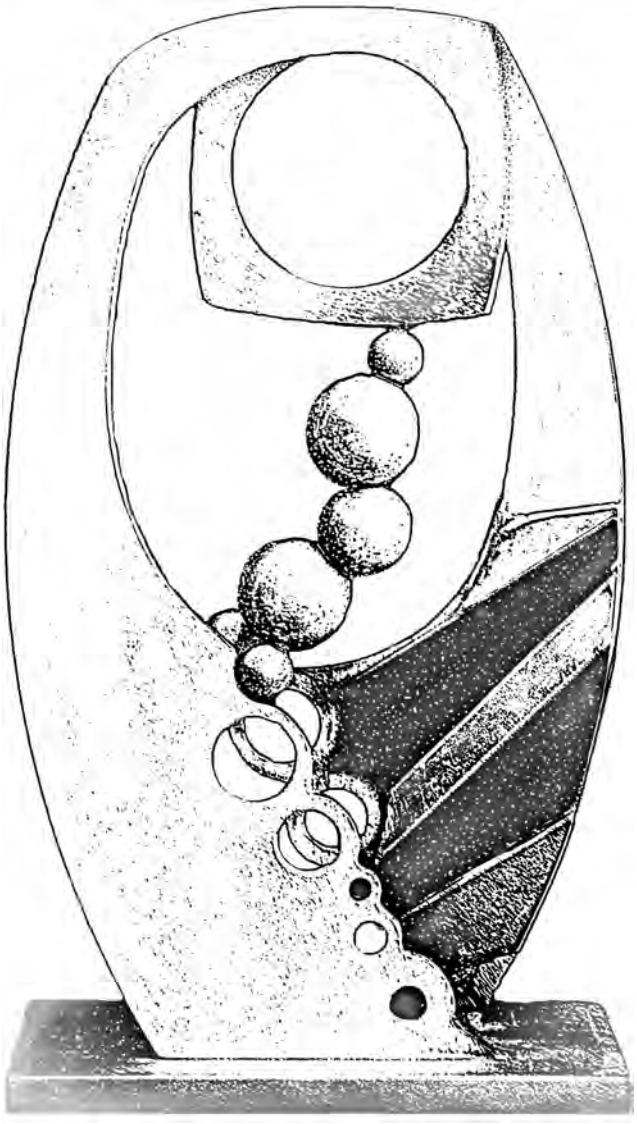
Closed Loop

Proposal for the BSU Geothermal Public Art Project

Submitted by Matt Grover
August 2014



Throughout history the search for sources of energy has shaped the face of cultures and societies as well as the face of our environment. Boise has been afforded a unique resource in its geo-thermally heated aquifer. This naturally occurring, clean energy source has been an integral part of Boise's history since its first inhabitants, Native Americans, utilized the hot water percolating from springs along the foothills. Today Boise has four independent geothermal heating districts, with the Boise City Geothermal Heating District being the largest, and the largest of its kind in the country. About 300 million gallons of naturally heated 175°F water are pumped each year through its almost 20 miles of pipe to heat 5.2 million square feet of building space. After the water passes through the system it is re-injected into the geothermal aquifer. This closed loop network is unique to the Boise City Geothermal District and ensures the sustainability of the system.

Now, more than at any other time in history, the importance of renewable and sustainable energy systems has become apparent. The sculpture *Closed Loop* represents and celebrates a Boise contribution to better solutions for energy: The Boise City Geothermal Heating System.

The sculpture

Closed loop is an eight foot tall stainless steel sculpture on a two foot high concrete base. With two sides that meet on top in a spiral, it depicts a naturally occurring artesian geothermal hot spring with its hot water, represented by cut out circles turning to solid spheres, rising through a fault line. The darker steel striations suggest layers of granite, basalt, rhyolite, and sandstone. The depiction of this geology shows the origin of the geothermal process here in Idaho: that, contrary to what most people think, it is the decay of granite deep within the earth that produces heat to warm the aquifer, not magma. The outer, upward curving arms represent our interface with the natural geothermal process, extracting hot water up through one arm and sending it through a square spiral. The square shape represents

building space, and the spiral a heat exchanger. Finally, once the benefit of the geothermal water is utilized, it is sent back down the other arm to be re-injected into the geothermal aquifer, thus closing the loop.

The unique design of *Closed Loop* has many facets. It can stand alone as an interesting art piece but it can also draw observers in, as it looks different from every angle and side, and invites them to explore and see something new each time they pass it. This open invitation to explore provides an opportunity for viewers to seek out and learn more about Boise's geothermal past and present.

Through this broader knowledge and understanding, greater respect and value is placed on the geothermal resources available to Boise.

Thank you to Boise State University, Boise City Public Works Department, and the Boise City Department of Arts & History for the opportunity to create this public art piece.

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Fabrication

After engineering analysis, fabrication of *Closed Loop* will begin with 11 gauge (.125") stainless steel sheets CNC laser cut into the shape of each large side. The pieces will then be welded into 2.50" thick hollow, internally supported, box sections with the edges and insides of cut circles made of rolled 2.50" wide, .250" thick stainless bar. The two sides will be joined by welding at the spiral on top so it will appear to be one solid piece. All welds will be dressed and the entire stainless section will be finished with a buffed satin finish. The steel strips representing rock layers will be cut from mild steel and left to age naturally to look like layers of the earth. They will be attached with mechanical fasteners (screws) on stand offs spacing them slightly away from the stainless steel and screw heads will then be welded and ground to prevent removal. Spheres will be of hollow 10 gauge steel, threaded and welded together. They will be welded onto posts on the stainless structure, then primed and painted with automotive paint. The sculpture will sit on a 4.5' by 2.5' concrete base that extends two feet above ground level. Pea gravel or other material recommended by BSU is to be placed around base after grading and concrete work is finished.

Location

The recommended location by the city and BSU is still pending final approval and is at the intersection of Capitol Blvd., the greenbelt on the south side of the Boise River, and the BSU campus, on the triangle shaped patch of grass where now lies the "old" BSU sign. The exact spot of the sign would be the ideal location for visibility to motorists entering downtown on Capitol Blvd. as well as for greenbelt users. Removal of this sign has not been approved yet either, so an optional location would be closer to BSU in the same general grassy area.

Maintenance

With all materials being of a very durable nature, *Closed Loop* should require very little to no maintenance, aside from normal grounds keeping from BSU.

Additional Features Recommended

Informational signage written in conjunction with the Boise City Public Works Department about the geothermal system in Boise and placed on a post near the sculpture along the greenbelt would greatly add to the public value of this art project. Some examples are the sign about the Natatorium along the greenbelt and other historical markers installed by the city about our parks and river.

Timeline

Fabrication drawings and engineering analysis	one month
Purchasing materials, CNC work, fabrication	three months
Site prep, concrete work and installation of sculpture	spring 2015

Budget

Artist Fee		$ 3000.
Engineering drawings, CAD files		$ 500.
Structural engineering		$ 800.
Materials and CNC work		$ 5000.
Labor for fabrication		$ 7000.
Site prep and concrete foundation work		$ 3500.
Insurance		$ 1000.
Transportation and installation		$ 1200.
	Total	$22,000.

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