



Ulteig

CAPABILITIES

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# LETTER FROM THE PRESIDENT

Our core values say it all – we dedicate ourselves to our clients' success, we pursue excellence in our work and we act with integrity. As you will read in the following pages, Ulteig's employee-owners are a passionate group of talented professionals who know how to leverage their expertise and develop solutions that often involve a multi-disciplinary approach.

Our roots are in the Power industry but, as the decades have passed, we have evolved and adapted to serve clients who operate in a number of specialties that are fundamental to the existence of modern society. We call these the Lifeline Sectors™, and we recognize the tremendous responsibility we have to deliver professional services that help to improve access and preserve some of the most basic needs that we often take for granted today. Power, including solar and wind, water, oil/gas and transportation are among the Lifeline Sectors™ and markets we serve, and we will continue to grow and operate in additional sectors that will benefit from Ulteig's breadth and depth of professional knowledge.

Our process is relentlessly collaborative. We adapt to our clients' environment, often imbedding our employees directly into their operations. We anticipate needs and deliver results with trademark accuracy and timeliness. Our formula works – we have learned through feedback surveys that our clients overwhelmingly would choose to work with Ulteig again. Trust is paramount to our process and is fundamental to our successful client partnerships. We Listen, We Solve.

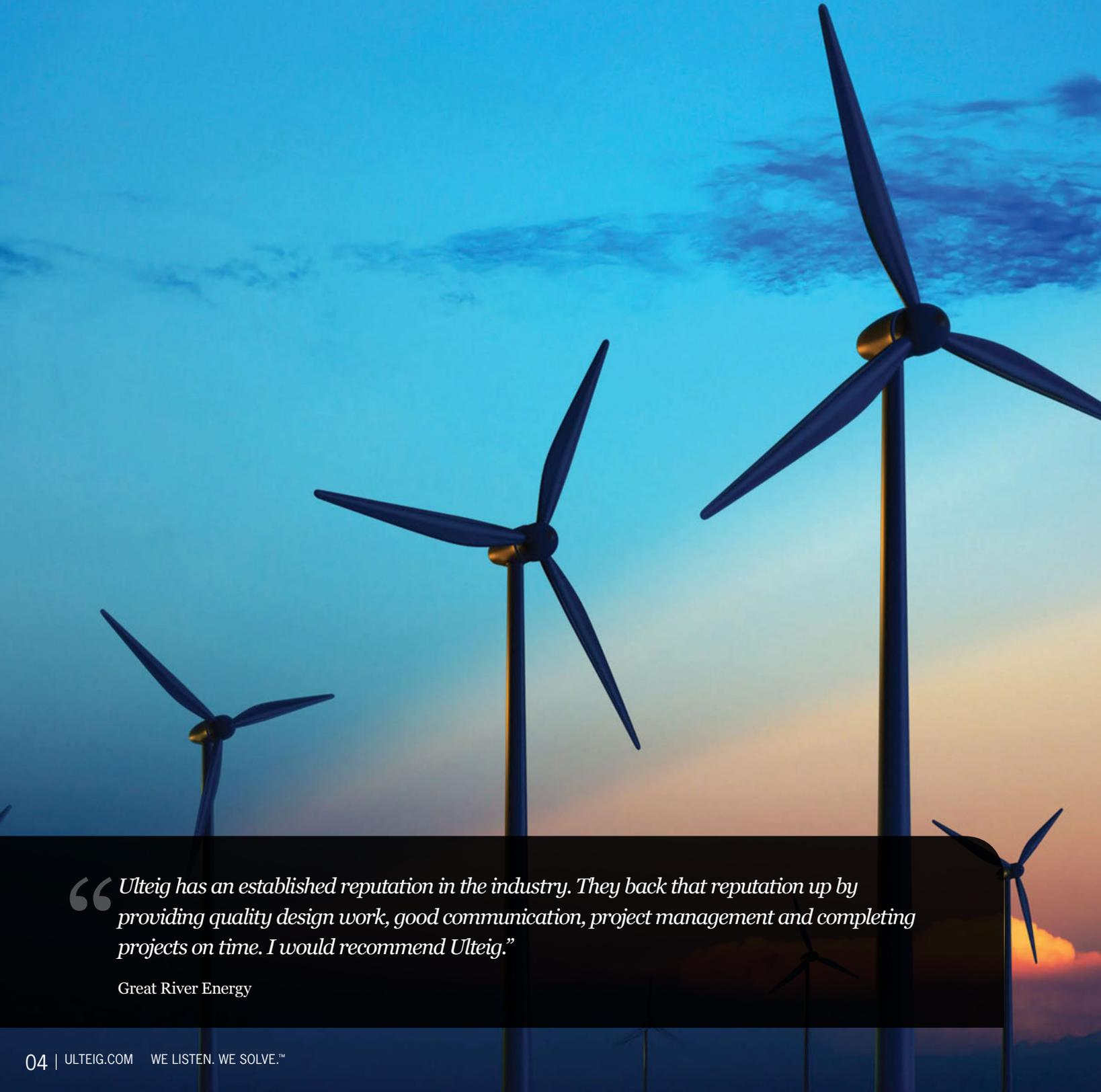
On behalf of Ulteig's 300+ employee-owners, I invite you to learn more about our solutions-focused approach to Lifeline Sector design and support, which includes design engineering, program management and technical and field services. We remain a committed partner to those municipalities, government agencies, public and private utilities, renewable developers and construction companies who have entrusted us to help them meet their goals and manage the resources critical to all of us. It is a privilege to advocate for our clients in this capacity.

We look forward to the opportunity to work with you.

**Doug Jaeger**  
PRESIDENT & CEO

“ We recognize the tremendous responsibility we have to deliver professional services that help to improve access and preserve some of the most basic needs that we often take for granted today.





# LEADER IN THE ENGINEERING INDUSTRY

### VISION

To be widely regarded as the partner of choice for technical solutions in our targeted Lifeline Sectors™.

### VALUE PROPOSITION

Clients depend on Ulteig to deliver comprehensive engineering and technical services that strengthen infrastructure vital to everyday life.

### CORE VALUES

- We Dedicate Ourselves to Our Clients' Success
- We Pursue Excellence in Our Work
- We Act with Integrity

### HISTORY

Melvin Ulteig knew how to light things up. The son of Norwegian immigrant farmers, Mel had the vision to bring electricity to the Upper Midwest. In 1944, he started Ulteig Engineers in the basement of his North Dakota home, with his wife and one surveyor.

Since that time, Ulteig has expanded its footprint and added more than 300 engineering professionals to offer a full range of engineering solutions. We are thankful to Mel, our roots in his humble beginnings, and his progressive vision.

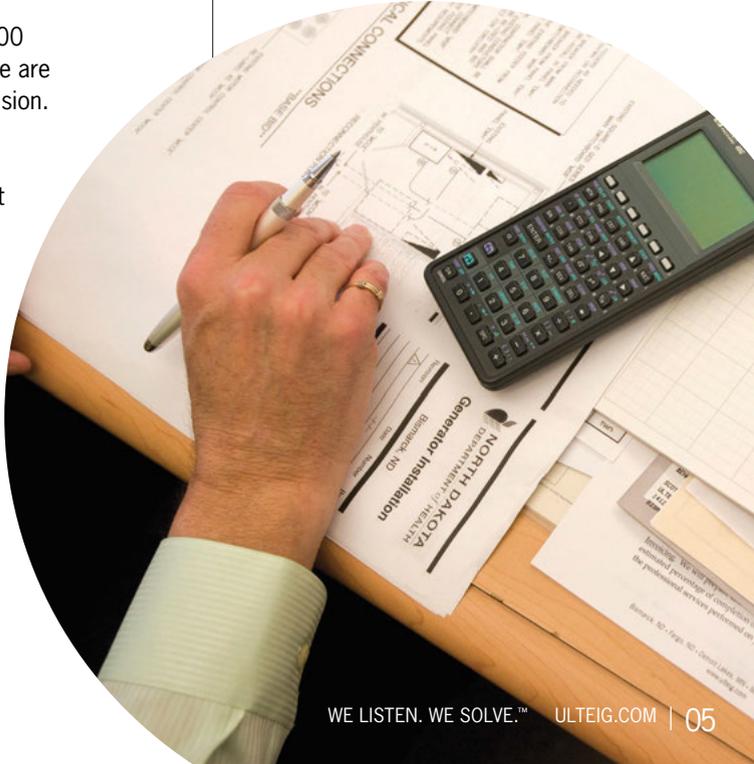
Today, Ulteig manages an average of 1,300 technical and field service projects per year. We are continually expanding our portfolio of projects that serve four primary Lifeline Sectors™:

- Power & Renewables
- Transportation
- Oil & Gas
- Water

Ulteig is 100% employee-owned, with an employee stock ownership program (ESOP). As a company, we received the Minneapolis Star Tribune Top Work Places Award, and we were runner-up for the North Dakota Young Professionals Best Place to Work.

### DID YOU KNOW?

Ulteig currently serves as the city engineer for 24 cities across North Dakota and Minnesota.



*“Ulteig has an established reputation in the industry. They back that reputation up by providing quality design work, good communication, project management and completing projects on time. I would recommend Ulteig.”*

Great River Energy

# CLIENT SOLUTIONS

We listen. We solve.™

The professionals at Ulteig understand there is no one-size-fits-all approach for meeting each client's needs. We pride ourselves on a customized, flexible set of solutions to meet unique requirements on time and on budget. Ulteig's Project Management Services group is a diverse and agile team of project management professionals that engage intimately with our business partners to provide tailored solutions to meet specific requirements.

The Project Management Services Group is comprised of three distinct units:

- Major Projects & Program Management
- Custom Client Solutions
- Integrated Resources

The Major Projects & Program Management unit consists of lean and efficient program and project management teams dedicated to particular clients and/or complex programs. These high performing teams coordinate design efforts between various

engineering disciplines, both in-house and subcontracted, while balancing multiple stakeholder objectives and expectations. They collaborate with diverse teams to develop and execute detailed plans for each project which define and manage scope of work, schedules, budgets and resource planning in an integrative way that delivers enhanced benefits and value for each client.

The Custom Client Solutions group specializes in providing unique and tailored consultative solutions for our clients. This exclusive team of seasoned professional Program & Project Managers and Business Analysts specialize in assisting clients with the difficult task of integrating and implementing organizational project management frameworks and methodologies within their organizations which are benchmarked against industry standard best practices and aligned with the Project Management Body of Knowledge (PMBOK Guide) and Standards for Program and Portfolio Management by The Project Management Institute (PMI). Whether it's

providing professional analytical consultation or leading the implementation of strategic enterprise project management maturity programs, we can tailor solutions to fit a variety of very unique needs.

When organizations face the challenge of quickly responding to changing market conditions that demand the availability of a highly skilled workforce, our Integrated Resources unit is on standby to assist our clients by supplementing their staff with professionally trained, experienced and highly skilled project managers capable of quickly and seamlessly embedding directly into their organizations to meet both short-term and long-term resource requirements. Our Integrated Resources staff is heavily comprised of certified Project Management Professionals (PMP) with diverse backgrounds and extensive knowledge that allow our clients' to meet their strategic goals without being constrained by limited resources to successfully execute and accomplish them.

“Ulteig and CIPCO have a long-standing relationship. They have been very professional in handling our projects and understanding our needs. We would recommend Ulteig because of the quality work they provide and their professionalism.”

Scott Mohwinkle - CIPCO

## CLIENT SOLUTIONS Project Management Profile

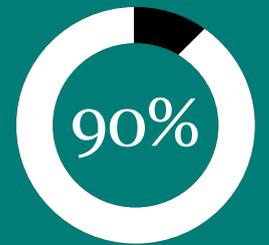
The Ulteig Project Management Services team provides integrated program and project management services for a leading global developer and operator in the field of energy generation from renewable sources operating in North America. Grounded in our core values of pursuing excellence and dedicating ourselves to our client's success, the Project Management Services group developed a client-focused program management team solely dedicated to managing a portfolio nine wind and solar projects. This focused program management model has allowed Ulteig to strategically align with our client, as well as their development partners, to create a high performing collaborative program team that consistently delivers solutions-focused value to our client within each project.

Under the leadership of a program manager, the Ulteig program management team sets the tone for success on every project by controlling and directing consistent and proactive project team communication, project status reporting and issues management. This approach to program management is a custom fit solution for our client in every way, and our success can be measured by the trust our client has in our team as a dedicated strategic partner to manage their growing portfolio of renewable energy projects.



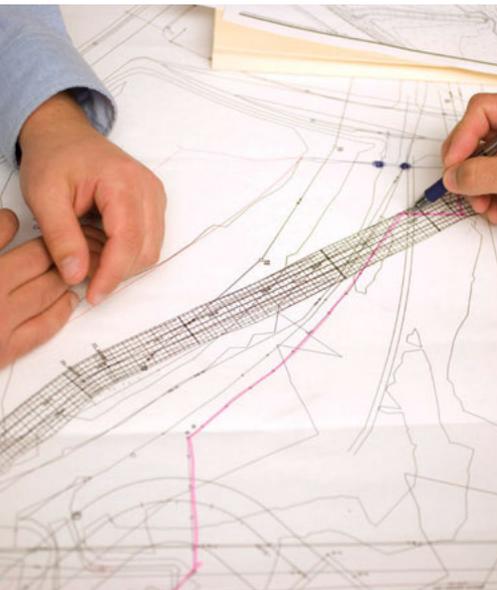
### DID YOU KNOW?

Ulteig evaluates the success of the company based on the percentage of repeat clients that provide us projects year after year. Approximately 90% of our annual workload is from repeat clients.



# CLIENT SOLUTIONS

We listen. We solve.™



In 2015, over 98% of our surveyed clients said they would select Ulteig again, citing exceptional partnerships and superior results. Among these clients are public utilities, investor owned utilities (IOUs), renewable developers, electric cooperatives, government agencies at the local, state and federal levels, municipal clients, construction companies, developers and balance-of-plant contractors (BOPs).

## STRATEGIC VALUE

- Optimized cost through application of total value management
- Industry-proven best practices
- Experienced and professional project managers
- Efficient project management based on a holistic approach
- Improved on-time delivery through intensive programmatic oversight
- Reduced risk through upfront project planning and continuous mitigation steps

## PROJECT-SPECIFIC VALUE

- Subcontractor management
- Collaborative relationship management
- Clear and concise communication
- Defined roles and responsibilities
- Alignment of project stakeholders
- Thorough scope definition
- Accurate estimates
- Meticulous schedule management
- Rapid projection initiation
- Disciplined change control
- Timely request-of-information management
- Proactive action-item management
- Targeted status update meetings
- Concise reporting
- Convenient document control
- First-time quality assurance and quality control
- Documentation of key lessons learned

## CLIENT SOLUTIONS Project Management Profile

Ulteig's Project Management Services team is currently engaged as a strategic partner with a major public utility client in Montana to assist with the development of its internal project management office, including new methodologies and policies, as well as providing integrated resources that augment the client's current project management staff. Ulteig has played a vital role in the development of the client's project management office and internal project management policies and procedures.

The Ulteig Project Management Services team engaged early as a key consultant in shaping and defining the client's evolving organizational structure. Ulteig has remained an intimate partner with the client, assisting with the establishment of many tools for project controls, such as implementing the enterprise-integrating project management software solution by BrightWork, which leverages the collaborative



functionality of SharePoint with the project management power of Microsoft Project Professional. This solution was rolled out within the client's major projects team in January 2016, and Ulteig remains closely engaged with the client as it grows toward organizational project management maturity, providing technical and tactical training and consultative support.



Ulteig further supports the client by providing integrated resources to augment their currently constrained project management staff. Ulteig's project managers integrate completely into our client's organization and culture, working seamlessly with the client's Project Management Office directors and functional managers to directly manage portfolios of major electric power and natural gas transmission infrastructure improvement projects spanning multiple years and representing millions of dollars' worth of investment. Our project managers help to integrate internal departments which have formerly been subject to working in functional "silos" as well as coordinate and communicate with a large array of project stakeholders of varying interests and influence in order to deliver successfully completed projects on schedule and on budget with no surprises.

# RIGHT-OF-WAY ACQUISITION



While our experience spans the nation we maintain a small-company feel. Ulteig's client-focused approach includes the advantage of a single point of contact and the flexibility to conform to client-specific methods and standards. Few companies can match our ability to leverage resources and capabilities across our core Lifeline Sectors™.

As the vision for a project takes shape, right-of-way acquisition is an essential step in the process of turning a great concept into a successful outcome. Ulteig's experienced real estate professionals deliver site acquisition and right-of-way services for a wide range of projects, including municipal infrastructure, large-scale electric transmission and pipeline corridors and wind farm sites. Ulteig's experts negotiate land purchases, leases, options and easements to best meet the client's project objectives and criteria. The team also handles document preparation, permitting, land title searches and public presentations.

## EXPERIENCE

- Municipal infrastructure
- Large-scale electric transmission lines
- Pipeline corridors
- Utility scale wind farms
- Utility scale solar farms
- Highway and street expansion
- Airport and communication facilities
- Relocation assistance and services
- Land acquisition
- Land lease
- Land value analysis
- Title research
- Deed and encumbrance procurement
- Easement origination for development or expansion
- Procurement of license and permits (DNR and USFWL)



# ENVIRONMENTAL

Ulteig's environmental experts guide clients through the regulatory process to keep the project moving forward. We evaluate environmental impacts so clients can make informed decisions during the project's development phase.

## FEDERAL, STATE AND LOCAL PERMITTING

- U.S. Army Corps of Engineers section 404 permit
- Section 401 of the Clean Water Act
- National pollutant discharge elimination system (NPDES)
- Air quality permits
- Watershed district permits
- Wetland alteration permits
- Local conditional use permits
- Sovereign land permits
- Flood plain permits
- No rise certifications (FEMA)

## DECISION-MAKING DOCUMENTS

- Finding of no significant impacts (FONSIs)
- Record of decisions (RODs)

## CORRIDOR STUDIES

- Transmission line routing studies
- New highway alignment studies
- GIS suitability analysis

## STAKEHOLDER INVOLVEMENT

- Public input meetings, hearings and informational open houses
- Media coordination
- Mass mailings
- Individual stakeholder meetings
- Special interest groups
- Surveys and questionnaires

## PROJECT DEVELOPMENT

- Coordination of on-site investigations
- Wetland delineations
- Cultural resources
- Archaeological resources
- Noise monitoring and modeling
- Soliciting input from federal, state and local government agencies
- Impact analyses
- Mitigation strategies

## ENVIRONMENTAL DOCUMENTATION

- Documented CATEXs
- Project memorandums
- Environmental Assessments (EAs, EAWs)
- Environmental Impact Statements (EISs)
- Section 4(f) Analysis



# SURVEY

Ulteig has the distinct combination of capacity and experience to deliver a wide range of surveying services. Our highly trained survey teams use industry-leading hardware and software to gather and lay out field information for many types of land surveys and construction staking projects.

## LAND SURVEYING

- ALTA/NSPS land title surveys
- Boundary surveys
- Cadastral surveys
- Construction staking surveys
- Control surveys
- Design surveys
- Easement surveys
- Elevation certificates
- Expert witness services
- Forensic surveys
- Global positioning system surveys
- Highway and road surveys
- Land descriptions
- Land divisions
- Mapping
- Subdivision Platting

## HD SCANNING

- Accident reconstruction
- Architectural/civil construction
- As-built surveys of complex facilities
- Building information modeling (BIM)
- Crime scene investigation
- Cultural heritage sites
- Fabrication quality assurance
- Facility management
- Historical building reconstruction or renovation
- Monitoring structure deformation
- Piping and ductwork retrofits
- Railways/bridges/tunnels
- Streets/highways/airports
- Volume calculations

## GEOGRAPHIC INFORMATION SYSTEMS (GIS)

- Asset management
- Custom mapping
- Data collection and conversion
- Geometric network modeling
- GIS consulting
- GIS needs assessments and implementation plans
- GIS server solutions
- Mobile mapping solutions
- Site selection
- Suitability modeling
- 3D modeling
- Utility mapping and modeling



## SURVEY Project Profile

Ulteig's GIS team collected approximately 700 features, including curb stops, valves, hydrants and sanitary sewer manholes in the City of Henning. The first phase of the project included an on-site assessment of the city's current business needs and goals. Specific attention was given to data needs, which included accuracy requirements and development of a data management plan. The team compiled and configured the GPS-collected data into a

usable GIS format suitable for ArcView mapping software. On-site, customized training was provided for the city's Public Works staff to update and maintain their GIS system. Ulteig used a combination of professional GPS survey and mapping techniques, along with on-site training, to successfully deliver a comprehensive water and sanitary sewer distribution mapping system.





*Ulteig produces meaningful results for connecting people to one another and their workplaces, connecting resources and goods to consumers and connecting entire economies to one another.*

*We are accustomed to meeting the requirements and expectations of federally funded projects and state departments of transportation as well as regional and local levels of government.*

Ulteig has a long history of successful transportation projects that create more reliable connections. We are accustomed to meeting the requirements and expectations of federally funded projects and working with state departments of transportation as well as municipal and county levels of government. This includes planning, design and construction services for complex urban intersections, corridor retrofits and rural highways.

Ulteig is an advanced firm that stays attuned to cutting-edge practices and the community elements of transportation facility development. We understand that facility planning and design must be environmentally friendly and sustainable, and our many private sector and governmental clients find us responsive and time conscientious. We are committed to effective and continuous communication with our clients and involved stakeholders to promote solutions that are supported by area staff and elected officials.

## PLANNING

Our planners and engineers work together to integrate our planning and design services.

- Traffic analysis
- Corridor studies
- Site impact analysis
- Multimodal plans
- Environmental documents
- Long-range transportation plans
- Public participation and consensus building

## DESIGN

Ulteig's designs are context sensitive and cost-effective. They strive to balance the competing needs and desires of the clients and end users.

- Structures and bridges
- Water resources, drainage and utilities
- Multiuse recreational trails
- Noise walls
- Roundabouts
- Streets and highways
- Traffic signals and lighting
- Reconstruction and rehabilitation
- CADD and MicroStation
- Construction traffic control and detour plans
- Right-of-way acquisition

## CONSTRUCTION

Ulteig offers varying levels of construction administration and observation to meet your needs. Our project managers and field personnel work with the client and the contractor to address issues that arise during construction and then monitor quality control and compliance.

- Project management
- Bidding phase services
- Shop drawing review
- Construction surveying
- On-site construction observation
- Records and as-builts
- Project close-out



## NDDOT PROJECT STATS FROM 2012 TO 2015:

- \$93 million in construction administration
- 50 miles of divided highway concrete overlay, designed and constructed
- 30 miles of environmental assessment for new highway
- 10 miles of highway reconstruction and widening
- \$4.5 million in urban FHWA design and construction
- 28 miles of major highway rehabilitation

## TRANSPORTATION *US 2 Westbound Concrete Overlay – Junction US 85 to Ray Project Profile*

The North Dakota Department of Transportation (NDDOT) hired Ulteig to complete the planning, design and construction administration for the US Highway 2 concrete overlay, a four-lane divided highway, from Junction US 85 to the town of Ray, ND. Due to the recent and continuing oil exploration, this is a high-traffic corridor and a large percentage of vehicles are heavy trucks.

The rural westbound section of US Highway 2 consisted of milling three inches and leaving five inches of existing Highway Bridge Program (HBP) in place. The roadway was overlaid with eight inches of doweled Portland Cement Concrete (PCC) pavement to increase the structural capacity of the pavement structure. The roadway consists of a 12-foot inside driving lane with a six-foot shoulder and a 12-foot outside driving lane with a two-foot shoulder. Widening the corridor was not necessary as the roadway centerline was shifted two feet to accommodate the six-foot shoulder on the driving lane.

This project also included overlaying the turn lane throughout the project and installing concrete crossovers at the major intersections. On previous mill and concrete overlay projects, the common practice was to mill the specified depth and establish a profile for the concrete pavement. This method resulted in the potential for a large overrun in concrete volume and its associated cost. Ulteig incorporated an innovative method to circumvent the additional cost, and the milling was controlled to the same profile as the PCC pavement. Ulteig had previously established and set control for the length of the project.

The Ulteig team obtained the profile of the highway by using Trimble Robotics to collect elevation and horizontal data from the centerline of the existing highway. That information was sent to the design team, the 20-mile alignment was built and construction staking was underway.



Following the surveyors, the contractor set a string line for the mill and concrete paver to create the new vertical profile. The result was a very small overrun in concrete volume. In the design, corrections to the profile and super elevations were made by varying the depth of the milling. The milling depth in these areas was based on the amount of existing asphalt, which, due to patching, was up to 14 inches in one area. The majority of the profile corrections were accomplished by transitioning the milling depth from three to zero inches.

Along the corridor, eight super-elevations were corrected to AASHTO standards. The staking process consisted of setting hubs with vertical and horizontal offsets every 25 feet through vertical curves, and 50 feet through the tangents for the length of the project. In addition to mainline concrete paving, the turn lanes were overlaid with doweled PCC pavement. During this construction season, all major crossroads and driveways were kept open to traffic. This was, and still is, one of the busiest highways in the state of North Dakota, so keeping the traffic flowing was of utmost importance.

# MUNICIPAL



Ulteig helps communities develop and manage their infrastructure and resources by connecting technical expertise to the vision of community leaders and their constituents. We serve a community's municipal engineering needs by providing services that are beyond typical engineering design solutions. Our approach centers on understanding a client's vision and objectives. Ulteig works closely with communities to preserve their resources and distinct characteristics. Together, we develop a path to success.

Our goal is not just to help clients successfully complete their projects, but to establish a long-term partnership. We have engineers, surveyors and technicians who are qualified to serve a city's or town's engineering needs. No matter the size, we can take a project from concept to completion while incorporating specialized knowledge and capabilities.

## ENGINEERING

- Construction document preparation
  - Water services
  - Wastewater services
  - Utility rehabilitation
  - Street rehabilitation
  - Land development/subdivisions
  - City maps and utility records
  - Maintenance assistance
  - Permit applications
- Studies and reports
  - Capital improvement plans
  - Preliminary design studies
  - Facility plans
  - Feasibility studies
  - Hydrology and hydraulic analysis

## ENVIRONMENTAL

- 404 permit applications
- Erosion control designs
- Storm water pollution prevention plans (SWPPPs)
- Wetland delineation, mitigation and restoration

## FINANCIAL

- Annual budgets
- Capital budgets
- Grant and loan assistance
- Improvement bond determinations
- Public hearings
- Special assessment determinations
- Water and sewer rate studies

## PLANNING

- Capital improvement planning
- Comprehensive planning
  - Growth projections
  - Infrastructure
  - Land use
  - Transportation
- Environmental assessment worksheet
- Ordinances and policies

## MUNICIPAL Eagle Valley Subdivision

Ulteig was retained by the City of Fargo in the summer of 2015 to provide a utility master plan, preliminary engineering, final design and construction inspection and administration for this 20-acre residential development consisting of 73 lots. The project was divided into two phases with the first phase completed in 2015 and the second phase to be completed at a later date. Due to the phasing of the development as part of the contract, Ulteig developed a utility master plan to provide the necessary utilities to the lots being developed in the initial phase, while allowing for the future expansion and development of the final phase.

The first phase of the project was bid rather late, which resulted in a condensed construction season with the contractor required to complete a contract that included site underground utility installation, site grading and paving in a 10-week construction period. The construction contractor was awarded a two-week extension due to unexpected field conditions and additional fill that was required to complete the LOMAR construction. The first phase of the development, including water mains and hydrants, was approved by the City of Fargo Public Works Department in December 2015. Final completion of seeding is expected in the spring of 2016.



## DID YOU KNOW?

*Ulteig has completed more than 25 miles of urban street design/construction within 5 years.*

**25** miles    
within **5** years 

# AVIATION

“We were impressed by the number of extra hours Ulteig was willing to spend working late to get construction to flow smoothly. Ulteig has a high level of workmanship and the end product is well worth the money spent. We would recommend Ulteig to other airports because of their reliability and work ethic.”

Joe Hedrick –  
Thief River Falls Regional  
Airport Authority

Ulteig's aviation tradition dates to 1970, with a project that pioneered the application of slipform technology for concrete runway overlays. That same year, we were instrumental in obtaining the first airport development grant awarded in the United States. Today, we provide total aviation engineering and planning services to air carrier airports, general aviation airports and military installations. Our team includes engineers, planners and scientists who provide effective solutions by drawing on each other's strengths. We partner with our clients to leverage their current facilities and future capital improvements to the greatest possible advantage for the communities they serve.

## PLANNING

- Airport layout plans
- Master plans
- GIS
- Part 77 obstruction studies
- Sign plans
- Site development plans
- Terminal planning

## ENVIRONMENTAL

- Environmental assessments
- Categorical exclusions
- Wetland mitigation plans
- Stormwater pollution prevention plans (SWPPPs)
- Surface water management

## DESIGN

- Airside: runways, taxiways, heliports, apron lighting, airfield lighting, drainage, guidance signs and navigation aids
- Landside: access roads/parking, fueling facilities, hangars, sanitary sewer water and storm sewer

## CONSTRUCTION

- Administration
- Observation
- Surveying
- AIP grant closeout

## AVIATION New Town Airport

Originally constructed in the 1970s, the New Town Airport consists of 21,500 square yards of pavement with three hangars. To meet the needs of the area, the airport was completely reconstructed, replacing and expanding the runway and apron areas, allowing for additional aircraft storage, bringing pilot sight distance up to

standards, improving terminal facilities, and providing a plan for ongoing operation, maintenance and expansion. Ulteig provided planning, funding search, engineering, surveying and project management services. The project was completed ahead of schedule and under budget.



# OIL & GAS

## ENGINEERING SERVICES

- Preliminary engineering/concepts
- Public hearings and public informational meetings
- HEC-RAS hydraulic modeling
- Internal drainage analysis
- Engineering reports
- Earthen levee design (per USACE design standards)
- Flood control structure design
- Coordination of geotechnical analysis
- Construction administration/inspection
- Recording of drawings

## LAND SERVICES

- Topographic surveying
- Boundary survey
- One-on-one property owner meetings
- Right-of-entry forms
- Permanent and temporary easement exhibits
- Title searches
- Assistance in appraisal process
- Construction staking



Ulteig provides inspection services on oil transmission line projects that have recently been permitted for construction. The most important priority for the inspector is the protection of public health, safety and general welfare from extreme danger resulting from the adverse effects of pipeline construction practices.

The priorities for our inspection services include environmental monitoring during construction to minimize the adverse effects of the pipeline. Adverse effects include bare soils that pollute water through soil erosion, sedimentation and drainage. The restoration monitoring of the land and water resources is necessary to bring post-construction conditions to pre-construction quality levels.

The Ulteig inspector attends all pre-construction conferences, performs all inspection duties during construction, completes a post-construction inspection after construction is finished and completes warranty inspections one year after the project is finalized.

The Ulteig inspector would have a working knowledge of assessing the conditions of the site prior to construction. The information would be organized by pipeline station and documented for post-construction reference. The pre-disturbance site assessment may include the following topics:

- Land use and characterization of vegetation types
- Production
- Cover
- Density
- Status climate (i.e., precipitation, growing season)
- SCS map review
- Observation of surface and ground water site conditions
- Review:
  - Geotechnical borings provided in the design documents
  - Geologic and topographic information in the design documents supplied by others
  - Identified cultural resources information supplied in the design documents
  - Wildlife diversity and habitat surveys supplied in the design documents
  - Species composition from studies supplied in the design documents
  - Information on manmade features identified in the design documents

## OIL & GAS NorthStar Transload Facility Project Profile

Located in East Fairview, ND, NorthStar Transload Facility is a \$200M multi-commodity inbound/outbound railroad and trucking transload terminal, owned and operated by NorthStar Transloading, serving the Bakken oil region of North Dakota.

The facility's two main commodities are Bakken crude oil and frac sand. The facility consists of five 103,000 bbl storage tanks, 12 truck unload LACT unit stations, 20 train loading arms, six 2,500-ton natural sand silos, two vapor recovery units, 16 miles of new rail and more than 27,000 LF of piping.

Ulteig managed subcontractors under the owner's authority, observing the progress and quality of the construction of the facility and completed field checks and multiple inspections, including tanks, piping, welds, backfill compaction, concrete and rebar. Ulteig also verified manhole, inlet and storm drainage locations and reported defective work to the client through photo and written documentation.

*“ [Ulteig was] retained by NST Transload Operating Company to review shop drawings and assist with onsite monitoring of construction activities in relation to NST's greenfield East Fairview rail and truck transportation hub. [Ulteig's] continued valuable contribution is expected to result in an on-time and on-budget delivery of this very fast-track project.”*

Brian Jenson – COO of NorthStar Midstream



# WATER & WASTEWATER

Ulteig's water and wastewater practice has helped a growing list of public and private clients meet the challenges of delivering potable water to their communities and clean water to the environment. Population growth, climate change, regulatory mandates and aging water and wastewater infrastructure are some of the biggest challenges facing society today.

Our engineers, technicians and operators provide the experience and innovation to develop dependable water and wastewater infrastructure solutions. Our specialists complete a full range of planning, design and operational services to help you overcome the challenges facing your community.

## SPECIALIZED WATER SERVICES

- Water distribution modeling/analysis
- Fire flow assessments
- Distribution system field testing
- Instrumentation and controls
- Vulnerability assessments
- Regulatory compliance
- Rate studies
- Funding assistance
- Operations consulting

## WASTEWATER COLLECTION

- Master planning
- Capital improvement plans (CIPs)
- Inflow/infiltration studies
- Sanitary sewer evaluation studies
- Capacity, management, operation and maintenance compliance
- Sewer separation
- Trenchless technologies

## CONVEYANCE

- Pump station design
- Pump station optimization and rehabilitation
- Flow control structures
- Inverted siphons

## TREATMENT

- Stabilization ponds
- Activated sludge
- Attached growth systems
- Nutrient removal
- Disinfection
- Biosolids management
- Odor control
- Water reuse

## WATER SUPPLY

- Ground water wells
- Surface water sources
- Intake structures
- Horizontal collector wells
- Alternate water supplies

## SPECIALIZED WASTEWATER SERVICES

- Sanitary sewer system modeling
- Smoke/dye testing
- Pump performance testing
- Instrumentation and controls
- Rate studies
- Funding assistance
- Regulatory compliance
- Permitting
- Operations consulting

## DISTRIBUTION

- Master planning
- Capital improvement plans (CIPs)
- Water storage facilities
- Pumping stations
- Transmission mains
- Distribution mains
- Regional systems
- Corrosion control

## TREATMENT

- Facility planning
- Process optimization/audits
- Water treatment facility design
- Granular filtration
- Softening
- Iron and manganese removal
- Chemical feed
- Membrane systems
- Disinfection
- Residuals management



## Did you know?

Ulteig assisted two North Dakota communities in receiving the first search grants awarded in ND through the USDA rural development. The program helps communities fund infrastructure projects critical to their development. Projects for which we were awarded funds focused on water distribution and storage improvements, lagoon rehabilitations and improvements to storm water lift stations and force mains.

## BEST MANAGEMENT PRACTICE (BMP) ANALYSIS & DESIGN

- BMP implementation planning
- BMP performance calculations and permitting
- Runoff water recycling strategies
- Erosion and sediment control

## FLOODPLAIN MANAGEMENT & ANALYSIS

- Flood insurance rate studies
- Conditional letters of map revision (CLOMR)
- Letters of map revision (LOMR)
- FEMA mapping
- Digital flood insurance rate maps (DFIRMs)
- Flood elevation certificates
- Post-event urban flood studies
- Flood damage reduction
- Flood control projects
- Flood preparation and planning
- Post-event recovery and analysis

## HYDRAULIC & CONTROL STRUCTURES

- Stormwater pumping stations
- Multistage outlets, control structures and diversions
- Bridge and culvert hydraulic assessments
- Agricultural control structures
- Dams, levees and flood walls

## STORMWATER CONVEYANCE & STORAGE

- Pond and storm sewer design
- Rate control, extended detention and hydrograph management
- Energy dissipation
- Overland conveyance design
- Bank stabilization

## ECONOMIC STUDIES & GRANTS

- Water resource grant applications
- Benefit/cost for hazard mitigation grants
- Stormwater utilities and rate studies
- Area and connection charges
- Capital improvement planning and budgeting

## WETLAND SERVICES

- Wetland delineation
- Wetland mitigation design and replacement plans
- Wetland studies/hydrology
- GIS wetland mapping

# WATER RESOURCES



At Ulteig, we are experts in water resources engineering and the field of hydrology and hydraulics. Our professionals assist public- and private-sector clients in managing stormwater runoff and surface water resources to sustain or improve water quality, minimize flooding and address regulatory challenges. Working on projects from simple drainage design to major flood control works demonstrates our ability to customize projects or work to fulfill your needs. We integrate natural elements into civil design and look to natural hydrologic systems as inspiration for our constructed solutions.

## WATERSHED MANAGEMENT

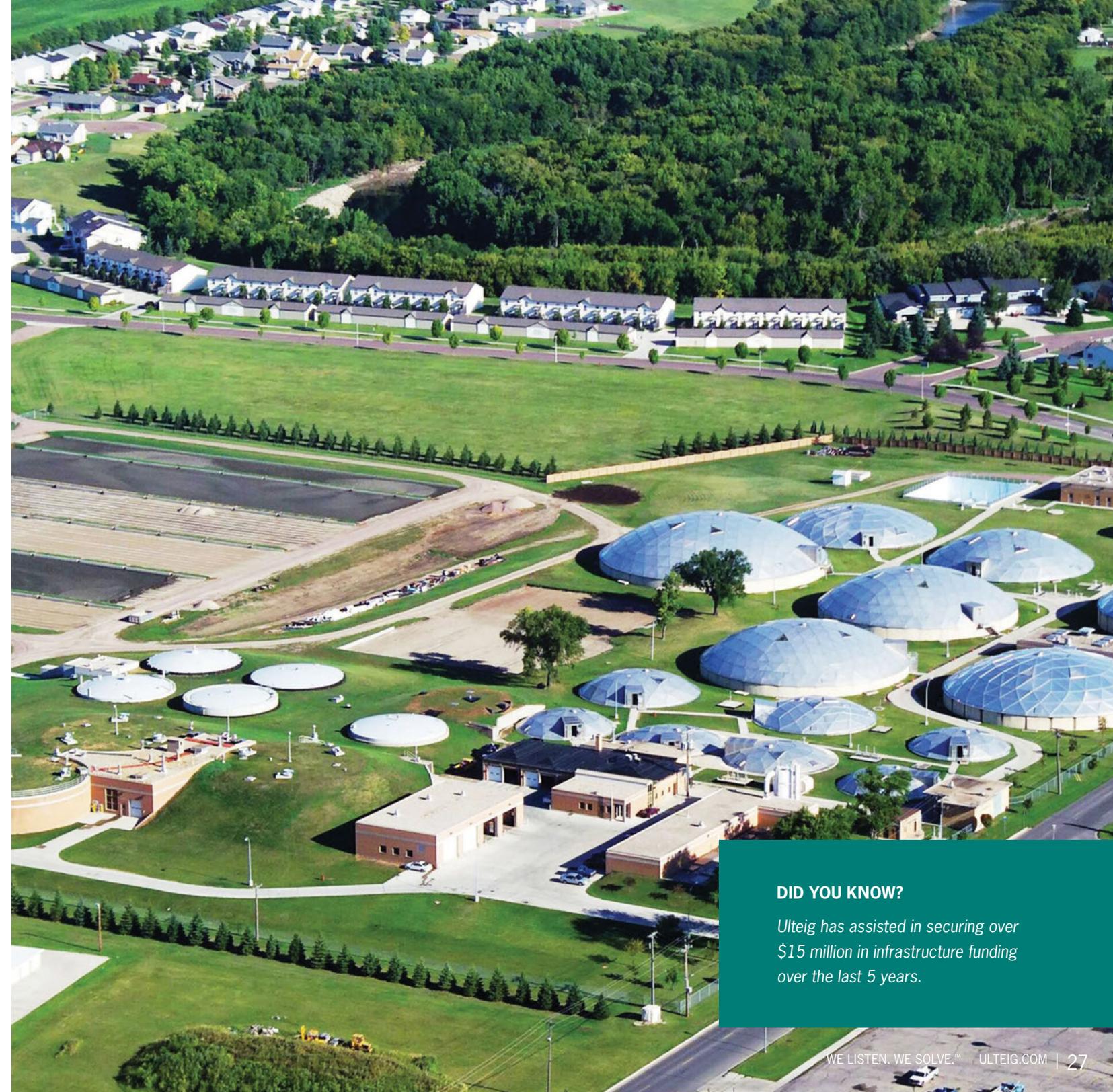
- Stormwater and surface water management plans
- Comprehensive sewer plans
- Development review and code compliance
- Operation and maintenance plans
- Risk assessment
- GIS mapping

## HYDROLOGIC & HYDRAULIC MODELING

- Urban stormwater modeling
- Rural drainage modeling
- Stream modeling
- Lake and reservoir modeling
- Sanitary sewer hydraulic modeling
- Dam and levee failure analysis

## STORMWATER COMPLIANCE & WATER QUALITY

- Project permitting
- MS4 Permit, Stormwater Pollution Prevention Plan (SWPPP) and program development
- Construction stormwater permit and SWPPP
- Anti-degradation compliance
- Impaired waters and special waters
- Water quality management plans



### DID YOU KNOW?

*Ulteig has assisted in securing over \$15 million in infrastructure funding over the last 5 years.*

# POWER & RENEWABLES

From project start through completion, we assist our clients by providing successful on-time and on-budget performance, regardless of the project size, scope and structure. The continued demand for cost-effective and reliable renewable energy sources is driving the need for a higher level of engineering expertise necessary to support this trend. Ulteig has a strong and proven track record of providing energy developers, owners, engineer procure and construct (EPC) contractors and Utilities with innovative professional services and full project support and execution.

## DESIGN SERVICES

- Access road design
- Collection systems design
- Foundation and structure design
- Operation and maintenance facility design
- Overhead collection system design
- PV and solar thermal systems design
- Substation design
- Transmission line design

## STUDIES

- Cable ampacity
- Grounded system
- Harmonic and transient
- Insulation coordination
- Fault current
- Power flow
- System loss
- Transportation

“One of our key concerns when working with a firm is will they be able to keep up with our demanding schedule. Not only did Ulteig’s responsive staff deliver on schedule, they communicated with us every step of the way, and that’s a valuable quality. Ulteig’s communication standards are some of the best in the business. Their responsiveness to a project ensures it keeps a forward momentum, delivering expert knowledge, and staying on schedule in an industry that is nothing short of lightning fast. Working with Ulteig means we are engaged with professionals who are extremely knowledgeable in all aspects of our projects. Ulteig has continually provided us with timely and comprehensive responses, which have proved invaluable in our problem solving decisions.”

Eli Bosco – Infinity Wind



### DID YOU KNOW?

To date, Ulteig has provided land and engineering services for the development of more than 7 GW of renewable energy in North America.



**Did you know?** During the past 15 years, Ulteig has worked on over 350 wind projects for more than 50 clients throughout the United States.

PAST  
**15**  
YEARS

OVER  
**350**  
PROJECTS

MORE THAN  
**50**  
CLIENTS



## POWER & RENEWABLES **Lopez Substation**

This project consists of the engineering and design of a 115 kV electrical substation within a fenced-in area of 270' x 210' just north of the existing Campbell Street Substation in Tucumcari, NM. The need for a new substation was driven by the new Quay County Generating Station (turbine relocation project), which provides backup power to the Tucumcari load center. Lopez Substation serves as a point of interconnection for the Quay County generating station. This substation allows for increased electric reliability in the surrounding area.

The green field 115 kV switching station consists of an initial three-breaker ring bus configuration that is expandable to a future breaker-and-a-half configuration. The three-breaker ring bus configuration will have positions for a 115 kV line from the existing Norton Substation, 115 kV strain bus to the new generating station, and a retermination of an existing 115 kV transmission line to the existing Campbell Substation.

The substation includes three 115 kV line terminations (plus two future) with three 115 kV circuit breakers (up to six future 115 kV breakers, for a total of nine), twelve 115 kV disconnect switches, a 115 kV station

service voltage transformer (SSVT), instrument transformers, metering units and surge arresters. A 20' W x 36' L x 11.5' H electrical equipment enclosure with relay and control equipment was also part of the design.



Ulteig's substation professionals have successfully engineered and designed more than 1,000 high-voltage substations, switching stations and interconnect stations — from 12.5 kV to 500 kV — for investor owned utilities, cooperatives, municipalities, contractors and developers.

### EXPERTISE

- Project scoping
- Preliminary arrangement
- Site selection
- Siting and permitting support, including photo renderings
- Environmental analysis
- Right-of-way
- Survey
- Facility studies
- Access-road design
- Construction estimating and support
- Grading design
- Control equipment enclosure design and specification
- Auxiliary power system design
- Station battery system sizing
- Fault coordination studies
- Electrical control and design
- Physical design
- Structural steel design
- Material ordering, tracking and expediting
- Equipment specifications
- Programmable Logic Controller (PLC) and Human-Machine Interface (HMI) programming
- Protective relay settings developments
- System control and data acquisition (SCADA) and communication design
- Spill prevention, control and countermeasure (SPCC) plan
- Stormwater pollution prevention plan (SWPPP)
- Event analysis and evaluation
- Lightning protection
- Grounding
- 3D design



“*Ulteig provided superior client service on our recent Hampton Substation project through their knowledge and familiarity with all aspects of the design, layout and project schedule...*”

James Kucera,  
Senior Substation Engineer,  
Xcel Energy

## TRANSMISSION & DISTRIBUTION MBPP East 345 kV Transmission Loop

This project carried aggressive timelines and required design work to begin as soon as possible. Engineering design included replacement of existing QEI SCADA remote terminal units (RTUs) and the existing Mehta-Tech digital fault recorders (DFRs) at the Sidney and Stegall 345 kV substations. Additional engineering included replacement of protective relays and power-line carrier transmitter/receivers at the six terminals of the Laramie River to Sidney, Sidney to Stegall, and Stegall to Laramie River 345 kV transmission lines.

Ulteig had a unique idea that ultimately transformed the engineering and construction delivery of the project and better positioned the client to be successful in completing the line relay replacements within the scheduled six-week outage. The shift in project delivery was to complete both phase one and two simultaneously. The proposal was to design and install all-new relay control panels fitted with the necessary components per substation. The new panels were designed to allow field technicians to abandon a majority of the existing panels and equipment in place

and reduce the amount of demolition and panel connections to the existing panels. As a result, a great deal of time was saved during the scheduled outage by not having to mount new components in existing panels.

These projects demonstrated Ulteig's ability to provide value added engineering solutions to our client and our capacity to complete engineering design work on time and with a high degree of accuracy.

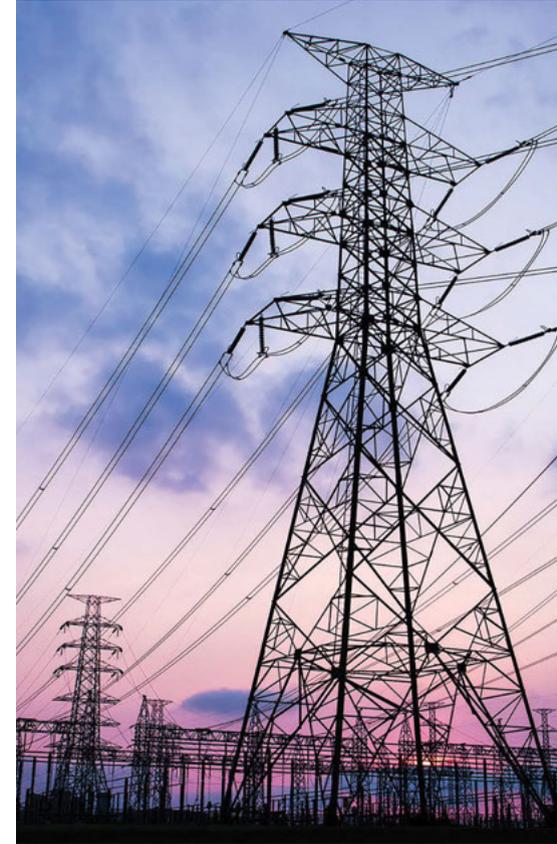


Ulteig has surveyed and engineered more than 18,000 miles of AC and DC transmission lines for public and private clients. From the 34.5 kV subtransmission line to the 500 kV EHV line, from routing and permitting to survey, right-of-way acquisition, detailed design and construction management, we have the experience to handle all aspects of the process.

Ulteig's designs are timely, cost-effective and meticulously meet client standards. Ulteig's goal is to provide solid commitment through unmatched client services and to create a positive experience for our clients.

### EXPERTISE

- Permitting assistance, including photo renderings
- Scoping
- Transmission routing
- Estimates
- Transmission line design
- Design criteria preparation
- Facility studies
- Shielding studies
- Electromagnetic field (EMF) studies
- Grounding studies
- Underground design
- Steel design
- Lattice tower analysis
- Foundation design
- Line uprating studies
- Structure analysis
- Stormwater pollution prevention plans (SWPPPs)
- Material specifications
- Material procurement support
- Construction specifications, management, observation and support



“Ulteig’s responsiveness and professionalism really impressed us. Their project turnaround was very quick and their delivery of a structural report was timely and accurate. The team clearly communicated goals and timelines and we would recommend them to anyone seeking engineering services.”

Nate Lyon - President and Founder of NorthfieldWiFi

# TRANSMISSION & DISTRIBUTION

Ulteig works with clients on a range of communications projects, and our proven commitment to client satisfaction results in unparalleled quality. From concept through construction and beyond, Ulteig has the experience to meet your communications infrastructure needs.

## EXPERTISE

- Integrated Program and Project Management
- Communications network evaluation and planning
- Communications network design
- Microwave and RF link design and field surveys
- Fiber optic (Optical Ground Wire (OPGW) and All-Dielectric Self Supporting (ADSS)) system design
- Point to multipoint RF link design
- Permitting, including FAA and FCC licensing process coordination
- Civil engineering
- Structural evaluation and engineering
- Equipment shelter design and equipment layout
- Civil site development
- Environmental study coordination
- Land surveying
- Right-of-way
- Geographic Information Systems (GIS)
- Electrical engineering
- DC power and alternative power system design
- Grounding system design
- Mechanical engineering
- Computer/network engineering
- Procurement and deployment



# FIELD SERVICES

One point of contact. One point of accountability.

## PROJECT MANAGEMENT

Managing a successful project involves executing a step-by-step process and staying aligned with the client's vision, objectives and priorities. Ulteig's Project Managers become the single point of contact and are responsible for project performance and the

planning and management of all project-related details from concept to completion. Our Project Managers understand the importance of quality, resource management, risk management, communications and responding quickly to changing project needs.

### PRIMARY PROJECT MANAGEMENT SERVICES INCLUDE:

- Coordination with Stakeholders
- Schedule Management
- Contract Administration
- Bid Package Preparation
- Architect/Engineer/Contractor Selection
- Pay Applications
- Project Cost Forecasts
- Change Order Reviews
- RFI Management
- Technical and Shop Drawing Reviews
- As-Built Drawings and Reviews
- Permit Compliance
- Value Engineering
- Risk Management
- Progress Reports and Meetings

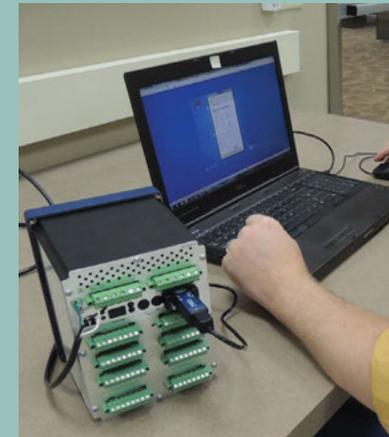
## CONSTRUCTION MANAGEMENT

Our goal for every project is to meet the completion date, control the cost, achieve high quality and ensure safety. Ulteig's Construction Managers monitor all construction activities, identify and manage risks, utilize industry best practices, collaborate with stakeholders and execute and monitor the uniform policies and procedures as established by our clients. In addition, we take responsibility for general project safety, scheduling, cost reporting, the RFI process, conflict resolution, quality management and the general condition of major equipment deliveries. If required, we can also fulfill the role of onsite Resident Project Representative (RPR), acting as an extension of the project team and providing detailed daily inspection reports for project-specific tasks.

Our QA/QC service is implemented through a series of processes that assure each project activity is carried out in a method that meets our clients' expectations. Ulteig is highly proficient in QA/QC implementation and engaging contractors in the process. We also support our clients' efforts to secure ISO 9001 compliance for their projects. As a firm with our own rigorous Quality Management System, guided by ISO 9001, we strive to exceed our clients' expectations and provide deliverables that meet specifications.

### EXPERTISE:

- Contractor/Subcontractor Management
- Pre-construction meeting
- Quantity Tracking
- In-field data logging
- Construction Activity Documentation
- Compliance with Contract Documents
- Quality Assurance/Quality Control
- Third party testing Coordination
- Material Verification
- Change Order Analysis and Tracking
- Productivity Analysis
- Safety/OSHA Compliance
- Dispute Avoidance and Resolution



## TESTING & COMMISSIONING

We call it testing and commissioning. You can call it Ulteig's whole-site solution.

## AELab

Ulteig's Advanced Energy Lab (AELab) gets our clients' systems into the field faster than traditional on-site development approaches.

# LOCATIONS

■ **FARGO, ND**  
**CORPORATE HEADQUARTERS**  
 3350 38th Ave. S.  
 Fargo, ND 58104  
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**FAX:** 701.237.3191

■ **BISMARCK, ND**  
 1412 Basin Ave  
 Bismarck, ND 58504  
**PH:** 701.258.6507  
**FAX:** 701.224.1163

■ **WILLISTON, ND**  
 820 11th Street E., Suite 101  
 Williston, ND 58801  
**PH:** 701.572.4172  
**FAX:** 701.572.4152

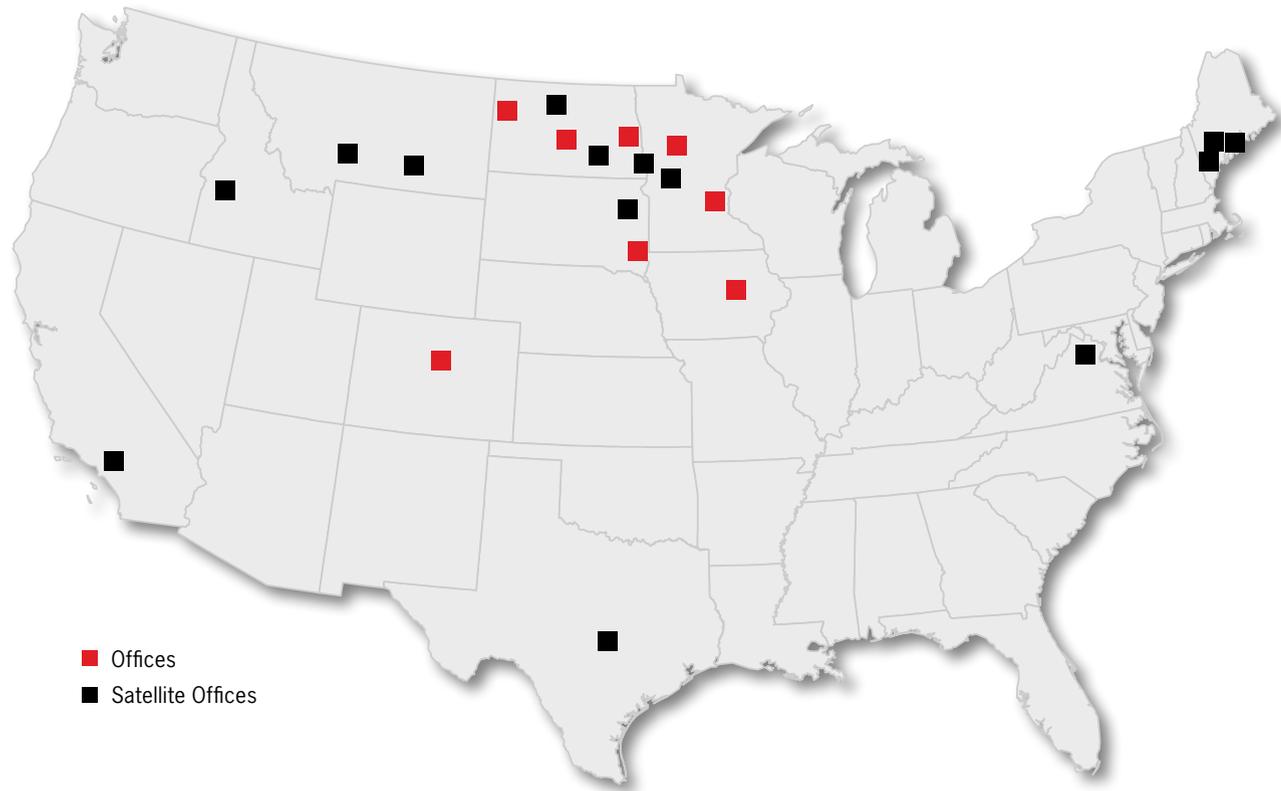
■ **DENVER, CO**  
 5575 DTC Parkway, Suite 200  
 Greenwood Village, CO 80111  
**PH:** 720.873.5700  
**FAX:** 720.873.5701

■ **CEDAR RAPIDS, IA**  
 109 N. Center Point Road  
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**PH:** 319.286.3000

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**FAX:** 218.847.2791

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 Sioux Falls, SD 57108  
**PH:** 605.323.2306  
**FAX:** 605.323.2308



■ Offices  
 ■ Satellite Offices

## A LEADER IN THE ENGINEERING INDUSTRY

With more than 70 years in the engineering industry, Ulteig improves the design and reliability of critical infrastructure and delivers vital engineering, program management and technical solutions.

[ulteig.com](http://ulteig.com)

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## A LEADER IN THE ENGINEERING INDUSTRY

*With over 70 years in the engineering industry, our clients choose Ulteig to improve the design and reliability of critical infrastructure and deliver vital engineering, program and technical solutions.*