



**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

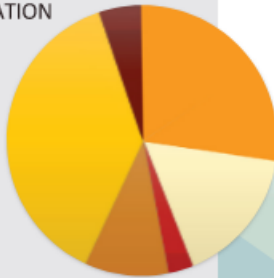
- 19 MECHANICAL ENGINEERS
- 12 ELECTRICAL ENGINEERS
- 8 LEED ACCREDITED PROs  
Sustainability
- 5 TECHNOLOGY-SPECIFIC
  - RCCD Communications
  - LC Lighting Design
  - CTS Audio/Visual
- 1 CPHC Passive House
- ★ 23 LICENSED & BRILLIANT PROFESSIONAL ENGINEERS



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

DIRECT DIGITAL CONTROLS  
automation & monitoring

SMART-SIZED HVAC  
Energy-efficient designs  
that save and last longer

SECURITY & FIRE SYSTEMS

GEOTHERMAL  
heating and cooling

FUTURE-CENTRIC ELECTRICAL  
- LED Lighting  
- Robust Data  
- AV Integration

PHOTOVOLTAIC ARRAYS

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**

8801 Prairie View Lane SW, Cedar Rapids, IA 52404  
8215 Greenway Blvd, Middleton, WI 53562



We provide **proactive** engineering excellence in HVAC, Plumbing, Fire Suppression, Power, Lighting 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 65 talented and professional individuals, including 19 Mechanical Engineers and 12 Electrical Engineers. Our team’s credentials include 16 PE, 8 LEED AP/GA, 1 RCDD, 2 LCs, 1 CTS, 1 CPHC, and 1 CPD.

Design Engineers has been doing exceptional work for 41 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.

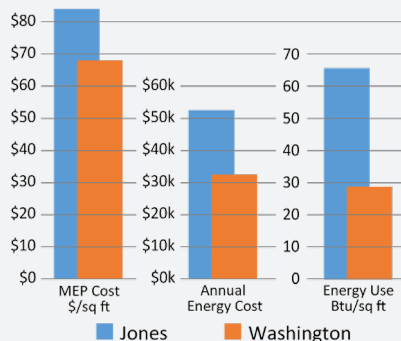


### Project History

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

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

**Architect**

OPN Architects  
 Cedar Rapids, Iowa  
 Bradd A. Brown, AIA, LEED AP  
 319.730.2907  
 bbrown@opnarchitects.com

**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



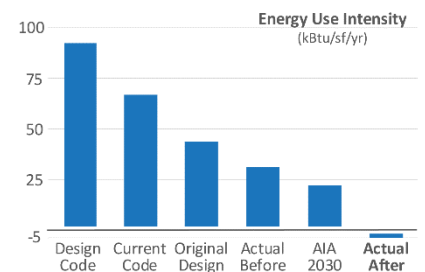
**Integrated & Adaptive Design from Day One**

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.

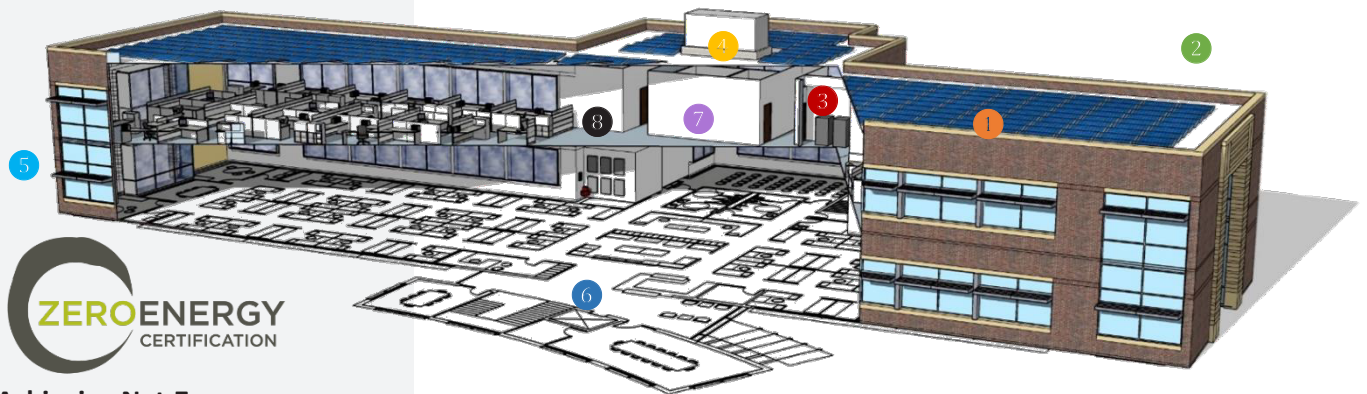
Fine tuning improvements to our HVAC and lighting systems coincided with the installation of a 6,500-sf, 103 kW photovoltaic array on the roof. Hidden from view and silent, it is offsetting 100% of the office’s energy use, qualifying the office for Net Zero Energy certification.



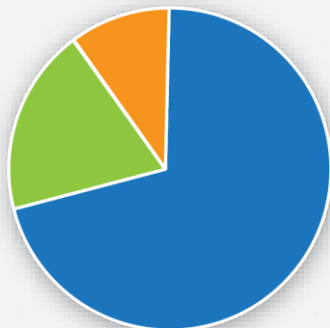
**Net-Zero Building Meets Four-Season Climate**

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





Voxman School of Music

*"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
- Madison Area Technical College
- Misericordia University
- Mount Mercy University
- Sacred Heart Seminary
- University of Dubuque
- University of Iowa
- University of Northern Iowa
- University of Wisconsin-LaCrosse
- University of Wisconsin-Madison
- University of Wisconsin-Oshkosh
- University of Wisconsin-Parkside
- University of Wisconsin-Stevens Point
- 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



**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.







Mary Greeley Medical Center

*"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 Greeley Medical Center*



### Primary Clients

Mayo Hospitals  
Albert Lea  
Austin  
Lake City  
Methodist  
Owatonna  
Saint Mary's  
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 health care 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.







Waukee Innovation and Learning Center  
Waukee Community School District



**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  
 Beaver Dam United  
 BGM Community Schools  
 Belle-Plaine  
 Calamus-Wheatland  
 Cedar Rapids Community  
 Dubuque Community  
 Iowa City Community  
 Madison Metro  
 Marion Independent  
 Mount Vernon Community  
 Salem  
 St. Catherine's High of Racine  
 St. Joseph School  
 Waukee Community  
 Williamsburg Community  
 Wisconsin Dells

**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.







Cedar Rapids Public Library

*“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, Mortenson Construction*



**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.





**Advanced Teaching & Research Building**

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

*- Mark Rhoades, SLAM Collaborative*



**References**

Thomas Moore, Manager  
Building Operations &  
Maintenance  
Facilities Management  
University of Iowa  
Iowa City, Iowa  
319.335.2469  
thomas-p-moore@uiowa.edu

Mark Grief, Project Manager  
Design & Construction Services  
Facilities Planning & Management  
Iowa State University  
Ames, Iowa  
515.294.8955  
mgrief@iastate.edu

**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.





Wellabe National Headquarters

*"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**

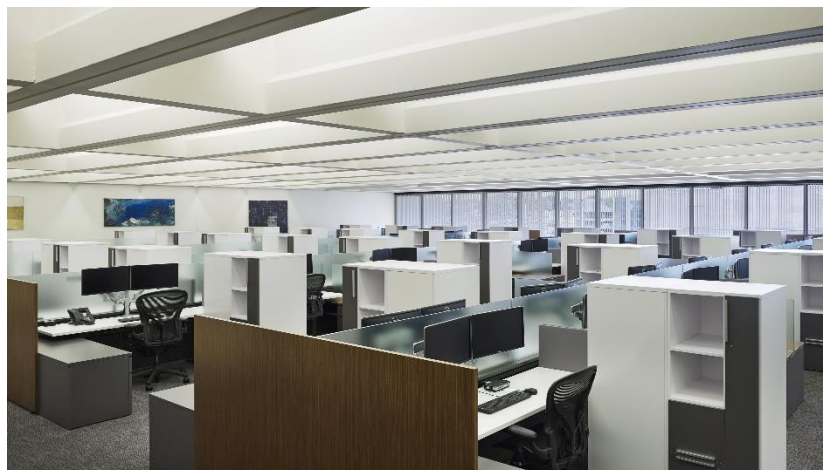
- UI Pentacrest Projects – \$6M
  - UI Residence Halls – \$87M
  - Burge Dining – \$11M
  - Burge Addition – \$14M
  - Hillcrest Projects – \$9M
  - Stanley Hall – \$6M
  - Mayflower Hall – \$20M
  - Slater Hall – \$6.5M
  - Currier Hall – \$9.7M
  - Daum Hall – \$3.2M
  - Rienow Hall – \$2.4M
  - Parklawn 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  
 Capitol Bank | \$3.2M  
 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  
 Exact Sciences | \$100K  
 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  
 Kinship Bank | \$1M  
 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  
 Prevail Bank | \$500,000  
 Quarra Ston | \$10M  
 Randalls Foods | \$600,000  
 RISE Wisconsin | \$2M  
 Roquette America | \$150,000  
 RuffaloCODY | \$1.4M  
 Skogman Offices | \$200,000  
 Thiesen | \$1M  
 Thyse Printing | \$9M  
 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.





Immaculate Conception



**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

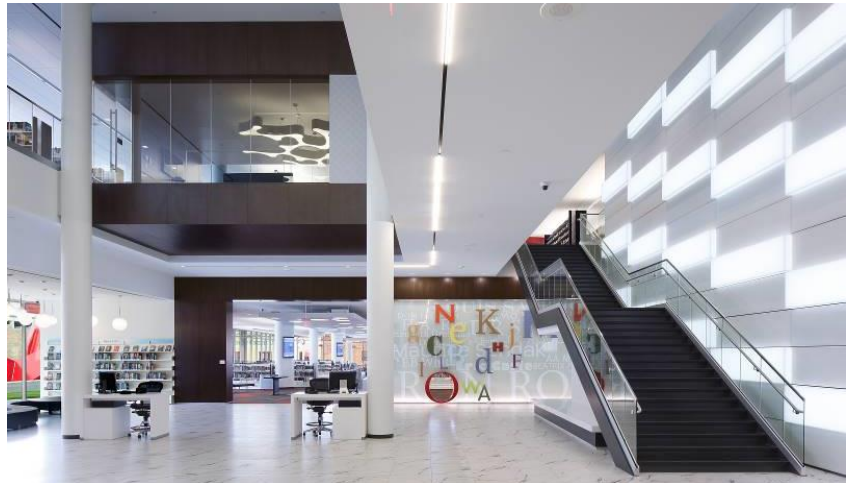
- Cedar Rapids Central Fire Station
- Cedar Rapids Public Library

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



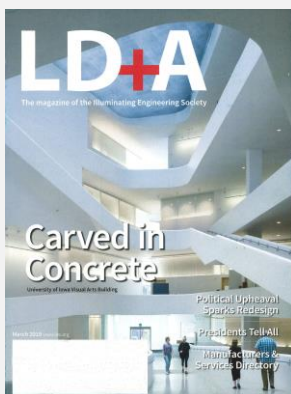
Our award-winning electrical engineering team has been designing innovative lighting systems since our founding in 1983, but the recent advances in commercial LED fixtures and lighting system controls integration have won us the recognition of our peers. Today, we provide lighting design and custom lighting 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
<b>DE TOP 52 AVERAGE</b>	<b>91,992</b>	<b>53.9</b>	<b>\$1.05</b>	<b>44.9%</b>	<b>\$152,083</b>	<b>\$70,061</b>	<b>\$0.86</b>
<b>DE TOP 52 HIGH</b>	<b>386,000</b>	<b>242</b>	<b>\$5.39</b>	<b>68.4%</b>	<b>\$772,269</b>	<b>261,646</b>	<b>\$2.22</b>
<b>DE TOP 52 LOW</b>	<b>10,400</b>	<b>21</b>	<b>\$0.40</b>	<b>20.9%</b>	<b>\$16,331</b>	<b>\$6,904</b>	<b>\$0.31</b>



*“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%).<sup>1</sup>

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.

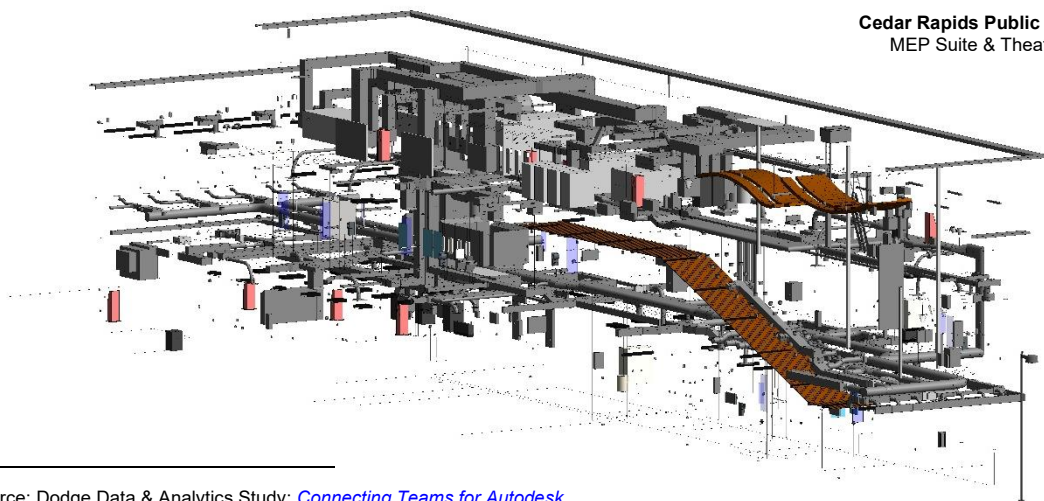
Design Engineers has developed customized *REVIT Families* with specific parameters for a wide range of common building elements. Each BIM project further informs and tunes the depth of our modeling practice, increasing the accuracy and reliability of our models and our custom BIM Families, project after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

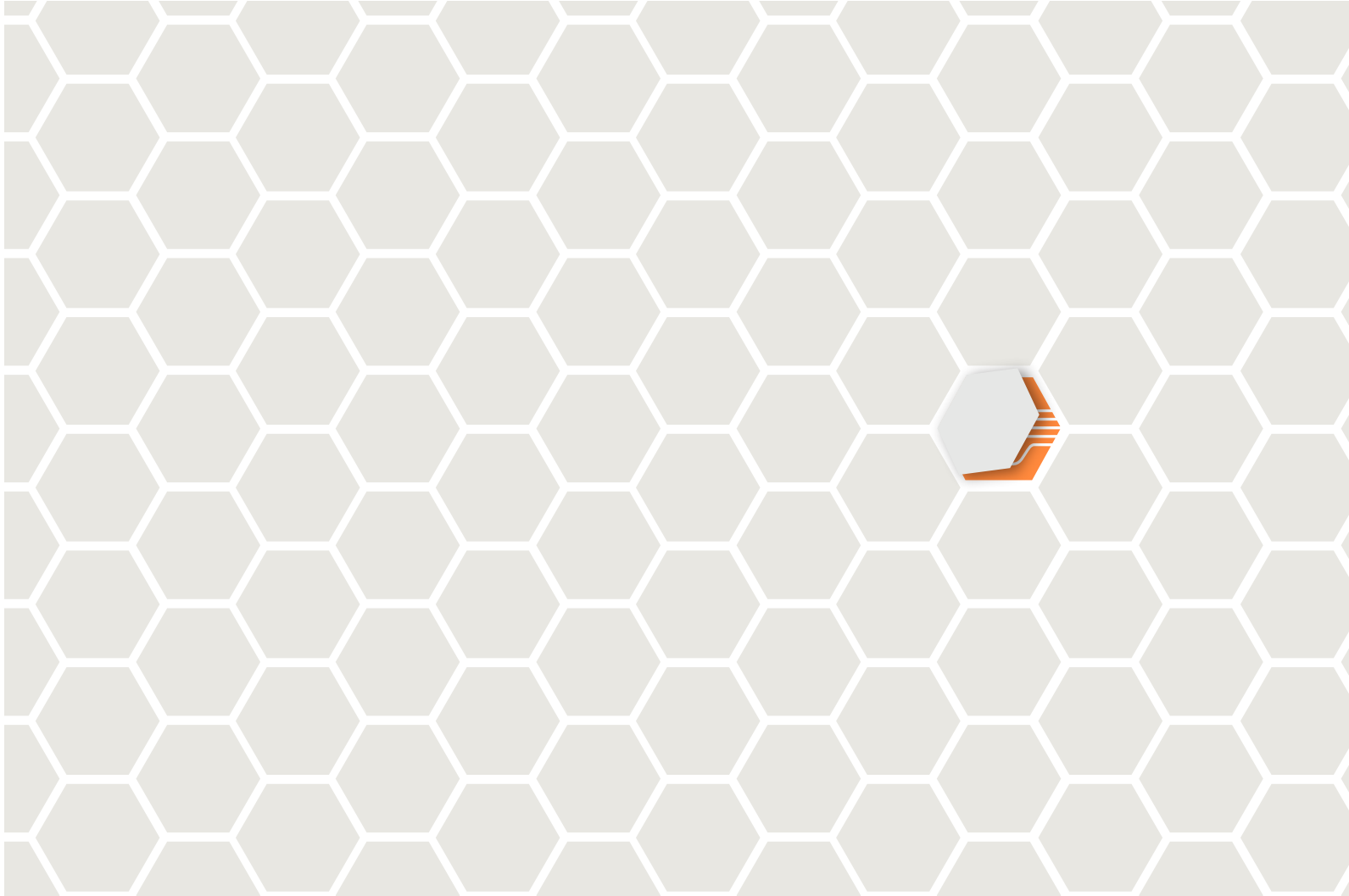


<sup>1</sup> Source: Dodge Data & Analytics Study: [Connecting Teams for Autodesk](#)









Everything works better together when DE's behind it.

