

Service Learning Proposal  
*Davis Creek Trail Marker Restoration Project*

Group Members	Academy	History Class Period
Lloyd Gonzales	Engineering (Manufacturing)	2nd
Halak Patel	Engineering (Manufacturing)	5th
Jaime Garcia	Engineering (Welding)	2nd

Fall/Spring Presentation: Spring	
Date (turned in): _____	
Advisor Signature _____	Date: _____
Mr. Rogers' Signature _____	Date: _____

**Abstract:**

Our goal is to build, replace, and move several old, worn-down trail markers at Davis Creek Regional Park. We aim to fabricate new, weather-resistant trail markers by utilizing the CADD and welding skills of our group. In order to achieve this, we will coordinate with a ranger within Washoe County's Community Services Division to assess financial and material needs, as well as determine appropriate designs.

**1. Roughly describe your plan of action for completing this project:**

- Visit the site, assessing needs and determining a suitable design for the new trail markers
- Begin planning and designing the new trail markers, including the CADD files for each part of the trail markers, the (composition) material, and any funding necessary to acquire the materials
- Begin fabricating the new markers, welding individual parts together and CNC cutting necessary components
- Transport the new markers to the target site and install them as deemed appropriate, removing the old markers; plan other activities to involve AACT students wherever possible

## **2. What issue in the community does your problem address, and who are the beneficiaries?**

This project resolves the increasingly worn-down trail markers at the park, currently composed of a wooden beam with a metal pine cone cutout at the top with a number. The markers are damaged (or missing) to a great extent, with some needing to be relocated. The fabrication of new, sturdier markers allows for their continued use with the Davis Creek Naturalist Guide over a long period of time, enduring through environmental stresses.

The primary beneficiaries of this project are those who visit the park and are interested in the local wildlife using the Naturalist Guide (found here:

<https://www.washoecounty.us/parks/files/images/park%20images/Davis%20Creek%20Nature%20Trail%20Interp%20Guide.pdf>), which outlines various features of the nearby environment at each trail marker. This particularly includes schools that engage in activities at the park (for example, guided hikes) and includes the general public interested in the local wildlife.

### **2a. How will this project impact the problem you identified?**

This project will directly address the worn-down trail markers by replacing them with new markers that should involve a low amount of maintenance, moving some as necessary to align with the Naturalist Guide. This will ensure that they can be used with the Naturalist Guide in the future, improving the overall experience of the hiking trail for those who use the guide.

### **2b. What exactly do you hope to accomplish (specific and clear goals)?**

We plan to raise \$300 - \$500, depending on the availability of sponsors and materials. We plan to make **10** trail markers (a relatively large, hollow metal post installed in the ground with pine cone cutouts attached to the top, aligning with the Naturalist Guide based on location).

Other:

#### Materials - Trail Markers

After talking with Mr. Cooney, we have determined that the materials used to make the new trail markers themselves will cost just under \$300 in a best-case scenario. This accounts for excess material in the event of errors as well as the necessary material for the backing plate and the pinecone cut-out with the trail marker number itself. The breakdown is as follows:

- \$250 for a sheet of metal sufficient to make the backing plates and cutouts
- \$20 for (more than enough) rebar to keep the new trail markers in place

#### Materials - Event

Based on the suggestions of our advisor, Mrs. Raker, and our community partner, Park Ranger II Nick Steuer, our first priority will be to seek sponsorships or support from Scheels, REI, and the Truckee Meadows Parks Foundation. If these organizations are unable to provide direct support, we believe that they may be able to assist in finding other organizations or individuals who can.

The day of the installation will involve materials such as gloves, shovels, wheelbarrows, etc. that can be supplied by our community partner in advance. Thus, there is no need for additional allocation of funding or additional planning to provide these materials. However, we do intend to supply the volunteers with some snacks and drinks. Depending on whether or not our sponsors directly supply these materials, we may or may not have additional costs. Additional funding of

\$200 will account for any surprise costs or additional costs for the installation event itself, although it is not *necessary* (but it is preferable to out-of-pocket spending).

**2c. Do you plan to fundraise at school?**

No.

**2. Who will your project advisor be?** Mrs. Raker

**a. Describe why you chose this person.**

In addition to being an outstanding overall coordinator and leader, Mrs. Raker has connections both within the AACT and the outside community that we believe will be of great benefit to our goals. It is through her communication that we discovered this project, and thus it extremely beneficial (and fitting) for her to be our project advisor.

**3. What organization(s) will you be working with/for?** (effectively) Washoe County Community Services Department - Regional Parks and Open Space

**a. How do you plan to work with this organization?**

Our work will directly be designed based on the needs and actions determined by both us, members of the department, and people as necessary. After assessing what needs to be done and the viable methods of achieving these needs, we can then use our skills to fulfill any goals set by the Washoe County department or by other people.

**4. Who is your potential community partner?**

Nick Steuer, a Park Ranger II familiar with the campground and our main community partner for this project.

**5. How is this project applicable to your academy? What skills are you using?**

To be specific, we intend to split the individual processes of this project based on our chosen academy path: either Welding Technology or Manufacturing. Both classes have taught (and will teach) us skills that we can utilize to complete this project.

The design of the new trail markers involves several CADD/Manufacturing aspects, including:

- the design, development, and testing of a 3D assembly of the trail marker in SolidWorks or other software as taught in Manufacturing. This includes material testing and simulations, a potential cost estimate, and a provably viable, strong trail marker design.
- the design of the pine cone cutouts (or other CNC-cuttable parts) in software such as AutoCAD to necessary specifications for export to a CNC machine for cutting

In addition, the fabrication of the new trail markers involves several welding/machining aspects, including:

- the application of welding processes to join parts of the metal trail marker as necessary
- the use of machines (such as bandsaws) to shape the base material to the desired shape and size
- the use of the CNC cutting machine to efficiently make the pine cone numeric cutouts

## **6. Describe how you will distribute responsibilities amongst group members.**

Based on academy path, Halak and Lloyd will be responsible for the Manufacturing aspects of this project, while Jaime will be responsible for the Welding Technology aspects of this project.

Responsibilities for the maintenance of the project materials (binder, logging, etc.), social media, and overall communication and management will be split amongst group members as necessary, ensuring that if one person is unable to fulfill a task at a given moment, another person can pick up the task. However, if needed, these tasks can be explicitly delegated to one person if deemed necessary within the course of the project.

All members will be responsible for holding each other accountable to deadlines and necessary actions to ensure the success of the project.

## **7. How will you involve/impact other AACT students?**

Within the school, we can allow students to directly assist with the fabrication of the trail markers (for example, grinding metal down and preparing it to be welded onto) or teach students welding or manufacturing skills.

Outside of school, we hope to invite AACT students to the Davis Creek Regional Park to assist in the removal of old markers, the installation of new markers, and potentially helping clean up the park. This will not only reduce the physical burden on us, but also provides an incentive for AACT students through by awarding them volunteer hours. If permitted to do more beyond just the installation of the new markers, they may be able to further improve the park with an organized cleanup. The park is approximately thirty minutes away from the school - if permitted, we hope to sign an additional hour for the transportation to and from the park itself. The cleanup and installation at the park should last anywhere from two to four hours, most likely three.

## **8. How do you plan to publicize your project?**

Within the school, we hope to utilize the variety of mass communication outlet available to us. Asking teachers to spread the word of any potential park activities that may award volunteer hours has proven to help immensely with past JSL projects, as well as non-JSL events. This includes a simple message on the board, Edmodo posts, Remind messages, and general announcements.

Outside of the school community, we hope to publicize the project through social media connections. This may include people within the AACT community, but it may also include official bodies (e.g. a WCSD social media account) as well as our own social media account to help document and publicize our progress throughout the project. We also hope to achieve additional publicity through the social media accounts of our sponsors and supporters, as well as social media accounts connected with the park itself/park foundations.

We have been offered the opportunity to present the development and results of our project at an official assembly which is expected to be much like the JSL presentation at our school itself. This will achieve additional publicity within community officials, although it may not actually be presented on Internet outlets.