



Construction Services Qualifications

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Construction Services

At Arora, the efforts on project and construction management in the construction lifecycle are highly effective in delivering results of a greener, safer, and more accessible built environment.

Here we partner with designers and contractors to deliver end results with the expected quality envisioned at the program level.

Key Services

PROJECT MANAGEMENT – the design, procurement, construction, and post-construction phases of their new construction, renovation, or redevelopment projects. We assist clients/programs in achieving the established project budget and schedule with support including:

- + Project Scheduling/Schedule Analysis
- + Project Design Coordination – reviews and constructability assessments
- + Cost Management – inclusive of change management and value engineering
- + Claims Avoidance – exercise best practices in Project Management
- + Delivery and Contracting – conclude active procurement efforts with due diligence in monitoring, review, reporting, and award
- + Commissioning Management
- + Oversight of MSI role

During construction, Arora oversees and/or manages all of the preconstruction and construction activities. Our turnover at the end of the project ensures that the client has complete operating staff training, operation and maintenance records, and as-built records. >>



CONSTRUCTION MANAGEMENT – Arora provides support for clients that request limited assistance during any part of the project's design or construction phases. Construction management services might consist of constructability reviews, contract administration, quality assurance, inspection of the work in place, change order evaluation, etc. To whatever extent our services will be required, we offer a full spectrum to satisfy each client's needs.

Preconstruction Phase Services

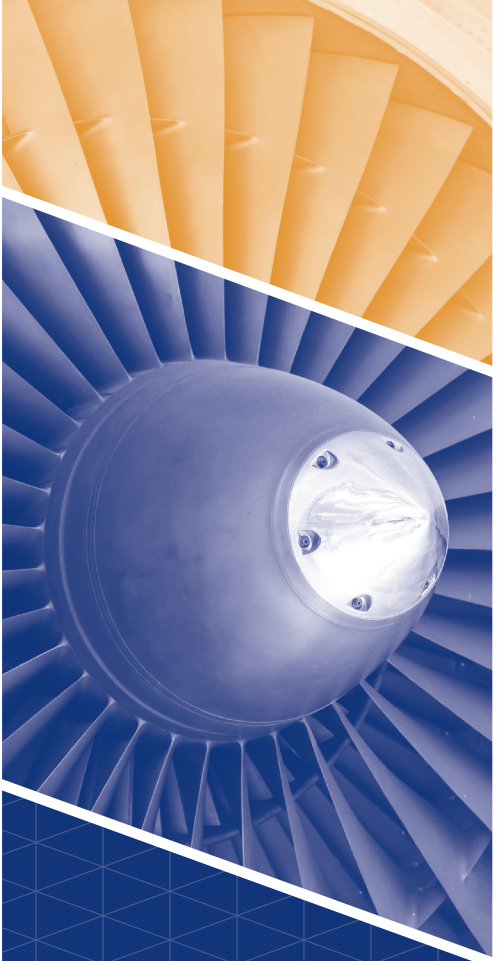
- + Master Systems Integration (MSI)
- + Project administration
- + Submittal review/tenant permit reviews
- + Design support coordination
- + Constructability reviews

Construction & Delivery Phase Services

- + Project documentation
- + Project administration
- + Construction schedule oversight
- + Materials testing review
- + Daily inspection
- + Reports
- + Commissioning Results
- + Tests Certifications Review
- + Data Collection Information

STAFF SUPPORT SERVICES

Arora provides project management support as an extension of staff for capital improvement programs and projects. Support staff includes project managers, resident engineers, construction managers, project coordinators, contract administrators, and construction inspectors.



PROJECT DETAILS

Client

Michael Baker International
Andre Szumylo, PE
Project Manager
International Plaza I
Suite 200
Philadelphia, PA 19153
aszumylo@mbakercorp.com
215-937-5449

Construction

\$3,400,000

Project Start

2016

Project Completion

2017

Highlights

- + Provided overall project management support during the planning, design, construction, and closeout for the Gate V01 Upgrades.
- + Coordinated the design review & delivery process.
- + Prepared progress charts, construction schedules, and reports.
- + Provided a project closeout.

CITY OF PHILADELPHIA, DIVISION OF AVIATION

PHL ON-CALL PM/CM SERVICES – GATE V01 UPGRADES

Philadelphia International Airport (PHL), Philadelphia, PA

As part of an on-call project management/construction management contract with Michael Baker International, Arora Engineers (Arora) provided overall project management support to the engineering manager during the planning, design, construction, and closeout for the Gate V01 Upgrades at the Philadelphia International Airport (PHL).

Project upgrades included demolition and removal of existing gate/barrier equipment, hardware, and temporary Jersey barrier mounted fencing. The project also included the provision of new vehicle gates/barriers for traffic control, reconfiguration and expansion of roadways and parking areas to accommodate larger vehicles, construction of a new operations booth and security booth, installation of new lighting poles and fixtures throughout the work site, and installation of new security system and CCTV to control and monitor the new gates/barriers and booths. Work was done in phases to minimize impact to gate operations. The phasing plan was prepared to allow only one Gate V01 lane to be shut down for new upgrades at a time, while allowing vehicles to be screened and accessed through another lane.

Scope of work included:

Arora's scope of work focused on reviewing, inspecting, and coordinating the Gate V01 Upgrades with the Division of Aviation (DOA). The team's tasks included:

- + Providing guidance to the consulting engineer regarding design and implementation characteristics respective to the DOA's requirements.
- + Coordinating to verify and validate, through design review and construction review, that the DOA's requirements and expectations were being met.
- + Coordinating the design review & delivery process with DOA engineering, IT, and other departments.

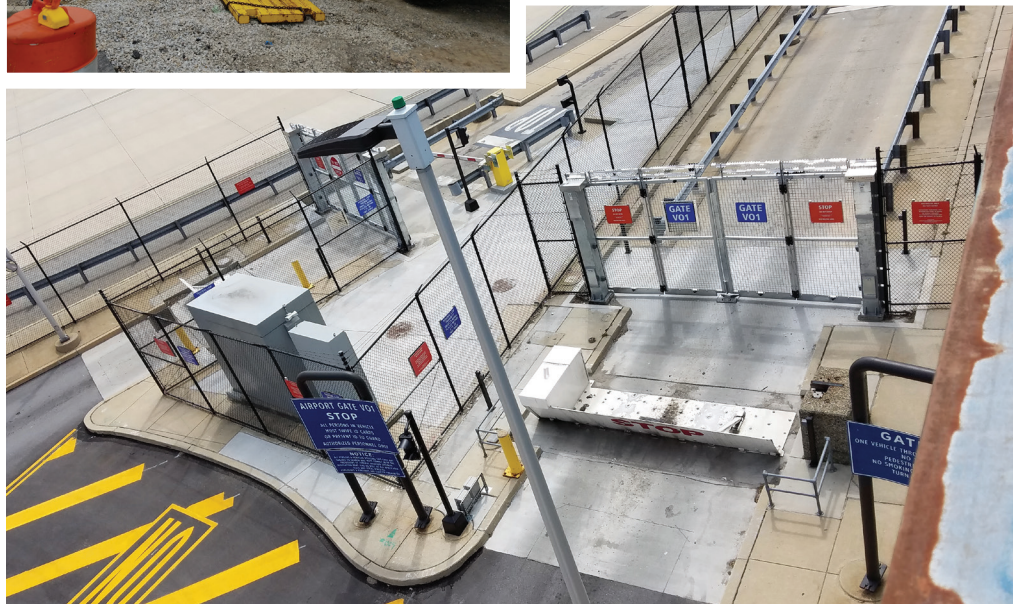
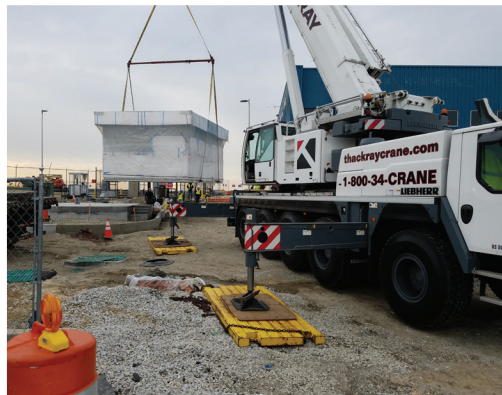


**CITY OF
PHILADELPHIA,
DIVISION OF
AVIATION**

**PHL ON-
CALL PM/CM
SERVICES
– GATE V01
UPGRADES**

**Philadelphia
International Airport
(PHL), Philadelphia, PA**

- + Providing support during the project bid opening, evaluation, and procurement process.
- + Coordinating with the City of Philadelphia, Tinicum Township, etc.
- + Interfacing with different departments at PHL, including Engineering, CBP, TSA, and construction groups.
- + Reviewing shop drawings to ensure compliance with project specifications and the DOA's security requirements.
- + Conducting project coordination meetings.
- + Preparing progress charts, construction schedules, and reports.
- + Monthly billing reviews.
- + Testing and commencing systems as a PHL representative.
- + Generating all testing and certification paperwork to be given to the DOA.
- + Measuring the quantities of work and certifying estimates and payments to the contractors.
- + Generating weekly status reports.
- + Providing documentation for payment requisitions.
- + Collecting and validating as-built drawings from the contractor.
- + Providing a project closeout.



PROJECT DETAILS

Client

WSP
Marc L. Beningson
National Practice Lead
One Penn Plaza, 2nd Floor
250 W 34th Street
New York, NY 10119
beningsonml@pbworld.com
212-532-9600

Project Start

2019

Project Completion

2020

Highlights

- + Arora is an experienced inspector at Robert F. Kennedy (RFK) and/or Bronx-Whitestone Bridges.
- + Provide construction quality assurance and oversight inspection staff support for this project when directed by WSP.

METROPOLITAN TRANSPORTATION AUTHORITY TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY **ROBERT F. KENNEDY & BRONX-WHITESTONE BRIDGE INSPECTION**

New York, NY

Arora Engineers (Arora), serving as a subconsultant to WSP provided inspection services at the Robert F. Kennedy (RFK) and Bronx-Whitestone (BW) bridges for the Metropolitan Transportation Authority (MTA) Triborough Bridge and Tunnel Authority (TBTA). Arora provided construction quality assurance and oversight inspection staff support for this project.

Scope of work included:

Arora provided quality oversight for the installation of facility-wide electronic monitoring and detection systems at the Bronx Whitestone Bridge and Robert F. Kennedy Bridge Facilities.

Arora provided a Senior Inspector and Inspector to assist WSP in performing construction inspection services for the project. The Senior Special Systems Inspector assisted WSP in performing construction inspection services for the project. Arora performed construction inspection of the contractor's work, kept contract records, reviewed shop drawings and submittals, and performed oversight of the testing of materials as assigned by WSP.



PROJECT DETAILS

Client

GFP (Gannett Fleming/
Parsons JV)
Brad Mason, P.E., P.M.P.
Program Manager
100 M St SE, 9th Floor
Washington, DC 20003
bmason@gfnet.com
202.969.3164

Project Start

2017

Project Completion

2021

Highlights

- + Provided support for site surveys, scope development, and future contract generation for WMATA's Yard 2 project.
- + Collected scope requirements, defined scope, and identified stakeholders.
- + Provided administrative and technical support activities in the construction management field office.
- + Prepared cost estimates and analyses.
- + Developed pre-negotiation positions.
- + Supported contract negotiations.

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

A/E SERVICE STAFF AUGMENTATION FOR YARD 2 PROJECT

Washington, D.C. Metropolitan Area

Arora Engineers, Inc. (Arora) is part of the Gannett Fleming/Parson Joint Venture (GFP) team for the Washington Metropolitan Area Transit Authority (WMATA) General Architectural and Engineering Consultant Services—Facilities Indefinite Delivery Indefinite Quantity (IDIQ) contract No. FQ1519.

The WMATA worked on a multi-year program for the rehabilitation of several rail yard facilities. Arora provided A/E service staff augmentation for the Yard 2 project. This included providing support to WMATA for site surveys, scope development, and future contract generation, as well as in-field coordination and administrative support for the future rail yard facilities' rehabilitation projects.

Arora recently provided staff augmentation for contract support services, specifically providing a Project Controls Specialist and a Construction Manager.

Scope of work included:

Arora's Project Controls Specialist provided the following:

- + Worked with the contract support group.
- + Developed pre-negotiation positions.
- + Prepared cost estimates.
- + Reviewed claims.
- + Performed cost analyses.
- + Supported contract negotiations.

Arora's Construction Manager scope of work:

- + Maintained full familiarity with plans, specifications, construction schedules, and contractor's plans on assigned contracts, Adjacent Construction Project Manual, JDAC Procedures, and current safety regulations relative to assigned projects to be knowledgeable of the contractor's obligations and Project Manager's responsibilities.
- + Disseminated information to office and field staff and internal stakeholder offices as required to keep all pertinent WMATA personnel accurately informed of relevant matters.
- + Established and maintained job record files for assigned projects per instructions contained in the Project Implementation Manual.
- + Reviewed contractor's Critical Path Method or bar chart progress schedules as applicable, and maintained current, marked-up copies of such schedules.
- + Collected scope requirements, defined scope, and identified stakeholders.
- + Participated in engineering package reviews during the select, define, and execute phases of projects and provided constructive input to the design team.
- + Provided administrative and technical support activities in the construction management field office.
- + Ensured work was performed per plans and specifications via coordination with Quality Assurance (QA).
- + Performed various administrative office functions and work under the direction of the Project Manager, who reviewed the work based on the daily informal contacts, reports, and conferences

PROJECT DETAILS

Client

Lehigh Northampton Airport
Authority
Ryan Meyer
Director of Planning &
Programming
3311 Airport Road
Allentown, PA 18109
rmeyer@lnaa.com
610-231-5230

Construction

\$6,000,000

Project Start

2015

Project Completion

2017

Highlights

- + Assisted with airport obtaining \$2.5MM PennDOT grant.
- + Stakeholder coordination
- + MEP design
- + Roadway improvements
- + Rental car maintenance building demolition
- + Terminal expansion
- + Rental car consolidation
- + Construction safety and phasing
- + Full-time on-site construction management

LEHIGH – NORTHAMPTON AIRPORT AUTHORITY (LNAA) MULTIMODAL GROUND TRANSPORTATION HUB

Lehigh Valley International Airport (ABE), Allentown, PA

In August 2017, the Lehigh Valley International Airport (ABE) opened its new Multimodal Ground Transportation Hub. Funding for this project included a \$1.75 million grant from the Multimodal Transportation Fund through the PennDOT Bureau of Aviation. The new facility provided a modern and convenient location for regional bus transportation companies (Lanta and Transbridge) and improved on previous operational deficiencies for the existing rental car operations.

The completed facility improved the walking distances to the rental cars from the terminal by 700 feet, provided adequate weather protection to the traveling customers, eliminated vehicle conflict points, improved area lighting, signage, and wayfinding, and nearly doubled the number of taxi stands and designated areas for bus service.

Scope of work included:

The project entailed the demolition of the existing fire house/rental car maintenance facility (Building 10) and construction/erection of a new multimodal ground transportation hub within the footprint of the existing rental car lot. Arora provided overall program and construction management services including professional engineering services for the mechanical, electrical, plumbing, fire alarm/fire protection and special systems.

Arora utilized teaming partners for the architectural, civil, structural, HAZMAT, and regulatory aspects of this project. The construction team managed a fast-tracked construction schedule and completed the facility on time and within the allocated program budget.

Arora also provided full-time, on-site construction management services, which ensured that the project remained on schedule and within budget.



PROJECT DETAILS

Client

Lehigh Northampton Airport
Authority
Thomas Stoudt
Lehigh Valley International
Airport
Director of Operations &
Safety
3311 Airport Road
Allentown, PA 18109-3040
tstoudt@lnaa.com
(610) 266-6001

Construction

\$26,320,958

Project Start

2020

Project Completion

2021

Highlights

- + Multi-Prime Delivery

LEHIGH NORTHAMPTON AIRPORT AUTHORITY

LNAA TASK 38 – PROGRAM, CONSTRUCTION, AND INSPECTION MANAGEMENT SERVICES

Lehigh Valley International Airport, Allentown, PA

Arora Engineers (Arora), serving as the Prime Consultant, was selected to provide on-call planning, architectural, and engineering services for the Lehigh-Northampton Airport Authority (LNAA). Under this contract, Arora issued a task for program management, program administration and construction management related to the implementation of the security checkpoint (connector) improvements project located at Lehigh Valley International Airport (ABE). The critical elements of this project included:

- + Improved departing (outbound) PAX flow via an elevated connector
- + New PAX Security Screening Checkpoint (SSCP)
- + New vertical circulation core located at the Wiley Terminal
- + Improved arriving (inbound) PAX flow via a new below-grade tunnel
- + LifeAire purification system evaluation and improvements
- + COVID-19 evaluation of potential modifications to design
- + Financial coordination assistance for the program funding
- + Township Coordination and response to comments
- + Haul route rehabilitation
- + Utility coordination
- + Stand-by emergency generator
- + Renderings and animation preparation
- + Art coordination

Scope of work included:

Arora was responsible for program management, program administration and



LEHIGH
NORTHAMPTON
AIRPORT AUTHORITY

**LNAA TASK 38
– PROGRAM,
CONSTRUCTION,
AND INSPECTION
MANAGEMENT
SERVICES**

Lehigh Valley
International Airport,
Allentown, PA

construction administration, including the following services:

Project Management with tasks including:

- + Owner's representative
- + Project schedule management – LNAA Stakeholders
- + Stakeholder coordination
- + Request for Proposal (RFP) development & management
- + Management of hours and review of documentation.
- + Conflict resolution
- + Day-to-day project management
- + Project partnering
- + Financial review & coordination with LNAA stakeholders
- + Project partnering

Project Administration with tasks including:

- + Owner's representative services.
- + Financial review & coordination with project primes.
- + Request for Proposal (RFP) development & management.

Project Schedule Management services includes:

- + Contract document peer reviews, including design change control and value engineering management & coordination.
- + Preparation of funding request applications, including federal applications (i.e. FAA) and state applications.
- + Document control & management.

On-Site ***Construction Management*** support services provided by Arora included:

- + Owner's representative services.
- + Providing LNAA stakeholder updates.
- + Bid phases project procurement support.
- + Monitoring MBE/DBE program compliance.
- + Reviewing and approving contractor's request for payment.

PROJECT DETAILS

Client

City of Philadelphia
Division of Aviation
Jim Jones, PE
Project Manager
International Plaza II,
Suite 540
Philadelphia, PA 19113
james_t.jones@phl.org
215-937-6229

Construction

\$4,000,000

Project Start

2014

Project Completion

2015

Highlights

- + Project provided more accurate information to the traveling public
- + Prepared bid documents
- + Managed overall project
- + Coordinated with PHL operations, IT, properties, airlines, and tenants

CITY OF PHILADELPHIA, DIVISION OF AVIATION

MULTI-USER FLIGHT INFORMATION DISPLAY (MUFID) UPGRADE

Philadelphia International Airport, Philadelphia, PA

Arora Engineers (Arora) provided planning, managed the design process, and provided project and construction management for this multi-prime contract project to upgrade MUFIDS throughout Terminal A-East, A-West and F. The main elements of the contract included demolition of existing MUFIDS enclosures and construction/installation of both new and temporary enclosures, and respective structure support assemblies within Terminal A-West. This included MUFIDS banks in the ticket lobby and at gate A-14. A total of 27 small and large MUFIDS banks were upgraded along with 13 gate podium monitors including mini MACs and new LED monitors.

Scope of work included:

Arora prepared project bid documents for the city procurement process. Arora was also responsible for managing the overall project. Responsibilities included the following:

- + Support contractor procurement process, project budget, and schedule
- + Review and process shop drawings
- + Coordination of drawings for installation suitability
- + Submittals
- + RFIs
- + Field directives
- + Letters of correspondence
- + Estimates for payments
- + Pay applications
- + Change orders
- + Utilize construction management software.

Arora was responsible for the coordination of over 30 MUFIDS location upgrades around PHL terminals with PHL operations, IT, properties, airlines, and tenant.



PROJECT DETAILS

Client

City of Philadelphia
Division of Aviation
Imad Haq, PE
Airport Engineering Manager
Capital Development Group
Philadelphia International
Airport
1 International Plaza, Suite
200
Philadelphia, PA 19113
imad.haq@phl.org
215-937-7878

Construction

\$25,000,000

Project Start

2019

Project Completion

2022

Highlights

- + Arora provided Construction Management/ Project Management inspection support services.
- + Arora conducted a field investigation within the anticipated limit of work, including the existing electrical vault, to review and record site and equipment conditions.
- + Reviewed shop drawing submittals from the Contractor and maintained a submittal log to track the status of each submittal.

CITY OF PHILADELPHIA DIVISION OF AVIATION EAST AIRFIELD REHABILITATION INSPECTION SUPPORT

Philadelphia International Airport, Philadelphia, PA

Arora Engineers (Arora), working as a subconsultant to Johnson, Mirmiran & Thompson (JMT) provided Construction Management/ Project Management inspection support services for the North Apron Reconstruction and Rehabilitation of Taxiways D, E and K at Philadelphia International Airport (PHL). This project is a task order under the City of Philadelphia Department of Aviation On-Call Civil Engineering project for PHL and Philadelphia Northeast Airport (PNE) to aid with planning, design and construction inspection services in the discipline of civil engineering at the airport on an as needed basis.

The East Airfield rehabilitation project received the 2021 Philadelphia Aviation Project Award from the March of Dimes. The honor was presented at the organization's annual Transportation, Building and Construction awards ceremony in November of 2021.

Scope of work included:

Arora provided CM/PM inspection support services for the North Apron Reconstruction and Rehabilitation of Taxiways D, E and K at Philadelphia International Airport. Scope of services included:

Field Investigations & Equipment Analysis - Arora conducted a field investigation within the anticipated limit of work, including the existing electrical vault, to review and record site and equipment conditions. Existing airfield electrical equipment, including airfield lighting infrastructure, signage, manhole/handholes, constant current regulators, Airfield lighting and Control Monitoring System (ALCMS), and underground distribution systems, were evaluated to confirm equipment and circuits affected by the project. Ideally, the field investigation was scheduled in coordination

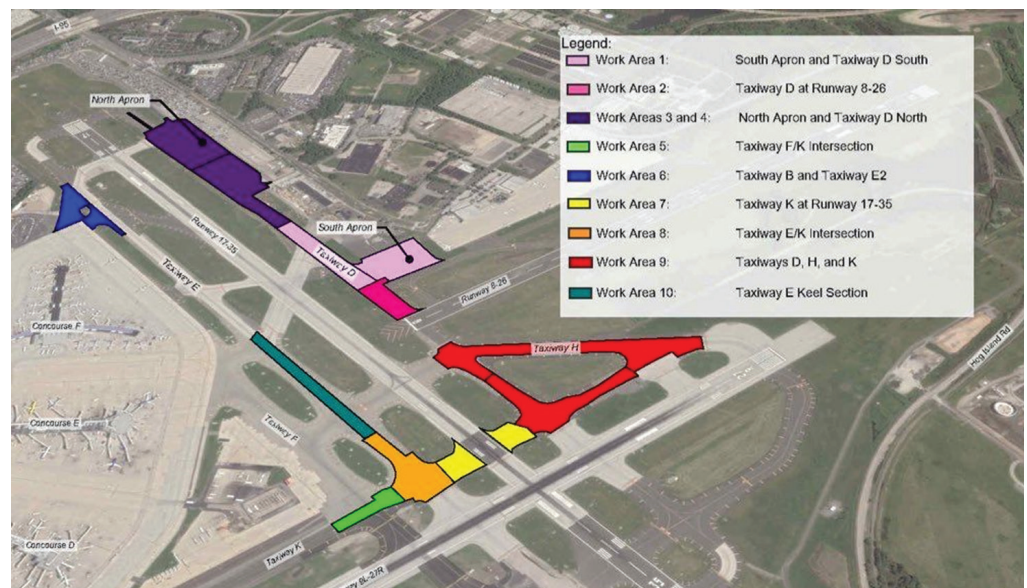


Photo provided by Philadelphia International Airport

**CITY OF
PHILADELPHIA
DIVISION OF
AVIATION**

**EAST AIRFIELD
REHABILITATION
INSPECTION
SUPPORT**

**Philadelphia
International Airport,
Philadelphia, PA**

with the project initiation meeting. The following was required to verify circuitry:

- + Manhole survey to verify circuit routing of underground distribution.
- + Toggling on/off of circuits within project limits to confirm circuit connections for lights and signage.
- + Verify utilities located within area by circuit tracing.

Shop Drawing/Submittal Review - Arora reviewed shop drawing submittals from the contractor and maintained a submittal log to track the status of each submittal. Arora ensured the timely processing of submittals were a high priority.

Responses to Requests for Information/Construction Clarifications (RFIs) - Arora reviewed and responded to clarification requests from PHL and the construction manager. An internal log tracked the status of each RFI and ensured each one was completed in a timely manner.

As built drawings - As-built drawings were completed of as-built conditions from the contractor-furnished redline prints regarding electrical installations. A hard copy and electronic version were submitted to JMT at the conclusion of construction.



PROJECT DETAILS

Client

ARUP USA, Inc.
Jeffrey Tubbs, PE
Principal
60 State Street, 10th Floor
Boston, MA 02109
617-864-2987
jeff.tubbs@arup.com

Construction

\$2,300,000,000

Project Start

2019

Project Completion

2022

Highlights

- + Oversaw the Design-Build Team's commissioning of mechanical and electrical systems.
- + Testing and Commissioning
- + Systems Integration Testing
- + Performed operational readiness

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

GREEN LINE EXTENSION CONSTRUCTION PHASE SERVICES

East Cambridge, Somerville, and Medford, MA

Arora Engineers (Arora) working as a subconsultant to ARUP USA, Inc. (ARUP), assisted with monitoring and observing the Design-Build Team's commissioning of mechanical and electrical systems in an owner's representative role for the Massachusetts Bay Transportation Authority's (MBTA) Green Line Extension (GLX) project.

The GLX project was an initiative of the Massachusetts Department of Transportation (MassDOT) and the MBTA to provide a direct rail link connecting the underserved areas of Cambridge, MA to Union Square in Somerville and College Avenue in Medford, MA.

The project extended the existing Green Line service from a relocated Lechmere Station in East Cambridge to Somerville and Medford. Construction for the project included six stations, 4.3 miles of Green Line light rail tracks, the relocation of four miles of double track commuter rail, extensive bridge repair and development, and a vehicle maintenance storage facility.

Our team was engaged when the MBTA had to reevaluate the project's scope, schedule, programming and procurement methodologies due to major budgetary overruns. The team re-engineered the project design and delivery methodology to design/build, which enabled them to reduce the overall schedule by 19 month and the project cost by a staggering \$700M.

Scope of work included oversight of the design/build teams consisting of:

Testing and Commissioning: The testing and commissioning phase of the project consisted of factory and field verification testing, systems integration and verification testing, training, safety and security certification, and configuration management.



Image of Green Line Ribbon Cutting at the Union Branch Opening Ceremony courtesy of MassDOT

MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

GREEN LINE
EXTENSION
CONSTRUCTION
PHASE SERVICES

East Cambridge,
Somerville, and
Medford, MA

Factory and Field Verification: Testing included systematic inspection, testing, and documentation of the testing of field installed equipment to verify the proper functional performance of components and assemblies of a system element (e.g. traction power). Factory and field verification testing activities were accomplished using inspection and test procedures prepared and accepted by the design/build entity.

Systems Integration Testing: The purpose of systems integration testing was to confirm that all system elements operate, function, and can be maintained in a safe manner when integrated as an overall system. Arora performed and documented all integration activities and verified that all subsystems, and assemblies thereof, were installed and interconnected in accordance with accepted designs. Systems integration testing involved interface testing as well as point-to-point verification of the system's functionality when more than one subsystem is involved.

Upon successful test completion, the test procedure, test data and test results were documented in a Test Report.

System Pre-Revenue Test and Operational Readiness: The purpose of the system pre-revenue test and operational readiness was to verify that the integrated systems of the Project perform individually and collectively as required by the contract and MBTA staff have been effectively trained and certified for facility operations and revenue service.

System Acceptance: Acceptance of the system involved substantial completion and final acceptance. Substantial completion signifies the end of the design, supply, construction, and testing stages of the work and that the project is certified by the design/build entity and MBTA as ready for revenue service.

Promptly after system acceptance, Arora performed punch list items and other work, as needed. Arora also provided technical support to the MBTA for the evaluation, diagnoses, and remediation of GLX Project defects found during this period.

The opening of the Union Branch in March 2022 was followed by the opening of Medford Branch in December 2022, which marks the completion of this important project.

In the News:

https://www.enr.com/articles/55580-bostons-mbta-green-line-extension-finally-reaches-terminus?oly_enc_id=8241D4763101I5C

PROJECT DETAILS

Client

City of Philadelphia
Division of Aviation
Imad Haq, PE
Airport Engineering Manager
Capital Development Group
Philadelphia International
Airport
1 International Plaza, Suite
200
Philadelphia, PA 19113
imad.haq@phl.org
215-937-7878

Construction

\$300,000,000

Project Start

2007

Project Completion

2015

Highlights

- + Program management
- + Construction management and inspection
- + Project cost estimating and coordination

PHILADELPHIA DEPARTMENT OF AVIATION

TERMINAL D – E EXPANSION AND MODERNIZATION, PHASE I, II, III

Philadelphia International Airport

Arora Engineers (Arora) provided construction management for Phase I, II, & III of the Terminal D-E Expansion and Modernization at the Philadelphia International Airport. The project consisted of a new multi-level connector building between Terminals D and E, a 50,000 SF addition to the Terminal E concourse, and various renovations within the two terminals and the adjacent Thermal Plant. The project included a new 14-lane checkpoint, ticket lobby, in-line baggage system with eight EDS, deployment of 290 new VOIP phones, and the relocation of two main server rooms.

Arora provided onsite inspection, design, and design review services. Tasks entailed construction management (CM) and contractor quality control (C.Q.C.) services to ensure that electrical, plumbing, and mechanical construction was completed in accordance with the requirements of construction documents and applicable codes/standards on various projects.

Scope of work included:

- + Program management
- + Construction management and inspection
- + Project logistics
- + Cost estimating
- + Project coordination
- + Representation at stakeholder meetings
- + Project close out
- + Assistance in the management of tenant projects



PROJECT DETAILS

Client

City of Philadelphia
Division of Aviation
Imad Haq, PE
Airport Engineering Manager
Capital Development Group
Philadelphia International
Airport
1 International Plaza, Suite
200
Philadelphia, PA 19113
imad.haq@phl.org
215-937-7878

Construction

\$40,000,000

Project Start

2007

Project Completion

2014

Highlights

- + Responsible for design and construction administration
- + Fire protection engineering for baggage screening system
- + Clean agent suppression system provided for critical systems
- + New cctv camera design
- + new access control system doors design
- + universal cabling distribution design

CITY OF PHILADELPHIA, DIVISION OF AVIATION IN-LINE BAGGAGE SCREENING (CBIS) SYSTEM

Philadelphia International Airport, Philadelphia, PA

Arora Engineers (Arora) performed MEP, special systems, fire protection engineering, and construction management services for the Checked Baggage Inspection Systems (CBIS) in Terminals A-West and A-East at Philadelphia International Airport.

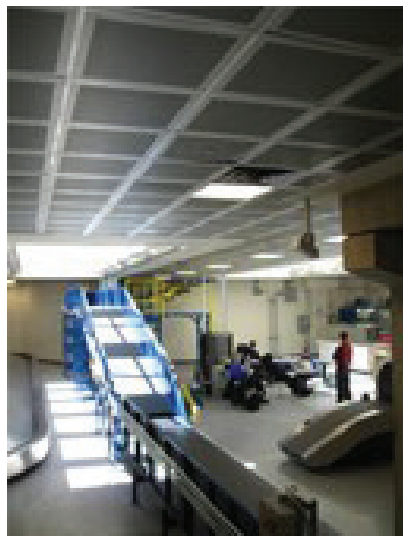
Scope of work included:

The scope included modifications to the existing A East Pier to include a new connector bridge for baggage conveyors, two new baggage handling rooms, and modifications to the existing baggage handling system in Terminal A-East.

Mechanical design included HVAC, radiant heating, door heaters, CO2 sensing, and ventilation. Electrical engineering services included design for new motor control panels, a new electrical substation, lighting, and low voltage power distribution. The plumbing design included engineering for drainage, new restrooms, and condensate.

The fire protection scope of work included modifications to the existing wet sprinkler systems that were necessary to accommodate the new space layouts. New pre-action and clean agent systems were also required for the new space layout. The scope also involved fire alarm and detection system design tasks, such as notification appliance and initiating device relocations per NFPA codes and fire alarm programming matrix revisions per DOA standards. New notification appliance and initiating device layouts were required for the new structures, in addition to all new devices that were required for the pre-action and clean agent systems.

Special systems engineering included the addition of approximately 50 new CCTV cameras, 20 new security doors, universal cabling distribution design, telecom room modifications, multi-user flight information display systems, TSA systems, and full systems design for a new OSR and BHS rooms.



PROJECT DETAILS

Client

STA Joint Venture
C/O STV Incorporated
Anthony G. Cracchiolo, P.E.
225 Park Avenue South
New York, NY 10003
Anthony.Cracchiolo@stvinc.
com
(212) 777-4400

Construction

\$1,600,000,000

Project Start

2012

Project Completion

2021

Highlights

- + Arora provided special systems and fire/life safety engineering services and document control services for the new Moynihan Station Program project.
- + The new Moynihan Train Hall relieved station crowding and improved passenger comfort and security.

AMTRAK, MOYNIHAN STATION DEVELOPMENT CORPORATION

MOYNIHAN STATION PROGRAM PROJECT

New York, NY

Arora Engineers (Arora) served as a subconsultant to AECOM and Tishman Construction and provided fire/life safety engineering services as well as document control services for the new Moynihan Station Program project. The \$1.6 billion project transformed the 100-year-old James A. Farley Post Office building into a state-of-the-art transit hub. The 225,000 SF Moynihan Train Hall nearly doubled the existing Penn Station rail complex's concourse space. The expansion of Amtrak's passenger services into the new Moynihan Train Hall relieved previous station crowding and improved passenger comfort and security.

This project was owned by Amtrak, in partnership with the New York Empire State Development Corporation (ESD) and its subsidiary Moynihan Station Development Corporation (MSDC). The Moynihan Station Program project included enhanced passenger facilities for Amtrak's Northeast Corridor (NEC) and long-distance travelers, including accessibility for passengers with disabilities, all within a new, grand train hall.

The project was constructed into two phases. Phase I created the West End Concourse. The new concourse provided new stairs and elevators to boarding platforms, passenger circulation space, and a new entrance across 8th Avenue from Penn Station. Arora provided construction management and controls support for this phase, maintaining document control and shop drawings, construction monitoring, and providing cost estimating support by performing quantity take-offs.

Phase II entailed the Moynihan Train Hall, a new, enhanced intercity and commuter passenger boarding concourse for Amtrak and MTA-Long Island Railroad



Rendering Courtesy of SOM | Volley

**AMTRAK,
MOYNIHAN STATION
DEVELOPMENT
CORPORATION**

**MOYNIHAN STATION
PROGRAM PROJECT**

New York, NY

passengers. The Moynihan Train Hall included a sunlit atrium boarding concourse, a combined ticketing and baggage unit, a new Metropolitan Lounge, a new reserved customer waiting room, casual waiting space features, retail, and food shops. Arora provided full-time, on-site project controls including the preparation of monthly cost reports for CM services, assembly and update of the project management plan, construction management plan, and financial management plan, as well as preparation of monthly project progress reports and creation of project progress tracking drawings in AutoCAD to demonstrate project development. In addition, Arora performed QA/QC of submittals and RFIs, attended design and construction management coordination meetings, and supported the construction field office.

Moynihan Train Hall opened to the public in January, 2021.

PROJECT DETAILS

Client

City of Philadelphia
Division of Aviation
Jim Jones, PE
Project Manager
International Plaza II
Suite 540
Philadelphia, PA 19113
james_t.jones@phl.org
215-937-6229

Construction

\$750,000,000

Project Start

1998

Project Completion

2004

Highlights

- + 850,000 SF facility with 13 new international gates
- + Arora was tasked with project management oversight of special systems construction
- + Systems included access control, surveillance, fire protection, terminal announcement, flight information displays, and baggage screening

CITY OF PHILADELPHIA, DIVISION OF AVIATION

TERMINAL A WEST PROJECT/CONSTRUCTION MANAGEMENT

Philadelphia International Airport, Philadelphia, PA

The \$750 million terminal is a four-level, 850,000 SF facility with 13 new international gates, 26,000 SF of concession space, expanded federal inspection facilities, and exciting original artwork. Arora Engineers (Arora)'s project responsibilities included oversight and project management for new special systems construction involving security access and surveillance, universal cabling distribution system, fire alarm, specialty hazard systems, terminal announcement control systems (TACS), multi-user flight information display systems (MUFIDS), specialty power distribution systems, baggage information display systems, and home land security. Additionally, Arora oversaw the construction of the Thermal Plant providing service to Terminal A.



The Thermal plant handled delivery of chilled water and hot water to Terminal A-West and included cooling towers, chillers, boilers, pumps, air heaters, piping, and a hub for the Building Automation System (BAS). This area was protected by a pre-action sprinkler and fire alarm system.

Scope of work included:

- + CM of supply and return modifications affected by new baggage belt mainline locations
- + CM of HVAC needed to provide optimum temperature for EDS machines as required
- + PLC logic coordination and shutdown of baggage doors based on addressable smoke
- + Coordination with Tinicum, TSA, and DOA SST
- + Access control and intrusion designed for all AOA boundary doors in accordance with TSA 49CFR and the DOA SST department
- + Integration of access control and baggage PLC'S start circuit
- + Modifications to existing access control doors affected by location of baggage belt
- + Integration with EDS lockout panel in Sector 23 Control Room
- + Access control back of house and public carousel coordination with baggage PLC
- + Assess multiplexer assignments and door hardware requirements
- + Design of new and relocated CCTV equipment with DOA SST standard
- + Provided digital recording details for TSA reconciliation
- + Designed BIDS inputs Burr Brown Tugnamn Keypads and BIDS/MUFIDS network architecture
- + Updated BPS 8600 core and 2000 distribution switches in accordance with the MUFIDS Phase II design
- + Designed structured cabling and horizontal station cabling for both voice and data



PROJECT DETAILS

Client

C&S Engineers, Inc.
Jon P. Donahue, PE
Aviation Department Manager
499 Col. Eileen Collins Blvd
Syracuse, NY 13212
jdonahue@cscos.com
315-455-2000

Construction

\$3,000,000.00

Project Start

2014

Project Completion

2015

Highlights

- + Construction observation services for the Reconstruct Taxiways "B" & "E" - Phase I at New Castle Airport.
- + Observed testing and inspection.
- + Mill and overlay on the perimeter of the proposed pavement to tie-in to existing pavements.
- + Prepared and submitted daily inspection reports of construction activity and problems encountered.

DELAWARE RIVER AND BAY AUTHORITY (DRBA)

RECONSTRUCT TAXIWAY B & E-PHASE 1 - CONSTRUCTION MANAGEMENT

New Castle Airport, New Castle, DE

Arora Engineers (Arora), serving as a subconsultant to C&S Engineers, Inc. (C&S) provided construction management and observation services for the Reconstruct Taxiways B and E - Phase I at New Castle Airport. The work for this project included a full-depth removal of Taxiway B south of Runway 9-27, Taxiway C east of Taxiway B to Runway 1-19, Taxiway D east of Taxiway B to Runway 1-19, and reconstruction of Taxiway B 400 feet east of Runway 1-19 from centerline to centerline between Runway 9-27 to Taxiway A.

This project also included a mill and overlay on the perimeter of the proposed pavement to tie in to existing pavements, and a connector taxiway was constructed perpendicular to the parallel taxiway onto Runway 1-19. In addition, re-grading was conducted on all new construction and rehabilitation completed, the storm water removal system within the work limits was upgraded to conform to the current standards, and electrical work associated with the reconstruction, including replacing and/or re-adjusting light cans along the taxiway system.

Scope of work included:

The construction observation phase consisted of construction observation with the following scope of work:

- + Observed the work to determine general conformity with the contract documents and to ascertain the need for correction or rejection of the work.
- + Attended pre-construction, pre-paving, and pre-installation conferences; weekly progress meetings; and final inspection of the completed project.
- + Observed testing and inspection. Arranged for, conducted, or witnessed field, laboratory, or shop tests of construction materials as required by the plans and



Photo Credit Dave Sheehy

**DELAWARE RIVER
AND BAY AUTHORITY
(DRBA)**

**RECONSTRUCT
TAXIWAY B &
E-PHASE 1 -
CONSTRUCTION
MANAGEMENT**

**New Castle Airport,
New Castle, DE**

specifications for the project; monitored the suitability of materials on the project site or brought to the project site to be used in construction; interpreted the contract plans and specifications and checked the construction activities for general compliance with the design intent; measured, computed, or checked quantities of work performed and quantities of materials in-place for partial and final payments to the contractor.

- + Prepared and submitted daily inspection reports of construction activity and problems encountered.
- + Prepared and implemented a quality control and assurance plan as required by the FAA for monitoring material requirements and properties throughout the course of construction.

PROJECT DETAILS

Client

Susquehanna Area Regional
Airport Authority
Harrisburg International
Airport
David Spaulding
One Terminal Drive, Suite 300
Middletown, PA 17057
dspaulding@saraa.org
717-948-3900

Construction

\$500,000

Project Start

2009

Project Completion

2013

Highlights

- + Rehabilitation and upgrade of airfield lighting systems and lighting vault
- + Study featured an extensive evaluation of electrical and lighting infrastructure
- + Identified areas for improvement that reduced lighting loads and streamlined maintenance needs

SUSQUEHANNA AREA REGIONAL AIRPORT AUTHORITY

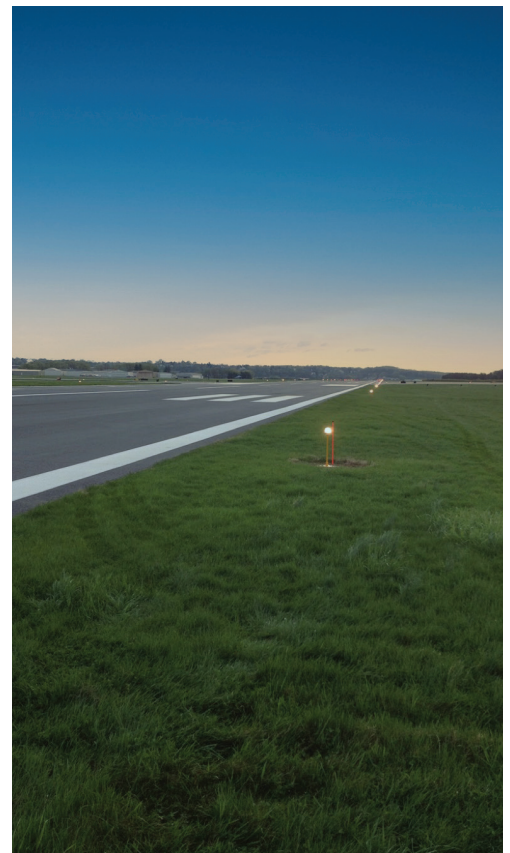
REHABILITATION OF RUNWAY LIGHTS

Capital City Airport, Harrisburg, PA

The Susquehanna Area Regional Airport Authority (SARAA) tasked Arora Engineers (Arora) with providing engineering design to rehabilitate and upgrade the airfield lighting systems and airfield lighting vault at Capital City Airport (CXY). A preliminary design study was completed by Arora as part of a general services on-call agreement with SARAA to identify existing infrastructure, phasing constraints, and probable construction costs for replacement of the outdated equipment.

Scope of work included:

Specifically, the design study evaluated the existing edge lighting systems, underground distribution, and components of the electrical vault and determined the infrastructure exceeded its normal life span. New technology was proposed to reduce lighting loads and provide better maintenance history for airport personnel. The Federal Aviation Administration (FAA) and SARAA utilized the information within the design study to program funding and submit project criteria for final design documents and construction.



PROJECT DETAILS

Client

Lehigh Northampton Airport
Authority
Thomas Stoudt
Lehigh Valley International
Airport
Director of Operations &
Safety
3311 Airport Road
Allentown, PA 18109-3040
tstoudt@lnaa.com
(610) 266-6001

Construction

\$26,320,958

Project Start

2020

Project Completion

2021

Highlights

- + Multi-prime delivery

LEHIGH-NORTHAMPTON AIRPORT AUTHORITY (LNAA)

LNAA TASK 38 – PROGRAM, CONSTRUCTION, AND INSPECTION MANAGEMENT SERVICES

Lehigh Valley International Airport (ABE), Allentown, PA

Arora Engineers (Arora), serving as the prime consultant, was selected to provide on-call planning, architectural, and engineering services for the Lehigh-Northampton Airport Authority (LNAA). Under this contract, Arora issued a task for program management, program administration and construction management related to the implementation of the Security Checkpoint (Connector) Improvements project located at Lehigh Valley International Airport (ABE). The critical elements of this project included:

- + Improved departing (outbound) PAX flow via an elevated connector
- + New PAX Security Screening Checkpoint (SSCP)
- + New vertical circulation core located at the Wiley Terminal
- + Improved arriving (inbound) PAX flow via a new below grade tunnel
- + LifeAire purification system evaluation and improvements
- + COVID-19 evaluation of potential modifications to design
- + Financial coordination assistance for the program funding
- + Township coordination and response to comments
- + Haul route rehabilitation
- + Utility coordination
- + Stand-by emergency generator
- + Renderings and animation preparation
- + Art coordination



**LEHIGH-
NORTHAMPTON
AIRPORT AUTHORITY
(LNAA)**

**LNAA TASK 38
– PROGRAM,
CONSTRUCTION,
AND INSPECTION
MANAGEMENT
SERVICES**

**Lehigh Valley
International Airport
(ABE), Allentown, PA**

Scope of work included:

Arora was responsible for program management, program administration and construction administration, including the following services:

- + Project management with tasks including:
 - + Owner's representative
 - + Project schedule management – LNAA stakeholders
 - + Stakeholder coordination
 - + Request for Proposal (RFP) development & management
 - + Management of hours and review of documentation.
 - + Conflict resolution
 - + Day-to-day project management
 - + Project partnering
 - + Financial review & coordination with LNAA stakeholders
 - + Project partnering
- + Program administration services included:
 - + Owner's representative services.
 - + Financial review & coordination with project primes.
 - + Request for Proposal (RFP) development & management.
 - + Project schedule management services includes:
 - + Contract document peer reviews, including design change control and value engineering management & coordination.
 - + Preparation of funding request applications, including federal applications (i.e. FAA) and state applications.
 - + Document control & management.
- + On-site construction management support services provided by Arora included:
 - + Owner's representative services.
 - + Providing LNAA stakeholder updates.
 - + Bid phases project procurement support.
 - + Monitoring MBE/DBE program compliance.
 - + Reviewing and approving contractor's request for payment.

PROJECT DETAILS

Client

Pond & Company, Inc.
R. Chris Jenkins,
Principal, Program Manager
3500 Parkway Lane
Suite 500
Peachtree Corners, GA 30092
jenkinsc@pondco.com
(678) 362-7133

Construction

\$44,000,000

Project Start

2023

Project Completion

2025

Highlights

- + Arora provided full-time, on-site, Resident Project Representative

GREATER ASHEVILLE REGIONAL AIRPORT AUTHORITY

RESIDENT PROJECT REPRESENTATIVE SERVICES FOR AIR TRAFFIC CONTROL TOWER AND ASSOCIATED FACILITIES

Asheville Regional Airport, Asheville, NC

The Greater Asheville Regional Airport Authority engaged Pond & Company, Inc. to provide architectural/engineering design and resident project representation for a new air traffic control tower at Asheville Regional Airport (AVL).

The existing air traffic control tower was connected to the airport terminal building. The new tower needs to be constructed so the existing tower can be demolished to make room for the airport to expand the existing terminal. The new air traffic control tower will be a free-standing tower and FAA office building located near the southwest area of the airport's property, across the airfield from the airport terminal building.

"For several years, we have been working with the Federal Aviation Administration and Pond, our architectural firm, to design a new tower," said Lew Bleiweis, A.A.E., President and CEO. "It is exciting to take this step and award a construction contract. We will break ground in early 2023.

Scope of work included:

Arora is providing a full-time, on-site, Resident Project Representative (RPR) to GARAA under a subconsultant agreement with Pond & Company.

Our RPR role includes conducting on-site observations of the construction project to monitor conformance with contract documents and schedule; serving as the owner's liaison with the contractor, designers, and other stakeholders; maintaining adequate records of contract work ongoing and completed; maintaining a detailed daily diary; reviewing the contractor's monthly applications for payment; and other duties as assigned.



Photo credit Jarred/GARAA

PROJECT DETAILS

Client

WSP USA
Zachariah Panneton, Senior
Technical Specialist
1 East Pratt Street, Suite 300
Baltimore, MD 21202
zachariah.panneton@wsp.
com
(443) 280-3895

Construction

Varies per Task

Project Start

2023

Project Completion

2024

Highlights

- + Staff Augmentation:
Systems Technical Manager

MARYLAND DEPARTMENT OF TRANSPORTATION ON-CALL COMMUNICATIONS AND SECURITY ENGINEERING SERVICES

Baltimore, MD

The Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) engaged WSP to provide in-house engineering and operations technical support services for MDOT MTA METRO Facilities Maintenance.

Scope of work included:

Arora provided a Systems Technical Manager (STM) to MDOT MTA under a subconsultant agreement with WSP. Our STM provided direct operations technical support in coordination with the MDOT MTA task manager. The technical support consisted of assistance for project management, drawing reviews, quality assurance, negotiating change orders, and warranty issues.

Support also included monitoring of contract progress, progress payment review; technical correspondence review; monitoring of modifications and contract submittals; conducting technical meetings with Contractors; and documenting the resolution of technical, quality assurance, and contractual issues between the MDOT MTA and the Contractors and vendors.

Arora provided the following services under the direction of the MDOT MTA Manager:

- + Project management.
- + Project development support and investigation.
- + Design document review including plans, specifications, and cost estimates.
- + Work scope, budget, and schedule development.
- + Construction management and inspection.
- + On-site technical support.
- + Coordination with the MDOT MTA Engineering department.
- + Meetings as directed by the MDOT MTA Work Order Manager.



PROJECT DETAILS

Client

AECOM
Brian Fuerst,
Vice President - Aviation
6000 Fairview Road
Charlotte, NC 28210
brian.fuerst@aecom.com
(703) 489-7444

Construction

\$2,000,000,000

Project Start

2022

Project Completion

2027

Highlights

- + Staff Augmentation: Project Coordinator & Contracts Administrator

RALEIGH-DURHAM AIRPORT AUTHORITY

PROJECT MANAGEMENT, PROJECT CONTROLS, AND SPECIAL ASSIGNMENT SERVICES

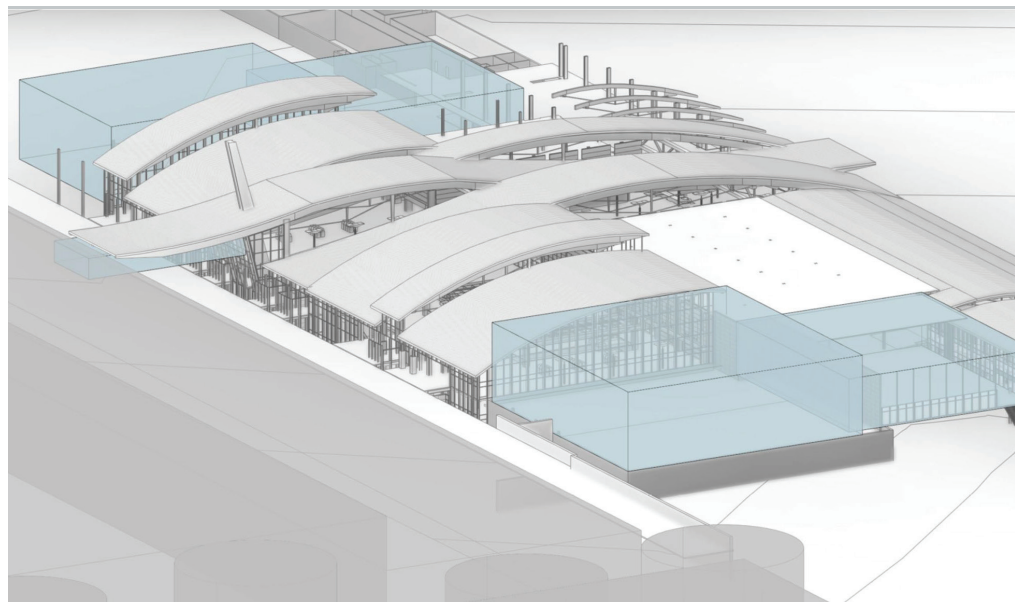
Raleigh-Durham International Airport, Morrisville, NC

The Raleigh-Durham Airport Authority (RDAA) engaged AECOM to provide staff augmentation in support of Project Management (PM), Project Controls (PC), and Special Assignment (SA) services for the Authority. The PM services are needed to support a \$2 billion capital program over the next 10-years at Raleigh-Durham International Airport. Planned projects include design and construction of a new Consolidated Rental Car Facility; Runway 5L/23R Replacement Program; landside component expansion of Terminal 2 in addition to an expanded Customs and Border Protection Facility; Park Economy 3 expansion; Aviation Parkway Interchange; John Brantley Boulevard Extension; expansion of Terminal 1; design and construction of a new Airport Operations Center combined with an ARFF station; major concession redevelopment in both terminals; and various other support buildings associated with a medium-hub commercial airport.

Scope of work included:

Arora is providing a Project Coordinator and Contracts Administrator to RDAA under a subconsultant agreement with AECOM.

Our Project Coordinator is providing technical and administrative support to a variety of project managers responsible for delivering the capital program. Their duties are wide ranging and include ensuring compliance with the procurement process, reviewing various design documents, assisting with project management responsibilities, maintaining document control, attending meetings, and participating in the oversight of construction activities.



Rendering courtesy of Raleigh-Durham Airport Authority

**RALEIGH-DURHAM
AIRPORT AUTHORITY**

**PROJECT
MANAGEMENT,
PROJECT
CONTROLS,
AND SPECIAL
ASSIGNMENT
SERVICES**

Raleigh-Durham
International Airport,
Morrisville, NC

Our Contracts Administrator oversees prime and subcontract formation and administration, project setup, and accounting. Oversees bidding process, including bid reviews, bid addenda, and recommendations for the award for all RDU landside and airside projects as assigned. Reviews new project setup ensuring compliance with contractual provisions and billing requirements. Compares project budget changes with contractual documentation and resolves any discrepancies. Reviews all potential change orders as they are discovered to determine contractual merit. Continually reviews project activity to identify projects for close out. Ensures subcontracts are in place for each sub-consultant working on a project.

PROJECT DETAILS

Client

Washington Metropolitan Area
Transit Authority
Ginna Greenbaum,
Director, Capital Projects
Financial and Contracts
Management
600 Fifth Street NW
Washington, DC 20001
ggreenbaum@wmata.com
(202) 525-8543

Project Start

2021

Project Completion

2025

Highlights

- + Staff Augmentation:
Construction Claims
Specialist

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

GENERAL ARCHITECTURAL AND ENGINEERING CONSULTANT SERVICES PROGRAM MANAGEMENT, CONSTRUCTION MANAGEMENT, AND ENGINEERING SUPPORT CONTRACT CPFCM 21001

Washington, DC

The Washington Metropolitan Area Transit Authority (WMATA) is one of the largest transit organizations in the United States. The WMATA service area is approximately 1,500 square miles, with a population of approximately four million people. WMATA provides three core transit functions: Metrorail, Metrobus, and Metro Access paratransit.

WMATA continues to develop, modernize, and grow the infrastructure needed to remain one of the premier transit systems in the country. Within the Capital Program Delivery Group, the Office of Project Financial and Contract Management (PFCM) helps WMATA maintain the fiscal accountability necessary to continue its multi-billion-dollar capital construction program. Due to the large volume of work, the PFCM office requires the services of a Construction Claims Specialist in support of the capital program. Arora, serving as the prime consultant, provided construction claims support for WMATA's Capital Programs.

Scope of work included:

Arora provided a Construction Claims Specialist to assist the office of PFCM in support of their capital construction program. Arora was involved in the implementation of a new Construction Change Order Management (CCOM) tool within the organization. In addition, our Construction Claims Specialist prepared cost estimates, performed cost analyses, developed pre-negotiation positions, reviewed claims for merit, supported and conducted contract negotiations, and documented the resolution of claims and changes.



PROJECT DETAILS

Client

Five Star Electric Corp.
Allen Hirsch
350 West 31st St., 6th Floor
New York, NY, 10001
AHirsch@fivestartelectric.net
718-641-5000 ext. 48003

Construction

\$1,200,000,000

Project Start

2018

Project Completion

Est. 2022

Highlights

- + Provided TSE Expert construction phase services
- + Verified all airport systems and integrations were tested and functioned in accordance with design phase documentation
- + Assisted in all testing, commissioning and operationalization of airport systems

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

EWR TERMINAL ONE REDEVELOPMENT PROGRAM – TECHNICAL SUPPORT EXPERT SERVICES

Newark International Airport, Newark, NJ

The Port Authority of New York and New Jersey (PANYNJ) is currently undertaking the Newark Liberty International Airport (EWR) Terminal A Redevelopment Program. The new Terminal One will replace Terminal A and is estimated to be three (3) stories high and approximately 1.2 million square feet (SF) in area. Terminal One will include a centralized arrivals/departures hub, passenger and baggage processing systems, and 3 radiating concourses to service thirty-three (33) aircraft gates. Arora Engineers (Arora) provided Master Systems Integrator (MSI) and Technical Systems Expert (TSE) services under the electrical contractor Five Star Electric.

Scope of work included:

Arora provided Technical Systems Expert Services (TSE) to the Functional Systems Expert (FSE) to guide the FSE through construction phase services for the successful integration of airport systems. TSE services included but were not limited to the following:

- + Reviewing RFC drawings and identifying performance criteria vs. out of scope items (assessment).
- + Reviewing vendor shop drawings and coordinating vendor interfaces and shop drawings with one another.
- + Coordinating and scheduling third-party testing agencies.
- + Developing special systems delivery and construction schedule.
- + Developing testing and commissioning plan(s).



Rendering by PANYNJ

**THE PORT
AUTHORITY OF NEW
YORK AND NEW
JERSEY**

**EWR TERMINAL ONE
REDEVELOPMENT
PROGRAM**

**Newark International
Airport, Newark, NJ**

- + Developing tracking mechanisms for systems tests and requests
- + Reviewing disparate systems product data and shop drawing submittals, reviewing and consolidating shop drawings
- + Generating integration shop drawings containing detailed schematics, data, programming and software, and process information for the integrations between access control, CCTV and fire alarm systems

Together with FSE, Arora verified that all airport systems and integrations were tested and functioned in accordance with the design phase documentation, assisted in all testing, commissioning and operationalizing of airport systems.



PROJECT DETAILS

Client

Joseph Adams, AIA, LEED AP
BD+C
Project Manager — Vice
President
Corgan
350 Fifth Avenue, Suite 5401,
New York, New York 10118
212 847 3074
Joseph.Adams@corgan.com

Construction

Approx. \$2B

Fee

\$6,177,323

Project Start

2019

Project Completion

Groundbreaking: 2022

Construction Completion:
Est. 2025

Highlights

- + New 1.15 million SF Terminal
- + 13 new gates
- + Arora provided fire/life safety, plumbing, a engineering design services

PORT AUTHORITY OF NEW YORK AND NEW JERSEY TERMINAL 6 / TERMINAL 7 JETBLUE REDEVELOPMENT PROGRAM MSI SERVICES

John F. Kennedy International Airport, Queens, NY

Arora Engineers (Arora) provided engineering design and construction phase services to the JFK Millennium Partners consortium led by the RXR/Vantage/American Triple I Development team for the Terminal 6 / Terminal 7 JetBlue Redevelopment program at John F. Kennedy International Airport (JFK). This Public-Private-Partnership (P3) design-build project includes 13 new gates and a total terminal area estimated at 1.15 million SF, with approximately 850,000 SF in Terminal 6 and 450,000 SF in existing Terminal 7, and roughly 74,000 SF of commercial dining and retail amenities, including lounges and recreational space.

Arora provided fire/life safety and plumbing engineering services as a subconsultant to Lilker related to the program's vertical structures, as well as special systems engineering and Master Systems Integrator (MSI) services to Burns McDonnell for the terminal's low voltage and IT systems. Arora also assisted in the design of the PBB/PCA/400Hz/PWC electrical and network infrastructure alongside AERO engineers and the terminal electrical engineering team, and designed the electrical ground service equipment charging (EGSE) and all of the airside electrical and network systems in addition to high mast lighting (HML) associated with the T6/T7 building and apron construction.

Sustainable design is a cornerstone of this project which incorporates several methodologies to promote energy efficiency, water conservation, and waste reduction. Renewable energy technologies include a solar photovoltaic system, aircraft de-icing and fluid recovery, and stormwater capture and re-use, as well as high efficiency lighting, baggage system motors, and automated building controls to help conserve energy in the completed terminal.



Rendering Courtesy of the Port Authority of New York and New Jersey

**PORT AUTHORITY OF
NEW YORK AND NEW
JERSEY**

**TERMINAL 6 /
TERMINAL 7 JETBLUE
REDEVELOPMENT
PROGRAM**

**John F. Kennedy
International Airport,
Queens, NY**

Serving as MSI, Arora's overall objectives included:

- + Development and oversight of low voltage system integration requirements. Our services included defining integration requirements to be carried by the individual low voltage systems designers' specifications and drawings. In addition, Arora provided input on systems' interconnectivity requirements such as new or existing AODB connectivity, based on previous working history with AODB's in the PANYNJ network.
- + Meeting with stakeholders to gather business requirements and define integrations requirements for all Terminal, Airline and Owner systems.
- + Oversaw testing and commissioning type activities during construction specific to integration.

Drawing upon our extensive expertise with PANYNJ airports and standards, our team defined the interconnectivity of security system architecture/protocols to match existing JFK Airport systems wherever possible.

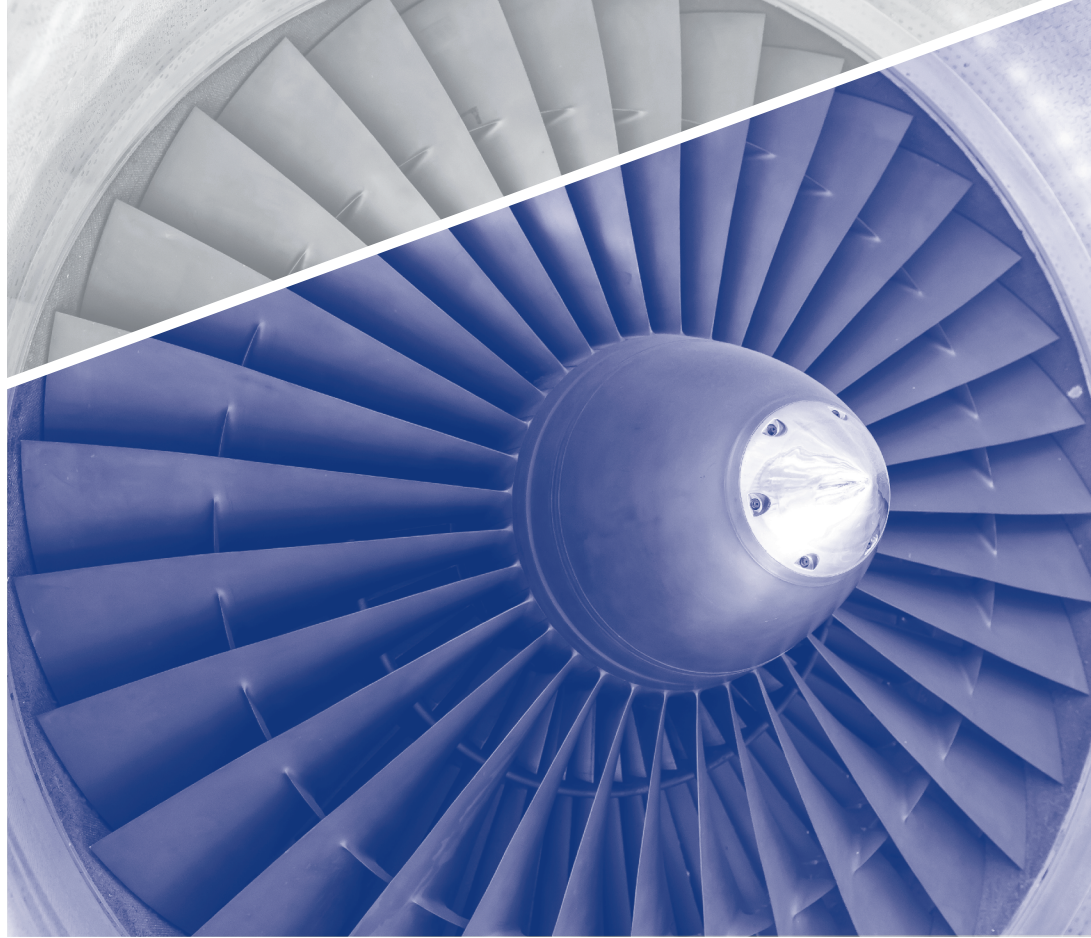
During the procurement phase Arora participated in bid and vendor design reviews and provided general input, as well as specific input and review to security systems bid and vendor selections. Arora also provided reviews of integrations pertaining to those related to MEP and other base building systems.

During construction, Arora acted as the primary on-site point of contact to the MSI team.



Rendering Courtesy of the Port Authority of New York and New Jersey

Rethinking Infrastructure®



CONTACT:

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