

CHILD AID PAPUA

The New "Blue Ocean School" in Sawinggrai

PROJECT DESCRIPTION & BUDGET ESTIMATE

March 2024



www.ChildAidPapua.org
Education - Conservation - Health Care



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THE ENVIRONMENTAL SCHOOL IN RAJA AMPAT

At Child Aid Papua we believe that every child has the right to education and healthcare, regardless of who they are, where they are, or how much money their family has. We are committed to providing children living in the remote provinces of West Papua the opportunity to improve their knowledge of the world around them and to gain skills for lifelong learning.

Child Aid Papua is a non-profit, public benefit organisation based in Switzerland, working exclusively in Raja Ampat, Indonesia.

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PROJECT TEAM



JONAS MÜLLER

Founder
Child Aid Papua

Jonas works on site and coordinates processes around Child Aid Papua



MAYA PUSPA DEWI

Founder
Child Aid Papua

Maya has been working with Jonas since the beginning and is the founder of the Foundation and a teacher. She also handles all legal matters in Indonesia.



GARRETT LORD, AIA, M.ARCH

Architect
Journeyman International

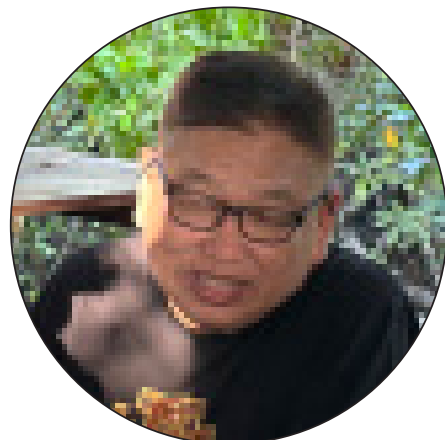
Garrett is a licensed architect in the U.S. He brings over 12 years of experience in designing public buildings including education projects.



TOMMY

Construction Supervisor

Tommy brings decades of leading built projects in Raja Ampat and around West Papua. Much of his work focuses on modern building techniques to provide long-lasting structures.



ARIS

General Contractor

Aris will provide the logistics and building material support and procurement.



ALAND

General Contractor

Aland will be working with Garrett to develop the school through the design process.

SITE VISIT



In person project team coordination meetings. Throughout the week of on-site work, multiple coordination and design review meetings took place to establish construction methods and logistics.



Formal presentations given to the local community and regional government provided transparency on the project scope and development.



Interactive sessions with students allowed them to be involved in a the school that will ultimately be where they learn

PROJECT LOCATION

SCHOOL LOCATION



SITE PLAN

WORK AREA FOR CARPENTRY, FURNITURE, AND CONSTRUCTION. (CURRENTLY COVERED BY A CANOPY, AND POWERED BY THE MAIN BUILDING SOLAR SYSTEM)

FUTURE SOLAR ON NEW SCHOOL WILL BE INDEPENDENT FROM CURRENT SOLAR SYSTEM

EDGE OF COAST LINE

NEW EDUCATION CENTER

TEACHER HOUSING (UNDER CONSTRUCTION)

LOCKABLE STORAGE ACCESSIBLE FROM EXTERIOR

LAUNDRY, TOILET, AND SHOWER CURRENTLY POWERED BY MAIN BUILDING

GRAVEYARD

NEW BUILDING WILL HOUSE GIRLS DORMITORY

FUTURE JETTY TO CONNECT TO TEACHER HOUSES

GRAVEYARD

CLASSROOM

CONCRETE PLAY AREA (COURTYARD) SLAB ON GRADE

1.3 M WIDE JETTY (TYP)

OFFICE

EQUIPMENT AND STORAGE

MANGROVE CANOPY

CLASSROOM

AFTER TEACHER HOUSES ARE FINISHED, THIS WILL BE USED AS THE BOYS DORMITORY

MAIN BUILDING AND CLASSROOM

(6) 2,200L WATER TANKS

EDGE OF COAST LINE

2M WIDE JETTY

BOAT HARBOR

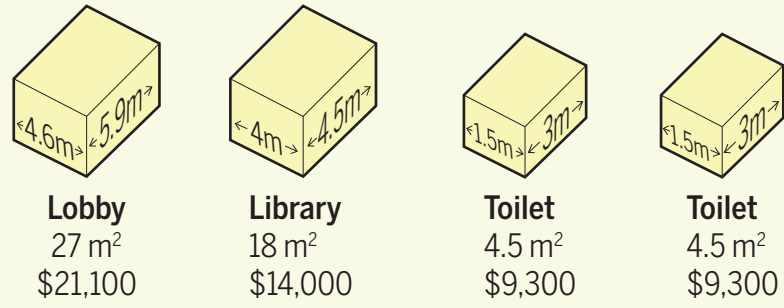




COST ESTIMATE BASED ON PROGRAM

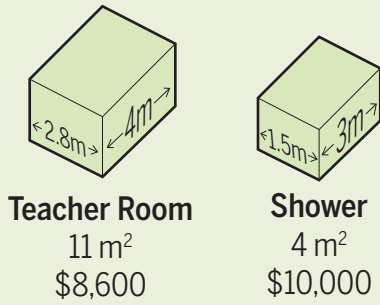
Cost Estimate Date 31-01-2024
 Cahaya Anak Papua
 Journeyman International
 Prepared by Garrett Lord, AIA

Public Space



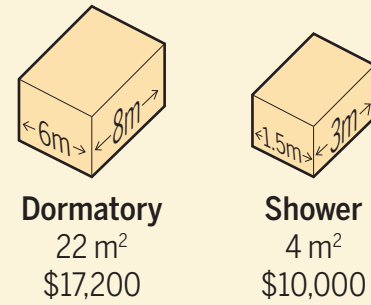
Total Public Space Estimate
 54 m²
 \$74,000

Teacher Accommodations



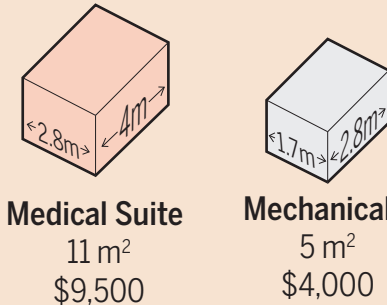
Total Teacher Estimate
 54 m²
 \$18,600

Student Accommodations



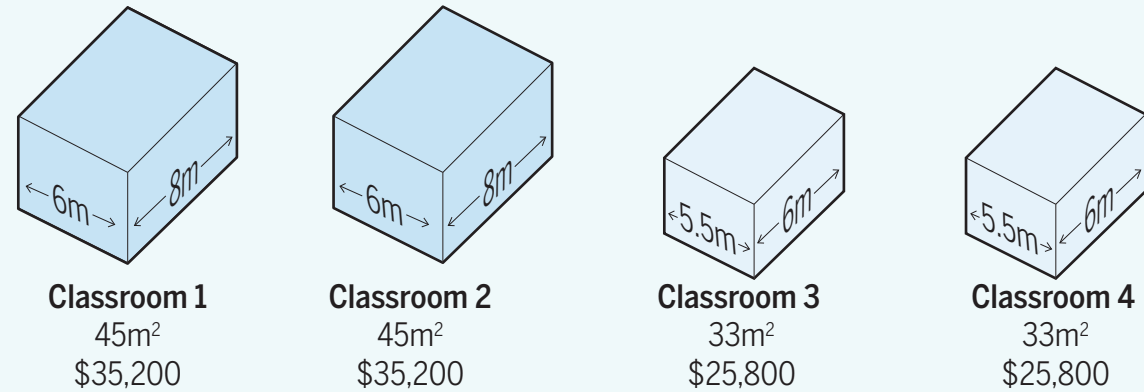
Total Student Estimate
 54 m²
 \$27,200

Ammenties and Support



Total Ammenities Estimate
 54 m²
 \$13,500

Academic Program

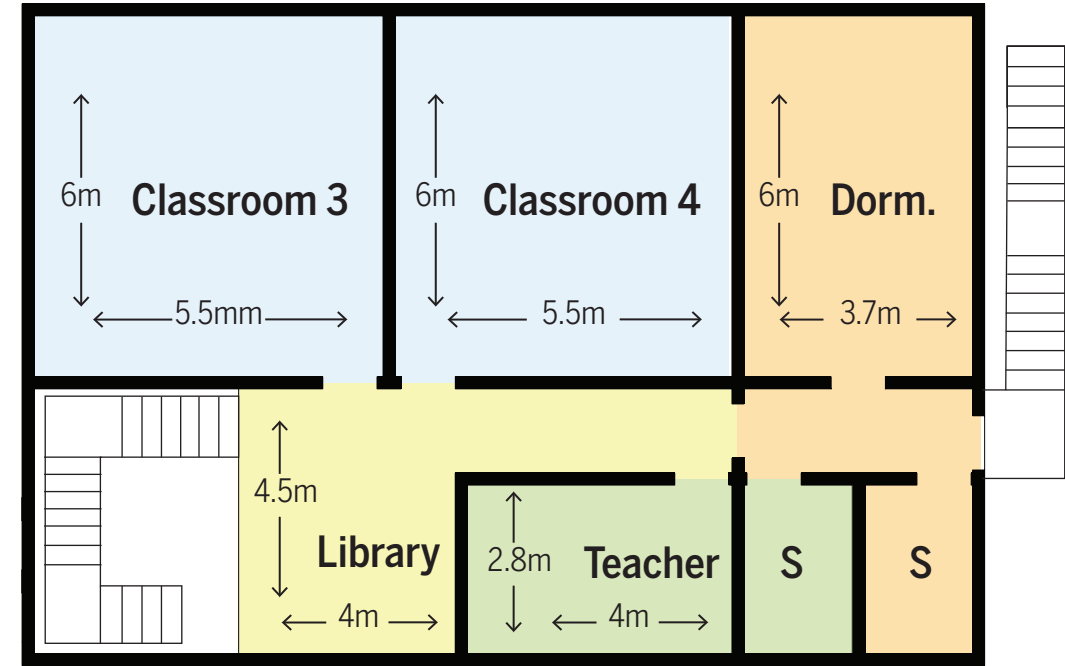


Total Academic Estimate
 54 m²
 \$122,000

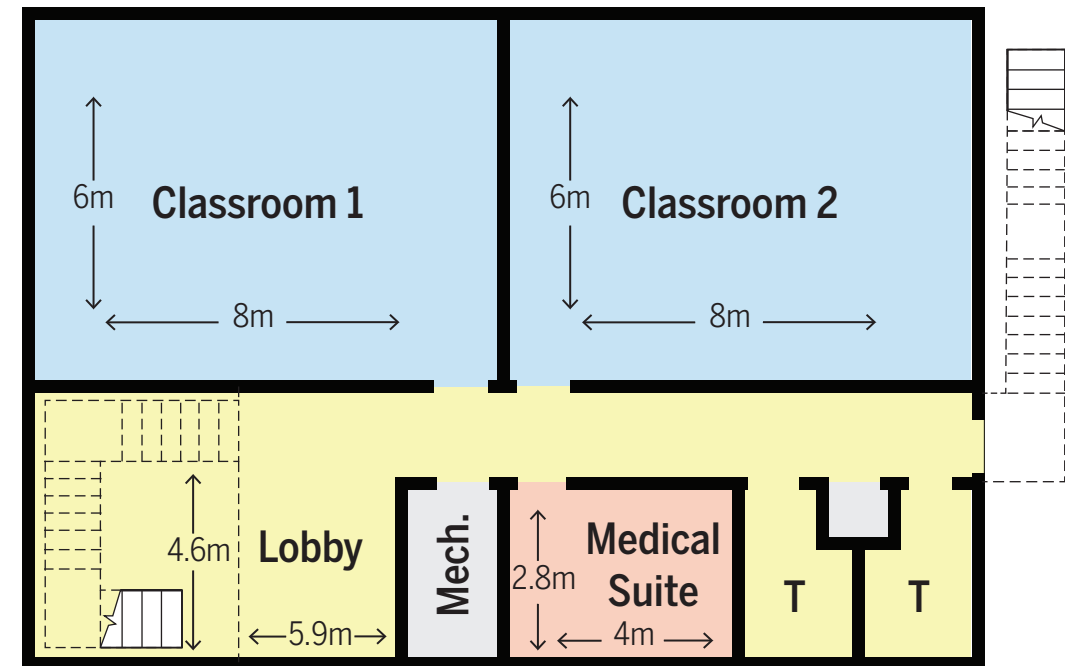
Program Cost	Work Preparation	Building Plumbing	Total Building Cost
\$255,300	+ \$17,300	+ \$23,400	+ \$296,000

SCHEMATIC FLOOR PLANS

Cost Estimate Date 31-01-2024
 Cahaya Anak Papua
 Journeyman International
 Prepared by Garrett Lord, AIA



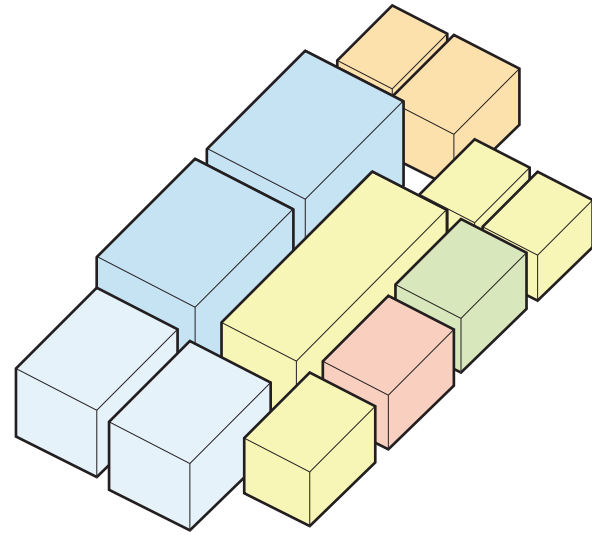
UPPER LEVEL



▲ Main Entrance

LOWER LEVEL

BUILDING MASSING



Initial studies focused on providing a single story layout with a central lobby space flanked by the classrooms and public amenity program.

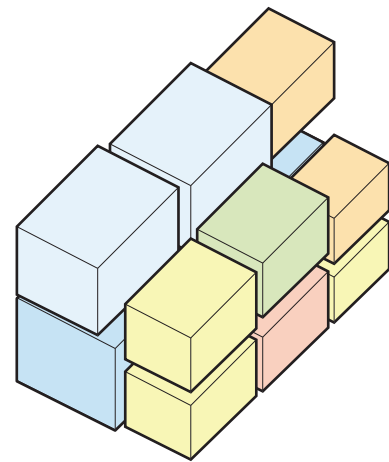
The major concern with this layout proved to be the building footprint exceeded the allowable lot size provided (15m x 20m) with single story structure exceed lot size. Additional concerns arose for the dormatory and the lack of privacy if on the ground floor, adjacent to public space.

Arranging program on two floors supports all program elements without compromising space requirements within the classrooms. The other advantage is a smaller footprint and simplified structure

This stacked organization also provides an exciting opportunity to create a more vertical lobby with a mezzanine style library. By locating the Lobby at the corner of the building lots of natural light and ventilation can enter the space.

Additional benefits are provided by stacking the classroom blocks. The structure can be aligned and allow a corridor off the lobby, organizing the classrooms on one side and the amenity space on the other.

The introduction of a hallway also provided the ability to separate the dormatory and associated shower rooms from the rest of the program.

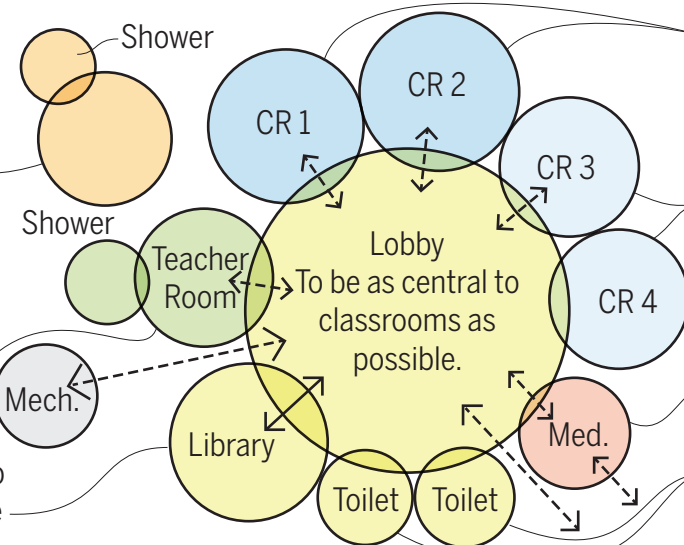


PROGRAM DIAGRAM

Dormatory to be seperated from public and educational spaces with direct access to shower and exit

Teacher room to be located adjacent to public space, and maintain visibility into the Library. To have access to shower

Library to be located within Lobby as an open space, but to be secluded from the entrance



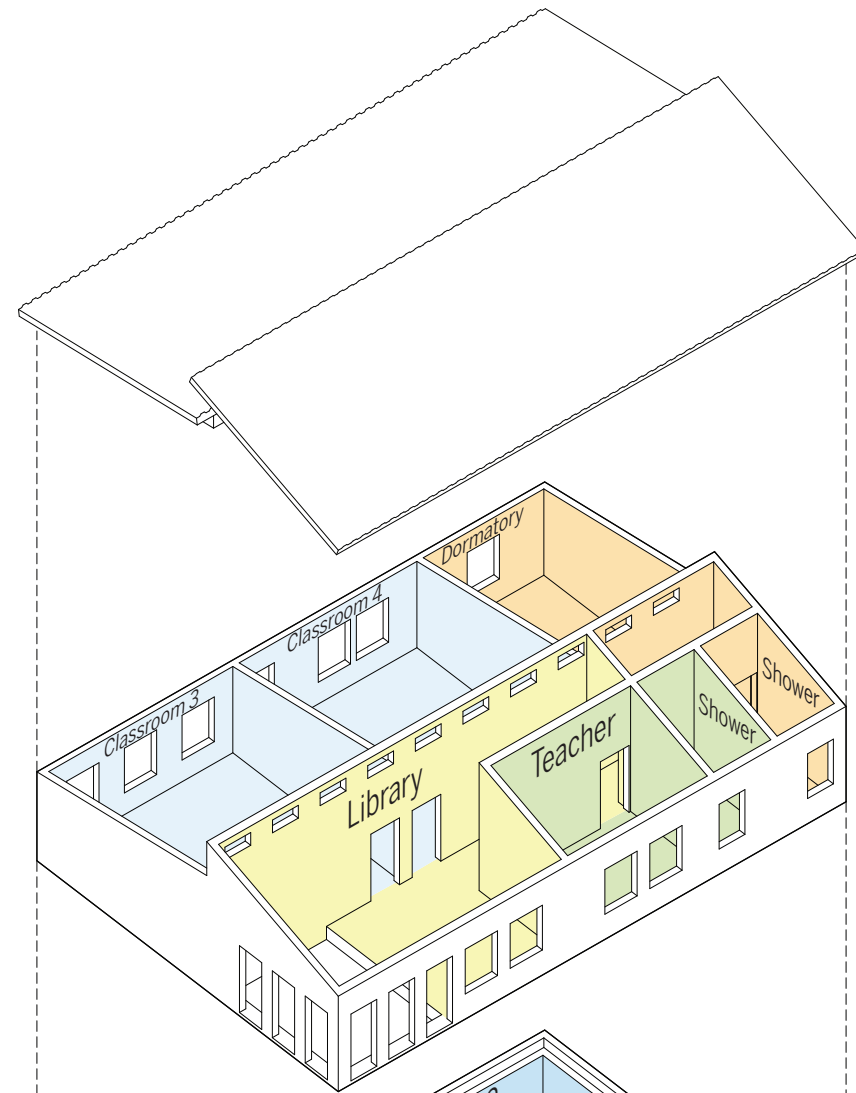
Classrooms 1 and 2 need direct access from the Lobby or public space, should be adjacent, and at ground level

Classrooms 3 and 4 need direct access from the Lobby or public space, and should be adjacent

Medical Suite to be accessible via exterior and lobby

Toilets to be accessible via Lobby

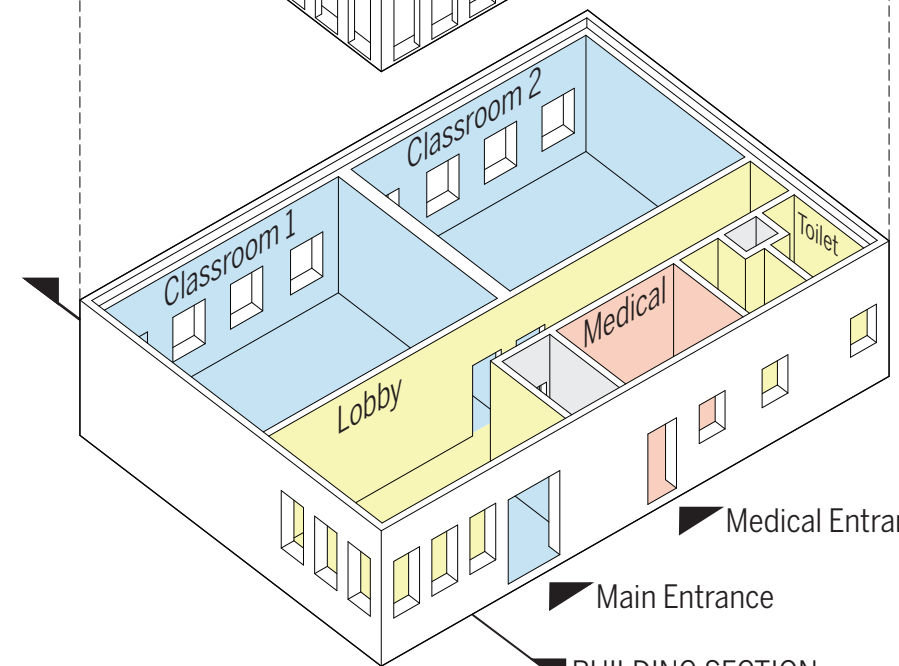
BUILDING MASSING



UPPER LEVEL

The upper level continues the public space up an open stair from the lobby to a mezzanine that connects to the Library and Corridor leading to Classrooms 3 and 4, the Teacher Room, The dormatory, and the showers.

To optimize the building structure and systems, the classrooms were aligned along the corridors from the lower floor to the upper floor. The lower level toilets were also aligned with the upper floor showers which simplified the plumbing systems.



LOWER LEVEL

The lower level houses the two larger primary classrooms that can double as community meeting space. Located directly off the double height lobby with information screens and boards intended v

Medical Entrance

Main Entrance

BUILDING SECTION

PRIMARY CONSTRUCTION ESTIMATE

Cost Estimate Date: 10-03-2024
 Cahaya Anak Papua
 Prepared by Garrett Lord, AIA

TOTAL COST: €296,000

ROOF €70,300

Truss:	€13,100
Substrate:	€5,700
Roofing Panel:	€7,000
Photovoltaic:	€44,500

UPPER LEVEL €93,100

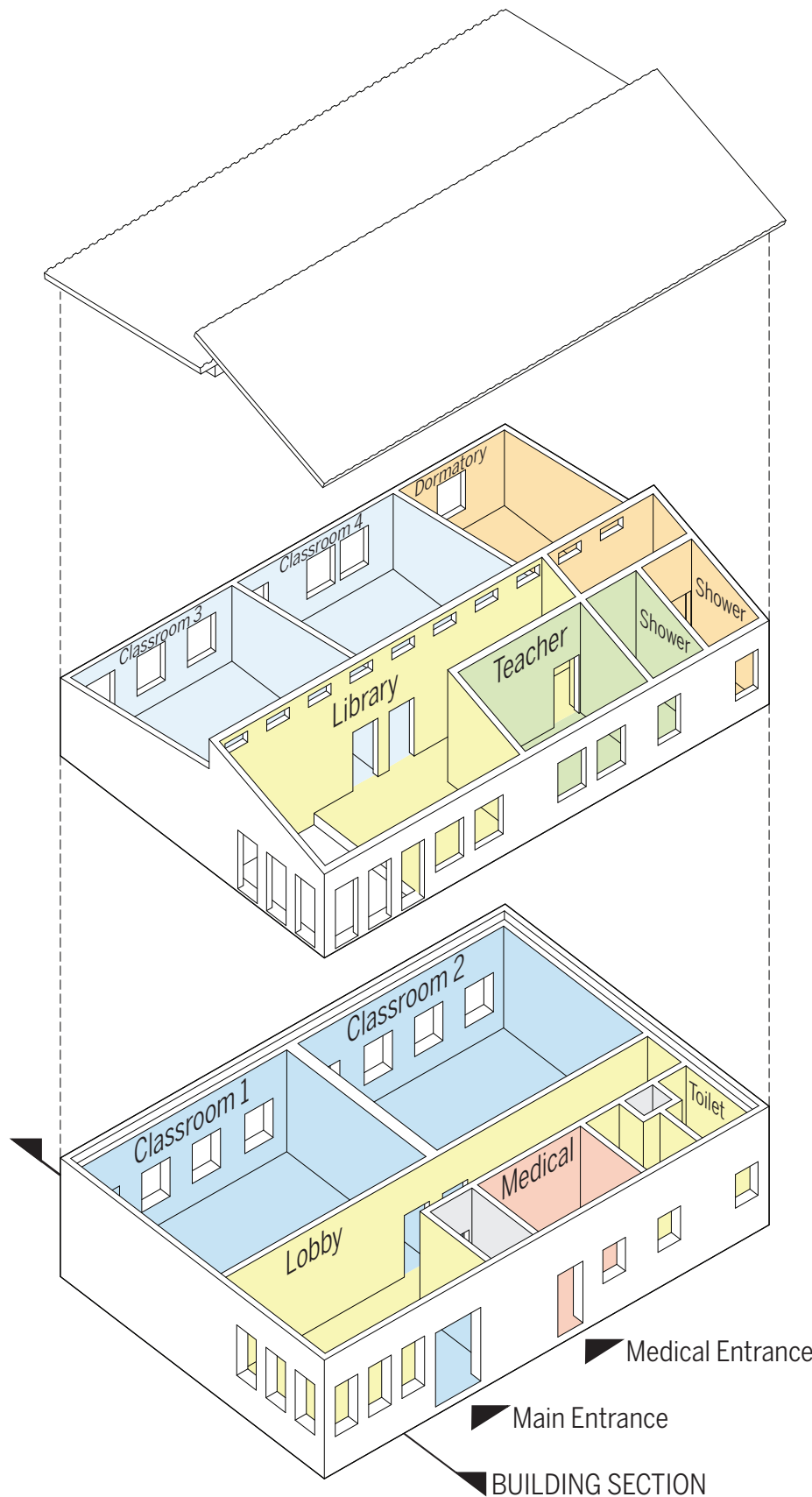
Structure:	€16,500
Precast Floors:	€6,400
Flooring Finish	€9,700
Walls:	€28,300
Finish Work:	€4,000
Ceiling:	€2,900
Openings	€7,000
Interior Stair:	€2,000
Exterior Stair:	€1,400
Electrical:	€7,100
Plumbing:	€7,900

LOWER LEVEL €97,000

Structure:	€19,100
Poured Floor:	€6,600
Flooring Finish	€11,900
Walls:	€29,800
Finish Work:	€4,200
Ceilings:	€4,800
Openings	€7,900
Electrical:	€6,200
Plumbing:	€6,600

SITE WORK €35,600

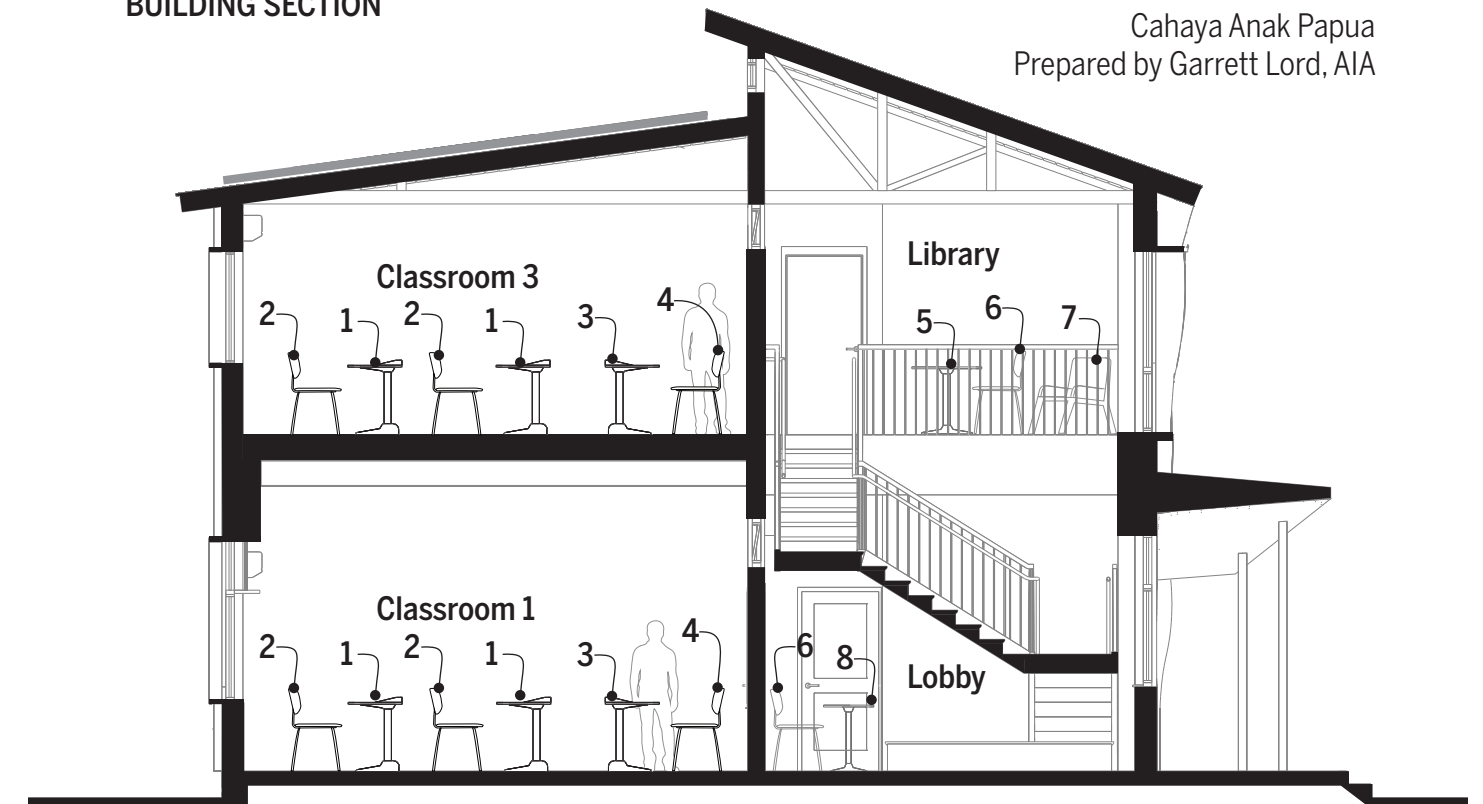
Work Prep:	€17,300
Civil:	€800
Electrical:	€700
Plumbing:	€5,100
Cladding	€11,700



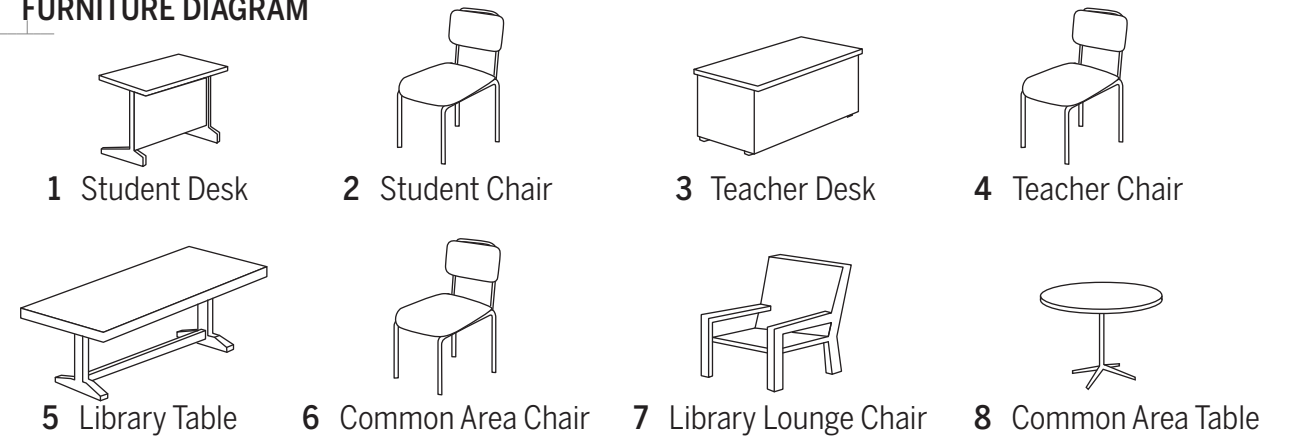
FURNITURE AND MILLWORK ESTIMATE

Cost Estimate Date: 10-03-2024
 Cahaya Anak Papua
 Prepared by Garrett Lord, AIA

BUILDING SECTION



FURNITURE DIAGRAM

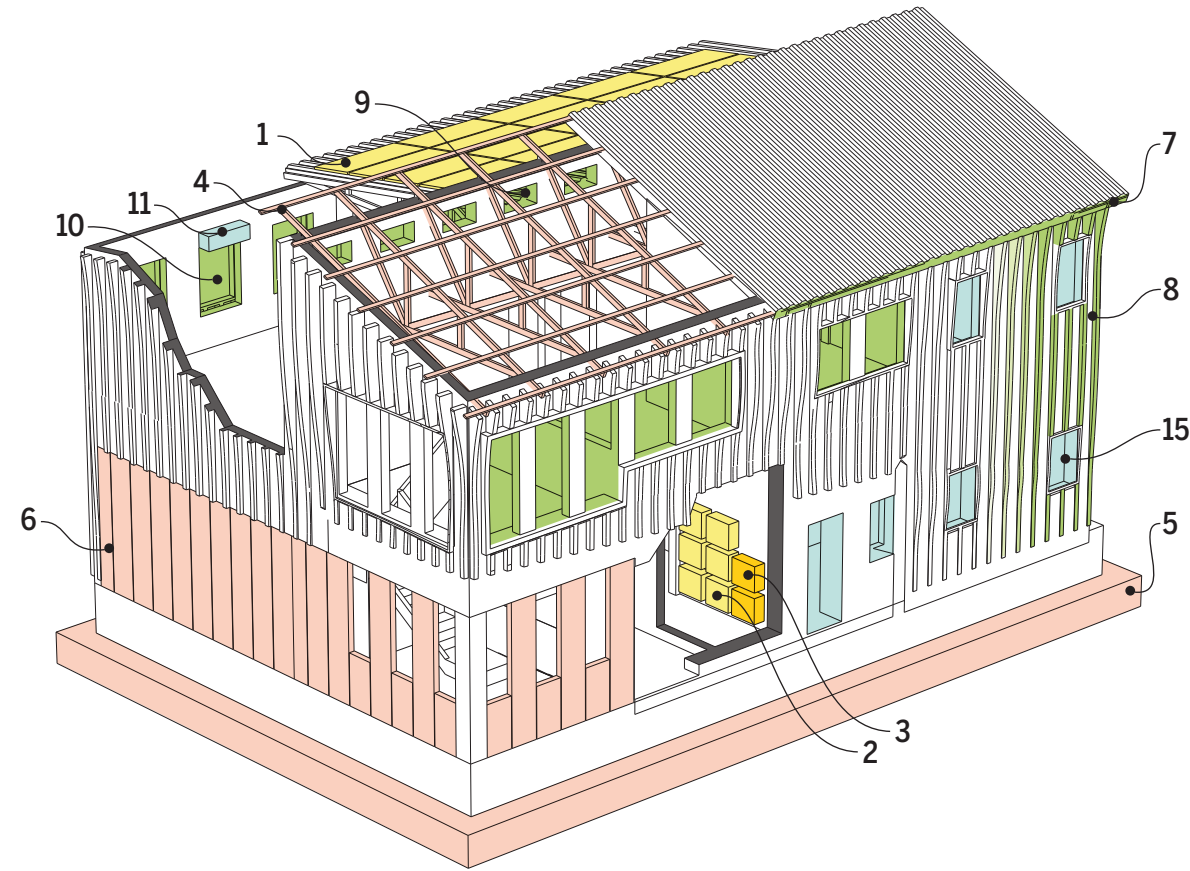


FURNITURE SCHEDULE

COMPONENT	COUNT	MATERIAL	UNIT PRICE	TOTAL PRICE
1 Student Desk	40	Wood & Steel	€100	€4,000
2 Student Chair	40	Wood & Steel	€50	€2,000
3 Teacher Desk	8	Wood	€100	€800
4 Teacher Chair	8	Wood & Steel	€50	€400
5 Library Table	1	Wood	€200	€200
6 Common Area Chairs	8	Wood & Steel	€50	€400
7 Library Lounge Chairs	2	Wood	€75	€150
8 Common Area Tables	2	Wood	€100	€200

TOTAL FURNITURE PRICING €8,150

BUILDING SYSTEMS & SUSTAINABILITY



Electrical System

1. 14 kW Rooftop Photovoltaic System. To provide 100% of electrical needs.
2. (6) 10kW Battery system
3. 16kW Inverter

Structural Systems

4. Non-corrosive roofing truss system.
5. Continuous footing for poor soil conditions
6. Engineered Structural Precast Building system.

Passive Sustainability

7. Rainwater Collection. Covers 100% of gray water.
8. Sunscreening with locally sourced wood rainscreen
9. Clerestory windows along ridge provide air flow and reduce artificial lighting needs
10. Operable windows for natural ventilation

Amenities

11. Airconditioning Throughout building
12. All rooms equipt with ceiling fans
13. All Classrooms utilized integrated projectors
14. Public Medical Facility with exterior entrance
15. Toilets and Showers with running water

SYSTEM EXAMPLES



Photovoltaic



Battery Storage



Precast Structural System



Wood Truss Roof



Rainwater Harvesting



Operable Clerestory



Ductless Unit



Condensor

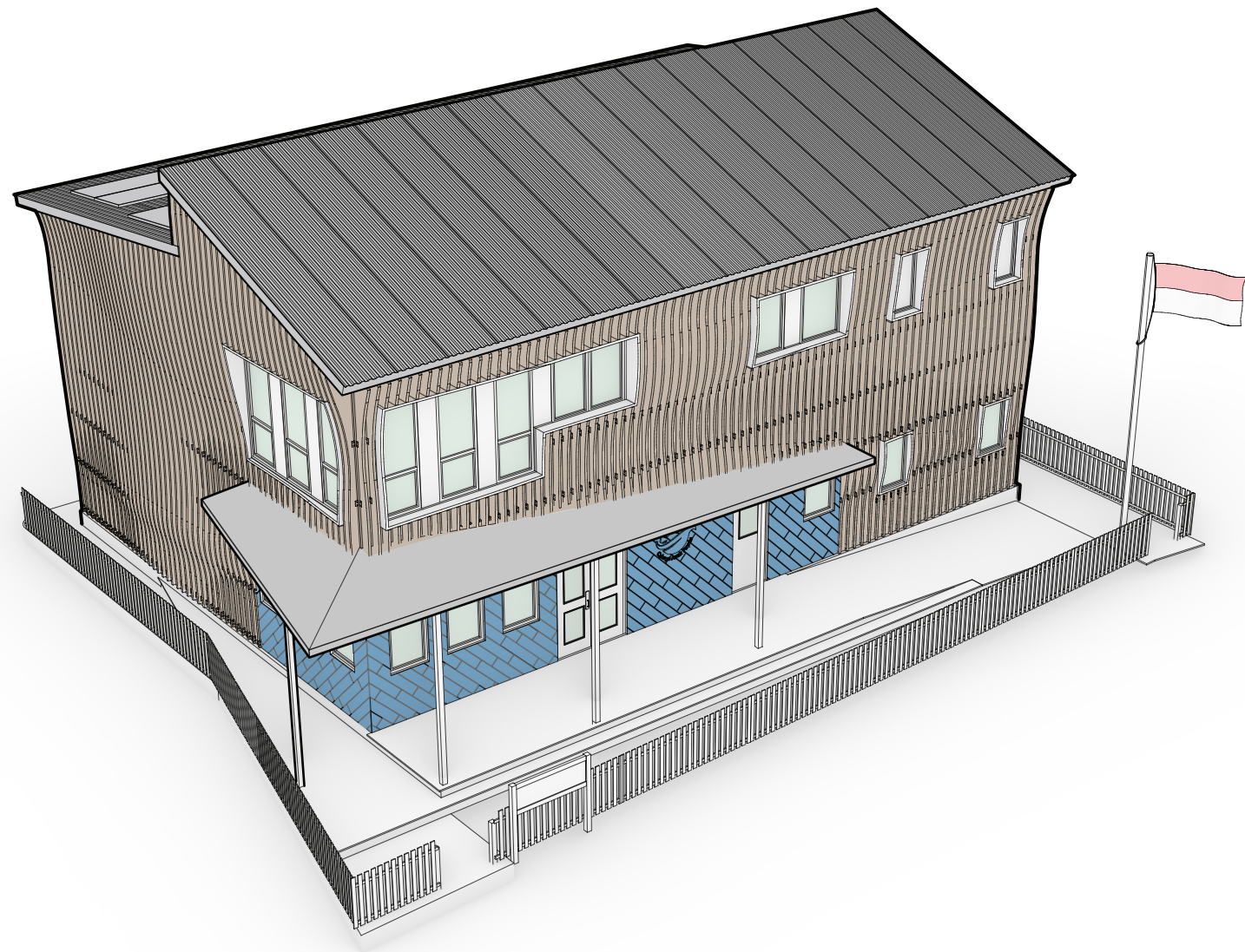
Solar energy generation and a battery storage and backup system allow the school to operate off-grid, and ensure there is no interruption to the students education. The current energy supply to the village comes from a diesel generator that is only operated between 7pm and 6am. The existing school relays on it's own solar power generation, and this school will have a stand-alone system to ensure consistant energy throughout the year.

A precast panel system will be used for the infill of all structural walls. This provides structural consistency throughout the building, and will reduce the amount of work required in field. By providing a building system that can be developed beforehand the quality of the material can be controlled. This is especially important due to the area being prone to flooding from storm surges and tsunamis in addition to earthquakes and poor soil conditions.

Multiple passive sustainable measures have been incorporated into the school. All graywater used in the building will be provided by a rainwater harvesting system. All windows will be operable to provide ventilation in the event the airconditioning system needs to be shut off. A major component of the design is solar shading. From the entrance canopy, to the vertical fins, to the window surrounds, as much of building as possible incorporates shading to reduce solar head gain.

Air conditioning, comprising of ductless systems in each classroom and public space have been implemented for both comfort and health and safety. Ceiling fans in all classrooms are also provided in the even the air conditioning is not required. Other amenities include integrated projectors for teachers, and running water for toilets and showers. Additionally, a medical suite with triage capability will be the villages first.

BUILDING DESIGN

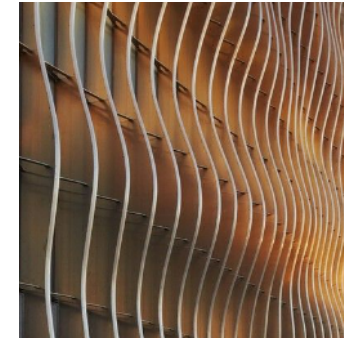


MATERIAL PALETTE

The Blue Ocean School in Raja Ampat is intended to be a modern teaching facility, providing the absolute best education to the students of West Papua. At the same time, it is important to tie the school together with the rest of the Child Aid campus and the village of Sawinggrai. Paying homage to the local construction and materiality, the exterior is clad with locally sourced water repellent wood (the same wood used for dock building). This can be sourced on the island, and can be processed by local artisans. The entryway is emboldened with blue cladding, connecting the human scaled portion of the building with the local architectural practice of vibrant colors used on the exterior of homes and businesses.

The interior incorporates a simple palette of colors that lend as a backdrop to vibrant unique murals in each classroom. Gray ceramic tiles with a granite like composition are used for the flooring. This will help keep the interior cool, while also being easy to clean. Natural wood planking is used for the millwork and ceiling designs to connect the interior and exterior. Off-white walls create a bright interior, and coupled with the large amount of natural lighting, reduce the need for artificial lighting.

MATERIAL PALETTE



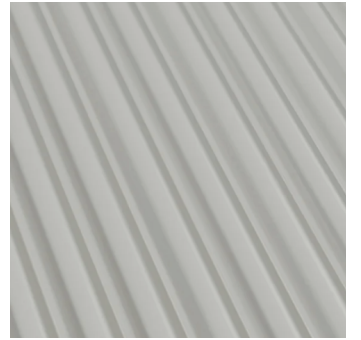
Wood Fin



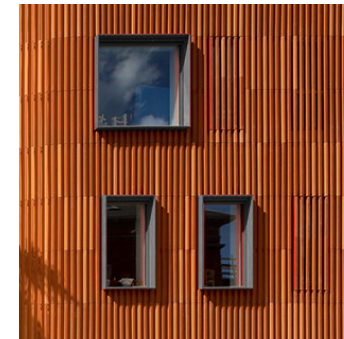
Blue Aluminum Panel



Limestone Base



Light Gray Roofing



Aluminum Windows



School Themed Mural



Local Mural Design



Ceramic Flooring

The existing school, and most of the campus was constructed with type of woods selected for this project. The light colored roof, and vertical fin shading being used for the rain-screen will reduce the thermal load on the building, while simultaneously stitching the new school seamlessly into the community. The intentional selection of blue accents on the exterior, and within the murals, is intended to be a direct connection to the ocean.

All wood components on this project will be sourced with local lumber and will be processed in the village by skilled woodworkers. It was imperative that this school was design with, not just for, the people of Sawinggrai. Detailing cues were taken from the existing Child Aid school and much of the surrounding context.

VILLAGE CONTEXT

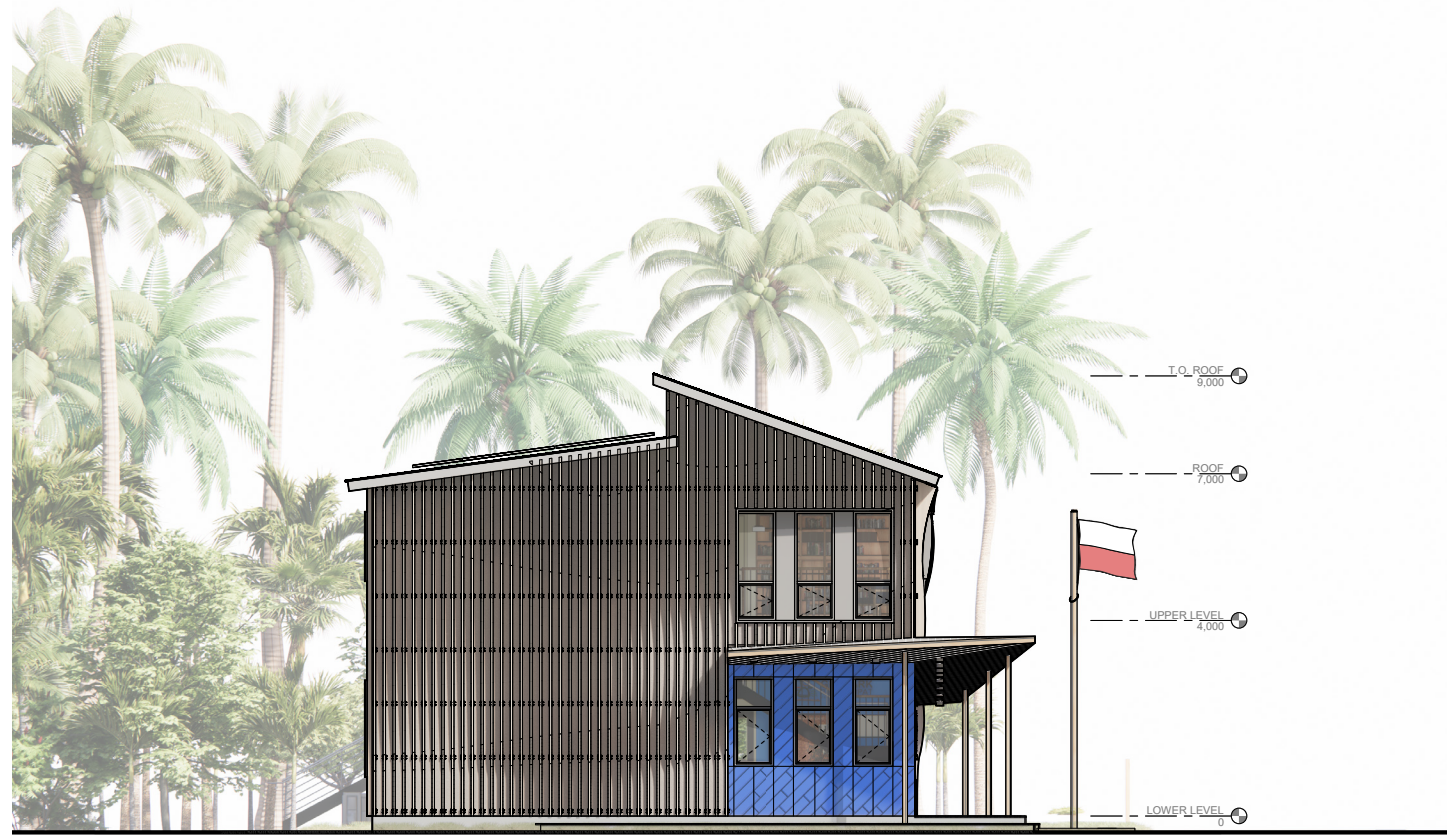


ELEMENTARY SCHOOL



CURRENT CHILD AID SCHOOL

BUILDING ELEVATIONS

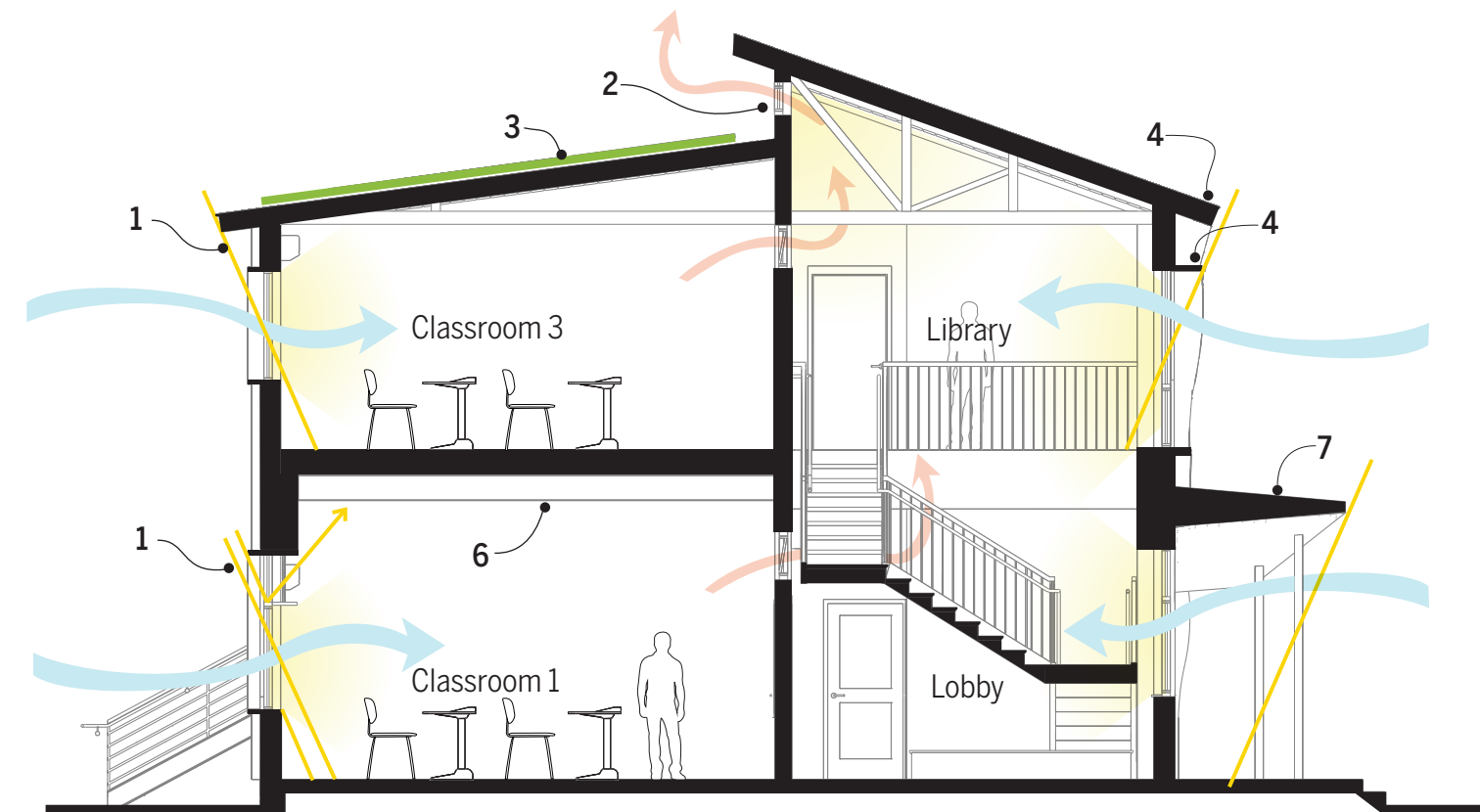


WEST ELEVATION



SOUTH ELEVATION

BUILDING SECTION



MASSING ORGANIZATION

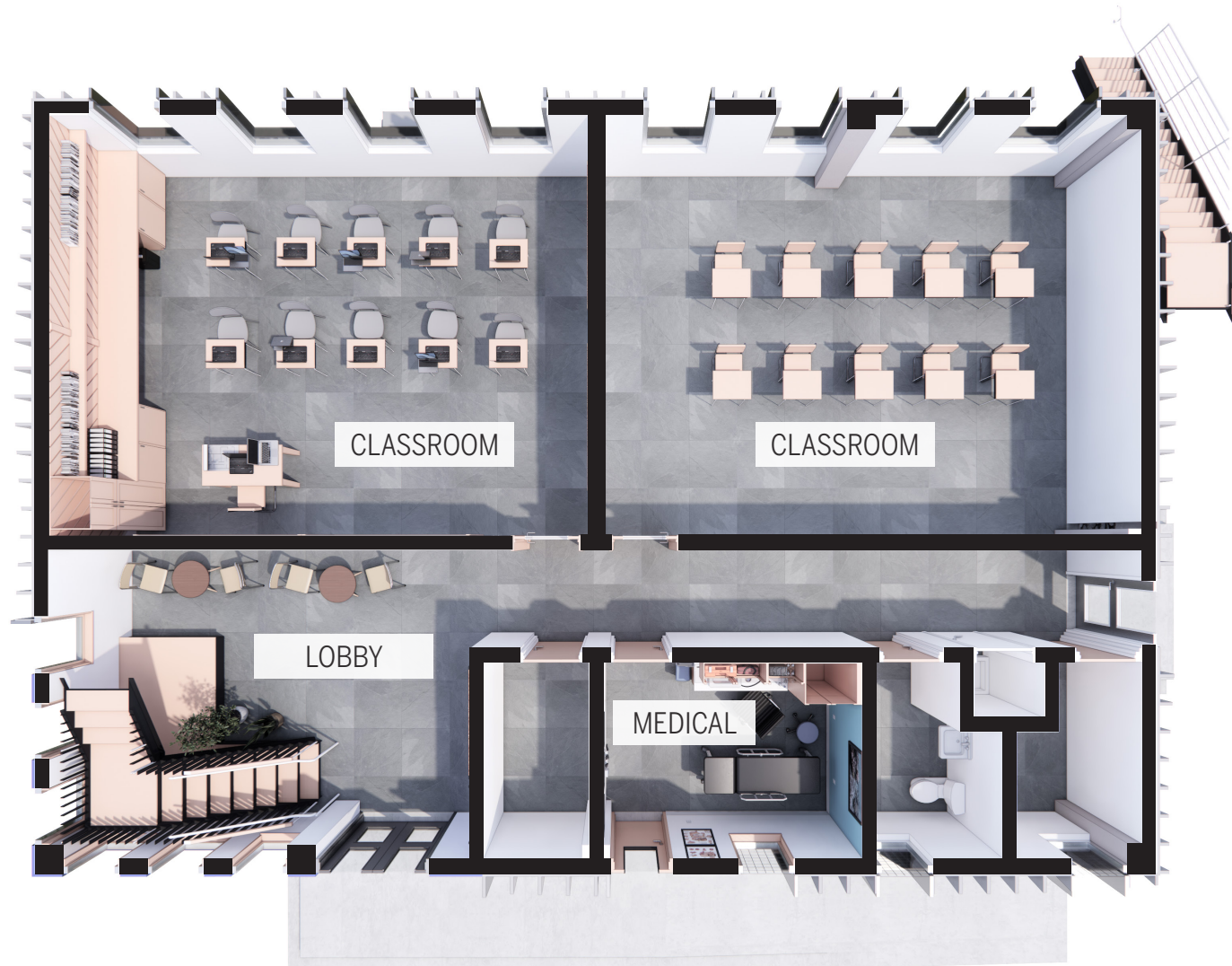
A primary goal of the building organization and orientation within the tight site constraints was to optimize the building structure and program to keep the construction costs and complexity low. Taking advantage of the vertical circulation stacking an open Library mezzanine above the lobby creates an exciting public space for student or public use.

Large operable windows allow for natural ventilation and day lighting, reducing the need for artificial lighting and conditioning of the space after school hours. Tall ceilings and transom windows along ridge to provide air circulation promoted by Bernoulli's Principle due to the proximity to the ocean.

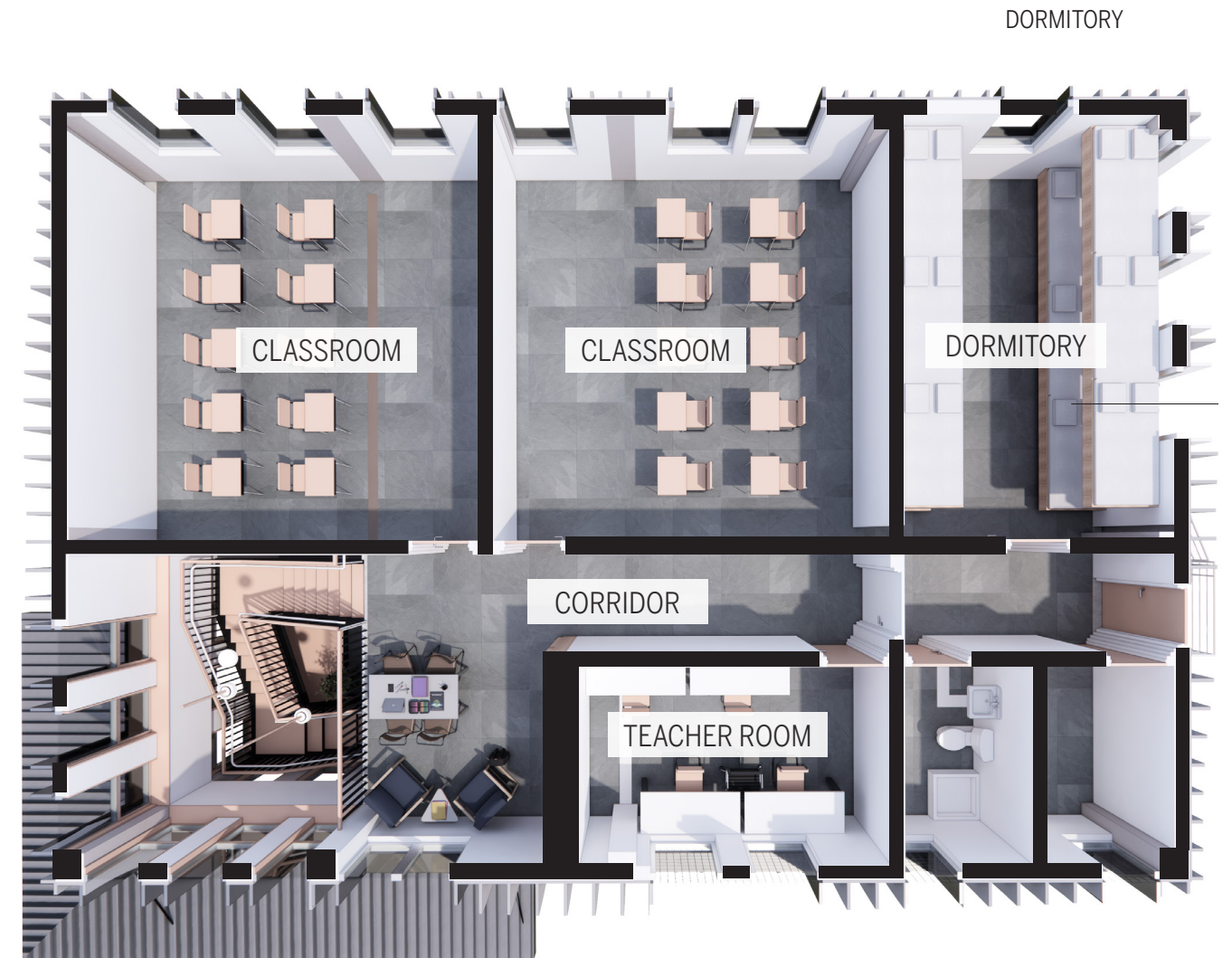
DIAGRAM KEY

1. Maximum Solar Angle at Winter/Summer Solstice.
2. Operable clerestory windows provide ventilation and natural diffused light in the public spaces.
3. Larger roof surface angled flatter to provide greater surface area for solar generation.
4. Roof overhangs and window surrounds prevent direct solar heat gain and glare.
5. Light shelves diffuse daylight deeper into the room
6. Tall ceilings and operable interior ventilation in each room keep the ambient temperatures cooler while maintaining privacy in each classroom.
7. Entrance canopy provides protection from weather and sun, while also blocking solar radiation.

LOWER LEVEL FLOOR PAN



UPPER LEVEL FLOOR PLAN



BUILDING SECTION



LIBRARY



The open library sits as a mezzanine above the lobby to promote interaction among students. This also provides space to site and study between classes. The space has a built-in bookshelf along with tables and chairs. It sits adjacent to the teachers room to provide quick access for teachers to provide any necessary tutoring.

LOBBY AND STAIRCASE



The lobby boasts a two-story tall atrium with an open stair that leads up to classrooms and the open library. Transom skylights provide light and air movement to keep the space well-lit and ventilated. The two large main classrooms are on the ground floor and are accessible directly off the lobby via a naturally lit corridor.

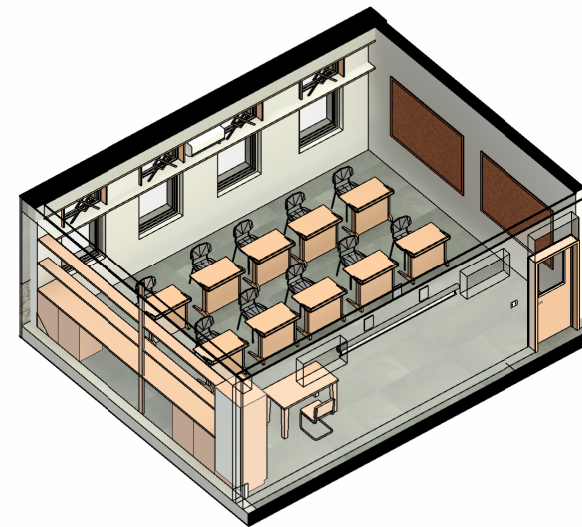
MAIN CLASSROOM



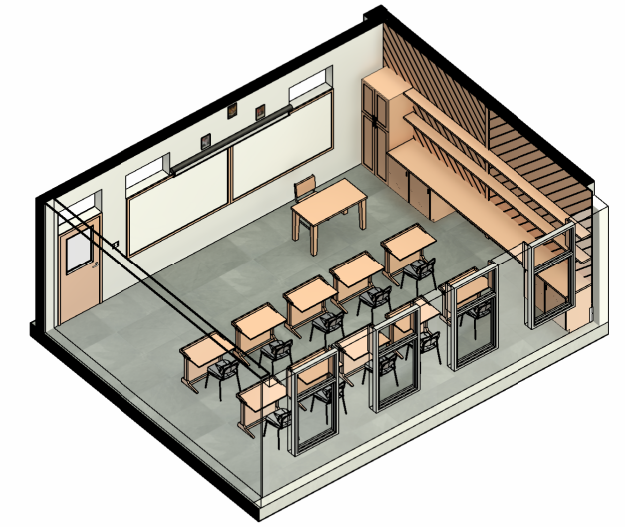
Every classroom in the school is accessible from the main corridors and are provided two means of egress. They are all provided with plenty of daylighting amplified by the light-shelves on each window. Operable windows, along with ceiling fans and ductless air conditioners create a comfortable learning environment. Every room is provided with work benches and storage lockers and cabinets in addition to desks. All rooms are equipped with dedicated projectors and projector screens. Built-in cork boards and whiteboards are mounted on the front and side wall for any analog display.

Each room will have a custom mural on the work-bench wall signifying a different iconic Raja Ampat imagery. Images will consist of the birds of paradise, manta rays, coral reefs, and island geography. Local Iron wood will be used for detailing and finish details. Wood slat ceilings will maintain a natural warmth inside the classroom, and a medium gray slate floor will keep the space cooler and less distracting.

TYPICAL CLASSROOM LAYOUTS



CORK BOARD AND EXTERIOR WINDOW WALLS



TEACHING AND STORAGE WALLS

MEDICAL FACILITY



The medical suite, a first for the village of Saw-
inggrai, will provide triage and first aid to the
school as well as the community. Exterior access
is available to allow community members to see
the nurse without disrupting the school. Lockable
cabinets provides secure storage for medications.
A larger width door is used to facilitate the use of
a gurney when needed. Ductless air conditioning
is provide to create a comfortable environment.V

TEACHER ROOM



Creating a separate teacher's office was crucial
for developing lesson plans and collaborating with
fellow teachers. Individual desks for each teacher,
and plenty of storage and work space promote
work outside the classroom.
Large operable windows and vaulted ceilings
create an open feel.





CHILD AID PAPUA
EDUCATION
CONSERVATION - HEALTH CARE