# Sidney Lanier High School

## The “High School of Light” Renovation, San Antonio, TX

Located in the urban core of the westside of San Antonio, Sidney Lanier High School has been a gateway for learning and creativity since it first originated in 1915. The main academic building opened in 1975 and became living history as multiple familial generations attended the school. The 175,000-square-foot renovation of the Lanier Academic Building recognizes and respects the past, while emphasizing the campus’ forward-thinking mentality.

175K
BUILDING AREA

$35M
PROJECT COST

$200
COST PER SQUARE FOOT

175K

EXISTING
BUILDING AREA

1,800

EXISTING
STAFFS & USERS

0

EXISTING
WINDOWS

view along existing colonnade

***"The building represents our "Wizard of Oz" moment - when we transitioned from black and white to color."***

- Dr. Moises Ortiz, Lanier Principal

AFTER

# Executive Summary

## Understanding Context

Located in the culturally vibrant Westside of San Antonio, the Lanier High School renovation transforms a massive 1970's windowless, brick building rife with security, daylight and infrastructural issues. The design focuses on the power of daylight, the wonder and delight of Lanier's Mexican-American culture, high performance design and curriculum innovation through flexible space planning. The building is 200,000 sf, has the footprint of two football fields, is over 400' long and is the heart of the campus. With each intervention, the existing building's history and architecture are celebrated and given new life, all within a $200/sf budget.

## Ambitious Goal Setting

The goal of this project was to develop the first school of 99 in the district with flexible, next generation learning space types that aligned with this school's educational goals. The district's educational programming specifications had not been updated in over a decade; they consisted of few space types outside of 10' wide corridors and 800 sf classrooms with a single teaching wall. Offering space types beyond that was initiated by the design team after an extensive user survey was performed. A building capacity analysis proved out that room could be made available to support these. By efficiently providing the "base" program, the design team was able to program in a diverse array of space types: small group learning, large classrooms with operable partitions, collaborative "light labs", second floor dining, a living library and hybrid training/educational spaces.

What is unique about these spaces is they reside within an incredibly deep building footprint; they don't always have the luxury of being adjacent to exterior walls. Carving large holes second floor waffle slab and adding light monitors on the roof created natural daylighting in the middle of the building that animate and define these internal collaboration spaces. These spaces among all distinguish this building because they turn the building's burden (excessive depth) into its feature.

# Scope of Work & Budget

## Lanier High School

**Project Location:** San Antonio, TX
**District:** San Antonio School District
**Project Type:** Renovation
**Occupancy Date:** January 01, 2022
**Current School Enrollment:** 1215
**School Capacity:** 1600
**Floor Area:** 175,000sf
**Gross Area (Per Occupant):** 144 sf/occupant)
**Site Area:** 150,00sf | 3.44 acres (278v540sf)
**Delivery method:** Construction Manager at Risk
**Project Budget:** $35,170,332
**Project Final Cost:** $36,269,542
**Site Development Cost:** $3,376,500
**Building Construction Cost:** $32,893,042
**Baseone Energy Use Intensity (EUI):** 77
**Actual Energy Use Intensity (EUI)**: 46

Second Floor Living Room

# Community Engagement

***"The redefined mall space, bathed in sunlight, celebrating the murals of its community, and tying together academics, administration redefines what it means to be a Vok. "***

- Lanier Teacher

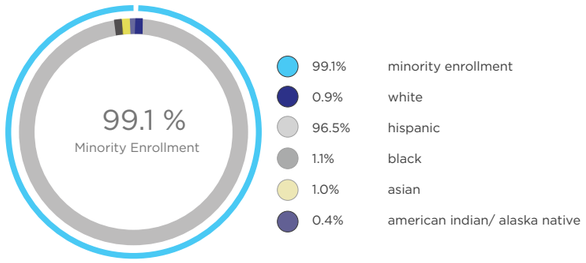
First Floor Mural Walk

# The Lanier Community

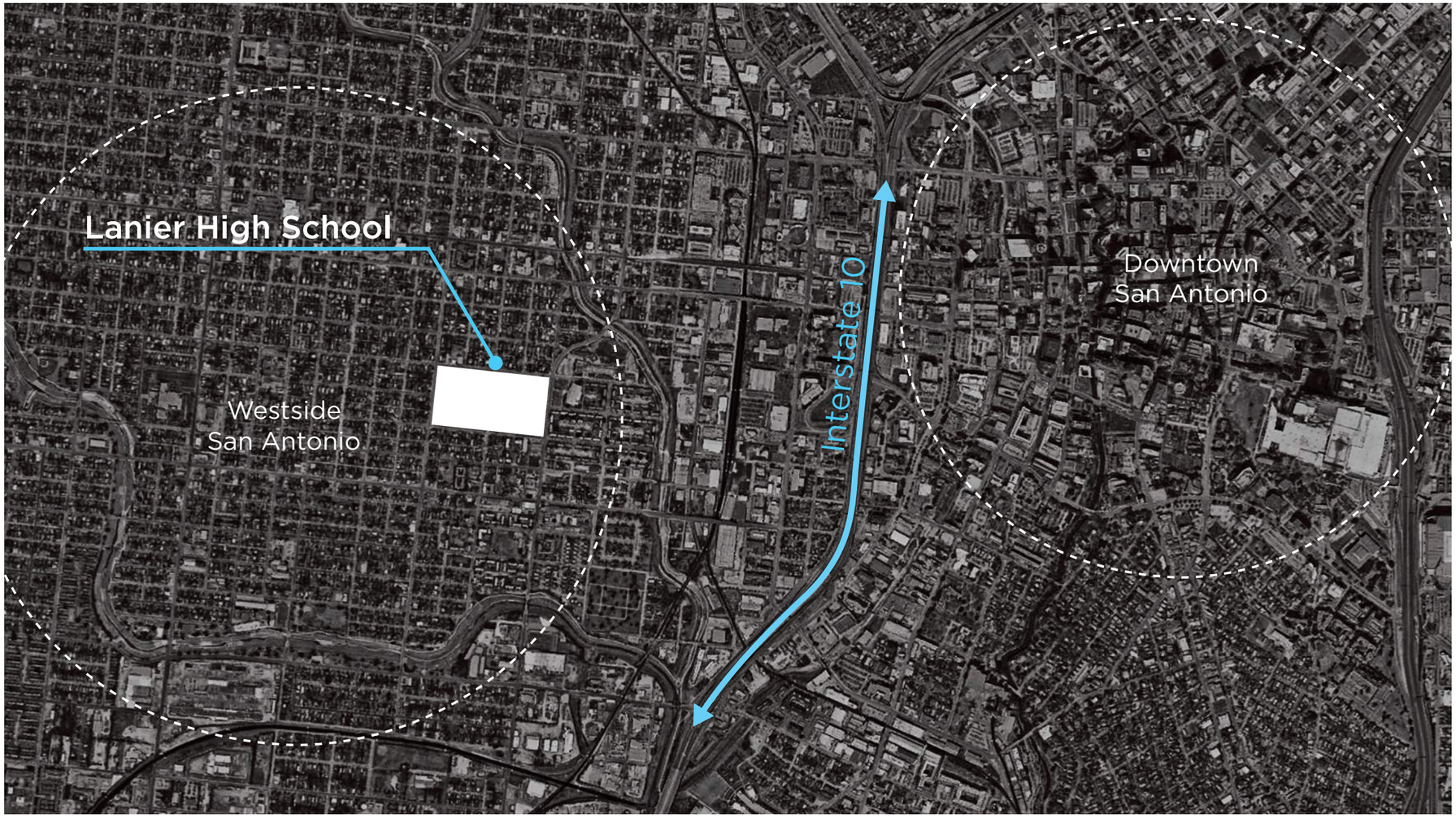
## Understanding the Westside

Lanier High School is located on the Westside of San Antonio, a historically hispanic neighborhood (99%) with a deep community of generational families. This community was particularly interested in sharing its culture, history and values with the design team. For example, despite its immediate proximity to downtown San Antonio, this neighbrhood has suffered from a lack of infrastructure and technological investment as a neighborhood. There is a fear of gentrification, but also a frustration with feeling left behind. The neighborhood also is exceptionally urban - a regular grid of homes, narrow lots, continuous sidewalks mean that there is a strong pedestrian culture. In fact - that directly influences the school as their campus has very little space dedicated to parking. Most students walk, ride the bike or take the bus to school. This directly shaped the program for this project, as no additional parking is added to the campus.

campus demographics:




| | | |
|---|---|---|
| 99.1% | minority enrollment |
| 0.9% | white |
| 96.5% | hispanic |
| 1.1% | black |
| 1.0% | asian |
| 0.4% | american indian/ alaska native |





# The Profile of a Vok

## Strong Connections to the Community

The landscape architect on the project was a proud graduate of the high school - pictured in the image to the right. Her cultural connection to the school allowed the design team to develop strong connections to parents, administrators and muralists. She was a second generation Vok, indicative of the typical student experience at Lanier.

## Authentic Relationships

The design team understood from the onset the importance of murals in the school - but equally important was the original artists and muralists. In reaching out to them, over three meetings, we developed a relationship that allowed them to take ownership of the project, strategy and decision making of murals. Marcelino Villanueva, the original teacher who oversaw the first round of murals, shepherded this process and was eventually selected to paint a new mural in honor of the building's rebirth. The photo on the right illustrates when the painting was revealed to the design team at their office. This now sits proudly in the administrative conference room.

## A Building Funeral

A concerned community member summoned a meeting with the design team to help communicate the emotional connection to the old facility and its spaces. Together, this member and the design developed the idea of having a "building funeral". On one Saturday in the summer of 2019, a memorial was held for the existing facility to allow the community to grieve the previous building and allow them to say good bye properly. This was a sensitive event for the community, one in which the architect and district representatives were not present. It was the highest attended event of the entire bond program for the district.

## Meeting with Purpose, with Everyone

The early design engagement schedule is illustrated to the right. The design team met with every kind of community member in strategically organized agendas. This engagement plan was the first of its kind in the district and became the model for the other 16 projects in the bond, and the model for their 2020 bond. Some highlights are the three meetings with the muralists, various community stakeholder meetings and the involvement of a dedicated project advisory team composed of parents, alumni and staff.

Community Collaboration Sessions

Student Pride

Lanier's Prideful Mariachi Band

Meeting with the Original Muralists

**02/22/18**
Project Advisory Team Meeting #1: Fact Finding

**04/19/18**
Project Advisory Team Meeting #2: Visioning

**05/16/18**
Project Advisory Team Meeting #3: Dedicated User Group Day

**08/27/18**
Community Stakeholder Meeting: Murals, Culture and Economics

**08/30/18**
Mural Meeting #1: Understanding Place and History

**09/25/18**
Community Stakeholder Meeting: Murals, Plans and Project Goals

**10/03/18**
Mural Meeting #2: Strategy, Image Selection

**12/03/18**
Principal Meeting: Plans, Goals, Schedules

**03/21/19**
Mural Meeting #3: Final Design, Layout

**04/10/19**
Community Stakeholder Meeting: Final Design Review

# Being Subjective About the Existing Facility

## Using a  Research Based Process to Support Innovative Programming

The design team approached the project with zero pre-conceptions and a lot of fact finding.

A digital survey based on the Center for Built Environment's Facilities survey was distributed to the teachers and staff to hear their concerns and opportunities directly and anonymously. The survey looked at feedback along four categories:

**1)  Layout and Furnishings**

**2) Acoustic and Thermal Comfort**

**3) Technology and Tools**

**4) Design**

We learned about their frustrations with the inability to collaborate across disciplines, the acoustical challenges, antiquated technology and inflexible furniture. Of course we also heard about the psychological impact of the lack of windows. We also heard about how meaningful the murals painted on the building's interior were the community.

exsting hallways

facade view along existing campus promenade

view along existing arch arcade facing community

survey monkey snip
showing the interface every teacher used

**Thank you in advance for your participation and valuable input!**

1. How many years have you been teaching...

| | 0-5 years | >5-10 years | >10-15 years | >15-20 years | 20+ years |
|---|---|---|---|---|---|
| in total? | | | | | |
| at your current school? | | | | | |

Please include the name of the school(s) where you currently teach and the grade(s)/course(s) you currently teach:

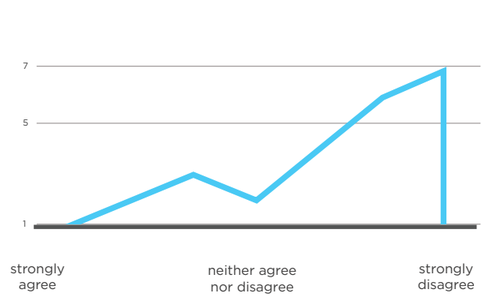
**For each of the following statements, please indicate the degree to which the particular feature currently exists in your classroom on a scale of 1 to 3, where:**
1= Currently exists (as stated/exists to a high degree)
2= Exists to some extent (exists in some areas/to some degree)
3= Does not exist (does not exist as stated or at all)

**After reading each statement, remember to consider:**
If the statement accurately describes what exists in your classroom, indicate your response by selecting 1. If the statement presents a feature or characteristic that is somewhat evident in your classroom, select 2. And, if the statement does not accurately describe what exists in your classroom, select 3.

2. To what degree do each of the following design features currently exist in the teaching/learning spaces you use?

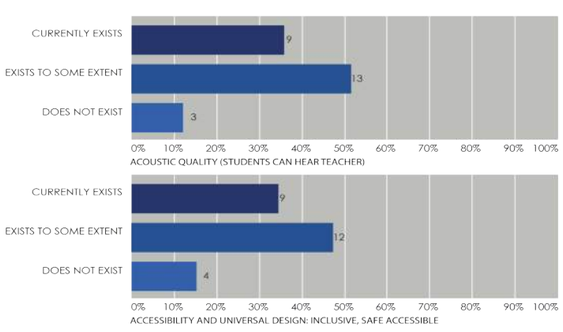
*"Students feel like they are in prison because they have **no sunlight** in the main building or windows"*

pre-occupancy survey results:
does the facility support cross collaboration?



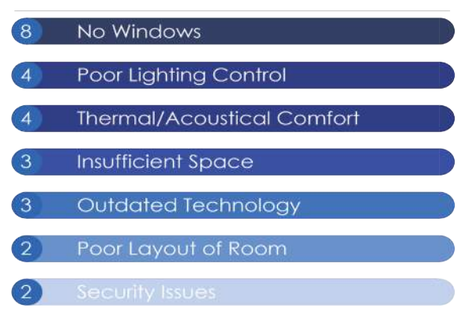

*"**Collaboration** between all fields of  study **is impossible**"*

sample results for 2 of 80+ questions




*"Lanier is literally a **crumbling prison**"*

high level requests from staff




*"Students **don't** feel like the school's physical environment is **welcoming**"*

# Educational Environment

view at central social staircase

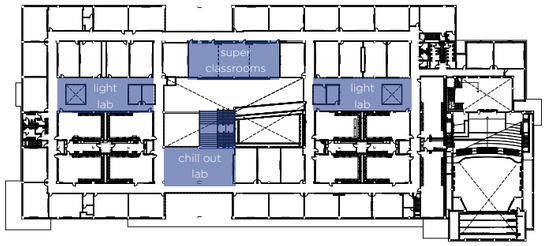
# Innovative Programming Inspired by its Users

### Future Proofing an outdated Ed-Spec

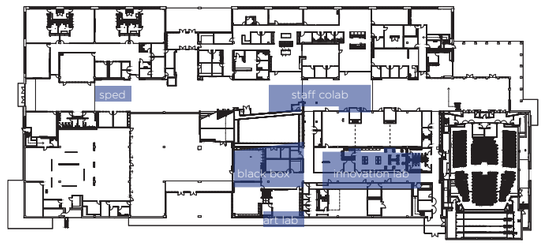
The colored spaces in the diagram below were added to the program by the users and design team after an extensive process of user engagement including focus groups, community meetings and a digital survey. These spaces represent large multipurpose classrooms with operable partitions, small group rooms, a blackbox, collaborative open areas and the building's signature "light labs" that pull light and people together in the middle of the building.

***11%***

*of the building program was "innovation space" outside of SAISD's Education Specifications*

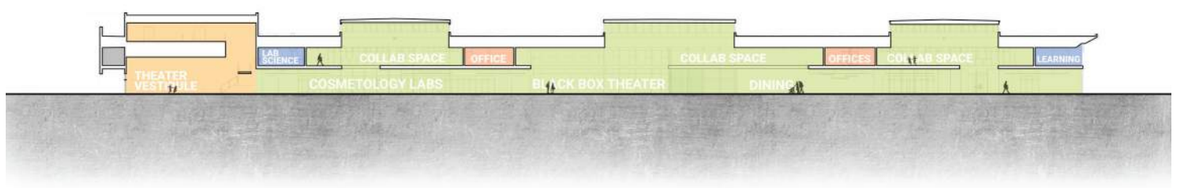


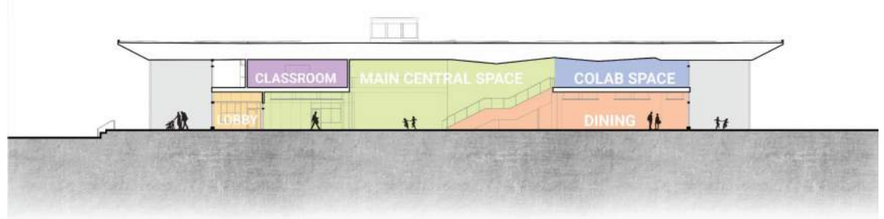

Second Floor

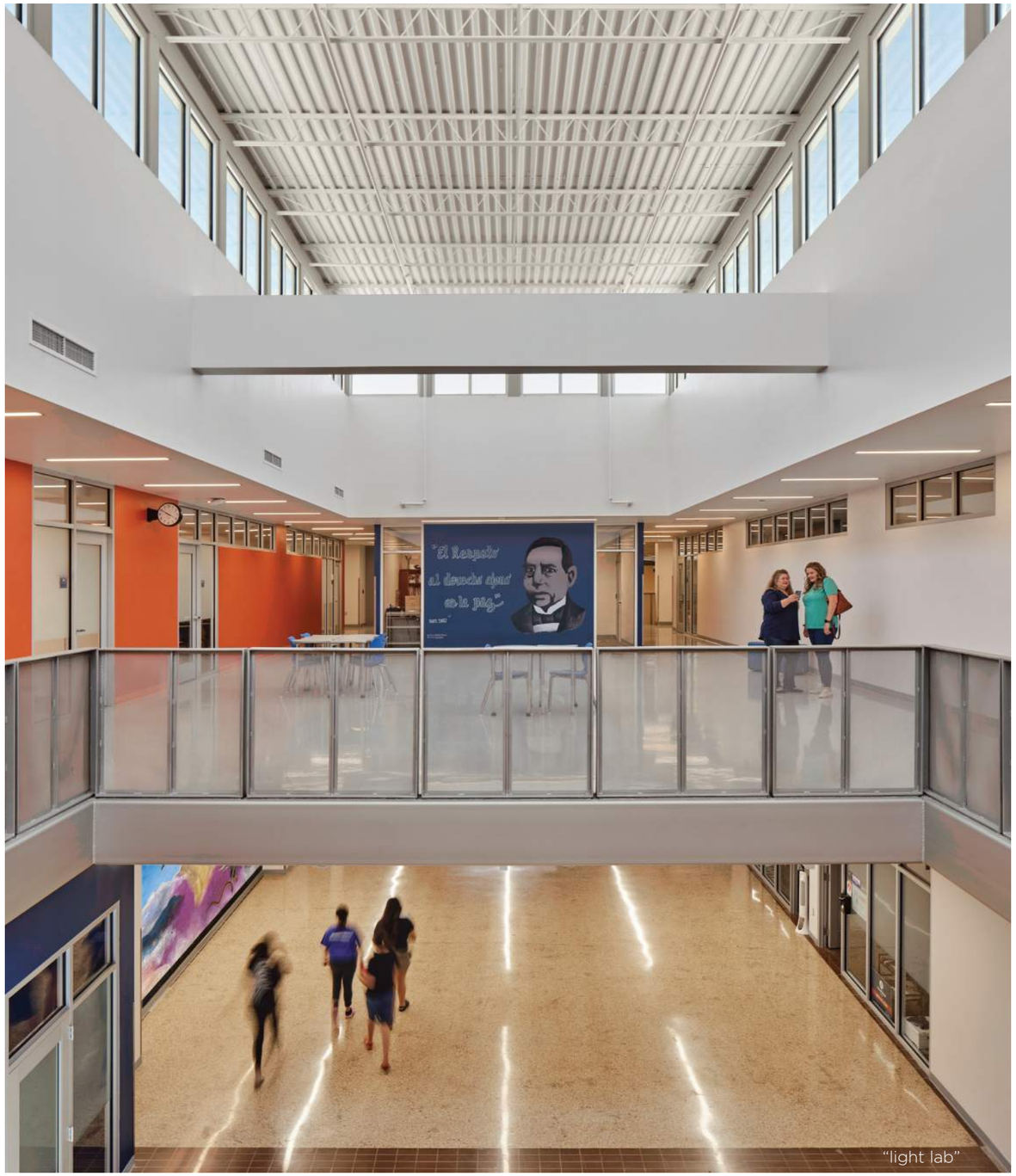



First Floor

Programmed Spaces Added by Users



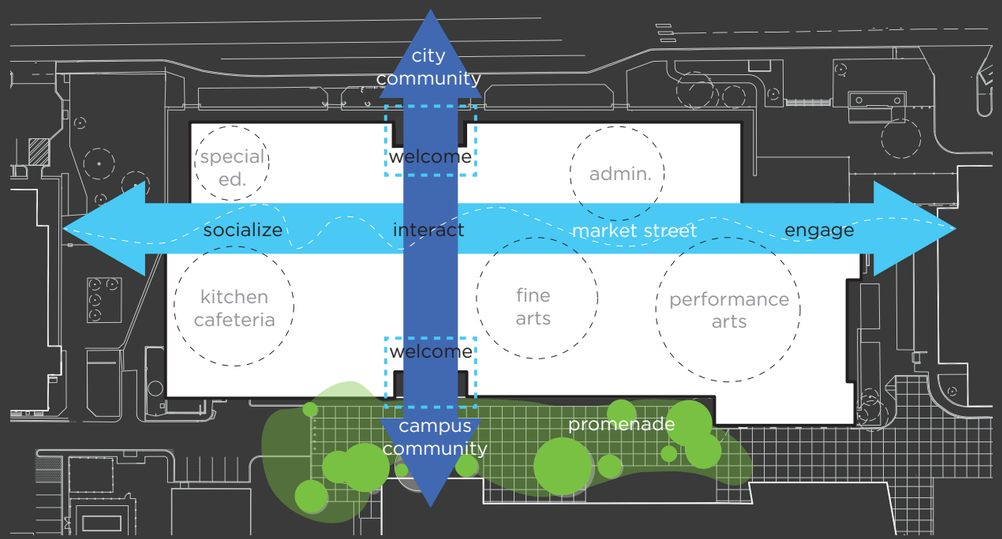



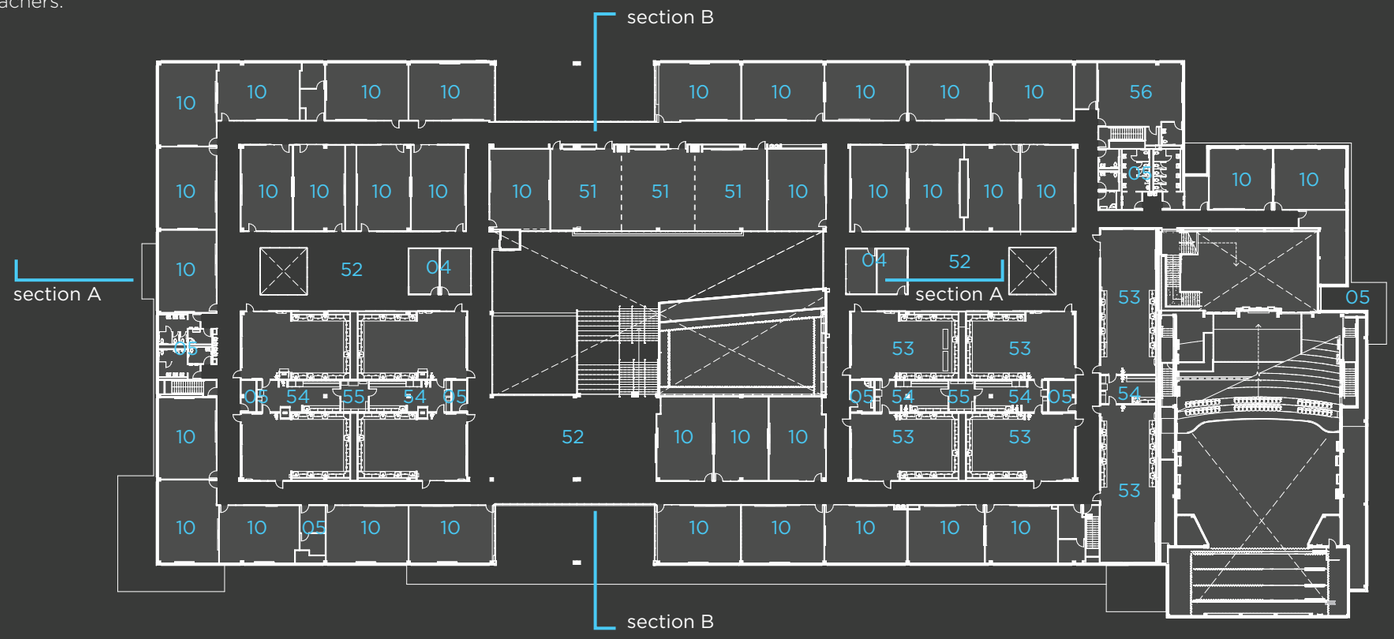
"light lab"

# Project Goal: Designing for Diverse Curriculum

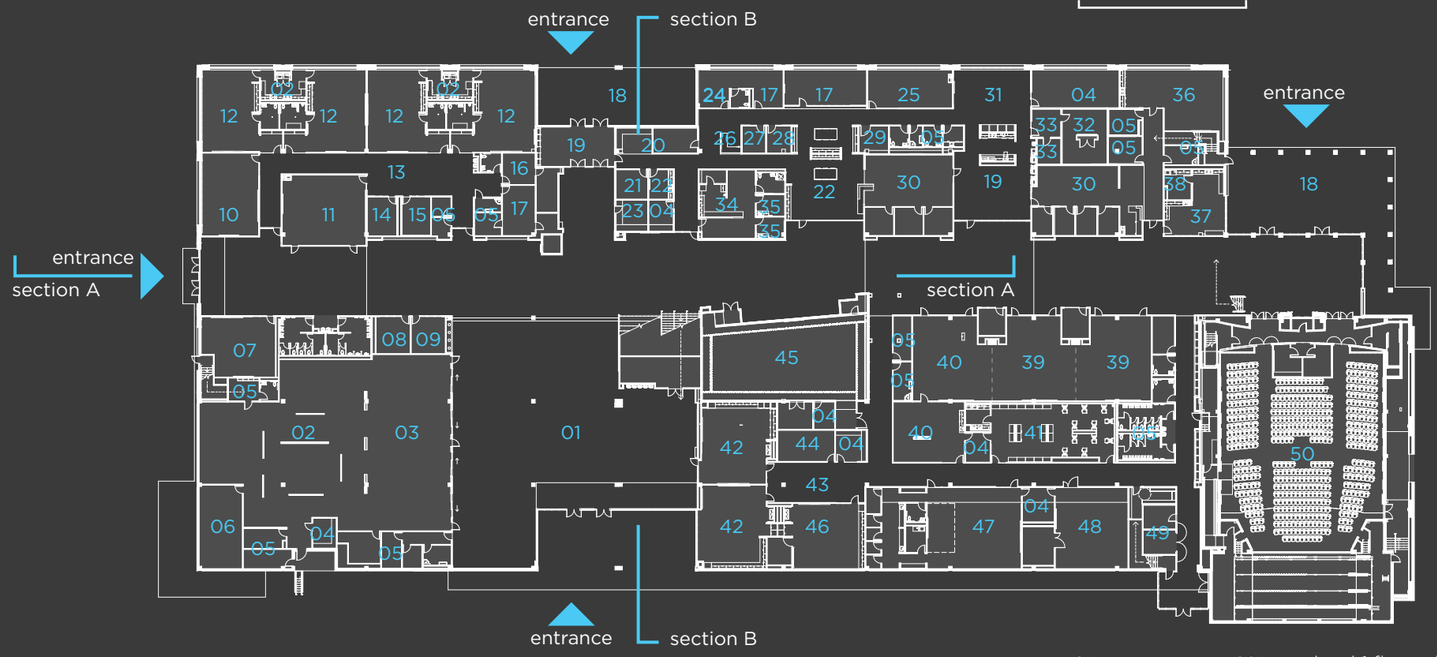
The renovation allows a flexible approach to education, that builds on the idea of the 'traditional classroom' and evolves it into collaboration zones and immersive educational environments focusing on critical thinking, problem-solving, and communication. Open collaboration spaces, double classrooms, flex labs, private small and medium group rooms, and break out spaces allow for group or personalized engagement between the students and teachers.




circulation diagram




level 2 floor plan



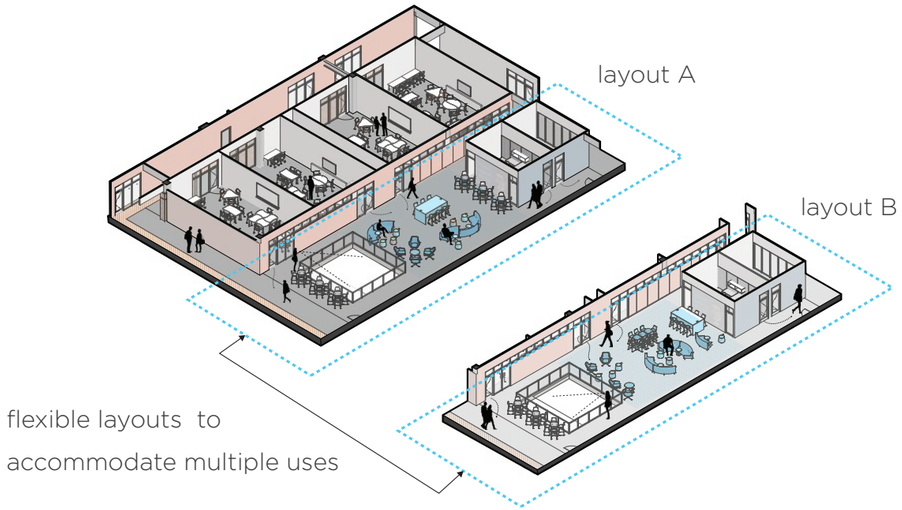

level 1 floor plan

program legend:

01 dining
02 kitchen
03 serving
04 office
05 building supports
06 pantry
07 content mastery
08 social work room
09 team room
10 general learning
11 go center
12 life skills
13 colab
14 diagnostician
15 speech
16 sem's
17 conference
18 vestibule
19 reception
20 bookkeeper
21 ap conference
22 work room
23 student store
24 principal
25 departmental office
26 administration
27 communities
28 teen social workroom
29 vault
30 counseling
31 teacher lounge
32 materials testing
33 testing
34 clinic
35 exam room
36 professional learning
37 parent service
38 clothes closet
39 flex lab
40 cosmetology classroom
41 cosmetology lab
42 art
43 art colab
44 art storage
45 black box theater
46 ceramics
47 drama
48 scene shop
49 storage
50 theather
51 multipurpose classroom
52 colab space
53 science lab
54 science storage
55 science prep
56 in school suspension
57 chemistry lab

# Connecting Through “Light Labs”

The designed created “light labs” that offer multiple furniture and seating arrangements. These are organized around the locations of the light monitors and second floor holes. These can be used for small group learning, lecture style discussions and social gatherings. They capture each of the goals for the buliding, which is to introduce and distribute natural daylight, use “found area” for collaborative learning, celebrate the mural culture of Lanier and liberate connections from the first floor and second floor.



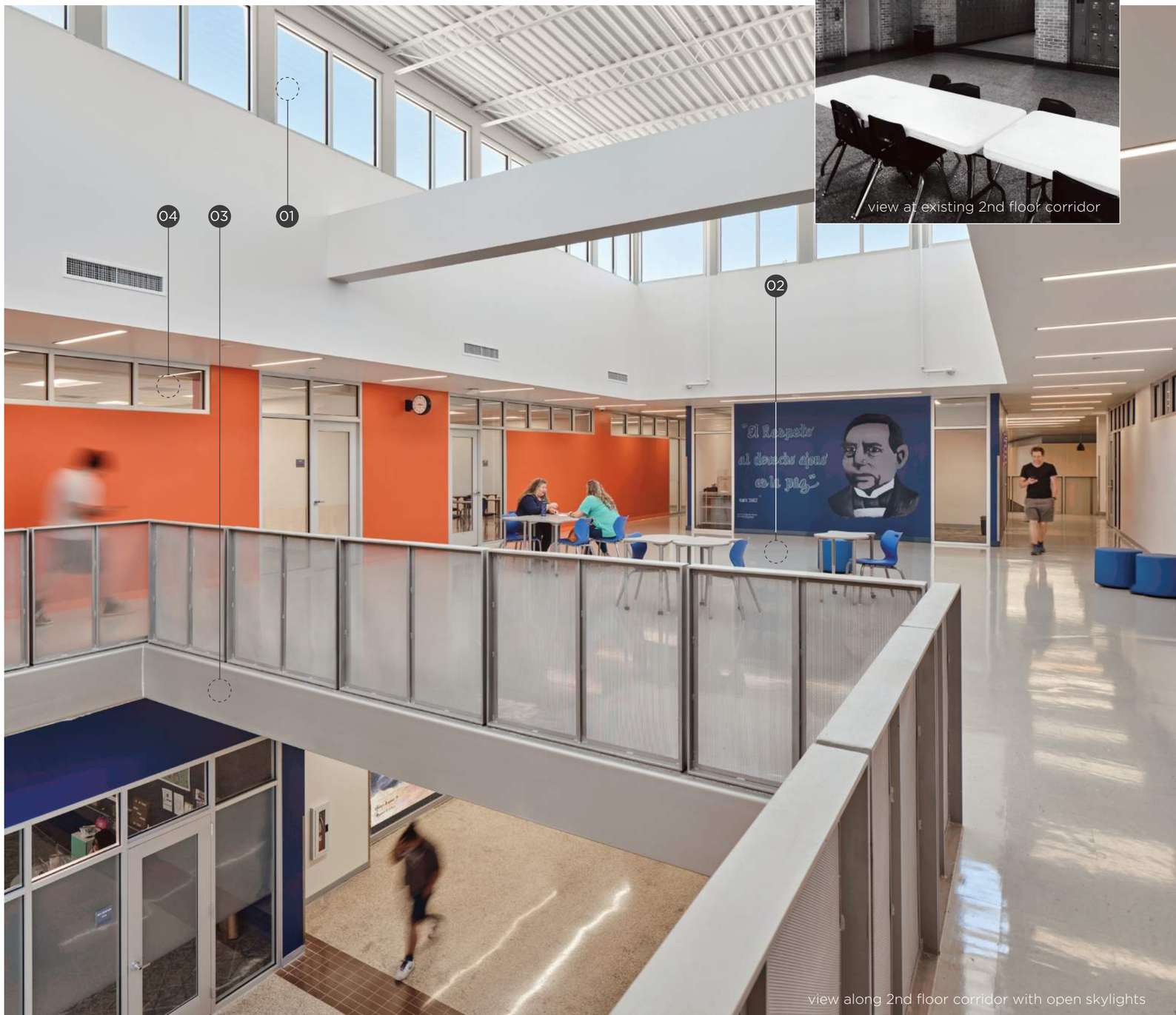

flexible colab furniture layout

legend:

01 adding skylight provides natural light to all spaces
02 flexible collaborative light lab
03 floor plate cut-out allows light travel to ground level
04 flexible collaborative light lab

construction view during floor plate

view at existing 2nd floor corridor



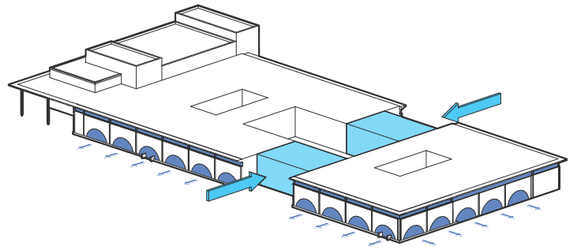

view along 2nd floor corridor with open skylights

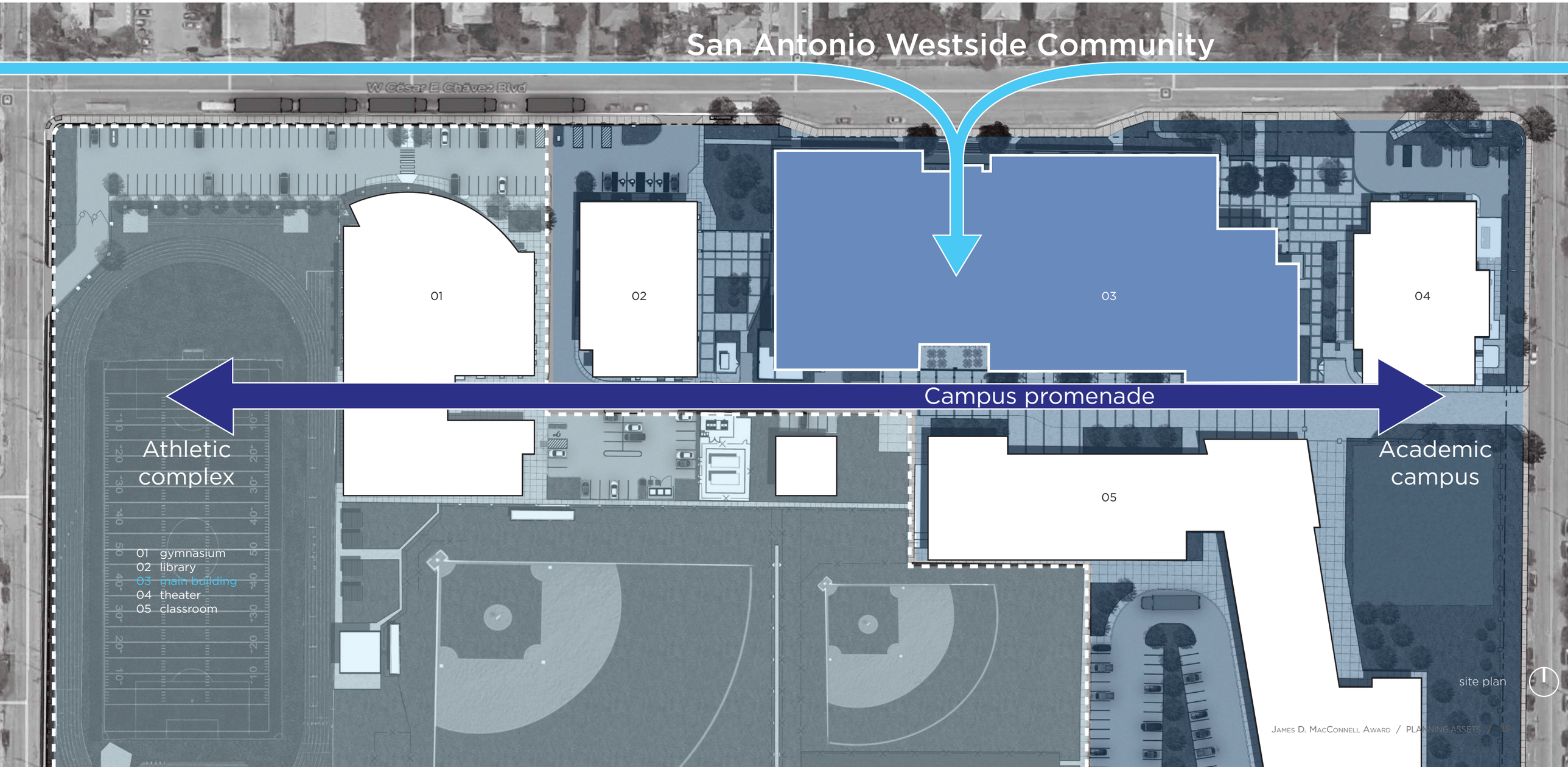
# Result of the Process and Project

campus view along cesar chavez blvd.

# Using Design to Integrate the Community

The previous design for the building had 17 points of unsecured entry. The north facade, while symbolically important, served as a barrier and dam for the community. In introducing a new “slice” into the building, a single point of celebrated entry was created. A single, secure entry plaza welcomes the westside community into the heart of the campus through a secure vestibule. The solid brick, interior wall of the arcade was removed, and the interior space was extended to the existing brick arches, which were infilled with glazing to allow for visual connections to the surrounding community.  There is a north/south connection from the entrance to the campus promenade, which connects the academic building to outdoor learning spaces, the athletic complex, fields, library, music building, and CTE Building. The removal of the brick facade also celebrates and exposes the original cast in place conrete structure for the building.





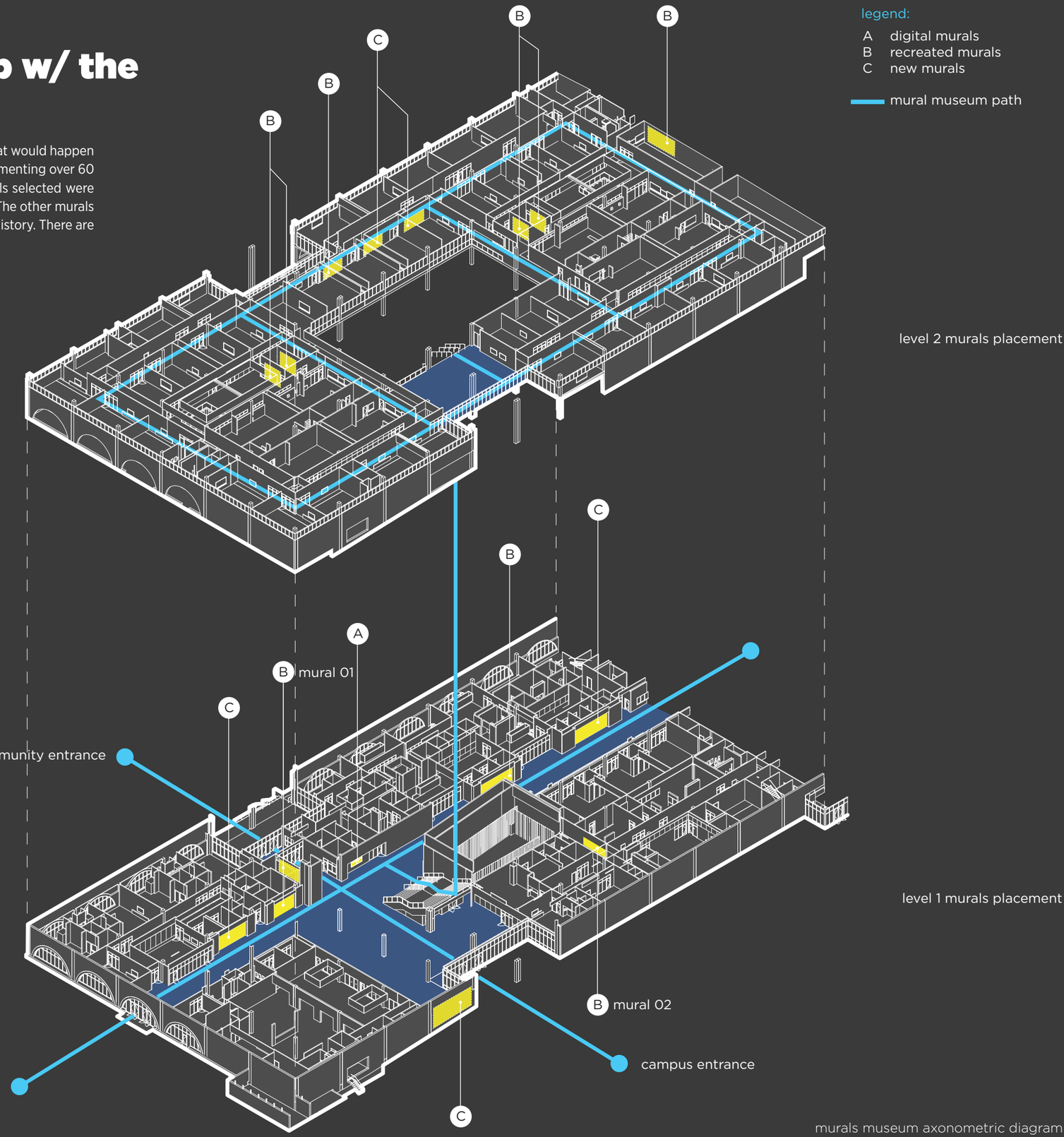

site plan

# Fostering a Long-Term Relationship w/ the Community Through Mural Culture

Lanier was the birthplace of 'mural culture' in the westside and there was concern among the community of what would happen to the existing murals. A team of teachers, original mural artists, and designers went through a process of documenting over 60 murals and determining which murals were the most meaningful and important to the community. The murals selected were professionally photographed, reprinted on durable material, and installed throughout the renovated building. The other murals were photographed and compiled into a Digital Mural Library to be preserved as an important part of Lanier's history. There are also opportunities for new murals for the current students to extend the legacy of murals in the community.

mural 01
mural name: virgin de guadalupe
artist: george ybarra jr. & manuel cardenas
year: 1976

mural 02
mural name: farm workers
artist: marcelino villanueva
year: recreated in 2022




murals museum axonometric diagram

# Project Goal: Designing for Occupant Wellbeing

The design team set and achieved three wellbeing goals:.

100 % Provide Access to Natural Daylight and Views to 100% of Occupied Spaces (previously 0%)

Provide Access to Neuro-Diverse Spaces, Targeting All Four of These Quadrants:

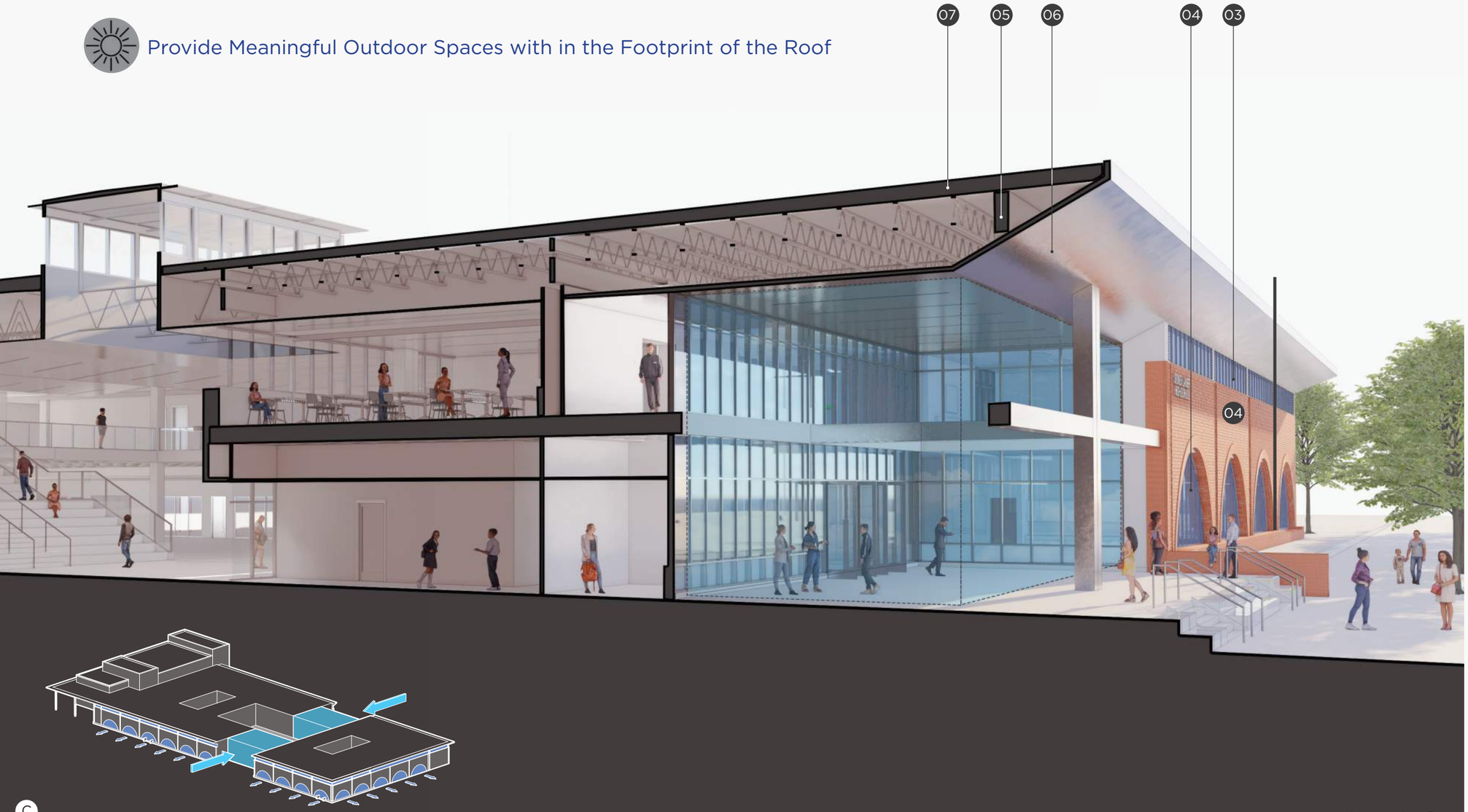
1. Alone, In Public
2. Together, In Public
3. Alone, In Private
4. Together, In Private

Provide Meaningful Outdoor Spaces with in the Footprint of the Roof

key wall legend:

01 existing wall to remain in place
02 new interior wall on existing stud
03 celestory window
04 infill arch window
05 existing concrete beam
06 metal panel
07 heat reflecting roof

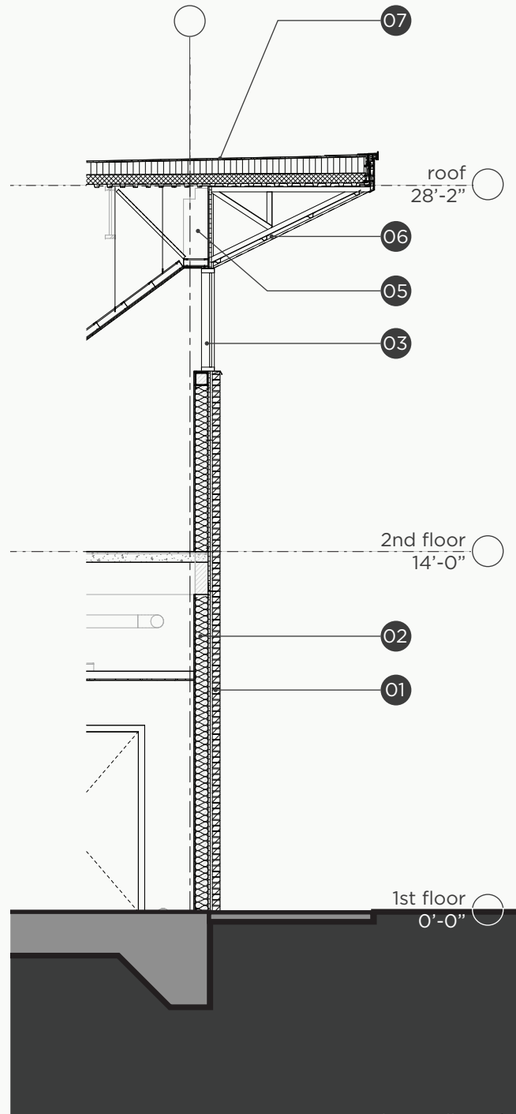
C fenestration diagram




perspective section B



C



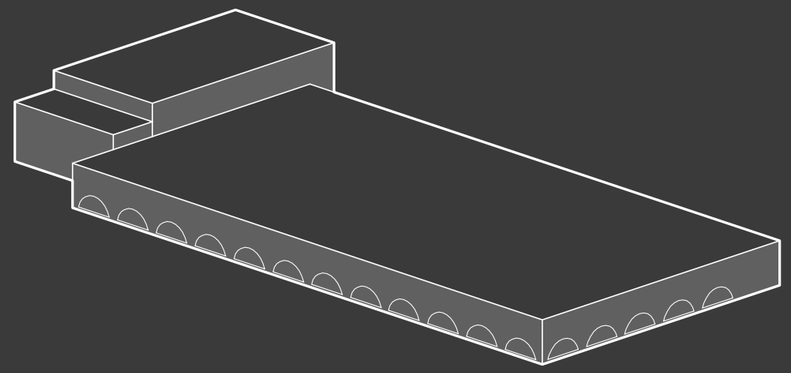

key wall section

# Physical Environment


campus view along cesar chavez blvd.

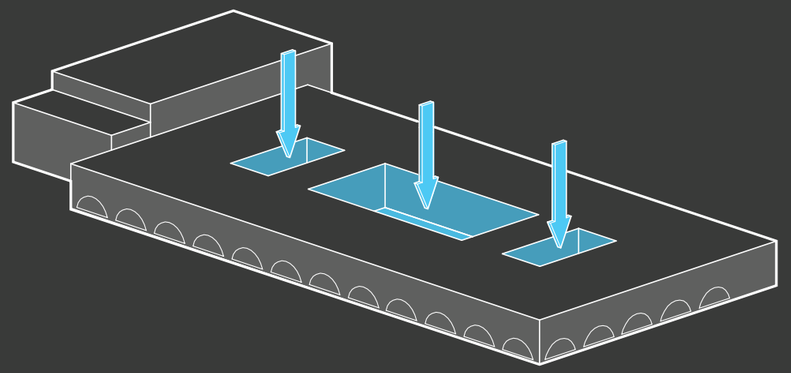
# A Transformed Physical Environment

The building is 450'-0" deep and 2-stories high, so getting daylight deep into the core of the building was a challenge. The existing arches on the first floor were infilled with windows and the existing upper '-0" of brick was removed to provide clerestories around the entire exterior of the building.  Punched openings in the roof and second floor slab area allow for light to infiltrate to the first-floor core of the building, providing natural light and views to 100% of learning spaces.



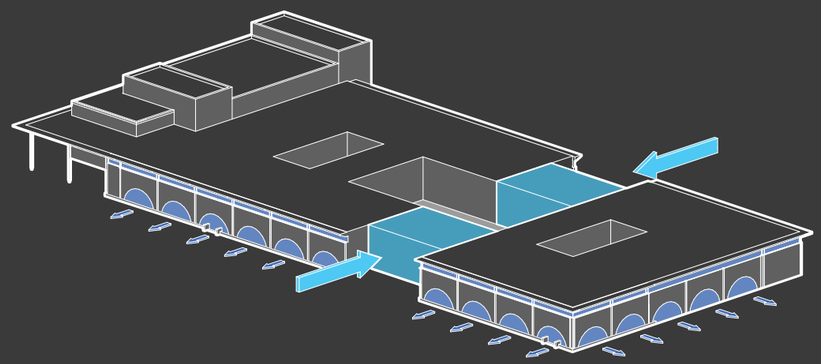
Ⓐ Existing building masing

existing building massing has minimal access to daylight



Ⓑ Cut openings in roof and second floor

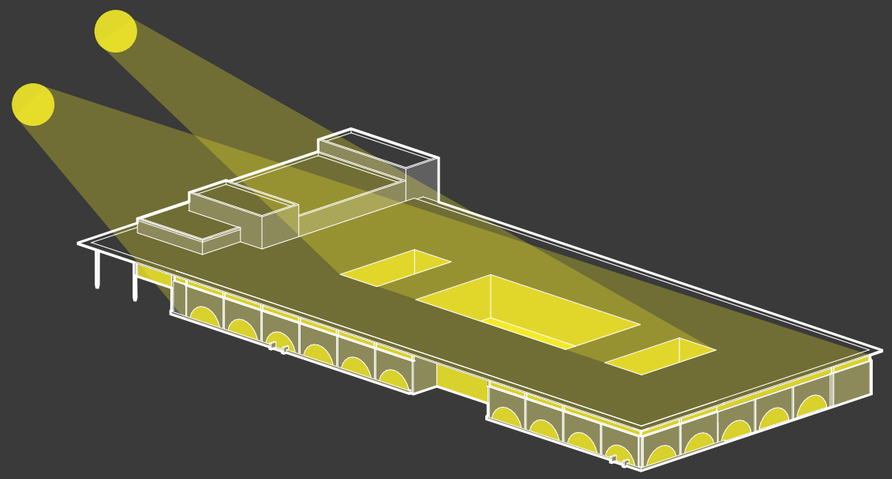
cuting out openings at roof level and introducing more skylights



Ⓒ Notch facade for entry

carving out entrances to connect community and campus

infilling arch windows to extend programs area, this also brings natural light to all interior classrooms



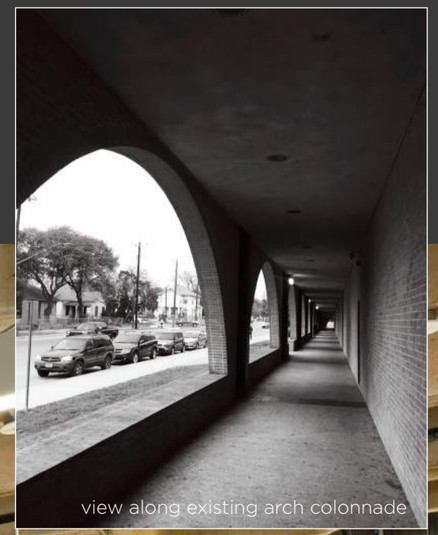
Ⓓ Remove top 8 ft of brick for continuous clerestory

with new skylights, exterior & interior celestories, and arch windows

the building form maximizes daylight exposure while provides quality lighting to all interior spaces

# Project Goal: Turn Problems into Assets

The existing arcades, while symbolically important, were blind spots for the school. They were unable to be easily observed by administrators, created areas where kids would loiter and didn't connect any two locations on the campus. In infilling the arcades, the building's functions are put on display for the community and more space was recaptured for the school. This additional square footage is what alled next generational learning spaces to be programmed into the building and distributed throughout the inside of the school while still meeting the desired classroom count.



view along existing arch colonnade

view from teacher break room

# Sustainability and Wellness

campus view along cesar chavez blvd.

# The Greenest Buildings are Current Buildings

## Celebrating Reuse

It has been well established that building re-use is one of the most ecologically sensitive approaches available – that is the foundation for its sustainable approach. However, the previous building was suffering from “sick building syndrome” – there was extremely poor fresh air input, ventilation and asbestos was present in the flooring, wall mastic and weather barrier. 100% of the asbestos in the building was safely removed and remediated, and the exterior weather barrier was sealed from the interior with a fluid applied membrane on the inside face of the brick and code-exceeding ventilation, humidity control and fresh air supplies were implemented. The project had minimal, but impactful landscaping - creating a “green corridor” in an otherwise bleak strip of San Antonio urban corridor. The landscape is all installed with no irrigation and uses regional, durable plants to align with their extremely minimal maintenance department’s capacity.

## Designing for Energy

The project sought to improve building performance despite not being able to replace the central plant until the next bond – it set a goal of a 60% EUI reduction from baseline and achieved just that. Very even daylighting reduced lighting watts/sf to below .5. Computer labs were "programmed out" of the initial building program at the suggestion of the design team - substantially reducing plug load. Newly insulated exterior walls and a fully insulated roof provided the strongest thermal break from the outside possible.

The project is setup for one more major upgrade: the mechanical system is “plug and play” for a new water cooled central plant currently being designed as a part of the next bond package. Once that is online, it is expected that the energy performance will approach a 72% reduction from baseline and will be able to be throttled more appropriately during off-peak hours.

## Minimizing Resource Drains

Approximately 4,000 tons of carbon were offset by reusing the majority of the exterior wall and the entirety of the concrete waffle slab structure. Single layer finishes reduced material waste. The waffle slab was exposed wherever possible to minimize the amount of new ceilings needed. By making its highest investment in the building envelope, the project is set for a very, very long life in its prominent position on the Westside of San Antonio.

## Being Stewards of Water

This project used a water cooled, closed-loop four pipe chilled water system with an existing central plant. It makes the best use of water as a “chilling and heating agent” as possible. Low-flow fixtures that exceed EPA’s water sense goals and irrigation free landscaping allow for a very minimal draw of potable water for the facility. The water usage comparing before and after the renovation was designed to be cut in half

3,920
METRIC TONS OF CARBON SAVED THROUGH REUSE

42kbtu
PREDICTED EUI

75%
SDA WELL LIT SPACES

view at central atrium above main entrance

# Project Goal: Build for A Second (and Third) Life

This project's budget was very small -  $200/sf. Despite this- the entire masonry façade was salvaged and reinforced with new renovation anchors and the entire roof deck was replaced. The result is a resilient shell capable of many more renovations beyond this one. The approach was to get the big performing systems right first – the wall, roof and MEP systems. The design is very deliberate and humble about a reduced interior pallete – drywall, vinyl tile and acoustical ceiling tile being the predominant material choices. Re-use was very important – the exposed waffle slab serving as the ceiling and floor, the existing aggregate floor was polished in the main corridor and 75% of the exterior wall remained in place, although brought up to code with modern insulation and waterproofing.

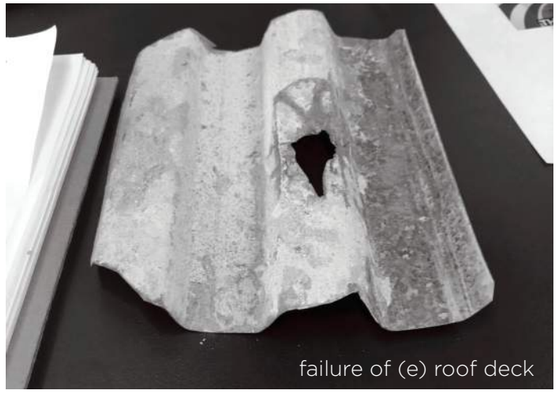

failure of (e) masonry

helical masonry anchors


installing anchors


new steel backup


failure of (e) masonry tie


failure of (e) roof deck


protective overhang, brick "cuts"

north facade along cesar chavez blvd.

# The Roof is An Opportunity

During the existing building assessment, it was determined the entirety of the 2 acre roof was failing and needed replacement.  This created opportunity to introduce light monitors in 3 locations and to incorporate clerestories that would bring light into the core of the building.  These clerestory locations were guided by the location of open collaboration and public spaces, where portions of the second-floor plate could be removed to allow for a visual and natural light connection between the first and second floor.

30%

WINDOW TO WALL RATIO

60%

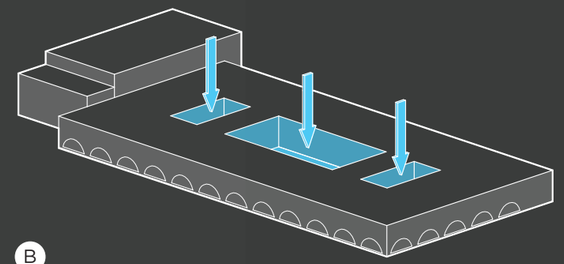
EUI REDUCTION OVER BENCHMARK


perspective section A

legend:

01 metal panel overhang
02 celestory window
03 existing brick facade
04 infill arch window
05 view to campus
06 heat reflecting roof
07 lightweight truss
08 skylight system
09 interior celestory
10 existing waffle concrete floor
11 floor plate cut
12 community murals

B roof cut-out diagram



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