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A Functional Escape

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A FUNCTIONAL ESCAPE

Honors Capstone | Zachary Spero

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Over the past two decades, the treehouse has outgrew its more recent traditional role as a child's place to play and has served many new functions. My research questions how the treehouse has evolved over the last twenty years based upon changes in program, technology, and relation to the tree itself. Treehouse builders, designers, and construction specialists now serve a new adult audience who want tree houses.

When one builds in a tree, they do so to escape the earth, the people, and its cares.[1] This escape relates to the "prospect and refuge" theory which seeks to describe why certain environments (such as the tree house) feel secure. To prove this, three specific areas will be studied: the tree house program, the tree itself, and tree house technologies.

Because of the technology that has developed in the past 20 years, treehouses can now be fully supported by the trees. A treehouse in the lens of this study requires that the live load and dead load of the treehouse are held up solely by the trees or their branches. A more inclusive notion of what a treehouse can be in terms of additional supports allows for more extravagant designs, but strays from the notion of a pure treehouse in this study. Many treehouses have wood or metal tree posts to help support the platform. The only aspect of the treehouse that meets the ground in the circulation to the main structure of the tree house.

Sources:
1."Treehouses Branch out: the Latest High-End Treetop Retreats." Financial Times, 4 Apr. 2014, www.ft.com/content/abce8eec-b5ba-11e3-a1bd-00144feabdc0.

TREEHOUSE HISTORY:

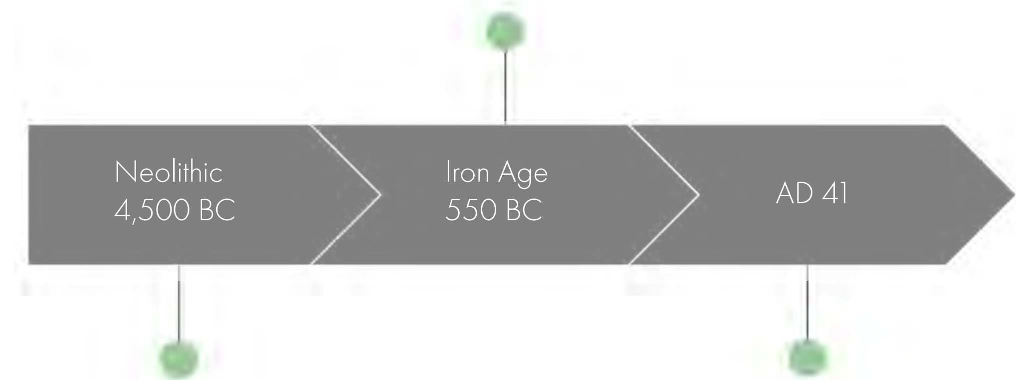
Natives of New Guinea once defined a tree house to be for security against enemies, however, this definition has become more general and is now considered to be a structure built among the branches of a tree. Though this research is not concerned with the tree house's use by primitive peoples as a reaction of necessity in terms of protection, it is important to note the deliberate evolution of the tree house over time. Evolving from its original use as a place of security in New Guinean culture, the tree house has become a child's place to play. The traditional "childhood" tree house is defined as a structure that is built on an elevated platform in a tree. The structure can also be described as a tree fort or shed often as the result of a family "do-it-yourself" (DIY) project. In more modern times, the tree house can be many things, including a teahouse, hotel, playhouse, or even a personal retreat to reflect on one's life among many other things. Below is a timeline of how the treehouse has evolved. Humans have been in treehouses since 4,500 B.C. This relationship to the human and treehouse is one that has stood the test of time and has truly evolved with the ages.

Sources:
1.Paula Henderson & Adam Mornement. "Treehouses", 2005, p.12

2. Pliny, Natural History, Book XII, Ch.V

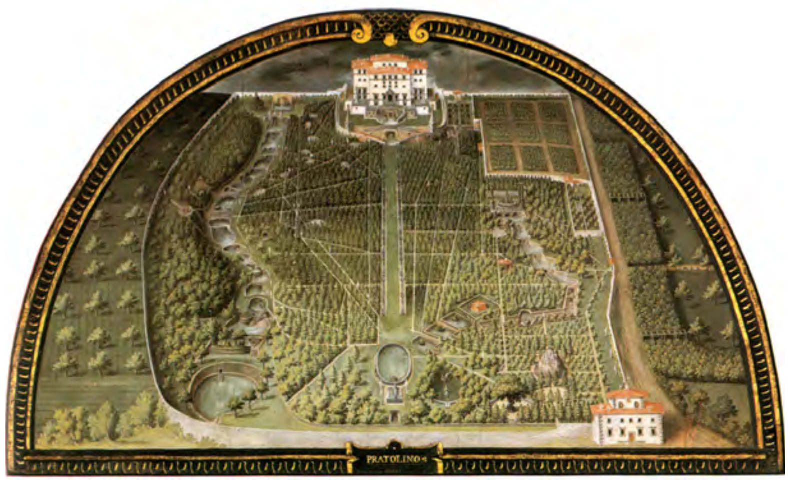

Korowai Tribe Tree House

Iron Age hill forts on natural or man-made hilltops and retreated to those sanctuaries at times of threat and to participate in special social ceremonies [1]



Natives of New Guinea, The Benuaq Peoples (of Kalimantan) and the Korowai People of West Papua live in tree houses, the latter in refuges 30 M high

Roman Era, Pliny the Elder outlined a tree house (raised platform in the trees) in a large plane tree as well as carved spaces enclosed in the trunks of trees for Caligula in a Plane tree at Velitrae [2]



Villa di Castello | Florence, Tuscany

1.Paula Henderson & Adam Mornement. "Treehouses", 2005, p.12
2.Celia Fiennes. "The Journeys of Celia Fiennes",(1685 – 1703), 1983. p.140

1499

In the Renaissance, Italy saw Francesco Colonna's book Hyperotomachia This led to a great rise in construction of tree houses [1]

1587

The Medici Family also had treehouses in their gardens near Fiesole and Pratolino

1603

Queen Elizabeth I (reigned 1558– 1603) banqueted in the Cobham tree house. The Formal Gardens of England had treehouses

1697

Celia Fiennes describes a visit to the Duke of Bedford's Gardens at Woburnseat up in a high tree that ascends from the green 50 steps [2]

1902

Architect Harold Peto designed and built a treehouse for Daisy, Countess of Warwick at Easton Lodge, Essex [1]

1950

Postwar housing boom leads to construction of many backyard DIY tree forts and tree sheds as economic growth led to purchasing of many single family homes and cars in the United States [2]

1997

Jonathan Fairoaks designs a measurable fastening solution for treehouses that would satisfy local building codes on his builds. This leads to the rise in treehouse construction and analysis that follows [3]

2000

Garnier Limb & Treehouse Attachment Bolt Development allows more programming and structure in the trees as technology develops

2001

Revival of treehouse trends worldwide with more disposable income and desire for unique experiences

Today

Treehouse resurgence and program growth: teahouse, hotel, playhouse, or even a personal retreat for adults and children alike

Don the Beachcombers Banyan Tree House

Sources:
1. David Leviatin. "On the up: countess Daisy's lofty gem reborn", Cornerstone, Vol. 30, No. 2, 2009 p.70 – 71
2. Moffatt, M. (2020, January 27). The Cause Behind the Post-War Economic Housing Boom After WWII. Retrieved May 11, 2020, from https://www.thoughtco.com/the-post-war-us-economy-1945-to-1960-1148153
3.We Design Simple, Complete Tree House Plans." Treehouse Guides - Plans to Build a Tree House. Accessed May 03, 2018. http://www.treehouseguides.com/.

CONTEXT OF TODAY:

Prominent Tree house & Tree hotel Regions of the World:

1 Africa: South Africa, Tanzania, Zambia

2 Asia: Israel, Japan, Sri Lanka, Cambodia

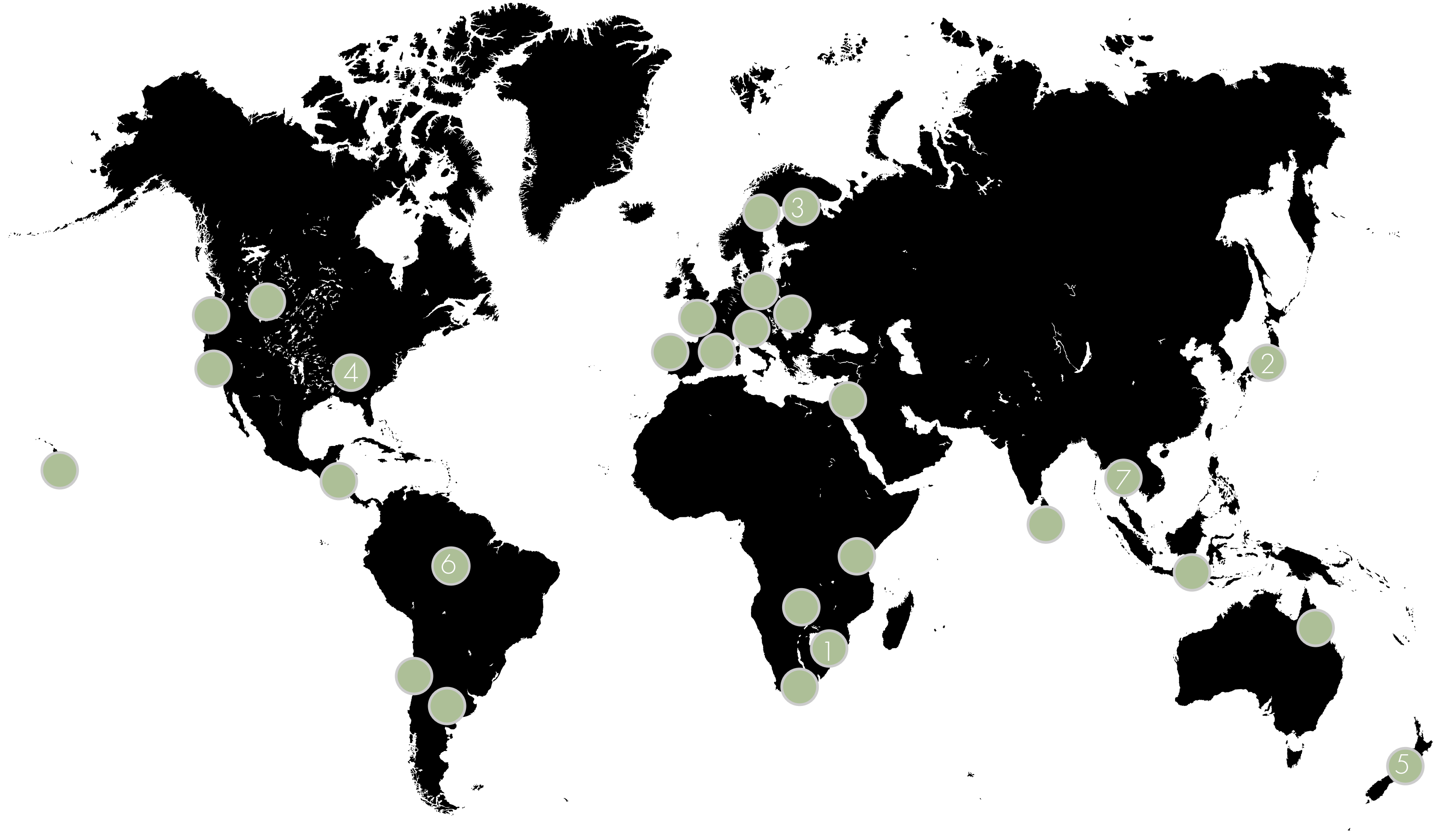
3 Europe: Austria, Belgium, Finland, France, Germany, Italy, Portugal, Spain, Sweeden, Switzerland, United Kingdom

4 North America: Canada, United States of America, Mexico

5 Oceania: Australia, New Zeland

6 South America: Argentina, Chile, Nicaragua, Brazil

7 South East Asia: Indonesia, Thailand



Sources:1. Treehouses by takashi kobayashi, japan. (2016, February 23). Retrieved May 11, 2020, from https://www.designboom.com/architecture/treehouses-by-takashi-kobayashi-japan/
2. The World's 30 Best Treehouse Hotels. (n.d.). Retrieved May 11, 2020, from https://travel.usnews.com/gallery/the-worlds-30-best-treehouse-hotels?slide=30


1


2


3


4


5


6


7

CONTEXT OF TODAY:

Tree house builders, designers, and construction specialists now serve a new adult audience who want tree houses.[1] Adults redefined the treehouse as a place for recreation, work, observation, and habitation. Even with this example of the change of function of the tree house over time, the inherent definition of the tree house has still tested time as the tree house still serves the purpose of security against enemies.

Today, the price of its treehouses range from $20,000 to $250,000 (in the residential and commercial market).Founded in 2003, UK's prominent builder Blueforest averaged prices around $25,000 per treehouse.Blue Forest now averages $190,000-$257,000 per build, with significantly larger, more developed structures with lighting, heating and technology.[2]


Play Treehouse


Education Treehouse


Family Treehouse

Sources:
1."Why We Live in Trees." New Statesman. Accessed March 15, 2018.
Green Tiger Press. "Tree Houses: An Illustrated Essay on the Aesthetic & Practical Aspects of Arboreal Architecture". La Jolla, CA: Press, 1975.

PROGRAM:

It is essential to understand the progression of tree houses through history to analyze how much the program of the tree house has changed. Program is the specific use of the treehouse of explains what happens inside a treehouse. Treehouses are typically found on domestic properties for private use, as well as commercial properties in the form of resorts. This study will focus on domestic properties. A typical single room treehouse is $200-$400 nightly in the U.S.[1] The majority of people today are building small retreats in the trees. Programs include kitchens, classrooms, social tree houses, offices or studios, media centers, yoga retreats, music studios, and adventure playgrounds. Components of these programs can also include stairway access, desks, electricity, chairs, decks, and places to sleep.

Sources:

TreeHouse Point. (n.d.). Retrieved May 11, 2020, from https://www.treehousepoint.com/

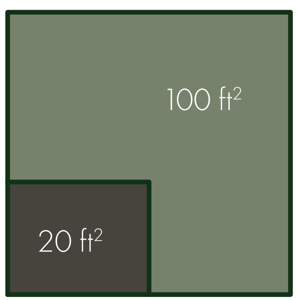

Retreat


Studio

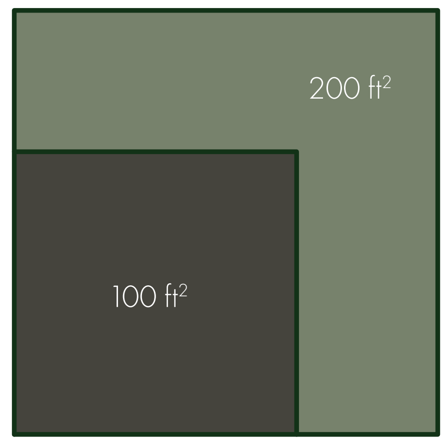

Family

PROGRAM CLASSIFICATIONS:

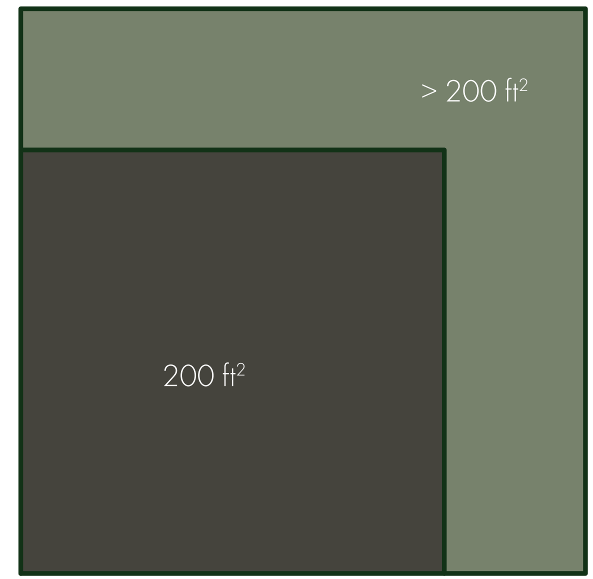
Retreats: 20-100 square feet)
Studios: 100-200 square feet
Homes: 200 + square feet



Retreat Square Footage



Studio Square Footage



Family Square Footage

TREEHOUSE TREE TYPES:

Trees can grow to be tall and skinny, and wide and large. Treehouses situated within the wide and large trees typically sit within the canopy of the tree as large supporting branches help support the treehouse (Figure 1).Treehouses attached to the to the tall and skinny trees typically sit adjacent to the trunk as supporting branches usually do not offer much support to the tree house (Figure 2).Figure 3 displays the forest ecological zones of North America. ‘Wide and large trees” are found in the temperate steppe and temperate oceanic forest regions. “Tall and skinny trees” are found in the subtropical mountain system and dry forest, as well as the temperate continental forest.[1]

Sources:
1. “Commission for Environmental Cooperation.” North American Forests, 2011 | Commission for Environmental Cooperation, www.cec.org/tools-and-resources/map-files/north-american-forests-2011.

IDEAL TREES:

Beech
Ceda
Chesnut
Cypress
Douglass Fir
Eastern Hemlock
Fir
Hickory
Live Oak
Madrona
Maple
Monkey Pod
Oak
Redwood
Sequoia
Spruce
Sycamore
Walnut

ACCEPTABLE TREES:

Apple
Ash
Basswood
Birch
Elm
Eucalyptus
Ironwood
Hackberry
Hornbeam
Pine
Poplar
Western Hemlock

UNSUITABLE TREES:

Cottonwood
Palm
Western Red Alder
Willow

Figure 1: Typical Wide and Large Treehouse Location

Figure 2: Typical Tall and Skinny Treehouse Location

Figure 3: Typical Tall and Skinny Treehouse Locations

TYPICAL WIDE AND LARGE TREEHOUSE


Dihan | South of Brittany, France

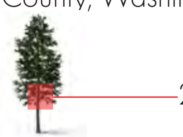

15′ off ground


Beddegama Ecopark | Sri Lanka


25′ off ground

TYPICAL TALL AND SKINNY TREEHOUSE

The Cinder Cone | Skamania County, Washington



20’ off ground

Treehouse Paradise | Oregon

10’ off ground

OVERCOMING ISSUES OF BUILDING IN TREES:

A major advancement in tree fastening technology occurred in 1997 with the introduction of a fastening device. Jonathan Fairoaks created a three-inch diameter stainless steel pin that, when sunk into the heartwood of a tree, is able to support more weight than anything attempted. Fairoaks presented this device at the annual World Treehouse Association Conference in Takilma, Oregon. This device caught the attention of Michael Garnier. Garnier had been searching for a measurable fastening solution that would satisfy local building codes on his builds and thus developed Fairoaks design. Over the next year, with the help of engineer Charley Greenwood, the duo refined a tree bolt design that came to be known as the Garnier Limb, or GL. Today, the GL is a turned steel device with a wide collar starting six inches off a coarsely threaded end. Various variations now stem from the original GL. In various combinations these GL's can hold loads as heavy as a 2700 square foot house. Treehouse Attachment Bolts (TABS) are extra-large bolts specifically designed for use in treehouse construction developed by Nelson Treehouse Supply that are a new edition of the Garnier Limb (GL) that are now highly employed[1] . The TAB is comprised of 4 main sections (Figure 1). The lag-threaded end secures the TAB beyond the cambium layer of a tree. The boss (thicker part of steel) provides the TAB sheer strength for greater distribution of load. The stem extends from the boss and acts as a limb to support all structural members. The end of the stem has a short-threaded section (K-nut) to accommodate a hex nut. [2]

ZONING/ ENGINEERING:

Engineering may be required for permitting in an area. Engineers can help with platform design, beam sizing, and placement. Live load- humans, dogs, dead loads- structure- snow loads. Winds, earthquakes, snowfall critical consideration.Design stage prior to building requires research per city/ area you are building. Code standards, zoning regulations, permitting, in local jurisdiction must be followed. Visit the local building department and speak with a building official.Obtaining a permit for a treehouse is similar to building a ground house. May be necessary to consult an architect and engineer to produce construction drawings. Regulations differ WIDELY per jurisdiction. Contact building and zoning departments to know regulations for your site. Renting out for any commercial purpose requires potentially a new set of code standards and zoning regulations than just private use.[2]

Sources:
1."We Design Simple, Complete Tree House Plans." Treehouse Guides - Plans to Build a Tree House. Accessed May 03, 2018. http://www.treehouseguides.com/.
2. Treehousing: The Instructional Guide. 2018.


Illustrated need for a better fastner- tree grows into treehouse supports


Early versions of the GL


15 year old GL Adapting with tree over time [3]

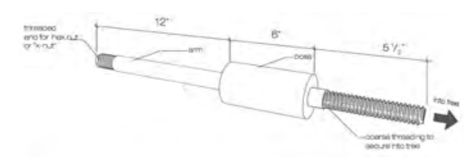


Figure 1:Treehouse Attachment Bolt


TAB installed in tree


TAB supporting beam [4]

TREE CONSIDERATIONS:

Because trees are alive and dynamic, specific design considerations must be considered when designing a modern treehouse. Tree growth under time and wind sway must be considered as preventing natural motions of a tree are harmful to the trees healthy structure.

TREE GROWTH
Trees grow both upward and outward. Upward growth only happens at treetops and the ends of branches. Because of this the treehouse will stay at the built height in relation to the ground even as the tree grows. Treehouses only grow in relation to height of the ground in younger trees, not the more mature trees usually selected for the modern-day treehouse for the reasons specified above. Tree girth influx is the main factor that needs to be considered in design best practices. The TAB is designed to accommodate the increase in girth and is the most common mediator between the treehouse and tree for this reason. The tree envelops more of the TAB as the attachments to the tab can move over time (Figure 1). As the tree grows over time the positioning of the beams moves. The spatial relationship to other beams it may become essential to unfasten and refasten the joist to beam connection accordingly (Figure 2).

LATERAL MOVEMENT:
Trees move in unique patterns. When there is not a single tree supporting a treehouse but a system of trees, it is important that all trees in the system can move independently. Rigidly fixing trees with structural components can damage both the treehouse, and more importantly the tree during an event that occurs with high winds. The higher that a treehouse is situated in the tree, the more motion there is needed to be accounted for (Figure 3). [1]

THINGS TO HAVE BEFORE SPEAKING TO THE BUILDING DEPARTMENT:
Treehouse Purpose/ use
Will it have utilities (heat, plumbing, electricity)
Square footage- interior and exterior
Height from ground to top of roof
Location on property (site plan)
Consulted an arborist regarding health of the trees/ site and tree placement

Sources:
1. Treehousing: The Instructional Guide. 2018.


Tree Growth


Tree Growth

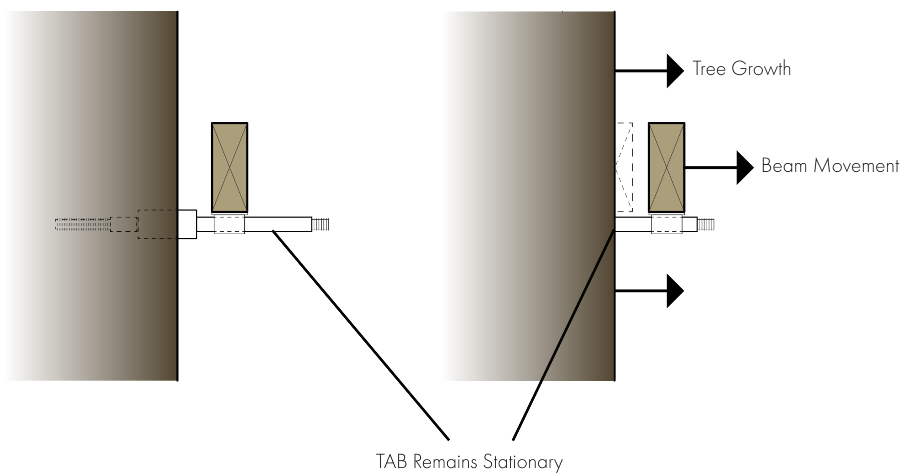


Figure 1: Tree Growth

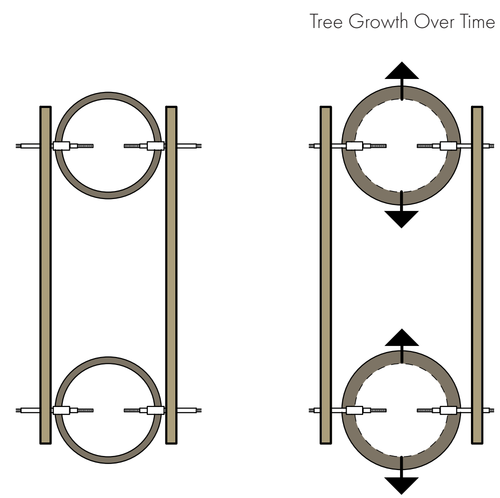


Figure 2: Beam and Joist Position Changing Over Time

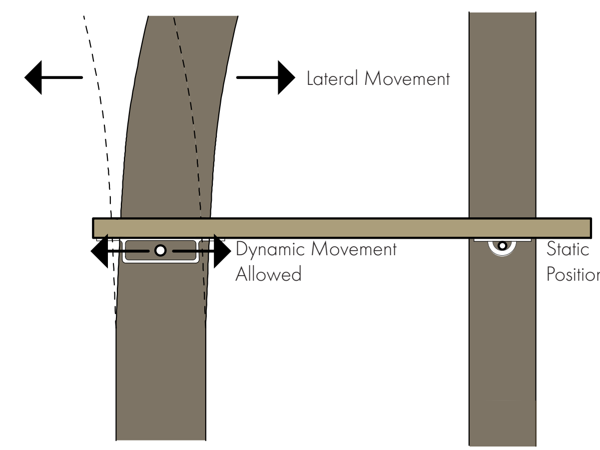


Figure 3:
Lateral Tree Movement

TREE SELECTION

Treehouses can be built in single or multi tree layouts. The type and arrangement of trees dictate the design of the treehouse.Spanning multiple trees with beams is easier than building in a single tree. The bigger the trees are, the better. You can safely put a TAB in a healthy tree as small as a 10" diameter.[1] Larger trees are more favorable as they tend to move less in the wind and are more mature in terms of growth to resist drought and parasite activity. If a treehouse is to be built in a single tree the tree must me a minimum 18" in diameter. Multi tree layouts must be within 16' to 20' of each other as larger spans require larger beams, which are heavier and harder to work with. Treehouses should be situated 8'-18' from the ground. 8' is about the second level of a standard house and 18' is about the level of a third floor for reference.

TREE EVALUATION

Awareness of your environment is important as you select your trees and building site. Thinking of how tools and lumber will get to site, tree sunlight, neighbors, power to site, snowfall and winds must be considered along with evaluating the health of the tree. International society of arboriculture (ISA) Certified arborists help with the tree selection process. [2] Tree health, root-soil conditions, and expected longevity of trees are critical considerations. Arborists can also prune trees and leave safety lines in trees to help the builder.

Sources:
1. Treehousing: The Instructional Guide. 2018
2.www.isa-arbor.com/.
Images in Section:"28 Most Amazing Treehouse Designs in the World." The Venue Report, 18 Feb. 2018, www.venuereport.com/roundups/28-of-the-world-s-most-amazing-treehouses/.

Multi Tree Layout
Secluded Intown Treehouse |
Atlanta, Georgia

Single Tree Layout
Treehouse Lodge | Peru

TREE/ PROGRAM RELATIONSHIP

Certain environments feel secure and thereby meet basic human psychological needs. Designs of treehouses under the canopy versus in it reflect personal preference to how one experiences nature by their designs, as a preference to wide and larve vs. tall and skinny is found by customers.[1]

Sources:

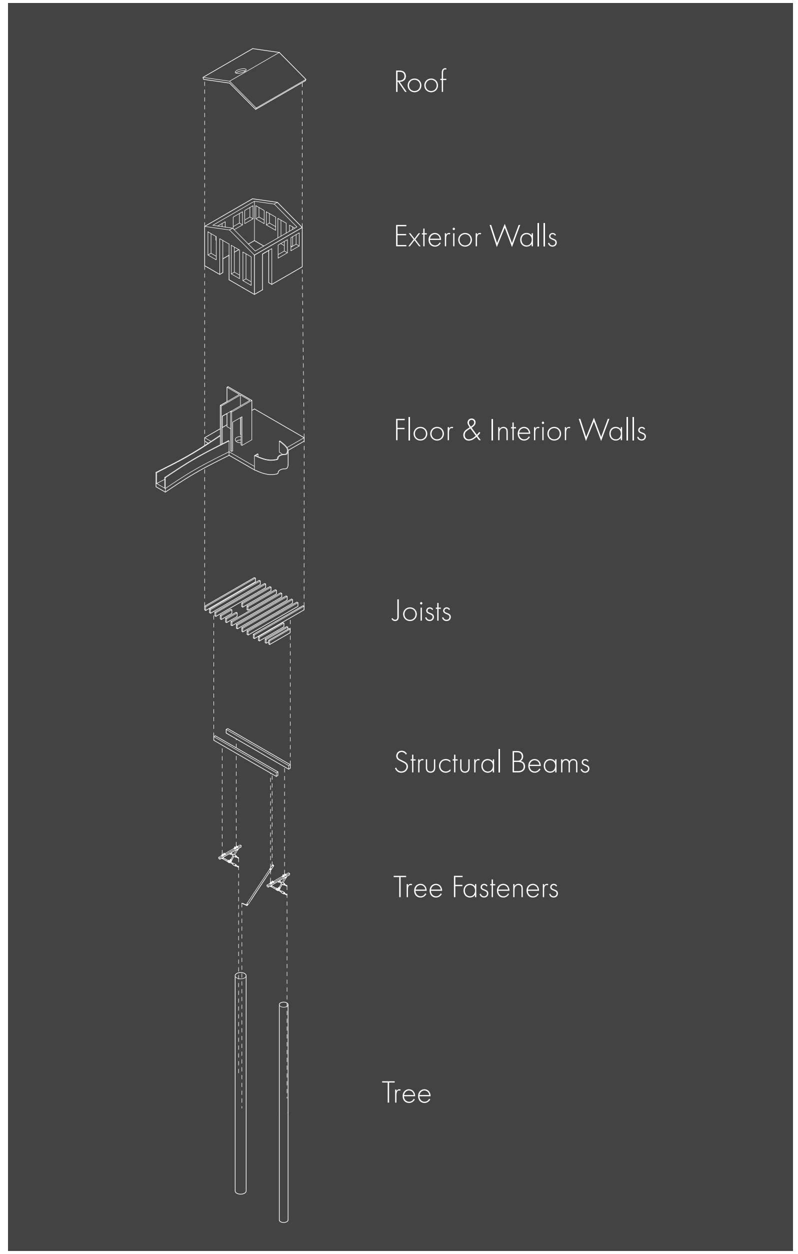
1. Green Tiger Press. "Tree Houses: An Illustrated Essay on the Aesthetic & Practical Aspects of Arboreal Architecture". La Jolla, CA: Press, 1975.

Typically, the wide and large treehouse supports a larger program as the canopy of branches offers more support for a larger floor plan compared to the tall and skinny treehouse.

TREE/ PROGRAM RELATIONSHIP

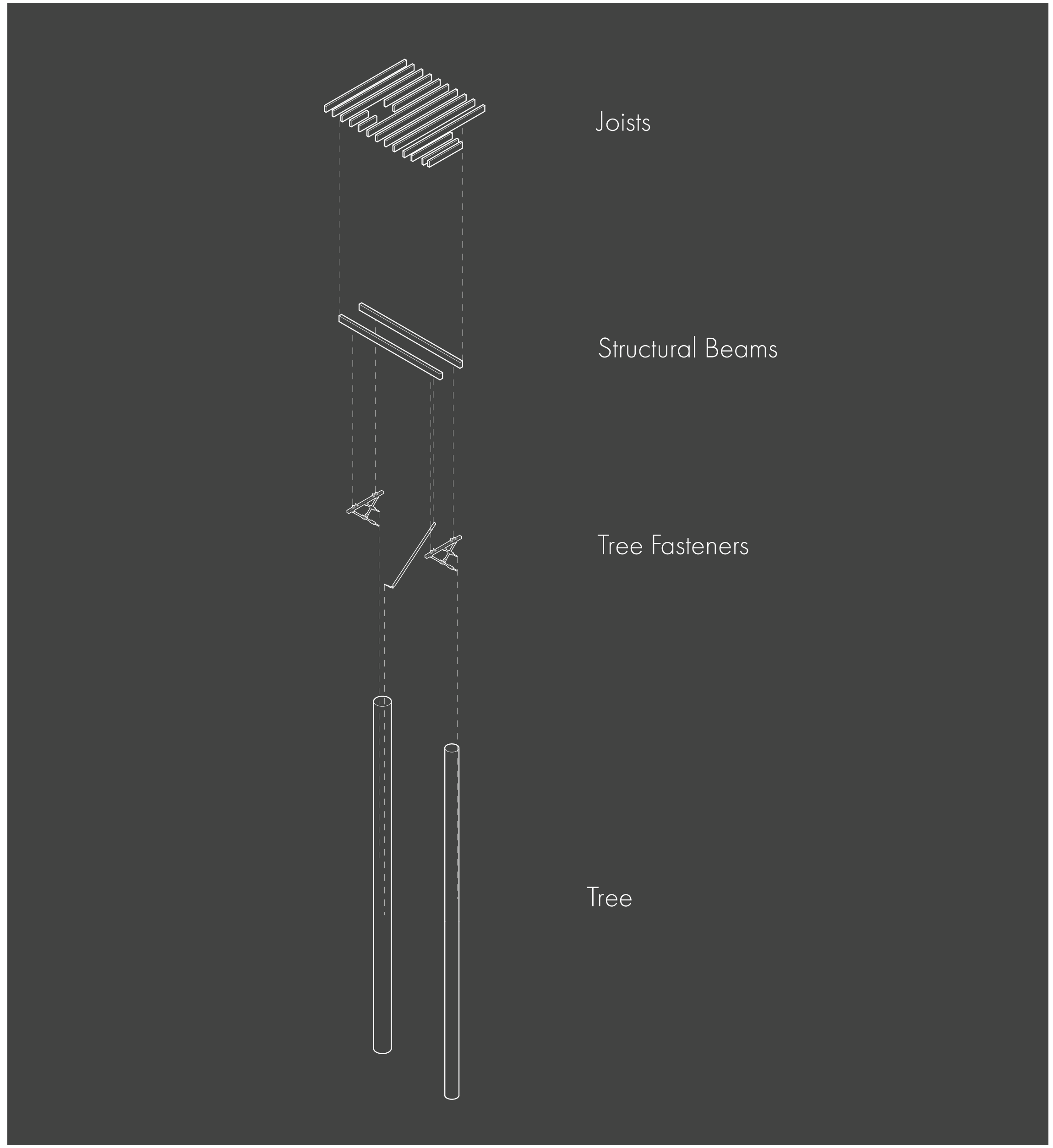
The multi-tree layout can overcome this shortage of square footage or program by using multiple trees to support the activities above for both the tall and skinny and wide and large trees.

TREEHOUSE ASSEMBLY:
The treehouse is assembled in the following order: Trefastners allows structural beams and joists to support the treehouse above. The treehouse has its own finished floor, interior and exterior walls, and roof.



TECHNOLOGY COMPONENTS DISCUSSED:

The components of focus for this study are the tree, tree fastners, structural beams and joists.



TREEHOUSE HARDWARE
20 YEARS OF DEVELOPMENT:

1. **Treehouse Attachment Bolt (TAB)**
Main structural support member for treehouse

2. **Uplift Arrestors**
Interface between beam and a TAB to prevent beam from lifting, and allowing for beam to move laterally along TAB

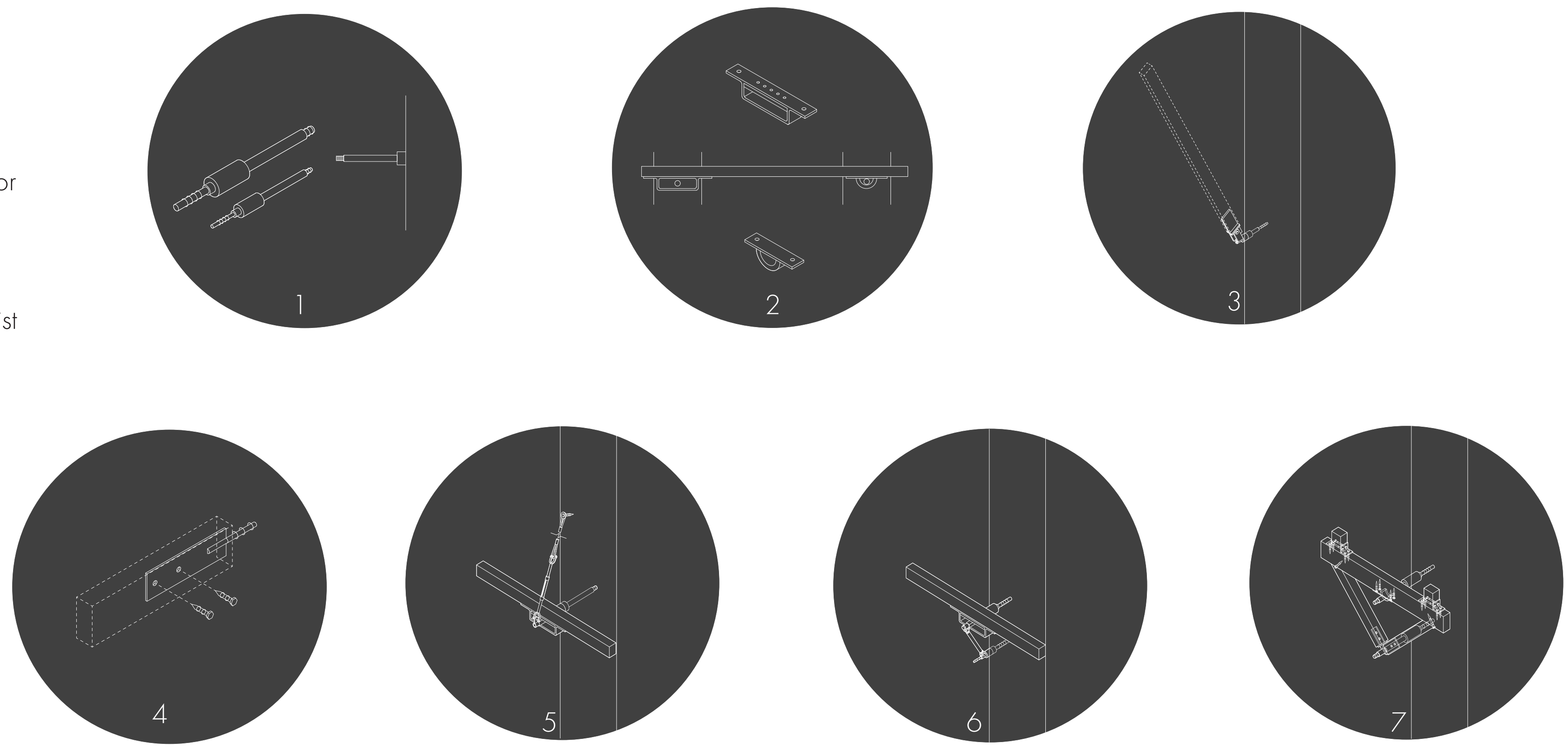
3. **Wood Strut**
Helps support a cantilevered beam or joist and connects the wood strut to the tree

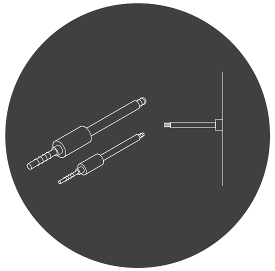
4. **Paddle Tab**
Bears light loads (stairs/ landings)

5. **TAB Suspension System**
Allows for 3” of spacing between beam and tree

6. **Strut Back-Up**
Adds strangth to a TAB

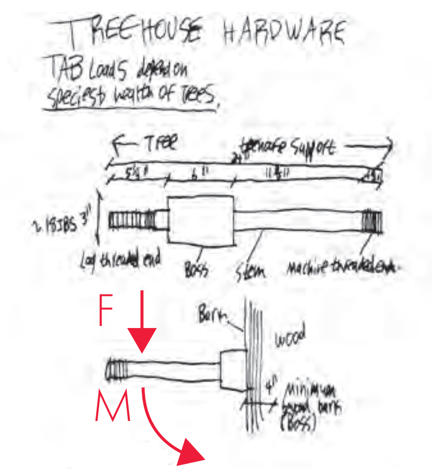
7. **Yoke**
Sub-structure to support beams

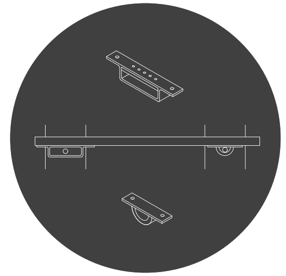




Treehouse Attachment Bolt (TAB):

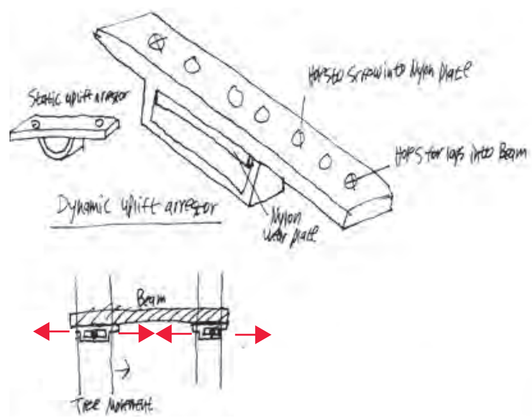
The TAB is the most common hardware component to use when building a treehouse. Main sup-port members rest or hand from TABs. Loads from 6,000 to 10,000 pounds of force (depending on tree type) can be held. Modeled is the largest TAB (SL TAB) and the smallest TAB (mini tab).

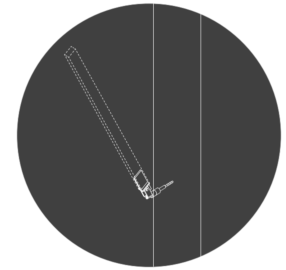




Uplift Arrestors:

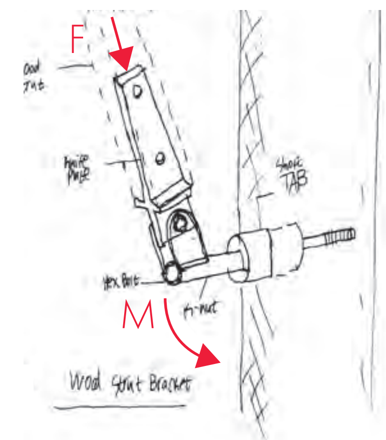
Uplift arrestors interface between a beam and a TAB to prevent the beam from lifting off the support while allowing for lateral movement along the length of the TAB. TABs and uplift arrestors work together to provide a dynamic support system that allows for growth and tree movement without sacrificing structure of harming the tree. Degrees of lateral movement can be achieved by allowing for sway with a wider gap within the uplift arrestor. Multi tree scenarios call for a tighter connection as a dominant tree needs less lateral movement. When building in a static tree a highly static connection is required.

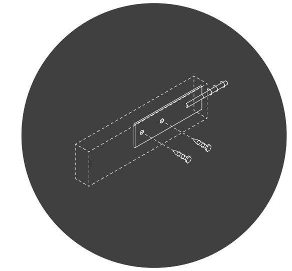




Wood Strut Bracket:

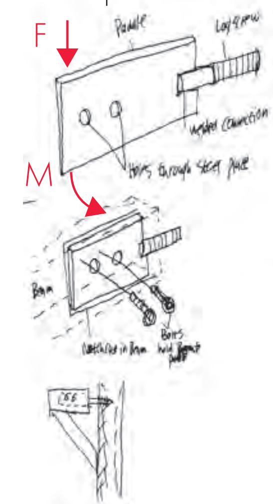
The wood strut bracket supports a cantilevered beam and connects the strut and the tree. The strut avoids a wood to wood contact that invites rot.

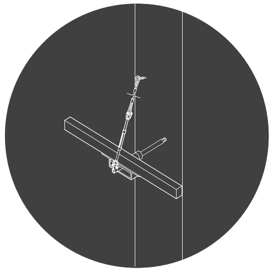




Paddle Tab:

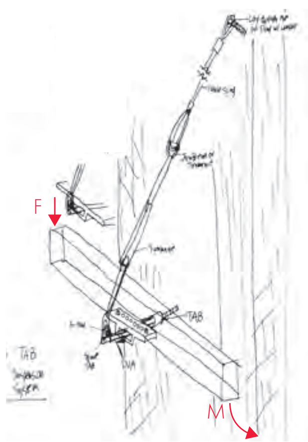
The paddle TAB bears light loads such as stairs, landings, or small platforms. A notched beam is fit into the paddle section and bolted into place. Acommon configuration for the paddle TAB is a knee brace configuration in which multiple paddle TABS and kne braces circle a tree to create a quick, single tree platform.

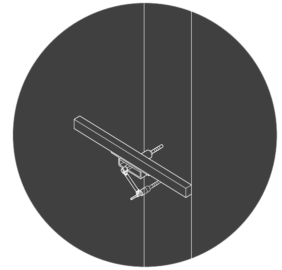




TAB Suspension System:

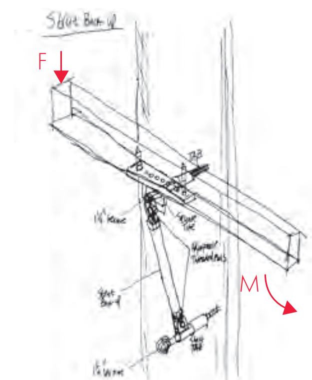
The TAB Syspension System allows for 3" of spacing between beam and tree.Best practice is to keep 3" between the beam and tree. This allows for tree growth and movement. This suspension system allows for greater safety and growth margins before retrofitting is a necessity. This assembly perches the beam while allowing for maximum structural integrity. After beams and uplift arrestors are installed a K-nut is threaded to the end of the TAB. A turnbuckle is then connected to the K-nut and a cable sling is fastened to the tree with a lag bolt.

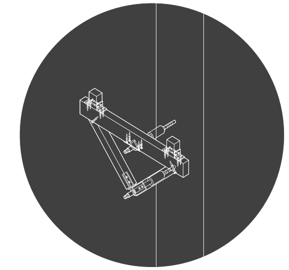




Strut Back- Up:

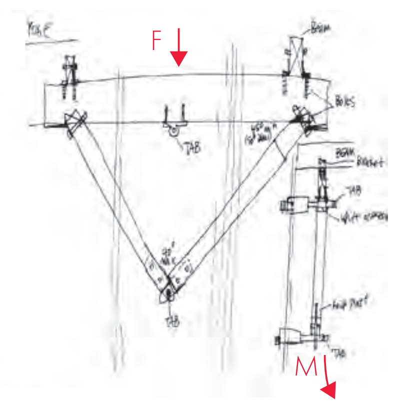
A strut-back up adds strength to a TAB. When an instance arrives where there is no room to install a suspension system above the TAB. Struts are often used when you do not want to penetrate the house above. The strut back-up system is installed below the TAB. A short TAB is installed below the standard TAB and the strut bridges the gap between the two members.





Yoke:

A yoke is typically prefabricated steel, wood, or a combination of the two. It is used as a sub structure to support beams. Yokes are used in two treehouses when beams resting on TABs would not provide a wide enough structural base. A yoke at its maximum is a right triangle connected to two TABs.



PLATFORM:

Below the platform is a set of structural components normalizing the structure so the floor can be occupied. The floor also stabilizes and sets a level for framing, walls, furniture, and structure is built on. The platform consists of all structural components including hardware, beams, joists, and decking surfaces. The platform is the first stage of the design process as it drives the size and shape of everything to follow. Platform orientation is driven by views, southern exposure to light, access and entry, and slope. Using the scaled tree layout, sketch where beams can be placed in trees (Figures 4-6) spaces about 12' to 16' between trees. After placing beams, joist layout must be considered. The size of the bams is dependent on the distance spanned and weight carried. Beams support joists, and joists spand beams while supporting the weight of the treehouse. Typical beam size is 6' by 12/ (glulam) beams. Consult with an engineer to determine size and placement of structural members where possible. After designing the placement of structural members now its time to design the "house" that sits on the platform!

TREE LAYOUT PLAN

Creating a tree layout plan is an essential task to complete after selecting and evaluating trees. These scaled drawings show distances and diameters of trees in relation to each other. Major branches are also shown and specified if they are used for support (Figures 1-3. Accurate measurements must be taken to create this plan. Use a laser or water level to ensure measurements are made in the same plane. Take all measurements at deck level height in the tree. This plan must include your trees numbered, and the distance from bark to bark. Along a straight line from tree to tree. Tree diameters should be writted my the trees. Triangulate measurements meaning mark the distance to at least two other trees for reference. Note orientation, site slope, favored views, and access points at this time. Using this information create a scaled tree layout plan. These example layouts will be revisited in the case study below.

CLEARANCE GUIDELINES

Lateral movement and tree growth must be accounted for in building. Below are good rules of thumb to ensure the tree can grow and thrive:

Keep 3" between beams and the bark of a tree.

Keep joists 6" away from the bark of a tree.

Keep walls 12" and roofs 7" away from the tree.

Trim decking 2" from the bark of the tree

Weather tight building envelopes typically do not have trees inside the "house" as it is hard to seal areas where limbs enter the building. This can lead to moisture issues.[1]

Sources:

Two Tree Scenario: Documenting an existing site with a simple layout with two trees

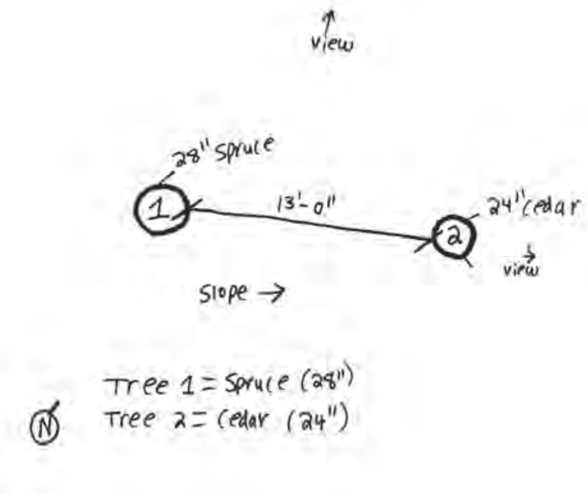


Figure 1

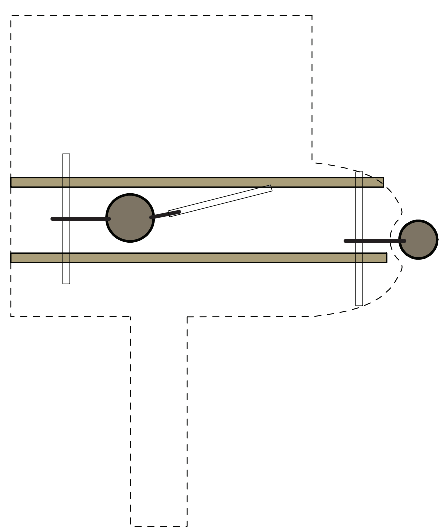


Figure 4

Multi-Tree Scenario: Documenting an existing site with many trees and potential layouts

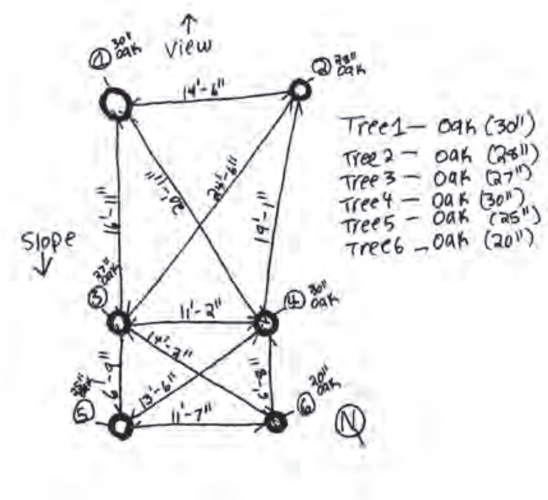


Figure 2

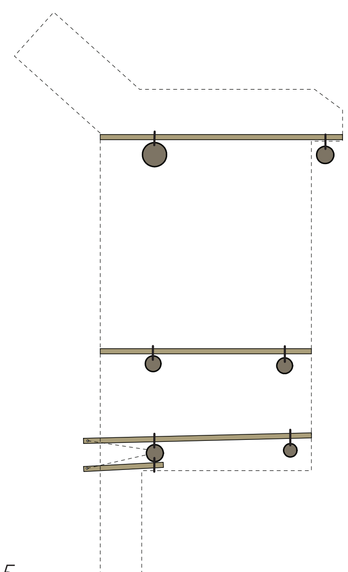


Figure 5

Single Tree Scenario: Documenting an existing site withone tree, the most extreme building scenario

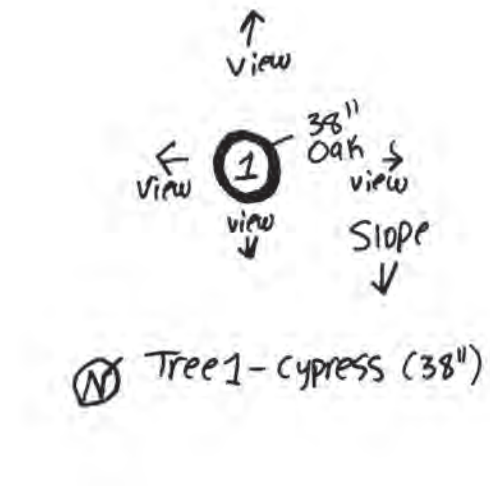


Figure 3

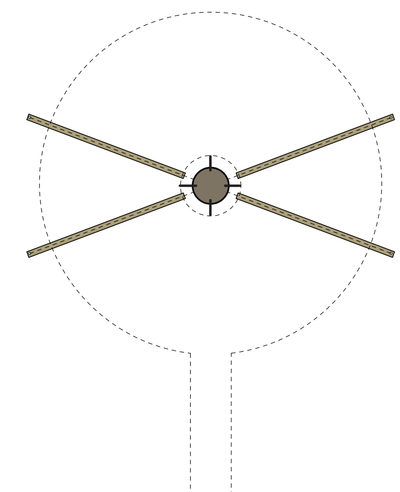


Figure 6

CASE STUDY:

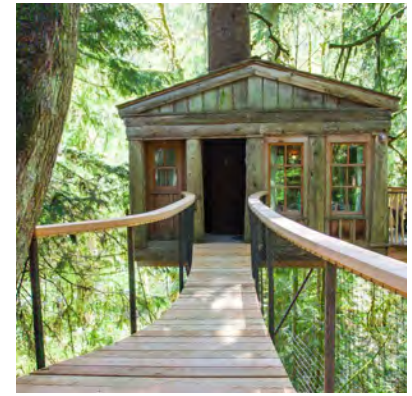
The case study analysis is an effort to analyze treehouses from different builders, regions, and species of tree. All Case studies have been made in the last 20 years and share the same square footage classification (Family, 200 + Square feet, 5-15 feet off the ground. Utilities. Example Programs: kitchen, classroom, office, studio, media center, etc.) and are single and multi-tree layouts. The TAB has made these structures possible as each has a different primary structural system or tree fasting devices. The intent is to prove that while the program and square footage classification remains the same in both the single and multi-tree layout, these treehouses would not be standing without the advancement of the 7 fastening devices in treehouses that have allowed the treehouse to have such a robust program while situated in such a powerful place as the tree.

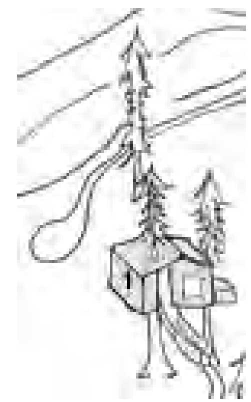
Temple of the Blue Moon |
Issaquah, WA |2006

Florida Ranch Getaway |
Boca Raton, Florida | 2015

The Lofthaven | Spicewood, TX |
2013

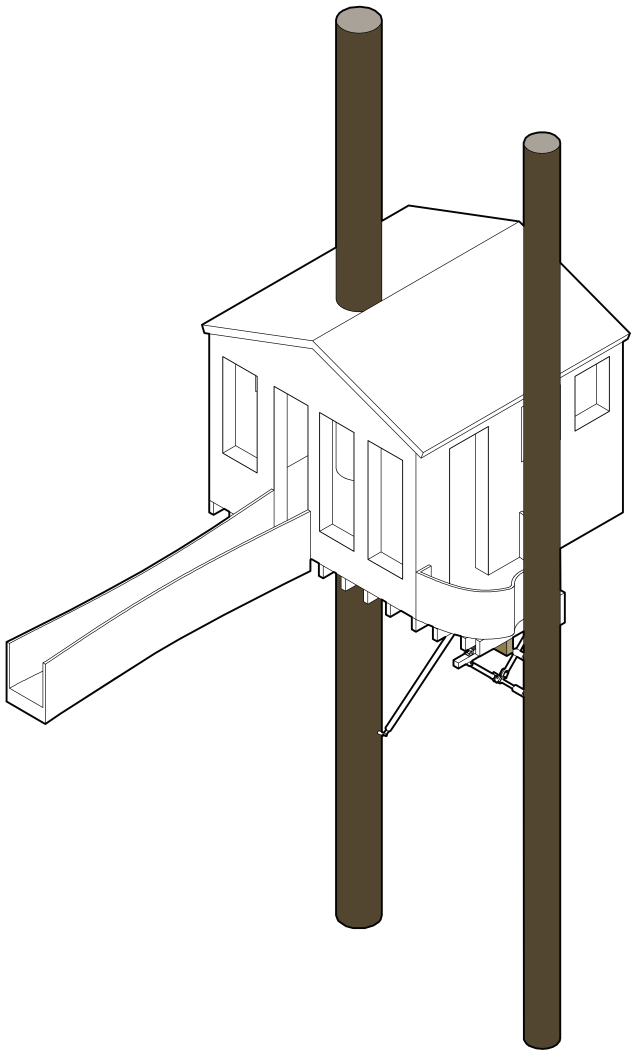
Case Study Locations



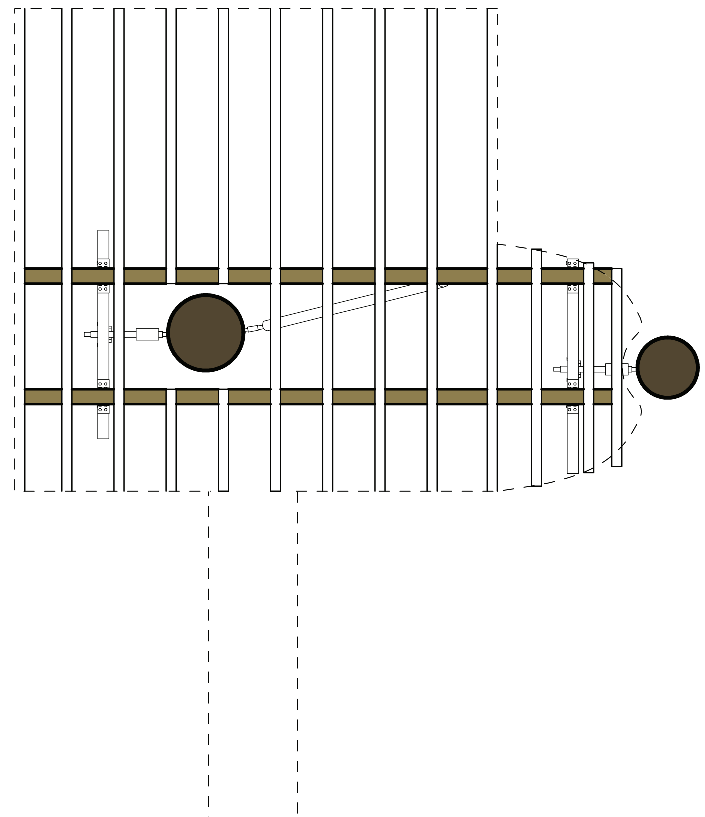


Temple of the Blue Moon |Treehouse Point | Nelson Treehouse | Issaquah, WA |2006 | 250 Square Feet | Lodging/ Hospitality
Sitka Spruce/ Western Red Cedar | 18' Off ground

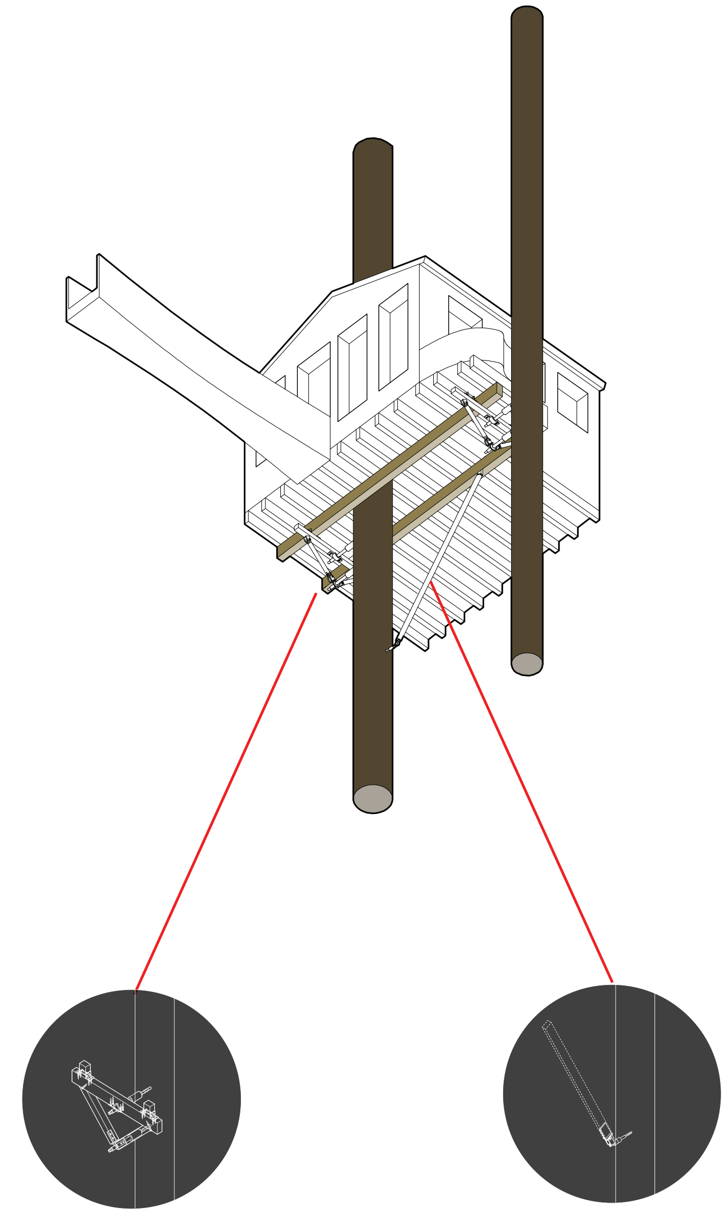
The treehouse serves as a retreat on a campus of treehouses built by the "Treehouse Man" Pete Nelson. Nelson is the a main manufacturer of treehouse technology and publications in the treehouse world.



The treehouse is built around the tree, but the tree is separated by interior windows to help reduce pests, and protect the interior from rainwater. It has side support to a second tree to the right (Western Red Cedar), but the primary supports are under the treehouse on the Spruce.



Finished Structural Plan
Showing Main Beam Supports

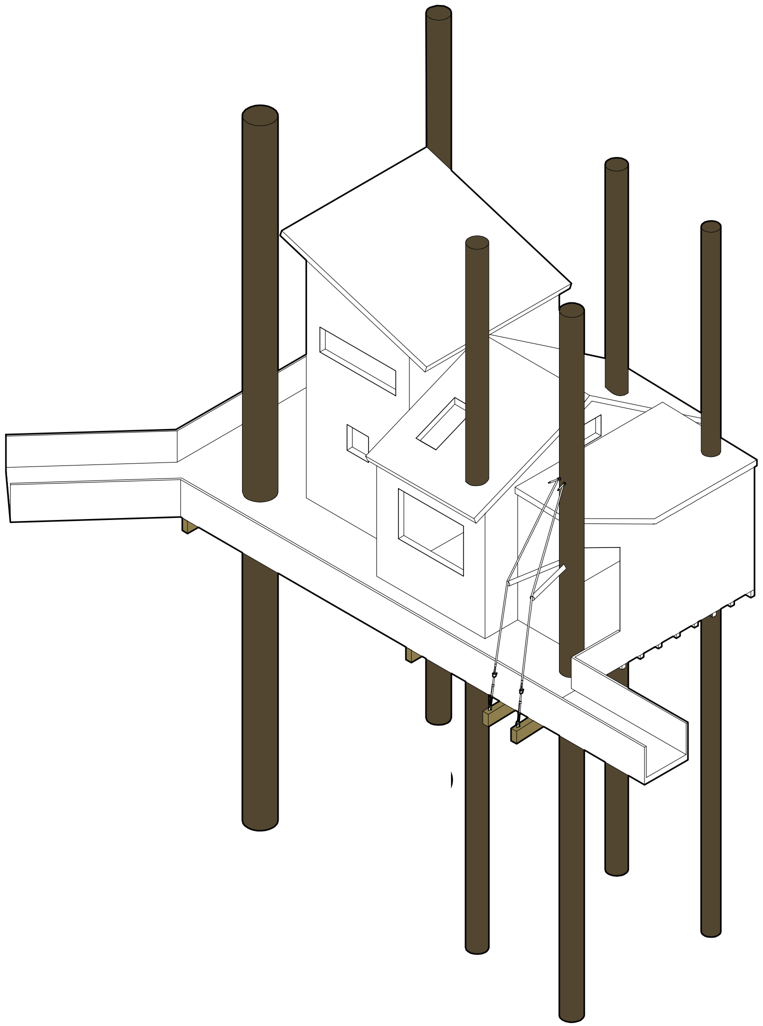


Yoke

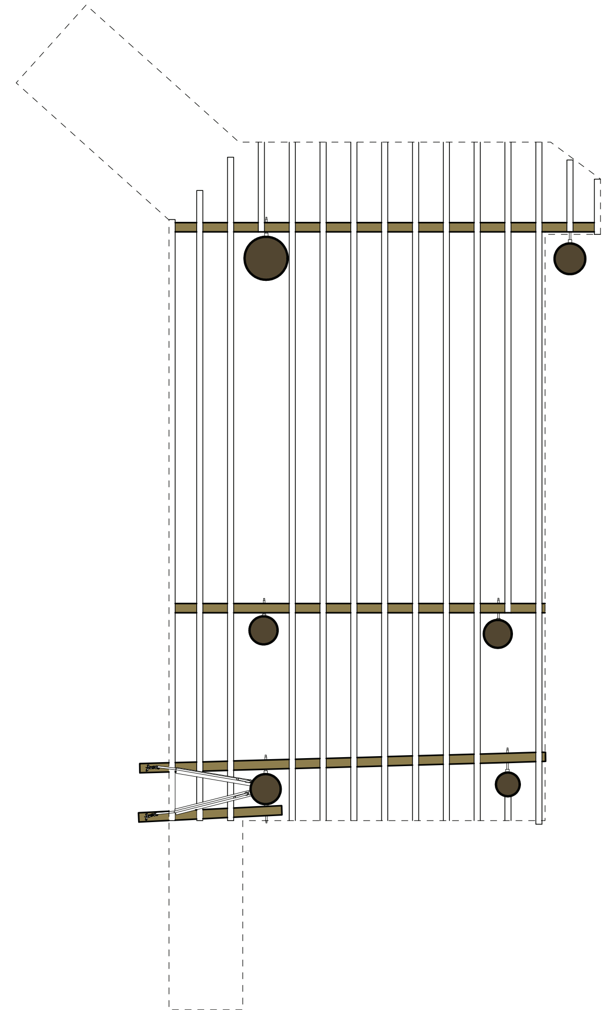
Wood Strut

Florida Ranch Getaway |Tree Top Builders | Boca Raton, Florida | 2015| 500 Square Feet | Guest House Retreat| Magnolia and Turkey Oak |8' Above Grade

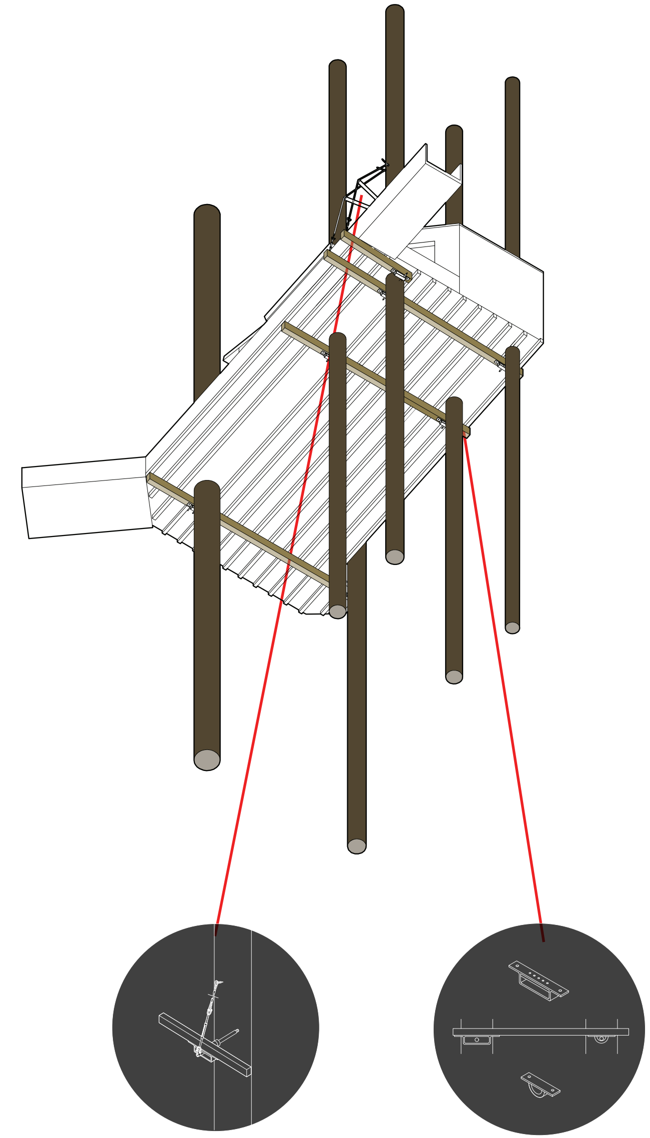
Function is the main aesthetic of this treehouse high above the ground. The couple wanted a simple, cabin like retreat.



A functional and beautiful retreat for a couple is found in the trees. Water runs under the ramp to feed the treehouse. Logs of cedar, cypress, and pine logs were remilled into siding. Situated almost 100’ out above a valley of magnolia and turkey oak, the built treehouse has electricity and rustic plumbing



Finished Structural Plan
Showing Main Beam Supports

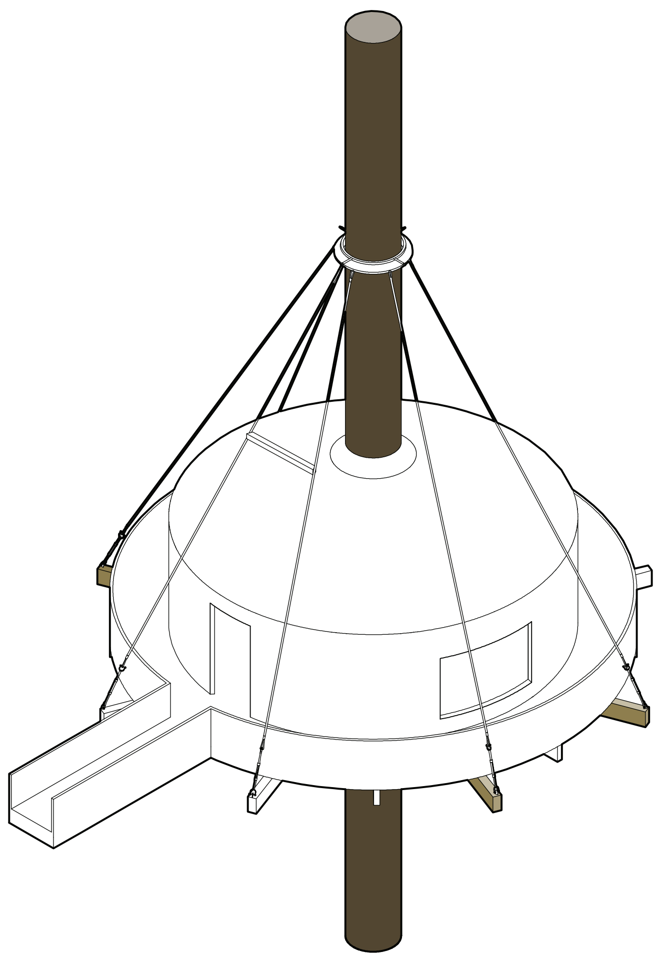


TAB Suspension System

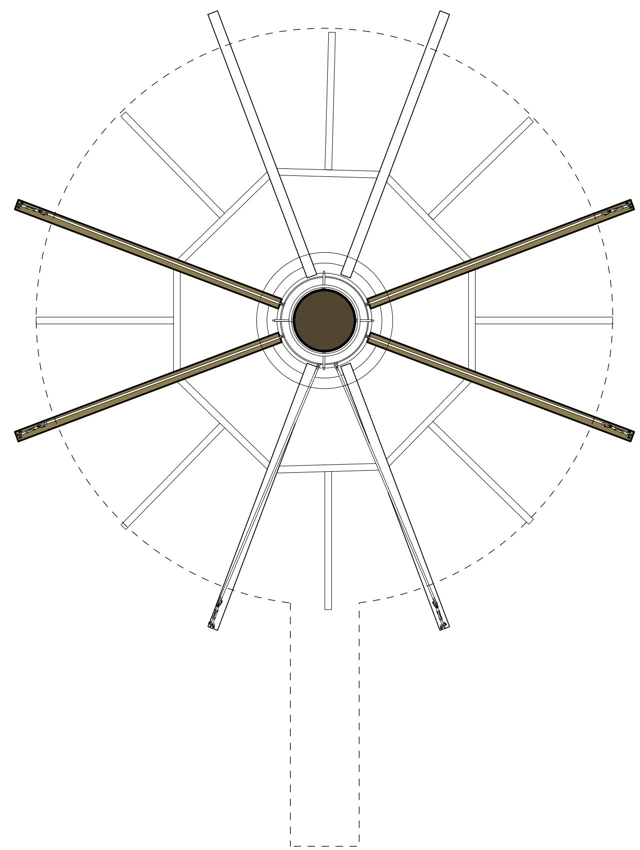
Uplift Arrestors for TABS

The Lofthaven | Artis Tree Treehouses| Spicewood, TX| 2013 | 350 Square Feet | Guest House| Cypress Tree |80' above valley

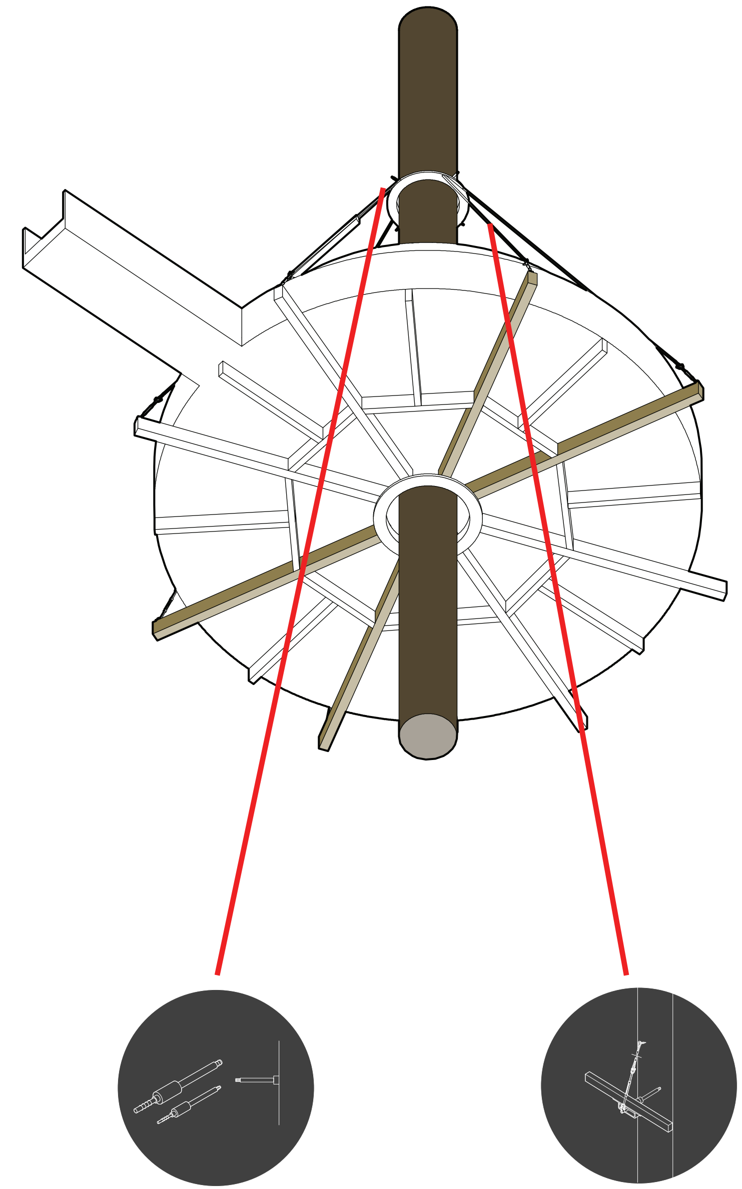
The Lofthaven is a single tree layout treehouse, the hardest to complete. The hoisting of beams, drilling of trees, and creation of the platform is a tall order in a single tree layout.



A “yurt” design built atop a deck attached to a huge cypress tree with a swinging bridge entrance. The treehouse was built by ArtisTree treehouse builders. The expansive canopy of cypress trees and our love for circular structures inspired this magnificent treehouse, The “Lofthaven”. It serves as a romantic getaway for outdoorsy couples.

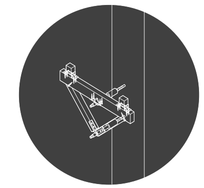
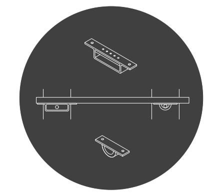
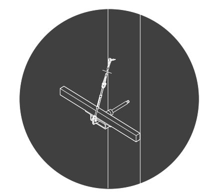


Finished Structural Plan
Showing Main Beam Supports



TAB

TAB Suspension System

	Location	Tree Type	Tree Layout Type	Square Footage	Program	Technology
Blue Moon	Washington	Tall Spruce Cedar	Multi	250	Lodging	
Ranch	Texas	Tall Oak	Multi	500	Retreat	
Yurt	Florida	Wide Cypress	Single	350	Guest House	

Treehouse builders with both single and multi-tree layouts. Both wide and tall tree typologies are used to attain the desired program of the 3 clients in the case study. Without the recent technology developments of tree fasting devices these new treehouses would not be a reality in the different regions of the United States.