

## **Fire Station Site Design**

### **Benefits of Parks and Outdoor Areas; How Is A “Safe” Park Designed?**

A Thesis Prospectus

In STS 4500

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By

Emma Coutts

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Technical Project Team Members: Scout Bale, Esther Park, Greg Zeckman, Jeremiah Castillo

On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

Advisors

Karina Rider, Department of Engineering and Society

Somayeh Asadi, Department of Civil and Environmental Engineering

## **Introduction**

In the depths of the COVID-19 pandemic there were few options for socializing and getting out of the house. This crisis brought to light a few of the ways people can survive even in the midst of unforeseen circumstances. One essential feature was involved in a lot of people's lives more than ever before: public parks. Parks came through as one of the few places where people could get a change of scenery and social interaction in the midst of quarantines. Parks were hubs for getting outside to walk, run, and play with lower chances of infection. Outdoors, people were able to get closer and have face to face conversations with less chance of spreading the virus. Parks, which have always promoted socialization and community building, played an even greater role in finding community when it was hardest.

Despite all the benefits of having a safe and well-used public park in any area, pandemic or not, there are still locales that lack access to one, or at least lack access to safe and useful parks where they want to go and take their children. In my STS research paper I will study what makes a safe and useful park and how we can design them to be more in tune with the needs of people in their communities. I will also consider what benefits parks have for childhood development and who has access to existing parks.

I believe building a safe park will require increased consideration of the wants and needs of those who will use it. I predict that a park is utilized consistently when it addresses the needs of the community, especially the need to feel safe. To design a park that is safe and contributes to the wellbeing of all community members, it is important to make sure each potential user is considered in the design process.

For my technical project I will be creating a site plan for a fire station and parks and recreation area in Chester, Virginia. This research paper will help to illuminate some of the

important aspects to consider in the design of public parks, which will be applicable in the design of the recreational area.

### **Site Design**

My technical project involves the development of a parcel of land. On this land we need to situate a fire station, a trail that connects to a larger system of trails, three picnic pavilions, a restroom structure, a parking lot for the fire station, and a parking lot for the parks and recreation. The new fire station was requested by the county to replace an existing fire station that was out of date and hard to access. The new trail and parks and recreation area was requested by the county to connect to the larger trail system and the necessary components were passed down to my team from our industry mentors at Dewberry. The final design of the site will contain plans for demolition, location of each of these components, stormwater management, grading, utilities, and sediment control. Each of these components needs to abide by regulations set forth by various government agencies such as the Americans with Disabilities Act and the Virginia Department of Transportation. After all of these considerations are made, we will develop a plan set. This plan set will consist of one sheet for each different category and will give both a visual representation of what should be changed and notes on how that should be done. The demolition plan will highlight existing features on the land that need to be removed before new construction can be considered. The site plan will show what new construction will be added and where it will be placed. A stormwater management plan will explain what needs to be done to ensure that water entering and leaving the site will not be impacted in quality or quantity because of the change in land use. A grading plan shows where soil will need to be added or removed to ensure the building is possible and slopes are manageable. The utility plan will outline what piping, wiring, and other utilities will need to be installed to make the design

operational and where they need to connect. Finally, a sediment control plan details how erosion and sediment transport will be minimized to make sure the area's landscaping and surrounding water bodies are minimally impacted throughout construction. All of these sheets come together to form a plan of how to develop the parcel.

Plan sheets contain both visual representations of what needs to be done in each stage of the project and written notes about considerations that need to be made to guide the process of construction. They will be used to direct builders on the site. The plan sheets should fully communicate the site design and the process of constructing it to someone who was not in the room when the plans were made. At completion, the site should have a functional fire station and a parks and recreation that will be open to all. People are free to gather here and use the space as they please. Once it is built, the community might use it as a meeting place for the benefit of all, or it might become an unsafe area people tell their children to stay away from. Either outcome has impacts on the surrounding community.

### **Parks In Society**

Current knowledge surrounding parks focuses on the benefits of play and nature for children as well as access to public parks. There is also some information about what makes people feel safe in parks, but there is little published information about how to consider that as part of the design process for future parks. In recent mainstream news the narrative has been that play and learning are intrinsically connected for children and essential to development. There is also a lot of discussion of the benefits of play in general for children's early development, which parks enable. Play "has a great deal to do with competency, resiliency, emotional health [and] brain size" (Mader, 2022). There is evidence to suggest a link between opportunities for children to play and likelihood of incarceration later in life. Play has such an important impact on learning

and development that without it children can be predisposed to violence and have a harder time participating in society. NPR lists five benefits of play in early development including healthy brain development, reduced obesity, help managing stress and trauma, family bonding, and contributing to academic skills (Kamenetz, 2018). All of these sources place play as one of the most important aspects of early childhood development. A lot of this play, especially with other children, is facilitated by parks and open spaces where neighborhood children can gather. This unstructured play has major benefits.

In academic discourse on the topic most researchers have focused on finding substantial evidence for many of the same concepts as are communicated in news streams. Several studies have backed the assertions that play and outdoor activity have various important benefits for children. “The role of playgrounds in promoting children’s health – a scoping review,” for example, summarizes the literature on playgrounds and health to give a better understanding of what we already know about health and social impacts of play. “The impacts of unstructured nature play on health in early childhood development: A systematic review” also studies how play impacts young children, but from a focus on how the outdoors plays a role in the benefits. Both of these academic articles work to understand how public parks impact the health of children and communities.

Current conversations about parks also cover access for different demographics. Access to public parks is uneven between races and income levels. The Trust for Public Land releases data from cities across the United States that demonstrates the lack of equity in park access for different demographics (Parkscore, 2024). This is a common trend around green spaces in general. They are more accessible to those with more privilege, which deprives lower income families and non-white children of the same opportunities and benefits previously discussed that

can be gained from green spaces. Where low income communities and communities with higher rates of people of color do have public parks, they tend to have parks with lower ratings and less safety compared to whiter, richer neighborhoods (Walter et al., 2023). This reflects and compounds upon previous findings that these demographics are less likely to have parks. Other identities, such as gender, also matter to our perception of parks. To be able to design parks that people will happily use we need to understand what makes everybody feel safe. “Gender as a factor differentiating the perceptions of safety in urban parks” helps to determine differences in what makes women and men feel safe so that considerations for both genders can be made. Even with all of the issues surrounding parks and equity, they have been beneficial for society as a whole. As I mentioned above, parks played an important role in supporting socialization during COVID-19 lockdown periods (Swapan et al., 2024). Parks and public outdoor spaces can be utilized to help the community when other avenues for interaction and community are hard to access.

Despite all we know about the benefits of parks, little has been done to synthesize all these factors and devise a plan for how we can design future parks to make sure that they are safe and deliver all of the benefits we know we can see from them. To fill this gap I intend to use a meta review of existing research as well as content and discourse analysis. To conduct a meta review I will search for papers with further depth on accessibility to parks and safety in parks. Alongside this review I intend to conduct a content and discourse analysis by studying Google reviews of parks to identify which features are commonly cited in parks with good reviews and which are common in those with bad reviews. Google reviews will be collected for several parks with good reviews and several parks with bad reviews in the northeastern United States in the

last 10 years. Findings from this analysis will help to understand what should be prioritized in construction of future parks if we want people to use and appreciate them.

## **Conclusion**

In my STS research paper I will be studying what benefits parks allow and how we can make parks safer in future developments alongside a study of how parks benefit children and communities. This is connected to the design of a parks and recreation area alongside a fire station for my technical project, which will consist of a plan set for development of a parcel to contain both elements. In conversation about parks it is known that play and nature are essential in early childhood development both socially and academically. It is also known that there are certain populations that are less well served by existing public park infrastructure, which presents a social justice impact in the creation of park spaces. In my investigation into how we can design future parks to address the needs of communities, I plan to do a meta review as well as a content and discourse analysis to understand what we know and what people are saying. In understanding what people want and need in order to feel safe we can plan to make a better park experience for all.

It is important to make safe and useful parks because they are a refuge of community and personal development. Parks have been essential for communities from childhood development to pandemic disaster response to protests and civil movements. Personally, I grew up in parks and outdoor spaces and I feel that that experience played an important role in shaping my life. Much of my love for the environment, passion for community, and interpersonal skills can be attributed in part to the role parks played in my childhood. I went there to see other people, to get outdoors, and as I grew older to form a community and participate in activism. This is a common

story. Parks can make a difference in communities, and safe ones even more so, so we should be prioritizing making these spaces more accessible for the good of our communities.



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