridor.

There is an identified EJ Population associated with this project; however, there are no disproportionally high and adverse impacts to this population. Therefore, in accordance with the provisions of Executive Order 12898 and Federal Highway Administration (FHWA) Order 6640.23, no further EJ analysis is required.

Noise: Detailed noise analysis is warranted for the I-295 NB, SR 141 to US 13 Project. The proposed work meets the criteria of a Type 1 project (those types of projects that would require a noise analysis) under the conditions of the 23 CFR 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise and DelDOT's Transportation Noise Policy (P.I. Number D-03, 3/1/21). A Preliminary Noise Analysis was completed for the project in September 2023 to determine if the proposed project would result in traffic noise impacts to the adjacent Noise Sensitive Receptors, and if so, determine if noise abatement would meet DelDOT feasibility and reasonableness criteria for mitigation. One Noise Sensitive Area (NSA) was identified within the study area, NSA-01. NSA-01 is located south of I-295 and west of US 13 and consists of single-family residences within the communities of Manor Park and Robins Nest and a portion of the Jack A. Markell Trail. The impact analysis determined that the receptors in NSA-01 will not be impacted by predicted future build noise levels and that predicted future build noise levels will not substantially increase beyond existing noise levels. With no impact on receptors, noise mitigation is not warranted. Therefore, noise mitigation was not investigated for feasibility and reasonableness.

During construction of the I-295 NB improvements, the residences closest to the construction area will likely be impacted by temporary construction noise resulting from the project. To minimize impacts to the residential community all proposed construction will comply with applicable Federal, State and local noise control regulations, as well as the Occupational Safety and Health Act of 1970. Where practicable, construction activities will be confined to time periods that will create a minimum amount of disturbance to the community. The Contractor will only use equipment adapted to operate with the least possible noise and should conduct work so that annoyance to occupants of nearby property and the general public will be minimized.



Air Quality: New Castle County is in the nonattainment zone for ozone and PM2.5. The proposed project is listed in the 2050 RTP / FY 2023-2026 TIP Conformity Analyses. This project is exempt from the requirement that a conformity determination be made (US EPA Criteria and Procedures for Determining Conformity to State and Federal Implementation Plans, Programs, or Projects – Final Rule). The purpose of the Project is to enhance roadway capacity within the vicinity of the northbound I-95 and I-295 split. The project would not result in any meaningful negative changes in traffic volumes, vehicular mix, location of the existing facility, or any other factor that would cause an increase in emissions impacts relative to a no-build alternative. As such, this Project will generate no air quality impacts for the Clean Air Act criteria pollutants and has not been linked with any special Mobile Source Air Toxics (MSAT) concerns. Consequently, this project is exempt from analysis for MSATs. Projects that are exempt from project level conformity are also exempt from the PM2.5 project level conformity determination requirements, in accordance with 40 CFR 93.126.

Hazardous Materials: DelDOT's Hazardous Waste Program reviewed the project area for potentially contaminated sites on 8/3/2023. Please see the attached Hazardous Materials Project Checklist. It was noted that there is potential to encounter contaminated soil within the project limits and that sampling and possibly removal of soil from within project limits may be needed. Special Provision Item 202560 has been prepared to provide the contractor with direction for storage, sampling, and disposal of contaminated soils encountered on the site. A note is included in the plans to direct the contractor to perform the necessary sampling prior to removal of any soil from the site. Potentially contaminated soil will be stockpiled on plastic and covered pending sampling results and if necessary, disposed of in accordance with Special Provision Item 202560.

Cultural Resources: DelDOT Qualified Staff reviewed the project on 3/27/2023 and determined that in accordance with Stipulation III.B.1 or III.B.2.a.i. of the 2018 Programmatic Agreement for the Federal Aid Highway Program in Delaware, no historic properties will be affected (**Attachment A**). This finding was based on the fact that physical impacts for the project are small and limited to ground disturbing limits of construction, which take place entirely within existing DelDOT rights-of-way, a previously disturbed area. There are no historic standing structures or recorded archaeological sites within the project limits, therefore the likelihood of affecting unidentified resources is low to null.

Fish & Wildlife: Delaware Department of Natural Resources and Environmental Control (DNREC) Species Conservation and Research Program (SCRP) and DNREC Fisheries commented on the project in a letter dated 3/9/2023 (Attachment B), indicating that this project does not lie within a State Natural Heritage Site, nor does it lie within a Delaware National Estuarine Research Reserve. SCRP has no records of state-rare or federally listed species or natural communities at this site. SCRP stated in their letter that the project area has not been surveyed for the presence of nesting migratory birds, which are protected by Title 7, Delaware Code, Chapter 7, Sections 734 and 735. It is possible that one or more pairs of barn swallow (*Hirundo rustica*) and/or eastern phoebe (*Sayornis phoebe*) nest under the bridges. If work is proposed during the breeding season (April 15 – August 1), a survey will be completed prior to the start of work to determine if nests are present. Should nests be present, construction activities will be limited to August 1 – April 15. If construction



cannot be performed during this time period, mesh netting or other deterrent fully encapsulating the underside of the bridge will be installed no later than April 15 and left in place until construction begins to block access to nesting sites on the underside of the bridge. If active nests are discovered during construction, activities will be halted immediately and SCRP will be contacted for further guidance.

A US Fish and Wildlife Service (USFWS) Official Species List was generated in the Information for Planning and Conservation (IPaC) system on 2/17/2023. Included on the list for the proposed project were the threatened bog turtle (*Glyptemys muhlenbergii*) and candidate monarch butterfly (*Danaus plexippus*). The USFWS reviewed the project on 4/14/2023, stating that the project as proposed will have "no effect" on the endangered, threatened, or candidate species because while the project is within the range of listed species, it is unlikely that the species would occur within the project area that was submitted. Therefore, no Biological Assessment or further Section 7 Consultation with the USFWS is required. Since that time the Official Species List was updated on 5/5/2023 with no changes to the listed species. See **Attachment C** for the referenced documentation.

Land Use/Natural Resources: The I-295 NB, SR 141 to US 13 Project will not induce land use impacts. The proposed project construction will occur entirely within the existing roadway rights-of-way. Minimal impacts to existing woodlands and trees within the project area are anticipated. A tree survey was completed in April 2023 in compliance with the Delaware Landscaping and Reforestation Act. A Mitigation and Needs Analysis Plan was developed for the proposed project, which identified 143 trees within the existing right-of-way that will be removed by the proposed project. This plan requires 0.74 acre of reforestation (148 native tree species), which will take place within the project limits. Landscaping plans will be prepared following construction for Tree Mitigation for the proposed project in accordance with the Delaware Landscaping and Reforestation Act. Although minor impacts to woodlands and trees are anticipated within the project limits, there are no proposed impacts to agriculture, conservation areas, or the Coastal Zone.

Water Quality/Hydrological Impacts: The nearest mapped waterways are the Christina River and Nonesuch Creek. The limits of construction begin immediately north of the Christina River and do not include the existing bridge crossing. No impacts to this watercourse are proposed. Northbound I-295 is being widened over the Nonesuch Creek culvert; however, no impacts are proposed within the watercourse. There is however, one tributary (S2) to Nonesuch Creek within the project area that will be impacted by the proposed improvements. This watercourse is under the jurisdiction of both the US Army Corps of Engineers (USACE) and DNREC. Total unavoidable open water impacts are anticipated to include 0.0099 acre of permanent impacts and 0.0144 acre of temporary impacts to USACE and DNREC regulated waters. The proposed project will require a National Pollutant Discharge Elimination System (NPDES) General Construction Permit for ground disturbance greater than one acre and an approved Erosion and Sediment Control Plan.

Wetlands: Wetlands are present throughout much of the project area and include tidal and non-tidal wetlands. Some of the wetlands at this site are historically tidal; however, there is a tide gate located outside of the project area at the confluence of Nonesuch Creek and the Christina River which restricts daily tidal



fluctuation on Nonesuch Creek and surrounding wetlands. Because of this, the USACE considers wetlands upstream of the tide gate to be non-tidal. Conversely, DNREC bases its jurisdiction on the State-Regulated Wetland Maps, as if the tide gate were not present, and therefore continues to regulate these wetlands as if they are tidal.

The proposed design for the project includes avoidance and minimization measures to reduce and, where possible, avoid stream and wetland impacts. These practices include the addition of one (1) retaining wall approximately 1,500 linear feet in length and the use of 2:1 embankment slopes throughout the project.

Unavoidable impacts to wetlands under USACE jurisdiction will result in 0.0598 acre of permanent impacts and 0.0933 acre of temporary impact. Unavoidable impacts to DNREC jurisdictional wetlands will result in 0.0051 acre of permanent impacts and 0.0018 acre of temporary impacts.

Permits: The proposed project will require the following permits/approvals:

- USACE Nationwide Permit (NWP) # 23 for Approved Categorical Exclusion with Preconstruction Notification
- DNREC Wetlands & Subaqueous Lands Permit Letter of Authorization
- DNREC NPDES General Construction Permit
- DNREC approval of the project ESC Plan
- New Castle County Floodplain Permit

DNREC Section 401 Water Quality Certification and Coastal Zone Consistency are already issued for projects verified under the USACE NWP # 23.

Utility Relocations: There are utilities present throughout the Airport Road Exit 5A Interchange and the proposed location of the roundabout that will replace the existing stop-controlled intersection. The utilities present include New Castle County sanitary sewer, Delmarva Power utility poles, overhead Delmarva Power electric transmission and distribution lines, Delmarva Power underground gas, and Artesian underground water. It is anticipated that three distribution utility poles will need to be relocated during construction for the proposed project.

Existing ITMS conduits run from the southern project limits parallel to northbound I-95 and I-295 on the northerly side of northbound I-95 before crossing under northbound I-95 prior to the SR 141 Interchange and running parallel on the south side of the SR 141 On/Off acceleration lanes, terminating at Ramp D-2. These facilities will be relocated as needed throughout the project limits during the project construction.

At the SR 141 Interchange, existing Verizon Conduits hang from Bridge No 1-678 (southbound SR 141 over northbound I-95), a Delmarva Gas conduit hangs from Bridge No 1-675 (northbound SR 141 Over northbound I-95), and an existing Artesian Water line runs perpendicularly under northbound I-95/I-295 prior to Bridge No. 1-678. No impacts are anticipated to these facilities.



Recommendation: Based on the above, it can be concluded that significant impacts to social, economic, cultural, and environmental resources will not occur because of this project. DelDOT recommends that the Project be classified as a Class II Categorical Exclusion per 23 CFR 771.117(d)13. The proposed project exceeds thresholds IV.A.1.b.iii and xii of the 2018 DelDOT/FHWA Programmatic Agreement regarding the processing of certain Categorical Exclusions Actions; thereby requiring approval from the FHWA.

Attachment A DelDOT Hazardous Materials Project Checklist

HAZARDOUS MATERIALS PROJECT CHECKLIST

Project Title: I 295 State Contract No.: T Federal Aid Project N		20 US 13				
	May Friday	Preliminary Plan Review				
No Anticipated HazMat		COMMENTS				
Contaminant 1	None					
Contaminant 2	None					
DNREC Program 1	None	HazMat Reviewer: Blank				
Semi-Final Plan Review						
No Anticipated HazMat		COMMENTS				
Contaminant 3	None					
Contaminant 4	None					
DNREC Program 2	None	HazMat Reviewer: Blank				
		Final Plan Review				
No Anticipated HazMat		COMMENTS				
Contaminant 5	Soil	Various potential for contaminants within soil in project limits. Environmental consultant will need to sample and possibly remove soil				
Contaminant 6	None	from within project limits.				
DNREC Program 3	None	HazMat Reviewer: Bobby Johnson 08/03/2023				
		Acronyms				
LUST - DNREC Le HSCA - Hazardous	untary Cleanup Prog aking Underground Substance Cleanup A ated Materials Mana I Storage Tank	Storage Tank Act				

Attachment B Cultural Resource Determination

FINDING OF NO HISTORIC PROPERTIES AFFECTED

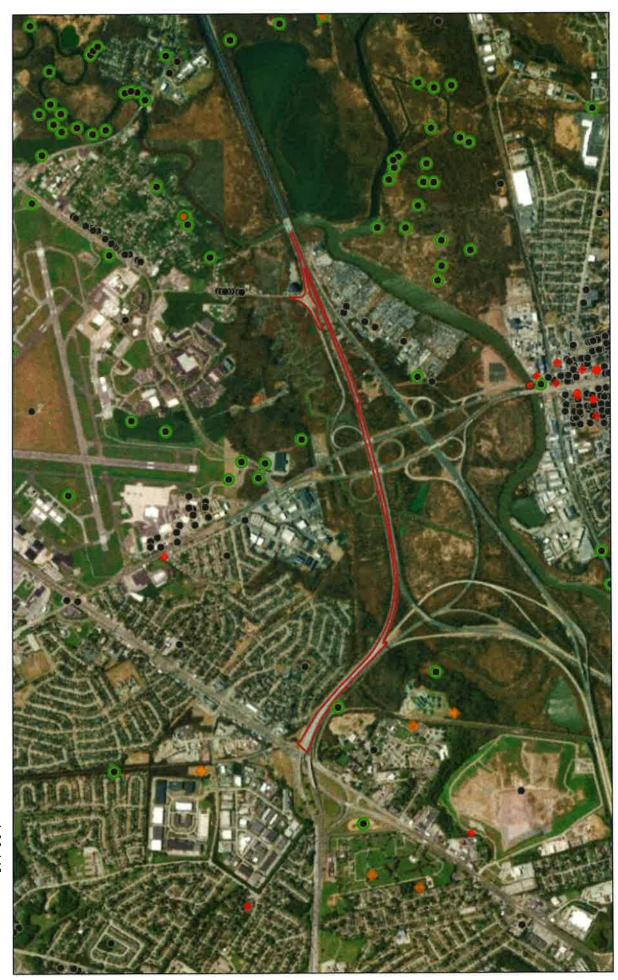
Programmatic Agreement Tracking Form

Date	03/17/	03/17/2023						
Project Name/Location	I-295	I-295 Widening SR141 to US13						
State Contract No.	T2021	.09101	F	ederal Aid Project No.	EIM-N056(46)			
Finding Classification	III.B.	1.	P	roject Type	B.8			
USACE Permit	6.6	Yes	✓ N	o				
Project Description	The project is located in New Castle County and includes capacity improvements for northbound 1-295 from the northbound 1-95/1-295 diverge through the 1-295/SR 141 interchange and northbound to US 13. The proposed work includes the addition of a sixth northbound 1-95 travel lane between the Christina River bridge and the Airport Road exit, adding a third northbound 1-295 travel lane at its split and continuing the three travel lanes to the US 13 interchange. The existing Exit 5A Airport Road will be reconfigured from a stop-controlled intersection to a single lane roundabout. Existing overhead sign sign structures will be replaced throughout the project limits and supplemented with additional ground mounted signs.							
In accordance with Stip Federal Aid Highway Freferenced project and the information support	Program in D letermined th	elaware, I at no hist	DelDOT	Qualified Staff have	reviewed the above-			
Area of Potential Effect (APE):			_	disturbing limit of cortion easements (TCE)				
Level of Effort to Identi Historic Properties:	ify 🗸	Desk Re	view	Field Re	connaissance			
Previous Studies:	"Cultur	vare Turnpik val Resource y" (Kern and	s Overvie	ements Project Ph I Analy w and Sensitivity Analysi t 1979)	sis" (Berger Inc 1993); s for the Delaware River			
Resources present in the	e APE?	No	Y	es, listed in the table				
NAME or TYPE	ERS#	DATE		DESCRIPTION	NR STATUS			
Exempt Under the Post	1945 Bridge	Program	Comme	nt Yes				

Additional Information (List): See attached SHPO Map and construction plans By this form, DelDOT is documenting its intent to apply a finding of de minimis impact (23 CFR Part 774.5(b)) based on a finding of no historic properties affected and/or an exception to the requirement for Section 4(f) approval 23 CFR Part 774.13. The area of physical impacts for this project is limited to the ground Justification for disturbing limits of construction, which are within existing DelDOT right-Finding: of-way. The APE has been previously disturbed by mid- to late twentieth century road construction and maintenance. There are no historic standing structures within the APE. Therefore, DelDOT is issuing a finding of No Historic Properties Affected. DelDOT Architectural Historian: Sarah G. Traum Digitally signed by Traum, Traum, Sarah Sarah Date: 2023.03.20 09:51:29 Signature: Justification for The area of physical impacts for this project is small, encompassing the ground disturbing limits of construction in a previously disturbed area. A Finding: review of historic aerials indicates that significant ground disturbance occurred throughout the mid- to late 20th century with the construction and maintenance of roadway infrastructure. As there are no recorded archaeological sites within the project limits, the likelihood of affecting unidentified resources is low to null. DelDOT Archaeologist: Maggie Klejbuk MKlejbuk Date: 2023.03.27 12:54:28

Signature:

I-295 Widening SR141 to US13 Map



March 17, 2023

Other Proposed Properties

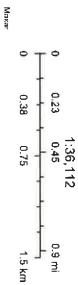
HistoricPropertySync

National Register-listed

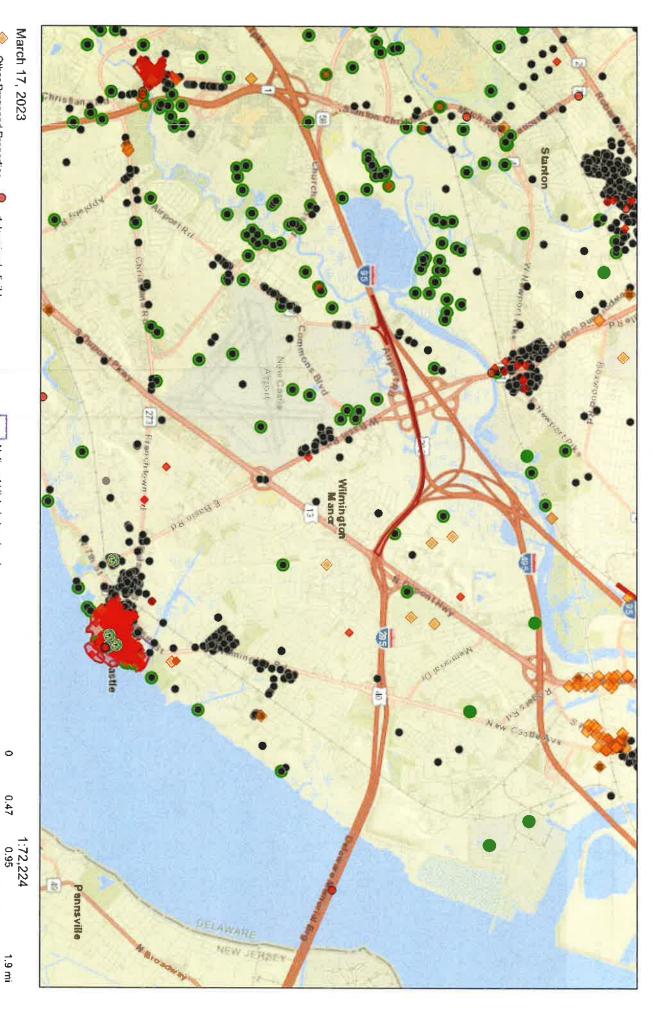
determined eligible

other surveyed, assigned CRS inventory #

HistoricProperty_Archaeo



I-295 Widening SR141 to US13 Map



HistoricPropertySync

National Register-listed

HistoricProperty_Archaeo

other surveyed, assigned CRS inventory # NR_line

Other Proposed Properties

determined eligible

National Historic Landmarks

Dolaware FirstMap, Esri, HERE, Garmin, INCREMENT P, NGA, USGS

0.75

3 km

National Historic Landmark Historic_Districts

Attachment C DNREC SCRP Coordination



DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF FISH & WILDLIFE RICHARDSON & ROBBINS BUILDING 89 KINGS HIGHWAY DOVER, DELAWARE 19901

PHONE (302) 739-9910

March 9, 2023

DIRECTOR'S

OFFICE

Maureen Kelley 800 Bay Road P.O. Box 778 Dover, DE 19903

Re: DelDOT 2023 I-295 NB, SR 141 to I-95 (T202109101)

Dear Maureen Kelley:

Thank you for contacting the Species Conservation and Research Program (SCRP) about information on rare, threatened and endangered species, unique natural communities, and other significant natural resources as they relate to the above referenced project.

State Natural Heritage Site

A review of our database indicates that there are currently no records of state-rare or federally listed plants, animals or natural communities at this project site. As a result, at present, this project does <u>not</u> lie within a State Natural Heritage Site, <u>nor</u> does it lie within a Delaware National Estuarine Research Reserve which are two criteria used to identify "Designated Critical Resource Waters" in the Army Corps of Engineers (ACOE) Nationwide Permit General Condition No. 22. A copy of this letter shall be included in any permit application or preconstruction notification submitted to the Army Corps of Engineers for activities on this property.

Migratory Birds

The bridges within the project area have not been surveyed for the presence of nesting migratory birds, which are protected by Title 7, Delaware Code, Chapter 7, Sections 734 and 735. It is possible that one or more pairs of barn swallow (*Hirundo rustica*) and/or eastern phoebe (*Sayornis phoebe*) nest under the bridge(s). If work is proposed during the breeding season (**April 15**th – **August 1**st), a survey should be completed prior to the start of work to determine if nests are present. If a survey detects nesting activity, the following steps should be taken to avoid nest destruction and take, which is a violation of state law:

- 1. Perform construction activities from August 1st to April 15th.
- 2. If construction cannot be performed in this time period, a deterrent such as mesh netting should be used to block access to nesting sites on the underside of the bridge(s). The

material would need to be in place no later than April 15th, the underside of the bridge(s) would need to be fully encapsulated, and the material should be left in place until construction begins.

If active nests are discovered during the course of work, activities should be halted immediately and SCRP contacted for further guidance.

Fisheries

The Christina River is the largest tidal tributary in northern New Castle County with important resident fish and migratory fish species (including American shad, blueback herring, alewife, white perch, striped bass, and American eel). However, it is unlikely that habitat occurs in the project site that would support anadromous fish species. No time of year restrictions or other measures are requested for these species or for resident gamefish species.

We are continually updating our records on Delaware's rare, threatened and endangered species, unique natural communities and other significant natural resources. If the start of the project is delayed more than a year past the date of this letter, please contact us again for the latest information.

Please feel free to contact me with any questions or if you require additional information.

Sincerely,

Katie Kadlubar

Environmental Review Coordinator

Phone: (302) 735-8665

Kati Kadlular

6180 Hay Point Landing Road

Smyrna, DE 19977

Attachment D USFWS CBFO Coordination



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Chesapeake Bay Ecological Services Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401-7307 Phone: (410) 573-4599 Fax: (410) 266-9127

In Reply Refer To:

February 17, 2023

Project Code: 2023-0046602

Project Name: T202109101 – I-295 NB, SR 141 to I-95 Project

Subject: List of threatened and endangered species that may occur in your proposed project

location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

02/17/2023 2

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401-7307 (410) 573-4599

PROJECT SUMMARY

Project Code:

2023-0046602

Project Name:

T202109101 – I-295 NB, SR 141 to I-95 Project

Project Type:

Road/Hwy - Maintenance/Modification

Project Description: The T202109101 – I-295 NB, SR 141 to I-95 Project includes capacity improvements for northbound I-295 from the northbound I-95/I-295 diverge through the I-295/SR 141 interchange and northbound to US 13. Proposed work includes the addition of a sixth northbound I-95 travel lane between the Christina River bridge and the Airport Road exit, adding a third northbound I-295 travel lane at its split with I-95, and continuing the three travel lanes to the US 13 interchange. The existing Exit 5A Airport Road Ramp will be reconfigured from a stop-controlled intersection to a single lane roundabout. Existing overhead sign structures will be replaced throughout the project limits and supplemented with additional ground mounted signs. Proposed construction work is anticipated to be completed in four separate phases. Proper Delaware sediment and stormwater regulation measures shall be implemented during construction to ensure downstream sedimentation is minimized.

Project Location:

The approximate location of the project can be viewed in Google Maps: https:// www.google.com/maps/@39.698605349999994,-75.60818943914069,14z



Counties: New Castle County, Delaware

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

REPTILES

NAME

STATUS

Bog Turtle Glyptemys muhlenbergii

Threatened

Population: Wherever found, except GA, NC, SC, TN, VA

No critical habitat has been designated for this species.

This species only needs to be considered under the following conditions:

For bog turtle projects in DE, email dnrec_envreview@delaware.gov for review.

Species profile: https://ecos.fws.gov/ecp/species/6962

INSECTS

NAME

STATUS

Monarch Butterfly *Danaus plexippus*

Candidate

No critical habitat has been designated for this species.

This species only needs to be considered under the following conditions:

The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: https:// www.fws.gov/savethemonarch/FAQ-Section7.html).

Species profile: https://ecos.fws.gov/ecp/species/9743

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Delaware Department of Transportation

Name: Kristin Aiosa

Address: 220 St. Charles Way, Suite 200

City: York State: PA Zip: 17402

Email kaiosa@jmt.com Phone: 7177416243

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, Maryland 21401 http://www.fws.gov/chesapeakebay

April 14, 2023

Kristin J. Aiosa Delaware Department of Transportation 220 St. Charles Way, Suite 200 York, PA 17402

RE: T202109101 - I-295 NB, SR 141 to I-95 Project

Dear Ms. Aiosa:

This responds to your letter, received February 17, 2023, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the above referenced project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

This project as proposed will have "no effect" on the endangered, threatened, or candidate species listed on your IPaC species list because while the project is within the range of the species, it is unlikely that the species would occur within the project area that was submitted. Therefore, no Biological Assessment or further Section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact the Delaware Division of Fish and Wildlife's Species Conservation and Research Program at DNREC_EnvReview@delaware.gov or (302) 735-3600 ext. 2. You may also obtain information on how to make such a request by visiting the Program website at https://dnrec.alpha.delaware.gov/fish-wildlife/conservation/reviews/.

An additional concern of the Service is wetlands protection. The Service's wetlands policy has the interim goal of no overall net loss of Delaware Bay's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Philadelphia District should be



contacted for permit requirements. They can be reached at (215) 656-6728.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Trevor Clark at (410) 573-4527.

Sincerely,

Genevieve LaRouche

& La Rouche

Supervisor



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Chesapeake Bay Ecological Services Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401-7307 Phone: (410) 573-4599 Fax: (410) 266-9127

In Reply Refer To:

May 05, 2023

Project Code: 2023-0046602

Project Name: T202109101 - I-295 NB, SR 141 to I-95 Project

Subject: List of threatened and endangered species that may occur in your proposed project

location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

2

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Chesapeake Bay Ecological Services Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401-7307 (410) 573-4599

PROJECT SUMMARY

Project Code:

2023-0046602

Project Name:

T202109101 – I-295 NB, SR 141 to I-95 Project

Project Type:

Road/Hwy - Maintenance/Modification

Project Description: The T202109101 – I-295 NB, SR 141 to I-95 Project includes capacity improvements for northbound I-295 from the northbound I-95/I-295 diverge through the I-295/SR 141 interchange and northbound to US 13. Proposed work includes the addition of a sixth northbound I-95 travel lane between the Christina River bridge and the Airport Road exit, adding a third northbound I-295 travel lane at its split with I-95, and continuing the three travel lanes to the US 13 interchange. The existing Exit 5A Airport Road Ramp will be reconfigured from a stop-controlled intersection to a single lane roundabout. Existing overhead sign structures will be replaced throughout the project limits and supplemented with additional ground mounted signs. Proposed construction work is anticipated to be completed in four separate phases. Proper Delaware sediment and stormwater regulation measures shall be implemented during construction to ensure downstream sedimentation is minimized.

Project Location:

The approximate location of the project can be viewed in Google Maps: https:// www.google.com/maps/@39.698605349999994,-75.60818943914069,14z



Counties: New Castle County, Delaware

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an
office of the National Oceanic and Atmospheric Administration within the Department of
Commerce.

REPTILES

NAME STATUS

Bog Turtle *Glyptemys muhlenbergii*

Threatened

Population: Wherever found, except GA, NC, SC, TN, VA No critical habitat has been designated for this species.

This species only needs to be considered under the following conditions:

For bog turtle projects in DE, email dnrec_envreview@delaware.gov for review.

Species profile: https://ecos.fws.gov/ecp/species/6962

INSECTS

NAME STATUS

Monarch Butterfly *Danaus plexippus*

Candidate

No critical habitat has been designated for this species.

This species only needs to be considered under the following conditions:

 The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: https:// www.fws.gov/savethemonarch/FAQ-Section7.html).

Species profile: https://ecos.fws.gov/ecp/species/9743

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Delaware Department of Transportation

Name: Kristin Aiosa

Address: 220 St. Charles Way, Suite 200

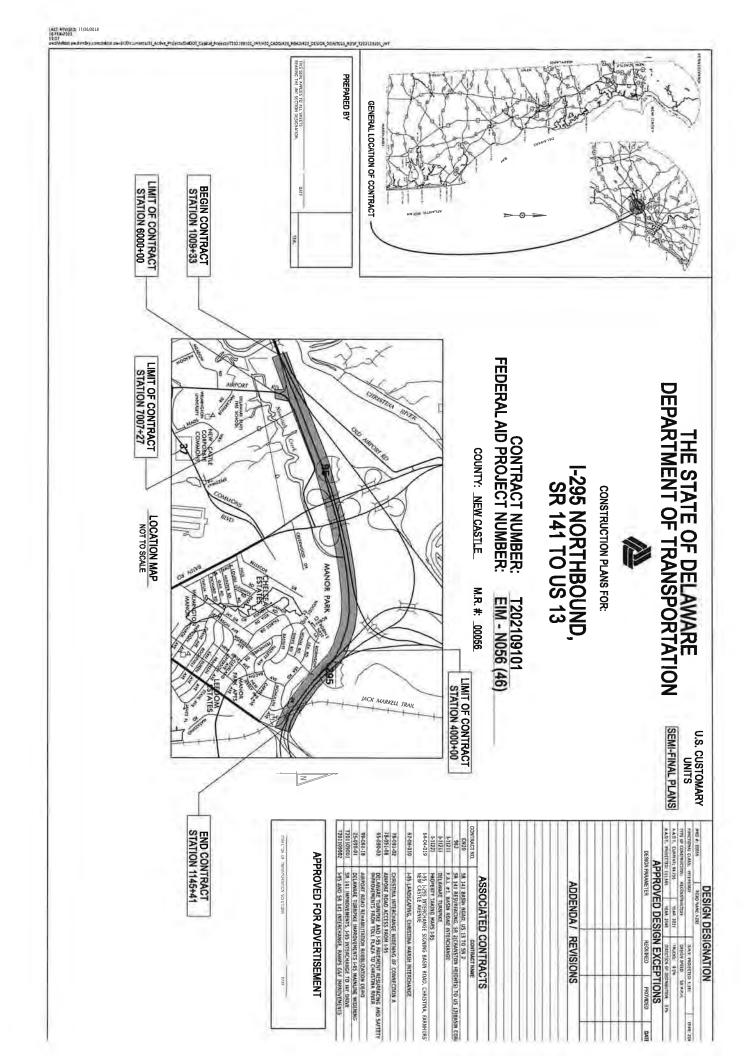
City: York State: PA Zip: 17402

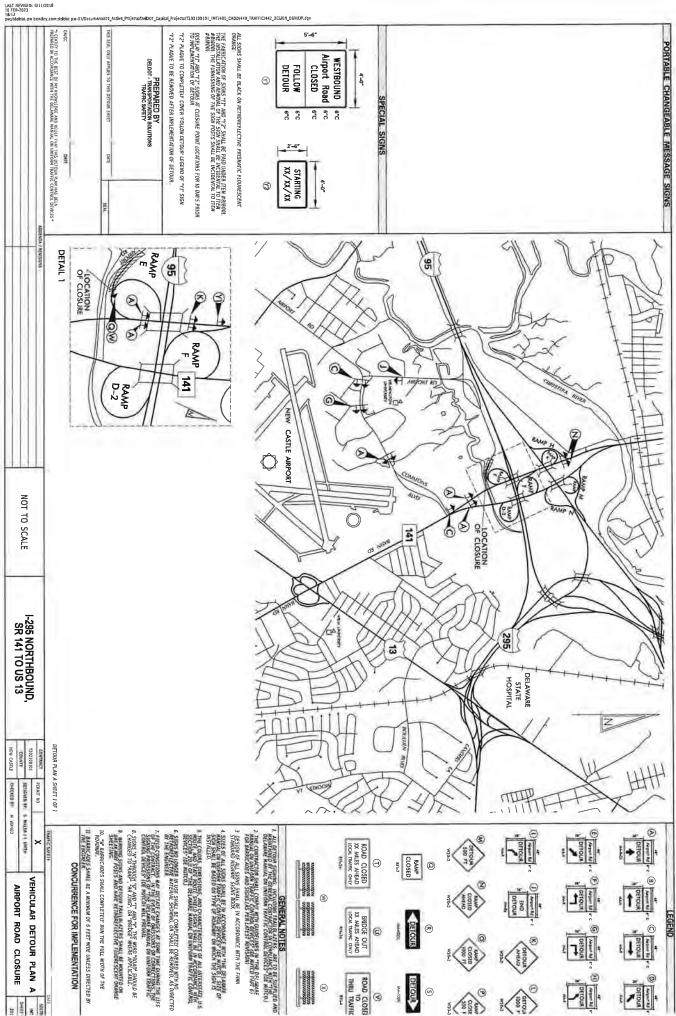
Email kaiosa@jmt.com Phone: 7177416243

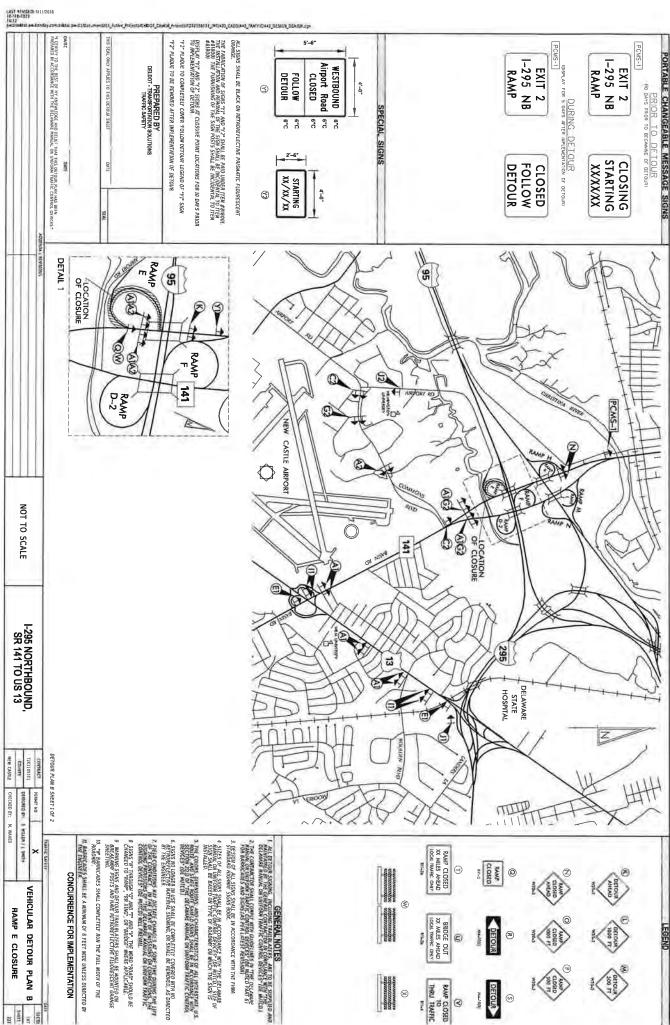
LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

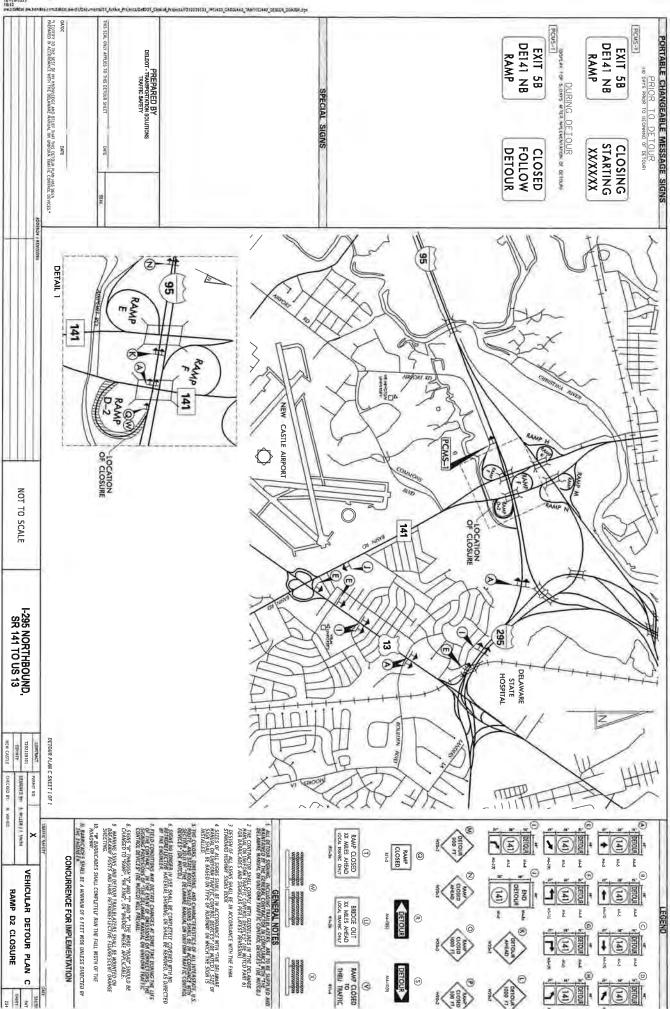
Attachment E Project Plans

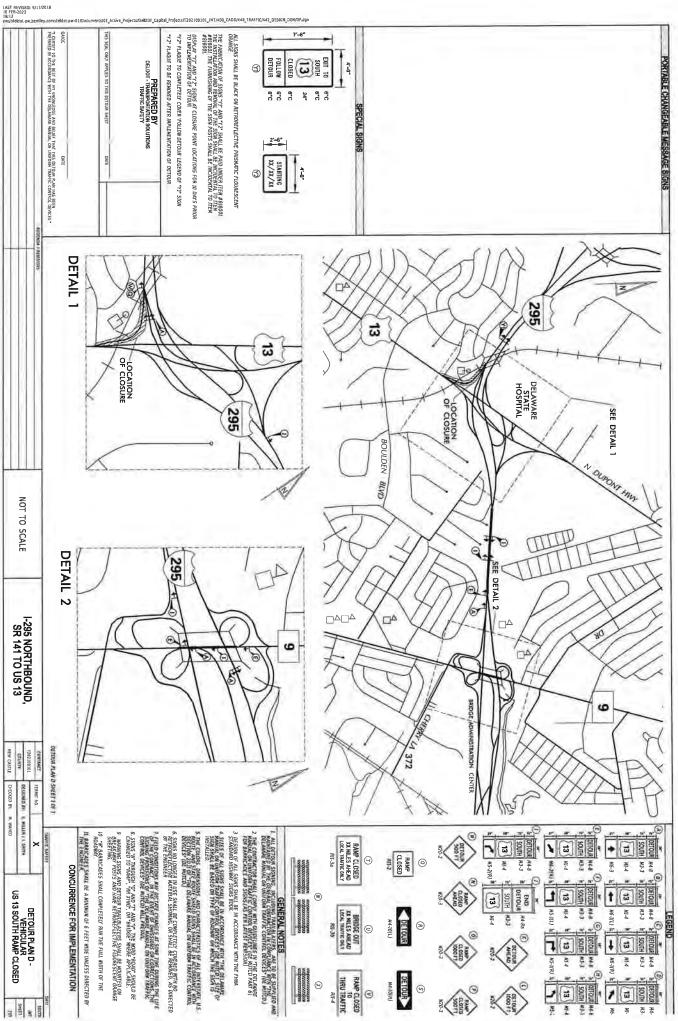


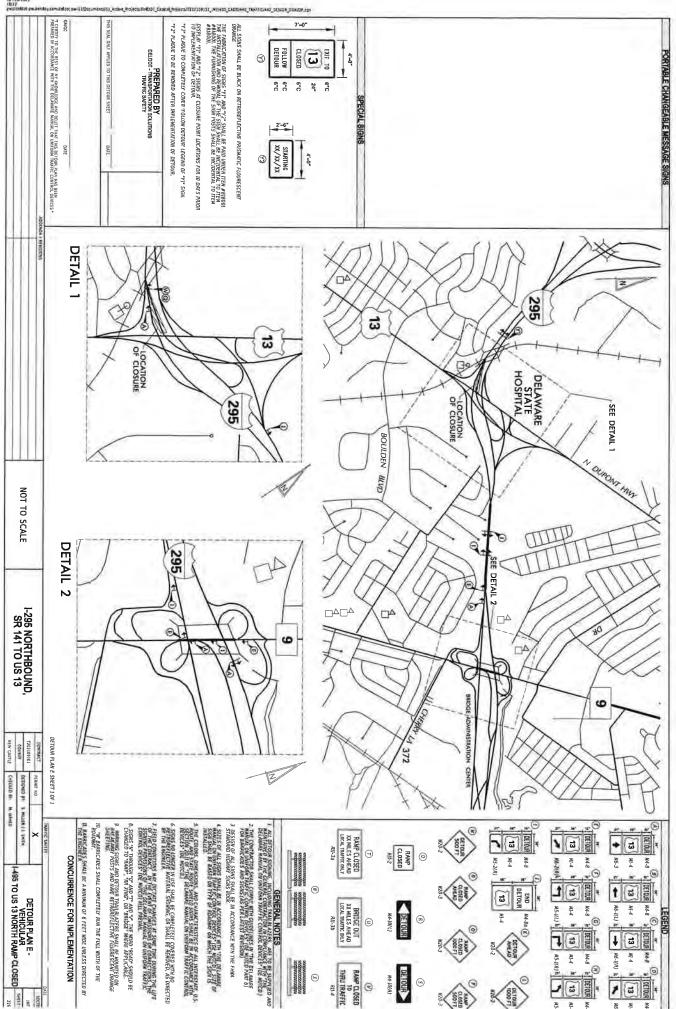


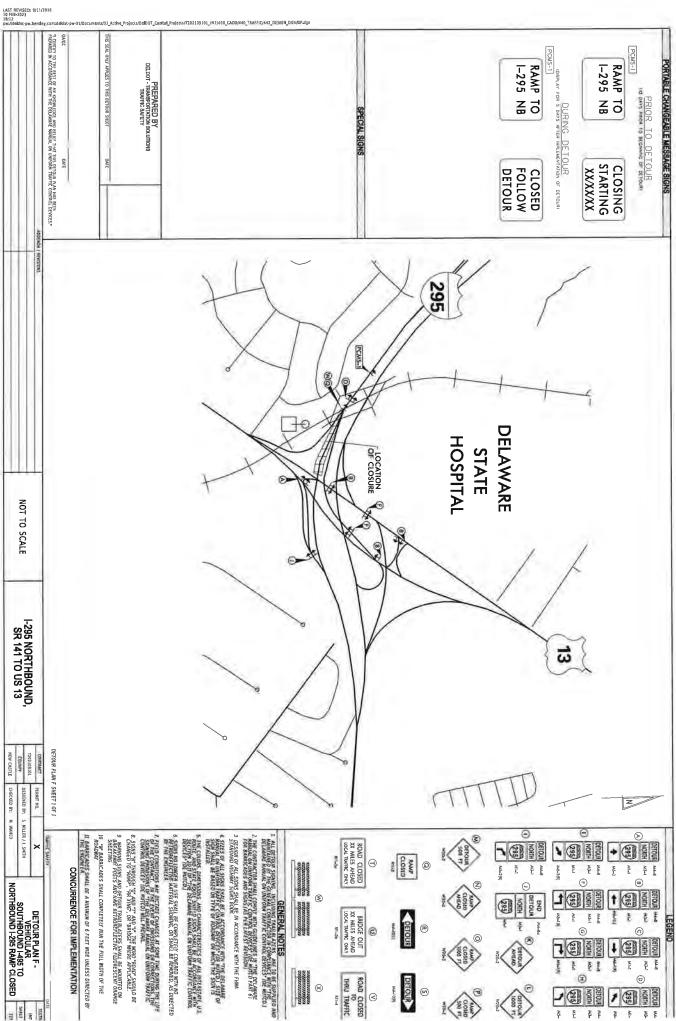


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AQUATIC RESOURCE IDENTIFICATION & DELINEATION REPORT





AQUATIC RESOURCE IDENTIFICATION & DELINEATION REPORT

I-295 NB, SR 141 to US 13 Project New Castle, New Castle County, Delaware

DelDOT Project #: T202109101 JMT Project #: 20-01097-003

Submitted to:

Delaware Department of Transportation (DelDOT)

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I. EXECUTIVE SUMMARY

This report presents the results of an aquatic resource identification and delineation study conducted by Johnson, Mirmiran, and Thompson, Inc. (JMT) on behalf of the Delaware Department of Transportation (DelDOT) as part of the proposed I-295 Northbound, SR 141 to US 13 Project in New Castle, New Castle County, Delaware. DelDOT is proposing roadway improvements along an approximately 2.75-mile-long roadway corridor that begins just west of the I-95 crossing over the Christina River, continues along I-295 northbound (NB) to the east and southeast, and ends at the I-295/US 13 (North Dupont Parkway) interchange.

The aquatic resource investigations were conducted on September 7, 8, 9, 22, and 23, 2021, and June 8, 2023. Wetlands were delineated using a combination of secondary data analysis and field verification. Fieldwork was conducted in accordance with the *U.S. Army Corps of Engineers Wetland Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010)*.

As of March 20, 2023, the new federal *Waters of the U.S. Rule* had taken effect. However, in light of the U.S. Supreme Court ruling in *Sackett v. Environmental Protection Agency* that was published on May 25, 2023, the U.S. Army Corps of Engineers (USACE) is currently interpreting "waters of the United States" (WUS) consistent with this Supreme Court decision.

Four watercourses (S1 through S4) and 16 palustrine wetlands (W1 through W16) were identified and delineated within the study area during JMT's field investigations. All perennial and intermittent watercourses were determined to be jurisdictional resources at both the federal and state levels. All of the palustrine wetlands were considered federally jurisdictional based on the current interpretation of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Of the 16 identified wetlands, 11 occur at least in part within the boundaries of state-delineated tidal wetlands, which are jurisdictional resources regulated by the Delaware Department of Natural Resources and Environmental Control (DNREC). The remaining five wetlands are all relatively small, non-tidal wetlands, which are not considered jurisdictional by the state of Delaware based on current state laws and regulations. Any impacts to the jurisdictional resources would require permits from DNREC and/or the USACE.



II. INTRODUCTION

This Aquatic Resource Identification and Delineation Report has been prepared on behalf of DelDOT for roadway improvements being proposed along I-295 northbound between SR 141 and US 13 in New Castle, New Castle County, Delaware.

The center of the proposed project is located at approximately 39.700617° north latitude and -75.598666° west longitude and occurs within the Wilmington South, DE-NJ 7.5-Minute USGS Topographic Quadrangle (**Figure 1** in **Appendix A**). The project area consists of an approximately 2.75-mile-long roadway corridor that begins just west of the I-95 crossing over the Christina River, continues along I-295 northbound to the east and southeast, and ends at the I-295/US 13 (North Dupont Parkway) interchange. The I-295/SR 141 (West Basin Road) interchange occurs in the central portion of the project area. The western end of the project area also includes a portion of Airport Road, which is located to the south of I-295 northbound. Land use/land cover in the immediate vicinity of the project area is dominated by tidal and nontidal wetlands and watercourses, roadway infrastructure, and commercial and residential development. Natural topography in the study area overall is generally flat with some gentle slopes, although moderate to steep slopes are associated with roadway fill embankments and other disturbed areas.

The study area for the proposed project included the aforementioned 2.75-mile-long roadway corridor, focused primarily along the southern side of I-295 northbound. The width of the study area varied depending on the anticipated work along the corridor. Please see a depiction of the study area boundary in the Wetland and Waterways Delineation Plans (**Appendix D**, **Index Sheet**).

III. WETLAND AND WATERCOURSE DELINEATION

Investigations were conducted on September 7, 8, 9, 22, and 23, 2021, and June 8, 2023 by JMT to identify and delineate the extent and location of jurisdictional waters and wetlands within the project study area pursuant to the federal Clean Water Act (Section 404) and the state of Delaware's *Wetlands Regulations* (7 Del. C. §7502) and *Regulations Governing the Use of Subaqueous Lands* (7 Del. C. §7504). The EPA/Corps of Engineers joint memorandum: *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (December 02, 2008), Code of Federal Regulations (33 CFR Parts 320-330) and the aforementioned Delaware State regulations define wetlands and watercourses and provide regulatory jurisdictional guidance on water obstructions and encroachments. Wetlands with potential federal jurisdiction are defined as those areas satisfying the technical criteria contained in the *Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1, United States Waterway Experiment Station, Vicksburg, Mississippi 1987 (Delineation Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010)*.

As of March 20, 2023, the new federal *Waters of the U.S. Rule* had taken effect. However, in light of the U.S. Supreme Court ruling in *Sackett v. Environmental Protection Agency* that was published on May 25, 2023, the U.S. Army Corps of Engineers (USACE) is currently interpreting "waters of the United States" (WUS) consistent with this Supreme Court decision. The delineated resource descriptions within this report have been structured to aid USACE regulators in determining jurisdiction based on the decision from the *Sackett v. Environmental Protection Agency* ruling.



A. METHODOLOGY

a. RECORDS RESEARCH

In accordance with the Delineation Manual, the Wilmington South, DE-NJ 7.5-Minute USGS topographic quadrangle (Figure 1 in Appendix A), Web Soil Survey of New Castle County (Figures 2a-2b in Appendix A), National Wetlands Inventory (NWI) web-based Interactive Mapper (Figures 3a-3b in Appendix A), FEMA flood maps (Figures 4a-4b in Appendix A), and the Delaware Environmental Navigator NavMap tool (Figures 5a-5c in Appendix A) were reviewed to identify areas with topographical configurations, previously mapped wetlands, and/or hydric soils, which may suggest the presence of wetlands. In addition, the State of Delaware Wetlands maps (Figures 6a-6c in Appendix A) were reviewed to identify the delineated boundaries of state-regulated tidal wetlands within the vicinity of the study area.

b. FIELD INVESTIGATIONS

The on-site, "routine" level, wetland identification and delineation methodology, contained in the U.S. Army Corps of Engineers (USACE) Delineation Manual, was followed (USACE, 1987). The on-site field investigation involved inspection of the study area to identify areas that satisfy the three wetland parameters (i.e., criteria): a predominance of hydrophytic (wetland) vegetation, wetland hydrology, and hydric soils. In order to make a determination that an area is a wetland, the Delineation Manual requires that, under normal (typical) circumstances, a minimum of one primary wetland indicator be confirmed for each of the three wetland parameters. A failure to confirm or account for all three parameters must result in a finding that the area under evaluation is a non-wetland under normal circumstances. When applicable, site characteristics were evaluated based on the potential for problematic wetland situations, as described in the *Atlantic and Gulf Coastal Plain Regional Supplement*. Data from representative wetland and upland sample plots were recorded on Wetland Determination Data Forms (**Appendix B**). In accordance with the Delineation Manual, the following wetland delineation criteria and primary field indicators were used:

1. Hydrophytic Vegetation

Vegetation on the property was initially characterized to plant community type based on guidance provided in the *Atlantic and Gulf Coastal Plain Regional Supplement*. Within a plant community, sample plots were established. When possible, 30-foot radius circular sample plots for all vegetative strata were used. Larger or smaller plot sizes were used as conditions dictated.

Dominant plant species were then assigned a wetland indicator classification according to the *U.S. Army Corps of Engineers* (USACE) *National Wetland Plant List* (NWPL) (USACE, 2018). The 2018 NWPL (version 3.4) was used, which features updates that were approved on May 18, 2020 (85 Fed. Reg. 29,689, 2020). The indicator status is based on a species frequency of occurrence in wetlands. The wetland indicator rating and the corresponding frequency of occurrence are explained in **Table 1**.

Once the dominant plant species are determined, the procedure for using the hydrophytic vegetation indicators is as follows:



- Step 1: Apply Indicator 1 (Rapid Test for Hydrophytic Vegetation, if not met proceed to Step 2)
- Step 2: Apply Indicator 2 (Dominance Test, if not met proceed to Step 3),
- Step 3: Apply Indicator 3 (Prevalence Test; if not met proceed to Step 4),
- Step 4: Apply Indicator 4 (Morphological Adaptations).

When more than 50 percent of the dominant species in a plant community are determined to have an indicator status of OBL, FACW, and/or FAC, hydrophytic vegetation is determined to be present. If none of the indicators are satisfied, then predominantly hydrophytic vegetation is absent unless indicators of hydric soil and wetland hydrology are present, and the site meets the requirements for a problematic wetland (see Chapter 5 of the *Atlantic and Gulf Coastal Plain Regional Supplement*).

Table 1. Wettalia indicator bescriptions officer Natural Conditions.								
Indicator Status Code	Indicator Status Name	Description						
OBL	Obligate Wetland	Plants that occur almost always (more than 99% of the time) in wetlands						
FACW	Facultative Wetland	Plants that occur usually (67-99% of the time) in wetlands						
FAC	Facultative	Plants with similar likelihood (34-66% of the time) of occurring in wetlands/non-wetlands						
FACU	Facultative Upland	Plants that may occur (1-33% of the time) in wetlands, but are usually in non-wetlands						
UPL	Obligate Upland	Plants that occur rarely (less than 1% of the time) in wetlands under natural conditions						
NI	Not Included	Only genus information known and/or cannot assign accurate indicator status						

Table 1. Wetland Indicator Descriptions Under Natural Conditions.

2. Wetland Hydrology

In each plant community, indicators of wetland hydrology and hydric soils were investigated following the *Atlantic and Gulf Coastal Plain Regional Supplement*. Wetland hydrology means that water is present at or above the surface for a prolonged period (in consecutive days) during the growing season. Prolonged duration of seasonally inundated or saturated areas is considered to be longer than 12.5-percent of the growing season. Primary indicators of wetland hydrology include, but are not limited to, direct observation of inundation or saturation at the surface, recorded stream gauge data (where available); water marks or sediment deposits on objects and vegetation (i.e., water-stained leaves), water-carried debris drift lines, oxidized rhizospheres on living roots. Secondary indicators of hydrology include, but are not limited to, drainage patterns, stressed plants, microtopographic relief, sparsely vegetated concave surfaces. Some vegetative physiological adaptations, such as tree buttressing, shallow rooting, and multiple stems may also indicate wetland hydrology. Any observed wetland hydrologic field indicators were then noted on the data forms. Factors such as the depth of water or the depth to free water in the soil excavation pit were also noted.



A minimum of one primary or two secondary indicators are required to satisfy the wetland hydrology parameter.

3. Hydric Soils

Soils were investigated in the field using a soil auger and/or sharpshooter shovel. The exposed soils were divided into distinct layers on the basis of color, mottling, and structural and textural differences. Color (chroma) was determined by comparison with standard soil color chips contained in the *Munsell Soil Color Charts* (Munsell, 2009). Because hydric soils are saturated to the surface for periods of sufficient duration during the growing season to create oxygen-free conditions in the upper layer, indicators of oxygen-free conditions develop. Following the guidelines outlined in the *Atlantic and Gulf Coastal Plain Regional Supplement*, observations were made for hydric soil indicators (e.g., depleted or gleyed matrix, redox depletions, or concentrations). Soil characteristics of each layer and any hydrologic indicators were recorded on the data forms provided in **Appendix B**.

4. Watercourse Identification

Watercourses were identified as channels or surface water conveyances featuring defined bed and banks, natural or artificial, hydrologically sorted substrate material, and the presence of an Ordinary High Water Mark (OHWM). These aquatic resources are regulated in the state of Delaware's *Regulations Governing the Use of Subaqueous Lands* (7 Del. C. §7504), and as Waters of the U.S. (WUS) under the Federal Clean Water Act. The USACE in its Regulatory Guidance Letter 07-01, *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (December 02, 2008), and *Corps and EPA Responses the Rapanos Decision* (December 02, 2008), established the basic guidance for determining what will be regulated as WUS. As previously noted, the USACE is currently defining WUS consistent with the *Sackett v. Environmental Protection Agency* Supreme Court ruling.

c. WETLAND BOUNDARY IDENTIFICATION

Sample plots were analyzed to determine wetland/upland boundaries. Representative observations were recorded as data points (**Appendix B**). Sampling was conducted along the gradient between uplands and wetlands to identify the location of the wetland boundary. The wetland/upland boundary was marked in the field using pink surveyors ribbon tied to live, woody or herbaceous vegetation nearest the boundary. The flags were labeled sequentially using the wetland number as the prefix. Marked transitions in vegetative communities and hydrologic characteristics were primarily used to flag the wetland boundary once data sampling was complete; however, additional soil samples were examined as necessary to better define the wetland boundary when clear transitions were not observed.

B. RESULTS OF INVESTIGATION

a. RECORDS RESEARCH

The project site lies within the Christina River Smalleys Pond, Lower Christina River, and Broad Duke Canal HU-12 subwatersheds, which are all subbasins of the Brandywine-Christina HU-8 Watershed. A review of the NWI map revealed mapped riverine systems and palustrine wetlands throughout a large portion of the study area, which included the Christina River and its tributaries (E1UBL), Nonesuch Creek and its tributaries



(R1UBV), estuarine intertidal wetlands (E2EM1P), palustrine tidal wetlands (PFO1R, PEM1T, PEM5R, PUBT, PSS1/FO1R, PUBV, PFO1/SS1R, PEM5/SS1R), and palustrine nontidal wetlands (PFO1A, PFO1Ad, PEM5C, PEM5/SS1C, PEM5/SS1C, PEM5/SS1E, PFO1/EM5E, PFO1/SS1C) (**Figures 3a-3b** in **Appendix A**). According to the 2007 State Wetlands layer from the DNREC NavMap tool (**Figures 5a-5c** in **Appendix A**), several mapped tidal and nontidal wetlands were identified throughout the majority of the study area, which generally matched the aerial coverage of the wetlands shown on the NWI maps. According to the FEMA FIRM Maps (Map # FM10003C0153L and Map # FM10003C0154L), FEMA-designated 100-year floodplain areas and a FEMA-delineated 100-year floodway of the Christina River occur within the study area (**Figures 4a-4b** in **Appendix A**).

A review of the State of Delaware Wetlands maps (**Figures 6a-6c** in **Appendix A**) identified state-regulated tidal wetlands within the project vicinity, primarily in the western and central portions of the study area. The delineated tidal wetland categories identified included Marsh (M), Tidal Mudflats/Sand Bars (T), Impounded Marsh (IM), and Impounded Water (IW).

b. SOIL CHARACTERISTICS

According to the Geologic Map of New Castle County, Delaware (Ramsey, 2005), the study area lies in the Coastal Plain physiographic province. It is primarily underlain by the Delaware Bay Group (undifferentiated) and Columbia Formation of the Pleistocene era. Portions of the study area are also underlain by Marsh Deposits of the Holocene era, as well as fill. The predominant soils within the study area, as obtained from the *Web Soil Survey of New Castle County* shown in **Figures 2a-2b** of **Appendix A**, include the Hambrook-Urban land complex (HkB), Mattapex-Urban land complex (MuB), Nanticoke and Mannington soils (NM), Othello silt loams (OtA), and Urban land-Othello complex (VoB) series. The hydric status and additional characteristics of the dominant soil series in each mapping unit are provided below in **Table 2**.

Table 2: Soils Series Units within the I-295 NB, SR 141 to US 13 Project Study Area, New Castle County, Delaware

Soil Mapping Symbol	Soil Mapping Unit	Drainage Class	Depth to Water Table	Frequency of Flooding	Frequency of Ponding	Hydric Status
HkB	Hambrook-Urban land complex, 0 to 5 percent slopes	Well drained	40 to 72 inches	None	None	Non-Hydric
MuB	Mattapex-Urban land complex, 0 to 5 percent slopes	Moderately well drained	20 to 40 inches	None	None	Non-Hydric
NM	Nanticoke and Mannington soils, very frequently flooded, tidal	Very poorly drained	0 to 5 inches	Very frequent	None	Hydric (Rating = 100)
OtA	Othello silt loams, 0 to 2 percent slopes, northern coastal plain	Poorly drained	0 to 10 inches	None	Occasional	Hydric (Rating = 95)
Urban land-Othello VoB complex, 0 to 5 percent slopes		Poorly drained	10 to 20 inches	None	Rare	Hydric Inclusions (Rating = 30)



c. AQUATIC RESOURCE DESCRIPTIONS

Four watercourses (S1 through S4) and 16 palustrine wetlands (W1 through W16) were identified and delineated within the study area during JMT's field investigations on September 7, 8, 9, 22, and 23, 2021. JMT collected data from sampling points associated with representative habitats within the study area and recorded these data on Wetland Determination Data Forms (**Appendix B**). Representative site photographs are provided in **Appendix C**. Refer to the Wetland and Waterways Delineation Plans (**Appendix D**) for depictions of the study area boundary, wetland and watercourse boundaries, data points, and site photograph locations. Please see **Table 3** and **Table 4** for summary information on the delineated watercourses and wetlands, respectively. The following provides additional descriptions of the results from the field investigation.

In the discussions of federal jurisdiction below, the terms Traditional Navigable Water (TNW) and Relatively Permanent Water (RPW) are based on the *Sackett v. Environmental Protection Agency* decision. For the purpose of this report, a RPW refers to watercourses with perennial or intermittent hydrology.

Watercourses

Table 3: Summary of Delineated Watercourses within the I-295 Northbound, SR 141 to US 13

Project Study Area, New Castle County, Delaware

Watercourse ID	Watercourse Flow Type	Latitude and Longitude (center of stream length in study area)	Plan Sheets	Agency with Jurisdiction ^a
S 1	Perennial	39.694302° N, -75.622407° W	1	USACE/DNREC
S 2	Intermittent	39.696637° N, -75.614384° W	3	USACE/DNREC
S3	Perennial	39.700799° N, -75.597502° W	7, 8	USACE/DNREC
S4	Perennial	39.701225° N, -75.592967° W	7, 8, 9, 10	USACE/DNREC

^a Federal jurisdiction based on *Sackett v. Environmental Protection Agency* Supreme Court ruling.

Stream 1 (S1)

Stream 1 (S1) is a perennial watercourse named the Christina River that generally flows in a northerly direction near the western end of the study area. The channel width was approximately 210 feet and the water depth was greater than 3 feet within the study area. Substrate consisted of a mix of sand/silt, cobble rock, boulders, and large riprap. The streambanks were lined with a variety of trees, shrubs, and herbaceous vegetation.

Because S1 (Christina River) is a TNW, this watercourse is federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. This watercourse is also considered jurisdictional under Delaware's Subaqueous Lands regulations.

Stream 2 (S2)

Stream 2 (S2) is an intermittent UNT to the Christina River that flows in a southerly direction in the western portion of the study area. S2 appears to be a constructed stormwater drainage channel that emanates from a pipe outfall to the south of I-295 NB and is piped south beneath Airport Road where it ultimately discharges



into Wetland 3 (W3). This stream is fed by multiple constructed concrete stormwater drainage channels. The stream width was approximately 10 to 12 feet and the water depth was 8 to 12 inches. Substrate consisted primarily of cobble-sized riprap. The streambanks were primarily lined with herbaceous vegetation such as common reed (*Phragmites australis*, FACW) and purple loosestrife (*Lythrum salicaria*, OBL).

Because WUS-2 exhibits intermittent flow and features a surface connection to a tributary to a TNW (Nonesuch Creek), this watercourse is federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. This watercourse is also considered jurisdictional under Delaware's Subaqueous Lands regulations.

Stream 3 (S3)

Stream 3 (S3) is a perennial tributary to the Christina River named Nonesuch Creek that flows in a northerly direction beneath I-295 NB in the central portion of the study area, to the east of the I-295/SR 141 interchange. The channel width was approximately 70 feet within the study area. Due to the high water depths, average depth and streambed substrate could not be observed during the field investigation. The streambanks were lined with a variety of trees, shrubs, and herbaceous vegetation.

Because S3 exhibits perennial flow and features a direct connection to a TNW (Christina River), this watercourse is federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. This watercourse is also considered jurisdictional under Delaware's Subaqueous Lands regulations.

Stream 4 (S4)

Stream 4 (S4) is a perennial UNT to Nonesuch Creek (S3) that generally flows in a westerly direction in the eastern and central portions of the study area. This watercourse flows along the southern side of I-295 NB for approximately 3,000 feet to its confluence with the eastern side of S3. The stream width averaged approximately 25 feet and the water depth was highly variable. Substrate consisted of a mix of sand/silt, gravel, and cobble rock. The streambanks were lined with a variety of trees, shrubs, and herbaceous vegetation.

Because S4 exhibits perennial flow and features a direct connection to a RPW tributary (S3) of a TNW (Christina River), this watercourse is federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. This watercourse is also considered jurisdictional under Delaware's Subaqueous Lands regulations.



Wetlands

Table 4: Summary of Delineated Wetlands within the I-295 Northbound, SR 141 to US 13
Project Study Area, New Castle County, Delaware

Project Study Area, New Castle County, Delaware					
Wetland ID	Cowardin Class	Acreage Within Study Area	Latitude and Longitude (wetland center within study area)	Plan Sheets	Agency with Jurisdiction ^b
W1	PFO	0.091 acres ^a	39.694559° N, -75.621303° W	1	USACE
W2	PEM	0.052 acres ^a	39.694704° N, -75.620728° W	1	USACE
W3	PEM	0.609 acres ^a	39.696275° N, -75.613957° W	3	USACE/DNREC
W4	POW	0.154 acres ^a	39.696682° N, -75.612414° W	3, 4	USACE/DNREC
W5	PEM	0.175 acres ^a	39.697133° N, -75.611251° W	4	USACE/DNREC
W6	PFO	0.784 acres ^a	39.698080° N, -75.609411° W	4, 5	USACE
W7	PFO	0.673 acres ^a	39.698956° N, -75.606313° W	5, 6	USACE/DNREC
W8	PEM/PFO	0.012 acres ^a	39.699324° N, -75.604122° W	6	USACE/DNREC
W9	PEM	0.364 acres ^a	39.699707° N, -75.602506° W	6	USACE/DNREC
W10	PEM/PSS	0.465 acres ^a	39.700102° N, -75.600180° W	7	USACE/DNREC
W11	PEM	0.258 acres ^a	39.700464° N, -75.598311° W	7, 8	USACE/DNREC
W12	PFO	0.265 acres ^a	39.699667° N, -75.585982° W	10, 11	USACE
W13	PEM	0.340 acres ^a	39.701795° N, -75.587741° W	10	USACE/DNREC
W14	PEM/PFO	0.954 acres ^a	39.701558° N, -75.589222° W	9, 10	USACE/DNREC
W15	PEM	0.057 acres ^a	39.699302° N, -75.607386° W	5	USACE
W16	PEM	0.036 acres ^a	39.693937° N, -75.623249° W	1	USACE/DNREC

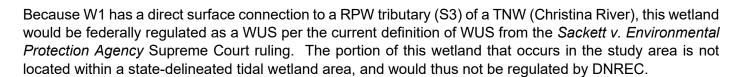
^a Wetland extends beyond the study area boundary.

Wetland 1 (W1)

Wetland 1 (W1) is a linear palustrine forested (PFO) wetland swale located near the western end of the study area, to the south of I-295 and east of the Christina River (S1). Approximately 0.091 acres of W1 was delineated. This wetland was delineated as open-ended, with the southern side of the swale located outside of the study area. Hydrology for W1 is primarily supplied by a seasonally high groundwater table and surface runoff. Vegetation within the TP-1 sample plot was dominated by red maple (*Acer rubrum*, FAC), green ash (*Fraxinus pennsylvanica*, FACW), common reed (FACW), and eastern poison ivy (*Toxicodendron radicans*, FAC); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-1 featured mucky organic material from 0 to 2 inches, and silt loam with a 10 YR 5/1 matrix and 5 YR 4/6 redoximorphic features between 2 and 16 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of surface water, saturation (episaturation), water marks, water-stained leaves, drainage patterns, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W1 was delineated as a potentially jurisdictional wetland.



^b Federal jurisdiction based on *Sackett v. Environmental Protection Agency* Supreme Court ruling.



Wetland 2 (W2)

Wetland 2 (W2) is a palustrine emergent (PEM) wetland located in the western portion of the study area, to the south of I-295 and east of W1. Approximately 0.052 acres of W2 was delineated. The southern portion of W2 was delineated as open-ended and continues further south. Hydrology for W2 is primarily supplied by a seasonally high groundwater table, surface runoff, and groundwater discharge. Vegetation within the TP-3 sample plot was dominated by ash-leaf maple (*Acer negundo*, FAC), multiflora rose (*Rosa multiflora*, FACU), and common reed (FACW); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-3 featured mucky organic soils between 0 and 16 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator A1 (Histosol). The wetland displayed hydrology indicators of surface water, high water table, saturation, sediment deposits, hydrogen sulfide odor, and geomorphic position, thus fulfilling the wetland hydrology parameter. For these reasons, W2 was delineated as a potentially jurisdictional wetland.

Because W2 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. The portion of this wetland that occurs in the study area is not located within a state-delineated tidal wetland area, and would thus not be regulated by DNREC.

Wetland 3 (W3)

Wetland 3 (W3) is a large PEM wetland located in the western portion of the study area, to the south and east of Airport Road. Approximately 0.609 acres of W3 was delineated. This wetland was delineated as open-ended, with the wetland continuing further south. Hydrology for W3 is primarily supplied by a seasonally high groundwater table, surface runoff, and groundwater discharge. Vegetation within the TP-5 sample plot was dominated by ash-leaf maple (FAC), common reed (FACW), and grape (*Vitis* sp., NI); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-5 featured silt loams with a 10 YR 4/1 matrix and 5 YR 4/6 redoximorphic features between 0 and 10 inches in depth, and silty clay loam with a 10 YR 5/1 matrix and 7.5 YR 4/6 redoximorphic features from 10 to 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of surface water, high water table, saturation, water marks, inundation visible on aerial imagery, oxidized rhizospheres on living roots, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W3 was delineated as a potentially jurisdictional wetland.

Because W3 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W3 occur within a state-delineated tidal wetland area (M – Marsh) and would thus also be regulated by DNREC.



Wetland 4 (W4)

Wetland 4 (W4) is a palustrine open water (POW) wetland located in the western portion of the study area, to the south of Airport Road and east of W3. Approximately 0.154 acres of W4 was delineated. The southern portion of W4 was delineated as open-ended and continues further south away from Airport Road. This wetland largely consisted of open water and areas of aquatic vegetation. Hydrology for W4 is primarily supplied by groundwater discharge, a seasonally high groundwater table, and surface runoff. Vegetation within the TP-7 sample plot was dominated by ash-leaf maple (FAC), pin oak (*Quercus palustris*, FACW), southern arrowwood (*Viburnum dentatum*, FAC), yellow pond-lily (*Nuphar advena*, OBL), and Eurasian water-milfoil (*Myriophyllum spicatum*, OBL); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-7 featured loamy sand with a 10 YR 5/1 matrix from 0 to 12 inches. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of surface water, high water table, saturation, water marks, inundation visible on aerial imagery, aquatic fauna, saturation visible on aerial imagery, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W4 was delineated as a potentially jurisdictional wetland.

Because W4 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W4 occur within a state-delineated tidal wetland area (M – Marsh) and would thus also be regulated by DNREC.

Wetland 5 (W5)

Wetland 5 (W5) is a PEM wetland located in the western portion of the study area, to the south of Airport Road and east of a utility access berm adjacent to W4. Approximately 0.175 acres of W5 was delineated. The southern portion of W4 was delineated as open-ended and continues further south away from Airport Road. Hydrology for W5 is primarily supplied by a seasonally high groundwater table, surface runoff, and groundwater discharge. Vegetation within the TP-8 sample plot was dominated by red maple (FAC) and common reed (FACW); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-8 featured organic muck with a 10 YR 3/1 matrix from 0 to 8 inches in depth, and mucky sand with a 10 YR 3/2 matrix between 8 to 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator A2 (Histic Epipedon); in addition, the Hydrogen Sulfide (A4) indicator was also satisfied. The wetland displayed hydrology indicators of surface water, high water table, saturation, inundation visible on aerial imagery, saturation visible on aerial imagery, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W5 was delineated as a potentially jurisdictional wetland.

Because W5 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W5 occur within a state-delineated tidal wetland area (M – Marsh) and would thus also be regulated by DNREC.

Wetland 6 (W6)

Wetland 6 (W6) is a large PFO wetland located in the western portion of the study area between I-295 NB and Airport Road. Approximately 0.784 acres of W6 was delineated. This wetland was delineated as openended, with a portion of the wetland continuing further south towards Airport Road. Hydrology for W6 is



primarily supplied by a seasonally high groundwater table, surface runoff, and groundwater discharge. Vegetation within the TP-9 sample plot was dominated by green ash (*Fraxinus pennsylvanica*, FACW), red maple (FAC), southern arrowwood (FAC), eastern poison ivy (FAC), rough barnyard grass (*Echinochloa muricata*, FACW), and water smartweed (*Persicaria amphibia*, OBL); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-9 featured silt loams with a 10 YR 4/2 matrix and 5 YR 4/6 redoximorphic features between 0 and 5 inches in depth, and a 10 YR 5/2 matrix with 5 YR 4/6 redoximorphic features from 5 to 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of surface water, high water table, saturation, water marks, water-stained leaves, oxidized rhizospheres along living roots, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W6 was delineated as a potentially jurisdictional wetland.

Because W6 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. The portion of this wetland that occurs in the study area is not located within a state-delineated tidal wetland area, and would thus not be regulated by DNREC.

Wetland 7 (W7)

Wetland 7 (W7) is a PFO wetland swale located in the central portion of the study area, to the south of I-295 NB and north and east of W6. Approximately 0.673 acres of W7 was delineated. The southern portion of W7 was delineated as open-ended and continues further south into more of an emergent/open-water condition. Hydrology for W7 is primarily supplied by a seasonally high groundwater table, surface runoff, and groundwater discharge. Vegetation within the TP-11 sample plot was dominated by red maple (FAC), sweetgum (*Liquidambar styraciflua*, FAC), southern arrowwood (FAC), sensitive fern (*Onoclea sensibilis*, FACW), and eastern poison ivy (FAC); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-11 featured silt loams with a 10 YR 3/1 matrix and 5 YR 4/6 redoximorphic features between 0 and 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F6 (Redox Dark Surface). This wetland displayed hydrology indicators of surface water, high water table, saturation, water marks, water-stained leaves, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W7 was delineated as a potentially jurisdictional wetland.

Because W7 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W7 occur within a state-delineated tidal wetland area (IW – Impounded Water) and would thus also be regulated by DNREC.

Wetland 8 (W8)

Wetland 8 (W8) is a mixed PEM/PFO wetland located in the central portion of the study area, within the interchange loop on the western side of the I-295 NB/SR 141 interchange. Approximately 0.012 acres of W8 was delineated. This wetland was delineated as open-ended, with the wetland continuing further south and west. Hydrology for W8 is primarily supplied by a seasonally high groundwater table and surface runoff. Vegetation within the TP-13 sample plot was dominated by common reed (FACW); thus, the hydrophytic vegetation parameter was met by the Rapid Test and Dominance Test indicators. The soil sample from TP-13 featured silt loams with a 10 YR 4/2 matrix and 5 YR 4/6 redoximorphic features between 0 and 10 inches



in depth, and silty clay loam with a 10 YR 4/3 matrix and 10 YR 4/6 redoximorphic features between 10 and 16 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of high water table, saturation, oxidized rhizospheres on living roots, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W8 was delineated as a potentially jurisdictional wetland.

Because W8 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W8 occur within a state-delineated tidal wetland area (IM – Impounded Marsh) and would thus also be regulated by DNREC.

Wetland 9 (W9)

Wetland 9 (W9) is a PEM wetland located in the central portion of the study area, in between the SR 141 bridges to the south of I-295 NB. Approximately 0.364 acres of W9 was delineated. This wetland was delineated as open-ended and continues further south. Hydrology for W9 is primarily supplied by a seasonally high groundwater table, surface runoff, and groundwater discharge. Vegetation within the TP-15 sample plot was dominated by field blackberry (*Rubus arvensis*, FAC) and common reed (FACW); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-15 featured silt loams with a 10 YR 4/2 matrix and 5 YR 4/6 redoximorphic features from 0 to 5 inches in depth, and a 10 YR 4/3 matrix with 10 YR 4/6 redoximorphic features from 5 to 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of surface water, high water table, saturation, oxidized rhizospheres on living roots, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W9 was delineated as a potentially jurisdictional wetland.

Because W9 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W9 occur within a state-delineated tidal wetland area (IM – Impounded Marsh) and would thus also be regulated by DNREC.

Wetland 10 (W10)

Wetland 10 (W10) is a mixed PEM/palustrine scrub-shrub (PSS) wetland located in the central portion of the study area, to the south of I-295 NB and within the interchange loop just east of the SR 141 bridges. Approximately 0.465 acres of W10 was delineated. The southern portion of W10 was delineated as openended and continues further south. Hydrology for W10 is primarily supplied by a seasonally high groundwater table and surface runoff. Vegetation within the TP-17 sample plot was dominated by sweetgum (FAC), American elm (*Ulmus americana*, FAC), groundseltree (*Baccharis halimifolia*, FAC), common reed (FACW), purple loosestrife (OBL), and Virginia creeper (*Parthenocissus quinquefolia*, FACU); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-17 featured silt loams with a 10 YR 4/2 matrix with 7.5 YR 4/6 redoximorphic features from 0 to 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of surface water, saturation, water marks, water-stained leaves, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W10 was delineated as a potentially jurisdictional wetland.



Because W10 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W10 occur within a state-delineated tidal wetland area (IM – Impounded Marsh) and would thus also be regulated by DNREC.

Wetland 11 (W11)

Wetland 11 (W11) is a PEM wetland located in the central portion of the study area, to the south of I-295 NB and east of the I-295/SR 141 interchange. Approximately 0.258 acres of W11 was delineated. The southern portion of W11 was delineated as open-ended and continues further south. The eastern side of the wetland abuts Nonesuch Creek (Stream 3, S3). Hydrology for W11 is primarily supplied by a seasonally high groundwater table, surface runoff, groundwater discharge, and occasional high flows from S3. Vegetation within the TP-20 sample plot was dominated by common reed (FACW); thus, the hydrophytic vegetation parameter was met by the Rapid Test and Dominance Test indicators. The soil sample from TP-20 featured silt loams with a 10 YR 4/2 matrix and 5 YR 4/6 redoximorphic features between 0 and 8 inches in depth, and silty clay loams with a 10 YR 4/1 matrix and 5 YR 4/6 redoximorphic features between 8 and 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of surface water, high water table, saturation, water-stained leaves, oxidized rhizospheres on living roots, drainage patterns, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W11 was delineated as a potentially jurisdictional wetland.

Because W11 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W11 occur within a state-delineated tidal wetland area (M – Marsh) and would thus also be regulated by DNREC.

Wetland 12 (W12)

Wetland 12 (W12) is a PFO wetland located in the eastern portion of the study area, to the south of I-295 NB and southeast of S4. This wetland occurs in a low-lying area that discharges into S4. Approximately 0.265 acres of W12 was delineated. The southern portion of W12 was delineated as open-ended and continues further south. Hydrology for W12 is primarily supplied by a seasonally high groundwater table, surface runoff, and groundwater discharge. Vegetation within the TP-21 sample plot was dominated by ash-leaf maple (FAC), green ash (FACW), common reed (FACW), and eastern poison ivy (FAC); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-21 featured a thin 10 YR 2/2 muck layer from 0 to 2 inches, and silty clay loams with a 10 YR 4/2 matrix and 7.5 YR 4/6 redoximorphic features between 2 and 10 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of surface water, high water table, saturation, water marks, water-stained leaves, sparsely vegetated concave surface (portions of wetland), geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W12 was delineated as a potentially jurisdictional wetland.

Because W12 has a direct surface connection via S4 to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. This wetland is not located within a state-delineated tidal wetland area, and would thus not be regulated by DNREC.



Wetland 13 (W13)

Wetland 13 (W13) is a PEM wetland located in the eastern portion of the study area, between the I-295 NB on-ramp and I-295 southbound (SB). Approximately 0.340 acres of W13 was delineated. This wetland was delineated as open-ended, with the wetland continuing further north. Hydrology for W13 is primarily supplied by a seasonally high groundwater table and surface runoff. Vegetation within the TP-23 sample plot was dominated by common reed (FACW); thus, the hydrophytic vegetation parameter was met by the Rapid Test and Dominance Test indicators. The soil sample from TP-23 featured silt loams with a 10 YR 4/1 matrix and 5 YR 4/6 redoximorphic features between 0 and 16 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of oxidized rhizospheres on living roots, drainage patterns, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W13 was delineated as a potentially jurisdictional wetland.

Because W13 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W13 occur within a state-delineated tidal wetland area (IM – Impounded Marsh) and would thus also be regulated by DNREC.

Wetland 14 (W14)

Wetland 14 (W14) is a large PEM/PFO wetland located in the eastern portion of the study area, to the north of I-295 NB and south of the I-295 NB on-ramp. Approximately 0.954 acres of W14 was delineated. This wetland was delineated as open-ended, with the wetland continuing further north of I-295 NB and further south of the I-295 NB on-ramp. Hydrology for W14 is primarily supplied by a seasonally high groundwater table, surface runoff, and groundwater discharge. Vegetation within the TP-26 sample plot was dominated by silver maple (*Acer saccharinum*, FAC) and common reed (FACW); thus, the hydrophytic vegetation parameter was met by the Dominance Test indicator. The soil sample from TP-26 featured silt loams with a 10 YR 4/2 matrix and 5 YR 4/6 redoximorphic features between 0 and 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of surface water, high water table, saturation, oxidized rhizospheres along living roots, drainage patterns, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W14 was delineated as a potentially jurisdictional wetland.

Because W14 has a direct surface connection via S4 to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Portions of W14 occur within a state-delineated tidal wetland area (IM – Impounded Marsh) and would thus also be regulated by DNREC.

Wetland 15 (W15)

Wetland 15 (W15) is a narrow PEM wetland channel located in the central portion of the study area, along the northern side of I-295 NB and west of the I-295 NB/SR 141 interchange. Approximately 0.057 acres of W15 was delineated. This wetland was delineated as open-ended, with the wetland continuing further north and east. Hydrology for W15 is primarily supplied by a seasonally high groundwater table and surface runoff. Vegetation within the TP-25 sample plot was dominated by common reed (FACW); thus, the hydrophytic vegetation parameter was met by the Rapid Test and Dominance Test indicators. The soil sample from TP-25 featured silt loams with a 10 YR 4/1 matrix and 5 YR 4/6 redoximorphic features from 0 to 7 inches in



depth, and a 10 YR 5/1 matrix with 10 YR 5/6 redoximorphic features between 7 and 12 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The wetland displayed hydrology indicators of algal mat or crust, drainage patterns, geomorphic position, and the FAC-Neutral test, thus fulfilling the wetland hydrology parameter. For these reasons, W15 was delineated as a potentially jurisdictional wetland.

Because W15 has a direct surface connection to a RPW tributary (S3) of a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. This wetland is not located within a state-delineated tidal wetland area, and would thus not be regulated by DNREC.

Wetland 16 (W16)

Wetland 16 (W16) is a PEM wetland located at the western end of the study area, to the south of I-95/I-295 and west of the Christina River (S1). This wetland could not be safely accessed from the roadway due to the heights of the retaining walls; therefore, W16 was not officially delineated during the field investigation. Boundaries for W16 within the vicinity of the study area were mapped using aerial imagery. Vegetation within W16 was dominated by common reed (FACW), with a distinct transition into upland vegetation on the roadway fill embankment evident on the aerial imagery. Although soils were not directly examined in the field, the soils in this area are mapped as Othello silt loams (OtA), which are characterized as hydric soils. Surface water hydrology was observed from the roadway in portions of the wetland area. For these reasons, W16 was mapped as a potentially jurisdictional wetland. W16 was mapped as open-ended, with the wetland continuing further west outside of the study area. Approximately 0.036 acres of W16 were estimated.

Because W16 has a direct surface connection to a TNW (Christina River), this wetland would be federally regulated as a WUS per the current definition of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. The eastern portion of W16 occurs within a state-delineated tidal wetland area (T – Tidal Mudflats), and would thus also be regulated by DNREC.

IV. SUMMARY

JMT has completed an aquatic resource identification and delineation study for the proposed I-295 Northbound, SR 141 to US 13 Project in New Castle, New Castle County, Delaware. The study area for the proposed project included an approximately 2.75-mile long roadway corridor focused primarily along the southern side of I-295 northbound between the Christina River and US 13, and was investigated for wetlands and watercourses on September 7, 8, 9, 22, and 23, 2021, and June 8, 2023.

Four watercourses (S1 through S4) and 16 palustrine wetlands (W1 through W16) were identified and delineated within the study area during JMT's field investigations. All perennial and intermittent watercourses were determined to be jurisdictional resources at both the federal and state levels. All of the palustrine wetlands were considered federally jurisdictional based on the current interpretation of WUS from the *Sackett v. Environmental Protection Agency* Supreme Court ruling. Of the 16 identified wetlands, 11 occur at least in part within the boundaries of state-delineated tidal wetlands, which are jurisdictional resources regulated by the Delaware Department of Natural Resources and Environmental Control (DNREC). The remaining five wetlands are all relatively small, non-tidal wetlands, which are not considered jurisdictional by the state of Delaware based on current state laws and regulations. Any impacts to the jurisdictional resources would





Wetland and waterways investigations of this type reflect the current state of conditions. The delineation is often based on professional judgment, experience and the information and techniques available. A determination of jurisdictional areas and their boundaries, especially in highly disturbed and variable conditions of a developed area, can only be conducted through a consultation with the USACE and/or DNREC.



V. REFERENCES

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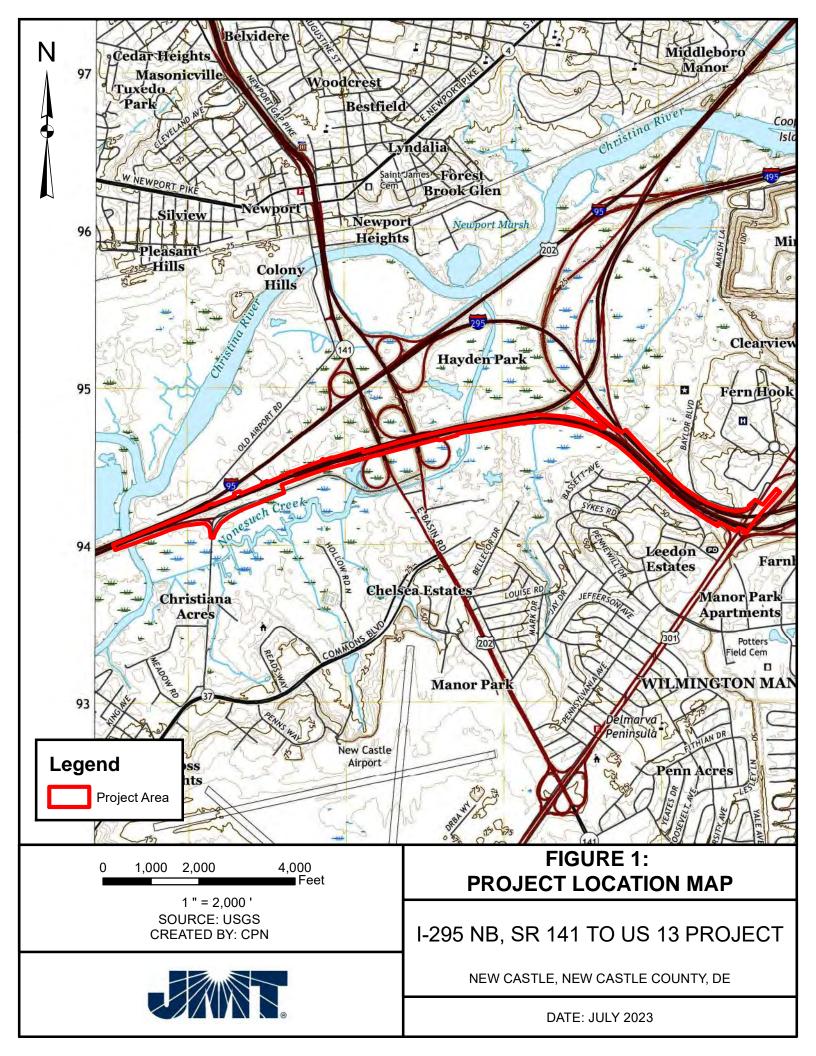


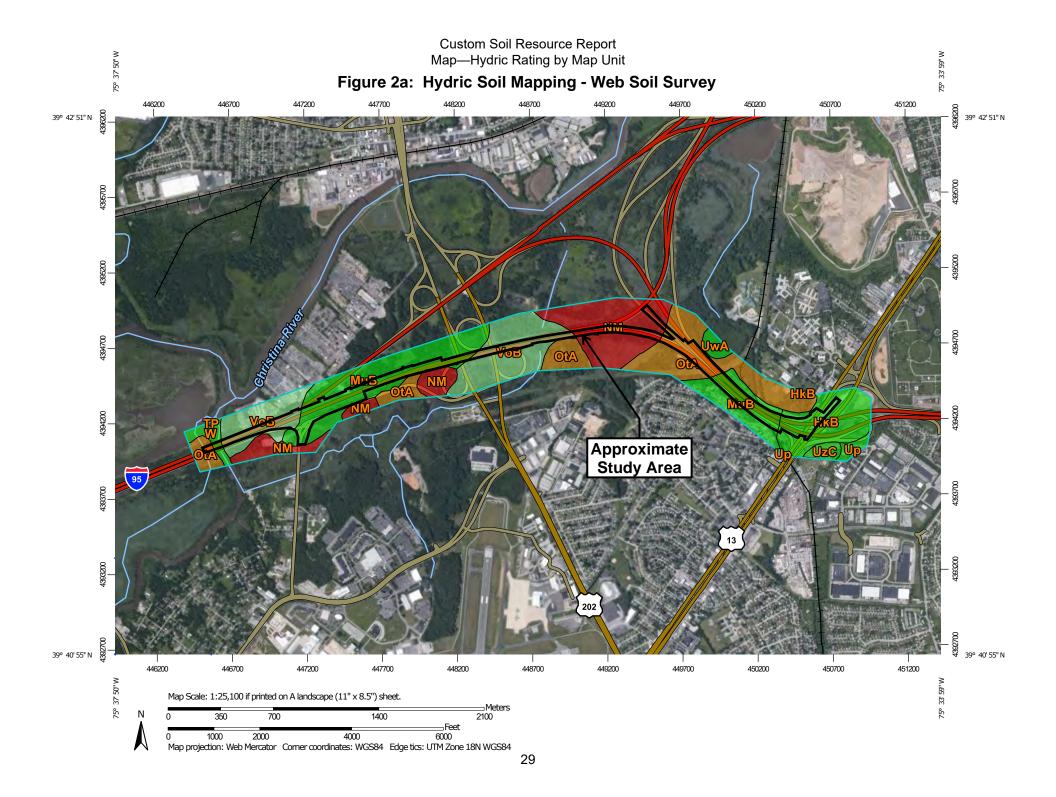
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Appendix A Figures







MAP LEGEND MAP INFORMATION Area of Interest (AOI) The soil surveys that comprise your AOI were mapped at Transportation 1:24.000. Area of Interest (AOI) Rails Soils Interstate Highways Please rely on the bar scale on each map sheet for map Soil Rating Polygons measurements. **US Routes** Hydric (100%) Major Roads Source of Map: Natural Resources Conservation Service Hydric (66 to 99%) Web Soil Survey URL: Local Roads \sim Hydric (33 to 65%) Coordinate System: Web Mercator (EPSG:3857) Background Hydric (1 to 32%) Aerial Photography Maps from the Web Soil Survey are based on the Web Mercator Not Hydric (0%) projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Not rated or not available Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required. Soil Rating Lines Hydric (100%) This product is generated from the USDA-NRCS certified data as Hydric (66 to 99%) of the version date(s) listed below. Hydric (33 to 65%) Soil Survey Area: New Castle County, Delaware Hydric (1 to 32%) Survey Area Data: Version 15, Jun 11, 2020 Not Hydric (0%) Soil map units are labeled (as space allows) for map scales Not rated or not available 1:50,000 or larger. **Soil Rating Points** Date(s) aerial images were photographed: Apr 30, 2019—Jul 13, Hydric (100%) 2019 Hydric (66 to 99%) Hydric (33 to 65%) The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background Hydric (1 to 32%) imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident. Not Hydric (0%) Not rated or not available **Water Features** Streams and Canals

Table—Hydric Rating by Map Unit

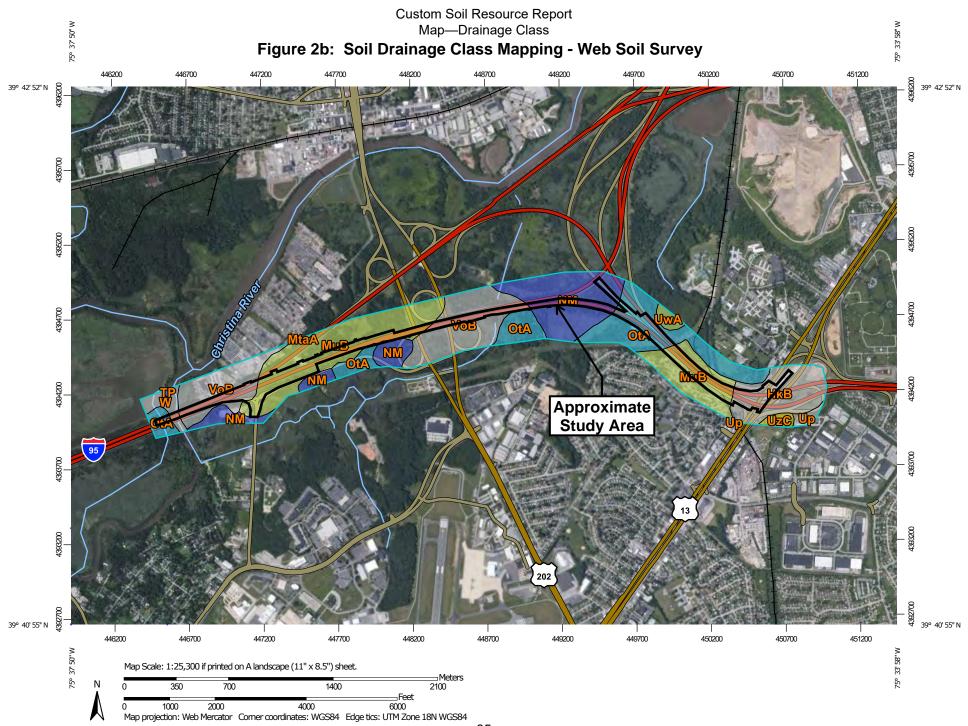
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HkB	Hambrook-Urban land complex, 0 to 5 percent slopes	0	47.0	10.3%
MuB	Mattapex-Urban land complex, 0 to 5 percent slopes	0	109.2	23.9%
NM	Nanticoke and Mannington soils, very frequently flooded, tidal	100	92.7	20.3%
OtA	Othello silt loams, 0 to 2 percent slopes, northern coastal plain	95	92.8	20.3%
TP	Transquaking and Mispillion soils, very frequently flooded, tidal	100	0.2	0.0%
Up	Urban land	0	5.0	1.1%
UwA	Udorthents, wet substratum, 0 to 2 percent slopes	0	5.6	1.2%
UzC	Udorthents, 0 to 10 percent slopes	0	5.6	1.2%
VoB	Urban land-Othello complex, 0 to 5 percent slopes	30	90.4	19.8%
W	Water	0	8.0	1.8%
Totals for Area of Inter	est	1	456.6	100.0%

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower



Excessively drained

drained

Water Features

Transportation

+++

 \sim

~

Background

Rails

US Routes

Maior Roads

Local Roads

Well drained

Poorly drained

Subaqueous

Very poorly drained

Somewhat excessively

Moderately well drained

Somewhat poorly drained

Not rated or not available

Streams and Canals

Interstate Highways

Aerial Photography

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

Excessively drained

Somewhat excessively drained

Well drained

Moderately well drained

Somewhat poorly drained

Poorly drained

Very poorly drained
Subaqueous

Not rated or not available

Soil Rating Lines

Excessively drained

Somewhat excessively drained

Well drained

Moderately well drained

Somewhat poorly drained

Poorly drained

Very poorly drained

Subaqueous

Not rated or not available

Soil Rating Points

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24.000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: New Castle County, Delaware Survey Area Data: Version 16, Aug 26, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 30, 2019—Sep 5, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Drainage Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HkB	Hambrook-Urban land complex, 0 to 5 percent slopes		44.8	9.9%
MtaA	Mattapex silt loam, 0 to 2 percent slopes, northern coastal plain	Moderately well drained	0.6	0.1%
MuB	Mattapex-Urban land complex, 0 to 5 percent slopes	Moderately well drained	119.3	26.4%
NM	Nanticoke and Mannington soils, very frequently flooded, tidal	Very poorly drained	85.9	19.0%
OtA	Othello silt loams, 0 to 2 percent slopes, northern coastal plain	Poorly drained	84.5	18.7%
TP	Transquaking and Mispillion soils, very frequently flooded, tidal	Very poorly drained	0.5	0.1%
Up	Urban land		3.7	0.8%
UwA	Udorthents, wet substratum, 0 to 2 percent slopes	Moderately well drained	4.6	1.0%
UzC	Udorthents, 0 to 10 percent slopes	Well drained	4.1	0.9%
VoB	Urban land-Othello complex, 0 to 5 percent slopes		94.7	21.0%
W	Water		9.1	2.0%
Totals for Area of Inter	est		451.9	100.0%

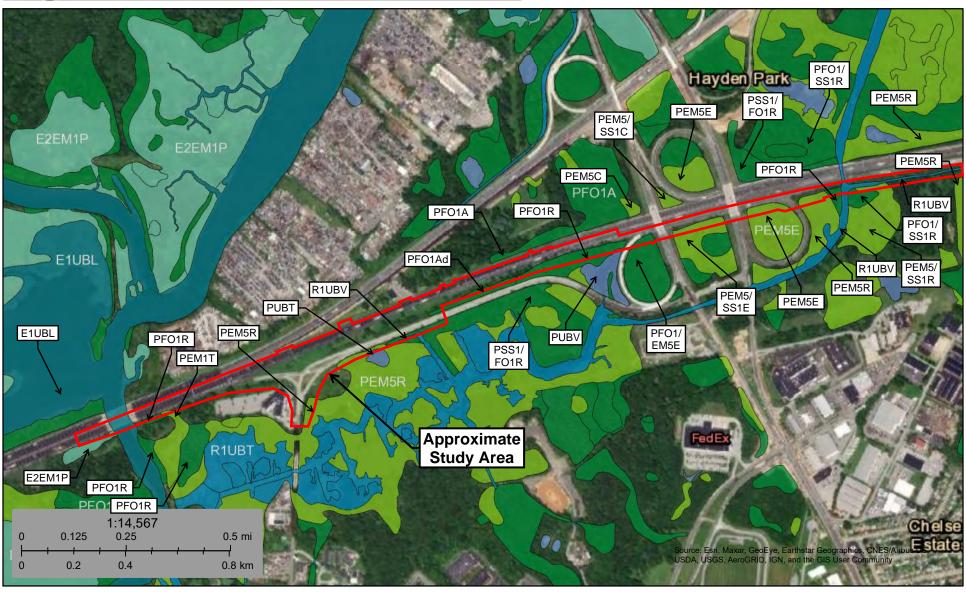
Rating Options—Drainage Class

Aggregation Method: Dominant Condition
Component Percent Cutoff: None Specified

Tie-break Rule: Higher



Figure 3a: NWI Map



May 20, 2021

Wetlands

Estuarine and Marine Deepwater

Estuarine and Marine Wetland

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Lake

Riverine

Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



Figure 3b: NWI Map



May 20, 2021

Wetlands

Estuarine and Marine Deepwater

Estuarine and Marine Wetland

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

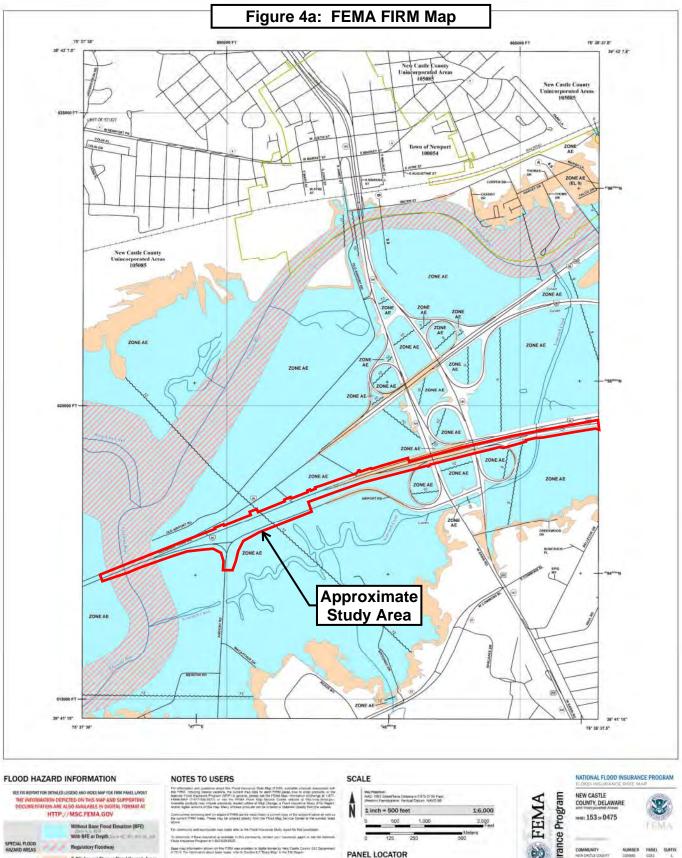
Freshwater Pond

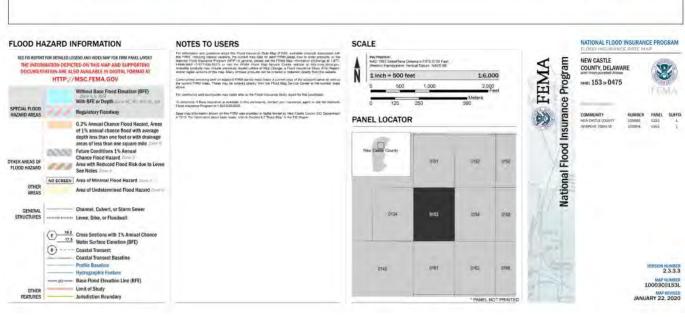
Lake

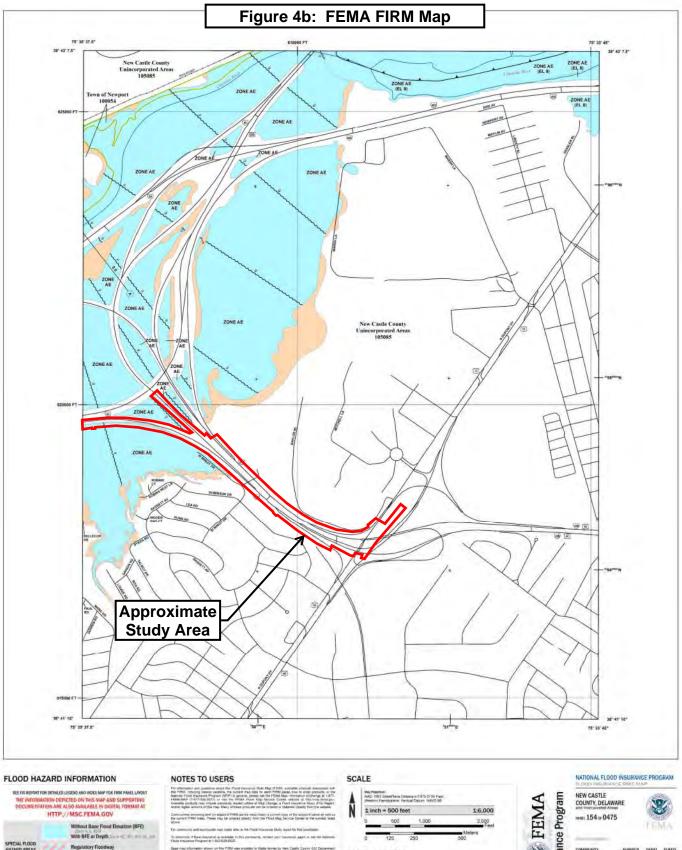
Other

Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.







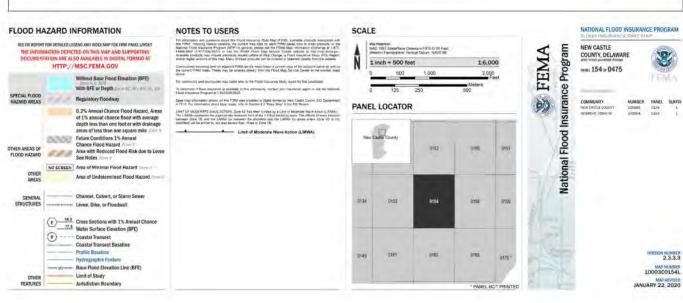
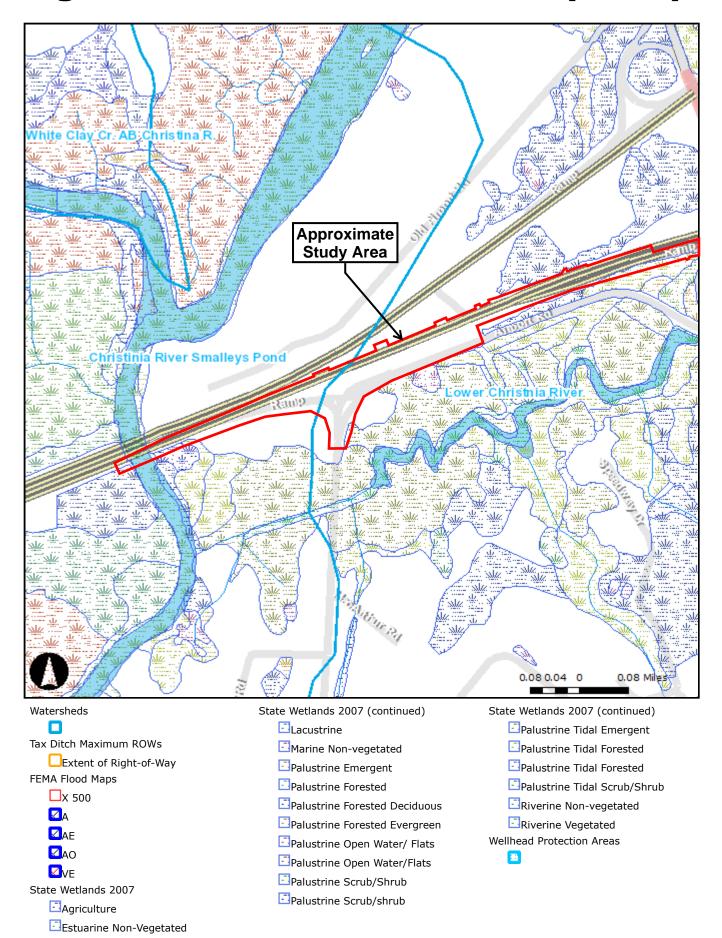


Figure 5a: DE State Wetlands (2007)

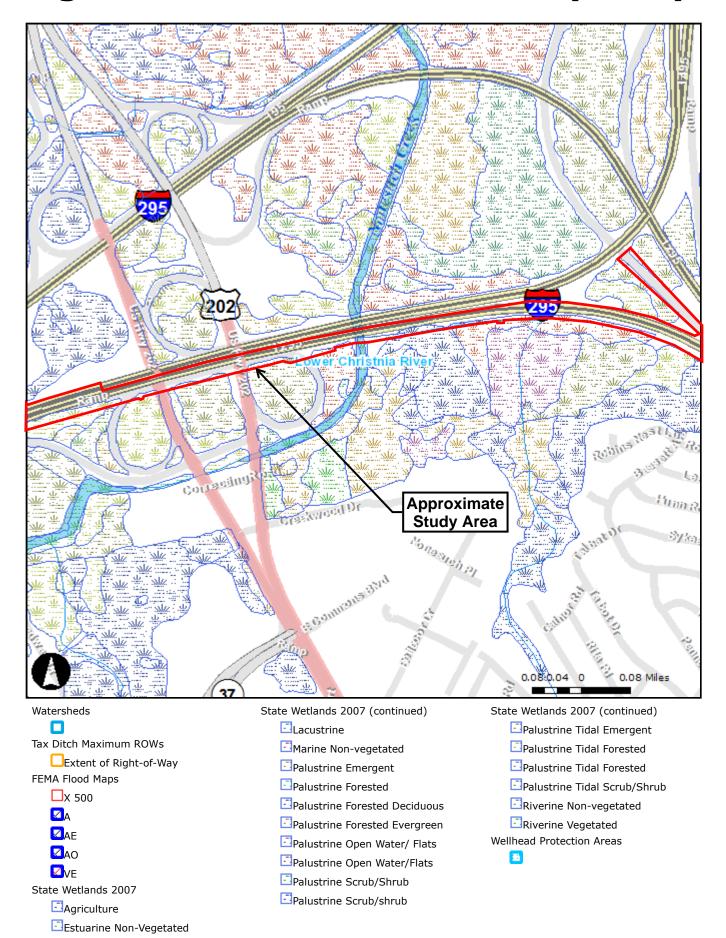


Estuarine Vegetated

Copyright DNREC 2009

Copyright Delaware Depeartment of Natural Resources and Environmental Control, 2009

Figure 5b: DE State Wetlands (2007)

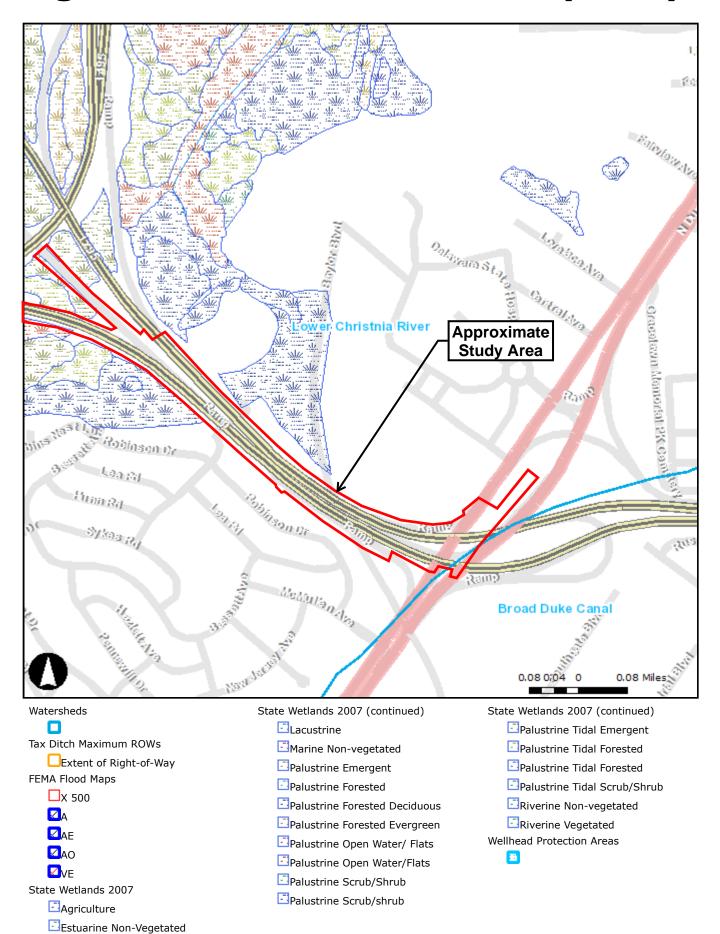


Estuarine Vegetated

Copyright DNREC 2009

Copyright Delaware Depeartment of Natural Resources and Environmental Control, 2009

Figure 5c: DE State Wetlands (2007)



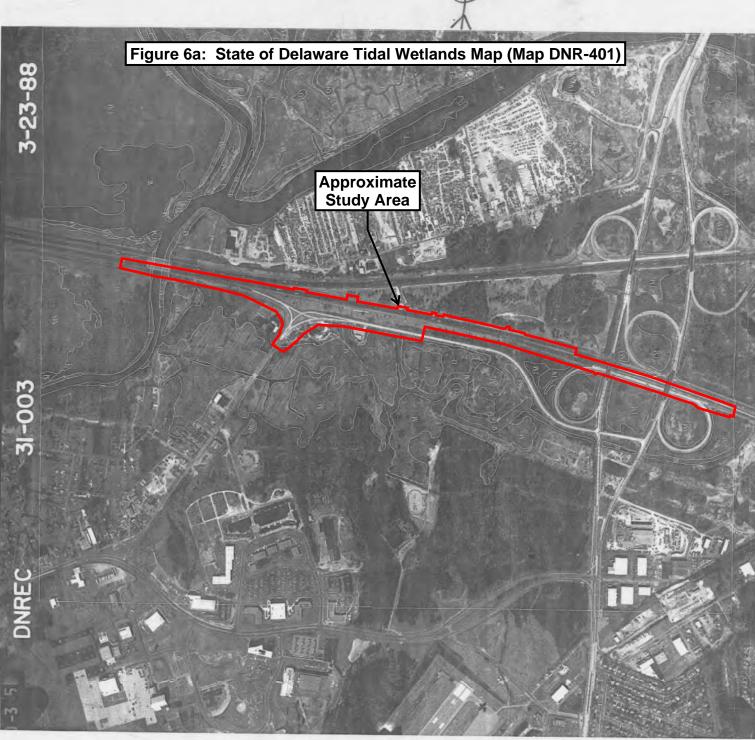
Estuarine Vegetated

Copyright DNREC 2009

Copyright Delaware Depeartment of Natural Resources and Environmental Control, 2009



PHOTO * 31-003





NA NA

ONERESS







Appendix B Wetland Determination Data Forms



WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/Co	ounty: New Castle/New Castle County Sampling Date: 2021-09-07			
Applicant/Owner: DelDOT State: Delaware Sampling Point: TP-1				
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A				
Landform (hillslope, terrace, etc.): Depression Local	relief (concave, convex, none): Concave Slope (%): < 1			
Subregion (LRR or MLRA): S 149A Lat: 39.694405	Long:75.621783 Datum: WGS 84			
Soil Map Unit Name: VoB - Urban land-Othello complex, 0 to 5 per	cent slopes NWI classification: PFO1R			
Are climatic / hydrologic conditions on the site typical for this time of year? Ye				
Are Vegetation, Soil, or Hydrology significantly disturb				
Are Vegetation, Soil, or Hydrology naturally problema				
SUMMARY OF FINDINGS – Attach site map showing sam				
Hydrophytic Vegetation Present? Yes No				
Hydric Soil Present? Yes V No No	Is the Sampled Area			
Wetland Hydrology Present? Yes No	within a Wetland? Yes No			
Remarks:				
Depressional, linear PFO wetland (W1), located				
HYDROLOGY				
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)			
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)			
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)			
☐ High Water Table (A2) ☐ Marl Deposits (B15) (LRR				
	· · · · · · · · · · · · · · · · · · ·			
Sediment Deposits (B2) Sediment Deposits (B2) Presence of Reduced Iron				
Drift Deposits (B3) Recent Iron Reduction in				
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)			
Iron Deposits (B5) Other (Explain in Remarks	_ · · · · · · · · · · · · · · · · · · ·			
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)			
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)			
Field Observations:				
Surface Water Present? Yes No Depth (inches): 2-3				
Water Table Present? Yes No Depth (inches):				
Saturation Present? Yes No Depth (inches): 0-5 (includes capillary fringe)	Wetland Hydrology Present? Yes No			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Google Earth 2021, Web Soil Survey of New Castle County				
Remarks:				
Multiple wetland hydrology indicators were met.				
Saturation indicator satisfied by episaturation.				

Sampling	Doint	TP-1
Sambling	Point:	11 -1

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 20 x 5 ft		Species?		Number of Dominant Species
1. Acer rubrum	55	~	FAC	That Are OBL, FACW, or FAC: 4 (A)
2.				
				Total Number of Dominant Species Across All Strata: 4 (B)
3				Species Across All Strata: 4 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100 (A/B)
6				
7				Prevalence Index worksheet:
8				Total % Cover of: Multiply by:
	55%	Total Cov	er	OBL species 10 x 1 = 10
50% of total cover: 27.5				FACW species <u>43</u> x 2 = <u>86</u>
	20 /0 01	total cover.		FAC species <u>80</u> x 3 = <u>240</u>
Sapling/Shrub Stratum (Plot size: 20 x 5 ft)	2		EAC\A/	FACU species 5
1. Fraxinus pennsylvanica	3		FACW	UPL species 0 x 5 = 0
2				
3				Column Totals: <u>138</u> (A) <u>356</u> (B)
4				Prevalence Index = B/A = 2.6
5.				·
				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				<u></u> 2 - Dominance Test is >50%
8				3 - Prevalence Index is ≤3.0¹
	3% =	= Total Cov	er	Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover: 1.5	20% of	total cover	0.6	
Herb Stratum (Plot size: 20 x 5 ft)				¹ Indicators of hydric soil and watland hydrology must
1 Phragmites australis	40	~	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Microstegium vimineum	10		FAC	1
				Definitions of Four Vegetation Strata:
3. Persicaria punctata	10		OBL	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4. Parthenocissus quinquefolia	5		FACU	more in diameter at breast height (DBH), regardless of
5. Persicaria perfoliata	5		FAC	height.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8.				
				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
9				of size, and woody plants less than 3.20 it tall.
10				Woody vine - All woody vines greater than 3.28 ft in
11				height.
12				
	70%	Total Cov	er	
50% of total cover: <u>35.0</u>	20% of	total cover	14.0	
Woody Vine Stratum (Plot size: 20 x 5 ft)	_			
1 Toxicodendron radicans	10	~	FAC	
··· 				
2.				
3				
4				
5				Hydrophytic
	10%	Total Cov	er	Vegetation
50% of total cover: 5.0	20% of	total cover:	2.0	Present? Yes No
Remarks: (If observed, list morphological adaptations belo				
, , ,	,			
Hydrophytic vegetation indicator was	s met.			
Plot sizes adjusted due to linear shap		atland		
riot sizes aujusteu uue to iiileai Siidļ	OI W	Cuariu		

Profile Desc Depth	ription: (Describe Matrix	e to the dep	th needed to docur	nent the x Feature		or confirm	n the absence	of indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0 - 2	10YR 2/1	100					Mucky Loam/Clay	Organic material
2 - 16	10YR 5/1	85	5YR 4/6	15	С	PL / M	Silt Loam	
-								
-								
_								
-						-		
¹Type: C=Co	ncentration D=De	pletion RM:		S=Maske	d Sand G	rains	² I ocation:	PL=Pore Lining, M=Matrix.
			LRRs, unless other					for Problematic Hydric Soils ³ :
Histosol (,		Polyvalue Be					Muck (A9) (LRR O)
. 	pipedon (A2)		☐ Thin Dark Su☐ Loamy Muck					Muck (A10) (LRR S) ed Vertic (F18) (outside MLRA 150A,B)
Black His	n Sulfide (A4)		Loamy Gleye	-		κ Ο)		ont Floodplain Soils (F19) (LRR P, S, T)
Stratified	Layers (A5)		Depleted Ma		,			alous Bright Loamy Soils (F20)
	Bodies (A6) (LRR		Redox Dark		•			RA 153B)
	cky Mineral (A7) (L esence (A8) (LRR		Depleted Dai		, ,			arent Material (TF2) Shallow Dark Surface (TF12)
	ck (A9) (LRR P, T)		Marl (F10) (L		0)			(Explain in Remarks)
I =	Below Dark Surfa	ce (A11)	Depleted Ocl				_ 3	
I 	irk Surface (A12) airie Redox (A16) ((MLRA 150)	☐ Iron-Mangan A) ☐ Umbric Surfa				•	cators of hydrophytic vegetation and tland hydrology must be present,
	lucky Mineral (S1)	•	Delta Ochric					ess disturbed or problematic.
_	leyed Matrix (S4)		Reduced Ver	tic (F18)	(MLRA 1	50A, 150B)		
	edox (S5) Matrix (S6)		Piedmont Flo				I9A) ≾A 149A, 153C	1520)
	face (S7) (LRR P,	S, T, U)	Anomalous L	nigni Loa	arriy Solis	(F20) (WILK	A 149A, 133C	, 1330)
	ayer (if observed							
Type:								
Depth (inc	ches):						Hydric Soil	Present? Yes No
Remarks:								
Hydric s	oil indicator	was m	et.					
Ī								

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	ounty: New Castle/New Castle County Sampling Date: 2021-09-07
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-2
Investigator(s): Craig Nein, Sarah Leidenheimer Section	on, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillslope Local	
Subregion (LRR or MLRA): S 149A Lat: 39.69453	Long:75.621609 Datum: WGS 84
Soil Map Unit Name: VoB - Urban land-Othello complex, 0 to 5 per	
Are climatic / hydrologic conditions on the site typical for this time of year? Y	
Are Vegetation, Soil, or Hydrology significantly disturb	
Are Vegetation, Soil, or Hydrology naturally problema	
SUMMARY OF FINDINGS – Attach site map showing sam	
	pinig point roddions, transcots, important roddies, etc.
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area
Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	within a Wetland? Yes No
Remarks:	
Upland plot on roadway embankment for I-295	, on the north side of W1.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Saturation (A3) Hydrogen Sulfide Odor (C	
Water Marks (B1) Water Marks (B1) Water Marks (B1)	· · · · · · · · · · · · · · · · · · ·
Sediment Deposits (B2) Presence of Reduced Iron	
Drift Deposits (B3)	
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)
Iron Deposits (B5) Under (Explain in Remark	
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)
☐ Water-Stained Leaves (B9) Field Observations:	Sphagnum moss (D8) (LRR T, U)
Surface Water Present? Yes No Depth (inches):	
Water Table Present? Yes No Depth (inches):	
Saturation Present? Yes No Depth (inches):	
(includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre- Google Earth 2021, Web Soil Survey of New Ca	· · · · · · · · · · · · · · · · · · ·
Remarks:	stie County
No wetland hydrology indicators were met	
, , , , , , , , , , , , , , , , , , , ,	

Sampling	Point-	TP-2
Sambling	Point:	11 -2

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 20 x 10 ft		Species?	Status	Number of Dominant Species
1. Acer negundo	25		FAC	That Are OBL, FACW, or FAC: 3 (A)
2.				Total Number of Dominant
3.				Species Across All Strata: 6 (B)
4.				
5.				Percent of Dominant Species That Are OBL_FACW_or_FAC: 50 (A/B)
6.				That Are OBL, FACW, or FAC: 50 (A/B)
				Prevalence Index worksheet:
7		-		Total % Cover of: Multiply by:
8	25%			OBL species 0 x 1 = 0
12.5		= Total Cov		FACW species $0 x 2 = 0$
50% of total cover: 12.5	20% of	total cover	5.0	FAC species 85 x 3 = 255
Sapling/Shrub Stratum (Plot size: 20 x 10 ft)				FACU species 65 x 4 = 260
1. Rosa multiflora	15		FACU	
2				
3				Column Totals: <u>150</u> (A) <u>515</u> (B)
4				Prevalence Index = B/A = 3.4
5				Hydrophytic Vegetation Indicators:
6.				
7				1 - Rapid Test for Hydrophytic Vegetation
0				☐ 2 - Dominance Test is >50%
o	15%	Total Cov		☐ 3 - Prevalence Index is ≤3.0 ¹
75				Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover: 7.5	20% of	total cover	3.0	
Herb Stratum (Plot size: 20 x 10 ft)	40		E40	¹ Indicators of hydric soil and wetland hydrology must
1. Microstegium vimineum	40		FAC	be present, unless disturbed or problematic.
2. Lonicera japonica	15		FACU	Definitions of Four Vegetation Strata:
3. Parthenocissus quinquefolia	10		FACU	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4. Persicaria perfoliata	10		FAC	more in diameter at breast height (DBH), regardless of
5. Ageratina altissima	5		FACU	height.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8.				Have All harbassaus (non woody) plants, regardless
9.				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
10				,, -
		-		Woody vine – All woody vines greater than 3.28 ft in
11				height.
12.	00%			
40.4		= Total Cov		
50% of total cover: 40.0	20% of	total cover	10.0	
Woody Vine Stratum (Plot size: 20 x 10 ft)				
1. Vitis aestivalis	20		FACU	
2. Toxicodendron radicans	10		FAC	
3				
4				
5.				Hydrophytic
	30%	= Total Cov	/er	Vegetation
50% of total cover: 15.0				Present? Yes No
-	<u> </u>	total covci		
Remarks: (If observed, list morphological adaptations be				
	•			
No hydrophytic vegetation indicator	•	met.		
	rs were		d roady	wav
No hydrophytic vegetation indicator Plot sizes adjusted due to proximity	rs were		d roadv	way
	rs were		d roadv	way

Profile Desc	ription: (Describe	to the dep	th needed to docur	ment the	indicator	or confirm	n the absence of indi	icators.)
Depth	Matrix			x Featu				
(inches) 0 - 2	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks
	10YR 2/2	100					Silt Loam	
2-8	10YR 3/3	100					Loam	
8 - 16	10YR 4/4	95	7.5YR 4/6	5	<u>C</u>	<u>M</u>	Loam	
-								
-								
¹ Type: C=C	oncentration. D=De	pletion. RM	Reduced Matrix, M	S=Mask	ed Sand G	rains.	² Location: PL=Po	ore Lining, M=Matrix.
			LRRs, unless othe					oblematic Hydric Soils³:
Histosol	(A1)		Polyvalue Be	elow Sur	face (S8) (LRR S, T,	U) 1 cm Muck (A	(49) (LRR O)
Histic E	oipedon (A2)		Thin Dark Su				2 cm Muck (A	
_	stic (A3)		Loamy Muck	-		R O)		tic (F18) (outside MLRA 150A,B)
	en Sulfide (A4)		Loamy Gleye					odplain Soils (F19) (LRR P, S, T)
	d Layers (A5) Bodies (A6) (LRR I) T III	Depleted Ma Redox Dark				(MLRA 153	right Loamy Soils (F20)
	ıcky Mineral (A7) (L		_				Red Parent M	,
_	esence (A8) (LRR		Redox Depre					Dark Surface (TF12)
	ıck (A9) (LRR P, T)		☐ Marl (F10) (L				U Other (Explain	n in Remarks)
	d Below Dark Surfa	ce (A11)	Depleted Oc				3,	
_	ark Surface (A12) rairie Redox (A16) (MI DA 150	☐ Iron-Mangan A) ☐ Umbric Surfa		, ,	•		of hydrophytic vegetation and ydrology must be present,
	fucky Mineral (S1) (Delta Ochric	-			•	turbed or problematic.
	Gleyed Matrix (S4)	, 0, 0,	Reduced Ve					tanbou or problemane.
	Redox (S5)		Piedmont Flo	oodplain	Soils (F19) (MLRA 1	49A)	
_ ::	Matrix (S6)		Anomalous E	Bright Lo	amy Soils	(F20) (MLF	RA 149A, 153C, 153D))
	rface (S7) (LRR P,						<u> </u>	
	Layer (if observed)):						
Type:	ahaa):						Hydric Soil Prese	nt? Yes No ✔
Remarks:	ches):						nyunc son Frese	iit! Tes NO
	ia aailiadiaa							
No nyar	ic soil indica	itors we	ere met.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	Sounty: New Castle/New Castle County Sampling Date: 2021-09-07				
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-3				
Investigator(s): Craig Nein, Sarah Leidenheimer Section	on, Township, Range: N/A				
Landform (hillslope, terrace, etc.): Depression Local					
Subregion (LRR or MLRA): \$149A					
Soil Map Unit Name: VoB - Urban land-Othello complex, 0 to 5 per					
Are climatic / hydrologic conditions on the site typical for this time of year? Y					
Are Vegetation, Soil, or Hydrology significantly disturb	· · · · · · · · · · · · · · · · · · ·				
Are Vegetation, Soil, or Hydrology naturally problems					
SUMMARY OF FINDINGS – Attach site map showing sam	ipling point locations, transects, important features, etc.				
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area				
Hydric Soil Present? Yes No	within a Wetland? Yes V No				
Wetland Hydrology Present? Yes <u>✓</u> No					
Remarks:					
PEM wetland (W2), located east of W1 and sou	th of I-295. Emanates from a culvert and then				
flows east.					
HYDROLOGY					
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)				
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)				
Surface Water (A1) Aquatic Fauna (B13) And Reposite (B15) (B15)	Sparsely Vegetated Concave Surface (B8)				
High Water Table (A2) Saturation (A3) Marl Deposits (B15) (LRF					
Water Marks (B1) Saturation (A3) Water Marks (B1) Oxidized Rhizospheres a					
Sediment Deposits (B2) Presence of Reduced Iron					
Drift Deposits (B3)					
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)				
☐ Iron Deposits (B5) ☐ Other (Explain in Remark	Shallow Aquitard (D3)				
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)				
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)				
Field Observations:					
Surface Water Present? Yes V No Depth (inches): 4					
Water Table Present? Yes No Depth (inches): 0					
Saturation Present? Yes Vo Depth (inches): 0	Wetland Hydrology Present? Yes No				
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:				
Google Earth 2021, Web Soil Survey of New Castle County					
Remarks:	,				
Multiple wetland hydrology indicators were me	t.				

		TD 0
Sampling	Point.	1P-3

	Absolute	Dominant	Indicator	Dominance Test worksheet:	\neg
Tree Stratum (Plot size: 30 ft r)	% Cover	Species?	Status	Number of Dominant Species	
1. Acer negundo	5		FAC	That Are OBL, FACW, or FAC: 2 (A)	
2					
3.				Total Number of Dominant Species Across All Strata: 3 (B)	
				opedies Across All Ottata.	
4				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: 67 (A/B))
6				Prevalence Index worksheet:	_
7	-				
8					
	5% =	Total Cov	er	OBL species 40 $x 1 = 40$	
50% of total cover: 2.5	20% of	total cover:	1.0	FACW species 60 x 2 = 120	
Sapling/Shrub Stratum (Plot size: 30 ft r)	_			FAC species <u>5</u>	
1. Rosa multiflora	5	v	FACU	FACU species <u>5</u> x 4 = <u>20</u>	
···				UPL species 0 x 5 = 0	
2				Column Totals: 110 (A) 195 (B)	
3				(1)	
4					
5				Hydrophytic Vegetation Indicators:	
6				1 - Rapid Test for Hydrophytic Vegetation	
7				2 - Dominance Test is >50%	
8				☑ 3 - Prevalence Index is ≤3.0¹	
		Total Cov	er	1 	
50% of total cover: 2.5				Problematic Hydrophytic Vegetation ¹ (Explain)	
	20% 01	lotal cover.			
Herb Stratum (Plot size: 30 ft r)	60	,	E A O\A/	¹ Indicators of hydric soil and wetland hydrology must	
1. Phragmites australis	60		FACW	be present, unless disturbed or problematic.	
2. Leersia oryzoides	10		OBL	Definitions of Four Vegetation Strata:	
3. Persicaria punctata	10		OBL	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or	.
4. Persicaria sagittata	10		OBL	more in diameter at breast height (DBH), regardless of	
5 Lythrum salicaria	5		OBL	height.	
6 Persicaria arifolia	5		OBL		
o				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
7				than 3 iii. DDi i and greater than 3.20 it (1 iii) taii.	
8				Herb – All herbaceous (non-woody) plants, regardless	
9				of size, and woody plants less than 3.28 ft tall.	
10				Woody vine – All woody vines greater than 3.28 ft in	
11				height.	
12.					
	100% -	Total Cov	er		
50% of total cover: 50.0					
	20% 01	total cover	20.0		
Woody Vine Stratum (Plot size: 30 ft r)					
1					
2					
3					
4					
5					
J				Hydrophytic	
		Total Cov		Vegetation Present? Yes No	
50% of total cover:	20% of	total cover:	·	100 <u>100 </u> 100 <u>100 </u>	
Remarks: (If observed, list morphological adaptations belo	w).				
Hydrophytic vegetation indicator wa	s met.				

Profile Desc	ription: (Describe	to the depth	needed to docun	nent the i	ndicator	or confirn	n the absence	of indicators.)
Depth	Matrix			x Feature		loc ²	- .	5
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type ¹	Loc ²	<u>Texture</u>	Remarks
0 - 16	10YR 2/1	100					Muck	Organic
				. ———				
	-							
-								
					-			
					-			
1- 0.0							2, ,,	
	oncentration, D=Dep Indicators: (Applic					ains.		PL=Pore Lining, M=Matrix. For Problematic Hydric Soils ³ :
Histosol		able to all Li	Polyvalue Be			DDCTI		Muck (A9) (LRR O)
_	oipedon (A2)		Thin Dark Su				. –	Muck (A10) (LRR S)
Black Hi			Loamy Mucky					ced Vertic (F18) (outside MLRA 150A,B)
	n Sulfide (A4)		Loamy Gleye			,		ont Floodplain Soils (F19) (LRR P, S, T)
	l Layers (A5)		Depleted Mat					alous Bright Loamy Soils (F20)
	Bodies (A6) (LRR F		Redox Dark	•	,			RA 153B)
	icky Mineral (A7) (L esence (A8) (LRR l		Depleted Dar					arent Material (TF2) Shallow Dark Surface (TF12)
	ick (A9) (LRR P, T))	Marl (F10) (L		0)			(Explain in Remarks)
	Below Dark Surface	ce (A11)	Depleted Och		(MLRA 1	51)		(
Thick Da	ark Surface (A12)		Iron-Mangan	ese Mass	es (F12) (LRR O, P,		cators of hydrophytic vegetation and
	rairie Redox (A16) (_			', U)		tland hydrology must be present,
	lucky Mineral (S1) (Bleyed Matrix (S4)	LRR O, S)	Delta Ochric			OA 150D)		ess disturbed or problematic.
	ledox (S5)		Reduced Ver Piedmont Flo					
_	Matrix (S6)						RA 149A, 153C	c, 153D)
	rface (S7) (LRR P,	S, T, U)	_			, ,		•
Restrictive I	_ayer (if observed)	:						
Type:								,
. ,	ches):						Hydric Soil	Present? Yes No
Remarks:								
Hydric s	oil indicator	was met	t.					
Organic	muck (sapri	c) soils i	n a wet den	ressio	n.			
o game	mack (oapii	o, como n						

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/Co	ounty: New Castle/New Castle County Sampling Date: 2021-09-07
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-4
Investigator(s): Craig Nein, Sarah Leidenheimer Sectio	n, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillslope Local r	
Subregion (LRR or MLRA): S 149A Lat: 39.694755	
Soil Map Unit Name: VoB - Urban land-Othello complex, 0 to 5 per	cent slopesNWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Ye	· · · · · · · · · · · · · · · · · · ·
Are Vegetation, Soil, or Hydrology significantly disturb	
Are Vegetation, Soil, or Hydrology naturally problema	
SUMMARY OF FINDINGS – Attach site map showing sam	
Hydrophytia Vagetation Propert?	
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No	Is the Sampled Area
Wetland Hydrology Present? Yes No	within a Wetland? Yes No
Remarks:	
Upland embankment north of W2 and south of	l-295.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Marl Deposits (B15) (LRR	
☐ Saturation (A3) ☐ Hydrogen Sulfide Odor (C☐ Water Marks (B1) ☐ Oxidized Rhizospheres all	· · · · · · · · · · · · · · · · · · ·
Sediment Deposits (B2) Sediment Deposits (B2) Presence of Reduced Iron	
Drift Deposits (B3) Recent Iron Reduction in	
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)
Iron Deposits (B5) Other (Explain in Remarks	s) Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)
☐ Water-Stained Leaves (B9)	☐ Sphagnum moss (D8) (LRR T, U)
Field Observations:	
Surface Water Present? Yes No Depth (inches):	
Water Table Present? Yes No Depth (inches):	
Saturation Present? Yes No _	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, prev	
Google Earth 2021, Web Soil Survey of New Cas	stle County
Remarks:	
No wetland hydrology indicators were met.	

VEGETATION	(Four Strata)	– Use	scientific	names of	f plants.

Sampling Point: TP-4

00 405		Dominant		Dominance Test worksheet:	
Tree Stratum (Plot size: 20 x 10 ft)	% Cover			Number of Dominant Species	
1				That Are OBL, FACW, or FAC: 1 (A)	
2				Total Number of Dominant	
3				Species Across All Strata: 5 (B)	
4					
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 20 (A/E	٥١ ا
				That Are OBL, FACW, or FAC: 20 (A/E	3)
6				Prevalence Index worksheet:	
7				Total % Cover of: Multiply by:	
8				OBL species $0 x 1 = 0$	
		Total Cov		FACW species 0 x 2 = 0	
50% of total cover:	20% of	total cover	:	FAC species 10 x 3 = 30	
Sapling/Shrub Stratum (Plot size: 20 x 10 ft)				FACU species 72	
1. Lonicera maackii	10		UPL		
2. Rosa multiflora	5		FACU	UPL species 30 x 5 = 150	
3. Fraxinus americana	2		FACU	Column Totals: <u>112</u> (A) <u>468</u> (B)
4				Prevalence Index = B/A = 4.2	
5					
6				Hydrophytic Vegetation Indicators:	
7				1 - Rapid Test for Hydrophytic Vegetation	
				2 - Dominance Test is >50%	
8		Total Cov		3 - Prevalence Index is ≤3.0 ¹	
50% (1.1.				☐ Problematic Hydrophytic Vegetation¹ (Explain)	
50% of total cover: <u>8.5</u>	20% of	total cover	3.4		
Herb Stratum (Plot size: 20 x 10 ft)	45	_		¹ Indicators of hydric soil and wetland hydrology must	
1. Solidago altissima	45		FACU	be present, unless disturbed or problematic.	
2. Artemisia vulgaris	20		UPL	Definitions of Four Vegetation Strata:	
3. Lonicera japonica	15		FACU	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) of	or
4. Ageratina altissima	5		FACU	more in diameter at breast height (DBH), regardless of	
5				height.	
6.				Sapling/Shrub – Woody plants, excluding vines, less	
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	,
				9	
8				Herb – All herbaceous (non-woody) plants, regardless	S
9				of size, and woody plants less than 3.28 ft tall.	
10				Woody vine - All woody vines greater than 3.28 ft in	
11				height.	
12					
	85% =				-
50% of total cover: <u>42.5</u>	20% of	total cover	: <u>17.0</u>		
Woody Vine Stratum (Plot size: 20 x 10 ft)					
1. Toxicodendron radicans	10		FAC		
2					
3.					
4.					
5					
J		Total Cov		Hydrophytic Vegetation	
500				Present? Yes No	
50% of total cover: 5.0		total cover	: 2.0		
Remarks: (If observed, list morphological adaptations belo	w).				
No hydrophytic vegetation indicators	s were	met.			
Plot sizes adjusted due to proximity			d roads	Mav.	
riot sizes aujusteu uue to proxiillity	io wella	anu an	u i uauv	way.	
					- 1

Profile Desc	ription: (Describe	to the dep	th needed to docur	nent the	indicator	or confir	m the absence of in	ndicators.)
Depth	Matrix			x Featu		. 2	<u> </u>	
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type'	Loc ²	<u>Texture</u>	Remarks
0-2	10YR 2/2	100					Sandy Loam	
2 - 14	10YR 4/3	95	10YR 4/4	5	_ <u>C</u>	<u>M</u>	Sandy Loam	
							<u> </u>	
-								
_								
			-			-		
	-					-		
1							2	
			=Reduced Matrix, MS LRRs, unless other			rains.		Pore Lining, M=Matrix. Problematic Hydric Soils ³ :
		Sable to all				I DD C T		· · · · · · · · · · · · · · · · · · ·
Histosol	oipedon (A2)		Polyvalue Be					(A10) (LRR S)
	stic (A3)		Loamy Muck					ertic (F18) (outside MLRA 150A,B)
_	en Sulfide (A4)		Loamy Gleye	-		,	7 7	loodplain Soils (F19) (LRR P, S, T)
	d Layers (A5)		Depleted Ma				<u> </u> Anomalous	Bright Loamy Soils (F20)
	Bodies (A6) (LRR I		Redox Dark				(MLRA 1	
	ıcky Mineral (A7) (L esence (A8) (LRR I		Depleted Da Redox Depre					: Material (TF2) ow Dark Surface (TF12)
	uck (A9) (LRR P, T)	J)	Marl (F10) (L		(10)			ain in Remarks)
	d Below Dark Surfa	ce (A11)	Depleted Oc		1) (MLRA 1	151)	<u> </u>	an in remaine,
	ark Surface (A12)		Iron-Mangan	ese Mas	sses (F12)	(LRR O, P	P, T) ³ Indicators	s of hydrophytic vegetation and
	rairie Redox (A16) (-				hydrology must be present,
	Mucky Mineral (S1) (LRR O, S)	Delta Ochric					listurbed or problematic.
	Gleyed Matrix (S4) Redox (S5)		Reduced Ve					
	Matrix (S6)						RA 149A, 153C, 153	SD)
	rface (S7) (LRR P,	S, T, U)		g = -	,	(·) (, , , , , , , , , , , , , , , , , , , ,	-,
Restrictive	Layer (if observed)):						
Type:								
Depth (in	ches):						Hydric Soil Pres	sent? Yes No
Remarks:								
No hydr	ic soil indica	tors we	ere met.					
Ì								

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	ounty: New Castle/New Castle County Sampling Date: 2021-09-07						
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-5						
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A							
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0							
Subregion (LRR or MLRA): \$ 149A							
Soil Map Unit Name: MuB - Mattapex-Urban land complex, 0 to 5 p							
Are climatic / hydrologic conditions on the site typical for this time of year? You							
Are Vegetation, Soil, or Hydrology significantly disturt							
Are Vegetation, Soil, or Hydrology naturally problema	tic? (If needed, explain any answers in Remarks.)						
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.						
Hydrophytic Vegetation Present? Yes No							
Hydric Soil Present? Yes V No	Is the Sampled Area						
Wetland Hydrology Present? Yes <u>✓</u> No	within a Wetland? Yes No						
Remarks:							
Large PEM wetland (W3) located south and east	st of Airport Road.						
	F						
LIVEROLOGY							
HYDROLOGY Westernd Hydrology Indicators	Secondary Indicators (minimum of two required)						
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)						
Primary Indicators (minimum of one is required; check all that apply) Surface Water (A1) Aquatic Fauna (B13)	Surface Soil Cracks (B6)						
= Addatio Facility	Sparsely Vegetated Concave Surface (B8)						
 							
Saturation (A3) Water Marks (B1) Hydrogen Sulfide Odor (C	· · · · · · · · · · · · · · · · · · ·						
Sediment Deposits (B2) Drift Deposits (B3) Presence of Reduced Iron Recent Iron Reduction in							
Algal Mat or Crust (B4) Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)						
Iron Deposits (B5) Other (Explain in Remark	_ · · · · · · · · · · · · · · · · · · ·						
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)						
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)						
Field Observations:	<u> </u>						
Surface Water Present? Yes No Depth (inches): 2-4							
Water Table Present? Yes ✓ No Depth (inches): 0							
Saturation Present? Yes Vo Depth (inches): 0	Wetland Hydrology Present? Yes ✓ No						
(includes capillary fringe)	vious inspections) if available:						
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Google Earth 2021, Web Soil Survey of New Castle County							
Remarks:	stie County						
Multiple wetland hydrology indicators were me	t.						
,g,							

		TD F
Sampling	Point:	1P-5

00 40 ()		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size: 20 x 10 ft		Species?		Number of Dominant Species
1. Acer negundo	15		FAC	That Are OBL, FACW, or FAC: $\underline{2}$ (A)
2				Total Number of Dominant
3				Species Across All Strata: 2 (B)
4				Dancout of Dancin out Charies
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
6				(70b)
7.				Prevalence Index worksheet:
8.			•	Total % Cover of: Multiply by:
0	15% =	Total Cov	· · ·	OBL species 20 x 1 = 20
50% of total cover: 7.5				FACW species <u>57</u> x 2 = <u>114</u>
	20% 01	total cover.	0.0	FAC species 15 x 3 = 45
Sapling/Shrub Stratum (Plot size: 20 x 10 ft)				FACU species $0 \times 4 = 0$
1				UPL species 0 x 5 = 0
2				Column Totals: 92 (A) 179 (B)
3				Column Totals. <u>32</u> (A) <u>173</u> (B)
4				Prevalence Index = B/A = 1.9
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7.				
8				
o		Total Cov		3 - Prevalence Index is ≤3.0 ¹
EOO/ of total approxi				Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover:	20% 01	lotal cover.	· ——	
Herb Stratum (Plot size: 20 x 10 ft)	55		EAC\\\	¹ Indicators of hydric soil and wetland hydrology must
1. Phragmites australis			FACW	be present, unless disturbed or problematic.
2. Persicaria punctata	10		OBL	Definitions of Four Vegetation Strata:
3. Lythrum salicaria	5		OBL	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4. Persicaria sagittata	5		OBL	more in diameter at breast height (DBH), regardless of
5. Onoclea sensibilis	2		FACW	height.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8.				Have All harbaccaus (non woods) plants, regardless
9.				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
10.			•	
11.				Woody vine – All woody vines greater than 3.28 ft in
				height.
12	770/		-	
20.5		Total Cov		
50% of total cover: 38.5	20% of	total cover:	15.4	
Woody Vine Stratum (Plot size: 30 ft r)	_			
1. Vitis sp.	5			
2				
3				
4.				
5.				Hydrophytic
-	5% =	Total Cov	er	Hydrophytic Vegetation
50% of total cover: 2.5		total cover:		Present? Yes No
Pamarke: (If observed, list morphological adaptations belo		iolai cuvel.		

Remarks: (If observed, list morphological adaptations below).

Hydrophytic vegetation indicator was met.

Plot sizes adjusted due to shape of portion of wetland.

Vitis sp. not identified to species, thus, it was not included in Dominance Test calculations.

Profile Desc	ription: (Describe	to the de	oth needed to docur	ment the	indicator	or confirm	n the absence of ir	ndicators.)
Depth	Matrix			x Featur		. 2		
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks
0 - 10	10YR 4/1	90	5YR 4/6	10	<u> C </u>	PL / M	Silt Loam	
10 - 14	10YR 5/1	90	7.5YR 4/6	10	<u> </u>	PL / M	Silty Clay Loam	
				_	_			
-								
					_			
1Typo: C=C	ncontration D-Do	nlotion PM	=Reduced Matrix, M	S-Macke	d Sand G	raine	² I ocation: DI =	Pore Lining, M=Matrix.
			LRRs, unless other			airis.		Problematic Hydric Soils ³ :
Histosol			Polyvalue Be			LRR S. T. U		•
	oipedon (A2)		Thin Dark Su					(A10) (LRR S)
Black Hi			Loamy Muck	-	. , .	R O)		vertic (F18) (outside MLRA 150A,B)
	n Sulfide (A4)		Loamy Gleye		(F2)			Floodplain Soils (F19) (LRR P, S, T)
	l Layers (A5) Bodies (A6) (LRR l	D T II\	Depleted Ma	. ,	(E6)		Anomalous (MLRA 1	s Bright Loamy Soils (F20)
_	icky Mineral (A7) (L		=		` '			t Material (TF2)
_	esence (A8) (LRR		Redox Depre					ow Dark Surface (TF12)
1 cm Mι	ck (A9) (LRR P, T)		☐ Marl (F10) (L				Other (Exp	lain in Remarks)
	Below Dark Surfa	ce (A11)	Depleted Oc				- 3, , ,	
	ark Surface (A12) rairie Redox (A16) ((MI DA 150	☐ Iron-Mangan A) ☐ Umbric Surfa					s of hydrophytic vegetation and hydrology must be present,
	lucky Mineral (S1)		Delta Ochric					disturbed or problematic.
	leyed Matrix (S4)	-,-,	Reduced Ver					•
	edox (S5)		Piedmont Flo					
	Matrix (S6)		Anomalous E	Bright Loa	amy Soils	(F20) (MLR	A 149A, 153C, 153	3D)
	rface (S7) (LRR P, -ayer (if observed							
Type:	Layer (II Observed	<i>)</i> -						
, , <u> </u>	ches):						Hydric Soil Pres	sent? Yes 🗸 No
Remarks:							Tiyano con i re	36III. 163 <u></u> 140 <u></u>
	oil indicator	· wac m	ot					
nyunc s	oil indicator	was III	et.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	ounty: New Castle/New Castle County Sampling Date: 2021-09-07						
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-6						
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A							
Landform (hillslope, terrace, etc.): Upland Local relief (concave, convex, none): None Slope (%): 3							
Subregion (LRR or MLRA): S 149A Lat: 39.695796 Long: -75.614867 Datum: WGS 84							
Soil Map Unit Name: MuB - Mattapex-Urban land complex, 0 to 5 p							
Are climatic / hydrologic conditions on the site typical for this time of year? Y							
Are Vegetation, Soil, or Hydrology significantly disturb							
Are Vegetation, Soil, or Hydrology naturally problema							
SUMMARY OF FINDINGS – Attach site map showing sam							
Hydrophytic Vegetation Present? Yes No V Hydric Soil Present? Yes No V	Is the Sampled Area						
Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	within a Wetland? Yes No						
Remarks:							
Upland plot located south of W3 near TP-5, in area along electric transmission line corridor.							
HYDROLOGY							
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)						
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)						
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)						
High Water Table (A2) Saturation (A3) Hydrogen Sulfide Odor (C							
Water Marks (B1) Salutation (A3) Water Marks (B1) Oxidized Rhizospheres al	· · · · · · · · · · · · · · · · · · ·						
Sediment Deposits (B2) Presence of Reduced Iron							
Drift Deposits (B3)	Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)						
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)						
☐ Iron Deposits (B5) ☐ Other (Explain in Remark							
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)						
Water-Stained Leaves (B9) Field Observations:	☐ Sphagnum moss (D8) (LRR T, U)						
Surface Water Present? Yes No _ Depth (inches):							
Water Table Present? Yes No Depth (inches):							
Saturation Present? Yes No Depth (inches):							
(includes capillary fringe)							
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Google Earth 2021, Web Soil Survey of New Castle County							
Remarks:							
No wetland hydrology indicators were observe	d.						

		TD 6
Sampling	Point-	117-0

<u>Tree Stratum</u> (Plot size: <u>30 ft r</u>) 1	% Cover		Indicator	Dominance Test worksheet:
		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
				Total Number of Dominant
3				Species Across All Strata: 2 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 0 (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				OBL species 0 $x 1 = 0$
-		Total Cov		FACW species $0 \times 2 = 0$
50% of total cover:	_ 20% of	total cover	·	FAC species 5 x 3 = 15
Sapling/Shrub Stratum (Plot size: 30 ft r)				FACU species 10
1				UPL species 65 x 5 = 325
2	·			00 200
3				Column Totals: 80 (A) 380 (B)
4	,			Prevalence Index = B/A = 4.8
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
8	·			3 - Prevalence Index is ≤3.0 ¹
<u>-</u>	=	Total Cov	er	Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover:	20% of	total cover	:	
Herb Stratum (Plot size: 30 ft r)				¹ Indicators of hydric soil and wetland hydrology must
1	40	~	UPL	be present, unless disturbed or problematic.
2. Setaria viridis	15	~	UPL	Definitions of Four Vegetation Strata:
3. Lespedeza cuneata	10		FACU	Tree Mondy plants evaluating vince 2 in (7.6 cm) or
4. Securigara varia	10		UPL	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
5. Cyperus esculentus	5		FAC	height.
6		_		Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8				Herb – All herbaceous (non-woody) plants, regardless
9.				of size, and woody plants less than 3.28 ft tall.
10				Was trades Allowed by developing the COO files
11.				Woody vine – All woody vines greater than 3.28 ft in height.
12.				
	80% =	Total Cov	er	
50% of total cover: 40.0				
Woody Vine Stratum (Plot size: 30 ft r)	_			
1				
2.				
3.				
4.				
5				Hadron bod's
<u> </u>		: Total Cov		Hydrophytic Vegetation
				Present? Yes No
50% of total cover:		total cover	` <u> </u>	
50% of total cover:				

Profile Desc	ription: (Describe	to the depth	needed to docun	nent the i	ndicator	or confirm	n the absence	of indicato	rs.)	
Depth	Matrix			x Feature		. 2				
(inches)	Color (moist)		Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture		Remarks	. (400()
0-7	10YR 3/3	100					Loam	Small ro	ck fragmen	ts (10%)
				· <u></u>						
-										
								•		
	oncentration, D=De					ains.			ning, M=Matri	_
Hydric Soil I	Indicators: (Applie	cable to all L	RRs, unless other	wise not	ed.)				natic Hydric S	Soils³:
Histosol			Polyvalue Be					/luck (A9) (L		
	pipedon (A2)		Thin Dark Su					Лuck (A10) (
Black Hi			Loamy Mucky			R O)		,	, .	/ILRA 150A,B)
_	n Sulfide (A4) I Layers (A5)		Loamy Gleye Depleted Mat		F2)				lin Solis (F19) Loamy Soils (I	(LRR P, S, T)
_	Bodies (A6) (LRR F) T II)	Redox Dark S		6)			RA 153B)	Loanly Solis (I	20)
I = 1	cky Mineral (A7) (L		Depleted Dar	•	,			arent Materi	al (TF2)	
_	esence (A8) (LRR I		Redox Depre						Surface (TF1	2)
1 cm Mu	ck (A9) (LRR P, T)		Marl (F10) (L	RR U)			Other	(Explain in F	Remarks)	
	d Below Dark Surfac	ce (A11)	Depleted Och				•			
=	ark Surface (A12)		Iron-Mangane				•	•	rophytic veget	
	rairie Redox (A16) (_			, U)		-	gy must be pr	
	lucky Mineral (S1) (Bleyed Matrix (S4)	LKK (), (3)	Delta Ochric Reduced Ver			.0Δ 150R)		ess disturbe	d or problema	uc.
	ledox (S5)		Piedmont Flo							
_	Matrix (S6)						RA 149A, 153C	, 153D)		
	rface (S7) (LRR P,	S, T, U)			,	, ,				
	ayer (if observed)):								
, , —	cky substrate									
Depth (inc	ches): <u>> 7</u>						Hydric Soil	Present?	Yes	No 🔽
Remarks:										
No hydr	ic soil indica	itors wer	e met.							
Fill mate	rial observe	d along	electric utili	tv line	corric	lor				
i ili iliacc		a diorig		cy iii ic	COITIC	101				

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/Co	ounty: New Castle/New Castle County Sampling Date: 2021-09-07					
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-7					
Investigator(s): Craig Nein, Sarah Leidenheimer Sectio	n, Township, Range: N/A					
Landform (hillslope, terrace, etc.); Riverine Local	relief (concave, convex, none); Concave Slope (%); < 1					
Subregion (LRR or MLRA): S 149A Lat: 39.696772	Long:75.612353					
Soil Map Unit Name: NM - Nanticoke and Mannington soils, very fr	equently flooded, tidal _{NWI classification:} R1UBV					
Are climatic / hydrologic conditions on the site typical for this time of year? Ye						
Are Vegetation, Soil, or Hydrology significantly disturb						
Are Vegetation, Soil, or Hydrology naturally problema						
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.						
Lhydraphytia Vagatatian Dracent2						
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No	Is the Sampled Area					
Wetland Hydrology Present? Yes _ V No	within a Wetland? Yes No					
Remarks:						
POW/PUB wetland (W4), located south of Airpo	ort Road and east of W3. This is mapped as					
riverine in NWI.						
Tive in terms.						
HYDDOLOGY						
HYDROLOGY Westernd Hydrology Indicators	Secondary Indicators (minimum of two required)					
Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary mulcators (minimum or two required) Surface Soil Cracks (B6)					
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)					
High Water Table (A2) High Water Table (A2) Addatic Facility (B15)						
Saturation (A3) Hydrogen Sulfide Odor (C						
✓ Water Marks (B1) ☐ Oxidized Rhizospheres al						
Sediment Deposits (B2) Presence of Reduced Iron	n (C4) Crayfish Burrows (C8)					
Drift Deposits (B3)	Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)					
Algal Mat or Crust (B4)	Geomorphic Position (D2)					
☐ Iron Deposits (B5) ☐ Other (Explain in Remarks						
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)					
☐ Water-Stained Leaves (B9) Field Observations:	Sphagnum moss (D8) (LRR T, U)					
Surface Water Present? Yes No Depth (inches): 16						
Water Table Present? Yes ✓ No Depth (inches): 0						
Saturation Present? Yes V No Depth (inches): 0	Wetland Hydrology Present? Yes V No No					
(includes capillary fringe)						
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Google Earth 2021, Web Soil Survey of New Car	stie County					
Multiple wetland hydrology indicators were me	t					
I wantiple wettand nyarology maleators were me						

Sampling	Daint	TP-7
Sampling	Point.	1 - 7

	Dominant	Indicator	Dominance Test worksheet:
	Species?		Number of Dominant Species
5	· ·	FAC	That Are OBL, FACW, or FAC: 5 (A)
5		FACW	Total Number of Dominant
			Species Across All Strata: 5 (B)
			(/
			Percent of Dominant Species That Are OBL FACW or FAC: 100 (A/B)
			That Are OBL, FACW, or FAC: 100 (A/B)
			Prevalence Index worksheet:
			Total % Cover of: Multiply by:
			OBL species 83 x 1 = 83
<u>10%</u> =	Total Cov	er	
_ 20% of	total cover:	2.0	FACW species $\frac{5}{10}$ $\times 2 = \frac{10}{20}$
			FAC species $10 \times 3 = 30$
5	~	FAC	FACU species <u>0</u>
			UPL species 0 x 5 = 0
			Column Totals: <u>98</u> (A) <u>123</u> (B)
			Prevalence Index = B/A = 1.3
			2 - Dominance Test is >50%
			✓ 3 - Prevalence Index is ≤3.0 ¹
<u></u> =	: Total Cov	er	
			☐ Problematic Hydrophytic Vegetation¹ (Explain)
_ 20% 01	lotal cover.		
40		ODI	¹ Indicators of hydric soil and wetland hydrology must
			be present, unless disturbed or problematic.
			Definitions of Four Vegetation Strata:
		OBL	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
3		OBL	more in diameter at breast height (DBH), regardless of
			height.
			Continui Charde Mande avaludina vince less
			Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
			than 5 m. DBH and greater than 5.20 h (1 m) tail.
			Herb – All herbaceous (non-woody) plants, regardless
			of size, and woody plants less than 3.28 ft tall.
			Woody vine – All woody vines greater than 3.28 ft in
			height.
83% =	: Total Cov	er	
_ 20 /0 01	lotal cover.		
			Hydrophytic
	Total Cov		Vegetation
		01	
_ 20% of	total agreer		Present? Yes No
	10% = 10% of 5 = 20% of 40 = 35 = 3 = 20% of 40 = 20%	10% = Total Cover: 20% of total cover: 5	10% = Total Cover _ 20% of total cover: 2.0 5

Profile Desc Depth	ription: (Describe Matrix	to the depth	needed to docum	ent the ind Features	dicator or confirm	the absence o	f indicators.)
(inches)	Color (moist)	%	Color (moist)		Type ¹ Loc ²	Texture	Remarks
0 - 12	10YR 5/1	100				Loamy Sand	
-							
_							
							
	-						
			Reduced Matrix, MS				PL=Pore Lining, M=Matrix.
Hydric Soil	Indicators: (Appli	cable to all L	RRs, unless other		•	_	or Problematic Hydric Soils ³ :
Histosol	` '				(S8) (LRR S, T, U		uck (A9) (LRR O)
· == ·	oipedon (A2)		Thin Dark Sur				uck (A10) (LRR S) d Vertic (F18) (outside MLRA 150A,B)
Black Hi	n Sulfide (A4)		Loamy Gleye			77	nt Floodplain Soils (F19) (LRR P, S, T)
	Layers (A5)		Depleted Mat		-,		ous Bright Loamy Soils (F20)
	Bodies (A6) (LRR I	P, T, U)	Redox Dark S)		A 153B)
	cky Mineral (A7) (L		Depleted Dar		•		rent Material (TF2)
	esence (A8) (LRR		Redox Depre	. ,			allow Dark Surface (TF12)
_	ick (A9) (LRR P, T) d Below Dark Surfa		☐ Marl (F10) (L	•	/II DA 151\	U Other (E	Explain in Remarks)
	ark Surface (A12)	ce (ATT)			(F12) (LRR O, P,	T) ³ Indica	tors of hydrophytic vegetation and
l '	rairie Redox (A16) ((MLRA 150A)	=			•	and hydrology must be present,
_	lucky Mineral (S1)	(LRR O, S)	Delta Ochric				ss disturbed or problematic.
_	Sleyed Matrix (S4)				LRA 150A, 150B)		
	edox (S5) Matrix (S6)				ls (F19) (MLRA 14 / Soils (F20) (MLR		152D)
	rface (S7) (LRR P,	S. T. U)	Anomalous B	ngni Loamy	/ Solis (F20) (WILK	A 149A, 153C,	1930)
	_ayer (if observed						
Type:							
Depth (in	ches):					Hydric Soil P	Present? Yes No
Remarks:							
Hydric s	oil indicator	was me	t.				
,			••				

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	ounty: New Castle/New Castle County Sampling Date: 2021-09-08
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-8
Investigator(s): Craig Nein, Sarah Leidenheimer Section	
	relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR or MLRA): \$ 149A Lat: 39.69701	Long:75.611672 Datum: WGS 84
Soil Map Unit Name: NM- Nanticoke and Mannington soils, very from	
Are climatic / hydrologic conditions on the site typical for this time of year? Y	
Are Vegetation, Soil, or Hydrology significantly disturb	
Are Vegetation, Soil, or Hydrology naturally problems	ıtic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS - Attach site map showing same	pling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area within a Wetland? Yes V No
Wetland Hydrology Present? Yes <u>✓</u> No	within a Wetland: 165 NO
Remarks:	
PEM wetland (W5), located south of Airport Road a	nd east of utility access berm adjacent to W4.
Note: wetland boundary abuts fill embankment alor	ng Airport Road with upland plants; therefore, no
upland test plot conducted.	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Marl Deposits (B15) (LRF	
Saturation (A3) Hydrogen Sulfide Odor (C	
☐ Water Marks (B1) ☐ Oxidized Rhizospheres a	· · · · · · · · · · · · · · · · · · ·
Sediment Deposits (B2) Presence of Reduced Iro	n (C4) Crayfish Burrows (C8)
☐ Drift Deposits (B3) ☐ Recent Iron Reduction in	Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	☑ Geomorphic Position (D2)
☐ Iron Deposits (B5) ☐ Other (Explain in Remark	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)
Field Observations:	
Surface Water Present? Yes No Depth (inches): 6-8	
Water Table Present? Yes <u>✓</u> No Depth (inches): <u>0</u>	
Saturation Present? Yes V No Depth (inches): 0 (includes capillary fringe)	Wetland Hydrology Present? Yes No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:
Google Earth 2021, Web Soil Survey of New Ca	stle County
Remarks:	
Multiple wetland hydrology indicators were me	t.

Sampling Point: TP-8	TD 0		
	- 1P-8	Point:	Sampling

00.6		Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 30 ft r)		Species?		Number of Dominant Species	
1. Acer rubrum		5		FAC	That Are OBL, FACW, or FAC: 2	(A)
2					Total Number of Dominant	
3						(B)
4						
5					Percent of Dominant Species That Are OBL, FACW, or FAC: 100	(A/B)
6.					That Ale OBE, I AOW, OI I AO.	(7,0)
7					Prevalence Index worksheet:	
8.					Total % Cover of: Multiply by:	-
0		5% =	Total Cov	or	OBL species 20 x 1 = 20	
	50% of total cover: 2.5				FACW species <u>80</u> x 2 = <u>160</u>	
		20% 01	total cover	1.0	FAC species <u>5</u> x 3 = <u>15</u>	
Sapling/Shrub Stratum (Plot size					FACU species $0 \times 4 = 0$	
1					UPL species 0 $x = 0$,
2	_				1	(D)
3					Column Totals. 100 (A) 100	(B)
4					Prevalence Index = B/A = 1.9	-
5					Hydrophytic Vegetation Indicators:	
6					1 - Rapid Test for Hydrophytic Vegetation	
7					2 - Dominance Test is >50%	
8					2 3 - Prevalence Index is ≤3.0 ¹	
		=	Total Cov	er	Problematic Hydrophytic Vegetation ¹ (Explain)
	50% of total cover:	20% of	total cover:	·		<i>'</i>
Herb Stratum (Plot size: 30 ft r	<u> </u>				¹ Indicators of hydric soil and wetland hydrology m	ust
1. Phragmites australis		80	✓	FACW	be present, unless disturbed or problematic.	
2 Lemna minor		15		OBL	Definitions of Four Vegetation Strata:	
Persicaria punctata		5		OBL		
4					Tree – Woody plants, excluding vines, 3 in. (7.6 cm more in diameter at breast height (DBH), regardle	
4					height.	55 01
5						
6					Sapling/Shrub – Woody plants, excluding vines, than 3 in. DBH and greater than 3.28 ft (1 m) tall.	ess
7					than 3 iii. DBH and greater than 3.20 it (1 iii) taii.	
8					Herb - All herbaceous (non-woody) plants, regard	lless
9					of size, and woody plants less than 3.28 ft tall.	
10					Woody vine – All woody vines greater than 3.28 f	t in
11					height.	
12						
		100% =	Total Cov	er		
	50% of total cover: 50.0	20% of	total cover:	20.0		
Woody Vine Stratum (Plot size:	30 ft r					
1.						
2.						
3						
4				•		
5					Hydrophytic	
			Total Cov		Vegetation Present? Yes No	
	50% of total cover:	-	total cover:	·	100 <u>100 100 100 100 100 100 100 100 100</u>	
Remarks: (If observed, list morp	hological adaptations below	w).				
Hydrophytic vegetat	ion indicator was	s met				

Profile Desc	ription: (Describe	to the depth	needed to docur	nent the i	ndicator	or confirm	the absence	of indicators.)
Depth	Matrix			x Feature		. 2		
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type ¹	Loc ²	<u>Texture</u>	Remarks
0-8	10YR 3/1	_ 100					Muck	Organic (sapric)
8 - 14	10YR 3/2	100					Mucky Sand	Mucky mineral soil with small rock fragments
-								
_				· <u></u>				
		 						
								
1							2	
	oncentration, D=De Indicators: (Appli					ains.		PL=Pore Lining, M=Matrix. for Problematic Hydric Soils ³ :
l <u> </u>		cable to all Li			•	DD 0 T 1		_
Histosol	(A1) pipedon (A2)		Polyvalue Be				. —	Muck (A9) (LRR O) Muck (A10) (LRR S)
Histic Ep			Loamy Muck					ed Vertic (F18) (outside MLRA 150A,B)
	n Sulfide (A4)		Loamy Gleye			. 0,		ont Floodplain Soils (F19) (LRR P, S, T)
	d Layers (A5)		Depleted Ma		/			alous Bright Loamy Soils (F20)
	Bodies (A6) (LRR I	P, T, U)	Redox Dark		⁻ 6)			RA 153B)
5 cm Mu	icky Mineral (A7) (L	RR P, T, U)	Depleted Dar	k Surface	(F7)			arent Material (TF2)
	esence (A8) (LRR	J)	Redox Depre		8)			Shallow Dark Surface (TF12)
	ick (A9) (LRR P, T)	(4.4.1)	Marl (F10) (L	-			U Other	(Explain in Remarks)
	d Below Dark Surfa	ce (A11)	Depleted Ocl				T) 3India	cators of hydrophytic vegetation and
	ark Surface (A12) rairie Redox (A16) (MI RA 150A)	☐ Iron-Mangan☐ Umbric Surfa				•	tland hydrology must be present,
	lucky Mineral (S1)		Delta Ochric			, 0,		ess disturbed or problematic.
_	Gleyed Matrix (S4)	,,	Reduced Ver			0A, 150B)		
_	Redox (S5)		Piedmont Flo					
	Matrix (S6)		Anomalous E	Bright Loar	my Soils (F20) (MLR	A 149A, 153C	, 153D)
	rface (S7) (LRR P,						1	
Restrictive I	_ayer (if observed)):						
Type:								.,
	ches):						Hydric Soil	Present? Yes No
Remarks:								
Hydric s	oil indicator	s were n	net.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/Ci	ounty: New Castle/New Castle County Sampling Date: 2021-09-08
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-9
Investigator(s): Craig Nein, Sarah Leidenheimer Section	
Landform (hillslope, terrace, etc.): Depression	
Subregion (LRR or MLRA): S 149A Lat: 39.697719	· · · · · · · · · · · · · · · · · · ·
Soil Map Unit Name: MuB - Mattapex-Urban land complex, 0 to 5 p	
Are climatic / hydrologic conditions on the site typical for this time of year? Ye	
Are Vegetation, Soil, or Hydrology significantly disturb	
Are Vegetation, Soil, or Hydrology naturally problema	tic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	
Hydric Soil Present? Yes V No No	Is the Sampled Area
Wetland Hydrology Present? Yes No	within a Wetland? Yes No
Remarks:	
Large PFO wetland (W6), located between I-29	5 and Airport Road
Large 11 6 Wettaria (W6), located between 126	o and Amport Road.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Marl Deposits (B15) (LRR	R U) Drainage Patterns (B10)
Saturation (A3) Hydrogen Sulfide Odor (C	Moss Trim Lines (B16)
Water Marks (B1) Oxidized Rhizospheres al	long Living Roots (C3)
Sediment Deposits (B2) Presence of Reduced Iron	n (C4)
☐ Drift Deposits (B3) ☐ Recent Iron Reduction in	Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)	Geomorphic Position (D2)
☐ Iron Deposits (B5) ☐ Other (Explain in Remark	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)
✓ Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)
Field Observations:	
Surface Water Present? Yes No Depth (inches): <u>3-4</u>	
Water Table Present? Yes No Depth (inches): 0	
Saturation Present? Yes V No Depth (inches): 0	Wetland Hydrology Present? Yes No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, prev	vious inspections), if available:
Google Earth 2021, Web Soil Survey of New Ca	stle County
Remarks:	
Multiple wetland hydrology indicators were me	t.

Sampling	Daint	TP-9
Sampling	Point.	17-9

)	Species?	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: 8 (ATTION OF THE PROOF OF TH
) 	<u> </u>	FAC	Total Number of Dominant Species Across All Strata: B (E
			Species Across All Strata: 8 (E
			That Are OBL, FACW, or FAC: 100 (A
			Prevalence Index worksheet:
			Total % Cover of: Multiply by:
<u> </u>	Total Cov	er	OBL species 28 x 1 = 28
20% of t	otal cover:	10.0	FACW species $\frac{75}{0.5}$ $\times 2 = \frac{150}{10.5}$
			FAC species 65 x 3 = 195
5	✓	FACW	FACU species $0 \times 4 = 0$
	~	FAC	UPL species <u>0</u> x 5 = <u>0</u>
			Column Totals: <u>168</u> (A) <u>373</u> (
			Prevalence Index = B/A = 2.2
			Hydrophytic Vegetation Indicators:
			1 - Rapid Test for Hydrophytic Vegetation
			2 - Dominance Test is >50%
			✓ 3 - Prevalence Index is ≤3.0 ¹
)% =	Total Cov	er	Problematic Hydrophytic Vegetation ¹ (Explain)
			Problematic hydrophytic vegetation (Explain)
2070 0. 1			1
5	~	FAC	¹ Indicators of hydric soil and wetland hydrology mus be present, unless disturbed or problematic.
	~		Definitions of Four Vegetation Strata:
			Definitions of Four Vegetation Strata.
			Tree – Woody plants, excluding vines, 3 in. (7.6 cm
			more in diameter at breast height (DBH), regardless height.
			Sapling/Shrub – Woody plants, excluding vines, les
			than 3 in. DBH and greater than 3.28 ft (1 m) tall.
			Herb - All herbaceous (non-woody) plants, regardle
-			of size, and woody plants less than 3.28 ft tall.
			Woody vine - All woody vines greater than 3.28 ft i
			height.
20% of t	otal cover:	16.6	
		FAC	
			Hydrophytic
=	Total Cov	er	Vegetation
20% of t	otal cover:	3.0	Present? Yes No
3 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	20% of t	20% of total cover:	FACW FAC FACW FAC FACW FAC FACW FAC FACW FACW

Profile Desc	cription: (Describe	to the dep	oth needed to docur	nent the	indicator	or confirm	n the absence of in	dicators.)
Depth	Matrix			x Featur		. 2		
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks
0-5	10YR 4/2	95	5YR 4/6	5	_ <u>C</u>	PL / M	Silt Loam	
5 - 14	10YR 5/2	85	5YR 4/6	15	<u> </u>	<u>M</u>	Silt Loam	
-								
_								
1 _{Tyme} , C=C	anacatration D-Da	nlation DM	=Reduced Matrix, MS	C=Mook	- Cand Ci	roine	2l costion: DI =	Pore Lining, M=Matrix.
			LRRs, unless other			airis.		Problematic Hydric Soils ³ :
Histosol			Polyvalue Be			RR S. T. I		•
	pipedon (A2)		Thin Dark Su					(A10) (LRR S)
	istic (A3)		Loamy Muck					ertic (F18) (outside MLRA 150A,B)
	en Sulfide (A4)		Loamy Gleye		(F2)			loodplain Soils (F19) (LRR P, S, T)
	d Layers (A5)	···	Depleted Ma		(E0)			Bright Loamy Soils (F20)
	Bodies (A6) (LRR I ucky Mineral (A7) (L		☐ Redox Dark : Depleted Dark :				(MLRA 1	Material (TF2)
_	resence (A8) (LRR		Redox Depre					w Dark Surface (TF12)
	uck (A9) (LRR P, T)		Marl (F10) (L		/			ain in Remarks)
	d Below Dark Surfa	ce (A11)	Depleted Oc					
	ark Surface (A12)	(14) DA 450	Iron-Mangan				•	s of hydrophytic vegetation and
	rairie Redox (A16) (/lucky Mineral (S1)		A) Umbric SurfaDelta Ochric					hydrology must be present, listurbed or problematic.
	Gleyed Matrix (S4)	(LIXIX O, 3)	Reduced Ver					istarbed or problematic.
	Redox (S5)		Piedmont Flo					
	l Matrix (S6)		Anomalous E	Bright Lo	amy Soils	(F20) (MLR	A 149A, 153C, 153	D)
	rface (S7) (LRR P,							
	Layer (if observed):						
Type:	- I \						Uhadala Oali Bara	
	ches):						Hydric Soil Pres	sent? Yes V No No
Remarks:	!! !!! 4		- 4					
Hyaric s	soil indicator	was m	et.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/Co	ounty: New Castle/New Castle County Sampling Date: 2021-09-08
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-10
Investigator(s): Craig Nein, Sarah Leidenheimer Sectio	n, Township, Range: N/A
Landform (hillslope, terrace, etc.): Hillslope Local I	· · · · ·
Subregion (LRR or MLRA): S 149A Lat: 39.697806	
Soil Map Unit Name: MuB - Mattapex-Urban land complex, 0 to 5 p	percent slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Ye	
Are Vegetation, Soil, or Hydrology significantly disturb	
Are Vegetation, Soil, or Hydrology naturally problema	
SUMMARY OF FINDINGS – Attach site map showing sam	
	pling point locations, transects, important leatures, etc.
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area
Hydric Soil Present? Yes No	within a Wetland? Yes No
Wetland Hydrology Present? Yes No No	
Upland plot to north of Wetland 6 (W6), along t	he of I-295 roadway embankment
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Aquatic Fauna (B13) Mari Deposits (B15) (LBR)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Saturation (A3) Hydrogen Sulfide Odor (C	
Water Marks (B1) Oxidized Rhizospheres al	
Sediment Deposits (B2) Presence of Reduced Iron	
Drift Deposits (B3)	Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)
☐ Iron Deposits (B5) ☐ Other (Explain in Remarks	
Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U)
Field Observations:	ephagham mess (56) (Lint 1, 6)
Surface Water Present? Yes No Depth (inches):	
Water Table Present? Yes No Depth (inches):	
Saturation Present? Yes No Depth (inches):	Wetland Hydrology Present? Yes No _✓
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, prev	vious inspections) if available:
Google Earth 2021, Web Soil Survey of New Cas	. ,
Remarks:	
No wetland hydrology indicators were met.	

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: TP-10

- 0 1E ft r		Dominant		Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>15 ft r</u>) 1		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
2				Total Number of Densired
3				Total Number of Dominant Species Across All Strata: 2 (B)
4				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)
6				That / He est, 17 (ev), 61 17 (e)
7.				Prevalence Index worksheet:
8.				Total % Cover of: Multiply by:
		Total Cov		OBL species <u>0</u> x 1 = <u>0</u>
50% of total cover:				FACW species <u>5</u> x 2 = <u>10</u>
Sapling/Shrub Stratum (Plot size: 15 ft r)	20 / 0 0 1	total cover		FAC species <u>5</u> x 3 = <u>15</u>
				FACU species <u>48</u>
1			•	UPL species <u>0</u> x 5 = <u>0</u>
2				Column Totals: <u>58</u> (A) <u>217</u> (B)
4.				Prevalence Index = B/A = 3.7
5.				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
8				3 - Prevalence Index is ≤3.0¹
		Total Cov		Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover:	20% of	total cover:		Froblematic Hydrophytic vegetation (Explain)
Herb Stratum (Plot size: 15 ft r)	_			Indicators of hydric coil and watland hydrology must
1. Paspalum sp.	25	~		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Plantago lanceolata	25		FACU	Definitions of Four Vegetation Strata:
3. Tridens flavus	20		FACU	Johnson C. F. Call. F. C. Gottanon C. Land.
4. Setaria viridis	10			Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
5. Cyperus esculentus	5		FAC	height.
6 Echinochloa muricata	5		FACW	
7. Apocynum cannabinum	3		FACU	Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8.				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12				
	93% =	Total Cov	er	
50% of total cover: 46.5	20% of	total cover:	18.6	
Woody Vine Stratum (Plot size: 15 ft r)				
1				
2.			-	
3				
4				
5				Hydrophytic
		Total Cov		Vegetation Present? Yes No
50% of total cover:		total cover:		
Remarks: (If observed, list morphological adaptations below	A/1			

No hydrophytic vegetation indicators were met.

Plot sizes reduced due to proximity to wetland and roadway.

Paspalum not identified to species; thus, it was not included in the Dominance Test calculations

Profile Desc	cription: (Describe	to the de	oth needed to docur	ment the	indicator	or confirm	n the absence of	indicators.)
Depth				- .	Б			
(inches) 0 - 2	Color (moist)	% 95	Color (moist)	<u>%</u> 5	Type¹		Texture	Remarks
	10YR 4/3		5YR 4/6		_ <u>C</u>	PL / M	Silt Loam	_
2-8	10YR 4/3	<u>85</u>	7.5YR 4/6	15	<u>C</u>	M	<u>Loam</u>	
				_	_			
-								
¹Type: C=C	oncentration, D=De	pletion, RM	=Reduced Matrix, M	S=Maske	ed Sand G	rains.	² Location: PL	
			LRRs, unless other					r Problematic Hydric Soils³:
Histosol	(A1)		Polyvalue Be	elow Surf	face (S8) (I	LRR S, T, L	ر) <u> </u>	ck (A9) (LRR O)
l =	pipedon (A2)		Thin Dark Su					ck (A10) (LRR S)
_	istic (A3)		Loamy Muck	-		₹ 0)		Vertic (F18) (outside MLRA 150A,B)
_	en Sulfide (A4) d Layers (A5)		Loamy Gleye Depleted Ma		(F2)			Floodplain Soils (F19) (LRR P, S, T) us Bright Loamy Soils (F20)
_	Bodies (A6) (LRR l	P. T. U)	Redox Dark		(F6)		(MLRA	. , ,
	ucky Mineral (A7) (L		_				,	nt Material (TF2)
	resence (A8) (LRR		Redox Depre	essions (F8)			llow Dark Surface (TF12)
	uck (A9) (LRR P, T)		Marl (F10) (L				U Other (Ex	plain in Remarks)
	d Below Dark Surfa	ce (A11)	☐ Depleted Oc☐ Iron-Mangan	-			T) ³ Indicate	ors of hydrophytic vegetation and
	ark Surface (A12) rairie Redox (A16) (MI RA 150			, ,	•	•	d hydrology must be present,
	/lucky Mineral (S1)		Delta Ochric					disturbed or problematic.
	Bleyed Matrix (S4)		Reduced Ve				1	·
	Redox (S5)		Piedmont Flo					
_ ::	Matrix (S6)	C T II)	Anomalous E	Bright Lo	amy Soils	(F20) (MLR	RA 149A, 153C, 15	53D)
	rface (S7) (LRR P, Layer (if observed							
	cky substrate	,.						
, , <u> </u>	ches): > 8						Hydric Soil Pre	esent? Yes No
Remarks:								
No hydr	ic soil indica	tors w	ere met					
No Hyai	ic 30ii ii aice	itois w	ore met.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	Sounty: New Castle/New Castle County Sampling Date: 2021-09-08					
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-11					
••	on, Township, Range: N/A					
Landform (hillslope, terrace, etc.): Swale Local						
Subregion (LRR or MLRA): \$ 149A	Jones -75 607132 Detum: WGS 84					
Soil Map Unit Name: OtA - Othello silt loams, 0 to 2 percent slopes						
•	· · · · · · · · · · · · · · · · · · ·					
Are climatic / hydrologic conditions on the site typical for this time of year? Y						
Are Vegetation, Soil, or Hydrology significantly disturb						
Are Vegetation, Soil, or Hydrology naturally problems	atic? (If needed, explain any answers in Remarks.)					
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? Yes No	In the Complet Area					
Hydric Soil Present? Yes V No No	Is the Sampled Area within a Wetland? Yes V No					
Wetland Hydrology Present? Yes <u>✓</u> No	within a Wetland? TesNO					
Remarks:						
PFO wetland swale (W7), located south of I-29	5, north of W6, and west of SR 141					
interchange loops.						
interestating toops.						
HYDROLOGY						
	Secondary Indicators (minimum of two required)					
Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)	Secondary mulcators (minimum or two required) Surface Soil Cracks (B6)					
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)					
High Water Table (A2) Marl Deposits (B15) (LRF						
Saturation (A3) Hydrogen Sulfide Odor (C						
Water Marks (B1) Water Marks (B1) Oxidized Rhizospheres a						
Sediment Deposits (B2) Presence of Reduced Iron						
Drift Deposits (B3)						
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)					
☐ Iron Deposits (B5) ☐ Other (Explain in Remark	Shallow Aquitard (D3)					
☐ Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)					
✓ Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)					
Field Observations:						
Surface Water Present? Yes No Depth (inches): 2-5						
Water Table Present? Yes No Depth (inches): 0						
Saturation Present? Yes Vo Depth (inches): 0	Wetland Hydrology Present? Yes No					
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:					
Google Earth 2021, Web Soil Survey of New Castle County						
Remarks:						
Multiple wetland hydrology indicators were me	t.					

- 20 V10 H	Absolute	Dominant		Dominance Test worksheet:	
Tree Stratum (Plot size: 20 X 10 ft)		Species?		Number of Dominant Species	
1. Acer rubrum	35	<u> </u>	FAC	That Are OBL, FACW, or FAC: 6	A)
2. Liquidambar styraciflua	30		FAC	Total Number of Dominant	
3				Species Across All Strata: 6 (I	B)
4				Percent of Dominant Species	
5					A/B)
6				Prevalence Index worksheet:	
7					
8				Total % Cover of: Multiply by: OBL species 0 x 1 = 0	
	65%	= Total Cov	er	x :	
50% of total cover: 32.5	20% of	total cover	13.0	FACW species 10 x 2 = 20 FAC species 95 x 3 = 285	
Sapling/Shrub Stratum (Plot size: 20 x 10 ft)				1 AO Species X 0 = X 0 =	
1. Viburnum dentatum	15		FAC	FACU species $0 \times 4 = 0$	
2. Liquidambar styraciflua	10	<u> </u>	FAC	UPL species $0 \times 5 = 0$	
3				Column Totals: 105 (A) 305	(B)
4.				Prevalence Index = B/A = 2.9	
5				Hydrophytic Vegetation Indicators:	
6.				1 - Rapid Test for Hydrophytic Vegetation	
7					
8.				I =	
o	25%	Total Cov	er	✓ 3 - Prevalence Index is ≤3.0 ¹	
50% of total cover: 12.5				Problematic Hydrophytic Vegetation ¹ (Explain)	
Herb Stratum (Plot size: 20 x 10 ft) 1. Onoclea sensibilis	10		FACW	¹ Indicators of hydric soil and wetland hydrology mube present, unless disturbed or problematic.	st
2. Toxicodendron radicans	5		FAC	Definitions of Four Vegetation Strata:	
3				Tree – Woody plants, excluding vines, 3 in. (7.6 cm	a) or
4				more in diameter at breast height (DBH), regardless	
5				height.	
6				Sapling/Shrub – Woody plants, excluding vines, le	ess
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
8				Herb – All herbaceous (non-woody) plants, regardle	000
9.				of size, and woody plants less than 3.28 ft tall.	CSS
10.					
11.				Woody vine – All woody vines greater than 3.28 ft height.	ın
12.					
	15%	Total Cov	er		
50% of total cover: 7.5					
Woody Vine Stratum (Plot size: 20 x 10 ft)		total cover.			
1					
2					
3					
4					
5				Hydrophytic	
		= Total Cov		Vegetation Present? Yes ✓ No	
50% of total cover:		total cover	:		
Remarks: (If observed, list morphological adaptations belo	w).				
Hydrophytic vegetation indicator was	s met.				
Plot sizes adjusted due to narrow sha		wetland	d swale	2	

Depth	ription: (Describe Matrix	to the dep	lepth needed to document the indicator or confirm Redox Features				the absence o	f indicators.)
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0 - 14	10YR 3/1	95	5YR 4/6	5	<u>C</u>	PL / M	Silt Loam	
-								
							·	
					-			
1Type: C=C	ncentration D-De	nletion PM-	Reduced Matrix, M	S-Masker	Sand G	raine	² l ocation: [PL=Pore Lining, M=Matrix.
			LRRs, unless othe			ruino.		or Problematic Hydric Soils ³ :
Histosol	(A1)		Polyvalue Be	elow Surfa	ce (S8) (LRR S, T, L	J) 🔲 1 cm Mu	uck (A9) (LRR O)
· == ·	oipedon (A2)		Thin Dark Su					uck (A10) (LRR S)
Black Hi			Loamy Muck	-		R O)		d Vertic (F18) (outside MLRA 150A,B)
	n Sulfide (A4) d Layers (A5)		Loamy Gleye Depleted Ma		(FZ)			nt Floodplain Soils (F19) (LRR P, S, T) ous Bright Loamy Soils (F20)
	Bodies (A6) (LRR I	P, T, U)	Redox Dark		- 6)			A 153B)
	icky Mineral (A7) (L		_		. ,			rent Material (TF2)
	esence (A8) (LRR lick (A9) (LRR P, T)		Redox Depre		8)			allow Dark Surface (TF12) Explain in Remarks)
_	d Below Dark Surfa				(MLRA 1	151)	U Other (E	explain in Remarks)
	ark Surface (A12)	,	Iron-Mangan	, ,	•	•	T) ³ Indica	tors of hydrophytic vegetation and
	rairie Redox (A16) (· =					and hydrology must be present,
_	lucky Mineral (S1) (Gleyed Matrix (S4)	(LRR O, S)	Delta Ochric Reduced Ve					ss disturbed or problematic.
_	ledox (S5)		Piedmont Flo					
_	Matrix (S6)						A 149A, 153C,	153D)
	rface (S7) (LRR P,							
	_ayer (if observed)):						
Type: Depth (in	chos):						Hydric Soil F	Present? Yes V No No
Remarks:							Hydric 30ii F	rieseiit: res NO
	oil indicator	wasm	at .					
_								
Note: m	ore organic	solis we	ere evident ir	n deep	er po	rtions o	r mucky s	waie.

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/County: New Castle/New Castle County Sampling Date: 2021-09-08						
Applicant/Owner: DelDOT State: Delaware Sampling Point: TP-12						
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A						
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 2						
Subregion (LRR or MLRA): S 149A Lat: 39.698853 Long: -75.607113 Datum: WGS 84						
Soil Map Unit Name: OtA - Othello silt loams, 0 to 2 percent slopes, northern coastal plain NWI classification: N/A						
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)						
Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No						
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)						
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.						
Hydrophytic Vegetation Present? Yes No Is the Sampled Area						
Hydric Soil Present? Yes No within a Wetland? Yes No Wetland Hydrology Present? Yes No Wetland?						
Remarks:						
Upland terrace to the north of Wetland 7 (W7).						
HYDROLOGY						
Wetland Hydrology Indicators: Secondary Indicators (minimum of two required)						
Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6)						
□ Surface Water (A1) □ Aquatic Fauna (B13) □ Sparsely Vegetated Concave Surface (B8)						
High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Drainage Patterns (B10)						
Umage: Saturation (A3) Umage: Hydrogen Sulfide Odor (C1) Umage: Moss Trim Lines (B16) Umage: Saturation (A3) Umage: Saturation (A3) Umage: Dispute Saturation (A3)						
Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8)						
Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)						
Algal Mat or Crust (B4)						
Iron Deposits (B5) Under (Explain in Remarks) Shallow Aquitard (D3)						
Inundation Visible on Aerial Imagery (B7)						
☐ Water-Stained Leaves (B9) ☐ Sphagnum moss (D8) (LRR T, U)						
Field Observations:						
Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches):						
Water Table Present? Yes No V Depth (inches): Wetland Hydrology Present? Yes No V Depth (inches): Wetland Hydrology Present? Yes No V						
(includes capillary fringe)						
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Google Earth 2021, Web Soil Survey of New Castle County						
Remarks:						
No wetland hydrology indicators were met.						

Sampling	Daint	TP-12
Sampling	Point.	15-14

1E ft =		Dominant		Dominance Test worksheet:	
Tree Stratum (Plot size: 15 ft r 1. Acer rubrum	% Cover 35	Species? ✓	Status FAC	Number of Dominant Species	
	30	<u></u>	FAC	That Are OBL, FACW, or FAC: 3	(A)
Liquidambar styraciflua .				Total Number of Dominant Species Across All Strata: 5	(B)
4					, ,
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 60	(A/B)
6				Prevalence Index worksheet:	
7				Total % Cover of: Multiply by:	
8				OBL species 0 x 1 = 0	-
20.5		Total Cov		FACW species 3 x 2 = 6	-
50% of total cover: <u>32.5</u>	20% of	total cover:	13.0	FAC species 80 x 3 = 240	-
Sapling/Shrub Stratum (Plot size: 15 ft r)				FACU species 20 x 4 = 80	-
1. Viburnum dentatum	15		FAC	UPL species 0 x 5 = 0	-
2					(D)
3				Column Totals: <u>103</u> (A) <u>326</u>	(B)
4				Prevalence Index = $B/A = 3.2$	-
5				l —	
6				1 - Rapid Test for Hydrophytic Vegetation	
7				2 - Dominance Test is >50%	
8	450/			3 - Prevalence Index is ≤3.0 ¹	
		Total Cov		Problematic Hydrophytic Vegetation¹ (Explain	1)
50% of total cover: 7.5	20% of	total cover:	3.0		
Herb Stratum (Plot size: 15 ft r)				¹ Indicators of hydric soil and wetland hydrology m	ust
1. Lonicera japonica	10		FACU	be present, unless disturbed or problematic.	
2. Parthenocissus quinquefolia	10		FACU	Definitions of Four Vegetation Strata:	
3. Onoclea sensibilis	3		FACW	Tree – Woody plants, excluding vines, 3 in. (7.6 c	m) or
4				more in diameter at breast height (DBH), regardle	
5				height.	
6.				Sapling/Shrub – Woody plants, excluding vines,	less
7.				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	1000
8.				Hort All bank account (a consumed to be accounted to be accoun	
9				Herb – All herbaceous (non-woody) plants, regard of size, and woody plants less than 3.28 ft tall.	liess
10					
				Woody vine – All woody vines greater than 3.28 theight	ft in
11.				height.	
12	23%	Total Cov			
50% (1.1.) 11.5					
50% of total cover: 11.5	20% of	total cover:	4.0		
Woody Vine Stratum (Plot size: 15 ft r)					
1					
2					
3					
4					
5				Hydrophytic	
	=	Total Cov	er	Vegetation	
50% of total cover:	20% of	total cover:		Present? Yes No	
Remarks: (If observed, list morphological adaptations belo	w).				
, , , , , , , , , , , , , , , , , , , ,	,				
Hydrophytic vegetation indicator wa		_			
Plot sizes adjusted due to proximity t	to wetla	ands			

Profile Desc	ription: (Describe	to the depth	needed to docur	nent the i	ndicator	or confirn	n the absence o	f indicators.)	
Depth	Matrix			x Feature		. 2			
(inches)	Color (moist)		Color (moist)	<u>%</u>	Type'	Loc ²	<u>Texture</u>	Remarks	_
0 - 8	10YR 3/3	100					Loam		
				<u> </u>					
-									
_									
	-			. ———	-				
									_
	oncentration, D=De					ains.		PL=Pore Lining, M=Matr	
Hydric Soil	Indicators: (Appli	cable to all Li	RRs, unless other	rwise not	ed.)			or Problematic Hydric	Soils³:
Histosol	` '		Polyvalue Be					ıck (A9) (LRR O)	
_	pipedon (A2)		Thin Dark Su					ick (A10) (LRR S)	
Black Hi			Loamy Muck	-		₹ 0)		d Vertic (F18) (outside	-
_	n Sulfide (A4) d Layers (A5)		Loamy Gleye Depleted Ma		F2)			nt Floodplain Soils (F19) ous Bright Loamy Soils (
	Bodies (A6) (LRR I	P. T. U)	Redox Dark		-6)			A 153B)	(120)
	icky Mineral (A7) (L		Depleted Dai				,	ent Material (TF2)	
_	esence (A8) (LRR		Redox Depre					allow Dark Surface (TF1	12)
1 cm Mu	ıck (A9) (LRR P, T)		Marl (F10) (L	RR U)			Other (E	xplain in Remarks)	
	d Below Dark Surfa	ce (A11)	Depleted Ocl				2		
	ark Surface (A12)	(141 D.A. 450A)	Iron-Mangan				•	tors of hydrophytic vege	
	rairie Redox (A16) (lucky Mineral (S1) (, U)		nd hydrology must be p s disturbed or problema	
_	iucky Millerai (ST) (Gleyed Matrix (S4)	(LKK 0, 3)	Delta Ochric Reduced Ver			.0Δ 150R)		s disturbed or problema	ilio.
_	ledox (S5)		Piedmont Flo						
_	Matrix (S6)						RA 149A, 153C, 1	153D)	
Dark Su	rface (S7) (LRR P,	S, T, U)							
	_ayer (if observed								
Type: De	ense roots in wo	odlands	<u> </u>						
Depth (inc	ches): <u>> 8</u>						Hydric Soil P	resent? Yes	No <u>~</u>
Remarks:									
No hydr	ic soil indica	itors wer	e met						

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/Ci	ounty: New Castle/New Castle County Sampling Date: 2021-09-08					
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-13					
Investigator(s): Craig Nein, Sarah Leidenheimer Section						
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0						
Subregion (LRR or MLRA): S 149A Lat: 39.699358	Long:75.604133 Datum: WGS 84					
Soil Map Unit Name: MuB - Mattapex-Urban land complex, 0 to 5 p	percent slopes NWI classification: PF01/EM5E					
Are climatic / hydrologic conditions on the site typical for this time of year? Ye						
Are Vegetation, Soil, or Hydrology significantly disturb						
Are Vegetation, Soil, or Hydrology naturally problema						
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area					
Hydric Soil Present? Yes No	within a Wetland? Yes V No					
Wetland Hydrology Present? Yes <u>✓</u> No						
Remarks: Mixed DEM/DEO wetland in interchange loop for	or west side of SP 1/1 and L-205					
Mixed PEM/PFO wetland in interchange loop fo	r west side of SR 141 and 1-295.					
HYDROLOGY						
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)					
Surface Water (A1) High Water Table (A2) Aquatic Fauna (B13) Marl Deposits (B15) (LRR	Sparsely Vegetated Concave Surface (B8)					
青 · · · · · · · · · · · · · · · · · ·						
 	· · · · · · · · · · · · · · · · · · ·					
■ Water Marks (B1) ✓ Oxidized Rhizospheres al ■ Sediment Deposits (B2) ✓ Presence of Reduced Iron						
☐ Sediment Deposits (B2) ☐ Presence of Reduced Iron ☐ Drift Deposits (B3) ☐ Recent Iron Reduction in						
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)					
Iron Deposits (B5) Other (Explain in Remark	= · · · · · ·					
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)					
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)					
Field Observations:						
Surface Water Present? Yes No _ V Depth (inches):						
Water Table Present? Yes No Depth (inches): 10						
Saturation Present? Yes No Depth (inches): 7	Wetland Hydrology Present? Yes No					
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, prev	l vious inspections), if available:					
Google Earth 2021, Web Soil Survey of New Castle County						
Remarks:						
Multiple wetland hydrology indicators were me	t.					

Sampling	Point-	TP-13
Samululliu	r Oll It.	

- 0 15 ft r		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size: 15 ft r) 1	% Cover			Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2.				Total Number of Dominant
3				Species Across All Strata: 1 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100 (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
<u> </u>		Total Cov		OBL species <u>5</u> x 1 = <u>5</u>
50% of total cover:				FACW species <u>85</u> x 2 = <u>170</u>
Sapling/Shrub Stratum (Plot size: 15 ft r)				FAC species $0 \times 3 = 0$
1				FACU species $0 \times 4 = 0$
2				UPL species $0 \times 5 = 0$
3				Column Totals: <u>90</u> (A) <u>175</u> (B)
4				Prevalence Index = B/A = 1.9
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
8				3 - Prevalence Index is ≤3.0¹
50% of total cover:		Total Cover		Problematic Hydrophytic Vegetation ¹ (Explain)
Herb Stratum (Plot size: 15 ft r)	20 /0 01	total cover	·	1
1. Phragmites australis	85	~	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Lythrum salicaria	5		OBL	Definitions of Four Vegetation Strata:
3				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4				more in diameter at breast height (DBH), regardless of
5				height.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10				Woody vine – All woody vines greater than 3.28 ft in
12.				height.
	90% =	Total Cov	er	
50% of total cover: 45.0				
Woody Vine Stratum (Plot size: 15 ft r)			_ _	
1				
2				
3				
4				
5				Hydrophytic
500/ of total accomm		Total Cov		Vegetation Present? Yes ✓ No ———
50% of total cover:		total cover	<u> </u>	
Remarks: (If observed, list morphological adaptations belo	,			
Hydrophytic vegetation indicator wa	s met.			
Plot sizes adjusted due to proximity	to road	ways		
•		-		

Depth (Inches)
0 - 10
10 - 16 10YR 4/3 85 10YR 4/6 15 C M Silty Clay Loam Small rock fragments (10%) -
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1) Histosol (A1) Histic Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Organic Bodies (A6) (LRR P, T, U) Stratified Layers (A5) Organic Bodies (A6) (LRR P, T, U) Depleted Dark Surface (F7) Tocation: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils ³ : Indicators for Poblematic Hydric Soils ³ : Indicators for Poblematic Hydric Soils ³ : Indicators for Poblematic Hydric Soils ³ : Indicators for Plance Hydric
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Histosol (A1)
Histosol (A1) Polyvalue Below Surface (S8) (LRR S, T, U) Histic Epipedon (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Loamy Mucky Mineral (F1) (LRR O) Hydrogen Sulfide (A4) Stratified Layers (A5) Organic Bodies (A6) (LRR P, T, U) Stratified Layers (A7) Depleted Matrix (F3) Redox Dark Surface (F6) Stratified Layers (A7) (LRR P, T, U) Depleted Dark Surface (F7) Tom Muck (A9) (LRR O) 2 cm Muck (A10) (LRR O) Reduced Vertic (F18) (outside MLRA 150A,B) Piedmont Floodplain Soils (F19) (LRR P, S, T) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2)
Histic Epipedon (A2) Thin Dark Surface (S9) (LRR S, T, U) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Organic Bodies (A6) (LRR P, T, U) 5 cm Mucky Mineral (A7) (LRR P, T, U) Depleted Dark Surface (F7) Thin Dark Surface (S9) (LRR S, T, U) Loamy Mucky Mineral (F1) (LRR O) Loamy Mucky Mineral (F1) (LRR O) Reduced Vertic (F18) (outside MLRA 150A,B) Piedmont Floodplain Soils (F19) (LRR P, S, T) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2)
Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) Organic Bodies (A6) (LRR P, T, U) 5 cm Mucky Mineral (A7) (LRR P, T, U) Depleted Dark Surface (F7) Loamy Mucky Mineral (F1) (LRR O) Loamy Mucky Mineral (F1) (LRR O) Loamy Mucky Mineral (F1) (LRR O) Piedmont Floodplain Soils (F19) (LRR P, S, T) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2)
Hydrogen Sulfide (A4) Stratified Layers (A5) Organic Bodies (A6) (LRR P, T, U) Stratified Layers (A5) Depleted Matrix (F3) Redox Dark Surface (F6) The piedmont Floodplain Soils (F19) (LRR P, S, T) Anomalous Bright Loamy Soils (F20) (MLRA 153B) Red Parent Material (TF2)
Organic Bodies (A6) (LRR P, T, U) Redox Dark Surface (F6) The state of the state o
5 cm Mucky Mineral (A7) (LRR P, T, U) Depleted Dark Surface (F7)
1 cm Muck (A9) (LRR P, T) Redox Depressions (F6) Very Strainow Dark Surface (TF12) Marl (F10) (LRR U) Other (Explain in Remarks)
Depleted Below Dark Surface (A11) Depleted Ochric (F11) (MLRA 151)
Thick Dark Surface (A12) Iron-Manganese Masses (F12) (LRR O, P, T) ³ Indicators of hydrophytic vegetation and
Coast Prairie Redox (A16) (MLRA 150A) Umbric Surface (F13) (LRR P, T, U) wetland hydrology must be present,
Sandy Mucky Mineral (S1) (LRR O, S) Delta Ochric (F17) (MLRA 151) unless disturbed or problematic.
☐ Sandy Gleyed Matrix (S4) ☐ Reduced Vertic (F18) (MLRA 150A, 150B) ☐ Sandy Redox (S5) ☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
Stripped Matrix (S6) Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)
Dark Surface (S7) (LRR P, S, T, U)
Restrictive Layer (if observed):
Type:
Depth (inches): Hydric Soil Present? Yes No No
Remarks:
Hydric soil indicator was met

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	County: New Castle/New Castle County Sampling Date: 2021-09-08					
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-14					
Investigator(s): Craig Nein, Sarah Leidenheimer Section	on, Township, Range: N/A					
Landform (hillslope, terrace, etc.): Hillslope Local						
Subregion (LRR or MLRA): S 149A Lat: 39.69939						
Soil Map Unit Name: MuB - Mattapex-Urban land complex, 0 to 5	percent slopes NWI classification: N/A					
Are climatic / hydrologic conditions on the site typical for this time of year? Y						
Are Vegetation, Soil, or Hydrology significantly distur						
Are Vegetation, Soil, or Hydrology naturally problems						
SUMMARY OF FINDINGS – Attach site map showing sam						
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area					
Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	within a Wetland? Yes No					
Remarks:						
Toe of roadway embankment. Upland plot to the	ne north of W8.					
HYDROLOGY						
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)					
Surface Water (A1) High Water Table (A2) Aquatic Fauna (B13) Marl Deposits (B15) (LBI	Sparsely Vegetated Concave Surface (B8)					
High Water Table (A2) Marl Deposits (B15) (LRR U) Saturation (A3) Marl Deposits (B15) (LRR U) Hydrogen Sulfide Odor (C1) Moss Trim Lines (B16)						
Saturation (A3) Water Marks (B1) Hydrogen Sulfide Odor (C1) Woss Trim Lines (B16) Dry-Season Water Table (C2)						
Sediment Deposits (B2) Presence of Reduced Iron (C4) Dry-Geason Water Pable (C2) Crayfish Burrows (C8)						
Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)						
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)					
☐ Iron Deposits (B5) ☐ Other (Explain in Remark						
Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U)					
Field Observations:	opinagnam mode (20) (21tt 1, 3)					
Surface Water Present? Yes No Depth (inches):						
Water Table Present? Yes No Depth (inches):						
Saturation Present? Yes No Depth (inches):	Wetland Hydrology Present? Yes No _ ✓					
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections) if available:					
Google Earth 2021, Web Soil Survey of New Ca	. ,					
Remarks:						
No wetland hydrology indicators were met.						

Sampling	Point-	TP-14
Samuliniu	r Oll It.	

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 10 ft r		Species?		Number of Dominant Species
1 Fraxinus pennsylvanica	15	~	FACW	That Are OBL, FACW, or FAC: 1 (A)
				(1)
				Total Number of Dominant
3				Species Across All Strata: 4 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 25 (A/B)
6				(178)
				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				OBL species 0 x 1 = 0
	<u>15%</u> =	Total Cov	er	
50% of total cover: 7.5	20% of	total cover:	3.0	FACW species 20 $\times 2 = 40$
Sapling/Shrub Stratum (Plot size: 10 ft r)				FAC species <u>5</u> x 3 = <u>15</u>
Laniaara maaakii	15	~	UPL	FACU species <u>85</u> x 4 = <u>340</u>
				UPL species 15 x 5 = 75
2				Column Totals: 125 (A) 470 (B)
3				Column Totals. (A) (B)
4				Prevalence Index = B/A = 3.8
5				
				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
8				☐ 3 - Prevalence Index is ≤3.0 ¹
	15% =	Total Cov	er	Problematic Hydrophytic Vegetation¹ (Explain)
50% of total cover: 7.5				Problematic Hydrophytic vegetation (Explain)
	20 /0 01	total cover.		
Herb Stratum (Plot size: 10 ft r)	00			¹ Indicators of hydric soil and wetland hydrology must
1. Solidago altissima	60		FACU	be present, unless disturbed or problematic.
2. Parthenocissus quinquefolia	5		FACU	Definitions of Four Vegetation Strata:
3. Phragmites australis	5		FACW	
4. Toxicodendron radicans	5		FAC	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
· · · · · · · · · · · · · · · · · · ·	<u> </u>		1710	more in diameter at breast height (DBH), regardless of height.
				noight.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8				
				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
9				of size, and woody plants less than 5.26 it tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12				
	75% -	Total Cov	or	
50% (1.1.) 27.5				
50% of total cover: 37.5	20% of	total cover:	15.0	
Woody Vine Stratum (Plot size: 10 ft r)				
1. Lonicera japonica	20	✓	FACU	
2.				
3				
4				
5				Hydrophytic
	20% =	Total Cov	er	Vegetation
50% of total cover: 10.0	20% of	total cover	4.0	Present? Yes No
		total cover.		
Remarks: (If observed, list morphological adaptations belo	w).			
No hydrophytic vegetation indicators	were	met		
Plot sizes adjusted due to proximity	of W8 a	and roa	dway.	
			-	

Depth	Matrix		epth needed to document the indicator or confirm Redox Features				n the absence of	indicators.)
(inches)	Color (moist)	%	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks
0 - 12	10YR 4/3	85	7.5YR 4/6	15	С	M	Silt Loam	
				_				
							<u> </u>	
-						-		
_								
	-	 :						
1Type: C=C	ncentration D-De	nletion RM-	Reduced Matrix, M	S-Masker	Sand G	raine	² Location: PL	
			RRs, unless othe			rumo.		r Problematic Hydric Soils ³ :
Histosol	(A1)		☐ Polyvalue Be	elow Surfa	ce (S8) (LRR S, T, I	U) 1 cm Muc	k (A9) (LRR O)
· == ·	pipedon (A2)		Thin Dark Sι					ck (A10) (LRR S)
Black Hi			Loamy Muck	-		R O)		Vertic (F18) (outside MLRA 150A,B)
	n Sulfide (A4) I Layers (A5)		Loamy Gleye Depleted Ma		F2)			Floodplain Soils (F19) (LRR P, S, T) us Bright Loamy Soils (F20)
	Bodies (A6) (LRR I	P, T, U)	Redox Dark	. ,	- 6)		(MLRA	• • • • • •
	cky Mineral (A7) (L		Depleted Da		` '			nt Material (TF2)
	esence (A8) (LRR		Redox Depre	,	8)			llow Dark Surface (TF12)
	ick (A9) (LRR P, T) d Below Dark Surfa		Marl (F10) (L □ Depleted Oc	•	(MLRA '	151)	U Other (Ex	plain in Remarks)
· ·	ark Surface (A12)	()	☐ Iron-Mangan				, T) ³ Indicato	ors of hydrophytic vegetation and
	rairie Redox (A16)	•						d hydrology must be present,
_	lucky Mineral (S1) Bleyed Matrix (S4)	(LRR O, S)	Delta Ochric					disturbed or problematic.
_	ledox (S5)		Reduced Ve Piedmont Flo					
	Matrix (S6)						RA 149A, 153C, 15	53D)
	rface (S7) (LRR P,							
	_ayer (if observed):						
Type:	- L N						United Call Ba	
Depth (in	cnes):						Hydric Soil Pro	esent? Yes No
	io ooil indica	toro wo	ro mot					
NO Hydr	ic soil indica	itors we	re met.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	Sounty: New Castle/New Castle County Sampling Date: 2021-09-09
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-15
Investigator(s): Craig Nein, Sarah Leidenheimer Section	on, Township, Range: N/A
Landform (hillslope, terrace, etc.): Basin Local	
Subregion (LRR or MLRA): S 149A Lat: 39.699536	
Soil Map Unit Name: VoB - Urban land-Othello complex, 0 to 5 per	
Are climatic / hydrologic conditions on the site typical for this time of year? Y	
Are Vegetation, Soil, or Hydrology significantly disturb	· ——
Are Vegetation, Soil, or Hydrology naturally problems	atic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area
Hydric Soil Present? Yes No	within a Wetland? Yes V No
Wetland Hydrology Present? Yes <u>✓</u> No	William & Westerne
Remarks:	
PEM wetland (W9), located in between the SR	141 bridges to the south of I-295.
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Marl Deposits (B15) (LRF	
Saturation (A3) Hydrogen Sulfide Odor (C	
Water Marks (B1) Oxidized Rhizospheres a	
Sediment Deposits (B2) Presence of Reduced Iron	
Drift Deposits (B3) Recent Iron Reduction in	
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)
☐ Iron Deposits (B5) ☐ Other (Explain in Remark	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)
☐ Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)
Field Observations:	
Surface Water Present? Yes No Depth (inches): 2	
Water Table Present? Yes No Depth (inches): 1	
Saturation Present? Yes V No Depth (inches): 0	Wetland Hydrology Present? Yes No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:
Google Earth 2021, Web Soil Survey of New Ca	• • •
Remarks:	one county
Multiple wetland hydrology indicators were me	t.

Sampling	Point-	TP-15
Samonno	FUIII.	

			Indicator	Dominance Test worksheet:
1	% Cover	Species?	<u>Status</u>	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 2 (A)
2				Total Number of Densinent
3				Total Number of Dominant Species Across All Strata: 2 (B)
4				(b)
				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100 (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				
_	=	Total Cov	er	OBL species 0 x 1 = 0
50% of total cover:	20% of	total cover:		FACW species <u>80</u> x 2 = <u>160</u>
Sapling/Shrub Stratum (Plot size: 30 ft r	<u> </u>			FAC species <u>25</u> x 3 = <u>75</u>
<u> </u>	10	~	FAC	FACU species <u>5</u> x 4 = <u>20</u>
··-				UPL species <u>0</u> x 5 = <u>0</u>
2				Column Totals: 110 (A) 255 (B)
3				(b)
4				Prevalence Index = $B/A = 2.3$
5				
6				
7				2 - Dominance Test is >50%
8				1 =
	10% -	Total Cov		3 - Prevalence Index is ≤3.0¹
				Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover: <u>5.0</u>	_ 20% of	total cover:	2.0	
Herb Stratum (Plot size: 30 ft r)				¹ Indicators of hydric soil and wetland hydrology must
1	80	✓	FACW	be present, unless disturbed or problematic.
2. Baccharis halimifolia	10		FAC	Definitions of Four Vegetation Strata:
3. Parthenocissus quinquefolia	5		FACU	- W + + + + + + + + + + + + + + + + + +
Toxicodendron radicans	5		FAC	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
5				height.
5				
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10				Manda de de la companya del companya de la companya del companya de la companya d
11.				Woody vine – All woody vines greater than 3.28 ft in height.
12.				noight.
	100%	Total Cov		
50% of total cover: <u>50.0</u>	_ 20% of	total cover:	20.0	
Woody Vine Stratum (Plot size: 30 ft r)				
1				
2				
3				
4				Hydrophytic
5				
5	=	Total Cov		Vegetation
	=			

Profile Desc	ription: (Describe	to the dep	th needed to docur	ment the	indicator	or confirm	n the absence	of indicators.)	
Depth	Matrix		Redox Features		- .	Demonstr			
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type ¹	Loc ²	<u>Texture</u>	Remarks	
0-5	10YR 4/2	90	5YR 4/6	10	_ <u>C</u>	PL / M	Silt Loam		
5 - 14	10YR 4/3	85	10YR 4/6	15	<u>C</u>	<u>M</u>	Silt Loam	Small rock fragments (10%)	
					_				
-									
					_				
17			De desert Metric M				21	Di Dan Linia a M Matria	
			=Reduced Matrix, MS LRRs, unless other			ains.		PL=Pore Lining, M=Matrix. for Problematic Hydric Soils ³ :	
Histosol		ouble to un	Polyvalue Be		•	RR S. T. I		Muck (A9) (LRR O)	
	oipedon (A2)		Thin Dark Su					Muck (A10) (LRR S)	
	stic (A3)		Loamy Muck				Reduced Vertic (F18) (outside MLRA 150A,B)		
	en Sulfide (A4)		Loamy Gleye		(F2)			ont Floodplain Soils (F19) (LRR P, S, T)	
	d Layers (A5)		Depleted Ma	. ,	(EQ)		·	alous Bright Loamy Soils (F20)	
	Bodies (A6) (LRR I		Redox Dark		` '		_ ,	RA 153B) arent Material (TF2)	
_	resence (A8) (LRR		Redox Depre					Shallow Dark Surface (TF12)	
	ick (A9) (LRR P, T)		Marl (F10) (L		/			(Explain in Remarks)	
	d Below Dark Surfa	ce (A11)	Depleted Oc						
	ark Surface (A12)		Iron-Mangan					cators of hydrophytic vegetation and	
	rairie Redox (A16) (lucky Mineral (S1) (A) Umbric Surfa Delta Ochric			, U)		tland hydrology must be present, ess disturbed or problematic.	
	Gleyed Matrix (S4)	Litit O, O,	Reduced Ver			50A, 150B)		cas disturbed of problematic.	
	Redox (S5)		Piedmont Flo						
	l Matrix (S6)		Anomalous E	Bright Loa	amy Soils	F20) (MLR	A 149A, 153C	, 153D)	
	rface (S7) (LRR P,								
	Layer (if observed)):							
Type:	-1 \						Hardela Oall	B	
	ches):						Hydric Soil	Present? Yes No	
Remarks:			- 4						
Hyaric s	soil indicator	was m	et.						

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	County: New Castle/New Castle County Sampling Date: 2021-09-09					
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-16					
Investigator(s): Craig Nein, Sarah Leidenheimer Section	on, Township, Range: N/A					
Landform (hillslope, terrace, etc.): Hillslope Local						
Subregion (LRR or MLRA): S 149A Lat: 39.699599						
Soil Map Unit Name: VoB - Urban land-Othello complex, 0 to 5 per						
Are climatic / hydrologic conditions on the site typical for this time of year? Y						
Are Vegetation, Soil, or Hydrology significantly distur						
Are Vegetation, Soil, or Hydrology naturally problems						
SUMMARY OF FINDINGS – Attach site map showing sam						
Hydrophytic Vegetation Present? Yes No						
Hydric Soil Present? Yes No	Is the Sampled Area					
Wetland Hydrology Present? Yes No	within a Wetland? Yes No					
Remarks:						
Upland plot on roadway embankment to the no	orth of w9.					
HYDROLOGY						
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)					
Surface Water (A1) High Water Table (A2) Aquatic Fauna (B13) Marl Deposits (B15) (LRI	Sparsely Vegetated Concave Surface (B8) R U) Drainage Patterns (B10)					
High Water Table (A2) Marl Deposits (B15) (LRR U) Saturation (A3) Marl Deposits (B15) (LRR U) Hydrogen Sulfide Odor (C1) Drainage Patterns (B10) Moss Trim Lines (B16)						
☐ Water Marks (B1) ☐ Oxidized Rhizospheres a	· · · · · · · · · · · · · · · · · · ·					
Sediment Deposits (B2) Presence of Reduced Iron (C4) Crayfish Burrows (C8)						
Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)						
Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2)						
☐ Iron Deposits (B5) ☐ Other (Explain in Remark						
Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U)					
Field Observations:	Gpriagrium moss (Do) (EKK 1, 0)					
Surface Water Present? Yes No Depth (inches):						
Water Table Present? Yes No ✓ Depth (inches):						
Saturation Present? Yes No Depth (inches):						
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre						
Describe Recorded Data (stream gauge, monitoring well, aerial priotos, pre	vious inspections), if available.					
Remarks:						
No wetland hydrology indicators were met.						
l l l l l l l l l l l l l l l l l l l						

		TD 40
Sampling	Point.	16-10

•	,	Absolute	Dominant	Indicator	Dominance Test worksheet:	\equiv
Tree Stratum (Plot size: 20 x 1	<u>0 ft</u>)	% Cover	Species?		Number of Dominant Species	
1. Fraxinus americana		20		FACU	That Are OBL, FACW, or FAC: 2 (A)	
2					Total Number of Dominant	
3					Species Across All Strata: 6 (B)	
4					Demant of Demain and Conscion	
5					Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/I	3)
6						-,
7					Prevalence Index worksheet:	
8					Total % Cover of: Multiply by:	
		20% =	Total Cov	er	OBL species $0 \times 1 = 0$	
	50% of total cover: 10.0				FACW species $0 \times 2 = 0$	
Sapling/Shrub Stratum (Plot size	: <u>20 x 10 ft</u>)				FAC species $30 \times 3 = 90$	
1. Baccharis halimifolia		15	~	FAC	FACU species 65 x 4 = 260	
2. Lonicera morrowii		5	~	FACU	UPL species <u>5</u> x 5 = <u>25</u>	
3. Rhus typhina		5		UPL	Column Totals: 100 (A) 375 (B)
4.					Prevalence Index = B/A = 3.8	
5.						
6					Hydrophytic Vegetation Indicators:	
7					1 - Rapid Test for Hydrophytic Vegetation	
8					2 - Dominance Test is >50%	
0		25% =	Total Cov	er	☐ 3 - Prevalence Index is ≤3.0¹	
	50% of total cover: 12.5				☐ Problematic Hydrophytic Vegetation¹ (Explain)	
Herb Stratum (Plot size: 20 x 1		20 /0 01	total cover.			
1. Solidago altissima)	30	~	FACU	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. Toxicodendron radicans		15		FAC	·	
3 Parthenocissus quinquef	olia	10		FACU	Definitions of Four Vegetation Strata:	
*·	•				Tree – Woody plants, excluding vines, 3 in. (7.6 cm)	
4					more in diameter at breast height (DBH), regardless of height.	of
5					noight.	
6					Sapling/Shrub – Woody plants, excluding vines, less	;
7					than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
8					,	s
9					of size, and woody plants less than 3.28 ft tall.	
10					Woody vine – All woody vines greater than 3.28 ft in	
11					height.	
12						
			Total Cov			
	50% of total cover: 27.5	20% of	total cover	11.0		
Woody Vine Stratum (Plot size:						
1						
2						
3						
4						
5					Hydrophytic	
		=	Total Cov	er	Vegetation	
	50% of total cover:	20% of	total cover		Present? Yes No	
Remarks: (If observed, list morp	hological adaptations belo	w).			•	\dashv
No hydrophytic vege	station indicators	woro	mot			
, , ,						
Plot sizes adjusted d	lue to proximity t	o wetla	and and	d roady	way.	
						1

Profile Desc	ription: (Describe	to the dep	th needed to docur	nent the	indicator	or confir	m the absence of inc	licators.)
Depth	Matrix (Natrix			- T	Demonstra			
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type'	Loc ²	Texture	Remarks
0-5	10YR 4/2	100				_	Silt Loam	
5 - 11	10YR 4/3	90	10YR 4/6	10	<u>C</u>	M	Silt Loam	
-								
_					_	_	<u> </u>	
							-	-
	-			-	_	-		
				_		_		
¹ Type: C=C	oncentration, D=De	pletion, RM:	Reduced Matrix, M	S=Maske	ed Sand G	rains.	² Location: PL=F	ore Lining, M=Matrix.
Hydric Soil	Indicators: (Appli	cable to all	LRRs, unless othe	rwise no	ted.)		Indicators for P	roblematic Hydric Soils³:
Histosol	(A1)		Polyvalue Be	elow Surf	ace (S8) (LRR S, T,	U) 1 cm Muck (A9) (LRR O)
Histic E	oipedon (A2)		🔲 Thin Dark Sເ					A10) (LRR S)
_	stic (A3)		Loamy Muck	-		R O)		rtic (F18) (outside MLRA 150A,B)
	en Sulfide (A4)		Loamy Gleye		(F2)			podplain Soils (F19) (LRR P, S, T)
_	d Layers (A5) Bodies (A6) (LRR I	. T III	Depleted Ma		(E6)			Bright Loamy Soils (F20)
	ucky Mineral (A7) (L		Redox Dark Depleted Da		. ,		(MLRA 15	Material (TF2)
	resence (A8) (LRR		Redox Depre					v Dark Surface (TF12)
	ick (A9) (LRR P, T)		Marl (F10) (L		. 0,			in in Remarks)
	d Below Dark Surfa		Depleted Oc	-) (MLRA 1	151)		,
	ark Surface (A12)		Iron-Mangan	ese Mas	ses (F12)	(LRR O, F	P, T) ³ Indicators	of hydrophytic vegetation and
	rairie Redox (A16) (· —					ydrology must be present,
_	Mucky Mineral (S1)	(LRR O, S)	Delta Ochric					sturbed or problematic.
_	Gleyed Matrix (S4)		Reduced Ver					
	Redox (S5) I Matrix (S6)		Piedmont Flo				149A) RA 149A, 153C, 153[1
=	rface (S7) (LRR P ,	S T III	Anomaious E	origini Lo	arriy Solis	(F20) (IVIL	KA 149A, 133C, 133L	<i>'</i>)
	Layer (if observed							
	cky substrate	,-						
, , <u> </u>	ches): > 11						Hydric Soil Prese	ent? Yes No 🗸
Remarks:	ones).						Tiyano con i ica	103 140
	io opil indiga	toro w	ro mot					
No nyar	ic soil indica	itors we	ere met.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	ounty: New Castle/New Castle County Sampling Date: 2021-09-09							
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-17							
	nvestigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A							
	relief (concave, convex, none): Concave Slope (%): 0							
Subregion (LRR or MLRA): S 149A Lat: 39.699956	,							
Soil Map Unit Name: Urban land-Othello complex, 0 to 5 percent s								
Are climatic / hydrologic conditions on the site typical for this time of year? You								
Are Vegetation, Soil, or Hydrology significantly disturt								
Are Vegetation, Soil, or Hydrology naturally problema	atic? (If needed, explain any answers in Remarks.)							
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.							
Hydrophytic Vegetation Present? Yes No	In the County of Asses							
Hydric Soil Present? Yes V No No	Is the Sampled Area within a Wetland? Yes No							
Wetland Hydrology Present? Yes <u>✓</u> No	within a wetland? Tes No							
Remarks:								
Mixed PEM/PSS wetland (W10) just east of the	SR 141 bridges over I-295, in the exit ramp							
loop.								
HYDROLOGY								
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)							
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)							
Surface Water (A1) High Water Table (A2) Aquatic Fauna (B13) Marl Deposits (B15) (LRF	Sparsely Vegetated Concave Surface (B8) U) Drainage Patterns (B10)							
Saturation (A3) Hydrogen Sulfide Odor (C								
Water Marks (B1) Water Marks (B1) Oxidized Rhizospheres al	· · · · · · · · · · · · · · · · · · ·							
Sediment Deposits (B2) Presence of Reduced Iron								
Drift Deposits (B3) Recent Iron Reduction in	_ ` · · · · · · · · · · · · · · · · · ·							
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)							
Iron Deposits (B5) Other (Explain in Remark	_ · · · · · · · · · · · · · · · · · · ·							
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)							
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)							
Field Observations:								
Surface Water Present? Yes No Depth (inches): 2								
Water Table Present? Yes No Depth (inches): 14								
Saturation Present? Yes Vo Depth (inches): 10	Wetland Hydrology Present? Yes No							
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre-	vious inspections), if available:							
Google Earth 2021, Web Soil Survey of New Ca	stle County							
Remarks:	•							
Multiple wetland hydrology indicators were me	t.							

20 # "		Dominant		Dominance Test worksheet:	
Tree Stratum (Plot size: 30 ft r		Species?		Number of Dominant Species	
1. Liquidambar styraciflua	15		FAC	That Are OBL, FACW, or FAC: 5 (A	()
2. Ulmus americana	10		FAC	Total Number of Dominant	
3				Species Across All Strata: 6 (B	3)
4					
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A	VB)
6.				That Ale OBE, I AOW, OI I AO.	(10)
7.				Prevalence Index worksheet:	
				Total % Cover of: Multiply by:	
8		Total Cov		OBL species 40 x 1 = 40	
12.5				FACW species 25 x 2 = 50	
50% of total cover: 12.5	20% of	total cover	5.0	FAC species 55 x 3 = 165	
Sapling/Shrub Stratum (Plot size: 30 ft r)			540	FACU species 5 x 4 = 20	
1. Baccharis halimifolia	30		FAC	UPL species 0 x 5 = 0	
2. Salix nigra	5		OBL	· —	(D)
3				Column Totals: <u>125</u> (A) <u>275</u> ('B)
4				Prevalence Index = B/A = 2.2	
5				Hydrophytic Vegetation Indicators:	
6				1 - Rapid Test for Hydrophytic Vegetation	
7				2 - Dominance Test is >50%	
8				☑ 3 - Prevalence Index is ≤3.0 ¹	
		= Total Cov		Problematic Hydrophytic Vegetation¹ (Explain)	
50% of total cover: 17.5				Problematic Trydrophytic Vegetation (Explain)	
Herb Stratum (Plot size: 30 ft r)			·	1	
1. Phragmites australis	25	~	FACW	¹ Indicators of hydric soil and wetland hydrology mus be present, unless disturbed or problematic.	it
2. Lythrum salicaria	20	<u> </u>	OBL	·	
				Definitions of Four Vegetation Strata:	
3. Hibiscus moscheutos	10		OBL	Tree – Woody plants, excluding vines, 3 in. (7.6 cm)) or
4. Persicaria punctata	5		OBL	more in diameter at breast height (DBH), regardless	of
5				height.	
6				Sapling/Shrub – Woody plants, excluding vines, les	ss
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
8.				Horte All banks account (non-viscodis) plants proposition	
9.				Herb – All herbaceous (non-woody) plants, regardle of size, and woody plants less than 3.28 ft tall.	SS
10				Woody vine – All woody vines greater than 3.28 ft in	n
11				height.	
12	000/				
		= Total Cov			
50% of total cover: 30.0	20% of	total cover	12.0		
Woody Vine Stratum (Plot size: 30 ft r)					
1. Parthenocissus quinquefolia	5		FACU		
2					
3					
4					
5.				The decorded in	
0.		= Total Cov		Hydrophytic Vegetation	
50% of total cover: 2.5		total cover		Present? Yes No	
Remarks: (If observed, list morphological adaptations belo		total cover			
, , , , , , , , , , , , , , , , , , , ,	•				
Hydrophytic vegetation indicator wa	s met.				

Profile Desc	ription: (Describe	to the depth	n needed to docur	nent the i	indicator	or confirm	the absence o	f indicators.)		
Depth	Matrix (Matrix		Redox Features				Tautura			
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type'	Loc 2	<u>Texture</u>	Remarks		
0 - 14	10YR 4/2	_ 90	7.5YR 4/6	10	<u>C</u>	PL / M	Silt Loam			
-										
	-			· ———	. ———			<u> </u>		
-					· 					
	oncentration, D=De					rains.		PL=Pore Lining, M=Matrix.		
l <u> </u>	Indicators: (Appli	cable to all L						or Problematic Hydric Soils ³ :		
Histosol	` '		Polyvalue Be					uck (A9) (LRR O)		
_	oipedon (A2)		Thin Dark Su					uck (A10) (LRR S)		
Black Hi	en Sulfide (A4)		Loamy Muck	-		λ ()		d Vertic (F18) (outside MLRA 150A,B) nt Floodplain Soils (F19) (LRR P, S, T)		
	d Layers (A5)		Depleted Ma		(1 2)			ous Bright Loamy Soils (F20)		
	Bodies (A6) (LRR I	P, T, U)	Redox Dark		- 6)			A 153B)		
	icky Mineral (A7) (L		Depleted Dai	rk Surface	(F7)		Red Par	rent Material (TF2)		
	esence (A8) (LRR		Redox Depre		8)			allow Dark Surface (TF12)		
	ick (A9) (LRR P, T)		Marl (F10) (L				U Other (E	Explain in Remarks)		
_	d Below Dark Surfa	ce (A11)	Depleted Ocl				T) 3Indian	tors of hydrophytic vegetation and		
	ark Surface (A12) rairie Redox (A16) (MI RΔ 150Δ)					•	and hydrology must be present,		
	lucky Mineral (S1)		Delta Ochric					ss disturbed or problematic.		
_	Gleyed Matrix (S4)	,	Reduced Ver							
_	tedox (S5)		Piedmont Flo							
	Matrix (S6)		Anomalous E	Bright Loai	my Soils	(F20) (MLR	A 149A, 153C,	153D)		
	rface (S7) (LRR P,						1			
	_ayer (if observed)):								
Type:										
	ches):						Hydric Soil P	Present? Yes No		
Remarks:			_							
Hydric s	oil indicator	was me	t							

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	ounty: New Castle/New Castle County Sampling Date: 2021-09-09						
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-18						
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A							
Landform (hillslope, terrace, etc.): Hillslope Local							
Subregion (LRR or MLRA): S 149A Lat: 39.700101 Long: -75.600845 Datum: WGS 84							
Soil Map Unit Name: VoB - Urban land-Othello complex, 0 to 5 per	cent slopesNWI classification: N/A						
Are climatic / hydrologic conditions on the site typical for this time of year? You							
Are Vegetation, Soil, or Hydrology significantly disturb							
Are Vegetation, Soil, or Hydrology naturally problema							
SUMMARY OF FINDINGS – Attach site map showing sam							
Hydrophytic Vegetation Present? Yes No							
Hydrophytic Vegetation Present? Yes No V Hydric Soil Present? Yes No V	Is the Sampled Area						
Wetland Hydrology Present? Yes No	within a Wetland? Yes No						
Remarks:							
Upland plot along roadway embankment, to the	e north of W10.						
HYDROLOGY							
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)						
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)						
Surface Water (A1) Aquatic Fauna (B13) And Reposite (B45) (B5)	Sparsely Vegetated Concave Surface (B8)						
High Water Table (A2) Saturation (A3) Hydrogen Sulfide Odor (C							
Water Marks (B1) Water Marks (B1) Oxidized Rhizospheres al	· · · · · · · · · · · · · · · · · · ·						
Sediment Deposits (B2) Presence of Reduced Iron							
Drift Deposits (B3)	Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)						
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)						
☐ Iron Deposits (B5) ☐ Other (Explain in Remark							
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U)						
☐ Water-Stained Leaves (B9) Field Observations:	Germagnum moss (Do) (ERR 1, 0)						
Surface Water Present? Yes No _ C Depth (inches):							
Water Table Present? Yes No Depth (inches):							
Saturation Present? Yes No Depth (inches):							
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre							
Google Earth 2021, Web Soil Survey of New Ca	· · · · · · · · · · · · · · · · · · ·						
Remarks:	•						
No wetland hydrology indicators were met.							

Sampling	Point-	TP-18
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,				T	=
To a Otraction (Distains 20 v 10 ft		Dominant		Dominance Test worksheet:	
Tree Stratum (Plot size: 20 x 10 ft)		Species?		Number of Dominant Species	
1				That Are OBL, FACW, or FAC: 1 (A)	
2				Total Number of Deminant	
3				Total Number of Dominant Species Across All Strata: 6 (B)	.
				Species / toross / tir circuta.	
4				Percent of Dominant Species	
5	· ——			That Are OBL, FACW, or FAC: 17 (A/I	B)
6				December of the december of	
7				Prevalence Index worksheet:	
8				Total % Cover of: Multiply by:	
		Total Cov	/or	OBL species <u>0</u> x 1 = <u>0</u>	
				FACW species <u>0</u> x 2 = <u>0</u>	
50% of total cover:	20% of	total cover	·	FAC species 30 x 3 = 90	
Sapling/Shrub Stratum (Plot size: 20 x 10 ft)					
1. Lonicera maackii	20		UPL		
2. Rosa multiflora	10	~	FACU	UPL species <u>25</u> x 5 = <u>125</u>	
3 Baccharis halimifolia	5		FAC	Column Totals: <u>110</u> (A) <u>435</u> (B	3)
	5		UPL		
4. Rhus typhina				Prevalence Index = B/A = 4.0	
5				Hydrophytic Vegetation Indicators:	
6				1 - Rapid Test for Hydrophytic Vegetation	
7					
				2 - Dominance Test is >50%	
8	400/			3 - Prevalence Index is ≤3.0¹	
		= Total Cov		Problematic Hydrophytic Vegetation ¹ (Explain)	
50% of total cover: 20.0	20% of	total cover	8.0		
Herb Stratum (Plot size: 20 x 10 ft)				¹ Indicators of hydric soil and wetland hydrology must	
1 Baccharis halimifolia	20	~	FAC	be present, unless disturbed or problematic.	
2 Ageratina altissima	15		FACU	· ·	
			$\overline{}$	Definitions of Four Vegetation Strata:	
3. Rosa multiflora	15		FACU	Tree – Woody plants, excluding vines, 3 in. (7.6 cm)	or
4. Solidago altissima	15		FACU	more in diameter at breast height (DBH), regardless of	
5. Toxicodendron radicans	5		FAC	height.	
6					
6				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.	3
7				than 3 iii. DBH and greater than 3.20 it (1 iii) taii.	
8				Herb – All herbaceous (non-woody) plants, regardles	ss
9				of size, and woody plants less than 3.28 ft tall.	
10.					
11.				Woody vine – All woody vines greater than 3.28 ft in height.	1
				neight.	
12					
		= Total Cov			-
50% of total cover: <u>35.0</u>	20% of	total cover	14.0		
Woody Vine Stratum (Plot size: 20 x 10 ft)					
1.					
2					
3					
4.					
5					
J				Hydrophytic	
		= Total Cov		Vegetation Present? Yes No	
50% of total cover:	20% of	total cover		1105cm: 105 105	
Remarks: (If observed, list morphological adaptations belo	ow).			1	_
	•				
No hydrophytic vegetation indicator	s were	met.			
Plot sizes adjusted due to proximity	to woth	and and	d roads	Mav	
riot sizes aujusteu due to proximity	to well	anu an	a roau\	way.	

Profile Desc	ription: (Describe	to the dept	h needed to docum	nent the i	ndicator	or confir	m the absence of i	indicators.)
Depth	Matrix (Natrix	0/	Redox Features					D
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type'	Loc ²	Texture	Remarks
0-8	10YR 4/3	95	10YR 4/6	5	С	M	Silt Loam	
-						-	.	
							<u> </u>	
-								
-								
							·	
					-			_
17			De desert Matrice NAC				21ti DI	Daniel linium M. Matria
	oncentration, D=De Indicators: (Applicators)					rains.		=Pore Lining, M=Matrix. Problematic Hydric Soils ³ :
Histosol			Polyvalue Be			IRRST		k (A9) (LRR O)
	oipedon (A2)		Thin Dark Su					k (A10) (LRR S)
	stic (A3)		Loamy Muck					Vertic (F18) (outside MLRA 150A,B)
Hydroge	en Sulfide (A4)		Loamy Gleye	ed Matrix (F2)		Piedmont	Floodplain Soils (F19) (LRR P, S, T)
	d Layers (A5)		Depleted Mat					s Bright Loamy Soils (F20)
	Bodies (A6) (LRR I		Redox Dark	•	,		(MLRA 1	
	icky Mineral (A7) (L esence (A8) (LRR I		Depleted Dar					nt Material (TF2) low Dark Surface (TF12)
	ick (A9) (LRR P, T)		Marl (F10) (L		0)			plain in Remarks)
	d Below Dark Surfa		Depleted Och		(MLRA 1	51)	` ` ` '	,
	ark Surface (A12)		Iron-Mangan			•		rs of hydrophytic vegetation and
	rairie Redox (A16) (d hydrology must be present,
	Mucky Mineral (S1) (Gleyed Matrix (S4)	LRR O, S)	Delta Ochric Reduced Ver					disturbed or problematic.
	Redox (S5)		Piedmont Flo					
	Matrix (S6)						RA 149A, 153C, 15	53D)
	rface (S7) (LRR P,							
	Layer (if observed)):						
, , <u> </u>	cky substrate							_
Depth (in	ches): <u>> 8</u>						Hydric Soil Pre	esent? Yes No
Remarks:								
No hydr	ic soil indica	tors we	re met.					
Fill mate	erial near toe	of road	wav emankı	ment				

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	County: New Castle/New Castle County Sampling Date: 2021-09-09						
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-19						
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A							
Landform (hillslope, terrace, etc.): Hillslope Local							
Subregion (LRR or MLRA): S 149A Lat: 39.700363 Long: -75.599152 Datum: WGS 84							
Soil Map Unit Name: VoB - Urban land-Othello complex, 0 to 5 per	rcent slopesNWI classification: N/A						
Are climatic / hydrologic conditions on the site typical for this time of year? Y							
Are Vegetation, Soil, or Hydrology significantly distur							
Are Vegetation, Soil, or Hydrology naturally problems							
SUMMARY OF FINDINGS – Attach site map showing sam							
Hydrophytic Vegetation Present? Yes No✓ Hydric Soil Present? Yes No✓	Is the Sampled Area						
Wetland Hydrology Present? Yes No	within a Wetland? Yes No						
Remarks:							
Hill slope to the north of W11, along the south s	ide of I-295 NB.						
HYDROLOGY							
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)						
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)						
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)						
High Water Table (A2) Saturation (A3) High Water Table (A2) Hydrogen Sulfide Odor (0							
Water Marks (B1) Oxidized Rhizospheres a							
Sediment Deposits (B2) Presence of Reduced Iro							
Drift Deposits (B3)	Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9)						
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)						
☐ Iron Deposits (B5) ☐ Other (Explain in Remark							
Inundation Visible on Aerial Imagery (B7) Water-Stained Leaves (B9)	FAC-Neutral Test (D5) Sphagnum moss (D8) (LRR T, U)						
Field Observations:	Gpriagnum moss (Do) (ERR 1, 0)						
Surface Water Present? Yes No Depth (inches):							
Water Table Present? Yes No V Depth (inches):							
Saturation Present? Yes No Depth (inches):							
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:						
Google Earth 2021, Web Soil Survey of New Ca	. ,						
Remarks:							
No wetland hydrology indicators were met.							

Sampling	Point-	TP-19
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Absolute	Dominant	Indicator	Dominance Test worksheet:
	Species?		Number of Dominant Species
			That Are OBL, FACW, or FAC: 0 (A)
			Total Number of Dominant Species Across All Strata: 8 (B)
			Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)
			Prevalence Index worksheet:
			Total % Cover of: Multiply by:
20%			OBL species 0 x 1 = 0
			FACW species $0 x 2 = 0$
_ 20% of	total cover:	4.0	FAC species 5 x 3 = 15
00	,	LIDI	FACU species 95 x 4 = 380
			UPL species 40 x 5 = 200
			Column Totals: 140 (A) 595 (B)
5		FAC	Column rotals (A) (B)
			Prevalence Index = B/A = 4.3
			Hydrophytic Vegetation Indicators:
			2 - Dominance Test is >50%
			3 - Prevalence Index is ≤3.0¹
45% =	Total Cov	er	Problematic Hydrophytic Vegetation ¹ (Explain)
20% of	total cover:	9.0	- Posicinato Hydrophytic Vogotation (Explain)
_			¹ Indicators of hydric soil and wetland hydrology must
25	~	FACU	be present, unless disturbed or problematic.
20	~	FACU	Definitions of Four Vegetation Strata:
15		FACU	
5			Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
			more in diameter at breast height (DBH), regardless of height.
			Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
			than 5 in. DBH and greater than 5.25 it (1 iii) tail.
			Herb – All herbaceous (non-woody) plants, regardless
			of size, and woody plants less than 3.28 ft tall.
			Woody vine – All woody vines greater than 3.28 ft in
			height.
_ 20% of	total cover:	13.0	
10		FACU	
			Hydrophytic
			Hydrophytic Vegetation
10% =		er	
	20% = 20% of 20 = 20% of 25 = 20	20% = Total Cover: 20	10

Profile Desc	cription: (Describe	to the dep	oth needed to docur	ment the	indicator	or confi	rm the absence of ir	ndicators.)
Depth	Matrix	0/		x Featur		Loc ²		
(inches) 0 - 4	Color (moist)	<u>%</u> 05	Color (moist)	<u>%</u> 15	Type ¹		Texture	Remarks
	10YR 4/3	85	10YR 5/6	15	_ <u>C</u>	M	Loam	_
4 - 14	10YR 6/6	80	10YR 4/3	20	<u> D</u>	M	Loam	
			-					
					_			
-								
¹ Type: C=C	oncentration, D=De	pletion, RM	=Reduced Matrix, M	S=Maske	ed Sand G	rains.	² Location: PL=	Pore Lining, M=Matrix.
			LRRs, unless other					Problematic Hydric Soils³:
Histosol	, ,		Polyvalue Be					
· =	oipedon (A2)		Thin Dark Su					(A10) (LRR S)
	stic (A3)		Loamy Muck	-		₹ 0)	77	Vertic (F18) (outside MLRA 150A,B)
_	en Sulfide (A4) d Layers (A5)		☐ Loamy Gleye☐ Depleted Ma		(FZ)			Floodplain Soils (F19) (LRR P, S, T) Big Bright Loamy Soils (F20)
_	Bodies (A6) (LRR	P, T, U)	Redox Dark		(F6)		(MLRA 1	
	ıcky Mineral (A7) (L		Depleted Da	rk Surfac	e (F7)		Red Parent	t Material (TF2)
	resence (A8) (LRR		Redox Depre		F8)			ow Dark Surface (TF12)
	uck (A9) (LRR P, T)		Marl (F10) (L		\	E4)	U Other (Exp	lain in Remarks)
	d Below Dark Surfa ark Surface (A12)	ce (ATT)	☐ Depleted Oct				P. T) ³ Indicators	s of hydrophytic vegetation and
	rairie Redox (A16)	MLRA 150						hydrology must be present,
	Mucky Mineral (S1)	(LRR O, S)	Delta Ochric				unless o	disturbed or problematic.
	Gleyed Matrix (S4)		Reduced Ver					
	Redox (S5) I Matrix (S6)		Piedmont Flo					20)
	rface (S7) (LRR P,	S. T. U)	Anomalous E	Bright Loa	amy Solls	(F2U) (IVIL	RA 149A, 153C, 153	30)
	Layer (if observed							
Type:	• •							
Depth (in	ches):						Hydric Soil Pres	sent? Yes No
Remarks:								
No hydr	ic soil indica	tors w	ere met.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	ounty: New Castle/New Castle County Sampling Date: 2021-09-09							
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-20							
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A								
Landform (hillslope, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 0								
Subregion (LRR or MLRA): S 149A Lat: 39.700397 Long: -75.598932 Datum: WGS 84								
Soil Map Unit Name: VoB - Urban land-Othello complex, 0 to 5 per								
Are climatic / hydrologic conditions on the site typical for this time of year? You								
Are Vegetation, Soil, or Hydrology significantly disturt								
Are Vegetation, Soil, or Hydrology naturally problema								
SUMMARY OF FINDINGS – Attach site map showing sam								
Lhydrophytic Vagetation Dracont2								
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No No No No No No No N	Is the Sampled Area							
Wetland Hydrology Present? Yes V No No	within a Wetland? Yes No							
Remarks:								
PEM wetland (W11) located east of the I-295/SR 141 interchange.								
HYDROLOGY								
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)							
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)							
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)							
High Water Table (A2) Saturation (A3) Hydrogen Sulfide Odor (C								
 	· · · · · · · · · · · · · · · · · · ·							
☐ Water Marks (B1) ☐ Oxidized Rhizospheres all ☐ Sediment Deposits (B2) ☐ Presence of Reduced Iron								
Drift Deposits (B3) Presence of Reduction in	_ ` · · · · · · · · · · · · · · · · · ·							
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)							
Iron Deposits (B5) Other (Explain in Remark	_ · · · · · · · · · · · · · · · · · · ·							
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)							
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)							
Field Observations:								
Surface Water Present? Yes No Depth (inches): 2-3								
Water Table Present? Yes No Depth (inches): 0								
Saturation Present? Yes V No Depth (inches): 0	Wetland Hydrology Present? Yes No							
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre-	vious inspections), if available:							
Google Earth 2021, Web Soil Survey of New Ca	stle County							
Remarks:								
Multiple wetland hydrology indicators were me	t.							

00.6	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 30 ft r	% Cover	Species?	<u>Status</u>	Number of Dominant Species	
1				That Are OBL, FACW, or FAC: 1	(A)
2				Total News hours of Daniel and	
3.				Total Number of Dominant Species Across All Strata: 1	(B)
4.				epodes / toross / tir otrata.	(5)
				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: 100	(A/B)
6				Prevalence Index worksheet:	
7					
8				Total % Cover of: Multiply by:	_
		Total Cov		OBL species $0 \times 1 = 0$	_
50% of total cover:				FACW species <u>95</u> x 2 = <u>190</u>	=
Sapling/Shrub Stratum (Plot size: 30 ft r)		total cover		FAC species 0 x 3 = 0	_
				FACU species <u>0</u> x 4 = <u>0</u>	
1				UPL species 0 x 5 = 0	='
2				Column Totals: 95 (A) 190	(D)
3				Column Totals. <u>99</u> (A) <u>199</u>	_ (D)
4				Prevalence Index = B/A = 2.0	
5.					_
6.				Hydrophytic Vegetation Indicators:	
				1 - Rapid Test for Hydrophytic Vegetation	
7				2 - Dominance Test is >50%	
8				② 3 - Prevalence Index is ≤3.0 ¹	
	=	Total Cov	er	Problematic Hydrophytic Vegetation ¹ (Explain	1)
50% of total cover:	20% of	total cover		_ , , , , , , ,	,
Herb Stratum (Plot size: 30 ft r)				Indicators of budgie call and watland budgelogy m	uet
1. Phragmites australis	95	~	FACW	¹ Indicators of hydric soil and wetland hydrology m be present, unless disturbed or problematic.	usi
"					
2				Definitions of Four Vegetation Strata:	
3				Tree – Woody plants, excluding vines, 3 in. (7.6 c	m) or
4				more in diameter at breast height (DBH), regardle	ss of
5				height.	
6				Sapling/Shrub – Woody plants, excluding vines,	less
7.				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	1000
8				Herb – All herbaceous (non-woody) plants, regard	dless
9				of size, and woody plants less than 3.28 ft tall.	
10				Woody vine – All woody vines greater than 3.28 to	ft in
11				height.	
12.					
	95% =	= Total Cov	er		
50% of total cover: 47.5					
Woody Vine Stratum (Plot size: 30 ft r)	20 /0 01	Juli OUVEI			
1					
2					
3					
4					
5				Undrankutia	
		Total Cov	or	Hydrophytic Vegetation	
500/ 51 / 1				Present? Yes No	
50% of total cover:		total cover			
Remarks: (If observed, list morphological adaptations belo	w).				
Hydrophytic vegetation indicator wa	s met.				

Profile Desc	ription: (Describe	to the dep	th needed to docur	nent the	indicator	or confirm	the absence of inc	dicators.)
Depth	Matrix		Redo	x Feature				
(inches)	Color (moist)	%	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks
0-8	10YR 4/2	90	5YR 4/6	10	<u>C</u>	PL / M	Silt Loam	
8 - 14	10YR 4/1	85	5YR 4/6	15	С	М	Silty Clay Loam	
-								
					-	·		
-								
¹Type: C=C	oncentration. D=De	pletion. RM:	Reduced Matrix, MS	S=Maske	d Sand G	rains.	² Location: PL=P	Pore Lining, M=Matrix.
			LRRs, unless other					roblematic Hydric Soils ³ :
Histosol	(A1)		Polyvalue Be	low Surfa	ace (S8) (LRR S. T. U	J) 1 cm Muck (A9) (LRR O)
	oipedon (A2)		Thin Dark Su					A10) (LRR S)
	stic (A3)		Loamy Muck	y Mineral	(F1) (LR I	₹ 0)	Reduced Ve	rtic (F18) (outside MLRA 150A,B)
	en Sulfide (A4)		Loamy Gleye	ed Matrix	(F2)			oodplain Soils (F19) (LRR P, S, T)
	d Layers (A5)		✓ Depleted Ma					Bright Loamy Soils (F20)
= -	Bodies (A6) (LRR I		Redox Dark		,		(MLRA 15	
	icky Mineral (A7) (L							Material (TF2)
	esence (A8) (LRR luck (A9) (LRR P, T)		Redox Depre		-8)			v Dark Surface (TF12) nin in Remarks)
	d Below Dark Surfa		Depleted Ocl	•	(MIRA 1	51)	Other (Expla	iii iii Neiliaiks)
	ark Surface (A12)	(, , , , ,	☐ Iron-Mangan				T) ³ Indicators	of hydrophytic vegetation and
_	rairie Redox (A16) (MLRA 150					•	nydrology must be present,
Sandy N	Mucky Mineral (S1)	(LRR O, S)	Delta Ochric	(F17) (M	LRA 151)		unless dis	sturbed or problematic.
	Sleyed Matrix (S4)		Reduced Ver					
	Redox (S5)		Piedmont Flo					
	Matrix (S6)		Anomalous E	Bright Loa	my Soils	(F20) (MLR	A 149A, 153C, 153D	P)
	rface (S7) (LRR P,						1	
	Layer (if observed):						
Type:			<u></u>					
Depth (in	ches):						Hydric Soil Prese	ent? Yes V No No
Remarks:								
Hydric s	soil indicator	was m	et.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	ounty: New Castle/New Castle County Sampling Date: 2021-09-22							
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-21							
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A								
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): < 1								
Subregion (LRR or MLRA): S 149A Lat: 39.700453 Long: -75.587386 Datum: WGS 84								
Soil Map Unit Name: OtA - Othello silt loams, 0 to 2 percent slopes	, northern coastal plain NWI classification: N/A							
Are climatic / hydrologic conditions on the site typical for this time of year? You								
Are Vegetation, Soil, or Hydrology significantly disturt								
Are Vegetation, Soil, or Hydrology naturally problema								
SUMMARY OF FINDINGS – Attach site map showing sam								
	pling point rocations, transcots, important reatures, etc.							
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area							
Hydric Soil Present? Yes <u>✓</u> No	within a Wetland? Yes No							
Wetland Hydrology Present? Yes <u>✓</u> No								
Remarks:								
PFO wetland (W12) located south of I-295 NB a	and west of the pump house.							
The western end of the wetland starts at stream	m flag S4-43.							
HYDROLOGY								
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)							
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)							
Surface Water (A1)	Sparsely Vegetated Concave Surface (B8)							
High Water Table (A2) Marl Deposits (B15) (LRF								
Saturation (A3) Hydrogen Sulfide Odor (C								
Water Marks (B1) Oxidized Rhizospheres al	· · · · · · · · · · · · · · · · · · ·							
Sediment Deposits (B2) Presence of Reduced Iron								
Drift Deposits (B3) Recent Iron Reduction in	_ ` · · · · · · · · · · · · · · · · · ·							
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)							
Iron Deposits (B5) Other (Explain in Remark	_ · · · · · · · · · · · · · · · · · · ·							
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)							
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)							
Field Observations:								
Surface Water Present? Yes No Depth (inches): 6-8								
Water Table Present? Yes No Depth (inches): 0								
Saturation Present? Yes No Depth (inches): 0	Wetland Hydrology Present? Yes No							
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre-	vieus inspections) if available:							
Google Earth 2021, Web Soil Survey of New Ca	· · · · · · · · · · · · · · · · · · ·							
Remarks:	one county							
Multiple wetland hydrology indicators were me	t.							

45.6	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 15 ft r		Species?		Number of Dominant Species
1. Acer negundo	40		FAC	That Are OBL, FACW, or FAC: 7 (A)
2. Fraxinus pennsylvanica	15		FACW	Total Number of Dominant
3. Ulmus americana	10		FAC	Species Across All Strata: 7 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100 (A/B)
6				
7				Prevalence Index worksheet:
8				Total % Cover of: Multiply by:
	65% =	Total Cov	er	OBL species $0 \times 1 = 0$
50% of total cover: 32.5	20% of	total cover:	13.0	FACW species 45 x 2 = 90
Sapling/Shrub Stratum (Plot size: 15 ft r)				FAC species <u>70</u> x 3 = <u>210</u>
1. Fraxinus pennsylvanica	15	✓	FACW	FACU species <u>0</u>
2. Acer negundo	10		FAC	UPL species <u>5</u> x 5 = <u>25</u>
	5		UPL	Column Totals: 120 (A) 325 (B)
				2.7
4 5.				Prevalence Index = B/A = 2.7
· 				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
8	20%			☑ 3 - Prevalence Index is ≤3.0 ¹
45.0		Total Cov		Problematic Hydrophytic Vegetation¹ (Explain)
50% of total cover: <u>15.0</u>	20% of	total cover:	6.0	
Herb Stratum (Plot size: 15 ft r)				¹ Indicators of hydric soil and wetland hydrology must
1. Phragmites australis	15		FACW	be present, unless disturbed or problematic.
2. Toxicodendron radicans	5		FAC	Definitions of Four Vegetation Strata:
3				Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4				more in diameter at breast height (DBH), regardless of
5				height.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8				Herb – All herbaceous (non-woody) plants, regardless
9				of size, and woody plants less than 3.28 ft tall.
10.				Was desided. Allowed by design a second of the control of the cont
11.				Woody vine – All woody vines greater than 3.28 ft in height.
12.				noight.
·	20% =	Total Cov		
50% of total cover: 10.0				
Woody Vine Stratum (Plot size: 15 ft r)	20 /0 01	iolai covei.		
1 Toxicodendron radicans	5	./	FAC	
·· ————			170	
2				
3				
4				
5				Hydrophytic
		Total Cov		Vegetation Present? Yes No
50% of total cover: 2.5	20% of	total cover:	1.0	11030111: 163 140
Remarks: (If observed, list morphological adaptations belo	w).			1

Hydrophytic vegetation indicator was met.

Plot sizes adjusted due to size and linear shape of wetland.

Profile Desc	ription: (Describe	to the dep	th needed to docur	nent the	indicator	or confirm	n the absence	of indicators.)
Depth	Matrix	0/		x Featur		Loc ²	- .	D .
(inches) 0 - 2	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type'	Loc ²	<u>Texture</u>	Remarks This revel lever (conris)
	10YR 2/2	100					Muck	Thin muck layer (sapric)
2 - 10	10YR 4/2	90	7.5YR 4/6	10	<u> </u>	PL / M	Silty Clay Loam	
10 - 14	10YR 3/2	100					Sandy Loam	
-								
		 		-				
17			Dada ad Madaia M				21	Di Dana Linia a M. Matria
			Reduced Matrix, MS			rains.		PL=Pore Lining, M=Matrix. for Problematic Hydric Soils ³ :
Histosol		Jubio to un	Polyvalue Be		•	IRRSTI		Muck (A9) (LRR O)
_	oipedon (A2)		Thin Dark Su				. —	Muck (A10) (LRR S)
 	stic (A3)		Loamy Muck					ed Vertic (F18) (outside MLRA 150A,B)
	en Sulfide (A4)		Loamy Gleye		(F2)			ont Floodplain Soils (F19) (LRR P, S, T)
	d Layers (A5)		Depleted Ma		(50)			alous Bright Loamy Soils (F20)
	Bodies (A6) (LRR I cky Mineral (A7) (L		Redox Dark		,		_ ·	RA 153B) arent Material (TF2)
	esence (A8) (LRR I		Redox Depre					Shallow Dark Surface (TF12)
	ick (A9) (LRR P, T)	-,	Marl (F10) (L		/			(Explain in Remarks)
	d Below Dark Surfac	ce (A11)	Depleted Oc	•	, .	•		
	ark Surface (A12)		Iron-Mangan				•	cators of hydrophytic vegetation and
	rairie Redox (A16) (lucky Mineral (S1) (Umbric Surfa Delta Ochric					land hydrology must be present, ess disturbed or problematic.
	Gleyed Matrix (S4)	LKK 0, 3)	Reduced Vei					ess disturbed of problematic.
	Redox (S5)		Piedmont Flo					
	Matrix (S6)		Anomalous E	Bright Lo	amy Soils	(F20) (MLR	A 149A, 153C	, 153D)
	rface (S7) (LRR P,						T	
	Layer (if observed)):						
Type:								
	ches):						Hydric Soil	Present? Yes V No No
Remarks:			_					
Hydric s	oil indicator	was m	et.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	Sounty: New Castle/New Castle County Sampling Date: 2021-09-22							
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-22							
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A								
Landform (hillslope, terrace, etc.): Hillslope Local								
Subregion (LRR or MLRA): S 149A Lat: 39.700513								
Soil Map Unit Name: OtA - Othello silt loams, 0 to 2 percent slopes	s, northern coastal plain NWI classification. N/A							
Are climatic / hydrologic conditions on the site typical for this time of year? Y								
Are Vegetation, Soil, or Hydrology significantly distur								
Are Vegetation, Soil, or Hydrology naturally problems								
SUMMARY OF FINDINGS – Attach site map showing sam								
Hadanakatia Vandatian Buranto								
Hydrophytic Vegetation Present? Yes No V Hydric Soil Present? Yes No V	Is the Sampled Area							
Wetland Hydrology Present? Yes No	within a Wetland? Yes No							
Remarks:								
Upland plot on roadway embankment to the north of TP-21 (W12).								
HYDROLOGY								
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)							
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)							
Surface Water (A1) Aquatic Fauna (B13) Aud Bonovita (B45) (B15)	Sparsely Vegetated Concave Surface (B8)							
High Water Table (A2) Saturation (A3) Hydrogen Sulfide Odor (6								
Water Marks (B1) Saturation (A3) Water Marks (B1) Oxidized Rhizospheres a	· · · · · · · · · · · · · · · · · · ·							
Sediment Deposits (B2) Presence of Reduced Iro								
Drift Deposits (B3) Recent Iron Reduction in	- ` <i>'</i>							
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)							
Iron Deposits (B5)								
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)							
Water-Stained Leaves (B9) Field Observations:	Sphagnum moss (D8) (LRR T, U)							
Surface Water Present? Yes No _ ✓ Depth (inches):								
Water Table Present? Yes No ✓ Depth (inches):								
Saturation Present? Yes No Depth (inches):								
(includes capillary fringe)								
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	. ,							
Google Earth 2021, Web Soil Survey of New Ca	stie County							
No wetland hydrology indicators were met.								
Wettaria frydrology maleuters were met.								

Sampling	Point-	TP-22
Samululliu	rollit.	

,	Δhsolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 15 ft r		Species?		Number of Dominant Species	
1. Liquidambar styraciflua	5	✓	FAC	That Are OBL, FACW, or FAC: 4 (A))
2. Liriodendron tulipifera	5		FACU		
3. Quercus rubra	5		FACU	Total Number of Dominant Species Across All Strata: 8 (B)	
				Species Across All Strata: 8 (B)	'
4				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: 50 (A/	B)
6				Prevalence Index worksheet:	
7				Total % Cover of: Multiply by:	
8					
	<u>15%</u> =	Total Cov	er		
50% of total cover: 7.5	20% of	total cover:	3.0	FACW species $0 \times 2 = 0$	
Sapling/Shrub Stratum (Plot size: 15 ft r)				FAC species 65 x 3 = 195	
1. Baccharis halimifolia	10	✓	FAC	FACU species 40 x 4 = 160	
2. Liquidambar styraciflua	10		FAC	UPL species <u>25</u> x 5 = <u>125</u>	
3 Rosa multiflora	10		FACU	Column Totals: <u>130</u> (A) <u>480</u> (E	3)
··-					
4				Prevalence Index = B/A = 3.7	
5				Hydrophytic Vegetation Indicators:	
6				1 - Rapid Test for Hydrophytic Vegetation	
7				2 - Dominance Test is >50%	
8				3 - Prevalence Index is ≤3.0 ¹	
	30%	Total Cov	er	Problematic Hydrophytic Vegetation ¹ (Explain)	
50% of total cover: 15.0	20% of	total cover:	6.0	· · · · · · · · · · · · · · · · ·	
Herb Stratum (Plot size: 15 ft r)				1 Indicators of hydric soil and watland hydrology must	
1. Agrostis scabra	40	/	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. Artemisia vulgaris	20		UPL	Definitions of Four Vegetation Strata:	
3. Lonicera japonica	10		FACU	Definitions of Four Vegetation Strata.	
4. Daucus carota	5		UPL	Tree – Woody plants, excluding vines, 3 in. (7.6 cm)	
	5			more in diameter at breast height (DBH), regardless	of
5. Parthenocissus quinquefolia			FACU	height.	
6. Solidago altissima	5		FACU	Sapling/Shrub – Woody plants, excluding vines, less	s
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.	
8				Herb – All herbaceous (non-woody) plants, regardles	ss
9				of size, and woody plants less than 3.28 ft tall.	
10.				Manada and an Alleman de administration of CO 6 in	
11.				Woody vine – All woody vines greater than 3.28 ft in height.	1
12.				noight.	
12.	85%	Total Cov			
42 F					
50% of total cover: 42.5	20% of	total cover:	17.0		
Woody Vine Stratum (Plot size: 15 ft r)					
1					
2					
3					
4					
5.				Hydrophytic	
		Total Cov	er	Vegetation	
50% of total cover:				Present? Yes No	
50% of total cover:		iolai cover.	· ——		
Remarks: (If observed, list morphological adaptations belo	w).				
No hydrophytic vegetation indicators	s were	met.			
Plot sizes adjusted due to proximity of			d roads	Nav	
i lot sizes adjusted due to proximity	oi well	and and	a i oauv	way.	

Profile Description: (Describe to the	depth needed to docur	ment the inc	dicator or confir	rm the absence of ir	ndicators.)
Depth Matrix		x Features	_ 1 . 2		
(inches) Color (moist) %	Color (moist)	<u> </u>	Type Loc 2	Texture	Remarks
0 · 8 10YR 4/3 100	<u> </u>			Loam	
<u> </u>					
-					
-					
					
-					
<u> </u>					
¹ Type: C=Concentration, D=Depletion,					Pore Lining, M=Matrix.
Hydric Soil Indicators: (Applicable to	all LRRs, unless othe	rwise noted	l.)		Problematic Hydric Soils ³ :
Histosol (A1)	—		(S8) (LRR S, T,	. –	(A9) (LRR O)
Histic Epipedon (A2)			LRR S, T, U)		(A10) (LRR S)
Black Histic (A3)	Loamy Muck			777	Vertic (F18) (outside MLRA 150A,B)
Hydrogen Sulfide (A4) Stratified Layers (A5)	Loamy Gleye		2)		Floodplain Soils (F19) (LRR P, S, T) s Bright Loamy Soils (F20)
Organic Bodies (A6) (LRR P, T, U)	Depleted Ma		1	(MLRA 1	
5 cm Mucky Mineral (A7) (LRR P, T				,	t Material (TF2)
Muck Presence (A8) (LRR U)	Redox Depre				ow Dark Surface (TF12)
1 cm Muck (A9) (LRR P, T)	Marl (F10) (L			Other (Exp	lain in Remarks)
Depleted Below Dark Surface (A11)	= :				
Thick Dark Surface (A12)			(F12) (LRR O, I		s of hydrophytic vegetation and
Coast Prairie Redox (A16) (MLRA 1					hydrology must be present,
Sandy Mucky Mineral (S1) (LRR O, Sandy Gleyed Matrix (S4)	· —		A 151) LRA 150A, 150E		disturbed or problematic.
Sandy Redox (S5)			s (F19) (MLRA 1		
Stripped Matrix (S6)				.RA 149A, 153C, 153	3D)
Dark Surface (S7) (LRR P, S, T, U)		,	()(, ,	,
Restrictive Layer (if observed):					
_{Type:} Rodky substrate					
Depth (inches): > 8				Hydric Soil Pres	sent? Yes No
Remarks:				1	
No hydric soil indicators	were met.				
, , , , , , , , , , , , , , , , , , , ,					
İ					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	ounty: New Castle/New Castle County Sampling Date: 2021-09-22					
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-23					
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A						
Landform (hillslope, terrace, etc.): Depression Local	relief (concave, convex, none): Concave Slope (%): 0					
Subregion (LRR or MLRA): S 149A Lat: 39.701699	Long: -75.587604 Datum: WGS 84					
Soil Map Unit Name: OtA - Othello silt loams, 0 to 2 percent slopes	, northern coastal plain _{NWI classification:} PEM5C					
Are climatic / hydrologic conditions on the site typical for this time of year? Y	· · · · · · · · · · · · · · · · · · ·					
Are Vegetation, Soil, or Hydrology significantly disturb						
Are Vegetation, Soil, or Hydrology naturally problema						
SUMMARY OF FINDINGS – Attach site map showing sam						
Hydrophytic Vegetation Present? Yes No						
Hydric Soil Present? Yes V No	Is the Sampled Area					
Wetland Hydrology Present? Yes V No No	within a Wetland? Yes No					
Remarks:						
PEM wetland (W13) located between I-295 NB	on-ramp and I-295 SB					
Fed by storm water ditches.	on ramp and r 200 05.					
red by Storm water ditches.						
HYDROLOGY	_					
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)					
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)					
High Water Table (A2) Addate Facility (B15) Marl Deposits (B15) (LRF						
Saturation (A3) Hydrogen Sulfide Odor (C						
Water Marks (B1) Water Marks (B1) Water Marks (B1)	orian de la companya					
Sediment Deposits (B2)						
Drift Deposits (B3) Recent Iron Reduction in	· ` ' · · · · · · · · · · · · · · · · ·					
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)					
Iron Deposits (B5)	Shallow Aquitard (D3)					
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)					
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)					
Field Observations:						
Surface Water Present? Yes No Depth (inches):						
Water Table Present? Yes No Depth (inches):	_					
Saturation Present? Yes No Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes <u>✓</u> No					
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:					
Google Earth 2021, Web Soil Survey of New Castle County						
Remarks:	•					
Multiple wetland hydrology indicators were me	t.					

	- 61		Dominant		Dominance Test worksheet:	
Tree Stratum (Plot size: 20 x 5	•	% Cover			Number of Dominant Species	
1					That Are OBL, FACW, or FAC: 1	(A)
2					Total Number of Dominant	
3					Species Across All Strata: 1	(B)
4					Percent of Dominant Species	
5					That Are OBL, FACW, or FAC: 100	(A/B)
6						
7					Prevalence Index worksheet:	
8					Total % Cover of: Multiply by:	-
			= Total Cov		OBL species 15 x 1 = 15	-
	50% of total cover:	20% of	total cover	•	FACW species <u>85</u> x 2 = <u>170</u>	-
Sapling/Shrub Stratum (Plot size	· · · · · · · · · · · · · · · · · · ·				FAC species <u>0</u> x 3 = <u>0</u>	-
1					FACU species <u>0</u>	
2.					UPL species <u>0</u> x 5 = <u>0</u>	_
					Column Totals: 100 (A) 185	(B)
3					10	
4						-
5						
6					1 , 1 , 3	
7					2 - Dominance Test is >50%	
8					3 - Prevalence Index is ≤3.0¹	
		=	Total Cov	ver	Problematic Hydrophytic Vegetation ¹ (Explain	1)
	50% of total cover:	20% of	total cover	:		
Herb Stratum (Plot size: 20 x 5	5 ft)				¹ Indicators of hydric soil and wetland hydrology m	ust
1. Phragmites australis		85		FACW	be present, unless disturbed or problematic.	
2. Lythrum salicaria		10		OBL	Definitions of Four Vegetation Strata:	
3. Typha latifolia		5		OBL	Tree – Woody plants, excluding vines, 3 in. (7.6 ci	m) or
4					more in diameter at breast height (DBH), regardle	
5.					height.	
6.					Sapling/Shrub – Woody plants, excluding vines, l	loce
7.					than 3 in. DBH and greater than 3.28 ft (1 m) tall.	1033
8						
					Herb – All herbaceous (non-woody) plants, regard of size, and woody plants less than 3.28 ft tall.	lless
9				-	of size, and woody plante less than 6.20 it tall.	
10					Woody vine – All woody vines greater than 3.28 f	ft in
11					height.	
12		100%				
	=== F0.0	100%				
	50% of total cover: <u>50.0</u>	20% of	total cover	20.0		
Woody Vine Stratum (Plot size:						
1						
2						
3						
4						
5					Hydrophytic	
		=	= Total Cov	ver	Vegetation	
	50% of total cover:	20% of	total cover	·	Present? Yes No	
Remarks: (If observed, list morp					<u> </u>	
Hydrophytic vegetat	-	·	+			
Plot sizes adjusted of	tue to narrow sha	ape of $^{\circ}$	wetlan	d area.		

Profile Desc	ription: (Describe	to the dept	n needed to docum	nent the i	ndicator	or confirm	the absence o	f indicators.)
Depth	Matrix	0/	Redox Features					Demonstr
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type'	Loc ²	<u>Texture</u>	Remarks
0 - 16	10YR 4/1	90	5YR 4/6	10	<u>C</u>	PL / M	Silt Loam	
-								
	-							
								<u> </u>
			Reduced Matrix, MS			ains.		PL=Pore Lining, M=Matrix.
l <u> </u>		cable to all L	RRs, unless other					or Problematic Hydric Soils ³ :
Histosol	, ,		Polyvalue Be					uck (A9) (LRR O)
_	pipedon (A2)		Thin Dark Su					uck (A10) (LRR S)
Black Hi	n Sulfide (A4)		Loamy Mucky Loamy Gleye			(0)		d Vertic (F18) (outside MLRA 150A,B) nt Floodplain Soils (F19) (LRR P, S, T)
	l Layers (A5)		Depleted Mat		1 2)			ous Bright Loamy Soils (F20)
	Bodies (A6) (LRR I	P, T, U)	Redox Dark		- 6)			A 153B)
	cky Mineral (A7) (L		Depleted Dar	k Surface	· (F7)		Red Par	rent Material (TF2)
	esence (A8) (LRR I		Redox Depre		8)			allow Dark Surface (TF12)
	ck (A9) (LRR P, T)		Marl (F10) (L				U Other (E	Explain in Remarks)
_	d Below Dark Surface (A12)	ce (A11)	Depleted Och				T) 3Indian	tors of hydrophytic vegetation and
	ark Surface (A12) rairie Redox (A16) (ΜΙ R Δ 150Δ'					•	and hydrology must be present,
	lucky Mineral (S1) (Delta Ochric			, 0,		ss disturbed or problematic.
_	leyed Matrix (S4)	,,	Reduced Ver			50A, 150B)		
_	edox (S5)		Piedmont Flo					
	Matrix (S6)		Anomalous B	right Loar	my Soils	F20) (MLR	A 149A, 153C,	153D)
	rface (S7) (LRR P,						1	
	_ayer (if observed)):						
Type:								
. ,	ches):						Hydric Soil P	Present? Yes No
Remarks:			_					
Hydric s	oil indicator	was me	et.					

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/County: New Castle/New Castle County Sampling Date: 2021-09	9-22					
Applicant/Owner: DelDOT State: Delaware Sampling Point: TP-24						
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A						
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 8						
Subregion (LRR or MLRA): S 149A Lat: 39.701657 Long: -75.587658 Datum: WGS	3 84					
Soil Map Unit Name: OtA - Othello silt loams, 0 to 2 percent slopes, northern coastal plain NWI classification: N/A						
Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)						
Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No _						
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)						
SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features,	, etc.					
Hudward die Verschaffen Dussen 2						
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Within a Wetland? Yes No Within a Wetland?						
Wetland Hydrology Present? Yes No within a Wetland? Yes No						
Remarks:						
Hill slope upslope from W13.						
HYDROLOGY						
Wetland Hydrology Indicators: Secondary Indicators (minimum of two requirements)	red)					
Primary Indicators (minimum of one is required; check all that apply) Surface Soil Cracks (B6)						
Sparsely Vegetated Concave Surface (E	38)					
High Water Table (A2) Marl Deposits (B15) (LRR U) Drainage Patterns (B10) Mary Trip Line (B10)						
Saturation (A3) Hydrogen Sulfide Odor (C1) Water Marks (B1) Oxidized Rhizospheres along Living Roots (C3) Dry-Season Water Table (C2)						
Sediment Deposits (B2) Presence of Reduced Iron (C4) Dry-beason Water Hable (C2) Crayfish Burrows (C8)						
Drift Deposits (B3) Recent Iron Reduction in Tilled Soils (C6) Saturation Visible on Aerial Imagery (C9))					
Algal Mat or Crust (B4) Thin Muck Surface (C7) Geomorphic Position (D2)						
Iron Deposits (B5) Uther (Explain in Remarks) Shallow Aquitard (D3)						
Inundation Visible on Aerial Imagery (B7)	= ` '					
☐ Water-Stained Leaves (B9) ☐ Sphagnum moss (D8) (LRR T, U)						
Field Observations:						
Surface Water Present? Yes No Depth (inches): Water Table Present? Yes No Depth (inches):						
Saturation Present? Yes No V Depth (inches): Wetland Hydrology Present? Yes No V	Wetland Hydrology Brocont2 Voc. No. V					
(includes capillary fringe)						
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:						
Google Earth 2021, Web Soil Survey of New Castle County						
Remarks:						
No wetland hydrology indicators were met.						

Sampling	Point-	TP-24
Sambinu	FUIII.	

		Dominant		Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 15 ft r)		Species?		Number of Dominant Species
1				That Are OBL, FACW, or FAC: 1 (A)
2				Total Number of Dominant
3				Species Across All Strata: 3 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 33 (A/B)
6				Prevalence Index worksheet:
7				
8				
	=	Total Cov	er	
50% of total cover:	20% of	total cover:		FACW species $\frac{0}{25}$ $\times 2 = \frac{0}{75}$
Sapling/Shrub Stratum (Plot size: 15 ft r)				FAC species 25 x 3 = 75
1				FACU species 50 x 4 = 200
2				UPL species 0 x 5 = 0
3				Column Totals: <u>75</u> (A) <u>275</u> (B)
4				Prevalence Index = B/A = 3.7
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7.				2 - Dominance Test is >50%
8.				3 - Prevalence Index is ≤3.0 ¹
-		Total Cov		
50% of total cover:				Problematic Hydrophytic Vegetation ¹ (Explain)
Herb Stratum (Plot size: 15 ft r)				The disabone of hydric acid and watered hydrology may be
1. Paspalum sp.	25	~		¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Setaria pumila	25		FAC	Definitions of Four Vegetation Strata:
3. Cichorium intybus	20		FACU	_
4. Tridens flavus	20		FACU	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of
5. Cirsium arvense	10		FACU	height.
				One the original to the origin
6				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
7				
8				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
9				of size, and woody plants less than 3.20 it tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12	100%			
TON 11 1 50 0		Total Cov		
50% of total cover: <u>50.0</u>	20% of	total cover:	20.0	
Woody Vine Stratum (Plot size: 15 ft r)				
1				
2				
3	-			
4				
5				Hydrophytic
	=	Total Cov	er	Vegetation
50% of total cover:	20% of	total cover:		Present? Yes No
Remarks: (If observed, list morphological adaptations below	w).			

No hydrophytic vegetation indicators were met.

Plot sizes adjusted due to proximity of wetland and roadways.

Paspalum grass not identified to species; thus, it was not included in Dominance Test calculations.

Profile Desc	ription: (Describe	to the depth	needed to docur	nent the	indicator or	r confirm	the absence	of indicato	rs.)	
Depth	Matrix			x Feature		. 2				
(inches)	Color (moist)	_ <u>%</u>	Color (moist)	%	Type ¹ I	Loc ²	Texture	 	Remarks	 -
0 - 10	10YR 4/3	100						No hydric	soil indicato	rs were met.
-										
				-						
										
				_						
-										
1Type: C=C	oncentration, D=De	nletion RM-F	Peduced Matrix M	S-Macker	d Sand Grai	ne .	² Location:	DI -Dore I i	ning, M=Matri	<u> </u>
	ndicators: (Appli					113.			natic Hydric S	
Histosol			Polyvalue Be			PSTII	_	лиск (А9) (L	•	
_	pipedon (A2)		Thin Dark Su					лиск (дэ) (L Лиск (А10) (
Black Hi			Loamy Muck							/ILRA 150A,B)
	n Sulfide (A4)		Loamy Gleye	-		-,				(LRR P, S, T)
	Layers (A5)		Depleted Ma		(- –)				Loamy Soils (I	
	Bodies (A6) (LRR I	P, T, U)	Redox Dark		F6)			RA 153B)	, ,	,
	cky Mineral (A7) (L		Depleted Da				Red Pa	arent Materi	al (TF2)	
Muck Pr	esence (A8) (LRR	U)	Redox Depre	essions (F	8)			hallow Dark	Surface (TF1	2)
1 cm Mu	ck (A9) (LRR P, T)		Marl (F10) (L	.RR U)			U Other	(Explain in F	Remarks)	
	l Below Dark Surfa	ce (A11)	Depleted Oc							
	rk Surface (A12)		Iron-Mangan				•	-	rophytic veget	
	rairie Redox (A16)					U)		-	ogy must be pr	
_	lucky Mineral (S1)	(LRR O, S)	Delta Ochric			• 450D\	unle	ess disturbe	d or problema	tic.
_	leyed Matrix (S4)		Reduced Ver							
_	edox (S5)		Piedmont Flo					4E2D\		
	Matrix (S6) face (S7) (LRR P,	e T II)	Anomalous E	srignt Loa	my Solls (F2	20) (WILKA	A 149A, 153C	, าองบ)		
	ayer (if observed									
Type:	Layer (II Observed	,.								
	ahaa).		_				Usalain Cnil	Dracanta	Vaa	No. V
. ,	ches):						Hydric Soil	Present?	Yes	No
Remarks:										
No hydr	ic soil indica	itors wer	e met.							
i										

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/Co	ounty: New Castle/New Castle County Sampling Date: 2021-09-23					
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-25					
Investigator(s): Craig Nein, Sarah Leidenheimer Section, Township, Range: N/A						
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0						
Subregion (LRR or MLRA): S 149A Lat: 39.699126	,					
Soil Map Unit Name: MuB - Mattapex-Urban land complex, 0 to 5 p						
Are climatic / hydrologic conditions on the site typical for this time of year? Ye						
Are Vegetation, Soil, or Hydrology significantly disturb						
Are Vegetation, Soil, or Hydrology naturally problema						
SUMMARY OF FINDINGS – Attach site map showing sam						
Hydrophytic Vegetation Present? Yes No						
Hydric Soil Present? Yes V No No	Is the Sampled Area					
Wetland Hydrology Present? Yes No	within a Wetland? Yes No					
Remarks:						
Narrow PEM wetland strip (W15) along the nort	hern side of I-295 NB, to the west of the					
interchange with SR 141.						
interchange with SK 141.						
HYDROLOGY						
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)					
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)					
High Water Table (A2) High Water Table (A2) Marl Deposits (B15) (LRR						
Saturation (A3) Hydrogen Sulfide Odor (C						
Water Marks (B1) Oxidized Rhizospheres al	· · · · · · · · · · · · · · · · · · ·					
Sediment Deposits (B2) Presence of Reduced Iron						
Drift Deposits (B3) Recent Iron Reduction in						
Algal Mat or Crust (B4)	Geomorphic Position (D2)					
☐ Iron Deposits (B5) ☐ Other (Explain in Remarks	s) Shallow Aquitard (D3)					
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)					
Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)					
Field Observations:						
Surface Water Present? Yes No Depth (inches):						
Water Table Present? Yes No Depth (inches):						
Saturation Present? Yes No Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No					
Describe Recorded Data (stream gauge, monitoring well, aerial photos, prev	vious inspections), if available:					
Google Earth 2021, Web Soil Survey of New Castle County						
Remarks:						
Multiple wetland hydrology indicators were me	t.					

Sampling	Point-	TP-25

00 = /:		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size: 20 x 5 ft	% Cover	Species?	Status	Number of Dominant Species
1				That Are OBL, FACW, or FAC: 1 (A)
2				Total Number of Densinent
3				Total Number of Dominant Species Across All Strata: 1 (B)
4.				
				Percent of Dominant Species That Are OBL FACW or FAC: 100 (A/B)
5				That Are OBL, FACW, or FAC: 100 (A/B)
6				Prevalence Index worksheet:
7				Total % Cover of: Multiply by:
8				OBL species 1 x 1 = 1
	=	Total Cov	ver	FACW species 99 x 2 = 198
50% of total cover:	20% of	total cover	:	
Sapling/Shrub Stratum (Plot size: 20 x 5 ft)				TAO species X 0 =
1				FACU species $0 \times 4 = 0$
2.				UPL species <u>0</u> x 5 = <u>0</u>
3.				Column Totals: 100 (A) 199 (B)
4				Prevalence Index = B/A = 2.0
5				
6				☑ 1 - Rapid Test for Hydrophytic Vegetation
7				
8				☑ 3 - Prevalence Index is ≤3.0 ¹
	=	= Total Cov	ver	Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover:	20% of	total cover	•	Troblematic Trydrophytic Vegetation (Explain)
Herb Stratum (Plot size: 20 x 5 ft)				1
1 Phragmites australis	95	~	FACW	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. Echinochloa muricata	4		FACW	
	1			Definitions of Four Vegetation Strata:
3. Persicaria punctata	<u> </u>		OBL	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or
4				more in diameter at breast height (DBH), regardless of
5				height.
6				Sapling/Shrub – Woody plants, excluding vines, less
7				than 3 in. DBH and greater than 3.28 ft (1 m) tall.
8.				
				Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
9				or size, and woody plants less than 5.20 it tall.
10				Woody vine – All woody vines greater than 3.28 ft in
11				height.
12				
	100% =	= Total Cov	ver	
50% of total cover: <u>50.0</u>	20% of	total cover	20.0	
Woody Vine Stratum (Plot size: 20 x 5 ft)				
1				
1				
2				
2				
2				
2				Hydrophytic
2				Vegetation
2	=	Total Cov	ver	

SOIL Sampling Point: TP-25

Profile Desc	ription: (Describe	e to the dep	oth needed to docur	nent the	indicator	or confirm	the absence of in	dicators.)	
Depth	Matrix			x Featur		. 2			
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type ¹	Loc ²	Texture	Remarks	
0-7	10YR 4/1	96	5YR 4/6	4	<u> </u>	PL / M	Silt Loam		
7 - 12	10YR 5/1	<u>85</u>	10YR 5/6	15	_ <u>C</u>	<u>M</u>	Silt Loam		
12 - 16	7.5YR 5/6	75	10YR 5/1	25	<u>D</u>	M	Silt Loam		
-									
_									
¹Type: C=C	oncentration D=De	nletion RM	=Reduced Matrix, M	S=Maske	ed Sand Gi	ains	² l ocation: PI =F	Pore Lining, M=Matrix.	
			LRRs, unless other					roblematic Hydric So	
Histosol	(A1)		☐ Polyvalue Be	elow Surf	ace (S8) (I	RR S, T, U	J) 1 cm Muck ((A9) (LRR O)	
Histic E	oipedon (A2)		Thin Dark Su	urface (S	9) (LRR S ,	T, U)	. —	(A10) (LRR S)	
	stic (A3)		Loamy Muck	-		R O)		ertic (F18) (outside MI	-
	en Sulfide (A4)		Loamy Gleye		(F2)			oodplain Soils (F19) (I	
	d Layers (A5) Bodies (A6) (LRR l	D T II\	Depleted Ma	. ,	'E6\		Anomalous (MLRA 15	Bright Loamy Soils (F2	20)
	ucky Mineral (A7) (L		=		,		,	Material (TF2)	
	esence (A8) (LRR		Redox Depre					w Dark Surface (TF12))
	ıck (A9) (LRR P, T)		Marl (F10) (L	RR U)			Other (Expla	ain in Remarks)	
	d Below Dark Surfa	ce (A11)	Depleted Oc	•	, .	•	2		
	ark Surface (A12)	/MI DA 450	Iron-Mangan					of hydrophytic vegeta	
	rairie Redox (A16) ⁄lucky Mineral (S1)		A) Umbric Surfa			, U)		nydrology must be pre sturbed or problematio	
	Gleyed Matrix (S4)	(LIXIX 0, 0)	Reduced Ve			50A. 150B)		starbed or problematic	<i>,</i> .
	Redox (S5)		Piedmont Flo						
	Matrix (S6)		Anomalous E	Bright Lo	amy Soils (F20) (MLR	A 149A, 153C, 153I	D)	
	rface (S7) (LRR P,						1		
	Layer (if observed):							
Type:									
	ches):						Hydric Soil Pres	ent? Yes	No
Remarks:									
Hydric s	soil indicator	was m	et.						

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	Sounty: New Castle/New Castle County Sampling Date: 2021-09-23					
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-26					
Investigator(s): Craig Nein, Sarah Leidenheimer Section	on, Township, Range: N/A					
Landform (hillslope, terrace, etc.): Basin Local	. •					
Subregion (LRR or MLRA): \$149A Lat: 39.701458						
Soil Map Unit Name: NM - Nanticoke and Mannington soils, very fr						
Are climatic / hydrologic conditions on the site typical for this time of year? Y						
Are Vegetation, Soil, or Hydrology significantly disturb						
Are Vegetation, Soil, or Hydrology naturally problems						
SUMMARY OF FINDINGS – Attach site map showing sam	pling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present? Yes No	Is the Sampled Area					
Hydric Soil Present? Yes No	within a Wetland? Yes V No					
Wetland Hydrology Present? Yes _ ✔ No	165 160					
Remarks:						
PFO wetland (W14) located on the north side o	f I-295 NB and to the south of the I-295 NB					
on-ramp.						
HYDROLOGY						
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)					
Surface Water (A1) Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)					
High Water Table (A2) Marl Deposits (B15) (LRF						
Saturation (A3) Under Hydrogen Sulfide Odor (C						
Water Marks (B1) Water Marks (B1) Oxidized Rhizospheres a						
Sediment Deposits (B2) Presence of Reduced Iro Drift Deposits (B3) Recent Iron Reduction in						
Algal Mat or Crust (B4) Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)					
Iron Deposits (B5) Other (Explain in Remark						
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)					
☐ Water-Stained Leaves (B9)	Sphagnum moss (D8) (LRR T, U)					
Field Observations:						
Surface Water Present? Yes No Depth (inches): 2-4	·					
Water Table Present? Yes No Depth (inches): 0						
Saturation Present? Yes No Depth (inches): 0	Wetland Hydrology Present? Yes No					
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	vious inspections), if available:					
Google Earth 2021, Web Soil Survey of New Castle County						
Remarks:	•					
Multiple wetland hydrology indicators were me	t.					
Note: no surface water or water table observed	d at the sample plot location, but observed in					
the wetland.						

Sampling	Point-	TP-26
Samonno	FUILL.	20

True Otratam (Blataine 30 ft r		Dominant		Dominance Test worksheet:
Tree Stratum (Plot size: 30 ft r) 1. Acer saccharinum	% Cover 45	Species?	FAC	Number of Dominant Species
•			FAC	That Are OBL, FACW, or FAC: 2 (A)
2				Total Number of Dominant
3				Species Across All Strata: 2 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100 (A/E
6				
7				Prevalence Index worksheet:
3.				Total % Cover of: Multiply by:
	45% =	Total Cov	er	OBL species <u>0</u> x 1 = <u>0</u>
50% of total cover: <u>22.5</u>				FACW species <u>75</u> x 2 = <u>150</u>
Sapling/Shrub Stratum (Plot size: 30 ft r)	20 /0 01	total cover.		FAC species 50 x 3 = 150
				FACU species <u>5</u> x 4 = <u>20</u>
1				UPL species 0 x 5 = 0
2				Column Totals: 130 (A) 320 (B)
3				
4				
5				Hydrophytic Vegetation Indicators:
6				1 - Rapid Test for Hydrophytic Vegetation
7				2 - Dominance Test is >50%
3				☑ 3 - Prevalence Index is ≤3.0 ¹
		Total Cov		Problematic Hydrophytic Vegetation ¹ (Explain)
50% of total cover:	20% of	total cover:		
Herb Stratum (Plot size: 30 ft r	<u> </u>			¹ Indicators of hydric soil and wetland hydrology must
Phragmites australis	70	~	FACW	be present, unless disturbed or problematic.
Onoclea sensibilis	5		FACW	Definitions of Four Vegetation Strata:
Parthenocissus quinquefolia	5		FACU	
4 Toxicodendron radicans	5		FAC	Tree – Woody plants, excluding vines, 3 in. (7.6 cm) of more in diameter at breast height (DBH), regardless of
5				height.
				2
6				Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
7				, ,
8				Herb – All herbaceous (non-woody) plants, regardless
9.				of size, and woody plants less than 3.28 ft tall.
10				Woody vine - All woody vines greater than 3.28 ft in
11				height.
12				
	<u>85%</u> =			
50% of total cover: <u>42.5</u>	20% of	total cover:	17.0	
Woody Vine Stratum (Plot size: 30 ft r)				
l				
2				
3				
4				
5				Hydrophytic
				Vegetation
50% of total cover				Present? Yes No
50% of total cover:	20% of	Total Cov		

SOIL Sampling Point: TP-26

Profile Desc	ription: (Describe	to the depti	n needed to docun	nent the i	ndicator	or confirm	the absence of	of indicators.)	
Depth	Matrix (Matrix	0/		x Feature		1 2	Tautura		
(inches)	Color (moist)	<u>%</u>	Color (moist)	<u>%</u>	Type'	Loc ²	<u>Texture</u>	Remarks	
0 - 14	10YR 4/2	<u>85</u>	5YR 4/6	15	<u>C</u>	PL / M	Silt Loam		
-									
					-				
	-				-				
-									
			Reduced Matrix, MS			ains.		PL=Pore Lining, M=Matrix.	
l <u> </u>		cable to all L	RRs, unless other				_	for Problematic Hydric Soils ³ :	
Histosol	` '		Polyvalue Be					uck (A9) (LRR O)	
_	oipedon (A2)		Thin Dark Su					uck (A10) (LRR S) ed Vertic (F18) (outside MLRA 150A,B)	
Black Hi	en Sulfide (A4)		Loamy Mucky Loamy Gleye			(0)		nt Floodplain Soils (F19) (LRR P, S, T)	
	d Layers (A5)		Depleted Mat		1 2)			ous Bright Loamy Soils (F20)	
	Bodies (A6) (LRR I	P, T, U)	Redox Dark S		- 6)			A 153B)	
5 cm Mu	ıcky Mineral (A7) (L	RR P, T, U)	Depleted Dar	k Surface	(F7)			rent Material (TF2)	
	esence (A8) (LRR		Redox Depre		8)			nallow Dark Surface (TF12)	
	ick (A9) (LRR P, T)		☐ Marl (F10) (L			=4\	U Other (E	Explain in Remarks)	
_	d Below Dark Surfa ark Surface (A12)	ce (A11)	Depleted Och				T) ³ Indica	ators of hydrophytic vegetation and	
	rairie Redox (A16) (MLRA 150A					•	and hydrology must be present,	
	lucky Mineral (S1)		Delta Ochric			, -,		ss disturbed or problematic.	
	Bleyed Matrix (S4)	, ,	Reduced Ver			50A, 150B)		·	
	tedox (S5)		Piedmont Flo						
	Matrix (S6)		Anomalous B	right Loar	my Soils ((F20) (MLR	A 149A, 153C,	153D)	
	rface (S7) (LRR P,						T		
	_ayer (if observed)):							
Type:	ches):						Hydric Soil F	Present? Yes 🗸 No	
Remarks:	ones)						Hydric Soil F	riesent? resNo	
	-:::::::::::::::::::::::::::::::::::::								
Hyaric s	oil indicator	was me	τ.						

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: I-295 Northbound, SR 141 to US 13 Project City/C	Sounty: New Castle/New Castle County Sampling Date: 2021-09-23
Applicant/Owner: DelDOT	State: Delaware Sampling Point: TP-27
Investigator(s): Craig Nein, Sarah Leidenheimer Section	
Landform (hillslope, terrace, etc.): Hillslope Local	
Subregion (LRR or MLRA): S 149A Lat: 39.701467	
Soil Map Unit Name: NM - Nanticoke and Mannington soils, very fr	requently flooded, tidal NWI classification. N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Y	
Are Vegetation, Soil, or Hydrology significantly disturl	
Are Vegetation, Soil, or Hydrology naturally problems	
SUMMARY OF FINDINGS – Attach site map showing sam	
Hydrophytia Vagatatian Procent2	
Hydrophytic Vegetation Present? Yes No V Hydric Soil Present? Yes No V	Is the Sampled Area
Wetland Hydrology Present? Yes No	within a Wetland? Yes No
Remarks:	
Upland plot on hill slope to the north of W14.	
HYDROLOGY	
Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	☐ Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Marl Deposits (B15) (LRF	
☐ Saturation (A3) ☐ Hydrogen Sulfide Odor (C ☐ Water Marks (B1) ☐ Oxidized Rhizospheres a	· · · · · · · · · · · · · · · · · · ·
Sediment Deposits (B2) Presence of Reduced Iron	
Drift Deposits (B3) Recent Iron Reduction in	- ` <i>'</i>
Algal Mat or Crust (B4) Thin Muck Surface (C7)	Geomorphic Position (D2)
☐ Iron Deposits (B5) ☐ Other (Explain in Remark	Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)	FAC-Neutral Test (D5)
Water-Stained Leaves (B9)	☐ Sphagnum moss (D8) (LRR T, U)
Field Observations:	
Surface Water Present? Yes No Depth (inches):	
Water Table Present? Yes No Depth (inches):	
Saturation Present? Yes No Depth (inches): (includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, pre	. ,
Google Earth 2021, Web Soil Survey of New Ca	stle County
Remarks:	
No wetland hydrology indicators were met.	

Sampling	Point-	TP-27
Sambiind	Point.	11 -21

25	Species?	FACU	Number of Dominant Species That Are OBL, FACW, or FAC: Total Number of Dominant Species Across All Strata: 3 (
			Total Number of Dominant Species Across All Strata: 3
			Species Across All Strata: 3 (
			Demonstrat Demoisement Consider
			Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (
			Prevalence Index worksheet:
			Total % Cover of: Multiply by:
<u> </u>			OBL species 0 x 1 = 0
			FACW species 0 x 2 = 0
_ 20% of t	total cover:	5.0	FAC species 0 x3 = 0
			FACU species 35
-			UPL species 50 x 5 = 250
			Column Totals: 85 (A) 390
			Column Totals (A)
			Prevalence Index = B/A = 4.6
			Hydrophytic Vegetation Indicators:
			1 - Rapid Test for Hydrophytic Vegetation
			2 - Dominance Test is >50%
			3 - Prevalence Index is ≤3.0 ¹
			Problematic Hydrophytic Vegetation ¹ (Explain)
_ 20% of t	total cover:	11.0	
_			¹ Indicators of hydric soil and wetland hydrology mu
5	✓	FACU	be present, unless disturbed or problematic.
<u> 2 </u>			Definitions of Four Vegetation Strata:
			Tree – Woody plants, excluding vines, 3 in. (7.6 cm
			more in diameter at breast height (DBH), regardles
			height.
			Sapling/Shrub – Woody plants, excluding vines, le
			than 3 in. DBH and greater than 3.28 ft (1 m) tall.
			Herb – All herbaceous (non-woody) plants, regardl
			of size, and woody plants less than 3.28 ft tall.
			Woody vine – All woody vines greater than 3.28 ft
			height.
<u>7% </u>	Total Cov	er	
_ 20% of t	total cover:	1.4	
			Hydrophytic
			Vegetation
			Present? Yes No
).			
	25% = 20% of f	25% = Total Cover: 20% of total cover: 50	20% of total cover: 5.0 50

SOIL Sampling Point: TP-27

Profile Desc	ription: (Describe	to the depth	needed to docur	nent the i	indicator	or confirn	n the absence of	indicators.)	
Depth	Matrix			x Feature					
(inches)	Color (moist)		Color (moist)	<u>%</u>	Type'	Loc ²	<u>Texture</u>	Remarks	_
0-7	10YR 4/4	100					Silt Loam		
-									
									-
-									
				<u> </u>					_
-									
¹Type: C=Ce	oncentration, D=De	pletion. RM=F	educed Matrix. M	S=Masked	d Sand Gr	ains.	² Location: PL	=Pore Lining, M=Matr	ix.
	Indicators: (Appli							Problematic Hydric	
Histosol	(A1)		☐ Polyvalue Be	elow Surfa	ce (S8) (L	RR S, T, U	J) \square 1 cm Muc	k (A9) (LRR O)	
_	oipedon (A2)		Thin Dark Su					k (A10) (LRR S)	
Black Hi	stic (A3)		Loamy Muck	y Mineral	(F1) (LRF	R O)	Reduced '	Vertic (F18) (outside	MLRA 150A,B)
	n Sulfide (A4)		Loamy Gleye	ed Matrix ((F2)			Floodplain Soils (F19)	
	d Layers (A5)		Depleted Ma					ıs Bright Loamy Soils ((F20)
	Bodies (A6) (LRR I		Redox Dark				(MLRA	•	
_	icky Mineral (A7) (L		Depleted Date					nt Material (TF2)	10)
	esence (A8) (LRR lick (A9) (LRR P, T)		Redox Depre		8)			low Dark Surface (TF1 plain in Remarks)	(2)
	d Below Dark Surfa		Depleted Ocl		(MIRA1	51)	U Other (EX	piaiii iii Remarks)	
	ark Surface (A12)	00 (/ 11 1)	Iron-Mangan				T) ³ Indicato	ors of hydrophytic vege	tation and
	rairie Redox (A16) ((MLRA 150A)					•	d hydrology must be p	
	lucky Mineral (S1)		Delta Ochric	(F17) (ML	RA 151)		unless	disturbed or problema	ntic.
_	Gleyed Matrix (S4)		Reduced Ver						
	tedox (S5)		Piedmont Flo						
	Matrix (S6)		Anomalous E	Bright Loar	my Soils (F20) (MLR	RA 149A, 153C, 15	53D)	
	rface (S7) (LRR P,								
	_ayer (if observed cky substrate):							
							Hardela Oall Day	10 V	N = 1/
	ches): <u>> 7</u>						Hydric Soil Pre	esent? Yes	No
Remarks:									
No hydr	ic soil indica	itors wer	e met.						

Appendix C Site Photographs





Photo 1: Looking southwest across the Christina River (Stream 1, S1) on the south side of the I-95/I-295 bridge, at the western end of the study area. Photo taken September 7, 2021.



Photo 2: Looking northeast towards the TP-1 sample plot in Wetland 1 (W1), in the western portion of the study area. Photo taken September 7, 2021.





Photo 3: Looking north towards the TP-2 sample plot located north of Wetland 1 (W1).

Photo taken September 7, 2021.



Photo 4: Looking south towards the western end of Wetland 2 (W2), in the western portion of the study area. Photo taken September 7, 2021.





Photo 5: Looking east towards the TP-3 sample plot in Wetland 2 (W2).

Photo taken September 7, 2021.



Photo 6: Looking northeast towards the TP-4 sample plot located north of Wetland 2 (W2).

Photo taken September 7, 2021.





Photo 7: Looking southwest along a grass swale that drains towards Wetland 2 (W2) in the western portion of the study area. Photo taken September 7, 2021.



Photo 8: Looking southeast towards roadside stormwater management features located south of I-295 and west of Airport Road. Photo taken September 7, 2021.





Photo 9: Looking south along Airport Road, in the western portion of the study area.

Photo taken September 7, 2021.



Photo 10: Looking northeast along an existing utility access road located east and south of Airport Road. Photo taken September 7, 2021.





Photo 11: Looking northeast towards the TP-5 sample plot within Wetland 3 (W3), located east and south of Airport Road. Photo taken September 7, 2021.



Photo 12: Looking southeast towards the TP-6 upland sample plot, located south and west of Wetland 3 (W3). Photo taken September 7, 2021.





Photo 13: Looking northeast along Airport Road, towards the roadway embankment along the north side of Wetland 3 (W3). Photo taken September 7, 2021.



Photo 14: Looking south from Airport Road towards Wetland 3 (W3).

Photo taken September 7, 2021.





Photo 15: Looking southeast towards the TP-7 sample plot within Wetland 4 (W4).

Photo taken September 7, 2021.



Photo 16: Looking southeast towards Wetland 4 (W4).
Photo taken September 7, 2021.





Photo 17: Looking southeast along a constructed berm that separates Wetland 4 (W4) from Wetland 5 (W5). Photo taken September 8, 2021.



Photo 18: Looking southeast towards the TP-8 sample plot within Wetland 5 (W5).

Photo taken September 8, 2021.





Photo 19: Looking southeast towards Wetland 5 (W5).
Photo taken September 8, 2021.



Photo 20: Looking east towards area between I-295 NB and Airport Road, in the western portion of the study area. Photo taken September 8, 2021.





Photo 21: Looking southwest along a non-jurisdictional concrete drainage swale that discharges into Stream 2 (S2). Photo taken September 8, 2021.



Photo 22: Looking south (downstream) along Stream 2 (S2), located between I-295 NB and Airport Road. Photo taken September 8, 2021.





Photo 23: Looking east towards the TP-9 sample plot within Wetland 6 (W6).

Photo taken September 8, 2021.



Photo 24: Looking southwest towards the TP-10 upland sample plot, located north of Wetland 6 (W6). Photo taken September 8, 2021.





Photo 25: Looking west towards the eastern end of Wetland 6 (W6).

Photo taken September 8, 2021.



Photo 26: Looking southwest towards the TP-11 sample plot in Wetland 7 (W7).

Photo taken September 8, 2021.





Photo 27: Looking northwest towards the TP-12 upland sample plot, located north of Wetland 7 (W7). Photo taken September 8, 2021.



Photo 28: Looking south towards the northcentral portion of Wetland 7 (W7).

Photo taken September 8, 2021.





Photo 29: Looking northeast along the southern side of I-295 NB, to the west of the I-295/SR 141 interchange. Photo taken September 8, 2021.



Photo 30: Looking northwest towards the northeastern portion of Wetland 7 (W7).

Photo taken September 8, 2021.





Photo 31: Looking south towards the TP-13 sample plot within Wetland 8 (W8).

Photo taken September 8, 2021.



Photo 32: Looking southwest towards Wetland 8 (W8), located inside the I-295 NB on-ramp loop from the SR 141 interchange. Photo taken September 8, 2021.





Photo 33: Looking northeast towards the TP-14 upland sample plot located northwest of Wetland 8 (W8). Photo taken September 8, 2021.



Photo 34: Looking northeast along the southern side of I-295 NB, beneath the western bridge of the interchange with SR 141. Photo taken September 8, 2021.



WETLANDS AND SUBAQUEOUS LANDS SECTION PERMIT APPLICATION FORM

For Subaqueous Lands, Wetlands, Marina and 401 Water Quality Certification Projects

State of Delaware Department of Natural Resources and Environmental Control Division of Water

Wetlands and Subaqueous Lands Section



APPLICATION FOR APPROVAL OF SUBAQUEOUS LANDS, WETLANDS, MARINA AND WATER QUALITY CERTIFICATION PROJECTS

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

Application Instructions:

- 1. Complete each section of this basic application and appropriate appendices as thoroughly and accurately as possible. Incomplete or inaccurate applications will be returned.
- 2. All applications must be accompanied by a scaled plan view and cross-section view plans that show the location and design details for the proposed project. Full construction plans must be submitted for major projects.
- 3. All applications must have an original signature page and proof of ownership or permitted land use agreement.
- 4. Submit an original and two (2) additional copies of the application (total of 3) with the appropriate application fee and public notice fee* (prepared in separate checks) to:

Department of Natural Resources and Environmental Control Wetlands and Subaqueous Lands Section 89 Kings Highway Dover, Delaware 19901

*Application and public notice fees are non-refundable regardless of the Permit decision or application status.

5. No construction may begin at the project site before written approval has been received from this office.

Helpful Information:

1.	Tax Parcel Information:	New Castle County Kent County Sussex County	(302) 395-5400 (302) 736-2010 (302) 855-7878
2.	Recorder of Deeds:	New Castle County Kent County Sussex County	(302) 571-7550 (302) 744-2314 (302) 855-7785

- 3. A separate application and/or approval may be required through the Army Corps of Engineers. Applicants are strongly encouraged to contact the Corps for a determination of their permitting requirements. For more information, contact the Philadelphia District Regulator of the Day at (215) 656-6728 or visit their website at: http://www.nap.usace.army.mil/Missions/Regulatory.aspx.
- 4. For questions about this application or the Wetlands and Subaqueous Lands Section, contact us at (302) 739-9943 or visit our website at: http://www.dnrec.delaware.gov/wr/Services/Pages/WetlandsAndSubaqueousLands.aspx. Office hours are Monday through Friday 8:00 AM to 4:30 PM, except on State Holidays.

APPLICANT'S REVIEW BEFORE MAILING

DID TOU COMIT LETE THE POLLOWING:					
Yes	BASIC APPLICATION				
Yes	SIGNATURE PAGE (Page 3)				
Yes	APPLICABLE APPENDICES				
Yes	SCALED PLAN VIEW				
Yes	SCALED CROSS-SECTION OR ELEVATION VIEW PLANS				
Yes	VICINITY MAP				
Yes	COPY OF THE PROPERTY DEED & SURVEY				
Yes	THREE (3) COMPLETE COPIES OF THE APPLICATION PACKET				
Yes	APPROPRIATE APPLICATION FEE & PUBLIC NOTICE FEE (Separate checks made payable to the State of Delaware)				

Submit 3 complete copies of the application packet to:

DID YOU COMPLETE THE FOLLOWING?

Department of Natural Resources and Environmental Control Wetlands and Subaqueous Lands Section 89 Kings Highway Dover, Delaware 19901

Before signing and mailing your application packet, please read the following:

The Department requests that the contractor or party who will perform the construction of your proposed project, if other than the applicant, sign the application signature page along with the applicant in the spaces provided. When the application is signed by the contractor as well as the applicant, the Department will issue the Permit to both parties. For Leases, the contractor will receive a separate construction authorization that will make them subject to all of the terms and conditions of the Lease relating to the construction

Section	1: A	App	licant	Id	lentifi	cation
----------------	-------------	-----	--------	----	---------	--------

1.	Applicant's Name:Mailing Address:			Telephone #: Fax #: E-mail:					
2.	. Consultant's Name:			Telephone #: Fax #:					
3.	. Contractor's Name:			Telephone #: Fax #:					
Sec	ction 2: Project Description	1050 3			Downer,				
	Check those that apply: New Project/addition to existing project Project Purpose (attach additional s		-	nir/Replace exis	sting str	ucture? (If che	cked, must ans	swer #16)	
6.	Check each Appendix that is enclose	sed wi	ith this applicati	on:					
	A. Boat Docking Facilities		G. Bulkheads			N. Prelimina	y Marina Che	cklist	
	B. Boat Ramps		H. Fill			O. Marinas			
	C. Road Crossings		I. Rip-Rap Sills		S	P. Stormwate			
	D. Channel Modifications/Dams		J. Vegetative Sta						
	E. Utility Crossings		K. Jetties, Groin			R. Maintena			
	F. Intake or Outfall Structures		M. Activities in	State Wetlands	3	S. New Dred	lging		
Sec	ction 3: Project Location	1969			North Control			00000000	
7. Project Site Address: Site					unty: N.C. Kent Sussex e owner name (if different from applicant): dress of site owner:				
8.	Driving Directions:								
(At	tach a vicinity map identifying road	name	s and the project	t location)					
9.	Tax Parcel ID Number:			Subdivision 1	Name: _				
WS	SLS Use Only: Permit #s: _							_	
Ty]	pe SP \square SL \square S	SU 🗆	WE \square	\mathbf{WQ}	LA 🗆	SA \square	$\mathbf{MP}\ \Box$	$\mathbf{WA}\ \Box$	
	rps Permit: SPGP 18 □ 20 □ Nat								
	Received Date:								
			tice Dates: ON		0	FF			

Section 3: Project Location (Continued)

10.	Name of waterbody a	t Project Location	n:	waterbody	is a tributary to:		
11.	Is the waterbody:	□ Tidal □ No	on-tidal Wa	terbody width at me	ean low or ordina	ry high wa	iter
12.	Is the project:	☐ On public sub☐ In State-regula		☐ On private sub☐ In Federally-re			
*If	the project is on privat	te subaqueous land	ds, provide the na	ame of the subaqueo	ous lands owner:		
(W	ritten permission from	the private subaqu	ueous lands own	er must be included	with this applica	tion)	
13.	Present Zoning:	☐ Agricultural	☐ Residential	☐ Commercial	☐ Industrial	□ Other	
Sec	ction 4: Miscellaneous	3					
14.	A. List the names as project (attach addition	onal sheets as nece	essary):	the immediately a			
foo	B. For wetlands and at radius of the project (addresses of pro	operty own	ners within a 1,000
15.	Provide the names of I	DNREC and/or Arı	my Corps of Engi	neers representatives	whom you have o	liscussed th	ne project with:
	A. Have you had a St B. Has the project be *If yes, what was	en reviewed in a n	nonthly Joint Per		eting?	□ Yes □ Yes	□ No □ No
16.	Are there existing str *If yes, provide	uctures or fill at the	1 0	subaqueous lands?	□ Yes	□ No	
	*If no, were struc	ctures and/or fill in	n place prior to 1	969?	☐ Yes ☐ No		
17. □ 1	Have you applied for No □ Pend		-		Engineers?		
Ту	pe of Permit:			Federal Permit o	r ID #:		
18. □ Ì	Have you applied for No ☐ Pend				Perr	nit or ID#	:
Ту	pe of permit (circle all	that apply): Se	eptic Well	NPDES Storm	n Water		
Of	her:						

Section 5: Signature Page

19. Agent Authorization:	
If you choose to complete this section, all future correspondagent. In addition, the agent will become the primary point	dence to the Department may be signed by the duly authorized t of contact for all correspondence from the Department.
I do not wish to authorize an agent to act on my behalf $\ \square$	
I wish to authorize an agent as indicated below \Box	
I. hereby design	gnate and authorize
I,, hereby designation (Name of Applicant) to act on my behalf in the processing of this application and Department.	(Name of Agent) d to furnish any additional information requested by the
Authorized Agent's Name:	Telephone #:
Mailing Address:	Fax #:
	_ E-mail:
20. Agent's Signature:	
	e attached plans are true and accurate to the best of my knowledge. mation in addition to that set forth herein if deemed necessary to
Agent's Signature	Date
21. Applicant's Signature:	
and that I am required to inform the Department of any chafurther understand that the Department may request inform	e attached plans are true and accurate to the best of my knowledge anges or updates to the information provided in this application. I nation in addition to that set forth herein if deemed necessary to a to authorized Department representatives to enter upon the
Applicant's Signature	Date
Print Name	
22. Contractor's Signature:	
and that I am required to inform the Department of any cha	e attached plans are true and accurate to the best of my knowledge, anges or updates to the information provided in this application. I nation in addition to that set forth herein if deemed necessary to
Contractor's Name	Date
Print Name	



Photo 35: Looking southeast towards the TP-15 sample plot within Wetland 9 (W9).
Photo taken September 9, 2021.



Photo 36: Looking southeast towards the TP-16 sample plot, located north of Wetland 9 (W9).

Photo taken September 9, 2021.





Photo 37: Looking southwest towards the northeastern side of Wetland 9 (W9).

Photo taken September 9, 2021.



Photo 38: Looking northeast towards the TP-17 sample plot within Wetland 10 (W10).

Photo taken September 9, 2021.





Photo 39: Looking southeast towards Wetland 10 (W10), located within the I-295 NB off-ramp loop of the interchange with SR 141. Photo taken September 9, 2021.



Photo 40: Looking southeast towards the TP-18 upland sample plot located to the north of Wetland 10 (W10). Photo taken September 9, 2021.





Photo 41: Looking south towards the TP-20 sample plot within Wetland 11 (W11).

Photo taken September 9, 2021.



Photo 42: Looking southeast towards Wetland 11 (W11), located south of I-295 NB and east of the I-295/SR 141 interchange. Photo taken September 9, 2021.





Photo 43: Looking southeast towards the TP-19 upland sample plot located northwest of Wetland 11 (W11). Photo taken September 9, 2021.



Photo 44: Looking northeast along the southern side of I-295 NB, in the central portion of the study area. Photo taken September 9, 2021.





Photo 45: Looking south (upstream) along Stream 3 (S3, Nonesuch Creek), located in the central portion of the study area. Photo taken September 9, 2021.



Photo 46: Looking southeast (upstream) along Stream 4 (S4), near its confluence with Nonesuch Creek (Stream 3, S3). Photo taken September 9, 2021.





Photo 47: Looking west along the toe-of-slope of the I-295 NB roadway embankment, along the northern side of Stream 4 (S4). Photo taken September 9, 2021.



Photo 48: Looking east along the southern side of I-295 NB, near the northernmost portion of the study area corridor. Photo taken September 9, 2021.





Photo 49: Looking southeast (upstream) along Stream 4 (S4).

Photo taken September 9, 2021.



Photo 50: Looking southeast towards the TP-21 sample plot within Wetland 12 (W12).

Photo taken September 22, 2021.





Photo 51: Looking north towards the TP-22 upland sample plot located north of Wetland 12 (W12). Photo taken September 22, 2021.



Photo 52: Looking west towards the southeastern end of Wetland 12 (W12), located in the eastern portion of the study area. Photo taken September 22, 2021.





Photo 53: Looking southeast along a fill embankment between I-295 NB and Robinson Drive.
Photo taken September 22, 2021.



Photo 54: Looking southeast alongside the I-295 NB off-ramp at the southeastern portion of the study area. Photo taken September 22, 2021.





Photo 55: Looking northwest towards constructed stormwater drainage ditches and inlet located south of I-295 NB, at the southeastern end of the study area. Photo taken September 22, 2021.



Photo 56: Looking northeast beneath the I-295 bridges over US-13, at the southeastern end of the study area. Photo taken September 22, 2021.





Photo 57: Looking northwest along the northern side of I-295 SB, near the southeastern end of the study area. Photo taken September 22, 2021.



Photo 58: Looking southeast between I-295 NB and I-295 SB. Photo taken September 22, 2021.





Photo 59: Looking north towards the TP-23 sample plot within Wetland 13 (W13).

Photo taken September 22, 2021.



Photo 60: Looking southeast towards the TP-24 upland sample plot located south of Wetland 13 (W13). Photo taken September 22, 2021.





Photo 61: Looking southeast towards Wetland 16 (W16) located at the western end of the study area, to the west of the Christina River (Stream 1, S1). Photo taken September 23, 2021.



Photo 62: Looking southeast (upstream) along the Christina River (Stream 1, S1), at the western end of the study area. Photo taken September 23, 2021.





Photo 63: Looking northeast along the northern side of I-295 NB, in the western portion of the study area. Photo taken September 23, 2021.



Photo 64: Looking southeast towards the TP-25 sample plot within Wetland 15 (W15).

Photo taken September 23, 2021.





Photo 65: Looking west towards Wetland 15 (W15), located north of I-295 NB.

Photo taken September 23, 2021.



Photo 66: Looking southwest towards the TP-26 sample plot within Wetland 14 (W14).

Photo taken September 23, 2021.





Photo 67: Looking south towards the TP-27 upland sample plot, located north of Wetland 14 (W14). Photo taken September 23, 2021.



Photo 68: Looking northwest towards the southern side of Wetland 14 (W14).

Photo taken September 23, 2021.





Photo 69: Looking south along a vegetated drainage swale located north of I-295 NB, in the western portion of the study area. Photo taken June 8, 2023.



Photo 70: Looking northeast beneath I-295 NB in the eastern portion of the study area. Photo taken June 8, 2023.





Photo 71: Looking northeast towards the eastern portion of the study area, to the north of I-295 SB.

Photo taken June 8, 2023.



Photo 72: Looking east towards Wetland 13 (W13). Photo taken June 8, 2023.

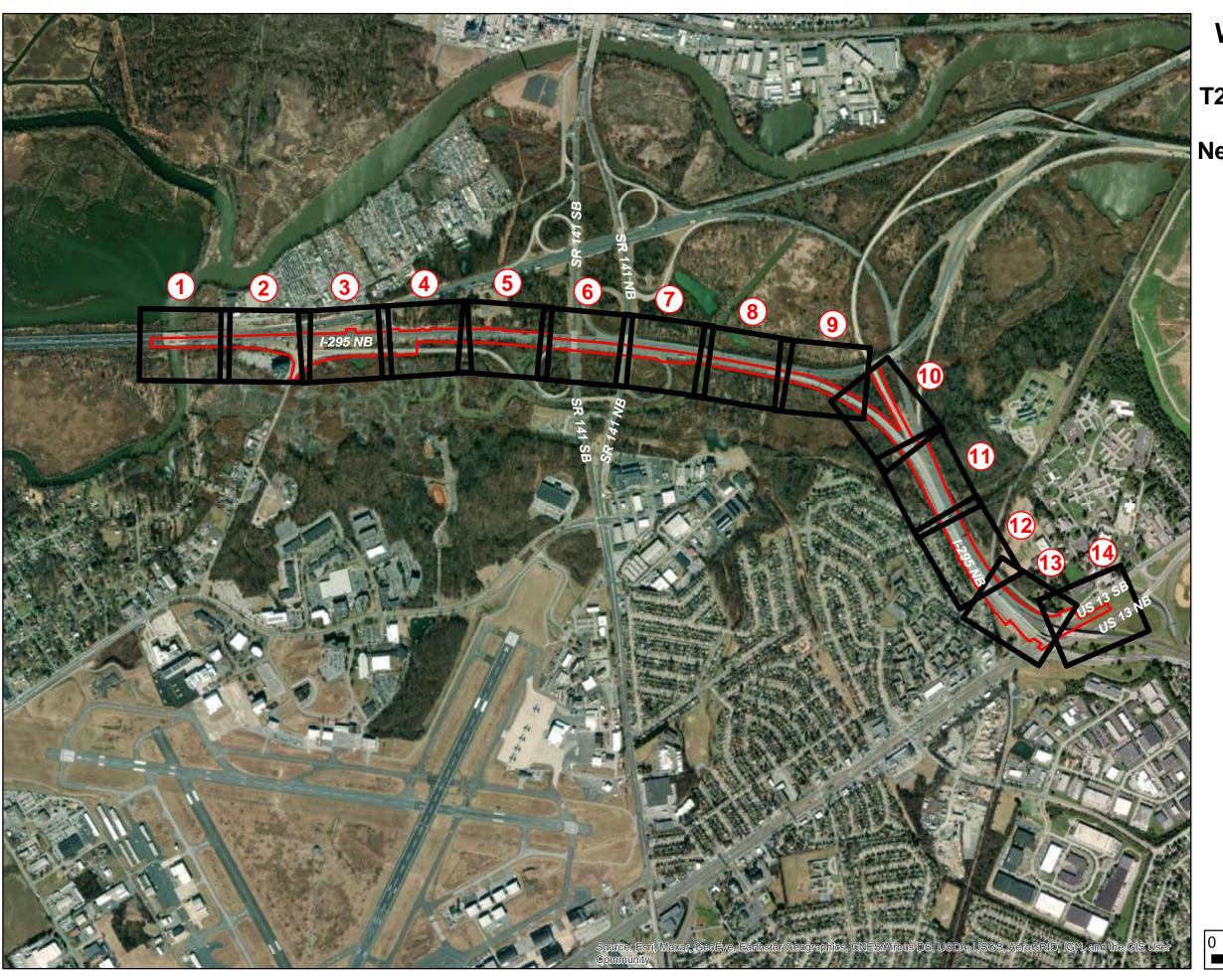




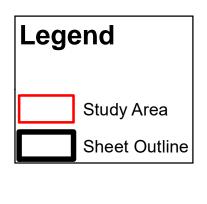
Photo 73: Looking southeast towards the northern side of Wetland 14 (W14).
Photo taken June 8, 2023.

Appendix D Wetland and Waterways Delineation Plans





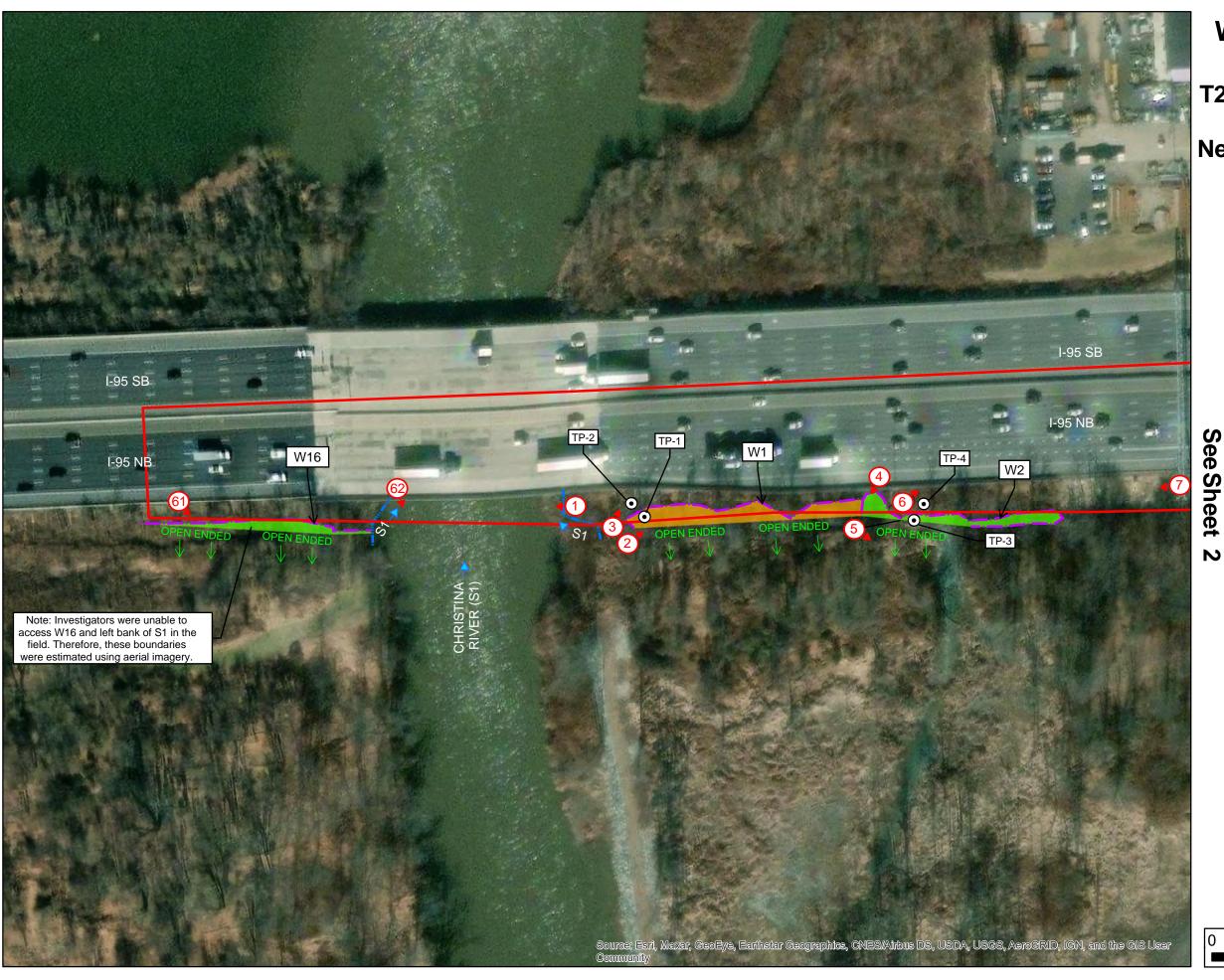
Index Sheet

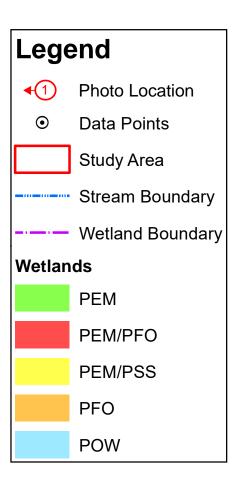






0 1,000 2,000 4,000 Feet

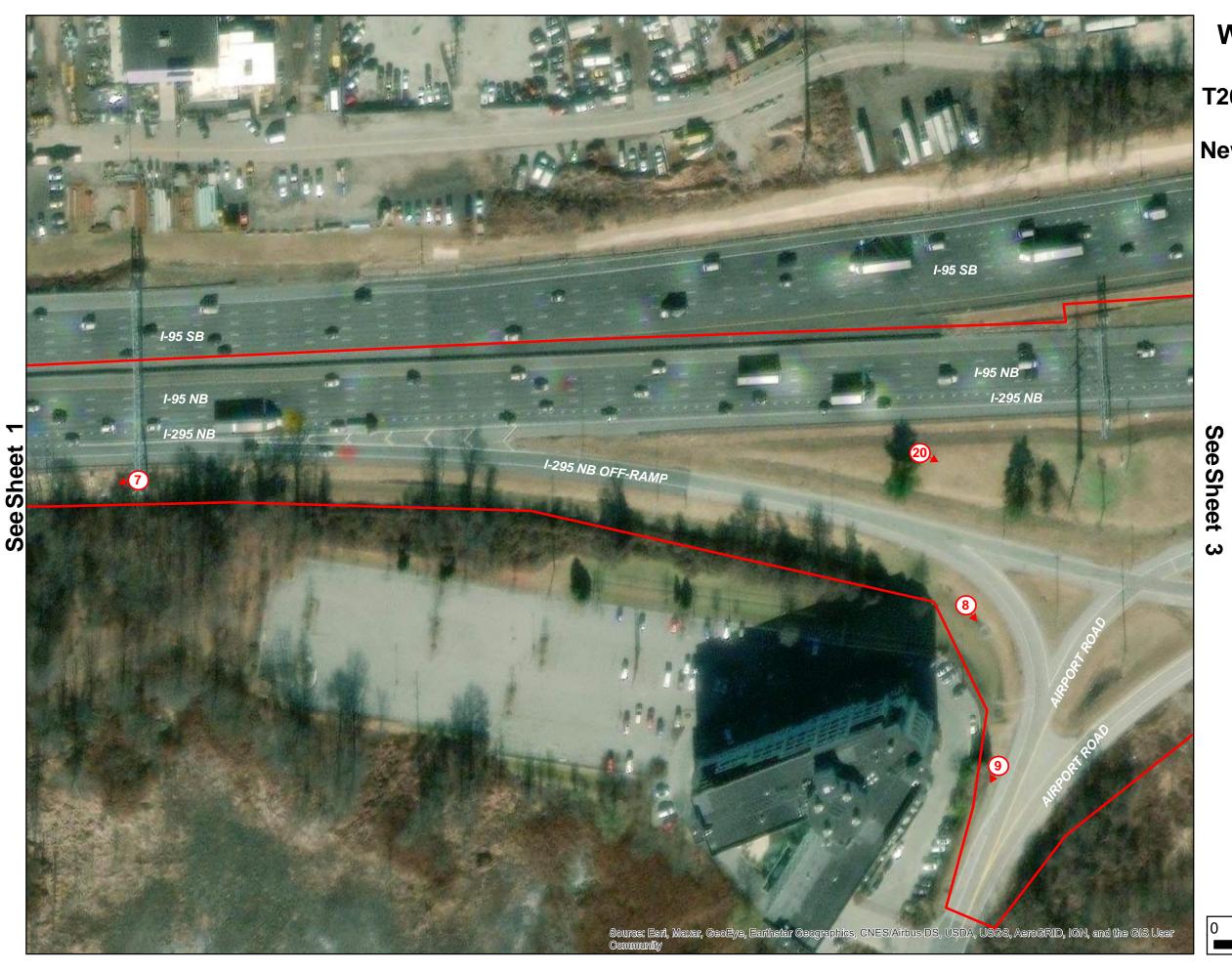


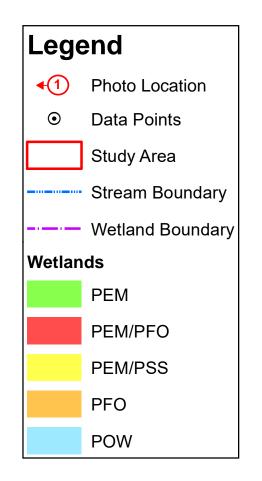






0	75	150	300
			Feet



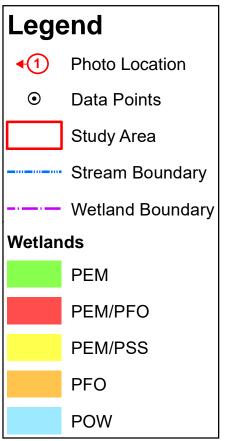






0	75	150	300
			Feet



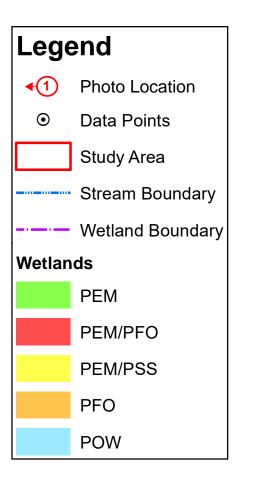






0	75	150	300
			Feet

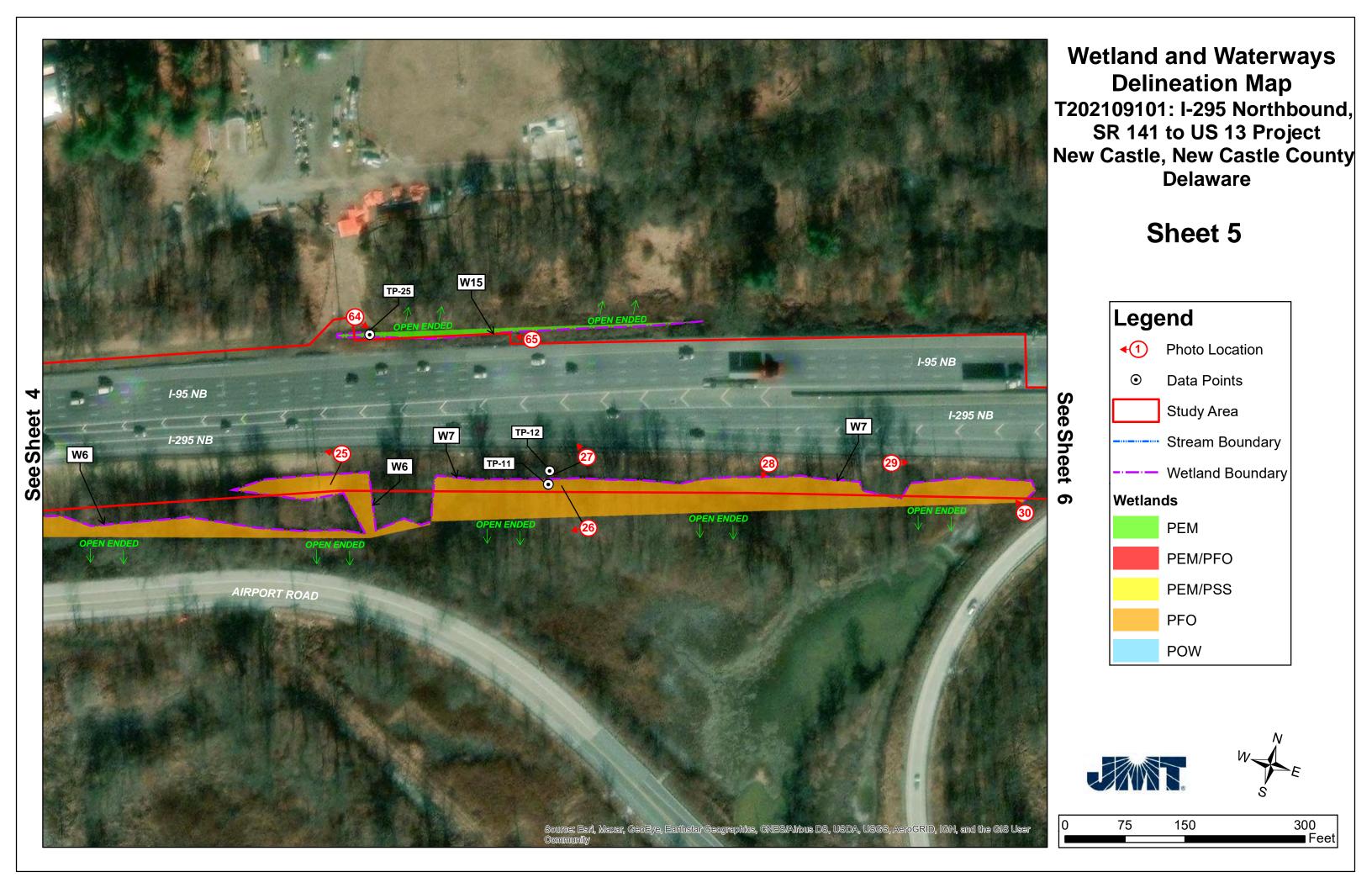


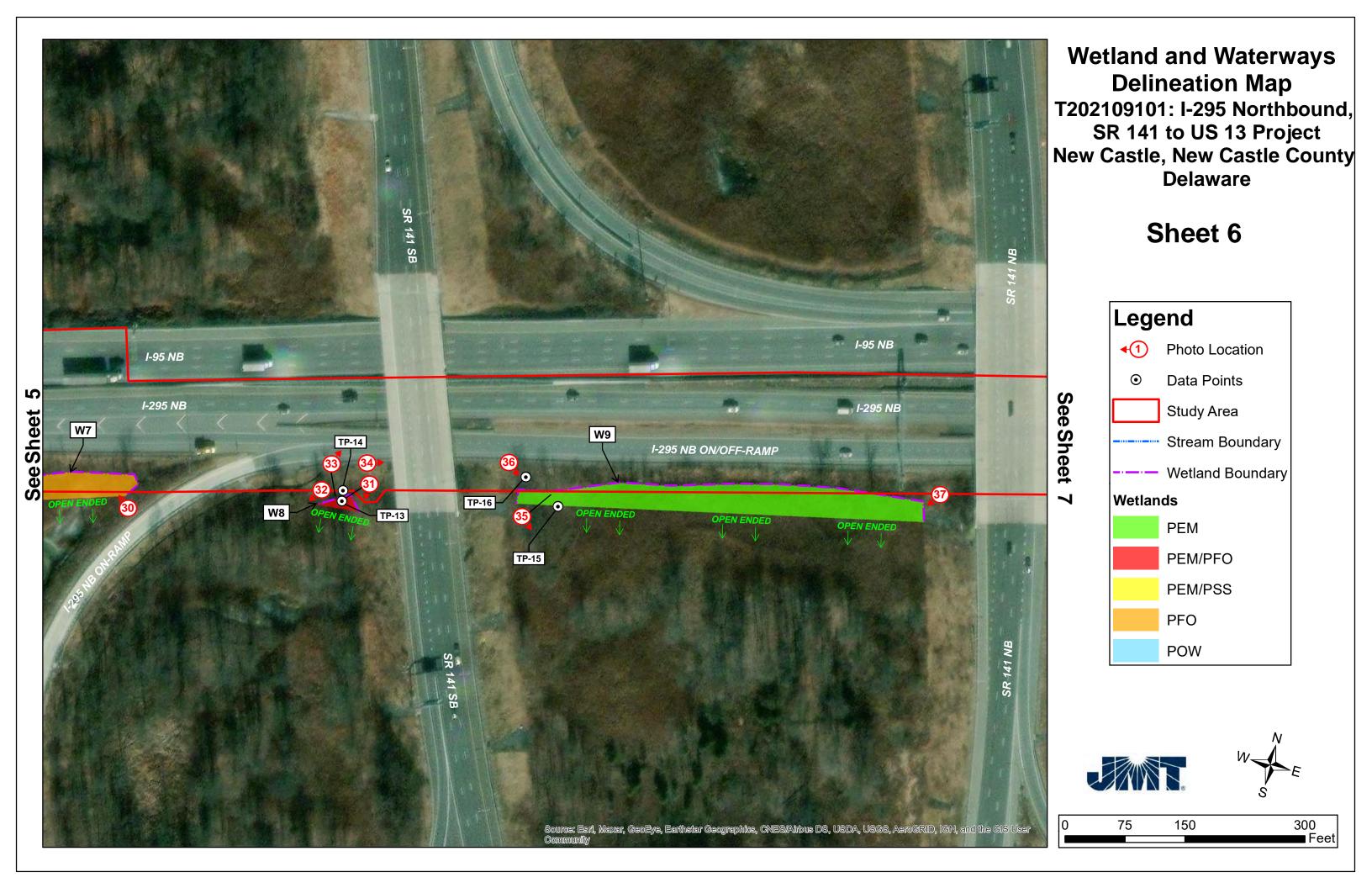


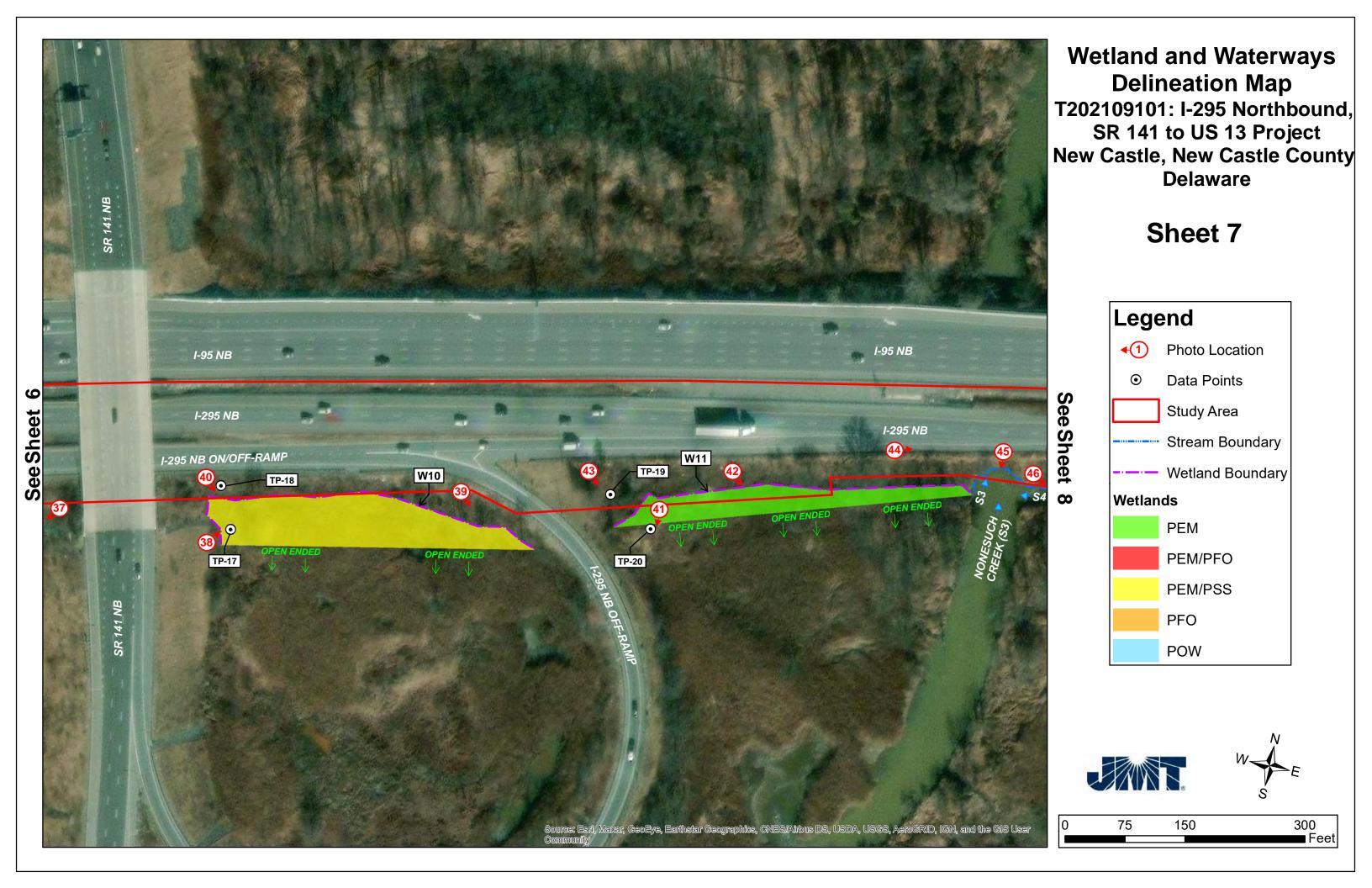


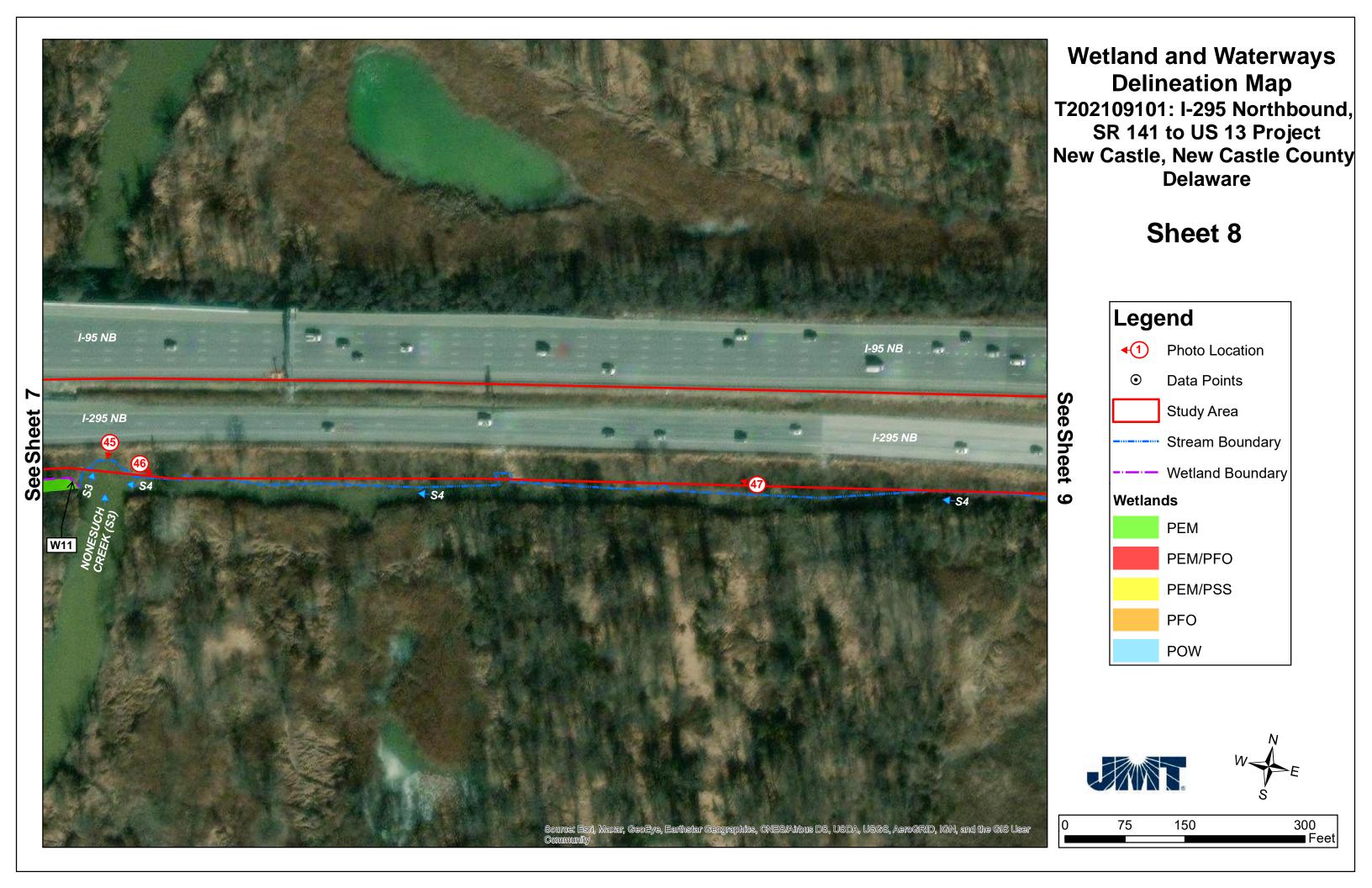


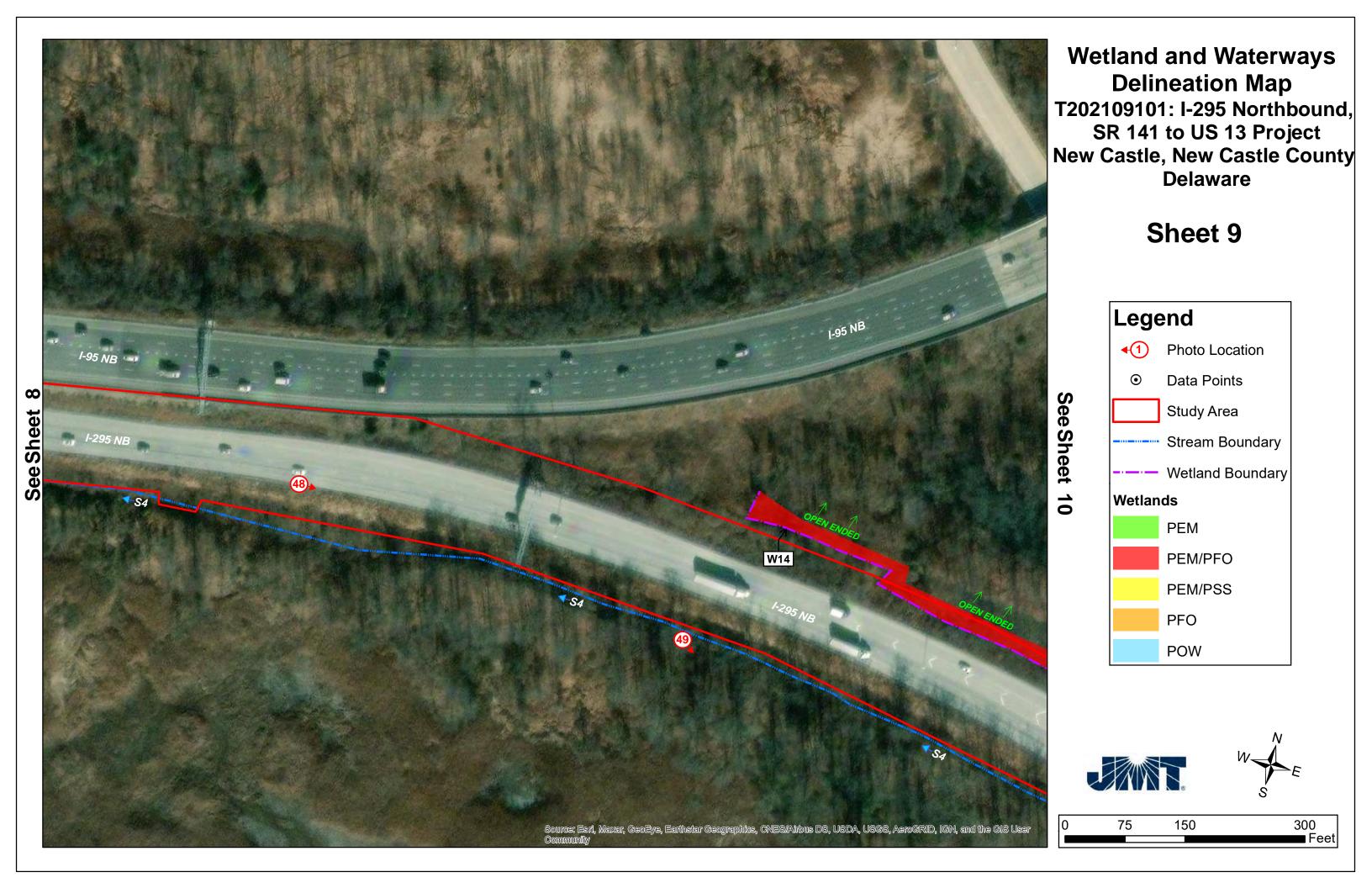
0 7	75 1	50	300
			Feet

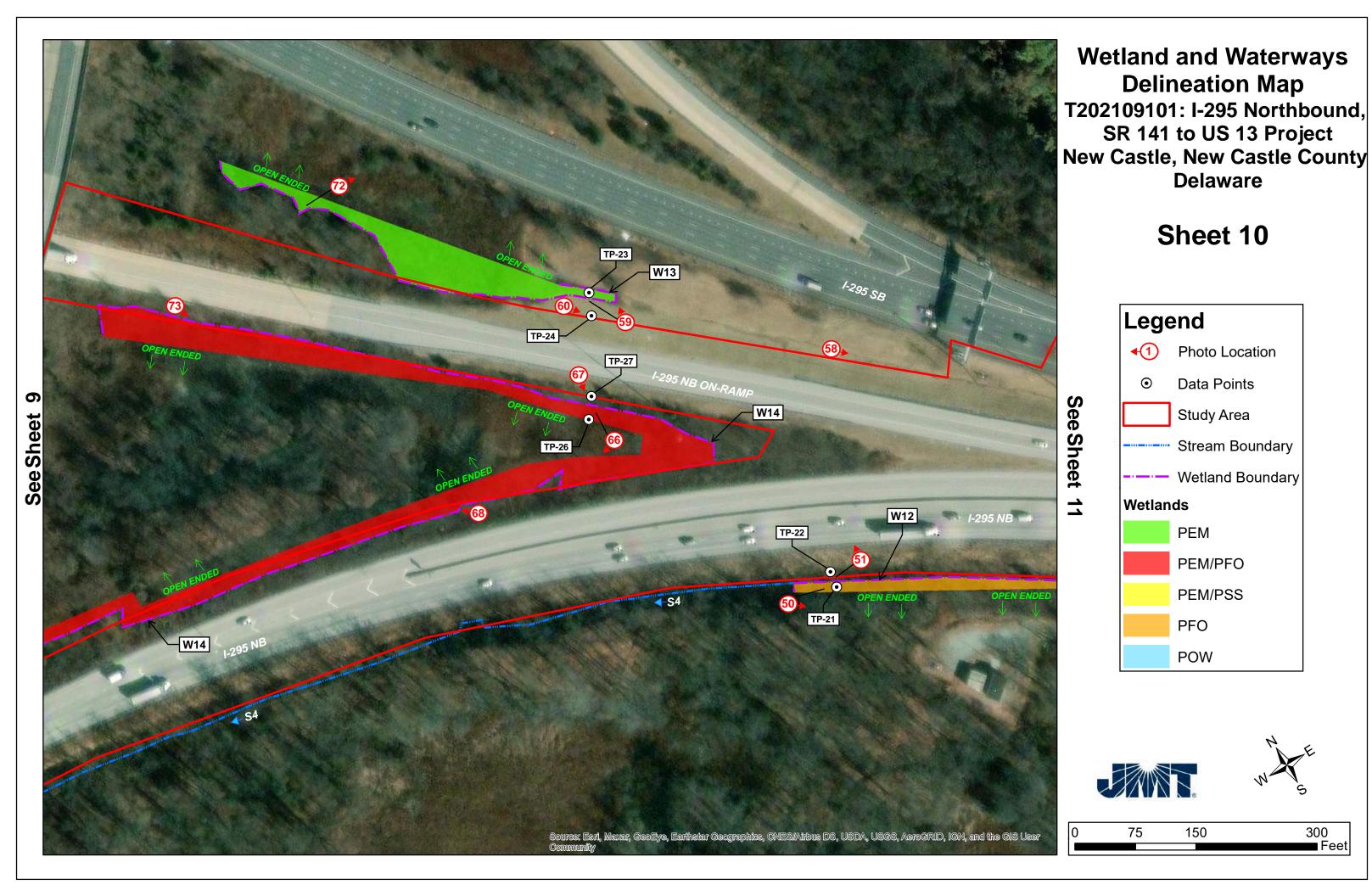






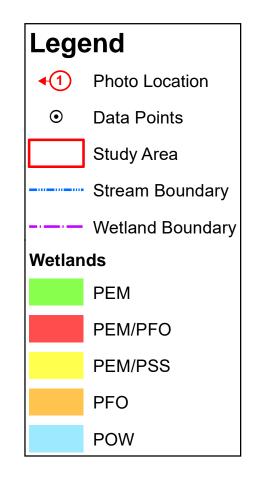








Delaware

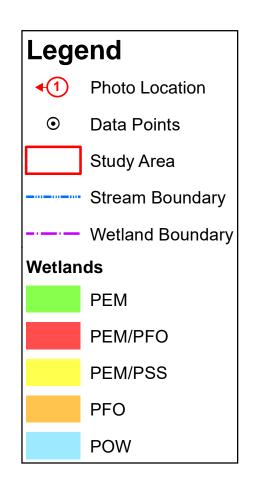






0	75	150	300
			Fee

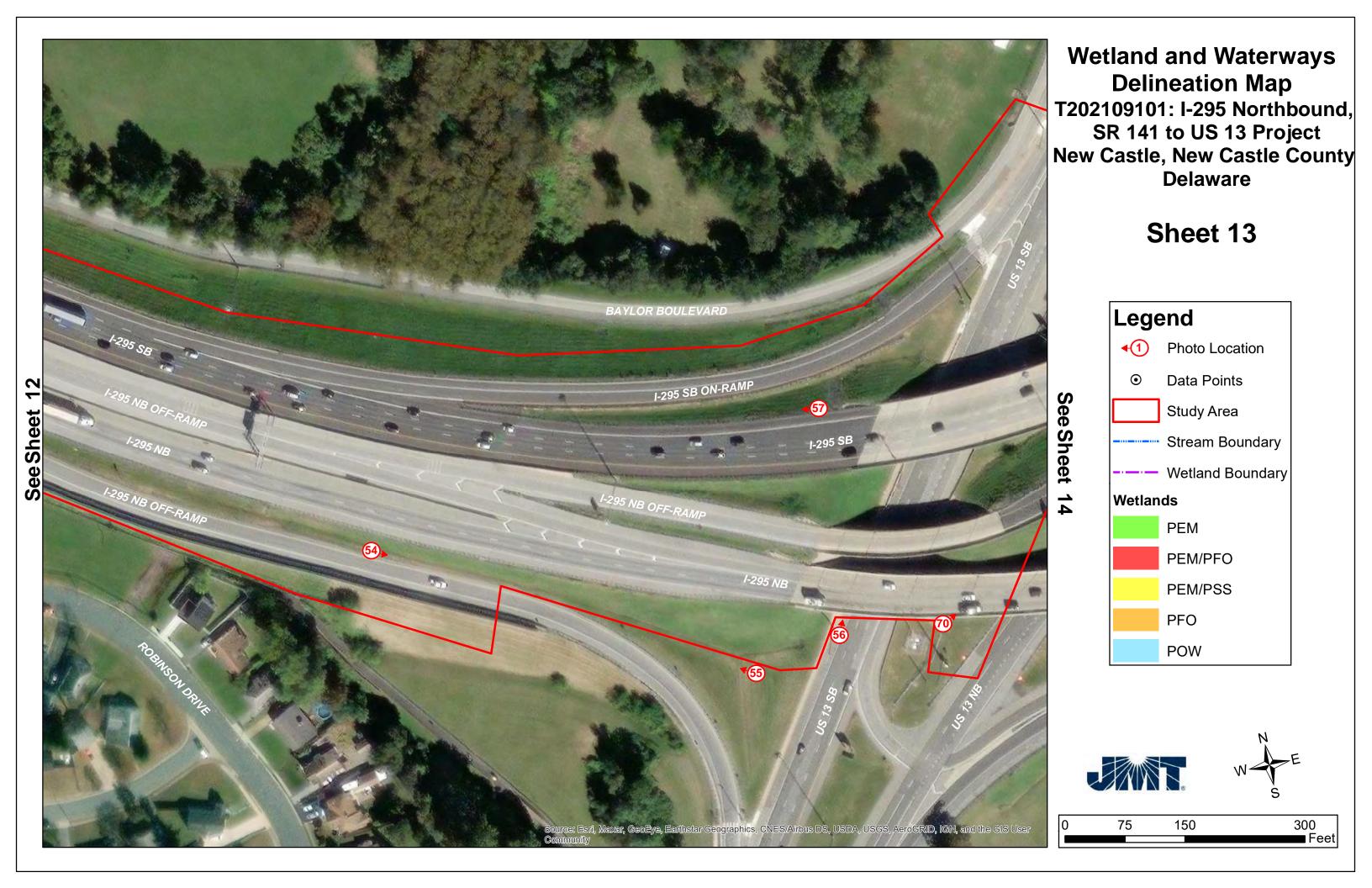




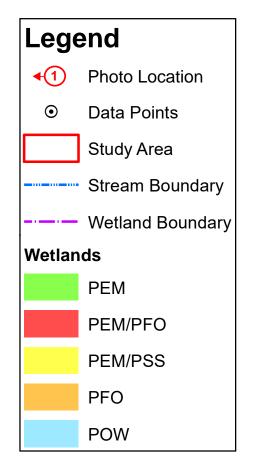




0	75	150	300
			- Fee





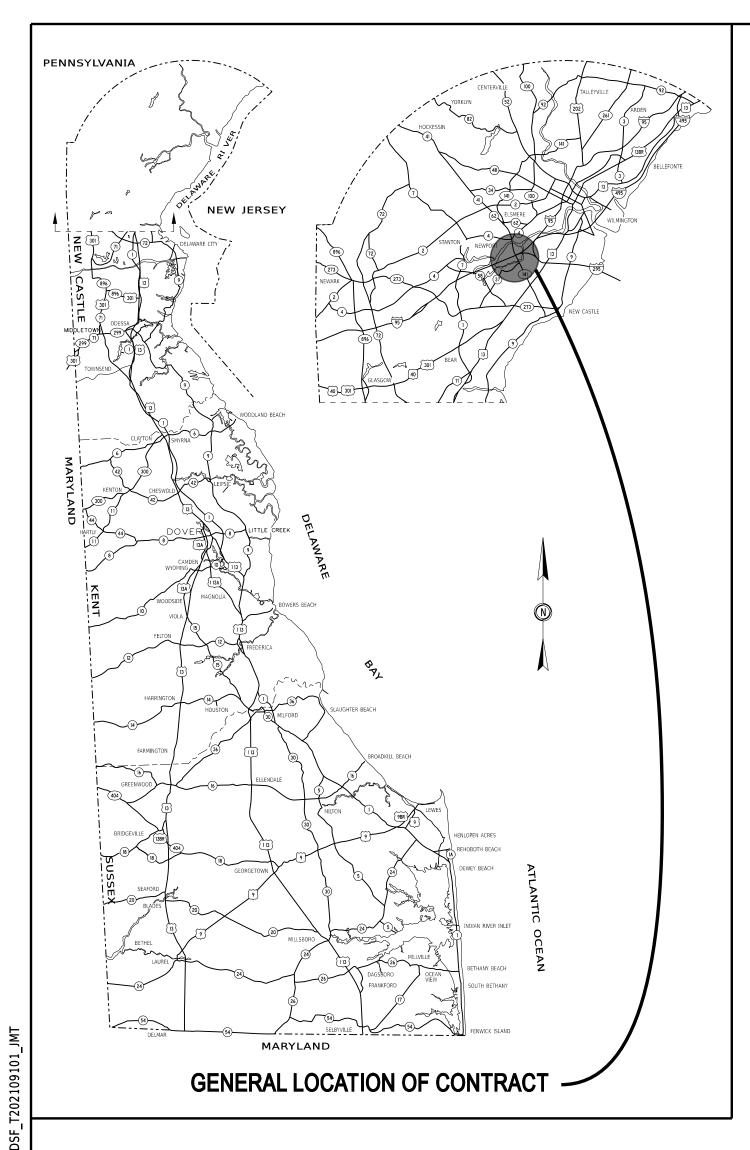






0	75	150	300
			Feet

CONSTRUCTION PLANS AND ENVIRONMENTAL COMPLIANCE SHEETS



THE STATE OF DELAWARE DEPARTMENT OF TRANSPORTATION

U.S. CUSTOMARY UNITS

FINAL PLANS

MRD #: 00056

CONTRACT NO.

CN20

962

I-1(21)

I-1(21)

I-1(22)

64-04-019

67-06-010

78-091-02

78-091-08

95-090-03

99-061-18 25-090-01 T201109001

FUNCTIONAL CLASS: INTERSTATE

A.A.D.T. PROJECTED: 111.685

TYPE OF CONSTRUCTION: RECONSTRUCTION

DESIGN PARAMETER

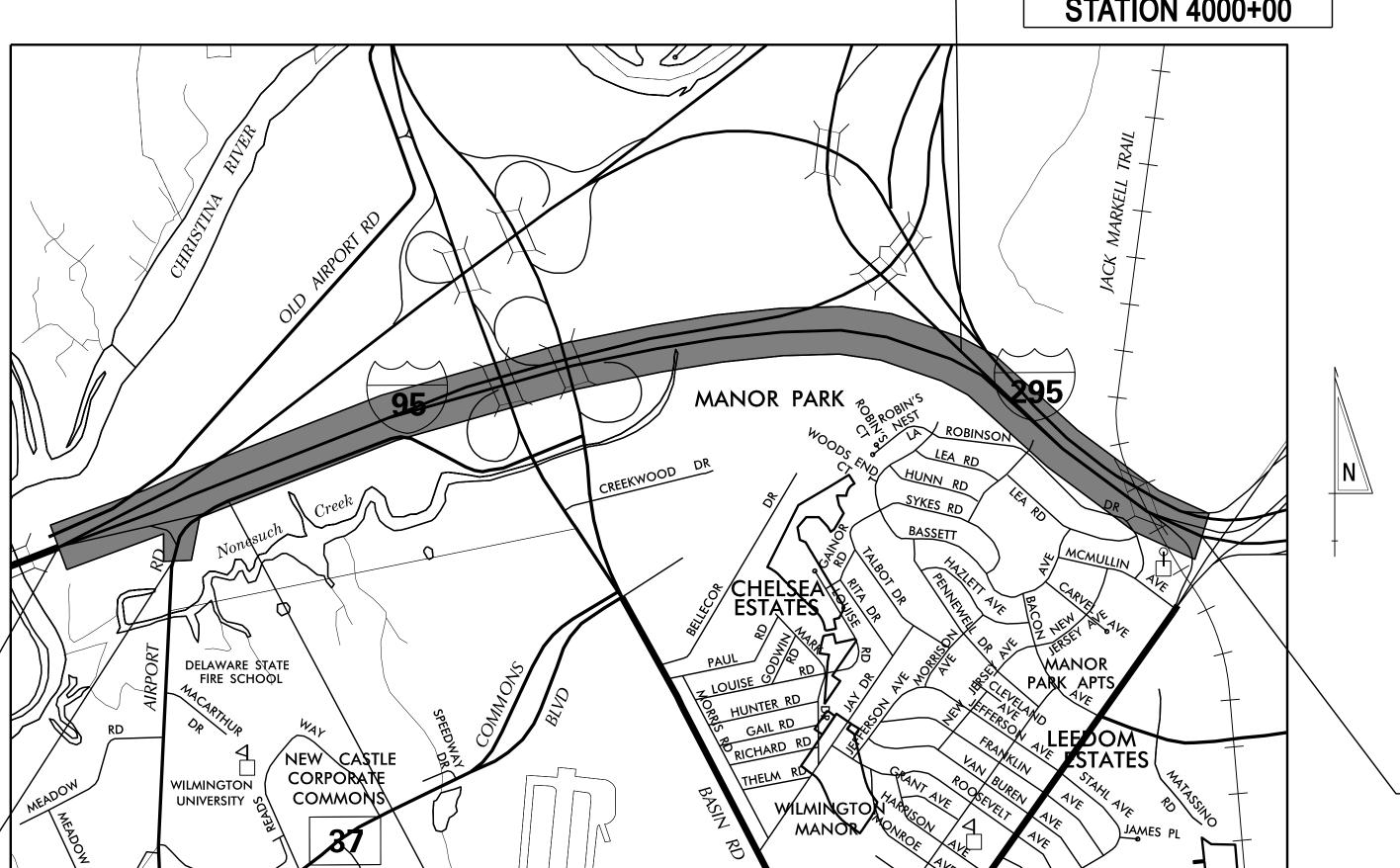
CONSTRUCTION PLANS FOR:

I-295 NORTHBOUND, SR 141 TO US 13

CONTRACT NUMBER: T202109101 EIM - N056 (46) FEDERAL AID PROJECT NUMBER:

> COUNTY: NEW CASTLE M.R. #: <u>00056</u>

> > LIMIT OF CONTRACT **STATION 4000+00**



I-95 AND SR 141 INTERCHANGE, RAMPS G&F IMPROVEMENTS T201109002

APPROVED FOR ADVERTISEMENT

DESIGN DESIGNATION

APPROVED DESIGN EXCEPTIONS

ADDENDA/ REVISIONS

ASSOCIATED CONTRACTS

I-95 LANDSCAPING, CHRISTINA MARSH INTERCHANGE

CHRISTINA INTERCHANGE WIDENING OF CONNECTION A

SR 141 IMPROVEMENTS, I-95 INTERCHANGE TO JAY DRIVE

SR 141 RESURFACING, SR 2(CRANSTON HEIGHTS) TO US 13(BASIN CORNER

I-95, I-295 INTERCHANGE SIGNING BASIN ROAD, CHRISTINA, FARNHURST & NEW CASTLE AVENUE

DELAWARE TURNPIKE AND I-95 PAVEMENT RESURFACING AND SAFTETY IMPROVEMENTS FROM TOLL PLAZA TO CHRISTINA RIVER

SR 141 BASIN ROAD, US 13 TO SR 2

F.A.I. #1, BASIN ROAD INTERCHANGE

AIRPORT ROAD ACCESS FROM I-95

DELAWARE TURNPIKE

PROPERTY TAKING MAPS I-95

YEAR: 2040

D.H.V. PROJECTED: 5,181

TRUCKS: 9.3%

REQUIRED

DESIGN SPEED: 50 M.P.H.

DIRECTION OF DISTRIBUTION: 57%

PROVIDED

DATE

DIRECTOR OF TRANSPORTATION SOLUTIONS

END CONTRACT STATION 1145+41

PREPARED BY 121 Continental Drive, Suite 300 Newark, DE 19713 THIS SEAL APPLIES TO ALL SHEETS DATE BEARING THE "JMT" SECTION DESIGNATION.

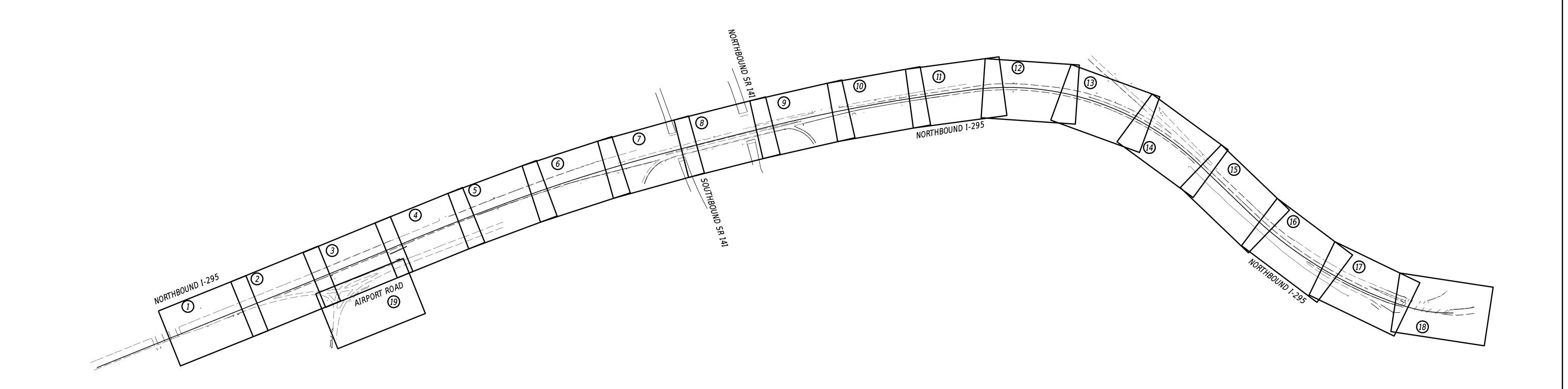
BEGIN CONTRACT STATION 1009+33

LIMIT OF CONTRACT **STATION 6000+00**

LIMIT OF CONTRACT **STATION 7007+27**

LOCATION MAP NOT TO SCALE

ADDENDA / REVISIONS



I-295 NORTHBOUND, SR 141 TO US 13

CONTRACT	BRIDGE NO.	N/A	
T202109101		14// (
1202109101	DESIGNED BY:	CCAREL	
COUNTY	DESIGNED BY:	C.GADEL	
NEW CASTLE	CHECKED BY:	B.HERB	

INDEX OF SHEETS SHEET NO.

MANMADE ROADSIDE FEATURES			
FEATURE DESCRIPTION	EXISTING	PROPOSED	ID
BOLLARD - STEEL POLE	0		
BOLLARD - WOOD POST	\boxtimes		
CURB, TYPE 1 AND TYPE 3			
CURB, TYPE 2	CURB, TYPE "X"		
CURB & GUTTER, TYPE 1			C
CURB & GUTTER, TYPE 2			
CURB & GUTTER, TYPE 3	,		
CURB OPENING - SUMP / ON GRADE			(6)
CURB OPENING WITH SIDEWALK			CO
FENCE - CHAINLINK OR STRANDED	—x——	0	F
FENCE - STOCKADE OR SPLIT RAIL	<u> </u>	• • • •	XXX
FLAG POLE	F.P. ⊕		
GUARDRAIL - STEEL BEAM, TYPE 1		_	
GUARDRAIL - STEEL BEAM, TYPE 2		_ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^ ^	
GUARDRAIL - STEEL BEAM, TYPE 3		<u> </u>	
GUARDRAIL - WIRE ROPE			
GUARDRAIL - END ANCHORAGE		<u></u>	GR XXX
GUARDRAIL - END TREATMENT, TYPE 1			
GUARDRAIL - END TREATMENT, TYPE 2		مسسسب	
GUARDRAIL - END TREATMENT, TYPE 3			
GUARDRAIL - IMPACT ATTENUATOR			
LAMP AND POST - RESIDENTIAL	LAMP ⊚		
MAILBOX	MB	<i>MB</i> ■	
PARKING METER AND POST	P.M. ⊕		
PAVEMENT - FLEXIBLE			
PAVEMENT - RIGID			
PILE - BRIDGE			
PILLAR OR MISCELLANEOUS POST	0		
TRAFFIC SIGN AND POST	7	•	
WALL - BRICK OR BLOCK	0000		
WALL - STONE	0000		

DRAI	DRAINAGE FEATURES			
FEATURE DESCRIPTION	EXISTING	PROPOSED	ID	
BIOFILTRATION SWALE		<bfs×< td=""><td></td></bfs×<>		
DITCH OR STREAM CENTERLINE		××		
DIRECTIONAL STREAM FLOW ARROW				
DRAINAGE INLET	C.B. D.I.	•	DI	
DRAINAGE JUNCTION BOX	J.B.	•	JB XXX	
DRAINAGE MANHOLE	(D)	•	MH	
DRAINAGE PIPE AND FLOW ARROW	SIZE/TYPE_LABEL		P	
FLARED END SECTION		•	FES	
RIPRAP - AREA FEATURE		5 0 8 0 0 0 8 0 0 0 8 0 0 0 0 0 0 0 0 0	RR	
RIPRAP - LINEAR FEATURE	00000000000000000000000000000000000000			
SAFETY END SECTION			SES XXX	
UNDERDRAIN			UD XXX	
UNDERDRAIN OUTLET			UDO XXX	

UTILITY FEATURES			
FEATURE DESCRIPTION	EXISTING	PROPOSED	
COMMUNICATIONS DISTRIBUTION BOX	CD TV		
COMMUNICATIONS MANHOLE			
COMMUNICATIONS TEST POINT	СТ		
COMMUNICATIONS - UNDERGROUND	COMM(A)	СОММ	
ELECTRIC - UNDERGROUND	E(A)	E	
ELECTRIC MANHOLE	E		
ELECTRIC METER	EM		
ELECTRIC TRANSFORMER	E		
GAS - UNDERGROUND			
GAS MANHOLE	G		
GAS METER	G.M.		
GAS VALVE	G.V.		
GAS PUMP - SERVICE STATION	G.P.		
IRRIGATION - UNDERGROUND	IR(A)	IR	
ITMS - UNDERGROUND	ITMS(A)	——— ITMS ———	
LIGHTING - UNDERGROUND	LI(A)	LI	
LUMINAIRE - POLE MOUNTED	<u> </u>	+	
MANHOLE - UNDETERMINED OWNER	3		
RAILROAD TRACKS			
SANITARY - UNDERGROUND	S(A)	s	
SANITARY SEWER MANHOLE	(\$)		
SANITARY SEWER VALVE	S.V.		
SANITARY SEWER CLEANOUT OR VENT	S.C.O.		
SEPTIC DRAIN FIELD	S.D.F.		
SIGNALIZATION - UNDERGROUND	· SIG(A)	SIG	
SOIL BORING LOCATION	•		
TELEPHONE BOOTH	В		
TRAFFIC - CONDUIT JUNCTION WELL	J.W.		
TRAFFIC - LIGHT POLE AND BASE	(0)		
TRAFFIC - PEDESTRIAN POLE & BASE			
TRAFFIC - SIGNAL CABINET & BASE		9	
TRAFFIC - SIGNAL POLE AND BASE	⊗	0	
UTILITY BOX	U		
UTILITY MARKER	<u>(</u> IM)		
UTILITY POLE GUY WIRE ANCHOR	0→>	•	
UTILITY POLE	Ø	T	
UTILITY TEST HOLE LOCATION	•		
WATER - UNDERGROUND	W(A)	w	
WATER - FIRE HYDRANT	F.H.	F.Ħ.	
WATER METER	W.M.		
WATER VALVE	WV °	₩ . V.	
WELL HEAD	WELL		

PAVEMENT SECTION(S)	
OVERLAY PAVEMENT - SEE TYPICAL SECTIONS FOR MATERIALS AND DEPTHS	
RECONSTRUCTED PAVEMENT - SEE TYPICAL SECTIONS FOR MATERIALS AND DEPTHS	
DRIVEWAY AND ENTRANCE PAVEMENT - SEE NOTES FOR MATERIALS AND DEPTHS	

NATURAL ROADSIDE FEATURES		
FEATURE DESCRIPTION	EXISTING	PROPOSED
HEDGEROW OR THICKET	ananana mananana	
MARSH BOUNDARY LINE		
TREE - CONIFEROUS	*	\varnothing
TREE - DECIDUOUS		\odot
TREE STUMP	Д	
SHRUBBERY	©	É
WETLAND BOUNDARY - DELINEATED	WL	
WOODS LINE BOUNDARY		

RIGHT-OF-WAY FEATURES		
FEATURE DESCRIPTION	EXISTING	PROPOSED
DENIAL OF ACCESS	DA	DA
EASEMENT - OTHERS	EASEMENT_TYPE	
PERMANENT EASEMENT	— — — -PE— — — -	——— PE———·
PROPERTY LINE		
PROPERTY MARKER - CONCRETE	C.M.	_
PROPERTY MARKER - IRON PIPE	I.P.	- ©
RIGHT-OF-WAY BASELINE	100+00	100+00
RIGHT-OF-WAY LINE		R/W
RIGHT-OF-WAY BY PE		
RIGHT-OF-WAY & DENIAL OF ACCESS	R/W-DA	R/W-DA
RIGHT-TO-ENTER		RTE
TEMPORARY CONSTRUCTION EASEMENT		———ТСЕ———

IDENTIFIERS	
FEATURE DESCRIPTION	ID
ABANDON BY CONTRACTOR	AB C
ABANDON BY OTHERS	AB O
ADJUST BY CONTRACTOR	A C
ADJUST BY OTHERS	A O
BEST MANAGEMENT PRACTICE	BMP
BUS STOP PAD / TYPE	BSP X
BUS STOP WITH SHELTER PAD / TYPE	BSSP X
CONCRETE SAFETY BARRIER	B
CONVERT TO JUNCTION BOX	CJB XXX
CONVERT TO DRAINAGE MANHOLE	CMH XXX
DO NOT DISTURB	DND
ENERGY DISSIPATOR	ED XXX
FILL WITH FLOWABLE FILL	FF C
LANDSCAPE PLANTINGS	LS
PEDESTRIAN CONNECTION / TYPE	PC
PEDESTRIAN CONNECTION / TYPE WITHOUT DETECTABLE WARNING SYSTEM	PC-N XXX
RELOCATE BY CONTRACTOR	RL C
RELOCATE BY OTHERS	RL O
RELOCATE BY PROPERTY OWNER	RL PO
REMOVE BY CONTRACTOR	RM
REMOVE BY OTHERS	RM O
REMOVE BY TRAFFIC CONTRACTOR	RM TC
RIGHT-OF-WAY MONUMENT	M XXX
TRAFFIC CABINET TYPE	CA

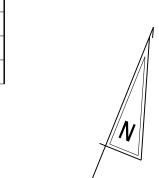
SURVEY CONTROL & MONUMENTATION		
FEATURE DESCRIPTION	EXISTING	
POINT OF CURVATURE OR TANGENCY	0	
POINT OF INTERSECTING TANGENTS	0	
SURVEY BENCHMARK LOCATION	B.M.	
SURVEY NGS POINT LOCATION	(a)	
SURVEY TIE POINT LOCATION	T.P.	
SURVEY TRAVERSE POINT	Δ	

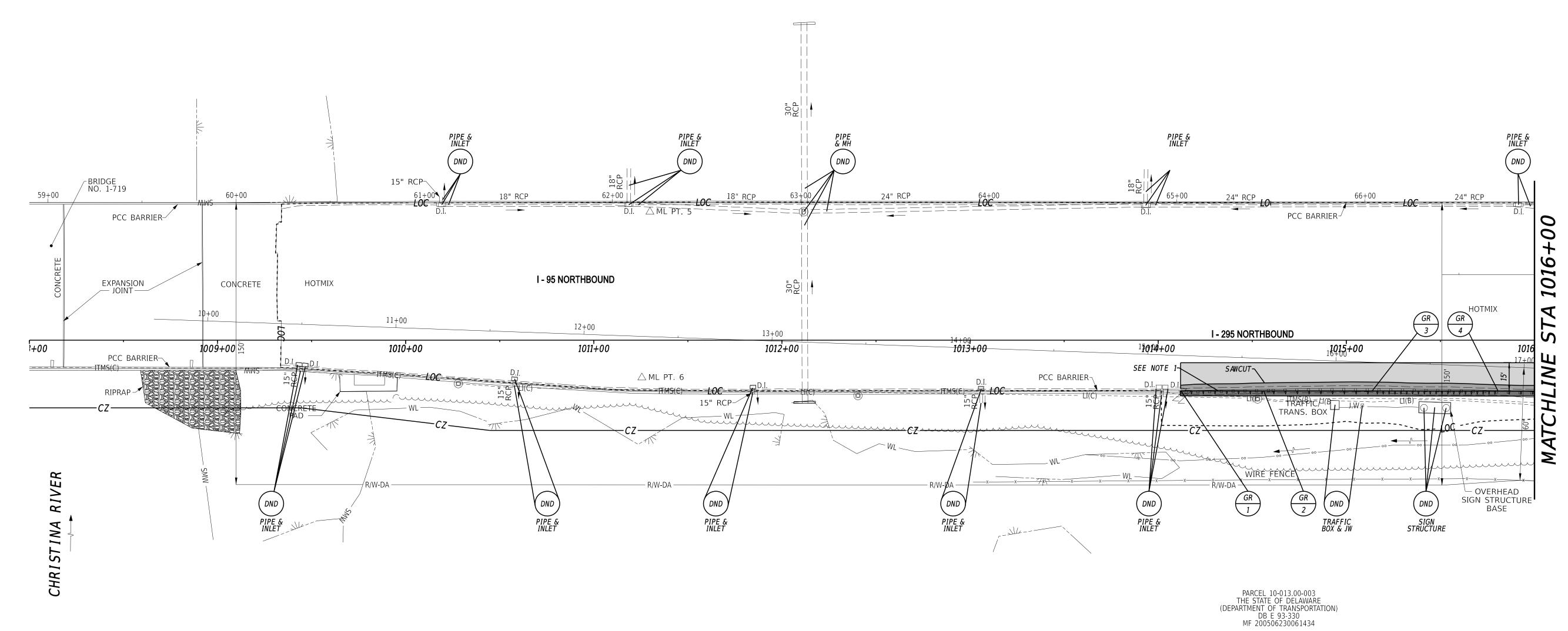
MISCELLANEOUS FEATURES		
WIISCELLAINEOUS FEATURES		
FEATURE DESCRIPTION	PROPOSED	
BARRIER, DOUBLE-FACED, PERMANENT		
BARRIER, SINGLE-FACED, PERMANENT, TEST LEVEL 4 / TEST LEVEL 5		
BRICK PATTERNED SURFACE		
BUTT JOINT		
CLEAR ZONE	CZ	
CONSTRUCTION BASELINE	100+00	
LATERAL OFFSET	LO	
LIMIT OF CONSTRUCTION	LOC	
PAVEMENT PATCH		
PAVEMENT REMOVAL - TOPSOIL, SEED AND MULCH		
P.C.C. SIDEWALK - 4"		
P.C.C. SIDEWALK - 6" (USE 8" DEPTH FOR CHANNELIZATION ISLANDS.)		

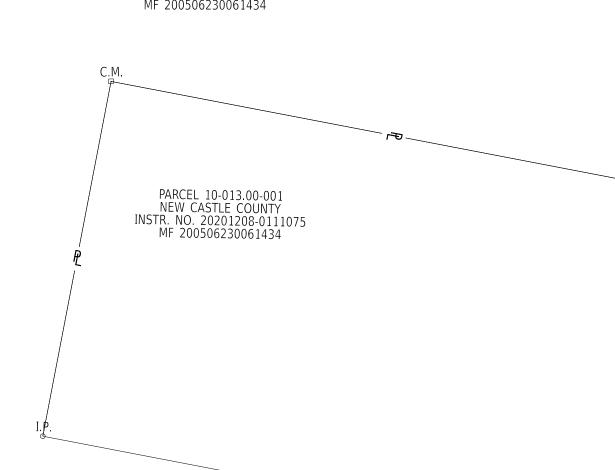
ADDENDA /	REVISIONS	

CONTRACT	BRIDGE NO.	N/A	
T202109101	DESIGNED BY:	C.GABEL	1
COUNTY NEW CASTLE	CHECKED BY:	B.HERB	1

GUARDRAIL SCHEDULE ITEM DESCRIPTION / TYPE BEGIN STA. OFFSET LENGTH 1 | GUARDRAIL TO BARRIER CONNECTION, EXIT TYPE 31 1014+09.03 26.9' 14.23' 26.9' 2 | GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31 1014+23.26 3 GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31 1015+13.26 26.9' 67' 4 GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31 1015+80.26 26.9' 20'







1. USE CAUTION WHEN INSTALLING PROPOSED GUARDRAIL POSTS BETWEEN STA. 1014+00 AND STA. 1015+00 SO AS NOT TO DISTURB THE EXISTING UNDERGROUND ITMS LINES.

I-295 NORTHBOUND, SR 141 TO US 13

CONTRACT	BRIDGE NO.	N/A	
T202100101	51.115 62 1161	IV/A	
T202109101	DECICNED BY	CCAREL	
COUNTY	DESIGNED BY:	C.GABEL	
NEW CASTLE	CHECKED BY:	B.HERB	

CONSTRUCTION PLAN

CP-01

SECTION

SHEET NO.

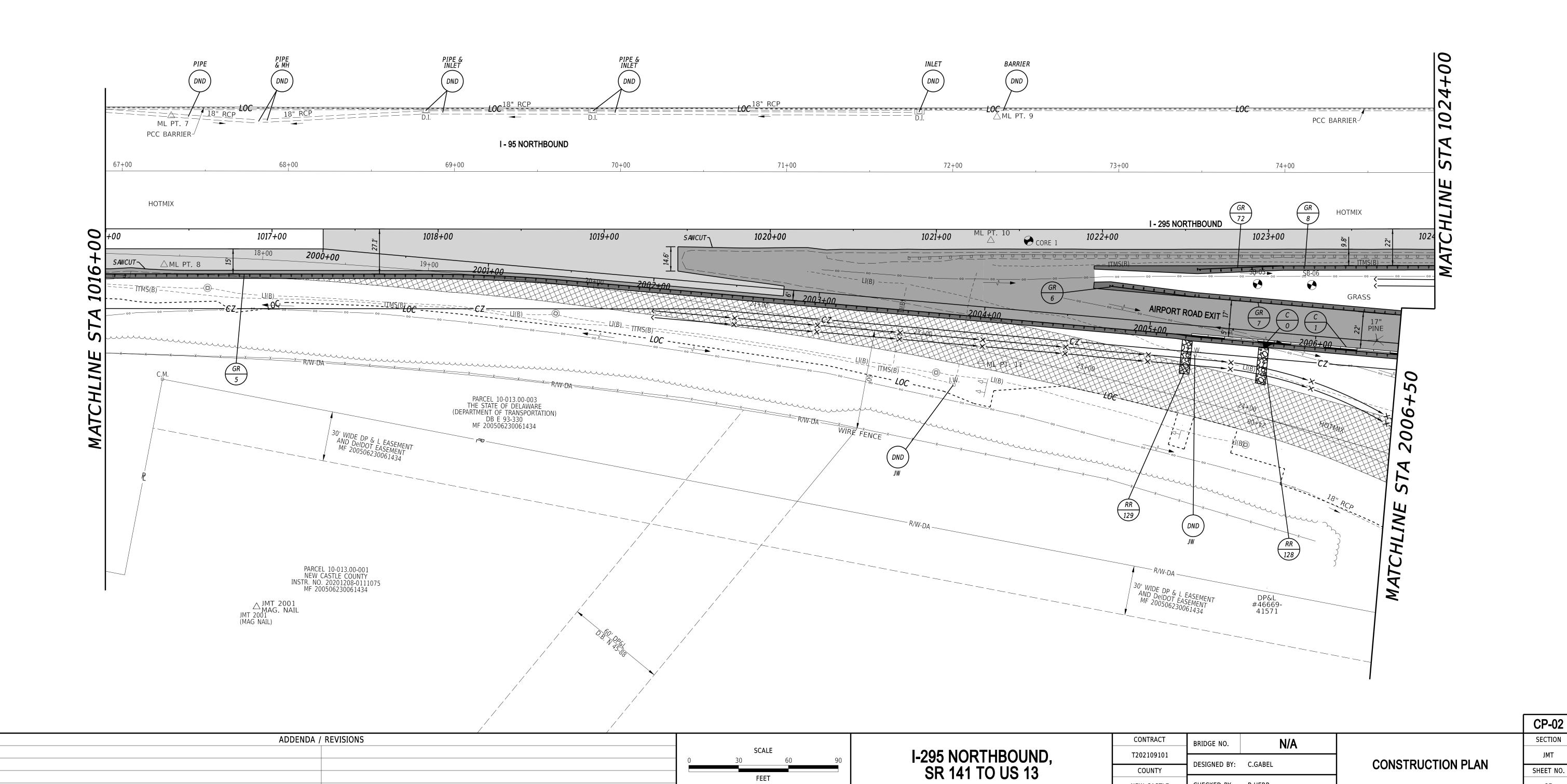
29-SEP-2023 16:49 pw://deldot-pw.bent

	GUARDRAIL SCHEDULE						
NO.	ITEM DESCRIPTION / TYPE	BEGIN STA.	OFFSET	LENGTH			
5	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1016+00.00	VARIES	802'			
6	GUARDRAIL END TREATMENT, TYPE 1-31	2004+73.66	VARIES	50'			
7	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	2005+23.66	17'	125'			
8	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1022+57.02	22'	92'			
72	GUARDRAIL END TREATMENT, TYPE 1-31	1022+57.02	VARIES	50'			

RIPRAP SCHEDULE				
NO.	TYPE	AREA (SY)	DEPTH (IN)	
128	R - 4	14.50	18	
129	R - 4	15.50	18	

	ROADWAY CORE SCHEDULE					
NO.	STATION	OFFSET	DESCRIPTION			
C - 1	1021+56.00	RT 6.83'	20.5" HMA			

	CURB SCHEDULE				
NO.	ITEM DESCRIPTION / TYPE	LENGTH			
1	INTEGRAL PCC CURB & GUTTER, TYPE 3-4	125'			

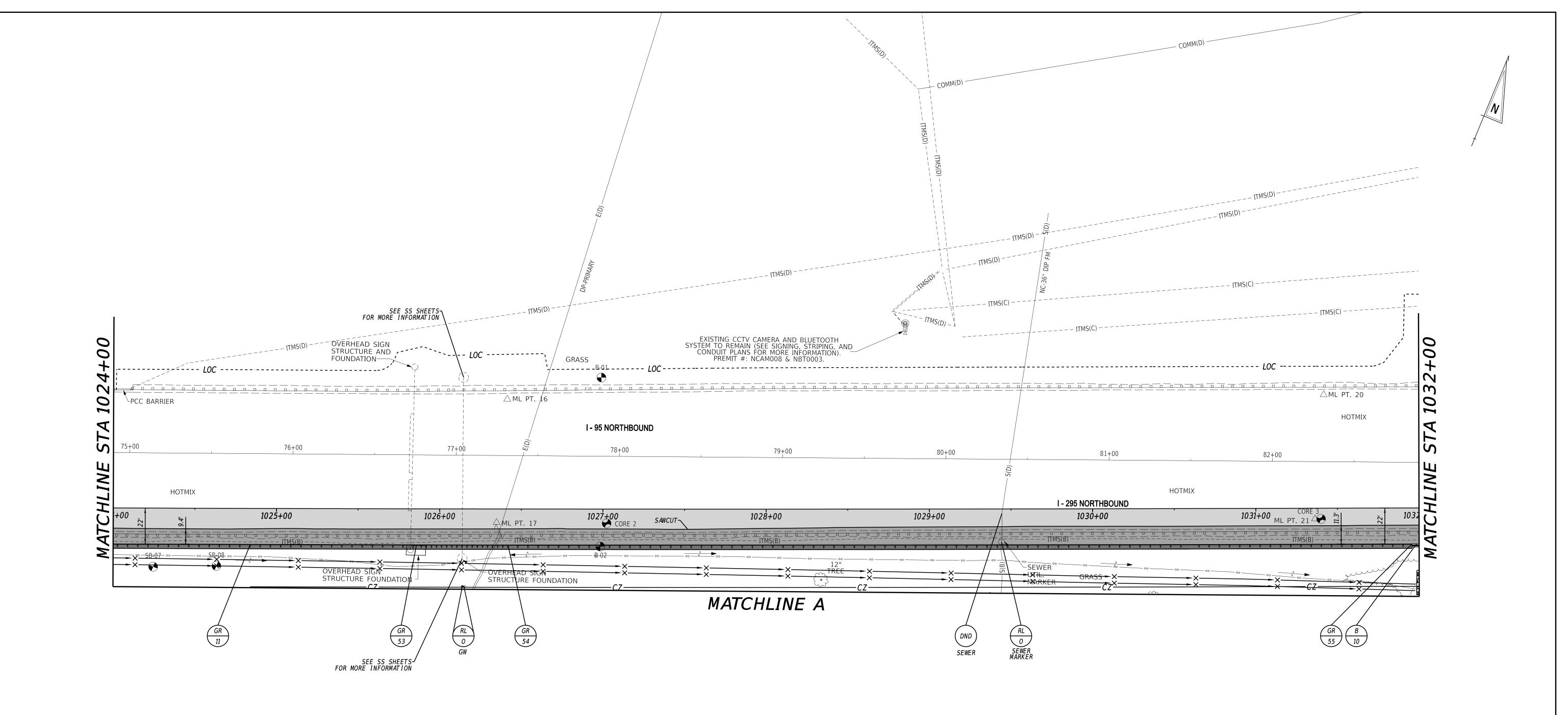


CHECKED BY: B.HERB

NEW CASTLE

27

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	BARRIER SCHEDULE				
NO.	ITEM DESCRIPTION / TYPE	LENGTH			
10	CONCRETE ROADSIDE BARRIER, 36", TYPE 1	5 '			

ROADWAY CORE SCHEDULE						
NO.	STATION	OFFSET	DESCRIPTION			
C-2	1027+02.00	RT 8.74'	18.25" HMA			
C-3	1031+40.00	RT 6.55'	19.25" HMA			

	GUARDRAIL SCHEDULE						
NO.	ITEM DESCRIPTION / TYPE	BEGIN STA.	OFFSET	LENGTH			
11	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1024+00.00	22.00'	186'			
53	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	1025+85.00	22.00'	56 '			
54	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1026+42.00	22.00'	515'			
55	GUARDRAIL TO BARRIER, APPROACH TYPE 3-31	1031+75.75	22.00'	39.56'			

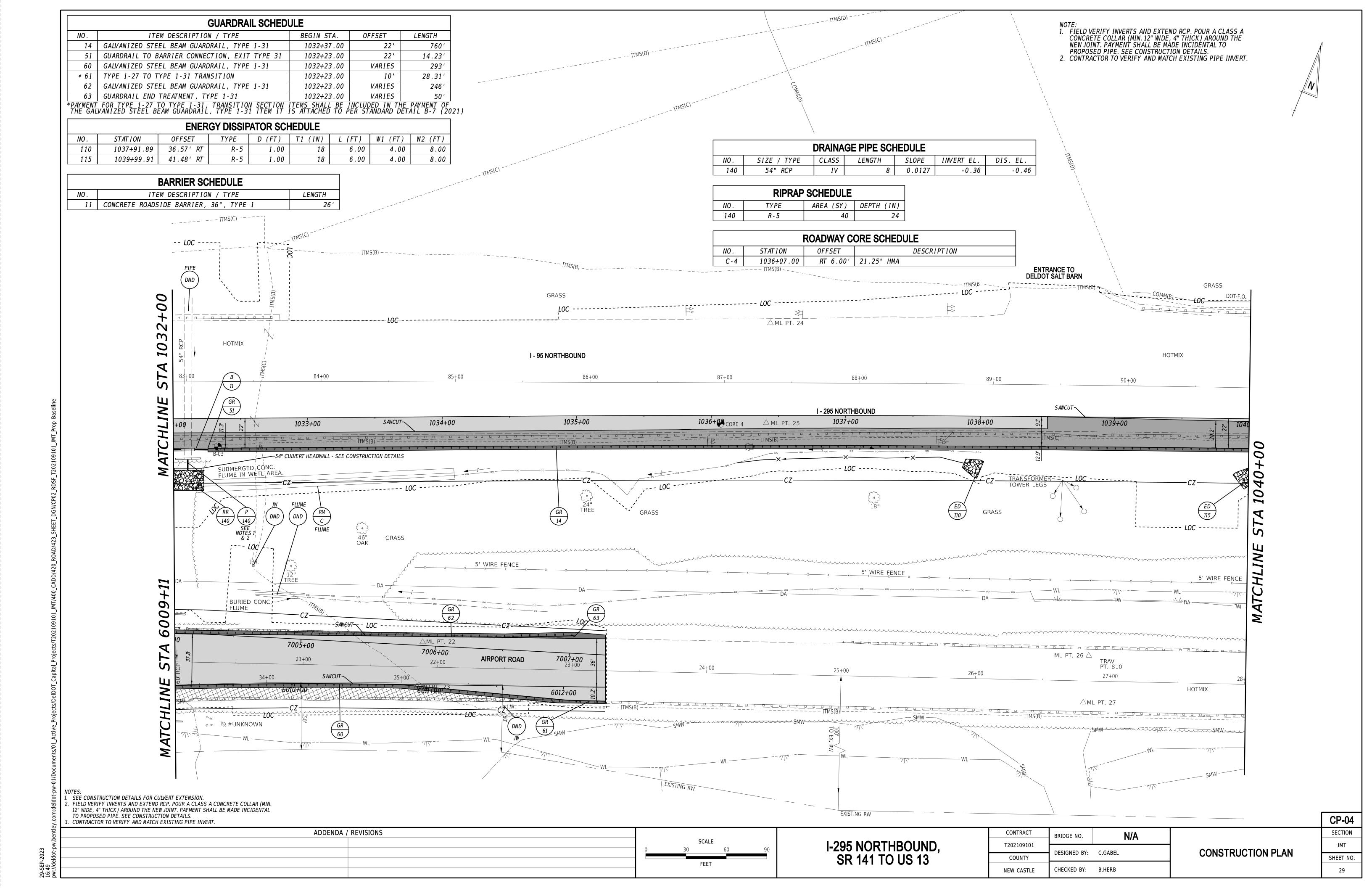
ADDENDA / REVISIONS

SCALE

1-295 NORTHBOUND,
SR 141 TO US 13

FEET

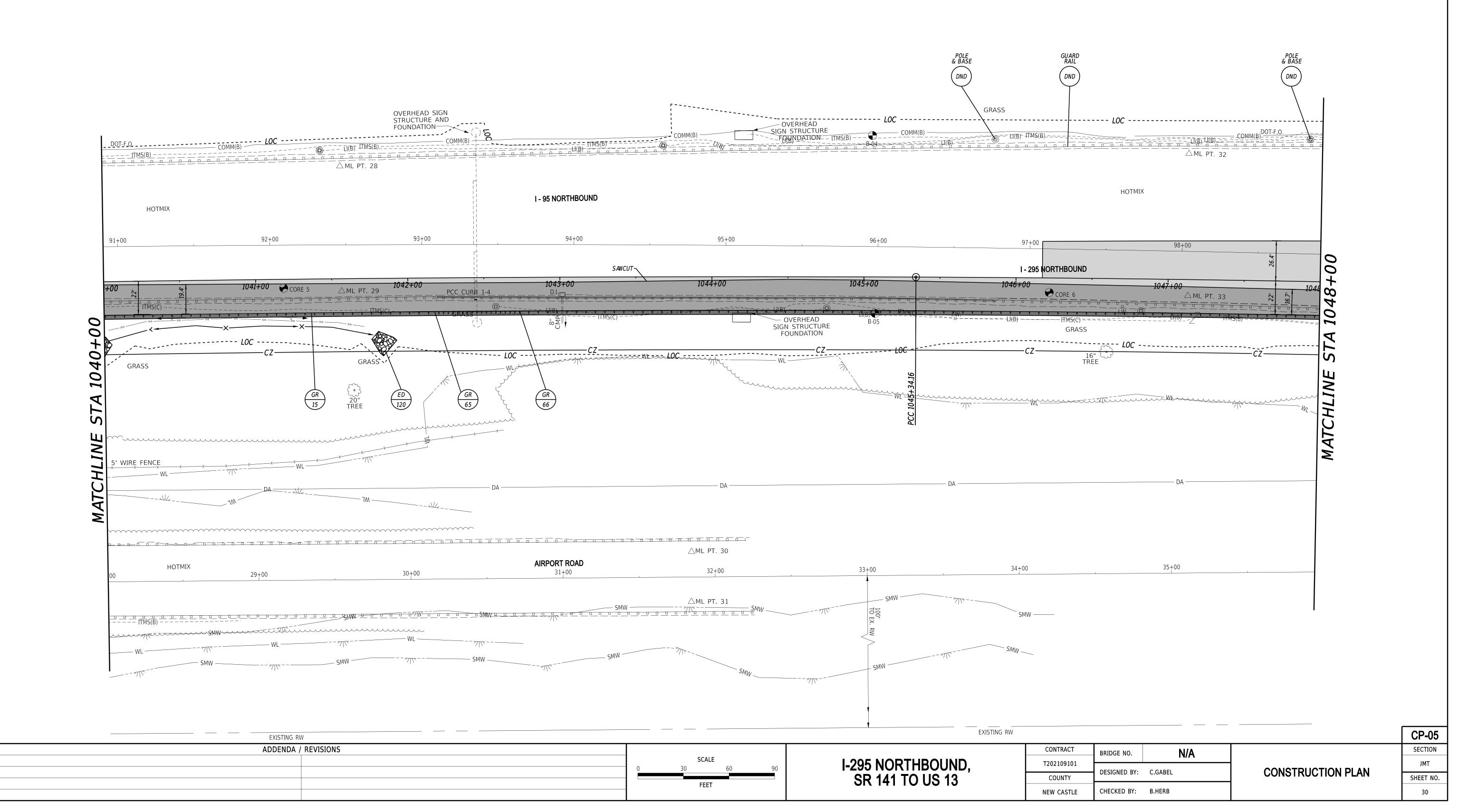
| Page No. | Contract | Bridge No. | N/A | | Contract | Contrac



	GUARDRAIL SCHED	ULE		
NO.	ITEM DESCRIPTION / TYPE	BEGIN STA.	OFFSET	LENGTH
15	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1040+00.00	22'	218'
65	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	1042+17.42	22'	56′
66	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1042+73.43	22'	526'

ENERGY DISSIPATOR SCHEDULE								
NO.	STATION	OFFSET	TYPE	D (FT)	T1 (IN)	L (FT)	W1 (FT)	W2 (FT)
120	1041+81.29	40.05' RT	R - 5	1.00	18	6.00	4.00	8.00

	ROADWAY CORE SCHEDULE					
NO.	STATION	OFFSET	DESCRIPT I ON			
C - 5	1041+18.00	RT 5.77'	8.25" HMA			
C-6	1046+22.00	RT 9.59'	7.75" HMA			



29-SEP-2023 16:49 pw://deldot-pw.bentlev.com:0

	GUARDRAIL SCHEDULE					
NO.	ITEM DESCRIPTION / TYPE	BEGIN STA.	OFFSET	LENGTH		
16	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1048+00.00	VARIES	800'		

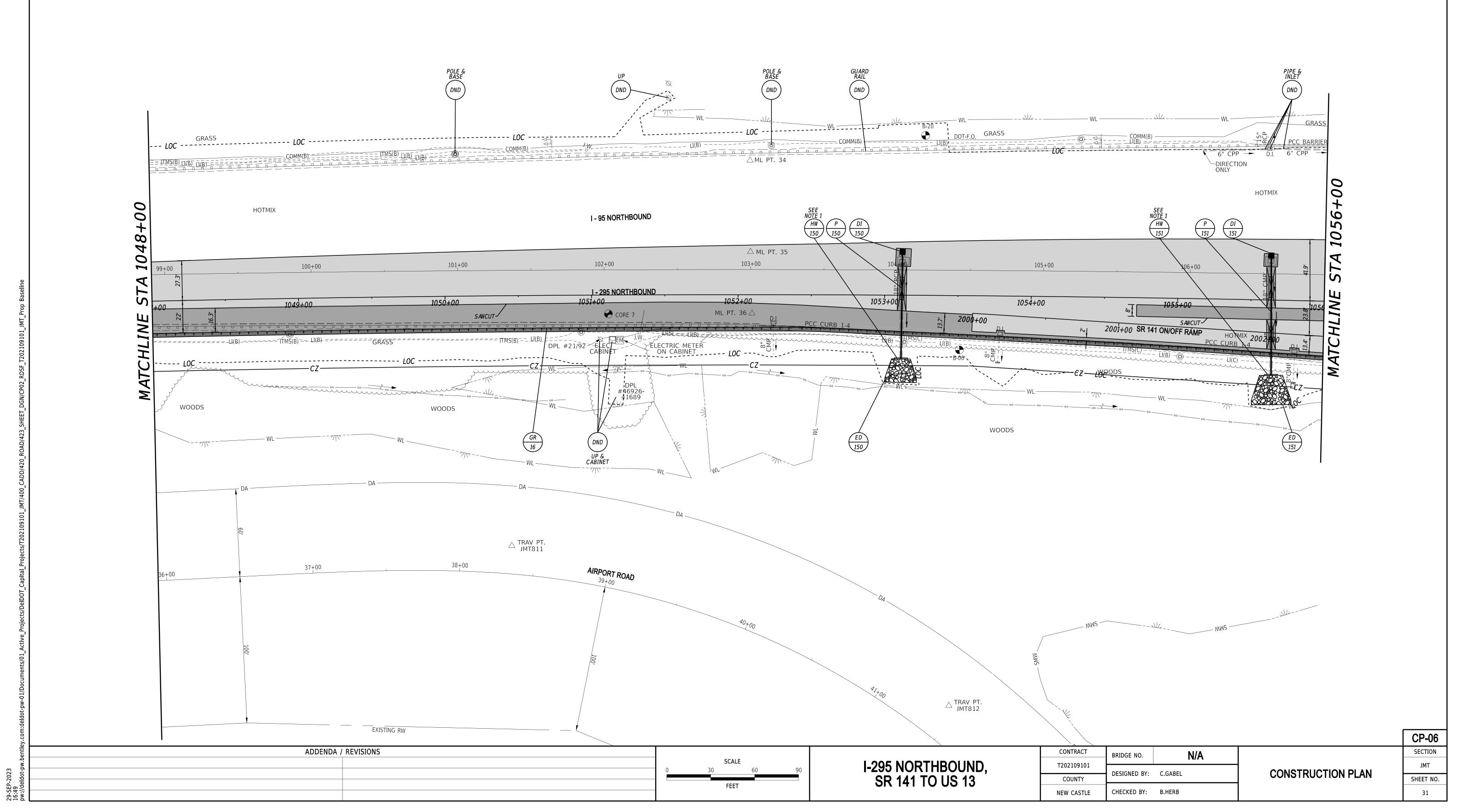
	ROADWAY CORE SCHEDULE									
NO. STATION OFFSET			DESCRIPTION							
C-7	1051+11.00	RT 12.87'	8.25" HMA							

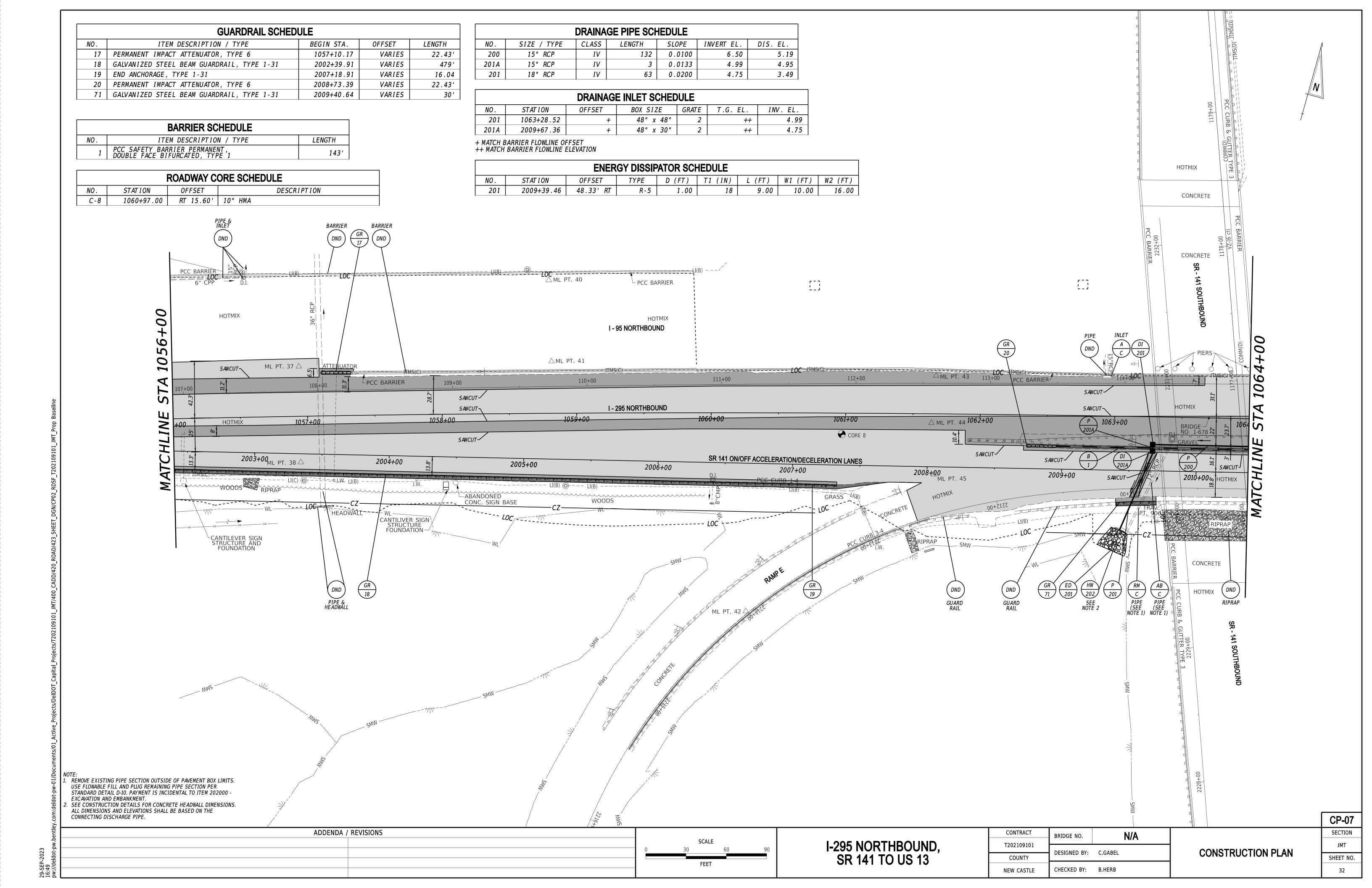
	DRAINAGE PIPE SCHEDULE									
NO.	SIZE / TYPE	CLASS	LENGTH	SLOPE	INVERT EL.	DIS. EL.				
150	18" RCP	IV	71	0.0501	7.06	3.50				
151	18" RCP	IV	80	0.0505	9.04	5.00				

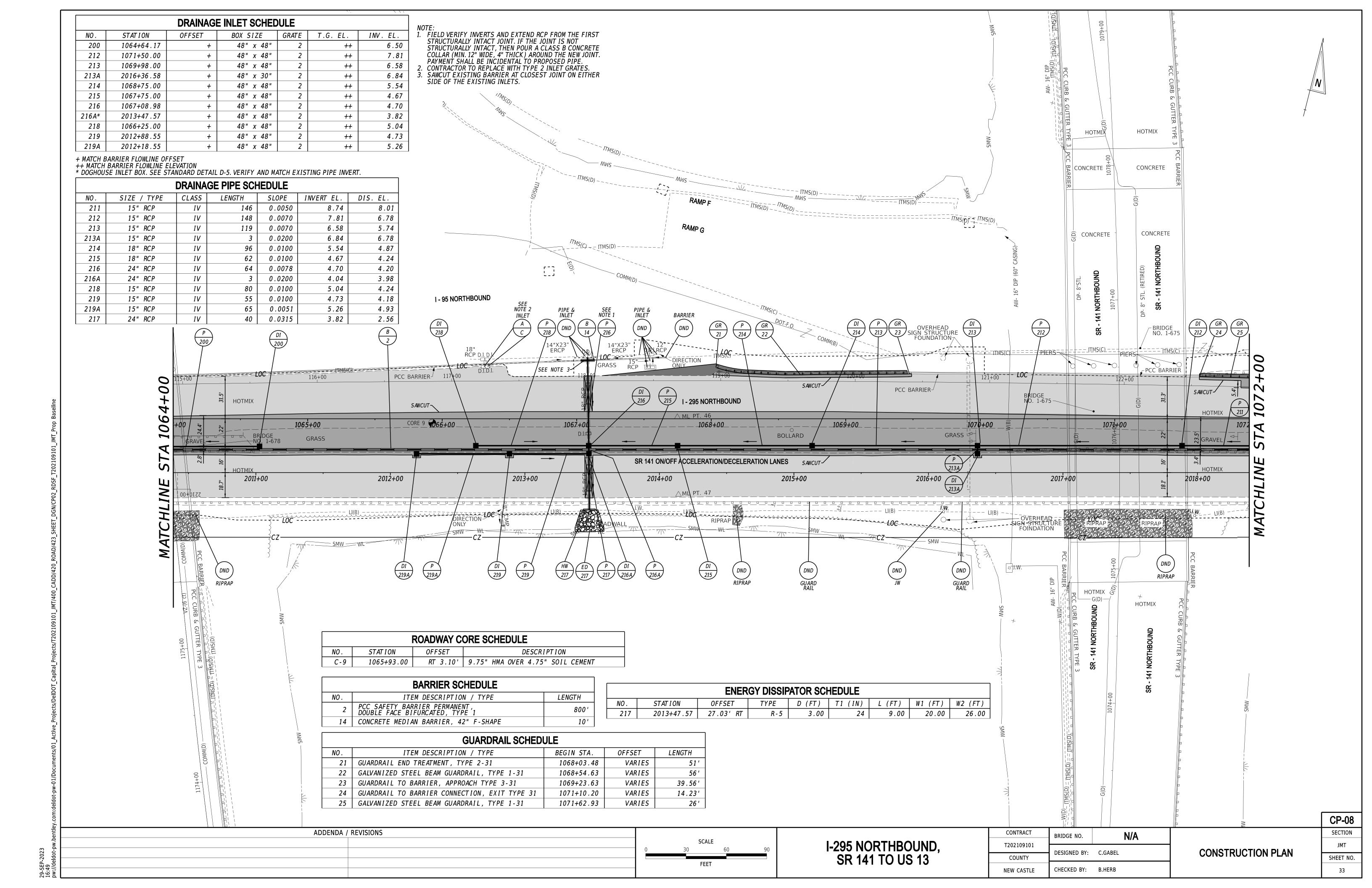
	DRAINAGE INLET SCHEDULE										
NO.	STATION	OFFSET	BOX SIZE	GRATE	T.G. EL.	INV. EL.					
150	1053+12.13	28.89' LT	48" x 30"	2	12.32	7.06					
151	1055+63.24	28.56' LT	48" x 30"	2	13.17	9.04					

	ENERGY DISSIPATOR SCHEDULE										
NO.	STATION	OFFSET	TYPE	D (FT)	T1 (IN)	L (FT)	W1 (FT)	W2 (FT)			
150	1053+11.20	49.08' RT	R - 5	1.00	18	9.00	10.00	16.00			
151	2002+06.50	36.40' RT	R - 5	2.00	18	9.00	10.00	16.00			

NOTE: 1. SEE CONSTRUCTION DETAILS FOR CONCRETE HEADWALL DIMENSIONS. ALL DIMENSIONS AND ELEVATIONS SHALL BE BASED ON THE CONNECTING DISCHARGE PIPE.







	GUARDRAIL SCHEDULE										
NO. ITEM DESCRIPTION / TYPE BEGIN STA. OFFSET LENGTH											
26	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1072+00.00	VARIES	800'							
27	GUARDRAIL END TREATMENT, TYPE 2-31	2022+58.02	VARIES	51'							
28	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	2023+09.22	VARIES	158'							
29	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	2024+67.22	VARIES	170'							

	BARRIER SCHEDULE						
NO.	ITEM DESCRIPTION / TYPE	LENGTH					
3	PCC SAFETY BARRIER PERMANENT, DOUBLE FACE BIFURCATED, TYPE 1	355'					

ROADWAY CORE SCHEDULE								
NO.	STATION	OFFSET	DESCRIPTION					
C - 10	1072+25.00	RT 7.56'	10" HMA OVER 6" SOIL CEMENT					
C-11	1076+40.00	RT 12.66'	10" HMA OVER 6.25" SOIL CEMENT					

	DRAINAGE INLET SCHEDULE											
NO.	STATION	OFFSET	BOX SIZE	GRATE	T.G. EL.	INV. EL.						
210	1074+00.00	+	48" x 48"	2	++	9.42						
211	1073+00.00	+	48" x 48"	2	++	8.74						
211A	2019+38.29	+	48" x 30"	2	++	9.00						
303	2026+18.57	+	48" x 48"	2	++	12.49						
304	2024+68.44	+	48" x 48"	2	++	11.56						
305	2023+24.09	+	48" x 48"	2	++	10.69						

+ MATCH CURB/BARRIER FLOWLINE OFFSET ++ MATCH CURB/BARRIER FLOWLINE ELEVATION

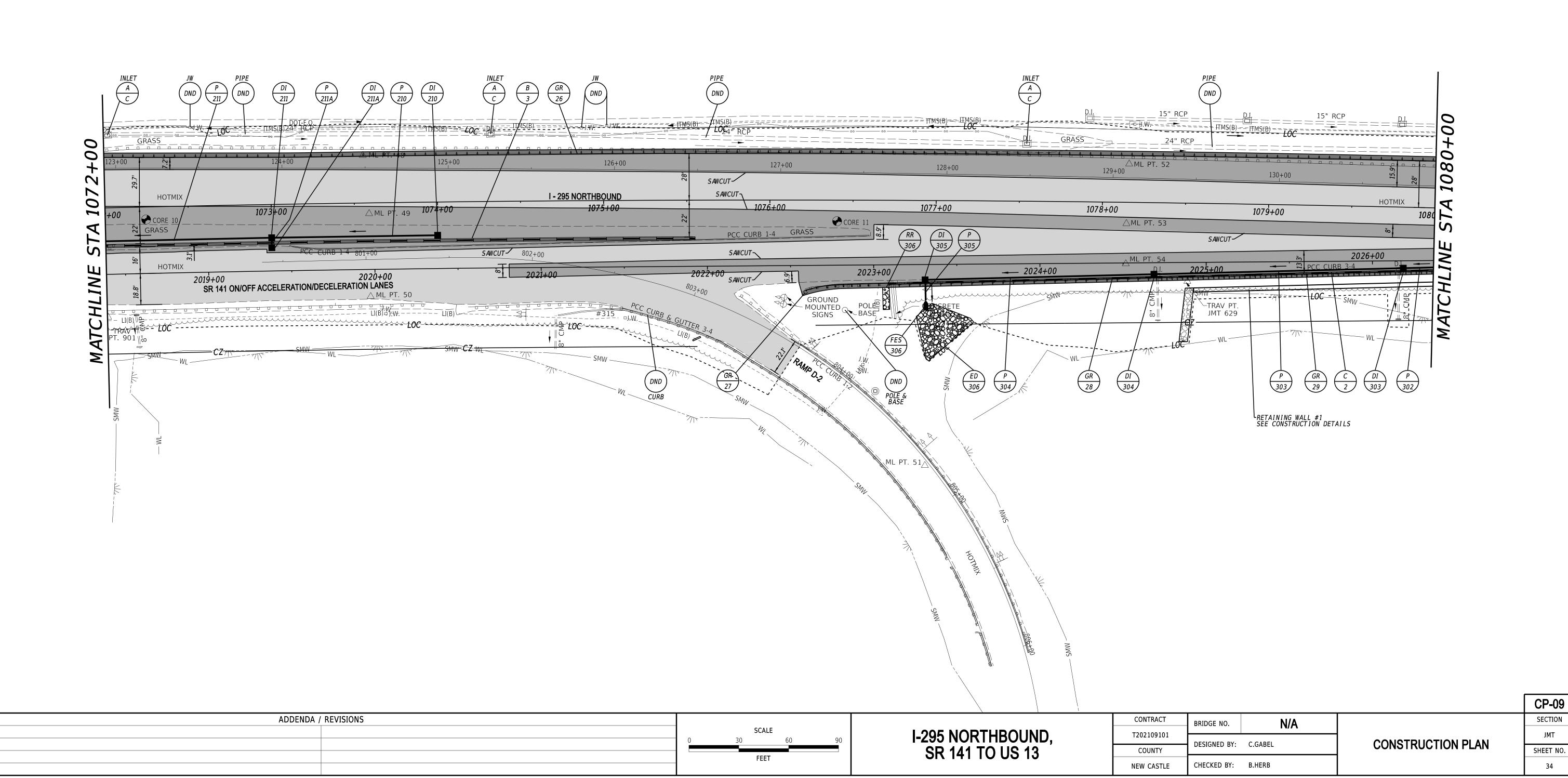
	DRAINAGE PIPE SCHEDULE									
NO.	SIZE / TYPE	CLASS	LENGTH	SLOPE	INVERT EL.	DIS. EL.				
210	15" RCP	IV	96	0.0050	9.42	8.94				
211A	15" RCP	IV	3	0.0200	9.00	8.94				
302	15" RCP	IV	127	0.0050	13.33	12.69				
303	15" RCP	IV	146	0.0050	12.49	11.76				
304	18" RCP	IV	134	0.0050	11.56	10.89				
305	18" RCP	IV	12	0.0383	10.69	10.00				
	r - ¬									

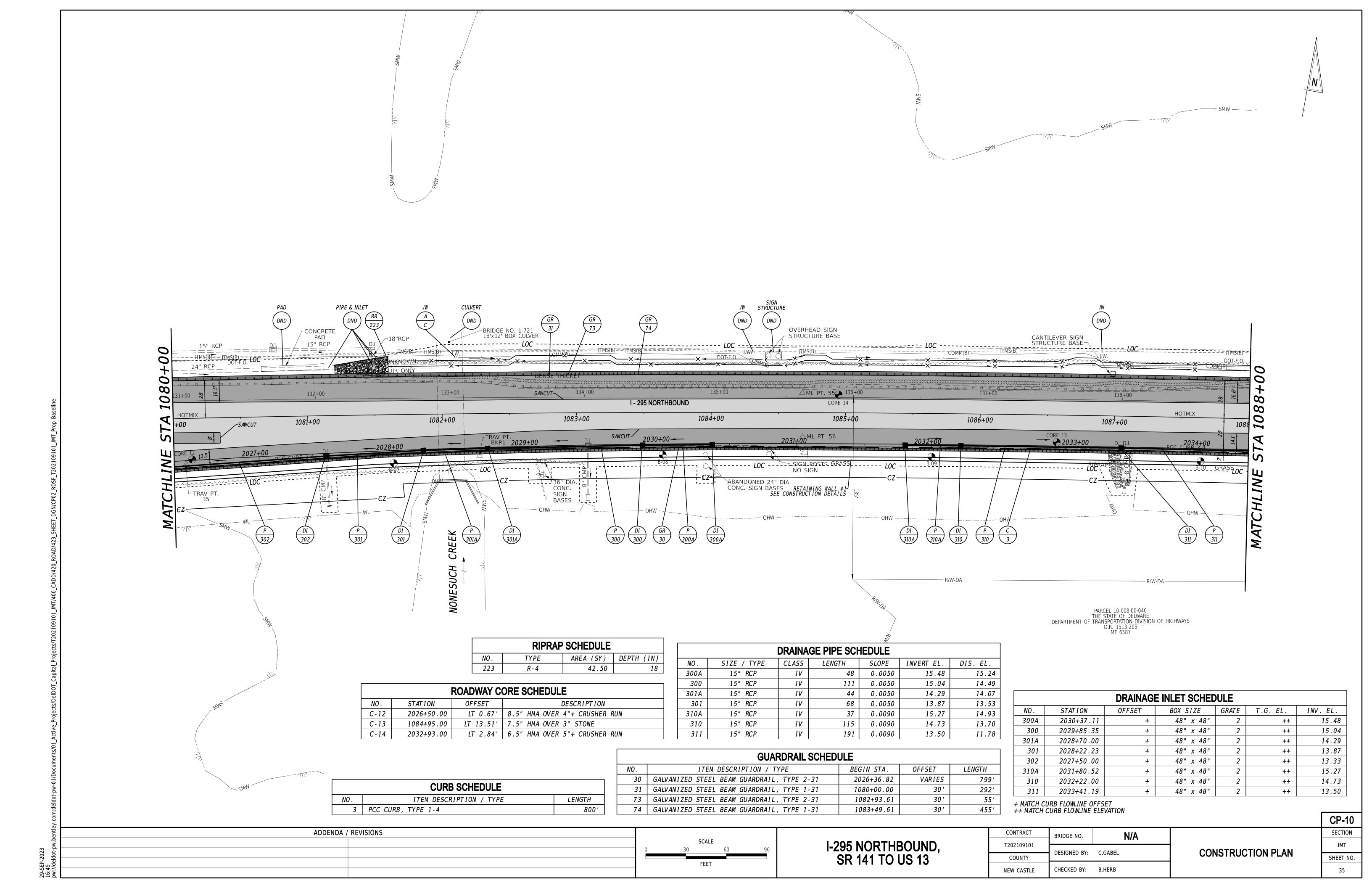
	ENERGY DISSIPATOR SCHEDULE									
NO.	STATION	OFFSET	TYPE	D (FT)	T1 (IN)	L (FT)	W1 (FT)	W2 (FT)		
306	2023+35.53	33.74' RT	R - 5	3.00	18	9.00	6.00	12.00		

	RIPRAP SCHEDULE								
NO.	NO. TYPE AREA (SY) DEPTH (IN)								
306	R - 4	7.00	18						

	FLARED END SECTION SCHEDULE							
NO.	SIZE / TYPE	SLOPE	SAFETY GRATE					
306	18" RCP	0.0383	NO					

	CURB SCHEDULE	
NO.	ITEM DESCRIPTION / TYPE	LENGTH
2	PCC CURB, TYPE 1-4	328 '

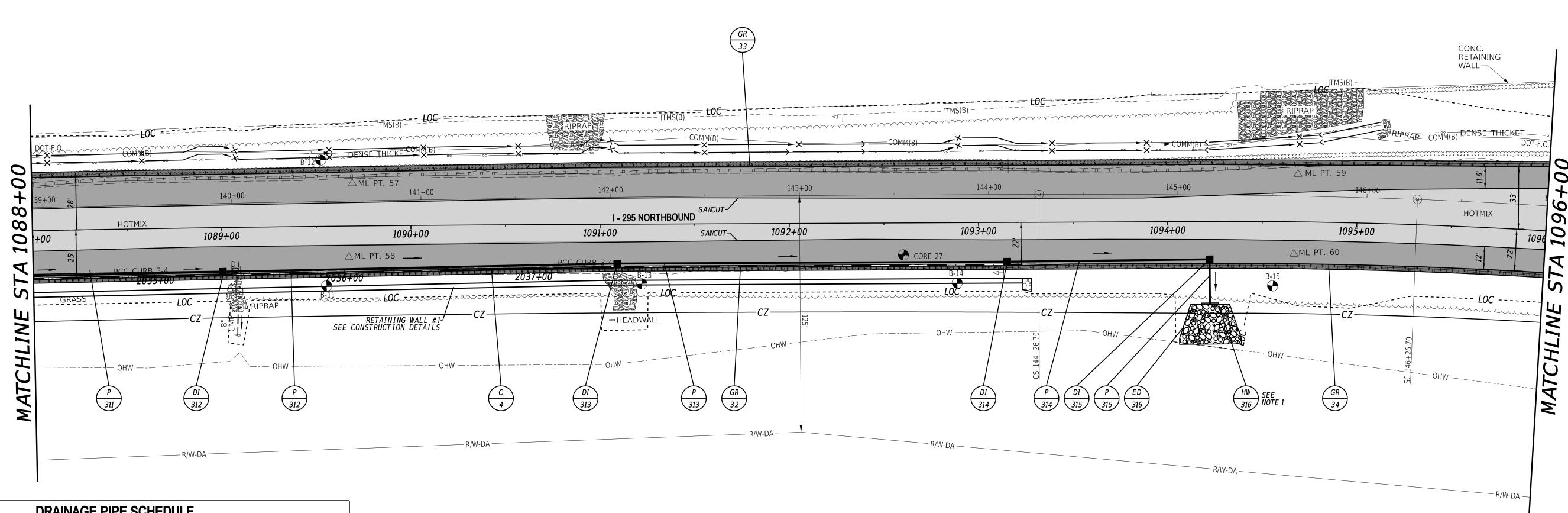




	GUARDRAIL SCHED	ULE		
NO.	ITEM DESCRIPTION / TYPE	BEGIN STA.	OFFSET	LENGTH
<i>32</i>	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 2-31	2034+36.82	22.75'	523 '
33	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1088+00.00	VARIES	800'
34	GALVANIZED STEEL BEAM GUARDRAIL, TYPE 1-31	1093+22.97	22'	277 '

		ROADWAY C	ORE SCHEDULE	
NO.	STATION	OFFSET	DESCRIPTION	
C-27	1092+60.00	RT 16.88'	14.5" HMA	

	CURB SCHEDULE	
NO.	ITEM DESCRIPTION / TYPE	LENGTH
4	PCC CURB, TYPE 1-4	523



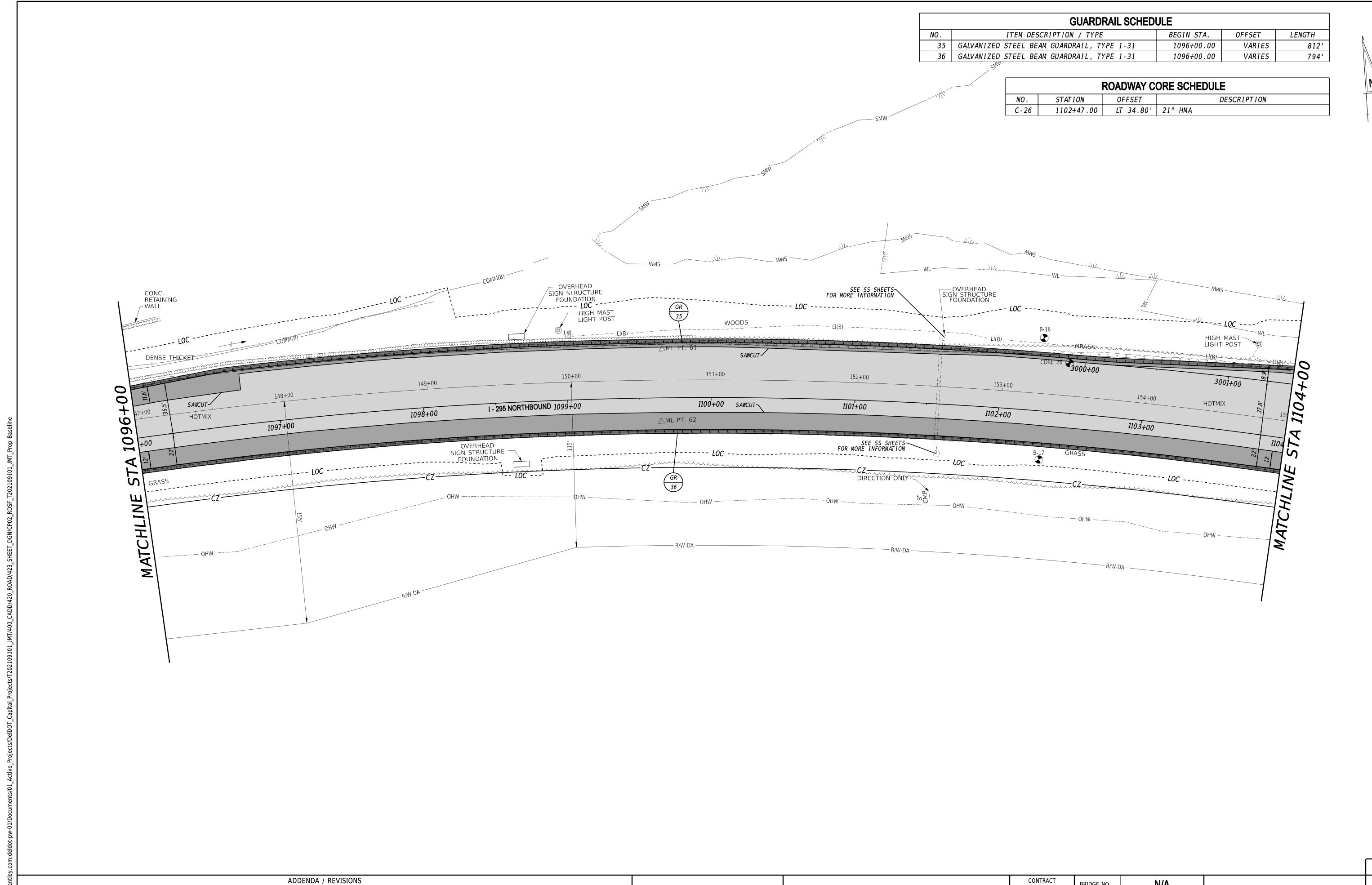
	DRAINAGE PIPE SCHEDULE						
NO.	SIZE / TYPE	CLASS	LENGTH	SLOPE	INVERT EL.	DIS. EL.	
312	15" RCP	IV	204	0.0090	11.58	9.74	
313	18" RCP	IV	202	0.0090	9.54	7.72	
314	18" RCP	IV	103	0.0090	7.52	6.59	
315	18" RCP	IV	22	0.0632	6.39	5.00	

DRAINAGE INLET SCHEDULE						
NO.	STATION	OFFSET	BOX SIZE	GRATE	T.G. EL.	INV. EL.
312	2035+35.92	+	48" x 48"	2	++	11.58
313	1091+08.96	+	48" x 48"	2	++	9.54
314	1093+15.04	+	48" x 48"	2	++	7.52
315	1094+22.07	20.05' RT	48" x 48"	2	15.52	6.39
	312 313 314	312 2035+35.92 313 1091+08.96 314 1093+15.04	NO. STATION OFFSET 312 2035+35.92 + 313 1091+08.96 + 314 1093+15.04 +	NO. STATION OFFSET BOX SIZE 312 2035+35.92 + 48" x 48" 313 1091+08.96 + 48" x 48" 314 1093+15.04 + 48" x 48"	NO. STATION OFFSET BOX SIZE GRATE 312 2035+35.92 + 48" x 48" 2 313 1091+08.96 + 48" x 48" 2 314 1093+15.04 + 48" x 48" 2	NO. STATION OFFSET BOX SIZE GRATE T.G. EL. 312 2035+35.92 + 48" x 48" 2 ++ 313 1091+08.96 + 48" x 48" 2 ++ 314 1093+15.04 + 48" x 48" 2 ++

+ MATCH CURB FLOWLINE OFFSET ++ MATCH CURB FLOWLINE ELEVATION

ENERGY DISSIPATOR SCHEDULE								
NO.	STATION	OFFSET	TYPE	D (FT)	T1 (IN)	L (FT)	W1 (FT)	W2 (FT)
316	1094+21.35	52.31' RT	R - 5	3.00	18	6.00	12.00	16.00

5.00 10 0.00 12.00 10.00						
						CP-11
ADDENDA / REVISIONS			CONTRACT	BRIDGE NO. N/A		SECTION
	SCALE 0 30 60 90	I-295 NORTHBOUND,	T202109101		CONCEDITOTION DI ANI	JMT
		SR 141 TO US 13	COUNTY	DESIGNED BY: C.GABEL	CONSTRUCTION PLAN	SHEET NO.
	FEET		NEW CASTLE	CHECKED BY: B.HERB		36



CP-12
SECTION
JMT

SHEET NO.

29-SEP-2023 16:49

I-295 NORTHBOUND, SR 141 TO US 13 CONTRACT
BRIDGE NO.

T202109101

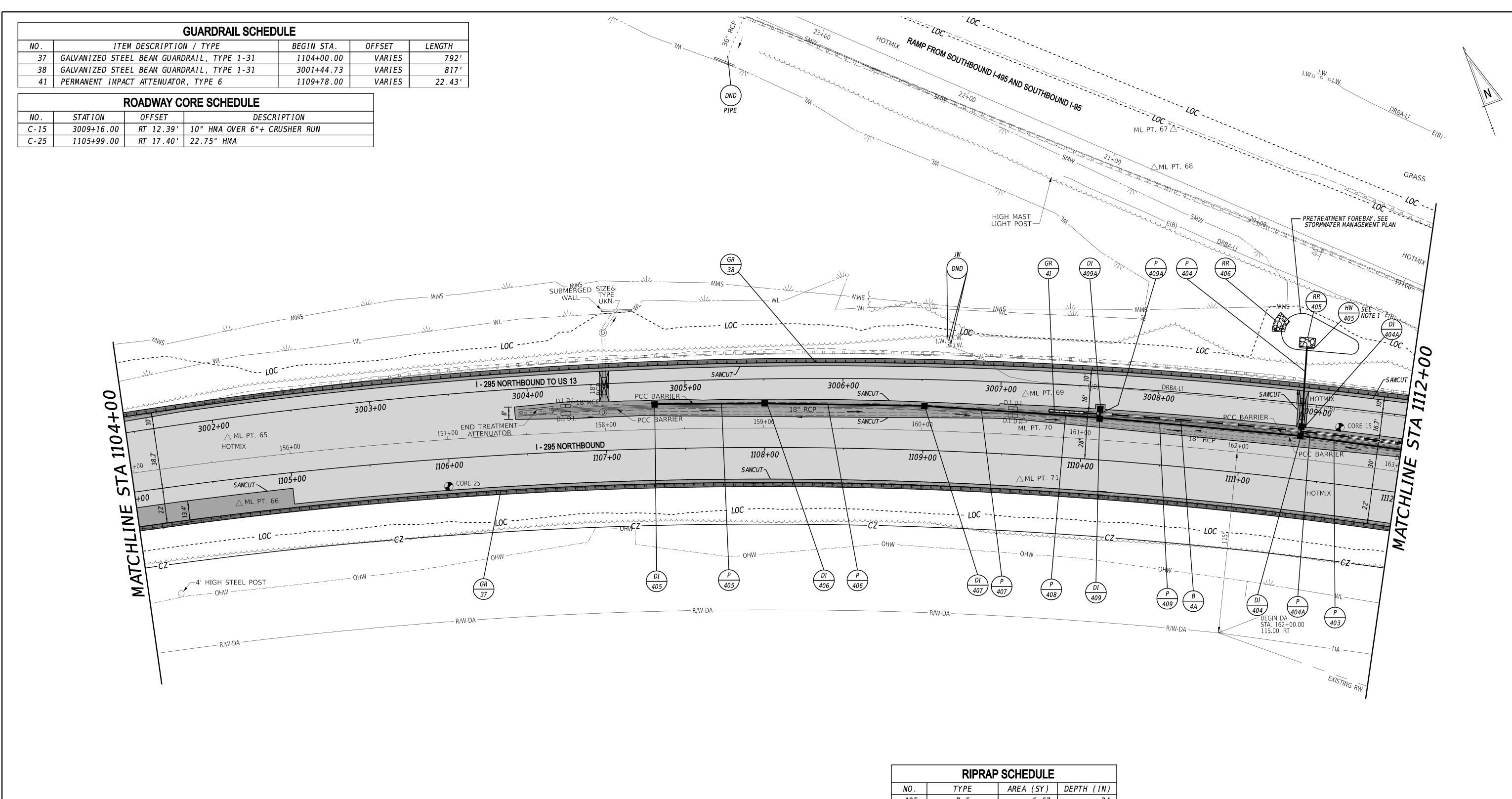
COUNTY

DESIGNED BY: C.GABEL

NEW CASTLE

CHECKED BY: B.HERB

CONSTRUCTION PLAN



				, ,	, ,
		405	R - 5	6.67	24
		406	R - 5	9.25	24
	DRAINAGI	E INLET	SCHEDULE		
STATION	OFFSET	BOX	SIZE GRATE	T G FI	INV FI

	DRAINAGE INLET SCHEDULE						
ĺ	NO.	STATION	OFFSET	BOX SIZE	GRATE	T.G. EL.	INV. EL.
	404	1111+36.34	+	72" x 48"	2	++	11.41
	404A	3008+92.08	+	48" x 48"	2	++	11.35
	405	3004+80.27	14.44' RT	34" x 24"	2	15.31	12.78
	406	3005+50.31	15.39' RT	48" x 30"	2	15.94	12.55
	407	3006+51.86	16.76' RT	48" x 30"	2	17.33	12.21
	409	1110+10.00	+	72" x 48"	2	++	11.83
	409A	3007+63.67	+	34" x 24"	2	++	12.09

	DRAINAGE PIPE SCHEDULE										
NO.	SIZE / TYPE	CLASS	LENGTH	SLOPE	INVERT EL.	DIS. EL.					
403	18" RCP	IV	153	0.0200	18.69	15.63					
404	24" RCP	IV	51	0.0225	11.35	10.21					
404A	24" RCP	IV	3	0.0200	11.41	11.35					
405	15" RCP	IV	66	0.0035	12.78	12.55					
406	15" RCP	IV	97	0.0035	12.55	12.21					
407	18" RCP	IV	108	0.0035	12.21	11.83					
409	24" RCP	IV	122	0.0035	11.83	11.41					
409A	15" RCP	IV	3	0.0200	12.09	12.03					

. SEE CONSTRUCTION DETAILS FOR CONCRETE HEADWALL DIMENSIONS. ALL DIMENSIONS AND ELEVATIONS SHALL BE BASED ON THE CONNECTING DISCHARGE PIPE.

BARRIER SCHEDULE	
ITEM DESCRIPTION / TYPE	LENGTH
PCC SAFETY BARRIER PERMANENT, DOUBLE FACE BIFURCATED, TYPE 1	200'

NO.

ADDENDA / REVISIONS

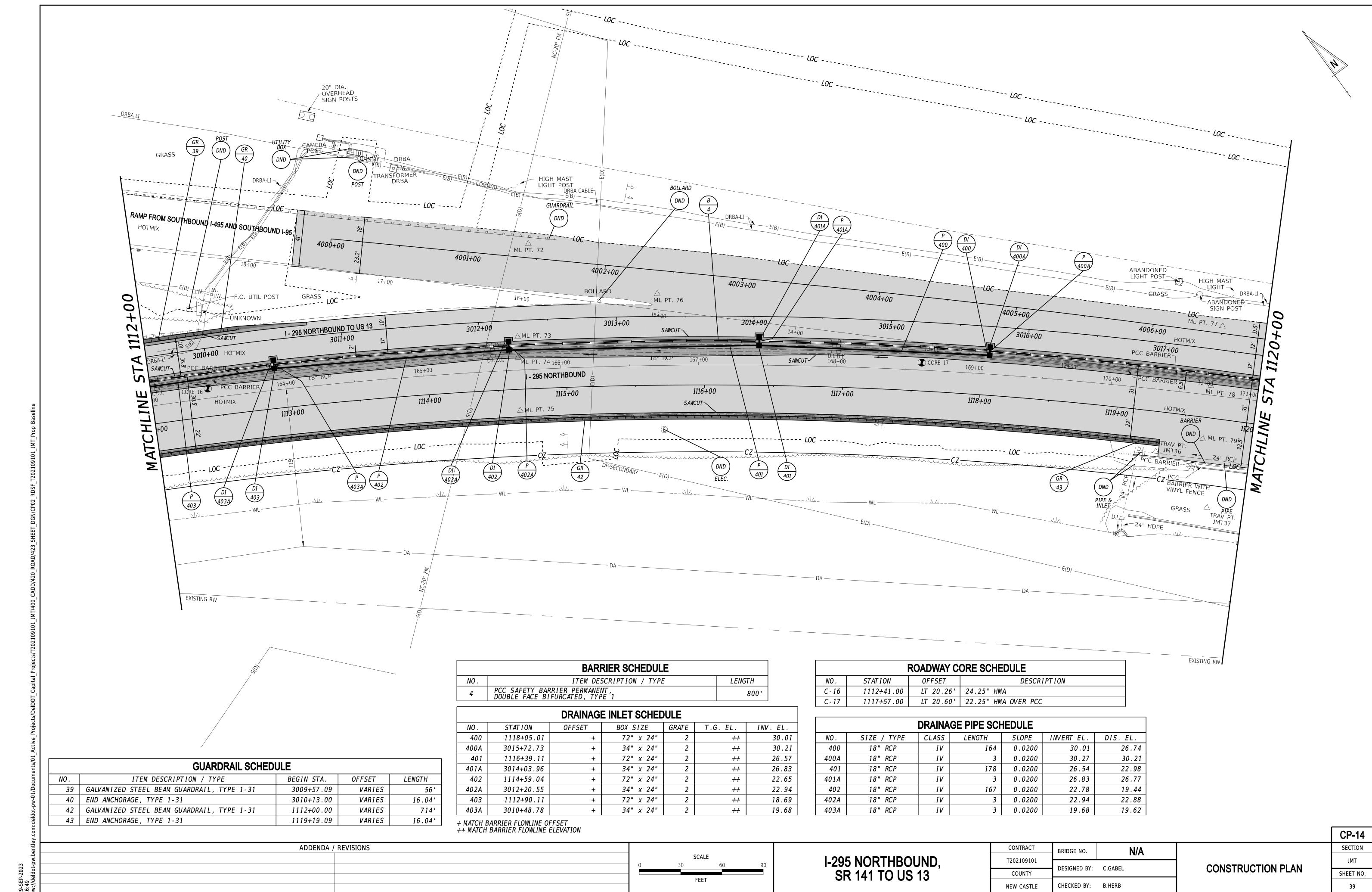
+ MATCH BARRIER FLOWLINE OFFSET
++ MATCH BARRIER FLOWLINE ELEVATION

I-295 NORTHBOUND,	T202109101
SR 141 TO US 13	COUNTY
OK 111 10 00 10	NEW CASTLE

CONTRACT	BRIDGE NO.	N/A
T202100101	BINIDGE NO.	14/74
T202109101	DESIGNED BY:	CGAREL
COUNTY	DESIGNED BI.	C.GADEL
NEW CASTLE	CHECKED BY:	B.HERB

CONSTRUCTION PLAN SHEET NO.

CP-13

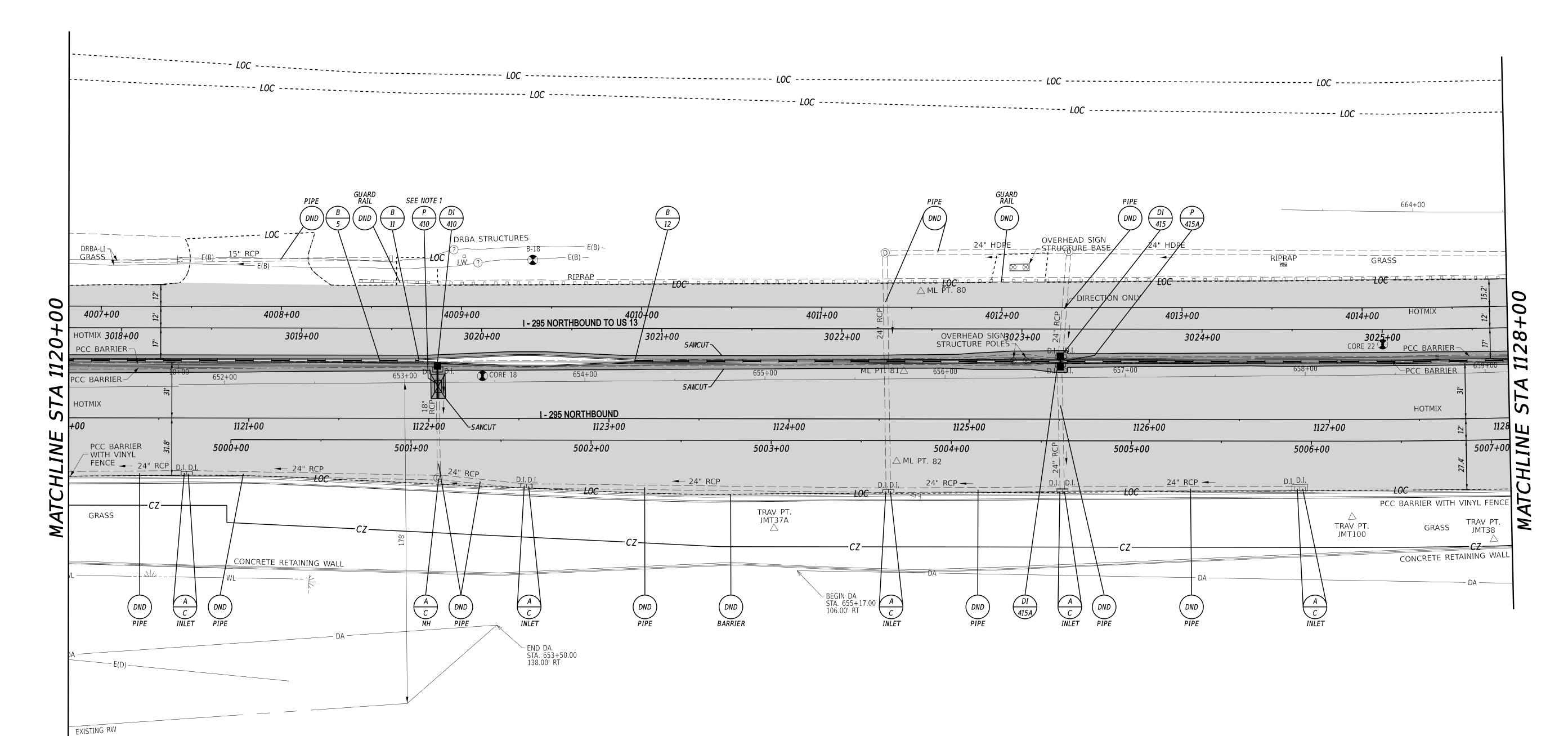


DRAINAGE INLET SCHEDULE STATION OFFSET BOX SIZE GRATE T.G. EL. INV. EL. NO. 410 48" x 30" 38.96 1122+04.74 415* 3023+24.36 48" x 48" ++ 42.45 415A* 1125+50.62 42.19 48" x 48"

DRAINAGE PIPE SCHEDULE NO. SIZE / TYPE CLASS LENGTH SLOPE INVERT EL. DIS. EL. 0.0066 38.90* 410 18" RCP 39.00 16 415A 0.0133 42.43 42.39 24" RCP * CONTRACTOR TO VERIFY AND MATCH EXISTING PIPE INVERT.

1. FIELD VERIFY EXISTING PIPE INVERTS AND EXTEND RCP. POUR A CLASS B CONCRETE COLLAR (MIN. 12" WIDE, 4" THICK) AROUND THE NEW JOINT. PAYMENT SHALL BE INCIDÉNTAL TO PROPOSED PIPE.

+ MATCH BARRIER FLOWLINE OFFSET ++ MATCH BARRIER FLOWLINE ELEVATION * DOGHOUSE INLET BOX. SEE STANDARD DETAIL D-5. VERIFY AND MATCH EXISTING PIPE INVERT.



ROADWAY CORE SCHEDULE						
NO.	STATION	OFFSET	DESCR I PT I ON			
C - 18	1122+30.00	LT 23.60'	9.25" HMA OVER 10" PCC			
C-22	3025+00.00	RT 8.27'	15" HMA OVER PCC			

	BARRIER SCHEDULE	
NO.	ITEM DESCRIPTION / TYPE	LENGTH
5	PCC SAFETY BARRIER PERMANENT, DOUBLE FACE BIFURCATED, TYPE 1	195'
11 *	BIFURCATED BARRIER, SIGN STRUCUTRE, CL-3	120'
12	PCC SAFETY BARRIER PERMANENT, DOUBLE FACE BIFURCATED, TYPE 1	485'

*SEE CONSTRUCTION DETAILS

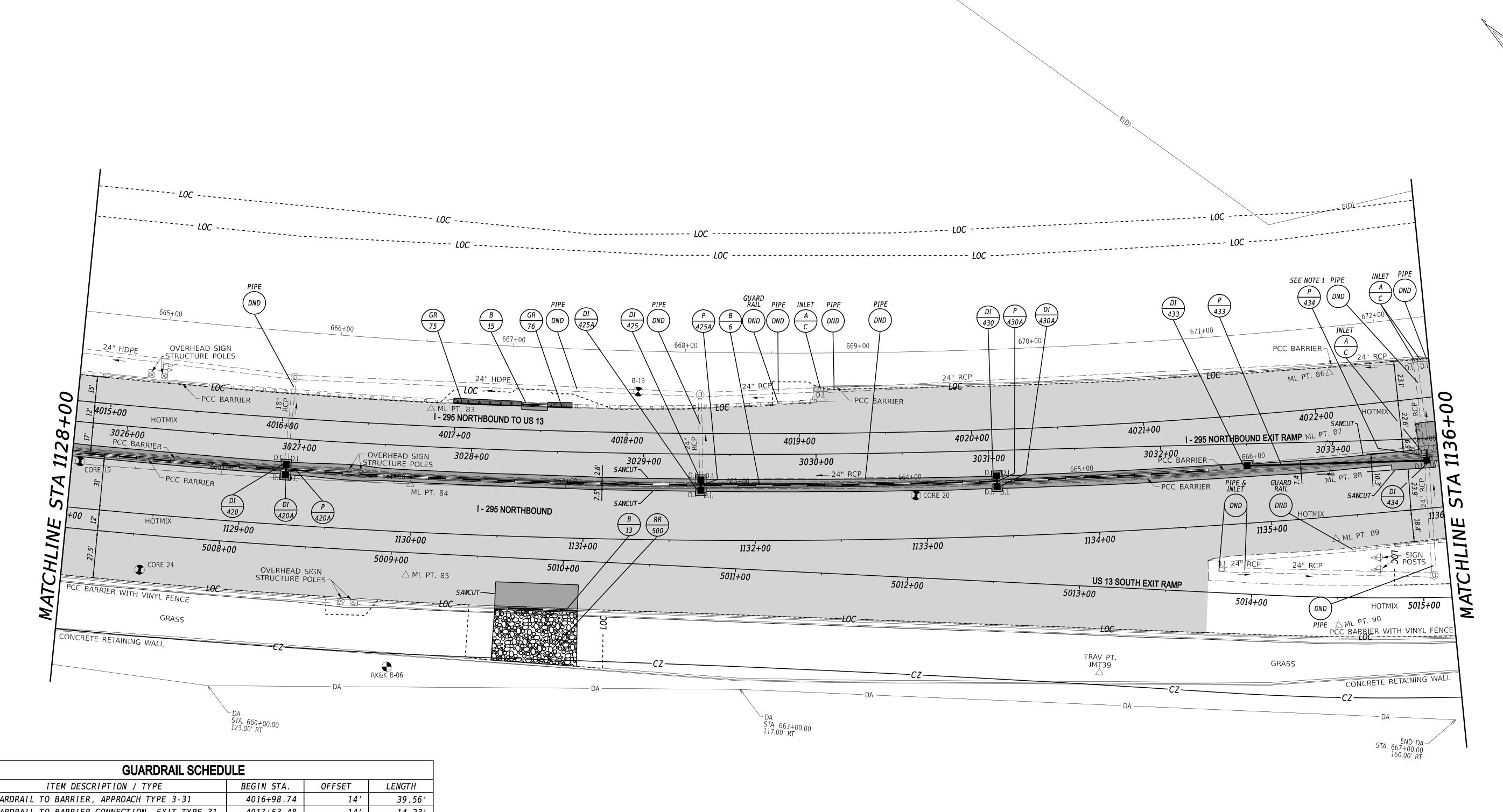
ADDENDA /	REVISIONS			
			SCA	LE
		0	30	60
			FEE	T

I-295 NORTHBOUND,	
SR 141 TO US 13	

CONTRACT	BRIDGE NO.	N/A	
202100101	51.115 62 1161	14//4	
202109101	DESIGNED BY:	CCAREL	1
COUNTY	DESIGNED BY:	C.GADEL	,
EW CASTLE	CHECKED BY:	B.HERB	

CONSTRUCTION PLAN SHEET NO.

CP-15



	GUARDRAIL SCHEDULE					
NO.	ITEM DESCRIPTION / TYPE	BEGIN STA.	OFFSET	LENGTH		
75	GUARDRAIL TO BARRIER, APPROACH TYPE 3-31	4016+98.74	14'	39.56'		
76	GUARDRAIL TO BARRIER CONNECTION, EXIT TYPE 31	4017+53.48	14'	14.23'		

ROADWAY CORE SCHEDULE				
NO.	STATION	OFFSET	DESCR I PT I ON	
C-19	3025+74.00	RT 22.90'	8.5" HMA OVER 10.25" PCC	
C-20	3030+57.00	RT 24.84'	11" HMA OVER 9.75" PCC	
C-24	5007+55.00	RT 20.47'	19.75" HMA	

	BARRIER SCHEDULE	
NO.	ITEM DESCRIPTION / TYPE	LENGTH
6	PCC SAFETY BARRIER PERMANENT, DOUBLE FACE BIFURCATED, TYPE 1	661'
13 *	42" PCC SINGLE FACE BARRIER, OH-6 SIGN STRUCTURE	48'
15	CONCRETE ROADSIDE BARRIER, 42" TYPE 3	15'
*SEE CON	ISTRUCTION DETAILS	

NO.	STATION	OFFSET	BOX SIZE	GRATE	T.G. EL.	INV. EL.
420*	3026+93.24	+	48" x 48"	2	++	54.11
420A	1129+25.15	+	34" x 24"	2	++	54.37
425*	3029+33.37	+	48" x 48"	2	++	58.66
425A	1131+68.24	+	34" x 24"	2	++	58.92
430*	3031+04.52	+	48" x 48"	2	++	60.38
430A	1133+41.39	+	34" x 24"	2	++	60.64
433	3032+50.00	14.45' RT	48" x 48"	2	68.02	63.50
434	3033+54.09	12.81' RT	48" x 30"	2	69.55	59.77

++ MATCH BARRIER FLOWLINE ELEVATION

* DOGHOUSE INJET BOX SEE STANDARD DETAIL D-5 VERIEY AND MATCH EXISTING PIPE INVERT

		DRAINA	GE PIPE SCH	HEDULE		
NO.	SIZE / TYPE	CLASS	LENGTH	SLOPE	INVERT EL.	DIS. EL.
420A	18" RCP	IV	3	0.0133	54.35	54.31
425A	18" RCP	IV	3	0.0133	58.90	58.86
430A	18" RCP	IV	3	0.0133	60.62	60.58
433	15" RCP	IV	102	0.0150	63.50	61.97
434	24" RCP	IV	4	0.0247	60.25	60.16

RIPRAP SCHEDULE

R - 5

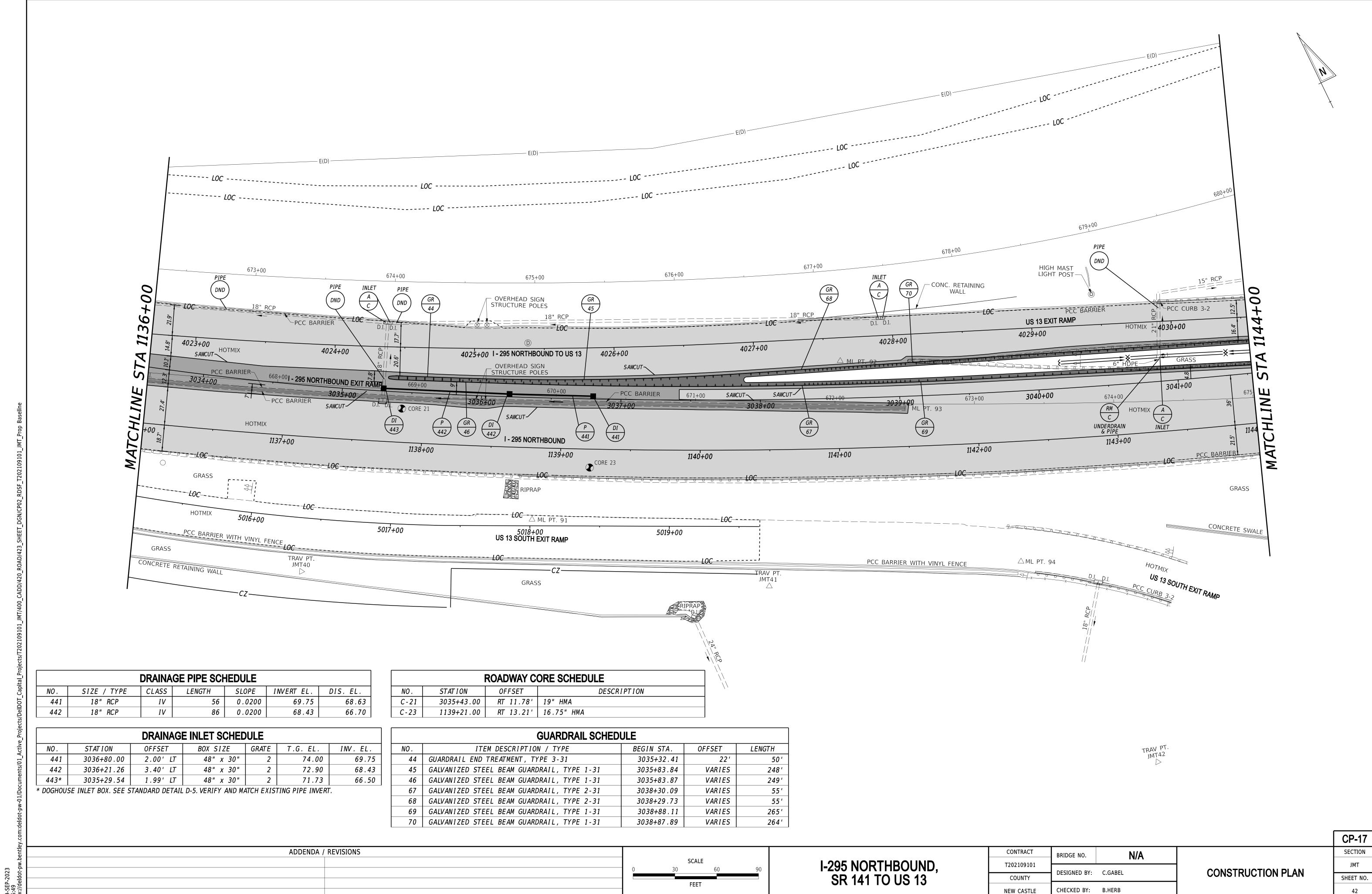
NO. 500 AREA (SY) DEPTH (IN)

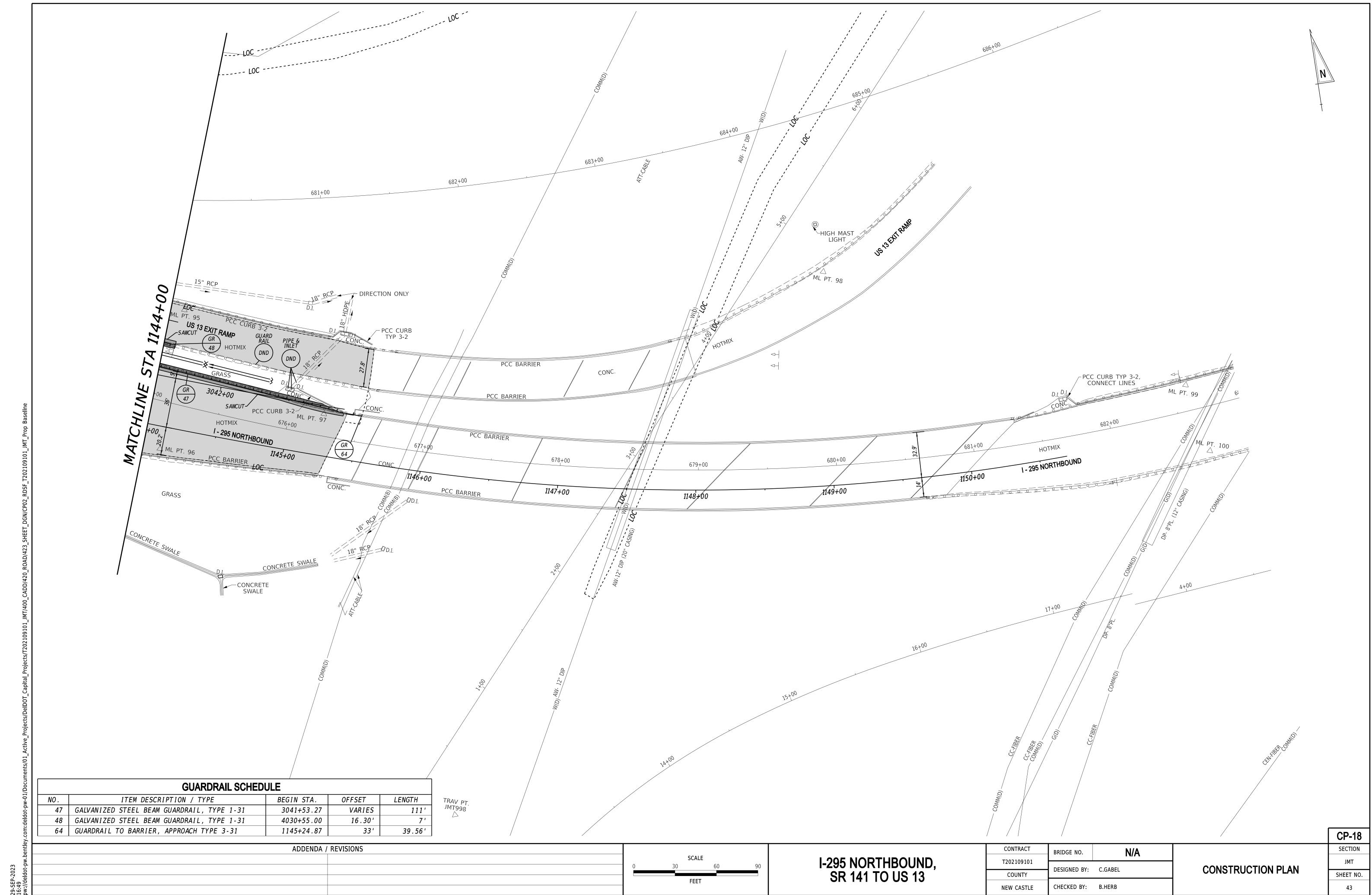
165.09

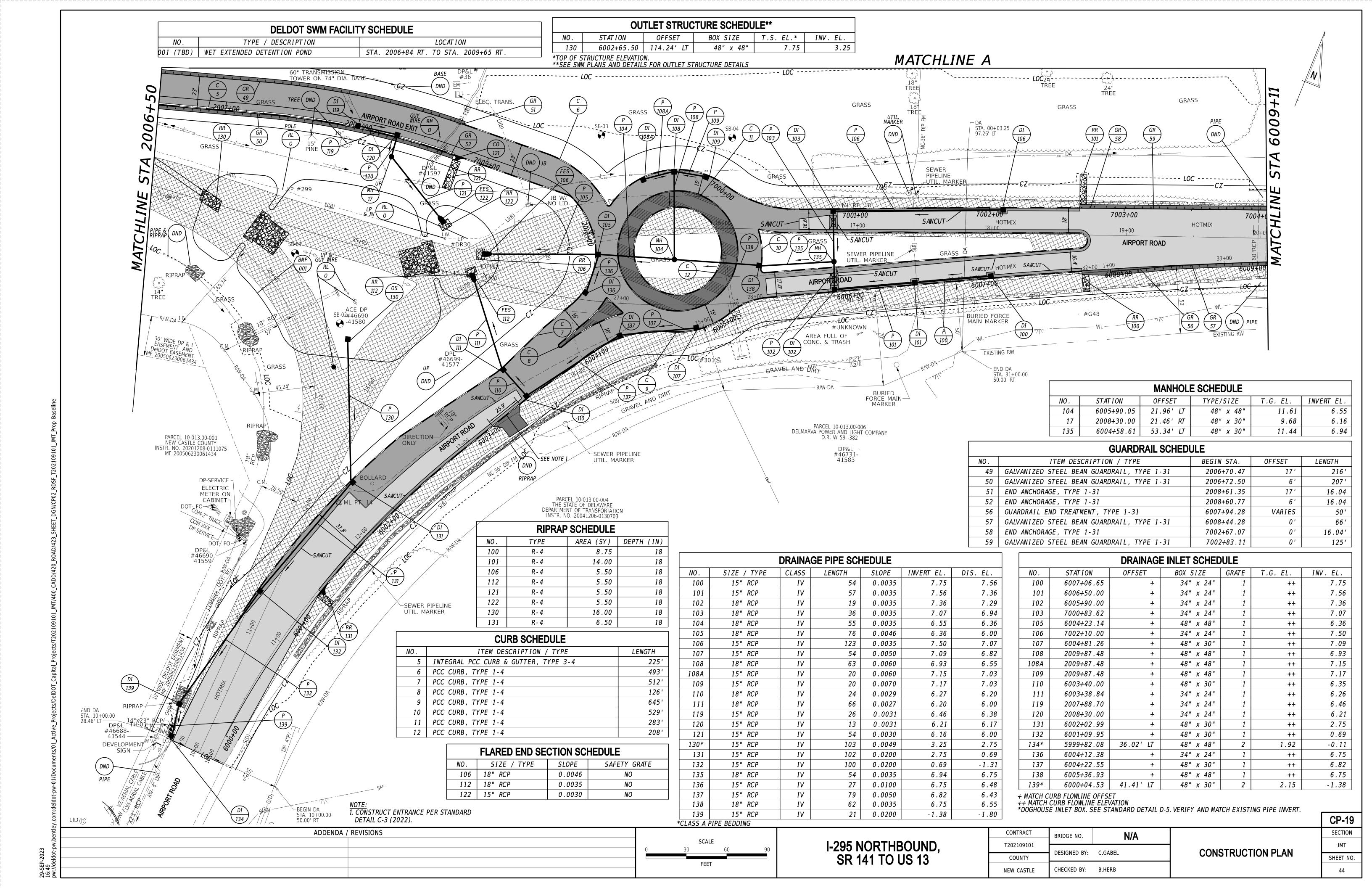
NOTE:
1. FIELD VERIFY EXISTING PIPE INVERTS AND EXTEND RCP.
POUR A CLASS B CONCRETE COLLAR (MIN. 12" WIDE, 4"
THICK) AROUND THE NEW JOINT. PAYMENT SHALL BE
INCIDENTAL TO PROPOSED PIPE.

VEKI.

							CP-16
ADDENDA / REVISIONS			CONTRACT	BRIDGE NO.	N/A		SECTION
	SCALE 0 30 60 90	I-295 NORTHBOUND, SR 141 TO US 13	T202109101		C GABEL	CONCEDUCTION DUAN	JMT
	FEET		COUNTY	DESIGNED BY: C.GABEL		CONSTRUCTION PLAN	SHEET NO.
	FEE!		NEW CASTLE	CHECKED BY: B.HERB	41		



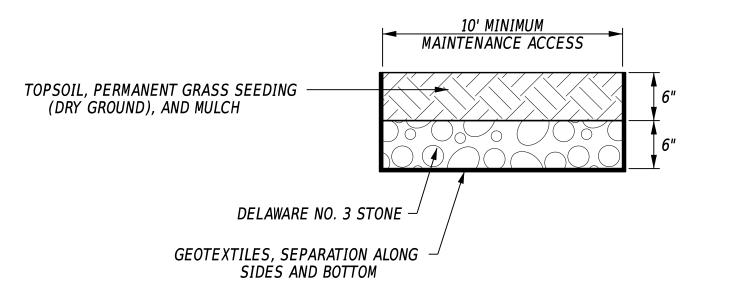




BMP 001 (TBD) WET EXTENDED DETENTION POND AREA - PLAN VIEW SCALE: 1" = 30'

	POND DESIGN SUMMARY										
DESIGN STORM	FACILITY INFLOW(CFS)	FACILITY DISCHARGE (CFS)	WATER SURFACE EL. (FT)	STORAGE VOLUME (AC.FT)							
1-YEAR (RPv)	6.03	0.24	6.16	0.261							
10-YEAR (Cv)	12.84	0.35	7.26	0.595							
100-YEAR (Fv)	23.57	6.08	7.98	0.852							

- 1. DRAINAGE AREA TO FACILITY = 3.08 AC
 2. MANAGEMENT PROVIDED BY FACILITY:
 WATER QUALITY BY RUNOFF REDUCTION FROM 1-YEAR (RPv) STORM
 WATER QUANTITY BY ATTENUATION OF RUNOFF FROM 10-YEAR (Cv) AND 100-YEAR
- 3. REFER TO SECTION 910 OF THE STANDARD SPECIFICATIONS
 4. SEE GRADES AND GEOMETRIC SHEETS FOR MAINTENANCE ACCESS COORDINATES
 5. SEE SOIL BORING LOG SHEETS FOR BORING DATA



STABILIZED TURF MAINTENANCE ACCESS **NOT TO SCALE**

	VVX DOND ENDANGMENT DAGELING							
	<u> </u>	POND EMBANI	KMENT BASELINE					
NO.	POINT	STATION	NORTHING	EASTING				
10	РОВ	0+00.00	617612.702	599814.650				
11	HPI	0+13.18	617600.413	599819.418				
12	PT	0+24.40	617596.996	599832.148				
				RADIUS = 26.00 FT				
13	PC	0+34.03	617594.499	599841.453				
14	HPI	0+39.39	617593.110	599846.628				
15	PRC	0+44.53	617594.370	599851.836				
				RADIUS = 21.00 FT				
16	HPI	0+50.51	617595.777	599857.654				
17	PRC	0+55.84	617592.544	599862.691				
				RADIUS = 14.00 FT				
18	HPI	0+57.76	617591.508	599864.305				
19	PRC	0+59.67	617590.753	599866.069				
				RADIUS = 23.00 FT				
20	HPI	0+83.26	617 581.519	599887.837				
21	PRC	1+06.34	617565.247	599904.919				
				RADIUS = 129.67 FT				
22	HPI	1+28.79	617548.855	599919.842				
23	PT	1+46.48	617555.133	599941.397				
				RADIUS = 36.00 FT				
24	PC	1+97.00	617 5 6 9 . 2 6 1	599989.903				
25	HPI	2+04.37	617 57 0.8 41	599997.098				
26	PT	2+10.88	617577.221	600000.783				
				RADIUS = 16.70 FT				
27	PC	2+49.61	617611.378	600019.026				
28	HPI	2+67.56	617627.213	600027.483				
29	PCC	2+80.74	617640.287	600015.181				
-								

RADIUS = 25.00 FT

	POND EMBANKMENT BASELINE						
EASTING	NORTHING	STATION	POINT	NO.			
600030.140	617635.699	2+96.39	HPI	30			
600037.512	617649.501	3+06.92	PT	31			
RADIUS = 19.00 I							
600044.779	617663.141	3+22.38	PC	32			
600050.199	617674.451	3+34.92	HPI	33			
600045.053	617685.888	3+45.86	PCC	34			
RADIUS = 27.00 I		•	•				
600032.921	617711.956	3+73.95	HPI	35			
600004.854	617710.712	3+95.38	PCC	36			
RADIUS = 42.00 I		•	•				
599978.367	617709.539	4+13.00	HPI	37			
599977.814	617691.933	4+23.79	PCC	38			
RADIUS = 19.00 I		•	•				
599969.485	617703.514	4+38.05	HPI	39			
599955.278	617702.236	4+49.72	PCC	40			
RADIUS = 25.00 I		•	•				
599939.342	617700.599	4+61.29	HPI	41			
599927.902	617698.871	4+72.85	PCC	42			
RADIUS = 540.65 I		•	•				
599907.184	617695.272	4+93.61	HPI	43			
599887.503	617688.662	5+14.29	PCC	44			
RADIUS = 272.911		•	•				
599875.097	617684.149	5+27.19	HPI	45			
599873.721	617671.322	5+37.36	PCC	46			
RADIUS = 20.70 I			•				
599868.068	617682.715	5+50.08	HPI	47			
599855.904	617679.001	5+58.46	PT	48			
RADIUS = 15.00 I			•				
599838.556	617673.703	5+76.60	PC	49			
599833.346	617672.112	5+82.05	HPI	50			
599829.027	617668.791	5+87.38	POE	51			
RADIUS = 30.00 F		1					

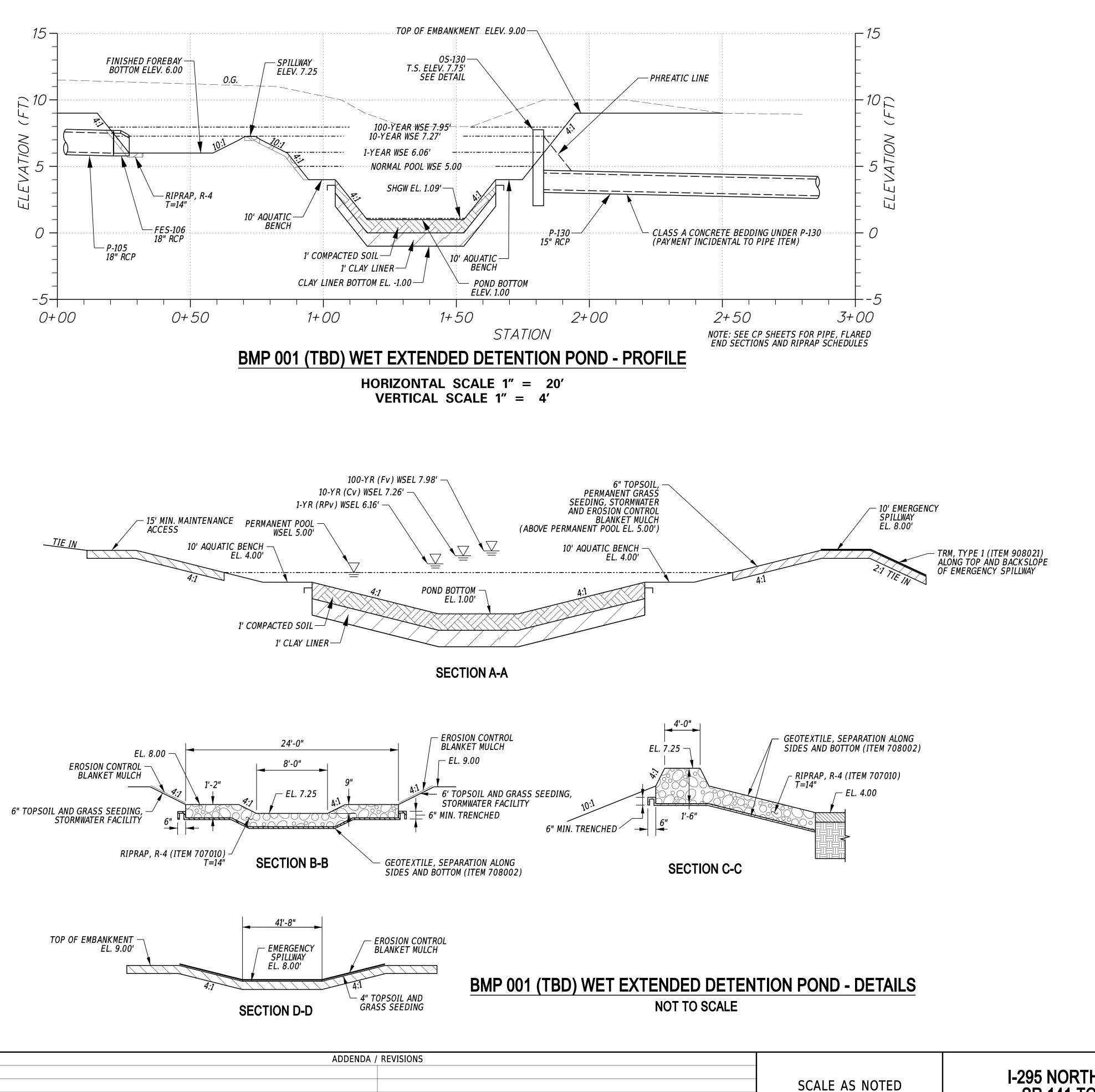
	X PRINCIPAL SPILLWAY BASELINE								
NO.	POINT	STATION	NORTHING	EASTING					
1	РОВ	0+00.00	617691.7277	600054.4745					
2	PI	0+27.00	617681.7043	600029.4059					
3	PI	0+51.59	617673.1284	600006.3534					
4	PI	1+30.57	617625.7111	599943.2017					
5	POE	2+27.63	617536.5276	599981.4992					

ADDENDA / REVISIONS I-295 NORTHBOUND, SR 141 TO US 13

N/A BRIDGE NO. T202109101 DESIGNED BY: C.GABEL COUNTY CHECKED BY: B.HERB **NEW CASTLE**

STORMWATER
MANAGEMENT PLAN

SHEET NO.



29-SEP-2023 15:48 pw://deldot-m

I-295 NORTHBOUND, SR 141 TO US 13

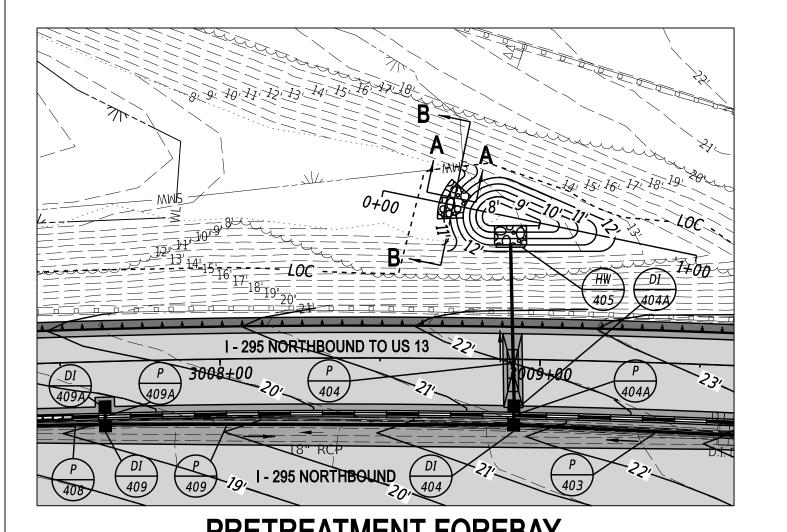
CONTRACT N/A BRIDGE NO. T202109101 DESIGNED BY: C.GABEL COUNTY CHECKED BY: B.HERB **NEW CASTLE**

STORMWATER
MANAGEMENT PLAN

JMT

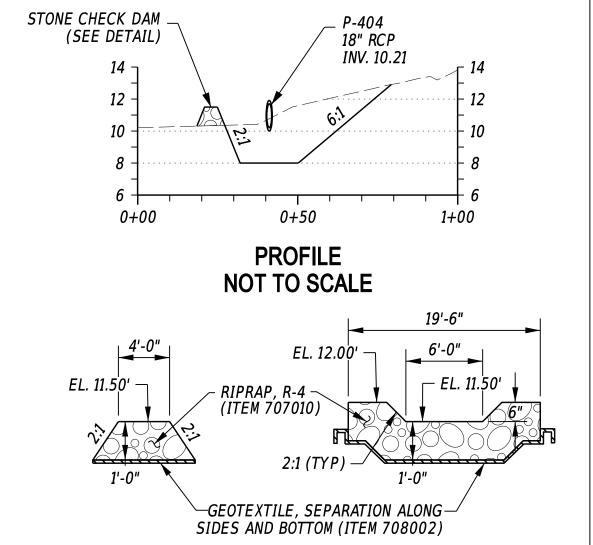
SHEET NO.

145



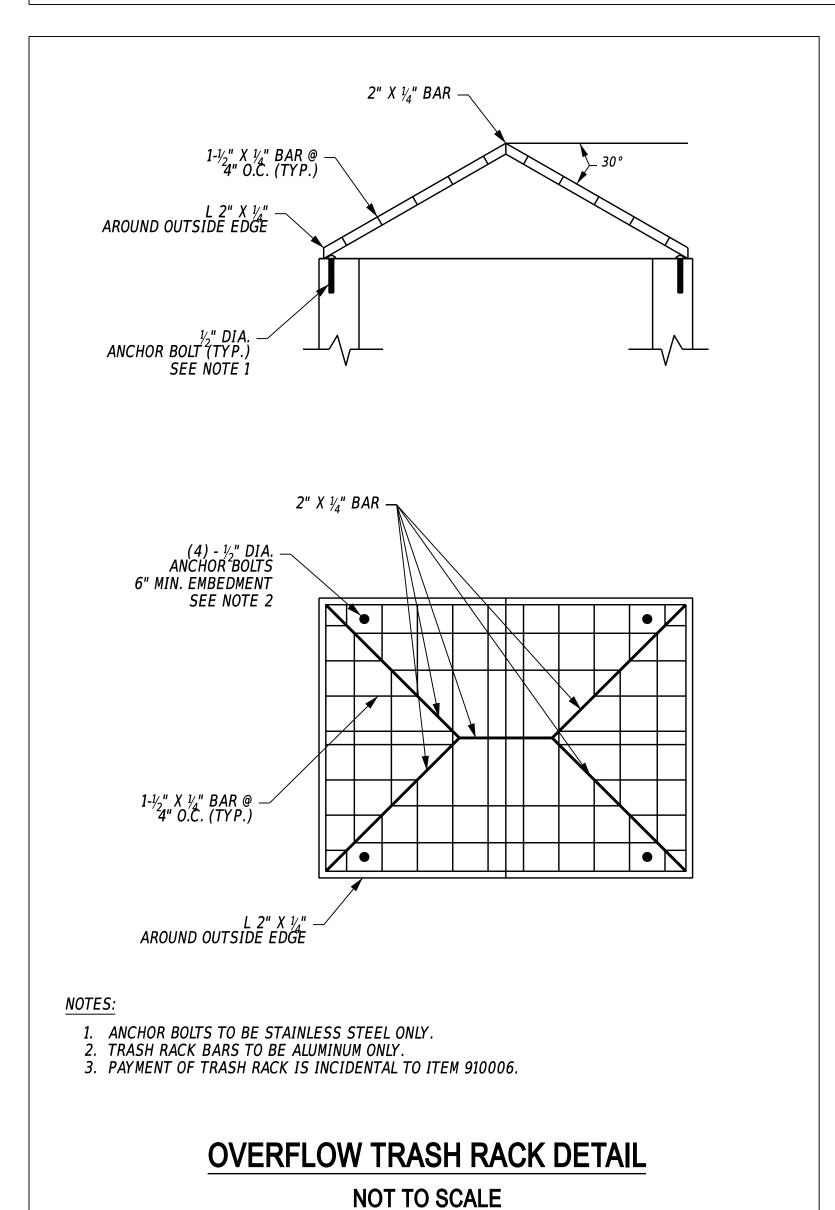
PRETREATMENT FOREBAY SCALE: 1" = 30'

PRETREATMENT FOREBAY IS NOT ASSOCIATED WITH BMP 001 (TBD) WET EXTENDED DETENTION POND. SEE SHEET CP-13

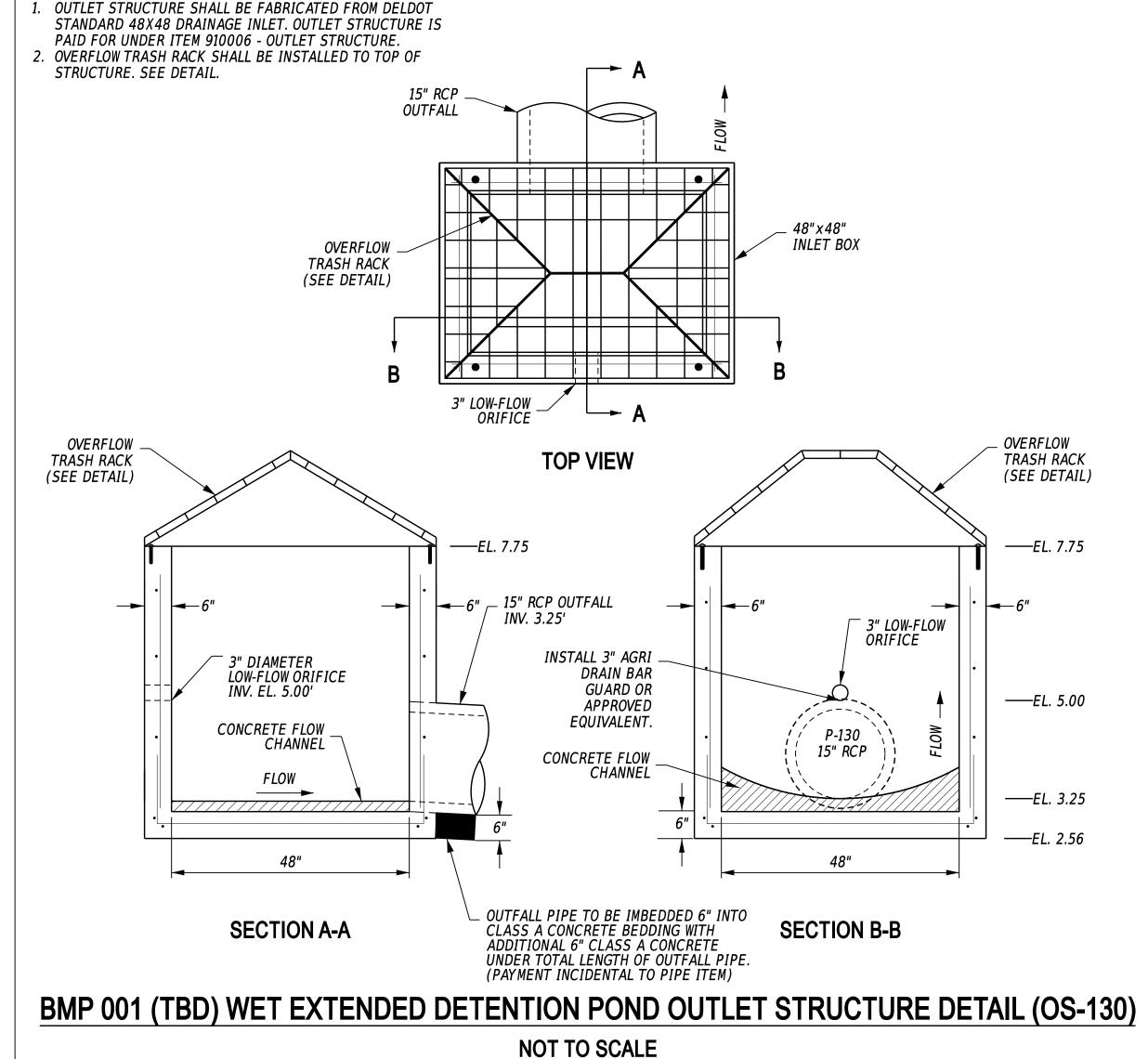


SECTION A-A NOT TO SCALE

SECTION B-B NOT TO SCALE



ADDENDA / REVISIONS



SEQUENCE OF CONSTRUCTION FOR WET EXTENDED DETENTION POND BMP 001 (TBD):

BEFORE ANY CONSTRUCTION BEGINS ON THE WET POND, CONTACT THE DESIGNATED CCR A MINIMUM OF 2 WORKING DAYS IN ADVANCE SO THAT THE REQUIRED FACILITY CONSTRUCTION CHECKLIST CAN BE COMPLETED.

A. CONSTRUCTION:

- CLEAR AND GRUB FOR INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS.
- INSTALL PERIMETER SEDIMENT CONTROLS AS SHOWN IN CONSTRUCTION PHASING SHEETS. CLEAR AND GRUB REMAINING AREA FOR POND CONSTRUCTION.
- EXCAVATE PARTIAL EMBANKMENT AS NEEDED TO CONSTRUCT AND INSTALL POND OUTLET STRUCTURE AND PIPE. DEWATER AS NEEDED IN ACCORDANCE WITH SECTION 900 OF DELDOT'S STANDARDS AND SPECIFICATIONS.
- BLOCK LOW FLOW ORIFICE.
- INSTALL SKIMMER DEWATERING DEVICE, ITEM NO. 906004 AND SET DISCHARGE TO ELEVATION 5.00'. COMPLETE BASIN EXCAVATION TO THE LINES AND GRADES SHOWN.
- ALL DISTURBED AREAS MEETING FINAL ELEVATIONS AND GRADES ABOVE THE PERMANENT BOTTOM ELEVATION SHALL BE SEEDED WITH GRASS SEEDING STORMWATER FACILITY AND MULCHED WITH EROSION CONTROL BLANKET

B. MAINTENANCE OF WET POND DURING CONSTRUCTION:

- INSPECT THE BASIN AFTER EACH RAIN EVENT AND MAKE REPAIRS AS NEEDED. ANY EXCESS SEDIMENT AROUND THE OUTFALL AREA WILL BE REMOVED WITHIN TWO WORKING DAYS AND DISPOSED AT A LOCATION APPROVED BY THE ENGINEER.
- C. AS-BUILT DRAWINGS OF STORMWATER FACILITY:

AS-BUILT DRAWINGS WILL BE COMPLETED BY THE CONTRACTOR AND CERTIFIED BY A DELAWARE PLS BEFORE THE DELDOT INITIAL INSPECTION DATE. SEND THE AS-BUILT DRAWINGS TO THE STORMWATER ENGINEER FOR VERIFICATION. AS-BUILT DRAWINGS WILL INCLUDE, BUT NOT LIMITED TO:

- GENERAL TOPOGRAPHY OF THE WHOLE FACILITY AT 1-FOOT CONTOURS INCLUDING FOREBAYS AND TOP/TOE OF ANY EMBANKMENT
- INVERTS OF ALL PIPES AND SWALES THAT INFLOW TO THE FACILITY OUTLET STRUCTURE INVERTS OF ANY AND ALL ORIFICES/WEIRS, TOP OF STRUCTURE, OUTLET PIPE, ETC. PRIMARY OUTFLOW PIPE. FOR A PIPE OUTFALL, INVERTS AT THE ENTRANCE AND EXIT.
- OUTLINE OF ALL RIPRAP AND OBTAIN SPOT ELEVATIONS ON TOP OF RIPRAP
- DEVELOPMENT OF AS-BUILT DRAWINGS IS INCIDENTAL TO ITEM 910008 STORMWATER MANAGEMENT POND.

DEWATERING NOTES:

- DEWATER THE EXCAVATION AREA IN ACCORDANCE WITH SECTION 900 OF THE STANDARD SPECIFICATIONS. THE CONTRACTOR MAY DEWATER UP TO 50,000 GALLONS PER DAY IN ACCORDANCE WITH THE STATEWIDE GENERAL PERMIT FOR MINOR DEWATERING ACTIVITIES AND SHALL BE INCIDENTAL TO ITEM 910008 STORMWATER MANAGEMENT POND AND ITEM ITEM 910006 OUTLET STRUCTURE.
- EACH DEWATERING PUMP SHALL HAVE A FUNCTIONING INSTANTANEOUS/TOTALIZING VOLUME METER INSTALLED PRIOR TO THE WITHDRAW OF GROUNDWATER. THE DEWATERING OPERATION WILL BE CONTINUOUS UNTIL COMPLETION.
- THE CONTRACTOR SHALL NOTIFY THE DNREC WATER SUPPLY SECTION AT 302-739-9945 48 HOURS PRIOR TO STARTING ANY DEWATERING OPERATION.
- IF THE DISCHARGE WATER FROM THE DEWATERING OPERATION WILL BE DIRECTED TO WETLANDS, THE CONTRACTOR SHALL NOTIFY THE DNREC WETLANDS AND SUBAQUEOUS LANDS SECTION AT 302-739-9943 48 HOURS PRIOR TO
- STARTING ANY DEWATERING OPERATION. IF IT IS ANTICIPATED THAT THE DEWATERING OPERATION WILL DEWATER MORE THAN 50,000 GALLONS PER DAY, THE CONTRACTOR SHALL OBTAIN A SEPARATE DEWATERING PERMIT FROM THE DNREC WATER SUPPLY SECTION.

PAYMENT TO APPLY FOR AND OBTAIN THE SEPARATE DEWATERING PERMIT SHALL BE INCIDENTAL TO ITEM 906005 - WELL POINT SYSTEM.

I-295 NORTHBOUND, SR 141 TO US 13

CONTRACT N/A BRIDGE NO. T202109101 DESIGNED BY: C.GABEL COUNTY CHECKED BY: B.HERB NEW CASTLE

JMT **STORMWATER MANAGEMENT PLAN** SHEET NO. 146

ENVIRONMENTAL COMPLIANCE NOTES

- . GENERAL NOTES:
 - A. THE PURPOSE OF THIS SHEET 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, CONTACT THE ENVIRONMENTAL STUDIES SECTION AT (302-760-2264 OR DOT_ENVIRONMENTALSTUDIES@DELAWARE.GOV) TO ALLOW FOR COORDINATION WITH THE APPROPRIATE RESOURCE AGENCIES AND APPROVAL.
 - C. USE OF THIS SHEET DOES NOT ALLEVIATE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL CONDITIONS SET FORTH IN THE ENVIRONMENTAL STATEMENT AND PERMITS.
- 2. NATURAL RESOURCE ISSUES:
 - A. PERMIT REQUIREMENTS/APPROVALS *:

 U.S. ARMY CORPS OF ENGINEERS (COE): NATIONWIDE PERMIT NWP 23 WITH PRECONSTRUCTION NOTIFICATION (PCN)

 DNREC WETLANDS & SUBAQUEOUS LANDS (WLSL): WETLANDS & SUBAQEOUS LANDS PERMIT

 DNREC WATER QUALITY (WQC) & COASTAL ZONE CONSISTENCY (CZM): ISSUED NWP 23

 NCC DEPT. OF LAND USE (NCC): NCC FLOODPLAIN PERMIT
 - * THE PERMITS/APPROVALS LISTED ARE THOSE REQUIRED FOR THIS PROJECT. THE ENVIRONMENTAL STUDIES SECTION IS
 - RESPONSIBLE FOR COORDINATING AND/OR OBTAINING THESE APPROVALS.

 ** THE CONTRACTOR MUST ENSURE THAT THESE PERMITS/APPROVALS ARE IN THEIR POSSESSION PRIOR TO BEGINNING
 CONSTRUCTION IN THE PERMITTED AREA(S) AND ENSURE THEY ARE DISPLAYED ON-SITE DURING THE ENTIRE CONSTRUCTION
 PERIOD
 - B. CONSTRUCTION RESTRICTIONS:
 FISHERIES NONE
 ENDANGERED SPECIES NONE
 MIGRATORY BIRDS IF WORK PROPOSED BETWEEN APRIL 15 AND AUGUST 1 A PRE-CONSTRUCTION SURVEY
 FOR PRESENCE OF NESTS MUST BE COMPLETED. IF NESTS PRESENT, NO CONSTRUCTION ACTIVITIES
 FROM APRIL 15 TO AUGUST 1 OR INSTALL DETERANT SUCH AS MESH NETTING THAT FULY ENCAPSULATES
 THE UNDERSIDE OF THE BRIDGE PRIOR TO APRIL 15. MATERIAL SHOULD BE LEFT IN PLACE UNTIL
 CONSTRUCTION BEGINS.
- 3. CULTURAL RESOURCE ISSUES:
 - A. BASED ON CURRENT COORDINATION, THE PROJECT IS CLEAR FOR CULTURAL RESOURCES AND EXEMPT FROM SHPO REVIEW UNDER STIPULATION III OF DELDOT'S PROGRAMMATIC AGREEMENT WITH FEDERAL HIGHWAYS ADMINISTRATION (FHWA) AND DELAWARE STATE HISTORIC PRESERVATION OFFICE (SHPO). AS A RESULT, DELDOT CULTURAL RESOURCE STAFF HAVE ISSUED A FINDING OF NO HISTORIC PROPERTIES AFFECTED FOR THIS PROJECT. THERE ARE NO CULTURAL RESOURCE CONCERNS AS LONG AS THE PROJECT SCOPE IS NOT MODIFIED AND ALL STAGING AND STOCKPILING REMAIN WITHIN THE EXISTING ROADWAY FOOTPRINT. SHOULD IT BE NECESSARY TO ADD ADDITIONAL ACCESS LOCATIONS, OTHER STOCKPILING/STAGING AREAS, OR OTHERWISE ALTER THE SCOPE OF THE PROJECT, DELDOT ENVIRONMENTAL STUDIES STAFF WILL NEED TO BE CONTACTED AT DOT ENVIRONMENTALSTUDIES@DELAWARE.GOV OR (302) 760-2093 TO REVIEW THESE CHANGES FOR POTENTIAL CULTURAL RESOURCE CONCERNS.
- 4. STREAM RESTORATION AND RIPRAP TREATMENT:
 - A. FOLLOW THE SPECIAL PROVISION FOR ITEM 707500 CHANNEL BED FILL IN REGARDS TO THE SALVAGING OF ON-SITE NATURAL STREAM BOTTOM MATERIAL OR THE FURNISHING OF OFFSITE MATERIAL. IF SUFFICIENT SOURCES FOR CHANNEL BED FILL DO NOT EXIST ON-SITE, ANY NEW MATERIAL MUST CONFORM TO THE REQUIREMENTS OF ITEM 707500 CHANNEL BED FILL. RECESS ALL RIPRAP IN THE CHANNEL BOTTOM (I.E. BELOW THE WATER LINE) ONE FOOT BELOW STREAM BED ELEVATION AND CHOKE WITH BORROW TYPE 'B' SO THAT ALL OF THE VOIDS IN THE RIPRAP ARE FILLED WITH SPECIFIED MATERIAL. PAYMENT UNDER ITEM 209002 BORROW, TYPE B. COVER THE RIPRAP WITH A MINIMUM OF 12" CHANNEL BED FILL. MATCH THE FINAL CHANNEL ELEVATIONS WITH EXISTING ELEVATIONS AT THE UPSTREAM AND DOWNSTREAM PROJECT LIMITS. THROUGH THE STRUCTURE, BLEVATIONS WILL BE AS NOTED ON THE PLANS. PAYMENT UNDER ITEM 707500 CHANNEL BED FILL.
 - B. RESTORE OTHER AREAS OF THE CHANNEL BOTTOM AFFECTED BY CONSTRUCTION (INCLUDING, BUT NOT LIMITED TO, THE LOCATION OF SUMP PITS, STABILIZED OUTFALLS, TEMPORARY PIPES AND/OR SANDBAG DIKES AND DIVERSIONS) TO EXISTING CONDITIONS. FILL ANY CAVITIES OR SCOUR HOLES RESULTING FROM CONSTRUCTION ACTIVITIES WITH CHANNEL BED FILL. PAYMENT UNDER ITEM 707500 CHANNEL BED FILL.
 - C. WHEN ALL EROSION AND SEDIMENT CONTROL MEASURES ARE REMOVED AND THE STREAM RETURNS TO ITS NATURAL FLOW CONDITIONS, THE FLOW MUST REMAIN ABOVE GROUND AND ABOVE THE RIPRAP (I.E. THE FLOW CANNOT BE "LOST" IN THE RIPRAP OR BENEATH THE STRUCTURE). IF THIS IS NOT ACHIEVED, THE CONTRACTOR WILL BE REQUIRED TO TAKE CORRECTIVE ACTION AT THE CONTRACTOR'S EXPENSE.
 - D. CHOKE ALL RIPRAP ON THE STREAM BANK, OUTSIDE THE CHANNEL BED, WITH DELAWARE #57 STONE. PLACE JUST ENOUGH CHOKE MATERIAL TO PREVENT THE LOSS OF TOPSOIL THROUGH THE RIPRAP, AND THEN FINISH FILLING THE VOIDS WITH TOPSOIL SO THAT THE RIPRAP PEAKS ARE BARELY VISIBLE. PLACE AN ADDITIONAL 6-INCH TOPSOIL LAYER ON TOP OF THE RIPRAP. SEED THE SLOPE IN ACCORDANCE WITH ITEM 908019 STREAMBANK SEED MIX, SEEDING. FOLLOWING THE SEEDING OPERATION, INSTALL ITEM 908020 EROSION CONTROL BLANKET (ECB) MULCH, OR OTHER BLANKET AS SHOWN ON THE PLANS. ECB AT TOE OF SLOPE CAN BE EITHER BE STAPLED AT 6" ON CENTER OR TRENCHED IN, AS DIRECTED BY THE ENGINEER. COMPLETE ALL WORK, STARTING WITH THE INITIAL CHOKING WITH TOPSOIL THROUGH THE SEEDING AND MULCHING PRIOR TO ANY RAIN EVENT. DELAWARE #57 STONE IS INCIDENTAL TO THE RIPRAP ITEM. ALL OTHER ITEMS WILL BE PAID FOR UNDER THEIR RESPECTIVE ITEMS.
 - E. THE TOPSOIL/SEED/MULCH CAN BE PLACED BEFORE OR AFTER THE REMOVAL OF THE STREAM DIVERSION. IF THE PLACEMENT OCCURS AFTER STREAM DIVERSION REMOVAL, USE A TURBIDITY CURTAIN TO MINIMIZE IN-STREAM SEDIMENTATION. PAYMENT WILL BE INCIDENTAL TO ITEM 909005 STREAM DIVERSION.
- 5. PROTECTION OF RESOURCES:
 - A. KEEP CLEARING IN WETLAND AREAS TO A MINIMUM ABSOLUTELY NECESSARY FOR CONSTRUCTION ACCESS. SUPPORT ALL EQUIPMENT TRAVERSING WETLANDS AND SUBAQUEOUS LAND ON MATS. PAYMENT FOR MATS WILL BE MADE UNDER ITEM 621500 TEMPORARY TIMBER MAT. IN WETLAND AREAS THAT ARE CLEARED, NO GRUBBING EXCEPT WHERE NECESSARY TO CONSTRUCT PROJECT COMPONENTS SUCH AS FOUNDATIONS AND RIPRAP PROTECTION IS PERMITTED. CUT VEGETATION FLUSH WITH THE GROUND (I.E. NO DISTURBANCE OF THE ROOT MAT). RESTORE TEMPORARILY DISTURBED WETLAND AREAS TO GRADE AND SEED WITH ITEM 908017 TEMPORARY GRASS SEEDING (ANNUAL RYEGRASS).
 - B. USE SILT FENCE OR CONSTRUCTION SAFETY FENCE ALONG THE LIMITS OF CONSTRUCTION IN ALL AREAS WHERE WATER WETLANDS ARE BEING IMPACTED (AS SHOWN ON ENVIRONMENTAL COMPLIANCE SHEETS), AND ALSO IN ANY AREA WHERE WATER/WETLANDS EXIST WITHIN 20 FEET OF THE LIMIT OF CONSTRUCTION (AS SHOWN ON CONSTRUCTION PLAN SHEETS). ANY CONTRACTOR ACCESS BEYOND THE LIMIT OF CONSTRUCTION IS STRICTLY PROHIBITED.

ADDENDA / REVISIONS

- C. USE SANDBAGS OR COMPOST FILTER LOG (CFL) TO SECURE SILT FENCE AT AREAS ADJACENT TO WOODED UPLANDS/ ALL WETLANDS IN LIEU OF TRENCHING UNLESS PROPER EROSION AND SEDIMENT CONTROL CANNOT BE MAINTAINED. REMOVE SANDBAGS AND CFLS (AND CONTENTS) IN THEIR ENTIRETY WHEN NO LONGER NEEDED. SANDBAGS/CFLS USED TO SECURE THE SILT FENCE IS INCIDENTAL TO ITEM 905001 SILT FENCE. THE ENVIRONMENTAL STUDIES SECTION (302-760-2259 OR DOT ENVIRONMENTALSTUDIES@DELAWARE.GOV) CAN PROVIDE FURTHER GUIDANCE REGARDING THIS METHOD OF INSTALLATION.
- D. CLEARLY MARK ALL TREES TO BE REMOVED WITH PAINT PRIOR TO THE EROSION AND SEDIMENT CONTROL MEETING.

WETLANDS DELINEATED BY JMT, INC. ON 7/8, 7/9, 7/22, AND 7/23/2021 AND 6/8/2023 IN ACCORDANCE WITH THE 1987 CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND REGIONAL SUPPLEMENT.

ORIGINAL SHEETS PREPARED ON 11/22/2022. SHEETS REVISED ON 9/20/2023.

	PERMANENT WETLAND IMPACT AREA SCHEDULE							
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION	LOSS VS. IMPACT	LOSS AREA (AC)	
8-W-01	FILL	66.99	0.0015	2.48	USACE	LOSS	0.0015	
13-W-01	FILL	26.17	0.0006	0.97	USACE	LOSS	0.0006	
14-W-01	FILL	30.54	0.0007	1.13	USACE	LOSS	0.0007	
TOTAL PER	MANENT WETLAND IMPACT AREAS	123.70	0.0028	4.58	USACE	LOSS	0.0028	

	PERMANENT TIDAL WETLAND IMPACT AREA SCHEDULE									
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION	LOSS VS. IMPACT	LOSS AREA (AC)			
8-W-02	CULVERT EXTENSION / FILL	278.07	0.0064	10.30	USACE / DNREC	LOSS	0.0064			
10-W-01	FILL	2291.40	0.0526	84.87	USACE / DNREC	LOSS	0.0526			
10-W-02	CULVERT REPLACEMENT / FILL	5.22	0.0001	0.19	USACE / DNREC	LOSS	0.0001			
TOTAL PER	RMANENT TIDAL WETLAND IMPACT AREAS	2574.69	0.0591	95.36	USACE / DNREC	LOSS	0.0591			

	TEMPORARY WETLAND IMPACT AREA SCHEDULE									
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION					
7 - T - 01	WORK AREA / ESC CONTROLS	337.33	0.0077	12.49	USACE					
8-T-02	WORK AREA / ESC CONTROLS	1295.59	0.0297	47.99	USACE					
13-T-01	WORK AREA / ESC CONTROLS	381.03	0.0087	14.11	USACE					
14-T-01	WORK AREA / ESC CONTROLS	427.38	0.0098	15.83	USACE					
TOTAL TEM	PORARY WETLAND IMPACT AREAS	2441.33	0.0559	90.42	USACE					

	TEMPORARY TIDAL WETLAND IMPACT AREA SCHEDULE									
I D	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION					
8-T-01	WORK AREA / ESC CONTROLS	44.30	0.0010	1.64	USACE / DNREC					
10-T-01	WORK AREA / ESC CONTROLS	1359.98	0.0312	50.37	USACE / DNREC					
10-T-02	WORK AREA / ESC CONTROLS	110.84	0.0025	4.11	USACE / DNREC					
11-T-01	WORK AREA / ESC CONTROLS	35.54	0.0008	1.28	USACE / DNREC					
20-T-01	WORK AREA / ESC CONTROLS	1219.78	0.0280	45.18	USACE / DNREC					
TOTAL TEM	PORARY TIDAL WETLAND IMPACT AREAS	2769.44	0.0635	102.58	USACE / DNREC					

	PERMANENT OPEN WATER IMPACT AREA SCHEDULE								
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION	LOSS VS. IMPACT	LOSS AREA (AC)		
4-0-01	CULVERT EXTENSION / FILL	29.51	0.0007	1.09	USACE / DNREC	IMPACT	0.0000		
5-0-01	CULVERT EXTENSION / FILL	402.87	0.0092	14.92	USACE / DNREC	IMPACT	0.0000		
TOTAL PER	RMANENT OPEN WATER IMPACT AREAS	432.38	0.0099	16.01	USACE / DNREC	N/A	0.0000		

	TEMPORARY OPEN WATER IMPACT AREA SCHEDULE									
ID	ID IMPACT DESCRIPTION AREA (SF) AREA (AC) VOLUME (CY) JURISDICTION									
4 - OT - 01	WORK AREA / ESC CONTROLS	35.06	0.0008	1.30	USACE / DNREC					
5 - OT - 01	WORK AREA / ESC CONTROLS	469.81	0.0108	17.40	USACE / DNREC					
20-OT-01	20-OT-01 WORK AREA / ESC CONTROLS 123.14 0.0028 4.56 USACE / DNREC									
TOTAL TEM	TOTAL TEMPORARY OPEN WATER IMPACT AREAS 628.01 0.0144 23.26 USACE / DNREC									

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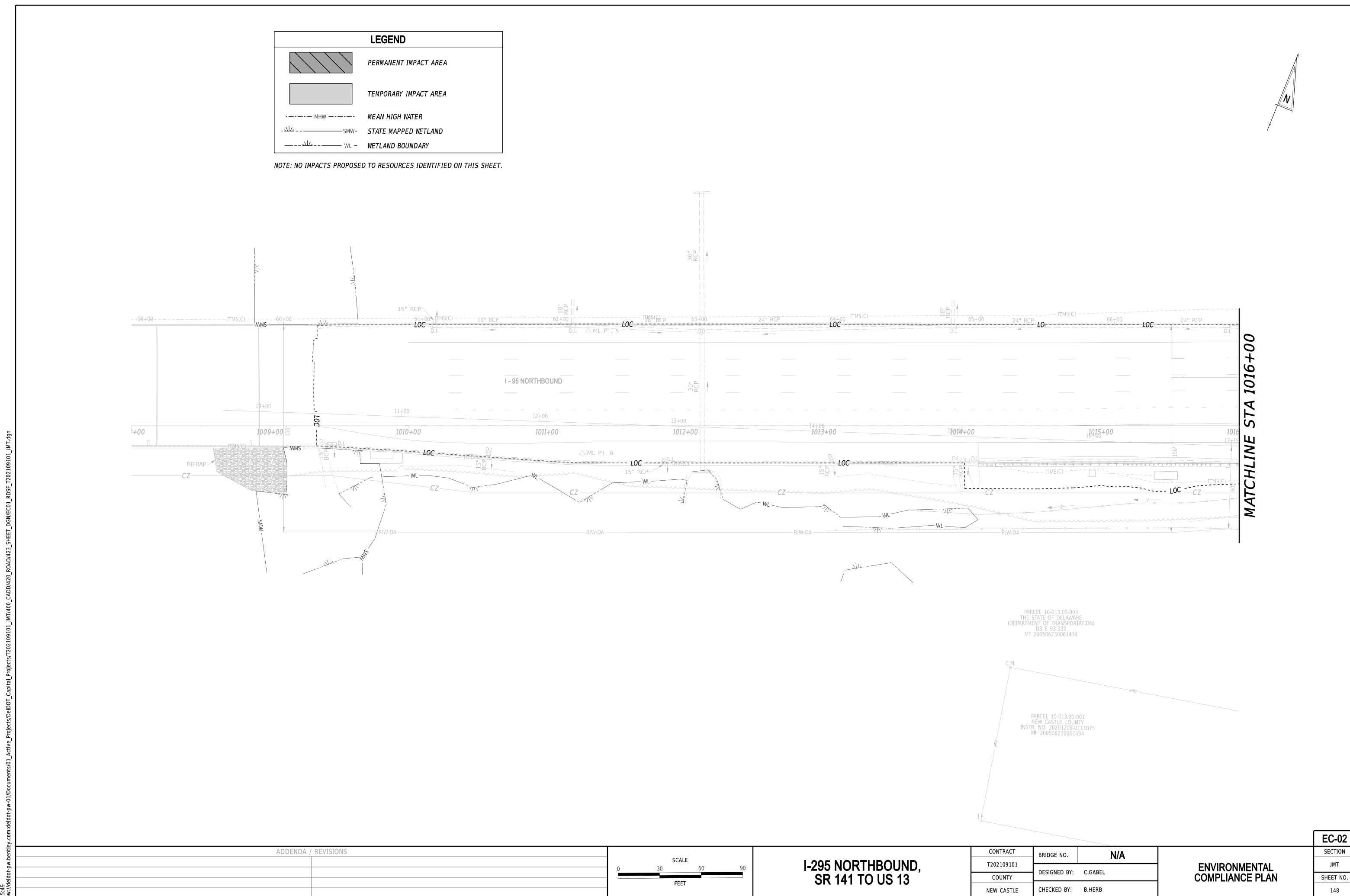
I-295 NORTHBOUND, SR 141 TO US 13

CONTRACT	BRIDGE NO.	N/A	
202100101	21.112.02.1101	14/74	
202109101	DESIGNED BY:	CCAREL	
COUNTY	DESIGNED BY:	C.GADEL	
EW CASTLE	CHECKED BY:	B.HERB	

ENVIRONMENTAL COMPLIANCE PLAN

JMT
SHEET NO.

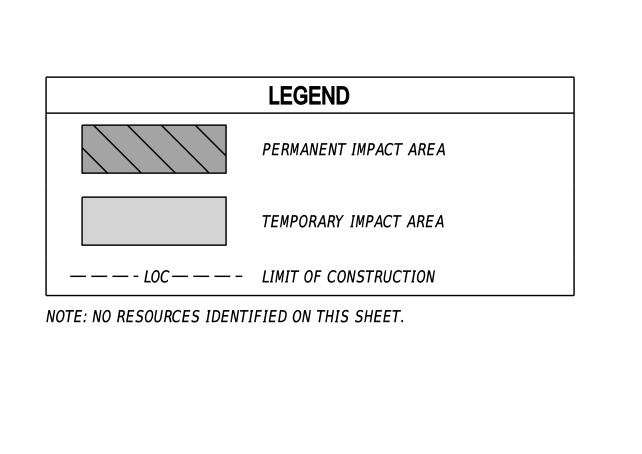
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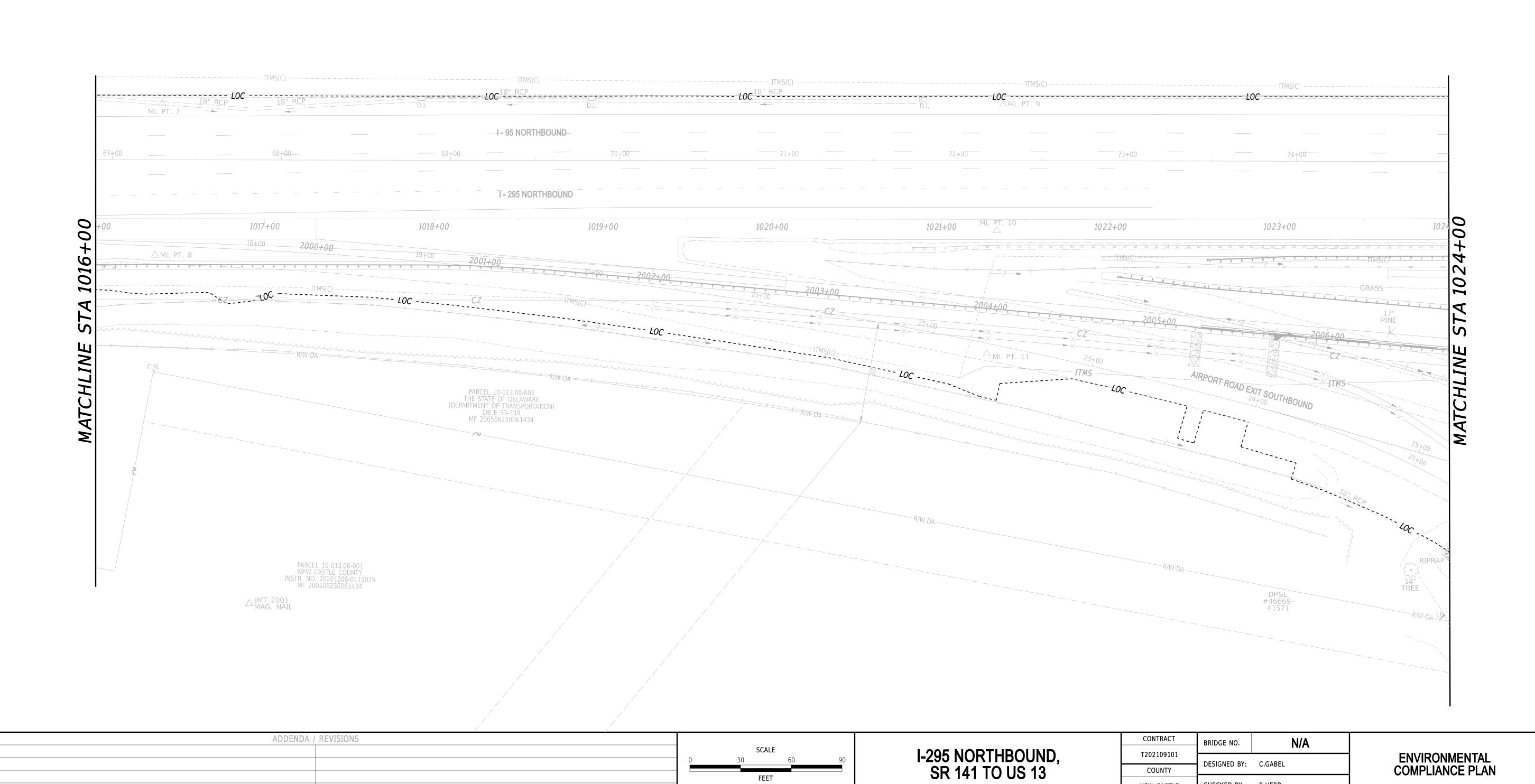


SECTION

JMT

148





EC-03

SECTION

JMT

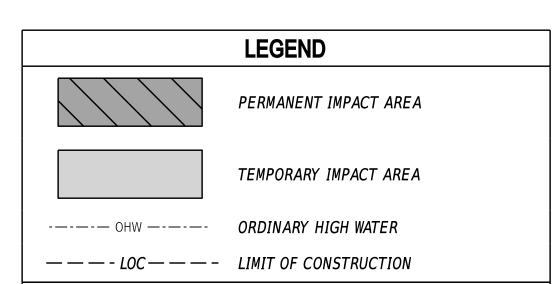
SHEET NO.

149

COUNTY

NEW CASTLE

CHECKED BY: B.HERB

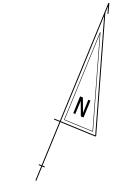


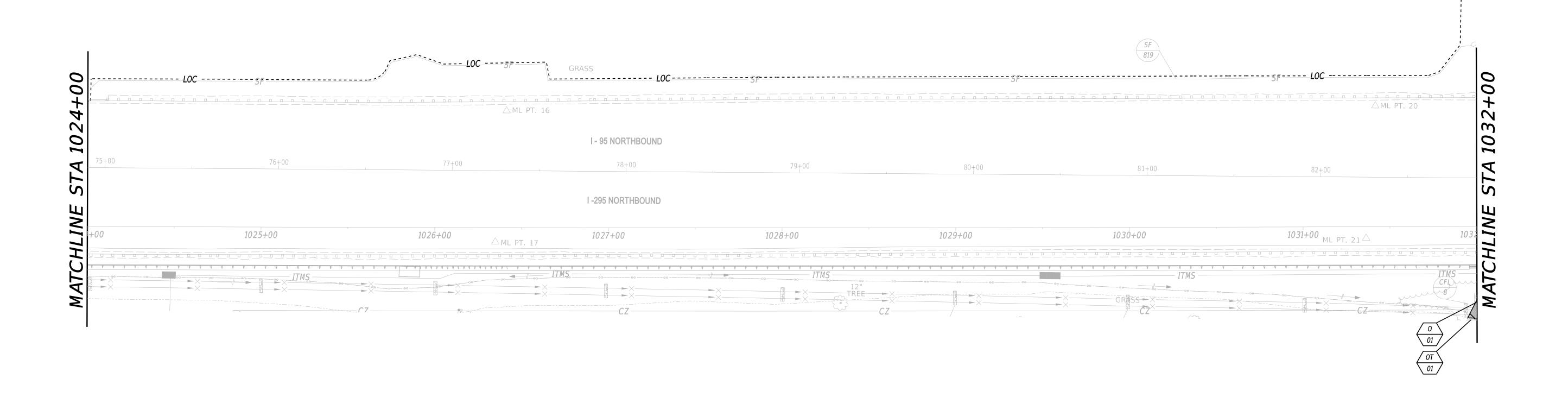
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$\overline{\ }$?X	IMPACT AREA ID. AND/OR NUMBER

O = OPEN WATER IMPACT T = TEMPORARY IMPACT

	PERMANENT OPEN WATER IMPACT AREA SCHEDULE									
ID	ID IMPACT DESCRIPTION AREA (SF) AREA (AC) VOLUME (CY) JURISDICTION LOSS VS. IMPACT LOSS AREA (AC)									
0-01	CULVERT EXTENSION / FILL	29.51	0.0007	1.09	USACE / DNREC	IMPACT	0.0000			
TOTAL PER	TOTAL PERMANENT OPEN WATER IMPACT AREAS 29.51 0.0007 1.09 USACE / DNREC IMPACT 0.0000									

	TEMPORARY OPEN WATER IMPACT AREA SCHEDULE									
ID	ID IMPACT DESCRIPTION AREA (SF) AREA (AC) VOLUME (CY) JURISDICTION									
OT - 01	WORK AREA / ESC CONTROLS	35.06	0.0008	1.30	USACE / DNREC					
TOTAL TEM	TOTAL TEMPORARY OPEN WATER IMPACT AREAS 35.06 0.0008 1.30 USACE / DNREC									





ADDENDA / REVISIONS

ADDENDA / REVISIONS

I-295 NORTHBOUND, SR 141 TO US 13

FEET

I-295 NORTHBOUND, SR 141 TO US 13

CONTRACT BRIDGE NO. N/A

T202109101
DESIGNED BY: C.GABEL

ENVIRONMENTAL COMPLIANCE PLAN

SECTION

MEW CASTLE

CHECKED BY: B.HERB

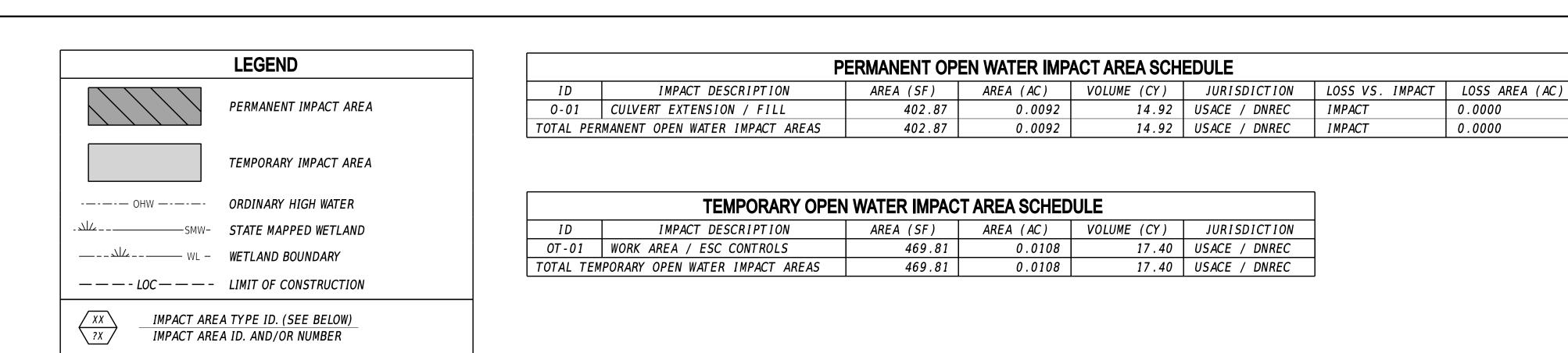
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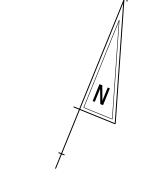
ENVIRONMENTAL COMPLIANCE PLAN

SECTION

SHEET NO.

150





EC-05

SECTION

SHEET NO.

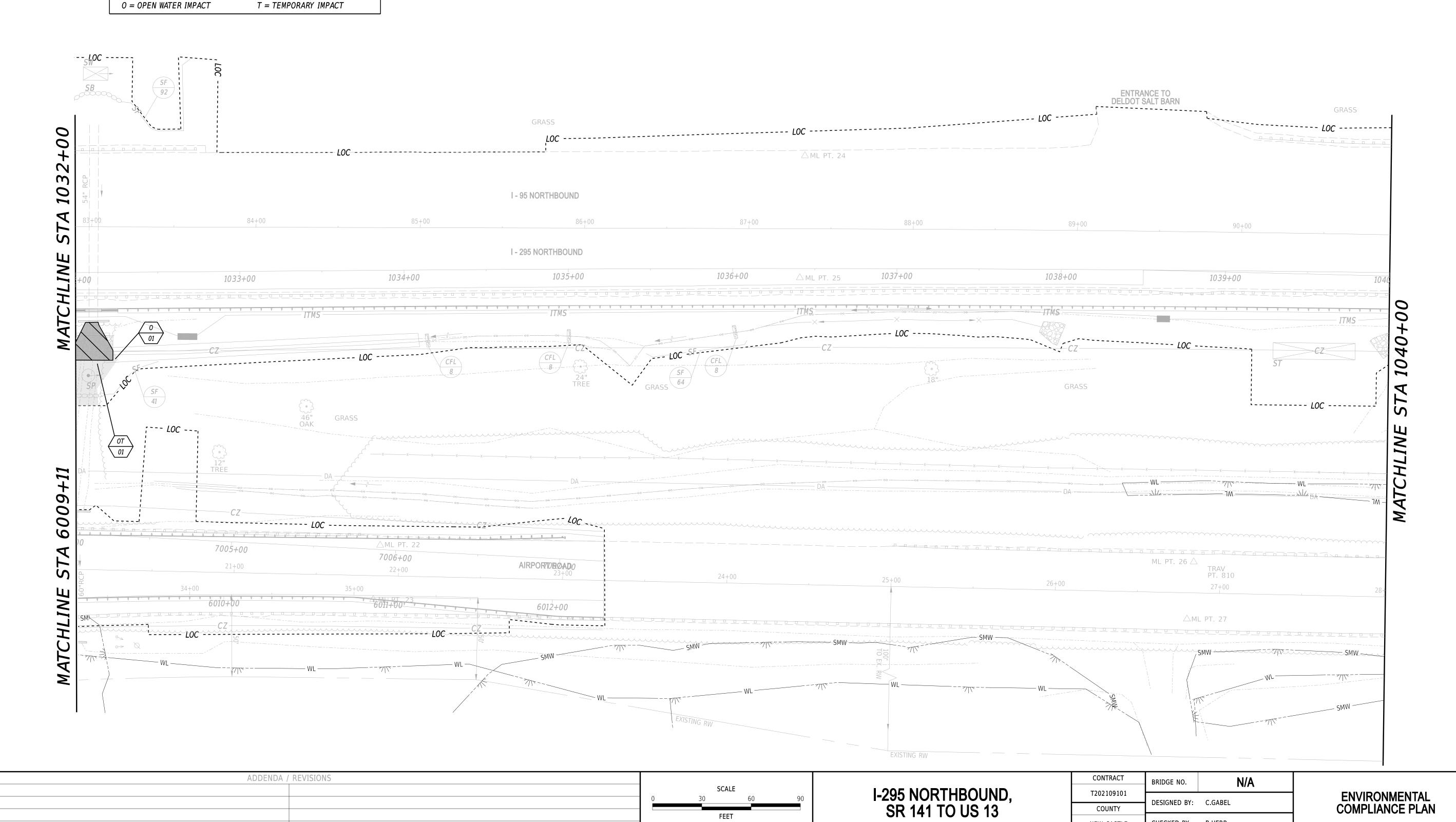
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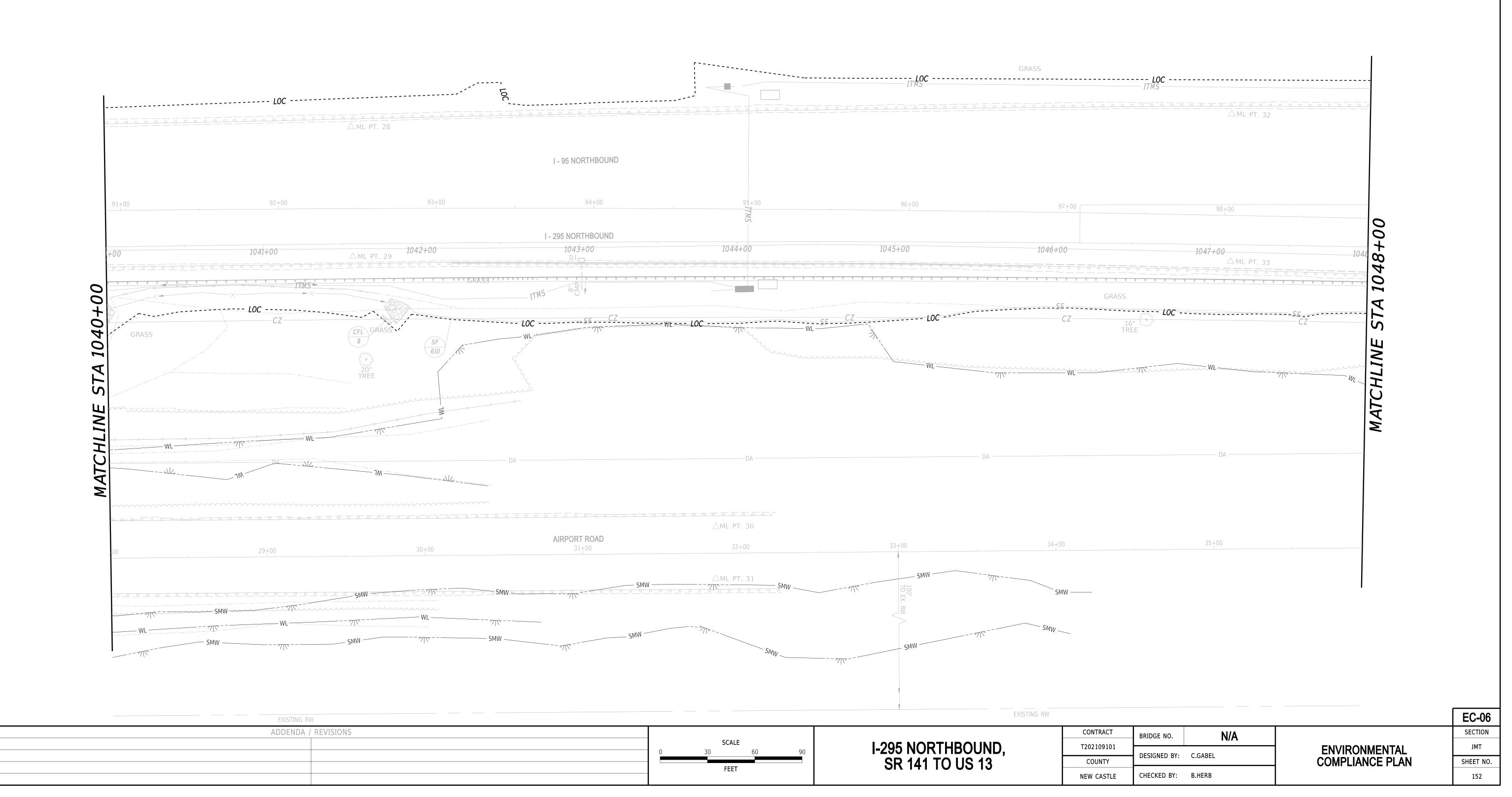
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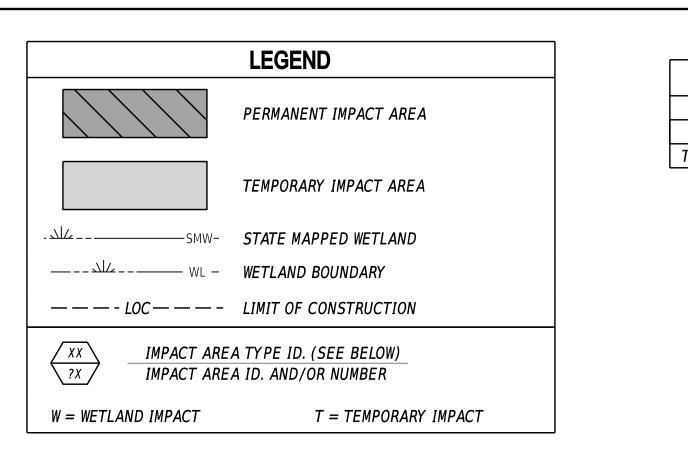
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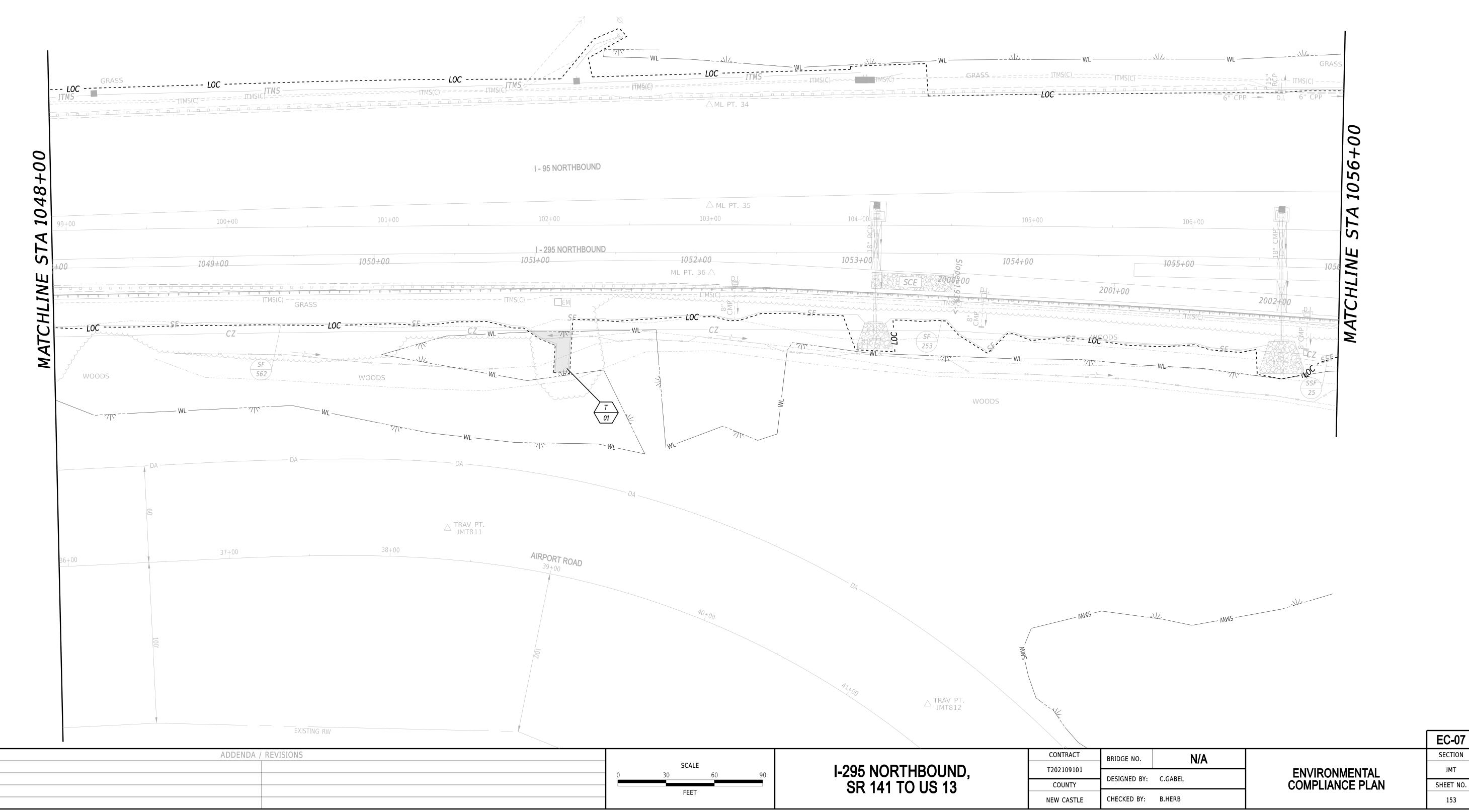
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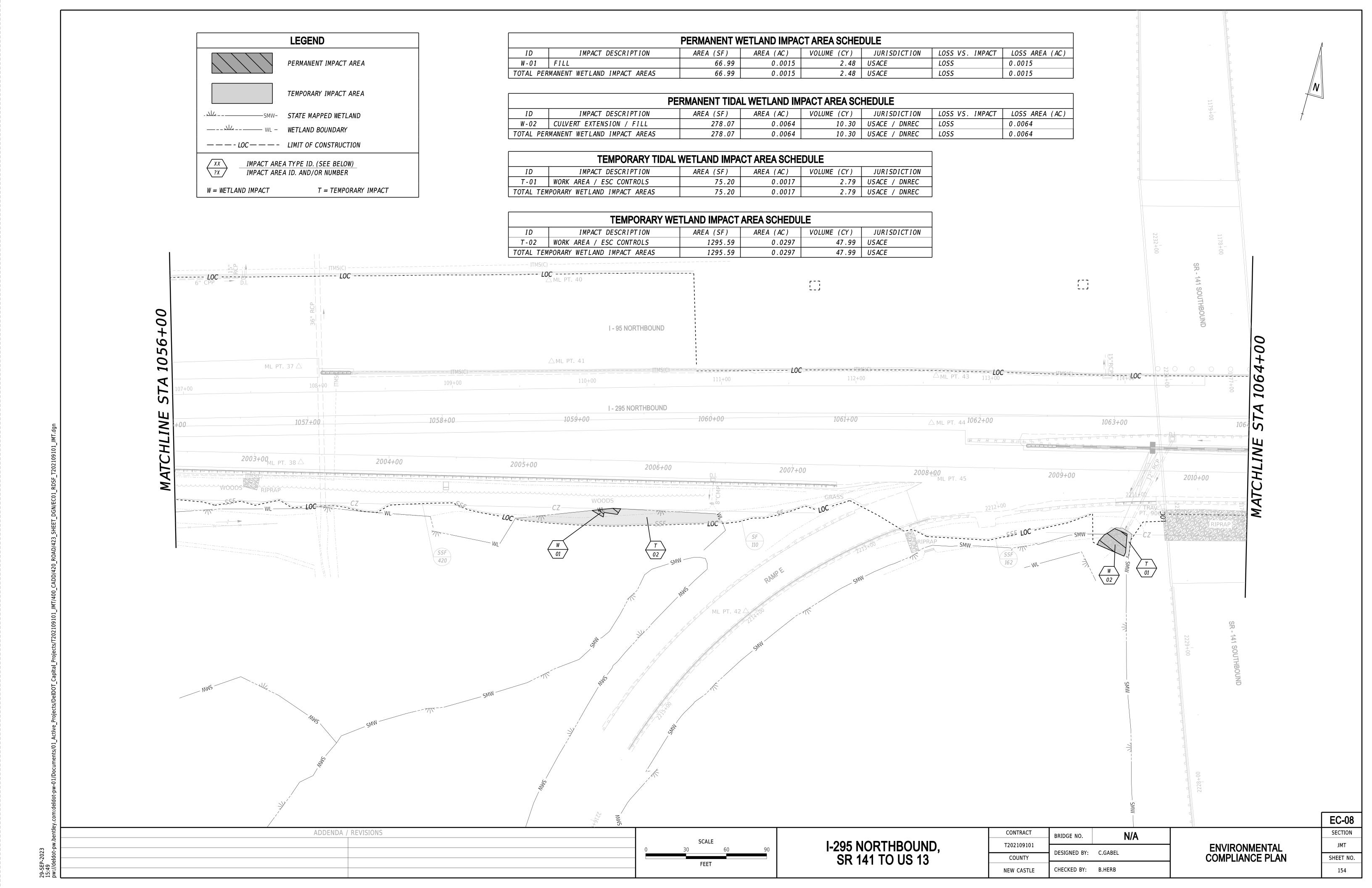


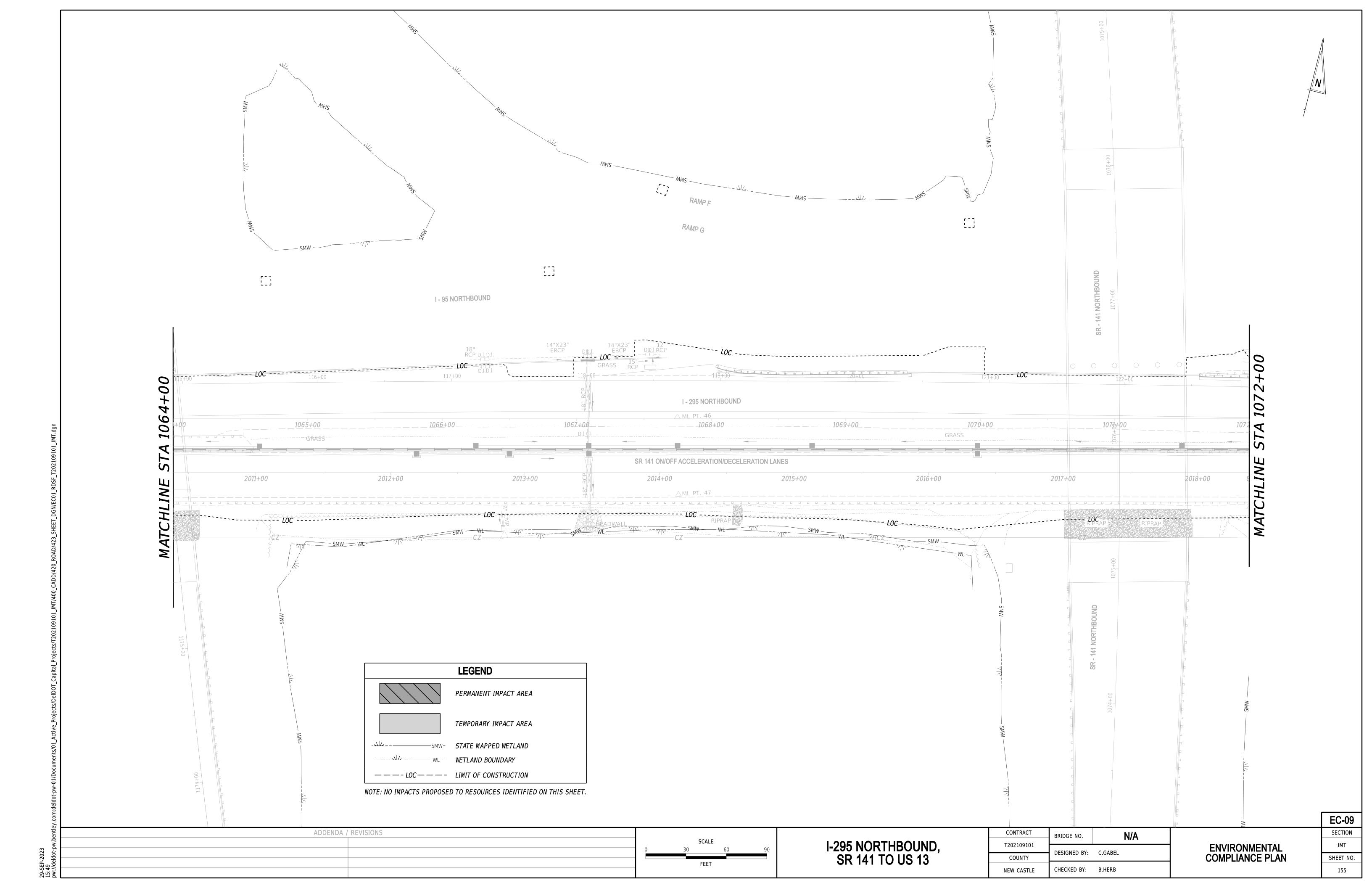
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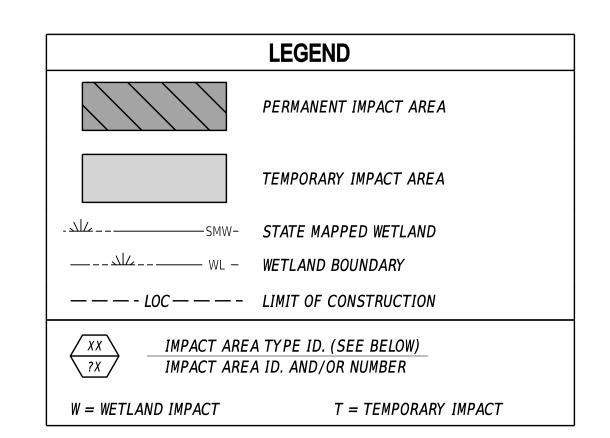


TEMPORARY WETLAND IMPACT AREA SCHEDULE								
I D	ID IMPACT DESCRIPTION AREA (SF) AREA (AC) VOLUME (CY) JURISDICTION							
T - 01	WORK AREA / ESC CONTROLS	337.33	0.0077	12.49	USACE			
TOTAL TEMPORARY WETLAND IMPACT AREAS 337.33 0.0077 12.49 USACE								







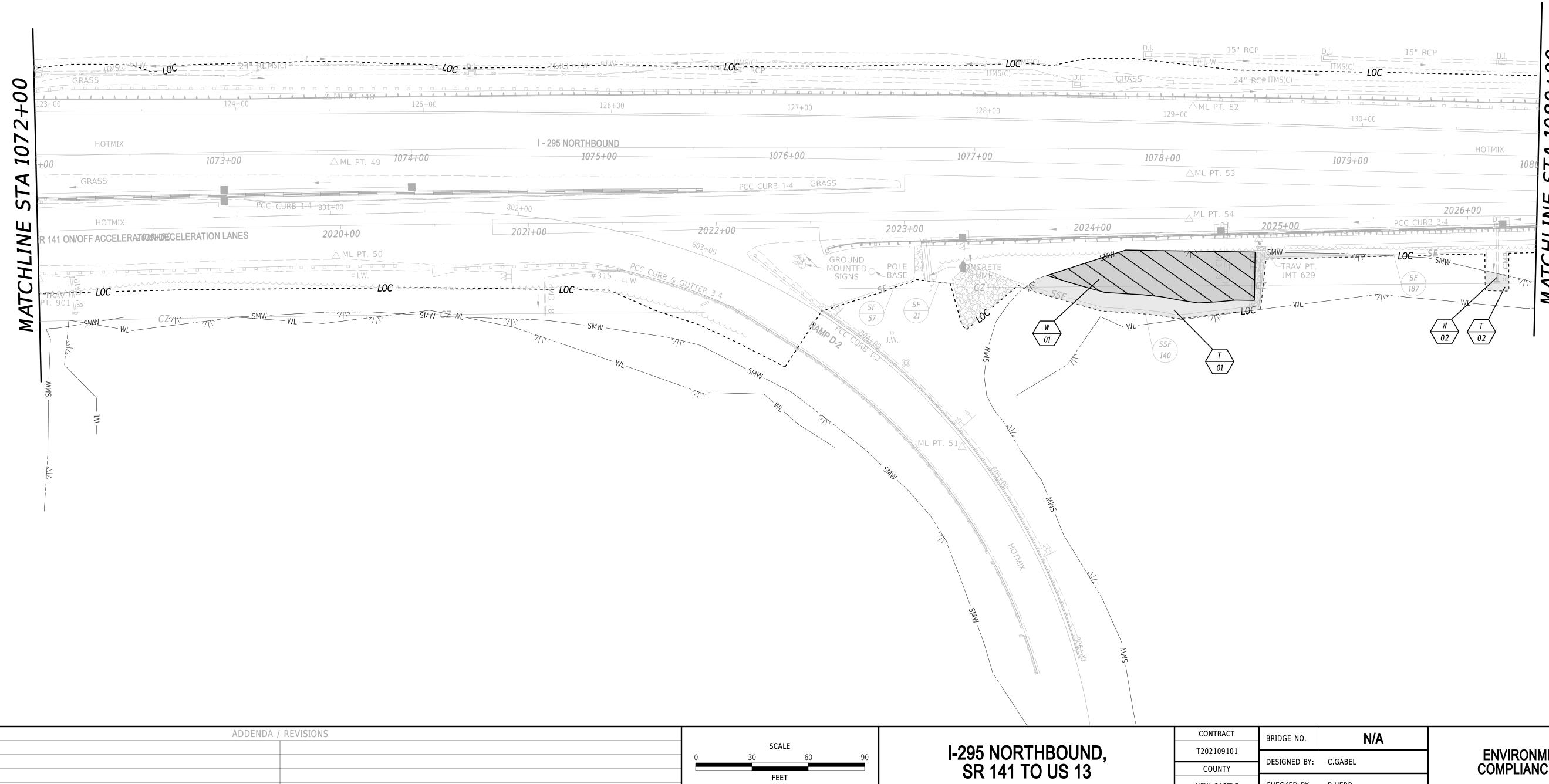


	PERMANENT TIDAL WETLAND IMPACT AREA SCHEDULE									
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION	LOSS VS. IMPACT	LOSS AREA (AC)			
W - 01	FILL	2291.40	0.0526	84.87	USACE / DNREC	LOSS	0.0526			
W-02	CULVERT REPLACEMENT / FILL	5.22	0.0001	0.19	USACE / DNREC	LOSS	0.0001			
TOTAL PEI	TOTAL PERMANENT WETLAND IMPACT AREAS 2296.62 0.0527 85.06 USACE / DNREC LOSS 0.0527									

	TEMPORARY TIDAL WETLAND IMPACT AREA SCHEDULE								
I D	ID IMPACT DESCRIPTION AREA (SF) AREA (AC) VOLUME (CY) JURISDICTIO								
T - 01	WORK AREA / ESC CONTROLS	1359.98	0.0312	50.37	USACE / DNREC				
T-02	WORK AREA / ESC CONTROLS	110.84	0.0025	4.11	USACE / DNREC				
TOTAL TEM	TOTAL TEMPORARY WETLAND IMPACT AREAS 1470.82 0.0337 54.48 USACE / DNREC								

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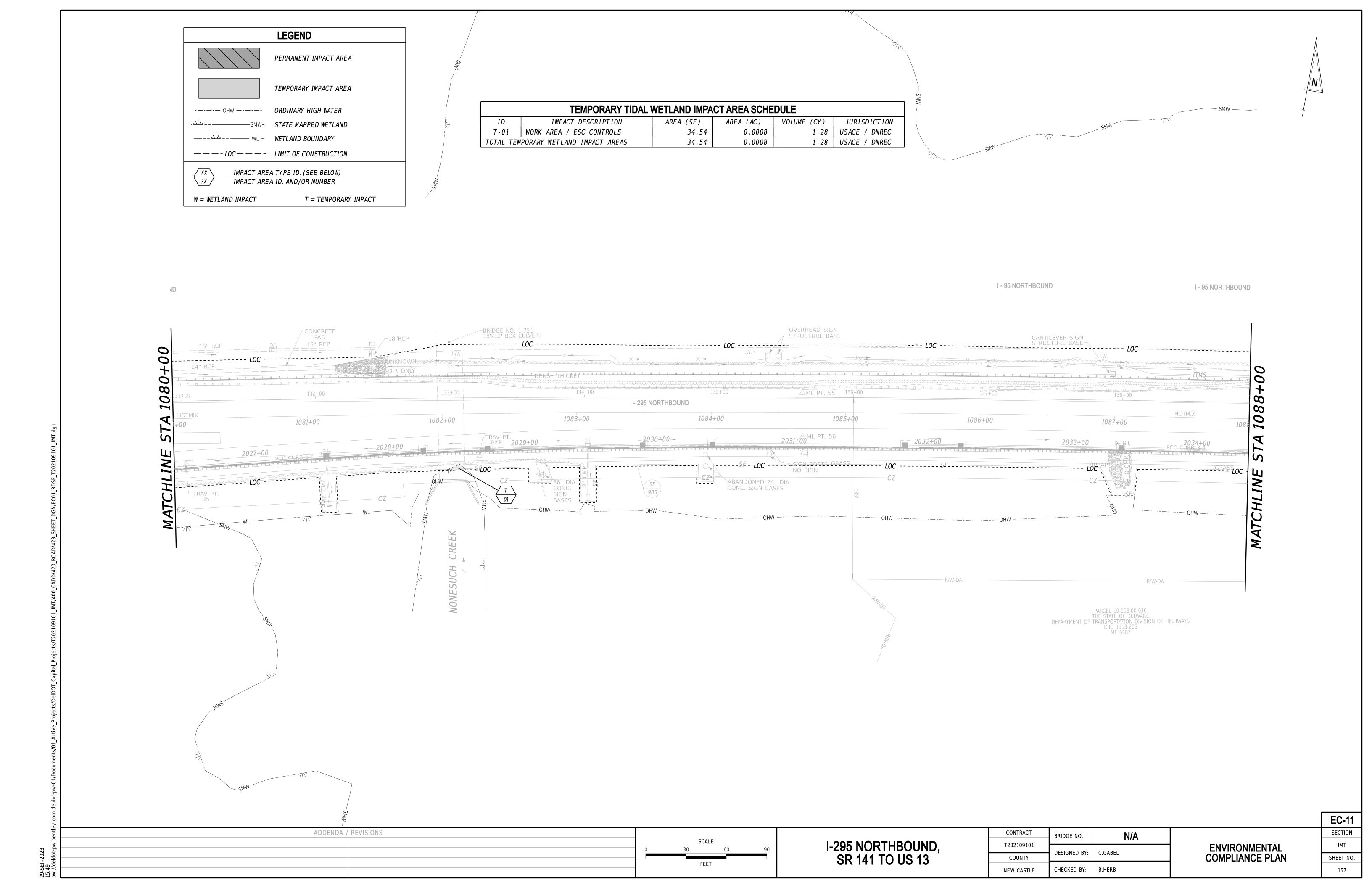
ENVIRONMENTAL COMPLIANCE PLAN DESIGNED BY: C.GABEL CHECKED BY: B.HERB

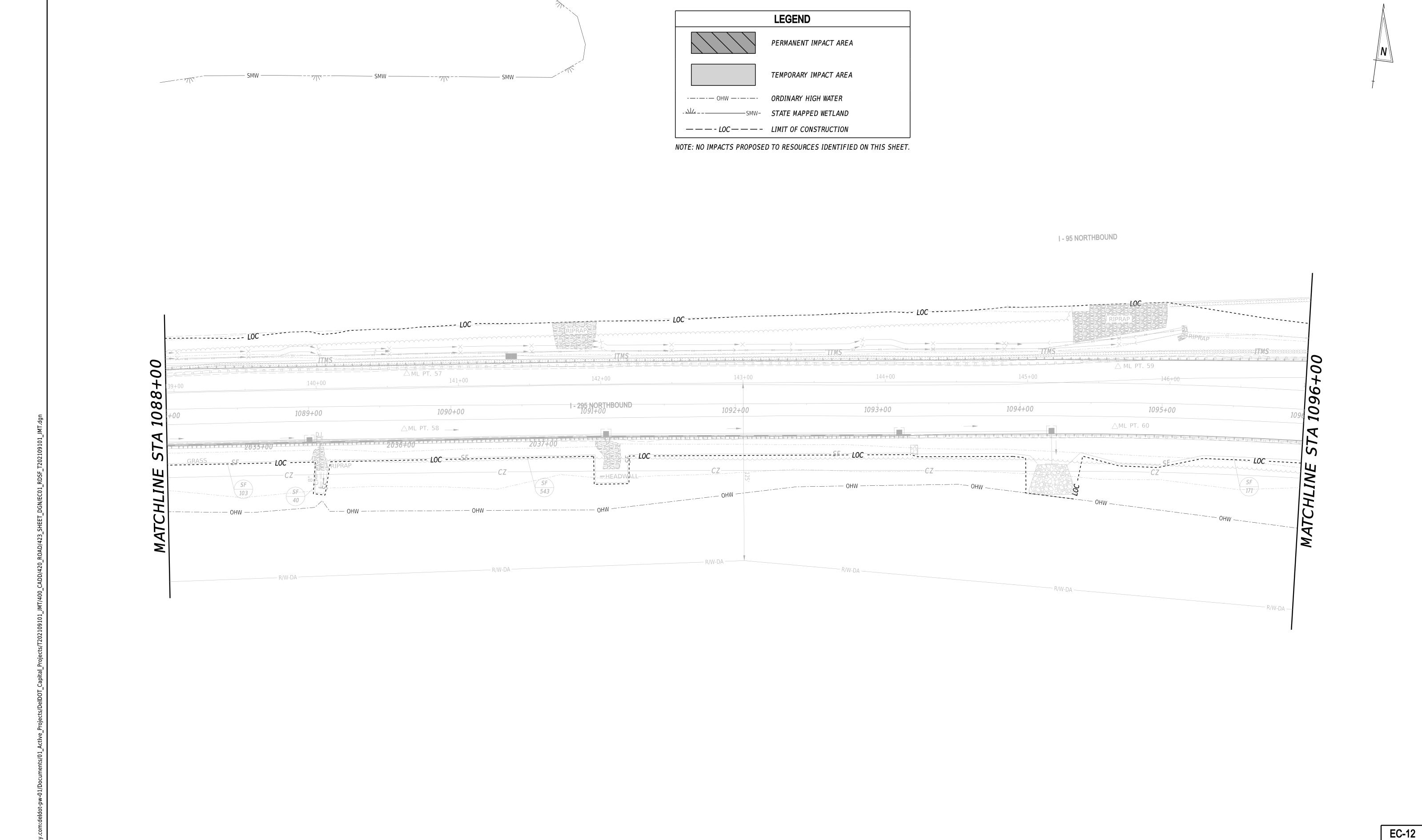
COUNTY

NEW CASTLE

EC-10

SHEET NO.





CONTRACT

T202109101

COUNTY

NEW CASTLE

I-295 NORTHBOUND, SR 141 TO US 13 BRIDGE NO.

DESIGNED BY: C.GABEL

CHECKED BY: B.HERB

N/A

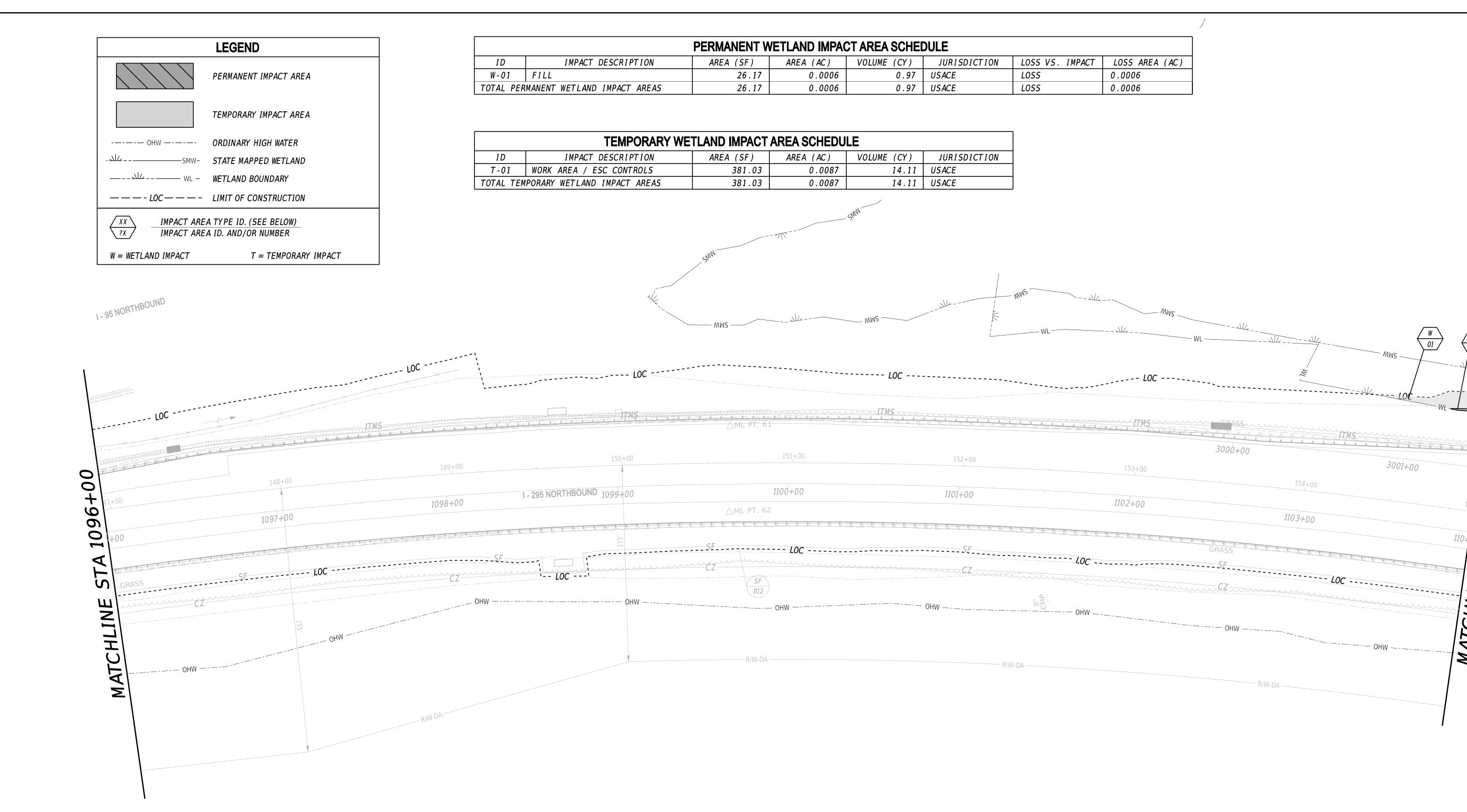
ENVIRONMENTAL COMPLIANCE PLAN

SHEET NO.

158

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ADDENDA / REVISIONS



EC-13 SHEET NO.

N/A BRIDGE NO. ENVIRONMENTAL COMPLIANCE PLAN DESIGNED BY: C.GABEL CHECKED BY: B.HERB

ADDENDA / REVISIONS

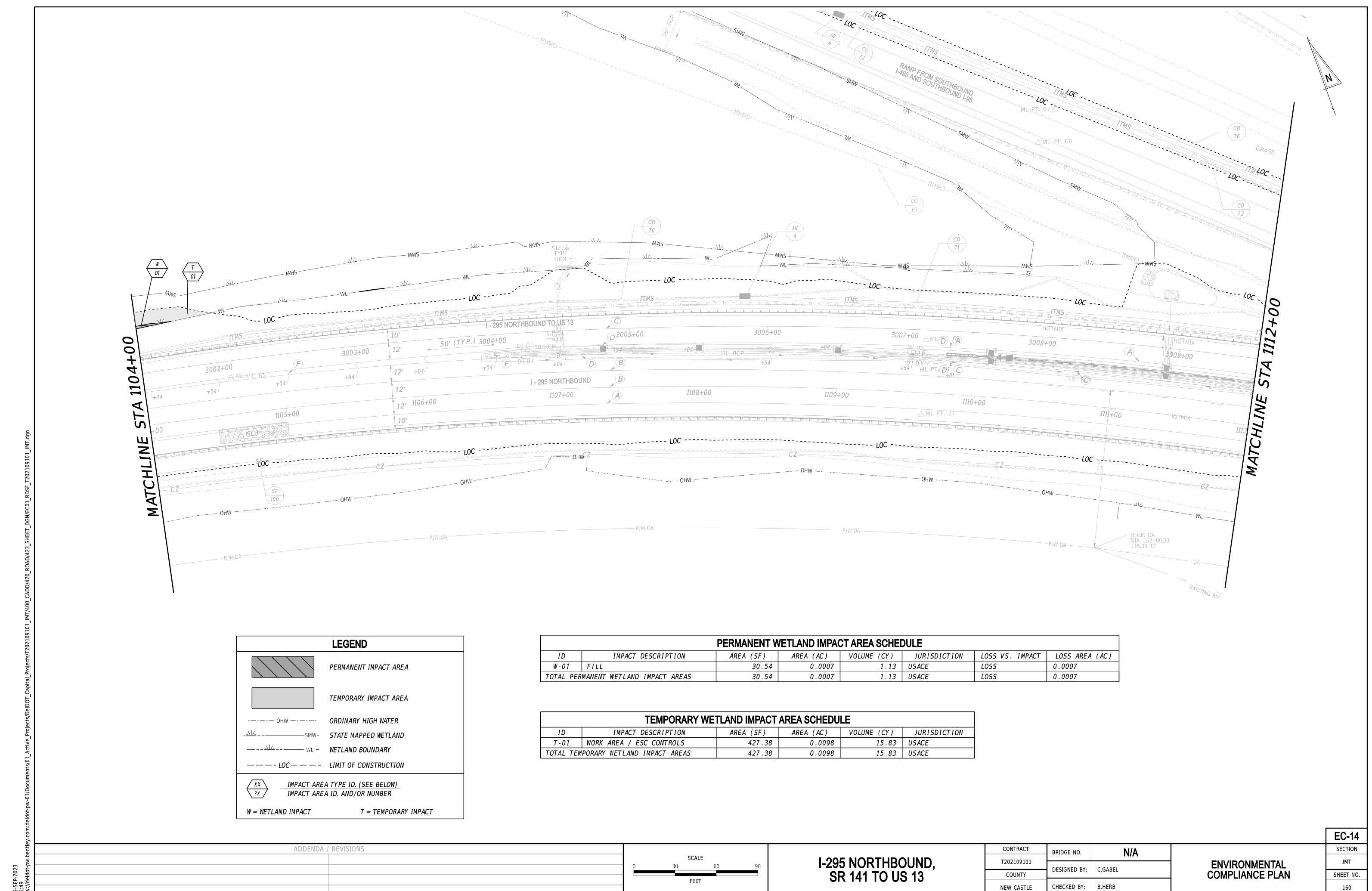
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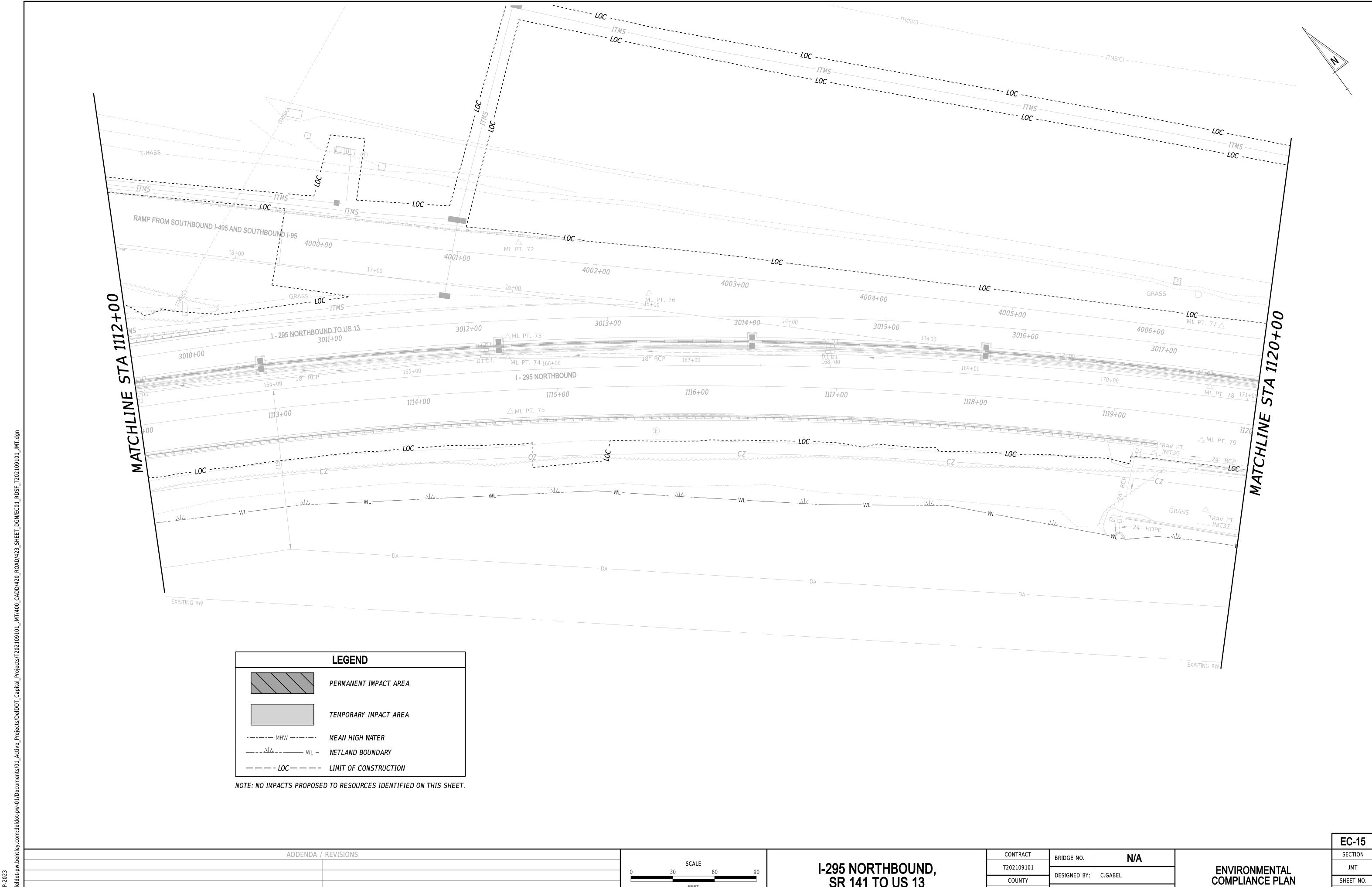
CONTRACT

T202109101

COUNTY

NEW CASTLE





I-295 NORTHBOUND, SR 141 TO US 13

CHECKED BY: B.HERB NEW CASTLE

ADDENDA / REVISIONS

I-295 NORTHBOUND, SR 141 TO US 13

CONTRACT

T202109101

COUNTY

NEW CASTLE

N/A DESIGNED BY: C.GABEL CHECKED BY: B.HERB

BRIDGE NO.

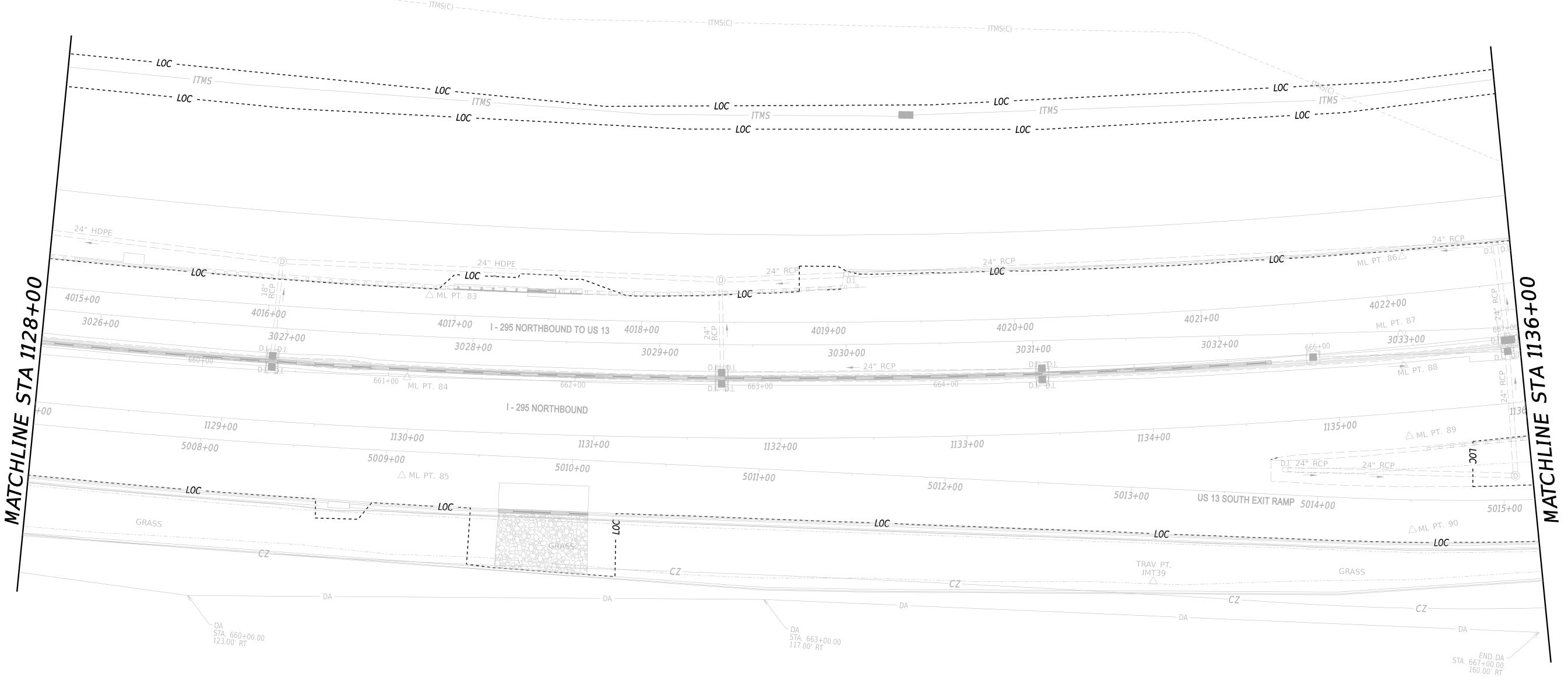
ENVIRONMENTAL COMPLIANCE PLAN

EC-16

SECTION

SHEET NO.

162



PERMANENT IMPACT AREA

TEMPORARY IMPACT AREA

---- LOC---- LIMIT OF CONSTRUCTION

NOTE: NO RESOURCES IDENTIFIED ON THIS SHEET.

ADDENDA / REVISIONS

BRIDGE NO. N/A

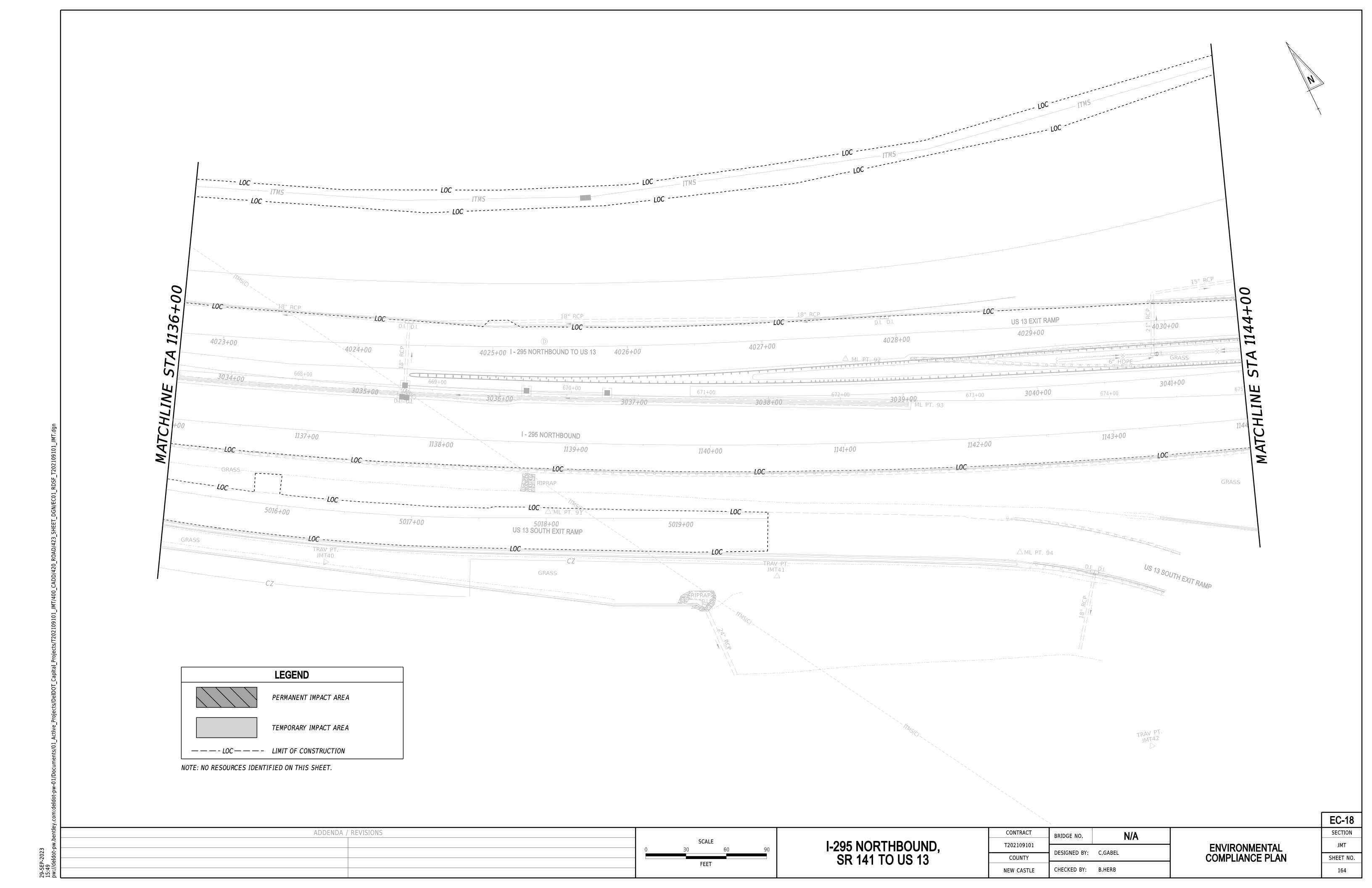
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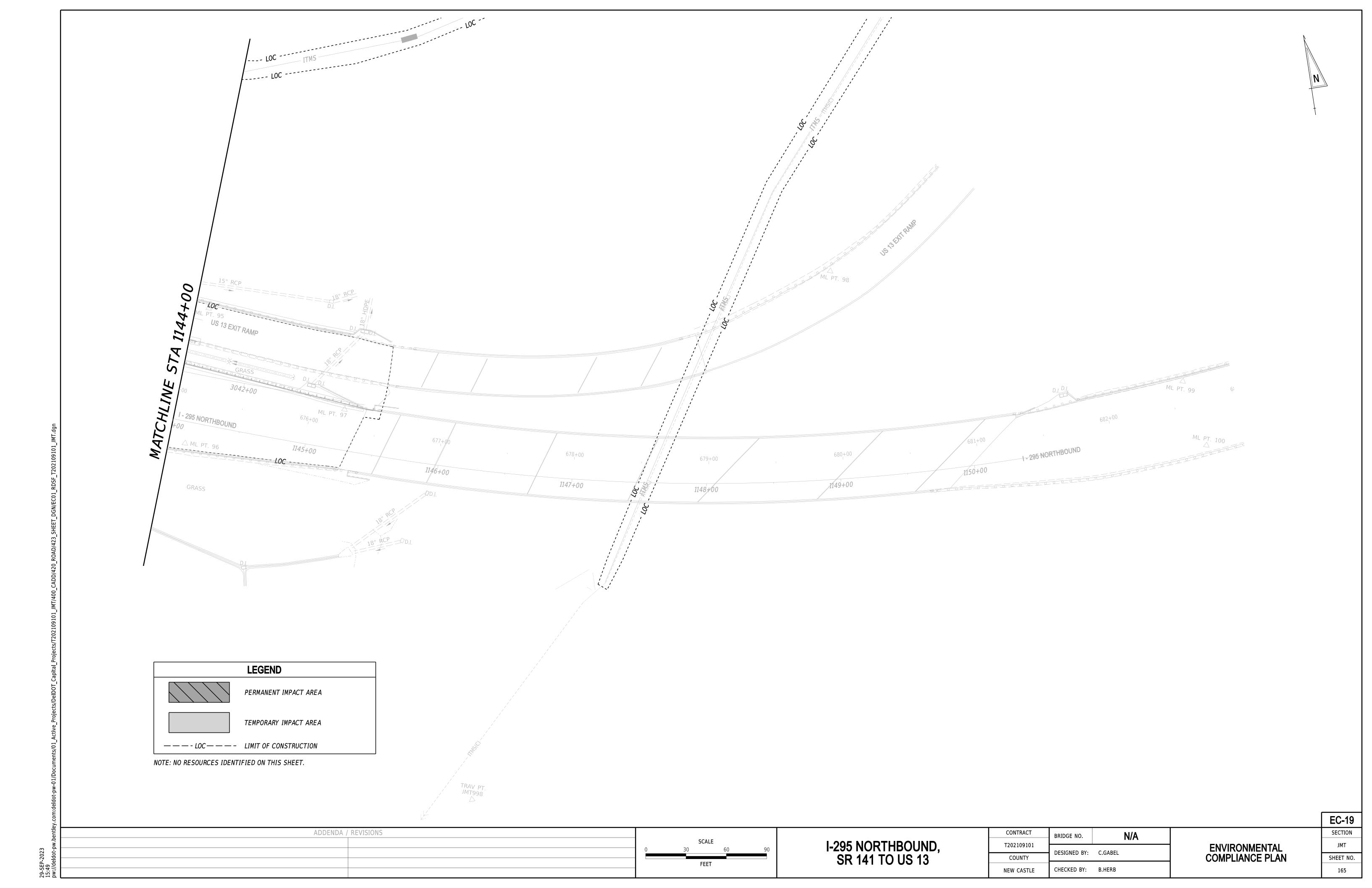
COMPT DESIGNED BY: C.GABEL

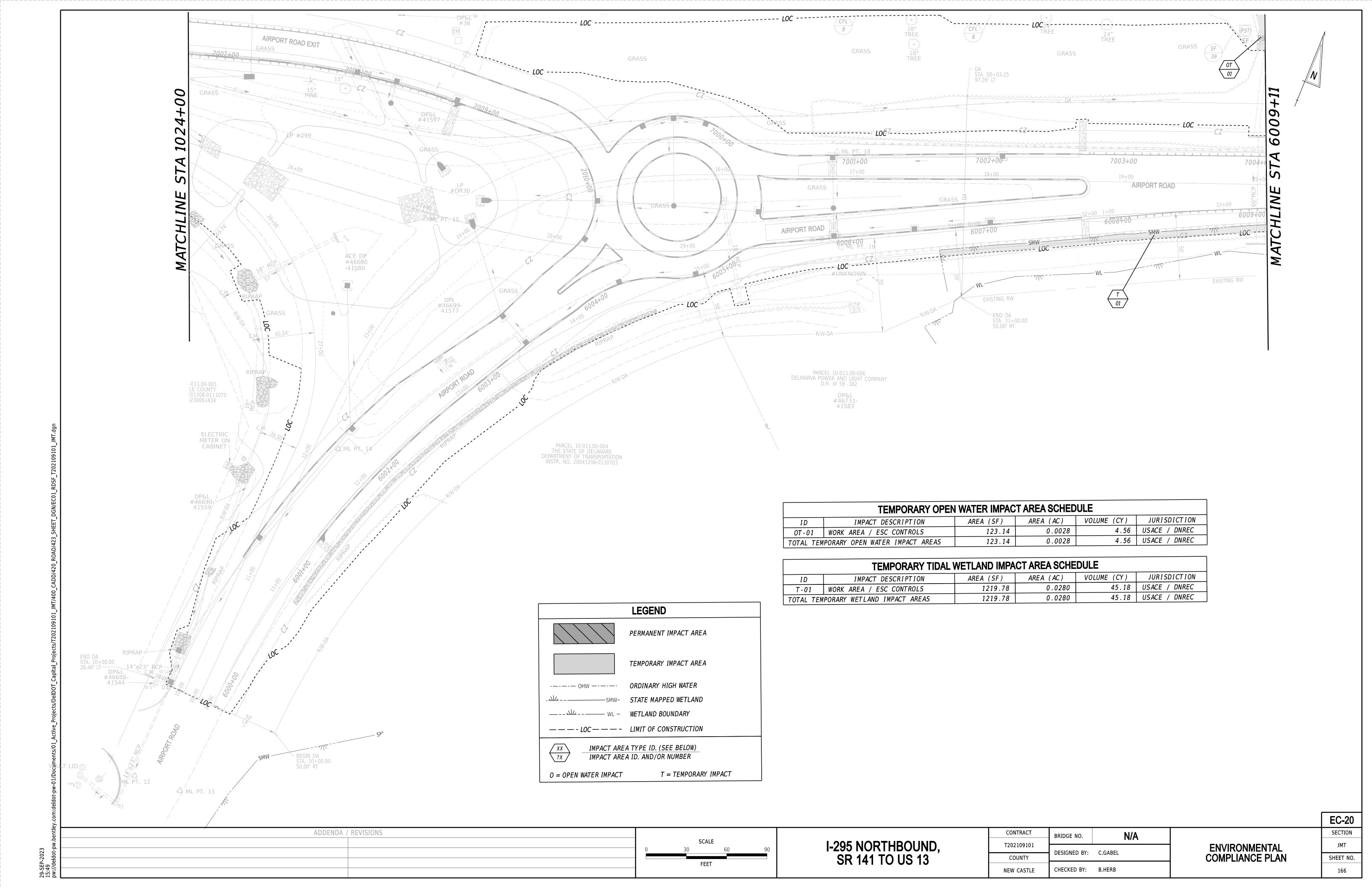
ENVIRONMENTAL COMPLIANCE PLAN

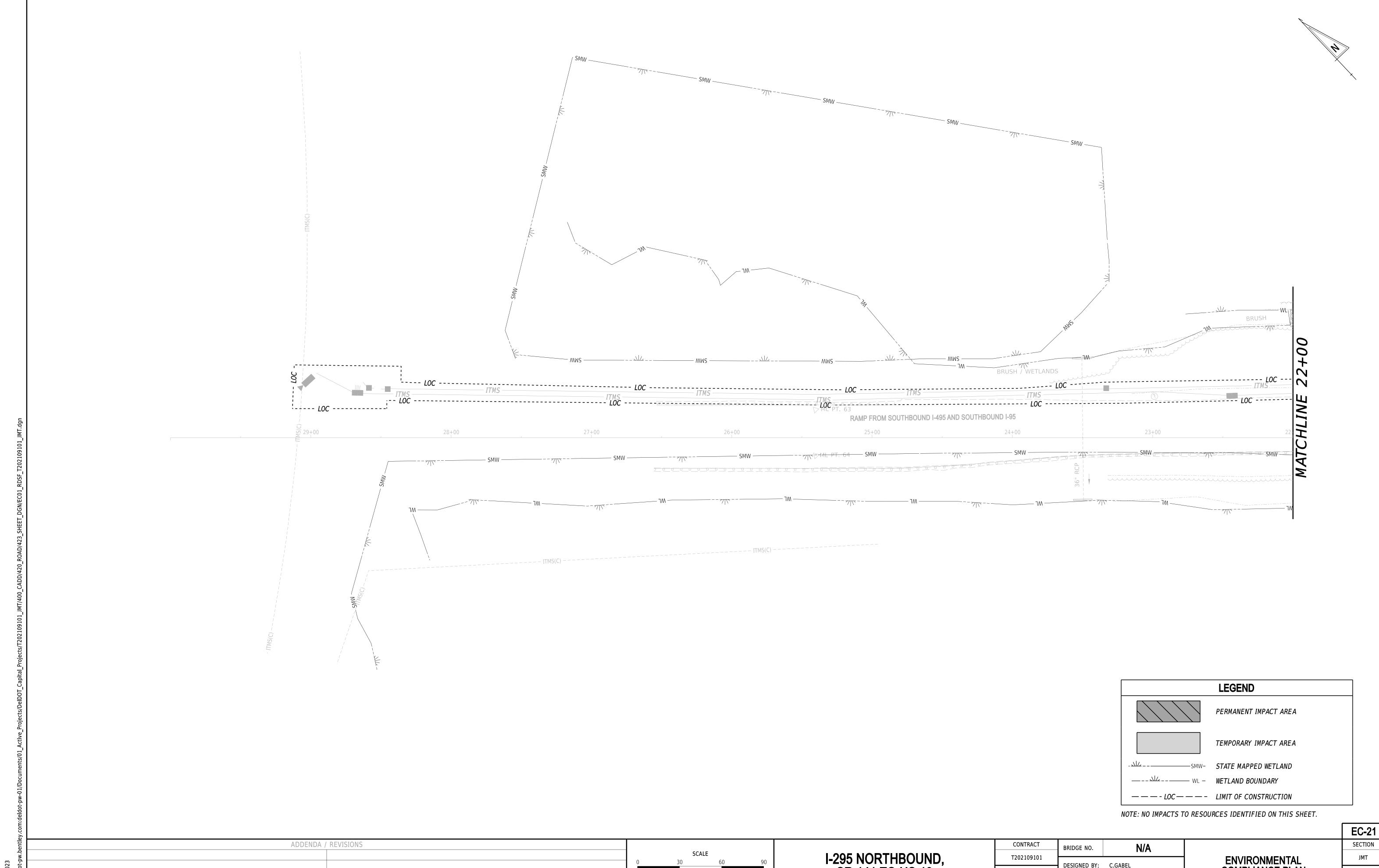
SHEET NO.

163







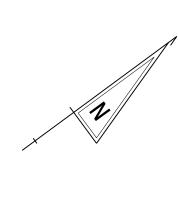


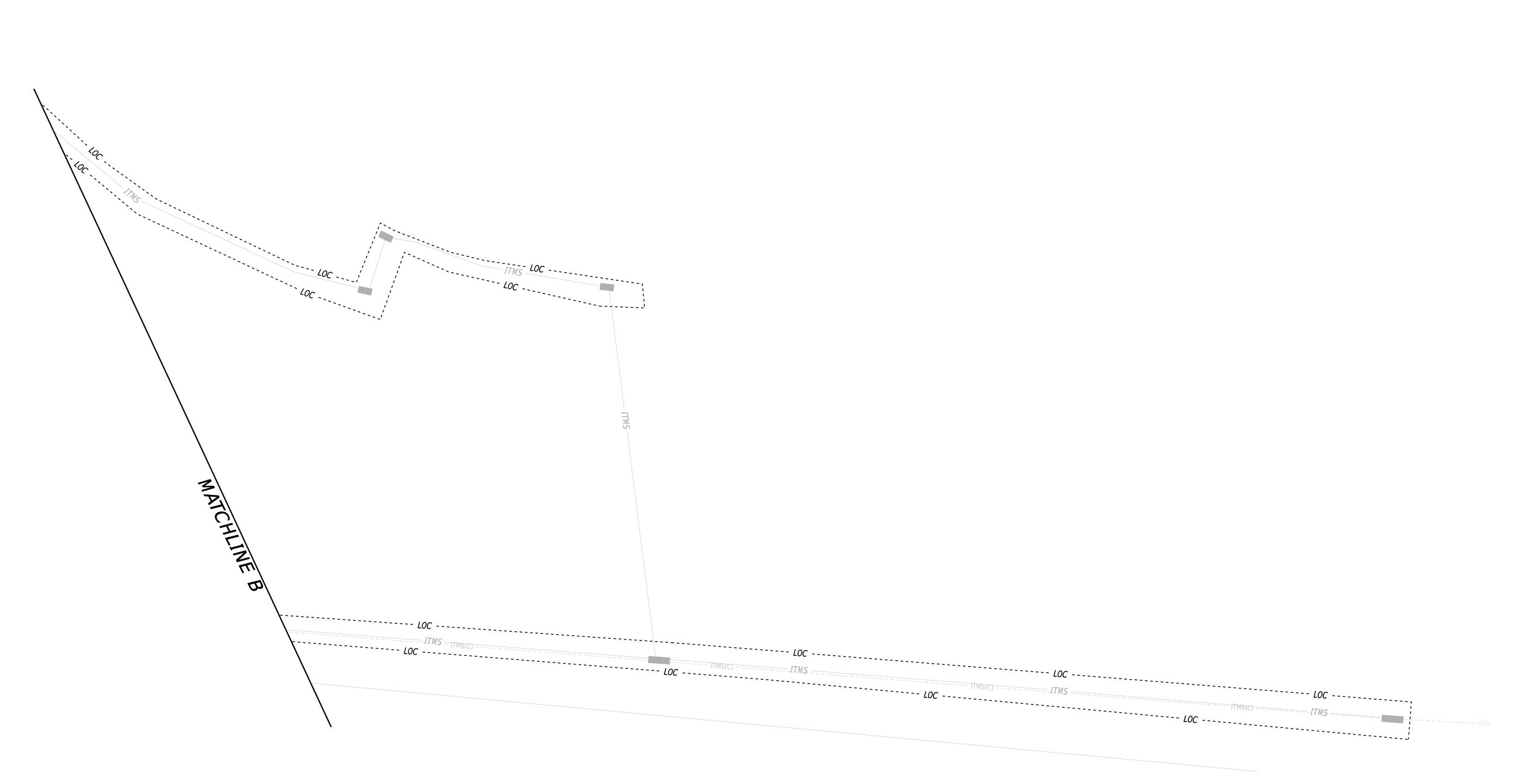
I-295 NORTHBOUND, SR 141 TO US 13

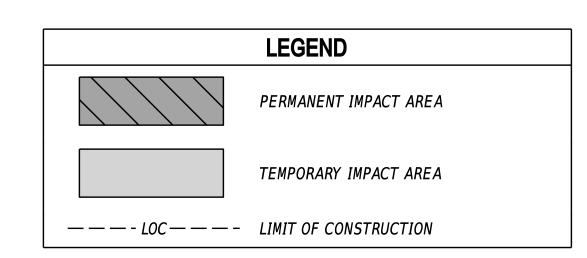
DESIGNED BY: C.GABEL COUNTY CHECKED BY: B.HERB NEW CASTLE

ENVIRONMENTAL COMPLIANCE PLAN

SHEET NO.







NOTE: NO RESOURCES IDENTIFIED ON THIS SHEET.

						EC-22
ADDENDA / REVISIONS			CONTRACT	BRIDGE NO. N/A		SECTION
	SCALE	I-295 NORTHBOUND,	T202109101	14/7	ENI/IDONMENTAL	JMT
	0 30 60 90	OD 444 TO UO 40 '	COUNTY	DESIGNED BY: C.GABEL	COMPLIANCE PLAN	SHEET NO.
	FEET	SR 141 10 05 13	NEW CASTLE	CHECKED BY: B.HERB	COMPLIANCE PLAN	160
			NEW CASILE	CHECKED DI. B.HERD	1	100

ENVIRONMENTAL COMPLIANCE NOTES

- GENERAL NOTES:
 - A. THE PURPOSE OF THIS SHEET 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
 - B. IF A DEPARTURE FROM THE APPROVED PLANS (WHICH WOULD AFFECT ANY NATURAL AND/OR CULTURAL RESOURCES) IS NECESSARY, CONTACT THE ENVIRONMENTAL STUDIES SECTION AT (302-760-2264 OR DOT ENVIRONMENTALSTUDIES@DELAWARE.GOV) TO ALLOW FOR COORDINATION WITH THE APPROPRIATE RESOURCE AGENCIES AND APPROVAL.
 - C. USE OF THIS SHEET DOES NOT ALLEVIATE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL CONDITIONS SET FORTH IN THE ENVIRONMENTAL STATEMENT AND PERMITS.
- 2. NATURAL RESOURCE ISSUES:
 - A. PERMIT REQUIREMENTS/APPROVALS * U.S. ARMY CORPS OF ENGINEERS (COE): NATIONWIDE PERMIT NWP 23 WITH PRECONSTRUCTION NOTIFICATION (PCN) DNREC - WETLANDS & SUBAQUEOUS LANDS (WLSL): WETLANDS & SUBAQEOUS LANDS PERMIT DNREC - WATER QUALITY (WQC) & COASTAL ZONE CONSISTENCY (CZM): ISSUED NWP 23 NCC DEPT. OF LAND USE (NCC): NCC FLOODPLAIN PERMIT
 - * THE PERMITS/APPROVALS LISTED ARE THOSE REQUIRED FOR THIS PROJECT. THE ENVIRONMENTAL STUDIES SECTION IS RESPONSIBLE FOR COORDINATING AND/OR OBTAINING THESE APPROVALS.
 - ** THE CONTRACTOR MUST ENSURE THAT THESE PERMITS/APPROVALS ARE IN THEIR POSSESSION PRIOR TO BEGINNING CONSTRUCTION IN THE PERMITTED AREA(S) AND ENSURE THEY ARE DISPLAYED ON-SITE DURING THE ENTIRE CONSTRUCTION
 - **B.** CONSTRUCTION RESTRICTIONS: FISHERIES - NONE ENDANGERED SPECIES - NONE MIGRATORY BIRDS - IF WORK PROPOSED BETWEEN APRIL 15 AND AUGUST 1 A PRE-CONSTRUCTION SURVEY FOR PRESENCE OF NESTS MUST BE COMPLETED. IF NESTS PRESENT, NO CONSTRUCTION ACTIVITIES FROM APRIL 15 TO AUGUST 1 OR INSTALL DETERANT SUCH AS MESH NETTING THAT FULY ENCAPSULATES THE UNDERSIDE OF THE BRIDGE PRIOR TO APRIL 15. MATERIAL SHOULD BE LEFT IN PLACE UNTIL CONSTRUCTION BEGINS.
- 3. CULTURAL RESOURCE ISSUES:
 - A. BASED ON CURRENT COORDINATION, THE PROJECT IS CLEAR FOR CULTURAL RESOURCES AND EXEMPT FROM SHPO REVIEW UNDER STIPULATION III OF DELDOT'S PROGRAMMATIC AGREEMENT WITH FEDERAL HIGHWAYS ADMINISTRATION (FHWA) AND DELAWARE STATE HISTORIC PRESERVATION OFFICE (SHPO). AS A RESULT, DELDOT CULTURAL RESOURCE STAFF HAVE ISSUED A FINDING OF NO HISTORIC PROPERTIES AFFECTED FOR THIS PROJECT. THERE ARE NO CULTURAL RESOURCE CONCERNS AS LONG AS THE PROJECT SCOPE IS NOT MODIFIED AND ALL STAGING AND STOCKPILING REMAIN WITHIN THE EXISTING ROADWAY FOOTPRINT. SHOULD IT BE NECESSARY TO ADD ADDITIONAL ACCESS LOCATIONS, OTHER STOCKPILING/STAGING AREAS, OR OTHERWISE ALTER THE SCOPE OF THE PROJECT, DELDOT ENVIRONMENTAL STUDIES STAFF WILL NEED TO BE CONTACTED AT DOT ENVIRONMENTALSTUDIES@DELAWARE.GOV OR (302) 760-2093 TO REVIEW THESE CHANGES FOR POTENTIAL CULTURAL RESOURCE CONCERNS.
- 4. STREAM RESTORATION AND RIPRAP TREATMENT:
 - A. FOLLOW THE SPECIAL PROVISION FOR ITEM 707500 CHANNEL BED FILL IN REGARDS TO THE SALVAGING OF ON-SITE NATURAL STREAM BOTTOM MATERIAL OR THE FURNISHING OF OFFSITE MATERIAL. IF SUFFICIENT SOURCES FOR CHANNEL BED FILL DO NOT EXIST ON-SITE, ANY NEW MATERIAL MUST CONFORM TO THE REQUIREMENTS OF ITEM 707500 - CHANNEL BED FILL. RECESS ALL RIPRAP IN THE CHANNEL BOTTOM (I.E. BELOW THE WATER LINE) ONE FOOT BELOW STREAM BED ELEVATION AND CHOKE WITH BORROW TYPE 'B' SO THAT ALL OF THE VOIDS IN THE RIPRAP ARE FILLED WITH SPECIFIED MATERIAL. PAYMENT UNDER ITEM 209002 - BORROW, TYPE B. COVER THE RIPRAP WITH A MINIMUM OF 12" CHANNEL BED FILL. MATCH THE FINAL CHANNEL ELEVATIONS WITH EXISTING ELEVATIONS AT THE UPSTREAM AND DOWNSTREAM PROJECT LIMITS. THROUGH THE STRUCTURE, BLEVATIONS WILL BE AS NOTED ON THE PLANS. PAYMENT UNDER ITEM 707500 - CHANNEL BED FILL
 - B. RESTORE OTHER AREAS OF THE CHANNEL BOTTOM AFFECTED BY CONSTRUCTION (INCLUDING, BUT NOT LIMITED TO, THE LOCATION OF SUMP PITS, STABILIZED OUTFALLS, TEMPORARY PIPES AND/OR SANDBAG DIKES AND DIVERSIONS) TO EXISTING CONDITIONS. FILL ANY CAVITIES OR SCOUR HOLES RESULTING FROM CONSTRUCTION ACTIVITIES WITH CHANNEL BED FILL. PAYMENT UNDER ITEM 707500 - CHANNEL BED FILL.
 - C. WHEN ALL EROSION AND SEDIMENT CONTROL MEASURES ARE REMOVED AND THE STREAM RETURNS TO ITS NATURAL FLOW CONDITIONS, THE FLOW MUST REMAIN ABOVE GROUND AND ABOVE THE RIPRAP (I.E. THE FLOW CANNOT BE "LOST" IN THE RIPRAP OR BENEATH THE STRUCTURE). IF THIS IS NOT ACHIEVED, THE CONTRACTOR WILL BE REQUIRED TO TAKE CORRECTIVE ACTION AT THE CONTRACTOR'S EXPENSE.
 - D. CHOKE ALL RIPRAP ON THE STREAM BANK, OUTSIDE THE CHANNEL BED, WITH DELAWARE #57 STONE. PLACE JUST ENOUGH CHOKE MATERIAL TO PREVENT THE LOSS OF TOPSOIL THROUGH THE RIPRAP. AND THEN FINISH FILLING THE VOIDS WITH TOPSOIL SO THAT THE RIPRAP PEAKS ARE BARELY VISIBLE. PLACE AN ADDITIONAL 6-INCH TOPSOIL LAYER ON TOP OF THE RIPRAP. SEED THE SLOPE IN ACCORDANCE WITH ITEM 908019 - STREAMBANK SEED MIX, SEEDING. FOLLOWING THE SEEDING OPERATION, INSTALL ITEM 908020 - EROSION CONTROL BLANKET (ECB) MULCH, OR OTHER BLANKET AS SHOWN ON THE PLANS. ECB AT TOE OF SLOPE CAN BE EITHER BE STAPLED AT 6" ON CENTER OR TRENCHED IN, AS DIRECTED BY THE ENGINEER. COMPLETE ALL WORK, STARTING WITH THE INITIAL CHOKING WITH TOPSOIL THROUGH THE SEEDING AND MULCHING PRIOR TO ANY RAIN EVENT. DELAWARE #57 STONE IS INCIDENTAL TO THE RIPRAP ITEM. ALL OTHER ITEMS WILL BE PAID FOR UNDER THEIR RESPECTIVE ITEMS.
 - E. THE TOPSOIL/SEED/MULCH CAN BE PLACED BEFORE OR AFTER THE REMOVAL OF THE STREAM DIVERSION. IF THE PLACEMENT OCCURS AFTER STREAM DIVERSION REMOVAL, USE A TURBIDITY CURTAIN TO MINIMIZE IN-STREAM SEDIMENTATION. PAYMENT WILL BE INCIDENTAL TO ITEM 909005 - STREAM DIVERSION.
- 5. PROTECTION OF RESOURCES:
 - A. KEEP CLEARING IN WETLAND AREAS TO A MINIMUM ABSOLUTELY NECESSARY FOR CONSTRUCTION ACCESS. SUPPORT ALL EQUIPMENT TRAVERSING WETLANDS AND SUBAQUEOUS LAND ON MATS. PAYMENT FOR MATS WILL BE MADE UNDER ITEM 621500 - TEMPORARY TIMBER MAT. IN WETLAND AREAS THAT ARE CLEARED, NO GRUBBING EXCEPT WHERE NECESSARY TO CONSTRUCT PROJECT COMPONENTS SUCH AS FOUNDATIONS AND RIPRAP PROTECTION IS PERMITTED. CUT VEGETATION FLUSH WITH THE GROUND (I.E. NO DISTURBANCE OF THE ROOT MAT). RESTORE TEMPORARILY DISTURBED WETLAND AREAS TO GRADE AND SEED WITH ITEM 908017 - TEMPORARY GRASS SEEDING (ANNUAL RYEGRASS).
 - B. USE SILT FENCE OR CONSTRUCTION SAFETY FENCE ALONG THE LIMITS OF CONSTRUCTION IN ALL AREAS WHERE WATER WETLANDS ARE BEING IMPACTED (AS SHOWN ON ENVIRONMENTAL COMPLIANCE SHEETS), AND ALSO IN ANY AREA WHERE WATER/WETLANDS EXIST WITHIN 20 FEET OF THE LIMIT OF CONSTRUCTION (AS SHOWN ON CONSTRUCTION PLAN SHEETS). ANY CONTRACTOR ACCESS BEYOND THE LIMIT OF CONSTRUCTION IS STRICTLY PROHIBITED.

ADDENDA / REVISIONS

- C. USE SANDBAGS OR COMPOST FILTER LOG (CFL) TO SECURE SILT FENCE AT AREAS ADJACENT TO WOODED UPLANDS/ ALL WETLANDS IN LIEU OF TRENCHING UNLESS PROPER EROSION AND SEDIMENT CONTROL CANNOT BE MAINTAINED. REMOVE SANDBAGS AND CFLS (AND CONTENTS) IN THEIR ENTIRETY WHEN NO LONGER NEEDED. SANDBAGS/CFLS USED TO SECURE THE SILT FENCE IS INCIDENTAL TO ITEM 905001 - SILT FENCE. THE ENVIRONMENTAL STUDIES SECTION (302-760-2259 OR DOT ENVIRONMENTALSTUDIES@DELAWARE.GOV) CAN PROVIDE FURTHER GUIDANCE REGARDING THIS METHOD OF INSTALLATION.
- D. CLEARLY MARK ALL TREES TO BE REMOVED WITH PAINT PRIOR TO THE EROSION AND SEDIMENT CONTROL MEETING.

WETLANDS DELINEATED BY JMT, INC. ON 7/8, 7/9, 7/22, AND 7/23/2021 AND 6/8/2023 IN ACCORDANCE WITH THE 1987 CORPS OF ENGINEERS WETLAND DELINEATION MANUAL AND REGIONAL SUPPLEMENT.

ORIGINAL SHEETS PREPARED ON 11/22/2022. SHEETS REVISED ON 9/20/2023.

	PERMANENT WETLAND IMPACT AREA SCHEDULE									
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION	LOSS VS. IMPACT	LOSS AREA (AC)			
8-W-01	FILL	66.99	0.0015	2.48	USACE	LOSS	0.0015			
13-W-01	FILL	26.17	0.0006	0.97	USACE	LOSS	0.0006			
14-W-01	FILL	30.54	0.0007	1.13	USACE	LOSS	0.0007			
TOTAL PER	MANENT WETLAND IMPACT AREAS	123.70	0.0028	4.58	USACE	LOSS	0.0028			

	PERMANENT TIDAL WETLAND IMPACT AREA SCHEDULE								
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION	LOSS VS. IMPACT	LOSS AREA (AC)		
8-W-02	CULVERT EXTENSION / FILL	278.07	0.0064	10.30	USACE / DNREC	LOSS	0.0064		
10-W-01	FILL	2291.40	0.0526	84.87	USACE / DNREC	LOSS	0.0526		
10-W-02	CULVERT REPLACEMENT / FILL	5.22	0.0001	0.19	USACE / DNREC	LOSS	0.0001		
TOTAL PER	TOTAL PERMANENT TIDAL WETLAND IMPACT AREAS 2574.69 0.0591 95.36 USACE / DNREC LOSS 0.0591								

	TEMPORARY WETLAND IMPACT AREA SCHEDULE									
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION					
7 - T - 01	WORK AREA / ESC CONTROLS	337.33	0.0077	12.49	USACE					
8-T-02	WORK AREA / ESC CONTROLS	1295.59	0.0297	47.99	USACE					
13-T-01	WORK AREA / ESC CONTROLS	381.03	0.0087	14.11	USACE					
14-T-01	WORK AREA / ESC CONTROLS	427.38	0.0098	15.83	USACE					
TOTAL TEM	TOTAL TEMPORARY WETLAND IMPACT AREAS 2441.33 0.0559 90.42 USACE									

TEMPORARY TIDAL WETLAND IMPACT AREA SCHEDULE						
ID	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION	
8-T-01	WORK AREA / ESC CONTROLS	44.30	0.0010	1.64	USACE / DNREC	
10-T-01	WORK AREA / ESC CONTROLS	1359.98	0.0312	50.37	USACE / DNREC	
10-T-02	WORK AREA / ESC CONTROLS	110.84	0.0025	4.11	USACE / DNREC	
11-T-01	WORK AREA / ESC CONTROLS	35.54	0.0008	1.28	USACE / DNREC	
20-T-01	WORK AREA / ESC CONTROLS	1219.78	0.0280	45.18	USACE / DNREC	
TOTAL TEM	PORARY TIDAL WETLAND IMPACT AREAS	2769.44	0.0635	102.58	USACE / DNREC	

PERMANENT OPEN WATER IMPACT AREA SCHEDULE							
I D	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION	LOSS VS. IMPACT	LOSS AREA (AC)
4-0-01	CULVERT EXTENSION / FILL	29.51	0.0007	1.09	USACE / DNREC	IMPACT	0.0000
5-0-01	CULVERT EXTENSION / FILL	402.87	0.0092	14.92	USACE / DNREC	IMPACT	0.0000
TOTAL PERMANENT OPEN WATER IMPACT AREAS		432.38	0.0099	16.01	USACE / DNREC	N/A	0.0000

TEMPORARY OPEN WATER IMPACT AREA SCHEDULE							
I D	IMPACT DESCRIPTION	AREA (SF)	AREA (AC)	VOLUME (CY)	JURISDICTION		
4 - OT - 01	WORK AREA / ESC CONTROLS	35.06	0.0008	1.30	USACE / DNREC		
5 - OT - 01	WORK AREA / ESC CONTROLS	469.81	0.0108	17.40	USACE / DNREC		
20-OT-01	WORK AREA / ESC CONTROLS	123.14	0.0028	4.56	USACE / DNREC		
TOTAL TEMPORARY OPEN WATER IMPACT AREAS		628.01	0.0144	23.26	USACE / DNREC		

SE 49

CONTRACT	BRIDGE NO.	N/A	
T202109101		14// \	
1202109101	DESIGNED BY:	CCAREL	
COUNTY	DESIGNED BI.	C.GADEL	
NEW CASTLE	CHECKED BY:	B.HERB	

EC-01

SECTION

SHEET NO.