BO KA Powell

Joby AVIATION

PROPOSAL FOR

On Call Architectural Design and Engineering Services
UAM Vertiport Development for Joby Aviation

August 13, 2021

Chris W. Barnes
John E. Orfield
R. Andrew Bennett
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architecture
interiors
planning
graphics
strategy

August 13, 2021

Ms. Yasmina Platt
Joby Aviation
VIA Email: yasmina.platt@jobyaviation.com

Re: Proposal for On Call Architectural Design and Engineering Services Supporting UAM Vertiport Development

Dear Ms. Platt:

Thank you for the invitation to submit a proposal for on-call Architectural Design and Engineering Services in support of Joby Aviation's development of Urban Air Mobility (UAM) facilities.

BOKA Powell's aviation practice has extensive experience designing corporate facilities for major air carriers, including work for **Southwest Airlines, American Airlines, Delta Airlines,** and **Airbus.** In addition to the large-scale efforts, we have also been fortunate to work with **Southwest Airlines** under a **Master Services Agreement** for the past six years providing a range of on-call services, from **test-fitting and departmental moves**, to designing Southwest's **$16M Remote Operations Center (ROC).**

Our team will be led by **Principals John Orfield** and **Andrew Bennett,** as well as **Project Architects Marianne Scheer** and **Olivia Freasier.** This team of experienced professionals have delivered **complex, mission-critical aviation projects** of varying size and complexity such as the **United Airlines Flight Training Center** in Denver, Colorado and the **Southwest Airlines Office and Flight Training Complex** here in Dallas, Texas. Also, they all participated in BOKA Powell's submission for the **Uber Elevate** design competition in both 2018 and 2019.

As required, BOKA Powell certifies adherence to the following required qualifications:

- BOKA Powell is lawfully authorized to do business in the State of California
- BOKA Powell carries General Liability Insurance.
- BOKA Powell has more than ten (10) years of experience in providing planning, design and cost estimating services for airports and/or heliports.

We sincerely appreciate the opportunity to work with Joby Aviation as a trusted service provider. We look forward to providing any additional information that may be helpful in determining our qualifications and suitability as an architectural partner for specific scopes of work.

Sincerely,
BOKA Powell, LLC

John E. Orfield, RA, LEED AP
Principal-in-Charge

R. Andrew, AIA, NCARB
Principal

EXECUTIVE SUMMARY

Participation in Urban Air Mobility (UAM) exercises such as UberElevate and a recent UAM infrastructure proposal for a program to connect Incheon International Airport to the Seoul metropolitan center has given BOKA Powell a unique edge in understanding the requirements, the challenges, and the sheer potential of this new generation of transportation. **Dozens of aviation infrastructure projects** that encompass, operations facilities, training centers, and ground service maintenance hubs; **two decades of working with aviation carriers** such as Southwest Airlines, American Airlines, and United Airlines; and nearly **50 years of planning, architecture, and project management** of sites, structures, and systems requiring and/or related to multimodal transportation accessibility, has prepared BOKA Powell for this opportunity.

PROJECT UNDERSTANDING

We understand that this solicitation requests proposals for the provision of On Call services in support of vertiport development to accommodate Joby Aviation's electric Vertical Takeoff and Landing (eVTOL) aircraft. It is further understood that vertiport development(s) could be comprised of:

- Adaptations to existing aviation infrastructure;
- Development of non-aviation facilities; and/or
- Newly constructed terminals on unused land.

The sizes of potential facilities, as outlined in the Request for Proposal could include:

- Small: Facilities that provide only the most basic requirements for UAM,
- Medium: Terminals that could accommodate up to two (2) Touchdown and Lift Off Areas (TLOFs), and up to four (4) aircraft parking spaces, as well as limited passenger support infrastructure.
- Large: Facilities that include operational infrastructure such as maintenance hangers and passenger shelters/ support and Aerial Ridesharing Coordination Center (ARCC).

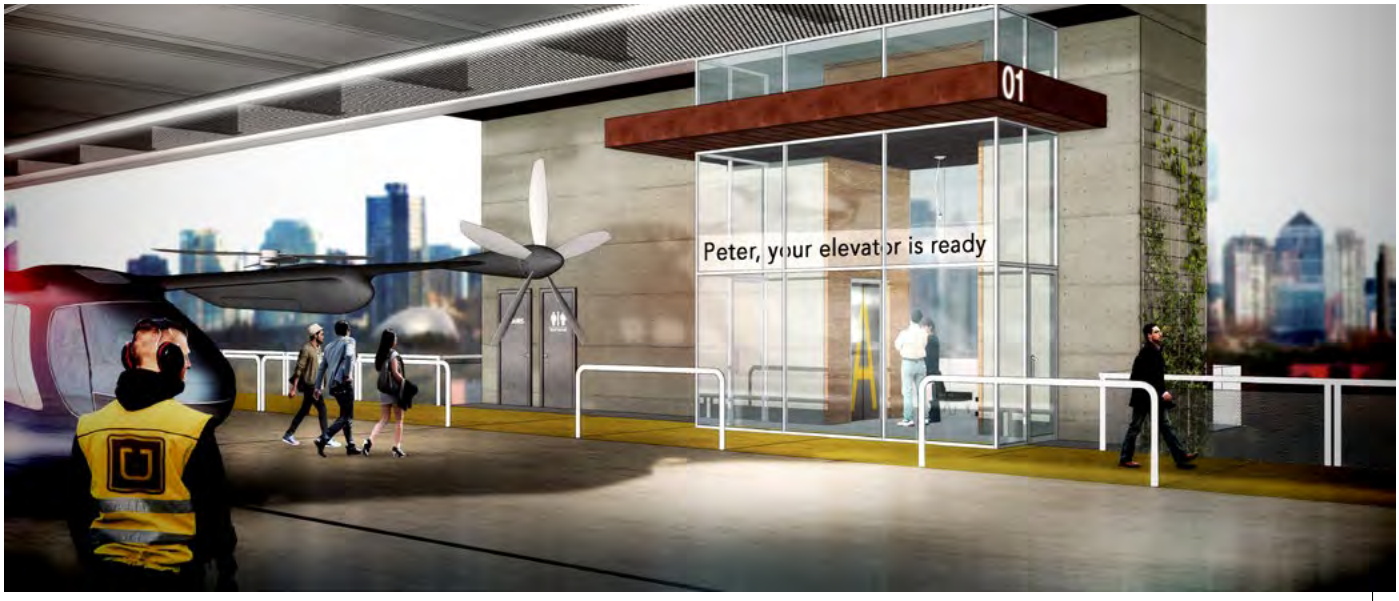
SCOPE OF WORK

In addition to planning, design, and cost estimating on an as-needed basis, Joby Aviation has identified the following tasks as Scope of Work (SOW) items that may be expected:

- Examination of potential site(s)/building(s)/structure(s) including zoning, height restrictions, and other factors limiting development.
- Analyze Existing Conditions of potential site(s)/ building(s)/structure(s) including assessment of pavement, mechanical infrastructure, electrical infrastructure, and fire systems for suitability as a repurposed vertiport.
- Identification of existing electrical power capabilities.
- Identification of site(s)/building(s)/structures(s) improvements needed to satisfy regulatory requirements and Joby Aviation's required standards.
- Review and interpretation of existing construction drawings and/or 3D models of potential sites(s)/ building(s)/ structure(s) for use as potential backgrounds.
- Preparation of Rough Order of Magnitude (ROM) cost estimates for required/desired improvements.

This proposal includes Architectural Services by BOKA Powell, and Mechanical and other Consultant Services to be provided at the direction of BOKA Powell.

Joby Aviation's story is inspiring. It is clear that this is a company that appreciates the importance of forging the right relationships, as evidenced by the recent partnerships with REEF Technology and Neighborhood Property Group. Selection of a professional service provider with UAM experience and understanding will be key to maximizing the impact of these alliances. Whether it is qualifying an existing parking garage as a potential vertiport site, or analyzing property for construction opportunities, BOKA Powell can offer the Architecture and Mechanical Services necessary to



REQUIRED INFORMATION

1. Describe the Proposer's background, size, and history as it may be relevant to:
a. The SOW of this RFP, with an emphasis on airports and, particularly, heliports/vertiports, and/or
b. Provided on an on-call task order basis

BOKA Powell is a full-service architecture, planning, and interior design firm with a team of more than 100 design and administrative professionals. Founded in 1975, the firm headquartered in Dallas, with additional offices in Fort Worth, Austin and Denver.

BOKA Powell has extensive aviation experience and routinely provides architecture and architectural support services on an on-call basis under Master Services Agreements (MSA). In fact, all Southwest Airlines projects are governed by an MSA including the following projects:

- Headquarters - Master Plan
- Training & Operations Support Center - Design Architecture & Interior Design
- Wings Flight Training Complex - Design Architecture & Interior Design
- Network Operations Center - Design Architecture & Interior Design
- Remote Operations Center - Design Architecture & Interior Design
- Environmental Graphics for Wings and TOPS

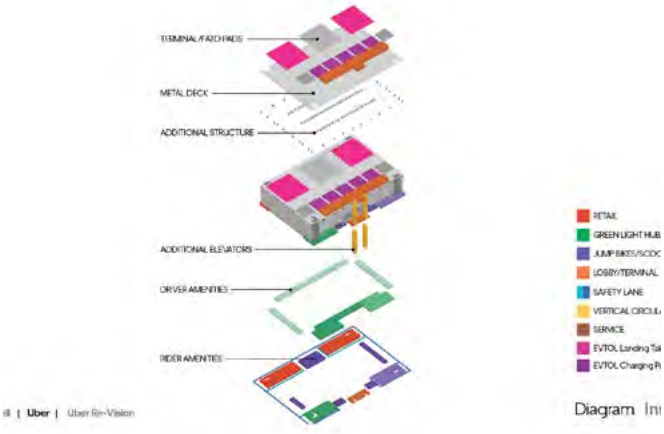
Aviation Clients
Airbus
American Airlines
DFW Airport
Delta Airlines
Southwest Airlines
Uber Elevate
United Airlines
Southwest Airlines

2. Describe the anticipated tasks the Proposer would expect to perform to analyze and evaluate the condition of an existing parking garage/deck (including its structure, mechanical systems, and electrical systems) to understand what improvements would be required to install a vertiport on top. Provide the staff breakdown and an estimated cost associated with it. Identifying a particular parking deck to be used as an example is acceptable.

Discovery, or the fact-finding phase, is a critical component of master planning. During this process, we incorporate the input and expertise of a broad base of consultants and stakeholders. The goal during Discovery is to build an overall understanding of factors affecting planning as well as to develop a comprehensive base plan that attempts to graphically locate property lines, existing uses/structures, utilities, easements, and other miscellaneous limitations.

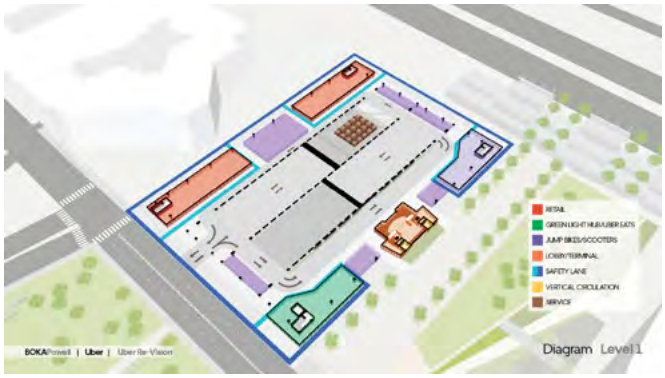
Discovery Analysis is about gathering all pertinent files and information about the property as it exists today, including:

- Plats
- Zoning Restrictions/Challenges
- Applicable Building Codes
- CAD Files for Existing Buildings/Sites
- Existing Surrounding Utilities
- Planned Utility Extensions
- Drainage through Site



These research activities are done primarily by the design team. We will coordinate with Joby Aviation and its partners as needed to acquire the information necessary to develop a robust understanding of existing and potential development surrounding the subject sites. We will conduct a site analysis to assess factors that will affect proposed uses of each.

It will be important to get input from the Joby Aviaiton team about the vision for your vertiport strategy, including the values/ features that identify and differentiate it from competitors (connectivity with other transportation options, passenger flow, unique parking integration, mix of uses, biophilic influences, etc.).



The Discovery phase culminates in the development of a planning document that captures all of the background data, site analysis and potential land use diagrams, models, sketches, electronic files, and notes on the personal impressions offered during the Discovery process.

REQUIRED INFORMATION (CONTINUED)

3. Describe any ideas regarding materials, construction methods, or other options that are both sustainable and cost-effective that the Proposer would consider implementing at vertiports.

BOKA Powell has explored a number of innovative means of generating energy within the vertiport structure, including photovoltaic roofing and pavement, kinetic flooring, microturbines within sun shading devices, and turbines located below the FATO areas to recapture energy from rotor wash. Each of these concepts has been tested in principle in other applications but we see each of these combining to create a significant sustainable energy production capability within the vertiport itself.

4. Describe the Proposer's experience providing the following types of on-call professional services for airports and heliports, along with examples of such work:

BOKA Powell routinely provides many of the services listed below in the ordinary course of business. For specialty services such as engineering and cost estimating, we rely on skilled partners. Environmental and Surveying are the exclusive responsibility of the owner/client.

Service Provided	Responsible Party
Planning	BOKA Powell
Architecture	BOKA Powell
Engineering (all disciplines)	Licensed engineers under the direction of BOKA Powell
Environmental	Not provided by BOKA Powell. Owner/Client is responsible for ensuring developability.
Surveying	Not provided by BOKA Powell. Owner/Client is responsible for securing site surveys
Permitting	This is typically handled by the project General Contractor, however BOKA Powell can assist as necessary
Cost Estimating	BOKA Powell would engage a Cost Estimator or General Contractor to secure any pre-construction cost estimation.

5. Describe the Proposer's experience and methodology for staffing on-call or task order contracts and your proposed approach for this particular RFP. Indicate which services, if any, will be performed by your firm directly, and which would be subcontracted.

For on-call services, BOKA Powell maintains the same team to maintain continuity with our clients. We have applied this approach on accounts with Southwest Airlines, United Airlines, CoreLogic, and Mercedes-Benz. We anticipate all site investigation services will be done by BOKA Powell, utilizing available information for each site from the local AHJ. We anticipate subcontracting engineering services, including structural, MEP, and civil engineering to qualified third-parties. For all sites, we request Joby Aviation engage environmental, civil, and geotechnical investigation.

6. Describe your approach to ensure an adequate and timely response to Joby's on-call needs, including accessibility, communication, and site visits.

We have assembled a team of experienced architectural staff for work with Joby Aviation. The engineering scope and other consultant work, will be provided by qualified firms under the direction of BOKA Powell. Strong relationships based on trust and open communication are invaluable, and we pledge to maintain the key professional staff presented in this package throughout the life of our agreement with Joby Aviation. Maintaining continuity fosters confidence in the process and certainty of outcome, especially when working in and around mission-critical areas. Keeping the same team together who understand UAM and know Joby Aviation's goals and operational requirements will speed initial engagement and subsequent execution of design work.

The team proposed includes firm leadership and experienced project designers who are intimately familiar with architecture to support UAM/eVTOL aircraft facilities. Upon award, this team will engage with Joby Aviation and be available to conduct multiple concurrent site studies to support your investigation of locations in the target launch cities.

REQUIRED INFORMATION (CONTINUED)

7. Staffing:

a. Identify the firm's primary Point of Contact (POC).

Primary Point of Contact	
Primary Contact	John E. Orfield, RA, LEED AP 8070 Park Lane, Suite 300 Dallas, Texas 75231 Tel 972.701.9000 Cell 214.289.0078 Email jorfield@bokapowell.com

b. List each member of the team you intend to assign to this RFP And include at least the following for each listed individual:

(a) area(s) of specialization
(b) title or position
(c) types of services that could be performed
(d) licenses/registrations held
(e) primary geographic location

John E. Orfield
RA, LEED AP
Partner
Dallas, Texas

SPECIALIZATION
Architecture/Design
Registered Architect, State of Texas No. 11164

R. Andrew Bennett
AIA, NCARB
Partner
Dallas, Texas

SPECIALIZATION
Architecture/Design
Architect, State of Texas No. 18129
Architect, State of Colorado
Architect, State of Hawaii No. RA-8383

Marianne Scheer
International RA
Project Designer
Dallas, Texas

SPECIALIZATION
Architecture/Design

Olivia Freasier
RA
Project Designer
Dallas, Texas

SPECIALIZATION
Architecture/Design

8. Provide at least three (3) client references for whom the Proposers have performed similar work to that requested in this RFP. For each client, describe the projects, dates, and services performed, and provide the name, address, and telephone number for a person at the client's firm familiar with such work.

The following references represent clients with which we work with on an on-call basis governed by Master Services Agreements:

Southwest Airlines	Hillwood, A Perot Company	CoreLogic
Mr. Robert Dorsey Director of Facilities/HDQ 469.360.4881 robert.dorsey@wnco.com	Mr. Steven Aldrich Senior Vice President 817.224.6000 steve.aldrich@hillwood.com	Mr. Matthew Johnson Sr Ldr, Facilities Management 817.699.2585 matjohnson@corelogic.com

REQUIRED INFORMATION (CONTINUED)

9. Indicate if the Proposers are, have been, and/or have plans of working with/for other eVTOL manufacturers. If so, indicate how your firm will ensure there is no sharing of Joby IP, data, and/or information with any other firm, especially competitors.

BOKA Powell has been approached by other eVTOL interests, however we are not currently working with any other firms. As architects, it is not unusual to have clients with competiting interests. Maintaining the integrity of each project and ensuring the safety and security of sensitive development details is part of our day-to-day operating procedures. Our primary focus is to make sure that projects are staffed independently, and to limit shared services between competitive stakeholders. In these situations, project information is handled in a manner that is similar to the treatment of information governed by disclosure restrictions.

10. How does the Proposer identify and manage conflicts of interest? Are there any potential conflict of interest issues posed by your firm's performance on behalf of Joby Aviation?

BOKA Powell follows the guidance of the American Institute of Architects in regard to conflicts of interests. In the event an architect faces a conflict of interest, the AIA instructs that architects should immediately disclose the information to the client. Architects should not act or continue to act unless the client specifically requests the architect to continue work despite the conflict.

Actions	Claims
Within the last five (5) years, has your firm, or a partner or employee in your firm, been involved in litigation or other legal disputes relating to the provision of professional services?	No
In the past five (5) years, have any clients terminated their working relationship with the Proposer?	No
Within the last five (5) years, has your firm, or a partner or employee in your firm, been involved in litigation or other legal disputes relating to the provision of professional services?	No
In the past five (5) years, have any clients terminated their working relationship with the Proposer?	No

PAYMENT TERMS

[redacted]

UBER ELEVATE
2023 URBAN MOBILITY HUB CONCEPTS

Dallas, Texas & Frisco, Texas

CLIENT
Uber Technologies

SERVICES PROVIDED
Architectural Design
Interior Design

PROJECT SIZE
150,000 SF

In anticipation of Uber's rollout of electric Vertical Take-Off and Landing (eVTOL) air taxis within the next few years, the transportation firm asked architects to envision two settings for "Uber Skyport Mobility Hubs" for the near future. We first focused on retrofitting an existing parking structure within the urban core, and second, a suburban location that would serve as a mixed-use development with a transit hub, retail, and other uses. Both schemes link ground with air, providing recharge/service fleets of Uber ground vehicles (self-driving cars in the future), JUMP bikes and scooters (also part of the Uber network), as well as operations for Uber Eats ground couriers. BOKA Powell selected two locations in North Texas: Downtown Dallas and Frisco. The Downtown Dallas location, near Victory Park, is envisioned as a retrofitted parking garage where the Uber Air components (arrival, passenger holding spaces, and take-off and landing areas) are efficiently added to the existing structure. Frisco was selected because of the greater availability of land area in addition to catering to real life-needs for people who live in suburbs and commute downtown. The suburban site explored aspirational goals of having the Skyport as a nucleus to an "Uber Village," with energetic retail at each corner, and an Uber Experience Center where users can learn about the technology.

UBER ELEVATE MEGASKYPORT CONCEPT

Dallas, Texas

CLIENT
Uber Technologies

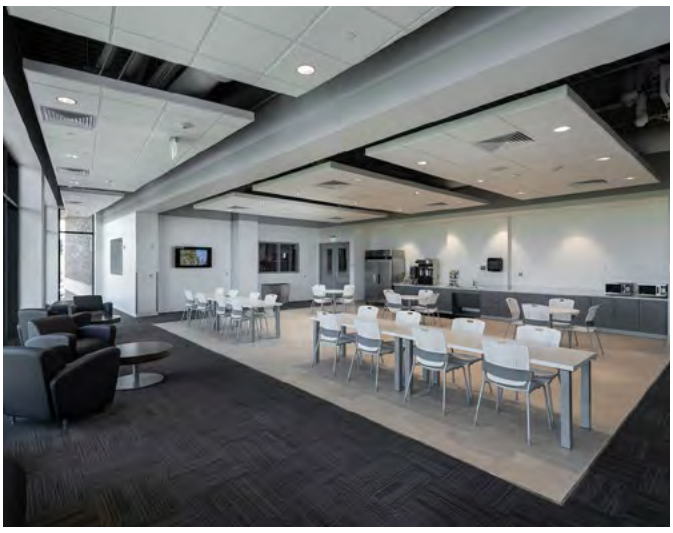
SERVICES PROVIDED
Architectural Design
Interior Design

PROJECT SIZE
150,000 SF

As part of the Uber Elevate Summit 2018 in Los Angeles, BOKA Powell presents “Skyport,” a vision for an urban airport structure supporting Uber’s upcoming electric VTOL (vertical take-off and landing) aircraft network. This critical piece of infrastructure is the next step in bringing “flying cars” to the public, spurred by advancements in VTOL aircraft design and Uber’s plans for “on-demand aviation” to connect to its ground transportation system. “Skyport” takes inspiration from the dynamics of flight, connecting Uber car passengers to Uber’s VTOL network through a vertically-oriented, open-air structure. BOKA Powell’s design can accommodate 1,000 vehicle take-offs and 1,000 vehicle landings per hour (some 2,000 to 4,000 passengers per hour). The structure’s operation is flexible, even allowing for a reversal of vehicle movement to accommodate changes in prevailing wind directions. Skyport takes passengers from curb to cockpit, or vice-versa, in average of less than 3 minutes. Sustainable innovations include micro-turbines integrated into the structure’s skin, turbine-powered regeneration cells at each take-off and landing pad, “living” vegetated walls throughout, and a photovoltaic-clad sun shade covering the building.

UNITED AIRLINES
FLIGHT TRAINING CENTER EXPANSION

Denver, Colorado



OWNER
United Airlines

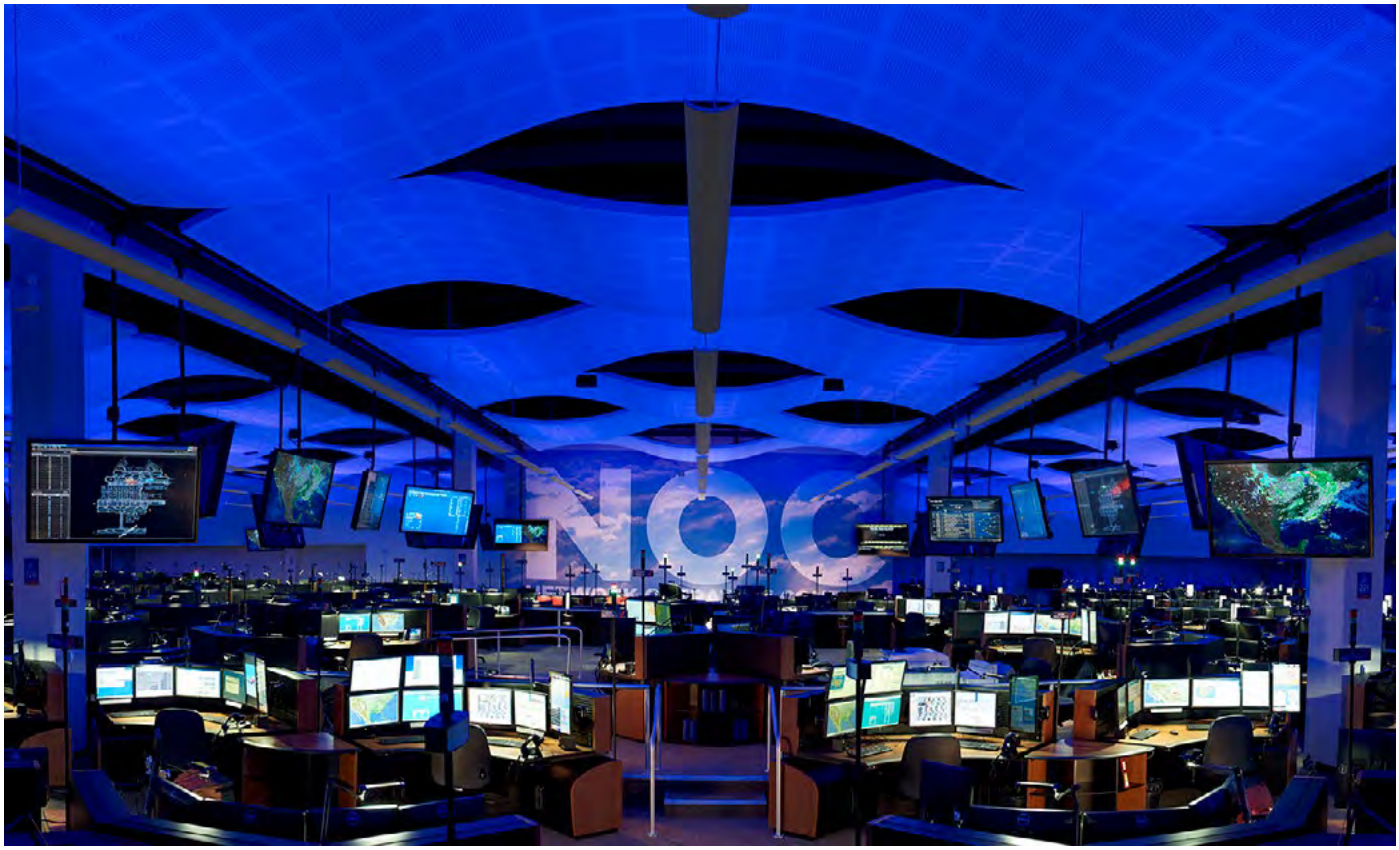
SERVICES PROVIDED
Architectural Design
Interior Design

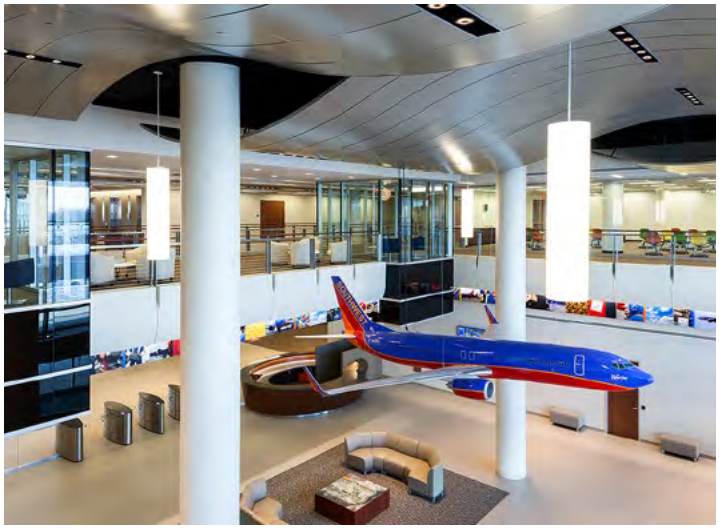
PROJECT SIZE
90,000 SF

United Airlines is consolidating all pilot training operations into its flight training center, located at the former Stapleton International Airport site east of downtown Denver. To support the airline's growth and to provide training facilities for new aircraft models entering the fleet, United Airlines BOKA Powell to design a new facility, Building G, which adds eight flight simulator bays and four FTD simulators. The expansion also includes support spaces for simulator operation and flight crew instruction, including computer rooms, briefing rooms, classrooms, instructor and pilot amenities, simulator technician work areas, and storage. Building G was designed to fit the architectural style and proportionality of the existing modernist campus. Inside, spaces cater to pilots and instructors, emphasizing comfort and utility. Fundamentally, the building is designed to support and protect the vital training equipment needed to keep United's pilots airworthy. The simulator bays on either side of the primary building mass are open to all three levels, showcasing the two-story-tall, full-motion training devices. Exterior glazing was deliberately limited in these spaces to minimize the impact of severe weather or man-caused disasters outside the building. Pilot briefing rooms are also located on the second floor, immediately adjacent to each simulator, for pre-flight and debrief discussions. Computer stations at each simulator bay allow pilots to check in and check out of simulator sessions.

SOUTHWEST AIRLINES
NETWORK OPERATIONS CONTROL

Dallas, Texas





OWNER
Southwest Airlines

SERVICES PROVIDED
Architectural Design
Interior Design

PROJECT SIZE
97,500 SF

Southwest's blast-resistant Network Operations Control (NOC) is the nerve center of the headquarters campus. The facility supports the carrier's flight operations management, scheduling, dispatch, and maintenance for its fleet of more than 730 aircraft serving 101 destinations and over 4,000 departures daily. The Headquarters Emergency Command Center (HECC) provides communications and logistical support during emergency operations. Heightened security measures and the hardening of structural and building systems, including redundant electrical and HVAC, will allow Southwest to maintain uninterrupted flight operations during a wide range of natural disasters and man-caused catastrophes. The striking blue glow of the NOC was designed to create a calming environment and reduce eye strain. The NOC achieved LEED Silver certification.


BOKAPowell