

**Thesis Project Portfolio**

**Site Redesign of Crozet Elementary**

(Technical Report)

**The Impact of Urban Regeneration in Doha, Qatar**

(STS Research Paper)

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## Executive Summary

Infrastructure provides identity to every community. It is one of the principal factors for building a culture. Development and redevelopment projects can offer technological advancements, but they also can shape the social practices or culture of the community. This is why incorporating stakeholder beliefs is crucial for any infrastructure project. How can new infrastructure design be beneficial to communities as a whole? My technical and STS research paper seek to answer this question both on a small-scale and large-scale. Working alongside Timmons Group in my technical topic, my three team members and I were tasked with the site redesign of Crozet Elementary School. The school sought to add a new wing to the building to accommodate the growing staff and student body. The addition to the school meant there needed to be numerous alterations to the entire site. This included increasing the parking supply, changing the bus route, relocating the basketball court, adjusting the grading, and ensuring all stormwater management and utilities were operational. None of these alterations could have begun without incorporating stakeholder beliefs. My STS topic investigated the impact of urban regeneration in Doha, Qatar on its residences. Through the near four-decade long regeneration project, Qatar has adopted, through neoliberal policies, to attempt to create a global urban image. This process was accelerated after Doha was announced to be the host city for the 2022 FIFA World Cup. Only little remains of the original architecture and infrastructure that shaped the culture of Doha natives. Both topics aim to link innovative design with community and culture.

Redesigning Crozet Elementary School was a gradual process. When one part of the plan was altered, it affected every other plan. My team and I split the parts among ourselves. Because a change to one plan would affect all other plans, we ensured constant communication on the parts we were working on. Project constraints, VDOT/local ordinances and design standards, and

stakeholder needs were taken into account when drafting an initial layout. After cycling through design alternatives, a final site layout was constructed in Civil3D. From there, construction documents including grading, erosion and sedimentation, and stormwater management plans were created. Data and calculations were essential for the completion of these plans. This included Land of development areas, VRRM spreadsheets, stormwater calculations, grading calculations and NOAA precipitation data. In the end, a complete set of construction documents were generated. The site redesign focused specifically on school parking and traffic circulation. We accomplished one of the requirements set by the school which was to increase the bus parking from 6 to 12 spaces and increase the total parking supply from 86 to 136 spaces. The redesign of Crozet Elementary successfully met all standards as well as provided a revamped school for all students and staff.

To assess the impact of the Old Doha Regeneration Project, a timeline of population rates, employment rates, working conditions, policy, and change in infrastructure was created to investigate any correlation of these factors. Doha adopted foreign ownership laws in 2000. Population rates increased due to more opportunity along with employment in the industry sector reaching nearly 60% of the population working in that field. However, from 2010 (beginning of construction for the 2022 FIFA World Cup) to the present day, population rates drastically decreased currently sitting at an all-time low. Employment in the industry sector decreased leading to an increase in migrant workers. This can be traced to the poor treatment of industrial workers, specifically construction workers. Many had to endure the harsh working conditions such as forced labor in 120-degree Fahrenheit. A numerous number of industrial workers also reported they were receiving below minimum wage. This mistreatment forced Qatari workers to seek employment elsewhere. It's also worth noting landlords took advantage of the Qatari

government's lack of enforcement over their annual 10% increase in rent policy. Some Doha residents were unable to afford their homes because their rent skyrocketed as high as 40% annually. The rapid pace of urbanization and foreign ownership took away the culture of the city. To understand the cultural impact of the regeneration project, Nardine Scharfenort's theoretical framework was utilized. Interviews of residents were conducted on her research trip to Doha. Based on these interviews, there was an overwhelming disconnection and vexation towards their city, many sitting the loss of tradition architecture being the main culprit. It was concluded that residents have great contempt for Doha. The Qatari government's push for urbanization and lack of care in citizens will only increase the number of their native people fleeing the city. It is important to have advancements in society, but regardless of scale, it is vital to ensure that the culture was preserved.

My work this year has shown the impact infrastructure has over a community. I believe my work shows that infrastructure must be carefully planned out with emphasis on preserving culture. For those that wish to pursue similar work, the next step is to investigate methods for mass infrastructure plans that serve benefits to all parties.