LAKE RIDGE JUNIOR HIGH SCHOOL REPLACEMENT

100% Design Development
13 November 2018
KEY VOICES

- 6 Design Advisory Team Meetings
- 6 Educational Specification Meetings
- 3 Community Design Workshops
- 7 Building Tours
- Student Sessions
- Multiple user group meetings with stakeholders
## Project Goals

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TOP THREE GOALS

**LEARNER-CENTRIC ENVIRONMENT**
- Addressing the specific needs of the teenage learner (academically and emotionally)
- Interactive technology for communication, display, storytelling, presentations
- Gathering spaces, such as commons or forum, designed for use throughout the day
- Spaces for learning at different scales

**PROMOTE EQUITY**
- Diverse spaces support multiple learning styles
- Lunch environment that provides healthy socialization
- Whole school meeting area includes accommodations for special needs
- Gender inclusive restrooms

**HIGHLY SUSTAINABLE BUILDING**
- Reuse materials from old building in new construction
- Hybrid passive cooling
- Robust exterior envelope
- Target EUI: 22.5
- Ready for photovoltaic (PV) array
- Display energy use / generation
- Resilient systems
EXISTING SCHOOLS

WEST CAMPUS (BRYANT ES)

MAIN CAMPUS (WALUGA JHS)

JEAN ROAD

SW CENTRAL AVENUE

BRYANT ROAD

LIMIT OF WORK

EXISTING SCHOOLS
SITE PLAN
BUILDING ORGANIZATION

- Public use components located on east side close to drop-off, parking & fields: Administration, Gym, Library, Commons, Stage
- 1-story brick volumes with large windows and varied roof forms welcome learners & visitors
- 2-story wings with learning studios are clad in efficient cement board
- Courtyard organization creates a secure outdoor space at the center of the new school
- Administration has eyes on all arrivals
PROGRAM OVERVIEW

- 141,000 square feet
- 1,100 students
- Paired Learning Studios: exploratory classrooms
- Student Commons: dining, drama, library
- Active courtyard: science, art, music
- Physical Education: 2 gyms, covered play
• Administration has eyes on the all students arriving on foot, by bike, bus or car
• During student arrival: vestibule doors are unlocked
• During school hours: exterior vestibule doors are unlocked, interior doors are locked; visitors must enter the reception area to check in
• Security glass at outside perimeter of the building
SPIRIT OF THE SITE
EXTERIOR MATERIALS

LOW VOLUMES
WOOD

MEDIUM VOLUMES
BRICK & FIBER CEMENT

TALL VOLUMES
FIBER CEMENT
EXTERIOR MATERIALS

CONCRETE MASONRY - SERVICE

BRICK AT ONE-STORY VOLUMES

WOOD COLUMNS AND CANOPIES

FIBERGLASS WINDOW FRAMES

FIBER CEMENT AT TWO-STORY VOLUMES
EXTERIOR ELEVATIONS

WEST ELEVATION

SOUTH ELEVATION

EAST ELEVATION

NORTH ELEVATION

MATERIALS

BRICK
CMU
FIBER CEMENT
GLASS
• Secure environment for outdoor learning & the teenage learner’s social-emotional development
• Secure access for art, science, music performances, eating & reading
• Provides a breath of fresh air when transitioning between classes
• Provides access to nature and stress relief
• Supports orientation when navigating the building
COURTYARD

VIEW TOWARDS EAST
COURTYARD

VIEW TOWARDS SOUTH
INTERIOR FINISHES

- mass timber ceiling
- reclaimed fir benches
- CMU
- tack board
- wood panel and casework

- exposed concrete
- bathroom floor tile
- resilient floor
- carpet
- accent color
- whole tree columns
• Low-ceiling volume with wood beams provides small group seating option for eating & learning
• High-ceiling volume with wood trusses serves large group gatherings during lunch & performances
• Connection to courtyard provides for secure outdoor eating & learning
• Small group study area is within sight of the librarian
• Security zoning for after hours events
COMMONS

VIEW TOWARDS COURTYARD
COMMONS

VIEW TOWARDS STAGE
• Quiet reading area with book stacks & work tables

• Adjacent common area adds space for small group work, gaming, independent research & presentations

• Flexible furniture allows this room to be easily re-configured & used for after-hour events

• Covered outdoor area in the courtyard provides additional study & reading opportunities
LIBRARY

VIEW FROM ENTRY TOWARDS COURTYARD
• Loop organization allows options to avoid potential confrontations
• Multiple circulation options minimize crowding
• Loop exposes learners to all academic activities & stimulates teenage curiosity (blue symbols)
• Courtyard encourages taking shortcuts & fresh air when transitioning between classes
• Views into courtyard support user orientation when navigating the building
• Small group work areas provide alternative learning settings: seating steps, meeting rooms, cafeteria and library (purple symbols)
CIRCULATION

STAIR SEATING AREAS AT EACH CORNER OF LOOP
CIRCULATION

ENTRY INTO PAIRED LEARNING STUDIOS
Learning Studios are inspired by Ed Spec goal: “every classroom should be a STEAM / Maker space”

The extra-large footprint supports innovative learning by providing more room to explore within the classroom.

Tools for learning include: sinks, white boards, extra power, movable furniture & a flexible central space.

Visual & physical connection between Learning Studios is provided by sliding glass doors.
LEARNING STUDIOS

LARGER LEARNING STUDIO, FACING COURTYARD
Fall 2018: LRJ teachers have week-long “stay-cations” in a pair of classrooms, testing scale & furnishings

Some teachers utilized the space to team teach two classes, allowing students to rotate through a variety of activities

Positive feedback on the variety of seating types, flexible mobile furnishings & flip-top marker board tables

Study continues all year to inform building design and learning practices in the new Junior High School
Traditional HVAC

Full Heating and Air Conditioning with VAV Packaged Rooftop Units

Traditional HVAC systems are provided where spaces have:

• Limited access to operable windows
• Acoustic sensitivity to operable windows
• Active metabolic rates
• Large group assembly gathering

Hybrid Passive Cooling

Central Dedicated Outside Air (DOAS) Ventilation with partial heating & cooling, supplemented by night flush and passive cooling

Occupant engagement “trimming the sails”:

• Opening & closing windows when outdoor conditions are ideal
• Opening stack exhaust dampers per indicator sign
• Turning on ceiling fans to assist with cooling
• Closing window shades as needed
**HYBRID PASSIVE COOLING**

**Occupants Engaged with Tunable Building**

**VENTILATION SYSTEM**

Dedicated 100% Outside Air System (DOAS)
- Provides all required ventilation through filters
- Night Flushing to pre-cool thermal mass
- Heat Recovery Ventilators capture energy from exhaust
- Partial heating & cooling in rooftop units

**INTERNAL HEAT GAIN**

Students & Teachers
Individual Tablets & Displays
Lighting & Equipment
Electric Cove Heaters

**THERMAL MASS**

Exposed concrete slabs
Exposed CMU shear walls

**PASSIVE COOLING MODE**

Indicator sign for occupants to:
- Open windows
- Activate stack exhaust dampers
- Turn on ceiling fans

**ROBUST ENVELOPE**

R-60 Roof Insulation
R-30 Wall Assemblies
R-5 Under-slab Insulation
High-performance Fiberglass Windows
Improved Air Tightness Testing

**EXTERNAL**

Sun Shades
Open Windows

**Lighting & Equipment**

Electric Cove Heaters
MUSIC SPACES

- Acoustic isolation: separated from classroom wings
- Taller volumes support appropriate acoustics for music rehearsal
- Practice rooms and program office to support music program
- Instrument storage at hallway for simplified access
- Access to Central Avenue for transportation to off-site performances
• Simple materials
• Seating capacity for all-school gathering - 1,100 students
• Supporting 4-5 PE sections every period to meet State PE requirements
• Connected spaces provide covered running loop
- Restrooms are gender inclusive & provide two entry/egress options
- Restrooms are accessible for commons and gym events, and can be secured separately for after hours events.
- Gendered locker rooms offer private changing stations and showers
- Locker rooms can be supervised from the PE office
- Additional single-occupant changing & shower rooms provided nearby
RESILIENT STRATEGIES

Community Resource

**Structural Capacity**
Entire building designed as Seismic Risk Category IV Structure with enhanced Lateral Bracing

**Passive Survivability**
Robust Building Envelope and operable windows allow school to be habitable without any utility power

**Community Shelter**
Gyms, Commons, Kitchen, Locker Rooms
- Back-up generator can support limited loads in these spaces
- Back-up ventilation at Gyms
- Passive ventilation at Commons
- Water connection for pumper trucks for Lockers & Kitchen
- Select Kitchen equipment (all-electric) could be designed to run off generator or future battery storage system
BUILDING EFFICIENCY

Low-Energy Systems

Highly Efficient Systems:

• Robust building envelope maintains comfortable spaces
• Durable passive systems
• Fewer active systems; requires less maintenance
• Heat recovery ventilators at hybrid passive cooling zones
• Optimized daylighting
• All LED light fixtures, occupancy sensors
• All-electric equipment allows school to become powered entirely by renewable energy
• Low-flow plumbing fixtures
• Options for solar PV panels
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Thank You