



Northlake Elementary School

Garland Independent School District

DESIGN DEVELOPMENT



ADES 4640 - INTD SPACE PLANNING V

MARCH 3 , 2026

ALICE NGUYEN

COMMUNITY & EQUITY AS DESIGN FOUNDATIONS

*OUR FAMILY OF THREE CITIES SHARES A VISION TO PROVIDE AN
EXCEPTIONAL EDUCATION FOR ALL STUDENTS.*

*This district-wide commitment to equity and inclusion informs design decisions
related to accessibility, sensory comfort, supervision, and student belonging.*



PROJECT OVERVIEW & DESIGN SCOPE

PROJECT OVERVIEW

- **Project Type:** Public Elementary School
- **Client:** Garland Independent School District (GISD)
- **Location:** Garland, Texas
- **Primary Occupancy:** Group E
- **Secondary Occupancy:** Group A-3 (Cafetorium)
- **Project Approach:** Partial interior renovation

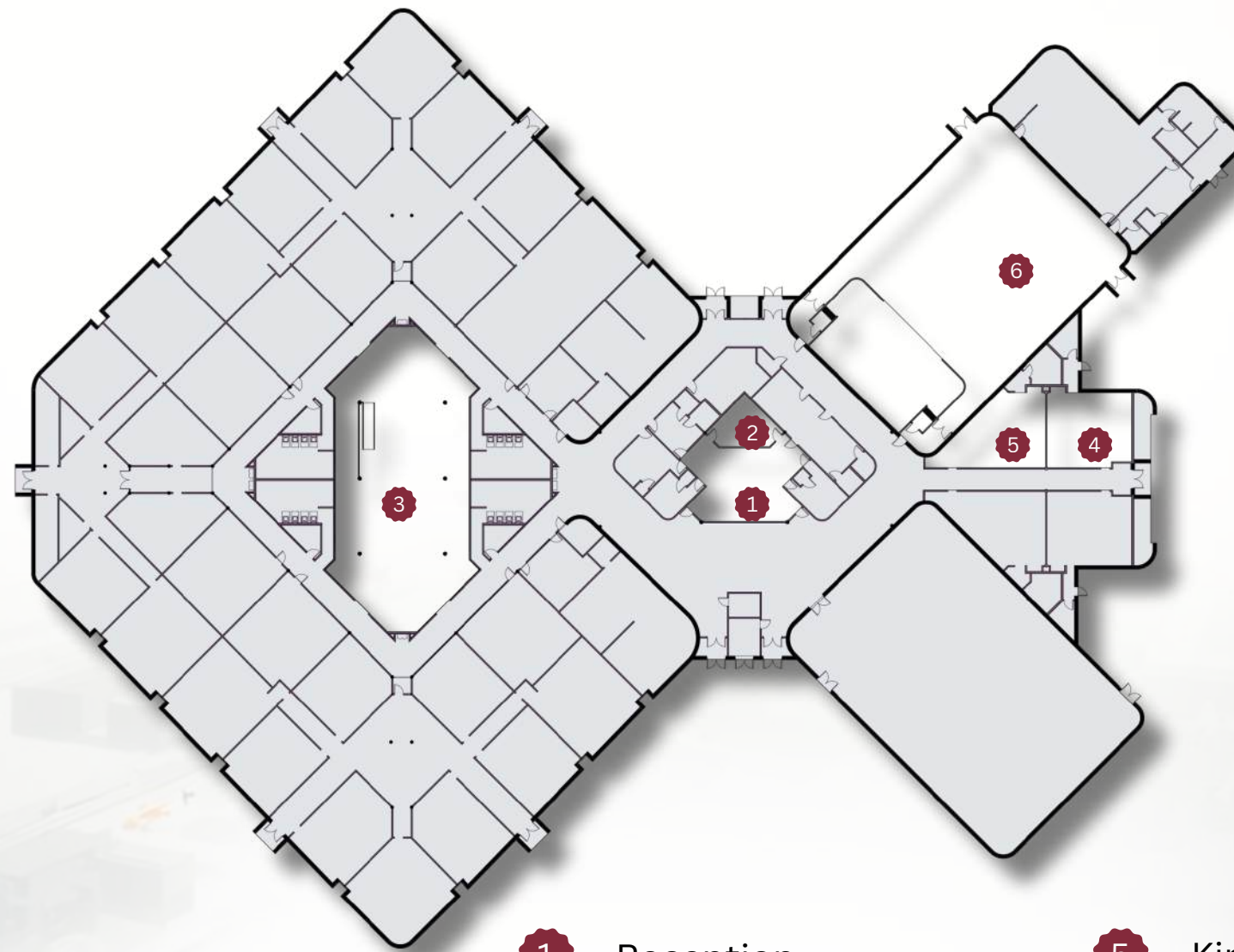
DESIGN SCOPE:

(APPROXIMATELY 13,500 SF)

- **Learning Environments:** Pre-K Classroom, Kindergarten Classroom
- **Shared Community Spaces:** Library, Cafetorium (student seating only)
- **Administrative & Support Spaces:** Reception Area, Conference Space

BASELINE STANDARDS

- **Acoustics:** ANSI S12.60-2010
- **Building Codes:** 2021 IBC, IFC, IMC, and IPC
- **Accessibility:** 2012 Texas Accessibility Standards (TAS) and ADA
- **Education Standards:** Texas Education Agency (TEA) Facility Guidelines



- | | | | |
|---|------------|---|--------------|
| 1 | Reception | 5 | Kindergarten |
| 2 | Conference | 6 | Cafetorium |
| 3 | Library | | |
| 4 | Pre- K | | |
| | | | Not In Scope |



This project is a partial interior renovation of Northlake Elementary School focused on early childhood learning environments and shared community spaces.



HISTORICAL & COMMUNITY CONTEXT ANALYSIS

Understanding neighborhood growth and stability informs long-term community use, equity considerations, and the role of the school as a social anchor.

1950S–1960S

*Post-War
Suburban Growth*

The Garland area experienced rapid suburban development, with new housing attracting young families and increasing the need for neighborhood schools.

EARLY 1970S

*Growing Educational
Demand*

Population growth in North Garland created a demand for additional elementary schools to support expanding residential communities.

1974–1975

*Establishment of
Northlake Elementary*

Northlake Elementary School was constructed to serve the growing neighborhood and provide a local, community-based learning environment.

1980S–1990S

*Neighborhood Stability
and Growth*

The neighborhood became a stable, family-oriented community, with Northlake Elementary serving as a long-term educational and social anchor.

2000S–PRESENT

*Aging Facilities and
Changing Needs*

The school continues to serve the community while facing aging infrastructure and the need for updated learning environments.



INVESTIGATIVE QUESTIONS

INCLUSION & BELONGING

- How can design help every child feel welcome?
- How can classrooms support students of all abilities?
- How can classroom design promote equity and belonging?
- How can learning environments feel welcoming to families?

LEARNING STYLES & FLEXIBILITY

- How can classrooms support different learning styles?
- How can spaces balance structure and flexibility?
- How can design support both individual and group work?
- How can classrooms adapt as students grow and develop?

SENSORY COMFORT & SELF-REGULATION

- How can spaces reduce sensory overload?
- How can design support emotional comfort and self-regulation?
- How can quiet and active zones coexist?
- How can visual organization reduce distraction?

FURNITURE, MOVEMENT & CHOICE

- How can flexible furniture support movement and choice?
- How can layouts encourage independence while allowing supervision?
- How can circulation support safe and calm movement?

ENVIRONMENTAL QUALITY

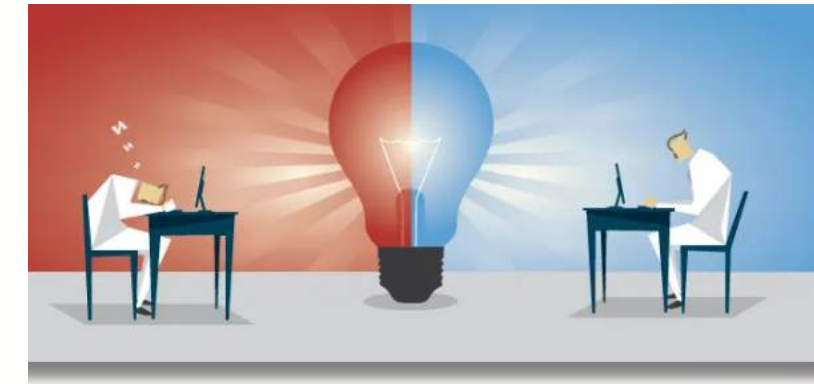
- How can daylight and views improve focus and well-being?
- How can acoustic strategies reduce noise and distraction?
- How can material choices support comfort, durability, and safety?

SOCIAL INTERACTION & TRANSITIONS

- How can spaces encourage positive social interaction?
- How can design support the transition from Pre-K to Kindergarten?



CASE STUDIES: ENVIRONMENTAL IMPACT ON LEARNING



Case Study 1 (Acoustics)

CASE STUDY 01: CLASSROOM ACOUSTICS

- Noise negatively impacts early reading and language development
- Younger children are more sensitive to sound distractions
- Open classrooms increase cognitive load

KEY RESEARCH TAKEAWAYS:

Research indicates that acoustic separation, sound absorption, and controlled transitions play a critical role in early learning environments.

Mealings, K. T. (2023). The effect of classroom acoustic treatment on listening, learning, and well-being: A scoping review. *Acoustics Australia*, 51(2), 279–291.
<https://doi.org/10.1007/s40857-023-00291-y>



Case Study 2 (Lighting)

CASE STUDY 02: CLASSROOM LIGHTING

- Daylight improves focus and engagement in elementary students
- Poor lighting increases fatigue and reduces attention
- Balanced natural and artificial lighting supports visual comfort

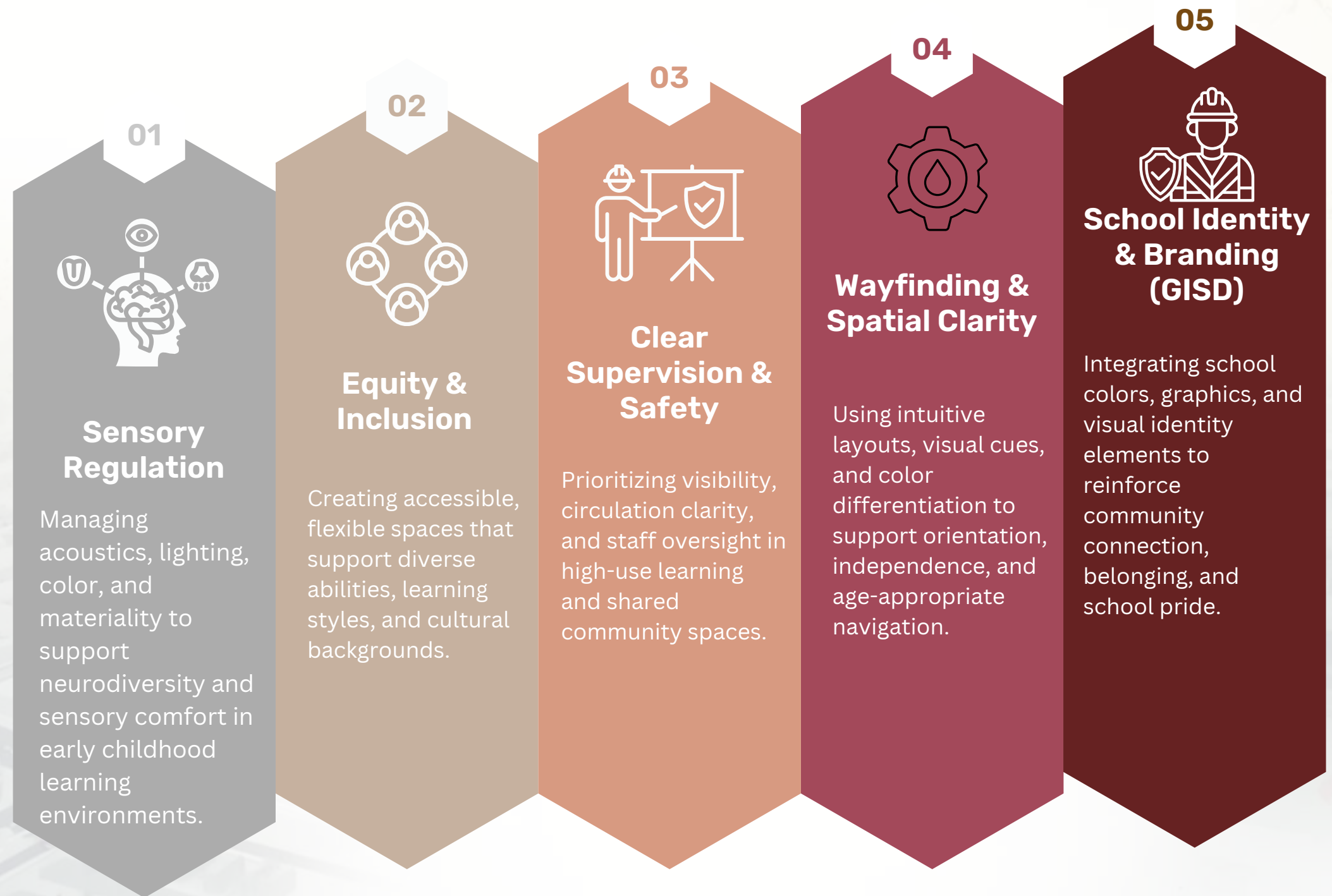
KEY RESEARCH TAKEAWAYS:

Research indicates that access to daylight and balanced lighting conditions support focus and visual comfort in early childhood classrooms.

Slegers, P. J. C., Moolenaar, N. M., Galetzka, M., Pruyn, A., Sarroukh, B. E., & van der Zande, B. (2013). Lighting affects students' concentration positively: Findings from three Dutch studies. *Lighting Research & Technology*, 45(2), 159–175.
<https://doi.org/10.1177/1477153512446099>



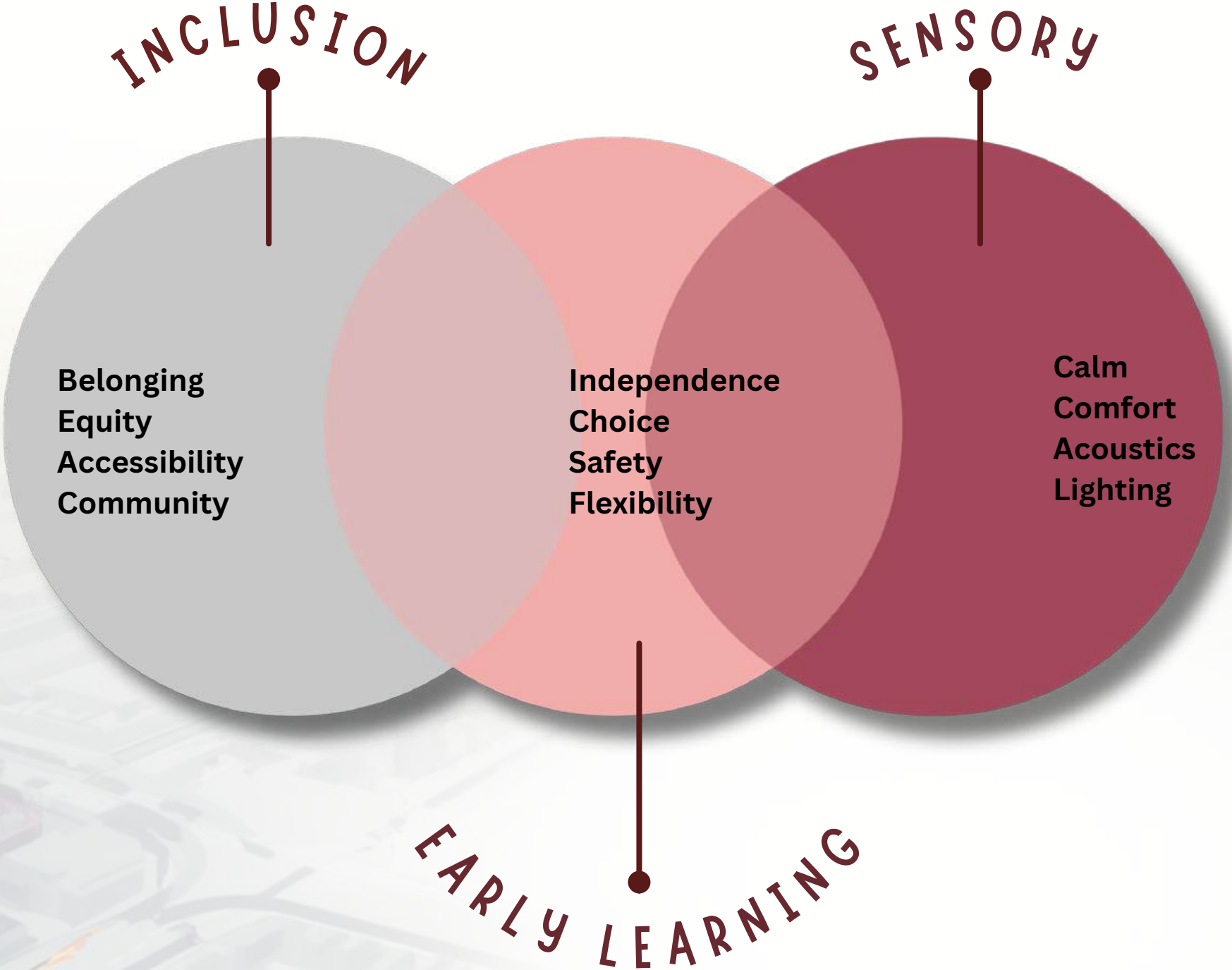
DESIGN DRIVERS & FORMGIVERS



These design drivers translate research and institutional values into spatial planning strategies across all areas of focus.



PROJECT KEYWORDS

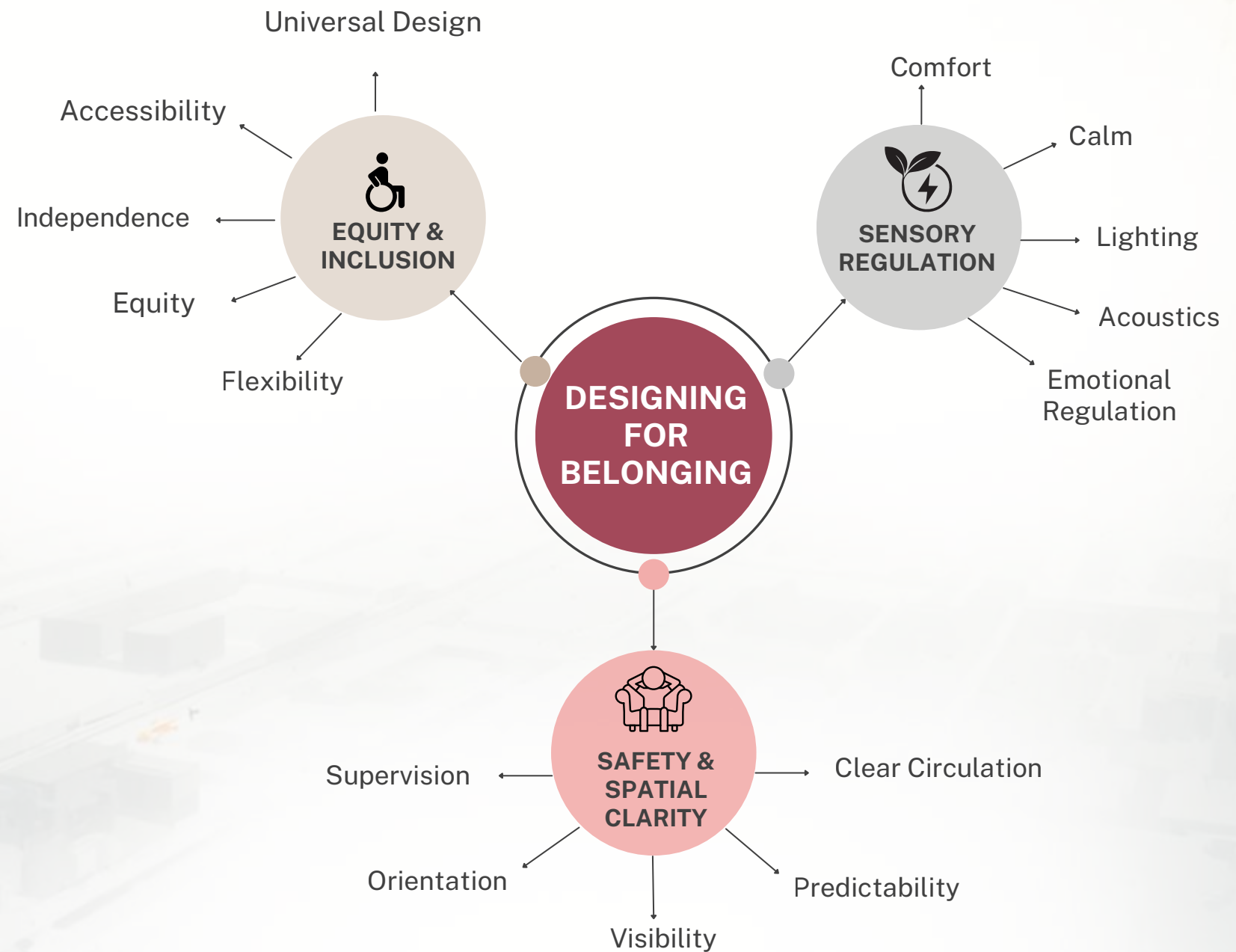


DESIGN DEVELOPMENT CONCEPT

The core concept of this design development proposal is **A Supportive Learning Environment**, an early childhood interior that prioritizes **sensory regulation, equitable access, and spatial clarity** to support **learning, safety, and student belonging**.

- **Sensory Regulation** supports emotional regulation and **learning readiness** through **controlled acoustics, balanced lighting, and reduced visual stimulation**, which research identifies as critical for attention and behavioral support **in early childhood environments** (Tamblyn et al., 2023).
- **Equity & Inclusion** applies **Universal Design principles** to create **accessible, flexible spaces** that support **diverse physical, cognitive, and cultural needs**, promoting **independence** and **equitable participation** for all learners (Konda et al., 2023).
- **Wayfinding & Supervision** enhances **safety** and **confidence** through **intuitive circulation, clear sightlines, and visual cues** that support **age-appropriate navigation** and **effective staff oversight** (Passini, 1996).

Together, these concepts translate **research** into **spatial strategies** that strengthen **learning, safety, and community** within **Northlake Elementary School**.



KEY WORDS



Tamblyn, A., Sun, Y., May, T., Evangelou, M., Godsman, N., & Skouteris, H. (2023). How do physical or sensory early childhood education and care environment factors affect children's social and emotional development? Educational Review. <https://doi.org/10.1080/00131911.2023.2195584>
 Konda, V., Vera, K., & Vaishanvi, D. (2023). Spatial design recommendations for inclusive early childhood learning spaces. OCAD University Open Research. <https://openresearch.ocadu.ca/id/eprint/4090/>
 Passini, R. (1996). Wayfinding in architecture. McGraw-Hill.

RESEARCH FRAMEWORK INFORMING DESIGN DEVELOPMENT

This design development proposal is grounded in interdisciplinary research integrating sensory processing theory, Universal Design principles, environmental psychology, and evidence-based educational design. These frameworks establish performance criteria that inform spatial planning, circulation strategy, environmental control, and programmatic organization within early childhood learning environments at Northlake Elementary School.

SENSORY PROCESSING THEORY

Research indicates that excessive noise, uncontrolled lighting, and visual overstimulation negatively affect attention span, emotional regulation, and early language development in young learners (Tamblyn et al., 2023; Mealings, 2023).

DESIGN IMPLICATIONS:

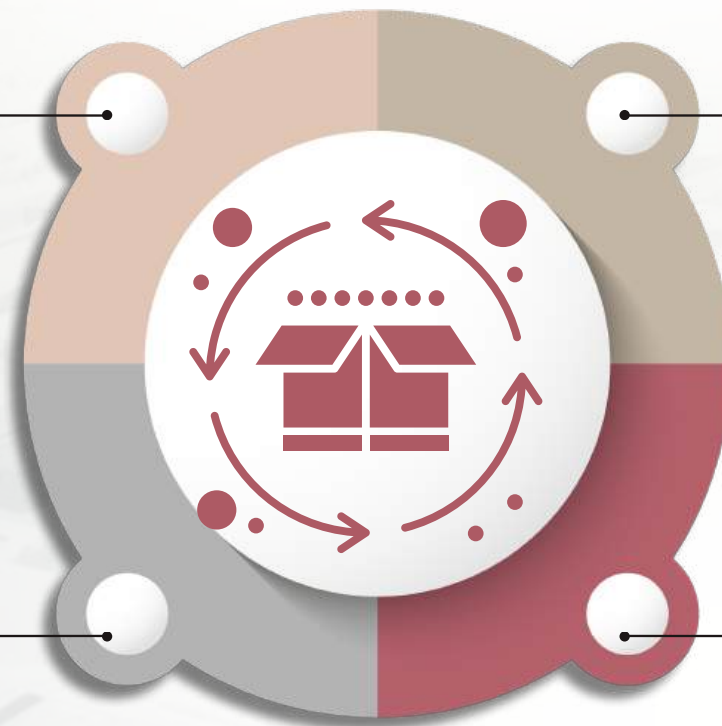
- Acoustic buffering between high-activity and quiet zones
- Sound-absorbing ceiling and wall systems
- Layered daylight and artificial lighting strategies
- Organized storage to reduce visual clutter

WAYFINDING & ENVIRONMENTAL PSYCHOLOGY

Clear spatial hierarchy, predictable circulation, and visual transparency reduce anxiety and improve behavioral regulation in early childhood settings (Passini, 1996).

Design Implications:

- Primary circulation spine for intuitive navigation
- Public-to-private zoning progression
- Direct sightlines supporting passive supervision
- Program-based color zoning for orientation



UNIVERSAL DESIGN PRINCIPLES

Universal Design research supports accessible, flexible environments that accommodate diverse physical, cognitive, and sensory needs, promoting independence and equitable participation (Konda et al., 2023).

Design Implications:

- 36" minimum barrier-free circulation
- Flexible classroom configurations
- Multiple seating typologies
- Equal access to shared learning environments

SCHOOL IDENTITY & BELONGING

Environmental branding and visual identity integration strengthen community connection, pride, and student belonging within shared educational environments.

Design Implications:

- Integration of GISD colors and graphics
- Age-appropriate wayfinding elements
- Visual continuity across shared and learning spaces



COLLABORATION & INTERDISCIPLINARY INPUT

This design development proposal was informed by interdisciplinary consultation to ensure alignment with educational performance goals, regulatory standards, and long-term operational needs.

EDUCATIONAL INSIGHT

Consultation with early childhood educators informed classroom zoning, supervision requirements, sensory regulation strategies, and age-appropriate flexibility within learning environments.

FACILITIES & OPERATIONS

Discussions with district facilities personnel informed material durability, maintenance considerations, life-cycle performance, and practical implementation within an existing public school building.

CODE & ACCESSIBILITY COMPLIANCE

Review of 2021 IBC, TAS, ADA, and TEA Facility Guidelines informed circulation widths, occupant load calculations, egress planning, and barrier-free design integration.

ENVIRONMENTAL & ACOUSTIC STRATEGY

Evidence-based research and professional guidance informed acoustic buffering strategies, layered lighting design, and environmental performance criteria supporting early childhood learning.



FROM RESEARCH TO SPATIAL TRANSLATION

The research framework directly informs spatial organization, environmental control strategies, and programmatic zoning across the selected renovation areas of Northlake Elementary School.

SENSORY REGULATION → SPATIAL STRATEGY

Research Insight:

Noise and uncontrolled lighting reduce focus and increase cognitive load.

Spatial Translation:

- Acoustic buffering between cafeteria and classrooms
- Soft surface integration in high-occupancy areas
- North-oriented daylight prioritization
- Layered task and ambient lighting

Applied In:

Pre-K | Kindergarten | Library | Cafetorium Seating

SUPERVISION & SAFETY → SPATIAL STRATEGY

Research Insight:

Clear sightlines and predictable circulation improve safety and behavioral regulation.

Spatial Translation:

- Centralized shared spaces for passive supervision
- Direct sightlines from reception to primary corridor
- Controlled entry sequence, defined primary and secondary circulation hierarchy

Applied In:

Reception | Main Corridor | Shared Community Spaces

EQUITY & INCLUSION → SPATIAL STRATEGY

Research Insight:

Accessible and adaptable environments increase independence and participation.

Spatial Translation:

- 36"+ clear circulation paths
- Flexible classroom furniture configurations
- Shared zones designed for equal access
- Refuge spaces within classrooms

Applied In:

All Learning Environments | Library | Reception

IDENTITY & BELONGING → SPATIAL STRATEGY

Research Insight:

Environmental graphics reinforce community connection and orientation.

Spatial Translation:

- GISD color integration by program
- Age-appropriate wayfinding markers
- Visual continuity between learning and shared spaces

Applied In:

Library | Cafetorium | Reception



PROGRAM MATRIX: RESEARCH INTEGRATION & FUNCTIONAL REQUIREMENTS

| Research Framework | Design Driver | Functional Requirement | Spatial Strategy | Applied In |
|---------------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sensory Processing Theory | Sensory Regulation | <ul style="list-style-type: none"> • ≤ 35 dBA classroom acoustic performance (ANSI S12.60) • Balanced daylight + artificial lighting • Reduced visual overstimulation | <ul style="list-style-type: none"> • Acoustic buffering between cafetorium and classrooms • Sound-absorbing ceiling and wall systems • Layered task + ambient lighting • Organized storage to reduce clutter | <ul style="list-style-type: none"> • Pre-K Classroom • Kindergarten Classroom • Library • Cafetorium Seating |
| Universal Design Principles | Equity & Inclusion | <ul style="list-style-type: none"> • 36” minimum barrier-free circulation (TAS / ADA) • Accessible furniture arrangements • Equal access to shared learning zones | <ul style="list-style-type: none"> • Flexible classroom configurations • Clear circulation paths • Refuge areas within classrooms • Shared zones designed for inclusive participation | <ul style="list-style-type: none"> • All Learning Environments • Library • Reception |
| Environmental Psychology & Wayfinding | Clear Supervision & Spatial Clarity | <ul style="list-style-type: none"> • Clear sightlines to primary circulation • Controlled entry sequence • Defined public-to-private zoning hierarchy | <ul style="list-style-type: none"> • Centralized shared spaces for passive supervision • Direct sightlines from reception to corridor • Defined primary and secondary circulation routes • Public-to-private spatial progression | <ul style="list-style-type: none"> • Reception • Main Corridor • Shared Community Spaces |
| School Identity & Belonging Research | School Identity & Branding | <ul style="list-style-type: none"> • Visual continuity across shared spaces • Age-appropriate orientation cues • Reinforcement of school identity | <ul style="list-style-type: none"> • GISD color integration by program area • Environmental graphics for wayfinding • Consistent material and visual language across zones | <ul style="list-style-type: none"> • Library • Cafetorium • Reception |



ENVIRONMENTAL & CONTEXTUAL ANALYSIS



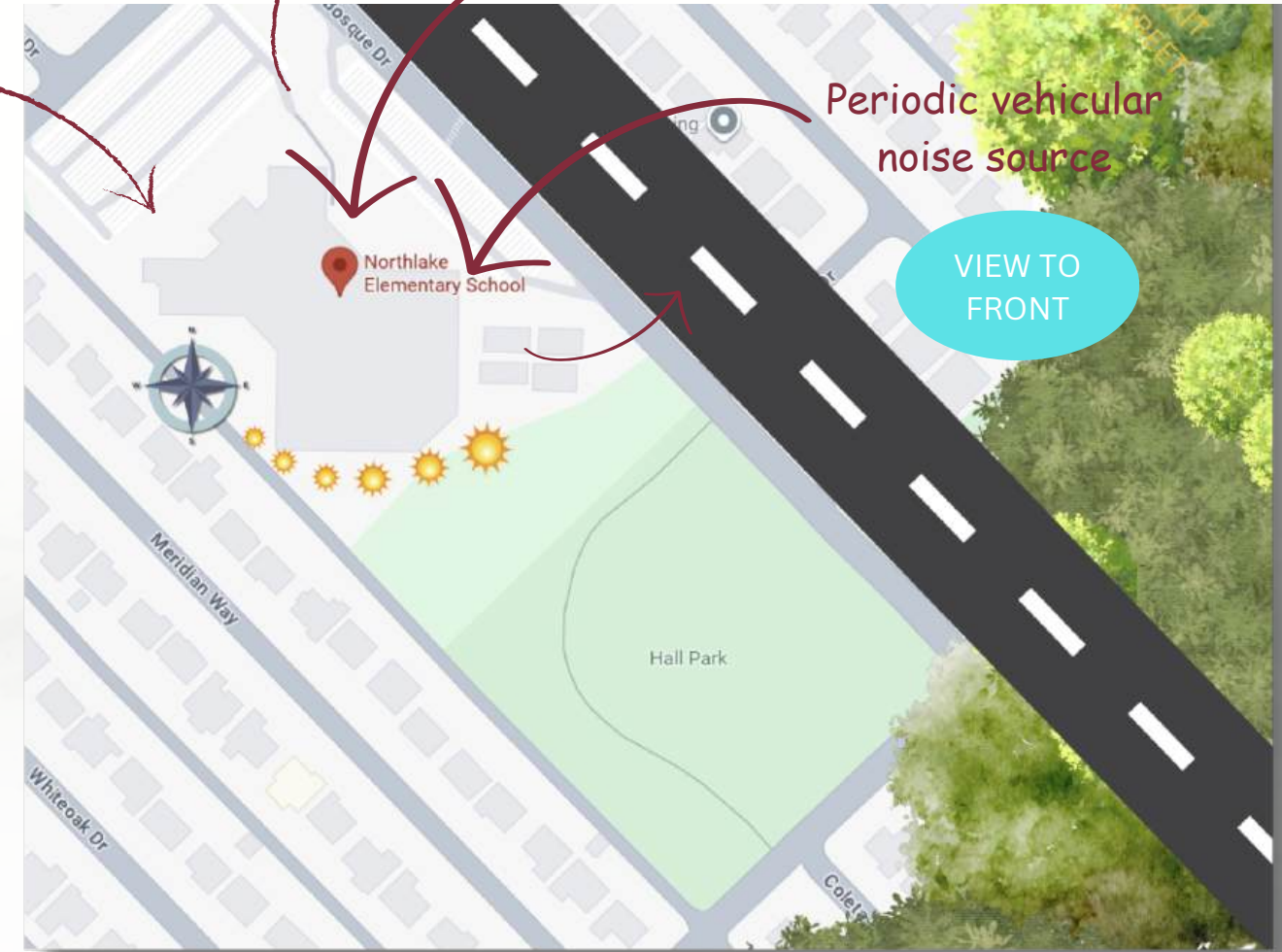
Employee Parking

Building Exit To Main Street

Parent Drop-Off & Student Entry

Periodic vehicular noise source

VIEW TO FRONT



- East → Morning sun
- South → Strongest and longest sun exposure
- West → Harsh afternoon sun
- North → Mostly indirect light



These environmental factors inform daylight control, acoustic buffering, and primary circulation zones.



SITE VISIT OBSERVATIONS



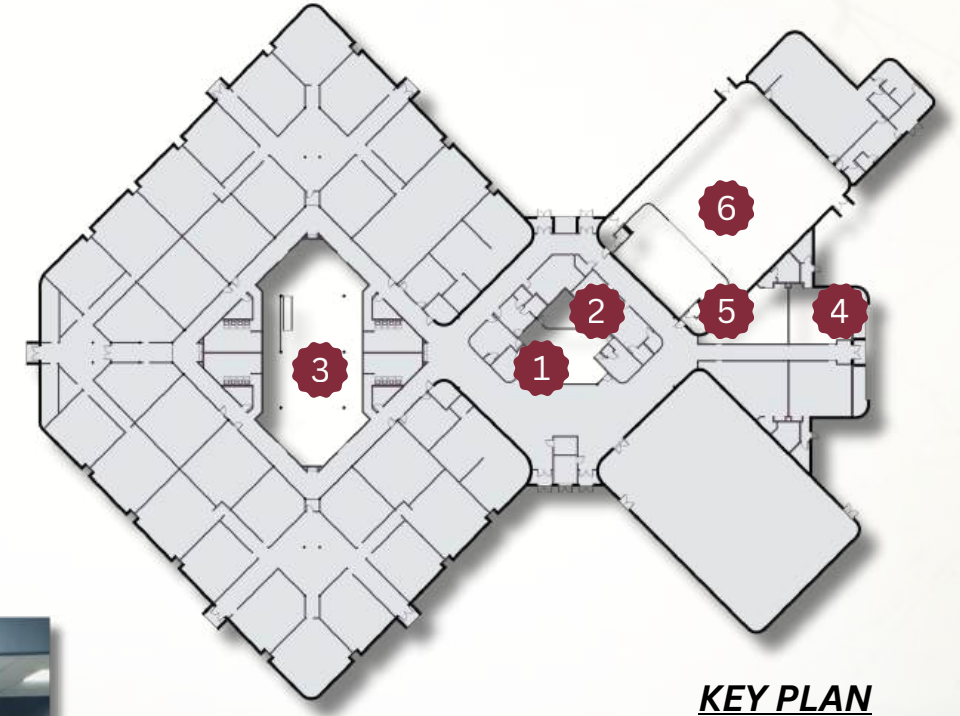
CAFETORIUM 6

- Excessive noise
- Sensory overstimulation
- Hard surfaces
- Limited flexibility



LIBRARY / MEDIA CENTER 3

- Limited daylight
- Poor zoning
- Obstructed sightlines
- No refuge spaces



KEY PLAN



4

5



1

RECEPTION / ENTRY

- Physical barrier
- Limited welcome
- Unclear wayfinding
- Low visibility



CONFERENCE 2

- Inflexible layout
- Limited daylight
- Dated environment
- Underutilized space



PRE-K/ K CLASSROOM

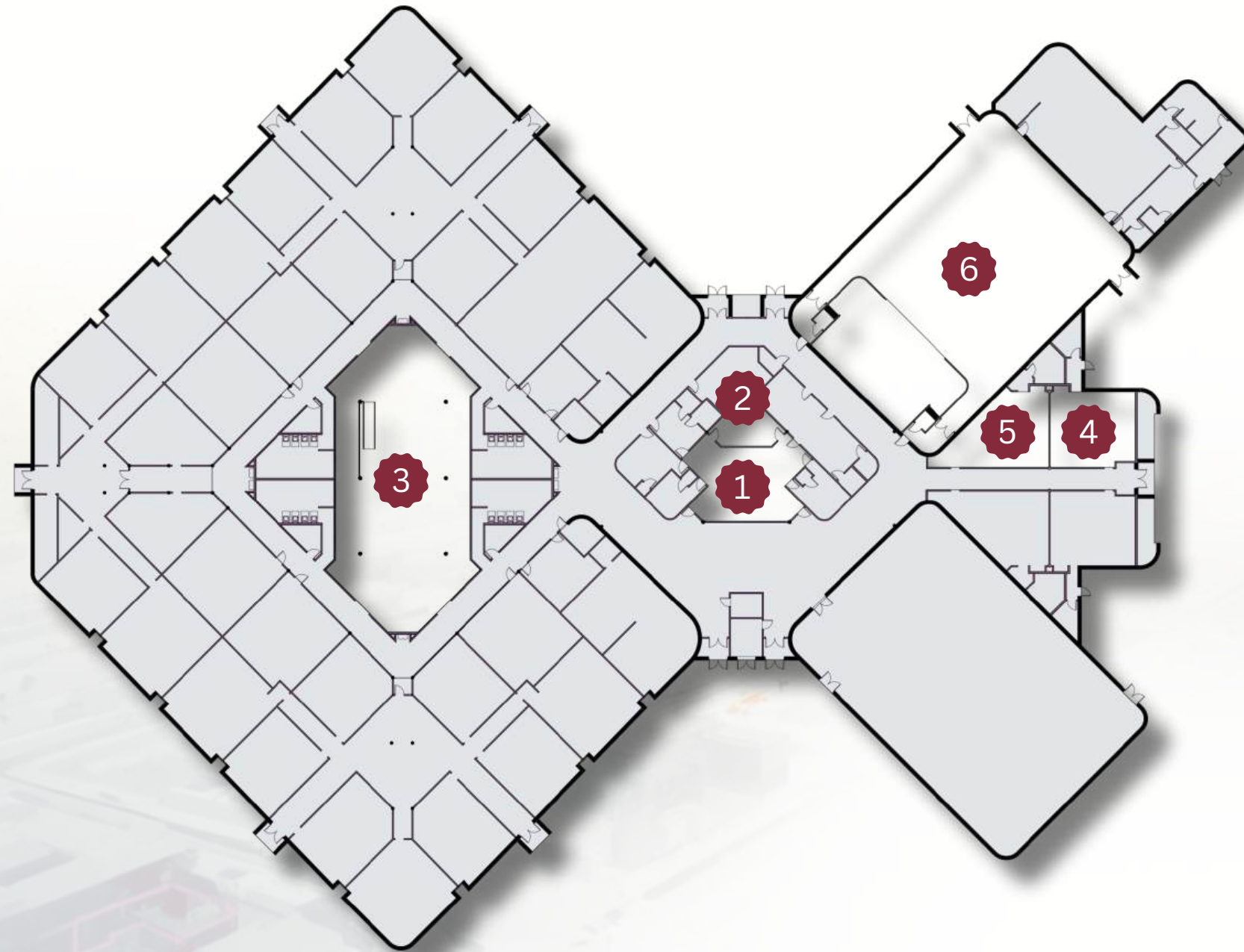
- Sensory overload
- Visual clutter
- Noise intrusion
- Inflexible layout



Observed deficiencies informed spatial reorganization and environmental control strategies



EXISTING CONDITIONS ANALYSIS



- 1 Reception
- 2 Conference
- 3 Library
- 4 Pre- K
- 5 Kindergarten
- 6 Cafetorium
- Not In Scope



LIMITED ACCESS TO NATURAL DAYLIGHT OBSERVED IN CLASSROOMS AND SHARED SPACES



LIMITED ENCLOSURE AND ACOUSTIC SEPARATION OBSERVED IN EXISTING CLASSROOMS



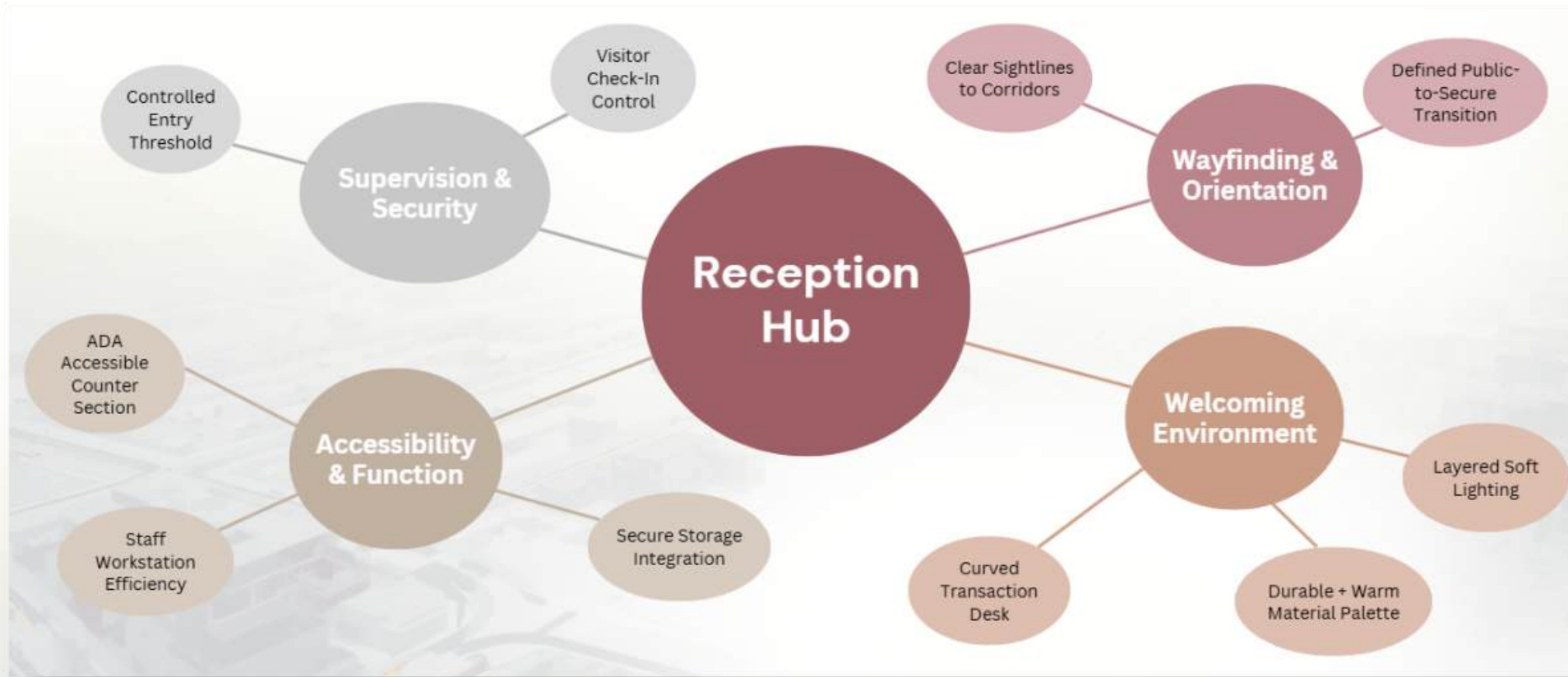
SENSORY COMFORT CHALLENGES OBSERVED IN EARLY LEARNING ENVIRONMENTS



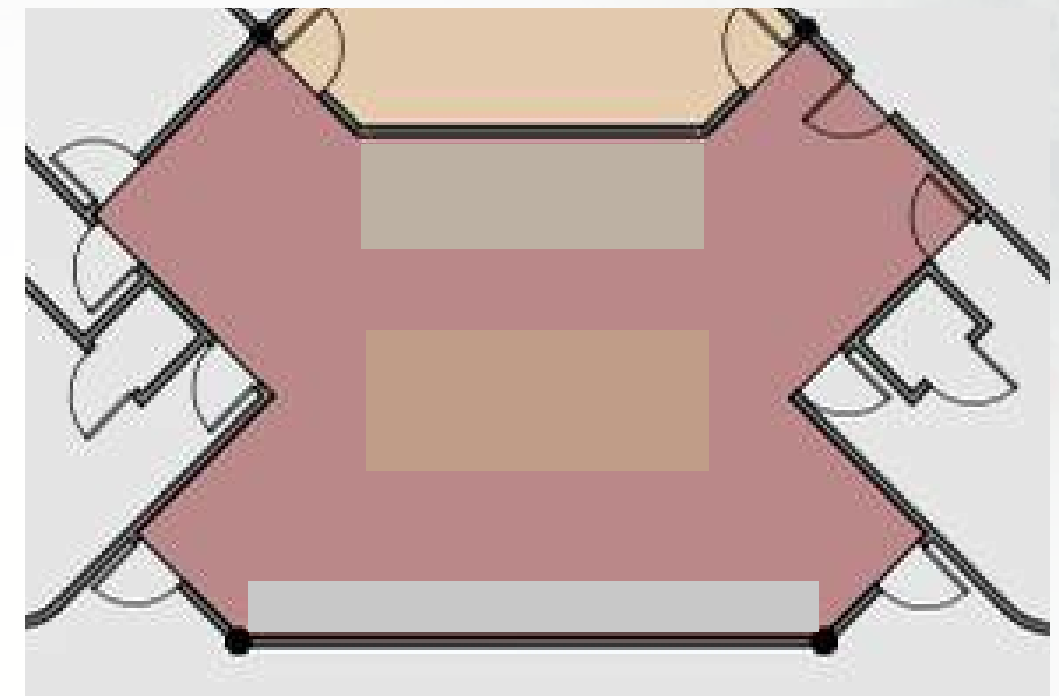
Existing spatial limitations directly informed proposed zoning reconfiguration and programmatic restructuring



RECEPTION AREA BLOCK DIAGRAM — ZONING & PERFORMANCE STRATEGY



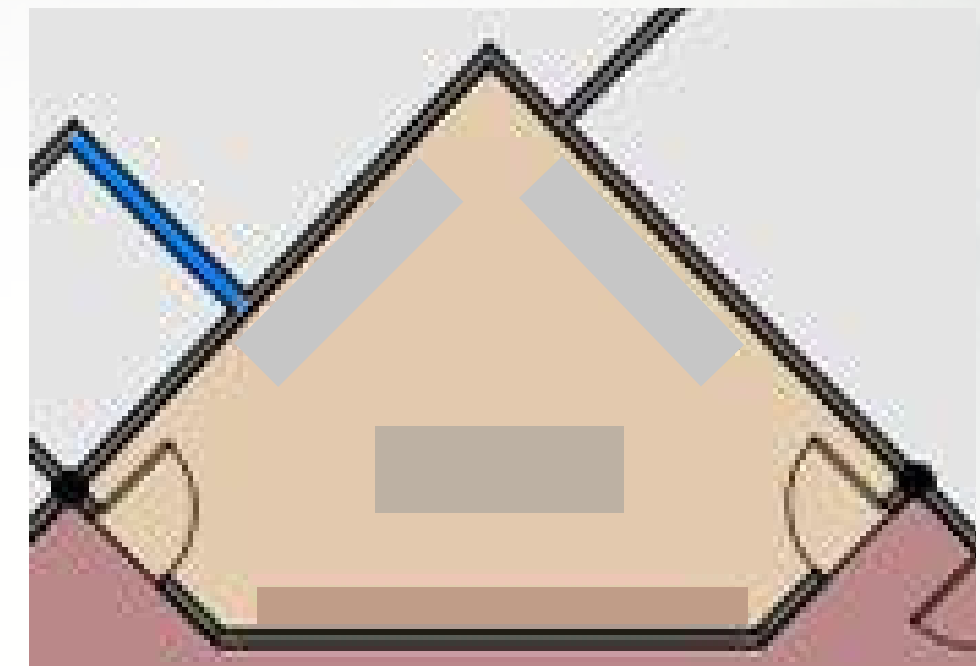
- Guest Seating
- Function Area
- Reception Desk
- Circulation



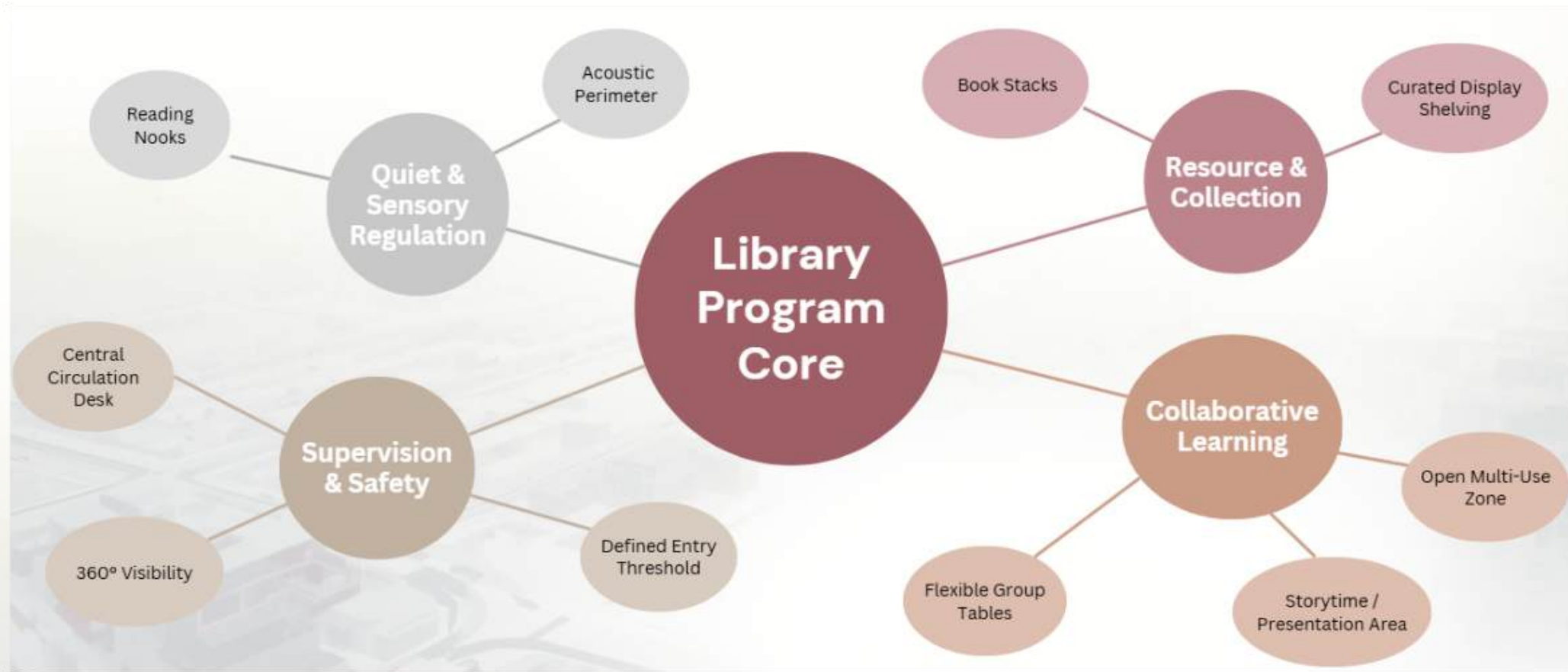
CONFERENCE ROOM BLOCK DIAGRAM — ZONING & PERFORMANCE STRATEGY








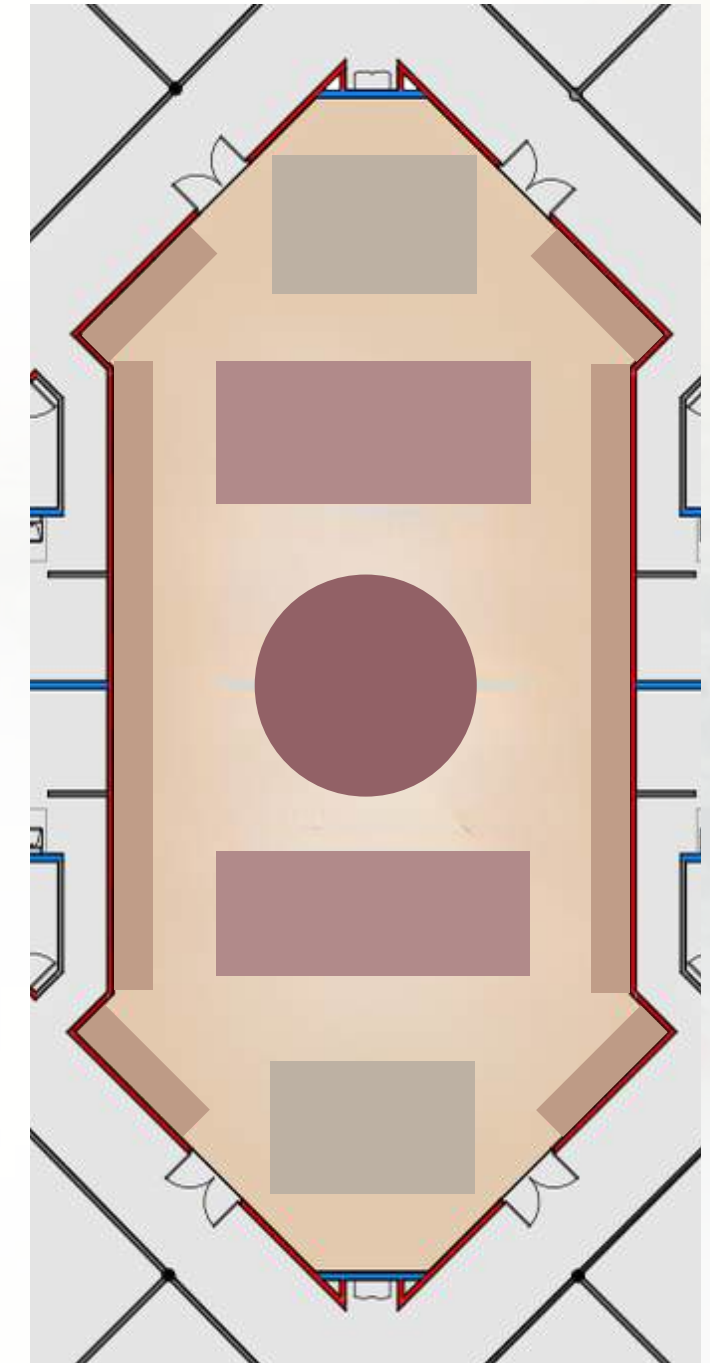
- Soft Seating
- Collaboration
- Projector Screen
- Circulation



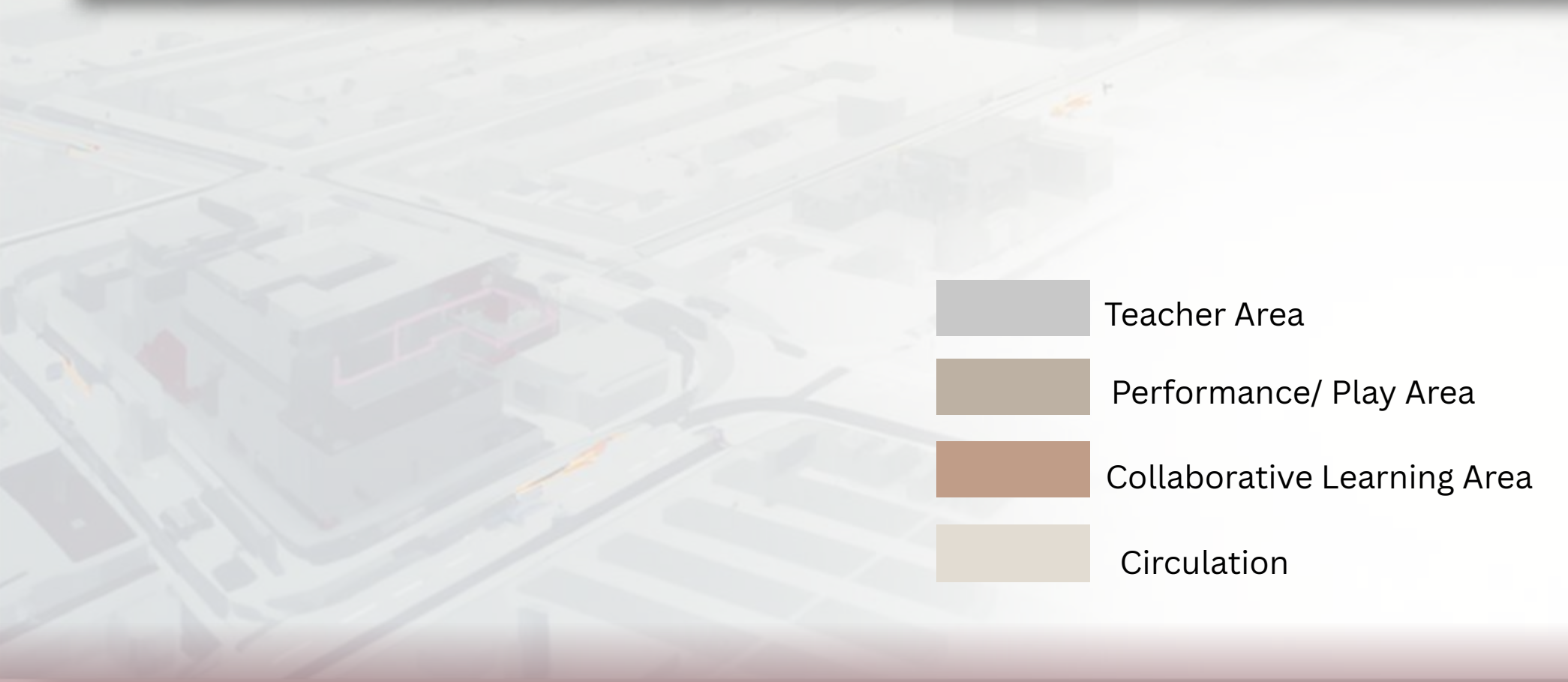
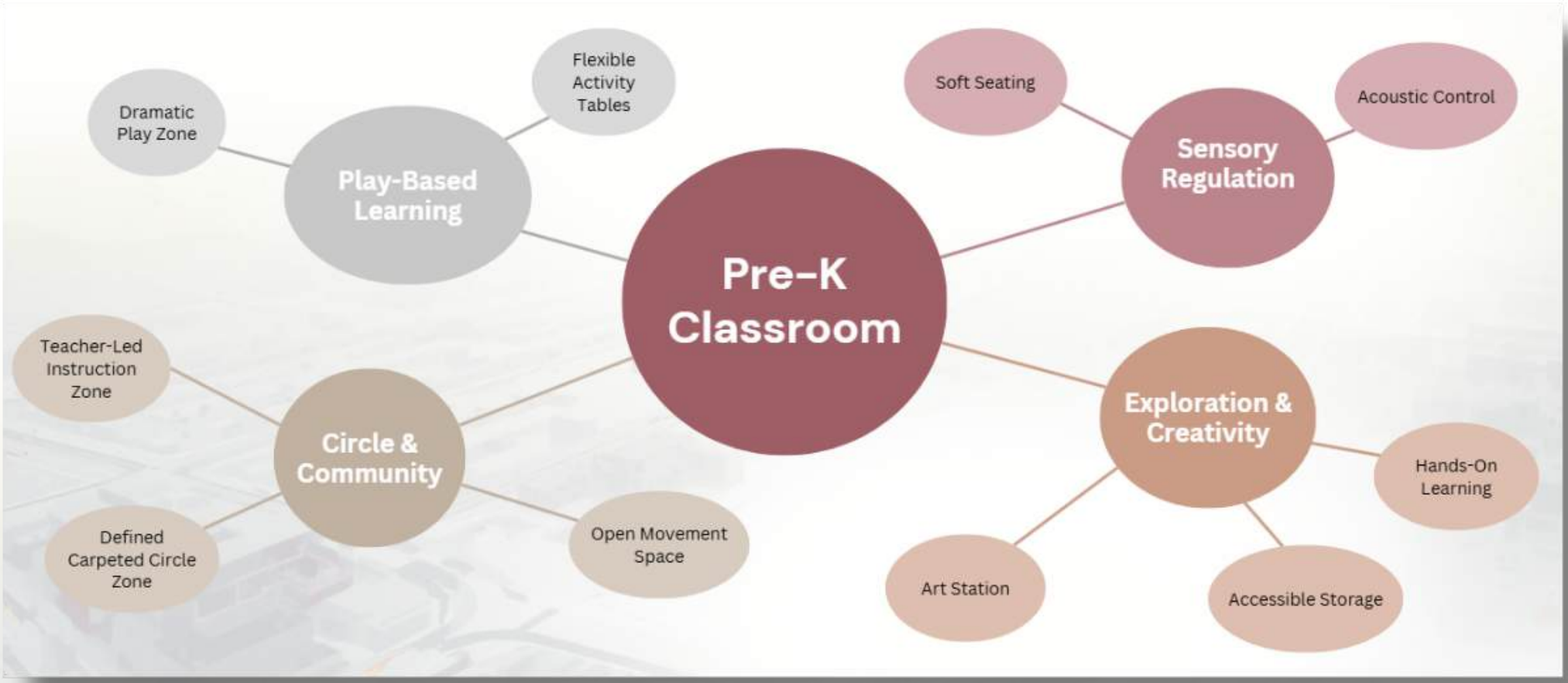
LIBRARY BLOCK DIAGRAM — ZONING & PERFORMANCE STRATEGY



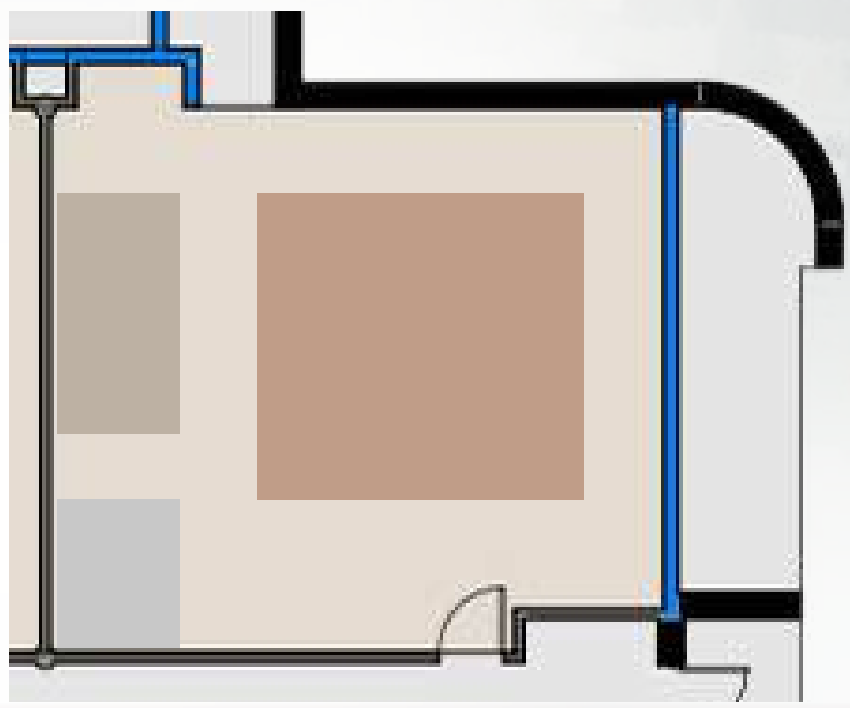
-  Collaborative Learning Area
-  Quiet Area
-  Soft Seating/ Play Area
-  Central Hub/ Reception
-  Circulation



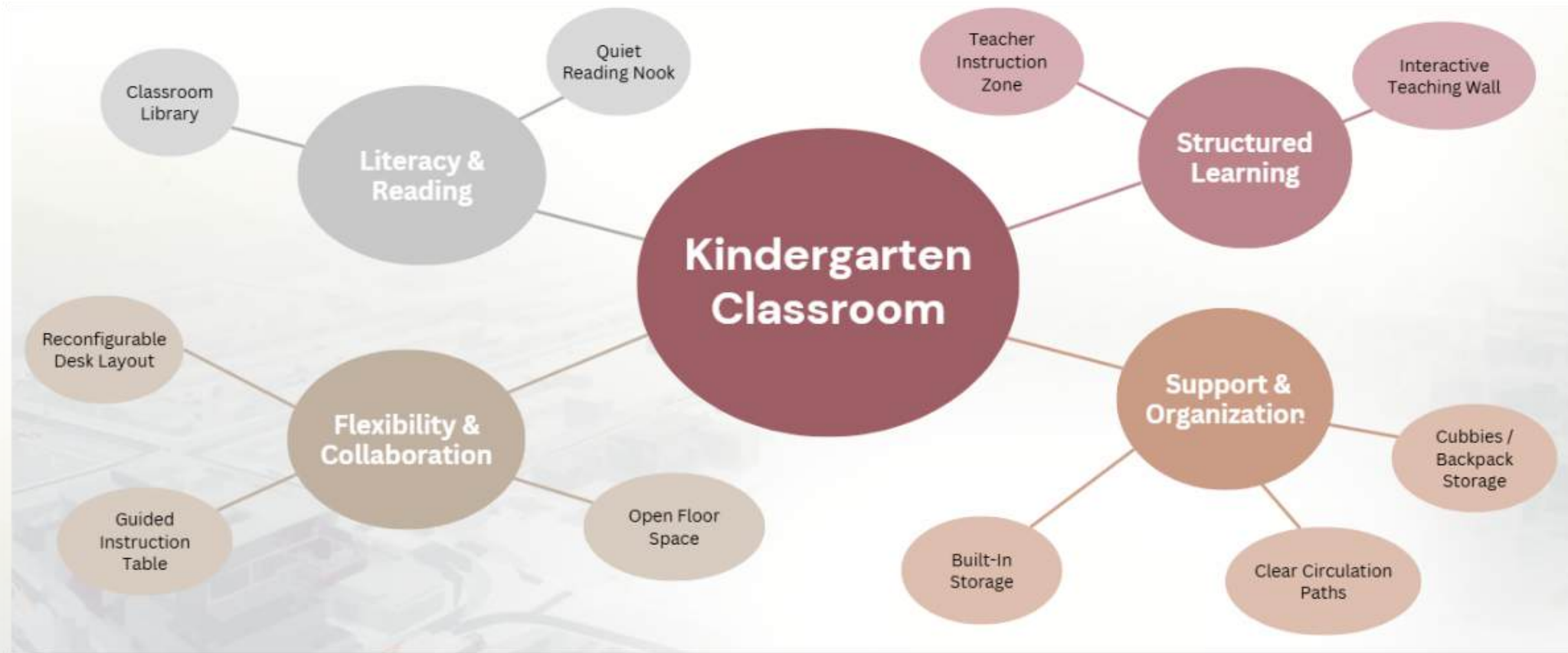
PRE-K CLASSROOM BLOCK DIAGRAM — ZONING & PERFORMANCE STRATEGY

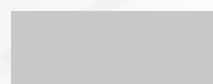


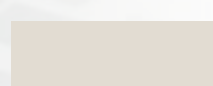


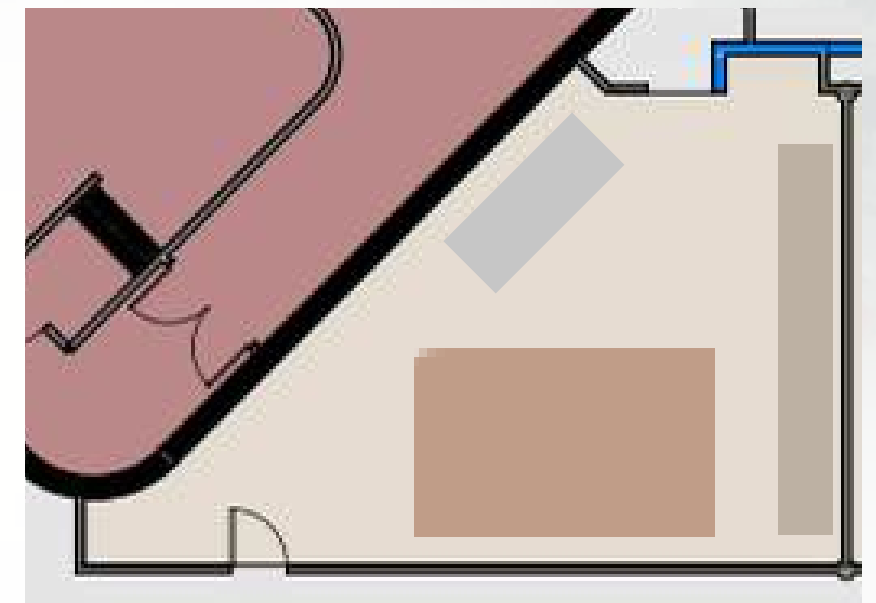
- Teacher Area
- Performance/ Play Area
- Collaborative Learning Area
- Circulation



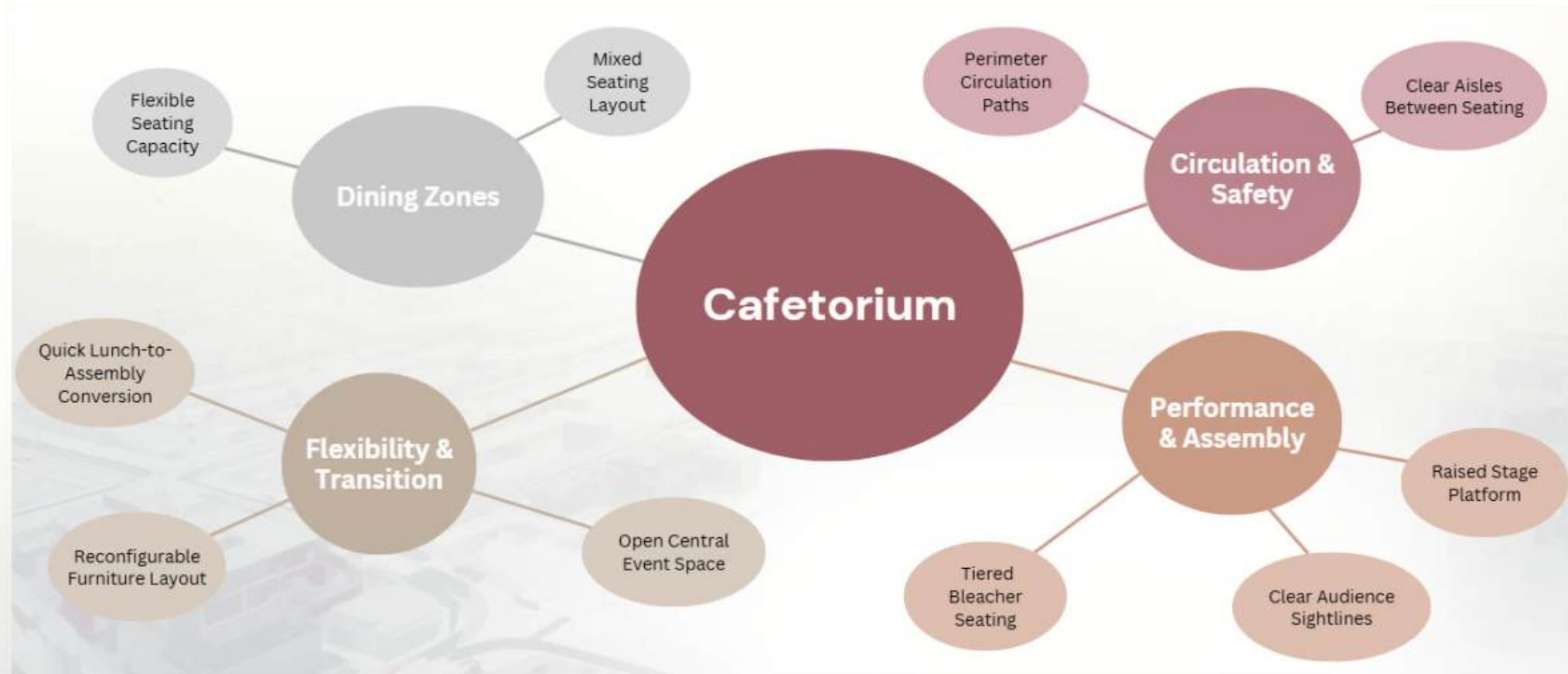
KINDERGARTEN CLASSROOM BLOCK DIAGRAM — ZONING & PERFORMANCE STRATEGY







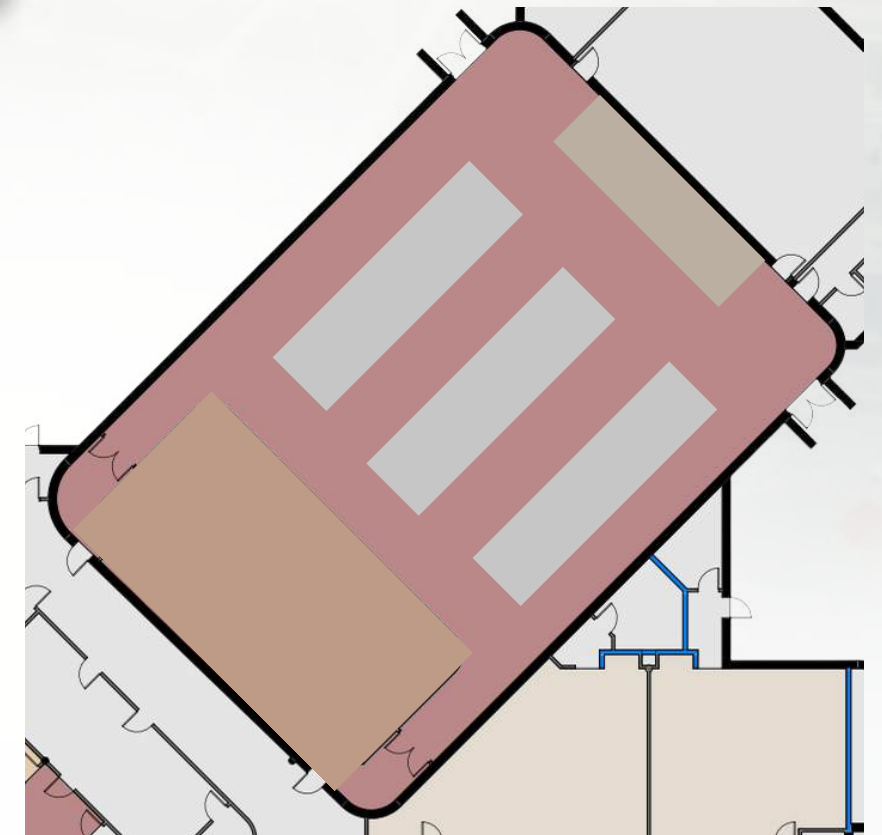
-  Teacher Area
-  Sensory Area
-  Collaborative Learning Area
-  Circulation



CAFETORIUM BLOCK DIAGRAM — ZONING & PERFORMANCE STRATEGY



-  Dining Area
-  Flexibility Area
-  Performance Area
-  Circulation


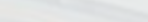


PROPOSED SPATIAL ORGANIZATION | DESIGN DEVELOPMENT

LEGEND

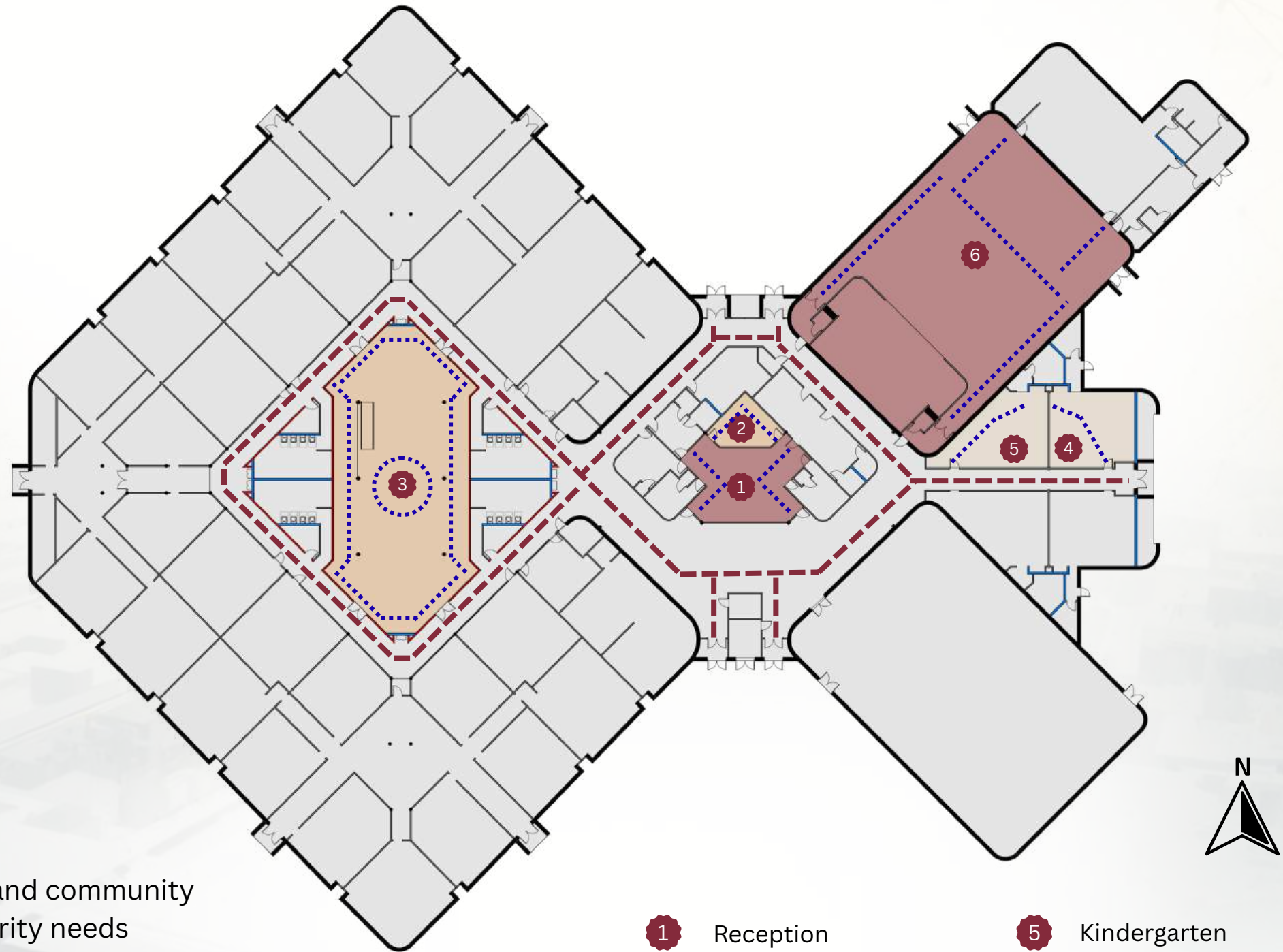
-  Public Zone
-  Semi- Public Zone
-  Semi- Private Zone
-  Not In Scope

CIRCULATION

-  Primary Circulation
-  Secondary Circulation

DESIGN DEVELOPMENT INTERVENTIONS:

- Centralized shared spaces to support supervision and community
- Public-to-private zoning aligned with age and security needs
- Primary circulation spine reinforces intuitive wayfinding



-  Reception
-  Conference
-  Library
-  Pre- K
-  Kindergarten
-  Cafetorium
-  Not In Scope

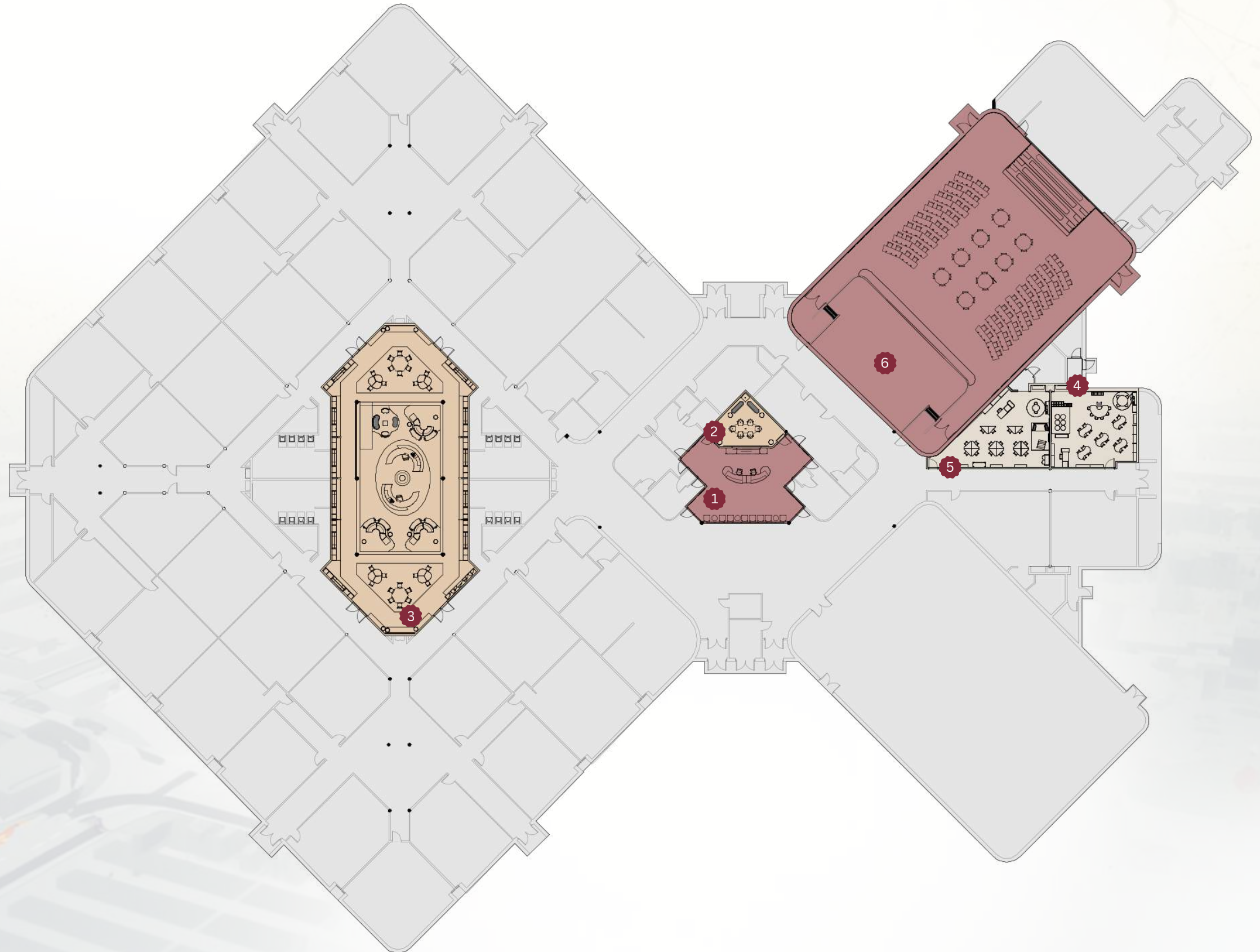


Zoning organizes the building by function to support clarity, safety, and age-appropriate transitions.



FURNITURE PLAN | DESIGN DEVELOPMENT

- 1 Reception
- 2 Conference
- 3 Library
- 4 Pre- K
- 5 Kindergarten
- 6 Cafetorium
- Not In Scope

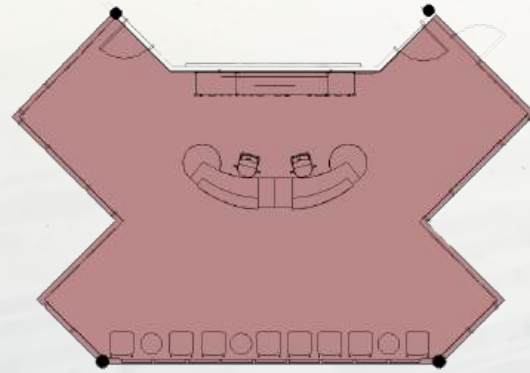
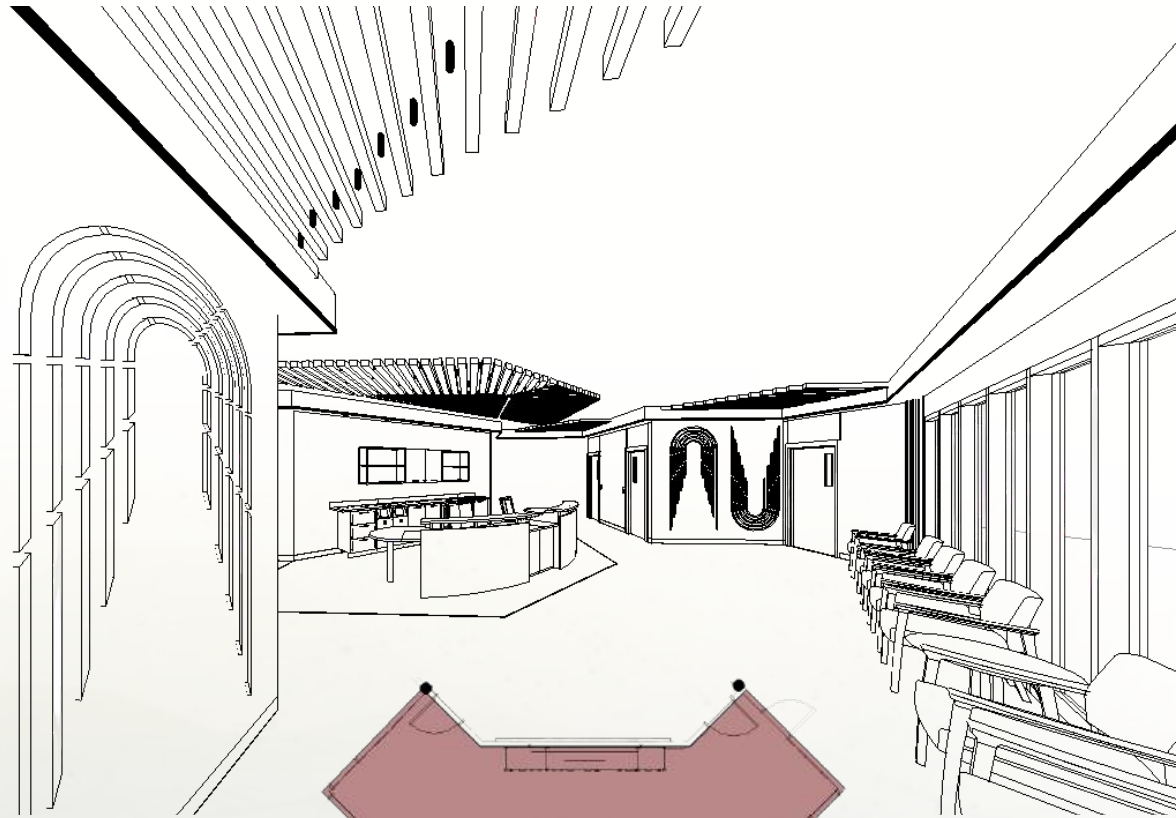


DESIGN PERFORMANCE NOTES

- 36" minimum clear circulation maintained between furniture
- Clear sightlines to teaching walls, stage, and supervision points
- Furniture layout supports flexible reconfiguration
- Zoning reinforced through furniture grouping
- ADA accessible paths integrated throughout
- Cafetorium occupant load calculated per assembly standards



RECEPTION AREA | DESIGN DEVELOPMENT



KEY AREA NOT TO SCALE



RECEPTION PERSPECTIVE

The reception establishes a secure yet welcoming threshold through controlled entry sequencing, clear sightlines to primary circulation, and a centrally positioned curved transaction desk that supports supervision and ADA accessibility. A custom acoustic wall installation inspired by the Northlake identity reinforces school branding while contributing to sound absorption within this high-traffic zone. Carpet flooring enhances acoustic comfort and reduces noise transfer, supporting sensory regulation goals identified in the research framework. Durable solid surface countertops provide longevity and ease of maintenance while maintaining a refined, community-centered first impression.



WA - 1



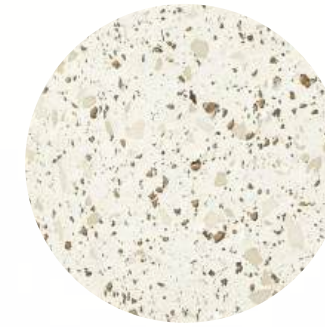
CH - 1



CH - 2



PT - 1



RBF - 1



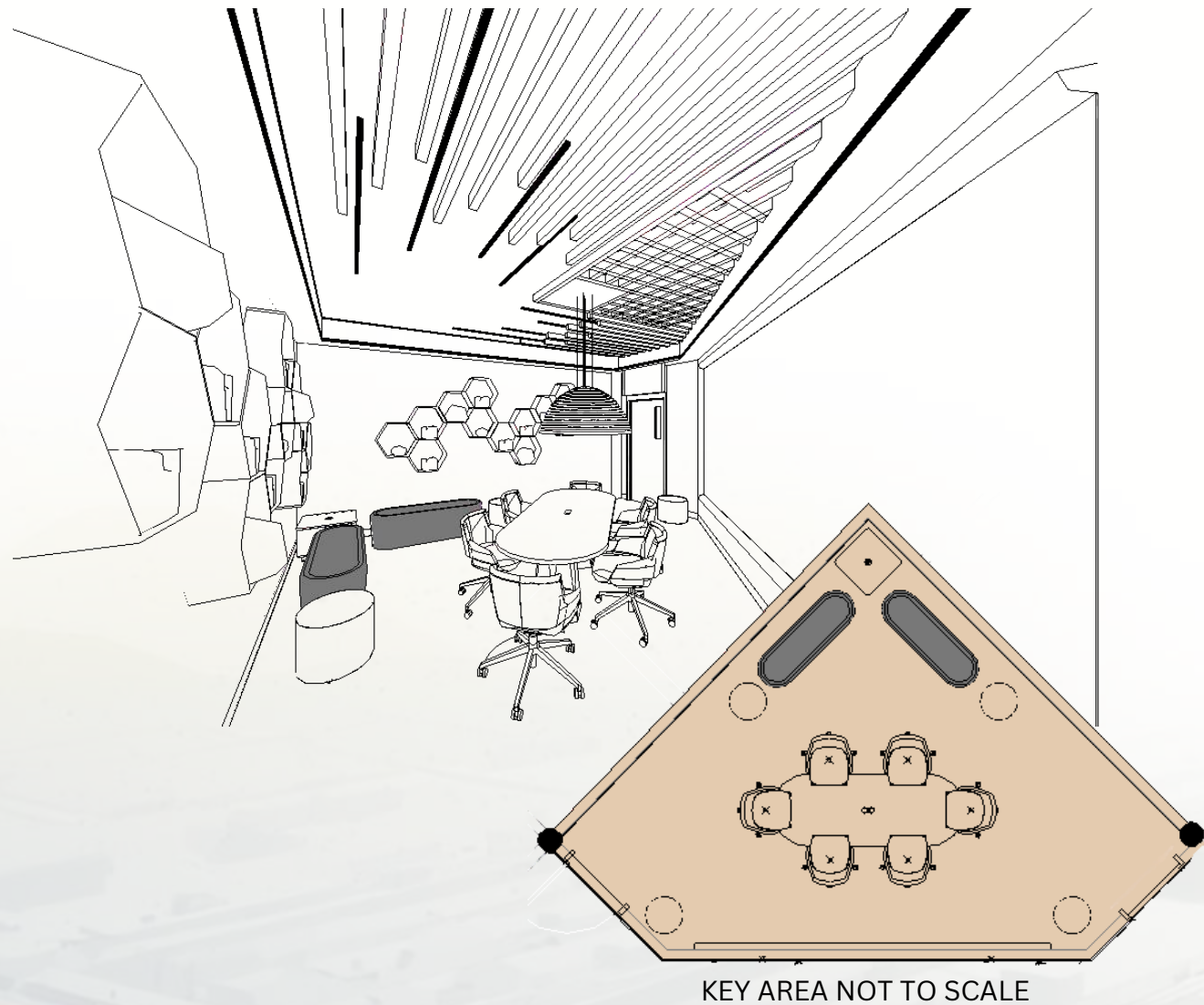
SSF - 1



CT - 1

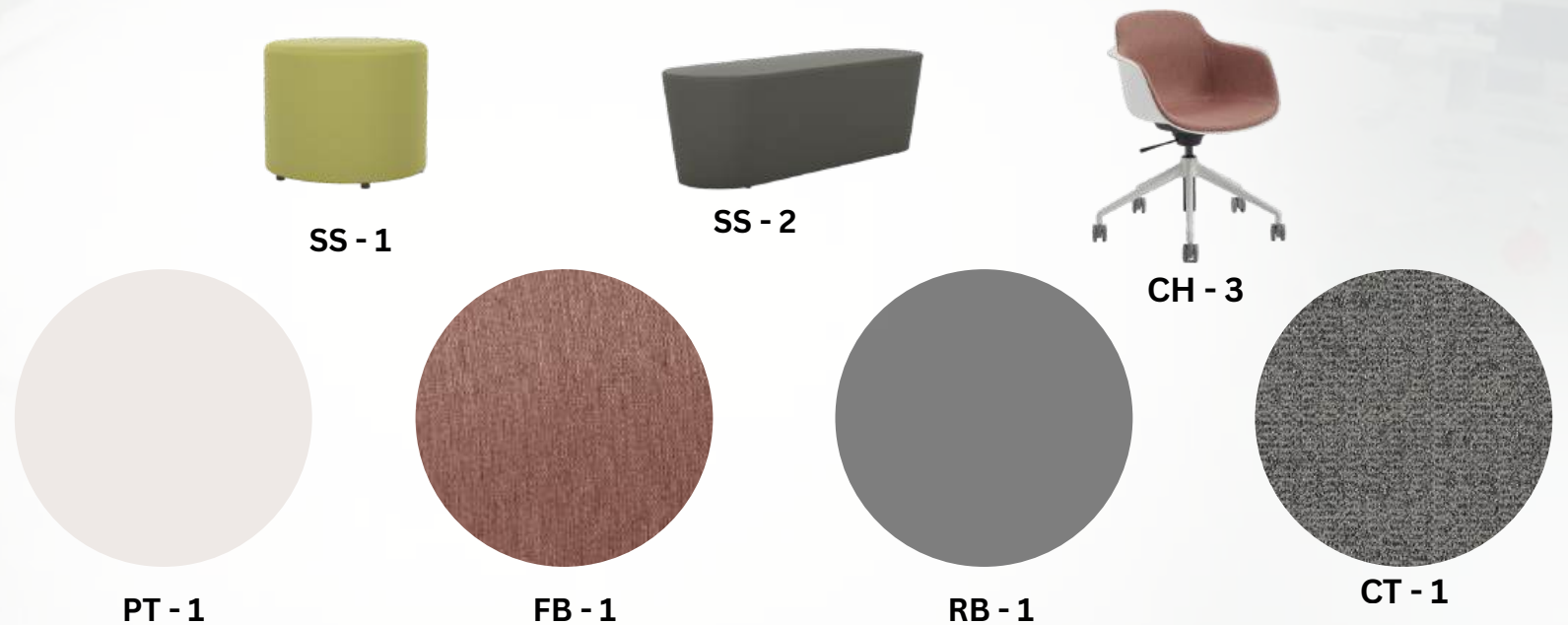


CONFERENCE ROOM | DESIGN DEVELOPMENT

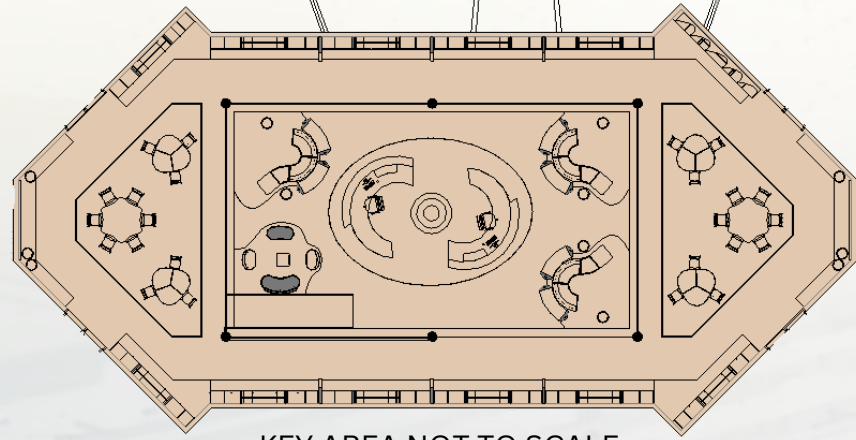


CONFERENCE PERSPECTIVE

The conference room balances collaboration and sensory comfort through reconfigurable furniture layouts, carpet flooring that enhances acoustic performance, and layered linear LED ceiling lighting that evenly distributes illumination while minimizing glare. Integrated presentation surfaces support structured communication and staff engagement, while soft seating elements and flexible task chairs accommodate diverse user needs in alignment with Universal Design principles. Clear circulation paths maintain accessibility standards, and the defined spatial organization reinforces predictability and focus, supporting both professional collaboration and family meetings.



LIBRARY | DESIGN DEVELOPMENT



KEY AREA NOT TO SCALE



LIBRARY PERSPECTIVE

The library functions as a centralized learning hub organized around a clearly defined circulation spine that allows 360° supervision while maintaining distinct zones for collaboration, quiet reading, and storytime. Modular soft seating supports adaptable group configurations and individual engagement, while varied table arrangements allow flexibility across age groups and learning styles. Carpeted zones enhance acoustic performance and reduce noise transfer, supporting sensory regulation and focused learning. Luxury vinyl tile with a wood grain finish introduces warmth and durability, reinforcing a welcoming, inclusive environment while maintaining long-term performance standards.



SS - 3



CH - 4



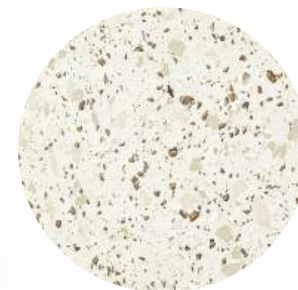
TB - 3



TB - 4



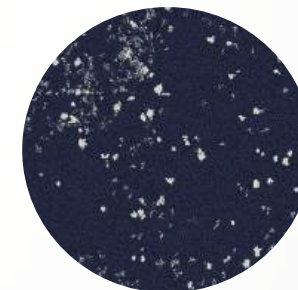
PT - 1



RBF - 1



LVT - 1



CT - 2



CT - 1



PRE-K | DESIGN DEVELOPMENT

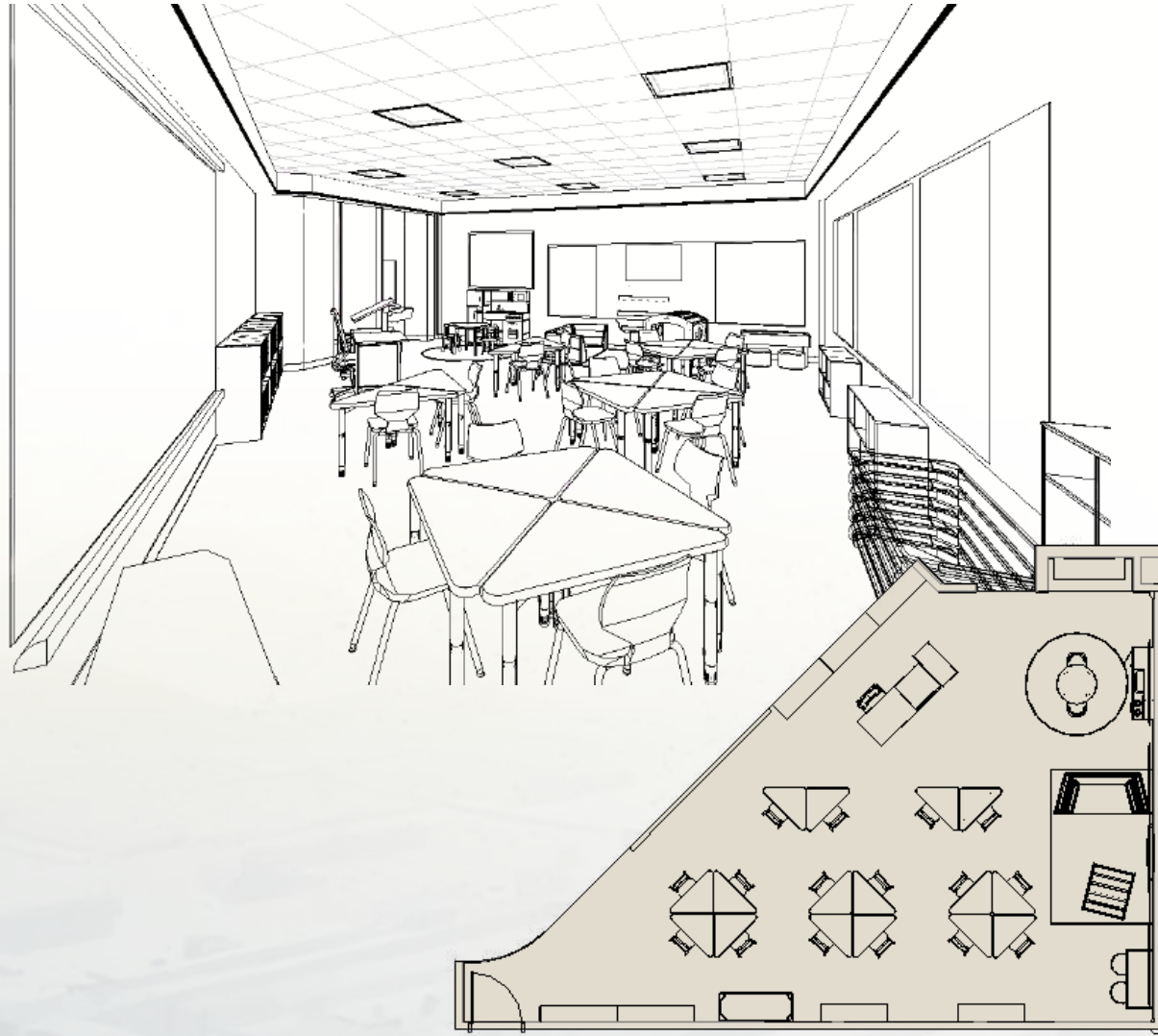


PRE- K PERSPECTIVE

The Pre - K classroom prioritizes sensory regulation and play based learning through clearly defined activity zones, flexible curved tables, and accessible storage that minimizes visual clutter. Open circulation paths maintain a 36 inch minimum clearance in alignment with accessibility standards, supporting independence and safe movement. Luxury vinyl tile flooring provides durability and ease of maintenance, while controlled lighting strategies reduce visual overstimulation. A defined carpeted circle area establishes a structured gathering zone that supports community building and emotional regulation. Varied classroom seating encourages movement, choice, and developmental flexibility while maintaining teacher supervision and spatial clarity.



KINDERGARTEN | DESIGN DEVELOPMENT



KEY AREA NOT TO SCALE



KINDERGARTEN PERSPECTIVE

The Kindergarten classroom balances structured learning with imaginative exploration through clearly organized student desk groupings and an integrated dramatic play kitchen area that supports social development and role play. Color changing tables introduce visual engagement and adaptability, reinforcing flexibility and student choice within the learning environment. Carpet flooring enhances acoustic comfort, reducing noise distraction and supporting sensory regulation. Defined instructional zones, reading areas, and open circulation paths maintain supervision and accessibility while allowing movement, creativity, and independent participation.



TB - 1



TB - 2



CH - 4



PLAY - 1



PLAY - 2



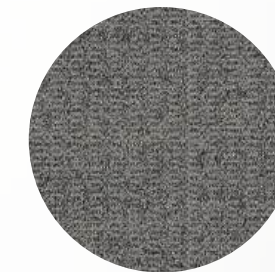
PT - 1



LVT - 2



AW - 2



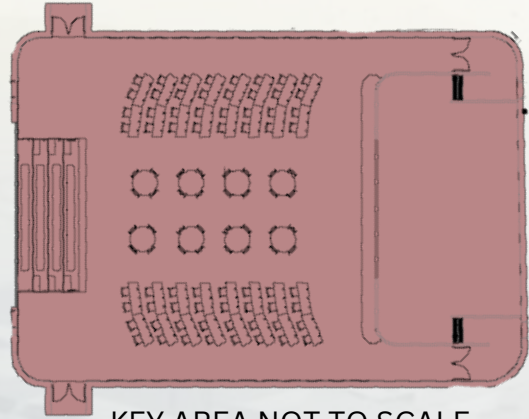
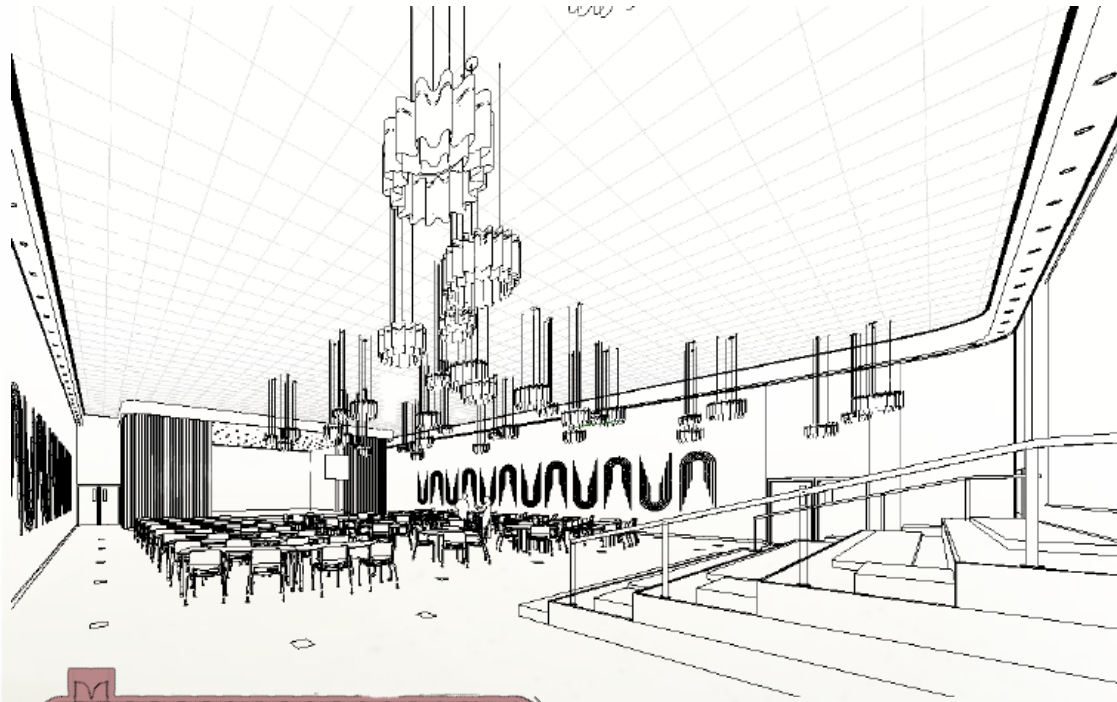
CT - 1



CT - 2



CAFETORIUM | DESIGN DEVELOPMENT

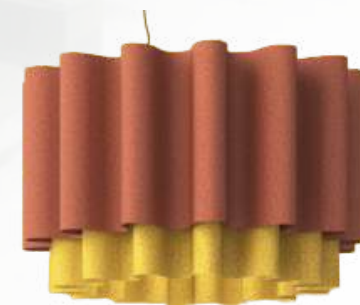


KEY AREA NOT TO SCALE



CAFETERIA PERSPECTIVE

The cafetorium is designed as a flexible, multi functional environment that supports daily dining, assemblies, and community events through reconfigurable seating layouts and clear sightlines to the raised stage platform. Defined perimeter circulation paths maintain safe egress and supervision while allowing efficient transition between lunch service and performance use. Suspended acoustic lighting elements contribute to sound absorption and reduce reverberation in this high occupancy space, supporting sensory regulation and speech clarity. Resin flooring with a non slip finish provides durability and safety for heavy traffic, while acoustic wall panels improve overall sound control. A custom acoustic wall installation inspired by the Northlake identity reinforces school branding while enhancing environmental performance and long term resilience.



L - 1



WA - 1



AW - 3



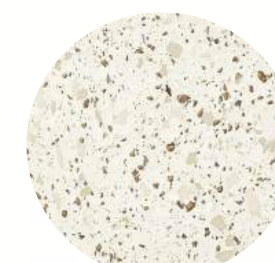
LM - 1



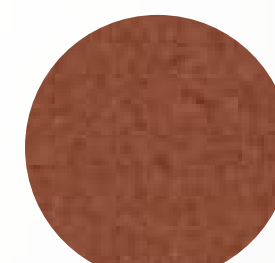
SIGNAGE



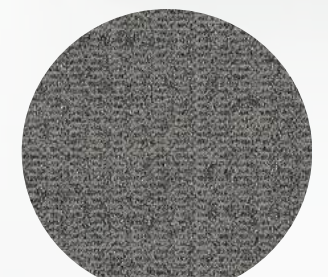
PT - 1



RN - 1



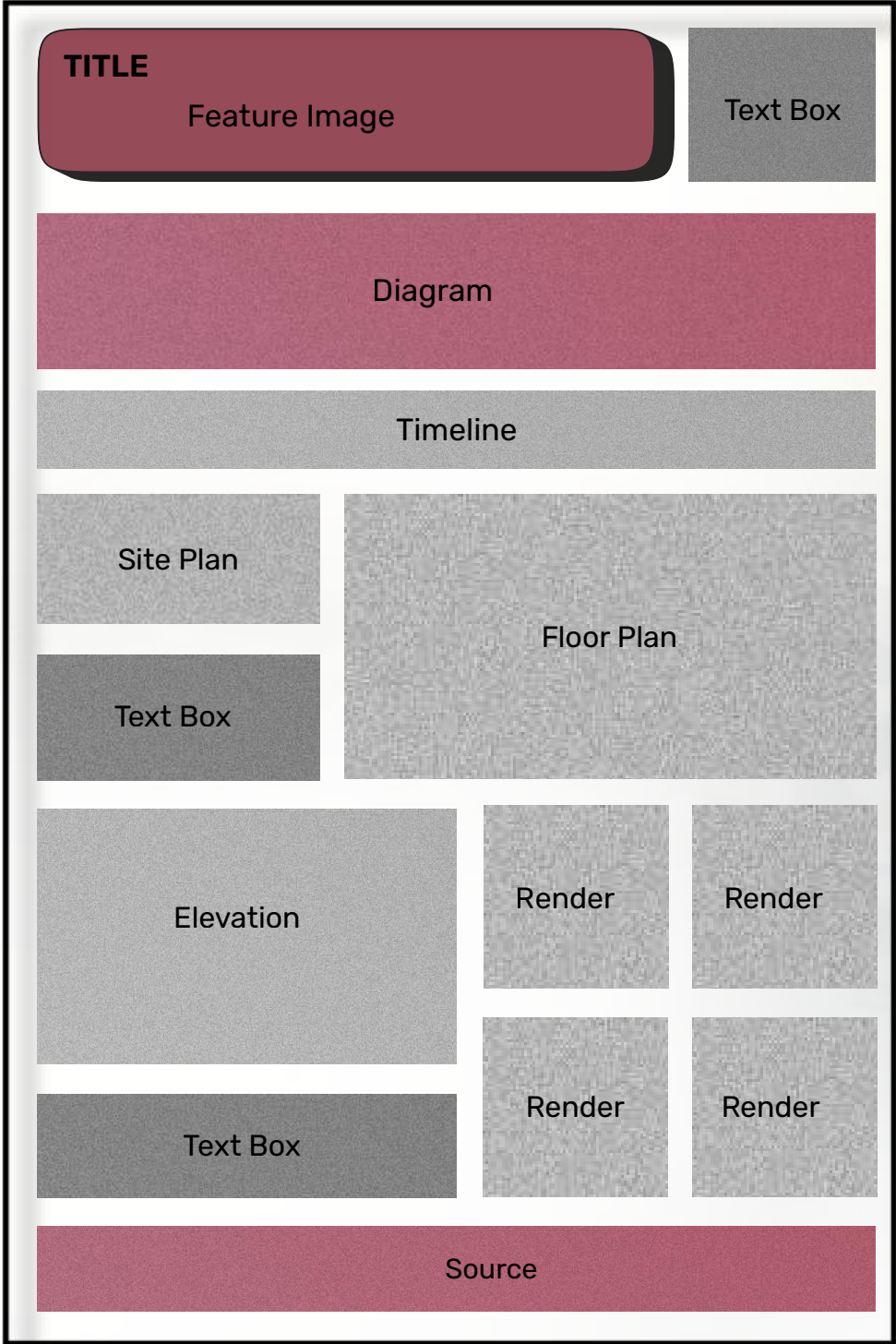
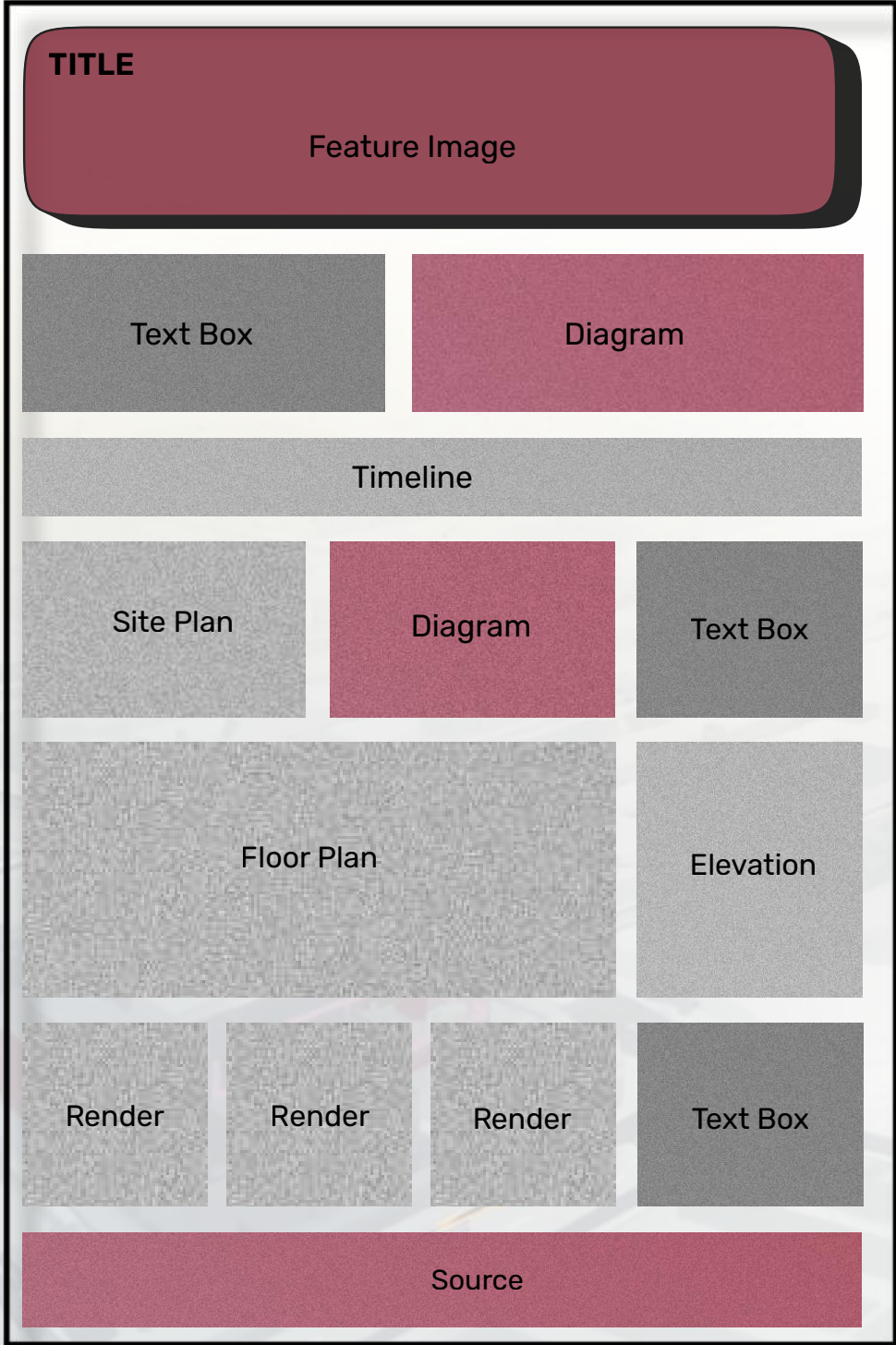
AW - 3



CT - 1



POSTER LAYOUT IDEATION



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THANK YOU