Article 12. Indigenous Hawaiian Architecture

Sections:

Sec. 16-12.1 Policy.

This code shall be administered with due consideration given to the policy of the city that indigenous Hawaiian architecture furthers the city's compelling interest in cultural, environmental, and historic preservation; energy efficiency; economic development; aesthetic beauty; and public safety. For purposes of this article, indigenous Hawaiian architecture includes any of the predominant architectural practices, customs, styles, and techniques historically employed by the native residents of the Hawaiian Islands, including structures comprised of either rock walls or wood frames for the bottom portion of structures and thatch of different native grasses and leaves for the roof. (Added by Ord. 12-34)

Sec. 16-12.2 Scope.

The provisions of this article shall apply exclusively to Indigenous Hawaiian Architecture Structures. (Added by Ord. 12-34)

Sec. 16-12.3 Publications incorporated by reference.

The following publications are incorporated by reference and made a part of these provisions. Where there is a conflict between the references and these provisions, these provisions shall prevail.

(1) "Hawaiian Thatched House" (1971), by Russell A. Apple, published by the United States Department of the Interior,
(2) "Hale Construction Standards" (2000), by Francis Sinenci and Bill Sides,
(3) "The Hawaiian Grass House in Bishop Museum" (1988), by Catherine C. Summers, and
(4) "Arts and Crafts of Hawaii, Section II, Houses" (1957) by Te Rangi Hiroa (Peter H. Buck).

(Added by Ord. 12-34)

Sec. 16-12.4 Definitions.

For purposes of this article, the following words and terms shall have the meanings shown herein.

"Certified Hale Builder" means a person who has obtained a certificate of completion for satisfactorily completing a course in Hawaiian hale construction from the University of Hawaii, or any of its community colleges, or as approved by the Building Official.

"Group of Structures" means a group of indigenous Hawaiian architecture structures that are in close proximity to each other and have an aggregate floor area of 1,800 square feet or less.

"Indigenous Hawaiian Architecture Structure or Hale" means a structure that is consistent with the design, construction methods and uses of structures built by Hawaiians in the 1800's, which uses natural materials found in the Hawaiian islands, and complies with this article and references.

"Separation" means the clear distance between two structures.

"Setback" means the clear distance between a structure and a property line.
(Added by Ord. 12-34)

Sec. 16-12.5 Material requirements.

(a) Hale shall be constructed using only materials grown and harvested in the State of Hawaii.

(b) Wood Framing Material. The wood members for the hale, such as posts and rafters, shall be, but not limited to hardwoods of unmilled, straight sections of trunks or branches of the following species:
   (1) Casaurina equisitafolia (ironwood).
   (2) Prosopis pallida (kiawe).
   (3) Eucalyptus robusta (eucalyptus).
   (4) Psidium cattleianum (strawberry guava).
   (5) Metrosideros polymorpha (ohia).
   (6) Rizophora mangle (mangrove).

   Exception: Ardisia elliptica (inkberry) may be used only for roof purlins as an alternative to specified woods listed in subdivisions (1) through (6).

(c) Roofing and Siding. Thatched roofing and siding materials for the hale may be any grass or leaf material grown and harvested in the State of Hawaii, to include but not be limited to pili, kualohia, pueo, kawelu, sugarcane leaves, and ti leaves.

(d) Cord. Natural or synthetic cord used for lashing structural members of the hale shall be 400 pound test. Cord used for tying floating purlins and thatched materials shall be 100 pound test. All cord used on the hale shall be shades of green, tan, brown or black.

(e) Metal Prohibited. Metal shall not be used for the construction of the hale.
(Added by Ord. 12-34)

Sec. 16-12.6 Size and location.

(a) Height and Size Limitation. Hale shall be one-story, detached structure(s) not to exceed 1,800 square feet. The maximum allowable size for each type of hale shall be as follows:

MAXIMUM ALLOWABLE SIZES (IN FEET) FOR EACH HALE TYPE			
hale halawai	hale kuai	hale noa	hale waa
30'X 60'	14'X 20'	14'X 24'	30'X 60'

(b) Zoning Requirements. Hale shall comply with minimum yard requirements in the Land Use Ordinance, ROH Chapter 21.

(c) Minimum Separation. The minimum separation between a hale and another structure shall be at least 10 feet for a one-story structure; 15 feet for a two-story structure; or a distance equal to the height of the hale, whichever is more. The minimum separation between two hale shall be at least 10 feet or a distance equal to the height of the taller hale.

(d) Hale Noa. Hale noa structures for sleeping may be constructed only on property where a separate residence exists on the property.

(Added by Ord. 12-34)

Sec. 16-12.7 Allowable prohibited uses.

(a) Allowable Uses. To the extent permitted by other applicable law, the various types of hale shall be used as follows:

ALLOWABLE USES FOR EACH HALE TYPE			
Hale Halawai	Hale Kuai	Hale Noa	Hale Waa
eating (ai)	eating (ai)		eating (ai)
assembling (halawai)	assembling (halawai)		assembling (halawai)
		sleeping (moe)	
retailing (e.g., fruits) (ku`ai)	retailing (e.g., fruits) (ku`ai)		retailing (e.g., fruits) (ku`ai)
	storage (papa`a)		storage (e.g., canoe) (papa`a)

(b) Prohibited Uses and Activities. The following uses and activities shall be prohibited from occurring within or near the hale:

(1) Cooking.
(2) Open flames.
(3) Generators.
(4) Extension cords.
(5) Electrical switches, fixtures, or outlets.
(6) Plumbing faucets, fixtures, or drains.
(7) Power tools.
(8) No screen, mesh, plastic or any other similar material shall be attached to the hale.
(9) Hale shall not be used as a food establishment as defined in the administrative rules adopted by the State of Hawaii, Department of Health.

(c) Maintenance. The hale shall be periodically maintained by the owner to ensure structural integrity. Repairs for maintenance of the hale shall not require additional building permits.

(Added by Ord. 12-34)

Sec. 16-12.8 Fire protection.

(a) Fire Protection Classifications. Indigenous Hawaiian architecture structures shall be categorized into the following two classes for fire protection requirements:

CLASS	SETBACK REQUIREMENTS	FIRE PROTECTION REQUIREMENTS

Class A	The structure (or a group of structures) is: 1. Located at least 100 feet from any existing structure on the same or neighboring properties; and 2. Located at least 100 feet from any property line, except as follows: a. if the property line abuts a public way, the 100 feet minimum setback for that property line shall be reduced by the width of the public way, b. if the property line abuts the shoreline, the minimum setback for that property line shall be the shoreline setback, or c. for any hale ku`ai in the agricultural district that is less than 200 square feet, that is completely open on three sides, and that is used as an agricultural products stand and if the property line abuts a public way, the minimum setback for that property line shall be 15 feet.	No fire protection is required for the structure.
Class B	The structure (or a group of structures) that conforms to applicable zoning setback requirements but does not satisfy Class A setback requirements.	Automatic fire sprinkler system shall be installed in accordance with design standards in Section 16-12.8.2. An electrical permit is required for fire sprinklers systems.

(b) Automatic Fire Sprinklers. The design standards for automatic fire sprinklers for Class B indigenous Hawaiian architecture structures shall be in accordance with NFPA 13.

Exception: The design standards for automatic fire sprinklers for Class B indigenous Hawaiian architecture structures shall be permitted as follows:

(1) 18 gallons per minute for a single head at 140 square feet maximum coverage of roof area.

(2) 13 gallons per minute for each subsequent head at 140 square feet maximum coverage of roof area per head.
(3) The minimum supply pressure at the base of the riser shall not be less than 40 pounds per square inch.
(4) The minimum residual pressure at the highest sprinkler shall be not less than 12 pounds per square inch.
(5) Sprinkler heads spacing shall not exceed 14 feet.
(6) Sprinkler heads shall be open type upright, pendent, or sidewall with 1/2-inch or 17/32- inch orifice and have a wax corrosion resistant coating.
(7) The total number of sprinklers on a branch shall not exceed 6 heads.
(8) The total number of sprinklers shall not exceed the following schedule:

1-inch diameter	2 sprinklers
1-1/4 inch diameter	3 sprinklers
1-1/2 inch diameter	5 sprinklers
2-inch diameter	10 sprinklers
2-1/2 inch diameter	30 sprinklers
3-inch diameter	60 sprinklers

(9) The above pipe schedule shall not apply to hydraulically designed systems.
(10) The water density for hydraulically designed systems shall not be less than 0.10 gpm per square foot.
(11) The source of water may be by domestic water meters, detector check meter, underground well, storage tank, swimming pool, ponds, etc., but must meet the design requirements for adequate pressure and duration.
(12) Water supply shall be sufficient to provide 30 minutes duration.
(13) If domestic water meters are used as the source of water for the fire sprinklers, without a storage tank and booster pump, the maximum number of heads shall not exceed the following table:

5/8-inch water meter	1 sprinkler
3/4-inch water meter	2 sprinklers
1-inch water meter	3 sprinklers
1-1/2 inch water meter	7 sprinklers

2-inch water meter	11 sprinklers
3-inch water meter	27 sprinklers

(14) The piping material shall be hard drawn copper with silver solder or brazed fittings, or carbon steel with corrosion-resistant coatings. Plastic pipes shall not be allowed, except for below grade supply pipes.

(15) Fire sprinkler system shall be actuated by smoke detectors located at the highest points of the roof and spaced as recommended by the manufacturer.

(16) Flow control valves shall be either hydraulically or electrically operated with a manual override switch.

(17) Where the width of a roof exceeds the width allowed for one row of sprinklers, two or more rows of sprinklers shall be placed such that the entire roof area is protected.

(18) Prevailing wind direction shall be considered in the placement of sprinklers.

(19) Deflectors for sprinklers shall be parallel with the roof surface or tilted slightly towards the peak of the roof.

(20) Fire sprinkler systems shall have a local alarm activated by a smoke detector.

(c) For any hale that requires fire protection pursuant to Sec.16-12.8(b), the applicant shall provide a certification from a licensed engineer or a licensed C-20 contractor that the water supply for the fire sprinkler system has been tested and is capable of delivering the required fire flow for a duration of 30 minutes.

(d) Smoke Detector. Any hale used for sleeping shall have an approved battery operated smoke detector installed in the hale.

(Added by Ord. 12-34)

Sec. 16-12.9 Design standards.

(a) General Design Standards. All types of hale shall be designed and constructed in accordance with the standards set out in this section.

(1) The minimum diameter size of all structural members shall be measured at the member's midpoint, except that the minimum diameter size of posts shall be measured at the smaller end. For structure sizes not specifically shown in the tables, the requirements in the next larger width size shall be applicable.

(2) The specifications for structural members were estimated based on no wind loads. Hale shall be constructed to allow all thatching materials to separate from the structure prior to adding significant loads.

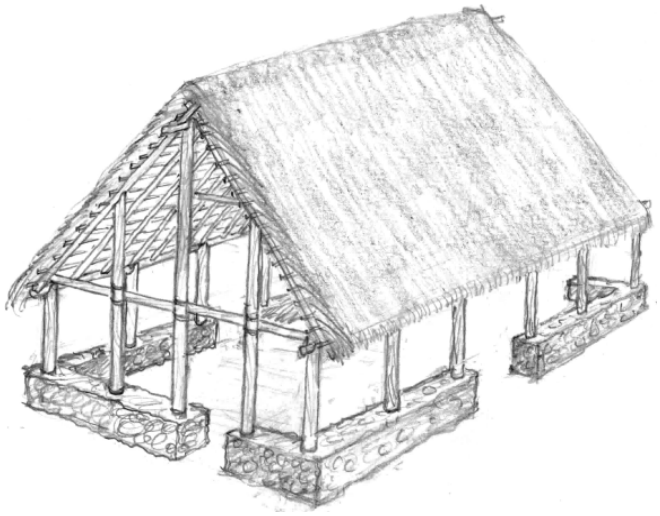
(3) The mix formula for mortar specified in these rules shall be one part portland cement, four parts clean sand, and sufficient fresh water to make the mixture workable.

(4) Every hale, except hale noa, shall have at least two sides completely open.

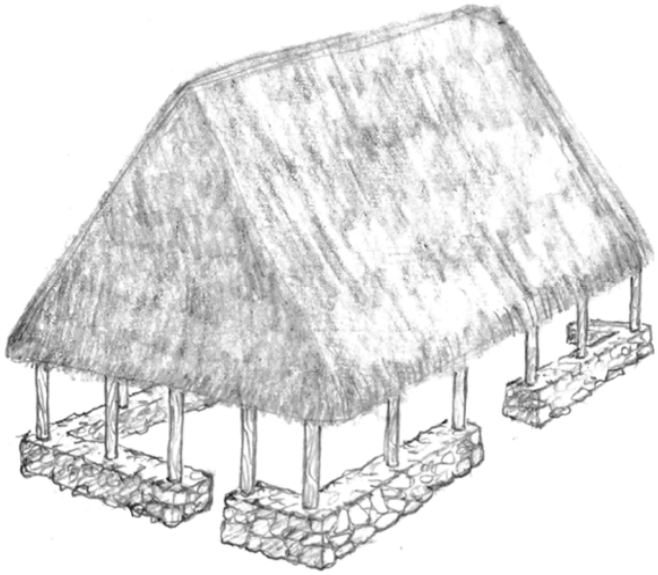
(5) Lashing and thatching methods shall comply with illustrations found in "Arts and Crafts of Hawaii" or "The Hawaiian Grass House in Bishop Museum."

(b) Allowable Designs. Hale shall be designed and constructed in accordance with the schematic designs and illustrations that follow:

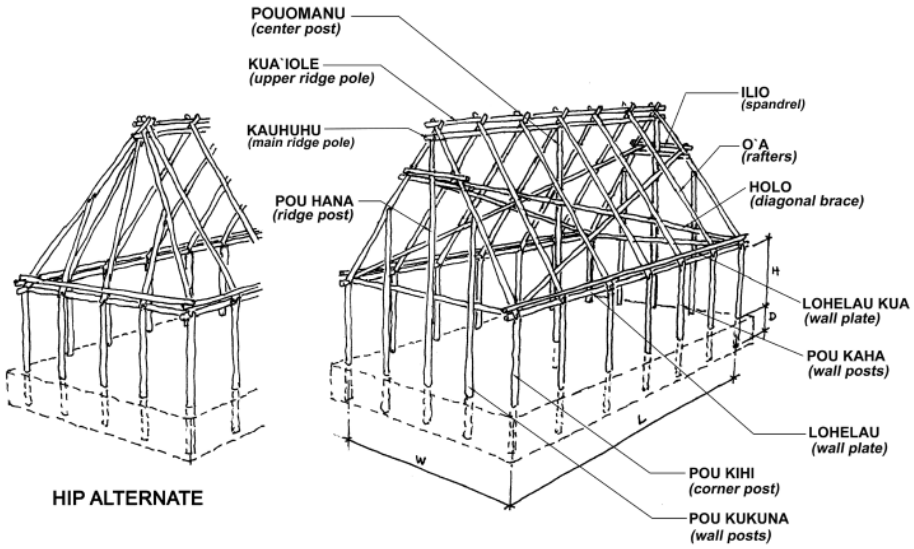
(1) Hale Halawai. Each end of the Hale Halawai may be open or thatched. The ends may also be constructed with a thatched roof hip as an alternate design.



HALE HALAWAI
Open End Style



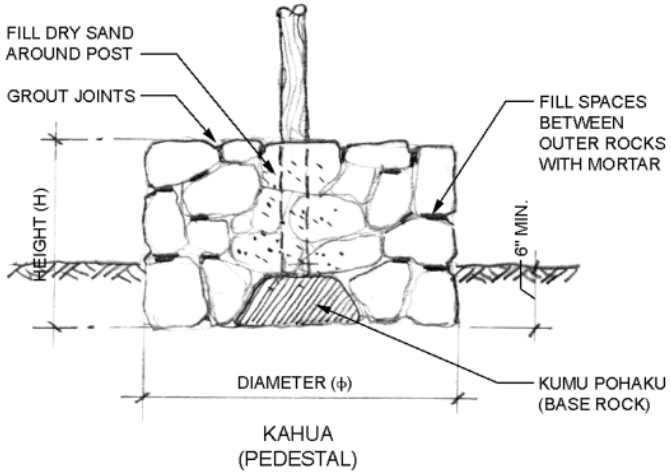
HALE HALAWAI
Thatched End Style



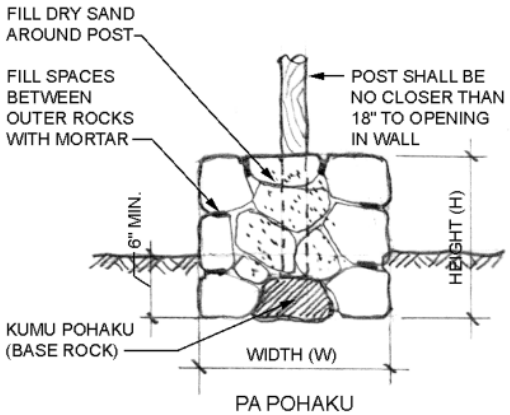
FRAMING SCHEMATIC

HALE HALAWAI

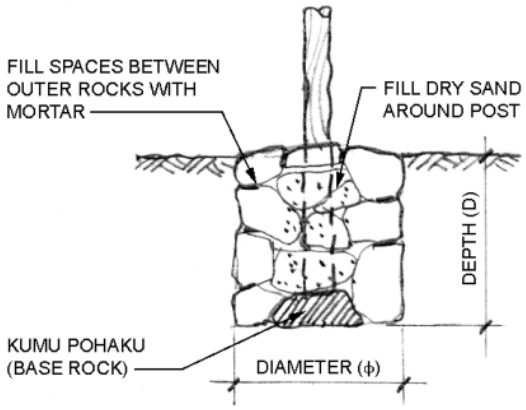
W x L x H	***Pou Kihi*** minimum diameter	***Pou Kukuna*** & ***Pou Kaha*** minimum diameter	***Pou Hana*** minimum diameter	***Pouomanu*** minimum diameter	***O'a*** minimum diameter	***Kuaiole*** & ***Holo*** minimum diameter	***Kauhuhu*** minimum diameter	***lohelau*** minimum diameter	Post Spacing maximum spacing	Rafter Spacing maximum spacing
12'x 20'x 7'	4"	3 "	4"	4"	3 "	2 "	3"	3"	5'	3'
14'x 24'x 7'	4"	4"	4 "	4 "	3 "	2 "	3"	3 "	5'	3'
24'x 30'x 7'	5"	4 "	4 "	4 "	4"	2 "	3"	3 "	5'	3'
25'x 50'x 7'	5 "	5"	5 "	5 "	4"	2 "	3"	32"	5'	3'
30'x 60'x 7'	6"	5 "	6"	6"	4 "	2 "	3"	4"	5'	3'



KAHUA
(PEDESTAL)



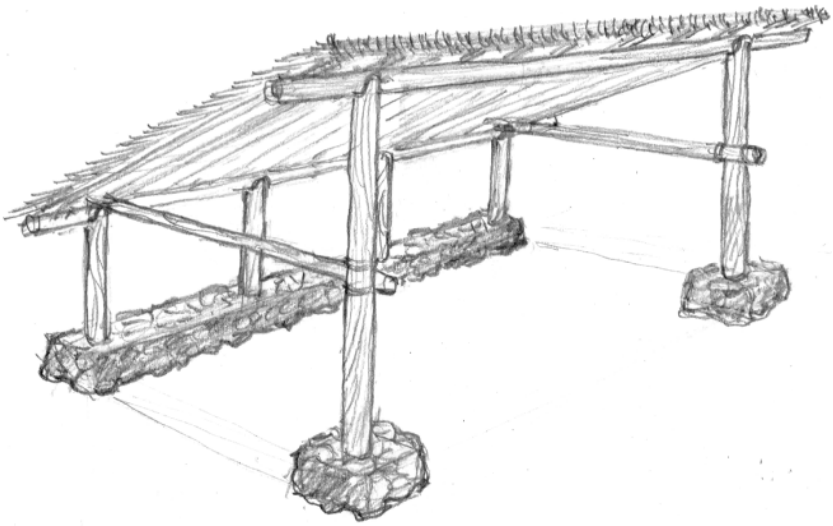
PA POHAKU
(FOUNDATION WALL)



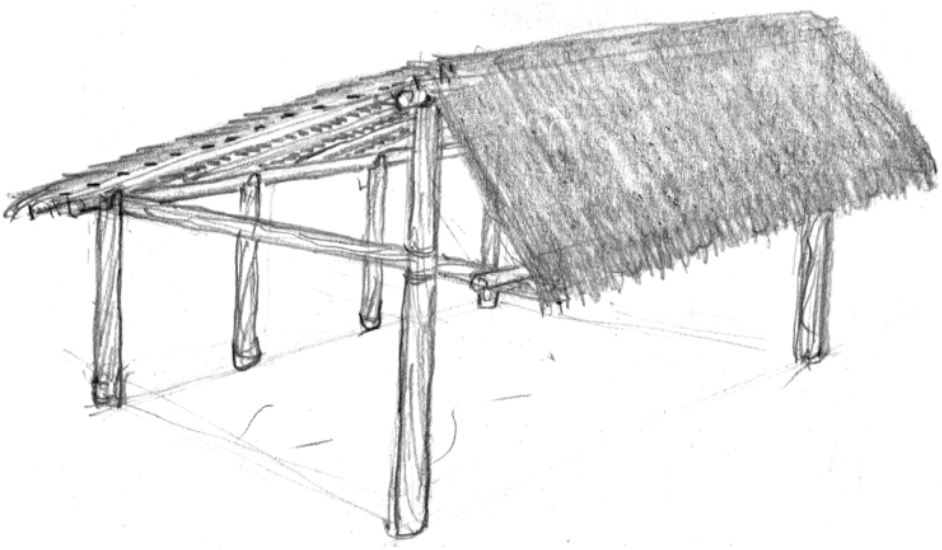
POU KANU
(BURIED POST)

SIZE OF ***HALE HALAWAI*** W x L x H	FOUNDATION TYPE		
	Kahua Diameter x Height	***Pa Pohaku*** Width x Height x Length	***Pou Kanu*** Diameter x Depth
12'x 20'x 7'	3'6"φ x 24"H	2'6"W x 2'8"H x 4'0"L	30"φ x 2'8"D
14'x 24'x 7'	3'8"φ x 24"H	2'6"W x 2'8"H x 4'0"L	30"φ x 2'9"D
24'x 30'x 7'	4'0"φ x 30"H	3'0"W x 3'0"H x 4'0"L	36"φ x 3'0"D
25'x 50'x 7'	4'0"φ x 30"H	3'0"W x 3'0"H x 4'0"L	36"φ x 3'0"D
30'x 60'x 7'	4'0"φ x 30"H	3'0"W x 3'3"H x 4'0"L	36"φ x 3'3"D

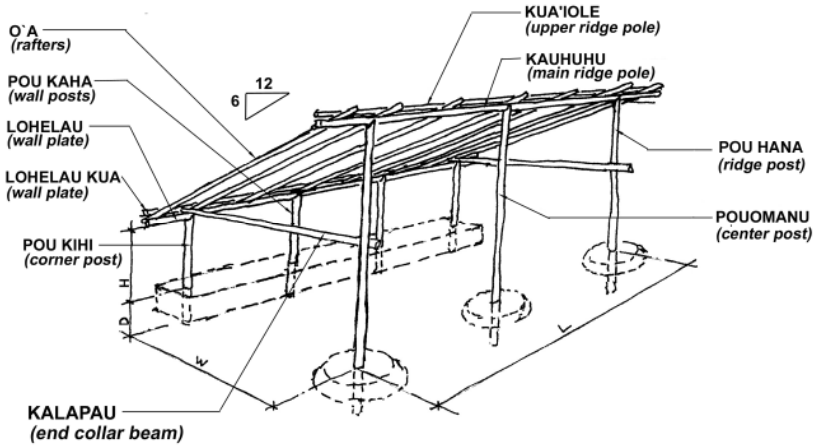
(2) Hale Ku`ai.

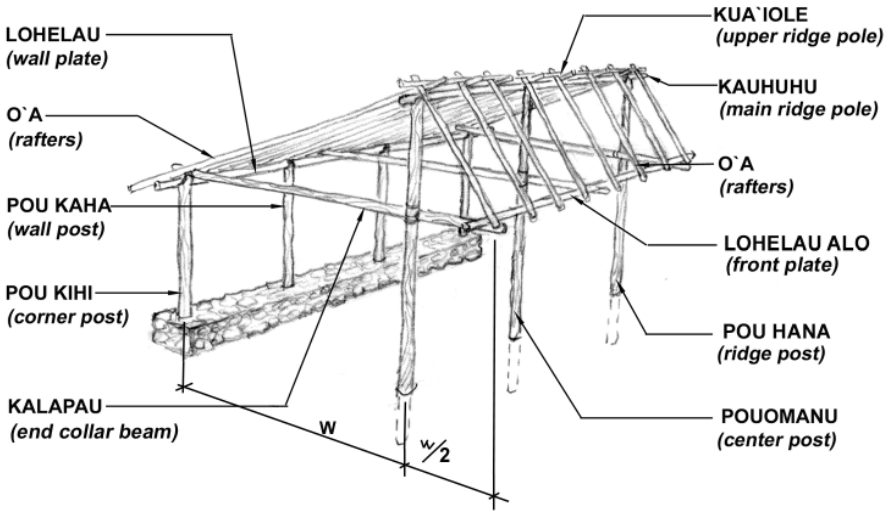


HALE KU`AI
SHED STYLE



HALE KU`AI
GABLE STYLE

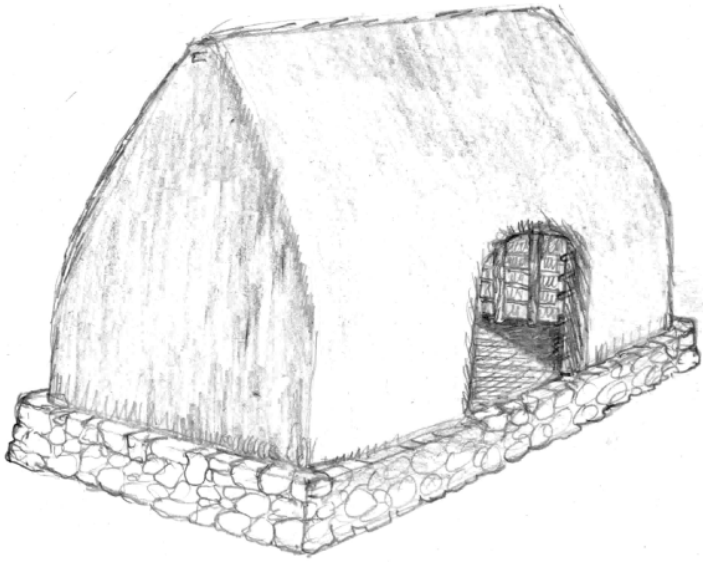




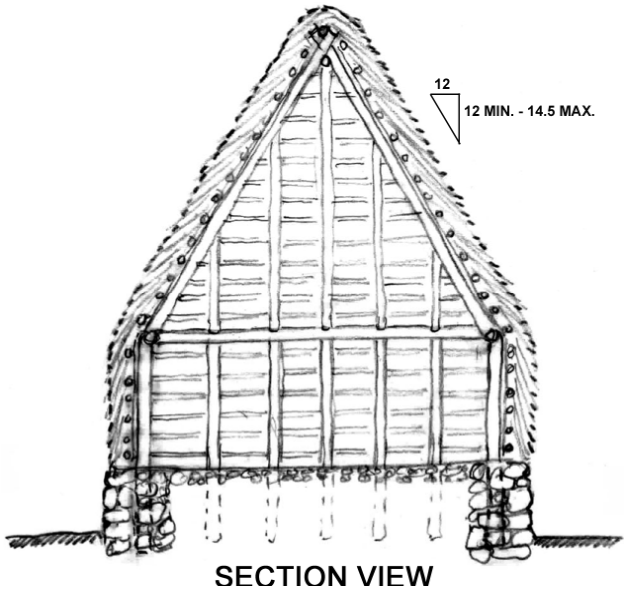
FRAMING SCHEMATIC

HALE KU`AI									
W x L x H	***Pou Kihi*** minimum diameter	***Pou Kaha*** minimum diameter	***Pou Hana*** minimum diameter	***Pouomanu*** minimum diameter	***O`a*** minimum diameter	***Kuaiole & Holo*** minimum diameter	***Kauhuhu*** minimum diameter	***Lohelau*** minimum diameter	Rafter Spacing maximum spacing
5'x10'x5'	4"	3"	3"	4"	3"	2"	3"	2"	4'
9'x12'x5'	4"	3"	3"	4"	3"	2"	3"	2"	4'
12'x16'x5'	4"	3"	4"	4"	3"	2"	4"	2"	4'
14'x20'x5'	4"	3"	4"	4"	3"	2"	4"	2"	4'
NOTE: The maximum post spacing for Pou Kihi and Pou Kaha is five feet. The maximum post spacing for Pou Hana and Pouomanu is twelve feet.									

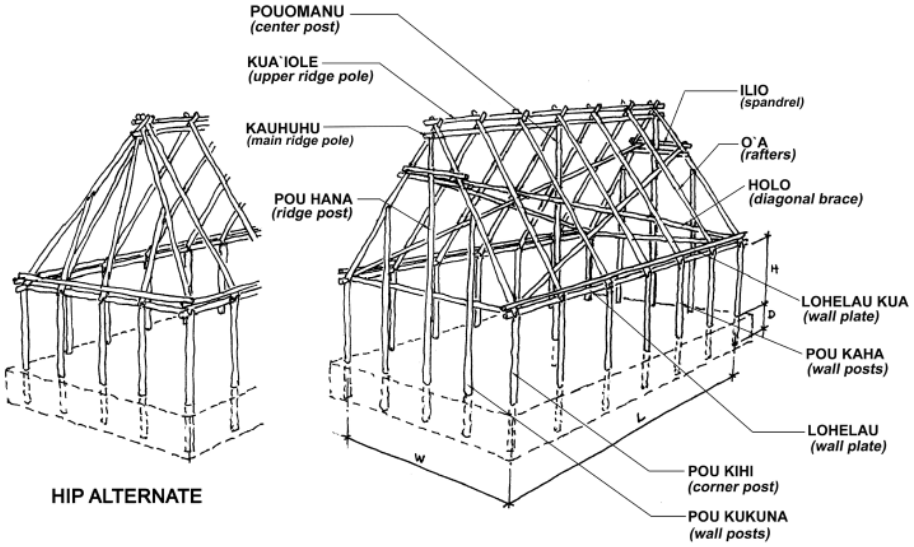
(3) Hale Noa. Hale Noa shall have at least two openings. One opening shall be at least 3 feet wide and 5 feet high, and the other opening shall be at least 2 feet wide and 3 feet high.



HALE NOA

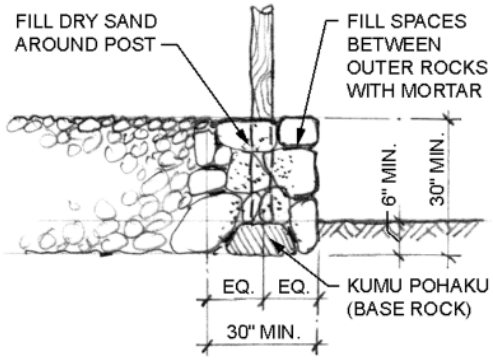


SECTION VIEW



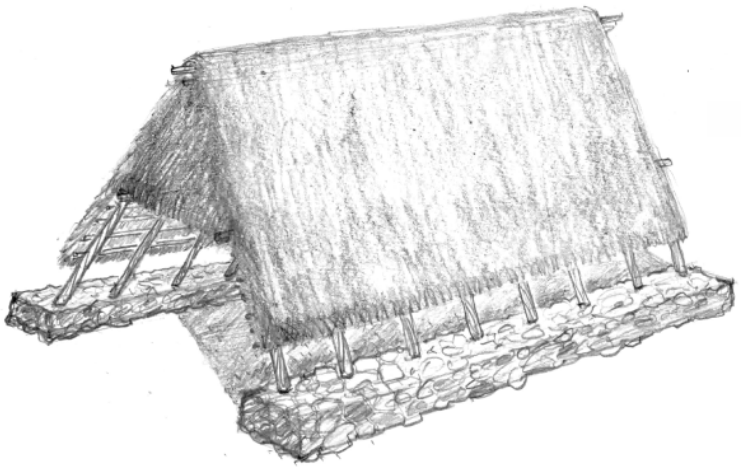
FRAMING SCHEMATIC

HALE NOA										
W x L x H	***Pou Kihi*** minimum diameter	***Pou Kukuna*** & ***Pou Kaha*** minimum diameter	***Pou Hana*** minimum diameter	***Pouomanu*** minimum diameter	***O`a*** minimum diameter	***Kuaiole*** & ***Holo*** minimum diameter	***Kauhuhu*** minimum diameter	***Lohelau*** minimum diameter	Post Spacing maximum spacing	Rafter Spacing maximum spacing
9'x12'x7'	3"	3"	4"	3"	3"	2"	3"	2"	6'	4'
12'x20'x7'	4"	4"	4"	3"	3"	2"	3"	2"	6'	4'
4'x24'x7'	5"	4"	4"	3"	3"	2"	3"	3"	6'	4'

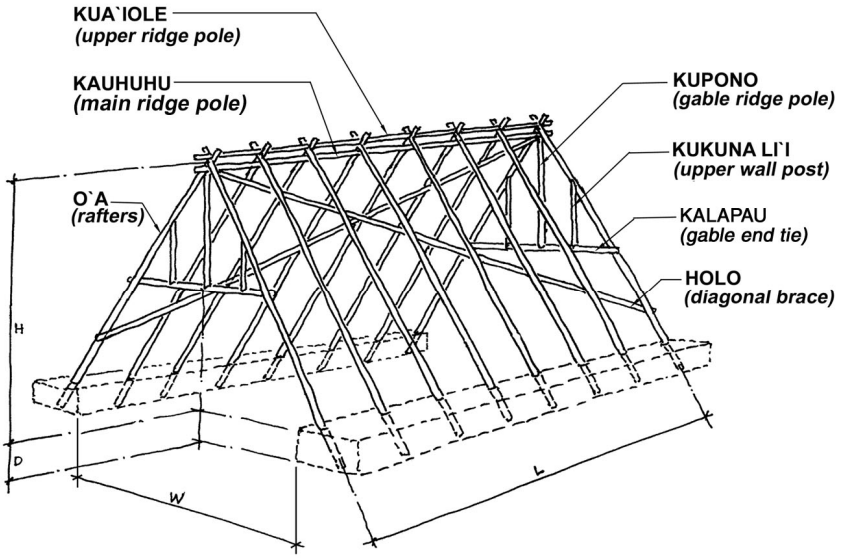


PAEPAE
(HOUSE PLATFORM)

(4) Hale Wa`a.

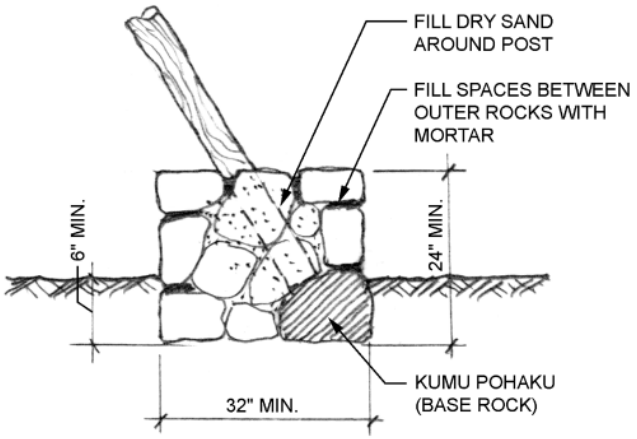


HALE WA`A



FRAMING SCHEMATIC

HALE WA`A					
W x L	***O`a*** minimum diameter	***Kuaiole*** & ***Holo*** minimum diameter	***Kauhuhu*** minimum diameter	Rafter Spacing maximum spacing	Ridge Height minimum height, H
20'x 60'	4"	3"	4"	4'to 5'	22'
25'x 60'	5"	3"	4"	4'to 5'	27 '
30'X 60'	5 "	3"	4"	4'to 5'	27 '



PA POHAKU
(FOUNDATION WALL)

(Added by Ord. 12-34)