Mission Bay School

San Francisco Unified School District

Concept

The Mission Bay School creates a heart and new center of community life within the emerging San Francisco Mission Bay neighborhood to bring together families, educators, and community institutions within a vibrant and growing hub of activity. DLR Group's design for the space achieves San Francisco Unified School District's (SFUSD) vision through equity, energy performance goals, and community values.

Project Goals

- Pre-K - TK-5 grade level integration
- Integration of Universal Design for Learning (UDL) model
- Outdoor play-based and nature-based learning spaces
- Indoor/Outdoor connections
- Safe and secure campus
- "Linked Learning Hub" to support career path-ways
- District-wide staff & faculty training facility

Outcomes

This campus is a long anticipated missing puzzle piece to both the Mission Bay neighborhood as well as SFUSD. Mission Bay School will serve all of the District, providing a safe and secure Pre-K-TK-5 campus for surrounding residents, a STEM-focused linked learning hub for District high school students, and a dedicated space for the District's educator professional development. This campus will truly serve as a heart for the District and future generations.

Budget / Project Data

Completion Date: est. 2025

Construction Costs: $95M

Building Area: 81,810 SF

Site Area: 2.5 acres

Enrollment Capacity: 550 PreK-TK-5

Project Goals

- Pre-K-TK-5 campus with fully integrated UDL model and District-wide Professional Development
- Fourth floor “Linked Learning Hub” for High School Student throughout the District

Physical Environment
Contextual View

Located on Block 14 in Mission Bay, the school site is a much needed piece of the puzzle for the community which has lacked an accessible public school for residents. The need for an elementary school in this growing community has been decades in the making.

Nextdoor to UC San Francisco and Kaiser Permanente, the site is also just blocks from the Chase Center where the Golden State Warriors play. The context is a diverse community of housing, social places, work, eat and play.

The Mission Bay School embraces the community, complements the surrounding architecture and will remain a timeless structure for years to come.

Site Context Diagrams

1 Land Use
2 Emergency Service
Communal Spaces
3 Sound Transmission
4 Public Transit/Circulation
5 Schools, CCA and UCSF

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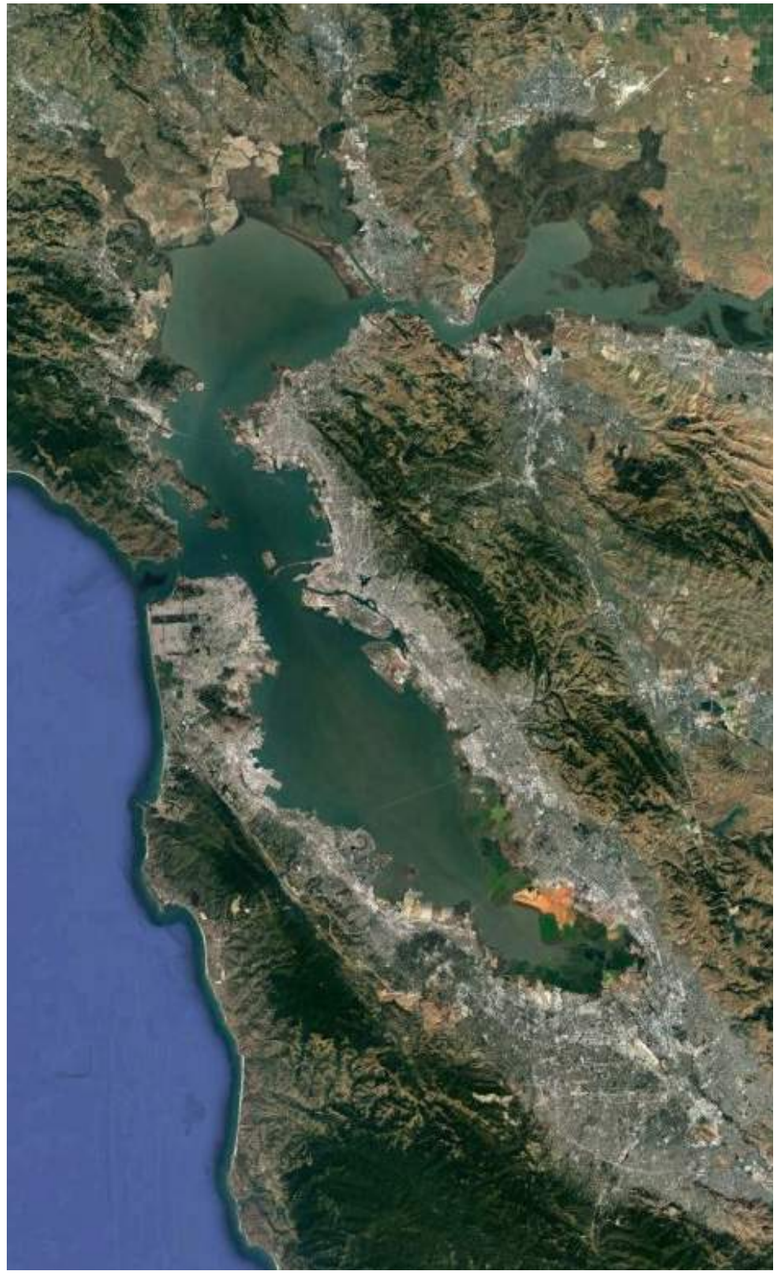
School & Community Engagement

The Mission Bay School is a pioneering project for the District in addressing equity, social justice and a model for a long-range pedagogical transition to more flexible project-based learning through the Universal Design for Learning (UDL) model.

The project is being delivered under a stipulated sum, design-build delivery method, where the architect was given criteria for the project at a schematic design level. Our goal was to maintain the concept and integrity of the critera design, while bringing it in line with budget constraints and a rapidly escalating construction market amid the COVID-19 pandemic.

Since maintaining authentic partnerships is essential to achieving the vision for student success for the District, we met with stakeholders to validate our proposal and collaborated during design development. The final design is the epitome of a project which maximizes a constrained site; bringing together a community and District resource for all ages.

Surrounding Environment



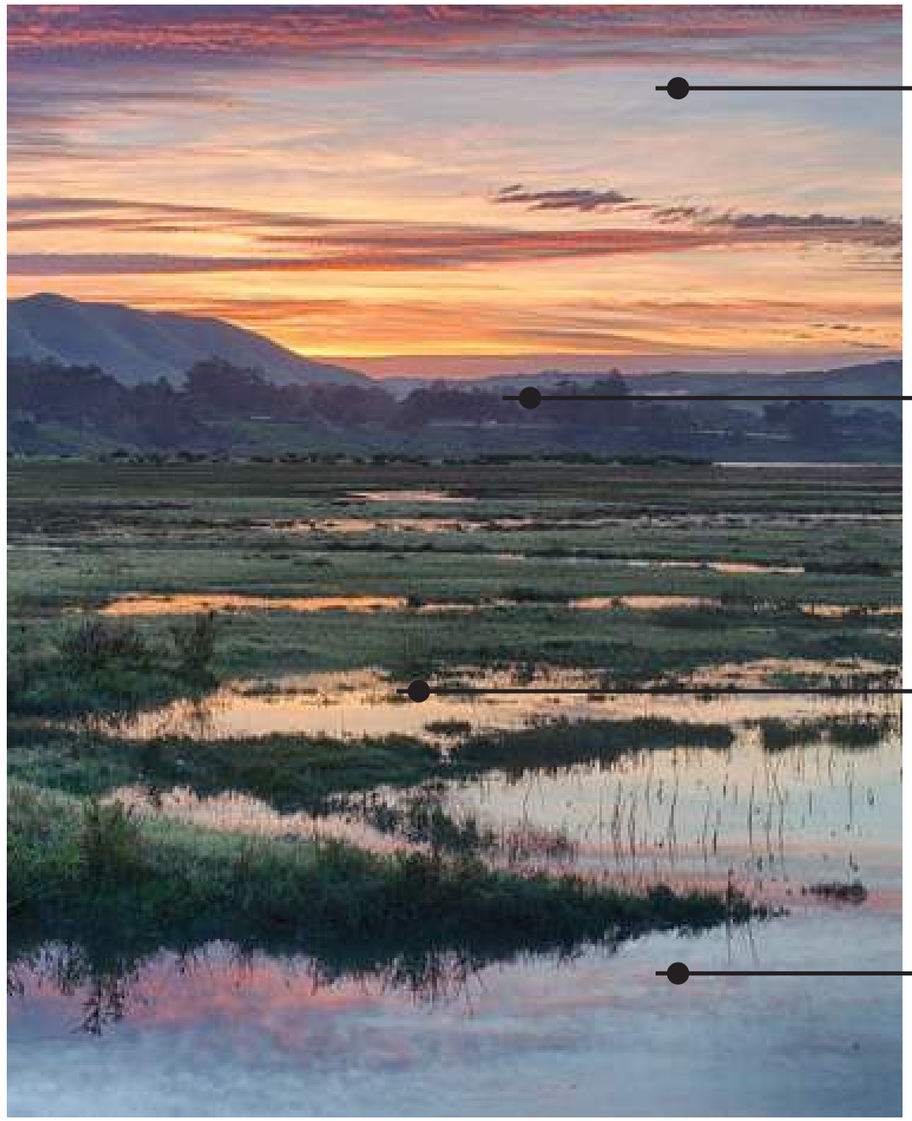
Mission Bay, while an industrial area now, used to be a large estuary. Estuaries form when a freshwater river meets the ocean, creating one of the most productive natural systems on the planet. They are a combination of freshwater marsh, saltwater marsh, tidal mudflats, and shallow bays and are the ecological protection of the coast. The many different layers created by the tides coming in and out allow for many species of plants and animals to thrive. Estuaries have water rich in nutrients making them the ideal nursing ground for young marine life.

San Francisco and Mission Bay have a rich history that has transformed through the years. From animal habitats, tribes like the Ohlone cultivating the estuaries, to the industrial movement, this area has shown growth and opportunity.

Interior Concept

Nurturing Grounds

- History of the estuary in Mission Bay, used in the color and graphics with the learning communities and studios
- The striking views that are experienced in these estuaries create rhythms of colors and textures that flow and reflect throughout its surroundings
- Zones are defined to create unique experiences for all students and faculty



LEVEL 4
LEARNING HUB

Learning Community

LEVEL 3
3RD + 4TH + 5TH GRADE

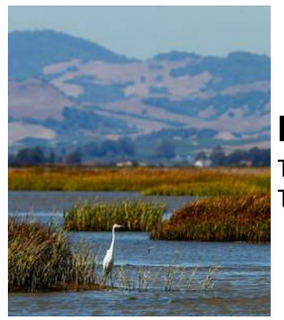
LEVEL 2
KINDER + 1ST + 2ND GRADE

LEVEL 1
PRE-K + TK

Design Pillars

NURTURING
SAFE SPACE FOR PERSONAL GROWTH, LEARNING, AND DISCOVERY

FLUID
PROMOTES FLEXIBILITY



ECOTONE
TRANSITION BETWEEN TWO COMMUNITIES

Surrounding Environment

Looking to history, San Francisco is an area in which every species thrived. The structure of the estuary, created by the changing tides, allowed for it to be a habitat which nurtured all. They were the nursing grounds for young life, just like Mission Bay.

Mission Bay's design looks to the estuary, using its ecology to create an enriching ecosystem where every student can grow and be their best. The layering which allows for many species to flourish in the estuary, inspires the design of different zones and practices to accommodate all. The plan is kept fluid, adaptable and re-configurable to best fit their needs and the evolution of learning. The building uses finishes that reflect rich natural colors and textures to define zones and create a unique experience for all students and faculty.

Physical Environment

Sustainability/High Performance

SFUSD set an energy performance goal of 20kBtu/SF and is currently tracking a design EUI of 8 kBtu/SF. Energy modeling has been performed at all phases of the project design to inform design decisions and meet the performance goals.

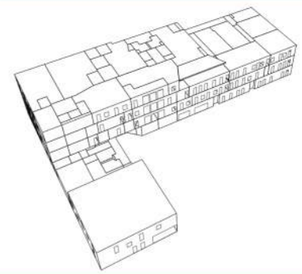
Sustainable Design Strategies to Achieve EUI of 8 kbtu/SF/year:

- Average installed lighting power density (LPD) of 0.4 W/SF
- Average plug load of 0.75 W/SF
- Lighting controls to turn lights off when spaces are not in use (occupancy sensors)
- Daylight harvesting controls in perimeter corridors
- Window-to-Wall ratio of 30% to include connection to outdoors while controlling heat gain and heat loss
- R-13 walls and R-30 roof
- Glazing U-value of 0.36 and SHGC of 0.25
- Using perimeter corridors with internal glazing to classrooms on west façade to reduce solar gain and visual glare and provide a passive thermal “buffer” while still enabling views to outside for classroom occupants.
- The Dedicated Outside Air System with Energy Recovery serves all areas and densely occupied spaces will have Demand Controlled Ventilation based on CO2 monitoring.
- Air source heat pump for multipurpose spaces, cafeteria, and kitchen.
- High-efficiency heat recovery type Variable Refrigerant Flow System.
- All Electric Equipment, including Kitchen
- Operable Windows to take advantage of the Bay winds
- Solar Array
- Sustainable Materials
- Reclaimed Water Use in the Building
- Native and drought-tolerant plant species throughout the campus
- Bio-retention areas

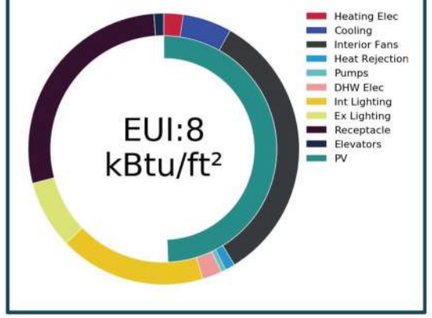
Annual Energy Consumption (kBtu/ft²/year) & CO2 KgCO2/ft²/yr

Energy End Use	Site Energy	Source Energy	CO2 Emissions
Heating Fossil Fuel	0.0	0.0	0.0
Heating Electricity	0.4	1.2	0.0
Space Cooling	1.0	3.1	0.1
Fans Interior	5.7	18.0	0.7
Heat Rejection	0.2	0.7	0.0
Pumps	0.1	0.4	0.0
DHW Fossil Fuel	0.0	0.0	0.0
DHW Electricity	0.4	1.4	0.1
Interior Lighting	3.0	9.6	0.4
Exterior Lighting	1.4	4.3	0.2
Receptacle	4.8	15.1	0.6
Data Center	0.0	0.0	0.0
Cooking Fossil Fuel	0.0	0.0	0.0
Cooking Electricity	0.0	0.0	0.0
Elevators & Escalators	0.2	0.7	0.0
Refrigeration	0.0	0.0	0.0
Process	0.0	0.0	0.0
TOTAL (ex renewables)	17	54	2

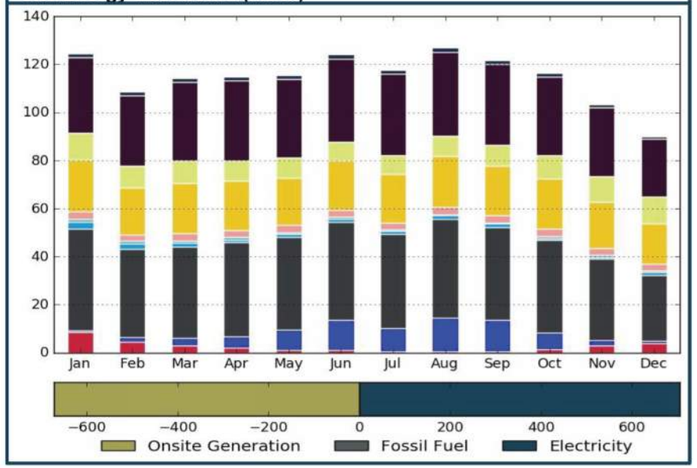
Project Viewer - 3D Model



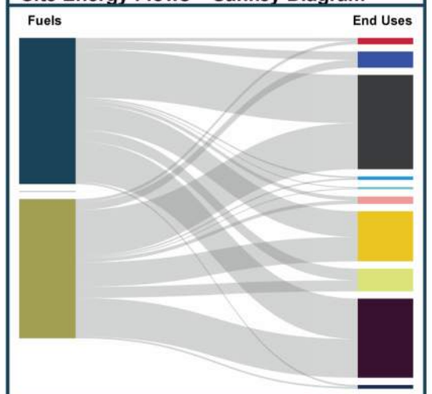
Site Energy Use Intensity



Site Energy Dashboard (MBtu)



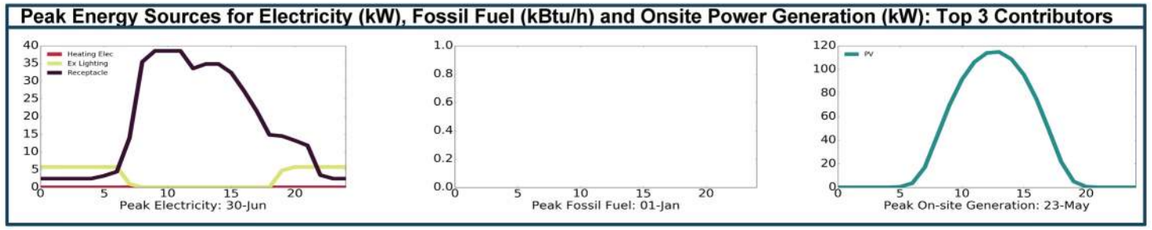
Site Energy Flows – Sankey Diagram



Annual Fuel Costs and Peak Demands

Fuels	Cost ($)	Peak Day	Peak Time	Peak Demand
Electricity	14,476.00	30-Jun	14:00	208.0 kW
Fossil Fuel	0.00	01-Jan	0:00	0.0 kBtu/h
Total	14,476.00	01-Jan	0:00	

Peak Energy Sources for Electricity (kW), Fossil Fuel (kBtu/h) and Onsite Power Generation (kW): Top 3 Contributors



Site Plan

The building was designed to embrace the community and open up to northeast where the majority of the immediate housing is along with the green belt/park extension. The play yards, open/event area, the garden and the multipurpose room act as a welomeing community center, much needed by the neighborhood. Working on a tight 2.5 acre site, the building was designed to minimize its footprint on the site and act as a barrier to the highway to the west.

- Main Entry is a secured, single point of entry
- Separate play yards for the different grade levels
- Outdoor play-based and nature-based learning spaces
- Indoor/Outdoor connections
- Two entries into the “Heart”

First Floor Plan Key

1 the “Heart”/Lobby
2 Administration
3 Multipurpose Room
4 Library/Media
5 Creative Endeavor Library
6 Multi-Stall All Gender Restrooms
7 Pre-Kindergarten Studio
8 Transitional Kindergarten Studio
9 Pre-Kinder/TK SDC Studio
10 Observation Room

Floor Plans

Legend
K - Kindergarten Learning Studio
1 - First Grade Learning Studio
2 - Second Grade Learning Studio
K-2 - SDC Learning Studio
3 - Third Grade Learning Studio
4 - Fourth Grade Learning Studio
5 - Fifth Grade Learning Studio
3-5 - SDC Learning Studio

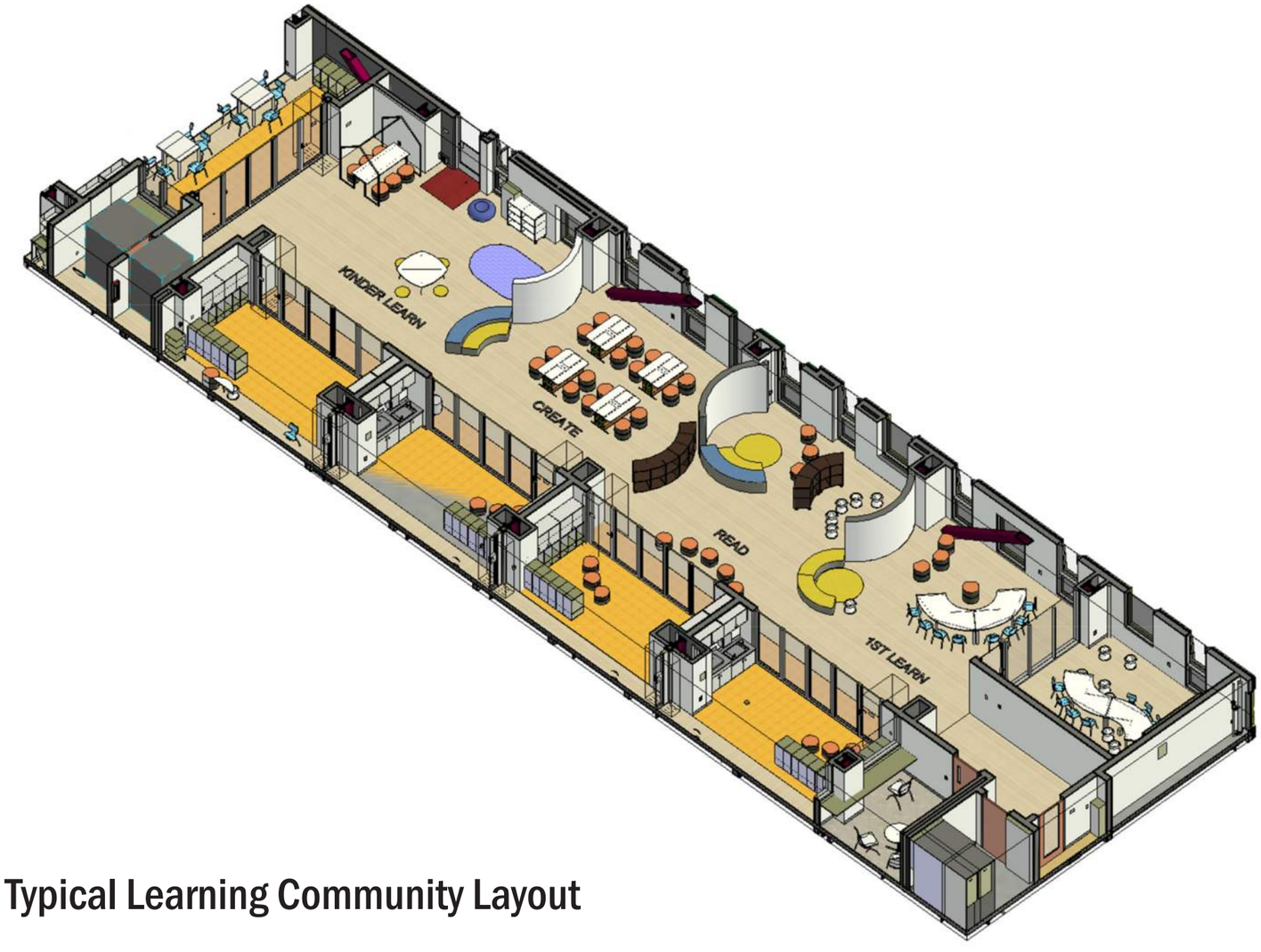
Professional Development
O - Observation Room
S - Staff Collaboration/Breakroom

Second Floor Plan

Third Floor Plan

Educational Environment

The Elementary School utilizes the Universal Design for Learning (UDL) learning model, and the challenge was to create a facility which supports teaching and the learners of the UDL model. First floor learning environments have direct connections to outdoor play-based and nature-based learning spaces to meet all early learner's sensory needs, effectively making outdoor learning a fluid extension of the learning studio.



Typical Learning Community Layout


Learning Studio

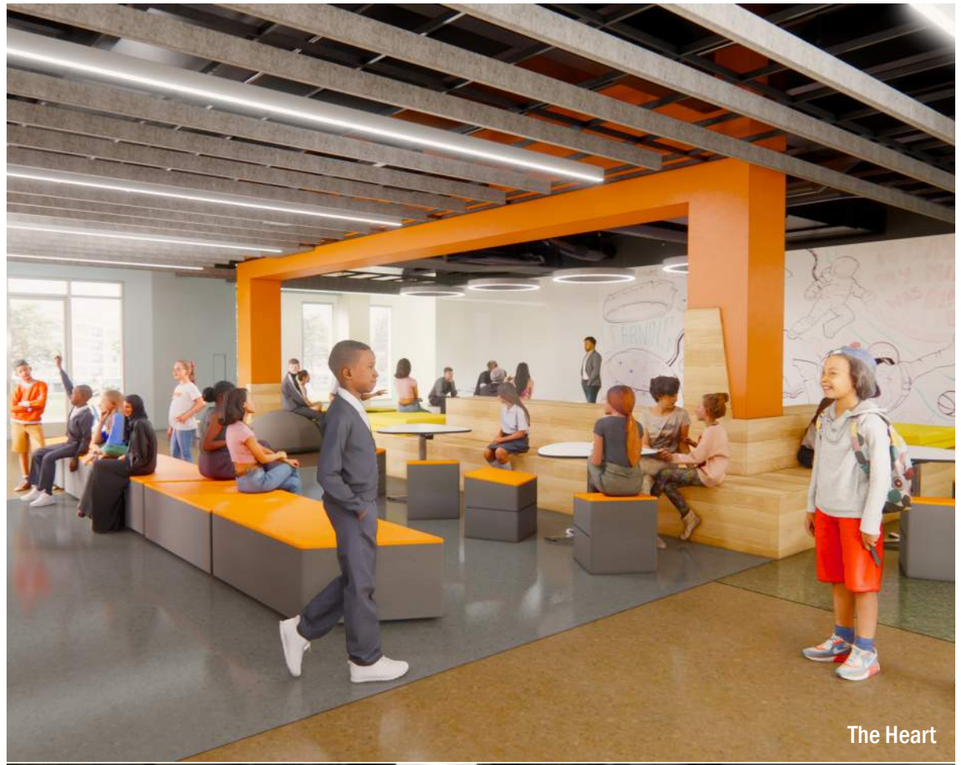

Learning Community

Learning Community

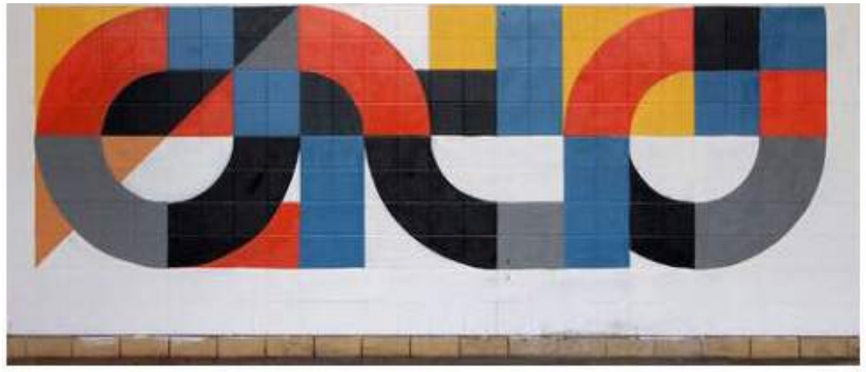
Educational Environment

School at the heart of its community, with access and equity at the core of student learning. The first floor “Heart” space brings the community together, the students and staff for events, learning, and collaboration. The “Heart” is the public space everyone enters from each side of the building, accesses the administration, the library and all the floors. The design will incorporate Public Art and Graphics that involves students as way for the community to engage the process and forge a personal connection to their new building. A reflection of Mission Bay in and out, the building will be timeless and compliment the diverse architecture and community of the neighborhood.

The second and third floors house learning studios for grades 1-5 adjacent to breakout rooms and learning communities, zoned to foster collaboration and innovation across disciplines including students with faculty, offering choices on how and where to learn. Transparency and access between learning studios and the learning communities are key to the UDL success. The plan is kept fluid, adaptable and re-configurable to best fit their needs and evolution of learning.



The Heart



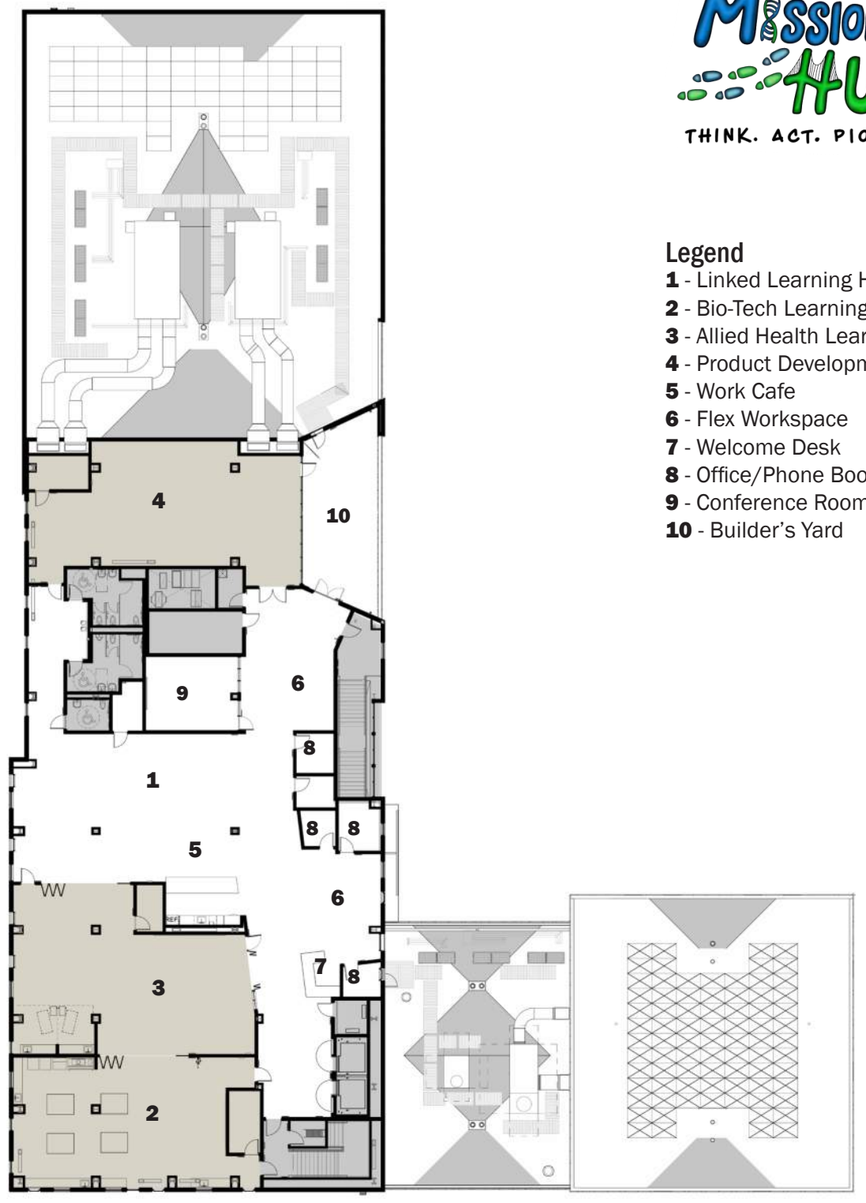
Multipurpose Room

Linked Learning Hub

The Linked Learning Hub on the fourth floor will be a one-year advanced bridge for high school students in allied health, biotechnology, and other STEM-aligned fields. The Mission Bay Hub will be adjacent to a significant medical hub of UC San Francisco and Kaiser Permanente as partners, where students will be supported as agents of change and take on real world challenges.

The space will also include a Professional Development program as a resource for teacher and staff training which will include observation rooms which provide the opportunity to observe and learn methods of engaging students in active classrooms.

Mission Bay - the Ulitmate Classroom



Possible Fourth Floor Plan

Legend

1 - Linked Learning Hub Heart
2 - Bio-Tech Learning Studio
3 - Allied Health Learning Studio
4 - Product Development Learning Studio
5 - Work Cafe
6 - Flex Workspace
7 - Welcome Desk
8 - Office/Phone Booth
9 - Conference Room
10 - Builder's Yard

Public Art

The design will incorporate Public Art that involves students as a way for the community to engage the process and forge a personal connection to their new building. Areas on the interior, west and east sides of the building have been identified for art.

Art

Art

MISSION BAY SCHOOL

Art

Art

Results of the Process & Project

The plan for the Mission Bay School is kept fluid, adaptable and re-configurable to best fit the needs and the evolution of learning which is setting a new precendent in San Francisco Unified School District. The building uses finishes that reflect rich natural colors and textures. inspired by the surrounding nature, to define zones and create a unique experience for all students and faculty.

The design exceeds expectations in sustainability where the District's EUI standard was set at 20 kbtu/SF/year, but is currently tracking at an EUI of 8 kbtu/SF/year. The campus will successfully incorporate a TK-5 elementary school with an additional floor for a Linked Learning Hub within the District's budget and site constraints. The result will be a building that expresses the joy of learning with dynamic architecture which enhances the prominence of the areas of public art to create a vivid and welcoming message to the community that this is their school, the last piece of the puzzle in the new, diverse, and thriving Mission Bay neighborhood.