To Our Prospective Client,

I founded Milhouse Engineering & Construction, Inc. with the goal of building the best engineering company in the country. It was based on the belief that if I hired great people, challenged them to excel, and maintained laser focus on the needs of our clients, success would come; and so it has. Our portfolio of successful projects continues to grow; our family of highly satisfied clients continues to expand, and our staff, now numbering over 150 strong, just gets better and better. One of the things of which I am most proud is our 11th consecutive selection as one of the “101 Best and Brightest Companies to Work For” by The National Association of Business Resources.

As you review this description of our company’s qualifications, please note that I have based our business model on combining the wisdom and experience of senior experts with the energy, vitality, and creativity of young professionals. The resulting powerful project teams have proven they can meet any challenge and produce great projects on schedule and under budget. I am proud of our people, and I know that Milhouse can present a project team that equals or exceeds the capabilities of any team from any competitor, be they new or old, large or small.

We will listen carefully to your needs. We will work tirelessly to see that those needs are fulfilled. We will hold ourselves to the highest standards of integrity and professionalism. We understand the importance of your projects, and we know that we must earn your trust every day.

We look forward to an opportunity to serve you.

Sincerely,

Wilbur C. Milhouse III, P.E.
Milhouse Engineering & Construction, Inc.
President/CEO
About Us

Milhouse is a professional full service engineering and architecture consulting firm with headquarters in downtown Chicago serving public and private sectors. As a multi-disciplinary full-service firm, we offer expertise in Civil, Mechanical, Electrical, Structural, and Construction engineering. To complement our professional engineering capabilities, Milhouse also offers Architectural services.

Milhouse is comprised of a dedicated team of more than 150 talented engineers including 4 LEED-accredited professionals. As an engineering industry leader, the Milhouse team is committed to delivering technical excellence, innovative solutions, and value engineering to foresee and meet client needs.

Industries

Aviation, Facilities, Gas, Power, Transportation, and Water/Wastewater

Recognitions

• 2016 Chicago’s 101 Best & Brightest Companies to Work For, 11 Years in a Row
• 2015 Zweig Group HotFirm Winner
• 2015 ACEC Consultant Exceptional Service Award
• 2015 UIUC Power Moves Business & Entrepreneurship Award
• 2015 March of Dimes Rufus Taylor Award
• 2014 ENR Regional Best Airport/Transit Project
• 2014 March of Dimes Construction Project of The Year
• 2014 ACEC Excellence in Design Award

Certifications

Milhouse is certified with various cities and states as a Minority Business Enterprise (MBE). We are also certified with the U.S. Small Business Administration as a small business concern.

Office Locations

Chicago - HQ
60 E Van Buren Street, Suite 1501
Chicago, IL 60605
312.987.0061

Chicago
1000 E 111th Street, 7th Floor
Chicago, IL 60628
773.264.4855

Indiana
7725 Broadway Avenue, Suite E
Merrillville, IN 46410
219.648.2933

Michigan
2723 South State Street, Suite 150
Ann Arbor, MI 48104
734.794.4747

Maryland
18310 Montgomery Village, Suite 245
Gaithersburg, MD 20879
240.224.7791

Texas
1431 Greenway Drive, Suite 800
Irving, TX 75038
972.815.2337
Professional Services

Civil Engineering
- Site Civil
- Grading & Drainage
- Storm Water Detention Design
- Utilities
- ADA Ramp Design
- GEOTECH Analysis
- Environmental Remediation

Transportation
- Traffic Engineering Studies & Planning
- Roadway Design
- Roadway Drainage
- Utilities & Lighting
- Parking Studies & Parking Lot Design
- Maintenance of Traffic (MOT)

Natural Gas
- Transmission
- Distribution
- Gathering Systems
- Pressure Improvements
- Public Improvements
- Vault Repair/Replacement
- New Business

Mechanical Engineering
- Building HVAC Systems
- Central Plant Systems
- Commissioning & Retro Commissioning
- Renewable Energy
- Sustainable Design
- Condition Assessments & Code Reviews
- Value Engineering Studies
- Fire Suppression
- NFPA Classified Area Designs
- Process Systems
- Building Automation Systems
- Pumping Stations

Electrical Engineering
- Facilities
  - Low Voltage Power and Controls
  - Medium Voltage Power and Controls
  - SCADA and Telemetry
  - Short Circuit, Load Flow, Arc Flash
  - Condition Assessments & Code Reviews
  - Fire and Hazardous Gas Alarm Systems
  - Exterior and Interior Lighting
  - Lightning Protection
- Power
  - Substation Design
  - Protection & Control Design
  - Distribution Systems

Structural Engineering
- Construction Engineering for Contractors
- Bridge Design
  - (Advanced Typical, Highway, Railroad, Moveables)
- Bridge Condition Assessments
- Bridge Inspections
- Retaining Walls
- Substation Structures & Foundations
- SPCC

Construction Engineering
- Pre-Construction
  - Construction Documentation Review
  - Construction Cost Estimating
  - Project Schedule Preparation Program Development
  - Project Development

Post Construction
- Operation and Maintenance
- Manuals/Warranties
- As-Builts & Record Drawings
- Punch List & Close-out
- QA/QC Plan(s)

Architecture
- Preliminary & Schematic Design
- Design Development
- Construction Documentation
- Construction Administration
- Feasibility Analysis
- Physical Assessments
- Program Development
- Value Engineering Studies
- Space Planning
- Remodeling
- Furnishings

State Business Registrations

Clients
- Ameren Corporation
- Atlanta Gas Light Resources
- Chicago Public Schools
- Chicago State University
- City of Chicago
  - Department of Aviation
  - O’Hare Modernization Program
  - Department of Sewers
  - Department of Transportation
  - Department of Water Management
- ComEd
- DC Water
- DePaul University
- DuPage County Department of Public Works
- Federal Emergency Management Agency (FEMA)
- General Services Administration (GSA)
- Illinois Department of Transportation
- Illinois State Toll and Highway Authority
- Metropolitan Water Reclamation District of Greater Chicago (MWRD)
- Milwaukee Metropolitan Sewer District
- Naval Facilities Engineering Command (NAVFAC)
- Navy Pier
- Nicor Gas
- NIPSCO
- Peoples Gas
- Pepco
- Public Building Commission of Chicago
- Rush University
- Scott Airforce Base
- The University of Chicago
- United States Housing Urban Development (HUD)
- University of Illinois at Chicago
- U.S. Cellular Field
- Washington Suburban Sanitary Commission (WSSC)
- WEC Energy

Partners
- AECOM
- Arcadis
- Benesch
- Black & Veatch Corporation
- Bums & McDonnell Engineering, Inc.
- CH2M Hill
- Cotter Consulting, Inc.
- Crawford Murphy & Tilly, Inc.
- Environmental Design International, Inc.
- ESI International
- EXP, Inc.
- JACOBS Engineering, Inc.
- HDR Engineering, Inc.
- HNTB Corporation
- HOH Group
- Parsons Brinckerhoff
- Parsons Corporation
- Solomon Cordwell Buenz (SCB) Architecture
- US Equities
Headquartered in Chicago, Illinois, Milhouse has quickly become a local technical expert in aviation design and continues to expand to additional regions. Milhouse’s aviation expertise includes construction management; electrical engineering; civil and structural design; building information modeling; geographic information systems; and computer aided design and drafting. Our dedicated aviation specialists have an in-depth understanding of technical and regulatory issues, as well as a track record of successful coordination with airport stakeholders. We use this knowledge to help our clients deliver projects that soar.

Milhouse brings a wealth of design expertise, practical experience, and management skills to meet the specialized demands of the aviation industry. Design services provided by Milhouse include: geometry, grading, utilities, and drainage; runway/taxiway lighting; airfield signage; pavement markings; site lighting; structural design; roadway design; light rail; lift stations; electrical and civil engineering services for air traffic control towers; as well as construction phase services.

Our experienced professionals have worked on two major design projects at O’Hare International Airport, as well as several enabling projects for the O’Hare Modernization Program.

Representative project experience includes:

**O’Hare International Airport**
- Runway 9C-27C & Associated Taxiways
- Runway 10C-28C & Associated Taxiways
- Daytona Beach Lift Station
- Taxiway WK
- Fixed Base Operator Relocation & Site Preparation
- FedEx Cargo Facility Relocation
- South Airport Traffic Control Tower
- Runway 9C-27C –Trunk Sewer System E
- Drainage Improvements & Wetlands Removals – Bensenville Ditch East
- East Airfield Lighting Control Vault
- Auxiliary Construction Vehicle Area for Guard Post #1
- Cargo Tunnel Expansion

**Midway International Airport**
- Runway 13C-31C Rehabilitation
- Runway 4L-22R Rehabilitation
- Security Guard Booth Enhancements

**Peoria International Airport**
- Airport Traffic Control Tower

**Gary Chicago International Airport**
- Runway 12-30 Expansion and Railroad Relocation – Program Management

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**Aviation**

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- Runway 4L-22R Rehabilitation
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**Peoria International Airport**
- Airport Traffic Control Tower

**Gary Chicago International Airport**
- Runway 12-30 Expansion and Railroad Relocation – Program Management
Highlighted Projects
Runway 10C-28C & Associated Taxiways
Chicago, Illinois

Milhouse is a partner in the O'Hare Airfield Engineers (OAE) joint venture on the design of Runway 10C-28C and Associated Taxiways at O'Hare International Airport. The project includes a new 10,800-ft. x 200-ft., Group VI runway and associated taxiways, a new airport service road, two new cargo aprons, the extension of the south cargo tunnel under the new runway, and numerous enabling projects. The design and construction of this project involved numerous runway/taxiway bid packages; relocation (temporary and permanent) of a major waterway, railroad, and roadway; relocation of two cargo facilities, and relocation of Lake O'Hare. Runway 10C-28C is O'Hare Airport's first Group VI runway, and its completion allows air traffic to operate primarily in an east-west configuration. As an OAE joint venture partner, Milhouse's scope included all aspects of utility infrastructure associated with the proposed runway, taxiways, and surrounding areas. Utility scope items included review and validation of existing conditions, identification of proposed conflicts, and design of proposed and relocated infrastructure.

Milhouse was responsible for the design of the following items:
• 45,000 linear feet (LF) of ductbanks (common electrical ductbank, ComEd, FAA, and AT&T)
• 3,000 LF of sanitary sewer main
• 8,500 LF of water main
• 2,600 LF of storm sewer
• 5,000 LF of jacked steel casing
• Cathodic protection, utility structures, and equipment associated with this infrastructure, including three above ground backflow preventers in heated enclosures and ComEd equipment.

Milhouse was also involved with Construction Phase Services for this project by maintaining an on-site presence at the client’s office for the majority of the project. Services provided during construction included attending weekly coordination meetings, reviewing contractor shop drawings, and responding to construction requests for information. During the construction phase, Milhouse coordinated extensively with the Chicago Department of Aviation, FAA, and project/airport stakeholders to accommodate the dynamic conditions typically encountered at O'Hare Airport. Additionally, during two of the bid packages, significant coordination was required with the O'Hare Fuel Committee regarding its concurrent project to relocate the FedEx cargo apron fuel line.

Client
Chicago Department of Aviation

Prime
O'Hare Airfield Engineers (JV)

Role
Civil Engineering Services
Milhouse provided professional engineering design services for the new Runway 9C-27C and Associated Taxiways for Chicago O’Hare International Airport. Runway 9C-27C is an integral part of the O’Hare Modernization Program’s initiative to reduce traffic congestion at O’Hare International Airport.

Runway 9C-27C is a $400M, 11,245-ft.-long x 200-ft.-wide carrier runway, and is designed to meet FAA Airplane Design Group VI standards. Design also includes full-length parallel taxiways adjacent to RW 9C-27C, utility design and coordination, building demolition, airfield lighting and signage, runway/taxiway horizontal and vertical geometry, runway and taxiway pavement design, NAVAID design, grading improvements, construction phasing, and construction cost estimating, local storm drainage and major collector system improvements, as well as sustainable design.

Milhouse was responsible for design components, including all utility routings and infrastructure associated with the runway (common utility ductbank, Commonwealth Edison ductbank, water main, storm, sanitary, natural gas, and telephone); airfield geometry; grading and drainage; airfield lighting and signage; construction phasing; and sustainable design. Utility design included approximately 10,000 linear feet of water main, and involved the development of plan and profile sheets and the design of hydrant laterals, service lateral to facilities, cathodic protection systems, hot taps, and hot boxes.
Milhouse served as the prime consultant providing design and project management services for the Rehabilitation of Taxiway WQ (charted as Taxiway F1), part of the Completion Phase of the Chicago Department of Aviation’s O’Hare Modernization Program. Taxiway WQ is an enabling project for the future Runway 9C-27C and was commissioned as Taxiway F1 in September 2012 with a total construction cost of $10M.

The project included the full rehabilitation of a 2,500 linear foot (LF) abandoned taxiway in order to meet FAA Design Criteria for Airplane Design Group V. The pavement design consisted of a combination of full depth PCC reconstruction and a bituminous pavement overlay of an existing portion within an adjacent runway safety area. The project also included replacing existing turf shoulders with 35-ft-wide paved bituminous shoulders, installing energy efficient LED taxiway edge lights, providing drainage modifications, improving grading, updating existing signage, installing new paving markings, and protecting nearby utility infrastructure.

Milhouse was responsible for overall project management and provided design services for airfield electrical, pavement, grading/drainage, utility design, and construction phasing. In addition, Milhouse led a team of consultants who provided paving, drainage, and geotechnical support.

This project was completed on schedule.
Milhouse assisted with providing engineering design services for Taxiway WK, located at O’Hare International Airport’s North Airfield. Taxiway WK connects the west end of Runway 9C-27C on the south to the west end extension of Runway 9L-27R to the north. The project included the design of the 4,064-ft.-long x 75-ft.-wide air carrier high speed Taxiway WK as an Airport Design Group V category taxiway in accordance with FAA Advisory Circular 150/5300-13.

Mount Prospect Road serves as the primary access road to the northwest maintenance hangar area via Guard Post 1, and connects Touhy Avenue to Hangar Road on the south. The existing alignment was relocated to accommodate the construction of Taxiway WK. The improvements included the widening of Hangar Road and additional improvements to the existing pavement due to the relocation of Mount Prospect Road.

Milhouse was responsible for the design of utilities to support the site. The work included the relocation of utilities located within the alignment of Taxiway WK and Mount Prospect Road. Utilities included electrical power, communication, natural gas, potable/domestic water, sanitary sewer, and storm drainage. Milhouse also provided the roadway design for the connection of the relocated Mount Prospect Road to the existing Hangar Road.

Additionally, Milhouse served as the LEED accredited professional for sustainable design project components in accordance with the Chicago Department of Aviation’s Sustainable Airport Manual.
Milhouse served as a subconsultant to exp US Services, Inc. on the design of the South Airport Traffic Control Tower at O’Hare International Airport. The project includes a 12,000-sq.-ft. base building and 219-ft.-tall tower with a 565 sq. ft. cab, which was designed to achieve LEED GOLD status. The completion of this tower allowed operations to commence on the Chicago Department of Aviation’s (CDA’s) Runway 10R-28L. The project required significant coordination with airport stakeholders, as well as local and national FAA personnel.

Milhouse was responsible for all electrical design associated with the cab and base building. This included a design based on FAA guidelines for a typical radial critical power distribution system. The electrical scope also involved design of the power systems, including normal, essential, and critical power; power and electronic grounding systems; lighting systems; the electrical power management system; fire detection and alarm systems; and lightning protection.

In addition, Milhouse provided site utility engineering services to support the operation of the airport traffic control tower. Site utility design included sanitary sewer, natural gas, and domestic water main, as well as fire protection main with an above ground backflow preventer in a heated enclosure. A new ComEd power feed was designed for the control tower and an existing ComEd power feed was relocated to serve the heated enclosure. Communication ductbanks (AT&T and CDA/FAA) were designed to support the communication requirements for the control tower and heated enclosure. Milhouse also determined the cable routing for the airfield lighting control system in the new control tower and designed the site lighting.

Contributing to the project’s goal to achieve LEED GOLD status, Milhouse was responsible for the following LEED items:

- **SS Credit 8 Light Pollution Reduction**
- **IEQ 6.1 Controllability of Lighting Systems**
- **IEQ 8.1 Day lighting and views**
- **EAp2 Minimum Energy Performance a prerequisite**
Milhouse served as a subconsultant to exp US Services, Inc. on the Chicago Department of Aviation's Runway 13C-31C rehabilitation project at Midway International Airport. The rehabilitation of Runway 13C-31C included pavement reconstruction and bituminous overlay on one of Midway's major runways. The project included reconstructing the runway keel section and overlaying the entire runway surface with six to nine inches of bituminous concrete. The project also included the widening of Taxiway B in order to meet FAA standards for a high speed exit taxiway; replacing the Engineered Materials Arrestor Systems (EMAS) at Runways 13C, 31C, 4R, and 22L; and improving drainage and sub-drainage.

In addition, Milhouse was responsible for the installation of a new common electrical ductbank that allows for the consolidation of existing airfield lighting circuits. The project also included installing new centerline lighting for Runway 13C-31C, Taxiway B, and Taxiway; as well as replacing existing runway lighting fixtures. Due to the importance of the runway, the construction phasing was designed to ensure that all work was performed at night, with the runway and associated taxiways reopened to air traffic in the morning. Three (3) 56-hour closures were implemented to facilitate keel pavement replacement, as well as placement of the final runway surface course.

Milhouse developed all construction phasing, pavement markings, restoration, and erosion control. Additionally, Milhouse provided design services for the common electrical ductbank and for existing guidance signs and foundations. Electrical work included providing overall technical guidance and engineering support for airfield lighting, circuiting, weather sensors, and airfield lighting control vault modifications.
Milhouse served as a subconsultant to Jacobs Engineering Group on the Chicago Department of Aviation’s Runway 4L-22R rehabilitation project at Midway International Airport.

The rehabilitation of Runway 4L-22R featured pavement reconstruction and bituminous overlay on one of Midway Airport’s major runways. The project included overlaying the entire runway surface with three inches of bituminous concrete, a two-inch overlay on the shoulders, and thickening the pavement at the intersection with Runway 13L-31R to mitigate ponding. Work on Runway 4L-22R also included a 200-ft.-long run-up area between Runway 13L and the realigned Taxiway P. In addition, Taxiway P was realigned to accommodate Taxiway Design Group (TDG) 3 aircraft and to provide a perpendicular crossing at Runway 22R. The taxiway realignment required regrading stormwater detention areas on either side of the taxiway to maintain storage volumes. Stormwater detention volumes were determined using XP-SWMM modeling software.

Milhouse was responsible for the design of storm sewers and underdrains, as well as calculations of stormwater detention. Additionally, Milhouse assisted with the development of construction phasing, erosion control, and restoration plans.
Milhouse serves as a subconsultant to Jacobs Engineering on the design of Taxiway Lima Lima at O'Hare International Airport. The project consists of the realignment of existing taxiways and the construction of new taxiways, along with the relocation and demolition of existing service roads and utilities. Upon completion of Taxiway Lima Lima, future airfield operations will be enhanced and aircraft will be able to taxi for takeoff and taxi to terminals without stopping. The project will expedite airfield traffic and increase the maximum number of landings per hour at O'Hare International Airport.

Milhouse was responsible for all utility coordination and design; service road design and coordination; design of demolition plans; sustainability; and project management support. Utility coordination efforts comprised verifying existing utilities, relocating utility structures, utility phasing, and fuel coordination. Service road design and coordination required a maintenance of traffic (MOT) plan to re-route traffic for the Service Road adjacent to the Existing Fuel Super Satellite and American Airlines facilities. Milhouse led the demolition planning efforts and developed a sequence of demolition activities related to utilities and facilities. A significant amount of coordination was required with the O'Hare Fuel Committee to obtain an accurate timeline of concurrent fuel infrastructure projects and to ensure that the Taxiway LL project reflects and accommodates future field conditions. Milhouse researched and developed details and specifications for artificial turf installed in select infield areas. The existing infield areas were either painted green or seeded. Both surfaces required regular maintenance, which involved closing taxiways in a heavily-traveled area close to the terminals. Artificial turf was a low maintenance solution for the infield areas. Milhouse adhered to the developed Sustainable Design Strategy to complete the work within a sustainable design framework. In addition, Milhouse assisted Jacobs Engineering with general project management services.

Milhouse is also assisting with construction phase services, coordinating shop drawing reviews and Requests for Information (RFI) within the design team, attending construction progress meetings, and providing on-site design support. Milhouse is also responsible for reviewing shop drawings and RFI’s for the design scope; assisting with reviews of other design items; and preparing bulletins for field changes.
Milhouse was selected as the prime consultant for the design of a replacement fuel center and glycol storage facility for American Airlines at O’Hare International Airport. The project included a new glycol facility capable of storing approximately 150,000 gallons of Type I, Type I blended, and Type IV glycol, as well as dispensing to six de-icer vehicles simultaneously. The project also included provisions for storing and dispensing 20,000 gallons each of diesel and gasoline; a 3,800 SF support building; as well as parking for American Airlines’ de-icing fleet and various ground service equipment. In addition to construction of the relocated facility, the project required the relocation of an existing access road and security gate. Several constraints were present during the relocation of the facility, which resulted in a number of advance bid packages to design a temporary glycol storage and de-icing facility, as well as associated fleet parking.

Milhouse was responsible for coordinating all sub consultant designs as well as ensuring that the client’s requirements and requests were incorporated into the design. Services provided by Milhouse included all site civil, utility, site electrical, and building MEP services. In addition, the location of the project site posed several constraints with respect to the design of the new facility. Some of these constraints included significant grade changes; existing utilities required to remain in service; and close proximity to numerous airport facilities, including I-190, the airport transport system, taxiways, an existing airfield access roadway, and the Chicago Fire Department.
This project will provide design services for the HVAC systems that serve the American Airlines Baggage Room area at O’Hare International Airport. The objectives of this project are to address and resolve indoor air quality problems that presently occur at the American Airlines Baggage Room area and to replace deteriorated HVAC equipment contributing to the American Airlines Baggage Room area air quality problems. The existing 10 air handling units and associated equipment were installed in the mid-1980s. The American Airlines Baggage Room HVAC systems are significantly deteriorated due to their age. In addition, the HVAC systems are difficult to access by maintenance staff.

The overall goal of this project is to perform a detailed assessment of the HVAC system and provide recommendations to address the problems of deteriorated equipment and poor equipment access. Milhouse Engineering & Construction, Inc. is providing electrical engineering design services associated with the HVAC systems assessments and upgrades.