Hawai‘i Plantation Village Design Concepts:
Subdivisions to Villages in Hāwī, North Kohala

Wylan Marquez
May 2012

Submitted towards the fulfillment of the requirements for Doctor of
Architecture Degree.

School of Architecture
University of Hawai‘i

Doctorate Project Committee

Spencer Leineweber, Chairperson
Pat Onishi
Stanley Solamillo
Hawai‘i Plantation Village Design Concepts:  
Subdivisions to Villages in Hāwī Town, North Kohala

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We certify that we have read this Doctorate Project and that, in our opinion, it is satisfactory in scope and quality in fulfillment as a Doctorate Project for the degree of Doctor of Architecture in the School of Architecture, University of Hawai‘i at Mānoa.

Doctorate Project Committee

[Signatures]

Spencer Leineweber, Chairperson

Pat Onishi

Stanley Solamillo
ABSTRACT

Subdivisions, gated communities, and estates have become increasingly common in rural areas of Hawai‘i. Many community members criticize these developments and wish that new housing developments would be integrated into existing rural towns and offer more community-oriented spaces "like" the plantation villages while also respecting the rural atmosphere that is enjoyed by visitor and residents.

This study analyzed the evolution of plantation camps through historic documents and literature and identified various village design concepts that made late plantation villages different than standard subdivisions. These design concepts are integrated with basic rural planning practices to create a foundation for the Hāwī Expansion Plan in N. Kohala, Hawai‘i. The challenge of creating and implementing such design ideas comes from past and current rural development projects that do not recognize or integrate appropriate planning for developing new rural communities.
DEDICATION

To my mother,

Pamela S. Marquez

For her sacrifice and commitment to both family and education

“Don’t give up and always do your best!”
ACKNOWLEDGEMENTS

There are many people that I would like to acknowledge who had a hand in making this possible. Although I cannot acknowledge everyone, know that you have all contributed to my success and I am grateful to you all.

I would like to first thank my family and friends for their endless love and support. To my mother, Pamela S. Marquez, for your commitment to higher education and the sacrifices you have made through my academic career. I am so blessed to have such a supportive and encouraging family.

To Bob Martin and the N. Kohala Community Board, thank you for the positive support and in allowing me to conduct my professional studies in our community. Mahalo Nui Loa

To Patrick Onishi, a citizen architect, your commitment to community oriented projects has been inspiring. You have shown me that helping communities can be meaningful and rewarding both as a citizen and an architect. Your participation brought a richer understanding of community oriented design to this project. Mahalo Nui Loa

To Stanley Solamillo, cultural planner and visionary, your participation brought deeper historical insight and understanding. You have personally shown me the importance of being true to myself as a Hawaiian and the value of remembering our history. You have instilled in me the importance of understanding history as a means to work towards a better future. As a mentor and friend, I am grateful for your assistance in the historic analysis throughout this process. Mahalo Nui Loa

To my Chairperson, Spencer Leineweber, who helped me realize the importance of being first, a Hawaiian and second, an architect. You have always led by example. As a mentor, friend and professor, you have always held higher standards and from that I have learned so much. I am forever grateful and will always cherish your constant question of, what is the next step? This small phrase has always been the epitome of understanding a process, weather through design or life, we can never settle for one thing but should always advance. Mahalo Nui Loa
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**GLOSSARY**

**Hawaiian Vocabulary**

*Ahupua’a*  A traditional land division unit, under the control of a sub-chief, which generally extended from the mountains to the sea, including the near shore fisheries.

*ʻĀina*  land

*Aloha*  Love

*Haole*  Westerner

*Hapa*  Individual of part Hawaiian ancestry

*Hawaiian*  Native people of Hawai`i

*ʻIo*  Hawaiian Hawk

*Kohala iloko*  Inner Kohala

*Kūpuna*  Elderly individual or ancestor

*Luʻaus*  Gathering of family and friends in celebration

*lunas*  leaders

*Ma Kai*  Ocean Direction

*Ma Uka*  Mountain Direction

*Moana*  Sea

*ʻOhana*  Family

*Paniolo*  Cowboy

*Pule*  Spirituality and Prayer

*Wahi Pana*  A celebrated, noted or legendary place.
Abbreviations

2008 NKCDP – 2008 North Kohala Community Development Plan

CDP – Community Development Plan

CRP – Community Readiness Program

DOE – Department of Education

FEMA – Federal Emergency Management Agency

HACBED – Hawai‘i Alliance for Community Based Economic Development

HSPA – Hawaiian Sugar Planter’s Association

ILWU – International Longshoremen’s and Warehousemen’s Union

ISB – Industrial Service Bureau

Jesus Christ of L.D.S – Jesus Christ of Latter-Day Saints

LSBSC – Land Studies Bureau of Soil Classification

N. Kohala – North Kohala

SWB – Social Welfare Bureau

U.S. – United States

Passages in which Hawaiian words are used will be quoted exactly as they are printed in ‘Ōlelo No‘eau: Hawaiian Proverbs and Poetical Sayings by Mary Kawena Pukui. They offer the reader “a unique opportunity to savor the wisdom, poetic beauty, and earthy humor of these finely crafted expressions. Each new reading offers a deeper layer of meaning and understanding of the essence and origins of traditional Hawaiian values.” Also in keeping proper use of Hawaiian words, an “s” will not be added to Hawaiian terms to signify plurality, which instead must be taken from the context.

---

Kahakō and ‘okina are applied consistently throughout this project. It is the intent of the project and thesis to use the kahakō and ‘okina for words as they are correctly used in the Hawaiian language and as they can be found in the Hawaiian dictionary. In addition, kahakō and ‘okina are not applied to excerpts from texts used throughout this project unless they have been used by the original authors.
INTRODUCTION

‘A’ole no i i’ke ke kānaka I na nani
o kona wahi I hānau ‘ia ai.

*A person doesn’t see all the
beauties of his birthplace.*

‘Ōlelo No`eau have been used by our kūpuna and ancestors for generations as a way of passing on wisdom, knowledge, and insight to others, especially to younger generations. They became a way to educate and teach in short phrases or sentences. Those phrases/sentences would take time to understand and comprehend as there were always hidden meanings behind them. The `ōlelo no`eau above is one such example. At face value it simply means “a person doesn’t see all the beauties of his birthplace”. What is hidden beneath that, however, is that one does not fully understand the beauty of his home land until he or she goes away.

This has become a description and understanding of my departure and return back home to North Kohala on the island of Hawai‘i. For the past decade, I have pursued education on the Island of O‘ahu at Kamehameha Schools and higher education at the University of Hawai‘i at Mānoa, School of Architecture, and so have lived outside of my home community.

Upon completion at the University of Hawai‘i at Mānoa, School of Architecture, I find myself looking back to my home town of North Kohala and admiring its beauty and character.

---

1 Mary Kawena Pukui. *‘Ōlelo No`eau, Hawaiian Proverbs and Poetical Sayings* (Honolulu, HI, Bishop Museum Press: 1983), 27
STUDY INTENT

“...I attempt to guide, not to instruct, but merely to show
and describe what I see. All I claim is the right to
speak according to my best light – primarily to myself
and corresponding to others…”

-Edmund Husserl-

As architects, we pride ourselves on our creativity and problem-solving skills in the realm of project development. Architects are considered the conductor, of the symphony of building design which affect community character. Our greatest contribution to society is our ability to solve problems through creative designs.

New housing developments have become increasingly common in rural areas of Hawai‘i where communities still cherish the historic plantation heritage that once flourished there. Many community members wish that these new housing developments would be "like" the plantation camps and feel that they were perfect rural models of village communities. These community members and leaders are the kūpuna of the towns and also view plantation camps as being alternatives to elderly homes.

This study analyzes the evolution of plantation camps and how these camps and villages concepts could be adapted with rural planning practices to supplement and guide modern development in existing rural communities.
METHODOLOGY

The approach to this project was to understand the evolutionary changes in the history of plantation camps and identify unique organizational and housing characteristics that plantation communities created. These housing characteristics were re-interpreted into new housing developments and communities. The sequence of research and design analysis was established on the spatial organization and housing characteristics of plantation camps and villages, a defined expansion plan for Hāwī Town, N. Kohala and the integration of village concepts into residential development.

- Review –

  The knowledge of plantation camps is written in its history. As one that has not experienced plantation life first hand, understanding the history will better familiarize myself in plantation life and living.

- Identify -

  Through researching plantation memoirs and documents, I have identified multiple characteristics that have made the organization of such camps and villages unique to modern residential development.

- Integrate -

  Rural planning practices and architectural designs were used to reintegrate spatial plantation village concepts into new housing developments while also practicing rural design strategies in Hāwī town, North Kohala.

The goal of this study is to help understand plantation “camp” or “village” design concepts to help guide new housing developments in existing plantation towns to be better able to promote community living and heritage.
CHAPTER 1

THE HISTORY OF PLANTATION LABOR HOUSING IN HAWAI’I

Agriculture has always been a big part of Hawaii’s history. During the 19th and 20th centuries, many agricultural plantations were established in the Hawaiian islands; typically growing sugar cane for export. While sugar became big business in Hawai’i, so did the need for workers to keep the plantations running. Imported labor became an integral part of the plantation workforce in the mid-19th century after Native Hawaiian populations had declined due to illness and could not sustain the plantation's need for labor.² People came from distant lands such as China, Japan, Korea, Okinawa and Philippines to work and provide for a better life in Hawai’i. Many sought employment so that they could support their families back home.

Temporary Barrack Housing, 18th century -1910:

There were two main types of camps; the skilled labor camps and the unskilled camps. Skilled labor camps were generally located next to the plantation processing mill plant, water pumps, or other specialty machinery while, unskilled camps were located away from the mill and either in or near the sugar cane fields in which laborers worked.

Early camps were typically segregated by ethnicity because of cultural barriers and many laborers were managed “like slaves. Back then the field lunas (leaders) whipped the slow workers and the lazy ones...Haole (Western) workers and Portuguese luna’s (foreman) were paid more than other immigrants for the same work”.³ Most plantation managers saw their workers as temporary workers. Segregation by ethnicity was also used to ensure a constant tension among different ethnic groups. This practice of social separation was thought to pit one ethnic group against another and prevent organized strikes.

Plantation camps where established to house foreign laborers in Hawai’i, especially after the Reciprocity Treaty which established free trade between the United States and the Hawaiian Kingdom in 1876. These early housing arrangements became Hawaii’s first plantation worker

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housing. Early housing conditions were cramped, overcrowded, unsanitary and haphazard.  

Figure 1 is a photograph of an early Japanese camp in the 19th century, located at Wainaku Camp in Hilo, Hawai’i.

![Figure 1: An early Japanese camp in the 19th century located at Wainaku Camp in Hilo, Hawai’i.](image)

**Sanitation:**

Sanitation was primitive and not a priority or concern to camp managers. In some instances, camps would only have one toilet for the entire camp. Matsu Kina, an Okinawan worker living on the Island of Hawai’i, described it as "all the camp people went to the same toilet. you had to wait in line while the people sat. We didn't even have a place to wash clothes". Kiku Yoshida remembered that as late as 1916, one toilet was shared by the entire camp and long house barracks were shared by men, women, and children. Yasutaro Soga, the Nippu Jiji editor, wrote and described Waianae Plantation on Oahu as being "filthy and unsanitary" and that “sewage would overflow within the camp".

A summary list of strikes, lockouts, riots, and other labor disturbances in Hawai’i from 1890-1925 compiled by John E. Reinecke illustrates the numerous labor disputes ranging from housing and working environments. Although the practice of segregation was structured to prevent organized strikes, poor housing and working conditions brought numerous labor disputes.

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Due to the poor housing conditions, worker turnover rate, and numerous labor disputes, outmigration of imported workforce was a concern and became a priority to the Hawai‘i Sugar Planter’s Association in 1909.  

**Unmarried-Worker Housing Type:**

**Barracks and Double Houses**

Wood to build houses were usually imported to Hawai‘i from the Pacific Northwest. Houses were constructed of box or plank framing known in the vernacular as single wall houses, an American construction technique that by 1900, was the dominant method of construction in Hawai‘i.  

Plank and Box framing techniques were developed as a simplified construction method of the Anglo-American timber framing in New England in the 1650’s. These methods of construction removed the inner wall studs and transferred the loads through vertical planks secured to sills and top plates. The planks would provide a building's exterior and interior walls.  

“Plank and Box framing became dominant in New England by the end of the seventeenth century and remained in use in Rhode Island, Connecticut, Massachusetts, New Hampshire, and Maine well into the nineteenth century. Introduced into Kentucky by 1800, and appearing in Tennessee, Arkansas, and Texas by the 1850s, plank and box framing became consolidated under the term “box frame” in the oral tradition of Anglo-American house wrights. Its popularity for use in the production of tenant and sharecropper housing, as well as outbuildings in the latter areas well into the 1920s, provided impetus for its diffusion, initially under the auspices of American sugar companies, to the Hawaiian islands for widespread use in the construction of sugar and pineapple plantation dwellings that were erected during the same period”.  

“Although plank framed buildings were erected in the islands which had neither corner posts nor studs, most examples appear to have not survived in their original form. They have more likely been modified over time through the addition of wood studs or horizontal wooden strips,
located at a plank wall’s mid-point, to provide lateral support. A majority of the buildings which were erected in Hawai‘i using Anglo-American building tradition appear to have been variations of box framing and include corner posts and vertical studs to frame doors and windows.\textsuperscript{12}

There were predominantly two forms of building types: a long, open bunkhouse layout, known as barracks, and a two-room wide, two room deep structure, known as double houses. Barracks would have housed fifty to sixty workers in cramped quarters with men sleeping in multitier bunks stacked 4-5 beds high of one another, or some combination or variation of this arrangement.\textsuperscript{13}

Figure 2 is a photograph of Barracks type housing at Ewa Plantation, on the island of O‘ahu. These Barracks were designed modularly and often configured end-to-end which created a long row of houses with minimal spacing from one structure to the next.

![Figure 2: Barracks at Ewa Plantation. (Bishop Museum)](image)

Single men and families shared rooms in structures called double houses. Families lived in side-by-side rooms sharing a common wall and were either one or two rooms deep. Both barracks and double house were supplemented by detached kitchens or occupants built makeshift stoves in their assigned housing units.\textsuperscript{14}


\textsuperscript{14} Ibid. p. 127.
Figure 3 is a photograph of double houses at Ewa Plantation. In between every other double house were outbuildings which housed the kitchens, baths, toilets and laundries.

Living conditions also varied from plantation to plantation. Miki Saito described plantation camps at Haiku Sugar Company and Kihei Plantation on Maui as being perfect models of housing density. He described these buildings as being twelve-foot-by-twenty-four-foot houses which were divided into two separate apartments. In each side lived either a couple with their children or three to four single male workers. A nine-foot-by-sixteen-foot kitchen outhouse was constructed at the front of every three houses. Saito stated that “there was no reason why the other employers should not give comfortable quarters to their employees...the laborers were the principal sources of their own prosperity, and as human beings those laborers should have fit places in which to live.”

First Generation of Single-Family Homes to Hawai‘i: 1910-1920:

Social and Sanitary Reform

In the early 20th century, establishment of the Territory of Hawai‘i brought the extension of U.S. laws to Hawai‘i though the organic act in 1906. Pressures from minimal labor forces, social reform movements from the Eastern part of the United States, and sanitation standards fueled the first generation of single family homes which marked the first major housing reform in Hawai‘i.

In 1910, the Labor Committee of the Hawaiian Sugar Planters’ Association (HSPA) sent a circular report to all plantations encouraging them to create "better and more commodious quarters" for their workers.

We think that none of the plantations would suffer if they undertook...welfare work among employees...Many plantations have done a great deal for their skilled men by providing club houses, baseball fields, tennis courts, swimming tanks, etc., but there has been very little done for the common unskilled laborer...Plantations away from towns have no opportunities for recreation or amusement..except what are given by passing Japanese shoes...all of the plantations could very well afford to go into this work and attempt to provide their laborers with recreation and amusement, as well as giving them more comfortable and attractive quarters.16

Riznik noted in “From Barracks to Family Homes”, that the Labor Committee’s suggestions were directly adopted from labor reform movements that other American industries had experienced. "In many places in the Eastern part of the United States there are as many diverse classes of laborers as are found in these islands, and magnificent results have been obtained in holding the laborers, as well as in preventing strikes”.17 Labor and housing reforms had lucrative aspects vital to labor workforce stability in both the mainland United States and in Territory of Hawai‘i. By providing better working and living conditions, workers attained positive self-esteem that was reflected in their work ethics. In addition, healthier workers were the result of the increased awareness and implementation of sanitation standards. The key objective of such

17 Ibid.
reforms was to maintain a steady supply of labor workers and to lower the incidence of strikes, since both impacted plantations financially.

Another factor that contributed to the construction of new housing and labor reform was the increase of “picture brides” migrating from native countries and the baby boom that followed in the Territory of Hawai‘i during the beginning of the twentieth century. The territorial population increased at more than twice the national growth rate of the United States, and the principal result of the increase in multi-ethnic population was a shift from a disproportionate number of unmarried males to a balanced gender population”. The newly married couples formed families who needed larger living arrangements and community services, such as medical dispensaries, recreational facilities, and schools. New families brought women and children into the plantation camp setting and thus created a more complex community that required additional institutions such as religious establishments and language schools to perpetuate the home culture for families living in the plantation camps.

In 1911, a serious outbreak of the plague in plantation camps prompted the Territorial Board of Health to mount “a systematic and progressive campaign for the improvement of sanitary conditions”. The Territorial Board of Health provided “plantations with construction drawings for model homes which placed an emphasis on sanitary conditions”. A letter from the agency recommended "low to the ground houses should be raised to have sufficient air space (2ft) or a cement floor put in" and that "buildings too close together should be either torn down or removed".

Social and sanitary reforms brought together the interests of both the Board of Health and social welfare professionals in housing reform. In response to the prevalence of unsanitary and crowded housing conditions that contributed to the spread of infectious diseases, Palama Settlement, the chief voluntary health organization in Honolulu, published the relationship between poor housing conditions, tuberculosis, and the need for community education. Palama Settlement, in partnership with the Board of Health led an Anti-Tuberculosis campaign in 1912 and showcased a "Public Welfare Exhibit". The exhibit showcased single-family homes that

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21 Ibid.
were well ventilated, which were in contrast with housing conditions which were prevalent in Honolulu and on plantations at that time.

**Standardization of Plantation Housing:**

Significant study of the relationship between poor housing conditions and its contributions to the outbreak of diseases brought the first steps of standardizing housing in plantation camps.

In 1914, the Board of Health office in Hilo distributed blueprints for washhouses, water closets, and plantation baths to all plantations throughout Hawai‘i. In 1917, it released plans for double houses and kitchens for two families, and, in 1918 the agency distributed plans for single-family houses that included optional fireplaces with tall smoke hoods at the rear of the dwellings on the lanai next to kitchens. The living room sizes were twelve feet by twelve feet, the kitchens seven feet by twelve feet, and the inset lanais five feet by twelve feet.\(^\text{22}\)

Figure 4 depicts the standard “cottage for one family” plan. Figure 5 is the elevation drawings.

The house plan was a square plan, measured 22’ x 24’ (528 square ft) and had 2 equal bedrooms of 10’ x 12’, a kitchen 7’ x 12’, a 12’ x 12’ living room and a 5’ x 12’ lanai.

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Figure 5: HSPA “Cottage For One Family” Elevation.

Diversified Housing Types among Plantation Camps:

Singles, Couples, and Single-Family Housing Type

Between 1917 and 1920, Grove Farm built 120 homes west of Līhu‘e on Kaua‘i in a single new camp for workers called Puhi Camp. Through the influence of social welfare leaders and architects Clinton Ripley and Charles Dickey, these model houses gained attention from the HSPA and the dwellings set the standard for the industry in the 1920s.²⁵

Robert S. Thurston described the buildings as being erected of three types: (1) Two or three rooms in a row, all under a hip roof, without a kitchen. (2) Two rooms under the same kind of roof, but with a kitchen adjoining in the rear. (3) A three room bungalow with an adjoining kitchen in the rear. The first type is for bachelors; the second for a couple and one or two children; and the third for larger families. The kitchen floors are of concrete. The stove is built of concrete and cast iron and has a concrete smoke stack, thereby reducing to a minimum the chance of fire. Just outside the kitchen is a concrete floor about 4' x 5' on which a wash tub may be set. This floor drains into a concrete gutter which runs past and drains all the houses. Buildings are of wood and are set out in 3 double rows, each row fronting on a street. Cross walks will be put in, making a double row of 8 buildings, or 16 buildings per block. Each building is set on a lot of 50' x 75'. Running water is piped to each kitchen and an open concrete ditch is furnished for draining from the kitchens. If the laborers with to cultivate their gardens the plantation will furnish a team and plow with which to plow up the land.²⁶

²⁶ Ibid.
From "Camps" to "Villages", 1919-1938:

Industry-Wide Reform & United States Influence:

From 1919 onward plantation camps had experienced reforms in sanitation and social welfare. Plantation reforms in Hawaii were influenced by the United States labor reforms that were established during the American industrialization era. Experienced professional welfare workers, architects and planners who conducted studies and made recommendations were schooled and trained in the United States with expertise in industrial labor standards.

In 1919, the HSPA established the Social Welfare Bureau (SWB), which was one of "five hundred industrial welfare departments in the United States and acted as a planning catalyst for individual plantations". The Bureau conducted detailed surveys of living conditions and created and disseminated sets of standard blueprints and bills for construction materials. Over a period of two decades, the SWB monitored housing reforms by recommending changes to plantation housing, producing standard architectural drawings, and providing town-planning guidelines.

The Bureaus reports, provide a record of reforms while also providing insight on the committee's philosophy:

After the Annual Meeting held in 1917, it was suggested that...a committee be appointed at the 1918 Meeting on Sanitation and Social Welfare...a very comprehensive report, pointing out the importance of establishing a closer relationship between employer and employee, and showing how little was being done by our plantations compared with progressive mainland institutions...Investigators have rudely awakened us to a realization that at least some of our plantation conditions are not as they should be, improvements have not progressed as rapidly as we thought, and the delinquency of one plantation endangers the labor statue of all. Beside[s] sound business reasons, there is the obligation that their standards of living and social conditions be such that their descendants will be qualified to become useful American Citizens...There is a tendency to scoff at social welfare works as a passing fad, an impression that its function is somewhat utopian, altogether visionary, and hence utterly impracticable,-an idea that the Director will act as spy, that he will

order impracticable changes and improvements, which in turn will entail unnecessary expense. Such concepts are absolutely erroneous.  

In 1919 the SWB hired Clinton S. Child to conduct an extensive survey of Hawaiian plantations. Child's reported on workers' living conditions and described housing, sanitation, and other camp features. Childs came to the Islands with more than ten years of experience in social work on the mainland, including the position of welfare manager at E. A. Filene & Sons department store in Boston, a company with many progressive programs for its workers. Unfortunately, the majority of the 1919 report by the bureau was not preserved and so is lost to us today.  

Child's evaluation of Grove Farm can be found in the historical papers at Grove Farm Homestead. He visited the new Puhi Camp development which had been influenced by mainland social workers, and architects Charles Dickey and Clinton Ripley. Child considered it "the most advanced construction in the way of camp houses" and also described the numerous camp gardens that were found throughout Grove Farms.

At the Puhi camp each house is provided with a small amount of ground immediately around it, on which quite a good deal of gardening is done, almost universally. In addition to this, a quite large tract of land has been set aside a little distance from the camp on the other side of the road. Each family is given a plot in this division and given water for the purpose of irrigation. These gardens have been very successful and supply a large part of the vegetable need of the families.

Child also commented on camp social life, stating that there was "no organized effort...in the way of recreation and amusement, excepting at Puhi Camp" where a field for baseball, a newly built motion picture and meeting hall was erected.  

The Social Welfare Committee became the Industrial Service Bureau (ISB) in 1920 and commissioned draftsmen to prepare standard blueprint drawings for two and three-bedroom workers' houses; houses for single men; boarding houses; outbuildings; and concrete stoves. Additional plans also included theaters, baseball diamonds and bleachers, and nurseries where visiting public health nurses could conduct "well baby" clinics. [Figures 6-11 show standardized plans by the ISB for numerous housing types.]

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29 Ibid.  
30 Ibid. p. 137.  
31 Ibid.
Figures 6 & 7 show plans for a “Cottage for One Family or Single Men”. The overall building measured 22’ x 24’, had a kitchen, two bedrooms, a living room and a small lanai. Room dimensions were 10’ x 12’ and the kitchen was 9’ x 12’. The kitchens were usually prep areas with make shift stoves.

Figures 8 & 9 show plans for a “3 Bedroom House”. The interior was an adaption of the cottage for one family or single men. A third bedroom was added and room dimensions reconfigured to accommodate overall building dimensions of 22’ x 32’. Two Bedroom dimensions were 11’ x 11’, while one bedroom measurement was 10’ x 10’. The living room was decreased to 11’x11’ and the resulting centered lanai in the cottage for one family house became a corner veranda.

The ISB stated that such homes could be built by five carpenters in five days using an attached bill of materials that had been proposed "with inherent construction economies".  

Detached outbuildings were still used for washing, restrooms, and cooking. Figures 10 – 12 show a “Combination Wash & Toilet” building plans. Figure 10 shows a typical plan for a “Combination Wash & Toilet” building. There were two combination plans: such as a two unit and a four unit design were a two unit reversed back to back. The overall building measured 8’ x 11’ for a two unit and 16’ x 11’ for a four unit model. Figure 11 shows a slight modification to Figure 10, includes a 5’ x 6’ storage room which has been added to the ends making the entire width of the four unit building 26’ x 12’.

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Figure 6: HSPA "Cottage For One Family or Single Men."³³

³³ HSPA "Cottage for One Family or Single Men". (HSPA Collection, University of Hawai‘i at Mānoa).
Figure 7: HSPA “Cottage For One Family or Single Men”. The overall building measures 22’ x 24’, includes a kitchen, two bedrooms, a living room and a small lanai. Room dimensions are 10’ x 12’ and the kitchen is 9’ x 12’. The kitchens were usually prep areas with make shift stoves.  

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34 HSPA “Cottage for One Family or Single Men”. (HSPA Collection, University of Hawai’i at Mānoa).
Figure 8: HSPA “3-Bedroom House.”

HSPA “3 Bedroom House”. (HSPA Collection, University of Hawai‘i at Mānoa).
Figure 9: HSPA “3-Bedroom House.” The interior is an adaption of the cottage for one family or single men. A third bedroom was added and room dimensions reconfigured to accommodate the change. Overall building measurements are 22’ x 32’. Two bedrooms dimensions are 11’ x 11’, while one bedroom is 10’ x 10’. The living room has been reduced to 11’x11’ and the center lanai in the cottage for one family house became a corner porch.\[36\]

\[36\] HSPA “3 Bedroom House”. (HSPA Collection, University of Hawai‘i at Mānoa).
Figure 10: HSPA “Combination Wash & Toilet Building.”

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37 HSPA “Combination Wash & Toilet Building”. (HSPA Collection, University of Hawai‘i at Mānoa).
Figure 11: HSPA “Combination Wash & Toilet Building.”

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38 HSPA “Combination Wash & Toilet Building”. (HSPA Collection, University of Hawai‘i at Mānoa).
Figure 12: HSPA "Combination Wash & Toilet Building".  

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39 HSPA “Combination Wash & Toilet Building”. [HSPA Collection, University of Hawai‘i at Mānoa].
Single Family Structures

In 1920, Donald Bowman, a sanitation engineer and administrator of the ISB concluded that “enough of the small two family houses exist to supply the demands for housing couples with no children for some years to come.” He also stated that the housing priority should be modified to accommodate single families. In the following year ISB, partnered with social-welfare organizations and Bowman, presented the new focus of social-welfare in Hawai’i.

There is a consideration here that goes beyond the question of sanitation air and window space. This is the relationships that result from improper assignments to the houses. Neither ethics or business can ever justify a condition where single men are housed in the same building with married men in rooms that are uncelled with just a board partition between them.” Bowman went on to conclude that “sewerage [sic] is the one thing lacking to make these camps ideal from a health point of view.40

Building "Communities" Around "Villages"

In 1925, the HSPA contracted the industrial relations firm of Curtis, Fosdick, and Belknap to survey Hawaii’s sugar industry management policies. The survey quantified housing conditions, on each individual plantation, based upon responses elicited through an extensive questionnaire. Consultants used US mainland industrial housing standards to guide the HSPA's policy and stated that “the barracks type of buildings must go, that overcrowding must be relieved and that new construction should be limited to one-family with at least two bedrooms.”41

The survey recommended the ISB engage the services of rural industrial housing architects and town planners to help meet the plantations building campaign requirements of "well-laid out streets, sidewalks, sewers, lighting, location of stores, schools, churches, playgrounds and recreational centers, landscaping and gardening, the development of parkways and the variety of beauty of houses.” It also advised that:

...the use of the word "camp", as a designation for the groups of homes in which plantations laborers are housed, should be abandoned and the "camp site" thought of and planned more nearly as the ‘home site’ or ‘village’. The camps

41 HSPA “Combination Wash & Toilet Building”. (HSPA Collection, University of Hawai’i at Mānoa), p.141
should be converted into organized villages, the villages should be named and every measure taken to stimulate and develop normal community interests.\textsuperscript{42}

The survey was the first report that specifically suggested the use of professional architects and planners to help facilitate and design “communities” as opposed to camp sites. Unfortunately, it was not until 1935 that the HSPA followed the report’s recommendations and hired a professional architect and planner, Theodore A. Vierra. Vierra was a Native Hawaiian from Hilo on the island of Hawai‘i. He graduated from Kamehameha Schools, Kapalama in 1919 on the island of O‘ahu. He received his certificate from the Harvard School of Architecture in 1929 and worked in the Boston offices of Coolidge, Sheply, Bulfinch & Abbott for six years before returning to Hawai‘i and becoming a part of the HSPA staff.\textsuperscript{43} Vierra prepared master plans for plantation gymnasiums, clubhouses, swimming pools and offices. He also updated the 1920 standard housing plans and single-family homes that incorporated toilets, showers, and laundries and added more windows to aid in cross ventilation.\textsuperscript{44} Throughout his life, Vierra was a part of numerous architectural and planning projects throughout Hawai‘i, from early subdivisions, residential subdivisions, airports, hotels and inns, various schools, both Universities of Hawaii at Hilo and Mānoa, and multiple commercial buildings.\textsuperscript{45}

Figures 13 & 14 are plans for a “Cottage for Semi Skilled” workers which Vierra updated from plans generated during the 1920’s. The “Cottage for Semi Skilled” workers included a bathroom, three bedrooms, a kitchen, dining room, living room, front porch, and a rear porch for washing. These interior changes were made within a foot print of 28’ x 38’. As the title implied, these new houses were offered to semi skilled workers and not to field workers.

In the effort to provide single-family housing by the ISB, Figure 15 shows plans that converted existing housing into single-family homes. A standard double house, which was a single house divided into two rooms with a front veranda, was converted into a 3 bedroom house with a kitchen, laundry and bath addition.

\textsuperscript{44}Barnes Riznik, “From Barracks to Family Homes: A Social History of Labor Housing Reform on Hawai‘i’s Sugar Plantations”. The Hawaiian Journal of History, vol. 33 (University of Hawai‘i at Mānoa, Honolulu, HI:1999) p. 145-46.
While also providing new housing plans, Figures 16 & 17 are plans for recreational buildings for workers such as a “Plantation Theatre”.
Figure 13: HSPA “Cottage For Semi Skilled” workers.\textsuperscript{46}

\textsuperscript{46} HSPA “Cottage for Semi Skilled”. (HSPA Collection, University of Hawaiʻi at Mānoa).
Figure 14: HSPA “Cottage For Semi Skilled” workers included a bathroom, three bedrooms, a kitchen, dining room, living room, front porch and rear porch for washing. These interior changes were made within a footprint of 28’ x 38’.47

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47 HSPA “Cottage for Semi Skilled”. (HSPA Collection, University of Hawai‘i at Mānoa).
Figure 15: HSPA “Alternative Floor Plan Converting [“Two-Family”] Into House For One Family”.

48 HSPA “Alternative Floor Plan Converting Plan Into House For One Family”. (HSPA Collection, University of Hawai‘i at Mānoa).
Figure 16: HSPA “Plantation Theatre”. 49

49 HSPA “Plantation Theatre”. (HSPA Collection, University of Hawai‘i at Mānoa).
Figure 17: HSPA “Plantation Theatre”.

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50 HSPA “Plantation Theatre”. (HSPA Collection, University of Hawai‘i at Mānoa).
By the 1930’s professional Honolulu architects such as Charles Dickey and Hart Wood began designing for local plantations. Charles Dickey was born in Alameda, California. His maternal grandfather, William P. Alexander, was an early missionary to Hawai‘i. His mother was Anne Alexander, whose brother Samuel Thomas Alexander co-founded Alexander and Baldwin, one of the major plantation companies in Territorial Hawai‘i. Standard plans incorporated toilets, showers, and laundries into dwellings. The designs were reflective of the twentieth-century Hawaiian architecture vernacular movement in Hawai‘i. The movement created stylized architectural designs in consideration of Hawai‘i’s environment and interpretations of iconic Hawaiian structures. Charles Dickey designed many buildings with high, sloped, double hipped roofs, as interpretations of early Hawaiian thatched hale (house) roof forms as architectural tectonics. Dickey stated in 1926, “I believe that I have achieved a distinctive Hawaiian type of architecture”. Fred Williams, another Honolulu architect proclaimed that it was neither new nor distinctively Hawaiian. Williams stated “Twenty –seven years ago, I built a house with that type [high, sloped, double hipped] roof for a barrister in Hertfordshire, England”. Charles Dickey incorporated the stylized Hawaiian roof in many of his projects involved in Hawai‘i that it became a prominent roof of residential architecture. The style was so commonly used that visitors and new comers to Hawai‘i saw it as distinctively being Hawaiian.

One of the house types produced during this time was the single-family house at Ewa Plantation’s Tenney Village. The Tenney houses were:

All of three-bedroom construction with the Hawaiian type roof, and [were] varied in color and [were] placed on their respected lots as to avoid an appearance of formal regimentation. Each house [had] a complete lanai, large living room and convenient kitchen, and is equipped with all modern plumbing and service facilities. Upon completion, the entire new village [was] landscaped as a unit. An assortment of fruit trees [was] planted in each yard, while

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53 Honolulu Advertiser, March 14, 1926: 16, with one illustration.
55 Ibid. p. 104.
flowering trees and ornamental plants [were] located along the streets and
[faced] a hard surface road, service roads being provided at the side or rear.56

Figure 18 shows the Tenney House floor plan. The new floor plan was widely different from the
standard HSPA designs and was the first housing plans to not follow previous HSPA designs. The
dwellings became wider and almost a square in plan in contrast with the more rectangular plans
in the 1920’s. The room dimensions were expanded to 10’ x 12’, 12’ x 12’, and 13’ x 12’. Figure
19 shows the Tenney House exterior, with its tall double hipped roof, fenestration details, and
plentiful garden and yard space.

Due to the positive public reviews of the Ewa Plantation Tenney Village and a publication in a
1938 issue of California Arts and Architecture recognizing architectural work for plantations,
HSPA companies began to restructure and re-organize plantation camps to replicate the new
camp or village with housing lots, roads, and open recreational green space.

Figure 20 is a field map of “Camp 13”, Honokaa Sugar Company in 1933. Figure 21 shows a
“New Plan of Camp 13, Kawela” from May, 1939 and Figure 22 shows an August 1939 sketch of
another “Proposed Plot Plan – Overon Camp”. The re-organization of these camps was directly
related to the influences of professional architects and planners who are now designing for the
HSPA and the garden city planning movement which began taking place on the continental US.

The “Garden City” movement was a planning concept that was developed by Englishmen
Ebenezer Howard in the 1890s as an alternative to the industrial city which had been criticized
by its inhabitants. His ideas served as hypothetical, though often unrealized alternatives to the
slums that routinely developed within or in proximity to industrial cities. In essence, Howard
“wanted to build wholly new cities in the midst of [an] unspoiled country side on land which
would remain the property of the community as a whole...[that were] limited in size...and
surrounded by a perpetual “greenbelt”.57 Howard’s ideas were published as “Garden Cities of
To-Morrow” in 1898 and were adopted in theory in Europe and the United States.

56 Barnes Riznik, From Barracks to Family Homes: A Social History of Labor Housing Reform on Hawaii’s Sugar Plantations. The
57 Robert Fishman. Urban Utopias of the Twentieth Century: Ebenezer Howard, Frank Lloyd Wright, Le Corbusier, 1982, as cited in
Stanley Solamillo. “Lāna‘i City BCT Historic District, Lāna‘i, Hawai‘i”. Multi-Property Nomination to the Hawai‘i and National Register
Howard’s concepts were better articulated for layman and planner alike by American Raymond Unwin who published “Town Planning in Practice” in 1909. His block diagrams detailing the placement of a fixed number of housing units per acre as well as his designs for public or open spaces and tree-lined arterials were adopted by architects and design practitioners throughout the United States for a number of new housing developments of the period.\(^{58}\)

In addition to the transition from “camp” to “village”, recreational spaces such as baseball fields, volleyball, gymnasiums, tennis courts, etc. were also incorporated. Figure 21 and 22 both show open recreational space surrounded by housing.

![Diagram](image)

**Figure 18:** 1936 Floor plan of the Tenney Village single-family house which was widely different from the standard HSPA housing designs. The overall house became wider and had an almost square footprint, in contrast with the more rectangular plans of the 1920’s. The room dimensions were expanded to 10’ x 12’, 12’ x 12’, and 13’ x 12’.\(^{59}\)

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\(^{58}\) Stanley Solamillo, "Lāna‘i City BCT Historic District, Lāna‘i, Hawai‘i". Multi-Property Nomination to the Hawai‘i and National Register of Historic Places. Wailuku: Maui County Planning Department, 2009.

Figure 19: Exterior view of the Tenney Village single-family house. All were three-bedroom construction with double-hip roof, and were varied in color and so placed on their respected lots as to avoid an appearance of formal regimentation.

Figure 20: Honokaa Sugar Company “Camp 13, Kawela” field map, 1933.

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61 Honoka’a Sugar Company Map, Camp 13 - “Kawela”, 1933. (HSPA Collection, University of Hawai‘i at Mānoa).
Due to the positive reviews of the Ewa Plantation Tenney Village, HSPA companies began to restructure and re-organize plantation camps to reproduce the new “camp” or “village” concepts with parcels of land, roads, and open recreational green space.

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63 Honokaa Sugar Company Map, “Proposed Plot Plan – Overon Camp”. August 1939. (HSPA Collection, University of Hawai‘i at Mānoa).
The application of new architectural designs for labor housing and facilities became the epitome of twentieth-century prewar design. Single-family working-class dwellings had evolved from previous housing varieties and architectural design variations brought openness to floor plans as well as being responsive to the island environment and weather.

Although better housing and sanitary conditions were implemented, labor reforms were slow moving within the plantation. A summary of labor disputes in Hawai‘i between 1890 to 1925 was compiled by John E. Reinicke that exemplify various acts of mistreating labor workers on plantation mills and camps. These disputes vary from the physical mistreatment and killing of labor workers by lunas, to fines enforced by plantation offices to those refusing to work. Union leaders came from the U.S. mainland to Hawai‘i to recruit and organize plantation workers. Speeches detailing the injustices which workers were subjected to created overwhelming support for unionization. The resulting "Big Strike of 1946" galvanized plantation workers through a lengthy strike under auspices of the International Longshoremen’s and Warehousemen’s Union (ILWU). This was the single largest event that prompted improvement in working conditions of plantation laborers.

Plantation Village Standards

While existing camps were being restructured and re-organized with parceled land divisions, roads, and open recreational green space. The HSPA created the “Plantation Village Standards” in the 1920’s to regulate new village development.

Parceled land was arranged and diagramed as a means for spacing housing. Although parceled land was shown on HSPA drawings, housing remained neutral and owned by plantation companies. Home ownership did not occur until after 1950. As late as 2012, Lāna‘i City still has multiple buildings on blocks under company ownership.

Figure 23 & 24 are 1920 HSPA “Plantation Village Standard” Plans for town development. The plans laid out towns in a grid pattern of 20’ alleys and 30’ streets. Standard housing were laid in parceled lands of roughly 5,000 sq feet, with 50’x100’ dimensions. Housing was constructed

with a 25’ front yard and 10’ side yards, in combination of wash, bath, and toilet outbuildings were sited along the alleys.

Centered in the grid were recreational spaces, such as community parks for varied activities, tremendous play ground spaces, and even baseball fields. Surrounding the recreational spaces and the ends of rows of housing were located for retail and institutional uses such as stores, club houses, theatres, churches, and shops.

The focal points of the “Plantation Village Standards” became central quads of community spaces about which housing was organized. This design approach provided the means by which communal interaction was provided through the addition and incorporation of social spaces into camp living.

Lāna‘i City was designed by Anglo-American engineer David E. Root and built in 1922. Lāna‘i City is one of the few plantation communities that incorporated the “Garden City” concept and “Plantation Village Standards”. Lāna‘i City was the first planned community in the Territory of Hawai‘i and is the last intact plantation town in Maui County as well as one of the last in the State of Hawai‘i.67

Figure 25 depicts 1923 Lāna‘i City block arrangements for a central park and surrounding parcels in “zone 4, Section 9, Plat 01, Lāna‘i City, Lāna‘i island”.

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Figure 23: Hawaiian Sugar Planter’s Association (HSPA) “Plantation Village Standards”, Plan 21, Sheet A (1920). The plan calls for a grid pattern of 20’ alleys and 30’ streets. Standard housing was laid in parceled lands of roughly 5,000 sq feet, 50’x100’. Housing was sited with 25’ front yards and 10’ side yard boundary. Combined wash, bath, and toilet outbuildings would be sited along the alleys.68

Figure 24: Hawaiian Sugar Planters’ Association (HSPA) “Plantation Village Standards”, Plan 22, Sheet A (1920). Centered on the grid pattern are recreational spaces such as a community park for varied activities, playground space, and baseball fields. Surrounding the recreational spaces and at the ends of individual rows of housing were located commercial and institutional uses such as stores, club houses, theatres, churches, and misc. shops.69

Figure 25: Lāna’i City block arrangement (1923) for a central park and adjacent parcels in “zone 4, Section 9, Plat 01, Lāna’i City, Lāna’i,” Hawai’i TMK Service in 1984. Lāna’i’s city block arrangement is a variation of the “Plantation Village Standard” plan.

Individual Homeownership, 1947-1960:

Housing Subdivisions

Unlike housing on the U.S. mainland, Individual home ownership did not become widespread until well after World War II. Even after the unionization of the industry by the ILWU in 1946, which produced better opportunity in the plantation system, the “American Dream” of home ownership amongst plantation workers was slow to be realized in Hawai’i.

In 1946, under the terms of a new “union contract, management and labor agreed to end company subsidized housing as a perquisite and to treat employees as market rate rent-paying tenants for the first time”. Plantations viewed giving up the maintaining of the worker housing sector in favor of wage increases and rental fees. Maintaining aging housing was financially

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undesirable to the HSPA and thus a rental program was initiated. Monthly rents were kept fairly low because they were reflective of the value of the dwellings. These structures were quite old and the ILWU had no intentions of rehabilitating them for home ownership due to their extensive costs.\(^{71}\)

The rental rates corresponded with three housing classes and were categorized by the basic type of construction and facilities provided. The homes are also classified by physical condition into four groups: poor, fair, good and excellent.

**Description of the Three Classes of Village Housing:**

**CLASS 1.** A dwelling constructed of rough merchantable lumbar, stud framing, single wall, floors 1” x 12” or 1” x 6”; stock sized or T & G doors; sliding windows; drop cord electrical outlets; toilet, bathing and laundry facilities detached; kitchen with sink and tap may be attached or detached.

**CLASS 2.** A dwelling constructed of surfaced lumber; ceiling of Canec (a composite material made from bagasse – a sugar cane by product., surfaced lumber, or other material; single wall: stock doors; sliding or hung windows; stain or painted outside and inside; drop cord electrical outlets; kitchen, with sink and tap, attached; toilet and bathing facilities and laundry, with laundry trays, detached; sewer or cesspool connections.

**Class 3.** A dwelling constructed of surfaced lumber, Canec or surfaced lumber ceiling; T & G floors; stock doors; sliding, double hung or casement windows; stain or painted outside and inside; clothes closets; some kitchen cabinet work; floor plugs and outlets for electrical equipment; shower or bathtub, standard flush toilet, lavatory and kitchen sink in the dwelling; individual laundry and laundry trays; sewer or cesspool connections.\(^{72}\)


\(^{72}\) The Sugar Industry in Hawai‘i, “Sugar Plantation Housing in Hawai‘i”, University of Hawai‘i, Hamilton Library. p. 20
Description of Four Categories Covering the Physical Conditions of Houses:

- **Poor**: A dwelling requiring major repairs or thorough renovating or possibly complete replacement.
- **Fair**: A dwelling requiring general, but not major, repairs and painting.
- **Good**: A dwelling which has been well-maintained and repaired.
- **Excellent**: A dwelling built, remodeled, or thoroughly renovated within the past five years, and well-maintained.\(^7\)

Figure 26 illustrates the rental notes for single-family homes divided by floor area, class and condition of building.

Rental fees for single men’s quarters were calculated by either the total floor area of the house divided by the number of bedrooms, or the floor area per bedroom, and commenced with dwellings of 100 square feet or less outbuildings. Figure 27 illustrates the rental fee program for single men.

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\(^7\) The Sugar Industry in Hawai’i, "Sugar Plantation Housing in Hawai’i", University of Hawai’i, Hamilton Library. p. 20
**Figure 26:** Single-Family Homes, Hawai'i Sugar Industry Monthly Rental Rates of Dwellings characterized by Floor Area, Class and Condition of Building.  

| CLASS 1 | | | | |
| FLOOR AREA | POOR | FAIR | GOOD | EXCELLENT |
| 500 Sq. Ft. or less | $10.00 | 12.50 | 15.00 | 18.00 |
| 550 | 11.00 | 14.00 | 17.00 | 20.00 |
| 600 | 13.00 | 15.50 | 18.00 | 21.00 |
| 650 | 15.00 | 18.50 | 20.00 | 23.00 |
| 700 | 17.00 | 20.00 | 22.00 | 25.00 |
| 750 | 19.00 | 22.00 | 24.00 | 27.00 |
| 800 | 21.00 | 25.00 | 27.00 | 30.00 |
| 850 | 23.00 | 28.00 | 30.00 | 33.00 |
| 900 | 25.00 | 30.00 | 32.00 | 35.00 |
| 950 | 27.00 | 33.00 | 35.00 | 38.00 |
| 1000 | 29.00 | 35.00 | 38.00 | 41.00 |

| CLASS 2 | | | | |
| FLOOR AREA | POOR | FAIR | GOOD | EXCELLENT |
| 500 Sq. Ft. or less | $12.50 | 15.00 | 18.00 | 21.00 |
| 550 | 14.00 | 17.00 | 20.00 | 24.00 |
| 600 | 16.00 | 19.00 | 22.00 | 26.00 |
| 650 | 18.00 | 21.00 | 24.00 | 28.00 |
| 700 | 20.00 | 23.00 | 26.00 | 30.00 |
| 750 | 22.00 | 25.00 | 28.00 | 32.00 |
| 800 | 24.00 | 27.00 | 30.00 | 34.00 |
| 850 | 26.00 | 30.00 | 33.00 | 37.00 |
| 900 | 28.00 | 33.00 | 36.00 | 40.00 |
| 950 | 30.00 | 36.00 | 39.00 | 43.00 |
| 1000 | 32.00 | 40.00 | 43.00 | 47.00 |

| CLASS 3 | | | | |
| FLOOR AREA | POOR | FAIR | GOOD | EXCELLENT |
| 500 Sq. Ft. or less | $15.00 | 18.00 | 21.50 | 25.00 |
| 550 | 17.00 | 20.50 | 24.00 | 28.50 |
| 600 | 19.00 | 23.00 | 27.00 | 32.00 |
| 650 | 21.00 | 25.50 | 30.00 | 35.50 |
| 700 | 23.00 | 28.00 | 33.00 | 38.00 |
| 750 | 25.00 | 30.50 | 36.00 | 42.00 |
| 800 | 27.00 | 33.00 | 39.00 | 45.00 |
| 850 | 29.00 | 37.00 | 43.00 | 50.00 |
| 900 | 31.00 | 41.50 | 49.00 | 57.50 |

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*The Sugar Industry in Hawai'i, “Sugar Plantation Housing in Hawai'i”, University of Hawai'i, Hamilton Library. p.21*
### Figure 27: Single Men’s Quarters, Hawai‘i Sugar Industry Monthly Rental Rates Bedrooms in Single Men’s Quarters categorized by Floor Area per Bedroom, Class and Condition of Building; and per Capita Minimum Rental rates.²⁵

<table>
<thead>
<tr>
<th>Class</th>
<th>SINGLE OCCUPANCY</th>
<th>PER CAPITA MINIMA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>POOR</td>
<td>FAIR</td>
</tr>
<tr>
<td>100 Sq. Ft. or less</td>
<td>$5.00</td>
<td>5.75</td>
</tr>
<tr>
<td>125</td>
<td>5.25</td>
<td>6.25</td>
</tr>
<tr>
<td>175</td>
<td>5.75</td>
<td>6.75</td>
</tr>
<tr>
<td>225</td>
<td>6.25</td>
<td>7.25</td>
</tr>
<tr>
<td>275</td>
<td>6.75</td>
<td>7.75</td>
</tr>
<tr>
<td>325</td>
<td>7.25</td>
<td>8.25</td>
</tr>
</tbody>
</table>

²⁵ The Sugar Industry in Hawai‘i, “Sugar Plantation Housing in Hawai‘i”, University of Hawai‘i, Hamilton Library. p. 22
Due to a lack of regular maintenance, the majority of plantation dwellings were in poor condition with few opportunities for individual ownership. In 1947, Castle and Cooke provided opportunities for homeownership at Kohala Sugar Company on the Big Island and at Waialua Plantation on O‘ahu. Alexander and Baldwin offered homeownership in 1949 for the Hawaiian Commercial Sugar Company workers under a new development called Kahului New Town.\footnote{Barnes Riznik, “From Barracks to Family Homes: A Social History of Labor Housing Reform on Hawaii’s Sugar Plantations”. The Hawaiian Journal of History, vol. 33 (University of Hawai‘i at Mānoa, Honolulu, HI:1999), p. 150.}

During the Great Aloha Strike of 1958, Kohala workers demanded new housing and labor direction from the Kohala Sugar Company and began negotiating for change in that same year. 673 workers were employed by the Kohala Sugar Company when they announced; “The Company has been developing plans that will make home ownership an economic possibility for every employee”. In 1960, Kohala Sugar Company presented each employee with a one-third acre lot of land, and provided an option to purchase plantation homes for minimal fees.\footnote{Sophia V. Schweitzer & Michael S. Gomes. Kohala Aina, A History of North Kohala. (Mutual Publishing, Honolulu, HI: 2003) p. 72.}

Low rents for plantation housing were a disincentive to homeownership as well as the established social; communal relationships, in plantation “camps” and “villages”. Plantation “camps” or “villages” over the years evolved into multi-cultural communities through cultural exchange and inter-marriage. This created a unique sense of place and environment for plantation camp communities. One writer described the environment in 1936:“Here was small-town America with a tropical twist: homes, churches and schools nestled amid mango trees, hanging vines and fields of billowing cane”.\footnote{Yasushi “Scotch” Kurisu, Sugar Town: Hawai‘i Plantation Days Remembered, (Watermark Publishing, Honolulu, HI: 1995), p. 31.}

New community development however, was rare as this required land, and the majority of land dedicated for agriculture. In addition, many “plantations simply chose not to sell any of their property to individuals for homes as land values appreciated on all the islands after statehood in 1959”.\footnote{Barnes Riznik, From Barracks to Family Homes: A social History of Labor Housing Reform on Hawaii’s Sugar Plantations, The Hawaiian Journal of History, Vol. 33 ((University of Hawai‘i at Mānoa, Honolulu, HI:1999), p. 151.}

**Kahului New Town, American "Dream City" at Kahului, Maui**

The newest housing development of the period was Kahului New Town (1950s), also known as "Dream City" at Kahului, was designed by Bartholomew & Associates of St. Louis, Missouri which utilized acreage of non-sugar growing lands. Lot sizes were 9,275 square feet, and the houses
built between 1950 and 1953 used the new HSPA housing standard plans created by architect and planner Theodore A Vierra and his draftsman, Mata Kimura. The new houses were called "All Hawai‘i" houses, by Vierra. These houses measured between "800-1000 square feet, were built on a concrete slab with asphalt tile flooring and featured hollow-tile walls. They contained three bedrooms, a living and dining room, kitchen, toilet, bath, and laundry, and were similar to post war U.S. mainland middle-class homes. Carports were optional additions".  

“Dream City” was Vierra’s first substantial housing project. He commented on the project in 1982: [trying] “to get variety with it – we finally came up with a scheme – did three sets of working drawings for it – but I wasn’t satisfied – I didn’t feel we had the solution. We had good (house) plans – but it would have been just repetition, repetition right down the line and I just thought that was just not the answer and I remember I told everyone – WE ARE GOING TO DO THIS JOB OVER AGAIN...”  

Vierra settled on a rectangular house plan and he described creating variety by “turning it around on the lot [with in]...(optional) garage added on one end”.  

The “Dream City” Master plan incorporated the standard double loaded 9,000-10,000 square foot lots fronting residential streets. The standard plan was built throughout Kahului with parks and open green space scattered amid dense housing lots.

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82 Ibid. p. 39.
Figure 28: Kahului New Town, also known as “Dream City” at Kahului, was designed by St. Louis, Missouri, city planners Bartholomew & Associates and utilized acreage of non-sugar growing lands. Lot sizes were 9,275 square feet, and the houses built between 1950 and 1953 utilized the new HSPA housing standard plans designed by architect and planner Theodore A Vierra and his draftsman, Mata Kimura.\(^{83}\)

End of the Era of the Plantation, 1960-1980:

New Business, New Development

In the 1960's, sugar plantations began to close their doors due to the high price of production and export. Plantation camps were dismantled, auctioned off, or sold to workers through special financing transactions. Plantation camp or village life became something of the past as new business and new development spread throughout Hawai’i.

Figure 29 shows a plantation house being relocated from Kohala Sugar Company’s, Union Mill Camp, to the Kynnersley subdivision by company personnel in 1960. Sixteen houses were moved from Union Mill Camp to a development on Kynnersley road along with an estimated 70 additional relocated homes from other areas.  

Figure 29: Plantation house being moved from Kohala Sugar Company’s, Union Mill Camp to Kynnersley subdivision by company personnel in 1960.

As agriculture no longer became Hawaii’s primary business, land and resort development increased along with numerous urbanization projects on acres of fallow sugar lands. Subdivision development in Hawai’i increased dramatically in the 1980s, with many new housing projects that were modeled after middle-class American suburbs.

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85 Ibid.
Figure 30 shows Ainakea subdivision in North Kohala, Hawai‘i. Ainakea subdivision was developed in 1980s and was much different from the “village” schemes of the 1930s and 1940s. There are heavily paved roads with dense housing and no central or surrounding public open/recreational spaces or community buildings. This type of cluster development became the norm of new housing development in Hawai‘i. Cluster or spot development was intended to confine housing to one area and maintain surrounding green/agriculture space. Community needs for the most part were neglected in cluster or spot development projects. There were no longer areas which promoted community social or recreational activities within neighborhood settings.

Figure 30: Ainakea subdivision, N. Kohala, Hawai‘i. Developed in 1980s, was different from the “village” schemes of the 1930s and 1940s. There are heavily paved roads and dense housing and no central or surrounding public open/recreational spaces or community buildings.

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86 Ainakea subdivision, N. Kohala, Hawai‘i. (Google Earth:2011).
Evaluating the Evolution of Hawaiʻi Plantation Villages

Plantation camps originated as a means to house the Hawaiʻi Sugar Plantation’s labor workers and over time evolved into being the catalyst of Hawaii’s housing stock. Maps can be reviewed through time to understand village changes. The best of these are Sanborn insurance maps.

Founded in 1867 by D. A. Sanborn, the Sanborn Map Company was the primary American publisher of fire insurance maps for nearly 100 years. Sanborn fire insurance maps are the most frequently consulted maps in both public and academic libraries. These maps are valuable historical tools for various professionals such as urban specialists, social historians, architects, geographers, genealogists, local historians, planners, environmentalists and anyone who wants to learn about the history, growth, and development of American cities, towns, and neighborhoods. Sanborn maps are large-scale plans containing data that can be used to estimate the potential risk for urban structures. This includes information such as the outline of each building, the size, shape and construction materials, heights, and function of structures, location of windows and doors. The maps also give street names, street and sidewalk widths, property boundaries, building use, and house and block numbers.

Construction details such as, steel beams or reinforced walls are often given on the plans while shading indicates different building materials. Information on building use is given, ranging from symbols for generic terms such as stable, garage, house, and warehouse to names of owners of factories and details on what was manufactured in them. In the case of large factories or commercial buildings, even individual rooms and the uses to which they were put are recorded on the maps. Other features shown include pipelines, railroads, wells, dumps, and heavy machinery.

Although Sanborn fire insurance maps were used to survey multiple plantation sites, not all are accessible today.

Through studying Sanborn fire insurance maps of plantation mills and plantation towns during the 1900s, an inventory of buildings, spatial layouts and organizational patterns can be compiled. Analyzing plantation survey maps in the years 1914, 1919, 1921, 1927, and 1956,

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there is a coherent of the spatial designs strategies and guidelines that were used to create a group of housing into a village community.

Figure 31 is a matrix of various 1919 Sanborn fire insurance maps of sugar plantation mill surveys (Figures 32-41) on the Island of Hawai‘i. Looking through the various maps, housing clusters around the mills where typically clustered together with shared community facilities such as kitchens, toilets, social halls, club houses, wash houses, swimming tanks and tennis courts scattered through the area generally centralized and around the housing units. The maps portray a variety of single men quarters and single family housing with various spacing of 15 to 40 feet apart.

Figure 42: Matrix of Honokaa, Laupahoehoe, Kapaaau, and Hawi Plantation Town Surveys from 1914, 1921, 1927, and 1954. The study of these towns inventories the diverse housing as well as the general layout of plantation towns. Commercial and public entertainment structures aligned around major intersections creating the town hub. Housing and basic community structures where clustered aside of the major roadways either in a grid layout with unpaved roads or around and open space with community parking aligning the major road or exterior of the camp cluster. Four major types of housing were barracks, double house duplex, single family house, triple or quad room houses single men quarters, and dwellings attached to commercial establishments. Documented spacing of houses spanned an average of 15-30 feet.
<table>
<thead>
<tr>
<th>Sugar Mill Survey 1919</th>
<th># of house types</th>
<th>Spacings</th>
<th>Communal Structures</th>
<th>Others?</th>
<th>What Kind of Structure?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kohala Hawi Mill &amp; Plantation Co.*</td>
<td>5 Single Family Houses 0 Double Family Houses 2 Barracks Housing</td>
<td>23-55 Feet</td>
<td>Social Hall</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Kohala Union Mill Co.*</td>
<td>4 Single Family Houses 1 Double Family House 1 Barracks Housing</td>
<td>22-40 Feet</td>
<td>None</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Kohala Niulii Mill &amp; Plantation*</td>
<td>3 Single Family House 0 Double Family Houses 3 Barracks Housing</td>
<td>22-30 Feet</td>
<td>None</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Kohala Halawa Plantations*</td>
<td>2 Single Family House 0 Double Family Houses 3 Barracks Housing</td>
<td>29-45 Feet</td>
<td>Social Hall</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Kohala Sugar Company*</td>
<td>3 Single Family Houses 7 Double Family Houses 4 Barracks Housing</td>
<td>12-30 Feet</td>
<td>None</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Paauhau Sugar Plantation Co.</td>
<td>7 Single Family Houses 5 Double Family Houses 2 Quad Room Houses 1 Barracks Housing</td>
<td>18-30 Feet</td>
<td>Swimming Pool Social Hall Wash House</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Honokaa Sugar Co.*</td>
<td>28 Single Family Houses 0 Double Family Houses 15 Barracks Housing</td>
<td>12-30 Feet</td>
<td>Kitchen Restrooms Social Hall Tennis Court Club House</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Kaiwiki Sugar Co.*</td>
<td>8 Single Family Houses 7 Double Family Houses 0 Barracks Housing</td>
<td>19-40 Feet</td>
<td>Wash House</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Laupahoehoe Sugar Co.</td>
<td>12 Single Family Houses 10 Double Family Houses 0 Barracks Housing</td>
<td>20-28 Feet</td>
<td>Kitchen Club House Hospital</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Pepeekeo Sugar Co.</td>
<td>12 Single Family Houses 12 Double Family Houses 0 Barracks Housing</td>
<td>16-30 Feet</td>
<td>Kitchen Hospital</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Onomea Sugar Co.</td>
<td>3 Single Family Houses 11 Double Family Houses 1 Quad Room House</td>
<td>20-40 Feet</td>
<td>Social Hall</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
<tr>
<td>Waiakea Mill Co.’s Sugar Mill</td>
<td>12 Single Family Houses 14 Double Family Houses 2 Triple Room Houses 0 Barracks Housing</td>
<td>18-40 Feet</td>
<td>Church &amp; School Room Bath &amp; Laundry Kitchen</td>
<td>Yes</td>
<td>Plantation Mill</td>
</tr>
</tbody>
</table>

Figure 31: Matrix of various 1919 sugar plantation mill surveys (Figures 32-41) on the Island of Hawai‘i by author. Looking through the various maps, housing clusters around the mills where typically clustered together with shared community facilities such as kitchens, toilets, social halls, club houses, wash houses, swimming tanks and tennis courts scattered through the area generally centralized and around the housing units. The maps portray a variety of single men quarters and single family housing with various spacing of 15 to 40 feet apart.
Figure 32: (18) 1919 Survey of Hawi Mill & Plantation Co., North Kohala, Hawaiʻi, 5 single family houses and 2 barracks housing colored in yellow. Social Hall colored in orange. Laborers camp is approximately 100’ from mill. (18B) Union Mill Co., N. Kohala, Hawaiʻi. 4 single family houses, 1 double house, and 1 barracks spaced 22’ to 40’ apart with no community structure.88

Figure 33: (19) 1919 Survey of Niulii Mill & Plantation, North Kohala, Hawai‘i, 3 single family houses and 3 barracks housing colored in yellow. Housing spaced 22-30 feet apart. (19B) Halawa Plantations, N. Kohala, Hawai‘i. 2 single family houses and 3 barracks spaced 29’ to 45’ apart with one social hall.  

Figure 34: (20) 1919 Survey of Kohala Sugar Co., North Kohala, Hawai‘i, 3 single family houses, 7 double houses and 3 barracks housing colored in yellow. Housing spaced 12’-30’ apart. No community structure surveyed but laborers camp beyond survey is mentioned.\textsuperscript{90}

Figure 35: (22) 1919 Survey of Paahau Sugar Plantation Co., Hawai‘i. (22C) Camp located quarter of a mile south of mill. Two clusters of community buildings and housing quarters. Community buildings include a social hall, swimming pool, general store, and office. Housing cluster includes 7 single family homes, 5 double houses, 2 quad room houses and one barracks highlighted in yellow.  

Figure 36: (21) 1919 Survey of Honokaa Sugar Co., Hawai‘i. Camps located 1 mile north of mill. Camp consists of 28 single family houses and 15 barracks housing spaced 12'-30' apart. Community buildings include a social hall, swimming pool, club house, and office scattered around the perimeter of the camp while kitchens and washrooms were centralized in the camp.  

Figure 37: (23) 1919 Survey of Kaiwiki Sugar Co., O'okala, Hawai‘i. Camps are approximately 300' north of mill. Camp consists of 8 single family houses and 7 double houses spaced 19’-40’ apart. Community buildings include a social hall, kitchens and washrooms where centralized in the camp.93

Figure 38: (24) 1919 Survey of Laupahoehoe Sugar Co., Laupahoehoe, Hawai‘i. Laborers camp consists of 12 single family houses and 10 double houses highlighted in yellow, spaced 20'-28' apart. Community buildings highlighted in orange include a club house, kitchens and washrooms were centralized or organized on the end of a quad.\(^\text{54}\)

Figure 39: (26) 1919 Survey of Pepeekeo Sugar Co., Pepeekeo, Hawai‘i. Laborers camp consists of 12 single family houses and 12 double houses highlighted in yellow, spaced 16'-30' apart. Houses primarily align the main roads. Hospital is located in (26B).95

Figure 40: (27) 1919 Survey of Onomea Sugar Co., Onomea, Hawai‘i. Laborers camp consists of 3 single family houses, 11 double houses and 1 quad room house highlighted in yellow, spaced 20'-30' apart. Houses primarily cluster around an open space with community parking aligning the main road.\footnote{1919 Sanborn Fire Insurance Maps of Hawaii\textsuperscript{a} \url{http://magis.manoa.hawaii.edu/maps/index.html}, access: February, 2011.}
Figure 41: (28) 1919 Survey of Waiakea Mill Co., Waiakea, Hawai‘i. Laborers camp consists of 12 single family houses, 14 double houses and 2 triple room houses highlighted in yellow, spaced 18'-40' apart. Houses orient in a grid with rows of housing and a row of wash houses and kitchens are mixed in every other row. A church and school room located in the East corner of the survey.  

<table>
<thead>
<tr>
<th>Year</th>
<th>Town</th>
<th># of house types</th>
<th>Spacing</th>
<th>Communal Structures</th>
<th>Others?</th>
<th>What Kind of Structure?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1914</td>
<td>Honokaa Town*</td>
<td>44 Single Family Houses 8 Double Family Houses 2 Triple Room House 17 Family Type Dwellings Adjacent/Attached to Merchants 5 Barracks Housing</td>
<td>13-30 Feet</td>
<td>Tennis Court Kitchen Restrooms Social Hall Japanese/Christian Church</td>
<td>Yes</td>
<td>Plantation Mill Korean School Honokaa Public School Honokaa Club (Hotel) Japanese School Japanese Hospital Town Merchants</td>
</tr>
<tr>
<td></td>
<td>Laupahoehoe Town</td>
<td>26 Single Family Houses 1 Double Family House 1 Quad Room Houses 1 Family Type Dwelling Adjacent/Attached to Misc. Merchants</td>
<td>20-72 Feet</td>
<td>Social Hall Restroom Tennis Court Hawaiian Church Church of Jesus Christ of L.D.S</td>
<td>Yes</td>
<td>Laupahoehoe Public School Classrooms Laupahoehoe Hotel Japanese School Japanese Temple Misc. Merchants</td>
</tr>
<tr>
<td></td>
<td>Kapaau</td>
<td>21 Single Family Houses 2 Double Family Houses 3 Family Type Dwelling Adjacent/Attached to Misc. Merchants</td>
<td>10-50 Feet</td>
<td>Kohala Club Restrooms</td>
<td>Yes</td>
<td>Bakery Bank District Court House Jail Misc. Merchants</td>
</tr>
<tr>
<td>1927</td>
<td>Hawi Town*</td>
<td>37 Single Family Houses 3 Double Family Houses 2 Triple Room Houses 9 Quad Room Houses</td>
<td>25-40 Feet</td>
<td>Theatre Club House</td>
<td>Yes</td>
<td>Hawi Town Merchants</td>
</tr>
<tr>
<td>1956</td>
<td># of house types</td>
<td>Spacing</td>
<td>Communal Structures</td>
<td>Others?</td>
<td>What Kind of Structure?</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------------------</td>
<td>---------</td>
<td>---------------------</td>
<td>--------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>Honokaa Town*</td>
<td>104 Single Family Houses 5 Double Family House 3 Triple Room House 5 Barracks Housing</td>
<td>15-30 Feet</td>
<td>R.C. Church &amp; Gymnasium Tennis Court Restrooms Honokaa Theatre Kitchens Peoples Theatre Filipino M.E. Church Public Library</td>
<td>Yes</td>
<td>Bank Hongwanji Japanese Mission Honokaa Hospital Honokaa Club Hotel Honokaa Congressional Church The Rickard Hotel</td>
<td></td>
</tr>
<tr>
<td>Laupahoehoe Town**</td>
<td>13 Single Family Houses 2 Family Type Dwelling Adjacent/Attached to Misc. Merchants</td>
<td>20-72 Feet</td>
<td>Hawai’i National Guard Armory Gym Tennis Court Theatre Library</td>
<td>Yes</td>
<td>Laupahoehoe High &amp; Ele. School Japanese Temple</td>
<td></td>
</tr>
<tr>
<td>Kapaau Town</td>
<td>34 Single Family Houses 0 Double Family Houses 3 Family Type Dwelling Adjacent/Attached to Misc. Merchants</td>
<td>10-50 Feet</td>
<td>Kohala Club Hotel Theatre Restrooms</td>
<td>Yes</td>
<td>Bakery Bank District Court House Jail Misc. Merchants Kohala County Hospital</td>
<td></td>
</tr>
<tr>
<td>Hawi Town*</td>
<td>43 Single Family Houses 3 Double Family Houses 1 Triple Room Houses 6 Quad Room Houses</td>
<td>25-40 Feet</td>
<td>Kohala Theatre Club House Recreation Building &amp; Gym Luke’s Hotel Church</td>
<td>Yes</td>
<td>Hāwī Town Merchants</td>
<td></td>
</tr>
</tbody>
</table>

* Maps depict Labor Camps Beyond Surveyed Area  
** Laupahoehoe Public School and buildings in survey demolished by 1946 tsunami.

Figure 42: Matrix of Honokaa, Laupahoehoe, Kapa’au, and Hawi Plantation Town Surveys from 1914, 1921, 1927, and 1954 by author. The study of these towns inventory the diverse housing as well as the general layout of plantation towns. Commercial and public entertainment structures aligned around major intersections creating the town hub. Documented spacing of houses spanned an average of 15-30 feet.
Figure 43: 1914 Survey of Honokaa Town (part 1 of 2), Hawai‘i. 28

Honokaa Town camp consisted of 44 single family houses, 8 double houses, 2 triple room houses, 17 family type dwellings attached/detached to merchants and 5 barracks housing highlighted in yellow spaced in 13'-30' variations. Located throughout the town were tennis courts, communal kitchens, restrooms, social halls, Japanese/Christian church, a Korean School, Honokaa Public school, Honokaa Club (hotel), Japanese School Japanese Hospital and various town merchants. Residential camps where oriented in along the road and in clusters, while merchants and commercial structures where located along major intersections.99

Laupahoehoe town consisted of 26 single family houses, 1 double houses, 1 quad room houses, and 1 family type dwellings attached/detached to merchants highlighted in yellow spaced in 20’-72’ variations. Located throughout the town is tennis courts, communal kitchens, restrooms, social halls, a Hawaiian church, church of Jesus Christ of L.D.S., Laupahoehoe Public school, Laupahoehoe hotel, Japanese School, Japanese temple and various town merchants.¹⁰⁰

Figure 46: 1921 Survey of Kapaau Town, N. Kohala, Hawai‘i. Kapaau Town consisted of 21 single family houses, 2 double houses and 3 family type dwellings attached/detached to merchants highlighted in yellow spaced in 10’-50’ variations. Located throughout the town is Kohala Club, theatre, restrooms, bakery, bank, district courthouse jail, community garages and various merchant shops.\textsuperscript{103}

Figure 47: 1927 Survey of Hawi Town, N. Kohala, Hawai‘i. Hawi Town consisted of 37 single family houses, 3 double houses, 3 triple room houses and 9 quad room houses highlighted in yellow spaced in 25’-40’ variations. Located throughout the town is Hawi Club House, a theatre, and various merchant shops. South of Hawi town intersection are 9 quad room houses clustered in a grid with a double loaded arrangement.102

Figure 48: 1956 Survey of Honokaa Town (part 1 of 2), Hawai‘i.

Figure 49: 1956 Survey of Honokaa Town, (part 2 of 2) Hawai‘i. The 1956 Survey of Honokaa Town consisted of 104 single family houses, 5 double houses, 3 triple room houses, and 5 barracks highlighted in yellow spaced in 25'-40' variations. Since the 1914 survey, there has been an increase of 60 single family houses and a decrease in double family houses, triple room houses and attached family/merchant homes. Aside from an increase of single family home, new community and cultural structure appeared such as the Peoples theatre, Filipino M.E. Church, Public library, bank, Hongwanji Japanese Mission, Honokaa congressional church and the Richard Hotel.104

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104 Ibid.
Figure 50: 1956 Survey of Laupahoehoe Town, Hawai'i. Due to a tsunami in 1946, the 1956 Survey of Laupahoehoe Town shows a decrease of residential homes and multiple community structures.  

Figure 51: 1956 Survey of Kapaau Town, N. Kohala Hawai'i. The 1956 Survey of Kapaau Town show an increase of 13 additional single family homes and the demolishing of 2 double houses. There is also the erection of the N. Kohala Hospital.\footnote{Kapaau Town [Hawaii Co.], Hawai'i, 1956. \url{http://sanborn.umi.com.eres.library.manoa.hawaii.edu/cgi-bin/auth.cgi?command=AccessOK&CCSI=2977n}, access: February 2011.}
Figure 52: 1956 Survey of Hawi Town, N. Kohala, Hawai‘i. The 1956 Survey of Hawi Town illustrates an addition of 6 single family homes and the demolishment of 1 triple room house and 3 quad room houses. The 6 new single family homes are clustered round an open space on the South-Western corner of the map. New community structures consist of a recreational building and gym, Luke’s Hotel and a church highlighted in orange.\footnote{Hawi Town [Hawaii Co.], Hawai‘i, 1956. http://sanborn.umi.com.eres.library.manoa.hawaii.edu/cgi-bin/auth.cgi?command=AccessOK&CCSI=2977n, access: February 2011.}
The inventory of housing in 1957 contrasts to that of the 1920’s. This is largely due to HSPA’s agenda of focusing on single family homes. As kitchens, bathrooms, and washrooms became incorporated into the single family house, those same community structures that once forced social interactions became obsolete. The social reform and professional architects and planners influence in the 1930s brought the rise of public spaces and recreational buildings. Up until the 1950s, the pre-war era of housing in Hawai’i was that of community village living. Baseball fields, tennis courts, theatres, libraries, community club houses, gardens and social halls were all meant to help pass time as a community. Post World War II housing development saw a new direction of American influence of suburbia and the ideology and focus of maximizing home ownership of single family homes.

Hawai’i is unique in many ways and its housing history is no different. The multitude of social reforms and their progressive influences on housing from the continental US can be argued as being techniques of "Americanization of Hawai’i". Tracing the history of plantation housing from the hamlets, to social camps and villages, to post war suburban American models, there is something missing in the present housing development in Hawai’i that can be traced back to Hawaii’s "Plantation" Heritage. While the terms camps or villages are used broadly in new development as a description of "community", the reality is but another post World War II American Suburbia.

Through the progress of social reform, we have alienated ourselves from a unique housing concept model of Hawaii’s plantation camps or villages. Amongst plantation elder leaders of the rural sectors of Hawai’i, today’s housing conditions can be questionable. We are blinded by the foresight of spot or cluster housing development and are no longer creating "communities" of social value. There is a high emphasis on the need of creating housing but housing is only one part of the equation in building a community. Housing has been a huge issue in Hawai’i but by learning from our own history, diversified housing types and communal areas for social and recreational engagement are just multiple ideas that need to be resurrected and instilled into our future development to sustain our communities rural character and value.

Figure 53 is a compilation of data on the evolution in Hawai’i Plantation Workers Housing and Camps (pre-1900 to post-2000). The study outlines the shift from plantation camps of barracks, plantation villages of diverse housing, and to exclusive single family subdivisions. Over time,
homes and lots grew, subdivisions became standard form of housing projects with every home fronting a paved road.

Figure 53 is data compiled by Barnes Riznik and the author. Barnes Riznik inventories plantation camps and villages from pre-1900 to 1960. The author inventories post-plantation era development of subdivision.

From pre-1900 to 1960 Plantation housing evolved itself from a mere alignment of worker housing into a planned community village around the concept of balancing housing, open space, recreation and commercial activity.

The planned community layouts and organizing facets of plantation camps were not implemented until the 1930s. Before the re-organization of camps, homes where smaller, varying from less than 500-600sq ft, organized in large rows or small clusters aside major paved roadways. The first reorganizing of existing camps incorporated open spaces, un-paved roads, recreational structures, larger houses (650-1000 sq ft) and individual lot sizes of less than 5,000 sq. ft. Larger house sizes were due to the incorporation of bathrooms and kitchens into the houses. The reorganizing of existing camps focused on re-using existing structures and oriented them around an open space while creating new roads and community structures.108

The standardized plan for plantation villages incorporated primarily single family housing of 850-1,000 sq ft, on 5,000-7,000 sq ft lots fronting roads, centralized around open space and commercial space in a grid system of roads. The grid system of blocking housing, open space, and commercial space led to the standard subdivisions.109

After the end of the plantation village housing, camps that were not re-organized were dismantled, sold off, or re-developed. New housing development was carried out by private developers and land owners (some previous plantation businesses). The focus of planning communities shifted to creating single family homes and thus the average size of single family homes rose to over 1,200 sq ft. Increases to house densities and lot size, eliminated the incorporation of open space and community structures.

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109 Ibid.
<table>
<thead>
<tr>
<th>Evolution in Hawai‘i Plantation Workers Housing and Camps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spatial Organization of Buildings</strong></td>
</tr>
<tr>
<td>Pre-1900 Barracks; Duplex</td>
</tr>
<tr>
<td>1900-1920 Barracks; Duplex; First Single Family</td>
</tr>
<tr>
<td>1920-1940 Duplex; Single Family</td>
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<tr>
<td>1940-1960 Single Family</td>
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<tr>
<td>1960-1980 Single Family</td>
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<tr>
<td>1980-2000 Single Family</td>
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<tr>
<td>Post 2000 Single Family</td>
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<tr>
<td><strong>Representative House Forms</strong></td>
</tr>
<tr>
<td>Barracks; Duplex; First Single Family</td>
</tr>
<tr>
<td>Duplex; Single Family</td>
</tr>
<tr>
<td>Single Family</td>
</tr>
<tr>
<td><strong>Arrangements of rooms in plan</strong></td>
</tr>
<tr>
<td>Barracks: Open bunkhouses for 50-60 workers; U-Shaped</td>
</tr>
<tr>
<td>Bachelor; Four Square</td>
</tr>
<tr>
<td>Four Square; Three bedrooms in corners</td>
</tr>
<tr>
<td>Some L-shaped, three-bedrooms</td>
</tr>
<tr>
<td>Rectangular, Three-bedrooms</td>
</tr>
<tr>
<td>Rectangular, Three-bedrooms</td>
</tr>
<tr>
<td>Rectangular, Three-four bedrooms</td>
</tr>
<tr>
<td><strong>Size of Single Houses</strong></td>
</tr>
<tr>
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</tr>
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<td>500-600 sq. ft.</td>
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<tr>
<td>650-1000 sq. ft.</td>
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<tr>
<td>850-1000 sq. ft.</td>
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<tr>
<td>1000-1200 sq. ft.</td>
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<td>1200 sq. ft.</td>
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<tr>
<td>1,200-1,500 sq. ft.</td>
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<tr>
<td><strong>Number and Type of Windows</strong></td>
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<td>Two-Three per room; double hung; slider</td>
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<td>Two-three pre room; double hung; slider</td>
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<td>Two-three per room; double hung, slider</td>
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<tr>
<td>Two-three per room; double hung, slider</td>
</tr>
<tr>
<td><strong>Kitchens</strong></td>
</tr>
<tr>
<td>Separate</td>
</tr>
<tr>
<td>Separate and attached</td>
</tr>
<tr>
<td>Incorporated</td>
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<tr>
<td>Incorporated</td>
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<tr>
<td>Incorporated</td>
</tr>
<tr>
<td><strong>Baths</strong></td>
</tr>
<tr>
<td>Separate</td>
</tr>
<tr>
<td>Separate and incorporated</td>
</tr>
<tr>
<td>Incorporated</td>
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<tr>
<td>Incorporated</td>
</tr>
<tr>
<td>Incorporated</td>
</tr>
<tr>
<td><strong>Wash Houses</strong></td>
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<td><strong>Toilets</strong></td>
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<td>Separate privies</td>
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<td>----------------------</td>
</tr>
<tr>
<td><strong>Building Systems</strong></td>
</tr>
<tr>
<td>wall construction</td>
</tr>
<tr>
<td><strong>Types of Materials</strong></td>
</tr>
<tr>
<td>Board and batten; shingles</td>
</tr>
<tr>
<td>Board and batten; tongue and groove; first canes; first hollow tile; shingles or metal roofs; concrete floors in outbuildings</td>
</tr>
<tr>
<td>Tongue and groove; canec; hollow tile; shingle; metal roof; cement pad</td>
</tr>
<tr>
<td><strong>Builders</strong></td>
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<tr>
<td><strong>Water Supply</strong></td>
</tr>
<tr>
<td><strong>Sewage and Waste disposal</strong></td>
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<tr>
<td><strong>Electricity</strong></td>
</tr>
<tr>
<td><strong>Sewage and Waste disposal</strong></td>
</tr>
<tr>
<td><strong>Electricity</strong></td>
</tr>
<tr>
<td>----------------------------------</td>
</tr>
<tr>
<td>Standardized construction plans</td>
</tr>
<tr>
<td>Roofs</td>
</tr>
<tr>
<td>Whitewash, Painting, stain coverings</td>
</tr>
<tr>
<td>Siting</td>
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<tr>
<td>Features</td>
</tr>
<tr>
<td>Lot size</td>
</tr>
<tr>
<td>Yards</td>
</tr>
<tr>
<td>Roads</td>
</tr>
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</table>

Figure 53: Data compiled by Barnes Riznik and the author. Barnes Riznik inventories plantation camps and villages from pre-1900 to 1960. The author inventories post-plantation era development of subdivision. Over time, homes and lots grew; subdivisions became the standard form of housing projects modeled by U.S. mainland suburbs.
## Changes in Hawai‘i Plantation Workers Housing and Camps: 1890-1960

<table>
<thead>
<tr>
<th></th>
<th>Pre-1900</th>
<th>1900-1920</th>
<th>1920-1940</th>
<th>1940-1960</th>
</tr>
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<tbody>
<tr>
<td><strong>Percentage of Single-</strong></td>
<td>Less than 10%</td>
<td>20%</td>
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<td>90%</td>
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<tr>
<td><strong>Family Units on</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Plantations</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Means of Food Prep &amp;</strong></td>
<td>Hired Cooks for bachelors</td>
<td>Family; Hired cooks for</td>
<td>Family; Hired cooks for</td>
<td>Family</td>
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<tr>
<td><strong>Cook</strong></td>
<td></td>
<td>bachelors</td>
<td>bachelors</td>
<td></td>
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<td><strong>Catalyst of social change</strong></td>
<td>Increase size of workforce</td>
<td>Demographic shifts; strikes;</td>
<td>Social reforms; HSPA</td>
<td>Unionization and end of</td>
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<td></td>
<td></td>
<td>Board of Health circular and</td>
<td>Industrial Service Bureau</td>
<td>isolation; home</td>
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<td></td>
<td></td>
<td>standardized plans</td>
<td>reports and plans; Worker</td>
<td>ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Strikes</td>
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</tr>
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<td><strong>Camp ethnicity</strong></td>
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<td>Segregated and mixed</td>
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<td>Yes</td>
<td>Yes</td>
<td>Rental after 1947</td>
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<tr>
<td><strong>Tenants</strong></td>
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<td></td>
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<td><strong>Plantation Community</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Churches and temples</strong></td>
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<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>Japanese Language</strong></td>
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<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>Schools</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ethnic Clubs</strong></td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>Medical Care</strong></td>
<td>Plantation Dispensaries and hospitals; outside services: Hospital</td>
<td>Plantation Dispensaries and Hospitals; outside services: hospitals; TB sanatoria; Public health nurse</td>
<td>Plantation Dispensaries and Hospitals; outside services: hospitals; TB sanatoria; Public health nurse</td>
<td>Plantation Dispensaries and Hospitals; outside services: hospitals; TB sanatoria; Public health nurse</td>
</tr>
<tr>
<td><strong>Birthing Practices</strong></td>
<td>Midwives; Family</td>
<td>Midwives; Family; Plantation doctors and nurses</td>
<td>Midwives; Family; Plantation doctors and nurses</td>
<td>Plantation doctors and nurses; Family</td>
</tr>
<tr>
<td><strong>Stores/Salesmen</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>Plantation Recreational</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td><strong>Facilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unionization</strong></td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Figure 54: Social Changes to Hawai‘i Plantation Worker Housing and Camps from Pre-1900 to 1960’s.

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Analyzing the Plantation Village

In analyzing the evolution of Hawai‘i plantation villages, there are key organizational patterns and concepts that make it a desirable way of planning and developing communities.

- **Well Defined “Village” Cluster**

  Pre 1930’s, camp developments were isolated into densities of 30-40 housing units next to main roads. These were laid out according to the topography and nestled into steep sloping areas to preserve flat lands for the cultivation of sugar cane.

  Houses were typically fronting each other around a central open public courtyard, defining public and private spaces.

- **Incorporation of Housing, Open Space and Community Structures**

  Open Space was generally centralized within a cluster of housing with community structures centralized or scattered around the development.

- **Diverse Housing**

  There were numerous housing types through the transition of single men quarters to the single family homes. These were generally barracks, duplexes and single family homes. Spacing around the housing units ranged from 15-30 feet.

- **No Lots/Small Lots**

  Before standardized lot plans, housing was dispersed and clustered with 15’-30’ spacing between structures. Early lot sizes were small, roughly 5,000 to 7,000 sq. ft.

- **Limited Inner Roads**

  Inner roads were non-existent/limited up until the 1900’s. Roads created in the 1900-1920’s were unpaved and linear to rows of housing. The initial reorganizing of plantation camps to villages created belt roads that created a central open space surrounded by houses that lined the road.
• **Community Parking**

The automobile was not readily a part of the average family or individual until the 1950’s. Early accommodations for parking were optional and limited to detached community carports of 4 stalls. These community garages were located around clusters of housing. Parking was clustered together, limiting roads, and not mixed into the housing areas.

• **Landscaping and Gardens**

Early landscaping referred to yards fronting streets be lined with trees. Gardens in the surrounding yard where used first as a source of food production and evolved into ornamental front gardens in the 1930s and 1940s.

• **Smaller house plans**

Early house plans did not include many of the functional spaces such as kitchens and bathrooms but over time house footprints grew with the incorporation of these functions. The single family house evolved into an 800-1,000 sq feet footprint for a 3 bedroom house.

• **Simple Conversion Plans**

One of the fascinating evolution of the plantation houses where the conversion plans. These plans were intended to convert single houses to growing plantation single family needs.

In identifying key concepts that make Plantation Village planning unique, the re-interpretation of these concepts can be integrated into new housing developments in rural plantation towns in a planned approach of creating identifiable communities that foster a variety of living situations.
CHAPTER 2

Historical North Kohala

Figure 55: Map of N. Kohala, Hawai‘i. Major towns of Hāwī and Kapa‘au.¹¹¹

¹¹¹ North Kohala, Hawaii, Map Taken from North Kohala Studies: Preliminary Research in Human Ecology, 197.
New housing development has become increasingly common in rural areas of Hawai‘i where communities still cherish their historic plantations heritage that had once flourished in the area. Many community members still wish that the new developments would be like the plantation camps and feel that it they were a perfect rural model of a village community. These community members and leaders are elderly and also view plantation camps as being an alternative to elderly homes.

This author would like to acknowledge the work of James Stone in his Darch project for Hāwī. Most of the mapping in this overview section is noted as from his project, which was an inspiration to this thesis.

**North Kohala Setting:**

North Kohala is the location for the integration of the plantation “village” concepts.

The district of Kohala is located on the Island of Hawai‘i, which is the largest among the Hawaiian Islands, and is in the northern most region of the island, east of ‘Upolu Point. It is considered the oldest and northern most region of the island of Hawai‘i. This regional land was once called Kohala iloko (inner or mainland Kohala).

The region is isolated from other regions and districts by land features such as the Kohala Mountains and the numerous valleys along the windward coast. Currently, Akoni Pule Highway and the Kohala Mountain Road are the only access routes into and out of North Kohala.

North Kohala is approximately 80,350 acres, or 3% of the total land area of the island of Hawai‘i. While North Kohala encompasses of all the area north of the Honokea stream and Honokoa gulch, the primary emphasis for this study is the region around the town of Hāwī and Kapa‘au.

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**Brief History of North Kohala**

**King Kamehameha I**

Kohala’s historical heritage is primarily linked to the legacy of King Kamehameha I, a Hawaiian Chief of North Kohala that led a conquest throughout the Hawaiian Islands, unifying all of Hawai`i under one kingdom. Many place names, sites and artifacts in North Kohala commemorate the life of King Kamehameha I. His “birthing stones” are located at Kokoiki, near ‘Upolu Point, and “Kamehameha’s rock” is located just outside of Niuli‘i. In addition, King Kamehameha I often used ‘Āinakea in North Kohala as the training grounds for his army. The numerous stream networks in North Kohala made it a prime location for the cultivation of Hawaiian agriculture such as lo‘i kalo and sweet potatoes, and its abundant agricultural resources made it possible to support a vast number of people. These lands were called the “Kohala Field System” and traces of the terracing still currently exist. North Kohala’s abundant agricultural production and resources led to another era in its history, commercialized sugar plantations.\(^\text{114}\)

**Sugar Plantation**

The Kingdom of Hawai‘i was well known for its abundant natural resources. Commercialized sugar plantations were an industrial market that was spreading throughout the Kingdom of Hawai‘i.\(^\text{115}\) Sugar plantations dominated the region of North Kohala between the late 1800’s and into the 1970s. The industry thrived and multiple sugar mills occupied the coastline of North Kohala. The first was the Kohala Mill, established in 1863 and located at Hala‘ula. The second plantation was Hālawa Mill, established in 1873. Union Mill Company was initiated in 1874 and Niulii‘i Mill was founded shortly thereafter in 1876. Star Mill started during 1878 through 1879, and was located behind the current location Holy Bakery at Kapa‘au. Hāwī Mill began in 1881 and later expanded to Hō‘ea Mill upon completion of the “Kohala Ditch”.\(^\text{116}\)

Sugar production doubled in North Kohala in the early 1900s with the construction of the Kohala Ditch. The Kohala Ditch ran ma uka of the “Kohala Field System” diverting water from the valleys on the windward side of North Kohala to the drier west lands. These mills would later be

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\(^\text{116}\) Stephens, Larry K. Kohala Keia, (This is Kohala), Collected Expressions of a Community, A Product of Kohala People, (University of Hawaii at Hilo:1977).
connected by a railroad that helped transport sugar to the Māhukona Harbor. The population in Kohala peaked at 6,500 around 1920 and gave rise to the creation of the towns of Hāwī and Kapa`au.

Sugar production in the 1900s along with technology and business models of centralization forced North Kohala’s independent plantations to merge in 1937 when they formed the Kohala Sugar Company. In 1971, Castle & Cooke announced the closure of the Kohala Sugar Company and over 500 employees where threatened with immediate unemployment. With Kohala’s small population of 3,000, Kohala’s reason of existence ceased with the collapse of the sugar industry in Hawai‘i. The towns of Hāwī and Kapa`au were destined to become plantation ghost towns.

**Tourism and Hospitality**

Since the closing of the Kohala Sugar Company, the North Kohala community has followed the State of Hawaii’s economic model of the hospitality industry into the twenty-first century. As the hospitality and tourism Industry replaced commercial agriculture, North Kohala saw small growth, a majority of which was attributed to the growing development of various resort complexes along the neighboring South Kohala coastline, as well as a growing number of people who built their retirement homes within the district.

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118 Department of Land and Natural resources, North Kohala: Preservation Master Plan for Historical Resources, (1972).
Figure 56: Map of N. Kohala, Hawai‘i. Highlighting the 5 Sugar Plantation Mills across N. Kohala (Kohala, Hō‘ea, Hālawa, Niuli‘i, Hāwī Mills) 119

119 North Kohala, Hawaii, Map Taken from North Kohala Studies: Preliminary Research in Human Ecology, p.197.
N. Kohala Statistics

Annual Rainfall

The Kohala Mountains divide the region into two climate zones. The windward side is lush with an average rainfall of up to 160 inches a year while the leeward side is arid and averages 10 inches of rainfall per year.

Figure 57: Annual Rainfall Data from Hawai‘i County.  

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120 James L. Stone, Ho‘a‘ina: Beyond Technologies Placestudies of Sustainable Communities in Cultural and Ecological Harmony (University of Hawaii, School of Architecture, 2008).
Geology and Topography

Kohala Mountains is the oldest volcanic formation on the island of Hawai‘i and is considered extinct at an elevation of roughly 4,000 feet above sea level. There are two primary volcanic flows that occurred, the Pololu series and the Hāwī series. The leeward side is characteristic of rolling hills while the windward has deep valleys with steep cliffs.

Figure 58: 500’ Contour map of N. Kohala.\textsuperscript{121}

\textsuperscript{121} James L. Stone. Hoa’aina: Beyond Technologies Placestudies of Sustainable Communities in Cultural and Ecological Harmony (University of Hawaii, School of Architecture, 2008). p.91
Soil Classifications

Soil in the Kohala region is silty with moderate permeability. A variety of soils are located throughout the region of Kohala. Soil in the North Kohala area is considered the best soil type for agricultural production. The State of Hawai‘i Land Study Bureau, in partnership with the University of Hawai‘i, provides specific studies of the quality of Hawaii’s lands to include soil quality. Soil is categorized into 5 main classes A-E. “A” and “B” cases are prime agriculture lands, while “C” & “D” lands can be improved to a “B” rating with adequate irrigation.²²²

Figure 59: Land Studies Bureau of Soil Classification in N. Kohala, Hawai‘i. Soil in the N. Kohala area is classified and considered the best soil type for agricultural production.²²³

²²³ Ibid.
Streams of North Kohala

The two climate zones that are created within the Kohala Mountains provide the streams of the windward side perennial while the Leeward side is non-perennial. Lush dense flora and fauna is provided by the windward valleys and gulches. Within the district seven endangered species and eight candidates are found and the diverse fauna that is located in N. Kohala is home to many endangered bird species that are nowhere else on earth. Various species of honey creepers and the ‘io or Hawaiian Hawk are inhabitants the windward side.\textsuperscript{124}

Figure 60: Stream types of N. Kohala, Hawai‘i. Streams Windward of Kohala Mountains are perennial while the Leeward side is non-perennial.\textsuperscript{125}

\textsuperscript{124} James L. Stone. Hoa‘aina: Beyond Technologies Placestudies of Sustainable Communities in Cultural and Ecological Harmony (University of Hawaii, School of Architecture, 2008) p. 94.

\textsuperscript{125} IBID.
Hydrology and Water Supply

2 wells drilled into basal ground water serve the entire N. Kohala community. The Kohala aquifer system is fed by an abundant rainfall which estimated to yield 110MGD. Agriculture water is primarily fed by private water reservoirs and the Kohala ditch, which collects water from the windward side and diverts it to the Leeward side.

Future water demand projected by Hawai‘i county is anticipated to approach 200MGD, necessitating the drilling of more wells as well as incorporating water conservation, water catchment, and wastewater reclamation.

Water Use and Future Demand for N. Kohala

![Water Use and Future Demand for N. Kohala](image)

Figure 61: Water Use and Future Demand for N. Kohala.\(^\text{126}\)

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\(^{126}\) Hawaii County-Water Use & Department Plan 2008.
**Land Ownership**

Parker Ranch is the largest land owner in the district owning approximately 15,188 acres, followed by the State of Hawai‘i. Within the N. Kohala district and the Hāwī and Kapa‘au towns, Surety Kohala, New Moon Foundation, and a combination of smaller corporations are the major land owners.

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**Figure 62: Major land owners in North Kohala.**

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Resident Statistic

According to the 2012 Census, the total population of N. Kohala is 6,322 with approximately equal amount of males and females. Looking at the ethnic breakdown of N. Kohala’s population the majority of ethnicities within the district are Native Hawaiian/Pacific Islander, in conjunction to multi-ethnicity, hapa or Part-Hawaiian. White is considered the second major ethnicity followed by Asians. The ethnic breakdown is characteristic of N. Kohala’s Hawaiian and Plantation history of being predominately a mix of Hawaiian or Part-Hawaiian, Asian and White.

N. Kohala is an aging community with 43% of the current population being between the ages of 50 and 64. These are predominately the members of the community who lived in N. Kohala after the closure of the Kohala Sugar Plantation and new residents that moved into N. Kohala to live out their retirement.\textsuperscript{128}

The general data, according to the 2010 census, contains an average household size of 2.89 people per household, and 65.5 percent of homes being owned while 30.3 percent were rented.

\textsuperscript{128} 2010 U.S. Census
### Population of N. Kohala

<table>
<thead>
<tr>
<th>Population</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>6,322</td>
<td>100%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Population by Sex/Age</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td>3,148</td>
<td>49%</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>3,174</td>
<td>51%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Group</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Under 18</td>
<td>1,412</td>
<td>23%</td>
</tr>
<tr>
<td>20 - 24</td>
<td>303</td>
<td>5%</td>
</tr>
<tr>
<td>25 - 34</td>
<td>691</td>
<td>11%</td>
</tr>
<tr>
<td>35 - 49</td>
<td>1,163</td>
<td>18%</td>
</tr>
<tr>
<td>50 - 64</td>
<td>1,573</td>
<td>26%</td>
</tr>
<tr>
<td>65 &amp; Over</td>
<td>1,064</td>
<td>17%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Population by Race</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>2,110</td>
<td>33%</td>
</tr>
<tr>
<td>African American</td>
<td>13</td>
<td>.25%</td>
</tr>
<tr>
<td>Asian</td>
<td>1,278</td>
<td>20%</td>
</tr>
<tr>
<td>American Indian and Alaska Native</td>
<td>16</td>
<td>.25%</td>
</tr>
<tr>
<td>Native Hawaiian and Pacific Islander</td>
<td>593</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td>92</td>
<td>1.5%</td>
</tr>
<tr>
<td>Identified by two or more</td>
<td>2,220</td>
<td>35%</td>
</tr>
</tbody>
</table>

Figure 63: 2010 Population of N. Kohala.  

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Population Growth

According to the 2010 US Census, N. Kohala grew by 284 individuals or 4.5% within a 10 year period. South Kohala, by contrast, which is closer to the economic centers of the hotel industry, has seen a population increase of 4,496 or 34% increase. The population growth of N. Kohala should be maintained in order for it to preserve its rural nature.

![Population growth chart of N. Kohala vs South Kohala created by author.](image)

Employment and Income

According to the U.S. Census Small Area Estimates (November, 2011), the Hawai‘i County median household income was $46,444. In other words, 50% of the Hawai‘i County households had incomes less than $46,444 and 50% of households made more than $46,444. As a whole, Hawai‘i County has nearly a third of its population (31.7%) with an income at or below 200% of the Federal Poverty Level. Employment in select industries indicates that a majority of the population works in visitor industry related jobs, which are primarily located at resorts along the South Kohala coastline.¹³⁰

¹³⁰ Hawaii County, 2000 US Census.
Agriculture remains a strong historical industry for N. Kohala and a number of farms thrive within the district. Many small farmers produce are for self sufficiency or local markets as cattle ranching by Parker Ranch and smaller partner ranches utilize the majority of the land. Over time, local feedlots have closed and the majority of cattle have been exported to mainland US facilities.

**Farms in N. Kohala, 2007**

<table>
<thead>
<tr>
<th>Area by Zip Code</th>
<th>Total Number of Farms</th>
<th>Number of Farms selling less than $50,000</th>
<th>Number of Farms selling $50,000-$250,000</th>
<th>Number of Farms selling $250,000 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kapa‘au</td>
<td>54</td>
<td>43</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Hawi</td>
<td>37</td>
<td>31</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Figure 66: Farms in N. Kohala, 2007 USDA Census of Agriculture.\(^{132}\)

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\(^{131}\) James L. Stone. Hoa‘aina: Beyond Technologies Placestudies of Sustainable Communities in Cultural and Ecological Harmony (University of Hawaii, School of Architecture, 2008).

Waste: Sewage and Solid

There is currently no county wastewater treatment system nor is there any planned in the future. Current cesspool and private wastewater systems are used throughout the district, however, new development requires a wastewater treatment system via septic tanks. There is also no curbside waste collection in the district, and instead residents either haul their waste to a transfer station or pay for private road side pickup service. The current landfill system is projected to serve the district for at least the next 40 years.133

Education

North Kohala is served primarily by the state Department of Education (DOE) schools, Kohala Elementary, Middle & High school. There are also 2 private schools, Kohala Mission School (K-8) and Kamehameha Pre-school.

The rural character has been largely untouched in North Kohala by the national chain stores, big business and foreign development; however, within the past six years change has accelerated due to the real estate boom in the housing market. “The remote landscape and charming rural town ambiance of North Kohala remain desirable for wealthy absentee homeowners to build million dollar gentlemen ranches and gated communities”.134 In response to the growing development in North Kohala by wealthy foreigners and recreational and commercial activities that are catered to the tourism industry, the North Kohala community has partnered with the County of Hawai’i to have a stronger community voice in the types of developments that are happening within North Kohala and have created a “grass roots” model of community policy.

134 Alex Frost and Shannon Conner, “Community Voices” North Kohala CDP, Community Readiness Program (CRP) Summary (Department of Research and Development – Hawaii County Resource Center: 2007). p. 3.
CHAPTER 3

2006 “Community Voices”, N. Kohala Community Readiness Program

In 2006, the County of Hawai’i, Department of Planning, Department of Research and Development, Townscape Inc., and the Hawai’i Alliance for Community Based Economic Development (HACBED), started conducting a Community Readiness Program (CRP), the initial process to collaborate with the present N. Kohala community, collect data, create a vision statement and structure future goals to initiate the process for the N. Kohala Community Development Plan.

The CRP can be described as a process of meetings and discussions that took place over a 2 year period in which the Community Development Plan (CDP) was formed. Although a 1984 N. Kohala Community Development Plan existed, it was not used or referenced for the CRP. The CRP was established to gain input from the present N. Kohala community. The overall goal of the CRP was to build relationships between the community and government, engage the community in public participation, and create a stronger awareness in community planning.

The CRP created a community logistics team that would notify the broader community of various workshops and meetings. These meetings were for the citizens of N. Kohala to describe their ideas of N. Kohala’s sense of place, vision, values, and priorities that would be the framework of the N. Kohala development plan. Outreach tools that were used to promote the participation of events were numerous phone calls, faxes, e-mails, web notices, flyers, surveys, mailings, signs, banners, newsletters, brochures, and newspaper announcements. Engagements with the community were discussed through one-on-one meetings, neighborhood meetings, meetings at church and local organizations, “talk story” small group meetings, school presentations, student participation, and educational workshops.

The main community workshops were conducted between June 2005 and November 2006. Figure 14 describes the timeframe of the formal meetings that took place over a period of 17 months. During this time, 2,758 ideas were generated from informal small group meetings and surveys. Many of these ideas generally expressed multiple values of the community. To help facilitate the discussions, questions were asked to the community regarding what residents would like to change, what characteristics they would ultimately like to see in their community,
what assets the community has to support the change, and what do to help facilitate change or preservation.\textsuperscript{135}

**KOHALA TODAY**

**North Kohala’s Sense of Place:**

[Diagram of interconnected entities: People, Community (socio-economic), Ecosystem, with elements like History, Culture, Values, Beliefs, Behaviors, Local Jobs, Flora & Fauna, Air, Water, Soil, Climate, Minerals, Small Town Atmosphere, Historical Sites, Working Landscape, Built Environment, School, Hospital, Parks, etc.]

Figure 67: N. Kohala’s sense of place or Wahi Pana, can be described through 3 interconnected entities. First is through the people or community, Community Systems or Socio-Economic System, and Ecological System or ‘Aina and Moana.\textsuperscript{136}

In exercises and discussions about this model of People, Community and Ecosystem, N. Kohala community members define their sense of place as their lifestyle. N. Kohala’s lifestyle is defined by the long history of Hawaiian culture, sugar plantation and ranching.\textsuperscript{137} The rural lifestyle is characterized and shaped by vast agricultural lands, unobstructed vistas and strong communal bonds between family and community. The existing social lifestyle has also been identified as one that community members would like to preserve in North Kohala as future growth and new development are proposed.

\textsuperscript{135} Alex Frost and Shannon Conner, “Community Voices” North Kohala CDP, Community Readiness Program (CRP) Summary (Department of Research and Development – Hawaii County Resource Center: 2007), p. 13.

\textsuperscript{136} Townscape, Inc., “2008 North Kohala Community Development Plan”, (Hawaii County Resource Center: 2008), pg. 3.

\textsuperscript{137} ibid.
Vision & Values

Throughout the numerous meetings that took place with the N. Kohala community, a vision statement was created. The vision statement was a way for the community of N. Kohala to determine what it sees as an ideal condition for its future. Ideals were compiled and a vision was created. The North Kohala Vision entails:

“We are a community that respects, preserves and honors our history, our land, and our diverse culture. We value access to our shores, our forest, and our streams”.

“We have a broad range of programs for our youth that includes work on the land. We have good social services, recreation, health, and education”.

“We are friendly and hard working people, which enables us to continue to build our small businesses and create jobs as part of our sustainable economic development”.

“We have a strong community voice in the development of affordable housing, the use of our land, and the development of alternative energy sources”.

“‘Ohana and the Spirit of Aloha are the foundations of our community”.

The N. Kohala Vision was created through a list of values that summarizes important ideals with the community. These values included the following words and phrases:

<table>
<thead>
<tr>
<th>Spirituality and prayer (pule)</th>
<th>Protecting natural resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Ohana</td>
<td>Humility is strength</td>
</tr>
<tr>
<td>Honoring the past</td>
<td>Being respectful</td>
</tr>
<tr>
<td>History of Kamehameha</td>
<td>Bridging old ways with the new</td>
</tr>
<tr>
<td>We stand together for the ‘aina, the community, and each other</td>
<td>Tolerance towards your neighbor</td>
</tr>
<tr>
<td>Open Space</td>
<td>Give and take; give comes first.</td>
</tr>
</tbody>
</table>

139 Ibid.
The community value system is heavily reflective of local Hawaiian values and the importance of a check and balance system. These key values help build the perspectives of the community. There is a sense of preservation and honor to the things of cultural and historic value; a sense of care to the land and to the community and of blending the future with the existing. The importance of the value system and the vision statement is important in unifying the community and guide future decisions on development.

2008 North Kohala Community Development Plan

“Keep Kohala, Kohala”

The goals of the 2008 North Kohala Community Development Plan (NKCDP) is stated as:

To manage the future growth of the district in a manner that is consistent with the Kohala lifestyle and ideals of being a rural community with a strong cultural heritage, and agricultural base, and a small town feel.

KOHALA TOMORROW

Community Core Themes

During the numerous community outreach meetings that occurred in the 2006 “Community Voices” N. Kohala Community Readiness Program, 2,758 ideas where gathered in reference to the future of N. Kohala. These ideas where characterized into four core themes: Threat to Kohala’s Sense of Place, Protect and Enhance Kohala’s Sense of Place, the Built Environment, and Community Gathering & Learning Space.\(^{140}\)

\(^{140}\) Alex Frost and Shannon Connor, “Community Voices” North Kohala CDP, Community Readiness Program (CRP) Summary (Department of Research and Development – Hawaii County Resource Center: 2007), pg. 12.
Figure 68: Chart used in the N. Kohala CDP Process to outline community’s thoughts on what protects and enhances kohala’s sense of place and what ideas threatens the community’s lifestyle. The greatest threat that the Kohala community feels are major outside influences and changes to the existing landscape and designs that do not reflect the existing atmosphere which is reflective of their historic background predominately of Hawaiian culture, Plantation and Paniolo history.  

Threat, Protect and Enhance Kohala’s Sense of Place

Figure 68 represents two interconnected core themes, threat to Kohala’s Sense of Place and Protect and Enhance Kohala’s Sense of Place. Each core represents two ends of a spectrum, helping to identify ideas that are portrayed as being a threat and ideas that help enhance Kohala’s Sense of Place.

Ideas that are categorized as being threats to Kohala’s sense of place are:

- Lack of Growth Management
- Major Development, Foreign Development, not beneficial to local residents
- Lack of Affordable Housing for future generations.
- Loss of Public Access to Resources
- Loss of coastline access and ma uka to ma kai trails
- More Economic Activities
- Gated Communities
- Shopping center, more eateries
- Loss of Agricultural Lands
- Drug Addiction
- Big Box Retail and Franchises
- Homeless, Safety, Trash
- Light Trespass
- Adding streetlights and traffic lights
- Art Galleries
Ideas that are considered to help protect and enhance Kohala’s Sense of Place are listed as:

- Preserving Open Space & Natural Resources
- Creating Local Jobs
- More accountability of the government and more local decision making
- To celebrate local culture
- Preserving small town “rural” atmosphere
- Keep it the same
- Preserve local character
- Better planning
- Values
- Keeping the design of the local buildings
- Back to how it was in the plantation days
- Preserve Historic Sites
- Light Trespass
- No street or traffic light

The collective summary of these core ideas of the community are the threat of drastic change to the existing conditions and atmosphere verses a future that blends new structure and space into the existing. It’s about having a balance of blending new development with an existing environment. Apart from creating a new building or space, one would not want to replicate the existing buildings. An approach to design in this nature would cause confusion among historically significant buildings. Important buildings may lose their vibrant or unique rustic character if it is surrounded by replicated buildings or buildings that compete for uses.

Below is a list that has been comprised of many historic sites located across N. Kohala. Many of these sites have been identified by the community and residents of N. Kohala as a means to protect and preserve the natural and historically significant sites that have been registered with the Hawai‘i State Historic Register as well as the National Historic Register. Because many of North Kohala’s buildings are 19th and early 20th century buildings that have deteriorated over time, through community and government support, historic structures have recently been restored and reused under local and national preservation standards.
<table>
<thead>
<tr>
<th>Site</th>
<th>Tax Map Key</th>
<th>Ahupua’a or Region</th>
<th>Hawai’i Register</th>
<th>National Register</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bond District</td>
<td>5-3-05: 4, 5, 17, 19, 20, 26, 27</td>
<td>Iole</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tong Wo Society Building</td>
<td>5-3-08:20</td>
<td>Halawa</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Kohala District Courthouse</td>
<td>5-4-05:1</td>
<td>Honopueo</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Nanbu Hotel/Holy’s Bakery</td>
<td>5-4-05:22</td>
<td>Honopue</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Union Mill Manager’s Residence</td>
<td>5-4-10: 58, 59</td>
<td>Puehuehu-Laauama</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Mo’okini Heiau</td>
<td>5-5-05:20</td>
<td>Puuepa</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Kohala Pilgrim Church</td>
<td>5-5-15:25</td>
<td>Pahoa</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>James M. Hind Residence</td>
<td>5-5-15:35</td>
<td>Hāwi</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hashimoto House</td>
<td>5-5-15:41</td>
<td>Hāwi</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hāwī Plantation Manager’s Residence</td>
<td>5-5-15:41</td>
<td>Hāwī</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Heiau in Kukuipahu</td>
<td>5-6-01:27</td>
<td>Paoo</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Habitation Complex</td>
<td>5-7-01:21</td>
<td>Paoo</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Vault Complex</td>
<td>5-7-01:21</td>
<td>Paoo</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Makeanehu Complex</td>
<td>5-8-01:12</td>
<td>Makeanehu</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Habitation and Burial</td>
<td>5-8-01:12</td>
<td>Makeanehu</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Possible Heiau</td>
<td>5-8-01:13</td>
<td>Kehena</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lapakahi Complex</td>
<td>Various</td>
<td>Lapakahi</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Figure 69:** List outlining the various historical sites on the Hawai’i and National register created by author. Historic significance is primarily of Hawaiian Culture or Plantation Historic significance.
In 2006, multiple sites were greatly damaged in the earthquake just off the Kohala coastline. Two historic sites that were greatly affected are the historic Kohala Mill Smokestack in Hāwī and the Kalahikiola Congregational Church in the Bond District. During the earthquake the 100 year old smokestack crumbled and collapsed. The smokestack was such a visual monument of the plantation era for N. Kohala residents that many of the senior citizens took pieces of stone from the rubble as a remembrance of both Kohala’s history and the 2006 earthquake.

Kalahikiola Congregational Church experienced a slightly similar result. The church was built by missionary Elias Bond and his parishioners in 1855. The church was constructed of timber and its 3 foot thick walls were made of round field stones of various sizes set in a soft lime mortar. During the earthquake, the churches 3 foot rock masonry wall collapsed on the ma kai end of the building. Following the Kalahikiola damage, Architect Glenn Mason was awarded the restoration project. In rebuilding the walls, he replaced the 3 foot thick rock walls with concrete masonry units which were scored with mortar lines to resemble the church’s original exterior. All original equipment that could be salvaged was reinstalled and missing parts were replaced with the closest possible match. Mason Architects is quoted as stating “the church retains its historical appearance but is safe for its parishioners”.

Another structure that was greatly damaged during the 2006 earthquake is the Hisaoka Gym at Kamehemea Parks. Hisaoka Gym is the main public gymnasium for the N. Kohala Community and the official court for the Kohala High School Cowboys basketball. Hisaoka Gym’s structure was severely damaged and deemed unsafe. Unlike Kalahikiola Church, which was able to begin reconstruction almost immediately, reconstruction on the gym did not start until 2008 due to funding and delays in the bidding process. Kohala’s Hisaoka Gym reopened in late August 2009 with a total reconstruction cost of 2 million dollars. Funding for the project was attained through Parks and Recreations insurer, American International Group (AIG) and the Federal Emergency Management Agency (FEMA).

Historic preservation and adaptive reuse has been a huge part in preserving and rehabilitating deteriorating historic sites and structures across N. Kohala. Due to the lack of economic

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143 Ibid.
144 Ibid.
145 Ibid.
funding, a combined effort from the community, government and the help of federal tax credits have contributed to the refurbishment various structures such as the Bond District, Tong Wo Society, and the old courthouse. The Tong Wo Society has been kept closely to its original use while the old courthouse has been renovated into the senior citizens center where various meetings can be held and the Bond District converted into a historic museum district.

Numerous other buildings within N. Kohala are in need of restoration and adaptive reuse. With the dwindling funding available for preservation and the limited tax credits, preservation may no longer create a financial incentive for rehabilitation as it did in the past.

The Kohala community feels the greatest threats are major outside influences and changes to the existing landscape and designs. These changes do not reflect the historic background, predominately of Hawaiian culture and Plantation history.

Community Gathering & Learning Space

Another core theme that was identified is community gathering & learning spaces. This theme is centered on social interaction spaces. 19.8% of the total ideas emphasized the importance of enhancing existing community spaces or creating new spaces to help share local culture, values and behavior. New community gathering spaces are encouraged to facilitate healthy and spontaneous social interaction between children, residents, families and visitors.

Summarized ideas expressing community gathering and learning spaces are:

- Update our Education Systems
- More Activities for the Youth
- More Recreational Facilities
- Upgrade Existing Parks
- Bring Back Movie Theater for Community Activity
- More Sidewalks, Bike paths, Multi-mode Trails
- More Healthy Recreational Opportunities
- ATV, Dirt Bike Track, Skate Park, etc.
- Swimming Pool
- Repair Gymnasium
- Local Laundry Place
- Better Beach, Camping and Golf Facilities
One of the ideas expressed in creating a social gathering space for the community was a Community Center and Park for residents to hold family lu`au and gatherings with available kitchen facilities and restrooms. N. Kohala has a limited amount of public areas that are capable of holding large functions such as lu`au. While the town had multiple community halls during the plantation era that were frequently used by the community for numerous occasions, these structures have either deteriorated or could no longer accommodate the capacity of large functions. Because a small town in a rural setting creates a unique bond between family and friends, one celebration of extended family and friends can bring the attendance from a conservative 150 to an extreme of over 400 guests. The strong community relationships that are fostered in an isolated setting, like N. Kohala, create an amazing sense of ‘ohana.

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147 Alex Frost and Shannon Connor, “Community Voices” North Kohala CDP, Community Readiness Program (CRP) Summary (Department of Research and Development – Hawaii County Resource Center: 2007), pg. 15.
Figure 70: Community Gathering & Learning Space as a Core Theme of what N. Kohala Community members with to see incorporated into the future development of N. Kohala. Many of these, such as a local laundry place, re-establishment of the community theatre, recreational facilities, and open space were just some of the community spaces that was either lost or in need of.\footnote{Townscape, Inc., “2008 North Kohala Community Development Plan”, (Hawai’i County Resource Center: 2008), pg. 15.}
Improve Built Environment

The Improve Built Environment theme is comprised of manmade structures. 12.3% of the community’s ideas were related to the improvement of the built environment. These ideas expressed the need to improve local infrastructure that are typically considered capital improvement projects which could shape N. Kohala’s future sense of place. The 2006 “Community Voices” N. Kohala Community Readiness Program states that the interactions between people, community gathering space and the built environment are very important.

The Improve Built Environment theme is described as:

Better Roads and Access Around Kohala  General – Improve Public Facilities
Better Hospitals and Medical Facilities  More Public Transportation
More Police and Fire Protection  Improvements
More Renewable and Alternative Energy Development  Public Restrooms
Waste Management and Recycling  Improve General Utilities

Many of the ideas expressed by the community members where focused on the improvement of existing buildings and public facilities. Future development must enhance the existing infrastructure that is considered outdated or could be improved. Community members were open and optimistic of future development that could help with the improvement of their public resources such as Kohala Hospital and medical facilities, police and fire personnel and waste management and recycling.

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Figure 71: Built Environment as a core theme of what N. Kohala Community members want to see incorporated into the future development of N. Kohala. Improvement of existing buildings/public facilities while also addressing that future development be incorporated to enhance the existing infrastructure that is considered outdated or could be improved. Community members are open and optimistic of future development that could help with the improvement of their public resources.\(^{100}\)

\(^{100}\) Alex Frost and Shannon Connor, “Community Voices” North Kohala CDP, Community Readiness Program (CRP) Summary (Department of Research and Development – Hawaii County Resource Center: 2007), pg. 16.
Figure 72: Summarized 4 core themes of the 2008 NKCDP.\textsuperscript{151}

Summarizing the core themes are resident reflections of Protecting Kohala “Sense of Place,” creating community gathering and learning spaces and improving on the existing built environment. Any issue that compromises these general visions for the future are considered threats to Kohala’s sense of place or lifestyle.

\textsuperscript{151} Townscape, Inc., “2008 North Kohala Community Development Plan”, (Hawai’i County Resource Center: 2008), Appendix 4.
Priority Issues and Goals

Priority issues and goals outlined in the 2008 CDP are stated into 4 areas of focus: Growth Management, Public Access, Affordable Housing, and Infrastructure and Community Facilities. North Kohala residents recognize that some growth will happen in the district and with incremental growth, new developments projects will arise and the community has expressed the desire to control the type and quantity of development that happens.

Before initial designing can take place, an analysis of the existing character of North Kohala will need to be conducted to recognize important features of N. Kohala followed by examining development trends.
CHAPTER 4

CHARACTERISTICS OF NORTH KOHALA

TOWN CENTERS

Town centers play a critical role in North Kohala’s built environment as well as many other rural towns. The character of North Kohala is described in the 2008 NKCDP as the relationship of man-made and natural features that comprise the physical setting or sense of place. Hāwī and Kapa’au towns can be identified as having unique site features and varied activities.

Figure 73: Photograph of Hāwī Town, looking east along Akoni Pule Highway by author. (February 18, 2011)

Hāwī town is one of two main town centers in North Kohala and is situated at the intersection of Hāwī Road and Akoni Pule Highway. Hāwī can be considered North Kohala’s business center and it holds many small visitor retail shops, eco-tourism activities office, art galleries, two restaurants, the Kohala Inn, one of two gas stations, a groceries and small goods store, real estate offices, a tattoo shop, small eateries, a small Montessori preschool and the Surety Kohala Corporation office.
Kapa`au town is located approximately 2 miles east along the Akoni Pule Highway from Hāwī. Kapa`au town shares many of North Kohala’s public services, including the Kohala Hospital, Kohala Health Center, Kohala Pharmacy, Fire and Police Station, the Senior Center (which is located within the Old Court House), Kohala Dental Center and Kamehameha Parks. Kapa`au town also has art galleries, eateries, visitor shops, a movie rental store, a hardware store, offices and the famous Holy Bakery. Holy Bakery is a Japanese bakery and has become famous for their delicious pies.

The areas outside of the town centers of Hāwī and Kapa`au consists of small art shops, eateries, groceries and small goods stores at multiple locations. These mini-commercial destinations are located between Hāwī and Kynnersley Road, at the Kynnersley Road intersection, and in Halaula.

North Kohala residents once recognized these two town centers as separate entities but through the years, residents have come to embrace North Kohala as a single town along the Akoni Pule Highway. With the anticipation of increased population and future improvement projects, the following visual characteristic analysis of existing buildings offers insight to document the existing.

Town centers should be of important value to their residents as well as visitors. Maintaining their sense of quality and character is dependent on balancing a mix of uses, scale and visual images of the existing development. It is prevalent that Hāwī Town and Kapa`au have two
distinctive spatial uses. While Hāwī Town is slowly creating a great visitor oriented destination, Kapa`au has many destinations and facilities that serve the local public. This may in part be due to Kapa`au’s central location within the North Kohala town from Hāwī to Niuli`i. Previous planning practices encouraged centralized areas of service and functions in rural areas to consolidate town infrastructure. These early planning practices helped to facilitate what planners and architects today recognize as urban sprawl with the high and increased use of the automobile.

**Town Character**

Existing conditions within North Kohala carry a fairly common characteristic. Structures outside of Hāwī and Kapa`au are primarily single story residential, while the buildings within Hāwī and Kapa`au are multi-story commercial. Strong building characteristics in the town centers include a variety of false facades, hipped, shed and gable metal roofs, and are primarily wood structures with decorative architectural details in roof bracings.

In contrast, there exist a few historic buildings that have character with the use of steel and stucco. Nakahara Store and Kohala Corportion Building in Hāwī are a stucco masonry building while Takata and Arakaki store are steel structure. Nakahara Store, although made of masonry and stucco still carries a continuation of the false facade approach found in Hāwī. Takata and Arakaki stores are outside the town centers and fairly isolated from surrounding commercial areas.
Figure 75: Photograph of Surety Kohala Corporation & Nakahara in Hāwī by author. (February 18, 2011)

Figure 76: Photograph of Arakaki Store in Halaula, by author. (February 18, 2011)
Figure 77: Photograph of Hawai Town, Looking West at Hawai intersection along Akoni Pule Highway by author. (February 18, 2011)

Figure 78: Photograph of Kapa’au Town, Looking West along Akoni Pule Highway by author. (February 18, 2011)
Building Heights

Building heights follow a common pattern among North Kohala. Two story 25-30 foot tall structures occupy the town centers while residential housing is typically single and double story structures. A few structures provide a visual perception of a 3 story building with an exaggerated roof form and false facade.

Figure 79 illustrates the basic design patterns of the buildings with recessed entry, double hung windows with decorative window caps on the second story and a false front with ornate overhanging bracketed cornices. These design features are considered as typical of the plantation commercial structures within North Kohala.

The current pattern of building height should be maintained as it creates an identifiable characteristic between the height and style of commercial and residential buildings.

Figure 79: Basic Design Elements of a False Front Façade Building.\textsuperscript{152}

Street Elevations

The street elevation of the town is expressed in Figures 80 through 83. Streets are lined with narrow sidewalks and original plantation stores fronting the streets. Storefronts line the main road with parallel parking directly in front. Electrical poles also line the roads, majority of which were erected in the middle of the sidewalks fronting the old stores as seen in Figure 78 of Kapa’au town. Street lights are minimal and located on the electrical poles.

Figure 80: Drawing of Kapa’au Town Center by Wylan Marquez. Various Small shops in a series of buildings not like standard commercial building design. (March 2010)
Figure 81: Drawing of Ackerman Galleries by Wylan Marquez. Art Gallery in Kapa‘au town. Single story building with false façade. (March 2010)

Figure 82: Drawing of another Ackerman art gallery by Wylan Marquez in Kapa‘au town. Double story building with a parapet roof. Design elements typical of ornate commercial building. (March 2010)
Vegetation

In balance with the built environment, the natural vegetation plays another major role in the overall character of North Kohala. Through the authors analysis, various vegetations are found throughout North Kohala and can be seen from any vantage point. Layered vegetation is a defining natural quality within North Kohala town centers as well as residential housing and native and non-native plants can be found throughout the town centers and residential yards. The foreground vegetation are typically the native species of kī leaf, loulu palms, niu (coconut), mai’a (banana), various ferns and hapu’u. Other common foreground landscaping includes various tropical plants such as palms and song of India. The mid and background vegetation consists of an assortment of plant species. Those that are easily recognized are the wiliwili trees, various palms, lychee trees and various pine trees, predominately Norfolk and Ironwood. Pine trees are used in various locations but are greatly concentrated along the gulches that run perpendicular to Akoni Pule Highway (N. Kohala’s main road).
Figure 84: Akoni Pule Highway.\textsuperscript{153}

Figure 85: Akoni Pule Highway.\textsuperscript{154}

\textsuperscript{153} Google Earth, 2010.
\textsuperscript{154} Ibid.
Landscaping should become an important consideration in the development of future rural designs. Landscaping in various forms can be feasible for practical and aesthetic purposes. Landscaping can be used to buffer development while also enhancing open spaces within town centers. It can also be used to screen and buffer the future housing projects that are being created in N. Kohala. Landscaping can also provide shade for pedestrians, act as screen areas for parking and accentuate entry and exit points of key destinations. It can also provide an alternative to mitigate water runoff from the roads by incorporating landscape swells that can capture road runoff and recharge the natural aquifers. This alternative to the standard run off system can save on the cost of new infrastructure in North Kohala while also incorporating landscaping.

**Views and Vistas**

There are three types of views in a rural setting. The first is a slot view or framed view. These are views that are framed in the foreground by buildings to allow for a slight view into the distance.

The second is the street view. This view is of distant objects that can be viewed from along the street. Examples of these views would be the open land between Hāwī and Kapa‘au Towns, where one is often able to see the ocean or mountains in the distance.

The third is Panoramic Views. These are views that are from a single location which you are able to see vast lands from the mountain and the ocean. Examples of this view are the multiple areas along the Kohala Mountain Road at a higher elevation of North Kohala.

Views and vistas should be protected to keep the rural visual integrity of the countryside.
Figure 86: Street view from Akoni Pule Highway, East of Hāwī, Looking ma’i. (March 2010)

Figure 87: Street view from Akoni Pule Highway, East of Hāwī, Looking ma’uka.155

155 Google Earth, 2010.
Description of Residential Development of N. Kohala

Upon the closure of the Kohala Sugar Company, plantation camps were dismantled and housing was offered to plantation workers along the main roads of N. Kohala. The dispersal of these once concentrated areas of settlement has created what we know of as North Kohala today.

![Aerial view between Hāwī and Kapa`au Town. Residential housing adjacent to main road](image)

Residential housing lines the majority of North Kohala roadways. Kynnersley Road, Hāwī Road, Union Mill Road, Halaula Road are the major housing areas and roadways within N. Kohala and all lie adjacent to Akoni Pule Highway. These housing areas are reflective of the expansive Kohala plantation worker owned housing project that took place upon the closure of the Kohala Sugar Company in 1970.

Residential Subdivisions, such as Kahei House Lots Project and Ainakea, were developed in the 1980's to offer diverse housing to low and moderate income families. These residential divisions were created shortly after the completion and recommendations of the 1984 North Kohala Community Development Plan. The Kahei House Lots Project subdivisions is located east of Hāwī and ma uka of the Akoni Pule Highway. Ainakea is located on the eastern side of Kapa`au town and ma kai of Akoni Pule Highway.

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156 Google Earth, 2010.
Figure 89: Aerial view between Hāwī and Kapa`au Town. Kahei Subdivision is highlighted in yellow and Ainakea Subdivision is highlighted in red.\textsuperscript{557}

Figure 90: Aerial view of Kahei Subdivision. Single ring road with multiple cul de sacs with 3 bedroom houses on 12,000 sq ft lots.\textsuperscript{558}

\textsuperscript{557} Google Earth, 2010.
\textsuperscript{558} Google Earth, 2010.
Hanaula Village

Gated Community Development

The first gated community to be completed in N. Kohala is Hanaula Village. Hanaula Village is located between Kynnersly intersection and Kapa`au Town. Hanaula Village was semi-completed in 2008 as a gated community. The gate has since been taken down due to community petitions. Hanaula Village is comprised of 35 plots of long rectangular 10,000 sq ft lots. Comments from the community are that this development is overly priced and is considered to be a “sleeper” gated community. The proposed housing sizes, styles and exclusivity do not reflect the community’s aspirations of keeping with the existing character and town history.

Figure 91: Aerial view of Hanaula Village. Single road with cul de sacs at ends. 35 open 10,000 sq ft lots.  

Google Earth, 2010.
Figure 92: Aerial view of Ainakea. Single double ring road with multiple cul de sacs with 3 bedroom to 4 bedroom houses on 10,000 sq ft to one acre lots.  

The dispersal of residential housing among multiple routes of N. Kohala over the years have required N. Kohala residents to rely heavily on the automobile to access services located in and around Hāwī and Kapa‘au Town as well as rely on a single model of 3 bedroom family units isolated on separate housing lots around the road.

**Residential Growth and Development**

The main development and growth in North Kohala has primarily been residential development. New residential development has slowly been developed around N. Kohala with the most recent being small housing developments, gated community type developments and small self help/affordable housing developments.

In planning for an incremental residential development plan based on N. Kohala’s population statistics, rural planning practices and the Hawai‘i Plantation “Village” concepts, new developments can address much of the community’s wishes of incorporating and providing community gathering places and learning spaces into the built environment.

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CHAPTER 5

Hāwī Expansion Plan

Purpose:

The Hāwī Expansion Plan is an urban design program based on the visual characteristics of N. Kohala and rural planning considerations.

The initial densities that once only occupied Hāwī and Kapa’au have now began to expand around the town center areas and are beginning to merge the two centers. This expansion has been recognized and encouraged by the 2008 NKCDP as a means to consolidate public services, reestablish the local use of town centers and stabilize the economic structure of both towns of Hāwī and Kapa’au.

Figure 93 of the LUPAG Map site E-2 shows the area that has been identified for urban expansion in the Hāwī Town. Urban expansion is expressed as the spread of new development into undeveloped areas. This urban expansion area is expected to be future low-density housing development as housing has become the primary development in N. Kohala.

The orange highlighted areas are identified as medium density urban lands. These areas have a primarily urban function, for uses such as the concentration of commercial activities. The yellow highlighted areas are identified by the county of Hawai‘i as low density urban. Low density urban areas are defined as land characterized by low density land that are reserved for foreseeable urban growth.
Figure 93: Current LUPAG-Map from County of Hawai‘i: 2010.

Figure 94: Aerial view of N. Kohala with highlighted urban expansion site.\textsuperscript{161}

\textsuperscript{161} Google Earth, 2010.
Figure 95 Aerial view of urban expansion area in N. Kohala.  

Hāwī Expansion Site:

Figure 96: Aerial view of urban expansion area in N. Kohala.

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162 Google Earth, 2010.
163 Google Earth, 2010: as modeled by author.
The Hāwī Expansion Site is located between Hāwī Town and Kohala High & Elementary School along the Akoni Pule Highway. The land along the Akoni Pule Highway was also a previous plantation camp site named Camp #5. Although mentioned in historic literature, no maps identifying Camp #5’s location could be found. Camp #5 consisted of sugar cane during the height of Kohala’s Plantation era. Currently, the site consists of vacant pasture lands, a prawn farming business and two residential developments.

**Land Zoning:**

The Hāwī Expansion Site is zoned entirely as Agricultural – 20 acres, (A-20), with the exception of the two self help housing developments along Hāwī Road.

The existing A-20 zoning does not allow for residential housing to be mixed with agriculture, therefore there must be a zoning change. According to County of Hawai‘i records, the intended future residential expansion is to be re-zoned, however the current residential code greatly limits the agriculture activities and hinders the integration of mixed use development.

Both the self help and plantation housing along Hāwī are zoned as Residential, Single-Family Housing (RS). The house lot size along Hāwī road and the Hāwī area is 15,000 sq ft making the zoning RS-15. Individual lot sizes within the self help development community are approximately 7,500 sq ft, RS-7.5. 7,500 sq ft is the minimum building site area for a single structure on Hawai‘i Island, therefore no additional single family structures can be added on the self help lots.

**Ahupua‘a Division:**

The site is part of two Hawaiian ahupua‘a land divisions, Hāwī and Pahoa. Dividing Pahoa and Honomakau ahupua‘a is Kumakua Gulch. The overlay of ahupua‘a divisions also show existing town development patterns. Lower Hāwī road aligns directly with the Hāwī and Ka‘auhuhu ahupua‘a division. Roads are also present along the Kahei and Ka‘auhuhu divisions, as well as the boarder of Honomakau ahupua‘a.

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164 USGS, Department of Interiors, Hawi Quadrangle Hawaii-Hawaii. Co. 7.5 minute series, 1995.
Figure 97: Aerial view of urban expansion area in N. Kohala with ahupua’a callouts.  

Google Earth, 2010: as modeled by author.
Owners:

According to Hawai‘i County Tax Map Key (TMK) records, the Hāwī Expansion Site is owned by two major land owners: Chalon International of Hawai‘i Inc. and the Kohala Corporation, both major land owners in N. Kohala. The total land area of the site is approximately 150 acres.

Figure 98: TMK of urban expansion area in N. Kohala.\textsuperscript{166}

Topography:

The topography of the Hāwī Expansion Site indicates a decline of elevation in the northern direction. Hawai’i County describes the topography of N. Kohala as being difficult to provide housing due to the numerous gulches and waterways that are present in the region. This site is no exception as the east end of the site boarders a gulch and bisecting the site is a seasonal water runoff area for the Hāwī Town. The water runoff area pools and accumulates in two distinct areas on the mid and northern ends of the site. A smaller water runoff area is also located on the site.

Site Views:

Figure 100 is the street view of the lush green pasture of the site. The borders are covered with 3-5 feet high California grass. These views showcase the ma kai vista from Akoni Pule Highway looking in the northern direction. This clearing is one of the few vantage points from Akoni Pule Highway that overlooks the vast open lands. Many of the adjacent lands along the Akoni Pule Highway have been developed blocking off the opportunity for scenic views.

Scenic Roads:

Rural is defined as the relating to, or characteristic of, the country or country life.167 Scenic views and street landscaping play a vital role in our perception of the rural setting. There are two types of scenic views: Foreground and Background or distant. The various forms of roadside trees, vegetation, rock walls and fences play an initial impression in shaping the foreground perception of places and their associated settings; the second being the vistas or open fields that offer distant views of the lay of the land.

Public perception of community character or setting is largely based on what can be seen from an automobile. 77 percent of the population of the United States enjoys driving for pleasure and sightseeing; pleasure driving accounts for 15 percent of all vehicle miles driven; and pleasure driving is the second most popular recreational pastime, after walking.168

In the absence of scenic views and landscaping, the perception of rural character is lost. In protecting and incorporating existing views with new development, the rural setting can be preserved in N. Kohala.
Figure 99: Aerial view of site with topography and natural water shed. Created by author.
Figure 10B: View from main highway onto expansion site. Currently a panoramic view of lush green pasture. Photographed by author (March 2012).
The Rural Street Network

Highways, Access Roads and Minor Streets

“Maintain town character, supplement as is-no strip malls, chain stores”.

-North Kohala Residents

Figure 77 depicts a sketch of the “Townless Highway” and the “Highwayless Town”, two of the earliest planning diagrams that make the case for keeping major traffic corridors uncluttered with roadside commercial or residential uses.

Figure 101: Benton Macaye’s 1929 sketch of the “Townless Highway” and the “Highwayless Town,” Two of the earliest planning diagrams making the case for keeping major traffic corridors uncluttered with roadside commercial or residential uses.

The “Townless Highway” illustrates development growth along a single highway creating a linear town. The development of such towns increases the usage of the rural highway and alters the character of town or community “gateways”. Community “gateways” are places that express an

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1 Alex Frost and Shannon Connor, “Community Voices” North Kohala CDP, Community Readiness Program (CRP) Summary Department of Research and Development – Hawaii County Resource Center, 2007.
3 Ibid.
entry into a town. These are usually marked by a signage or a shift in the character setting, for example by the change in view from open fields to multiple store fronts. Two-lane rural highways that once handled traffic reasonably well often become inadequate and congested with the addition of left turning vehicles and stop lights. In the end, development along a main highway degenerated from a rural highway into a local shopping street.4

The “Highwayless Town” demonstrates the importance of isolating town centers and guiding expansion away from main highways to restrict future strip development. This approach to town development creates the opportunity to produce development patterns of residential and commercial activities that can be mixed into the existing town centers while simultaneously preserving its core and gateways.

Current and future development in N. Kohala typically starts along the highway and progresses outward. This approach to development will create a strip town of commercial and residential development along the highway that eventually blurs the lines of town identity, hinders the connection of future development, and drastically alters the physical and existing character of the landscape. To preserve the identities of Hāwī town and Kapa’au town while also providing opportunities for future expansion, a hierarchy of roads need to be established.

The hierarchy of roads provides the basic framework of way-finding, access and preservation of rural character.

**Hierarchy of Roads**

A network of roads with clear hierarchy plays an integral part of how town expansion or growth is achieved in a way that also protects existing visual characters.

**Highways or Main Roads**

These roads are typically the main arteries of a town that absorbs its primary traffic and leads to other main destinations such as town centers, confined residential communities and industrial estates. Highways or Main Roads should be maintained as functional roads and be lined with roadside development.

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Access Roads:

Access Roads provide a secondary road from the main highway to relieve congestion and development while also integrating a secondary network throughout a town. Secondary roads function as an extension from the main highway. These roads provide broader access within and around town centers.

Minor Streets:

Minor streets span from access roads to areas of smaller developments such as residential projects. These streets are typically used less often by the general public.

The three development roads vary by size according to their traffic use. Highways are typically two lanes in both directions averaging 36 to 40 feet wide. Access roads are typically two lanes wide, one in each direction. Lanes are typically 10’ or wider if formal road side parking is allocated. Development roads are typically the same as access roads depending on their function. Within residential areas, 9’ lane widths should be used in order to reduce the speed of traffic in neighborhoods.5

Basic Access Road

The Hāwī Expansion Site has recently seen the emergence of 2 self help residential developments over the past decade. The most recent is Self Help site 2, which was completed in 2010. The land for both self help housing sites was donated to the County of Hawai‘i to be used for low income residential development.

The self help development starts directly adjacent to the main highway and does not consider the hierarchy of road system to pull development off of the main highway and preserve the rural highway characteristics. In preserving the spaces between town centers, a stronger perception of town identity is preserved as well as visual setting.

Figure 102: Illustration of hierarchy of road system by author.

Figure 103: Aerial view of site with Self-help and Prawns Farm.\(^6\)

\(^6\) Google Earth, 2010: as modeled by author.
At the ends of the two residential developments that are built adjacent to the highway, secondary roads are incorporated to subdivide the land into a basic road network in relation to topography and site features.

An access road belts around the prawn farm on the northern side of the site in order to protect the existing farm as well as grant accessibility to both sides of the site that is split by a run off area. The developments of the two self help housing provide points of road connectivity that end at each development boarder.

Subdivided Area

Once the basic road system is determined, the subdivided spaces and site features become the focus area. The subdivided lands can then be evaluated to find areas on the site that are of great importance or areas that can be utilized to maximize the preservation of historic sites and the rural character. Residential areas are outlined or grouped near existing development, while the planning of green zones should be incorporated to both preserve certain site characteristics.
while also dispersing residential development. Secondary roads should also be scenic and the basic zoning of the subdivided lands should offer areas of scenic views.

Figure 105: Aerial view of Hāwī expansion site with zoned areas linking existing green space and residential development.

Green Zones & Scenic Views

“Promote island grown goods”

-North Kohala Resident

The incorporation of green space systems are able to create additional scenic views from the road, break the densities of the residential development and protect existing site features.

In this plan, the Hāwī runoff area is preserved for its natural water shed while also functioning as the preservation of the existing view plane from the highway. The green space preserving the run off area also serves to connect other green zones so as to create additional scenic views. A water retention area is built where water pools naturally during times of persistent heavy run rain. This body of water shall help treat water runoff and serve as a core focus to the central green zone to create a place of casual interaction.

7 Alex Frost and Shannon Connor, “Community Voices” North Kohala CDP, Community Readiness Program (CRP) Summary (Department of Research and Development – Hawaii County Resource Center, 2007). P.10
Characteristics of being rural are also associated with country living in which agricultural farming and ranching is outlined by the 2008 NKCDP. The green zones or areas that disperse the residential density can be relabeled into agricultural green space, such as micro-farming, parks or hawaiian agriculture as outlined by the community.

Figure 106: Aerial view of Hāwī expansion site with linking green space creating additional scenic views.

**Town Center Development**

The development around Hāwī is within 5000 ft, which is the maximum comfortable walking distance to a town center by the American Planners Association. The average rate of walk is at a speed of 2.5 miles per hour. This converts to 13,200 feet per hour or 220 feet per minute. On this basis, a 5-minute walk would be 1,100 feet and a 10-minute walk would be 2,200 feet. This formula would imply that a walk to the Hāwī center, taking into account the slight topographical incline of the site, would take approximately 25 to 30 minutes.

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Figure 10: Diagram illustrating 5000’ radius around Hāwī Center. Maximum average walking distance to town centers.

Due to the close proximity of the residential development and Hāwī Town Center, formal commercial activity will be directed to the Town center and not within the new development. In order for town centers to be successful, they must possess both strong community services and a healthy retail base. When one is weak, so is the other. Currently, there are 19 vacant commercial spaces in Hāwī, and one of two town restaurants has recently closed down. Due to N. Kohala’s small population, commercial space should be concentrated within the town area and not dispersed, as it does not have the adequate population to sustain a new town center.
CHAPTER 6

“Subdivisions” to “Villages”

“Subdivisions emphasize the fragmentation of land, rather than the creation of a proper neighborhood of homes and relationships. What people yearn these days is not another wave of “real estate developments,” but rather the chance to live in a real human settlement[s] with a sense of place and a sense of belonging”.

--Randall Ardent

Subdivisions are essentially the main housing development model that has been occurring in rural communities. The “subdivision” model is so commonly used to develop housing that rarely is it analyzed on how appropriate it is to rural communities. The subdivision emphasizes the fragmentation of land rather than the creation of a proper neighborhood of homes and relationships. A neighborhood should consist of more than house lots and streets.

Plantation Village Design Intent

The plantation village design is intended to produce an organizational plan of housing to reflect Plantation Village Design Characteristics.

Like the housing reforms that happened to Hawai’i Plantation Camps, rural communities yearn for a chance to live in smaller human settlements with a sense of place and a sense of belonging.

Through research, certain characteristics of plantation villages have been identified. These characteristics can be incorporated to organize housing to better foster community living, a sense of place and belonging.

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Plantation Village Design Concepts

- Housing Development separate from main roads
- Small Communities of 30-40 mixed housing units
- Clusters of housing arranged around public space
- Small community structures in central public space & big public facilities near perimeter of plantation village.
- Clusters arranged to create public and private spaces
- Smaller House plans (no garage)
- Simple Expansion Plans

“Small Villages”

Instead of vast housing blanketing over the landscape, small villages with densities of 30-40 housing units were established off of main roads. The small cluster of housing provides a manageable sense of identity and belonging.

Living within smaller communities create an opportunity for the greater likelihood of a broader range of relationships and friendships, an increased sense of mutual responsibility and support among neighbors and a closer relationship to nature through informal outdoor recreation opportunities. ¹⁰

Villages also create opportunities to move development off of secondary roads that span from the main highway and screen them with vegetation to keep a scenic road and rural character.

Figure 108: Diagram illustrating Hāwī expansion site with small villages and subdivision infill..
Central Community Space

Within a village, community space was centrally located surrounded by clusters of housing. Community structures were within the housing development or scattered around it. These community areas serve as centers of gravity to draw people together. Without them, convenient opportunities for residents to interact casually are severely reduced.11

Central and surrounding open space presents opportunities for neighbors to meet casually and to get to know each other a little better. In conventional developments most people spend nearly all their time indoors or in their private backyards, largely because there is nowhere else to go, except by stepping into their car and driving away.12

Central space of village designs can house various functions such as BBQ areas, a laundry facility, park space, community gardens, etc. to foster formal and informal interactions. Residents of subdivisions often have two distinct destinations of interest: home and work. Places of social interaction are often missing in standard subdivision developments but are an essential place or destination.

Clusters of Housing around Public Space

Housing clusters border the central open space to create a centralized hierarchy of space. The inner portion is the most common space, public space is provided within the housing cluster, while private space is formed in the outer ring of the cluster.

The typical front yard and entry of the houses are centrally faced to one another in order to create an enclosure of housing, forming a community within a community. In preventing roads through the housing clusters, residents are encouraged to walk to their houses, where opportunities of informal interaction amongst the neighbors may be made.

Limited Inner roads

A single access onto a village creates a formal entry. Limiting roads to its functional use of street access to the village can reduce traffic and create opportunities of pedestrian interactions.

Village road lanes should be a maximum of 9’ wide to maintain the hierarchy of road design as narrow roads is a rural characteristic and slows down traffic within a residential setting. The village road defines the central open space and creates a defined boundary between the common space and housing clusters.

**Basic Village Organizational Pattern**

![Diagram illustrating re-interpreted village organizational pattern](image)

Figure 109: Diagram illustrating re-interpreted village organizational pattern

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Variety of Housing

There were many plantation housing types through the transition of single working men quarters to the single family homes. These were generally barracks, duplexes and single family homes.

For modern housing, there are three basic types of housing characteristics such as a studio, two bedroom and three bedroom homes. The three types of housing are variations that fit a wide range of occupants. The studio housing can accommodate young adults or elderly, while two bedrooms and three bedrooms can appeal to the young or established families. For the Hāwī Expansion, studio duplexes can play a vital role in the housing supply as studio apartment are becoming a common housing option within town center areas among those that want a small living situation close to the center or those that work within the area.¹⁴

N. Kohala’s average household size is 2.87 according to Hawai‘i County housing records. Therefore, a 3 bedroom house should be able to support the average size family in N. Kohala. 4 bedroom houses require a second bathroom and is rarely used in new development.

Community Parking

The automobile was not readily a part of the average family or individual until the 1950’s. Early accommodations for parking were optional and limited to detached community carports of 4 to 6 stalls or community garages located around clusters of housing. By clustering parking together, areas for driveways can be omitted in the development and the parking then becomes an additional area of informal interaction amongst residents.

Parking requirements are dependent on the type of housing. According to Hawai‘i County building codes, a single-family home, being 2 to 3 bedrooms, require 2 parking stalls. For every 1.5 studios, one parking is required.

### PARKING REQUIREMENTS

<table>
<thead>
<tr>
<th>HOUSING TYPE</th>
<th># OF UNITS</th>
<th>REQUIRED PARKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDIO</td>
<td>1.5</td>
<td>1</td>
</tr>
<tr>
<td>2 BEDROOMS</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3 BEDROOMS</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

*Maximum walking distance from parked car to residence should not be more than 150’.15*

Figure 1: Hawai’i County Parking Requirements

By clustering parking together, we can also maximize the area for cluster housing.

### Smaller House Plans

Early house plans did not include many of the functional spaces such as kitchen, bathrooms, and garages; therefore over time as these functions were incorporated into the house square footages grew larger and larger. The single family house has evolved from less than 600 sq ft to an average 1,500+ sq feet footprint for a 3 bedroom house and garage.

By consolidating parking along the street and keeping it separate from the house, 400 square feet is eliminated from the buildings footprint. In re-evaluating spatial plans of a home we can further project the smaller building area averages.

### TARGET HOUSE FOOT PRINT

<table>
<thead>
<tr>
<th>HOUSING TYPE</th>
<th>SQUARE FEET</th>
</tr>
</thead>
<tbody>
<tr>
<td>STUDIO</td>
<td>300-400 SQ FT</td>
</tr>
<tr>
<td>2 BEDROOM</td>
<td>600-800 SQ FT</td>
</tr>
<tr>
<td>3 BEDROOM</td>
<td>800-1000 SQ FT</td>
</tr>
</tbody>
</table>

Figure 11: Target housing sizes based on no garage and combined open kitchen and living area.

### Smaller House Plans

During the multiple transitions that took place during the evolution of the plantation village, conversion plans were created to add kitchens, bathrooms and wash areas.

Like the plantation village conversion plans, house plans should be simple and able to grow with the family.

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**Studio Duplex Floor Plan**

The configured studio duplex plan creates living conditions for both young adults and elderly. In simple spatial arrangements, a studio of 400 square feet is attainable. Studio Duplexes are combined to fit with the existing residential scales of N. Kohala.

![Studio Duplex Floor Plan Diagram](image)

**Figure 112**: Studio Duplex, 400 sq feet. Single 20’x20’ unit. By author.
Young Family 2 Bedroom Home

2 bedroom homes are great starter homes for young families. The new affordable homes, according to the 2008 NKCDP, are primarily targeted toward young families, as young families may not be in the market or price range for a 3 bedroom house. A 2 bedroom house should be flexible to accommodate family growth and convert to a 3 bedroom house as the need arises.

Figure 113: 2 Bedroom Home. Simple floor plan with entry to rear of home. Made open to allow addition of a third room so young families may start with 2 bedroom and be able to expand to 3 bedroom when family gets bigger. By author.
3 Bedroom Family Home

A 3 bedroom house plan has been created with a 987 sq ft footprint. The plan is identical to a 2 bedroom house with the exception of the additional room. The three rooms span in a hierarchy of 10’ x 10’, 10’ x 11’ and 15’ x 11’. The second largest room is the addition with the thought that a young family may start with a 2 bedroom which is smaller and expand at their own discretion.

All floor plans are designed with an outdoor lanai (porch). This area is optional to lower initial home cost but is an essential space for public entertainment in the housing cluster configuration.

Figure 114: 3 bedroom home. Identical to 2 bedroom. What 2 bedroom home would look like with additional room. By author.
Affordability

“An architect not only has the opportunity to conduct a business, but also has a chance to serve his fellow man by producing good homes at prices within reach of people of moderate means”.

-Theodore A. Vierra, 1951

According to Maui and Hawai‘i construction analysis, construction costs are in the ranges of $200 – $300 per square foot.

A robust but still relatively modest home will cost roughly $200 a square foot. At this market rate, a home will be equipped with a 30 year roof, mid-range appliances and mostly carpeted floors with some tile.

The price range for a very well appointed home is about $350 a square foot. This would be a home with higher-end appliances, and finer finishes such as granite.\(^\text{16}\)

In calculating the average construction costs per sq ft, the home prices are:

<table>
<thead>
<tr>
<th>House Type</th>
<th>Square Footage</th>
<th>Cost Per Square Foot</th>
<th>Rough Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studio Duplex</td>
<td>800</td>
<td>Min. 200 – Max 300</td>
<td>$160,000 – $240,000</td>
</tr>
<tr>
<td>2 Bedroom</td>
<td>814</td>
<td>Min. 200 – Max 300</td>
<td>$162,800 – $244,200</td>
</tr>
<tr>
<td>3 Bedroom</td>
<td>975</td>
<td>Min. 200 – Max 300</td>
<td>$195,000 – $292,500</td>
</tr>
</tbody>
</table>

Figure 115: Rough Estimate of cost of home based on Maui and Hawai‘i Island construction data.

The affordable price of housing according to the NKCDP was stated to be $250,000-$300,000. By creating a modest home with mid range appliances and finishes, cost for new housing could be approximately $160,000-$200,000. By offering two bedroom starter houses, you start from a smallest single family house figure of $160,000.

Clustered Mix Housing

Before standardized lot plans, housing was dispersed and clustered with 15’-30’ spacing between structures. Early lot sizes were small, roughly 5,000 to 7,000 sq. ft. With no attached garages, smaller housing plans, and a variety of housing opportunities, houses can be clustered to create public and private space, while also being on a smaller lot size.

The rendered cluster occupies .6 acres and houses one cluster of two 3 bedroom units, two 2 bedroom houses, and 2 studio duplexes. If we were to zone these into individual lots, they would be roughly 4,000 sq ft.

Being in proximity, or a part of an open space development can outweigh the negative connotation of having a small lot size. Being in proximity of open space allows for more outdoor recreational spaces.

Figure 117 illustrates all 3 housing types in a single cluster. This variety of housing creates an opportunity for multi-generational living within a community. The variety of housing encourages a range of residents rather than just one type. Multiple housing accommodations also allow people to remain in the community as their housing needs change.

Figures 118 and 119 are illustrations of other housing cluster configurations.

Figures 117 through 119 are basic cluster configurations of mixed housing types. Cluster configurations should maintain pockets of public spaces while taking advantage of site features such as topography and view.

Landscaping and Gardens

Early landscaping referred to yards fronting streets to be lined with trees. Gardens in the surrounding yard where used first as a source of food production and evolved into ornamental front gardens in the 1930s and 1940s.

Landscape and gardens are an important part in both functional and social design. Trees are useful in providing shade and defining spaces. A row of trees along the street help with the visual appeal, while also providing a shade that encourages pedestrian uses. Trees are also

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great for screening development from certain areas or viewpoints, while also creating framed views.

In an inventory of the existing landscape, native and non-native plants can be found throughout the town centers and residential yards. Figure 119 lists just a few plants that are readily known to be growing in various home gardens and yards.

<table>
<thead>
<tr>
<th>Existing Landscape Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreground (Small)</td>
</tr>
<tr>
<td>Ki Leafs</td>
</tr>
<tr>
<td>Loulu</td>
</tr>
<tr>
<td>Various Ferns</td>
</tr>
<tr>
<td>Laua’e</td>
</tr>
<tr>
<td>Gardenia</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Food Cultivated in Home Gardens in N. Kohala**

| Garlic | Green Onion | Onions |
| Thyme | Sugar Cane | Rosemary |
| Tomatoes | Peanuts | Potatoes |
| Hawaiian Chili Pepper | Mango | Papaya |
| Lemon | Lime | Oranges |
| Mai’a (Banana) | Tangerines | Grapefruit |
| Sweet Potato | Eggplant | Pumpkin |
| Squash | Dry Land Kalo (Taro) | |

*Figure 116: Existing Inventory of landscape in N. Kohala. By author.*
Figure 117: Cluster of housing incorporating all three housing types. Central courtyard of 100' deep to 60' wide. Side yards are 15' apart and back yards are 20' apart. Parking located in front of cluster. Garden space is in the front of each house. Trees, mid height and ground foliage align the front to screen the housing area from parked cars. Between housing, clusters of vegetation can be used to provide additional privacy and shade. Physical walls such as fences should not be used. These physical barriers can inhibit natural ventilation through the housing clusters. By author.
Figure 118: Cluster of housing incorporating all three housing types with studio units nearest to the parking area. Central courtyard of 1120' deep to 60' wide. Side yards are 15' apart and back yards are 20' apart. Parking located in front of cluster. Garden space is in the front of each house. Studio units are closer to parking in the planning for future elderly access. By author.
Figure 119: Cluster of housing incorporating studio housing types. Central courtyard of 100’ deep to 30’ wide. Side yards are 15’ apart and back yards are 15’ to 20’ apart. Parking located in front of cluster. Garden space is in the front of each house as well as additional landscaping clustered for vegetative screening. By author.
A Village Master Plan

Incorporating the various plantation organizational patterns, a village cluster is established with multiple social amenities that are outlined as being missing or obsolete in standard subdivision housing models. The central community space is a public destination within the community. This space is a central anchor that serves as the foundation for community engagement. This area also serves as a gathering space for numerous entertainment and cultural activities that allows each community to create their own identity. Through this community space, community identity and a sense of belonging is established.

Figure 120: Diagram of Village showcasing clusters around central community spaces. By author.
Capturing the Sense of a Village

Figure 121 is an illustration of the village housing project that incorporates the multiple plantation design concepts. The inward organizational pattern is strongly expressed with the central community space surrounded by various clusters of housing. The various clusters create small communities within the village offering a dynamic living environment that can be enjoyed by multi-generational residents.

Figure 122 is an illustration of the entry that is between the carports. Each cluster is designed with a formal entry.

Figure 121: Illustration of the village housing project that incorporates the multiple plantation design concepts. By author.

Figure 122: Illustration of the entry into housing cluster. By author.
Hāwī 50 Year Expansion Master Plan

In calculating the total housing provided by both the Hāwī subdivision infill and the Hāwī villages, a total housing supply of 265 single family units and 161 studio units are achieved.

<table>
<thead>
<tr>
<th>Housing Breakdown</th>
<th>Single Family Units</th>
<th>Studio Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Development</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hāwī Subdivision Infill</td>
<td>45</td>
<td>0</td>
</tr>
<tr>
<td>Hāwī villages</td>
<td>220 (2 bedrooms and 3 bedrooms)</td>
<td>161</td>
</tr>
<tr>
<td>Total</td>
<td>265</td>
<td>161</td>
</tr>
</tbody>
</table>

Figure 123: Hāwī Expansion Master plan housing breakdown.

According to the 2010 US Census, N. Kohala district grew by 4.5% or 284 residents, which is on normal growth in a rural community. If a growth rate of 4.5% is sustained, the Hāwī Expansion Plan should sustain housing for the next 30-50 years.

Figure 123: Hāwī Expansion Master plan comparing village development patterns to standard subdivision development.
Model of Hāwī 50 Year Expansion Master Plan

Figure 124 is a photograph of the Hāwī 50 year Expansion Master Plan model. The master plan incorporates multiple villages throughout the site while preserving the existing characteristics in N. Kohala as outlined in this project.

Figure 124: Photograph of Hāwī 50 year Expansion Master Plan model of multiple village developments throughout the site.
CHAPTER 7

CONCLUSION

Plantation Village Design guides community housing projects in Hāwī town, N. Kohala. The concept defines strategies to foster community engagement in rural housing projects. This thesis project presents an alternative community design for rural town development. The plan provides an incremental residential development plan based on N. Kohala’s population statistics, rural planning practices and Hawai’i Plantation “Village” concepts. New developments can address much of the community’s wishes to provide multiple sized gathering places and learning spaces into the built environment. By incorporating the various plantation organizational patterns, a village cluster is created with multiple social amenities that are outlined as being missing or obsolete in the standard subdivision housing model.

Housing developments can create communal relationships to refocus development towards human values and relationships, to balance development with nature, and to reflect social needs.

Plantation camps or villages evolved into multi-cultural communities through cultural exchange and inter-marriage. This created a unique sense of place and environment for plantation camp communities. Early plantation camps were segregated and served as a means to house immigrated single men who came to Hawai’i as plantation laborers. Initially, camps were unregulated, cramped, overcrowded, and unsanitary, but eventually were regulated and standardized in 1915. In the 1920s, when camp populations shifted from the single male worker to families, plantation camps began construction on new housing that was directed toward single-families. As families created complex living in plantation camps, social reforms and labor disputes influenced by the U.S. mainland brought the reorganization of camps into villages. Barracks were used for singles, while double houses housed groups of single men as well as couples and single-families. Specialized outbuildings for cooking, washing, and restrooms were sited centrally and surrounded by clusters of houses.

In the 1930s, professional architects and planners began working for the Hawai’i Sugar Planters Association to develop new housing projects. New advancements included the addition of kitchens, washing, and bathrooms to individual homes. The architects developed the
“Plantation Village Standards” which re-organized existing plantation camps and guided new housing projects.

New community development was a rarity and the majority of land was dedicated for agricultural use. In the 1980s, sugar plantations began to close their doors due to the high price of production and exportation. Plantation camps were dismantled, auctioned off, or sold to workers through special financing transactions. Plantation camp or village life became something of the past as new businesses and new developments spread throughout Hawai‘i.

With agriculture no longer serving as Hawaii’s primary business, land and resort development increased along with numerous urbanization projects on acres of fallow sugar lands. Subdivision development in Hawai‘i also increased dramatically from the 1960s through the 1980s with many new housing projects being modeled after suburban America, making it the new norm of housing development in Hawai‘i. Cluster or spot development confined housing to one area while maintaining surrounding green/agriculture space. However, this type of development tended to create housing that neglected the incorporation of community gathering spaces that fostered social and recreational needs. Many features which promoted community activities were missing. These were local stores, public facilities such as a laundromats, community social halls, all suited within a small village housing.

The hierarchy of roads is an integral part of how town expansion or growth is achieved while protecting existing visual characteristics. In rural town settings, vegetation and landscaping play a role in shaping the perception of the place. Subdivided lands can be evaluated to find areas that have great importance which can be utilized to maximize or preserve rural character. Rural communities yearn for a chance to live in smaller human settlements with a sense of place and a sense of belonging. Subdivisions are essentially the main housing model that occur in rural communities.

These are the specific characteristics of plantation villages identified in this document that are important to planned rural housing development.

**Smaller Communities**

By creating smaller communities of 30-40 units, manageable relationships and friendships are created with an increased sense of mutual responsibility and support among neighbors. In maintaining smaller communities, housing projects can be incorporated off of main roads and
screened by vegetation to keep a rural setting by preserving scenic roads and views. Smaller communities also provide the opportunity to incorporate green belts or green zones that preserve lands of historic or scenic value.

Central Community Space

By arranging housing around public space, a central community destination is established. These community cores are the foundation for community engagement often missing in standard subdivisions.

Cluster of Various Housing Type

By clustering housing arrangement a sense of community within a community is developed. Houses are arranged around a public space fronting each other as opposed to a street. Front yards become public enclosures which young children and older residents can enjoy.

In clustering various housing types a multi-generational community is achieved by the engagement of young families and elders. This in turn promotes a dynamic living environment for the elderly.

Incorporation Community Structures

By incorporating small community structures within the central public space and big public facilities near the perimeter of housing projects, residents are able to walk to these establishments as opposed to traveling by car. The inclusion of community structures and public facilities also promotes community activities outside one’s home but still within the general neighborhood.

Smaller House Plans with Simple Conversion Plans

In clustering housing and providing community parking separate from homes, a smaller house plan is achieved. Community parking provides the opportunity of interacting and have a steady relationship with neighbors.

Simple expansion plans offer the opportunity for young families to start early home ownership with a two bedroom house and expand into a pre-planned 3 bedroom unit. This allows the home to grow as the family grows.
Both smaller house plans and simple conversion plans create the opportunity for affordable housing by offering options to home buyers, especially young families.

By integrating these various plantation village design concepts, a proactive housing project can be incorporated in rural areas that house multi-generational families, promotes community social and recreational engagement, as well as affordable options for young families.

**Limitations**

This thesis is primarily a research and conceptual design project. It focuses on addressing salient issues related to the history of plantation housing and how ideas of it are applicable and positive for rural town design. The initial design addresses various goals of the 2008 N. Kohala Community Development Plan.

**Implementation**

Plantation Design Concepts do not strictly follow standard Hawai`i subdivision codes or design standards but can be creatively implemented through a restructuring of condominium laws to fit smaller building scales found in rural communities. Condominium development allows for the flexible use of land while also allowing for the clustering of multiple housing types.

Initial studies have concluded that the Hāwī Expansion Plan can sustain housing for 30-50 years while also complying with the 2008 N. Kohala Community Development Plan.

Plantation Village Design Concepts proactively addresses, community engagement, multi-generational living, and young family housing options. Comprehensive input from both the public and N. Kohala community still needs to be done in order for these concepts to become reality but the initial study is a step towards a housing project that integrates various community needs. The concept of a village provides an area for homes but also the creation of communities.
In closing,

“He hale kanaka, ke ‘alalā ala no keiki, ke hae ala no ka ‘ilio”.

*It is an inhabited house, for the wail of children and the bark of a dog are heard*

The signs of living about a home are the voices of humanity and animals. Used in answer to someone’s apology over their children crying or dogs barking.\(^{18}\)

The closing ʻōlelo noʻeau speaks of the signs of an inhabited home are the voices of the inhabitants. Like the signs of an inhabited home, the signs of a flourishing village are the voices of humanity and animals of many homes.

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Maps


HSPA “Cottage for One Family or Single Men.” (HSPA Collection, University of Hawai‘i at Mānoa.)

HSPA “3-Bedroom House.” (HSPA Collection, University of Hawai‘i at Mānoa.)

HSPA “Combination Wash & Toilet Building.” (HSPA Collection, University of Hawai‘i at Mānoa.)

HSPA “Cottage for Semi Skilled.” (HSPA Collection, University of Hawai‘i at Mānoa.)

HSPA “Alternative Floor Plan Converting Plan Into House For One Family.” (HSPA Collection, University of Hawai‘i at Mānoa.)

HSPA “Plantation Theatre.” (HSPA Collection, University of Hawai‘i at Mānoa.)

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