

# ia architect

THE OFFICIAL MAGAZINE OF AIA IOWA



## Making & Made

Patterns and Practices



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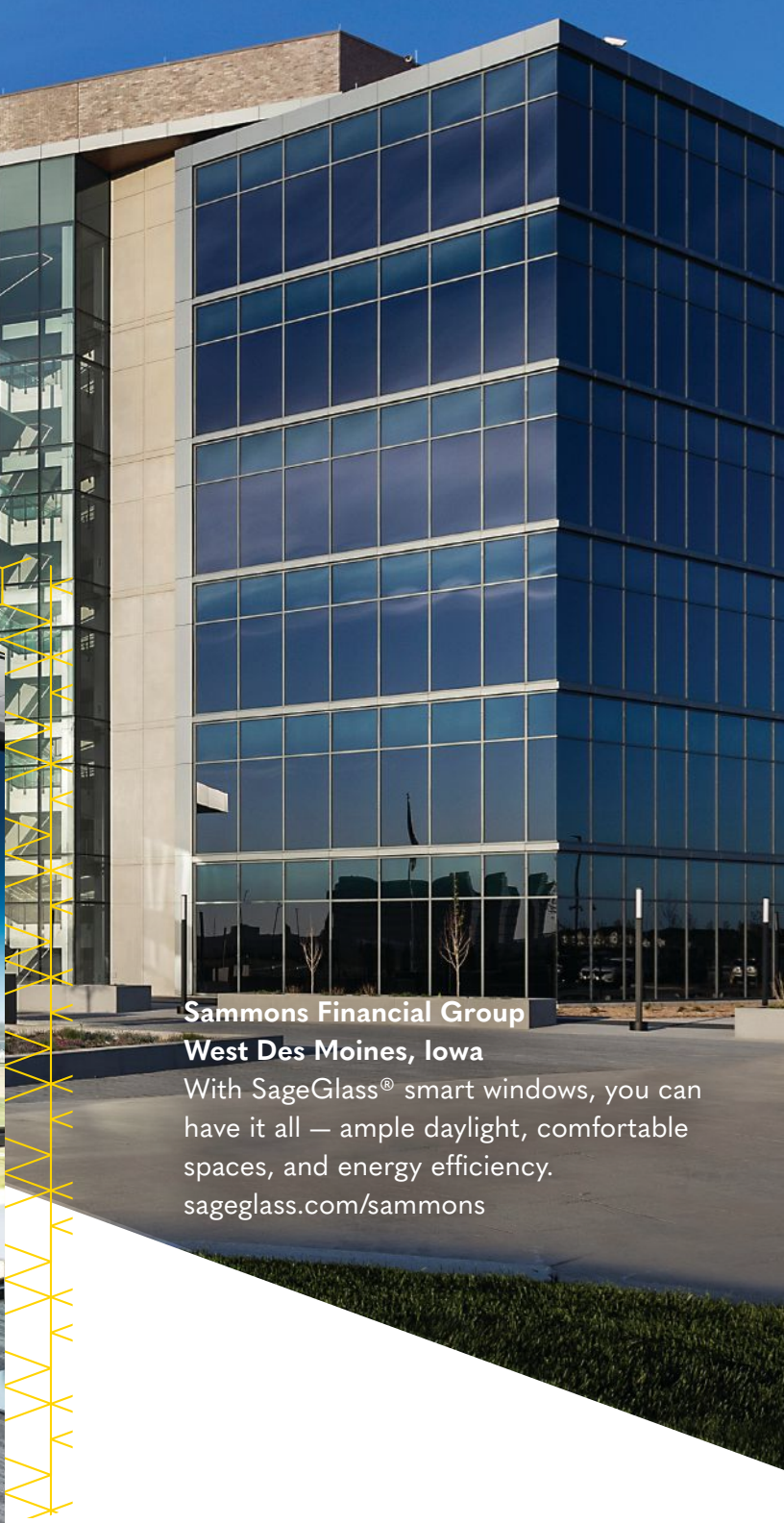
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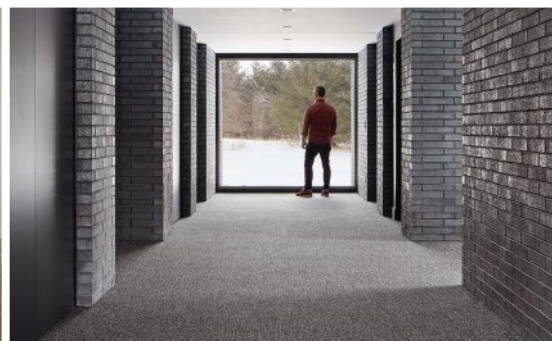
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# THE NATURE OF DESIGN



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# editor's letter



**Justin Burnham, Assoc. AIA**  
Editor, *Iowa Architect*

## Welcome!

Architecture is a STEAM (Science, Technology, Engineering, Arts, and Math) profession. In my youth, I learned how to develop appealing compositions—utilizing structure, theme, and variation—through music and art. I found most math impenetrable, but trigonometry interested me. I did not know how this would apply to my life until architecture revealed itself as an appealing merger of creative and technical concepts applied to problem-solving.

Not all makers pursue architecture, so this issue is a nod to all those makers out there: We see what you are doing, and you inspire us. This issue features spaces to make music, paintings, drawings, textiles, glassworks, industrial goods, and solar cars among other things. We examine means of modeling performance in both the computational and physical realm and explore an emerging method of timber assembly.

Ultimately, this issue showcases work made with contemporary methods of practice that have unlocked new dialogues about what is possible. How do the capabilities of the designers and their design tools influence one another? How are expressive and technical aspects balanced?

Finally, the relationship between instructor and pupil is not to be overlooked. What are our future makers in the AIAS up to? Even more broadly, in preschool, my son ordered leaves in a pattern according to their species; one Christmas, my niece's present was a robot that needed code to move. This fall—my signoff as editor—let's enjoy spaces where we can observe others making stuff together.

iaarchitect

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**Correction:** It has been brought to our attention that, in the summer issue, project credits (page 37) for the article "More Outdoors, Please" (page 26) neglected to credit the landscape architecture consultant: Confluence. We very much regret this omission as Jamie Hurd Amphitheater was designed as collaboration between OPN Architects and Confluence Landscape Architecture.

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The theme is “TEAM SPIRIT” so use your imagination and the sky is the limit on what you can design. Space is limited so secure your spot today!



**Register online @  
MasonryInstituteofIowa.org  
(under CE)**



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## EXPERT PARTNERS

### Thank you to our Allied members

As a profession, architecture thrives on one key ingredient: collaboration. Throughout each project our American Institute of Architects, Iowa Chapter (AIA Iowa) members are constantly connecting with experts who provide the products, materials, and services that make their buildings possible. Our AIA Iowa Allied members are our partners throughout it all. Our profession relies on the lasting relationships we have with product suppliers, contractors, developers, manufacturers, distributors, engineers, landscape architects, planners, artists, and vendors in fields allied to architecture. No two projects are alike, and our AIA Iowa members value the deep understanding that each Allied member has about their area of expertise. Allied members help architects meet the ultimate project goal of marrying form with function to build an aesthetically pleasing but sustainably produced building.

“Our goal as Allied members is to partner with architects to help them identify and provide the best solutions for the project at hand. As experts in our areas of concentration, we strive to be the go-to resource, offering assistance from the conceptual stage of design to post-occupancy,” says AIA Iowa Allied Director Brenda Golwitzer, Integrated Sales.

“Our profession moves at a mile a minute and there’s no slowing down the project timeline to do the research to vet every product or service that is available on the market. Our AIA Iowa Allied members are the trusted resource we need to be sure that the projects we are designing have the best quality of materials and solutions to make lifelong lasting architecture,” says AIA Iowa Board of Directors President Dan Drendel, AIA, Slingshot Architecture.

Thank you to all our AIA Iowa Allied members for being the best partners in this profession.

#### Allied Members

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# THE FUTURE OF DATA-DRIVEN DESIGN

## How the capabilities of designers and their software influence one another

**WORDS :** MICHAEL BECHTEL, AIA; BRENT HOFFMAN, ASSOC. AIA

Many initialisms surround the sustainability movement. Chances are if you have recently worked with an architect, then you have probably been exposed to at least a few. We at the Editorial Board of Iowa Architect are motivated to share with our community what our state's architects are doing behind the scenes with high-tech research and algorithmic evaluation to predict building energy: tools for design feedback.

As environmental science and computer technological advancement have collided, architects have changed how they approach practice. Iowa architects, in large part, no longer conceptualize and document building designs solely in two dimensions. More likely, the architect is working simultaneously between hand sketching and three-dimensional modeling from the onset of their work. It is this building modeling that has given rise to far more robust and informed decision making by providing architects with real-time evaluation impacts within the iterative process, we call design.

As architects harness the power of the ever-changing advancement in computer software and machine learning to iterate, challenge, study, and test assumptions, one thing is certain: data-driven design is here to stay. The benefit for our clients, community, and our state at large is that our built environment is being optimized. Architects strive for high-performance buildings for our clients, building occupants, and our broader community, but they are not as valuable if people do not like to occupy them. It takes an architect's skill to design long-lasting structures that people enjoy.

So, while data-driven design and complex parametric computer programming help architects answer the why, we cannot lose sight of balancing cost, function, and aesthetics to ensure our communities are beautiful, healthy, and productive.

Many firms in our state have made commitments to developing our built environment in a beautiful, healthy, and sustainable way. Highlighted below are four firms that are signatories to the AIA 2030 Commitment, which measures and reports carbon use. What follows is a list of software they rely on as well as a statement of their thinking.

Past (^) / Present (*) / Future (-)	BNIM Architects	Neumann Monson Architects	OPN Architects	RDG Planning & Design
AIA 2030 DDX	*	*	*	*
AIA Common App			*	
AIA COTE Super Spreadsheet	*		*	
Athena		*		
Climate Consultant			*	
Climate Studio		~	*	
Cove.tool	*			*
EPA Target Finder			*	
Insight 360	^	^	~	
PV Watts	*			
PlanIT Impact	^			
Power Profiler	*			
PV Watts (NREL)			*	
Red2Green		*		
Sephira	^	*	^	
Tally	*	*		
Uc Berkley CBE POE Toolkit			*	
USGBC Arc			*	
EC3	~			~
iTree	~			
Insight 360	^		~	
Pathfinder	~			
Reli toolkit	~			
Tally	*			~

## RDG Planning & Design

SOURCE : BRENT WOLLENBURG, AIA

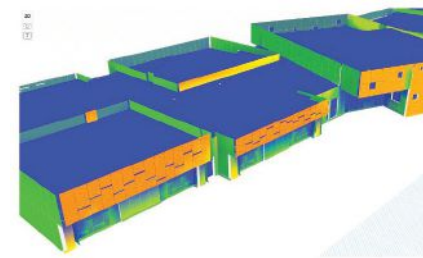
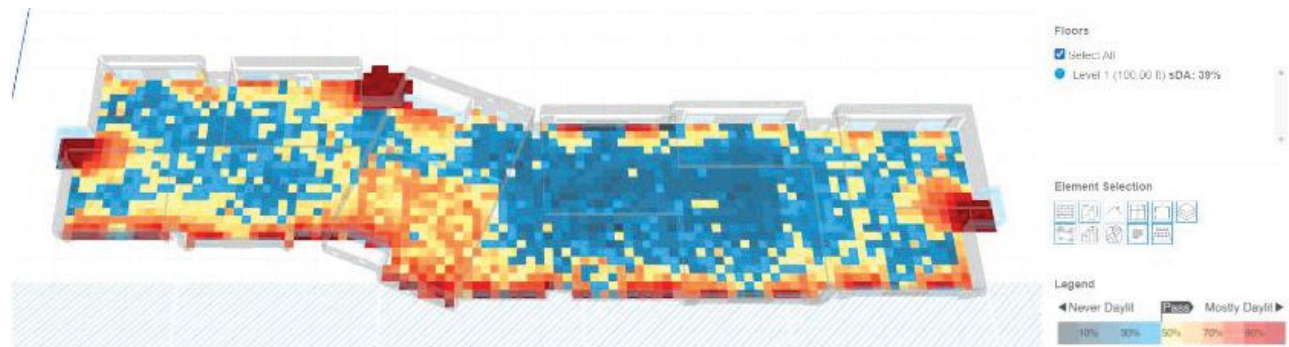
RDG Planning & Design's commitment to the triple bottom line—that is, a focus on People, Planet and Purpose (aka Profit)—is what guides the firm's holistic approach to sustainability. Though the tools to measure impact and success can be complex, RDG's sustainable design practice is rooted in a simple, straightforward belief that today should not sacrifice tomorrow.

Because of RDG's national presence and the diversity of markets in which it practices, the firm designs projects sited within a variety of climate conditions and of varying size, scale and scope; because of this, teams work to gain an early understanding of a project's potential Energy Use Intensity (EUI)/Operational Carbon and establish metrics necessary to positively influence subsequent design.

RDG also participates in the AIA 2030 Data Exchange (DDx), which supports not only the development of benchmarking

and success but also opportunities for improvement and advancement. The firm has recently taken steps to enhance post-occupancy evaluations (POEs) by collecting data after a building has been occupied to help validate or improve future design decisions.

The firm currently uses the Cove.tool as its main energy modeling tool, which allows for real-time feedback on building performance analysis and operational carbon analysis throughout the design and documentation process. Tools RDG is exploring include Tally - Life Cycle Assessment and EC3 for embodied carbon (carbon from the building materials) tracking and benchmarking. Understanding and designing for Operational Carbon is vital, but to not consider the materials and embodied carbon of a project would miss a critical part of the equation.



**Top:** Cove.tool software measures daylight penetration. **Left:** Cove.tool software measures maximum sun hours. **Bottom right:** Rendering of Porter-Leath Early Childhood Academy designed by RDG Planning & Design.



# Neumann Monson Architects

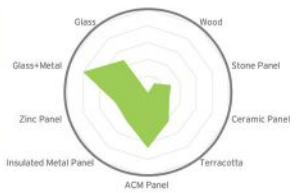
SOURCE : MATT KRIEGER, AIA

Neumann Monson Architects focuses on a two-pronged approach composed of both social and environmental efforts that make up one of the company's core values-responsibility. While Neumann Monson clearly views both aspects of responsibility as intertwined, their commitment to the environmental facet was cemented when they became signatories to the AIA 2030 Commitment, which includes the annual project portfolio reporting to the DDx.

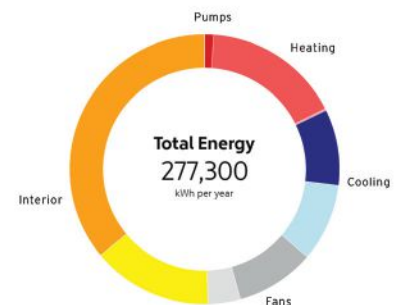
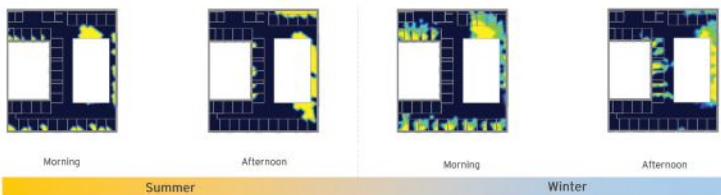
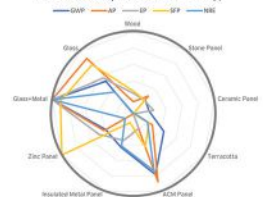
The inclusion of a Sustainability Action Plan within the overall strategic plan serves to measure progress for both internal operational goals and projects. Additionally, they follow the AIA's Design Excellence Framework for charting process integration. Actual energy use follow-ups (POE's) are done for all projects to improve and inform their future design work.



Material Analysis: Global Warming Potential



Material Analysis: Embodied Energy



**Top left:** Stanley Center for Peace and Security, designed by Neumann Monson Architects **Top right:** Tally Lifecycle Analysis **Bottom left:** Sefaira Daylight Analysis **Bottom right:** Sefaira Energy Analysis

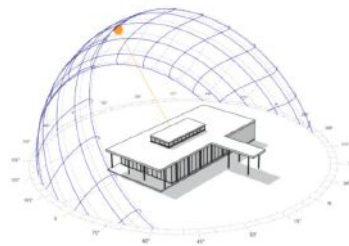
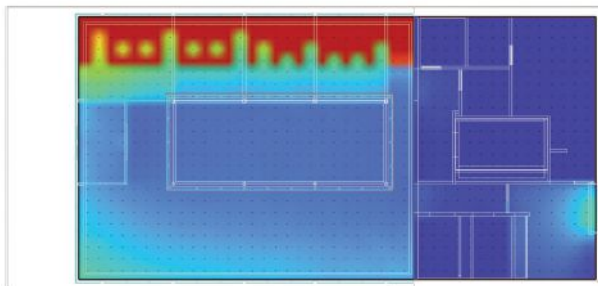
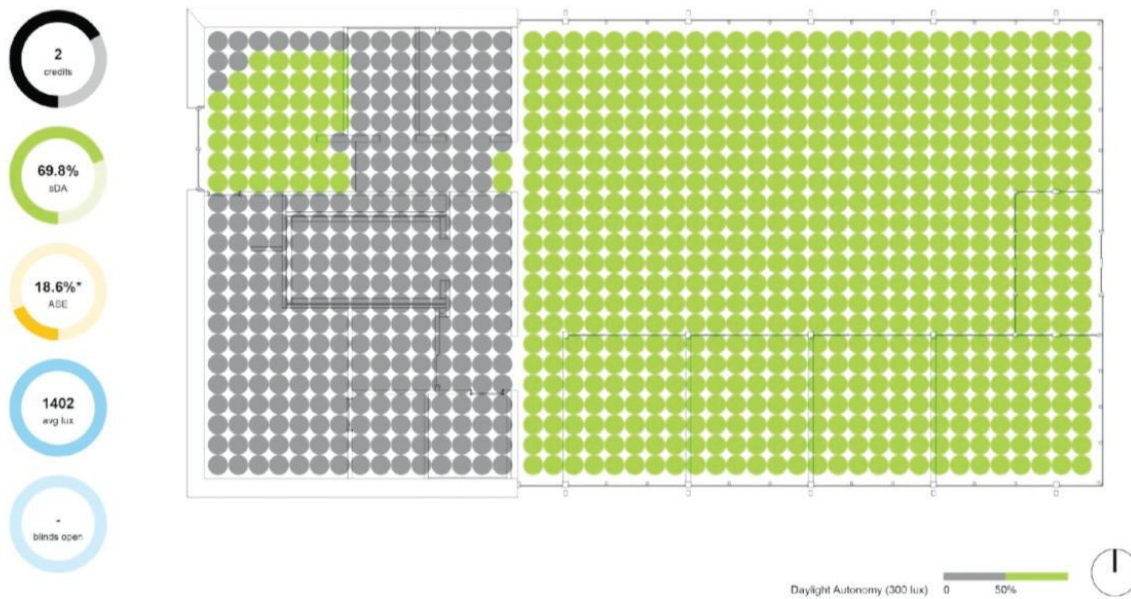
I collected

## OPN Architects

SOURCE: DANIELLE HERMANN, AIA; DAVID SORG, AIA; TATE WALKER, AIA

The big idea at OPN Architects is that sustainability isn't separate from design—they're one and the same. Good design cannot exist without good performance and vice versa. OPN has adopted the AIA's Framework for Design Excellence and measure our projects and our firm against its 10 principles, and we've had success integrating the framework into client's strategic priorities as well. It works because it's design centric and both comprehensive and flexible. Every line we draw can be an act of advocacy for good design and for the environment.

OPN utilizes a wide range of different programs depending on need, individual staff capabilities, and desired outcomes. OPN selects specific program tools to support each one of the AIA's Framework for Design Excellence comprehensive categories. The most common principle affecting their design work is Energy. OPN uses both low and no-cost analysis tools and advanced software when applicable. This way, there are no implementation barriers; you can always do something to positively affect the outcome of a project. Tools are great, but nothing beats a well thought out process and strong partners.



**Above:** Spatial Daylight Autonomy is used to depict the area people can work comfortably without electrical lighting.

**Left:** Climate Studio is used to evaluate OPN project CRBT Marion, led by David Sorg, AIA.



# BNIM

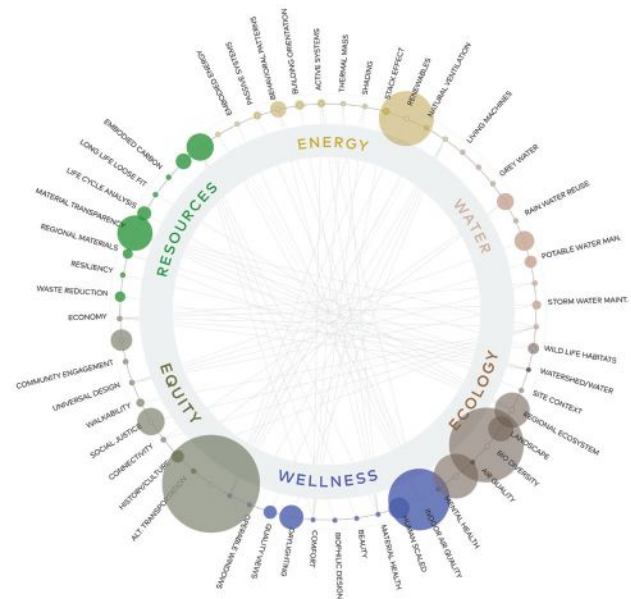
SOURCE: JEREMY KNOLL, AIA; DANA SORENSEN, AIA

BNIM has an action plan that references the AIA's Design Excellence Framework for charting process integration. Their company produces an annual sustainability report to understand progress and areas for growth.

The BNIM Sustainability Action Plan is a systems-based approach to design, developed to further their mission of enhancing the human condition through our Human-Purposed Integrated Design (HPid) methodology. This approach reflects a deep commitment to humanity as the origin of inspiration, and design innovation.

BNIM has developed a series of categorical measures to apply systematically to current and past projects, as well as their operational practice. These categories include energy, water, equity, wellness, ecology, and resources. Each category contains a series of goals by which to measure the success of a given project or design.

Post occupancy is usually accomplished by the project pursuing third party certification, such as LEED or Living Building Challenge, which include requirements for post occupancy surveys and utility reporting. In recent years, BNIM has increasingly utilized "intelligent" building automation systems, which automatically balance energy flows, outside air, daylight controls, and more. These systems have proved to be effective methods to add new functionality and reporting capabilities over time, such as air quality sensors which have become critical in a post-pandemic world.



**Above:** BNIM has developed categorical measures to apply systematically to current and past projects, as well as their operational practice.

## Techy Terms and Their Translations

**AIA** – American Institute of Architects  
**AIA DDX** – Design Data Exchange  
**BIM** – Building Information Modeling, a technical process that is used to represent physical and functional characteristics of a space  
**Climate Studio** – Parametric workflows for daylight simulations and early energy modeling  
**COTE** – Committee on the Environment (an AIA knowledge community, which administers the COTE Top 10 Awards program)  
**cove.tool** – Building performance analysis software  
**EUI** – Energy Unit Intensity  
**Grasshopper** – Visual programming language within Rhinoceros 3D  
**Insight360** – Contained within Revit  
**JUST** – A label for organizations related to social justice  
**LBC** – Living Building Challenge certification (world's most stringent green building performance standard)

**LCA** – Life Cycle Analysis  
**LEED** – Leadership in Energy and Environmental Design rating system  
**NREL** – National Renewable Energy Laboratory (PV Watts)  
**PEUI** – Predicted Energy Unit Intensity  
**POE** – Post-Occupancy Evaluation  
**REDi** – Resilience-based Earthquake Design Initiative  
**Revit** – Modeling software system used by architects and engineers  
**Rhinoceros 3D** – Computer-aided design application  
**SEED** – Social Economic Environmental Design  
**Sephira** – Daylight and energy evaluation plug-in for both Sketchup and Revit  
**SITES** – Certification related to sustainability  
**Tally** – Embodied carbon tracking and life cycle analysis  
**WELL** – Building standard (a people-first approach to buildings, organizations, and communities that is focused on health and well-being)

# on the boards

Projects  
In Progress



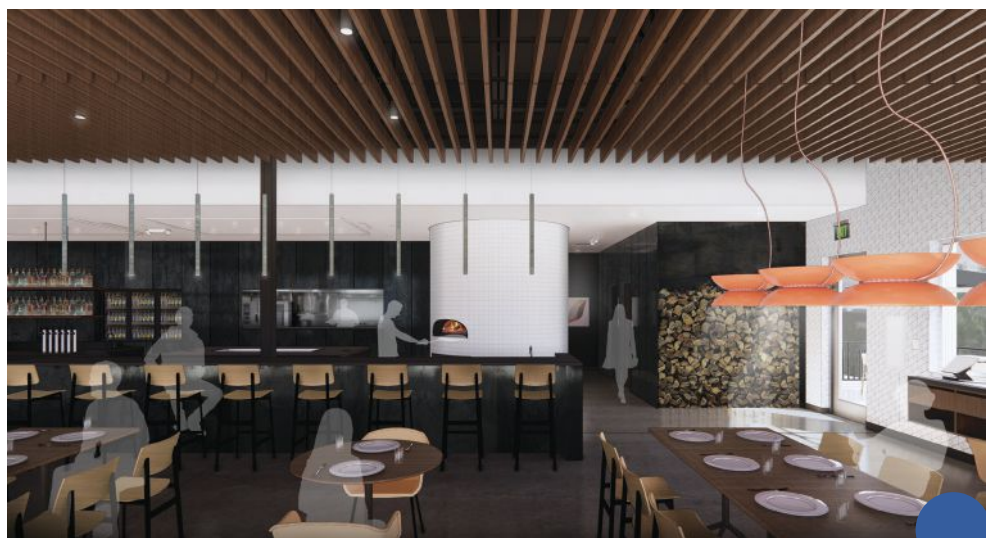
## 1201 Keo

Des Moines, Iowa  
MA Architecture

This rare surviving early 20th-century industrial rug works factory complex is being transformed into a highly desirable mixed-use building. Originally constructed between 1910 and 1928, and run by accomplished 20th-century businesswoman Emma Owens Ferrington, the complex has remained largely untouched until now. A series of distinctive historic spaces combined with a variety of historic finishes—including the wood storefront, stone entranceway, wood floor, and pressed metal ceilings—makes for a truly unique development. When rehabilitation is complete, this one-of-a-kind complex will shine as an anchor for the northern edge of downtown Des Moines with contemporary interiors, modern exterior spaces, and repaired historic architectural character. Visit [www.1201keo.com](http://www.1201keo.com) for more information.

## Franka Pizzeria

Franka Pizzeria is opening a 3,200-square-foot full-service restaurant that will bring Neapolitan-style pizza to Clive, Iowa. Housed in an existing one-story commercial retail space, the restaurant deploys a focused material palette and simple organizational strategy that features an 8-foot cylindrical wood-fired pizza oven and offers a polished-casual dining experience.



Clive, Iowa  
Knop Architects



# COMMERCIAL NEW CONSTRUCTION PROGRAM

*it pays to make energy efficiency part of the plan*



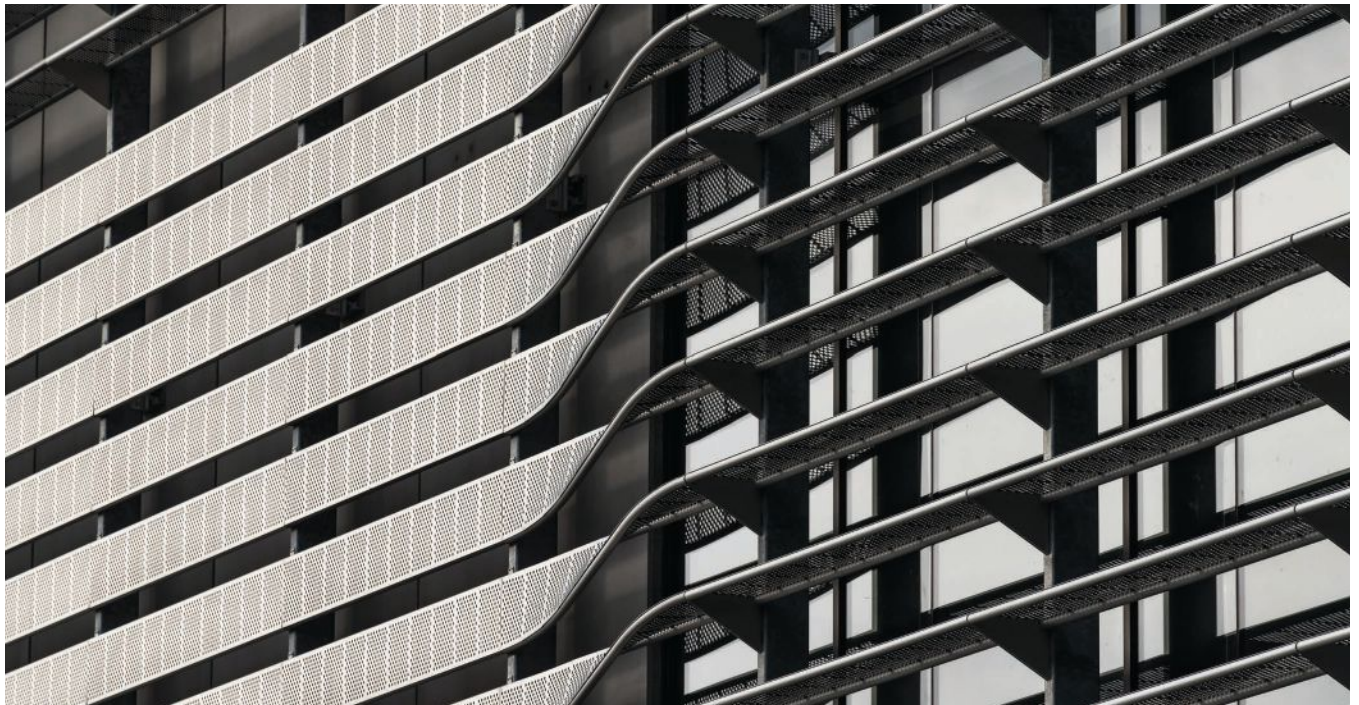
## Program participation includes these benefits and more:

- A customized energy model simulating how energy will be used
- Assistance identifying and evaluating energy-saving strategies
- Analysis of energy costs and paybacks
- Financial incentives to help offset the cost of implementing energy-saving strategies



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Willdan: [cnc@willdan.com](mailto:cnc@willdan.com) or 877-939-1874



Pushing Boundaries in Pattern, Practice



## FACADE TESTING: WHY IT'S IMPORTANT

### Perspectives from Architectural Wall Systems, LLC

WORDS : KELSEY CASTANEDA

For new construction projects, a timely and well-planned facade performance test is essential for myriad reasons.

Water infiltration to a building's interior, air leakage, structural load failure, thermal discomfort, and condensation are some of the common performance problems that can occur. System Design Manager at Architectural Wall Systems, LLC (AWS) Brad Davison-Rippey, AIA, explains that "performance testing building envelope systems acts as a check to make sure a system drawn on paper will perform as expected in the field. Drawing and modeling are accurate, useful tools, but a physical test provides additional assurance to the architect and owner." Only so much can be learned until physical testing is completed.

Lee Ebel, operations manager with AWS, notes that facade testing is different for every project, as there are numerous ways to test depending on the type of project and products used. "For example, if it's a completely custom curtain wall system that's

never been tested before, it's something that you would most likely want to take to an actual performance test lab, or erect a full-size version of a part of the facade and test that for air, water, dynamic, structural loads, seismic thermal, etc. ... If it's a curtain wall system or a facade system that's been previously tested at a lab, you don't necessarily need to take it to a performance lab to have it tested. You could do either a smaller scale, visual slash performance mockup on site and have it tested on site, or you could even just test the material once it's installed on the building," Ebel says. Every project is different, so testing for each project will vary.

Ebel explains that for completely new systems, the benefits of a performance mockup at a certified test lab are worth the costly price tag. "The design team gets to see the material. The installing contractor, for example, AWS, and the general contractor are able to see the products, learn a lot from it and apply lessons from the mockup to the site to help things go smoother, and the owner gets







to see the product and know they're getting a good quality, tested system that's passed the lab testing," Ebel explains.

Put simply, "Not only does performance testing confirm how the drawn envelope system will perform in physical form, but it also allows the project team to have a practice run at assembling the system," says Davison-Rippey.

---

**Above:** Student Innovation Center mockup is prepared for its test at Construction Research Laboratory in Miami, Florida.

**Opposite left, right:** Visual Arts Building mockup undergoes testing in Wausau Wisconsin.

Ebel also notes that forgoing testing can result in costly repairs and schedule delays that impact everyone involved with the project.

Prevent performance errors before they occur and require repair by properly testing facade systems—money spent is money saved in this industry.

**Resources:** [www.wfmmedia.com/facade-performance-testing-importance-and-types](http://www.wfmmedia.com/facade-performance-testing-importance-and-types) [bit.ly/3dubOp6](https://bit.ly/3dubOp6).

## AMERICAN INSTITUTE OF ARCHITECTURE STUDENTS IOWA STATE UNIVERSITY

### Iowa State University AIAS chapter preparing the architects of the future

WORDS : SAMANTHA BROWN IMAGES : BEN HANSEN, ASSOC. AIA

The Iowa State University chapter of the American Institute of Architecture Students (AIAS) connects the 350-plus graduates and undergraduates in the programs with industry professionals, provides leadership opportunities, and meets with the American Institute of Architects, Iowa Chapter (AIA Iowa) through events, lectures, and discussion that help bridge the gap between education and the workforce.

“It’s really valuable for students to get the opportunity to engage outside of the classroom,” says Ben Hansen, Assoc. AIA. “Whether through volunteer events and giving back with their knowledge about architecture, learning more about building professional relationships, or collaborating with other older students on projects.”

Hansen, a recent graduate, first got involved with AIAS as a younger student and later became president of the organization. Now, he’s working at Bergland + Cram in Mason City. His successor, Mercedes Cooper, Student Affiliate of AIA Iowa, echoed Hansen’s thought about the ingrained mentorship opportunities at AIAS. With student involvement spanning different grade levels, Cooper said that students can connect through their experiences in school, the job search, interview practices, and, depending on how much work they put into it, emerge fully prepared for the world of architecture. Hearing from older and former students helps guide those with less experience. “I had a lot of students from one event that we had where a guest speaker talked about the credit hours that you need to get your license,” Cooper explains. “A lot of students didn’t know that you even had to go through that process.”

#### Freedom by Design: Little Free Library

In Cedar Rapids, the AIAS saw an opportunity to connect with communities rebuilding from the August 2020 derecho in the simplest of ways—a Little Free Library for neighbors to exchange books. “We wanted to regain what was lost,” says Cooper, “to help students or people [through] books, and to show up for that community.” Through community service invoked by Freedom by Design, a program in partnership with the National Council of Architectural Registration Boards, these talented students are



**Above:** Madison Cardenas (2020-21 Freedom By Design Project Manager), Brandon Schoo (2021-22 Freedom By Design Director), Nolan Sullivan (2020-21 Freedom By Design Director), and Rob Murrow (2020-21 AIAS ISU Vice President) at the AIAS were exposed to real-world applications while designing and building Little Free Libraries as part of storm relief efforts.

exposed to real-world applications by creating miniature-scale projects that teach them about the design-build process.

Nolan Sullivan, Freedom by Design director, says the students were tasked with finding a client, coordinating meetings to present their design ideas, and adjusting designs based on client feedback. He says projects like these offer experience that translates to life after school. “Small design-build projects force students to think about their designs with a level of detail that is not often reached in studio projects due to the fact that this project actually needs to be built,” Sullivan says. “This is a pretty valuable experience, especially for younger students to realize the level of thought and detail that goes into actually constructing something.”

The end product gives the community a place to connect and share the contents of their bookshelves, but it also provides a glimpse of how architects affect their communities. “Seeing the impact that your project and design has on the client and community is really rewarding,” Hansen says. “That feeling is something that you always strive for when working in the design field.”



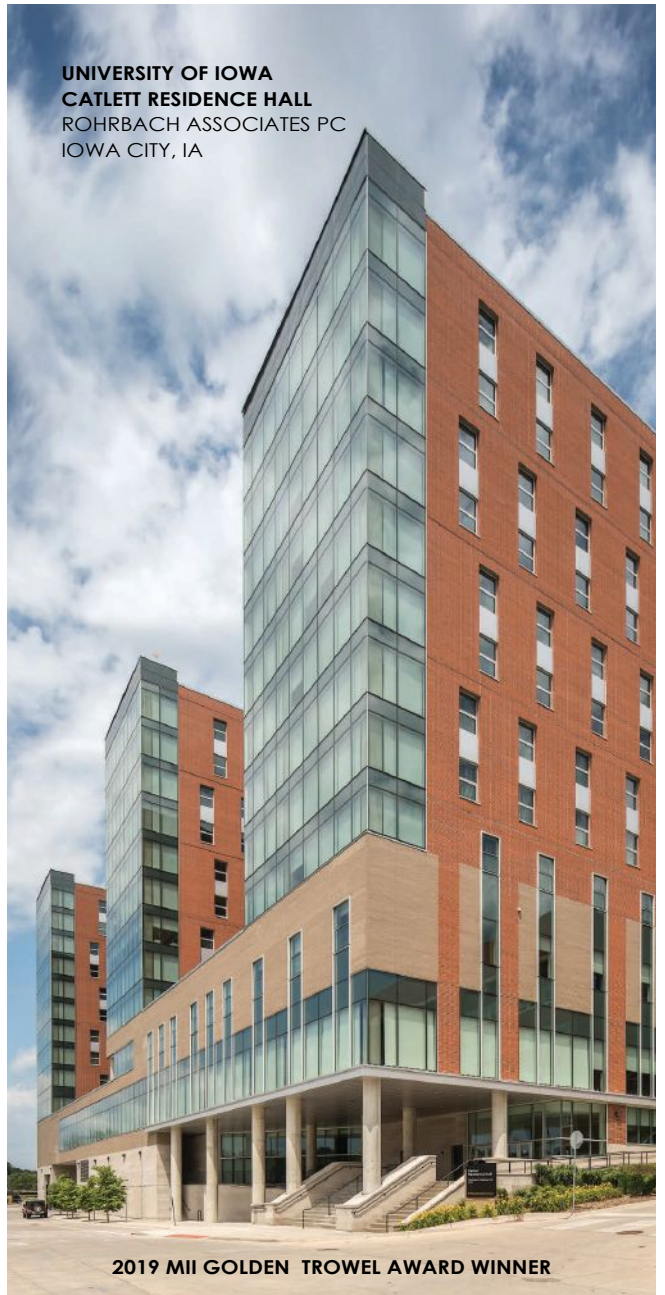
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# 111 EAST GRAND

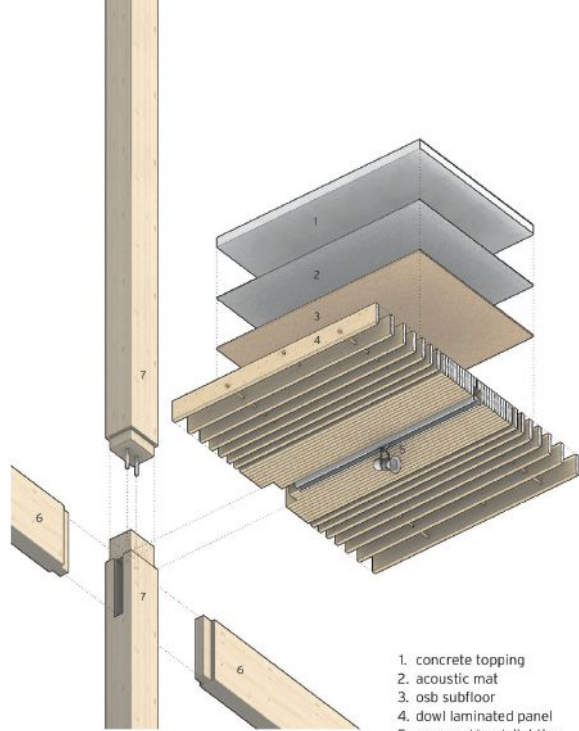
**WORDS :** JESSICA SEARS **IMAGES :** MIKE SINCLAIR **ARCHITECT :** NEUMANN MONSON ARCHITECTS

As only the second dowel laminated timber (DLT) building in North America, 111 East Grand, a multistory office building, is one of the most unique buildings in the state. This timber system relies on a friction-fit bond between softwood dimensional lumber and hardwood dowels, which are typically made from beech, poplar, or mahogany. Using this application greatly reduces the need for glue, while also decreasing off-gassing upon fabrication. Architects at Neumann Monson, the company that produced this building, chose to use this all-wood system in the design of this building to offer more versatility and creativity. DLT is most common in Europe and is now slowly making its way to North America. 111 East Grand is the first building in Iowa to fully employ this type of construction.

The building itself is the latest addition to Des Moines' East Village, a rapidly growing area filled with apartment buildings, retail shops, and office spaces. 111 East Grand is the result of a joint partnership among JSC Properties, Rypma Properties, Christensen Development, and Ryan Companies. This four-story structure houses three floors of commercial office space. Each floor includes restrooms, a shower, and locker rooms. With operable windows, tenants can enjoy natural ventilation. Balconies on the west end of the building offer stunning views of downtown.

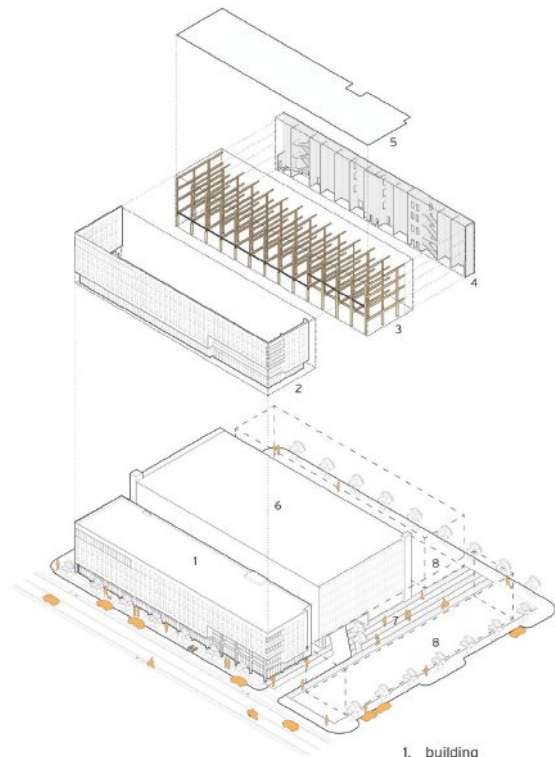
Initially, the process for this building was similar to other projects, says Eric Neuhaus, AIA, architect at Neumann Monson Architects. After the schematic design, the team went through





MASS TIMBER ASSEMBLY

1. concrete topping
2. acoustic mat
3. osb subfloor
4. dowel laminated panel
5. recessed track lighting
6. glulam beam
7. glulam column



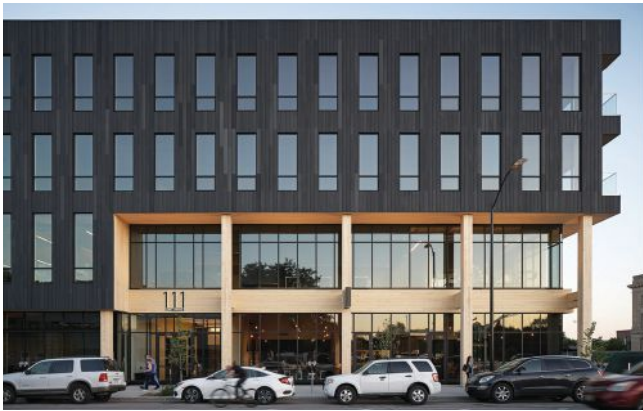
EXPLODED ISOMETRIC

1. building
2. glass / zinc envelope
3. mass timber frame
4. precast concrete core
5. roof
6. existing parking ramp
7. pedestrian corridor
8. future liner building



**Above:** The project is the first multi-story office building in North America to employ dowel laminated timber (DLT), a mass timber system relying on a friction-fit bond between softwood dimensional lumber and hardwood dowels. **Top right:** Exposed natural material creates a sensory experience. **Middle right:** Retail spaces activate the street level with three floors of office space above. **Bottom right:** Natural Accoya wood soffits and columns complement the exposed wood interior.





a process of interviewing different mass timber consultants. Ultimately, StructureCraft Builders out of Vancouver, British Columbia, was selected as the mass timber supplier and engineer of record for the timber superstructure. Once selected, they worked with Neuhaus and the team, along with local code officials, during the design development phase. The timber erection required a minimal crew, with around eight to 10 people on-site for approximately seven to nine weeks.

This DLT strategy has had several benefits. As a hybrid system, it relies on a precast concrete service core that helps support the lateral forces, in addition to housing stairs, elevators, mechanical shafts, and utilities. Construction and disturbance were minimized, due to a smaller crew and the prefabricated kit of parts. This timber system is also environmentally friendly: Myriad benefits have been cited in using DLTs and other mass timber building materials. In fact, Forbes reports one of those benefits is a reduction in carbon emissions. With less carbon dioxide, the building offers long-term health benefits and a sustainable work environment. The wood can also remain exposed as an interior finish, which, in turn, will minimize work such as dropped ceilings and column wraps.

“Since you have this exposed natural material, you have a sensory experience in terms of touch, feel and even smell. I believe on average we spend 90 percent of our lives indoors, so it’s important to look to nature and incorporate those aspects into the space,” says Neuhaus.





# (A) MAKING BUILDING

Iowa State University (ISU) gets a “patchwork quilt” of making, learning, and meeting spaces that physically and conceptually tie the east campus together with the Student Innovation Center

WORDS: TOM LESLIE, FAIA IMAGES: TOM KESSLER  
DESIGN ARCHITECT: KIERAN TIMBERLAKE ARCHITECT OF RECORD: SUBSTANCE ARCHITECTURE



**Above:** The chosen site is physically central to the east campus and combines a range of disciplines.

Iowa State’s land grant mission suggests that research isn’t just “ivory tower” material. The university’s motto, “Science with Practice,” neatly encapsulates its ethic of making—testing ideas out against the resistance that the real world offers at every turn; ISU’s College of Engineering prides itself on its annual entries in the solar car competition, the Department of Architecture has one of the nation’s leading digital fabrication laboratories, and the College of Human Sciences feeds the campus with ice cream that it produces daily.

While making permeates the campus, the spaces in which this real-world engagement occurred were mostly jury-rigged

and often hidden from view. The Gaffer’s Guild, for instance, a full-fledged glass-blowing workshop run by students, produced artisanal-quality hand-crafted glass from a basement studio that was invisible to the rest of campus, and the solar car program operated out of a garage tucked behind classroom buildings. In 2011, the university began planning for a shared facility, based on interdisciplinary centers at universities such as Stanford and MIT, that would provide space and equipment for “making” activities throughout campus. This was only the stated program; the chosen site, along Bissell Road adjacent to the iconic Marston Water Tower, was physically central to the east campus, but it





contained a jumble of service buildings and the old Nuclear Engineering Building. Connecting the engineering campus to itself and the pair of quads to the east added to an emerging complex of functions. In addition to laboratories and studios, the center would provide meeting spaces and a palette of learning spaces.

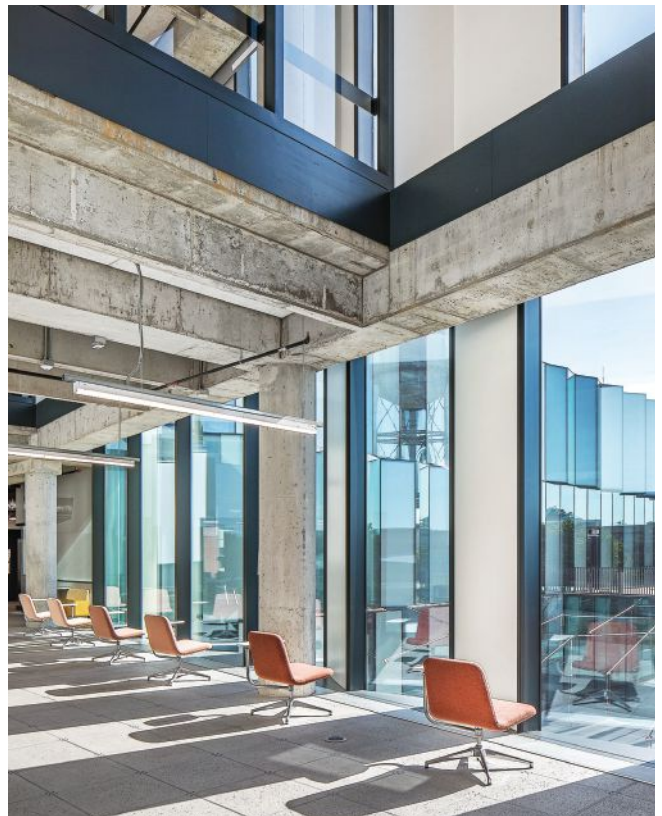
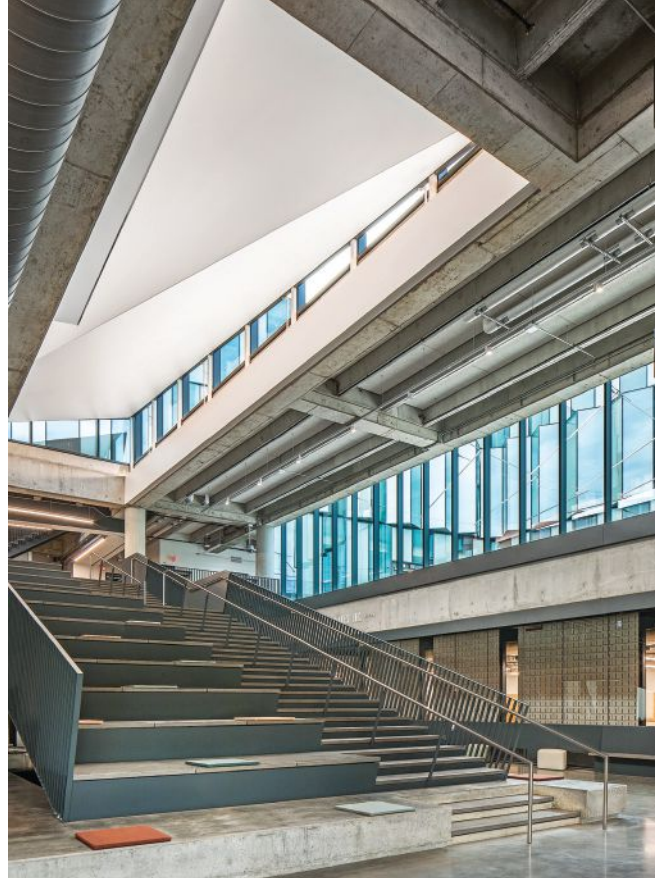
Philadelphia-based Kieran Timberlake and Des Moines' Substance Architecture were paired to address this rich mix, which they digested over an extended, 20-week schematic design period. Kieran Timberlake's Jason Ciotti-Niebish, AIA, describes their collaborative process as a search for a workable metaphor that could organize their approach and building experience. This became a "patchwork quilt" of activities that were allowed to mix and butt up against one another, with

generous circulatory and casual meeting spaces surrounding them that would foster chance meetings, conversations, and, the university hoped, new collaborations. Resisting the typical placement of noisy workspaces in basements, the team agreed that the program should be "atomized" throughout; each floor has maker, learning, and meeting spaces, as well as a unique "attractor" designed to draw students and visitors through the building. A common staircase that also serves as a lecture and performance space forms the hub of the two lower floors, while an outdoor terrace and café on the third and fourth floors provide incentives to climb further. The café connects to a lounge and a "launch pad," a supercharged meeting space housed in a cantilevered snout that provides views back toward the main campus.





These mixed arrangements of program led to an irregular massing that the team accepted as an outgrowth of the planning process, one that involved balancing competing requirements. Substance’s Leah Rudolphi, AIA, points out that the massing wasn’t ideal from an air distribution standpoint but that it allowed views over campus and of the water tower that were critical to drawing people through the building. Kieran Timberlake and Substance massaged the resulting form—“two L-shaped floors atop a donut”—into a nuanced urban response. An east-west axis between two “front doors” makes the building a genuine connector, while stacking the four floors of program to create a street wall along Bissell Road left a happily sculptural set of forms to face the water tower and ample green space to the east. Rudolphi describes an agile curtain wall system



**Opposite:** An east-west axis between two “front doors” makes the building a genuine connector, while stacking the four floors of program to create a street wall along Bissell Road left a happily sculptural set of forms to face the water tower and ample green space to the east. **Above top:** Daylight is drawn into the first floor with a clerestory above the main staircase and windows flanking the second floor courtyard. **Above bottom:** Inside there are a variety of spaces that visually connect two floors.





that articulates the spaces within while giving the building a recognizable, unifying character. With a nod toward passive solar control, Kieran Timberlake and Substance, along with cladding consultant Wes Higgins developed an extraordinarily sophisticated system of pleated glass that opens at varying angles to northerly light while blocking much of the building’s southern exposure. The pleats are tuned to provide syncopated, wavelike rhythms along the western street wall, giving otherwise similar classrooms and meeting spaces within unique characters and providing occasional pulpits that offer irresistible moments of occupation and views. The system itself, provided and installed by Iowa-based Architectural Wall Systems, relied on a global supply chain of materials and expertise, along with rigorous testing and inventive details. “There’s a moment in every architect’s career where you realize you can invent something instead of specifying something,” Ciotti-Niebish notes, describing the revelatory process of working with Higgins. That inventiveness came at a price, but construction manager J.E. Dunn provided costing support and real-time budgetary advice that allowed the client and design teams to make informed decisions. Recognizing that the building’s interior spaces would likely be reconfigured and see constant, hard use, Rudolphi and Ciotti-Niebish describe an intentional dichotomy between the curtain wall, which signals the building’s sophisticated activity within, and its interior finishes, which recall the exposed structure and robust materials of traditional loft buildings.

Ultimately, Rudolphi notes that the building will be at its best when it disappears behind the swarm of students, faculty, and advisers that will populate it with activities ranging from Potterbots blorping out precision patterns of volumetric clay to textiles woven on digitally controlled looms. “The really cool thing about the building is that anyone can be trained to use any of that equipment,” she notes. While the center’s “hardware”—its pleated facade and evocative massing—will capture attention, its occupants will ensure that Iowa State’s mission, combining theory with the real, material world, will be front and center within.



**Top:** Along the western street, three levels of pleated glass sit atop the entry level producing a syncopated, wavelike rhythm. **Center right:** Casual meeting spaces foster collaboration. **Above:** A common staircase that also serves as a lecture and performance space forms the hub of the two lower floors.





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# CREATIVITY & CONNECTION

University of Iowa's Visual Arts Building Inspires  
Imagination and Spurs Social Interaction

**WORDS :** ERIN PINKERTON **PHOTOGRAPHY :** ERIC DEAN, UNIVERSITY OF IOWA AND BNIM  
**DESIGN ARCHITECT :** STEVEN HOLL ARCHITECTS **ARCHITECT OF RECORD :** BNIM







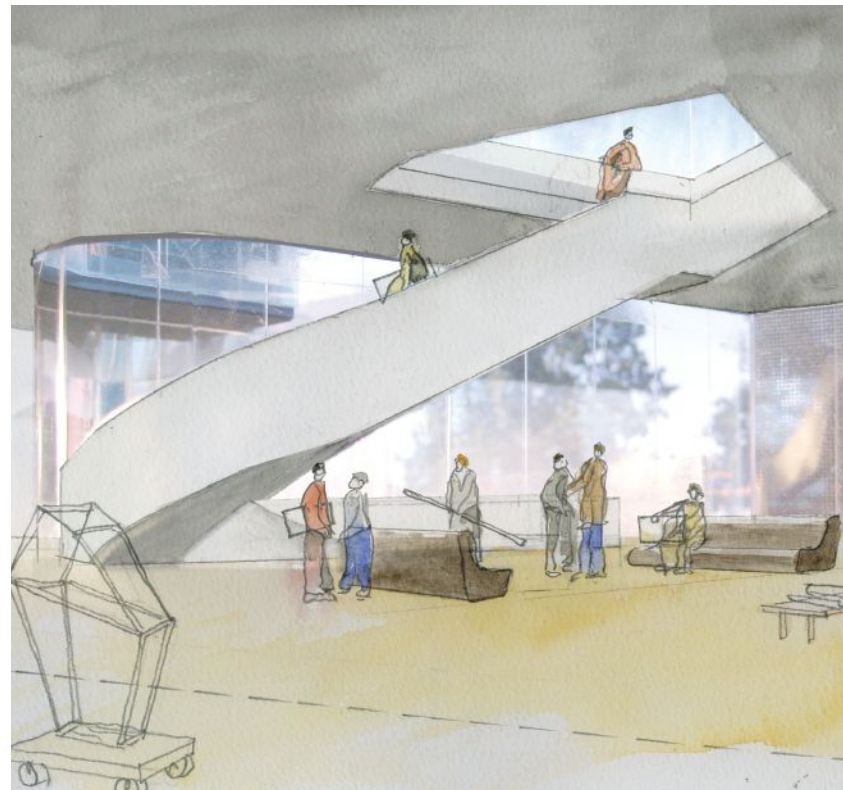
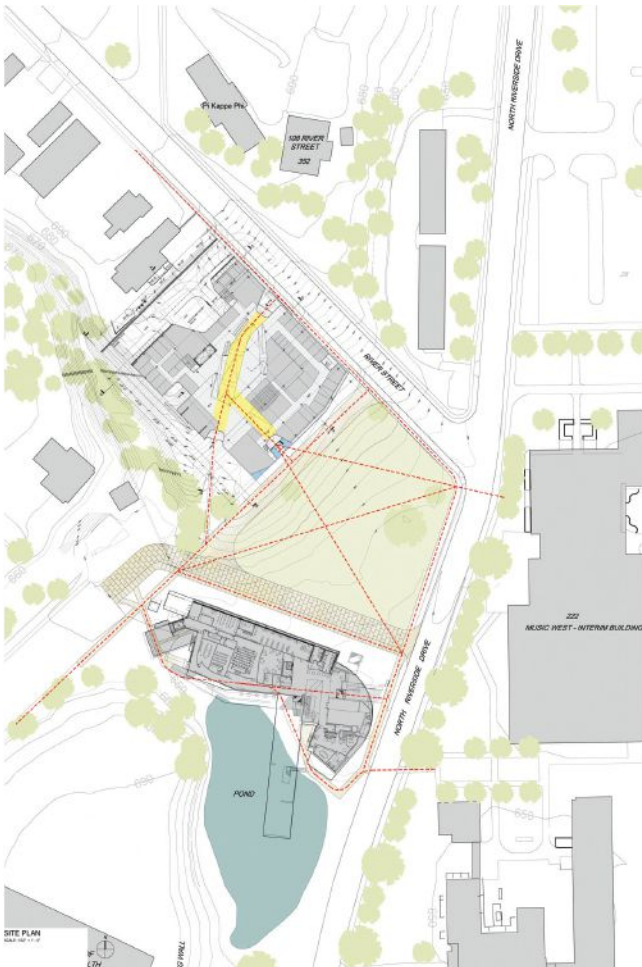
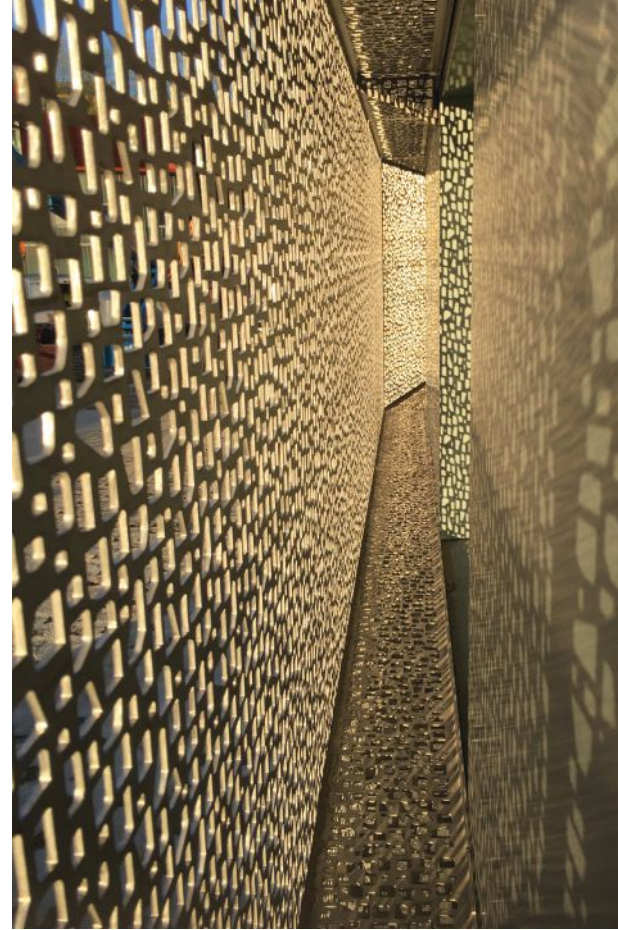
Students attend art school not only to learn the history and specific techniques of their craft, but also to have a space to hone their skills, a space that inspires them and encourages them to create. The University of Iowa's Visual Arts Building is precisely that kind of space, with its thoughtful connection to the rest of the arts campus, its intriguing "shifting" horizontal planes, its natural daylighting and ventilation, and its intentional design to foster interaction among students and disciplines.

In 2008, the University of Iowa experienced a damaging flood when the Iowa River rose out of its banks and rendered unusable the university's Art Building West, which was designed by Steven Holl Architects and opened in 2006, and the university's original Art Building, which was built in the 1930s. Art Building West was repaired and eventually reopened to students. But the old Art Building was replaced with something more suitable for modern students in search of open, awe-inspiring spaces to study and create.

New York-based Steven Holl Architects and architecture firm BNIM, with an office in Des Moines, Iowa, collaborated to design the University of Iowa School of Art and Art History's award-winning Visual Arts Building, which is home to galleries, faculty offices, learning spaces for art history, and studio spaces for myriad visual arts media, including ceramics, sculpture, metalwork, printmaking, painting, drawing, graphic design, photography, and more. The 126,000-square-foot Visual Arts Building, which opened in 2016, stands above the 500-year flood line and is adjacent to Art Building West.

The Visual Arts Building was conceived by Steven Holl Architects to form a connection with its neighboring art building and for the two buildings to complement each other and to form an arts campus. The design of the Visual Arts Building's primary circulation was intentional to create connection with the way pedestrian traffic moves through the building and between the two buildings.





**Left:** Site plan. **Above:** Sculptural open stairs are shaped to encourage meeting, interaction and discussion. Some stairs stop at generous landings with tables and chairs, others open onto lounge spaces with built in seating. **Top left:** Daylighting was a major driver of the building's design, with large areas brightened with filtered light being conducive to creating art. **Top right:** Punched structural steel screens on the exterior of the building.



“It’s a rare thing to find two significant SHA [Steven Holl Architects] buildings with such close proximity and in dialogue with each other, and to take advantage of that opportunity to reinforce that notion of the arts campus was an important component,” says Carey Nagle, AIA, principal at BNIM’s Des Moines office. “The sculptural massing and shaping of the building and the way it sits on the site and in relationship to Art Building West are part of the first really dramatic component.”

Outside the Visual Arts Building, on the path to Art Building West, stand two sculptural limestone pillars, titled The Guardians, a piece by artist Rebecca Thompson that registers the height of the former flood line with a steel layer and marks the pathway through campus. From the artwork to the architecture, these new additions to the University of Iowa are forming connections with their surroundings and with the past, but with an eye toward the future of efficiency and creativity.

The Visual Arts Building’s exterior design shows a laminar “slicing” as horizontal planes appear to shift off one another, and large vertical cutouts give the building a feeling of porosity. The Visual Arts Building’s punched concrete frame structure composed of cast-in-place concrete gives a sculptural shape to the building and the interior ramps and stairs, and tubing was cast in the underside of the concrete slabs for heating and cooling. The concrete also serves as a thermal battery to temper the seasonal swings in temperature and make the building more efficient, explains Jonathan Sloan, AIA, associate principal at BNIM’s Des Moines office, who led construction administration for the project.

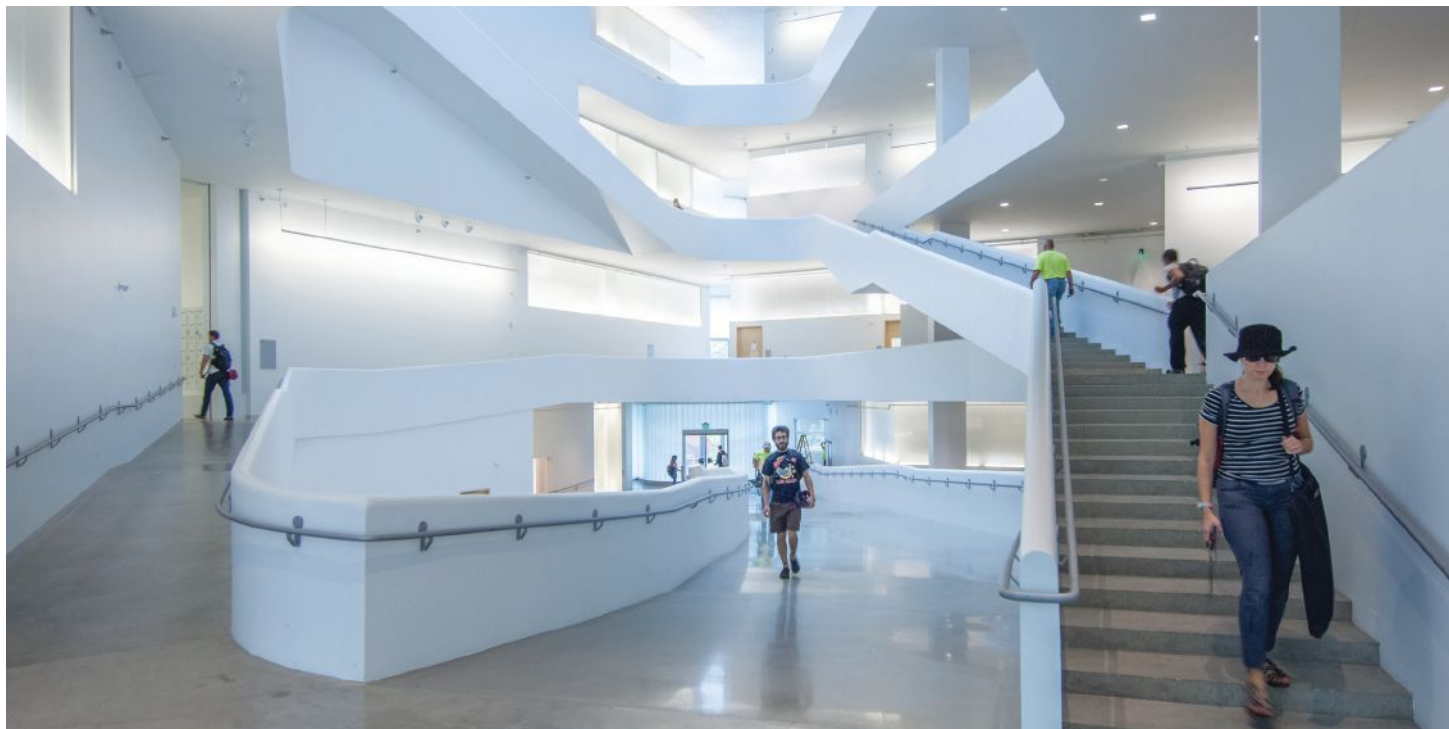
The building also makes use of “bubble” concrete slabs. The bubble deck system casts empty, watertight plastic balls—called “voids”—into the slab to reduce the weight and height of the

“The atrium space really became the heartbeat of the whole facility. It’s conceived in a way that starts to create a flow and connectivity between levels.”

– CAREY NAGLE, AIA

slab, which allowed for greater ceiling heights and greater openness of interior spaces as well as less building material. The Visual Arts Building is the second project in the United States to use a bubble deck system and the first project in the world to use the bubble deck system with an activated slab combination, Sloan adds.

The concrete frame is layered under a metal panel system and perforated stainless steel scrim on the southwest and southeast building facades to provide sunshade and minimize glare. The scrim allows filtered light into workspaces while appearing opaque from the exterior during daylight hours. In the evening, light from inside the building glows outside through a series of composed apertures and the uniquely designed skin.



The shape patterns in the perforated skin can be found throughout the building, such as in light wells and the atrium's skylight. The design team not only created a unique pattern to cut into the stainless steel but also spent hours determining how the pattern would resolve itself around the edges of the panels, Sloan notes. Similar patterns are also repeated in other areas of the building. Each detail was composed with respect to the building's other elements and designed to be impactful in its own right.

"Around every corner, there's something interesting to see," Sloan says.

As conceived by Steven Holl Architects, the Visual Arts Building, through its perforated skin, skylights, and vertical cutouts of large open floor plates, allows natural light and ventilation to reach into the core of the building through what the design team referred to as "multiple centers of light." Daylighting was a major driver of the building's design, with large areas brightened with filtered light being conducive to creating art.

Perhaps one of the most striking views in the building is in the atrium, with its impressive concrete stairs and guardrails that, as Sloan describes, wrap up through the building like ribbons.

"The atrium space really became the heartbeat of the whole facility. It's conceived in a way that starts to create a flow and connectivity between levels, with a series of ramps that gracefully connect this really organically shaped space," Nagle says. "We tried to connect that all in a way so that it doesn't get siloed off into a series of partitions. You have multiple levels that work as a singular community."

Building community by creating social spaces and designing stairs and corridors to serve as meeting spaces was another major driver in the building's design. The shape of the stairs, the generous landings and common areas, and the vertical connections between floors encourage informal meeting and discussion. Studio walls along interior corridors include glass partitions so passersby can experience artists at work. Gathering spaces offer places to display and share artwork and for students from various disciplines to interact with one another, whether they are studying sculpture or ceramics, drawing or graphic design.

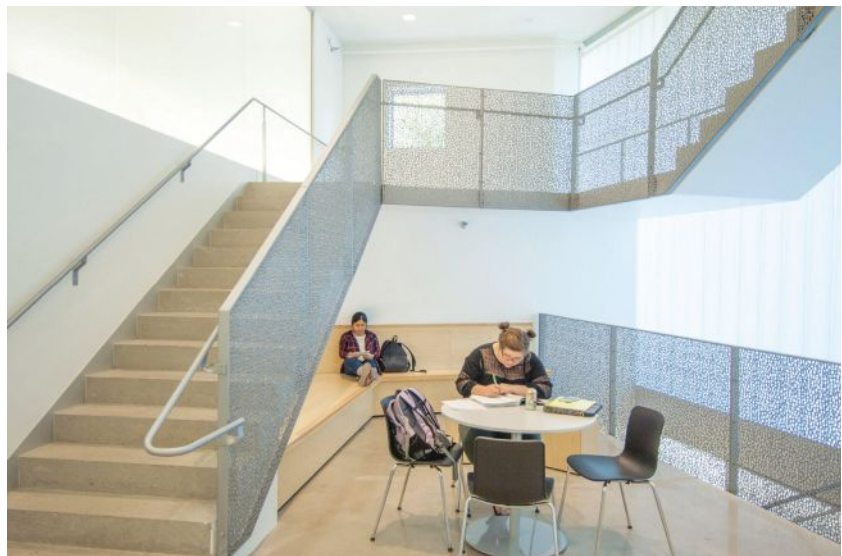
"There's a number of different disciplines in the building, and how they cross-pollinate with each other was very important," Sloan says.

In the end, the design team is proud to have helped shape an incredible place for students to make art.

"It's a pretty cool thing when you walk into spaces like that after the fact and you see the people activating them and using them both in ways that you imagined but also in ways that you couldn't possibly have imagined," Nagle says.

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**Opposite:** Perhaps one of the most striking views in the building is in the atrium, with its impressive concrete stairs and guardrails that, as Sloan describes, wrap up through the building like ribbons. **Right:** The building is home to galleries, faculty offices, learning spaces for art history, and studio spaces for myriad visual arts media, including ceramics, sculpture, metalwork, printmaking, painting, drawing, graphic design, photography, and more. "There's a number of different disciplines in the building, and how they cross-pollinate with each other was very important," Sloan says.







# EVERY SPACE Is a Jewel Box

The new Voxman School of Music building brings campus and community together

**WORDS :** MEG KENNEDY

**IMAGES :** TIM GRIFFITH

**DESIGN ARCHITECT :** LMN ARCHITECTS

**ARCHITECT OF RECORD :** NEUMANN MONSON ARCHITECTS

The Voxman School of Music is a jewel on University of Iowa's campus, drawing students from around the country as well as community members from Iowa City. The University of Iowa School of Music describes the setting as "inspirational" for its music students, and the building is undoubtedly inspirational from an architectural perspective as well. The space was awarded a 2020 Honor Award for Interior Architecture from the American Institute of Architects (AIA) based on its sense of place and purpose, environmental sustainability, and history.

The six-story building is a triumph in balance: It integrates the campus with the city; provides collaborative, performance, and private spaces; and meets all the school's needs for function with a truly elegant form. Neumann Monson Architects, located in Iowa City and Des Moines, served as the associate architect on the



**Top:** The exterior of the building is wrapped in a composition of subtly textured and delicately reflective terra-cotta panels and low-iron glass. **Above:** The organ hall.

building, which was completed in 2016. Josh Rechkemmer, AIA, who served as project manager, and Neumann Monson, through the University of Iowa, engaged Seattle-based LMN Architects as the lead design consultant for the project, along with many other consulting firms providing a variety of technical expertise from across the country.

With the university's requirements for the space, specialist expertise in performing arts spaces was critical, but just as important to Neumann Monson was ensuring involvement from local partners and those who know the university and School of Music well. "The design process was very integrated, collaborative, rigorous," says Rechkemmer. With the complexity of the project, which began after flooding in June 2008, such close cooperation was essential.

Neumann Monson first became involved in assessing the School of Music's original space after the flooding occurred, to determine whether it could be renovated in place. With its location right on the river on the west side of campus, the damage was extensive. Additionally, the building had been designed in the late 1960s and constructed in the early 1970s, meaning the space was not up to date with current building codes or accessibility requirements. After multiple years and iterations of studies to mitigate and renovate the building in place, it was ultimately determined by the Federal Emergency Management Agency (FEMA) with university involvement that the school would be rebuilt elsewhere, outside the flood zone. A new project was embarked upon with Neumann Monson hired to begin the process of assembling a design team and to begin analysis of potential sites.

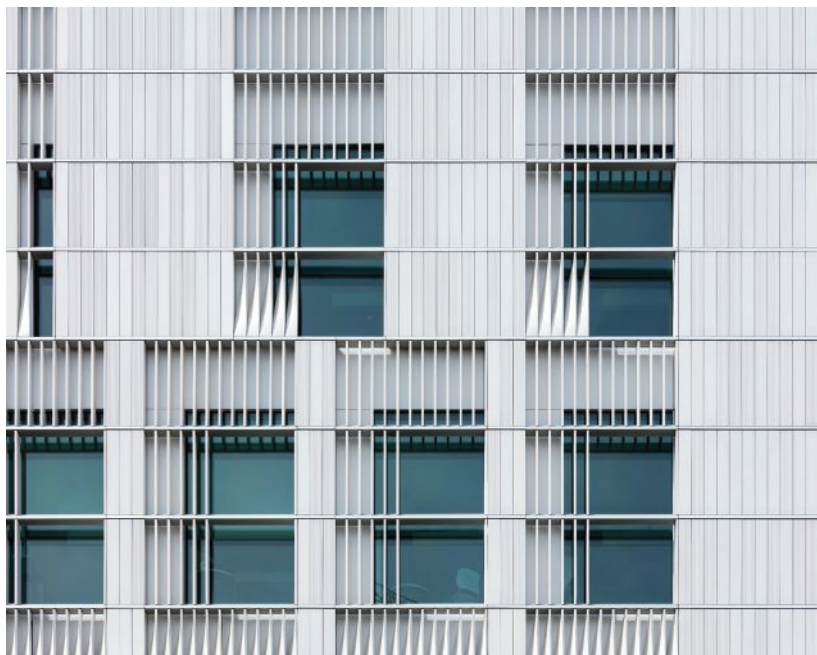
The design process was defined by constraints, leading Rechkemmer to describe the project as a great puzzle. Due to flood funding rules, the new Voxman Music Building had to be a one-for-one replacement of the old building, matching the previous building's square footage and program at a new site and meeting current requirements for accessibility and safety.

The original location along the river featured a low, horizontally oriented building of precast concrete with minimal gathering and circulation space, and little internal access to natural light. The new location, nestled in downtown Iowa City, had to be more compact and vertical by necessity of the urban site, resulting in a complex stacking of the program. To meet the functional requirements of the space, nearly all of the more than 300 spaces in the new building needed to be acoustically isolated. Despite these required similarities, the design team sought to bring a very different feel to the space. Public spaces were designed not only for circulation but also for gathering and impromptu meetings and potential breakout performances. Stairs and corridors were widened with adjacent built-in seating, display areas, and guardrails, with integrated work surfaces and power. Public gathering space and circulation space is maximized and bathed in natural light. Nearly every space can be used as a tool for teaching, practicing, and performing.

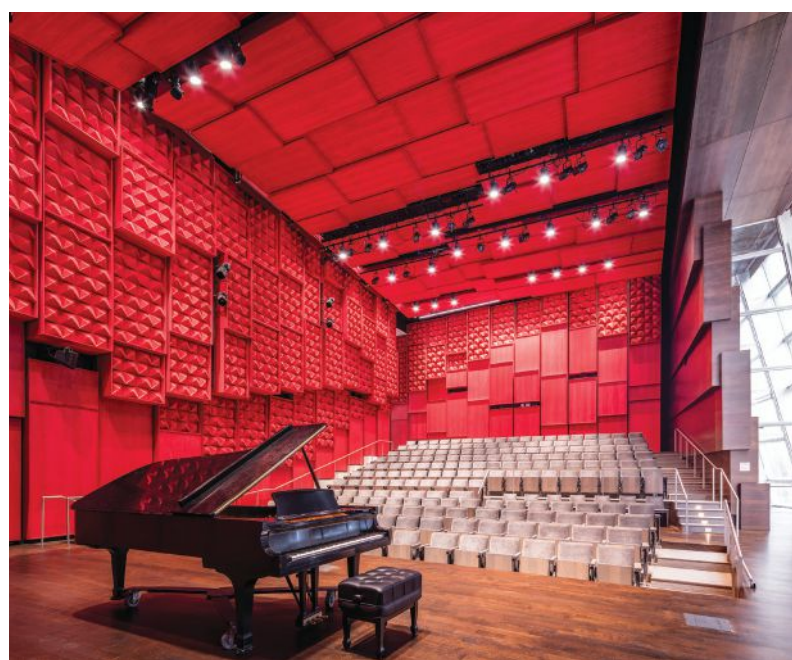
"The design effort, led by LMN Architects, really started with the location of the major performance venues," says Rechkemmer of the 700-seat concert hall and the 200-seat student recital hall. "Both spaces could only fit and be properly oriented on the site

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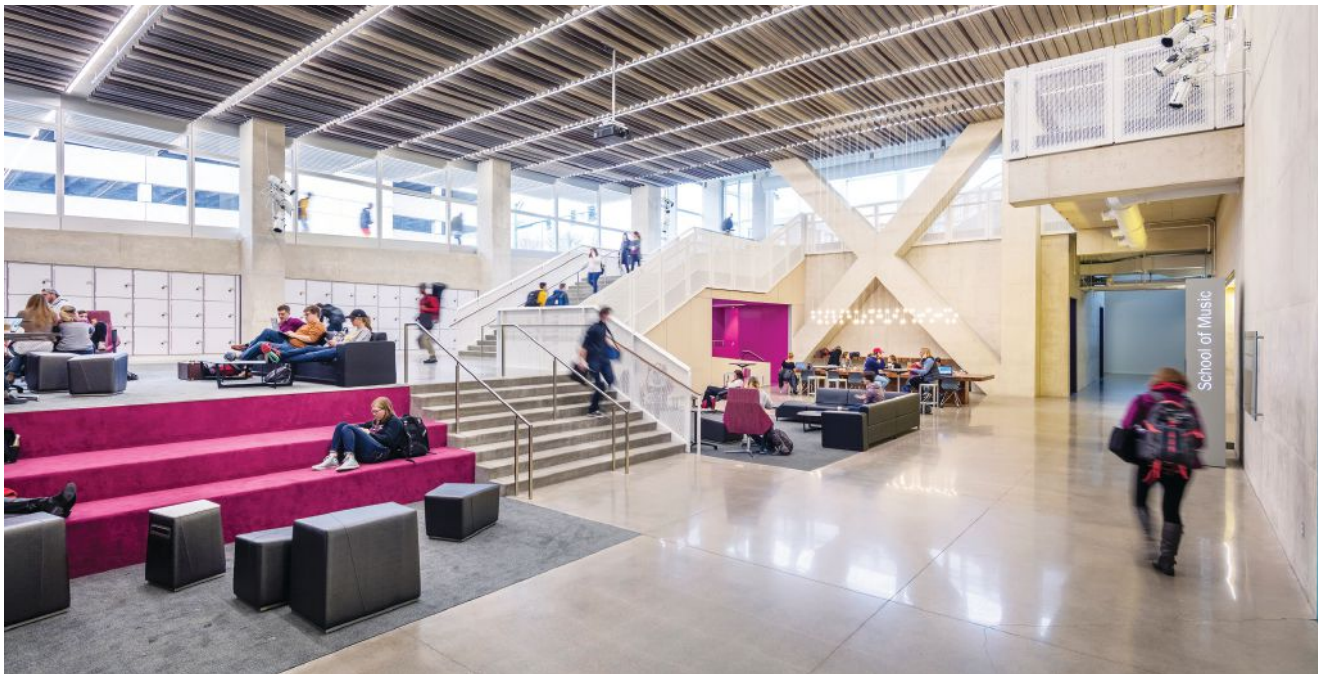
**Top and opposite:** The exterior of the building is wrapped in a composition of subtly textured and delicately reflective terra-cotta panels and low-iron glass. **Opposite:** Detail of ceiling panels in rehearsal hall  
**Right:** The recital hall features bold acoustic panels.











in a particular way. It was kind of a domino effect once those were located.” The building is organized with student-centered spaces and public spaces on the lower levels, performance spaces elevated off the street on the second level, classrooms on the third level, and the faculty studios crowning the building on the fifth and sixth levels.

“The two primary performance spaces are large volumes, raised one level off the street, and they become major organizers for the design,” says Rechkemmer. “And from there it was a process to develop the building—the experience of circulating to and around the performance spaces, through the building, bringing daylight into the building, how the building would be finished.”

The exterior of the Voxman building is striking, clad in textured and reflective terra-cotta panels, precast concrete, and curtain wall glazing. While all the terra-cotta panels are white clay, they are treated in a number of different shapes and glazes. Adding visual interest at window openings, some of the terra-cotta baguettes twist at 90 degrees. The overall effect is that, depending on the time of day and angle of sunlight, the building takes on a different character with each viewing.

One corner of the building is almost entirely glazed, visually inviting the public in and flowing naturally into an organically shaped shingled-glass wall system that wraps around the bold red recital hall. The larger concert hall cantilevers over the sidewalk and common space at the ground and lower level. Beyond its striking appearance, the building has even more impact.

The design team participated in the local Commercial New Construction Program to model energy performance relative to building code. Receiving an Excellence in Energy Efficient Design Award, the collaborative process resulted in a 73 percent energy cost savings over a code baseline building. “Not only for a building [that aspires] to have high design, it performs very well acoustically [and] performs very well from an energy efficiency standpoint.”

The interior design of the building is similarly impressive. “Every design move had a story and a reason and a logic,” says

Rechkemmer. “So that, when we got to the end, it just made sense, everybody was in agreement.”

Inside the Voxman building, daylight is welcomed into the space in ways rarely seen in performing arts spaces. “There was a desire to bring a lot of daylight into every space, not just the offices,” says Rechkemmer. Both performance venues bring in natural light as well—the concert hall has windows that allow for control of the light, and the recital hall is bounded by a glass curtain wall on one side, offering views of the performances from the street. “That’s where the students perform their recitals,” says Rechkemmer. “So they’re essentially on stage to the community.”

The glazing is acoustically treated to allow light in while blocking sound from the street. Achieving acoustic isolation throughout this complex project was a challenge, but one that Neumann Monson met with the help of their consultants. The concert hall ceiling is a prime example of the rigor required from detailing through construction. “There was a lot of modeling done acoustically to integrate things that are important to the function of space—lighting, speakers, sprinklers, catwalks, rigging,” says Rechkemmer. “Everything is hidden above this undulating ceiling, and the ceiling serves a very important purpose for reflecting sound back down to performers, but it’s perforated to allow the sound to be diffused and distributed, the light to come through.”

Another gleaming example of craft within the concert hall is its organ. The instrument is integrated into the architecture of the hall and largely unseen, save for the bright polished tin pipes that hover over the organ console at the west end of the hall. It was designed and constructed by Klais Orgelbau, a family-run company located in Bonn, Germany. The organ is composed of more than 3,800 pipes made of wood and tin alloy, with its inner workings stacked over multiple levels. The organ was constructed in Bonn, completely disassembled, then shipped in six shipping containers before being reassembled in its final home over a four-month period in mid-2016—a



testament to the commitment to detail in the building's performance spaces.

In addition to the performance spaces, there is a student commons space, a Z-shaped second level lobby connecting performance and rehearsal rooms, a three-story atrium (protected and separated by hidden fire shutters), administrative offices, a well-utilized music library, a dedicated organ hall and organ practice rooms, and rehearsal rooms for band, percussion, choral, and orchestral groups. From the rehearsal rooms to the practice rooms to the faculty offices, nearly every space is acoustically designed to accommodate a wide range of performances and instruction, meeting the needs of all the School of Music's students, while still being connected to the surrounding community.

"One of the things I love about the space is that it appears very serene and calm from the exterior and from the public spaces," says Rechkemmer. "Every space was treated like a jewel box with something rich inside to discover." Rechkemmer explains that once individuals leave the more neutrally toned public lobbies and circulation spaces, they enter each room through a portal that is uniquely colored—providing a hint of the interior finishes within. Colors across the spectrum were used to enliven and give identity to each space. "The building is a rich environment for music majors and non-majors alike to gather and celebrate creativity. It's a vibrant building, it's very active, it's a place that people like to be."



**Top:** The concert hall ceiling hides lighting, speakers, sprinklers, catwalks, and rigging above an undulating ceiling. **Opposite:** Rehearsal rooms can also be used for performances. **Top left:** The organ hall. **Bottom left:** The Dusdieker Student Commons.

# project credits

## Features

### 111 East Grand | 20

**Location:** Des Moines, Iowa  
**Architect:** Neumann Monson Architects  
**Civil Engineer:** Civil Engineering Consultants  
**Contractor:** Ryan Companies  
**MEP Engineer:** Baker Group  
**Mass Timber Engineering and Construction:** StructureCraft Builders Inc  
**Structural Engineer:** Raker Rhodes Engineering  
**Photographer:** Mike Sinclair

### Student Innovation Center | 23

**Location:** Ames, Iowa  
**Design Architect:** Kieran Timberlake  
**Architect of Record:** Substance Architecture  
**Construction Manager:** JE Dunn  
**MEPT Engineer:** IMEG  
**Structural Engineer:** KPFF  
**Civil Engineer:** Snyder & Associates  
**Enclosure Consultant:** WJ Higgins  
**Green Roof Consultant:** Roofmeadow  
**Life-Safety Consultant:** Jensen Hughes  
**Food Service Consultant:** Bakergroup  
**Sustainability Consultant:** C-Wise  
**Elevator Consultant:** Learch Bates  
**Photographer:** Tom Kessler

### Visual Arts Building | 28

**Location:** Iowa City, Iowa  
**Design Architect:** Steven Holl Architects  
**Architect of Record:** BNIM  
**AV Consultant:** The Sextant Group  
**Civil Engineer:** Shive-Hattery  
**Curtain Wall Consultant:** WJ Higgins & Co.  
**Landscape Architect:** BNIM  
**Lighting Consultant:** L'Observatoire International  
**Mechanical Engineer:** Design Engineers  
**Structural Engineer:** Buro Happold  
**Structural Engineer:** Structural Engineering Associates  
**Sustainability Engineer:** Transsolar  
**Photographers:** Eric Dean, University of Iowa; BNIM

### Voxman School of Music | 33

**Location:** Iowa City, Iowa  
**Design Architect:** LMN Architects  
**Architect of Record:** Neumann Monson Architects  
**Acoustic + A/V:** Jaffe Holden  
**Civil Engineer:** Shive-Hattery  
**Construction Management:** Mortenson  
**Design Architect:** LMN Architects  
**Landscape Architect:** Confluence  
**Lighting Design:** Horton Lees Brogden  
**MEP Engineer:** Design Engineers  
**Structural Engineer:** Magnusson Klemencic Associates  
**Theater Planning:** Fisher Dachs Associates  
**Photographer:** Tim Griffith

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**Photo:**  
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**Thin Brick Veneer:**  
Riverstone Group

**Precast Project Manager:**  
Ryan Miles

**Photo Credits:**  
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