

	Strands of History PO Box 6505 Tahoe City, CA 96145 530-583-1552	PRESS MATERIALS
		03 April 2019

COMPANY FACTS

Company Name	Strands of History, LLC
Location	Tahoe City, California
Where products are manufactured	Kings Beach, California
Time in business	October 2017
Number of employees	2
Collaborators	Bushey Ironworks https://www.busheyironworks.com Roundwood Furniture https://roundwoodfurniture.com
Website	Strandsofhistory.com
Social media	@strandsofhistory
Contact	Mary Zimmerman 530-583-1552 mary@strandsofhistory.net

FREQUENTLY ASKED QUESTIONS

Who Made the original Golden Gate Bridge Suspender Ropes?

John A. Roebling's Sons Company manufactured 205,900 feet or 1211 tons of galvanized steel suspender ropes for the Golden Gate Bridge. This is the same company that manufactured the suspender ropes for many suspension bridges including the Brooklyn Bridge, the George Washington Bridge. Roebling's wire rope helped make possible some of the most important technological achievements of the industrial age: telegraphs, telephones, electrification, suspension bridges, deep mines, big ships, elevators, and airplanes, including Charles Lindbergh's Spirit of Saint Louis and the Slinky!

How did Strands of History obtain the original suspender ropes from the Golden Gate Bridge?

In 1936, John A. Roebling's Sons Company manufactured 254 pieces of pre-cut suspender rope that they shipped from New Jersey to San Francisco; 83 pairs of suspender ropes on the main span and 22 pairs on each approach, all installed over the main cable. In 1969, during a comprehensive engineering inspection, significant corrosion was identified where the suspender ropes connected to the stiffening truss of the roadway. The Golden Gate Bridge, Highway and Transportation District concluded that they would undertake an ambitious effort to replace all of the suspender ropes in order to properly repair the damage. Such a replacement had never been done before on any suspension bridge. The replacement project took place from 1970 to 1976. The suspender ropes were replaced in three phases (Phase 1 replaced 97 pairs of ropes, Phase 2 replaced 30 pairs of ropes, Phase 3 replaced 123 pairs of ropes); on May 4, 1976, the last suspender rope was replaced. The Golden Gate Bridge, Highway and Transportation District originally retained over 20 miles of suspender rope for testing; eight of the longest ropes were retained for emergency repairs.

The contractor who performed the retrofit was responsible for removal of the original ropes, installation of the new suspender ropes (manufactured by US Steel) and disposal of the original ropes. As we understand it, he created a side company with a limited number of the ropes to sell small pieces as mementos. The majority of the materials were scrapped. After a couple of years, he decided to sell the business. The inventory changed hands we believe three more times before we bought into it. Bob had a long-time friend from college who acquired the business from his golf partner, who had bought it from

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the owner of a car dealership that used to make and sell the mementos, who it appears may have bought the business from the contractor who removed the original suspender ropes.

Prior companies only focused on creating the four inch memento pieces, whereas we wanted to make functional art, architectural fixtures and installations, and public art. We felt it's important to honor the people who had the vision, designed and engineered the bridge, as well as the men who built the bridge, 11 of whom died during the project. Our goal is to have sections of these historical ropes in public spaces for everyone living or visiting the Bay Area to appreciate. We were fortunate in that technology caught up with our dreams, and that we knew metal artists.

We did research and located the original schematics from John A. Roebling's Sons Company in Trenton, NJ that depict the unique lay and sizes of the individual 229 wires that validate the authenticity of the ropes. Every suspender rope has a unique wire pattern; its like a fingerprint of the Golden Gate Bridge.

In 2016, Tom Piatkowski, Bob's good friend of 40+ years, casually mentioned he had a second business selling mementos made from the original Golden Gate Bridge suspension cables (the suspender ropes). After hearing the story, we all discussed the many cool things that could be made from them, which led to a partnership with Tom to grow the business. Unfortunately, about eight months later Tom unexpectedly passed, and we took over full responsibility.

Where did you get the materials for the tables?

The original Golden Gate Bridge suspender ropes were manufactured in Trenton, New Jersey at the John A. Roebling's Sons Company in 1935. During the 1967-1969 Bridge inspection advancing corrosion was discovered at the connection between the roadway and the suspender ropes. Therefore, a major retrofit was undertaken to correct the connections which required the installation of all new suspender rope pairs manufactured by US Steel.

When possible, we only use wood that are eco-harvested, sustainably grown, and/or indigenous to North America. Some slabs are salvaged from downed trees at the end of their life cycle. After commercial trees age past their production stage, they are either cut down for firewood or salvaged for artisan projects.

The coffee table top is claro-walnut from an orchard that was located near Chico, California. We felt that the dark, almost black, grain pattern of the wood would really accentuate the wire pattern in the ropes.

The redwood burl that we use is also a salvaged.

Could you tell us about yourself?

We're both native Californians and had lived in the Bay Area for a number of years. During that time, we sailed in San Francisco Bay numerous times and had great views of the Golden Gate Bridge. We mainly thought of it as a stately embellishment to a lot of fantastic sunsets and a driving option to get into the City. That all changed in 2017, we both ended long careers in biopharmaceutical drug development to become owners of, and hands-on fabricators for, Strands of History. Creating art and designing furniture is pretty different than drug development but we learned to utilize transferrable skills. Some days we draw on our past experiences with start-up companies, such as identifying experts in the field, delegating responsibilities, and we learned a lot of new skills.

When we sought out help or advice, it surprised us how often we would hear a personal story about the Golden Gate Bridge or people's connection to San Francisco. That enthusiasm was the fuel to keep learning and to move our vision forward.

We took welding classes, read many books and articles about how the Golden Gate Bridge was built, history of steel, and metallurgy. We perfected how to remove and apply paint, learned to grind, polish,

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and wax metal. Then learning how about e-commerce and social media. After months of hard work and we were able to re-launch the company, complete with a newly designed logo and purpose. Our philosophy when we took ownership of the business, and these historical suspender ropes, was to create something that was beautiful, inspired, functional, and enduring. The memento pieces are simple yet iconic experiential display works. We want the furniture and interior design pieces to have architectonic flourishes reminiscent of the engineering and design found on the Golden Gate Bridge.

Who do you collaborate with and how did they get involved?

We work with Bushey Ironworks and Roundwood Furniture. Both groups are well-known in the Tahoe area and beyond for their innovative designs and attention to detail. When we moved the shop to Kings Beach, we were fortunate to be in the same building as Bushey Ironworks. The guys were so helpful when we were starting out, from operating the forklift to procuring steel. We saw their designs and really wanted to work with them. Jesse Bushey and his brother Aaron Bushey have been instrumental in transforming the salvaged steel ropes into statement pieces. Both brothers were introduced to blacksmithing in their home state of Vermont and took separate paths to learn the trade, pursuing lessons from expert smiths across the US and Europe. In 2010, Jesse and a partner struck out on their own forming Striker Forge. When Aaron arrived in California in 2012, he joined the team at Striker Forge and in 2017 they created Bushey Ironworks.

Jesse has had many significant projects as far afield as the Four Seasons hotel in Aman, Jordan, for which they built intricate and airy room dividers, and as close to home as the dozens of Tahoe houses that they have filled with a wide array of ironwork styles. Bushey Ironworks - where people come for both the functional and the beautiful; where the Bushey's and their highly skilled collaborators utilize the craft and the style that imbue artisan blacksmithing; where projects are unique and diverse.

Through the Bushey's, we met Andy Cline of Roundwood Furniture. Cline's name had been given to us by a number of people so when we were ready with our first table design, he had the perfect recommendation of wood species to compliment the forge-welded legs. Born and raised in Homer, Alaska, Cline spent his most influential and formative years in an environment where nature clearly served as one's teacher, guide, and wondrously powerful provider. In 1993 he moved to Tahoe where he worked as a free-lance wood artist creating exotic woven branch handrails. In 2000 he opened his own company Roundwood Furniture. With over 60,000 hours dedicated to learning and developing his craft, Cline has achieved mastery status in his work. In selecting wood for a project, Cline ensures that the wood is either eco-harvested, sustainably grown, or indigenous to the United States. Preferring to let the wood "speak for itself", Cline does not use any stain or grain enhancers.

What is your vision for Strands of History?

Strands of History will eventually be limited by the shrinking available inventory of the original Golden Gate Bridge suspender ropes. There are only so many feet of these ropes remaining, and we don't plan to expand to other bridge sources. That being said, our vision is to make these historical ropes available to both public and private organizations, as well as home owners, so that they can be appreciated by everyone. We plan to make limited runs of distinctive furniture utilizing the suspender ropes. Our designs are truly unique, and customizing options are available; incorporation of these historical steel ropes only adds to their allure. In addition to furniture, we have designs for architectural elements such as corbels, room dividers, and foot rails. The remaining rope pieces from our custom designs are used to make our 4- and 12-inch mementos. We sell these online and in select retail stores. Five percent of our sales from the mementos is donated to the SF Exploratorium to support STEM education for Bay Area youth.

Before 2017, did you ever think about making custom furniture or architectural details from historic steel?

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In a word, no. We’ve rehabilitated numerous pieces of salvaged furniture, up-cycled odd farm equipment like old water pump and barrel hoops and made chandeliers and other art out of vintage jewelry, but the large scale and technical complexities of this endeavor were entirely different. Who repurposes a bridge?

What type of furniture do you create?

We really like a quote from Karl Friedman Schinkel, “Use the best possible materials and reveal the qualities of those materials and the craftsmanship of their assembly.” That really is our mission statement. We apply thoughtful modern aesthetics infused with historical reverence, or as we like to say, “We build art that you can put a glass on.” Each piece created is a collaboration that starts off with, “Let’s build a...(for example) table.” We then discuss what type of table, is it a prototype to be scaled or a unique custom piece, what aspect of working with the ropes do we have to experiment with, what style of blacksmithing and forge work details could be used or developed, and so on. Often the decisions regarding the shape of the top and wood selection are made once the base is completed to artistically interlace and flow those elements together. Each person has a say, each person puts their artistic flair into the design to compliment the other contributions. Somehow, it all works out.

Could you give us information about the production process? Which equipment do you use? How long does it take to complete the process?

We start with sandblasting an 11-foot section of steel rope. The ropes are 2 11/16 inches in diameter, and weigh about 135 pounds (approximately 1 pound per inch). After sandblasting we use dental tools to remove any remaining lodged paint or debris. The ropes are then measured for production lengths and stainless-steel bands are crimped on the rope in the appropriate positions at 7000 psi using a custom-built hydraulic press. The ropes are then cut using a large chop saw with a 14” blade specifically engineered to cut wire ropes. Any remaining rope sections are later processed into mementos by grinding and sanding smooth the cut ends, polishing the ends and the stainless-steel bands with metal polish, and finally painting the rope pieces the iconic international orange color of the Golden Gate Bridge, or other finish requested by the customer. Each 4- or 12-inch memento piece takes roughly 2.5 – 3 hours to make. We spend a lot of time ensuring these pieces meet our high-quality standards for final appearance and artistic balance.

The sections destined for furniture or architectural elements follow a different path depending on how the rope will be used. If the design calls for forge welding, the section is placed in a mild-acid solution to remove the galvanized zinc. The piece is then heated and hammered, either with a hydraulic press or by hand, into the desired shape. Every design follows its own timeline. A small table base with a simple design could take seven to 10 days.

Timelines for table tops can range from five days to five weeks depending on type of wood, thickness, design, and finish.

What inspired you to use the old suspension cables in your furniture?

Our philosophy when we took ownership of the business, and these historical suspender ropes, was to create something that was beautiful, inspired, functional, and enduring. The memento pieces are simple yet iconic experiential display works. We want the furniture and interior design pieces to have architectonic flourishes reminiscent of the engineering and design found on the Golden Gate Bridge.

The type of art that most impresses us is when a material is coaxed into displaying opposing properties, like wood appearing fluid, metal appearing soft. We thought about the qualities of the suspender ropes and how to give them an opposing property. The ropes were designed to be dynamic and accommodate tension, so we fabricated them to be static and handle compression. This required exploring various

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techniques to maintain their structural integrity, as well as to preserve the unique lay of the wire, and their inherent attractiveness.

Since the suspender ropes had been vertical, we wanted to start with vertical applications, like furniture legs and supports. We've created pieces that orient the ropes horizontally.

We're fortunate to work with highly skilled and recognized artists and craftsmen that are located near us who were excited to work with this unique medium. Jesse and Aaron Bushey of Bushey Ironworks designed and created the steel base and showed us how forge welding could compress and stabilize the ropes while maintaining the beauty of their individual wires. Andy Cline of Roundwood Furniture suggested using claro-walnut for the top for its inherent beauty as the grain cascade waterfall seen on the edge mimics the flow of the wire ropes. The fact that the ropes and the walnut are about the same age (over 80 years old) just adds to the appeal of the table as it brings together two rare materials.

Why do the suspender ropes make such a good material for furniture?

The best thing about the suspender ropes is their iconic heritage. After that you have to appreciate the significant engineering that went into making them so you can best strategize how to work with them. This is very high carbon steel which makes it very hard to cut and to weld. The steel was designed not to distort, bend or break. All 229 wires are coated with zinc, so we have special handling, the ropes were painted with lead oxide, so we sandblast them, then wash with denatured alcohol. If not under tension, the ropes want to unwind so we have to crimp them with stainless steel bands at 7000 psi. In order to cut them, we use a specialized saw with a 14-inch abrasive blade. The steel is so hard that we only get five cuts per blade. Then we start the forge welding process where the experience and craftsmanship really pay off. You need to be able to uniformly heat the inner strands and not destroy the outer strands. Through all of these steps, you are wrestling with a piece of steel that weighs a pound per inch.

Fortunately, all of us that work on these projects are committed to the preservation of this historic steel. We've all stared at it, interacted with it, fought it, and finally understood it enough to work with it. We came away thinking about the type of art that most impressed us was when a material is coaxed into displaying opposing properties, like wood appearing fluid, metal appearing soft. We thought about the qualities of the suspender ropes and how to give them an opposing property. The ropes were designed to be dynamic and accommodate tension, so we fabricated them to be static and handle compression. This required exploring various techniques to maintain their structural integrity, as well as to preserve the unique lay of the wire, and their inherent attractiveness.

What was the most challenging part of working with the suspender ropes?

Metallurgy matters! These steel ropes were unique at the time they were manufactured in 1935 and continue to be so today. Their high carbon content (0.85% carbon) makes them extremely strong and very hard to cut or weld. Each rope is made up of 229 individual wires that are ten different sizes, arranged in seven bundles. Each wire and bundle have torsional energy that makes them want to unwind – sometimes forcefully. We crimp a stainless-steel band to the ropes with 7000 pounds of hydraulic pressure to maintain their form and shape prior to cutting or forge welding them. Because the wires are galvanized steel, prior to any application of heat, the zinc coating has to be removed to eliminate the health risks.

There's also the physical aspect of them- the ropes are an irregular surface and they weigh about a pound per inch.

What other materials do you use to build your furniture?

We want the furniture and interior design pieces to have architectonic flourishes reminiscent of the engineering and design found on the Golden Gate Bridge. We're fortunate to work with highly skilled

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and recognized artists and craftsmen that are located near us who were excited to work with this unique medium. Jesse and Aaron Bushey of Bushey Ironworks designed and create the steel bases and showed us how forge welding could compress and stabilize the ropes while maintaining the beauty of their individual wires. Andy Cline of Roundwood Furniture suggested using claro-walnut for the top of the coffee table for its inherent beauty as the grain cascade waterfall seen on the edge mimics the flow of the wire ropes. The fact that the ropes and the walnut are about the same age (over 80 years old) just adds to the appeal of that table as it brings together two rare materials. Cline has been fantastic at matching the character of the wood tops with the designs and coloration of the bases on all of our projects.

What was your favorite furniture that you have produced so far?

It’s hard to pick among the tables we’ve made so far, each of them has special attributes that draw you into them. While each of us has a different favorite, we all felt that the first table, the coffee table with the Damascus-style forged legs that went viral on Reddit, really blew our minds when it all came together, and it was so well received. Coupling the visual textures of those two rare materials resulted in a stunning piece.

Is there other furniture in the works?

Yes, the team is continuing to design and create both furniture and architectural pieces. In addition to private homes, we want to get these pieces of San Francisco history into public, commercial, and corporate spaces so everyone who lives in or visits the Bay Area can appreciate them. They’re really impressive pieces of history and engineering.

We also have interest in incorporating the ropes into architectural details such as stairway balusters, shelving supports, room dividers, bar rails and foot rails, and as corbels for fireplace mantles.

We also continue to evaluate opportunities for various public art works using the ropes. When they are allowed to unwind, they’re reminiscent of winterized trees. We’ve been playing around with that idea for a few months.

How does it feel to be part of the history of Golden Gate Bridge and give to its parts a chance to live in their new homes?

We do feel a sense of stewardship over these ropes. We’ve read so many books, professional papers, engineering reports, memoirs, and blogs about the Golden Gate Bridge, that we do feel like we have a responsibility to create designs with permanency. Our vision is to create designs that people can interact with just like when they supported the road deck.

We do our best at not wasting this historical steel. Remainder pieces are used for experiments in welding or making billets for forged details in the designs. When we do on-site market research, we also raffle or give away pieces of the ropes that don’t meet our quality standards for mementos.

What does Golden Gate Bridge mean to you?

The more we learn about who designed it, who built it, who maintains it, the people who’ve had family members or loved ones be the first to walk across it or ended their life there the more complicated the answer gets. Every time we pick a piece up or we finish a project, we can honestly say we could stare at that piece for hours because it is so complex. There are so many mind-boggling statistics about the bridge and engineering specifications that it really deserves the label “iconic.”

QUOTES

“We were quite overwhelmed by all of the positive reviews and interest we received after launching our prototype table.”

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“Working with these historic steel ropes isn’t easy, but when we see the end product, we feel like we’ve done our part to maintain the legacy of the Golden Gate Bridge.”

“We are always impressed with how many people have such a profound recollection or relationship with the Golden Gate Bridge and how they interact with the ropes.”

“We hope that our designs will find a way back into the public domain as an art installation or outdoor furniture.”

“Our focus as a company is on custom furniture and architectural works because we think its important to incorporate these historical ropes into public spaces, corporate and hotel lobbies, restaurants and bars so they can be appreciated by everyone who feels that special connection to one of the most famous bridges in the world .”