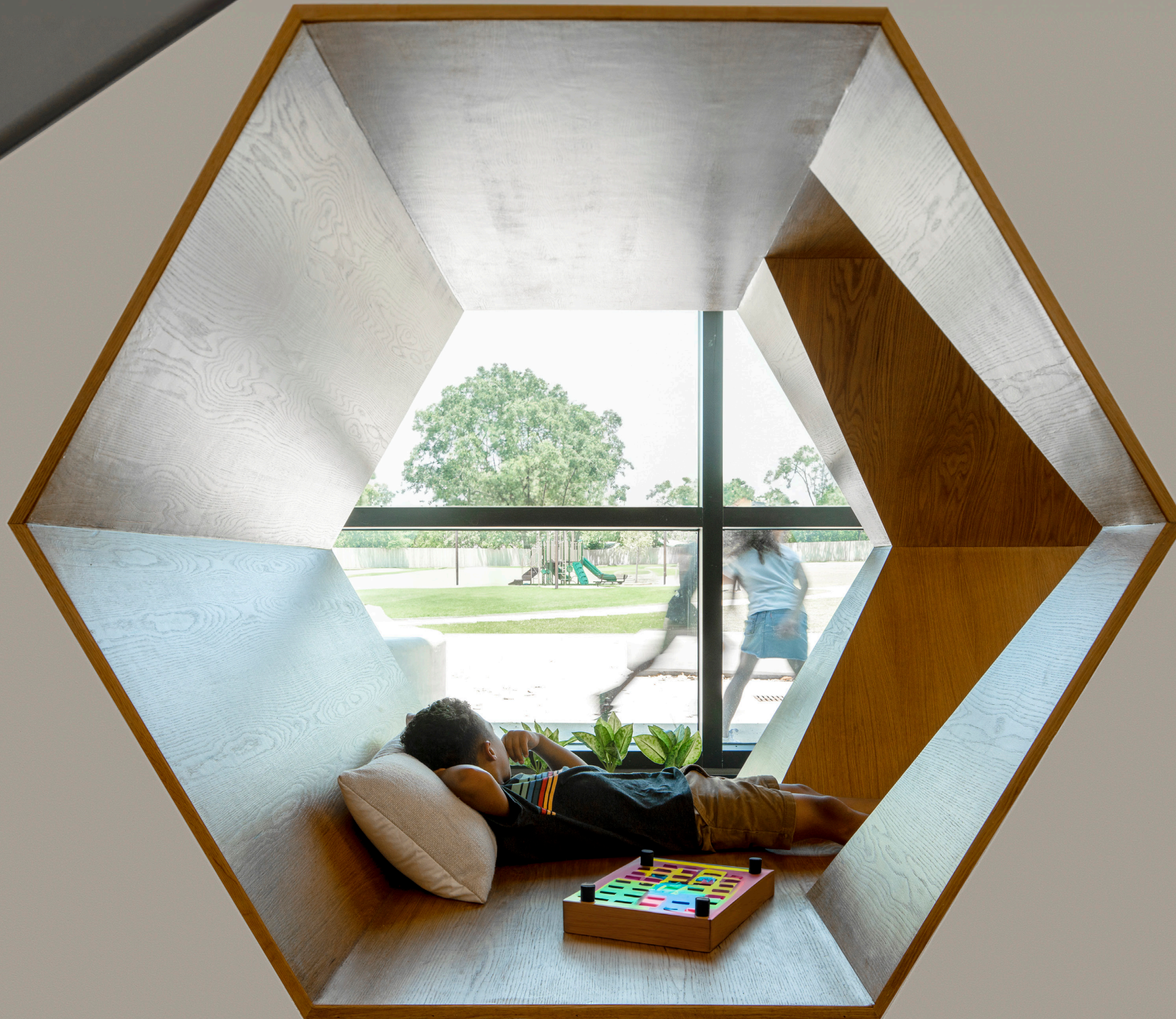


Smithfield Elementary School

The design team faced the challenge of designing a new 94,000-square-foot elementary school in North Richland Hills, TX that would be a forward-thinking, transitional learning environment. The new school accommodates and supports all students based on current and future programs and aligns with the pedagogical strategies of Birdville Independent School District.



Executive Summary

The Smithfield Elementary school is a two-story PK-5th grade elementary school that **works to inspire and motivate the community by incorporating innovative learning methods and sustainable practices. A collaborative design process brought together end-users and school district administration to create something greater than the sum of individual perspectives.** Comparisons were drawn between the design method and the pedagogies of the collaborative learning styles of the school district. What began to emerge was an emphasis toward transformation. With every meeting, the school site became more than anticipated. The design team learned that the special needs curriculum at Smithfield went well beyond the typical educational specifications.

Community Engagement

By working with key stakeholders the project began to form a holistic approach to design innovative teaching spaces. **Such as The design solution grounds itself in a Sensory Commons that functions as a HUB for the school community.**

Educational Environment

Smithfield **worked closely with key stakeholders to develop the main public areas** to be innovative meetings places to help cultivate learning for all types. The addition of a two-story volume Learning Commons that greets students upon arrival with glazing and transparency to provide ample natural light and access to nature.

Physical Environment

By using the primary **site assets to inform the project development, we can better understand how the project can effectively fit into the community.** All classrooms have physical and visual connection to the teaming hive and access to the library at each pod.

Sustainability and Wellness

At the heart of all school programming and design efforts is sustainability and safety. The most sustainable goal of all being an inclusive learning environment, workplace and community center that fosters a sense of belonging and exists to excite and inspire students, faculty, parents, and the surrounding community for generations. All safety guidelines of the International Crime Prevention through Environmental Design Association were actively considered and utilized in the design of Smithfield Elementary.

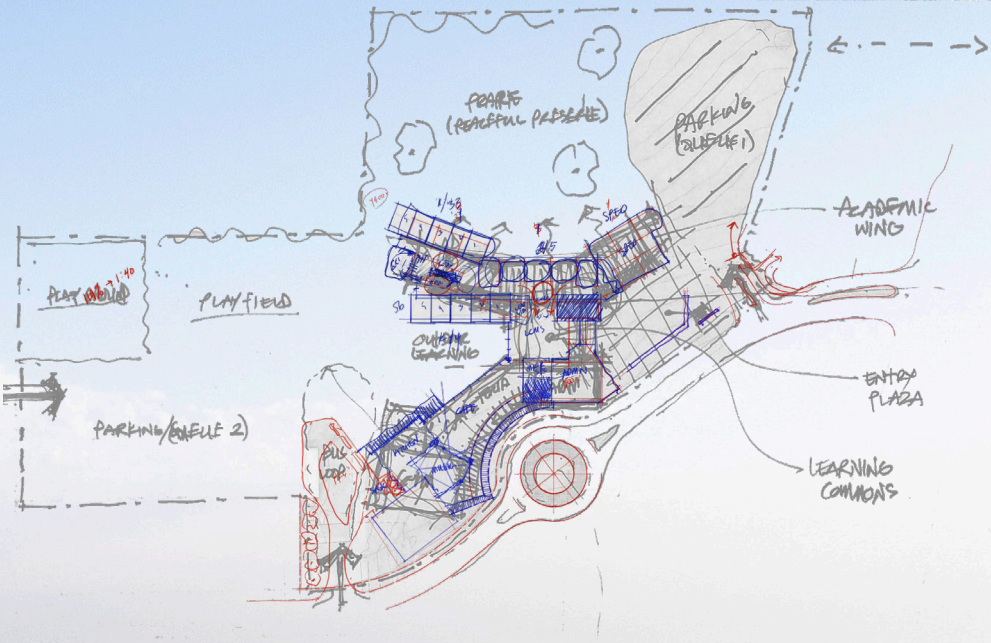
Results and Process

Smithfield is committed to enhancing their **learning environment through community, collaboration, sustainability, and school safety. The design emphasizes the importance of learning and human health, identifying environmental impact through sustainable interior finishes and design.** From classroom collaboration spaces to innovative social areas, Smithfield Elementary invites the students to explore their vision through high performing areas of learning.



Project Details

- Owner** Birdville Independent School District
- Location** North Richland Hills, TX, USA
- Building Area** 98,000 SF
- Student Capacity** 700 Students
- Grades** PK-5th



Innovative Program

Collaborative Spaces

- The Learning Commons
- Makers Space Cabin
- Reading Hive
- Learning Stair

Special Education

- Outdoor Sensory Path
- Zen Garden
- Active Zone
- Respite Zone
- Playful Entries

Learning Environments

- Kindergarten through 5th Grade
- Teaming Areas

Supporting Program

- Reception
- Parents Rooms
- Clinic
- Counseling
- Teacher Lounge
- Cafeteria
- Kitchen
- Restrooms
- Music
- Gym

Construction Cost
\$22,454,000

Scope and Budget

Master Planning and Architecture, from programming through construction Administration.



01

Community Engagement



Surrounding Community

Birdville ISD is one of the largest school districts in Northeast Tarrant County, with more than 23,500 students.

Stakeholders

Administrators
Teachers
Parents
Students
Community

Project Assets

Supportive Community
Tree-lined site
Greenspace
Existing FFE Inventory
Previous Project

North Richland Hills, TX, USA



History and Demographics

The team was challenged to provide design solutions that respond to the school’s large special needs program and student population. Both physical and emotional safety were key drivers.

Community Connection

The community of Zion was renamed Smithfield in honor of Eli Smith, who donated land for the Methodist church and was a grandmaster of Masonic Lodge 255. The lodge is still located just south of Smithfield Cemetery, where Eli Smith is buried. The **Eli Smith historical marker** at his grave was applied for by the seventh grade Texas History Lamp class at Smithfield Jr. High in 1983. It is highly likely the current elementary school resides on a portion of Eli Smith’s former farm.

Smithfield was anchored by the **Cottonbelt Railroad** (officially the St. Louis Southwestern Railway) in the 1880s, a route which still serves today as the Trinity Metro Line and as an 11-mile bike/hike trail from Watauga to Grapevine.



Median household Income \$54,099



58% White
23% Hispanic
8% African American
3% Asian
1% Pacific Islander
.4% Native American

43%

of students are economically disadvantaged



7.5% Bilingual
10% Special Education
7.9% Gifted and Talented

*Stats refer to Birdville ISD - Not Smithfield ES Only

Community Project Value

By partnering with community stakeholders, the project can have more effective designs to meet educational needs.

Collaboration Process

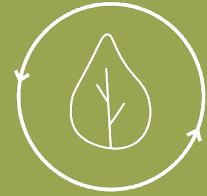
A collaborative design process brought together **the community of students, parents, faculty and school district administration** with the goal of **creating something greater than the sum of individual perspectives or program aspects**. The program and its students were both implicit and explicit drivers for a holistic interior design solution and 'ethos' of the school. Smithfield's contribution towards universal design enables educators to ensure all students are connected, valued, and engaged members of the learning community.





Collaboration

Together, individual elements can create something **greater than the sum of their parts**. Design serves to facilitate and enhance the natural gathering of individuals, to guide collaboration into shared unifying experience. Flexibility facilitates groups of all sizes; prescribed groups to form and identify and eventually integrate back into the larger whole.



Sustainability

A school is a learning environment, workplace, and community center that exists to excite and inspire students, faculty, and community for generations. This common ground serves the community **through healthier materials, socially beneficial elements like biophilia, and an increased access to physical play** and balanced nutrition.



Community

Generosity created Smithfield by bringing people together in a communal space. Architecture forms a place of shelter, a shared experience, and a **connection to the larger community** that has existed through time. A place must be distinctly rooted in its surroundings and history to be relevant, but flexible enough to accommodate the needs and culture of the future.



Transformation

We as learners need direction and room for discovery. As the typical ideas of learning and collaboration areas are challenged, we can better inform our spaces for learners and students from all backgrounds. **Through creating moments of discovering the unexpected and pondering what it can teach us about ourselves**, of each other, and how it all fits together we can enrich the environments around us.



School Safety

Creating a safe and healthy learning environment will promote better learning outcomes for our schools. By maintaining a sense of trust for our students and faculty this will help to **promote a positive and nurturing environment for students**. By being mindful of security, students will be more engaged in learning and more likely to participate in classroom activities. This will help to promote overall student success and well-being.

Outcomes and Goals



02

Learning Environment



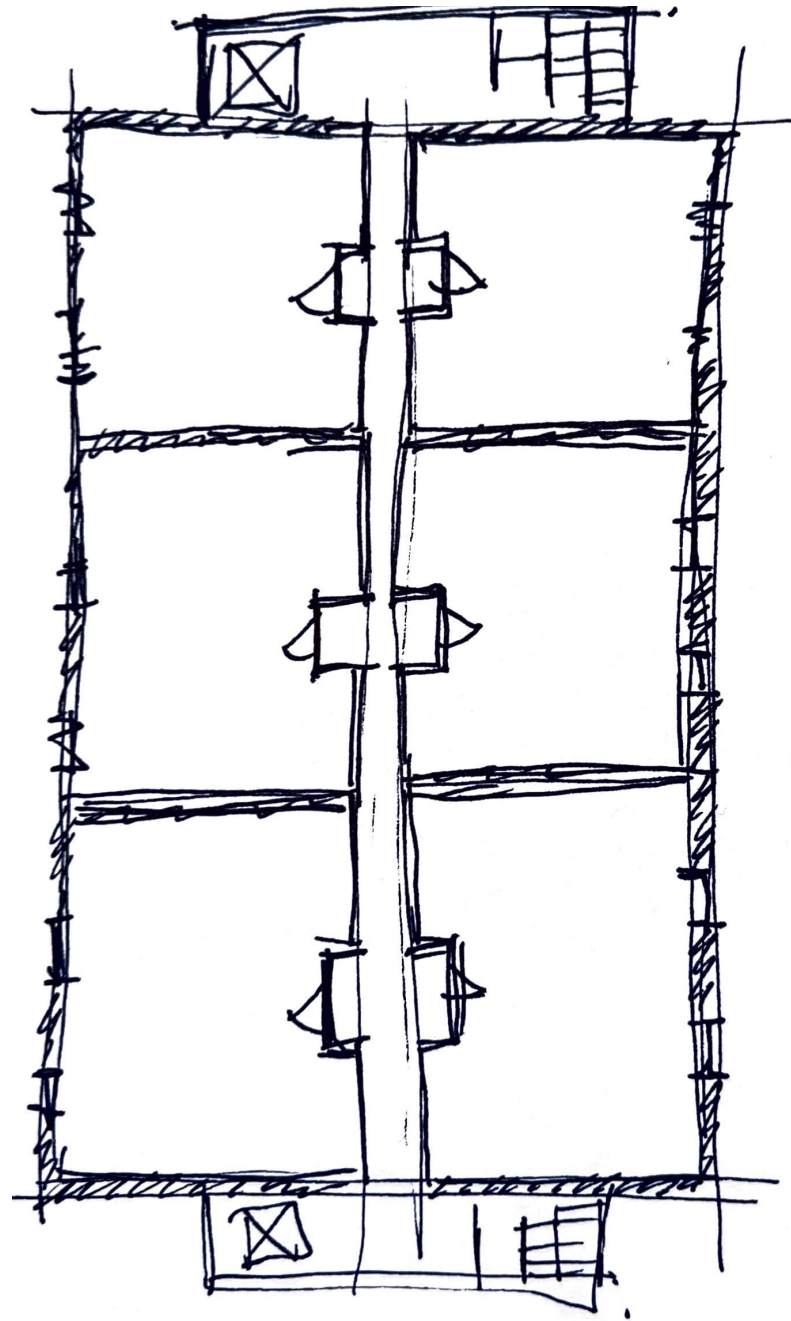
Education Vision

Birdville ISD is committed to the imperatives of Community, Collaboration, Transformation, Sustainability and Safety (both psychological + physical), along with offering a large Special Needs program.

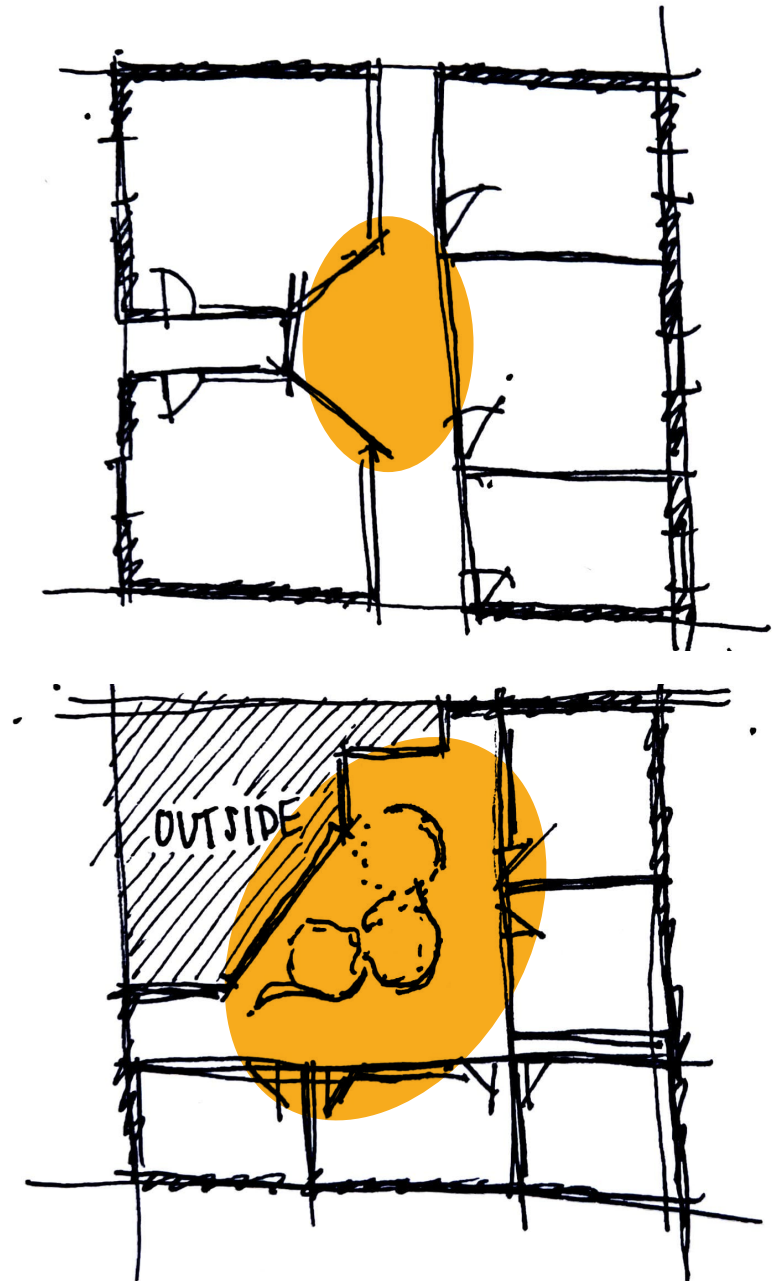
Innovative Education

Smithfield Elementary serves a growing population of students with diverse environmental and instructional needs. The design responds by breaking the school design convention, eliminating the **typical double-loaded corridor** and creating a **new type of space - part program, part circulation**. Allowing students and faculty to craft tailored environments and sensorial experiences.

This design solution promotes learning and engagement with students sensitive to the stimuli around them, while providing a physical and visual connection to nature beyond the circulation. Smithfield's contribution towards universal design enables educators to ensure all students are connected, valued, and engaged members of the learning community.



Typical Double-loaded Corridor



Part Program/Part Circulation Corridor

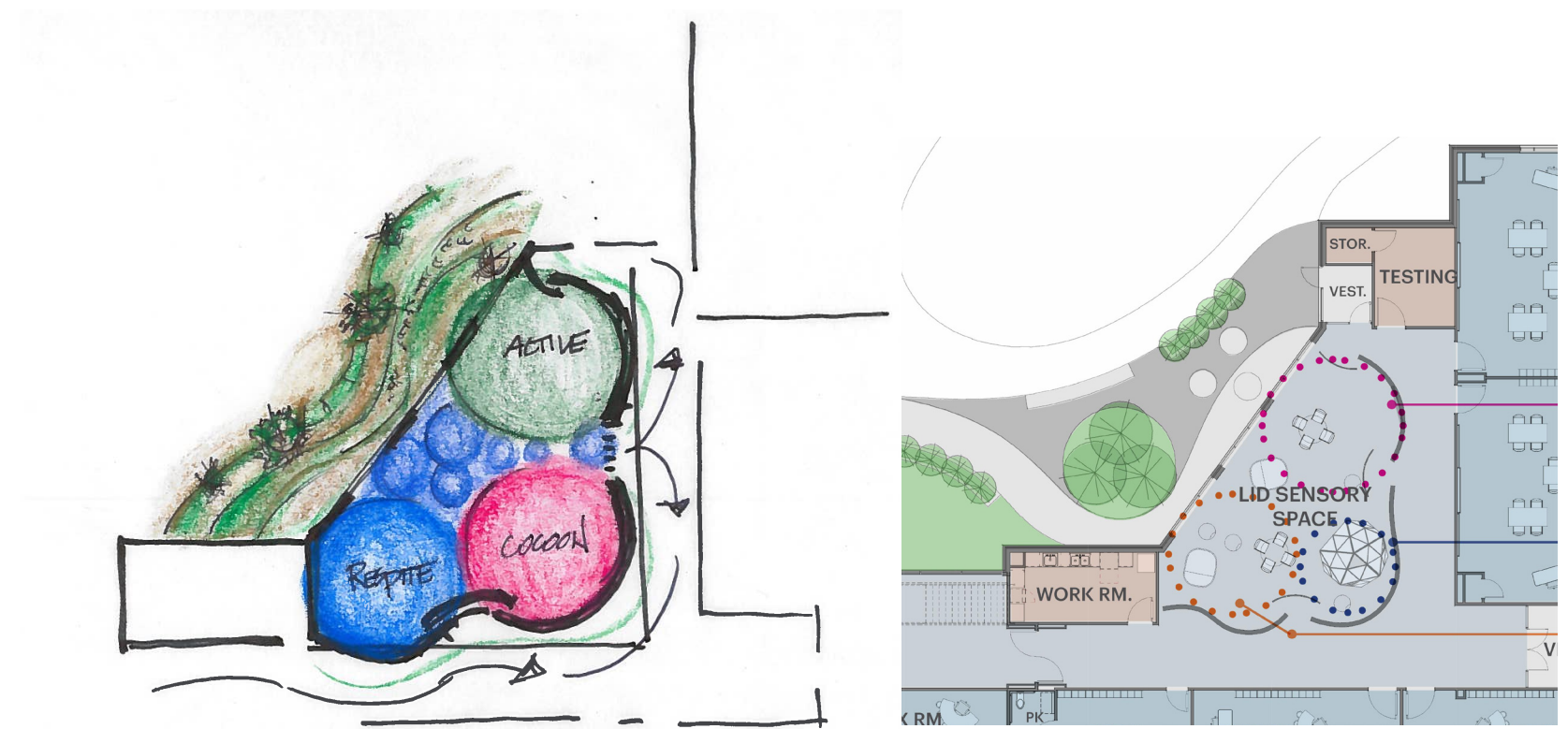
Learning Support

Supporting Variety of Learning Styles

The Learning Commons, collaboration spaces, and the sensory well-being hub are zones designed for future flexibility and re-purpose to support a **variety of teaching methods and learning experiences**. Those spaces were also designed with universal design strategies to make them accessible to all people, regardless of age or ability.

Sensory Learning Hub

The Sensory learning hub is expressed with rigor in evidence-based design and genuine inclusivity around dynamic student populations. A sensory 'sense or place' **embodies a variety of spaces for calm, activity, sensory engagement, and positive interaction and distraction**. A sensory environment is a dynamic learning destination for students to explore experiences that correspond to individual needs.



Sensory Hub Diagram and Plan

“I’ve been doing this for over 30 years and this is the first time that I walk into a school and feel, wow, this building loves these children.”



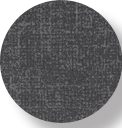



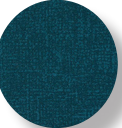
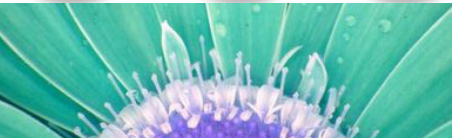

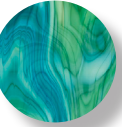
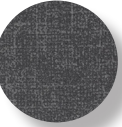


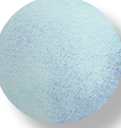
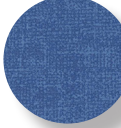



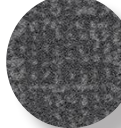





Dr. Gayle Stinson, BISD Superintendent



Color Psychology

A variety of colors and material selections can help distinguish learning environments and support balanced spaces that **influence perceptions to promote emotional connections and experiences in humans**. Color strategy is integrated with the overall interior design, enriching the learning and sense of place.



	ACCENT PAINT	ACCENT WALLCOVERING	ACCENT FLOOR	
5TH				 <p>Balanced gradations of oranges and yellows encourages seeking new perspectives, engages the left side of the brain engaging the powerhouse of rational thinking, stimulates mental activity and generates activity.</p>
4TH				 <p>Blending hues of blues and greens promote enthusiasm, innate human connection to life, value, and building relationships.</p>
3RD				 <p>A balance of gentle and invigorating gradations of greens represents innate human affinity to nature, freshness, and wellbeing.</p>
2ND				 <p>Blues represent a sense of inner reflection, research informed indications of calm, authenticity and thoughtfulness.</p>
1ST				 <p>Incorporating accents of orange promotes rejuvenation, encouragement and associated with joy, warmth and sunshine.</p>
KINDER				 <p>Hues of purple are associated with independence, creativity, mystery and magic.</p>

03

Physical Environment



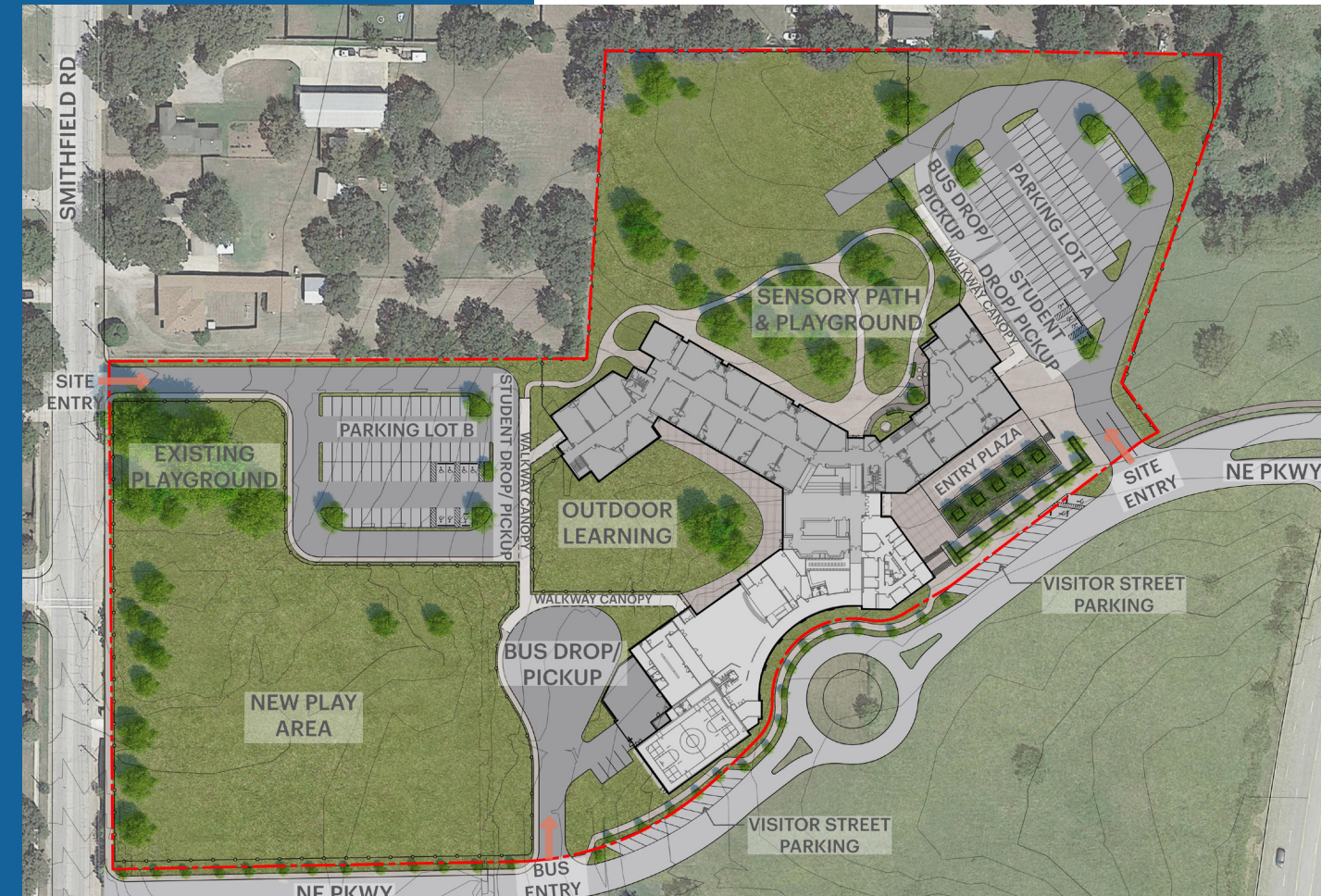
Site Development

Iterative site development allows for a cohesive design selection that optimizes learning with site conditions.

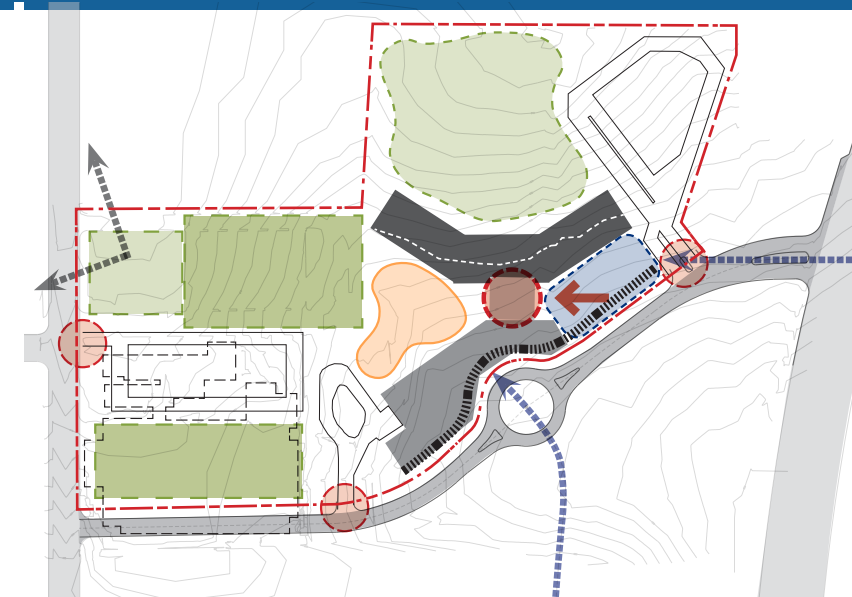
Relationship to Community

Through thoughtfully considering site constraints and current conditions such as direct sun, prevailing winds, and circulation paths, the design can be better suited to optimize the site relationship to the given area. **The iterations below demonstrate the options to best maximize the site and give views of the naturally wooded area North of the site.** The Roundabout location creates convenient connection to the NE parkway allowing for natural flow of drop off and queuing circulation in and around the design. The existence of

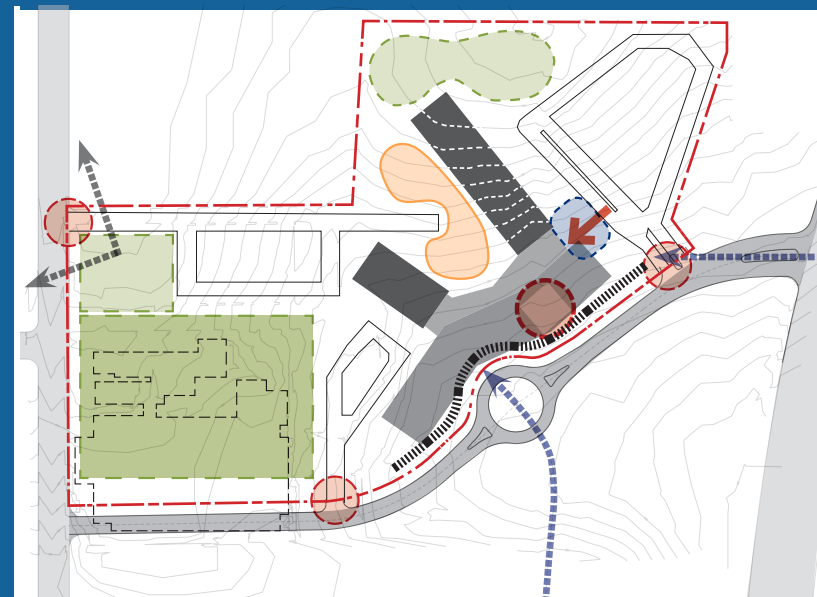
mature trees provides natural biophilia and benefits the outdoor environment. Preserving and incorporating them into the design can have **environmental and socially positive** impacts on the students and faculty. While also considering the centralized location of the Learning Commons as the main point of convergence and teaching collaboration. By placing these areas in the middle location, the public and private areas of the building program can easily be accessed by the entire building.



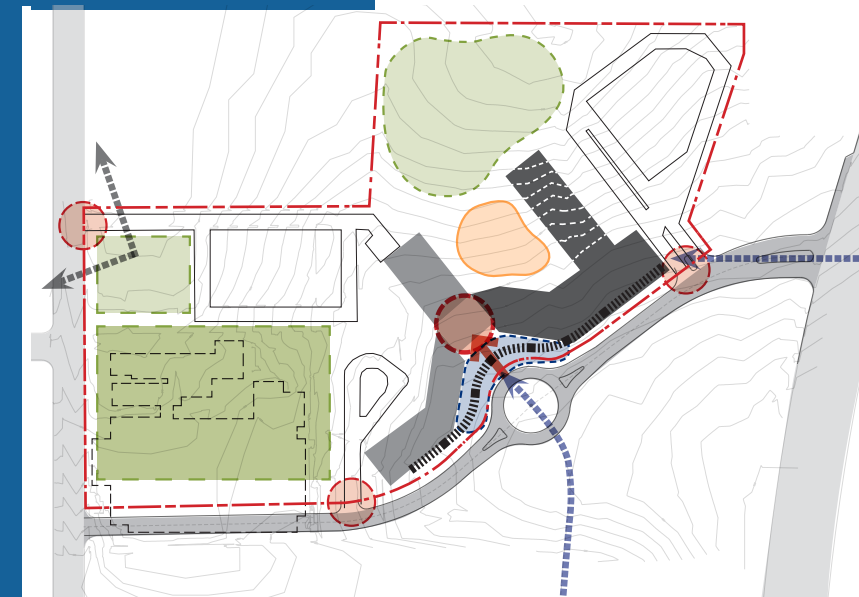
Site Plan - Final Iteration



Site Plan - Option A



Site Plan - Option B



Site Plan - Option C

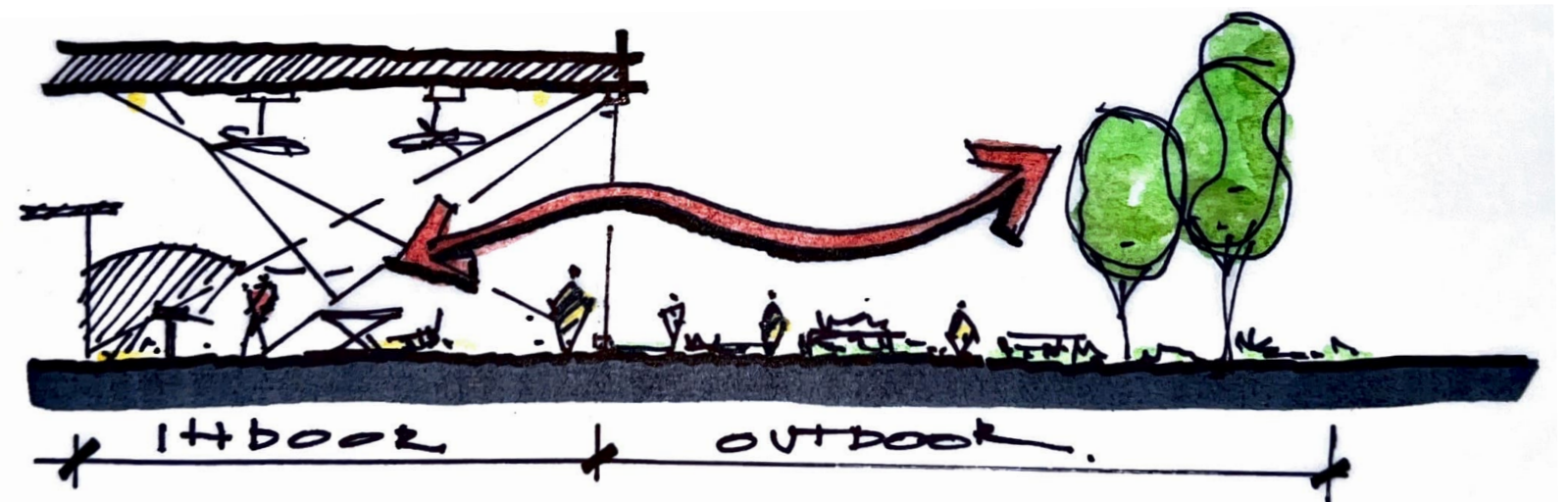
Indoor + Outdoor Learning

Relating indoor and outside elements to integrate natural elements with the built environment.



New Learning

The sensory path is informed by strategic measures of the WELL Building Standard and insights from the project team created a Sensory Well-being Hub. **Students can experience tactile activities and engage in self-directed learning, helping mitigate behavioral episodes, supporting wayfinding, encouraging social interaction, and engaging their mental development via their responses to this environment.** Finished materials such as porcelain tile were selected carefully and used throughout the corridor for wainscoting to enhance the pathway of the learning environment for all users and to not overwhelm the student experience.



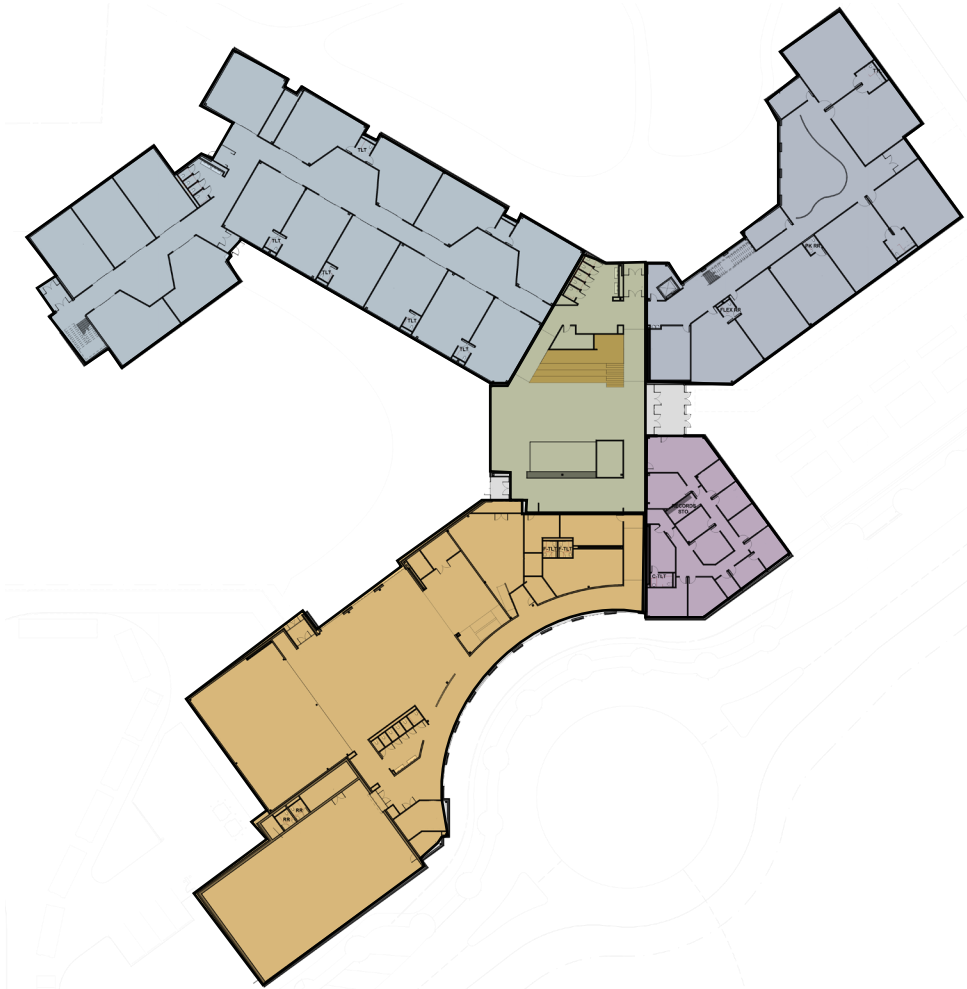
Innovative Spaces

Dynamic Learning Spaces

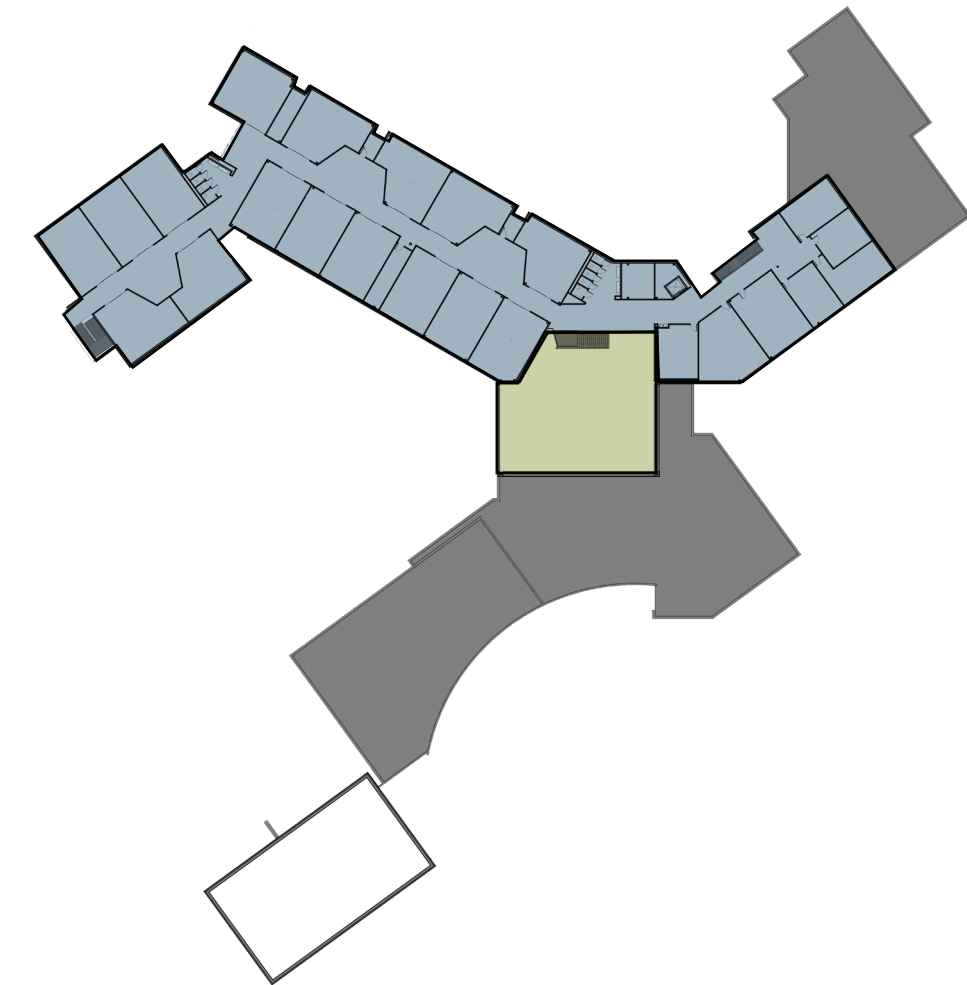
The academic wing is comprised of six 5-section grade-pods with a shared flexible teaming hive in each. **All classrooms have a visual and physical direct connection to the ‘teaming hive’ and access to the leveled library at each pod**, allowing project based learning and further bridging pedagogy to the learning commons. The teaming hives are located at each grade level and are comprised of digital display, writable surfaces, acoustic strategies, soft flooring for underfoot comfort, flexible soft seating and variety lighting for activity-based adaptability. Carefully curated biophilic imagery and a playful color story further connects students to nature while promoting healthy, cognitive creativity.



Level 1 - Plan



Level 2 - Plan



Interior Environment

Teaming areas provide additional collaboration opportunities for classrooms.



Dreaming Area

The design emphasizes the importance of holistic learning and human health, identifying environmental impact through sustainable interior finishes and design. From classroom collaboration spaces to innovative social areas, Smithfield Elementary invites students to explore their vision through inspirational design and high performing areas of learning.

04

Process and Results



Educational Goals

By working with key stakeholders, the project was developed to exceed current school conditions and create innovative teaching environments.

Educational Goals

Smithfield worked with staff, faculty, and students to better understand the current needs of the project. Positioned as the anchor for the historic Smithfield Train District walkable community, this elementary school **highlights dynamic health and wellness to create a sense of place and provide an inclusive learning environment for all students. The 'heart of the school,' the two-story Learning Commons** features ample natural lighting and encompasses a learning stair, maker space 'cabin' and reading hive library collectively positioned in a large flexible space for teaching and gathering. As a school with one of the largest Autism Programs, Smithfield prioritizes the sensory needs of its Special Education students. Using evidence-based design, HKS created a sensory well-being hub for Special Education students featuring an outdoor sensory path, and active, respite and playful zones that allow students to discover, play and restore within their individual comfort levels.



District and Community Goals

Connecting the Learning Commons to nature and providing a variety of areas promotes discovery and interactive spaces.

Inspires and Motivates

The Learning Common is one part of the innovate spaces throughout Smithfield Elementary. **For this space we reimagine and flip the notion of a library, makerspace and a pre-function area that was externalized for the users to have full access and views to nature.** It accommodates highly regenerative and sustainable materials such as cork at the back panel of the reading hives, used for acoustical properties to bring down the noise into the respite niche. It serves as a biophilic and key tactile design element. Natural and renewable materials were selected to promote mindful materials as well as cognitive restoration through biophilic design and material strategies.

Community Goals

As a school with one of the largest Autism Programs, Smithfield prioritizes the sensory needs of its

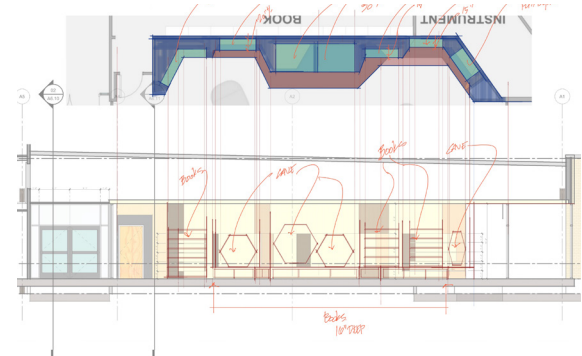
Special Education students as well as **unique sensory considerations for all students.** Using evidence-based design, the Special Education students utilize an outdoor sensory path, and interior active, respite and playful zones that allow students to discover, play and restore within their individual comfort levels.

Unintended Project Results

Within the Sensory Hub students with special needs can pin up their work along the curved partitions around the back of the room. This allowed parents to view the student's classwork in a meaningful way creating an unintended art gallery in and around the space.

"Thank you for all your hard work! I was fascinated with the different roles of each person on your team. I went home and told my daughter about how beautifully your team interfaced with one another...respectfully and creatively."

Mary Ann Welborn (Speech-language Pathologist)



Sustainability and Wellness

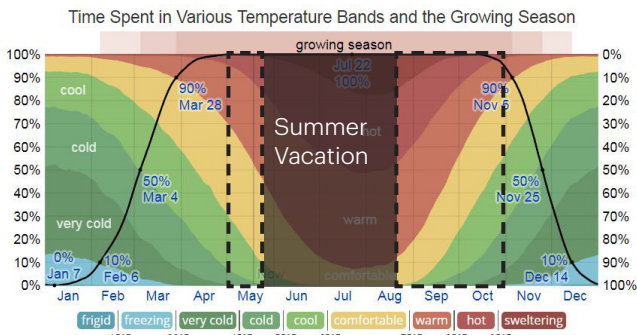
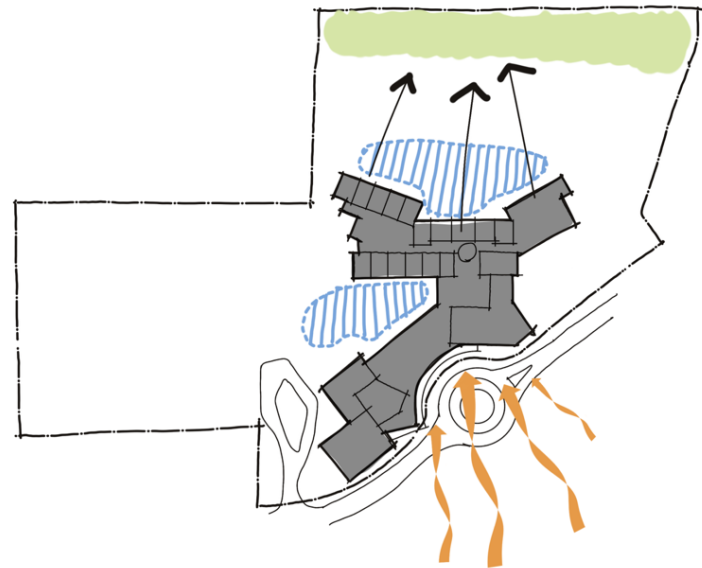
60% Energy

Smithfield was projected to reduce energy consumption over a Zero Tool baseline campus by approximately 60%. The design accomplishes this through strategic orientation of classroom windows-the majority of which face north- and through extensive use of natural light in the largest gathering and circulation spaces to minimize fixtures counts. This extends even to the campus gym/storm shelter, which features the largest available ICC-500 rated windows available to bring light into the recreation environment.

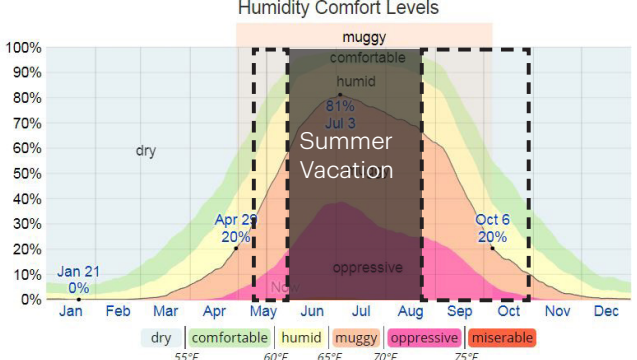
A big impact is that in the sensory well-being hub we’ve gather evidence from previous projects and from our research of the Lane Tech Sensory Lab to create different zones and artifacts with technology integrated that **allows for lighting to be dimmed for circadian rhythm. LED lighting and sensors were utilized throughout for positive sustainable impact to reduce electricity consumption** and to maximize access to natural lighting.

40% Water

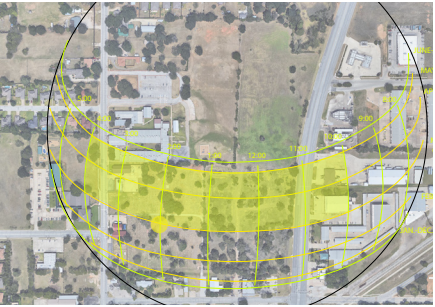
Throughout the school high efficiency plumbing fixtures were installed, high performance water filling stations are found not only to help conserve and protect the water supply but to also save energy. With the use of water filters we were able to help remove common contaminants such as chlorine, arsenic, mercury and lead. At the same time filters ensure the important minerals are retained. Low -flow faucet and toilets were installed to reduce a 30% - 50% the overall water use.



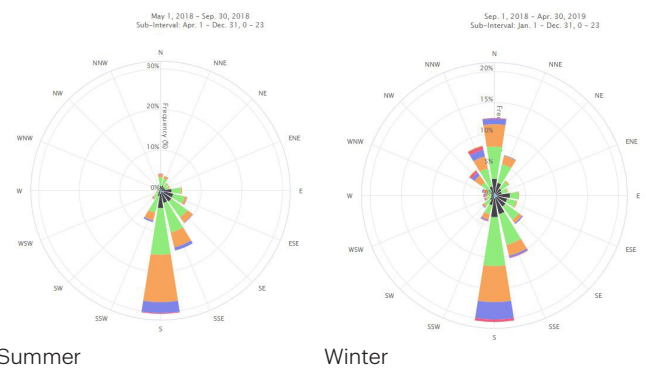
Temperature: September, October, April, and May are primary cooling concerns. During these months, shading and natural breezes help keep exterior spaces habitable. Due to the high rainfall, permeable surfaces and landscaping will retain water on-site and release it slowly into the atmosphere for natural evapotranspiration cooling.



Most of the year is categorized as dry, with a potentially muggy start and end to the school year. Shading and vegetation increase comfort and decrease risk of heat stroke or dehydration. Good ventilation- artificial or natural- can address the humid-muggy conditions of May, Sept., & Oct.



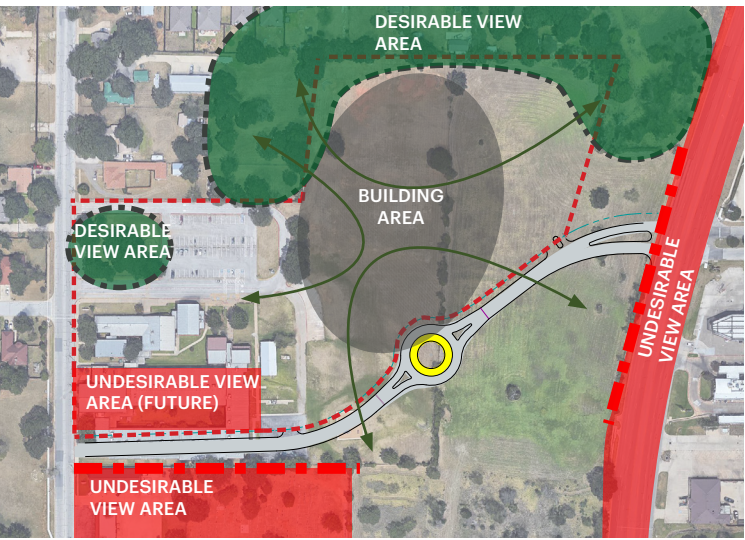
Sun Path: Omitting summer vacation and focusing on the hottest months of August-Oct. and April-May, we can determine the solar angles that need shading to prevent glare and excessive heat gain.



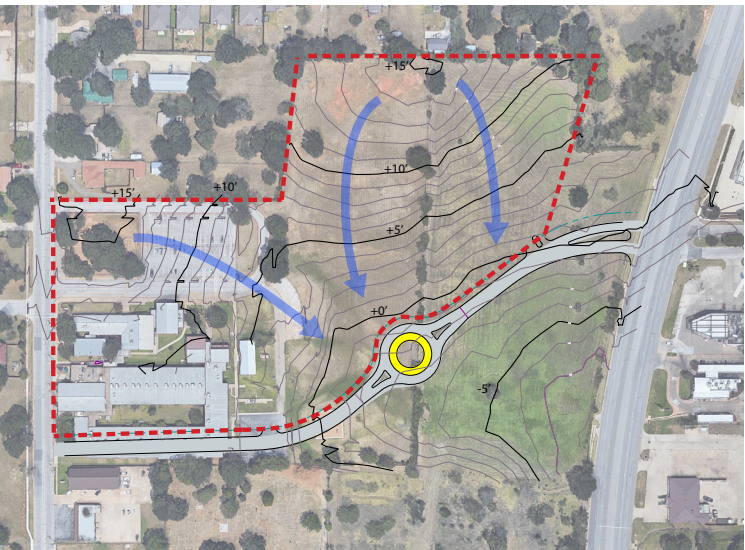
Prevailing Winds: Occur almost exclusively from due South in summer and more balanced in winter months. Southern wind is typically warm and dry, best used when it can be screened through vegetation or over a body of water.



Vegetation: Existing established, mature trees provides natural biophilia and benefit to the outdoor environment. Preserving and incorporating them into design it is cost-effective, environmentally and socially beneficial.



Land and Views: The architecture embraces the benefits of biophilia design. The building it is positioned providing views to undeveloped land and tree groves, while screening from road/views helping in reducing student stress.



Topography/Water Management: The approach to the site leverages the topography slope, placing the building following the contours, minimizing excavation and naturally acting as a water runoff collector in the south.

Sustainability and Wellness

Site Strategies



Ecosystems

The Learning common is one part of the innovated spaces throughout the Smithfield elementary. For this space we reimagine and flipped the notion of a library, makerspace and a pre-function area that was externalized for the users to have full access and views to nature. It accommodates highly regenerative and sustainable materials such as cork at the back panel of the reading hives, used for acoustical properties to bring down the noise into the respite niche. It served as biophilic and key tactile design element.

Natural and renewable materials selected to promote mindful material selection as well as cognitive restoration through biophilic design and material strategies.



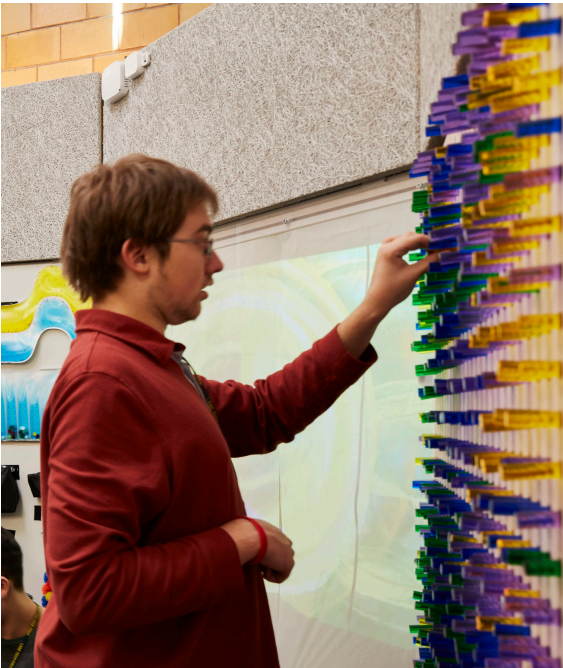
Wellbeing

The Wellbeing Hub is designed to provide hypo- or hyper-sensitive learners with an environment where they may control their stimuli.

An array of tactile, acoustic, and visual design elements allows students to “re-set” their overwhelmed senses and return to their classrooms.

Preliminary research indicates that this resource prevents disruptive episodes in classrooms and reduces the time spent in a disruptive state when the episodes do happen.

The project is designed to provide a constant time engaging with and appreciating nature benefiting the diverse learners’ health and wellbeing.



A. Wood craftsmanship

B. LED lighting, sensors, and dimmers utilized throughout for positive.

sustainable impact to reduce electricity consumption and maximize access to natural lighting.

C. Materials selected that consider sourcing, manufacturing, care, performance, and beauty. Panel design to minimize waste and maximize recycled content.

D. Highly regenerative and sustainable materials such as cork, are used creatively for connection to nature, acoustic properties and a key tactile design element for the reading hives.

A4LE Core Values

By designing to incorporate key concepts from A4LE, Smithfield was able to create safe, innovative designs that value the community and students' education.

Learners First

By prioritizing the educational experience of the design rooms, the project is able to create spaces that accommodate all learning types and discoveries.. Through the integration of natural elements, The Learning Commons and the Sensory Hub allow for creative learning and **all learners are valued** in the design solution.

Innovation

The innovative spaces in the Smithfield project are **reimagined and reinterpreted ideas of a traditional library** and makerspace that was externalized to give all users access to views and nature. The Learning Commons uses regenerative materials such as cork and natural and renewable materials selected to promote mindful material selection as well as cognitive restoration through biophilic design and material strategies.

Respect

Through understanding and listening to key stakeholders and with community engagement, **the project can produce more inclusive spaces that cultivate respect.**

Place Matters

Working with school and community stakeholders, the design of the Smithfield provides students with a safe place to discover, play and restore within their individual comfort levels.

Justice, Equity, Diversity, and Inclusion

As a school with one of the largest Autism Programs, Smithfield prioritizes the sensory needs of its Special Education students as well as unique sensory considerations for all students. Using evidence-based design, the Special Education students utilize an outdoor sensory path, and interior active, respite and playful **zones that allow students to discover, play and restore within their individual comfort levels.**



Smithfield Elementary School

