



**DESIGN
ENGINEERS™**
MECHANICAL & ELECTRICAL CONSULTANTS





I don't think there is a day that goes by that I don't learn something new or have discussions with other engineers in the office that gives me a different perspective. There aren't many jobs that encourage continuously learning and evolving, but DE really pushes its people to do so.

Stephanie Riggan, Mechanical Engineer

Who We Are

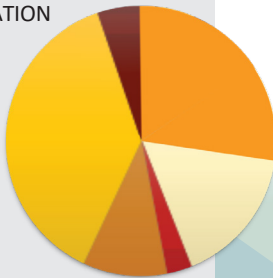
- 27 MECHANICAL ENGINEERS
- 26 ELECTRICAL ENGINEERS
- 8 LEED ACCREDITED PROS
Sustainability
- 5 TECHNOLOGY-SPECIFIC
RCCD Communications
LC Lighting Design
CTS Audio/Visual
- ★ 11 LICENSED & BRILLIANT
PROFESSIONAL ENGINEERS



DESIGN ENGINEERS has been a driving force in the built environment since 1983. Starting with one guy and an idea, we've grown to over 60 talented and driven people with international engineering awards and the stories to prove it.

What We Do

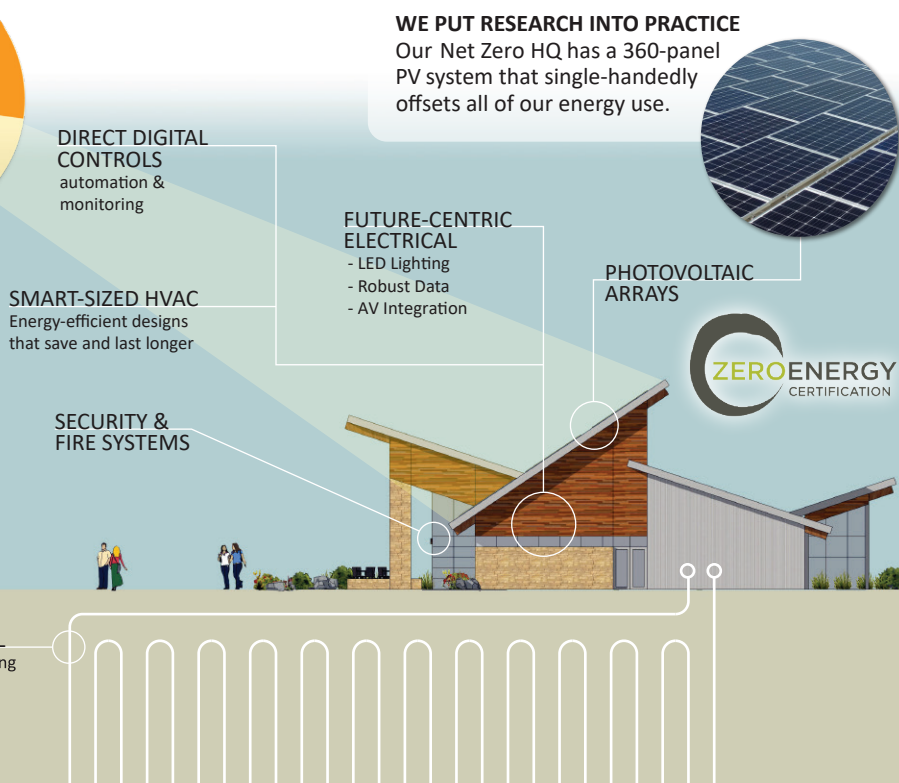
- HIGHER EDUCATION
- HEALTHCARE
- COMMERCIAL
- K12 SCHOOLS
- MUNICIPAL
- OTHER



20+
million+
square feet
of better spaces

energy design consistently
42%
better
than code

5+
million
square feet
geothermal



WE PUT RESEARCH INTO PRACTICE
Our Net Zero HQ has a 360-panel PV system that single-handedly offsets all of our energy use.



Where We Are Going

We are champions of smart buildings; allies of **beautiful and thoughtful design**. Our work makes better buildings, **happier people**, and an energy-effective world.

Everything works **better** together when DE's behind it.

PROACTIVE | COLLABORATIVE | TENACIOUS



We provide **proactive** engineering excellence in Mechanical, Electrical, Plumbing and Technology system design. We are **collaborative** researchers, planners and designers of efficient, sustainable, and durable building systems. We are **tenacious** problem solvers, energized by complex challenges.

Insightful Engineers

We serve our clients by proactively identifying clear solutions to complex challenges. We do this by listening carefully, researching comprehensively, anticipating project needs, designing creatively, recommending thoughtfully, and executing beyond expectations.

Sustainable Partners

We are committed to collaborative, sustainable design. The key to sustainable design, in all its meanings, is collaboration and integration among all members of the project team and with the environment at large. Our responsibilities for projects are shared, as are our successes.

Problem Solvers

We are tenacious problem solvers working together in a culture of accountability where we accept responsibility and take ownership in our projects. We think innovatively to improve existing systems to perform beyond expectation and to make new systems that measurably improve on the past. We are committed to remaining actively involved in our projects until these goals are realized.

Integrated Design Excellence

We are your best choice for your most challenging engineering projects. Since 1983 we have built a team of more than 60 talented and professional individuals, including 27 Mechanical Engineers and 26 Electrical Engineers. Our team’s credentials include 11 PE, 8 LEED AP/GA, 1 RCDD, 2 LCs, 1 CTS, and 1 CPDT.

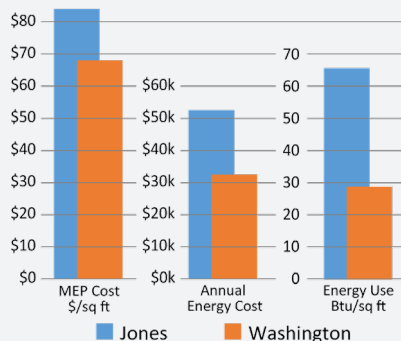
Design Engineers has been doing exceptional work for 40 years. We hire only the best and are committed to working with owners, architects and contractors to create design solutions that are efficient, reliable, sustainable, intelligent, and beautiful.

Project History

Kirkwood Community College’s Regional Centers work with area K12 schools, extending skills training from high-schools into areas that Iowa communities need. Design Engineers (DE) was hired to redesign a prototype building used at Jones County for a new Washington County Regional Center, targeting improved efficiency. As shown in the table below, our design-centric approach makes a measurable difference.

Owner

Kirkwood Community College
 Troy McQuillen, VP of Facilities
 troy.mcquillen@kirkwood.edu



Good Engineering Matters in Millions to the Bottom Line

The difference between two competent engineering firms should not be that great, but as this comparison shows, it can amount to millions of dollars. This unique situation allows a real-world comparison of two structures that are nearly identical except for MEP design. Although both buildings function for their intended educational purpose, the Design Engineers building cost **\$1,400,000 less to build and operate** over a typical 25-year life cycle.

Unique Opportunity to Compare Engineering Approaches

Very rarely do two buildings share so many characteristics as the prototype, Jones, and our project, Washington. The buildings have identical window, wall, and roof insulation specifications, differing only slightly in orientation. Facility functions are almost identical with offices, classrooms, welding, automotive, manufacturing and architectural shops. Washington provides 11% more square footage and adds an energy-intensive automotive paint booth with 17,500 cfm of exhaust, yet according to Kirkwood’s actual utility bills, Washington’s energy cost is **\$20,000 less per year** than Jones.

The Design Engineers Difference

HVAC for Jones County includes rooftop units and hot water reheat terminal units where DE’s project, Washington, uses geothermal heat pumps connected to a vertical ground heat exchanger. Over the 25-year life of the mechanical system the higher efficiency of the heat pump system results in over \$500,000 in energy savings. Despite the typically higher initial cost of geothermal heat pumps, the 11% larger building and 12% escalation in construction cost during the 5 years between bidding, the cost-effective design of Washington’s MEP systems cost **\$600,000 less to build** than Jones.



Kirkwood Jones County – Industry Standard Engineers, Bid 9/08



Kirkwood Washington County – Design Engineers, Bid 3/13

	Industry Standard Engineers JONES COUNTY	Design Engineers WASHINGTON COUNTY	% Change
Area	33,475 sf	37,217 sf	11% larger
General Construction Cost	\$113/sf	\$116/sf	3% more
MEP Systems Cost	\$84/sf	\$68/sf	20% less
Annual Energy Use	66 kBtu/sf	29 kBtu/sf	56% less
Annual Energy Cost	\$1.55/sf	\$0.86/sf	45% less

ACTUAL BUILDING OPERATIONS DATA for 2015, Source: Kirkwood Community College

Cost

Construction: \$4,800,000
 MEPT Construction: \$1,500,000
 Size: 28,000-sf
 MEPT \$/sf: \$53.57 (2009)
 EUI: -0.9 kBtu/sf w/ PV
 30.2 kBtu/sf w/o PV

Owner

DE-PC Properties
 Cedar Rapids, Iowa
 Steve Foster, President
 319.841.1944

Services

Fire Suppression
 Plumbing
 HVAC
 Lighting
 Power
 Safety & Security
 Technology



Project History

Design Engineers all-new, two-story 28,000 square foot office building is a state-of-the-art showcase of sustainable technology and with a beautiful and inspiring open-plan design. The project achieved LEED Gold certification, including the maximum 10 points available for the optimization of energy performance plus 1 additional innovation point.

Mechanical Design

The mechanical scope of work includes a water-efficient plumbing system with waterless urinals, dual-flush sensor-operated water closets and low-flow sensor-operated lavatories. The entire facility is protected by an automatic sprinkler system. The HVAC system consists of a network of water to air heat pumps connected to a vertical ground heat exchanger, an energy recovery unit to provide outdoor air for ventilation and fully networked direct digital controls (DDC).

Electrical Design

Energy-efficient lighting with integrated day lighting controls and occupancy sensors with building-wide low-voltage lighting controls resulted an average lighting power density of 0.4 W/sf as compared to average 1.7 W/sf for a similar building. In addition to a structured cabling plant for telephone and data, the telecommunications scope of work includes access control and burglar systems as well as AV systems for conference rooms.



Sustainability Achievements

The completed building uses 55% less energy than a code compliant building. The water conservation features will save over 30% of the water of a standard building.

Net-Zero Design Process

1. Site Design
2. Envelope Design
3. Geothermal HVAC
4. Solar Management
5. Sensors & Timers
6. Photovoltaic Array
7. LED Lighting
8. Systems Tuning
9. Certification

Annual Savings & CO2 Offset

Avoided Energy Cost: \$17,810
Offset CO2: 8.4 homes

Measures & Certifications

LEED Gold Certified
Energy Star Rating 98/100
Living Building Challenge:
- Net-Zero Energy Registered



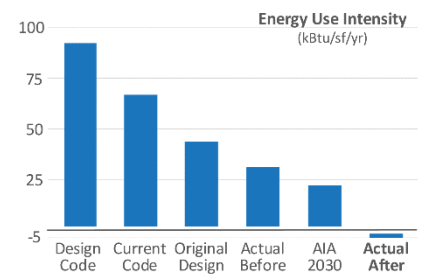
Integrated & Adaptive Design from Day One

Energy-effective buildings use an integrated approach to design, weighing a technology’s potential against its impact, up-front cost, and durability to find the best solutions as they arrive.

The path to our net zero energy office began with the fundamentals of good design. The building size and orientation maximize north and south glazing, sun shades minimize summer heat gain and maximize winter heat gain, while light shelves direct illuminate the core of the building.

A geothermal HVAC system exchanges heat from the earth while heat pumps manage air distribution for combustion-free heating and cooling. An energy recovery unit recaptures heat and moisture typically lost to venting and pre-treats fresh air.

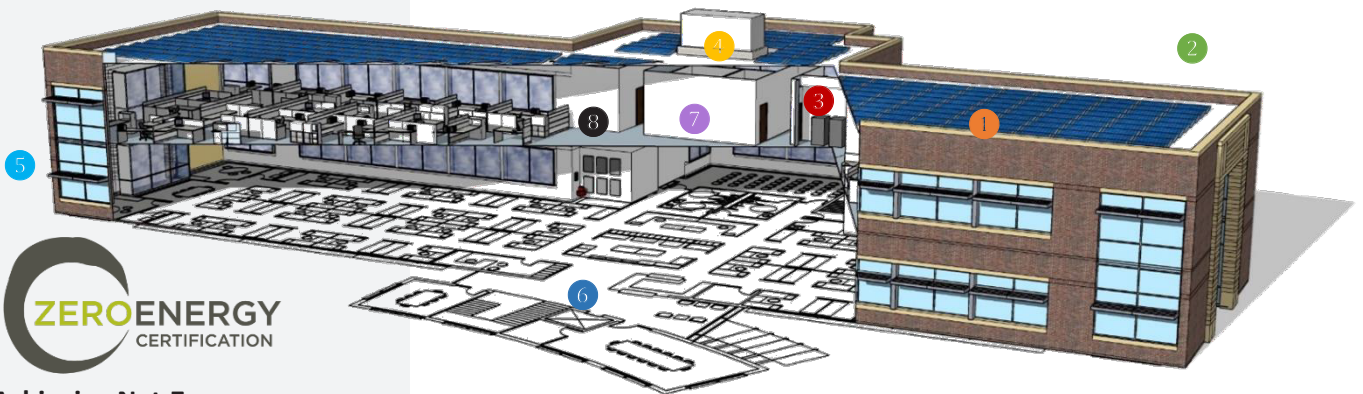
Fine tuning improvements to our HVAC and lighting systems coincided with the installation of a 6,500-sf, 103 kW photovoltaic array on the roof. Hidden from view and silent, it is offsetting 100% of the office’s energy use, qualifying the office for Net Zero Energy certification.



Net-Zero Building Meets Four-Season Climate

The array creates more power in summer than winter and is grid-tied to our utility provider. This flexible relationship helps regulate seasonal utility loads while minimizing system complexity.

Net-Zero Systems Diagram

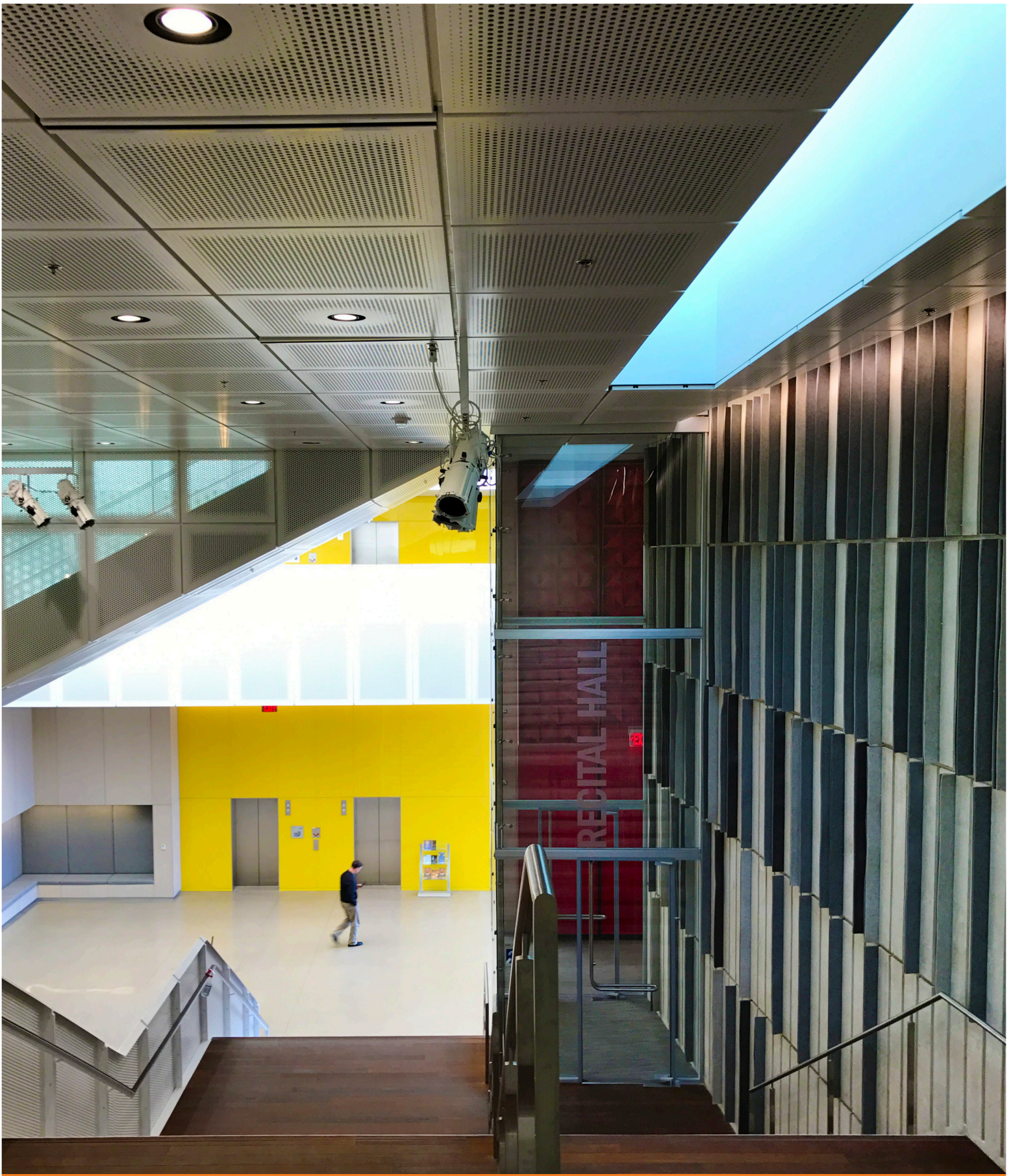


Achieving Net-Zero



◆ Conservation ◆ Geothermal ◆ PV

- 1** 103 kW Solar Panel Array
360 Panels, 6 Inverters
180 Optimizers
- 2** Geothermal HVAC
Vertical Ground-heat Exchangers
- 3** Heat Pump Network
Zoned water-to-air pump
- 4** Energy Recovery
Total Energy Recovery Unit
- 5** Light Shelves & Sun Shades
Interior & exterior harvesting
- 6** Occupancy Sensors
Ultra-sonic & Infra-red
- 7** LED Lighting Conversion
Under 0.36W/sf
- 8** Direct Digital Controls
Individual, room-adjustable



"I have been enormously impressed with Design Engineers' dedication and quality of work. The principal in charge has remained deeply and actively involved in all aspects of the project."

- Sam Miller, Partner, LMN Architects

Primary Clients

- Clarke College
- Coe College
- Cornell College
- Drake University
- Grinnell College
- Indian Hills Community College
- Iowa State University
- Kirkwood Community College
- Loras College
- Luther College
- Misericordia University
- Mount Mercy University
- Sacred Heart Seminary
- University of Dubuque
- University of Iowa
- University of Northern Iowa
- University of Wisconsin-Madison
- University of Wisconsin-La Crosse
- University of Wisconsin-Parkside
- Wartburg Seminary
- Wartburg College

Space Types

- Art Studios
- Athletic Centers & Practice Fields
- Central Plants
- Classrooms & Lecture Halls
- Data Center
- Dining & Food Centers
- Hotel & Conference Centers
- Libraries
- Laboratories
- Medical Facilities
- Medical Simulators
- Museums
- Offices & Conference Centers
- Pools & Gymnasiums
- Research & Teaching Labs
- Residence Halls
- Stadiums & Locker Rooms
- Student Unions
- Theaters & Auditoriums
- Wellness Centers

Academic Programs

- Architecture
- Art & Art History
- Chemistry & Physics Labs
- Education
- Engineering
- Humanities & Law
- Medical & Dental Science
- Medical Simulation Centers



Designing World-Class Educational Environments

Design Engineers has completed more than 1,000 higher education projects including renovations, additions, and new construction. Our work on the award-winning UI Visual Arts Building brought the first bi-axially voided active thermal slab to the United States.

Design Engineers started working on higher education projects in 1983 with the University of Iowa and has enjoyed continual projects on the campus ever since. Building on a relationship of exceptional service and an integrated approach to the campus-wide utility system, we have grown from renovating every dormitory on campus to pioneering campus chilled water heat recovery at new award-winning art and music facilities. Our commitment to excellence informs our work.

In addition to traditional mechanical, electrical, plumbing and fire protection system design, we provide interior and exterior lighting design, access control and security systems, data and telecom design, and full audio-video integration in diverse environments, including structures on the National Historic Register.





"DE's understanding of our equipment and systems was outstanding. Their communication with us was precise. I would recommend this engineering group for complete and understandable documents."

- John Rodilloso, Mary Greely Medical Center

Primary Clients

Mayo Hospitals
University of Iowa
University of Iowa
Hospitals & Clinics
Mercy Hospital
Iowa City
Cedar Rapids
VA Medical Centers
Mary Greeley Medical Center
UnityPoint Hospitals
Cedar Rapids/St. Luke's
Rock Island/Trinity Hospital
Muscatine/Trinity Hospital



Since 1983, Design Engineers has successfully completed more than 600 healthcare projects. These projects included both new and remodeled facilities in both hospital and clinic environments. Many of these projects have involved complex, phased construction in continuously occupied facilities.

Specific healthcare departments included emergency care, neurology, psychiatry, pathology, physical therapy, cancer treatment, laboratory, pharmacy, ophthalmology, pediatrics, radiology, maternal child, surgical suites, and urology.

Some specialty system design has included: airborne infection isolation rooms, medical gas equipment and systems, and specialty medical equipment (e.g., fluoroscopy, linear accelerators, MRI, CT scanners, etc.), hazardous material rooms, computer room HVAC systems, emergency power systems, nurse call systems, clean agent fire suppression systems, clean and uninterruptible power systems, specialty grounding, and lighting.





Project Data

Construction: \$1B+
 Size: 7M+ square feet
 Average Utility Rebate: \$130,000
 Average EUI: 39 kBtu/sf/yr
 Average ECI: \$0.85 \$/sf/yr
 Average Savings: \$67,000 /yr
 Ave. % Better Than Code: 48%

Recent Area School Districts

All Saints Catholic School
 Ames Community School District
 BGM Community Schools
 Belle-Plaine School District
 Calamus-Wheatland School District
 Cedar Rapids Community SD
 Dubuque Community SD
 Iowa City Community SD
 Madison Metro School District
 Marion Independent SD
 Mount Vernon Community SD
 St. Catherine's High of Racine
 Waukee Community School Dist.
 Williamsburg Community SD

Projects

Elementary Schools – 127
 Junior Highs – 41
 High Schools – 116
 District-Wide Upgrades – 63
 New Buildings – 80
 Renovations – 158
 Additions – 89
 Studies – 106



Design Engineers has successfully completed hundreds of K-12 School projects of all sizes totaling more than 7 million square feet and \$1 billion in construction costs. Many of these projects utilize ultra-high-efficiency and low-maintenance strategies including ground-source geothermal HVAC and LED lighting. Renovation projects often include facility access and usage during complex, phased construction.

Specific space types include classrooms, offices, auditoriums, science and laboratory classrooms, locker rooms, health centers, cafeterias and commercial kitchens, gymnasiums, outdoor athletic fields and support facilities.

Projects have included specialized services such as boiler replacements, elevators, security cameras, access control, intercom and data networking. Lighting services have included LED conversion, sidewalk and athletic field outdoor lighting.

Design Engineers focuses on designing efficient, sustainable, maintainable and durable systems for our public schools. HVAC systems for these projects include traditional boiler, a wide range of geothermal solutions, and centralized steam/chiller all with DDC and zone controls.

Comprehensive power distribution systems redesign includes emergency power systems, fire alarm and suppression systems, and low-voltage access control, data and AV systems integrated into existing networks.





“Design Engineers was proactive in delivering a project within budget while still delivering high value mechanical and electrical systems. The cooperation and collaboration that they brought to the table everyday was greatly appreciated.”

- Randy Clarahan

RECENT MUNICIPAL CLIENTS

Anamosa, Iowa
Ankeny, Iowa
Ames, Iowa
Cedar Falls, Iowa
Cedar Rapids, Iowa
Clinton, Iowa
Coralville, Iowa
Davenport, Iowa
Dubuque, Iowa
Evansdale, Iowa
Fairfield, Iowa
Hiawatha, Iowa
Iowa City, Iowa
Madison, Wisconsin
Magnolia, Iowa
Marion, Iowa
Mauston, Wisconsin
Mount Vernon, Iowa
Muscatine, Iowa
North Liberty, Iowa
Norway, Iowa
Oskaloosa, Iowa
Palo, Iowa
Riverside, Iowa
Robins, Iowa
Rock Springs, Wisconsin
Sun Prairie, Wisconsin
Tipton, Iowa
Toledo, Iowa
Viroqua, Wisconsin
Waterloo, Iowa
West Burlington, Iowa
Dane County, Wisconsin
Jefferson County, Wisconsin
Johnson County, Iowa
Washington County, Iowa

PROJECTS TYPES

Airports
Pools
Data Centers
Recreation Centers
Administrative & Government
Fire Stations
Vehicle Maintenance
Police Stations
Parking Structures
Community Center
Public Libraries
Emergency Response Centers
Ambulance Station
Municipal Courts
Wastewater Treatment Plants



Committed to Community

Design Engineers has successfully completed over 250 projects for local governments totaling over \$400 million in construction cost.

HIGHLIGHTED MUNICIPAL PROJECTS

Cedar Rapids Central Fire – Cedar Rapids, Iowa

New LEED Platinum 67,000-sf facility housing a working Firehouse, Administrative Headquarters and Emergency Operation Center

Davenport Police Facility – Davenport, Iowa

New \$23M LEED-certified 161,000-sf facility with offices, conference rooms, laboratories, dispatch, training, parking and a shooting range.

Madison Far West Public Works – Madison, Wisconsin

New 160,000-sf facility to vehicle and equipment repair and storage for Engineering and Parks divisions; Streets crew basecamp.

Coralville Parks & Transit Facility – Coralville, Iowa

New 68,000-sf vehicle maintenance, office, and facilities shop. Certified LEED Gold using total energy recovery and geothermal heat pumps with supplemental boilers for office spaces. Radiant in-floor heat and hot water unit heaters supply shop and maintenance areas. Vehicle pollution monitoring systems control ventilation and exhaust.

Iowa City Fire Stations #2 & #4 – Iowa City, Iowa

New LEED Gold certified community stations. Strategies included geothermal HVAC with total energy recovery ventilation, apparatus bay hydronic radiant floor heating, and apparatus bay vehicle exhaust.

Joint Emergency Communication Center – Iowa City, Iowa

New 20,000-sf facility with hardened generator, redundant UPS, redundant cooling and clean agent fire suppression.

Oskaloosa Fire Station – \$3M renovation and 5,000-sf addition to historic 1909 fire station for high bays, exercise, deck and kitchen.

Cedar Rapids Public Library – Cedar Rapids, Iowa

New LEED Platinum 94,000-sf central library including a 200-seat auditorium, offices, conference rooms, stack area and coffee shop.



"DE is a terrific firm that I will be collaborating with whenever I can."

- Mark Rhoades, SLAM Collaborative

References

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Services

Fire Suppression
Plumbing
HVAC
Lighting
Power
Safety & Security
Technology



DE's 300+ laboratory projects range in size from one-room renovations to 120,000-sf of new construction and include renovations, additions and new construction for biological sciences, chemistry, biosafety level 3, medical, electronics, clean rooms, animal and environmental for research and teaching labs.

Specialty system design has included: clean rooms, space pressurization controls, fume hoods, biological safety cabinets, laminar flow hoods, acid waste and vent piping, gas and liquid nitrogen systems and storage, clean agent fire suppression, pure water, industrial water, laboratory gas, process cooling water, uninterruptible and clean power, specialty grounding and lighting, security and intercom, and equipment monitoring systems.

HIGHLIGHTED PROJECTS

MilliporeSigma Raw Material Sampling Room – Verona, WI
Renovated spaces include raw materials receiving/processing, Class 1/Div 1 hazards, and an H-4 hazard occupancy lab.

Physics Department – University of Iowa
\$22M in renovations including clean rooms, semi-conductor research, teaching, research, wave basin, and hydraulics labs.

Medical Laboratories – University of Iowa
Multiple renovations including BSL3 lab, animal care, pathology and general research laboratories totaling \$35M in construction.

Bowen Science Building – University of Iowa
Renovations for Microbiology, Biophysics, Biochemistry, Anatomy, and Cell Biology laboratories including \$12 million ME upgrade.

Advanced Teaching & Research Building – Iowa State University
New 121,600-sf, \$45M facility including Cell Biology, Entomology, Genetics, Microbiology and Plant Pathology Laboratories.

Henry Science Building – Misericordia University
\$36 million renovation of 27,000 sf building and construction of a 49,000-sf addition for research and teaching laboratories.

Eckstein Medical Research Building – University of Iowa
Multiple renovations of more than 65,000-sf of research labs.

VA Medical Center – Iowa City, Iowa
\$15M in projects including BSL3 lab, animal care and research.

Chemistry Building – University of Iowa
\$50M in renovations and additions for teaching and research.



"This is a fine example of an exceptional restoration of a modern building."

- AIA Honor Award Jury

Market Data

Construction: \$1 billion +
Square feet: 7 million +

Highlighted Projects

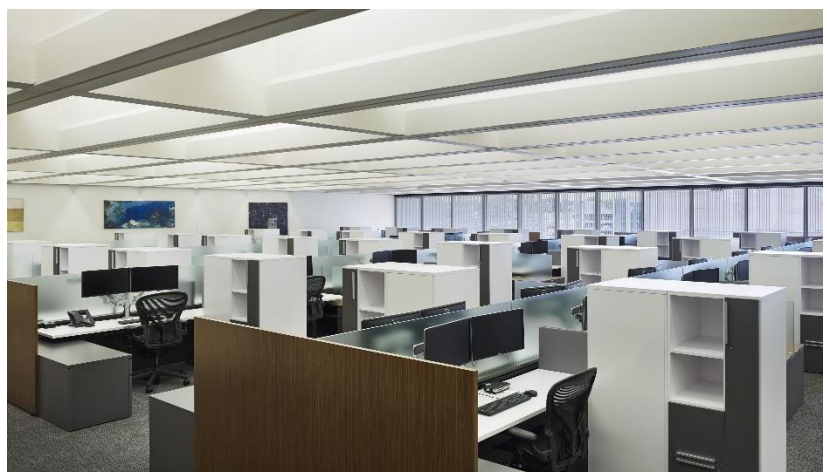
- UI Pentacrest Projects – \$6M
 - UI Residence Halls – \$87M
 - Burge Dining – \$11M
 - Burge Addition – \$14M
 - Hillcrest Projects – \$9M
 - Stanley Hall – \$6M
 - Mayflower Hall – \$20M
 - Slater Hall – \$6.5M
 - Currier Hall – \$9.7M
 - Daum Hall – \$3.2M
 - Rienow Hall – \$2.4M
 - Parklawn Hall – \$1.8M
 - Quadrangle – \$2.7M
 - UI Dental Science Building
\$27M | 200,000-sf
 - UI Chemistry Renovation
\$12.8M | 250,000-sf
 - UI Seamans Center Addition
\$25M | 88,000-sf
 - ISU Forker Hall, Iowa City
\$4M | 150,000-sf
 - AEG Offices*‡, Des Moines
\$30M | 153,000-sf
 - Benedictine Convent, Clyde
\$22M | 180,000-sf
 - Grand Opera House, Dubuque
\$1M | 115,000-sf
 - CSPS*, Cedar Rapids
\$7M | 30,000-sf
 - Midwest One, Iowa City
\$4M | 50,000-sf
 - Oskaloosa City Hall, Oskaloosa
\$1M | 16,000-sf
 - Blessed Sacrament, Springfield
\$2.5M | 10,000-sf
 - Cottingham & Butler, Dubuque
\$1M | 20,000-sf
 - Stonehill Franciscan Services
\$4.5M | 21,500-sf
 - Wartburg Seminary, Dubuque
\$9M | 116,000-sf
- * National Historic Record
‡ AIA Honor Award winner



Since 1983, Design Engineers has successfully completed more than 1,250 renovation projects in excess of 7 million square feet and \$1 billion in construction costs. Over \$82 million of this can be considered “historic” and includes properties on the National Register of Historic Places. Renovations at the University of Iowa include over 550 projects, from every residence hall on campus to each of the five iconic structures of the Pentacrest.

Specific building types include classrooms, museums, corporate and governmental offices, hospitals and clinics, performing arts, gymnasium and athletic centers, residence halls, multi-tenant storefronts, churches, convents and monasteries. Historic projects have included Brutalist, Gothic, Romanesque Revival, Neo-Byzantine, Richardsonian, and Mid-century Modern architecture.

Design Engineers focuses on designing efficient, sustainable, maintainable and durable systems for renovations. HVAC systems for these projects include traditional boiler, a wide range of geothermal solutions, and centralized steam/chilled water, all with DDC and zone controls. Comprehensive power distribution systems design includes emergency power systems, fire alarm and suppression systems, and low-voltage access control. Our data and AV systems are designed to integrate into historic interiors with efficient, color-tuned LED lighting.



Specialty Consultant Partners

Acoustics

Jaffe Holden, Connecticut
Threshold Acoustics, Illinois
Kirkegaard Associates, Illinois
Acoustic Dimensions, New York

Theater Design

Schuler Shook, Minnesota
Fischer Dachs Assoc., New York
Theatre Projects, Connecticut

Audio / Visual Systems

Jaffe Holden, Connecticut
Threshold Acoustics, Illinois
Design Engineers, Iowa

Lighting Designer

Schuller Shook, Minnesota
HLB Lighting Design, California
Design Engineers, Iowa

Organ Designer

Orgelbau Klais Bonn, Germany
Casavant, Quebec

CFD Modeling

Price Industries, Manitoba

Energy Modeling

Transsolar, Germany
Wildan, Minnesota



Design Engineers' attention to detail and creative problem-solving has been instrumental in the success of dynamic performing arts projects large and small, including renovations and new construction.

HIGHLIGHTED PROJECTS

University of Dubuque Performing Arts	Proscenium, Black Box
University of Iowa School of Music	Concert Hall, Recital Hall, Organ Hall, Opera Hall
Dubuque Grand Opera House	Proscenium
CSPS Legion Arts	Concert Hall
Liberty High School Auditorium	Proscenium
Kirkwood Ballantyne Auditorium	Proscenium
University of Iowa Theatre	Proscenium, Black Box
Englert Theatre	Proscenium
Sundance Institute (in design)	Cinema, White Box
Sycamore Cinema	Cinema
UNI Strayer-Wood Theater	Proscenium

Specialty systems included displacement ventilation, low dew point air delivery systems, precision humidification systems, clean agent and pre-action sprinkler fire protection, high sensitivity air sampling fire detection systems, and specialty power for AV systems such as 200% rated neutrals, isolation transformers, isolated neutrals, etc.



Project Data

Construction: \$450,000,000+
Size: 1,650,000+ square feet

Market	# Projects	Const. \$
Churches	70	\$130M
Museums	16	\$60M
Libraries	50	\$85M
Performing Arts	42	\$177M

Highlighted Projects

- Robins Hindu Temple
11,100-sf | \$1,500,000 | 2019
- Immaculate Conception Church
5,000-sf | \$1,500,000 | 2016
- Unitarian Universalist Society of IC
18,600-sf | \$5,000,000 | 2015
- St. Paul’s United Methodist CR
32,000-sf | \$5,000,000 | 2015
- Clyde Monastery Renovation
80,000-sf | \$10,000,000 | 2010
- St. Patrick’s Church, Iowa City
50,000-sf | \$10,500,000 | 2007
- LDS Church of Fairfield
11,000-sf | \$2,000,000 | 1995
- Indian Creek Nature Center
12,000-sf | \$4,000,000 | 2017
- University of Iowa Museum of Art
85,000-sf | \$50,000,000 | 2017
- U of Iowa Old Capitol Museum
8,000-sf | \$1,000,000 | 2007
- Cedar Rapids Museum of Art
10,000-sf | \$2,000,000 | 2005
- Cedar Rapids Public Library
94,000-sf | \$43,000,000 | 2010
- Warsaw Public Library
7,000-sf | \$768,000 | 2004
- Anamosa Public Library
15,600-sf | \$1,500,000 | 2002
- Mount Carmel Archives
32,000-sf | \$1,800,000 | 2001
- University of Iowa School of Music
190,000-sf | \$150,000,000 | 2016
- University of Iowa Visual Arts
126,000-sf | \$72,000,000 | 2016
- University of Dubuque
Performing Arts Center
80,000-sf | \$35,000,000 | 2012
- CSPS Legion Arts
32,000-sf | \$5,000,000 | 2011
- Dubuque Grand Opera House
23,000-sf | \$5,000,000 | 2008
- Heartland Acres Events Center
50,000-sf | \$6,000,000 | 2008



Church, museum and cultural facility design requires close collaboration between engineers, architects, curators and building owners to define parameters for specific collections and artifacts.

Design Engineers is energized by the complex design challenges associated with the specialty systems our most treasured cultural institutions require. These systems have included low dew point air delivery systems, precision humidification systems, high efficiency air filtration systems, clean agent and pre-action sprinkler fire protection, high sensitivity air sampling fire detection systems, low UV lighting and award-winning lighting systems.

HIGHLIGHTED PROJECTS

Unitarian Universalist Society of Iowa City – Coralville, Iowa

This new 18,600-sf church embraces its surrounding environment with expansive views and a strategy for achieving Zero Energy use in 2019. Systems include geothermal HVAC, daylighting, smart LED lighting, integrated landscaping, vegetated parking and abundant daylighting.

Immaculate Conception Church Renovation – Cedar Rapids, Iowa

Built in 1915, this iconic downtown church was ready for a complete interior facelift on a tight budget. DE’s lighting design played a key role in the low-cost solution that brought a once dark sanctuary back to life.

St. Paul’s United Methodist Church Renovation – Cedar Rapids, Iowa

Comprehensive \$4.5M renovation of the Louis Sullivan-designed church improved accessibility, safety, lighting, energy efficiency and A/V capabilities while keeping many original floors and finishes.

University of Iowa School of Music – Iowa City, Iowa

This \$150M project included multiple organ and instrument rooms as well as a rare book room requiring special environmental controls and fire protection systems.

Linn County History Center – Cedar Rapids, Iowa

36,000 sf transformation of downtown car dealership into a new interactive museum with exhibit space, archival storage and admin.

University of Iowa Museum of Art – Iowa City, Iowa

New \$55M building houses more than 14,000 globally significant works of art; requiring careful security, lighting, and air handling design.

Project Data

Construction: \$350,000,000+
Size: 2,000,000+ square feet

Highlighted Projects

- Coe Athletics Facility, Cedar Rapids
110,000-sf | \$15,000,000
- Coralville Recreation Center, Iowa
30,000-sf | \$900,000
- Drexler MS Gym, Farley, Iowa
65,000-sf | \$7,900,000
- East High Athletics, Madison
35,000-sf | \$2,800,000
- Kirkwood Wellness, Cedar Rapids
43,000-sf | \$3,900,000
- Lake Carroll Pool, Lake Carroll
8,600-sf | \$1,800,000
- Lester Buresh Center, Mt. Vernon
33,382-sf | \$7,059,000
- Loras College Athletics & Wellness
91,000-sf | \$14,000,000
- Marion YMCA
10,000-sf | \$357,000
- Nevada Aquatic, Nevada, Iowa
1,100-sf | \$2,200,000
- UI Beckwith Boathouse, Iowa City
15,000-sf | \$4,800,000
- UI Fieldhouse Upgrades & Repairs
30,000 | \$250,000
- UD Chlapaty Wellness, Dubuque
65,000-sf | \$15,000,000
- Washington YMCA
140,000-sf | \$16,000,000
- Washington Pool, Washington
7,500-sf | \$1,800,000
- West High Gym, Cascade, Iowa
57,600-sf | \$6,700,000
- Williamsburg High School Gym
48,000-sf | \$5,700,000
- W.D. High Gym, Cascade, Iowa
57,600-sf | \$6,700,000
- West Union Pool, West Union
5,700-sf | \$2,000,000



Design Engineers' first athletic center project started in 1983 with a pool at Highland School's Riverside Gym. Since then DE has successfully completed more than 100 Athletic or Wellness focused projects, both state-of-the-art new construction and renovations that breathe new life and efficiencies into existing facilities. We have completed more than 2 million square feet and \$350M in construction at 40+ pool environments and 80+ gymnasiums. Design Engineers brings project-specific expertise rooted in our primary focus areas of efficiency, maintenance, and comfort.

Design Engineers focuses on designing efficient, sustainable, maintainable and durable systems in our athletic and wellness centers. HVAC systems for these projects include traditional centralized boiler/chiller, and a wide range of geothermal solutions, all with DDC and zone controls. Comprehensive power distribution systems redesign includes emergency power systems, fire alarm and suppression systems, low-voltage access control, and integrated data and AV systems, many with highly efficient and low-maintenance LED lighting.



Market Data

Construction: \$280,000,000+
Size: 1,500,000+ square feet

Highlighted Projects

University of Iowa New
Catlett Hall – \$80M, 315-ksf
Petersen Hall – \$36M, 180-ksf

University of Iowa Renovations
Burge Dining – \$11M
Burge Addition – \$14M
Hillcrest Projects – \$9M
Stanley Hall – \$6M
Mayflower Hall – \$20M
Slater Hall – \$6.5M
Currier Hall – \$9.7M
Daum Hall – \$3.2M
Rienow Hall – \$2.4M
Parklawn Hall – \$1.8M
Quadrangle – \$2.7M

Iowa State University
Friley Dining – \$6M
East Campus Dining – \$8M

University of Northern Iowa
Lawther Hall – \$14.4M
Noehren Hall – \$8.8M

University of Wisconsin-Madison
Phillips Hall – \$2.2M

Cornell College – \$8M

University of Dubuque – \$15M

Wartburg College – \$8.6M

Loras College
Beckman Hall – \$8.9M
Binz Hall – \$8.6M

Indian Hills Community College
Residence Hall – \$1.4M

Project Types

New Construction
Renovations
Food Service
Fire Alarm
Fire Suppression
Plumbing
Power
Lighting
HVAC & Direct Digital Controls
Access Control Systems
Camera Systems
Data Infrastructure



Creating Better Places for Living and Learning

Starting in 1984, residence halls and related spaces have been a core focus for Design Engineers. DE has successfully completed over 150 residence hall projects, including in every dormitory at the University of Iowa in Iowa City, as well as projects at UNI, ISU, University of Dubuque, Cornell, Wartburg, and Loras College.

These projects have involved all aspects of residence hall management and student life, including offices, lounges, kitchens, multipurpose, study areas and exercise rooms, student rooms, food services, restrooms, and loading dock areas. At the University of Iowa, Design Engineers is currently finishing renovation projects that have been continuous since 1992 and include every single restroom in the University Housing and Dining system.

Improving the Quality and Comfort of Residential Life

In addition to design in support of planned renovation projects, mechanical projects have included domestic hot water piping and heater replacements, HVAC system and piping replacements, food service equipment upgrades, hydronic snow melt systems, DDC control system upgrades and the installation of sprinkler systems. Electrical projects have included fire alarm systems, access control and security systems, and lighting upgrades.



Featured Projects

Benedictine Sisters	180,000-sf
Cottage Grove Place	40,000-sf
Sacred Heart Convent	180,000-sf
Meth-Wick Manor	250,000-sf
Saint Mary's Monastery	76,000-sf
Sisters of Charity	125,000-sf
Mount St. Francis	107,000-sf
Sisters of the Presentation	94,000-sf
Newton Senior Living	120,000-sf
Greenwood Terrace	50,000-sf
Meadowview Assisted Living	38,000-sf
Stonehill Franciscan Services	136,000-sf



Since 1983, Design Engineers has completed multiple Senior Living Community projects that include both new and remodeled facilities with many involving complex, phased construction.

Traditional aspects of Senior communities include Independent Senior Living, Assisted Living, Memory Care and Skilled Nursing Facilities. Each aspect requires detailed attention to resident needs, capabilities, and comfort. Our systems are designed around individual comfort controls and accessibility while remaining inconspicuous, quiet, efficient, and easy to maintain, ensuring a comfortable home environment.

Senior communities often use geothermal heating and cooling for superior energy efficiency and maintenance. Newer projects include comprehensive use of LED lighting and occupancy sensors as well as the use of fixtures with reduced water flow.

Specialty system design has included: security and access systems, fire detection, alarm and suppression systems, medical gas equipment, hazardous material rooms, emergency power systems, nurse call systems, interior and site lighting. Senior living facilities often include commercial kitchen, and laundry facilities, and may incorporate hydrotherapy suites.



Corporate Environment Projects

- AEGON Tower | \$10M
- American Enterprise Group | \$30M
- CRBT Main Branch | \$1.4M
- Collins Aerospace | \$3M
- Cottingham Butler | \$1M
- CRST Tower | \$22M
- Diamond V Mills | \$570,000
- Danfoss Power | \$5M
- Economy Advertising | \$1M
- Farm Bureau | \$500,000
- Fastenal Offices | \$20M
- Fisher Printing | \$3M
- Frontier Cooperative | \$3.5M
- GE Capital | \$6M
- General Mills | \$250,000
- Heartland Express | \$9M
- Holden Seeds | \$1M
- Hewlett Packard | \$1M
- Highway Equipment Co. | \$5M
- Hills Bank | \$3M
- Integrated DNA Tech | \$1M
- Intermec Inc | \$1.5M
- Kroenert Corporation | \$500,000
- Lease American Inc. | \$1,000,000
- Lil' Drug | \$10M
- Mercy Hospitals Offices | \$2.6M
- MidWestOne Main Offices | \$13.6M
- Miron Construction | \$1.3M
- National Computer Systems | \$1.5M
- Northrup King | \$2M
- Parker-Hannifin | \$3M
- Randalls Foods | \$600,000
- Roquette America | \$150,000
- RuffaloCODY | \$1.4M
- Skogman Offices | \$200,000
- Thiesen | \$1M
- Toyota Motor Services | \$3.7M
- Toyota Financial Services | \$10M
- UICCU Member Services | \$22M
- Wells Fargo | \$1.5M
- Ward Commercial Dev. | \$4.2M



Corporate Office design is programmatically complex, with many space types and industry-specific technical requirements. Product testing, light manufacturing, wellness centers, conference and meeting rooms with sophisticated A/V, and complex telecom and data center requirements are common technical complexities. These spaces require close collaboration between engineers, architects, and company planners to determine precise parameters.

Design Engineers is energized by the complex design challenges associated with corporate environments, including multi-story atriums with complex HVAC and fire protection systems.

Occupant comfort and employee productivity are critical parts of a successful office design. Systems may include high-efficiency air filtration, appropriate temperature control zoning, occupancy sensors, daylighting, occupant-controlled under-floor air distribution, and task lighting.

HIGHLIGHTED PROJECTS

UICCU Headquarters – North Liberty, Iowa

This 4-story, 100,000-sf facility includes offices, conference rooms, a retail bank, data center, cafeteria, and fitness center. The \$22M project featured a central plant geothermal, under-floor air distribution, furniture-integrating lighting, and backup emergency power.

American Enterprise Group – Des Moines, Iowa

\$30M project to Update systems while maintaining historic architectural details and providing a home for a world-class modern art collection resulted in multiple awards including a national AIA Honor Award.

CRST Tower & Corporate HQ – Cedar Rapids, Iowa

All-new 117,000-sf tower features 7-stories of energy-efficient office and retail spaces on top of a 3-story parking ramp with flood protection design.

Heartland Express Headquarters – Cedar Rapids, Iowa

Project included two new buildings, a 64,000-sf office and a 34,000-sf truck maintenance facility. Specialty systems included geothermal HVAC, networked digital controls, energy recovery, clean agent fire suppression, backup generators, and lightning protection.



Building Types

- Health Care
- Performing Arts
- Corporate Offices
- Commercial & Retail
- Classrooms & Auditoriums
- Museums & Churches
- Public Libraries
- Laboratories
- Exterior & Street Lighting
- Residential & Hotel
- Parking Structures

Illuminating Engineering Society (IES) Awards

2014 Merit Awards

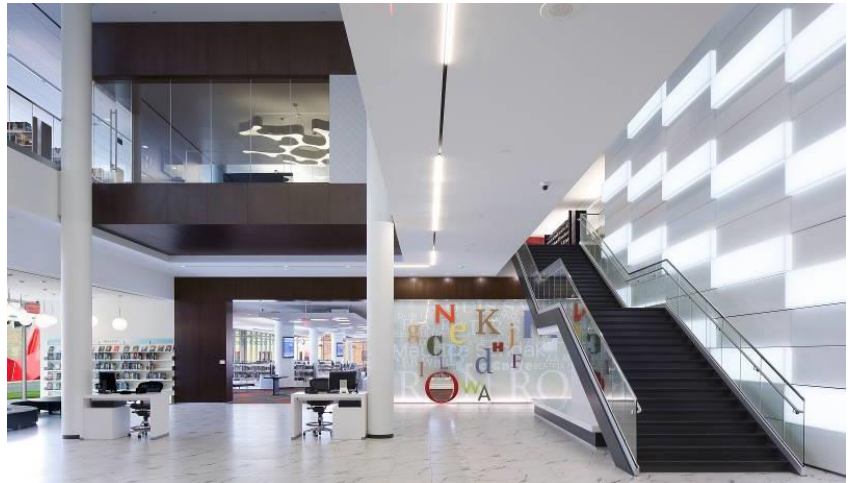
- Cedar Rapids Central Fire Station
- Cedar Rapids Public Library

2015 Merit Awards

- Cedar Rapids City Services Center
- Kirkwood Linn Hall Remodel

2016 Merit Awards

- Kirkwood Regional Center at the University of Iowa
- Mary Louise Petersen Residence Hall at the University of Iowa
- AEG Headquarters Renovation



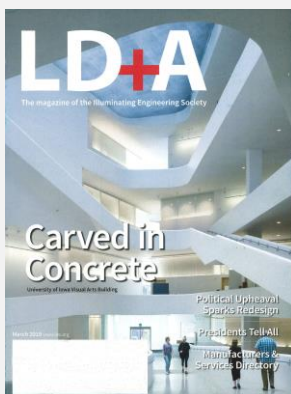
Our award-winning electrical engineering team has been designing innovative lighting systems since our founding in 1983, but the recent advances in commercial LED fixtures and lighting system controls integration have won us the recognition of our peers. Today, we provide lighting design and custom lighting applications that coordinate with HVAC, occupancy sensors, emergency, security and fire safety systems. Systems can trend usage and interface with BMS to automate lighting to conditions, weather, and time of day.

Lighting Design and Controls

Unique lighting applications can be designed around prominent building features, including cascading, interactive LED panels and exterior lighting and signage.

Color temperatures and illuminance are selected using lighting mock-ups. For example, as part of the historic renovation of the AEG Headquarters office building, 4000K LED linear fixtures were used to blend the primary lighting with the day-lit spaces while warmer 3000K downlights mimic original incandescent fixtures.

Networked and wireless lighting systems are energy-efficient and low-maintenance while maintaining the building's design intent. Integrated lighting controls allow daylight harvesting and add individual control of lighting in private offices, classrooms and conference rooms, while a mix of manual controls with occupancy sensors automatically powers down unused rooms.



UIVAB – March 2019 LD+A



Highlighted PV Projects

- Design Engineers Offices
102.6 kW | 2016
- Indian Creek Nature Center
100 kW | 2016
- Unitarian Universalist Church
160 kW | 2017
- Kirkwood Comm. College
Johnson County Regional
66.1 kW | 2016
- Olin Schools PV Array
100.2 kW | 2016
- Johnson County Ambulance
66.1 kW | 2017
- Farmer's Electric Coop Study
800 kW | 2014
- University of Iowa
Seaman's Center
College of Engineering
62.4 kW | 2017
- Cambus Rooftop Array
38 kW | 2010
- Solar Charging Station
70 kW | 2011
- Campus Solar Study, 2015

Installation Types

- Rooftop
- Building-integrated
- Ground-mounted

Facility Types

- Municipal Admin & Utility
- College Campuses
- Libraries
- Museums
- Wellness & Athletic Centers
- Stadiums & Athletic Fields
- Theaters & Auditoriums
- Hospital Campus
- Corporate Campuses
- Office Buildings/Parks
- Residence Halls
- Dining Centers
- Central Plants
- Data Center
- Hotel & Conference Centers
- Restaurants



Sustainable Design is Efficient Design

Design Engineers is committed to the principles of minimizing non-renewable energy use, responsible water use, and enhancing the quality of both the built and natural environments and has been using sustainable design principles since our inception over 30 years ago.

We believe that the foundation of sustainable systems is a simple, intuitive, and flexible design. The long-term success of systems depends on these characteristics. Sustainable design is also efficient design, but it is uncomplicated, easy to understand, and adaptable to change. Anything less will not maintain its efficiency over the life of the system and will ultimately become a drain on resources rather than a savings.

Commitment to Sustainable Design

Proof of our commitment to sustainable design is our own office space, which was LEED Gold certified in 2010. We were the first and are still the only engineering firm in Iowa to have their offices located in a LEED-certified facility.

Our Cedar Rapids headquarters hosts a 6,500 square-foot, 102.6 kW photovoltaic array on the roof. Hidden from view and completely silent, it offsets 100% of the office's energy use, qualifying the building for Net Zero and Living Building in 2018.

Geothermal Experts

Design Engineers has been active in the design of commercial scale geothermal heating and cooling systems for over 25 years and has successfully completed over 100 projects totaling over 6 million square feet and \$900 million in construction costs, including new construction and renovations.

Geothermal sources have included vertical, horizontal, and pond-based closed-loop ground heat exchangers and groundwater systems including pump/discharge and pump/reinject.

PROJECT	Size square feet	EUI kBtu/sf/yr	ECI \$/sf/yr	% Better than code	Rebate Utility	\$ Saved Annually	\$ saved Per sf/yr
AEG Corporate HQ	153,400	131.6	\$1.38	32.0%	\$69,352	\$99,620	\$0.65
AEGON Daycare	15,500	55.7	\$0.82	35.2%	N/A	\$6,904	\$0.45
Cedar Rapids Central Fire Station	82,000	50.0	\$0.95	50.7%	\$279,343	\$80,112	\$0.98
Cedar Rapids Library	94,000	36.5	\$1.06	50.0%	\$276,000	\$99,640	\$1.06
Cedar Rapids Public Works	342,000	76.3	\$0.85	41.0%	\$415,628	\$202,012	\$0.59
Coralville North Fire Station	21,600	43.6	\$0.69	33.7%	\$16,331	\$7,576	\$0.35
Coralville Transit & Parks	39,000	57.5	\$0.82	39.9%	\$76,300	\$21,231	\$0.54
Davenport Police Facility	113,000	41.1	\$0.65	44.5%	\$255,000	\$58,892	\$0.52
Design Engineers Office	28,000	31.6	\$0.58	45.9%	\$46,800	\$13,778	\$0.49
Dubuque Airport Terminal	33,000	50.7	\$1.23	61.0%	N/A	\$63,487	\$1.92
Dubuque Senior High School	133,300	44.4	\$0.98	26.2%	\$41,000	\$46,324	\$0.35
Dyersville Elementary	60,000	27.2	\$0.70	64.8%	\$169,200	\$77,318	\$1.29
IC West High Band	30,000	21.1	\$0.44	68.4%	\$62,100	\$28,572	\$0.95
Indian Creek Nature Center	13,000	39.3	\$1.32	50.3%	\$27,326	\$17,367	\$1.34
Iowa City Fire Station #2	10,400	60.8	\$1.21	37.6%	\$22,700	\$7,583	\$0.73
Iowa City Fire Station #4	13,300	69.9	\$1.62	52.0%	\$21,500	\$23,342	\$1.76
ISU Biosciences ATRB	117,700	242.0	\$5.39	29.2%	\$0	\$261,646	\$2.22
Johnson County Ambulance	34,100	60.3	\$0.60	59.0%	\$98,308	\$29,442	\$0.86
Johnson County Comm Ctr	17,300	55.4	\$0.88	42.6%	\$34,200	\$11,299	\$0.65
Kirkwood Center	44,100	52.0	\$0.81	47.4%	\$84,300	\$32,190	\$0.73
Kirkwood Johnson County	101,000	30.7	\$0.89	55.0%	N/A	\$109,644	\$1.09
Kirkwood Linn Hall	213,200	24.3	\$0.61	57.7%	\$412,330	\$177,400	\$0.83
Liberty High School	253,110	37.5	\$0.86	41.1%	\$437,429	\$151,892	\$0.60
Linn County Options	97,000	55.3	\$1.11	25.8%	\$37,300	\$37,438	\$0.39
Loras College Athletic	91,200	67.5	\$0.98	57.5%	\$352,100	\$120,920	\$1.33
Midwest One Bank	61,600	62.9	\$0.96	26.6%	\$31,471	\$21,431	\$0.35
Mt. Vernon High School	93,000	39.2	\$0.89	38.4%	\$151,590	\$51,597	\$0.55
North Linn Elementary	52,600	42.0	\$1.28	55.5%	\$147,182	\$83,971	\$1.60
Penn Elementary	71,600	37.1	\$1.19	46.7%	\$146,727	\$74,653	\$1.04
Prairie High School	386,000	50.1	\$0.75	29.2%	\$71,000	\$119,398	\$0.31
Prescott Elementary	65,000	30.2	\$0.58	51.9%	\$74,314	\$40,678	\$0.63
St. Patrick's Church	50,500	50.0	\$1.00	42.8%	\$88,700	\$37,787	\$0.75
UD Administration	41,600	36.6	\$0.73	52.9%	\$42,040	\$34,108	\$0.82
UD Performing Arts	80,000	50.1	\$1.23	59.4%	\$336,800	\$143,965	\$1.80
UI Beckwith Boathouse	22,600	67.3	\$1.43	33.3%	\$46,000	\$16,135	\$0.71
UI Dental Science Addition	32,400	38.9	\$1.03	43.8%	\$12,100	\$26,009	\$0.80
UI Dental Science Phase Two	131,600	52.3	\$0.93	35.9%	\$124,000	\$68,545	\$0.52
UI Catlett Residence Hall	298,700	82.3	\$1.87	20.9%	\$51,873	\$147,586	\$0.49
UI Petersen Residence Hall	178,600	71.5	\$1.50	44.5%	\$509,300	\$214,803	\$1.20
UI Seamans Center Engineering	68,100	75.2	\$1.75	32.2%	\$21,000	\$56,599	\$0.83
UI Visual Arts Building	126,000	70.2	\$1.18	48.6%	\$522,900	\$140,581	\$1.12
UI Voxman School of Music	182,600	32.9	\$0.80	48.7%	\$772,269	\$138,676	\$0.76
UNI Lawther Hall	132,900	86.8	\$1.09	25.5%	N/A	\$49,583	\$0.37
Van Meter	22,900	31.1	\$0.59	58.1%	N/A	\$18,735	\$0.82
Washington Public Library	30,000	24.3	\$0.40	52.6%	\$28,815	\$13,316	\$0.44
Waukee CAPS	70,000	49.7	\$0.81	33.5%	\$29,100	\$28,563	\$0.41
West Delaware High Phase 2	28,300	35.0	\$0.61	67.6%	\$71,307	\$36,018	\$1.27
Williamsburg High School	140,100	38.1	\$0.84	43.9%	\$197,001	\$92,091	\$0.66
Williamsburg High School	140,100	38.1	\$0.84	43.9%	\$197,001	\$92,091	\$0.66
Williamsburg Library	17,500	36.0	\$0.95	55.9%	\$42,672	\$21,073	\$1.20
Willow Wind School	17,100	58.2	\$1.15	49.8%	\$46,100	\$19,508	\$1.14
DE TOP 52 AVERAGE	91,992	53.9	\$1.05	44.9%	\$152,083	\$70,061	\$0.86
DE TOP 52 HIGH	386,000	242	\$5.39	68.4%	\$772,269	261,646	\$2.22
DE TOP 52 LOW	10,400	21	\$0.40	20.9%	\$16,331	\$6,904	\$0.31

“The School of Music building model is one of the most fully developed design models I’ve ever encountered.”

Chris Bubser
Integrated Construction Coord.
Mortensen Construction

Strategic Building Information Modeling

Design Engineers uses Autodesk’s *REVIT* 3D Building Information Modeling software on 100% of our projects. *REVIT* is the global industry standard. A recent AEC industry study found teams using BIM processes experience reduced project error (61%), reduced time for communication (55%), increased client visibility and input (52%), and higher quality projects (52%).¹

Design Engineers’ implementation of BIM began in 2006 and continues to rapidly evolve as a strategic tool. We continually add new capabilities to better leverage the power of building models to benefit design construction and operations teams.

BIM Execution & Planning

Since 2008 DE has been actively developing our own BIM standards (DE-LOD) for use in our models and construction drawings. Our BIM Manager directs this effort and the level of development required for each project in coordination with the building owner, architect, specialty consultants, and construction teams. *BIM 360* keeps teams and documents connected, active, and globally available 24/7.

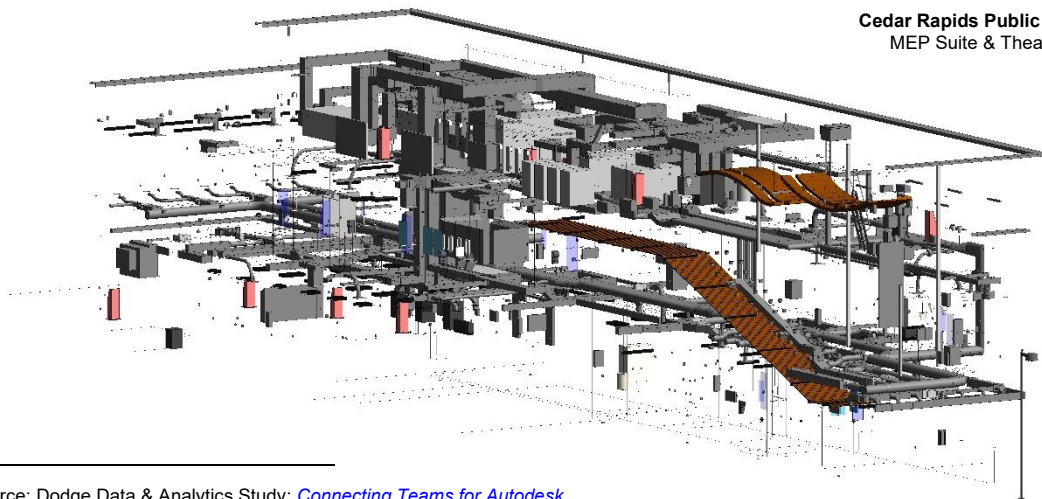
Design Engineers has developed customized *REVIT Families* with specific parameters for a wide range of common building elements. Each BIM project further informs and tunes the depth of our modeling practice, increasing the accuracy and reliability of our models and our custom BIM Families, project after project.

Design Engineers Suite of Solutions

DE uses *REVIT* to develop building elements and *Navisworks* for visualization and clash detection. We use *Dynamo* to directly automate aspects of *REVIT*’s API to suit our custom workflow.

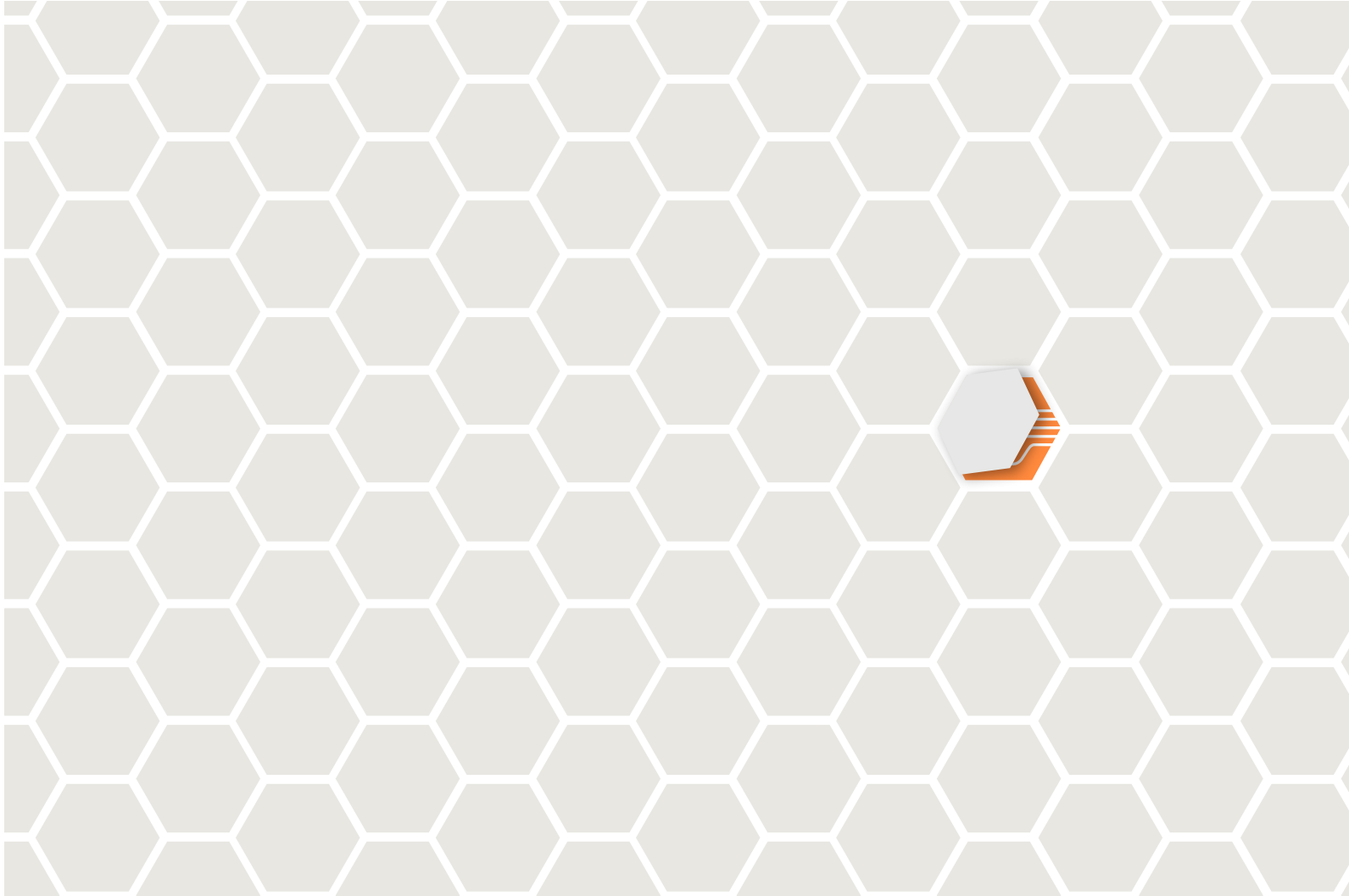
To enable quick views of system performance and design, DE’s in-house system-analysis tools, including color-coded plans and schedules, are available from day one for all projects. DE also uses *Sefaira*, an energy modeling plug-in for *REVIT* that is commonly used for early energy analysis, and *Elum Tools* for *REVIT*-based lighting calculations.

Cedar Rapids Public Library
MEP Suite & Theatre BIM Model



¹ Source: Dodge Data & Analytics Study: [Connecting Teams for Autodesk](#)





Everything works better together when DE's behind it.

