Un Plan Visionario de Peña Blanca: Proposals for the Properties of Servicio Panamericano de Salud and the Canal Communities of Lake Yojoa

The 2014 Urban Design Studio

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Proposals for the properties of Servicio Panamericano de Salud and the canal communities of Lake Yojoa
“Our first priority should be to glorify God in all that we do. Let’s use this place to help point people to Him.”

~ Aileen Youngberg
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Servicio Panamericano de Salud

This document was commissioned by and prepared for Pan American Health Services, Inc. (PAHS) - a non-denominational Christian, non-government organization operating in Peña Blanca, Honduras. Founded by Dr. Stephen Youngberg near the northern shore of Lake Yojoa, PAHS has been successfully providing nutrition and educational outreach for the hungry, sick, and homeless since 1960.

PAHS has a strong historical record of fighting disease, ignorance, and poverty, with a special focus on children, nutritional rehabilitation and education. Today more than 80 boys and girls live in the children’s home on the PAHS campus and more than 200 adolescents are enrolled at the Dr. Stephen Youngberg Technical Vocational Center.

Some of the challenges facing northwestern Honduras have changed since 1960, but PAHS remains committed to “doing what we can with what we have” in order to uplift the health and welfare of local people.

MISSION

Educated youth and communities thriving in a healthful environment.

VISION

To develop happy, healthy, productive children through nutrition and education.
Pan American Health Services, Inc. owns approximately 250 acres of land located just southeast of the town of Peña Blanca. The northwestern boundary of the property is shaped by a hydroelectric canal, which flows north and was built a few years after the establishment of the PAHS campus. The campus still features several wooden buildings that were purchased from the canal's construction company after work on the canal was completed. Campus buildings were conceived to surround an ordered plaza, as laid out with a rope by Verlene Youngberg. This beautifully landscaped, garden-like plaza continues to be the functional, social, and symbolic heart of campus.

This group of buildings is surrounded on all sides by gardens, orchards, a bird sanctuary, and agricultural fields. Just north of the nearby village of El Edén are former rice terraces overlooking the spectacular Santa Barbara Mountains. Now used to grow beans and corn for PAHS, this southern portion of the site is bound to the west by the road leading to Lake Yojó and the Eco-Archeological Park “Los Naranjos” - only 2 km away. To the north, across the road that leads to La Guama and the country's main highway CA-5, lies more hilly agricultural terrain leading up to the village of El Tigre. This is also the location of the Dr. Stephen Youngberg Technical Vocational Center.

The purpose of this document is to outline a vision for how this land can serve the mission and long-term interests of PAHS, but also the well-being of the surrounding community.
Peña Blanca is an unincorporated settlement of over 10,000 people located less than 4 km north of Lake Yojoa. It is part of the municipality of Santa Cruz de Yojoa, Department of Cortés, Honduras. The town is the economic hub for local plantation and mining communities north of the Lake. It is a relatively young community, having developed spontaneously and unplanned in the early 1960s due to the location of a bridge built over the hydro-electric canal.

Peña Blanca is a growing community and acts primarily as a commercial and educational center for the area. Its over 100 businesses include coffee exporters, numerous retailers, various service providers for local customers, as well as some tourism-related services.
Pan American Health Services (PAHS) occupies a strategic location within Peña Blanca, between the country’s main highway CA-5 and the bridge leading into the commercial heart of the town. Furthermore, existing property ownership and severe topography limits town growth to the west and north, placing a significant economic demand on PAHS land.

The yellow dotted line to the right indicates a proposed location for a second bridge, which has been discussed by the community recently. This second bridge is intended to alleviate traffic within the center of Peña Blanca by dispersing vehicular routes, especially coming from Los Naranjos and heading to the country’s main highway CA-5. While the bridge is expected to benefit local commercial opportunities, it would also further increase the strategic role of PAHS land.

As a result, Pan American Health Services finds itself with an inordinate development pressure on its properties, especially fronting onto the principal thoroughfares. This is also evident when observing the informal spontaneous development that currently occupies PAHS land and part of the public right-of-way of Carretera a la Guama (N-54). Relatively sophisticated multi-story construction with no legal title to property fronts both sides of the road from the canal bridge up to the intersection at Calle Parque Eco-Arqueológico (V-891). While this kind of development has now been firmly halted, the demand for property continues. This pressure visually represented here in orange.
Peña Blanca and the properties of Pan American Health Services are located less than 4 km north of Lake Yojoa, the largest lake in Honduras. A paved local road (V-891) leads south through the agricultural village of El Edén and terminates near the undeveloped lakeshore and the entrance to the Eco-Archeological Park “Los Naranjos”, which features Lenca ruins dating to 700 BC as well as various wildlife trails and boardwalks with spectacular views of the lake.

At this park, the hydro-electric canal flows north past the village of Los Naranjos, which has become somewhat of an eco-tourism hub for local and foreign tourists. Small rowboats are used by fishermen and tourists to access the lake from this location, partly because motorized boat traffic is virtually prohibited on Lake Yojoa for environmental protection reasons.

The lake is bordered on the west and east by vast national parks rich in biodiversity, which have helped to establish this area as one of the world’s premier bird-watching destinations. The lake, which is also a popular fishing destination, is relatively undeveloped to the north, but multi-national and industrial-scale fish farms are threatening the water quality elsewhere, potentially compromising a future for eco-tourism and healthy species habitat.
Lake Yojoa is one of the principal local assets for human and wildlife health, and for economic prosperity. Located only 84 km from the nation’s economic capital San Pedro Sula, the lake and its agricultural and natural lands attract an increasing number of weekend vacationers who help to support local businesses. Likewise, the pristine environment already attracts international visitors keen on seeing wildlife and healthy forests. Local eco-tourism is a nascent industry and can be seen as a key strategy in attracting investment and promoting prosperity, particularly because Hondurans are very adept at seizing economic opportunities at very small scales. All of this, however, depends greatly on preserving water quality through community and government oversight, and through careful planning that helps to connect people with these assets without compromising environmental health.

**Eco Tourism**

Eco-tourism is already a growing industry on the north shore of Lake Yojoa. Local examples include the D&D Brewery, Lodge and Restaurant which is highly rated in international guidebooks and attracts visitors from Europe and the United States throughout the year. Towns that plan healthy and attractive urban environments can help to expand this industry beyond the niche.
This document prepared as part of a graduate studio project by the 2014 Urban Design Studio at Andrews University, based in Berrien Springs, Michigan, USA. Due to a previous working relationship with PAHS, the Andrews University team was able to prepare early studies, site documentation, and preliminary concept proposals in July and August 2014. The eleven international graduate architecture students and two professors then travelled to Honduras in September to study a broad range of precedent-setting places and projects and to meet with professionals (Ojojona, Valle de Ángeles, Santa Lucía, El Zamorano, Comayagua, Siguatepeque, Santa Barbara, San Pedro Sula, Copán Ruinas, and various places in Guatemala).

This visit also enabled the team to study the existing PAHS properties and site conditions in and around Peña Blanca. Representing PAHS, Aileen and Stephen Youngberg reviewed preliminary concepts and helped the team identify needs, challenges, and assets. Working with professional consultants in the fields of architecture, engineering, and planning, the team was able to develop refined responses to the conditions observed in the field.
Under the leadership of PAHS staff, the team was also able to engage more than thirty officials, leaders, and citizens of the local community to review the preliminary concepts and to offer critique and feedback. This extensive public meeting gave important direction and focus to the work contained herein, in particular in regards to water quality, safety and security, and the need to coordinate development with eco-tourism, health, and education.

**Consultants**

The team’s professional consultants included Walt Vernon, an internationally-recognized engineer based in San Francisco with extensive experience in developing countries; Eduardo Castillo, an architect and planner based in Guatemala and internationally recognized for planning achievements in Central America; and Timothy Zork, urban designer with the renown planning office of TortiGallas & Partners.
This diagram illustrates a range of distinct investment opportunities proposed on properties owned by Pan American Health Services. These investment opportunities are conceived as distinct and separate development projects that are intended to help shape a larger, interconnected vision.

This document does not propose a strict order of development, but certain project components are assumed to commence earlier than others due to feasibility, market demand, and infrastructure availability. This is why a new commercial plaza is presented first (#1), while larger and more ambitious projects are found later on. The section on the PAHS campus itself is treated last (#8) merely because of the unique nature of this part of the project.

By breaking the larger proposal into smaller project components, it is hoped that each part can be understood more easily as a manageable private (or public-private) development opportunity. But the boundaries represented here are not fixed and could easily be understood differently. At its most basic level, it may be seen simply as a visual table of contents.
1. **Plaza Nueva** *(p. 14)*

A proposal for a new commercial plaza at the intersection of Carretera a la Guama and Calle Parque Eco-Arqueológico. Proposal includes secure parking and access to a park.

2. **Escuela Técnica** *(p. 47)*

Proposal for new facilities for the Dr. Stephen Youngberg Technical & Vocational School, including related retail, services, educational, agricultural facilities, and parking.

3. **Colina del Norte** *(p. 18)*

Proposal for private development of residential and commercial lots leading up to El Tigre, as well as for a boutique eco-lodge and conference facility overlooking the Santa Barbara mountains.

4. **Canal y Malecón** *(p. 22)*

Proposed vision for a canal corridor that connects Peña Blanca and the various canal communities, including a canal-side trail system, bridge, public urban promenade and civic amenities - a true Malecón.

5. **Paseo** *(p. 24)*

A proposal for additional commercial development that especially targets the tourism and leisure economy, including space for retail, lodging, restaurants, offices, and limited housing opportunities.

6. **Hospital y Bosque** *(p. 28)*

Proposal for a future community Health & Wellness center, including a hospital for local and medical-tourism purposes. Proposal includes a preserved woodland and a small residential estate.

7. **Aldea** *(p. 32)*

Proposal for a future hamlet located within an expanded palm oil plantation and overlooking the magnificent Santa Barbara Mountains. Intended primarily for vacation homes, retirement homes, etc.

8. **PAHS Campus** *(p. 38)*

Various proposals for the improvement of the central campus of Pan American Health Services. Includes concepts for building projects and various guidelines for implementation.
Diagram illustrating the proposed distribution of centrally-managed retail (blue), vocational school-related commerce, commercial parking, pedestrian spaces, and related elements and structures.
This proposal is for a new commercial plaza to be located at the southeast corner of the intersection of Carretera a la Guama and Calle Parque Ecológico. Currently, Peña Blanca has no actual plaza, and this design is intended to provide a pedestrian-friendly public space to anchor the east side of the community. Although more modest in scale, it is intended to be in the great tradition of Honduran plazas such as at Comayagua, with planted shade trees and seating opportunities around a fountain.

This place is intended to be the focus for one centrally-managed retail environment, including shops that open onto colonnades. A larger “anchor” store has been located in the southeast corner - easily accessed from both the plaza, its convenient diagonal parking street, and the secure parking behind the buildings. The floor plate matches that of a typical “Despensar Familia” to help attract national retailers. Between the buildings, pedestrian passages lead to secure parking and, to the west, connect to a park nestled amongst existing small hills and mature trees.

The whole arrangement is intended to shape a “gateway” for the community, with future service and retail buildings belonging to the Technical School and a proposed fire station on the north side of the plaza (towards the bottom of the bird’s eye views). The scheme also considers improved pedestrian pathways and a new parking court to be shared by the school and football enthusiasts.
Vocational School Diagram illustrating proposed arrangement of school facilities, including new staff housing and agricultural buildings that are part of an expanded scope of agrarian education.
The Plaza Nueva is also intended to serve as an improved address and “forecourt” to the nearby educational institutions. For example, the neatly dressed students from the nearby Instituto Oficial Canada would finally have a safe gathering space nearby, rather than being forced to congregate in the road.

For the PAHS-operated Dr. Stephen Youngberg Technical Vocational School, the plaza also becomes an opportunity for showcasing the school’s beautiful products and useful services. The plan illustrates a new service court complex to house expanded mechanical instruction and commercial services, as well as new space from which to show and sell furniture and craft items. Beyond a mere commercial opportunity for the school, the presence of such spaces can infuse a rich authenticity to the experience of the plaza, which can be very attractive to tourism and help to cultivate pride in local craftsmanship.

To facilitate this scheme, the design realigns the existing dirt road heading north past the ceiba tree. This enables the school grounds to easily expand towards the east and helps to shape a smooth turbine-effect for graceful, slow, and safe traffic management through the plaza. Other future academic buildings can extend the existing landscaped green by aligning new facades (and possibly a colonnade) towards a new western entrance on Calle Hacia El Tigre.

The celebrated presence of the Technical Vocational School, its students, and its beautiful products help to enrich the new plaza with an authentic local culture that can be attractive to tourism and help to cultivate pride in local craftsmanship.
Colina del Norte

Above is a proposed view from the common court of the eco-lodge, illustrating a garden, pool, and view over conserved agricultural areas. A conference center is part of the lodge and nestled in the trees.

Proposed view concept, based on photo below

Eco-Lodge and Conference Center Above is a proposed view from the common court of the eco-lodge, illustrating a garden, pool, and view over conserved agricultural areas. A conference center is part of the lodge and nestled in the trees.

View from the hill top looking west towards the Santa Barbara Mountains
The hill to the north of the Dr. Stephen Youngberg Technical Vocational School features more dramatic terrain, especially on its southern slope which is currently used for agriculture. The northwest side of this area is bound by the road to El Tigre, and PAHS is already considering making this land available for private development. The dirt road leading up past the ceiba tree is roughly on the ridge of this hill. This plan advises new streets to run with the terrain from the existing dirt road towards Calle Hacia El Tigre to shape efficient blocks and limit the length of new streets. The arrangement also anticipates the possible redevelopment of an antenna field, which could enable a third street to connect at a small park near the existing public elementary school.

Any new development should take care to preserve the existing tree lines on the ridge road. These trees add character and visually soften the impact of new private houses here. The plan also proposes that new houses should face that road with porches and garden walls as screens that help to preserve the road’s attractiveness.

This would help preserve value at the top of the hill, which features a stunning view over the fields towards the Santa Barbara Mountains. This plan proposes to reserve this site for a small eco-lodge and conference facility, sensitively sited amongst existing trees and preserving the best views by dedicating land as agricultural conservation areas for health-focused agrarian teaching purposes.

**Ridge Road** Typical section of the proposed ridge road, with its tree lines preserved and new houses screened with attractive garden walls and porches.

**Plan** (1) Eco-lodge; (2) Small conference center; (3) Agricultural conservation area; (4) New mixed-use lots on Calle Hacia El Tigre and adjacent residential streets; (5) Existing water tank; (6) Existing antenna field; (7) Proposed park and future street; (8) Existing elementary school; (9) Existing cemetery; (10) Ceiba tree plaza and road realignment.
A central part of this document's proposal is to improve the community's connections with nearby Lake Yojoa. As one of the principal environmental and economic assets, the lake offers opportunities for increased tourism, healthy leisure activities for locals, and access to fish and fresh water. At the same time, increased connections must be pursued carefully in order to guarantee continued environmental protection.

This plan proposes to expand the use of the hydro-electric canal and its government-controlled easement for trails, a recreational ferry system, and additional bridges at Peña Blanca and Los Naranjos. The latter bridge would reconnect the historic road and help to disperse truck traffic in the area.
The proposed ferry system is inspired by the Trajinera boats at Xochimilco, Mexico. Similar small and low-speed ferries on the hydro-electric canal would be intended primarily for tourism and recreational purposes, for which the quality of the journey experience is of higher significance than the speed of transport. The fact that Lake Yojoa is not easily reached on foot makes the ferries more attractive for visitors. Ferries designs could be inspired by Lenca and Mayan ornamental traditions, while simple food and drinks could make the journey along the pleasant canal a relaxing event.

This plan proposes several ferry docks, shown to the left with circles indicating the area accessible within a ten-minute walk. All docks could be floating dock systems to account for the changing level of the canal. The first dock is shown near the existing Peña Blanca bridge, with the final destination at the Eco-Archeological park or the open lake itself. A transfer would be necessary at the existing locks, and row boats and kayaks could continued to be chartered at Los Naranjos.

The whole canal is proposed to be lined by landscaped pedestrian trails, as shown in the section to the right. The west side features a second trail for equestrian purposes. The trail and canal would require increased management and guards for security, but the whole arrangement would enable the broader community to more directly plug into the amenities of Lake Yojoa for tourism and healthy activities.
Canal

Proposed view of the canal, a landscaped trail, market structure, ferry dock, and second bridge

Market The view above includes a proposed market structure to help anchor small vendor activity and to provide a visually appealing bookend to the existing spontaneous development. Its small corner tower slips in front of existing houses but makes room for a pedestrian walkway.

Existing view looking southwest towards the lake
The trail and ferry system is proposed to begin and end in central Peña Blanca near the existing bridge. These pages introduce how the trail system is conceived to become an urban waterfront promenade (or Malecón) to help shape the river as an attractive and healthy civic center for the community. The river and bridge are already a focal point for social life, fishing, swimming, and various public festivals, although the space is not adequately designed.

The waterfront promenade is essentially proposed as a network of public spaces, with a tree-lined pedestrian walk lining the edge of the canal. A new street is proposed to connect Carretera a la Guama with existing PAHS property to the west of Instituto Oficial Canada. This then enables access behind the existing spontaneous development for new buildings and public spaces, including a proposed urban park and plaza lined by shops, a future city hall, and a police station.

Although not on PAHS property, this plan proposes that an additional trail also be constructed on the west side of the canal, with future development facing it. The second bridge to the south is intended to be visually appealing in the great Honduran tradition, such as at Ojojona.

The whole arrangement is intended to offer a quality public space network as a healthy civic amenity that also helps to attract tourists, who would be presented with an iconic and memorable view as they cross the bridge into central Peña Blanca.

**Section and Plan** This site section is looking south towards Lake Yojoa and shows the proposed urban park and plaza fronted by a future city hall. The canal and its existing easement is lined by trails and small restaurants. The plan illustrates: (1) Existing bridge; (2) Existing spontaneous development; (3) Proposed new street with space for vendor stalls and a new entry for Instituto Oficial Canada; (4) Proposed market structure fronting onto trail; (5) Proposed police station on urban park; (6) Proposed city hall on urban park; (7) Small canal-side restaurant; (8) Proposed second bridge; (9) Future private development, as shown on next page; (10) Proposed library; (11) Existing private concrete storage for future redevelopment.
This concept for a pedestrian-friendly commercial environment shows a proposed future library at the end. Streets are to be cobble stone for slow traffic, durability, and character.
The proposed Malecón is intended to enable future development opportunities in the interior of PAHS property. A key connection is the new street (1) leading southwest behind the existing spontaneous development. The proposed market structure illustrated on the previous page is intended to be set on top of a small-scale sewer-treatment package plant (2), thereby helping to improve health and water quality and further justifying the investment. The pedestrian trail (3) connects the proposed urban park and plaza (4), under which can be a small package sewer treatment plant for the area. This plaza is fronted by a future municipal building (5), which also helps to enhance security along the trail and for the proposed restaurants (6). This arrangement, together with the proposed second bridge (7) helps to enable future interior development for commerce and complimentary uses.

This development is proposed to be anchored by a pedestrian-friendly paseo (8), as illustrated in the section here and on the following pages. The paseo leads to a future public library (9). The existing private concrete block storage area (10) can be tied into this scheme at a later date, while the Instituto Oficial Canada can now access the area via a new entrance (11) that improves safety and convenience for local students. The same area can also be used for small vendor stands.

This is a long-term strategy that anticipates public-private partnership for infrastructure investment and private development, probably based on long-term lease agreements.

**Public/Private Investments** This diagram illustrates a concept for the proposed public investments in public spaces and structures (blue), and the proposed private investments in streets and buildings (red).

**Water Quality** This diagram illustrates the location of two package sewer treatment plans to ensure water quality in the canal. It also illustrates the areas for bio-infiltration (green), pervious cobble paving (orange), and gravel parking and service areas (yellow).
The new mixed-use and pedestrian-based development project Cayalá and its retail paseo is the most successful real estate development in the Guatemala City area. Although larger in scale and scope, it is a good example of how pedestrian-friendly design can be modern and economically viable.
With the presence of an improved waterfront infrastructure and civic space network, the interior of PAHS property becomes more conducive to future commercial development. This plan intends for commercial development to satisfy a market that is currently unmet by local businesses in Peña Blanca. This includes national retailers, service providers and higher-end boutiques, for which local customers must currently drive at least one hour to San Pedro Sula or Siguatepeque. The commercial portfolio is also intended to be attractive to visitors and tourists, and would be managed by one or two developers or property managers.

The pedestrian-friendly paseo is designed with a public spirit but remains private to enable enhanced maintenance, security, and management. The paseo features limited convenient on-street parking, but more parking is located within a secure lot mid-block.

Most buildings are for retail, restaurants, and appropriate office space (on the second floors), but space is also dedicated for a small boutique hotel and possible short-term housing for vacationers and/or the adjoining hospital. Traditional live-work units face the new street that leads to the second bridge.

The project is designed to maximize safety and security, with clear demarcations between public and private space, and civic buildings located strategically to provide watchful “eyes” on the streets and parks.

**Commerce** Retail is indicated in light blue, with office space above in darker blue. A boutique hotel is shown (grey) overlooking the canal-side trail and parkway, as is a building designed for condominium-like short-term housing (orange). Live-work units are shown in red.

**Security** Civic buildings are located strategically to naturally encourage a presence of security personnel throughout the day. Spaces accessible to the public are shown in blue, while the paseo’s secure parking lot (green) is located mid-block with its vehicular access points indicated.
Bird’s eye view looking south at the proposed hospital site and second bridge
This plan proposes a long-term strategy for attracting a community Health & Wellness center, including a hospital for local use and for medical-tourism. The closest existing hospitals are located at least one hour away in Santa Barbara and San Pedro Sula. The intention is that this facility can cater to local needs but be financially viable by carefully integrating facilities for medical-tourism, thereby benefiting from the efficiencies of certain shared services.

The site was selected based on convenient access for the community, land availability, proximity to nearby natural areas and the proposed canal-side trail system, a community-based spirit, and a desire to visibly advocate for a broader agenda of health & wellness within the town.

The facility described in this document has been given a preliminary conceptual program - one which requires further development. Its public face and community amenities are located near the new road (1), while the medical-tourism elements front preserved woodlands (2) and the canal-side parkways (3). The shared technical facilities and service areas (4) are located within the courtyard arrangement of the complex.

Furthermore, the complex includes a hospital chapel (5) located visibly from the canal-side trail and bridges as an expression of faith-based mission. Limited recreational fields (6) are also part of the scope to encourage additional healthy leisure activities.
Courtyards for Health Hospitals in Honduras can benefit greatly from courtyard-based design. This is because courtyards increase access to natural light, ventilation, outdoor life, and views of natural elements, all of which are fundamental to healing and whole well-being. Some courtyards may simply offer opportunities for functional services, while others can be seen as outdoor rooms or gardens that expand the size of the hospital for rest, social activity, and circulation.
The design concept for the proposed health & wellness center carefully balances the various programmatic elements around a system of courtyards and exterior spaces. In general, the components which require community access are located near the new road, while the for-profit medical-tourism components look over the quiet and private natural woodlands to the southwest.

The site selection is deliberately different from the frequent pattern of withdrawing hospitals to the community fringe, thereby making them more difficult to access for ordinary people. This concept locates the hospital on a public street near the town center, which supports its community role. But attention has also been paid to use landscaping, plazas, and layers of courtyards to help protect the interior from noise and business. The design of the buildings and the corner plaza helps to celebrate the health & wellness center as a prominent and welcoming institution within the community. The plaza and hospital chapel are also located along the canal-side trail leading to Lake Yojoa.

Service areas are located away from the canal and woodlands. These are accesses through a private and secure parking area surrounded by garden walls. This arrangement allows for easy service access to all parts of the facility.
Aldea de las Palmas

The southern agricultural fields of PAHS offer a long-term opportunity for future development. With a spectacular view over the Santa Barbara Mountains and its proximity to PAHS and local conveniences in Peña Blanca, this site could merge agricultural activities with small private aldea, intended primarily for vacation houses, retirement houses, and possibly long-term recovery housing related to the medical-tourism hospital.

The current tree-lined tractor road (1) is proposed to be improved and lead through the existing teak plantation (2) and bean fields (3), which help to support PAHS. A gate house secures the aldea at the end of this road (4), where it turns onto a formally landscaped sequence of linear parkways, greens, and plazas in the grand tradition of historic haciendas.
The whole ensemble is carved out of a future palm oil plantation, planted in a neat grid around the whole property to offer shelter and privacy. A large semi-circular green (5) is left open to preserve mountain views from the aldea’s central plaza, club house and pool (6). The aldea features less than twenty rural homes but gathers them around a plaza with views to enhance the value of the whole place and project. Smaller retirement casitas and possibly long-term recovery housing are sited at the periphery (7).

A path leads through the plantation to connect pedestrians and golf carts with the PAHS campus, offering an opportunity for retirees and others to volunteer and interact with the children and local community life. This project also requires improved stormwater detention and infiltration (9).
The concept for the aldea deliberately arranges small range of housing types around a compact plaza configuration. This has several benefits:

A range of diverse dwelling types can cater to a broader range within the market, decreasing risk for the developer and enriching the place with a fuller community life. In this case, the range in price-point would be relatively narrow, with all units being of high and/or luxury quality regardless of configuration.

All units would be courtyard-based to enable quality outdoor life. But the overall arrangement is relatively compact, especially around the central plaza. Here there are attached courtyard townhouses that might cater to vacationers and weekenders who are not interested in extensive property maintenance. Larger detached haciendas with big yards are around the perimeter.

The courtyard arrangement preserves broad views of the mountains for most properties, while the compact nature of the project helps to preserve a rural character around and fields for agricultural use. The project is deliberately not a conventional subdivision with large lots, which tend to needlessly consume land once a great number of them are grouped together.
**Palm Oil Plantation** This form of agriculture can yield a profitable crop and visually compliment residential housing of planned appropriately. The order of the plantation’s grid inspired the formal design of the aldea, which evokes a historic hacienda.

**Residential Types**
The aldea’s club house and community garden shed are shown in blue. Residential types include attached single-family townhouses (light orange), detached haciendas (red), retirement casitas (orange), and long-term recovery housing related to the medical-tourism hospital (grey).
Illustrative
Masterplan
This drawing is an illustrative master plan that is intended to summarize the long-term vision for the property. The precise details are expected to change, as long as the overall vision is generally maintained. Key aspects:

1. The preservation of extensive natural and agricultural areas, in particular around the historic PAHS campus, in the south fields, the mature forest to the southwest near the canal, and the agricultural fields on the north hill.

2. The concentration of new development near the canal and the two bridges. This concentration should be characterized by an interconnected network of durable and pedestrian-friendly streets and paths. It should also be characterized by courtyard-based and thin-wing buildings that provide healthy living environments inside and outside.

3. A well-connected network of quality public spaces that plug into the canal, existing and new civic institutions, and recreational parks, and double as attractive green stormwater infrastructure.

4. The establishment of new development as pedestrian-based, with access and provisions for automobiles but prioritizing human scale, safe and comfortable walking, and a character conducive to tourism and outdoor community life.

5. The integration of schools as places that require protection, but are also essential anchors for public life, local character, and a youthful energy that participates in the local economy.

6. Malecón
   Waterfront Walk

7. Puente Nueva
   New Bridge

8. Paseo
   Shopping Street

9. Hospital
   Health & Wellness

10. Fincas
    Residential Estates

11. Instituto “Canada”
    “Canada” School

12. Eco-lodge

13. Colina del Norte
    North Hill

14. Escuela Técnica
    Technical School

15. Plaza Nuevo
    Commercial Plaza

16. Policía
    Police Station

17. Aldea de las Palmas
    Palm Hamlet

18. Bomberos
    Fire Station

19. PAHS Campus
The Plaza

The plaza has been the center of life at PAHS ever since it was laid out with a rope by Verlene Youngberg in 1960. It also provides the model for all future healthy development: ordered, verdant, generous, welcoming, simple, soft with solid paths, and cared for.
The design and arrangement of the historic central campus provides the physical framework for healing, everyday work, community life, and worship at Pan American Health Services. It is a modest campus with a grand vision for its people, and the design and care reflects that.

This plan intends to preserve the buildings and spaces that are noble and purposeful on this campus. It also reaffirms that contact with nature, agricultural work, and fellowship have the ability to point to our Creator and help us to maintain healthy lives.

Often, contemporary attitudes about building and maintenance can unintentionally promote solutions that create more problems than they solve. This document proposes that simple, well-built buildings and spaces can endure to support a mission of lasting value.

A good example on which to build are the guest house and adjacent storage building. While they are not perfect, they provide a model for an elegant aesthetic unity, durable construction that is economical, natural materials, a certain ease of cross-ventilation, provisions for outdoor life on the porch (see photo), and relatively easy maintenance because the construction can be tackled by local builders. They are also relatively compact, face towards the plaza and have service areas in the back. Parking is informal on simple turf grass, and various large trees help to shade the buildings from the hot sun.
This is an ideal vision for the long-term development of the campus. New and rebuilt facilities are in dark grey.
Rehabilitation Center & Doctor’s Apartment

The new child malnutrition rehabilitation center remains to be completed as of this writing. The building shell is up but substantial work is still required to complete the roof, the ceiling, electrical and miscellaneous work. A design has been prepared by the Andrews University School of Architecture for the completion of a doctor’s apartment wing, to be built between the new rehab center and the existing dining hall. The first floor will have circulation space, patient family accommodations, laundry, and storage. The second floor will have two apartments for visiting doctors.

Estimated Project Cost: US $300,000

Future buildings should always seek to reinforce these existing spaces by facing them with building fronts. Such fronts should include the following:

- Entrances and operable openings to buildings.
- Generous porches and similar outdoor spaces to promote outdoor life during varied weather.
- Carefully crafted details, such as brick piers, stuccoed walls, etc.
- Landscape that shades houses without obscuring them, their views, or access to breezes.

As much as possible, one should avoid placing service areas, storage spaces, garbage and secure parking areas at the front of buildings.

The following pages describe the principal project needs at PAHS.
These projects are loosely organized in order to priority, as interpreted by PAHS staff members. One could easily argue that certain projects, such as a new and clean water supply (No. 4), should move up on the list. Indeed, individuals and organizations who have a certain burden to advance projects that are central to health and well-being are encouraged to initiate the necessary support. In this sense, the priority list is only conceptual and can be reconsidered.

However, in general, work should prioritize the completion of existing, unfinished projects rather than the commencement of new buildings.

(2) Administration Building
This approximately 5,000 square foot building is currently under construction and is intended to house the PAHS administrative offices and the campus store. While the roof of the structure has stood for some time, the interior has yet to be completed, including a durable and climate-responsive ceiling system.

Estimated Project Cost: US $100,000

The concept site section above also illustrates two future adjoining buildings, to be used as a medical and dental clinic staffed by visiting doctors.
(3) Single Mothers Housing
A current need exists for new housing for single mothers. This proposal locates two small duplex buildings between the new rehabilitation center and the existing girls dormitory, facing the playground green but set back at some distance against the woods. Each building includes two 800 square foot apartments with a porch.

Estimated Project Cost: US $120,000 per Building

Other and Future Projects

7 An activity center and auditorium space for use by the PAHS children, staff, and families, as well as for community outreach and educational events.

8 Existing single-family house is poorly suited for the Honduran climate and requires extensive rebuilding to shape healthy living environment for PAHS staff and/or volunteers. See photo at top of page 46.

9 Existing main/front entrance on Carretera a la Guama requires alternating trees and stone bollards to shape ordered landscape appearance and to prevent informal parking by community residents during football games, etc. Also, completion of the sign.

(4) Infrastructure
1. A 6” water pipe to supply clean, fresh water from a new PAHS-owned spring located about 200 ft above and approximately 3 miles away.
2. A new tractor path to reroute farm traffic around child activity areas and to improve stormwater drainage around the girls dormitory and in the plaza’s SW corner, to remove standing water issues.

(5) Organic Farm Facilities
Existing storage sheds and mechanical shops have concrete foundation slabs that can be reused for new agricultural barns. These are next to fields already prepared for irrigation, which can be used for increased organic farming and associated agricultural purposes.
This photograph shows the existing view of the boys dormitory, where only the foundation and lower walls have been constructed. The illustration above shows the intended completed design from a similar viewpoint.

Boys Dormitory
The boys dormitory project is an opportunity to construct a model PAHS building, which can serve to guide all future construction on the campus. The schematic design presented here illustrates a layout that utilizes existing plumbing risers within the built foundation.

Several environmental concepts are significant:

- The arrangement of the rooms, in combination with the open wood ceilings, high and louvered openings to the central hall, and ventilation monitor along the ridge, enable continuous cross-ventilation for all rooms.
- Doors are aligned with windows to enable cross-ventilation when doors are left open - or when doors are designed to include louvers.
- The broad and deep front porch enables outdoor life for the boys during varied weather. It also shades the building and its important openings from the morning sun.
- The centrally-located entry hall acts as a commons for the boys, and is designed to include floor-to-ceiling louvered and operable openings that enable continuous airflow at this gathering space.
- Existing tall trees and the planned two-story caretaker’s apartment help to shade the metal roof of the building during the afternoon.

As much as possible, durable wood louvers, windows, doors, and furniture should be made by students of the Technical Vocational School.

Estimated Project Cost: **US $200,000**
Unintended Consequences

Pan American Health Services has been in blessed with tremendous donations from willing volunteers. This has included various groups that have travelled at their own expense to labor on new buildings as time and resources permit. Many of these efforts have resulted in important structures and facilities, and PAHS is grateful for the many contributions that have supported its mission.

At the same time, foreign groups with noble intentions have at times introduced construction methods and designs that work well in other places, but are not necessarily well-suited to local conditions in Peña Blanca. In certain instances, this can unintentionally transform blessings into serious burdens, as materials begin to fail in the humid climate and local builders are unable to repair manufactured products. Technologies and designs that are considered simple and convenient in one place and building culture, can quickly fail in another, even resulting in unhealthy living conditions.

For this reason, volunteers are asked to carefully consider the following design guidelines and the advice of PAHS staff and their consulting professionals. Let us do our best to make the most of the donations, so that nothing is wasted or becomes an unnecessary burden.
Over 200 students are enrolled at the Dr. Stephen Youngberg Technical Vocational School in courses that train young people in the arts of sewing, automobile mechanics, wood carving, and furniture making. Future subjects might also include sustainable agriculture and a beauty school. Led by knowledgeable teachers, students are already able to prepare items for sale on the market, including high-quality doors and furniture. The school currently operates an auto lube business and has launched a small retail outlet for souvenirs and wood accessory items.

Volunteers and donors are encouraged to work with the school to obtain products as much as possible. Cedar doors made by students might be twice the cost of an imported metal door bought in the city, but there are other benefits:

- The money invested helps to support the local school and students benefit financially, which keeps money in the community.
- The high-quality products made by students are likely to last longer and can be repaired by local people after wear and tear.
- The work by the students is likely to be more beautiful, using natural materials, and can help to cultivate a sense of pride in building community.

Let us help others help themselves.
1 Raised Porch

Raise Porch approximately 8-16cm in order to prevent rain from accumulating during the rainy season. **We do this because** during extreme rain conditions the rain splash from the ground accumulates on the porch which then gets very wet and creates an area that is unusable.

2 Use of Porches

Provides shelter, shade, and comfort to accommodate outside social activities by incorporating the use of porches. **We do this because** the porches provide an area where kids can play, study, and gather to protect themselves from the heat or rain. Make sure the porches are deep enough to accommodate various social activities.

3 Column Details

Use brick columns for residential, educational, and administrative purposes and use concrete columns for ancillary buildings. **We do this because** the campus already has a strong presence of brick column porches on existing buildings. The use of brick columns on all future projects help to create aesthetic unity amongst the other structures on the PAHS site. We propose concrete columns on ancillary buildings in order to save cost for less significant buildings.
4 Screened Windows

Use screened windows to help reduce sunlight and heat gain. **We do this because** screens permit fresh airflow, while repelling insects and debris. Screened window minimizes cooling costs and sun damage to furnishings. One main advantage of screened windows is that they help repel mosquitoes which carry diseases that can prove harmful in Honduras. The screens also need to be easily removable in order to fix any damages.

5 Window Grates

Iron window grates are used to provide safety and security from theft for residents of PAHS and volunteers. **We do this because** window grates serve as protective shields for the window because breaking or cutting through metal bars is extremely difficult. The window sill also needs to be designed in which the window grate can be installed to sit directly on the window sill, in which the sill should project from the wall.

6 Jalousie Windows & Louvers

Provide interior wooden louvers to protect against sun, heat, and provide for privacy. Provide jalousie windows to allow maximum cooling and natural airflow. **We do this because** louvers allow you to easily choose between privacy and visibility. When closed, you can still adjust the rod to allow light to enter. Window louvers can be adjusted to allow varying amounts of sunlight to enter between the slats which allows the user to control the amount of light entering the room. Jalousie window provide 100% airflow as opposed to horizontal sliders which only allow 50% when open. Jalousie windows can also remain open during extreme rain conditions and also keep the rain from entering the window.
Design Guidelines

7 Eave Overhang

Provide an eave overhang that extends no less than 0.6-0.9m minimum. **We do this because** it protects the walls and foundation from excess moisture and protects people and structural elements. Avoid exposing wood to rotting due to excess rain conditions. Large overhangs protect the walls and openings from radiation and precipitation.

8 Roof Construction

When possible, use wooden rafters on all structures, especially residential. If not possible due to cost or materials, use a steel truss system. **We do this because** wood helps to add to the character of the building, helps with noise control, and natural use of building materials. All wood should be treated with termiticide due to the high population of termites and should be constructed with high quality wood. Steel truss systems should be kept simple with no proprietary components. Metal rafter tails should be constructed correctly. Avoid dropped ceilings which are difficult to maintain.

9 Eave Ventilation

Build eaves that enable natural air to cool the roof. **We do this because** in a hot climate, the primary purpose of ventilation is to expel solar-heated hot air from the attic or roof to reduce the building’s cooling load. Gabled roof louvers allow maximum release of moisture and overheated air. American style boxed in soffits will not work for this climate unless they are installed properly, and currently there aren't in high demand in the Honduran construction industry. Ridge vents, gable end vents, eaves vents, rotary vents. All of these work for this climate.
10 Flooring

Provide terra cotta tiles and or concrete flooring. **We do this because** they are more suitable for hot climates by providing a good cooling material. We use concrete flooring because of sustainability, easy care, economical, versatile, and has longevity. We use terra-cotta tiles because they are durable, and versatile. Note: Do not use carpet or wood flooring. Wood flooring is a bad flooring material due to the local termite pest problems and carpet requires excess maintenance.

11 Storm-water Management

The use of softscape and hardscape local water channeling practices should be implemented in order to provide an efficient design for storm-water management. **We do this because** the main goal is to manage water quantity in addition to protecting water quality. We have to manage storm-water runoff in order to prevent adverse impacts on the environment and to manage the rate of runoff and erosion from a development to prevent flooding.

12 Use of Landscaping

Do provide good use of landscaping in order to protect buildings from extreme hot weather conditions. **We do this because** They provide shade and a barrier from the sun's rays high trees with wide, shading crowns provide significant protection from solar radiation and should be incorporated as much as possible into any landscape planning. Plantings should have a significance to the local species of rain trees High bushes, however, should be avoided near buildings because the space between the ground vegetation and the high crowns of the trees should remain open, providing free access for the wind at the level of the living spaces.
13 Wall Construction

All buildings should be built using CMU masonry infill construction with a stucco finish. **We do this because** it helps provide a durable and cost-effective construction technique for the Peña Blanca climate due to the extreme rainy seasons and termites that destroy wood construction buildings. We should use a stucco finish because of its durability and its relatively inexpensive cost compared to other finishes. Also, it is possible for local labor to apply stucco on their own. Another advantage is that applying stucco is not very technically demanding and can be learned relatively quickly for volunteers. Note: The stucco at the bottom base of the building should consist of a darker color to avoid damage from outside furniture against the wall and people leaning against the wall making it dirty with scuff marks from feet and clothes.

14 Roof Design

Use a roofing metal product due to the fact they last longer due to excessive amount of water from extreme rain conditions and it is also affordable. **We do this because** if we don’t use the right product then it is hard to fix. We would also like to avoid unnecessary opportunities for future leaking in joints due to complicated roof designs. The design layout of the roof should include a simplicity of massing due to the fact that the Honduran weather provides excess amount of water during the rainy system. The goal is to drain water from the building and for the water to not pool up on the roof in order to create roof leaks. In warm-humid areas the roof is preferably pitched 3-4/12 to allow heavy rains to run off.
Provide sufficient air circulation for buildings and use thin winged building or use courtyard buildings that provide for multiple uses. **We do this because** the high humidity and warm temperatures require maximum ventilation, which leads to very open buildings. This is valid not only for the design of the elevations, but also for the floor plan. Free passage of air for cross-ventilation through the interior is important. This can be achieved by large openings, not only in the outer walls but also in the internal partitions. The open courtyard buildings act as a thermal regulator, the walls exclude the sun and shade a large area of the inner building surfaces. The vegetation and grass normally found in the courtyard, contribute to keeping the air cool and providing shade. The building layout also allows for air to flow freely thru the thin winged buildings and corridors. Buildings should be separated with large, free spaces between them. This allows airflow which provides ventilation for cooling.

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**15 Passive Cooling Strategies**

**Thin Wings & Courtyard Buildings**

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**Natural Ventilation Techniques**

Provide natural ventilation techniques to that dont require a mechanical system. **We do this because** it is a more cost effective mechanism in order to ventalte the building without having to pay for a mechanical system and requires less maintenance. Also it is energy efficient, it can be integrated into the building easily, and it provides a healthy and more comfortable environment if designed correctly. Exchange of air is also necessary because without it, both the temperature and the atmospheric humidity in the room will quickly increase above the values outside, due both to the heat and moisture and output of human bodies and to various activities such as washing, cooking etc.
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