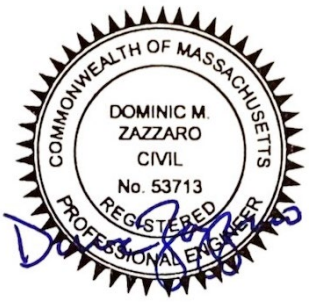
LAWRENCE MUNICIPAL AIRPORT
North Andover, Massachusetts

CONTRACT DOCUMENTS FOR
Runway 5 End Drainage Improvements



FEBURARY 12, 2025
Project: 179450605

Stantec

45 Network Drive, Burlington, Massachusetts 01803 | (781) 221-1000

Page Intentionally Blank

TABLE OF CONTENTS

DIVISION II - SPECIAL PROVISIONS

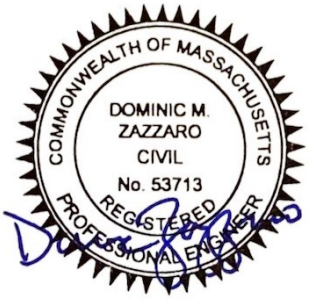
DIVISION III - TECHNICAL SPECIFICATIONS

APPENDICES

Page Intentionally Blank

LAWRENCE MUNICIPAL AIRPORT
North Andover, Massachusetts

BID PROPOSAL DOCUMENTS FOR
Runway 5 End Drainage Improvements



FEBURARY 12, 2025
Project: 179450605

Stantec

45 Network Drive, Burlington, Massachusetts 01803 | (781) 221-1000

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

BID PROPOSAL (ALL PAGES MUST BE RECEIVED ELECTRONICALLY)

Page Intentionally Blank

FORM FOR GENERAL BID

TO THE AWARDING AUTHORITY: City of Lawrence

A. The Undersigned proposes to furnish all labor and materials required for **Runway 5 End Drainage Improvements [Project #179450605]** at **Lawrence Municipal Airport** in North Andover, Massachusetts, in accordance with the accompanying plans and specifications prepared by **Stantec Consulting Services Inc.** for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

B. This bid includes addenda numbered: _____

C. The proposed contract price is:

_____ dollars $_____

Bid Amount in Words **Bid Amount in Numbers**

For alternate	No. _____	Add $_____	Subtract $_____
	No. _____	Add $_____	Subtract $_____
	No. _____	Add $_____	Subtract $_____
	No. _____	Add $_____	Subtract $_____
	No. _____	Add $_____	Subtract $_____

D. In submitting this Bid, the Bidder represents, as set forth.

1) The Bidder has examined the bid documents and all data and reference items identified in the bid documents.
2) The Bidder is familiar with and understands all federal, state, and local laws and regulations that may affect the cost, progress, and performance of the Work.
3) The Bidder has visited the site and understands the general conditions that may affect the cost, progress, and performance of the Work.
4) The Bid consist of all costs, including but not limited to, labor and supervision, materials, tools and equipment, freight handling, temporary facilities, home and field office expenses, taxes and/or insurances (when applicable), permits, overhead and profit to perform all work described in the bid documents.

E. The undersigned agrees to, if selected as the general contractor and after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish each bond requested in the documents. Each bond shall be provided by a surety company qualified to do business under the laws of the state or jurisdiction where the project is located, satisfactory to the awarding authority, and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price; provided, however, that if there is more than one surety company, the surety companies shall be jointly and severally liable.

The undersigned hereby certifies that the Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course.

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair, and made without collusion or fraud with any other person. As used in this subsection, the word 'person' shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

_____

NAME OF BIDDER

_____

SIGNATURE AND TITLE OF PERSON SIGNING BID

Date: _____

_____

BUSINESS ADDRESS

Page Intentionally Blank

SIMILAR PROJECTS - REFERENCE FORM

Similar Project 1

Project Address: _____

Start Date: _____ End Date: _____
Current Cost: _____ Original Cost: _____
Cost Change Explanation: _____

Project Description: _____

Awarding Authority Reference Contact	Prime Designer Reference Contact

Project Manager Reference Contact	General Contractor Reference Contact

Similar Project 2

Project Address: _____

Start Date: _____ End Date: _____
Current Cost: _____ Original Cost: _____
Cost Change Explanation: _____

Project Description: _____

Awarding Authority Reference Contact	Prime Designer Reference Contact

Project Manager Reference Contact	General Contractor Reference Contact

SIMILAR PROJECTS - REFERENCE FORM

Similar Project 3

Project Address: _____

Start Date: _____ End Date: _____
Current Cost: _____ Original Cost: _____
Cost Change Explanation: _____

Project Description: _____
_____
_____

Awarding Authority Reference Contact	Prime Designer Reference Contact
_____ _____ _____ _____	_____ _____ _____ _____
Project Manager Reference Contact	**General Contractor Reference Contact**
_____ _____ _____ _____	_____ _____ _____ _____

Similar Project 4

Project Address: _____

Start Date: _____ End Date: _____
Current Cost: _____ Original Cost: _____
Cost Change Explanation: _____

Project Description: _____
_____
_____

Awarding Authority Reference Contact	Prime Designer Reference Contact
_____ _____ _____ _____	_____ _____ _____ _____
Project Manager Reference Contact	**General Contractor Reference Contact**
_____ _____ _____ _____	_____ _____ _____ _____

SIMILAR PROJECTS - REFERENCE FORM

Similar Project 5	
Project Address: _____	
Start Date: _____	End Date: _____
Current Cost: _____	Original Cost: _____
Cost Change Explanation: _____	
Project Description: _____	
Awarding Authority Reference Contact	Prime Designer Reference Contact
_____	_____
Project Manager Reference Contact	General Contractor Reference Contact
_____	_____

Page Intentionally Blank

Runway 5 End Drainage Improvements
Lawrence Muncipal Airport
North Andover, Massachusetts

SCHEDULE OF PRICES

Note: All "Like Items" shall have the same unit bid price. Like Items are pay items listed under Schedule A and Schedule B that have the same Pay Item No. and Item of Work Description.
If the bidder uses difference unit prices for Like Items, the lower unit price will be considered to be the bid price for all Like Items with varying unit prices.

Item No.	Pay Item No.	Item of Work Description	Estimated Quantity	Units	Unit Bid Price Written in Words	Unit Bid Price Numerical	Bid Amount
SCHEDULE A - Drainage Infrastructure & Fence Related Work							
1	Div II-27.01	Construction Safety and Phasing for Schedule A Work (Limited to 2.5% of the total cost of Schedule A)	1	LS			
2	Div II-27.03	As-Built Drawings for Schedule A Work (Limited to 1% of the total cost of Schedule A)	1	LS			
3	C-105-6.1	Mobilization for Schedule A Work (Limited to 5% of the total cost of Schedule A)	1	LS			
4	C-102-5.1	Temporary Seeding and Mulching	2,700	SY			
5	C-102-5.2	Installation and Removal of Sediment Barrier	1,000	LF			
6	C-102-5.3	Installation of Erosion Control Blanket	2,800	SY			
7	C-102-5.7	Installation and Removal of Temporary Stabilized Construction Exits	1	EA			
8	D-701-5.1	24-inch Class III Reinforced Concrete Pipe	80	LF			
9	D-701-5.2	30-inch Class III Reinforced Concrete Pipe	500	LF			
10	D-701-5.4	Connection of Existing Pipe to New Structure	3	EA			
11	D-701-5.5	Removal of Reinforced Concrete Pipe	55	LF			
12	D-751-5.1	60-inch Drain Manhole	3	EA			
13	D-751-5.2	72-inch Drain Manhole	2	EA			
14	D-751-5.3	84-inch Drain Manhole	1	EA			
15	D-752-5.2	Removal of Reinforced Concrete Headwall	1	EA			
16	T-901-5.1	Seeding	2,700	SY			
17	T-905-5.1	Topsoil	300	CY			
						Schedule A Subtotal =	

Runway 5 End Drainage Improvements
Lawrence Muncipal Airport
North Andover, Massachusetts

SCHEDULE OF PRICES

Note: All "Like Items" shall have the same unit bid price. Like Items are pay items listed under Schedule A and Schedule B that have the same Pay Item No. and Item of Work Description.
If the bidder uses difference unit prices for Like Items, the lower unit price will be considered to be the bid price for all Like Items with varying unit prices.

Item No.	Pay Item No.	Item of Work Description	Estimated Quantity	Units	Unit Bid Price Written in Words	Unit Bid Price Numerical	Bid Amount
SCHEDULE B - Stream Restoration Related Work							
18	Div II-27.02	Construction Safety and Phasing for Schedule B Work (Limited to 2.5% of the total cost of Schedule B)	1	LS			
19	Div II-27.04	As-Built Drawings for Schedule B Work (Limited to 1% of the total cost of Schedule B)	1	LS			
20	C-105-6.2	Mobilization for Schedule B Work (Limited to 5% of the total cost of Schedule B)	1	LS			
21	C-102-5.1	Temporary Seeding and Mulching	2,800	SY			
22	C-102-5.2	Installation and Removal of Sediment Barrier	1,000	LF			
23	C-102-5.3	Installation of Erosion Control Blanket	1,300	SY			
24	C-102-5.4	Installation of Stone Check Dams	1	EA			
25	C-102-5.5	Installation of Sandbag Diversion Berms	1	EA			
26	C-102-5.6	Installation and Removal of Dewatering Sediment Devices	1	EA			
27	P-151-4.1	Clearing	1,200	SY			
28	P-151-4.2	Fence Line Clearing	300	LF			
29	P-152-4.1	Unclassified Excavation	450	CY			
30	P-152-4.2	Rock Excavation	10	CY			
31	P-152-4.3	Embankment in place	650	CY			
32	P-154-5.1	Subbase Course	130	CY			
33	D-701-5.3	30-inch Class V Reinforced Concrete Pipe	40	LF			
34	D-752-5.1	30-inch Reinforced Concrete Flared End Section	1	EA			

Runway 5 End Drainage Improvements
Lawrence Muncipal Airport
North Andover, Massachusetts

SCHEDULE OF PRICES

Note: All "Like Items" shall have the same unit bid price. Like Items are pay items listed under Schedule A and Schedule B that have the same Pay Item No. and Item of Work Description.
If the bidder uses difference unit prices for Like Items, the lower unit price will be considered to be the bid price for all Like Items with varying unit prices.

Item No.	Pay Item No.	Item of Work Description	Estimated Quantity	Units	Unit Bid Price Written in Words	Unit Bid Price Numerical	Bid Amount
35	T-901-5.1	Seeding	2,400	SY			
36	T-905-5.1	Topsoil	300	CY			
37	M-901-5.1	Stream Channel Stabilization	200	LF			
38	M-901-5.2	Stream Bank Repair and Stabilization	125	LF			
39	M-901-5.3	Stream Bank Plantings	200	LF			
40	M-902-5.1	Riprap Class III (d50=18")	12	SY			
41	F-162-5.1	Chain-Link Fence	550	LF			
42	F-162-5.2	Remove Existing Chain-Link Fence	575	LF			
43	L-108-5.1	Reinstallation of Existing Conductors in Conduit	250	LF			
44	L-108-5.2	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed Above the Conduit, Including Connections/Terminations	75	LF			
45	L-110-5.1	Non-Encased Electrical Conduit, 1-Way 1-inch Schedule 40 PVC	75	LF			
						Schedule B Subtotal =	
						Total Contract Price (Schedule A + Schedule B) to be entered into Line C. of the Form For General Bid =	

Notes:
1. Pay items are broken out under Schedule A and Schedule B for funding purposes only.
2. Prices should generally be written in whole dollars and cents. The extended total amount of each item should not be rounded.
3. It is understood that the quantities given in the Schedule of Prices are approximate only and are given as a basis for comparison of Bids. The Owner does not expressly or by implication agree that the actual quantity of work will even approximately correspond herewith, but reserves the right to increase or decrease the quantity of any item of the work listed, and the unit prices quoted in Bid Shall apply without change to such variation in the quantity of each of the items, except as further clarified herein. The Owner further reserves the right to delete any item of work in whole or in part, in order to meet the available funding.

Page Intentionally Blank

BIDDER'S QUALIFICATIONS AND CERTIFICATION

The undersigned submits answers to the following questions to enable the Owner to judge of his experience and ability in, and facilities for, the work proposed to be done.

1. The Work, if awarded to you, will have the resident personal supervision of whom? State his or their special qualifications

2. Describe equipment you propose to use. State whether you own or rent it.

3. How many years has your organization been in business as a general contractor under the name in which you propose to execute this contract?

4. What projects has your present organization completed of character similar to that proposed? Give the information indicated by the following tabulation.

Name and address of Owner for Whom Work was done	Work Done as Contractor or Subcontractor	Description of Work, including Approximate Amount of Contract and Dates Work Done

5. Has your present organization ever failed to complete any work awarded to it? If so, state when, where and why.

6. In lieu of the financial statement requested in Section 20-02 of the specifications provided below the name of one or more financial institutions which have information that would enable them to advise regarding the financial capacity of your company.

Name of Bank	Address

7. The undersigned also agrees that all work to be performed by subcontractors are as follows:

Description of Subcontractor work	Name and Address of Subcontractor

Date _____ _____
(Name of Bidder)

By _____
(Title and Name of Person Signing Bid)

_____
(Business Address)

_____
(City and State)

Page Intentionally Blank

CERTIFICATE OF NON-COLLUSION

The following certification statement is to be signed by the bidder.

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

Date _____ _____
(Name of Bidder)

By _____
(Title and Name of Person Signing Bid)

_____
(Business Address)

_____
(City and State)

Page Intentionally Blank

CERTIFICATION OF LABOR HARMONY AND OSHA TRAINING

The undersigned hereby certifies that prior to the start of construction the bidder shall provide CERTIFICATION OF LABOR HARMONY AND OSHA TRAINING in accordance with M.G.L. c. 30 § 39 S (a).

M.G.L. c. 30 § 39 S (a)requires any person submitting a bid for, or signing a contract to work on, the construction, reconstruction, alteration, remodeling or repair of any building or public works project undertaken by a public awarding authority in Massachusetts that is estimated to cost more than $10,000 to clarify on the bid or contract, under penalties of perjury: (1) that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

(b) Any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

(c) The attorney general, or his designee, shall have the power to enforce this section including the power to institute and prosecute proceedings in the superior court to restrain the award of contracts and the performance of contracts in all cases where, after investigation of the facts, he has made a finding that the award or performance has resulted in violation, directly or indirectly, of subsection (b), and he shall not be required to pay to the clerk of the court an entry fee in connection with the institution of the proceeding.

_____

Signature and Title of Authorized Company Officer

_____

Date

Corporate Seal (affix below):

Page Intentionally Blank

ATTESTATION OF TAXES

Any person failing to sign the Attestation of Taxes shall not be allowed to obtain, renew, or extend a license, permit or public contract.

Pursuant to M.G.L. Chapter 62C, §49A, I hereby certify, under the penalties of perjury, that, to the best of my knowledge and belief, I am in compliance with all the laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____

Signature and Title of Authorized Company Officer

_____

Date

Corporate Seal (affix below):

Page Intentionally Blank

Letter of Intent/Schedule of Participation[1]
Disadvantaged Business Enterprise (DBE)[2] Participation
(For Federally-sponsored Projects)[3]

MassDOT Aeronautics Division Form AD3-DBE (Last Modified: November 27, 2023)

NOTE TO BIDDER: THE DBE GOAL FOR THIS PROJECT SHALL NOT BE LESS THAN _____% (FROM SPONSOR'S APPROVED DBE PLAN). IF THIS GOAL IS NOT MET, THE BIDDER MUST SUBMIT DOCUMENTATION OF A "GOOD FAITH EFFORT" TO THE SPONSOR. PLEASE REFER TO CONTRACT DOCUMENTS REGARDING WHEN THIS FORM NEEDS TO BE SUBMITTED.

AIRPORT: _____ **AIP NO.:** _____

PROJECT TITLE: _____

_____
Name of General Contractor

_____
Name of DBE Contractor

_____
Address

_____
City State Zip Code Phone

1. **The undersigned DBE firm intends to perform work in connection with the above referenced project as:**
   Check One:
   - ☐ An individual ☐ A partnership ☐ A corporation
   - ☐ A joint venture with: _____
   - ☐ Other _____

   Attach extra sheets if necessary

2. **The undersigned affirms that they are a duly authorized official representing the proposed DBE and affirms that its certification has not expired nor been revoked. (Attach a copy of the certification letter)** [4]
   Check all that apply:
   - ☐ DBE

   Certification Agency _____ Certification Number _____

3. **If awarded the contract, the undersigned intends to enter into a subcontract to perform the work described on the following sheet for the prices indicated.**

---

[1] Use a separate form for each DBE firm to be utilized on this project.
[2] Must be register with the MA Supplier Diversity Office (SDO) and must be listed as a DBE with a valid certification when work is completed. Suppliers must be discounted at 60%. The participation of the Prime Contractors and Subcontractors that are DBEs may be counted toward the DBE goal.
[3] For projects with any amount of federal participation.
[4] Certification of DBE must be completed prior to Contract Award.

Contract Item No.	Description of Work to be Performed by DBE Contractor	Estimated Quantity	Unit Price	Item Amount

Total amount credited to DBE contractor (add item amounts): TOTAL $ _____

Proposed total contract price: $ _____

The total price to DBE contractor for work performed under this contract is _____ % of the proposed total contract price. (See note to bidder above).

The undersigned certify that they will enter into a formal agreement upon execution of the contract for the above referenced project pursuant to all conditions noted in attached documents, swearing and affirming under the pains and penalties of perjury, that the foregoing information and appropriate attachments are true and accurate to the best of their knowledge.

Name of DBE Contractor: _____

Authorized Signature: _____

Name and Title: _____

Date: _____

Name of Prime Contractor: _____

Authorized Signature: _____

Name and Title: _____

Date: _____

CERTIFICATION OF BIDDER REGARDING PAYMENT OF PREVAILING WAGES

The undersigned bidder hereby certifies, under the pains and penalties of perjury, that the foregoing bid is based upon the payment to all workers to be employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Industries or the Minimum Wage Rates established by the U.S. Department of Labor whichever is higher. The undersigned bidder agrees to indemnify the Awarding authority for, from, and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work, arising out of, or as a result of, (1) the failure of the said bid to be based upon the payment of said applicable prevailing wage rates, or (2) the failure of the bidder, if selected as the Contractor, to pay all workers employed on the project the said prevailing wage rates.

Dated: _____

_____
Printed name of General Bidder

By:

_____
Signature and position of person signing bid

Page Intentionally Blank

CERTIFICATION OF COMPLIANCE WITH FAA BUY AMERICAN PREFERENCE – CONSTRUCTION PROJECTS

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with its proposal. The bidder or offeror must indicate how it intends to comply with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e., not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:

a) Only installing iron, steel and manufactured products produced in the United States;

b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.

c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or

d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

a) To provide to the Airport Sponsor or the FAA evidence that documents the source and origin of the iron, steel, and/or manufactured product.
b) To faithfully comply with providing U.S. domestic products.
c) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
d) Certify that all construction materials used in the project are manufactured in the U.S.

☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

a) To the submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
d) To furnish U.S. domestic product for any waiver request that the FAA rejects.

e) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 2 Waiver (Nonavailability) - The iron, steel, manufactured goods or construction materials or manufactured goods are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is

a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the "facility/project." The required documentation for a Type 3 waiver is:

a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
b) Listing of all manufactured products that are not comprised of 100 percent U.S. domestic content (excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).
c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
d) Percentage of non-domestic component and subcomponent cost as compared to total "facility" component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

Type 4 Waiver (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction materials would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

a) A completed Content Percentage Worksheet and Final Assembly Questionnaire from
b) At minimum two comparable equal bids and/or offers;
c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

CERTIFICATION OF BIDDER REGARDING DEBARMENT

The undersigned bidder hereby certifies, under the pains and penalties of perjury, that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

Dated: _____

_____
Printed name of General Bidder

By: _____
Signature and position of person signing bid

Page Intentionally Blank

CERTIFICATION OF BIDDER REGARDING LOBBYING

(Source: 31 USC § 1352 – Byrd Anti-Lobbying Amendment, 2 CFR part 200, Appendix II(I), 49 CFR part 20, Appendix A)

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Dated: _____

_____
Printed name of General Bidder

By: _____
Signature and position of person signing bid

Page Intentionally Blank

CERTIFICATION OF BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

1) The applicant represents that it **is (_) is not (_)** a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

2) The applicant represents that it **is (_) is not (_)** a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the Sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. Code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 USC § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

_____ _____

Date Signature

_____ _____

Company Name Title

Page Intentionally Blank

CERTIFICATION OF BIDDER REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

Dated: _____

_____
Printed name of General Bidder

By: _____
Signature and position of person signing bid

Page Intentionally Blank

BID BOND

CONTRACTOR:
Name: _____
Address: _____
_____

SURETY:
Name: _____
Address: _____
_____

AWARDING AUTHORITY:
Name: _____
Address: _____
_____

BOND AMOUNT: _____

PROJECT: _____

The Contractor and Surety are bound to the Awarding Authority in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Awarding Authority accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Awarding Authority and Contractor, and the Contractor either (1) enters into a contract with the Awarding Authority in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise, acceptable to the Awarding Authority, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Awarding Authority may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Awarding Authority and Contractor to extend the time in which the Awarding Authority may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Awarding Authority and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory and not as a common law bond.

IN THE WITNESS WHEREOF,

the Principal and Surety signed and sealed this _____ day of _____, 20_____

_____
_____ *(Contractor as Principal)* *(Seal)*
(Witness)

_____
(Title)

_____
_____ *(Surety)* *(Seal)*
(Witness)

_____
(Title)

IMPORTANT - Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

Page Intentionally Blank

INFORMATION, CONTRACT, & BONDS

Page Intentionally Blank

INVITATION FOR BID
FOR
AIRPORT IMPROVEMENTS

THIS PROJECT IS BEING ELECTRONICALLY BID AND HARD COPY BIDS WILL NOT BE ACCEPTED. Please review the instructions in the bid documents on how to register as an electronic bidder. The bids are to be prepared and submitted at https://biddocs.com/. Tutorials and instructions on how to complete the electronic bid documents are available online (click on the "More Videos" button and "How to Bid" for more information).

The City of Lawrence invites bids for **Runway 5 End Drainage Improvements** at the Lawrence Municipal Airport. Bids will be received until **Friday, March 7, 2025 at 11:00 a.m. local time**, at which time bid results will be electronically released on-line at https://biddocs.com/. Any bids received after the specified time will not be accepted. Bidding procedures will be in accordance with the latest edition of M.G.L. Chapter 30 §39M. All bids must be submitted electronically online at https://biddocs.com/.

The project is located on the airfield within the airport security fence at the south end of the airport adjacent to Runway 5. The intent of the project is to restore approximately 200 LF of intermittent stream, repair approximately 100 LF of bank erosion and install approximately 650 LF of storm drainage pipe and manholes. The new storm drainage infrastructure will be used to temporarily divert the intermittent stream for the restoration work and will permanently divert a portion of stormwater to a point further downstream. The work also includes but is not necessarily limited to: airfield safety measures including safety fence, cones, barricades, and runway closure markers; erosion controls; sand bag diversion dam; earthwork; subbase; topsoil and seeding; stream stabilization; fence removal and replacement; electrical conduit and wiring; and incidentals. The work will also require the contractor to provide qualified operators ("Escorts) with Airband radio equipped vehicles who will be trained by the airport to communicate with the Air Traffic Control Tower to escort construction vehicles and equipment to and from the work site throughout the duration of the project. The total contract time for completion is 50 calendar days. The estimated cost is approximately $700,000.00.

Work under this contract will be funded by the City of Lawrence and through grants from the Federal Aviation Administration (FAA) and the Massachusetts Department of Transportation (MassDOT) Aeronautics Division.

Bid Forms and Contract Documents will be available for download after **11:00 a.m. on Wednesday February 12, 2025** at https://biddocs.com/. Hard copies of bid forms and contract documents may be viewed at: at the Lawrence Municipal Airport, 492 Sutton St., North Andover, MA 01845 (978) 794-5880 after 11:00 a.m. on Wednesday February 12, 2025.

Bidders are highly encouraged to inspect the project site to familiarize themselves with existing conditions and project requirements. **A non-mandatory pre-bid conference followed by a site visit is scheduled to be held on Thursday, February 20, 2025 at 10:00 a.m. at the Airport Manager's Office, Lawrence Municipal Airport, North Andover, MA.**

All questions or requests for clarification regarding the bid documents or the project are to be submitted by email to airport.bids@stantec.com (subject line: "Lawrence Airport Drainage Project Questions"). The deadline for submission of questions is **12:00 p.m., Friday February 28, 2025.** Answers to significant questions and clarifications will be issued via addenda which will be posted at https://biddocs.com/. It is the responsibility of the bidders to check the website for any issued addenda.

Bid security in the amount of at least five percent (5%) of the total bid must be submitted with the bid. The bid security shall be a proposal guaranty bond executed by a surety company authorized to do business in the Commonwealth of Massachusetts. Bid security shall be made payable to the City of Lawrence. Bids submitted without security will not be considered.

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY

(Source: 41 CFR Part 60-4 and Executive Order 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables

Goals for minority participation for each trade:	**4.0%**
Goals for female participation in each trade:	**6.9%**

These goals are applicable to all of the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is the State of Massachusetts, Essex County, Town of North Andover.

FAA BUY AMERICAN PREFERENCE

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws,[1] U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects

1 Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.

are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

TITLE VI SOLICITATION NOTICE

The **City of Lawrence**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

DAVIS-BACON REQUIREMENTS

The bidder must comply with the requirements of the Davis-Bacon Act (40 USC §§ 3141-3144, 3146, and 3147) to ensure that laborers and mechanics employed under the contract receive pay no less than the locally prevailing wages and fringe benefits as determined by the Department of Labor. Refer to the Federal Contract Provisions for the requirements.

DISADVANTAGED BUSINESS ENTERPRISE

The airport has an overall program Disadvantaged Business Enterprise (DBE) Goal of **1.86%**.

The Owner's award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR § 26.53.

As a condition of responsibility, every Bidder or Offeror must submit the following information on the forms provided herein within five days after bid opening.

1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
2) A description of the work that each DBE firm will perform;
3) The dollar amount of the participation of each DBE firm listed under (1);
4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner's project goal;
5) Written confirmation from each listed DBE firm that it is participating in the contract in the kind and amount of work provided in the prime contractor's commitment; and

6) If Bidder or Offeror cannot meet the advertised project DBE goal, evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR part 26. The documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, et seq, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The Contractor has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

Contractors must certify that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or another award covered by 31 USC § 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award.

TRADE RESTRICTION CERTIFICATION

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

1) is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR);

2) has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the USTR; and

3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18 USC § 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR § 30.17, no contract shall be awarded to an Offeror or subcontractor:

1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR; or
2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list; or
3) who incorporates in the public works project any product of a foreign country on such USTR list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The Contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by USTR, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration (FAA) may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

Page Intentionally Blank

INSTRUCTIONS TO BIDDERS

THIS PROJECT IS BEING ELECTRONICALLY BID AND HARD COPY BIDS WILL NOT BE ACCEPTED. Please review the instructions in the bid documents on how to register as an electronic bidder. The bids are to be prepared and submitted at https://biddocs.com/. Tutorials and instructions on how to complete the electronic bid documents are available online (click on the "More Videos" button and "How to Bid" for more information).

ARTICLE 1 - PREPARATION AND SUBMISSION OF BIDS AND GENERAL INFORMATION

1.1 Forms and Bid Preparation

Bids shall be submitted electronically on the **"Form for General Bid"** at https://biddocs.com/, as appropriate and available at no cost. The forms enclosed in the Project Manual shall not be extracted or used.

1.1.1 All bidders must create at User Profile account at https://biddocs.com/, at no cost, to complete and submit a bid. The Awarding Authority, the Prime Designer or BidDocs Online Inc. will not be held accountable if the bidder fails to create a User Profile in a timely manner.

1.1.2 All entries on the bid form shall be made online. Any documents that are attached to the bid must be in a pdf format.

1.1.3 Sums shall be expressed in both words and figures in the space indicated on the bid form. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control. Note: The electronic bid forms automatically matches the "word" amount to the numeric "figure" amount entered.

1.1.4 The submission of a bid will be construed to mean that the bidder is fully informed as to the extent and character of the supplies, materials, equipment, and work required and a representation that the bidder can furnish the supplies, materials, or equipment satisfactorily in complete compliance with the specifications and complete the work identified. Failure to examine the Contract Documents and the project site will not relieve the Bidder from any obligation under the bid as submitted.

1.1.5 The City of Lawrence reserves the right to accept or reject any or all bids or to waive any informality in the bidding. Also reserved is the right to reject, for cause, any bid in part or whole, if it is judged by the City of Lawrence that the best interests of the Lawrence Municipal Airport will be served thereby.

1.1.6 The total contract time for completion is **Fifty (50)** Calendar Days. Subsequent to award of the contract, the Contractor will be issued a "Notice to Proceed for Construction" and shall fully complete all on-site work except the stream bank plantings within **Forty-Five (45)** Calendar Days of the effective date of Notice to Proceed for Construction. A second "Notice to Proceed for Stream Bank Plantings" will be issued in December or April for the contractor to complete stream bank plantings within **Five (5)** Calendar Days of the effective date of the Notice to Proceed for Stream Bank Plantings.

1.1.7 The contractor shall be **assessed liquidated damages in the sum of One Thousand Dollars ($1,000.00) for each calendar day** the project is not substantially complete beyond the contract times specified.

1.1.8 Each bid must be prepared in strict accordance with the requirements of Section 20 of the General Provisions of these specifications.

1.2 Electronic Submission of General Bids

1.2.1 General Bids, including the bid deposit, bidder's reference form and any required miscellaneous forms noted in the bid documents shall be submitted electronically online at https://biddocs.com/. No hard copy bids will be accepted**.**

1.2.2 Date and time for receipt of bids is set forth in the Advertisement.

1.2.3 Timely submission of a bid online shall be the full responsibility of the Bidder.

1.3 Required Submittals

1.3.1 The Contractor's attention is called to the following pages within these Contract Documents. These are pages that MUST be completed by bidder prior to submitting the bid. All the written words and figures shall be in black ink or typed. If these pages are not completed, the bid may be considered non-responsive and rejected. More specifically, the following pages must be completed:

1.3.2 PLEASE USE THIS LIST AS A CHECKLIST BEFORE SUBMITTING YOUR BID

1.4 Bid Deposits and Bonding Requirements shall be:

1.4.1 at least five percent (5%) of the greatest possible bid amount, considering all alternates;

1.4.2 made payable to the City of Lawrence.

1.4.3 conditioned upon faithful performance by the principal of the agreements contained in the bid, and

1.4.4 in the form of:

.1 cash,

.2 certified check, treasurer's or cashier's check issued by a responsible bank or trust company, or

.3 a bid bond issued by a surety company licensed to do business in the Commonwealth of Massachusetts.

Note: Both the "bid bond" or "check" bid deposits are to be scanned and uploaded to the system as a pdf file. **IMPORTANT NOTICE**: If the bidder elects to make a bid deposit in the form of "cash" or "check" the bidder must have the cash or check physically delivered to the Awarding Authority prior to the date and time of the bid opening.

1.4.5 All bid deposits, except those of the three lowest responsive and responsible general bidders shall be returned within five business days after the opening of general bids. The award of the contract shall be made within **one hundred twenty (120) days** after the opening of general bids and the bid deposits of the three lowest, responsive and responsible bidders shall be returned upon execution and delivery of the contract. If no award is made, then at the expiration of the **one hundred twenty (120) days**, the remaining bid deposits shall be returned, except that, if any general bidder fails to perform his/her agreement to execute a contract, his/her bid deposit shall become the property of the City of Lawrence as liquidated damages. In case of death, disability, or other unforeseen circumstances affecting the lowest general bidder, his/her deposit may be returned to him/her and an award made to the next lowest, responsive and responsible bidder.

1.4.6 The successful bidder will have **five (5) days** after notice of award to provide to the City of Lawrence performance and payment bonds each equaling 100% of the contract price. Each bond must be from a surety company authorized to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the Awarding Authority. The only other bonds acceptable to the City of Lawrence are certified bank checks or treasurer's checks.

1.4.7 No bonds will be released by the City of Lawrence without a fully executed Release of Lien form by the Contractor to the City of Lawrence.

1.5 Bid Pricing

1.5.1 No bidder may withdraw their bid for a period of **120 calendar days** after the date of the opening of the bids. All bid prices submitted in response to the Invitation to Bid must remain firm for the **120 calendar days** following the bid opening. In the event of a tie bid, the award will be made with a coin toss.

1.6 References

1.6.1 Bidders must submit references, using the online Bidder's Reference form at https://biddocs.com/, a complete list of all jobs performed in the past five (5) years that are similar in scope to this project.

1.7 Questions Concerning Invitation to Bid

1.7.1 No interpretation of the meaning of the plans, specifications, or other pre-bid documents will be made to any bidder orally. All information given to bidders other than by means of the plans, specifications, or by addenda, as described below, is given informally and shall not be used as the basis of a claim against the Owner. **All questions or requests for clarification regarding the bid documents or the project are to be submitted by email to airport.bids@stantec.com**. The deadline for submission of questions is **12:00 p.m., Friday February 28, 2025**. Answers to significant questions and clarifications will be issued via addenda which will be posted at https://biddocs.com/. It is the responsibility of the bidders to check the website for any issued addenda.

1.8 Addenda

1.8.1 All modifications to the bid documents will be issued via an addendum. All registered plan holders

will be electronically notified when addenda are issued. Hard copies of the addenda will not be forwarded to the plan holders. The bidder is solely responsible for reviewing all addenda posted on the project website page at https://biddocs.com/. The bidder must acknowledge all addenda have been reviewed by selecting "yes" or "no" as part of the ebidding process. If the bidder selects "no", the bidder will automatically be directed to the Addenda icon on the project page.

1.9 Modifications by Bidder:

1.9.1 After the bid opening, a bidder may not change any provision of the bid in a manner prejudicial to the interests of the City of Lawrence or fair competition. Minor informalities may be waived or the bidder may be allowed to correct them at the discretion of the City of Lawrence. If a mistake and the intended bid are clearly evident on the face of the bid document, the mistake will be corrected to reflect the intended correct bid, and the bidder will be notified in writing; the bidder may not withdraw the bid. A bidder may withdraw a bid if a mistake is clearly evident on the face of the bid document, but the intended correct bid is not similarly evident.

1.10 Cancellation of Invitation for Bids:

1.10.1 The City of Lawrence may cancel this Invitation to Bid, or reject in whole or in parts any and all bids, if the City of Lawrence determines that cancellation or rejection serves the best interests of the Lawrence Municipal Airport.

1.11 Reference to Commercial Types

1.11.1 Any and all references to commercial types, styles, or trade names and catalogues are intended to be descriptive only and not restrictive. The intention is to indicate to the bidders the kind and quality of the articles which will be necessary.

1.12 Delivery of Goods/Services

1.12.1 No items are to be shipped or delivered until receipt of an official contract or purchase order from the City of Lawrence.

1.13 Invoicing

1.13.1 Tax Exempt Status: The City of Lawrence is tax exempt and will provide Sales Tax Exempt Purchaser Certificate(s) upon request. No charges for Federal, State, or Municipal sales or excise taxes will be allowed. The prices bid shall be net and not include the amount of any such tax.

1.13.2 Invoices shall be submitted in triplicate to the Office of the Airport Manager unless otherwise specified. Payments of such bills shall not preclude the City of Lawrence from making claims for adjustment on any item found not to have been in accordance with the general conditions or specifications.

1.14 Massachusetts Prevailing Wage and Davis-Bacon Minimum Federal Wage Requirements:

1.14.1 The prevailing wage requirements of Massachusetts General Laws, Chapter 30 §39M and Davis-Bacon and Related Acts, 40 USC §3141 et seq.; 29 CFR Parts 1, 3, 5, 6 and 7 are applicable to this invitation for bids. Wage rates, as determined by the Massachusetts Division of Occupational Safety and by the U.S. Department of Labor are included in Division II Special Provisions of the Bid Documents. Certified payrolls must be submitted with each invoice.

1.15 OSHA 10 Hour Certification:

1.15.1 All employees that will be employed at the worksite shall have successfully completed a course in

construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and shall furnish documentation of successful completion (certificate) of said course with the first certified payroll report for each employee.

ARTICLE 2 – BID ALTERNATES (Not Used)

ARTICLE 3 - WITHDRAWAL OF BIDS

3.1. Before Opening of Bids

3.1.1. Any bid may be withdrawn (retracted) prior to the time designated for receipt of bids upon clicking the tab to "Retract Bid". The bidder and Awarding Authority will receive an email confirming that the bidder retracted the bid.

3.1.2. Withdrawn bids may be modified and resubmitted up to the time designated for the receipt of bids.

3.2. After Opening of Bids

3.2.1. Bidders may withdraw a bid, without penalty, any time up to the time of Award as defined in paragraph 5.1, and upon demonstrating, to the satisfaction of the –Awarding Authority, that a bona fide clerical error was made during the preparation of the bid and that the corrected bid intent is not clearly evident as noted in Paragraph 1.9.1. Failure to conclusively demonstrate a bona fide clerical error may result in forfeiture of the bid deposit.

ARTICLE 4 – PURCHASE DESCRIPTION/SCOPE OF SERVICES

4.1. Refer to attached project plans and specification documents prepared by Stantec Consulting Services Inc. entitled "**Runway 5 End Drainage Improvements**" for a complete description of project scope of services.

ARTICLE 5 – RULE FOR AWARD

5.1 The contract will be awarded to the responsive and responsible bidder offering the lowest total price determined on the basis of the sum of the base bid and the accepted alternates.

5.2 The contract will be awarded within **one hundred twenty (120)** days after the bid opening. The time for award may be extended for up to 30 additional days by mutual agreement between the City of Lawrence and the apparent lowest responsive and responsible bidder.

5.3 Construction under this contract will be funded in part by FAA's Airports Division and MassDOT's Aeronautics Division and will be subject to all applicable requirements. Award of this contract will be contingent upon receipt of funding from FAA's Airports Division and MassDOT's Aeronautics Division.

ARTICLE 6 – INSURANCE REQUIREMENTS

6.1 The Contractor's Public Liability and Property Damage Insurance.

Contractor's liability insurance shall be purchased and maintained by the Contractor to protect him/her from claims for damages because of bodily injury, including death, and from claims for damages, other than to the work itself, to property which may arise out of or result from the Contractor's operation under this agreement, whether such operations be by himself/herself or by any or anyone directly or indirectly employed by any of them. The insurance shall name the City of Lawrence as an additional insured and shall be written for not less than $500,000 each person, $1,000,000 each occurrence for bodily injury, and $500,000 each occurrence, $1,000,000 aggregate for property damage, or such amount as required by law, whichever is greater, and shall include contractual liability applicable to the Contractor's obligations. Coverage must include the following: Premises/ Operations, Elevators and Hoists, Independent Contractors, Contractual Liability Assumed Under this Contract, Products/completed operations, Broad Form Property Coverage, and Personal Injury.

6.2 Workmen's Compensation Insurance.

Workmen's Compensation Insurance must be provided at the Contractor's expense in accordance with the provisions of M.G.L. Chapter 149, § 34A. The Contractor shall, before commencing performance of this Contract, provide by insurance for the payment of compensation and the furnishing of other benefits under M.G.L. Chapter 152, § 25C, as amended, to all persons to be employed under the Contract, and the Contractor shall continue such insurance in full force and effect during the term of this Contract. Proof of compliance with the aforesaid stipulations shall be furnished to the City's Purchasing Agent when requested and by submitting two copies of a properly endorsed insurance certificate issued by a company authorized to write Workmen's Compensation Insurance policies in the Commonwealth of Massachusetts. Any cancellation of such insurance whether by the insurer or by the insured shall not be valid unless written notice thereof is given by the party proposing cancellation to the other party and the Purchasing Agent at least fifteen (15) days prior to the intended effective date thereof, which date shall be expressed in said notice.

6.3 Vehicle Liability Insurance.

The Contractor shall take out and maintain at his/her own expense during the life of this Contract vehicle liability insurance. The insurance shall name the City of Lawrence as an additional insured and shall be written for not less than $500,000 each person, $1,000,000 each occurrence for bodily injury, and $500,000 each occurrence, $1,000,000 aggregate for property damage, or such amount as required by law, whichever is greater, and shall include contractual liability applicable to the Contractor's obligations. Coverage must include the following: Owned Vehicles, Leased Vehicles, Hired Vehicles, Non-Owned Vehicles

6.4 Certificates of Insurance.

The Contractor shall deposit with the City of Lawrence Certificates of Insurance for the coverage required, in form and substance satisfactory to the City of Lawrence, and shall deliver to the City of Lawrence new policies and certificates thereof for any insurance about to expire at least ten (10) days before such expiration. All such insurance policies shall contain an endorsement requiring thirty (30) days written notice to the City of Lawrence prior to cancellation of change in coverage, scope or amount of any such policy or policies. Compliance by the Contractor with the insurance requirement, however, shall not relieve the Contractor from liability under the indemnity provisions.

6.5 Indemnification

The vendor/contractor agrees to indemnify the City of Lawrence, its successors, agents, servants, employees, or assigns against any and all claims for loss, liability, or damage arising out of or in connection with the work done or to be performed and in connection with or arising out of the acts or negligent omissions of the Vendor's employees, whether negligent or intentional, foreseeable or unforeseeable, within or without the scope of his/her employment, while said employees are upon, entering, or leaving the premises upon which this agreement is being performed.

ARTICLE 7 – SUCCESSFUL BIDDER GUARANTEES

7.1 His/her products against defective material or workmanship and to repair or replace any damages or marring occasioned in transit.

7.2 That he/she will complete the work within **50 calendar days** or be subject to liquidated damages as specified in section 80-08 of the General Provisions and the section entitled "Liquidated Damages" of the Special Provisions.

7.3 To furnish adequate protection from damage for all work and to repair damages of any kind for which he/she or his/her workpeople are responsible, to the building or equipment, to his/her own work, or to existing facilities or other properties.

7.4 That all deliveries of materials shall be equal to any accepted bid sample.

7.5 Any merchandise provided under the contract that is or becomes defective during the guarantee period shall be replaced by the successful bidder free of charge with the specific understanding that all replacements shall

carry the same guarantee as the original equipment (one year from the date of acceptance by the City of Lawrence). The Successful Bidder shall make any replacement immediately upon receiving notice from the Lawrence Municipal Airport Manager.

ARTICLE 8 – AFFIRMATIVE ACTION, NON-DISCRIMINATION IN HIRING AND EMPLOYMENT

8.1 The successful bidder shall comply with all federal and state laws, rules and regulations promoting fair employment practices or prohibiting employment discrimination and unfair labor practices and shall not discriminate in the hiring of any applicant for employment nor shall any qualified employee be demoted, discharged or otherwise subject to discrimination in the tenure, position, promotional opportunities, wages, benefits or terms and conditions of their employment because of race, color, national origin, ancestry, age, sex, religion, disability, handicap, sexual orientation or for exercising any rights afforded by law. The successful bidder commits to purchasing supplies and services from certified minority or women-owned businesses, small businesses or businesses owned by socially or economically disadvantaged persons or persons with disabilities. All bidders will receive consideration without regard to race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability.

ARTICLE 9 – ADDITIONAL TERMS AND CONDITIONS

9.1 If the Successful Bidder fails to deliver, within the time specified, or fails to make replacement of rejected articles when so requested, immediately or as requested by the City of Lawrence, the Town may purchase from other sources to take the place of the items rejected or not delivered. The Purchasing Agent reserves the right to authorize immediate purchase from other sources against rejections on any contract when necessary. On all such purchases, the Successful Bidder hereby agrees to reimburse the City of Lawrence promptly for excess costs occasioned by such purchases. Should the cost be less, the Successful Bidder shall have no claim to the difference. Such purchases shall be deducted from the contract quantity.

9.2 A contract may be canceled at the Successful Bidder's expense upon non-performance of the contract.

ARTICLE 10 – UTILITY LOCATION AND DIG-SAFE NOTIFICATION

10.1 Chapter 82, §§ 40, 40A-40E of Massachusetts General Laws requires that prior to commencing any excavation the Contractor shall notify any and all utility companies which might have an underground utility installation in the vicinity of the work area. Such notice shall be given at least 72 hours prior to the time of anticipated excavation. Such notice may be conducted by notifying Dig Safe, Inc. at 888-344-7233 or **811** to ascertain the potential location of any underground utility in the area.

ARTICLE 11 – SPECIMEN CONTRACT AGREEMENT

11.1 A specimen contract agreement is included in this specifications package; this contract is included as a fair representation of the contract under which the Successful Bidder will work. Please notice that the Contract Agreement incorporates by reference all the terms, specifications, and conditions of the bid.

END OF SECTION

Page Intentionally Blank

CITY OF LAWRENCE
STANDARD CONTRACT

This AGREEMENT made as of _____ by and between _____, hereinafter referred to as "the Contractor", and the **CITY OF LAWRENCE, MASSACHUSETTS**, a municipal corporation organized and existing under the laws of the Commonwealth of Massachusetts, hereinafter referred to as "the City."

WITNESSETH THAT:

WHEREAS, the City desires to engage the Contractor to render certain services hereafter described,

NOW THEREFORE, the parties hereto do mutually agree as follows;

****GENERAL PROVISIONS****

1. Employment of Contractor. The City agrees to engage the services of the Contractor and the Contractor agrees to perform the services hereinafter set forth.

2. Scope of Services. The Contractor shall do, perform, and carry out, in a satisfactory and proper manner, as determined reasonable and fairly by the City, the tasks described within Schedule A, Scope of Services, attached hereto and made a part hereof.

   The City shall have a reasonable opportunity to inspect all services performed by and work product of the Contractor and accept or reject such service or work product.

3. Directives Within Scope of Services. The above tasks and items are not intended to be all inclusive. The City may add to or delete any items, provided that any added items are of a similar nature, and provided that the total cost of such work does not exceed the total cost as specified in Paragraph 8 hereof. The Contractor shall undertake such work only upon the direction of the City. All directives and changes thereof in conformance with this Agreement shall be in written form, prepared and signed by the City and accepted and countersigned by the Contractor or his authorized representatives. Any added tasks or items which are not agreed to be within the Scope of Services by both the City and the Contractor, or which will incur costs beyond the total cost specified in Paragraph 8, shall be handled in accordance with Paragraph 12 hereof.

4. Data to be furnished to Contractor. All information, data and reports as are existing, available, and necessary for the carrying out of work, shall be furnished to the Contractor upon request without charge by the City, and the City shall cooperate with the Contractor in the carrying out of the Scope of Services.

5. Personnel. (a) The Contractor represents that he has, or will secure at his own expense, all personnel required for the performance of the services under this Agreement. Such personnel shall not be employees of or have any contractual relationship with the City except as employees of the Contractor. (b) All of the services required hereunder will be performed by the Contractor or under his supervision, and all personnel engaged in the work shall be fully qualified and shall be authorized under State and local law to perform such services. (c) None of the work or services covered by the Agreement shall be subcontracted without the prior written approval of the City.

5.1. The Contractor certifies that it is not disbarred, suspended, or otherwise excluded from receiving funds or bidding on any project by any State or Federal Agency.

6. Waiver of Workmen's Compensation and Unemployment Compensation Benefits. It is agreed that the Contractor and Contractor's employees, agents, servants or other persons for whose conduct the contractor is responsible shall not be deemed to be employees of the city and shall not file any claim nor bring any action for any workmen's compensation or unemployment benefits and compensation for which they may otherwise be eligible as a result of work performed pursuant to the terms of this Agreement.

6.1 The Contractor is retained solely for the purposes of and to the extent set forth in this Contract. Contractor's relationship to the City during the term of this Contract shall be that of an independent Contractor. The Contractor shall have no capacity to involve the City in any contract nor to incur any liability on the part of the city. The Contractor, its agents or employees shall not be considered as having the status or pension rights of an employee; provided that the Contractor shall be considered an employee for the purpose of General Laws c. 268A (the Conflict of Interest Law). The City shall not be liable for any personal injury to or death of the Contractor, its agents or employees.

7. Duration. The services of the Contractor are to commence as of the date first written above and shall be undertaken and completed in such sequence as to assure their expeditious completion in light of the purposes of this Agreement. All of the services required pursuant to Schedule A, Scope of Services, herein shall be completed pursuant to Schedule C, Work Program and Schedule. Any changes in performance dates shall be handled in accordance with paragraph 12, herein. Additional services may be requested at the option of the City, which shall be completed by such date as may be established by the City at the time of authorization subject to mutual agreement of the parties thereto.

7.1 It is understood and agreed that all specified times or periods of performance are of the essence of this Contract.

8. Compensation. The City agrees to pay the contractor the compensation specified in Schedule B, Compensation and Method of Payment, which is attached hereto and made a part hereof, for the above services which shall constitute complete compensation for all services rendered and for such reimbursable expenses as authorized per paragraph 9, Reimbursable Expenses. Appropriate sums will be paid, subject to receipt of a detailed requisition for payment from the Contractor specifying that he has performed the work and incurred authorized reimbursable costs under this Agreement in conformance with the Agreement, and that he is entitled to receive the amount requisitioned under the terms of the Agreement and approval of said requisition by the City department responsible for payment of this Contract.

8.1 The Contractor may, in the absence of a payment schedule, periodically submit to the Official invoices, itemizing service, labor and expenses for which compensation is due and requesting payment for services rendered by the Contractor during the period covered by the invoice.

8.2 Acceptance by the Contractor of payment from the City for final services under this Contract shall be deemed to release forever the City from all claims and liabilities.

9. Reimbursable Expenses. The City agrees to reimburse the Contractor only for those direct costs incurred by the Contractor pursuant to the performance of work under this Agreement as set forth and authorized within Schedule B, Compensation and Method of Payment, herein. As the City is exempt from sales tax, sales tax charges are not reimbursable by the City.

9.1 In the event that this Contract provides for reimbursement by the City to the Contractor for travel or other expenses, the Contractor shall submit such proposed expenses to the Official for approval prior to the incurrence of such expenses.

10. Termination of Agreement for Cause. If, through any cause, the Contractor shall fail to fulfill in a timely manner all obligations under this Agreement, or in the Contractor shall violate any or all of the provisions of this Agreement, the City shall thereupon have the right to terminate this agreement by written notice to the Contractor of such termination specifying the effective date thereof at least

five (5) days before the effective date of such termination. Cause shall also include, but not be limited to, dissolution, termination of existence, insolvency, appointment of receiver of any property, assignment for the benefit of creditors, or commencement of any proceeding under any bankruptcy or insolvency laws by or against the Contractor. In that event, all finished or unfinished documents, data, studies, surveys, drawings, maps, models, photographs, and reports or

other material prepared by the Contractor under this Agreement shall, at the option of the City, become its property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed on such documents and other material.

Notwithstanding the above, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of the Agreement by the Contractor, and the City may withhold any payments to the Contractor for the purposes of setoff until such time as the exact amount of damages due the City from the Contractor is determined.

11. Termination for Convenience of City. The City may terminate this Agreement at any time by giving written notice to the Contractor of such termination and specifying the effective date of such termination. In that event, all finished or unfinished documents and other materials as described in Paragraph 11 above shall, at the option of the City, become its property. If the Agreement is terminated by the City as provided herein, the Contractor will be paid an amount which bears the same ratio to the total compensation as the services actually performed actually bear to the total services of the Contractor covered by this Agreement, less payments of compensation previously made.

12. Changes. The City may from time to time require changes in the Scope of Service of the contractor to be performed hereunder. Such changes, including any increase or decrease in the amount of the Contractor's compensation or any change in the work schedule, which are mutually agreed upon by and between the City and the Contractor, shall be incorporated in written amendments to this Agreement.

13. If the Contractor shall provide services in a manner which is not to the satisfaction of the City, the City may request that the Contractor refurnish services at no additional cost to the City until approved by the City. If the Contractor shall fail to provide services or shall provide services which are not satisfactory to the City, the City, in the alternative, may make any reasonable purchase or Contract to purchase services in substitution for those due from the Contractor. The City may deduct the cost of any substitute Contract or nonperformance of services with incidental and consequential damages from the Contract price and shall withhold such damages from sums due or to become due to the Contractor.

13.1 If the damages sustained by the City exceed sums due or to become due, the Contractor shall pay the difference to the City upon demand.

13.2 The Contractor shall not be liable for any damages sustained by the City due to the Contractor's failure to furnish services under the terms of this Contract if such failure is in fact caused by the occurrence of a contingency with the nonoccurrence of which was a basic assumption under which this Contract was made, including but not necessarily limited to a state of war, act of enemies,

embargoes, expropriation of labor strike or any unanticipated federal, state or municipal governmental regulation of order, provided that the Contractor has notified the official in writing of such cause within fourteen (14) days after its occurrence.

14. Incorporation of Non-Discrimination Laws and Requisitions. It is understood and agreed that if this Agreement is funded in whole or in part by Federal money, that the Contractor is expected, and hereby agrees, to comply with all laws, ordinances, and duly promulgated regulations applicable to contracts of such a nature.

15. Interest of Members of the City. No officer, member, or employee of the City and no members of its governing body of the locality or localities in which the project is situated or being carried out who exercises any functions or responsibilities in the review or approval of the undertaking or carrying out of this project, shall participate in any decision relating to this Agreement which affects his personal interest or the interest of any corporation, partnership, or association in which he is, directly or indirectly interested or has any personal or pecuniary interest, direct or indirect, in this Agreement or the proceeds thereof. The Contractor's attention is specifically called to the Conflict of Interest Law, M.G.L. c. 268A.

16. Interest of Contractor. The Contractor covenants that he has neither presently nor during the period of this Agreement shall have any interest, direct or indirect, which would conflict in any manner or degree with the performance of services required under this Agreement. The Contractor further covenants that in the performance of this Agreement no person having any such interest shall be employed. Conflicts of interest include, but are not limited to: (a) family relationships with officials of the City, (b) instances where the Contractor during the period covered by the Agreement was connected as an officer or employee of the City, (c) instances where the Contractor has an interest in the Community Development Department or any parcels of land therein, covered by the work to be performed under this Agreement.

17. Assignability. The Grantee shall not assign any interest in this Agreement and shall not transfer any interest in the same (whether by assignment or novation) without the prior written consent of the City thereto.

18. Findings Confidential. Any reports, information, data, etc. given to or prepared or assembled by the contractor under this Agreement which the City requests to be kept as confidential shall not be made available to any individual or organization by the Contractor without the prior written approval of the City.

19. Officials Not to Benefit. (Applicable to Contracts Pertaining to Community Development Department) No Members or Delegates to the Congress of the United States of America, and no Resident Commissioner, shall be admitted to any share or part hereof or to any benefit to arise herefrom.

20. Identification of Documents. (Applicable to Contracts Pertaining to Community Development Department) All reports, maps, and other documents completed under this Agreement other than documents exclusively for internal use within the City, shall carry the following notation on the front cover or title page, (or in the case of maps, in the title block):

"The preparation of this (report, map, document, etc.) was financially aided through the Department of Planning and Community Development of the City of Lawrence."

21. Publication, Reproduction and Use of Material. (a) Material produced in whole or in part under this Agreement shall not be subject to Copy right, except by the City, in the United States or in any other country. The City or its duly authorized representatives have unrestricted authority to publish, disclose, distribute and otherwise use, in whole or in part, any reports, data, or other materials prepared under this Contract. (b) The Contractor hereby agrees to provide to the City copies of the draft of the report, and associated material, in sufficient number, as may be requested by the City for review and/or working purposes. (c) The Contractor hereby agrees to provide copies of the final report as indicated in Schedule A, Scope of Services.

22. Commission Prohibited. The Contractor warrants that he has not employed any person to solicit or secure this Agreement upon any agreement for a commission, percentage, brokerage, or contingent fee. Breach of this warranty shall give the City the right to terminate this Agreement, or, in its discretion, to deduct from the Contractor's fee the amount of such commission, percentage brokerage, or contingent fee.

23. This Contract is made subject to all laws of the Commonwealth of Massachusetts.

23.1 Jurisdiction and venue exclusively in Essex County, Massachusetts- This contract is executed and delivered in the Commonwealth of Massachusetts and is governed by, construed, and enforced in accordance with the laws of the Commonwealth of Massachusetts. The parties hereto expressly agree that the sole and exclusive place, status, and forum of this agreement shall be the County of Essex, Massachusetts. If either party to this contract brings any action or proceeding, including any arbitration or litigation, against the other party arising out of this agreement, that proceeding shall be solely and exclusively brought, heard, conducted, prosecuted, tried and determined within Essex County, Massachusetts. It is the express intention of the parties to this Agreement that the exclusive venue of all legal actions and procedures of any nature whatsoever which relate in any way to this Agreement shall be either the Superior Court Department of the Trial Court of the Commonwealth of Massachusetts sitting in the County of Essex, or the United States District Court sitting in Boston, Massachusetts. Accordingly, each party hereby irrevocably submits to the exclusive jurisdiction of the courts of Essex

County for purposes of any such proceeding, unless the parties identify a more suitable and agreeable jurisdiction and venue and all the parties consent to the more suitable and agreeable jurisdiction and venue in writing.

24. The Contractor shall provide, all its sole expense, all necessary licenses, permits of other authorizations required by the City, the Commonwealth of Massachusetts or any other governmental agency with proper jurisdiction.

25. The Contractor shall where applicable take out and maintain during the term of this agreement such Workmen's Compensation Insurance as may be reasonably necessary to protect the Contractor from claim under General Laws c. 152 (the Workmen's Compensation Law).

26. The Contractor agrees and shall require any subcontractor to agree not to discriminate in connection with the performance of work under the Contract against any employee or applicant for employment because of sex, race, religious creed, national origin or age. The contractor agrees and shall require any sub-contractor to agree to post in conspicuous places notices to be provided by the Massachusetts Commission Against Discrimination, setting forth provisions of the Fair Employment Practice Law of the Commonwealth.

27. The Contractor shall keep himself fully informed of all City Ordinances and Regulations, and State and Federal laws which in any manner affect the work herein specified. The Contractor shall at all times observe and comply with said ordinances, regulations or laws, and shall protect and indemnify the City, its officers, agents and employees against any claim or liability arising from or based on the violations of such ordinances, regulations or laws, caused by the negligent actions of the Contractor, his agents or employees.

28. Audit and Inspection. (a) At any time during normal business hours, and as often as the City, HUD/or representatives of the Comptroller General of the United States may deem it necessary, there shall be made available to audit, examine and make excerpts or transcripts, all records, contracts, invoices, materials, payrolls, records or personnel conditions of employment and other data relating to all matters covered by the Contract. (b) For a period of three years after final payment under this Agreement, the Contractor shall make its work papers, records and other evidence of audit available to the City or its duly authorized representatives.

29. The Contractor shall furnish such information, estimate or vouchers relating to the services or to documentation of labor or expenses as may be requested by the Official.

30. The Contractor shall pay and be exclusively responsible for all debts for labor and material contracted for by Contractor for the rental of any appliance or equipment hired by Contractor and/or for any expense incurred on account of

services to be performed under this Contract.

31. The Contractor shall bear all loss resulting from any cause before performance of service if the service or work product fails to conform to specifications.

32. The Contractor shall assume the defense of and hold the City, its officers, agents or employees, harmless from all suits and claims against them or any of them arising from any act or omission of the Contractor, its agents or employees in any way connected with performance under this Contract.

33. This Contract is subject to the availability of an appropriation therefor.

33.1 If the Contract is funded under a grant with the Federal Government, it is being executed without further appropriation pursuant to General Laws c.44, s. 53A.

33.2 When the amount of the City Auditor's certification of available funds is less than the face amount of the Contract, the City shall not be liable for any claims or requests for payment by the Contractor which would cause total claims or payments under this Contract to exceed the amount so certified.

34. Any waiver, expressed or implied, by the City or the Official of any rights, terms or conditions of this Contract shall not operate to waive such rights, terms or conditions or any other rights, terms or conditions, beyond the specific instance of waiver.

35. Force Majeure. Neither party shall be liable to the other or be deemed to be in breach of this Contract for any failure or delay in rendering performance arising out of causes beyond its reasonable control and without its fault or negligence. Such causes may include, but are not limited to, acts of God or the public enemy, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, or unusually severe weather. Dates or times of performance shall be extended to the extent of delays caused by events described this Section, provided that the party whose performance is affected notifies the other promptly of the existence and nature of such delay.

36. Attachments. Attached hereto are the following schedules which are incorporated into this Agreement and made a part hereof:

Schedule A - Scope of Services
Schedule B - Compensation and Method of Payment
Schedule C - Work Program and Schedule
Schedule D - Attestation Pursuant to M.G.L. c.62c, sec.49A
Schedule E - Certificate of Good Standing

SCHEDULE A

SCOPE OF SERVICES

SCHEDULE B

COMPENSATION AND METHOD OF PAYMENT

ORDERS
Verbal Orders are not binding on the City of Lawrence and any delivery made or work performed without written order or written Contract are at the risk of the Seller or Contractor and may result in an unenforceable claim. The actual needs of City Departments shall govern the actual amount delivered under Contract to be drawn and entered into between the successful bidder and the City. Purchase Orders issued by the City to pay for goods or services shall be made part of the contract.

This contract shall not exceed $

INVOICING REQUIREMENTS
All invoices are to be submitted to the Department of Public Works, 200 Common Street, Room 201, Lawrence, MA 01840, Attention: Accounts Payable. Only invoices referencing a valid purchase order, authorized by the City of Lawrence's Purchasing Agent and Comptroller, will be processed for payment.

To ensure a proper invoice, the invoice must include the following information and/or attached documentation:

1. Name of the business concern, invoice number and invoice date;
2. Contract number, or authorization for delivery of property or performance of services;
3. Description, price, quantity and services actually delivered or rendered;
4. Shipping and payment terms;
5. Name (where practicable), title, phone number, and complete mailing address of responsible official to who payment is to be sent; and
6. Other substantiating documentation or information as required by the contract.

All invoices submitted, in the manner stated above, will be processed and forwarded, to the City Auditor's Office, for payment, within sixty (60) days, provided the materials, supplies and/or services have been delivered and/or rendered, as directed, and accepted by the City of Lawrence.

SCHEDULE C

DELIVERABLES AND SCHEDULE

The services described in Schedule A, Scope of Services shall be rendered upon full execution of this contract and receipt of authorized purchase orders issued by the City's Purchasing Agent throughout the contract term.

SCHEDULE D

LEGISLATION ENACTED BY THE COMMONWEALTH OF MASSACHUSETTS, EFFECTIVE JULY 1, 1983, REQUIRES THAT THE ATTESTATION BELOW BE SIGNED.

A T T E S T A T I O N

Pursuant to M.G.L. Ch. 62C, Sec. 49A, I certify under the penalties of perjury that I, to my best knowledge and belief have filed all state tax returns and paid all state taxes required under law.

_____	_____
*Signature of Individual or Corporate Name (Mandatory)	**Social Security Number (Voluntary) or Federal Identification Number

By:_____ Date:_____
Corporate Officer
(Mandatory, if Applicable)

* Approval of a contract or other agreement will not be granted unless this certification clause is signed by the applicant.

** Your social security number will be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment of obligations. Providers who fail to correct their non-filing or delinquency will not have a contract or other agreement issued, renewed, or extended. This request is made under the authority of Mass. G.L.C. 62C, S. 49A.

SCHEDULE E

STATEMENT OF GOOD STANDING

In accordance with State and Federal regulations, I _____ hereby certify that we are not disbarred, suspended or otherwise excluded from receiving funds or bidding on any project by any State or Federal agency.

_____ _____

Signature Date

****SIGNATORIES****

IN WITNESS WHEREOF the parties hereto have executed this Agreement in duplicate as of the day first written above in the City of Lawrence, Essex County, Massachusetts.

CONTRACTOR

By_____
Date

I hereby certify this contract complies with the provisions of M.G.L. Chapter 30B:

By_____
Procurement Officer Date

APPROVED AS TO FORM:

By_____
City Attorney Date
Date

CITY OF LAWRENCE

Reviewed and Authorized by:

By_____
Department Head Date

I hereby certify that an appropriation is available for and encumbered against this contract in the amount of:
$
Fund
Account

By_____
Comptroller Date

By _____
Mayor

MassDOT Contract Approval

MassDOT Aeronautics Division Form AD8 (Last Modified: November 27, 2023)

Approval of the below contract is granted in accordance with Section 51K, Chapter 90, of the Massachusetts General Laws, as amended. Such approval in no way makes the Massachusetts Department of Transportation (MassDOT) a party to the contract, in no way interferes with the right of any party to the contract and may not be considered a commitment of the MassDOT to fund the contract, unless otherwise so authorized.

PROJECT NAME:	Runway 5 End Drainage Improvements
PROJECT NUMBER:	
PARTIES TO CONTRACT:	
CONTRACT AMOUNT:	

Approved by and date:

_____

Dr. Jeffery DeCarlo, Administrator, or approved designee

Page Intentionally Blank

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____, hereinafter called Principal,
(Corporation, Partnership or Individual)

and _____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the City of Lawrence, Massachusetts, hereinafter called OWNER, in the penal sum of _____ _____, ($_____.__) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____ 2024, a copy of which is hereto attached and made a part hereof for the construction of:

Airport Improvements
Runway 5 End Drainage Improvements
Lawrence Municipal Airport
North Andover, Massachusetts

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, Subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the Work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such Work, and all insurance premiums on said Work, and for all labor, performed in such Work whether by Subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the Work to be performed thereunder or the Specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the Work or to the Specifications.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts,

each of which shall be deemed an original, this the _____ day of _____ 2024.

ATTEST:

_____
Principal

_____
(Principal) Secretary

(SEAL) By _____(s)

_____
(Address)
_____

_____
Witness as to Principal

_____
(Address)

_____ _____
Surety

ATTEST: By _____
Attorney-in-Fact

_____ _____
Witness as to Surety (Address)

_____ _____
(Address)

_____

NOTE: Date of Bond must not be prior to date of Contract.
IF CONTRACTOR is Partnership, all partners should execute Bond.

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.

Page Intentionally Blank.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____, hereinafter called Principal,
(Corporation, Partnership, or Individual)

and_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto the City of Lawrence, Massachusetts

hereinafter called OWNER, in the penal sum of _____
_____ Dollars, ($_____)
in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 2024, a copy of which is hereto attached and made a part hereof for the construction of:

Airport Improvements
Runway 5 End Drainage Improvements
Lawrence Municipal Airport
North Andover, Massachusetts

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and affect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to Work to be performed thereunder or the Specifications accompanying the same shall in any wise affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the Work or to the Specifications.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts,

each one of which shall be deemed an original, this the _____ day of _____, 2024.

ATTEST: _____
Principal

_____ By _____(s)
(Principal Secretary)

(SEAL of Principal)

_____ _____
(Witness as to Principal) (Address)

_____ _____
(Address)

_____ _____
Surety

ATTEST:

_____
(Surety) Secretary

(SEAL of Surety)

_____	By _____
Witness as to Surety	Attorney-in-Fact
_____	_____
(Address)	(Address)
_____	_____

NOTE: Date of Bond must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute Bond.

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the Project is located.

Page Intentionally Blank.

DIVISION I

GENERAL CONTRACT PROVISIONS

Page Intentionally Blank

General Contract Provisions

Section 10 Definition of Terms

When the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be defined as follows:

Paragraph Number	Term	Definition
10-01	**AASHTO**	The American Association of State Highway and Transportation Officials.
10-02	**Access Road**	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
10-03	**Advertisement**	A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.
10-04	**Airport**	Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; airport buildings and facilities located in any of these areas, and a heliport.
10-05	**Airport Improvement Program (AIP)**	A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
10-06	**Air Operations Area (AOA)**	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.
10-07	**Apron**	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
10-08	**ASTM International (ASTM)**	Formerly known as the American Society for Testing and Materials (ASTM).
10-09	**Award**	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
10-10	**Bidder**	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

Paragraph Number	Term	Definition
10-11	**Building Area**	An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.
10-12	**Calendar Day**	Every day shown on the calendar.
10-13	**Certificate of Analysis (COA)**	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
10-14	**Certificate of Compliance (COC)**	The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	**Change Order**	A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for work within the scope of the contract and necessary to complete the project.
10-16	**Contract**	A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment. The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.
10-17	**Contract Item (Pay Item)**	A specific unit of work for which a price is provided in the contract.
10-18	**Contract Time**	The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.
10-19	**Contractor**	The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.
10-20	**Contractors Quality Control (QC) Facilities**	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).
10-21	**Contractor Quality Control Program (CQCP)**	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the

Paragraph Number	Term	Definition
		contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	**Control Strip**	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
10-23	**Construction Safety and Phasing Plan (CSPP)**	The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
10-24	**Drainage System**	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	**Engineer**	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
10-26	**Equipment**	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	**Extra Work**	An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.
10-28	**FAA**	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
10-29	**Federal Specifications**	The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.
10-30	**Force Account**	**a.** Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis. **b.** Owner Force Account - Work performed for the project by the Owner's employees.
10-31	**Intention of Terms**	Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer and/or Resident

Paragraph Number	Term	Definition
		Project Representative (RPR) is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer and/or RPR, subject in each case to the final determination of the Owner. Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.
10-32	**Lighting**	A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.
10-33	**Major and Minor Contract Items**	A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.
10-34	**Materials**	Any substance specified for use in the construction of the contract work.
10-35	**Modification of Standards (MOS)**	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
10-36	**Notice to Proceed (NTP)**	A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.
10-37	**Owner**	The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is **City of Lawrence, Massachusetts**.
10-38	Passenger Facility Charge (PFC)	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	**Pavement Structure**	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	**Payment bond**	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.

Paragraph Number	Term	Definition
10-41	**Performance bond**	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	**Plans**	The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications. Plans may also be referred to as 'contract drawings.'
10-43	**Project**	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	**Proposal**	The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.
10-45	**Proposal guaranty**	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	**Quality Assurance (QA)**	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	**Quality Control (QC)**	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	**Quality Assurance (QA) Inspector**	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
10-49	**Quality Assurance (QA) Laboratory**	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	**Resident Project Representative (RPR)**	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.
10-51	**Runway**	The area on the airport prepared for the landing and takeoff of aircraft.

Paragraph Number	Term	Definition
10-52	**Runway Safety Area (RSA)**	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	**Safety Plan Compliance Document (SPCD)**	Details how the Contractor will comply with the CSPP.
10-54	**Specifications**	A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.
10-55	**Sponsor**	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
10-56	**Structures**	Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	**Subgrade**	The soil that forms the pavement foundation.
10-58	**Superintendent**	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.
10-59	**Supplemental Agreement**	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%: (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	**Surety**	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	**Taxilane**	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	**Taxiway**	The portion of the air operations area of an airport that has been designated by competent airport authority for movement of

Paragraph Number	Term	Definition
		aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.
10-63	**Taxiway/Taxilane Safety Area (TSA)**	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
10-64	**Work**	The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.
10-65	**Working day**	A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.
10-66	**Owner Defined terms**	**MassDOT Aeronautics Division – A branch of the Massachusetts Department of Transportation that is responsible for promoting aviation, enhancing airport safety, customer service, economic development, and environmental stewardship in the State of Massachusetts. For this Contract, MassDOT Aeronautics is also a stake holder for project funding and approvals/acceptance of work.**

END OF SECTION 10

Page Intentionally Blank

Section 20 Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders). See the Invitation to Bid in the Information, Contract and Bonds portion of the Contract Documents.

20-02 Qualification of bidders. Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.

Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.

Each bidder shall furnish the Owner satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current "bidder's list" of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.

20-03 Contents of proposal forms. The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

Mobilization is limited to 10 percent of the total project cost.

A non-mandatory prebid conference will be held to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; and the construction safety and phasing plan including airport access and staging areas. See the Invitation to Bid in the Information, Contracts, and Bonds portion of the Contract Documents for details on time, date, and place of the pre-bid conference.

20-04 Issuance of proposal forms. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is in default for any of the following reasons:

a. Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.

b. Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force with the Owner at the time the Owner issues the proposal to a prospective bidder.

c. Documented record of Contractor default under previous contracts with the Owner.

d. Documented record of unsatisfactory work on previous contracts with the Owner.

20-05 Interpretation of estimated proposal quantities. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as provided in the Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

20-07 Preparation of proposal. The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.

20-08 Responsive and responsible bidder. A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

20-09 Irregular proposals. Proposals shall be considered irregular for the following reasons:

a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.

b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.

c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.

d. If the proposal contains unit prices that are obviously unbalanced.

e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.

f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

20-10 Bid guarantee. Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral, shall be made payable to the Owner.

20-11 Delivery of proposal. Proposal shall be submitted electronically online to https://biddocs.com/. See the Invitation to Bid and Instructions to Bidder in the Contract Documents on details on how to submit the proposal electronically.

20-12 Withdrawal or revision of proposals. See the Instructions to Bidders in the Bid Documents for details regarding withdrawal or revisions to the electronic online proposal submission.

20-13 Public opening of proposals. Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

20-14 Disqualification of bidders. A bidder shall be considered disqualified for any of the following reasons:

a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.

b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, *Issuance of Proposal Forms,* of this section.

20-15 Discrepancies and Omissions. A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than **7** days prior to bid opening.

Any interpretation of the project bid documents by the Owner's Engineer will be by written addendum issued by the Owner. The Owner will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than written addendum.

END OF SECTION 20

Page Intentionally Blank

Section 30 Award and Execution of Contract

30-01 Consideration of proposals. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.

b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

30-02 Award of contract. The award of a contract, if it is to be awarded, shall be made within **120** calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals.* Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds.*

30-05 Requirements of contract bonds. At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

30-06 Execution of contract. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds,* of this section, within **15** calendar days from the date mailed or otherwise delivered to the successful bidder.

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract,* of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

END OF SECTION 30

Section 40 Scope of Work

40-01 Intent of contract. The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

40-02 Alteration of work and quantities. The Owner reserves the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, *Compensation for Altered Quantities*.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

40-03 Omitted items. The Owner, the Owner's Engineer or the RPR may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with Section 90, paragraph 90-04, *Payment for Omitted Items*.

40-04 Extra work. Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, Owner may issue a Change Order to cover the necessary extra work. Change orders for extra work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the RPR's opinion, is necessary for completion of the extra work.

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. Extra work that is necessary for acceptable completion of the project, but is not within the general scope of the work

covered by the original contract shall be covered by a supplemental agreement as defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

If extra work is essential to maintaining the project critical path, RPR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available to establish the level of effort necessary for the extra work, the Owner shall initiate a change order or supplemental agreement to cover the extra work.

Any claim for payment of extra work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

40-05 Maintenance of traffic. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

b. With respect to their own operations and the operations of all subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying personnel, equipment, vehicles, storage areas, and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD). Refer to AC 150/5210-5, Painting, Marking and Lighting of Vehicles Used on an Airport and AC 150/5370-2, Operational Safety on Airports During Construction for applicable standards.

c. When the contract requires the maintenance of an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (http://mutcd.fhwa.dot.gov/), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

40-06 Removal of existing structures. All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly, but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Resident Project Representative (RPR) shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

40-07 Rights in and use of materials found in the work. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be embankment, the Contractor may at their own option either:

a. Use such material in another contract item, providing such use is approved by the RPR and is in conformance with the contract specifications applicable to such use; or,

b. Remove such material from the site, upon written approval of the RPR; or

c. Use such material for the Contractor's own temporary construction on site; or,

d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., the Contractor shall request the RPR's approval in advance of such use.

Should the RPR approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at their expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for use of such material used in the work or removed from the site.

Should the RPR approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of their own exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

40-08 Final cleanup. Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The Contractor shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of the property Owner.

END OF SECTION 40

Page Intentionally Blank

Section 50 Control of Work

50-01 Authority of the Resident Project Representative (RPR). The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to specification requirements.

50-02 Conformity with plans and specifications. All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross-sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans, or specifications.

If the RPR finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the RPR finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the RPR's written orders.

The term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the RPR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the RPR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The RPR will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

50-03 Coordination of contract, plans, and specifications. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If

any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the RPR for an interpretation and decision, and such decision shall be final.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.

50-04 List of Special Provisions. See Division II of the Contract Documents for Special Provisions

50-05 Cooperation of Contractor. The Contractor shall be supplied with an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional hard copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof, and shall cooperate with the RPR and their inspectors and with other Contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as their agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the RPR or their authorized representative.

50-06 Cooperation between Contractors. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct the work not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with their own contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange their work and shall place and dispose of the materials being used to not interfere with the operations of the other Contractors within the limits of the same project. The Contractor shall join their work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

50-07 Construction layout and stakes. The Engineer/RPR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving integrity of horizontal and vertical controls established by Engineer/RPR. In case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor.

Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the RPR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution and control of the work on this project will be provided to the RPR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): PDF, AutoCAD Civil 3D and XML.

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses. The cost shall be included in the price of the bid for the various items of the Contract.

50-08 Authority and duties of Quality Assurance (QA) inspectors. QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA Inspectors are authorized to notify the Contractor or their representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the RPR for a decision.

50-09 Inspection of the work. All materials and each part or detail of the work shall be subject to inspection. The RPR shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the RPR requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) Owner, authorized representatives of the Owners of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract, and shall in no way interfere with the rights of the parties to this contract.

50-10 Removal of unacceptable and unauthorized work. All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of Section 70, paragraph 70-14, *Contractor's Responsibility for Work*.

No removal work made under provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against the Contractor.

50-11 Load restrictions. The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

50-12 Maintenance during construction. The Contractor shall maintain the work during construction and until the work is accepted. Maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in paragraph 50-12, *Maintenance during Construction*, the RPR shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the RPR's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner, shall be recovered as a liquidated damage against the Contractor.

50-14 Partial acceptance. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the RPR to make final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR may accept it as being complete, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

50-15 Final acceptance. Upon due notice from the Contractor of presumptive completion of the entire project, the RPR and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such

inspection shall constitute the final inspection. The RPR shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the RPR will notify the Contractor and the Contractor shall correct the unsatisfactory work. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the RPR will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

50-16 Claims for adjustment and disputes. If for any reason the Contractor deems that additional compensation is due for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the RPR has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 10 calendar days, submit a written claim to the RPR who will present it to the Owner for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

END OF SECTION 50

Page Intentionally Blank

Section 60 Control of Materials

60-01 Source of supply and quality requirements. The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish documentation to the RPR as to the origin, composition, and manufacture of all materials to be used in the work. Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the RPR's option, materials may be approved at the source of supply before delivery. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that meets the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program* and *Addendum*, that is in effect on the date of advertisement.

60-02 Samples, tests, and cited specifications. All materials used in the work shall be inspected, tested, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the RPR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Owner in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), federal specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the RPR. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the RPR.

A copy of all Contractor QC test data shall be provided to the RPR daily, along with printed reports, in an approved format, on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the RPR showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

60-03 Certification of compliance/analysis (COC/COA). The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified. The COA is the manufacturer's COC and includes all applicable test results.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time and if found not to be in conformity with contract requirements will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the RPR.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "or equal," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

a. Conformance to the specified performance, testing, quality or dimensional requirements; and,

b. Suitability of the material or assembly for the use intended in the contract work.

The RPR shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

The RPR reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

60-04 Plant inspection. The RPR or their authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for acceptance of the material or assembly.

Should the RPR conduct plant inspections, the following conditions shall exist:

a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.

b. The RPR shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.

c. If required by the RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The RPR shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

60-05 Engineer/ Resident Project Representative (RPR) field office. An Engineer/RPR field office is not required.

60-06 Storage of materials. Materials shall be stored to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the RPR. Materials to be stored on airport property shall not create an obstruction to air navigation nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans and/or CSPP, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the RPR. Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the RPR a copy of the property Owner's permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at their expense, except as otherwise agreed to (in writing) by the Owner or lessee of the property.

60-07 Unacceptable materials. Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the RPR.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the RPR has approved its use in the work.

60-08 Owner furnished materials. The Contractor shall furnish all materials required to complete the work, except those specified, if any, to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

END OF SECTION 60

Page Intentionally Blank

Section 70 Legal Regulations and Responsibility to Public

70-01 Laws to be observed. The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all their officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by the Contractor or the Contractor's employees.

70-02 Permits, licenses, and taxes. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

70-03 Patented devices, materials, and processes. If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work.

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the RPR.

Should the Owner of public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such Owners by arranging and performing the work in this contract to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the RPR, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

70-05 Federal Participation. The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States a party to the contract nor will any such requirement interfere, in any way, with the rights of either party to the contract.

70-06 Sanitary, health, and safety provisions. The Contractor's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

70-07 Public convenience and safety. The Contractor shall control their operations and those of their subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic,* and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the RPR. If the RPR determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the RPR reserves the right to assign the task of debris removal to a third party and recover the resulting costs as a liquidated damage against the Contractor.

70-08 Construction Safety and Phasing Plan (CSPP). The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is on sheet(s) included in Appendix A of the Contract Documents and on drawings G001, G002, G101 and G102 of the project plans.

70-09 Use of explosives. The use of explosives is not permitted on this project.

70-10 Protection and restoration of property and landscape. The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer/RPR has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the non-execution thereof by the Contractor, the Contractor shall restore, at their expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or the Contractor shall make good such damage or injury in an acceptable manner.

70-11 Responsibility for damage claims. The Contractor shall indemnify and hold harmless the Engineer/RPR and the Owner and their officers, agents, and employees from all suits, actions, or claims, of any character, brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he or she is adequately protected by public liability and property damage insurance.

70-12 Third party beneficiary clause. It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create for the public or any member thereof, a third-party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

70-13 Opening sections of the work to traffic. Not Used.

70-14 Contractor's responsibility for work. Until the RPR's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at their own expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

70-15 Contractor's responsibility for utility service and facilities of others. As provided in paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and/or in the contract documents.

Facility or Utility	**Contact**	**Phone #**
Lawrence Municipal Airport	Francisco Urena	978-794-5880
FAA System Support Center (SSC)	Jim Caulfield	781-372-5526
National Grid	David Boucher	978-725-1461
DigSafe		**888-344-7233**

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of the responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the RPR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's "Person to Contact" no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the RPR.

The Contractor's failure to give the two days' notice shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the RPR and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the RPR continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or their own surety.

70-16 Furnishing rights-of-way. The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

70-17 Personal liability of public officials. In carrying out any of the contract provisions or in exercising any power or authority granted by this contract, there shall be no liability upon the Engineer, RPR, their authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

70-18 No waiver of legal rights. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights under any warranty or guaranty.

70-19 Environmental protection. The Contractor shall comply with all federal, state, and local laws and regulations controlling pollution of the environment. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

70-20 Archaeological and historical findings. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not

contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during their operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the RPR. The RPR will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work,* and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

70-21 Insurance Requirements. See Article 6 of the Instructions to Bidders portion of the Bid Documents for insurance requirements specific to this project.

END OF SECTION 70

Page Intentionally Blank

Section 80 Execution and Progress

80-01 Subletting of contract. The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person, by a qualified superintendent, or by other designated, qualified representative who is duly authorized to receive and execute orders of the Resident Project Representative (RPR).

The Contractor shall perform, with his organization, an amount of work equal to at least **25** percent of the total contract cost.

Should the Contractor elect to assign their contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

The Contractor shall provide copies of all subcontracts to the RPR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:

- Subcontractor's legal company name.
- Subcontractor's legal company address, including County name.
- Principal contact person's name, telephone and fax number.
- Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- Copies of required insurance certificates in accordance with the specifications.
- Minority/ non-minority status.

80-02 Notice to proceed (NTP). The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within **7** days of the NTP date. The Contractor shall notify the RPR at least 24 hours in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the Owner.

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least 14 days prior to the start of work. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the RPR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the RPR at least 48 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

80-04 Limitation of operations. The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) that cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis will be closed to aircraft operations intermittently as specified in the CSPP.

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction and the approved CSPP.

80-04.1 Operational safety on airport during construction. All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

80-05 Character of workers, methods, and equipment. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

Should the Contractor fail to remove such person or persons, or fail to furnish suitable and sufficient personnel for the proper execution of the work, the RPR may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall not cause injury to previously completed work, adjacent property, or existing airport facilities due to its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the RPR determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the RPR may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this paragraph.

80-06 Temporary suspension of the work. The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods the Owner may deem necessary, due to unsuitable weather, or other conditions considered unfavorable for the execution of the work, or for such time necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The RPR will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather or for any other delay provided for in the contract, plans, or specifications.

If it becomes necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. The Contractor shall take every precaution to prevent damage or deterioration of the work performed and provide for

normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

80-07 Determination and extension of contract time. The number of calendar days shall be stated in the proposal and contract and shall be known as the Contract Time.

If the contract time requires extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

80-07.1 Contract time based on calendar days. Contract Time based on calendar days shall consist of the number of calendar days stated in the contract counting from the effective date of the Notice to Proceed and including all Saturdays, Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

80-08 Failure to complete on time. For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

The maximum construction time allowed is **fifty (50) calendar days**. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a wavier on the part of the Owner of any of its rights under the contract.

80-09 Default and termination of contract. The Contractor shall be considered in default of their contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons, if the Contractor:

a. Fails to begin the work under the contract within the time specified in the Notice to Proceed, or

b. Fails to perform the work or fails to provide sufficient workers, equipment and/or materials to assure completion of work in accordance with the terms of the contract, or

c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or

d. Discontinues the execution of the work, or

e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or

f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or

g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or

h. Makes an assignment for the benefit of creditors, or

i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Owner consider the Contractor in default of the contract for any reason above, the Owner shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the RPR of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract, to take the execution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the RPR will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

80-10 Termination for national emergencies. The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the execution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the RPR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their surety of its obligation for and concerning any just claim arising out of the work performed.

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the RPR prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate work in accordance with the approved CSPP and SPCD.

END OF SECTION 80

Page Intentionally Blank

Section 90 Measurement and Payment

90-01 Measurement of quantities. All work completed under the contract will be measured by the RPR, or their authorized representatives, using United States Customary Units of Measurement.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the RPR.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract. When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

When requested by the Contractor and approved by the RPR in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Measurement and Payment Terms

Term	Description
Excavation and Embankment Volume	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
Measurement and Proportion by Weight	The term "ton" will mean the short ton consisting of 2,000 pounds (907 km) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the RPR directs, and each truck shall bear a plainly legible identification mark.
Measurement by Volume	Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable for the materials hauled, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles

Term	Description
	shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.
Asphalt Material	Asphalt materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts. Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
Cement	Cement will be measured by the ton (kg) or hundredweight (km).
Structure	Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
Timber	Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.
Plates and Sheets	The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inch.
Miscellaneous Items	When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.
Scales	Scales must be tested for accuracy and serviced before use. Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end. Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed 0.1% of the nominal rated capacity of the scale, but not less than one pound (454 grams). The use of spring balances will not be permitted. In the event inspection reveals the scales have been “overweighing” (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%. In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded. Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them.

Term	Description
	Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment. All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.
Rental Equipment	Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 *Payment for Extra Work*.
Pay Quantities	When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the RPR. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

90-02 Scope of payment. The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

When the "basis of payment" subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

90-03 Compensation for altered quantities. When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in Section 40, paragraph 40-02, *Alteration of Work and Quantities,* will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 Payment for omitted items. As specified in Section 40, paragraph 40-03, *Omitted Items,* the RPR shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the RPR omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the RPR's order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the RPR's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the RPR's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

90-05 Payment for extra work. Extra work, performed in accordance with Section 40, paragraph 40-04, *Extra Work*, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and in place, in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

a. From the total of the amount determined to be payable on a partial payment, 5 percent of such total amount will be deducted and retained by the Owner for protection of the Owner's interests. Unless otherwise instructed by the Owner, the amount retained by the Owner will be in effect until the final payment is made except as follows:

(1) Contractor may request release of retainage on work that has been partially accepted by the Owner in accordance with Section 50-14. Contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

(2) In lieu of retainage, the Contractor may exercise at its option the establishment of an escrow account per paragraph 90-08.

b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. Contractor must provide the Owner evidence of prompt and full payment of retainage held by the prime Contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

c. When at least 95% of the work has been completed to the satisfaction of the RPR, the RPR shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done. The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the RPR to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in paragraph 90-09, *Acceptance and Final Payment*.

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

90-07 Payment for materials on hand. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

a. The material has been stored or stockpiled in a manner acceptable to the RPR at or on an approved site.

b. The Contractor has furnished the RPR with acceptable evidence of the quantity and quality of such stored or stockpiled materials.

c. The Contractor has furnished the RPR with satisfactory evidence that the material and transportation costs have been paid.

d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material stored or stockpiled.

e. The Contractor has furnished the Owner evidence that the material stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of their responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this paragraph.

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 90-06 *Partial Payments*, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.

b. The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the retainage that would otherwise be withheld from partial payment.

c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.

d. The Contractor shall obtain the written consent of the surety to such agreement.

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the RPR shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

After the Contractor has approved, or approved under protest, the RPR's final estimate, and after the RPR's receipt of the project closeout documentation required in paragraph 90-11, *Contractor Final Project Documentation*, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of Section 50, paragraph 50-16, *Claims for Adjustments and Disputes,* or under the provisions of this paragraph, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

90-10 Construction warranty.

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession.

c. The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within 14 days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed,

in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

h. This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

90-11 Contractor Final Project Documentation. Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the RPR approves the Contractor's final submittal. The Contractor shall:

a. Provide two (2) copies of all manufacturers warranties specified for materials, equipment, and installations.

b. Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.

c. Complete final cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.

d. Complete all punch list items identified during the Final Inspection.

e. Provide complete release of all claims for labor and material arising out of the Contract.

f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.

g. When applicable per state requirements, return copies of sales tax completion forms.

h. Manufacturer's certifications for all items incorporated in the work.

i. All required record drawings, as-built drawings or as-constructed drawings.

j. Project Operation and Maintenance (O&M) Manual(s).

k. Security for Construction Warranty.

l. Equipment commissioning documentation submitted, if required.

END OF SECTION 90

Page Intentionally Blank

DIVISION II

SPECIAL PROVISIONS

Page Intentionally Blank

DIVISION II
SPECIAL PROVISIONS

1. Description and Location of Work:

1.1 The project work area is located on the airfield within the airport security fence at the south end of the airport adjacent to Runway 5. The intent of the project is to restore approximately 200 LF of intermittent stream, repair approximately 100 LF of bank erosion and install approximately 650 LF of storm drainage pipe and manholes. The new storm drainage infrastructure will be used to temporarily divert the intermittent stream for the restoration work and will permanently divert a portion of stormwater to a point further downstream. The work also includes but is not necessarily limited to: airfield safety measures including safety fence, cones and barricades, erosion controls; sand bag diversion dam; earthwork; subbase; topsoil and seeding; stream stabilization; fence removal and replacement; electrical conduit and wiring; and incidentals. The work will also require the contractor to provide qualified operators ("Escorts) with Airband radio equipped vehicles who will be trained by the airport to communicate with the Air Traffic Control Tower to escort construction vehicles and equipment to and from the work site throughout the duration of the project.

2. Drawings:

2.1 The Contract Drawings are as follows:

SHEET NO.	DRAWING NO.	DRAWING TITLE
1	T001	TITLE SHEET
2	G001	GENERAL SITE PLAN
3	G002	GENERAL NOTES
4	G101	SAFETY & PHASING PLAN
5	G102	SAFETY & PHASING NOTES & DETAILS
6	V101	EXISTING CONDITIONS PLAN
7	C101	LAYOUT PLAN
8	C102	VEGETATION REMOVAL PLAN
9	C201	GRADING PLAN & PROFILE
10	C301	DRAINAGE PLAN
11	C302	DRAINAGE DETAILS
12	C401	STREAM RESTORATION & EROSION CONTROL PLAN
13	C402	STREAM RESTORATION – TYPICAL SECTIONS
14	C403	STREAM RESTORATION – NOTES & DETAILS
15	C404	EROSION CONTROL DETAILS - 1
16	C405	EROSION CONTROL DETAILS - 2
17	C406	EROSION CONTROL NOTES

SHEET NO.	DRAWING NO.	DRAWING TITLE
18	C501	FENCE PLAN & DETAILS
19	C601	CROSS SECTIONS - 1
20	C602	CROSS SECTIONS - 2
21	E101	ELECTRICAL PLAN & DETAILS

3. Commencement and Completion of Work:

3.1 It is expected that project execution of this contract, will be on or about **June 2, 2025,** and is dependent on receipt of FAA and State funding grants. The anticipated date of Notice to Proceed is on or about **July 28, 2025**. The scheduled total construction period is **Fifty (50)** calendar days for substantial completion of the work. Refer to Contract Plans and Division I, Article 80-08 for additional information.

4. Liquidated Damages:

4.1 If the work shall remain substantially uncompleted after the time specified above for the overall completion of the work, or for any specific phase (exclusive of any authorized extension of such stipulated time), the Contractor shall pay to the Owner the sum of **One Thousand Dollars ($1,000.00)** per calendar day for each and every day that the Contractor is in default in completing the work. Refer to Division I, Article 80-08 for additional information.

4.2 The Owner's right to collect liquidated damages shall not be exclusive but shall be in addition to any and all rights and/or remedies reserved to the Owner under this Contract.

5. Minimum Wage Rates:

5.1 The minimum wage rates to be used for this Contract are shown on the schedules that follow. There are two sets of Prevailing Wages contained in this document. The Commonwealth of Massachusetts Division of Occupational Safety Wage Rate Schedule is contained herein as Attachment A. The Davis-Bacon requirements as determined by U.S. Department of Labor including rate schedules are included in herein as Attachment C. In the event of conflict between the schedules for any classification, the greater amount for the classification shall prevail as the minimum wage rate.

5.2 If the Contractor, during the progress of the work, requires a minimum wage rate for some additional classification, a request shall be made to the Owner, who in turn will request the additional classification and corresponding minimum wage rate from the State Department of Labor Standards and advise the Contractor of the same. These additional classification and minimum wage rates are then to be considered a part of the Contract and the Contractor shall have no claim for additional compensation because of the additional classification and minimum wage rates.

5.3 The U.S. Department of Labor (DOL) Wage and Hour Division administers the Fair Labor Standards Act (FLSA).This act prescribes federal standards for basic minimum wage, overtime pay, record keeping, and child labor standards.

5.4 All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The Contractor has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

6. Utilities for Construction

6.1 The Contractor shall provide or arrange for, at his/her own expense, water, heat, and electricity for construction purposes, sanitary facilities for workmen, telephone, and other facilities and services as found necessary for his/her own operations.

6.3 It is the Contractor's responsibility to verify if the public water system (i.e. hydrants) may be used for construction purposes and shall provide backflow devices and meters inspected and approved for use by local utility authorities. The Contractor shall coordinate with the local Water utility authority and pay for any and all charges that the local authority requires. If hydrants are not available on-site, the Contractor shall be prepared to provide water truck(s) as required at no additional cost.

6.4 Electricity for the Contractor's work site will be the responsibility of the Contractor. If portable power units are used for work during the hours of darkness, they shall be suitably muffled. Furnishing such units shall be the responsibilities of the Contractor and will be considered a subsidiary obligation of the Contractor.

6.5 Buildings for the sanitary necessities of all persons employed on the work, beginning with the first workman at the site, shall be provided and maintained by the Contractor;

1. at approved locations near the work;
2. on the basis of not less than 1 unit for each 15 persons;
3. in a clean, sanitary condition at all times;
4. of an approved chemical type, or water closets, if permitted;
5. adequately screened to be inaccessible to flies.

7. Disturbances

7.1 The committing of nuisances on the land of the Owner and adjacent properties shall be rigorously prohibited and adequate steps taken to prevent it. Any employee found violating this provision shall be discharged and not employed again on work under this Contract.

8. Samples

8.1 Samples required by the Specifications shall be submitted, after the award of the Contract, to the Resident Project Representative (RPR). No material for which samples are required shall be delivered to the site for use until the representative samples of same have been approved in writing by the RPR. Such samples shall be furnished by the Contractor without charge.

9. Underground Utilities

9.1 The Contractor shall refer to the Drawings and these Specifications covering the utilities and include in his/her bid all work required in connection with them.

9.2 The utility lines and other underground structures shown on the Contract Drawings have been compiled from record plans, but the accuracy of the locations shown and the completeness of information is not guaranteed.

9.3 The Contractor shall check and verify the location of all existing utilities both underground and overhead before proceeding to begin the work or to order materials. A utility locating service shall be hired by the Contractor to verify the location and depth of existing utilities if DIGSAFE is not able to verify all utilities shown within areas of excavation on the plans. A site plan of the existing Contractor-verified existing utilities shall be submitted by the Contractor prior to starting any excavation. No separate payment will be made for any utility locating required, including the work of the utility locating service and existing utility site plan submittal. Excavation shall be in accordance with Chapter 502 of the Acts of 1980 entitled "An Act Further Regulating Excavation in Public Ways," which became effective in the Commonwealth of Massachusetts on October 12, 1980, and all other statutes, ordinances, rules and regulations of any city, state or Federal Agency that may be applicable. Any damage to the existing utilities caused by negligence on the part of the Contractor, and any other costs arising out of said excavation or by reason thereof, shall be the Contractor's sole responsibility.

9.4 Approximate locations of known underground utility lines, where known, are shown on the contract drawings. Should any phase of the work require excavating under existing utilities or otherwise endanger their support, the Contractor shall furnish and install at his/her own expense such temporary supports as may be required to prevent damage to or interruption of the utility or utilities involved. Extreme care shall be used in working in areas where buried cable is known to exist. The Contractor shall have on the site, at all times, proper equipment for locating buried cable and such cable shall be located by hand-dug test pits before power equipment is permitted to work in the area.

9.5 Should any other underground utility line be encountered, the RPR may make a field check and direct such additional procedure as may be necessary to maintain or eliminate the interfering utility.

9.6 Contractor shall hand dig or vacuum excavate within 3 feet of any known utility. No separate payment will be made for hand digging or vacuum excavation.

10. As-Built Drawings

10.1 The Contractor shall maintain at the site, a set of contract plans on which to record the as-built conditions. These As-Built Drawings shall be updated on a daily basis, as the work progresses, showing what was actually constructed, the dimensions and grades of all work, located horizontally and vertically to the nearest 0.1 of a foot, indicating thereon all exposed features uncovered during the work and all other construction work items completed under this Contract. The Contractor shall require the Subcontractors to participate daily in the As-Built Drawing updates, which shall show all work, as it was built or discovered, including the Work of all Subcontractors. As-Built Drawings of hidden features shall be based upon measurements taken by the Contractor before covering them. These As-Built Drawings shall be kept current and available for review by the RPR and the Owner at all times.

10.2 At the completion of the work the Contractor shall hire a Professional Engineer or Land Surveyor (registered in MA) to perform a detailed topographical survey of the entire project site. The topographical survey shall be adequate to allow for the generation of ½ foot contours. Shots on existing pavement surfaces shall be taken to the nearest 0.03 feet and turf areas to the nearest 0.10 feet. The survey shall include cross sections of the stream channel at 25-foot intervals. The survey shall also include all utilities installed as part of the project including rim elevations and inverts. The Professional Engineer or Land Surveyor (registered in MA) shall prepare and sign/stamp an "As-Built" plan, showing at a minimum, the following:

- Post-development elevations and grades of the entire project site.
- Post-development elevations of all drainage and stormwater structures within the project site.
- A limit of work line and the extent of erosion control devices.

10.3 Prior to final acceptance and payment by the Owner, the Contractor must submit to the RPR the "As-Built" Survey and Plan. The "As-Built" Survey and Plan shall be provided in both AutoCAD and PDF formats.

11. Aerial Photographs

11.1 Not used.

12. Maintenance of the Construction Site and Haul Roads

12.1 The Contractor shall keep the construction site free of foreign object debris (FOD) that could be blown onto the runways, taxiways, aprons and other areas of the airport operations. All airport pavements, haul roads, access roads, and city/town roads used to access the airport shall be kept clear and clean at all times. Unpaved haul roads shall be maintained by blading and filling as directed/approved by the RPR. All rocks, mud, and other debris carried onto the airport pavement by the Contractor's equipment must be reported to the RPR or the Airport Manager. The Airport Manager will then close the affected area to air traffic and the Contractor will immediately sweep the area to the satisfaction of the Airport Manager.

12.2 Dust shall be controlled at all times. The Contractor shall maintain, at the construction site, the equipment for the application of water to control dust within the construction site and on haul roads. The equipment shall be equipped with a shutoff control valve that can be operated from the cab by the operator. The Contractor shall apply water for dust control as necessary to prevent dust from the construction site and/or haul roads from being a hazard to aircraft and from being a nuisance to the public and as directed by the Engineer.

12.3 FOD shall be controlled at all times. The Contractor shall maintain at the job site at all times while the construction under this contract is in progress, a self-propelled, self-contained vacuum sweeper with a broom and dust control and a minimum hopper capacity of four (4) cubic yards. The sweeper shall operate as necessary to keep active aircraft pavements, access roads and the work areas clean. At the close of each day's work, all active aircraft pavements and airport paved roads used or dirtied by the Contractor shall again be swept. Pavement sweepings shall be disposed of legally offsite. No separate payment shall be made for disposal of pavement sweepings and shall be considered incidental to the various items of work.

12.4 The Contractor shall also be responsible for supplying any other equipment as may be necessary to clean all areas that are contaminated a result of his/her operations to the complete satisfaction the Engineer and the Airport Manager.

12.5 Trucks loaded in the construction area shall have loads trimmed and covered as necessary to assure that no particles, stones, or debris will fall off.

12.6 No separate payment will be made for the maintaining the construction site free of FOD and dust and for construction, repair, sweeping, and maintenance of airport pavements, haul roads, access roads, and city/town roads, and all costs thereof shall be included in the contract prices for the various items of work in the Proposal.

13. Employees and Vehicle Traffic Control by the Contractor.

13.1 Access to the construction area will be as shown on the Contract Drawings. Contractor shall park only those work vehicles and equipment required for construction within the secured areas of the airport at the designated Contractor parking area. Contractor employee personal cars will **not** be permitted within the secured areas of the airport. All vehicles destined to or from the work area shall be escorted by a Contractor's vehicle specifically assigned for the purpose. Workers shall be transported from a pre-determined assembly area to and from the work area by properly equipped Contractor's escort vehicles. The Contractor, as a subsidiary obligation, shall provide adequate and safe transportation for his/her employees from outside the secured area of the airport to the work area. Any area inside the airfield security fence shall be considered the secure area. Employees and drivers of work vehicles shall be instructed as to proper access roads and shall be cautioned that unauthorized use of aircraft pavements or other areas outside the designated work area may lead to their arrest and subsequent payment of fines. All orders, written or verbal, for material issued by the Contractor or his Subcontractors shall instruct the supplier of the procedures to be followed. Extra construction vehicles needed at the work site will require temporary escort permits as required by the Owner.

13.2 The Contractor shall provide signs to properly direct his/her employees and delivery trucks to the project staging area. Contractor's employees and deliveries shall be properly escorted to their destination.

13.3 The Contractor shall submit to the RPR 14 days prior to starting work a written method of operations detailing the precautions he proposes for the control of vehicle traffic including flag people, signs, escorts, and any other measures he proposes. No work shall start until the operations plans are approved by the RPR and Owner. No contract time extensions or claims for extra costs will be allowed because of the Contractor's inability to get approval for his/her operations plan.

13.4 If any of the Contractor's employees violate the airport's security or driving rules and regulations, they may be banned from the airport secured areas for the duration of the project. If there are delays in the Contractor's work schedule because of this action, the Owner will not consider any time extensions or claims for extra costs. It is the Contractor's responsibility to provide qualified, responsible and experienced personnel so that violations do not occur.

13.5 The contractor shall comply with all airport security requirements including obtaining security badges and attending airfield driver and security training offered by the Airport for operation of vehicles within the secured area of the airport and the AOA, and maintaining a secure perimeter of the airport when accessing airfield vehicle gates. The airport does not charge a fee to the contractor for the cost of providing security badges or for providing driver or security training. At a minimum the Contractor's project manager, superintendent, foreman, and escorts and all subcontractor's superintendents, foreman and escorts shall obtain security badges and attend airfield driving and security training.

14. Escorts, Flag Persons and Gate Guards

14.1 The Contractor shall ensure that all vehicles needing to enter the airfield for construction purposes are escorted by approved Contractor radio equipped escort vehicles to and from the work area. The Contractor shall have on site at all times at least one radio equipped escort vehicle with qualified operator who shall monitor/operate the radio during all working hours. The Contractor shall have a minimum of two radio equipped escort vehicle with qualified operator who shall monitor/operate the radio when scheduled activities require construction equipment/activities to cross/access locations in the AOA (taxiways, aprons, runways or work within the runway obstacle free zone, runway approach surfaces or taxiway object free area). The contractor shall note that crossing of active runways are strictly prohibited. Airfield radio communications personnel shall not perform any other task during performance of this duty.

The escort vehicle will be parked in an appropriate location so that the operator can view the work. Radio control will be required whenever the Contractor is working in or adjacent to the aircraft operations areas. Radio control will be required whenever the Contractor's vehicle and equipment are operating on or crossing active runways, taxiways, and/or aircraft parking aprons.

The escort vehicles shall have a two-way radio on the appropriate GROUND/TOWER/ CTAF/UNICOM frequency and the radio shall be capable of reliable two-way communication with the GROUND/TOWER/CTAF/UNICOM from any location on the airport. The contractor shall monitoring the GROUND/TOWER frequencies when the tower is open and the UNICOM frequency when the FAA Air Traffic Control Tower (ATCT) it is closed. Escort vehicles shall be properly equipped with a rotating amber light on the roof, and have the escort's call sign with a minimum inscription height of 16" labeled on both sides of the vehicle. The escort vehicle drivers shall be trained to perform escort duties on the airfield and will be briefed on Airport safety, security and radio protocol prior to the start of construction. The Contractor's superintendent and foremen will also be required to attend this safety briefing at no additional cost.

14.2 The Contractor shall provide a gate guard to provide adequate security at airfield access gates to properly identify, regulate and direct all construction vehicles during all work hours of the project. The gate guard shall remain at the gate at all times when the gate is left in the open position.

14.3 Costs incurred by the Contractor for the above shall be considered incidental to the various project items of the Contract.

15. Storage Area and Equipment Yard

15.1 The areas for the location of storing materials and for servicing, repairing and parking construction equipment are located as shown on the Contract Drawings. All materials to be used in the work shall be stored in these areas. The Contractor's attention is alerted to the fact that a limited amount of area is available within the designated areas and that exact limits are subject to the approval of the RPR.

15.1 Any area occupied by the Contractor shall be maintained in a clean and orderly condition satisfactory to the RPR. Contractor shall be required to eliminate weeds and other unwanted vegetative growth within the storage areas, as directed by the RPR. Particular attention shall be given to the elimination of combustible rubbish or debris in the areas and none shall be left exposed overnight or at other periods of time the work is shut down.

15.2 No separate payment will be made for the establishment of the Contractor's storage area and equipment yard or for any costs in connection with its maintenance or restoration. This work is considered a subsidiary obligation of the Contractor and shall be included in the contract prices for the various items.

16 Airport Operation and Safety Requirements.

16.1 Normal airport operations will be conducted on the airfield during portions of the project and the work shall be carried on in such a manner so as not to interfere with the necessary operation of the airport. The Contractor shall take all precautions necessary to ensure the safety of operating aircraft as well as his/her own equipment and personnel. The Contractor shall follow all safety and phasing requirements shown in the plans and included within these Special Provisions. In addition, the Contractor shall follow FAA Advisory Circular (AC) 150/5370-2, "Operational Safety on Airports During

Construction", latest version, with respect to safety requirements for this project as well as any other requirements set forth by the Owner. The Contractor shall **submit a Safety and Phasing Compliance Document** 14 days prior to beginning work. The Safety and Phasing Compliance Document shall describe how the Contractor will comply with the requirements of the Safety & Phasing Plan, Notes and Details, as well as the safety and operational requirements of these Special Provisions. The Safety and Phasing Compliance Document shall include a certification statement by the Contractor that indicates he/she understands the operational safety requirements of the plans and specifications, and he/she asserts that they will not deviate from the operational safety requirements of the plans and specifications unless otherwise approved by the Owner, FAA, and MassDOT.

16.2 The Contractor shall identify a safety officer who is responsible for Airport safety to monitor construction activities and to coordinate immediate response to correct any construction related activity that may adversely affect the operational safety of the Airport.

16.3 No construction operations shall be carried on within the taxiway object free area or within the runway safety area/runway obstacle free zone or within the limits of active runway approach zones unless prior approval has been obtained. The Contractor shall consult with the RPR if they're unsure of the active restricted areas. When permission has been granted to work inside these limits, no equipment shall be left within the lines when not actually working. All equipment shall be located outside of the restriction area when not in use. All booms shall be lowered when the equipment is not in operation. No construction operations, including an open flame such as welding or burning, shall be carried on near any aircraft. Equipment is to be stored in the Contractor's staging areas during nights and weekends when no work is scheduled.

16.4 Each Contractors' motorized vehicle operating in the restricted area shall be equipped with an amber flashing light and a three (3) foot square flag consisting of international orange and white squares not less than one foot square displayed in full view above the vehicle. Flashing light and flag is not required for delivery vehicles. In addition, all Contractors' vehicles shall have the company identification and the vehicle call sign (escort vehicles) in 16" letters/numbers plainly visible on both sides of the vehicle in order to identify the vehicle.

16.5 The Contractor shall obey all instructions as to the operation and routes to be taken by equipment traveling on airport property. Any signs, lights, signals, markings, traffic control and other devices that may be required by the Owner shall be provided and maintained by the Contractor during the course of the work, subject to the approval of the RPR. Lighted channelizer cones shall be provided by the Contractor and must be maintained by the Contractor for the duration of the project. No aircraft pavement or navigation aid currently lighted shall be left unlighted overnight unless closed to all airport operations. The Contractor shall check all temporary lighting to assure its operating condition before leaving the job each day.

16.6 The Contractor shall coordinate his/her work with the RPR so that no less than 48 hours notice will be given before he/she starts work in any area. No trenches or other excavation shall be left open within runway or taxiway safety areas when the runway/taxiway is to be

released for aircraft at the end of the work shift. The use of steel plates is prohibited on the airfield.

17. Radio Control and Signs

17.1 Radio control of construction operations is required at all times when the contractor is working on the Airfield and the Airport is open. The Contractor shall monitor air traffic using an FAA radio at all times when working within the Air Operations Area. The radios shall be two-way radios capable of handling FAA frequencies (118 MHZ – 135 MHZ) to monitor aircraft operations.

The Contractor shall supply a minimum of three (3) FAA airband portable radios for use by the Superintendent, Foreman and Escorts and one (1) FAA portable radio for use by the Resident Project Representative (RPR). The radios shall be ICOM model IC-A24, 720 channel, "tune-able", with battery, extra battery, battery charger, extended microphone and earphone.

The Contractor shall purchase and maintain all radios required as specified above. The Contractor shall operate these radios, at his/her expense, and at the completion of the work all radios shall remain the property of the Contractor. All costs associated with purchasing and maintaining these radios shall be considered incidental to the various project items.

18. Barricades, Cones and Safety Fence

18.1 The Contractor shall provide airport approved lighted low-profile interlocking barricades, lighted channelizer cones and orange safety fence at the locations as shown on the project drawings and maintained in place as long as the area is closed, after which they shall be removed promptly. Low-profile barricades where shown as continuous runs shall be interlocked together. Lighted channelizer cones shall be spaced not more than 4 feet on center and/or as directed by the RPR. The Contractor shall use lighted barricades to close airfield pavements according to project drawings. The Contractor shall use orange safety fence and lighted channelizer cones to delineate the areas of work and closed airfield pavements according to project drawings. The lighted low-profile barricades, lighted channelizer cones and orange safety fence shall be in accordance with the detail on the project drawings. The final placement and location of all barricades, channelizer cones and safety fence shall be subject to the approval of the RPR and Owner.

18.2 No separate payment will be made for providing, transporting, setting, maintaining, installing and removing barricades, channelizer cones and safety required by the RPR or Owner to satisfactorily designate an area as closed to aircraft operations all of which is considered a subsidiary obligation of the Contractor and shall be included in the contract prices for the various items.

19. Portable Runway Closure Markers

19.1 Portable lighted runway closure markers shall meet the requirements of Advisory Circular 150/5345-55A. See Technical Specification Item C-125 in Division III and project drawing G-102 for detailed requirements on furnishing, installing, and maintaining the markers. No

payment will be made separately or directly for Runway Closure Markers. Runway Closure Markers shall be considered incidental to Item Div. II-27.01 Construction Safety and Phasing for Schedule A Work and Div. II-27.02 Construction Safety and Phasing for Schedule B Work.

20. Construction Schedule

20.1 The Contractor shall complete all work within **Fifty (50)** Calendar Days**.** The Contractor shall be issued a "Notice to Proceed for Construction" and shall fully complete all on-site work except the stream bank plantings within **Forty-Five (45)** Calendar Days of the effective date of Notice to Proceed for Construction. A second "Notice to Proceed for Stream Bank Plantings" will be issued in December or April for the contractor to complete stream bank plantings within **Five (5)** Calendar Days of the effective date of the Notice to Proceed for Stream Bank Plantings. The Contractor is required to provide sufficient labor, materials and equipment to complete the project within the schedule prescribed in the Phasing Schedule on the Contract Drawings. Refer to Division I, Article 80-08 and Phasing Drawings for additional information.

20.2 Refer to the Division I, Article 80-03 for project schedule requirements.

21. Subsurface Investigation

21.1 No subsurface investigation was conducted for this project. Borings performed under a previous project near this project site are included in Appendix C of these specifications.

22 Construction Layout

22.1 Construction Layout shall be in accordance with Section 50-07 of the General Provisions.

23. Applicable Federal Contract Provisions

23.1 Federal Contract Provisions that are applicable to this Contract are contained in Attachment A of the contract documents.

24. Environmental Requirements

24.1 The Contractor shall become familiar with, fully understand, and provide written acknowledgement of the Town of North Andover Conservation Commission (NACC) Order of Conditions (OOC) #242-1876, a copy of which is included in Appendix D of these specifications. The Contractor shall assume responsibility for compliance to these conditions. All costs associated with these Environmental Requirements and for conformance with the Order of Conditions #242-1876, shall be considered incidental to the various contract items. Although the Contractor shall assume responsibility for full compliance with the Order of Conditions in its entirety, special attention shall be made to the following requirements:

24.2 In accordance with OOC #40, a sign shall be provided by the Contractor and displayed at the site, not less than two square feet or more than three square feet in size, bearing the

words “Massachusetts Department of Environmental Protection (or MassDEP) File Number 242-1876”. There shall be no separate measurement or payment associated with providing, maintaining, and removal/disposal of the sign, when so directed by the Engineer or Owner.

24.3 In accordance with OOC #43, a dated sequence of construction (i.e. project schedule) shall be submitted by the Contractor for review and shall generally correspond with the Phasing Plans. This shall be the same schedule as described in Division I, Article 80-03.

24.4 In accordance with OOC #44, prior to the start of the work, the Contractor shall mark the boundary of Bordering Vegetated Wetland in the vicinity of the proposed work area with wooden stakes or flagging, as directed by the RPR. The RPR will provide the Contractor with wetland boundary line work in CAD for the purposes of layout, if so requested. The Contractor shall anticipate providing flagging or wooden stakes at all former wetland flag locations, as denoted by angle points in the CAD line work. There shall be no separate measurement or payment associated with marking of wetland boundary; all costs associated with marking of wetland boundary shall be considered incidental to the various contract items.

24.5 In accordance with OOC #45, prior to the start of construction, erosion controls shall be installed by staked on the ground survey as shown on the approve plan set. The installed barriers shall be inspected and approved by the NACC or its agent prior to the start of construction and shall remain intact until all disturbed areas have been permanently stabilized to prevent erosion. All additional or alternative erosion prevention and sedimentation protection measures found necessary during construction shall be implemented at the direction of the NACC or its agent. The NACC reserves the right to impose additional conditions on portions of this project to mitigate any impacts which could result from site erosion, or any noticeable degradation of surface water quality discharging from the site. For example, installation of erosion control measures may be required in areas not shown on the plans. Should such installation be required by the NACC, they shall be installed within 48 hours of the Commission's request.

24.6 In accordance with OOC #46, the Contractor shall have on hand at the start of any soil disturbance, removal or stockpiling, a minimum of 75 feet of 12" mulch sock, 50 hay bales and sufficient stakes for staking these socks & bales, 150 feet of silt fence, and an adequate supply of emergency erosion controls including crushed stone, silt sacks, flock blocks, jute matting/100% biodegradable erosion control blanketing and any other erosion controls included in the Erosion and Sedimentation Control Plans. Said supplies shall be used only for the control of emergency erosion problems and shall not be used for the normal control of erosion.

24.7 In accordance with OOC #47, sufficient square footage of 100% biodegradable erosion control (no plastic netting), shall be calculated by the Contractor and said calculation shall be forwarded to the Conservation Department prior to any pre-construction meetings.

24.8 In accordance with OOC #52, upon completion of construction, the Contractor shall permanently mark the edge of wetland or at the edge of routine mowing (furthest from the wetland at every opportunity) with signs or markers spaced evenly every thirty (30) feet

incorporating the following text: "Protected Wetland Resource Area" and the associated rules. Wetland delineator marker signs shall be purchased from the North Andover Conservation Commission.

24.9 In accordance with OOC #54, a pre-construction meeting with representatives of the Owner, Contractor, RPR, and Conservation Commission shall be held on-site upon completion of installation of erosion and sedimentation controls, and at least 72 hours prior to the start of construction. The Conservation Commission reserves the right to inspect erosion controls and may require modifications prior to the start of Construction. All erosion controls shall be installed by the Contractor to the satisfaction of the RPR prior to this pre-construction meeting.

24.10 In accordance with OOC #64, any fill used in connection with this project shall be clean fill, containing no trash, refuse, rubbish or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles or parts on any of the foregoing. Any fill imported to the site must be accompanied by a certificate of origin or an analysis certifying cleanliness - whichever is most applicable as determined by the Conservation Commission or its staff.

24.11 In accordance with OOC #65, all exposed soil finish grade surfaces shall be immediately landscaped and stabilized, or loamed, seeded and mulched, with a layer of mulch hay. All disturbed areas must be graded, loamed and seeded prior to November 1st of each year. Outside of the growing season, exposed soil finish grade surfaces shall be stabilized with a layer of mulch hay until climate conditions allow for seeding. During construction, any area of exposed soils that will be left idle for more than 30 days shall be stabilized with a layer of mulch hay or other means approved by the NACC.

24.12 Erosion controls shall be inspected by the Contractor at the close of each construction day. Erosion controls shall be repaired, reinforced or replaced at no additional cost as necessary.

24.13 In accordance with OOC #68, there shall be no stockpiling of soil or other materials within twenty-five (25) feet of any resource area.

24.14 In accordance with OOC #74, during and after work on this project, there shall be no discharge or spillage of fuel, or other pollutants into any wetland resource area. If there is a spill or discharge of any pollutant during any phase of construction the NACC shall be notified by the applicant within one (1) business day. No construction vehicles are to be stored or cleaned within 100 feet of wetland resource areas, and no vehicle refueling, equipment lubrication, or maintenance is to be done within 100 feet of a resource area.

24.15 The Contractor shall adhere to the Best Management Practices (BMPs) to be implemented during construction. BMPs are designed to minimize potential contamination of stormwater as a result of contact with soil stockpiles, materials, equipment, and vehicles.

24.16 All soil waste shall be disposed of at the project site. Refer to the soil waste characterization in Appendix B of the contract documents.

24.17 All Erosion Control Monitoring required as part of the OOC will be performed by the Engineer.

25. Field Office

25.1 Not Used.

26. Measurement and Payment for Special Provisions Requirements:

27.1 With the exception of the items specifically listed below for measurement and payment, no separate measurement and payment will be made for the requirements listed in these Special Provisions and the cost of all requirements shall be included in and considered incidental to the other pay items listed in the contract documents.

27.2 Construction Safety and Phasing – Payment will be made at the Contract lump sum price to furnish and install runway closure markers, construction signs, barricades, and incidentals necessary to implement the construction safety and phasing plan.

27.4 As-Built Drawings – Payment will be made at the Contract lump sum price after as-built drawings have been submitted by the Contractor and reviewed and approved by the RPR.

Division II-27.01 and II-27.02 pay items shall be paid based on the following schedule of partial payments:

a. With first pay request, 25%

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 25%.

d. When 75% or more of the original contract is earned, the final 25%

Payment will be made under:

Div II-27.01	Construction Safety and Phasing for Schedule A Work (Limited to 2.5% of the total cost of Schedule A) – per lump sum
Div II-27.02	Construction Safety and Phasing for Schedule B Work (Limited to 2.5% of the total cost of Schedule B) – per lump sum
Div II-27.03	As-Built Drawings for Schedule A Work (Limited to 1% of the total cost of Schedule A) – per lump sum
Div II-27.04	As-Built Drawings for Schedule B Work (Limited to 1% of the total cost of Schedule B) – per lump sum

END OF DIVISION II

ATTACHMENT A

Federal Contract Provisions

Page Intentionally Blank

FEDERAL CONTRACT PROVISIONS

CONSTRUCTION CONTRACTS
(AS OF MAY 24, 2023)

The following contract provisions and clauses apply to this Contract. Submission of a bid/proposal by a prospective Contractor shall constitute full acceptance of these provisions and clauses.

NOTE TO BIDDER: The Contractor (including all subcontractors) MUST insert the following contract provisions into all lower-tier contracts (e.g. subcontract or sub-agreement). The applicable requirements of these contract provisions shall be incorporated by reference for all work done under any purchase orders, rental agreements, and any other agreements for supplies or services. The Bidder (Prime Contractor) shall be responsible for compliance with these contractor provisions by all subcontractors, lower-tier subcontractors, and service providers.

ACCESS TO RECORDS AND REPORTS

(Source: 2 CFR § 200.334, 2 CFR § 200.337 and FAA Order 5100.38)

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Owner, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY

(Source: 41 CFR Part 60-4 and Executive Order 11246)

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables

Goals for minority participation for each trade: **4.0%**

Goals for female participation in each trade: **6.9%**

These goals are applicable to all of the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a) and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is the State of Massachusetts, Essex County, Town of North Andover.

BREACH OF CONTRACT TERMS

(Source: 2 CFR § 200 Appendix II(A))

Any violation or breach of terms of this contract on the part of the Contractor or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

Owner will provide *Contractor* written notice that describes the nature of the breach and corrective actions the *Contractor* must undertake in order to avoid termination of the contract. Owner reserves the right to withhold payments to Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner's notice will identify a specific date by which the *Contractor* must correct the breach. Owner may proceed with termination of the contract if the *Contractor* fails to correct the breach by the deadline indicated in the Owner's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

FAA BUY AMERICAN PREFERENCE

(Source: Title 49 USC § 50101)

The Contractor certifies that its bid/offer is in compliance with 49 USC § 50101, BABA and other related Made in America Laws,[1] U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued list.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein with their bid or offer. The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

[1] Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.

CERTIFICATION OF COMPLIANCE WITH BUY AMERICAN PREFERENCE – CONSTRUCTION PROJECTS

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with its proposal. The bidder or offeror must indicate how it intends to comply with 49 USC § 50101, BABA and other related Made in America Laws, U.S. statutes, guidance, and FAA policies, by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e., not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:

a) Only installing iron, steel and manufactured products produced in the United States;

b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.

c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or

d) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

a) To provide to the Airport Sponsor or the FAA evidence that documents the source and origin of the iron, steel, and/or manufactured product.
b) To faithfully comply with providing U.S. domestic products.
c) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
d) Certify that all construction materials used in the project are manufactured in the U.S.

☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 USC § 50101(a) but may qualify for a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

a) To the submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
b) That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.

d) To furnish U.S. domestic product for any waiver request that the FAA rejects.
e) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 2 Waiver (Nonavailability) - The iron, steel, manufactured goods or construction materials or manufactured goods are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is

a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the "facility/project." The required documentation for a Type 3 waiver is:

a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
b) Listing of all manufactured products that are not comprised of 100 percent U.S. domestic content (excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).
c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
d) Percentage of non-domestic component and subcomponent cost as compared to total "facility" component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

Type 4 Waiver (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction materials would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

a) A completed Content Percentage Worksheet and Final Assembly Questionnaire from
b) At minimum two comparable equal bids and/or offers;
c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

GENERAL CIVIL RIGHTS PROVISIONS

(Source: 49 USC § 47123)

In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

CIVIL RIGHTS – TITLE VI ASSURANCE

(Source: 49 USC § 47123, FAA Order 1400.11)

Title VI Solicitation Notice:

The **City of Lawrence**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

Title VI List of Pertinent Nondiscrimination Acts and Authorities

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 USC § 2000d *et seq*., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR part 21 (Non-discrimination in Federally-Assisted programs of the Department of Transportation—Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 USC § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 USC § 794 *et seq*.), as amended (prohibits discrimination on the basis of disability); and 49 CFR part 27 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);
- The Age Discrimination Act of 1975, as amended (42 USC § 6101 *et seq*.) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 USC § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-259) (broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990 (42 USC § 12101, et seq) (prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration's Nondiscrimination statute (49 USC § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations);
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs [70 Fed. Reg. 74087 (2005)];
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 USC § 1681, et seq).

Compliance with Nondiscrimination Requirements:

During the performance of this contract, the Contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "Contractor"), agrees as follows:

1. **Compliance with Regulations:** The Contractor (hereinafter includes consultants) will comply with the Title VI List of Pertinent Nondiscrimination Acts and Authorities, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR part 21.
3. **Solicitations for Subcontracts, including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding or negotiation made by the Contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the Contractor of the contractor's obligations under this contract and the Nondiscrimination Acts and Authorities on the grounds of race, color, or national origin.
4. **Information and Reports:** The Contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Sponsor or the Federal Aviation Administration to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the Contractor will so certify to the Sponsor or the Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a Contractor's noncompliance with the non-discrimination provisions of this contract, the Sponsor will impose such contract sanctions as it or the Federal Aviation Administration may determine to be appropriate, including, but not limited to:
    a. Withholding payments to the Contractor under the contract until the Contractor complies; and/or
    b. Cancelling, terminating, or suspending a contract, in whole or in part.

Incorporation of Provisions: The Contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The Contractor will take action with respect to any subcontract or procurement as the Sponsor or the Federal Aviation Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the Contractor may request the Sponsor to enter into any litigation to protect the interests of the Sponsor. In addition, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

CLEAN AIR AND WATER POLLUTION CONTROL

(Source: 2 CFR § 200, Appendix II(G), 42 USC § 7401, et seq and 33 USC § 1251, et seq)

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 USC §§ 7401-7671q) and the Federal Water Pollution Control Act as amended (33 USC §§ 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency (EPA) and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceed $150,000.

CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

(Source: 2 CFR § 200, Appendix II(E), 2 CFR § 5.5(b), 40 USC § 3702 and 40 USC § 3704)

1. Overtime Requirements.

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; Liability for Unpaid Wages; Liquidated Damages.

In the event of any violation of the clause set forth in paragraph (1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this clause, in the sum of $29 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

3. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this clause.

4. Subcontractors.

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) and also a clause requiring the subcontractor to include these clauses in any lower tier

subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this clause.

COPELAND "ANTI-KICKBACK" ACT

(Source: 2 CFR § 200, Appendix II(D) and 29 CFR Parts 3 and 5)

Contractor must comply with the requirements of the Copeland "Anti-Kickback" Act (18 USC 874 and 40 USC 3145), as supplemented by Department of Labor regulation 29 CFR part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each Subcontractor must submit to the Owner, a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

DAVIS-BACON REQUIREMENTS

(Source: 2 CFR § 200, Appendix II(D), 29 CFR Part 5, 49 USC § 47112(b) and 40 USC §§ 3141-3144, 3146, and 3147)

1. Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any

additional classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers, or mechanics to be employed in the classification, or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding. The Federal Aviation Administration or the Sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the Contractor, Sponsor, Applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and Basic Records.

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records that show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit the payrolls to the applicant, Sponsor, or Owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR § 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (*e.g.,* the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at *https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker and shall provide them upon request to the Federal Aviation

Administration if the agency is a party to the contract, but if the agency is not such a party, the Contractor will submit them to the applicant, Sponsor, or Owner, as the case may be, for transmission to the Federal Aviation Administration, the Contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, Sponsor, or Owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR § 5.5 (a)(3)(i), and that such information is correct and complete;

(2) That each laborer and mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the “Statement of Compliance” required by paragraph (3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Sponsor, the Federal Aviation Administration, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the Contractor, Sponsor, applicant, or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR § 5.12.

4. Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State

Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination that provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training

Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees, and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

The Contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. Subcontracts.

The Contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR §§ 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR § 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR § 5.12.

8. Compliance with Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of Eligibility.

(i) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR § 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR § 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 USC § 1001.

DEBARMENT AND SUSPENSION

(Source: 2 CFR part 180 (Subpart B), 2 CFR Part 200, Appendix II(H), 2 CFR Part 1200 DOT Order 4200.5, and Executive Orders 12549 and 12689)

CERTIFICATION OF OFFERER/BIDDER REGARDING DEBARMENT

By submitting a bid/proposal under this solicitation, the bidder or offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds $25,000 as a "covered transaction", must confirm each lower tier participant of a "covered transaction" under the project is not presently debarred or otherwise disqualified from participation in this federally-assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: http://www.sam.gov.
2. Collecting a certification statement similar to the Certification of Offeror /Bidder Regarding Debarment, above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA may pursue any available remedies, including suspension and debarment of the non-compliant participant.

DISADVANTAGED BUSINESS ENTERPRISE

(Source: 49 CFR part 26)

Contract Assurance (49 CFR § 26.13; mandatory text provided) –

The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

1) Withholding monthly progress payments;

2) Assessing sanctions;

3) Liquidated damages; and/or

4) Disqualifying the Contractor from future bidding as non-responsible.

Prompt Payment (49 CFR § 26.29; acceptable/sample text provided) –
The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 30 days from the receipt of each payment the prime contractor receives from the City of Lawrence. The prime contractor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the City of Lawrence. This clause applies to both DBE and non-DBE subcontractors.

Termination of DBE Subcontracts (49 CFR § 26.53(f); acceptable/sample text provided) –
The prime contractor must not terminate a DBE subcontractor listed in response to the Disadvantaged Business Enterprise Requirements included in the Invitation to Bid (or an approved substitute DBE firm) without prior written consent of the City of Lawrence. This includes, but is not limited to, instances in which the prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent the City of Lawrence. Unless the City of Lawrence consent is provided, the prime contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

The City of Lawrence may provide such written consent only if the City of Lawrence agrees, for reasons stated in the concurrence document, that the prime contractor has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR §26.53.

Before transmitting to the City of Lawrence its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to the City of Lawrence, of its intent to request to terminate and/or substitute, and the reason for the request.

The prime contractor must give the DBE five days to respond to the prime contractor's notice and advise The City of Lawrence and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the City of Lawrence should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), the City of Lawrence may provide a response period shorter than five days.

In addition to post-award terminations, the provisions of this section apply to preaward deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

TEXTING WHEN DRIVING

(Source: Executive Order 13513, DOT Order 3902.10)

In accordance with Executive Order 13513, "Federal Leadership on Reducing Text Messaging While Driving", (10/1/2009) and DOT Order 3902.10, "Text Messaging While Driving", (12/30/2009), the Federal Aviation Administration encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or subgrant.

In support of this initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding $10,000 that involve driving a motor vehicle in performance of work activities associated with the project.

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act [Public Law 115-232 § 889(f)(1)].

EQUAL OPPORTUNITY CLAUSE

(Source: 2 CFR Part 200, Appendix II(C), 41 CFR § 60-1.4, 41 CFR § 60-4.3 and Executive Order 11246)

During the performance of this contract, the Contractor agrees as follows:

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identify, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff, or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed

the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the Contractor's commitments under this section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance*: Provided,* however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;

d. "Minority" includes:

(1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);

(3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR part 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by

publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items with onsite supervisory personnel such superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other contractors and subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel, for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the Contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11. The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR part 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone numbers, construction trade, union affiliation if any,

employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

(Source: 29 USC § 201, et seq, 2 CFR § 200.430)

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR part 201, et seq, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part-time workers.

The Contractor has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor – Wage and Hour Division.

CERTIFICATION REGARDING LOBBYING

(Source: 31 USC § 1352 – Byrd Anti-Lobbying Amendment, 2 CFR part 200, Appendix II(I), 49 CFR part 20, Appendix A)

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned

shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

PROHIBITION OF SEGREGATED FACILITIES

(Source: 2 CFR Part 200, Appendix II(C) and 41 CFR Part 60-1)

(a) The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Employment Opportunity clause in this contract.

(b) "Segregated facilities," as used in this clause, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

(c) The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Employment Opportunity clause of this contract.

OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

(Source: 29 CFR part 1910)

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. The employer must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The employer retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act

of 1970 (29 CFR Part 1910). The employer must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

PROCUREMENT OF RECOVERED MATERIALS

(Source: 2 CFR § 200.323, 2 CFR Part 200, Appendix II(J), 40 CFR Part 247 and 42 USC § 6901, et seq (Resource Conservation and Recovery Act (RCRA)))

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

1) The contract requires procurement of $10,000 or more of a designated item during the fiscal year; or
2) The contractor has procured $10,000 or more of a designated item using Federal funding during the previous fiscal year.

The list of EPA-designated items is available at www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
b) Fails to meet reasonable contract performance requirements; or
c) Is only available at an unreasonable price.

TAX DELINQUENCY AND FELONY CONVICTIONS

(Source: Section 8113 of the Consolidated Appropriations Act, 2022 (Public Law 117-103) and similar provisions in subsequent appropriations acts, DOT Order 4200.6 – Appropriations Act Requirements for Procurement and Non-Procurement Regarding Tax Delinquency and Felony Convictions)

CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark (✓) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

1) The applicant represents that it **is (_) is not (_)** a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

2) The applicant represents that it **is (_) is not (_)** a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant is ineligible to receive an award unless the Sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

Term Definitions

Felony conviction: Felony conviction means a conviction within the preceding twenty four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. Code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 USC § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

TERMINATION OF CONTRACT

(Source: 2 CFR § 200 Appendix II(B), FAA Advisory Circular 150/5370-10, Section 80-09)

TERMINATION FOR CONVENIENCE (CONSTRUCTION & EQUIPMENT CONTRACTS)

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

1. Contractor must immediately discontinue work as specified in the written notice.
2. Terminate all subcontracts to the extent they relate to the work terminated under the notice.
3. Discontinue orders for materials and services except as directed by the written notice.

4. Deliver to the Owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work, and as directed in the written notice.
5. Complete performance of the work not terminated by the notice.
6. Take action as directed by the Owner to protect and preserve property and work related to this contract that Owner will take possession.

Owner agrees to pay Contractor for:

1. Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
2. Documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;
3. Reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and
4. Reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.

TERMINATION FOR CAUSE (CONSTRUCTION)

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes standard language for conditions, rights, and remedies associated with Owner termination of this contract for cause due to default of the Contractor.

TRADE RESTRICTION CERTIFICATION

(Source: 49 USC § 50104, 49 CFR part 30)

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

1) is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms as published by the Office of the United States Trade Representative (USTR);

2) has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the USTR; and

3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18 USC § 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR § 30.17, no contract shall be awarded to an Offeror or subcontractor:

1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR; or
2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list; or
3) who incorporates in the public works project any product of a foreign country on such USTR list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The Contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by USTR, unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration (FAA) may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

VETERAN'S PREFERENCE

(Source: 49 USC § 47112(c))

In the employment of labor (excluding executive, administrative, and supervisory positions), the Contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam-era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by

15 USC § 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

ATTACHMENT B

Davis-Bacon/US Department of Labor Wage Rates

Page Intentionally Blank

"General Decision Number: MA20250018 01/03/2025

Superseded General Decision Number: MA20240018

State: Massachusetts

Construction Type: Highway

County: Essex County in Massachusetts.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this

wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2025

CARP0339-004 09/01/2024

	Rates	Fringes
CARPENTER (Includes Form Work)	$ 48.10	30.95

ELEC0103-007 09/01/2024

	Rates	Fringes
ELECTRICIAN	$ 63.78	36.22

ENGI0004-025 12/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1	$ 57.03	33.20
Group 2	$ 56.40	33.20

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:
A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Labor Day, Memorial Day, Independence Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day, Christmas Day

POWER EQUIPMENT OPERATORS CLASSIFICATIONS
Group 1: Backhoe/Excavator/Trackhoe; Bobcat/Skid Steer/Skid Loader; Broom/Sweeper; Gradall; Loader; Paver (Asphalt, Aggregate, and Concrete); Post Driver (Guardrail/Fences)
Group 2: Bulldozer; Grader/Blade; Milling Machine; Roller

IRON0007-026 03/16/2024

	Rates	Fringes
IRONWORKER (ORNAMENTAL AND STRUCTURAL)	$ 54.68	36.48

LABO0022-016 12/01/2024

	Rates	Fringes
LABORER		
Asphalt, Includes Raker, Shoveler, Spreader, and Distributor	$ 39.20	29.41
Common or General	$ 38.95	29.41
Landscape	$ 39.20	29.41

LABO0039-001 06/01/2021

	Rates	Fringes
LABORER (Guardrail Installation)	$ 35.00	25.94

PAIN0035-023 07/01/2024

	Rates	Fringes
PAINTER (Steel)	$ 56.76	36.00

SUMA2014-008 01/11/2017

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 56.70	21.08
IRONWORKER, REINFORCING	$ 49.94	22.45
LABORER: Concrete Saw (Hand Held/Walk Behind)	$ 41.78	18.37
OPERATOR: Crane	$ 52.14	21.08
OPERATOR: Forklift	$ 64.67	0.00
OPERATOR: Mechanic	$ 48.14	17.02
OPERATOR: Piledriver	$ 44.46	16.94
PAINTER: Spray (Linestriping)	$ 41.14	15.50
PILEDRIVERMAN	$ 45.65	23.33
TRAFFIC CONTROL: Flagger	$ 23.00	20.44
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper	$ 44.49	12.41

TRUCK DRIVER: Concrete Truck....$ 33.69 15.79

TRUCK DRIVER: Dump Truck.....$ 38.92 9.73

TRUCK DRIVER: Flatbed Truck.....$ 48.53 0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was

prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the

discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.

Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

==========

END OF GENERAL DECISION"

Page Intentionally Blank

ATTACHMENT C

Massachusetts State Wage Rates

Page Intentionally Blank

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

LAUREN JONES
Secretary

MICHAEL FLANAGAN
Director

Awarding Authority: City of Lawrence

Contract Number:

City/Town: NORTH ANDOVER

Description of Work: Airfield work zone setups; erosion controls; sandbag diversion dam; earthwork; subbase; topsoil and seeding; stream stabilization; fence; electrical conduit and wiring.

Job Location: 492 Sutton Street

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.
- This annual update requirement is generally not applicable to 27F "rental of equipment" contracts. For such contracts, the prevailing wage rates issued by DLS shall remain in effect for the duration of the contract term. However, if the prevailing wage rate sheet issued does not contain wage rates for each year covered by the contract term, the Awarding Authority must request updated rate sheets from DLS and provide them to the contractor to ensure the correct rates are being paid throughout the duration of the contract. Additionally, if an Awarding Authority exercises an option to renew or extend the contract term, they must request updated rate sheets form DLS and provide them to the contractor.
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27.The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Issue Date: 02/05/2025 **Wage Request Number:** 20250205-022

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$39.95	$15.57	$20.17	$0.00	$75.69
	06/01/2025	$40.95	$15.57	$20.17	$0.00	$76.69
	12/01/2025	$40.95	$15.57	$21.78	$0.00	$78.30
	01/01/2026	$40.95	$16.17	$21.78	$0.00	$78.90
	06/01/2026	$41.95	$16.17	$21.78	$0.00	$79.90
	12/01/2026	$41.95	$16.17	$23.52	$0.00	$81.64
	01/01/2027	$41.95	$16.77	$23.52	$0.00	$82.24
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.02	$15.57	$20.17	$0.00	$75.76
	06/01/2025	$41.02	$15.57	$20.17	$0.00	$76.76
	12/01/2025	$41.02	$15.57	$21.78	$0.00	$78.37
	01/01/2026	$41.02	$16.17	$21.78	$0.00	$78.97
	06/01/2026	$42.02	$16.17	$21.78	$0.00	$79.97
	12/01/2026	$42.02	$16.17	$23.52	$0.00	$81.71
	01/01/2027	$42.02	$16.77	$23.52	$0.00	$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.14	$15.57	$20.17	$0.00	$75.88
	06/01/2025	$41.14	$15.57	$20.17	$0.00	$76.88
	12/01/2025	$41.14	$15.57	$21.78	$0.00	$78.49
	01/01/2026	$41.14	$16.17	$21.78	$0.00	$79.09
	06/01/2026	$42.14	$16.17	$21.78	$0.00	$80.09
	12/01/2026	$42.14	$16.17	$23.52	$0.00	$81.83
	01/01/2027	$42.14	$16.77	$23.52	$0.00	$82.43
ADS/SUBMERSIBLE PILOT *PILE DRIVER LOCAL 56 (ZONE 1)*	01/01/2024	$117.16	$10.08	$24.29	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR *LABORERS - ZONE 2*	12/01/2024	$40.61	$9.65	$17.70	$0.00	$67.96
	06/01/2025	$42.00	$9.65	$17.70	$0.00	$69.35
	12/01/2025	$43.38	$9.65	$17.70	$0.00	$70.73
	06/01/2026	$44.82	$9.65	$17.70	$0.00	$72.17
	12/01/2026	$46.26	$9.65	$17.70	$0.00	$73.61
	06/01/2027	$47.71	$9.65	$17.70	$0.00	$75.06
	12/01/2027	$49.16	$9.65	$17.70	$0.00	$76.51
	06/01/2028	$50.66	$9.65	$17.70	$0.00	$78.01
	12/01/2028	$52.16	$9.65	$17.70	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.61	$9.65	$17.80	$0.00	$68.06
	06/01/2025	$42.00	$9.65	$17.80	$0.00	$69.45
	12/01/2025	$43.38	$9.65	$17.80	$0.00	$70.83
	06/01/2026	$44.82	$9.65	$17.80	$0.00	$72.27
	12/01/2026	$46.26	$9.65	$17.80	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	12/01/2024	$42.80	$14.50	$11.05	$0.00	$68.35
	06/01/2025	$43.80	$14.50	$11.05	$0.00	$69.35
	12/01/2025	$44.80	$14.50	$11.05	$0.00	$70.35

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASPHALT RAKER *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.11	$9.65	$17.80	$0.00	$67.56
	06/01/2025	$41.50	$9.65	$17.80	$0.00	$68.95
	12/01/2025	$42.88	$9.65	$17.80	$0.00	$70.33
	06/01/2026	$44.32	$9.65	$17.80	$0.00	$71.77
	12/01/2026	$45.76	$9.65	$17.80	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$57.03	$15.55	$16.50	$0.00	$89.08
	06/01/2025	$58.33	$15.55	$16.50	$0.00	$90.38
	12/01/2025	$59.78	$15.55	$16.50	$0.00	$91.83
	06/01/2026	$61.08	$15.55	$16.50	$0.00	$93.13
	12/01/2026	$62.53	$15.55	$16.50	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$57.03	$15.55	$16.50	$0.00	$89.08
	06/01/2025	$58.33	$15.55	$16.50	$0.00	$90.38
	12/01/2025	$59.78	$15.55	$16.50	$0.00	$91.83
	06/01/2026	$61.08	$15.55	$16.50	$0.00	$93.13
	12/01/2026	$62.53	$15.55	$16.50	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER *LABORERS - ZONE 2*	12/01/2024	$40.61	$9.65	$17.70	$0.00	$67.96
	06/01/2025	$42.00	$9.65	$17.70	$0.00	$69.35
	12/01/2025	$43.38	$9.65	$17.70	$0.00	$70.73
	06/01/2026	$44.82	$9.65	$17.70	$0.00	$72.17
	12/01/2026	$46.26	$9.65	$17.70	$0.00	$73.61
	06/01/2027	$47.71	$9.65	$17.70	$0.00	$75.06
	12/01/2027	$49.16	$9.65	$17.70	$0.00	$76.51
	06/01/2028	$50.66	$9.65	$17.70	$0.00	$78.01
	12/01/2028	$52.16	$9.65	$17.70	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.61	$9.65	$17.80	$0.00	$68.06
	06/01/2025	$42.00	$9.65	$17.80	$0.00	$69.45
	12/01/2025	$43.38	$9.65	$17.80	$0.00	$70.83
	06/01/2026	$44.82	$9.65	$17.80	$0.00	$72.27
	12/01/2026	$46.26	$9.65	$17.80	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER *BOILERMAKERS LOCAL 29*	01/01/2024	$48.12	$7.07	$20.60	$0.00	$75.79

Apprentice - *BOILERMAKER - Local 29*

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$31.28	$7.07	$13.22	$0.00	$51.57
2	65	$31.28	$7.07	$13.22	$0.00	$51.57
3	70	$33.68	$7.07	$14.23	$0.00	$54.98
4	75	$36.09	$7.07	$15.24	$0.00	$58.40
5	80	$38.50	$7.07	$16.25	$0.00	$61.82
6	85	$40.90	$7.07	$17.28	$0.00	$65.25
7	90	$43.31	$7.07	$18.28	$0.00	$68.66
8	95	$45.71	$7.07	$19.32	$0.00	$72.10

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) *BRICKLAYERS LOCAL 3 (LYNN)*	02/01/2025	$65.80	$11.49	$23.59	$0.00	$100.88
	08/01/2025	$67.95	$11.49	$23.59	$0.00	$103.03
	02/01/2026	$69.30	$11.49	$23.59	$0.00	$104.38
	08/01/2026	$71.50	$11.49	$23.59	$0.00	$106.58
	02/01/2027	$72.90	$11.49	$23.59	$0.00	$107.98

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *BRICK/PLASTER/CEMENT MASON - Local 3 Lynn*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$32.90	$11.49	$23.59	$0.00	$67.98
2	60	$39.48	$11.49	$23.59	$0.00	$74.56
3	70	$46.06	$11.49	$23.59	$0.00	$81.14
4	80	$52.64	$11.49	$23.59	$0.00	$87.72
5	90	$59.22	$11.49	$23.59	$0.00	$94.30

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$33.98	$11.49	$23.59	$0.00	$69.06
2	60	$40.77	$11.49	$23.59	$0.00	$75.85
3	70	$47.57	$11.49	$23.59	$0.00	$82.65
4	80	$54.36	$11.49	$23.59	$0.00	$89.44
5	90	$61.16	$11.49	$23.59	$0.00	$96.24

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2024	$48.10	$9.65	$18.22	$0.00	$75.97
	06/01/2025	$49.60	$9.65	$18.22	$0.00	$77.47
	12/01/2025	$51.10	$9.65	$18.22	$0.00	$78.97
	06/01/2026	$52.65	$9.65	$18.22	$0.00	$80.52
	12/01/2026	$54.15	$9.65	$18.22	$0.00	$82.02
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2024	$46.95	$9.65	$18.22	$0.00	$74.82
	06/01/2025	$48.45	$9.65	$18.22	$0.00	$76.32
	12/01/2025	$49.95	$9.65	$18.22	$0.00	$77.82
	06/01/2026	$51.50	$9.65	$18.22	$0.00	$79.37
	12/01/2026	$53.00	$9.65	$18.22	$0.00	$80.87
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2024	$47.28	$9.65	$18.22	$0.00	$75.15
	06/01/2025	$48.78	$9.65	$18.22	$0.00	$76.65
	12/01/2025	$50.28	$9.65	$18.22	$0.00	$78.15
	06/01/2026	$51.83	$9.65	$18.22	$0.00	$79.70
	12/01/2026	$53.33	$9.65	$18.22	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARBIDE CORE DRILL OPERATOR *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"						
CARPENTER *CARPENTERS -ZONE 2 (Eastern Massachusetts)*	09/01/2024	$48.37	$9.83	$19.97	$0.00	$78.17
	03/01/2025	$49.62	$9.83	$19.97	$0.00	$79.42
	09/01/2025	$50.87	$9.83	$19.97	$0.00	$80.67
	03/01/2026	$52.12	$9.83	$19.97	$0.00	$81.92
	09/01/2026	$53.37	$9.83	$19.97	$0.00	$83.17
	03/01/2027	$54.62	$9.83	$19.97	$0.00	$84.42

Apprentice - *CARPENTER - Zone 2 Eastern MA*

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$21.77	$9.83	$1.73	$0.00	$33.33
2	45	$21.77	$9.83	$1.73	$0.00	$33.33
3	55	$26.60	$9.83	$3.40	$0.00	$39.83
4	55	$26.60	$9.83	$3.40	$0.00	$39.83
5	70	$33.86	$9.83	$16.51	$0.00	$60.20
6	70	$33.86	$9.83	$16.51	$0.00	$60.20
7	80	$38.70	$9.83	$18.24	$0.00	$66.77
8	80	$38.70	$9.83	$18.24	$0.00	$66.77

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$22.33	$9.83	$1.73	$0.00	$33.89
2	45	$22.33	$9.83	$1.73	$0.00	$33.89
3	55	$27.29	$9.83	$3.40	$0.00	$40.52
4	55	$27.29	$9.83	$3.40	$0.00	$40.52
5	70	$34.73	$9.83	$16.51	$0.00	$61.07
6	70	$34.73	$9.83	$16.51	$0.00	$61.07
7	80	$39.70	$9.83	$18.24	$0.00	$67.77
8	80	$39.70	$9.83	$18.24	$0.00	$67.77

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARPENTER WOOD FRAME *CARPENTERS-ZONE 3 (Wood Frame)*	10/01/2024	$26.65	$7.02	$4.80	$0.00	$38.47
	10/01/2025	$27.75	$7.02	$4.80	$0.00	$39.57
	10/01/2026	$28.85	$7.02	$4.80	$0.00	$40.67

All Aspects of New Wood Frame Work

Apprentice - *CARPENTER (Wood Frame) - Zone 3*

Effective Date - 10/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$15.99	$7.02	$0.00	$0.00	$23.01
2	60	$15.99	$7.02	$0.00	$0.00	$23.01
3	65	$17.32	$7.02	$1.00	$0.00	$25.34
4	70	$18.66	$7.02	$1.00	$0.00	$26.68
5	75	$19.99	$7.02	$4.80	$0.00	$31.81
6	80	$21.32	$7.02	$4.80	$0.00	$33.14
7	85	$22.65	$7.02	$4.80	$0.00	$34.47
8	90	$23.99	$7.02	$4.80	$0.00	$35.81

Effective Date - 10/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$16.65	$7.02	$0.00	$0.00	$23.67
2	60	$16.65	$7.02	$0.00	$0.00	$23.67
3	65	$18.04	$7.02	$1.00	$0.00	$26.06
4	70	$19.43	$7.02	$1.00	$0.00	$27.45
5	75	$20.81	$7.02	$4.80	$0.00	$32.63
6	80	$22.20	$7.02	$4.80	$0.00	$34.02
7	85	$23.59	$7.02	$4.80	$0.00	$35.41
8	90	$24.98	$7.02	$4.80	$0.00	$36.80

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING *BRICKLAYERS LOCAL 3 (LYNN)*	07/01/2024	$49.19	$13.35	$24.21	$1.80	$88.55

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CEMENT MASONRY/PLASTERING - Eastern Mass (Lynn)*

Effective Date - 07/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.60	$13.35	$16.43	$0.00	$54.38
2	60	$29.51	$13.35	$19.21	$1.80	$63.87
3	65	$31.97	$13.35	$20.21	$1.80	$67.33
4	70	$34.43	$13.35	$21.21	$1.80	$70.79
5	75	$36.89	$13.35	$22.21	$1.80	$74.25
6	80	$39.35	$13.35	$23.21	$1.80	$77.71
7	90	$44.27	$13.35	$24.21	$1.80	$83.63

Notes:

Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$58.18	$15.55	$16.50	$0.00	$90.23
	06/01/2025	$59.51	$15.55	$16.50	$0.00	$91.56
	12/01/2025	$60.98	$15.55	$16.50	$0.00	$93.03
	06/01/2026	$62.31	$15.55	$16.50	$0.00	$94.36
	12/01/2026	$63.79	$15.55	$16.50	$0.00	$95.84
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$36.67	$15.55	$16.50	$0.00	$68.72
	06/01/2025	$37.52	$15.55	$16.50	$0.00	$69.57
	12/01/2025	$38.47	$15.55	$16.50	$0.00	$70.52
	06/01/2026	$39.33	$15.55	$16.50	$0.00	$71.38
	12/01/2026	$40.28	$15.55	$16.50	$0.00	$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2025	$58.46	$9.95	$23.95	$0.00	$92.36

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$29.23	$9.95	$0.00	$0.00	$39.18
2	55	$32.15	$9.95	$6.66	$0.00	$48.76
3	60	$35.08	$9.95	$7.26	$0.00	$52.29
4	65	$38.00	$9.95	$7.87	$0.00	$55.82
5	70	$40.92	$9.95	$20.32	$0.00	$71.19
6	75	$43.85	$9.95	$20.93	$0.00	$74.73
7	80	$46.77	$9.95	$21.53	$0.00	$78.25
8	90	$52.61	$9.95	$22.74	$0.00	$85.30

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN *LABORERS - ZONE 2*	12/02/2024	$47.00	$9.65	$18.40	$0.00	$75.05
	06/02/2025	$48.50	$9.65	$18.40	$0.00	$76.55
	12/01/2025	$50.00	$9.65	$18.40	$0.00	$78.05
	06/01/2026	$51.55	$9.65	$18.40	$0.00	$79.60
	12/07/2026	$53.05	$9.65	$18.40	$0.00	$81.10
	06/07/2027	$54.65	$9.65	$18.40	$0.00	$82.70
	12/06/2027	$56.25	$9.65	$18.40	$0.00	$84.30
	06/05/2028	$57.93	$9.65	$18.40	$0.00	$85.98
	12/04/2028	$59.60	$9.65	$18.40	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR *LABORERS - ZONE 2*	12/02/2024	$48.00	$9.65	$18.40	$0.00	$76.05
	06/02/2025	$49.50	$9.65	$18.40	$0.00	$77.55
	12/01/2025	$51.00	$9.65	$18.40	$0.00	$79.05
	06/01/2026	$52.55	$9.65	$18.40	$0.00	$80.60
	12/07/2026	$54.05	$9.65	$18.40	$0.00	$82.10
	06/07/2027	$55.65	$9.65	$18.40	$0.00	$83.70
	12/06/2027	$57.25	$9.65	$18.40	$0.00	$85.30
	06/05/2028	$58.93	$9.65	$18.40	$0.00	$86.98
	12/04/2028	$60.60	$9.65	$18.40	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS *LABORERS - ZONE 2*	12/02/2024	$47.75	$9.65	$18.40	$0.00	$75.80
	06/02/2025	$49.25	$9.65	$18.40	$0.00	$77.30
	12/01/2025	$50.75	$9.65	$18.40	$0.00	$78.80
	06/01/2026	$52.30	$9.65	$18.40	$0.00	$80.35
	12/07/2026	$53.80	$9.65	$18.40	$0.00	$81.85
	06/07/2027	$55.40	$9.65	$18.40	$0.00	$83.45
	12/06/2027	$57.00	$9.65	$18.40	$0.00	$85.05
	06/05/2028	$58.68	$9.65	$18.40	$0.00	$86.73
	12/04/2028	$60.35	$9.65	$18.40	$0.00	$88.40

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER *LABORERS - ZONE 2*	12/02/2024	$48.00	$9.65	$18.40	$0.00	$76.05
	06/02/2025	$49.50	$9.65	$18.40	$0.00	$77.55
	12/01/2025	$51.00	$9.65	$18.40	$0.00	$79.05
	06/01/2026	$52.55	$9.65	$18.40	$0.00	$80.60
	12/07/2026	$54.05	$9.65	$18.40	$0.00	$82.10
	06/07/2027	$55.65	$9.65	$18.40	$0.00	$83.70
	12/06/2027	$57.25	$9.65	$18.40	$0.00	$85.30
	06/05/2028	$58.93	$9.65	$18.40	$0.00	$86.98
	12/04/2028	$60.60	$9.65	$18.40	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR *LABORERS - ZONE 2*	12/02/2024	$47.75	$9.65	$18.40	$0.00	$75.80
	06/02/2025	$49.25	$9.65	$18.40	$0.00	$77.30
	12/01/2025	$50.75	$9.65	$18.40	$0.00	$78.80
	06/01/2026	$52.30	$9.65	$18.40	$0.00	$80.35
	12/07/2026	$53.80	$9.65	$18.40	$0.00	$81.85
	06/07/2027	$55.40	$9.65	$18.40	$0.00	$83.45
	12/06/2027	$57.00	$9.65	$18.40	$0.00	$85.05
	06/05/2028	$58.68	$9.65	$18.40	$0.00	$86.73
	12/04/2028	$60.35	$9.65	$18.40	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER *LABORERS - ZONE 2*	12/02/2024	$47.00	$9.65	$18.40	$0.00	$75.05
	06/02/2025	$48.50	$9.65	$18.40	$0.00	$76.55
	12/01/2025	$50.00	$9.65	$18.40	$0.00	$78.05
	06/01/2026	$51.55	$9.65	$18.40	$0.00	$79.60
	12/07/2026	$53.05	$9.65	$18.40	$0.00	$81.10
	06/07/2027	$54.65	$9.65	$18.40	$0.00	$82.70
	12/06/2027	$56.25	$9.65	$18.40	$0.00	$84.30
	06/05/2028	$57.93	$9.65	$18.40	$0.00	$85.98
	12/04/2028	$59.60	$9.65	$18.40	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2024	$78.11	$10.08	$21.66	$0.00	$109.85
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A $69.83, 3A $91.79,4A $102.14 Total Rate						
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2024	$55.79	$10.08	$24.29	$0.00	$90.16
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A $54.20, 3A $73.93,4A $82.05 Total Rate						
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2024	$83.69	$10.08	$24.29	$0.00	$118.06
For apprentice rates see "Apprentice- PILE DRIVER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIVER/SLURRY (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)* For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2024	$117.16	$10.08	$24.29	$0.00	$151.53
DRAWBRIDGE OPERATOR (Construction) *DRAWBRIDGE - SEIU LOCAL 888*	07/01/2020	$26.77	$6.67	$3.93	$0.16	$37.53
ELECTRICIAN *ELECTRICIANS LOCAL 103*	09/01/2024	$63.78	$13.00	$22.26	$0.00	$99.04
	03/01/2025	$64.98	$13.00	$22.30	$0.00	$100.28
	09/01/2025	$66.89	$13.00	$22.36	$0.00	$102.25
	03/01/2026	$68.09	$13.00	$22.39	$0.00	$103.48
	09/01/2026	$70.00	$13.00	$22.45	$0.00	$105.45
	03/01/2027	$71.19	$13.00	$22.49	$0.00	$106.68
	09/01/2027	$73.11	$13.00	$22.54	$0.00	$108.65
	03/01/2028	$74.31	$13.00	$22.58	$0.00	$109.89

Apprentice - *ELECTRICIAN - Local 103*

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$25.51	$13.00	$0.77	$0.00	$39.28
2	40	$25.51	$13.00	$0.77	$0.00	$39.28
3	45	$28.70	$13.00	$16.69	$0.00	$58.39
4	45	$28.70	$13.00	$16.69	$0.00	$58.39
5	50	$31.89	$13.00	$17.20	$0.00	$62.09
6	55	$35.08	$13.00	$17.70	$0.00	$65.78
7	60	$38.27	$13.00	$18.21	$0.00	$69.48
8	65	$41.46	$13.00	$18.71	$0.00	$73.17
9	70	$44.65	$13.00	$19.22	$0.00	$76.87
10	75	$47.84	$13.00	$19.74	$0.00	$80.58

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$25.99	$13.00	$0.78	$0.00	$39.77
2	40	$25.99	$13.00	$0.78	$0.00	$39.77
3	45	$29.24	$13.00	$16.71	$0.00	$58.95
4	45	$29.24	$13.00	$16.71	$0.00	$58.95
5	50	$32.49	$13.00	$17.21	$0.00	$62.70
6	55	$35.74	$13.00	$17.72	$0.00	$66.46
7	60	$38.99	$13.00	$18.23	$0.00	$70.22
8	65	$42.24	$13.00	$18.74	$0.00	$73.98
9	70	$45.49	$13.00	$19.24	$0.00	$77.73
10	75	$48.74	$13.00	$19.76	$0.00	$81.50

Notes: :

Apprentice to Journeyworker Ratio:2:3***

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ELEVATOR CONSTRUCTOR *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2022	$65.62	$16.03	$20.21	$0.00	$101.86

Apprentice - *ELEVATOR CONSTRUCTOR - Local 4*

Effective Date - 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$32.81	$16.03	$0.00	$0.00	$48.84
2	55	$36.09	$16.03	$20.21	$0.00	$72.33
3	65	$42.65	$16.03	$20.21	$0.00	$78.89
4	70	$45.93	$16.03	$20.21	$0.00	$82.17
5	80	$52.50	$16.03	$20.21	$0.00	$88.74

Notes:
Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2022	$45.93	$16.03	$20.21	$0.00	$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.11	$9.65	$17.80	$0.00	$67.56
	06/01/2025	$41.50	$9.65	$17.80	$0.00	$68.95
	12/01/2025	$42.88	$9.65	$17.80	$0.00	$70.33
	06/01/2026	$44.32	$9.65	$17.80	$0.00	$71.77
	12/01/2026	$45.76	$9.65	$17.80	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	11/01/2024	$51.78	$15.30	$16.40	$0.00	$83.48
	05/01/2025	$53.22	$15.30	$16.40	$0.00	$84.92
	11/01/2025	$54.51	$15.30	$16.40	$0.00	$86.21
	05/01/2026	$55.95	$15.30	$16.40	$0.00	$87.65
	11/01/2026	$57.24	$15.30	$16.40	$0.00	$88.94
	05/01/2027	$58.67	$15.30	$16.40	$0.00	$90.37
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	11/01/2024	$53.37	$15.30	$16.40	$0.00	$85.07
	05/01/2025	$54.82	$15.30	$16.40	$0.00	$86.52
	11/01/2025	$56.12	$15.30	$16.40	$0.00	$87.82
	05/01/2026	$57.57	$15.30	$16.40	$0.00	$89.27
	11/01/2026	$58.87	$15.30	$16.40	$0.00	$90.57
	05/01/2027	$60.32	$15.30	$16.40	$0.00	$92.02
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	11/01/2024	$25.37	$15.30	$16.40	$0.00	$57.07
	05/01/2025	$26.22	$15.30	$16.40	$0.00	$57.92
	11/01/2025	$26.98	$15.30	$16.40	$0.00	$58.68
	05/01/2026	$27.83	$15.30	$16.40	$0.00	$59.53
	11/01/2026	$28.59	$15.30	$16.40	$0.00	$60.29
	05/01/2027	$29.44	$15.30	$16.40	$0.00	$61.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER *ELECTRICIANS LOCAL 103*	09/01/2024	$63.78	$13.00	$22.26	$0.00	$99.04
	03/01/2025	$64.98	$13.00	$22.30	$0.00	$100.28
	09/01/2025	$66.89	$13.00	$22.36	$0.00	$102.25
	03/01/2026	$68.09	$13.00	$22.39	$0.00	$103.48
	09/01/2026	$70.00	$13.00	$22.45	$0.00	$105.45
	03/01/2027	$71.19	$13.00	$22.49	$0.00	$106.68
	09/01/2027	$73.11	$13.00	$22.54	$0.00	$108.65
	03/01/2028	$74.31	$13.00	$22.58	$0.00	$109.89
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING*ELECTRICIANS LOCAL 103*	09/01/2024	$51.02	$13.00	$20.24	$0.00	$84.26
	03/01/2025	$51.98	$13.00	$20.27	$0.00	$85.25
	09/01/2025	$53.51	$13.00	$20.32	$0.00	$86.83
	03/01/2026	$54.47	$13.00	$20.34	$0.00	$87.81
	09/01/2026	$56.00	$13.00	$20.39	$0.00	$89.39
	03/01/2027	$56.95	$13.00	$20.42	$0.00	$90.37
	09/01/2027	$58.49	$13.00	$20.46	$0.00	$91.95
	03/01/2028	$59.45	$13.00	$20.49	$0.00	$92.94
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$45.96	$15.55	$16.50	$0.00	$78.01
	06/01/2025	$47.02	$15.55	$16.50	$0.00	$79.07
	12/01/2025	$48.19	$15.55	$16.50	$0.00	$80.24
	06/01/2026	$49.25	$15.55	$16.50	$0.00	$81.30
	12/01/2026	$50.43	$15.55	$16.50	$0.00	$82.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$27.01	$9.65	$17.80	$0.00	$54.46
	06/01/2025	$28.09	$9.65	$17.80	$0.00	$55.54
	12/01/2025	$28.09	$9.65	$17.80	$0.00	$55.54
	06/01/2026	$29.21	$9.65	$17.80	$0.00	$56.66
	12/01/2026	$29.21	$9.65	$17.80	$0.00	$56.66
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER *FLOORCOVERERS LOCAL 2168 ZONE I*	09/01/2024	$56.23	$8.83	$20.27	$0.00	$85.33
	03/01/2025	$57.73	$8.83	$20.27	$0.00	$86.83
	09/01/2025	$59.23	$8.83	$20.27	$0.00	$88.33
	03/01/2026	$60.73	$8.83	$20.27	$0.00	$89.83
	09/01/2026	$62.23	$8.83	$20.27	$0.00	$91.33
	03/01/2027	$63.73	$8.83	$20.27	$0.00	$92.83

Apprentice - *FLOORCOVERER - Local 2168 Zone I*

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$25.30	$8.83	$1.76	$0.00	$35.89
2	45	$25.30	$8.83	$1.76	$0.00	$35.89
3	55	$30.93	$8.83	$3.52	$0.00	$43.28
4	55	$30.93	$8.83	$3.52	$0.00	$43.28
5	70	$39.36	$8.83	$16.75	$0.00	$64.94
6	70	$39.36	$8.83	$16.75	$0.00	$64.94
7	80	$44.98	$8.83	$18.51	$0.00	$72.32
8	80	$44.98	$8.83	$18.51	$0.00	$72.32

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$25.98	$8.83	$1.76	$0.00	$36.57
2	45	$25.98	$8.83	$1.76	$0.00	$36.57
3	55	$31.75	$8.83	$3.52	$0.00	$44.10
4	55	$31.75	$8.83	$3.52	$0.00	$44.10
5	70	$40.41	$8.83	$16.75	$0.00	$65.99
6	70	$40.41	$8.83	$16.75	$0.00	$65.99
7	80	$46.18	$8.83	$18.51	$0.00	$73.52
8	80	$46.18	$8.83	$18.51	$0.00	$73.52

Notes: Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$57.03	$15.55	$16.50	$0.00	$89.08
	06/01/2025	$58.33	$15.55	$16.50	$0.00	$90.38
	12/01/2025	$59.78	$15.55	$16.50	$0.00	$91.83
	06/01/2026	$61.08	$15.55	$16.50	$0.00	$93.13
	12/01/2026	$62.53	$15.55	$16.50	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$36.67	$15.55	$16.50	$0.00	$68.72
	06/01/2025	$37.52	$15.55	$16.50	$0.00	$69.57
	12/01/2025	$38.47	$15.55	$16.50	$0.00	$70.52
	06/01/2026	$39.33	$15.55	$16.50	$0.00	$71.38
	12/01/2026	$40.28	$15.55	$16.50	$0.00	$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) *GLAZIERS LOCAL 35 (ZONE 2)*	01/01/2025	$47.96	$9.95	$23.95	$0.00	$81.86

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *GLAZIER - Local 35 Zone 2*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.98	$9.95	$0.00	$0.00	$33.93
2	55	$26.38	$9.95	$6.66	$0.00	$42.99
3	60	$28.78	$9.95	$7.26	$0.00	$45.99
4	65	$31.17	$9.95	$7.87	$0.00	$48.99
5	70	$33.57	$9.95	$20.32	$0.00	$63.84
6	75	$35.97	$9.95	$20.93	$0.00	$66.85
7	80	$38.37	$9.95	$21.53	$0.00	$69.85
8	90	$43.16	$9.95	$22.74	$0.00	$75.85

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$57.03	$15.55	$16.50	$0.00	$89.08
	06/01/2025	$58.33	$15.55	$16.50	$0.00	$90.38
	12/01/2025	$59.78	$15.55	$16.50	$0.00	$91.83
	06/01/2026	$61.08	$15.55	$16.50	$0.00	$93.13
	12/01/2026	$62.53	$15.55	$16.50	$0.00	$94.58

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 12/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$31.37	$0.00	$0.00	$0.00	$31.37
2	60	$34.22	$15.55	$16.50	$0.00	$66.27
3	65	$37.07	$15.55	$16.50	$0.00	$69.12
4	70	$39.92	$15.55	$16.50	$0.00	$71.97
5	75	$42.77	$15.55	$16.50	$0.00	$74.82
6	80	$45.62	$15.55	$16.50	$0.00	$77.67
7	85	$48.48	$15.55	$16.50	$0.00	$80.53
8	90	$51.33	$15.55	$16.50	$0.00	$83.38

Effective Date - 06/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$32.08	$0.00	$0.00	$0.00	$32.08
2	60	$35.00	$15.55	$16.50	$0.00	$67.05
3	65	$37.91	$15.55	$16.50	$0.00	$69.96
4	70	$40.83	$15.55	$16.50	$0.00	$72.88
5	75	$43.75	$15.55	$16.50	$0.00	$75.80
6	80	$46.66	$15.55	$16.50	$0.00	$78.71
7	85	$49.58	$15.55	$16.50	$0.00	$81.63
8	90	$52.50	$15.55	$16.50	$0.00	$84.55

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) *SHEETMETAL WORKERS LOCAL 17 - A*	02/01/2025	$59.69	$14.75	$28.12	$2.98	$105.54
	08/01/2025	$61.54	$14.75	$28.12	$2.98	$107.39
	02/01/2026	$63.49	$14.75	$28.12	$2.98	$109.34
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) *ELECTRICIANS LOCAL 103*	09/01/2024	$63.78	$13.00	$22.26	$0.00	$99.04
	03/01/2025	$64.98	$13.00	$22.30	$0.00	$100.28
	09/01/2025	$66.89	$13.00	$22.36	$0.00	$102.25
	03/01/2026	$68.09	$13.00	$22.39	$0.00	$103.48
	09/01/2026	$70.00	$13.00	$22.45	$0.00	$105.45
	03/01/2027	$71.19	$13.00	$22.49	$0.00	$106.68
	09/01/2027	$73.11	$13.00	$22.54	$0.00	$108.65
	03/01/2028	$74.31	$13.00	$22.58	$0.00	$109.89
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) *SHEETMETAL WORKERS LOCAL 17 - A*	02/01/2025	$59.69	$14.75	$28.12	$2.98	$105.54
	08/01/2025	$61.54	$14.75	$28.12	$2.98	$107.39
	02/01/2026	$63.49	$14.75	$28.12	$2.98	$109.34
For apprentice rates see "Apprentice- SHEET METAL WORKER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING -WATER) *PIPEFITTERS LOCAL 537 (Local 138)*	09/01/2024	$67.08	$12.70	$21.80	$0.00	$101.58
	03/01/2025	$68.88	$12.70	$21.80	$0.00	$103.38
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC *PIPEFITTERS LOCAL 537 (Local 138)*	09/01/2024	$67.08	$12.70	$21.80	$0.00	$101.58
	03/01/2025	$68.88	$12.70	$21.80	$0.00	$103.38
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS *LABORERS - ZONE 2*	12/01/2024	$40.61	$9.65	$17.70	$0.00	$67.96
	06/01/2025	$42.00	$9.65	$17.70	$0.00	$69.35
	12/01/2025	$43.38	$9.65	$17.70	$0.00	$70.73
	06/01/2026	$44.82	$9.65	$17.70	$0.00	$72.17
	12/01/2026	$46.26	$9.65	$17.70	$0.00	$73.61
	06/01/2027	$47.71	$9.65	$17.70	$0.00	$75.06
	12/01/2027	$49.16	$9.65	$17.70	$0.00	$76.51
	06/01/2028	$50.66	$9.65	$17.70	$0.00	$78.01
	12/01/2028	$52.16	$9.65	$17.70	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.61	$9.65	$17.80	$0.00	$68.06
	06/01/2025	$42.00	$9.65	$17.80	$0.00	$69.45
	12/01/2025	$43.38	$9.65	$17.80	$0.00	$70.83
	06/01/2026	$44.82	$9.65	$17.80	$0.00	$72.27
	12/01/2026	$46.26	$9.65	$17.80	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	09/01/2024	$56.92	$14.75	$19.61	$0.00	$91.28
	09/01/2025	$60.34	$14.75	$19.61	$0.00	$94.70
	09/01/2026	$63.76	$14.75	$19.61	$0.00	$98.12

Apprentice - *ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston*

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.46	$14.75	$14.32	$0.00	$57.53
2	60	$34.15	$14.75	$15.37	$0.00	$64.27
3	70	$39.84	$14.75	$16.43	$0.00	$71.02
4	80	$45.54	$14.75	$17.49	$0.00	$77.78

Effective Date - 09/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$30.17	$14.75	$14.32	$0.00	$59.24
2	60	$36.20	$14.75	$15.37	$0.00	$66.32
3	70	$42.24	$14.75	$16.43	$0.00	$73.42
4	80	$48.27	$14.75	$17.49	$0.00	$80.51

Notes:
Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER *IRONWORKERS LOCAL 7 (LAWRENCE AREA)*	03/16/2024	$49.56	$8.35	$26.70	$0.00	$84.61

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *IRONWORKER - Local 7 Lawrence*

Effective Date - 03/16/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$29.74	$8.35	$26.70	$0.00	$64.79
2	70	$34.69	$8.35	$26.70	$0.00	$69.74
3	75	$37.17	$8.35	$26.70	$0.00	$72.22
4	80	$39.65	$8.35	$26.70	$0.00	$74.70
5	85	$42.13	$8.35	$26.70	$0.00	$77.18
6	90	$44.60	$8.35	$26.70	$0.00	$79.65

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"						
LABORER *LABORERS - ZONE 2*	12/01/2024	$39.86	$9.65	$17.70	$0.00	$67.21
	06/01/2025	$41.25	$9.65	$17.70	$0.00	$68.60
	12/01/2025	$42.63	$9.65	$17.70	$0.00	$69.98
	06/01/2026	$44.07	$9.65	$17.70	$0.00	$71.42
	12/01/2026	$45.51	$9.65	$17.70	$0.00	$72.86
	06/01/2027	$46.96	$9.65	$17.70	$0.00	$74.31
	12/01/2027	$48.41	$9.65	$17.70	$0.00	$75.76
	06/01/2028	$49.91	$9.65	$17.70	$0.00	$77.26
	12/01/2028	$51.41	$9.65	$17.70	$0.00	$78.76

Apprentice - *LABORER - Zone 2*

Effective Date - 12/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$23.92	$9.65	$17.70	$0.00	$51.27
2	70	$27.90	$9.65	$17.70	$0.00	$55.25
3	80	$31.89	$9.65	$17.70	$0.00	$59.24
4	90	$35.87	$9.65	$17.70	$0.00	$63.22

Effective Date - 06/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$24.75	$9.65	$17.70	$0.00	$52.10
2	70	$28.88	$9.65	$17.70	$0.00	$56.23
3	80	$33.00	$9.65	$17.70	$0.00	$60.35
4	90	$37.13	$9.65	$17.70	$0.00	$64.48

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$39.86	$9.65	$17.80	$0.00	$67.31
	06/01/2025	$41.25	$9.65	$17.80	$0.00	$68.70
	12/01/2025	$42.63	$9.65	$17.80	$0.00	$70.08
	06/01/2026	$44.07	$9.65	$17.80	$0.00	$71.52
	12/01/2026	$45.51	$9.65	$17.80	$0.00	$72.96

Apprentice - *LABORER (Heavy & Highway) - Zone 2*

Effective Date - 12/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$23.92	$9.65	$17.80	$0.00	$51.37
2	70	$27.90	$9.65	$17.80	$0.00	$55.35
3	80	$31.89	$9.65	$17.80	$0.00	$59.34
4	90	$35.87	$9.65	$17.80	$0.00	$63.32

Effective Date - 06/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$24.75	$9.65	$17.80	$0.00	$52.20
2	70	$28.88	$9.65	$17.80	$0.00	$56.33
3	80	$33.00	$9.65	$17.80	$0.00	$60.45
4	90	$37.13	$9.65	$17.80	$0.00	$64.58

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER *LABORERS - ZONE 2*	12/01/2024	$39.86	$9.65	$17.70	$0.00	$67.21
	06/01/2025	$41.25	$9.65	$17.70	$0.00	$68.60
	12/01/2025	$42.63	$9.65	$17.70	$0.00	$69.98
	06/01/2026	$44.07	$9.65	$17.70	$0.00	$71.42
	12/01/2026	$45.51	$9.65	$17.70	$0.00	$72.86
	06/01/2027	$46.96	$9.65	$17.70	$0.00	$74.31
	12/01/2027	$48.41	$9.65	$17.70	$0.00	$75.76
	06/01/2028	$49.91	$9.65	$17.70	$0.00	$77.26
	12/01/2028	$51.41	$9.65	$17.70	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER *LABORERS - ZONE 2*	12/01/2024	$39.86	$9.65	$17.70	$0.00	$67.21
	06/01/2025	$41.25	$9.65	$17.70	$0.00	$68.60
	12/01/2025	$42.63	$9.65	$17.70	$0.00	$69.98
	06/01/2026	$44.07	$9.65	$17.70	$0.00	$71.42
	12/01/2026	$45.51	$9.65	$17.70	$0.00	$72.86
	06/01/2027	$46.96	$9.65	$17.70	$0.00	$74.31
	12/01/2027	$48.41	$9.65	$17.70	$0.00	$75.76
	06/01/2028	$49.91	$9.65	$17.70	$0.00	$77.26
	12/01/2028	$51.41	$9.65	$17.70	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER *LABORERS - ZONE 2*	12/02/2024	$39.95	$9.65	$17.76	$0.00	$67.36
	06/02/2025	$41.34	$9.65	$17.76	$0.00	$68.75
	12/01/2025	$42.72	$9.65	$17.76	$0.00	$70.13
	06/01/2026	$44.16	$9.65	$17.76	$0.00	$71.57
	12/07/2026	$45.60	$9.65	$17.76	$0.00	$73.01
	06/07/2027	$47.05	$9.65	$17.76	$0.00	$74.46
	12/06/2027	$48.50	$9.65	$17.76	$0.00	$75.91
	06/05/2028	$50.00	$9.65	$17.76	$0.00	$77.41
	12/04/2028	$51.50	$9.65	$17.76	$0.00	$78.91
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.11	$9.65	$17.80	$0.00	$67.56
	06/01/2025	$41.50	$9.65	$17.80	$0.00	$68.95
	12/01/2025	$42.88	$9.65	$17.80	$0.00	$70.33
	06/01/2026	$44.32	$9.65	$17.80	$0.00	$71.77
	12/01/2026	$45.76	$9.65	$17.80	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MULTI-TRADE TENDER *LABORERS - ZONE 2*	12/01/2024	$39.86	$9.65	$17.70	$0.00	$67.21
	06/01/2025	$41.25	$9.65	$17.70	$0.00	$68.60
	12/01/2025	$42.63	$9.65	$17.70	$0.00	$69.98
	06/01/2026	$44.07	$9.65	$17.70	$0.00	$71.42
	12/01/2026	$45.51	$9.65	$17.70	$0.00	$72.86
	06/01/2027	$46.96	$9.65	$17.70	$0.00	$74.31
	12/01/2027	$48.41	$9.65	$17.70	$0.00	$75.76
	06/01/2028	$49.91	$9.65	$17.70	$0.00	$77.26
	12/01/2028	$51.41	$9.65	$17.70	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER *LABORERS - ZONE 2*	12/01/2024	$39.86	$9.65	$17.70	$0.00	$67.21
	06/01/2025	$41.25	$9.65	$17.70	$0.00	$68.60
	12/01/2025	$42.63	$9.65	$17.70	$0.00	$69.98
	06/01/2026	$44.07	$9.65	$17.70	$0.00	$71.42
	12/01/2026	$45.51	$9.65	$17.70	$0.00	$72.86
	06/01/2027	$46.96	$9.65	$17.70	$0.00	$74.31
	12/01/2027	$48.41	$9.65	$17.70	$0.00	$75.76
	06/01/2028	$49.91	$9.65	$17.70	$0.00	$77.26
	12/01/2028	$51.41	$9.65	$17.70	$0.00	$78.76
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.11	$9.65	$17.80	$0.00	$67.56
	06/01/2025	$41.50	$9.65	$17.80	$0.00	$68.95
	12/01/2025	$42.88	$9.65	$17.80	$0.00	$70.33
	06/01/2026	$44.32	$9.65	$17.80	$0.00	$71.77
	12/01/2026	$45.76	$9.65	$17.80	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2025	$50.36	$11.49	$21.62	$0.00	$83.47
	08/01/2025	$52.08	$11.49	$21.62	$0.00	$85.19
	02/01/2026	$53.16	$11.49	$21.62	$0.00	$86.27
	08/01/2026	$54.92	$11.49	$21.62	$0.00	$88.03
	02/01/2027	$56.04	$11.49	$21.62	$0.00	$89.15

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MARBLE & TILE FINISHER - Local 3 Marble & Tile*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.18	$11.49	$21.62	$0.00	$58.29
2	60	$30.22	$11.49	$21.62	$0.00	$63.33
3	70	$35.25	$11.49	$21.62	$0.00	$68.36
4	80	$40.29	$11.49	$21.62	$0.00	$73.40
5	90	$45.32	$11.49	$21.62	$0.00	$78.43

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.04	$11.49	$21.62	$0.00	$59.15
2	60	$31.25	$11.49	$21.62	$0.00	$64.36
3	70	$36.46	$11.49	$21.62	$0.00	$69.57
4	80	$41.66	$11.49	$21.62	$0.00	$74.77
5	90	$46.87	$11.49	$21.62	$0.00	$79.98

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2025	$65.82	$11.49	$23.56	$0.00	$100.87
	08/01/2025	$67.97	$11.49	$23.56	$0.00	$103.02
	02/01/2026	$69.32	$11.49	$23.56	$0.00	$104.37
	08/01/2026	$71.52	$11.49	$23.56	$0.00	$106.57
	02/01/2027	$72.92	$11.49	$23.56	$0.00	$107.97

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$32.91	$11.49	$23.56	$0.00	$67.96
2	60	$39.49	$11.49	$23.56	$0.00	$74.54
3	70	$46.07	$11.49	$23.56	$0.00	$81.12
4	80	$52.66	$11.49	$23.56	$0.00	$87.71
5	90	$59.24	$11.49	$23.56	$0.00	$94.29

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$33.99	$11.49	$23.56	$0.00	$69.04
2	60	$40.78	$11.49	$23.56	$0.00	$75.83
3	70	$47.58	$11.49	$23.56	$0.00	$82.63
4	80	$54.38	$11.49	$23.56	$0.00	$89.43
5	90	$61.17	$11.49	$23.56	$0.00	$96.22

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) *MILLWRIGHTS LOCAL 1121 - Zone 2*	01/06/2025	$45.09	$10.08	$21.47	$0.00	$76.64
	01/05/2026	$47.42	$10.08	$21.47	$0.00	$78.97

Apprentice - *MILLWRIGHT - Local 1121 Zone 2*

Effective Date - 01/06/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$24.80	$10.08	$5.50	$0.00	$40.38
2	65	$29.31	$10.08	$6.50	$0.00	$45.89
3	75	$33.82	$10.08	$18.97	$0.00	$62.87
4	85	$38.33	$10.08	$19.97	$0.00	$68.38

Effective Date - 01/05/2026

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$26.08	$10.08	$5.50	$0.00	$41.66
2	65	$30.82	$10.08	$6.50	$0.00	$47.40
3	75	$35.57	$10.08	$18.97	$0.00	$64.62
4	85	$40.31	$10.08	$19.97	$0.00	$70.36

Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 $5.72, Step 2 $6.66)
Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:4

MORTAR MIXER *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$25.37	$15.30	$16.40	$0.00	$57.07
	06/01/2025	$25.97	$15.30	$16.40	$0.00	$57.67
	12/01/2025	$26.63	$15.30	$16.40	$0.00	$58.33
	06/01/2026	$27.22	$15.30	$16.40	$0.00	$58.92
	12/01/2026	$27.89	$15.30	$16.40	$0.00	$59.59
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$31.08	$15.30	$16.40	$0.00	$62.78
	06/01/2025	$31.80	$15.30	$16.40	$0.00	$63.50
	12/01/2025	$32.60	$15.30	$16.40	$0.00	$64.30
	06/01/2026	$33.32	$15.30	$16.40	$0.00	$65.02
	12/01/2026	$34.12	$15.30	$16.40	$0.00	$65.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2025	$58.46	$9.95	$23.95	$0.00	$92.36

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$29.23	$9.95	$0.00	$0.00	$39.18
2	55	$32.15	$9.95	$6.66	$0.00	$48.76
3	60	$35.08	$9.95	$7.26	$0.00	$52.29
4	65	$38.00	$9.95	$7.87	$0.00	$55.82
5	70	$40.92	$9.95	$20.32	$0.00	$71.19
6	75	$43.85	$9.95	$20.93	$0.00	$74.73
7	80	$46.77	$9.95	$21.53	$0.00	$78.25
8	90	$52.61	$9.95	$22.74	$0.00	$85.30

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	01/01/2025	$49.36	$9.95	$23.95	$0.00	$83.26

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - New*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.68	$9.95	$0.00	$0.00	$34.63
2	55	$27.15	$9.95	$6.66	$0.00	$43.76
3	60	$29.62	$9.95	$7.26	$0.00	$46.83
4	65	$32.08	$9.95	$7.87	$0.00	$49.90
5	70	$34.55	$9.95	$20.32	$0.00	$64.82
6	75	$37.02	$9.95	$20.93	$0.00	$67.90
7	80	$39.49	$9.95	$21.53	$0.00	$70.97
8	90	$44.42	$9.95	$22.74	$0.00	$77.11

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PAINTER (SPRAY OR SANDBLAST, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2025	$47.42	$9.95	$23.95	$0.00	$81.32

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.71	$9.95	$0.00	$0.00	$33.66
2	55	$26.08	$9.95	$6.66	$0.00	$42.69
3	60	$28.45	$9.95	$7.26	$0.00	$45.66
4	65	$30.82	$9.95	$7.87	$0.00	$48.64
5	70	$33.19	$9.95	$20.32	$0.00	$63.46
6	75	$35.57	$9.95	$20.93	$0.00	$66.45
7	80	$37.94	$9.95	$21.53	$0.00	$69.42
8	90	$42.68	$9.95	$22.74	$0.00	$75.37

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.*PAINTERS LOCAL 35 - ZONE 2*	01/01/2025	$47.96	$9.95	$23.95	$0.00	$81.86

Apprentice - *PAINTER - Local 35 Zone 2 - BRUSH NEW*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.98	$9.95	$0.00	$0.00	$33.93
2	55	$26.38	$9.95	$6.66	$0.00	$42.99
3	60	$28.78	$9.95	$7.26	$0.00	$45.99
4	65	$31.17	$9.95	$7.87	$0.00	$48.99
5	70	$33.57	$9.95	$20.32	$0.00	$63.84
6	75	$35.97	$9.95	$20.93	$0.00	$66.85
7	80	$38.37	$9.95	$21.53	$0.00	$69.85
8	90	$43.16	$9.95	$22.74	$0.00	$75.85

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2025	$46.02	$9.95	$23.95	$0.00	$79.92

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 2 - BRUSH REPAINT*

Effective Date - 01/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.01	$9.95	$0.00	$0.00	$32.96
2	55	$25.31	$9.95	$6.66	$0.00	$41.92
3	60	$27.61	$9.95	$7.26	$0.00	$44.82
4	65	$29.91	$9.95	$7.87	$0.00	$47.73
5	70	$32.21	$9.95	$20.32	$0.00	$62.48
6	75	$34.52	$9.95	$20.93	$0.00	$65.40
7	80	$36.82	$9.95	$21.53	$0.00	$68.30
8	90	$41.42	$9.95	$22.74	$0.00	$74.11

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$39.86	$9.65	$17.80	$0.00	$67.31
	06/01/2025	$41.25	$9.65	$17.80	$0.00	$68.70
	12/01/2025	$42.63	$9.65	$17.80	$0.00	$70.08
	06/01/2026	$44.07	$9.65	$17.80	$0.00	$71.52
	12/01/2026	$45.51	$9.65	$17.80	$0.00	$72.96
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$39.78	$15.57	$20.17	$0.00	$75.52
	06/01/2025	$40.78	$15.57	$20.17	$0.00	$76.52
	12/01/2025	$40.78	$15.57	$21.78	$0.00	$78.13
	01/01/2026	$40.78	$16.17	$21.78	$0.00	$78.73
	06/01/2026	$41.78	$16.17	$21.78	$0.00	$79.73
	12/01/2026	$41.78	$16.17	$23.52	$0.00	$81.47
	01/01/2027	$41.78	$16.77	$23.52	$0.00	$82.07
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2024	$55.79	$10.08	$24.29	$0.00	$90.16
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2024	$55.79	$10.08	$24.29	$0.00	$90.16

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PILE DRIVER - Local 56 Zone 1*

Effective Date - 08/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$25.11	$10.08	$2.53	$0.00	$37.72
2	55	$30.68	$10.08	$5.07	$0.00	$45.83
3	70	$39.05	$10.08	$19.22	$0.00	$68.35
4	80	$44.63	$10.08	$21.76	$0.00	$76.47

Notes:

% Indentured BEFORE 8/1/20; 50/60/70/75/80/80/90/90

Step 1 $62.27/ 2 $67.84/ 3 $73.42/ 4 $76.21/ 5&6 $79.00/ 7&8 $84.58

Apprentice to Journeyworker Ratio:1:5

PIPEFITTER & STEAMFITTER *PIPEFITTERS LOCAL 537 (Local 138)*	09/01/2024	$67.08	$12.70	$21.80	$0.00	$101.58
	03/01/2025	$68.88	$12.70	$21.80	$0.00	$103.38

Apprentice - *PIPEFITTER Local 537 (Local 138)*

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$26.83	$12.70	$9.05	$0.00	$48.58
2	45	$30.19	$12.70	$21.80	$0.00	$64.69
3	60	$40.25	$12.70	$21.80	$0.00	$74.75
4	70	$46.96	$12.70	$21.80	$0.00	$81.46
5	80	$53.66	$12.70	$21.80	$0.00	$88.16

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$27.55	$12.70	$9.05	$0.00	$49.30
2	45	$31.00	$12.70	$21.80	$0.00	$65.50
3	60	$41.33	$12.70	$21.80	$0.00	$75.83
4	70	$48.22	$12.70	$21.80	$0.00	$82.72
5	80	$55.10	$12.70	$21.80	$0.00	$89.60

Notes:

** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.

Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

PIPELAYER *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
PIPELAYER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.11	$9.65	$17.80	$0.00	$67.56
	06/01/2025	$41.50	$9.65	$17.80	$0.00	$68.95
	12/01/2025	$42.88	$9.65	$17.80	$0.00	$70.33
	06/01/2026	$44.32	$9.65	$17.80	$0.00	$71.77
	12/01/2026	$45.76	$9.65	$17.80	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
PLUMBER *PLUMBERS & GASFITTERS LOCAL 12 (Local 138)*	09/01/2024	$69.04	$14.32	$19.61	$0.00	$102.97
	03/02/2025	$70.84	$14.32	$19.61	$0.00	$104.77

Apprentice - *PLUMBER/GASFITTER - Local 12 (Local 138)*

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$24.16	$14.32	$7.06	$0.00	$45.54
2	40	$27.62	$14.32	$8.02	$0.00	$49.96
3	55	$37.97	$14.32	$10.93	$0.00	$63.22
4	65	$44.88	$14.32	$12.86	$0.00	$72.06
5	75	$51.78	$14.32	$14.79	$0.00	$80.89

Effective Date - 03/02/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$24.79	$14.32	$7.06	$0.00	$46.17
2	40	$28.34	$14.32	$8.02	$0.00	$50.68
3	55	$38.96	$14.32	$10.93	$0.00	$64.21
4	65	$46.05	$14.32	$12.86	$0.00	$73.23
5	75	$53.13	$14.32	$14.79	$0.00	$82.24

Notes: ** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Steps are 1 yr
Step 4 with lic$69.00, Step5 with lic$76.87

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) *PIPEFITTERS LOCAL 537 (Local 138)*	09/01/2024	$67.08	$12.70	$21.80	$0.00	$101.58
	03/01/2025	$68.88	$12.70	$21.80	$0.00	$103.38
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR *LABORERS - ZONE 2*	12/01/2024	$40.61	$9.65	$17.70	$0.00	$67.96
	06/01/2025	$42.00	$9.65	$17.70	$0.00	$69.35
	12/01/2025	$43.38	$9.65	$17.70	$0.00	$70.73
	06/01/2026	$44.82	$9.65	$17.70	$0.00	$72.17
	12/01/2026	$46.26	$9.65	$17.70	$0.00	$73.61
	06/01/2027	$47.71	$9.65	$17.70	$0.00	$75.06
	12/01/2027	$49.16	$9.65	$17.70	$0.00	$76.51
	06/01/2028	$50.66	$9.65	$17.70	$0.00	$78.01
	12/01/2028	$52.16	$9.65	$17.70	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.11	$9.65	$17.80	$0.00	$67.56
	06/01/2025	$41.50	$9.65	$17.80	$0.00	$68.95
	12/01/2025	$42.88	$9.65	$17.80	$0.00	$70.33
	06/01/2026	$44.32	$9.65	$17.80	$0.00	$71.77
	12/01/2026	$45.76	$9.65	$17.80	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
POWDERMAN & BLASTER *LABORERS - ZONE 2*	12/01/2024	$40.86	$9.65	$17.70	$0.00	$68.21
	06/01/2025	$42.25	$9.65	$17.70	$0.00	$69.60
	12/01/2025	$43.63	$9.65	$17.70	$0.00	$70.98
	06/01/2026	$45.07	$9.65	$17.70	$0.00	$72.42
	12/01/2026	$46.51	$9.65	$17.70	$0.00	$73.86
	06/01/2027	$47.96	$9.65	$17.70	$0.00	$75.31
	12/01/2027	$49.41	$9.65	$17.70	$0.00	$76.76
	06/01/2028	$50.91	$9.65	$17.70	$0.00	$78.26
	12/01/2028	$52.41	$9.65	$17.70	$0.00	$79.76
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.86	$9.40	$17.55	$0.00	$67.81
	06/01/2025	$42.25	$9.40	$17.55	$0.00	$69.20
	12/01/2025	$43.63	$9.40	$17.55	$0.00	$70.58
	06/01/2026	$45.07	$9.40	$17.55	$0.00	$72.02
	12/01/2026	$46.51	$9.40	$17.55	$0.00	$73.46
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
POWER SHOVEL/DERRICK/TRENCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$57.03	$15.55	$16.50	$0.00	$89.08
	06/01/2025	$58.33	$15.55	$16.50	$0.00	$90.38
	12/01/2025	$59.78	$15.55	$16.50	$0.00	$91.83
	06/01/2026	$61.08	$15.55	$16.50	$0.00	$93.13
	12/01/2026	$62.53	$15.55	$16.50	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$36.67	$15.55	$16.50	$0.00	$68.72
	06/01/2025	$37.52	$15.55	$16.50	$0.00	$69.57
	12/01/2025	$38.47	$15.55	$16.50	$0.00	$70.52
	06/01/2026	$39.33	$15.55	$16.50	$0.00	$71.38
	12/01/2026	$40.28	$15.55	$16.50	$0.00	$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER *TEAMSTERS 170 - J.G. MacLellan (Lowell)*	01/01/2025	$30.00	$11.57	$6.55	$0.00	$48.12
	05/01/2025	$30.50	$11.57	$6.65	$0.00	$48.72
	01/01/2026	$30.50	$11.97	$6.65	$0.00	$49.12

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
RECLAIMERS *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR *LABORERS - ZONE 2*	12/01/2024	$40.11	$9.65	$17.70	$0.00	$67.46
	06/01/2025	$41.50	$9.65	$17.70	$0.00	$68.85
	12/01/2025	$42.88	$9.65	$17.70	$0.00	$70.23
	06/01/2026	$44.32	$9.65	$17.70	$0.00	$71.67
	12/01/2026	$45.76	$9.65	$17.70	$0.00	$73.11
	06/01/2027	$47.21	$9.65	$17.70	$0.00	$74.56
	12/01/2027	$48.66	$9.65	$17.70	$0.00	$76.01
	06/01/2028	$50.16	$9.65	$17.70	$0.00	$77.51
	12/01/2028	$51.66	$9.65	$17.70	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) *ROOFERS LOCAL 33*	02/01/2025	$52.28	$13.03	$21.70	$0.00	$87.01
	08/01/2025	$53.78	$13.03	$21.70	$0.00	$88.51
	02/01/2026	$55.03	$13.03	$21.70	$0.00	$89.76

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ROOFER - Local 33*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.14	$13.03	$15.55	$0.00	$54.72
2	60	$31.37	$13.03	$21.70	$0.00	$66.10
3	65	$33.98	$13.03	$21.70	$0.00	$68.71
4	75	$39.21	$13.03	$21.70	$0.00	$73.94
5	85	$44.44	$13.03	$21.70	$0.00	$79.17

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.89	$13.03	$15.55	$0.00	$55.47
2	60	$32.27	$13.03	$21.70	$0.00	$67.00
3	65	$34.96	$13.03	$21.70	$0.00	$69.69
4	75	$40.34	$13.03	$21.70	$0.00	$75.07
5	85	$45.71	$13.03	$21.70	$0.00	$80.44

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
(Hot Pitch Mechanics' receive $1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE *ROOFERS LOCAL 33*	02/01/2025	$52.53	$13.03	$21.70	$0.00	$87.26
	08/01/2025	$54.03	$13.03	$21.70	$0.00	$88.76
	02/01/2026	$55.28	$13.03	$21.70	$0.00	$90.01
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER *SHEETMETAL WORKERS LOCAL 17 - A*	02/01/2025	$59.69	$14.75	$28.12	$2.98	$105.54
	08/01/2025	$61.54	$14.75	$28.12	$2.98	$107.39
	02/01/2026	$63.49	$14.75	$28.12	$2.98	$109.34

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SHEET METAL WORKER - Local 17-A*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	$25.07	$14.75	$6.13	$0.00	$45.95
2	42	$25.07	$14.75	$6.13	$0.00	$45.95
3	47	$28.05	$14.75	$12.11	$1.62	$56.53
4	47	$28.05	$14.75	$12.11	$1.62	$56.53
5	52	$31.04	$14.75	$13.09	$1.74	$60.62
6	52	$31.04	$14.75	$13.34	$1.75	$60.88
7	60	$35.81	$14.75	$14.75	$1.93	$67.24
8	65	$38.80	$14.75	$15.73	$2.04	$71.32
9	75	$44.77	$14.75	$17.69	$2.28	$79.49
10	85	$50.74	$14.75	$19.15	$2.49	$87.13

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	$25.85	$14.75	$6.13	$0.00	$46.73
2	42	$25.85	$14.75	$6.13	$0.00	$46.73
3	47	$28.92	$14.75	$12.11	$1.62	$57.40
4	47	$28.92	$14.75	$12.11	$1.62	$57.40
5	52	$32.00	$14.75	$13.09	$1.74	$61.58
6	52	$32.00	$14.75	$13.34	$1.75	$61.84
7	60	$36.92	$14.75	$14.75	$1.93	$68.35
8	65	$40.00	$14.75	$15.73	$2.04	$72.52
9	75	$46.16	$14.75	$17.69	$2.28	$80.88
10	85	$52.31	$14.75	$19.15	$2.49	$88.70

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.24	$15.57	$20.17	$0.00	$75.98
	06/01/2025	$41.24	$15.57	$20.17	$0.00	$76.98
	12/01/2025	$41.24	$15.57	$21.78	$0.00	$78.59
	01/01/2026	$41.24	$16.17	$21.78	$0.00	$79.19
	06/01/2026	$42.24	$16.17	$21.78	$0.00	$80.19
	12/01/2026	$42.24	$16.17	$23.52	$0.00	$81.93
	01/01/2027	$42.24	$16.77	$23.52	$0.00	$82.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.53	$15.57	$20.17	$0.00	$76.27
	06/01/2025	$41.53	$15.57	$20.17	$0.00	$77.27
	12/01/2025	$41.53	$15.57	$21.78	$0.00	$78.88
	01/01/2026	$41.53	$16.17	$21.78	$0.00	$79.48
	06/01/2026	$42.53	$16.17	$21.78	$0.00	$80.48
	12/01/2026	$42.53	$16.17	$23.52	$0.00	$82.22
	01/01/2027	$42.53	$16.77	$23.52	$0.00	$82.82
SPRINKLER FITTER *SPRINKLER FITTERS LOCAL 550 - (Section B) Zone 2*	10/01/2024	$63.31	$11.51	$23.80	$0.00	$98.62
	03/01/2025	$64.93	$11.51	$23.80	$0.00	$100.24

Apprentice - *SPRINKLER FITTER - Local 550 (Section B) Zone 2*

Effective Date - 10/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$22.16	$11.51	$13.07	$0.00	$46.74
2	40	$25.32	$11.51	$13.90	$0.00	$50.73
3	45	$28.49	$11.51	$14.72	$0.00	$54.72
4	50	$31.66	$11.51	$15.55	$0.00	$58.72
5	55	$34.82	$11.51	$16.38	$0.00	$62.71
6	60	$37.99	$11.51	$17.20	$0.00	$66.70
7	65	$41.15	$11.51	$18.03	$0.00	$70.69
8	70	$44.32	$11.51	$18.85	$0.00	$74.68
9	75	$47.48	$11.51	$19.68	$0.00	$78.67
10	80	$50.65	$11.51	$20.50	$0.00	$82.66

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$22.73	$11.51	$13.07	$0.00	$47.31
2	40	$25.97	$11.51	$13.90	$0.00	$51.38
3	45	$29.22	$11.51	$14.72	$0.00	$55.45
4	50	$32.47	$11.51	$15.55	$0.00	$59.53
5	55	$35.71	$11.51	$16.38	$0.00	$63.60
6	60	$38.96	$11.51	$17.20	$0.00	$67.67
7	65	$42.20	$11.51	$18.03	$0.00	$71.74
8	70	$45.45	$11.51	$18.85	$0.00	$75.81
9	75	$48.70	$11.51	$19.68	$0.00	$79.89
10	80	$51.94	$11.51	$20.50	$0.00	$83.95

Notes: Apprentice entered prior 9/30/10:
40/45/50/55/60/65/70/75/80/85
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
STEAM BOILER OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN *ELECTRICIANS LOCAL 103*	09/01/2024	$51.02	$13.00	$20.24	$0.00	$84.26
	03/01/2025	$51.98	$13.00	$20.27	$0.00	$85.25
	09/01/2025	$53.51	$13.00	$20.32	$0.00	$86.83
	03/01/2026	$54.47	$13.00	$20.34	$0.00	$87.81
	09/01/2026	$56.00	$13.00	$20.39	$0.00	$89.39
	03/01/2027	$56.95	$13.00	$20.42	$0.00	$90.37
	09/01/2027	$58.49	$13.00	$20.46	$0.00	$91.95
	03/01/2028	$59.45	$13.00	$20.49	$0.00	$92.94

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TELECOMMUNICATION TECHNICIAN - Local 103*

Effective Date - 09/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$22.96	$13.00	$0.69	$0.00	$36.65
2	45	$22.96	$13.00	$0.69	$0.00	$36.65
3	50	$25.51	$13.00	$16.16	$0.00	$54.67
4	50	$25.51	$13.00	$16.16	$0.00	$54.67
5	55	$28.06	$13.00	$16.57	$0.00	$57.63
6	60	$30.61	$13.00	$16.97	$0.00	$60.58
7	65	$33.16	$13.00	$17.38	$0.00	$63.54
8	70	$35.71	$13.00	$17.78	$0.00	$66.49
9	75	$38.27	$13.00	$18.18	$0.00	$69.45
10	80	$40.82	$13.00	$18.58	$0.00	$72.40

Effective Date - 03/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	$23.39	$13.00	$0.70	$0.00	$37.09
2	45	$23.39	$13.00	$0.70	$0.00	$37.09
3	50	$25.99	$13.00	$16.16	$0.00	$55.15
4	50	$25.99	$13.00	$16.16	$0.00	$55.15
5	55	$28.59	$13.00	$16.57	$0.00	$58.16
6	60	$31.19	$13.00	$16.97	$0.00	$61.16
7	65	$33.79	$13.00	$17.38	$0.00	$64.17
8	70	$36.39	$13.00	$17.78	$0.00	$67.17
9	75	$38.99	$13.00	$18.18	$0.00	$70.17
10	80	$41.58	$13.00	$18.58	$0.00	$73.16

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	02/01/2025	$64.74	$11.49	$23.59	$0.00	$99.82
	08/01/2025	$66.89	$11.49	$23.59	$0.00	$101.97
	02/01/2026	$68.24	$11.49	$23.59	$0.00	$103.32
	08/01/2026	$70.44	$11.49	$23.59	$0.00	$105.52
	02/01/2027	$71.84	$11.49	$23.59	$0.00	$106.92

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *TERRAZZO FINISHER - Local 3 Marble & Tile*

Effective Date - 02/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$32.37	$11.49	$23.59	$0.00	$67.45
2	60	$38.84	$11.49	$23.59	$0.00	$73.92
3	70	$45.32	$11.49	$23.59	$0.00	$80.40
4	80	$51.79	$11.49	$23.59	$0.00	$86.87
5	90	$58.27	$11.49	$23.59	$0.00	$93.35

Effective Date - 08/01/2025

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$33.45	$11.49	$23.59	$0.00	$68.53
2	60	$40.13	$11.49	$23.59	$0.00	$75.21
3	70	$46.82	$11.49	$23.59	$0.00	$81.90
4	80	$53.51	$11.49	$23.59	$0.00	$88.59
5	90	$60.20	$11.49	$23.59	$0.00	$95.28

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER *LABORERS - FOUNDATION AND MARINE*	12/01/2024	$51.28	$9.65	$18.22	$0.00	$79.15
	06/01/2025	$52.78	$9.65	$18.22	$0.00	$80.65
	12/01/2025	$54.28	$9.65	$18.22	$0.00	$82.15
	06/01/2026	$55.83	$9.65	$18.22	$0.00	$83.70
	12/01/2026	$57.33	$9.65	$18.22	$0.00	$85.20
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER *LABORERS - FOUNDATION AND MARINE*	12/01/2024	$47.07	$9.65	$18.22	$0.00	$74.94
	06/01/2025	$48.57	$9.65	$18.22	$0.00	$76.44
	12/01/2025	$50.07	$9.65	$18.22	$0.00	$77.94
	06/01/2026	$51.62	$9.65	$18.22	$0.00	$79.49
	12/01/2026	$53.12	$9.65	$18.22	$0.00	$80.99
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2024	$46.95	$9.65	$18.22	$0.00	$74.82
	06/01/2025	$48.45	$9.65	$18.22	$0.00	$76.32
	12/01/2025	$49.95	$9.65	$18.22	$0.00	$77.82
	06/01/2026	$51.50	$9.65	$18.22	$0.00	$79.37
	12/01/2026	$53.00	$9.65	$18.22	$0.00	$80.87
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$56.40	$15.55	$16.50	$0.00	$88.45
	06/01/2025	$57.68	$15.55	$16.50	$0.00	$89.73
	12/01/2025	$59.12	$15.55	$16.50	$0.00	$91.17
	06/01/2026	$60.40	$15.55	$16.50	$0.00	$92.45
	12/01/2026	$61.84	$15.55	$16.50	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRAILERS FOR EARTH MOVING EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.82	$15.57	$20.17	$0.00	$76.56
	06/01/2025	$41.82	$15.57	$20.17	$0.00	$77.56
	12/01/2025	$41.82	$15.57	$21.78	$0.00	$79.17
	01/01/2026	$41.82	$16.17	$21.78	$0.00	$79.77
	06/01/2026	$42.82	$16.17	$21.78	$0.00	$80.77
	12/01/2026	$42.82	$16.17	$23.52	$0.00	$82.51
	01/01/2027	$42.82	$16.77	$23.52	$0.00	$83.11
TUNNEL WORK - COMPRESSED AIR *LABORERS (COMPRESSED AIR)*	12/01/2024	$59.18	$9.65	$19.00	$0.00	$87.83
	06/01/2025	$60.68	$9.65	$19.00	$0.00	$89.33
	12/01/2025	$62.18	$9.65	$19.00	$0.00	$90.83
	06/01/2026	$63.73	$9.65	$19.00	$0.00	$92.38
	12/01/2026	$65.23	$9.65	$19.00	$0.00	$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) *LABORERS (COMPRESSED AIR)*	12/01/2024	$61.18	$9.65	$19.00	$0.00	$89.83
	06/01/2025	$62.68	$9.65	$19.00	$0.00	$91.33
	12/01/2025	$64.18	$9.65	$19.00	$0.00	$92.83
	06/01/2026	$65.73	$9.65	$19.00	$0.00	$94.38
	12/01/2026	$67.23	$9.65	$19.00	$0.00	$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR *LABORERS (FREE AIR TUNNEL)*	12/01/2024	$51.25	$9.65	$19.00	$0.00	$79.90
	06/01/2025	$52.75	$9.65	$19.00	$0.00	$81.40
	12/01/2025	$54.25	$9.65	$19.00	$0.00	$82.90
	06/01/2026	$55.80	$9.65	$19.00	$0.00	$84.45
	12/01/2026	$57.30	$9.65	$19.00	$0.00	$85.95
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) *LABORERS (FREE AIR TUNNEL)*	12/01/2024	$53.25	$9.65	$19.00	$0.00	$81.90
	06/01/2025	$54.75	$9.65	$19.00	$0.00	$83.40
	12/01/2025	$56.25	$9.65	$19.00	$0.00	$84.90
	06/01/2026	$57.80	$9.65	$19.00	$0.00	$86.45
	12/01/2026	$59.30	$9.65	$19.00	$0.00	$87.95
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	01/01/2025	$40.24	$15.57	$20.17	$0.00	$75.98
	06/01/2025	$41.24	$15.57	$20.17	$0.00	$76.98
	12/01/2025	$41.24	$15.57	$21.78	$0.00	$78.59
	01/01/2026	$41.24	$16.17	$21.78	$0.00	$79.19
	06/01/2026	$42.24	$16.17	$21.78	$0.00	$80.19
	12/01/2026	$42.24	$16.17	$23.52	$0.00	$81.93
	01/01/2027	$42.24	$16.77	$23.52	$0.00	$82.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WAGON DRILL OPERATOR *LABORERS - ZONE 2*	12/01/2024	$40.61	$9.65	$17.70	$0.00	$67.96
	06/01/2025	$42.00	$9.65	$17.70	$0.00	$69.35
	12/01/2025	$43.38	$9.65	$17.70	$0.00	$70.73
	06/01/2026	$44.82	$9.65	$17.70	$0.00	$72.17
	12/01/2026	$46.26	$9.65	$17.70	$0.00	$73.61
	06/01/2027	$47.71	$9.65	$17.70	$0.00	$75.06
	12/01/2027	$49.16	$9.65	$17.70	$0.00	$76.51
	06/01/2028	$50.66	$9.65	$17.70	$0.00	$78.01
	12/01/2028	$52.16	$9.65	$17.70	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2024	$40.11	$9.65	$17.80	$0.00	$67.56
	06/01/2025	$41.50	$9.65	$17.80	$0.00	$68.95
	12/01/2025	$42.88	$9.65	$17.80	$0.00	$70.33
	06/01/2026	$44.32	$9.65	$17.80	$0.00	$71.77
	12/01/2026	$45.76	$9.65	$17.80	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2024	$57.03	$15.55	$16.50	$0.00	$89.08
	06/01/2025	$58.33	$15.55	$16.50	$0.00	$90.38
	12/01/2025	$59.78	$15.55	$16.50	$0.00	$91.83
	06/01/2026	$61.08	$15.55	$16.50	$0.00	$93.13
	12/01/2026	$62.53	$15.55	$16.50	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER *PLUMBERS & GASFITTERS LOCAL 12 (Local 138)*	09/01/2024	$69.04	$14.07	$18.36	$0.00	$101.47
	03/02/2025	$70.84	$14.32	$18.61	$0.00	$103.77
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

Additional Apprentice Information:

All apprentices must be registered with the Division of Apprenticeship Training (DAS) in accordance with M.G.L. c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L. c. 149, §§ 26-27D. Apprentice ratios are established by DAS pursuant to M.G.L. c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements (CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate. Parties having questions regarding what ratio to use should contact DAS.

Page Intentionally Blank

DIVISION III
TECHNICAL SPECIFICATIONS

Page Intentionally Blank

Item C-105 Mobilization

105-1 Description. This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to **5 percent** of the total project cost.

105-3 Posted notices. Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-4 Engineer/RPR field office. An Engineer/RPR field office is not required.

METHOD OF MEASUREMENT

105-5 Basis of measurement and payment. Based upon the contract lump sum price for "Mobilization" partial payments will be allowed as follows:

a. With first pay request, 25%.

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, *Contractor Final Project Documentation,* the final 10%.

BASIS OF PAYMENT

105-6 Payment will be made under:

Item C-105-6.1	Mobilization for Schedule A Work (Limited to 5% of the total cost of Schedule A) – per lump sum
Item C-105-6.2	Mobilization for Schedule B Work (Limited to 5% of the total cost of Schedule B) – per lump sum

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.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 – Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

ITEM C-125 RUNWAY CLOSURE MARKERS

DESCRIPTION

125-1.1. GENERAL. The proposed phasing plan will require the closure of various runways for portions of the work. For each runway closure, a lighted Runway Closure Marker (RCM) must be placed over the numerals at each runway end; one set of two lighted RCMs are required for each runway closure.

The Contractor shall be responsible for providing one complete set of lighted RCMs.

This item shall consist of furnishing and maintaining the required number of RCMs and placing the RCMs in accordance with the phasing plans, operating, fueling, maintaining (including light bulb replacement), and recovering each set of markers. The RCMs shall be placed and removed as many times as required to comply with project work phasing and maintain airport operations throughout the life of the construction project.

Once the project is complete, all Contractor furnished RCMs shall remain the property of the Contractor.

MATERIAL REQUIREMENTS

125-2.1 PORTABLE LIGHTED RUNWAY CLOSURE MARKERS. For the purposes of this specification a set of markers shall consist of two complete X's. The Contractor furnished sets of lighted RCMs shall meet the requirements of FAA Advisory Circular 150/5345-55A “Specification for L-893 Lighted Visual Aid to Indicate Temporary Runway Closure” and shall be listed in AC 150/5345-53, “Airport Lighting Equipment Certification Program”.

COORDINATION AND WORK REQUIREMENTS

125-3.1 COORDINATION. The Contractor shall provide a minimum 7 days notice to the Owner and the Resident Project Representative (RPR) in accordance with schedule work which will require closure of a runway. All approvals for runway closures shall be considered tentative and subject to change at any time based upon operational needs of the airport and current weather conditions. Every effort must be made to maximize work effort during periods when the runway must be closed.

125-3.2 PLACEMENT AND MAINTENANCE OF MARKERS. Each time that the runway is closed, the contractor shall be responsible for placing closed runway markers over the numerals of the runway. The contractor shall be responsible for providing all fueling, servicing, and maintenance of the markers to ensure continuous operation during the closure.

125-3.3. RECOVERY OF MARKERS. Each time the runway must be reopened to accommodate aircraft, the contractor shall recover the markers and transport them to a storage location as directed by the RPR. The Contractor shall be responsible for maintaining all markers in good condition throughout the project. If during operation and use the markers are damaged or become inoperable they shall be repaired or replaced immediately at the contractor’s expense. The Contractor furnished markers shall remain the property of the Contractor and shall be removed from the site at the completion of the project.

125-3.4. SAFETY CONSIDERATIONS. The contractor shall accomplish all work in accordance

with FAA Advisory Circular AC 150/5370-2F, Operational Safety on Airports During Construction. Additionally, the contractor shall become familiar with vehicle operation requirements at airports as discussed in the FAA Guide to Ground Vehicle Operations on the Airport. The contractor shall monitor and maintain contact with the Airport Control Tower at all times when any work is being performed associated with placing, maintaining, or recovering the RCMs. Refer also to Construction Safety Requirements of the Special Provisions of the contract documents.

METHOD OF MEASUREMENT

125-4.1. No separate measurement for payment shall be made for furnishing or retrieving, and placing, operating, fueling, servicing, maintaining, and recovering Runway Closure Markers. Runway Closure Markers shall be considered incidental to Item Div. II-27.01 Construction Safety and Phasing for Schedule A Work and Div. II-27.02 Construction Safety and Phasing for Schedule B Work.

BASIS OF PAYMENT

125-5.1. No payment will be made separately or directly for Runway Closure Markers. Runway Closure Markers shall be considered incidental to Item Div. II-27.01 Construction Safety and Phasing for Schedule A Work and Div. II-27.02 Construction Safety and Phasing for Schedule B Work.

MATERIAL REQUIREMENTS

AC 150/5345-55A	Specification for L-893 Lighted Visual Aid to Indicate Temporary Runway Closure

END OF ITEM C-125

Item C-102 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control

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, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

Temporary erosion control shall be in accordance with the 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, equipment and material storage 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.

MATERIALS

102-2.1 Grass. Grass that will not compete with the grasses sown later for permanent cover per Item T-901shall 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 cellulose fiber, manufactured mulch, 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. Not used.

102-2.4 Slope drains. Not used.

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. Wood stakes shall have a minimum size of 1 inch by 1 inch and a minimum length of 4 feet.

102-2.6 Erosion Control Blanket. Erosion control blanket shall be composed of a coconut fiber matrix. The coconut matrix shall be confined by a biodegradable jute/scrim net on top and bottom, mechanically (stitch) bound on two-inch centers with a biodegradable cotton thread. The erosion control blanket shall be capable of functioning up to thirty-six months. North American Green BioNet C125BN or approved equal.

102-2.7 Sediment Filter Bag. Sediment Filter Bags for dewatering shall be manufactured from a specially designed non-woven geotextile fabric that is needle-punched to allow water to flow back out while retaining fine soils and particles.

102-2.7 Sandbag. Sandbags for diversion berms shall meet the requirements of U.S. Military Specification CID A-A-52141, Class A, Jute or Kenaf Burlap and shall be 14" x 26" – 10 oz. treated burlap sandbag with attached tie-string.

102-2.8 Filter Fabric. Filter fabric for dewatering sediment devices and stabilized construction exits shall be an 8 oz. non-woven needle-punched geotextile fabric, Mirafi 180N as manufactured by TenCate or approved equal. The geotextiles shall be furnished in a protective wrapping which shall protect the fabric from ultraviolet radiation and from abrasion due to shipping and handling. Fabric shall be furnished in rolls with minimum 15 ft. widths.

102-2.8 Crushed Stone. Crushed stone for stabilized construction exits, stone check dams and dewatering sediment devices shall be clean, crushed, and angular meeting AASHTO-M-43, No. 1.

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 at the work site and a plan for disposal of waste materials off-site. All soil excavated at the project site shall remain at the project site. 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 24 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 and maintenance of erosion control blanket. Erosion control blanket shall be installed as indicated on plans and details or as directed by the RPR. The erosion control blanket shall be maintained and kept securely fastened until a good stand of grass of uniform color and density is established to the satisfaction of the RPR. A grass stand shall be considered adequate when bare spots are one square foot or less, randomly dispersed, and do not exceed 3% of the area seeded.

102-3.6 Installation and maintenance of stone check dams. Stone check dams shall be constructed at locations shown on the plans or directed by the RPR. Check dams shall be constructed according to the details shown on the plans. The check dams shall be maintained in good working condition throughout the duration of the project. Accumulated sediment and debris shall be removed as directed by the RPR.

102-3.7 Installation and maintenance of sandbag diversion berms. Sandbag diversion berms shall be constructed at locations shown on the plans or directed by the RPR. Diversion berms shall be constructed according to the details shown on the plans. The diversion berms shall be maintained in good working condition throughout the duration of the project. The Contractor shall have extra sandbags on hand for repairs and modifications. The Contractor shall increase the height of the sandbag diversion berm as needed based on field conditions in order to maintain one foot of freeboard to top of the berm. All work to maintain and modify sandbag diversion berms shall be incidental to the item.

102-3.8 Installation and maintenance of temporary pumps. Temporary pumps for stream diversion and dewatering shall be installed at locations shown on the plans or directed by the RPR. Pumps shall be maintained in good working condition throughout the duration of the project.

102-3.9 Installation and maintenance of dewatering sediment devices. Dewatering sediment devices if required shall be constructed at locations directed by the RPR. Sediment devices shall be constructed according to the details shown on the plans. Accumulated sediment shall be removed once storage volume is reduced by 50%, and the removed material shall be incorporated into areas of the work that have not yet undergone final grading or topsoiling or shall be legally disposed of offsite. Prior to placing

topsoil, the Contractor must completely remove the sediment devices and restore the area to the original condition as directed by the RPR.

102-3.10 Installation, maintenance, and removal of temporary stabilized construction exits. Construction exits shall be installed at the locations and according to the details shown on the plans or as directed by the RPR. The Contractor shall remove any debris from the construction exits throughout the life of the project as directed by the RPR. At the conclusion of the project, the Contractor must completely remove the construction exits from the project site and restore the area to the original condition as directed by the RPR.

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.** Temporary seeding and mulching will be measured by the square yard
- **b.** Installation and removal of sediment barrier will be measured by the linear foot.
- **c.** Installation of erosion control blanket will be measured by the square yard.
- **d.** Installation of stone check dams will be measured by each.
- **e.** Installation of sandbag diversion berms will be measured by each.
- **f.** Installation of temporary pumps will not be measured and shall be considered incidental.
- **g.** Installation and removal of dewatering sediment devices will be measured by each.
- **h.** Installation and removal of temporary stabilized construction exits will be measured by each for each stabilized construction exit installed in accordance with the plans and details.

102-4.2 Control work performed for protection of construction areas outside the limit of disturbance line as indicated on the plans, such as borrow and waste areas, haul roads, equipment and material storage sites, and other areas disturbed by the contractor, will not be measured and 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-102-5.1	Temporary Seeding and Mulching - per square yard
Item C-102-5.2	Installation and Removal of Sediment Barrier - per linear foot
Item C-102-5.3	Installation of Erosion Control Blanket – per square yard
Item C-102-5.4	Installation of Stone Check Dams – per each
Item C-102-5.5	Installation of Sandbag Diversion Berms – per each
Item C-102-5.6	Installation and Removal of Dewatering Sediment Devices - per each
Item C-102-5.7	Installation and Removal of Temporary Stabilized Construction Exits - per each

102-5.2 Control work performed for protection of construction areas outside the limit of disturbance line as indicated on the plans, such as borrow and waste areas, haul roads, equipment and material storage sites, and other areas disturbed by the contractor, will not be paid for directly but shall be considered as a subsidiary obligation of the Contractor.

102-5.3 Installation and maintenance of temporary pumps shall be considered incidental, and no separate payment shall be made.

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

END OF ITEM C-102

Page Intentionally Blank

Item P-151 Clearing and Grubbing

DESCRIPTION

151-1.1 This item shall consist of clearing, including the disposal of materials, for all areas within the limits designated on the plans or as required by the Resident Project Representative (RPR).

a. Clearing shall consist of the cutting and removal of all trees, stumps, brush, logs, hedges, the removal of fences and other loose or projecting material from the designated areas. The grubbing of stumps and roots will not be required.

b. Clearing and grubbing. Not Used.

c. Tree Removal. Not Used.

CONSTRUCTION METHODS

151-2.1 General. The areas denoted on the plans to be cleared shall be staked on the ground by the Contractor as indicated on the plans.

The removal of existing structures and utilities required to permit orderly progress of work shall be accomplished by local agencies, unless otherwise shown on the plans. Whenever a telephone pole, pipeline, conduit, sewer, roadway, or other utility is encountered and must be removed or relocated, the Contractor shall advise the RPR who will notify the proper local authority or owner to secure prompt action.

151-2.1.1 Disposal. All materials removed by clearing shall be disposed of outside the Airport's limits at the Contractor's responsibility, except when otherwise directed by the RPR. As far as practicable, waste concrete and masonry shall be placed on slopes of embankments or channels. When embankments are constructed of such material, this material shall be placed in accordance with requirements for formation of embankments. Any broken concrete or masonry that cannot be used in construction and all other materials not considered suitable for use elsewhere, shall be disposed of by the Contractor. In no case, shall any discarded materials be left in windrows or piles adjacent to or within the airport limits. The manner and location of disposal of materials shall be subject to the approval of the RPR and shall not create an unsightly or objectionable view. When the Contractor is required to locate a disposal area outside the airport property limits, the Contractor shall obtain and file with the RPR permission in writing from the property owner for the use of private property for this purpose.

151-2.1.2 Blasting. Blasting shall not be allowed.

151-2.2 Clearing. The Contractor shall clear the staked or indicated area of all materials as indicated on the plans. Trees unavoidably falling outside the specified clearing limits must be cut up, removed, and disposed of in a satisfactory manner. To minimize damage to trees that are to be left standing, trees shall be felled toward the center of the area being cleared. The Contractor shall preserve and protect from injury all trees not to be removed. The trees, stumps, and brush shall be cut flush with the original ground surface. The grubbing of stumps and roots will not be required.

Fences shall be removed and disposed of as directed by the RPR. Fence wire shall be neatly rolled and the wire and posts stored on the airport if they are to be used again, or stored at a location designated by the RPR if the fence is to remain the property of a local owner or authority.

151-2.3 Clearing and grubbing. Not Used.

151-2.4 Fence Line Clearing. The Contractor shall clear fence lines of all vegeation within 3 feet of fence at locations indicated on the plans. All trees (less than 4" in diameter), brush and vines shall be cleared from the fence lines. All trees, brush, vines, etc. that have grown into the fence fabric shall be carefully trimmed away. Any damage to the existing fence during clearing operations shall be repaired by the contractor at no additional cost. The trees, stumps, and brush shall be cut flush with the original ground surface. The grubbing of stumps and roots will not be required.

METHOD OF MEASUREMENT

151-3.1 The quantities of clearing as shown by the limits on the plans shall be the number of square yards of land specifically cleared.

151-3.2 The quantities of fence line clearing as shown by the limits on the plans shall be the number of linear feet of fence line specifically cleared.

BASIS OF PAYMENT

151-4.1 Payment shall be made at the contract unit price per square yard for clearing. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

151-4.2 Payment shall be made at the contract unit price per linear foot for fence line clearing. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-151-4.1	Clearing – per square yard
Item P-151-4.2	Fence Line Clearing - per linear foot

END OF ITEM P-151

Item P-152 Excavation, Subgrade, and Embankment

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work as well as other areas for drainage, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature which is not otherwise classified and paid for under one of the following items. All soil waste shall be disposed of at the project site at area(s) designated by the RPR.

b. Rock excavation. Rock excavation shall include all solid rock in ledges, in bedded deposits, in unstratified masses, and conglomerate deposits which are so firmly cemented they cannot be removed without blasting or using rippers. All boulders containing a volume of more than 1/2 cubic yard (0.4 m^3) will be classified as "rock excavation."

152-1.3 Unsuitable excavation. Unsuitable material shall be disposed in areas designated by the RPR. Materials containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material suitable for topsoil may be used on the embankment slope when approved by the RPR.

CONSTRUCTION METHODS

152-2.1 General. Before beginning excavation, grading, and embankment operations in any area, the area shall be cleared or cleared and grubbed in accordance with Item P-151.

The suitability of material to be placed in embankments shall be subject to approval by the RPR. All unsuitable material shall be disposed of in waste areas as shown on the plans. All waste areas shall be graded to allow positive drainage of the area and adjacent areas. The surface elevation of waste areas shall be specified on the plans or approved by the RPR.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the RPR notified per Section 70, paragraph 70-20. At the direction of the RPR, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Areas outside the limits of the pavement areas where the top layer of soil has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the RPR, who shall arrange for their removal if necessary. The Contractor, at their

own expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

a. Blasting. Blasting shall not be allowed.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the RPR has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. The Contractor and RPR shall agree that the original ground lines shown on the original topographic mapping are accurate, or agree to any adjustments made to the original ground lines.

Digital terrain model (DTM) files of the existing surfaces, finished surfaces and other various surfaces were used to develop the design plans.

Volumetric quantities were calculated by comparing DTM files of the applicable design surfaces and generating Triangle Volume Reports. Electronic copies of DTM files and a paper copy of the original topographic map will be issued to the successful bidder.

Existing grades on the design cross sections or DTM's, where they do not match the locations of actual spot elevations shown on the topographic map, were developed by computer interpolation from those spot elevations. Prior to disturbing original grade, Contractor shall verify the accuracy of the existing ground surface by verifying spot elevations at the same locations where original field survey data was obtained as indicated on the topographic map. Contractor shall recognize that, due to the interpolation process, the actual ground surface at any particular location may differ somewhat from the interpolated surface shown on the design cross sections or obtained from the DTM's. Contractor's verification of original ground surface, however, shall be limited to verification of spot elevations as indicated herein, and no adjustments will be made to the original ground surface unless the Contractor demonstrates that spot elevations shown are incorrect. For this purpose, spot elevations which are within 0.2 foot of the stated elevations for ground surfaces, or within 0.04 foot for hard surfaces (pavements, buildings, foundations, structures, etc.) shall be considered "no change". Only deviations in excess of these will be considered for adjustment of the original ground surface. If Contractor's verification identifies discrepancies in the topographic map, Contractor shall notify the RPR in writing at least two weeks before disturbance of existing grade to allow sufficient time to verify the submitted information and make adjustments to the design cross sections or DTM's. Disturbance of existing grade in any area shall constitute acceptance by the Contractor of the accuracy of the original elevations shown on the topographic map for that area.

All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the RPR. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes **as** shown on the plans. All unsuitable material shall be disposed of as shown on the plans.

The grade shall be maintained so that the surface is well drained at all times.

When the volume of the excavation exceeds that required to construct the embankments to the grades as indicated on the plans, the excess shall be used to grade the areas of ultimate development or disposed as directed by the RPR. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

a. Selective grading. When selective grading is indicated on the plans, the more suitable material designated by the RPR shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas until it can be placed. The more suitable material shall then be placed and compacted as specified. Selective grading shall be considered incidental to the work involved. The cost of stockpiling and placing the material shall be included in the various pay items of work involved.

b. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum

depth of 12 inches (300 mm) below the subgrade or to the depth specified by the RPR. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed of at locations shown on the plans. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard (per cubic meter) for rock excavation. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans. Undercutting will be paid as rock excavation.

c. Over-break. Over-break, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the RPR. All over-break shall be graded or removed by the Contractor and disposed of as directed by the RPR. The RPR shall determine if the displacement of such material was unavoidable and their own decision shall be final. Payment will not be made for the removal and disposal of over-break that the RPR determines as avoidable. Unavoidable over-break will be classified as "Unclassified Excavation."

d. Removal of utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by the Contractor as indicated on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the RPR. All foundations thus excavated shall be backfilled with suitable material and compacted as specified for embankment or as shown on the plans.

152-2.3 Borrow excavation. Borrow areas are not required.

152-2.4 Drainage excavation. Drainage excavation shall consist of excavating drainage ditches including intercepting, inlet, or outlet ditches; or other types as shown on the plans. The work shall be performed in sequence with the other construction. Ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the RPR. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 Preparation of cut areas or areas where existing pavement has been removed. In those areas on which a subbase or base course is to be placed, the top 12 inches (300 mm) of subgrade shall be compacted to not less than 95% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

152-2.6 Preparation of embankment area. All sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted per paragraph 152-2.10.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.7 Control Strip. The first half-day of construction of subgrade and/or embankment shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The

sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

152-2.8 Formation of embankments. The material shall be constructed in lifts as established in the control strip, but not less than 6 inches (150 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

The lifts shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the RPR. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained due to rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each lift shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. The material shall be moistened or aerated as necessary to achieve a uniform moisture content throughout the lift. Natural drying may be accelerated by blending in dry material or manipulation alone to increase the rate of evaporation.

The Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

The contractor will take samples of excavated materials which will be used in embankment for testing and develop a Moisture-Density Relations of Soils Report (Proctor) in accordance with ASTM D698. A new Proctor shall be developed for each soil type based on visual classification.

Density tests will be taken by the contractor for every 200 square yards of compacted embankment for each lift which is required to be compacted, or other appropriate frequencies as determined by the RPR.

If the material has greater than 30% retained on the 3/4-inch (19.0 mm) sieve, follow AASHTO T-180 Annex Correction of maximum dry density and optimum moisture for oversized particles.

Rolling operations shall be continued until the embankment is compacted to not less than 95% of maximum density for non-cohesive soils, and 95% of maximum density for cohesive soils as determined by ASTM D698. Under all areas to be paved, the embankments shall be compacted to a depth of 12 inches and to a density of not less than 95% percent of the maximum density as determined by ASTM D698. As used in this specification, "non-cohesive" shall mean those soils having a plasticity index (PI) of less than 3 as determined by ASTM D4318.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches (100 mm) which shall be prepared for a seedbed in accordance with Item T-901.

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor's laboratory shall perform all quality control density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance. When the Contractor's quality control density tests are acceptable the RPR will perform quality assurance density tests. If the specified density is not attained, the area represented by the test or as designated by the RPR shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

Compaction areas shall be kept separate, and no lift shall be covered by another lift until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each lift is placed. Lift placement shall begin in the deepest portion of the embankment fill. As placement progresses, the lifts shall be constructed approximately parallel to the finished pavement grade line.

When rock, concrete pavement, asphalt pavement, and other embankment material are excavated at approximately the same time as the subgrade, the material shall be incorporated into the outer portion of the embankment and the subgrade material shall be incorporated under the future paved areas. Stones, fragmentary rock, and recycled pavement larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 12 inches (300 mm) of the subgrade. Rockfill shall be brought up in lifts as specified or as directed by the RPR and the finer material shall be used to fill the voids forming a dense, compact mass. Rock, cement concrete pavement, asphalt pavement, and other embankment material shall not be disposed of except at places and in the manner designated on the plans or by the RPR.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in lifts of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in lifts not exceeding 2 feet (60 cm) in thickness. Each lift shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The lift shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in lifts, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

152-2.9 Proof rolling. Not Used

152-2.10 Compaction requirements. The subgrade under areas to be paved shall be compacted to a depth of 12 inches and to a density of not less than 100 percent of the maximum dry density as determined by ASTM D698. The subgrade in areas outside the limits of the pavement areas shall be compacted to a depth of 12 inches and to a density of not less than 95 percent of the maximum density as determined by ASTM D698.

The material to be compacted shall be within ±2% of optimum moisture content before being rolled to obtain the prescribed compaction (except for expansive soils). When the material has greater than 30 percent retained on the ¾ inch (19.0 mm) sieve, follow the methods in ASTM D698. Tests for moisture content and compaction will be taken at a minimum of 200 S.Y. of subgrade. All quality assurance testing shall be done by the RPR. All quality control testing shall be done by the Contractor's laboratory in the presence of the RPR, and density test results shall be furnished upon completion to the RPR.

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938 within 12 months prior to its use on this contract. The gage shall be field standardized daily.

Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached.

All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the RPR and the finished subgrade shall be maintained.

152-2.11 Finishing and protection of subgrade. Finishing and protection of the subgrade is incidental to this item. Grading and compacting of the subgrade shall be performed so that it will drain readily. All low areas, holes or depressions in the subgrade shall be brought to grade. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans. All ruts or rough places that develop in the completed subgrade shall be graded, re-compacted, and retested. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes.

The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been accepted by the RPR.

152-2.12 Haul. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work.

The Contractor's equipment shall not cause damage to any excavated surface, compacted lift or to the subgrade as a result of hauling operations. Any damage caused as a result of the Contractor's hauling operations shall be repaired at the Contractor's expense.

The Contractor shall be responsible for providing, maintaining and removing any haul roads or routes within or outside of the work area, and shall return the affected areas to their former condition, unless otherwise authorized in writing by the Owner. No separate payment will be made for any work or materials associated with providing, maintaining and removing haul roads or routes.

152-2.13 Surface Tolerances. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor’s expense.

a. **Smoothness.** The finished surface shall not vary more than +/- ½ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. **Grade.** The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

On safety areas, turfed areas and other designated areas within the grading limits where no subbase or base is to placed, grade shall not vary more than 0.10 feet (30 mm) from specified grade. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.14 Topsoil. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall be located as shown on the plans and the approved CSPP, and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the RPR, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further re-handling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as shown on the plans and as required in Item T-905. Topsoil shall be paid for as provided in Item T-905. No direct payment will be made for topsoil under Item P-152.

METHOD OF MEASUREMENT

152-3.1 Measurement for payment specified by the cubic yard shall be computed by the comparison of digital terrain model (DTM) surfaces for computation of neat line design quantities. The end area is that bound by the original ground line established by field cross-sections and the final theoretical pay line established by cross-sections shown on the plans, subject to verification by the RPR.

152-3.2 The quantity of unclassified excavation and rock excavation to be paid for shall be the number of cubic yards measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

152-3.3 The quantity of embankment in place shall be the number of cubic yards measured in its final position.

BASIS OF PAYMENT

152-4.1 Unclassified excavation and rock Excavation payment shall be made at the contract unit price per cubic yard. This price shall include excavation, loading, hauling, stockpiling, grading, compacting and on-site disposal of soil waste. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

152-4.2 For embankment in place, payment shall be made at the contract unit price per cubic yard. This price shall include furnishing material from approved on-site or off-site sources, excavation, loading, hauling, stockpiling, placing, grading and compacting. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-152-4.1	Unclassified Excavation - per cubic yard
Item P-152-4.2	Rock Excavation - per cubic yard
Item P-152-4.3	Embankment in place - per cubic yard

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.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T-180	Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

ASTM International (ASTM)

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2700 kN-m/m^3))
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

Advisory Circulars (AC)

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

Software

FAARFIELD – FAA Rigid and Flexible Iterative Elastic Layered Design

U.S. Department of Transportation

FAA RD-76-66	Design and Construction of Airport Pavements on Expansive Soils

END OF ITEM P-152

Item P-154 Subbase Course

DESCRIPTION

154-1.1 This item shall consist of a subbase course composed of granular materials constructed on a prepared subgrade or underlying course in accordance with these specifications, and in conformity with the dimensions and typical cross-section shown on the plans.

MATERIALS

154-2.1 Materials. The subbase material shall consist of hard durable particles or fragments of granular aggregates. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with proper blending. The materials from these sources shall meet the requirements for gradation, quality, and consistency. The material shall be free from vegetative matter, excessive amounts of clay, and other objectionable substances; uniformly blended; and be capable of being compacted into a dense, stable subbase.

The subbase material shall exhibit a California Bearing Ratio (CBR) value of at least 20 when tested in accordance with ASTM D1883. The subbase material shall meet the gradation specified in the table below.

Subbase Gradation Requirements

Sieve designation	Percentage by weight passing sieves	Contractor's Final Gradation	Job Control Grading Band Tolerances[1] (Percent)
	Subbase Aggregate		
3 inch (75 mm)	100		0
1 1/2 inch (37.5 mm)			0
3/4 inch (19.0 mm)	70-100		±10
No. 10 (2.00 mm)	20-100		±10
No. 40 (425 µm)	5-60		±5
No. 200 (75 µm)	0-10		±5

[1]The "Job Control Grading Band Tolerances" shall be applied to "Contractor's Final Gradation" to establish the job control grading band.

The portion of the material passing the No. 40 (425 µm) sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than six (6) when tested in accordance with ASTM D4318.

154-2.2 Sampling and testing.

a. Aggregate base materials. Samples shall be taken by the Contractor per ASTM D75 for initial aggregate subbase requirements and gradation. Material shall meet the requirements in paragraphs 154-2.1. The Contractor shall submit to the Resident Project Representative (RPR) certified test results showing that the aggregate meets the Material requirements of this section. Tests shall be representative of the material to be used for the project.

b. Gradation requirements. The Contractor shall take at least one aggregate subbase sample per day in the presence of the RPR to check the final gradation. Samples shall be taken from the in-place, un-compacted material at sampling locations determined by the RPR on a random basis per ASTM D3665. Sampling shall be per ASTM D75 and tested per ASTM C136 and ASTM C117. Results shall be furnished to the RPR by the Contractor each day during construction. Material shall meet the requirements in paragraph 154-2.1.

154-2.3 Separation Geotextile. Not used.

154-2.4 Geogrid. Not used.

CONSTRUCTION METHODS

154-3.1 General. The subbase course shall be placed where designated on the plans or as directed by the RPR. The material shall be shaped and thoroughly compacted within the tolerances specified.

Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support the construction equipment without movement, shall be mechanically modified to the depth necessary to provide stability as directed by the RPR. The mechanical modification shall include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so the course will not deform under construction equipment traffic.

154-3.2 Preparing underlying course. Prior to constructing the subbase course, clean the underlying course or subgrade of all foreign substances. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances in accordance with Item P-152. Correct ruts, soft yielding spots in the underlying courses, and subgrade areas having inadequate compaction and/or deviations of the surface from the specified requirements, by loosening and removing soft or unsatisfactory material, adding approved material, reshaping to line and grade, and recompacting to specified density requirements. For cohesionless underlying courses or subgrades containing sands or gravels, as defined in ASTM D2487, the surface shall be stabilized prior to placement of the overlying course by mixing the overlying course material into the underlying course, and compacting by approved methods. The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained in a satisfactory condition until the overlying course is placed. The underlying course shall be checked and accepted by the RPR before placing and spreading operations are started.

To protect the subgrade and to ensure proper drainage, spreading of the subbase shall begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

154-3.3 Control Strip. The first half-day of subbase construction shall be considered as a control strip for the Contractor to demonstrate, in the presence of the RPR, that the materials, equipment, and construction processes meet the requirements of this specification. The sequence and manner of rolling necessary to obtain specified density requirements shall be determined. The maximum compacted thickness may be increased to a maximum of 12 inches (300 mm) upon the Contractor's demonstration that approved equipment and operations will uniformly compact the lift to the specified density. The RPR must witness this demonstration and approve the lift thickness prior to full production.

Control strips that do not meet specification requirements shall be reworked, re-compacted, or removed and replaced at the Contractor's expense. Full operations shall not begin until the control strip has been accepted by the RPR. The Contractor shall use the same equipment, materials, and construction methods for the remainder of construction, unless adjustments made by the Contractor are approved in advance by the RPR.

154-3.4 Placement. The material shall be placed and spread on the prepared underlying layer by spreader boxes or other devices as approved by the RPR, to a uniform thickness and width. The equipment shall have positive thickness controls to minimize the need for additional manipulation of the material. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted. The material shall not be placed when the underlying course is soft or yielding.

The material shall meet gradation and moisture requirements prior to compaction. Material may be free-draining and the minimum moisture content shall be established for placement and compaction of the material.

The material shall be constructed in lifts as established in the control strip, but not less than 4 inches (100 mm) nor more than 12 inches (300 mm) of compacted thickness.

When more than one lift is required to establish the layer thickness shown on the plans, the construction procedure described here shall apply to each lift. No lift shall be covered by subsequent lifts until tests verify that compaction requirements have been met. The Contractor shall rework, re-compact and retest any material placed which does not meet the specifications.

154-3.5 Compaction. The subbase material shall be compacted, adjusting moisture as necessary, to be within ±2% of optimum moisture. The field density of the compacted material shall be at least 95% of the maximum density as specified in paragraph 154-3.9a. If the specified density is not attained, the area of the lift represented by the test shall be reworked and/or re-compacted and additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

154-3.6 Weather limitation. Material shall not be placed unless the ambient air temperature is at least 40°F (4°C) and rising. Work on subbase course shall not be conducted when the subgrade is wet or frozen or the subbase material contains frozen material.

154-3.7 Maintenance. No base or surface course shall be placed on the subbase until the subbase has been accepted by the RPR. The Contractor shall maintain the completed course in satisfactory condition throughout placement of subsequent layers. When material has been exposed to excessive rain, snow, or freeze-thaw conditions, the Contractor shall verify that materials still meet all specification requirements before placement of additional material. Equipment may be routed over completed sections of subbase course, provided the equipment does not damage the subbase course and the equipment is routed over the full width of the completed subbase course. Any damage to the subbase course from routing equipment over the subbase course shall be repaired by the Contractor at their expense.

154-3.8 Surface tolerance. In those areas on which a subbase or base course is to be placed, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and re-compacted to grade until the required smoothness and accuracy are obtained and approved by the RPR. The Contractor shall perform all final smoothness and grade checks in the presence of the RPR. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense.

a. Smoothness. The finished surface shall not vary more than +/- ½ inch (12 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The straightedge

shall be moved continuously forward at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. Grade. The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +/- 0.05 feet (15 mm) of the specified grade.

154-3.9 Acceptance sampling and testing. The aggregate base course shall be accepted for density and thickness on an area basis. Two test shall be made for density and thickness for each 200 square yards. Sampling locations will be determined on a random basis per ASTM D3665.

a. Density. The Contractor's laboratory shall perform all density tests in the RPR's presence and provide the test results upon completion to the RPR for acceptance .

Each area shall be accepted for density when the field density is at least 95% of the maximum density of laboratory specimens compacted and tested per ASTM D698. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the area represented by the failed test shall be reworked and/or recompacted and two additional random tests made. This procedure shall be followed until the specified density is reached. Maximum density refers to maximum dry density at optimum moisture content unless otherwise specified.

When the material has greater than 30 percent retained on the ¾ inch (19.0 mm) sieve, use methods in ASTM D698 and the procedures in AASHTO T180 Annex for correction of maximum dry density and optimum moisture for oversized particles.

b. Thickness. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the RPR for each area. Where the thickness is deficient by more than 1/2-inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material of proper gradation, and the material shall be blended and recompacted to grade. The Contractor shall replace, at his expense, base material where depth tests have been taken.

METHOD OF MEASUREMENT

154-4.1 Subbase course shall be measured by the number of cubic yards of subbase course material placed and compacted to specified density and plan thickness requirements in the completed course. The quantity of subbase course material shall be measured in final position based upon survey of the completed work computed from elevations to the nearest 0.01 foot. On individual depth measurements, thicknesses more than 1/2 inch (12 mm) in excess of that shown on the plans shall be considered as the specified thickness plus 1/2 inch (12 mm) in computing the yardage for payment. Subbase materials shall not be included in any other excavation quantities.

BASIS OF PAYMENT

154-5.1 Payment shall be made at the contract unit price per `cubic yard` for subbase course. This price shall be full compensation for furnishing all materials; for all preparation, hauling, and placing of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-154-5.1	Subbase Course - per cubic yard

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 C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D4759	Practice for Determining the Specification Conformance of Geosynthetics
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

American Association of State Highway and Transportation Officials (AASHTO)

M 288	Geotextile Specification for Highway Applications

END OF ITEM P-154

Page Intentionally Blank

Item P-610 Concrete for Miscellaneous Structures

DESCRIPTION

610-1.1 This item shall consist of concrete and reinforcement, as shown on the plans, prepared and constructed in accordance with these specifications. This specification shall be used for all concrete other than airfield pavement which are cast-in-place.

MATERIALS

610-2.1 General. Only approved materials, conforming to the requirements of these specifications, shall be used in the work. Materials may be subject to inspection and tests at any time during their preparation or use. The source of all materials shall be approved by the Resident Project Representative (RPR) before delivery or use in the work. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be stored and handled to ensure preservation of their quality and fitness for use and shall be located to facilitate prompt inspection. All equipment for handling and transporting materials and concrete must be clean before any material or concrete is placed in them.

The use of pit-run aggregates shall not be permitted unless the pit-run aggregate has been screened and washed, and all fine and coarse aggregates stored separately and kept clean. The mixing of different aggregates from different sources in one storage stockpile or alternating batches of different aggregates shall not be permitted.

a. Reactivity. Fine aggregate and coarse aggregates to be used in all concrete shall have been tested separately within six months of the project in accordance with ASTM C1260. Test results shall be submitted to the RPR. The aggregate shall be considered innocuous if the expansion of test specimens, tested in accordance with ASTM C1260, does not exceed 0.08% at 14 days (16 days from casting). If the expansion either or both test specimen is greater than 0.08% at 14 days, but less than 0.20%, a minimum of 25% of Type F fly ash, or between 40% and 55% of slag cement shall be used in the concrete mix.

If the expansion is greater than 0.20%, the aggregates shall not be used, and test results for other aggregates must be submitted for evaluation; or aggregates that meet P-501 reactivity test requirements may be utilized.

610-2.2 Coarse aggregate. The coarse aggregate for concrete shall meet the requirements of ASTM C33 and the requirements of Table 4, Class Designation 5S; and the grading requirements shown below, as required for the project.

Coarse Aggregate Grading Requirements

Maximum Aggregate Size	ASTM C33, Table 3 Grading Requirements (Size No.)
1 1/2 inch (37.5 mm)	467 or 4 and 67
1 inch (25 mm)	57
¾ inch (19 mm)	67
½ inch (12.5 mm)	7

610-2.2.1 Coarse Aggregate susceptibility to durability (D) cracking. Not used.

610-2.3 Fine aggregate. The fine aggregate for concrete shall meet all fine aggregate requirements of ASTM C33.

610-2.4 Cement. Cement shall conform to the requirements of ASTM C150 Type I.

610-2.5 Cementitious materials.

a. Fly ash. Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash shall have a Calcium Oxide (CaO) content of less than 15% and a total available alkali content less than 3% per ASTM C311. Fly ash produced in furnace operations using liming materials or soda ash (sodium carbonate) as an additive shall not be acceptable. The Contractor shall furnish the previous three most recent, consecutive ASTM C618 reports for each source of fly ash proposed in the concrete mix, and shall furnish each additional report as they become available during the project. The reports can be used for acceptance or the material may be tested independently by the RPR.

b. Slag cement (ground granulated blast furnace (GGBF)). Slag cement shall conform to ASTM C989, Grade 100 or Grade 120. Slag cement shall be used only at a rate between 25% and 55% of the total cementitious material by mass.

610-2.6 Water. Water used in mixing or curing shall be from potable water sources. Other sources shall be tested in accordance with ASTM C1602 prior to use.

610-2.7 Admixtures. The Contractor shall submit certificates indicating that the material to be furnished meets all of the requirements indicated below. In addition, the RPR may require the Contractor to submit complete test data from an approved laboratory showing that the material to be furnished meets all of the requirements of the cited specifications. Subsequent tests may be made of samples taken by the RPR from the supply of the material being furnished or proposed for use on the work to determine whether the admixture is uniform in quality with that approved.

a. Air-entraining admixtures. Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entrainment agent and any water reducer admixture shall be compatible.

b. Water-reducing admixtures. Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D. ASTM C494, Type F and G high range water reducing admixtures and ASTM C1017 flowable admixtures shall not be used.

c. Other chemical admixtures. The use of set retarding, and set-accelerating admixtures shall be approved by the RPR. Retarding shall meet the requirements of ASTM C494, Type A, B, or D and set-

accelerating shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

610-2.8 Premolded joint material. Premolded joint material for expansion joints shall meet the requirements of ASTM D1751**.**

610-2.9 Joint filler. The filler for joints shall meet the requirements of Item P-605, unless otherwise specified.

610-2.10 Steel reinforcement. Reinforcing shall consist of Reinforcing Steel conforming to the requirements of ASTM A615**.**

610-2.11 Materials for curing concrete. Curing materials shall conform to ASTM C309.

CONSTRUCTION METHODS

610-3.1 General. The Contractor shall furnish all labor, materials, and services necessary for, and incidental to, the completion of all work as shown on the drawings and specified here. All machinery and equipment used by the Contractor on the work, shall be of sufficient size to meet the requirements of the work. All work shall be subject to the inspection and approval of the RPR.

610-3.2 Concrete Mixture. The concrete shall develop a compressive strength of 4000 psi 28 MPa in 28 days as determined by test cylinders made in accordance with ASTM C31 and tested in accordance with ASTM C39. The concrete shall contain not less than 470 pounds of cementitious material per cubic yard (280 kg per cubic meter). The water cementitious ratio shall not exceed 0.45 by weight. The air content of the concrete shall be 5% +/- 1.2% as determined by ASTM C231 and shall have a slump of not more than 4 inches (100 mm) as determined by ASTM C143.

610-3.3 Mixing. Concrete may be mixed at the construction site, at a central point, or wholly or in part in truck mixers. The concrete shall be mixed and delivered in accordance with the requirements of ASTM C94 or ASTM C685.

The concrete shall be mixed only in quantities required for immediate use. Concrete shall not be mixed while the air temperature is below 40°F (4°C) without the RPRs approval. If approval is granted for mixing under such conditions, aggregates or water, or both, shall be heated and the concrete shall be placed at a temperature not less than 50°F (10°C) nor more than 100°F (38°C). The Contractor shall be held responsible for any defective work, resulting from freezing or injury in any manner during placing and curing, and shall replace such work at his expense.

Retempering of concrete by adding water or any other material is not permitted.

The rate of delivery of concrete to the job shall be sufficient to allow uninterrupted placement of the concrete.

610-3.4 Forms. Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the RPR. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as shown on the plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes. The Contractor shall be responsible for their adequacy.

The internal form ties shall be arranged so no metal will show in the concrete surface or discolor the surface when exposed to weathering when the forms are removed. All forms shall be wetted with water or with a non-staining mineral oil, which shall be applied immediately before the concrete is placed. Forms shall be constructed so they can be removed without injuring the concrete or concrete surface.

610-3.5 Placing reinforcement. All reinforcement shall be accurately placed, as shown on the plans, and shall be firmly held in position during concrete placement. Bars shall be fastened together at intersections. The reinforcement shall be supported by approved metal chairs. Shop drawings, lists, and bending details shall be supplied by the Contractor when required.

610-3.6 Embedded items. Before placing concrete, all embedded items shall be firmly and securely fastened in place as indicated. All embedded items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The concrete shall be spaded and consolidated around and against embedded items. The embedding of wood shall not be allowed.

610-3.7 Concrete Consistency. The Contractor shall monitor the consistency of the concrete delivered to the project site; collect each batch ticket; check temperature; and perform slump tests on each truck at the project site in accordance with ASTM C143.

610-3.8 Placing concrete. All concrete shall be placed during daylight hours, unless otherwise approved. The concrete shall not be placed until the depth and condition of foundations, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved by the RPR. Concrete shall be placed as soon as practical after mixing, but in no case later than one (1) hour after water has been added to the mix. The method and manner of placing shall avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be used as an aid in placing concrete when necessary. The concrete shall not be dropped from a height of more than 5 feet (1.5 m). Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to procedures which cause segregation. Concrete shall be placed on clean, damp surfaces, free from running water, or on a properly consolidated soil foundation.

610-3.9 Vibration. Vibration shall follow the guidelines in American Concrete Institute (ACI) Committee 309R, Guide for Consolidation of Concrete.

610-3.10 Joints. Joints shall be constructed as indicated on the plans.

610-3.11 Finishing. All exposed concrete surfaces shall be true, smooth, and free from open or rough areas, depressions, or projections. All concrete horizontal plane surfaces shall be brought flush to the proper elevation with the finished top surface struck-off with a straightedge and floated.

610-3.12 Curing and protection. All concrete shall be properly cured in accordance with the recommendations in American Concrete Institute (ACI) 308R, Guide to External Curing of Concrete. The concrete shall be protected from damage until project acceptance.

610-3.13 Cold weather placing. When concrete is placed at temperatures below 40°F (4°C), follow the cold weather concreting recommendations found in ACI 306R, Cold Weather Concreting.

610-3.14 Hot weather placing. When concrete is placed in hot weather greater than 85ºF (30 ºC), follow the hot weather concreting recommendations found in ACI 305R, Hot Weather Concreting.

QUALITY ASSURANCE (QA)

610-4.1 Quality Assurance sampling and testing. Concrete for each day's placement will be accepted on the basis of the compressive strength specified in paragraph 610-3.2. The RPR will sample the concrete in accordance with ASTM C172; test the slump in accordance with ASTM C143; test air content in accordance with ASTM C231; make and cure compressive strength specimens in accordance with ASTM C31; and test in accordance with ASTM C39. The QA testing agency will meet the requirements of ASTM C1077.

The Contractor shall provide adequate facilities for the initial curing of cylinders.

610-4.2 Defective work. Any defective work that cannot be satisfactorily repaired as determined by the RPR, shall be removed and replaced at the Contractor's expense. Defective work includes, but is not limited to, uneven dimensions, honeycombing and other voids on the surface or edges of the concrete.

METHOD OF MEASUREMENT

610-5.1 Concrete shall be considered incidental and no separate measurement shall be made of concrete complete in place and accepted.

BASIS OF PAYMENT

610-6.1 Concrete shall be considered incidental and no separate payment shall be made. This shall include furnishing all materials including reinforcement and embedded items and for all preparation, delivery, installation, and curing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

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 A184	Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A704	Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement
ASTM A706	Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A775	Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A884	Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement
ASTM A934	Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C94	Standard Specification for Ready-Mixed Concrete

ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C114	Standard Test Methods for Chemical Analysis of Hydraulic Cement
ASTM C136	Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C171	Standard Specification for Sheet Materials for Curing Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C685	Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM C1017	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1157	Standard Performance Specification for Hydraulic Cement
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1365	Standard Test Method for Determination of the Proportion of Phases in Portland Cement and Portland-Cement Clinker Using X-Ray Powder Diffraction Analysis
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types)

ASTM D1752	Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

American Concrete Institute (ACI)

ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 308R	Guide to External Curing of Concrete
ACI 309R	Guide for Consolidation of Concrete

END OF ITEM P-610

Page Intentionally Blank

Item D-701 Pipe for Storm Drains and Culverts

DESCRIPTION

701-1.1 This item shall consist of the construction of pipe culverts and storm drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

MATERIALS

701-2.1 Materials shall meet the requirements shown on the plans and specified below. Underground piping and components used in drainage systems for terminal and aircraft fueling ramp drainage shall be noncombustible and inert to fuel in accordance with National Fire Protection Association (NFPA) 415.

701-2.2 Pipe. The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following appropriate requirements:

ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C1479	Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations
ASTM C1840	Standard Practice for Inspection and Acceptance of Installed Reinforced Concrete Culvert, Storm Drain, and Storm Sewer Pipe

701-2.3 Concrete. Not used.

701-2.4 Rubber gaskets. Rubber gaskets for rigid pipe shall conform to the requirements of ASTM C443.

701-2.5 Joint mortar. Not used.

701-2.6 Joint fillers. Not used.

701-2.7 Plastic gaskets. Not used.

701-2.8. Controlled low-strength material (CLSM). Not used.

701-2.9 Precast box culverts. Manufactured in accordance with and conforming to ASTM C1433.

701-2.10 Precast concrete pipe. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or American Concrete Pipe Association QCast Plant Certification program.

CONSTRUCTION METHODS

701-3.1 Excavation. The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but it shall not be less than the external diameter of the pipe plus 12 inches (300 mm) on each side. The trench walls shall be approximately vertical.

The Contractor shall comply with all current federal, state and local rules and regulations governing the safety of men and materials during the excavation, installation and backfilling operations. Specifically,

the Contractor shall observe that all requirements of the Occupational Safety and Health Administration (OSHA) relating to excavations, trenching and shoring are strictly adhered to. The width of the trench shall be sufficient to permit satisfactorily jointing of the pipe and thorough compaction of the bedding material under the pipe and backfill material around the pipe, but it shall not be greater than the widths shown on the plans trench detail.

Where rock, hardpan, or other unyielding material is encountered, the Contractor shall remove it from below the foundation grade for a depth of at least 8 inch (200 mm) or 1/2 inch (12 mm) for each foot of fill over the top of the pipe (whichever is greater) but for no more than three-quarters of the nominal diameter of the pipe. The excavation below grade should be filled with granular material to form a uniform foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved granular material for the full trench width. The RPR shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

The excavation for pipes placed in embankment fill shall not be made until the embankment has been completed to a height above the top of the pipe as shown on the plans.

701-3.2 Bedding. The bedding surface for the pipe shall provide a foundation of uniform density to support the pipe throughout its entire length.

a. Rigid pipe. The pipe bedding shall be constructed uniformly for the full length of the pipe barrel, as required on the plans. The maximum aggregate size shall be 1 in when the bedding thickness is less than 6 inches, and 1-1/2 in when the bedding thickness is greater than 6 inches. Bedding shall be loosely placed uncompacted material under the middle third of the pipe prior to placement of the pipe.

b. Flexible pipe.

Not Used.

c. Other pipe materials. Not Used.

701-3.3 Laying pipe. The pipe laying shall begin at the lowest point of the trench and proceed upgrade. The lower segment of the pipe shall be in contact with the bedding throughout its full length. Bell or groove ends of rigid pipes and outside circumferential laps of flexible pipes shall be placed facing upgrade.

Paved or partially lined pipe shall be placed so that the longitudinal center line of the paved segment coincides with the flow line.

Elliptical and elliptically reinforced concrete pipes shall be placed with the manufacturer's reference lines designating the top of the pipe within five degrees of a vertical plane through the longitudinal axis of the pipe.

701-3.4 Joining pipe. Joints shall be made with rubber gaskets.

Rubber ring gaskets shall be installed to form a flexible watertight seal.

a. Concrete pipe. Concrete pipe may be either bell and spigot or tongue and groove. Pipe sections at joints shall be fully seated and the inner surfaces flush and even. Concrete pipe joints shall be sealed with rubber gaskets meeting ASTM C443.

b. Metal pipe. Not used.

c. PVC, Polyethylene, or Polypropylene pipe. Not used.

d. Fiberglass pipe. Not used.

701-3.5 Embedment and Overfill. Pipes shall be inspected before any fill material is placed; any pipes found to be out of alignment, unduly settled, or damaged shall be removed and re-laid or replaced at the Contractor's expense.

701-3.5-1 Embedment Material Requirements

a. Concrete Pipe. Embedment material and compaction requirements shall be in accordance with the applicable Type of Standard Installation (Types 1, 2, 3, or 4) per ASTM C1479. If a concrete cradle or CLSM embedment material is used, it shall conform to the plan details.

b. Plastic and fiberglass Pipe. Not used.

c. Metal Pipe. Not used.

701-3.5-2 Placement of Embedment Material

The embedment material shall be compacted in layers not exceeding 6 inches (150 mm) on each side of the pipe and shall be brought up one foot (30 cm) above the top of the pipe or to natural ground level, whichever is greater. Thoroughly compact the embedment material under the haunches of the pipe without displacing the pipe. Material shall be brought up evenly on each side of the pipe for the full length of the pipe.

When the top of the pipe is above the top of the trench, the embedment material shall be compacted in layers not exceeding 6 inches (150 mm) and shall be brought up evenly on each side of the pipe to one foot (30 cm) above the top of the pipe. All embedment material shall be compacted to a density required under Item P-152.

Concrete cradles and flowable fills, such as controlled low strength material (CLSM) or controlled density fill (CDF), may be used for embedment provided adequate flotation resistance can be achieved by restraints, weighing, or placement technique.

It shall be the Contractor's responsibility to protect installed pipes and culverts from damage due to construction equipment operations. The Contractor shall be responsible for installation of any extra strutting or backfill required to protect pipes from the construction equipment.

701-3.6 Overfill

Pipes shall be inspected before any overfill is in place. Any pipes found to be out of alignment, unduly settled, or damaged shall be removed and relaid or replaced at the Contractor's expense. Evaluation of any damage to RCP shall be evaluated based on AASHTO R73.

Overfill material shall be place and compacted in layers as required to achieve compaction to at least 95 percent standard proctor per ASTM D698. The soil shall contain no debris, organic matter, frozen material, or stones with a diameter greater than one half the thickness of the compacted layers being placed.

701-3.7 Inspection Requirements

An initial post installation inspection shall be performed by the RPR no sooner than 30 days after completion of installation and final backfill. Clean or flush all lines prior to inspection.

Reinforced concrete pipe shall be inspected, evaluated, and reported on in accordance with ASTM C1840, "Standard Practice for Inspection and Acceptance of Installed Reinforced Concrete Culvert, Storm Drain, and Storm Sewer Pipe." Any issues reported shall include still photo and video documentation. The zoom ratio shall be provided for all still or video images that document any issues of concern by the inspection firm.

701-3.8 Existing Pipe Connections to New Structures. Where required to connect existing pipe to new structure, the Contractor shall cut back the existing pipe and install a new section of pipe of sufficient

length (8’ max.) with a watertight coupling connection as shown on the drawings. A rubber gasket per ASTM C443 shall be utilized for connection of existing pipe to new structure.

701-3.9 Removal of Drain Pipe. Remove the types of drain pipe as indicated on the plans. The drain pipe material shall be legally disposed of off-site in a timely manner following removal. Trenches shall be backfilled with material equal to or better in quality than adjacent embankment and shall be compacted to 95% of ASTM D698. Removal of drain pipe shall include backfill, compaction and surface restoration with topsoil, seed, and mulch. Existing pipes and pipe openings in structures to remain after pipe removal shall be permanently plugged at no additional cost to prevent entry of soil materials and groundwater. Openings and pipes 18-inch diameter or less should be plugged with concrete grout to a minimum length of 8 inches. Openings greater than 18-inch diameter may be constructed of brick or concrete blocks. Plaster the exposed face of block or brick plugs with mortar. All plugs shall be watertight and capable of withstanding all internal and external pressures without leakage.

METHOD OF MEASUREMENT

701-4.1 The length of pipe shall be measured in linear feet of pipe in place, completed, and accepted. It shall be measured along the centerline of the pipe from end or inside face of structure to the end or inside face of structure, whichever is applicable. Each class, type and size of pipe shall be measured separately. All fittings shall be included in the footage as typical pipe sections in the pipe being measured.

701-4.2 The length of drain pipe removal shall be measured in linear feet of pipe removed.

BASIS OF PAYMENT

701-5.1 Payment will be made at the contract unit price per linear foot for Class III Reinforced Concrete Pipe. These prices shall fully compensate the Contractor for furnishing all materials and for all preparation, excavation, backfilling, compacting and installation of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

701-5.2 Payment will be made at the contract unit price per linear foot for removal of drain pipe. These prices shall fully compensate the Contractor for removal of all pipe and for all preparation, excavation, backfilling and compaction and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item 701-5.1	24-inch Class III Reinforced Concrete Pipe - per linear foot
Item 701-5.2	30-inch Class III Reinforced Concrete Pipe - per linear foot
Item 701-5.3	30-inch Class V Reinforced Concrete Pipe - per linear foot
Item 701-5.4	Connection of Existing Pipe to New Structure - per each
Item 701-5.5	Removal of Reinforced Concrete Pipe - per linear 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.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M167	Standard Specification for Corrugated Steel Structural Plate, Zinc-Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches
AASHTO M190	Standard Specification for Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches
AASHTO M196	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
AASHTO M219	Standard Specification for Corrugated Aluminum Alloy Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches
AASHTO M243	Standard Specification for Field Applied Coating of Corrugated Metal Structural Plate for Pipe, Pipe-Arches, and Arches
AASHTO M252	Standard Specification for Corrugated Polyethylene Drainage Pipe
AASHTO M294	Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
AASHTO M304	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter
AASHTO MP20	Standard Specification for Steel Reinforced Polyethylene (PE) Ribbed Pipe, 300- to 900-mm (12- to 36-in.) Diameter

ASTM International (ASTM)

ASTM A760	Standard Specification for Corrugated Steel Pipe, Metallic Coated for Sewers and Drains
ASTM A761	Standard Specification for Corrugated Steel Structural Plate, Zinc Coated, for Field-Bolted Pipe, Pipe-Arches, and Arches
ASTM A762	Standard Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains
ASTM A849	Standard Specification for Post-Applied Coatings, Pavings, and Linings for Corrugated Steel Sewer and Drainage Pipe
ASTM B745	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
ASTM C14	Standard Specification for Nonreinforced Concrete Sewer, Storm Drain, and Culvert Pipe
ASTM C76	Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
ASTM C94	Standard Specification for Ready Mixed Concrete
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C443	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
ASTM C506	Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe

ASTM C507	Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain and Sewer Pipe
ASTM C655	Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain and Sewer Pipe
ASTM C990	Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
ASTM C1433	Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers
ASTM D1056	Standard Specification for Flexible Cellular Materials Sponge or Expanded Rubber
ASTM D3034	Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM D3212	Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
ASTM D3262	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Sewer Pipe
ASTM D3282	Standard Practice for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
ASTM D4161	Standard Specification for "Fiberglass" (Glass-Fiber Reinforced Thermosetting Resin) Pipe Joints Using Flexible Elastomeric Seals
ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F667	Standard Specification for 3 through 24 in. Corrugated Polyethylene Pipe and Fittings
ASTM F714	Standard Specification for Polyethylene (PE) Plastic Pipe (DR PR) Based on Outside Diameter
ASTM F794	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe & Fittings Based on Controlled Inside Diameter
ASTM F894	Standard Specification for Polyethylene (PE) Large Diameter Profile Wall Sewer and Drain Pipe
ASTM F949	Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings
ASTM F2435	Standard Specification for Steel Reinforced Polyethylene (PE) Corrugated Pipe
ASTM F2562	Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage
ASTM F2736	Standard Specification for 6 to 30 in. (152 to 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Double Wall Pipe

ASTM F2764	Standard Specification for 30 to 60 in. (750 to 1500 mm) Polypropylene (PP) Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications
ASTM F2881	Standard Specification for 12 to 60 in. (300 to 1500 mm) Polypropylene (PP) Dual Wall Pipe and Fittings for Non-Pressure Storm Sewer Applications

National Fire Protection Association (NFPA)

NFPA 415	Standard on Airport Terminal Buildings, Fueling Ramp Drainage, and Loading Walkways

END ITEM D-701

Page Intentionally Blank

Item D-751 Manholes, Catch Basins, Inlets and Inspection Holes

DESCRIPTION

751-1.1 This item shall consist of construction of manholes, catch basins, inlets, and inspection holes, in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

MATERIALS

751-2.1 Brick. The brick shall conform to the requirements of ASTM C32, Grade MS.

751-2.2 Mortar. Mortar shall consist of one part Portland cement and two parts sand. The cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

751-2.3 Concrete. Plain and reinforced concrete used in structures, connections of pipes with structures, and the support of structures or frames shall conform to the requirements of Item P-610.

751-2.4 Precast concrete pipe manhole rings. Precast concrete pipe manhole rings shall conform to the requirements of ASTM C478. Unless otherwise specified, the risers and offset cone sections shall have an inside diameter of not less than 36 inches (90 cm) nor more than 48 inches (120 cm). There shall be a gasket between individual sections and sections cemented together with mortar on the inside of the manhole. Gaskets shall conform to the requirements of ASTM C443.

751-2.5 Corrugated metal. Corrugated metal shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M36.

751-2.6 Frames, covers, and grates. The castings shall conform to one of the following requirements:

a. ASTM A48, Class 35B: Gray iron castings

b. ASTM A47: Malleable iron castings

c. ASTM A27: Steel castings

d. ASTM A283, Grade D: Structural steel for grates and frames

e. ASTM A536, Grade 65-45-12: Ductile iron castings

f. ASTM A897: Austempered ductile iron castings

All castings or structural steel units shall conform to the dimensions shown on the plans and shall be designed to support the loadings, aircraft gear configuration and/or direct loading, specified.

Each frame and cover or grate unit shall be provided with fastening members to prevent it from being dislodged by traffic but which will allow easy removal for access to the structure.

All castings shall be thoroughly cleaned. After fabrication, structural steel units shall be galvanized to meet the requirements of ASTM A123.

751-2.7 Steps. The steps or ladder bars shall be gray or malleable cast iron or galvanized steel. The steps shall be the size, length, and shape shown on the plans and those steps that are not galvanized shall be given a coat of asphalt paint, when directed.

751-2.8 Precast inlet structures. Manufactured in accordance with and conforming to ASTM C913.

CONSTRUCTION METHODS

751-3.1 Unclassified excavation.

a. The Contractor shall excavate for structures and footings to the lines and grades or elevations, shown on the plans, or as staked by the RPR. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximately only; and the RPR may direct, in writing, changes in dimensions or elevations of footings necessary for a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. Where concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing is placed.

c. The Contractor shall do all bracing, sheathing, or shoring necessary to implement and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for the structure.

d. All bracing, sheathing, or shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage finished masonry. The cost of removal shall be included in the unit price bid for the structure.

e. After excavation is completed for each structure, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

751-3.2 Brick structures.

a. Foundations. A prepared foundation shall be placed for all brick structures after the foundation excavation is completed and accepted. Unless otherwise specified, the base shall consist of reinforced concrete mixed, prepared, and placed in accordance with the requirements of Item P-610.

b. Laying brick. All brick shall be clean and thoroughly wet before laying so that they will not absorb any appreciable amount of additional water at the time they are laid. All brick shall be laid in freshly made mortar. Mortar not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted. An ample layer of mortar shall be spread on the beds and a shallow furrow shall be made in it that can be readily closed by the laying of the brick. All bed and head joints shall be filled solid with mortar. End joints of stretchers and side or cross joints of headers shall be fully buttered with mortar and a shoved joint made to squeeze out mortar at the top of the joint. Any bricks that may be loosened after the mortar has taken its set, shall be removed, cleaned, and re-laid with fresh mortar. No broken or chipped brick shall be used in the face, and no spalls or bats shall be used except where necessary to shape around irregular openings or edges; in which case, full bricks shall be placed at ends or corners where possible, and the bats shall be used in the interior of the course. In making closures, no piece of brick shorter than the width of a whole brick shall be used; and wherever practicable, whole brick shall be used and laid as headers.

c. Joints. All joints shall be filled with mortar at every course Exterior faces shall be laid up in advance of backing. Exterior faces shall be plastered or parged with a coat of mortar not less than 3/8 inch (9 mm) thick before the backing is laid up. Prior to parging, all joints on the back of face courses shall be

cut flush. Unless otherwise noted, joints shall be not less than 1/4 inch (6 mm) nor more than 1/2 inch (12 mm) wide and the selected joint width shall be maintained uniform throughout the work.

d. Pointing. Face joints shall be neatly struck, using the weather-struck joint. All joints shall be finished properly as the laying of the brick progresses. When nails or line pins are used, the holes shall be immediately plugged with mortar and pointed when the nail or pin is removed.

e. Cleaning. Upon completion of the work all exterior surfaces shall be thoroughly cleaned by scrubbing and washing with water. If necessary to produce satisfactory results, cleaning shall be done with a 5% solution of muriatic acid which shall then be rinsed off with liberal quantities of water.

f. Curing and cold weather protection. The brick masonry shall be protected and kept moist for at least 48 hours after laying the brick. Brick masonry work or pointing shall not be done when there is frost on the brick or when the air temperature is below 50°F (10°C) unless the Contractor has, on the project ready to use, suitable covering and artificial heating devices necessary to keep the atmosphere surrounding the masonry at a temperature of not less than 60°F (16°C) for the duration of the curing period.

751-3.3 Concrete structures. Concrete structures which are to be cast-in-place within the project boundaries shall be built on prepared foundations, conforming to the dimensions and shape indicated on the plans. The construction shall conform to the requirements specified in Item P-610. Any reinforcement required shall be placed as indicated on the plans and shall be approved by the RPR before the concrete is placed.

All invert channels shall be constructed and shaped accurately to be smooth, uniform, and cause minimum resistance to flowing water. The interior bottom shall be sloped to the outlet.

751-3.4 Precast concrete structures. Precast concrete structures shall be furnished by a plant meeting National Precast Concrete Association Plant Certification Program or another RPR approved third party certification program.

Precast concrete structures shall conform to ASTM C478. Precast concrete structures shall be constructed on prepared or previously placed slab foundations conforming to the dimensions and locations shown on the plans. All precast concrete sections necessary to build a completed structure shall be furnished. The different sections shall fit together readily. Joints between precast concrete risers and tops shall be full-bedded in cement mortar and shall: (1) be smoothed to a uniform surface on both interior and exterior of the structure or (2) utilize a rubber gasket per ASTM C443. The top of the upper precast concrete section shall be suitably formed and dimensioned to receive the metal frame and cover or grate, or other cap, as required. Provision shall be made for any connections for lateral pipe, including drops and leads that may be installed in the structure. The flow lines shall be smooth, uniform, and cause minimum resistance to flow. The metal or metal encapsulated steps that are embedded or built into the side walls shall be aligned and placed in accordance to ASTM C478. When a metal ladder replaces the steps, it shall be securely fastened into position.

751-3.5 Corrugated metal structures. Corrugated metal structures shall be prefabricated. All standard or special fittings shall be furnished to provide pipe connections or branches with the correct dimensions and of sufficient length to accommodate connecting bands. The fittings shall be welded in place to the metal structures. The top of the metal structure shall be designed so that either a concrete slab or metal collar may be attached to allow the fastening of a standard metal frame and grate or cover. Steps or ladders shall be furnished as shown on the plans. Corrugated metal structures shall be constructed on prepared foundations, conforming to the dimensions and locations as shown on the plans. When indicated, the structures shall be placed on a reinforced concrete base.

751-3.6 Inlet and outlet pipes. Inlet and outlet pipes shall extend through the walls of the structures a sufficient distance beyond the outside surface to allow for connections. They shall be cut off flush with

the wall on the inside surface of the structure, unless otherwise directed. For concrete or brick structures, mortar shall be placed around these pipes to form a tight, neat connection.

751-3.7 Placement and treatment of castings, frames, and fittings. All castings, frames, and fittings shall be placed in the positions indicated on the plans or as directed by the RPR, and shall be set true to line and elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

When frames or fittings are placed on previously constructed masonry, the bearing surface of the masonry shall be brought true to line and grade and shall present an even bearing surface so the entire face or back of the unit will come in contact with the masonry. The unit shall be set in mortar beds and anchored to the masonry as indicated on the plans or as directed by the RPR. All units shall set firm and secure.

After the frames or fittings have been set in final position, the concrete or mortar shall be allowed to harden for seven (7) days before the grates or covers are placed and fastened down.

751-3.8 Installation of steps. The steps shall be installed as indicated on the plans or as directed by the RPR. When the steps are to be set in concrete, they shall be placed and secured in position before the concrete is placed. When the steps are installed in brick masonry, they shall be placed as the masonry is being built. The steps shall not be disturbed or used until the concrete or mortar has hardened for at least seven (7) days. After seven (7) days, the steps shall be cleaned and painted, unless they have been galvanized.

When steps are required with precast concrete structures they shall meet the requirements of ASTM C478. The steps shall be cast into the side of the sections at the time the sections are manufactured or set in place after the structure is erected by drilling holes in the concrete and cementing the steps in place.

When steps are required with corrugated metal structures, they shall be welded into aligned position at a vertical spacing of 12 inches (300 mm).

Instead of steps, prefabricated ladders may be installed. For brick or concrete structures, the ladder shall be held in place by grouting the supports in drilled holes. For metal structures, the ladder shall be secured by welding the top support to the structure and grouting the bottom support into drilled holes in the foundation or as directed by the RPR.

751-3.9 Backfilling.

a. After a structure has been completed, the area around it shall be backfilled with approved material, in horizontal layers not to exceed 8 inches (200 mm) in loose depth, and compacted to the density required in Item P-152. Each layer shall be deposited evenly around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans or as directed by the RPR.

b. Backfill shall not be placed against any structure until approved by the RPR. For concrete structures, approval shall not be given until the concrete has been in place seven (7) days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill and placing methods.

c. Backfill shall not be measured for direct payment. Performance of this work shall be considered an obligation of the Contractor covered under the contract unit price for the structure involved.

751-3.10 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankments, shoulders, or as approved by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

751-4.1 Manholes, catch basins, inlets, and inspection holes shall be measured by the unit.

BASIS OF PAYMENT

751-5.1 The accepted quantities of manholes, catch basins, inlets, and inspection holes will be paid for at the contract unit price per each in place when completed. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling, compacting and placing of the materials; furnishing and installation of such specials and connections to pipes and other structures as may be required to complete the item as shown on the plans; and for all labor equipment, tools and incidentals necessary to complete the structure.

Payment will be made under:

Item D-751-5.1	60-inch Drain Manhole - per each
Item D-751-5.2	72-inch Drain Manhole - per each
Item D-751-5.3	84-inch Drain Manhole - per each

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 A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A47	Standard Specification for Ferritic Malleable Iron Castings
ASTM A48	Standard Specification for Gray Iron Castings
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
ASTM A536	Standard Specification for Ductile Iron Castings
ASTM A897	Standard Specification for Austempered Ductile Iron Castings
ASTM C32	Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C443	Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
ASTM C478	Standard Specification for Precast Reinforced Concrete Manhole Sections

ASTM C913	Standard Specification for Precast Concrete Water and Wastewater Structures.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO M36	Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains

END OF ITEM D-751

Item D-752 Concrete Culverts, Headwalls, and Miscellaneous Drainage Structures

DESCRIPTION

752-1.1 This item shall consist of reinforced concrete culverts, headwalls, flared end sections, and miscellaneous drainage structures constructed in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the RPR.

MATERIALS

752-2.1 Concrete. Reinforced concrete shall meet the requirements of Item P-610.

CONSTRUCTION METHODS

752-3.1 Unclassified excavation.

a. Trenches and foundation pits for structures or structure footings shall be excavated to the lines and grades and elevations shown on the plans. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximate only; and the RPR may approve, in writing, changes in dimensions or elevations of footings necessary to secure a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the RPR. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. When concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturbed and excavation to final grade shall not be made until immediately before the concrete or reinforcing steel is placed.

c. The Contractor shall do all bracing, sheathing, or shoring necessary to perform and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheathing, or shoring shall be included in the unit price bid for excavation.

d. All bracing, sheathing, or shoring shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage the finished concrete. The cost of removal shall be included in the unit price bid for excavation.

e. After each excavation is completed, the Contractor shall notify the RPR. No concrete or reinforcing steel shall be placed until the RPR has approved the depth of the excavation and the character of the foundation material.

752-3.2 Backfilling.

a. After a structure has been completed, backfilling with approved material shall be accomplished by applying the fill in horizontal layers not to exceed 8 inches (200 mm) in loose depth, and compacted. The field density of the compacted material shall be at least 90% of the maximum density for cohesive soils and 95% of the maximum density for noncohesive soils. The maximum density shall be determined in accordance with ASTM D698. The field density shall be determined in accordance with ASTM D1556.

b. No backfilling shall be placed against any structure until approved by the RPR. For concrete, approval shall not be given until the concrete has been in place seven (7) days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill or the placement methods.

c. Fill placed around concrete culverts shall be deposited on each side at the same time and to approximately the same elevation. All slopes bounding or within the areas to be backfilled shall be stepped or serrated to prevent wedge action against the structure.

d. Backfill will not be measured for direct payment. Performance of this work shall be considered as a subsidiary obligation of the Contractor, covered under the contract unit price for "unclassified excavation for structures."

752-3.3 Weep holes. Weep holes shall be constructed as shown on the plans.

752-3.4 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankment, shoulders, or as approved by the RPR. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

752-4.1 Reinforced concrete culverts, headwalls, flared end sections, and miscellaneous drainage structures shall be measured by the unit.

752-4.2 Removal of reinforced concrete headwalls shall be measured by the unit.

BASIS OF PAYMENT

752-5.1 The accepted quantities of reinforced concrete culverts, headwalls, flared end sections, and miscellaneous drainage structures will be paid for at the contract unit price per each in place when completed. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling, compacting and placing of the materials; furnishing and installation of such specials and connections to pipes and other structures as may be required to complete the item as shown on the plans; and for all labor equipment, tools and incidentals necessary to complete the structure.

Payment will be made under:

Item D-752-5.1	30-inch Reinforced Concrete Flared End Section - per each
Item D-752-5.2	Removal of Reinforced Concrete Headwall - per each

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 D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

END OF ITEM D-752

Page Intentionally Blank

Item T-901 Seeding

DESCRIPTION

901-1.1 This item shall consist of soil preparation, seeding, fertilizing, and liming the areas shown on the plans or as directed by the RPR in accordance with these specifications.

MATERIALS

901-2.1 Seed. The species and application rates of grass, legume, and cover-crop seed furnished shall be those stipulated herein. Seed shall conform to the requirements of Federal Specification JJJ-S-181, Federal Specification, Seeds, Agricultural.

Seed shall be furnished separately or in mixtures in standard containers labeled in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable state seed laws with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the RPR duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within six (6) months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed. Wet, moldy, or otherwise damaged seed will be rejected.

Seeds shall be Endophyte Enhanced Airport Mixture applied as follows:

Seed Properties and Rate of Application

Seed	Rate of Application lbs./acre
Kentucky 31 Tall Fescue	70.0 (31%)
Viking H20 Hard Fescue	70.0 (31%)
Ambrose Chewing Fescue	70.0 (31%)
Top Gun Perennial Ryegrass	18.0 (7%)
TOTAL RATE	228 lbs./acre

Seeding shall be performed during the period between April 1st to June 1st and August 15th to October 14th inclusive, unless otherwise approved by the RPR.

901-2.2 Lime. Lime shall be applied to the soil if the pH is less than 5.5. Lime shall be ground limestone containing not less than 85% of total carbonates, and shall be ground to such fineness that 90% will pass through a No. 20 (850 µm) mesh sieve and 50% will pass through a No. 100 (150 µm) mesh sieve. Coarser material will be acceptable, providing the rates of application are increased to provide not less than the minimum quantities and depth specified in the special provisions on the basis of the two sieve requirements above. Dolomitic lime or a high magnesium lime shall contain at least 10% of magnesium oxide. Lime shall be applied at the rate required to increase the soil pH to between 5.5 and 7.6. All liming materials shall conform to the requirements of ASTM C602.

901-2.3 Fertilizer. Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water-soluble potash. They shall be applied at the rate and to the depth specified, and shall meet the requirements of applicable state laws. They shall be furnished in standard containers with name, weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

a. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;

b. A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or

c. A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be commercial fertilizer and shall be spread at the following rate:

Rate of Application

Percent of Nutrients			
Initial	Re-fertilization	Min. Application Rate (lbs. per 1000 Sq. Ft.)	Measurement Factor
10-10-10		20.0	1.0
15-15-15		13.4	1.5
19-19-19		10.5	1.9
	10-3-6	20.0	1.0
	12-2-8	16.7	1.2
	12-4-8	16.7	1.2

901-2.4 Soil for repairs. The soil for fill and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the RPR before being placed.

CONSTRUCTION METHODS

901-3.1 Advance preparation and cleanup. After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage include filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to seeding, the top 3 inches (75 mm) of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

When the area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, any grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches (75 mm) of soil shall be worked into a satisfactory seedbed by discing, or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

901-3.2 Dry application method.

a. Liming. Lime shall be applied separately and prior to the application of any fertilizer or seed and only on seedbeds that have previously been prepared as described above. The lime shall then be worked into the top 3 inches (75 mm) of soil after which the seedbed shall again be properly graded and dressed to a smooth finish.

b. Fertilizing. Following advance preparations and cleanup fertilizer shall be uniformly spread at the rate that will provide not less than the minimum quantity stated in paragraph 901-2.3.

c. Seeding. Grass seed shall be sown at the rate specified in paragraph 901-2.1 immediately after fertilizing. The fertilizer and seed shall be raked within the depth range stated in the special provisions. Seeds of legumes, either alone or in mixtures, shall be inoculated before mixing or sowing, in accordance with the instructions of the manufacturer of the inoculant. When seeding is required at other than the seasons shown on the plans or in the special provisions, a cover crop shall be sown by the same methods required for grass and legume seeding.

d. Rolling. After the seed has been properly covered, the seedbed shall be immediately compacted by means of an approved lawn roller, weighing 40 to 65 pounds per foot (60 to 97 kg per meter) of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot (223 to 298 kg per meter) of width for sandy or light soils.

901-3.3 Wet application method.

a. General. The Contractor may elect to apply seed and fertilizer (and lime, if required) by spraying them on the previously prepared seedbed in the form of an aqueous mixture and by using the methods and equipment described herein. The rates of application shall be as specified in the special provisions.

b. Spraying equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 lb / sq inches (690 kPa). The pump shall be mounted in a line that will recirculate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipe lines shall be capable of providing clearance for 5/8 inch (16 mm) solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet

nozzle. For case of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.

In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

c. Mixtures. Lime, if required, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. The Contractor shall identify to the RPR all sources of water at least two (2) weeks prior to use. The RPR may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the RPR following such tests.

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within two (2) hours from the time they were mixed or they shall be wasted and disposed of at approved locations.

d. Spraying. Lime, if required, shall be sprayed only upon previously prepared seedbeds. After the applied lime mixture has dried, the lime shall be worked into the top 3 inches (75 mm), after which the seedbed shall again be properly graded and dressed to a smooth finish.

Mixtures of seed and fertilizer shall only be sprayed upon previously prepared seedbeds on which the lime, if required, shall already have been worked in. The mixtures shall be applied by means of a high-pressure spray that shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area.

Checks on the rate and uniformity of application may be made by observing the degree of wetting of the ground or by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the RPR, seed and fertilizer applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

901-3.4 Maintenance of seeded areas. The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the RPR. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work done out of season, it will be required that the Contractor establish a good stand of grass of uniform color and density to the satisfaction of the RPR. A grass stand shall be considered adequate when bare spots are one square foot (0.01 sq m) or less, randomly dispersed, and do not exceed 3% of the area seeded.

METHOD OF MEASUREMENT

901-4.1 The quantity of seeding to be paid for shall be the number of square yards measured on the ground surface, completed and accepted. Any seeding required beyond the limit of disturbance line to restore areas disturbed by the Contractor shall not be measured separately and shall be considered incidental to the overall cost of the project.

BASIS OF PAYMENT

901-5.1 Payment shall be made at the contract unit price per square yard or fraction thereof, which price and payment shall be full compensation for furnishing and placing all material including lime and fertilizer and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item. Any seeding required beyond the limit of disturbance line to restore areas disturbed by the Contractor shall not be paid separately and shall be considered incidental to the overall cost of the project.

Payment will be made under:

Item T-901-5.1	Seeding - per square yard

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 C602	Standard Specification for Agricultural Liming Materials

Federal Specifications (FED SPEC)

FED SPEC	JJJ-S-181, Federal Specification, Seeds, Agricultural

Advisory Circulars (AC)

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

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-901

Page Intentionally Blank

Item T-905 Topsoil

DESCRIPTION

905-1.1 This item shall consist of preparing the ground surface for topsoil application, removing topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placing and spreading the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the RPR.

MATERIALS

905-2.1 Topsoil. Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth, and it shall be reasonably free from subsoil and stumps, roots, brush, stones (2 inches (50 mm) or more in diameter), and clay lumps or similar objects. Brush and other vegetation that will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sod and herbaceous growth such as grass and weeds are not to be removed, but shall be thoroughly broken up and intermixed with the soil during handling operations. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means, shall be removed. The topsoil or soil mixture, unless otherwise specified or approved, shall have a pH range of approximately 5.5 pH to 7.6 pH, when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall be not less than 3% nor more than 20% as determined by the wet-combustion method (chromic acid reduction). There shall be not less than 20% nor more than 80% of the material passing the 200 mesh (75 μm) sieve as determined by the wash test in accordance with ASTM C117.

Natural topsoil may be amended by the Contractor with approved materials and methods to meet the above specifications.

905-2.2 Inspection and tests. Within 10 days following acceptance of the bid, the RPR shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine if the selected soil meets the requirements specified and to determine the depth to which stripping will be permitted. At this time, the Contractor may be required to take representative soil samples from several locations within the area under consideration and to the proposed stripping depths, for testing purposes as specified in paragraph 905-2.1.

CONSTRUCTION METHODS

905-3.1 General. Areas to be topsoiled shall be shown on the plans. If topsoil is available on the site, the location of the stockpiles or areas to be stripped of topsoil and the stripping depths shall be shown on the plans.

Suitable equipment necessary for proper preparation and treatment of the ground surface, stripping of topsoil, and for the handling and placing of all required materials shall be on hand, in good condition, and approved by the RPR before the various operations are started.

905-3.2 Preparing the ground surface. Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened by discs or spike-tooth harrows, or by other means approved by the RPR, to a minimum depth of 2 inches (50 mm) to facilitate bonding of the topsoil to the covered subgrade

soil. The surface of the area to be topsoiled shall be cleared of all stones larger than 2 inches (50 mm) in any diameter and all litter or other material which may be detrimental to proper bonding, the rise of capillary moisture, or the proper growth of the desired planting. Limited areas, as shown on the plans, which are too compact to respond to these operations shall receive special scarification.

Grades on the area to be topsoiled, which have been established by others as shown on the plans, shall be maintained in a true and even condition. Where grades have not been established, the areas shall be smooth-graded and the surface left at the prescribed grades in an even and compacted condition to prevent the formation of low places or pockets where water will stand.

905-3.3 Obtaining topsoil. Prior to the stripping of topsoil from designated areas, any vegetation, briars, stumps and large roots, rubbish or stones found on such areas, which may interfere with subsequent operations, shall be removed using methods approved by the RPR. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means shall be removed.

When suitable topsoil is available on the site, the Contractor shall remove this material from the designated areas and to the depth as directed by the RPR. The topsoil shall be spread on areas already tilled and smooth-graded, or stockpiled in areas approved by the RPR. Any topsoil stockpiled by the Contractor shall be rehandled and placed without additional compensation. Any topsoil that has been stockpiled on the site by others, and is required for topsoil purposes, shall be removed and placed by the Contractor. The sites of all stockpiles and areas adjacent thereto which have been disturbed by the Contractor shall be graded if required and put into a condition acceptable for seeding.

When suitable topsoil is secured off the airport site, the Contractor shall locate and obtain the supply, subject to the approval of the RPR. The Contractor shall notify the RPR sufficiently in advance of operations in order that necessary measurements and tests can be made. The Contractor shall remove the topsoil from approved areas and to the depth as directed. The topsoil shall be hauled to the site of the work and placed for spreading, or spread as required. Any topsoil hauled to the site of the work and stockpiled shall be rehandled and placed without additional compensation.

905-3.4 Placing topsoil. The topsoil shall be evenly spread on the prepared areas to a uniform depth of 2 inches (50 mm) after compaction, unless otherwise shown on the plans or stated in the special provisions. Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Spreading shall be carried on so that turfing operations can proceed with a minimum of soil preparation or tilling.

After spreading, any large, stiff clods and hard lumps shall be broken with a pulverizer or by other effective means, and all stones or rocks (2 inches (50 mm) or more in diameter), roots, litter, or any foreign matter shall be raked up and disposed of by the Contractor. after spreading is completed, the topsoil shall be satisfactorily compacted by rolling with a cultipacker or by other means approved by the RPR. The compacted topsoil surface shall conform to the required lines, grades, and cross-sections. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

METHOD OF MEASUREMENT

905-4.1 Topsoil shall be measured by the number of cubic yards of topsoil measured in its final position within the proposed limit of disturbance line indicated on the plan and as accepted by the RPR, regardless of whether it was obtained from on-site or off-site sources. Any topsoil required to be placed beyond the limit of disturbance line to restore areas disturbed by the Contractor shall not be measured separately and shall be considered incidental to the overall cost of the project.

BASIS OF PAYMENT

905-5.1 Payment will be made at the contract unit price per cubic yard for topsoil . This price shall be full compensation for furnishing all materials and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item. Any topsoil required to be placed beyond the limit of disturbance line to restore areas disturbed by the Contractor shall not be paid separately and shall be considered incidental to the overall cost of the project.

Payment will be made under:

Item T-905-5.1	Topsoil - per cubic yard

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 C117	Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing

Advisory Circulars (AC)

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

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-905

Page Intentionally Blank

Item T-908 Mulching

DESCRIPTION

908-1.1 This item shall consist of furnishing, hauling, placing, and securing mulch on surfaces indicated on the plans or designated by the RPR.

MATERIALS

908-2.1 Mulch material. Acceptable mulch shall be the materials listed below or any approved locally available material that is similar to those specified. Mulch shall be free from noxious weeds, mold, and other deleterious materials. Mulch materials, which contain matured seed of species that would volunteer and be detrimental to the proposed overseeding, or to surrounding farm land, will not be acceptable. Straw or other mulch material which is fresh and/or excessively brittle, or which is in such an advanced stage of decomposition as to smother or retard the planted grass, will not be acceptable.

a. Hay. Not used.

b. Straw. Straw shall be the stalks from threshed plant residue of oats, wheat, barley, rye, or rice from which grain has been removed. Furnish in air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Straw shall contain no fertile seed.

c. Hay mulch containing seed. Not used.

d. Manufactured mulch. Cellulose-fiber or wood-pulp mulch shall be products commercially available for use in spray applications.

e. Asphalt binder. Not used.

908-2.2 Inspection. The RPR shall be notified of sources and quantities of mulch materials available and the Contractor shall furnish him with representative samples of the materials to be used 30 days before delivery to the project. These samples may be used as standards with the approval of the RPR and any materials brought on the site that do not meet these standards shall be rejected.

CONSTRUCTION METHODS

908-3.1 Mulching. Before spreading mulch, all large clods, stumps, stones, brush, roots, and other foreign material shall be removed from the area to be mulched. Mulch shall be applied immediately after seeding. The spreading of the mulch may be by hand methods, blower, or other mechanical methods, provided a uniform covering is obtained.

Mulch material shall be furnished, hauled, and evenly applied on the area shown on the plans or designated by the RPR. Straw shall be spread over the surface to a uniform thickness at the rate of 2 to 3 tons per acre (1800 - 2700 kg per acre) to provide a loose depth of not less than 1-1/2 inches (38 cm) nor more than 3 inches (75 mm). Other organic material shall be spread at the rate directed by the RPR. Mulch may be blown on the slopes and the use of cutters in the equipment for this purpose will be permitted to the extent that at least 95% of the mulch in place on the slope shall be 6 inches (150 mm) or more in length. When mulches applied by the blowing method are cut, the loose depth in place shall be not less than one inch (25 mm) nor more than 2 inches (50 mm).

908-3.2 Securing mulch. The mulch shall be held in place by light discing, a very thin covering of topsoil, pins, stakes, wire mesh, asphalt binder, or other adhesive material approved by the RPR.

If the "peg and string" method is used, the mulch shall be secured by the use of stakes or wire pins driven into the ground on 5-foot (1.5-m) centers or less. Binder twine shall be strung between adjacent stakes in straight lines and crisscrossed diagonally over the mulch, after which the stakes shall be firmly driven nearly flush to the ground to draw the twine down tight onto the mulch.

908-3.3 Care and repair.

a. The Contractor shall care for the mulched areas until final acceptance of the project. Care shall consist of providing protection against traffic or other use by placing warning signs, as approved by the RPR, and erecting any barricades that may be shown on the plans before or immediately after mulching has been completed on the designated areas.

b. The Contractor shall be required to repair or replace any mulch that is defective or becomes damaged until the project is finally accepted. When, in the judgment of the RPR, such defects or damages are the result of poor workmanship or failure to meet the requirements of the specifications, the cost of the necessary repairs or replacement shall be borne by the Contractor.

METHOD OF MEASUREMENT

908-4.1 Mulching shall be considered incidental to seeding and no separate measurement shall be made for mulching..

BASIS OF PAYMENT

908-5.1 Mulching shall be considered incidental to seeding and no separate payment shall be made. This shall include furnishing all materials and for placing and anchoring the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

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 D977 Standard Specification for Emulsified Asphalt

Advisory Circulars (AC)

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

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

END OF ITEM T-908

Item M-901 Stream Stabilization

DESCRIPTION

901-1.1 This Item shall consist of stabilizing the stream channel and repairing and stabilizing the existing stream bank including coconut turf reinforcement mat, wetland seed mix, coconut coir fiber logs, live stakes, stickers and wattles and natural, rounded stone within the stream channel and stream bank restoration areas and in accordance with the plans and specifications, or as directed by the RPR.

MATERIALS

901-2.1 Stream Stone. Stream stone shall consist of reclaimed mineral material from the limits of stream restoration area or adjacent areas as directed by the RPR and supplemented with stone from offsite sources as necessary to ensure an adequate supply of stream stone. The stream stone shall include naturally rounded, coarse mineral materials ranging from stones to cobbles, with sizes ranging in size from 16" to 24". The stream stone shall be free of loose fine materials including fine sand, loam, silt and clay. Stream stone shall be hand placed in the relocated stream according to the contract plans and this specification or as directed by the RPR.

901-2.2 Coconut Turf Reinforcement Mat. Shall consist of a long-term triple net turf reinforcement mat, machine-produced mat of 100% coconut fiber with a functional longevity of up to thirty-six months. The mat shall be of consistent thickness with the coconut evenly distributed over the entire area of the mat. The coconut fibers shall be mechanically (stitch) bound between a three-dimensional UV stabilized, heavy duty synthetic net structure. Stitching shall be secured on two-inch centers using UV stabilized, synthetic thread. The mat shall be specific for applications in channels. North American Green VMax C350 or approved equal. The mat shall be in excellent functional condition at the time of the installation as determined by the RPR.

The turf reinforcement mat shall be secured with wire staples according to the manufacturer's recommendations. The staples shall consist of 12-inch lengths of No. 11 gauge wire bent to form a "U", or other wire staples as approved by the RPR.

901-2.3 Coconut Coir Fiber Logs. Coconut fiber logs shall consist of the following:

Diameter:	12 in - minimum
Length:	10 ft - minimum
Weight	7 lbs/ft - minimum
Density	7 lbs/cu ft - minimum
Outer Net Strength:	90 lbs (400 N) - minimum
Outer Net Type:	Bristle coir twine net or approved equal
Outer Net Openings:	2 in x 2 in - maximum
Inner Core:	Coir fiber (unsorted, cleaned, well-graded)

The rolls shall be secured with #4 rebar, 3' in length driven securely into the substrate as shown in the detail. The rolls shall be in excellent functional condition at the time of installation as determined by the RPR.

901-2.4 Willow/Dogwood Live Stakes, Stickers and Wattles. Material as specified in the drawings.

901-2.5 Wetland Seed. The species and application rates of wetland seed furnished shall be those stipulated herein.

Seed shall be furnished separately or in mixtures in standard containers labeled in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable state seed laws with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the RPR duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within six (6) months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed. Wet, moldy, or otherwise damaged seed will be rejected.

Seed Properties and Application Rate

Seed	Application Rate
Creeping Bentgrass (Agrostis Stolonifera)	50%
Fowl Bluegrass (Poa Palustris)	20%
Deertongue Grass (Panicum Clandestinum)	15%
Switchgrass (Panicum Virgatum)	10%
Annual Ryegrass (Lolium Multiflorum)	5%
TOTAL RATE	40 lbs./acre

CONSTRUCTION METHODS

901-3.1 Installation of stream stone. Stream stones shall be hand placed on top of the seeded turf reinforcement mat as indicated on the drawings or directed by the RPR. Some stones will be placed individually, some in piles and others in a linear vane to form small riffles. Care shall be taken to limit the impact of this effort on the created banks along the channel; access shall be carefully planned to minimize disturbance. The Contractor shall work with the RPR in identifying the most sensitive manner in which to access and place the individual stones.

Vane creation with the stream stones shall create a 20-30 degree angle from the bank, pointing downstream. The initial stone in the sequence shall securely abut the coir mesh roll along the bank. The end stone in the sequence shall not extend past the mid-point of the channel. Gaps between the major stream stones in this sequence shall be filled with smaller stones placed on the upstream portion of the vane so that flows will compress the gap rocks into the vane structure.

All stream stone is to be placed on top of the erosion control netting and after installation of the coir mesh rolls.

901-3.2 Installation and maintenance of coconut turf reinforcement mat. Coconut turf reinforcement mat shall be installed as indicated on plans and details or as directed by the RPR. The mat shall be maintained and kept securely fastened until a good stand of grass of uniform color and density is established to the satisfaction of the RPR. A grass stand shall be considered adequate when bare spots are one square foot or

less, randomly dispersed, and do not exceed 3% of the area seeded.

901-3.3 Installation and maintenance of willow/dogwood live stakes and stickers. Live willow and dogwood stakes and stickers (shrub cuttings) work shall consist of obtaining, transporting and planting live dogwood and willow cuttings in conformance with this item. Cuttings shall be planted between December 1st and January 31st or April 1st and May 31st and when the soil is moist to a minimum depth of 8 inches, unless otherwise permitted, in writing, by the RPR. Collect and plant the cuttings per the following.

(a) The Contractor shall notify the RPR, in writing, at least 10 working days prior to gathering willow and dogwood cuttings. The cuttings shall be taken only from on-site areas adjacent to the impact area. If insufficient stock is available on the site, the Contractor shall locate and identify off-site sources for approval by the RPR.

(b) Cuttings shall be taken at random from healthy, vigorous plants. No more than 50 percent of the plants in a designated area shall be cut. No more than 25 percent of each individual plant shall be cut. Cuts shall be made at an angle, and completed with sharp, clean tools.

(c) Cuttings shall be reasonably straight, 12 inches to 24 inches in length, and 3/4 inch to 3 inch in diameter at the base of the cutting. The top of each live cutting shall be cut square above a leaf bud, and the base of each willow cutting shall be cut below a leaf bud at an angle of approximately 45 degrees. Cuttings shall have leaves and branches trimmed off flush with the stem. Pruned branches and trimmings shall be spread in the destination areas as an acceptable mulch material.

(d) Cuttings shall be planted within 48 hours after cutting and shall be kept wet until planted. Cuttings not planted within 48 hours after cutting, or allowed to dry out, shall not be used, but may be placed in the destination sites as a mulch. Cuttings not planted within 48 hours shall not be measured for payment.

(e) A root stimulant shall be applied to the cuttings immediately prior to planting. The stimulant shall be applied in conformance with the printed instructions of the root stimulant manufacturer. A copy of the instructions shall be furnished to the RPR prior to applying the stimulant.

(f) Planting holes shall be made perpendicular to the ground line and shall be formed with a steel bar; in many instances, the cuttings may be pounded directly into the ground if adequate soil conditions exist. Plant holes shall be large enough to receive the cuttings in order that the cuttings may be planted to the proper depths without damage to the bark. Where rock or other hard material prohibits holes from being excavated as specified, new holes shall be excavated and the abandoned holes backfilled. Note that most of the live stakes and stickers are to be planted within erosion control blanket. Care shall be taken during installation of the cutting to avoid damage to the erosion control blanket.

(g) If the soil in and around the plant hole is not wet prior to planting, the soil shall be watered immediately and maintained in a wet state until the cuttings are planted.

(h) Holes for live stakes and stickers shall receive one ounce (30 grams) of Osmocote 18-6-12 Fast Start / 8-9 month Time Release Fertilizer or approved other. Each fertilizer portion shall be mixed in the backfill of each plant to within 6 inches to 8 inches of the soil surface and approximately one inch from the cutting.

(i) The base of cuttings shall be planted from 10 inches to 12 inches deep (approximately one-half

the cutting's length) and shall have from 3 to 5 bud scars exposed above the plant hole. After planting and addition of fertilizer, the plant holes shall be backfilled with excavated material. The excavated material shall be distributed evenly within the hole without clods, lumps or air pockets and compacted without damage to the willow cutting's bark. Compaction shall be adequate to prevent the shrub cutting from being easily removed from the soil.

(j) Cuttings shall be watered immediately and maintained in a healthy condition from the time the cuttings are planted until acceptance of the contract. Cuttings that die shall be replaced at the Contractor's expense. The method of planting replacement cuttings shall be as specified in this section.

(k) The quantity of stakes and stickers will be measured as units determined by the RPR from actual count in place, excluding additional cuttings required for replacement cuttings.

(l) Full compensation for obtaining and transporting shrub cuttings, preparing planting holes, furnishing and placing commercial fertilizer packets, applying root stimulant, and for watering and maintaining cuttings shall be considered as incidental to the contract unit price paid for the live stakes and stickers.

901-3.4 Willow/dogwood wattles. Live willow and dogwood wattles made from live whips shall consist of obtaining, transporting, and planting live dogwood and willow wattles in conformance with this item. Wattles shall be planted between December 1st and January 31st or April 1st and May 31st and when the soil is moist to a minimum depth of 8 inches, unless otherwise permitted, in writing, by the RPR.. Collect, prepare and plant the wattles per the following.

(a) The Contractor shall notify the RPR, in writing, at least 10 working days prior to gathering willow and dogwood whips for wattle construction. The whips shall be taken only from the on-site areas adjacent to the impact area.

(b) Whips for each wattle shall be taken at random from healthy, vigorous plants. A whip is a vertical branch, 2’ – 5’ in length, cut at the shrub base with the branch top left intact. Cuts shall be made at an angle, and completed with sharp, clean tools.

(c) Whip cuttings for wattles shall be reasonably straight, 24 inches to 60 inches in length, and 1/2 inch to 3 inch in diameter at the base of the cutting. The base of each cutting shall be cut below a leaf bud at an angle of approximately 45 degrees.

(d) 3-5 whip cuttings for wattles shall be tightly bundled together using biodegradable twine, and shall be planted within 48 hours after cutting and shall be kept wet until planted. Wattles not planted within 48 hours after cutting, or allowed to dry out, shall not be used, but may be placed in the destination sites as mulch. Wattles not planted within 48 hours shall not be measured for payment.

(e) A root stimulant shall be applied to the whips immediately prior to planting. The stimulant shall be applied in conformance with the printed instructions of the root stimulant manufacturer. A copy of the instructions shall be furnished to the RPR prior to applying the stimulant.

(f) Planting holes shall be made perpendicular to the ground line and shall be formed with a steel bar or excavated by use of an auger, post hole digger or similar tools. Plant holes shall be large enough to receive the cuttings in order that the wattles may be planted to the proper depths without damage to the bark. Where rock or other hard material prohibits holes from being

excavated as specified, new holes shall be excavated and the abandoned holes backfilled. Note that most of the wattles are to be planted within erosion control blanket. Care shall be taken during hole excavation to avoid damage to the erosion control blanket.

(g) If the soil in and around the plant hole is not wet prior to planting, the soil shall be watered immediately and maintained in a wet state until the cuttings are planted.

(h) Holes for wattles shall receive one ounce (30 grams) of Osmocote 18-6-12 Fast Start / 8-9 month Time Release Fertilizer or approved other. Each fertilizer portion shall be mixed in the backfill of each plant to within 6 inches to 8 inches of the soil surface and approximately one inch from the cutting.

(i) The base of wattles shall be planted approximately three-quarters the wattle's length. After planting and addition of fertilizer, the plant holes shall be backfilled with excavated material. The excavated material shall be distributed evenly within the hole without clods, lumps or air pockets and compacted without damage to the wattle. Compaction shall be adequate to prevent the wattle from being easily removed from the soil.

(j) Wattles shall be watered immediately and maintained in a healthy condition from the time the cuttings are planted until acceptance of the contract. Wattles that die shall be replaced at the Contractor's expense. The method of planting replacement wattles shall be as specified in this section.

(k) The quantity of wattles will be measured as units determined by the RPR from actual count in place, excluding additional wattles required for replacement cuttings.

(l) Full compensation for obtaining and transporting shrub wattles, preparing planting holes, furnishing and placing commercial fertilizer packets, applying root stimulant, and for watering and maintaining wattles shall be considered as incidental to the contract unit price paid for the shrub wattles.

901-3.4 Planting of wetland seed. Seed shall be sown at the rate specified in paragraph 901-2.5. The seed shall be raked within the depth range as recommended by the manufacturer. When seeding is required at other than the seasons shown on the plans or in the special provisions, a cover crop shall be sown by the same methods required for grass and legume seeding.

METHOD OF MEASUREMENT

901-4.1 Stream stabilization will be measured for payment per linear foot of stabilized stream, measured on the ground along the stream centerline, completed and accepted.

901-4.2 Stream bank repair and stabilization will be measured for payment per linear foot of stream bank repaired and stabilized, measured on the ground along the repaired and stabilized stream bank, completed and accepted.

901-4.3 Stream bank plantings will be measured for payment per linear foot of stream bank plantings, measured on the ground along the stream centerline, completed and accepted.

BASIS OF PAYMENT

901-5.1 Payments will be made at the contract unit price per linear foot for stabilization of the stream bed and bank. Stream stabilization shall include the cost of all labor, equipment, materials, and incidentals necessary for the successful installation and maintenance of the coconut turf reinforcement mat, coconut coir fiber logs and rebar/wire, live stakes, stickers and wattles, and stream stones placed according to the plans and specifications, and to the satisfaction of the RPR.

901-5.2 Payments will be made at the contract unit price per linear foot for repair and stabilization of the stream bank. Stream bank repair and stabilization shall include the cost of all labor, equipment, materials, and incidentals necessary for the successful installation and maintenance of the subbase material, topsoil, seed, coconut turf reinforcement mat, coconut coir fiber logs and rebar/wire, live stakes, stickers and wattles, placed according to the plans and specifications, and to the satisfaction of the RPR. This item shall also include any excavation that may be required to complete the work.

901-5.3 Payments will be made at the contract unit price per linear foot for stream bank plantings. Stream bank plantings shall include the cost of all labor, equipment, materials, and incidentals necessary for the successful installation and maintenance of the willow/dogwood live stakes, stickers and wattles placed according to the plans and specifications, and to the satisfaction of the RPR.

Payment will be made under:

Item M-901-5.1	Stream Channel Stabilization – per linear foot
Item M-901-5.2	Stream Bank Repair and Stabilization – per linear foot
Item M-901-5.3	Stream Bank Plantings – per linear foot

END OF ITEM M-901

Item M-902 Riprap

DESCRIPTION

902-1.1. This item shall consist of furnishing required materials and constructing riprap areas for slopes, aprons, channels, inlets, outlets, plunge pools, and headwalls in accordance with these specifications at the locations shown in the plans. This item shall include any excavation, grading, and / or backfill required to construct riprap areas, the placement of specified geotextile fabric linings, and placement of stone riprap and all incidentals necessary to complete the item to the satisfaction of the RPR.

MATERIALS

902-2.1. Filter Fabric. The geotextile fabric to be installed under riprap areas as shown on the construction drawings shall be an 8 oz. non-woven needle-punched geotextile fabric, Mirafi 180N as manufactured by TenCate or approved equal. The geotextiles shall be furnished in a protective wrapping which shall protect the fabric from ultraviolet radiation and from abrasion due to shipping and handling. Fabric shall be furnished in rolls with minimum 15 ft. widths.

902-2.2. Riprap Stone. Stone for pipe ends shall be sound, durable rock which is angular in shape. Rounded stones, boulders, sandstone or similar stone or relatively thin slabs will not be acceptable. Each stone shall weigh not less than 50 lb not more than 125 lb and at least 75% of the volume shall consist of stones weighing not less than 75 lb each. The remainder of the stones shall be so graded that when placed with the larger stones the entire mass will be compact. The various classes of stone (size) shall be as shown on the drawings for culvert inlets and outlets and for drainage channels. Where no size is given, the minimum allowable d_{50} diameter shall be 12 inches, at a minimum thickness of 2 times the d_{50} rock size.

CONSTRUCTION METHODS

902-3.1 Preparation. The Contractor shall excavate or fill as necessary to construct riprap areas to meet the slopes, grades and alignments indicated on the construction drawings. Excavation and embankment shall meet the requirements of Item P-152, although no separate or additional payment shall be made for any excavation or fill materials or labor needed for the construction of riprap areas.

902-3.2 Subgrade. The subgrade to receive fill shall be rolled smooth and shall not contain holes greater than 3 inches in depth and shall not have any protruding stones which could damage the fabric to be placed over it.

902-3.3 Placing Filter Fabric. Fabric shall be placed over the prepared subgrade layer immediately after it is completed. Fabric shall be placed starting at the bottom of the apron working up the longitudinal slope. Fabric shall be placed so that the long dimension of the fabric is parallel to the main direction of flow. Fabric shall be overlapped a minimum of two (2) feet or as indicated on the plans, with the top layer of all overlaps ending on the downhill side.

Fabric torn during placement shall be patched with overlaps of at least three feet in all directions from the damaged areas. Fabric shall be protected from ultraviolet damage caused by excessive exposure to sunlight while being stored on the jobsite or prior to the placement of stone.

Costs for furnishing and installing geotextile fabric shall be incidental to and included in the cost for the riprap.

902-3.4 Placing Riprap Stone. Riprap stones shall be individually placed from the toe of the slope upward with close joints set perpendicular to the slope with large stone at the toe of the slope. Open joints will be chinked in with successively smaller stones until the riprap becomes stable with no movement of stones when the entire layer is walked on.

Stone shall be carefully placed over the completed fabric in such a manner as not to damage stone or fabric. No stone shall be dropped more than one (1) foot onto the fabric. Any damage to fabric which results will require that stone be completely removed to the extent necessary to allow the overlaid fabric to overlap the damaged sections of fabric by a minimum of three (3) foot in all directions. The finished surface shall be uniform in appearance and parallel to and within four (4) inches of line and grade shown on the construction drawings.

METHOD OF MEASUREMENT

902-4.1 The quantity of riprap shall be the number of square yards of fabric and stone placed to the specified depth at locations indicated on the construction drawings, completed and accepted by the RPR. Separate measurements shall be made for each of the various classes of riprap.

902-4.2 The quantity of filter fabric placed under riprap will not be measured and shall be considered incidental.

BASIS OF PAYMENT

902-5.1 Payment for riprap will be made at the contract unit price per square yard of riprap installed in place by the Contractor and accepted by the RPR. This price shall be full compensation for furnishing all materials including filter fabric and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

902-5.2 Filter fabric shall be considered incidental, and no separate payment shall be made.

Payment will be made under:

Item M-902-5.1 Riprap Class III (d_{50}=18") - per square yard

END OF ITEM M-902

Item F-162 Chain-Link Fence

DESCRIPTION

162-1.1 This item shall consist of furnishing and erecting a chain-link fence and removing existing fence in accordance with these specifications, the details shown on the plans, and in conformity with the lines and grades shown on the plans or established by the RPR.

MATERIALS

162-2.1 Fabric. The fabric shall be woven with a 9-gauge galvanized steel wire in a 2-inch (50 mm) mesh and shall meet the requirements of ASTM A392, Class 2 .

162-2.2 Barbed wire. Barbed wire shall be 2-strand 12-1/2 gauge zinc-coated wire with 4-point barbs and shall conform to the requirements of ASTM A121, Class 3.

162-2.3 Posts, rails, and braces. Line posts, rails, and braces shall conform to the requirements of ASTM F1043 or ASTM F1083 as follows:

- Galvanized tubular steel pipe shall conform to the requirements of Group IA, (Schedule 40) coatings conforming to Type A, or Group IC (High Strength Pipe), External coating Type B, and internal coating Type B or D.

Posts, rails, and braces, with the exception of galvanized steel conforming to ASTM F1043 or ASTM F1083, Group 1A, Type A, or aluminum alloy, shall demonstrate the ability to withstand testing in salt spray in accordance with ASTM B117 as follows:

- External: 1,000 hours with a maximum of 5% red rust.
- Internal: 650 hours with a maximum of 5% red rust.

The dimensions of the posts, rails, and braces shall be in accordance with Tables I through VI of Federal Specification RR-F-191/3.

162-2.4 Gates. Not Used.

162-2.5 Wire ties and tension wires. Wire ties for use in conjunction with a given type of fabric shall be of the same material and coating weight identified with the fabric type. Tension wire shall be 7-gauge marcelled steel wire with the same coating as the fabric type and shall conform to ASTM A824.

All material shall conform to Federal Specification RR-F-191/4.

162-2.6 Miscellaneous fittings and hardware. Miscellaneous steel fittings and hardware for use with zinc-coated steel fabric shall be of commercial grade steel or better quality, wrought or cast as appropriate to the article, and sufficient in strength to provide a balanced design when used in conjunction with fabric posts, and wires of the quality specified herein. All steel fittings and hardware shall be protected with a zinc coating applied in conformance with ASTM A153. Barbed wire support arms shall withstand a load of 250 pounds (113 kg) applied vertically to the outermost end of the arm.

162-2.7 Concrete. Concrete shall have a minimum 28-day compressive strength of 3000 psi (2670 kPa).

162-2.8 Marking. Each roll of fabric shall carry a tag showing the kind of base metal (steel, aluminum, or aluminum alloy number), kind of coating, the gauge of the wire, the length of fencing in the roll, and the

name of the manufacturer. Posts, wire, and other fittings shall be identified as to manufacturer, kind of base metal (steel, aluminum, or aluminum alloy number), and kind of coating.

CONSTRUCTION METHODS

162-3.1 General. The fence shall be constructed in accordance with the details on the plans and as specified here using new materials. All work shall be performed in a workmanlike manner satisfactory to the RPR. The Contractor shall layout the fence line based on the plans. The Contractor shall span the opening below the fence with barbed wire at all locations where it is not practical to conform the fence to the general contour of the ground surface because of natural or manmade features such as drainage ditches. The new fence shall be permanently tied to the terminals of existing fences as shown on the plans. The Contractor shall stake down the woven wire fence at several points between posts as shown on the plans.

The Contractor shall arrange the work so that construction of the new fence will immediately follow the removal of existing fences. The length of unfenced section at any time shall not exceed 300 feet (90 m). The work shall progress in this manner and at the close of the working day the newly constructed fence shall be tied to the existing fence.

162-3.2 Clearing fence line. Clearing shall consist of the removal of all stumps, brush, rocks, trees, or other obstructions that will interfere with proper construction of the fence. Stumps within the cleared area of the fence shall be grubbed or excavated. The bottom of the fence shall be placed a uniform distance above ground, as specified in the plans. When shown on the plans or as directed by the RPR, the existing fences which interfere with the new fence location shall be removed by the Contractor as a part of the construction work unless such removal is listed as a separate item in the bid schedule. All holes remaining after post and stump removal shall be refilled with suitable soil, gravel, or other suitable material and compacted with tampers.

The cost of removing and disposing of the material shall not constitute a pay item and shall be considered incidental to fence construction.

162-3.3 Installing posts. All posts shall be set in concrete at the required dimension and depth and at the spacing shown on the plans.

The concrete shall be thoroughly compacted around the posts by tamping or vibrating and shall have a smooth finish slightly higher than the ground and sloped to drain away from the posts. All posts shall be set plumb and to the required grade and alignment. No materials shall be installed on the posts, nor shall the posts be disturbed in any manner within seven (7) days after the individual post footing is completed.

Should rock be encountered at a depth less than the planned footing depth, a hole 2 inches (50 mm) larger than the greatest dimension of the posts shall be drilled to a depth of 12 inches (300 mm). After the posts are set, the remainder of the drilled hole shall be filled with grout, composed of one part Portland cement and two parts mortar sand. Any remaining space above the rock shall be filled with concrete in the manner described above.

In lieu of drilling, the rock may be excavated to the required footing depth. No extra compensation shall be made for rock excavation.

162-3.4 Installing top rails. Not Used.

162-3.5 Installing braces. Not Used.

162-3.6 Installing fabric. The wire fabric shall be firmly attached to the posts and braced as shown on the plans. All wire shall be stretched taut and shall be installed to the required elevations. The fence shall generally follow the contour of the ground, with the bottom of the fence fabric no less than one inch (25

mm) or more than 4 inches (100 mm) from the ground surface. Grading shall be performed where necessary to provide a neat appearance.

At locations of small natural swales or drainage ditches and where it is not practical to have the fence conform to the general contour of the ground surface, longer posts may be used and multiple strands of barbed wire stretched to span the opening below the fence. The vertical clearance between strands of barbed wire shall be 6 inches (150 mm) or less.

162-3.7 Electrical grounds. Not Used.

162-3.8 Cleaning up. The Contractor shall remove from the vicinity of the completed work all tools, buildings, equipment, etc., used during construction. All disturbed areas shall be seeded per T-901.

162-3. Removing existing chain link fence. Where shown on the drawings, existing chain link fence shall be removed, including all posts and concrete foundations, fabric, barbed wire, and all incidental items as a part of the existing chain link fence. Holes from removed fence posts shall be backfilled with approved material, and the area of the former fence shall be smoothed and restored with topsoil and seed. All materials associated with the existing chain link fence to be removed shall be removed from airport property and legally disposed of by the Contractor.

METHOD OF MEASUREMENT

162-4.1 Chain-link fence will be measured for payment by the linear foot. Measurement will be along the top of the fence from center to center of end posts, excluding the length occupied by gate openings.

162-4.2 Removal of existing chain-link fence will be measured for payment by the linear foot. Measurement will be along the top of the fence from center to center of end posts, excluding the length occupied by gate openings.

BASIS OF PAYMENT

162-5.1 Payment for chain-link fence will be made at the contract unit price per linear foot. The price shall be full compensation for furnishing all materials, and for all preparation, and installation of these materials, and for all labor equipment, tools, and incidentals necessary to complete the item.

162-5.2 Payment for removal of existing chain-link fence will be made at the contract unit price per linear foot. The price shall be full compensation for all demolition, removal and off-site disposal of these materials, and for all labor equipment, tools, and incidentals necessary to complete the item. Payment shall include backfilling holes and smoothing of the area where the fence was located, and restoration of the area with topsoil and seed as directed by the RPR.

Payment will be made under:

Item F-162-5.1	Chain-Link Fence - per linear foot
Item F-162-5.2	Remove Existing Chain-Link Fence - per linear 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 A121	Standard Specification for Metallic-Coated Carbon Steel Barbed Wire

ASTM A153	Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A392	Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric
ASTM A491	Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric
ASTM A824	Standard Specification for Metallic-Coated Steel Marcelled Tension Wire for Use with Chain Link Fence
ASTM B117	Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM F668	Standard Specification for Polyvinyl Chloride (PVC), Polyolefin and other Organic Polymer Coated Steel Chain-Link Fence Fabric
ASTM F1043	Standard Specification for Strength and Protective Coatings on Steel Industrial Fence Framework
ASTM F1083	Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures
ASTM F1183	Standard Specification for Aluminum Alloy Chain Link Fence Fabric
ASTM F1345	Standard Specification for Zinc 5% Aluminum-Mischmetal Alloy Coated Steel Chain-Link Fence Fabric
ASTM G152	Standard Practice for Operating Open Flame Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G153	Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials
ASTM G155	Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials

Federal Specifications (FED SPEC)

FED SPEC RR-F-191/3	Fencing, Wire and Post, Metal (Chain-Link Fence Posts, Top Rails and Braces)
FED SPEC RR-F-191/4	Fencing, Wire and Post, Metal (Chain-Link Fence Accessories)

FAA Standard

FAA-STD-019	Lightning and Surge Protection, Grounding, Bonding and Shielding Requirements for Facilities and Electronic Equipment

FAA Orders

5300.38	AIP Handbook

END OF ITEM F-162

Item L-108 Underground Power Cable for Airports

DESCRIPTION

108-1.1 This item shall consist of furnishing and installing power cables that are direct buried and furnishing and/or installing power cables within conduit or duct banks per these specifications at the locations shown on the plans. It includes excavation and backfill of trench for direct-buried cables only. Also included are the installation of counterpoise wires, ground wires, ground rods and connections, cable splicing, cable marking, cable testing, and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the RPR. This item shall not include the installation of duct banks or conduit, trenching and backfilling for duct banks or conduit, or furnishing or installation of cable for FAA owned/operated facilities.

EQUIPMENT AND MATERIALS

108-2.1 General.

a. Airport lighting equipment and materials covered by advisory circulars (AC) shall be approved under the Airport Lighting Equipment Certification Program per AC 150/5345-53, current version.

b. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification, when requested by the RPR.

c. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the RPR) and replaced with materials that comply with these specifications at the Contractor's cost.

d. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

e. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be electronically submitted in pdf format. The RPR reserves the right to reject any and all equipment, materials, or procedures that do not meet the system design and the standards and codes, specified in this document.

f. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. The Contractor shall maintain a minimum insulation

resistance in accordance with paragraph 108-3.10e with isolation transformers connected in new circuits and new segments of existing circuits through the end of the contract warranty period when tested in accordance with AC 150/5340-26, *Maintenance Airport Visual Aid Facilities*, paragraph 5.1.3.1, Insulation Resistance Test.

108-2.2 Cable. All conductors shall comply with FAA and National Electric Code (NEC) requirements.

Wire for electrical circuits up to 600 volts shall comply with Specification L-824 and/or Commercial Item Description A-A-59544A and shall be type THWN-2, 75°C for installation in conduit and RHW-2, 75°C for direct burial installations. Conductors for parallel (voltage) circuits shall be type and size as indicated on the plans and installed in accordance with NFPA-70, National Electrical Code.

Unless noted otherwise, all 600-volt and less non-airfield lighting conductor sizes are based on a 75°C, THWN-2, 600-volt insulation, copper conductors, not more than three single insulated conductors, in raceway, in free air. The conduit/duct sizes are based on the use of THWN-2, 600-volt insulated conductors. The Contractor shall make the necessary increase in conduit/duct sizes for other types of wire insulation. In no case shall the conduit/duct size be reduced. The minimum power circuit wire size shall be #12 AWG.

Conductor sizes may have been adjusted due to voltage drop or other engineering considerations. Equipment provided by the Contractor shall be capable of accepting the quantity and sizes of conductors shown in the Contract Documents. All conductors, pigtails, cable step-down adapters, cable step-up adapters, terminal blocks and splicing materials necessary to complete the cable termination/splice shall be considered incidental to the respective pay items provided.

Cable type, size, number of conductors, strand and service voltage shall be as specified in the Contract Document.

108-2.3 Bare copper wire (counterpoise, bare copper wire ground and ground rods). Wire for counterpoise or ground installations for airfield lighting systems shall be No. 6 AWG bare solid copper wire for counterpoise and/or No. 6 AWG insulated stranded for grounding bond wire per ASTM B3 and ASTM B8, and shall be bare copper wire. For voltage powered circuits, the equipment grounding conductor shall comply with NEC Article 250.

Ground rods shall be copper-clad steel. The ground rods shall be of the length and diameter specified on the plans, but in no case be less than 8 feet (2.4 m)long and 5/8 inch (16 mm)in diameter.

108-2.4 Cable connections. In-line connections or splices of underground primary cables shall be of the type called for on the plans, and shall be one of the types listed below. No separate payment will be made for cable connections.

a. The cast splice. Not used.

b. The field-attached plug-in splice. Not used.

c. The factory-molded plug-in splice. Not used.

d. The taped or heat-shrink splice. Taped splices employing field-applied rubber, or synthetic rubber tape covered with plastic tape is acceptable. The rubber tape should meet the requirements of ASTM D4388 and the plastic tape should comply with Military Specification MIL-I-24391 or Commercial Item Description A-A-55809. Heat shrinkable tubing shall be heavy-wall, self-sealing tubing rated for the voltage of the wire being spliced and suitable for direct-buried installations. The tubing shall be factory coated with a thermoplastic adhesive-sealant that will adhere to the insulation of the wire being spliced forming a moisture- and dirt-proof seal. Additionally, heat shrinkable tubing for multi-conductor cables, shielded cables, and armored cables shall be factory kits that are designed for the application. Heat shrinkable tubing and tubing kits shall be manufactured by Tyco Electronics/ Raychem Corporation, Energy Division, or approved equivalent.

In all the above cases, connections of cable conductors shall be made using crimp connectors using a crimping tool designed to make a complete crimp before the tool can be removed. All L-823/L-824 splices and terminations shall be made per the manufacturer's recommendations and listings.

All connections of counterpoise, grounding conductors and ground rods shall be made by the exothermic process or approved equivalent, except that a light base ground clamp connector shall be used for attachment to the light base. All exothermic connections shall be made per the manufacturer's recommendations and listings.

108-2.5 Splicer qualifications. Not used.

108-2.6 Concrete. Not used.

108-2.7 Flowable backfill. Not used.

108-2.8 Cable identification tags. Cable identification tags shall be made from a non-corrosive material with the circuit identification stamped or etched onto the tag. The tags shall be of the type as detailed on the plans.

108-2.9 Tape. Electrical tapes shall be Scotch™ Electrical Tapes –Scotch™ 88 (1-1/2 inch (38 mm) wide) and Scotch™ 130C® linerless rubber splicing tape (2-inch (50 mm) wide), as manufactured by the Minnesota Mining and Manufacturing Company (3M™), or an approved equivalent.

108-2.10 Electrical coating. Electrical coating shall be Scotchkote™ as manufactured by 3M™, or an approved equivalent.

108-2.11 Existing circuits. Whenever the scope of work requires connection to an existing circuit, the existing circuit's insulation resistance shall be tested, in the presence of the RPR. The test shall be performed per this item and prior to any activity that will affect the respective circuit. The Contractor shall record the results on forms acceptable to the RPR. When the work affecting the circuit is complete, the circuit's insulation resistance shall be checked again, in the presence of the RPR. The Contractor shall record the results on forms acceptable to the RPR. The second reading shall be equal to or greater than the first reading or the Contractor shall make the necessary repairs to the existing circuit to bring the second reading above the first reading. All repair costs including shall be borne by the Contractor.

108-2.12 Detectable warning tape. Plastic, detectable, American Public Works Association (APWA) Red (electrical power lines, cables, conduit and lighting cable) with continuous legend tape shall be polyethylene film with a metalized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item. Detectable warning tape for communication cables shall be orange. Detectable warning tape color code shall comply with the APWA Uniform Color Code.

CONSTRUCTION METHODS

108-3.1 General. The Contractor shall install the specified cable at the approximate locations indicated on the plans.

108-3.2 Installation in duct banks or conduits. This item includes the installation of the cable in duct banks or conduit per the following paragraphs. The maximum number and voltage ratings of cables installed in each single duct or conduit, and the current-carrying capacity of each cable shall be per the latest version of the National Electric Code, or the code of the local agency or authority having jurisdiction.

The Contractor shall make no connections or splices of any kind in cables installed in conduits or duct banks.

Unless otherwise designated in the plans, where ducts are in tiers, use the lowest ducts to receive the cable first, with spare ducts left in the upper levels. Check duct routes prior to construction to obtain assurance that the shortest routes are selected and that any potential interference is avoided.

Duct banks or conduits shall be installed as a separate item per Item L-110, Airport Underground Electrical Duct Banks and Conduit. The Contractor shall run a mandrel through duct banks or conduit prior to installation of cable to ensure that the duct bank or conduit is open, continuous and clear of debris. The mandrel size shall be compatible with the conduit size. The Contractor shall swab out all conduits/ducts and clean light bases, manholes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed, the light bases and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, light bases, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be re-cleaned at the Contractor's expense. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

The cable shall be installed in a manner that prevents harmful stretching of the conductor, damage to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape providing moisture-tight mechanical protection with minimum bulk, or alternately, heat shrinkable tubing before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a conduit, all cable shall be pulled in the conduit at the same time. The pulling of a cable through duct banks or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Maximum pulling tensions shall not exceed the cable manufacturer's recommendations. A non-hardening cable-pulling lubricant recommended for the type of cable being installed shall be used where required.

The Contractor shall submit the recommended pulling tension values to the RPR prior to any cable installation. If required by the RPR, pulling tension values for cable pulls shall be monitored by a dynamometer in the presence of the RPR. Cable pull tensions shall be recorded by the Contractor and reviewed by the RPR. Cables exceeding the maximum allowable pulling tension values shall be removed and replaced by the Contractor at the Contractor's expense.

The manufacturer's minimum bend radius or NEC requirements (whichever is more restrictive) shall apply. Cable installation, handling and storage shall be per manufacturer's recommendations. During cold weather, particular attention shall be paid to the manufacturer's minimum installation temperature. Cable shall not be installed when the temperature is at or below the manufacturer's minimum installation temperature. At the Contractor's option, the Contractor may submit a plan, for review by the RPR, for heated storage of the cable and maintenance of an acceptable cable temperature during installation when temperatures are below the manufacturer's minimum cable installation temperature.

Cable shall not be dragged across base can or manhole edges, pavement or earth. When cable must be coiled, lay cable out on a canvas tarp or use other appropriate means to prevent abrasion to the cable jacket.

108-3.3 Installation of direct-buried cable in trenches. Not used.

108-3.4 Cable markers for direct-buried cable. Not used.

108-3.5 Splicing. Connections of the type shown on the plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

a. Cast splices. Not used.

b. Field-attached plug-in splices. Not used.

c. Factory-molded plug-in splices. Not used.

d. Taped or heat-shrink splices. A taped splice shall be made in the following manner:

Bring the cables to their final position and cut so that the conductors will butt. Remove insulation and jacket allowing for bare conductor of proper length to fit compression sleeve connector with 1/4 inch (6 mm) of bare conductor on each side of the connector. Prior to splicing, the two ends of the cable insulation shall be penciled using a tool designed specifically for this purpose and for cable size and type. Do not use emery paper on splicing operation since it contains metallic particles. The copper conductors shall be thoroughly cleaned. Join the conductors by inserting them equidistant into the compression connection sleeve. Crimp conductors firmly in place with crimping tool that requires a complete crimp before tool can be removed. Test the crimped connection by pulling on the cable. Scrape the insulation to assure that the entire surface over which the tape will be applied (plus 3 inches (75 mm) on each end) is clean. After scraping, wipe the entire area with a clean lint-free cloth. Do not use solvents.

Apply high-voltage rubber tape one-half lapped over bare conductor. This tape should be tensioned as recommended by the manufacturer. Voids in the connector area may be eliminated by highly elongating the tape, stretching it just short of its breaking point. The manufacturer's recommendation for stretching tape during splicing shall be followed. Always attempt to exactly half-lap to produce a uniform buildup. Continue buildup to 1-1/2 times cable diameter over the body of the splice with ends tapered a distance of approximately one inch (25 mm) over the original jacket. Cover rubber tape with two layers of vinyl pressure-sensitive tape one-half lapped. Do not use glyptol or lacquer over vinyl tape as they react as solvents to the tape. No further cable covering or splice boxes are required.

Heat shrinkable tubing shall be installed following manufacturer’s instructions. Direct flame heating shall not be permitted unless recommended by the manufacturer. Cable surfaces within the limits of the heat-shrink application shall be clean and free of contaminates prior to application.

e. Assembly. Surfaces of equipment or conductors being terminated or connected shall be prepared in accordance with industry standard practice and manufacturer’s recommendations. All surfaces to be connected shall be thoroughly cleaned to remove all dirt, grease, oxides, nonconductive films, or other foreign material. Paints and other nonconductive coatings shall be removed to expose base metal. Clean all surfaces at least 1/4 inch (6.4 mm) beyond all sides of the larger bonded area on all mating surfaces. Use a joint compound suitable for the materials used in the connection. Repair painted/coated surface to original condition after completing the connection.

108-3.6 Bare counterpoise wire installation for lightning protection and grounding. If shown on the plans or included in the job specifications, bare solid #6 AWG copper counterpoise wire shall be installed for lightning protection of the underground cables. The RPR shall select one of two methods of lightning protection for the airfield lighting circuit based upon sound engineering practice and lightning strike density.

a. Equipotential. The counterpoise size is as shown on the plans. The equipotential method is applicable to all airfield lighting systems; i.e. runway, taxiway, apron – touchdown zone, centerline, edge, threshold and approach lighting systems. The equipotential method is also successfully applied to provide lightning protection for power, signal and communication systems. The light bases, counterpoise, etc – all components - are bonded together and bonded to the vault power system ground loop/electrode.

Counterpoise wire shall be installed in the same trench for the entire length of buried cable, conduits and duct banks that are installed to contain airfield cables. The counterpoise is centered over the cable/conduit/duct to be protected.

The counterpoise conductor shall be installed no less than 8 inches (200 mm) minimum or 12 inches (300 mm) maximum above the raceway or cable to be protected, except as permitted below:

(1) The minimum counterpoise conductor height above the raceway or cable to be protected shall be permitted to be adjusted subject to coordination with the airfield lighting and pavement designs.

(2) The counterpoise conductor height above the protected raceway(s) or cable(s) shall be calculated to ensure that the raceway or cable is within a 45-degree area of protection, (45 degrees on each side of vertical creating a 90 degree angle).

The counterpoise conductor shall be bonded to each metallic light base, mounting stake, and metallic airfield lighting component.

All metallic airfield lighting components in the field circuit on the output side of the constant current regulator (CCR) or other power source shall be bonded to the airfield lighting counterpoise system.

All components rise and fall at the same potential; with no potential difference, no damaging arcing and no damaging current flow.

See AC 150/5340-30, Design and Installation Details for Airport Visual Aids and NFPA 780, Standard for the Installation of Lightning Protection Systems, Chapter 11, for a detailed description of the Equipotential Method of lightning protection.

Reference FAA STD-019E, Lightning and Surge Protection, Grounding Bonding and Shielding Requirements for Facilities and Electronic Equipment, Part 4.1.1.7.

b. Isolation. Not used.

c. Common Installation requirements. Grounding electrodes may be rods, ground dissipation plates, radials, or other electrodes listed in the NFPA 70 (NEC) or NFPA 780.

The counterpoise wire shall also be exothermically welded to ground rods installed as shown on the plans but not more than 500 feet (150 m) apart around the entire circuit **.**

d. Parallel Voltage Systems. Provide grounding and bonding in accordance with NFPA 70, National Electrical Code.

108-3.7 Counterpoise installation above multiple conduits and duct banks. Not Used.

108-3.8 Counterpoise installation at existing duct banks. Not Used

108-3.9 Exothermic bonding. Bonding of counterpoise wire shall be by the exothermic welding process or equivalent method accepted by the RPR. Only personnel experienced in and regularly engaged in this type of work shall make these connections.

Contractor shall demonstrate to the satisfaction of the RPR, the welding kits, materials and procedures to be used for welded connections prior to any installations in the field. The installations shall comply with the manufacturer's recommendations and the following:

a. All slag shall be removed from welds.

b. Using an exothermic weld to bond the counterpoise to a lug on a galvanized light base is not recommended unless the base has been specially modified. Consult the manufacturer's installation directions for proper methods of bonding copper wire to the light base. See AC 150/5340-30 for galvanized light base exception.

c. If called for in the plans, all buried copper and weld material at weld connections shall be thoroughly coated with 6 mm of 3M™ Scotchkote™, or approved equivalent, or coated with coal tar Bitumastic® material to prevent surface exposure to corrosive soil or moisture.

108-3.10 Testing. Not Used.

METHOD OF MEASUREMENT

108-4.1 Counterpoise wire installed in trench, duct bank or conduit shall be measured by the number of linear feet installed and grounding connectors, and trench marking tape ready for operation, and accepted as satisfactory. Separate measurement shall be made for each counterpoise wire installed in trench, duct bank or conduit. The measurement for this item shall not include additional quantities required for slack.

108-4.2 Temporarily pulling back existing conductors and reinstalling in existing or new raceways shall be measured by the number of linear feet of existing conductors reinstalled. A single measurement shall be made along the existing or new raceway where the existing conductors have been reinstalled. Individual conductors shall not be measured separately for payment and no measurement shall be made for pulling back conductors.

108-4.3 No separate payment will be made for ground rods.

BASIS OF PAYMENT

108-5.1 Payment will be made at the contract unit price for bare counterpoise wire installed in trench (direct-buried), or cable and equipment ground installed in conduit, in place by the Contractor and accepted by the RPR. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals, including ground rods and ground connectors and trench marking tape, necessary to complete this item.

Payment will be made under:

Item L-108-5.1	Reinstallation of Existing Conductors in Conduit - per liner foot
Item L-108-5.2	No. 6 AWG, Solid, Bare Copper Counterpoise Wire, Installed Above the Conduit, Including Connections/Terminations - per linear 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.

Advisory Circulars (AC)

AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-53	Airport Lighting Equipment Certification Program

Commercial Item Description

A-A-59544A	Cable and Wire, Electrical (Power, Fixed Installation)
A-A-55809	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic

ASTM International (ASTM)

ASTM B3	Standard Specification for Soft or Annealed Copper Wire

ASTM B8	Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes
ASTM D4388	Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes

Mil Spec

MIL-PRF-23586F	Performance Specification: Sealing Compound (with Accelerator), Silicone Rubber, Electrical
MIL-I-24391	Insulation Tape, Electrical, Plastic, Pressure Sensitive

National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)
NFPA-780	Standard for the Installation of Lightning Protection Systems

American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)

ANSI/IEEE STD 81	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System

Federal Aviation Administration Standard

FAA STD-019E	Lightning and Surge Protection, Grounding Bonding and Shielding Requirements for Facilities and Electronic Equipment

END OF ITEM L-108

Item L-110 Airport Underground Electrical Duct Banks and Conduits

DESCRIPTION

110-1.1 This item shall consist of underground electrical conduits and duct banks (single or multiple conduits encased in concrete or buried in sand) installed per this specification at the locations and per the dimensions, designs, and details shown on the plans. This item shall include furnishing and installing of all underground electrical duct banks and individual and multiple underground conduits and removal of existing underground conduits. It shall also include all turfing trenching, backfilling, removal, and restoration of any paved or turfed areas; concrete encasement, mandrelling, pulling lines, duct markers, plugging of conduits, and the testing of the installation as a completed system ready for installation of cables per the plans and specifications. This item shall also include furnishing and installing conduits and all incidentals for providing positive drainage of the system. Verification of existing ducts is incidental to the pay items provided in this specification.

EQUIPMENT AND MATERIALS

110-2.1 General.

a. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when requested by the RPR.

b. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications and acceptable to the RPR. Materials supplied and/or installed that do not comply with these specifications shall be removed, when directed by the RPR and replaced with materials, that comply with these specifications, at the Contractor's cost.

c. All materials and equipment used to construct this item shall be submitted to the RPR for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in project that accrue directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the RPR, to determine compliance with the plans and specifications. The Contractor's submittals shall be electronically submitted in pdf format, tabbed by specification section. The RPR reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes specified in this document.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

110-2.2 Steel conduit. Not used.

110-2.3 Plastic conduit. Plastic conduit and fittings-shall conform to the following requirements:

- UL 514B covers W-C-1094-Conduit fittings all types, classes 1 thru 3 and 6 thru 10.
- UL 514C covers W-C-1094- all types, Class 5 junction box and cover in plastic (PVC).
- UL 651 covers W-C-1094-Rigid PVC Conduit, types I and II, Class 4.
- UL 651A covers W-C-1094-Rigid PVC Conduit and high-density polyethylene (HDPE) Conduit type III and Class 4.

Underwriters Laboratories Standards UL-651 and Article 352 of the current National Electrical Code shall be one of the following, as shown on the plans:

a. Type I–Schedule 40 and Schedule 80 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II–Schedule 40 PVC suitable for either above ground or underground use.

c. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.

d. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

110-2.4 Split conduit. Not used.

110-2.5 Conduit spacers. Not used.

110-2.6 Concrete. Not used.

110-2.7 Precast concrete structures. Not used.

110-2.8 Flowable backfill. Not used.

110-2.9 Detectable warning tape. Plastic, detectable, American Public Works Association (APWA) red (electrical power lines, cables, conduit and lighting cable), orange (telephone/fiber optic cabling) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item.

CONSTRUCTION METHODS

110-3.1 General. The Contractor shall install underground duct banks and conduits at the approximate locations indicated on the plans. The RPR shall indicate specific locations as the work progresses, if required to differ from the plans. Duct banks and conduits shall be of the size, material, and type indicated on the plans or specifications. Where no size is indicated on the plans or in the specifications, conduits shall be not less than 2 inches (50 mm) inside diameter or comply with the National Electrical Code based on cable to be installed, whichever is larger. All duct bank and conduit lines shall be laid so as to grade toward access points and duct or conduit ends for drainage. Unless shown otherwise on the plans, grades shall be at least 3 inches (75 mm) per 100 feet (30 m). On runs where it is not practicable to maintain the grade all one way, the duct bank and conduit lines shall be graded from the center in both directions toward access points or conduit ends, with a drain into the storm drainage system. Pockets or traps where moisture may accumulate shall be avoided. Under pavement, the top of the duct bank shall not be less than 18 inches (0.5 m) below the subgrade; in other locations, the top of the duct bank or underground conduit shall be be not less than 18 inches (0.5 m) below finished grade.

The Contractor shall mandrel each individual conduit whether the conduit is direct-buried or part of a duct bank. An iron-shod mandrel, not more than 1/4 inch (6 mm) smaller than the bore of the conduit shall be pulled or pushed through each conduit. The mandrel shall have a leather or rubber gasket slightly larger than the conduit hole.

The Contractor shall swab out all conduits/ducts and clean base can, manhole, pull boxes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed the light bases, manholes, pull boxes, etc., and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, base cans, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be recleaned at the Contractor's expense. All accessible points shall be kept closed when not installing cable. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the RPR of any blockage in the existing ducts.

For pulling the permanent wiring, each individual conduit, whether the conduit is direct-buried or part of a duct bank, shall be provided with a 200-pound (90 kg) test polypropylene pull rope. The ends shall be secured and sufficient length shall be left in access points to prevent it from slipping back into the conduit. Where spare conduits are installed, as indicated on the plans, the open ends shall be plugged with removable tapered plugs, designed for this purpose.

All conduits shall be securely fastened in place during construction and shall be plugged to prevent contaminants from entering the conduits. Any conduit section having a defective joint shall not be installed. Ducts shall be supported and spaced apart using approved spacers at intervals not to exceed 5 feet (1.5 m).

Unless otherwise shown on the plans, concrete encased duct banks shall be used when crossing under pavements expected to carry aircraft loads, such as runways, taxiways, taxilanes, ramps and aprons. When under paved shoulders and other paved areas, conduit and duct banks shall be encased using flowable fill for protection.

All conduits within concrete encasement of the duct banks shall terminate with female ends for ease in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for conduits and duct banks may be excavated manually or with mechanical trenching equipment unless in pavement, in which case they shall be excavated with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of graders shall not be used to excavate the trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required conduit or duct bank depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4-inch (6.3 mm) sieve. Flowable backfill may alternatively be used

Underground electrical warning (Caution) tape shall be installed in the trench above all underground duct banks and conduits in unpaved areas. Contractor shall submit a sample of the proposed warning tape for approval by the RPR. If not shown on the plans, the warning tape shall be located 6 inches above the duct/conduit or the counterpoise wire if present.

Joints in plastic conduit shall be prepared per the manufacturer's recommendations for the particular type of conduit. Plastic conduit shall be prepared by application of a plastic cleaner and brushing a plastic solvent on the outside of the conduit ends and on the inside of the couplings. The conduit fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly. Where more than one

conduit is placed in a single trench, or in duct banks, joints in the conduit shall be staggered a minimum of 2 feet (60 cm).

Changes in direction of runs exceeding 10 degrees, either vertical or horizontal, shall be accomplished using manufactured sweep bends.

Whether or not specifically indicated on the drawings, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the RPR, the unsuitable material shall be removed per Item P-152 and replaced with suitable material. Additional duct bank supports shall be installed, as approved by the RPR.

All excavation shall be unclassified and shall be considered incidental to Item L-110. Dewatering necessary for duct installation, and erosion per federal, state, and local requirements is incidental to Item L-110.

Unless otherwise specified, excavated materials that are deemed by the RPR to be unsuitable for use in backfill or embankments shall be removed and disposed of offsite.

Any excess excavation shall be filled with suitable material approved by the RPR and compacted per Item P-152.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

a. Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred

b. Trenching, etc., in cable areas shall then proceed with approval of the RPR, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair.

110-3.2 Duct banks. Not used.

110-3.3 Conduits without concrete encasement. Trenches for single-conduit lines shall be not less than 6 inches (150 mm) nor more than 12 inches (300 mm) wide. The trench for 2 or more conduits installed at the same level shall be proportionately wider. Trench bottoms for conduits without concrete encasement shall be made to conform accurately to grade so as to provide uniform support for the conduit along its entire length.

Unless otherwise shown on the plans, a layer of fine earth material, at least 4 inches (100 mm) thick (loose measurement) shall be placed in the bottom of the trench as bedding for the conduit. The bedding material shall consist of soft dirt, sand or other fine fill, and it shall contain no particles that would be retained on a 1/4-inch (6.3 mm) sieve. The bedding material shall be tamped until firm. Flowable backfill may alternatively be used.

Unless otherwise shown on plans, conduits shall be installed so that the tops of all conduits within the Airport's secured area where trespassing is prohibited are at least 18 inches (0.5 m) below the finished grade. Conduits outside the Airport's secured area shall be installed so that the tops of the conduits are at least 24 inches (60 cm) below the finished grade per National Electric Code (NEC), Table 300.5.

When two or more individual conduits intended to carry conductors of equivalent voltage insulation rating are installed in the same trench without concrete encasement, they shall be spaced not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less

than 6 inches (150 mm) apart in a vertical direction. Where two or more individual conduits intended to carry conductors of differing voltage insulation rating are installed in the same trench without concrete encasement, they shall be placed not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and lot less than 6 inches (150 mm) apart in a vertical direction.

Trenches shall be opened the complete length between normal termination points before conduit is installed so that if any unforeseen obstructions are encountered, proper provisions can be made to avoid them.

Conduits shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth while backfilling. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the RPR for review prior to use.

110-3.4 Markers. The location of each end and of each change of direction of conduits and duct banks shall be marked by a concrete slab marker 2 feet (60 cm) square and 4 - 6 inches (100 - 150 mm) thick extending approximately one inch (25 mm) above the surface. The markers shall also be located directly above the ends of all conduits or duct banks, except where they terminate in a junction/access structure or building. Each cable or duct run from a line of lights and signs to the equipment vault must be marked at approximately every 200 feet (61 m) along the cable or duct run, with an additional marker at each change of direction of cable or duct run.

The Contractor shall impress the word “DUCT” or “CONDUIT” on each marker slab. Impression of letters shall be done in a manner, approved by the RPR, for a neat, professional appearance. All letters and words must be neatly stenciled. After placement, all markers shall be given one coat of high-visibility orange paint, as approved by the RPR. The Contractor shall also impress on the slab the number and size of conduits beneath the marker along with all other necessary information as determined by the RPR. The letters shall be 4 inches (100 mm) high and 3 inches (75 mm) wide with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep or as large as the available space permits. Furnishing and installation of duct markers is incidental to the respective duct pay item.

110-3.5 Backfilling for conduits. For conduits, 8 inches (200 mm) of sand, soft earth, or other fine fill (loose measurement) shall be placed around the conduits ducts and carefully tamped around and over them with hand tampers. The remaining trench shall then be backfilled and compacted per Item P-152 except that material used for back fill shall be select material not larger than 4 inches (100 mm) in diameter.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during back filling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the RPR.

110-3.6 Backfilling for duct banks. Not used.

110-3.7 Restoration. Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the work shall be restored to its original condition. The restoration shall include topsoiling, fertilizing, liming, seeding, and mulching as shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. All restoration shall be considered incidental to the respective L-110 pay item. Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually

inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

110-3.8 Ownership of removed cable. The Contractor shall retain ownership of all cables indicated on the plans to be removed. All removed cables must be legally disposed of off-site by the Contractor.

METHOD OF MEASUREMENT

110-4.1 Underground conduits shall be measured by the linear feet of conduits installed, including encasement, locator tape, trenching and backfill with designated material, and restoration, and for drain lines, the termination at the drainage structure, all measured in place, completed, and accepted. Separate measurement shall be made for the various types and sizes.

BASIS OF PAYMENT

110-5.1 Payment will be made at the contract unit price per linear foot for each type and size of conduit completed and accepted, including trench and backfill with the designated material, and, for drain lines, the termination at the drainage structure. This price shall be full compensation for removal and disposal of existing conduits as shown on the plans, furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications.

Payment will be made under:

Item L-110-5.1	Non-Encased Electrical Conduit, 1-Way 1-inch Schedule 40 PVC - per linear 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.

Advisory Circular (AC)

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-53	Airport Lighting Equipment Certification Program

ASTM International (ASTM)

ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

National Fire Protection Association (NFPA)

NFPA-70	National Electrical Code (NEC)

Underwriters Laboratories (UL)

UL Standard 6	Electrical Rigid Metal Conduit - Steel
UL Standard 514B	Conduit, Tubing, and Cable Fittings
UL Standard 514C	Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
UL Standard 1242	Electrical Intermediate Metal Conduit Steel
UL Standard 651	Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings

UL Standard 651A Type EB and A Rigid PVC Conduit and HDPE Conduit

END OF ITEM L-110

Page Intentionally Blank

APPENDIX A

Construction Safety and Phasing Plan (CSPP)

Page Intentionally Blank

CONSTRUCTION SAFETY AND PHASING PLAN

Lawrence Municipal Airport

Runway 5 End Drainage Improvements

Prepared for:
Lawrence Municipal Airport
North Andover, MA

Prepared by:

Dominic Zazzaro, PE
Senior Civil Engineer
Stantec Consulting Services Inc.
45 Network Drive, 3rd Floor
Burlington, MA 01803

January 27, 2025

Page Intentionally Blank

Table of Contents

LIST OF APPENDICES

Page Intentionally Blank

1.0 CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)

The contractor shall submit to the RPR (Resident Project Representative), a minimum of two weeks prior to the issuance of the notice to proceed for construction, a written Safety Plan Compliance Document (SPCD) prepared in accordance with the guidance specified in FAA Advisory Circular AC 150/5370-2G, Chapter 3, which can be located online at:

https://www.faa.gov/documentLibrary/media/Advisory_Circular/150-5370-2G.pdf

The SPCD shall detail how the contractor will comply with the Construction Safety and Phasing Plan (CSPP) included herein and shown on the project drawings, as well as in the specifications. The SPCD will specifically identify the precautions that the contractor proposes to control vehicle traffic. This includes signs, cones, barricades, flaggers, and escorts, as well as any other proposed measures. The SPCD will also specifically identify the contractor's on-site employees responsible for compliance with both the CSPP and the SPCD during construction.

In accordance with Section 2.4.2 within FAA AC 150/5370-2G, the SPDC should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, "I, (Name of Contractor), have read the (Title of Project) CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:"). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information is necessary for any specific subject, the statement, "No supplemental information," should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP. Refer to Section 2.4.2 for additional guidance on the topics to be discussed within the SPCD.

No work shall start until the SPCD is approved by the Airport Manager.

1. PROJECT COORDINATION

Predesign/Scope Meeting:

- Meeting was held on November 15, 2023
- Attendees included:
  - Francisco Urena, Lawrence Airport
  - Samantha Smithies, FAA
  - John Kirkendall, FAA
  - Colleen Mailloux, FAA
  - Cheryl Quaine, FAA
  - Owen Silbaugh, MassDOT
  - Chris Deacetis, MassDOT
  - James Matz, MassDOT

- Valerie Johnson, MassDOT

Prebid Meeting:

- The pre-bid meeting is anticipated to be held in February 2025.
- Discussion will occur regarding airport safety requirements during construction.
- Contractors will learn of operational impacts on construction and should plan accordingly.
- Contractors will be informed of the requirement of producing a SPCD which shall be prepared prior to beginning construction.

Pre-Construction Conference:

- The Pre-Construction conference will be conducted before construction begins. Discussion shall include:
  - Airport safety requirements
  - The approval of the SPCD by the RPR, Airport Manager, and FAA
  - Construction access
  - Other details contained herein.
- Attendance will include:
  - Construction Contractor
  - Any Major Subcontractors
  - Airport Manager
  - Stantec Project Manager and RPR
  - FAA Airports Division
  - FAA Tech Ops
  - MassDOT Aeronautics Division
  - FAA Air Traffic Controllers based at LWM

Coordination Meetings:

- Project process meetings will be held once per week, or more frequently as needed.
- Attendants will include:
  - Contractor and major Subconsultants
  - Stantec's Project Manager and Resident Project Representative (RPR)
  - Airport Manager
  - FAA Airports Division
  - FAA Tech Ops (as needed)
  - MassDOT Aeronautics Division
  - FAA Air Traffic Controllers based at LWM (as needed)
- Discussion will include:
  - Concerns regarding safety.
  - Security, as a result of the ongoing work
  - Location of contractor's equipment/material staging area(s)
  - Detailed confirmation of proposed access routes, as well as procedures
  - Notification to access any Air Operating Areas (AOAs)
  - Any closures of airport surfaces that have not already been coordinated.
  - Taxiway Safety Areas (TSAs) and Taxiway Object Free Areas (TOFAs)
  - Runway Safety Areas (RSAs), Runway Object Free Areas (ROFAs), and Runway Obstacle Free Zones (OFZs).
  - Impacts to existing NAVAIDs
- Any changes in scope of work or schedule will be coordinated immediately with the Contractor, and the CSPP will be updated for review and approval.

Daily Coordination:

- The Contractor shall coordinate daily construction activities with Airport Manager through the RPR. The Airport Manager shall then coordinate with the airport tenants, as needed.
- The Contractor and the RPR shall perform, at minimum, a daily site safety inspection of the construction area.
- Runway status to be confirmed and verified at the start of each work shift.

2. PHASING

- This project consists of three phases designed to minimize disruptions and maintain a safe environment to airport operations. Refer to the accompanying safety and phasing drawing in Appendix A.
- Proposed access and haul routes for the project are shown on the attached *General Site Plan (G001) and the Safety & Phasing Plan (G101).* Specific requirements regarding access and haul routes are included in the attached *General Notes (G002)* sheet.
- NOTAMs will be issued by the airport operator on an as needed basis, to ensure pilots are informed of workers and equipment in the vicinity of the airport operational surfaces and approaches. The contractor shall provide a minimum of 24-hour notice to the RPR and airport operator, to allow time to coordinate a NOTAM.

Construction Schedule and Notes (Refer to drawing *G101)*

Phase 0:
(Procurement/Mobilization)
Major items:

- Perform required topographic survey and establish baseline/benchmarks.
- Prepare SPCD and other submittals for review and approval.
- Procure long lead materials.
- Perform any subsurface explorations required to determine the existing soil characteristics.
- Locate all subsurface utilities within the proposed construction limits.

Phase 1:
Work areas: A & B
Duration: 5 consecutive calendar days
Work schedule:

- Monday - Friday: 7:00 am - 5:00 pm
- Saturday: no work
- Sunday: no work

Runway closures:

· Runway 5-23

Runway closure notes:

1. Runway shall be closed for a maximum of 1 day during this phase.
2. Runway closure is required for erosion control installation in Work Area B.
3. Runway closure requests shall be submitted via email to the airport manager through the RPR a minimum of 7 days in advance.
4. Runway shall be reopened at the end of the work shift.

Taxiway closures:

· Taxiway A between Taxiway B and Runway 5
· Taxiway A between Taxiway E and Runway 23

Taxiway closure notes:
1. Taxiways shall only be closed when Runway 5-23 is closed unless otherwise approved by the Airport Manager.

Major work items:
- Place barricades, runway closure markers and cover signs as required for runway/taxiway closures
- Install safety fence and signage
- Install erosion controls
- Install construction exit

Notes:
1. See additional notes and requirements this sheet.
2. All erosion controls shall be installed and inspected by the RPR and the North Andover Conservation Commission prior to commencing Phase 2 work.

Phase 2:
Work area: A
Duration: 3 consecutive calendar days (may be concurrent with Phase 3)
Work schedule:
- Monday - Friday: 7:00 am - 5:00 pm
- Saturday: 7:00 am - 3:00 pm (as needed)
- Sunday: no work

Runway closures:
- Runway 5-23

Runway closure notes:
1. Runway shall only be closed when working within Work Area B
2. Runway closure requests shall be submitted via email to the airport manager through the RPR a minimum of 7 days in advance.
3. Runway shall be reopened at the end of each work shift

Taxiway closures:
- Taxiway A between Taxiway B and runway 5
- Taxiway A between Taxiway E and runway 23

Major work items:
1. Place barricades, runway closure markers and cover signs as required for runway/taxiway closures
2. Install drainage pipe and manholes

Notes:
1. See additional notes and requirements this sheet.

Phase 3:
Work area: B
Duration: 32 consecutive calendar days
Work schedule:
· Monday - Friday: 7:00 am - 5:00 pm
· Saturday: 7:00 am - 3:00 pm (as needed)
· Sunday: no work

Runway closures:
· None

Taxiway closures:
- Taxiway A between Taxiway B and Runway 5 as approved by Airport Manager

Taxiway closure notes:

1. The contractor may request a partial closure of Taxiway A between Taxiway B and Runway 5 for a particular day or time if it is determined by the RPR and the Airport Manager that the closure is justified based on the need.
2. All taxiway closure requests shall be submitted via email to the airport manager through the RPR a minimum of 24 hours in advance. Approval of closure requests will be at the discretion of the Airport Manager and will be based on the predicted wind and weather and the operational need of the taxiway for the specific day or time the closure is being requested for.
3. When a taxiway closure request is approved, low profile barricades shall be placed at locations as shown on the plan immediately following notification from the airport manager that the taxiway has been closed.
4. The taxiway shall be vacuum swept clean and shall be free of all foreign object debris (FOD) prior to requesting a reopening inspection by the airport manager. All barricades shall remain in place until the airport manager has inspected the pavement and approved the removal of the barricades.

Major work items:

- Place low profile barricades for taxiway closure when required (see taxiway closure notes)
- Install drainage pipe and manholes
- Remove vegetation
- Install stone check dam
- Install sandbag diversion dam and pump
- Excavation, embankment and placement of subbase material for stream restoration
- Remove and replace chain link fence
- Topsoil, seed and mulch
- Install turf reinforcement mat and erosion control blanket

Notes:

1. See additional notes and requirements this sheet.
2. All drainage pipe, manholes, sandbag dams, check dams shall be installed and operational prior to commencing any work within the intermittent stream.

Phase 4:
Work area: B
Duration: 5 consecutive calendar days
Work schedule:

- April 1st - June 15th
- Monday - Friday: 7:00 am - 5:00 pm
- Saturday: no work
- Sunday: no work

Runway closures:

- None

Taxiway closures:

- None

Major work items:

- Plant live stakes, stickers and wattles

Notes:

1. See additional notes and requirements this sheet.

Additional notes and requirements:

1. The contractor shall ensure that the haul route is kept clean and free of all foreign object debris (FOD) at all times throughout construction. The contractor shall anticipate vacuum sweeping the haul route each time it is used to ensure it remains free of FOD.

2. The contractor shall remain outside the Runway Safety Area (RSA) and the Runway Obstacle Free Zone (ROFZ) at all times except when Runway 5-23 is closed.
3. The contractor's equipment shall remain below elevation 134.7' when within the Precision Obstacle Free Zone (POFZ) and below the approach/departure surfaces at all times except when Runway 5-23 is closed.
4. The contractor shall not stage any equipment or material within the Runway Object Free area (ROFA).
5. The contractor shall remain outside the Taxiway Object Free Area (TOFA) and the Glide Slope critical area (GS) at all times except when being escorted by an airfield radio communications person who is in contact with Lawrence Air Traffic Control (ATC).
6. A portion of Taxiway A that is shown on the plan to be used as a haul route passes through the Runway 5 GS critical area. The GS is part of the Runway 5 Instrument Landing System (ILS). Access to this area is controlled by ATC. The contractor shall remain clear of this area at all times except as permitted by ATC for traversing between the airfield access gate and the work site. The contractor shall obey all ATC instructions while operating a vehicle within the movement area of the airfield and when accessing the GS critical area. The contractor shall anticipate not having access to the work site during times of low visibility (fog or inclement weather) unless approved by the airport manager and ATC due to the haul route passing through the GS critical area.
7. During low visibility (fog or inclement weather) the airport reserves the right to suspend work to ensure the safety of aircraft operations.

3. AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION

Identification/Mitigation of Affected Areas

- Refer to the accompanying safety and phasing drawing in Appendix A. The area affected by the project is summarized in Section 2. NOTAMs will be issued by Lawrence Municipal Airport Manager. All NOTAMs will be coordinated with Lawrence Municipal Airport and the RPR during Weekly Meetings.
- Scheduling of all work within the AOA shall be coordinated in writing with Lawrence Municipal Airport through the RPR with a minimum of 24 hours in advance for taxiway closures. No runway closures are anticipated for this project.

1) Closing, or partially closing, of runways: Runway closures will be required for work within Work Area A due to the likelihood of taller construction equipment penetrating the POFZ and approach/departure surfaces. All runway closure requests shall be submitted via email to the Airport Manager through the RPR a minimum of 7 days in advance. Approval of closure requests will be at the discretion of the Airport Manager and will be based on the predicted wind and weather and the operational need of the runway for the specific day or time the closure is being requested for.

NOTAMs will be issued by the Lawrence Municipal Airport Manager for required runway closures. All NOTAMs will be coordinated with the FAA, airport manager and the RPR during weekly construction meetings and as needed.

When a runway closure request is approved, lighted runway closure markers and lighted low-profile barricades shall be placed at locations shown on the safety and phasing plan immediately following notification from the Airport Manager that the runway has been closed.

All runways will remain open and available for aircraft operations other than what is noted in the document and on the plans.

2) Closing, or partially closing, of taxiways: All taxiways will remain open and available for aircraft operations throughout the duration of the project except as noted below.

The contractor may request a partial closure of Taxiway A (from Taxiway B to runway 5) for a particular day or time if it is determined by the RPR and the Airport Manager that the closure is justified based on the need.

All taxiway closure requests shall be submitted via email to the Airport Manager through the RPR a minimum of 24 hours in advance. Approval of closure requests will be at the discretion of the Airport Manager and will be based the predicted wind and weather and the operational need of the taxiway for the specific day or time the closure is being requested for.

NOTAMs will be issued by the Lawrence Municipal Airport Manager for required taxiway closures. All NOTAMs will be coordinated with the FAA, airport manager and the RPR during weekly construction meetings and as needed.

When a taxiway closure request is approved, low profile barricades shall be placed at locations shown on the safety and phasing plan immediately following notification from the Airport Manager that the taxiway has been closed.

The taxiway shall be vacuum swept clean and shall be free of all foreign object debris (FOD) prior to requesting a reopening inspection by the Airport Manager. All barricades shall remain in place until the airport manager has inspected the pavement and approved the removal of the barricades.

3) Closing Aircraft Rescue and Fire Fighting access routes: Not applicable.

4) Closing of access routes used by airport and airline support vehicles: Not applicable.

5) Interruption of utilities, including water supplies for firefighting: Not applicable.

6) Approach/departure surfaces affected by heights of objects: Penetrations to the approach/departure surfaces is not anticipated for this project. However, if it is determined that an approach/departure surface will be affected by equipment proposed to be used on the project the Contractor will be required to file a new 7460-1 for FAA review and approval 60 days prior to use.

7) Closure of Gates: Not Applicable.

8) Construction areas, storage areas, and access routes: Contractor staging, and laydown areas and construction access routes will be restricted to what is shown on the general site plan and safety and phasing plan and approved by the airport manager. All construction vehicles shall follow the Contractor's radio-equipped escort vehicles from the gate to the active work site. The Contractor's radio-equipped escorts shall be aware of any air traffic, as well as aircraft taxiing for to/from a runway with a route that utilizes the same taxiway or crosses or is adjacent to construction haul routes. The Contractor's radio-equipped escorts shall monitor the airport's UNICOM frequency 122.8 during hours when the FAA ATCT is closed which is from 10PM – 7AM.

4. NAVIGATION AID (NAVAID) PROTECTION

- Refer to the *General Site Plan (G001), General Notes (G002), Safety & Phasing Plan (G101)* and *Safety & Phasing Plan Notes & Details (G102)* for additional information regarding NAVAIDs. The existing NAVAID critical areas are shown on the *General Site Plan (G001) and the Safety & Phasing Plan (G101)*.
- No shutdowns of NAVAIDs (Glide Slope, Localizer, REILS, PAPIs, etc.) are anticipated for this project. However, if it is determined that a NAVAID shutdown is required, the Contractor shall

submit a request to the Airport Manager (through the RPR) for approval 7 days in advance of the required shutdown. The request should include the reason for the shutdown and a schedule of the work that will impact the NAVAID. The Airport Manager and the RPR will coordinate the shutdown with the FAA SSC Manager.

- A portion of Taxiway A that is shown on the plan to be used as a haul route passes through the Runway 5 glide slope (GS) critical area. The GS is part of the Runway 5 instrument landing system (ILS). Access to this area is controlled by air traffic control (ATC). The contractor shall remain clear of this area at all times except as permitted by ATC for traversing between the airfield access gate and the work site. The contractor shall obey all ATC instructions while operating a vehicle on the AOA and when accessing the GS critical area. the contractor shall anticipate not having access TO the work site during times of low visibility (fog or inclement weather) unless approved by the airport manager and ATC due to the haul route passing through the GS critical area.
- Any stockpile areas will be approved by the airport manager and the RPR to maintain clearance from any NAVAID Critical Areas.
- The Contractor shall be required to verify the location of all utilities in the field prior to starting excavation.
- Any impact to NAVAIDs, airfield lighting circuits, communication or power circuits shall immediately be communicated to the airport manager through the RPR for coordination with the FAA, FAA Technical Operations, and any other relevant stakeholder.
- The Contractor will hand dig when work is within three feet of any known utilities and/or cables.
- The Contractor shall coordinate all work on and in the vicinity of the underground utilities and cables with the following agencies when appropriate:
    - Airport Management
    - Local Federal Aviation Administration
    - Contact information is located at Appendix C.
- Contractor shall provide the FAA, airport management, and the RPR with records of coordination prior to commencing with excavation.

5. CONTRACTOR ACCESS

Site Access:

- See attached *General Site Plan (G001), General Notes (G002), and Safety & Phasing Plan (G101)*, for locations of proposed work, access routes, and staging and material storage areas.
- Material deliveries and Contractor access to project areas shall be as follows:
    - All phases shall be accessed/egressed as shown on *General Site Plan (G001) and Safety & Phasing Plan (G101)*. All personnel, equipment, and materials requiring access to the work site must access/egress the airfield through the airfield security Gate #3 as shown on the plans.
- Haul routes shall be clearly communicated to Radio Escorts and will be located outside of the Movement Area when possible.
- Each Contractor's motorized vehicle operating in the AOA shall be equipped with an amber flashing light and a 3-foot-square orange and white checkered flag. The company identification

must be plainly visible on both sides of the vehicle in accordance with AC 150-5210-5D. Additionally, the Contractor's escort vehicles must have an amber flashing light, an orange and white checkered flag, company identification, and the vehicle call sign plainly visible on both sides, in 16" letters, of the vehicle.

Stockpile and Staging Locations

- Staging and laydown areas shall be as shown on the general plan and safety and phasing drawing. Equipment and material stockpiles are not permitted in the AOA without the approval of Airport Management except as shown on the plans.
- Appropriate erosion control BMPs shall be placed around each stockpile area as directed by the RPR.
- No stockpiling is permitted within Taxiway and Runway object free areas.

Escorts and Radio Communication:

- The Contractor shall ensure that all vehicles needing to enter the airfield for construction purposes are escorted by approved Contractor radio equipped escort vehicles to and from the work area. The Contractor shall have on site at all times at least one radio equipped escort vehicle with qualified operator who shall monitor/operate the radio during all working hours. The Contractor shall have someone with the crew at the work site at all times who is badged and qualified to operate the air-band radio. The Contractor shall have a minimum of two radio equipped escort vehicle with qualified operator during hauling operations and material/equipment deliveries. Airfield radio communications personnel shall not perform any other task during performance of this duty. The contractor shall note that crossing of active runways or entering runway safety areas or runway obstacle free zones are strictly prohibited.
- Due to the proximity of the work site on the airfield all vehicles will need to be escorted to/from the site. When the escort vehicle is not escorting vehicles it shall be parked in an appropriate location so that the operator can view the work. Radio control will be required throughout the duration of the project due to the work site being adjacent to the aircraft operations areas. Radio communications with the Air Traffic Control Tower will be required whenever the Contractor's vehicle, equipment or personnel on foot are operating on or crossing active taxiways or taxiway safety areas.
- The escort vehicles shall have a two-way radio on the appropriate GROUND/TOWER/ CTAF/UNICOM frequency and the radio shall be capable of reliable two-way communication with the GROUND/TOWER/CTAF/UNICOM from any location on the airport. The contractor shall monitor the GROUND/TOWER frequencies when the tower is open and the UNICOM frequency when the FAA Air Traffic Control Tower (ATCT) it is closed. Escort vehicles shall be properly equipped with a rotating amber light on the roof, and have the escort's call sign with a minimum inscription height of 16" labeled on both sides of the vehicle. The escort vehicle drivers shall be trained to perform escort duties on the airfield and will be briefed on Airport safety, security and radio protocol prior to the start of construction. The Contractor's superintendent and foremen will also be required to attend this safety briefing at no additional cost.
- The contractor's radio communications personnel shall monitor the following frequencies:
    - LAWRENCE TOWER: 119.25 (7:00AM-10:00PM)
    - LAWRENCE GROUND: 124.3 (7:00AM-10:00PM)
    - LAWRENCE UNICOM: 122.8 (10:00PM - 7:00AM)

- Contractors' vehicles will not be allowed to access portions of the airport, other the haul routes, staging areas and work areas as identified on the plans.

Maintenance of Secured Area of the Airport:

- The construction area limits shall be delineated on the ground by means of safety fence, water ballasted lighted safety barricades and/or channelizer cones. Construction signs shall be used for site access, and rerouting traffic. Cones and barricades shall be equipped with a red battery-powered flashing light with a photocell. Refer to the *Safety & Phasing Plan (G101)* for locations and details for safety fence, cones, barricades, and construction signs.

6. WILDLIFE MANAGEMENT

- The Contractor shall notify Lawrence Municipal Airport of any wildlife activity that may impact operations, should the need arise.
- Contractor personnel will dispose of any trash and garbage generated by project work in closed containers provided by the contractor. Trash and garbage will be periodically removed from the site so as not to act as a wildlife attractant.
- The contractor will ensure the perimeter security fence remains unaltered.
- The contractor will immediately re-grade any area with standing water that remains more than (3) hours after rainfall.
- The seed mixture specified for topsoil and seed is compliant with the Airport's Wildlife Hazard Management Plan (WHMP).
- The Airport will mow all restored grass per the WHMP.

7. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

The Airport will manage FOD control during construction as follows:

- The Contractor is responsible for dust and debris control on roads surrounding the airport.
- The Contractor shall keep the construction site free of paper, boxes, and FOD that could be blown onto the AOA and/or attract wildlife.
- The Contractor will check the adjacent taxiway for FOD on an hourly basis and each time they use the taxiway for travelling between the airfield security gate and the work site. If FOD is found on the taxiway they should immediately notify ATC and the Airport Manager and remove the FOD.
- If any FOD is seen blowing onto the runway, the contractor shall immediately notify ATC and the Airport Manager. The Airport's Maintenance Crew will be responsible for removing any FOD from the runway. The Contractor shall not go on the runway to retrieve FOD.
- The Contractor will be required to utilize water trucks on an as needed basis and as directed by the Airport and the RPR to control dust and foreign object debris.
- Failure to control these items shall result in suspension of project work.

8. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

The Airport will manage hazard material transported during construction as follows:

- The Contractor is required to maintain a spill kit capable of containing and removing leaked fuel and hydraulic fluids.
- The contractor is required to notify the Airport Manager and the RPR of any spills immediately.
- If there is a release of fuel, hydraulic fluid or other hazardous materials the Contractor shall follow the Massachusetts Contingency Plan (MCP) for assessing, managing and cleaning up the spill.
- The Contractor shall have Safety Data Sheets (SDS) available on site for all equipment and materials being stored and used on site.

9. NOTIFICATION OF CONSTRUCTION ACTIVITIES

Contact List:

- The contact list for the Contractor, Airport, Consultant, and Emergency contacts are located in Appendix A.
- Contractor's contact list shall be included in the SPCD.
- Contact 911 for medical and fire emergencies. The North Andover Fire Department will respond to the emergency. The person calling 911 should and tell the dispatcher to have the fire department respond to Gate 1 next to the Airport Terminal. The contractor shall also notify Air Traffic Control and the Airport Manager. The Contractor's escort should anticipate meeting the fire department at Gate 1 and escorting them to the work site. However, if the Airport Manager or the Airport Maintenance personnel are available they will escort the fire department.

Notice to Air Missions (NOTAMs):

- Airport management will issue all NOTAMs through the eNOTAM system.

Airport Construction Notification:

- The Airport will notify airport users/tenants prior to construction of the following:
  - Project goals and proposed scope of work
  - Tentative taxiway closures
- The Consultant will notify FAA Airport's Division and the NAVAIDS Support Service Center of the following:
  - Project schedule
  - Notice of Proposed Construction (FAA Form 7460).
    - Refer to Appendix C for the 7460 – Construction Plan.
    - The Contractor will be required to file a new 7460 if they plan to use equipment above the height that was filed.

10. INSPECTION REQUIREMENTS

A) Daily Inspections

- The Contractor is responsible for Quality Control inspections for their own work, as well as safety requirements. This includes, but is not limited to, an inspection of all safety fence, lighted barricades, lighted cones and equipment daily.
- The RPR must conduct an inspection of closed taxiways including taxiway safety areas followed by an inspection conducted by the Airport Manager prior to opening the taxiway to air traffic operations.
- Airport Management will perform daily and periodic night inspections of CSPP requirements.
- Airport management will coordinate with the RPR and the Contractor for any issues noted for correction.

B) Final Inspection

- Upon completion of the entire project, the FAA, MassDOT, Airport Manager, the RPR, and the Contractor shall inspect the entire project. Any items identified as insufficient shall be remedied by the Contractor prior to final acceptance.

11. UNDERGROUND UTILITIES

Existing Utilities:

- The Contractor is responsible for conducting investigation to locate existing utilities within the limit of work. Existing utilities shown on the plan set are approximate locations based on record drawings and must be verified by the contractor.
- The contractor will immediately notify the RPR in writing of any discrepancies found during investigation.
- The contractor will contact Dig Safe to delineate all municipal utilities a minimum of seven days prior to any excavation work.
- The existing utilities shown on plans are approximate and are based on available record drawings.
- Any impact to NAVAIDs, airfield lighting circuits, communication, or power circuits, shall immediately be communicated to Lawrence Municipal Airport through the RPR for coordination with the FAA and any other relevant stakeholder.

Utility Damage:

- The Contractor shall immediately notify the RPR and Airport Management if any utilities are damaged and will be responsible for all immediate repairs, at his or her own expense.

12. PENALTIES

- Any Contractor not conforming to safety and security requirements will be considered in direct violation of this CSPP and the work will be stopped until approval is given by the Airport Manager to start once again. No time extension for the contract will be given, nor will any consideration for extra cost claims be given relative to security violations. It is the Contractor's responsibility to instruct, monitor, supervise, and control work staff to avoid this situation.

- A Contractor who causes an incursion will have their driving privileges revoked, the incursion will be investigated by the Airport, FAA, and MassDOT and the entire project may be subject to stoppage.
- It is the Contractor's responsibility to provide qualified, responsible, and experienced personnel so that violations do not occur.

13. SPECIAL CONDITIONS

- Aircraft in Distress: Airport Manager, the RPR, and/or the Contractor Superintendent will immediately notify construction personnel to suspend use of the haul route within the movement area upon receiving instructions from the LWM ATCT or monitoring a distress call on UNICOM. No work on the runway or within approach/departure surfaces is anticipated.
- Aircraft Incident: All construction personnel will immediately vacate the airfield and remain off airport property until cleared by the Airport Manager.
- Fog: No construction will be allowed on the Airport if visibility drops below 3/4 mile.

14. RUNWAY AND TAXIWAY VISUAL AIDS

- No work on runways or taxiways will be performed under this project.
- Short-term daytime closures of Runway 5-23 and Taxiway A will be required throughout the project. These short-term closures will not require runway/taxiway lights or signs to be deactivated. The Runway 5-23 lights will be turned off by the Tower.
- Daily taxiway closures shall be delineated with lighted low-profile barricades as shown on the drawings and as approved/directed by the RPR.

15. MARKING AND SIGNS FOR ACCESS ROUTES

- The haul route will utilize Gate #3, west ramp, Taxiway B and Taxiway A. "Stop Wait for Escort Signs" shall be placed at Gate #3 and at the work site exit points as indicated on the plans. Signs shall not be placed within movement or non-movement areas of the airfield where aircraft are operating. All signs shall remain outside taxiway object free areas and runway obstacle free zones.
- The Contractor shall obey all instructions as to the operation and routes to be taken by equipment travelling on Airport property. Any sign, lights, signals, markings, traffic control, and other devices which may be required shall be provided and maintained by the Contractor during the course of work, subject to approval of the RPR.
- All signage will be located and constructed to standards, including size, coloring, and lettering that conform to State highway specifications. Signage shall be approved by the RPR.

16. HAZARD MARKING AND LIGHTING

- Construction work areas are outside of all airfield critical areas will be delineated with safety fence, and channelizer cones with flashing red lights. See *Safety & Phasing Notes & Details (G102)* for safety fence, and channelizer cones details.

- Closed taxiways or portions thereof, will be delineated with low profile barricades with flashing red lights. See *Safety & Phasing Notes & Details (G102)* barricade details.
- Open trenches, equipment, and any temporary or exposed utilities shall be clearly marked and delineated with safety fence, lighted barricades and cones. Safety fence, cones, and barricades shall be inspected, at minimum, daily.

17. WORK ZONE LIGHTING FOR NIGHTTIME CONSTRUCTION

- Nighttime construction is not permitted for this project.

18. PROTECTION OF RUNWAY AND TAXIWAY SAFETY AND OBJECT FREE AREAS

- The Contractor is responsible for marking out the haul routes, which are located outside of all active runway obstacle free zones and taxiway object free areas where possible.
- Crossing of active runway safety areas is strictly prohibited.
- Entering an active taxiway object free area shall only be allowed while being escorted by approved contractor escorts equipped with appropriate radio communications.
- Any ground disturbance created as a result of construction vehicles shall be reported immediately to the RPR and restored, by the Contractor, to a smooth condition.
- No work is permitted within Runway Obstacle Free Zones or Taxiway Object Free Areas while the runway or taxiway is open.
- Work within any Runway/Taxiway Object Free Areas require prior approval and coordination between the Contractor, RPR, and Airport Management.
- No construction equipment may penetrate an approach or departure surface while the runway is active.
- The Contractor, RPR, and Airport Management shall be responsible for checking safety areas and object free areas on a daily basis.
- The work area must be delineated with safety fence as shown on the *Safety & Phasing Plan (G101)*.
- Protection of RSA, OFZ. ROFAs, and approach surfaces will be coordinated through Airport Management prior to any activity adjacent to Runway 5-23.

19. OTHER LIMITATIONS ON CONSTRUCTION

Prohibited items within airport limits unless otherwise noted:

- No cranes or equipment over 35 feet in height are permitted on the AOA without approval from Airport Management and the FAA (File FAA Form 7460-1). The Contractor shall coordinate any crane use with the airport manager, through the RPR, 60 days in advance. A 7460-1 has been filed for construction equipment with a maximum height of 35 feet. Refer to Appendix B for the plan that was filed with FAA Form 7460-1. Any increase in this height (greater than 35 feet), will

require the Contractor to file a new 7460-1 and subsequent FAA approval. All cranes shall be marked and lighted in accordance with FAA AC 70/7460-1 (latest edition).

- No open flame welding, torches, electrical blast caps and flare pots may be used at any time.

Page Intentionally Blank

APPENDICES

Appendix A – Construction Safety and Phasing Plans

Appendix B – 7460 Plans

Appendix C – Project Emergency Contact List

Page Intentionally Blank

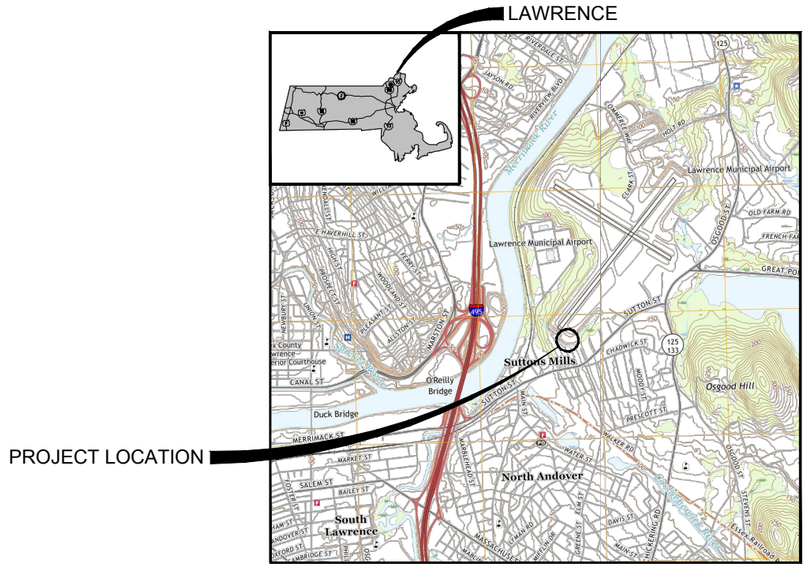
APPENDIX A

Construction Safety and Phasing Plans

Page Intentionally Blank

Stantec

LAWRENCE MUNICIPAL AIRPORT
NORTH ANDOVER, MASSACHUSETTS



VICINITY MAP
NOT TO SCALE

CONSTRUCTION SAFETY & PHASING PLANS

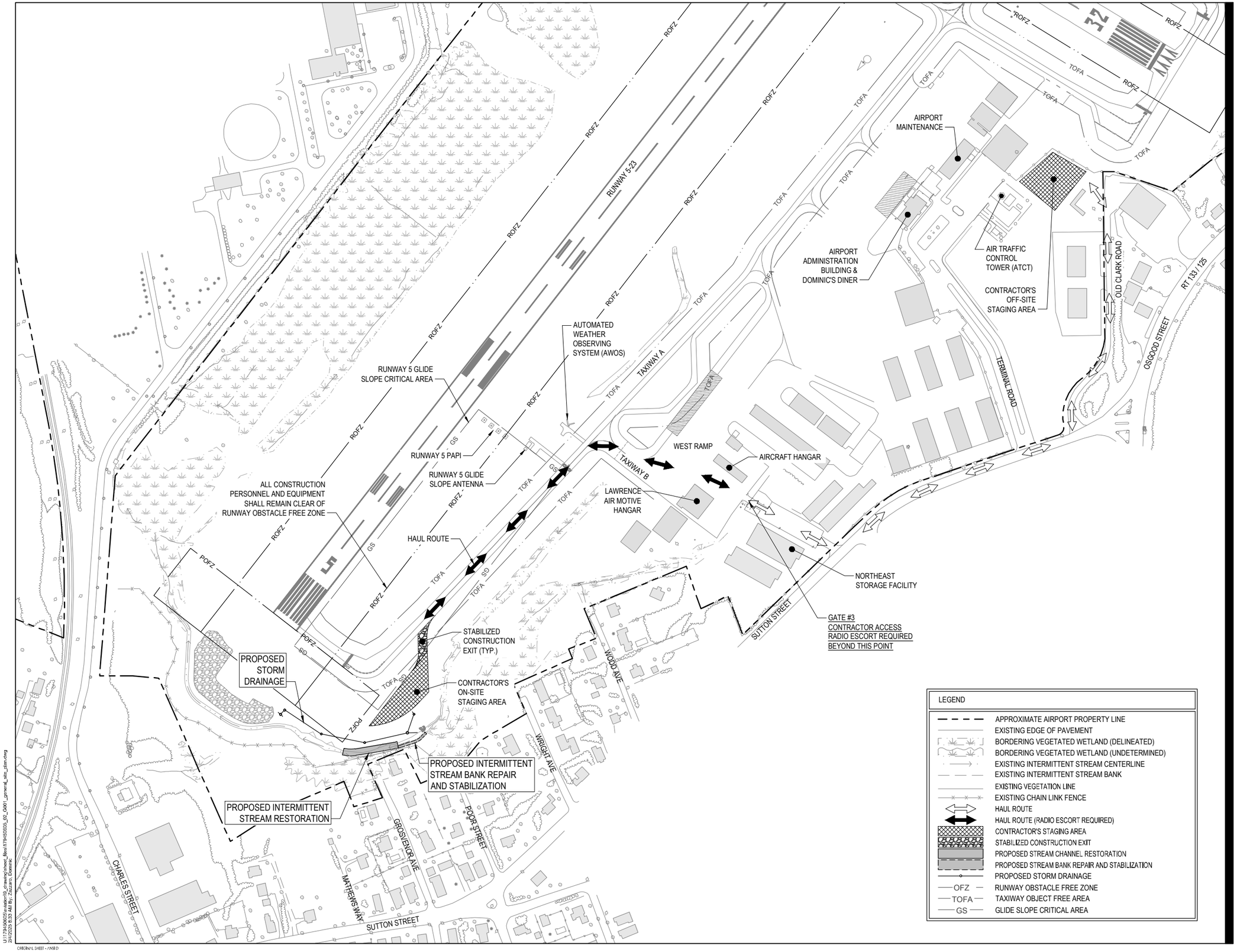
for

RUNWAY 5 END DRAINAGE IMPROVEMENTS

JANUARY 27, 2025
STANTEC PROJECT NO. 179450605

INDEX OF SHEETS

SHEET NO.	DWG. NO.	TITLE
1	T001	TITLE SHEET
2	G001	GENERAL SITE PLAN
3	G002	GENERAL NOTES
4	G101	SAFETY & PHASING PLAN
5	G102	SAFETY & PHASING NOTES & DETAILS



Stantec

Stantec Consulting Services Inc.
45 Blue Sky Drive, 3rd Floor
Burlington, MA 01803 U.S.A.
Tel. 781.221.1000
Fax. 781.229.1115
www.stantec.com

N

0 150' 300'

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

Dwn.	DMZ Chkd.	Dsgn.

Permit-Seal

Client/Project
LAWRENCE MUNICIPAL AIRPORT
NORTH ANDOVER, MA

RUNWAY 5 END
DRAINAGE IMPROVEMENTS

Title
GENERAL SITE PLAN

Project No.
179450605

Drawing No.	Sheet	Revision
G001	2 of 5	0

GENERAL NOTES:

1. **ANTICIPATED NOTICE TO PROCEED FOR CONSTRUCTION IS APPROXIMATELY JULY 28, 2025.** THE INTENT OF THE START DATE IS TO PERFORM THE MAJORITY OF THE WORK IN AUGUST SO THE SITE CAN BE STABILIZED AND SEEDED DURING THE GROWING SEASON IN SEPTEMBER.

2. **THE ANTICIPATED DATE FOR CONTRACT EXECUTION IS JUNE 2, 2025.** UPON EXECUTION OF THE CONTRACT, THE CONTRACTOR SHALL EXPEDITE THE SUBMISSION OF SHOP DRAWINGS, ORDERING OF MATERIALS AND MOBILIZATION EFFORTS.

3. THE TOTAL CONTRACT DURATION IS 50 CALENDAR DAYS. ALL WORK EXCEPT THE STREAM BANK PLANTINGS SHALL BE COMPLETED WITHIN 45 CALENDAR DAYS. STREAM BANK PLANTINGS SHALL BE COMPLETED WITHIN 5 CALENDAR DAYS DURING DECEMBER OR APRIL.

4. THE CONTRACTOR SHALL SCHEDULE ALL MANPOWER AND EQUIPMENT AND HAVE ALL REQUIRED MATERIALS READILY AVAILABLE TO ENSURE ALL SCHEDULED WORK CAN BE COMPLETED IN ITS ENTIRETY WITHIN THE SPECIFIED TIME FRAME. THE CONTRACTOR SHALL SCHEDULE WORK TO ENSURE SUFFICIENT TIME REMAINS FOR THE STREAM BANK PLANTINGS.

5. THE CONTRACTOR SHALL MAINTAIN COMMUNICATION AND PROJECT COORDINATION WITH THE RESIDENT PROJECT REPRESENTATIVE (RPR) AND AIRPORT MANAGER AT ALL TIMES.

6. THE CONTRACTOR SHALL PROVIDE A POINT OF CONTACT TO THE AIRPORT MANAGER AND THE RPR WHO CAN BE CONTACTED AT ANY TIME (24-HOURS A DAY) THROUGHOUT THE COURSE OF THE CONTRACT. THIS INDIVIDUAL SHALL BE CAPABLE OF COORDINATING AN IMMEDIATE RESPONSE TO CORRECT ANY CONSTRUCTION RELATED ACTIVITY THAT MAY ADVERSELY AFFECT AIRCRAFT SAFETY AND PUBLIC SAFETY.

7. THE CONTRACTOR SHALL COMPLY WITH ALL AIRPORT SECURITY REQUIREMENTS INCLUDING OBTAINING SECURITY BADGES AND ATTENDING AIRFIELD DRIVER AND SECURITY TRAINING OFFERED BY THE AIRPORT FOR OPERATION OF VEHICLES WITHIN THE SECURED AREA OF THE AIRPORT AND THE AIR OPERATIONS AREA (AOA), AND MAINTAINING A SECURE PERIMETER OF THE AIRPORT WHEN ACCESSING AIRFIELD VEHICLE GATES. THE AIRPORT DOES NOT CHARGE A FEE TO THE CONTRACTOR FOR THE COST OF PROVIDING SECURITY BADGES OR FOR PROVIDING DRIVER OR SECURITY TRAINING. AT A MINIMUM THE CONTRACTOR'S PROJECT MANAGER, SUPERINTENDENT, FOREMAN, AND ESCORTS AND ALL SUBCONTRACTOR'S SUPERINTENDENTS, FOREMAN AND ESCORTS SHALL OBTAIN SECURITY BADGES AND ATTEND AIRFIELD DRIVING AND SECURITY TRAINING.

8. EACH CONTRACTOR'S MOTORIZED VEHICLE OPERATING IN THE AOA SHALL BE EQUIPPED WITH AN AMBER FLASHING LIGHT AND A 3-FOOT-SQUARE ORANGE AND WHITE CHECKERED FLAG. THE COMPANY IDENTIFICATION MUST BE PLAINLY VISIBLE ON BOTH SIDES OF THE VEHICLE IN ACCORDANCE WITH AC 150-5210-5D. ADDITIONALLY, THE CONTRACTOR'S ESCORT VEHICLES MUST HAVE AN AMBER FLASHING LIGHT, AN ORANGE AND WHITE CHECKERED FLAG, COMPANY IDENTIFICATION, AND THE VEHICLE CALL SIGN PLAINLY VISIBLE ON BOTH SIDES, IN 16" LETTERS, OF THE VEHICLE.

9. THE CONTRACTOR COVENANTS AND AGREES THAT THEY AND THEIR SUBCONTRACTORS AND EMPLOYEES WILL PROVIDE AND MAINTAIN A SAFE PLACE TO WORK AND THAT THEY WILL COMPLY WITH ALL LAWS AND REGULATIONS OF ANY GOVERNMENTAL AUTHORITY HAVING JURISDICTION THEREOF, AND THE CONTRACTOR AGREES TO INDEMNIFY, DEFEND AND HOLD HARMLESS THE RPR, OWNER AND OTHERS FROM AND AGAINST ANY LIABILITY, LOSS, DAMAGE OR EXPENSE, INCLUDING ATTORNEY'S FEES, ARISING FROM A FAILURE OR ALLEGED FAILURE ON THE PART OF THE CONTRACTOR, THEIR SUBCONTRACTORS AND THEIR AGENTS AND EMPLOYEES TO PROVIDE AND MAINTAIN A SAFE PLACE TO WORK AND TO COMPLY WITH ALL LAWS AND REGULATIONS OF ANY GOVERNMENTAL AUTHORITY HAVING JURISDICTION THEREOF. IN ADDITION TO ALL APPLICABLE OSHA SAFETY REQUIREMENTS ALL PERSONNEL SHALL WEAR APPROPRIATE REFLECTIVE SAFETY VESTS AND REQUIRED PERSONAL PROTECTIVE EQUIPMENT (PPE) AT ALL TIMES.

10. AIRCRAFT OPERATING AREAS (AOA), WHICH ARE ALL AREAS WITHIN THE AIRFIELD SECURITY FENCE, SHALL REMAIN ACTIVE THROUGHOUT THE PROJECT. CONTRACTOR SHALL PLACE CONSTRUCTION SAFETY FENCE AT THE LOCATIONS SHOWN ON THE CONSTRUCTION SAFETY AND PHASING PLAN AND/OR AS DIRECTED BY THE RPR AND AIRPORT MANAGER.

11. THE CONTRACTOR SHALL REFER TO DIVISION I AND DIVISION II, GENERAL AND SPECIAL PROVISIONS OF THE CONTRACT DOCUMENTS FOR ADDITIONAL SAFETY CONSIDERATIONS.

12. NOTICE TO AIR MISSIONS (NOTAMS) SHALL BE ISSUED BY THE AIRPORT MANAGER AFTER COORDINATING WITH THE RPR. NOTAMS SHALL BE ISSUED WHEN A RUNWAY OR A TAXIWAY IS REQUIRED TO BE CLOSED. A RUNWAY SHALL BE CLOSED WHEN WORK NEEDS TO OCCUR WITHIN THE RUNWAY SAFETY AREA (RSA) OR OBSTACLE FREE ZONE (OFZ). A TAXIWAY SHALL BE CLOSED WHEN WORK NEEDS TO OCCUR WITHIN THE TAXIWAY OBJECT FREE AREA (TOFA). THE CONTRACTOR SHALL COORDINATE SCHEDULED RUNWAY CLOSURES A MINIMUM OF 7 DAYS IN ADVANCE AND TAXIWAY CLOSURES A MINIMUM OF 72 HOURS IN ADVANCE UNLESS OTHERWISE SPECIFIED.

13. IF CRANES OR EQUIPMENT OVER 30' IN HEIGHT ARE TO BE UTILIZED FOR THE PROJECT, THE CONTRACTOR IS REQUIRED TO FILE AN FAA 7460 AND REQUEST AN AIRSPACE REVIEW BY MASSDOT. THE FAA AND MASSDOT REVIEWS CAN TAKE UP TO 45 DAYS FOR A DETERMINATION. IF THE CONTRACTOR IS UNSURE IF THEY HAVE TO FILE, THE CONTRACTOR SHALL CONTACT THE AIRPORT FOR A DETERMINATION.

14. THE LOCATION OF THE CONTRACTOR'S STAGING AREA FOR STORING AND STOCKPILING MATERIALS AND PARKING CONSTRUCTION EQUIPMENT IS AS SHOWN ON THE DRAWINGS. THE LOCATION OF ALL CONTRACTOR MATERIAL STOCKPILE AREA(S) SHALL BE APPROVED IN ADVANCE BY THE RPR AND SHALL BE LOCATED OUTSIDE THE ACTIVE RUNWAY AND TAXIWAY OBJECT FREE AREAS. EQUIPMENT AND MATERIAL SHALL REMAIN BELOW THE AIRPORT'S PROTECTED AIRSPACE SURFACES AT ALL TIMES AS DETERMINED BY THE CONTRACTOR'S REGISTERED SURVEYOR AND APPROVED BY THE RPR (WHEN RUNWAYS ARE ACTIVE). THE CONTRACTOR SHALL RESTORE ALL CONTRACTOR STAGING, STORAGE AND EQUIPMENT PARKING AREAS TO THEIR PRE-PROJECT OR IMPROVED CONDITION AT THE COMPLETION OF THE PROJECT WITHOUT ADDITIONAL EXPENSE TO THE OWNER. THIS SHALL INCLUDE AT A MINIMUM, REMOVING DEBRIS, SCARIFYING THE AREA TO LOOSEN COMPACTED MATERIAL, PLACING TOPSOIL, SEEDING AND MULCHING. THE CONTRACTOR SHALL DOCUMENT (PHOTOGRAPH/VIDEO) THE CONDITIONS OF ALL PROPOSED STAGING AND STOCKPILE AREAS BY PHOTOGRAPHING AND VIEWING THE AREAS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ONLY AUTHORIZED VEHICLES ARE ALLOWED ACCESS THROUGH THE DESIGNATED AIRFIELD ACCESS GATE FOR THE PROJECT. AIRFIELD ACCESS GATES SHALL REMAIN CLOSED AT ALL TIMES TO MAINTAIN A SECURE PERIMETER OF THE AIRPORT. A GATE GUARD POSSESSING A LAWRENCE AIRPORT SIDA BADGE SHALL BE POSTED AT THE GATE IF THE GATE IS REQUIRED TO BE OPENED FOR AN EXTENDED PERIOD OF TIME FOR THE PASSAGE OF CONSTRUCTION EQUIPMENT OR VEHICLES. ALL COSTS ASSOCIATED WITH A GATE GUARD SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY FOR THE DURATION OF THE PROJECT TO MAINTAIN THE GATES IN GOOD CONDITION, AND REPAIR/REPLACE ANY FENCING OR GATE SYSTEM COMPONENTS AT NO ADDITIONAL COST TO THE OWNER THAT ARE DAMAGED BY THE CONTRACTOR'S ACTIVITIES.

16. THE CONTRACTOR SHALL PROVIDE SUFFICIENT SILTATION CONTROL DEVICES TO ENSURE THAT NO SILT OR OTHER CONSTRUCTION MATERIALS ARE DEPOSITED BEYOND THE PROJECT LIMITS. ALL SILTATION CONTROL DEVICES SHALL BE IN PLACE AND APPROVED BY THE RESIDENT PROJECT REPRESENTATIVE PRIOR TO THE COMMENCEMENT OF EARTHWORK. REFER TO CONTRACT SPECIFICATION C-102 AND EROSION CONTROL PLANS AND DETAILS.

17. THE CONTRACTOR SHALL LEGALLY DISPOSE OF ALL DEBRIS AND UNSATISFACTORY MATERIALS OFF AIRPORT PROPERTY IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS AT NO ADDITIONAL COST TO THE OWNER.

18. CONTRACTOR VEHICLES AND EQUIPMENT SHALL AT ALL TIMES GIVE WAY TO AIRCRAFT OPERATIONS, SUPPORT VEHICLES, AND EMERGENCY VEHICLES. THE CONTRACTOR'S VEHICLES/EQUIPMENT SHALL NOT ENTER ANY RUNWAY, TAXIWAY OR APRON IN THE AIR OPERATIONS AREA (AOA) AT ANY TIME, WITHOUT PRIOR AUTHORIZATION FROM THE AIRPORT MANAGER AND/OR RPR.

19. AT A MINIMUM, AT THE COMPLETION OF WORK EACH DAY, THE CONTRACTOR SHALL INSPECT THE WORK AREA FOR FOREIGN OBJECT DEBRIS (FOD) AND VERIFY THAT THE CONSTRUCTION SAFETY FENCE IS SECURE AND IN GOOD CONDITION.

20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THOROUGHLY CLEANING VEHICLE TIRES PRIOR TO THE VEHICLES LEAVING THE WORK AREA. AT THE END OF EACH SHIFT, THE CONTRACTOR AND THE RPR SHALL INSPECT THE ADJACENT ROADWAYS, AS WELL AS PAVED HAUL ROUTES USED BY THE CONTRACTOR WITHIN AIRPORT PROPERTY, AND CLEAN AS NECESSARY.

21. THE APPROXIMATE LOCATION OF THE HAUL ROUTE IS SHOWN ON THE PLANS. THE HAUL ROUTE REQUIRES OPERATING VEHICLES AND EQUIPMENT ON ACTIVE AIRCRAFT RAMPS AND TAXIWAYS. THE CONTRACTOR'S RADIO-EQUIPPED ESCORT SHALL LEAD CONSTRUCTION EQUIPMENT AND VEHICLES BETWEEN THE AIRFIELD ACCESS GATE AND THE SITE. SEE SPECIAL PROVISIONS IN DIVISION II OF THE SPECIFICATIONS FOR FURTHER DETAILS. EXACT LOCATION OF THE HAUL ROUTE SHALL BE DETERMINED IN THE FIELD BY THE AIRPORT OPERATOR AND THE RESIDENT PROJECT REPRESENTATIVE (RPR) IN COORDINATION WITH THE CONTRACTOR. GRASS PORTIONS OF HAUL ROUTES SHALL BE CLEARLY MARKED WITH CONES OR WOODEN STAKES AND FLAGGING ON THE AIRFIELD AS DIRECTED BY THE RPR FOR THE DURATION OF THE PROJECT TO ENSURE THAT CONSTRUCTION VEHICLES DO NOT STRAY INTO ACTIVE AIRFIELD OPERATIONS AREAS, WETLANDS, OR CREATE UNNECESSARY SOIL DISTURBANCE. IN AREAS WHERE THE HAUL ROUTE PASSES INTO ACTIVE RUNWAY OR TAXIWAY SAFETY AREAS, THE ROUTE SHALL BE MAINTAINED DAILY AND RE-GRADED SUCH THAT WHEEL RUTS ARE REDUCED TO TWO (2) INCHES OR LESS IN DEPTH. ALL NEW AND EXISTING UNDERGROUND CABLES SHALL BE PROTECTED FROM DAMAGE WHERE HAUL ROUTES CROSS OVER CABLES. THE CONTRACTOR SHALL REMOVE AND REPLACE IN KIND ANY CABLES DAMAGED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. CONTRACTOR'S USE OF HAUL ROUTES SHALL BE AT THE DISCRETION OF THE AIRPORT MANAGER AND/OR THE RPR. THE OWNER RESERVES THE RIGHT TO CHANGE THE HAUL ROUTE AT ANY TIME AT NO ADDITIONAL COST.

22. TEMPORARY STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED WHERE HAUL ROUTES MEET WITH RUNWAYS, TAXIWAYS OR EXISTING GRAVEL OR PAVED ROADWAYS TO PREVENT TRACKING OF MUD AND DEBRIS FROM THE PROJECT SITE. TEMPORARY CONSTRUCTION EXITS SHALL BE CONSTRUCTED AT LOCATIONS SHOWN ON THE PLANS.

23. THE CONTRACTOR SHALL PHOTOGRAPH/VIDEO THE ENTIRE SITE, INCLUDING STAGING AREAS, HAUL ROUTES, AND THE AIRPORT ACCESS ROADS TO PROVIDE DOCUMENTATION OF PRE-CONSTRUCTION SITE CONDITIONS. AT THE COMPLETION OF CONSTRUCTION, ALL STAGING AREAS, STOCKPILE AREAS AND HAUL ROUTES SHALL BE RETURNED TO THEIR PRE-PROJECT CONDITION BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. THIS SHALL INCLUDE AT A MINIMUM, REPAIR OR RECONSTRUCTION OF PORTIONS OF EXISTING PAVED RUNWAYS, TAXIWAYS, APRONS, GRAVEL/PAVED ROADWAYS, SCARIFYING, TOPSOILING, SEEDING AND MULCHING HAUL ROUTES IN TURF AREAS, AND SWEEPING OF ALL PAVED SURFACES THAT WERE UTILIZED FOR HAULING. ALL WORK ASSOCIATED WITH PHOTOGRAPHY/VIDEOTAPING THE SITE, MAINTAINING, AND RESTORING HAUL ROUTES, PUBLIC ROADWAYS, AND ADJACENT AREAS IS CONSIDERED INCIDENTAL TO THE OVERALL PROJECT COST.

24. EXISTING PAVED ACCESS ROADS INDICATED ON THE PLANS TO BE USED AS HAUL ROADS THAT MAY BE UNABLE TO SUPPORT CONSTRUCTION VEHICLES WITHOUT DAMAGE MAY REQUIRE REPAIRS AT THE END OF THE PROJECT AS DETERMINED BY THE RPR AND THE AIRPORT MANAGER. ANY DECISION INVOLVING THE REPAIR OF ACCESS ROADS SHALL BE MADE BY THE AIRPORT MANAGER. ACCESS ROAD REPAIRS SHALL BE COMPLETED IN ACCORDANCE WITH THE ACCESS ROAD REPAIR TYPICAL SECTIONS PROVIDED IN THE PLANS. THE TYPE AND LIMITS OF REPAIRS SHALL BE DETERMINED BY THE RPR WITH APPROVAL FROM THE AIRPORT MANAGER. NO ACCESS ROADS SHALL BE REPAIRED WITHOUT SPECIFIC APPROVAL IN WRITING FROM THE AIRPORT MANAGER. REPAIR OF ACCESS ROADS SHALL BE PAID UNDER THE RESPECTIVE DIVISION II PAY ITEMS FOR ACCESS ROAD REPAIRS INCLUDED IN THE SPECIAL PROVISIONS. ANY DAMAGE TO EXISTING PAVEMENTS AS A RESULT OF NEGLIGENCE ON THE PART OF THE CONTRACTOR FOR FAILURE TO PROPERLY PROTECT THE ROAD SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.

25. THE CONTRACTOR SHALL ANTICIPATE PROTECTING EXISTING IN PAVEMENT LOOP DETECTOR WIRES AT AIRFIELD SECURITY GATE #3 SHOWN ON THE PLANS TO BE UTILIZED FOR CONSTRUCTION ACCESS. THERE ARE 4 EXISTING LOOP DETECTOR WIRES INSTALLED AT GATE #3. LOOP DETECTOR WIRES DAMAGED SHALL BE REPLACED IN THEIR ENTIRETY AT NO ADDITIONAL COST TO THE OWNER. NO SPLICING OF LOOP WIRES WILL BE ACCEPTED.

26. THE CONTRACTOR SHALL PLACE CAUTION SIGNS AT AIRFIELD ACCESS LOCATIONS, LEADING UP TO (WITHIN 1/4 OF A MILE) AND AT LOCATIONS WHERE AIRFIELD ACCESS INTERSECTS WITH EXISTING PUBLIC ROADS OR AS APPROVED BY THE RPR AND AIRPORT MANAGER. THE SIGNS SHALL WARN PUBLIC OF CONSTRUCTIONS VEHICLES ENTERING/EXITING THE PUBLIC ROADWAY. THERE WILL BE NO SEPARATE PAYMENT FOR PRODUCING, PLACING, MAINTAINING AND REMOVING SIGNS AND SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

27. AT THE COMPLETION OF THE CONTRACT, ALL CONTRACTOR'S AND SUBCONTRACTOR'S FACILITIES SHALL BE REMOVED PROMPTLY AND THE AREA LEFT CLEAN AND FREE OF ALL DEBRIS OR SURPLUS MATERIAL. ANY DISTURBED AREAS WITHIN THE SITE (INCLUDING ALL WORK AREAS, HAUL ROUTES, STAGING AREAS, AFFECTED DRAINAGE SWALES & UTILITIES, AND DISTURBED AREAS CAUSED BY THE REMOVAL OF EROSION CONTROL MEASURES) SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT NO ADDITIONAL EXPENSE TO THE OWNER. FAILURE TO DO SO MAY RESULT IN A DELAY OF PARTIAL/FINAL PAYMENT APPROVAL UNTIL AREA IS RESTORED TO THE SATISFACTION OF THE RPR. ALL COSTS ASSOCIATED WITH SITE RESTORATION SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PROJECT ITEMS. EROSION CONTROLS SHALL REMAIN IN PLACE UNTIL GRASS IS ESTABLISHED AS DETERMINED BY THE RPR.

28. CONSTRUCTION VEHICLES MUST BE PARKED WITHIN THE PROJECT LIMITS OR STAGING AREAS. CONTRACTOR'S PERSONAL VEHICLES ARE NOT ALLOWED ON THE AIRFIELD SHALL BE PARKED IN A STAGING AREA OUTSIDE THE AIRFIELD SECURITY FENCE. NO CONTRACTOR EMPLOYEE PARKING SHALL BE ALLOWED IN THE AIRPORT/RESTAURANT PARKING AREA.

29. EQUIPMENT/MATERIAL STOCKPILES SHALL NOT BE PERMITTED OUTSIDE THE CONTRACTOR STAGING AREA. STOCKPILE HEIGHT IS SUBJECT TO THE APPROVAL OF THE RPR AND AIRPORT MANAGER SO AS NOT TO OBSTRUCT AIRSPACE PROTECTED SURFACES.

30. PRIOR TO THE COMMENCEMENT OF THE PROJECT, ALL CONTRACTOR AND SUBCONTRACTOR'S PERSONNEL SHALL ATTEND A FOREIGN OBJECT DEBRIS (FOD) AND SAFETY PRESENTATION AT THE AIRPORT MANAGER'S OFFICE. ALL ATTENDEES WILL BE REQUIRED TO UNDERSTAND AND COMPLY WITH SAFETY AND SECURITY REQUIREMENTS.

31. THE CONTRACTOR SHALL SUPPLY A DUMPSTER WITH COVER TO KEEP THE CONSTRUCTION SITE FREE OF PAPER, BOXES, AND OTHER DEBRIS WHICH COULD BE BLOWN ONTO THE AOA AND/OR ATTRACT WILDLIFE. ALL COSTS ASSOCIATED WITH THE DUMPSTER SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PROJECT PAY ITEMS.

32. THE CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO THE DUST CONTROL REQUIREMENTS OF THIS CONTRACT. THE CONTRACTOR SHALL FURNISH AND OPERATE A MINIMUM OF ONE (1) SELF-PROPELLED VACUUM SWEEPER TO MAINTAIN OPERATIONS OF THE RUNWAYS, TAXIWAYS, APRONS, AND OTHER AIRCRAFT OPERATING AREAS SENSITIVE TO DUST. THE CONTRACTOR SHALL ALSO PROVIDE A WATER TRUCK AND APPLY SUFFICIENT WATER TO CONTROL DUST WITHIN THE WORK AREA AND ENSURE DUST DOES NOT DRIFT INTO AIRCRAFT OPERATING OR PARKING AREAS. THE CONTRACTOR SHALL MAINTAIN ALL PUBLIC ROADS WITHIN 1/2 MILE OF AIRPORT ACCESS ROADS FREE OF DUST AND DEBRIS. THE RPR RESERVES THE RIGHT TO STOP WORK IF NECESSARY IN ORDER TO BRING DUST UNDER CONTROL. FAILURE TO CONTROL THESE ITEMS SHALL RESULT IN SUSPENSION OF PROJECT WORK. NO ADDITIONAL COMPENSATION OR TIME SHALL BE MADE TO THE CONTRACTOR SHOULD LOSS OF PRODUCTIVITY OR DOWN-TIME OCCUR AS A RESULT OF THE RPR LIMITING OR SUSPENDING WORK BECAUSE OF THE CONTRACTOR'S FAILURE TO CONTROL DUST. ADDITIONAL MEASURES MAY BE REQUIRED AS DIRECTED BY THE RPR. ALL COSTS ASSOCIATED WITH PROVIDING AND MAINTAINING A SWEEPER AND WATER TRUCK FOR FOD AND DUST CONTROL SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR LOCATING A HYDRANT AND OBTAINING APPROVAL FROM THE LOCAL WATER AUTHORITY FOR ITS USE AND METERING. THE CONTRACTOR IS RESPONSIBLE FOR PAYING FOR ALL WATER USED FOR DUST CONTROL, COMPACTION, AND ANY OTHER GENERAL CONSTRUCTION USE.

33. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT LOCATIONS AND/OR ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORD DRAWINGS AND WERE FIELD SURVEYED FOR CONFIRMATION ONLY WHERE POSSIBLE. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING COMPLETE OR EXACT AND THE CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION PRIOR TO COMMENCEMENT OF THE WORK. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE RPR IN WRITING OF ANY DISCREPANCY DISCOVERED DURING FIELD VERIFICATION.

34. THE CONTRACTOR MUST CALL DIGSAFE AND LOCATE/VERIFY UTILITY LOCATIONS PRIOR TO COMMENCING EXCAVATION. THE CONTRACTOR SHALL ALSO CONTACT JIM CAULFIELD, FAA SSC MANAGER (TEL. 781-372-5526) FOR ASSISTANCE IN LOCATING UNDERGROUND FAA UTILITIES PRIOR TO COMMENCING EXCAVATION. ALL EXISTING UTILITIES IN THE VICINITY OF ANY EXCAVATION SHALL BE CLEARLY MARKED ON THE GROUND BY THE CONTRACTOR PRIOR TO BEGINNING EXCAVATION. A MINIMUM OF 72 HOURS NOTICE TO THE RPR, AIRPORT MANAGER AND THE UTILITY COMPANY IS REQUIRED WHEN DISRUPTION OF UTILITIES ARE REQUESTED BY THE CONTRACTOR. ALL COSTS ASSOCIATED WITH LOCATING UTILITIES SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS PROJECT ITEMS. ANY DAMAGE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED IMMEDIATELY BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. THE REPAIRS MUST BE INSPECTED AND APPROVED BY THE UTILITY OWNER. THE CONTRACTOR SHALL HAND DIG WHEN WITHIN THREE (3) FEET OF ANY KNOWN OR SUSPECTED UNDERGROUND UTILITY.

35. SMOKING IS PROHIBITED ON AIRPORT PROPERTY DURING CONSTRUCTION OPERATIONS.

36. NO TRUCKS SHALL IDLE FOR LONGER THAN FIVE (5) MINUTES OR BEFORE 7:00 AM OR AFTER 9:00 PM.

Stantec

Stantec Consulting Services Inc.
45 Blue Sky Drive, 3rd Floor
Burlington, MA 01803 U.S.A.
Tel. 781.221.1000
Fax. 781.229.1115
www.stantec.com

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

Dwn.	Chkd.	Dsgn.
	DMZ	

Permit-Seal

Client/Project
LAWRENCE MUNICIPAL AIRPORT
NORTH ANDOVER, MA

RUNWAY 5 END
DRAINAGE IMPROVEMENTS

Title
GENERAL NOTES

Project No.
179450605

Drawing No.	Sheet	Revision
G002	3 of 5	0

PHASE 0:
(PROCUREMENT/MOBILIZATION)

MAJOR ITEMS:
- PERFORM REQUIRED TOPOGRAPHIC SURVEY AND ESTABLISH BASELINE/BENCHMARKS.
- PREPARE SPCD AND OTHER SUBMITTALS FOR REVIEW AND APPROVAL.
- PROCURE LONG LEAD MATERIALS
- PERFORM ANY SUBSURFACE EXPLORATIONS REQUIRED TO DETERMINE THE EXISTING SOIL CHARACTERISTICS.
- LOCATE ALL SUBSURFACE UTILITIES WITHIN THE PROPOSED CONSTRUCTION LIMITS.

PHASE 1:
WORK AREAS: A & B
DURATION: 5 CONSECUTIVE CALENDAR DAYS
WORK SCHEDULE:
- MONDAY - FRIDAY: 7:00 AM - 5:00 PM
- SATURDAY: NO WORK
- SUNDAY: NO WORK

RUNWAY CLOSURES:
- RUNWAY 5-23

RUNWAY CLOSURE NOTES:
1. RUNWAY SHALL BE CLOSED FOR A MAXIMUM OF 1 DAY DURING THIS PHASE.
2. RUNWAY CLOSURE IS REQUIRED FOR EROSION CONTROL INSTALLATION IN WORK AREA B.
3. RUNWAY CLOSURE REQUESTS SHALL BE SUBMITTED VIA EMAIL TO THE AIRPORT MANAGER THROUGH THE RPR A MINIMUM OF 7 DAYS IN ADVANCE.
4. RUNWAY SHALL BE REOPENED AT THE END OF THE WORK SHIFT.

TAXIWAY CLOSURES:
- TAXIWAY A BETWEEN TAXIWAY B AND RUNWAY 5
- TAXIWAY A BETWEEN TAXIWAY E AND RUNWAY 23

TAXIWAY CLOSURE NOTES:
1. TAXIWAYS SHALL ONLY BE CLOSED WHEN RUNWAY 5-23 IS CLOSED UNLESS OTHERWISE APPROVED BY THE AIRPORT MANAGER.

MAJOR WORK ITEMS:
- PLACE BARRICADES, RUNWAY CLOSURE MARKERS AND COVER SIGNS AS REQUIRED FOR RUNWAY/TAXIWAY CLOSURES
- INSTALL SAFETY FENCE AND SIGNAGE
- INSTALL EROSION CONTROLS
- INSTALL CONSTRUCTION EXIT

NOTES:
1. SEE ADDITIONAL NOTES AND REQUIREMENTS THIS SHEET.
2. ALL EROSION CONTROLS SHALL BE INSTALLED AND INSPECTED BY THE RPR AND THE NORTH ANDOVER CONSERVATION COMMISSION PRIOR TO COMMENCING PHASE 2 WORK.

PHASE 2:
WORK AREA: A
DURATION: 5 CONSECUTIVE CALENDAR DAYS (MAY BE CONCURRENT WITH PHASE 3)
WORK SCHEDULE:
- MONDAY - FRIDAY: 7:00 AM - 5:00 PM
- SATURDAY: 7:00 AM - 3:00 PM (AS NEEDED)
- SUNDAY: NO WORK

RUNWAY CLOSURES:
- RUNWAY 5-23

RUNWAY CLOSURE NOTES:
1. RUNWAY SHALL ONLY BE CLOSED WHEN WORKING WITHIN WORK AREA B
2. RUNWAY CLOSURE REQUESTS SHALL BE SUBMITTED VIA EMAIL TO THE AIRPORT MANAGER THROUGH THE RPR A MINIMUM OF 7 DAYS IN ADVANCE.
3. RUNWAY SHALL BE REOPENED AT THE END OF EACH WORK SHIFT

TAXIWAY CLOSURES:
- TAXIWAY A BETWEEN TAXIWAY B AND RUNWAY 5
- TAXIWAY A BETWEEN TAXIWAY E AND RUNWAY 23

MAJOR WORK ITEMS:
- PLACE BARRICADES, RUNWAY CLOSURE MARKERS AND COVER SIGNS AS REQUIRED FOR RUNWAY/TAXIWAY CLOSURES
- INSTALL DRAINAGE PIPE AND MANHOLES

NOTES:
1. SEE ADDITIONAL NOTES AND REQUIREMENTS THIS SHEET.

SIGN LEGEND

A	STOP WAIT FOR ESCORT
B	ACCESS WORK AREA HERE

NOTE:
REFER TO DRAWING G102 FOR SIGN DETAILS

PHASE 3:
WORK AREA: B
DURATION: 35 CONSECUTIVE CALENDAR DAYS
WORK SCHEDULE:
- MONDAY - FRIDAY: 7:00 AM - 5:00 PM
- SATURDAY: 7:00 AM - 3:00 PM (AS NEEDED)
- SUNDAY: NO WORK

RUNWAY CLOSURES:
- NONE

TAXIWAY CLOSURES:
- TAXIWAY A BETWEEN TAXIWAY B AND RUNWAY 5 AS APPROVED BY AIRPORT MANAGER

TAXIWAY CLOSURE NOTES:
1. THE CONTRACTOR MAY REQUEST A PARTIAL CLOSURE OF TAXIWAY A BETWEEN TAXIWAY B AND RUNWAY 5 FOR A PARTICULAR DAY OR TIME IF IT IS DETERMINED BY THE RPR AND THE AIRPORT MANAGER THAT THE CLOSURE IS JUSTIFIED BASED ON THE NEED.
2. ALL TAXIWAY CLOSURE REQUESTS SHALL BE SUBMITTED VIA EMAIL TO THE AIRPORT MANAGER THROUGH THE RPR A MINIMUM OF 24 HOURS IN ADVANCE. APPROVAL OF CLOSURE REQUESTS WILL BE AT THE DISCRETION OF THE AIRPORT MANAGER AND WILL BE BASED ON THE PREDICTED WIND AND WEATHER AND THE OPERATIONAL NEED OF THE TAXIWAY FOR THE SPECIFIC DAY OR TIME THE CLOSURE IS BEING REQUESTED FOR.
3. WHEN A TAXIWAY CLOSURE REQUEST IS APPROVED, LOW PROFILE BARRICADES SHALL BE PLACED AT LOCATIONS AS SHOWN ON THE PLAN IMMEDIATELY FOLLOWING NOTIFICATION FROM THE AIRPORT MANAGER THAT THE TAXIWAY HAS BEEN CLOSED.
4. THE TAXIWAY SHALL BE VACUUM SWEPT CLEAN AND SHALL BE FREE OF ALL FOREIGN OBJECT DEBRIS (FOD) PRIOR TO REQUESTING A REOPENING INSPECTION BY THE AIRPORT MANAGER. ALL BARRICADES SHALL REMAIN IN PLACE UNTIL THE AIRPORT MANAGER HAS INSPECTED THE PAVEMENT AND APPROVED THE REMOVAL OF THE BARRICADES.

MAJOR WORK ITEMS:
- PLACE LOW PROFILE BARRICADES FOR TAXIWAY CLOSURE WHEN REQUIRED (SEE TAXIWAY CLOSURE NOTES)
- INSTALL DRAINAGE PIPE AND MANHOLES
- REMOVE VEGETATION
- INSTALL STONE CHECK DAM
- INSTALL SANDBAG DIVERSION DAM AND PUMP
- EXCAVATION, EMBANKMENT AND PLACEMENT OF SUBBASE MATERIAL FOR STREAM RESTORATION
- REMOVE AND REPLACE CHAIN LINK FENCE
- TOPSOIL, SEED AND MULCH
- INSTALL TURF REINFORCEMENT MAT AND EROSION CONTROL BLANKET

NOTES:
1. SEE ADDITIONAL NOTES AND REQUIREMENTS THIS SHEET.
2. ALL DRAINAGE PIPE, MANHOLES, SANDBAG DAMS, CHECK DAMS SHALL BE INSTALLED AND OPERATIONAL PRIOR TO COMMENCING ANY WORK WITHIN THE INTERMITTENT STREAM.

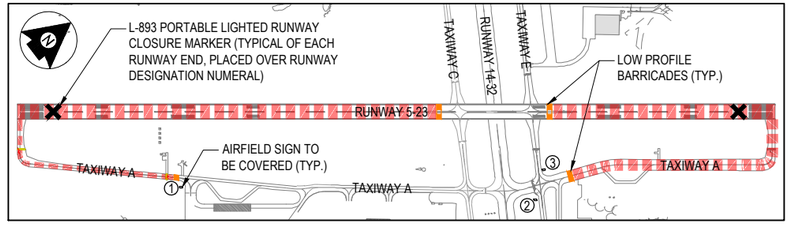
PHASE 4:
WORK AREA: B
DURATION: 5 CONSECUTIVE CALENDAR DAYS
WORK SCHEDULE:
- DECEMBER 1ST - 19TH OR APRIL 1ST - 30TH
- MONDAY - FRIDAY: 7:00 AM - 5:00 PM
- SATURDAY: NO WORK
- SUNDAY: NO WORK

RUNWAY CLOSURES:
- NONE

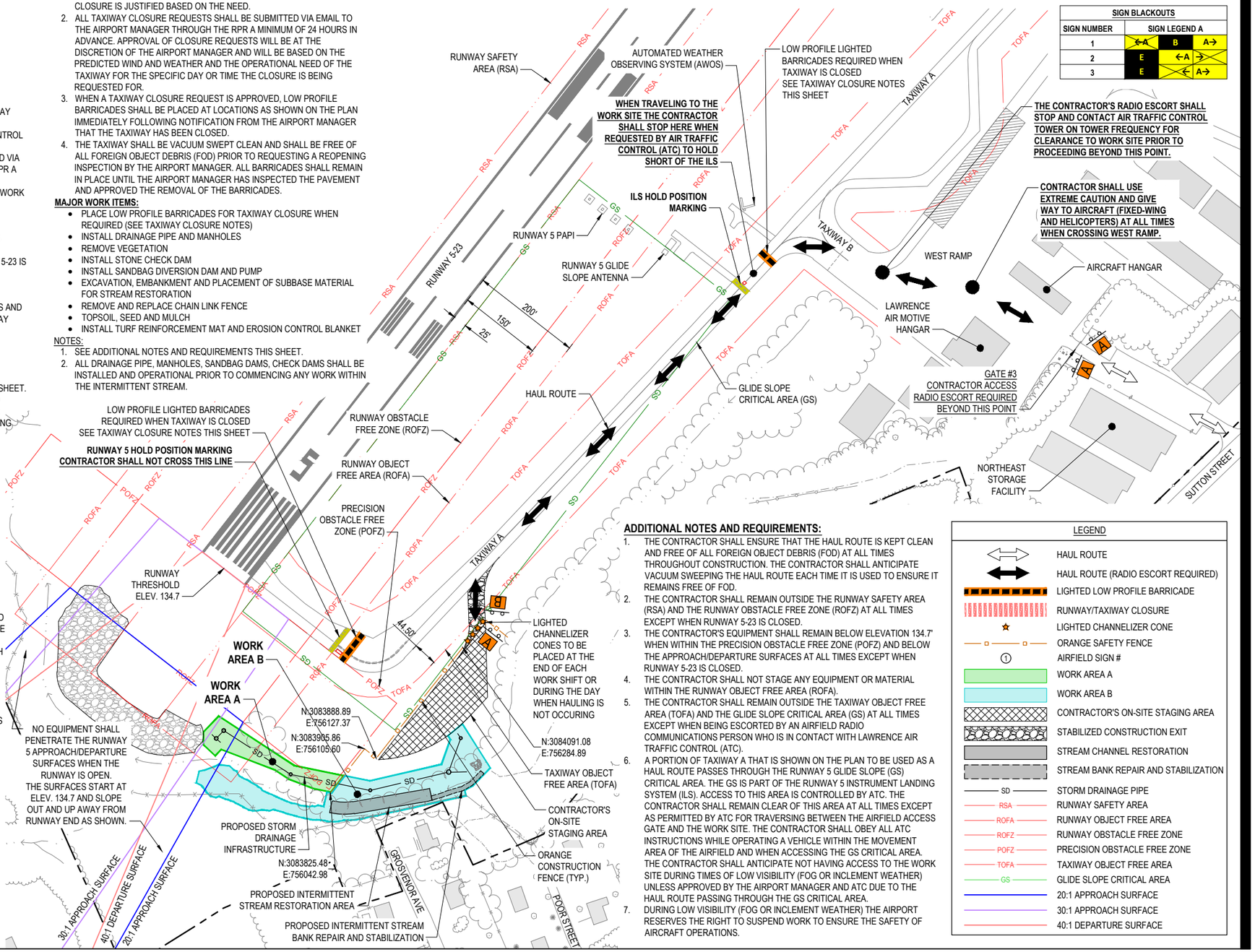
TAXIWAY CLOSURES:
- NONE

MAJOR WORK ITEMS:
- PLANT LIVE STAKES, STICKERS AND WATTLES

NOTES:
1. SEE ADDITIONAL NOTES AND REQUIREMENTS THIS SHEET.



RUNWAY/TAXIWAY CLOSURE PLAN



SIGN BLACKOUTS	
SIGN NUMBER	SIGN LEGEND A
1	←A B A→
2	E ←A →
3	E ← A→

ADDITIONAL NOTES AND REQUIREMENTS:
1. THE CONTRACTOR SHALL ENSURE THAT THE HAUL ROUTE IS KEPT CLEAN AND FREE OF ALL FOREIGN OBJECT DEBRIS (FOD) AT ALL TIMES THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL ANTICIPATE VACUUM SWEEPING THE HAUL ROUTE EACH TIME IT IS USED TO ENSURE IT REMAINS FREE OF FOD.
2. THE CONTRACTOR SHALL REMAIN OUTSIDE THE RUNWAY SAFETY AREA (RSA) AND THE RUNWAY OBSTACLE FREE ZONE (ROFZ) AT ALL TIMES EXCEPT WHEN RUNWAY 5-23 IS CLOSED.
3. THE CONTRACTOR'S EQUIPMENT SHALL REMAIN BELOW ELEVATION 134.7' WHEN WITHIN THE PRECISION OBSTACLE FREE ZONE (POFZ) AND BELOW THE APPROACH/DEPARTURE SURFACES AT ALL TIMES EXCEPT WHEN RUNWAY 5-23 IS CLOSED.
4. THE CONTRACTOR SHALL NOT STAGE ANY EQUIPMENT OR MATERIAL WITHIN THE RUNWAY OBJECT FREE AREA (ROFA).
5. THE CONTRACTOR SHALL REMAIN OUTSIDE THE TAXIWAY OBJECT FREE AREA (TOFA) AND THE GLIDE SLOPE CRITICAL AREA (GS) AT ALL TIMES EXCEPT WHEN BEING ESCORTED BY AN AIRFIELD RADIO COMMUNICATIONS PERSON WHO IS IN CONTACT WITH LAWRENCE AIR TRAFFIC CONTROL (ATC).
6. A PORTION OF TAXIWAY A THAT IS SHOWN ON THE PLAN TO BE USED AS A HAUL ROUTE PASSES THROUGH THE RUNWAY 5 GLIDE SLOPE (GS) CRITICAL AREA. THE GS IS PART OF THE RUNWAY 5 INSTRUMENT LANDING SYSTEM (ILS). ACCESS TO THIS AREA IS CONTROLLED BY ATC. THE CONTRACTOR SHALL REMAIN CLEAR OF THIS AREA AT ALL TIMES EXCEPT AS PERMITTED BY ATC FOR TRAVERSING BETWEEN THE AIRFIELD ACCESS GATE AND THE WORK SITE. THE CONTRACTOR SHALL OBEY ALL ATC INSTRUCTIONS WHILE OPERATING A VEHICLE WITHIN THE MOVEMENT AREA OF THE AIRFIELD AND WHEN ACCESSING THE GS CRITICAL AREA. THE CONTRACTOR SHALL ANTICIPATE NOT HAVING ACCESS TO THE WORK SITE DURING TIMES OF LOW VISIBILITY (FOG OR INCLEMENT WEATHER) UNLESS APPROVED BY THE AIRPORT MANAGER AND ATC DUE TO THE HAUL ROUTE PASSING THROUGH THE GS CRITICAL AREA.
7. DURING LOW VISIBILITY (FOG OR INCLEMENT WEATHER) THE AIRPORT RESERVES THE RIGHT TO SUSPEND WORK TO ENSURE THE SAFETY OF AIRCRAFT OPERATIONS.

LEGEND

	HAUL ROUTE
	HAUL ROUTE (RADIO ESCORT REQUIRED)
	LIGHTED LOW PROFILE BARRICADE
	RUNWAY/TAXIWAY CLOSURE
	LIGHTED CHANNELIZER CONE
	ORANGE SAFETY FENCE
①	AIRFIELD SIGN #
	WORK AREA A
	WORK AREA B
	CONTRACTOR'S ON-SITE STAGING AREA
	STABILIZED CONSTRUCTION EXIT
	STREAM CHANNEL RESTORATION
	STREAM BANK REPAIR AND STABILIZATION
SD	STORM DRAINAGE PIPE
RSA	RUNWAY SAFETY AREA
ROFA	RUNWAY OBJECT FREE AREA
ROFZ	RUNWAY OBSTACLE FREE ZONE
POFZ	PRECISION OBSTACLE FREE ZONE
TOFA	TAXIWAY OBJECT FREE AREA
GS	GLIDE SLOPE CRITICAL AREA
	20:1 APPROACH SURFACE
	30:1 APPROACH SURFACE
	40:1 DEPARTURE SURFACE

Stantec

Stantec Consulting Services Inc.
45 Blue Sky Drive, 3rd Floor
Burlington, MA 01803 U.S.A.
Tel. 781.221.1000
Fax. 781.229.1115
www.stantec.com

N

0 100' 200'

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
	DMZ Dwn.		DMZ Dsgn.

Permit-Seal

Client/Project
LAWRENCE MUNICIPAL AIRPORT
NORTH ANDOVER, MA

RUNWAY 5 END
DRAINAGE IMPROVEMENTS

Title
SAFETY & PHASING PLAN

Project No.
179450605

Drawing No. G101 | Sheet 4 of 5 | Revision 0

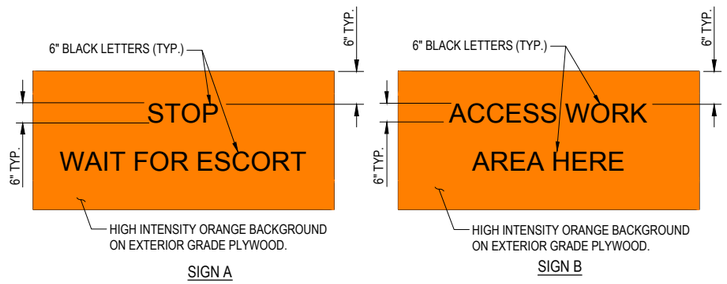
Last Modified: 02/10/2025 at 5:38PM EST
U:\179450605\cadd\cad\dgn_drawing\sheet_files\179450605_02_G101_traffic_and_phasing_plan.dwg
02/10/2025 5:34 AM By: ZaccariD, Dominic
ORIGINAL SHEET - ANSI D

SAFETY AND PHASING NOTES:

1. SAFETY/SECURITY PLAN: THE CONTRACTOR SHALL REVIEW THE OUTLINED REQUIREMENTS AND PROCEDURES CONTAINED IN THE FAA ADVISORY CIRCULAR NO. 150/5370-2G OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION AND THE CONSTRUCTION SAFETY AND PHASING PLAN (CSPP), A COPY OF WHICH IS INCLUDED IN THE SPECIFICATIONS. THE CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL A SAFETY PLAN COMPLIANCE DOCUMENT (SPCD) IN ACCORDANCE WITH THE REQUIREMENTS OF AC 150/5370-2G. THE AIRPORT MANAGER AND THE ENGINEER SHALL REVIEW THE CONTRACTOR'S SPCD, AND THE APPROVAL OF THE PLAN WILL BE REQUIRED PRIOR TO THE CONTRACTOR'S MOBILIZATION FOR THE PROJECT. THE SPCD SHALL ADDRESS THE FOLLOWING MAJOR ITEMS AT A MINIMUM AS THEY PERTAIN TO THE SCHEDULED WORK EFFORTS:
   - NOTIFICATION OF SCHEDULED CONSTRUCTION ACTIVITIES.
   - CONSTRUCTION ACTIVITIES NEAR RUNWAY AND TAXIWAY SAFETY AREAS, OBSTACLE FREE ZONES, AND OTHER AIRPORT OPERATIONAL AREAS.
   - PROCEDURES AND REQUIREMENTS FOR RUNWAY AND TAXIWAY CLOSURES.
   - DAILY AIRFIELD AND RADIO COMMUNICATIONS.
   - PLACEMENT OF SAFETY FENCE
   - CONSTRUCTION AND PUBLIC ROADWAY SIGNAGE.
   - GATE ACCESS PROCEDURES.
2. SAFETY OFFICER: THE CONTRACTOR SHALL PROVIDE A SAFETY OFFICER/POINT OF CONTACT PERSON WHO CAN BE CONTACTED 24 HOURS A DAY-SEVEN DAYS A WEEK FOR THE DURATION OF THE PROJECT. THIS PERSON SHALL BE RESPONSIBLE FOR TAKING IMMEDIATE ACTION TO CORRECT ANY CONSTRUCTION ACTIVITIES IDENTIFIED AS NOT IN THE BEST INTEREST OF AIRPORT'S SAFE OPERATION AND/OR SECURITY.
3. AT NO TIME SHALL THE CONTRACTOR CROSS/ACCESS ACTIVE RUNWAYS/TAXIWAYS OR STAGE EQUIPMENT IN ACTIVE RUNWAY APPROACHES, THE RUNWAY OBSTACLE FREE ZONE OR TAXIWAY OBJECT FREE AREAS WITHOUT PRIOR COORDINATION WITH THE AIRPORT MANAGER AND THE RPR. CROSSING OF ACTIVE RUNWAYS ARE STRICTLY PROHIBITED. THE CONTRACTOR'S RADIO COMMUNICATIONS PERSONNEL SHALL MONITOR AND COMMUNICATE WITH THE TOWER ON THE FOLLOWING FREQUENCY:
   - LAWRENCE TOWER: 119.25 (7:00AM-10:00PM)

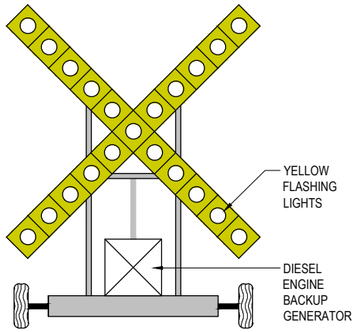
   IF RESPONDING TO AN EMERGENCY BETWEEN 10:00PM - 7:00AM THE CONTRACTOR SHALL MONITOR AND COMMUNICATE WITH OTHER PILOTS ON THE FOLLOWING FREQUENCY:
   - LAWRENCE COMMON TRAFFIC ADVISORY FREQUENCY (CTAF): 122.8 (10:00PM - 7:00AM)
4. THE CONTRACTOR SHALL HAVE ON SITE AT ALL TIMES AT LEAST ONE RADIO EQUIPPED ESCORT VEHICLE WITH QUALIFIED OPERATOR WHO SHALL MONITOR THE RADIO DURING ALL WORKING HOURS. CONTRACTOR'S RADIO PERSONNEL SHALL BE REQUIRED TO MEET LAWRENCE'S SAFETY AND SECURITY REQUIREMENTS AND SHALL MAINTAIN PROPER RADIO PROTOCOL. THE CONTRACTOR SHALL PROVIDE ALL APPROVED VEHICLES, RADIOS, EQUIPMENT, PERSONNEL AND PRIOR TRAINING FOR THIS PURPOSE. THE CONTRACTOR SHALL NOTE THAT CROSSING OF ACTIVE RUNWAYS ARE STRICTLY PROHIBITED.
5. ALL CONSTRUCTION VEHICLES EXCEPT FOR VEHICLES MAKING PERIODIC DELIVERIES, SHALL DISPLAY AN ORANGE/WHITE CHECKERED FLAG OR SHALL HAVE AN AMBER/YELLOW STROBE BEACON LIGHT ATTACHED TO THE ROOF AND BE CLEARLY IDENTIFIED BY EITHER ASSIGNED INITIALS OR NUMBERS PROMINENTLY DISPLAYED ON EACH SIDE OF VEHICLE. THERE SHALL BE NO SEPARATE PAYMENT FOR PROVIDING FLASHING YELLOW BEACONS AND ORANGE/WHITE CHECKERED FLAGS IN ACCORDANCE WITH FAA AC 150/5210-5D.
6. CONSTRUCTION PERSONNEL: ALL PERSONNEL SHALL WEAR APPROPRIATE REFLECTIVE SAFETY VESTS AND CUSTOMARY PERSONAL PROTECTIVE EQUIPMENT (PPE) AT ALL TIMES WHEN WORKING ON THE AIRFIELD AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL MAKE ALL PERSONNEL AWARE OF SAFETY REQUIREMENTS AND THE DANGERS OF WORKING ADJACENT TO ACTIVE AIRCRAFT OPERATIONAL AREAS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL ENSURE THAT ALL PERSONNEL UNDERSTAND AND COMPLY WITH THE AIRFIELD'S SAFETY/SECURITY REQUIREMENTS AND THE FOREIGN OBJECT DEBRIS (FOD) PROCEDURES.
7. IN THE EVENT OF A CONSTRUCTION ACCIDENT THE CONTRACTOR SHALL CALL 911 AND IMMEDIATELY NOTIFY THE RPR AND THE AIRPORT MANAGER.
8. ACTIVE TAXIWAYS AND RAMP AREAS SHALL BE KEPT CLEAN AT ALL TIMES WHEN UTILIZING THESE PAVEMENTS AS HAUL ROUTES.
9. ANY WORK THAT NEEDS TO BE PERFORMED ON A RUNWAY OR WITHIN THE OBSTACLE FREE ZONE (OFZ) OF A RUNWAY SHALL REQUIRE A RUNWAY CLOSURE. ALL RUNWAY CLOSURES MUST BE COORDINATED IN WRITING WITH THE AIRPORT MANAGER THROUGH THE RPR A MINIMUM OF 7 DAYS IN ADVANCE.
10. PRIOR TO REOPENING ANY RUNWAY OR TAXIWAY PAVEMENTS (INCLUDING DAILY/NIGHTLY CLOSURES):
    - ALL PAVEMENTS SHALL BE CLEANED AND FREE FROM FOD
    - ALL TRENCHES AND EXCAVATIONS ADJACENT TO PAVED SURFACES AND WITHIN RUNWAY/TAXIWAY SAFETY AREAS SHALL BE BACKFILLED AND GRADED TO WITHIN +/- 2 INCHES OF ADJACENT EXISTING GRADES. ALL OTHER TRENCHES SHALL BE PROTECTED AND LIGHTED.
    - THE CONTRACTOR SHALL REQUEST AN INSPECTION OF THE WORK AREA BY THE AIRPORT MANAGER AND THE RPR. THE CONTRACTOR SHALL CORRECT ANY HAZARDS WHICH MAY PRESENT A SAFETY CONCERN TO AIRCRAFT, VEHICLES OR PERSONS AS DETERMINED BY THE AIRPORT MANAGER AND THE RPR.

10. CLOSURE BARRICADES/CONES: ALL REQUIRED LIGHTED SAFETY BARRICADES, LIGHTED CHANNELIZER CONES, FLAGGED STAKES, TRAFFIC CONES, TEMPORARY TRAFFIC SIGNS, COVERED AIRFIELD SIGNS, COVERED AIRFIELD LIGHTING, ETC., SHALL BE IN PLACE PRIOR TO THE COMMENCEMENT OF WORK. THERE SHALL BE NO SEPARATE PAYMENT FOR FURNISHING, PLACING, RELOCATING, MAINTAINING, AND REMOVAL OF THESE AS MAY BE REQUIRED BY THE AIRPORT MANAGER OR THE ENGINEER TO ENSURE SAFETY OVER THE LIFE OF THE PROJECT. THIS WORK SHALL BE INCIDENTAL TO PAY ITEM DIV II-27.01 "CONSTRUCTION SAFETY AND PHASING" PAY ITEM. AT THE COMPLETION OF THE PROJECT, ALL LIGHTED SAFETY BARRICADES, CHANNELIZER CONES AND SIGNS SHALL BE REMOVED, AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. METHODS FOR COVERING AIRFIELD SIGNS AND LIGHTS (BLANK PANELS/LENS, SECURED FABRIC, ETC.) SHALL BE AS APPROVED BY THE RPR. SIGNS IDENTIFIED TO BE COVERED THAT WILL BE REMOVED/REPLACED AS PART OF THIS PROJECT MAY HAVE PANELS OR SIGN REMOVED AT START OF CONSTRUCTION IN LIEU OF COVERING THE SIGN.
11. MATERIAL STOCKPILING AND EQUIPMENT PARKING: NO MATERIAL SHALL BE STOCKPILED WITHIN THE OBJECT FREE AREA OF AN OPEN RUNWAY OR TAXIWAY. NO EQUIPMENT SHALL BE PARKED WITH AN ACTIVE RUNWAY/TAXIWAY OBJECT FREE AREA WHEN NOT IN USE AND/OR OUTSIDE WORK HOURS.



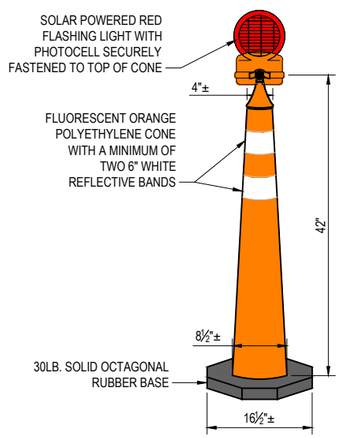
CONSTRUCTION SIGN NOTES:
1. SIGN SHALL CONFORM TO LATEST FHWA "STANDARD HIGHWAY SIGNS"
2. SIGNS SHALL NOT BE MOUNTED HIGHER THAN 4' ABOVE EXISTING GRADE.
3. IF WORKING IN MULTIPLE NON ADJACENT AREAS, THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL SIGNS REQUIRED AT THEIR OWN EXPENSE. THESE SIGNS SHALL REMAIN THE CONTRACTORS PROPERTY AT THE COMPLETION OF THE PROJECT.
4. THE CONTRACTOR SHALL ANCHOR THE SIGNS TO RESIST PROP WASH AND/OR WIND.
5. ALL COSTS ASSOCIATED WITH FURNISHING, INSTALLING AND MAINTAINING SIGNS SHALL BE INCIDENTAL TO THE VARIOUS CONTRACT PAY ITEMS.
6. REFER TO PHASING PLAN FOR SIGN LOCATIONS.

CONSTRUCTION SIGNAGE
NOT TO SCALE



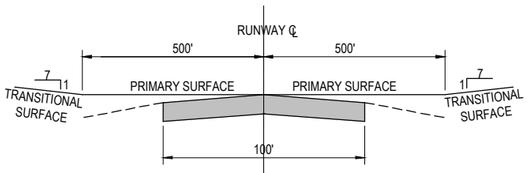
LIGHTED RUNWAY CLOSURE MARKER NOTES:
1. ALL COSTS ASSOCIATED WITH COORDINATING WITH LAWRENCE MUNICIPAL AIRPORT, SUPPLYING, HAULING, PLACING, SECURING, CONNECTIONS FOR POWER, MAINTAINING, FUELING AND RELOCATING THESE MARKERS SHALL BE INCIDENTAL TO THE THE VARIOUS CONTRACT PAY ITEMS.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING LIGHTED RUNWAY CLOSURE MARKERS WHILE THEY ARE IN USE.

LIGHTED RUNWAY CLOSURE MARKER
NOT TO SCALE

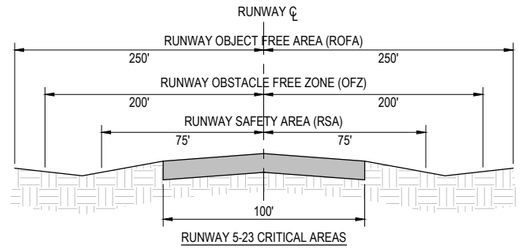


SAFETY FENCE, LIGHTED CHANNELIZER CONE AND LIGHTED LOW PROFILE BARRICADE NOTES:
1. ALL COSTS ASSOCIATED WITH FURNISHING, INSTALLING AND MAINTAINING SAFETY FENCE, BARRICADES, AND CONES SHALL BE INCIDENTAL TO THE VARIOUS CONTRACT PAY ITEMS.
2. THE LIGHTED SAFETY BARRICADES SHALL BE PLACED WHERE SHOWN ON PLANS AND BE USED WHEN A WORK AREA IS DIRECTLY ADJACENT TO AN ACTIVE TAXIWAY OR RUNWAY TO KEEP AIRCRAFTS AND VEHICLES FROM TRAVELING INTO A WORK AREA.
3. BARRICADES SHALL BE INTERCONNECTED ON AIRFIELD PAVEMENTS AND WITHIN A.O.A.'s. BARRICADE SPACING MAY BE INCREASED TO 4' ON CENTER IN ALL OTHER AREAS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RELOCATING AND/OR PROVIDING ADDITIONAL BARRICADES AROUND THE SITE AS NECESSARY TO ACCOMMODATE THE PROPOSED WORK.
5. THE CONTRACTOR SHALL ENSURE THE CONTINUOUS OPERATION OF ALL LIGHTS FOR THE DURATION OF THE PROJECT. LIGHTS AND BATTERIES SHALL BE REPLACED AS NEEDED.
6. THE BARRICADES SHALL BE FILLED WITH WATER.
7. CHANNELIZER CONES SHALL BE PLACED CONTINUOUSLY AT 4' ON CENTER.

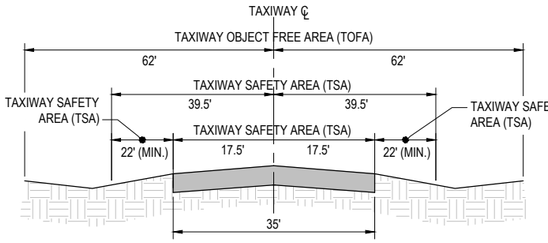
LIGHTED CHANNELIZER CONE
NOT TO SCALE



RUNWAY 5-23 FAR PART 77 IMAGINARY SURFACES SCHEMATICS
NOT TO SCALE

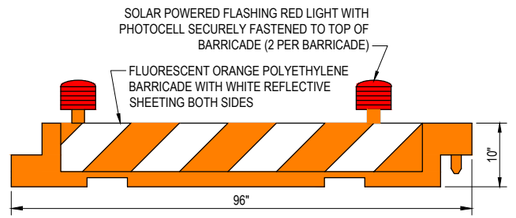


RUNWAY 5-23 CRITICAL AREAS

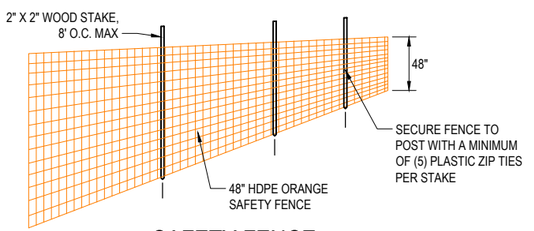


TAXIWAY CRITICAL AREAS

CRITICAL AREAS SCHEMATICS
NOT TO SCALE



LIGHTED LOW PROFILE BARRICADE
NOT TO SCALE



SAFETY FENCE
NOT TO SCALE

Stantec

Stantec Consulting Services Inc.
45 Blue Sky Drive, 3rd Floor
Burlington, MA 01803 U.S.A.
Tel. 781.221.1000
Fax. 781.229.1115
www.stantec.com

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

Dwn.	Chkd.	Dsgn.
	DMZ	

Permit-Seal

Client/Project
LAWRENCE MUNICIPAL AIRPORT
NORTH ANDOVER, MA

RUNWAY 5 END
DRAINAGE IMPROVEMENTS

Title
SAFETY & PHASING NOTES & DETAILS

Project No.
179450605

Drawing No.	Sheet	Revision
G102	5 of 5	0

APPENDIX B

7460 Plans

Page Intentionally Blank

HAUL ROUTE / STAGING AREA POINTS				
POINT #	LATITUDE	LONGITUDE	SITE ELEVATION (SE)	ABOVE GRADE LEVEL (AGL)
1	N42° 42' 42.86"	W71° 07' 25.03"	145'	15'
2	N42° 42' 44.43"	W71° 07' 31.00"	139'	15'
3	N42° 42' 38.07"	W71° 07' 39.19"	132'	15'
4	N42° 42' 37.09"	W71° 07' 38.89"	127'	15'
5	N42° 42' 34.84"	W71° 07' 41.27"	120'	35'
6	N42° 42' 35.08"	W71° 07' 39.77"	122'	35'
7	N42° 42' 36.14"	W71° 07' 38.41"	123'	35'
8	N42° 42' 37.48"	W71° 07' 38.45"	128'	35'

RUNWAY OBJECT FREE AREA (ROFA)
RUNWAY OBSTACLE FREE ZONE (ROFZ)
RUNWAY SAFETY AREA (RSA)
RUNWAY 5-23
RUNWAY 5 GLIDE SLOPE ANTENNA
HAUL ROUTE
TAXIWAY A
TAXIWAY B
TAXIWAY OBJECT FREE AREA (TOFA)
GLIDE SLOPE CRITICAL AREA (GS)
WEST RAMP
AIRCRAFT HANGAR
LAWRENCE AIR MOTIVE HANGAR
NORTHEAST STORAGE FACILITY
PRECISION OBSTACLE FREE ZONE (POFZ)
RUNWAY THRESHOLD ELEV. 134.7
PROPOSED DRAINAGE INFRASTRUCTURE
PROPOSED INTERMITTENT STREAM RESTORATION AREA
30:1 APPROACH SURFACE
40:1 DEPARTURE SURFACE
20:1 APPROACH SURFACE
CHARLES STREET
MATTHEWS WAY
GROSVENOR AVE
POOR STREET
WRIGHT AVE
WOOD AVE

LEGEND

- CONTRACTOR'S HAUL ROUTE
- CONTRACTOR'S STAGING AREA
- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- ROFZ — RUNWAY OBSTACLE FREE ZONE
- POFZ — PRECISION OBSTACLE FREE ZONE
- TOFA — TAXIWAY OBJECT FREE AREA
- GS — GLIDE SLOPE CRITICAL AREA
- 20:1 APPROACH SURFACE
- 30:1 APPROACH SURFACE
- 40:1 DEPARTURE SURFACE

N

0 100' 200'

Stantec

Stantec Consulting Services Inc.
45 Blue Sky Drive, 3rd Floor
Burlington, MA 01803 U.S.A.
Tel. 781.221.1000
Fax. 781.229.1115
www.stantec.com

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

DMZ Dwn. | Chkd. | DMZ Dsgn.

Permit-Seal

Client/Project
LAWRENCE MUNICIPAL AIRPORT
NORTH ANDOVER, MA

RUNWAY 5 END
DRAINAGE IMPROVEMENTS

Title
7460 PLAN - HAUL ROUTE/ STAGING AREA

Project No.
179450605

Drawing No. 7460-1 | Sheet 1 of 3 | Revision 0

Last Modified: 02/10/2025 at 5:38PM EST

U:\179450605\navigation\0_drawing\sheet_files\7460\179450605_7460_construction_plan-staging-areas.dwg
02/10/2025 5:38 PM By: Zacarias Sanchez

ORIGINAL SHEET - ANSI D

WORK AREA A POINTS				
POINT #	LATITUDE	LONGITUDE	SITE ELEVATION (SE)	ABOVE GRADE LEVEL (AGL)
1	N42° 42' 35.82"	W71° 07' 44.98"	109'	35'
2	N42° 42' 35.27"	W71° 07' 45.71"	96'	35'
3	N42° 42' 34.39"	W71° 07' 42.31"	105'	35'
4	N42° 42' 34.74"	W71° 07' 41.93"	115'	35'

RUNWAY OBJECT FREE AREA (ROFA)
RUNWAY OBSTACLE FREE ZONE (ROFZ)
RUNWAY SAFETY AREA (RSA)
RUNWAY 5-23
RUNWAY 5 GLIDE SLOPE ANTENNA
HAUL ROUTE
TAXIWAY A
TAXIWAY B
TAXIWAY OBJECT FREE AREA (TOFA)
GLIDE SLOPE CRITICAL AREA (GS)
WEST RAMP
AIRCRAFT HANGAR
LAWRENCE AIR MOTIVE HANGAR
NORTHEAST STORAGE FACILITY
PRECISION OBSTACLE FREE ZONE (POFZ)
RUNWAY THRESHOLD ELEV. 134.7
PROPOSED DRAINAGE INFRASTRUCTURE
PROPOSED INTERMITTENT STREAM RESTORATION AREA
30:1 APPROACH SURFACE
40:1 DEPARTURE SURFACE
20:1 APPROACH SURFACE
CHARLES STREET
MATTHEWS WAY
GROSVENOR AVE
POOR STREET
WRIGHT AVE
WOOD AVE

LEGEND

- WORK AREA A
- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- ROFZ — RUNWAY OBSTACLE FREE ZONE
- POFZ — PRECISION OBSTACLE FREE ZONE
- TOFA — TAXIWAY OBJECT FREE AREA
- GS — GLIDE SLOPE CRITICAL AREA
- 20:1 APPROACH SURFACE
- 30:1 APPROACH SURFACE
- 40:1 DEPARTURE SURFACE

N

0 100' 200'

Stantec

Stantec Consulting Services Inc.
45 Blue Sky Drive, 3rd Floor
Burlington, MA 01803 U.S.A.
Tel. 781.221.1000
Fax. 781.229.1115
www.stantec.com

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
	DMZ Dwn.	Chkd.	DMZ Dsgn.

Permit-Seal

Client/Project
LAWRENCE MUNICIPAL AIRPORT
NORTH ANDOVER, MA

RUNWAY 5 END
DRAINAGE IMPROVEMENTS

Title
7460 PLAN - WORK AREA A

Project No.
179450605

Drawing No. 7460-2
Sheet 2 of 3
Revision 0

WORK AREA B POINTS				
POINT #	LATITUDE	LONGITUDE	SITE ELEVATION (SE)	ABOVE GRADE LEVEL (AGL)
1	N42° 42' 35.06"	W71° 07' 45.31"	94'	35'
2	N42° 42' 34.53"	W71° 07' 45.71"	88'	35'
3	N42° 42' 33.74"	W71° 07' 42.87"	100'	35'
4	N42° 42' 34.50"	W71° 07' 38.04"	115'	35'
5	N42° 42' 35.66"	W71° 07' 39.02"	122'	35'
6	N42° 42' 35.08"	W71° 07' 39.77"	122'	35'
7	N42° 42' 34.74"	W71° 07' 41.93"	115'	35'
8	N42° 42' 34.39"	W71° 07' 42.31"	105'	35'

RUNWAY OBJECT FREE AREA (ROFA)
RUNWAY OBSTACLE FREE ZONE (ROFZ)
RUNWAY SAFETY AREA (RSA)
RUNWAY 5-23
RUNWAY 5 GLIDE SLOPE ANTENNA
HAUL ROUTE
TAXIWAY A
TAXIWAY B
TAXIWAY OBJECT FREE AREA (TOFA)
GLIDE SLOPE CRITICAL AREA (GS)
PRECISION OBSTACLE FREE ZONE (POFZ)
RUNWAY THRESHOLD ELEV. 134.7
PROPOSED DRAINAGE INFRASTRUCTURE
PROPOSED INTERMITTENT STREAM RESTORATION AREA
30:1 APPROACH SURFACE
40:1 DEPARTURE SURFACE
20:1 APPROACH SURFACE
WEST RAMP
AIRCRAFT HANGAR
LAWRENCE AIR MOTIVE HANGAR
NORTHEAST STORAGE FACILITY
WOOD AVE
WRIGHT AVE
GROSVENOR AVE
POOR STREET
MATHEWS WAY
CHARLES STREET

LEGEND

- WORK AREA B
- RSA — RUNWAY SAFETY AREA
- ROFA — RUNWAY OBJECT FREE AREA
- ROFZ — RUNWAY OBSTACLE FREE ZONE
- POFZ — PRECISION OBSTACLE FREE ZONE
- TOFA — TAXIWAY OBJECT FREE AREA
- GS — GLIDE SLOPE CRITICAL AREA
- 20:1 APPROACH SURFACE
- 30:1 APPROACH SURFACE
- 40:1 DEPARTURE SURFACE

N

0 100' 200'

Stantec

Stantec Consulting Services Inc.
45 Blue Sky Drive, 3rd Floor
Burlington, MA 01803 U.S.A.
Tel. 781.221.1000
Fax. 781.229.1115
www.stantec.com

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
	DMZ Dwn.	Chkd.	DMZ Dsgn.

Permit-Seal

Client/Project
LAWRENCE MUNICIPAL AIRPORT
NORTH ANDOVER, MA

RUNWAY 5 END
DRAINAGE IMPROVEMENTS

Title
7460 PLAN - WORK AREA B

Project No.
179450605

Drawing No. 7460-3

Sheet 3 of 3

Revision 0

APPENDIX C

Project Emergency Contacts List

Page Intentionally Blank

Insert Project Emergency Contact List here

Page Intentionally Blank

APPENDIX B

Soil Waste Characterization

Page Intentionally Blank

Stantec

Memo

To:	Dominic Zazzaro Burlington, MA	From:	Matthew Muto, Charles Young Quincy, MA
File:	Lawrence Airport Waste Characterization	Date:	March 28, 2024

Reference: Lawrence Municipal Airport Runway 5 Drainage Soil Waste Characterization

Background and Field Activities

The Lawrence Municipal Airport (LWM) is located at 492 Sutton Street, in North Andover, Massachusetts and is owned and operated by the City of Lawrence. The LWM (Site) was established in 1934 and can accommodate a full range of aircraft, from single and multi-engine planes to smaller jets and helicopters. On February 26, 2024 Stantec mobilized to the Site to collect soil disposal pre-characterization samples at the end of Runway 5 at the LWM. The purpose of this sampling was to characterize soil for waste disposal that would be generated as part of the Runway 5 drainage improvements. Field activities included the advancement of six soil borings (B-1 thru B-6) up to four feet bgs along the proposed stream restoration area and the advancement of six soil borings (B-7 thru B-12) up to eight feet bgs along the proposed new storm drain-pipe area. A site location map is provided as Figure 1 and a site plan depicting the location of the borings is provided as Figure 2. Borings were advanced by Geosearch, Inc. of Sterling, Massachusetts utilizing direct push methods with a track mounted Geoprobe drill rig. Each boring was screened every one-foot interval with a photoionization detector (PID) for the presence of total organic vapors (TOVs). PID readings were measured at 0.0 parts per million (ppm) for all intervals. No visual or olfactory evidence of impacted soils was observed. The subsurface stratigraphy along the proposed stream restoration area at B-1, B-2, and B-3 primarily consisted of fine sand and silt with trace amounts of gravel and clay from ground surface to four feet bgs and subsurface soils at borings B-4, B-5, and B-6 consisted of fine to coarse sand with trace amounts of clay and gravel. The subsurface overburden soil strata along the proposed storm drain-pipe area at B-7, B-8, B-9, B-10 generally consisted of fine sand and silt with trace amounts of gravel, while subsurface soils at B-11 and B-12 primarily consisted of fine to medium sand with trace amounts of clay and gravel.

A total of four composite samples were collected. Two composite samples were collected from the proposed stream restoration area (B-1, B-2, B-3 COMP and B-4, B-5, B-6 COMP) and two composite samples were collected from the proposed new storm drain-pipe area (B-7, B-8, B-9 COMP and B-10, B-11, B-12 COMP). The four composite soil samples were submitted for analysis of total petroleum hydrocarbons (TPH), RCRA 8 metals, semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), pesticides, herbicides, reactivity, conductivity, pH/corrosivity, and ignitability/flashpoint to Phoenix Environmental Laboratories in Manchester, Connecticut. The soil sample for analysis of VOCs was collected as a grab sample from 2-3 feet bgs at B-2, B-4, B-8 and B-10. Additionally, four composite samples, two from the proposed stream restoration area and two from the proposed new storm drain-pipe area were collected for analysis of Per and polyfluoroalkyl substances (PFAS). Samples for PFAS were collected from ground surface to 0.5 feet bgs using a metal hand auger. A mixture of Alconox and distilled water was used to decontaminate the hand auger between sampling points.

Reference: **Lawrence Municipal Airport Runway 5 Drainage Soil Waste Characterization**

Findings

A summary of the laboratory analytical results are included in Tables 1 and 2. Laboratory analytical data sheets are included in Attachment A. Laboratory analytical results indicate that concentrations of all analytes except PFAS were detected below Massachusetts Department of Environmental Protection (MassDEP) Reportable Concentrations (RCs) for soil located within 500 feet of a residential property (RCS-1) and Mass COMM 97 lined and unlined criteria for landfills.

PFAS soil analytical results indicate that concentrations of Perflurooctanesulfonic Acid (PFOS) were detected above RCS-1 in all soil samples and concentrations of Perfluorooctanoic Acid (PFOA) was detected above RCS-1 in one sample, B-7, B-8. B-9 0.0-0.5. MassDEP sampling guidance (June 16, 2022 Fact Sheet: Interim Guidance on Sampling and Analysis for PFAS at Disposal Sites Regulated under the Massachusetts Contingency Plan) identifies PFAS as a contaminant of concern (COC) due to their use in various industrial processes and product users/sources such as Airports and Firefighting Facilities that may have used or stored Aqueous Film Forming Foams (AFFF) that contain PFOS and PFOA. Pursuant to 310 CMR 40.0315(1) since concentrations of PFOA and PFOS in soil exceed applicable RCS-1 RCs, notification to MassDEP within 120 days of this finding is required. It should be noted that the concentrations of PFAS in soils collected at the end of Runway 5 are far below the MassDEP Method S-1 cleanup standards of 3,000 nanograms/gram for PFAS not located within a GW-1 groundwater characterized setting.

PFAS samples collected by Terra Environmental (Terra) on April 11, 2023 as part of the reconstruction and extension of Taxiway C indicated concentrations of PFOA and PFOS as generally consistent with PFOA and PFOS concentrations measured in soil at the end of Runway 5. Since the soil with PFOS and PFOS detections in the vicinity of Taxiway C was not located within an area defined to include reporting category RCS-1, the prior detections of PFOS and PFOA did not require MassDEP notification because the applicable RCS-2 reportable concentration was greater than the detected PFAS concentrations at both the Taxiway C and Runway 5 areas.

Recommendation

It is our understanding that the surplus soil generated during drainage improvement construction activity will be reused onsite to avoid the expense of off-site disposal of the PFAS containing soil. The locations considered for this onsite relocation would ideally be within the area from where the soil was removed to avoid relocating this soil to an area where the surrounding soil does not contain PFAS at similar concentrations. This soil can also be relocated to the area of the site to the north, where the RCS-2 reportable concentration is applicable since the Runway 5 soil does not exceed RCS-2 RCs.

The 120-day reporting obligation to MassDEP will require some level of additional assessment to characterize the area for PFAS in advance of regulatory reporting for site closure. Since the concentrations of PFOS and PFOA in soil are far below the applicable Method I cleanup standards, we do not consider that soil remediation will be necessary prior to preparation of a Permanent Solution submittal to MassDEP for closure of this PFAS release.

Reference: **Lawrence Municipal Airport Runway 5 Drainage Soil Waste Characterization**

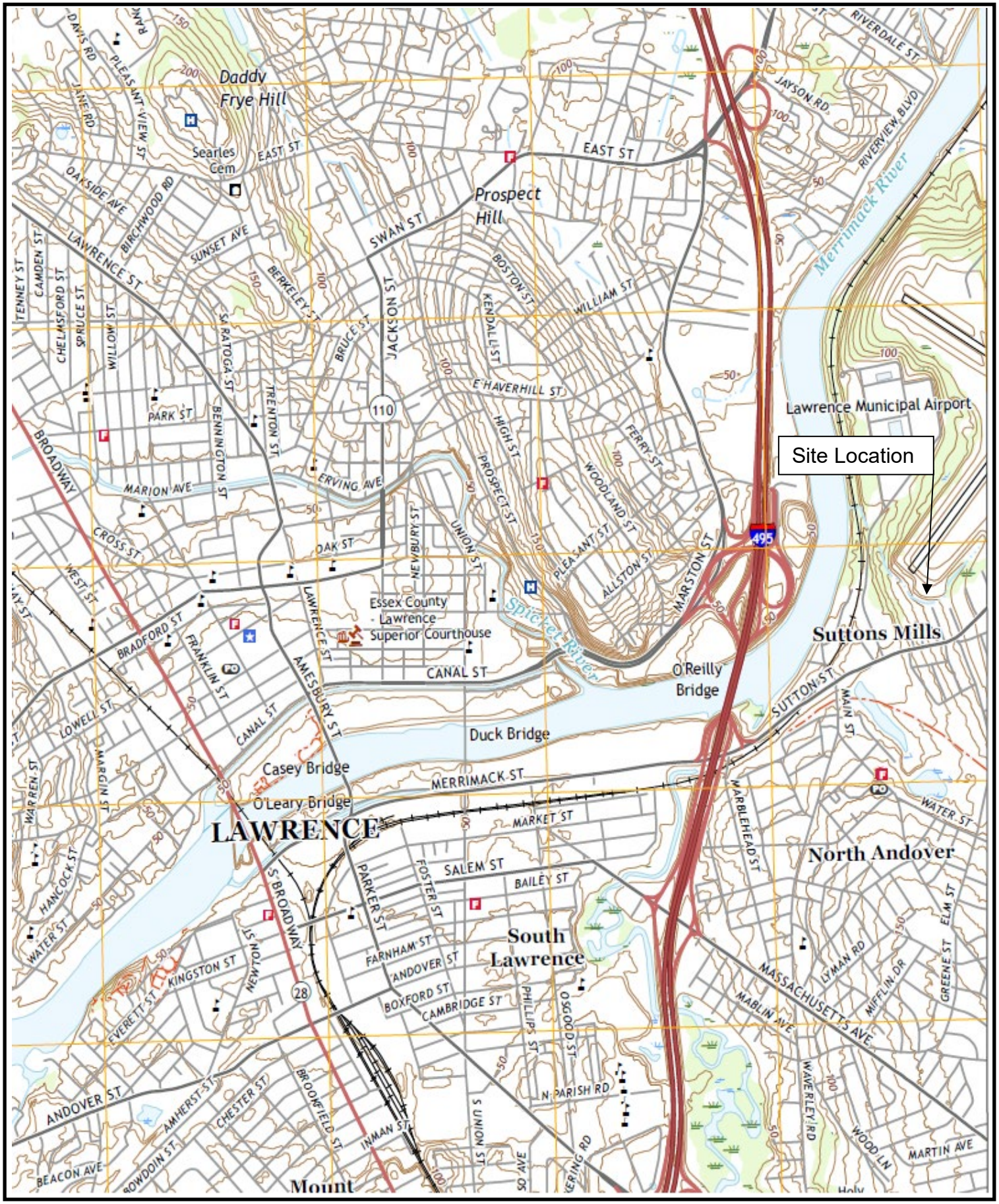
Please don't hesitate to contact the undersigned with any questions following your review of the above.

Stantec Consulting Services Inc.

Charles Young, LSP
Senior Associate
Phone: (508) 591-4326
Charles.young@stantec.com

Matthew Muto
Environmental Scientist
Phone: (508) 591-4324
Matthew.Muto@stantec.com

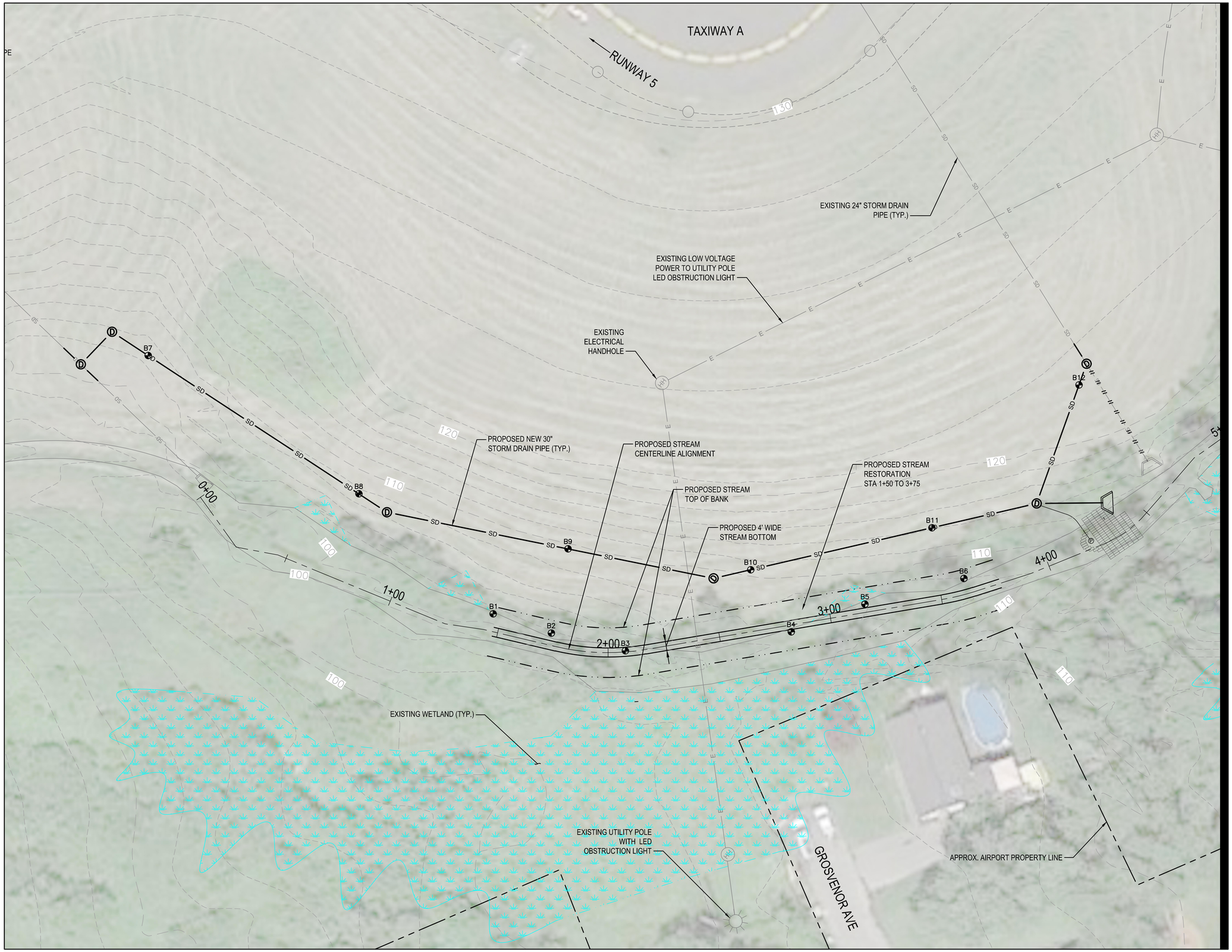
Attachment:
Figure 1: Site Location Map
Figure 2: Soil Sampling Location Plan
Table 1: Soil Analytical Results
Table 2: PFAS Soil Analytical Results
Attachment A: Phoenix Analytical Laboratory Report SGD: GCQ15424
Attachment B: Phoenix Analytical Laboratory Report SDG: GCQ15420



Last Modified: 02/10/2025 at 5:38PM EST

Stantec

Figure 1: Site Locus Map
Lawrence Municipal Airport
North Andover, Massachusetts
Source: USGS



Stantec

Stantec Consulting Services Inc.
45 Blue Sky Drive, 3rd Floor
Burlington, MA 01803 U.S.A.
Tel. 781.221.1000
Fax. 781.229.1115
www.stantec.com

LEGEND

B1 PROPOSED GEOPROBE

N

0 20' 40'

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD
	DMZ		DMZ
	Dwn.	Chkd.	Dsgn.

Permit-Seal

Client/Project
LAWRENCE MUNICIPAL AIRPORT
NORTH ANDOVER, MA

RUNWAY 5 END DRAINAGE IMPROVEMENTS

Title
SOIL SAMPLING LOCATION PLAN

Project No.
179450605

Drawing No.	Sheet	Revision
SK101	1 of 1	0

Table 1
Soil Analytical Results
Lawrence Municipal Airport
North Andover, MA

Sample ID					B-1,B-2,B-3 COMP	B-4,B-5,B-6 COMP	B-7,B-8,B-9 COMP	B-10,B-11,B-12 COMP	B-8 2-3`	B-2 2-3`	B-4 2-3`	B-10 2-3`
Collection Date					02/26/2024	02/26/2024	02/26/2024	02/26/2024	02/26/2024	02/26/2024	02/26/2024	02/26/2024
Matrix					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Project: Lawrence, MA Airport	Units	MassDEP RCS-1	MA COMM 97 Lined	MA COMM 97 Un-Lined	Result	Result	Result	Result	Result	Result	Result	Result
Miscellaneous/Inorganics												
Conductivity - Soil Matrix	umhos/cm	NS	8000	4000	10	10	10	12	NA	NA	NA	NA
Corrosivity	Pos/Neg	NS	NS	NS	Negative	Negative	Negative	Negative	NA	NA	NA	NA
Flash Point	Degree F	NS	NS	NS	>200	>200	>200	>200	NA	NA	NA	NA
Ignitability	degree F	NS	NS	NS	Passed	Passed	Passed	Passed	NA	NA	NA	NA
Percent Solid	%	NS	NS	NS	83	87	87	90	NA	NA	NA	NA
pH at 25C - Soil	pH Units	NS	NS	NS	6.56	6.36	6.73	6.72	NA	NA	NA	NA
Reactivity	Pos/Neg	NS	NS	NS	Negative	Negative	Negative	Negative	NA	NA	NA	NA
Reactivity Cyanide	mg/Kg	NS	NS	NS	< 6	< 5	< 5	< 6	NA	NA	NA	NA
Reactivity Sulfide	mg/Kg	NS	NS	NS	< 20	< 20	< 20	< 20	NA	NA	NA	NA
Metals Total												
Arsenic	mg/Kg	20	40	40	6.3	8.46	4.73	5.44	NA	NA	NA	NA
Barium	mg/Kg	1000	NS	NS	33	56.1	30.3	32.5	NA	NA	NA	NA
Cadmium	mg/Kg	70	80	30	< 0.41	< 0.38	< 0.34	< 0.38	NA	NA	NA	NA
Chromium	mg/Kg	100	1000	1000	25.2	34.1	21.8	23.6	NA	NA	NA	NA
Lead	mg/Kg	200	2000	1000	4.37	4.52	7.22	4.11	NA	NA	NA	NA
Mercury	mg/Kg	20	10	10	< 0.03	< 0.03	< 0.03	< 0.03	NA	NA	NA	NA
Selenium	mg/Kg	400	NS	NS	< 1.7	< 1.5	< 1.4	< 1.5	NA	NA	NA	NA
Silver	mg/Kg	100	NS	NS	< 0.41	< 0.38	< 0.34	< 0.38	NA	NA	NA	NA
Chlorinated Herbicides - SW8151A												
2,4,5-T	mg/kg	100	NS	NS	< 0.03	< 0.028	< 0.029	< 0.028	NA	NA	NA	NA
2,4,5-TP (Silvex)	mg/kg	100	NS	NS	< 0.03	< 0.028	< 0.029	< 0.028	NA	NA	NA	NA
2,4-D	mg/kg	100	NS	NS	< 0.06	< 0.056	< 0.057	< 0.055	NA	NA	NA	NA
2,4-DB	mg/kg	100	NS	NS	< 0.03	< 0.028	< 0.029	< 0.028	NA	NA	NA	NA
Dalapon	mg/kg	1000	NS	NS	< 0.03	< 0.028	< 0.029	< 0.028	NA	NA	NA	NA
Dicamba	mg/kg	500	NS	NS	< 0.03	< 0.028	< 0.029	< 0.028	NA	NA	NA	NA
Dichloroprop	mg/kg	NS	NS	NS	< 0.045	< 0.042	< 0.043	< 0.041	NA	NA	NA	NA
Dinoseb	mg/kg	500	NS	NS	< 0.03	< 0.028	< 0.029	< 0.028	NA	NA	NA	NA
MCPA	mg/kg	100	NS	NS	< 3.00	< 3.3	< 2.9	< 3.3	NA	NA	NA	NA
MCPP	mg/kg	NS	NS	NS	< 3.00	< 3.3	< 2.9	< 3.3	NA	NA	NA	NA
Oxygenates & Dioxane - SW8260D (OXY)												
1,4-Dioxane	mg/kg	0.2	NS	NS	NA	NA	NA	NA	< 0.11	< 0.086	< 0.11	< 0.094
Di-isopropyl ether	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Diethyl ether	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Ethyl tert-butyl ether	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
tert-amyl methyl ether	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Pesticides - SW8081B												
4,4' -DDD	mg/kg	8	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
4,4' -DDE	mg/kg	6	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
4,4' -DDT	mg/kg	6	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
a-BHC	mg/kg	50	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Alachlor	mg/kg	100	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Aldrin	mg/kg	0.08	NS	NS	< 0.004	< 0.0038	< 0.0037	< 0.0037	NA	NA	NA	NA
b-BHC	mg/kg	10	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Chlordane	mg/kg	0.7	NS	NS	< 0.016	< 0.015	< 0.015	< 0.015	NA	NA	NA	NA
d-BHC	mg/kg	10	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Dieldrin	mg/kg	0.08	NS	NS	< 0.004	< 0.0038	< 0.0037	< 0.0037	NA	NA	NA	NA
Endosulfan I	mg/kg	0.5	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Endosulfan II	mg/kg	0.5	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Endosulfan sulfate	mg/kg	NS	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Endrin	mg/kg	10	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Endrin aldehyde	mg/kg	10	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Endrin ketone	mg/kg	NS	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
g-BHC	mg/kg	0.003	NS	NS	< 0.0016	< 0.0015	< 0.0015	< 0.0015	NA	NA	NA	NA
Heptachlor	mg/kg	0.3	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Heptachlor epoxide	mg/kg	0.1	NS	NS	< 0.008	< 0.0076	< 0.0074	< 0.0074	NA	NA	NA	NA
Hexachlorobenzene	mg/kg	0.7	NS	NS	< 0.004	< 0.0038	< 0.0037	< 0.0037	NA	NA	NA	NA
Methoxychlor	mg/kg	200	NS	NS	< 0.04	< 0.038	< 0.037	< 0.037	NA	NA	NA	NA
Toxaphene	mg/kg	10	NS	NS	< 0.16	< 0.15	< 0.15	< 0.15	NA	NA	NA	NA
Polychlorinated Biphenyls - SW8082A												
PCB-1016	mg/kg	1	2	2	< 0.08	< 0.076	< 0.074	< 0.074	NA	NA	NA	NA
PCB-1221	mg/kg	1	2	2	< 0.08	< 0.076	< 0.074	< 0.074	NA	NA	NA	NA
PCB-1232	mg/kg	1	2	2	< 0.08	< 0.076	< 0.074	< 0.074	NA	NA	NA	NA
PCB-1242	mg/kg	1	2	2	< 0.08	< 0.076	< 0.074	< 0.074	NA	NA	NA	NA
PCB-1248	mg/kg	1	2	2	< 0.08	< 0.076	< 0.074	< 0.074	NA	NA	NA	NA
PCB-1254	mg/kg	1	2	2	< 0.08	< 0.076	< 0.074	< 0.074	NA	NA	NA	NA
PCB-1260	mg/kg	1	2	2	< 0.08	< 0.076	< 0.074	< 0.074	NA	NA	NA	NA
PCB-1262	mg/kg	1	NS	NS	< 0.08	< 0.076	< 0.074	< 0.074	NA	NA	NA	NA
PCB-1268	mg/kg	1	NS	NS	< 0.08	< 0.076	< 0.074	< 0.074	NA	NA	NA	NA
Semivolatiles - SW8270E												
1,1-Biphenyl	mg/kg	0.05	NS	NS	< 0.05	< 0.05	< 0.05	< 0.05	NA	NA	NA	NA
1,2,4,5-Tetrachlorobenzene	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
1,2,4-Trichlorobenzene	mg/kg	2	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
1,2-Dichlorobenzene	mg/kg	9	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
1,2-Diphenylhydrazine	mg/kg	50	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
1,3-Dichlorobenzene	mg/kg	3	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
1,4-Dichlorobenzene	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2,2'-Oxybis(1-Chloropropane)	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2,4,5-Trichlorophenol	mg/kg	4	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2,4,6-Trichlorophenol	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2,4-Dichlorophenol	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2,4-Dimethylphenol	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2,4-Dinitrophenol	mg/kg	3	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
2,4-Dinitrotoluene	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2,6-Dinitrotoluene	mg/kg	100	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2-Chloronaphthalene	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2-Chlorophenol	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2-Methylnaphthalene	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2-Methylphenol (o-cresol)	mg/kg	500	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
2-Nitroaniline	mg/kg	NS	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
2-Nitrophenol	mg/kg	100	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
3&4-Methylphenol (m&p-cresol)	mg/kg	NS	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
3,3'-Dichlorobenzidine	mg/kg	3	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
3-Nitroaniline	mg/kg	NS	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	mg/kg	50	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
4-Bromophenyl phenyl ether	mg/kg	100	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
4-Chloro-3-methylphenol	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
4-Chloroaniline	mg/kg	1	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
4-Nitroaniline	mg/kg	1000	NS	NS	< 0.64	< 0.6	< 0.6	< 0.57	NA	NA	NA	NA
4-Nitrophenol	mg/kg	100	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Acenaphthene	mg/kg	4	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Acenaphthylene	mg/kg	1	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Acetophenone	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Aniline	mg/kg	1000	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
Anthracene	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Benz(a)anthracene	mg/kg	7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Benzidine	mg/kg	10	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Benzo(a)pyrene	mg/kg	2	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Benzo(b)fluoranthene	mg/kg	7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Benzo(ghi)perylene	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Benzo(k)fluoranthene	mg/kg	70	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Benzoic acid	mg/kg	1000	NS	NS	< 0.79	< 0.75	< 0.75	< 0.72	NA	NA	NA	NA
Benzyl butyl phthalate	mg/kg	100	NS	NS	< 0.28	< 0.26	0.49	< 0.25	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	mg/kg	500	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Bis(2-chloroethyl)ether	mg/kg	0.7	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	mg/kg	90	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
Carbazole	mg/kg	NS	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
Chrysene	mg/kg	70	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Di-n-butylphthalate	mg/kg	50	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
Di-n-octylphthalate	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Dibenz(a,h)anthracene	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Dibenzofuran	mg/kg	100	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Diethyl phthalate	mg/kg	10	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Dimethylphthalate	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Fluoranthene	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Fluorene	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Hexachlorobenzene	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Hexachlorobutadiene	mg/kg	30	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Hexachlorocyclopentadiene	mg/kg	50	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Hexachloroethane	mg/kg	0.7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	7	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Isophorone	mg/kg	100	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
N-Nitrosodi-n-propylamine	mg/kg	50	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
N-Nitrosodimethylamine	mg/kg	50	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
N-Nitrosodiphenylamine	mg/kg	100	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
Naphthalene	mg/kg	4	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Nitrobenzene	mg/kg	500	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Pentachloronitrobenzene	mg/kg	100	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
Pentachlorophenol	mg/kg	3	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
Phenanthrene	mg/kg	10	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Phenol	mg/kg	1	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Pyrene	mg/kg	1000	NS	NS	< 0.28	< 0.26	< 0.26	< 0.25	NA	NA	NA	NA
Pyridine	mg/kg	500	NS	NS	< 0.4	< 0.37	< 0.37	< 0.36	NA	NA	NA	NA
TPH by GC (Extractable (C9-C36)) - SW8015D DRO												
Fuel Oil #2 / Diesel Fuel	mg/kg	NS	NS	NS	< 60	< 56	< 56	< 54	NA	NA	NA	NA
Fuel Oil #4	mg/kg	NS	NS	NS	< 60	< 56	< 56	< 54	NA	NA	NA	NA
Fuel Oil #6	mg/kg	NS	NS	NS	< 60	< 56	< 56	< 54	NA	NA	NA	NA
Kerosene	mg/kg	NS	NS	NS	< 60	< 56	< 56	< 54	NA	NA	NA	NA
Motor Oil	mg/kg	NS	NS	NS	< 60	< 56	< 56	< 54	NA	NA	NA	NA
Total TPH	mg/kg	1000	5000	2500	< 60	< 56	< 56	< 54	NA	NA	NA	NA

Table 1
Soil Analytical Results
Lawrence Municipal Airport
North Andover, MA

Sample ID					B-1,B-2,B-3 COMP	B-4,B-5,B-6 COMP	B-7,B-8,B-9 COMP	B-10,B-11,B-12 COMP	B-8 2-3`	B-2 2-3`	B-4 2-3`	B-10 2-3`
Collection Date					02/26/2024	02/26/2024	02/26/2024	02/26/2024	02/26/2024	02/26/2024	02/26/2024	02/26/2024
Matrix					Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Project: Lawrence, MA Airport	Units	MassDEP RCS-1	MA COMM 97 Lined	MA COMM 97 Un-Lined	Result	Result	Result	Result	Result	Result	Result	Result
Unidentified	mg/kg	NS	NS	NS	< 60	< 56	< 56	< 54	NA	NA	NA	NA
Volatiles - SW8260D												
1,1,1,2-Tetrachloroethane	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,1,1-Trichloroethane	mg/kg	30	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,1,2,2-Tetrachloroethane	mg/kg	0.005	NS	NS	NA	NA	NA	NA	< 0.0032	< 0.0026	< 0.0033	< 0.0028
1,1,2-Trichloroethane	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,1-Dichloroethane	mg/kg	0.4	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,1-Dichloroethene	mg/kg	3	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,1-Dichloropropene	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,2,3-Trichlorobenzene	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,2,3-Trichloropropane	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,2,4-Trichlorobenzene	mg/kg	2	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,2,4-Trimethylbenzene	mg/kg	1000	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,2-Dibromo-3-chloropropane	mg/kg	10	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,2-Dibromoethane	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.00053	< 0.00043	< 0.00055	< 0.00047
1,2-Dichlorobenzene	mg/kg	9	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,2-Dichloroethane	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,2-Dichloropropane	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,3,5-Trimethylbenzene	mg/kg	10	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,3-Dichlorobenzene	mg/kg	3	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,3-Dichloropropane	mg/kg	500	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
1,4-Dichlorobenzene	mg/kg	0.7	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
2,2-Dichloropropane	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
2-Chlorotoluene	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
2-Hexanone	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.026	< 0.022	< 0.027	< 0.024
2-Isopropyltoluene	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
4-Chlorotoluene	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
4-Methyl-2-pentanone	mg/kg	0.4	NS	NS	NA	NA	NA	NA	< 0.026	< 0.022	< 0.027	< 0.024
Acetone	mg/kg	6	NS	NS	NA	NA	NA	NA	< 0.26	< 0.22	< 0.27	< 0.24
Acrylonitrile	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Benzene	mg/kg	2	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Bromobenzene	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Bromochloromethane	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Bromodichloromethane	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Bromoform	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Bromomethane	mg/kg	0.5	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Carbon Disulfide	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Carbon tetrachloride	mg/kg	5	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Chlorobenzene	mg/kg	1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Chloroethane	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Chloroform	mg/kg	0.2	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Chloromethane	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
cis-1,2-Dichloroethene	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
cis-1,3-Dichloropropene	mg/kg	0.01	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Dibromochloromethane	mg/kg	0.005	NS	NS	NA	NA	NA	NA	< 0.0032	< 0.0026	< 0.0033	< 0.0028
Dibromomethane	mg/kg	500	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Dichlorodifluoromethane	mg/kg	1000	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Ethylbenzene	mg/kg	40	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Hexachlorobutadiene	mg/kg	30	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Isopropylbenzene	mg/kg	1000	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
m&p-Xylene	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Methyl Ethyl Ketone	mg/kg	4	NS	NS	NA	NA	NA	NA	< 0.032	< 0.026	< 0.033	< 0.028
Methyl t-butyl ether (MTBE)	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.011	< 0.0086	< 0.011	< 0.0094
Methylene chloride	mg/kg	0.1	NS	NS	NA	NA	NA	NA	< 0.011	< 0.0086	< 0.011	< 0.0094
n-Butylbenzene	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
n-Propylbenzene	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Naphthalene	mg/kg	4	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
o-Xylene	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
p-Isopropyltoluene	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
sec-Butylbenzene	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Styrene	mg/kg	3	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
tert-Butylbenzene	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Tetrachloroethene	mg/kg	1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Tetrahydrofuran (THF)	mg/kg	500	NS	NS	NA	NA	NA	NA	< 0.011	< 0.0086	< 0.011	< 0.0094
Toluene	mg/kg	30	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Total Xylenes	mg/kg	100	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
trans-1,2-Dichloroethene	mg/kg	1	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
trans-1,3-Dichloropropene	mg/kg	0.01	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
trans-1,4-dichloro-2-butene	mg/kg	10	NS	NS	NA	NA	NA	NA	< 0.011	< 0.0086	< 0.011	< 0.0094
Trichloroethene	mg/kg	0.3	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Trichlorofluoromethane	mg/kg	1000	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047
Trichlorotrifluoroethane	mg/kg	NS	NS	NS	NA	NA	NA	NA	< 0.011	< 0.0086	< 0.011	< 0.0094
Vinyl chloride	mg/kg	0.7	NS	NS	NA	NA	NA	NA	< 0.0053	< 0.0043	< 0.0055	< 0.0047

Notes:
Result Detected
NS - No Standard
NA- Not Analyzed
mg/kg - milligrams per kilograms

Table 2
PFAs Soil Analytical Results
Lawrence Municipal Airport
North Andover, MA

Client Id					**B-1,B-2,B-3 0.0-0.5**	**B-4,B-5,B-6 0.0-0.5**	**B-7,B-8,B-9 0.0-0.5**	**B-10,B-11,B-12 0.0-0.5**
Collection Date					02/26/2024	02/26/2024	02/26/2024	02/26/2024
Matrix					Soil	Soil	Soil	Soil
Project: Lawrence, MA Airport	Units	MassDEP RCS-1	MassDEP S-1/GW-2	MassDEP S-1/GW-3	Result	Result	Result	Result
Miscellaneous/Inorganics								
Perfluorodecanoic acid (PFDA)	ng/g	0.2	3,000	3,000	< 0.278	< 0.261	< 0.269	< 0.268
Perfluoroheptanoic acid (PFHpA)	ng/g	0.2	3,000	3,000	< 0.278	< 0.261	0.144	< 0.268
Perfluorohexanesulfonic Acid (PFHxS)	ng/g	0.2	3,000	3,000	< 0.254	< 0.239	< 0.246	< 0.245
Perfluorononanoic acid (PFNA)	ng/g	0.2	3,000	3,000	< 0.278	< 0.261	< 0.269	< 0.268
Perfluorooctanesulfonic Acid (PFOS)	ng/g	0.2	3,000	3,000	0.561	0.455	1.3	0.95
Perfluorooctanoic acid (PFOA)	ng/g	0.2	3,000	3,000	< 0.278	< 0.261	0.311	< 0.268

Notes:

Result Detected

Result Exceeds Criteria

ng/g - nanograms per gram

PHOENIX
Environmental Laboratories, Inc.

Tuesday, March 05, 2024

Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Project ID: **LAWRENCE, MA AIRPORT**
SDG ID: **GCQ15424**
Sample ID#s: CQ15424 - CQ15431

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

SDG Comments

March 05, 2024

SDG I.D.: GCQ15424

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

March 05, 2024

SDG I.D.: GCQ15424

Project ID: LAWRENCE, MA AIRPORT

Client Id	Lab Id	Matrix
B-1,B-2,B-3 COMP	CQ15424	SOIL
B-4,B-5,B-6 COMP	CQ15425	SOIL
B-7,B-8,B-9 COMP	CQ15426	SOIL
B-10,B-11,B-12 COMP	CQ15427	SOIL
B-8 2-3`	CQ15428	SOIL
B-2 2-3`	CQ15429	SOIL
B-4 2-3`	CQ15430	SOIL
B-10 2-3`	CQ15431	SOIL

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 05, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	9:05
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15424
Phoenix ID: CQ15424

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-1,B-2,B-3 COMP

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.41	0.41	mg/Kg	1	02/28/24	TH	SW6010D
Arsenic	6.30	0.83	mg/Kg	1	02/28/24	TH	SW6010D
Barium	33.0	0.41	mg/Kg	1	02/28/24	TH	SW6010D
Cadmium	< 0.41	0.41	mg/Kg	1	02/28/24	TH	SW6010D
Chromium	25.2	0.41	mg/Kg	1	02/28/24	TH	SW6010D
Mercury	< 0.03	0.03	mg/Kg	2	02/28/24	GW	SW7471B
Lead	4.37	0.41	mg/Kg	1	02/28/24	TH	SW6010D
Selenium	< 1.7	1.7	mg/Kg	1	02/28/24	TH	SW6010D
Percent Solid	83		%		02/27/24	CV	SW846-%Solid
Conductivity - Soil Matrix	10	5	umhos/cm	1	02/27/24	JY	SW9050A
Corrosivity	Negative		Pos/Neg	1	02/27/24	MW	SW846-Corr
Flash Point	>200	200	Degree F	1	02/28/24	G	SW1010B
Ignitability	Passed	140	degree F	1	02/28/24	G	SW846-Ignit
pH at 25C - Soil	6.56	1.00	pH Units	1	02/27/24 21:27	MW	SW846 9045D
Reactivity Cyanide	< 6	6	mg/Kg	1	02/29/24	GD	SW846 7.3.3.1/90
Reactivity Sulfide	< 20	20	mg/Kg	1	03/01/24	GD	SW846 CH7
Reactivity	Negative		Pos/Neg	1	03/01/24	GD	SW846-React
Mercury Digestion	Completed				02/28/24	HL/HL	SW7471B
Extraction of ETPH	Completed				03/01/24	R/H/JDW	SW3546
Soil Extraction for Herbicide	Completed				02/28/24	L/D	SW3546
Soil Extraction for PCB	Completed				02/29/24	C/JDW	SW3546
Soil Extraction for Pesticide	Completed				02/29/24	C/JDW	SW3546
Soil Extraction for SVOA	Completed				03/01/24	C/U	SW3546
Total Metals Digest	Completed				02/27/24	P/AG	SW3050B
Chlorinated Herbicides							
2,4,5-T	ND	0.03	mg/Kg	2	03/02/24	JRB	SW8151A

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2,4,5-TP (Silvex)	ND	0.03	mg/Kg	2	03/02/24	JRB	SW8151A
2,4-D	ND	0.06	mg/Kg	2	03/02/24	JRB	SW8151A
2,4-DB	ND	0.03	mg/Kg	2	03/02/24	JRB	SW8151A
Dalapon	ND	0.03	mg/Kg	2	03/02/24	JRB	SW8151A
Dicamba	ND	0.03	mg/Kg	2	03/02/24	JRB	SW8151A
Dichloroprop	ND	0.045	mg/Kg	2	03/02/24	JRB	SW8151A
Dinoseb	ND	0.03	mg/Kg	2	03/02/24	JRB	SW8151A
MCPA	ND	3	mg/Kg	2	03/02/24	JRB	SW8151A
MCPP	ND	3	mg/Kg	2	03/02/24	JRB	SW8151A
QA/QC Surrogates							
% DCAA	92		%	2	03/02/24	JRB	30 - 150 %
% DCAA (Confirmation)	91		%	2	03/02/24	JRB	30 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	0.08	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1221	ND	0.08	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1232	ND	0.08	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1242	ND	0.08	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1248	ND	0.08	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1254	ND	0.08	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1260	ND	0.08	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1262	ND	0.08	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1268	ND	0.08	mg/Kg	2	03/02/24	AW	SW8082A
QA/QC Surrogates							
% DCBP	81		%	2	03/02/24	AW	30 - 150 %
% DCBP (Confirmation)	79		%	2	03/02/24	AW	30 - 150 %
% TCMX	75		%	2	03/02/24	AW	30 - 150 %
% TCMX (Confirmation)	73		%	2	03/02/24	AW	30 - 150 %
Pesticides							
4,4' -DDD	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
4,4' -DDE	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
4,4' -DDT	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
a-BHC	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Alachlor	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Aldrin	ND	0.004	mg/Kg	2	03/01/24	CN	SW8081B
b-BHC	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Chlordane	ND	0.016	mg/Kg	2	03/01/24	CN	SW8081B
d-BHC	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Dieldrin	ND	0.004	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan I	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan II	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan sulfate	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Endrin	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Endrin aldehyde	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Endrin ketone	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
g-BHC	ND	0.0016	mg/Kg	2	03/01/24	CN	SW8081B
Heptachlor	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Heptachlor epoxide	ND	0.008	mg/Kg	2	03/01/24	CN	SW8081B
Hexachlorobenzene	ND	0.004	mg/Kg	2	03/01/24	CN	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Methoxychlor	ND	0.04	mg/Kg	2	03/01/24	CN	SW8081B
Toxaphene	ND	0.16	mg/Kg	2	03/01/24	CN	SW8081B
QA/QC Surrogates							
% DCBP	65		%	2	03/01/24	CN	30 - 150 %
% DCBP (Confirmation)	59		%	2	03/01/24	CN	30 - 150 %
% TCMX	52		%	2	03/01/24	CN	30 - 150 %
% TCMX (Confirmation)	59		%	2	03/01/24	CN	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	60	mg/kg	1	03/03/24	JRB	SW8015D DRO
Fuel Oil #4	ND	60	mg/kg	1	03/03/24	JRB	SW8015D DRO
Fuel Oil #6	ND	60	mg/kg	1	03/03/24	JRB	SW8015D DRO
Kerosene	ND	60	mg/kg	1	03/03/24	JRB	SW8015D DRO
Motor Oil	ND	60	mg/kg	1	03/03/24	JRB	SW8015D DRO
Total TPH	ND	60	mg/kg	1	03/03/24	JRB	SW8015D DRO
Unidentified	ND	60	mg/kg	1	03/03/24	JRB	SW8015D DRO
QA/QC Surrogates							
% COD (surr)	64		%	1	03/03/24	JRB	50 - 150 %
% Terphenyl (surr)	67		%	1	03/03/24	JRB	50 - 150 %
Semivolatiles							
1,1-Biphenyl	ND	0.05	mg/Kg	1	03/02/24	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
1,2-Dichlorobenzene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
1,3-Dichlorobenzene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
1,4-Dichlorobenzene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dichlorophenol	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dimethylphenol	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dinitrophenol	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dinitrotoluene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2,6-Dinitrotoluene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2-Chloronaphthalene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2-Chlorophenol	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2-Methylnaphthalene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
2-Nitroaniline	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
2-Nitrophenol	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
3-Nitroaniline	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
4-Chloroaniline	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Nitroaniline	ND	0.64	mg/Kg	1	03/02/24	MR	SW8270E
4-Nitrophenol	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Acenaphthene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Acenaphthylene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Acetophenone	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Aniline	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
Anthracene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Benz(a)anthracene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Benzidine	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(a)pyrene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(b)fluoranthene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(ghi)perylene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(k)fluoranthene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Benzoic acid	ND	0.79	mg/Kg	1	03/02/24	MR	SW8270E
Benzyl butyl phthalate	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Bis(2-chloroethyl)ether	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
Carbazole	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
Chrysene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Dibenz(a,h)anthracene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Dibenzofuran	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Diethyl phthalate	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Dimethylphthalate	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Di-n-butylphthalate	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
Di-n-octylphthalate	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Fluoranthene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Fluorene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Hexachlorobenzene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Hexachlorobutadiene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Hexachloroethane	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Isophorone	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Naphthalene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Nitrobenzene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
N-Nitrosodimethylamine	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
Pentachloronitrobenzene	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
Pentachlorophenol	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
Phenanthrene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Phenol	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Pyrene	ND	0.28	mg/Kg	1	03/02/24	MR	SW8270E
Pyridine	ND	0.4	mg/Kg	1	03/02/24	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	115		%	1	03/02/24	MR	30 - 130 %
% 2-Fluorobiphenyl	60		%	1	03/02/24	MR	30 - 130 %
% 2-Fluorophenol	57		%	1	03/02/24	MR	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Nitrobenzene-d5	73		%	1	03/02/24	MR	30 - 130 %
% Phenol-d5	67		%	1	03/02/24	MR	30 - 130 %
% Terphenyl-d14	70		%	1	03/02/24	MR	30 - 130 %

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Sulfide. This method is no longer listed in the current version of SW-846.

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Corrosivity is based solely on the pH analysis performed above.

Ignitability is based solely on the results of the closed cup flashpoint analysis performed above. Passed is >140 degree F.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 05, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 05, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	10:05
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15424
Phoenix ID: CQ15425

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-4,B-5,B-6 COMP

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.38	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Arsenic	8.46	0.77	mg/Kg	1	02/28/24	TH	SW6010D
Barium	56.1	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Cadmium	< 0.38	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Chromium	34.1	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Mercury	< 0.03	0.03	mg/Kg	2	02/28/24	GW	SW7471B
Lead	4.52	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Selenium	< 1.5	1.5	mg/Kg	1	02/28/24	TH	SW6010D
Percent Solid	87		%		02/27/24	CV	SW846-%Solid
Conductivity - Soil Matrix	10	5	umhos/cm	1	02/27/24	JY	SW9050A
Corrosivity	Negative		Pos/Neg	1	02/27/24	MW	SW846-Corr
Flash Point	>200	200	Degree F	1	02/29/24	G	SW1010B
Ignitability	Passed	140	degree F	1	02/29/24	G	SW846-Ignit
pH at 25C - Soil	6.36	1.00	pH Units	1	02/27/24 21:27	MW	SW846 9045D
Reactivity Cyanide	< 5	5	mg/Kg	1	02/29/24	GD	SW846 7.3.3.1/90
Reactivity Sulfide	< 20	20	mg/Kg	1	03/01/24	GD	SW846 CH7
Reactivity	Negative		Pos/Neg	1	03/01/24	GD	SW846-React
Mercury Digestion	Completed				02/28/24	HL/HL	SW7471B
Extraction of ETPH	Completed				03/01/24	R/H/JDW	SW3546
Soil Extraction for Herbicide	Completed				02/28/24	L/D	SW3546
Soil Extraction for PCB	Completed				02/29/24	C/JDW	SW3546
Soil Extraction for Pesticide	Completed				02/29/24	C/JDW	SW3546
Soil Extraction for SVOA	Completed				03/01/24	C/U	SW3546
Total Metals Digest	Completed				02/27/24	P/AG	SW3050B
Chlorinated Herbicides							
2,4,5-T	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2,4,5-TP (Silvex)	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
2,4-D	ND	0.056	mg/Kg	2	03/02/24	JRB	SW8151A
2,4-DB	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
Dalapon	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
Dicamba	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
Dichloroprop	ND	0.042	mg/Kg	2	03/02/24	JRB	SW8151A
Dinoseb	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
MCPA	ND	3.3	mg/Kg	2	03/02/24	JRB	SW8151A
MCPP	ND	3.3	mg/Kg	2	03/02/24	JRB	SW8151A
QA/QC Surrogates							
% DCAA	87		%	2	03/02/24	JRB	30 - 150 %
% DCAA (Confirmation)	89		%	2	03/02/24	JRB	30 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	0.076	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1221	ND	0.076	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1232	ND	0.076	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1242	ND	0.076	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1248	ND	0.076	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1254	ND	0.076	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1260	ND	0.076	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1262	ND	0.076	mg/Kg	2	03/02/24	AW	SW8082A
PCB-1268	ND	0.076	mg/Kg	2	03/02/24	AW	SW8082A
QA/QC Surrogates							
% DCBP	66		%	2	03/02/24	AW	30 - 150 %
% DCBP (Confirmation)	68		%	2	03/02/24	AW	30 - 150 %
% TCMX	63		%	2	03/02/24	AW	30 - 150 %
% TCMX (Confirmation)	62		%	2	03/02/24	AW	30 - 150 %
Pesticides							
4,4' -DDD	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
4,4' -DDE	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
4,4' -DDT	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
a-BHC	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Alachlor	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Aldrin	ND	0.0038	mg/Kg	2	03/01/24	CN	SW8081B
b-BHC	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Chlordane	ND	0.015	mg/Kg	2	03/01/24	CN	SW8081B
d-BHC	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Dieldrin	ND	0.0038	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan I	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan II	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan sulfate	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Endrin	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Endrin aldehyde	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Endrin ketone	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
g-BHC	ND	0.0015	mg/Kg	2	03/01/24	CN	SW8081B
Heptachlor	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Heptachlor epoxide	ND	0.0076	mg/Kg	2	03/01/24	CN	SW8081B
Hexachlorobenzene	ND	0.0038	mg/Kg	2	03/01/24	CN	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Methoxychlor	ND	0.038	mg/Kg	2	03/01/24	CN	SW8081B
Toxaphene	ND	0.15	mg/Kg	2	03/01/24	CN	SW8081B
QA/QC Surrogates							
% DCBP	56		%	2	03/01/24	CN	30 - 150 %
% DCBP (Confirmation)	53		%	2	03/01/24	CN	30 - 150 %
% TCMX	46		%	2	03/01/24	CN	30 - 150 %
% TCMX (Confirmation)	52		%	2	03/01/24	CN	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Fuel Oil #4	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Fuel Oil #6	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Kerosene	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Motor Oil	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Total TPH	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Unidentified	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
QA/QC Surrogates							
% COD (surr)	68		%	1	03/03/24	JRB	50 - 150 %
% Terphenyl (surr)	65		%	1	03/03/24	JRB	50 - 150 %
Semivolatiles							
1,1-Biphenyl	ND	0.05	mg/Kg	1	03/02/24	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
1,2-Dichlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
1,3-Dichlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
1,4-Dichlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dichlorophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dimethylphenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dinitrophenol	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dinitrotoluene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,6-Dinitrotoluene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Chloronaphthalene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Chlorophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Methylnaphthalene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Nitroaniline	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
2-Nitrophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
3-Nitroaniline	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
4-Chloroaniline	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-4,B-5,B-6 COMP

Phoenix I.D.: CQ15425

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Nitroaniline	ND	0.6	mg/Kg	1	03/02/24	MR	SW8270E
4-Nitrophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Acenaphthene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Acenaphthylene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Acetophenone	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Aniline	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Anthracene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benz(a)anthracene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzidine	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(a)pyrene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(b)fluoranthene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(ghi)perylene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(k)fluoranthene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzoic acid	ND	0.75	mg/Kg	1	03/02/24	MR	SW8270E
Benzyl butyl phthalate	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Bis(2-chloroethyl)ether	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Carbazole	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Chrysene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Dibenz(a,h)anthracene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Dibenzofuran	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Diethyl phthalate	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Dimethylphthalate	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Di-n-butylphthalate	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Di-n-octylphthalate	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Fluoranthene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Fluorene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Hexachlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Hexachlorobutadiene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Hexachloroethane	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Isophorone	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Naphthalene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Nitrobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
N-Nitrosodimethylamine	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Pentachloronitrobenzene	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Pentachlorophenol	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Phenanthrene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Phenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Pyrene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Pyridine	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	110		%	1	03/02/24	MR	30 - 130 %
% 2-Fluorobiphenyl	50		%	1	03/02/24	MR	30 - 130 %
% 2-Fluorophenol	39		%	1	03/02/24	MR	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Nitrobenzene-d5	53		%	1	03/02/24	MR	30 - 130 %
% Phenol-d5	50		%	1	03/02/24	MR	30 - 130 %
% Terphenyl-d14	74		%	1	03/02/24	MR	30 - 130 %

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Sulfide. This method is no longer listed in the current version of SW-846.

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Corrosivity is based solely on the pH analysis performed above.

Ignitability is based solely on the results of the closed cup flashpoint analysis performed above. Passed is >140 degree F.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 05, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 05, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	8:35
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15424
Phoenix ID: CQ15426

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-7,B-8,B-9 COMP

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.34	0.34	mg/Kg	1	02/28/24	TH	SW6010D
Arsenic	4.73	0.68	mg/Kg	1	02/28/24	TH	SW6010D
Barium	30.3	0.34	mg/Kg	1	02/28/24	TH	SW6010D
Cadmium	< 0.34	0.34	mg/Kg	1	02/28/24	TH	SW6010D
Chromium	21.8	0.34	mg/Kg	1	02/28/24	TH	SW6010D
Mercury	< 0.03	0.03	mg/Kg	2	02/28/24	GW	SW7471B
Lead	7.22	0.34	mg/Kg	1	02/28/24	TH	SW6010D
Selenium	< 1.4	1.4	mg/Kg	1	02/28/24	TH	SW6010D
Percent Solid	87		%		02/27/24	CV	SW846-%Solid
Conductivity - Soil Matrix	10	5	umhos/cm	1	02/27/24	JY	SW9050A
Corrosivity	Negative		Pos/Neg	1	02/27/24	MW	SW846-Corr
Flash Point	>200	200	Degree F	1	02/29/24	G	SW1010B
Ignitability	Passed	140	degree F	1	02/29/24	G	SW846-Ignit
pH at 25C - Soil	6.73	1.00	pH Units	1	02/27/24 21:27	MW	SW846 9045D
Reactivity Cyanide	< 5	5	mg/Kg	1	02/29/24	NP/GD	SW846 7.3.3.1/90
Reactivity Sulfide	< 20	20	mg/Kg	1	03/01/24	NP/GD	SW846 CH7
Reactivity	Negative		Pos/Neg	1	03/01/24	NP/GD	SW846-React
Mercury Digestion	Completed				02/28/24	HL/HL	SW7471B
Extraction of ETPH	Completed				03/01/24	R/H/JDW	SW3546
Soil Extraction for Herbicide	Completed				02/28/24	L/D	SW3546
Soil Extraction for PCB	Completed				02/29/24	C/JDW	SW3546
Soil Extraction for Pesticide	Completed				02/29/24	C/JDW	SW3546
Soil Extraction for SVOA	Completed				03/01/24	C/U	SW3546
Total Metals Digest	Completed				02/27/24	P/AG	SW3050B
Chlorinated Herbicides							
2,4,5-T	ND	0.029	mg/Kg	2	03/02/24	JRB	SW8151A

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2,4,5-TP (Silvex)	ND	0.029	mg/Kg	2	03/02/24	JRB	SW8151A
2,4-D	ND	0.057	mg/Kg	2	03/02/24	JRB	SW8151A
2,4-DB	ND	0.029	mg/Kg	2	03/02/24	JRB	SW8151A
Dalapon	ND	0.029	mg/Kg	2	03/02/24	JRB	SW8151A
Dicamba	ND	0.029	mg/Kg	2	03/02/24	JRB	SW8151A
Dichloroprop	ND	0.043	mg/Kg	2	03/02/24	JRB	SW8151A
Dinoseb	ND	0.029	mg/Kg	2	03/02/24	JRB	SW8151A
MCPA	ND	2.9	mg/Kg	2	03/02/24	JRB	SW8151A
MCPP	ND	2.9	mg/Kg	2	03/02/24	JRB	SW8151A
QA/QC Surrogates							
% DCAA	84		%	2	03/02/24	JRB	30 - 150 %
% DCAA (Confirmation)	79		%	2	03/02/24	JRB	30 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1221	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1232	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1242	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1248	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1254	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1260	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1262	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1268	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
QA/QC Surrogates							
% DCBP	53		%	2	03/01/24	KCA	30 - 150 %
% DCBP (Confirmation)	54		%	2	03/01/24	KCA	30 - 150 %
% TCMX	56		%	2	03/01/24	KCA	30 - 150 %
% TCMX (Confirmation)	57		%	2	03/01/24	KCA	30 - 150 %
Pesticides							
4,4' -DDD	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
4,4' -DDE	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
4,4' -DDT	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
a-BHC	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Alachlor	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Aldrin	ND	0.0037	mg/Kg	2	03/01/24	CN	SW8081B
b-BHC	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Chlordane	ND	0.015	mg/Kg	2	03/01/24	CN	SW8081B
d-BHC	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Dieldrin	ND	0.0037	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan I	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan II	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan sulfate	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endrin	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endrin aldehyde	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endrin ketone	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
g-BHC	ND	0.0015	mg/Kg	2	03/01/24	CN	SW8081B
Heptachlor	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Heptachlor epoxide	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Hexachlorobenzene	ND	0.0037	mg/Kg	2	03/01/24	CN	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Methoxychlor	ND	0.037	mg/Kg	2	03/01/24	CN	SW8081B
Toxaphene	ND	0.15	mg/Kg	2	03/01/24	CN	SW8081B
QA/QC Surrogates							
% DCBP	73		%	2	03/01/24	CN	30 - 150 %
% DCBP (Confirmation)	67		%	2	03/01/24	CN	30 - 150 %
% TCMX	63		%	2	03/01/24	CN	30 - 150 %
% TCMX (Confirmation)	64		%	2	03/01/24	CN	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Fuel Oil #4	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Fuel Oil #6	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Kerosene	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Motor Oil	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Total TPH	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
Unidentified	ND	56	mg/kg	1	03/03/24	JRB	SW8015D DRO
QA/QC Surrogates							
% COD (surr)	65		%	1	03/03/24	JRB	50 - 150 %
% Terphenyl (surr)	64		%	1	03/03/24	JRB	50 - 150 %
Semivolatiles							
1,1-Biphenyl	ND	0.05	mg/Kg	1	03/02/24	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
1,2-Dichlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
1,3-Dichlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
1,4-Dichlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dichlorophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dimethylphenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dinitrophenol	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
2,4-Dinitrotoluene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2,6-Dinitrotoluene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Chloronaphthalene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Chlorophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Methylnaphthalene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
2-Nitroaniline	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
2-Nitrophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
3-Nitroaniline	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
4-Chloroaniline	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-7,B-8,B-9 COMP

Phoenix I.D.: CQ15426

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Nitroaniline	ND	0.6	mg/Kg	1	03/02/24	MR	SW8270E
4-Nitrophenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Acenaphthene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Acenaphthylene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Acetophenone	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Aniline	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Anthracene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benz(a)anthracene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzidine	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(a)pyrene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(b)fluoranthene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(ghi)perylene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzo(k)fluoranthene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Benzoic acid	ND	0.75	mg/Kg	1	03/02/24	MR	SW8270E
Benzyl butyl phthalate	0.49	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Bis(2-chloroethyl)ether	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Carbazole	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Chrysene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Dibenz(a,h)anthracene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Dibenzofuran	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Diethyl phthalate	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Dimethylphthalate	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Di-n-butylphthalate	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Di-n-octylphthalate	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Fluoranthene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Fluorene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Hexachlorobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Hexachlorobutadiene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Hexachloroethane	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Isophorone	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Naphthalene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Nitrobenzene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
N-Nitrosodimethylamine	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Pentachloronitrobenzene	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Pentachlorophenol	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
Phenanthrene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Phenol	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Pyrene	ND	0.26	mg/Kg	1	03/02/24	MR	SW8270E
Pyridine	ND	0.37	mg/Kg	1	03/02/24	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	120		%	1	03/02/24	MR	30 - 130 %
% 2-Fluorobiphenyl	58		%	1	03/02/24	MR	30 - 130 %
% 2-Fluorophenol	55		%	1	03/02/24	MR	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Nitrobenzene-d5	75		%	1	03/02/24	MR	30 - 130 %
% Phenol-d5	66		%	1	03/02/24	MR	30 - 130 %
% Terphenyl-d14	72		%	1	03/02/24	MR	30 - 130 %

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Sulfide. This method is no longer listed in the current version of SW-846.

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Corrosivity is based solely on the pH analysis performed above.

Ignitability is based solely on the results of the closed cup flashpoint analysis performed above. Passed is >140 degree F.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 05, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 05, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	9:35
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15424
Phoenix ID: CQ15427

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-10,B-11,B-12 COMP

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Silver	< 0.38	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Arsenic	5.44	0.76	mg/Kg	1	02/28/24	TH	SW6010D
Barium	32.5	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Cadmium	< 0.38	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Chromium	23.6	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Mercury	< 0.03	0.03	mg/Kg	2	02/28/24	GW	SW7471B
Lead	4.11	0.38	mg/Kg	1	02/28/24	TH	SW6010D
Selenium	< 1.5	1.5	mg/Kg	1	02/28/24	TH	SW6010D
Percent Solid	90		%		02/27/24	CV	SW846-%Solid
Conductivity - Soil Matrix	12	5	umhos/cm	1	02/27/24	JY	SW9050A
Corrosivity	Negative		Pos/Neg	1	02/27/24	MW	SW846-Corr
Flash Point	>200	200	Degree F	1	02/29/24	G	SW1010B
Ignitability	Passed	140	degree F	1	02/29/24	G	SW846-Ignit
pH at 25C - Soil	6.72	1.00	pH Units	1	02/27/24 21:27	MW	SW846 9045D
Reactivity Cyanide	< 6	6	mg/Kg	1	02/29/24	NP/GD	SW846 7.3.3.1/90
Reactivity Sulfide	< 20	20	mg/Kg	1	03/01/24	NP/GD	SW846 CH7
Reactivity	Negative		Pos/Neg	1	03/01/24	NP/GD	SW846-React
Mercury Digestion	Completed				02/28/24	HL/HL	SW7471B
Extraction of ETPH	Completed				03/01/24	R/H/JDW	SW3546
Soil Extraction for Herbicide	Completed				02/28/24	L/D	SW3546
Soil Extraction for PCB	Completed				02/29/24	C/JDW	SW3546
Soil Extraction for Pesticide	Completed				02/29/24	C/JDW	SW3546
Soil Extraction for SVOA	Completed				03/01/24	C/U	SW3546
Total Metals Digest	Completed				02/27/24	P/AG	SW3050B
Chlorinated Herbicides							
2,4,5-T	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A

Ver 1

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
2,4,5-TP (Silvex)	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
2,4-D	ND	0.055	mg/Kg	2	03/02/24	JRB	SW8151A
2,4-DB	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
Dalapon	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
Dicamba	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
Dichloroprop	ND	0.041	mg/Kg	2	03/02/24	JRB	SW8151A
Dinoseb	ND	0.028	mg/Kg	2	03/02/24	JRB	SW8151A
MCPA	ND	3.3	mg/Kg	2	03/02/24	JRB	SW8151A
MCPP	ND	3.3	mg/Kg	2	03/02/24	JRB	SW8151A
QA/QC Surrogates							
% DCAA	82		%	2	03/02/24	JRB	30 - 150 %
% DCAA (Confirmation)	82		%	2	03/02/24	JRB	30 - 150 %
Polychlorinated Biphenyls							
PCB-1016	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1221	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1232	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1242	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1248	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1254	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1260	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1262	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
PCB-1268	ND	0.074	mg/Kg	2	03/01/24	KCA	SW8082A
QA/QC Surrogates							
% DCBP	70		%	2	03/01/24	KCA	30 - 150 %
% DCBP (Confirmation)	73		%	2	03/01/24	KCA	30 - 150 %
% TCMX	74		%	2	03/01/24	KCA	30 - 150 %
% TCMX (Confirmation)	76		%	2	03/01/24	KCA	30 - 150 %
Pesticides							
4,4' -DDD	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
4,4' -DDE	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
4,4' -DDT	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
a-BHC	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Alachlor	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Aldrin	ND	0.0037	mg/Kg	2	03/01/24	CN	SW8081B
b-BHC	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Chlordane	ND	0.015	mg/Kg	2	03/01/24	CN	SW8081B
d-BHC	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Dieldrin	ND	0.0037	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan I	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan II	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endosulfan sulfate	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endrin	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endrin aldehyde	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Endrin ketone	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
g-BHC	ND	0.0015	mg/Kg	2	03/01/24	CN	SW8081B
Heptachlor	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Heptachlor epoxide	ND	0.0074	mg/Kg	2	03/01/24	CN	SW8081B
Hexachlorobenzene	ND	0.0037	mg/Kg	2	03/01/24	CN	SW8081B

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Methoxychlor	ND	0.037	mg/Kg	2	03/01/24	CN	SW8081B
Toxaphene	ND	0.15	mg/Kg	2	03/01/24	CN	SW8081B
QA/QC Surrogates							
% DCBP	74		%	2	03/01/24	CN	30 - 150 %
% DCBP (Confirmation)	81		%	2	03/01/24	CN	30 - 150 %
% TCMX	71		%	2	03/01/24	CN	30 - 150 %
% TCMX (Confirmation)	67		%	2	03/01/24	CN	30 - 150 %
TPH by GC (Extractable (C9-C36))							
Fuel Oil #2 / Diesel Fuel	ND	54	mg/kg	1	03/03/24	JRB	SW8015D DRO
Fuel Oil #4	ND	54	mg/kg	1	03/03/24	JRB	SW8015D DRO
Fuel Oil #6	ND	54	mg/kg	1	03/03/24	JRB	SW8015D DRO
Kerosene	ND	54	mg/kg	1	03/03/24	JRB	SW8015D DRO
Motor Oil	ND	54	mg/kg	1	03/03/24	JRB	SW8015D DRO
Total TPH	ND	54	mg/kg	1	03/03/24	JRB	SW8015D DRO
Unidentified	ND	54	mg/kg	1	03/03/24	JRB	SW8015D DRO
QA/QC Surrogates							
% COD (surr)	78		%	1	03/03/24	JRB	50 - 150 %
% Terphenyl (surr)	77		%	1	03/03/24	JRB	50 - 150 %
Semivolatiles							
1,1-Biphenyl	ND	0.05	mg/Kg	1	03/01/24	MR	SW8270E
1,2,4,5-Tetrachlorobenzene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
1,2,4-Trichlorobenzene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
1,2-Dichlorobenzene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
1,2-Diphenylhydrazine	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
1,3-Dichlorobenzene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
1,4-Dichlorobenzene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2,2'-Oxybis(1-Chloropropane)	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2,4,5-Trichlorophenol	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2,4,6-Trichlorophenol	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2,4-Dichlorophenol	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2,4-Dimethylphenol	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2,4-Dinitrophenol	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
2,4-Dinitrotoluene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2,6-Dinitrotoluene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2-Chloronaphthalene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2-Chlorophenol	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2-Methylnaphthalene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2-Methylphenol (o-cresol)	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
2-Nitroaniline	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
2-Nitrophenol	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
3&4-Methylphenol (m&p-cresol)	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
3,3'-Dichlorobenzidine	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
3-Nitroaniline	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
4,6-Dinitro-2-methylphenol	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
4-Bromophenyl phenyl ether	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
4-Chloro-3-methylphenol	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
4-Chloroaniline	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
4-Chlorophenyl phenyl ether	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Nitroaniline	ND	0.57	mg/Kg	1	03/01/24	MR	SW8270E
4-Nitrophenol	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Acenaphthene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Acenaphthylene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Acetophenone	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Aniline	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
Anthracene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Benz(a)anthracene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Benzidine	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Benzo(a)pyrene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Benzo(b)fluoranthene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Benzo(ghi)perylene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Benzo(k)fluoranthene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Benzoic acid	ND	0.72	mg/Kg	1	03/01/24	MR	SW8270E
Benzyl butyl phthalate	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Bis(2-chloroethoxy)methane	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Bis(2-chloroethyl)ether	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
Bis(2-ethylhexyl)phthalate	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
Carbazole	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
Chrysene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Dibenz(a,h)anthracene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Dibenzofuran	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Diethyl phthalate	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Dimethylphthalate	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Di-n-butylphthalate	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
Di-n-octylphthalate	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Fluoranthene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Fluorene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Hexachlorobenzene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Hexachlorobutadiene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Hexachlorocyclopentadiene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Hexachloroethane	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Indeno(1,2,3-cd)pyrene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Isophorone	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Naphthalene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Nitrobenzene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
N-Nitrosodimethylamine	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
N-Nitrosodi-n-propylamine	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
N-Nitrosodiphenylamine	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
Pentachloronitrobenzene	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
Pentachlorophenol	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
Phenanthrene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Phenol	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Pyrene	ND	0.25	mg/Kg	1	03/01/24	MR	SW8270E
Pyridine	ND	0.36	mg/Kg	1	03/01/24	MR	SW8270E
QA/QC Surrogates							
% 2,4,6-Tribromophenol	107		%	1	03/01/24	MR	30 - 130 %
% 2-Fluorobiphenyl	57		%	1	03/01/24	MR	30 - 130 %
% 2-Fluorophenol	44		%	1	03/01/24	MR	30 - 130 %

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Nitrobenzene-d5	57		%	1	03/01/24	MR	30 - 130 %
% Phenol-d5	52		%	1	03/01/24	MR	30 - 130 %
% Terphenyl-d14	59		%	1	03/01/24	MR	30 - 130 %

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Sulfide. This method is no longer listed in the current version of SW-846.

Per 1.4.6 of EPA method 8270D, 1,2-Diphenylhydrazine is unstable and readily converts to Azobenzene. Azobenzene is used for the calibration of 1,2-Diphenylhydrazine.

Corrosivity is based solely on the pH analysis performed above.

Ignitability is based solely on the results of the closed cup flashpoint analysis performed above. Passed is >140 degree F.

The regulatory hold time for pH is immediately. This pH was performed in the laboratory and may be considered outside of hold-time.

The reactivity, reported above, is based only on the EPA Interim Guidance for Reactive Cyanide. This method is no longer listed in the current version of SW-846.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 05, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 05, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	8:30
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15424
Phoenix ID: CQ15428

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-8 2-3`

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				02/26/24		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.0032	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloroethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloroethene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloropropene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dibromoethane	ND	0.00053	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichloroethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichloropropane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,3-Dichloropropane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
2,2-Dichloropropane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
2-Chlorotoluene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
2-Hexanone	ND	0.026	mg/Kg	1	03/01/24	JLI	SW8260D
2-Isopropyltoluene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-8 2-3`

Phoenix I.D.: CQ15428

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chlorotoluene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.026	mg/Kg	1	03/01/24	JLI	SW8260D
Acetone	ND	0.26	mg/Kg	1	03/01/24	JLI	SW8260D
Acrylonitrile	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Benzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Bromobenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Bromochloromethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Bromodichloromethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Bromoform	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Bromomethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Carbon Disulfide	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Carbon tetrachloride	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Chlorobenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Chloroethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Chloroform	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Chloromethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Dibromochloromethane	ND	0.0032	mg/Kg	1	03/01/24	JLI	SW8260D
Dibromomethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Dichlorodifluoromethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Ethylbenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Hexachlorobutadiene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Isopropylbenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
m&p-Xylene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	0.032	mg/Kg	1	03/01/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Methylene chloride	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Naphthalene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
n-Butylbenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
n-Propylbenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
o-Xylene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
p-Isopropyltoluene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
sec-Butylbenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Styrene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
tert-Butylbenzene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Tetrachloroethene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Toluene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Total Xylenes	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Trichloroethene	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Trichlorofluoromethane	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Vinyl chloride	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	94		%	1	03/01/24	JLI	70 - 130 %

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-8 2-3`

Phoenix I.D.: CQ15428

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Bromofluorobenzene	99		%	1	03/01/24	JLI	70 - 130 %
% Dibromofluoromethane	97		%	1	03/01/24	JLI	70 - 130 %
% Toluene-d8	96		%	1	03/01/24	JLI	70 - 130 %

Oxygenates & Dioxane

1,4-Dioxane	ND	0.11	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Diethyl ether	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	0.0053	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 05, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 05, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	9:00
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15424
Phoenix ID: CQ15429

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-2 2-3`

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				02/26/24		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.0026	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloroethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloroethene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloropropene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dibromoethane	ND	0.00043	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichloroethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichloropropane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,3-Dichloropropane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
2,2-Dichloropropane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
2-Chlorotoluene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
2-Hexanone	ND	0.022	mg/Kg	1	03/01/24	JLI	SW8260D
2-Isopropyltoluene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-2 2-3`

Phoenix I.D.: CQ15429

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chlorotoluene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.022	mg/Kg	1	03/01/24	JLI	SW8260D
Acetone	ND	0.22	mg/Kg	1	03/01/24	JLI	SW8260D
Acrylonitrile	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Benzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Bromobenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Bromochloromethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Bromodichloromethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Bromoform	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Bromomethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Carbon Disulfide	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Carbon tetrachloride	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Chlorobenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Chloroethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Chloroform	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Chloromethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Dibromochloromethane	ND	0.0026	mg/Kg	1	03/01/24	JLI	SW8260D
Dibromomethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Dichlorodifluoromethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Ethylbenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Hexachlorobutadiene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Isopropylbenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
m&p-Xylene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	0.026	mg/Kg	1	03/01/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.0086	mg/Kg	1	03/01/24	JLI	SW8260D
Methylene chloride	ND	0.0086	mg/Kg	1	03/01/24	JLI	SW8260D
Naphthalene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
n-Butylbenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
n-Propylbenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
o-Xylene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
p-Isopropyltoluene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
sec-Butylbenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Styrene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
tert-Butylbenzene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Tetrachloroethene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.0086	mg/Kg	1	03/01/24	JLI	SW8260D
Toluene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Total Xylenes	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.0086	mg/Kg	1	03/01/24	JLI	SW8260D
Trichloroethene	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Trichlorofluoromethane	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.0086	mg/Kg	1	03/01/24	JLI	SW8260D
Vinyl chloride	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	94		%	1	03/01/24	JLI	70 - 130 %

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-2 2-3`

Phoenix I.D.: CQ15429

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Bromofluorobenzene	101		%	1	03/01/24	JLI	70 - 130 %
% Dibromofluoromethane	94		%	1	03/01/24	JLI	70 - 130 %
% Toluene-d8	94		%	1	03/01/24	JLI	70 - 130 %

Oxygenates & Dioxane

1,4-Dioxane	ND	0.086	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Diethyl ether	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	0.0043	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 05, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 05, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	10:00
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15424
Phoenix ID: CQ15430

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-4 2-3`

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				02/26/24		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.0033	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloroethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloroethene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloropropene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dibromoethane	ND	0.00055	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichloroethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichloropropane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,3-Dichloropropane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
2,2-Dichloropropane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
2-Chlorotoluene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
2-Hexanone	ND	0.027	mg/Kg	1	03/01/24	JLI	SW8260D
2-Isopropyltoluene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-4 2-3`

Phoenix I.D.: CQ15430

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chlorotoluene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.027	mg/Kg	1	03/01/24	JLI	SW8260D
Acetone	ND	0.27	mg/Kg	1	03/01/24	JLI	SW8260D
Acrylonitrile	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Benzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Bromobenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Bromochloromethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Bromodichloromethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Bromoform	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Bromomethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Carbon Disulfide	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Carbon tetrachloride	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Chlorobenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Chloroethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Chloroform	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Chloromethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Dibromochloromethane	ND	0.0033	mg/Kg	1	03/01/24	JLI	SW8260D
Dibromomethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Dichlorodifluoromethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Ethylbenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Hexachlorobutadiene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Isopropylbenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
m&p-Xylene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	0.033	mg/Kg	1	03/01/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Methylene chloride	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Naphthalene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
n-Butylbenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
n-Propylbenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
o-Xylene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
p-Isopropyltoluene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
sec-Butylbenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Styrene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
tert-Butylbenzene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Tetrachloroethene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Toluene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Total Xylenes	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Trichloroethene	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Trichlorofluoromethane	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.011	mg/Kg	1	03/01/24	JLI	SW8260D
Vinyl chloride	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	90		%	1	03/01/24	JLI	70 - 130 %

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-4 2-3`

Phoenix I.D.: CQ15430

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Bromofluorobenzene	97		%	1	03/01/24	JLI	70 - 130 %
% Dibromofluoromethane	92		%	1	03/01/24	JLI	70 - 130 %
% Toluene-d8	95		%	1	03/01/24	JLI	70 - 130 %

Oxygenates & Dioxane

1,4-Dioxane	ND	0.11	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Diethyl ether	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	0.0055	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 05, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 05, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	9:30
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15424
Phoenix ID: CQ15431

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-10 2-3`

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
Field Extraction	Completed				02/26/24		SW5035A
Volatiles							
1,1,1,2-Tetrachloroethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,1-Trichloroethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,2,2-Tetrachloroethane	ND	0.0028	mg/Kg	1	03/01/24	JLI	SW8260D
1,1,2-Trichloroethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloroethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloroethene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,1-Dichloropropene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,3-Trichlorobenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,3-Trichloropropane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,4-Trichlorobenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,2,4-Trimethylbenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dibromo-3-chloropropane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dibromoethane	ND	0.00047	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichlorobenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichloroethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,2-Dichloropropane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,3,5-Trimethylbenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,3-Dichlorobenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,3-Dichloropropane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
1,4-Dichlorobenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
2,2-Dichloropropane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
2-Chlorotoluene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
2-Hexanone	ND	0.024	mg/Kg	1	03/01/24	JLI	SW8260D
2-Isopropyltoluene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-10 2-3`

Phoenix I.D.: CQ15431

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
4-Chlorotoluene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
4-Methyl-2-pentanone	ND	0.024	mg/Kg	1	03/01/24	JLI	SW8260D
Acetone	ND	0.24	mg/Kg	1	03/01/24	JLI	SW8260D
Acrylonitrile	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Benzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Bromobenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Bromochloromethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Bromodichloromethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Bromoform	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Bromomethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Carbon Disulfide	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Carbon tetrachloride	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Chlorobenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Chloroethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Chloroform	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Chloromethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
cis-1,2-Dichloroethene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
cis-1,3-Dichloropropene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Dibromochloromethane	ND	0.0028	mg/Kg	1	03/01/24	JLI	SW8260D
Dibromomethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Dichlorodifluoromethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Ethylbenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Hexachlorobutadiene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Isopropylbenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
m&p-Xylene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Methyl Ethyl Ketone	ND	0.028	mg/Kg	1	03/01/24	JLI	SW8260D
Methyl t-butyl ether (MTBE)	ND	0.0094	mg/Kg	1	03/01/24	JLI	SW8260D
Methylene chloride	ND	0.0094	mg/Kg	1	03/01/24	JLI	SW8260D
Naphthalene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
n-Butylbenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
n-Propylbenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
o-Xylene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
p-Isopropyltoluene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
sec-Butylbenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Styrene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
tert-Butylbenzene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Tetrachloroethene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Tetrahydrofuran (THF)	ND	0.0094	mg/Kg	1	03/01/24	JLI	SW8260D
Toluene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Total Xylenes	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,2-Dichloroethene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,3-Dichloropropene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
trans-1,4-dichloro-2-butene	ND	0.0094	mg/Kg	1	03/01/24	JLI	SW8260D
Trichloroethene	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Trichlorofluoromethane	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
Trichlorotrifluoroethane	ND	0.0094	mg/Kg	1	03/01/24	JLI	SW8260D
Vinyl chloride	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D
QA/QC Surrogates							
% 1,2-dichlorobenzene-d4	94		%	1	03/01/24	JLI	70 - 130 %

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-10 2-3`

Phoenix I.D.: CQ15431

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference
% Bromofluorobenzene	94		%	1	03/01/24	JLI	70 - 130 %
% Dibromofluoromethane	102		%	1	03/01/24	JLI	70 - 130 %
% Toluene-d8	94		%	1	03/01/24	JLI	70 - 130 %

Oxygenates & Dioxane

1,4-Dioxane	ND	0.094	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Diethyl ether	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Di-isopropyl ether	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
Ethyl tert-butyl ether	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)
tert-amyl methyl ether	ND	0.0047	mg/Kg	1	03/01/24	JLI	SW8260D (OXY)

Massachusetts does not offer certification for Soil/Solid matrices.

RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

Results are reported on an ``as received`` basis, and are not corrected for dry weight.

All soils, solids and sludges are reported on a dry weight basis unless otherwise noted in the sample comments.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Phyllis Shiller, Laboratory Director
March 05, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

QA/QC Report

March 05, 2024

QA/QC Data

SDG I.D.: GCQ15424

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 720000 (mg/kg), QC Sample No: CQ15495 2X (CQ15424, CQ15425, CQ15426, CQ15427)														
Mercury - Soil	BRL	0.03	<0.03	<0.03	NC	106	102	3.8	98.8	98.5	0.3	75 - 125	20	
Comment:														
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%														
QA/QC Batch 719915 (mg/kg), QC Sample No: CQ15254 (CQ15424, CQ15425, CQ15426, CQ15427)														
ICP Metals - Soil														
Arsenic	BRL	0.67	0.92	1.01	NC	80.1	89.4	11.0	95.0			75 - 125	35	
Barium	BRL	0.33	20.6	21.1	2.40	91.1	99.0	8.3	99.4			75 - 125	35	
Cadmium	BRL	0.33	0.36	0.41	NC	129	97.9	27.4	99.5			75 - 125	35	l
Chromium	BRL	0.33	8.22	8.62	4.80	78.7	98.2	22.0	98.2			75 - 125	35	
Lead	BRL	0.33	6.61	9.63	37.2	120	96.8	21.4	104			75 - 125	35	r
Selenium	BRL	1.3	<1.3	<1.3	NC	86.4	88.5	2.4	86.1			75 - 125	35	
Silver	BRL	0.33	<0.32	<0.32	NC	102	93.1	9.1	97.3			75 - 125	35	
Comment:														
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.														

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

QA/QC Report

March 05, 2024

QA/QC Data

SDG I.D.: GCQ15424

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
QA/QC Batch 720067 (mg/Kg), QC Sample No: CQ14668 5X (CQ15424, CQ15425)													
Reactivity Cyanide	BRL	5	<5	<5.3	NC	96.0						80 - 120	20
Reactivity Sulfide	BRL	20	<20	<20	NC	94.5						80 - 120	20
Comment:													
Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.													
QA/QC Batch 720209 (mg/Kg), QC Sample No: CQ15427 (CQ15426, CQ15427)													
Reactivity Cyanide	BRL	1	<6	<5.4	NC	97.2						80 - 120	20
Reactivity Sulfide	BRL	20	<20	<20	NC	94.5						80 - 120	20
Comment:													
Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.													
QA/QC Batch 720045 (Degree F), QC Sample No: CQ13976 (CQ15424)													
Flash Point			>200	>200	NC	103						75 - 125	30
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 719974 (PH), QC Sample No: CQ15032 (CQ15424)													
pH			6.86	6.92	0.90	100						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 719983 (umhos/cm), QC Sample No: CQ15424 (CQ15424, CQ15425, CQ15426, CQ15427)													
Conductivity - Soil Matrix	BRL	5	10	11	NC	94.0						75 - 125	30
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 720261 (Degree F), QC Sample No: CQ15425 (CQ15425, CQ15426, CQ15427)													
Flash Point			>200	>200	NC	101						75 - 125	30
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													
QA/QC Batch 719975 (PH), QC Sample No: CQ15425 (CQ15425, CQ15426, CQ15427)													
pH			6.36	6.35	0.20	100						85 - 115	20
Comment:													
Additional: LCS acceptance range is 85-115% MS acceptance range 75-125%.													

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

QA/QC Report

March 05, 2024

QA/QC Data

SDG I.D.: GCQ15424

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 720517 (mg/Kg), QC Sample No: CQ18248 (CQ15424, CQ15425, CQ15426, CQ15427)											
TPH by GC (Extractable Products) - Soil											
Ext. Petroleum H.C. (C9-C36)	ND	50	78	70	10.8				50 - 150	30	
% COD (surr)	77	%	81	73	10.4				50 - 150	30	
% Terphenyl (surr)	73	%	73	65	11.6				50 - 150	30	
Comment:											
The ETPH/DRO LCS has been normalized based on the alkane calibration.											
QA/QC Batch 720173 (mg/Kg), QC Sample No: CQ15412 10X (CQ15424, CQ15425, CQ15426, CQ15427)											
Chlorinated Herbicides - Soil											
2,4,5-T	ND	0.13	75	74	1.3	50	72	36.1	40 - 140	30	r
2,4,5-TP (Silvex)	ND	0.13	70	71	1.4	52	69	28.1	40 - 140	30	
2,4-D	ND	0.25	74	73	1.4	58	75	25.6	40 - 140	30	
2,4-DB	ND	2.5	60	57	5.1	49	61	21.8	40 - 140	30	
Dalapon	ND	0.13	47	67	35.1	44	52	16.7	40 - 140	30	r
Dicamba	ND	0.13	74	85	13.8	61	74	19.3	40 - 140	30	
Dichloroprop	ND	0.13	85	95	11.1	76	85	11.2	40 - 140	30	
Dinoseb	ND	0.13	68	75	9.8	52	60	14.3	10 - 110	20	
MCPA	ND	38	82	79	3.7	69	94	30.7	40 - 140	30	r
MCPP	ND	38	84	86	2.4	70	85	19.4	40 - 140	30	
% DCAA (Surrogate Rec)	102	%	85	83	2.4	68	88	25.6	30 - 150	30	
% DCAA (Surrogate Rec) (Confirm	97	%	85	89	4.6	63	87	32.0	30 - 150	30	r
Comment:											
MCP 8151 additional criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%.											
QA/QC Batch 720331 (mg/Kg), QC Sample No: CQ15411 2X (CQ15424, CQ15425, CQ15426, CQ15427)											
Polychlorinated Biphenyls - Soil											
PCB-1016	ND	0.033	86	83	3.6	64	80	22.2	40 - 140	30	
PCB-1221	ND	0.033							40 - 140	30	
PCB-1232	ND	0.033							40 - 140	30	
PCB-1242	ND	0.033							40 - 140	30	
PCB-1248	ND	0.033							40 - 140	30	
PCB-1254	ND	0.033							40 - 140	30	
PCB-1260	ND	0.033	85	82	3.6	62	67	7.8	40 - 140	30	
PCB-1262	ND	0.033							40 - 140	30	
PCB-1268	ND	0.033							40 - 140	30	
% DCBP (Surrogate Rec)	91	%	93	92	1.1	66	78	16.7	30 - 150	30	
% DCBP (Surrogate Rec) (Confirm	88	%	85	84	1.2	52	61	15.9	30 - 150	30	
% TCMX (Surrogate Rec)	81	%	85	80	6.1	62	79	24.1	30 - 150	30	
% TCMX (Surrogate Rec) (Confirm	78	%	79	75	5.2	55	75	30.8	30 - 150	30	r
QA/QC Batch 720332 (mg/Kg), QC Sample No: CQ15411 2X (CQ15424, CQ15425, CQ15426, CQ15427)											
Pesticides - Soil											
4,4' -DDD	ND	0.0017	75	77	2.6	83	90	8.1	40 - 140	30	

QA/QC Data

SDG I.D.: GCQ15424

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
4,4' -DDE	ND	0.0017	76	79	3.9	69	74	7.0	40 - 140	30	
4,4' -DDT	ND	0.0017	71	78	9.4	72	73	1.4	40 - 140	30	
a-BHC	ND	0.001	71	74	4.1	57	55	3.6	40 - 140	30	
Alachlor	ND	0.0033	NA	NA	NC	NA	NA	NC	40 - 140	30	
Aldrin	ND	0.001	73	76	4.0	62	64	3.2	40 - 140	30	
b-BHC	ND	0.001	78	81	3.8	64	62	3.2	40 - 140	30	
Chlordane	ND	0.033	75	78	3.9	66	73	10.1	40 - 140	30	
d-BHC	ND	0.0033	80	83	3.7	60	66	9.5	40 - 140	30	
Dieldrin	ND	0.001	78	81	3.8	63	66	4.7	40 - 140	30	
Endosulfan I	ND	0.0033	74	78	5.3	60	64	6.5	40 - 140	30	
Endosulfan II	ND	0.0033	82	85	3.6	68	72	5.7	40 - 140	30	
Endosulfan sulfate	ND	0.0033	77	82	6.3	65	66	1.5	40 - 140	30	
Endrin	ND	0.0033	75	78	3.9	65	67	3.0	40 - 140	30	
Endrin aldehyde	ND	0.0033	73	75	2.7	55	53	3.7	40 - 140	30	
Endrin ketone	ND	0.0033	94	97	3.1	83	79	4.9	40 - 140	30	
g-BHC	ND	0.001	79	81	2.5	83	73	12.8	40 - 140	30	
Heptachlor	ND	0.0033	69	72	4.3	66	78	16.7	40 - 140	30	
Heptachlor epoxide	ND	0.0033	74	76	2.7	59	73	21.2	40 - 140	30	
Hexachlorobenzene	ND	0.0033	72	73	1.4	62	63	1.6	40 - 140	30	
Methoxychlor	ND	0.0033	70	72	2.8	67	67	0.0	40 - 140	30	
Toxaphene	ND	0.13	NA	NA	NC	NA	NA	NC	40 - 140	30	
% DCBP	81	%	79	80	1.3	56	65	14.9	30 - 150	30	
% DCBP (Confirmation)	80	%	72	73	1.4	63	72	13.3	30 - 150	30	
% TCMX	71	%	69	71	2.9	57	57	0.0	30 - 150	30	
% TCMX (Confirmation)	75	%	74	74	0.0	58	67	14.4	30 - 150	30	
QA/QC Batch 720473 (mg/Kg), QC Sample No: CQ15427 (CQ15424, CQ15425, CQ15426, CQ15427)											
Semivolatiles - Soil											
1,1-Biphenyl	ND	0.23	72	74	2.7	64	67	4.6	40 - 140	30	
1,2,4,5-Tetrachlorobenzene	ND	0.23	71	72	1.4	72	71	1.4	40 - 140	30	
1,2,4-Trichlorobenzene	ND	0.23	67	63	6.2	66	64	3.1	40 - 140	30	
1,2-Dichlorobenzene	ND	0.18	59	53	10.7	58	56	3.5	40 - 140	30	
1,2-Diphenylhydrazine	ND	0.23	91	97	6.4	83	86	3.6	40 - 140	30	
1,3-Dichlorobenzene	ND	0.23	57	50	13.1	55	54	1.8	40 - 140	30	
1,4-Dichlorobenzene	ND	0.23	56	49	13.3	54	54	0.0	40 - 140	30	
2,2'-Oxybis(1-Chloropropane)	ND	0.23	67	61	9.4	65	64	1.6	40 - 140	30	
2,4,5-Trichlorophenol	ND	0.23	78	84	7.4	69	74	7.0	30 - 130	30	
2,4,6-Trichlorophenol	ND	0.13	82	86	4.8	72	76	5.4	30 - 130	30	
2,4-Dichlorophenol	ND	0.13	78	80	2.5	78	75	3.9	30 - 130	30	
2,4-Dimethylphenol	ND	0.23	90	92	2.2	89	89	0.0	30 - 130	30	
2,4-Dinitrophenol	ND	0.23	67	61	9.4	84	93	10.2	30 - 130	30	
2,4-Dinitrotoluene	ND	0.13	86	95	9.9	77	80	3.8	40 - 140	30	
2,6-Dinitrotoluene	ND	0.13	81	91	11.6	73	76	4.0	40 - 140	30	
2-Chloronaphthalene	ND	0.23	77	79	2.6	67	71	5.8	40 - 140	30	
2-Chlorophenol	ND	0.23	72	67	7.2	72	71	1.4	30 - 130	30	
2-Methylnaphthalene	ND	0.23	75	76	1.3	75	73	2.7	40 - 140	30	
2-Methylphenol (o-cresol)	ND	0.23	77	77	0.0	78	72	8.0	30 - 130	30	
2-Nitroaniline	ND	0.33	98	86	13.0	175	192	9.3	40 - 140	30	m
2-Nitrophenol	ND	0.23	107	106	0.9	104	102	1.9	30 - 130	30	
3&4-Methylphenol (m&p-cresol)	ND	0.23	85	86	1.2	86	80	7.2	30 - 130	30	
3,3'-Dichlorobenzidine	ND	0.13	62	70	12.1	54	58	7.1	40 - 140	30	
3-Nitroaniline	ND	0.33	88	94	6.6	71	75	5.5	40 - 140	30	
4,6-Dinitro-2-methylphenol	ND	0.23	76	78	2.6	87	91	4.5	30 - 130	30	

QA/QC Data

SDG I.D.: GCQ15424

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
4-Bromophenyl phenyl ether	ND	0.23	75	82	8.9	67	71	5.8	40 - 140	30	
4-Chloro-3-methylphenol	ND	0.23	90	98	8.5	92	89	3.3	30 - 130	30	
4-Chloroaniline	ND	0.23	97	95	2.1	82	83	1.2	40 - 140	30	
4-Chlorophenyl phenyl ether	ND	0.23	79	84	6.1	72	73	1.4	40 - 140	30	
4-Nitroaniline	ND	0.23	110	119	7.9	97	103	6.0	40 - 140	30	
4-Nitrophenol	ND	0.23	129	140	8.2	79	131	49.5	30 - 130	30	l,m,r
Acenaphthene	ND	0.23	71	74	4.1	64	66	3.1	40 - 140	30	
Acenaphthylene	ND	0.13	66	69	4.4	59	62	5.0	40 - 140	30	
Acetophenone	ND	0.23	78	75	3.9	78	74	5.3	40 - 140	30	
Aniline	ND	0.33	62	57	8.4	48	42	13.3	40 - 140	30	
Anthracene	ND	0.23	74	83	11.5	67	72	7.2	40 - 140	30	
Benz(a)anthracene	ND	0.23	72	82	13.0	67	69	2.9	40 - 140	30	
Benzidine	ND	0.33	46	44	4.4	19	25	27.3	40 - 140	30	m
Benzo(a)pyrene	ND	0.13	80	90	11.8	72	74	2.7	40 - 140	30	
Benzo(b)fluoranthene	ND	0.16	75	84	11.3	67	68	1.5	40 - 140	30	
Benzo(ghi)perylene	ND	0.23	81	94	14.9	72	74	2.7	40 - 140	30	
Benzo(k)fluoranthene	ND	0.23	77	86	11.0	70	71	1.4	40 - 140	30	
Benzoic Acid	ND	0.67	55	50	9.5	109	107	1.9	30 - 130	30	
Benzyl butyl phthalate	ND	0.23	81	91	11.6	75	75	0.0	40 - 140	30	
Bis(2-chloroethoxy)methane	ND	0.23	74	74	0.0	75	73	2.7	40 - 140	30	
Bis(2-chloroethyl)ether	ND	0.13	74	67	9.9	74	70	5.6	40 - 140	30	
Bis(2-ethylhexyl)phthalate	ND	0.23	78	86	9.8	73	73	0.0	40 - 140	30	
Carbazole	ND	0.23	76	86	12.3	68	73	7.1	40 - 140	30	
Chrysene	ND	0.23	73	84	14.0	67	70	4.4	40 - 140	30	
Dibenz(a,h)anthracene	ND	0.13	76	90	16.9	68	70	2.9	40 - 140	30	
Dibenzofuran	ND	0.23	78	81	3.8	69	71	2.9	40 - 140	30	
Diethyl phthalate	ND	0.23	84	92	9.1	78	80	2.5	40 - 140	30	
Dimethylphthalate	ND	0.23	80	86	7.2	71	75	5.5	40 - 140	30	
Di-n-butylphthalate	ND	0.67	82	92	11.5	76	79	3.9	40 - 140	30	
Di-n-octylphthalate	ND	0.23	83	96	14.5	79	82	3.7	40 - 140	30	
Fluoranthene	ND	0.23	74	83	11.5	68	74	8.5	40 - 140	30	
Fluorene	ND	0.23	79	85	7.3	73	75	2.7	40 - 140	30	
Hexachlorobenzene	ND	0.13	93	107	14.0	86	88	2.3	40 - 140	30	
Hexachlorobutadiene	ND	0.23	74	67	9.9	74	73	1.4	40 - 140	30	
Hexachlorocyclopentadiene	ND	0.23	56	51	9.3	57	53	7.3	40 - 140	30	
Hexachloroethane	ND	0.13	68	59	14.2	66	66	0.0	40 - 140	30	
Indeno(1,2,3-cd)pyrene	ND	0.23	82	94	13.6	73	76	4.0	40 - 140	30	
Isophorone	ND	0.13	74	73	1.4	74	72	2.7	40 - 140	30	
Naphthalene	ND	0.23	70	67	4.4	69	67	2.9	40 - 140	30	
Nitrobenzene	ND	0.13	85	82	3.6	85	81	4.8	40 - 140	30	
N-Nitrosodimethylamine	ND	0.23	53	47	12.0	50	50	0.0	40 - 140	30	
N-Nitrosodi-n-propylamine	ND	0.13	86	83	3.6	86	82	4.8	40 - 140	30	
N-Nitrosodiphenylamine	ND	0.13	75	85	12.5	68	71	4.3	40 - 140	30	
Pentachloronitrobenzene	ND	0.23	96	108	11.8	88	88	0.0	40 - 140	30	
Pentachlorophenol	ND	0.23	71	80	11.9	76	76	0.0	30 - 130	30	
Phenanthrene	ND	0.13	75	84	11.3	68	71	4.3	40 - 140	30	
Phenol	ND	0.23	88	89	1.1	87	83	4.7	30 - 130	30	
Pyrene	ND	0.23	75	83	10.1	68	76	11.1	40 - 140	30	
Pyridine	ND	0.23	40	34	16.2	36	37	2.7	40 - 140	30	l,m
% 2,4,6-Tribromophenol	121	%	86	76	12.3	107	123	13.9	30 - 130	30	
% 2-Fluorobiphenyl	66	%	68	68	0.0	61	70	13.7	30 - 130	30	
% 2-Fluorophenol	58	%	62	57	8.4	60	65	8.0	30 - 130	30	
% Nitrobenzene-d5	71	%	76	74	2.7	77	83	7.5	30 - 130	30	

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits
% Phenol-d5	68	%	70	69	1.4	70	75	6.9	30 - 130	30
% Terphenyl-d14	64	%	61	70	13.7	56	71	23.6	30 - 130	30

Comment:

Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

QA/QC Batch 720460 (mg/Kg), QC Sample No: CQ17393 (CQ15428, CQ15429, CQ15430, CQ15431)

Volatiles - Soil (Low Level)

1,1,1,2-Tetrachloroethane	ND	0.005	112	114	1.8	112	113	0.9	70 - 130	20
1,1,1-Trichloroethane	ND	0.005	114	130	13.1	130	128	1.6	70 - 130	20
1,1,2,2-Tetrachloroethane	ND	0.003	104	106	1.9	103	108	4.7	70 - 130	20
1,1,2-Trichloroethane	ND	0.005	102	105	2.9	103	104	1.0	70 - 130	20
1,1-Dichloroethane	ND	0.005	109	120	9.6	123	118	4.1	70 - 130	20
1,1-Dichloroethene	ND	0.005	113	123	8.5	124	121	2.4	70 - 130	20
1,1-Dichloropropene	ND	0.005	115	118	2.6	126	123	2.4	70 - 130	20
1,2,3-Trichlorobenzene	ND	0.005	105	107	1.9	103	98	5.0	70 - 130	20
1,2,3-Trichloropropane	ND	0.005	99	100	1.0	104	107	2.8	70 - 130	20
1,2,4-Trichlorobenzene	ND	0.005	98	105	6.9	100	96	4.1	70 - 130	20
1,2,4-Trimethylbenzene	ND	0.001	112	116	3.5	116	118	1.7	70 - 130	20
1,2-Dibromo-3-chloropropane	ND	0.005	97	98	1.0	95	98	3.1	70 - 130	20
1,2-Dibromoethane	ND	0.005	102	104	1.9	101	104	2.9	70 - 130	20
1,2-Dichlorobenzene	ND	0.005	111	116	4.4	111	114	2.7	70 - 130	20
1,2-Dichloroethane	ND	0.005	106	110	3.7	110	109	0.9	70 - 130	20
1,2-Dichloropropane	ND	0.005	110	117	6.2	113	114	0.9	70 - 130	20
1,3,5-Trimethylbenzene	ND	0.001	115	121	5.1	121	125	3.3	70 - 130	20
1,3-Dichlorobenzene	ND	0.005	110	114	3.6	113	113	0.0	70 - 130	20
1,3-Dichloropropane	ND	0.005	101	107	5.8	105	105	0.0	70 - 130	20
1,4-Dichlorobenzene	ND	0.005	112	116	3.5	115	115	0.0	70 - 130	20
1,4-dioxane	ND	0.1	110	111	0.9	138	141	2.2	40 - 160	20
2,2-Dichloropropane	ND	0.005	111	124	11.1	123	124	0.8	70 - 130	20
2-Chlorotoluene	ND	0.005	115	120	4.3	120	123	2.5	70 - 130	20
2-Hexanone	ND	0.025	97	98	1.0	92	94	2.2	40 - 160	20
2-Isopropyltoluene	ND	0.005	122	129	5.6	128	130	1.6	70 - 130	20
4-Chlorotoluene	ND	0.005	113	116	2.6	113	116	2.6	70 - 130	20
4-Methyl-2-pentanone	ND	0.025	101	100	1.0	98	99	1.0	40 - 160	20
Acetone	ND	0.01	88	91	3.4	NC	152	NC	40 - 160	20
Acrylonitrile	ND	0.005	91	97	6.4	95	93	2.1	70 - 130	20
Benzene	ND	0.001	112	115	2.6	117	116	0.9	70 - 130	20
Bromobenzene	ND	0.005	115	118	2.6	117	116	0.9	70 - 130	20
Bromochloromethane	ND	0.005	101	110	8.5	108	103	4.7	70 - 130	20
Bromodichloromethane	ND	0.005	111	114	2.7	115	116	0.9	70 - 130	20
Bromoform	ND	0.005	95	98	3.1	94	100	6.2	70 - 130	20
Bromomethane	ND	0.005	124	126	1.6	128	123	4.0	40 - 160	20
Carbon Disulfide	ND	0.005	113	126	10.9	127	122	4.0	70 - 130	20
Carbon tetrachloride	ND	0.005	114	130	13.1	128	126	1.6	70 - 130	20
Chlorobenzene	ND	0.005	111	116	4.4	114	116	1.7	70 - 130	20
Chloroethane	ND	0.005	117	129	9.8	129	124	4.0	70 - 130	20
Chloroform	ND	0.005	107	116	8.1	118	116	1.7	70 - 130	20
Chloromethane	ND	0.005	118	129	8.9	125	124	0.8	40 - 160	20
cis-1,2-Dichloroethene	ND	0.005	107	119	10.6	121	114	6.0	70 - 130	20
cis-1,3-Dichloropropene	ND	0.005	109	114	4.5	113	111	1.8	70 - 130	20
Dibromochloromethane	ND	0.003	103	108	4.7	104	110	5.6	70 - 130	20
Dibromomethane	ND	0.005	102	106	3.8	104	106	1.9	70 - 130	20

QA/QC Data

SDG I.D.: GCQ15424

Parameter	Blank	Blk RL	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
Dichlorodifluoromethane	ND	0.005	105	119	12.5	112	108	3.6	40 - 160	20	
Diethyl ether	ND	0.005	100	110	9.5	104	101	2.9	70 - 130	20	
Di-isopropyl ether	ND	0.005	105	117	10.8	116	111	4.4	70 - 130	20	
Ethyl tert-butyl ether	ND	0.005	104	113	8.3	112	106	5.5	70 - 130	20	
Ethylbenzene	ND	0.001	111	117	5.3	119	119	0.0	70 - 130	20	
Hexachlorobutadiene	ND	0.005	120	128	6.5	123	125	1.6	70 - 130	20	
Isopropylbenzene	ND	0.001	119	128	7.3	127	128	0.8	70 - 130	20	
m&p-Xylene	ND	0.002	109	113	3.6	111	114	2.7	70 - 130	20	
Methyl ethyl ketone	ND	0.005	90	93	3.3	93	91	2.2	40 - 160	20	
Methyl t-butyl ether (MTBE)	ND	0.001	96	104	8.0	103	100	3.0	70 - 130	20	
Methylene chloride	ND	0.005	96	108	11.8	105	100	4.9	70 - 130	20	
Naphthalene	ND	0.005	103	105	1.9	92	90	2.2	70 - 130	20	
n-Butylbenzene	ND	0.001	120	125	4.1	126	127	0.8	70 - 130	20	
n-Propylbenzene	ND	0.001	117	123	5.0	120	124	3.3	70 - 130	20	
o-Xylene	ND	0.002	112	117	4.4	115	119	3.4	70 - 130	20	
p-Isopropyltoluene	ND	0.001	116	123	5.9	123	127	3.2	70 - 130	20	
sec-Butylbenzene	ND	0.001	121	126	4.0	126	128	1.6	70 - 130	20	
Styrene	ND	0.005	104	107	2.8	106	107	0.9	70 - 130	20	
tert-amyl methyl ether	ND	0.005	104	106	1.9	105	105	0.0	70 - 130	20	
tert-Butylbenzene	ND	0.001	121	127	4.8	128	133	3.8	70 - 130	20	m
Tetrachloroethene	ND	0.005	118	123	4.1	124	126	1.6	70 - 130	20	
Tetrahydrofuran (THF)	ND	0.005	88	94	6.6	90	88	2.2	70 - 130	20	
Toluene	ND	0.001	112	116	3.5	114	117	2.6	70 - 130	20	
trans-1,2-Dichloroethene	ND	0.005	111	124	11.1	124	119	4.1	70 - 130	20	
trans-1,3-Dichloropropene	ND	0.005	107	110	2.8	109	107	1.9	70 - 130	20	
trans-1,4-dichloro-2-butene	ND	0.005	103	103	0.0	97	100	3.0	70 - 130	20	
Trichloroethene	ND	0.005	117	120	2.5	120	121	0.8	70 - 130	20	
Trichlorofluoromethane	ND	0.005	118	133	12.0	137	132	3.7	70 - 130	20	l,m
Trichlorotrifluoroethane	ND	0.005	113	127	11.7	128	127	0.8	70 - 130	20	
Vinyl chloride	ND	0.005	116	127	9.1	123	120	2.5	70 - 130	20	
% 1,2-dichlorobenzene-d4	94	%	100	100	0.0	100	101	1.0	70 - 130	20	
% Bromofluorobenzene	101	%	97	100	3.0	98	100	2.0	70 - 130	20	
% Dibromofluoromethane	96	%	95	99	4.1	98	96	2.1	70 - 130	20	
% Toluene-d8	96	%	103	103	0.0	102	104	1.9	70 - 130	20	

Comment:

Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.
The RPD criteria for the LCS/LCSD is 20%,
The MS/MSD RPD criteria is listed above.

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
m = This parameter is outside laboratory MS/MSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
March 05, 2024

Tuesday, March 05, 2024

Criteria: MA: CAM, S1

State: MA

Sample Criteria Exceedances Report

GCQ15424 - STANTECMA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: LAWRENCE, MA AIRPORT **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
CQ15424, CQ15425, CQ15426, CQ15427, CQ15428, CQ15429, CQ15430, CQ15431

Matrices: ☐ Groundwater/Surface Water ☑ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☑	7470/7471 Hg CAM III B ☑	MassDEP VPH CAM IV A ☐	8081 Pesticides CAM V B ☑	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☑	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☑	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☑	6020 Metals CAM III D ☐	8082 PCB CAM V A ☑	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☑ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements speified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☐ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes ☐ No

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350

H	Were all QC performance standards specified in the CAM protocol(s) achieved? See Sections: Herbicide, ICP, SVOA, VOA Narrations .	☐ Yes ☑ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☑ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized Signature: Ethan Lee

Date: Tuesday, March 05, 2024

Printed Name: Ethan Lee

Position: Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

March 05, 2024

SDG I.D.: GCQ15424

SDG Comments

Metals Analysis:
The client requested a shorter list of elements than the 6010 MCP list. Only the RCRA 8 Metals are reported as requested on the chain of custody.

Cyanide Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

LACHAT 02/29/24-1 Nicholas Pappas, Greg Danielewski, Chemist 02/29/24

CQ15424 , CQ15425 , CQ15426 , CQ15427

The samples were distilled in accordance with the method.
The initial calibration met criteria.

The calibration check standards (ICV,CCV) were within 15% of true value and were analyzed at a frequencey of one per ten samples.
The continuing calibration blanks (ICB,CCB) had concentrations less than the reporting level.

The method blank, laboratory control sample (LCS), and matrix spike were distilled with the samples.

QC (Batch Specific):

Batch 720067 (CQ14668)

CQ15424, CQ15425

All LCS recoveries were within 80 - 120 with the following exceptions: None.
Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.

Batch 720209 (CQ15427)

CQ15426, CQ15427

All LCS recoveries were within 80 - 120 with the following exceptions: None.
Additional soil criteria LCS acceptance range is 80-120% MS acceptance range 75-125%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

ETPH Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-FID21 03/02/24-1 Jeff Bucko, Chemist 03/02/24

CQ15424 (1X), CQ15425 (1X), CQ15426 (1X), CQ15427 (1X)

The initial calibration (ETPH130I) RSD for the compound list was less than 30% except for the following compounds: None.
As per section 7.2.3, a discrimination check standard was run (302A004_1) and contained the following outliers: None.
The continuing calibration %D for the compound list was less than 30% except for the following compounds:None.

QC (Batch Specific):

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

March 05, 2024

SDG I.D.: GCQ15424

ETPH Narration

Batch 720517 (CQ18248)

CQ15424, CQ15425, CQ15426, CQ15427

All LCS recoveries were within 50 - 150 with the following exceptions: None.
All LCSD recoveries were within 50 - 150 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
The ETPH/DRO LCS has been normalized based on the alkane calibration.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Herbicide Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 720173 (Samples: CQ15424, CQ15425, CQ15426, CQ15427): -----

The LCS/LCSD RPD exceeds the method criteria for one or more analytes, but these analytes were not reported in the sample(s) so no variability is suspected. (Dalapon)

Instrument:

AU-ECD2 03/01/24-1 Jeff Bucko, Chemist 03/01/24

CQ15424 (2X), CQ15425 (2X), CQ15426 (2X), CQ15427 (2X)

The initial calibration (HRB102AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (HRB102BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 720173 (CQ15412)

CQ15424, CQ15425, CQ15426, CQ15427

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: Dalapon(35.1%)
MCP 8151 additional criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Mercury Narration

Were all QA/QC performance criteria specified in the analytical method achieved? Yes.

Instrument:

MERLIN 02/28/24 12:13 Grace White, Chemist 02/28/24

CQ15424, CQ15425, CQ15426, CQ15427

The method preparation blank, ICB, and CCBs contain all of the acids and reagents as the samples.
The initial calibration met all criteria including a standard run at or below the reporting level.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

Certification Report

March 05, 2024

SDG I.D.: GCQ15424

Mercury Narration

All calibration verification standards (ICV, CCV) met criteria.
All calibration blank verification standards (ICB, CCB) met criteria.
The matrix spike sample is used to identify spectral interference for each batch of samples, if within 85-115%, no interference is observed and no further action is taken.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 720000 (CQ15495)

CQ15424, CQ15425, CQ15426, CQ15427

All LCS recoveries were within 75 - 125 with the following exceptions: None.
All LCSD recoveries were within 75 - 125 with the following exceptions: None.
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional Mercury criteria: LCS acceptance range for waters is 80-120% and for soils is 75-125%

ICP Metals Narration

Were all QA/QC performance criteria specified in the analytical method achieved? No.

QC Batch 719915 (Samples: CQ15424, CQ15425, CQ15426, CQ15427): -----

The LCS and/or the LCSD recovery is above the upper range for one or more analytes that were not reported in the sample(s), therefore no significant bias is suspected. (Cadmium)

The Sample/Duplicate RPD exceeds the method criteria for one or more analytes, therefore there may be variability in the reported result. (Lead)

Instrument:

ARCOS-3 02/28/24 11:07 Tina Hall, Chemist 02/28/24

CQ15424, CQ15425, CQ15426, CQ15427

The linear range is defined daily by the calibration range.
The following Initial Calibration Verification (ICV) compounds did not meet criteria: None.
The following Continuing Calibration Verification (CCV) compounds did not meet criteria: None.
The following ICP Interference Check (ICSAB) compounds did not meet criteria: None.

QC (Batch Specific):

Batch 719915 (CQ15254)

CQ15424, CQ15425, CQ15426, CQ15427

All LCS recoveries were within 75 - 125 with the following exceptions: Cadmium(129%)
All LCSD recoveries were within 75 - 125 with the following exceptions: None.
All LCS/LCSD RPDs were less than 35% with the following exceptions: None.
Additional: LCS acceptance range is 80-120% MS acceptance range 75-125%.

PCB Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

MCP Certification Report

March 05, 2024

SDG I.D.: GCQ15424

PCB Narration

Instrument:

AU-ECD1 03/01/24-1 Keith Aloisa, Chemist 03/01/24

CQ15426 (2X), CQ15427 (2X)

The initial calibration (PC0209AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC0209BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

AU-ECD5 03/01/24-1 Keith Aloisa, Chemist 03/01/24

CQ15424 (2X), CQ15425 (2X)

The initial calibration (PC0228AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PC0228BI) RSD for the compound list was less than 20% except for the following compounds: None.
The continuing calibration %D for the compound list was less than 15% except for the following compounds:None.

QC (Batch Specific):

Batch 720331 (CQ15411)

CQ15424, CQ15425, CQ15426, CQ15427

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

PEST Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? Yes.

Instrument:

AU-ECD35 03/01/24-1 Adam Werner, Chemist 03/01/24

CQ15424 (2X), CQ15425 (2X), CQ15426 (2X)

The initial calibration (AC0130AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (AC0130BI) RSD for the compound list was less than 20% except for the following compounds: None.
The Endrin and DDT breakdown does not exceed 15% except for the following compounds:None.
The Endrin and DDT breakdown does not exceed the maximum of 20% except for the following compounds:None.
The continuing calibration %D for the compound list was less than 20% except for the following compounds:None.

AU-ECD4 03/01/24-1 Adam Werner, Chemist 03/01/24

CQ15427 (2X)

The initial calibration (PS0229AI) RSD for the compound list was less than 20% except for the following compounds: None.
The initial calibration (PS0229BI) RSD for the compound list was less than 20% except for the following compounds: None.
The Endrin and DDT breakdown does not exceed 15% except for the following compounds:None.
The Endrin and DDT breakdown does not exceed the maximum of 20% except for the following compounds:None.
The continuing calibration %D for the compound list was less than 20% except for the following compounds:None.

QC (Batch Specific):

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

March 05, 2024

SDG I.D.: GCQ15424

PEST Narration

Batch 720332 (CQ15411)

CQ15424, CQ15425, CQ15426, CQ15427

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: None.
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

SVOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 720473 (Samples: CQ15424, CQ15425, CQ15426, CQ15427): -----

The QC recoveries for one or more analytes are below method criteria. A slight low bias is likely. (Pyridine)

The LCS/LCSD recovery is acceptable. One or more analytes in the site specific matrix spike recovery is below the method criteria, therefore a low bias is likely. (Benzidine)

The MS and/or the MSD recovery is above the upper range for one or more analytes that were not reported in the sample(s), therefore no significant bias is suspected. (2-Nitroaniline)

The MS/MSD RPD exceeds the method criteria for one or more analytes, therefore there may be variability in the reported result. (4-Nitrophenol)

The QC recovery for one or more analytes is above the upper range but were not reported in the sample(s), therefore no significant bias is suspected. (4-Nitrophenol)

Instrument:

CHEM36 03/01/24-1 Matt Richard, Chemist 03/01/24

CQ15424 (1X), CQ15425 (1X), CQ15426 (1X), CQ15427 (1X, 1000X)

Initial Calibration Evaluation (CHEM36/36_SPLIT_0206):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet recommended response factors: 2-Nitrophenol 0.067 (0.1), Hexachlorobenzene 0.084 (0.1)
The following compounds did not meet a minimum response factors: None.

Continuing Calibration Verification (CHEM36/0301_08-36_SPLIT_0206) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
95% of target compounds met criteria.
The following compounds did not meet % deviation criteria: % 2,4,6-Tribromophenol 43%H (20%), 2-Nitrophenol 36%H (20%), 4-Chloroaniline 36%H (20%), 4-Nitroaniline 30%H (20%), Hexachlorocyclopentadiene 24%L (20%)
The following compounds did not meet maximum % deviations: % 2,4,6-Tribromophenol 43%H (40%)
The following compounds did not meet recommended response factors: 2-Nitrophenol 0.091 (0.1), Hexachlorobenzene 0.094 (0.1)
The following compounds did not meet minimum response factors: None.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

March 05, 2024

SDG I.D.: GCQ15424

SVOA Narration

QC (Batch Specific):

Batch 720473 (CQ15427)

CQ15424, CQ15425, CQ15426, CQ15427

All LCS recoveries were within 40 - 140 with the following exceptions: None.
All LCSD recoveries were within 40 - 140 with the following exceptions: 4-Nitrophenol(140%), Pyridine(34%)
All LCS/LCSD RPDs were less than 30% with the following exceptions: None.
Additional 8270 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is at least 10%. (Acid surrogates acceptance range for aqueous samples: 10-110%, for soils 30-130%)

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

VOA Narration

Were all QA/QC performance criteria specified in the MADEP document CAM achieved? No.

QC Batch 720460 (Samples: CQ15428, CQ15429, CQ15430, CQ15431): -----

The QC recovery for one or more analytes is above the upper range but were not reported in the sample(s), therefore no significant bias is suspected. (Trichlorofluoromethane)

Instrument:

CHEM18 02/29/24-2 Jane Li, Chemist 02/29/24

CQ15428 (1X), CQ15429 (1X), CQ15430 (1X), CQ15431 (1X)

Initial Calibration Evaluation (CHEM18/VT-M022924):
100% of target compounds met criteria.
The following compounds had %RSDs >20%: None.
The following compounds did not meet Table 4 recommended minimum response factors: Ethylbenzene 0.390 (0.4)
The following compounds did not meet the minimum response factor of 0.05: None.

Continuing Calibration Verification (CHEM18/0229_22-VT-M022924) (MCP Compliance):
Internal standard areas were within 50 to 200% of the initial calibration with the following exceptions: None.
97% of target compounds met criteria.
The following compounds did not meet % deviation criteria: Acetone 22%L (20%), tert-Butylbenzene 22%H (20%)
The following compounds did not meet maximum % deviations: None.
The following compounds did not meet Table 4 recommended minimum response factors: None.
The following compounds did not meet the minimum MCP response factor of 0.05: None.

QC (Batch Specific):

Batch 720460 (CQ17393) CHEM18 2/29/2024-2

CQ15428(1X), CQ15429(1X), CQ15430(1X), CQ15431(1X)

All LCS recoveries were within 70 - 130 with the following exceptions: None.
All LCSD recoveries were within 70 - 130 with the following exceptions: Trichlorofluoromethane(133%)
All LCS/LCSD RPDs were less than 20% with the following exceptions: None.
Additional 8260 criteria: 10% of compounds can be outside of acceptance criteria as long as recovery is 10%.
The RPD criteria for the LCS/LCSD is 20%,

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

ACCREDITED IN ACCORDANCE WITH nelac NY # 11301

MCP Certification Report

March 05, 2024

SDG I.D.: GCQ15424

VOA Narration

The MS/MSD RPD criteria is listed above.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Cooler: Yes ☒ No ☐
Coolant: IPK ☒ ICE ☐ No ☐

PHOENIX Environmental Laboratories, Inc.

CT/MA/RI CHAIN OF CUSTODY RECORD

Temp 1.9 C Pg of

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: makrina@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-1102

Data Delivery/Contact Options:
☐ Fax: _____
☐ Phone: _____
☒ Email: Charles.young@Stantec.com

Customer: Stantec
Address: 300 Crown Colony Drive
Suite 110
Quincy, MA 02169

Project: Lawrence Airport
Report to: Charles Young
Invoice to:
Quote #

Project P.O: 179450605

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification
Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe **OIL**=Oil
B=Bulk **L**=Liquid **X** = _____(Other)

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	*MS/MSD (May be billable at analysis unit rate)	VOCs 8260	TPH by Method 1664	RCRA 8 Metals (6010)	SVOCs 8270	PCBs 8082	Pesticides/Herbicides	Reactivity	Conductivity	pH	Corrosivity	Ignitability/Flashpoint	GL Amber 8 oz. [ ] w/H3PO4 [ ] NaHSO4	Soil VOA Vials [+] methanol [+] H2O	GL Soil container (8) oz	GL Soil container (4) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H2SO4	PL As is [ ] 250ml [ ] 500ml [ ] 1000ml	PL H2SO4 [ ] 250ml [ ] 500ml	PL HNO3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
15424	B-1, B-2, B-3 Comp	S	2/26/24	0905		X	X	X	X	X	X	X	X	X			1	1										
15425	B-4, B-5, B-6 COMP	S		1005		X	X	X	X	X	X	X	X	X			1	1										
15426	B-7, B-8, B-9 Comp	S		0835		X	X	X	X	X	X	X	X	X			1	1										
15427	B-10, B-11, B-12 Comp	S		0935		X	X	X	X	X	X	X	X	X			1	1										
15428	B-8 2'-3'	S		0830	X											2/1												
15429	B-2 2'-3'	S		0900	X											2/1												
15430	B-4 2'-3'	S		1000	X											2/1												
15431	B-10 2'-3'	S	↓	0930	X											2/1												

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	2/27/24	9:20
[signature]	[signature]	2/27/24	15:50

Comments, Special Requirements or Regulations:

Turnaround Time:
☐ 1 Day* ☒ Standard
☐ 2 Days* ☐ Other _____
☐ 3 Days*
☐ 4 Days*
☐ 5 Days*

RI
☐ RES DEC
☐ I/C DEC
☐ GA Leachability
☐ GB Leachability
☐ GA -GW Objectives
☐ GB -GW Objectives
☐ Other

CT
☐ RCP Cert
☐ GWPC
☐ SWPC
☐ GA PMC
☐ GB PMC
☐ SWPC
☐ RES DEC
☐ I/C DEC

MA
☒ MCP Certification
☐ GW-1 ☐ RCS-1 / RCGW-1
☐ GW-2 ☐ RCS-2 / RCGW-2
☐ GW-3 ☐ _____
☐ S-1
☐ S-2
☐ S-3
☐ SW Protection

Data Format
☒ Excel
☒ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist*
☐ Full Data Package*
☒ Phoenix Std
☐ Other

***MS/MSD are considered site samples and will be billed as such in accordance with the prices quoted.**

*** SURCHARGES MAY APPLY**

State where samples were collected: MA

*** SURCHARGE APPLIES**

PHOENIX
Environmental Laboratories, Inc.

Wednesday, March 13, 2024

Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Project ID: **LAWRENCE, MA AIRPORT**
SDG ID: **GCQ15420**
Sample ID#s: CQ15420 - CQ15423

This laboratory is in compliance with the NELAC requirements of procedures used except where indicated.

This report contains results for the parameters tested, under the sampling conditions described on the Chain Of Custody, as received by the laboratory. This report is incomplete unless all pages indicated in the pagination at the bottom of the page are included.

A scanned version of the COC form accompanies the analytical report and is an exact duplicate of the original.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200. The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.

Sincerely yours,

Phyllis Shiller
Laboratory Director

NELAC - #NY11301
CT Lab Registration #PH-0618
MA Lab Registration #M-CT007
ME Lab Registration #CT-007
NH Lab Registration #213693-A,B
NJ Lab Registration #CT-003
NY Lab Registration #11301
PA Lab Registration #68-03530
RI Lab Registration #63
VT Lab Registration #VT11301

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

NY # 11301

SDG Comments

March 13, 2024

SDG I.D.: GCQ15420

Phoenix reporting levels may exceed those referenced in the CAM protocol. Please refer to criteria sheet for comparisons to requested MCP standards.

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Sample Id Cross Reference

March 13, 2024

SDG I.D.: GCQ15420

Project ID: LAWRENCE, MA AIRPORT

Client Id	Lab Id	Matrix
B-1,B-2,B-3 0.0-0.5	CQ15420	SOIL
B-4,B-5,B-6 0.0-0.5	CQ15421	SOIL
B-7,B-8,B-9 0.0-0.5	CQ15422	SOIL
B-10,B-11,B-12 0.0-0.5	CQ15423	SOIL

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 13, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	9:00
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15420
Phoenix ID: CQ15420

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-1,B-2,B-3 0.0-0.5

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA	Completed				03/08/24	***	EPA 1633 Draft 3	C
PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA								
Perfluorodecanoic acid (PFDA)	ND	0.278	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluoroheptanoic acid (PFHpA)	ND	0.278	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorohexanesulfonic Acid (PFHxS)	ND	0.254	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorononanoic acid (PFNA)	ND	0.278	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorooctanesulfonic Acid (PFOS)	0.561	0.259	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorooctanoic acid (PFOA)	ND	0.278	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
QA/QC Surrogates								
% d3-N-MeFOSAA	104		%	1	03/10/24	***	25 - 150 %	C
% d5-NEtFOSA	104		%	1	03/10/24	***	25 - 150 %	C
% d5-N-EtFOSA	104		%	1	03/10/24	***	25 - 150 %	C
% d7-N-MeFOSE	76.6		%	1	03/10/24	***	25 - 150 %	C
% d9-N-EtFOSE	63.7		%	1	03/10/24	***	25 - 150 %	C
% d-N-EtFOSA	76.7		%	1	03/10/24	***	25 - 150 %	C
% d-N-MeFOSA	85.8		%	1	03/10/24	***	25 - 150 %	C
% M2-4:2 FTS	154		%	1	03/10/24	***	25 - 150 %	C,3
% M2-6:2 FTS	143		%	1	03/10/24	***	25 - 200 %	C
% M2-8:2 FTS	133		%	1	03/10/24	***	25 - 200 %	C
% M2PFTEDA	95.7		%	1	03/10/24	***	10 - 150 %	C
% M3HFPO-DA	152		%	1	03/10/24	***	25 - 150 %	C,3
% M3PFBS	142		%	1	03/10/24	***	25 - 150 %	C
% M3PFHxS	154		%	1	03/10/24	***	25 - 150 %	C,3
% M4PFHpA	128		%	1	03/10/24	***	25 - 150 %	C
% M5PFHxA	149		%	1	03/10/24	***	25 - 150 %	C
% M5PFPEA	24.0		%	1	03/10/24	***	25 - 150 %	C,3
% M6PFDA	153		%	1	03/10/24	***	25 - 150 %	C,3

Ver 1

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-1,B-2,B-3 0.0-0.5

Phoenix I.D.: CQ15420

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
% M7PFUDA	114		%	1	03/10/24	***	25 - 150 %	C
% M8FOSA	113		%	1	03/10/24	***	10 - 150 %	C
% M8PFOA	169		%	1	03/10/24	***	25 - 150 %	C,3
% M8PFOS	160		%	1	03/10/24	***	25 - 150 %	C,3
% M9PFNA	154		%	1	03/10/24	***	25 - 150 %	C,3
% MPFBA	1.71		%	1	03/10/24	***	25 - 150 %	C,3
% MPFDOA	120		%	1	03/10/24	***	25 - 150 %	C

3 = This parameter exceeds laboratory specified limits.
C = This parameter is subcontracted.

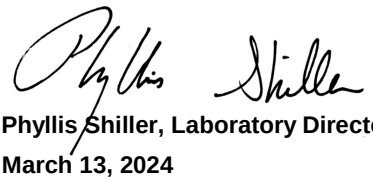
RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

*See attached

PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA (EPA 1633 Draft 3), PFOA/PFOS - Soil Extraction (EPA 1633 Draft 3) were analyzed by NY certified lab #12058.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
March 13, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 13, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	10:00
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15420
Phoenix ID: CQ15421

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-4,B-5,B-6 0.0-0.5

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA	Completed				03/08/24	***	EPA 1633 Draft 3	C
PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA								
Perfluorodecanoic acid (PFDA)	ND	0.261	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluoroheptanoic acid (PFHpA)	ND	0.261	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorohexanesulfonic Acid (PFHxS)	ND	0.239	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorononanoic acid (PFNA)	ND	0.261	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorooctanesulfonic Acid (PFOS)	0.455	0.243	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorooctanoic acid (PFOA)	ND	0.261	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
QA/QC Surrogates								
% d3-N-MeFOSAA	89.1		%	1	03/10/24	***	25 - 150 %	C
% d5-NEtFOSA	116		%	1	03/10/24	***	25 - 150 %	C
% d5-N-EtFOSA	116		%	1	03/10/24	***	25 - 150 %	C
% d7-N-MeFOSE	57.3		%	1	03/10/24	***	25 - 150 %	C
% d9-N-EtFOSE	52.9		%	1	03/10/24	***	25 - 150 %	C
% d-N-EtFOSA	58.0		%	1	03/10/24	***	25 - 150 %	C
% d-N-MeFOSA	75.2		%	1	03/10/24	***	25 - 150 %	C
% M2-4:2 FTS	112		%	1	03/10/24	***	25 - 150 %	C
% M2-6:2 FTS	103		%	1	03/10/24	***	25 - 200 %	C
% M2-8:2 FTS	103		%	1	03/10/24	***	25 - 200 %	C
% M2PFTEDA	86.7		%	1	03/10/24	***	10 - 150 %	C
% M3HFPO-DA	155		%	1	03/10/24	***	25 - 150 %	C,3
% M3PFBS	128		%	1	03/10/24	***	25 - 150 %	C
% M3PFHxS	127		%	1	03/10/24	***	25 - 150 %	C
% M4PFHpA	118		%	1	03/10/24	***	25 - 150 %	C
% M5PFHxA	135		%	1	03/10/24	***	25 - 150 %	C
% M5PFPEA	49.3		%	1	03/10/24	***	25 - 150 %	C
% M6PFDA	125		%	1	03/10/24	***	25 - 150 %	C

Ver 1

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-4,B-5,B-6 0.0-0.5

Phoenix I.D.: CQ15421

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
% M7PFUDA	112		%	1	03/10/24	***	25 - 150 %	C
% M8FOSA	108		%	1	03/10/24	***	10 - 150 %	C
% M8PFOA	147		%	1	03/10/24	***	25 - 150 %	C
% M8PFOS	139		%	1	03/10/24	***	25 - 150 %	C
% M9PFNA	123		%	1	03/10/24	***	25 - 150 %	C
% MPFBA	2.13		%	1	03/10/24	***	25 - 150 %	C,3
% MPFDOA	109		%	1	03/10/24	***	25 - 150 %	C

3 = This parameter exceeds laboratory specified limits.
C = This parameter is subcontracted.

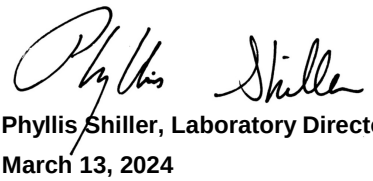
RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

*See attached

PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA (EPA 1633 Draft 3), PFOA/PFOS - Soil Extraction (EPA 1633 Draft 3) were analyzed by NY certified lab #12058.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
March 13, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 13, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	8:30
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15420
Phoenix ID: CQ15422

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-7,B-8,B-9 0.0-0.5

Parameter	Result		RL/ PQL	Units	Dilution	Date/Time	By	Reference	
PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA	Completed					03/08/24	***	EPA 1633 Draft 3	C
PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA									
Perfluorodecanoic acid (PFDA)	ND		0.269	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluoroheptanoic acid (PFHpA)	0.144	J	0.269	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorohexanesulfonic Acid (PFHxS)	ND		0.246	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorononanoic acid (PFNA)	ND		0.269	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorooctanesulfonic Acid (PFOS)	1.30		0.250	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorooctanoic acid (PFOA)	0.311		0.269	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
QA/QC Surrogates									
% d3-N-MeFOSAA	114			%	1	03/10/24	***	25 - 150 %	C
% d5-NEtFOSA	125			%	1	03/10/24	***	25 - 150 %	C
% d5-N-EtFOSA	125			%	1	03/10/24	***	25 - 150 %	C
% d7-N-MeFOSE	78.1			%	1	03/10/24	***	25 - 150 %	C
% d9-N-EtFOSE	65.0			%	1	03/10/24	***	25 - 150 %	C
% d-N-EtFOSA	82.0			%	1	03/10/24	***	25 - 150 %	C
% d-N-MeFOSA	95.4			%	1	03/10/24	***	25 - 150 %	C
% M2-4:2 FTS	147			%	1	03/10/24	***	25 - 150 %	C
% M2-6:2 FTS	153			%	1	03/10/24	***	25 - 200 %	C
% M2-8:2 FTS	117			%	1	03/10/24	***	25 - 200 %	C
% M2PFTEDA	116			%	1	03/10/24	***	10 - 150 %	C
% M3HFPO-DA	166			%	1	03/10/24	***	25 - 150 %	C,3
% M3PFBS	157			%	1	03/10/24	***	25 - 150 %	C,3
% M3PFHxS	153			%	1	03/10/24	***	25 - 150 %	C,3
% M4PFHpA	125			%	1	03/10/24	***	25 - 150 %	C
% M5PFHxA	155			%	1	03/10/24	***	25 - 150 %	C,3
% M5PFPEA	54.0			%	1	03/10/24	***	25 - 150 %	C
% M6PFDA	152			%	1	03/10/24	***	25 - 150 %	C,3

Ver 1

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-7,B-8,B-9 0.0-0.5

Phoenix I.D.: CQ15422

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
% M7PFUDA	152		%	1	03/10/24	***	25 - 150 %	C,3
% M8FOSA	134		%	1	03/10/24	***	10 - 150 %	C
% M8PFOA	164		%	1	03/10/24	***	25 - 150 %	C,3
% M8PFOS	166		%	1	03/10/24	***	25 - 150 %	C,3
% M9PFNA	145		%	1	03/10/24	***	25 - 150 %	C
% MPFBA	1.80		%	1	03/10/24	***	25 - 150 %	C,3
% MPFDOA	137		%	1	03/10/24	***	25 - 150 %	C

3 = This parameter exceeds laboratory specified limits.
C = This parameter is subcontracted.

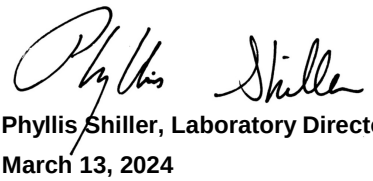
RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level J=Estimated Below RL
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

*See attached

PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA (EPA 1633 Draft 3), PFOA/PFOS - Soil Extraction (EPA 1633 Draft 3) were analyzed by NY certified lab #12058.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
March 13, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102 Fax (860) 645-0823

Analysis Report

March 13, 2024

FOR: Attn: Charles Young
Stantec
400 Crown Colony Drive/Suite 200
Quincy MA 02169

Sample Information		Custody Information		Date	Time
Matrix:	SOIL	Collected by:		02/26/24	9:30
Location Code:	STANTECMA	Received by:	SW	02/27/24	15:50
Rush Request:	Standard	Analyzed by:	see "By" below		
P.O.#:	179450605				

Laboratory Data

SDG ID: GCQ15420
Phoenix ID: CQ15423

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-10,B-11,B-12 0.0-0.5

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA	Completed				03/08/24	***	EPA 1633 Draft 3	C
PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA								
Perfluorodecanoic acid (PFDA)	ND	0.268	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluoroheptanoic acid (PFHpA)	ND	0.268	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorohexanesulfonic Acid (PFHxS)	ND	0.245	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorononanoic acid (PFNA)	ND	0.268	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorooctanesulfonic Acid (PFOS)	0.950	0.249	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
Perfluorooctanoic acid (PFOA)	ND	0.268	ng/g	1	03/10/24	***	EPA 1633 Draft 3	C
QA/QC Surrogates								
% d3-N-MeFOSAA	105		%	1	03/10/24	***	25 - 150 %	C
% d5-NEtFOSA	117		%	1	03/10/24	***	25 - 150 %	C
% d5-N-EtFOSA	117		%	1	03/10/24	***	25 - 150 %	C
% d7-N-MeFOSE	71.7		%	1	03/10/24	***	25 - 150 %	C
% d9-N-EtFOSE	60.8		%	1	03/10/24	***	25 - 150 %	C
% d-N-EtFOSA	76.8		%	1	03/10/24	***	25 - 150 %	C
% d-N-MeFOSA	79.4		%	1	03/10/24	***	25 - 150 %	C
% M2-4:2 FTS	134		%	1	03/10/24	***	25 - 150 %	C
% M2-6:2 FTS	128		%	1	03/10/24	***	25 - 200 %	C
% M2-8:2 FTS	124		%	1	03/10/24	***	25 - 200 %	C
% M2PFTEDA	94.9		%	1	03/10/24	***	10 - 150 %	C
% M3HFPO-DA	152		%	1	03/10/24	***	25 - 150 %	C,3
% M3PFBS	133		%	1	03/10/24	***	25 - 150 %	C
% M3PFHxS	132		%	1	03/10/24	***	25 - 150 %	C
% M4PFHpA	120		%	1	03/10/24	***	25 - 150 %	C
% M5PFHxA	152		%	1	03/10/24	***	25 - 150 %	C,3
% M5PFPEA	88.3		%	1	03/10/24	***	25 - 150 %	C
% M6PFDA	133		%	1	03/10/24	***	25 - 150 %	C

Ver 1

Project ID: LAWRENCE, MA AIRPORT
Client ID: B-10,B-11,B-12 0.0-0.5

Phoenix I.D.: CQ15423

Parameter	Result	RL/ PQL	Units	Dilution	Date/Time	By	Reference	
% M7PFUDA	134		%	1	03/10/24	***	25 - 150 %	C
% M8FOSA	120		%	1	03/10/24	***	10 - 150 %	C
% M8PFOA	148		%	1	03/10/24	***	25 - 150 %	C
% M8PFOS	144		%	1	03/10/24	***	25 - 150 %	C
% M9PFNA	142		%	1	03/10/24	***	25 - 150 %	C
% MPFBA	12.7		%	1	03/10/24	***	25 - 150 %	C,3
% MPFDOA	122		%	1	03/10/24	***	25 - 150 %	C

3 = This parameter exceeds laboratory specified limits.
C = This parameter is subcontracted.

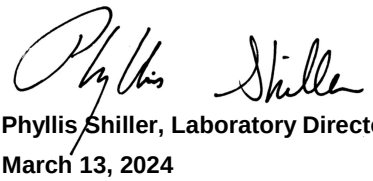
RL/PQL=Reporting/Practical Quantitation Level ND=Not Detected BRL=Below Reporting Level
QA/QC Surrogates: Surrogates are compounds (preceeded with a %) added by the lab to determine analysis efficiency. Surrogate results(%) listed in the report are not "detected" compounds.

Comments:

*See attached

PFOA, PFAS, PFNA, PFHxS, PFHpA, PFDA (EPA 1633 Draft 3), PFOA/PFOS - Soil Extraction (EPA 1633 Draft 3) were analyzed by NY certified lab #12058.

If you are the client above and have any questions concerning this testing, please do not hesitate to contact Phoenix Client Services at ext.200.
The contents of this report cannot be discussed with anyone other than the client listed above without their written consent.



Phyllis Shiller, Laboratory Director
March 13, 2024
Reviewed and Released by: Ethan Lee, Project Manager

Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O.Box 370, Manchester, CT 06045
Tel. (860) 645-1102

QA/QC Report

March 13, 2024

QA/QC Data

SDG I.D.: GCQ15420

Parameter	Blank	Blk RL	Sample Result	Dup Result	Dup RPD	LCS %	LCSD %	LCS RPD	MS %	MSD %	MS RPD	% Rec Limits	% RPD Limits	
QA/QC Batch 721728 (ng/g), QC Sample No: CQ15420 (CQ15420, CQ15421, CQ15422, CQ15423)														
PFOA & PFOS														
PFDA	ND	0.200	ND	ND	NC	87.2						50 - 150	30	
PFHpA	ND	0.200	ND	ND	NC	102						50 - 150	30	
PFHxS	ND	0.183	ND	ND	NC	99.3						50 - 150	30	
PFNA	ND	0.200	ND	ND	NC	85.7						50 - 150	30	
PFOA	ND	0.200	ND	ND	NC	78.3						50 - 150	30	
PFOS	ND	0.186	0.561	0.772	31.6	100						50 - 150	30	r
% d3-N-MeFOSAA	48.4			100	NC	42.7						25 - 150		
% d5-NEtFOSA	49.3			99.4	NC	46.7						25 - 150		
% M2-4:2 FTS	65.5			123	NC	69.1						25 - 150		
% M2-6:2 FTS	55.7			124	NC	51.4						25 - 200		
% M2-8:2 FTS	46.9			117	NC	45.1						25 - 200		
% M2PFTEDA	31.6			92.9	NC	34.9						10 - 150		
% M3HFPO-DA	137			142	NC	166						25 - 150		l
% M3PFBS	112			117	NC	124						25 - 150		
% M3PFHxS	99.7			122	NC	92.9						25 - 150		
% M4PFHpA	116			116	NC	102						25 - 150		
% M5PFHxA	130			141	NC	141						25 - 150		
% M5PFPEA	50.6			58.9	NC	61.4						25 - 150		
% M6PFDA	91.0			127	NC	74.1						25 - 150		
% M7PFUDA	70.0			112	NC	74.8						25 - 150		
% M8FOSA	71.1			111	NC	62.5						10 - 150		
% M8PFOA	114			143	NC	118						25 - 150		
% M8PFOS	87.0			140	NC	64.5						25 - 150		
% M9PFNA	113			127	NC	86.6						25 - 150		
% MPFBA	4.57			3.45	NC	3.74						25 - 150		l,s
% MPFDOA	56.2			109	NC	57.7						25 - 150		

l = This parameter is outside laboratory LCS/LCSD specified recovery limits.
r = This parameter is outside laboratory RPD specified recovery limits.
s = This parameter is outside laboratory Blank Surrogate specified recovery limits.

If there are any questions regarding this data, please call Phoenix Client Services at extension 200.

RPD - Relative Percent Difference
LCS - Laboratory Control Sample
LCSD - Laboratory Control Sample Duplicate
MS - Matrix Spike
MS Dup - Matrix Spike Duplicate
NC - No Criteria
Intf - Interference

Phyllis Shiller, Laboratory Director
March 13, 2024

Wednesday, March 13, 2024

Criteria: MA: CAM, S1

State: MA

Sample Criteria Exceedances Report

GCQ15420 - STANTECMA

SampNo	Acode	Phoenix Analyte	Criteria	Result	RL	Criteria	RL Criteria	Analysis Units

*** No Data to Display ***

Phoenix Laboratories does not assume responsibility for the data contained in this exceedance report. It is provided as an additional tool to identify requested criteria exceedences. All efforts are made to ensure the accuracy of the data (obtained from appropriate agencies). A lack of exceedence information does not necessarily suggest conformance to the criteria. It is ultimately the site professional's responsibility to determine appropriate compliance.

MassDEP Analytical Protocol Certification Form

Laboratory Name: Phoenix Environmental Laboratories, Inc. **Project #:**

Project Location: LAWRENCE, MA AIRPORT **RTN:**

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]
CQ15420, CQ15421, CQ15422, CQ15423

Matrices: ☐ Groundwater/Surface Water ☑ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below)

8260 VOC CAM II A ☐	7470/7471 Hg CAM III B ☐	MassDEP VPH CAM IV A ☐	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☐	6020 Metals CAM III D ☐	8082 PCB CAM V A ☐	9012 Total Cyanide/PAC CAM V1 A ☐	6860 Perchlorate CAM VIII B ☐	

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature*) in the field or laboratory, and prepared/analyzed with method holding times? (* see narrative)	☑ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements speified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes ☐ No
E	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 methods only: Was the complete analyte list reported for each method?	☐ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes ☐ No

Responses to questions G, H and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☑ Yes ☐ No

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056(2)(k) and WSC-07-350

H	Were all QC performance standards specified in the CAM protocol(s) achieved?	☑ Yes ☐ No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes ☐ No

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Authorized Signature: Ethan Lee

Date: Wednesday, March 13, 2024

Printed Name: Ethan Lee

Position: Project Manager

Cooler: Yes ☒ No ☐
Coolant: IPK ☐ ICE ☒ No ☐
Temp 1.6 °C Pg of

CT/MA/RI CHAIN OF CUSTODY RECORD

PHOENIX Environmental Laboratories, Inc.

587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: makrina@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-1102

Data Delivery/Contact Options:
☐ Fax:
☐ Phone:
☒ Email: Charles.young@Stantec.com

Customer: Stantec
Address: 300 Crown Colony Drive
Suite 110
Quincy, MA 02169

Project: Lawrence, MA Airport
Report to: Charles Young
Invoice to:
Quote #

Project P.O: 179450605

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe **OIL**=Oil
B=Bulk **L**=Liquid **X** = _____(Other)

PHOENIX USE ONLY SAMPLE #	Customer Sample Identification	Sample Matrix	Date Sampled	Time Sampled	*MS/MSD (May be billable at analysis unit rate)	PFAS by Method 537M	GL Amber 8 oz. [ ] w/H_3PO_4 [ ] $NAHSO_4$	Soil VOA Vials [ ] methanol [ ] H_2O	GL Soil container ( ) oz	GL Soil container ( ) oz	40 ml VOA Vial [ ] As is [ ] HCl	GL Amber 1000ml [ ] As is [ ] H_2SO_4	PL As is ☒	PL H_2SO_4 [ ] 250ml [ ] 500ml [ ] 1000ml	PL HNO_3 250ml	PL NaOH 250ml	Bacteria Bottle w/thio	Bacteria Bottle as is
15420	B-1, B-2, B-3 0.0-0.5	S	2/26/24	0900		X						1						
15421	B-4, B-5, B-6 0.0-0.5	S	2/26/24	1000		X						1						
15422	B-7, B-8, B-9 0.0-0.5	S	2/26/24	0830		X						1						
15423	B-10, B-11, B-12 0.0-0.5	S	2/26/24	0930		X						1						

Relinquished by:	Accepted by:	Date:	Time:
Meredith Mata		2/27/24	9:30
		2/27/24	15:50

Comments, Special Requirements or Regulations:

Turnaround Time:
☐ 1 Day* ☒ Standard
☐ 2 Days* ☐ Other
☐ 3 Days*
☐ 4 Days*
☐ 5 Days*

***MS/MSD are considered site samples and will be billed as such in accordance with the prices quoted.**

*** SURCHARGES MAY APPLY**

RI
☐ RES DEC
☐ I/C DEC
☐ GA Leachability
☐ GB Leachability
☐ GA -GW Objectives
☐ GB -GW Objectives
☐ Other

CT
☐ RCP Cert
☐ GWPC
☐ SWPC
☐ GA PMC
☐ GB PMC
☐ SWPC
☐ RES DEC
☐ I/C DEC

MA
☒ MCP Certification
☐ GW-1 ☐ RCS-1 / RCGW-1
☐ GW-2 ☐ RCS-2 / RCGW-2
☐ GW-3 ☐ _____
☐ S-1
☐ S-2
☐ S-3
☐ SW Protection

State where samples were collected: MA

Data Format
☒ Excel
☒ PDF
☐ GIS/Key
☐ EQuIS
☐ Other

Data Package
☐ Tier II Checklist*
☐ Full Data Package*
☒ Phoenix Std
☐ Other

*** SURCHARGE APPLIES**

Form PEL126 Rev. 1/23

Technical Report

prepared for:

Phoenix Environmental Laboratories, Inc.
P.O. Box 370, 587 East Middle Turnpike
Manchester CT, 06040
Attention: Helen Geoghegan

Report Date: 03/11/2024
Client Project ID: CQ15420 - CQ15423
York Project (SDG) No.: 24C0011

Stratford, CT Laboratory IDs:
NY:10854, NJ: CT005, PA: 68-0440, CT: PH-0723

Richmond Hill, NY Laboratory IDs:
NY:12058, NJ: NY037, CT: PH-0721, NH: 2097,
EPA: NY01600

120 RESEARCH DRIVE STRATFORD, CT 06615 ■ 132-02 89th AVENUE RICHMOND HILL, NY 11418
www.YORKLAB.com (203) 325-1371 FAX (203) 357-0166 ClientServices@yorklab.com

Report Date: 03/11/2024
Client Project ID: CQ15420 - CQ15423
York Project (SDG) No.: 24C0011

Phoenix Environmental Laboratories, Inc.
P.O. Box 370, 587 East Middle Turnpike
Manchester CT, 06040
Attention: Helen Geoghegan

Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on February 29, 2024 and listed below. The project was identified as your project: **CQ15420 - CQ15423**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

York Sample ID	Client Sample ID	Matrix	Date Collected	Date Received
24C0011-01	CQ15420	Soil	02/26/2024	02/29/2024
24C0011-02	CQ15421	Soil	02/26/2024	02/29/2024
24C0011-03	CQ15422	Soil	02/26/2024	02/29/2024
24C0011-04	CQ15423	Soil	02/26/2024	02/29/2024

General Notes for York Project (SDG) No.: 24C0011

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854, NJ Cert No. CT005, PA Cert No. 68-04440, CT Cert No. PH-0723; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058, NJ Cert No. NY037, CT Cert No. PH-0721, NH Cert No. 2097, EPA Cert No. NY01600.

Approved By: 

Date: 03/11/2024

Cassie L. Mosher
Laboratory Manager

Sample Information

Client Sample ID: CQ15420 **York Sample ID:** 24C0011-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
24C0011	CQ15420 - CQ15423	Soil	February 26, 2024 9:00 am	02/29/2024

PFAS, MASSDEP List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.146	0.278	1	EPA 1633 Draft 3 Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037	03/08/2024 12:07	03/10/2024 16:42	ER
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.249	0.254	1	EPA 1633 Draft 3 Certifications: NELAC-NH2097 ,NJDEP-NY037	03/08/2024 12:07	03/10/2024 16:42	ER
335-67-1	Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.239	0.278	1	EPA 1633 Draft 3 Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037	03/08/2024 12:07	03/10/2024 16:42	ER
1763-23-1	**Perfluorooctanesulfonic acid (PFOS)**	**0.561**		ug/kg dry	0.232	0.259	1	EPA 1633 Draft 3 Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037	03/08/2024 12:07	03/10/2024 16:42	ER
375-95-1	Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.263	0.278	1	EPA 1633 Draft 3 Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037	03/08/2024 12:07	03/10/2024 16:42	ER
335-76-2	Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.266	0.278	1	EPA 1633 Draft 3 Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037	03/08/2024 12:07	03/10/2024 16:42	ER

Surrogate Recoveries	Result		Acceptance Range
Surrogate: M3PFBS	*142 %*		*25-150*
Surrogate: M5PFHxA	*149 %*		*25-150*
Surrogate: M4PFHpA	*128 %*		*25-150*
Surrogate: M3PFHxS	*154 %*	PFSu-H	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*169 %*	PFSu-H	*25-150*
Surrogate: M6PFDA	*153 %*	PFSu-H	*25-150*
Surrogate: M7PFUdA	*114 %*		*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*120 %*		*25-150*
Surrogate: M2PFTeDA	*95.7 %*		*10-150*
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*1.71 %*	PFSu-L	*25-150*
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*160 %*	PFSu-H	*25-150*
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*24.0 %*	PFSu-L	*25-150*
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*113 %*		*10-150*
Surrogate: d3-N-MeFOSAA	*104 %*		*25-150*
Surrogate: d5-N-EtFOSAA	*104 %*		*25-150*
Surrogate: M2-6:2 FTS	*143 %*		*25-200*
Surrogate: M2-8:2 FTS	*133 %*		*25-200*
Surrogate: M9PFNA	*154 %*	PFSu-H	*25-150*
Surrogate: M2-4:2 FTS	*154 %*	PFSu-H	*25-150*
Surrogate: d-N-MeFOSA	*85.8 %*		*25-150*
Surrogate: d-N-EtFOSA	*76.7 %*		*25-150*
Surrogate: M3HFPO-DA	*152 %*	PFSu-H	*25-150*

Sample Information

Client Sample ID: CQ15420 **York Sample ID:** 24C0011-01

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
24C0011	CQ15420 - CQ15423	Soil	February 26, 2024 9:00 am	02/29/2024

PFAS, MASSDEP List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: d9-N-EtFOSE	*63.7 %*			*25-150*						
	Surrogate: d7-N-MeFOSE	*76.6 %*			*25-150*						

Total Solids

Log-in Notes:

Sample Notes:

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	**% Solids**	**71.8**		%	0.100	1	SM 2540G	03/04/2024 12:00	03/05/2024 19:00	AC
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID: CQ15421 **York Sample ID:** 24C0011-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
24C0011	CQ15420 - CQ15423	Soil	February 26, 2024 10:00 am	02/29/2024

PFAS, MASSDEP List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.137	0.261	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:14	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.233	0.239	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:14	ER
								Certifications: NELAC-NH2097 ,NJDEP-NY037			
335-67-1	Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.224	0.261	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:14	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
1763-23-1	**Perfluorooctanesulfonic acid (PFOS)**	**0.455**		ug/kg dry	0.218	0.243	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:14	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
375-95-1	Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.246	0.261	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:14	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
335-76-2	Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.249	0.261	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:14	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			

Surrogate Recoveries	Result	Acceptance Range
Surrogate: M3PFBS	*128 %*	*25-150*
Surrogate: M5PFHxA	*135 %*	*25-150*
Surrogate: M4PFHpA	*118 %*	*25-150*
Surrogate: M3PFHxS	*127 %*	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*147 %*	*25-150*
Surrogate: M6PFDA	*125 %*	*25-150*

Sample Information

Client Sample ID: CQ15421 **York Sample ID:** 24C0011-02

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
24C0011	CQ15420 - CQ15423	Soil	February 26, 2024 10:00 am	02/29/2024

PFAS, MASSDEP List

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: M7PFUdA	*112 %*			*25-150*						
	Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*109 %*			*25-150*						
	Surrogate: M2PFTeDA	*86.7 %*			*10-150*						
	Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*2.13 %*	PFSu-L		*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*139 %*			*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*49.3 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*108 %*			*10-150*						
	Surrogate: d3-N-MeFOSAA	*89.1 %*			*25-150*						
	Surrogate: d5-N-EtFOSAA	*116 %*			*25-150*						
	Surrogate: M2-6:2 FTS	*103 %*			*25-200*						
	Surrogate: M2-8:2 FTS	*103 %*			*25-200*						
	Surrogate: M9PFNA	*123 %*			*25-150*						
	Surrogate: M2-4:2 FTS	*112 %*			*25-150*						
	Surrogate: d-N-MeFOSA	*75.2 %*			*25-150*						
	Surrogate: d-N-EtFOSA	*58.0 %*			*25-150*						
	Surrogate: M3HFPO-DA	*155 %*	PFSu-H		*25-150*						
	Surrogate: d9-N-EtFOSE	*52.9 %*			*25-150*						
	Surrogate: d7-N-MeFOSE	*57.3 %*			*25-150*						

Total Solids

Log-in Notes: **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	**% Solids**	**75.3**		%	0.100	1	SM 2540G	03/04/2024 12:00	03/05/2024 19:00	AC
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID: CQ15422 **York Sample ID:** 24C0011-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
24C0011	CQ15420 - CQ15423	Soil	February 26, 2024 8:30 am	02/29/2024

PFAS, MASSDEP List

Log-in Notes: **Sample Notes:**

Sample Information

Client Sample ID: CQ15422 **York Sample ID:** 24C0011-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
24C0011	CQ15420 - CQ15423	Soil	February 26, 2024 8:30 am	02/29/2024

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-85-9	**Perfluoroheptanoic acid (PFHpA)**	**0.144**	J	ug/kg dry	0.141	0.269	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:30	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.241	0.246	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:30	ER
								Certifications: NELAC-NH2097 ,NJDEP-NY037			
335-67-1	**Perfluorooctanoic acid (PFOA)**	**0.311**		ug/kg dry	0.231	0.269	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:30	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
1763-23-1	**Perfluorooctanesulfonic acid (PFOS)**	**1.30**		ug/kg dry	0.225	0.250	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:30	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
375-95-1	Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.254	0.269	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:30	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
335-76-2	Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.257	0.269	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:30	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			

Surrogate Recoveries	Result		Acceptance Range
Surrogate: M3PFBS	*157 %*	PFSu-H	*25-150*
Surrogate: M5PFHxA	*155 %*	PFSu-H	*25-150*
Surrogate: M4PFHpA	*125 %*		*25-150*
Surrogate: M3PFHxS	*153 %*	PFSu-H	*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*164 %*	PFSu-H	*25-150*
Surrogate: M6PFDA	*152 %*	PFSu-H	*25-150*
Surrogate: M7PFUdA	*152 %*	PFSu-H	*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*137 %*		*25-150*
Surrogate: M2PFTeDA	*116 %*		*10-150*
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*1.80 %*	PFSu-L	*25-150*
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*166 %*	PFSu-H	*25-150*
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*54.0 %*		*25-150*
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*134 %*		*10-150*
Surrogate: d3-N-MeFOSAA	*114 %*		*25-150*
Surrogate: d5-N-EtFOSAA	*125 %*		*25-150*
Surrogate: M2-6:2 FTS	*153 %*		*25-200*
Surrogate: M2-8:2 FTS	*117 %*		*25-200*
Surrogate: M9PFNA	*145 %*		*25-150*
Surrogate: M2-4:2 FTS	*147 %*		*25-150*
Surrogate: d-N-MeFOSA	*95.4 %*		*25-150*
Surrogate: d-N-EtFOSA	*82.0 %*		*25-150*
Surrogate: M3HFPO-DA	*166 %*	PFSu-H	*25-150*
Surrogate: d9-N-EtFOSE	*65.0 %*		*25-150*
Surrogate: d7-N-MeFOSE	*78.1 %*		*25-150*

Sample Information

Client Sample ID: CQ15422 **York Sample ID:** 24C0011-03

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
24C0011	CQ15420 - CQ15423	Soil	February 26, 2024 8:30 am	02/29/2024

Total Solids **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	**% Solids**	**73.1**		%	0.100	1	SM 2540G	03/04/2024 12:00	03/05/2024 19:00	AC
							Certifications: CTDOH-PH-0723			

Sample Information

Client Sample ID: CQ15423 **York Sample ID:** 24C0011-04

York Project (SDG) No.	Client Project ID	Matrix	Collection Date/Time	Date Received
24C0011	CQ15420 - CQ15423	Soil	February 26, 2024 9:30 am	02/29/2024

PFAS, MASSDEP List **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		ug/kg dry	0.141	0.268	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:46	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		ug/kg dry	0.240	0.245	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:46	ER
								Certifications: NELAC-NH2097 ,NJDEP-NY037			
335-67-1	Perfluorooctanoic acid (PFOA)	ND		ug/kg dry	0.230	0.268	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:46	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
1763-23-1	**Perfluorooctanesulfonic acid (PFOS)**	**0.950**		ug/kg dry	0.224	0.249	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:46	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
375-95-1	Perfluorononanoic acid (PFNA)	ND		ug/kg dry	0.253	0.268	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:46	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			
335-76-2	Perfluorodecanoic acid (PFDA)	ND		ug/kg dry	0.256	0.268	1	EPA 1633 Draft 3	03/08/2024 12:07	03/10/2024 17:46	ER
								Certifications: NELAC-NH2097 ,NELAC-NY12058,NJDEP-NY037			

Surrogate Recoveries	Result		Acceptance Range
Surrogate: M3PFBS	*133 %*		*25-150*
Surrogate: M5PFHxA	*152 %*	PFSu-H	*25-150*
Surrogate: M4PFHpA	*120 %*		*25-150*
Surrogate: M3PFHxS	*132 %*		*25-150*
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*148 %*		*25-150*
Surrogate: M6PFDA	*133 %*		*25-150*
Surrogate: M7PFUdA	*134 %*		*25-150*
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*122 %*		*25-150*
Surrogate: M2PFTeDA	*94.9 %*		*10-150*
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*12.7 %*	PFSu-L	*25-150*

Sample Information

Client Sample ID:	CQ15423			York Sample ID:	24C0011-04
York Project (SDG) No.	Client Project ID		Matrix	Collection Date/Time	Date Received
24C0011	CQ15420 - CQ15423		Soil	February 26, 2024 9:30 am	02/29/2024

PFAS, MASSDEP List

Log-in Notes:

Sample Notes:

Sample Prepared by Method: EPA 1633 Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOD/MDL	LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
	Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*144 %*			*25-150*						
	Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*88.3 %*			*25-150*						
	Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*120 %*			*10-150*						
	Surrogate: d3-N-MeFOSAA	*105 %*			*25-150*						
	Surrogate: d5-N-EtFOSAA	*117 %*			*25-150*						
	Surrogate: M2-6:2 FTS	*128 %*			*25-200*						
	Surrogate: M2-8:2 FTS	*124 %*			*25-200*						
	Surrogate: M9PFNA	*142 %*			*25-150*						
	Surrogate: M2-4:2 FTS	*134 %*			*25-150*						
	Surrogate: d-N-MeFOSA	*79.4 %*			*25-150*						
	Surrogate: d-N-EtFOSA	*76.8 %*			*25-150*						
	Surrogate: M3HFPO-DA	*152 %*	PFSu-H		*25-150*						
	Surrogate: d9-N-EtFOSE	*60.8 %*			*25-150*						
	Surrogate: d7-N-MeFOSE	*71.7 %*			*25-150*						

Total Solids

Log-in Notes:

Sample Notes:

Sample Prepared by Method: % Solids Prep

CAS No.	Parameter	Result	Flag	Units	Reported to LOQ	Dilution	Reference Method	Date/Time Prepared	Date/Time Analyzed	Analyst
solids	**% Solids**	**74.6**		%	0.100	1	SM 2540G	03/04/2024 12:00	03/05/2024 19:00	AC
							Certifications: CTDOH-PH-0723			

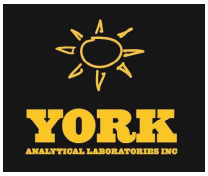
Analytical Batch Summary

Batch ID: BC40309 **Preparation Method:** % Solids Prep **Prepared By:** AC

YORK Sample ID	Client Sample ID	Preparation Date
24C0011-01	CQ15420	03/04/24
24C0011-02	CQ15421	03/04/24
24C0011-03	CQ15422	03/04/24
24C0011-04	CQ15423	03/04/24
BC40309-DUP1	Duplicate	03/04/24

Batch ID: BC40606 **Preparation Method:** EPA 1633 Prep **Prepared By:** J D

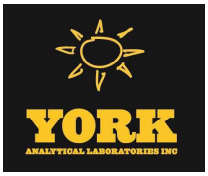
YORK Sample ID	Client Sample ID	Preparation Date
24C0011-01	CQ15420	03/08/24
24C0011-02	CQ15421	03/08/24
24C0011-03	CQ15422	03/08/24
24C0011-04	CQ15423	03/08/24
BC40606-BLK1	Blank	03/08/24
BC40606-BS1	LCS	03/08/24
BC40606-DUP1	Duplicate	03/08/24



PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

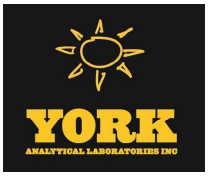
Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC40606 - EPA 1633 Prep											
Blank (BC40606-BLK1)								Prepared: 03/08/2024 Analyzed: 03/10/2024			
Perfluoroheptanoic acid (PFHpA)	ND	0.200	ug/kg wet								
Perfluorohexanesulfonic acid (PFHxS)	ND	0.183	"								
Perfluorooctanoic acid (PFOA)	ND	0.200	"								
Perfluorooctanesulfonic acid (PFOS)	ND	0.186	"								
Perfluorononanoic acid (PFNA)	ND	0.200	"								
Perfluorodecanoic acid (PFDA)	ND	0.200	"								
Surrogate: M3PFBS	*2.17*		"	*1.94*		*112*	*25-150*				
Surrogate: M5PFHxA	*2.71*		"	*2.08*		*130*	*25-150*				
Surrogate: M4PFHpA	*2.41*		"	*2.08*		*116*	*25-150*				
Surrogate: M3PFHxS	*1.96*		"	*1.97*		*99.7*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*2.37*		"	*2.08*		*114*	*25-150*				
Surrogate: M6PFDA	*0.945*		"	*1.04*		*91.0*	*25-150*				
Surrogate: M7PFUdA	*0.727*		"	*1.04*		*70.0*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*0.583*		"	*1.04*		*56.2*	*25-150*				
Surrogate: M2PFTeDA	*0.328*		"	*1.04*		*31.6*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*0.381*		"	*8.33*		*4.57*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*1.73*		"	*1.99*		*87.0*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*2.10*		"	*4.16*		*50.6*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*1.48*		"	*2.08*		*71.1*	*10-150*				
Surrogate: d3-N-MeFOSAA	*2.01*		"	*4.16*		*48.4*	*25-150*				
Surrogate: d5-N-EtFOSAA	*2.05*		"	*4.16*		*49.3*	*25-150*				
Surrogate: M2-6:2 FTS	*2.20*		"	*3.95*		*55.7*	*25-200*				
Surrogate: M2-8:2 FTS	*1.87*		"	*3.99*		*46.9*	*25-200*				
Surrogate: M9PFNA	*1.17*		"	*1.04*		*113*	*25-150*				
Surrogate: M2-4:2 FTS	*2.56*		"	*3.90*		*65.5*	*25-150*				
Surrogate: d-N-MeFOSA	*0.798*		"	*2.08*		*38.4*	*25-150*				
Surrogate: d-N-EtFOSA	*0.655*		"	*2.08*		*31.5*	*25-150*				
Surrogate: M3HFPO-DA	*11.4*		"	*8.33*		*137*	*25-150*				
Surrogate: d9-N-EtFOSE	*3.54*		"	*20.8*		*17.0*	*25-150*				
Surrogate: d7-N-MeFOSE	*5.37*		"	*20.8*		*25.8*	*25-150*				



PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC40606 - EPA 1633 Prep											
LCS (BC40606-BS1)								Prepared: 03/08/2024 Analyzed: 03/10/2024			
Perfluoroheptanoic acid (PFHpA)	4.06	0.199	ug/kg wet	3.98		102	50-150				
Perfluorohexanesulfonic acid (PFHxS)	3.61	0.182	"	3.64		99.3	50-150				
Perfluorooctanoic acid (PFOA)	3.11	0.199	"	3.98		78.3	50-150				
Perfluorooctanesulfonic acid (PFOS)	3.71	0.185	"	3.70		100	50-150				
Perfluorononanoic acid (PFNA)	3.41	0.199	"	3.98		85.7	50-150				
Perfluorodecanoic acid (PFDA)	3.47	0.199	"	3.98		87.2	50-150				
Surrogate: M3PFBS	*2.39*		*"*	*1.93*		*124*	*25-150*				
Surrogate: M5PFHxA	*2.92*		*"*	*2.07*		*141*	*25-150*				
Surrogate: M4PFHpA	*2.11*		*"*	*2.07*		*102*	*25-150*				
Surrogate: M3PFHxS	*1.82*		*"*	*1.96*		*92.9*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*2.46*		*"*	*2.07*		*118*	*25-150*				
Surrogate: M6PFDA	*0.766*		*"*	*1.03*		*74.1*	*25-150*				
Surrogate: M7PFUdA	*0.773*		*"*	*1.03*		*74.8*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*0.597*		*"*	*1.03*		*57.7*	*25-150*				
Surrogate: M2PFTeDA	*0.361*		*"*	*1.03*		*34.9*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*0.310*		*"*	*8.30*		*3.74*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*1.28*		*"*	*1.98*		*64.5*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*2.54*		*"*	*4.14*		*61.4*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*1.30*		*"*	*2.07*		*62.5*	*10-150*				
Surrogate: d3-N-MeFOSAA	*1.77*		*"*	*4.14*		*42.7*	*25-150*				
Surrogate: d5-N-EtFOSAA	*1.93*		*"*	*4.14*		*46.7*	*25-150*				
Surrogate: M2-6:2 FTS	*2.02*		*"*	*3.94*		*51.4*	*25-200*				
Surrogate: M2-8:2 FTS	*1.79*		*"*	*3.98*		*45.1*	*25-200*				
Surrogate: M9PFNA	*0.896*		*"*	*1.03*		*86.6*	*25-150*				
Surrogate: M2-4:2 FTS	*2.68*		*"*	*3.89*		*69.1*	*25-150*				
Surrogate: d-N-MeFOSA	*1.13*		*"*	*2.07*		*54.6*	*25-150*				
Surrogate: d-N-EtFOSA	*0.652*		*"*	*2.07*		*31.5*	*25-150*				
Surrogate: M3HFPO-DA	*13.8*		*"*	*8.30*		*166*	*25-150*				
Surrogate: d9-N-EtFOSE	*3.74*		*"*	*20.7*		*18.1*	*25-150*				
Surrogate: d7-N-MeFOSE	*5.94*		*"*	*20.7*		*28.7*	*25-150*				



PFAS Target compounds by LC/MS-MS - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC40606 - EPA 1633 Prep											
Duplicate (BC40606-DUP1)	*Source sample: 24C0011-01 (CQ15420)								Prepared: 03/08/2024 Analyzed: 03/10/2024		
Perfluoroheptanoic acid (PFHpA)	ND	0.274	ug/kg dry		ND					30	
Perfluorohexanesulfonic acid (PFHxS)	ND	0.250	"		ND					30	
Perfluorooctanoic acid (PFOA)	ND	0.274	"		ND					30	
Perfluorooctanesulfonic acid (PFOS)	0.772	0.255	"		0.561				31.6	30	Non-dir.
Perfluorononanoic acid (PFNA)	ND	0.274	"		ND					30	
Perfluorodecanoic acid (PFDA)	ND	0.274	"		ND					30	
Surrogate: M3PFBS	*3.12*		"	*2.66*		*117*	*25-150*				
Surrogate: M5PFHxA	*4.02*		"	*2.85*		*141*	*25-150*				
Surrogate: M4PFHpA	*3.31*		"	*2.85*		*116*	*25-150*				
Surrogate: M3PFHxS	*3.29*		"	*2.70*		*122*	*25-150*				
Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)	*4.09*		"	*2.85*		*143*	*25-150*				
Surrogate: M6PFDA	*1.81*		"	*1.42*		*127*	*25-150*				
Surrogate: M7PFUdA	*1.59*		"	*1.42*		*112*	*25-150*				
Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)	*1.55*		"	*1.42*		*109*	*25-150*				
Surrogate: M2PFTeDA	*1.32*		"	*1.42*		*92.9*	*10-150*				
Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)	*0.395*		"	*11.4*		*3.45*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)	*3.81*		"	*2.73*		*140*	*25-150*				
Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)	*3.36*		"	*5.70*		*58.9*	*25-150*				
Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)	*3.18*		"	*2.85*		*111*	*10-150*				
Surrogate: d3-N-MeFOSAA	*5.72*		"	*5.70*		*100*	*25-150*				
Surrogate: d5-N-EtFOSAA	*5.67*		"	*5.70*		*99.4*	*25-150*				
Surrogate: M2-6:2 FTS	*6.72*		"	*5.42*		*124*	*25-200*				
Surrogate: M2-8:2 FTS	*6.40*		"	*5.47*		*117*	*25-200*				
Surrogate: M9PFNA	*1.81*		"	*1.42*		*127*	*25-150*				
Surrogate: M2-4:2 FTS	*6.58*		"	*5.35*		*123*	*25-150*				
Surrogate: d-N-MeFOSA	*2.48*		"	*2.85*		*86.9*	*25-150*				
Surrogate: d-N-EtFOSA	*2.22*		"	*2.85*		*77.8*	*25-150*				
Surrogate: M3HFPO-DA	*16.3*		"	*11.4*		*142*	*25-150*				
Surrogate: d9-N-EtFOSE	*16.8*		"	*28.5*		*59.0*	*25-150*				
Surrogate: d7-N-MeFOSE	*20.7*		"	*28.5*		*72.5*	*25-150*				

Miscellaneous Physical Parameters - Quality Control Data

York Analytical Laboratories, Inc. - Stratford

Analyte	Result	Reporting Limit	Units	Spike Level	Source* Result	%REC	%REC Limits	Flag	RPD	RPD Limit	Flag
Batch BC40309 - % Solids Prep											
Duplicate (BC40309-DUP1)	*Source sample: 24C0078-06 (Duplicate)								Prepared: 03/04/2024 Analyzed: 03/05/2024		
% Solids	92.6	0.100	%		93.0				0.416	20	

Sample and Data Qualifiers Relating to This Work Order

PFSu-L	The isotopically labeled surrogate recovered below lab control limits due to a matrix effect. Isotope Dilution was applied.
PFSu-H	The isotopically labeled surrogate recovered above lab control limits due to a matrix effect. Isotope Dilution was applied.
J	Detected below the Reporting Limit but greater than or equal to the Method Detection Limit (MDL/LOD) or in the case of a TIC, the result is an estimated concentration.

Definitions and Other Explanations

*	Analyte is not certified or the state of the samples origination does not offer certification for the Analyte.
ND	NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL)
RL	REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve.
LOQ	LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses.
LOD	LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846.
MDL	METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods.
Reported to	This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only.
NR	Not reported
RPD	Relative Percent Difference
Wet	The data has been reported on an as-received (wet weight) basis
Low Bias	Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
High Bias	High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias.
Non-Dir.	Non-dir. flag (Non-Directional Bias) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons.

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

MT 0314 ~~2413~~ 24C0011

Cooler: Yes ☑ No ☐
Coolant: IPK ☐ ICE ☑ No ☐
Temp 2.7 °C Pg - of

PHOENIX Environmental Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Page 1 of 1
587 East Middle Turnpike, P.O. Box 370, Manchester, CT 06040
Email: info@phoenixlabs.com Fax (860) 645-0823
Client Services (860) 645-8726

Contact Options:
☐ Fax: 860-645-0823
☐ Phone: 800-827-5426
☐ Email: HelenG@PhoenixLabs.com

Customer: York Analytical Laboratories
Address: 120 Research Drive
Stratford, CT
(203) 325-1371

Project #: GCQ15420
Report to: HelenG@PhoenixLabs com / Helen Geoghegan
Invoice to: AccountsPayable@PhoenixLabs.com
Quote# :

Project P.O: GCQ15420

This section MUST be completed with Bottle Quantities.

Client Sample - Information - Identification

Sampler's Signature _____ Date: _____

Matrix Code:
DW=Drinking Water **GW**=Ground Water **SW**=Surface Water **WW**=Waste Water
RW=Raw Water **SE**=Sediment **SL**=Sludge **S**=Soil **SD**=Solid **W**=Wipe
OIL=Oil **B**=Bulk **L**=Liquid

Phoenix Sample ID	Sample Comment	Sample Matrix	Date Sampled	Time Sampled	Analysis Request: PFOA, PFAS, PFNA, PFHxS, PFHpA, Pl	8oz HDPE Plastic As Is
CQ15420	MA DEP list of 6	SOIL	2/26/2024	9:00 AM	x	1
CQ15421	MA DEP list of 6	SOIL	2/26/2024	10:00 AM	x	1
CQ15422	MA DEP list of 6	SOIL	2/26/2024	8:30 AM	x	1
CQ15423	MA DEP list of 6	SOIL	2/26/2024	9:30 AM	x	1

Relinquished by:	Accepted by:	Date:	Time:
[signature]	[signature]	2-29-24	0655
[signature]	[signature]	2/29/24	0900
[signature]	Neel Na	2/09/24	2024

Comments, Special Requirements or Regulations:
Rel: Neel Na

Please send notice as soon as possible not exceeding 24 hours of obtaining valid data, of the results of all drinking water samples that exceed any EPA or Department-established maximum contaminant level, maximum residual disinfectant level or reportable concentration.

Please notify Phoenix Environmental Laboratories, Inc. immediately and prior to conducting analysis if certification is not held for the analyses requested.

Turnaround:
☐ 1 Day
☐ 2 Days
☐ 3 Days
☐ 5 Days
☐ 10 Days
☒ Standard
☐ Other____

Report Type:
☒ Standard PDF
☐ Full Data Package
☐ NJ Reduced Deliverable
☐ NJ Full Deliverable
☐ NY ASP B

EDD Format:
☐ Excel
☐ GIS/Key
☐ EQuIS
☐ NJ Hazsite EDD
☐ NY EZ EDD (ASP)
☐ Other:_____

State Criteria:
MA: MCP
MA: CAM
MA: RCS-1 (S-1 GW1)

What State were samples collected?
MA

[signature] 03/01/24 1210 4.2C

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C

Borings

Page Intentionally Blank

TEST BORING LOG

SHEET 7

Soil Exploration Corp. Geotechnical Drilling Groundwater Monitor Well 148 Pioneer Drive Leominster, MA 01453 978 840-0391	**Cardno ATC** **Site: Lawrence Airport RW 5-23** **492 Sutton Street** **North Andover, MA**	BORING B-7 PROJECT NO. 14-0955 DATE: December 2, 2014

Ground Elevation:
Date Started: December 1, 2014
Date Finished: December 1, 2014
Driller: TF
Soil Engineer/Geologist:

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING	STABILIZATION

Depth Ft.	Casing bl/ft	Sample No.	Pen/Rec	Sample Depth	Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
1		1	12"	0"-2'0"	3-4-4-8	1'0"	Topsoil Loose topsoil into fine to medium sand and some inorganic silt,
		2	10"	2'0"-4'0"	5-7-6-10	2'0"	some coarse sand, little fine gravel Medium dense fine sand, some medium to coarse sand, trace fine gravel, trace inorganic silt.
5		3	10"	5'0"-7'0"	16-20-39-14	5'0"	
10		4	16"	10'0-12'0"	11-16-19-20		
15		5	16"	15'0"-17'0"	16-25-31-44		
20		6	12"	20'0"-22'0"	17-22-19-25		Very dense to dense, dry, fine to coarse sand and inorganic silt, some fine gravel and some cobbles.
25		7	10"	25'0"-27'0"	24-27-31-35		
30		8		30'0"-32'0"	14-18-15-19		
						32'0"	
35							End of boring at 32'0". No water encountered upon completion.
39							

Notes: Hollow Stem Auger Size - 4 1/4"

			CASING	SAMPLE	CORE TYPE
Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose,	Trace	0 to 10%			
10 -30 M Dense, 30 -50 Dense, 50+ V Dense.	Little	10 to 20%	ID SIZE (IN)	SS	
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff	Some	20 to 35%	HAMMER WGT (LB)	140 lb.	
8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard.	And	35% to 50%	HAMMER FALL (IN)	30"	

TEST BORING LOG

SHEET 8

Soil Exploration Corp.
Geotechnical Drilling
Groundwater Monitor Well
148 Pioneer Drive
Leominster, MA 01453
978 840-0391

Cardno ATC
Site: Lawrence Airport RW 5-23
492 Sutton Street
North Andover, MA

BORING B-8

PROJECT NO. 14-0955
DATE: December 2, 2014

Ground Elevation:
Date Started: December 1, 2014
Date Finished: December 1, 2014
Driller: TF
Soil Engineer/Geologist:

GROUNDWATER OBSERVATIONS			
DATE	DEPTH	CASING	STABILIZATION

Depth Ft.	Casing bl/ft	Sample No.	Pen/Rec	Sample Depth	Blows/6"	Strata	Visual Identification of Soil and / or Rock Sample
							Asphalt
1		1	12"	0"-2'0"	4-5-8-9	1'0"	
		2	18"	2'0"-4'0"	8-9-12-12		Topsoil into fine sand, little medium sand, trace inorganic silt.
5		3	18"	5'0"-7'0"	11-12-17-18	5'0"	Medium dense fine sand and some inorganic silt, trace medium to coarse sand, trace fine gravel.
						8'0"	
10		4	16"	10'0-12'0"	14-17-21-29		
15		5	16"	15'0"-17'0"	15-18-18-22		Dense, fine to medium sand, some coarse sand, some fine gravel, some inorganic silt, cobbles.
20		6	4"	20'0"-22'0"	39-43-28-25		
						23'0"	
25		7	16"	25'0"-27'0"	14-15-19-19		Dense, dry fine sand and inorganic silt, some medium sand, little coarse sand, little fine gravel.
30		8	12"	30'0"-32'0"	16-15-21-20		
						32'0"	
35							End of boring at 32'0". No water encountered upon completion.
39							

Notes: Hollow Stem Auger Size - 4 1/4"

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense.
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard.

Trace	0 to 10%
Little	10 to 20%
Some	20 to 35%
And	35% to 50%

	CASING	SAMPLE	CORE TYPE
ID SIZE (IN)		SS	
HAMMER WGT (LB)		140 lb.	
HAMMER FALL (IN)		30"	

APPENDIX D

Order of Conditions

Page Intentionally Blank

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
242-1876
MassDEP File #

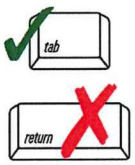
eDEP Transaction #

North Andover
City/Town

A. General Information

Please note: this form has been modified with added space to accommodate the Registry of Deeds Requirements

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. From: North Andover
Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

Francisco — a. First Name
Urena — b. Last Name
Lawrence Municipal Airport — c. Organization
492 Sutton Street — d. Mailing Address
North Andover — e. City/Town
MA — f. State
01845 — g. Zip Code

4. Property Owner (if different from applicant):

a. First Name
b. Last Name
c. Organization
d. Mailing Address
e. City/Town
f. State
g. Zip Code

5. Project Location:

492 Sutton Street (see attached for exact project locus within Airport property) — a. Street Address
North Andover — b. City/Town
Map 34 — c. Assessors Map/Plat Number
Lot 26 — d. Parcel/Lot Number

Latitude and Longitude, if known: 42d42m56.088s — d. Latitude; -71d07m03.468s — e. Longitude

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: 242-1876
MassDEP File #

eDEP Transaction #

North Andover
City/Town

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):

Northern Essex
a. County

b. Certificate Number (if registered land)

14
c. Book

29
d. Page

7. Dates: September 28, 2023 (a. Date Notice of Intent Filed) | June 12, 2024 (b. Date Public Hearing Closed) | June 26, 2024 (c. Date of Issuance)

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

Runway 5 End Drainage Improvements (10 Sheets)
a. Plan Title

Stantec
b. Prepared By

Dominic M. Zazzaro, PE
c. Signed and Stamped by

September 26, 2023
d. Final Revision Date

as shown
e. Scale

See Attached Full List of Approved Plans & Documents
f. Additional Plan or Document Title

g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

a. ☒ Public Water Supply b. ☐ Land Containing Shellfish c. ☒ Prevention of Pollution

d. ☒ Private Water Supply e. ☒ Fisheries f. ☒ Protection of Wildlife Habitat

g. ☒ Groundwater Supply h. ☒ Storm Damage Prevention i. ☒ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: 242-1876
MassDEP File #

eDEP Transaction #

North Andover
City/Town

B. Findings (cont.)

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☐ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) _____ a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☒ Bank	225 lf (temp) a. linear feet	225 lf b. linear feet	225 lf c. linear feet	225 lf d. linear feet
5. ☒ Bordering Vegetated Wetland	155 sf (temp) b. square feet	155 sf b. square feet	155+ sf c. square feet	155+ sf d. square feet
6. ☐ Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: 242-1876
MassDEP File #
eDEP Transaction #
North Andover
City/Town

B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	c. nourishment cu yd	d. nourishment cu yd
14. ☐ Coastal Dunes	a. square feet	b. square feet	c. nourishment cu yd	d. nourishment cu yd
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. c/y dredged	b. c/y dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		
22. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: 242-1876
MassDEP File #

eDEP Transaction #

North Andover
City/Town

B. Findings (cont.)

* **#23**. If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. ☐ Restoration/Enhancement *:

a. square feet of BVW | b. square feet of salt marsh

24. ☐ Stream Crossing(s):

a. number of new stream crossings | b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. The work is a maintenance dredging project as provided for in the Act; or
   b. The time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
   c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on _____ unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
242-1876
MassDEP File #

eDEP Transaction #

North Andover
City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act

8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]

"File Number 242-1876 "

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
242-1876
MassDEP File #

eDEP Transaction #
North Andover
City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

19. The work associated with this Order (the "Project")
    (1) ☒ is subject to the Massachusetts Stormwater Standards
    (2) ☐ is NOT subject to the Massachusetts Stormwater Standards

    If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:

    a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

    b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:

    i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;

    ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;

    iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
242-1876
MassDEP File #

eDEP Transaction #
North Andover
City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;

v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following:

i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and

ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
242-1876
MassDEP File #

eDEP Transaction #
North Andover
City/Town

C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
242-1876
MassDEP File #

eDEP Transaction #

North Andover
City/Town

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The North Andover Conservation Commission hereby finds (check one that applies):

   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

   1. Municipal Ordinance or Bylaw | 2. Citation

   Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

   b. ☒ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

   North Andover Wetlands Protection Bylaw & Regulations (1. Municipal Ordinance or Bylaw) | Ch. 190 et.sec. (2. Citation)

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):

   North Andover Conservation Commission Findings & Special Conditions (see attached)

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
242-1876
MassDEP File #

eDEP Transaction #

North Andover
City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

06-26-24
1. Date of Issuance

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

6
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signature	Printed Name
	SEAN MCDONOUGH
	MARISSA VALENTINO
	JOHN MABON
	ALBERT MANZI
	BRADLEY MUSTAIN
	JOSEPH LYNCH

☐ by hand delivery on

Date

☒ by certified mail, return receipt requested, on 06-26-24

Date

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
242-1876
MassDEP File #

eDEP Transaction #
North Andover
City/Town

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
242-1876
MassDEP File #

eDEP Transaction #

North Andover
City/Town

G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

North Andover
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

North Andover
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

492 Sutton Street (Lawrence Municipal Airport)

242-1876
MassDEP File Number

Has been recorded at the Registry of Deeds of:

Northern Essex
County

Book

Page

for: City of Lawrence
Property Owner

and has been noted in the chain of title of the affected property in:

14
Book

29
Page

In accordance with the Order of Conditions issued on:

06-26-24
Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Lawrence Municipal Airport DEP FILE # 242 - 1876

Findings

Project Site Location & Current Conditions:

The project locus governed by this Order of Conditions is centered around/within a ~225 linear foot segment of intermittent stream channel that is located at the southerly end of Lawrence Municipal Airport (LMA) near the terminal end of Runway 5 and associated runway safety area. The subject stream segment is located on LMA property, sandwiched between the toe of historic fill slope and associated plateau that supports Runway 5 and the dead-end streets of residential neighborhoods on Grosvenor Avenue and Poor Street. Current conditions of the stream segment and surrounding areas consist of wooded bordering vegetated wetland, an intermittent stream channel, fill side slopes, residential properties and airport outparcel containing additional BVW. At the upper section of the subject stream segment a concrete headwall and flared end rip-rapped level spreader discharges flow from a 24" RCP that receives stormwater flow from upper sections of the Airport property.

Jurisdictional Resource Areas:

The NACC agrees with the delineation of the following wetland resource areas as reviewed in the field by the Conservation Administrator and reflected on the approved plan. The applicant has not attempted to overcome the presumption of significance of these resource areas to the identified interests in the Act and Bylaw.

a. Inland Bank to Intermittent Stream:
    i. Flag Series B1 – B21, B32 – B35; B1A – B21A; B32A – B35A
b. Bordering Vegetated Wetland (BVW):
    i. Flag Series W1 @ B20A; W30 @ B2-B3; W31 @ B5-B7; W32 @ B13-B14
c. 100-Foot Buffer Zone to BVW & Inland Bank
d. The project locus does not lie within NHESP Priority Habitat or within 100 feet of vernal pools
e. The project locus does not occur within the 100-year floodplain
f. The project locus does not occur within 200-Foot Riverfront Area

Project Locus Permit History:

- OOC, DEP File #242-1672 - governed rehabilitation of runway pavement and the construction of standard runway safety areas for and extension of Runway 05-23. Intermittent stream relocation and reconstruction was necessary for this project. A CofC has not yet been issued.

Notice of Intent DEP File #242-1876 Procedural History:

The primary catalyst for this Notice of Intent originated from catastrophic flooding events experienced by the downstream abutting property at 27 Charles Street. Since early 2021, 27 Charles Street has been experiencing significant, property-damaging flooding from stormwater flowing down the hillside that receives runoff from the Lawrence Municipal Airport (LMA) as well as neighborhoods upstream. Based on a February 18, 2022 site inspection, two distinct

areas along the unaltered section of the Airport stream were identified where flows had jumped the banks and headed in a southwest direction. These sections of bank are low profile and abut up against the chain link fence on Airport property. In February of 2022, this issue was brought to the NACC's attention. Through discussion and consideration with LMA and 27 Charles Street representatives, as an immediate stopgap measure, the NACC issued a "friendly" Enforcement Order (EO) to allow the LMA to install staked coir logs or hay bales along these areas (~120 feet) to keep water within the stream banks while a more permanent solution is developed for formal permitting. The EO was later amended to allow additional coir log to be installed within the BVW upstream of the 24" RCP outlet to help better direct flows from the wetland into the stream channel.

The EO required monitoring of these coir logs after certain rain events to ensure their efficacy while the LMA developed plans and prepared the required Notice of Intent (NOI). Over 43 monitoring reports have been received from Stantec to date, which report that the coir logs are performing well in helping to contain flows within the stream channel at the breach points and directing flows into the stream within the BVW. These monitoring events further assisted in understanding the stormwater flow dynamics in this area and informed the project design, which showed that along with LMA stream breaches, neighborhood "self-management" of stormwater runoff along with some Town street drainage contribute to the flooding problem. ****Note:** This Enforcement Order shall remain in effect until such time that the work governed under this Order of Conditions commences.

On September 28, 2023, Stantec Consulting Services, Inc. submitted a NOI on behalf of LMA. The NACC held the public hearing at its October 11, 2023, April 10, 2024, May 22, 2024 and June 12, 2024 meetings. At its October 11th meeting, the NACC voted to engage a 3rd party engineer to perform a peer review of the following scope:

1. Review the NOI and associated attachments, in particular with respect to its compliance with the Massachusetts Stormwater Standards and North Andover's Stormwater Bylaw/Regulations.
    a. Evaluate the applicant's hydrodynamic analysis particularly with the appropriateness and accuracy of:
        i. Assignment of watershed(s) and contributory area(s);
        ii. Use of analytical storm events, including rain intensity, duration, and recurrence interval;
        iii. Use of valid hydrodynamic principles for Time to Concentration, Slope, Cover, etc.;
        iv. Use of hydraulic model;
        v. Interpretation of results for flow expressed as cfs and volume;
        vi. Use of appropriate routing model to express diverted flow through the 30"pipe, and through the modified streambed;
        vii. Interpretation of the analytical results that demonstrate that the modified stream will contain and convey all flow, without overtopping, under the regulatory storm events.
2. Review various comment letters and correspondence received from 27 Charles

Street's independent engineer and that of abutting neighborhood association.

3. Consult with the Town Engineer and DPW Director to obtain understanding of the drainage dynamics.

The NACC's 3rd party engineer, Bobrek Engineering, provided three rounds of review and comments, to which Stantec responded satisfactorily. The only remaining recommendation from Bobrek suggests that, through a separate permit process, LMA/Stantec evaluate for similar restoration, the section of stream that lies between the Runway 5 relocated stream channel and the ~225 l.f. stream section subject to this OOC in order to create one consistent stream section throughout the length of the channel, reducing the potential for failures.

At its June 12, 2024 meeting, having received sufficient information, and there being no further need for supplemental information and no remaining questions from the NACC, the abutters or the public, the NACC voted by majority to close the hearing and issue an Order of Conditions within 21 days.

In consideration of the applicant's request for a waiver for work to be performed within the stream channel and the 25' No Disturb Zone, the NACC voted by majority to grant the waiver. The NACC finds that the nature of the work (stream restoration) necessitates work to be performed within the resource area and associated immediate buffer zones which will result in an improved and enhanced condition of these resources.

The NACC reviewed and amended a draft Order of Conditions that same evening, and voted by majority to issue an Order of Conditions, Findings of Facts and Special Conditions approving the project under the Massachusetts Wetlands Protection Act and the North Andover Wetlands Protection Bylaw.

Therefore, the North Andover Conservation Commission (hereafter the "NACC") hereby finds that the following conditions are necessary, in accordance with the Performance Standards set forth in the State Regulations, the local ByLaw and Regulations, to protect those interests noted above. The NACC orders that all work shall be performed in accordance with said conditions and with the Notice of Intent referenced below. To the extent that the following conditions modify or differ from the plans, specifications or other proposals submitted with the Notice of Intent, the conditions shall control.

GENERAL CONDITIONS

21. The proposed work includes: improvement of drainage conditions within a ~225 l.f. section of intermittent stream channel located at the Runway 5 end at the Lawrence LWM which have deteriorated as a result of lack of routine maintenance and a series of significant storm events. The deteriorated conditions are exemplified by sediment accumulation, bank undercutting, uprooted vegetation, channel widening and bank overtopping. Improvement of the drainage conditions and the overall capacity of the

intermittent stream system to convey stormwater flows and provide other wetland functions includes the following measures:

a. Reposition the existing 24" RCP stormwater outfall from the upstream section of the work area into an existing 30" RCP bypass culvert located approximately 200' downstream of the work area. This will result in permanently diverting stormwater flows from the subject stream that originates from 15.5 acres of LMA property into the bypass culvert. Removal of this outfall will also assist in arresting a portion of the bank erosion that is occurring just upstream of the channel rehabilitation limits.
b. Rehabilitation of ~225 l.f. of intermittent stream channel to restore drainage capacity and reduce bank overtopping probabilities for the target theoretical storm events. Design of this rehabilitation is described in detail in the NOI narrative.
c. Installation of a short-term bypass culvert at the head of the channel rehabilitation section to provide for protection of the channel rehabilitation section during the vegetation regrowth period.
d. Bank repair and protection of sections above the channel rehabilitation limits to limit further sediment inputs into the system thus protecting the restored flow capacity of the rehabilitated channel.
e. In order to create a more consistent channel with available capacity and freeboard an upland berm (top of berm to be at elevation 104) was added to provide better protection from larger storms with the updated increased rainfall data and to assure greater longevity.
f. Wetland plantings along the rehabilitated channel edges to restore and increase bordering vegetated wetland within the work area thus meeting the wetland performance standards of the Massachusetts Wetlands Protection Act Regulations and the Town of North Andover Wetlands Bylaw.
g. Wetland impacts include: ~225 l.f. temporary impact and replacement of inland bank, 155 s.f. temporary impact and replacement BVW.

22. The work shall conform to the following (except as noted in the remainder of this document where revisions may be required):

Notice of Intent & Associated Attachments filed by: Stantec Consulting Services, Inc.
45 Blue Sky Drive
Burlington, MA 01803

Project Engineer: Dominic Zazzaro, PE
Stantec Consulting Services, Inc.

Project Wetland Consultant: Randall Christensen, M.S.

Site Plans prepared by: Stantec Consulting Services, Inc.
Title: Notice of Intent, Runway 5 End Drainage Improvements

10 Sheets, signed & stamped by Dominic Zazzaro, PE
Scale as noted
Last Revised:
Grading Sketch with Downstream Berm
Last Revised: 04-17-24

Stormwater Report prepared by: Stantec Consulting Services, Inc.
Signed & stamped by Dominic Zazzaro, PE
Dated 09-25-25 - Sections Revised to 03-27-24, 04-15-24 & 04-17-24

Operation & Maintenance Plan: Operation & Maintenance Plan Lawrence Municipal Airport Runway 5 End Drainage Improvements
Prepared by Stantec Consulting Services, Inc.
Dated: 04-19-24

Peer Review Letters: Bobrek Engineering & Construction
Brendan Pyburn, PE
Dated: 02-27-24, 04-08-24 & 05-20-24

Response Letters: Stantec Consulting Services, Inc.
Dominic Zazzaro, PE
Dated: 12-08-24, 03-27-24 & 04-18-24
Memo Dated 11-20-23

Other Record Documents: Letter Dated 10-05-23
Subject: Lawrence Municipal Airport NOI Filing
Review for Owner of 27 Charles Street Property
Prepared by Hancock Associates, signed by Joseph Peznola,PE

Letter Dated 10-11-23
Subject: Stantec Improvement Plan Notes/Concerns
Prepared by Matthews Way Homeowners Association Trust

23. The term "Applicant" as used in this Order of Conditions shall refer to the owner, any successor in interest or successor in control of the property referenced in the Notice of Intent, supporting documents and this Order of Conditions. The NACC shall be notified in writing within 30 days of all transfers of title of any portion of property that takes place prior to the issuance of a Certificate of Compliance.

24. The conditions of this decision shall apply to, and be binding upon, the applicant, owner, its employees, contractors and all successors and assigns in interest or control. These obligations shall be expressed in covenants in all deeds to succeeding owners of portions of the property.

25. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke, amend or modify this Order.

26. This Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of property rights. However, the NACC, agent of the NACC or the Department of Environmental Protection (DEP) reserves the right to enter and inspect the property at all reasonable times until a Certificate of Compliance is issued, to evaluate compliance with this Order of Conditions, the Act (310 CMR 10.00), the North Andover Wetland ByLaw and Regulations, and may require any information, measurements, photographs, observations, and/or materials, or may require the submittal of any data or information deemed necessary by the NACC for that evaluation. Further, work shall be halted on the site if the NACC, agent or DEP determines that any of the work is not in compliance with this Order of Conditions. Work shall not resume until the NACC is satisfied that the work will comply and has so notified the applicant in writing.

27. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state or local statutes, ordinances, by-laws or regulations.

28. The work authorized hereunder shall be completed within <u>three years</u> from the date of this order.

29. This Order may be extended by the issuing authority for one but not more than two periods of up to one year each upon application to the issuing authority at least <u>thirty days (30) prior to the expiration date of the Order</u> *(Refer to Section 8.3) of the North Andover Wetland Regulations).*

30. The NACC reserves the right to amend this Order of Conditions after a legally advertised public hearing if plans or circumstances are changed or if new conditions or information so warrant.

31. Where the Department of Environmental Protection (DEP) is requested to make a determination and to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before the Department.

32. The NACC finds that the intensive use of the upland areas and buffer zone proposed on this site will cause further alteration of the wetland resource areas. In order to prevent any alteration of wetland resource areas a <u>twenty five foot (25') No-Disturbance Zone and a fifty foot (50') No-Construction Zone</u> shall be established from the edge of the adjacent wetland resource areas. The Conservation Administrator and/or other agents of the NACC do not have the authority to waive these setbacks as established under the local bylaw. No disturbance of existing grade, soils or vegetation is permitted in the No-

Disturbance zone. *(See Section 3.4 & Appendix F of the local Regulations).* Any future work proposed within these areas/zones will require a separate application with the NACC.

33. This document shall be included in all construction contracts, subcontracts, and specifications dealing with the work proposed and shall supersede any conflicting contract requirements. The applicant shall assure that all contractors, subcontractors, and other personnel performing the permitting work are fully aware of the permit terms and conditions. Thereafter, the contractor will be held jointly liable for any violation of this Order resulting from failure to comply with its conditions.

34. The owners of the project and their successors in title agree that the Order does not in itself impose upon the Town any responsibility to maintain the proposed drainage system and that said Town shall not be liable for any damage in the event of failure. By acceptance of this Order, the owners agree to indemnify and hold harmless to the Town and its residents for any damage attributable to alterations undertaken on this property pursuant to the Order. Issuance of these Conditions does not in any way imply or certify that the site or downstream areas will not be subject to flooding, storm damage or any other form of water damage. Maintenance of the drainage system, if accepted by the Town as part of a public way, becomes the responsibility of the Town.

35. The restored stream section shall stabilize for a minimum of one full growing season before water flow is reestablished within the stream. A qualified wetland scientist or engineer must inspect the area to ensure the channel is stable and constructed as designed before allowing stream flow to enter. This should be followed by inspections during and/or following storm events of ½" or more in 24 hours during the first three months followed by storm events of 1" or more during the following two years to ensure that the channel is functioning as designed and remains stable. Within one week of the storm event, the designated scientist/engineer shall submit a written report with photographs documenting the observed conditions and impacts if any. The report may be submitted as part of the weekly monitoring report (see Condition #51).

36. Issuance of these Conditions does not in any way imply or certify that the site or downstream areas will not be subject to flooding, storm damage or any other form of water damage.

37. The existing Enforcement Order and associated directives shall remain in effect until such time that the work governed under this Order of Conditions commences.

PRIOR TO CONSTRUCTION

38. No work shall be undertaken until all administrative appeal periods from this Order have elapsed or, if such an appeal has been filed, until all proceedings before the Department or Court have been completed.

39. This Order, in its entirety, shall be recorded by the applicant at the Registry of Deeds immediately after the expiration of all appeal periods. No work shall be undertaken until the Final Order has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is to be done. The recording information shall be submitted to the North Andover Conservation Commission on the form at the end of this Order prior to commencement of the work. Any Order not recorded by the applicant before work commences may be recorded by the NACC at the applicant's expense.

40. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words "Massachusetts DEP, File Number 242-1876."

41. Any changes in the submitted plans caused by the applicant, another Board's decision or resulting from this Order of Conditions must be submitted to the NACC for approval prior to implementation. If the NACC finds said changes to be significant, the NACC will call for another public hearing (at the expense of the applicant). Within 21 days of the close of said public hearing the NACC will issue an amended or new Order of Conditions. Any errors found in the plans or information submitted by the applicant shall be considered as changes. No work shall begin on a project until written approval has been granted by the NACC.

42. It is the responsibility of the applicant, owner, and/or successor(s) to ensure that all conditions of this Order of Conditions are complied with. The project engineer and contractors are to be provided with a copy of this Order of Conditions and referenced documents before commencement of construction.

43. Prior to any work commencing on-site, the applicant shall submit to the NACC for approval, a dated sequence of construction. Any proposed changes to the Schedule must be approved by the NACC prior to the start of work.

44. Wetland flagging shall be checked prior to start of construction and shall be re-established where missing. Except in wetland impact areas, all wetland flagging, outside the limits of work, shall remain visible and enumerated per the approved plan(s) throughout the life of the project and until a Certificate of Compliance is issued so that erosion control measures can be properly placed and wetland impacts can be monitored. The proposed limit of work shall be shall be clearly marked with erosion controls or temporary fencing and shall be confirmed by the NACC. Such barriers shall be checked and replaced as necessary and shall be maintained until all construction is complete. Workers should be informed that no use of machinery, storage of machinery or materials, stockpiling of soil, or construction activity is to occur beyond this line at any time.

45. Prior to the start of construction, erosion controls shall be installed by staked on the ground survey as shown on the approve plan set. The installed barriers shall be inspected and approved by the NACC or its agent prior to the start of construction and shall remain intact until all disturbed areas have been permanently stabilized to prevent erosion. All additional or alternative erosion prevention and sedimentation protection measures found necessary during construction shall be implemented at the direction of the NACC or its agent. The NACC reserves the right to impose additional conditions on portions of this project to mitigate any impacts which could result from site erosion, or any noticeable degradation of surface water quality discharging from the site. For example, installation of erosion control measures may be required in areas not shown on the plan(s) referenced in this Order of Conditions. Should such installation be required by the NACC, they shall be installed within 48 hours of the Commission's request.

46. The applicant shall have on hand at the start of any soil disturbance, removal or stockpiling, a minimum of 75 feet of 12" mulch sock, 50 hay bales and sufficient stakes for staking these socks & bales, 150 feet of silt fence, and an adequate supply of emergency erosion controls including crushed stone, silt sacks, flock blocks, jute matting/100% biodegradable erosion control blanketing and any other erosion controls the applicant proposes to use as part of the Erosion and Sedimentation Control Plan detailed in the NOI, and the herein referenced plans. Said supplies shall be used only for the control of emergency erosion problems and shall not be used for the normal control of erosion.

47. Sufficient square footage of 100% biodegradable erosion control NO PLASTIC NETTING WHATSOEVER, shall be calculated and said calculation shall be forwarded to the Conservation Department prior to any pre-construction meetings.

48. Prior to the commencement of any work, the applicant shall submit to the Conservation Department a copy of the approved NPDES Storm Water Pollution Prevention Plan (SWPPP).

49. Once the Order is recorded and a current W9 form is provided, a check payable to the Town of North Andover shall be provided in the amount of **fifty thousand dollars ($50,000)** which shall be in all respects satisfactory to Town Counsel, Town Treasurer, and the NACC, and shall be posted with the North Andover Town Treasurer through the NACC before commencement of work. Said deposit of money shall be conditioned on the completion of all conditions hereof, shall be signed by a party or parties satisfactory to the NACC, and Town Counsel, and shall be released after completion of the project, provided that provisions, satisfactory to the NACC, have been made for performance of any conditions which are of continuing nature. The applicant may propose a monetary release schedule keyed to completion of specific portions of the project for the NACC's review and approval. This condition is issued under the authority of the local ByLaw.

50. The applicant shall designate a Wetland Scientist (or other environmental professional as approved by the NACC or its agent) as an "Erosion Control Monitor" to oversee any

emergency placement of controls and regular inspection or replacement of sedimentation control devices. The name and phone number of the erosion control monitor must be provided to the NACC in the event that this person has to be contacted, due to an emergency at the site, during any 24-hour period, including weekends. Proof of the retained monitor must be submitted to the Conservation Department on letterhead by the retained consulting firm. **This person shall be given the authority to stop construction for erosion control purposes (or) The Environmental Professional will immediately notify the Conservation agent of any matter that requires attention by the Commission or the agent.** The erosion control monitor will be required to inspect all such devices and oversee cleaning and the proper disposal of waste products. Cleaning shall include removal of any entrapped silt.

51. At least once during each week in which construction activities occurs on-site and for as long thereafter as ground remains unstabilized, the applicant shall submit a written report with photographs from the "Erosion Control Monitor" to the NACC certifying that, to the best of his/her knowledge and belief based on a careful site inspection, all work is being performed in compliance with this Order of Conditions and that approved setbacks are being adhered to. The erosion control monitor must visually inspect all sedimentation/erosion control measures and assume responsibility for their maintenance on a weekly basis and that they are functioning as intended. In addition, all wetland resource areas must be visually inspected for siltation, turbidity, and/or other water quality impacts. The Erosion Control Monitor shall be on site during and/or following a major storm event of ½" inch of rain or greater (24 hour event) to ensure that soils remain stable, and erosion controls are adequate and secure.

52. Upon completion of construction, the applicant shall permanently mark the edge of wetland or at the edge of routine mowing (furthest from the wetland at every opportunity) with signs or markers spaced evenly every thirty (30) feet incorporating the following text: "Protected Wetland Resource Area" and the associated rules. This will designate their sensitivity and assure no further inadvertent encroachment into the wetland. These permanent markers are subject to review and approval by the NACC. The applicant shall instruct all agents to explain these markers to buyers/lessees/landscapers and all persons taking over the property from the applicant. These markers shall remain posted and be replaced as necessary in perpetuity.

53. The applicant and/or the legal owner of that portion of land upon which these Orders of Conditions have been placed shall provide to the NACC prior to transferring, or assigning any portion of said land to another party, subject to said Orders of Conditions, the "Compliance Certification Form Affidavit" attached via "Appendix A" signed under the pains and penalties of perjury, stating that said applicant and/or owner has read these Orders of Conditions and is in compliance with each and every condition. This document shall apply to each of the conditions referenced herein and shall be provided to the Conservation Department at least five (5) business days prior to the closing of said land transaction.

54. Once these above-mentioned pre-construction requirements are complete, the applicant shall contact the Conservation Office prior to site preparation or construction and shall arrange an on-site conference with the NACC representative, the contractor, the engineer, wetland scientist and the applicant to ensure that all of the Conditions of this Order are understood. This Order shall be included in all construction contracts, subcontracts, and specifications dealing with the work proposed and shall supersede any conflicting contract requirements. The applicant shall assure that all contractors, subcontractors and other personnel performing the permitted work are fully aware of the permit's terms and conditions. Thereafter, the contractor will be held jointly liable for any violation of this Order of Conditions resulting from failure to comply with its conditions. The applicant or contractor shall notify the NACC in writing of the identity of the on-site construction supervisor hired to coordinate construction and to ensure compliance with this Order. A reasonable period of time shall be provided as notice of the pre-construction meeting (e.g. 72 hours).

STORMWATER MANAGEMENT CONDITIONS

55. All construction and post-construction stormwater management shall be conducted in accordance with supporting documents submitted with the Notice of Intent, the Department of Environmental Protection Stormwater Management Policy and as approved by the NACC in this Order of Conditions.

56. All stormwater best management practices shall be maintained as specified in the Operation and Maintenance Plan submitted with the Notice of Intent and incorporated in the Order of Conditions. Evidence of maintenance shall be provided to the NACC on an annual basis by a Registered Professional Civil Engineer during construction. The first report shall be submitted to the NACC one year after the stream flow is restored and annual reports must maintained for a prior 5 year period in perpetuity.

57. There shall be no increase in the post development discharges from the storm drainage system or any other changes in post development conditions that alter the post development watershed boundaries as currently depicted in the Notice of Intent and approved by this Order of Conditions, unless specifically approved in writing by the Commission.

58. The applicants, owners, and their successors and assignees, shall maintain all culverts, collections basins, traps, outlet structures, subsurface storage areas, and other elements of the drainage system in order to avoid blockages and siltation which might cause failure of the system and/or detrimental impacts to on-site or off-site resource areas, and shall maintain the integrity of vegetative cover on the site.

WETLAND REPLICATION & STREAM RELOCATION CONDITIONS

59. The stream restoration shall be constructed in accordance with the procedures outlined in the Notice of Intent as well as the requirements of the Massachusetts Inland Wetland Replication Guidelines and Section 6.0 of the North Andover Wetland Protection Regulations.

60. The Wetland Scientist shall submit a written status report to the NACC at the following times:
    - At the start of temporary bypass culvert installation & removal of existing 24" outfall components;
    - Sand bag, stone check dam/apron and pump installation and flow diversion;
    - Repair of upstream eroded bank sections;
    - When final grades are establish (compaction reports shall be submitted for stream embankment construction);
    - When the planting is completed;
    - One month after planting has been completed;
    - At the beginning and end of the growing season each year for at least two years after the stream embankment has been planted. Reports shall be received no later than July 1 and October 15 of each year.
    - Modification to sandbag dam as flows are introduced.

    Reports shall include color photographs.

61. The wetland scientist approved by the commission or its agent shall monitor the status of the stream restoration for three (3) calendar years and then until such time as the stream restoration area functions in accordance with the applicable regulations as established by data collected during monitoring. Monitoring shall include five fixed plots for vegetation progress. Annual status reports on the stream restoration, including all data collected during each of the years specified in this special condition, shall be submitted in a written report. The report shall include a description of the relative health of the planted species and shall make recommendations for replacement plants if needed. A copy of the report shall be sent to the NACC.

DURING CONSTRUCTION

62. Upon beginning work, the applicant shall submit written progress reports every week detailing what work has been done in or near resource areas, and what work is anticipated to be done over the next period. This will update the construction sequence and should be included with reports issued per Condition #52.

63. Approved water-diverting activities anticipated shall be supervised and witnessed by the designated erosion control monitor. This designee **must** be on-site while work is occurring and until this section is complete. De-watering activities shall be conducted as

shown on the approved plans and shall be monitored daily by the erosion control monitor to ensure that sediment laden water is appropriately settled prior to discharge toward the wetland resource areas. No discharge of water is allowed directly into an area subject to jurisdiction of the Wetlands Protection Act and/or the North Andover Wetland Bylaw. If emergency de-watering requirements arise, the applicant shall submit a contingency plan to the Commission for approval, which provides for the pumped water to be contained in a settling basin, to reduce turbidity prior to discharge into a resource area.

64. Any fill used in connection with this project shall be clean fill, containing no trash, refuse, rubbish or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles or parts on any of the foregoing. Any fill imported to the site must be accompanied by a certificate of origin or an analysis certifying cleanliness - whichever is most applicable as determined by the Conservation Commission or its staff.

65. All exposed soil finish grade surfaces shall be immediately landscaped and stabilized, or loamed, seeded and mulched, with a layer of mulch hay. All disturbed areas must be graded, loamed and seeded prior to November 1st of each year. Outside of the growing season, exposed soil finish grade surfaces shall be stabilized with a layer of mulch hay until climate conditions allow for seeding. During construction, any area of exposed soils that will be left idle for more than 30 days shall be stabilized with a layer of mulch hay or other means approved by the NACC.

66. No re-grading in the buffer zone shall have a slope steeper than 2:1 (horizontal: vertical) other than that shown on the approved plan set. Slopes of steeper grade shall be rip-rapped to provide permanent stabilization.

67. All project areas shall incorporate crushed rock pads to avoid sediment tracking onto adjacent paved areas. Paved areas affected by the project shall be swept daily to remove sediment deposited by construction vehicles accessing the site.

68. There shall be no stockpiling of soil or other materials within twenty-five (25) feet of any resource area.

69. All catch basins and any other stormwater inlets on the site or within 100 feet of the project shall be protected by silt sacks to prevent sediment from entering the drainage system (except where proposed to be blocked or removed). Silt sacks shall be maintained and regularly cleaned of sediments until all areas associated with the work permitted by this order have been permanently stabilized and the NACC or its agent has formally approved their removal.

70. All disturbed areas located within wetland resource areas which are to be only temporarily disturbed during construction, shall be restored to their original grade, soil profile and vegetative cover. Soil used for this purpose will either be wetlands topsoil or

a minimum of 4" of quality loam with a minimum of 20% organic material (soils to be amended with clean leaf compost if needed). This shall all be done in accordance with DEP Massachusetts Inland Wetland Replication Guidelines and Section 6.0 of the North Andover Wetlands Protection Regulations.

71. If utilized, washings from concrete trucks, or surplus concrete, shall not be directed to any drainage system or wetland resource area. If truck washing is to occur onsite an area for this activity must be designated and approved by the Conservation Department at the preconstruction meeting.

72. All waste generated by, or associated with, the construction activity shall be contained within the limit of work, and away from any wetland resource area. There shall be no burying of spent construction materials or disposal of waste on the site by any other means. The applicant shall maintain dumpsters (or other suitable means) at the site for the storage and removal of such spent construction materials off-site. However, no trash dumpsters will be allowed within 50' of areas subject to protection under the Act or local ByLaw.

73. Accepted engineering and construction standards and procedures shall be followed in the completion of the project.

74. During and after work on this project, there shall be no discharge or spillage of fuel, or other pollutants into any wetland resource area. If there is a spill or discharge of any pollutant during any phase of construction the NACC shall be notified by the applicant within one (1) business day. No construction vehicles are to be stored or cleaned within 100 feet of wetland resource areas, and no vehicle refueling, equipment lubrication, or maintenance is to be done within 100 feet of a resource area.

AFTER CONSTRUCTION

75. The coir logs located within the upstream Bordering Vegetated Wetland shall be monitored and properly maintained to function as intended.

76. No underground storage of fuel oils shall be allowed on any lot within one-hundred (100) feet of any wetland resource area. This condition shall survive this Order of Conditions and shall run with the title of the property. This condition is issued under the authority of the Town's Wetland protection Bylaw.

77. Fertilizers utilized for landscaping and lawn care shall be slow release, low-nitrogen , phosphorous free types (< 5%), and shall not be used within 25 feet of a resource area. Pesticides and herbicides shall not be used within 100 feet of a wetland resource area. This condition shall survive this Order of Conditions and shall run with the title of the

property. This condition is issued under the authority of the Town's Wetland Protection ByLaw and shall remain in perpetuity.

78. There shall be no dumping of leaves, grass clippings, brush, or other debris into a wetland resource areas or the 25-foot No-Disturb Zone. This condition shall remain in perpetuity.

79. Upon completion of construction and grading, all disturbed areas located outside resource areas shall be stabilized permanently against erosion. This shall be done by loaming and seeding according to NRCS standards. Stabilization will be considered complete once full vegetative cover has been achieved. Stabilized slopes shall be maintained as designed and constructed whether bioengineered or mechanically stabilized.

80. Upon approved site stabilization by Conservation staff, the erosion controls shall be removed and properly disposed of off-site and all exposed unvegetated areas shall be seeded.

81. Upon completion of the project the applicant shall submit the following to the Conservation Commission as part of a request for a Certificate of Compliance:
    a. WPA Form 8A - "Request for a Certificate of Compliance."
    b. A letter from the applicant requesting a Certificate of Compliance.
    c. The name and address of the current landowner.
    d. The name and address of the individual/trust or corporation to whom the compliance is to be granted.
    e. The street address and assessor's map/parcel number for the project.
    f. The DEP file number.
    g. A written statement from a Registered Professional Civil Engineer (and/or Registered Professional Land Surveyor) of the Commonwealth certifying that the work has been conducted as shown on the plan(s) and documents referenced above, and as conditioned by the Commission.
    h. An "As-Built" plan prepared and signed and stamped by a Registered Professional Civil Engineer (and/or Registered Professional Land Surveyor) of the Commonwealth, for the public record. This plan will include:

        - "As-Built" post-development elevations of all drainage & stormwater management structures constructed within 100 feet of any wetland resource area. NOTE: If portions of the stormwater systems exist partially within the Buffer Zone than the entire structure must be depicted to accurately verify compliance.

        - "As-Built" post-development elevations and grades of all filled or altered wetland resource areas including the encompassing buffer zone which is regulated as a resource area under the local Wetland Protection Bylaw.

- Distances from structures to wetland resource areas. Structures include (but are not limited to) septic systems, additions, fences, sheds, stone walls, pools, retaining walls, subsurface utilities and decks.

- A line showing the limit of work and the extent of existing erosion control devices. "Work" includes any disturbance of soils or vegetation.

- Location of all subsurface utilities entering the property.

90. The following special conditions shall survive the issuance of a Certificate of Compliance (COC) for this project:

    - 25' No-Disturbance Zone and a 50' No-Build Zone shall be established from the edge of adjacent wetland resource areas. Future work within the wetlands or within 100' of existing wetland resource areas will require a separate filing with the NACC of the Regulations for performance standards within these zones) The Conservation Administrator and/or other agents of the NACC do not have the authority to waive these setbacks as established under the local Bylaw (Condition #32);

    - Resource Area Markers (Condition #52);

    - Adherence to Operation & Maintenance Plan (Condition #56);

    - Discharge or spillage of pollutants (Condition #74);

    - Monitoring and maintenance of coir logs in BVW (Condtion #75);

    - Prohibition of underground fuels (Condition #76);

    - Limitations on the use of fertilizers, herbicides, and pesticides (Conditions #77);

    - No dumping of leaves, grass clippings, brush, or other debris into a wetland resource areas or the 25-foot No-Disturb Zone (Condition #78).

APPENDIX A - AFFIDAVIT

I, _____ on oath do hereby depose and state:
(authorized agent applicant and/or current owner)

(PLEASE CHECK AT LEAST ONE BLOCK)

1.____ I am the _____of_____
(position with applicant) **(applicant name or company name)**
the applicant upon whom Order of Conditions _____
have been placed upon by *(DEP or NACC number)*
the North Andover Conservation Commission.

&/or

2.____ I am the _____ of _____
(position with owner) **(owner name)**
the owner upon whose land Order of Conditions_____
have been placed up by **(DEP or NACC number)**
the North Andover Conservation Commission.

&

3. I hereby affirm and acknowledge that I have received said Order of Conditions _____ and have read the same and understand each
(DEP File #) and every condition which has been set forth in said Order of Conditions.

&

4. I hereby affirm and acknowledge that on this _____ day of _____ 19____ I inspected said property together with any and all improvements which have been made to the same and hereby certify that each and every condition set forth in Order of Conditions _____ are presently in compliance.
(DEP File #)

&

5. I hereby affirm and acknowledge that this document will be relied upon by the North Andover Conservation Commission as well as any potential buyers of said property which is subject to said Order of Conditions _____.
(DEP File #)

Signed under the pains and penalties of perjury this _____ day of _____ 19____.

_____
(Signature - authorized agent of applicant or owner)

Table 1: Project Component Inspection and Maintenance Schedule

Stream Project Component	Description/Location	Inspection Frequency	Assessment Items	Corrective Actions
30" Culvert Bypass System	RW 5 End – from pipe inlet at Station 4+50 to the discharge into the runway safety area bypass culvert.	Quarterly low flow visual assessment and wet weather (25-year storm intensity) inspection	Drainage manholes (5) and buried reinforced concrete pipe	Any visible subsidence of cover material shall be inspected for pipe connection failure. Utilize clean backfill and topsoil to meet surrounding grade and cover with the project seed mix. Pipe connection failure shall require immediate contact with the airport engineering team to investigate and correct.
			Flared pipe inlet with rip-rap protection	Remove all loose debris from inlet. Ensure a tight fit between the flared end attachment and pipe mouth; readjust as necessary. Hand adjust rip-rap for level and complete coverage of the pipe flared end entrance. Add rip rap as needed for scour protection.
Rehabilitated Bank (South Side)	90 linear feet of bank extending from the flared end inlet at Station 4+50 downstream to Station 3+60 on south side of channel	Quarterly low flow visual assessment and wet weather (25-year storm intensity) inspection	Erosion control fabric	Inspect for tenting of the fabric. Insert additional staples as needed to reestablish direct contact with bank substrate. Repair tears in fabric by inserting new sections beneath each tear and securing with staples. Hand clip any woody vegetation that is interfering with fabric/streambed contact. Apply an appropriate herbicide to cut woody stems in the absence of any standing water.
			Coir logs	Ensure full and direct contact between the logs and the corresponding substrate. Add rebar or hardwood stakes to secure loose or disturbed logs. Ensure upstream log ends are not subject to direct line of flow. Bend inward and resecure log ends that are impacted by direct flows.
			Channel	Manage and remove debris from the channel bottom and up to two feet up each side slope. Ensure a continuous unobstructed flow in this channel section by managing debris accumulation during each low flow inspection.
Rehabilitated Channel	195 linear feet of channel extending from Station 3+60 downstream to Station 1+65	Quarterly low flow visual assessment and wet weather (25-year storm intensity) inspection	Erosion control fabric	Inspect for tenting of the fabric. Insert additional staples as needed to reestablish direct contact with the streambed and bank. Repair tears in fabric by inserting new sections beneath each tear and securing with staples. Hand clip any woody vegetation that is interfering with fabric/streambed contact. Apply an appropriate herbicide to cut woody stems in the absence of any standing water.
			Coir logs	Ensure full and direct contact between the logs and the corresponding substrate. Add rebar or hardwood stakes to secure loose or disturbed logs. Ensure upstream log ends are not subject to direct line of flow. Bend inward and resecure log ends that are impacted by direct flows.
			Channel	Manage and remove all woody growth and debris from the channel bottom and up to two feet up each side slope. Remove growth in a manner that provides maximum protection of erosion control fabrics. Manage and remove accumulated sediment from on top of the erosion control fabrics. Hand remove and dispose of

				accumulated sediment to upland areas of the airport property. Stabilize disturbed areas with the project grass seed mix.
Non-rehabilitated Chanel Section with New Upland Berm (South Side)	165 linear feet of new upland berm along the south side extending from Station 1+65 downstream to Station 0+00	Quarterly low flow visual assessment and wet weather (25-year storm intensity) inspection	Erosion control fabric	Inspect for tenting of the fabric. Insert additional staples as needed to reestablish direct contact with berm substrate. Repair tears in fabric by inserting new sections beneath each tear and securing with staples. Hand clip any woody vegetation that is interfering with fabric/streambed contact. Apply an appropriate herbicide to cut woody stems in the absence of any standing water.
			Channel	Manage and remove debris from the channel bottom and up to two feet up each side slope. Ensure a continuous unobstructed flow in this channel section by managing debris accumulation during each low flow inspection.
Previously Relocated Channel Section at Runway 5 RSA	600 linear feet of channel beginning at runway safety area bypass culvert inlet extending to runway safety area bypass culvert outlet	Quarterly low flow visual assessment and wet weather (25-year storm intensity) inspection	Channel	Manage and remove debris from the channel bottom and up to two feet up each side slope. Ensure a continuous unobstructed flow in this channel section by managing debris accumulation during each low flow inspection.
Coir Log Diversion	Upstream of rehabilitated channel section within the wooded swamp bordering the end of Poor Street	Quarterly low flow visual assessment and wet weather (25-year storm intensity) inspection	Coir Logs	Ensure full and direct contact between the logs and the corresponding substrate. Add rebar or hardwood stakes to secure loose or disturbed logs. If severe log deterioration is noted, add additional logs as needed to provide for the intended diversion.