Thaden School

Benton County School District, Bentonville, AR

2022 James D. MacConnell Awards

Executive Summary

The design for Thaden School shaped a new high school campus at the heart of a growing city, integrating the student experience of learning by doing while connecting them to the land and the community. The school was developed collaboratively, design members working with local community nonprofits and school leadership to identify needs not just in terms of areas, but the character of spaces, required adjacencies, and a student's journey throughout the day.

This was an iterative process developed along a twin path—the design team working to advance space programming and planning while the founders simultaneously developed the curriculum and built a faculty.

Students achieve balance through motion, expected to move throughout the landscape over the course of a school day. This attitude towards circulation was similarly reflected in the distribution of buildings on campus. Academic programs are disbursed across the landscape, each with their own lab/makerspace, where students learn to integrate the movements of their minds and hands.

A conscious decision was made to shrink indoor program and building size in order to invest in an enormous surrounding learning landscape. This commitment, made prior to the emergence of COVID-19, has paid dividends for the school during the pandemic, enabling them to shift much of their learning into well-ventilated outdoor settings with minimal disruption.

The campus is a porous one, highlighting the importance of buildings and spaces connected to not only the landscape, but the surrounding community. In delicately layering all these systems in a compelling way, students are afforded optimal opportunities to learn from their surroundings and interact with their community.

The final outcome for Thaden School of a campus connected to the environment and its community

Vision

Benton County History

Located in the northwest corner of Arkansas, Benton County borders Missouri and Oklahoma. The county emerged from a Native American hunting ground and a timberland and fruit resource to one of the fastest-growing counties in the country.

Agribusiness, chiefly poultry and cattle remain anchors of industry. The county today maintains its blend of Midwestern, Western, and Southern small-town sensibilities, but it is increasingly becoming part of a more global community. Rapid population growth has, in turn, necessitated infrastructure and education improvements.

Thaden School's Origins

Envisioned by the Walton Family Foundation (headquartered in Bentonville, Arkansas), the nonprofit led by the founders of Walmart, the school is part of the retail giant's mission to groom its hometown as a sophisticated global headquarters that, with record-breaking population growth and new construction, remains pleasantly livable.

The seeds of what would become Thaden School sprouted in April of 2015, via initial conversations held with the Foundation, and the notion of an independent school with a very public face and a very public mission that might serve rapidly growing Bentonville. School leadership maintained that the school should emanate from its place, and success would be derived from a strong sense of connection. In order to serve the diverse community of Bentonville, the school established a sliding-scale tuition model, based on need.

Site

After reviewing numerous sites for the school, the school's leadership narrowed in on a plot a mere fifteen-minute walk from Bentonville City Square and close to a number of other growing districts.

The team quickly discovered the site had been the home of the Benton County fair, and prior to that, the home of Bentonville College, and Bentonville High School—the old buildings long gone.

Here, Thaden's leadership felt there was something inherent to the site that could be built on historically, particularly the idea of the fairgrounds as a place for community to come together. From the beginning, leadership held steadfast to the notion that the school should feel open, connected, and accessible, supported by a campus architecture and landscape that felt connected to the place it served.

Initial Challenges

The challenge posed to the design team involved working with the school's visionary founders to organize a vast and empty 26-acre site with only 125,000 SF of building program. A combination of intensive outdoor programming and carefully orchestrated building footprints would theoretically transform the site into a network of indoor and outdoor rooms hosting a wide variety of functions, programs, and events for Thaden students and faculty as well as the larger Bentonville community.

An aerial view of the site, circa 2016

Cover to the final Master Plan document

The Master Plan

Prior to designing buildings, the design team led the creation of a holistic Master Plan that would guide the school in the development of its campus. The founding vision for Thaden School sought to challenge traditional paradigms of education. The 'feel' of the campus proposed in the master plan was modeled more on a small college campus than a monolithic middle or high school building. In early conversations, Founding School Head Clayton Marsh had memorably said, "when it's cold, the kids need to feel the weather, and when it rains, they need to get wet." Many classrooms were designed to spill out into adjacent outdoor areas.

At a Glance

Owner	Site Area	Building Area	Building Area	Landscape Covered by Native Plants	Energy Use Intensity	Student Capacity	Square Feet per Pupil	Occupancy Date	Grades Housed
Thaden School	32 acres	136,000 square feet	136,000 square feet	77%	23 (70% more efficient than similar schools)	500	272	March 2019 (Home Building) - January 2022 (Final Phases)	6-12

Sustainability

The master plan helped the school prioritize what to build first, identifying opportunities for growth and intensification of their site, while simultaneously establishing an environmental trajectory in delivering buildings that use 70% less energy than typical schools.

At the same time, school leaders envisioned the school might provide a learning environment beyond benchmarks and standards, a place where landscape and buildings might work together in a closed loop of production and consumption—the goal being not to just outperform comparable buildings but rather to tell a story about building performance that would invite users to understand systems in play at every scale.

Key Goals

The design and stakeholder team held a series of initial workshops related to health and wellness and environmental standards, looking at benchmarks of comparable institutions and holding conversations with Thaden School staff.

Key goals identified included:

- Indoor air quality and thermal comfort performance levels proven to provide the best environment for cognitive function, learning, and health. These included low indoor CO2 and VOC levels, abundant daylight, and views to nature in all regularly occupied spaces.
- Energy consumption levels 70% below national averages, enabling the school to be “Net Zero Ready,” where on-site renewable energy generation offsets energy consumption.
- Consumption of potable water significantly below benchmark school facilities, and detention of stormwater onsite in ways consistent with best-practice “Low Impact Development” strategies, providing learning opportunities for students and case-study examples for the community.
- The avoidance of construction materials with significant negative health impacts.

The design team leading a workshop exploring how critical sustainable design interventions were to the school’s success (results at right). The conclusions served as a useful guide to ensure designs responded to environmental concerns on every front.

ENVIRONMENTAL PRIORITIES SURVEY

	Critical				Less Critical	
Every learning or working space...						
has enough daylight to read by (excluding spaces where daylight might interfere with the task, such as video editing)	⁘	⁘				
has a view to the outdoors	⁘		⁘			
can control its own temperature		•	⁘		•	
has enough fresh air that carbon dioxide levels are kept below the level above which cognitive function begins to be impaired	∴					
is made from materials chosen such that airborne chemical levels (VOCs) are kept below the level which cognitive function begins to be impaired.	∴	•				
contains no materials that have been found to cause cancer or to be endocrine disrupters (altering hormone levels)	⁘	⁘				
has windows you can open		∴	•			
Consistent with the mission of teaching environmental responsibility, the overall facility should...						
use less than half as much energy as typical schools	•	•	⁘			
be net zero energy (use on-site renewable energy to offset the energy consumed on site)		⁘	⁘			
use less than half as much water as typical schools		⁘	⁘			
capture all water it uses from what falls on the buildings	•	⁘	•			
generate less than half as much trash as typical schools	•	⁘				
have its own goal to be ‘zero waste’ (everything either recycled or composted)	⁘	⁘				
put half as much stormwater runoff into the municipal system as is allowed by local regulation	•	•	⁘			
handle rainfall on site such that the amount of water leaving the site doesn’t exceed what happened before the site was developed	•	⁘	•			
be made from a mix of materials such that at least half were produced regionally	•	⁘	•			
incorporate a significant portion of re-used, reclaimed, or recycled materials	•	⁘				

The natural and agricultural landscape of the region surrounding Thaden School

The Cultural Landscape

In addition to taking cues from the agricultural landscape surrounding, the design similarly explored the cultural setting of the new school.

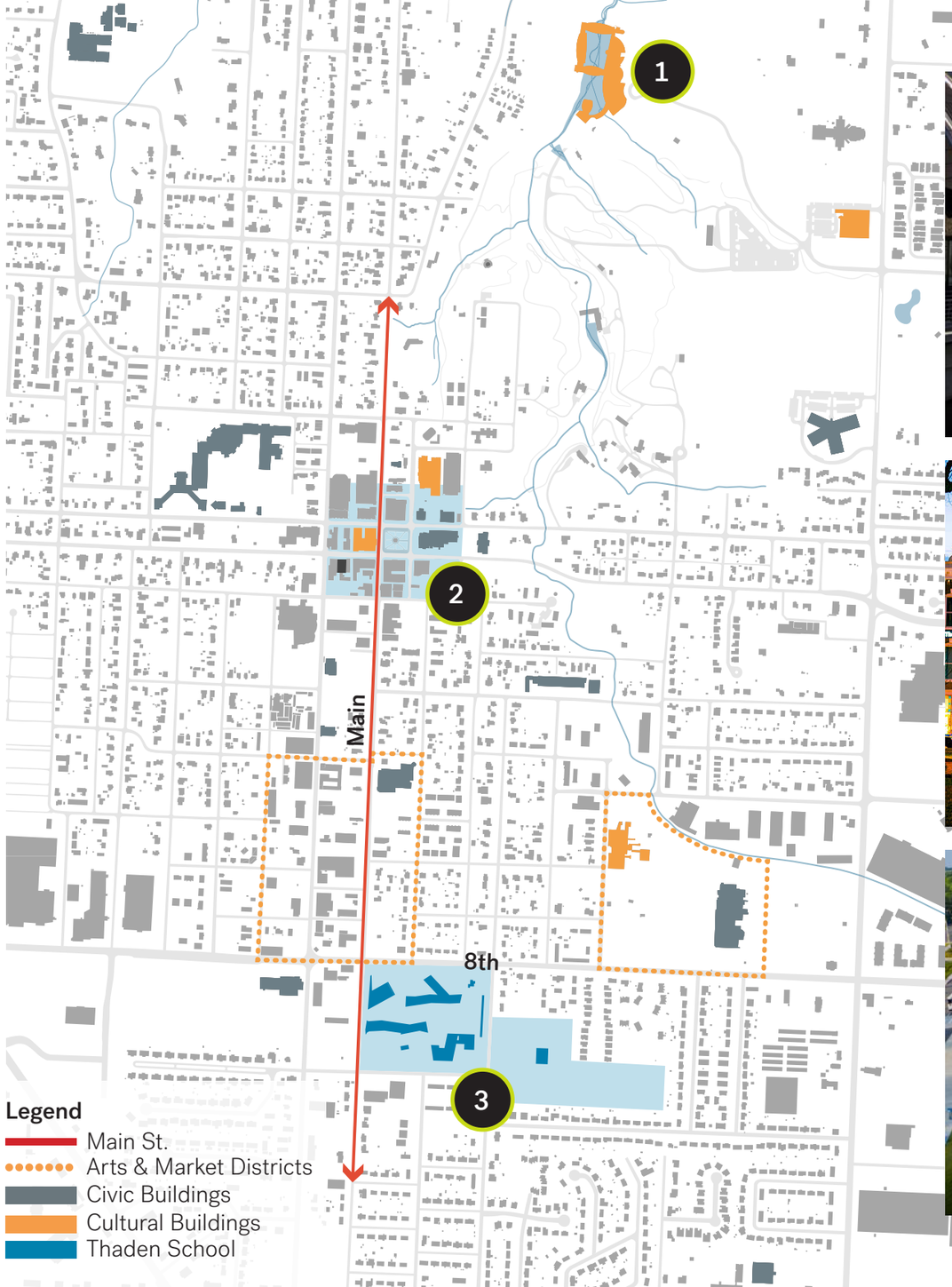
Following a Downtown Master Plan developed in 2005, the city of Bentonville developed a special component targeting the southeast portion of downtown Bentonville. It focused on incubating the development of two areas, the Arts District and Market District, connected by corridors along 6th and 8th Streets.

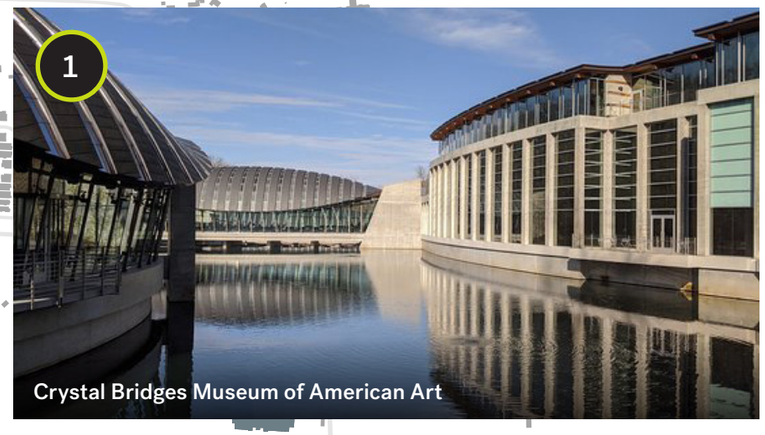
Prior to selection of the final site for the school, these nearby districts were viewed favorably. School leaders saw them as opportunities to enhance the school's mission of connecting to the community and envisioned school edges that might bleed into the surrounding area for after-school programming and community partnerships.

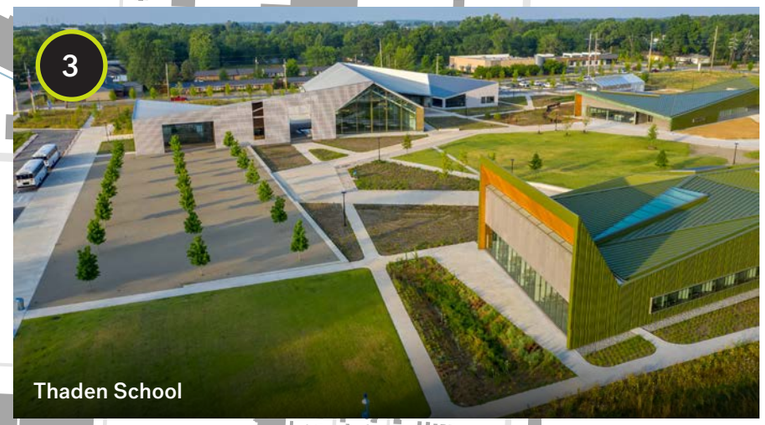
Ultimately, the school ended up anchoring the southern portion of the two districts, providing an integral link along 8th street.

Additionally, Thaden's 26 acres is only a 10 minute walk south of the town square down Main Street, which is underdeveloped. The development of the school presented a unique opportunity to establish an outpost of engaging urban development to catalyze the revitalization of Main Street infilling from 8th Street up to the Square.

As Bentonville's population grows rapidly in the suburbs, expanding the dense urban core will increase the connectivity between a collection of unique cultural facilities throughout the city, such as the nearby Crystal Bridges Museum of American Art.







Pedagogy

The school's pedagogy was ultimately developed around three signature programs that felt authentic to the region: Wheels (where the fields of physics and mechanics come alive through the construction and use of bicycles and other wheeled machines), Meals (where biology, chemistry, and community come alive through the growing and preparation of food), and Reels (where narrative and visual communication come alive through the production of film and video).

Each theme becomes a vehicle by which students approach many facets of a robust academic curriculum. The act of making lives at the core of each theme. Students develop a deep understanding of the world through deliberate and creative encounters with the physical reality of subject matters.

In this vein the school envisioned a series of "makerspaces," corresponding to each of the three individual programs, to augment learning as extensions of the classroom.

Wheels

Leveraging the region's extensive network of bike paths and trails as well as the campus pump track and skills course, the Wheels program provides students with hands-on opportunities to explore the design and mechanics of the bicycle and their connections to math, physics, history, urban planning, and other fields. In the campus bike shop, students integrate the motions of their hands and their minds as they develop their problem-solving skills and cultivate an ethos of repair and self-reliance.

Meals

The long history of food production in Arkansas provided fertile ground for the Meals program. Using the greenhouse, on-site gardens, and teaching kitchen as educational platforms, students are introduced to the science, economics, sustainability, and culture of the plate. Family-style meals in the Great Hall foster a culture in which students slow down and eat with their hearts and minds as a school community.

Reels

Equipped with a campus sound stage as well as indoor and outdoor screening spaces, the Reels program provides a platform for the creation and study of film, photography, podcasts, and other forms of media. As students study the technological, commercial, and cultural forces that set pictures and stories into motion, they hone their narrative and editorial skills and learn to bring critical distance and social responsibility to the production and consumption of the media that saturates our world.

Community Connections

Schools help build community, and the success of the school very much depended on its ability to form strong bonds with a vibrant array of local and regional community organizations.

The pedagogy of Thaden always envisioned a curriculum where students would apply what they learned in the classroom outside the classroom in hands-on application. In this spirit, school leadership looked to supplement student experiences with participation in local community programming.

For this reason, the master planning process was kicked off with a gathering of nearly thirty individuals from the school's leadership, the design staff, and more than a dozen community and nonprofit organizations.

After an initial warm-up describing the goals of the school and its pedagogy, individuals were broken into separate working groups focused on the three signature programs and explored opportunities for collaboration—and how the future facilities and landscape could be configured to support student learning in collaboration with these community partners.

School Leadership Design Team Community Organizations

Community Groups Engaged

Wheels

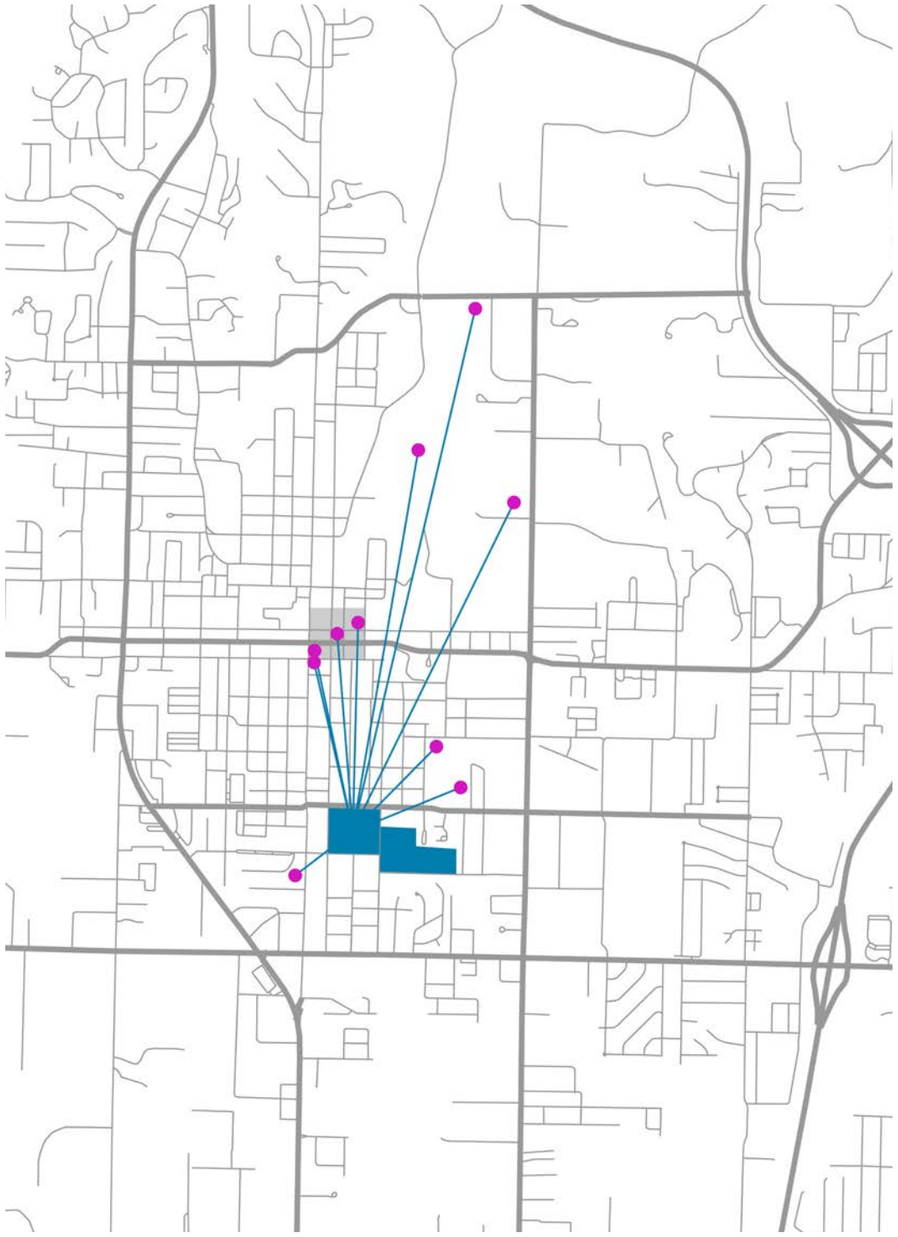
- Phat Tire Bike
- NICA
- Cisneros Center
- Bicycle Coalition of the Ozarks
- Girls Bike Bentonville

Meals

- Bentonville High EAST Program
- Crystral Bridges
- Rogers Historical Society
- University of Arkansas - Music Cognition Lab
- Theater Squared

Reels

- Ropeswing
- Velocity Group
- Brightwater
- Amazeum



Location of some of the various community groups engaged in relation to campus

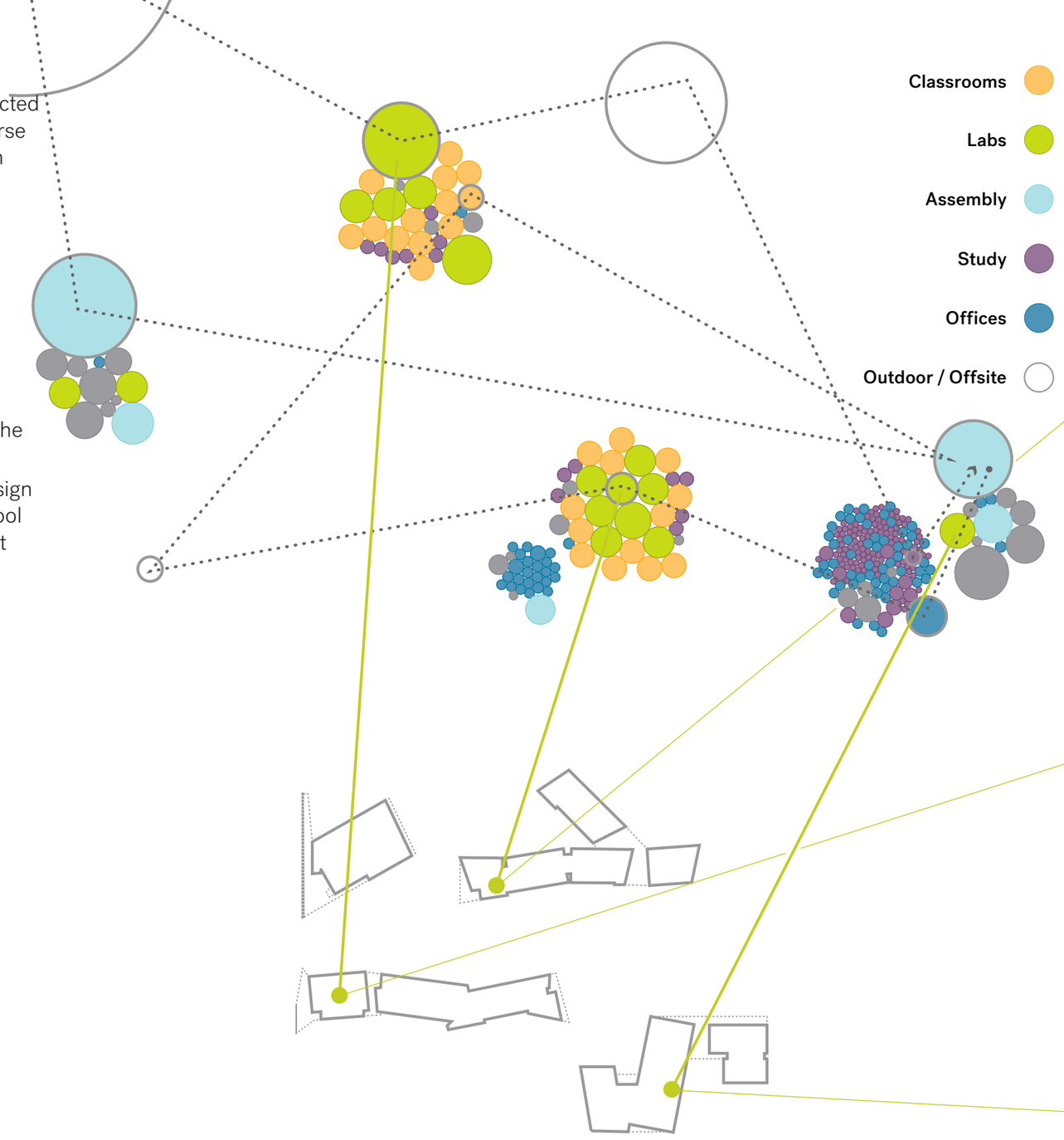
Motion and Balance

Students achieve balance through motion, expected to move throughout the landscape over the course of a school day. This attitude towards circulation was reflected in the distribution of buildings on campus.

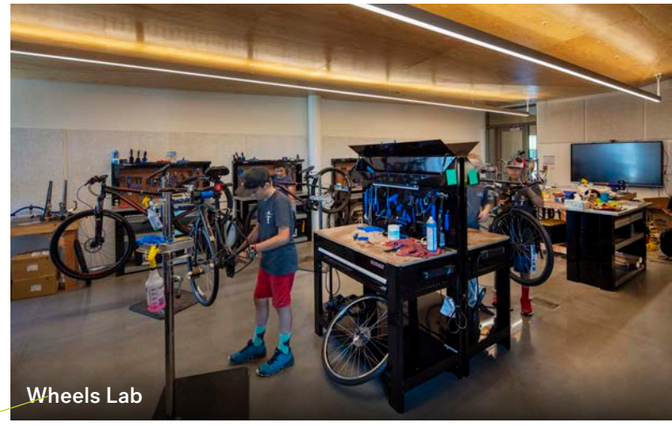
Where a typical school consists of classrooms augmented by specialty areas (gym, cafeteria, library) tucked away in corners, the Thaden School's philosophy of "learning by doing" and "learning by moving" necessitated a different approach. Academic programs are disbursed across the landscape, each with their own lab/ makerspace, where students learn to integrate the movements of their minds and hands.

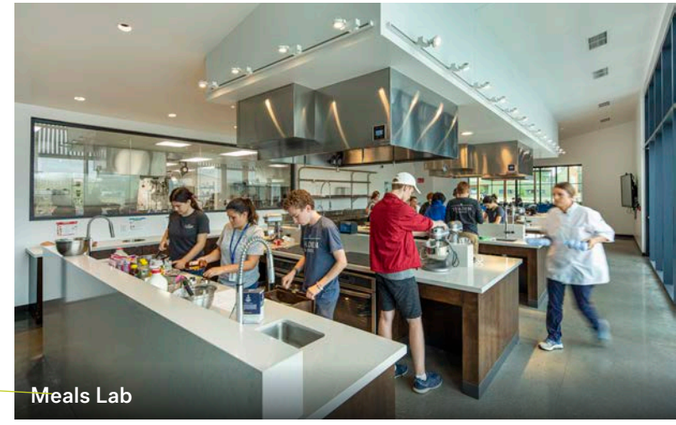
The program was developed collaboratively, design members working with the community and school leadership to identify what would be needed not just in terms of areas, but also the character of spaces, required adjacencies, and a student's journey throughout the day.

Building off the Ozark vernacular, the proposed Program called for approximately 20% of the constructed area to be unconditioned covered areas—porches, sheds, pavilions.




Reels Lab


Wheels Lab


Meals Lab

The Urban Pastoral

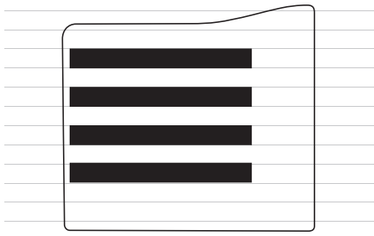
A crucial question emerged during the school's Master Planning process: how does one responsibly become part of a growing urban environment, and simultaneously create the vast open space needed to connect children with a longstanding regional agricultural identity?

Early on, the design team latched onto an idea for the campus of the "urban pastoral," where the campus would seamlessly marry a modern notion of urban development as a catalyst for energizing cities and a historical respect for agricultural elements from the local vernacular.

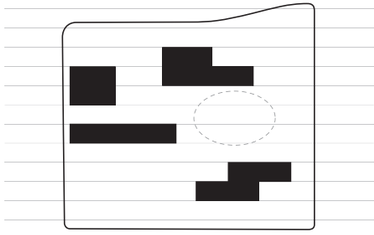
The Bentonville region has many chicken farms, all following a consistent logic. They tend to be narrow, oriented east-west, with overhangs at the roof eave. These qualities allow the buildings to block the south wind, encourage natural ventilation at the eave, and avoid excess exposure to low angle sun. Such strategies offered compelling instruction on how best to handle building distribution on site in the Arkansas climate.

The Pastoral Condition: Chicken Farming in NW Arkansas

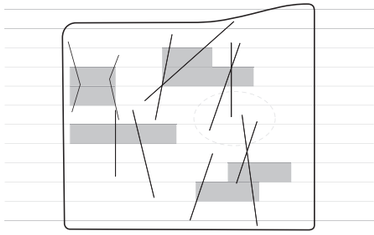
The Urban Condition: Bentonville Town Square



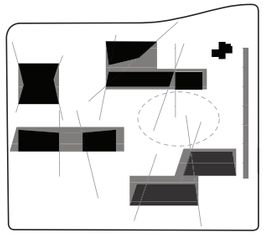
Chicken Shed Plan



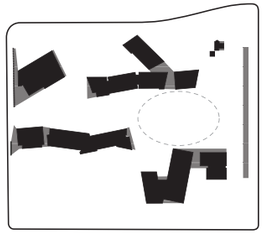
Creating a Quad



Cross-Grain



Porous Buildings



Final Figure Ground

Local Vernacular | Creating a Framework

In developing the Master Plan, the design team took precedents from local vernacular, particularly the idea of the regional farmstead.

In the same way that buildings in the agricultural landscape might be loosely organized to create semi-enclosed spaces connecting to open spaces, the campus was defined around four main buildings that stretch across the landscape; bending and wrapping to define a new kind of campus.

“Farm Court” Planning

A Pioneering Namesake

How do you develop a schooi from the ground up to maintain a sense of history? School leadership took a novel approach to the question by imbuing it with a history borrowed from the region.

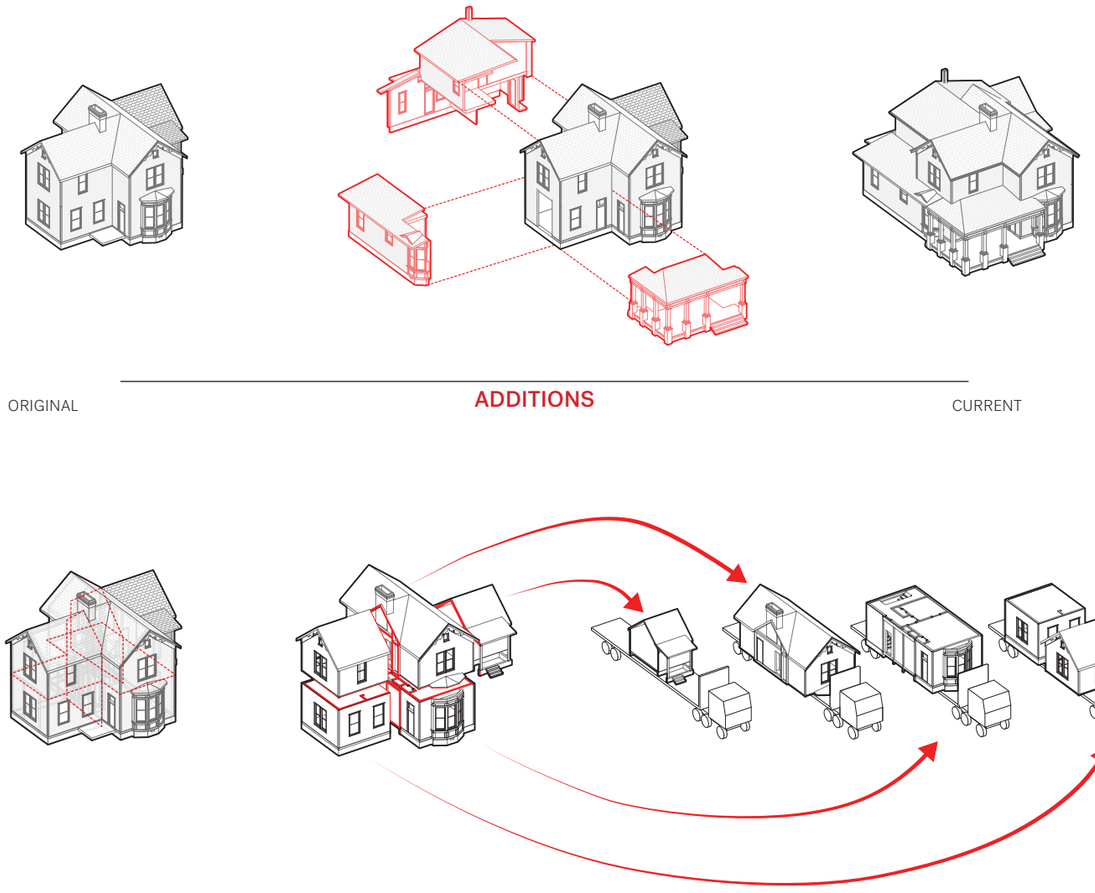
Thaden School is named in honor of Louise Thaden (1905-1979). Born and raised in Bentonville, Arkansas, she was one of the greatest aviators of her time. Her pioneering and innovative spirit similarly inspired the efforts to create a school dedicated to empowering students to pursue their dreams.

History Repurposed

Instilling this spirit in a very real way involved one of the very first physical efforts on campus—salvaging Louise Thaden's childhood home, originally constructed in the 1880s, and around 2016, slated for demolition. The home was donated to the school for use in the master plan. A number of additions had occurred over the decades since Louise last lived in the home. Strategic demolition removed these additions and restored the home to its original historic appearance. The plan then involved cutting the home into sections, readying them for transport via truck to their new location on campus.

The Spirit of Thaden

Once located on campus, the home was given new life via a painstaking restoration, and retrofitted within for modern amenities. Today, it houses the school's Office of Admissions. Located at the intersection of 8th Street and C Street, a placement that allowed the home to maintain its original orientation, and similarly enabled the home to serve as a constant presence and a visible reminder of the spirit of Thaden School.



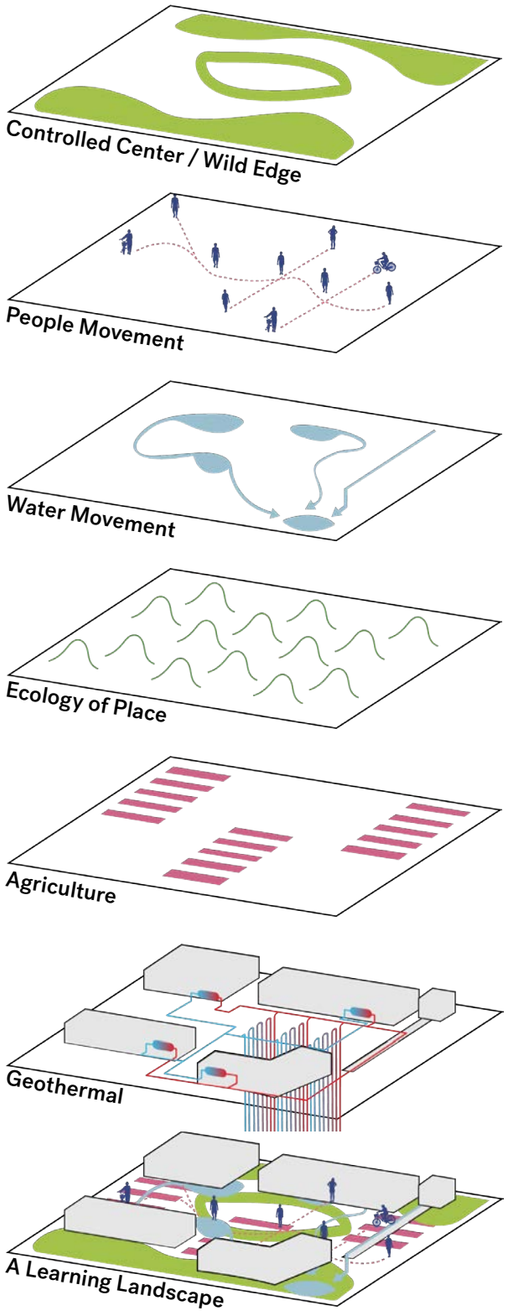
Layering By Design

The landscape of the school was always intended to be a multi-faceted one, relying in part on local, social, and ecological analogs for human use patterns, plant communities and indigenous land forms. This guiding principle provided a dynamic, rhythmic template for how the design team approached the site.

Beyond guiding building program and people movement, the campus similarly guides the flow of water. The landscape is a productive one. It supports natural ecological processes, restoration of the Osage Prairie, pollinators, models of production and consumption through farming.

The campus responds to a growing urban environment, creating buffer zones from the highway and residential zones while still opening the school to the surrounding community.

In delicately layering all these systems in a compelling way, students are afforded optimal opportunities to learn from their surroundings. Early diagrams, at right, from the first stages of the Master Plan, show this thought process.

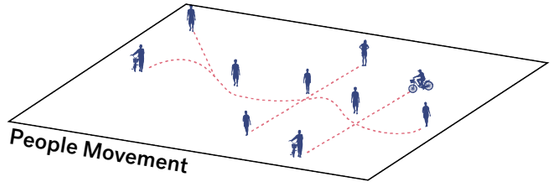


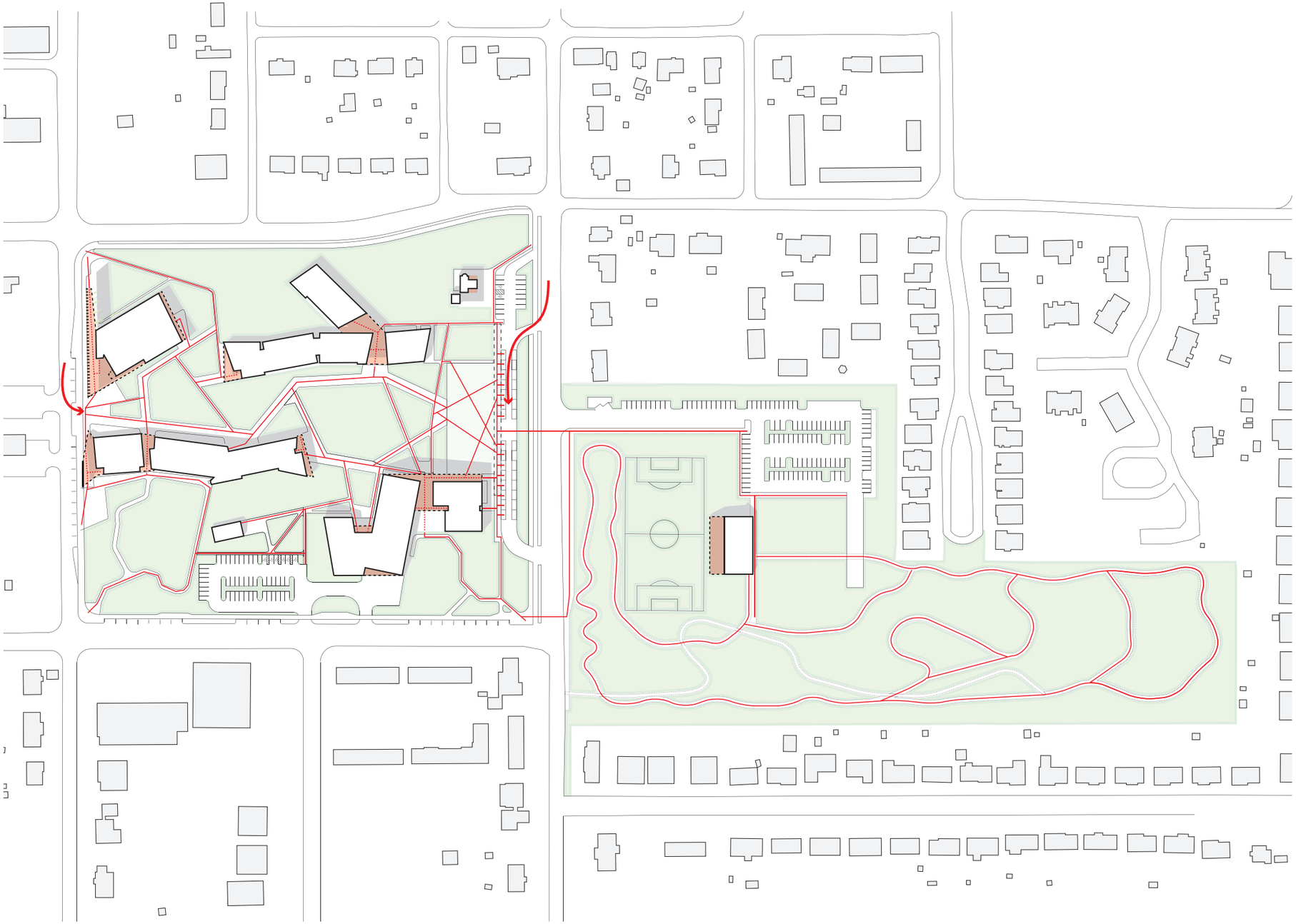
Movement | A Campus Journey

The site is open to encourage free movement between the buildings and throughout the landscape. The buildings are porous, using porches and covered “dog trots” to allow access while inviting students outside.

The building forms create a secure interior quad, accessed from Main Street with one main point of entry.

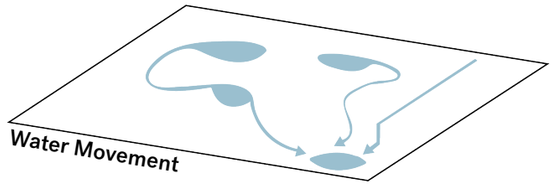
By contrast, the student dropoff on C Street drops them in the open quad, free to choose their own path to class.





Movement | The Flow of Water

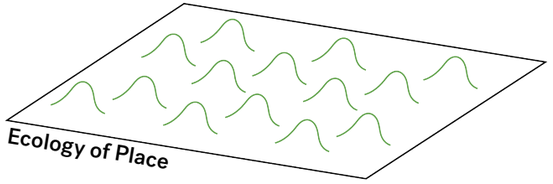
Stormwater management is accomplished via several detention areas across the site, a large portion accumulating naturally in the southeast corner of the west parcel, the lowest point on campus, where it overflows into drainage infrastructure.

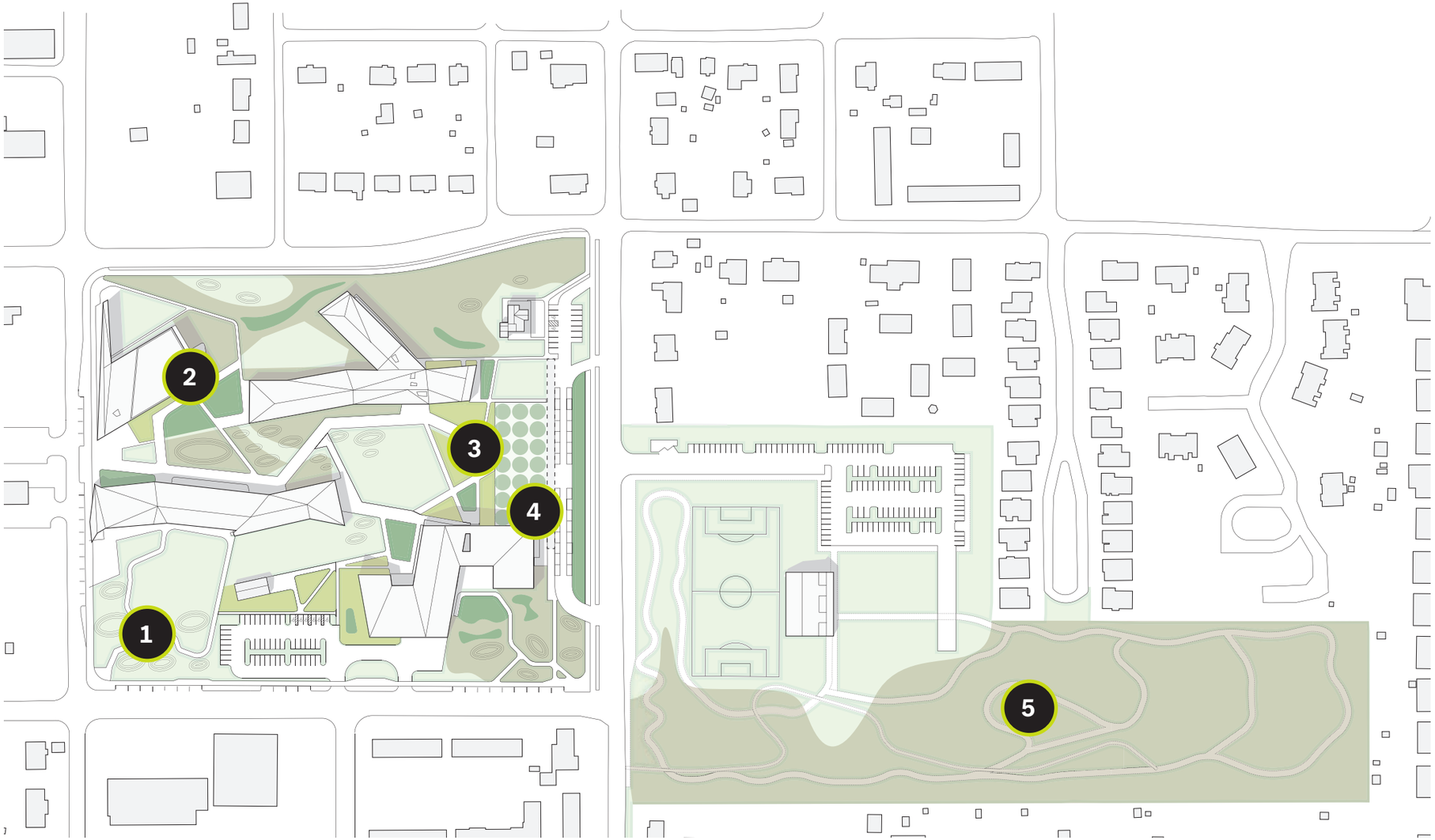


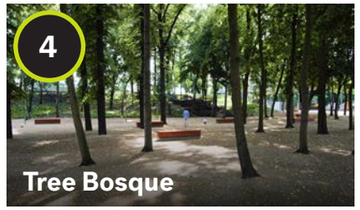
Ecology of Place

Bentonville is part of the Osage prairie landscape occurring among the Ozark mountains. The eastern site area was already host to a vibrant prairie landscape, now preserved and celebrated with new trails. The west campus takes advantage of open space to return native species and habitat to the city. Zones of Osage prairie planting, tall grass ground cover, and rain garden species along with more constructed areas of lawn, hardscape, and agriculture organize and scale the outdoor space for education and activity of all sorts.

Mima mounds are naturally occuring phenomena in the region. The landforms provide three-dimensional quality to the landscape, whose rise and fall can guide users, direct views, and gently surround for a complete landscape emersion.



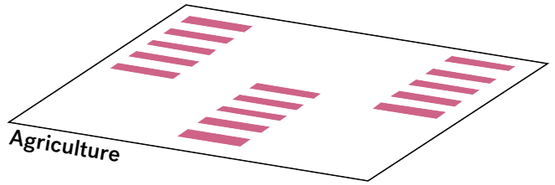


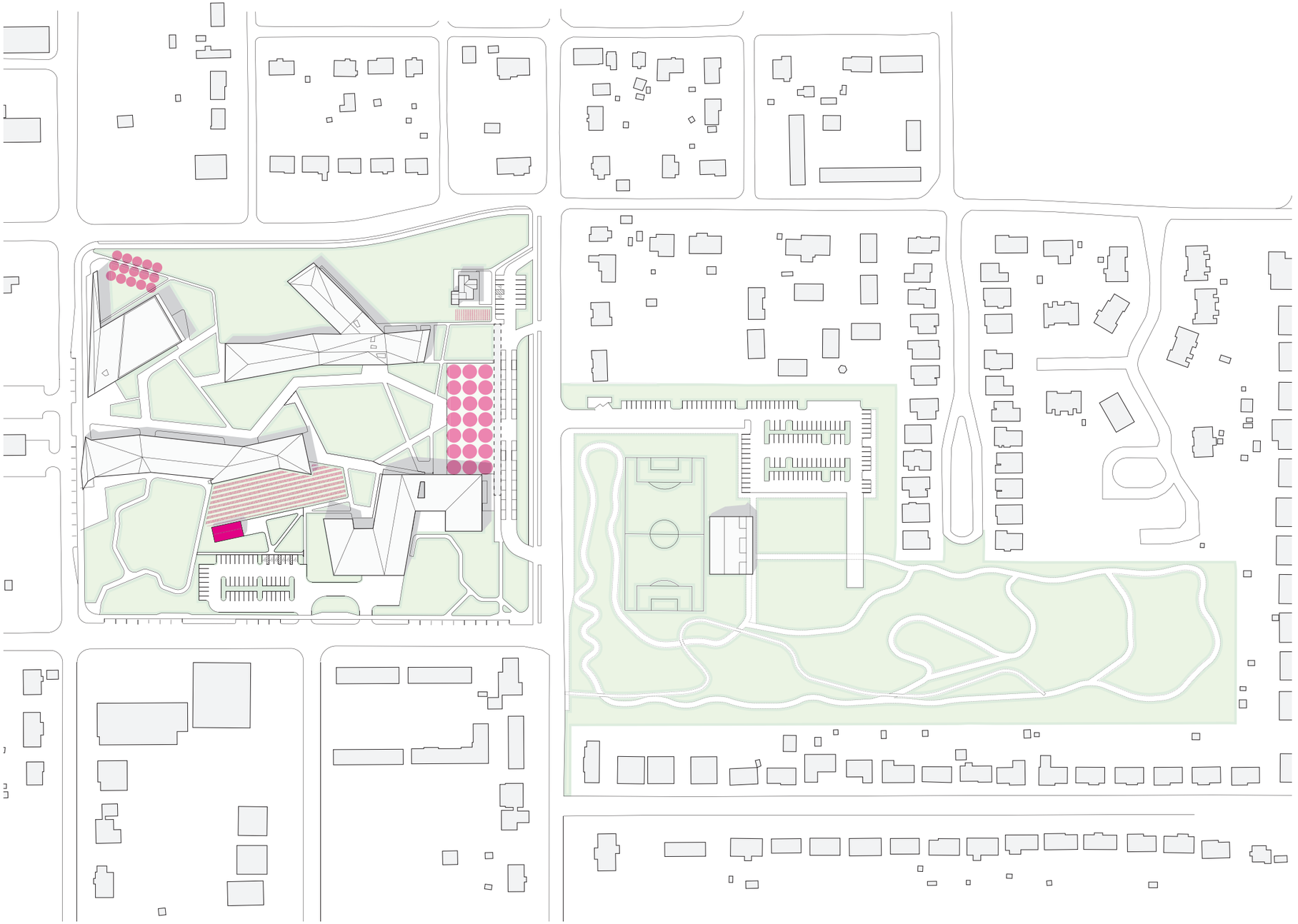


A Productive Landscape

Clearly, site and landscape are integral to the Thaden experience. Beyond serving as an educational tool, ecological restoration effort, and aesthetic experience, the landscape is also a productive one.

A key component of the developed landscape involved an “urban agriculture” program, intended to support the school’s signature “Meals” program. Fruit and vegetable fields, orchards, planter boxes, and a working greenhouse can all be found dotted across the campus.





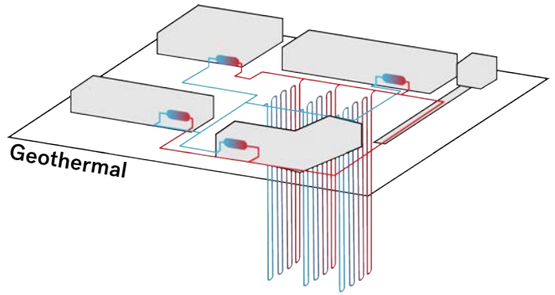
Geothermal

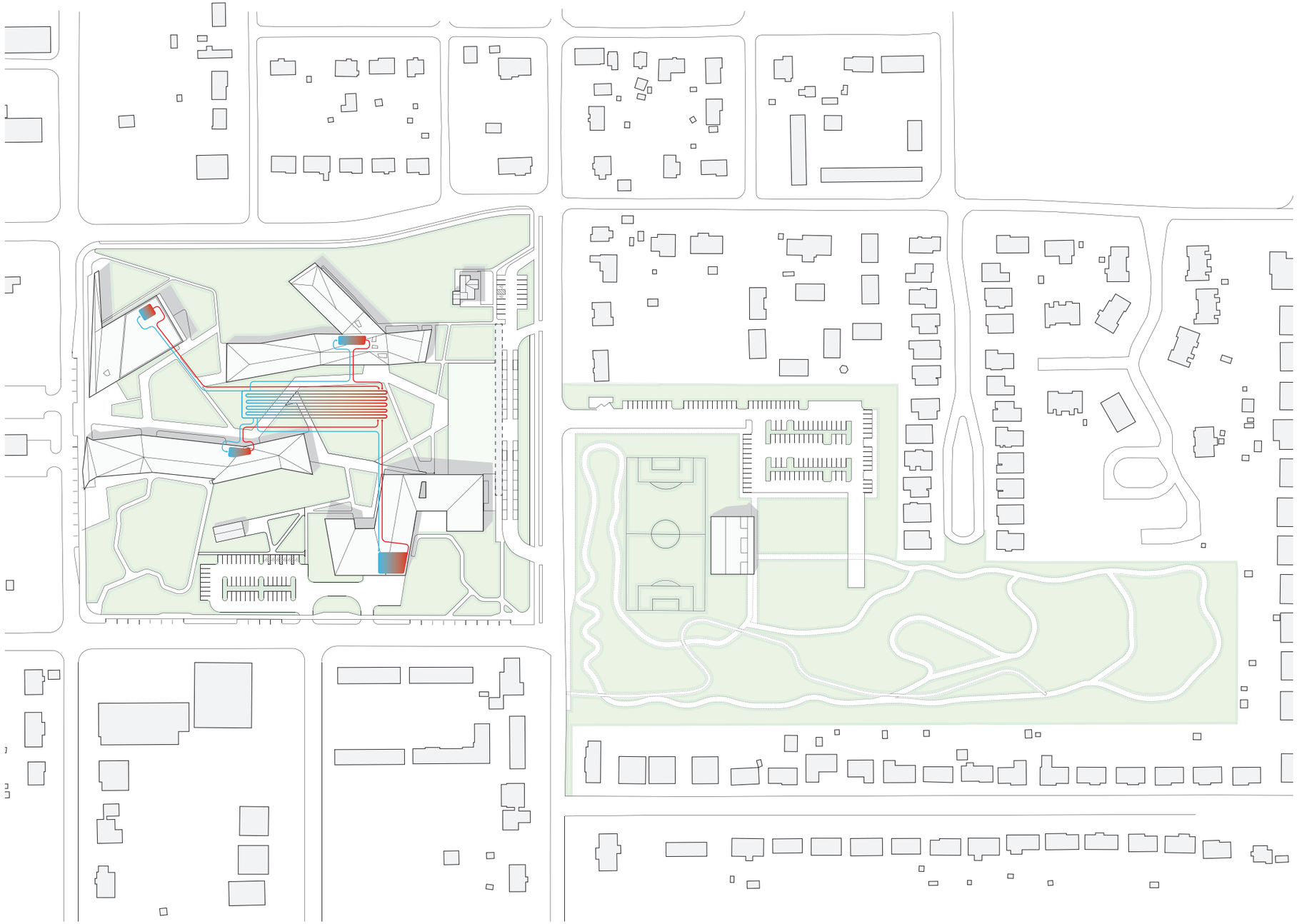
A geothermal well field sits under the site's central lawn, providing a neutral temperature water loop for the high efficiency water source heat pump HVAC systems used in each building on campus. The campus loop strategy coupled with responsive building controls allow buildings with different schedules and occupant schedules to optimally share heat and cooling loads and minimize work required by the AC units.

The well field's piping comes together in a vault under one of the mima mounds, where students can develop an understanding of what it means to exchange heat with the earth.

Alongside typical school bulletin boards, buildings have integrated tracking dashboards that enable students to monitor their consumption of energy, food and water in ways that will help them appreciate the global impact of local behavior.

Students examine the underground geothermal well





In Context

Within this overarching campus context, the project team set out to design buildings in service of the various components of the school's pedagogy:

- The Home Building, for the "Meals" program, where students learn about science and Biology through the act of harvesting, cooking, and preparing food
- The "Reels" building, where students cultivate their writing and narrative skills via a filmmaking program
- The "Wheels" building where students learn about physics and engineering through constructing, repairing, and analyzing bicycles
- A performance hall, for plays and music performance
- And the "Bike Barn," a multipurpose gymnasium and recreation center that adjoins the school's bicycle pump track

The approach to building design was rooted in basic vernacular environmental responses—orienting narrow buildings east-west to minimize solar heat gain and allow for natural ventilation—reinterpreting time-honored, regional best practices in a modern way. These forms were then bent, detached, and reshaped across the campus to create protected and defined outdoor rooms, a clearly implied secure interior to the campus, gateways and framed views, and visual and spatial connections throughout.

These design responses similarly proved a wonderful tool for educating students, educators using the surrounding campus as real-world examples of their curricula.

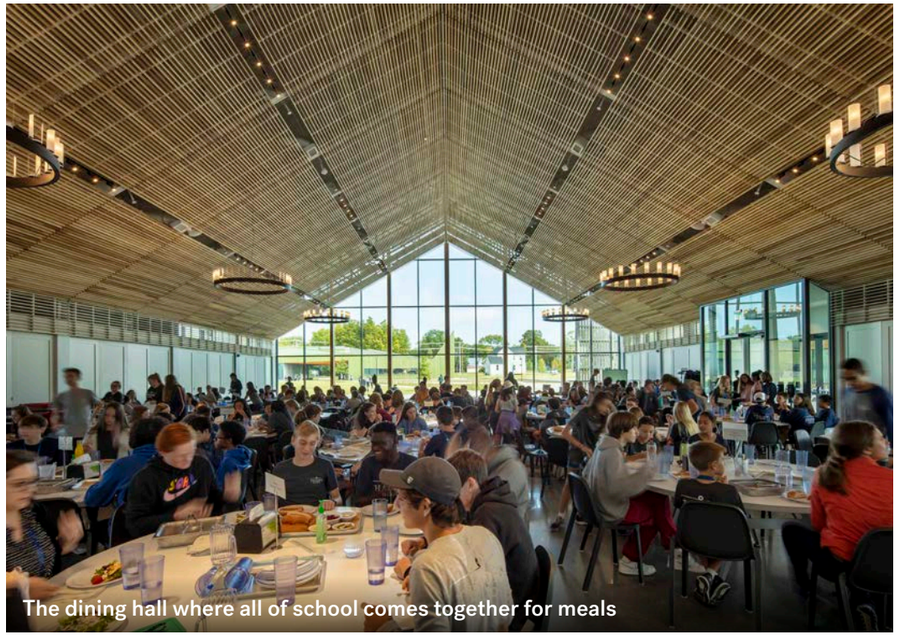
The Home Building

The Home Building is the critical link supporting all of campus life, as well as the school's signature "Meals" program and an ethos of open, ecologically sustainable food production.

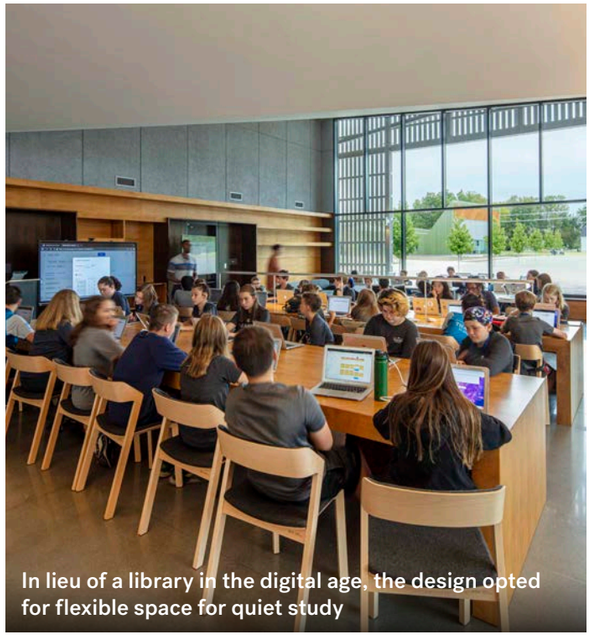
The large dining hall, where the entirety of school comes together for meals, adjoins a teaching and production kitchen. The landscape surrounding features a working agricultural plot and supporting greenhouse. Extended wings offer space for quiet, self-directed study.

The building takes visual cues from the region itself, with board and batten facades and all wood construction incorporating the beauty of local, vernacular architecture. Inspiration was drawn from precedents in the landscape, notably the Ozark farmhouse, the concept providing students with a recognizable form, but reinterpreted in a modern context, anchoring them to place and their history in the region.

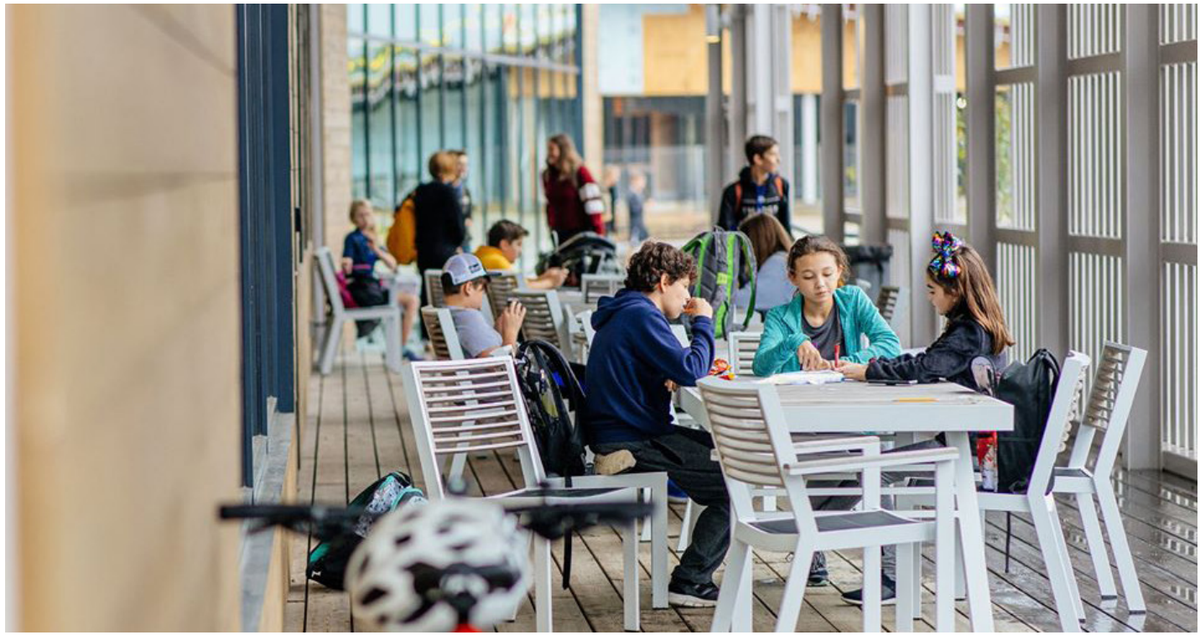
The Home Building features a variety of liminal spaces, porches and covered walkways, nestled among the building's overall massing, stitching together the use of site environment and building environment, and affording opportunities to learn outside the classroom.



The dining hall where all of school comes together for meals



In lieu of a library in the digital age, the design opted for flexible space for quiet study



Indoor/Outdoor Dynamic

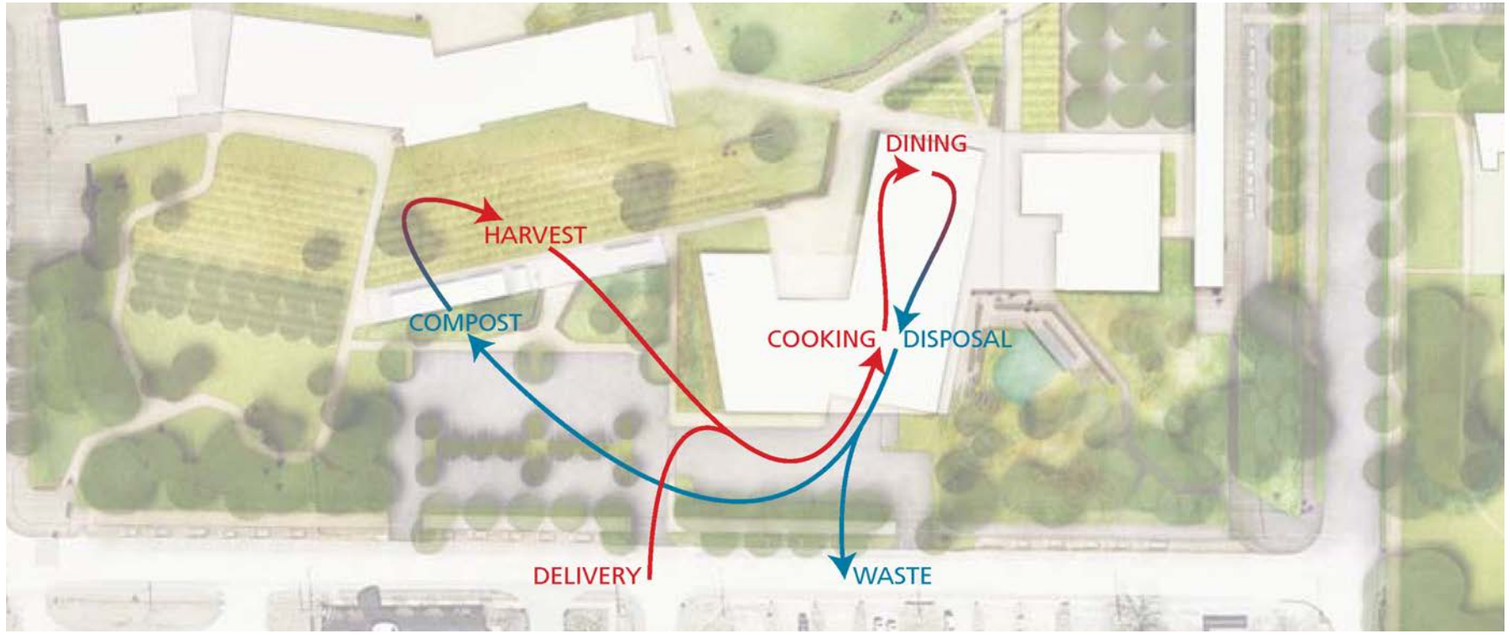
A concept to the overarching campus is that of indoor-outdoor relationships. This concept is embodied in the concept and site-planning for the Home Building. As the central space supporting the “Meals” program, the Home building sought to challenge default ideas of consumption and production.

Students take classes in a state-of-the-art teaching kitchen—one of the truly unique spaces in the Home building— one that deeply espouses the school’s “learning by doing” mantra.

The adjacent landscape is a productive one. An “urban agriculture” program features fruit and vegetable fields, orchards, and planter boxes. A working greenhouse is located within close proximity.

Their integration represents a near-perfect “loop”:

- Students harvest crops from the adjacent agriculture program
- Crops are cooked and prepared, contributing to student meals
- Compost from meals is used to fertilize crops




Students harvesting crops in the adjacent vegetable and fruit garden


Students preparing food harvested from the plots in the teaching kitchen

The Reels Building

The Reels Building houses the signature ‘Reels’ program, where students hone their narrative and storytelling skills through the study of film.

While the Reels Building includes a variety of spaces to encourage the film making and storytelling aspects of the curriculum, the building itself is a subject of inspiration and study. Specifically, students have engaged in studies of the building form in mathematics and drawing classes, and students have created short films submitted to the 2020 AIA Film Challenge about the building.

Building on relationships with the surrounding community, the Reels Building will be part of the fast growing Bentonville Film Festival, with the East facade and inclined movie lawn designed as an outdoor movie theater.

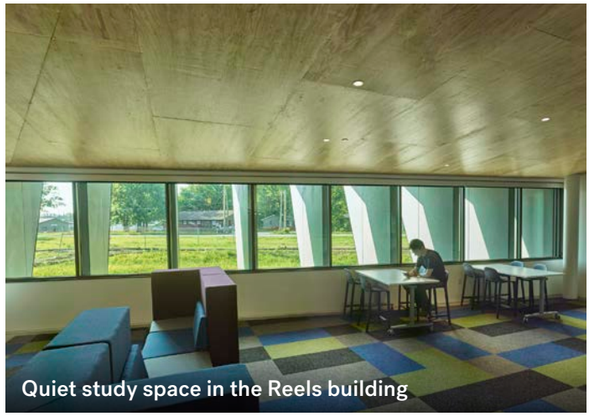
The Reels building

Community/school members watching a film projected on the Reels building

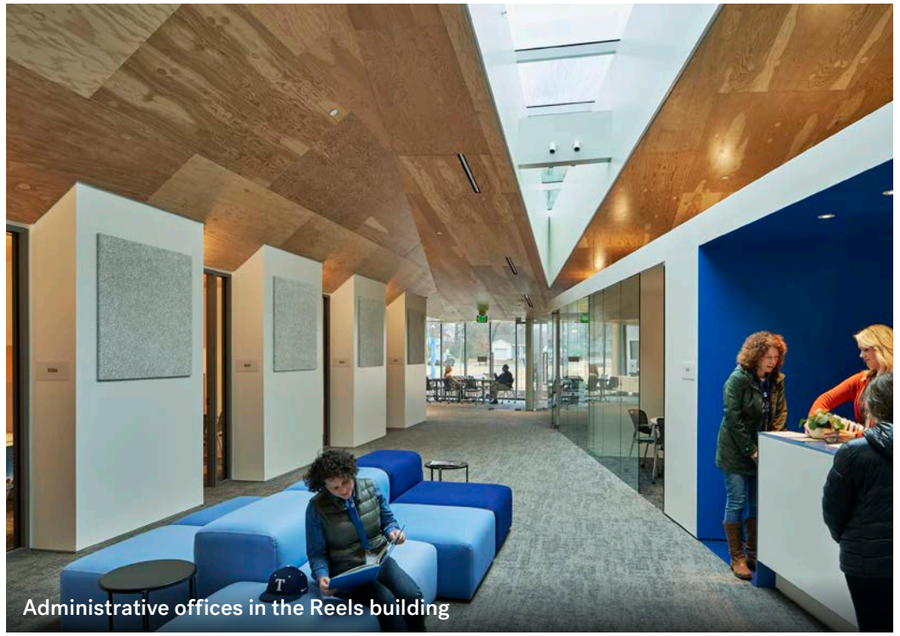
Students working within the film studio of the Reels building.

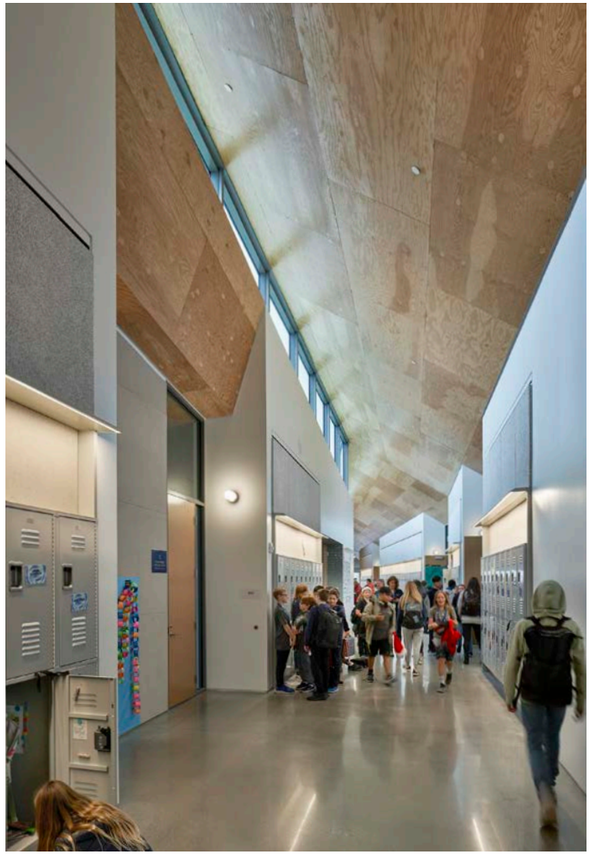
Comprehensive Programming
Beyond support for the signature art and film studies program, the Reels building simultaneously houses all administrative offices, quiet study space, and traditional classrooms for the English, Languages, and Social Sciences departments.


A Spanish language classroom in the Reels building


Quiet study space in the Reels building

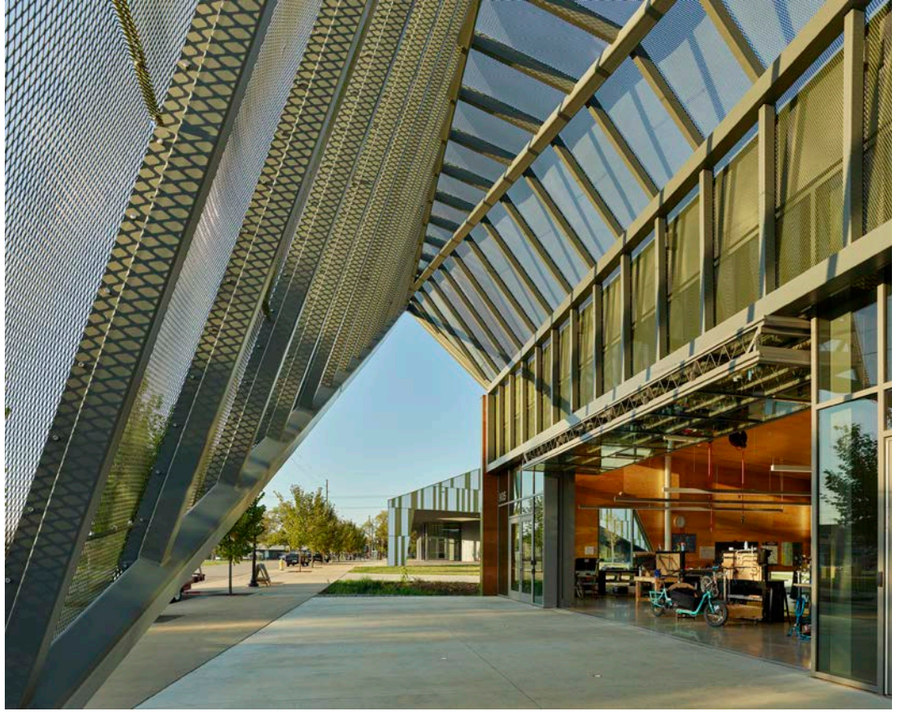

Administrative offices in the Reels building

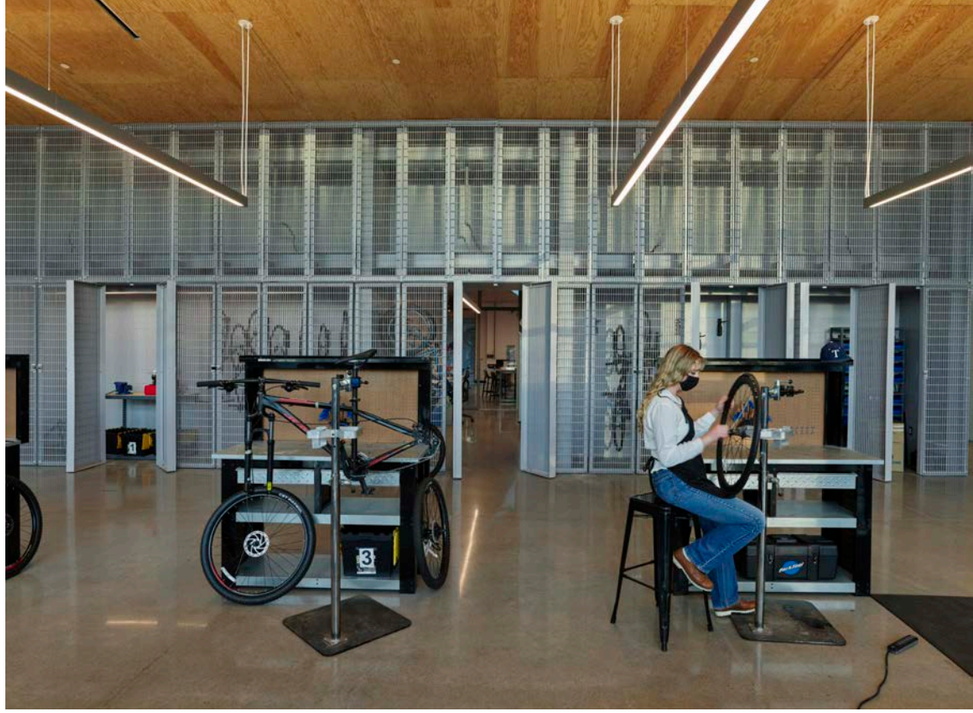

Administrative offices in the Reels building



The “Wheels” Building

The Wheels Building houses classrooms and a bike workshop, which opens to the street behind a soaring metal canopy, where students learn physics and science through the construction and repair of bicycles.





Students working on bicycle components in the “Wheels” workshop

The Bike Barn

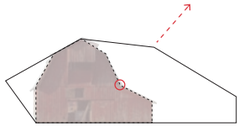
Situated on the eastern edge of campus, the Bike Barn serves as a multipurpose gymnasium, a viewing refuge for the adjacent soccer field, as well as a hub for cyclists using the adjacent pump track and nearby network of bike trails.

The Bike Barns transfigures the form of a gambrel barn pushing and pulling the work points of the original truss to create porches, skylights, and a mezzanine above the main athletic court. Recalling its initial form, the space of a gambrel barn is carved into the space of the interior, further accommodating the multi-purpose athletic court for the Thaden School team, the Barnstormers.

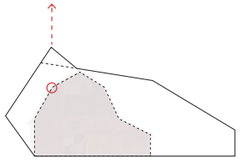
Start with a gambrel barn designed to maximize interior storage space

Pull the eastern edge to make a shallow porch and mezzanine

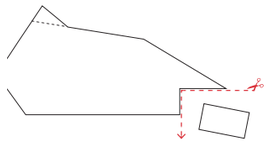
Drag the western face closer to the soccer fields



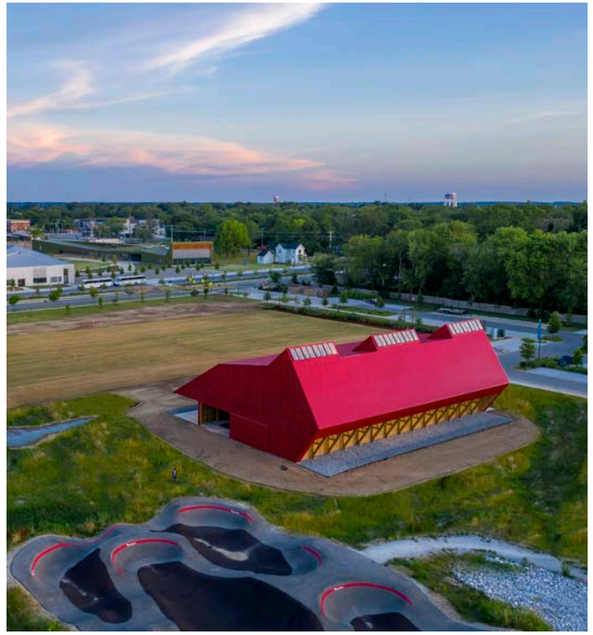
Reset the shape of the gambrel roof to maximize vertical clearance above the athletic court



Lift portions of the roof to create skylights above



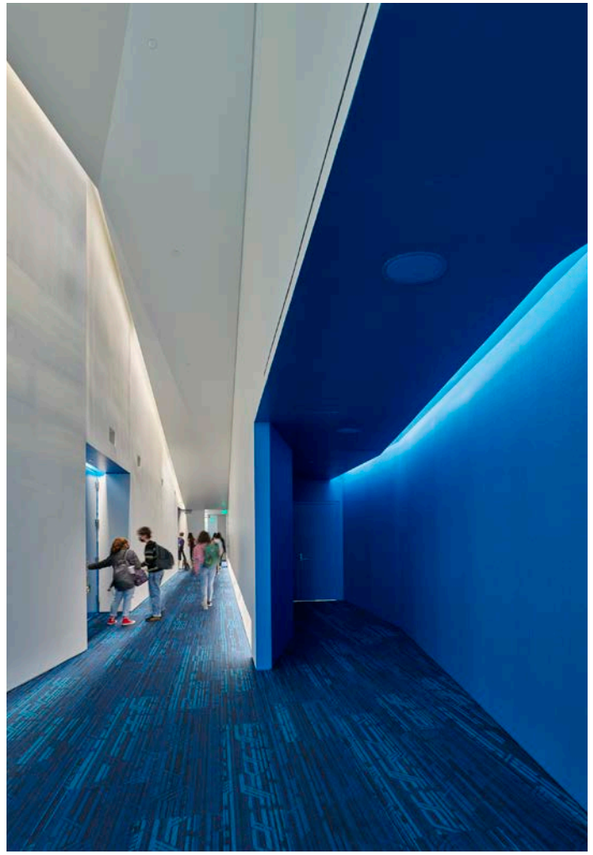
Cut away the west elevation to create a porch to watch soccer games



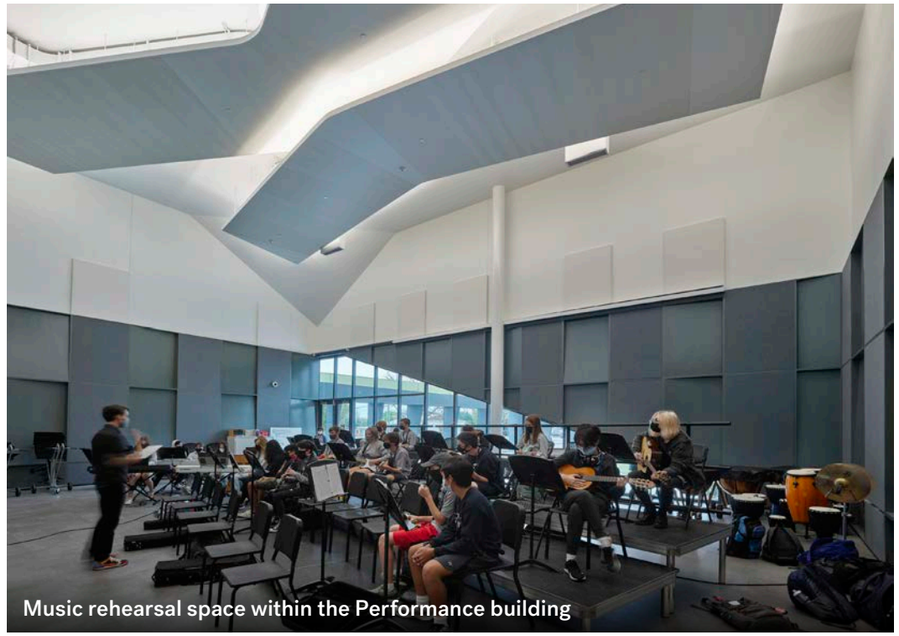
Performance Building

The most recent addition to Thaden School's campus, the Performance building, houses a state-of-the-art auditorium, along with practice and rehearsal rooms for both musical and theatre performance.

In service of Thaden's mission to be connected to the community, the building, located on the northwest edge of campus, is easily accessed by the public, offering itself as host to community programming requried by adjacent nonprofits and arts organizations, as well as other civic and cultural events.



A student performance for family and friends



Music rehearsal space within the Performance building

Play rehearsal space within the Performance building

Ecology

The campus' design places sustainability central to students' education. This begins with an adjacent landscape that acts as a botanical textbook filled with a diversity of plants, flowers, and trees—tallgrass prairie, oak and pecan woodlands, bottomland hardwood forests, freshwater wetlands—a microcosm of the region's native plant communities.

In designing the landscape in the "wild" vernacular model of the region, very little of the campus landscape requires active maintenance. In addition, by integrating various agricultural elements into landscape itself, it becomes a revenue producing asset fundamental to the curriculum, rather than an overhead burden.

Stormwater management (91% is managed onsite) is accomplished via a distributed strategy, with several detention areas across the site.

In the rear of the Home Building, an ever-present "water lab," detains the majority of rainwater, while offering a unique "classroom outside the classroom"—an opportunity for students to learn directly via their surroundings.

In making such interventions visible, didactic elements of the campus, the design hopes to inspire not only students, but the broader community.

Success Story

The decision to create a campus that responded not only to educating childrens' minds, but their bodies and spirits, has proven to be a definitive boon during the pandemic, when student health and wellness is suffering nation-wide.

Access to outdoor spaces, classrooms and support spaces with ventilation, views to the outdoors, and abundant natural light have all proven, in educators' minds, an ameliorative balm during trying times.

Too often, independent schools are isolated and insulated from the outside world, hidden behind gates at a remove from the communities in which they are situated. School leadership has spoken enthusiastically of the profound effect the campus has had in educating its students, particularly in the integrated way always imagined by the school's pedagogy of "Reels, Wheels, and Meals." This is best evidenced by a recent quote from Thaden's Founding Head of School, Clayton Marsh:

"When we were thinking about the design of this campus, we were thinking about interactions – how students and faculty would work together. How students would gather, the outdoor spaces, the indoor-outdoor dynamic, would it work?

It's working, like magic! And we kind of come back to "Meals, Wheels, and Reels," I walk in [the Home Building] the other day, and the Latin class is in there, making an ancient Roman recipe out of a Latin cookbook. And they're cooking it, and they're speaking in Latin making it together, and then the next thing is the Mandarin class is in there, and they're filming it…it's just all coming together exactly as we hoped."