

# **Eagle Scout Service Project Report**

Project name:

## **Bee Crossing**

Beneficiary name:

Herndon Elementary School PTA

Eagle Scout candidate's name:

Nuruddin Abdul-Rashid

Project start date:

10/29/2020

Project completion date:

5/15/2021

<b>Project Description &amp; Introduction</b>	<b>3</b>
<b>Chronological Events</b>	<b>4</b>
Construction Day	16
<b>Lessons Learned</b>	<b>19</b>
What worked and didn't work	19
VA Utility & Landownership	19
Good Habits	19
Staying Organized & Documenting	19
Accepting Help	21
Regularity & Schedules	22
Project's Scope & combating "Scope Creep"	23
Scrapped Ideas	24
Light Experiment	24
Dog Trash Can	25
Combat Flooding with Gravel	25
Legacy	25
Friends of Bee Crossing	25
SDG 15 Relevancy	26
Leadership	27
Ways leadership was demonstrated	27
Execution	27
Delegation of Tasks	27
Effective Listening	27
Difficulties in being a leader	27
The Rewards of Being a Leader	28
Skills Learned	28
Plan/Document Development	28
B.L.U.F.	28
Project Management Tools	29
<b>Finances &amp; Hours</b>	<b>29</b>
Funding	29
How much was collected	29
How much was spent	30
How was it collected?	33
How were the Donors thanked?	33
<b>Project's Stances</b>	<b>35</b>
<b>Closing Remarks</b>	<b>35</b>
<b>Project Gallery</b>	<b>37</b>

# Project Description & Introduction

**Bee Crossing** is an **Eagle Scout project** with a focus on **sustainability**— to live beyond the present day. It was always planned with the future in mind. That's why this project's three goals are **safety**, **education**, and **community** manifested in both **physical** and **digital** components linked by **QR Code** integration.

The **physical** component of this project was planned to foster the future as well. It's 16 wooden **posts**, 10 with **Solar LEDs** and all with **plaques**. They're planted in a marshy grove between an Elementary School, and two neighborhoods. The plaques describe the **diverse representation** of wildlife. From the **native** to the **invasive**, to the birds in the trees to the skunk cabbages rooting in the hummus, the beauty of **diversity** is exemplified and **showcased** for all.

The **digital** component involves creating a **website** since 16 plaques could not cover every single species in Bee Crossing. This website, [beecrossing.org](http://beecrossing.org), was made to **correct** and **expand** on the information covered by the plaques. These plaques were also made with Herndon Elementary School's proximity in mind. We have been working with the school to make Bee Crossing a part of the **local curriculum**.

Linking both the **physical** and **digital** components together, each plaque is etched with a unique **QR Code**. These **QR Codes** lead back to the website, [beecrossing.org](http://beecrossing.org). This way, if visitors wish to do their research, they can scan the **QR Code** and learn more through the sources we provide or the additional information we offer.

The suggestion to light up the path was pitched by the community itself. The path at night is dark, but many people still use it. The 10 Solar LEDs were placed on the post as a way to have **renewably powered lights** to keep the community **safe** at night. These LEDs are dim enough to avoid blinding but bright enough to make the path visible. This way, everyone can enjoy the path both in the day and **safely at night**.

**Sustainability** and the future go hand in hand. Scouting teaches us to be prepared for life, and bringing a **community** together with this project does exactly that. This is why this project aimed to align itself with the **United Nations Sustainable Development Goal 15, Life on Land** in effort to promote **sustainability** within our global and local **community**.

Bee Crossing was made to be a **rallying point** for everyone to gather around; an area for the **community** to **identify** themselves with. The name itself was suggested and voted on by the community. We have a **volunteer group** called "**Friends of Bee Crossing**" to **maintain** the path. The vision is for this project to become bigger than itself. For this project to instill a sense of **identity** and **action**. To one day return home and see many projects and works done for the benefit of all of us, would be a dream come true.

Bee Crossing is an Eagle Scout project built now for the **future** with 16 **posts** embedded along the trails with **Solar LEDs** and **plaques** about the wildlife. The steps from **envisioning** the

future, to **realizing** it can be rocky. Although this project's creation will be a small segment in my life, I hope it will **outlive** me, as the journey to its fruition will be a **life-long experience**. This report will go into depth about the **events**, **lessons learned**, and "**bottom-line**" **information** that transpired to make this project a reality.

The **goal** of this report is, like most of this project has been, for the **future**. For other's to **study** and **learn** from. I hope that my project **isn't** replicated because that would mean no progress would have been made. I hope that this project's successes and failures will lead to **better** projects, **smarter** decisions, and more lessons to be **learned**. I hope this report helps others who are aspiring— **to be prepared for life**.

## Chronological Events

Many events occurred during this project, however, it would be near impossible to list them all. So, this list of events presents the most relevant and important steps to the project's completion in **chronological** order.

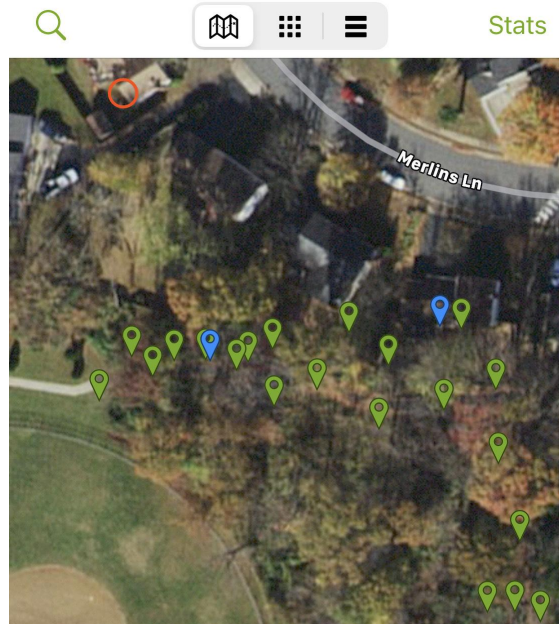
After the project's **proposal** was **accepted** on **10/29/2020**, the work began to start **identifying** the aspects of the **habitat** that were going to be displayed on the plaques. However, there was a **problem** in the fact that I was not able to identify most things. My Eagle Coach, Mrs. Graham, pointed me towards **Master Gardeners of Northern Virginia** for help.

After contact was made with them, they shared a **mobile app** with me that could aid in the **identification** of **wildlife**. In hindsight, this was one of the most important tools that were acquired for this project. The app is called **iNaturalist**, and it is a joint initiative by the California Academy of Sciences and the **National Geographic** Society to help **identify** plants and animals everywhere.

This app helped a lot because it gave **suggestions** on what the plant and animals were. Taking a photo would prompt the app to give you a few articles to read about to see if the suggestion was an accurate one. If not, it would give you other options to explore to help make the correct **identification**.

On top of this, wherever the picture was taken, the app would allow you to **share** on a **community map** where the picture was taken and what it was. This allowed for multiple people to give **suggestions** on what certain species were and eventually get it submitted to an **expert** to **verify**. It also proved useful when planning **schematics** of the build site later on.





(Screenshot of the **iNaturalist** App's Map. Each marker is attached with a photo and a suggested plant/animal species).

On **12/14/20**, A project plan **outline** was created that described the **phases** that this project was going to go through to meet **completion**. This was made so that the project would have a sense of **direction** and highlight the steps in between the **proposal** and the **execution**. The phases were:

**Identification - Identifying & classifying the wildlife** that inhabited the area of, soon to be Bee Crossing. This step turned out to be revisited over and over again throughout the project. When I realized this during planning, I thought about how similar to the EDGE method in scouting, this project plan's phases can be **revisited** at any **time** depending on the situation. New information caused the project to undergo all the steps again, from identification to sampling in preparation for the execution of it all. The **phases are fluid** states that just help figure out where we are currently, but it's important to understand that it isn't linear. It's just how plans are made; it's called **revision**.

**Schemetaization** - Making the **building blueprints** for the project. Figuring which posts go where and where the lights go. This one was often tricky, but the **geo-information** from **iNaturalist** helped to place which posts go where along the path. That in combination with **Google Maps** and its **scale legend** enabled me to **estimate** how many posts were needed. A **problem** that I had to deal with was that there were no **good** maps of the path as they were all **obscured** by the canopy from the trees. As a result, a **modified** Google Maps image was modified to **outline** the **path** to make the schematic-making easier.

**Prototyping** - Making **prototypes** of what would be built in the final project. This meant **testing** the **Solar LEDs** and trying to **verify** if the steps of construction for the posts will work as

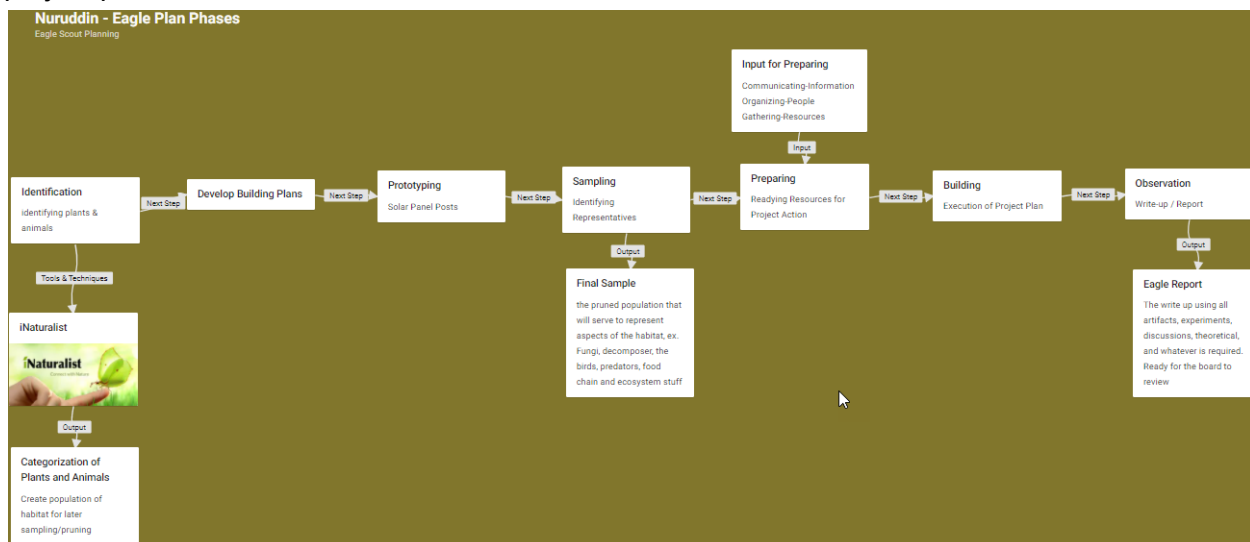
intended. In the end, this phase was only performed on the Solar LEDs very briefly. This was mostly due to a **short time** and **budget**, but it was proven also to be an **unnecessary** extra step for this project. This was only because the actual implementation of putting posts into the ground, LEDs, and plaques was planned out extensively. I would still recommend this step for future projects.

**Sampling** - This step **references** the information gathered from the **identification** phase and **prunes** it down to a **select sample**. The sample was to be made **diverse** enough to **represent** all **roles** within the **ecosystem**, but also appealing to people with both unknown and more commonly known species to **stimulate interest**. In the end, this goal was mostly achieved with the 15 plaques that described the **wildlife**. The roles that were covered were: **parasitic relationships/disease, producers, consumers, plants, animals, abiotic ecological factors**, and **native & invasive** species. On the website, [beecrossing.org](http://beecrossing.org), in the learn section, all of the posts have **tags** to help identify the role(s) that specimen fulfills as well.

**Communicating** - This is meant to **coordinate**, and **relay information** to all resources. This includes **people** and **materials**. This was the step where the project would have ordered materials and gathered volunteers. This phase went well during the project, but as it was so close to the deadline when we reached it, it was very chaotic making sure everything would be on time for the construction date (this topic will be touched upon more later in the report).

**Execution** - This was the day to **execute** the project plan, in other words, build-day. More information on this day to be covered later in the report

**Observation** - This stage is also called **monitoring**, and it's meant to **measure** the **outcome** of the project. The project is currently in this phase. **Reports** like this one, are simply a part of the project plan.



(A screenshot of a **visual organizer** being used to help develop the dependents of each step 12/14/20).

On **1/14/21**, the **PTA Board** and the **project team** (Eagle Coach, Eagle Advisor, and myself the Eagle Candidate) met to discuss an opportunity to **present** to the **PTA General Assembly meeting** coming up. We wanted to present it so we were **visible** to the **community** so we could create **interest** and **future funds** later for this project. When we met, questions about the **budget**, how would the project be **funded**, who will **maintain** this project after completion, and **who owns the land** that the project will be built on arose. The **maintenance** of the project and the **ownership** of the land were of particular **concern**. Maintenance of Eagle Scout projects wasn't something I heard of before, at least not what the Eagle Scout candidates had to plan for, but to **satisfy the beneficiary**, the project now needed a [Maintenance Plan](#) to handle that.

As for the **ownership** of the land, the asphalt path we will be working on has a **history** of **unknown** land ownership. Fortunately, we resolved this on **1/18/2021** by sending the PTA an email from **7/8/2020** from the Town of Herndon saying that the **land was deemed to be FCPS** (Fairfax County Public Schools) **property** due to lack of evidence otherwise. Unfortunately, this **lack of evidence** would also come back to get us later as described further down into the report.

Sent: Wednesday, July 8, 2020 5:32 PM  
To: Graham, Jaime <[REDACTED]>  
Cc: Ashton, Bill <[REDACTED]>; Dudzinsky, John <[REDACTED]>; Friedrichs, Signe <[REDACTED]>; McKenna, Bill <[REDACTED]>  
Subject: [External] Re: Eagle Scout Project In the Town of Herndon

Ms. Graham,

Town staff has not found any evidence that the town controls any portion of this trail and thus would not be deemed the beneficiary of the improvements. Fairfax County Public Schools appears to be the appropriate beneficiary. If the scout plans to improve the trail beyond the school property, he will need to contact the appropriate landowners and obtain their permission. If he needs help determining ownership, please have him arrange an appointment with me and I can try to help. Hopefully the proposal can come to fruition. The concept sounds wonderful and most appropriate for an Eagle Scout project.

Best,

Lisa

Elizabeth M. Gilleran, AICP  
Director of Community Development  
703.787.7380  
[www.herndon-va.gov](http://www.herndon-va.gov)



*(Screenshot of the email from 7/8/2020 describing land **ownership** of the path for Fairfax County Public Schools, email addresses covered for privacy).*

On **1/16/21**, myself, the Eagle Scout candidate, and another Eagle Scout candidate met with Ryan Alford, the **Ranger** from **Camp William B. Snyder** on **Zoom** to talk about how to construct our projects. This meeting turned out to be very helpful to identify how deep the posts needed to be and how to use gravel with the project. For more details on how deep the posts are and how much gravel was needed, see the [Construction Plan](#) that is attached.

On **1/27/21**. From 6:40 at night to 2:37 in the morning, I worked on **preparing a budget** for the **PTA's general assembly** the next day. It was going to be **live** on **youtube** (click this link [here](#) to watch) so it can be presented to any parent from the PTA. For the **budget**, I did gravel calculations (that later proved to be incorrect due to conversions between inches and cubic yards and confusion about how much a ton of gravel is) and **configured** the original **post height** so that it would be **tall enough** for elementary schoolers to **read** it, but **short enough** to **discourage** people **leaning** onto the posts. The sweet spot height was set to be **3 and a half feet** off the ground.

The **Presentation** on **1/28/2020** itself was well received.  
It included the following topics:

- What the project has to do with the community
- What's an Eagle Scout
- Why am I doing this project for this community
- The description of the project
- Vision of the project
- How far along the project is currently
- and How the community can help this project.

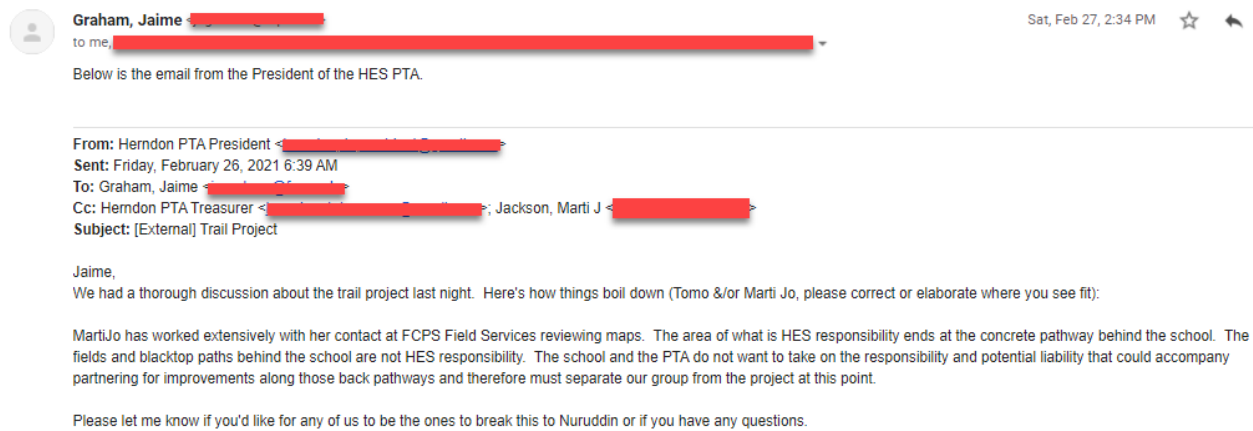
The reasons it covered these topics was to first make it **relevant** to the audience, then **explain** why I want to do it, say **what** the project **is** and what it **will be**, then what I **need** from them. At the end of the presentation, I invited them to email questions to, what I thought was an email account that can be shared with multiple people to abide by **Youth Protection Guidelines**, a google groups email. That didn't work because you cannot send emails to a google group email. As a result, I had missed some emails inquiring about the project.

On **2/4/21**, I have been told earlier that **local lumber yards** would be a good place to go for higher quality wood and lower prices unlike places like lowes or home depot. So, I found [Eco-Friendly Lumber](#) on the web as a local lumber source. They consider themselves **sustainable** since they acquire their wood from trees that are about to be removed from construction projects.

For any future project leaders looking for lumber, I do **recommend** this business. The people were **friendly**, offered a **discount** for Eagle Scout projects, and very **helpful**.

I began asking them for **quotes** for their **custom cuts** and what kind of wood should this project use. This exchange of inquiries and confirmations went on until we purchased the wood on **5/8/21**. They also gave the project a **free** piece of a custom-cut wood piece for the plaques with the trail name on it. For more details on the wood that was used in the end, see the [Construction Plan](#).

On **2/27/21**, After extensive research by the new interim principal of Herndon Elementary School, **the project was deemed a liability** since there was **no evidence** found to back up the claim land ownership. This meant the project **no longer had a beneficiary**.



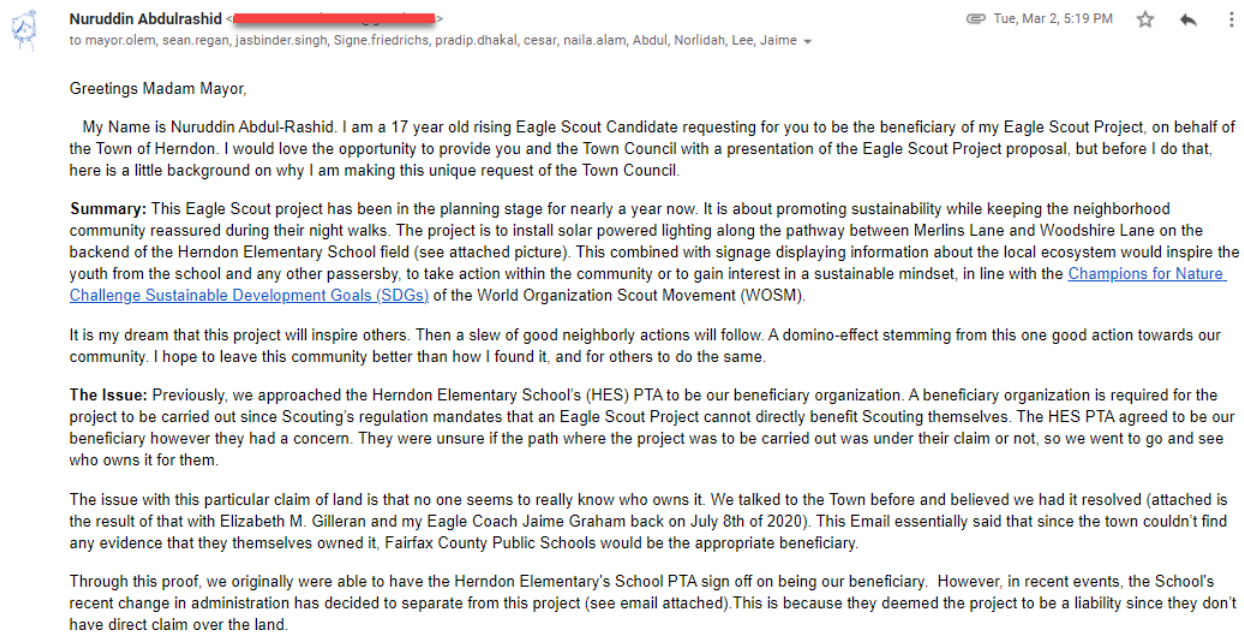
*(Screenshot of email sent to my Eagle Coach from the PTA. Email addresses covered for privacy).*

In response, I met with my Eagle Advisor to discuss our next steps. We decided to ask the **Town of Herndon** to be the **beneficiary** for the project instead. The logic was that the land had to belong to somebody since there was development on the land, so it might as well belong to the highest rung on the ladder, the Town of Herndon.

Later, after a few days of draft emails, on **3/2/21**, the **Mayor of Herndon, Sheila Olem**, was emailed a request to be the project's **beneficiary**. A few minutes afterward, we received a call from her asking about the project. We met at the path and discussed what to do. She said to give her a week to **find the evidence of ownership**, and she also advised me to talk to the **Town Forester, John Dudzinsky**, to help **identify** the wildlife there. I did meet with him later and he **showcased** a lot of plants and gave me **sources** to educate myself with.

The email to the Mayor was a great **milestone** because I practiced a new tool for writing called **B.L.U.F.** **B.L.U.F.** means **Bottom Line Up Front**. Say what you **need**, then give them concise **context**. It's **fast**, **direct**, and most importantly, very **clear**. This tool helped me with a lot of emails later on, as well as making the three plans: [Construction Plan](#), [Maintenance Plan](#), and [Volunteer Plan](#). It also gave me a lot of confidence in writing emails which helped because

asking for things was something I **struggled** with this project.



*(Screenshot of the email sent to Mayor Sheila Olem of Herndon).*

On **3/13/21**, nearly a week after the email to the mayor, we decided to email the **FCPS board at large members** the same request we emailed the town (which was asking them to be our beneficiary due to Herndon Elementary School's new administration deeming the project a liability). Fortunately, it was picked up by **Elaine Tholen**, who helped us through the remainder of this project by **expediting forms** and giving a sense of **direction**. Although she wasn't the project's beneficiary representative, she was kind of like it since she was a part of the organization **superior** to that of our beneficiary.

We got confirmation later on **4/1/21** that the project's construction zone is on **FCPS land** (meaning the land is **FCPS property**). The next day after the email was sent out, I started the process of making the **blueprints** of which post goes where by placing paint sticks from Home Depot into the ground. Each post had an **ID number** that was used to make an **ID system** for future QR codes and plaque associations. The **ID numbers** were given, starting from "1", in order of creation.



	A	B	C	D	E	F	G
1	ID#	Location Dependent	Type	Descriptee	Is Placed	Post created	Is Combined with
2	1	<input checked="" type="checkbox"/>	LP	Lights Along <i>Short-Side</i>	<input checked="" type="checkbox"/>		#17
3	2	<input checked="" type="checkbox"/>	LP	Lights Along <i>Short-Side</i>	<input checked="" type="checkbox"/>		#13
4	3	<input checked="" type="checkbox"/>	LP	Lights Along <i>Short-Side</i>	<input checked="" type="checkbox"/>		#14
5	4	<input checked="" type="checkbox"/>	LP	Lights Along <i>Short-Side</i>	<input checked="" type="checkbox"/>		#24
6	5	<input checked="" type="checkbox"/>	LP	Lights Along <i>Short-Side</i>	<input checked="" type="checkbox"/>		#
7	6	<input checked="" type="checkbox"/>	LP	Lights Along <i>Long-Side</i>	<input checked="" type="checkbox"/>		#
8	7	<input checked="" type="checkbox"/>	LP	Lights Along <i>Long-Side</i>	<input checked="" type="checkbox"/>		#
9	8	<input checked="" type="checkbox"/>	LP	Lights Along <i>Long-Side</i>	<input checked="" type="checkbox"/>		#
10	9	<input checked="" type="checkbox"/>	LP	Lights Along <i>Long-Side</i>	<input checked="" type="checkbox"/>		#
11	10	<input checked="" type="checkbox"/>	LP	Lights Along <i>Long-Side</i>	<input checked="" type="checkbox"/>		#
12	11	<input checked="" type="checkbox"/>	LP	Lights Along <i>Long-Side</i>	<input checked="" type="checkbox"/>		#
13	12	<input checked="" type="checkbox"/>	LP	Lights Along <i>Long-Side</i>	<input checked="" type="checkbox"/>		#
14	13	<input type="checkbox"/>	IP	Red Fox	<input type="checkbox"/>	<input checked="" type="checkbox"/>	#
15	14	<input type="checkbox"/>	IP	Gray Squirrel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	#
16	15	<input type="checkbox"/>	IP	Cardinal	<input type="checkbox"/>	<input checked="" type="checkbox"/>	#
17	16	<input type="checkbox"/>	IP	Down Woodpecker	<input type="checkbox"/>	<input checked="" type="checkbox"/>	#
18	17	<input checked="" type="checkbox"/>	IP	Fly Honeysuckle	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	#
19	18	<input checked="" type="checkbox"/>	IP	English Ivy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	#
20	19	<input checked="" type="checkbox"/>	IP	Scarlet Oak	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	#
21	20	<input type="checkbox"/>	IP	Poison Ivy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	#
22	21	<input checked="" type="checkbox"/>	IP	Diseased Tree (Hypoxilin)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	#
23	22	<input type="checkbox"/>	IP	Ash Borer/Ash Tree	<input type="checkbox"/>	<input checked="" type="checkbox"/>	#
24	23	<input checked="" type="checkbox"/>	IP	Skunk Cabbage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	#
25	24	<input type="checkbox"/>	IP	Terrain/Soil	<input type="checkbox"/>	<input checked="" type="checkbox"/>	#
26	25	<input checked="" type="checkbox"/>	IP	Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	#
27	26	<input checked="" type="checkbox"/>	SP	Sign Post for Path Name	<input checked="" type="checkbox"/>		#

(Screenshot of the **ID system** used for the posts, click [here](#) to see the google sheet).

On **4/6/21**, The need to make the website was growing but it needed a **name**. To find out what name to use, I made a google form that allowed participants to submit their 1st, 2nd, and 3rd choices. They were also allowed to **contribute** a name idea to the list of options. In the end, a name that was contributed as a suggestion called **Bee Crossing** was voted on. It was particularly nice because the Herndon Elementary School's mascot is also a bee. The runner-up name was Cardinal Crossing.

Now that there was a name for the project, on **4/7/21**, the domain [beecrossing.org](http://beecrossing.org) was **registered as a website** with help from my Eagle Advisor. This website uses **WordPress** to make **building** the website easier yet extremely **customizable**. It also enables us to later **collect funds** through various **plugins** as well as provide a link for our future **QR codes** on our plaques to go to by use of what they refer to as **slugs**. In addition to the website, "**beecrossing**" was also registered on **Facebook** as a **page** and **group**. Surprisingly, for the **domain**, and **Facebook URL**, "**beecrossing**" wasn't taken at all. Shortly after the **website** was set up, the **Fundraiser Form** was completed, and we were ready to start fundraising.

On **4/11/21**, to help aid the project completion, my Eagle Advisor, and my mother all sat down in front of a whiteboard and helped me plan out what needed to be done using a "**Kanban board**". Essentially, it's a list of tasks in categories of **To-do**, **in-progress**, and **completed**. This was done to help **organize** my **time** between school, the Air-Force enlistment I have been doing, and my Eagle Scout project and merit badges (which at the time I had **6** left to do).

That day I gathered a list of 5 volunteers that would help **maintain** the path **after completion** at the **request** of the **beneficiary**. I used that to help create the [Maintenance Plan](#). The [Maintenance Plan](#) was the first of three **plans** I would create for this project. It discussed how the project will be taken **care** of, who is **responsible** for what, and what are they **not responsible** for. This plan was approved and sent the next day.

Additionally, the same day I began contacting **Dan** from [Smart Garden Signs](#) about **custom plaques**. I heard about him as a suggestion to resolve the project's lack of custom-made plaques from **Elaine Tholen**. These plaques would incorporate a **title, description, illustration, scouting emblem, SDG Goal 15, and the QR Code**.

A few days later, **Mr. Moseley** was contacted to begin work on **school curriculum integration**. Although full integration is still in the works, at the time of contact I was also pointed towards the **school's public curriculum** as a **guide** when writing the information for the plaques.

So far, I am happy to say that the **elementary schoolers enjoy** walking through the path and **learning** from the signs. However, one child has said that signs were evil because they were red. Additionally, I will caution those who wish to place plastic plaques to secure the plaques on **all four corners**. This project uses **two** and expected the plaques to **stay flat**, however, they **bowed** outwards, and now risk **breaking** if the top that isn't screwed is pulled down.



(Picture taken of me writing the [Maintenance Plan](#) with the “Kanban” board in the background).

On 4/19/21, the [Construction plan](#) was submitted to the PTA, Interim Principal, and Board at Large Member, **Elaine Tholen** to approve construction and complete the DC 407 form they



needed. This form was later **approved** on **4/22/21** enabling us to start construction as far as **FCPS** was concerned, however, we needed to also contact **VA Utility** and get a **ticket** so we could **dig** into the ground.

**VA utility** finished **marking** the area on **4/26/21** fully **enabling** the project to **start construction** at any time. The ticket given however did expire on **5/14/21**, so we had it extended later on **5/5/21** so that we could start construction on **5/15/21**. In hindsight, contacting **VA Utility** earlier would've **resolved** the **land ownership issue** sooner. **VA Utility** keeps a **record** of who **owns** what since they need to know where the dig site is.

Also on **4/26/21**, **Bee Crossing** was put onto [Google Maps](#). The process of doing this was simple, and I highly recommend anyone to do it for their project if it fits their needs.

Here's how to do it:

1. Go to Google Maps
2. Click add a missing place
3. Fill in the information (hours of operation, what type of business is this for, etc...)
4. Wait for Google to review it and give it verification.  
(For **Bee Crossing**, the review took half an hour, but I do not know if that's faster than average or not).
5. After it has been reviewed, click claim this business, and then you can manage the profile attached to that location.

Whether or not this aspect was important, I am not sure. However, it was something that was done fast and easily that **impressed** a lot of people. The **location** profile also **linked** back to the **website**, so it provided additional **traffic** to the **website**. It also made sharing the address of the construction site easy to find for the volunteers.

The same day, I also **recruited** help in **generating** the text for the **plaques**. There were 16 plaques to be made so **delegating** this task out helped tremendously. However, giving additional **guidelines** and a **structure** of what to write as instructions for the volunteers would've been useful as I had to guide them a decent amount.

All plaques had sources that they **referenced** kept together and put onto the website so that it **encouraged self-research**. This was also to stop the spread of **misinformation**. By linking back to the source of information, we can see where the misinformation came from.

On **5/3/21**, the [Volunteer Plan](#) was sent out to the **PTA Members**, the **principal**, and **Board at Large member, Elaine Tholen**. This plan was also available to all volunteers who signed up to the mailing list via the project's website. The submissions of this plan **confirmed** the **date** of **5/15/21** to be the day of construction.

The same day, the **custom-printed signs** ordered from **Office Depot** arrived. I set them up the next day along the path to help **funnel traffic** into the **website**, however, it didn't seem to do much for the project.

On **5/4/21**, the **gravel** was **ordered** for the project. The **calculations** for gravel were very confusing. My advice is to ensure that the **conversion** of units is accurate. If using the **material calculator** that comes on most gravel companies, make sure to know what units the calculator takes in.

Often it comes in as **foot x foot x in**, which can cause issues if not aware. Since the **volume** of my gravel was calculated for a cylinder with a hole in the center, the **input** in the **calculator** was “**1-foot x the volume** that was solved x **12 inches**”. That way, when it gave me how many tons of gravel that would be, it'd just be like **multiplying** the volume of gravel that was planned for **by one** since 12 inches equals a foot.

It's important to use their calculator for the number of tons because tons is a measurement of **weight**, meaning they will use a number for gravel that is unknown multiplied with the expected **volume**. To see the final gravel calculations, refer to the [Construction Plan](#).

On **5/8/21**, the wood was picked up from [Eco-Friendly Lumber](#) for the project. We brought gloves which proved to be useful since the wood needed to be **sanded** down later to avoid splinters. The wood barely fit into the car, so for future project leaders, make sure that the car can fit your **materials**.



*(Helpful volunteer assisting me lifting logs and sanding wood).*

The next day, we ordered **CopperGreen** from Lowe's with an estimated shipping date of **5/14/21**. However, when we checked later that day, we saw the **actual shipping date** was the Monday after. This was a massive problem since **CopperGreen** is a **wood preservative**.

Originally, the plan didn't call for it because the type of wood we got was **white oak** which I was informed was already **resistant**. However, to ensure this project lasted a good while, we decided to get the **wood treated** with it. To resolve the issue, we ordered another kind of **CopperGreen** off of **Amazon** using prime so that it could get there in time. We later returned the **Lowe's CopperGreen** for a **refund**.

The days before construction were all **prep** days. On **5/13/21** we bought a **wheelbarrow**, **gloves**, and **screws** for the **plaques** and **Solar LEDs** rated for **exterior** use from Home Depot. Deciding on which screw was difficult to do, I already had the size of the screw drilled into the plaques, but the screws I was going to use would've been overkill. The screws I was going to use were an inch and a half in length, but the plaque is only about a quarter of an inch thick. The Home Depot employees proved to be very helpful in **advising** on exactly what screw fit our needs.

The day right before construction, **5/14/21** was the biggest **prep day**. We had set up my backyard as a **volunteer rest station** with **tents**, **food**, and places to **sit**. We also lined out all the **wood** and had it **treated** that day with the **CopperGreen** filled into a weedkiller pump-sprayer.

We ordered the **auger** the day before **as instructed** by the company, but the auger we were looking to rent **wasn't available**. To resolve this, we had to get a **bigger auger** with a **smaller bit** than what was planned (16 inches down to a 12 inch bit). This meant a **surplus** of gravel would be created since the holes would have a smaller diameter which would be an issue that was resolved later. The bigger **auger**, referred to as a **tow-able auger**, proved to be a great choice during construction. Because of the size, the auger didn't **buckle** as much, and it had enough **weight** to drill into the earth despite the occasional small root.

The same day, holes in the wood were measured and **drilled**, and the gravel was set to be delivered later in the day. We had instructed the gravel company to **deliver gravel** onto a **tarp** on the street near the path for **easy clean-up**.

Originally, the gravel would've been delivered to the back of the **school**, but that proved too much **disruption** to the school so we changed it. Additionally, to most gravel companies' **insurance policies**, they would not deliver on anything that isn't a **hard surface**, meaning that the truck couldn't deliver it directly to the construction site, and we had to deliver it by **wheelbarrow** into it.





*(Volunteers transporting the gravel mound using wheelbarrows & shovels).*

## Construction Day

**5/15/21** was **construction day**. Things began early in the morning, and everything was humming along. Food was being cooked, materials were being transported to the **build site**, and volunteers started to pour in with their tools and smiling faces. The only tool I used that day was my [Volunteer Plan](#), pen, and clipboard.

A few **logistical challenges** occurred that day that could've been planned for.

For instance, **poison ivy** was an issue that was faced, the volunteers were not instructed to bring long pants, so later we had to run out and get an **ivy relief** for some volunteers.

The **Auger drill** bit wasn't able to drill the entire depth, so we had to have volunteers clean out the rest of the hole. When the volunteers did, they often hit the **water table** since the land is very marshy. As a result, many of the posts had to be placed **higher** up than planned. In one instance, a **plaque** had to be mounted on the front **side of a post** instead of the top due to the **water table** pushing the post height up too high.

Another item that volunteers were not instructed to bring was a **water bottle**. There had been a water station set up by the path as a makeshift **HQ**. However, there was only ice in the jug, no water. It was a fairly warm day, and I expected the ice to melt into refreshing water, but it just stayed ice. This was probably because water coolers tend to keep their water cool.

**Communicating** needs also proved difficult for me as a **leader**. After this project, I believe **communication** is one of the core aspects of being a great **leader**. If I had shared my plan out more, given an idea of what equipment was needed and why more people who were willing to help would have helped. As an example, I never made any special request for a **posthole digger** for this project that made post-holes in the ground. Fortunately, a close friend was volunteering that day and brought a posthole digger. That digger served to be a very important tool.

Other than that, **funds** were also a **challenge**. I fundraised with a **goal of \$2000** knowing that I only **needed \$1,500**. I made the goal higher so I could raise potential budget *fluff* in case of any errors or incidents that occurred. In the end, we fundraised **\$1,450.92**, which was just shy of **\$1,500**. This meant we didn't have that extra wiggle room in the wallet, so plans must be **extensive** to strike out any possible financial loss.

There were, however, a good amount of things that went well during **execution**. Some examples of that would be the **website** & the **Facebook group/page**, utilizing the **tarp** for gravel clean-up, breaking into **teams**, **break** times, nearby **refresh station**, and renting the **towable auger**.

The **Website & Facebook** page made **communication** and public **visibility** simple. The **website** did many things; it provided a platform to donate; it had a sign-up to a volunteer mailing list, and made resources available to volunteers. The **Facebook group/page** gathered 22 members which helped give this project a confidence boost. What it meant was that over 20 people from this community actively **supported** this project. It made relaying information also an easier feat.

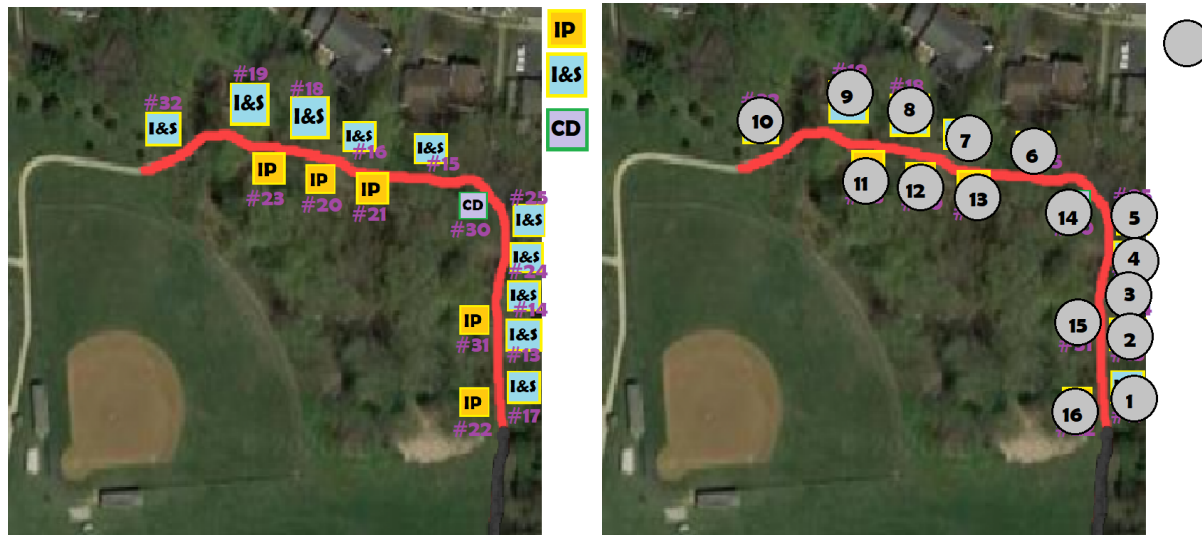
Utilizing the **tarp** for gravel clean-up was a time & lifesaver. Gravel was transported by having a **runner team**, a team that ran the **wheelbarrows**, and a **scooping** team, a team that **deposited** the gravel into the barrows, go back and forth between the site and the gravel mound. The gravel was kept on top of a big **tarp** so that when all the gravel was scooped into the **wheelbarrow**, all the leftovers could just be picked up with the tarp and **funneled** into another **wheelbarrow**. By using the **tarp**, we also kept gravel out of the street which **prevented** damage to cars that used the road.

The [Volunteer Plan](#) outlined the concept of dividing the labor into **teams**. The teams would have an **objective** that over time they would gain **proficiency** in. Each team had a **head leader** that reported to me **similarly** to how **patrols** work in a **troop**. Both the **structure** and time gaining **proficiency** made the execution of this project quick. So fast, the project was completed before the expected time of 6 pm by 10 minutes, and the last hour was only cleaning up the materials.

The volunteers also reported that the **distribution of labor** was good, no one volunteer felt overwhelmed with work because there were just enough volunteers to prevent **burn-out**. 20 volunteers seemed to be my project's sweet spot, any more and there would've been too many

idle hands. For any future project leader, this number will change depending on the scale of your project. As a helpful tip, one person can manage only about six people. Each specialized group I had was usually three volunteers with more general work being done by a group of six volunteers.

Below are the **site plans** shown in the [Volunteer Plan](#). This was made using **MS Paint**, **Google Maps**, and geo-information from the **iNaturalist App** & an App called “**Field Area Measuring**”:



(On the left is an **in-depth** schematic, on the right is the **simplified** view  
**I&S** refers to posts with info plaques and Solar LEDs, **IP** refers to only that of info plaques. **CD**  
 is a different kind of **IP** that will be used for crediting. The numbers are the corresponding  
**Plaque IDs** which are on the back).

The Volunteers reported also that the number of **break** times and the **duration** of breaks were excellent. Breaks are a great way to **revitalize** your hard-working crew and are in fact near **necessary** for any project lasting more than 3-4 hours. It's important to keep the breaks **limited** though and properly **timed**. Breaks interrupt “**work rhythms**” that exceptional hard workers rely on. It's like being in the zone for writing an essay, then being forced to go and eat. Most people would rather just finish the task, and then eat.

For any future project leaders, I would recommend pinging your staff on your routine **check-up** to gauge how they are feeling. If they're leaning towards **exhaustion**, make preparations for a **break**. If they are quite fine chugging along, let them be, but **monitor** them because some people tend to **overwork** themselves.

During the breaks, **food** was given and served for the volunteers to enjoy. The volunteers reported that the food of hotdogs, breakfast bars that **aren't Nature Valley**, and the other things served were great. They claimed it was because, at most **Eagle Service projects**, all they had to eat was usually **pizza** and/or **Nature Valley** bars— they were **sick** of it. They also cheered the actual **seating** that was provided because, at other projects, they also do not provide appropriate seating. So, as a general tip to future project leaders, the **comforts** that are given to

your workers are a huge **morale booster**. This includes **relaxation areas** and especially **food**. Do not underestimate the importance of these in your project.

On the topic of **relaxation areas**, having one that is nearby to the project site is also commendable. The Volunteers reported that the nearby refresh station helped avoid **fatigue** as it saves the distance needed to travel just to relax. If possible, I would recommend making, even if temporary, refresh stations as **close** to your worksite as possible. Not only does it help the volunteers, but it also helps you as the project leader manage your workers by giving a mini check-in area.

Renting the towable auger was the best accidental thing to happen to this project. As mentioned previously, the towable auger was really good for digging holes quickly. However, the bit size being **scaled down** by 4 inches did cause a **surplus** of gravel. This **surplus** was not much of an issue and rather provided an **opportunity**. After talking about the idea with my Eagle Coach, who communicates with **Herndon Elementary School's PTA**— my **beneficiary**, and **Elaine Tholen**, we placed all the extra gravel as **bedding** in a barren area attached to the grove. This bedding provides a place to sit and watch the soccer field nearby while in the shade, as well as possible bedding for a **future project**. My recommendation would be a sundial to continue on the theme of education in Bee Crossing.

All in all, the execution was very **successful**, and immediately after the project was completed, a “**Start, Stop, Continue**” was held and recorded to help aid in the report later on.

## Lessons Learned

### What worked and didn't work

#### VA Utility & Landownership

If you ever need to inquire about **land ownership** of a site to dig in, ask **VA Utility**. They keep a record of who owns what and will be able to show you a **map of property lines in VA**. It's a lot faster than asking the Town Council or going to the record's library yourself. This tip could've saved the Bee Crossing project at least two months enabling for a bigger scope or better-executed project.

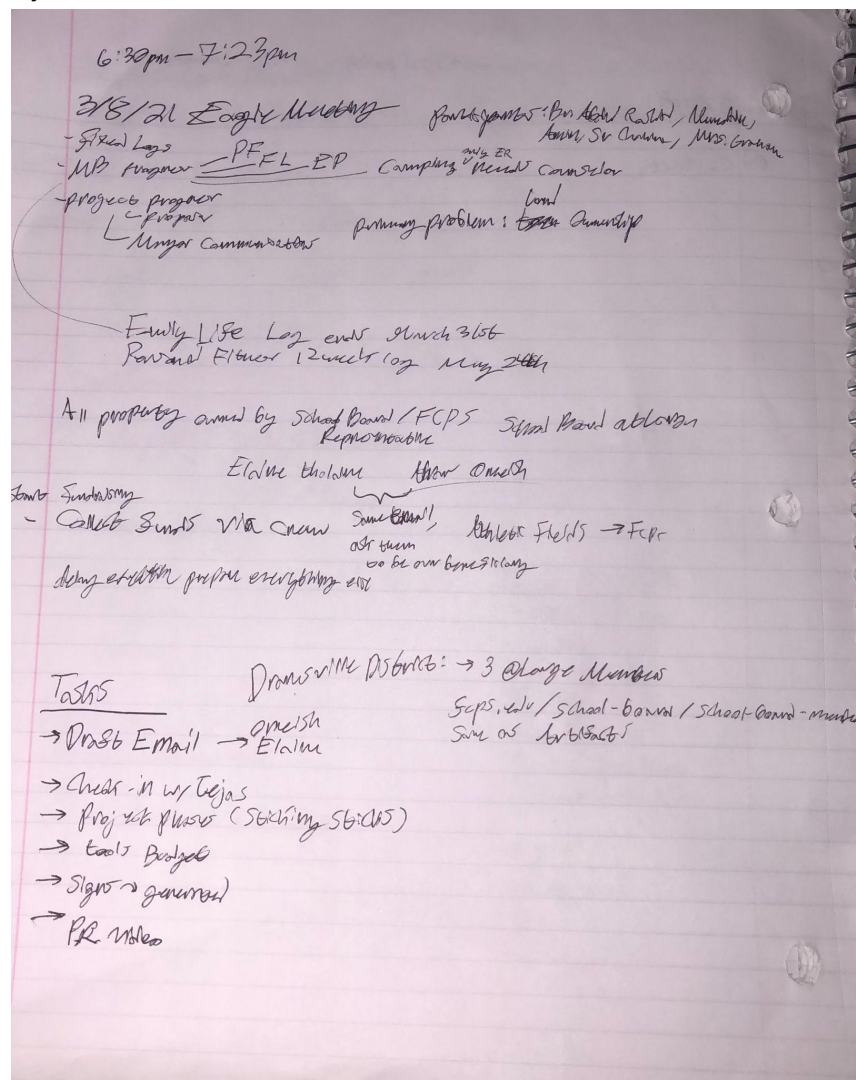
#### Good Habits

#### Staying Organized & Documenting



A great personal habit to have is to keep a **notebook** with you and write down as much as possible. Writing the **dates** on all documents or any **notes** whatsoever makes life in the future much easier when something is needed to be **referenced** later.

For example, recalling all events for the **Chronological Events** for this report wouldn't be possible without all the notebooks I have recording all the meetings I was in. It can also be **beneficial** during the project since it can be difficult to keep track of everything. Writing down stuff like the **tasks** that need to be done by the end of the day or week; what other people are doing; a particular **method** of how something gets done, helps ward off **tunnel vision** and lapses in memory.



(Typical notes for a **meeting**. **Title**, **date**, **time**, and **attendees** involved at the top. In between the top and bottom are a lot of **visual notes**. At the bottom, **tasks** are listed which need to be done after the meeting).

Great note-taking goes hand-in-hand with **staying organized**. Keeping everything in its place makes referencing easier and faster. It also helps **other people understand your work**



better since there is a logic to organization, unlike a messy pile of documents and folders. It's also great if there's ever a need for a surprise meeting, just grab a binder with everything inside and walk out the door.

Another great habit is to document everything **as time progresses**. **Documenting** is very similar to note-taking, and staying organized. However, it is **broader** in its **scope**.

Here are a few methods that can be used to document your project:

- Take videos of your work;
- Explain your thought processes;
- Take pictures, and digitize or back up everything for the future.

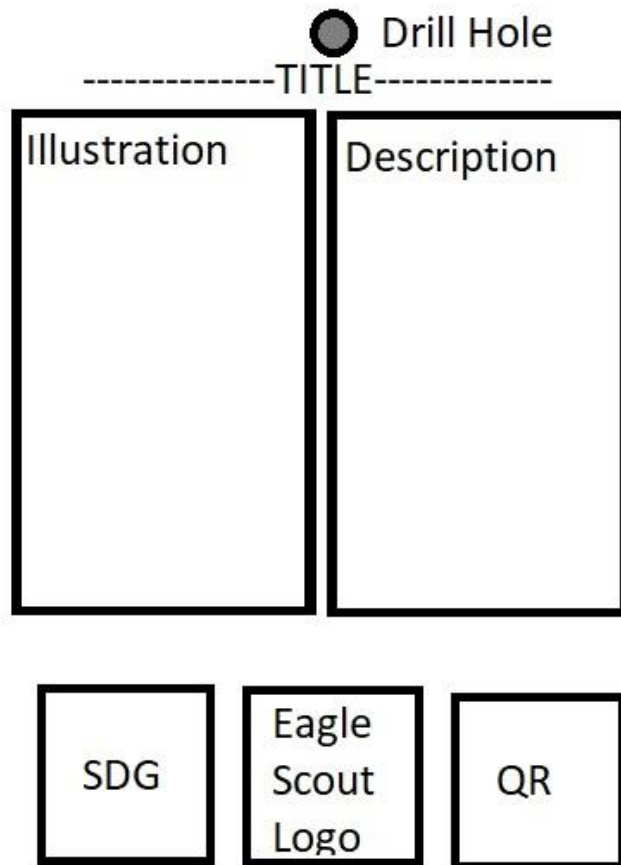
I believe heavily in this one **habit** when it comes to **managing** a project. All too often for other group projects/work, we ask ourselves **what** we did last time or **how** we did it. There is no **documentation** on how to build the **Great Pyramids**, and that's why we don't see any more of those wonders. By not documenting, little wonders and precious ideas can be **lost** to time. **Documentation** is information's best preservative, and the best to apply it is right away.

## Accepting Help

Accepting help from others makes a **difference**. It can be scary to hand off aspects of a project to other people. This could be simply for not trusting them or their **capability** to fulfill the vision. However, to be a **leader**, accepting help from others is **essential**. To ensure that they produce the work wanted, **the vision must be clearly communicated**.

**Clear communication** not only enables the production of work to be exactly as instructed but could also **improve the work** beyond what was originally planned. It's a fact that somebody will be better than somebody else at something. By allowing people to work in their **expertise**, with the **creative freedom** of a **vision**, you enable the growth of a better project.

When communicating with **Dan Pelkey**, from [Smart Garden Signs](#) about plaques, I gave him the **bottom line up front** of what I was trying to do. I provided a **sample** template and the **vision** of the project. When I gave him the first sample text, I **forgot to include an illustration** for the plaque. Instead of asking for one, Dan went through his library of images **and used his own**. He did this for every single **plaque** he custom-made for this project. This alone saved me **weeks** because there were many **images** needed for these **plaques**. I would have had to contact somebody to **illustrate** the specimen I wanted for 15 plaques, **pay** for them, **validate** that the images were **compatible** to burn into the plaques, make **changes** if necessary, and probably make the background transparent. **Communicating** what you need, and accepting help from others is absolutely **important** to be a **leader** and have a **great project**.



*(Template that was created in MS Paint to convey the vision of what the plaques should look like to **Dan Pelkey**).*

This also applies in terms of **advice** & wisdom. Even the president of the United States has a cabinet of members, each with their expertise to help the president make the best executive decisions possible. **A great leader is a great listener.**

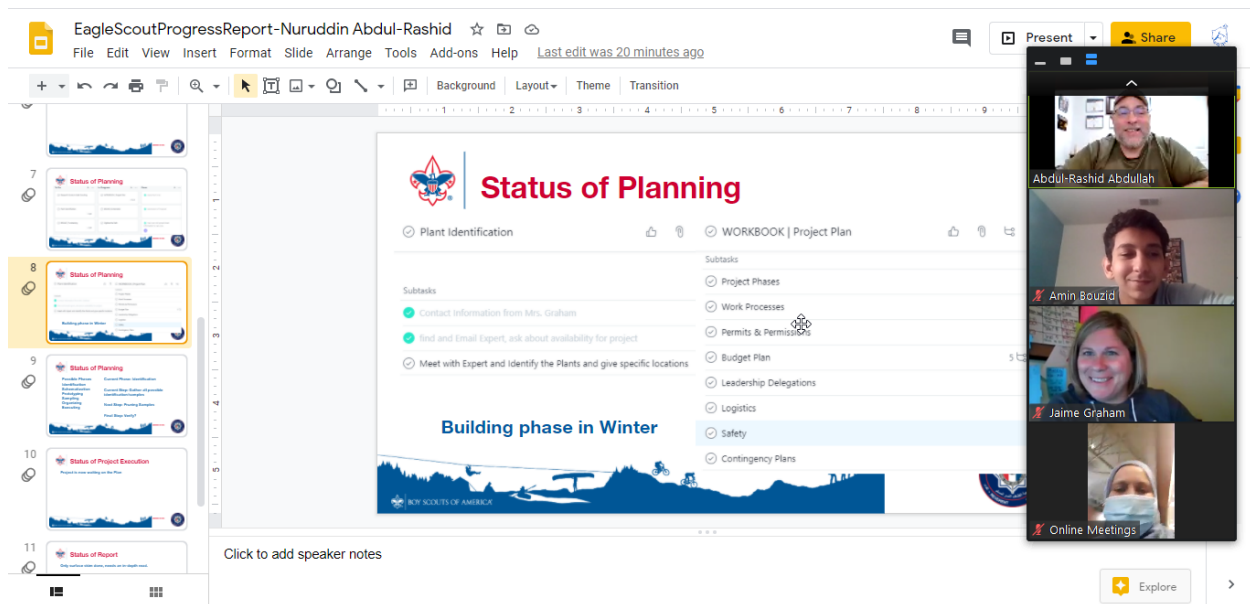
## Regularity & Schedules

Regularly scheduled meetings help immensely. I had meetings to discuss the Eagle Scout rank **every Monday** starting from August 24th, 2020. This helped make **mini-deadlines** for me which aided in **combating procrastination** and **stagnation** in the project. At each meeting, we reported using a [presentation template](#) designed by my Eagle Advisor. The template covered these topics:

- Status of Merit Badges
  - List Merit Badges Complete
  - List Merit Badges Incomplete

- Provide the next steps for completing incomplete merit badges.
- Eagle Scout Log (Link to Google Sheets)
- Status of Proposal
- Status of Planning
- Status of Project Execution
- Status of Report
- Status of ESRA

Thanks to this template, **measuring success** and seeing when we are stagnating became very clear. I highly recommend having a regularly **scheduled check-in** for any upcoming projects.



*(Screenshot of one of the many Zoom calls for the Eagle Monday meetings).*

## Project's Scope & combating "Scope Creep"

If there's also anything to keep in mind when working on a project with a time limit, it's to **stay within the scope of your project**. **Ambition** makes for great **ideas**, but a lack of **realism** in planning makes for **poor execution** of those ideas. As friendly advice, make a **definite scope** to stay within for your project. If there's **more time** granted or left, then it should be alright to broaden the edges of it.

Having a definite scope is handy because it also defends what is called **"scope creep"**. This is when another party tries to include **new goals** or **ambitions** into the scope. This is dangerous to the project because it could lead to a poorer execution. By having a **definite scope** to the project, **"scope creep" can be denied** when another party tries to advance an agenda that **wasn't agreed upon**.

This happened to this project when the plaques were asked to be made **bilingual**. This would've added too much **complexity** to the project that it was not able to handle. We later clarified in the scope that the plaques were to be made in **English only**.

## Scrapped Ideas

When producing nearly anything, there are usually leftovers that don't make the final product. These are some ideas that were scrapped in development, but they may still provide some insight into the planning process.

## Light Experiment

**Solar LEDs** require **sunlight**. Naturally, for the best performance, one would place the **Solar LEDs** in the area with the most sun to absorb the most energy. Early in planning, I attempted to find the areas with the most sun in a **cost-effective** manner. To do this, I cut out four **note cards**, **labeled** them, then filled a square that was subdivided into four sections with four different **sharpies**.

Each **note card's** subdivided square was filled in with **sharpie** in a different **pattern**. I then **laminated** two of them with **packaging tape** and placed them in two areas. I placed a pair of tape & non-taped cards in an area with presumably high amounts of **shade**. Then, I placed another pair of tape & non-taped cards on a **sunny spot**. They were both taped on the back and left there for a **week**. I recorded the progress from the before and after, and all the videos related to the experiment can be found [here](#).

The **hypothesis** was if the notecards with sharpie receive more **sun exposure**, then the more **faded** the sharpie on the notecards would be. My reasoning for this was that the sun's **Ultraviolet rays** would start **decomposing** the **pigment** in the sharpie or just make the **color fade** in some other way. The different patterns on each card would help to measure how much the card had faded. I used four different **sharpies** because that's what I had available and perhaps there was a chance that a **different sharpie would reveal more UV damage than another**. I laminated one pair to see if the plastic would also deter UV damage, and also to prevent possible **weather damage**.

The results of this experiment did **prove** the **hypothesis**. However, I ended up **not** using this method to aid in the placement of the **Solar LEDs** because there were no readily available **durable surfaces** to place them, a lack of a plan to properly **implement**, and **unnecessary** work.

There weren't any **durable surfaces** because the only surfaces were plants and the ground. Both of which are **dynamic** and ever-changing. Additionally, attaching it to the plants could cause damage to the plant which would go against our following of **Leave No Trace**.

With the cards, I had a method to showcase a level of **sun exposure** in a small area. However, I couldn't figure out a good way to measure the **entire area's** sun exposure given the short time of the project. So there wouldn't be a good way to compare & contrast which spots would be the **ideal** locations.

Lastly, it would be **unnecessary** because the sun changes positions throughout the year. So the **ideal** position will always change. The best position would most likely be where the most greenery is because plants undergo **phototropism**. This means plants will grow towards the sunlight. So instead of using notecards, I used the plants to help determine the optimal placement.

### Dog Trash Can

Early before the proposal was accepted, there was a conversation about including a trash can for general waste and dog waste. However, this was discarded due to the concerns of **maintenance** from the beneficiary.

### Combat Flooding with Gravel

When we had a surplus of gravel, we debated on how we should handle it. We thought about adding a wall of gravel to help combat the water spill-off that occurred frequently on the path. However, with additional thought, we decided against it. The reason was that the water behaves un-intuitively and will most likely continue to spill over. Secondly, the gravel would gradually be washed away leaving the issue to arise at some other point in the future.

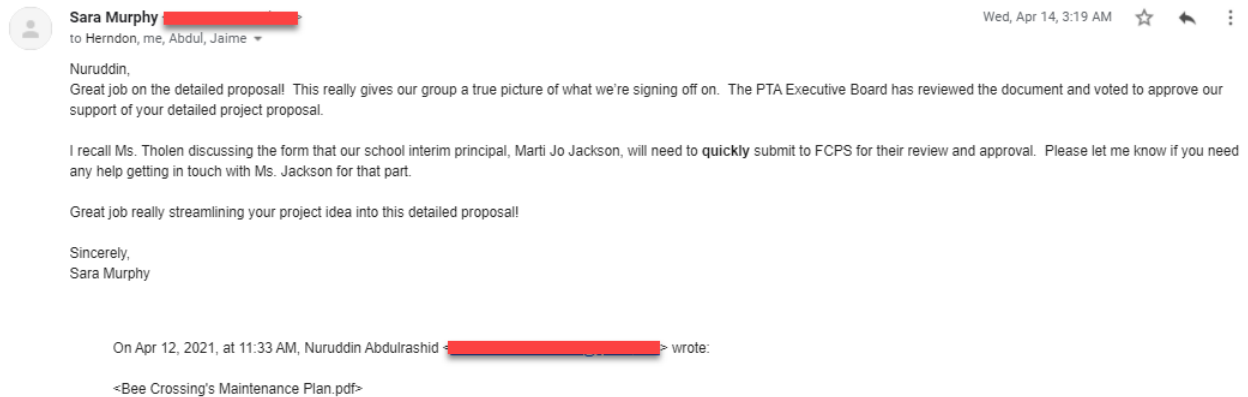
After communicating with the proper representatives, we decided to make a gravel patio in a barren area instead. This patio became a nice seating area for the soccer field and a great foundation for future projects.

## Legacy

### Friends of Bee Crossing

**"Friends of Bee Crossing"** is a **Volunteer group** for **Bee Crossing** that was set up in order to satisfy the **beneficiary's request of maintenance post-project completion**. The **duties & responsibilities** for **"Friends of Bee Crossing"** are outlined in the [Maintenance Plan](#).

The [Maintenance Plan](#) also **defines the relationship** between the **beneficiary** and “**Friends of Bee Crossing**”. Essentially, the beneficiary acts as a means of **funding** while the volunteer group acts as a means of **labor**. This plan was **drafted** on **4/11/2021** and **accepted** on **4/13/2021**.



## SDG 15 Relevancy

The [United Nations Sustainable Development Goals](#) (SDG's) are the world's targets for creating a **sustainable** future. There are 17 in total, in this project however, we focused mainly on one— **Sustainable Development Goal 15, Life on Land**.

**Life on Land's** goal is to do as follows, “Protect, restore and promote **sustainable** use of **terrestrial ecosystems**, sustainably manage **forests**, combat desertification, and halt and reverse land degradation and halt **biodiversity loss**”. This project aligns with **SDG 15** by promoting **sustainability** within our **local terrestrial ecosystem**, and **preserving biodiversity**.

**Bee Crossing** promotes **sustainability** within our **local terrestrial ecosystem** through the education provided by our **plaques**. Our **plaques** help to foster the **interest** within our community, especially the **youth**, by showcasing the **unique diversity** within **Bee Crossing**. The diversity that gets **represented** demonstrates the wide variety of **roles** species fill and each species approach to doing so. In particular, Bee Crossing's plaques **showcase** species that are found in a **marshy environment**. Plants like Skunk Cabbage and Jack-in-the-pulpit are natives that call Bee Crossing their home.

Bee Crossing also helps to **preserve biodiversity** through the **selection of wildlife** chosen for **plaques** and the **execution** of the project. The wildlife chosen intentionally cover a range of roles to **promote** the **benefits of biodiversity**. It's through this promotion we aim to spread **awareness** of the importance of diversity and **discourage** the destruction of natural ecosystems. In the execution of this project, Bee Crossing took an **observatory stance** on local wildlife. This was done by **not intervening** with the species at Bee Crossing whether it be invasive or not.

By aligning with **SDG 15**, Bee Crossing was able to make a **conscious effort** to make this project more **sustainable**. Although not all targets were met, promoting **sustainability** within our **local terrestrial ecosystem**, and **preserving biodiversity** still makes a difference within our **local** and **global community**.

## Leadership

### Ways leadership was demonstrated

#### Execution

The execution of the project went well under my leadership. I gave **direct** and **clear communication** of my ideas. The project was also well prepared for the day of construction. All aspects of the plan were successfully fulfilled and any obstacles like **gravel surpluses** and **high water tables** were navigated under my leadership. All three plans outlined the exact **vision** for the project and helped to ensure that the day of construction ran smoothly.

#### Delegation of Tasks

While I did a lot of work, on the day of construction I did not use a tool other than a pen and paper. **All labor** into the posts and LEDs was done by the hardworking **volunteers** that I recruited and split into construction **teams**. Additionally, I demonstrated the ability to **delegate** when I delegated the task of **generating text** for the plaques to two other volunteers.

#### Effective Listening

During the entire process of planning and execution, I had **open ears**. I had my Eagle Advisor and Eagle Coach constantly feeding me information to use for this project. I also kept aware of any other **opportunities** for this project. The **QR Codes** were a suggestion that got implemented into the project and became a core aspect of it. While in execution, I **listened** to all my volunteers, especially my volunteer team leaders that reported directly to me. They gave me **suggestions** on how to handle certain issues such as **water runoff**.

### Difficulties in being a leader

I did find it difficult **communicating my needs**, and **delegating** tasks. I had trouble communicating my needs because I was unsure of how many people are **willing to help** out with this project. I found that **most people**, project or not, **love to help** and are more than willing to lend a hand especially in their field of **expertise**. As for **delegating tasks**, I was afraid that the work that would be produced would have to be **redone** to fit the **vision**. I learned later on, that good **communication** skills resolve this issue, and **great communication of a vision** can **improve** a project in ways **unthinkable** to a **singular person**. During construction, It felt weird **delegating** many tasks to other people working with tools when I myself didn't even pick up a

tool. However, I was reassured that anyone can do that work, but not everyone can lead. **My task was to delegate tasks.** My task was to make sure that everything was running smoothly.

## The Rewards of Being a Leader

I found it rewarding when this project that took months to plan; endless hours to produce; and relentless effort to make possible, **became a reality**. From the pen to the world, I find the **transition** sweet. I loved it when operations hummed along like a well-oiled machine, and that when a problem occurred, my team and I were able to **resolve** it. I also find the **future-minded design** of this project rewarding. Shortly after the project was finished, I saw many locals using the path and giving **praise** to it. **Children** came out with their **teachers** to walk the path and **learn about nature together**. They walked up to me and started asking about the **wildlife**. The **interest** that was **piqued** was so unbelievably sweet. It worked, the plan for the future was working. Nearly a month after completion, **further development** on the land has occurred to seemingly combat the **water spillage** and **drainage**. New channels were dug and river rock was laid. I had **no involvement** in that. However, I find it no coincidence that after **decades** of this land being untouched, a **single Eagle Scout project spurred change** in this area. Probably because in doing this **Eagle Project**, **we resolved a long-standing land ownership issue**. Now, this **one** action that I lead, will spark **many** other actions within this community. I am hoping for a bright future for this place, and the joy from that is its own special kind of reward.

## Skills Learned

### Plan/Document Development

In this project, I developed **three** separate plan documents ([Maintenance Plan](#), [Construction Plan](#), [Volunteer Plan](#)). I feel accomplished that I managed to do each with little to no outside help. This **Eagle Scout project** helped show me that I have the **capability** to write plans and documents that show **clear, direct, and well-covered information**. These plans consisted of giving easily **referenceable information, executive summaries**, and the **responsibilities of parties**. Also, I learned how to make a **table of contents** that links to your headers. All that has to be done is to insert a table of contents and change your headers from normal text into headers and it will automatically update for you. A very useful tip that I will use in **every** document from now on.

### B.L.U.F.

**B.L.U.F.** stands for **Bottom Line Up Front**. It's an acronym to help write documents, emails, or **any form of communication** in an **effective** and **direct manner**.

1. First, give them the **ask**, which is what you **need** from them.
2. Then, **contextualize** the situation for them to give them an understanding of what's happening; give the issue at hand that you are attempting to resolve.



3. Finally, give the **reason** for delivery (the “why are you asking?” portion).

It's proven very **effective** for long emails where a lot of information needs to be **parsed**. I used this technique in my email requests to the **Mayor** and the **FCPS Board at Large members**. As soon as the **Mayor** got the email, she read it and five minutes later she gave us a call. That is proof of how **effective** this technique is. For any future project leaders or anyone in general, I **highly recommend** this for your communicating needs.

## Project Management Tools

Before this Eagle Project, when it came to projects, I sort of went with the flow. That was fine for these small things, but this Eagle Scout project was much **larger** than that. For that, I **needed tools to help me organize**. Tools like a “**Kanban**” board, a **prioritization chart**, and **organization techniques** helped me here. They help sort out **time** and **importance** whilst keeping **track** of all **tasks** that are **needed** to be done. These tools already have, and will serve me for the **rest of my life**.

## Finances & Hours

### Funding

#### How much was collected

The funds were collected mainly through the **website** we had set up at [beecrossing.org/donate](http://beecrossing.org/donate) and through offline donations. We stored the funds in our **Venturing Crew bank account** and kept track of what was spent and what was deposited via a **bill of materials**.

Below was the **budget** that was initially planned out after the proposal but before the materials were gathered. It **differs** from the actual spent cost by **~\$450**. However, it was during the ordering of materials that a guesstimate of **\$1,500** being needed was created.

Item	Description	Quantity	Unit Cost	Total Cost	Source
White Oak Posts 4x4 3 foot	an approximation til further notice	0.00	\$8.00	\$0.00	<a href="#">Eco Friendly Lumber</a>
White Oak Posts 4x4 6 foot	an approximation	16.00	-	\$384.00	Eco Friendly Lumber

	til further notice; two more for Forest sign				
Forest Naming Sign	18 in - 2 ft in length	1.00	\$0.00	\$0.00	Eco Friendly Lumber
Wooden Plaques	13 plaques	15.00	\$10.00	\$150.00	Smart Garden Signs
Solar LEDs	Screws included, packs of 6	2.00	\$32.90	\$65.80	<a href="#">SEZCA, Amazon</a>
Gravel	Arrives in a truck, Hard surface only, No delivery fees for Herndon VA, 6% Sales Tax	1.00	\$328.55	\$328.55	<a href="#">Saunder's</a>
Screws	For the plaques,	1.00	\$0.00	\$0.00	<a href="#">Donation from home</a>
CopperGreen Treatment	Contact prevention	1.00	\$32.39	\$32.39	<a href="#">Home Depot</a>
Tools & Other	from tools & Other	1.00	\$55.00	\$55.00	
				\$1,015.74	\$1,076.68

## How much was spent

Collectively, the project spent **100%** of its funds, which is **\$1,450.92**. There were **no** leftovers to turn over to the beneficiary.

Below is a simplified spreadsheet of the **Bill of Materials**. On the **right**, is the money that was **deposited** into Crew 114's Bank Account from fundraising . On the **left**, are the **purchases** made with the Crew 114 Bank Account. Refunds are also processed on the left, for example see *Refund CopperGreen (2 Gallons)* below.

Although the project was **completed** on May 15th, some **transactions** haven't been fully **processed** until **afterwards** with the latest being May 31st. For example, SmartGardenDesigns payment for their plaques wasn't fully processed until the 20th of May. This was due to hand-mailing their payment in the form of a check (this was done so to maneuver around processing fees).

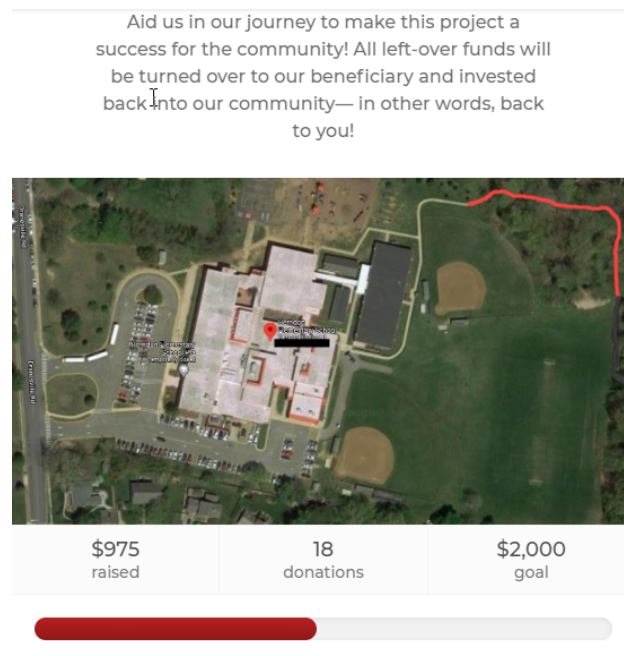
Item	Cost	Date	To	Debit money spent	Money left	Money Into Debit	Date put in	Amount
Stick Markers	\$3.12	3/13/2021	Home Depot via Nuruddin Abdul-Ras hid	\$1,450.92	\$0.00	\$1,450.92	4/17/2021	\$900.95
Yard Signs	\$34.56	4/21/2021	Office Depot via Crew Account Debit Card				4/25/2021	\$183.94
SEZAC Solar LEDs	\$65.80	5/1/2021	Amazon Via Crew Account Debit Card				5/8/2021	\$72.37
Solar LEDs Insurance	\$14.40	5/1/2021	Amazon Via Crew Account Debit Card				5/5/2021	\$116.16
Saunder's Gravel	\$328.55	5/3/2021	Saunders Via Crew Account Debit Card				5/13/2021	\$97.50
Eco Friendly Lumber	\$415.18	5/8/2021	Ecofriendly Lumber Via Crew Account Debit Card				5/14/2021	\$80.00
Copper Green (2 Gallons)	\$50.84	5/9/2021	Lowes Via Crew Account Debit Card					
Copper Green 1 Gallon	\$43.45	5/11/2021	Amazon Via Crew Account Debit Card					

SmartGardenSigns	\$150.00	5/20/2021	Check via Crew Account Debit Card					
Wheel Barrow and Screws and Gloves	\$135.62	5/13/2021	Home Depot via Crew Debit Card					
Food	\$59.53	5/14/2021	Restaurant Depot via Crew Debit Card					
Ice	\$5.77	5/14/2021	Restaurant Depot via Crew Debit Card					
Augger	\$86.20	5/15/2021	Rental Unlimited via Crew Debit Card					
Ivy relief	\$16.99	5/15/2021	Aunti Rosi via Crew Debit Card					
Additional 6-pack SEZAC Solar LEDs	\$24.68	5/26/21	Amazon via Crew Debit Card					
Website Domain Registration (1 year)	\$12.00	4/7/2021	NAMAS via Crew Debit Card					
Website Domain Registration (4 years)	\$48.00	5/31/2021	NAMAS via Crew Debit Card					
Website	\$10.19	5/31/2021	NAMAS					

Host Fees (1 year)			via Crew Debit Card					
Refund CopperGreen (2 Gallons)	-\$50.84	5/24/2021	check via Crew Account Debit Card					

## How was it collected?

We fundraised **\$1,450.92** through our website and offline donations. The plugin that our website used was for WordPress called Give. Give allowed for real-time **online** and **offline** donations to be tracked and collected.



(What the donation page looked like. The bar is a real time **donation tracker** that fills as more donations are given).

## How were the Donors thanked?

The Donors were thanked by being featured on our “**Donor Wall**” on the website. An email was sent using a tool called **Merge Mail** using an email list of donors which linked to a google form. They could respond, “Yes”, “Yes, but change my name used”, or “No”.

## Thank You to our Amazing Donors!

Without their contributions, Bee Crossing wouldn't have been possible.

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**Mr. Joshua David Hall**  
**Mr. Taha Majidi Idrissi**  
**Seifuddin Abdul-Rashid**  
**Mrs. Jessica Schelling**

(A screenshot of the Donor Wall that replaced the donation tracker on [beecrossing.org/donate](https://beecrossing.org/donate)).

### Service Hours

	Number of Workers	Total Hours Worked
The Eagle Scout Candidate	1	120.26
Registered BSA Youth members	5	58.59
Other Youth	3	16.92
Registered BSA adult Scouting volunteers and leaders	9	156.31
Other Adults	26	125.33
Grand Total of Hours	44	477.4

### Notes:

This is in no way the entire sum of hours worked on this project. These are the only hours I have been **able to document** throughout this project. To help document it, I created a Google Form attached to a Google Spreadsheet which **auto-calculated the sums** of hours for each group. This is a picture of what it looked like:

B	C	D	E	F	G	H	I	J	K	L
How long did the event take? I	Scout Youth hrs	Scout Adult hrs	UNR Youth hrs	UNR Adult hrs	Eagle Scout hrs	Total Hours	Name(s) //Optional ex. Ale	Name of Event/Task //optional	At what date did this occur?	All Hours Sum
1.5	0	0	0	0	0	1.5	1.5	Nuruddin	6/27/2020	261.860463
1	0	0	0	0	0	1.5	1	Nuruddin Abdul-Rashid	7/5/2020	Scout Youth Hours
0.25	0	0	0	0	0.25	0	0.25	Jaime Graham	7/8/2020	51.221153
0.6	0	0.6	0	0	0.6	0.6	1.8	Jaime Graham, Nuruddin Abdul-Rashid, Sr. Norlidah	7/8/2020	Scout Adult Hours
0.25	0	0.25	0	0	0.25	0.25	0.75	Nuruddin, Norlidah, Jaime Graham	7/22/2020	73.330906
1	0	0	0	0	1	0	1		7/28/2020	UNR Youth Hours
3	0	0	0	0	0	3	3	Drafting and sending emails to Webpage	7/29/2020	12.116
0.25	0	0	0	0	0.25	0	0.25	Jaime Graham	7/30/2020	UNR Adult Hours
2	0	4	0	0	2	2	8	Nuruddin, Andrew Turner, Br. Abdul-Rashid, Izzuddin	8/5/2020	56.418928
1.333	1.333	1.333	0	0	1.333	3.999	3.999	Nuruddin, Abdul-Rashid, Tasneem	8/5/2020	Eagle Scout Hours
0.5	0	1	0	0	0.5	0.5	2	Br. Abdul-Rashid, Lee Casi Eagle Meeting	8/20/2020	69.273476

## Project's Stances

Throughout the entirety of this project's lifespan, **COVID-19** has been an over-looming **danger** and an **impediment** to the project. All meetings were **digital**, and there were no **face-to-face** interactions. Personally, this made some things very **difficult** since I work better with people in person. The addition of the **mental stress** put on by **social distancing** made working difficult. I also believed **COVID-19** increased the **budget** needed for **wood** since it made wood prices inflate. Ensuring the safety of others during the **pandemic** was also a big concern of ours. Fortunately, as the summer approached, the threat of **COVID-19** **subsided** a bit. All of our volunteers were **immunized** on the day of **execution** and were able to work freely. Although precaution to **sanitize** and maintain distance was still taken.

Throughout the project, an **observatory stance** was taken on the **wildlife**. A direct effort was made to **avoid intervening** with the species at **Bee Crossing** whether it be **invasive** or **not**. Our goal was to **teach** about **invasive** species, but not for us to act upon them. For this reason, we also included many species that are **invasive** to the area to **showcase** to trail-goers. The project cleaned up as much **human waste** as possible and tried to cause as little disturbance as possible. The dirt from one hole stayed in the same area and was as only large as needed. A guarantee for a "**Leave No Trace**"-like policy can be found in the [Construction Plan](#) under "**Clean-up guarantee**". Additionally, a **plaque** entirely **dedicated** to the **Outdoor code** was designed and implemented for this project (see the post on our website about it [here](#)).

## Closing Remarks

This report was lengthy and in-depth due to the **extensive planning** that was done. However, I believe that it was this amount of **extensive planning** that **saved** a lot of execution **time**. There were many lessons learned on this path to Eagle, and many of them were from this project. Although much has been covered here, not everything has, and it will remain that way. Those little nuggets of **wisdom** will be left for any future Eagle scouts reading this to **discover**. I hope you are well on your journey, and I hope you will learn to understand through **your trials** what it means to be **prepared for Life**. To those who have already walked the path, or simply

wished to have read this report, I hope I have offered something of use to you. While the **future** is our **youth**, it is also in every one of us. **We don't stop being the future until we stop giving back to our community.**

Yours in Scouting,

Nuruddin Abdul-Rashid

[nuruddin@beecrossing.org](mailto:nuruddin@beecrossing.org)



# Project Gallery

These are additional photos that were collected throughout this project.

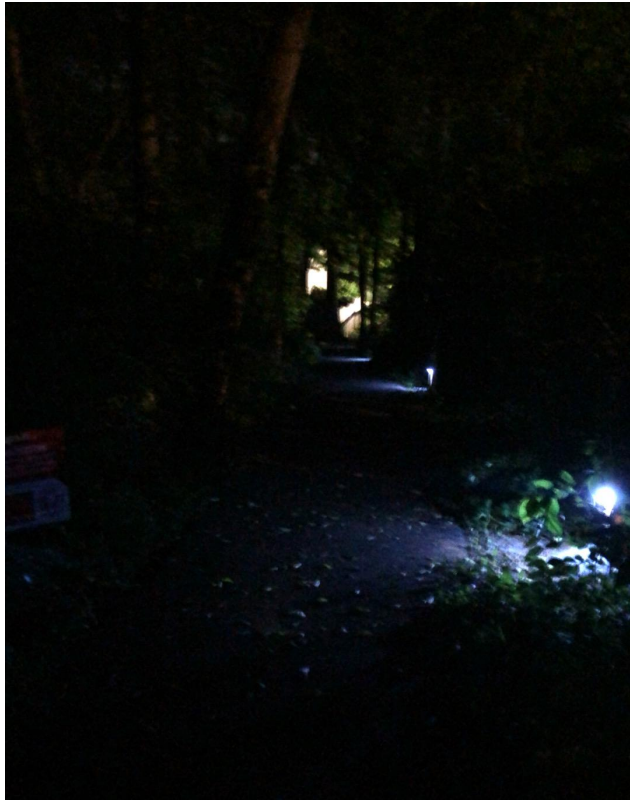


The first of the project's posts to be fully completed. ID number 17, Fly Honeysuckle. Find the online post [here](#).



The trail name plaque gives a description of the project. ID number 30, to read more, visit [here](#).





*The photo (on the left) was taken of the Solar LEDs powering on in the darkness illuminating the path. The photo on the right is a resident of Herndon enjoying the path shortly after construction.*

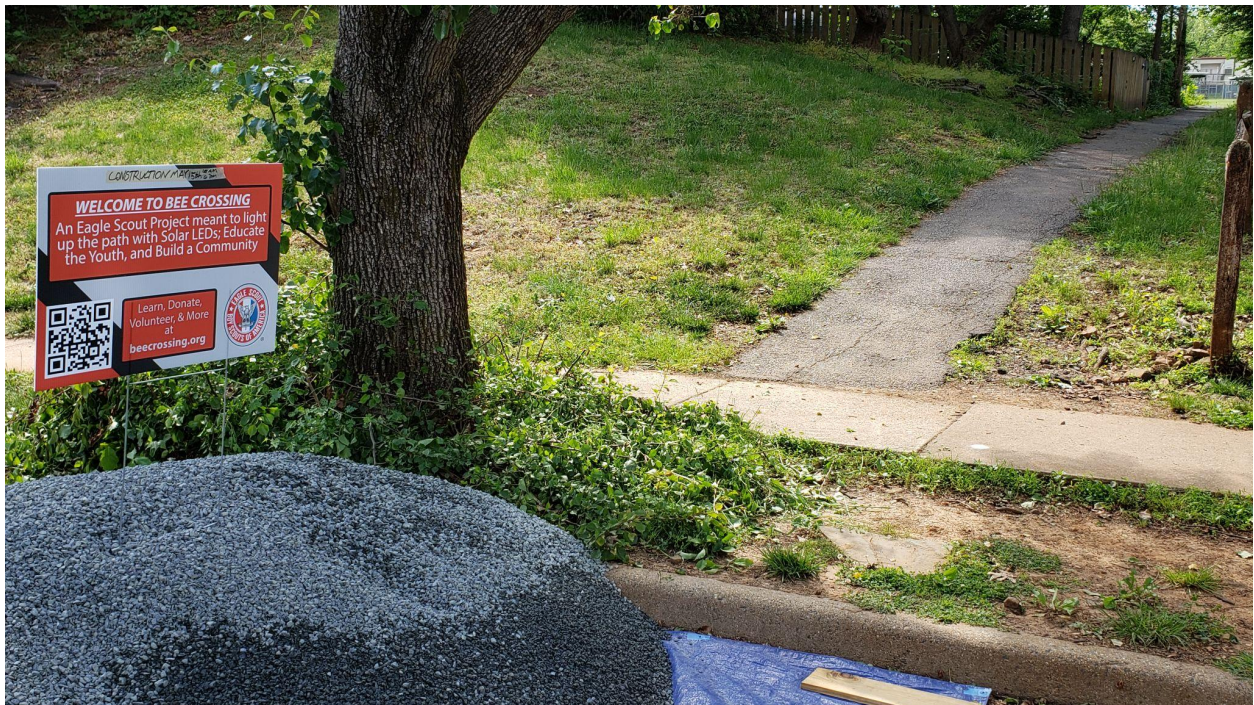


*FCPS Board Member, Elaine Tholen, posing with a hardworking and friendly volunteer during construction day.*





*Auger Crew drilling their first hole.*



*A Bee Crossing sign sitting upon a gravel mound for Bee Crossing on top of a tarp near Bee Crossing.*





*Preview of the signs placed around the worksite to promote visibility and engagement.*



*Thank you to all the volunteers who selflessly worked on this project.*