Rhode Island
Airport Corporation

March 5, 2025

ADDENDUM NO. 01
Invitation for Bids (IFB) No. 35821
Runway 5-23 Rehabilitation at
Rhode Island T. F. Green International Airport (PVD)

Prospective proposers and all concerned are hereby notified of the following changes in the document(s) related to **IFB 35821**. These changes shall be incorporated in and shall become an integral part of the contract documents.

The following are answers to the submitted questions:

1. I was wondering if I could get a copy of the plan holder list for the Runway 5-23 Rehabilitation project at Rhode Island TF Green International Airport.
   Response: Yes, the plan holder list is attached to this addendum.

2. Page GC100 The table says PH 4 is 18 calendar days duration…is that the same as 18 nights, since this is night work?
   Response: The duration of Phase 4 is 18 calendar days with working hour restrictions. Work may only be performed between the hours of 10pm and 5am. In detail A2/GC140, Note 1, second sentence will be revised to, ". ALL CONSTRUCTION ACTIVITIES MUST BE COMPLETED DURING THE 18 DAY CLOSURE." This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

3. Note 1 on sheets GC 140, 141, 145 and 147 refer to the work being completed during a 16 day closure…this appears to conflict with the 18 days shown on sheet GC 100.
   Response: The duration is 18 calendar days with working hour restrictions. Work may only be performed between the hours of 10pm and 5am. In detail A2/GC140, 141, 145 & 142, Note 1, second sentence will be revised to, ". ALL CONSTRUCTION ACTIVITIES MUST BE COMPLETED DURING THE 18 DAY CLOSURE." This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

4. Note 4 on sheets GC 140, 141, 145 and 147 states that permanent striping will be placed nightly. Can we suggest that this be performed after the grooving is complete? Each night after grooving, the pavement is clean, but still damp from the water used to cool the

blades while cutting the grooves. 18 nights with short working hours is not enough time to complete the grooving as it is, without having to stop early enough for the striping contractor to try to dry the pavement enough to do the striping. Also, the grooving will not remove the temporary striping.

Response: Yes, permanent striping may be performed after grooving, however the overall duration for Phase 4 of work shall not be increased.

5. Can you extend the allowable time to perform the grooving to 21 nights?

   Response: The allowable time will not be increased for Phase 4 work.

6. Please confirm the contractor is allowed to release filtered water removed during the pipe vacuuming process (known as "decant water") into the sanitary or storm system."
   a. If the decant water is to be released to the sanitary system, please confirm the sanitary sewer operator has granted permission.
   b. If the decant water is to be released to the storm system, please provide a copy of the MS4 permit.

   Response: Flushing/decant water shall not be released back into the storm sewer system, nor allowed to remain in the storm sewer system. Once the sediment has settled from the flushing water, the resulting decant water may be:

   - *Discharged to approved infiltration basins within airport site. Basins are within ¾ mile of project work area. Location will be coordinated with RPR. OR*
   - *May be disposed at facilities owned by the Warwick Sewer Authority. The Contractor will be responsible for all permits and fees required by the Warwick Sewer Authority.*

   This is addressed by addendum in the revised and new technical specification Item DX-702, Pipeline Cleaning referenced below.

7. Please confirm that the water introduced for the pipe jetting process is allowed to remain in the storm system.

   Response: Please see the answer to question 6 above.

8. Are there any well water areas, wetland areas, ground water or other sensitive environments proximate to the work area? If so, are there specific controls required to protect these areas such as "pre-liners".

   Response: There are no special lining requirements for the work areas.

9. Can CCTV videos be provided for the lines being CIPP rehabilitated?

   Response: Available videos can be accessed at the following OneDrive Link: PVD RW 5-23_Pipe Televising

Note that the drainage structure numbers utilized by the SUE firm are not the same as on the plans. The SUE plan is also included for reference.

10. Please confirm the work hours for the CIPP lining.
    Response: The work hours are the same for all items of work. Refer to the GC series in the Contract Drawings.

11. Please confirm the manhole depths associated with all the CIPP lining.
    Response: Refer to sheets VF501 and VF502 for the available existing drainage structure information.

12. Will any training be required for the workers before arriving on site. If so, in what form and duration of training is required.
    Response: Refer to the security section of the Construction Safety and Phasing Plan of the Contract Documents which is included as Attachment A to Section 70 of the FAA General Provisions. All workers are required to submit their information for a background check prior to accessing the project site as well as be in audible distance of a badged individual. It is the responsibility of the Contractor to determine the appropriate number of badged individuals. The badging process can be found here: Badging - Rhode Island T. F. Green International Airport | PVD. The Contractor must identify one individual to be the "signatory" to sign off on all badge applications. The signatory will be required to attend a short training provided by the airport. Gate guards will also require additional training provided by the airport.

13. Are there any de-icing products such as glycol running in these lines that needs to be considered when designing the CIPP liner.
    Response: There are central deicing collection facilities to contain de-icing products. During de-icing operations, glycol may enter the stormwater system. Airport outfalls are tested regularly and have not exceeded the permittable limits.

14. Please confirm how the contractor will be compensated for testing, handling and legally disposing of asphalt millings containing per- and polyfluoroalkyl substances (PFAS) occurring in pavements at airports where these chemicals are used in firefighting foam as these millings would be considered hazardous waste.
    Response: This question will be answered in a future Addendum.

15. All hardware/software/interface & controls/components are proprietary/sole source to the control system and will need to be procured outside of this AIP Funded Project per AIP

Guidelines, AIP Handbook 5100-38D Change 1, 3-36 Limited Noncompetitive Proposal Situations (ALCMS Modifications…). Please verify all hardware/software/interface & controls/proprietary components, including ACE units required to integrate existing and proposed materials is procured outside of this AIP Funded Project per AIP Guidelines.

Response: There is no ALCMS update in this project.

16. Average cure times for a 350-foot section of 36-inch dia. pipe to CIPPed is 16 hours, depending on weather, type of lining, etc. The sections in Phase 2 (even though it appears to be alternate) will likely be impossible to finish in the 7 hour work window. Is there a work around to accommodate the minimum cure time?

Response: Due to the limited hours available, this section of 42-inch RCP on sheet CU107 from structure 4439 to the nearest upstream structure will be eliminated from the project. This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

17. The work involved in the alternate is extensive, can we have an extension of contract time if the alternate is selected?

Response: No additional time will be granted for Add-On No. 1.

18. Can we assume that all export from the Site is clean and unregulated?

Response: This question will be answered in a future Addendum.

19. I am reaching out for a plan holders list for the upcoming bid od PVD's Runway Rehab project. I am looking to submit a quote for markings on this job and would need contacts for Prime bidders. Would you be able to help me locate these online or provide a list to me please.

Response: Yes, the plan holder list is attached to this addendum.

20. I was reaching out to you today to see if I could get a copy of the pre-bid sign in sheet for the Runway 5-23 Rehabilitation project.

Response: Response: Yes, the pre-bid sign in sheet is attached to this addendum.

21. On plan CU-105, section DMH 4316 - DMH 1308 is called out to CIPP line under bid item DX-703. The plan shows that this section is a 60" RCP pipe which we don't have an item to CIPP line 60" pipe on the specifications. Please clarify if this is in fact a 60" pipe. If so, will there be a bid item?

Response: This section of pipe between DMH 4316 and DMH 1308, and structures DMH 1308 and CB 4386 will not be included in the

Contract. This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

22. Do we need to provide financials with our bid? Or just if you are low bid? Bid package contradicts in different sections.
    Response: Per paragraph XI.A.5 of section 00100, Information to Bidders, financial references and current financial statement will be required to be submitted with the submission of your bid. This is further explained in section 00300, Certification of Bidding Requirements.

23. Can you provide another week for questions / bids? This will allow us to be able to digest the information provided.
    Response: No additional time will be granted at this time.

24. Can you provide the planholders list?
    Response: Yes, the plan holder list is attached to this addendum.

25. Does RIAC have any data regarding the chemical composition of flow in the pipes to be lined? This will affect the construction of the liner and the type of resin needed.
    Response: There are central deicing collection facilities to contain de-icing products. During de-icing operations, glycol may enter the stormwater system. Airport outfalls are tested regularly and have not exceeded the permittable limits. No additional data is available.

26. Can RIAC provide a volume of flow expected for bypass (dry weather flow)?
    Response There is no available flow data.

27. If RIAC does not have adequate flow data, can RIAC look at including a bypass allowance for both the base bid and the alternate? This would make the bids easier to level as the amount of bypass needed is hard to quantify. Same situation for the alternate bid.
    Response The cost to bypass the flow is included in the cost of the CIPP Item. There will be no separate bypass allowance.

28. Can the flows just be bypassed to the other parallel pipes while lining is being completed?
    Response The stormwater and groundwater flow from the existing pipe can be bypassed either downstream or to a parallel pipe if there is sufficient capacity and is approved by the RPR.

29. Where can the bypass flow be discharged?
    Response Please see the answer to question 28 above.

30. Are there any chemicals introduced into the pipes to be lined such as fuel, glycol, de-icing fluid etc.?

Response: *There are central deicing collection facilities to contain de-icing products. During de-icing operations, glycol may enter the stormwater system. Airport outfalls are tested regularly and have not exceeded the permittable limits.*

31. Can we be provided video surveys of the pipe to be cleaned / lined?

Response: *Available videos can be accessed at the following OneDrive Link: PVD RW 5-23 Pipe Televising*
Note that the drainage structure numbers utilized by the SUE firm are not the same as on the plans. The SUE plan is also included for reference.

32. Can we be provided geotechnical data in the area?

Response: *Existing core thicknesses are provided in the CD series of the Contract Drawings. The boring logs, test pits and test results can be found in the following OneDrive Link: PVD RW 5-23 Geotech Report*

33. If RIAC does not have adequate groundwater table data, can RIAC look at including a dewatering allowance? This would make the bids easier to level as the amount of dewatering needed is hard to quantify.

Response: *The boring logs, test pits and test results can be found in the following OneDrive Link: PVD RW 5-23 Geotech Report. Removal of water is further discussed in paragraph SP 50-18 of Section SP-200 of the General Provisions.*

34. We understand the final course of asphalt is a 1.5" overlay over milling asphalt placed during this project to give a clean finish. Given that, can we plan to install the majority of asphalt with long pulls?

Response: *Refer to section 401-4.12 of the technical specifications. This section states that a laydown plan shall be prepared and submitted that minimized the number of cold joints. Paving 1 long pull per shift will not minimize the number of cold joints.*

35. Sheet VF106, Boring CSW-5 Shows 2.5" asphalt over concrete. CD106 shows 3.5" of Milling in that area. -is the intent to mill into Concrete?

Response: *Yes, this is an isolated area that will require slight milling into the PCC to achieve the desired asphalt overlay thickness.*

36. GC110 States Phase 1 work area B-2 “work includes rehab of Taxiway B pavement, Shoulder areas” and GC130 States Phase 3 Work area B-1 “work includes Asphalt Rehab” -when will the milling & paving on taxiway be performed?
    Response: The milling and paving of the Taxiway B connector shall be performed during Phase 1 of the project.

37. Item 23 “Milling to remove delaminated pavement” – 20000 SY – provide where this on the drawings.
    Response: Milling to Remove Delaminated Pavement is a contingency item that is unknown until milling operations are complete. This item will be utilized when directed by the RPR. Refer to note 37 on sheet GI002 of the Contract Drawings.

38. Clean and flush pipe – is that structure to structure? So we would clean between the upgradient and downgradient structure?
    Response Yes. Please see technical specification DX-702 Pipeline Cleaning added by addendum below.

39. No pay item included for structure cleaning. Please confirm that only the pipe would be cleaned under the Clean and Flush Pipe pay item.
    Response Only pipes are cleaned under Clean and Flush Pipe item. Sediment from cleaning pipes will be removed from downstream drainage structure. Please see technical specification DX-702 Pipeline Cleaning added by addendum below.

40. Clean and flush pipe – can we decant the cleaning water back into the system?
    Response New specification DX-702, Pipeline Cleaning details the disposal of cleaning water.

41. Clean and flush pipe – where does the cleaning sediment have to be disposed of? I don’t see that any data was provided.
    Response New specification DX-702, Pipeline Cleaning details the disposal of cleaning sediment.

42. Note 11 on CE series – Clean and Flush Pipe – “Existing Pipe called to be cleaned and flushed shall be cleaned prior to the installation of new drainage structures and during the final cleanup phase of the project.” The pay item is by the foot. Please confirm that we will get paid by the foot each time we clean?
    Response Note 11 is modified by addendum below to read, “Existing Pipe called to be cleaned and flushed shall be cleaned during the final cleanup phase of the project.”

43. Note 3 on CE series - "STAKED HAYBALE OUTFALL PROTECTION SHALL BE INSTALLED AT ALL EXISTING STORMWATER DISCHARGE LOCATIONS WHERE CONTRIBUTING PIPES, CATCH BASINS, AND MANHOLES ARE TO BE CLEANED AND FLUSHED. THIS INCLUDES ALL OUTFALLS LOCATED BEYOND THE LIMITS OF THE PLANS. SEE DETAIL B2/CE501." Provide how many of these would should assume to install? How far away are they? Are there work restrictions? Will we have to do any work to access the outfall locations?

    Response *Only discharge locations located within the airport property are required to have the staked haybale outfall protection. There are 2 outfalls near the airfield operations building, 1 outfall near the ARFF building, and 1 outfall near the air traffic control tower that will require outfall protection. No work is anticipated to be able to access these locations. These locations will be coordinated and approved by the RPR.*

44. Consider adding items to the alternate for clean and flush pipe and structure cleaning or indicate whether this required cleaning would be incidental to the work.

    Response *Cleaning and flushing of pipes and structures is incidental to CIPP and structure lining. Refer to technical specification Item DX703.*

The following changes are to be incorporated into the Contract Documents:

1. In Section 00320 Bid Form, **DELETE** in its entirety, page 00320-9 and **SUBSTITUTE THEREFOR** the attached page 00320-9. The quantity for Item No. 64, Manhole Rehabilitation has been revised.

2. In Section 00320 Bid Form, **DELETE** in its entirety, page 00320-16 and **SUBSTITUTE THEREFOR** the attached page 00320-16. Item No. 7, Install Cured-In-Place-Pipe in Existing Drain Pipe (42-Inch Diameter) has been eliminated from the Contract.

3. In Section 00320 Bid Form, **DELETE** in its entirety, page 00320-17 and **SUBSTITUTE THEREFOR** the attached page 0320-17. The quantity for Item No. 8, Manhole Rehabilitation has been revised.

4. In the Technical Specification, **DELETE** in its entirety technical specification Item C-102, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control and **SUBSTITUTE THEREFOR** the attached technical specification Item C-102, Temporary Air and Water Pollution, Soil Erosion, and Siltation Control (Addendum No. 1).

5. In the Technical Specifications, **INSERT** the attached specification DX-702, Pipeline Cleaning (Addendum No. 1), following specification D-701, Pipe for Storm Drains and Culverts.

6. In the Technical Specification, **DELETE** in its entirety technical specification Item DX-703, Cured-In-Place Pipe (CIPP) and **SUBSTITUTE THEREFOR** the attached technical specification Item DX-703, Cured-In-Place Pipe (CIPP) (Addendum No. 1).

7. In the Technical Specification, **DELETE** in its entirety technical specification Item DX-753,Manhole Rehabilitation and **SUBSTITUTE THEREFOR** the attached technical specification Item DX-753, Manhole Rehabilitation (Addendum No. 1).

The following changes are to be incorporated into the Contract Drawings:

1. On Sheet GI002, **DELETE** in its entirety, General Note 35. This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

2. In Detail A1 on Sheet GI005, Item No. 64, Manhole Rehabilitation, **REVISE** the quantity to 90 VF.

3. In Detail A4 on Sheet GI005, **DELETE** in its entirety, Item No. 7, Install Cured-In-Place-Pipe In Existing Drain Pipe (42-Inch Diameter).

4. In Detail A4 on Sheet GI005, **REVISE** Item No. 8, Manhole Rehabilitation, 220 VF to be Item No. 7, Manhole Rehabilitation, to 205 VF.

5. In Detail A2 on Sheets GC130, GC131 and GC135, **REVISE** Note 1, second sentence, to "ALL CONSTRUCTION ACTIVITIES MUST BE COMPLETED DURING THE 16 DAY CLOSURE." This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

6. In Detail A2 on Sheets GC140, GC141, GC145 and GC147, **REVISE** Note 1, second sentence to, "ALL CONSTRUCTION ACTIVITIES MUST BE COMPLETED DURING THE 18 DAY CLOSURE." This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

7. In Sheets CE102 through CE109, **REVISE** Detail A4, Sheet Note No. 11 to, "EXISTING PIPE CALLED TO BE CLEANED AND FLUSHED SHALL BE CLEANED DURING THE FINAL CLEANUP PHASE OF THE PROJECT." This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

8. In the CU Series, **REVISE** Keyed Note No. 512 to, “INSTALL CIPP IN EXISTING DRAIN PIPE, CONTRACTOR TO VERIFY PIPE SIZE PRIOR TO CONSTRUCTION, SEE DETAIL A2/CU502, ITEM DX-703.”. This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

9. In the CU Series, **REVISE** Keyed Note No. 517 to, “LINE EXISTING DRAINAGE STRUCTURE, SEE DETAIL A2/CU501, ITEM DX-753.”. This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

10. In the CU Series, **REVISE** Keyed Note No. 528 to, “INSTALL CIPP IN EXISTING DRAIN PIPE, CONTRACTOR TO VERIFY PIPE SIZE PRIOR TO CONSTRUCTION, SEE DETAIL A2/CU502, ADD ALTERNATE NO. 1, ITEM DX-703.”. This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

11. In the CU Series, **REVISE** Keyed Note No. 536 to, “LINE EXISTING DRAINAGE STRUCTURE, SEE DETAIL A2/CU501, ADD ALTERNATE NO. 1, ITEM DX-753.”. This change will be reflected in the Issued For Construction Documents that will be provided to the awarded Contractor.

12. **DELETE** in its entirety Sheet CU107 and **SUBSTITUTE THEREFOR** the attached CU107 (Addendum No. 1).

13. **DELETE** in its entirety Sheet CU501 and **SUBSTITUTE THEREFOR** the attached CU501 (Addendum No. 1).

14. **DELETE** in its entirety Sheet CU502 and **SUBSTITUTE THEREFOR** the attached CU502 (Addendum No. 1).

RIAC would like to remind all prospective bidders/offerors that additional Addendums may be issued by RIAC until the deadline for bid submissions. As such, RIAC encourages prospective bidders/offerors to visit www.flyri.com/riac/procurement on a frequent basis.

####END OF ADDENDUM###

Rhode Island Airport Corporation

Pre BID/Site Visit # 1

2/25/2025 @ 2:00 PM

IFB 35821 - Runway 5-23 Rehabilitation at PVD

Attendee #	First Name	Last Name	Company	Email Address	Phone #	Date of Visit	Intitials	Badge #	Badge Returned (Y/N)
1	Thomas	Corcoran	C&S Engineers	tcorcoran@cscos.com	419-410-0671	2/25/2025			
2	Shaun D.	Bergdoll	Hi-Lite Airfield Services LLC	hr@hi-lite.com	470-361-3652	2/25/2025	SB	1	Yes
3	Robert L.	Towle	Insituform Technologies	rtowle@azuria.com	508-248-1700	2/25/2025			
4	Jeffrey J.	Petruzzi	Insituform Technologies	jpetruzzi@azuria.com	470-361-3652	2/25/2025			
5	Nelson A.	Leite	Insituform Technologies	rtowle@azuria.com	508-248-1700	2/25/2025	NL	2	Yes
6	Scott M.	O'Connor	J.H. Lynch & Sons, Inc.	socconor@jhlynch.com	401-333-4300	2/25/2025	S.OC	3	Yes
7	Wayne B.	Clarke	J.R. Vinagro Corporation	wclarke@jrvinagrocorp.com	401-640-9470	2/25/2025	WBC	4	Yes
8	Anthony	Mesiti	J.R. Vinagro Corporation	amesiti@jrvinagrocorp.com	401-525-1793	2/25/2025	AJM	5	Yes
9	Sophia D.	Narkiewicz	J.R. Vinagro Corporation	snarkiewicz@jrvinagrocorp.com	401-378-4737	2/25/2025			
10	Kevin M.	Mamlock	KOBO Utility Construction	kevin.mamlock@koboutility.com	508-776-8301	2/25/2025	KM	6	Yes

Rhode Island Airport Corporation

Pre BID/Site Visit # 1

2/25/2025 @ 2:00 PM

IFB 35821 - Runway 5-23 Rehabilitation at PVD

Attendee #	First Name	Last Name	Company	Email Address	Phone #	Date of Visit	Intitials	Badge #	Badge Returned (Y/N)
11	Edward	Bennett	KOBO Utility Construction	edward@koboutility.com	508-776-8082	2/25/2025	EMB	7	yes
12	Peter A.	Calcagni	Manafort Brothers Inc	pcalcagni@manafort.com	401-333-2550	2/25/2025		8	yes
13	Remi P.	Lussier	Manafort Brothers Inc	rlussier@manafort.com	401-333-2550	2/25/2025	RL	9	yes
14	Kenneth G.	Moulison	Moulison Electric, Inc	ken@moulisonassociates.com	207-468-2115	2/25/2025		10	yes
15	Andrew W.	Flannagan	National Water Main Cleaning Company	AFLANNAGAN@NWMCC-BOS.COM	617-719-9353	2/25/2025		11	yes
16	Jess C.	Rocha	T. Miozzi, LLC	jroch@peckham.com	401-295-7283	2/25/2025	JCR	12	yes
17	Ashley L.	Stanley	T. Miozzi, LLC	astan@peckham.com	401-295-7283	2/25/2025		13	yes
18	Jacques A.	Cranston	T. Miozzi, LLC	jcran@peckham.com	401-295-7283	2/25/2025			
19	Gregory D.	Monast	J.H. Lynch & Sons, Inc.	gmonast@jhlynch.com	401-640-7056	2/25/2025	G.M.	14	yes
	Sophia	Holmes	vortex services	Sophia.holmes@vortexcompanies.com	207-660-5423	2/25/25	SH	~~15~~	3 yes
	Nicole	Iannuzzi	BETA Group	Niannuzzi@BETA-Inc.com		2/25/25	NBI	~~16~~	not given
	Thomas	Corcoran	CJS	tcorcoran@CSCOS.com		2/25/25		15	yes
	Brian	Gerrity	Gerrity Asphalt	Brian.gerrity@gerrityasphalt.com				16	yes

Runway 5-23 Rehabilitation
Rhode Island T. F. Green International Airport
Planholders List

Email	Customer Name	Download	Phone Number	Firm Name	Firm Address	Zip/Postal Code	City	State
kdrolet@jhlynch.com	Kelly Drolet	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4013334300	J.H. Lynch & Sons, Inc.	50 Lynch Place	2864	Cumberland	Rhode Island
jward@solesourceconstruction.com	Jason Ward	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	401-712-2700	Sole Source Construction	766 Pippin Orchard Road	2921	Cranston	Rhode Island
astan@peckham.com	Ashley Stanley	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4016027071	T Miozzi	240 Chestnut St	2888	Warwick	RI
ascothon@digregoriocorp.com	Arthur Scothon	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4016023536	DIGREGORIO	24 business park drive	2917	Smithfield	Ri
mtozzi@rifenburg.com	Matt Tozzi	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	518-874-6017	Rifenburg Construction, Inc.	129 Defreest Drive	12180	Troy	New York
soconnor@jhlynch.com	Scott O\'Connor	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4013334300	J.H. Lynch & Sons, Inc.	50 Lynch Place	2864	Cumberland	Rhode Island
pcalcagni@manafort.com	Peter Calcagni	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4013332550	Manafort Brothers	24 Martin St Cumberland, RI	2864	Cumberland	RI
jbambara@chasolutions.com	Joseph Bambara	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	14016483343	CHA Consulting	272 West Exchange Street	2903	Providence	RI
jbambara@chasolutions.com	Joseph Bambara	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	14016483343	CHA Consulting	272 West Exchange Street	2903	Providence	RI
ssadozai@pvdairpor.com	Shahzad Sadozai	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4016912233	RIAC	Sjdj	90210	Warwick	CA
claytoncla@yahoo.com	dlay clayton	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	2937493933	na	na	na	na	na
jmcgahey@moulison.com	John McGahey	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	7742610754	Moulison Electric, Inc.	10 Iron Trail Road	4005	Biddeford	Maine
gbs@bidnet.com	Kurt Pitzer	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	8006771997	Bidnet	15 British American Blvd	12110	Latham	NY
malisa.fearing@koboutility.com	Malisa Fearing	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	8043137746	KOBO Utility Construction	4 Victory Dr	02563-5119	Sandwich	Massachusetts
fred@d-ambra.com	Fred Sarmento	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4017371300	D\'Ambra Construction Company Inc.	80 Centre of New England Boulevard	2816	Coventry	RI
jroch@peckham.com	Jess Rocha	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4012957283	T. Miozzi, LLC	80 Compass Circle	2852	North Kingstown	Rhode Island
rlussier@manafort.com	Remi Lussier	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	401-333-2550	Manafort Brothers Inc	21 Martin Street	2864	Cumberland	RI
wraysmith@ogind.com	Wray Smith	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	8606299822	O&G Industries	3 Regency Plaza Suite 1	2903	Providence	RI
wclarke@jrvinagrocorp.com	Wayne Clarke	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4016409470	JR Vinagro Corporation	2208 Plainfield Pike	2919	johnston	RI
rhillman@ferreiraconstruction.com	Robert Hillman	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4015196626	Ferreira Construction Co., Inc.	300 Centerville Road	2886	Warwick	RI
amesiti@jrvinagrocorp.com	anthony mesiti	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	401-525-1793	Jr Vinagro Corporation	2208 Planifield Pike	2920	Johnston	Rhode Island
jkuro@peckham.com	jon kurowski	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4133880179	T. Miozzi, LLC	80 Compass Circle	2874	North Kingstown	RI
baugustus@unitedconcrete.com	Bill Augustus	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	5086889566	United Concrete Products	173 Church Street	6492	Yalesville	CT
snarkiewicz@jrvinagrocorp.com	Sophia Narkiewicz	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4013784737	JR Vinagro	2208 Plainfield Pike	2909	Johnston	RI
aclarke@vhb.com	Amy Clarke	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	5085591066	VHB	1 Cedar Street	2903	Providence	RI
rlindsay@bentleycompanies.com	Ryan Lindsay	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	(978) 935-8477	Bentley Builders	1160 Post Road, Ste 4	2888	Warwick	RI
bmcelroy@nicori.com	Briana McElroy	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4013317420	Narragansett Improvement Co	223 allens ave	2903	providence	RI
k5admin@k5corporation.com	Colleen Mahoney	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	7819829229	k5 corporation	9 rockview way	2370	rockland	ma
k5admin@k5corporation.com	Colleen Mahoney	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	7819829229	k5 corporation	9 rockview way	2370	rockland	ma
JimDTeixeira@eaton.com	Jim Teixeira	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	6319014825	Eaton Crouse-Hinds	1200 Kennedy Road	6095	Windsor	Connecticut
malisa.fearing@koboutility.com	Malisa Fearing	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	5088882255	KOBO Utility Construction	4 Victory Dr	02563-5119	Sandwich	MA
rvoccia@coscofence.com	Robert Voccia	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4017650009	Cosco, LLC	707 Park East Drive	2895	Woonsocket	Rhode Island
andrew.valentino@orionengineers.com	Andrew Valentino	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	(518) 727-9584	Orion Engineers & Associates	83 Cambridge Street, Suite 3D	1803	Burlington	ma
Insituformsales@azuria.com	Erica Taylor	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	8134654587	Insituform Technologies, LLC	580 Goddard Avenue	63005	Chesterfield	MO
tim.scimone@airportlightingcompany.com	Timothy Scimone	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	3152955405	Airport Lighting Company	108 Fairgrounds Dr	13104	Manlius	NY
deltekplusonvia@gmail.com	Source Management	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	2063739500	Onvia	509 Olive Way	98101	Seattle	WA
kate@ewaudet.com	Kate Sweeney	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4014673510	E.W. Audet & Sons, Inc.	169 Bay Street	02905-2039	Providence	RI
kpagsuyuin@csigroup.com	Khristina Pagsuyuin	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	6038894163	Concrete Systems Inc	9 Commercial Street	3051	Hudson	New Hampshire
snarkiewicz@jrvinagrocorp.com	Sophia Narkiewicz	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4013784737	JR Vinagro	2208 Johnston	2909	RI	RI
alexandra@cardinalgrooving.com	Alex Smith	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	6108252200	Cardinal/Int. Grooving and Grinding	100 Barren Hill Rd.	19428	Conshohocken	Pennsylvania
taylor.sinclair@hi-lite.com	Taylor Sinclair	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	3155836111	Hi-Lite Airfield Services, LLC	20128 NY12F	13601	Watertown	NY
brenda.longwell@adbsafegate.com	Brenda Longwell	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	614-573-8255	ADB Safegate	700 Science Blvd.	43130	Gahanna	OH
office@martoneinc.com	Monique Robert	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	401-792-3847	Martone Service Company, Inc.	22 Sextant Lane	2882	Narragansett	RI
megan.romano@constructconnect.com	Megan Romano	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	(513) 458-5866	ConstructConnect	3825 Edwards Rd	45209	Cincinnati	Ohio
fkazienko@multielectric.com	Frank Kazienko	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	773.708.1654	Multi Electric Mfg	10501 Franklin Ave, Suite 400	60131	Franklin Park	IL
jtrottier@airsidesolutionsinc.com	Jeffrey Trottier	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	6037825188	Airside Solutions Inc	55 Joanne Dr	3106	Hooksett	NH
acouture@beta-inc.com	Aimee Couture	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4013332382	BETA	701 George Washington Hwy	2865	Lincoln	RI
agould@bentleycompanies.com	angel gould	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4012952022	Bentley Builders, LLC	1160 post rd suite 4	2888	warwick	Rhode Island
mlafazia@riconusa.com	Matthew LaFazia	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4016492810	RICON Construction, LLC	1160 Post Road, Suite 5	2888	Warwick	Rhode Island
natalie.rodriguez@wsp.com	Natalie Rodriguez	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	8133943964	WSP USA Inc	1000 Sawgrass Corporate Pkwy	33323	Sunrise	FL
content@constructconnect.com	Morgan Stinson	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	8003642059	ConstructConnect	3825 Edwards Rd. Ste. 800	45209	Cincinnati	OH
josephgodino@johnrocchiocorp.com	Joseph Godino	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4019495565	John Rocchio Corporation	20 Lark Industrial Parkway	2828	Smithfield	RI
bmiller@hugheyandphillips.com	Bruce Miller	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	9546582659	Hughey & Phillips	4201 NW 124th Ave	33065	Coral Springs	FL
jtate@nwmcc-bos.com	John Tate	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	7818280863	National Water Main Cleaning Co.	25 Marshall Street	2021	Canton	Massachusetts
liz@lumacurve.com	Elizabeth Humpage	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	3304672030	Lumacurve Airfield Signs	9115 Freeway Dr.	44056	Macedonia	OH
Sourcemgmt@gmail.com	onvia onvia	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	8085241711	Deltek	No, 501 olive way street	9501	AL	Alabama
dodge.docs@construction.com	Adam Bouman	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	5136663354	Company Information	300 American Metro Blvd #185	8619	Hamilton Township	New Jersey
food@gmail.com	joe smith	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4014670900	Eat me	main st	2886	anytown	RI
JColapietro@riconusa.com	Joe Colapietro	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	4018611162	RICON	1160 Post Rd Suite 5	2888	Warwick	RI
Brian.garrity@garrityasphalt.com	Brian Garrity	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	8602433100	Garrity Asphalt	22 Peters Road	6002	Bloomfield	Connecticut
dodge.docs@construction.com	Adam Bouman	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	5136663354	Company Information	300 American Metro Blvd #185	8619	Hamilton Township	New Jersey
dodge.docs@construction.com	Adam Bouman	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	5136663354	Company Information	300 American Metro Blvd #185	8619	Hamilton Township	New Jersey
ccorrigan@vortexcompanies.com	Catherine Corrigan	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	7137509081	Vortex Services, LLC.	18150 Imperial Valley Drive	77060	Houston	TX
tim.scimone@airportlightingcompany.com	Timothy Scimone	Invitation for Bid (IFB) #35821 – RIAC Construction Contract No. 35821 – Runway 5-23 Rehabilitation (PVD)	3152955405	Airport Lighting Company	108 Fairgrounds Dr	13104	Chittenango	NY

RHODE ISLAND AIRPORT CORPORATION
RUNWAY 5-23 REHABILITATION
RHODE ISLAND T. F. GREEN INTERNATIONAL AIRPORT
WARWICK, RHODE ISLAND
RIAC CONSTRUCTION CONTRACT NO. 35821
SCHEDULE OF PRICES - ADDENDUM NO. 1

BASE BID

ITEM NO.	FAA SPEC NO.	QUANTITY	ITEM LIST ITEM DESCRIPTION (PRICE WRITTEN IN WORD)	UNIT PRICE IN FIGURES DOLLARS	TOTAL AMOUNT DOLLARS
63	D-751	7 EACH	MODIFICATION OF CLEANOUT AT PER EACH		
64	DX-753	90 VF	MANHOLE REHABILITATION AT PER VERTICAL FOOT		
65	DX-790	1 LS	UNDERGROUND INFILTRATION CHAMBER SYSTEM 1 AT PER LUMP SUM		
66	DX-790	1 LS	UNDERGROUND INFILTRATION CHAMBER SYSTEM 2 AT PER LUMP SUM		
67	DX-791	630 LF	UNDERGROUND STONE TRENCH AT PER LINEAR FOOT		
68	DX-800	3 DAY	SOFT DIGS AT PER DAY		
69	T-901	55,600 SY	SEEDING, WET APPLIED AT PER SQUARE YARD		
70	T-905	5,000 CY	TOPSOIL (OBTAINED ON-SITE OR REMOVED FROM STOCKPILE) AT PER CUBIC YARD		
71	T-908	55,600 SY	MULCHING AT PER SQUARE YARD		

RHODE ISLAND AIRPORT CORPORATION
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WARWICK, RHODE ISLAND
RIAC CONSTRUCTION CONTRACT NO. 35821
SCHEDULE OF PRICES - ADDENDUM NO. 1

ADD ON NO. 1

ITEM NO.	FAA SPEC NO.	QUANTITY	ITEM LIST ITEM DESCRIPTION (PRICE WRITTEN IN WORD)	UNIT PRICE IN FIGURES DOLLARS	TOTAL AMOUNT DOLLARS
1	C-105	1 LS	MOBILIZATION (6% MAX.) AT PER LUMP SUM		
2	DX-703	180 LF	INSTALL CURED-IN-PLACE-PIPE IN EXISTING DRAIN PIPE (12-INCH DIAMETER) AT PER LINEAR FOOT		
3	DX-703	310 LF	INSTALL CURED-IN-PLACE-PIPE IN EXISTING DRAIN PIPE (18-INCH DIAMETER) AT PER LINEAR FOOT		
4	DX-703	730 LF	INSTALL CURED-IN-PLACE-PIPE IN EXISTING DRAIN PIPE (24-INCH DIAMETER) AT PER LINEAR FOOT		
5	DX-703	470 LF	INSTALL CURED-IN-PLACE-PIPE IN EXISTING DRAIN PIPE (30-INCH DIAMETER) AT PER LINEAR FOOT		
6	DX-703	960 LF	INSTALL CURED-IN-PLACE-PIPE IN EXISTING DRAIN PIPE (36-INCH DIAMETER) AT PER LINEAR FOOT		

RHODE ISLAND AIRPORT CORPORATION
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WARWICK, RHODE ISLAND
RIAC CONSTRUCTION CONTRACT NO. 35821
SCHEDULE OF PRICES - ADDENDUM NO. 1

ADD ON NO. 1

ITEM NO.	FAA SPEC NO.	QUANTITY	ITEM LIST ITEM DESCRIPTION (PRICE WRITTEN IN WORD)	UNIT PRICE IN FIGURES DOLLARS	TOTAL AMOUNT DOLLARS
7	DX-753	205 VF	MANHOLE REHABILITATION AT PER VERTICAL FOOT		

TOTAL PRICE (ADD ON NO. 1): **$** _____
(AMOUNT IN FIGURES)
_____
(AMOUNT IN WORDS)

TOTAL PRICE (BASE BID AND ADD ON NO. 1): **$** _____
(AMOUNT IN FIGURES)
_____
(AMOUNT IN WORDS)

NOTES:

1. **In the event of a bidder's mathematical error in tabulating any bid prices, the written unit price shall govern.**

2. **The basis of award of the Contract shall be the total Base Bid plus Add-On No. 1, subject to available funding. If the lowest responsible Base Bid plus Add-On No. 1 exceeds available funding, the award will be solely based on the Base Bid at the discretion of the Owner.**

3. **The Contract award is subject to receipt of Federal Aviation Administration (FAA) grant funding.**

Item C-102 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control (Addendum No. 1)

DESCRIPTION

102-1. This item shall consist of temporary control measures as shown on the plans or as ordered by the Resident Project Representative (RPR) during the life of a contract to control pollution of air and water, soil erosion, and siltation through the use of silt fences, compost filter sock, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, construction access pads, silt insert catch basin inlet devices, erosion control blankets, dewatering basins, concrete washouts, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the RIDEM WQC/STW File No. 24-174, UIC File No. 002272, and RIPDES File No. RIR102728 (attached), RIPDES General Permit for Stormwater Discharge During Construction Activity, approved erosion control plan; the approved Construction Safety and Phasing Plan (CSPP) and AC 150/5370-2, *Operational Safety on Airports During Construction*. The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control throughout the construction period.

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be designed, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

102-2. Environmental Permits. The environmental permits for this project are included in Attachment 1 of this Specification (Item C-102 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control) of these Contract Documents. The permits contain conditions and stipulations for the work to which the Contractor shall adhere.

It shall be the Contractor's responsibility to maintain copies of all environmental permits and documents for this Contract. Permits shall be posted in a noticeable location within the project area.

It shall be the Contractor's responsibility to comply with all restrictions and stipulations stated or implied by the environmental permits, documents and orders. There will be no separate payment for work done to comply with these requirements unless an item is provided in the Proposal for a specific requirement.

There will be no special payment for work done to comply with these plans and orders.

The Contractor shall comply with all Terms and Conditions from the Rhode Island Department of Environmental Management (RIDEM) WQC/STW File No. 24-174, UIC File No. 002272, and RIPDES File No. RIR102728 permit included in Attachment 1 of this Specification. The Contractor shall note the following conditions in particular:

- A copy of this permit, any inspection records, and a signed and updated SESC Plan, must be kept at the site at all times until the project is complete. Copies of this permit must be available for review by any RIDEM or City/Town representative upon request. Electronic versions of required documents that are readily available from the construction site are acceptable.
- All fill material shall be clean and free of matter that could cause pollution of the waters of the State.
- Prior to commencement of site alterations, the Contractor shall erect or post a sign resistant to the weather and at least twelve (12) inches wide and eighteen (18) inches long, which boldly identifies the initials "DEM" and the application number(s) of the permit. This sign must be maintained at the site in a conspicuous location until such time that the project is complete.
- The stormwater collection system approved herein is for the discharge of stormwater only. All other discharge is prohibited.
- Temporary erosion and sediment controls detailed or described on the approved site plans shall be properly installed at the site prior to or commensurate with site alterations. Such controls shall be properly maintained, replaced, supplemented, or modified as necessary throughout the life of this project to minimize soil erosion and to prevent sediment from being deposited in any wetlands not subject to disturbance under this permit.
- Upon permanent stabilization of all disturbed soils, temporary erosion and/or sediment controls must be removed.
- Any substitution of alternate products or alternate designs for the proposed underground infiltration practices will require the submittal of an application for permit modification to RIDEM. Contractor to submit substitution to the RPR a minimum of 120 days prior to the start of construction.

102-3. Soil Erosion and Sedimentation Control Plan (SESCP). The draft Soil Erosion and Sedimentation Control Plan (SESCP) for this project is included as Attachment 2 to this specification (Item C-102 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control) of these Contract Documents. The SESCP provides guidance for complying with the terms and conditions under the General Permit, however, these documents do not negate or eliminate the need to understand and adhere to all applicable RIPDES regulations.

The SESCP details the anticipated erosion and sediment controls required for this project. The Contractor must designate a SESCP contact person, experienced in stormwater management on construction sites, who is available on site throughout the life of the project, and who has the authority to direct the Contractor’s personnel and/or subcontractor’s personnel in carrying out corrective actions required by the RPR. The Contractor’s designated SESCP contact person must be available to oversee all SESCP related activities and to accompany the RPR, as requested, when inspections are performed. The Contractor shall identify the SESCP contact person at the Pre-Construction Meeting, and attend the meeting if possible.

It shall be the Contractor's responsibility to adhere to all restrictions as stated or implied by the plan and orders attached hereto as part of these Contract Documents. There will be no separate payment for work done to comply with these plans and orders.

All referenced soil erosion and sedimentation controls including materials used, application rates, and the installation procedures shall be performed per the "Rhode Island Soil Erosion and Sedimentation Control Handbook", latest edition.

MATERIALS

102-2.1 Grass. Grass that will not compete with the grasses sown later for permanent cover per Item T-901 shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

102-2.2 Mulches. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per Item T-908. Mulches shall not create a wildlife attractant.

102-2.3 Fertilizer. Fertilizer shall be a standard commercial grade and shall conform to all federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

102-2.4 Slope drains. Slope drains may be constructed of pipe, fiber mats, rubble, concrete, asphalt, or other materials that will adequately control erosion.

102-2.5 Silt fence. Silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

102-2.6 Compost Filter Sock. Compost filter sock shall be machine produced, consisting of compost filled tubes of compacted straw of rice, wheat, or barley and is to be certified as weed free. Netting for socks to be seamless, high density polyethylene with ultra violet inhibitors. Compost filter socks shall weigh 2.5 pounds (minimum) per linear foot. Compost used for filter materials shall be weed free and derived from a well-decomposed source of organic matter. The compost shall be produced using an aerobic composting process and shall be free of any refuse, contaminants, or other materials toxic to plant growth. Non-composted products will not be accepted.

102-2.7 Sack Insert Catch Basin Inlet Protection. Inlet protection shall be manufactured inlet filter bags in accordance with the detail as shown on the plans.

102-2.8 Construction Entrance. Crushed stone shall conform to the requirements of Subsection M.01.09, Table I, Column II of the RIDOT Standard Specifications. Filter fabric shall have the following minimum properties when measured in accordance with the referenced standards.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1380)	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
Permittivity	ASTM D4491	sec^{-1}	1.7	
Flow Rate	ASTM D4491	gal/min/ft² (l/min/m²)	135 (5500)	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	
Weight	ASTM D5261	oz/yd² (g/m²)	4.0 (136)	
Roll Dimensions (width x length)	N/A	ft (m)	12.5 x 360 (3.5 x 110)	15 x 360 (4.5 x 110)
Roll Area	N/A	yd^2 (m^2)	500 (418)	600 (502)
Roll Weight	N/A	lbs (kg)	151 (69)	177 (80)

102-2.9 Compliance with Temporary Air and Water Pollution, Soil Erosion and Sedimentation Control. Materials used, application rates, and the installation procedures for concrete washout, erosion control blanket, dewatering basin, and all other incidentals shall be per the "Rhode Island Soil Erosion and Sedimentation Control Handbook", latest edition.

102-2.10 Other. All other materials shall meet commercial grade standards and shall be approved by the RPR before being incorporated into the project.

CONSTRUCTION REQUIREMENTS

102-3.1 General. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The RPR shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

102-3.2 Schedule. Prior to the start of construction, the Contractor shall submit schedules in accordance with the approved Construction Safety and Phasing Plan (CSPP) and the plans for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the RPR.

102-3.3 Construction details. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the plans and approved CSPP. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion may be a problem, schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately if project conditions permit. Temporary erosion control measures are required if permanent measures cannot immediately follow grading operations. The RPR shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the RPR.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the RPR. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the RPR, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The RPR may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be maintained by the Contractor during the construction period.

Provide temporary structures whenever construction equipment must cross watercourses at frequent intervals. Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

102-3.4 Installation, maintenance and removal of silt fence. Silt fences shall extend a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the RPR.

102-3.5 Installation, maintenance and removal of compost filter sock.

a. Install at locations indicated on the Drawings or as directed by the RPR.
b. Remove all rocks, vegetation, or other obstructions at filter sock locations.
c. Anchor compost filter tube with stakes placed a maximum 10-feet apart.
d. The end stakes shall be placed 6-inches from the end of compost filter sock and angled toward previously laid compost filter sock to force compost filter sock together.
e. Refer to detail on Drawings for additional installation requirements.
f. Maintain compost filter socks throughout the entire duration of the project. Damaged or displaced compost filter socks shall be replaced by the Contractor at no additional cost to the Owner.
g. Remove sediments when depths accumulate to 50% of the depth of the compost filter sock height, or as necessary.

All compost filter socks shall be removed at project completion. Remove all sediment collected by the compost filter sock, remove the compost filter sock, and restore the area to pre-existing conditions.

102-3.6 Installation, maintenance and removal of sack insert catch basin inlet protection.

a. Install at locations indicated on the Drawings or as directed by the RPR.
b. Install manufactured inlet filter devices in accordance with the manufacturer's written installation instructions.
c. Refer to detail on Drawings for additional installation requirements.
d. Maintain inlet devices throughout the entire duration of the project. Damaged or displaced inlet devices shall be replaced by the Contractor at no additional cost to the Owner.
e. Remove sediments when depths accumulate to 50% of the inlet device height, or as necessary.

All inlet devices shall be removed at project completion. Remove all sediment collected by the inlet devices, remove the inlet devices, and restore the area to pre-existing conditions.

102-3.7 Installation, maintenance and removal of construction entrance.

a. Install at locations indicated on the Drawings or as directed by the RPR.
b. The area of the of the construction access shall be cleared of all vegetation, roots, stumps and other objectionable objects. The area shall then be excavated to subgrade and graded.
c. Filter fabric shall be placed on the prepared subgrade prior to the placement of the stone pad. If more than one sheet of fabric is required, the adjacent section shall be overlapped a minimum of 12-inches to insure full coverage.
d. Refer to detail on Drawings for additional installation requirements.
e. Maintain construction entrance throughout the entire duration of the project. Damaged or displaced stone shall be replaced by the Contractor at no additional cost to the Owner.

All construction entrances shall be removed at project completion. Remove all sediment collected by the construction entrance, remove the entrance, and restore the area to pre-existing conditions.

102-3.8 Compliance with Temporary Air and Water Pollution, Soil Erosion and Sedimentation Control. The installation procedures for concrete washout, erosion control blanket, dewatering basin, and all other incidentals shall be per the "Rhode Island Soil Erosion and Sedimentation Control Handbook", latest edition.

102-3.9 Cleaning and Flushing of Pipes. Cleaning and flushing of pipes (all sizes) shall be in accordance with Item DX-702, Pipeline Cleaning.

METHOD OF MEASUREMENT

102-4.1 Temporary erosion and pollution control work required will be performed as scheduled or directed by the RPR. Completed and accepted work will be measured as follows:

a. Installation and removal of sack insert catch basin inlet protection will be measured per each.

b. Installation and removal of compost filter sock will be measured by the linear foot.

c. Installation and removal of baled hay erosion check Std 9.1.0 and silt fence will be measured by the linear foot.

d. RI Std. 9.9.0 Construction Access, including installation, maintenance, removal and restoration will be measured per each.

f. Compliance with Temporary Air and Water Pollution, Soil Erosion and Sedimentation Control by the lump sum.

g. Cleaning and flushing pipes of all sizes will be measured by the linear foot.

102-4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

BASIS OF PAYMENT

102-5.1 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the RPR and measured as provided in paragraph 102-4.1 will be paid for under:

Item C-102-5.1a	Installation and Removal of Sack Insert Catch Basin Inlet Protection - per each
Item C-102-5.1b	Installation and Removal of Compost Filter Sock - per linear foot
Item C-102-5.1c	Installation and Removal of Baled Hay Erosion Check Std. 9.1.0 and Silt Fence - per linear foot
Item C-102-5.1d	Installation and Removal of Construction Entrance Std. 9.9.0 - per each
Item C-102-5.1e	Compliance with Temporary Air and Water Pollution, Soil Erosion and Sedimentation Control - per lump sum
Item C-102-5.1f	Clean and Flush Pipe (All Sizes) - per linear foot

Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items.

Temporary control features not covered by contract items that are ordered by the RPR will be paid for in accordance with Section 90, paragraph 90-05 *Payment for Extra Work*.

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5200-33 *Hazardous Wildlife Attractants on or Near Airports*

AC 150/5370-2 *Operational Safety on Airports During Construction*

ASTM International (ASTM)

ASTM D6461 *Standard Specification for Silt Fence Materials*

United States Department of Agriculture (USDA)

FAA/USDA Wildlife Hazard Management at Airports, A Manual for Airport Personnel

ATTACHMENT 1 – ENVIRONMENTAL PERMITS

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RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
235 Promenade Street, Providence, Rhode Island 02908-5767

November 29, 2024

Attention: Brittany Morgan, Esq., SVP Legal Affairs and HR
Rhode Island Airport Corporation
2000 Post Road
Warwick, RI 02886

Re: WQC/STW File No. 24-174; UIC File No. 002272; RIPDES File No. RIR102728
Runway 5-23 Runway Rehabilitation
Rhode Island T.F. Green International Airport
2000 Post Road
Assessor's Plat 321, Lot 4
Warwick, RI

Dear Ms. Morgan:

The Rhode Island Department of Environmental Management Office of Water Resources (RIDEM OWR) has reviewed the above-referenced project for compliance with the RIDEM Groundwater Discharge (GWD)/Underground Injection Control (UIC) Program (Groundwater Discharge Rules: 250-RICR-150-05-4) and the Rhode Island Pollutant Discharge Elimination System Construction General Permit (CGP). The purpose of the project is to construct and maintain a runway rehabilitation project including the replacement of approximately 6,800 linear feet of Runway 5-23, the expansion of the non-standard blast pad at the northern end of the runway to comply with standard dimensions, and the following other items:

- Fillet improvements and rehabilitation within the runway safety area at all taxiway intersections,
- Modifications to the FAA approach lighting system,
- Regrading of the runway safety area to meet FAA standards,
- Replacement of all Runway 5-23 edge lighting with LED fixtures,
- Replacement of all guidance signs with LED signage,
- Replacement of Runway 5-23 homerun cables,
- Installation of new pavement markings,

and the following stormwater management work items:

- Installation of a crushed stone drainage trench with perforated underdrains,
- Installation of drainage structures adjacent to the existing drainage system to divert runoff from lower intensity storms for portions of the runway into two proposed drainage infiltration practices described below,
- The installation of two (2) underground infiltration practices consisting of infiltration chambers bedded in washed crushed stone. One of these practices will provide a total storage volume of 2,739 cubic feet (cf); the other will provide 2,490 cf.

The work is as further described in your application and detailed on site plans consisting of 86 sheets as prepared by Douglas Daniel Bauer, P.E. of Beta Group, Inc., received by RIDEM OWR on 11/27/2024.

This letter serves as your permit/authorization to discharge for the above-referenced project, provided that you comply with the application materials, the Groundwater Discharge Rules, the CGP and the following conditions:

1) This authorization is specific to the project, site alterations, and stormwater management system depicted on the site plans submitted with your application and received by RIDEM on (*insert date*). Any alterations, additions or modifications to the project approved herein must be reviewed and approved by RIDEM OWR prior to implementation.

2) You must submit the Notice of Start of Construction Form prior to commencement of any permitted site alterations or construction activity. The Start of Construction Form can be found on the Stormwater Construction Permitting website.

3) Prior to construction, you must erect or post a sign resistant to the weather and at least twelve (12) inches wide and eighteen (18) inches long, which identifies the initials "DEM" and the application number(s) assigned to this permit. The sign must be posted in a conspicuous location near the site access and maintained until the project is complete.

4) A copy of this permit, any inspection records, and a signed and updated SESC Plan, must be kept at the site at all times until the project is complete. Copies of this permit must be made available for review by any RIDEM or City/Town representative upon request. Electronic versions of required documents that are readily accessible from the construction site are acceptable.

5) All fill material shall be clean and free of matter that could cause pollution of the waters of the State.

6) The stormwater collection and treatment system approved herein is for the discharge of stormwater only. Any other discharge is prohibited.

7) You must provide written certification from a registered land surveyor or registered professional engineer that the stormwater drainage system including any and all basins, piping systems, catch basins, culverts, swales, and any other stormwater management practices have been constructed/installed in accordance with the site plans reviewed for this permit. This written certification is due upon completion of the project or within twenty (20) working days of the request of this Program.

8) You must submit the Notice of Termination Form upon completion of the project and final site stabilization. The Notice of Termination Form can be found on the Stormwater Construction Permitting website.

9) You are responsible for the long-term inspection, cleaning and maintenance of the stormwater collection and treatment system to ensure proper performance of all components until documentation is provided to indicate that this responsibility has been assumed by another entity. Long-term operation and maintenance is to be as described in the Post-Construction Operation and Maintenance Plan entitled "Runway 5-23 Rehabilitation-Rhode Island T.F. Green International Airport, Warwick, RI, Operation & Maintenance Plan", dated September 2024 Revised November

2024, dated received 11/27/2024, and prepared by Beta, 701 George Washington, Highway, Lincoln, RI 02865.

10) Any substitution of alternate products or alternate designs for the proposed underground infiltration practices will require the submittal of an application for permit modification to this office.

This permit is not transferable to any person except after written notice to the Director, in the form of a Permit Transfer Form available on the RIDEM Stormwater Construction Permitting website.

This UIC/GWD Registration will expire 4 years from the date of issuance if the stormwater discharge system has not been constructed and installed. Once a registration is expired, a new application must be submitted for any proposed activity subject to the Groundwater Discharge Rules. Your authorization to discharge under the CGP expires at midnight on September 25, 2025. If construction has not been completed by that date, there will be measures in place for you to reauthorize.

RIDEM's Rules and Regulations Governing the Establishment of Various Fees require that RIPDES CGP permit holders pay an Annual Fee of $100.00. An invoice will be sent to the owner on record in May/June of each year if the construction was still active as of December 31st of the previous year. The owner will be responsible for the Annual Fee until the construction activity has been completed, the site has been properly stabilized, and a completed Notice of Termination (NOT) has been received.

You are required to adhere to all above terms and conditions and carry out this project in compliance with the CGP and Groundwater Discharge Rules at all times. Issuance of this permit does not bar RIDEM, or any of its various Divisions, from initiating any investigation and/or enforcement actions that it may deem necessary for violations of this permit or of any and all applicable statutes, regulations and/or permits.

This permit has the full force and effect of a permit issued by the Director. This permit does not relieve your obligation to obtain any other applicable local, state and federal permits prior to commencing construction and does not relieve you of any duties owed to adjacent landowners with respect to changes in drainage. RIDEM assumes no responsibilities for damages resulting from faulty design or construction.

If you have any questions regarding the contents of the permit, you may contact me nicholas.pisani@dem.ri.gov at or 401-537-4151.

Sincerely,

Nicholas A. Pisani P.E.

Nicholas A. Pisani, P.E., Environmental Engineer IV
Stormwater Engineering and 401 Permitting
Office of Water Resources
Rhode Island Department of Environmental Management

ec: Dawn Mineker, P.E., RIAC
Nicole Iannuzzi, P.E., Beta Group, Inc.
Neal Personeus, RI DEM/UIC Program

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ATTACHMENT 2 – SOIL EROSION AND SEDIMENTATION CONTROL PLAN

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Soil Erosion and Sediment Control Plan

For:

Runway 5-23 Rehabilitation

Warwick, RI, 02889

Owner:	Rhode Island Airport Corporation Dawn Mineker 2000 Post Road Warwick, RI 02886 (401) 222-2378 dmineker@pvdairport.com
Operator: *TO BE DETERMINED UPON CONTRACT AWARD*	Company Name Name Address City, State, Zip Code Telephone Number Email Address
Estimated Project Dates:	Start Date: April 2025 Completion Date: December 2025
SESC Plan Prepared By:	BETA Group, Inc. Nicole B. Iannuzzi, P.E. 701 George Washington Highway Lincoln, RI, 02865 (401) 333-2382 NIannuzzi@BETA-Inc.com
SESC Plan Preparation Date:	September 2024
SESC Plan Revision Date:	

OPERATOR CERTIFICATION

Upon contract award, the OPERATOR must sign this certification statement before construction may begin.

I certify under penalty of law that this document and all attachments were prepared under the direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that it is the responsibility of the owner/operator to implement and amend the Soil Erosion and Sediment Control Plan as appropriate in accordance with the requirements of the RIPDES Construction General Permit.

Operator Signature: Date

Contractor Representative: Name

Contractor Title: Title

Contractor Company Name: Company Name (if applicable)

Address: Mailing Address

Phone Number: Phone Number

Email Address: Email

TABLE OF CONTENTS

This Table of Contents is structured to be automatically populated by Microsoft Word.
Upon final completion of this template, "right-click" anywhere in the Table of Contents, select "Update Field", and then "Update entire table". Page numbers will automatically be synced with the changed document.

INTRODUCTION

This Construction Site Soil Erosion and Sediment Control Plan (SESC Plan) has been prepared for the Rhode Island Airport Corporation (RIAC) for the Runway 5-23 Rehabilitation Project. In accordance with the RIDEM Rhode Island Pollutant Discharge Elimination System (RIPDES) General Permit for Stormwater Discharge Associated with Construction Activity (RIPDES Construction General Permit ("CGP")), projects that disturb one (1) or more acres require the preparation of a SESC Plan. This SESC Plan provides guidance for complying with the terms and conditions of the RIPDES Construction General Permit. However, this document does not negate or eliminate the need to understand and adhere to all applicable RIPDES regulations.

The purpose of erosion, runoff, and sedimentation control measures is to prevent pollutants from leaving the construction site and entering waterways or environmentally sensitive areas during and after construction. This SESC Plan has been prepared prior to the initiation of construction activities to address anticipated worksite conditions. The control measures depicted on the site plan and described in this narrative should be considered the minimum measures required to control erosion, sedimentation, and stormwater runoff at the site. Since construction is a dynamic process with changing site conditions, it is the operator's responsibility to manage the site during each construction phase so as to prevent pollutants from leaving the site. This may require the operator to revise and amend the SESC Plan during construction to address varying site and/or weather conditions, such as by adding or realigning erosion or sediment controls to ensure the SESC Plan remains compliant with the RIPDES Construction General Permit. Records of these changes must be added to the amendment log attached to the SESC Plan, and to the site plans as "red-lined" drawings. Please Note: **Even if practices are correctly installed on a site according to the approved plan, the site is only in compliance when erosion, runoff, and sedimentation are effectively controlled throughout the entire site.**

It is the responsibility of the site owner and the site operator to maintain the SESC Plan at the site, including all attachments, amendments and inspection records, and to make all records available for inspection by RIDEM during and after construction. (RIPDES CGP - Part III.G)

The site owner, the site operator, and the designated site inspector are required to review the SESC Plan and sign the Party Certification pages (Section 8). The primary contractor (if different) and all subcontractors (if applicable) involved in earthwork or exterior construction activities are also required to review the SESC Plan and sign the certification pages before construction begins.

Any questions regarding the SESC Plan, control measures, inspection requirements, or any other facet of this document may be addressed to the RIDEM Office of Water Resources, at 401-222-4700 or via email: water@dem.ri.gov.

ADDITIONAL RESOURCES

Rhode Island Department of Environmental Management
Office of Water Resources
RIPDES Permitting Program
235 Promenade Street
Providence, RI 02908-5767
phone: 401-222-4700
email: waterresources@dem.ri.gov

RIDEM Office of Water Resources website
http://www.dem.state.ri.us/programs/benviron/water/index.htm

RIDEM RIPDES website
http://www.dem.state.ri.us/programs/benviron/water/permits/ripdes/index.htm

RIDEM Water Quality website (for 303(d) and TMDL listings)
http://www.dem.ri.gov/programs/benviron/water/quality/index.htm

RIDEM Rhode Island Natural Heritage Program
http://www.dem.ri.gov/programs/bpoladm/plandev/heritage/index.htm

RIDEM Geographic Data Viewer – Environmental Resource Map
http://www.dem.ri.gov/maps/index.htm

RIDEM *RI Stormwater Design and Installation Standards Manual* (RISDISM) (as amended)

http://www.dem.state.ri.us/programs/benviron/water/permits/ripdes/stwater/t4guide/desman.htm

RIDEM, USDA Soil Conservation Service, and RI State Conservation Committee *Soil Erosion and Sediment Control Handbook* (as amended)
http://www.dot.ri.gov/documents/enviro/stormwater/Soil_Erosion_Sediment_Control_Handbook.pdf

Rhode Island Department of Transportation *Standard Specifications for Road and Bridge Design and Other Specifications* and *Standard Details*
http://www.dot.ri.gov/engineering/standards/index.asp

Natural Resources Conservation Service - Rhode Island Soil Survey Program
http://www.ri.nrcs.usda.gov/technical/soils.html

EPA NPDES Stormwater Pollution Prevention Plan Guidance website
http://cfpub.epa.gov/npdes/stormwater/SWPPP.cfm#guide

EPA National Menu of Stormwater Best Management Practices
http://cfpub.epa.gov/npdes/stormwater/menuofbmps

SOIL EROSION AND SEDIMENT CONTROL PLAN GUIDENCE

SECTION 1: SITE DESCRIPTION

1.1 Project/Site Information

Project/Site Name:

- Runway 5-23 Rehabilitation
- Work on the project site includes:
  - Installation of (2) underground infiltration chamber systems.
  - Installation of drainage structures to maintain flow to the existing drainage systems
  - Removal and disposal of pavement from existing Runway.
  - Installation of new pavement structure for proposed Runway.

Project Street/Location:

- The project site is located at Runway 5-23 of Rhode Island T. F. Green International Airport on Plat 321, Lot 04 in Warwick, RI. The parcel is owned by the State of Rhode Island.
- See Location Map in Appendix A.

Provide construction site estimates of the total area of the site and the total area of the site that is expected to undergo soil disturbance.

The following are estimates of the construction site area:

- Total Project Area 68.7 acres
- Total Project Area to be Disturbed 68.7 acres

☐ Yes ☒ No

1.3 Natural Heritage Area Information

RIPDES CGP - Part III.H

Each project authorized under the RIPDES Construction General Permit must determine if the site is within or directly discharges to a Natural Heritage Area (NHA). DEM Natural Heritage Areas include known occurrences of state and federal rare, threatened and endangered species. Review RIDEM NHA maps to determine if there are natural heritage areas on or near the construction site that may be impacted during construction. For more information you may contact the RIDEM Rhode Island Natural Heritage Program mailto:plan@dem.ri.gov

Are there any Natural Heritage Areas being disturbed by the construction activity or will discharges be directed to the Natural Heritage Area as a result of the construction activity?

☐ Yes ☒ No

If yes, describe or refer to documentation which determines the likelihood of an impact on this area and the steps that will be taken to address any impacts.

- Not Applicable

1.4 Historic Preservation/Cultural Resources

The National Historic Preservation Act, and any state, local, and tribal historic preservation laws apply to construction activities. As with endangered species, some permits may specifically require you to assess the potential impact of your stormwater discharges on historic properties. However, whether or not this is stated as a condition for permit coverage, the National Historic Preservation Act and any applicable state or tribal laws apply to you. Contact the Rhode Island Historic Preservation Officer (http://www.preservation.ri.gov/) or your Tribal Historic Preservation Officer (http://grants.cr.nps.gov/THPO_Review/index.cfm) for more information

Are there any historic properties, historic cemeteries, or cultural resources on or near the construction site?

☐ Yes ☒ No

Describe how this determination was made and summarize state or tribal review comments:

A Historic Property Search on www.preservation.ri.gov/ was performed

If yes, describe or refer to documentation which determines the likelihood of an impact on this historic property, historic cemetery or cultural resource and the steps taken to address that impact including any conditions or mitigation measures that were approved by other parties.

- Not Applicable

SECTION 2: EROSION, RUNOFF, AND SEDIMENT CONTROL

RIPDES Construction General Permit – Part III.J.1 – Erosion, Runoff, and Sediment Controls

The purpose of erosion controls is to prevent sediment from being detached and moved by wind or the action of raindrop, sheet, rill, gully, and channel erosion. Properly installed and maintained erosion controls are the primary defense against sediment pollution.

Runoff controls are used to slow the velocity of concentrated water flows. By intercepting and diverting stormwater runoff to a stabilized outlet or treatment practice or by converting concentrated flows to sheet flow erosion and sedimentation are reduced.

Sediment controls are the last line of defense against moving sediment. The purpose is to prevent sediment from leaving the construction site and entering environmentally sensitive areas.

This section describes the set of control measures that will be installed before and during the construction project to avoid, mitigate, and reduce impacts associated with construction activity. Specific control measures and their applicability are contained in Section Four: Erosion Control Measures, Section Five: Runoff Control Measures, and Section Six: Sediment Control Measures of the *RI SESC Handbook*. The *RI SESC Handbook* can be found at the following address:

http://www.dem.ri.gov/soilerosion2014final.pdf

2.1 Avoid and Protect Sensitive Areas and Natural Features

Per RI Stormwater Design and Installation Standards Manual 3.3.7.1:

Areas of existing and remaining vegetation and areas that are to be protected as identified in the Section 1.6 of the SESC Plan must be clearly identified on the SESC Site Plans for each Phase of Construction. Prior to any land disturbance activities commencing on the site, the Contractor shall physically mark limits of disturbance (LOD) on the site and any areas to be protected within the site, so that workers can clearly identify the areas to be protected.

Constraints are identified to ensure a comprehensive understanding of the project and surrounding areas. The first goal in the low impact development (LID) site planning and design process is to avoid disturbance of natural features. This includes identification and preservation of natural areas that can be used in the protection of water resources. It is important to understand that minimizing the hydrologic alteration of a site is just as important as stormwater treatment for resource protection. Therefore, describe all site features and sensitive resources that exist at the site such as, view barriers,, steep slopes (>15%)that if disturbed will require additional erosion controls, areas with the potential to receive run-on from off-site areas, wetlands, surface waters, and their riparian buffers, specimen trees, natural vegetation, forest areas, stream crossings, historic properties, historic cemeteries or cultural resources that are to be preserved. ***This includes those site features that should be avoided within the designated limits of disturbance.*** *These areas are often identified on a constraints map or in a separate constraints report. For additional discussion on this topic refer to Appendix F. Site Constraint Map of the RI SESC Handbook.*

Describe and illustrate on SESC Site Plans Sensitive Areas and Natural Features and how each will be protected during construction activity. Examples of areas to be protected include vegetated buffers, forests, stands of trees on the perimeter and within the site, large diameter trees, areas designated for infiltration (QPAs), bioretention, rain gardens, and OWTS leachfields. Protection for stands of trees and individual trees to be preserved must be specified and such protection must comply with the RI SESC Handbook and extend to the drip line.

Describe and illustrate on SESC Site Plans based on Constraints Map, the areas that will be disturbed with each phase of construction and the control measures (signs, fences, etc.) that will be used to protect those areas that should not be disturbed. ***This includes marking for limits of disturbance at the perimeter and areas within the limits of disturbance.*** *Acceptable measures include but are not limited to construction fencing (plastic mesh, snow fence, chain link fence etc.) appropriate for the site, boundary markers using construction tape, flagged stakes, etc. for low density use, sediment barriers such as silt fence, compost socks with flagging where also required for sediment control, and signage. The narrative portion of the plan and SESC Site Plans must highlight measures to prevent soil compaction in areas designated as Qualified Pervious Areas (QPAs) and infiltration practices to protect infiltration capacity.*

The following measures will be taken to minimize disturbed areas and protect natural features and soil:

- Topsoil will be stockpiled as identified in RIDOT specifications;
- Paved areas to be excavated will be sawcut prior to excavation, and the sawcut lines shall serve as defined limits of disturbance within the paved areas;
- Sedimentation & erosion control measures, where installed, shall serve as the limit of disturbance in those locations;
- The limit of disturbance in all other locations without either sawcuts or sedimentation & erosion control measures shall be delineated with clearly marked and highly visible indicators and/or barriers (stakes, flagging, snow fence or other measures as appropriate) for the duration of the work;
- Native (in-situ) material from the site shall be stripped, screened, and stockpiled for reuse as fill material on the site to the maximum extent practicable;
- Topsoil from presently grassed areas will be stripped, screened, and stockpiled for reuse on the site to the maximum extent practicable;
- Long-term material stockpiles will be placed in defined locations within the project area, and shall be protected as described herein and as shown in the construction details;
- The design has been developed to minimize disturbance to existing vegetation to the maximum extent possible;
- Vegetation (trees, shrubs, etc.) within and/or in close proximity to work areas will be protected from damage during construction, unless specifically designated for removal or limited trimming/limbing.

Feature Requiring Protection	Construction Phase #	Method of Protection	Sheet #
Wetlands/River	1-3	Silt Fence; Compost Filter Sock	Soil Erosion and Sediment Control Plan

2.2 Minimize Area of Disturbance

Per RI Stormwater Design and Installation Standards Manual 3.3.7.2:

Will >5 acres be disturbed in order to complete this project?

☒ Yes ☐ No

If yes, phasing must be utilized at this site.

- Noted, see below for phasing plan.

Will <5 acres be disturbed, or will disturbance activities be completed within a six (6) month window?

☒ Yes ☐ No

If yes, phasing is not required as long as all other performance criteria will be met, and phasing is not necessary to protect sensitive or highly vulnerable areas.

Based on the answers to the above questions will phasing be required for this project?

☒ Yes ☐ No

If yes, and phasing is required, describe phasing plan as prompted below.

If No, provide substantive reasons why this was determined to be infeasible.

- The project will disturb <5 acres and the phasing plan is included below as required.

PHASING PLAN

Proper sequencing of construction activities is essential to maximize the effectiveness of erosion, runoff, and sediment control measures. Construction sequencing of construction activities for each phase must address the following elements:

1. *Installation of control measures identifying limits of disturbance and areas internal to the site that require protection before start of land disturbance.*

2. *Installation of all erosion, runoff, and sediment controls and temporary pollution prevention measures that are required to be in place and functional before any earthwork begins. This shall be done in accordance with the RI SESC Handbook and/or the RI Department of Transportation Standard Specifications for Road and Bridge Construction (as amended). Upon acceptable completion of site preparation and installation of erosion, runoff, and sediment controls and temporary pollution prevention measures, site construction activities may commence.*

3. *The phasing plan shall address the use of phasing to manage and limit increases in runoff rates and volumes during construction. Designated phases and timing of construction should also address the impacts to important or sensitive habitats.*

4. *Upon commencement of site construction activities, the operator shall initiate appropriate stabilization practices on all disturbed areas as soon as possible, but not more than fourteen (14) days after the construction activity in that area has temporarily or permanently ceased. Such temporary or permanent soil stabilization measures must be installed prior to initiating land disturbance in subsequent phases.*

5. *Routine inspection and maintenance and/or modification of erosion, runoff, and sediment controls and temporary pollution prevention measures while earthwork is ongoing is required.*

6. *Final site stabilization of any disturbed areas after earthwork has been completed and removal of temporary erosion, runoff, and sediment controls and temporary pollution prevention measures.*

7. *Activation of post-construction stormwater treatment conveyances and practices.*

For each phase of the construction project, provide site estimates of the total area of the project phase, and the total area of the project phase that is expected to undergo soil disturbance.

The following are estimates of each phase of the construction project:

(Copy and paste this section for projects with multiple phases)

Phase No. or Identifier	1-3
Total Area of Phase	68.7 acres
Area to be Disturbed	68.7 acres

Description of Construction Sequencing for Phase

Phase I – BEFORE EARTHWORK

- ☒ Installation of construction period erosion controls (compost filter sock/straw bale/silt fence perimeter erosion control measures & catch basin sedimentation inserts)
- ☒ Installation of tree/vegetation protection measures and trimming, limbing or removal of designated trees
- ☒ Sawcutting of all proposed pavement excavations

Estimated Duration: One (1) month (dates T.B.D.)

Phase II – DURING EARTHWORK

- ☒ Stormwater management system installations & stabilization prior to completion of other site improvements
- ☒ Disturbed areas to be impervious (paved or concrete) will be cut or filled, graded, compacted, and stabilized with at least one course of bituminous concrete asphalt within three (3) weeks of the initiation of work in that area
- ☒ Disturbed areas to be pervious (grassed) will be stabilized with temporary seeding or erosion blanket no later than fourteen (14) days after completion of work in that area
- ☒ Maintenance (cleaning and/or replacement) of catch basin sedimentation inserts
- ☒ Water application on exposed erodible soils for dust control, as needed

Estimated Duration: Six (6) months (dates T.B.D.)

Phase III – FINAL STABILIZATION

- ☒ Preparation and final seeding of grassed areas
- ☒ Installation of proposed landscaping plantings (if applicable)
- ☒ Removal of catch basin sedimentation inserts
- ☒ Removal of perimeter sedimentation and erosion controls

Estimated Duration: One (1) month (dates T.B.D.)

2.3 Minimize the Disturbance of Steep Slopes

Per RI Stormwater Design and Installation Standards Manual 3.3.7.3:

Are steep slopes (>15%) present within the proposed project area?

☐ Yes ☒ No

If yes, steep slopes must be identified on SESC Site Plans.

If yes, also list the specific control measures that will be used to control surface runoff and reduce erosion potential on steep slopes during construction including references to SESC Site Plans where the locations of such control measures are shown. Examples include limiting the number of steep slopes that are disturbed at one time, implementing land grading techniques such as reverse slope benches, diversions, stair steps, and terraced landforms, installation of retaining walls for stabilization of challenging slopes, prevention of soil movement, and slope protection, applying materials for temporary and permanent protection of slopes to prevent erosion such as stone aggregates, rip-rap, erosion control blankets, appropriate spacing of sediment barriers as a function of barrier size, slope, and slope length, geotextile, cellular confinement systems, mattresses (gabions and others), and articulating blocks.

- Compost filter socks will be installed at the limit of work in areas where slopes will not be disturbed as a part of construction activities. If slopes are to be disturbed as a part of grading activities, the compost filter sock shall be installed at the toe of the slope.

2.4 Preserve Topsoil

Per RI Stormwater Design and Installation Standards Manual 3.3.7.4:

Site owners and operators must preserve existing topsoil on the construction site to the maximum extent feasible and as necessary to support healthy vegetation, promote soil stabilization, and increase stormwater infiltration rates in the post-construction phase of the project.

Will existing topsoil be preserved at the site?

☒ Yes ☐ No

If Yes, describe how topsoil will be preserved at the site by describing the techniques that will be implemented to achieve appropriate depths of topsoil (4 inch minimum) and identify the locations where topsoil will be restored on SESC Site Plans.

- The site operator shall strip top soil in proposed project limit of disturbance areas. Top Soil shall be stockpiled in the location specified on the SESC plan. Stock Pile areas shall be surrounded by silt fence or approved erosion control measures to prevent migration of soils during rain events. Upon project completion, the site operation shall redistribute top soil over disturbed areas ensuring at minimum a 4" layer is provided over all disturbed areas. Additional material shall be brought on site should the need arise. Final top soil areas have been shown on the site plans as landscape areas. Top soil should be screened and free of weeds, sticks, and stones over ¾" in size and otherwise complying with section M.18.01 of the RIDOT Standard Specifications for Road and Bridge Construction. Contractor shall follow recommendations provided by the landscape plans and the Landscape Architect.

If No, provide substantive reasons why this was determined to be infeasible.

- Not Applicable

Soil compaction must be minimized by maintaining limits of disturbance throughout construction. In instances where site soils are compacted the site owner and operator must restore infiltration capacity of the compacted soils by tilling or scarifying compacted soils and amending soils as necessary to ensure a minimum depth of topsoil is available in these areas. In areas where infiltrating stormwater treatment practices are located compacted soils must be amended such that they will comply the design infiltration rates.

Identify the methods that will be used to restore and amend topsoil at the site. Include references to plan notes and SESC Site Plan sheet numbers where this information is made available for the site operator.

- In areas where over compaction has compromised the natural infiltration rate of onsite soils, the contractor shall scarify or till these areas to restore them to their natural state. Areas prone to over compaction are paths proposed to be used by construction equipment and construction equipment storage areas. Construction equipment storage areas are shown on the SESC Plan.

2.5 Stabilize Soils

Per RI Stormwater Design and Installation Standards Manual 3.3.7.5:

Upon completion and acceptance of site preparation and initial installation of erosion, runoff, and sediment controls and temporary pollution prevention measures, the operator shall initiate appropriate temporary or permanent stabilization practices during all phases of construction on all disturbed areas as soon as possible, but not more than fourteen (14) days after the construction activity in that area has temporarily or permanently ceased.

Any disturbed areas that will not have active construction activity occurring within 14 days must be stabilized using the control measures depicted in the SESC Site Plans, in accordance with the *RI SESC Handbook*, and per manufacturer product specifications.

Only areas that can be reasonably expected to have active construction work being performed within 14 days of disturbance will be cleared/grubbed at any one time. It is NOT acceptable to clear and grub the entire construction site if portions will not be active within the 14-day time frame. Proper phasing of clearing and grubbing activities shall include temporary stabilization techniques for areas cleared and grubbed that will not be active within the 14-day time frame.

All disturbed soils exposed prior to October 15 of any calendar year shall be seeded by that date if vegetative measures are the intended soil stabilization method. Any such areas that do not have adequate vegetative stabilization, as determined by the site operator or designated inspector, by November 15, must be stabilized through the use of non-vegetative erosion control measures. If work continues within any of these areas during the period from October 15 through April 15, care must be taken to ensure that only the area required for that day's work is exposed, and all erodible soil must be restabilized within 5 working days. In limited circumstances, stabilization may not be required if the intended function of a specific area of the site necessitates that it remains disturbed (i.e. construction of a motocross track).

Describe controls (i.e., temporary seeding with native vegetation, hydroseeding, mulching, application of rolled erosion control products, etc.) including design specifications and details that will be implemented to stabilize exposed soils where construction activities have temporarily or permanently ceased.

Temporary Stabilization - Topsoil stockpiles and disturbed portions of the site where construction activity temporarily ceases for at least 21 days will be stabilized with temporary seed and mulch no later than 14 days from the last construction activity in that area. The temporary seed shall be Rye (grain) applied at the rate of 50 pounds per 1000 sq. ft. After seeding, each area shall be mulched with straw.

- Permanent Stabilization - Disturbed portions of the site where construction activities permanently cease shall be stabilized with permanent seed mix no later than 14 days after the last construction activity. The permanent seed mix shall be as specified in the construction documents, and shall be properly maintained by the contractor until the grass has established an adequate level of growth.
- Other controls that may be utilized include street sweeping, water for dust control and mulching.

2.6 Protect Storm Drain Outlets

Per RI Stormwater Design and Installation Standards Manual 3.3.7.7:

Temporary or permanent outlet protection must be used to prevent scour and erosion at discharge points through the protection of the soil surface, reduction in discharge velocities, and through the promotion of infiltration. Outlets often have high velocity, high volume flows, and require strong materials that will withstand the forces of stormwater. Storm drain outlet control measures also offer a last line of protection against sediment entering environmentally sensitive areas.

All stormwater outlets that may discharge sediment-laden stormwater flow from the construction site must be protected using the control practices depicted on the approved plan set and in accordance with the *RI SESC Handbook*.

Describe controls, including design specifications and details, which will be implemented to protect outlets discharging stormwater from the project.

- Disturbed areas receiving flows from storm drain outfalls (whether existing or proposed) shall be protected from scour and erosion by use of temporary or permanent ground protection measures, including but not limited to rip rap pads, rip rap stilling basins, geotextile filter blankets, stone or concrete velocity breaks, etc. which shall serve to disrupt the flows and the reduce the velocities of outfall discharges without completely blocking the passage of said flows.
- Outfalls shall not be allowed to discharge to disturbed areas which have not been adequately stabilized with some form of outfall protection measure.
- Outfalls shall be monitored by the Contractor regularly during construction to insure that outfall protection measures are working as intended; if any measures are observed to be inadequate to prevent scour and erosion, they shall be immediately replaced with an outfall protection measure capable of withstanding the flows discharged by the outfall.

Will temporary or permanent point source discharges be generated at the site as the result of construction of sediment traps or basins, diversions, and conveyance channels?

☒ Yes ☐ No

If Yes, describe the method(s) of outlet protection specified for each instance where a point source discharge will be generated. In addition, specifically reference SESC Site Plan Sheet Numbers which identify where the outlets will be constructed at the site and the corresponding control measures that will be utilized for their protection including any associated specifications required for their installation and maintenance.

See Above

If No, discuss rationale for not including these elements in the SESC Plan.

- Not Applicable

2.7 Establish Temporary Controls for the Protection of Post-Construction Stormwater Treatment Practices

Per RI Stormwater Design and Installation Standards Manual 3.3.7.8:

Temporary measures shall be installed to protect permanent or long-term stormwater control and treatment measures as they are installed and throughout the construction phase of the project so that they will function properly when they are brought online.

This section details the measures that will be installed to protect permanent or long-term stormwater treatment practices as they are installed so that they will function properly when they are brought online at the end of the construction phase.

Include any applicable specifications from the *Rhode Island Soil Erosion and Sediment Control Handbook* (as amended), the RIDEM *RI Stormwater Design and Installation Standards Manual* (RISDISM) (as amended), including any applicable control practice maintenance requirements.

Examples of temporary control measures that can be used to protect permanent stormwater control measures include: establishing temporary sediment barriers around infiltrating practices, ensuring proper material staging areas and equipment routing (i.e. do not allow construction equipment to compact areas where infiltrating practices will be installed), and by conducting final cleaning of structural long term practices after construction is completed.

List and describe all post-construction stormwater treatment practices that will be installed during the construction process. Next, outline how these measures will be protected during the construction phase of the project to ensure that they will function appropriately once they are brought online.

Location/Station	BMP Description/ Standard Spec Ref	Maintenance Requirement
Runway 5-23	Underground Infiltration Chambers	See O&M Plan for further details

- Protection During Construction Phase – Avoiding over-compaction of underlying soils during construction is critical to the proper function of the underground infiltration chamber system. The areas will be delineated with a highly visible barrier and appropriate signage to alert equipment operators not to drive over the soils or to stockpile materials on the dry swale locations.

Will long-term stormwater treatment practices be installed at the site?

☒ Yes ☐ No

If Yes, describe the specific long-term stormwater treatment practices that will require protection from sedimentation and compaction. In addition, specifically reference SESC Site Plan Sheet Numbers which identify the location of these practices and the corresponding control measures that will be utilized for their protection including any associated specifications required for their installation and maintenance.

- Long term stormwater treatment practices, that will use infiltration, will be staked off throughout the construction phases. No construction vehicles shall enter these staked areas to avoid sedimentation and compaction.

If No, discuss rationale for not including these elements in the SESC Plan.

- Not Applicable

2.8 Divert or Manage Run-on from Up-gradient Areas

Per RI Stormwater Design and Installation Standards Manual 3.3.7.10:

Is stormwater from off-site areas anticipated to flow onto the project area or onto areas where soils will be disturbed?

☒ Yes ☐ No

If Yes, describe the specific runoff control measures (i.e., check dams, water bars, diversions, perimeter dikes, lined waterways, vegetated waterways, temporary line channels, sediment barriers, pipe slope drains, etc.) that will be utilized at the site including references to the SESC Site Plan Sheet Numbers, design specifications and details. See the RI SESC Handbook, Section Five: Runoff Control Measures for additional guidance.

- The structural soil & erosion control BMP's shall include compost filter sock and/or silt fence along the downgradient limits of work, as depicted on the plans. Based on the hydrology of the project area (as defined in the watershed analysis), it is not anticipated that there will be additional uncontrolled runoff entering and flowing through the site from off-site locations.
- The Contractor shall provide any alternative structural practices that will be used on this project, if it is determined that any are required during construction.
- Sub-watershed maps are included as part of the overall submission.
- Structural control measures will be used to limit stormwater flow from coming onto the project area, and to divert and slow on-site stormwater flow that is expected to impact exposed soils for the purpose of minimizing erosion, runoff, and the discharge of pollutants from the site.

Control measures shall be installed as depicted on the approved plan set and in accordance with the *RI SESC Handbook* or the *RI Department of Transportation Standard Specifications for Road and Bridge Construction*. **Run-on and Run-off Management**				
Construction Phase #	On-site or Off-site Run-on?	Control measure	Identified on Sheet #	Detail(s) is/are on Sheet #
All Phases	On-site & Off-site	Silt Fence; Compost Filter Sock	Site Preparation Plan	Construction Details

If No, discuss rationale for not including these elements in the SESC Plan.

- Not Applicable

2.9 Retain Sediment Onsite through Structural and Non-Structural Practices

Per RI Stormwater Design and Installation Standards Manual 3.3.7.12:

Once the erosion control measures and the run-on diversions are identified and located on the plans, the next step to site planning is sediment control and sediment management. Sediment barriers, inlet protection, construction entrances, stockpile containment, temporary sediment traps, and temporary sediment basins must be integrated into the SESC Plan if applicable. Refer to the RI SESC Handbook Section Six: Sediment Control Measures for additional guidance.

Per RI Stormwater Design and Installation Standards Manual 3.3.7.9:

SEDIMENT BARRIERS must be installed along the perimeter areas of the site that will receive stormwater from disturbed areas. This also may include the use of sediment barriers along the contour of disturbed slopes to maintain sheet flow and minimize rill and gully erosion during construction. Installation and maintenance of sediment barriers must be completed in accordance with the maintenance requirements specified by the product manufacturer or the *RI SESC Handbook*.

Will sediment barriers be utilized at the toe of slopes and other downgradient areas subject to stormwater impacts and erosion during construction?

☒ Yes ☐ No

If Yes, Describe the rationale for selecting control measures to serve as sediment barriers at the toe of slopes and other down gradient areas subject to stormwater impacts during construction. Describe the specific sediment barriers that will be used at the site in the table provided.

- Sediment barriers will be used to protect stormwater from discharging onto adjacent properties, sensitive areas and proposed BMPs.
- The structural soil & erosion control BMP's shall include compost filter sock and/or silt fence along the downgradient limits of work, as depicted on the plans. Based on the hydrology of the project area (as defined in the watershed analysis), it is not anticipated that there will be additional uncontrolled runoff entering and flowing through the site from off-site locations.
- The Contractor shall provide any alternative structural practices that will be used on this project, if it is determined that any are required during construction.

If No, discuss rationale for not including these elements in the SESC Plan.

Not Applicable

Describe rationale for whether or sediment barriers are required at regular intervals along slopes in order to minimize the creation of concentrated flow paths (i.e. rilling, gully erosion) and to encourage sheet flow. Keep in mind that sediment barriers can be placed at the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow. The description of the selected control measures must focus on sediment barrier spacing as a function of slope length and steepness. Refer to the RI SESC Handbook, Section Six: Sediment Control Measure, Straw Wattles, Compost Tubes, and Fiber Rolls Control Measure for additional information on acceptable spacing distances.

Will sediment barriers be utilized along the contour of slopes to maintain sheet flow and minimize rill and gully erosion during construction?

☒ Yes ☐ No

If Yes, list the specific sediment barriers that will be used at the site in the table provided. Describe the rationale for the locations and spacing frequency selected by the designer based on slope length and steepness. For additional guidance refer to the RI SESC Handbook or sediment barrier manufacturer's specifications.

SEDIMENT BARRIERS			
Construction Phase #	Sediment Barrier Type	Sediment Barrier is	Detail is on

		Labeled on Sheet #	Sheet #
All Phases	Silt Fence; Compost Filter Sock	Soil Erosion and Sediment Control Plan	Soil Erosion and Sediment Control Details

- See Above

If No, discuss rationale for not including these elements in the SESC Plan.

- Not Applicable

Per RI Stormwater Design and Installation Standards Manual 3.3.7.6:

INLET PROTECTION will be utilized to prevent soil and debris from entering storm drain inlets. These measures are usually temporary and are implemented before a site is disturbed. ALL stormwater inlets &/or catch basins that are operational during construction and have the potential to receive sediment-laden stormwater flow from the construction site must be protected using control measures outlined in the *RI SESC Handbook*.

For more information on inlet protection refer to the *RI SESC Handbook*, Inlet Protection control measure.

Maintenance

The operator must clean, or remove and replace the inlet protection measures as sediment accumulates, the filter becomes clogged, and/or as performance is compromised. Accumulated sediment adjacent to the inlet protection measures should be removed by the end of the same work day in which it is found or by the end of the following work day if removal by the same work day is not feasible.

Describe controls, including design specifications and details, which will be implemented to protect all inlets receiving stormwater from the project during the entire duration of the project. For more information on inlet protection refer to the RI SESC Handbook Inlet Protection control measure.

Do inlets exist adjacent to or within the project area that require temporary protection?

☒ Yes ☐ No

If Yes, describe the method(s) of inlet protection, including maintenance requirements and complete the table provided.

The following lists the proposed storm drain inlet types selected from Section Six of the *RI SESC Handbook*. Each row is unique for each phase and inlet protection type.

INLET PROTECTION			
Construction Phase #	Inlet Protection Type	Inlet Protection is labeled on Sheet #	Detail(s) is/are on Sheet #
All Phases	Inlet Sediment Control Device	Soil Erosion and Sediment Control Plan	Soil Erosion and Sediment Control Details

- Catch basin inserts will be used during construction to prevent soil and debris from entering storm drain inlets and pipes. Inserts are cone-shaped, made from a high strength, high flow, woven geotextile which retains sediments while allowing water to pass through. Inserts must be cleaned and maintained regularly to avoid sedimentation build-up which blocks the flow of runoff into the catch basin.

If No, discuss rationale for not including these elements in the SESC Plan.

- Not Applicable

CONSTRUCTION ENTRANCES will be used in conjunction with the stabilization of construction roads to reduce the amount of sediment tracking off the project. This project has avoided placing construction entrances on poorly drained soils where possible. Where poorly drained soils could not be eliminated, the detail includes subsurface drainage.

Any construction site access point must employ the control measures on the approved SESC site plans and in accordance with the *RI SESC Handbook*. Construction entrances shall be used in conjunction with the stabilization of construction roads to reduce the amount of mud picked up by construction vehicles. All construction access roads shall be constructed prior to any roadway accepting construction traffic.

The site owner and operator must:

1. Restrict vehicle use to properly designated exit points.

2. Use properly designed and constructed construction entrances at all points that exit onto paved roads so that sediment removal occurs prior to vehicle exit.

3. When and where necessary, use additional controls to remove sediment from vehicle tires prior to exit (i.e. wheel washing racks, rumble strips, and rattle plates).

4. Where sediment has been tracked out from the construction site onto the surface of off-site streets, other paved areas, and sidewalks, the deposited sediment must be removed by the end of the same work day in which the track out occurs. Track-out must be removed by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal.

Will construction entrances be utilized at the proposed construction site?

☒ Yes ☐ No

If Yes, indicate location(s) of vehicle entrance(s) and exit(s), and stabilization practices used to prevent sediment from being tracked off-site in the table provided. See also RI SESC Handbook, Section Six, Construction Entrances Measure.

CONSTRUCTION ENTRANCE			
Construction Phase #	Soil Type at the Entrance	Entrance is located on Sheet #	Detail is on Sheet #
All Phases	2" Crushed Stone	T.B.D.	RIDOT Std. Detail 9.9.0

If No, discuss rationale.

- Not Applicable

STOCKPILE CONTAINMENT will be used onsite to minimize or eliminate the discharge of soil, topsoil, base material or rubble, from entering drainage systems or surface waters. All stockpiles must be located within the limit of disturbance, protected from run-on with the use of temporary sediment barriers and provided with cover or stabilization to avoid contact with precipitation and wind where and when practical.

Stock pile management consists of procedures and practices designed to minimize or eliminate the discharge of stockpiled material (soil, topsoil, base material, rubble) from entering drainage systems or surface waters.

For any stockpiles or land clearing debris composed, in whole or in part, of sediment or soil, you must comply with the following requirements:

1. Locate piles within the designated limits of disturbance.

2. Protect from contact with stormwater (including run-on) using a temporary perimeter sediment barrier.

3. Where practicable, provide cover or appropriate temporary vegetative or structural stabilization to avoid direct contact with precipitation or to minimize sediment discharge.

4. NEVER hose down or sweep soil or sediment accumulated on pavement or other impervious surfaces into any stormwater conveyance, storm drain inlet, or surface water.

5. To the maximum extent practicable, contain and securely protect from wind.

Describe materials expected to be stockpiled or stored on-site and procedures for storage of materials to minimize exposure of the materials to stormwater and to eliminate the discharge of stockpiled material from entering drainage systems and surface waters. Refer to the RI SESC Handbook, Stockpile and Staging Area Management Control Measure for additional guidance. Complete the table provided.

STOCKPILE CONTAINMENT				
Construction Phase #	Run-on measures necessary? (yes/no)	Stabilization or Cover Type	Stockpile Containment Measure	Sheet #
All Phases	No	Top and Sub-Soil piles should be covered or vegetated	12" Dia. Compost Filter Sock	Where Applicable

- All stockpiled materials shall be protected from stormwater run-on by placing filter fabric under the stockpile and a berm of straw bale/silt sock around the stockpile.
- All stockpiled materials shall have a tarpaulin or similar cover to prevent wind erosion.
- The following materials or substances will potentially be present on-site during construction:
  - Road base materials (Gravel borrow)
  - Landscaping materials (Loam, mulch, bio-filtration media)
  - Crushed stone

CONSTRUCTED SEDIMENT STRUCTURES

If each common drainage location receives water from an area with less than one (1) acre disturbed at a time, this section can be deleted, and no sediment traps or basins are required. However, it is important to remember that there is still a requirement to retain sediment on-site. Therefore, if it is in the best professional judgment of the designer, that there is a condition or circumstance which may require structural controls (per Section 3.3.7.13 of the RI Stormwater Design and Installation Standards Manual), this section can be used.

TEMPORARY SEDIMENT TRAPS will be utilized onsite. There will be no disturbed drainage areas greater than one acre that will be exposed for longer than six months. Design and sizing calculations in accordance with the *RI SESC Handbook*, Section Six are found in Appendix I of this SESC Plan. A summary of the calculations are provided below:

For Disturbed Areas 1 to 5 Acres – Those areas with a common drainage location that serves an area between one (1) and five (5) acres disturbed at one time, a temporary sediment trap must be provided where attainable and where the sediment trap is only intended to be used for a period of six (6) months or less. For longer term projects with a common drainage location that serves between one (1) and five (5) acres disturbed at one time, a temporary sediment basin must be provided where attainable. Temporary sediment trapping practices must be designed in accordance with the RI SESC Handbook and must be sized to have a total storage volume capable of storing one (1) inch of runoff from the contributing area or one hundred and thirty four (134) cubic yards per acre of drainage area. A minimum of fifty percent (50%) of the total volume shall be storage below the outlet (wet storage). See RISDISM 3.3.7.12 for requirements and RI SESC Handbook, Section Six: Temporary Sediment Traps Measure for design details.

Are temporary sediment traps required at the site?

☐ Yes ☒ No

If No, discuss rationale.

- They are not required as part of this project. The work will be sequenced so that the site disturbs less than (1) acre at a given time.

TEMPORARY SEDIMENT BASIN(S) will be utilized onsite. Every effort must be made to prevent erosion and control it near the source.

If the following criterion does not apply to your proposed construction project, then this section may be eliminated from the plan.

For Disturbed Areas of 1 to 5 Acres – Those areas with a common drainage location that serves an area between one (1) and five (5) acres disturbed at one time for longer than six (6) months.

For Disturbed Areas > 5 Acres – Those areas with a common drainage location that serves an area with greater than five (5) acres disturbed at one time, a temporary (or permanent) sediment basin must be provided where attainable until final stabilization of the site is complete. Temporary sediment basins must be designed in accordance with the RI SESC Handbook. The volume of wet storage shall be at least twice the sediment storage volume and shall have a minimum depth of two (2) feet. Sediment storage volume must accommodate a minimum of one year of predicted sediment load as calculated using the sediment volume formula in the RI SESC Handbook. In addition to sediment storage volume and wet storage volume, the sediment basin shall provide adequate residence storage volume to provide a minimum 10 hours residence time for a ten (10) -year frequency, twenty four (24) hour duration, Type III distribution storm. To the maximum extent practicable, outlet structures must be utilized that withdraw water from the surface of temporary sedimentation basins for the purpose of minimizing the discharge of pollutants. Exceptions may include periods of extended cold weather, where alternative outlets are required during frozen periods. If such a device is infeasible for portions of or the entire construction period justification must be made in the SESC Plan. Describe the reasons sediment basins are required for this project. They may include physical conditions, land ownership, construction operations etc. For design details see RI SESC Handbook Section Six: Temporary Sediment Basins Measure.

Are temporary sediment basins required at the site?

☐ Yes ☒ No

If No, discuss rationale.

- They are not required as part of this project. The work will be sequenced so that the site disturbs less than (1) acre at a given time.

2.10 Properly Design Constructed Stormwater Conveyance Channels

Conveyances are required to be designed for inlets to temporary sediment basins. The construction site planner must use best professional judgment to determine if additional conveyance design is required for run-on control or in any other location where velocity control is required.

Are temporary stormwater conveyance practices required in order to properly manage runoff within the proposed construction project?

☐ Yes ☒ No

If Yes, describe the specific control measures that will be used at the site. Provide or attach design calculations associated with each proposed conveyance measure, demonstrating that each one is designed and sized to handle the peak flow from a 10-year, 24-hour, Type III design storm. Note where within the site plans each specified conveyance is depicted, including specifications and construction details.

- Not Applicable

The conveyance will be maintained as depicted on SESC Site Plans and in accordance with the *RI SESC Handbook* and if applicable.

If No, discuss rationale for not including conveyance measures in the SESC Plan.

- They are not required as part of this project.

2.11 Erosion, Runoff, and Sediment Control Measure List

Complete the following table for each Phase of construction where Erosion, Runoff, and Sediment Control Measures are located. This table is to be used as part of the SESC Plan Inspection Report – please fill out accordingly.

It is expected that this table and corresponding Inspection Reports will be amended as needed throughout the construction project as control measures are added or modified.

All Phases		
Location/Station	**Control Measure Description/Reference**	**Maintenance Requirement**
Perimeter	Silt Fence/Compost Filter Sock	Weekly or as required by site conditions; remove accumulated sediment when it has reach ½ the height of the hay bales/silt fence.
All Catch Basins	Catch Basin Insert	212.03.1 Sediment accumulated greater than half way up insert; break through or significant strain of insert.
Street Sweeping/Water for Dust Control	Not Applicable	Weekly or as required by site conditions. RAWP states dust suppression techniques shall be employed at all times during soil disturbance.
Additional measures to be determined by Contractor		

SECTION 3: CONSTRUCTION ACTIVITY POLLUTION PREVENTION

Per RI Stormwater Design and Installation Standards Manual 3.3.7.14:

The purpose of construction activity pollution prevention is to prevent day to day construction activities from causing pollution.

This section describes the key pollution prevention measures that must be implemented to avoid and reduce the discharge of pollutants in stormwater. Example control measures include the proper management of waste, material handling and storage, and equipment/vehicle fueling/washing/maintenance operations.

Where applicable, include *RI SESC Handbook* or the *RI Department of Transportation Standard Specifications for Road and Bridge Construction* (as amended) specifications.

3.1 Existing Data of Known Discharges from Site

Per RIPDES Construction General Permit – Part III.I:

List and provide existing data (if available) on the quality of any known discharges from the site. Examples include discharges from existing stormwater collection systems, discharges from industrial areas of the site, etc.

Are there known discharges from the project area?

☒ Yes ☐ No

Describe how this determination was made:

- Review of utility record plans, observations during site visits, and field-surveys

If yes, list discharges and locations:

- Refer to the Site Plans.

Is there existing data on the quality of the known discharges?

☐ Yes ☒ No

If yes, provide data:

- Not Applicable

3.2 Prohibited Discharges

Per RI SESC Handbook – Part D

The following discharges are prohibited at the construction site:

- Contaminated groundwater, unless specifically authorized by the DEM. These types of discharges may only be authorized under a separate DEM RIPDES permit.

- Wastewater from washout of concrete, unless the discharge is contained and managed by appropriate control measures.
- Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials.
- Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance. Proper storage and spill prevention practices must be utilized at all construction sites.
- Soaps or solvents used in vehicle and equipment washing.
- Toxic or hazardous substances from a spill or other release.

All types of waste generated at the site shall be disposed of in a manner consistent with State Law and/or regulations.

Will any of the above listed prohibited discharges be generated at the site?

☒ Yes ☐ No

If Yes, provide a list of those that will be generated at the site and provide a discussion of how they will be managed, including references to the specific SESC Site Plans where such control measures are specified.

- The Contractor shall designate the locations, if any, of concrete washout areas and amend this document accordingly. Under no circumstances will concrete washout areas be located where the discharge from same will create a nuisance or hazard (i.e. excavated areas, roadways, private property, etc.); furthermore, the Contractor shall immediately adjust the location or configuration of any concrete washout areas which are found to create a nuisance or hazard. All concrete washouts shall be discharged to a facility that will contain all liquid and concrete waste generated by the washout operations. The concrete washout facility shall adhere to the requirements of the revised Rhode Island Soil Erosion and Sediment Control Handbook.
- All other discharges will be prohibited from the site.

If No, discuss rationale.

- Not Applicable

3.3 Proper Waste Disposal

Per RI SESC Handbook – Part D

Building materials and other construction site wastes must be properly managed and disposed of in a manner consistent with State Law and/or regulations.

- A waste collection area shall be designated on the site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterbody or storm drain.
- All waste containers shall be covered to avoid contact with wind and precipitation.
- Waste collection shall be scheduled frequently enough to prevent containers from overfilling.

- All construction site wastes shall be collected, removed, and disposed of in accordance with applicable regulatory requirements and only at authorized disposal sites.

- Equipment and containers shall be checked for leaks, corrosion, support or foundation failure, or other signs of deterioration. Those that are found to be defective shall be immediately repaired or replaced.

Is waste disposal a significant element of the proposed project?

☒ Yes ☐ No

If Yes, identify potential building materials and other construction wastes and document how these wastes will be properly managed and disposed of at the construction site (i.e., trash disposal, sanitary wastes, recycling, and proper material handling). Include references to the specific SESC Site Plans where such control measures are specified.

- **Waste Materials -** All construction-generated waste materials will be collected and stored in a securely lidded metal dumpster which shall meet all local City and any State solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied as needed, and the trash will be hauled off site. No construction waste materials will be buried onsite. All personnel will be instructed regarding the correct procedure for waste disposal. Notices stating these practices will be posted in the office trailer, and the individual who manages the day-to-day site operations will be responsible for ensuring that these procedures are followed.
- **Hazardous Waste -** Hazardous waste materials, if encountered, will be disposed of in the manner specified by local or State regulation or by the manufacturer. Site personnel will be instructed in these practices and the individual, who manages day-to-day site operations, will be responsible for seeing that these practices are followed.
- **Sanitary Waste -** All sanitary waste will be collected from the portable units a minimum of once a week by a licensed sanitary waste management contractor, as required by local regulation.

If No, discuss rationale.

- Not Applicable

3.4 Spill Prevention and Control

Per RI SESC Handbook – Part D

All chemicals and/or hazardous waste material must be stored properly and legally in covered areas, with containment systems constructed in or around the storage areas. Areas must be designated for materials delivery and storage. All areas where potential spills can occur, and their accompanying drainage points must be described. The owner and operator must establish spill prevention and control measures to reduce the chance of spills, stop the source of spills, contain and clean-up spills, and dispose of materials contaminated by spills. The operator must establish and make highly visible location(s) for the storage of spill prevention and control equipment and provide training for personnel responsible for spill prevention and control on the construction site.

Are spill prevention and control measures required for this particular project?

☒ Yes ☐ No

If Yes, describe all areas where potential spills can occur, and their accompanying drainage points, and describe the spill prevention and control plan to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and control. Provide the method of establishing and making highly visible the location(s) for the storage of spill prevention equipment. Refer to the RI SESC Handbook, Spill Prevention and Control Plan for guidance.

- A spill can potentially occur anywhere within the project sites.
- The following good housekeeping practices will be followed onsite during the construction project:
    - An effort will be made to store on-site only enough products and materials required to perform the anticipated work.
    - All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
    - Products will be kept in their original containers with the original manufacturer's label.
    - Substances will not be mixed with one another unless recommended by the manufacturer.
    - Whenever possible, all of a product will be used up before disposing of the container.
    - Manufacturers' recommendations for proper use and disposal will be followed.
    - The site superintendent will inspect daily to ensure proper use and disposal of materials onsite.
- These practices shall be used to reduce the risks associated with hazardous materials:
    - Products will be kept in original containers unless they are not re-sealable.
    - Original labels and material safety data will be retained; they contain important product information.
    - If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal will be followed.
- In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices shall be followed for spill prevention and cleanup:
    - Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
    - Materials and equipment necessary for spill cleanup will be kept in a storage area onsite. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
    - All spills will be cleaned up immediately after discovery.
    - The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
    - Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size.
    - The spill prevention plan will be adjusted to include measures to prevent this type of spilt from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.

- The site superintendent responsible for the day-to-day site operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel who will receive spill prevention and cleanup training. The individual will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted in the office trailer onsite.

If No, discuss rationale.

- Not Applicable

3.5 Control of Allowable Non-Stormwater Discharges

Per RIPDES Construction General Permit – Part III.J.2.e:

Discharges not comprised of stormwater are allowed under the RIPDES Construction General Permit but are limited to the following: discharges which result from the washdown of vehicles where no detergents are used; external building wash-down where no detergents are used; the use of water to control dust; firefighting activities; fire hydrant flushing; natural springs; uncontaminated groundwater; lawn watering; potable water sources including waterline flushing; irrigation drainage; pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled materials have been removed) and where detergents are not used; and foundation or footing drains where flows are not contaminated with process materials such as solvents, or contaminated by contact with soils where spills or leaks of toxic or hazardous materials has occurred. If any of these discharges may reasonably be expected to be present and to be mixed with stormwater discharges, they must be specifically listed here.

Are there allowable non-Stormwater discharges present on or near the project area?

☒ Yes ☐ No

If yes, list the sources of allowable non-Stormwater discharge(s) associated with construction activity. For each of the allowable non-stormwater discharge(s) identified, describe the controls and measures that will be implemented at those locations to minimize pollutant contamination of these discharges and to separate them from temporary discharges of stormwater during construction.

List of allowable non-stormwater discharge(s) and the associated control measure(s):

- Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred
- Uncontaminated groundwater (from dewatering excavation)
- Water for dust control

If any existing or proposed discharges consist of contaminated groundwater, such discharges are not authorized under the RIPDES Construction General Permit. These discharges must be permitted separately by seeking coverage to treat and discharge under a separate RIPDES individual permit or under the RIPDES Remediation General Permit. Contact the RIDEM Office of Water Resources RIPDES Permitting Program at 401-222-4700 for application requirements and additional information.

Are there any known or proposed contaminated discharges, including anticipated contaminated dewatering operations, planned on or near the project area?

☐ Yes ☒ No

If yes, list the discharge types and the RIPDES individual permit number(s) or RIPDES Remediation General Permit Authorization number(s) associated with these discharges.

- Discharge Type and RIPDES Individual Permit Number: Not Applicable
- Discharge Type and RIPDES Remediation General Permit Authorization Number: Not Applicable

3.6 Control Dewatering Practices

Per RI SESC Handbook – Part D

Site owners and operators are prohibited from discharging groundwater or accumulated stormwater that is removed from excavations, trenches, foundations, vaults, or other similar points of accumulation, unless such waters are first effectively managed by appropriate control measures.

Examples of appropriate control measures include, but are not limited to, temporary sediment basins or sediment traps, sediment socks, dewatering tanks and bags, or filtration systems (e.g. bag or sand filters) that are designed to remove sediment. Uncontaminated, non-turbid dewatering water can be discharged without being routed to a control.

At a minimum the following discharge requirements must be met for dewatering activities:

1. Do not discharge visible floating solids or foam.
2. To the extent feasible, utilize vegetated, upland areas of the site to infiltrate dewatering water before discharge. In no case will surface waters be considered part of the treatment area.
3. At all points where dewatering water is discharged, utilize velocity dissipation devices.
4. With filter backwash water, either haul it away for disposal or return it to the beginning of the treatment process.
5. Replace and clean the filter media used in dewatering devices when the pressure differential equals or exceeds the manufacturer's specifications.
6. Dewatering practices must involve the implementation of appropriate control measures as applicable (i.e. containment areas for dewatering earth materials, portable sediment tanks and bags, pumping settling basins, and pump intake protection.)

Is it at all likely that the site operator will need to implement construction dewatering in order to complete the proposed project?

☒ Yes ☐ No

If Yes, describe all areas where construction dewatering may be required and the proposed control measures that will be used to treat and manage dewatering fluids including all proposed discharge points. Proposed control measures must comply with the RI SESC Handbook. Include references to all relevant SESC Site Plans.

- Uncontaminated groundwater pumped out of construction excavations will be routed to and through adequately sized dewatering basins to remove (to the maximum extent possible) sediments contained within the groundwater. The locations and sizes of dewatering basins shall be as needed to receive and treat groundwater when it is encountered during construction, as determined by the Contractor. Under no circumstances will dewatering

basins be located where the discharge from same will create a nuisance or hazard (i.e. excavated areas, roadways, private property, etc.); furthermore, the Contractor shall immediately adjust the location or configuration of any dewatering basins which are found to create a nuisance or hazard.

If No, discuss rationale.

- Not Applicable

3.7 Establish Proper Building Material Staging Areas

Per RI SESC Handbook – Part D

All construction materials that have the potential to contaminate stormwater must be stored properly and legally in covered areas, with containment systems constructed in or around the storage areas. Areas must be designated for materials delivery and storage. Designated areas shall be approved by the site owner/engineer. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in the discharge of pollutants, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use).

Describe construction materials expected to be stored on-site and procedures for storage of materials to minimize exposure of the materials to stormwater. Include references to all relevant SESC Site Plans.

- See Section 3.6 for procedures related to storage of materials to minimize exposure of the same to stormwater.
- The following materials or substances will potentially be present on-site during construction:
  - Fertilizers
  - Petroleum Based Products (Gasoline, Diesel Fuel, Motor Oil)
  - Cleaning Solvents
  - Bituminous Concrete Asphalt
  - Cement Concrete
  - Detergents
  - Wood
  - Liquid Asphalt/Tar

3.8 Minimize Dust

Per RI SESC Handbook – Part D

Dust control procedures and practices shall be used to suppress dust on a construction site during the construction process, as applicable. Precipitation, temperature, humidity, wind velocity and direction will determine amount and frequency of applications. However, the best method of controlling dust is to prevent dust production. This can best be accomplished by limiting the amount of bare soil exposed at one time. Dust Control measures outlined in the *RI SESC Handbook* shall be followed. Other dust control methods include watering, chemical application, surface roughening, wind barriers, walls, and covers.

Describe dust control practices that will be used to suppress dust and limit its generation (i.e. applying water, limiting the amount of bare soil exposed at one time etc.).

- Water for dust control will be applied prior to or during winding conditions (forecasted or actual wind conditions of 20 mph or greater) to all areas of exposed erodible soil. Water shall be spray-applied to avoid ponding or erosion, either by truck (in roadway areas) or manually (in off-road areas).
- In addition, the Contractor shall limit the amount of bare soil exposed at one time.

3.9 Designate Washout Areas

Per RI SESC Handbook – Part D

At no time shall any material (concrete, paint, chemicals) be washed into storm drains, open ditches, streets, streams, wetlands, or any environmentally sensitive area. The site operator must ensure that construction waste is properly disposed of, to avoid exposure to precipitation, at the end of each working day.

Will washout areas be required for the proposed project?

☒ Yes ☐ No

If Yes, describe location(s) and control measures that will be used to minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, washout areas for concrete mixers, paint, stucco, etc. The recommended location(s) of washout areas should be identified, or at a minimum the locations where these washout areas should not be sited should be called out.

- The Contractor shall designate the locations, if any, of concrete washout areas and amend this document accordingly. Under no circumstances will concrete washout areas be located where the discharge from same will create a nuisance or hazard (i.e. excavated areas, roadways, private property, wetland resource areas, etc.); furthermore, the Contractor shall immediately adjust the location or configuration of any concrete washout areas which are found to create a nuisance or hazard.

If No, discuss rationale.

- Not Applicable

3.10 Establish Proper Equipment/Vehicle Fueling and Maintenance Practices

Per RI SESC Handbook – Part D

Vehicle fueling shall not take place within regulated wetlands or buffer zone areas, or within 50-feet of the storm drain system. Designated areas shall be depicted on the SESC Site Plans, or shall be approved by the site owner.

Vehicle maintenance and washing shall occur off-site, or in designated areas depicted on the SESC Site Plans or approved of by the site owner. Maintenance or washing areas shall not be within regulated wetlands or buffer zone areas, or within 50-feet of the storm drain system. Maintenance areas shall be clearly designated, and barriers shall be used around the perimeter of the maintenance area to prevent stormwater contamination.

Construction vehicles shall be inspected frequently for leaks. Repairs shall take place immediately. Disposal of all used oil, antifreeze, solvents, and other automotive-related chemicals shall be according to applicable regulations; at no time shall any material be washed down the storm drain or in to any environmentally sensitive area.

Describe equipment/vehicle fueling and maintenance practices that will be implemented to prevent pollutants from mixing with stormwater (e.g., secondary containment, drip pans, spill kits, etc.) Provide recommended location(s) of fueling/maintenance areas, or, at minimum, locations where fueling/maintenance should be avoided.

- All onsite vehicles shall be monitored for leaks, and shall receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.
- The Contractor shall determine locations, if any, for vehicle fueling and maintenance activities, provided that said locations are more than fifty (50) feet from any storm drainage inlet structure.

3.11 Chemical Treatment for Erosion and Sediment Control

Per RI SESC Handbook – Appendix J

Chemical stabilizers, polymers, and flocculants are readily available on the market and can be easily applied to construction sites for the purposes of enhancing the control of erosion, runoff, and sedimentation. The following guidelines should be adhered to for construction sites that plan to use treatment chemicals as part of their overall erosion, runoff, and sedimentation control strategy.

The U.S. Environmental Protection Agency has conducted research into the relative toxicity of chemicals commonly used for the treatment of construction stormwater discharges. The research conducted by the EPA focused on different formulations of chitosan, a cationic compound, and both cationic and anionic polyacrylamide (PAM). In summary, the studies found significant toxicity resulting from the use of chitosan and cationic PAM in laboratory conditions, and significantly less toxicity associated with using anionic PAM. EPA's research has led to the conclusion that the use of treatment chemicals for erosion, runoff, and sedimentation control requires proper operator training and appropriate usage to avoid risk to aquatic species. In the case of cationic treatment chemicals additional safeguards may be necessary.

Application/Installation Minimum Requirements

If a site operator plans to use polymers, flocculants, or other treatment chemicals during construction the SESC plan must address the following:

1. Treatment chemicals shall not be applied directly to or within 100 feet of any surface water body, wetland, or storm drain inlet.

2. Use conventional erosion, runoff, and sedimentation controls prior to and after the application of treatment chemicals. Use conventional erosion, runoff, and sedimentation controls prior to chemical addition to ensure effective treatment. Chemicals may only be applied where treated stormwater is directed to a sediment control (e.g. temporary sediment basin, temporary sediment trap or sediment barrier) prior to discharge.

3. Sites shall be stabilized as soon as possible using conventional measures to minimize the need to use chemical treatment.

4. Select appropriate treatment chemicals. Chemicals must be selected that are appropriately suited to the types of soils likely to be exposed during construction and to the expected turbidity, pH, and flow rate of stormwater flowing into the chemical treatment system or treatment area. **Soil testing is essential. Using the wrong form of chemical treatment will result in some form of performance failure and unnecessary environmental risk.**

5. Minimize discharge risk from stored chemicals. Store all treatment chemicals in leak-proof containers that are kept under storm-resistant cover and surrounded by secondary containment structures (e.g., spill berms, decks, spill containment pallets), or provide equivalent measures, designed and maintained to minimize the potential discharge of treatment chemicals in stormwater or by any other means (e.g., storing chemicals in covered areas or having a spill kit available on site).

6. Use chemicals in accordance with good engineering practices and specifications of the chemical provider/supplier. You must also use treatment chemicals and chemical treatment systems in accordance with good engineering practices, and with dosing specifications and sediment removal design specifications provided by the supplier of the applicable chemicals, or document specific departures from these practices or specifications and how they reflect good engineering practice.

Will chemical stabilizers, polymers, flocculants, or other treatment chemicals be utilized on the proposed construction project?

☐ Yes ☒ No

If Yes, create a Treatment Chemical Application Plan and describe how the owner or SESC Plan preparer/designer intends to educate the designated operator prior to the application of such treatment chemicals.

Treatment Chemical Application Plan Required Elements

Insert information listed below:

1. *List Manufacturer's name and product name for each treatment chemical proposed for use at the site.*
2. *Attach a copy of applicable Material Safety Data Sheets (MSDSs) or Safety Data Sheets (SDS) for each proposed treatment chemical.*
3. *Provide the results of third-party toxicity testing of the materials proposed for use at the site.*
4. *Provide a certification from the site owner and operator that all proposed treatment chemicals are the same as those used in the toxicity tests and will not be altered in any way.*
5. *Provide an explanation as to why conventional erosion, runoff, and sediment control measures, alone or in combination, will not be sufficient to prevent turbidity impacts and sedimentation in downstream receptors.*
6. *Provide a plan prepared in consultation with the chemical treatment manufacturer(s) or authorized manufacturer's representative which includes the following:*
    a. *Identification of the areas of the site where treatment chemicals will be applied and the name, location, and distance to all downstream receptors that have the potential to be impacted from the discharges from the treatment areas.*
    b. *List the expected start and end dates or specific phases of the project during which each treatment chemical will be applied.*
    c. *Provide test results for representative soils from the site, and any recommendations from the manufacturer based on the soil tests, indicating the type of treatment chemical and the recommended application rate.*
    d. *List the frequency, method, and rates of application which are designed to ensure that treatment chemical concentrations will not exceed 50% of the IC25 or NOEC toxicity values, whichever is less, for each treatment chemical proposed.*

e. Provide the frequency of inspection and maintenance of the treatment chemical application system.

f. List the method proposed for the collection, removal, and disposal or stabilization of settled particles to prevent re-suspension.

g. Describe the training that will be provided to all persons who will handle and use treatment chemicals at the construction site. Training must include appropriate, product-specific training and proper dosing requirements for each product.

- It is not anticipated that a treatment chemical application will be required to control erosion, runoff, and sedimentation.
- The Contractor shall provide a treatment chemical application plan for review and approval, if it is determined that treatment chemicals are required during construction.

Treatment Chemical SESC Plan Weekly Inspection Report Documentation Requirements

1. Document the type and quantity of treatment chemicals applied.
2. List the date, duration of discharge, and estimated discharge rate.
3. Provide an estimate of the volume of water treated.
4. Provide an estimate of the concentration of treatment chemicals in the discharge, with supporting calculations.

3.12 Construction Activity Pollution Prevention Control Measure List

Complete the following table for each Phase of construction where Pollution Prevention Control Measures will be implemented. This table is to be used as part of the SESC Plan Inspection Report – please fill out accordingly.

It is expected that this table will be amended as needed throughout the construction project.

All Phases		
Location/Station	**Control Measure Description/Reference**	**Maintenance Requirement**
Construction Site Entrance/Exit	Rock/Riprap entrance pad 211.03/9.9.0	Replenish/Replace aggregate if it becomes clogged with sediment and is no longer effectively preventing sediment from being tracked into street.
Roads	Public roads within the construction site shall be clean at the end of each day **211.01.1**	Street Sweep if construction site sediment is visible
Site Wide	Pick-up & proper handling and disposal of construction trash and debris	All loose trash and debris must be disposed of properly at the end of each working day
To Be Determined by Contractor as Needed		

SECTION 4: CONTROL MEASURE INSTALLATION, INSPECTION, and MAINTENANCE

4.1 Installation

Per RI SESC Handbook – Part D:

Complete the installation of temporary erosion, runoff, sediment, and pollution prevention control measures by the time each phase of earth-disturbance has begun. All stormwater control measures must be installed in accordance with good judgment, including applicable design and manufacturer specifications. Installation techniques and maintenance requirements may be found in manufacturer specifications and/or the *RI SESC Handbook*. Any departures from such specifications must be provided, justified, and demonstrated to reflect good engineering practices.

Include references to SESC Site Plans where installation requirements are located.

- The contractor shall amend this section if there are any departures from the specifications or any previous section in this document.

4.2 Monitoring Weather Conditions

Per RI SESC Handbook – Part D:

Anticipating Weather Events - Care will be taken to the best of the operator's ability to avoid disturbing large areas prior to anticipated precipitation events. Weather forecasts must be routinely checked, and in the case of an expected precipitation event of over 0.25-inches over a 24-hour period, it is highly recommended that all control measures should be evaluated and maintained as necessary, prior to the weather event. In the case of an extreme weather forecast (greater than one-inch of rain over a 24-hour period), additional erosion/sediment controls may need to be installed.

Storm Event Monitoring for Inspections - At a minimum, storm events must be monitored and tracked in order to determine when post-storm event inspections must be conducted. Inspections must be conducted and documented at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event, which generates at least 0.25 inches of rainfall per twenty-four (24) hour period and/or after a significant amount of runoff or snowmelt.

In order for an operator to successfully satisfy this requirement list the weather gauge station that will be utilized to monitor weather conditions on the construction site. See www.wunderground.com or www.weather.gov for available stations.

The weather gauge station and website that will be utilized to monitor weather conditions on the construction site is as follows:

- There is a weather gauge station at the Rhode Island T. F. Green International Airport (KPVD) that may be used to monitor weather conditions. The station can be found on:

  www.wunderground.com

4.3 Inspections

Per RI SESC Handbook – Part D:

Minimum Frequency - Each of the following areas must be inspected by or under the supervision of the owner and operator at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event, which generates at least 0.25 inches of rainfall per twenty-four (24) hour period and/or after a significant amount of runoff or snowmelt:

a. All areas that have been cleared, graded, or excavated and where permanent stabilization has not been achieved;

b. All stormwater erosion, runoff, and sediment control measures (including pollution prevention control measures) installed at the site;

c. Construction material, unstabilized soil stockpiles, waste, borrow, or equipment storage, and maintenance areas that are covered by this permit and are exposed to precipitation;

d. All areas where stormwater typically flows within the site, including temporary drainage ways designed to divert, convey, and/or treat stormwater;

e. All points of discharge from the site;

f. All locations where temporary soil stabilization measures have been implemented;

g. All locations where vehicles enter or exit the site.

Reductions in Inspection Frequency - If earth disturbing activities are suspended due to frozen conditions, inspections may be reduced to a frequency of once per month. The owner and operator must document the beginning and ending dates of these periods in an inspection report.

Qualified Personnel – The site owner and operator are responsible for designating personnel to conduct inspections and for ensuring that the personnel who are responsible for conducting the inspections are "qualified" to do so. A "qualified person" is a person knowledgeable in the principles and practices of erosion, runoff, sediment, and pollution prevention controls, who possesses the skills to assess conditions at the construction site that could impact stormwater quality, and the skills to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of the permit.

Recordkeeping Requirements - All records of inspections, including records of maintenance and corrective actions must be maintained with the SESC Plan. Inspection records must include the date and time of the inspection, and the inspector's name, signature, and contact information.

General Notes

- A separate inspection report will be prepared for each inspection.

- The Inspection Reference Number shall be a combination of the RIPDES Construction General Permit No - consecutively numbered inspections. ex/ Inspection reference number for the **4**th inspection of a project would be: RIR10####-**4**

- Each report will be signed and dated by the Inspector and must be kept onsite.

- Each report will be signed and dated by the Site Operator.

- The corrective action log contained in each inspection report must be completed, signed, and dated by the site operator once all necessary repairs have been completed.

- It is the responsibility of the site operator to maintain a copy of the SESC Plan, copies of all completed inspection reports, and amendments as part of the SESC Plan documentation at the site during construction.

Failure to make and provide documentation of inspections and corrective actions under this part constitutes a violation of your permit and enforcement actions under 46-12 of R.I. General Laws may result.

- The Contractor shall amend this document if additional inspection requirements are needed for this project.

4.4 Maintenance

Per RI SESC Handbook – Part D:

Maintenance procedures for erosion and sedimentation controls and stormwater management structures/facilities are described on the SESC Site Plans and in the *RI SESC Handbook*.

Site owners and operators must ensure that all erosion, runoff, sediment, and pollution prevention controls remain in effective operating condition and are protected from activities that would reduce their effectiveness. Erosion, runoff, sedimentation, and pollution prevention control measures must be maintained throughout the course of the project.

Note: It is recommended that the site operator designates a full-time, on-site contact person responsible for working with the site owner to resolve SESC Plan-related issues.

- The Contractor is responsible for amending this section for additional maintenance requirements.

4.5 Corrective Actions

Per RI SESC Handbook – Part D:

If, in the opinion of the designated site inspector, corrective action is required, the inspector shall note it on the inspection report and shall inform the site operator that corrective action is necessary. The site operator must make all necessary repairs whenever maintenance of any of the control measures instituted at the site is required.

In accordance with the *RI SESC Handbook*, the site operator shall initiate work to fix the problem immediately after its discovery, and complete such work by the close of the next work day, if the problem does not require significant repair or replacement, or if the problem can be corrected through routine maintenance.

When installation of a new control or a significant repair is needed, site owners and operators must ensure that the new or modified control measure is installed and made operational by no later than seven (7) calendar days from the time of discovery where feasible. If it is infeasible to complete the installation or repair within seven (7) calendar days, the reasons why it is infeasible must be documented in the SESC Plan along with the schedule for installing the control measures and making it operational as soon as practicable after the 7-day timeframe. Such documentation of these maintenance procedures and timeframes should be described in the inspection report in which the issue was first documented. If these actions result in changes to any of the control measures outlined in the SESC Plan, site owners and operators must also modify the SESC Plan accordingly within seven (7) calendar days of completing this work.

The corrective action log contained in each inspection report must be completed, signed, and dated by the site operator once all necessary repairs have been completed.

SECTION 5: AMENDMENTS

Per RIPDES Construction General Permit – Part III.F:

This SESC Plan is intended to be a working document. It is expected that amendments will be required throughout the active construction phase of the project. **Even if practices are installed on a site according to the approved plan, the site is only in compliance when erosion, runoff, and sedimentation are effectively controlled throughout the entire site for the entire duration of the project.**

The SESC Plan shall be amended within seven (7) days whenever there is a change in design, construction, operation, maintenance or other procedure which has a significant effect on the potential for the discharge of pollutants, or if the SESC Plan proves to be ineffective in achieving its objectives (i.e. the selected control measures are not effective in controlling erosion or sedimentation).

In addition, the SESC Plan shall be amended to identify any new operator that will implement a component of the SESC Plan.

All revisions must be recorded in the Record of Amendments Log Sheet, which is contained in Attachment G of this SESC Plan, and dated red-lined drawings and/or a detailed written description must be appended to the SESC Plan. Inspection Forms must be revised to reflect all amendments. Update the Revision Date and the Version # in the footer of the Report to reflect amendments made.

All SESC Plan Amendments, except minor non-technical revisions, must be approved by the site owner and operator. Any amendments to control measures that involve the practice of engineering must be reviewed, signed, and stamped by a Professional Engineer registered in the State of RI.

The amended SESC plan must be kept on file at the site while construction is ongoing, and any modifications must be documented.

Attach a copy of the Amendment Log.

Reference RI Model SESC Plan ATTACHMENT G

See Attachment G – Amendment Log

SECTION 6: RECORDKEEPING

RIPDES Construction General Permit – Parts III.D, III.G, III.J.3.b.iii, & V.O

It is the site owner and site operator's responsibility to have the following documents available at the construction site and immediately available for RIDEM review upon request:

- A copy of the fully signed and dated SESC Plan, which includes:
    - A copy of the General Location Map
      INCLUDED AS ATTACHMENT A
    - A copy of all SESC Site Plans
      INCLUDED AS ATTACHMENT B
    - A copy of the RIPDES Construction General Permit *(To save paper and file space, do not include in DEM/CRMC submittal, for operator copy only)*
      INCLUDED AS ATTACHMENT C
    - A copy of any regulatory permits (RIDEM Freshwater Wetlands Permit, CRMC Assent, RIDEM Water Quality Certification, RIDEM Groundwater Discharge Permit, RIDEM RIPDES Construction General Permit authorization letter, etc.)
      INCLUDED AS ATTACHMENT D
    - The signed and certified NOI form or permit application form *(if required as part of the application, see RIPDES Construction General Permit for applicability)*
      INCLUDED AS ATTACHMENT E
    - Completed Inspection Reports w/Completed Corrective Action Logs
      INCLUDED AS ATTACHMENT F
    - SESC Plan Amendment Log
      INCLUDED AS ATTACHMENT G

SECTION 7: PARTY CERTIFICATIONS

RIPDES Construction General Permit – Part V.G

All parties working at the project site are required to comply with the Soil Erosion and Sediment Control Plan (SESC Plan including SESC Site Plans) for any work that is performed on-site. The site owner, site operator, contractors and sub-contractors are encouraged to advise all employees working on this project of the requirements of the SESC Plan. A copy of the SESC Plan is available for your review at the following location: _____, or may be obtained by contacting the site owner or site operator.

The site owner and site operator and each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement.

I acknowledge that I have read and understand the terms and conditions of the Soil Erosion and Sediment Control (SESC) Plan for the above designated project and agree to follow the control measures described in the SESC Plan and SESC Site Plans.

Site Owner:

Rhode Island Airport Corporation
Dawn Mineker
2000 Post Road
Warwick, RI 02886
(401) 691-2486, dmineker@pvdairport.com

_____
signature/date

Site Operator:

Insert Company or Organization Name
Insert Name & Title
Insert Address
Insert City, State, Zip Code
Insert Telephone Number, Insert Fax/Email

_____
signature/date

Designated Site Inspector:

Insert Company or Organization Name
Insert Name & Title
Insert Address
Insert City, State, Zip Code
Insert Telephone Number, Insert Fax/Email

_____
signature/date

Subcontractor SESC Plan Contact:

Insert Company or Organization Name
Insert Name & Title
Insert Address
Insert City, State, Zip Code
Insert Telephone Number, Insert Fax/Email

_____
signature/date

Insert more contact/signature lines as necessary

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LIST OF ATTACHMENTS

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Attachment A - General Location Map

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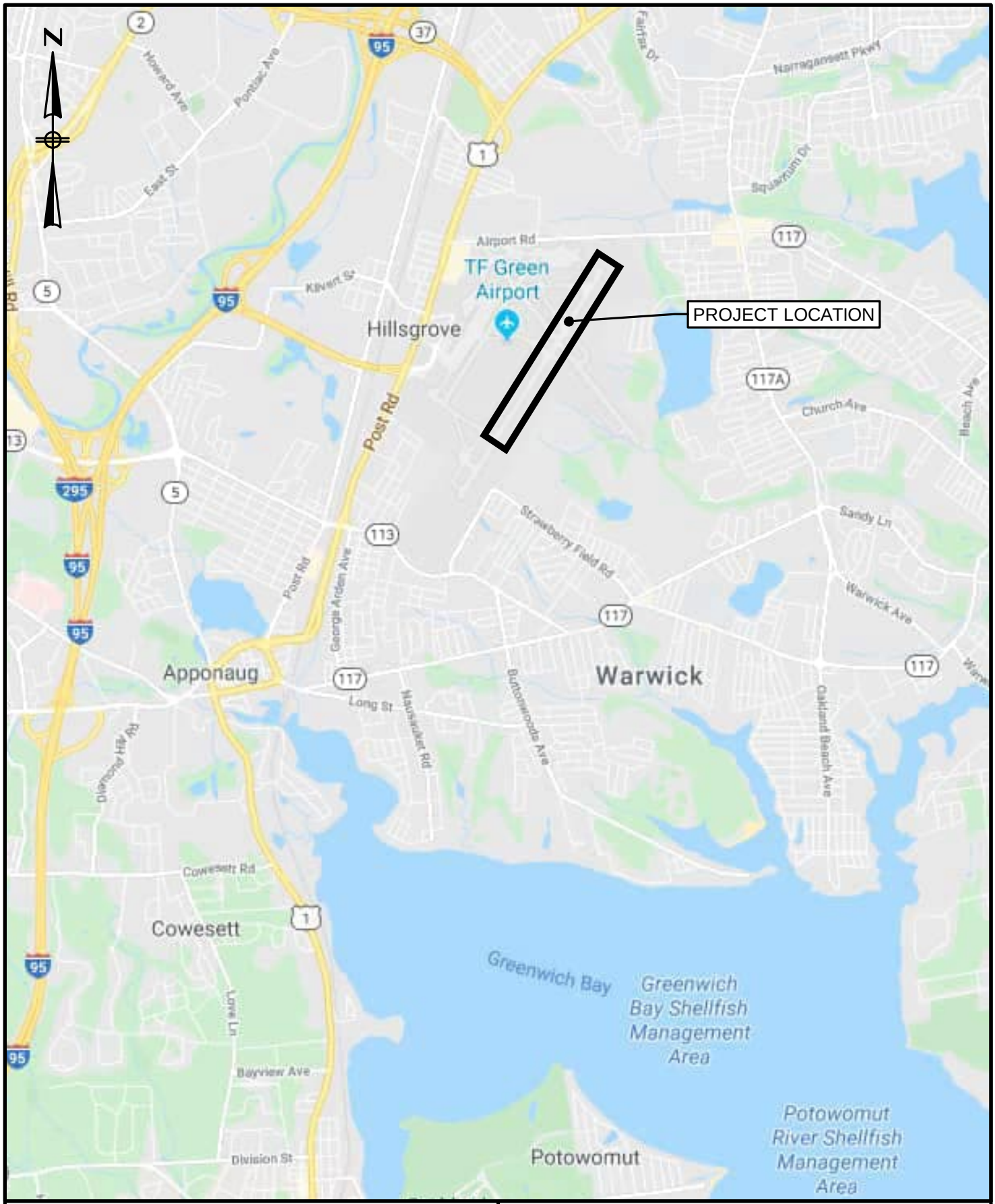

BETA

www.BETA-Inc.com

FIGURE 2-1 VICINITY MAP

Runway 5-23 Rehabilitation

Rhode Island T. F. Green International Airport

WARWICK, RI

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Attachment B – SESC Plan Site Maps

The RIDEM-approved set of project construction plans shall serve as the SESCP site maps, and are not included herein. Please refer to the RIDEM-approved plan set, which shall be kept on-site at all times for the duration of the project.

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Attachment C - Copy of RIPDES Construction General Permit

The RIPDES Construction General Permit may be accessed, viewed and printed from the RIDEM web site, at the following address:

http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/pdfs/cgp092620.pdf

A hard copy of the RIPDES CGP is not included herein.

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Attachment D - Copy of Regulatory Permits

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Attachment E - Copy of RIPDES NOI

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Attachment F - Inspection Reports and Corrective Action Log

This appendix contains copies of all project stormwater inspection reports and corrective action logs performed in accordance with Section 5 – Maintenance and Inspection of this SESCP. Reports are presented in chronological order from most recent to oldest.

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SESC Plan
Inspection Report Instructions

For all projects subject to the requirements of the *RI Stormwater Design and Installation Standards Manual* or the *RIPDES Construction General Permit* the site owner and operator are required to develop and comply with a site specific Soil Erosion and Sediment Control Plan (SESC Plan) in order to remain in compliance with applicable regulations.

This inspection report template has been provided by RIDEM for use by the site operator and designated inspector to document the adequacy and condition of erosion, runoff, sediment, and pollution prevention control measures specified for use on the construction site. It should be customized for your specific site conditions and consistent with the SESC Plan developed for your site.

Using the Inspection Report

This inspection report is designed to be customized according to the control measures and conditions at the site. On a copy of the applicable SESC Site Plans, number or label all stormwater control measures and areas of the site that will be inspected. Include all control measures (temporary traps, basins, inlet protection measures, etc.) and areas that will be inspected. Also, identify all point source discharges/outfalls, and the priority natural resource areas (i.e. streams, wetlands, mature trees, etc). List each control measure or area to be inspected separately in the site-specific control measure section of the inspection report.

Complete any items that will remain constant, such as the project information and control measure locations and descriptions. Then, print out multiple copies of this customized inspection report to use during the inspections.

When conducting the inspection, walk the site by following the SESC Site Plans and numbered control measure locations for inspection. Also note whether the overall site issues have been addressed. Customize this list according to the conditions at the site.

Minimum Monitoring and Reporting Requirements

Your site must be inspected by or under the supervision of the owner and operator at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event which generates at least 0.25 inches of rainfall per twenty-four (24) hour period and/or after a significant amount of runoff. Read Section 4.2 of your SESC Plan for more information regarding the importance of monitoring weather conditions.

General Notes

- A separate inspection report will be prepared for each inspection.

Revision Date: May 1, 2015

- The Inspection Reference Number shall be a combination of the RIPDES Permit Authorization Number - consecutively numbered inspections. For example: Inspection reference number for the **4**th inspection of a project would be: RIR101000-**4**

- Each report will be signed and dated by the inspector and forwarded to the site operator within 24 hours of the inspection.

- Each report will be signed and dated by the site operator upon his/her receipt and after completion of all required corrective actions.

- It is the responsibility of the site operator to maintain a copy of the SESC Plan, copies of all completed inspection reports, and amendments as part of the SESC Plan documentation at the site during construction.

Corrective Actions

If the SESC Plan Inspection determines that corrective actions are necessary to install or repair control measures, the resultant actions taken must be documented by the site operator. The actions must be recorded in the Corrective Action Log attached to each SESC Plan inspection form. If the site operator disagrees with the corrective action recommendations, it must be documented, with justifiable reasons, in the Corrective Action Log, as well. **Required timeframes for corrective actions are established by regulation and are discussed in Section 4.5 of your SESC Plan.**

Amendments

All SESC Plan Amendments, except minor non-technical revisions, must be approved by the site owner and site operator. The revision must be recorded in the Record of Amendments Log Sheet within the SESC Plan, and dated red-line drawings and/or a detailed written description of the revision must be appended to the SESC Plan. Inspection forms must be revised to reflect all amendments. Update the *Revision Date* and the *Version* # in the footer of the report to reflect amendments made.

The SESC Plan shall be amended whenever there is a change in design, construction, operation, maintenance or other procedure, which has a significant effect on the potential for the discharge of pollutants, or if the SESC Plan proves to be ineffective in achieving its objectives.

******Remember that the regulations are performance-oriented. Even if all control measures are installed on a site according to the SESC Plan, the site is only in compliance when erosion, runoff, sedimentation, and pollution are effectively controlled. ******

SESC Plan Inspection Report

Project Information			
Name			
Location			
DEM Permit No.			
Site Owner	**Name**	**Phone**	**Email**
Site Operator	**Name**	**Phone**	**Email**

Inspection Information			
Inspector Name	**Name**	**Phone**	**Email**
Inspection Date		**Start/End Time**	

Inspection Type
❑ **Weekly** ❑ **Pre-storm event** ❑ **During storm event** ❑ **Post-storm event** ❑ **Other**

Weather Information
Last Rain Event **Date:** **Duration (hrs):** **Approximate Rainfall (in):**
Rain Gauge Location & Source:
Weather at time of this inspection:

Check statement that applies then sign and date below:

☐ **I, as the designated Inspector, certify that this site has been inspected as required by regulation and I have determined that maintenance and corrective actions are not required at this time.**

☐ **I, as the designated Inspector, certify that this site has been inspected as required by regulation and I have made the determination that the site requires corrective actions. The required corrective actions are noted within this inspection report.**

	Print Name	**Signature**	**Date**
Inspector:			

The Site Operator acknowledges by his/her signature, the receipt of this SESC Plan inspection report and its findings. He/she acknowledges that all recommended corrective actions must be completed and documentation of all such corrective actions must be made in this inspection report per applicable regulations.

	Print Name	**Signature**	**Date**
Operator:			

Site-specific Control Measures

Number the structural and non-structural stormwater control measures identified in the SESC Plan and on the SESC Site Plans and list them below (add as necessary). Bring a copy of this inspection form and any applicable SESC Site Plans with you during your inspections. This list will assist you to inspect all control measures at your site.
FILL THIS TABLE USING THE SESC PLAN TABLES 2.11 & 3.12.

	Location/Station	Control Measure Description	Installed & Operating Properly?	Assoc. Photo/ Figure #	Corrective Action Needed (Yes or No; if 'Yes', please detail action required)
1	Example 1: Eastern Parcel – Slope No. 4 Adjacent to I-95. Straw Wattles	Straw Wattle. Section Six, Sediment Control Measures, Straw Wattles, Compost Tubes and Fiber Rolls - *RI SESC Handbook*.	❑Yes ❑No		
2	Example 2: Western Parcel – Green Street Construction Entrance	Stone Stabilized Pad. Section Six: Sediment Control Measures – Construction Entrances –*RI SESC Handbook*.	❑Yes ❑No		
3	Example 3: Hospital Main Footings – Excavation Area – SESC Site Plan Sheet No. 3.	Pump Intake Protection Using Stone Filled Sump with Standpipe. Section Six: Sediment Control Measures, Pump Intake Protection, *RI SESC Handbook.*	❑Yes ❑No		
4	Example 4: Bridge Abutment Construction Southbound Bridge Abutment, Bridge No. 244 – SESC Site Plan Sheet No. 18.	Prefabricated Concrete Washout Container with Ramp. Used to contain concrete washout during concrete pouring operations. Section Three: Pollution Prevention and Good Housekeeping, Concrete Washouts, *RI SESC Handbook*.	❑Yes ❑No		
5	INSERT TEXT	INSERT TEXT	❑Yes ❑No		
6	**Attention Operator:**	**You must modify this inspection form as the project progresses, control measure locations change, and amendments to the SESC Plan are instituted in the field.**	❑Yes ❑No		
7			❑Yes ❑No		
8			❑Yes ❑No		

	Location/Station	Control Measure Description	Installed & Operating Properly?	Assoc. Photo/ Figure #	Corrective Action Needed (Yes or No; if 'Yes', please detail action required)
9			❑Yes ❑No		
10			❑Yes ❑No		
11			❑Yes ❑No		
12			❑Yes ❑No		
13			❑Yes ❑No		
14			❑Yes ❑No		
15			❑Yes ❑No		
16			❑Yes ❑No		
17			❑Yes ❑No		
18			❑Yes ❑No		
19			❑Yes ❑No		
20			❑Yes ❑No		
21			❑Yes ❑No		
22			❑Yes ❑No		
23			❑Yes ❑No		
24			❑Yes ❑No		

	Location/Station	Control Measure Description	Installed & Operating Properly?	Assoc. Photo/ Figure #	Corrective Action Needed (Yes or No; if 'Yes', please detail action required)
25			❑Yes ❑No		
26			❑Yes ❑No		
27			❑Yes ❑No		
28			❑Yes ❑No		
29			❑Yes ❑No		
30			❑Yes ❑No		

(add more as necessary)

General Site Issues

*Below are some general site issues that should be assessed during inspections. Please **customize** this list as needed for conditions at the site.*

	Compliance Question		**Assoc. Photo/ Figure #**	**Corrective Action Needed (If 'Yes', please detail action required and include location/station)**
1	Have all control measures been installed as specified in the RISESC Handbook and prior to any earth disturbing activities?	❑Yes ❑No ❑ N/A		
2	Are appropriate limits of disturbance (LOD) established?	❑Yes ❑No ❑ N/A		
3	Are controls that limit runoff from exposed soils by diverting, retaining, or detaining flows (such as check dams, sediment basins, etc.) in place?	❑Yes ❑No ❑ N/A		
4	Are all temporary conveyance practices installed correctly and functioning as designed?	❑Yes ❑No ❑ N/A		
5	Has maintenance been performed as required to ensure continued proper function of all temporary conveyances practices?	❑Yes ❑No ❑ N/A		
6	Were all exposed soils seeded by October 15th?	❑Yes ❑No ❑ N/A		
7	Have soils been stabilized where earth disturbance activities have permanently or temporarily ceased on any portion of the site and will not resume for more than 14 days?	❑Yes ❑No ❑ N/A		
8	In instances where adequate vegetative stabilization was not established by November 15th, have non-vegetative erosion control measures must be employed?	❑Yes ❑No ❑ N/A		
9	If work is to continue from October 15th through April 15th, are steps taken to ensure that only the day's work area will be exposed and all erodible soil is stabilized within 5 working days?	❑Yes ❑No ❑ N/A		
10	Have inlet protection measures (such as fabric drop inlet protection, curb drop inlet protection, etc.) been properly installed?	❑Yes ❑No ❑ N/A		
11	Has the operator cleaned and maintained inlet protection measures when needed?	❑Yes ❑No ❑ N/A		
12	Has the operator removed accumulated sediment adjacent to inlet protection measures within 24 hours of detection?	❑Yes ❑No ❑ N/A		

	Compliance Question		**Assoc. Photo/ Figure #**	**Corrective Action Needed (If 'Yes', please detail action required and include location/station)**
13	Has the operator properly installed outlet protection (such as riprap, turf mats, etc.) at all temporary and permanent discharge points?	❑Yes ❑No ❑ N/A		
14	Are all outlet protection measures functioning properly in order to reduce discharge velocity, promote infiltration, and eliminate scour?	❑Yes ❑No ❑ N/A		
15	Have all discharge points been inspected to ensure the prevention of scouring and channel erosion?	❑Yes ❑No ❑ N/A		
16	Have sediment controls been installed along perimeter areas that will receive stormwater from earth disturbing activities?	❑Yes ❑No ❑ N/A		
17	Is the operator maintaining sediment controls in accordance with the requirements in the *RI SESC Handbook*?	❑Yes ❑No ❑ N/A		
18	Have temporary sediment barriers been installed around permanent infiltration areas (such as bioretention areas, infiltration basins, etc.)?	❑Yes ❑No ❑ N/A		
19	Have staging areas and equipment routing been implemented to avoid compaction where permanent infiltration areas will be located?	❑Yes ❑No ❑ N/A		
20	Are surface outlet structures (such as skimmers, siphons, etc.) installed for each temporary sediment basin? [Exception: frozen conditions]	❑Yes ❑No ❑ N/A		
21	Have all temporary sediment basins or traps been inspected and maintained as required to ensure proper function?	❑Yes ❑No ❑ N/A		
22	Does the project include the use of polymers, flocculants, or other chemicals to control erosion, sedimentation, or runoff from the site?	❑Yes ❑No ❑ N/A		
23	Are all chemicals being managed in accordance with Appendix J of the *RISESC Handbook* and current best management practices?	❑Yes ❑No ❑ N/A		
24	Has the site operator taken steps to **prohibit** the following pollutant discharges on the site?			
a	Contaminated groundwater.	❑Yes ❑No ❑ N/A		

	Compliance Question		**Assoc. Photo/ Figure #**	**Corrective Action Needed (If 'Yes', please detail action required and include location/station)**
b	Wastewater from washout of concrete; unless properly contained, managed, and disposed of.	❑Yes ❑No ❑ N/A		
c	Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction products.	❑Yes ❑No ❑ N/A		
d	Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance.	❑Yes ❑No ❑ N/A		
e	Soaps or solvents used in vehicle and equipment washing.	❑Yes ❑No ❑ N/A		
f	Toxic or hazardous substances from a spill or other release.	❑Yes ❑No ❑ N/A		
25	Is the operator using properly constructed entrances/exits to the site so sediment removal occurs prior to vehicles exiting?	❑Yes ❑No ❑ N/A		
26	If needed, are additional controls (such as rumble strips, rattle plates, etc.) in place to remove sediment from tires prior to exiting?	❑Yes ❑No ❑ N/A		
27	Is sediment track-out being removed by the end of the same workday in which it occurs (via sweeping, shoveling, or vacuuming)?	❑Yes ❑No ❑ N/A		
28	Are all wastes generated at the site being managed and properly disposed of by the end of each workday?	❑Yes ❑No ❑ N/A		
29	Are all chemicals and hazardous waste materials stored properly in covered areas and surrounded by containment control systems?	❑Yes ❑No ❑ N/A		
30	Has the operator established highly visible locations for the storage of spill prevention and control equipment on the construction site?	❑Yes ❑No ❑ N/A		
31	Are allowable non-stormwater discharges being managed properly with adequate controls?	❑Yes ❑No ❑ N/A		
32	Is the site operator properly managing groundwater or stormwater that is removed from excavations, trenches, or similar points of accumulation?	❑Yes ❑No ❑ N/A		
33	Are proper procedures and controls in place for the storage of materials that may discharge pollutants if	❑Yes ❑No ❑ N/A		

	Compliance Question		**Assoc. Photo/ Figure #**	**Corrective Action Needed (If 'Yes', please detail action required and include location/station)**
	exposed to stormwater?			
	Are stockpiles located within the limits of disturbance?	❑Yes ❑No ❑ N/A		
	Are stockpiles being protected from contact with stormwater using a temporary sediment barrier?	❑Yes ❑No ❑ N/A		
	Where needed, has cover or appropriate temporary vegetative or structural stabilization been utilized for stockpiles?	❑Yes ❑No ❑ N/A		
	Is the operator effectively managing the generation of dust through the use of water, chemicals, or minimization of exposed soil?	❑Yes ❑No ❑ N/A		
	Are designated washout areas (such as wheel washing stations, washout for concrete, paint, stucco, etc.) clearly marked on the site?	❑Yes ❑No ❑ N/A		
	Are vehicle fueling and maintenance areas properly located to prevent pollutants from impacting stormwater and sensitive receptors?	❑Yes ❑No ❑ N/A		
	(Other)			

(add more as necessary)

General Field Comments:

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Photos:

(Associated photos – each photo should be dated and have a unique identification # and written description indicating where it is located within the project area. If a close up photo is required, it should be preceded with a photo including both the detail area and some type of visible fixed reference point. Photos should be annotated with Station numbers and other identifying information where needed.)

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

Photo #:	Station:
(insert Photo here)	Description:

(add more as necessary)

Corrective Action Log

TO BE FILLED OUT BY SITE OPERATOR

Describe repair, replacement, and maintenance of control measures, actions taken, date completed, and note the person that completed the work.

	Location/Station	Corrective Action	Date Completed	Person Responsible
Operator Signature:			**Date:**	

Attachment G - Amendment Log

This appendix contains the log of all amendments made to the original SESCP during the construction phase of this project, in accordance with Section 6 – Amendments of this SESCP.

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PROJECT:

Amendment Log

TO BE FILLED OUT BY SITE OPERATOR

Describe amendment(s) to be made to the SESC Plan, the date, and the person/title making the amendment. ALL amendments must be approved by the Site Owner.

#	Date	Description of Amendment	Amended by: Person/Title	Site Owner Must Initial
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Add more lines/pages as necessary

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END OF ITEM C-102

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Item DX-702 Pipeline Cleaning (Addendum No. 1)

DESCRIPTION

702-1.1 This item shall consist of the cleaning and flushing of drainage pipelines. This item also includes the requirements for the disposal of materials resulting from the cleaning of pipelines.

CLEANING AND DISPOSAL REQUIREMENTS

702-2.1 General.

a. Remove dirt, grease, rocks, sand, iron tuberculation, and other materials and obstructions from the pipeline.

b. Pipeline cleaning shall be performed by hydraulically propelled or high velocity jet cleaning equipment. Selection of equipment shall be based on such field conditions as access availability and type of debris removed.

c. Clean pipeline to restore a minimum of 95 percent of the original carrying capacity of the pipe, and suitably to permit lining of the pipeline.

d. The Contractor is required to dispose of any waste material removed from the pipeline in accordance with RIDEM, Local, State and Federal requirements. If testing of waste material is required by facility, the testing will be at the Contractor's expense.

e. The Contractor shall notify the Engineer of the proposed disposal location and requirements of that disposal facility to allow disposal of waste material.

f. The Contractor is required to store any waste material until all testing requirements of the proposed facility have been met and shall submit copies of all test results to the Engineer.

702-2.1 Submittals.

a. Provide detailed plans and descriptions outlining cleaning procedures and all provisions and precautions regarding the handling of existing stormwater flows.

CONSTRUCTION METHODS

702-3.1 Cleaning procedures.

a. The designated pipelines shall be cleaned using hydraulically propelled or high velocity jet cleaning equipment.

b. Selection of the equipment used shall be based on the conditions of the lines at the time the work commences.

c. Equipment and methods selected shall be satisfactory to the RPR.

d. Equipment selected for cleaning shall be capable of removing dirt, grease, rocks, sand, iron tuberculation and other deleterious materials and obstruction from the pipelines.

e. Sludge, dirt, sand rocks, grease and other solid or semi-solid material resulting from the cleaning operation shall be removed at the downstream manhole of the section which could cause line stoppages.

f. Solids or semi-solids resulting from the cleaning operations shall be removed from the site and disposed in accordance with all applicable federal, state and local regulations.

g. Cleaning Precautions

1. During all pipeline cleaning operations, satisfactory precautions shall be taken to protect the pipelines from damage that might be inflicted by the improper use of cleaning equipment.
2. Whenever hydraulically propelled cleaning tools, which depend upon water pressure to provide their cleaning force or any tools which retard the flow of water in the pipeline are used, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to public or private property.
3. When additional quantities of water from fire hydrants are necessary to avoid delay in normal working procedures, the water shall be conserved and not used unnecessarily.
4. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant nor shall a hydrant be used for the purpose described unless a vacuum break is provided.

h. Root Removal

1. Any visible roots shall be removed as required by the RPR.
2. Roots shall be removed in all sections by mechanical methods.
3. Chemical root treatment shall also be used as approved by the RPR.

i. The Contractor shall supply the necessary pumps, conduits and other equipment to divert/bypass the flow of stormwater and groundwater around the pipeline section in which work is to be performed.

j. Whenever flows in a pipeline are blocked, plugged or bypassed, sufficient precautions must be taken to protect the pipes from damage that might be inflicted by excessive surcharging.

k. Further, precautions must be taken to ensure that stormwater flow control operations do not cause flooding or damage to public or private property being served by the pipelines involved.

702-3.2 Disposal Procedures.

a. Waste Material encountered in the cleaning of pipelines can include sludge, sand, grit, debris, etc.

b. The Contractor is required to dispose of any waste material removed from pipeline, manholes, etc. within the project area in accordance with RIDEM, Local, State and Federal requirements. If testing of waste material is required by facility, the testing will be at the Contractor's expense.

c. The materials being removed from the pipelines and manholes during the cleaning process shall be disposed in such a manner as to not endanger the public, personnel or persons performing the work. All solids or semi-solids resulting from the cleaning operations shall be removed and disposed of off-site at a suitable facility meeting RIDEM, Local, State and Federal requirements at the Contractor's expense. If testing of waste material is required by facility, the testing will be at the Contractor's expense.

d. Debris must be transported in a watertight vehicle. The Contractor must ensure that no water leaks from the vehicle in any manner during the transportation. The Contractor is solely responsible for any cleanup of debris on route to disposal at a licensed disposal facility. The Contractor is also responsible for the payment of any fines that are incurred as a result of any incident which occurs during the transportation and/or disposal of the contents of the vehicle.

e. Disposal must be at a licensed facility that is regulated to accept and properly dispose of the debris that is normally expected to be in a stormwater collection system.

f. Flushing/decant water shall not be released back into the storm sewer system, nor allowed to remain in the storm sewer system. Once the sediment has settled from the flushing water, the resulting decant water may be:
    - Discharged to approved infiltration basins within airport site. Basins are within ¾ mile of project work area. Location will be coordinated with RPR. OR
    - May be disposed at facilities owned by the Warwick Sewer Authority. The Contractor will be responsible for all permits and fees required by the Warwick Sewer Authority.

METHOD OF MEASUREMENT

702-4.1 The footage of cleaned and flushed pipe to be paid for shall be the number of linear feet of storm sewer pipe cleaned, flushed and accepted, measured along the centerline of pipe from manhole or catch basin edge to manhole or catch basin edge. No separate measurement shall be made for the various pipe sizes involved.

BASIS OF PAYMENT

702-5.1 Payment will be made at the Contract unit price per linear foot for cleaned and flushed pipe of storm sewers designated on the plans. These prices shall be full compensation for furnishing all materials and for all preparation, cleaning of pipelines, bypassing stormwater/groundwater, dewatering, transport, and disposal of any waste materials, required testing by disposal facility, providing of Bill of Lading or material shipping records for tracking of waste material disposal, transport and disposal of flushing/decant water, permitting fees associated with disposal of waste material and flushing/decant water and for all labor, equipment, tools and incidentals necessary to complete the item.

Payment for cleaning and flushing of pipes (all sizes) shall be made under Item C-102.

END OF ITEM DX-702

Item DX-703 Cured-In-Place Pipe (CIPP) (Addendum No. 1)

DESCRIPTION

703-1.1 This item shall consist of the reconstruction of pipelines and conduits by the installation of a resin-impregnated flexible tube inside an existing partially deteriorated pipe by the various methods detailed below. When cured, the finished cured-in-place pipe (CIPP) will be continuous and tight fitting.

A partially deteriorated pipe is defined as capable of sustaining load, however, the CIPP must resist groundwater (infiltration), provide corrosion protection and seal root intrusions.

a. Inversion Method:

   Under this method, the resin-impregnated flexible tube is inverted into the original conduit by use of a hydrostatic head. The resin is cured by circulating hot water within the tube.

b. Pulled In Place Installation Method:

   Under this method, a resin-impregnated flexible fabric tube (ranging in diameter from 4 to 96 inches), is pulled-in-place inside the original conduit. Secondarily the tube is inflated by use of a hydrostatic head to invert an impermeable calibration hose. The resin is cured by circulating hot water throughout the length of the installed tube.

c. Ultraviolet (UV) Light Cured Resin System:

   Under this method, it is the intent of this specification to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated fiberglass material tube ("Liner") which when cured shall extend the full length of the original pipe and provide a structurally sound, smooth, joint less and watertight pipe. The resin shall be cured using ultraviolet light within the tube. The Cured-In-Place Pipe (CIPP) will be continuous and tight fitting.

d. Alternative Pulled In Place Installation Method:

   Under this method, the pulled-in-place tubing consists of a non-woven fiberglass and polyester felt reinforced with fiberglass unidirectional roving for strain stability and lined with polyethylene and/or nylon film on the outside and inside. Curing is accomplished by circulating steam to cure the resin into a hard impermeable pipe. When cured, the hardened liner extends from manhole to manhole in a continuous tight-fitting pipe-within-a-pipe, and shall be chemically resistant to domestic sewage gases and materials.

MATERIALS

703-2.1 General.

a. Inversion Method:

   1. Tube: the sewn tube shall meet the requirements of ASTM F-1216, Section 5.1 and shall not contain fiberglass continuous strand matt. The tube shall be constructed to withstand inversion pressures, have sufficient strength to bridge missing pipe, stretch to fit irregular pipe sections and shall invert smoothly around bends.

A) The wetout tubes shall have a uniform thickness that when compressed at installation pressures will meet or exceed the design thickness.

B) The tube shall be sewn to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during inversion.

C) The outside layer of the tube (before wetout) shall be polyethylene coated, a translucent flexible material that clearly allows inspection of the resin impregnation (wetout) procedure. The plastic coating shall hold the resin inside the tube without leakage, accommodate inversion, stretch to size, and shall not delaminate before, during, or after curing of the CIPP.

D) The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.

E) The wall color of the interior pipe surface of the CIPP after installation shall be a light reflective color so that a clear detail examination with closed circuit television inspection equipment may be made.

F) Seams in the tube shall be stronger than the felt fabric. Where the length requires joining, the sewn joint shall not be perpendicular to the long axis, but spirally formed and sewn.

G) The outside of the tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 feet. Such markings shall include the manufacturer's name or identifying symbol.

2. Structural Requirements:

A) The CIPP shall be designed as per ASTM F1216, Appendix Xl. The CIPP design shall assume no bonding to the original pipe wall. The Long-Term Flexural Modulus to be used in design shall be verified by independent testing. Such Long-Term Modulus shall not exceed 50% of the short-term values given in Section 5 herein. CIPP thickness shall not be less than that which is computed from the DR's given in Table 1, for resin systems with the physical properties shown.

B) The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occur during testing of field samples, new samples will be cut from the work. Any reoccurrence may cause rejection of the work.

C) The cured pipe materials (CIPP) shall conform to the structural standards, as listed below:

Flexural Strength	ASTM D-790	4,500 psi (min.)
Flexural Modules	ASTM D-790	250,000 psi (min.)

D) CIPP thickness design based on ASTM F1216.

b. Pulled-In-Place Installation Method

1. Unless otherwise specified, the Contractor will use an epoxy vinyl ester resin and catalyst system that is compatible with the pulled-in-place installation process. The minimum physical properties for the cured-in-place pipe shall be as follows:

Flexural Modulus of Elasticity	ASTM D790	300,000 psi
Flexural Strength	ASTM D790	5,000 psi

These values are for commonly used epoxy vinyl ester resins. Values for other types of thermoset resins shall be substituted to the RPR for approval where applicable and/or when otherwise recommended by the resin manufacturer or CIPP manufacturer.

2. The tube shall consist of one or more layers of flexible, needled felt or an equivalent nonwoven material. The material shall be capable of carrying epoxy vinyl ester resin, be able to withstand installation pressures and curing temperatures, and be compatible with the epoxy vinyl ester resin used. The approved epoxy vinyl ester resin shall be compatible with the application and pipeline environment and be able to cure in the presence of water.
3. The outer tube coating shall consist of a translucent material that allows for visual inspection and verification of proper resin impregnation.
4. The tube used shall be fabricated to a size that, when installed, will tightly fit the internal circumference and the length of the original conduit. The material(s) of construction shall be able to stretch to fit irregular pipe sections and negotiate bends.
5. The calibration hose shall consist of an impermeable plastic coating on a flexible needled felt or equivalent woven and/or non-woven material(s) that is capable of absorbing resin and is of a thickness to become fully saturated with resin.
6. The calibration hose shall be translucent to facilitate post installation inspection .
7. The calibration hose shall be fabricated to a size that, when installed, will tightly fit the internal circumference and the length of the resin saturated tube. Once inverted, the calibration hose becomes a part of the tube, and once properly cured shall bond to and become a permanent part of the tube.
8. The wall thickness of the finished product shall be designed in accordance with the guidelines of ASTM F1216.

c. Ultraviolet (UV) Light Cured Resin System

1. Fiberglass liner – At the time of manufacture, each lot of glass fiber tube liner shall be inspected for defects. At the time of delivery, the liner shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters, and deleterious faults.
   A. The Resident Project Representative (RPR) may at any time direct the manufacturer to obtain compound samples and prepare test specimens in accordance with the latest applicable ASTM standards.
2. Cured-in Place Pipe – The glass fiber tubing shall include an exterior and interior film that protects and contains the polyester, vinylester or ortho based resin used in the liner. The exterior film shall be provided with a UV light blocker foil.
3. Tube
   A. The wet out Tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the Design thickness.
   B. The Tube shall be sized such that when installed, will tightly fit the internal circumference and length of the original pipe.
   C. The glass fiber Tube shall be saturated with the appropriate resin using a resin bath system to allow for the lowest possible amount of air entrapment. An inner and outer material will be

added that are both impervious to airborne styrene, with the outer material also having UV blocking characteristics. If required by the liner manufacturer, the inner membrane will be removed after the installation and curing processes are completed.

D. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.
E. The liner should be seamless in its cured state to ensure homogenous physical properties around the circumference of the cured liner.

4. Resin - The resin system shall be polyester, vinylester, or orthothalic (either ppg or npg grade) depending on the choice of the engineer, with a catalyst system that when properly cured within the tube composite meets the physical properties of:

A.	Flexural Modulus (minimum)	725,000 psi.
B.	Flexural Strength (minimum)	15,000 psi.
C.	Long term E-modulus	675,000 psi.
D.	Long term tensile bending strength	13,500 psi.

The resin used with this product shall use UV light to cure the pipe. The liquid UV resin shall saturate the tube and produce a properly cured liner, which is resistant to abrasion due to solids, grit, and sand.

Polyester, vinyl ester and catalyst system shall comply with the following requirements and when properly cured meet the requirements of ASTM F1216. Resins created from recycled materials are not allowed.

5. Adheres to ASTM F 2019-11 (or latest edition).

6. General Corrosion Requirements – The UV GRP cured-in-place pipe system shall utilize resins which will withstand the corrosive effect of the existing residential, commercial, and industrial effluents, liquids and/or gases.).

7. Delivery, Storage, and Handling

A. Care shall be taken in shipping, handling and storage to avoid damaging the liner. Any liner damaged in shipment shall be replaced as directed by the OWNER at no additional cost to OWNER.
B. While stored, the CIPPL shall be adequately supported and protected. The UV Cure GRP CIPPL shall be stored in a manner as recommended by the manufacturer and as approved by the RPR.

8. Quality Control

A. No change of material, design values, or procedures as developed before bidding the contract may be made during the course of the Work without the prior written approval of the RPR.
B. All liner to be installed under this Work may be inspected at the manufacturer's plant(s) and wet-out facility for compliance with these Specifications by OWNER or RPR. The CONTRACTOR shall require the wet-out facility's cooperation in these inspections. The cost of inspection will be the responsibility of the OWNER.
C. At the time of manufacture, inspect each lot of liner for defects. At the time of delivery, the liner shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters, or deleterious faults.
D. The liner manufacturer facility shall have a Quality Management System registered with the current ISO 9001 standard.

E. The wet out of the liner must be done in an indoor environmentally controlled manufacturing setting. No onsite wet out will be allowed. OWNER or RPR may inspect this facility at the manufacturer's plant(s) for compliance with these Specifications.

9. Submittals – UV GRP Cured-In-Place Pipe - CONTRACTOR shall submit the following:

a) Summary table of CIPP material properties, including short-term flexural modulus of elasticity, 50-year flexural modulus of elasticity, short-term flexural strength (bending stress), 50-year flexural strength (bending stress), and chemical resistance. Certified test reports shall be submitted verifying each value as described below.

b) Independent third party certified laboratory test reports demonstrating that the exact resin/liner combination to be used for this project meets the requirements for initial structural properties and chemical resistance (performed in accordance with ASTM F1216).

c) Independent third party certified laboratory test reports demonstrating that the exact resin and liner to be used for this project has been tested for long-term flexural modulus of elasticity and long-term flexural strength (i.e. 10,000 hour creep testing performed in accordance with ASTM 2990 or DIN 761 for design conditions applicable to this project). When filled resins are proposed, complementary data of the same data for unfilled resin shall also be provided. If the data submitted is not for the exact liner to be used on this project, submit a detailed description of the physical properties of both the liner used in the test and the liner to be used for this project to demonstrate that the two liners are comparable in terms of physical properties.

d) Test shall be performed for 10,000 hours under test conditions and loadings described below. The data points from 1,000 hours to 10,000 hours, or such other time period as determined by the RPR based on the curve or slope of the plotted data, of the Long-term Flexural Modulus shall be extrapolated using a Microsoft Excel log-log scale linear regression analysis to determine the minimum service life performance of the resin-tube.

e) Testing shall be conducted at:
Temperature 21°C to 25°C
Relative humidity: 50% minimum
Load: Load shall be calculated at 0.25% of the short term E-modulus as tested per ASTM D790 or ISO 178, or as approved by RPR.

f) The name of the liner and resin manufacturer, the location of the facility where each was manufactured, and a list of appurtenant materials and accessories to be furnished.

g) Structural design calculations and specification data sheets listing all parameters used in the liner design and thickness calculations based on Appendix X1 of ASTM F2019 for each pipe segment with less than 10% ovality. If the ovality is 10% or greater, use either the ASCE or the WRc Sewerage Rehabilitation Manual, Type II Design, Section 5.3.2.iii for non-round pipe.

h) The quality management system for the wet-out facility must be registered in accordance with and conform to the current ISO 9001 standard. It must ensure that proper materials and amounts are used in the resin saturation process and in liner shipping and storage. At a minimum, the quality control documentation shall include resin lot numbers, volumes of resin, catalyst, enhancers, date of wet-out, storage / transportation controls, and quality assurance procedures.

i) Installation quality control plan, including bypass pumping plans, mainline storm sewer cleaning plans, cleanliness requirements, liner shot plan and sequence, liner installation standard procedures (including, but not limited to, minimum / maximum allowable installation pressures and speeds certified by the liner manufacturer), intermediate manhole exposed liner restraining method, light train sizing, temperature monitoring plan, odor control

procedure, and plan to manage flow to/from laterals during lining.

j) Curing schedule for each lining segment.

k) Available standard written warranty from the manufacturer.

l) The submittal of a Company's Health and Safety Program and all required documents to demonstrate and prove that all employees are Confined Space Entry trained and Rescue trained as well. A site-specific Health and Safety Program will be created and submitted for review. All CONTRACTOR employees shall have all training documents submitted prior to work commencing for review.

10. Warranty – All lining work shall be fully guaranteed by the CONTRACTOR for a period of 1 year from the date of Final Acceptance unless otherwise stipulated in writing by the OWNER prior to the date of Conditional Acceptance. During this period, all serious defects discovered by the OWNER or ENGINEER shall be removed and replaced by the CONTRACTOR in a satisfactory manner at no cost to the OWNER. In addition, the OWNER may conduct independent television inspections, at its own expense, of the lining Work at any time prior to the completion of the guarantee period:

d. Alternate Pulled-In-Place Installation Method

1. The finished liner shall incorporate thermosetting materials which will withstand the corrosive effects of the normal existing effluents. The fully cured-in-place pipe liner shall conform to the minimum structural standards as follows:

Tensile Strength at Yield	ASTM D638	9,000 psi
Flexural Strength	ASTM D790	20,000 psi
Modulus of Elasticity	ASTM D790	900,000 psi
Long Term Modulus of Elasticity	ASTM D2990	450,000 psi

2. The tube shall consist of a combined fiberglass and polyester felt fiber fabric with sufficient needling, cross-lapping, and unidirectional roving to yield a minimum breaking strength of 430 pounds per circumferential/linear inch, free from tears, holes, cuts, foreign materials, and other defects. Tubing contains a dual thermal fused lap seam which must be tested using ASTM D5035 at a nominal value of 68 lbs/linear inch with no failure.

3. The liner film system shall contain inner nylon blend heat stabilized CTC #50/50HS, or equivalent tubing of at least five (5) mils thick sleeved through and over the fiber fabric tubing. Outer nylon blend heat stabilized CTC #50/50HSP which has RPRed oriented perforations.

4. The approved resin shall be a corrosion resistant polyester isophthalic or a premium corrosion resistant vinyl ester resin which has excellent cure properties in an aqueous environment.

5. The catalyst shall be compatible with the resin and the other components used in the manufacture of the liner. The resin shall be mixed with a sufficient amount of catalyst to create a compound that will generate the required physical properties upon cure. In addition, the compound shall be able to cure in the presence of water and in the absence of heat.

6. Saturated but uncured material shall have a minimum tensile strength of no less than 350 lbs/inch, with the strain not directly on the liner material

7. The liner shall be fabricated to a size that, when installed, will neatly fit the internal circumference of the storm sewer to be lined. Allowance for circumferential stretching of the liner during insertion shall be made as per standards. The liner thickness shall be designed to adequately resist all external pressures and conditions. Under no circumstances shall the liner be

less than the liner manufacturer's design criteria. The length of the liner shall be that deemed necessary to effectively carry out the insertion and seal of the liner at the inlet and outlet manholes. The Contractor shall verify the lengths in the field before cutting the liner to length. Prior to the start of work, the Contractor will be required to submit design calculations for wall thickness, along with the types of resins and cure times for each length and size of storm sewer to be lined, to the RPR. These calculations shall not include any additional strength deemed to exist from the host or carrier pipe being lined.

CONSTRUCTION METHODS

703-3.1 Preparatory procedures.

a. Prior to entering access areas such as manholes, and performing inspection or cleaning operations, an evaluation of the atmosphere to determine the presence of toxic or flammable vapors or lack of oxygen must be undertaken in accordance with local, state, or federal safety regulations.

b. Television Inspection of Pipeline: A television inspection and video tape recording of the storm sewer must be performed a maximum of seven (7) days prior to the setting up of the liner insertion equipment at the site. This inspection will be performed utilizing a radial eye camera to determine the latest condition of the storm sewer and to accurately identify the location of active service connections.

c. Cleaning of Pipeline: All internal debris should be removed from the original pipeline. Gravity pipes should be cleaned with hydraulically powered equipment, high-velocity jet cleaners, or mechanically powered equipment as per NASSCO Recommended Specifications for Sewer Collection System Rehabilitation. Pipeline cleaning prior to installing CIPP shall be in accordance with Item DX-702 but shall be incidental to Item DX-703.

d. Mineral Deposit Removal: Mineral Deposits shall be removed to allow a streamlined flow for the cured-in-place pipe. For pipes of diameter 30” or greater, mineral deposits shall be cleaned to flush with the pipe channel by person entry. For pipes of diameter 27” or smaller, mineral deposits shall be removed with a robotic cutter to within ½” of flush with the pipe channel.

e. Inspection of Pipelines: Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles, and service connections by closed circuit television. The interior of the pipeline shall be carefully inspected to determine the location of any conditions which may prevent proper installation of CIPP into the pipelines, such as protruding service taps, collapsed or crushed pipe, and reductions in the cross-sectional area of more than ten percent (10%). These conditions should be noted so that they can be corrected. A video tape and suitable log shall be kept for later reference by the Owner.

f. Line Obstructions: It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, crushed or collapsed pipe, and reductions in the cross-sectional area of more than ten percent (10%) that may hinder or prevent the installation of the CIPP into the pipeline and it cannot be removed by conventional storm sewer cleaning equipment, then the Contractor shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Owner's representative prior to the commencement of work and shall be considered as a separate pay item.

g. If necessary, Contractor is responsible to remove and dispose of top portion of the drainage structures and rebuilding of drainage structures to match existing conditions including materials and elevations to allow access to install CIPP Liner. Rebuilt portions of the manhole must be in accordance with the

specifications on Detail A4/CU501 or A4/CU502.

703-3.2 Flow control.

On all storm sewer lines which are to be reconstructed with cured-in-place pipe the normal flow of storm water and groundwater shall be controlled. The flow shall be reduced as required to permit proper cleaning of the storm sewer lines by pumping/bypassing of the flows.

Throughout all operations, the Contractor shall maintain storm sewer flow on the upstream side of the section being worked. The Contractor shall be required to pump around sections being cleaned such that no backups occur on the upstream side of that section. The word "section" shall mean any length of storm sewer between two (2) adjacent manholes.

When pumping/bypassing is required, the Contractor shall supply the necessary pumps, conduits and other equipment to divert the flow around the section in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flows plus additional flow that may occur during periods of rain storms. The Contractor shall be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system.

All hot water used in the curing of the Cured in Place Liner (CIPP) shall not be discharged into the stormwater system. The Contractor is required to remove and dispose of the hot water removed from pipeline, manholes, etc. within the project area in accordance with RIDEM, Local, State and Federal requirements.

703-3.3 Installation procedures.

a. Access to water hydrants or other water sources for cleaning, inversion, and all other work items requiring water, will be the responsibility of the Contractor. Coordination as to water access shall be made prior to installation of CIPP with the Owner and RPR.

b. Inversion Methods

   1. CIPP installation shall be in accordance with ASTM F-1216, Section 7, with the following additional requirements:

      a) Resin Impregnation - The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used. To ensure a thorough wet-out, the point of vacuum shall be no further than 25 feet from the point of initial resin introduction. After vacuum in the tube is established, the vacuum points shall be no further than 75 feet from the leading edge of the resin. The leading edge of the resin slug shall be as near to perpendicular as possible. A roller system shall be used to uniformly distribute the resin throughout the tube.

      b) No pull-in method shall be utilized. The unrolling action of the tube during inversion is necessary to minimize gouging and stretching and accommodating bends encountered or non-circular sections accommodated.

      c) Temperature gauges shall be placed to determine the temperature of the incoming and outgoing water from the heat source. Another such gauge shall be placed inside the tube at the remote end to determine the temperature at that location during the cure cycle.

      d) Curing shall be accomplished by utilizing water under hydrostatic pressure of a vertical standpipe.

c. Pulled In Place Installation

1. The Contractor shall designate a location where the tube will be impregnated with resin using a vacuum and distribution roller system to thoroughly saturate the tube prior to installation. The Contractor shall allow the Owner to inspect the materials and the "wet-out" procedure .
2. Perforation of Resin-Impregnated Tube: Prior to pulling the resin saturated tube in place, the outer impermeable plastic coating shall be perforated to permit resin to be forced through the perforations and out against the existing conduit by the force of the hydrostatic head or air pressure against the inner wall of the calibration hose. The perforation shall be done after fabric tube impregnation with a perforating roller device at the point of manufacture or at the job site.
3. Pulling Resin-impregnated Tube Into Position: The wet-out tube shall be pulled into place using a power winch. The saturated tube shall be pulled through an existing manhole or other approved access to fully extend it to the next designated manhole or termination Point.
4. Hydrostatic Head Calibration Inversion: The calibration hose shall be inserted into the vertical inversion standpipe and attached at the lower end of the inversion standpipe so that a leak proof seal is created. The resin-impregnated tube should also be attached to the standpipe so that the calibration hose can invert into the center of the resin impregnated tube. The inversion head should be adjusted to be of sufficient height to cause the calibration hose to invert through the entire length of tube and hold the resin-impregnated tube tight to the pipe wall, producing dimples at side connections.
5. After installation is completed, suitable heat source and water recirculation equipment are required to circulate heated water throughout the section to uniformly raise the water temperature above the temperature required to effect a cure of the resin.
6. The heat source should be fitted with suitable monitors to measure the temperature of the incoming and outgoing water supply. Temperature sensors should also be placed between the resin-impregnated tube and the host pipe invert at both termination points to monitor the temperatures during cure.
7. Initial cure will occur during temperature heat-up and is completed when exposed portions of the CIPP appear to be hard and sound and the remote temperature sensor indicates that the temperature is of a magnitude to realize an isotherm or cure in the resin. After initial cure is reached, the temperature should be raised to the post-cure temperature and held there for a period recommended by the resin manufacturer or CIPP manufacturer. The curing of the CIPP must take into account the existing pipe material, the resin system, and ground conditions (temperature, moisture level, and thermal conductivity of soil).
8. The new pipe shall be cooled to a temperature below 100^0F (38^0C) before relieving the static head in the inversion standpipe. Cool-down may be accomplished by the introduction of cool water into the inversion standpipe to replace water being drained from a small hole made in the downstream end. Care should be taken so as to cool down the CIPP in a controlled manner as recommended by the resin manufacturer or CIPP manufacturer.

d. Ultraviolet (UV) Light Cured Resin System

1. The approved system must utilize an outer and inner film to ensure that the liner remains intact during the insertion process and to protect the resin at all times during the installation and curing process from water and debris contamination, and resin migration.
2. A constant tension winch should be used, as specified by the liner manufacturer, to pull the glass fiber liner into position in the pipe. The liner shall have a longitudinal fiberglass reinforcement band which runs the entire length of the liner ensuring that the pulling force is transferred to the

band and not the fiberglass liner. Once inserted, end plugs shall be used to cap each end of the glass fiber liner to prepare for pressurizing the liner. The end plugs shall be secured to prevent them from being expelled due to pressure. Liner restraints shall be used in manholes.

3. A slip sheet shall be installed on the bottom one third to one half of the pipe prior to liner insertion (if it is not already part of the manufactured outer film of the liner), for the purpose of protecting the liner during insertion and reduce the drag, or as recommend by the liner manufacturer.
4. The glass fiber liner shall be cured with UV light sources at a constant inner pressure. When inserting the curing equipment in the liner, care shall be taken to not damage the inner film material.
5. The UV light sources shall be assembled according to the manufacturer's specifications for the liner diameter. For the liner to achieve the required water tightness and specified mechanical properties, the following parameters must be controlled during the entire curing process, giving the RPR a record of the curing parameters over every segment of the entire length of the liner. This demonstrates that the entire liner is cured properly. The recording shall include:
   a) Curing speed
   b) Light source working & wattage
   c) Inner air pressure
   d) Curing temperatures
   e) Date and time
   f) Length of liner
6. This shall be accomplished using a computer and database that are tamper proof. During the curing process, infrared sensors shall be used to record curing data that will be submitted to the RPR with a post CCTV inspection.
7. The optimal curing speed, or travel speed of the energized UV light sources, is determined for each length of liner based on liner diameter, liner thickness, and exothermic reaction temperature. Curing speed shall be as recommended by the manufacturer and determined by contractor based on various site-specific field conditions.
8. If the liner is manufactured with a removable inner film, the inner film material shall be removed and discarded after curing to provide optimal quality of the final product.

e. Alternate Pulled In Place Installation Method

1. Liner Impregnation: The liner shall be resonated in a controlled environment and shipped to the Contractor for installation. A resin and catalyst system compatible with the requirement of this method shall be used. The quantities of the liquid thermosetting materials shall be as per manufacturer's standards to provide the lining thickness specified.
2. Pulling Resin-Impregnated Tube Into Position: The chemical impregnated shall be inserted through the existing manhole by means of a winch cable. Once insertion is complete, air and steam manifolds are attached at both ends of the liner. Compressed air is then introduced, thereby inflating and pressing the liner material against the inner walls of the storm sewer pipe being lined.
3. Curing of Liner: After inflating is completed, the Contractor shall supply a suitable heat source (steam boiler). The equipment shall be capable of delivering steam to the far end of the liner, to uniformly raise the temperature required to effectively cure the resin. The heat source shall be fitted with suitable monitors to gauge the pressure of the incoming and outgoing steam.

4. Temperature gauges shall be placed to determine the temperature of the incoming and outgoing water from the heat source. Another such gauge shall be placed inside the tube at the remote end to determine the temperature at that location during the cure cycle.

5. Initial cure shall be deemed to be completed when inspection of the exposed portions of the liner shows it to be hard and sound. The cure period shall be of a duration recommended by the manufacturer as modified for this process. During this cure time, steam shall pass through the liner allowing an even thermal transfer. After the curing has been completed, the air and steam manifold at the downstream manhole is removed and compressed air is pushed through from the upstream manifold to remove any residual water and condensate.

703-3.4 Testing requirements.

a. Chemical Resistance: The CIPP shall meet the chemical resistance requirements of ASTM F-1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical testing requirements.

b. Hydraulic Capacity: Overall, the hydraulic profile shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

703-3.5 Inspection.

a. For each installation length designated by the Owner or as ordered by the RPR, the Contractor shall prepare no less than two (2) CIPP samples from one or both of the following two methods:

   1. The samples shall be cut from a section of cured CIPP at an intermediate manhole or at the termination point that has been installed through a like diameter section of pipe or other tubular restraining means which has been held in place by a suitable heat sink, such as sandbags .

   2. The sample shall be fabricated from material taken from the tube and the resin/ catalyst system used, and cured in a clamped mold, placed in the down tube with the heated circulating water. This method is also recommended when large diameter CIPP is installed that may otherwise not be prepared with a tubular restraint.

b. CIPP samples shall be prepared and physical properties tested in accordance with ASTM F 1216, Section 8.1 using either method proposed. The flexural modules must meet or exceed the value used in design in Section 5, structural requirements for the DR furnished in Table #1.

c. Leakage testing of the CIPP shall be accomplished during cure while under a positive head. CIPP products in which the pipe wall is cured while not in direct contact with the pressurizing fluid (e.g., a removable bladder) must be tested by an alternative method approved by the Owner.

d. Visual inspection of the CIPP shall be in accordance with ASTM F-1216, Section 8.4.

703-3.6 Pipeline cleaning

a. Refer to Technical Specification Item DX-702, Pipeline Cleaning, for waste material disposal as well as flushing/decanting water disposal requirements. Pipeline cleaning prior to installing CIPP shall be in accordance with Item DX-702 but shall be incidental to Item DX-703.

703-3.7 Completion procedures.

a. Flow Control: Plugging, pumping and bypassing operations are terminated and normal storm water flow is restored.

b. Cleanup: After all work has been completed, the Contractor will clean up the project area. Excess material and debris will be disposed of by the Contractor.

c. After the work is completed, the Contractor will provide the Owner with a videotape showing the completed work including the restored conditions.

METHOD OF MEASUREMENT

703-4.1 The footage of cured-in-place pipe to be paid for shall be the number of linear feet of storm sewer pipe reconstructed with cured-in-place pipe and accepted, measured along the centerline of pipe from manhole or catch basin edge to manhole or catch basin edge. Separate measurement shall be made for the various pipe sizes involved.

BASIS OF PAYMENT

703-5.1 Payment will be made at the Contract unit price per linear foot for cured-in-place pipe of storm sewers of the sizes designated. These prices shall be full compensation for furnishing all materials and for all preparation, hauling, storage and installation of these materials, cleaning of pipelines, testing, transport, and disposal of any waste materials, providing of Bill of Lading or material shipping records for tracking of waste material disposal, transport and disposal of flushing/decant water, permitting fees associated with disposal of waste material and flushing/decant water, dewatering, bypass pumping, removal transport and disposal of the hot water utilized to cure CIPP liner, removal and disposal of top portion of the drainage structures and rebuilding of drainage structures and for all labor, equipment, tools and incidentals necessary to complete the item.

Payment will be made under:

Base Bid:
Item DX-703-5.1 Install Cured-In-Place-Pipe (42-inch to 48-inch Diameter) - Per Linear Foot

Add Alternate No. 1:
Item DX-703-5.2 Install Cured-In-Place-Pipe (12-inch Diameter) - Per Linear Foot
Item DX-703-5.3 Install Cured-In-Place-Pipe (18-inch Diameter) - Per Linear Foot
Item DX-703-5.4 Install Cured-In-Place-Pipe (24-inch Diameter) - Per Linear Foot
Item DX-703-5.5 Install Cured-In-Place-Pipe (30-inch Diameter) - Per Linear Foot
Item DX-703-5.6 Install Cured-In-Place-Pipe (36-inch Diameter) - Per Linear Foot

END OF ITEM DX-703

Item DX-753 Manhole Rehabilitation (Addendum No. 1)

DESCRIPTION

753-1.1 Scope

a. The work under this Section includes the rehabilitation of existing drainage structures throughout the project and/or service area.

b. This Section covers the cleaning, repair, structural restoration, and rehabilitation of existing structures as required to eliminate leakage into the structures and to restore structural integrity. The work includes but is not limited to: cleaning entire structure interior, repair/reconstruction of the failed sections of the structure; stopping active leaks through manhole walls and joints; preparation of surfaces to receive the application of coatings designed to resist the affects of hydrogen sulfide gas or the affects of aging; and, application of those coatings to provide a monolithic liner on the inside walls of the manhole as specified.

c. All ancillary work shall be constructed properly in accordance with the Drawings and Specifications. All defects shall be remedied to the Resident Project Representative (RPR)'s satisfaction prior to approval.

753-1.2 Qualifications

a. The Contractor performing the work, as a company, must have at least five years of experience coating manholes with cementitious mortar, and shall have successfully installed a cementitious mortar lining product in a minimum of 2,000 manholes as documented by verifiable Owner references.

b. The Contractor performing the work shall be fully qualified, experienced and equipped to complete this work expeditiously and in a satisfactory manner and shall be an approved installer as certified and licensed by the product manufacturer.

c. The Contractor's proposed superintendent/foreman for the work under this Contract shall have successfully installed a cementitious lining product in a minimum of 1,000 manholes as documented by verifiable Owner references. The Contractor shall submit information to demonstrate that the experience requirements are met.

d. The cementitious product shall have been manufactured for installation specifically in manholes for at least ten years and shall have been installed in at least 10,000 manholes. References that are documented and that can be verified shall be submitted to demonstrate that the cementitious products meet these requirements. Contact names and numbers shall be included with the references.

e. Approved cementitious products are listed in these specifications. Even though the product may be listed as approved, the product manufacturer and Contractor(s) shall still meet the experience requirements specified above, or the products and Contractor will not be approved for this work.

753-1.3 Submittals

a. One pdf of all submittals specified herein shall be submitted to the RPR.

b. The Contractor shall submit complete shop drawings of the manhole lining system to demonstrate compliance with these specifications, to show materials of construction and to detail installation procedures. Testing procedures and quality control procedures shall also be submitted.

c. Certifications that the manhole lining was manufactured in accordance with these specifications and the appropriate ASTM standards shall be submitted with each shipment.

d. For all products to be used for manhole rehabilitation, the Contractor shall submit manufacturer documents containing product technical information, ASTM test results and certification, application procedures and specifications for approval, and testing and quality control procedures.

e. References for the Contractor, superintendent and products shall be submitted to verify the specified experience.

f. The Contractor shall submit a plan for bypassing flow around the work area and facilities where flows must be interrupted to complete the work. The plan shall be reviewed by the RPR and shall be acknowledged as acceptable before any work is started.

753-1.4 Warranty

a. The materials used for the project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the cementitious liner material to be free from defects in raw materials for 2 years from the date of installation and acceptance by the Owner. The Contractor shall warrant the liner installation for a period of 2 years from final acceptance.

MATERIALS

753-2.1 Cementitious Mortar Lining System

a. The Contractor shall line the interior of the manholes with a cementitious mortar lining system where specified in accordance with the specifications of the manufacturer.

b. The cementitious manhole lining system for the interior of manholes shall be a monolithic system suitable for use as a trowel- or spray-applied monolithic surfacing in drain manholes. The cementitious lining system shall be one of the following specified products or approved equal:

- Strong Seal MS-2A, MS-2C, or High Performance by Strong Seal Systems
- QM-1s Restore or Aluminaliner by Quadex
- Cemtec Silatec MSM or CAM by A.W. Cook Cement
- Sewpercoat PG by Kerneos, Inc.
- Permacast MS-10,000 or CR-9000 by Action Products Marketing Corp.
- PerpetuCrete MSC or CA by Protective Liner Systems
- Mainstay ML-72, ML-CA or ML-PF by Madewell
- Reliner MSP or Maximum CA Cement by Standard Cement Materials

Where hydrogen sulfide resistance is required and when specified by the RPR, the cementitious lining system shall be a 100% calcium aluminate product (product comprised of calcium aluminate cement and calcium aluminate aggregate). Partial calcium aluminate products (or blended products) shall not be considered an equal and shall not be approved. The hydrogen sulfide resistant 100% calcium aluminate products shall be one of the following products or approved equal:

- High Performance by Strong Seal Systems
- Aluminaliner PF by Quadex
- Sewpercoat PG by Kerneos, Inc.
- Mainstay ML-PF by Madewell
- Cemtec HITECH 100 by A.W. Cook Cement
- Maximum CA Plus Cement by Standard Cement Materials

c. The cementitious lining system shall be a pumpable cement mixture. The lining shall be installed via low-pressure application only. The materials shall be suitable for all the specified design conditions. Trowel application may be approved by the RPR.

d. The cementitious lining shall provide a minimum service life of 25 years. The cured cementitious lining shall be continuously bonded to all the brick, mortar, concrete, chemical sealant, grout, pipe and other surfaces inside the drain manhole. Provide bond strength data on cured, cementitious lining based on ASTM test methods referenced herein.

e. The cementitious liner when cured shall have the following minimum characteristics at 28 days as measured by the applicable ASTM standards referenced herein

- Minimum compressive strength of 6,000 psi
- Minimum bond strength of 130 psi
- Shrinkage of less than 0.05%

f. The cementitious lining shall be compatible with the thermal condition of the existing drain manhole surfaces. Surface temperatures will range from 20°F to 100°F. Provide test data on shrinkage of the cementitious lining based on the ASTM standards referenced herein.

g. Chemical sealants or grouts used to seal active manhole leaks, to patch cracks, to fill voids and to otherwise prepare the manhole surfaces for the lining installation shall be suitable for the intended purpose and shall be compatible with the lining as certified by the manufacturer

h. External Coating: Whenever the outside of exposed manholes walls are specified to be coated with a special exterior cementitious mortar product, the exterior mortar shall be HB2 Repair Mortar by ThoRoc, SikaTop 123 by Sika Corporation, ChemSeal by ChemMasters, or approved equal. The installed thickness shall be at least 2 inches, toweled smooth after application.

CONSTRUCTION METHODS

753-3.1 Delivery, storage and shipping

a. Care shall be taken in shipping, handling and placing to avoid damaging the lining products. Any lining product damaged in shipment, showing deterioration, or which has been exposed to any other adverse storage condition that may have caused damage, even though no such damage can be seen, shall be marked as rejected and removed at once from the work.

b. While stored, the lining products shall be adequately packaged and protected. The lining products shall be stored in a manner as recommended by the manufacturer

753-3.2 Flow Control

All drainage structures which are to be reconstructed, the normal flow of stormwater and groundwater shall be controlled. The flow shall be reduced as required to conduct the work by pumping/bypassing of the flows.

Throughout all operations, the Contractor shall maintain storm sewer flow on the upstream side of the structure being worked. The Contractor shall be required to pump around structures being rehabilitated such that no backups occur on the upstream side of that section.

When pumping/bypassing is required, the Contractor shall supply the necessary pumps, conduits and other equipment to divert the flow around the structure in which work is to be performed. The bypass system shall be of sufficient capacity to handle existing flows plus additional flow that may occur during periods of rain storms. The Contractor shall be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system.

753-3.3 Installation – Cementitious Lining

a. The Contractor shall notify all property owners who discharge stormwater directly to the manhole being rehabilitated 72 hours in advance, giving the date, start time and estimated completion time for the work being conducted and the impacts to the property owner.

b. Water for use on this project will be available from selected hydrants. The contractor shall coordinate the hydrant location with the RPR and RIAC.

c. The Contractor shall clean each drain manhole to be surfaced and shall dispose of any resulting material. The cleaning shall be performed using a high power jet wash at a minimum of 3500 psi water pressure to remove all dust, biological growths, grease, oil, paint or any other surface contaminants or coatings. The tip of the nozzle shall be a maximum of 4 inches from the manhole wall during cleaning to ensure that 3,500 psi is being applied to the walls.

d. Coatings that cannot be removed shall be sanded with coarse sand paper to roughen the surface sufficient to obtain and insure adequate bonding of the lining. Roots shall be removed by manually cutting the roots from inside the manhole.

e. The Contractor shall conduct a visual inspection of each manhole after it is cleaned. All active, hydrostatic infiltration leaks shall be plugged or sealed with an appropriate grout compatible with the cementitious lining. Injection grouting may be required to seal active leaks including leaks in existing invert channels and benches. All loose mortar and rubble of existing walls, benches and inverts shall be removed.

f. Prior to installing the lining, the RPR along with the Contractor must inspect and approve the surface preparation work. The Contractor shall notify the RPR when the manholes are ready for inspection. The Contractor is responsible for ensuring proper preparation and installation conditions including temperature and moisture regardless of the findings by the RPR during his inspection. The manhole lining shall be completed immediately after the inspection, or the manhole may need to be re-cleaned prior to spraying to remove accumulated debris on the benches and walls.

g. The Contractor shall prepare the manhole to receive cementitious lining as necessary by reshaping and repairing benches, inverts, and walls where required including smoothing out irregular shaped corbel and chimney sections prior to spray application. All interior surfaces shall be prepared as recommended by the manufacturer. Minimum requirements are as listed below.

1. All cracks and other voids must be repaired and filled with suitable non-shrinking cements, sealants or grouts, including all voids between the existing drain pipes and manhole walls.
2. All patches shall be smooth and even with the manhole wall.
3. All voids around existing manhole rungs/steps shall be filled.
4. All surfaces shall be suitably prepared for the required bonding of the cementitious lining as recommended by the manufacturer.

h. A complete, watertight seal shall be provided at pipe and manhole wall connections including filling in all voids around the connection and completely covering the connection with an approved non-shrink grout. Contractor shall submit details of how the watertight connections will be made to the RPR for review and approval. The invert channel shall be coated with an appropriate quick-set grout product in complete accordance with the manufacturer’s instructions.

i. When CIPP is installed in the connecting drain(s), the invert channel shall be coated with an approved grout to build up the invert channel to the invert elevations of the new cured- in-place pipe lining (CIPP); to fill all voids, cracks, holes, etc.; and to form a smooth flow channel. The entire channel shall be coated. The Contractor shall submit details of the proposed grout for this application.

j. The Contractor shall furnish and place the cementitious lining in each manhole as shown in the Details. The installation of the lining shall be in complete accordance with the applicable provisions of ASTM and the manufacturers' specifications.

k. The Contractor shall bypass pump flows around the manhole when the work is being performed. Contractor shall submit a detailed bypass pumping plan to the RPR prior to starting any work.

l. The walls and benches shall be coated to the required minimum 1-inch thickness by spray-on methods. Invert channels shall also be coated as specified herein. Cementitious mortar may be trowel-applied if approved by the RPR. Cementitious mortar lining shall be monolithically applied in one pass or application and shall be troweled smooth after application. The manhole lining shall not be installed until all required main drain rehabilitation and other manhole rehabilitation work are complete.

m. The cementitious lining shall cover the complete interior of the existing drain manhole including the benches (shelves). The lining shall effectively seal the interior surfaces of the drain manhole and prevent any penetration or leakage of groundwater infiltration. When cured, the lining shall form a continuous, tight-fitting, hard, impermeable surfacing which is suitable for sewer and drain system service and chemically resistant to any chemicals or vapors normally found in domestic sewage or drain systems.

n. The Contractor shall plug off and/or protect the connecting pipes while coating the manhole walls to prevent any material from washing down the drains. If material enters the drain pipes, the Contractor will be required to clean the drains from manhole to manhole to remove all material and then televise the drain to demonstrate that all material is removed at no cost to the Owner.

o. The Contractor shall take precautions to avoid damage or flooding to public or private property being served by the manhole being rehabilitated. The Contractor shall be responsible for all flooding and pay for cleanup from flooding to the satisfaction of the property owner. The Contractor shall document all backups and submit documentation to the RPR including the reason for the backup, the time and date of the backup, the property owner's name, address and phone number, the resolution to problem, the time and date the problem was resolved, and any special cleanup work that had to be performed. This required documentation shall be submitted for all backups regardless of when they occur. All cleanup shall be completed within 4 hours of the backup.

p. External Coating: Whenever the outside of exposed manholes walls are specified to be coated with a special exterior cementitious mortar product, the exterior mortar shall be HB2 Repair Mortar by ThoRoc, SikaTop 123 by Sika Corporation, ChemSeal by ChemMasters, or approved equal. The existing surface shall be completely cleaned and all loose material removed prior to applying the cementitious material. Installation shall be in strict accordance with the manufacturer's recommendations including utilizing any required bonding agents and providing proper curing conditions. The installed thickness shall be at least 2 inches, toweled smooth after application.

753-3.4 Acceptance Tests – Cementitious Mortar Lining System

a. Field acceptance of the cementitious lining shall be based on the RPR's field inspections and evaluation of the appropriate installation and curing test data. The cementitious lining shall provide a continuous monolithic surfacing with uniform thickness throughout the manhole interior. If the thickness of the lining is not uniform or is less than specified, it shall be repaired or replaced at no additional cost to the Owner.

b. If the RPR has to enter the manholes to inspect the work, the Contractor shall provide forced air ventilation, gas monitors and detectors, harnesses, lights, confined space entry permits, etc. for the RPR or Owner to enter the manhole and perform the inspection in complete accordance with OSHA requirements at no additional cost to the Owner.

c. Samples shall be taken of the installed liner each day that cementitious lining is installed as follows: one sample if one to five manholes were coated that day, two samples if six to ten manholes were coated that day, three samples if eleven to fifteen manholes were coated that day, and four samples if sixteen or more manholes were coated that day. Samples shall be taken at equally spaced intervals throughout the day. The frequency of tests may be increased by the RPR and performed by the Contractor at no additional cost to the Owner when the required tests show that the installed lining does not meet the specifications.

d. Samples shall be cube samples. At least six cubes shall be taken for each sample for testing. All cube samples shall be taken in the field from the material being sprayed. The Contractor shall show the samples to the RPR each day and the RPR shall initial the samples for delivery to the testing laboratory. The Contractor shall properly take and store the samples and shall deliver the samples to the testing laboratory. The laboratory shall document that they received the initialed samples. The tests shall be performed by an independent testing laboratory. All costs associated with the tests shall be paid for by the

Contractor. The test results shall be submitted to the RPR immediately when available, no later than 30 days after the lining is installed, or payment will be withheld.

The samples shall be tested in accordance with the applicable ASTM standards to verify that the installed liner meets the compressive strength requirements specified herein and the lining manufacturer's published data on the product. Tests shall include 7-day and 28-day strength tests (3 tests/cubes for each time period for each sample). Shrinkage and bond strength tests shall be performed on each batch or lot of material shipped to the Contractor.

e. All manholes shall be tested via vacuum testing (unless specified otherwise) when all manhole rehabilitation work to that manhole is complete. Manholes shall not be vacuum tested until at least 7 days after the cementitious lining was installed. Vacuum testing shall be performed in accordance with ASTM C-1244 except that the minimum test time shall be 1 minute. The testing shall be paid for by the Contractor and be included in the bid price for manhole lining. The RPR or Owner shall be present for all testing. The Contractor shall notify the RPR 48 hours prior to testing.

The Contractor shall submit test reports of the testing which include the project name, manhole tested, data on testing (vacuum pressure, test duration, etc.), and whether the manholes passed or failed the test. Test reports must be submitted for failed tests with the reason for failure noted on the report. The RPR shall sign all test reports to document that the RPR was present for the testing. Any manhole that fails the vacuum test shall be repaired and retested immediately by the Contractor at no additional cost.

f. There shall be no groundwater infiltration or other leakage (active or previously active) through the manhole walls, benches, inverts or pipe connections at the manholes after it has been lined. If leakage is found, it shall be eliminated with an appropriate cement mortar, grout or sealant as recommended by the manufacturer and approved by the RPR at no additional cost to the Owner. Injection grouting may be required to stop leaks around the pipe connections or in the invert channel or benches. The RPR's decision on how defective lining is repaired shall be final. If any defective lining is discovered after it has been installed or during the warranty period, it shall be repaired or replaced in a satisfactory manner at no additional cost to the Owner. Repaired manholes including those repaired during the warranty period shall be vacuum tested at no additional cost to the Owner.

g. Payment shall not be made for the installed cementitious lining until (1) the manhole passes the vacuum test, (2) all material tests are submitted, and (3) the final CCTV inspection of the CIPP liner is submitted as specified in Section DX-703 (when CIPP is installed; final CCTV performed after manhole rehabilitation is complete.

753-3.5 Disposal Procedures

a. Waste Material encountered in the cleaning of structures can include sludge, sand, grit, debris, etc.

b. The Contractor is required to dispose of any waste material removed from pipeline, manholes, etc. within the project area in accordance with RIDEM, Local, State and Federal requirements. If testing of waste material is required by facility, the testing will be at the Contractor's expense.

c. The materials being removed from the pipelines, manholes and catch basins during the cleaning process shall be disposed in such a manner as to not endanger the public, personnel or persons performing the work. All solids or semi-solids resulting from the cleaning operations shall be removed and disposed of off-site at a suitable facility meeting RIDEM, Local, State and Federal

requirements at the Contractor's expense. If testing of waste material is required by facility, the testing will be at the Contractor's expense.

d. Debris must be transported in a watertight vehicle. The Contractor must ensure that no water leaks from the vehicle in any manner during the transportation. The Contractor is solely responsible for any cleanup of debris on route to disposal at a licensed disposal facility. The Contractor is also responsible for the payment of any fines that are incurred as a result of any incident which occurs during the transportation and/or disposal of the contents of the vehicle.

e. Disposal must be at a licensed facility that is regulated to accept and properly dispose of the debris that is normally expected to be in a stormwater collection system.

f. Flushing/decant water shall not be released back into the storm sewer system, nor allowed to remain in the storm sewer system. Once the sediment has settled from the flushing water, the resulting decant water may be:

- Discharged to approved infiltration basins within airport site. Basins are within ¾ mile of project work area. Location will be coordinated with RPR. OR
- May be disposed at facilities owned by the Warwick Sewer Authority. The Contractor will be responsible for all permits and fees required by the Warwick Sewer Authority.

METHOD OF MEASUREMENT

753-4.1 The height of manhole rehabilitation to be paid under this Item shall be the actual field measured vertical footage of drain manholes lined from the manhole invert, to the base of the manhole frame measured by the unit.

BASIS OF PAYMENT

753-5.1 The accepted quantity of manhole rehabilitation will be paid for at the contract unit price per vertical foot of manholes rehabilitated from bottom of drainage structure to the base of the structure frame. This price shall be full compensation for furnishing all materials for sealing and lining of the drainage structure, work shall include but shall not be limited to cleaning and preparing structure as necessary, including but not limited to, bypass pumping and handling of existing flows, removing and replacing unsound bricks and mortar, installing grading ring sealant, removing steps or rungs, cutting crowns of existing incoming/outgoing pipes as indicated on the Drawings, dewatering, removing, transport, and disposal of any waste materials, required testing by disposal facility, providing of Bill of Lading or material shipping records for tracking of waste material disposal, removal, transport and disposal of flushing/decant water, permitting fees associated with disposal of waste material and flushing/decant water, sealing including end seals (if necessary) and plugging leaks, application of liner from the bottom of the structure frame down to the bottom of the structure, testing and any retesting required of the rehabilitation of the drainage structures, complete, as specified or directed by the RPR, and all other work incidental thereto and not specifically included for payment under other Items.

Payment will be made under:

Item DX-753-5.8 Manhole Rehabilitation – Per Vertical Foot

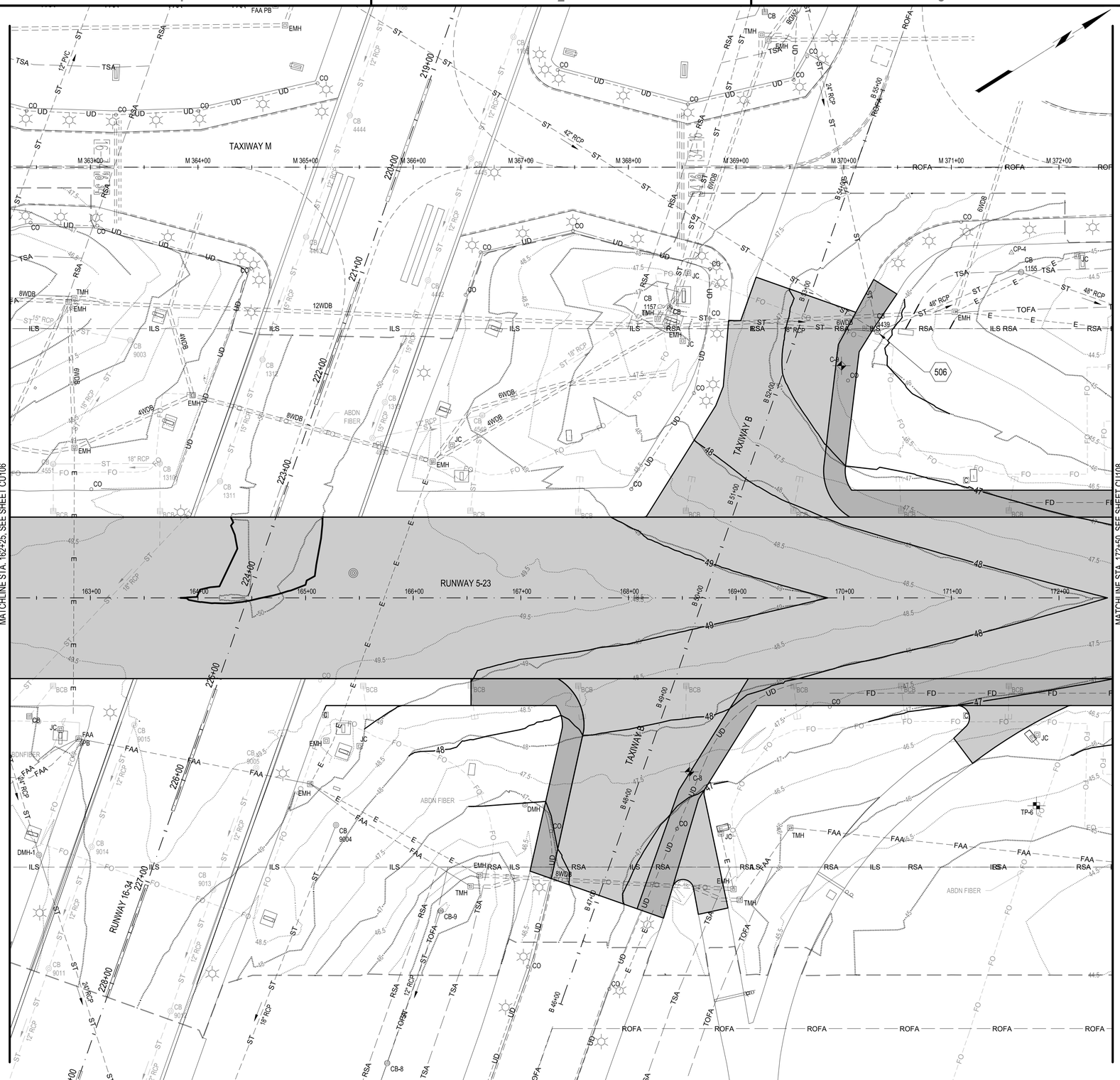
REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C78	Standard Test Method for Flexural Strength of Concrete
ASTM C94	Standard Test for Ready Mix Concrete
ASTM C109	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
ASTM C234	Standard Test Method for Comparing Concretes on the Basis of the Bond Developed with Reinforcing Steel
ASTM C267	Standard Test Method for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings
ASTM C321	Standard Test Method for Bond Strength of Chemical-Resistant Mortars ASTM C496 Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
ASTM C596	Standard Test Method for Drying Shrinkage of Mortar Containing Portland Cement
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C827	Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
ASTM C882	Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete by Slant Shear
ASTM C952	Standard Test Method for Bond Strength of Mortar to Masonry Units ASTM C1072 Test Method for Measurement of Masonry Flexural Bond Strength ASTM C1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test

END OF ITEM DX-753



506. ELEVATION ADJUSTMENT TO EXISTING DRAINAGE STRUCTURE, ITEM D-751, SEE DETAIL C2/CU501.

C4 KEYED NOTES

SCALE: NOT TO SCALE

NOTES:

1. REFER TO SHEET CU601 FOR DRAINAGE STRUCTURE TABLES.
2. REFER TO SHEET CU103 FOR STANDARD DRAINAGE NOTES.

A1 DRAINAGE PLAN

SCALE: 1" = 50'

50 0 50 100FT.
50'

A4 SHEET NOTES

SCALE: NOT TO SCALE

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NICOLE B. IANNUZZI
No. 9724
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

Rhode Island
Airport Corporation

RUNWAY 5-23 REHABILITATION
RHODE ISLAND T. F. GREEN INTERNATIONAL AIRPORT

MARK	DATE	DESCRIPTION
1	3/5/2025	ADDENDUM NO. 01

REVISIONS

PROJECT NO: I08010001
DATE: FEBRUARY 2025
DRAWN BY: T. DAVIS
DESIGNED BY: T. DAVIS
CHECKED BY: N. IANNUZZI

CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.

DRAINAGE PLAN

CU107

SHEET NO. 121 OF 203

Mar 04, 2025 - 8:22am
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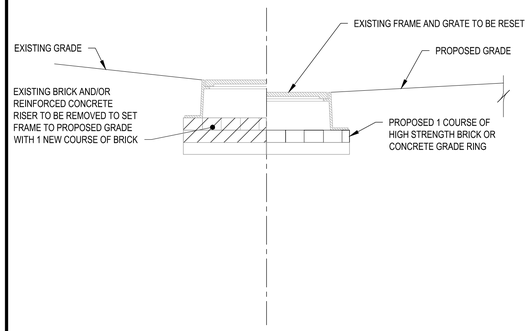
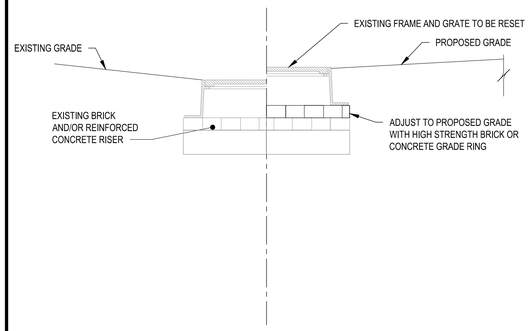


NOTE:
CONTRACTOR TO VERIFY EXISTING AND PROPOSED ELEVATIONS BEFORE START OF WORK.

C1 STRUCTURE ADJUSTMENT, TYPE I, LOWER GRADE

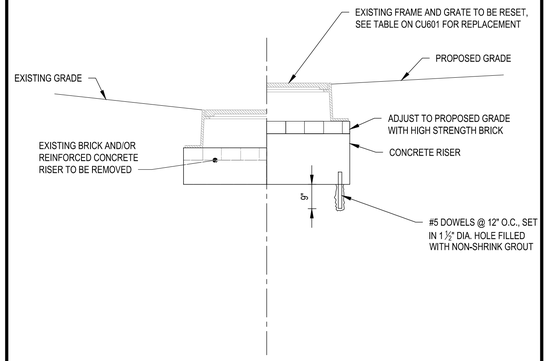
SCALE: NOT TO SCALE



NOTE:
CONTRACTOR TO VERIFY EXISTING AND PROPOSED ELEVATIONS BEFORE START OF WORK.

C2 STRUCTURE ADJUSTMENT, TYPE II, RAISE GRADE (<8")

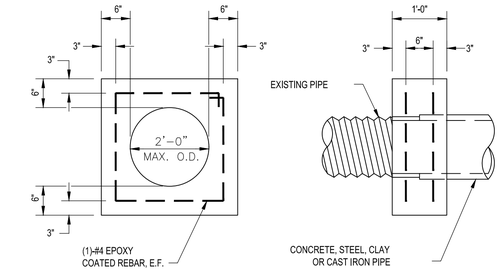
SCALE: NOT TO SCALE



NOTE:
CONTRACTOR TO VERIFY EXISTING AND PROPOSED ELEVATIONS BEFORE START OF WORK.

C3 STRUCTURE ADJUSTMENT, TYPE III, RAISE GRADE (> 8")

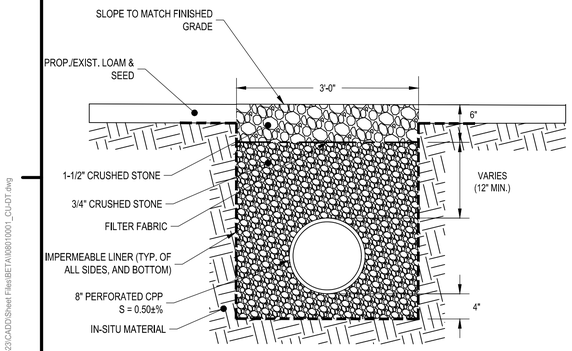
SCALE: NOT TO SCALE



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 709 OF THE R.I. STANDARD SPECIFICATIONS.
2. MAXIMUM PIPE DIAMETER FOR USE OF CONNECTING COLLAR IS 2'-0".
3. PIPE WITH LARGEST OUTSIDE DIAMETER USED TO DETERMINE SIZE OF COLLAR.

C4 CONCRETE CONNECTING COLLAR, R.I. STD. 1.3.0

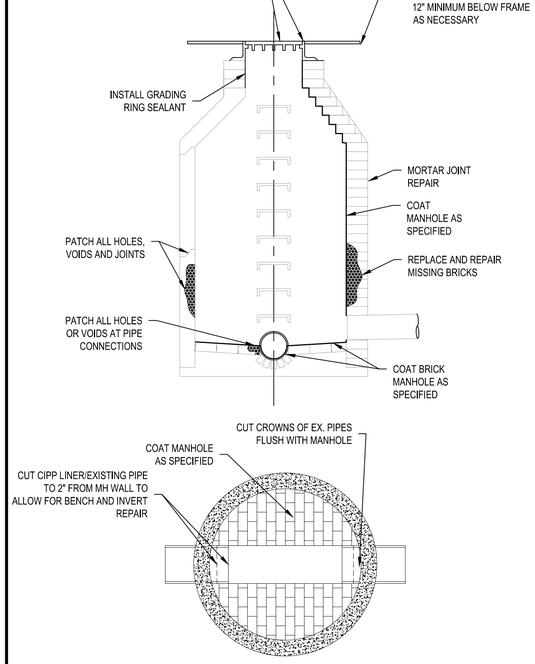
SCALE: NOT TO SCALE



NOTES:
1. UNDERGROUND STONE TRENCH SHALL MEET THE MATERIAL AND INSTALLATION REQUIREMENTS OF SECTION 2.3.3 OF THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION LINEAR STORMWATER MANUAL.
2. FILTER FABRIC SHALL SHALL MEET THE REQUIREMENTS OF SPECIFICATION SECTION DX-791.
3. IMPERMEABLE LINER SHALL BE A 30 MM THICK, NONWOVEN, HIGH-DENSITY POLYETHYLENE (HDPE) LINER SPECIFICALLY DESIGNED FOR USE IN SUBSURFACE LINING/CONTAINMENT APPLICATIONS. LINER SHALL BE PLACED TO LIMIT THE NUMBER OF SEAMS, AND OVERLAP A MINIMUM OF SIX INCHES OR AS OTHERWISE SPECIFIED BY THE MANUFACTURER'S INSTALLATION GUIDELINES.

A1 DRAINAGE TRENCH WITH UNDERDRAIN

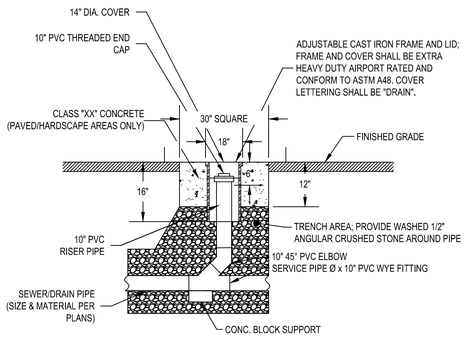
SCALE: NTS



NOTES:
1. PREPARATION FOR MANHOLE REHABILITATION TO BE AS SPECIFIED.
2. PRIOR TO APPLICATION OF MORTAR AND COATINGS, STOP ALL ACTIVE LEAKS INTO MANHOLE.
3. PAYMENT FOR MANHOLE REHABILITATION SHALL BE THE MEASURED VERTICAL FOOTAGE OF LINER INSTALLED, FROM MANHOLE INVERT TO TOP OF LINER

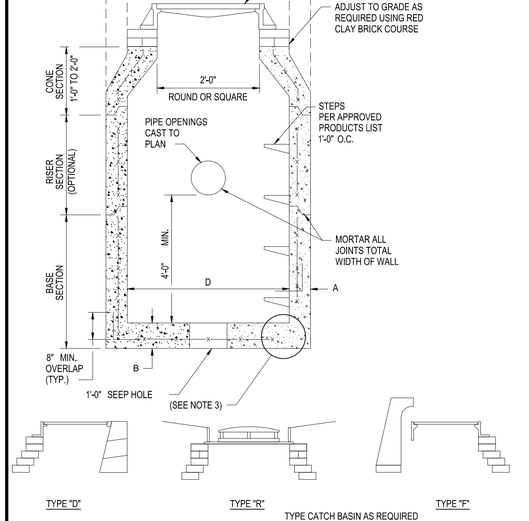
A2 MANHOLE REHABILITATION DETAIL

SCALE: NTS



A3 TYPICAL DRAIN CLEANOUT FOR INFILTRATION CHAMBER

SCALE: NTS



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
2. WALL/FLOOR THICKNESS AND STEEL REINFORCEMENT TO MEET AIRCRAFT LOADING REQUIREMENTS.
3. STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS), AND SHALL MEET AIRCRAFT LOADING REQUIREMENTS.
4. STEPS SHALL CONFORM TO STD. 5.3.0 AND SHALL BE INSTALLED AT THE CASTING PLANT.
5. ONE POUR MONOLITHIC BASE SECTION.
6. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
7. CORBEL MADE OF RED CLAY BRICK WILL BE PERMITTED FOR THE "CONE SECTION" OF THE 4'-0" CATCH BASIN ONLY.
8. FOR CATCH BASIN TYPES "D" AND "F" STEPS MUST BE INSTALLED ON THE CURB SIDE OF THE STRUCTURE.
9. THE CENTERLINE OF THE OPENING MUST BE WITHIN 2'-0" FROM THE STEPS.
10. ALL STRUCTURES, FRAMES AND GRATES/COVERS INSTALLED WITHIN RUNWAY AND TAXIWAY SAFETY AREAS AND/OR WHERE DESIGNATED AS "AIRCRAFT RATED" SHALL BE DESIGNED TO 200,000 LB. DUAL WHEEL AIRCRAFT LOADING REQUIREMENTS. ALL OTHER STRUCTURES, FRAMES, AND GRATES/COVERS OUTSIDE THE RUNWAY AND TAXIWAY SAFETY AREAS SHALL BE DESIGNED TO HS-20 LOADING REQUIREMENTS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND MANUFACTURER CERTIFICATIONS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION. SHOP DRAWINGS FOR LOADING SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN RHODE ISLAND.
11. ALL FRAMES AND COVERS WITHIN RUNWAY AND TAXIWAY SAFETY AREAS SHALL BE BOLTED TO THE FRAMES.
12. ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
13. REFER TO STD. 5.2.0 FOR MAXIMUM PIPE SIZES.
14. PROVIDE A MINIMUM OF 12 INCHES OF COMPACTED GRAVEL BORROW AROUND THE STRUCTURE.

A4 R.I. STD. 4.4.0M - PRECAST 4'-0" ROUND CATCH BASIN

SCALE: NTS

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NICOLE B. IANNUZZI
No. 9724
REGISTERED PROFESSIONAL ENGINEER (CIVIL)

Rhode Island
Airport Corporation

RUNWAY 5-23 REHABILITATION

RHODE ISLAND T. F. GREEN INTERNATIONAL AIRPORT

MARK	DATE	DESCRIPTION
1	3/5/2025	ADDENDUM NO. 01

REVISIONS

PROJECT NO: I08010001
DATE: FEBRUARY 2025
DRAWN BY: T. DAVIS
DESIGNED BY: T. DAVIS
CHECKED BY: N. IANNUZZI

CONTRACTOR SHALL VERIFY ALL CONDITIONS ON JOB SITE & NOTIFY THE OWNER OF ANY VARIATIONS FROM DIMENSIONS SHOWN ON THESE DRAWINGS BEFORE PROCEEDING WITH ANY CONSTRUCTION.

DRAINAGE DETAILS

CU501

SHEET NO. 124 OF 203

Mar 04, 2025 - 3:20pm
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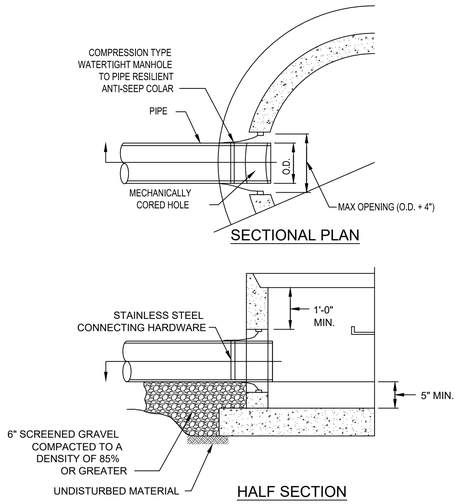
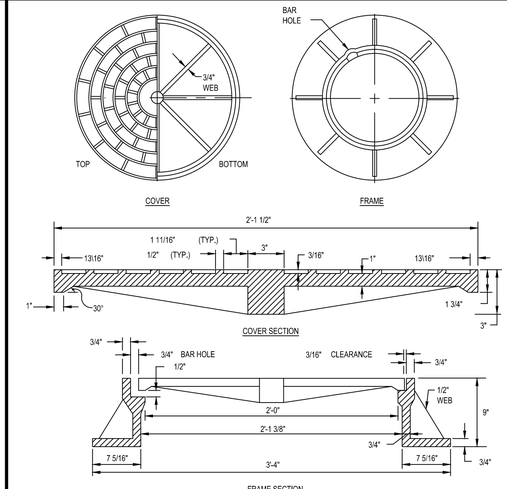


C1 CONNECTING PIPES TO EXISTING MANHOLES

SCALE: NTS

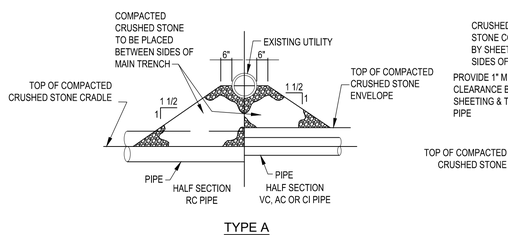


NOTES:

1. FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.
2. FRAME AND COVER SEATS MUST HAVE MACHINE FINISH.
3. ALL STRUCTURES, FRAMES AND GRATES/COVERS INSTALLED WITHIN RUNWAY AND TAXIWAY SAFETY AREAS AND/OR WHERE DESIGNATED AS "AIRCRAFT RATED" SHALL BE DESIGNED TO 200,000 LB. DUAL WHEEL AIRCRAFT LOADING REQUIREMENTS. ALL OTHER STRUCTURES, FRAMES, AND GRATES/COVERS OUTSIDE THE RUNWAY AND TAXIWAY SAFETY AREAS SHALL BE DESIGNED TO HS-20 LOADING REQUIREMENTS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND MANUFACTURER CERTIFICATIONS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION. SHOP DRAWINGS FOR LOADING SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN RHODE ISLAND.

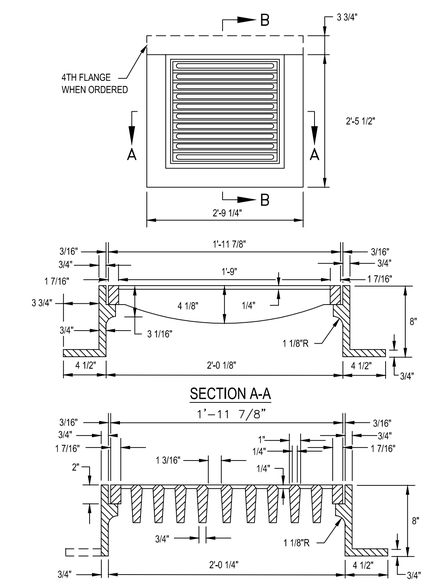
C2 HEAVY DUTY ROUND FRAME AND COVER

SCALE: NTS



C3 TYPICAL SUPPORTS FOR UTILITIES

SCALE: NTS



NOTES:

1. FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS
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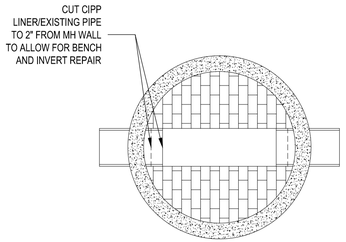
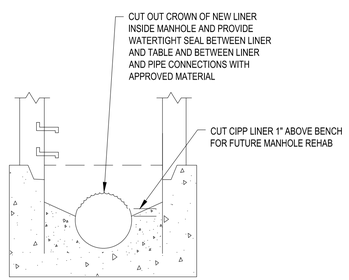
3. ALL FRAMES AND COVERS WITHIN RUNWAY AND TAXIWAY SAFETY AREAS SHALL BE BOLTED TO THE FRAMES.

A1 SQUARE FRAME AND GRATE

SCALE: NTS



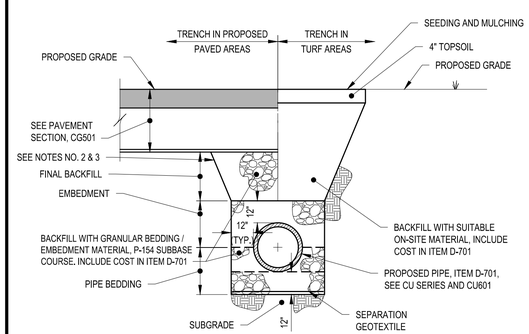


A2 CIPP LINER IN MANHOLE DETAIL

SCALE: NTS

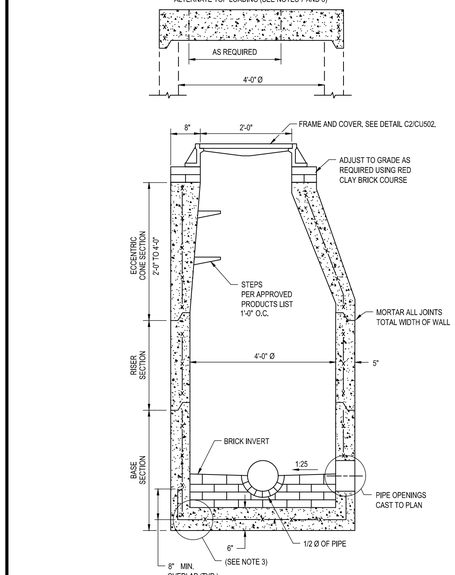
NOTES:

1. PIPE BEDDING / SPECIAL BACK FILL EMBEDMENT AND SEPARATION GEOTEXTILE SHALL BE INCLUDED IN THE COST OF THE PIPE.
2. EXCAVATIONS, TRENCHING AND SHORING SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.
3. EXCAVATIONS SHALL NOT UNDERMINE EXISTING PAVEMENTS, STRUCTURES OR UTILITIES.
4. SEPARATE PIPES IN A COMMON TRENCH BY A MINIMUM OF 24".
5. SEE PLANS FOR PIPE SIZES & DRAINAGE TABLE ON CU601.



A3 PIPE TRENCHING DETAIL

SCALE: NOT TO SCALE



NOTES:

1. SHALL BE IN ACCORDANCE WITH SECTION 702 OF THE R.I. STANDARD SPECIFICATIONS.
2. WALL/FLOOR THICKNESS AND STEEL REINFORCEMENT TO MEET AIRCRAFT LOADING REQUIREMENTS.
3. STEEL REINFORCEMENT FOR BASE SECTION BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS), AND SHALL MEET AIRCRAFT LOADING REQUIREMENTS.
4. ONE POUR MONOLITHIC BASE SECTION.
5. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
6. STEPS SHALL CONFORM TO STD. 5.3.0 AND SHALL BE INSTALLED AT THE CASTING PLANT.
7. ALL STRUCTURES, FRAMES AND GRATES/COVERS INSTALLED WITHIN RUNWAY AND TAXIWAY SAFETY AREAS AND/OR WHERE DESIGNATED AS "AIRCRAFT RATED" SHALL BE DESIGNED TO 200,000 LB. DUAL WHEEL AIRCRAFT LOADING REQUIREMENTS. ALL OTHER STRUCTURES, FRAMES, AND GRATES/COVERS OUTSIDE THE RUNWAY AND TAXIWAY SAFETY AREAS SHALL BE DESIGNED TO HS-20 LOADING REQUIREMENTS. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND MANUFACTURER CERTIFICATIONS TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION. SHOP DRAWINGS FOR LOADING SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN RHODE ISLAND.
8. ALL FRAMES AND COVERS WITHIN RUNWAY AND TAXIWAY SAFETY AREAS SHALL BE BOLTED TO THE FRAMES.
9. ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
10. REFER TO STD. 5.2.0 FOR MAXIMUM PIPE SIZES.
11. PROVIDE A MINIMUM OF 12 INCHES OF COMPACTED GRAVEL BORROW AROUND THE STRUCTURE.

A4 R.I. STD. 4.2.0 - PRECAST 4'-0" ROUND MANHOLE

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DRAINAGE DETAILS

CU502

SHEET NO. 125 OF 203