



ITC Trail Head Park Master Plan

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Abstract:

We have designed the future Trailhead Park for the ITC Corridor Regional Trail, a greenway linking open space within Novi, Michigan. As designers we went through an iterative design process that included site analysis including case studies and a literature review, concept development, and design. This park design is a thoughtful hybrid of a native Michigan woodland prairie aesthetic with traditional Japanese gardening styles. The park is composed of a bike loop in the northern section made in consideration of soil types and connections. The lower portion is the main trailhead park which is composed of three functional areas, the education and interactivity area, flat garden, and strolling pond garden, to provide a variety of experiences within the park. The project has a conceptual budget of \$6.9 million.

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INTRODUCTION:

Location: Garfield Road, Novi, Michigan

The goal of this project is to develop a Master Plan for a trailhead park from three adjoining parcels recently acquired from the Michigan Natural Resources Trust Fund and a private donation. The future ITC Trailhead Park will provide a naturalistic experience to nearby residents without compromising the habitat and natural systems within the parcels. The total project area is 100 acres divided into a northern and southern area with a newly built housing development between them.

As the city of Novi is diverse with a large Japanese population, our client, the Parks and Recreation Department of the city of Novi, expressed a desire to include cultural touchstones in our design.

ITC Corridor Regional Trail:

This park will serve as the trailhead to the larger ITC Corridor Trail, which is a four-mile non-motorized recreational trail running the entire length of the City of Novi from North to South.

The ITC trail links together regional facilities – such as Maybury Park, the I-275 Corridor and Hines Park, in the neighboring communities of Northville, Livonia and Westland, with parks within the city of Novi. The proposed ITC trailhead will serve as an introduction to the corridor. Once the ITC Corridor Trail is complete, residents will be able to travel between facilities and local communities safely on the ITC corridor, reducing the reliance on vehicles.

Terra Housing Development:

Within the three parcels of the design site, is a still under

construction new housing development by Cambridge Homes Inc called Terra. It is a gated community designed with residents looking to comfortably downsize into modern prairie ranch homes; “you’ll enjoy your luxury lifestyle in a right-sized new home for the next phase of your life” (“Terra Welcome Home”). The advertising for this community emphasizes the surrounding protected woodlands as a feature. Likely due to the immediate access of the future park, residents of this community will be among the frequent visitors to site.

RESEARCH METHODS:

Our workflow was divided into three phrases: Analysis and Research, Concept Development, and Design. During the overall design process, these phases became iterative (i.e. we revisited Analysis and Research when new ideas emerged during Concept Development), which is a natural part of the design process.

Site Analysis and Research

We conducted spatial analysis using Geographic Information Systems software (GIS). In this analysis, we studied and reviewed the site's vegetation, terrain, building/s, current uses, and other environmental factors (like for instance, hydrology, context, and circulation).

The spatial data provided to by our client included:

1. Topography – 1', 2', 5', 10' contour layers
2. Soil type and drainage capacity
3. Municipal drainage system
4. Preserved land, parks, conservation easements and open space
5. Invasive Species – Limited data from the phragmites project
6. Parcels data and building footprints
7. Roads
8. Land Use and Zoning Map
9. Woodland Distribution
10. Wetland Distribution

Case Studies: Our team closely studied existing precedents and designs to learn more about ecologically sound parks that also effectively meet the needs of visitors and residents. The precedent parks include: Maybury State Park in Wayne County, Michigan (1975) for an example on how to balance the relationship between users and natural systems, the Portland Japanese Park in Port

land, Oregon (1967) for an example of constructing a Japanese style garden, and the Sarah P. Duke Gardens in Durham, North Carolina (1934) for information on stormwater management and Japanese arboretum design. We used these precedents as a basis for some of our design strategies and decisions.

Literature Review: Our team explored academic research to better inform ourselves when making design decisions. The literature review focused on: ecological research on the topic of vernal pools and urbanization, and historical precedents and landscape configurations of Japanese style gardening.

Historical Research: Our team used historical aerial photographs to study the site and how it has changed overtime with a focus on canopy coverage, roads, nearby buildings, and the surrounding context.

Demographic Research/Forecast: We analyzed the current population of potential park users and future users. The age distribution is significant since it could potentially influence different programming needs and desires.

Site Visit: Our team also conducted a series of visits to the site and surrounding context across multiple seasons for a better understanding of the general feeling of the site, land use, including land uses, architecture, vegetation, and cultural connections. Sites were documented with photographs to be used in the future design process. Site visits for site analysis and design inspiration are a crucial part of the design process for landscape architects.

Concept Development:

At this stage in the process after synthesizing information gathered, we generated initial design ideas, producing site plans and schematic sketches to develop a few relatively abstract design ideas for the park to develop further. Then, we used our concepts to communicate our ideas with our client and gather feedback.

Design:

After our concept meeting with our client, we used their feedback to further refine and develop our ideas in more detail to achieve a realistic design that met the client's needs. We made more detailed and specific design decisions at this point in the process including: circulation, trail layout, boardwalk placement, observation areas, and programming.

LITERATURE INQUIRY:

Vernal Pond

1. Conserving Vernal Pool Wildlife in Urbanizing Landscapes

The relationship between the article and our site :

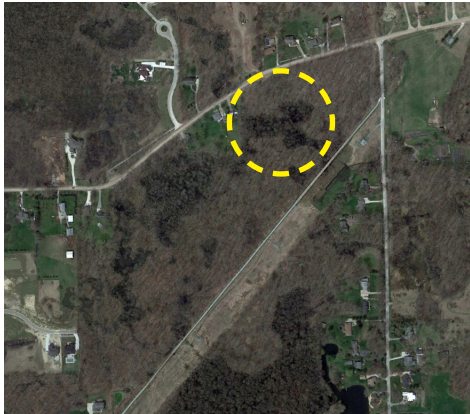


Figure-1. Vernal pond in the site.

We discovered the existence of vernal pools during a site visit and located them on aerial maps on Google Earth. So, as designers of this special system, we definitely have to consider its ecology, aesthetic and interactive values. Because of this unique feature in the landscape we consulted the following articles about how vernal

pools in North America are affected by urbanization and potential protocols for counteracting this undesirable effect. Our site is located within an urban area, but it is also located in an urban ecological matrix of higher quality. We think that this type of vernal pool has ecological value and necessitates protection. Because it is located in a developed area, our intervention may have a limited effect.

A brief description of vernal pools (Vernal pools, also called vernal ponds or ephemeral pools, are seasonal pools of water that provide habitat for a diverse array of flora and fauna, particularly natal amphibians and insects (Shrank et al., 161).

Points of knowledge

“Humans in the northeastern U.S. and eastern Canada have abandoned dense frogless inner city neighborhoods to flock to

new homes in sprawling suburbs or to exurban developments (residential development beyond the suburbs) in areas formerly dominated by agriculture and forestry.” (Windmiller, Bryan, and Aram Calhoun. “Conserving Vernal Pool Wildlife in Urbanizing Landscapes.” *Science and Conservation of Vernal Pools in Northeastern North America*, 2007, pp. 234., doi:10.1201/9781420005394.ch12.)

This article confirms that people are more inclined to live in a natural-style environment, which has both benefits and consequences for a vernal pool ecosystem. The benefit is that planners and designers can take this opportunity to educate the public about vernal pools and use this awareness for the protection of this vital habitat. However, vernal pools could be destroyed with development and construction. People and motor vehicles may greatly impact wildlife in the area. In this project, our site is essentially surrounded by residences; in our design, we need to consider the best methods of protecting vernal pools.

“Reduction in the probability of amphibian population presence in otherwise suitable breeding sites” (Windmiller 1996; Gibbs 1998; Homan et al. 2004; Rubbo and Kiesecker 2005; Clark et al., in review; Egan and Paton, in press).

From this article, we learned that a vernal pond is not a separate ecosystem. Instead, it is generally associated with nearby wetlands, and the creatures in vernal pools will migrate between these two destinations. This means that if one end of the link is damaged, the entire system will deteriorate. Therefore, for us, it may be impossible to not impact the circulation of this amphibian habitat during our design process. We may need to strengthen or stabilize the connection between the vernal pond and the nearby wetlands on the site.

“Likewise, vernal pool-dependent amphibians are highly vulnerable to road mortality as adults move to and from vernal pools during breeding migrations and as newly metamorphosed

juveniles disperse into the surrounding landscape.”(Windmill-er, Bryan, and Aram Calhoun. “Conserving Vernal Pool Wildlife in Urbanizing Landscapes.” Science and Conservation of Vernal Pools in Northeastern North America, 2007, pp. 238-239., doi:10.1201/9781420005394.ch12.) Amphibian vulnerability to mortality on the road is increased by a behavioral tendency among many species to “freeze” upon the approach of cars (Mazerolle et al. 2005). As a result, a high proportion of frogs and salamanders attempting to cross roads are killed even at low traffic densities (e.g., less than three cars per minute; van Gelder 1973; Hels and Buchwald 2001).

Any low-speed traffic may affect the activity of vernal pools. In consideration of this it will be necessary to avoid motorized lanes within our design and to make sure that non-motorized lanes do not affect the amphibians.

“As adequate terrestrial habitat cannot be maintained around all vernal pools, conservation efforts will require the use of some system of ranking the relative ecological value of vernal pool systems” (Calhoun et al. 2005; and Chapter 16, Calhoun and Reilly).

In consideration of this point we think that the vernal pond in our site should be treated with the utmost concern. protecting vernal ponds will definitely consume a lot of our attention. According to the report of the investigator in Novi government, when he visited the site, he heard many frogs and saw salamanders, which shows the value of this vernal pond.

Application & Practice

A site inventory is recommended to better understand the type of protections the vernal pool requires. After it is determined, we need to integrate various factors to make it a suitable place for both humans and amphibians: visitors can learn about vernal pools here, while observing the amphibians. Without excessive intervention by human activities, the living environment and lifesafety of the amphibians will be guaranteed to the greatest extent.

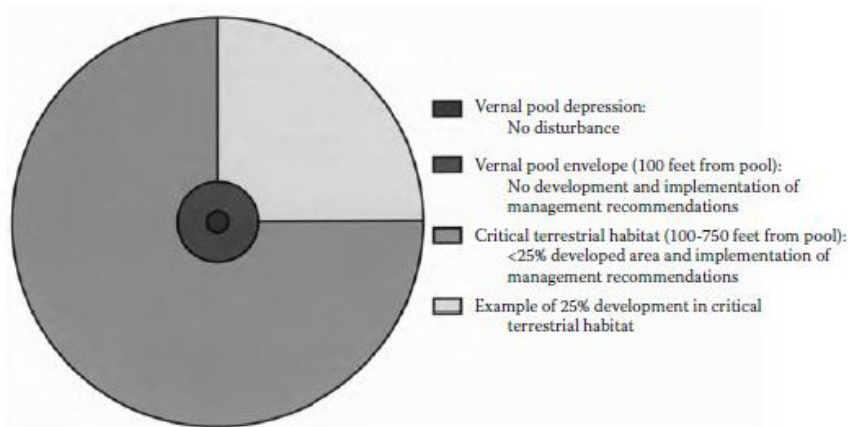


Figure-2. Vernal pool effect.

Japanese Gardening

1. Japanese gardens in Edwardian Britain: landscape and transculturation

Our site is located in Novi, Michigan and it has the highest proportion of the Japanese population in Michigan. ("Novi, Michigan." Wikipedia, Wikimedia Foundation, 21 Apr. 2020, en.wikipedia.org/wiki/Novi,_Michigan.) Thus, the Novi Parks and Recreation suggested for us to keep in mind the Japanese cultural characteristics of this community while contemplating our design. Tachibana, Setsu, et. al explains how the traditional Japanese gardens gradually opened to the outside world after the Europeans discovered their beauty at the World Expo, and how the British imitate the construction of Japanese gardens in the UK. This article mainly introduces the history of some early English-Japanese gardens, and some Japanese views on these imitations. Of course, as the first imitation, these gardens are certainly not so successful. But we can understand why they failed, thus avoiding the possibility of these failures.

Points of knowledge

On the other hand, vulgarity could be the result of the very availability of a few Japanese ingredients within the price range of a small suburban gardener. The editor of Country Life announced in 1915 that 'the disposition of a few typical ornaments, of a bronze stork here and a stone lantern there, does not make a Japanese garden; it only makes an English garden speak with a Japanese voice'.²⁶ Purist advocates of the style objected to features arranged without the deeper meanings—of artistry, scholarship, etiquette and philosophical wisdom—attributed to traditional Japanese culture, or the more arcane aura which attracted devotees of mysticism. (Tachibana, Setsu, et al. "Japanese Gardens in Edwardian Britain: Landscape and Transculturation." Journal of Historical Geography, vol. 30, no. 2, 2004, pp. 371., doi:10.1016/s0305-7488(03)00049-5.)

In the beginning, Britain's imitation of traditional Japanese gardens only focused on borrowing some features such as the placement of sculptures and stone lamps. However, this was not sufficient. To create a Japanese style garden, we must first understand the connection between Japanese gardening and Japanese culture. However, low construction and maintenance costs are also the goals of our project, which is in conflict with exquisite Japanese gardens. Perhaps, we need to explore further into Japanese culture so that our site can "sing Japanese songs even if it is wearing American clothes."

Part of the layout was planned according to the so-called 'ancient rule' of the Imperial Palace Gardens, other parts copied from Conder's Landscape Gardening in Japan (Fig. 12). As at Newstead Abbey, a Master's Isle and Guest's Isle were created according to the conventions of water gardening. The approach

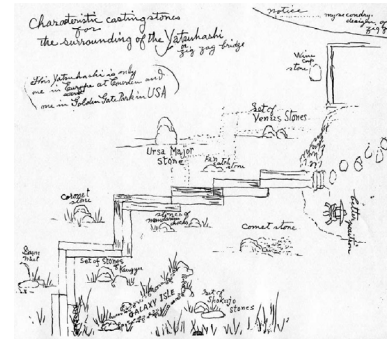


Figure-3. Japanese garden features sketches.



was marked by an early 19th century granite lantern imported from a Kyoto antique dealer, who provided detailed advice about maintaining moss, if local insect hunting wrens ensured it did not survive. A red lacquered torii, the pergola-like Shinto shrine structure, was imported in sections. One embankment was modelled to denote the slopes of Fuji-yama. Local limestone was shaped into scores of symbolic stones, carefully positioned to articulate the space as (in Christie's phrase) a 'sacred domain'. Plants were selected with a view to their successful establishment. (Tachibana, Setsu, et al. "Japanese Gardens in Edwardian Britain: Landscape

and Transculturation.” *Journal of Historical Geography*, vol. 30, no. 2, 2004, pp. 379-281., doi:10.1016/s0305-7488(03)00049-5.)

Even if appearance in the previous point is not the most important factor, it does not mean that we can ignore it. We can see that the designer referred to the most characteristic Japanese landscape symbol- Torii, and also carefully considered the terrain and spatial configuration. Finally, representative plants- such as wisteria and moss, are used to enhance the texture of the entire landscape. We should include similar elements. When designing, we should consider how to make the site "sing Japanese songs" in every aspect: circulation, planting, topography, hydrology, etc.

The ‘Japanese’ gardens at the White City [Exhibition of 1910] were quite the most cruel and insolent practical jokes that I have ever seen leveled at our native innocence—vast puddings of unrelated pebbles, shapeless, ridiculous, peppered with toys and bronzes and haphazard shrubs. How their creators must have laughed in the building... ‘Very pretty’ said a Japanese Ambassador one day in England, wishing to say pleasant things about a famous ‘Japanese’ garden through which he was being conveyed by its complacent owner. ‘Very pretty, yes. We have nothing like this in Japan!’. ‘We have never yet in England seen any fair or reasonable reproduction of a Japanese garden’ because of the ‘wrongheadedness of ‘copying’ Japanese gardens’, he continued. (Tachibana, Setsu, et al. “Japanese Gardens in Edwardian Britain: Landscape and Transculturation.” *Journal of Historical Geography*, vol. 30, no. 2, 2004, pp. 379-281., doi:10.1016/s0305-7488(03)00049-5.)

We do not need to copy a Japanese gardens completely. Our aspiration is the following: that should someone from Japan, someone intimately familiar with their style of gardens come to our site one day, they may suddenly feel an evocation of home while appreciating its translation to a different environment and cultural context. Perhaps this goal is difficult to achieve, because it requires us not only to imitate the image, but to also have a

unique understanding of another culture.

Application & Practice

We believe that the reason why the United Kingdom will fail to imitate Japanese gardens at their first stage is that: first, without fully grasping the influence of Japanese culture on the construction of gardens, they directly copied some things they saw that were different from their native landscapes. As a result, it lost both landscape characteristics of Japanese and British landscapes. They did not grasp the common ground between the Japanese and British landscapes, nor did they make minor changes to make the two styles blend better. It would be unsuccessful to put the Eastern culture stiffly and directly on the Western land. This is the lesson we learned through this article, and it is also the point we need to avoid in the next process.

2.The Application of Purity from Traditional Japanese Gardens to Modern Japanese Landscapes

The relationship between the article and our site

The previous article argued why it was a mistake to simply copy Japanese gardens. This article analyzes the modern landscape in Japan that does not lose its own traditional characteristics and achieve a modern appearance. In other words, we can simplify or extract the elements of some traditional Japanese feature gardens to flexibly express the Japanese style.

Points of knowledge

Based on the concept of abstract expression of natural forms, in order to reflect the purity in traditional gardens, designers of the site used various points by chiseling on the granite pavement, and the circular point-like geometric composition resembles the layout of pixels. The use of points/planting holes comes from the flying

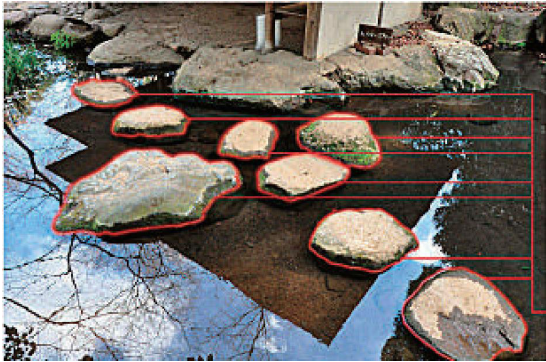


Figure-5. The use of points/planting holes.

stones in the traditional Japanese garden. The carefully arranged stones in the traditional garden form a relationship between the background which is the fine sand or the water surface. The arrangement of different natural elements in these planting holes achieves the dynamic change effect of the density of natural space, bringing people the real feeling of different natural scales and spaces.

The experience space of the burrow transitions from an open plantation to densely planted tree clusters, bypasses the grove and comes to water space, and finally returns to the grove. (Zhang, Yunlu, and Li Dong. "The Application of Purity from Traditional Japanese Garden to Modern Japanese Landscape." Chinese Landscape Architecture, 9 Sept. 2010, pp. 72.)



Figure-6. Planting holes in urban landscapes.



Figure-7. Planting holes in urban landscapes.

Japan is an island country. It has rolling hills, and natural elements such as the sea, islands, and mountains. Those elements become abstract materials that reflect the pure and beautiful nature of Japanese gardens. In traditional Japanese gardens, the expression of the mountains is usually abstracted through the processing methods such as strips. At one end of the site, the uplift of the geometrical strips is used to bring vertical changes, thereby representing the rolling hills on the island. Next, through the continuation of the strips, the space is transitioned to the next open part. The changes in the texture of the site seem to transform the scene from natural mountains to plains and the sea. In the end, the maple trees planted one by one in the site are like islands in the sea, breaking the regular layout in the site (Zhang, Yunlu, and Li Dong. "The Application of Purity from Traditional Japanese Garden to Modern Japanese Landscape." Chinese Landscape Architecture, 9 Sept. 2010, pp. 72.)



Figure-8. The planting strip layout.



Figure-9. The planting strip layout.

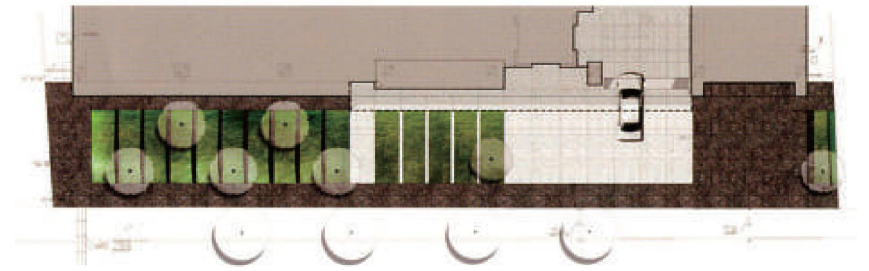


Figure-10. The planting strip layout.

Application & Practice

This article has taught us that we can abstract something complex and grand into very simple lines or graphics. For example, Torii is one type of unique building which represents Japan. If we want to use it on the site, we do not have to directly copy Torii completely, because it may be too rigid based on the surrounding context. We can simplify the Torii into a geometric figure, such as a circle or square, and then match the color and material. This will not conflict with the style of the United States, but also has a deep meaning of Japanese culture.

3.The Application of the Surrounding Landform to the Landscape Design in Japanese Gardens

The relationship between the article and our site

In our initial thoughts, we hoped to add a Japanese-style pavilion to the main entrance of the site. Then where should we put the pavilion, and how to manage the style of the landscape facing the pavilion are both under our consideration. This article analyzes several gardens built in the mountains of Kyoto. The authors reflect on the relationship and typical structure of viewpoints and visual objects in Japanese style. We hope that we can get inspiration from this article and bring a part of the frame from the Japanese garden into our design. With the detailed thoughts in our design, we believe it will make our work more meaningful.

Points of knowledge

Shuon-an is the Zen Buddhism temple built early in the 15th century by Ikkyu. The site once served as Myosho-ji temple. The main garden is created in the south. The building is situated on an elevation, 4 meters higher than the surrounding site in the south and east. This makes the site not be seen from outside. The surrounding mountains and the building of Hojyo make an enclosed space together. Hojyo. Mountains and a ravine in the south are chief elements of the scenery of the main garden. In the north, we can see

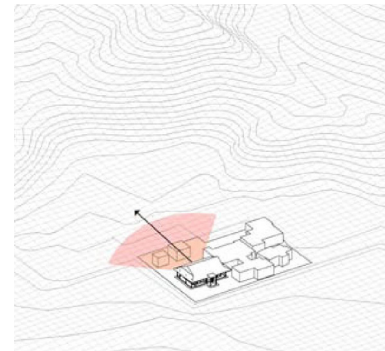


Figure-11. Shuon-an and the mountains.

no mountains but a large field. The north field outlines the rock garden. (Yamaguchi, Keita, Isao Nakajima, and Masashi Kawasaki. "The application of the surrounding landform to the landscape design in Japanese gardens." WSEAS Transactions on Environment and Development 8.4 (2008): 655-665.)

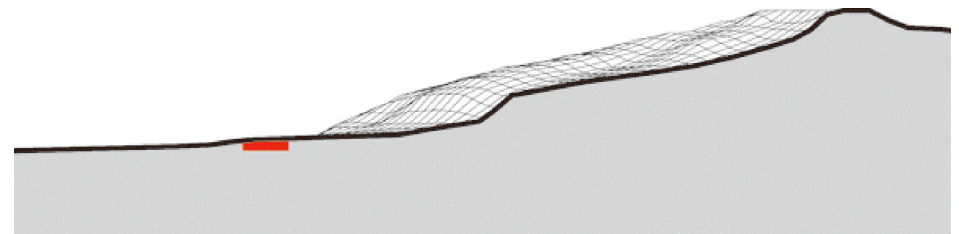


Figure-12. Section view of Shuon-an and the mountains.

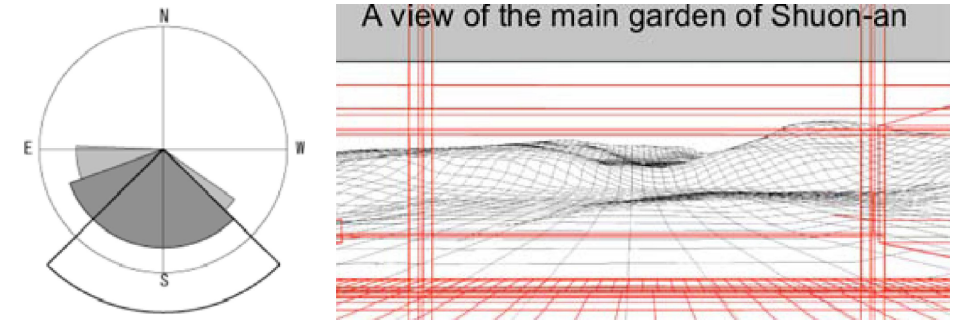


Figure-14, 15. A view of the main garden of Shuon-an.

What we learned from this article is that in most Japanese mountain gardens, the back of the building will always be "inlaid" in the mountain, and the mountain will be used as a cover and background. In the direction the building is facing, the terrain is usually smoother and wider, even if there are changing shapes of the mountain, it basically appears in the eyes of the viewer as a distant view that faraway from them. The rolling mountain is a distant

view, and the nearby scenery is generally a delicate garden. Since traditional Japanese buildings are mostly wooden, the doors, windows, or pillars will be directly used as a picture frame to frame all the scenery. We can draw on this idea and apply it in our project.

Application & Practice

In this case, we can put our expected pavilion on the edge of a higher and steeper terrain, let it face a gentle area, and then carry out a more Japanese-style design in this area, such as dry gardens. Because the terrain around the site is gentle and there are no mountains, the mountains in the distance, which are highly mentioned in the article, will not exist. But we can use the groves faraway as the background to highlight the design of the nearby areas. Or perhaps, we can add some small terrain in the vicinity, and then use plants with different heights to increase the undulation in the “photo frame”.

CASE STUDIES:

1. Sarah P. Duke Gardens:

Location: Durham, North Carolina

Size: 55 Acres

Designer: Duke University

Date Opening: 1934

According to the William Louis Culberson Asiatic Arboretum, whose information we accessed via the Sarah P. Duke website, the Sarah P. Duke Gardens are composed of a mixture of woodland and formal landscaped spaces. Within the garden, there are four distinct spaces: the Historic Gardens, the H.L. Blomquist Garden of Native Plants, the William Louis Culberson Asiatic Arboretum, and the Doris Duke Center Gardens. For the purposes of our project, we closely examined the Historic Gardens and the William Louis Culberson Asiatic Arboretum, which utilized several inspiring design strategies and Japanese garden style features.

The Historic Gardens can be used as a model for our project in creating a space that artfully manages the hydrology of a site. As part of the stormwater management system, there is a formal koi pond linked with a small creek which gathers most of the stormwater within the site. In the summer, the fish pond is filled with hardy and tropical water lilies. The water drainage channels in the Gardens are paved with different size slab stones that are formed to represent water wave patterns, which prevent erosion. During dry weather, the paved patterns become trails and provide visual interest that attracts people to explore the inner sections of the gardens.



Figure-16. Drainage channel patterns. Photo by Zibo Zhu. 2019

Within the Asiatic Arboretum’s 18-acre collection there is a wealth of floral diversity from Southeast Asia (Duke University). Exploring the trails, there are many classic garden favorites—Japanese maples, irises, peonies, ginger lilies and cherries, along with rarer ornamental species. Enhancing the Arboretum landscape are features typically associated with Asian gardens: stepping stone



Figure-17. Bamboo and Japanese-style arched bridge in the Culberson Asiatic Arboretum. Photo by Rick Fisher.

pathways, stone lanterns and water basins, arched bridges, large boulders, and water features.

In the Asiatic Arboretum, a lake sits in the center, which shows a representative eastern garden style with water features encircled by vegetation and landscape structures. The lake serves as habitat wildlife, like birds and fish. The designers utilized recycled materials within the site for a more sustainable design, including garden edge fencing from recycled bamboo (Duke University). This material also connects the fencing with the bamboo planting around the lake.

The Japanese cultural elements such as the seating chair with unique Japanese patterns and cultural event view areas provide opportunities for public visitation and participation. With Japanese culture, there is a saying, “one more step, one more view”. In this way, traditional garden designers try to make the places that follow the natural form. The visitors can always find something new as they explore this section of the Sarah P. Duke Gardens. Overall, this Asiatic Arboretum is a cultural symbol and serves the public as a successful open space.



Figure-18. “One more step, one more view”. Photo by Zibo Zhu. 2019.

2.PORTLAND JAPANESE GARDEN

Location: Portland, OR

Size: 5.5 acres

Designer: Professor Takuma Tono, Tokyo Agricultural University

Date Opening: 1967

Connections between Design Site and Case Study:

One of Novi's outstanding cultural characteristics is that it has the highest proportion of the Japanese population in Michigan. ("Novi, Michigan." Wikipedia, Wikimedia Foundation, 21 Apr. 2020, en.wikipedia.org/wiki/Novi,_Michigan.) Meanwhile, at our client's request, we are asked to consider and incorporate the Japanese cultural heritage within our design.

While we have not conducted a site visit to this location, it is informative to our process in designing a Japanese-style public park. It was built locally in the United States and is very popular with the public. Most importantly, it is also praised by the Japanese: When His Excellency Nobuo Matsunaga, the former Ambassador of Japan to the United States, visited Portland Japanese Garden, he proclaimed it to be "the most beautiful and authentic Japanese garden in the world outside of Japan." ("About Portland Japanese Garden." Portland Japanese Garden, japanesegarden.org/about-portland-japanese-garden/.)

We hope that through the study of this case, we can infer how Japanese culture can influence the garden style, and incorporate traditional Japanese space making methods. In addition, this park and its celebration of Japanese cultural history were very inspiring to us in our design.

Introduction:

This park was originally part of the Portland Zoo. According to Portland Japanese Garden, the non-profit organization that is



Figure-19. Master plan of Portland Japanese garden.

currently in charge of representing the park, the park was constructed in order to popularize Japanese culture in the United States and strengthen the cultural links between the United States and Japan. There are eight unique small areas within the park. Although they are all about Japanese culture and Japanese landscape, each area has its own theme and function. Visitors can experience different landscaping techniques and the Japanese culture embedded in it. ("Garden Spaces." Portland Japanese Garden, japanesegarden.org/garden-spaces/.)

The entry garden:

Unlike the typical park entrance in European and American style parks, the entrance of this park is very concealed. The long path gradually extends to the hillside, while surrounded by dense woods and peaceful moss. Except for the parking lot, there is no other open area at the entrance. Tourists need to follow the road over a hill to see the true appearance of this Japanese park. The experience here is like a spring, which is gradually compressed when they enter the park by a long path driven by curiosity for this place. Until they reach the top of the hill and see the contents of the park, the curiosity spring in their minds would bounce off instantly, which was both satisfying and very pleasant. ("The Entry Garden." Portland Japanese Garden, japanesegarden.org/garden-spaces/the-entry-garden/.)

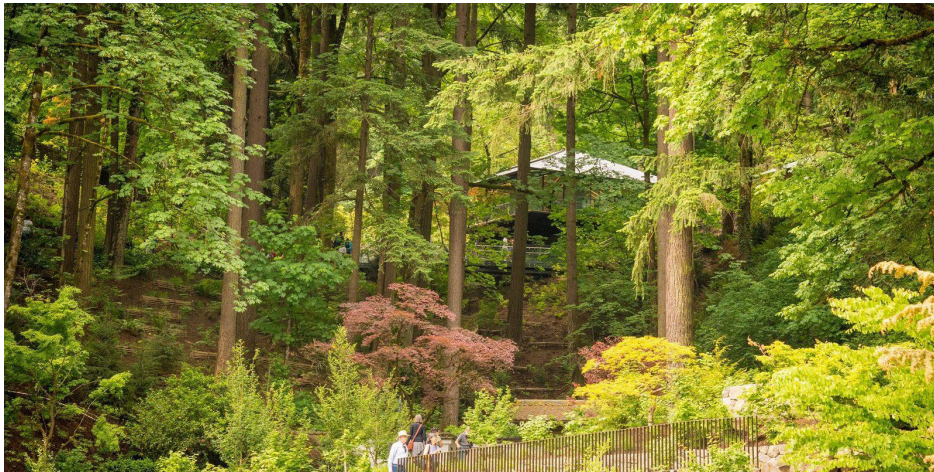


Figure-20. The entry garden.

Strolling garden:

Strolling Pond Garden is one of the most important aspects of Japanese gardens, and often representing classic Japanese landscapes. In this area of the park, the most outstanding feature is the relationship between the stream and the bridge in the park, and the color matching of the plants on the shore. Visitors can experience this beautiful area through changing perspectives by arch bridges and 'zig-zag' bridges in different seasons. ("Strolling Pond Garden." Portland Japanese Garden, japanesegarden.org/garden-spaces/strolling-pond-garden/.)

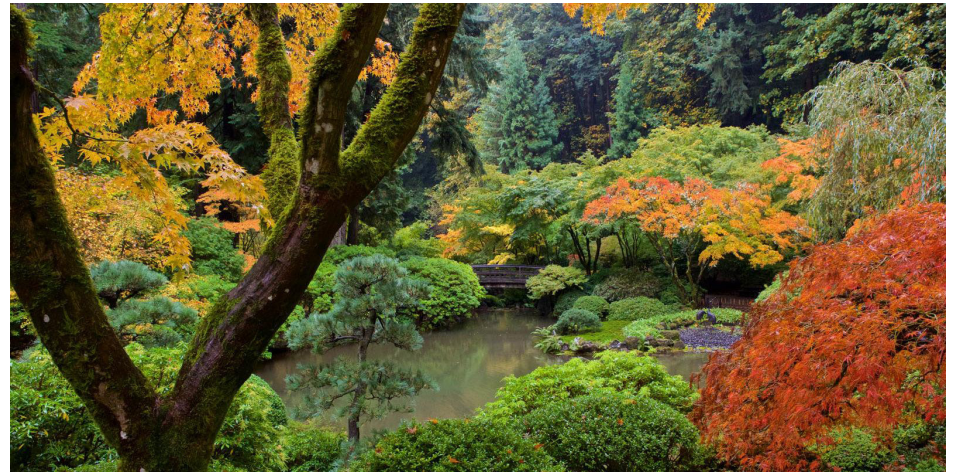


Figure-21. The Strolling pond garden.

The flat garden:

In Japanese culture, designers like to represent mountains, seas, and forests in nature through stones, sand, trees, moss, and so on. Flat gardens and dry landscapes are representatives of this style. In the garden, white sand represents the ocean, green spaces represent islands and forests, and stones represent mountains. People can appreciate the miniature world in the eyes of the Japanese. At the same time, the designer uses the seasonality of plants to make this garden more colorful than the dry landscape. ("Flat Garden." Portland Japanese Garden, [japanesegarden.org/garden-spaces/flat-garden/.](http://japanesegarden.org/garden-spaces/flat-garden/))



Figure-22. The flat garden.

The Pavilion Gallery:

In traditional Japanese gardens, plants, water and terrain are very important, but architecture is also essential as a highlight in the park. In this park, the pavilion adopts Japanese style, not only as part of the landscape, but also as a place for some Japanese theme events. This pavilion is also integrated with the adjacent garden, providing visitors with a complete Japanese garden experience. ("Pavilion." Portland Japanese Garden, [japanesegarden.org/garden-spaces/pavilion/.](http://japanesegarden.org/garden-spaces/pavilion/))



Figure-23. The pavilion gallery.

Design Lessons:

The entrance to the park is interesting for the following reason: unlike conventional parks, people need to walk in the woods for a long time to see the landscape inside the park. From the plan view, the path from the entrance is very slender, and the square at the end of the road instantly enlarges the space. This contrast in spatial configuration is very popular in Eastern gardening, and is very effective at creating a sense of place. Secondly, the cooperation between the narrow and changeable water surface and the bridge is always a highlight of the Japanese style park. These bridges are sometimes zig-zag bridges and sometimes arch bridges, which are generally relatively close to the water. A common design element of this style is to incorporate a tree with a slightly slanted crown in front of the folding bridge so that it can be used as a framing device. While each functional area flows well together, there is also a clear effort to make each space feel discreet and unique. Due to the terrain and plants, people often cannot see one functional area from another. Most visitors walk on the road and then suddenly find themselves transported to another place. We can also learn to incorporate these circulation strategies and other design methods to constantly create “surprises” for our visitors.

The success of this park can be attributed to the fact that the designer has shaped its appearance with Japanese design characteristics. This has provided visitors many opportunities to celebrate Japanese culture and to share in this unique cultural exchange. A design like this is valuable to the local community because it can facilitate commercial development. Also, our project can cooperate with nearby schools to provide children in Novi with a place to experience Japanese culture and ecological knowledge. The municipality can also use the site to hold events in conjunction with traditional Japanese celebrations and festivals.

3.MAYBURY STATE PARK

Location: Novi, Michigan

Size: 994 Acres

Designer: Michigan Department of Natural Resources

Date Opening:1975

Introduction:

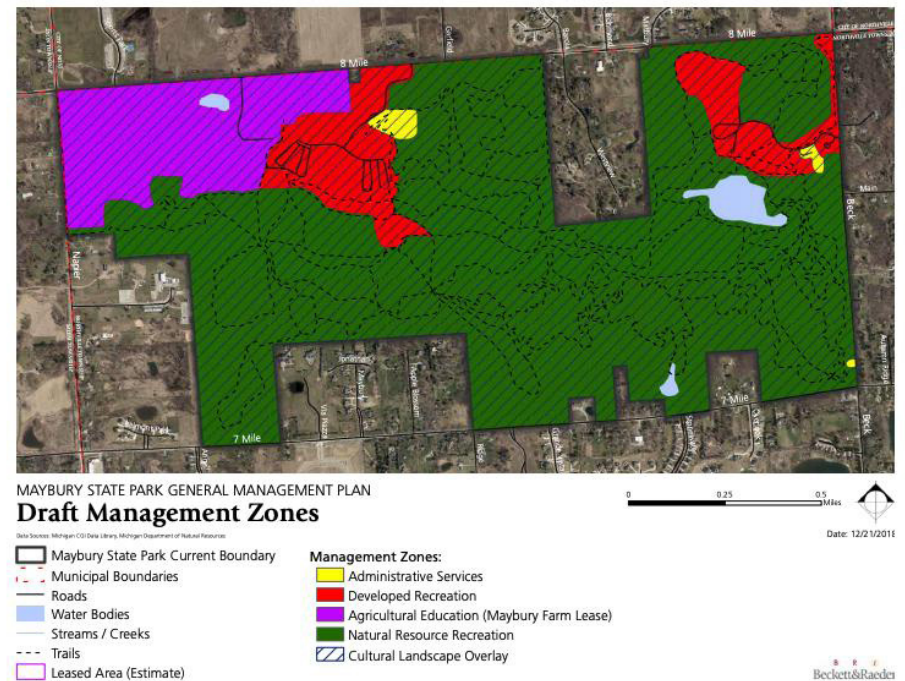
Maybury State Park is a local Novi recreation area roughly one mile from the design site and the two are connected by the ITC Corridor Trail. Near Maybury is “significant residential and commercial development” and access to Maybury may be limited during peak commuting times (Michigan Department of Natural Resources, Appendix-A). This park is managed by the Michigan



Figure-24. Example of the developed recreation area of Maybury State Park. Photo by Terra Weiland, August 2019.

Department of Natural Resources (DNR), whose mission statement is that they are “committed to the conservation, protection, management, use, and enjoyment of the state’s natural and cultural resources for current and future generations” (Michigan Department of Natural Resources, 5).

The park is 994 acres with the majority of the acreage devoted to natural resource recreation that largely include trailways (Michigan Department of Natural Resources, 13). Within the Natural Resource Recreation Zone, “there is an emphasis on resource quality over recreation” (Michigan Department of Natural Resources, 13). This makes up 76% of the park with rest of the land use divided between the developed recreation zone at 10%, the agricultural education zone at 13%, and the administrative zone at 1%. Image Source: Department of Natural Resources, Maybury State



This project was directed by Deborah Jensen, Management Plan Administrator, Department of Natural Resources, DNR Parks & Recreation Division with assistance from Beckett & Raeder, Inc.

Figure-25.Park General Management Plan Draft. 2019.

Within the park, Novi's history and cultural landscape is highlighted throughout with signage encompassing both built structures on the site and non-structural cultural history (Michigan Department of Natural Resources, 13). The site was originally built and maintained as a tuberculosis sanatorium with the hospital largely leaving the wooded natural area undisturbed to provide a natural environment for patients to rest and recreate for the sake of their health (Michigan Department of Natural Resources, 13).

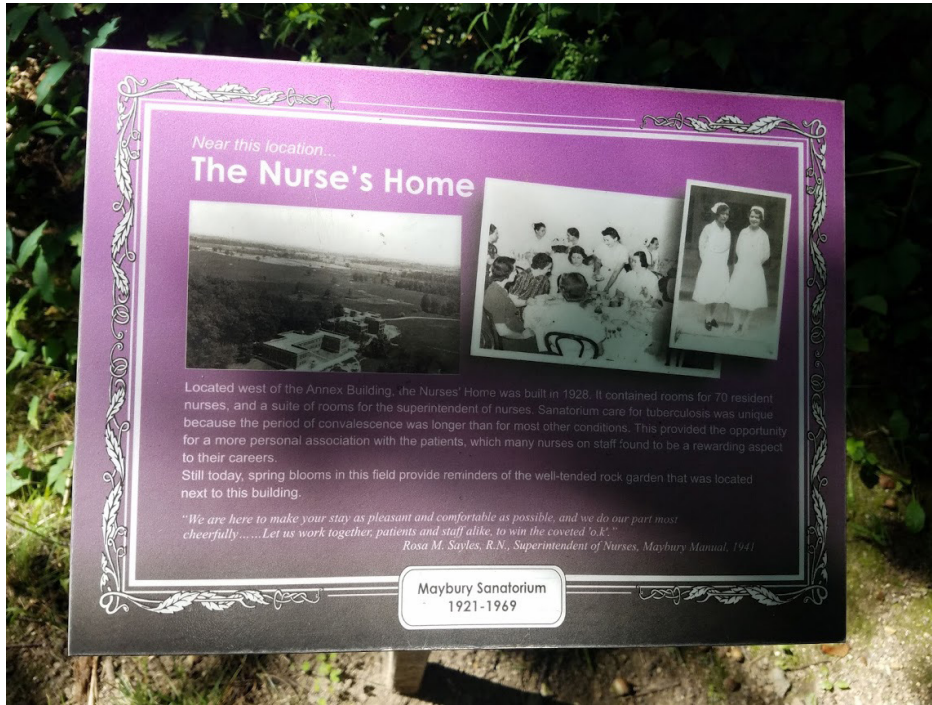


Figure-26. Interpretive Signage of Novi's Cultural History. Photos by Terra Weiland, August 2019.

There are multiple site uses available throughout the park including: education, fishing, hiking, biking, horseback riding on the equestrian trails with nearby the Maybury Riding Stables, playgrounds, cross-country skiing, snowshoeing, and space for community events (Michigan Department of Natural Resources, 21). During site visits, our design team noted the use of physical space

and site amenities available to the public, including public notice boards, interpretative displays, dog waste bags and trash cans, bicycle repair stations, public bathrooms, picnic shelters, benches in wooded areas, and picnic tables at wider lawn areas. Notably, there was signage and maps showing how local parks within the area are connected through greenways, which could direct the public to the future ITC Trailhead Park.



Figure-27. Examples of the wide variety of amenities throughout Maybury State Park. Photos by Terra Weiland, August 2019.

The Trailways were diverse in design with wide, easily accessible trails and narrower pathways branching off. The most accessible trails were 10' wide asphalt with 2' of decomposed granite on each side, likely for maintenance to limit weeds and increase visibility. These trails were large enough to accommodate both cyclists and pedestrians comfortably and included wider areas adjacent to the path for benches at intervals. The narrower paths were entirely mulched, roughly 6' wide, with no other material on the side to buffer from plants. These narrower paths, while perhaps less accessible to people with mobility limitations, were largely flat with few instances of trip hazards to safely accommodate visitors. The equestrian trails were almost entirely separated with some intersections with other path types.

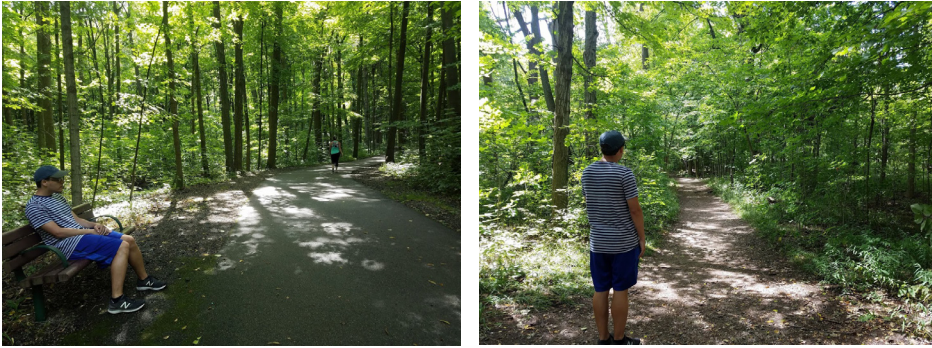


Figure-28. Examples of trail typologies within Maybury of paved, wider trails and narrower, wood-chipped trails. Photos by Terra Weiland, August 2019.



Figure-29. Example of signage throughout Maybury showing greenway connections. Photos by Terra Weiland, August 2019.

According to the Michigan Department of Natural Resources, despite the wide expanse of natural habitat, Maybury has “no known occurrence of endangered, threatened or species of concern documented in the park” (Michigan Department of Natural Resources, Appendix-13). The overall ecological management goals for the site are to continue invasive species management while limiting forest fragmentation and “maintaining the closed-canopy forest areas.” Maybury is largely mesic-southern forest composed of beech and maple, which is a representative forest community type composed of old-growth habitat in the southern Michigan region (Michigan Natural Features Inventory).

Design Lessons:

Maybury can serve as a successful example of balancing the Michigan public’s recreation and cultural needs while preserving and maintaining the natural systems and habitat in the region. It is important to note that visitors to Maybury include members of the public from forty-three communities, including the city of Detroit (Michigan Department of Natural Resources, Appendix-A). We can assume, given the very close proximity to Maybury State Park, that these visitors are potential future users of the ITC Trailhead Park as well.

Maybury can also inform our design team of programming and amenities readily available for public use that may not need to be included at the significantly smaller Trailhead Park. For instance, equestrian trails, fishing, and camping are likely not appropriate for the design site and available for public use at Maybury. We can also use Maybury as a template for providing local trail widths and design, trail layout, provided amenities, and interpretative signage typologies that the public is already largely familiar with in the region and that will appropriately fit the site.

SITE INVENTORY & ANALYSIS:

Site Context:

USA-Michigan-Novi-Site

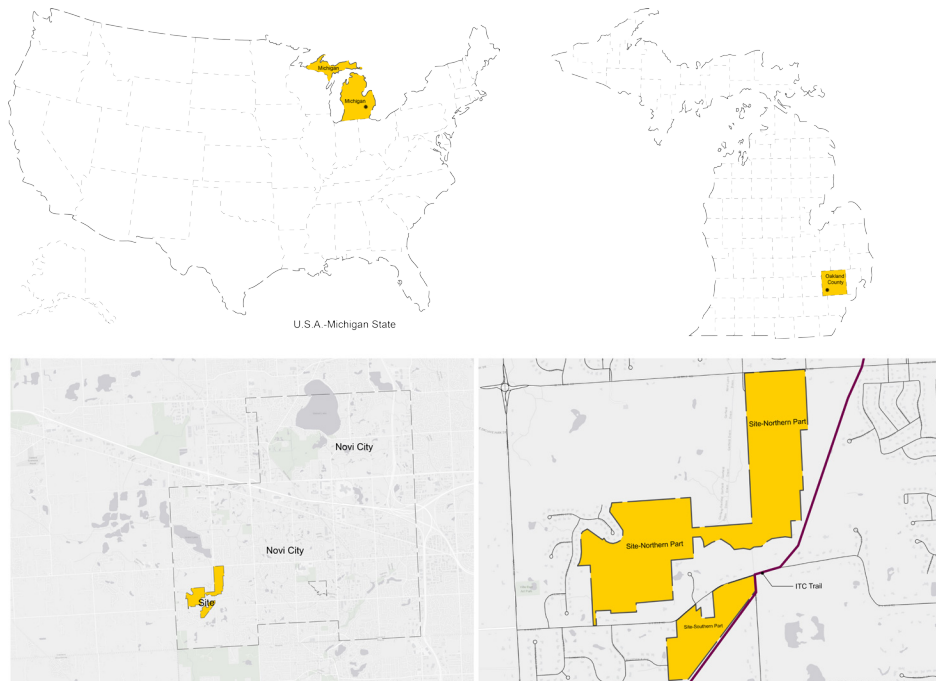


Figure-30, 31, 32, 33. The location of the site.

The site is composed of three parcels located within Novi, Michigan along Garfield and Nine Mile Road. The northern and southern areas intersected by Nine Mile Road going east to west with residential housing located along Nine Mile Road. The ITC Corridor Trail runs North to South along the eastern edge of the parcels. The northern and southern are unconnected, but there is an opportunity to connect them using Nine Mile Road.

Natural Elements:

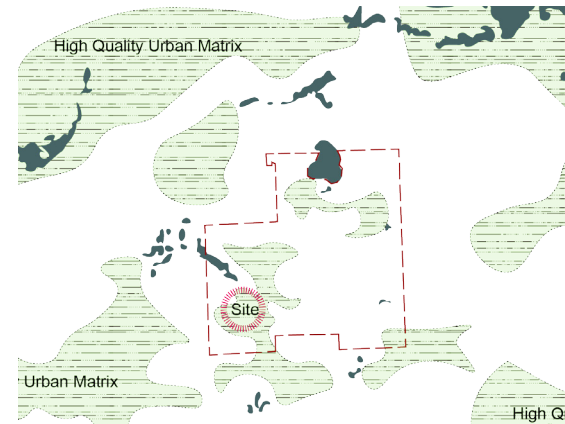


Figure-34. The ecological context.

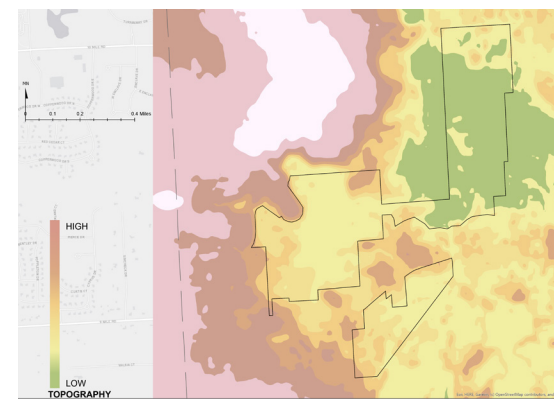


Figure-35. The topography of the site.

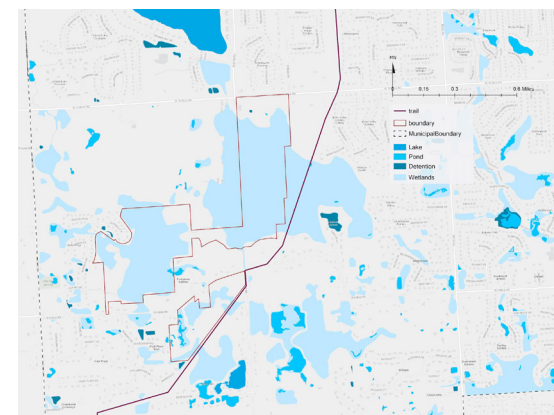


Figure-36. The topography of the site.

Ecological Value:
Our initial findings suggest that this site is largely undisturbed, high-quality habitat and is located within the context of nearby surrounding habitat. This site is likely valuable for wildlife both as habitat and as a migration steppingstone.

Topography:
Both the northern and southern portions of the site are lower in topography in relation to the immediate context, with the northern portion significantly lower. This suggests that water is flowing into the site from the surrounding area.

Hydrology:
The site is largely wet with small vernal pools and ponds. Recently, a culvert was constructed at the along 9 Mile Road, which is likely to increase water on the site. Water site flows through the site into a nearby wetland area with varying levels of flow throughout the site.

Vernal pond:



Figure-37. Future water source from north, some small ponds, wetland.

Flow direction:

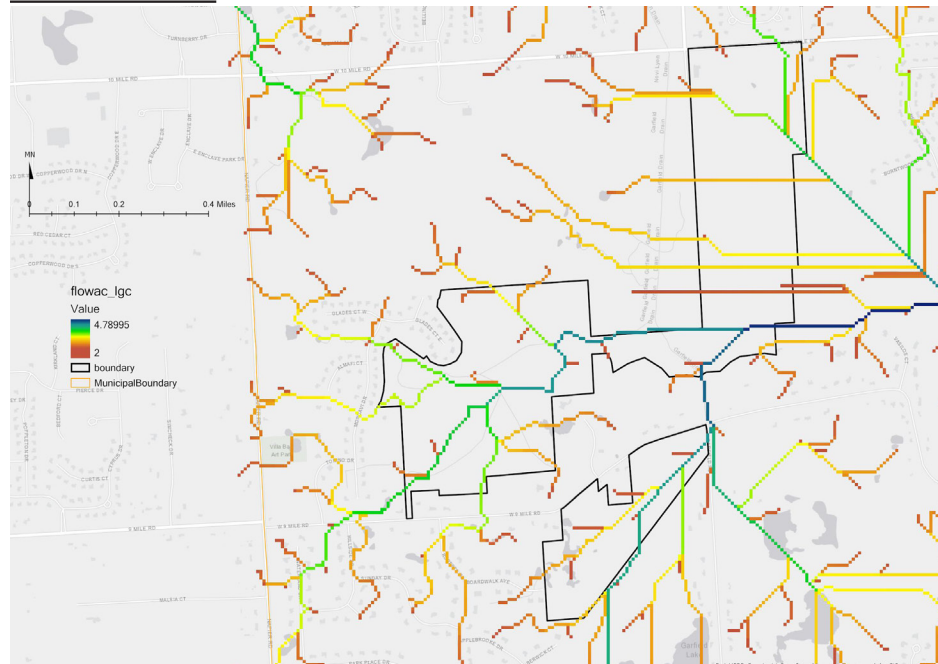


Figure-38. The water flow direction.

Wetland & Amphibian Situation:



Figure-39. The watershed context.

Chart-1. Oakland county species information.

County Name:	Oakland
State:	Michigan
Number of Species of Conservation Concern¹:	6

¹ U.S. ESA Listed, Proposed, Candidate and NatureServe Imperiled (G1-G2) Species

Species Occurring in County

Scientific Name ²	Common Name	Major Group	NatureServe Global Status	U.S. Federal Status ³	State Status
Epioblasma triquetra	Snuffbox	Freshwater Mussels	G3: Vulnerable	LE	S1S2
Oarisma poweshiek	Poweshiek Skipperling	Butterflies and Skippers	G1: Critically Imperiled	LE	S1
Oecanthus laricis	Tamarack Tree Cricket	Katydid and Crickets	G1: Critically Imperiled		S3
Papaipema beeriana	Blazing Star Stem Borer	Papaipema Moths	G2: Imperiled		S2
Sistrurus catenatus	Eastern Massasauga	Reptiles	G3: Vulnerable	LT	S3
Villosa fabalis	Rayed Bean	Freshwater Mussels	G2: Imperiled	LE	S1S2

² Links to NatureServe Explorer Comprehensive Species Report
³ Links to U.S. Fish & Wildlife Service's Environmental Conservation Online System (ECOS)

Our site is in Oakland county, Watershed of the Great Lakes region. Within Oakland county, there are 6-12 species of Conservation Concern.

No formal inventory was conducted at the design site as part of our project. Further research on wildlife within the design site may be necessary.

Chart-2. The species in the watershed.

Number of Species of Conservation Concern ¹ :	12
Watershed Code:	04090005
Watershed Region:	Great Lakes Region
Watershed Name:	St. Clair-Detroit
Watershed States:	MI

¹ U.S. ESA Listed, Proposed, Candidate and NatureServe Imperiled (G1-G2) Species

Species Occurring in Watershed²

Scientific Name ²	Common Name	Major Group	NatureServe Global Status	U.S. Federal Status ³
Betula murrayana	Murray's Birch	Flowering Plants	G1: Critically Imperiled	
Clonophis kirtlandii	Kirtland's Snake	Reptiles	G2: Imperiled	
Epioblasma triquetra	Snuffbox	Freshwater Mussels	G3: Vulnerable	LE
Myotis septentrionalis	Northern Long-eared Bat	Mammals	G1: Critically Imperiled	LT
Myotis sodalis	Indiana Myotis	Mammals	G2: Imperiled	LE
Neonympha mitchellii	Mitchell's Satyr	Butterflies and Skippers	G2: Imperiled	LE
Neonympha mitchellii mitchellii	Mitchell's Satyr	Butterflies and Skippers	T2	LE
Oarisma noweshiek	Poweshiek Skipperling	Butterflies and Skippers	G1: Critically Imperiled	LE
Oecanthus laricis	Tamarack Tree Cricket	Katydid and Crickets	G1: Critically Imperiled	
Papainema beeriana	Blazing Star Stem Borer	Papaipema Moths	G2: Imperiled	
Platanthera leucophaea	Eastern Prairie White-fringed Orchid	Flowering Plants	G2: Imperiled	LT
Sistrurus catenatus	Eastern Massasauga	Reptiles	G3: Vulnerable	LT
Villosa fabalis	Rayed Bean	Freshwater Mussels	G2: Imperiled	LE

² Links to NatureServe Explorer Comprehensive Species Report
³ Links to U.S. Fish & Wildlife Service's Environmental Conservation Online System (ECOS)

Soil Condition:

The majority of the soil within the site is muck composed of clay and water. This will impact visitor experience on the site and needs to be considered when developing a circulation system.

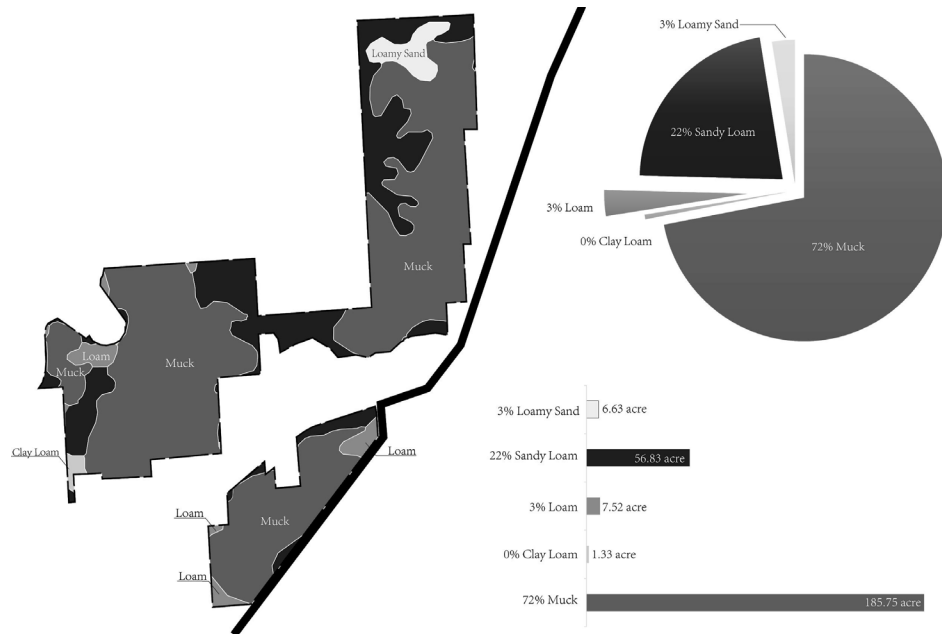


Figure-40. The soil condition in the site.

Existing Tree Species:

The entire property is heavily wooded. There are fairly distinct zones in the property, those being wooded wetlands with significant standing water extending down the center of the property, with another in the northeastern corner of the property, and low elevation uplands surrounding and between the wetland areas. No streams were observed. There are a number of low spots which appear to be vernal ponds scattered throughout the upland areas.

Its mix of upland and extensive wetlands make it very valuable in terms of natural ecology. Its long-term existence as a natural habitat makes it especially valuable as it likely has species that are not commonly found in more disturbed areas of the city. (Meador, Rick. "9 Mile Road Parcel- #50-22-31-200-021." Memorandum. March 2017.)

Some main existing tree species in our site are: Black Locust, Black Cherry, Bur Oak, Quaking Aspen, American Elm, Silver Maple, White Oak, Shellbark Hickory, Common Apple, Hackberry, Red Oak, Norway Maple, Eastern Cottonwood, Black Walnut, Norway Spruce, White Pine, Sugar Maple and Basswood.

More informations about the existing plants are included in the Appendix section.



Figure-41. Field trip with clients. October 3rd, 2019.



Figure-42. Field trip to ITC trail head park site. January 16th, 2020.

Social & Cultural Elements:

Land Use:

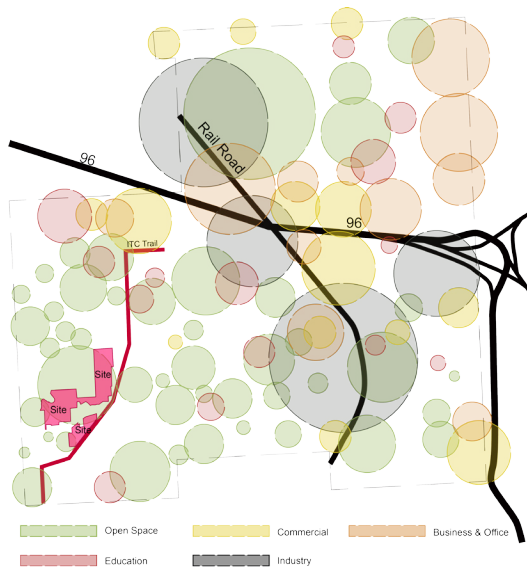


Figure-43. Land use of the city.

The site is surrounded by a mixture of open space, education, commercial, industrial, and office. Notably, the green space is the major, non-residential, land use closest to the site with local schools also in walking distance.

Green: open space
 Orange: business & office
 Yellow: commercial
 Red: education
 Black: industry



Figure-45. The connection of the site.

The ITC Trail may be an opportunity to enhance the connections between the two local areas.



Figure-44. Analysis of land use of the city.

The city of Novi overall can be divided into a more developed commercial/industrial area to the east and a less developed residential/open space area to the west, which is divided by highways and railroad. The context surrounding the design site is less developed, mainly composed of open space, residential, and local schools.

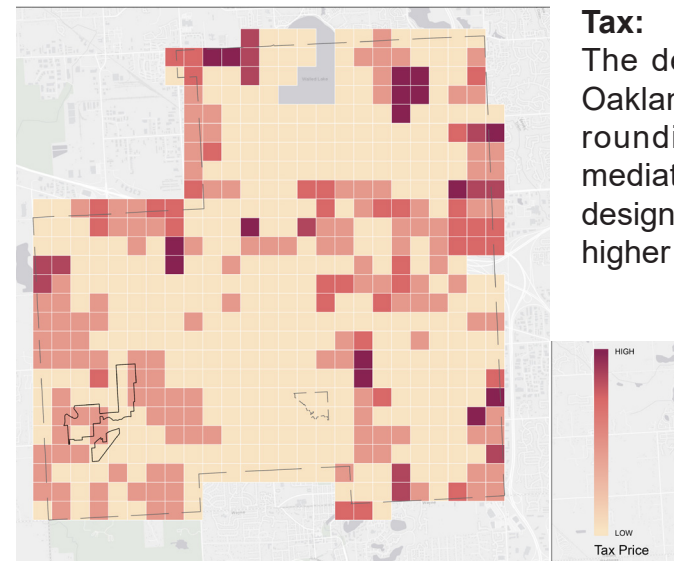


Figure-46. The tax parcel of Novi city.

Tax:

The design site is within Oakland county. The surrounding properties immediately adjacent to the design site are taxed at a higher rate.

Accessibility:

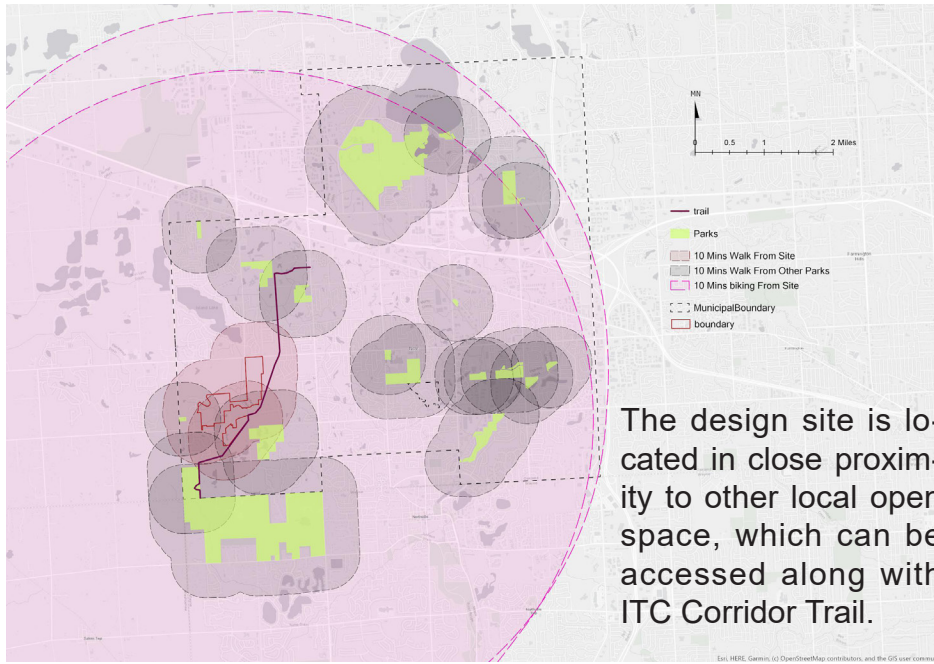


Figure-47. The connection from other parks.

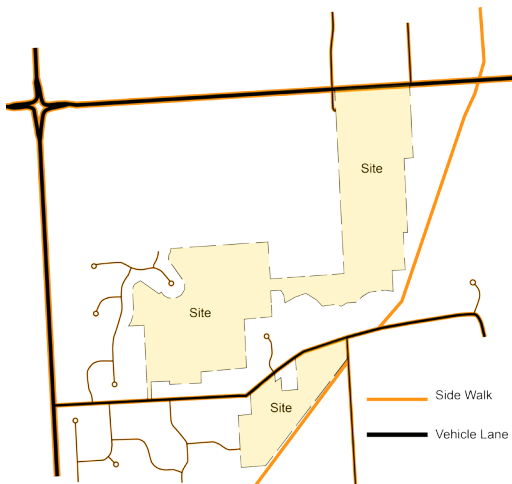


Figure-48. The circulation around the site.

Circulation:

There is currently limited circulation within the site, with the ITC trail to the eastern edge serving as a pedestrian and cyclist route. The design site is located in close proximity to vehicular roads with busier traffic at 9 mile and 10 mile, in addition to smaller residential streets.

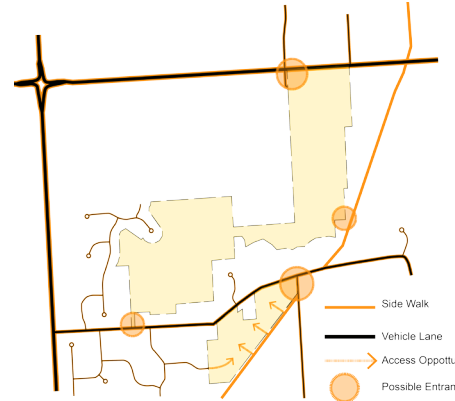


Figure-49. The entrances.

The orange circles here indicate possible entrances for the trailhead park based on existing circulation.

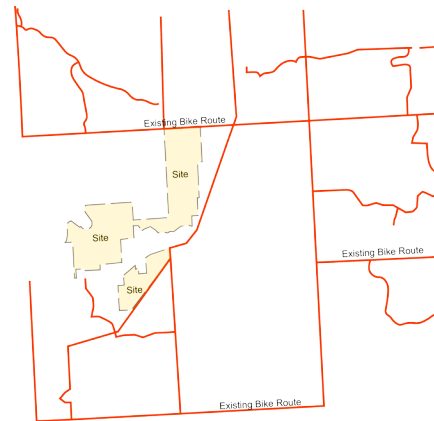


Figure-50. Bike trail.

Bike trail:

In the current site conditions, there are few cycling connections in our site.

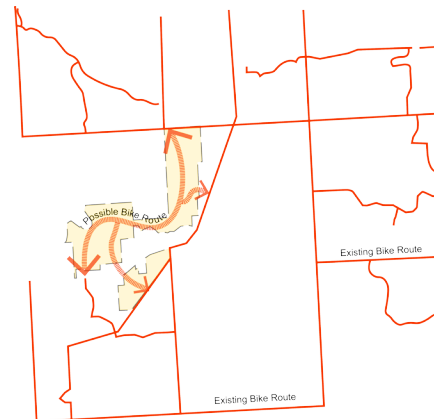


Figure-51. Bike trail opportunities.

In our design, we have opportunities to provide connections for cyclists. However, we must consider the impact and design of cyclist trails.

Population:

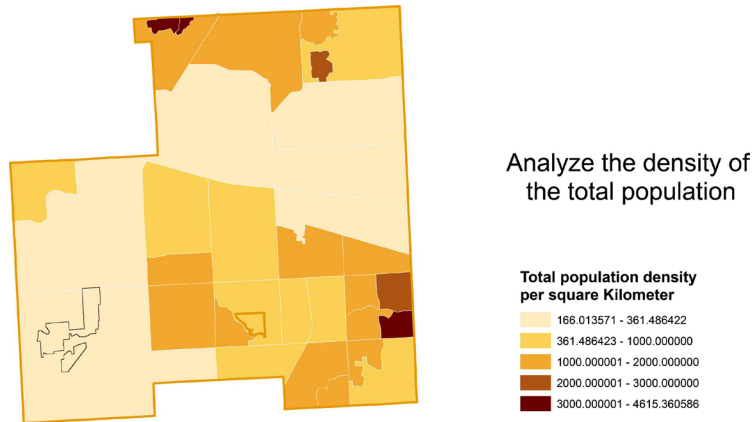


Figure-52. Population density of Novi city.

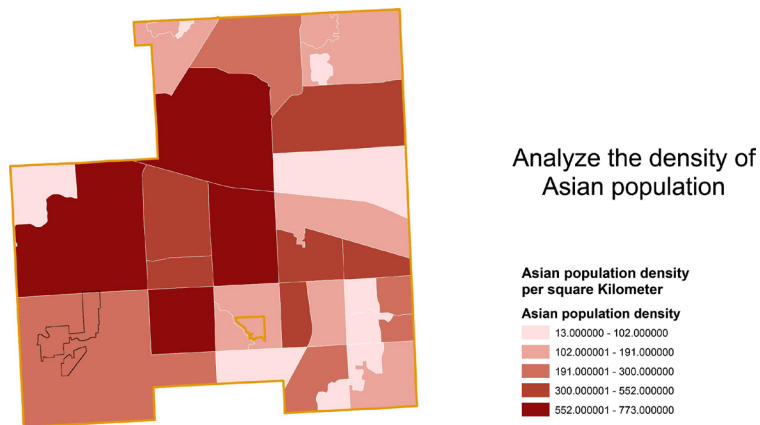


Figure-53. Asian population density of Novi city.

The city of Novi has a notably large Asian population, which our clients have asked us to consider in our design. Overall, the density of the population of Novi residents of Asian descent appears to be spread out within the city, not limited to one area. This is not true for the total population of Novi, who resident in a few higher density areas.

ITC limitation:

As the site is adjacent to the ITC trail, there are limitations that must be considered. Within the ITC Transmission Corridors, there are vegetation height limits. Our design site does not include these corridors.

More informations about the ITC limitation are included in the Appendix section.

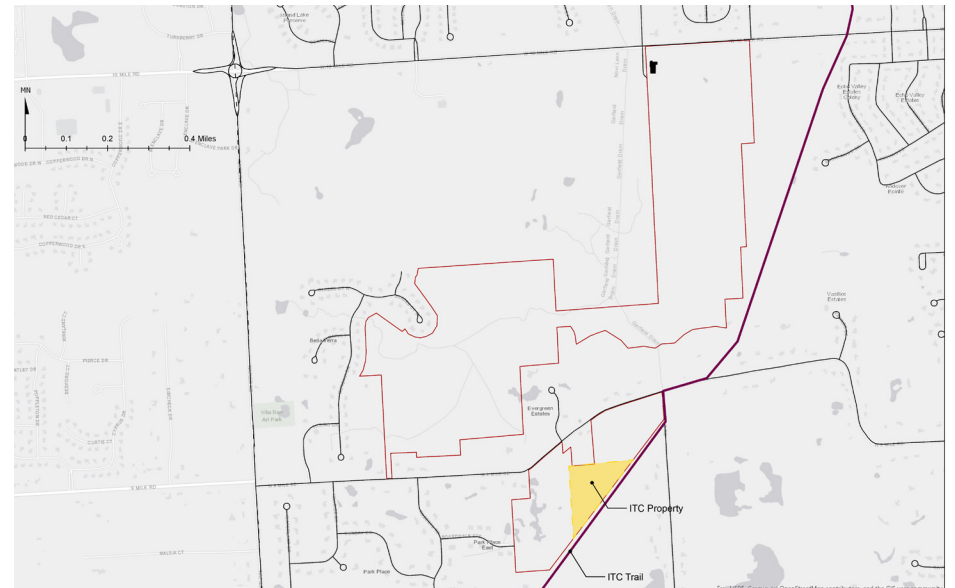


Figure-54. ITC property location.

CONCEPT DEVELOPMENT:

Brief:

In the early design stages, based on our site analysis and within the context of Novi as a whole, we developed two to three conceptual plans. After meeting with our instructor, we took the two conceptual plans to the staff of Novi Parks and Recreation for feedback. Based on their opinions and additional data provided by them, we decided to hybridize the concepts and combine the advantages of the two plans to complete our final design. The following is a demonstration of our concept development process and the final concept of our design.

ITC trail head park concept development:

We proposed two possible plans for the southern portion of the ITC trailhead park.

Plan A focused more on nature and health, combined with a Japanese culture inspired landscape. We proposed an interactive landscape within the interior of the site, which included an edible



Figure-55. Concept plan A of the ITC trail head park.



Figure-56. Site plan A of the ITC trail head park.

Plan B focused more on the formal Japanese garden components. This included more Japanese landscape elements such as stepping stone pathways, stone lanterns, water basins, arched bridges, large boulders, and water features within the site.

The same place as the edible garden in Plan A will be a Japanese flat garden. A tea garden and pavilion will be located at the park center adjacent to the flat garden.

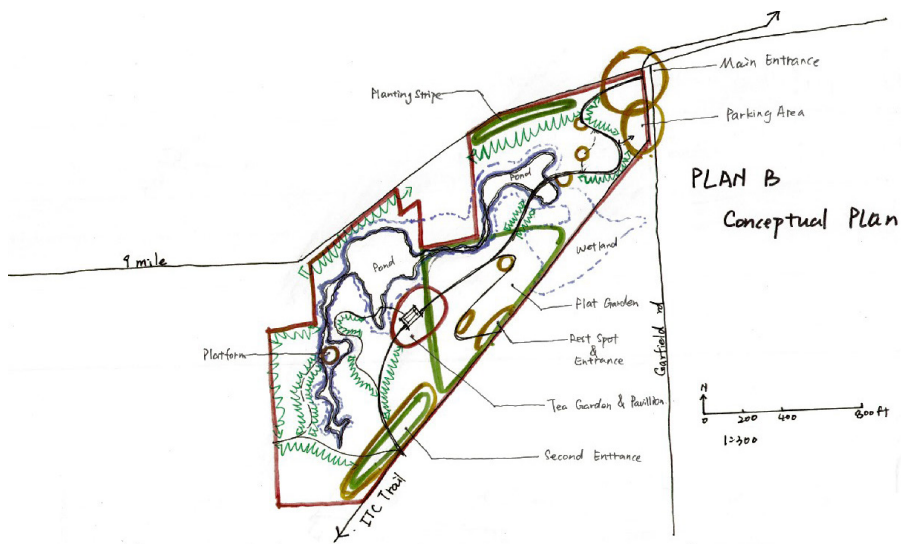


Figure-57. Concept plan B of the ITC trail head park.



Figure-58. Site plan B of the ITC trail head park.

Concept Revolution:

Our team met with our clients on March 11th for a presentation on our conceptual plans and progress, including ideas for our final master plan. Our clients were very enthusiastic about our ideas and gave us positive feedback with recommendations to refine the final design.

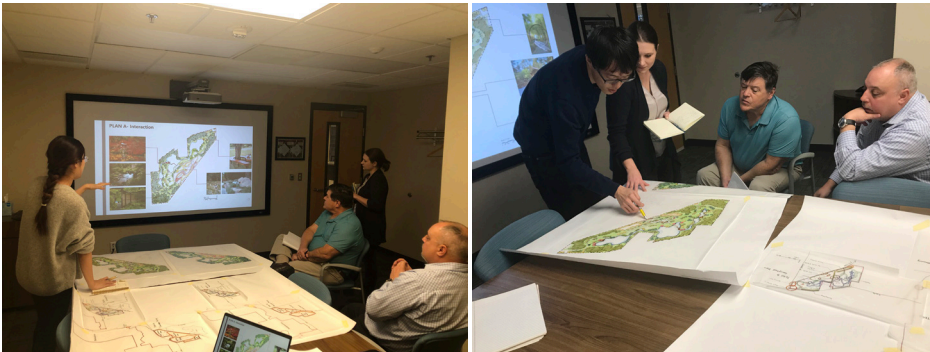


Figure-59, 60. The meeting with clients. March 11th, 2020.

Final Concept & Aims:

Based on the intersection of the above three conceptual words, the purpose of our design is:

1. Preserve the ecological value of the site.
2. Create a Japanese Culture inspired-landscape style; cooperation with local school
3. Create a network with ITC trail and parks nearby to attract more people
4. Accessibility
5. Low cost & Management

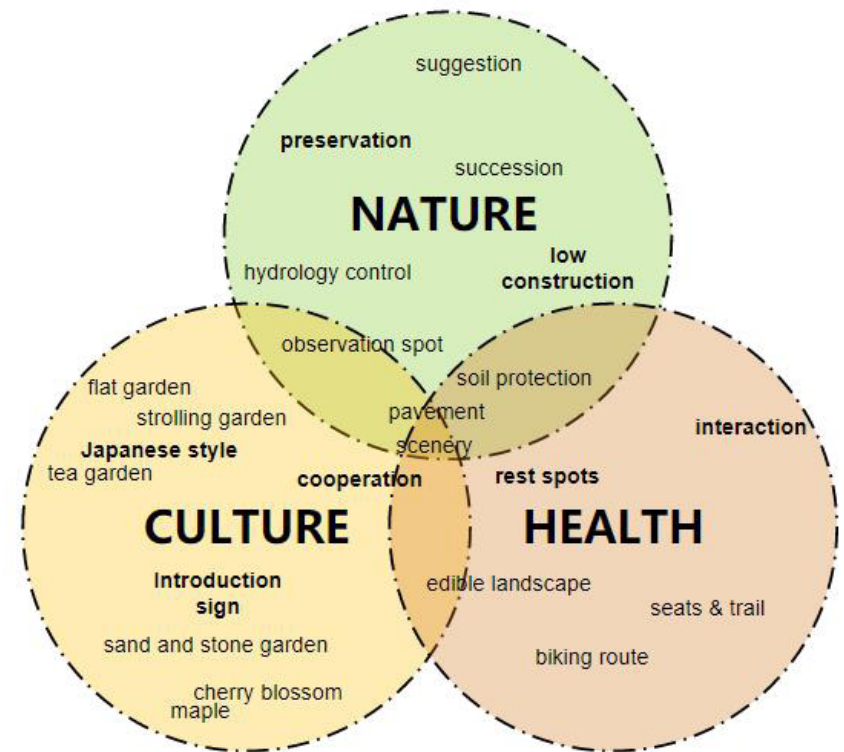


Figure-61. The main conceptual words.

RESULTS:

Site planning:

Novi Parks and Recreation prefers that the large northern portion of the site be largely preserved and left intact. One of our initial concepts, due to the shortage of bicycle lanes in the area, included adding a low-impact bicycle loop that would connect with Ten Mile Road. However in reality, that idea was not feasible in the utmost northern area of the site due to very wet soil conditions and the proximity to the fire station. We have limited the bicycle loop to areas that are appropriate to the soil condition and designated park use.

A major cause of amphibian mortality is due to cyclists and vehicles. The ITC Trailhead Park is limited to only pedestrians to limit impacts to amphibians in the seasonal ponds in the park and at the suggestion of our client citing the need for wider trails to accommodate pedestrians and cyclists.



Figure-62. Site planning analysis.



Figure-63. Site planning map.

Site planning:

In our final plan, the northern area is preserved with a low-impact bicycle trail, and the southern area is designed as the ITC Trailhead Park. The bicycle trail connects the southern and northern areas, while providing more options and scenery for visitors on the ITC Trail. The bicycle loop includes lanes constructed along Nine mile, which limits the cost of trail construction.

Legend:

- 1. Preserved Woodlands
- 2. ITC Trail Head Park
- 3. Bike Trail
- 4. Terra Community
- 5. Comfort Center
- 6. Fire Station 4

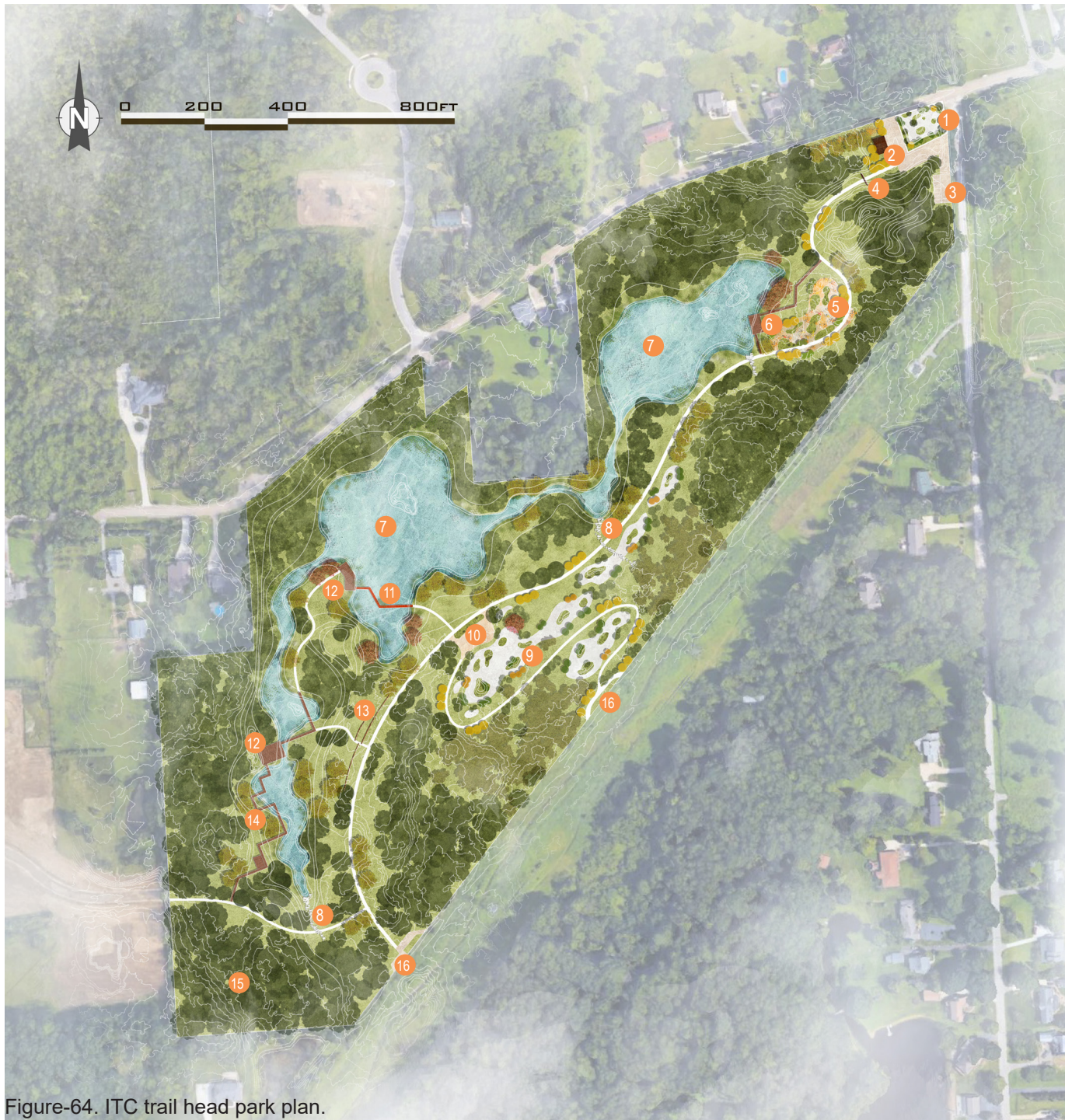


Figure-64. ITC trail head park plan.

ITC Trail Head Park Design:

Site Plan:

The South part of the master plan is a Japanese style inspired community park. The existing seasonal pond would be a water feature landscape. The main entrance consists of a Japanese tea house and a flat garden. An edible garden is proposed for people to have interaction with nature. At the mid site, the trails linked several flat gardens with the resting plaza together. The west part is the strolling garden which provides multiple aspects for people to appreciate views.

Legend:

1. Entry Flat Garden
2. Japanese Tea house
3. Parking lots
4. Ring Gate
5. Edible Garden
6. Waterside Terrace
7. Seasonal Pond
8. Stormwater drainage canal
9. Flat Garden
10. Resting Plaza
11. Red wooded Bridge
12. Strolling Pond Garden
13. Wood Fence
14. Arched Bridges
15. Preserved Habitat
16. ITC Trail Entrance

Activity Intensity in the Trailhead Park:

Since the northeast corner of the park is at the intersection of Nine Mile and Garfield road, this area has the opportunity to serve as a welcoming entrance to the public and a hub for activities. The southwest corner is not ideal for high intensity use or activities because it is further away from the main road with local residents in close proximity. Therefore, the trend of the activity intensity in this park should gradually transition from 'lively' in the northeast corner to 'quiet' in the southwest corner. The northeast portion largely serves as an educational and interactive space, with the southwest portion for serving as quiet recreation and relaxation space.

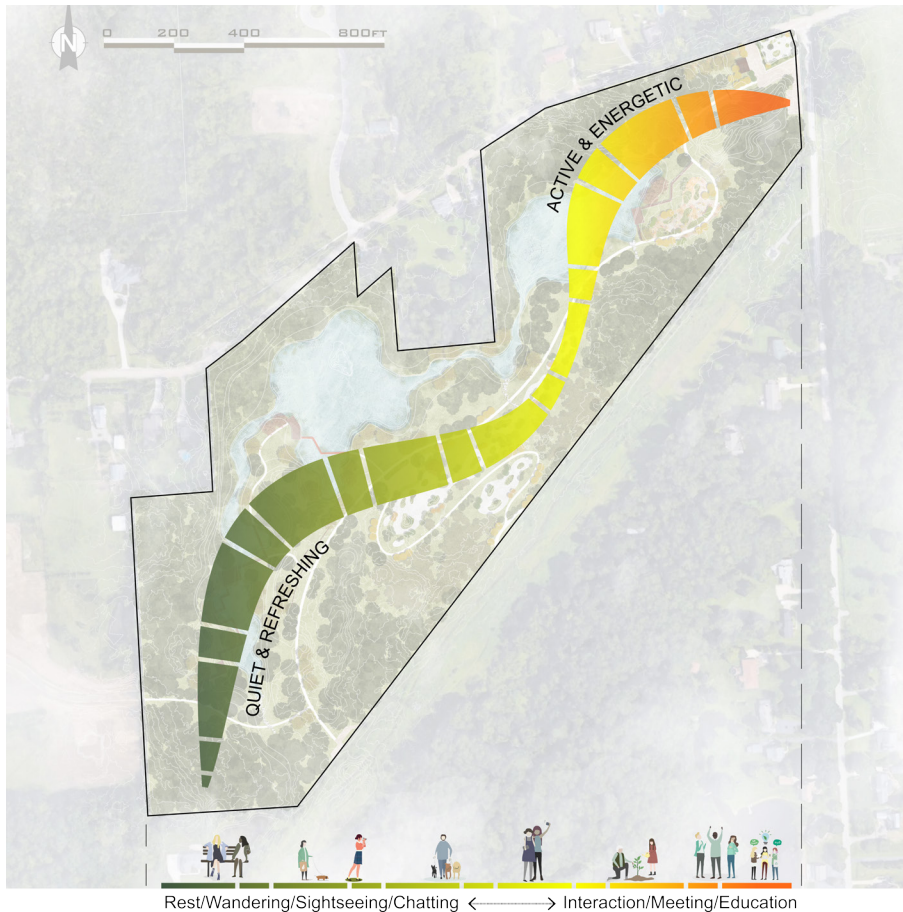


Figure-65. Activity Intensity in ITC trail head park.

Functional Areas:

The park is divided into three parts: Education & Interactivity Area, Flat Garden, and Strolling Pond Garden.

Education & interactivity Area: This area provides education on Japanese culture, vernal ponds, amphibians ecology, and edible plants. Within the edible plant area, visitors can also interact with the landscape through passive recreation.

Flat Garden: The design purpose of this area is to celebrate Japanese culture by merging design elements with the native Michigan landscape. Here people can experience the Japanese garden style from different perspectives through winding pathways. In order to achieve the goal of low cost and reduce maintenance, our flat garden does not completely recreate a formal Japanese garden. Instead, we have adapted elements of the garden style to retain the frame of the traditional Japanese garden with much less maintenance requirements: pebbles replace white sand, and hardy, creeping ground cover replaces moss and delicate lawns.



Figure-66. Functional areas in ITC trail head park.

Strolling Pond Garden: This is the most serene and quiet area of the park. Folding bridges, water surfaces, and combinations of colorful plants result in an exquisite Japanese garden inspired experience.

Circulation & Nods:

In order to protect delicate wildlife and plants within the park, use of the park is limited only to pedestrians. We recommend providing bike racks and signage to communicate this to the public. The pathway of the park begins at the main entrance in the northeast corner, then extends to the ITC trail, and forms a closed loop with the ITC. Since there is a dead end road on the southwestern border, we suggest that this road be opened and connected to the park to provide convenience to nearby residents. However due to privacy concerns of residents near this proposed entrance, we recommend that this entrance be understated and vegetated to keep foot traffic limited to only residents.

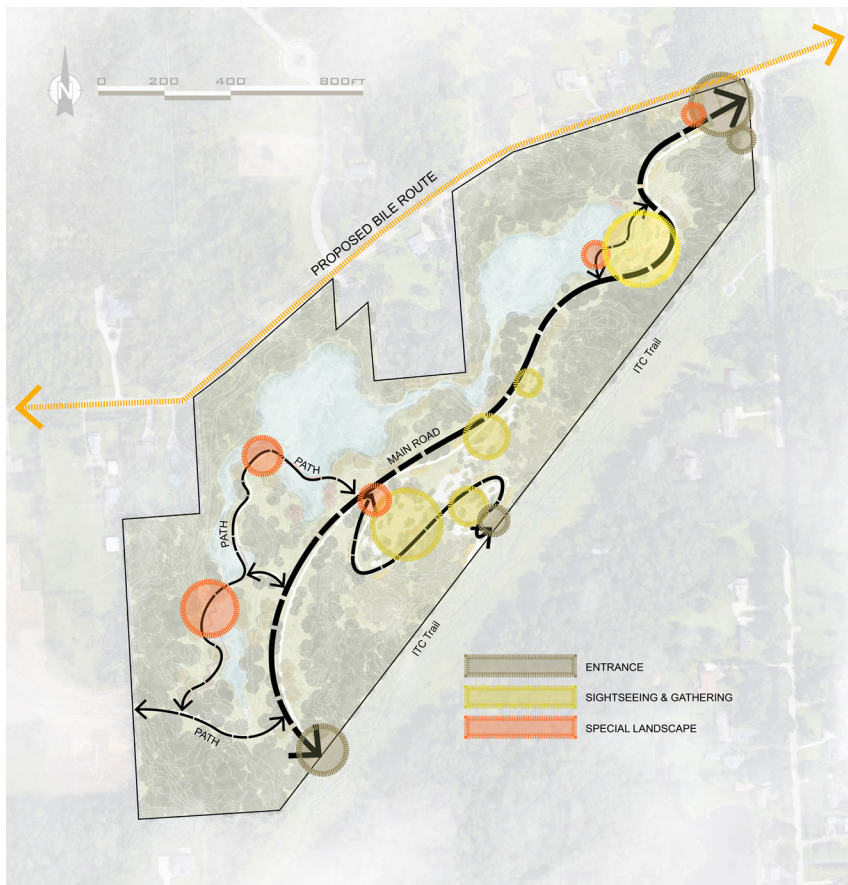


Figure-67. Circulation & nods in ITC trail head park.

Hydrology Treatment:

In the current conditions, the site has some permanent water surfaces and a vernal pond. In the summer, the vernal pool may completely dry out, which changes the aesthetics of landscape. However, more water will likely enter the site from the north corner through a newly constructed culvert, which means that there will be more consistent water retained within the site. Under such conditions, we plan to connect the bodies of water, including nearby wetlands. We intend to use stones and rocks on the bottoms and sides of the pools to prevent erosion and provide visual interest if water levels are low. Additionally, we recommend plants adapted to wet conditions.



Figure-68. Hydrology treatment in ITC trail head park.

Hydrology Treatment:



Figure-69. Before- In early spring or after rainfall, when all the ponds have water



Figure-72. After- In conditions of extreme drought with greatly reduced water flow, the stonework provides visual interest.



Figure-70. Before- In the Summer and Autumn, when weather conditions dry out the vernal pool, changing the aesthetic.



Figure-71. After- taking into account increased water flow to the site, there is consistent water retained on site and visual interest is added with stonework and vegetation.



Figure-73. After- In the event of highwater conditions, water can slowly flow to the wetland.

Important Venues & Perspectives:



Figure-74. Entry flat garden site view.

Entry Flat Garden:

This entry garden is the first view of ITC trail head park. In order to bring Japanese culture, attract Novi citizens and make this space to be a landmark of the community, we design a Japanese flat garden and also propose a Japanese tea house as an activity or education place for people to visit or have any events in the future. As one of the main races of Novi city, Japanese and Japanese culture are highly important to the city, having a cultural garden would enhance the influence of diversity.



Figure-75. Waterfront terrace (with water) site view.

Waterfront terrace:

Here is the view when spring comes, people gather around on the platform of the vernal pond. This would be a perfect place to appreciate the great view of spring and observe wildlife, like native amphibians.



Figure-76. Waterfront terrace (without water) site view.

Waterfront terrace:

In summer and autumn, the water in this vernal pond may have the possibility of drying out. This perspective shows what it will look like when this happens. We still have some plants growing on the bottom of the pond.



Figure-77. Flat garden plaza site view.

Flat garden plaza:

This resting garden is at the center of the park, linking several flat gardens and trails together. Many Japanese garden features such as stone lanterns, gargle water features, seatings and garden stones form a flat garden landscape. What makes it different from the traditional flat garden is that we chose to use flagging paving rather than sand to make the hardscape of the flat garden.



Figure-78. Flat garden trail site view.

Flat garden trail:

This flat garden trail connects the ITC trail and flat gardens together. Japanese plant species are proposed to this garden trail, visitors would have a great flat garden view during the trip to this place.



Figure-79. Red bridge site view.

Red bridge:

The view of the central pond, combining with the red bridge and the spring scene is the highlight part in the strolling pond garden. The red bridge and the beautiful flowering plant will decorate this park perfectly. The feeling of landscape here will be relatively delicate and well managed, in order to create the sense of traditional Japanese gardens.



Figure-80. Strolling pond garden site view.

Strolling Pond Garden:

Here, the changing perspectives of the relationship between water surface and the 'zig-zag' bridge will provide multiple aspects for people to appreciate views. Blooming redbud may be planted along the shore, with the decoration of traditional Japanese features, like painted stone lanterns and the clipped shrubs.

Planting Design:

Our goal was to create a landscape design that incorporates edible plants as a programming element with an overall strong focus on aesthetic appeal of the site and low maintenance requirements. The overall aesthetic intent was to hybridize classic Japanese garden elements with a native Michigan woodland and prairie aesthetic.

All species recommended are Michigan native and readily available at nurseries specializing in native species like WILD TYPE in Mason, Michigan. Native species are recommended on the basis that they will better, “fully integrate into a biotic community, establishing complex relationships with other local plants and animals” (Steiner, 8). Native plants are also notably tolerant of extreme local environmental and ecological conditions, including drought, high water events, and insects (Steiner, 11). While non-native species selections are often appropriate, successful, and widely used in planting designs, we have decided to implement purely native planting selections given the natural context of the site. With a wide variety of native plants to choose from, we selected species that require little care and will readily self-seed.

Edible plants have been selected as a programmatic element for public engagement. Plants with human-edible food are also providing those same food resources to wildlife (Bradtke). In addition to edible plant programming, there is an overall local cultural benefit to plantings with native species because they can better connect us to the natural history of our environments (Steiner, 12).

Our species selections are not based on “filling the space,” but are instead recommended with care to create a space and experience, while enhancing the habitat for wildlife within the park (Dunnett, 17). Low groundcover species were selected to spread, keep out weeds, maintain moisture, and reduce vegetation height to facilitate a formalized planting experience within a naturalized area (Steiner, 64-65). Limiting the planting palette to a few key

species and utilizing mass plantings, will create visual uniformity and structure as well.

The groundcover plants playfully blend into different species based on light conditions. We have selected the delicate and visually striking foam flower (*Tiarella cordifolia*) and wild ginger (*Asarum canadense*) in the woodland areas with the lowest light levels (Steiner). Nodding wild onion (*Allium cernuum*), prairie dropseed (*Sporobolus heterolepsis*), and wild strawberry (*Fragaria virginiana*), which will particularly fill the rock garden spaces beautifully, are planted in the partial to full sun areas. Prairie dropseed is notable for its modern, minimalist appearance, low height, and pleasing fall scent (Steiner, 127). Nodding onion has a beautiful orb flower that remains as a structural seed head well into the winter (Steiner, 67). Ostrich ferns (*Matteuccia struthiopteris*), notable for their regal appearance, work well at formal entrances and in mixed shrub borders in shady conditions (Steiner, 133).

For structural interest, we recommend New Jersey tea (*Ceanothus americanus*), Redbud (*Cercis canadensis*), bush juniper (*Juniperus communis*), and bush honeysuckle (*Diervilla lonicera*). New Jersey tea, notable for showy white flowers, is a species of importance to local pollinators (Steiner, 149). Redbuds echo visions of Japanese cherry blossoms in the spring, creating an intense visual impact. Bush junipers provide some of the classic structure and year-round color Japanese gardens are well known for. Bush honeysuckle is well suited to shade conditions and provides visually interesting foliage and a long bloom time (Steiner, 152).

All species were recommended with the goal of, once established, thriving and spreading with limited maintenance and special care. After the initial planting, they will require regular weeding and watering provided by the Parks and Recreation Department of Novi staff or, perhaps, by an organized group of local volunteers.

More information about the planting design are included in the Appendix section.

Conceptual Budget:

For the conceptual budget for this design, we used data for cost per unit given to us by the Novi Parks and Recreation for trails, sidewalks, and boardwalks. The total cost is estimated just under \$7 million. Cost of wooden platforms, parking, and bike trails were extrapolated. These costs include estimated labor and materials. Planting costs assume an average plant cost of \$6 each with 3' of mulch evenly distributed. Cost per ornamental tree includes labor and care costs. For perennials, we have reduced the costs significantly with the assumption of community volunteer planting assistance.

This conceptual budget can be used in future budgetary planning for the park. This is not meant to be a final budget. As expected, some of the most expensive design elements were the boardwalk, wooden platforms, and plaza. The significant social benefit of these features justifies the cost.

We look forward to installation and, one day, completion of this park, which will benefit the community of Novi.

Chart-3. Conceptual budget.

Design Element	cost per foot	sq foot/linear ft	cost
6' Concrete Sidewalk	\$ 5.00	1,703.54	\$ 8,517.70
Bike Trail	\$ 5.00	6,019.32	\$ 30,096.60
1' Wooden Boardwalk	\$ 600.00	1,187.32	\$ 712,392.00
Wooden Platform	\$ 600.00	6,204.59	\$ 3,722,754.00
Parking	\$ 80.00	3,003.71	\$ 240,296.80
Plaza	\$ 80.00	20,609.73	\$ 1,648,778.40
Planting Material	cost per unit	units	cost
Mulch (cubic yard)	\$ 30.00	6,600.00	\$ 198,000.00
Plants	\$ 8.00	16,875.00	\$ 135,000.00
Trees	\$ 106.00	30.00	\$ 3,180.00
		TOTAL	\$ 6,699,015.50

CONCLUSION:

The overarching goal of this masters project was to develop a Master Plan for a trailhead park from three adjoining parcels recently acquired from the Michigan Natural Resources Trust Fund and a private Donation. The future ITC trailhead park will provide a unique naturalistic experience celebrating the Japanese cultural heritage, without compromising the habitat and natural systems within the parcels. We are confident that we have accomplished this in our final design.

This process has been informative and meaningful to our career as designers and has given us the opportunity to focus on one project in depth with real world clients. Unfortunately, due to the Covid-19 global pandemic, we were unable to meet with our clients and share our final design. However, in the concept development meeting, they were enthusiastic and provided clear feedback and direction for the final design of the Trailhead Park. We are excited for the future of this site and hope that in time, with funding from the municipality and grants, the ITC Trailhead Park will become a reality.

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APPENDIX:

1.Existing plants



Bur Oak
Quercus macrocarpa



White Oak
Quercus alba



Red Oak
Quercus rubra



Norway Spruce
Picea abies



Quaking Aspen
Populus tremuloides



Shellbark Hickory
Carya laciniosa



Norway Maple
Acer platanoides



White Pine
Pinus strobus



Black Locust
Robinia pseudoacacia



American Elm
Ulmus americana



Common Apple
Malus pumila



Eastern Cottonwood
Populus deltoides



Sugar Maple
Acer saccharum



Black Cherry
Prunus serotina



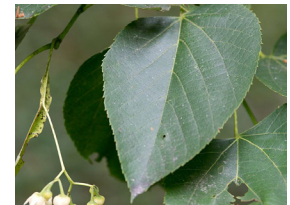
Silver Maple
Acer saccharinum



Hackberry
Celtis occidentalis



Black Walnut
Juglans nigra



Basswood
Tilia americana

2.Planting design list

Woodland Plants:



Wild Ginger (*Asarum canadense*)
 Edible
 Creeping ground cover
 Early Spring Foliage
 Excellent in dappled light
 Combine with Foam Flower and Nodding Wild Onion



Pawpaw (*Asimina triloba*)
 Edible fruits
 Moist soils along edges of forests
 shade-tolerant shrub
 "Tropical look"
 Will need careful transplanting



Foam Flower (*Tiarella cordifolia*)
 Moist woodlands
 Attractive shady ground cover, will spread,
 Partial to full shade
 Excellent in dappled light, establish closer to pond
 Combine with Wild Ginger



Ostrich Fern (*Matteuccia struthiopteris*), Edible fronds
 Regal look, can be used formally at entrances, mixed borders, spreads through rhizomes
 Cool to wet soil, but very adaptable
 Combine with shade tolerant shrubs

Edge (partial to full sun) Plants:



Nodding Wild Onion (*Allium cernuum*)
 Full sun to very light shade
 Edible flowers
 Plant under decid. trees with wild ginger
 Early spring foliage, summer flowers, autumn seedheads



New England Aster (*Asarum canadense*)
 Valuable fall nectar source
 Fall blooming
 Moist medium soil
 Deer resistant
 Full sun to deep shade



Prairie Dropseed (*Asarum canadense*)
 Low height ornamental grass
 Fall scent
 Compliments flowering plants
 Low maintenance



Wild Bergamont (*Monarda fistulosa*)
 Edible
 June to August Bloom
 Middle, not front of planting
 Pollinator friendly plant
 Spreads, easy to establish



Wild Strawberry
(*Fragaria virginiana*)
Edible, excellent groundcover
Does well in rock gardens
Part to full sun

Structural Interest:



New Jersey Tea
(*Ceanothus americanus*)
Woodland edges, 2-3' X 2-3'
Low growing, spreading
Blooms midsummer when others aren't blooming
Durable once established
Mixed or shrub border, or foundation planting
Technically edible, tea leaves from dried leaves

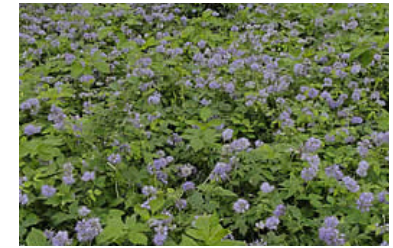


Redbud (*Cercis canadensis*)
Edible flowers
Rich woodlands along rivers and streams
Small tree with ornamental interest
Specimen species or in a group
Mixed border species
Moist wet drained soil, full to light shade

Pond/Wet Plants:



Northern Blue Flag
(*Iris versicolor*)
Emergent aquatic rhizomatous
Variety of conditions, hard to kill
Plant at water's edge or where variable water levels
Can be potted and sunken into wetland
Strong vertical accent
Full sun to light shade



Virginia Waterleaf
(*Hydrophyllum virginianum*)
low maintenance ground cover
Establishes well after early season interest
Moist to wet woods
Special value pollinator plant



Bush Juniper
(*Juniperus communis*)
Low growing evergreen
"Japanese Inspired" Michigan Native Garden
Full sun, well drained soil
Green in summer, purplish in fall
Many cultivar options, along with straight species
Can be paired with *Abies balsamea* 'Nana'

3.ITC Vegetation Height Limits



Compatible Plant List for ITC Transmission Corridors

Wire Zone:

Annual Flowers such as:

- Daisies
- Bachelor's Buttons
- Begonias
- Cosmos
- Geraniums
- Impatiens
- Marigolds
- Petunias
- Salvia
- Zinnias

Perennial Flowers

such as:

- Asters
- Black-eyed Susan
- Coralbell
- Phlox
- Tickseed

Ornamental Grasses

such as:

- Bottle Brush grass
- Blue stem (little and/or big) grass
- King Tut grass
- Fiber Optic grass

Near Border Zone:

All plants listed in column one, plus:

- Alberta Spruce
- Birdsnest Spruce
- Boxwood
- Burning Bush
- Coralberry
- Cotoneaster
- Forsythia
- Globe Arborvitae
- Hetz Midget Arborvitae
- Holly
- Hydrangea
- Lilac shrub
- Mugho Pine
- Pfitzer Juniper
- Privet
- Red Twig Dogwood
- Rose of Sharon
- Roses
- Spirea
- Viburnum
- Weigela
- Yews (Densi and/or Brownii)

Far Border Zone:

All plants listed in columns one and two, plus:

- Amur Maple tree
- Dogwood tree
- Dwarf Crabapple tree
- Emerald Green Arborvitae
- Hawthorne tree
- Japanese Maple tree
- Japanese Snowbell tree
- Lilac tree
- Redbud tree
- Serviceberry bush or tree
- Weeping Mulberry tree

Contact ITC Customer Service at 1-877-ITC-ITC9 to ask for a forester to verify compatibility of other species with the transmission system.

This garden example is for illustrative purposes only. The distance between a residence and the transmission corridor will vary depending on the individual property.