



Massachusetts Port Authority
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East Boston, MA 02128-2909
Telephone (617) 568-5000
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November 15, 2017

VIA Electronic Mail

David Carlon, Chairman
Massport Community Advisory Committee
dcarlonmcac@gmail.com

RE: *Massport CAC Motion re: RNAV MOU Information*

Dear Chairman Carlon,

Attached please find Massport's responsive documents to the motion voted at the Massport CAC's Annual Meeting for information relating to the RNAV Study and FAA/Massport MOU. The process timeline as previously provided, most recently at the Executive Committee meeting held on November 2nd 2017, has also been included in this packet.

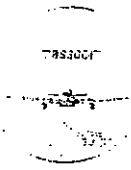
Thank you for your attention to this matter, and please do not hesitate to contact me with any questions you may have upon your review of the attached documents.

Sincerely,

Anthony J. Gallagher
Community Relations and Government Affairs

CC: Via Electronic Mail

Jennifer Gilbert
Michelle Kalowski
Flavio Leo
Elizabeth DR Becker



MASSACHUSETTS PORT AUTHORITY COMMUNITY ADVISORY COMMITTEE

Annual Meeting, October 12, 2017

Motion:

Pursuant to the authority granted to it by its enabling legislation and in furtherance of the purposes of the Massport Community Advisory Committee (Massport CAC) as set forth in the enabling legislation, the Massport CAC requests that Massport provide information and documentation to the Massport CAC relative to the Memorandum of Understanding dated September 27, 2016 Between the Federal Aviation Administration (MOU) and the Massachusetts Port Authority (a.k.a RNAV Study) within ten business days as follows:

1. A copy of the Statement of Work (SOW) referenced in the MOU at Section 4. (a) (2), and any related documents with respect to the scope of work to be completed by all consultants.
2. All FAA documents related to any consultants' work on the MOU including but not limited to the FAA Center of Excellence Grant Awards, grant applications, abstracts, and/or contracts.
3. All documents detailing the funding for the RNAV Study including copies of any FAA Center of Excellence Grant Awards or other funding sources used in support of the RNAV Study.
4. All documents pertaining to the work of HMMH and M.I.T. or any other consultants working on the RNAV Study including contracts, statement of work, agreements, and invoices; and
5. In addition to the above documents, the Massport CAC, as previously requested, again requests a written process and timeline for the "RNAV Study" including milestones and an opportunity/dates for the Massport CAC to review and comment to be provided to the Massport CAC within 5 business days of this request.

RNAV MOU Technical Team

RNAV MOU Technical Team

- **MIT (jointly funded by FAA and Massport through ASCENT research program)**
 - Massport is a member of Advisory Committee
 - Massport is providing in-kind matching resources
 - Massport has sponsored one graduate student
- **HMMH – funded by Massport**
- **Joe Davies – ex-FAA manager funded by Massport**



Mission

The Aviation Sustainability Center is

Focusing on meeting the environmental and energy goals of the Next Generation Air Transportation System, including reducing noise, improving air quality, reducing climate impacts, and energy efficiency

Exploring ways to produce sustainable aviation fuels at commercial scale, creating an industry with the potential for large-scale economic development and job creation

Discovering science-based solutions will benefit the aviation industry and improve the health and quality of life of those living and working around airports.

Scope of Research

The environmental and energy challenges confronting aviation cannot be solved with a single solution. To overcome these challenges, the researchers of ASCENT will need to rethink technology, operations, planning, and sustainability in the field of aviation.

The researchers of ASCENT study a broad range of topics, which include but are not limited to:

Alternative Jet Fuels

- Feedstock Development, Processing and Conversion
- Regional Supply and Refining Infrastructure
- Environmental Benefits Analysis
- Aircraft Component Detonation and Wear
- Fuel Performance Testing

Environment

- Aircraft Noise and Impacts
- Aviation Emissions and Impacts
- Aircraft Technology Assessment
- Energy Efficient Gate-to-Gate Aircraft Operations
- Aviation Modeling and Analysis

For more information on current ASCENT research, visit our [website](http://www.ascnt.org).

For further information on alternative jet fuels, visit www.ascnt.org

Washington State University | www.ascnt.org | www.ascnt.org

Washington State University

Noise

Noise pollution is a major challenge in the aviation industry. The noise caused by airports lowers property values and puts a major constraint on industry growth. It could also potentially cause health problems in communities, making noise reduction a key issue to ASCENT.

To help reduce noise pollution from the aviation industry, ASCENT researchers are working to understand how aircraft noise affects human health and wellbeing, create tools for analyzing aircraft noise, understand how elements like motion and atmospheric parameters affect noise, inform policies related to noise, and conduct outreach and education about aircraft noise reduction.

[Cardiovascular Disease and Aircraft Noise Exposure](#)

[Estimate of Noise Level Reduction](#)

[Noise Emission and Propagation Modeling](#)

[Rotorcraft Noise Abatement Operating Conditions Modeling](#)

[Civil, Supersonic Over Flight, Sonic Boom \(Noise\) Standards Development](#)

[Noise Outreach](#)

[Pilot Study on Aircraft Noise and Sleep Disturbance](#)

[Analytical Approach for Quantifying Noise from Advanced Operational Procedures](#)

[Airline Flight Data Examination to Improve Flight Performance Modeling](#)

[Rotorcraft Noise Abatement Procedures Development](#)

[Quantifying Uncertainties in Predicting Aircraft Noise in Real-world Situations](#)

[Identification of Noise Acceptance Onset for Noise Certification Standards of Supersonic Airplanes](#)

[Acoustical Model of Mach Cut-off](#)

[Noise Power Distance Re-Evaluation](#)

ASCENT is a center of excellence for interdisciplinary research.

[Washington State University](#) [University of Washington](#) [University of Texas at Austin](#) [University of California, Berkeley](#) [University of Michigan](#) [University of Illinois](#) [University of Wisconsin](#) [University of Arizona](#) [University of Colorado](#) [University of Florida](#) [University of Georgia](#) [University of Kentucky](#) [University of Maryland](#) [University of Minnesota](#) [University of Missouri](#) [University of Nebraska](#) [University of Nevada](#) [University of New Mexico](#) [University of New York](#) [University of North Carolina](#) [University of North Dakota](#) [University of Oklahoma](#) [University of Oregon](#) [University of Pennsylvania](#) [University of South Carolina](#) [University of South Florida](#) [University of Tennessee](#) [University of Texas at Dallas](#) [University of Texas at San Antonio](#) [University of Virginia](#) [University of Washington](#) [University of Wisconsin](#) [University of Wyoming](#)

ASCENT is a center of excellence for interdisciplinary research.

PROFESSIONAL SERVICES AGREEMENT

This agreement (the "Agreement") shall be effective as of September 1, 2016, by and between the **MASSACHUSETTS PORT AUTHORITY** (the "Authority" or "Massport"), a body politic and corporate established and existing pursuant to Chapter 465 of the Acts of 1956 (the "Enabling Act"), as amended, having a principal place of business at One Harborside Drive, Suite 200S, East Boston, Massachusetts, and **HARRIS MILLER MILLER & HANSON INC.** (the "Consultant"), a corporation organized and existing under the laws of the Commonwealth of Massachusetts, with a principal place of business at 77 South Bedford Street, Burlington, Massachusetts 01803.

WHEREAS, the Authority is the owner and operator of the General Edward Lawrence Logan International Airport located in East Boston, Massachusetts ("Logan"); and

WHEREAS, the Authority has undertaken a qualifications-based selection process (the "RFQ") to secure aviation noise consulting services; and

WHEREAS, as a result of the RFQ, the Authority has selected the Consultant to provide aviation noise consulting services, in accordance with the terms and conditions of this Agreement.

NOW, THEREFORE, in consideration of the mutual promises herein contained and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Authority and the Consultant agree as follows:

ARTICLE 1 - SCOPE OF SERVICES

1.1. Basic Services to Be Performed

Consultant shall provide certain aviation noise consulting services as set forth in **Exhibit A**. Consultant shall perform the professional services if and to the extent requested by the Authority in accordance with the Work Order Process set forth in Article 1.2 below, and the terms of this Agreement. The Consultant shall be solely responsible for the technical completeness and accuracy of all contract documents prepared under this Agreement.

1.2. Work Order Process

The parties agree to define the scope of services with individual Work Orders, which the Consultant shall prepare and submit to the Authority for its review and approval. The Consultant agrees to cooperate with the Authority in the preparation of detailed, consecutively numbered Work Orders in accordance with the Guidelines for the Preparation of Work Orders and the Sample Work Order attached hereto as **Exhibit E**, which Work Orders shall be executed by the parties.

Work Orders are intended to be discrete working documents that will provide, in summary form, the background and factual context within which a particular work ("Work") element or series of Work elements shall be completed by the Consultant. Each Work Order shall include a detailed scope of services, level of effort and related costs. Work Orders shall be construed to be in addition to, supplementary to, and consistent with the provisions of the text of this Agreement.

In the event of a conflict between a particular provision(s) of any Work Order and a provision(s) of this Agreement, the provision(s) of this Agreement shall be deemed to take precedence.

However, the provisions of a Work Order shall take precedence over Article 1 of this Agreement with respect to the exact scope of services to be provided under the Work Order. A Work Order may be amended by the parties by a written instrument referencing the identification number and date of the original Work Order that is being amended. An amendment to a Work Order shall be prepared by the parties jointly and signed by their authorized representatives.

ARTICLE 2 - TERM, COMMENCEMENT AND COMPLETION

2.1. Term

This Agreement shall commence on the effective date recited above, and remain in effect until March 14, 2019, unless extended or terminated by the Authority in accordance with this Agreement. Individual Work Orders shall have effective dates and completion dates for the related scope of Work.

2.2. Commencement of Services

The Consultant shall commence services in accordance with individual Work Orders. The Consultant shall not be entitled to any compensation for services performed unless and until it has received a Work Order executed by the Authority authorizing such services.

2.3. Time of the Essence

Time is of the essence for this Agreement, and the completion dates for various phases of the Consultant's services may be extended only as provided in this Agreement. The Consultant shall commence performance of the services in accordance with the Work Schedule agreed upon and set forth in a Work Order, or as otherwise required by the Authority, (a) upon the Authority's execution of the Work Order, (b) upon the Consultant's receipt from the Authority of a written Notice(s) to Proceed with the services under an unexecuted Work Order, which Notice to Proceed shall also specify the number of the unexecuted Work Order and the date for completion of the services thereunder, or (c) upon verbal request from the Project Manager or an authorized representative of the Authority in an emergency situation.

ARTICLE 3 - PERFORMANCE OF THE SERVICES

3.1. Standards of Performance

The Consultant agrees that the services provided hereunder shall conform to the highest standards of care and practice exercised by organizations engaged in performing comparable services; that the personnel furnishing said services shall be qualified and competent to perform adequately the services assigned to them; and that the recommendations, guidance and performance of such personnel shall reflect such standards of care and practice.

3.2. Laws and Codes

The Consultant shall perform the scope of services under this Agreement in conformance with all applicable federal, state or local laws, ordinances, statutes, rules, regulations or directives as all such laws, ordinances, statutes, rules, regulations or directives may be amended from time to time, including any regulations or directives of the Authority (whether now existing or hereinafter enacted or promulgated, as they may be amended from time to time) applicable to the

services to be rendered hereunder. Consultant shall obtain all necessary permits for the performance of the Consultant services.

3.3. Nondiscrimination and Affirmative Action

In accordance with policies adopted by the Authority, Consultant agrees with respect to its exercise of all uses, rights, privileges and obligations granted or required pursuant to this Agreement as follows:

3.3.1. Consultant shall not discriminate against any person, employee or applicant for employment because of that person's membership in any legally protected class, including but not limited to their race, color, gender, religion, creed, national origin, ancestry, age being greater than forty years, sexual orientation, gender expression or identity, disability, genetic information, or veteran status. Consultant shall not discriminate against any person, employee, or applicant for employment who is a member of, or applies to perform service in, or has an obligation to perform service in, a uniformed military service of the United States, including the National Guard, on the basis of that membership, application, or obligation.

3.3.2. Consultant will provide all information and reports pertinent to the Authority's Equal Employment, Anti-Discrimination and Affirmative Action requirements requested by the Authority and will permit access to its facilities and any books, records, accounts or other sources of information which may be determined by the Authority to affect the Consultant's obligations herein.

3.3.3. Consultant shall comply with all federal and state laws and Authority regulations pertaining to Civil Rights and Equal Opportunity, including executive orders and rules and regulations of appropriate federal and state agencies unless otherwise exempt.

3.4. Consultant's Cost Estimates

The Authority shall rely on the Consultant's cost estimates to determine whether it desires to go forward with all or part of the Work, and the Consultant shall engage competent and experienced professionals throughout the term of this Agreement in order to assess cost and budget impacts. The Consultant, upon request, shall furnish the names and experience and resumes, if necessary, of the professionals responsible for providing estimating services. Estimates which indicate that Work cannot be accomplished within the established budget shall be addressed in a manner satisfactory to the Authority in order to bring the Work within the established budget at no additional cost to the Authority.

3.5. Right of Review

The Authority shall have the right, at any time and in its sole discretion, to submit for review to consulting engineers or consulting architects engaged by the Authority for that purpose any or all parts of the scope of services performed by the Consultant, and the Consultant shall cooperate fully in such review at the Authority's request.

3.6. Access to Facilities and Use of Equipment

The Consultant, during the course of its services, shall coordinate its access, and the access of any contractors, suppliers, employees or agents, to and inspections of the site with the Authority. Interruptions or interference with the tenants' operations shall be allowed only with approval in advance by the Authority. All requested access shall be made a minimum of forty-eight (48)

hours in advance. Where the Consultant requires access to secured areas, and where the Authority determines that the Consultant's personnel require security badges, the Consultant shall provide the Authority with written justification for such request, and shall fully cooperate and comply with all Authority requirements, as all such Authority requirements may change from time to time.

If the Consultant requests, and the Authority permits (in its sole discretion), the use of the Authority's equipment in furtherance of the services under this Agreement, the Consultant shall assume all risk of loss, damage and injury to the Consultant, any of its employees, agents, or suppliers, and any property of any of the aforesaid, and hereby agrees to release, indemnify, defend, and hold harmless the Authority, its members, officers, and employees from and against all liabilities, claims, losses, damages and expenses against the Authority, its members, officers, or employees for any injury to or death of any person, including the Consultant, and/or damage to any property arising out of the Consultant's use of said equipment. Nothing herein shall require the Authority to consider or permit the Consultant's use of the Authority's equipment in connection with this Agreement.

3.7. Inspection Aids/Equipment

The Consultant shall provide inspection aids and/or equipment required for the examination of any site, as shall any agents or contractors required to perform inspection services. All materials and/or surfaces removed or altered in any manner shall be restored, subsequent to inspection, to the condition that existed prior to inspection.

3.8. Consultant's Personnel

The Consultant shall employ qualified and competent personnel to perform the services under this Agreement, particularly professionals experienced in the development and preparation of environmental reports and the provision of environmental services. The Authority shall have the right to approve such personnel prior to their engagement and to require the removal of any employee of the Consultant who, in the opinion of the Authority, is careless, incompetent, or otherwise unqualified to perform the services hereunder, or whose conduct is in any way considered improper by the Authority.

ARTICLE 4 **INTENTIONALLY OMITTED**

ARTICLE 5 - COMPENSATION

5.1. Compensation

The overall contract amount for the complete and proper performance of all services required under this Agreement shall be a sum not to exceed **Five Hundred Thousand Dollars (\$500,000.00)**. The parties acknowledge and agree that it is their intention to incorporate in each Work Order under this Agreement the amount and basis of payments to be made to the Consultant. Payments shall be made on the basis of a lump sum or a "not-to-exceed" amount, at the sole discretion of the Authority, for each individual Work Order in accordance with this Article.

5.2. Payments Based on a "Not-to-Exceed" Amount

For the services described in any Work Order based on a "not-to-exceed" amount, the amount actually due Consultant shall be calculated according to the time actually expended by Consultant in the performance of the Consultant Services at the hourly rates set forth in the schedule attached hereto and incorporated herein as **Exhibit B**. The not-to-exceed amount set forth in Article 5.1 above shall include complete compensation for all labor, materials, reasonable expenses, overhead, general administrative costs and profit.

5.3. Requests for Payment and Documentation

The Consultant shall submit invoices on a monthly basis to the Authority's Project Manager in order to ensure proper payment. Invoices shall be accompanied by appropriate supporting documentation, including without limitation, a summary report of all services performed during the period, and any additional detail the Authority may require in a Work Order. The Authority reserves the right not to accept invoices for services performed or expenses incurred that are older than ninety (90) calendar days.

5.4. Consultant's Accounting Records

The Consultant shall keep records pertaining to services performed and reimbursable expenses incurred on the basis of generally acceptable accounting principles and in accordance with such reasonable requirements to facilitate audit as the Authority may provide. Authorized representatives of the Authority shall have the right to inspect and audit all records of the Consultant pertaining to the services under this Agreement for a period of six (6) years from the date of completion of the Work, and all such records shall be made available to the Authority during normal business hours. The cost of any audit shall be borne by the Authority unless the Consultant's reports and documentation fail in a material way to support any charges made, in which case such costs shall be borne by the Consultant.

5.5. Authority's Right to Withhold Payment

The Authority may withhold payment to such extent as it deems necessary as a result of (a) third party claims arising out of the services and made against the Authority; (b) evidence of fraud, overbilling or overpayment discovered upon audit; (c) failure to make prompt payments to independent contractors; (d) a payment request that includes fees for unapproved subconsultants or independent contractors; (e) unsatisfactory performance of services; or (f) any breach of this Agreement.

ARTICLE 6 - INSURANCE**6.1. Professional Liability Insurance Coverage**

The Consultant shall maintain at all times required under this Agreement professional liability insurance coverage for professional errors and omissions arising out of the performance of services under this Agreement in an amount not less than \$1,000,000. Such insurance shall extend to the Consultant and to its legal representatives in the event of death, dissolution or bankruptcy of the Consultant, and shall cover any negligent errors and omissions arising out of the performance of services under this Agreement committed (or alleged to have been committed) by the Consultant or any person for whom the Consultant is legally responsible,

including without limitation its agents, employees, subconsultants and independent contractors.

6.2. Deductible

The Consultant may maintain a professional liability insurance policy with a deductible clause in an amount approved by the Authority if, in the judgment and opinion of the Authority, the Consultant's financial resources are sufficient to adequately cover possible liability in the amount of the deductible. In no event shall the Authority be responsible for payment of any deductible.

6.3. Worker's Compensation, General Liability, Automobile and Other Insurance

The Consultant shall carry, and shall ensure, if applicable, that each of its subconsultants and independent contractors carries, the following coverages:

- (a) Worker's compensation insurance as required under federal and Massachusetts law;
- (b) Employer's liability insurance with a minimum limit per accident or disease of \$1,000,000;
- (c) Commercial general liability insurance for bodily injury and property damage in the combined single limit of \$1,000,000, which shall include, without limitation, blanket contractual liability insurance covering all liabilities assumed by the Consultant under this Agreement; provided, however, that the Consultant may endorse its own commercial general liability policy to include its subconsultants and independent contractors as additional insureds in order to fulfill the insurance obligation described in this subparagraph (d) if the Authority provides its written approval in advance of such action, which approval the Authority may grant or deny in its sole discretion; and
- (d) Comprehensive automobile liability insurance for bodily injury and property damage in the combined single limit of \$1,000,000 covering all owned, hired, and non-owned vehicles.

6.4. Insurance Policies and Certificates

Prior to the execution of this Agreement, the Consultant shall furnish to the Authority certificates of insurance reflecting policies in force, and shall also provide certificates evidencing all renewals of any expiring insurance policy required hereunder within ten (10) days of the expiration thereof. The Consultant's failure to provide and continue in force and effect any insurance required under this Article shall be deemed a material breach of this Agreement for which the Authority, in its sole discretion, may terminate this Agreement immediately or on such other terms as it sees fit. If requested by the Authority, the Consultant shall provide copies of its insurance policies and/or evidence satisfactory to the Authority concerning the effectiveness and the specific terms of the insurance, including deductibles.

6.5. No Cancellation

All insurance maintained by the Consultant pursuant to this Article shall be written by insurance companies having a Best's Rating of B+ or better, and licensed to do business in Massachusetts, shall be in a form and substance satisfactory to the Authority, and shall provide that the insurance will not be subject to cancellation, expiration without renewal, termination, or material change during its term except upon thirty (30) days' prior written notice to the Authority.

6.6. Consultant's Insurance Primary

The commercial general liability and automobile liability policies maintained by the Consultant pursuant to this Agreement shall provide that insurance applying to the Authority shall be primary, and that the Authority's own insurance shall be non-contributing.

6.7. Additional Insured

All liability insurance policies, except the professional liability, workers' compensation, and employer's liability policies, maintained by the Consultant pursuant to this Agreement shall be endorsed to include the Authority, its officers, directors and employees as additional insureds, and all property and liability insurance policies, except professional liability, shall be endorsed with a waiver of subrogation by the insurer as to the Authority.

ARTICLE 7 - INDEMNIFICATION AND RELATED PROVISIONS**7.1. Indemnification**

The Consultant, at its expense, shall indemnify, defend and hold harmless the Authority, its members, officers and employees from and against all Consultant and third party claims, causes of action, and suits, and all losses, damages, and expenses which are the subject thereof, including attorneys' fees and costs of investigation and litigation, arising out of or resulting from any error, omission, or negligent act, or any breach of contractual duties of the Consultant and/or its agents, employees, subconsultants, and independent contractors, and the employees of each, in the performance of this Agreement; provided, however, that this obligation to indemnify, defend and hold harmless shall not apply to claims caused solely by the willful misconduct or negligence of the Authority. The foregoing express obligation of indemnification shall not be construed to negate or abridge any other obligation of indemnification running to the Authority that would otherwise exist. The Authority shall give the Consultant prompt and timely notice of any claim, threatened or made, or any lawsuit instituted against it that could result in a claim for indemnification hereunder. The extent of this agreement of indemnification shall not be limited by any obligation or any term or condition of any insurance policy required pursuant to Article 6 of this Agreement.

7.2. No Personal Liability

Members or employees of the Authority shall not be charged personally or held contractually liable by or to the Consultant under any term or provision of this Agreement, or because of any breach hereof, or because of its execution or attempted execution.

7.3. Independent Contractor Relationship

The parties intend that an independent contractor relationship shall be created by this Agreement. As between the Consultant and the Authority, the Consultant shall be responsible for any liability to third parties resulting from errors, omissions, or negligent acts of the Consultant, its agents, employees, subconsultants or independent contractors arising from or occurring in the course of the performance of the services under this Agreement. No act or direction of the Authority shall be deemed to be the exercise of supervision or control of the Consultant's performance hereunder.

7.4. Limitation of Liability

The liability of the Authority under this Agreement is limited to the compensation provided under Article 5, and shall in no event include liability for incidental, indirect, special or consequential damages, or for damages or loss from causes beyond the Authority's reasonable control.

7.5. Non-Waiver

Neither the Authority's review, approval, acceptance or payment for services under this Agreement, nor the failure of the Authority to require the Consultant's performance of any provision of this Agreement, shall operate as a waiver of any rights under this Agreement, and the Consultant shall be and remain liable to the Authority for all damages incurred by the Authority as the result of the Consultant's failure to perform in accordance with this Agreement. The rights and remedies of the Authority provided for under this Agreement are in addition to any other rights or remedies provided at law or in equity. The Authority may assert a right to recover damages by any appropriate means, either during or after performance of this Agreement.

ARTICLE 8 - FORM, OWNERSHIP AND PUBLICATION OF DOCUMENTS**8.1. Form and Number of Documents**

The Consultant shall provide review copies of all plans, drawings and other documents prepared by the Consultant under this Agreement in a number specified in each Work Order; provided however, that one of the copies shall be a reproducible. The Consultant shall provide electronic files for each design submittal as required under this Agreement.

8.2. Ownership

All files, records and documents, including, without limitation, calculations, plans, drawings, and specifications, and all text, electronic and graphic files, prepared pursuant to this Agreement, are property owned by the Authority and shall be clearly marked, identified, in good order, and delivered to the Authority's Project Manager, with a cover letter, upon the completion of the services, but in no event later than sixty (60) days after the acceptance of the Work or termination of this Agreement, unless such time limit shall be extended in writing by the Authority. The Authority may use all such files, records and documents as it determines.

8.3. Publication

Except as required for the discharge of its duties to the Authority under this Agreement, or required by subpoena or court order, and as otherwise provided in Section 8.4 hereof, the Consultant agrees to hold all information obtained in connection with the services under this Agreement in the strictest confidence, and shall not communicate, release or disclose any document, material, or information obtained or developed under this Agreement in any form (including without limitation plans, sketches, drawings, and other renderings or documents) to any third party without the prior written approval of the Authority. The Consultant shall not use any such information other than for the performance of services under this Agreement. The Consultant shall inform all persons to whom any such document or information has been or will be communicated, released or disclosed of the privileged and confidential nature of such

document or information, and shall ensure that all necessary steps are taken so that such document or information is treated confidentially.

8.4 Sensitive Security Information

The Consultant shall maintain in confidence, and shall cause its Key Employees (as hereinafter defined) to maintain in confidence, (a) all contract documents and information to be developed under this Agreement, and (b) all records, documents, and information provided to the Consultant by the Authority for the Consultant's preparation of said contract documents and information, that contain and/or constitute Sensitive Security Information ("SSI") as defined by 49 C.F.R. 1520.7, including without limitation, for (a) and (b), above, all data, plans, specifications, sketches, drawings, other renderings, individual personnel records, and all other records, documents and information that contain and/or constitute SSI. The Consultant shall restrict access to all such records, documents and information that contain and/or constitute SSI only to those employees of the Consultant who require such access to perform the services required under this Agreement (such employees, "Key Employees").

The unauthorized release of SSI is prohibited. All records, documents and information defined by 49 C.F.R. 1520 *et seq.* as SSI, or designated by the Authority as SSI, shall be marked, stored, distributed and destroyed in accordance with 49 C.F.R. 1520 *et seq.* SSI records, documents and information received during the course of this Agreement are the property of the Authority. No part of any such records or documents, or any of the information contained therein, may be photocopied or reproduced in any way except as specifically required or permitted by the terms of this Agreement, or released to any person without the prior written permission of the Authority. Unauthorized possession, photocopying, reproduction, or release of such records and documents, or any portion of their contents, or failure to return them to the Authority immediately upon request, shall constitute a material breach of this Agreement, and may result in immediate termination of this Agreement and/or such other action as deemed appropriate by the Authority, including but not limited to referral to federal authorities [see 49 C.F.R. 1520.5(d)].

ARTICLE 9 **INTENTIONALLY OMITTED**

ARTICLE 10 - NONDISCRIMINATION AND AFFIRMATIVE ACTION

10.1. Authority Requirements

In accordance with policies adopted by the Authority, the Consultant agrees with respect to its exercise of all uses, rights, privileges and obligations granted or required herein, to comply with all federal and state laws and the Authority's regulations pertaining to Civil Rights, Discrimination, and Equal Opportunity, including executive orders and rules and regulations of appropriate federal and state agencies unless otherwise exempt therein.

10.2. Federal Requirements

In all work pertaining to Logan, financed in whole or in part with federal funds, Consultant agrees to the following provisions required by federal grant agreements entered into by Authority:

10.2.1. Compliance with Regulations. Consultant shall comply with the regulations relative to nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation (DOT) found in 49 CFR Part 21 ("Regulations"), as they may be amended from time to time, which are hereby incorporated by reference and made a part of this Agreement.

10.2.2. Nondiscrimination. Consultant, with regard to the services performed by it during the term of this Agreement, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The Consultant shall not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the Agreement covers a program as set forth in Appendix B of the Regulations.

10.2.3. Solicitations for Subcontracts. In all solicitations either by competitive bidding or negotiation made by Consultant for services to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by Consultant of Consultant's obligations under this Agreement and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

10.2.4. Information and Reports. Consultant shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Authority or the Federal Aviation Administration (FAA) to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a Consultant is in the exclusive possession of another who fails or refuses to furnish this information, Consultant shall so certify to the Authority or the FAA as appropriate, and shall set forth what efforts it has made to obtain the information.

10.2.5. Sanctions for Noncompliance. In the event of Consultant's noncompliance with the nondiscrimination provisions of this Agreement, the Authority shall impose such contractual sanctions as it or the FAA may determine to be appropriate, including, but not limited to:

(a) withholding of payments to Consultant under this Agreement until Consultant complies, and/or

(b) cancellation, termination, or suspension of this Agreement, in whole or in part.

10.2.6. Incorporation of Provisions. Consultant shall include the provisions of Paragraphs 10.2.1. through 10.2.5. in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. Consultant shall take such action with respect to any subcontract or procurement as the Authority or the FAA may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided, however, that, in the event the Consultant becomes involved in, or is threatened with, litigation, Consultant may request the United States to enter into such litigation to protect the interests of the United States or the Authority.

ARTICLE 11 - SUCCESSORS AND ASSIGNS

11.1. Prohibition on Delegation or Assignment

The Consultant shall not, directly or indirectly, assign, mortgage, pledge, delegate or otherwise transfer (collectively referred to as a "transfer") this Agreement or delegate its duties without the prior written approval of the Authority, which approval may be withheld at the Authority's sole discretion. At the Authority's option, any attempted transfer without said written approval shall be void, ab initio, shall be of no force and effect, and shall confer no rights on or in favor of third parties.

If the Consultant is a general partnership, limited partnership, or limited liability partnership, a transfer of any interest of a general partner, a withdrawal of any general partner from the partnership, or the dissolution of the partnership shall be deemed a transfer of this Agreement. If the Consultant is a corporation, (i) unless the Consultant is a public corporation whose stock is regularly traded on any national or recognized stock exchange in the over-the-counter market and quoted on NASDAQ, any merger, consolidation, or other reorganization of the Consultant or sale or other transfer of a percentage of capital stock of the Consultant which results in a change of controlling persons, or (ii) any dissolution, sale or other transfer of substantially all of the assets of the Consultant, shall be deemed a transfer of this Agreement.

If the Consultant is a limited liability company, any consolidation or merger involving the Consultant, any dissolution (as defined in M.G.L. c. 156C, §43) of the Consultant, or any sale or other transfer of substantially all of the assets of the Consultant, that occurs during the term of this Agreement shall be deemed a transfer of this Agreement.

If the Consultant is a joint venture, and if, during the term of this Agreement, any of the foregoing occurs to any member of the joint venture, or if any member of the joint venture withdraws from the joint venture, such event shall be deemed a transfer of this Agreement.

If the Consultant changes its name, but does not otherwise transfer this Agreement within the meaning of this Section 11.1, the Consultant shall notify the Authority in writing of such name change and provide certificates of insurance evidencing coverages in force and required under Article 6 hereof that reflect such name change. Failure to so notify the Authority of such name change within thirty (30) days of effecting such change shall be deemed a material breach of this Agreement for which the Authority, in its sole discretion, may terminate this Agreement immediately or on such terms as it sees fit.

Any transfer shall be made only if, and shall not be effective until, the transferee shall execute, acknowledge and deliver to the Authority an agreement, in form and substance reasonably satisfactory to the Authority, whereby the transferee shall assume the Consultant's obligations and performance of this Agreement, and shall agree to be bound by all of the covenants, agreements, terms, provisions and conditions hereof on the part of the Consultant to be performed or observed. This agreement shall also include the transferee's obligation to deliver to the Authority certificates of insurance evidencing coverages in force and required under Article 6 hereof ten (10) days prior to the effective date of the transfer. Notwithstanding any transfer, the Consultant shall remain fully liable under this Agreement (jointly and severally with such assignee) and shall not be released from performing any of the terms and conditions of this Agreement.

The Consultant agrees that the Authority's written approval of any transfer of this Agreement in one instance shall not constitute a waiver by the Authority of its right to approve in writing subsequent transfer(s) of this Agreement by the Consultant, its successor(s) and/or assign(s). The Authority hereby reserves the right, but shall not be obligated, to approve any and all transfers of this Agreement in accordance with the terms of this Article 11.

11.2. Successors

The Authority for itself and its successors, and the Consultant for itself, its successors, assigns, partners and legal representatives, bind themselves each to the other with respect to all of the terms and conditions of this Agreement.

ARTICLE 12 - SUSPENSION AND TERMINATION

12.1. Suspension or Termination Without Cause

Notwithstanding any other provision of this Agreement, the Authority reserves the right, at any time in its absolute discretion, to suspend or terminate this Agreement in whole or in part without cause upon thirty (30) days' written notice to the Consultant. With respect to services performed, the Authority agrees to pay the Consultant the progress payments accruing to the Consultant under Article 5 hereof through and including the effective date of the suspension or termination. If any portion of this Agreement so suspended is not recommended by written notice of the Authority within the time period specified in the written notice of suspension, the suspended portion of this Agreement shall be thereupon deemed terminated as to that portion for the convenience of the Authority in accordance with this provision. The Authority shall incur no liability by reason of a termination for convenience, except for the obligation to pay in accordance with this Agreement progress payments and (if applicable) reimbursable expenses accruing through and including the date of termination, which obligation shall not exceed the limits established under each phase of the Work as to which the Authority has expressly authorized the Consultant to proceed, plus reasonable costs incurred in connection with the termination as approved by the Authority.

12.2. Termination for Cause

If this Agreement or any part hereof shall be assigned or sublet by the Consultant without the prior written consent of the Authority, or if the Consultant shall violate any material provision of this Agreement, or if the Consultant shall fail to perform the services or any material obligation, and such failure shall not be cured by the Consultant within five (5) days of its receipt of written notice thereof from the Authority, or if the Consultant becomes unable to perform the services contemplated under this Agreement, the Authority may terminate this Agreement upon seven (7) days' written notice or as otherwise provided in this Agreement, and the Authority may complete the services by such means as it determines. In the event of a termination for cause, the Consultant shall not be entitled to any further payment. If the total expense of completing the services reasonably incurred by the Authority, plus the Authority's losses and damages arising out of the Consultant's default, exceeds the unpaid balance of any amounts due the Consultant under this Agreement, the Consultant shall pay the deficiencies to the Authority upon demand.

12.3. Authority's Rights Upon Termination

In the event of termination for convenience or cause, the Consultant shall promptly deliver to the

Authority all documents pertaining to the Consultant's professional services performed through and including the effective date of termination. Any termination of this Agreement shall not impair the right of the Authority to recover damages occasioned by the fault or default of the Consultant.

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.1. Conflict of Interest

The Consultant shall not hire or employ, on either a full-time or part-time basis during the term of this Agreement, any person or persons so long as such person(s) shall be employed by the Authority. The Consultant hereby certifies that this Agreement is made in good faith, without fraud, collusion of any kind with any other consultant for the same services, and that the Consultant is acting solely on its own behalf without connection with, or obligation to, any undisclosed person or firm and in full compliance with the provisions of M.G.L. Chapter 268A and any other applicable conflict of interest laws. If any officer, agent or employee of the Authority has a financial interest in the Consultant, the Consultant hereby agrees that its representatives shall consult with the Authority's legal representatives to learn what action shall be taken to comply with the provisions of M.G.L. Chapter 268A, and any other applicable conflict of interest laws.

13.2. Assistance in Claims and/or Litigation

The Consultant shall render assistance to and on behalf of the Authority in claims and/or litigation in connection with or arising out of this Agreement, including without limitation, any claims and/or litigation involving the Consultant, its subconsultants, or independent contractors, and any claims and/or litigation brought by or against the Authority and any third parties, by providing technical information, analyses and expert witnesses only for the Authority. The Consultant shall provide services under this Section 13.2 at a mutually agreed upon and reasonable rate.

13.3. Certificates

The Consultant shall complete, sign, and comply with the provisions of the Consultant's Certificate and the Certificate of Compliance with Laws attached, respectively, as **Exhibit C** and **Exhibit D** to this Agreement.

13.4. Notices

All notices, approvals, requests, consents or other communications that are required or permitted pursuant to this Agreement shall be effective upon receipt if hand delivered, sent by a nationally recognized overnight courier, or sent by United States registered mail, return receipt requested, to the Authority addressed to **MASSACHUSETTS PORT AUTHORITY, One Harborside Drive, Suite 200S, East Boston, Massachusetts, 02128**, and directed to the attention of the Director of Aviation Planning & Strategy, with a copy to **MASSACHUSETTS PORT AUTHORITY, One Harborside Drive, Suite 200S, East Boston, Massachusetts, 02128**, and directed to the attention of the Chief Legal Counsel, or to the Consultant addressed to **Harris Miller Miller & Hanson Inc., 77 South Bedford Street, Burlington, Massachusetts 01803**, and directed to the attention of **Mary Ellen Eagan, President**, or to such other address as either

party may specify to the other by notice given as provided herein.

13.5. Invalid Provisions

If any term or condition of this Agreement or any application thereof shall to any extent be held invalid, illegal or unenforceable by a court of competent jurisdiction, the validity, legality and enforceability of the remaining terms and conditions of this Agreement shall not be deemed affected thereby, unless one or both parties would be substantially or materially prejudiced.

13.6. Governing Law

This Agreement shall be governed by, construed, and enforced in accordance with the laws of the Commonwealth of Massachusetts.

13.7. Jury Waiver

The parties, by execution of this Agreement, voluntarily and intentionally waive all rights to trial by jury as to all claims, disputes, or controversies arising out of, or relating to, this Agreement or the performance thereof.

13.8. Entire Agreement

The following exhibits described in this Agreement and attached to it as of the date of its execution shall be incorporated in and made a part of this Agreement:

- Exhibit A: Scope of Services
- Exhibit B: Consultant's Hourly Rates and Classifications
- Exhibit C: Consultant's Certificate
- Exhibit D: Certificate of Compliance with Laws
- Exhibit E: Guidelines for Preparation of Work Orders and Sample Work Order

If there is any inconsistency between this Agreement and the provisions of any exhibit, the provisions of this Agreement shall take precedence. The terms used in this Agreement and also used in any exhibit to this Agreement shall have the same meaning in the exhibit as in this Agreement.

This Agreement, including exhibits attached hereto at the time of its execution, constitutes the entire integrated agreement between the parties with respect to the matters described. This Agreement supersedes all prior agreements, negotiations and representations, either written or oral, and it shall not be modified or affected by any course of dealing, course of performance, or usage of trade.

13.9. Section Headings and Captions

All section headings and captions used in this Agreement are solely for convenience, and shall not affect the interpretation of this Agreement.

13.10. Counterparts

This Agreement may be executed in any number of counterparts, and each fully executed counterpart shall be deemed an original.

13.11. Survival of Terms

The Authority's rights and the Consultant's obligations hereunder that contemplate continuing rights and obligations, respectively, including without limitation, the Consultant's obligations to indemnify the Authority and to keep certain insurance coverages in effect, shall survive completion of the Consultant's services hereunder and the expiration or earlier termination of this Agreement.

13.12. Amendments

This Agreement may be amended only by a written instrument specifically referencing this Agreement executed by the authorized representatives of the parties.

13.13. Authority

The Consultant represents that it is a domestic profit corporation duly existing and in good standing under the laws of the Commonwealth of Massachusetts, and is authorized to transact business in the Commonwealth of Massachusetts. Each person executing this Agreement on behalf of the Authority and the Consultant, respectively, represents and certifies that he/she has the authority to sign on behalf of such party to the Agreement, and to bind such party to the obligations contained herein.

(SIGNATURES FOLLOW THE NEXT PAGE)

IN WITNESS WHEREOF, this Agreement is executed as of the day and year first written above.

**HARRIS MILLER MILLER &
HANSON INC.**

By:


Mary Ellen Eagan

Title: President and CEO

Date:

9/1/16

MASSACHUSETTS PORT AUTHORITY

By:


Michael A. Grieco

Title: Assistant Secretary-Treasurer

Date:

10/31/16

EXHIBIT A SCOPE OF SERVICES

Consultant shall provide aviation noise consulting services on an on-call basis to the Authority, as follows:

1. Produce annual noise contour and associated population and dwelling unit counts, based on the most current census information for Boston Logan International Airport ("Logan", "Boston-Logan" or "Logan Airport") to be included in Massport's annual environmental filing to the state MEPA unit. Consultant will produce Logan Airport's Noise Exposure Map to be submitted to the FAA for sound proofing and grant requirements including detailed street level maps to allow Massport and the FAA to determine eligibility requirements. Consultant will coordinate with the Authority's Noise Abatement Office and the other Massport consultants working on the Environmental Status Planning Report Team on schedule, format and technical consistency. Consultant will utilize the latest FAA AEDT version (adjusted for Logan-specific topography) and produce data and graphics of the highest quality (GPS/digital mapping, detail street level, aerial orthophoto/MassGIS) for current and previous years to allow for comparative analysis.
2. Noise surveys specific to certain communities and airport operations including calculating aircraft only noise levels, verifying flight tracks and Logan Noise Monitoring System results, comparing and investigating INM computed versus actual measurements, analyzing supplemental metrics (beyond traditional DNL measure);
3. Investigating noise propagation at Logan that may lead to adjustments to the FAA's AEDT for Boston-Logan. Consultant may be required to petition, on the Authority's behalf, the FAA and USDOT Volpe Center to implement changes;
4. Supporting Massport in analyzing aircraft noise from aircraft departures, arrivals and taxiing related to ongoing FAA initiatives including Boston-Logan's Runway 27, the Boston Logan Airport Noise Study and other runways and flight procedures (including PBN and RNAV) that may require Massport technical review and feedback during the contract period;
5. Assist staff in undertaking unique in-flight and ground noise studies/surveys to investigate aircraft noise impacts and recommend, if feasible, noise abatement measures; and
6. Other noise consulting services related to Boston-Logan noise and flight tracks, tracking international industry/policy trends, producing high quality GIS graphics for public dissemination, interagency presentations and regulatory filings.
7. Integrate existing and future analytical tools to the Authority from the new noise monitoring system at Boston-Logan and Hanscom Field.

EXHIBIT B
CONSULTANT'S HOURLY RATES AND CLASSIFICATIONS

BOS RNAV Study - HMMH Rates
 prepared by BLN 9/2/16

Harris Miller Miller & Hanson Inc.
 Standard Billing Rates

Labor Category	Hourly Rate (\$)
Program Manager	295
Supervisory Consultant	280
Principal Consultant I	275
Principal Consultant II	210
Programmer / Software Support	190
Senior Project Support	190
Senior Consultant II	155
Senior Consultant III	145
Project Support I	135
Consultant II	125
Consultant III	115
Project Support II	100

**EXHIBIT C
CONSULTANT'S CERTIFICATE**

The Consultant named in an agreement with Massachusetts Port Authority numbered **MPA Contract No. LL-29685** certifies that:

- a) the Consultant has not given, offered or agreed to give any gift, contribution or offer of employment as an inducement for, or in connection with, the award of the contract for design services;
- b) no subcontractor for the Consultant has given, offered or agreed to give any gift, contribution or offer of employment to the Consultant, or to any other person, corporation, or entity as an inducement for, or in connection with, the award of a contract by the Consultant;
- c) no person, corporation or other entity, other than a bona fide full-time employee of the Consultant, has been retained or hired to solicit for or in any way assist the Consultant in obtaining the contract for design services upon an agreement or understanding that such person, corporation or other entity be paid a fee or other consideration contingent upon the award of the contract to the Consultant; and
- d) with respect to contracts which exceed ten thousand dollars, or which are for the design of a building for which the budgeted or estimated construction costs exceed one hundred thousand dollars, that the Consultant has internal accounting controls as required by M.G.L. Chapter 30, Section 39R, and that the Consultant will:
 - (1) retain accurate and detailed books, records, and accounts for a six-year period after the final payment;
 - (2) file the required statements of management concerning the Consultant's internal accounting controls;
 - (3) file an annual audited financial statement; and

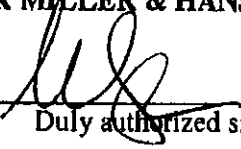
- (4) submit a statement prepared and signed by an independent certified public accountant stating that such CPA has examined the statement of management on internal accounting controls, and expressing an opinion as to whether management's statement described in (2) above is consistent with the result of management's evaluation of the system of internal accounting controls, and whether such statement is reasonable with respect to transactions and assets that are material in relation to the Consultant's financial statements.

For the purposes of this Certificate, the terms "consultant" and/or "Construction Manager" shall be synonymous with "Consultant".

CONSULTANT:

HARRIS MILLER MILLER & HANSON INC.

By:


Duly authorized signature

Print Name:

Mary Ellen Eagan, President and CEO

Date:

9/11/16

EXHIBIT D
CERTIFICATE OF COMPLIANCE WITH LAWS

Massachusetts Employment Security Law

Pursuant to G.L.c. 151A, §19A(b), the undersigned hereby certifies* under the penalties of perjury that Consultant, with Division of Unemployment Assistance (D.U.A.) ID Number 79-38931-0, has complied with all laws of the Commonwealth relating to unemployment compensation contributions and payments in lieu of contributions.

*Compliance may be certified if Consultant has entered into and is complying with a repayment agreement satisfactory to the Commissioner, or if there is a pending adjudicatory proceeding or court action contesting the amount due pursuant to G.L.c. 151A, §19A(c).

or check the following:

_____ *The undersigned certifies that the Massachusetts Employment Security Law does not apply to it because Consultant does not have any individuals performing services for it within the Commonwealth to the extent that it would be required to make any contributions or payments to the Commonwealth.*

Massachusetts Child Care Law

Pursuant to Chapter 521 of the Massachusetts Acts of 1990, as amended by Chapter 329 of the Massachusetts Acts of 1991, the undersigned hereby certifies that Consultant (check applicable item):

1. X employs fewer than fifty (50) full-time employees; or
2. _____ offers either a dependent care assistance program or a cafeteria plan whose benefits include a dependent care assistance program; or
3. _____ offers child care tuition assistance, or on-site or near-site subsidized child care placements.

Revenue Enforcement and Protection Program

Pursuant to G.L.c. 62C, §49A, the undersigned hereby certifies under the penalties of perjury that Consultant's Federal Identification No. (*for corporations only*) is 04-2737079, and that to the best of his/her knowledge and belief Consultant has complied with all laws of the Commonwealth relating to taxes, the reporting of employees and contractors, and withholding and remitting of child support.

In order to comply with all laws of the Commonwealth relating to taxes, the undersigned certifies that Consultant (check applicable item):

1. X has filed all tax returns and paid all taxes required by law; or
2. _____ has filed a pending application for abatement of such tax; or
3. _____ has a pending petition before the appellate tax board contesting such tax; or
4. _____ does not derive taxable income from Massachusetts Sources such that it is subject to taxation by the Commonwealth.

Certification Regarding Companies Doing Business with or in Northern Ireland

Pursuant to G.L.c. 7, § 22C, the undersigned hereby certifies under the pains and penalties of perjury that Consultant is not engaged in the manufacture, distribution or sale of firearms, munitions, including rubber or plastic bullets, tear gas, armored vehicles or military aircraft for use or deployment in any activity in Northern Ireland, and that Consultant (check applicable item):

1. X does not employ ten or more employees in an office or other facility located in Northern Ireland; or
2. _____ employs ten or more employees in an office or other facility located in Northern Ireland, but such office or other facility in Northern Ireland (a) does not discriminate in employment, compensation, or the terms, conditions and privileges of employment on account of religious or political belief; and (b) promotes religious tolerance within the work place, and the eradication of any manifestations of religious and other illegal discrimination.

Signed this 1 day of Sep, 2016

HARRIS MILLER MILLER & HANSON INC.

Authorized Signature: _____

Print Name: _____

Title: _____

Mary Ellen Egan, President and CEO

President and CEO

EXHIBIT E

GUIDELINES FOR PREPARATION OF WORK ORDERS

Work Orders are intended to be discrete documents that will provide, in detail, the background and factual context within which a particular scope of work, work element or series of work elements will be completed by the Consultant. Work Orders shall be construed to be in addition to, supplementary to and consistent with the provisions of the text of the Agreement. The following guidelines shall be followed in preparing Work Orders for review and approval by the Authority.

1 – SAMPLE FORMAT

Work Orders shall be prepared by the Consultant and submitted to the Authority for review and approval in strict accordance with the sample form attached. Work Orders shall only be numbered sequentially and consultants shall not create their own work order format. The Work Order shall not include a description of the services not being provided by the Consultant.

2 – DETAILED COST BREAKDOWN

The Consultant shall attach a detailed cost breakdown in the form of a level of effort matrix which clearly identifies tasks, personnel, manhours, rates and multiplier(s). Reimbursable expenses shall be described within the level of effort matrix. Furthermore, the level of effort matrix shall include a breakdown of costs for each and every subconsultant or vendor. Consultant shall not attach subconsultant or vendor agreements to the Work Order.

3 – WORK ORDER AMENDMENTS

Work Orders may be amended utilizing the same work order format. Each amendment shall operate as a separate document and shall not require a review of the original Work Order in order to understand the details of the amendment. Each amendment shall clearly identify what element of the original Work Order has been modified and what, if any, schedule or monetary impacts have resulted from such modifications. If the amendment will increase the overall amount of the Work Order, the Work Order amendment must include a level of effort matrix for the increased amount, as described above.

4 – WORK ORDER CLOSEOUT

Upon completion of work or completion of services for a particular Work Order, the Consultant is required to close out the Work Order by completing a Work Order Close-Out Form. The Consultant shall complete and sign the Work Order Close-Out Form and submit it to the Authority for its review and approval. The form identifies what work and monies have been authorized and paid to date including any amendments. Once a Work Order Close-Out Form is signed by the Authority, the Work Order shall be considered closed and no other services may be performed or billed against the particular Work Order. Work Order Close-Out Forms can be obtained from the Project Manager. Consultants should ensure that a separate Work Order Close-Out Form is completed for every work order executed under the Agreement.

SAMPLE WORK ORDER
MASSACHUSETTS PORT AUTHORITY

MPA Contract No. _____
 MPA Contract Title _____
 Location/Facility _____
 Work Order No. _____
 Work Order Title _____
 Date _____

1. **COMPENSATION**

In accordance with the provisions of the Agreement between the Authority and _____,
 (consultant's name), the Consultant, under MPA Contract No. _____, the Consultant is authorized to perform
 services as described in this Work Order for a total of \$ _____ (amount). Such amount is further
 broken down as follows:

a) A not-to-exceed amount of \$ _____

And/or

b) A lump sum amount of \$ _____

2. **EFFECTIVE DATE**

This Work Order is effective beginning _____ until _____.

3. **CONTRACT SUMMARY**

Contract Amount	\$ _____
Less Previously Authorized	\$ _____
This Authorization	\$ _____
Subtotal \$	_____
Remaining Unallocated	\$ _____

4. SUMMARY DESCRIPTION, GOALS, AND OBJECTIVES

5. SCOPE of WORK

The scope of work to be accomplished under this Work Order is as follows:

6. SCHEDULE of MILESTONES and DELIVERABLES

The work shall proceed in accordance with the following Schedule of Milestones and Deliverables:

7. ASSUMPTIONS

8. STAFFING PLAN/ORGANIZATION CHART

9. PAYMENT SCHEDULE

10. AUTHORIZATION

Recommended by: _____

Consultant

Recommended by: _____

Authority/ Project Manager/Contract

Recommended by: _____

Authority/ Project Manager/Funding (if applicable)

Recommended by: _____

Authority/ Program Manager (if applicable)

Approved by: _____

Authority/ Contract Specialist

Approved by: _____

Authority/ Director of Aviation Planning & Strategy



Massachusetts Port Authority
One Harborside Drive, Suite 200S
East Boston, MA 02128-2909
Telephone (617) 568-5000
www.massport.com

JAN 12, 2017

Joseph P. Davies
72 Vine Brook Road
Plymouth, MA 02360

Re: Consultant Services Agreement LL-29626
RNAV Procedures

Dear Mr. Davies:

The Massachusetts Port Authority (hereinafter referred to as the "Authority" or "Massport") hereby agrees with Joseph P. Davies (hereinafter referred to as the "Contractor") respecting the terms of its engagement by the Authority as further described below.

ARTICLE 1 – SCOPE OF SERVICES

The Contractor shall provide to Massport review and input on RNAV design and feasibility, as more fully described in Exhibit A, attached hereto and made a part of this Agreement.

ARTICLE 2 – COMPENSATION

1. For the services completed during the Term, the Contractor shall be paid an amount not-to-exceed fifty thousand dollars (\$50,000.00), which shall be payable to the Contractor in accordance with Exhibit B, commencing upon the effective date of this Agreement.
2. The Contractor shall submit invoice to Flavio Leo for services rendered. The Contractor's statements shall be in such detail as Authority may reasonably require to show the detailed nature and extent of services performed. Payment shall be made within thirty (30) days after receipt of satisfactory statements. All invoices pertaining to the services and terms listed under this Agreement are to reference Consultant Service Agreement LL-29626.
3. Contractor shall keep accounts, books and records pertaining to services performed and reimbursable expenses incurred in a true and accurate manner and on the basis of generally accepted accounting principles and in accordance with such reasonable requirements to facilitate review as the Authority may require. Upon seventy-two hours (72) hours advance notice, the

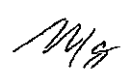
Authority or a representative on behalf of the Authority shall have the right to inspect, review or audit, during normal business hours, in conformity with generally accepted auditing standards, the accounts, books, records and activities of the Contractor necessary to determine compliance by the Contractor with the provisions and requirements of this Agreement, including without limitation the services. Contractor shall keep such accounts, books and records as required to be maintained by this Agreement at a location within the metropolitan Boston area or, if the Contractor maintains such accounts, books and records in another location outside the metropolitan Boston area, the Contractor shall make such accounts, books and records available at Contractor's Boston office or at a site acceptable to the Authority upon reasonable notice from the Authority. The Authority shall have the right to photocopy or otherwise duplicate at Contractor's expense those accounts, books and records as the Authority determines to be necessary or convenient in connection with its review or audit thereof. If Contractor's accounts, books or records have been generated from computerized data, Contractor shall provide the Authority or its representative with extracts of the data files in a computer readable format on suitable computer data exchange formats acceptable to the Authority. Contractor shall retain and keep available to the Authority all books and records relating to this Agreement for a period of not less than seven (7) years following the expiration of the Term of this Agreement or, in the event of litigation or claims arising out of or relating to this Agreement, until such litigation or claims are finally adjudicated and all appeal periods have expired.

ARTICLE 3 – TERM

1. This Agreement shall commence on September 1, 2016, and shall terminate on June 30, 2018, (the "Term" or "Agreement Period"), unless terminated or extended in accordance with this Agreement.

2. The Authority may, by written notice to Contractor, which notice shall include a statement of the reason(s) for such termination, terminate this Agreement for cause in any one of the following circumstances: (a) if Contractor fails to perform the services in a timely and professional fashion; or (b) if Contractor fails to perform any of the provisions of this Agreement or so fails to make progress in the engagement so as to endanger performance of this Agreement; provided, however, that in either of the aforementioned instances (a) or (b), the Contractor shall, no later than fifteen (15) days after receipt of said termination notice from the Authority, (i) submit a written plan to the Authority detailing how the Contractor will cure such failure, and obtain the Authority's approval of said plan, which approval shall be subject to the Authority's sole discretion ("approved cure plan") or (ii) cure such failure to the satisfaction of the Authority, which determination that Authority shall make in its sole discretion ("satisfactory cure"). If, within the aforementioned fifteen-day period, the Contractor does not submit an approved cure plan or achieve a satisfactory cure, the Authority may, in its sole discretion, either (i) afford the Contractor additional time as the Authority shall determine in its sole discretion to submit an approved cure plan or achieve a satisfactory cure or (ii) terminate this Agreement effective fifteen (15) days after the Contractor's receipt of the Authority's written confirmation that the Contractor failed to submit an approved cure plan or achieve a satisfactory cure; provided,

Initial: 



however, that this Agreement shall not be terminated if any such failure to perform or make progress arises out of causes beyond the control and without the fault or negligence of Contractor. In the event of a termination of this Agreement for cause, the Authority may, but need not, procure, upon such terms and in such a manner as it shall deem appropriate, services similar to those so terminated without prejudice to any other rights and remedies for default the Authority may have. The Contractor shall be liable to the Authority for any costs for such similar services in excess of the amounts paid or payable to Contractor under this Agreement.

3. In addition, the Authority may terminate this Agreement without cause by directing written notice of termination to Contractor not less than thirty (30) days prior to the effective date of such termination.

4. In the event of any termination pursuant to the provisions of this Article 3, Contractor shall deliver to the Authority any and all work or work in progress produced under this Agreement prior to its termination, and the Authority shall, upon receipt of said work, pay Contractor the reasonable value of said work less any set-off for damages caused by Contractor in the event that termination is for cause as set forth above. It is acknowledged and agreed that the Contractor's services hereunder are personal services, and may not be assumed or assigned by a trustee in bankruptcy.

ARTICLE 4 - INSURANCE AND INDEMNITY

1. In the defense of any claim, demand, expense or liability which is to be covered under insurance policies obtained by the Contractor as described in this Agreement (even if such claim, demand, expense or liability is groundless, false or fraudulent), Contractor agrees on its own behalf that it shall not and shall cause its insurers to agree that they shall not, without obtaining express advance written permission from the Chief Legal Counsel of the Authority, raise any defense involving in any way the jurisdiction of the tribunal over the person of the Authority, the immunity of the Authority, its members, officers, agents or employees, the governmental nature of the Authority or the provisions of any statutes respecting suits against the Authority.

2. To the fullest extent permitted by law, Contractor at its sole cost and expense shall defend, indemnify and hold harmless the Authority and its members, officers and employees from and against any and all liabilities, claims, demands, causes of action, losses, damages, actions, including actions for personal injury or wrongful death, actions for property damage, and any other type of claims asserted by third persons alleging a violation of law or for any other cause, costs, fines, fees and expenses of any kind or nature whatsoever (including attorneys' fees and costs of investigation and litigation) arising from or related to the Contractor's performance under this Agreement, or the negligence, omissions, acts or operations of Contractor, its agents, employees, subcontractors; provided, however, that this obligation to defend, indemnify and hold harmless shall not apply to claims which Contractor demonstrates were caused solely by the gross negligence or willful misconduct of the Authority. The foregoing express obligation of


indemnification shall not be construed to negate or abridge any other obligation of indemnification running to the Authority which would exist at common law, and the extent of this obligation of indemnification shall not be limited by any provision of insurance undertaken by Contractor. Further, Contractor shall indemnify and hold harmless the Authority against and from all costs, counsel and expert fees, expenses and disbursements incurred in connection with or in defending any such claim or any action or proceedings brought thereon; and in case any action or proceeding is brought against the Authority by reason of any such claim, Contractor, upon notice from the Authority, agrees to resist or defend such action or proceeding with counsel reasonably acceptable to the Authority. The Authority shall give Contractor reasonable written notice of any claims threatened or made or suit instituted against it which could result in a claim of indemnification hereunder. This paragraph shall survive any termination or expiration of this Agreement.

ARTICLE 5 - SALES TAX EXEMPTION

The exemption number assigned to the Authority as an exempt purchaser is E046-006-429, and the Contractor shall use this number, if applicable.

ARTICLE 6 - MISCELLANEOUS TERMS & CONDITIONS

1. Liaison between the Authority and Contractor relative to performance of services required under this Agreement shall be effected to Flavio Leo, or his designee, and the Contractor's Executive Project Manager or such other person as may be designated in writing by the Contractor.
2. Contractor shall maintain in confidence all Authority business information that becomes available to it in connection with its services under this Agreement. All data and information developed by Contractor in the performance of this Agreement shall become the property of the Authority and shall not be disclosed by Contractor without the prior express written approval of the Authority. In addition, all right, title and interest, including copyright, to all data, information and other work product generated or created pursuant to this Agreement shall be and remain with the Authority. This paragraph shall survive any termination or expiration of this Agreement.
3. This Agreement is intended to secure to the Authority the faithful assistance and cooperation of Contractor, and Contractor, therefore, shall not accept engagements in work or business adverse to the interest of the Authority in the subject matter of this Agreement.
4. The Authority may at any time, by written order to Contractor, make changes in the service tasks within the general scope of this Agreement or, with the consent of the Contractor, extend the Term of this Agreement. If any such change causes an increase or decrease in the cost of, or the time required for, the performance of any part of the services under this Agreement, an equitable adjustment in the price or the delivery schedule, or both, shall be made

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by the Authority and communicated to Contractor concurrently with said written change order. Any claim for or contest of adjustment under this clause must be asserted, if at all, within 30 days from the date of receipt by Contractor of said written change or order.

5. The Contractor agrees that services provided under this Agreement shall conform to the high professional standards of care and practice exercised by Contractors engaged in performing comparable services in the Greater Boston area; that the personnel assigned by Contractor to furnish such services shall be qualified and competent to perform adequately and completely the services assigned to them; and that the recommendations, guidance and performance of such personnel shall reflect such standards of professional knowledge and judgment. Contractor shall furnish labor that can work in harmony with all other elements of labor employed or to be employed on this work.

6. In the performance of its duties under this Agreement, Contractor shall obtain all necessary permits and licenses and abide with all applicable laws, rules and regulations.

7. Contractor is engaged under this Agreement as an independent contractor and not as an agent or employee of the Authority. Contractor shall be responsible for all payroll and other taxes arising from compensation and other amounts paid to Contractor under this Agreement. To the extent that M.G.L. c. 268A may apply to Contractor or to Contractor's employees, Contractor agrees that it and its employees shall not engage in any conduct that violates the provisions of M.G.L. c. 268A.

8. Contractor shall not create, agree to, or assume, any commitment, contract or agreement, express or implied, on behalf of or in the name of the Authority. The Authority shall have no obligations or liabilities by reason of its relationship with Contractor, except the obligation to pay compensation as provided herein.

9. During the term of this Agreement, Contractor shall not employ, on either a full-time or part-time basis, any person as long as such person shall be employed by the Authority.

10. Contractor shall abide by and conform with the non-discrimination terms and other provisions in Exhibit C, attached hereto and made a part hereof.

11. Any failure by the Authority to assert its rights for or upon any default of this Agreement shall not be deemed a waiver of such rights, nor shall any waiver be implied from the making of any payment hereunder. The Authority's review, approval, acceptance or payment for services under this Agreement shall not operate as a waiver of any rights under this Agreement, and Contractor shall be and remain liable to the Authority for any and all damages incurred by the Authority due to Contractor's failure to perform in accordance with the terms of this Agreement. The rights and remedies of the Authority provided under this Agreement are in addition to any other rights or remedies at law or in equity. The Authority may assert a right to recover damages by any appropriate means, including without limitation set-off, suit, withholding, recoupment, or counterclaim either during or after performance of the services under this Agreement.

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12. In no event shall the liability of the Authority in connection with this Agreement exceed the compensation provided for under Article 2 hereof. In no event shall the Authority be liable to Contractor for damages for loss resulting from causes beyond the reasonable control of the Authority, and in no event shall the Authority be liable for incidental, special or consequential damages, including loss of anticipated revenues or profits, whatever the cause.

13. No member, officer or employee of the Authority shall be charged personally or held contractually liable by or to Contractor under any term or provision of this Agreement or because of any breach thereof or because of its execution or attempted execution.

14. This Agreement, any duties hereunder, or interest herein may not be assigned or delegated by Contractor without the prior express written consent of the Authority.

15. This Agreement shall be governed by and construed under the laws of the Commonwealth of Massachusetts without regard to its principles regarding conflicts of laws. Any dispute arising between the parties under this Agreement may be decided by any court of competent jurisdiction located in Boston, Massachusetts.

16. The parties, by execution of this Agreement, voluntarily and intentionally waive all rights to trial by jury as to all claims, disputes, or controversies arising out of, or relating to, this Agreement or the performance or breach thereof. The Authority has acted in reliance on this condition in executing this Agreement.

17. This Agreement and the Exhibits attached to it set forth the entire understanding between the parties as to the subject matter hereof and supersede all prior or collateral agreements and representations. To the extent that there is any conflict between the Agreement and any provisions contained in any Exhibit, the Agreement shall prevail. This Agreement may not be amended or modified except by a writing signed by both parties; provided, however that the Authority may make changes in the service tasks within the general scope of this Agreement or extend the Term of this Agreement in accordance with the provisions of paragraph 4 of this Article 4; and provided, further, that any increase in monies due under this Agreement or any extension of the Term of this Agreement shall require a writing signed by both parties.

18. Contractor shall complete the Certificate of Compliance with Laws form designated as Exhibit D, attached hereto and made a part hereof.

19. Each of the persons executing this Agreement on behalf of the Contractor and the Authority, respectively, represents and certifies that he/she has authority and power to execute this Agreement on behalf of such party to the Agreement and to bind such party to the obligations contained herein.

20. If any term or condition of this Agreement or any application thereof shall to any extent be held invalid, illegal or unenforceable by a court of competent jurisdiction, the validity,

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legality and enforceability of the remaining terms and conditions of this Agreement shall not be deemed affected thereby unless one or both parties would be substantially or materially prejudiced.

21. Whenever written notice or consent is required pursuant to this Agreement, it shall be sent to the parties at their respective addresses below, by registered or certified mail (postage pre-paid with return receipt requested), facsimile transmission, overnight express mail (postage pre-paid) or courier service. Any notice or consent sent by facsimile shall also be sent by registered or certified mail or overnight express mail or courier service. If sent by registered or certified mail, notice will be achieved three (3) business days after the date on which it is sent, and if sent by overnight express mail or courier service, notice will be achieved on the date of delivery. If notice is to be sent to Contractor, it will be sent Joseph P. Davies, 72 Vine Brook Road, Plymouth, MA 02360. If notice is to be sent to the Authority, it will be sent to the Chief Legal Counsel, Massachusetts Port Authority, One Harborside Drive, Suite 200S, East Boston, Massachusetts 02128, with a copy sent to Pauline Roberts, Contract Administrator, Legal Department, at the above-written address. Notice shall be sent to the above-listed persons or to other persons at such other addresses as a party shall designate by like notice to the other party.

ARTICLE 5 - CONFIDENTIAL INFORMATION/SENSITIVE SECURITY INFORMATION

5.1 Contractor shall restrict access to Authority records, documents and information to only those employees of Contractor who require access to such records, documents and information to perform the services required hereunder. Contractor shall maintain in confidence, and shall cause its employees to maintain in confidence, all Authority records, documents and information, including but not limited to, individual personnel records, and records, documents and information which contain and/or constitute "Sensitive Security Information" ("SSI") as defined by 49 C.F.R. 1520, which become available to it/them in connection with Contractor's services under this Agreement.

The unauthorized release of SSI is prohibited. All records, documents and information defined by 49 C.F.R. 1520 or designated by the Authority as SSI shall be marked, stored, distributed and destroyed in accordance with 49 C.F.R. 1520. Upon receipt of SSI from the Authority, Contractor acknowledges that it is a "Covered Person" subject to the requirements of 49 C.F.R. 1520.

SSI records, documents and information received during the course of this Agreement are the property of the Authority. No part of any such records or documents, or any of the information contained therein, may be photocopied or reproduced in any way (except as specifically required by the terms of this Agreement), or released to any person without the prior written permission of the Authority. Unauthorized possession, photocopying, reproduction or release of such records and documents, or any portion of their contents, or failure to return them to the Authority immediately upon request shall constitute a material breach of this Agreement.

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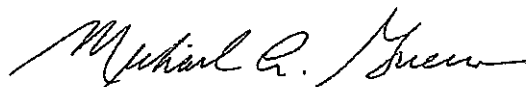
Contractor shall report to the Transportation Security Administration ("TSA") the loss or unauthorized disclosure of SSI in accordance with 49 C.F.R. 1520.9(c) and shall notify the Authority of each such report. Failure to report to the TSA the loss or unauthorized disclosure of SSI in accordance with 49 C.F.R. 1520.9(c) and/or failure to notify the Authority of such loss or unauthorized disclosure or of such report to the TSA shall constitute a material breach of this Agreement.

Any material breach of this Agreement as described in this Paragraph 5.1 may result in immediate termination of this Agreement and such other action as deemed appropriate by the Authority, including but not limited to, referral to federal authorities.

If the foregoing is satisfactory, please sign and return all three (3) copies to the Massachusetts Port Authority, One Harborside Drive, Suite 200S, East Boston, MA 02128-2909, Attention: Pauline Roberts, Contract Administrator. A fully executed copy shall be returned for your file.

Very truly yours,

MASSACHUSETTS PORT AUTHORITY

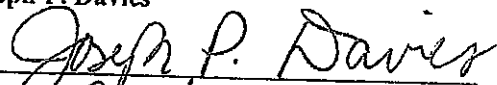


Michael A. Grieco
Assistant Secretary-Treasurer

Read and Agreed:

Joseph P. Davies

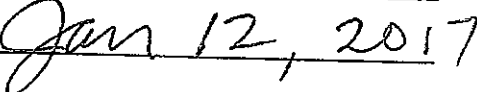
BY:



TITLE:



DATE:



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EXHIBIT A

SCOPE OF SERVICES

Consultant will provide technical advisory services to Massport and the Massport team, as the technical team undertakes specific design and technical feasibility analysis of actions to improve impacts of FAA RNAV procedures.

Scope includes:

1. Review of technical materials
2. Provide technical feedback as well as input related to FAA air traffic design and management requirements and protocols
3. Attend team technical briefings
4. Engage with FAA and other outside stakeholders
5. Conduct other services as needed consistent with the project

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EXHIBIT B

PAYMENT SCHEDULE

Consultant shall be paid based on an hourly rate of \$200 for services rendered.

Consultant shall be reimbursed for reasonable travel expenses in accordance with Authority Policy.

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Handwritten initials, possibly "JD", in cursive script.Handwritten signature, possibly "MS", in cursive script.

EXHIBIT C

NON-DISCRIMINATION AND AFFIRMATIVE ACTION

In accordance with policies adopted by the Massachusetts Port Authority ("Massport"), Contractor further agrees with respect to its exercise of all uses, rights, privileges and obligations granted or required herein as follows:

1. Contractor shall not discriminate against any person, employee, or applicant for employment because of that person's membership in any legally protected class, including but not limited to their race, color, gender, religion, creed, national origin, ancestry, age being greater than forty years, sexual orientation, gender expression and identity, handicap, genetic information, or veteran status. Contractor shall not discriminate against any person, employee, or applicant for employment who is a member of, or applies to perform service in, or has an obligation to perform service in, a uniformed military service of the United States, including the National Guard, on the basis of that membership, application, or obligation. Contractor shall undertake affirmative action measures designed to guarantee and effectuate equal employment opportunity for all persons.
2. Contractor will provide all information and reports pertinent to Massport's Equal Employment, Anti-Discrimination and Affirmative Action requirements requested by the Authority and will permit access to its facilities and any books, records, accounts or other sources of information which may be determined by Massport to affect the Contractor's obligations herein.
3. Contractor shall comply with all federal and state laws and Massport regulations pertaining to Civil Rights, Discrimination, and Equal Opportunity, including executive orders and rules and regulations of appropriate federal and state agencies unless otherwise exempt therein.
4. Contractor's non-compliance with the provisions of this Exhibit shall constitute a material breach of this Agreement, for which Massport may, in its discretion, upon failure to cure said breach within thirty (30) days of written notice thereof, terminate this Agreement upon ten (10) days written notice.
5. Contractor shall indemnify and hold harmless Massport from any claims and demands of third persons resulting from Contractor's non-compliance with any of the provisions of this Exhibit and, in case of termination or cancellation of this Agreement pursuant to Paragraph 4 of this Exhibit, the Contractor shall also indemnify Massport during the remainder of the original term against any loss or damage suffered by reason of such termination or cancellation.

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EXHIBIT D

CERTIFICATE OF COMPLIANCE WITH LAWS

Massachusetts Employment Security Law

Pursuant to G.L.c. 151A, §19A(b), the undersigned hereby certifies* under the penalties of perjury that Contractor, with the Department of Employment & Training Identification Number, _____ has complied with all laws of the Commonwealth relating to unemployment compensation contributions and payments in lieu of contributions.

- * Compliance may be certified if Contractor has entered into and is complying with a repayment agreement satisfactory to the Commissioner, or if there is a pending adjudicatory proceeding or court action contesting the amount due pursuant to G.L.c. 151A, §19A(c).

or please check the following:

☒ The undersigned certifies that the Massachusetts Employment Security Law does not apply to it, because Contractor does not have any individuals performing services for it within the Commonwealth, to the extent that it would be required to make any contributions or payments to the Commonwealth.

Massachusetts Child Care Law

Pursuant to Chapter 521 of the Massachusetts Acts of 1990, as amended by Chapter 329 of the Massachusetts Acts of 1991, the undersigned hereby certifies that Contractor *(please check applicable item)*:

1. ☒ employs fewer than fifty (50) full-time employees; or
2. ☐ offers either a dependent care assistance program or a cafeteria plan whose benefits include a dependent care assistance program; or
3. ☐ offers child care tuition assistance, or on-site or near-site subsidized child care placements.

Revenue Enforcement and Protection Program

Pursuant to G.L.c. 62C, §49A, the undersigned hereby certifies under the penalties of perjury that Contractor's Federal Identification No. *(for corporations only)* is _____, and that to the best of his/her knowledge and belief, Contractor has complied with all laws of the Commonwealth relating to taxes, the reporting of employees and contractors, and withholding and remitting of child support.

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EXHIBIT D (cont.)

In order to comply with all laws of the Commonwealth relating to taxes, the undersigned certifies that Contractor (*check applicable item*):

1. ☐ has filed all tax returns and paid all taxes required by law; or
2. ☐ has filed a pending application for abatement of such tax; or
3. ☐ has a pending petition before the appellate tax board contesting such tax; or
4. ☐ does not derive taxable income from Massachusetts sources such that it is subject to taxation by the Commonwealth.

Certification Regarding Companies Doing Business with or in Northern Ireland

Pursuant to G.L. c. 7, §22C, the undersigned hereby certifies under the pains and penalties of perjury that Contractor is not engaged in the manufacture, distribution or sale of firearms, munitions, including rubber or plastic bullets, tear gas, armored vehicles or military aircraft for use or deployment in any activity in Northern Ireland, and that Contractor (*check applicable item*):

1. ☐ does not employ ten or more employees in an office or other facility located in Northern Ireland; or
2. ☐ employs ten or more employees in an office or other facility located in Northern Ireland, but such office or other facility in Northern Ireland: (a) does not discriminate in employment, compensation, or the terms, conditions and privileges of employment on account of religious or political belief; and (b) promotes religious tolerance within the work place, and the eradication of any manifestations of religious and other illegal discrimination.

Signed this 12th day of January, 2017.

Joseph P. Davies

Joseph P. Davies
Authorized Signature
Contractor
Title

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my

BOS RNAV Pilot Study Work Order 1
MASSACHUSETTS PORT AUTHORITY

MPA Contract No.	<u>LL-29685</u>
MPA Contract Title	<u>Professional Services Agreement</u>
Location/Facility	<u>Logan International Airport</u>
Work Order No.	<u>1</u>
Work Order Title	<u>BOS RNAV Pilot Study Project Initiation and Analysis of Noise Changes</u>
Date	<u>October 18, 2016</u>

1. COMPENSATION

In accordance with the provisions of the Agreement between the Authority and Harris Miller Miller & Hanson Inc. (HMMH, the Consultant), the Consultant, under MPA Contract No. LL-29685, the Consultant is authorized to perform services as described in this Work Order for a total no-to-exceed amount of \$ 105,200.

2. EFFECTIVE DATE

This Work Order is effective beginning September 1, 2016 until September 1, 2017.

3. CONTRACT SUMMARY

Contract Amount	\$500,000
Less Previously Authorized	\$0
This Authorization	\$105,200
Subtotal \$	<u>\$105,200</u>
Remaining Unallocated	\$384,800

4. SUMMARY DESCRIPTION, GOALS, AND OBJECTIVES

This is the first work order for HMMH in the RNAV Pilot Study. The work order covers project tasks including project initiation; coordination and meetings between HMMH, Massport, MIT, and the FAA; and the calculation of noise levels before and after the implementation of certain RNAV procedures at BOS.

5. SCOPE of WORK

Project coordination and teleconferences

The scope of work to be accomplished under this Work Order is as follows:

HMMH will coordinate efforts between MIT, FAA and Massport. HMMH will meet via teleconference with Massport, MIT and the FAA on an as-needed basis for project coordination and results presentations. The budget assumes that these teleconference will typically be one half-hour in duration and occur every two weeks for four months. HMMH will coordinate these calls and prepare agendas in addition to preparing necessary slides to display the progress of the work for discussion.

Project team meetings

In addition to the teleconferences, HMMH will prepare for and attend in-person project team meetings at locations in the Boston area, such as MIT, or Massport. The budget assumes that these in-person meetings will typically be two hours in duration and occur on a monthly basis for four months. HMMH will assist in coordinating these meetings and will prepare an agenda and necessary slides to display the progress of the work for discussion.

AEDT analysis of pre- and post-RNAV noise levels

HMMH will analyze aircraft operations data and flight tracks using the Aviation Environmental Design Tool (AEDT) in order to compare noise exposure in communities surrounding BOS before and after the implementation of certain RNAV procedures. These noise calculations will be focus on the following specific combinations of runways and operations:

- Runway 4R arrivals
- Runway 15R departures
- Runway 22R departures
- Runway 33L departures

For each of these combinations, HMMH will compute the following items for representative samples of data before and after the implantation of RNAV procedures:

- Contours of Day-Night Average Sound Level (DNL)
- Contours of the Number of Events Above a Maximum A-Weighted Sound Level of 60 dB (NA60) in the night-time hours
- Contours of Number of Events Above a Maximum A-Weighted Sound Level of 70 dB (NA70) in the daytime hours
- DNL, NA60 during the nighttime hours, NA70 during the daytime hours at a grid of census population points
- Density plots of aircraft flight paths

Differences in the samples of operations before and after the implementation of the RNAV procedure may include the number of operations or the fleet of aircraft. In addition to computing the "raw" comparisons above, HMMH will examine the operations sample from before and after the RNAV implementation and re-run with adjustments to isolate the effect of the RNAV implementations. These adjustments may include the scaling of numbers of operations or adjusting the fleet of aircraft to make the before and after calculations more comparable. Including all combinations of aircraft operation, runway, before/after RNAV, with/without adjustments, and noise metric, HMMH will generate up to 48 noise contour sets and an equal number of result sets at the census population points.

HMMH will document the analysis in a technical memorandum and present the results to the project team at the teleconferences and project meetings listed above. The documentation and presentation will include text and figures describing the input data, analysis methods, and results with a particular focus on changes in noise exposure before and after the implementation of the RNAV procedures.

Other analysis and data support

HMMH will provide miscellaneous analysis and data support to Massport and members of the project team on an as-needed basis. Examples of possible tasks include delivery of historical data such as radar flight paths to MIT, presentation of data and results from previous HMMH analyses such as the EDR noise contours, and analysis of trends in aircraft fleet or runway use.

6. SCHEDULE of MILESTONES and DELIVERABLES

The work shall proceed in accordance with the following Schedule of Milestones and Deliverables:

Teleconferences and in-person project team meetings will be scheduled as-needed and will likely each occur on

a monthly basis. The AEDT analysis of pre- and post-RNAV noise levels, including the delivery of the technical memorandum and the presentation of all results, will be completed within 90 days of the execution of this work order. Other analysis and data support will occur on an as-needed basis within the term of the work order.

7. ASSUMPTIONS

The schedule and budget assumes approximately four each of monthly in-person meetings and teleconferences, the number and type of noise contours and other results described, and other analysis and data support.

8. STAFFING PLAN/ORGANIZATION CHART

Brad Nicholas will act as HMMH's project manager. Mary Ellen Eagan will oversee the project as principal in charge. Bob Mentzer will provide continuity with HMMH's past and other on-going work for Massport at BOS.

9. PAYMENT SCHEDULE

HMMH will complete this work on a time and materials basis with a not-to-exceed total cost of \$105,200. The table below provides a summary of the estimated labor hours and cost by labor category.

Sub-Task Descriptions	LABOR									
	Program Manager	Supervisory Cons.	Principal Cons. II	Sr. Consultant II	Sr. Consultant III	Consultant II	Sr. Proj. Support	Total Labor		
	Hrs. \$295	Hrs. \$280	Hrs. \$210	Hrs. \$155	Hrs. \$145	Hrs. \$125	Hrs. \$190	Hrs.	Cost	
Project coordination and teleconferences	8 \$2,360	8 \$2,240	24 \$5,040	0 \$0	0 \$0	8 \$1,000	0 \$0	48	\$10,640	
Project team meetings	24 \$7,080	8 \$2,240	48 \$10,080	0 \$0	0 \$0	16 \$2,000	0 \$0	96	\$21,400	
AEDT analysis of pre- and post-RNAV noise levels	16 \$4,720	8 \$2,240	60 \$12,600	24 \$3,720	40 \$5,800	160 \$20,000	8 \$1,520	316	\$60,600	
Other analysis and data support	8 \$2,360	8 \$2,240	32 \$6,720	8 \$1,240	24 \$3,480	40 \$5,000	8 \$1,520	128	\$22,560	
TOTAL	56 \$16,520	32 \$8,960	164 \$34,440	32 \$4,960	64 \$9,280	224 \$28,000	16 \$3,040	688	\$105,200	

10. AUTHORIZATION

Recommended by: Mary E. Egan
Mary Ellen Eagan, President and CEO
Consultant

Recommended by: _____
Authority/ Project Manager/Contract

Recommended by: _____
Authority/ Project Manager/Funding (if applicable)

Recommended by: _____
Authority/ Program Manager (if applicable)

Approved by: _____

Approved by: FL 4/10/17
Authority/ Contract Specialist
Authority/ Director of Aviation Planning & Strategy

BOS RNAV Pilot Study Work Order 2

MASSACHUSETTS PORT AUTHORITY

MPA Contract No.	<u>LL-29685</u>
MPA Contract Title	<u>Professional Services Agreement</u>
Location/Facility	<u>Logan International Airport</u>
Work Order No.	<u>2</u>
Work Order Title	<u>BOS RNAV Pilot Study Block 1</u>
Date	<u>April 7, 2017</u>

1. COMPENSATION

In accordance with the provisions of the Agreement between the Authority and Harris Miller Miller & Hanson Inc. (HMMH, the Consultant), the Consultant, under MPA Contract No. LL-29685, the Consultant is authorized to perform services as described in this Work Order for a total no-to-exceed amount of \$ 141,340.

2. EFFECTIVE DATE

This Work Order is effective beginning February 1, 2017 until February 1, 2018.

3. CONTRACT SUMMARY

Contract Amount	\$500,000
Less Previously Authorized	\$105,200
This Authorization	\$141,340
Subtotal \$	<u>\$246,540</u>
Remaining Unallocated	\$253,460

4. SUMMARY DESCRIPTION, GOALS, AND OBJECTIVES

This is the second work order for HMMH in the RNAV Pilot Study. The work order covers project tasks including coordination and meetings between HMMH, Massport, MIT, and the FAA; support of public involvement efforts, and analysis of historical noise levels and proposed Block 1 aircraft procedures.

5. **SCOPE of WORK**

Task 1 Project coordination and teleconferences

The scope of work to be accomplished under this Work Order is as follows:

HMMH will coordinate efforts between MIT, FAA and Massport. HMMH will meet via teleconference with Massport, MIT and the FAA on an as-needed basis for project coordination and results presentations. The budget assumes that these teleconference will typically be one hour in duration and occur every week for six months. HMMH will coordinate these calls and prepare agendas in addition to preparing necessary slides to display the progress of the work for discussion.

Task 2 Project team meetings

In addition to the teleconferences, HMMH will prepare for and attend in-person project team meetings at locations in the Boston area, such at MIT, or Massport. The budget assumes that these in-person meetings will typically be two hours in duration and occur on a monthly basis for six months. HMMH will assist in coordinating these meetings and will prepare an agenda and necessary slides to display the progress of the work for discussion.

Task 3 Analysis of Block I Procedures

HMMH will analyze past and proposed future aircraft operations data and flight tracks using the Aviation Environmental Design Tool (AEDT). These noise calculations will may include the following specific combinations of runways and operations or others as identified by MIT as part of the Block I analysis:

- Runway 4R arrivals
- Runway 15R departures
- Runway 22R departures
- Runway 33L departures
- Runway 27 departures

As with previous analyses, HMMH will compute.

- Contours of Day-Night Average Sound Level (DNL)
- Contours of the Number of Events Above a Maximum A-Weighted Sound Level of 60 dB (NA60) in the night-time hours

- Contours of Number of Events Above a Maximum A-Weighted Sound Level of 70 dB (NA70) in the daytime hours
- DNL, NA60 during the nighttime hours, NA70 during the daytime hours at a grid of census population points
- Density plots of aircraft flight paths

HMMH will document the analysis through figures and text presented at the regularly scheduled team teleconferences (task 1) and the on-site meetings (Task 2). In addition, HMMH will compile this information for later inclusion in a Study Report.

In addition, HMMH will provide miscellaneous analysis and data support to Massport and members of the project team on an as-needed basis. Examples of possible tasks include delivery of historical data such as radar flight paths to MIT, presentation of data and results from previous HMMH analyses such as the EDR noise contours, and analysis of trends in aircraft fleet or runway use.

Task 4 Public Outreach

HMMH will support Massport in public outreach efforts for the Block 1 procedures. This will include preparation of figures and text for public and committee presentations and handouts, assistance with meeting logistics, and attendance at the meetings. The budgeting for this task assumes two meetings.

6. SCHEDULE of MILESTONES and DELIVERABLES

The work shall proceed in accordance with the following Schedule of Milestones and Deliverables:

Teleconferences and in-person project team meetings will be scheduled as-needed and will likely each occur on a weekly and monthly basis, respectively. The AEDT noise levels will occur as MIT identifies each measure and as authorized by Massport for analysis. Other analysis and data support will occur on an as-needed basis within the term of the work order.

7. ASSUMPTIONS

The schedule and budget assumes approximately six monthly in-person meetings and twenty-four teleconferences, the number and type of noise contours and other results described, and two public outreach meetings.

8. STAFFING PLAN/ORGANIZATION CHART

Brad Nicholas will act as HMMH's project manager. Mary Ellen Eagan will oversee the project as principal in charge. Bob Mentzer will provide continuity with HMMH's past and other on-going work for Massport at BOS.

9. PAYMENT SCHEDULE

HMMH will complete this work on a time and materials basis with a not-to-exceed total cost of \$141,340. The table below provides a summary of the estimated labor hours and cost by labor category.

Sub-Task Descriptions	LABOR							
	Program Manager	Supervisory Cons.	Principal Cons. II	Sr. Consultant II	Sr. Consultant III	Consultant II	Sr. Proj. Support	Total Labor
	Hrs. \$295	Hrs. \$280	Hrs. \$210	Hrs. \$155	Hrs. \$145	Hrs. \$125	Hrs. \$190	Hrs. Cost
1. Project coordination and teleconferences	24 \$7,080	12 \$3,360	48 \$10,080	0 \$0	0 \$0	24 \$3,000	0 \$0	108 \$23,520
2. Project team meetings	36 \$10,620	0 \$0	36 \$7,560	0 \$0	0 \$0	16 \$2,000	0 \$0	88 \$20,180
3. Analysis of Block 1 procedures	16 \$4,720	8 \$2,240	160 \$33,600	40 \$6,200	40 \$5,800	160 \$20,000	8 \$1,520	432 \$74,080
4. Public outreach for Block 1 procedures	16 \$4,720	4 \$1,120	40 \$8,400	16 \$2,480	16 \$2,320	24 \$3,000	8 \$1,520	124 \$23,560
TOTAL	92 \$27,140	24 \$6,720	284 \$59,640	56 \$8,680	56 \$8,120	224 \$28,000	16 \$3,040	762 \$141,340

10. AUTHORIZATION

Recommended by: Mary E Egan

Mary Ellen Egan, President and CEO

Consultant

Recommended by: _____

Authority/ Project Manager/Contract

Recommended by: _____

Authority/ Project Manager/Funding (if applicable)

Recommended by: _____

Authority/ Program Manager (if applicable)

Approved by: _____

Authority/ Contract Specialist

Approved by: RVZ 4/10/17

Authority/ Director of Aviation Planning & Strategy



Massport/FAA MOU Process Timeline

(Preliminary/Subject to Change)

- Block 1

- MCAC/Public Meeting
- Briefed MCAC Aviation Subcommittee
- Briefed MCAC Aviation Subcommittee
- MIT Technical Feasibility/Noise Analysis
- MCAC/Public Meeting Block 1 and update on Block 2
- MCAC Block 1 Final Recommendations
- MPA Block 1 Recommendation to FAA
- FAA internal review (safety, efficiency, NEPA)
- FAA Implementation Process

Feb 2017
May 2017
Sep 2017
Oct 2017
Nov 2017
Dec 2017
Jan/Feb 2018
Ongoing
Ongoing

- Block 2

- MCAC/Public Meeting
- Briefed MCAC Aviation Subcommittee
- Briefed MCAC Aviation Subcommittee
- Technical Review (procedure and noise analysis)
- Brief MCAC (Full and Aviation Subcommittee)
- MIT Technical Feasibility/Noise Analysis to FAA and Massport
- MCAC/Public Meeting on Block 2
- MCAC Block 2 Final Recommendations
- MPA Recommendation to FAA
- FAA internal review (safety, efficiency, NEPA)
- FAA implementation (may include extensive NEPA process)

Feb. 2017
May 2017
Sept 2017
Jun 2017- Ongoing
Mar 2018- Ongoing
TBD

May 2018
TBD
TBD
TBD
TBD