



by Metalcrafters LLC

VINE DESIGN #2 [FINAL PROPOSAL](#)

A rugged steel bicycle rack designed to have the appearance of vines emerging from, and re-entering the ground.

Materials and techniques employed by CustomerX are used to create a functional bicycle rack that reflects the environment of the park.

Pete Segar, Metalcrafters LLC

[2018](#)

Introduction

Local artist and Metalcrafters LLC owner, Pete Segar, has visited and been inspired by the CustomerX Art Park. The use of stone and steel materials to create outdoor organic figures inspiring life are shared by both CustomerX and the artist. Interestingly, Metalcrafters recently created and installed a commissioned custom bicycle rack made for Family Vision Clinic in Burnsville MN. The artist has a particular interest in the CustomerX bicycle rack project because of inspiration from both CustomerX and his recent FVC rack project. In this proposal, the artist describes the fundamentals of a well-designed and functional bicycle rack, in an organic form that is a natural extension of the CustomerX grounds, and also utilizes principles and methods inspired by CustomerX. This proposal meets or exceeds all the requirements outlined in the RFP.

Revisions to the original proposal are marked in blue for the reader's convenience. The artist has responded to constructive suggestions by defining potential contact areas for bicycles, and will ensure those are smooth and untextured to prevent scratching of bicycles. Additionally, a concern re. the strength of the vine structures is responded to by strengthening the connections of the vines near the ground, and adding additional "vines" to serve as cross-bracing members.

Artist Design Concept and Vision

Design Inspiration

CustomerX's interest in nature and creating organic forms from inorganic materials such as metal and stone has been a source of inspiration for Metalcrafters. This includes interest in utilizing unique textures and finishing methods to bring life and realism to these organic shapes, including the unique knock-down textured welding pattern used by CustomerX that are reminiscent of bark and will be employed in this project.

Segar is inspired to create a bicycle rack that has the appearance of living plants and vines found through the CustomerX park. Because this is the first sculpture that a visitor will encounter as they enter the park, it is critical that the bicycle rack itself must be a sculpture that reflect the nature of the park. And it also must have a clear connection to CustomerX and his work. This is achieved both by creating forms that mimic nature and also by utilizing materials and techniques used by CustomerX.

Mechanical Design of Bicycle Rack

While artistic vision is extremely important, the design must also be functional as a bicycle rack. Critical specs include ability to u-lock front wheel and frame of any size bicycle. Also important to be rugged and environmentally stable, safe and comfortable for users to interact with.

The planned design has been based on research found in latlon.org regarding the ideal dimensions of a public bicycle rack to accommodate the maximum range of bicycle dimensions. The curve in this shape allows a smaller bicycle to lock wheel and frame by positioning further to the right of Figure 1, compared with a larger bicycle positioned further left. This is also illustrated in the final design renderings. The lock is a relatively small 8"x4" lock.

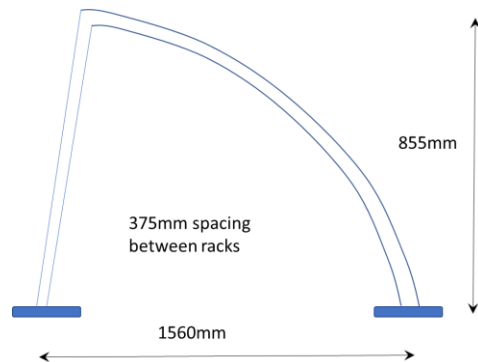


Figure 1) Idealized design and dimensions of a public bicycle rack

The rack structure is to be constructed primarily of #6 ($\frac{3}{4}$ ") steel rebar forming what appear to be 8 separate vine structures which allow up to 9 bicycles to be attached (including 2 mounted on the ends). While they appear to be independently rising out of the ground, they will be connected near and below the ground with a web of additional vines to provide structural support. #6 rebar is 1.5lb per foot, so the total weight is estimated to be 300-350lb.

Artistic Design, Materials & Finishes

With the idealized mechanical design in Figure 1 as a guide to ensure optimal function as a bicycle rack, the proposed design will be constructed to have the appearance of natural vines emerging from the ground, arching through the air, and returning to the ground (Fig. 2). Various gauges of steel wire will be used to create the roots of the vines and enhance it's organic appearance (Fig. 3). While the renderings show identical roots, the actual sculpture will have more natural variations. And the vines are shaped to reflect the idealized designs and dimensions in Figure 1, to allow both large and small bicycles to be securely locked (Fig. 4).

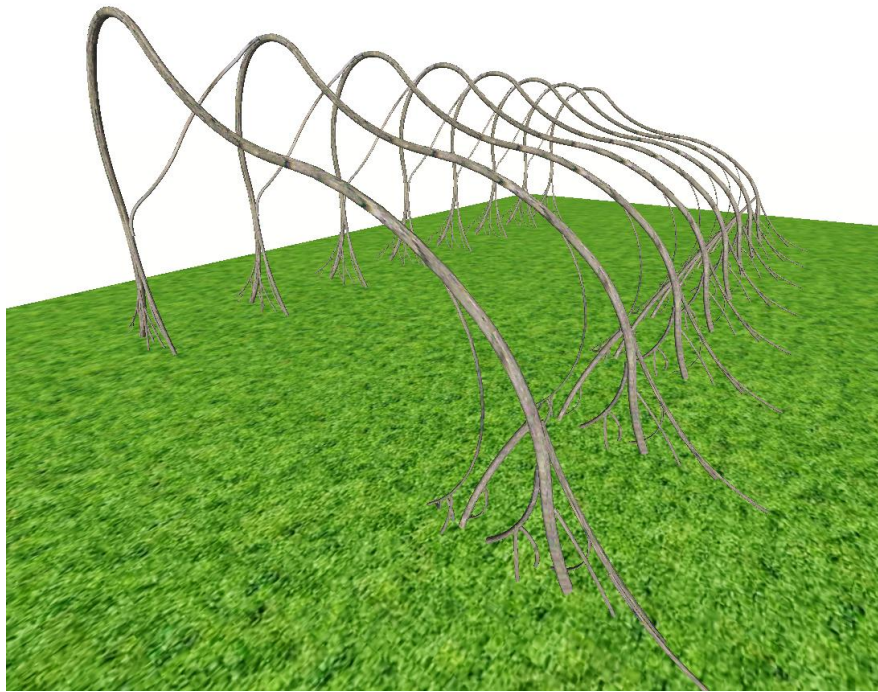


Figure 2) Rendering of vine-shaped bike rack design. 8 vines emerge from the ground, arch through the air, and return again to the ground. Other vines arch off the back forming cross-bracing. While they are all shown identical in this model, the actual will likely have some variation.

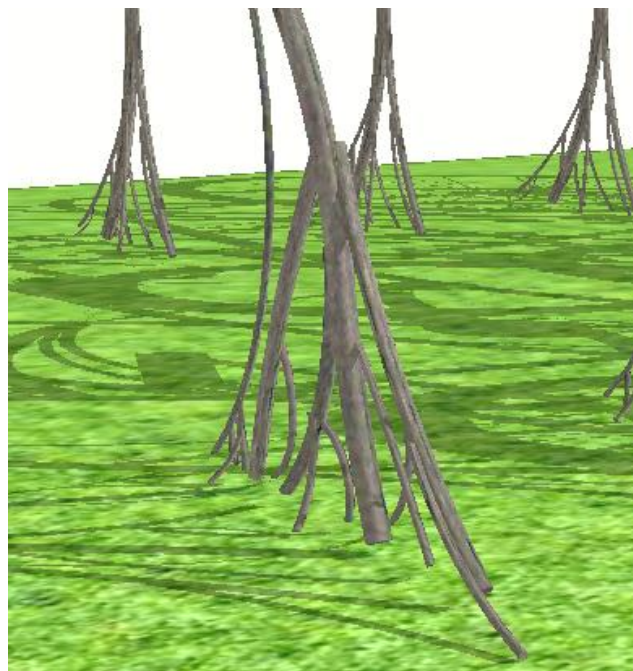


Figure 3) Close-up view of the vine structured base. The vines not only provide an organic look, but also serve to provide added structure to the rack.



Figure 4) Rendering of vine-shaped bike rack design illustrated with an adult and a child bicycle, both with standard u-locks. The sloped shape of the vine allows any size bicycle to be locked with a standard u-lock. Cross-bracing “vines” are designed to not interfere with the bicycle rear tire.

The main backbone of the steel rebar “vine” will be patterned using a technique employed by CustomerX referred to as “knockdown texture” on several of his sculptures that creates a texture reminiscent of tree bark (see Fig. 5). This is done by running welding beads along the length of the steel, and then knocking them down with a grinder as shown below. The artist has re-created this texture in his own studio and is prepared to provide a texture sample.



Figure 5) Example of CustomerX sculpture employing the knockdown texture method that creates a bark-like appearance. This will be used to pattern the main structures.

Regions on the “vines” which may contact the bicycle while stored, will be kept smooth and free of the knockdown texture. The attached drawing shows a cross section of the rebar and where the rebar will be smooth in bicycle contact points. Areas where bicycle will not contact may be textured in these areas.

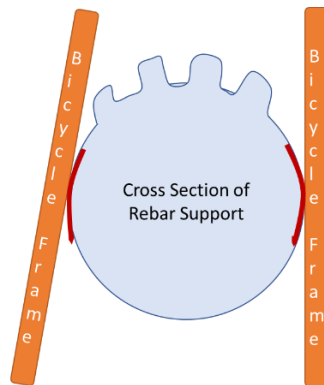


Figure 6) Cross-section of rebar showing location of knockdown texture in areas where bicycles may contact the bike rack.

The steel will be finished using a traditional method that leads to a natural steel look that is environmentally stable. The method uses a mixture of beeswax, linseed oil and turpentine which is coated and then torched to both darken and further stabilize the oxide to prevent rust from rubbing off on users. The artist plans a free annual visit to clean and re-coat the metal. No other maintenance should be required.

Dimensions

The overall dimensions are outlined below in Figure 6. The 17'x17' triangular space defined in the RFP is more than adequate to allow space for the rack when fully loaded with up to 9 bicycles.

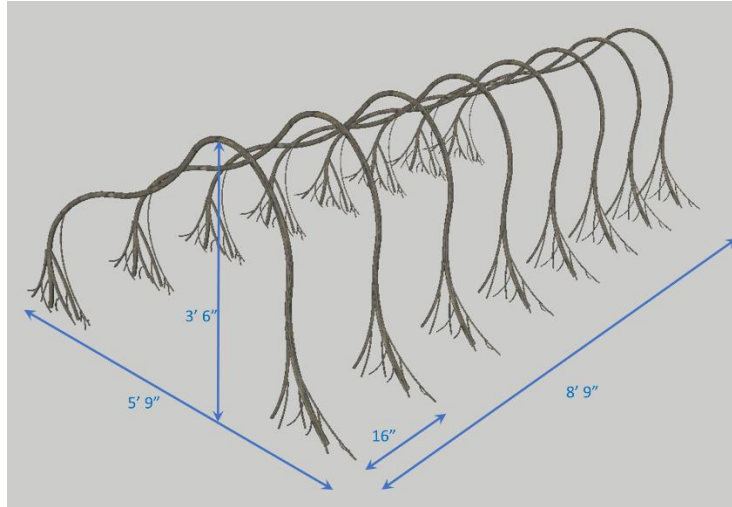


Figure 6) Overall dimensions are 8'9" wide by 5'9" deep x 3'6" tall. Rack sections are spaced apart 16".

Note: cross-bracing is not shown in this image.

Installation

Minimal on-site fabrication will be necessary. Welding, grinding, finishing will all be done in the artist studio, and the entire structure will be delivered on a trailer. The final installation and setting in the ground will be done on site and will require digging shallow (6") trenches filled with compacted gravel to hide support rails that give the structure added strength, and provide drainage to prevent corrosion of the base. The support rails are then covered with dirt and seeded. The existing grass-covered gravel surface will provide a good natural look for the sculpture, and will also prevent bicycles from rolling fore/aft. The artist owns a trailer and other equipment required for installation.

Price Estimate

Metalcrafters uses a costing model based on time and materials including overhead and consumables to provide price estimates. The price model comes in just below the allowed stipend, allowing the artist to commit to performing 3 yr of annual maintenance as part of the total \$1,400 stipend. No allowance is required for travel since the artist is local.

Steelcrafters LLC Price Quote				
Caponi Art Park Bicycle Rack: Vine Design				
Materials				
	Item	#	Price	Price
	Rebar, 16' 3/4"	10	\$ 16.00	\$ 160.00
	Steel Rod, 5' 1/8"	20	\$ 3.50	\$ 70.00
	Steel Rod, 5' 1/4"	20	\$ 5.00	\$ 100.00
	Steel Rod, 5' 3/8"	10	\$ 8.00	\$ 80.00
	Gravel, Dirt, Seed			\$ 150.00
	SUBTOTAL			\$ 560.00
Consumables				
	Welding wire and consumables			\$ 50.00
	Grinding wheels			\$ 10.00
	Linseed Oil			\$ 15.00
	Welding gas, propane			\$ 25.00
	SUBTOTAL			\$ 100.00
Labor				
	25 hr @ \$20/hr			\$ 500.00
Overhead (10%)				
				\$ 116.00
Tax (7.125%)				
				\$ 90.92
GRAND TOTAL PRICE				
				\$1,366.92

Table 1) Metalcrafters cost model. For the installed product, \$1,201.94 would be the standard price. With inclusion of 3 years of service support, the total is equivalent to the stipend of \$1,400.

Timeline

The following timeline begins with the formal acceptance by CustomerX Art Park. Any changes must be mutually agreed to and may impact the timeline. Additionally, the bicycle rack cannot be installed until the ground has thawed in the spring. Based on the timeline in the RFP document, there will be no issue installing in May as planned.

• Final Design Detailing	2 weeks
• Material Order and Receipt	4-6 weeks
• Fabrication	4-6 weeks
• Installation	2 days
TOTAL TIME	13-17 weeks

Guarantee and Other Contractual Terms

Metalcrafters, LLC will perform any repairs at no cost for damage as a result of safety, workmanship or design flaws for a period of 3 years. Metalcrafters also agrees to other stipulations outlined in the RFP document.

Metalcrafters LLC (Resume)

About Metalcrafters LLC

Metalcrafters is owned by Pete Segar, a local artist operating from his personal studio and the Chicago Avenue Fire Arts building in Minneapolis. The company is newly formed, but Segar has been creating stone and metal art works for 4 years. He has a passion for using mixed inorganic materials such as metal and stone, and creating unique shapes, textures and finishes to add visually interesting and realistic effects. Segar has a Ph.D. in chemistry and a scientific and business background that has been useful creating unique finishing and patterning methods.

Fabrication Methods

Segar has employed a wide variety of fabrication methods in previous projects, and Metalcrafters LLC owns most of the equipment.

- Welding: MIG, TIG, Oxy/Acetylene and Stick Welding
- Plasma Cutting
- Laser Cutting (through business partner)
- Bending, forming, grinding, patterning
- Stone grinding, drilling and setting
- Unique wood finishes including Lichtenberg patterning (high voltage electrode burning)

Previous Projects

Original art works include steel, stone and other materials hand crafted into wall hangings, indoor metal sculpture, furniture, and outdoor sculpture. His first commercial project under Metalcrafters LLC, was a custom bike rack for Family Vision Clinic in Burnsville. The rack is shown in the gallery section.

References

Carol Risdal, Office Manager, Family Vision Clinic, Burnsville MN

Contact Information

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Metalcrafters Gallery

The works outlined below are primarily personal works done by Pete Segar. The exception is the Family Vision Clinic bicycle rack, which is the first commercial work that was recently installed by Metalcrafters. While photos are not professional quality, the artist is willing to bring samples of select works to CustomerX Art Park if requested.

Family Vision Clinic Commissioned Bicycle Rack was made to the specifications of and cooperatively designed with FVC. They were striving for a relatively conservative design reflective of their optometry business. Their logo is overlapping FVC letters, which was recreated in 3D in the panel of the bicycle rack as shown on the bottom right picture. The stainless steel panel was patterned using a method favored by the artist. The design was intended for only 2-3 bicycles per the customer's request.



Steel Fish Wall Hanging Collection: These Minnesota fish were inspired by fish photos, plasma torch cut, and patterned with a grinder to reflect the natural patterns of the fish.



Salvador Dali Wall hanging Collection: A series of steel re-creations of the artists favorite Dali sculptures includes Woman with Drawers shown below. Others include Lobster Phone, Elephants, Surrealist Angel.



Rock Cairn is 6 feet high.. It is placed near a bus stop, thus for safety it has 8 feet of rebar running the entire length, and is set in 4-foot concrete footings.



Garden Tree Sculpture: a multi-layer tree fabricated by plasma cutting. The burnt edges from the plasma cutting were preserved. The tree is patterned and clear-coated for rust protection (2yr outside).



Water-Inspired Table-Top Sculptures reflect the artists love of the water and waves. These are indoor table top sculptures the artist made for his personal collection while investigating methods for shaping and forming steel into complex shapes.



Garden Columns: 4" steel tube, laser cut, and filled with river stones from the artist's property. These are special to the artist because Metalcrafters was formed after repeated requests from visitors to purchase the columns. The columns are naturally passivated and no coating has been employed.



Steel and Copper Table: Note the root-like detail on the base which is a much simplified version of what is planned for the CAP bicycle rack design. The CAP design will employ several different gauges of steel rod and will be more deliberately made to reflect natural roots. The top is a beautiful acid etched copper , which is unfortunately not clear in this image.



Steel and Pine Bar Table and Chairs. This original design uses Z-shaped steel structures patterned with an industrial finish. The wood is patterned using the Lichtenberg technique that employs high voltage electrodes to burn a lightning-bolt fractal pattern into the wood. Functional beauty.

