Executive Summary

The Hill District of Pittsburgh is a historically African-American region of neighborhoods in Pittsburgh. While it was once a major jazz cultural center, the neighborhood fell into decline after the 1950s when a large portion of the Lower Hill was designated for redevelopment, evicting over 8000 people from the area. In 1961, the Civic Arena was built on the border separating the Lower Hill from the downtown area. Ever since the arena was demolished in 2010, many different ideas on how to revitalize the area have been proposed.

Our project came about after renderings released by Bjarke Ingels Group (BIG) depicted their master plan for the redevelopment of Pittsburgh’s Lower Hill District. The 28 acre site plan calls for over a thousand new homes, retail space, and increased connectivity to the city for cyclists and pedestrians.

We chose to complete the structural design of one of the residential apartment buildings illustrated in BIG’s renderings. Our design calls for five levels of residential space, one level of retail space on the ground floor, and three levels of parking below ground. In order to meet Pittsburgh Arena Real Estate’s goal of achieving LEED Neighborhood Redevelopment certification, we chose to design as much of the structural system as possible in timber. Timber is used for joists, beams, and girders, while reinforced concrete is used for shear walls, as well as the beams and girders on the podium floor that are required by code. The underground parking garage is designed in prestressed concrete.

Our financial analysis proves that designing the structure in timber not only reduces the embodied carbon footprint of the building, but is also a financially feasible solution for the client.

Please see the attached report for a detailed explanation of the geotechnical, structural, construction, and financial analyses and decisions made in the project.