

## 2017 Summer Undergraduate Research Fellowship (SURF) Program

### Faculty Projects

#### Project Number 1: Biogeochemical Cycling in Pacific Northwest Forest Ecosystems

Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Abir Biswas	biswasa@evergreen.edu	(360) 867-6433	3
Project Description			
<p>This project seeks students working on aligned studies investigating nutrient and trace metal cycling in forest ecosystems in the Pacific Northwest. The SURF student(s) would contribute to analyses of samples that have been collected in plots across long-term forest research plots at Mt St Helens and possibly within the Evergreen Ecological Observation Network (EEON). The samples are related to ongoing studies of (i) phosphorus availability and cycling in old-growth forests and adjacent recently clear-cut forests in the tephra-fall region of Mt St. Helens, or (ii) tree-species-specific mercury inputs to stream ecosystems in 2nd growth temperate rainforest (within EEON). Faculty have additional on-going projects related to mercury and phosphorus cycling at these sites and backgrounds of students could support expansion of the ongoing research projects at either site.</p> <p>Students will have significant responsibility in conducting careful and detailed sample processing and sample analyses in the laboratory. Students with prior experience in the laboratory, or analytical experience, or an interest in developing these skills would be preferred. Students are likely to be asked to support or conduct analyses of samples for mercury content (using the Nippon MA-3 at Evergreen) or for phosphorus and other nutrient content (by ICP-MS, using Evergreen's Perkin Elmer Elan DRC-e), and prior experience with either or both instruments would be particularly relevant. Ideally, students would be interested in developing analysis skills over this summer (and hopefully into the future), with the end-goal of working toward producing paper(s) that will be submitted to peer-reviewed journals in the future.</p>			
General Expertise Required of Fellowship Applicants			
<p>Potential researchers should have lab experience (ideally within programs focusing on geology, soils, or chemistry), strong skills in scientific writing and working with primary literature, and be able to commit 20-40 hrs/week to this project. This project can support students at intermediate and advanced levels of study, and perhaps beginning-level students-- students ideally will have prior experience in the laboratory, or analytical experience, through Evergreen coursework or other research opportunities. Interested students are strongly encouraged to contact the faculty (Biswas) directly to discuss how their academic backgrounds and/or previous research experience fit with these studies and would allow them to be successful in this research framework.</p> <p>While training to use the mercury analyzer can be conducted in the summer, ideally students would either be trained on and/or have prior experience with analyses of samples for mercury content (using the Nippon MA-3000 at Evergreen) or for phosphorus and other nutrients (by ICP-MS, using Evergreen's Perkin Elmer Elan DRC-e).</p>			
Responsibilities of Fellows and Knowledge and Experience To Be Gained			
<p>Students will have significant responsibility in conducting careful and detailed sample processing and sample analyses in the laboratory. Students with prior experience in the laboratory, or analytical experience, or an interest in developing these skills would be preferred. Students are likely to be asked to prepare small soil and/or litter samples for laboratory analyses and attention-to-detail and detailed laboratory notes and very important. For the litter-mercury study, students may also need to sort litter samples—in which case training will be provided. Students would ideally support or conduct analyses of samples for mercury content (using the Nippon MA-3 at Evergreen) or for phosphorus and other nutrient content (by ICP-MS, using Evergreen's Perkin Elmer Elan DRC-e), and prior experience with either or both instruments would be particularly relevant. Ideally, students would be interested in developing analysis skills over this summer (and hopefully into the future), with the end-goal of working toward producing research paper(s) that will be submitted to peer-reviewed journals in the future.</p>			
Anticipated Progress on the Research Agenda			
<p>The anticipated progress will depend on the backgrounds of the students (as well as the number of students) seeking to work on this project.</p> <p>If student(s) with prior experience using Evergreen's ICP-MS join the project, we will conduct intensive analyses of phosphorus availability in Mt St Helens tephra and soils. If student(s) with prior experience using Evergreen's mercury analyzer join the project, we will focus on intensive analyses of litter samples collected in litter traps over EEON streams over a recently-completed year-long study. In both cases, with 1 student a subset of the samples will be analyzed, and with additional students we will be able to complete analyses of the full set of samples we previously collected.</p>			

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Please note that if 2-3 students with different backgrounds joined the project, they would join a collaborative laboratory environments wherein they would be expected to take the lead on their individual "project" while simultaneously support the other lab members in making progress on their projects. This lab-intensive research lends itself well to multiple students working together developing laboratory and analytical skills. These projects represent interdisciplinary work with other Evergreen faculty (Mt St. Helens with Fischer; EEON stream with LeRoy) and completion of these analyses is required to make progress on (and complete) the respective projects.

#### Additional Information

The faculty on this project will work in collaboration with the student(s) on these projects, though students are expected to be comfortable working independently in the laboratory. Faculty will provide necessary laboratory training for the research projects and will meet with the student(s) weekly to reevaluate project design and progress. Meetings early in the season will be particularly important to set up the research designs, schedules, and appropriate use and access to equipment.

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#### Project Number 2: Changing Social Movement Rhetoric and the Inertia of Language

Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Lori Blewett	blewettl@evergreen.edu	(360) 867-6590	2
Project Description			
<p>I am currently working on a rhetorical history project aimed at identifying key moments of rhetorical innovation (particularly lexical innovation) in specific strands of social movement discourse (women's movements, black liberation movements, and queer rights movements). The project aims to pair these changes with their political antecedents: investigating how the innovation re-framed social perceptions and why it was seen as strategically necessary or beneficial at the time. We will document lexical innovation using Google Ngram research tools and rhetorical frame analysis, supplemented with a review secondary historical literature.</p> <p>New word usage by social movement activists is generally seen as part of a larger rhetorical strategy intended to challenge dominant ways of speaking, thinking, and acting. But such innovation may indicate other political dynamics. It may show that the goals of a movement have shifted or advanced. It may be a response to opposing ideological forces that have co-opted or neutralized earlier rhetorical frames. It may represent a major paradigm shift in how activists understand their reality. It may arise almost by chance or it may be carefully cultivated by social movement leaders, lawyers, or educators.</p> <p>Regardless of why it catches on, lexical innovation does not suddenly replace other ways of thinking and speaking. It exists alongside older discursive frames, becoming dominant in some areas of society but not others. To some listeners, rhetorical innovations appear to be jargon or mere "political correctness." For others, a lack of contemporary usage appears to indicate explicit support for an oppressive status quo. An underlying goal of this research is to help readers understand and recognize both the purpose of innovation in social movement discourse (past and present) and to better prepare themselves for contexts in which the inertia of language is an obstacle to mutual understanding and progress.</p>			
General Expertise Required of Fellowship Applicants			
<p>Student fellows should have advanced analytical reading skills, with the ability to both scan large amounts of text quickly and engage in close reading to identify nuanced shifts in rhetorical framing and word usage. Experience analyzing primary texts through previous studies in rhetoric, linguistics, literature, history, or text-based qualitative research methods is preferred. However, a lack of experience in these areas may be offset by a strong background in social movement history or theory.</p> <p>Intermediate level skill in quantitative reasoning and skill in the use of computer-based statistical graphing programs is also preferred. Comfort with basic statistical reasoning is required. Before applying, students should familiarize themselves with the online Google Books Ngram Viewer to assess their level of comfort in learning to use this tool.</p> <p>Strong library research skills are required for this fellowship, including the patience and persistence necessary to track down primary source documents and the ability to quickly assess and document the relevance of secondary literature.</p>			
Responsibilities of Fellows and Knowledge and Experience To Be Gained			
<p>Students will use Google Ngram tools and analytical text-coding techniques to document patterns of lexical innovation in historical social movement rhetoric. Google Ngram aggregates data on word usage in a specified corpus of digitized documents. The Ngram Viewer provides information about the frequency of word usage, and it points researchers toward sources used in compiling the data, but it offers no analysis of contextual meaning. Figuring out when usage reflects changes in movement discourse is an interesting puzzle, requiring analysis of multiple source documents. Students will be asking: what were the key linguistic innovations of a particular period, what were the origins (if known), and what did the words or phrases mean at the time? Although students will not be focusing on theoretical or political questions about usage, they are likely to find clues to the rhetorical goals of movement rhetors in their analysis and coding of primary sources. Students will also conduct secondary literature reviews of scholarly writing on the rhetoric of specific periods. These secondary sources will help direct students to commonly recognized key terms and seminal texts as they start their Ngram investigations.</p> <p>Student fellows in this project will increase their understanding of primary social science and rhetorical studies research; they will gain skills in qualitative and quantitative text analysis; and they will expand their knowledge of social movement history and rhetoric.</p>			
Anticipated Progress on the Research Agenda			
<p>I expect each fellow to be able to investigate and document the primary rhetorical innovations associated with at least one major historical time period of one social movement, such as the innovation of civil rights and integrationist discourse leading up to and through the civil rights phase of the black liberation struggle. Rhetorical developments are "messy" so the</p>			

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more active and complex the particular period of social movement activity, the more challenging it will be to disaggregate data and accurately describe innovation. Each additional student will expand the number of historical time periods covered. Two students should be able to cover early and middle phases of a social movement (e.g. abolition and civil right, first wave and second wave feminism, etc.). One student may be able to cover one period, but because innovation occurs in relation to previous rhetorical conventions and social conditions, and because I am looking at trends over time, there is greater efficiency in working on two or three phases of a movement simultaneously.

### Additional Information

I encourage interested students to contact me before submitting their application.

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#### Project Number 3: Field and Laboratory Studies of Nitrogen-fixing Moss-Cyanobacteria Symbiosis In Puget Sound Prairies Of Western Washington

Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Lalita Calabria	calabril@evergreen.edu	(360) 867-6415	2

#### Project Description

In this project, fellows will research nitrogen-fixing (N<sub>2</sub>) moss-cyanobacteria symbiosis of south Puget Sound prairies. Our research group at The Evergreen State College recently discovered moss-cyanobacteria associations in common prairie mosses in Puget Sound prairies of western Washington using an acetylene reduction assay as a proxy for N<sub>2</sub>-fixation and confocal fluorescence microscopy. During summer 2017, we plan to continue with the examination of seasonal patterns and environmental factors that influence N<sub>2</sub>-fixing moss-cyanobacteria symbiosis on Puget Sound prairies.

Fellows will participate in field and laboratory studies of moss-cyanobacterial symbionts. Data collection in the field will include recording light, moisture and temperature data of moss mats, collecting moss and soil samples to examine nitrogen-fixation rates and nitrogen deposition. Data collection in the lab will include analyzing moss samples collected in the field via acetylene reduction assay and soil samples using a discrete analyzer and/or elemental analysis. Fellows will also become proficient with using the campus GC-MS instrument for quantifying N<sub>2</sub>-fixation in our samples. This project has the potential to influence area conservation and management decisions for PNW prairies and to advance our understanding of an otherwise unknown source of biological nitrogen fixation for the Puget Sound prairie ecosystem.

#### General Expertise Required of Fellowship Applicants

Fellows should have coursework including field identification of bryophytes and experience with ecological field sampling and data collection. Fellows should also have at least one year of college level biology and chemistry lab coursework. Proficiency with using both compound and dissecting microscopes is required. An operator's license on the campus GC-MS is required. Microbiology coursework, including labs would also be beneficial but not required. Strong scientific writing skills and familiarity with statistics and data analysis would be very helpful, but faculty is willing to work with potential fellows to improve skills in these areas. Interested students are strongly encouraged to contact the faculty directly to discuss how their academic backgrounds and/or previous research experience fit with these studies and would allow them to be successful in this research framework. The position requires a commitment of 20-30 hours/week.

#### Responsibilities of Fellows and Knowledge and Experience To Be Gained

Fellows will be expected to spend approximately 4-6 days a month in the field collecting samples and conducting field experiments at multiple prairie sites, where they will gain experience with a variety of sampling methods for collecting environmental data. Fellows will also learn methods for collecting soil and vegetation samples for the purposes of analyzing nitrogen content. Fellows will spend approximately 10-15 hours a week in the lab, processing and analyzing samples using an acetylene-reduction assay and quantifying nitrogen fixation rates of samples on the GC-MS. The fellows should expect to spend 2-4 hours per week with data entry and analysis. The last few weeks of the fellowship may require additional hours for data analysis and writing up their results for peer-reviewed publication. The fellows will be expected to work independently for some part of the time spent in the lab and the field. However, faculty will provide training and regularly meet with fellow(s) to troubleshoot data collection, analysis and writing progress.

#### Anticipated Progress on the Research Agenda

Last year I requested two fellows, but only one was allocated to this project. With one fellow we were able to achieve the majority of our research goals in addition to making some exciting ecological discoveries. However, our work last summer also underlined the complexity of the phenomena we are studying. Two fellows would allow us to expand our studies to include the analysis of more environmental parameters and to collect data from a greater number of field sites and plots, providing a more robust sample size. This would require more data analysis and instrumentation; splitting this work between two fellows would allow for more samples to be processed in a shorter amount of time so that fellows could focus more time on higher-level learning opportunities, such as developing new research questions, data interpretation, and scientific writing. The research tasks for two fellows would be divided up as follows:

Fellow 1: Continue with examination of seasonal fluctuations of N<sub>2</sub>-fixing moss-cyanobacteria symbiosis using acetylene reduction assays and GC-MS. Add additional prairie sites and more samples per site. Complete confocal microscopy counts for target moss samples to correlate with N<sub>2</sub>-fixation rates.

Fellow 2: Analysis of nitrogen content of moss and soil samples using the Discrete Analyzer. Focus on detecting correlations between anthropogenic sources of N-deposition and the N<sub>2</sub>-fixing capacity of the moss-cyanobacteria association.

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### Additional Information

This is an ongoing research project and students who participate in the summer fellowship may have the opportunity to continue with the project during the 2017-2018 academic year through advanced undergraduate research (see academic catalog). There may also be opportunities to contribute to the preparation of a manuscript describing the research findings to a peer-reviewed journal and to attend a regional meeting during Spring 2018 to present research in the form of a poster or a talk.

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#### Project Number 4: Hegel's End of Art Thesis and the Political Afterlife of Art in Craft and Tactile Sensibilities

Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Kathleen M. Eamon	eamonk@evergreen.edu	(360) 867-6850	1

#### Project Description

I have been invited to contribute a chapter to an edited volume, Hegel's Philosophy of Art and its Place in the Modern State, on Hegel's famous "end of art" thesis, its relationship to his political thinking, and its contemporary resonances. Hegel reads the European world during the emergence of capitalism and industry as divided into two realms: the "spiritual" realm is where he locates art, religion and philosophy, and the "objective" realm is organized as the modern state. Hegel also famously claims that "art is, and remains for us, on the side of its highest destiny, a thing of the past," assigning the real work that was once done by art to the rational modern state. The edited volume to which I will be contributing will be an investigation of that tension in the context of 20th century and contemporary art and politics.

Hegel's "end of art" thesis echoes in Marx's later claim that "all that is solid melts into air." Works of art no longer represent the promise that our sensuous needs will be reconciled with our spiritual ones; they now represent the loss of that promise. Instead of that of a brighter future, art communicates in registers of memorial and mourning. I want to investigate two different histories that can be understood as tending to the "remains of the sensible," to the loss as it appears at the center of a dominant discourse in and about art, and to its uncanny appearance in a second, less publicly visible but no less active sphere of those who were never included in the (now voided) promise of political and artistic agency. Themes will include: histories that formalist criticism of the 20th century missed, by design, of work in "folk" and "craft" registers; the gendered implications of Hegel's claims about art and recognition; the position of artists both positioned at the margins but also celebrated precisely for their "particularization," and tactile sensibility as offering a counterpoint to aesthetic sociability grounded in the scopic.

#### General Expertise Required of Fellowship Applicants

For a successful collaboration, the student should have completed some substantial study of philosophy or critical theory, feel comfortable with difficult texts, be interested in developing research skills in the humanities and contemporary art and criticism. A sense of 20th century art desirable but not required.

#### Responsibilities of Fellows and Knowledge and Experience To Be Gained

By the beginning of the summer, I will have laid out my initial work with primary theoretical sources (Hegel's Lectures on Aesthetics and Philosophy of Right, Anni Albers's Selected Writings on Design, T'ai Smith's Bauhaus Weaving Theory: From Feminine Craft to Mode of Design, and Sianne Ngai's Our Aesthetic Categories), excerpts of each of which the student will be asked to read. I will have gathered but not yet mapped a small body of philosophical secondary sources, and my student research associate will help with that, as well as gathering and reading critical responses to the specific works, artists, and art shows the chapter will reference. We will meet regularly to talk about these resources, strategize further research, and discuss the sections of my chapter as they emerge.

#### Anticipated Progress on the Research Agenda

The current schedule proposed by the volume's editors asks for completed work at the beginning of September 2017. That means that I will need to transform it from a broad-brush sketch of a philosophical argument (I will have presented that at a working paper conference with my collaborators in spring) to a refined argument informed by deep work with specific artists and works.

## 2017 Summer Undergraduate Research Fellowship (SURF) Program Faculty Projects

Project Number 5: GIS Data Acquisition, Analysis and Cataloging			
Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Peter Impara	imparap@evergreen.edu	(360) 867-6543	2
Project Description			
<p>GIS data at Evergreen (TESC), and covering the TESC campus, needs to be organized to serve faculty and students, is missing important themes, and is not used by faculty to any significant extent. This SURF project would organize existing data (including TESC spatial data as well as data on areas outside of TESC), census faculty on data they need as well as data they are in possession of, determine datasets needed for the TESC campus, initiate creation of those datasets, and conduct analyses of TESC datasets as appropriate. Datasets to be created would focus on the ESC campus, especially ecological and land use layers in relation to the forest on campus.</p>			
General Expertise Required of Fellowship Applicants			
<p>Intermediate to advanced GIS skills in ArcGIS, spatial analysis skills, file management skills, field data collection skills. Upper division ecological and environmental coursework, ability to work independently on a spatial analysis project.</p>			
Responsibilities of Fellows and Knowledge and Experience To Be Gained			
<p>Fellows responsibilities include inventorying, organizing and investigating existing datasets, interviewing faculty on their spatial thematic needs, determining additional datasets needed, initiating field collection of datasets. Fellows will advance their abilities to carry out and understand spatial analysis, significantly improve their GIS skills, and increase their experience in sample design and field spatial data collection.</p>			
Anticipated Progress on the Research Agenda			
<p>This project is an initial effort to better map the campus forest, and understand and map on-going research on campus. In addition it will serve as a database for future spatial analyses on campus, and as a resource for students to refer to in the future when conducting their own research on campus.</p>			
Additional Information			
<p>This project focuses on inventorying and understanding existing spatial data at Evergreen, especially data related to the TESC campus. It would serve to identify data gaps and initiate filling of those gaps for future spatial analyses, future student research, and land use analyses of the campus.</p>			



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### Faculty Projects

#### Project Number 6: Comparative Ionian Colonization in the Black Sea and the Western Mediterranean

Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Ulrike Krotscheck	ulrikek@evergreen.edu	(360) 867-6017	3

#### Project Description

The sudden arrival of newcomers in an unfamiliar environment is a common scenario ancient and modern. Archaic Ionian colonization throughout the Mediterranean and the Black Sea is an example of such a movement. Newly arrived settlers invariably had fundamental cultural, social, and linguistic differences compared to the indigenous residents of the land they chose to occupy. Existing historical and modern narratives describing the resulting inter-cultural encounters are not always an accurate reflection of what happened, and archaeology can provide important additional evidence. In this research project, student fellows would help unlock a more nuanced narrative, which de-emphasizes the dominant Greek narrative, emphasizes the indigenous part in the process, and compares cultural artifacts, economies, and mobility, using as examples two or more Ionian colonial foundations, one of them currently under archaeological investigation.

This represents the next step in my larger professional research agenda of comparative archaic (8th-6th c BCE) Ionian colonization in different geographical and indigenous contexts. It is intended to support my recent Foundation Grant application of the same title by giving students the opportunity to engage in international scholarship with primary source material. While my previous scholarship focused on Ionian colonization and cultural contacts in the western Mediterranean, the next step is to launch the study of an almost uninvestigated Black Sea Ionian colony, ancient Sinope (modern Sinop). This research will eventually lead to a third step: the comparison of western Mediterranean and Black Sea colonies, and an investigation of comparative cultural interactions. This second step includes the current excavation in ancient Sinope, where I am in charge of investigating the Greek ceramics. In 2017, we will have the chance to excavate the archaic layers, which will give us an indication of the nature of the town during my particular area of interest. I anticipate three different options for student fellows: two research options and a fieldwork and lab option, described in detail below. The end result of this work will be a research report on the work completed, to be submitted as an article in a peer-reviewed journal in the future.

#### General Expertise Required of Fellowship Applicants

**Research Option(s):** The fellow(s) would need to have experience researching primary and secondary sources and assembling multi-lingual bibliographies. Strong academic writing skills are required. Coursework in anthropology, archaeology, history, or art history is desired. A reading knowledge of French and German and/or facility using ArcGIS is necessary for different aspects of this research.

**Fieldwork/lab option\*:** If possible, this would require travel to Turkey. Archaeological field and lab experience and the ability to conduct physically taxing work outside in varying weather conditions are required. Fellow(s) are also expected to exhibit cultural sensitivity to their surroundings.

\*Given the current political situation in Turkey, the feasibility of the second option cannot be determined until later this spring. If the excavation is canceled or fellows are unable to go for other reasons, they could instead replace this work with library research.

#### Responsibilities of Fellows and Knowledge and Experience To Be Gained

**Research option #1:** This option would be a study of sea lanes and transportation methods to investigate the question of how easily communication between colonies and their metropoleis could be achieved. The fellow would research ancient methods of transportation over land and sea. This research program includes creating a GIS model of transport routes. Knowledge and experience gained will include, but is not limited to: advanced historical inquiry into the ancient world; experience with GIS; advanced research writing.

**Research option #2:** In addition, research on ceramics found in different Ionian colonies will help compare what is found at Sinope to other archaeological sites. This fellow would compare percentage of indigenous and imported ceramics in other well-studied Greek colonies (exact locations TBD according to the interests of the student fellow) and write a paper summarizing the results. Knowledge and experience gained include primary source research, statistical evaluation of archaeological data, and advanced research writing.

**Fieldwork/lab option (which could be more than 1 fellow):**

Fellow(s) would need to travel to Sinop and participate in the excavation season from July 1-31, 2017. They would work on understanding and decoding the stratigraphic profile of the archaic layers and investigate the ceramics found in these layers.

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Knowledge and experience gained include international field and lab experience, handling and evaluating primary archaeological evidence, ceramic analysis (including XRF), and advanced research writing.

#### Anticipated Progress on the Research Agenda

I believe that the individual duties of the fellows are outlined in the "responsibilities" section, but to sum up briefly: With field/lab fellow(s), progress would include an immediate evaluation and study of the stratigraphy and archaeological evidence of ancient Sinope. One research fellow will evaluate comparative ceramic percentages in other colonies; another will research potential connectivity between colonies and their metropoleis, which will help investigate whether there is a relationship between travel "cost" and level of connectivity as observed in the archaeological record.

#### Additional Information

Student applicants need to know that this project will involve either extensive literature review or, if participating in the excavation, long hours of hard physical work in a variety of conditions (from wind and rain to direct sun), as well as work in the lab, cleaning, categorizing, and analyzing pottery. Traveling fellows would work with an international team of archaeologists, both faculty and students. Shared lodging and meals are provided.

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#### Project Number 7: Sculptural Work in Stone: A Public Outdoor Work for Vashon Island High School and Other New Works

Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Robert T. Leverich	leverich@evergreen.edu	(360) 349-9042	2

#### Project Description

This project is a continuation of my spring 2017 sabbatical work. My sabbatical proposal includes making new sculptural works, to continue to develop themes that I've been working with for the past eight years, to continue to ground myself in the medium technically and conceptually, and to explore larger scaled, site specific work in community contexts. I proposed making 3-5 new intermediate scaled works and one large site specific work.

I received a commission from the Washington State Arts Commission in late 2015 to make a large work for the grounds of Vashon Island High School. It is now scheduled for installation in fall of 2017. I completed my research for the project and made design proposals to the WSAC and the selection committee on Vashon Island last year. The final design for the project has been approved. It stems from "educe" the root word of education, meaning "to draw out." The work consists of a large boulder, split in half, with a scooped out hollow students can sit in, and three linear stone elements radiating from the opened boulder, each with a polished meander carved down its length. Each can be touched, and leaned or sat upon, as well. I've located stone for the project (Cascade granite), and plan to begin acquiring materials after signing a construction contract with the State, at the start of February. I have tentative agreement with Mark Kormondy and Jeanne Rynne in the Facilities Office to proceed with the work in the Facilities work yard – a convenient location for work with students. In parallel with this project, I've been offered a show of my work at the Koch Gallery of the new Vashon Island Art Center in July. I plan to have the smaller works proposed in my sabbatical application completed for that show.

My recent works have been organized horizontally and reference landscape forms. They call for a more intuitive and immediate process based on the particular stone choice (generally granite), the original shape of the block, and how that particular stone responds, or "moves" with hand and power tools. The Vashon Island High School commission and the new intermediate scaled multi-part works present new conceptual challenges of working with larger installation-scaled and interactive works that function as part of larger compositions in the landscape and in the case of the Vashon Island project, their relation to particular sites and communities, their peoples, histories, and values. These works also provide new technical challenges relating to scale, stone handling, carving, and finishing, as well as site issues, logistics, and construction coordination. The conceptual, technical, and contextual challenges of these works provide a unique opportunity for students interested in careers in the arts, sculpture in particular, to gain insight and hands-on experience in the design, coordination, and fabrication of such works, in both studio and public contexts.

#### General Expertise Required of Fellowship Applicants

Level of Study: Intermediate to Advanced

Prerequisite Coursework: The student should have the equivalent of at least one year of course work in 3D art forms (sculpture, metalworking, woodworking, ceramics, etc.) and previous course work in 2D drawing and design. Prior coursework in art history is desirable.

Skills and Abilities:

- Strong commitment to excellent workmanship
- Able to follow directions in detail
- Able to communicate ideas and information clearly and quickly through drawing
- Demonstrated eye/hand skills, i.e., visual problem solver, attentive to detail and finish, skilled in hands-on work
- Experience with basic hand and power tools (wood and metals shops). Welding ability is desirable. Experience with stone hand and power tools is desirable, but not expected.
- Able to follow directions in detail
- Ability to effectively use a digital camera to document events, processes, and work. Ability to use a video camera also desirable.
- Ability to work effectively with Microsoft Office (Word, Excel, and PowerPoint)
- Driver's License
- Ability to communicate effectively with the public (Evergreen staff, individuals associated with projects and galleries, visitors, etc.)

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#### Responsibilities of Fellows and Knowledge and Experience To Be Gained

- Fellows will be provided with and learn to use appropriate safety gear to protect eyes, ears, lungs, and hands. They will learn best practices to keep themselves and others safe while handling and working with stone.
- Fellows will gain an overview or conceptualizing works in stone, working in dialogue with the material and tools, responding to particular stones and particular sites, and addressing, communicating, and collaborating with others with vested interests in public sculptural works.
- Fellows will assist in the carving and shaping of stone using a variety of hand and power tools including: hammers and carbide-tipped hand chisels (point, flat, rondel, toothed, frosting, tracer, hand set, rocko, etc.), pneumatic hammers, angle grinders and stone saws with diamond blades, diamond chain saw, diamond cup wheels, carborundum wheels, etc.
- Fellows will assist in finishing and polishing of stone with diamond sanding papers and discs, and pneumatic or electric water polishing equipment, gaining insight into the questions and choices inherent in finishing materials to signify intent and express meaning in the work.
- Fellows will learn and assist in use of safe and efficient methods to move stone using both hand tools and power equipment, and will observe and learn in the strapping, moving, transport, positioning, and installation of large stones.
- Fellows will assist in logistics for moving and installation of small and intermediate stone works at the Vashon Arts Center. They will further observe and learn from the design and coordination challenges of engineering, site work and foundations, crane work and transport logistics, and installation of the Vashon Island High School commission.
- Fellows will learn and assist in documentation of the work, interfacing with the public (primarily visitors to the work site), and communicating with diverse personnel from the Vashon Arts Center, Washington State Arts Commission, Vashon Island High School, Evergreen, and various stone suppliers, and equipment suppliers.
- Fellows will learn more about stone and stone sources in the Pacific Northwest and the region's basic geology. They will also learn where and how to tools and equipment for their own projects, and important resource individuals and organizations.

I envision offering each fellow the opportunity to make a stone work of his or her own, working outside the fellowship hours, to take advantage of the space and tools available (largely my own), to advance conceptual and technical skills, to broaden the dialogue, and to increase enthusiasm for all of us working on site!

#### Anticipated Progress on the Research Agenda

I'm requesting two fellows. More would likely be difficult to coordinate and oversee, and also would require additional expenses for duplication of equipment and supplies. As noted above, I plan to complete new intermediate scaled works for exhibition in July. I anticipate hiring at least one student during spring quarter using my own funds to assist with those works. Fellows would assist in finishing that work at the start of the summer for delivery to the Koch Gallery in July.

My current schedule for the Vashon Island High School Commission proposes substantial completion by September 15, with installation immediately after that. Without support from the SURF program, I will nonetheless need to hire assistants. An award of two student fellowships to assist in this project would be invaluable to me, and would provide them with great experience in sculpture as both expression and service.

#### Additional Information

(Please see package of drawings and photos documenting the site and design included at the end of this document.)

## 2017 Summer Undergraduate Research Fellowship (SURF) Program

### Faculty Projects

#### Project Number 8: Summer Research in Field Ornithology

Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Alison Styring	styringa@evergreen.edu	(360) 867-6837	3
Project Description			
<p><b>Monitoring Avian Productivity and Survivorship (MAPS):</b></p> <p>In collaboration with the Center for Natural Lands Management (CNLM), the ornithology lab has established a MAPS station at Glacial Heritage Preserve: a remnant native prairie site 23 miles south of campus. MAPS is a network bird banding stations across North America that collect standardized data on key indicators of avian health and survival. I am looking for students to participate in station activities and collect the fifth season of data. Work will include conducting habitat assessments; setting mist-nets; banding birds; collecting information on body condition, sex, breeding status, molt, and age; entering data into spreadsheets/databases; running analyses; and preparing/submitting reports to the Institute for Bird Populations and state/federal wildlife agencies.</p> <p><b>Breeding biology of the Pacific Wren:</b></p> <p>The ornithology lab is studying the breeding biology of Pacific Wrens in the campus forest. We are looking to better understand ecological processes that influence territory size, mating strategy, and reproductive success in this species.</p> <p><b>Bioacoustic research and monitoring of birds in the Evergreen Forest:</b></p> <p>The ornithology lab is working on a project aimed at determining bird locations and behaviors using microphone arrays. This project will focus on determining locations of birds in the campus forest and assessing detection differences between canopy-based and ground-based surveys. Work involves setting up arrays, testing efficacy, downloading, analyzing, and archiving recordings, entering location estimates and relevant habitat information into spreadsheets/databases.</p> <p><b>Swainson's Thrush Migration Ecology and Tracking:</b></p> <p>This is a new project that will focus on migration and breeding season movements of Swainson's Thrush using the campus forest. The work will involve tracking Swainson's Thrush using handheld and automated telemetry systems and recording feeding behavior, territoriality, and breeding behavior.</p>			
General Expertise Required of Fellowship Applicants			
<p>Successful applicants will be expected to work on all projects. Desired qualifications: experience/training in MAPS protocol (including mist net deployment, bird banding, and related data collection), proficiency with field recording, prior coursework in data analysis (upper division statistics), and experience with canopy access methods. Interested students should contact Alison Styring (styringa@evergreen.edu) for more information on the projects, qualifications, and expectations.</p>			
Responsibilities of Fellows and Knowledge and Experience To Be Gained			
<p>Successful applicants must commit to conducting field work from 4:45 am to as late as 4 pm on field days. The faculty will work with students in the field and lab during the first weeks of the projects and will meet regularly throughout summer. Field work includes hiking in uneven terrain using map and compass, identification of bird species by sound and sight, observation of behavior, tracking in roadless areas using telemetry, and maintenance/basic repair of field gear. In addition, students must scan and enter (in excel) all field observations within 24 hours of each field outing. A final research poster focused on one or more of the labs projects is should be completed by the end of the fellowship and should include a comprehensive literature review of the topic, description of field and analytical research methods, a results section clearly presenting quantitative analysis and visual representation of the analysis and a discussion of the broader meaning of the project. Successful completion of coursework in field research, scientific writing, and statistical analysis will be beneficial to the applicant. Interested students should contact Alison Styring (styringa@evergreen.edu) for more information on the projects, qualifications, and expectations.</p>			
Anticipated Progress on the Research Agenda			
<p>I can make substantial progress on my research if only one fellow is selected, but to move all the described projects forward, I will need 2-3. With one fellow, the focus will most likely be the MAPS project, the Swainson's Thrush project, and, if time warrants, the Pacific Wren Project. With 2 fellows, I can include the field components of all the projects including bioacoustic project, and with three fellows, analytical work can be completed (resulting in a poster) on at least three of the project (most likely MAPS, Swainson's Thrush, and Pacific Wren, but interested students could instead focus on bioacoustics).</p>			

## 2017 Summer Undergraduate Research Fellowship (SURF) Program

### Faculty Projects

Project Number 9: Ecophysiology of Ctenophores			
Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Erik V. Thuesen	thuesene@evergreen.edu	(360) 867-6584	2
Project Description			
<p>Ctenophores, also known as comb jellies, are marine predators found in all oceans, inhabiting both deep and shallow seas. Although fragile and difficult to study, they are biologically important, in part because they appear to have been the first group of animals to split off from all other organisms during evolution, even before sponges and jellyfish. Over evolutionary time, many marine organisms have transitioned their home ranges to and from the deep sea despite the tremendous differences between these two habitats, including light, temperature, and hydrostatic pressure. Such habitat shifts required significant genetic and physiological changes to these animal lineages over time. The relationships between comb jelly species indicate that species from a variety of different families have evolved to live and thrive in the deep sea. This project compares closely related deep and shallow species at biochemical, physiological and genetic levels to understand how these transitions came about. The main objective for this SURF project is to investigate adaptations of ctenophore enzymes to high hydrostatic pressures in the deep sea to confirm the theory-based predictions of how gene sequence affects the properties of enzymes.</p>			
General Expertise Required of Fellowship Applicants			
<p>Coursework and lab experience in chemistry and biology equivalent to a year of INS is necessary. Further knowledge, lab experience and interests in biochemistry, molecular biology and evolutionary biology is preferred. Experience with marine biology and/or zoology is beneficial.</p>			
Responsibilities of Fellows and Knowledge and Experience To Be Gained			
<p>Students will carry out biochemical assays of ctenophore enzymes at different hydrostatic pressures. We will be working with enzymes extracted from shallow and deep-sea species as well as cloned enzymes generated from orthologous genes.</p>			
Anticipated Progress on the Research Agenda			
<p>This project is taking place during the second year of my 5-year NSF project. This coming summer, we are finishing our work with natural enzymes and starting our work with cloned product. We are analyzing various enzymes of numerous species, and two students would work with different enzymes/species to accomplish the goals of the NSF grant. An MES student in my lab will also be working with the SURF students.</p>			

## 2017 Summer Undergraduate Research Fellowship (SURF) Program

### Faculty Projects

#### Project Number 10: Research in Cyber Security: Educational Cyber Security Games

Faculty Project Leader	Email	Campus phone	Number of Positions Requested
Richard Weiss	weissr@evergreen.edu	(360) 867-6871	2
Project Description			
<p>The goal of this project is to develop cyber security games in the EDURange framework. EDURange is an ongoing project with the goal of building cloud-based, interactive computer security exercises (games). Games are an effective tool for active learning. The desired outcome is the creation of a suite of exercises for faculty and students that will be engaging and will teach computer security skills and concepts, most significantly the security mindset. Having the security mindset implies that one can understand a system both from the standpoint of a builder and an attacker. Thus, the security mindset provides the conceptual underpinnings for a student to reason in both defensive and offensive situations. The exercises in EDURange focus on highly interactive, competitive, and dynamic scenarios. For example, we would like an evercises that teach intrusion detection, where one team implements rules for intrusion detection and the other team tries to evade detection. We are also developing introductory exercises in cryptography, password cracking, and hacking Web Applications.</p> <p>It is estimated that approximately 400,000 jobs in cyber security will be created in the next few years. A major security breach occur almost every month, and computer security is one of the fastest growing areas in computer science today. The most serious problems are from stealthy exploits, where an attacker gains entry to a computer system and is able to read sensitive data over a long period of time. Typically this is caused by malicious software and and may be designed for the exfiltration of private data. What makes it so difficult to detect is that while it is generally possible to model normal activity, abnormal activity due to malware and exploit technology keeps changing. The researcher will create exercises that teach analytical skills like these.</p> <p>EDURange currently has six exercises that have been tested at Evergreen and other schools, and several more that are being developed. Student researchers will create new exercises based on their interests. One of them requires students to examine network traffic and deduce which computers are talking to each other. The other one requires students to analyze what system resources a program is using. There are many other possibilities for exercises, including one where one team must configure a firewall to keep the other team from accessing valuable resources.</p>			
General Expertise Required of Fellowship Applicants			
<p>Students who apply should have good programming skills. Some understanding of computer networking and security is desirable. The level of study is intermediate to advanced. Students will study techniques in security, including intrusion detection and prevention, cryptography, malware analysis and access control . Good mathematical skills will also be an advantage.</p>			
Responsibilities of Fellows and Knowledge and Experience To Be Gained			
<p>Students who participate will be able to achieve a deep understanding of the security skills and concepts taught by the games that they develop. They will also learn the skills needed to configure virtual machines and networks using the latest Cloud technology on Amazon's EC2. They will need to install and configure the software on these virtual machines to create the vulnerabilities that make the games instructive and interesting. They will write documentation to explain the games to users. They will be working with a large code base and will learn software engineering skills. The students will be part of a collaborative effort. There will be discussions and design reviews with students and faculty from Evergreen and other schools and research institutions, including Lewis &amp; Clark College, SRI, and Wellesley College. There will be a hackathon during the summer. The EDURange project has had 24 refereed publications in the last four years. Students will be expected to participate in writing scientific papers on their work suitable for publication. This is a collaborative project supported by a grant from the National Science Foundation and an educational grant from Amazon. The student will be able to pursue original research that could combine computer security with related disciplines. Students will be required to make a poster showing their results that could be presented at a conference, and they will write a final report.</p>			
Anticipated Progress on the Research Agenda			
<p>Having more exercises or games and accurate assessment would improve the adoption of EDURange nationally. This work would also make it easier for other faculty to use. The project can accommodate two fellows, each one would be developing a new game that they would design or they could work together to create a more complex game. In addition, they would work collaboratively on the development of EDURange as a framework. Thus, with one student, we would be able to implement one new game, which could be based on breaking ciphers, cracking passwords, configuring firewalls, or an idea</p>			

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that the student has. With two students, we would make faster progress in creating games and adding more features to EDURange to improve scoring and assessment for attack/defense games.

### Additional Information

Some of our alumni have gone on to graduate school or have gone on to work as security analysts.

More information can be found at <http://blogs.evergreen.edu/edurange>



A Sculptural Installation on the Grounds of Vashon Island High School

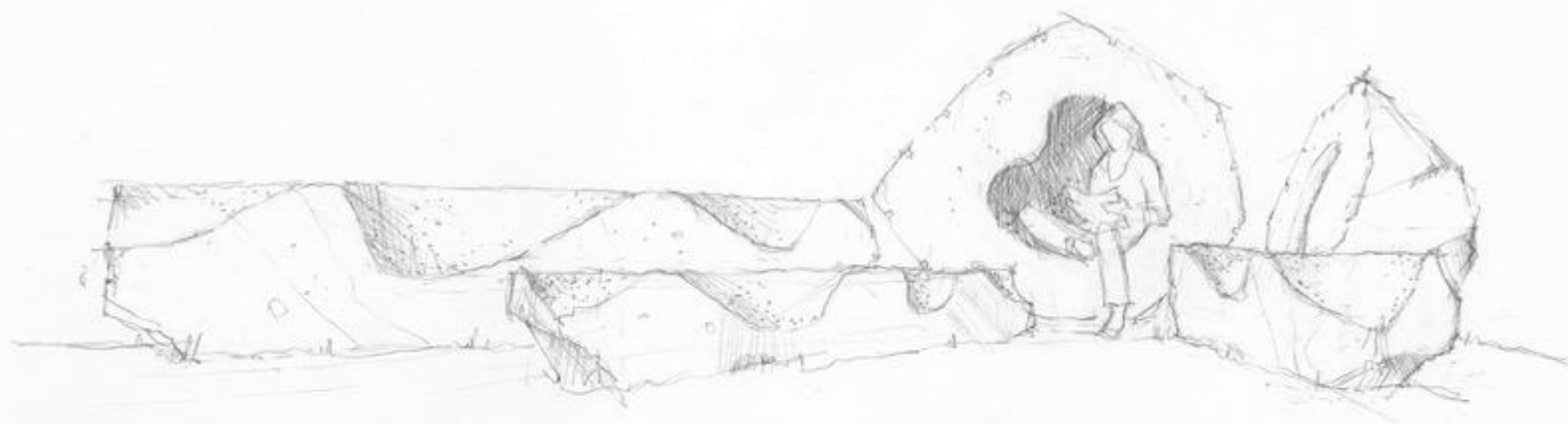
# Final Concept Proposal

Bob Leverich, Artist

October 21, 2016

Site / Drawings / Model





Vision  
Concept 1  
R. Laverick  
5/8/16

A Sculpture for  
Vashon Island High School  
Vashon, Washington

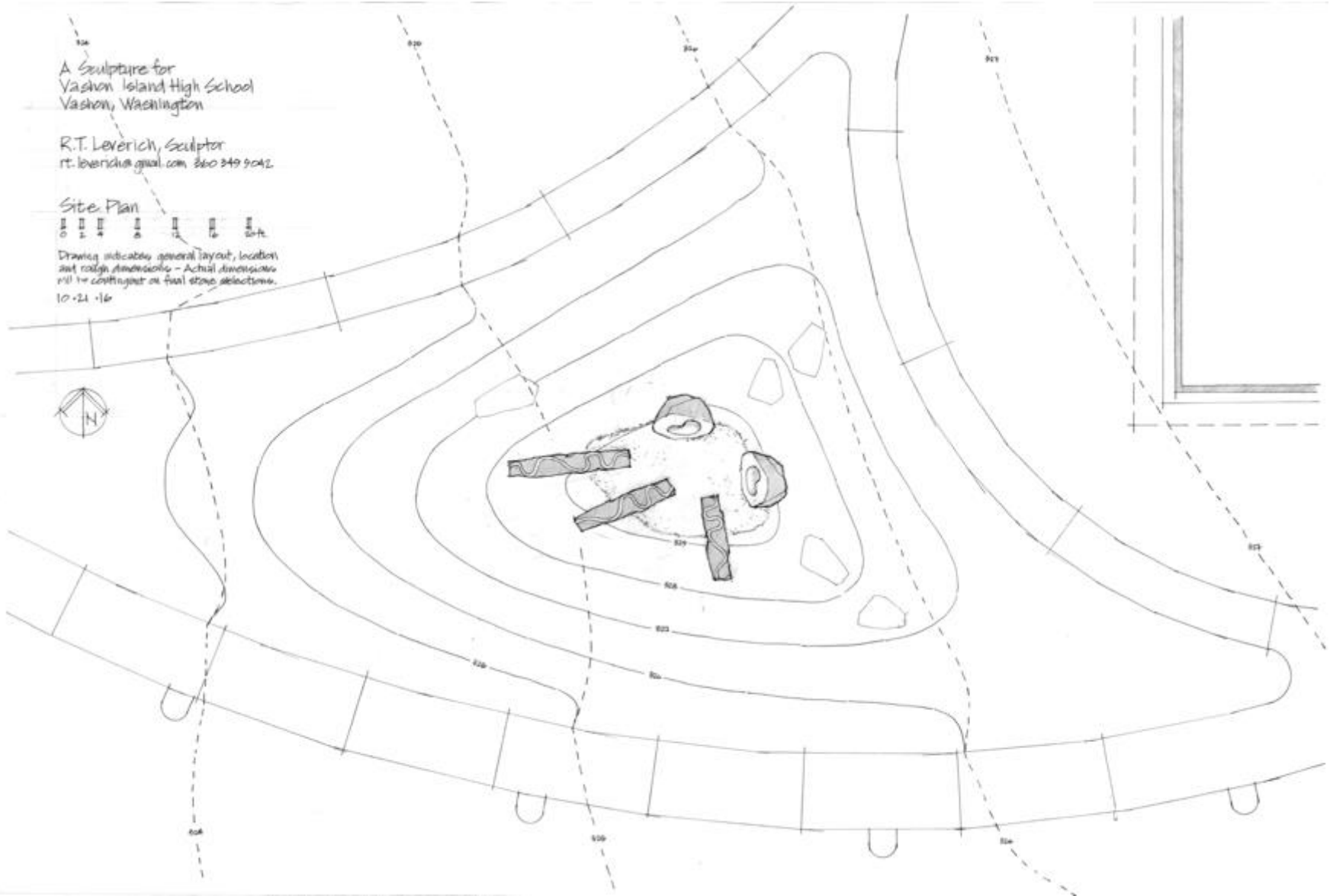
R.T. Leverich, Sculptor  
rt.leverich@gmail.com 360 349 9042

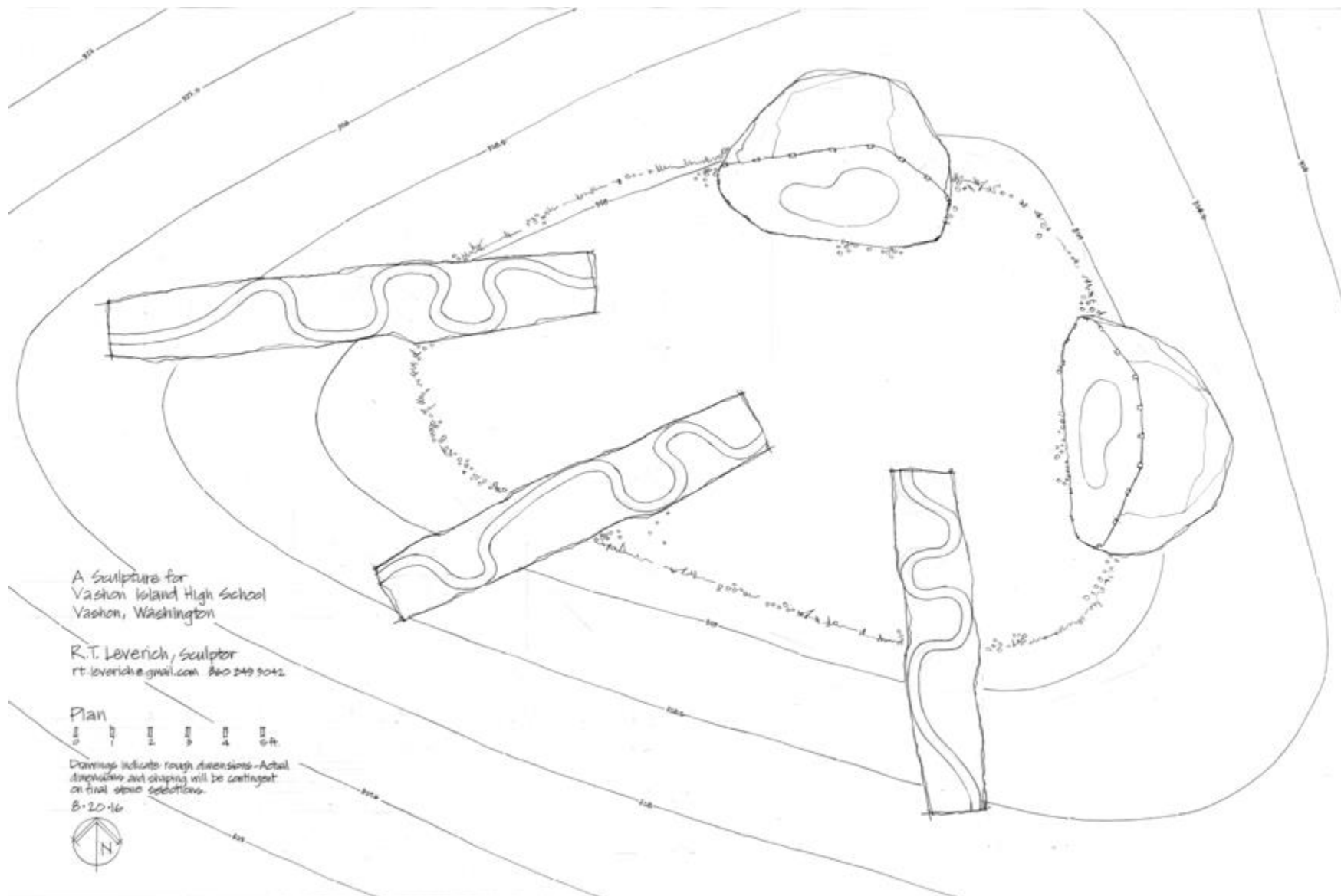
Site Plan

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Drawing indicates general layout, location  
and rough dimensions - Actual dimensions  
will be contingent on final stone selections.

10-21-16





A Sculpture for  
Vashon Island High School  
Vashon, Washington

R.T. Leverich, Sculptor  
rt.leverich@gmail.com 360 249 9042

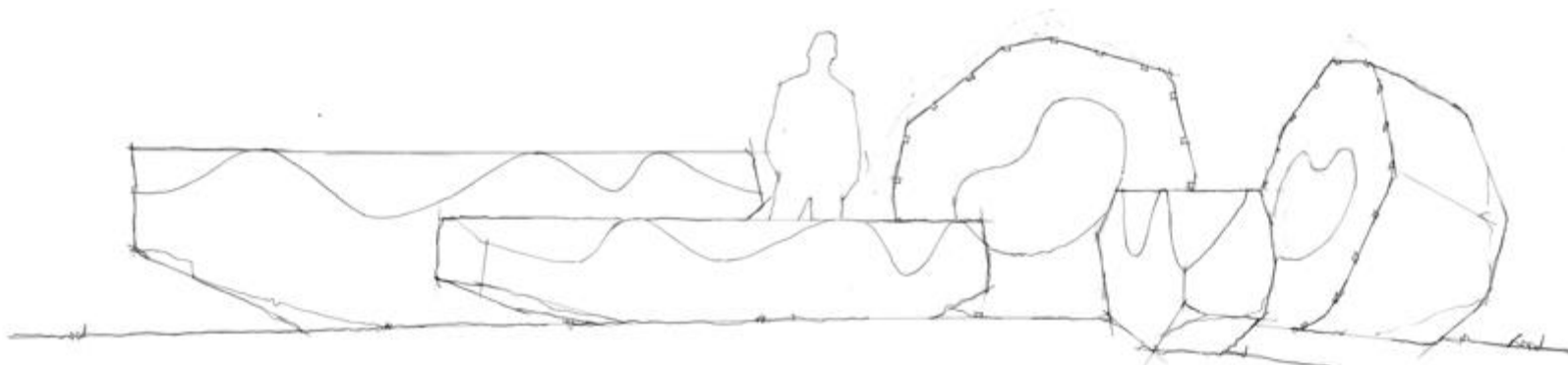
Plan

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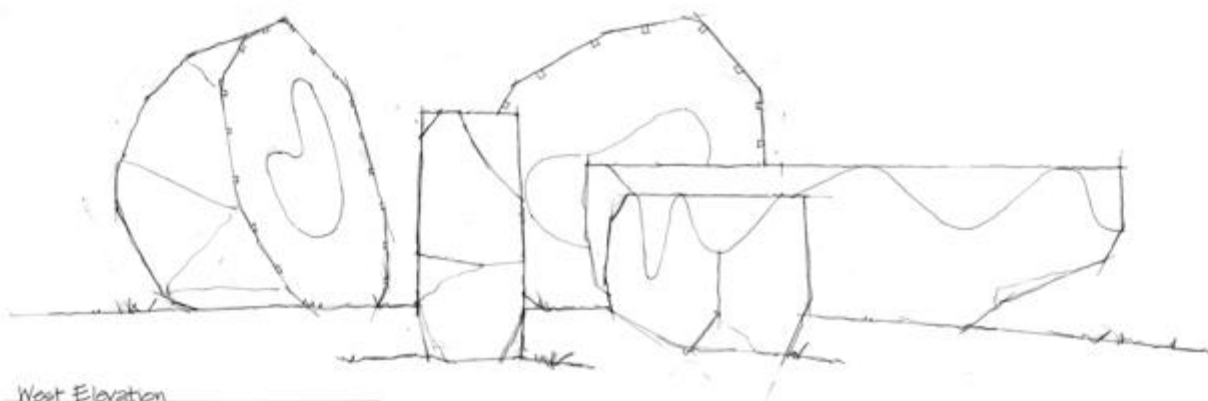
Drawings indicate rough dimensions - Actual  
dimensions and shaping will be contingent  
on final stone selections.

8-20-16





South Elevation



West Elevation

A Sculpture for  
Vashon Island High School  
Vashon, Washington

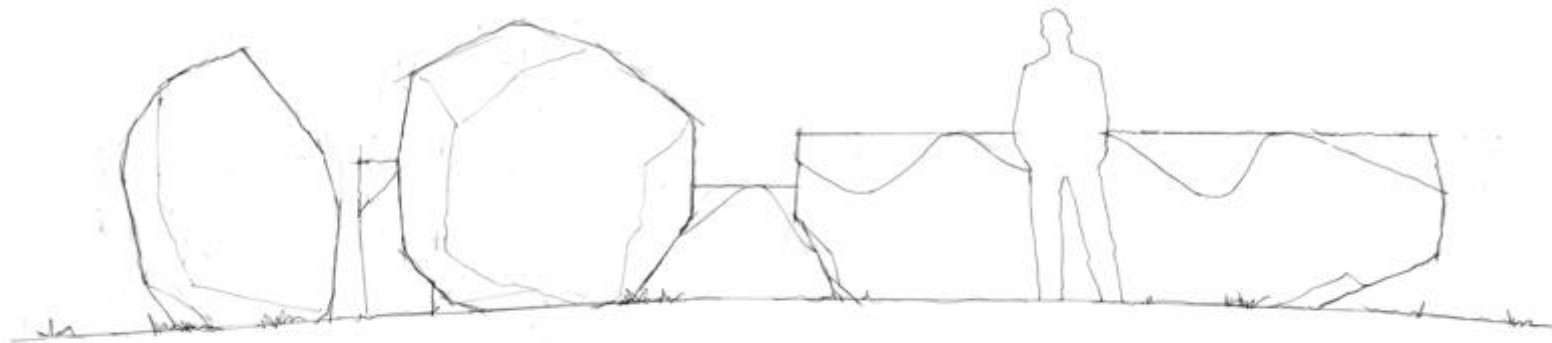
R.T. Leverich, Sculptor  
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#### Elevations

11	1	11	5	11	11
2	1	1	5	4	6.4

Drawings indicate rough dimensions - Actual  
dimensions and shaping will be contingent  
on final stone selections.

10 • 21 • 16



North Elevation

A Sculpture for  
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Vashon, Washington

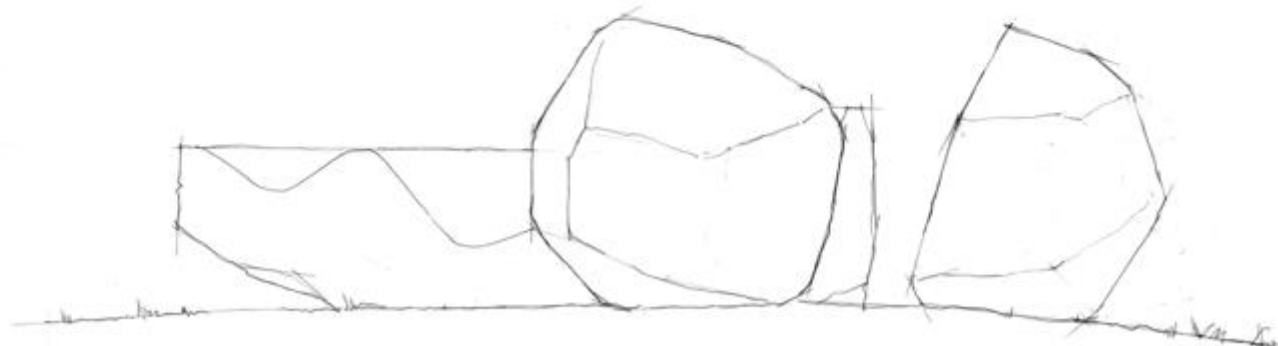
R.T. Leverich, Sculptor  
rt.leverich@gmail.com 360 349 9042

#### Elevations

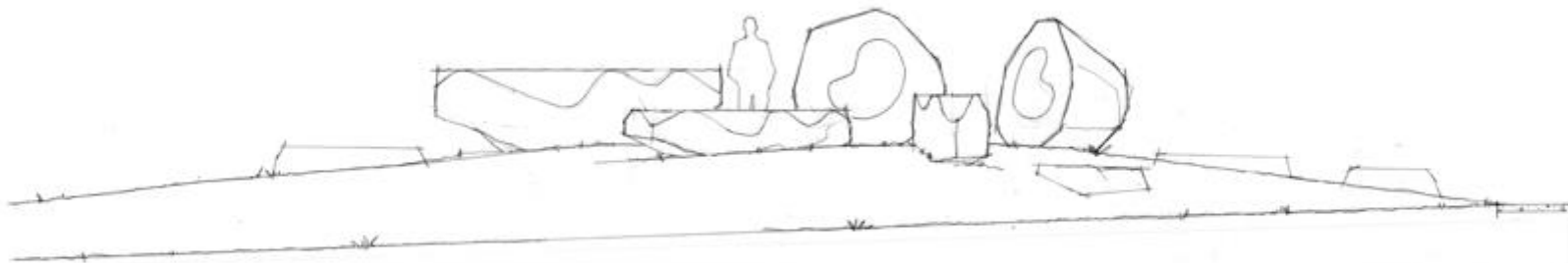


Drawings indicate rough dimensions - Actual  
dimensions and shaping will be contingent  
on final stone selections.

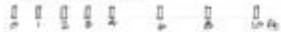
10-21-16



East Elevation



Site Section

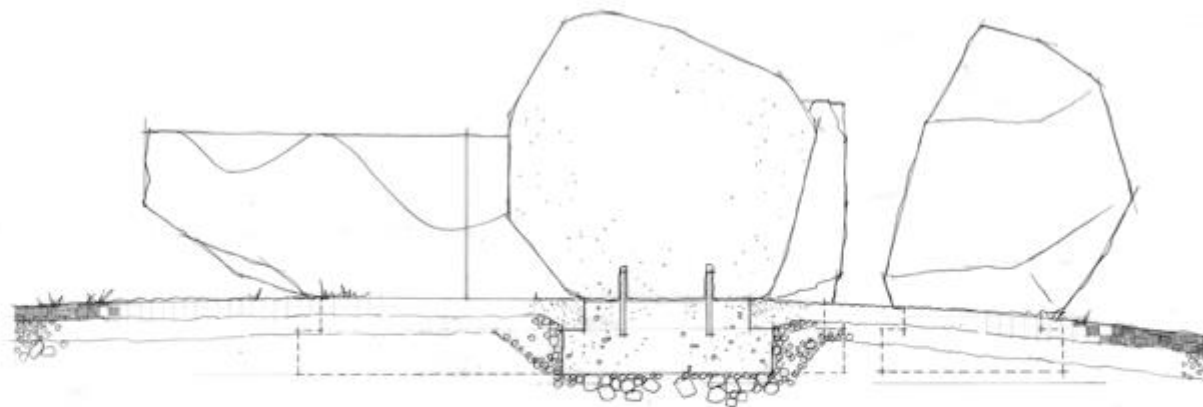


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Vashon, Washington

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Sections

Drawings indicate rough dimensions - Actual  
dimensions and shapes will be contingent  
on final stone selections.  
10-21-16



Foundation Schematic















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