

**POSITIONING STEEL FRAMING AS A SOLUTION TO REGIONAL ISSUES**

**PROJECT NO. 2**

**HOMEOWNER EXPERIENCE  
AND ATTITUDE SURVEY AND STUDY**

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## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

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# HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

## 1 Introduction

After Hurricane Katrina in 2006, investigations on buildings damaged in the Gulf Coast revealed that there was much more damage that could be attributed to the Formosan Subterranean Termite than originally estimated. This has raised questions about what this means in terms of cost to the homeowner both in maintenance and the long-term performance of their homes. “Construction durability” has been a central theme for the rebuilding efforts in the Gulf Coast. New building codes and standards are not only addressing hurricane resistant structures, they are also looking at utilizing termite resistant construction materials.

The Formosan Subterranean Termite (FST) found in the Gulf Coast is the same insect that has raised havoc in Hawaii for several decades. In the late 1980’s, Hawaii responded to this infestation by developing and implementing new standards for termite resistant construction materials that have helped minimize the potential for dangerous structural conditions, as well as limit the financial impact of termite infestation. One of the solutions, cold-formed steel framing, became popular almost overnight, and soon took over as the most popular framing material on the island of Oahu, the most populated island in Hawaii.

By capturing the experiences of the FST in Hawaii, perhaps lessons learned there can be applied to other regions such as the Gulf Coast that has similar problems with FSTs. The Steel Framing Alliance (SFA) has been part of the rebuilding efforts in the Gulf region. In the context of a market where steel framing materials have been relatively unknown, the SFA is looking to draw from the Hawaii FST experience to help accelerate the building of a sound infrastructure that can support the adoption of steel framing by builders in the Gulf and other areas.

The SFA contracted with the Hawaii Pacific Steel Framing Alliance (HSA) to conduct a project entitled “Positioning Steel Framing as a Solution to Regional Issues”. This project has four parts: A White Paper: Treated Wood Use in Hawaii (Adoption of Requirements and Resistance of Treated Wood), A Homeowner Experience and Attitude Survey and Study, A Builder Experience and Attitude Survey and Study, and The Impact on Builder Costs of Construction Study.

This report, “A Homeowner Experience and Attitude Survey and Study” includes a study of the impact of treated wood requirements on home maintenance and homeowner attitudes about what this has represented to them in terms of perceived comfort and safety, as well as observations about alternative methods of protection against FSTs.

### 1.1 Homeowners’ Survey

The HSA developed the survey questions in this project taking into account standard survey procedures. The HSA Research Team attempted to obtain credible answers from this

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survey<sup>1</sup> without sacrificing the relevancy that encompasses the main outcome. For coding and identification, the HSA attempted to put the questions in the best possible order to reduce the likelihood of errors on the respondents' answers.<sup>2</sup> All questions had unique identifiers numbered sequentially throughout the survey.<sup>3</sup>

The HSA developed a questionnaire<sup>4</sup> that consisted of 35 multiple choice questions designed to solicit information on homeowners' perceptions about their current residence, performance of its walls, floors, roof and other parts of the building. (See Appendix A.) Data was also collected on termite control applications they have used in the past as well as financial allocations to prevent and control termite infestations.

### 1.2 Respondents

The HSA Research Team chose homeowners as its respondents who had first-hand experience with ground termite infestations and were eager to obtain more knowledge in controlling the spread of termites and protect their homes.

The HSA team sought the assistance of Dr. Julian Yates of the Department of Plant and Environmental Protection Sciences, University of Hawaii at Manoa. Dr. Yates is a specialist in urban entomology in the Department of Entomology, College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa<sup>5</sup>. The HSA team was invited to assist his office in their conduct of the program "The Termite Project: Educate to Eradicate" which presented a series of free termite informational seminars for the public. Dr. Yates introduced the HSA team at each seminar and explained the intent and objectives of the survey to the participants. The HSA team relied on the attendees of Dr. Yates' seminar to conduct the survey.

It is important to point out that the survey in this report was conducted with homeowners that attended this seminar. It was not a random survey among the general public, but a survey of participants that represented homeowners in Hawaii who expressed an interest to know more about termites and how to combat the havoc they have affected in their respective houses.

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<sup>1</sup> Brace, I. (2004). *Questionnaire Design: How to Plan, Structure and Write Survey Material for Effective Market Research*. London: Market Research in Practice Series.

<sup>2</sup> Waddington, H. (2000). Types of survey questions. In B. Hoffman (Ed.), *Encyclopedia of Educational Technology*. Retrieved February 28, 2007. <http://coe.sdsu.edu/eet/Articles/surveyquest/start.htm>. Warwick, D.P. & C.A. Lininger. (1971). *The Sample Survey: Theory and Practice*. New York: McGraw Hill.

<sup>3</sup> Iraossi, G. (2006). *The Power of Survey Design: A User's Guide for Managing Surveys, Interpreting Results, and Influencing Respondents*. Washington, D.C.: The World Bank.

<sup>4</sup> Burgess, Dr. Thomas F. (May 2001) "A General Introduction to the design of questionnaires for survey research". Retrieved February, 28, 2007, from University of Leeds: <http://www.leeds.ac.uk/iss/documentation/top/top2.pdf>

<sup>5</sup> Dr. Yates has performed laboratory and field research with the Formosan subterranean termite since 1975 with a major interest is in urban entomology with emphasis on the biology, ecology, and integrated management of household and structural pests. Dr. Yates is recognized locally and nationally for his expertise in termites having been published, he has also been invited to speak at many conferences here and throughout the world, like Malaysia, Singapore, China, Hong Kong, Brazil and Australia.

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Attendees were homeowners who were interested in learning facts about these wood-eating insects. Topics at the seminars included termite identification and biology, and tips on how to prevent and control them. Participants also were able to ask and receive answers to questions regarding termite infestation, possible remedies, safeguards, available applications and the safety of their respective houses.

Out of three seminars slated in the Island of Oahu, the HSA team targeted the participants at two of these seminars at the following locations. The approximate attendance was 150 to 200 individuals per event:<sup>6</sup>

- June 25, 2009, Moanalua High School, 6:30 - 8:30 pm
- July 23, 2009, Windward Community College, 6:30 - 8:30 pm

The HSA Research Team was not able to measure the response rate at the seminars as the attendees were present along with their spouses and/or partners. The majority of respondents were couples that answered the questionnaires together. (One household represented per survey). It is safe to assume that a majority of households in attendance submitted a survey.

In addition to the seminars' attendees, the HSA also obtained information from random member-companies' representatives who lived in Oahu.

The respondent population was notably informed about the purpose of the survey as the HSA research team explained the objectives before and after seminars. Also the respondents could be presumed to be knowledgeable about the types of termites in question as forms were filled up after the seminars. Many respondents generously shared information and insight. It took the attendees about 5-10 minutes to fill out the questionnaire. Out of the survey forms distributed, the HSA received 231 forms.

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<sup>6</sup> The research team was not able to distribute forms during the seminar at Mililani High School in June 17, 2008.

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## 2 Data and Results

The data from the 231 surveys was collected and summarized in an Excel spreadsheet. It is important to note that respondents were allowed to select more than one answer for each question. The following were key findings of the termite questionnaire culled from the 231 usable responses.

### 2.1 Respondents & Their Type of Residence

The respondents were asked a series of questions about their housing category, ownership, age or residence and years occupying their current residence. For many questions, the respondents were asked to select all answers that applied, thus the total number of responses may exceed 231 for some questions. (For some questions, we are not sure why the respondents selected more than one answer.)

#### 2.1.1 Housing Category

When asked about the type of structure the respondents currently live in,

- a. 213 responses or 87.7% said they live in a single family home,
- b. 16 responses or 6.6% said they live in a townhouse, duplex or triplex,
- c. 6 responses or 2.5% said they live in a low-rise apartment building, and
- d. 7 responses or 2.9% said they live in a high-rise apartment building.
- e. 1 response or 0.4% said other.

*Comment: The majority of responses in this survey (almost 88%) indicated that they currently reside in a single family home.*

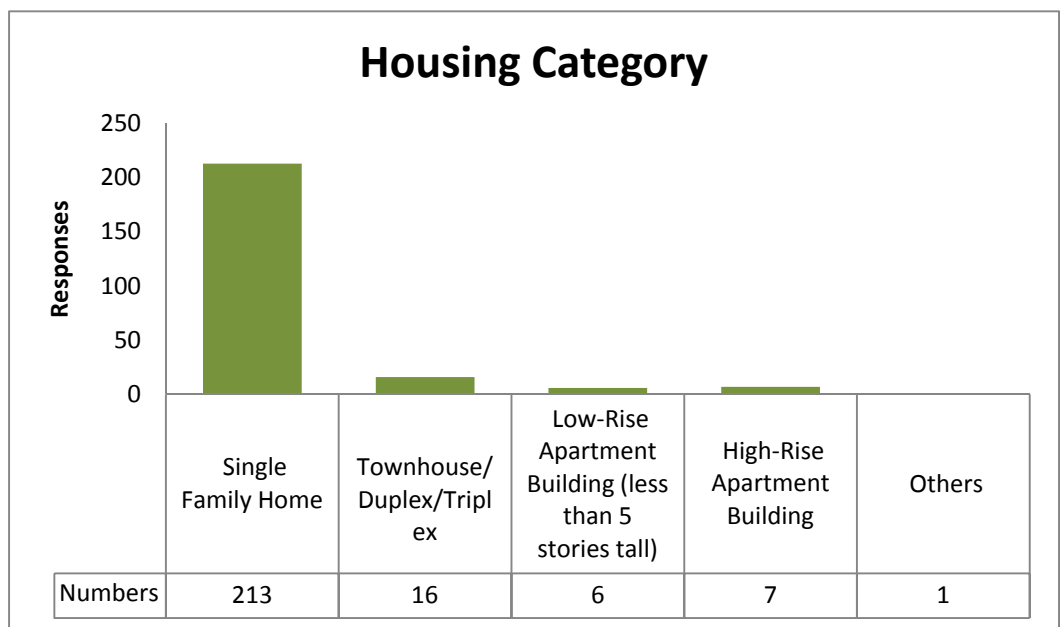


Chart 1

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.1.2 Ownership

When asked which best describes their current housing situation,

- 220 respondents or 90.5% said that they own and reside in their current residence,
- 16 respondents or 6.6% own other properties than the one they currently reside in, and
- 7 respondents or 2.9% rent and reside in the residence.

*Comment: Over 90 percent of the responses that were given indicated they own and reside in their current residence.*

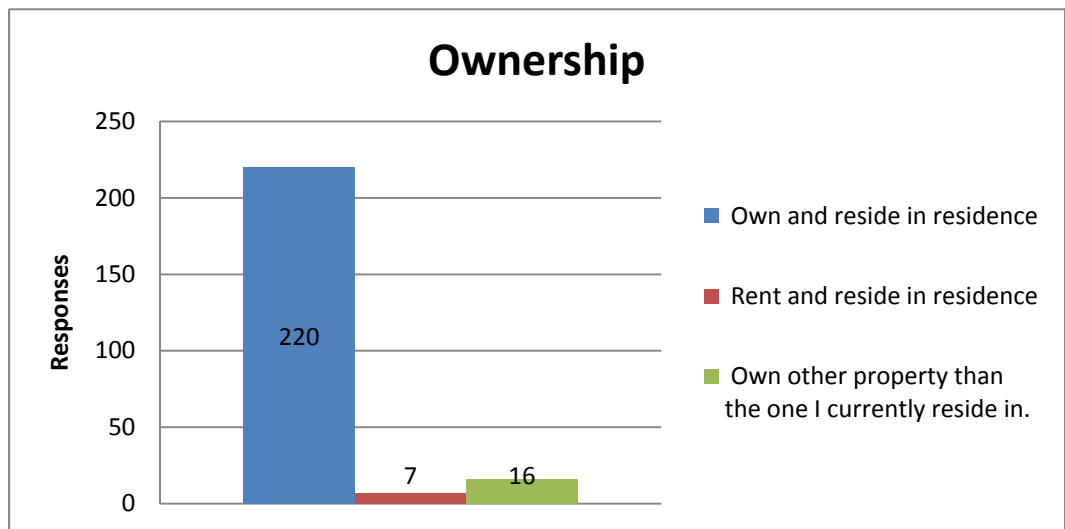


Chart 2

### 2.1.3 Housing Age

When asked how old their current residence was,

- Most responses (105 or 44.1%) have a residence that is 31 to 50 years old,
- 48 responses (20.2%) have a residence 51 years and older,
- 46 responses (19.3%) have a residence 21 to 30 years old,
- 31 responses (13.0%) have a residence 11 to 20 years old, and
- The remaining 8 responses (3.4%) have a residence 1 to 10 year old.

*Comment: Approximately 40% of the participants live in residences that are between 31 and 50 years old, while about 20 percent live in residences that are 51 years and older, and about 20 percent live in residences that are between 21 and 30 years old. About 16 percent live in residences less than 21 years old.*



## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

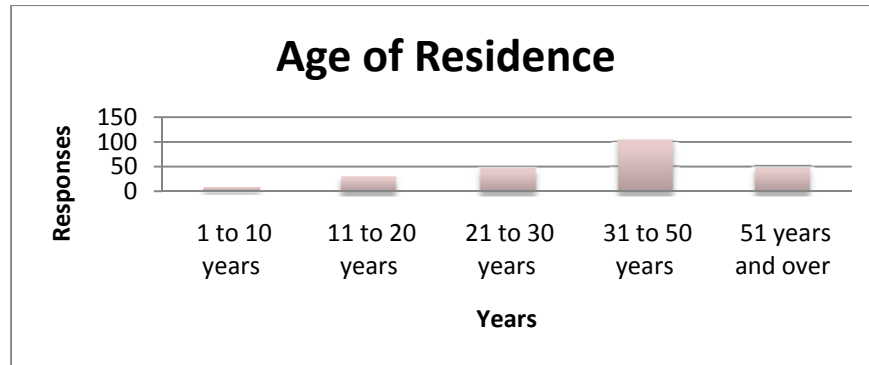


Chart 3

### 2.1.4 Respondents' Gender & Age

Gender:

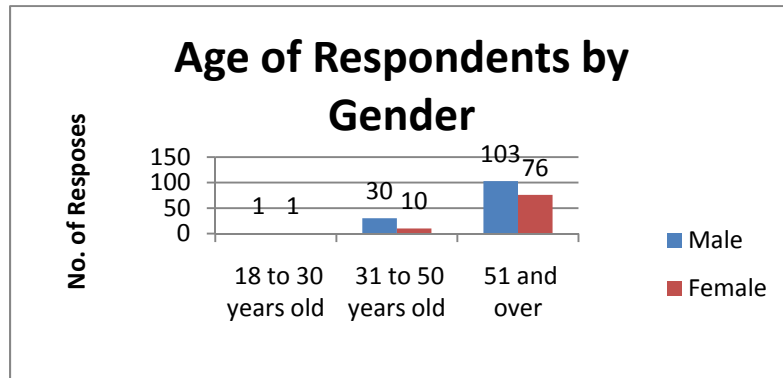
- a. 130 or 56.3% were male respondents, and
- b. 88 or 38.1% were female respondents, and
- c. 13 or 5.6% did not respond.

Age:

- a. 173 or 74.9% are 51 or older,
- b. 38 or 16.4% are between 31 and 50 years old,
- c. 2 or 0.9% are between 18 and 30 years old, and
- d. 18 or 7.8% did not respond.

*Comment: The majority of the respondents (about 55%) were male and most of were over age 51.*

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**Chart 4**

### 2.1.5 Locations

Respondents indicated that their respective residences are located in the following cities, which represent several different geographic areas of Oahu both coastal and inland. The number in brackets indicate the number of participants that completed a survey from that area. The area in parenthesis indicates the region on the map where the town is located, if it is not specifically labeled on the map. (15 participants did not indicate their location.)

- |                             |                                  |
|-----------------------------|----------------------------------|
| a. Aiea [35] (Pearl City)   | i. Makiki [8] (Metro Oahu)       |
| b. Hawaii Kai [4]           | j. Mililani [11]                 |
| c. Honolulu [3]             | k. Nuuanu [5]                    |
| d. Kahaluu [4] (Kaneohe)    | l. Pearl City [15](Central Oahu) |
| e. Kailua [36]              | m. Salt Lake [12] (Pearl City)   |
| f. Kalihi [11] (Metro Oahu) | n. Waianae [2](Leeward Coast)    |
| g. Kaneohe [54]             | o. Waimanalo [4] (Kailua)        |
| h. Liliha [4] (Metro Oahu)  | p. Waipahu [8]                   |

*Comment: While most of the participants were solicited at the Moanalua and Windward Termite Seminars (and thus the highest number from Aiea, Pearl City, Kaneohe, and Kailua). There is a very good distribution of participants from all around Oahu.*

# HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

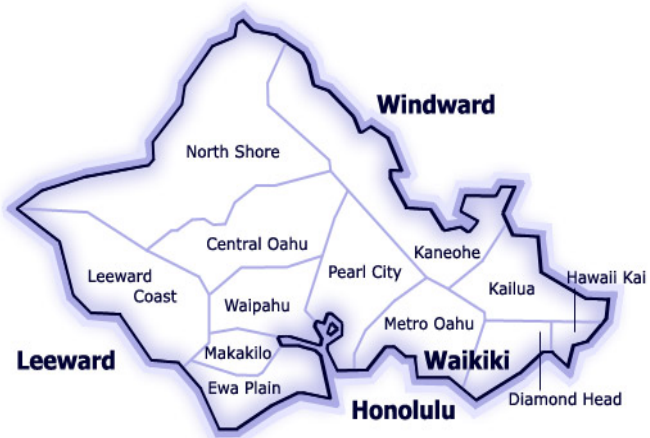


Chart 5

## 2.1.6 Occupancy in Current Residence

- a. 76 or 32.6% answered that they have been living in their residence from 31 to 50 years,
- b. 56 or 24.0% said from 1 to 10 years,
- c. 52 or 22.3% said from 11 to 20 years,
- d. 44 or 18.9% said from 21 to 30 years, and
- e. 5 or 2.1% said over 51 years.

*Comment: About 38 percent of the respondents have been living in the same house for over 31 years, while 62 percent have been living in their houses for a period less than that.*

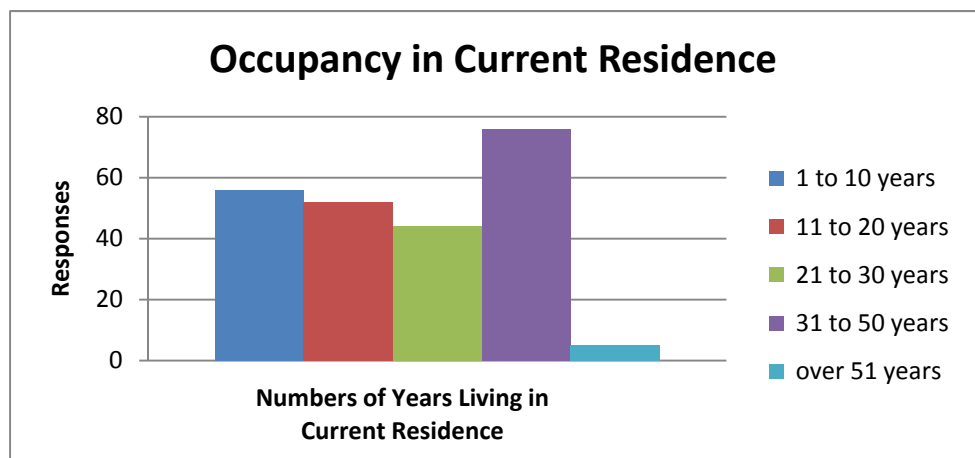


Chart 6

# HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

## 2.2 Type of Materials

The respondents were asked about the type of materials used in their walls, ground floors, upper story floors, roofing and foundations. They were asked to check all answers that apply (some houses have more than one type of wall.)

### 2.2.1 Walls

The respondents were asked what material their walls were made out of with regard to their current residence. They were asked to check all that apply, therefore the totals exceed 100%.

- a. 115 or 49.8% said they have wood-framed double wall construction (with drywall and siding),
- b. 105 or 45.4% said they have wood-framed single wall construction,
- c. 46 or 19.9% said they have CMU construction (grouted or un-grouted block),
- d. 15 or 6.5% said they have reinforced concrete,
- e. 12 or 5.2% said they have other materials,
- f. 5 or 2.2% said they have steel-framed construction, and
- g. 3 or 1.3% said they did not know.

*Comment: Nearly half of the responses indicated that their residence is made with traditional double wall construction, however about 45% claim they still live in older Hawaiian style 'single wall' plantation homes (built before 1990). Almost 20% said they live in a house with CMU walls.*

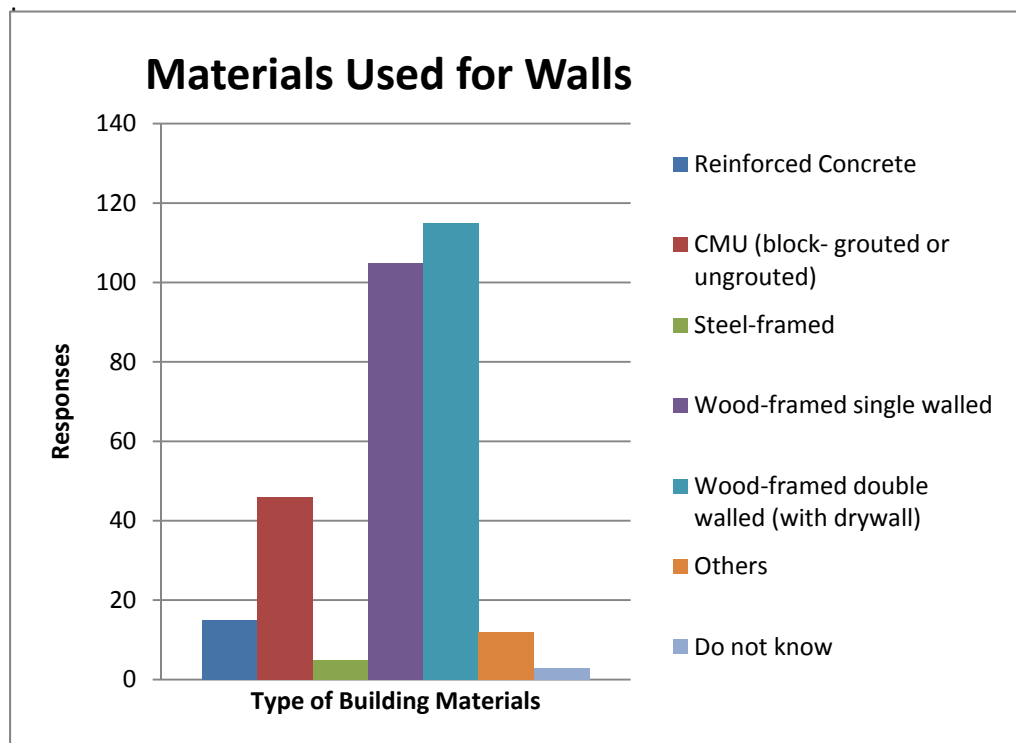


Chart 7

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.2.2 Ground Floors

Respondents were asked with regard to their current residence, what materials were used to construct the ground floor. They were asked to check all answers that apply (some houses have more than one type of floor, therefore totals exceed 100%)

- a. 192 or 83.1% said they have concrete slabs,
- b. 49 or 21.2% said they have wood-framed treated lumber,
- c. 16 or 6.9% said they have wood-framed untreated lumber,
- d. 8 or 3.5% said they do not know,
- e. 5 or 2.2% said they have other materials, and
- f. 2 or 0.9% said they have steel-framed floors.

*Comment: Most of the participants have slab-on-grade foundations (about 83%). About 28 percent said they have a wood foundation (most likely post and pier).*

### 2.2.3 Upper Story Floors

Respondents were asked with regard to their current residence, what materials were used on the upper story floors. They were asked to check all answers that apply (some houses have more than one type of floor, therefore totals exceed 100%.)

- a. 85 or 36.8% did not indicate or did not have upper story floor materials,
- b. 80 or 34.6% said they have wood-framed treated lumber,
- c. 27 or 11.7% said they have wood-framed untreated lumber,
- d. 20 or 8.7% said they do not know,
- e. 16 or 6.9% said they have concrete slabs,
- f. 3 or 1.3% said they have other materials, and
- g. 2 or 0.9% said they have steel-framed floors.

*Comment: Of those that had a second floor, or answered this question, 46% said they have wood framing for their second floor. 2/3rds of those homeowners indicated that the lumber was treated. As for the 1/3 that said the wood was not treated, their home was probably constructed before treated lumber was mandated. It is not clear how certain the homeowners were when indicating if they had treated or un-treated lumber in their floors as some homeowners probably cannot see the difference.*

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.2.4 Roof

Respondents were asked with regard to their current residence, what materials were used for the roof framing. They were asked to check all answers that apply (some houses may have one type of roof, therefore the totals exceed 100%.)

- The majority of the responses (141 or 61.0%) indicated they have wood-framed treated lumber,
- 65 responses or 28.1% indicated they have wood-framed untreated lumber,
- 36 responses or 15.6% said they do not know what materials they have,
- 9 responses or 3.9% indicated they have reinforced concrete,
- 5 responses or 2.2% indicated they have other materials, and
- 3 responses or 1.3% indicated they have steel-framed roof framing.

*Comment: Most respondents said they had a wood-framed roof, either treated or untreated.*

### 2.2.5 Foundation.

Respondents were asked with regard to their current residence, what materials were used for the foundation. They were asked to check all answers that apply (some houses may have one type of foundation, therefore the totals exceed 100%.)

- The majority of the responses (180 or 77.9%) indicated they have slab on grade foundations,
- 44 responses or 19.1% indicated they have post foundations,
- 20 responses or 8.7% indicated they have pier foundations,
- 14 responses or 6.1% said they do not know, and
- 6 responses or 2.6% said they have other types of foundations.

*Comment: Nearly three times more respondents have a slab on grade house compared with those that have post and pier foundations.*

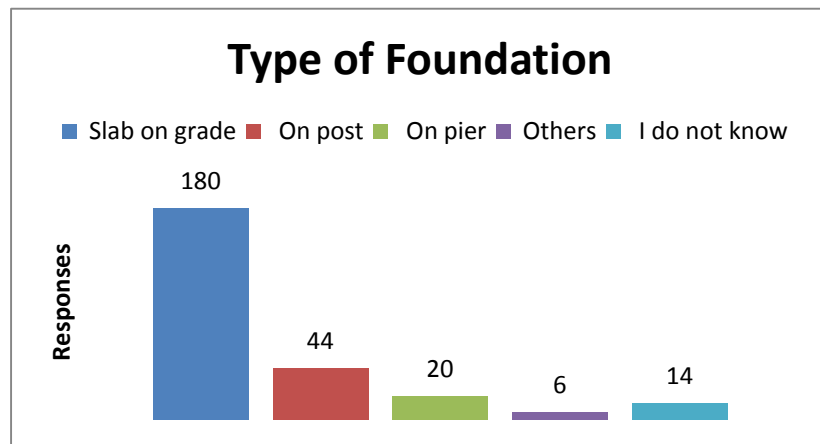


Chart 8

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.3 Perception of Respondents

Those taking the survey were asked to respond how they felt about the walls, floors, and roof structures in their homes. Respondents were asked to select all choices that apply, thus totals may exceed 100%.

#### 2.3.1 Wall Comfort

- a. 116 or 50.2% felt comfortable with their walls,
- b. 86 or 37.2% felt safe with their walls,
- c. 77 or 33.3% identified their residence walls felt solid,
- d. 71 or 30.7% have straight walls,
- e. 52 or 22.5% have encountered problems in the walls, and
- f. 21 or 9.1% felt that they could resist termites.

*Comment: Nearly half of the respondents felt comfortable with the wall construction in their homes, and a third felt they had safe, solid, and straight walls. Nearly one-fourth had encountered a problem with their walls. Only one tenth felt they could resist termites.*

#### 2.3.2 Floor Comfort

- a. 104 or 45.0% felt comfortable with their floors,
- b. 96 or 41.6% felt safe with their floors,
- c. 95 or 41.1% identified their floors felt solid,
- d. 39 or 16.9% had experienced problems with their floors, and
- e. 25 or 10.8% felt their floors could resist termites.

*Comment: Just over 40% of the responses indicated their floors felt comfortable, safe, and solid. Around 17 percent experienced problems, and one-tenth felt their floors could resist termites.*

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.3.3 Roof Comfort

- 100 or 43.3% felt comfortable with their roofs,
- 90 or 39.0% felt safe with their roofs,
- 76 or 32.9% identified their roofs felt solid,
- 46 or 19.9% had experienced problems with their roofs, and
- 23 or 10.0% felt their roofs could resist termites.

*Comment: Between 30 and 40 percent of the responses felt comfortable, safe or felt their roofs were solid. Around 20% indicated they had had problems and once again 10 percent felt their roofs could resist termites.*

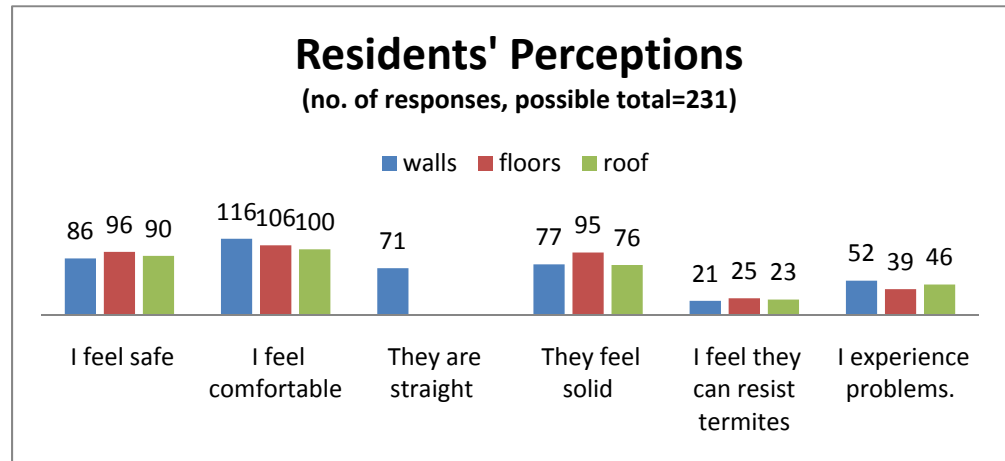


Chart 9

## 2.4 Indication of Termite Damage

Homeowners were asked a series of questions about any previous experience they may have had with termite infestation and damage.

### 2.4.1 Termite damage.

When asked if they have experienced any structural damage caused by termites in their current residence,

- 133 or 57.6% said yes they have, and
- 94 or 40.7% said no they have not, and
- 4 or 1.7% did not respond.

*Comment: Nearly 58 percent of the respondents said they experienced structural damage caused by termites in their residence while 40 percent had not.*



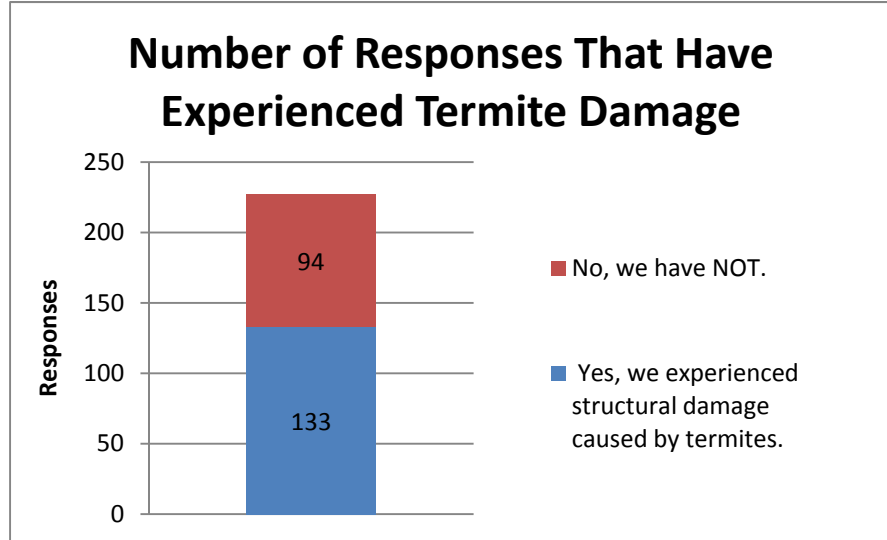


Chart 10

#### 2.4.2 Kinds of Termites

Out of the 133 respondents that responded ‘yes’ to question 2.4.1 above that they have experienced structural damage caused by termites in their current residence, they were also asked what kind of termites caused the damage. (More than one type could be selected by each respondent, therefore totals exceed 100%.)

- 90 responses or 67.7% answered drywood termites caused the damage,
- 50 responses or 21.6% answered Formosan subterranean termites caused the damage,
- 26 responses or 19.5% answered they were not sure or did not know, and
- 1 response or 0.8% answered that the damage was caused by others.

*Comment: The majority of the respondents said the damage was caused by drywood termites. Around 20 percent said that the damage was caused by FSTs. Another 20 percent said they did not know what termite it was. While the seminar the participants attended explained the difference in the type of termites in Hawaii, it was not clear if the participants could accurately identify what termites had caused the damage in their homes.*

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.4.3 Areas Infested

Out of the 133 respondents that responded 'yes' to question 2.4.1 above that they have experienced structural damage caused by termites in their current residence, they were also asked what areas of their current residence were infested by termites. (They were asked to check all that apply, thus the totals may exceed 100%.) Also, the category 'crawl space' was lumped into the roof and attic category. It was assumed that respondents in Hawaii did not mean the floor area, which was another category in this question. (Typically, the term crawl space is not used to describe the area underneath floors in Hawaii.)

- a. There were 76 responses or 57.1% that said walls,
- b. There were 41 responses or 30.8% that said floors.
- c. There were 38 responses or 28.6% that said roofs/attic/crawl space,
- d. There were 33 responses or 24.8% that said other parts, and
- e. There were 14 responses or 10.5% that said basement/foundation.

*Comment: Most of the participants experienced termite structural damage in the walls (57%) followed by floors at 31% and roofs at 29%.*

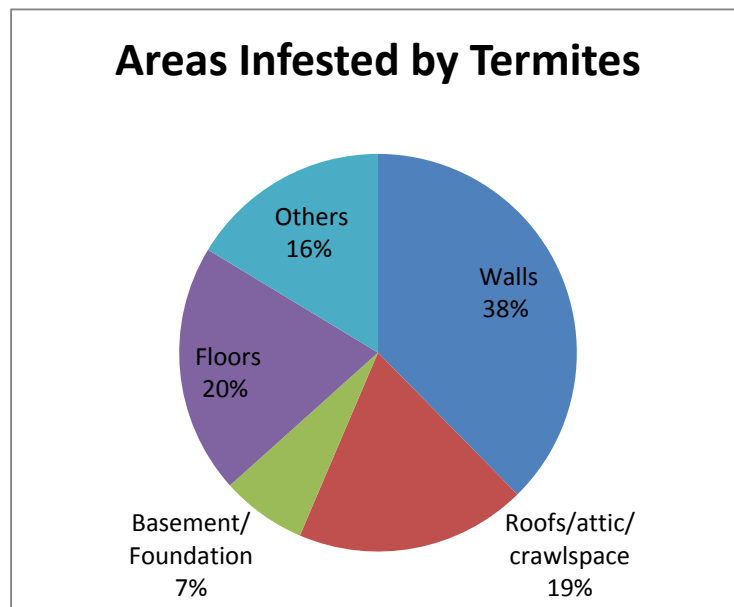


Chart 11

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.4.4 Other Causes of Infestations.

When asked if their residence had also been infested by other pests (respondents were requested to check all that apply, therefore totals may exceed 100%),

- 160 respondents or 69.3% reported their residence had been infested by ants,
- 42 respondents or 18.2% had been infested by mold,
- 29 respondents or 12.6% had been infested by fungi/dry rot,
- 19 respondents or 8.2% had been infested by bees/beetles and
- 4 respondents or 1.7% had been infested by others.

*Comment: Most of the participants also have experienced ant infestations in their homes (nearly 70%). 18 percent experienced mold and 13 percent had fungi or dry rot.*

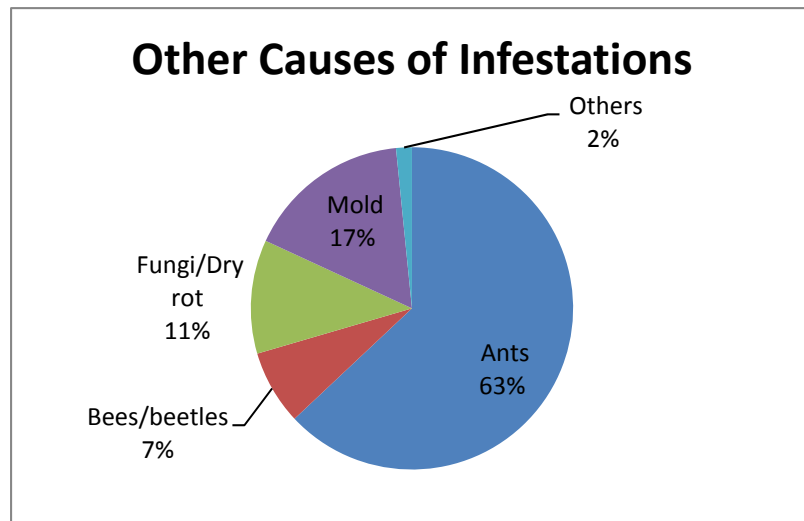


Chart 12

## 2.5 Termite Inspections

Respondents were asked a series of questions about termite inspections.

### 2.5.1 Frequency of House Inspections.

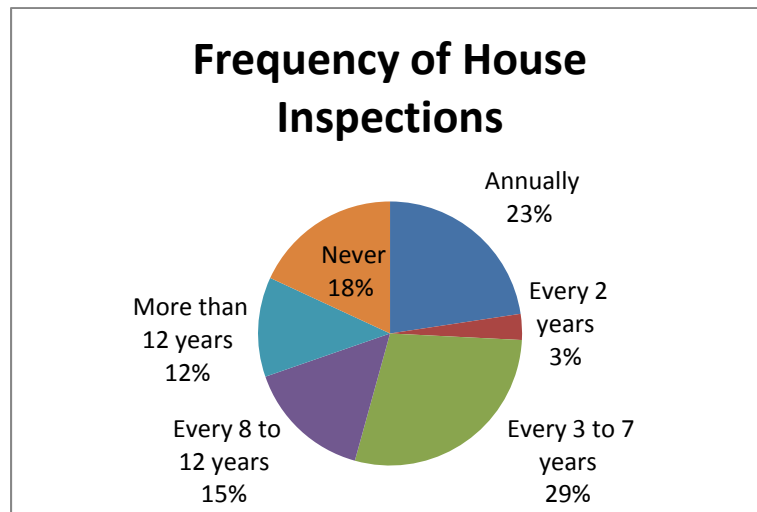
When asked how often they have their residence checked or inspected for termites,

- 63 respondents or 27.3% answered they have an inspection every 3 to 7 years,
- 50 respondents or 21.6% have an inspection annually,
- 40 respondents or 17.3% had no inspection at all,
- 34 respondents or 14.7% have an inspection every 8 to 12 years,
- 27 respondents or 11.7% have not had an inspection in more than 12 years,
- 7 respondents or 3.0% have an inspection every 2 years, and
- 10 respondents or 4.3% did not respond.

*Comment: Most of the participants have their homes checked for termites every 3 to 7 years (27%). One-fifth of the respondents claimed to have their*

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

*homes inspected annually. The rest either don't have their homes inspected, wait to over 7 years, or didn't respond to this question. This is alarming, because it only takes a few months for FSTs to cause significant structural damage to a home. Most bait control systems need to be inspected every 3 to 6 months. Many Hawaii residents are vulnerable to significant structural damage due to FSTs.*



**Chart 13**

### 2.5.2 Years of Recent Inspection

When asked about their recent inspection,

- 82 respondents or 35.5% had their residence inspected between 2006-2008,
- 82 or 35.5% did not respond,
- 19 respondents or 8.2% between 2004-2006,
- 16 respondents or 6.9% between 2002-2004,
- 14 respondents or 6.1% between 2000-2002,
- 4 respondents or 1.7% between 1994-1996,
- 4 respondents or 1.7% before 1986,
- 3 respondents or 1.3% between 1998-2000,
- 3 respondents or 1.3% between 1990-1992,
- 2 respondents or 0.9% between 1996-1998,
- 2 respondents or 0.9% between 1992-1994,
- No respondents indicated their house was inspected between 1986-1990.

*Comment: About one third of the participants claimed they had their house inspected between 2006-2009, while another third did not respond at all to this question (implying they have not had their house inspected at all.) This is also alarming.*

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

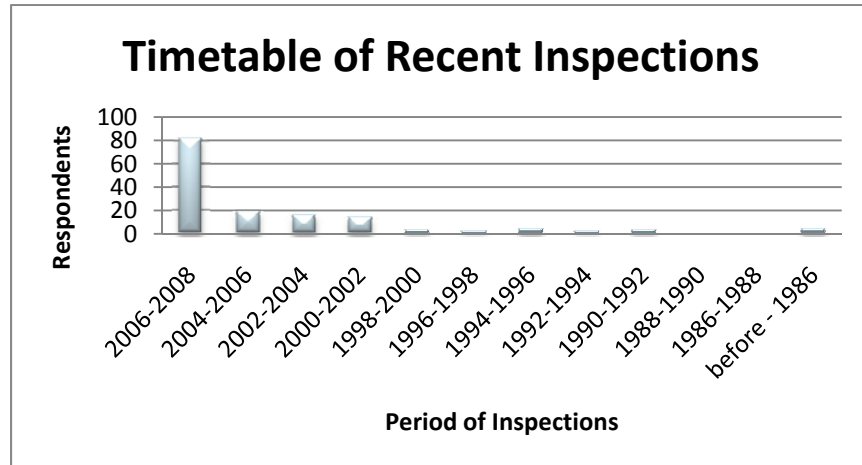


Chart 14

### 2.5.3 Types of Inspectors

The respondents were asked who they had inspect their residence for termites.

- 173 respondents or 74.9% had professional pest control operators,
- 14 respondents or 6.1% used others,
- 9 respondents or 3.9% had used real estate agents,
- Only one resident used an engineer/architect to inspect their residence,
- No one used a city inspector, and
- 34 or 14.7% did not respond.

*Comments: Almost ¾'s of those that had their homes inspected used professional pest control operators.*

### 2.5.4 Areas Inspected

When asked whether the inspectors checked the obstructed, concealed and enclosed areas of their residence,

- 80 respondents or 34.6% were not sure or did not know,
- 68 respondents or 29.4% responded yes,
- 60 respondents or 26.0% responded no, and
- 23 or 10.0% did not respond.

*Comments: About 30% of the respondents that had inspectors knew whether the inspectors checked the concealed spaces or not. Most did not know, or knew they did not.*

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.5.5 Proof of Inspections

The respondents were asked whether the inspectors provided the home occupants with the inspection report.

- a. 95 or 41.1% said the inspectors provided reports.
- b. 47 or 20.4% said the inspectors did not provide reports.
- c. 40 or 17.3% could not remember or did not know, and
- d. 49 or 21.2% did not respond.

*Comments: About 40% of those that had termite inspections were provided with a report, however, 17% could not remember. This would imply that many that had their home inspected were given a verbal report. This could be because they did not pay for a professional, or they simply could not remember. Another reason may be that a pest control operator provided an inspection and an estimate how much a system would cost for a bait system for instance. This could not be derived from this question.*

## 2.6 Termite Control Applications

Respondents were asked a series of questions about the termite control they use.

### 2.6.1 Specific Products or Brands

The respondents were asked specific products or brands that they have used to combat termites. They could check all that apply.

- a. 82 respondents or 35.5% were not sure which products were used.
- b. 44 respondents or 19.1% answered that they used Sentricon– termite monitoring & baiting system (Dow Agro Sciences).
- c. 32 respondents or 13.9% indicated they used Termidor (BASF).
- d. 25 respondents or 10.82% used other products.
- e. 7 respondents or 3.0% used a Basaltic Termite Barrier (BTB).
- f. 3 respondents or 1.3% used Premise (by Bayer).
- g. 3 respondents or 1.3% answered that they used Exterra – termite baiting system (Ensystem).
- h. 1 respondent or 0.4% used Bio Blast.
- i. No one answered that they used Termimesh.
- j. 34 did not respond (Totals do not add to 100%.)

*Comment: Most respondents (about one third), while they indicated there was termite protection, were not aware of what the brand name of the system that was used. One fifth said Sentricon was used, and about 1/8<sup>th</sup> said they used Termidor. A few indicated they had BTB.*

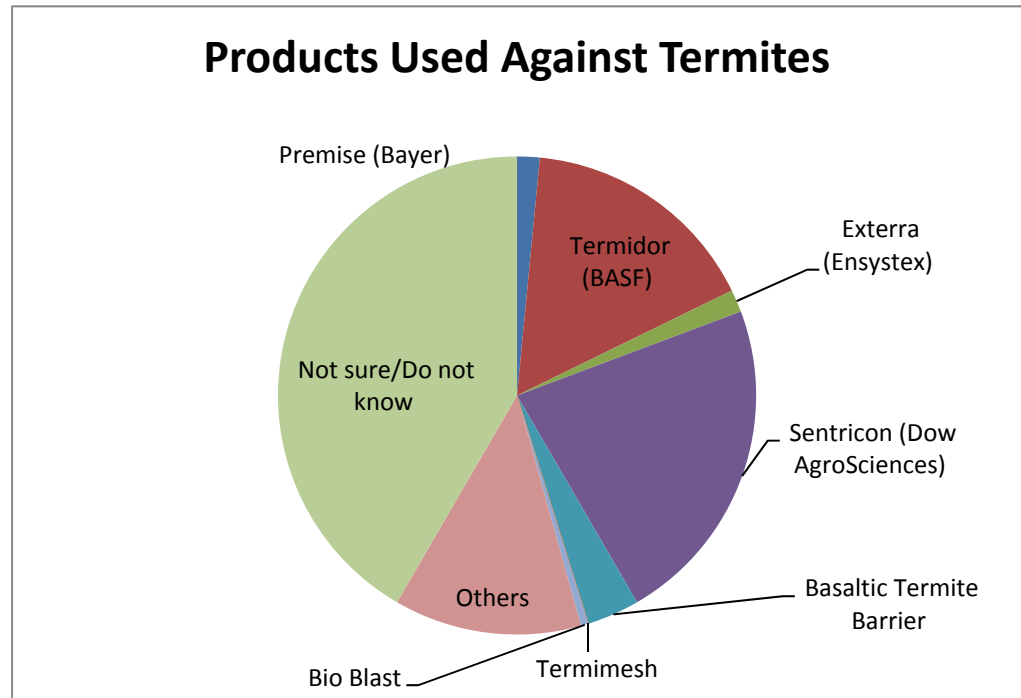


Chart 15

### 2.6.2 Types of Termite Control Applications

The respondents were asked to indicate what type of termite control applications have been applied to their residences. They were told to check all that apply (Totals exceed 100%.)

- 113 respondents or 48.9% answered that tenting (fumigation) was used.
- 92 or 39.8% answered that chemical barriers, like liquid or powder, dusts, gels, granules, foams, etc. have been applied in their residence.
- 53 respondents or 22.9% answered that bait stations were applied.
- 28 respondents or 12.1% answered that they were not sure or did not know.
- 11 respondents or 4.8% answered that other applications were applied, and
- 8 respondents or 3.5% answered that physical barriers, like Basaltic Termite Barrier (BTB) were installed.

*Comment: Almost half indicated that tenting had been used on their homes out of the choices in the question. About 40 percent have used chemical barriers and 23 percent had bait stations. It is interesting to note that many respondents have used multiple termite control applications to protect their home.*

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.6.3 Frequency of Use

The respondents were asked when was the last time they used a termite control application on their residence.

- a. 53 respondents or 23.0% answered that they have never used any applications.
- b. 47 respondents or 20.3% used applications within 1 to 5 years.
- c. 26 respondents or 11.3% used applications within 6 to 12 years.
- d. 22 respondents or 9.5% use once every 3 to 6 months.
- e. 21 respondents or 9.1% used less than a year ago.
- f. 11 respondents or 4.8% used within 13 to 25 years.
- g. 7 respondents or 3.0% used over 25 years ago.
- h. 44 or 19.0% did not respond.

*Comment: Twenty three percent have never used a termite control application on their home. About 1/5<sup>th</sup> of the respondents did use an application within 1 to 5 years. Nearly 10% said they have an application every 3 to 6 months.*

### 2.6.4 Perceptions

The respondents that indicated they used termite control applications were asked to indicate how the applications performed. Out of the 137 that responded to this question:

- a. 62 respondents or 45.3% felt that the performance of the termite protection was good and they did not see any more termite activity.
- b. 35 respondents or 25.5% felt that the performance of the termite protection was fair and they still have termite damage.
- c. 30 respondents or 21.9% felt that the performance of the termite protection was better and they have seen a decrease in termite activity.
- d. 10 respondents or 7.3% felt that the performance of the termite protection was poor and they still have termite infestation.

*Comment: Out of those respondents that indicated they used termite control applications about 45% felt the performance of the termite protection was good and they did not see any more termite activity. Roughly 55% of the respondents that used control applications still had some degree of termite activity in their home.*



## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.7 Financial Allocations for Termite Maintenance

Respondents were asked a series of questions about the costs for termite protection covering annual expenditures, yearly allocation and choice of termite control applicators.

#### 2.7.1 Annual Expenditure (Estimate)

The respondents were asked in their best estimation how much they spent in termite maintenance on their current residence on an annual basis.

- a. 119 respondents or 51.5% spent between \$0 - \$500.
- b. 41 respondents or 17.7% spent between \$501 - \$1,500.
- c. 18 respondents or 7.8% spent between \$1,501 - \$3,000.
- d. 8 respondents or 3.5% spent \$3,000 or more.
- e. 45 or 19.5% did not respond.

*Comment: Most respondents spend between \$0- \$500 a year on termite maintenance on their homes. About 18% spend between \$501- \$1,500 annually, and 11% said they spend more than \$1,500.*

#### 2.7.2 Tri-Annual Projection

The respondents were asked how much they plan to allocate for the termite control/ protection in the next three years.

- a. 45 respondents or 19.5% expect to allocate between \$0 - \$250.
- b. 44 respondents or 19.1% expect to allocate between \$501 - \$1,000.
- c. 42 respondents or 18.2% expect to allocate between \$1,001 and more.
- d. 35 respondents or 15.2% expect to allocate between \$251 and \$500, and
- e. 65 or 28.1% did not respond.

*Comment: Out of those that responded to how much they plan to allocate for termite control in the next three years, 20% said less than \$250, another 35% said less than \$1,000, and 18% said more than \$1,000. Note that most bait systems cost \$500 per year to maintain (\$1,500/3 years). Either most participants are not aware of the actual costs to protect their homes, or most do not plan to do so. The 18% that responded \$1,000 or more probably have installed bait systems already.*

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.7.3 Choice of Termite Control Applicators

The respondents were asked how they chose their termite control applicator. They could check all that apply (totals exceed 100%).

- a. 114 respondents or 49.4% chose applicators through referrals.
- b. 54 respondents or 23.4% chose applicators through advertisements.
- c. 32 respondents or 13.8% chose applicators through other means.
- d. 15 respondents or 6.5% chose applicators through the newspaper.
- e. 11 respondents or 4.8% chose applicators through trade shows.
- f. 7 respondents or 3.0% chose applicators through mini-fliers or brochures.
- g. 7 respondents or 3.0% chose applicators through television.
- h. 1 respondent or 0.4% chose applicators through the radio.

*Comment: Almost half of the responses indicated they found a termite control applicator through a referral. This could be through a community association, or a neighbor. Chances are if a participant has a problem his next door neighbor does as well. The rest of the responses found an applicator through other means such as advertisements.*

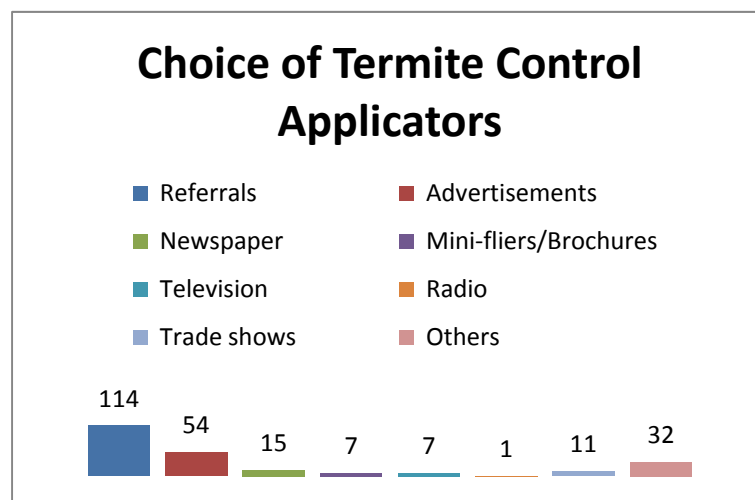


Chart 16

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 2.8 Misc.

#### 2.8.1 Damage Disclosure

The respondents that were not first time occupants of their home (question 2.1.4) were asked whether the previous occupant of their current residence provided them disclosure statements indicating there was prior termite damage. Out of the 134 non-first time occupants,

- a. 44 or 32.8% said the seller did provide them with disclosure statements.
- b. 55 or 41.0% said the seller did not provide them with disclosure statements.
- c. 35 or 26.1% said that disclosure statements were not made available.

*Comment: Only a third of those first time occupants when they bought their home indicated they were provided with disclosure statements indicating there was termite damage. The rest either did not receive or they were not made available. This could be because there was no damage, or the information was not properly disclosed up front. The question should have been re-phrased to clearly say if they later found out upon purchasing that there was indeed prior termite damage in the home.*

#### 2.8.2 Choice of Materials

The respondents were asked if they had a choice when purchasing a new home what framing materials did they feel would do better to resist termite damage. They were asked to rank their choice, with 1 being the highest ranking.

- a. 88 respondents or 38.1% chose steel-framing first.
- b. 41 respondents or 17.8% chose wood framing (using treated lumber) first.
- c. 39 respondents or 16.9% chose reinforced concrete or CMU (block) first.
- d. 33 respondents or 14.3% chose insulated concrete forms (ICFs) first.
- e. 2 respondents or 0.9% chose others materials first.
- f. 28 or 12.1% did not respond.

*Comment: 38% of the respondents chose steel framing as their number one choice for a framing material for their home. 18% chose treated lumber, and 17% chose CMU.*

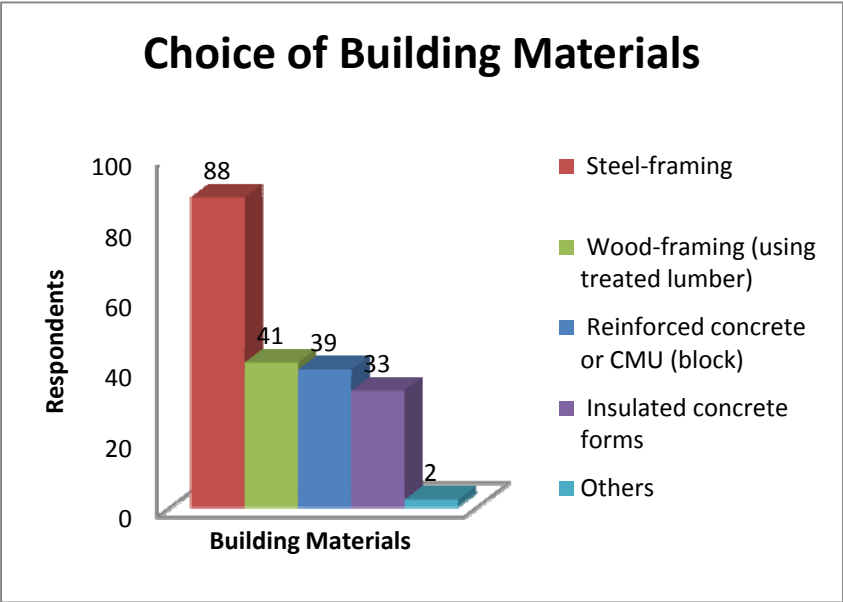


Chart 17

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 3 Summary

The following summarizes the findings in the survey.

#### 3.1 Respondents and Their Type of Residence

The majority of the respondents (about 55%) were male and most of were over age 51. About 90 percent of the responses in this survey indicated that they currently own and reside in a single family home. About 38 percent of the respondents have been living in the same house for over 31 years, while 62 percent have been living in their houses for a period less than that.

While most of the participants were solicited at the Moanalua and Windward Termite Seminars (and thus the highest number of respondents were from from Aiea, Pearl City, Kaneohe, and Kailua), there is a very good distribution of participants from all around the island of Oahu.

Approximately 40 percent of the participants live in residences that are between 31 and 50 years old, while about 20 percent live in residences that are 51 years and older. Twenty percent live in residences that are between 21 and 30 years old, and 16 percent live in residences less than 21 years old. Most of these homes represented by the participants are more than 30 years old and may not meet current termite and structural building standards as they were built prior to the 1980s before Hawaii made significant changes to its building code.

#### 3.2 Type and Perception of Materials Used

Most of the participants have slab-on-grade foundations (about 83 percent). About 28 percent said they have a wood foundation (most likely post and pier). Three times more respondents in this survey have a slab on grade house compared with those that have post and pier foundations<sup>7</sup>. Most houses built in Hawaii since the 1950s use either post and pier or concrete slabs. Due to the island's geological makeup, houses seldom have basements or attics.

Nearly half of the responses indicated that their residence is made with traditional double wall construction<sup>8</sup>. However about 45 percent claim they still live in older Hawaii style

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<sup>7</sup> Post and pier construction is also vulnerable to ground termite infestation. The ground termites sometimes build their mud tubes over the foundation and metal termite shield, and then into the house. The good thing about this type of foundation is that termite mud-tubes can be seen and stopped before the house can be severely damaged. If left too long, the houses have to be razed, as they are usually not salvageable.

<sup>8</sup> Standard or double walled construction is typically framed with Douglas fir. Left untreated, FST termites can do considerable damage in a short time.

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

'single wall' plantation homes (built before 1990)<sup>9</sup>. Almost 20 percent said they live in a house with CMU walls. Regardless of what their walls were made of, nearly half of the respondents felt comfortable with the wall construction in their homes, and a third felt they had safe, solid, and straight walls. Nearly one-fourth had encountered a problem with their walls. Only one tenth felt they could resist termites.

Of those that had a second floor, 46 percent said they have wood framing for their second floor. Two thirds of those homeowners indicated that the lumber was treated. As for the other third that said the wood was not treated, their home was probably constructed before treated lumber was mandated. It is not clear how certain the homeowners were when indicating if they had treated or un-treated lumber in their floors as some homeowners probably cannot see the difference. Just over 40 percent of the responses indicated their floors felt comfortable, safe, and solid. Around 17 percent experienced problems, and one-tenth felt their floors could resist termites.

Most respondents said they had a wood-framed roof, either treated or untreated. Between 30 and 40 percent of the respondents felt comfortable, safe or felt their roofs were solid. Around 20 percent indicated they had problems and 10 percent felt their roofs could resist termites.

### 3.3 Indication of Termite Damage

A clear majority, nearly 58 percent of the respondents said they experienced structural damage caused by termites in their residence while 40 percent had not. The majority of the respondents said the damage was caused by drywood termites. Around 20 percent said that the damage was caused by FSTs. Another 20 percent said they did not know what termite it was. While during the seminar the participants learned how to identify the different types of termites in Hawaii, it was not clear if the participants actually knew what termites had caused the damage in their homes.

Most of the participants experienced termite structural damage in the walls (57 percent) followed by floors at 31 percent and roofs at 29 percent.

Most of the participants also have experienced ant infestations in their homes (nearly 70 percent). Eighteen percent experienced mold and 13 percent had fungi or dry rot.

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<sup>9</sup> Prior to 1990, most homes in Hawaii were built using single wall construction. The tongue and groove wall board in single wall construction was typically made out of redwood which was a somewhat unfavorable food source for termites. Not all the components however were made with redwood, and the lumber back then typically did not have an insecticide/fungicide applied to it. This allowed termites to easily infest them.

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 3.4 Termite Inspections

Most of the participants have their homes checked for termites every 3 to 7 years (27 percent). One-fifth of the respondents claimed to have their homes inspected annually. The rest either don't have their homes inspected, wait to over 7 years, or didn't respond to this question. About one third of the participants claimed they had their house inspected between 2006-2009, while another third did not respond at all to this question (implying they have not had their house inspected at all.) This is alarming, because it only takes a few months for FSTs to cause significant structural damage to a home. Also, most bait control systems need to be inspected every 3 to 6 months in order to function properly. If this survey is representative of most Hawaii residents, many are vulnerable to significant structural damage due to FSTs.

Regardless of frequency of inspections, most respondents said in the survey they have regular home inspections which result in additional costs for them. This may be why they said they felt comfortable and safe about their walls, floors, roof and foundations in an earlier question.

Almost three quarters of those that had their homes inspected used professional pest control operators. About 30 percent of the respondents that had inspectors knew whether the inspectors checked the concealed spaces or not. Most did not know, or knew they did not. About 40 percent of those that had termite inspections were provided with a report, however, 17 percent could not remember. This would imply that many that had their home inspected were given a verbal report. This could be because they did not pay for a professional, or they simply could not remember. Another reason may be that a pest control operator provided an inspection and an estimate how much a system would cost for a bait system for instance. If a follow up survey is conducted that could be a point of clarification.

Only a third of those first time occupants when they bought their home indicated they were provided with disclosure statements indicating there was termite damage. The rest either did not receive or they were not made available. This could be because there was no damage, or the information was not properly disclosed up front. This question should also be re-phrased in a future survey to clearly find out if they later found upon purchasing that there was indeed prior termite damage in the home.

### 3.5 Termite Control Applications

Most respondents (about one third), while they indicated there was termite protection in their home, were not aware of what the brand name of the system that was used. One fifth said Sentricon was used, and about one-eighth said they used Termidor. Very few indicated they had BTB protecting their homes. Chemicals are the predominate form of protection used by respondents.

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

Almost half indicated that tenting had been used on their homes. About 40 percent have used chemical barriers and 23 percent had bait stations. It is interesting to note that many respondents have used multiple termite control applications to protect their home. About 30 percent have never used a termite control application. About one-fourth of the respondents did use an application within 1 to 5 years. Nearly 13 percent said they have an application every 3 to 6 months.

Out of those respondents that indicated they used termite control applications about 35 percent felt the performance of the termite protection was good and they did not see any more termite activity. However, roughly 40 percent of the respondents that used control applications still had some degree of termite activity in their home.

Most respondents in the survey have seen and experienced termite infestation or damage and realize that they must use post damage treatment solutions or replace the infested areas or the whole house. Quite often, termites' actions are hidden from view within walls or floors, damages occur unnoticed. This means preventive actions (and costs) must be done 'in good faith,' without actually seeing damage. Some homeowners may be in denial that any damage is occurring until it is too late.

Almost half of the responses indicated they found a termite control applicator through a referral. This could be through a community association, or a neighbor. Chances are if a participant has a problem his next door neighbor has as well. The rest of the responses found an applicator through other means such as advertisements.

### 3.6 Financial Allocations for Termite Maintenance

Most respondents currently spend under \$0-\$500 a year on termite maintenance on their homes. About 18 percent spend between \$500- \$1,500 annually, and 11 percent said they spend between \$1,500- \$3,000.

Out of those that responded to how much they plan to allocate for termite control in the next three years, 20 percent said less than \$250, another 35 percent said less than \$1,000, and 18 percent said more than \$1,000. Most bait systems cost \$500 per year to maintain (\$1,500/for three years). Either most participants are not aware of the actual costs to protect their homes, or most do not plan to do so. The 18 percent that responded \$1,000 or more probably have installed bait systems already.

### 3.7 Steel Framing is the Choice of Material

Almost forty percent of the respondents chose steel framing as their number one choice for the framing material for their home. Eighteen percent chose treated lumber, and 17 percent chose CMU. The benefits of using steel framing, including lower structural maintenance (replacement of materials), lower costs of home ownership (insurance,



## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

termite treatments), puts steel framing as the number one choice of respondents by a more than 2 to 1 ratio over the next highest choice for building materials. The respondents in the survey seem to understand the importance of selecting building materials (steel, treated lumber, or CMU) that can prevent or reduce future termite problems or expenditures.

## HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY

### 4 Observations and Lessons Learned

The survey results illustrate the homeowners' actual experience of termite infestation, performance of their respective residences, the incurring and repetitive costs on maintenance and prevention they incur, and their preference for framing materials. Observations and lessons learned in this survey were:

- The survey sampling of 231 participants from the termite seminars provided a good sampling of respondents from all around Oahu with about 90 percent currently owning and residing in a single family home. Forty percent of those homes were between 31 and 50 years old.
- Half of the responses indicated that their residence was made with traditional double wall construction, while 45 percent said they still lived in older Hawaii style 'single wall' plantation homes.
- Fifty eight percent said they experienced structural damage caused by termites in their residence.
- Most of the participants experienced termite structural damage in the walls (57 percent) followed by floors at 31 percent and roofs at 29 percent.
- The majority of the respondents said the damage was caused by drywood termites while 20 percent said that the damage was caused by FSTs.
- Most of the participants have their homes checked for termites every 3 to 7 years which is alarming, because it only takes a few months for FSTs to cause significant structural damage to a home.
- Almost three quarters of those that had their homes inspected used professional pest control operators.
- Most respondents (about one third), while they indicated there was chemical termite protection in their home, were not aware of what the brand name of the system that was used.
- Almost half indicated that tenting had been used on their homes.
- Forty percent of the respondents that used control applications still had some degree of termite activity in their home.
- Most respondents currently spend under \$500 a year on termite maintenance on their homes.
- Almost forty percent of the respondents chose steel framing as their number one choice for the framing material for their home by a more than 2 to 1 ratio over treated lumber.

**HOMEOWNER EXPERIENCE AND ATTITUDE SURVEY AND STUDY**

**APPENDIX A**

## Homeowner Study on Termites

This questionnaire was developed by the Hawaii Pacific Steel Framing Alliance. The objective of this survey is to produce a credible study on the impact Formosan Subterranean Termites (FST) have on residential construction and maintenance and what this has represented in terms of perceived comfort and safety, as well as observations about alternative methods of protection against FST.

## QUESTIONNAIRE

Please check the appropriate box or fill in the blank next to the questions below. This survey should take only about 5 - 10 minutes of your time. Thank you in advance for participating in this valuable survey.

1. What type of structure do you currently live in?

- Single Family Home
- Townhouse/Duplex/Triplex
- Low-Rise Apartment Building (less than 5 stories tall)
- High-Rise Apartment Building
- Others

2. Which best describes your current housing situation?

- (check all that apply)
- Own and reside in residence
  - Rent and reside in residence
  - Own other property than the one I currently reside in.

3. Are you the first occupant in your current residence?

- Yes
- No

4. With respect to your current residence, what part of the island is it located in? (e.g., Mililani, Manoa, Hawaii Kai, etc. please do not give exact street address)

\_\_\_\_\_

5. In your best estimate, how old is your current residence?

- 1 to 10 years
- 11 to 20 years
- 21 to 30 years
- 31 to 50 years
- 51 years and over

6. With regard to your current residence, what material are the walls made out of (check all that apply)?

- Reinforced Concrete
- CMU (block- grouted or ungrouted)
- Steel-framed
- Wood-framed single walled
- Wood-framed double walled (with drywall)
- Other: \_\_\_\_\_
- I do not know

7. With regard to your current residence, what material is the ground floor made out of?

- Concrete slab
- Steel-framed
- Wood-framed treated lumber
- Wood-framed untreated lumber
- Other: \_\_\_\_\_
- I do not know

8. With regard to your current residence, what material are the upper story floors made out of?

- Concrete slab
- Steel-framed
- Wood-framed treated lumber
- Wood-framed untreated lumber
- Other: \_\_\_\_\_
- I do not know
- N/A

9. With regard to your current residence, what material is the roof framing made out of?

- Reinforced Concrete
- Steel-framed
- Wood-framed treated lumber
- Wood-framed untreated lumber
- Other: \_\_\_\_\_
- I do not know

10. With regard to your current residence, what kind of foundation do you have?

- Slab on grade
- On post
- On pier
- Other: \_\_\_\_\_
- I do not know

11. Regarding the choice you selected above, how do you feel about the walls in your residence? (check all that apply):

- I feel safe
- I feel comfortable
- They are straight
- They feel solid
- I feel they can resist termites
- I experience the following problems: \_\_\_\_\_

12. Regarding the choice you selected above, how do you feel about the floors in your residence? (check all that apply):

- I feel safe
- I feel comfortable
- They feel solid
- I feel it can resist termites
- I experience the following problems: \_\_\_\_\_

**NEXT PAGE PLEASE**

Homeowner Study on Termites

13. Regarding the choice you selected above, how do you feel about the roof in your residence? (check all that apply):
- I feel safe
  - I feel comfortable
  - It feels solid
  - I feel it can resist termites
  - I experience the following problems: \_\_\_\_\_
14. How long have you been living in your current residence?
- 1 to 10 years
  - 11 to 20 years
  - 21 to 30 years
  - 31 to 50 years
  - over 51 years
15. Have you experienced any structural damage caused by termites in your current residence?
- Yes
  - No
16. If your answer was 'yes' to Question 15 above, do you know what kind of termites they were?
- Formosan Subterranean Termites
  - Drywood Termites
  - Other: \_\_\_\_\_
  - Not sure/Do not know
17. If your answer was 'yes' to Question 15 above, what areas of your residence were infested by termites (check all that apply)?
- Walls
  - Roofs/attic/crawlspace
  - Basement/Foundation
  - Floors
  - Other: \_\_\_\_\_
18. If your answer was 'yes' to Question 15, please check all that apply:
- there is a tree on the property
  - there was a tree on the property
19. Has your residence also been infested by any of the following? (check all that apply):
- Ants
  - Bees/beetles
  - Fungi/Dry rot
  - Mold
  - Others: \_\_\_\_\_
20. How often do you have your residence checked or inspected for termites?
- Annually
  - Every 2 years
  - Every 3 to 7 years
  - Every 8 to 12 years
  - More than 12 years
  - Never

21. Please indicate year of most recent inspection:
- \_\_\_\_\_
22. Who do you have inspect your residence for termites?
- Real Estate Agent
  - Professional Pest Control Operator
  - City inspector
  - Engineer/Architect
  - Others: \_\_\_\_\_
23. Did the inspectors check the obstructed, concealed and enclosed areas?
- Yes
  - No
  - Not sure/Do not know
24. Did the inspectors provide you with the inspection report?
- Yes
  - No
  - Cannot remember/ Do not know
25. Have any of these termite control applications been applied to your residence? (Check all that apply):
- Chemical barriers, like liquid or powder, dusts, gels, granules, foams, etc.
  - Physical barriers, like Basaltic Termite Barrier (BTB) or Termimesh
  - Tenting (Fumigation )
  - Bait Stations
  - Others: \_\_\_\_\_
  - Not sure/Do not know
26. Have you used any of the following products on your residence to combat termites (check all that apply):
- Premise (by Bayer)
  - Termidor (BASF)
  - Exterra – termite baiting system (Ensystem)
  - Sentricon– termite monitoring & baiting system (Dow AgroSciences)
  - Basaltic Termite Barrier (BTB)
  - Termimesh
  - Bio Blast
  - Others: \_\_\_\_\_
  - Not sure/Do not know
27. When was the last time you used these applications on your residence (except for physical barriers)?
- Once every 3 to 6 months
  - Less than a year
  - 1 to 5 years
  - 6 to 12 years
  - 13 to 25 years
  - over 25 years
  - Never

**NEXT PAGE PLEASE**

**Homeowner Study on Termites**

28. If you indicated that you used any termite protection in Questions 25 or 26 above (also for prevention purposes), how do you feel about its performance?  
 Good, we have not seen any more termite activity.  
 Better, we have seen a decrease in termite activity.  
 Fair, we still have termite damage  
 Poor, we still have termite infestation.

29. In your best estimate, how much have you spent in termite maintenance on your current residence on an annual basis?  
 \$0 - \$500  
 \$501 - \$1,500  
 \$1,501 - \$3,000  
 \$3,000 - more

30. How much do you allocate for the termite control/protection in next three years?  
 \$0 - \$250  
 \$251 - \$500  
 \$501 - \$1,000  
 \$1,001 - more

31. How did you choose termite control applicators?  
 Referrals  
 Advertisements  
 Newspaper  
 Mini-fliers/Brochures  
 Television  
 Radio  
 Trade shows  
 Others: \_\_\_\_\_

32. If you are not the first occupant of your home, before you bought your property did the seller provide you with disclosure statements indicating there was prior termite damage?  
 Yes  
 No  
 Not available

33. If you had a choice when purchasing a new home, what framing materials do you feel would do better to resist termite damage? (Please rank 1-4, with 1 being the highest ranking):  
 Reinforced concrete or CMU (block)  
 Steel-framing  
 Wood-framing (using treated lumber)  
 Insulated concrete forms (ICFs)  
 Others: \_\_\_\_\_

34. For survey purposes only, please indicate your gender:  
 Male  
 Female

35. For survey purposes only, please indicate which best represents your current age:  
 18 to 30 years old  
 31 to 50 years old  
 51 and over

33. Please add any additional comments you may have:

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Thank you for assisting us in our survey. Would you be available in case we have additional questions? If so, please indicate your contact information below. Please note this is voluntary, and your input will be kept strictly confidential.

Name: \_\_\_\_\_

Address : \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: \_\_\_\_\_

**Mail: P.O. Box 2880, Aiea, HI 96701 or Fax (808) 356-0396.  
For more information, contact us at (808) 499-1400. MAHALO!**