BLACK & VEATCH

Military Aviation Services

Providing resilient, sustainable and integrated solutions to our nation's mission-critical facilities, infrastructure and programs worldwide.

At Black & Veatch, we know that all flightline operations are essential to military missions at air bases around the world. We have provided military aviation planning, programming, design, construction and consulting services at more than 100 airports and air bases worldwide for beddowns, airfields, support facilities, taxiways, runways and parking aprons, including hardstands, pavements and airfield lighting. Our in-house professionals have extensive experience providing resilient and sustainable military aviation solutions to government clients worldwide.

Aviation Services

- Airfield Master Planning
- Flight Line Area Development Planning
- Airfield Pavement Design and Inspections
- Beddown Planning, Programming and CMS
- Munitions Planning and Facility Design
- Airfield Lighting
- Aircraft Support Systems
- Utility Evaluations
- Vehicular Traffic Studies
- Air Installations Compatible Use Zones (AICUZ) Planning

Project Types

- Runways, Taxiways, Aprons and Hardstands
- Hangars and Maintenance Facilities
- Aircraft Shelters and Sunshades
- Squadron Operations Facilities
- Firing Ranges
- Training and Test Facilities
- Fuel Systems
- Administrative Facilities

100+
years supporting military aviation programs

100+
bases where we've worked for the military

11,000+
global Black & Veatch professionals

Relevant Project Experience:

Airfield Planning and Programming

Eielson Air Force Base KC-135 Redistribution Programming, AK

Black & Veatch completed 13 Planning Charrette Reports (PCRs) in support of the KC-135 Redistribution to Eielson Air Force Base. Reports included planning and programming for new construction, renovation, and/or additions to a Rescue Alert Hangar, Fuel Cell Hangar, Aviation Fuel Issue/Receipt Tank, Squadron Operations, Aircraft Ground Equipment (AGE) Storage, as well as munitions and administration facilities. (USACE Alaska)

FY21 USAFE Polish Provided Infrastructure (PPI) Planning & Programming Support

Black & Veatch supported USAFE-AFAFRICA with master planning and programming services for FY21 USAFE PPI Planning & Programming. PPI is a secure, flexible portfolio of resilient, enduring facilities advancing compatible missions with a focus on Remotely Piloted Aircraft (RPA) and cargo operations. Facilities included airfield infrastructure, munitions storage, headquarters, maintenance, operations, and life support facilities. Black & Veatch worked with U.S. and Polish stakeholders to develop a Real Property Vision Plan and concept plan development for 36 distinct facility types at six locations across Poland, and two Area Development Plans (ADP), Mission Requirements Analysis (RA), and cost estimates at Łask AB and Wrocław Airport. (USACE Europe)

Master Planning and Area Development Plan (ADP), Camp Bondsteel, Kosovo

Black & Veatch completed an installation-wide ADP for Camp Bondsteel, Kosovo. This project demonstrated experience to prepare a Vision Plan, large and complex ADP/LRDP with airfield infrastructure and explosives/munitions planning while working closely with U.S. and HN personnel. The scope included a planned consolidation of helicopter pads, a new rotary wing hangar, and new apron. Technical evaluations included on-site electrical power generation and distribution, explosives storage facility relocation requirements, rotary wing airfield requirements, resiliency improvements, telecom requirements, facility, land use, and civil/structural evaluations including water and wastewater improvements. The ADP included a summary of the planning charrette, analysis and requirements, alternatives analysis, regulating plan, illustrative plans, a preliminary project priority list, execution plan, and parametric cost estimates.

Base Comprehensive Planning, Tyndall Air Force Base, FL

Black & Veatch has completed planning work at Tyndall since 2000. The Tyndall "T-1" ADP provided a vision for unifying Tyndall AFB into one cohesive training campus by effectively joining the support side of the base to the operational flightline with a proposed overpass. The Flightline ADP provided the plan for the facilities required to support the transition from F-15 to F/A-22 aircraft. The plan built upon the existing facilities and revised the aircraft parking plan to better utilize limited available

ramp space, with expansion to the east. Forty-four new projects were included in this plan as well as a four-phase development plan to achieve this monumental growth.

Design Charrette and DD Form 1391 Preparation, Hohenfels, Germany,
Black & Veatch validated a rotary wing aircraft hangar to be sited near the existing airfield. Siting constraints included the footprint of the existing outdated aircraft hangar and aircraft approach and landing zones. The project developed a design-build RFP package utilizing a standard design from a USACE Center of Excellence which was adapted to European usage. We modified facility floor plans to meet installation needs and developed site plans to integrate the projects with their surroundings. We based the site plans on existing maps and GIS data and proposed site changes. We created site sketches of the buildings along with sub-area development plans that showed the routing of infrastructure serving the projects. We also identified utility supply points along with other required infrastructure improvements. Black & Veatch developed a comprehensive cost estimate for the project as well as the DD Form 1391. (USACE Europe)

Airfield Pavements and Horizontal Infrastructure

Design-Build RFPs for Multiple Airfield Pavement Projects, Nellis AFB, NV (Base IDIQ)

Live Ordinance Loading Area (LOLA)
Black & Veatch developed a Design-Build RFP package for an airfield ramp extension and hardstand with revetments and related aircraft support systems, and new crew operations facility for the F-35A The RFP included drawings, technical specifications, design analyses, and cost estimate. Black & Veatch performed geotechnical investigations and addressed soil conditions to provide designs for flexible and rigid pavements.

Construct Warm-up Apron Taxiway A
Black & Veatch prepared 65% design documents for a warm-up / holding pad attached to the north-side of Taxiway A between two parallel runways. This pad design accommodates four design aircraft at a 45-degree angle to the taxiway meeting all clearance / parking requirements as specified in the UFC 3-260-01. The concrete pavement section and asphalt shoulders were designed in accordance with UFC 3-260-02 and markings and striping design was per UFC 3-260-04. Erosion and sedimentation control Best Management Practices were designed in compliance with state and National Pollutant Discharge Elimination System requirements to reduce environmental impacts from existing airfield operations.

Taxiways D & E Arm/Disarm Pads
Black & Veatch prepared a 35% conceptual level design package to construct two separate arm/disarm pads. The project included demolition of over 5,500 SY of asphalt shoulder. Taxiway D arm/disarm pad was a 2,200 SY expansion of the existing pad to park an additional two aircraft, providing a total of four (4) design aircraft capacity to the apron. The Taxiway E arm/disarm pad was a new 14,300 SY concrete pad designed to accommodate a total of six aircraft with over 28,900 SY of new asphalt shoulder. Design also included geotechnical analysis of the subsurface soil, new markings and striping for the apron and taxiway, new taxiway edge lights and grounding system and conceptual grading to channel runoff to an existing drop inlet.

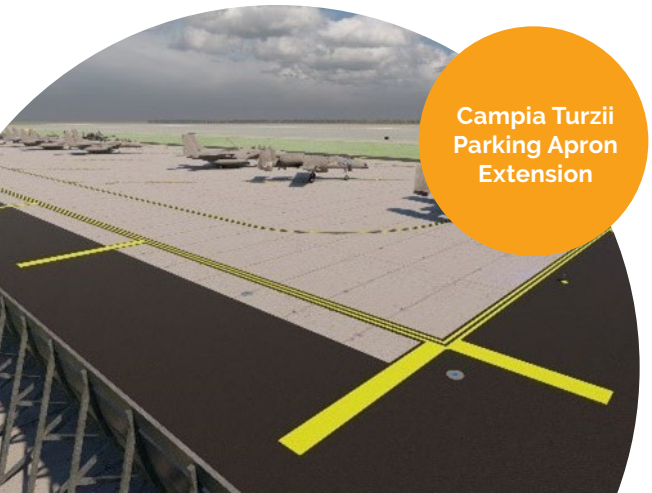
Keflavik Airfield Repairs and Upgrades, Keflavik, Iceland
Black & Veatch was Designer of Record for the General Construction Contractor, Iceland Prime Contractor, at Keflavik International Airport for the FY21 Airfield Repairs and Upgrade project. This project consisted of repair and upgrade to seven taxiways, two access aprons, a dangerous cargo apron, complete replacement of taxiway and apron edge lighting and visual navigation systems, and installation


Nellis AFB Live Ordinance Loading Area (LOLA)

of a new trench drainage system with oil water separator to meet local environmental regulations. Black & Veatch provided 100% overall design project management, planning, code review, engineering, cost estimating, preparation of specifications, design quality control, and construction support post design. Black & Veatch ensured design deliverables were in accordance with Icelandic Coast Guard, and Keflavik International Airport regulations, as well as UFC 3-260-01, Airfield and Heliport Planning and Design, UFC 3-260-02, Pavement Design for Airfields, and ICAO criteria. Black & Veatch managed, coordinated, and reviewed subcontractor deliverables including airfield pavement evaluation, site survey, geotechnical survey, and environmental assessment. Completed constructability reviews during each phase of the design process for a seamless transition to construction.

100% Design, Kecskemét Airbase; Kecskemét, Hungary

Black & Veatch provided full design and construction management services for several primary airfield elements in support of the FY18 and FY20 European Deterrence Initiative (EDI) programs. The project scope included runway repair, connecting taxiway reconstruction, safety area improvements and relocation of aircraft arresting systems. Black & Veatch prepared all design documents for three distinct sub-projects: Parallel taxiway that can double as an emergency runway, four ladder runway connector taxiways, and two airfield lighting vaults; aircraft parking apron, blast deflectors, dangerous cargo pad, marshalling area, access road, airfield lighting, mast lighting, and storm drainage, and site infrastructure improvements; and Parking apron expansion. Conducted an airfield pavement evaluation to diagnose appropriate repair strategy, including replacement of all joint filling, adding paved shoulders, new runway markings, and additional airfield lighting and NAVAIDS to reclassify the runway as CAT III/B. Design complied with applicable DoD, Air Force, NATO, International Civil Aviation Organization (ICAO) and Host Nation Technical Requirements. (USACE Europe)



Aircraft Parking Apron at Campia Turzii Air Base, Romania

Black & Veatch provided an Area Development Plan, requirements development and facility siting, programming, and preliminary design in support of the North Atlantic Treaty Organization (NATO) mission at Câmpia Turzii Air Base in Romania. The team provided all necessary services to prepare a complete and biddable Design-Build RFP package. The parking apron extends a recently constructed parking apron completed by the Host Nation and connected a future aircraft maintenance hangar. The medium-load Portland cement concrete (PCC) parking apron extension is over 150,000 square feet and accommodates twelve (12) Tactical Fighter Aircraft and includes asphalt shoulders, a drainage layer, drainage system, edge lighting, jet blast deflectors, flood lighting, pavement markings, and grading. Design was executed in accordance with host-nation agreements for the European Deterrence Initiative (EDI) and NATO Standard Agreements.

Hazard Cargo Pad, Łask Air Base, Poland

Black & Veatch provided the Design-Bid-Build Package for the construction of a hazardous cargo pad, live ordnance loading area, munitions holding pad, arm / de-arm pad, and a new electrical substation consolidating two existing substations. Scope included design of barrier arresting cables (BAK)/airport weather operations station (AWOS)/ temperature and humidity sensor (TEMP) relocation and supporting infrastructure. Tasks included value engineering study, site investigations, permitting, Host Nation (HN) support, and explosive safety plan for local HN Department of Defense (DoD) Explosives Safety Board (DDESB) approval.

Tactical Parking Apron and Taxiway, Nellis AFB, NV

Black & Veatch provided the design for a 60,000 SY airfield pavement and aircraft parking ramp at Nellis AFB. This project was a $12M MILCON tactical aircraft parking apron and taxiway system for the USAF Fighter Weapons School and other organizations. The project includes a 19,140 SY addition. Actual siting planning work involves UFC 3-260-01 (airfield Planning and Design) and installation Master Plan. The project design includes an 18-inch-thick parking apron with base and sub-base. Aircraft tie-downs, grounding, and ramp and airfield lighting were also included. (USACE Sacramento)

Hangars and Flightline Support Facilities

PCR Modify Hangars 1 & 2 for HH-139 Beddown, Joint Base Andrews, MD

Black & Veatch completed two Planning Charrette Reports (PCR) in support of the MH-139 Beddown to replace the UH-1N helicopters at Joint Base Andrews. The first project is intended to repair/renovate infrastructure and major components of a 77,807 square foot hangar to support 9 MH-139 helicopters. The second project is intended to repair/renovate infrastructure and major components of the 95,003 SF facility to support five MH-139 helicopters. The reports identified scope-impacting criteria for the Facility Sustainment, Restoration, and Modernization (FSRM) necessary to accommodate the new mission within two existing hangars, identifying all repair work including modifications required for the HVAC, electrical, communications, fire protection systems as well as life safety and code compliance issues. Construction sequencing was considered to provide “swing space” for continued operations. (AFCEC AE Next)

Design Repair Air Traffic Control Tower (ATCT) at Joint Base McGuire-Dix-Lakehurst (JBMDL), NJ

Black & Veatch provided Title I design services for the renovation of JBMDL Westfield ATCT. Black & Veatch provided field investigative services, analysis, recommendations, cost estimating, building system evaluation, and analysis and concept design for alternative stairs or ladders to access the Tower Cab. The concept plan considered all mechanical, electrical, plumbing, fire protection, and structural systems with recommendations and assumptions for renovation to include sustainable design options. (AFCEC AE Next)

C-5 Fuel Cell Maintenance Hangar, Wright-Patterson AFB, OH

Black & Veatch developed the RFP Technical Documents for the D/B contract of a new $10.5 million 35,142 SF tail-out, high bay fuel cell maintenance hangar. It includes two 14-foot-tall adjacent spaces for auxiliary functions, which include administrative and supervisory functions, a tool room, and space to house mechanical, electrical, and fire protection equipment. The work included extension of the concrete apron from the taxiway to the new hangar. (USACE Louisville)

Squadron Operations and Hangar at Câmpia Turzii Air Base, Romania

Develop two military D/B RFPs for the USACE Europe District and the US Air Force. Additional key stakeholders included USAFE, AFCEC, Romanian Air Force, and the Romania Ministry of Defense (MOD). One RFP was for a Squadron Operations Facility and one for a One Bay Maintenance Hangar at the Câmpia Turzii Air Base in Cluj County, Romania. Design work included new construction, site infrastructure, utility systems, fire protection, life safety, ATFP, and a secure area. The D/B RFP was required to use conventional design and construction methods to accommodate F-15 Eagle and A-10 Warthog weapons systems.

POL Complex & Fighter Ramp Fuel at Al Dhafra Air Base, United Arab Emirates

Prepared a combined Validation and Design Charrette Report for the petroleum, oil, and lubricant (POL) Complex and Fighter Ramp Operating Fuel Storage Area at ADAB which supports various installations throughout the CENTCOM Area of Responsibility (AOR).

POL Capacity Increase in Slovakia

Black & Veatch performed A-E services required to prepare the design-build RFP for the design and construction of a jet fuel storage facility including two 2,500 m3 (2,500,00 L) cut-and-cover fuel storage tanks, two operational jet fuel truck fill stands, one jet fuel operations and filter building, parking for six R-11 truck

refuelers and circulation roadways, an operation jet fuel pipeline from an existing railhead off-road point, and all applicable support facilities.

POL Capacity Increase in Hungary

Black & Veatch performed a Value Engineering Study and developed a Design/Build RFP under the European Reassurance Initiative (ERI) at Kecskemet Air Base in Hungary. Black & Veatch provided A-E services required to prepare the D/B RFP for the design and construction of an operational jet fuel storage facility. The increase in Petroleum, Oils and Lubricants (POL) storage capacity will accommodate NATO equivalent Tactical Fighter Aircraft and Strategic Transport Aircraft and allow for simultaneous refueling. The design included installation of 2 cut-and-cover fuel tanks (2,500,00 L), a POL fuel operation building, exterior lighting, pavements, site development, utilities and connections, lightning protection, storm drainage, landscaping, and signage. (USACE Europe

Airfield Crash Rescue/Fire Station, Incirlik AFB, Adana, Turkey

Black & Veatch performed multidisciplinary AE services for the USACE Europe District and The U.S. Engineer Group (TUSEG) at Incirlik AB, in accordance with USACE criteria for the Airfield Crash Rescue/Fire Station Facility. The project included the design of an 11-bay facility to replace the outdated and inefficient fire station. The facility houses equipment and first responders for both structure and airfield events. Each vehicle bay was designed to house the largest ARFF vehicle in the Air Force inventory, the Oshkosh Striker. (USACE Europe)

Heliport Control Tower and Fire Station A/E Design Services Washington Headquarters Services

Black & Veatch was retained to find the best site for the Pentagon Heliport Control Tower and Fire Station on Pentagon Reservations and to develop pertinent documents to best serve the existing (RDF roof-based) Helipad operations while fully satisfying the goals and objectives of DOD Unified Facilities Criteria (UFC 2-100-01). Black & Veatch developed the Program Requirements Document for a new Heliport Control Tower and Fire Station; Selected and analyzed three sites to replace the post-9-11 temporary facilities; and developed a 35% Design plus RFP. The project provides WHS a more robust operation to include 24/7 coverage of both the heliport and Pentagon structures, utilizing the services of in-house staff supplemented by JBMHH and Arlington County.

Simulators, Training, and Operations Facilities

HC-130J Flight Simulator, Joint Base Elmendorf-Richardson, AK

Black & Veatch prepared a Planning Charrette Report for the proposed HC-130J Simulator Facility. The scope included conducting, coordinating, and facilitating a charrette workshop to prepare and update all sections of DD Form 1391 documents. This Planning Charrette Report combines the results of on-site requirement validation efforts with the Defense Department (DD) Form 1391. The Planning Charrette Report provides a planning framework for construction of an HC-130J Flight Simulator Training Facility at Joint Base Elmendorf-Richardson (JBER) near Anchorage, Alaska. The Planning Charrette was completed using a process that included preparation, planning, site visit and charrette workshop, and document completion. The effort involved intensive work sessions with a collaborative, interdisciplinary team of users, stakeholders, subject matter experts, and design specialists brought together to reach consensus on the project program, scope, and cost estimate. (USACE Alaska)

F-16 Flight Simulator Facility, Nellis AFB, NV

Black & Veatch provided planning and design services for a 16,000 SF Flight Simulator Facility at Nellis Air Force Base, Nevada, with a total construction cost of $10.6 million. The Flight Simulator Facility houses the F-16 Mission Training Center (MTC), which is used for mission simulation, continuation, and upgrade training. It allows for the configuration of the four F-16 simulators to provide several types of training simultaneously. The building design includes a secure training zone and a non-secure administrative area. Black & Veatch also provided support construction services for the duration of the construction activities. (USACE Sacramento)

Squadron Facilities and Renovate Simulator Facility 672 & Add/Alter to Survival Equipment Shop, Vance AFB, OK

This project includes a new 10,800 SF facility, plus alterations to the nearby Life Support Building 171, both of which are adjacent to the aircraft parking apron. The new facility accommodates both the IFF Squadron and the Undergraduate Pilot Training. The Simulator Facility renovation involved dividing a large bay which formerly housed a flight simulator into two levels. The project also involved converting a two-story administrative space to accommodate two new Weapons Safety Trainers and a classroom. The Survival Equipment Shop Building 542 design included an addition of 1,268 SF to match the existing masonry facility for new canopy work and storage areas, and storage for the aircraft seats. (USACE Tulsa)

F-16 Aggressor Squadron Operations Facility, Design Charrette, Nellis AFB, NV

Black & Veatch provided full architectural-engineering design plus design during construction services to support the F-16 Aggressor Squad Operations Facility design. The new squadron operation facility and infrastructure modifications supports the beddown of 24 Primary Training Aircraft Inventory F-16 Aggressor aircraft under the 64th Aggressor Squadron and functions independently as a mission planning and support unit. Facilities include a 16,000 SF single story masonry building with steel frame and standing seam roof with fire detection/protection, utilities, site improvements, landscaping, reconfigured road system and parking, and communications support. (USACE Sacramento)

Weapon Storage and Maintenance Facility of the Future, Various AF Bases

Develop a prototype Weapon Storage and Maintenance Facility (WSMF) of the Future for the Air Force Global Strike (AFGSC) bomber mission. The prototype WSMF is being developed through the charrette process; Black & Veatch is currently conducting Planning Charrettes at four CONUS Air Force bases including projects located at FE Warren, Malmstrom and Barksdale, as well as one underway at Ellsworth. This process engages Base personnel, facility users, and the engineers and architects to propose innovative alternatives, develop a cost-effective solution, and validate facility requirements and associated costs. Black & Veatch is actively utilizing past experience to comprehensively incorporate information, design solutions, and programmatic criteria to further develop the WSMF of the Future throughout the holistic process. (USACE Omaha)

B-21 Weapon Generation Facility (WGF), Ellsworth AFB, SD

The Ellsworth B-21 WGF is a “first-of-its-kind” design and required Black & Veatch to develop resilient and innovative design criteria for complex unique AT/FP, mitigate requirements for blast containment by implementation of fire suppressions systems that mitigate a fire hazard, and life safety requirements that allow movement of assets efficiently to storage and maintenance areas while maintaining a secure and safe work environment. The facility enhances operations, safety, and security for the bomber mission resulting in a hybrid consolidated facility accommodating maintenance, storage, security, and support in a secure environment. The design team is evaluating the facility site and local climate to implement appropriate insulation R-values for walls and roof, implement heat traced approaches to the building where appropriate, design gutter and downspout to limit ice accumulation, and inclusion of cold weather concrete construction requirements within specifications. The architectural design includes exterior finishes that tolerate extreme climate fluctuations. (USACE Omaha)

Why Black & Veatch?

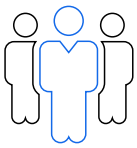
We Deliver

- Complex, sensitive DoD and USAF projects worldwide
- Plans and designs for entire new air bases from the ground up
- Knowledge of the installations and relationships with key stakeholders
- Past experience and project execution to ensure quality designs and cost assurity, delivered on schedule
- Commitment to provide our customers with the experience, discipline, and stewardship they require
- Professionals with no learning curve, in-country offices and local experts worldwide

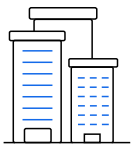
You Receive

- Comprehensive Project Delivery
- Schedule and Budget Certainty
- Reduced Risk
- Mission Assurance
- Best in Class Technical Expertise

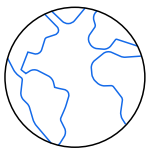
Black & Veatch Today



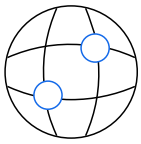
11,000
professionals



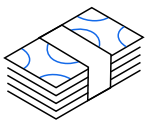
100
offices



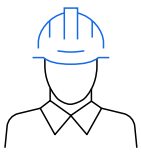
Six
continents



7,000
active projects



$4.0 billion
revenue



Safety performance
0.24 RIR; 0.05 LTIR

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