

4.2 Design Exploration

4.2.1 Design Decisions

- A. After completing the foundational elements of the site, including the header, footer, and body, we will then proceed to implement the website components, such as dropdown menus, links, sliding pictures, and other effects. We will initially leave placeholders for these components and return to them for implementation once the core structure of the website is in place.
- B. We decided to work on the homepage first before we moved on to other pages. The reason for this choice is because the homepage is what allows us to reach the other pages so it is easier to organize by making the homepage first and then working on the other pages. The homepage also has the most work to do in terms of text, pictures, and features so it will take longer than other pages to work on.
- C. Our design decision was to only use Elementor as the plugin to work on for WordPress. The reason for this choice is that the majority of the site design and features we need to implement are all possible through Elementor. This choice has multiple benefits. First, we don't need to look for new plugins and risk security issues. Second, by using one plugin, it will be easier to hand off to clients because they do not need to get multiple plugins. Lastly it reduces the cost because some plugins require payment by sticking with Elementor we will not need to pay for other plugins.

4.2.2 Ideation

For design decision A we came up with ideas by using the Lotus Blossom Technique and the Agile approach. With the Lotus Blossom, we were able to look at the diagram we made and identify that each component of the page is broken down into widgets/blocks on WordPress and Elementor. This means that we can rearrange the order and placement of the widgets after we make them, and because they are broken into small blocks it's easier to edit individual text and pictures. From this, we created the following ideas:

- 1) Implement the features whenever we come across them during the site creation
- 2) Work on any part of the page first features, text, pictures etc. And then rearrange the page after.
- 3) Implement the features first because they will take longer compared to adding text or images.

After working on the pages for some time we discovered some new things. Features like parallax scrolling or having images appear on the page require us to mark the blocks in certain orders and we need to redo it if we choose to change parts of the page. It also makes it harder to know how far we want the features/function to move without knowing

how the rest of the page will be structured. After these evaluations, we came up with the following new ideas.

- 4) Work on the page's foundation first, then implement the features at the end and place them in the desired locations.
- 5) Work on the foundations and leave placeholders for the features to indicate the size and locations of where they will be. [Chosen]

4.2.3 Decision-Making and Trade-Off

We identified the pro and cons of some of the ideas by directly testing them and we identified the pros and cons of them through first hand experience. We also spent time as a group discussing the ideas that we came up with before we chose the most optimal design decision. The following are the pros and cons of the ideas our group made:

Idea #1

- **Pros:**
 - Can follow step by step how the original site looks
 - We won't skip over any parts of the site because we go from top to bottom
- **Cons**
 - Some features require widgets that occur after so they can't be implemented

Idea #2

- **Pros:**
 - Allows for more flexibility
- **Cons:**
 - Difficult to make sure every part of the page is there until the end
 - Harder to track features because the site will be unorganized

Idea #3

- **Pros:**
 - Complete the most difficult tasks first
 -
- **Cons:**
 - Some features depend on other blocks so we will also need to make them to implement the features
 - Unorganized because we are looking for all the features to work on first

Idea #4

- **Pros:**

- The creation of the site stays organized
- Avoids the issue of a feature missing a widget to be implemented
- **Cons:**
 - May run into sizing or placement issues
 - Have to backtrack in the site to determine where the feature needs to be placed

Idea #5 (Chosen):

- **Pros:**
 - Keeps the site organized
 - Have placeholders for the features so we know the sizing and placement will work
 - Avoid forgetting to implement features
- **Cons:**
 - It takes more time to make the placeholders

Out of these five ideas we determined that idea 5 is the best choice for us. The pros of this idea outweigh the cons. By making the features last we can avoid any issues of incorrect/missing blocks that the feature might need to be connected to. We will also be able to work from top to bottom and reference the original site easier. Lastly, by taking time and making the placeholders for the features we can get an idea of how they will fit on the site and avoid any placement issues that could have occurred.

4.3 Proposed Design

4.3.1 Overview

Our current design is not based on a project, but more as a procedure in order to migrate 70+ websites from Duda to WordPress. The process is very similar to the Scrum Agile framework, where it is a continuous cycle of planning, developing, testing and reviewing.

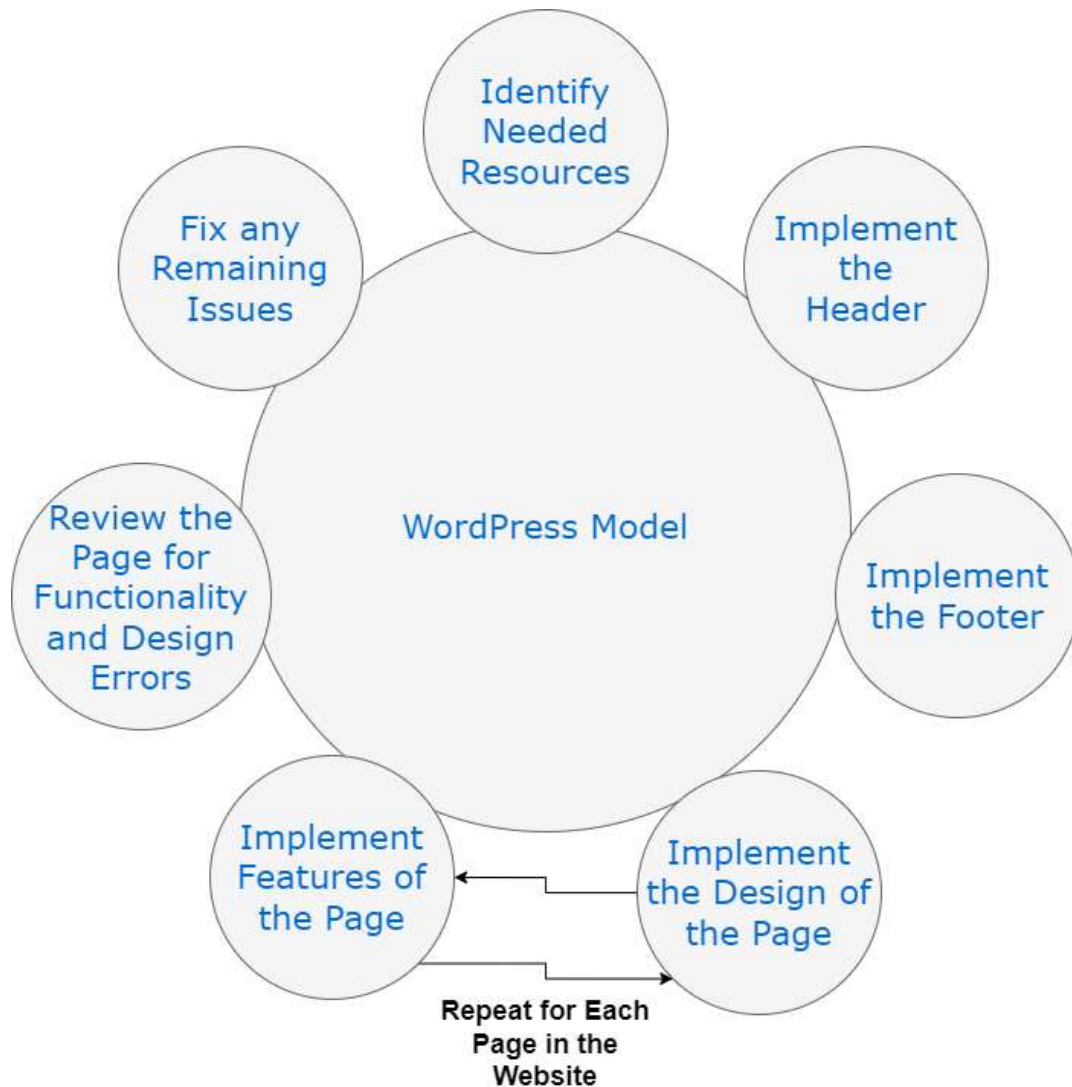


Figure 1

Step 1, Identify Needed Resources: Identify what resources will be needed for the site, such as pictures, links, texts and plugins.

Step 2, Implement the Header: A header allows the navigation of the entire website and any contact information, so implementing it at first will provide a decent guiding light for the rest of the website.

Step 3, Implement the Footer: A footer closes off the website, it marks the end point; while the website may not be completed, it allows us to visualize it as a whole and see what's missing. It is also useful for the owner of the website, as it shows social media that potential customers can use to learn more about the company via LinkedIn, Instagram, X, or Facebook.

Step 4, Implement the Design of the Page: This is the central part of the website. This step constitutes creating the design to mirror the website created with Duda.

Step 5, Implement features of the Page: This section focuses on the features and functionalities that will be included in each page. It has to do with the things that the pages can do such as buttons, links, forms, etcetera.

Step 6, Review the page for Functionality and Design Errors: This is the process of checking for any design errors, flaws, or functionalities that need to be corrected immediately.

Step 7, Fix any Remaining Issues: This is when the sites are complete and ready to be launched and handed over to the client, and a test-run is recommended for errors like broken pages or links. If any errors exist, refer to step 6.

4.3.2 Detailed Design and Visuals

The UML chart in Figure 2 shows how a client can securely give out resources (like images, icons, fonts, ect...), and how each component interacts with each other. First, the client sends the resources to FlyWheel, which acts as a GitHub that is more suited towards sending out said resources and helps with security where only those who are allowed access can pull. From the developer's personal computers, the resources are pulled from Local, which is a WordPress hosting platform that gives developers the ability to safely view websites before production with what is called "Live Links". Live Links forces privacy mode and HTTPS to keep bots, search engines, and automated attack traffic from finding local sites. When the website is running with Local, it immediately pulls up the corresponding WordPress website where the website can be developed. Elementor can then be downloaded inside of WordPress, where it simplifies the development process by using drag and drop methods instead of typing HTML, JavaScript, and CSS from scratch.

From here the WordPress development model listed in Figure 1 can be used to develop the needed website.

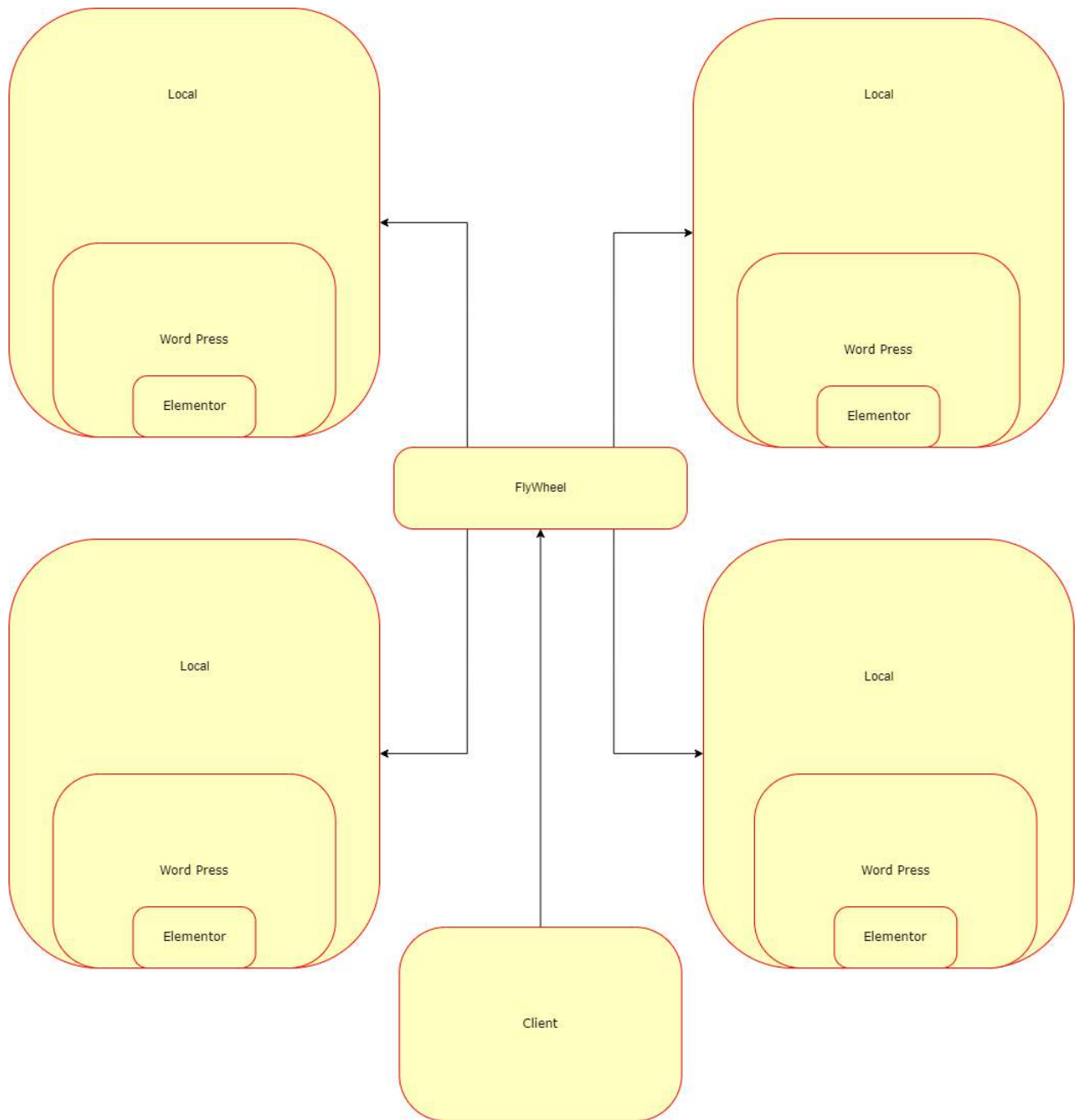


Figure 2.

4.3.3 Functionality

This project is unique because it has different types of users: The users of the website (customers) and the owners of the website.

The users of the site are mainly going to use the website in order to gather information about the company who owns it. Take for example the user wants to install an inground swimming pool from Aune Brothers Construction. When they click on the link on a search engine it will take them to the homepage of the website. From here the user immediately knows that they offer swimming pool installation services because it is in the center of the home page, listed with other services Aune Brothers provides (Figure 3).

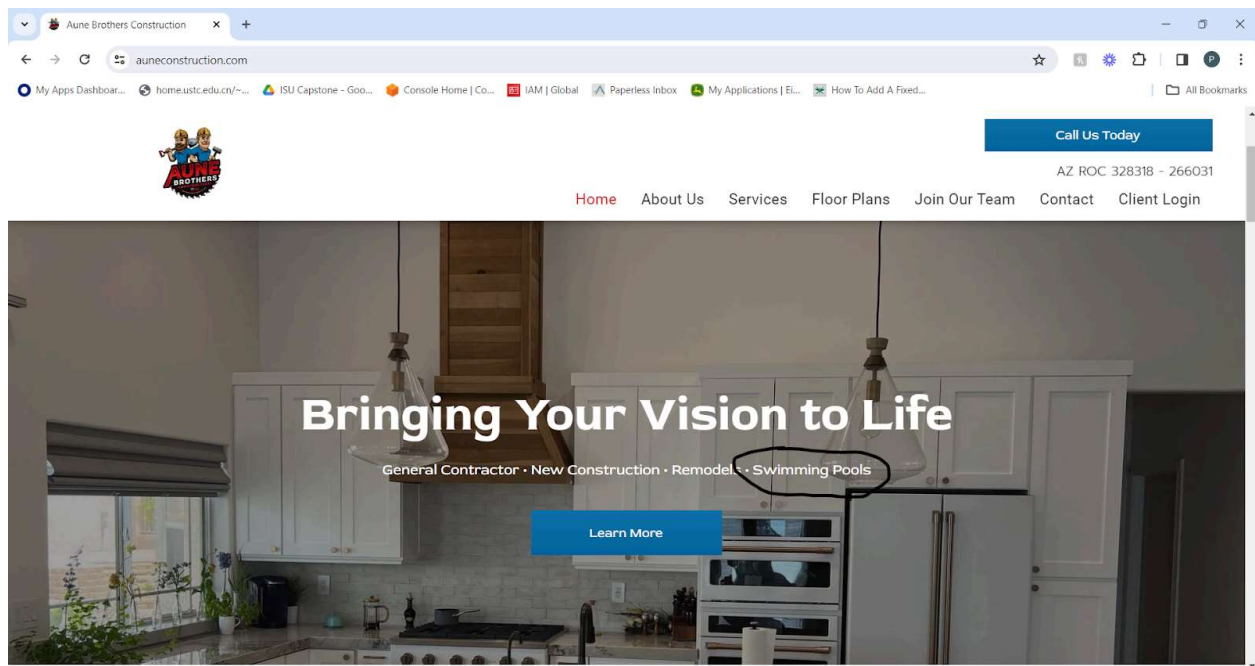


Figure 3, Aune Brothers Home page when first clicked on from a search engine

If the user wants to learn more about the process of how Aune Brothers install an in ground pool, the user can use the navigation bar to look at the Services Page, scroll down to “Swimming Pools” (Figure 4), and from there the user can get the information they need. If the user has any further questions, there is a contact button that will send a form to the website’s owners.

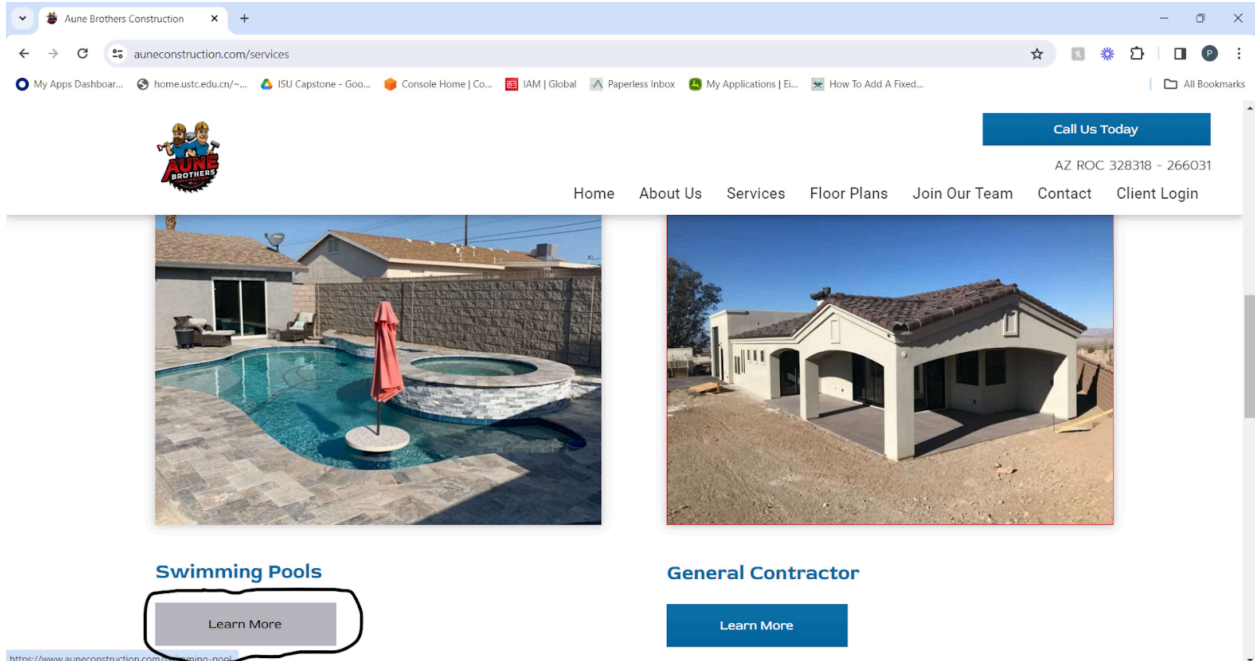


Figure 4, On the Services page, scrolling down to “Swimming Pools”

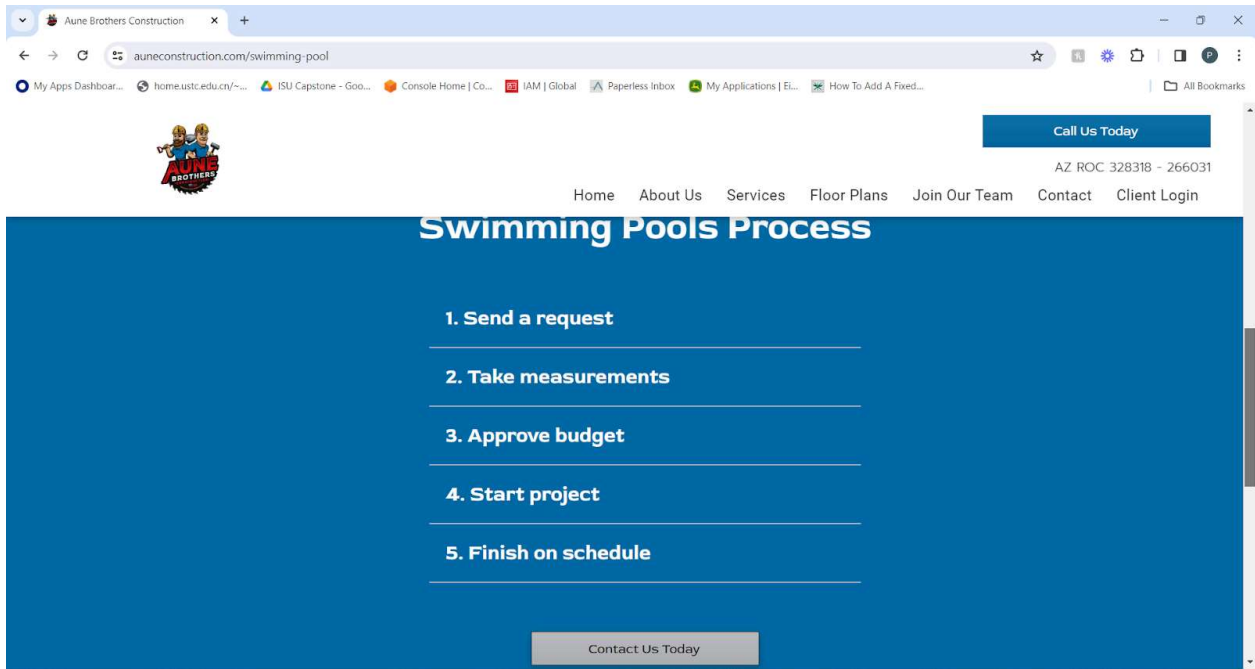


Figure 5, The Swimming Pool information needed

For the website owners, they will mainly be working on WordPress and Elementor. A common maintenance task for an owner of a website would be to look at forms sent from a user. Using Aune Brothers as an example again, they have two different forms: one for hiring and the other for answering users questions.

To look at submissions, the owner needs to log into WordPress. From there, they can go to Elementor, Submissions (Figure 6), and that brings up the Elementor Submissions page (Figure 7).

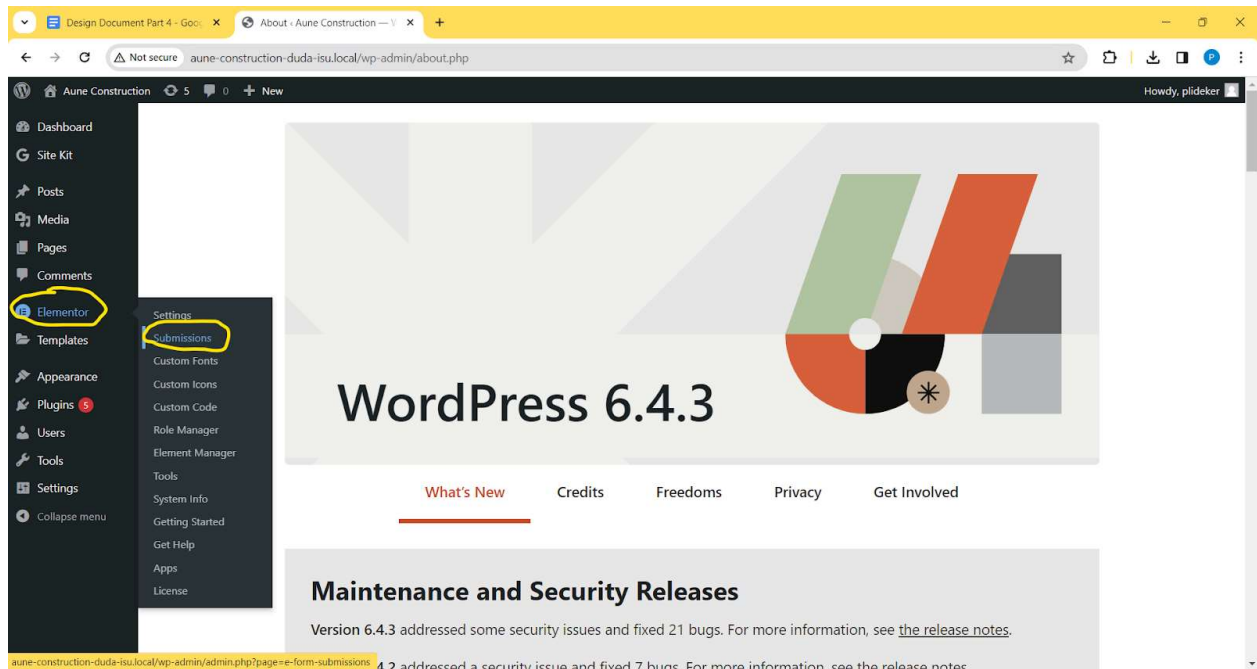


Figure 6, WordPress page, moving to the Elementor Submissions page

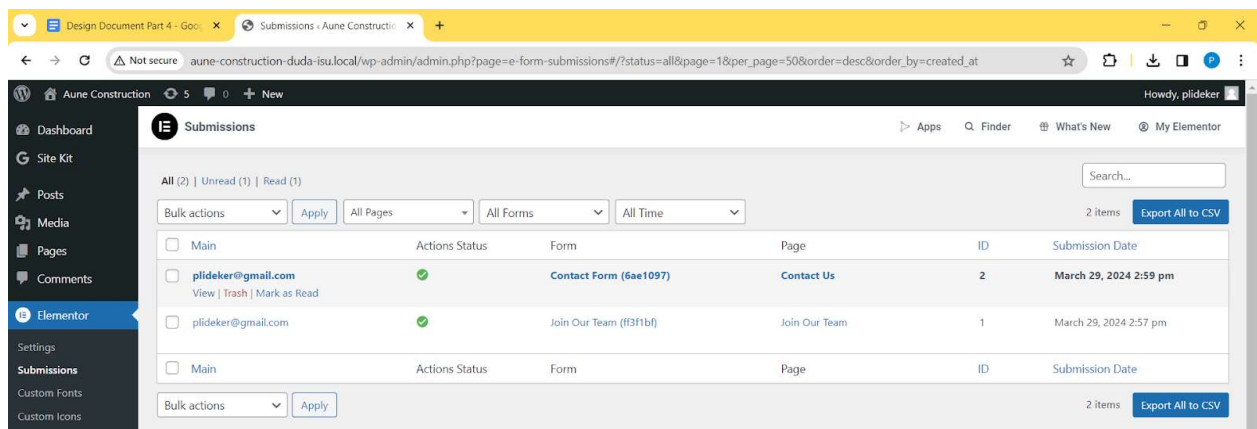


Figure 7, Submissions page.

From here the website owner can see that there were two form submissions, one from the Contact Us page and the other from the Join Our Team page. Clicking on the Contact form for example, we can see more information about the user who submitted the form and what questions or comments they have (Figure 8).

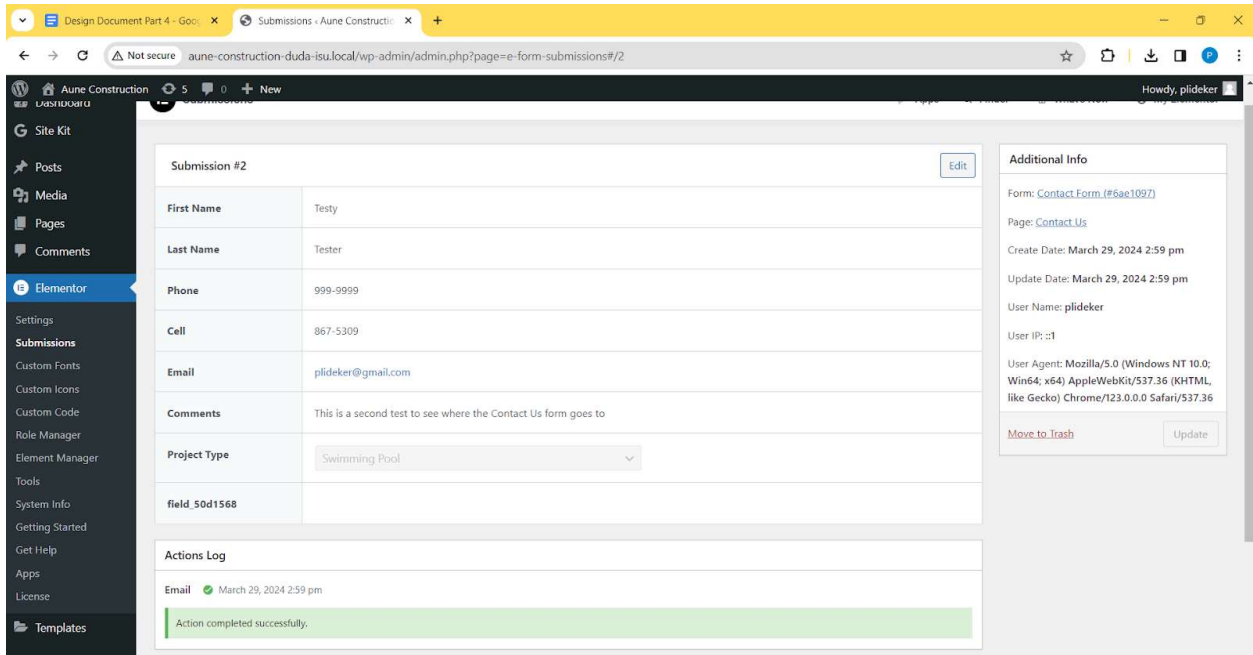


Figure 8, Contact Us submission

4.3.4 Areas of Concern and Development

There are four listed requirements for this project (Resources, User, Aesthetic and UI), and the current design seems to fulfill them all.

Resources: Requirements of resources that have to be used during the project.

- Themes for the sites are created on WordPress.
- The provided pictures for the websites are being used.
- The provided text for the website is being used.

User: Requirements of what the clients (the owner of the sites) need to be able to do.

- Clients, who are not experienced with WordPress, are able to edit the sites.
- Plugins, themes, and features used are easily accessible, well-supported, and frequently updated. The client can use them in the future if needed.

Aesthetic: Requirements on how the site should look.

- WordPress sites look similar to the original sites. Any changes that do exist are made to improve the site.
- The company is clearly identified on the site that it belongs to.
- The text is easy to read
- Pictures are at a viewable size

UI: Requirements on how the user interface needs to be for the migrated sites.

- Interactive elements, like links and dropdown menus, function correctly

- Navigation of the site is simple (The sites we are working with are mainly sites where you can scroll up and down)
- Site response time and performance are at a reasonable speed. (The use of specific plugins or features can impact this)

4.4 Technology Considerations

For this project there are three main technologies that we are using WordPress, Elementor and Flywheel\Local:

- **WordPress:** WordPress is the site designing platform that we are migrating sites to from Duda.
 - **Strengths:** The strengths of WordPress come from its large variety of plugins which allows for scalability, adaptability, and flexibility when creating the sites. It also has the ability to create sites in the format of tablets, phones and desktops. WordPress is also more compatible with a larger scale of search engines compared to other site creation platforms.
 - **Weaknesses:** The weaknesses of WordPress also originate from the plugins. Some plugins require a subscription or payment to access, so users will need to buy the plugins. The plugins also have the potential for security risks where malware or other malicious software could be hidden in the plugins. Another weakness is WordPress can be hard to learn because it has so many features and functions, there is a learning curve when trying to create more complex functions on the site.
 - **Trade-offs:** The trade-off for us is using the plugin Elementor which gives us tools to create the sites more efficiently. The drawback of this plugin is we need the Elementor Pro version so it costs money to use.
- **Elementor:** Elementor is a popular plugin for WordPress, it allows for easier site designing and construction. The Elementor plugin gives us access to drag and drop features where we can place blocks onto the screen and edit them into the desired parts that we want.
 - **Strengths:** The strength of Elementor comes from its ability to help us create and edit a site easily. It allows us to construct the site with individual blocks/widgets, which lets us break down the site into small chunks. We are also able to rearrange these blocks in any order after creating them, making the site creation process very flexible.
 - **Weaknesses:** One weakness of Elementor is that the Pro version that we use costs money. Another weakness is that it doesn't provide all the features that we need; like a before and after picture slider does not exist. Some features of Elementor also take some time to learn how to execute, an example is image effects.

- **Trade-offs:** The trade-offs we have with Elementor are that even though we lack the ability to implement some of the features and it has a cost to use, we are still able to create the majority of the sites. With the given features of Elementor, we are able to replicate the majority of the features from the original sites, and for the features that we cannot replicate, we can substitute them for different ones.
- **Flywheel/Local:** Flywheel and Local are platforms tailored specifically to WordPress. It allows for multiple people to pull sites, work on them, and then push them into Flywheel.
 - **Strengths:** The strength of Flywheel and Local is it allows us to pull the sites and work on them, this allows us to collaborate on one site if needed. Flywheel will also automatically save our progress and allow us to access the previous versions of our work. And since Flywheel is made specifically for WordPress there are very few compatibility issues when saving or pushing sites. It also allows us to locally view the site without having to use a server.
 - **Weaknesses:** A weakness of Flywheel and local is there can be merging errors when multiple people work on the same site and push it. The way we are avoiding this problem is by working on different sites. Another weakness is it is not free.
 - **Trade-offs:** The trade-off of paying for Flywheel is we get access to the benefits of Flywheel. As mentioned in “Strengths” the benefits include autosaving, accessing previous versions, duplication of the site, and running the site locally without needing a server.

4.5 Design Analysis

So far, we have each been working on our individual sites to avoid the merging issue mentioned in 4.4, it also allows us to get more sites done. We have been following the design we established in 4.3, which has been working well because it prevents the issue of having to reimplement the features if we decide to alter a widget on the page. We intend to follow this design plan because it has been working well and allows us to avoid the weaknesses of the tools that we are using. A potential change in the future is we may be using additional plugins to implement features for Elementor. We do not have an exact timeline for that additional plugin, because it is going to depend on what BuilderTrend (Our client) decides. But once it is introduced we will go back and modify our design plan to accommodate for that additional plugin and its functionality.