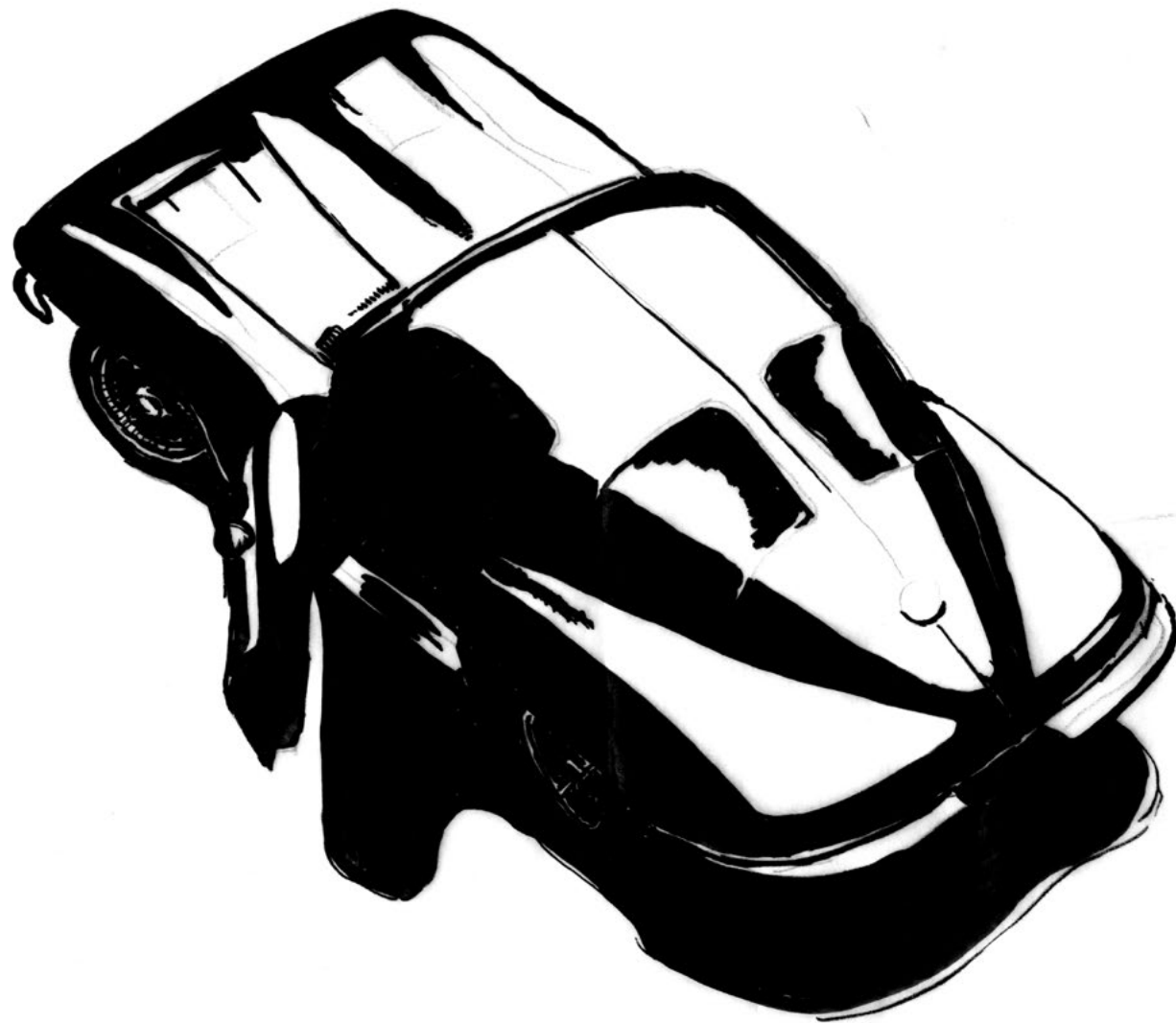


FIBERGLASS SANCTUARY
A NEW CORVETTE MUSEUM



SHUHONG SUN

Fiberglass Sanctuary
A New Corvette Museum

Shuhong Sun

Thesis submitted to the faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Master of Architecture

Thesis Committee

Heinrich Schnoedt - Committee Chairman

Mario Cortes - Committee Member

William Green - Committee Member

Blacksburg, Virginia

Aug 11, 2017

To the 1989 Corvette I used to own
Thank you for letting me know the attraction of Corvette.

To My Parents
Thank you for your support and motivation.



ABSTRACT

A museum is an important type in the palette of public buildings. Most famous and iconic museums are mainly dedicated to house art works, or historical and cultural artifacts. Aside from the sheltering of the artifacts, museums often are landmarks, which contribute to the identity of a place.

The few museums dedicated to the automobile is interesting because America, also called the country on the wheels has little more than very basic renovated warehouses or former factories, with little commitment to exhibiting cars in a beautiful manner. The proposal here seeks to define a space that both honors its Corvette exhibits and hopefully provides sufficient architectural character to be accepted as an institutional landmark.

ACKNOWLEDGEMENT

I would like to thank all my committee members, Heiner, Mario, Bill, who have given me invaluable advice throughout steps of my design development, help me realize my dream, design a specific building for the Corvette, my favorite sports car. I have had a great lesson in learning the importance of working with time frames.

I would like to express my appreciation to Heiner who support my initial ideas and helped shaping my design ideas with great patience on my slow progress. I am grateful for your continued encouragement and support along when I lost confidence. Your insights and in-depth knowledge in architecture has been, and will continue to be a constant source of inspiration for me.

I would like to express my appreciation to Mario who gave me excellent advice regarding the structural system, which helped me greatly in an important aspect of the building's architecture. Equally important was his encouragement to analyze and synthesize structure and envelop to achieve a good building.

I would like to express my appreciation to Bill who gave me valuable input and helped to bring forward a very positive side in my work. His infecting enthusiasm and detailed knowledge introduced me to automobile museums around world to serve as precedents.

I thank everyone in the studio for your support. I enjoyed the experiences that I shared with you over the past two years.

At last, I also want to thank my 1972 Oldsmobile, I'm grateful for you taking me to studio every day, without ever breaking down on the road.



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CHAPTER ONE

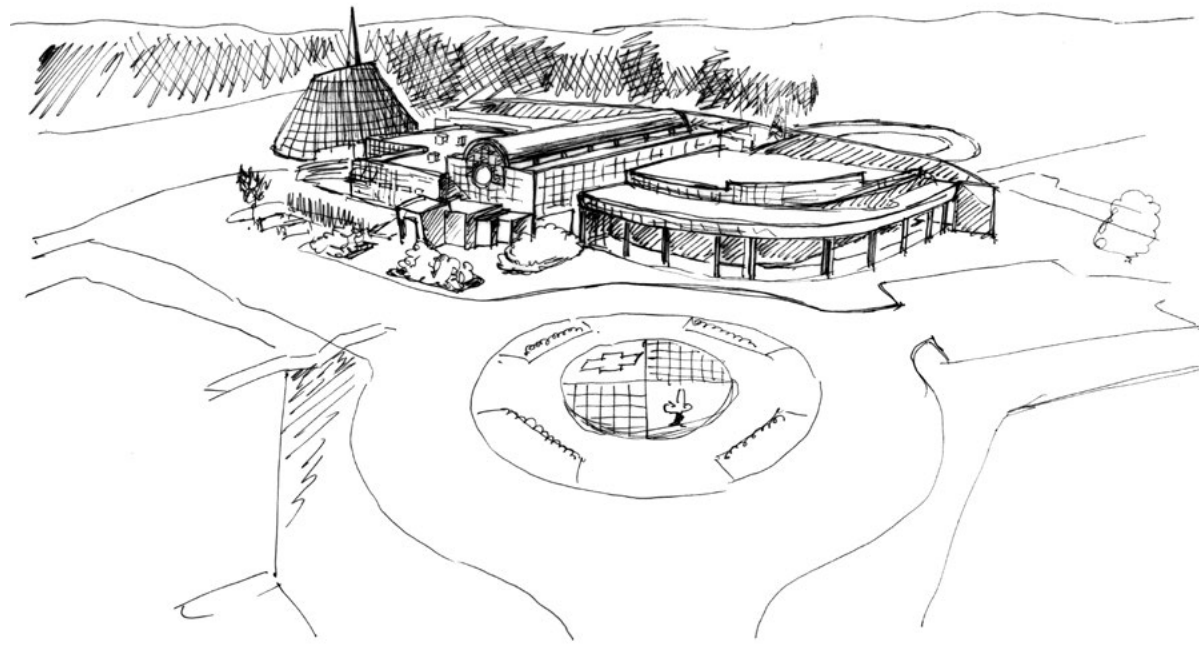
RETHINKING THE CORVETTE MUSEUM

INTRODUCTION

In past 65 years, the Corvette was always considered the icon of the American sports car. With the development of newest Corvette generation, America's most famous sports car is looking to move beyond the U.S. onto the world stage. At this point, its European competitors, such as Porsche and Ferrari, designate the Corvette still a rare niche brand. On a personal level, as a former Corvette owner, I hope that the qualities and beauty of the Corvette can be recognized by the greater general public. And as a student of architecture, I see my contribution in an attempt to envision a new Corvette Museum.

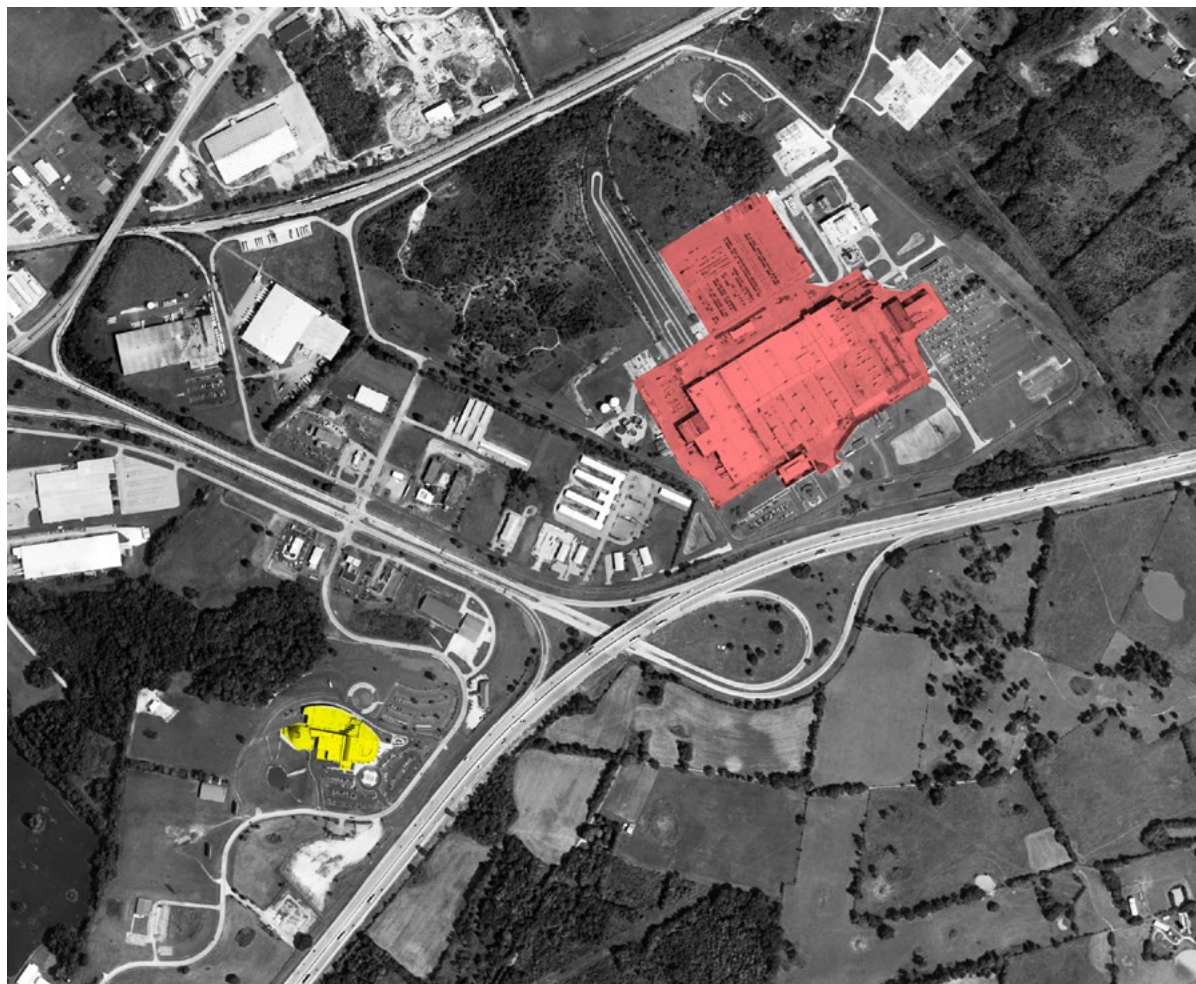


THE ORIGINAL CORVETTE MUSEUM



The National Corvette Museum at Bowling Green, KY

The original National Corvette Museum located in Bowling Green, Kentucky, opened its doors on September 2, 1994. The museum is located only a quarter mile from the Bowling Green Assembly Plant, where Corvettes have been manufactured since 1981. Making a Corvette-only museum is the brainchild of Terry McManmon, a long-time member of National Corvette Restorers Society (NCRS). After communicating with General Motors and Corvette associates, the National Corvette Museum started construction, ten years after McManmon's initial idea. Although the Corvette Museum was not financed by General Motors or Chevrolet, it received a number of historic Corvette models from GM. But because of a tight budget, the build itself is basically a silver-shimmering warehouse with yellow tent.



Red: GM Bowling Green Assembly Yellow: National Corvette Museum

2014 DAMAGE



Sinkhole in the National Corvette Museum

On February 12, 2014, a sinkhole opened under the floor of the Skydome area of the museum at around 5:44 AM local time, causing a portion of the floor to collapse. Eight rare and one-of-a-kind Corvettes, portions of the display stands and rails, large concrete floor slabs and dirt fell into the sinkhole, causing serious damage to some of the Corvettes. The Corvettes involved have an estimated value of a million dollars. The remaining 20 cars in the Skydome were immediately removed from that area. Between March 3, 2014 and March 6, 2014, 5 of the 8 Corvettes were recovered from the sinkhole. The museum reopened the day after the sinkhole appeared.



BUILD OR RE-BUILD

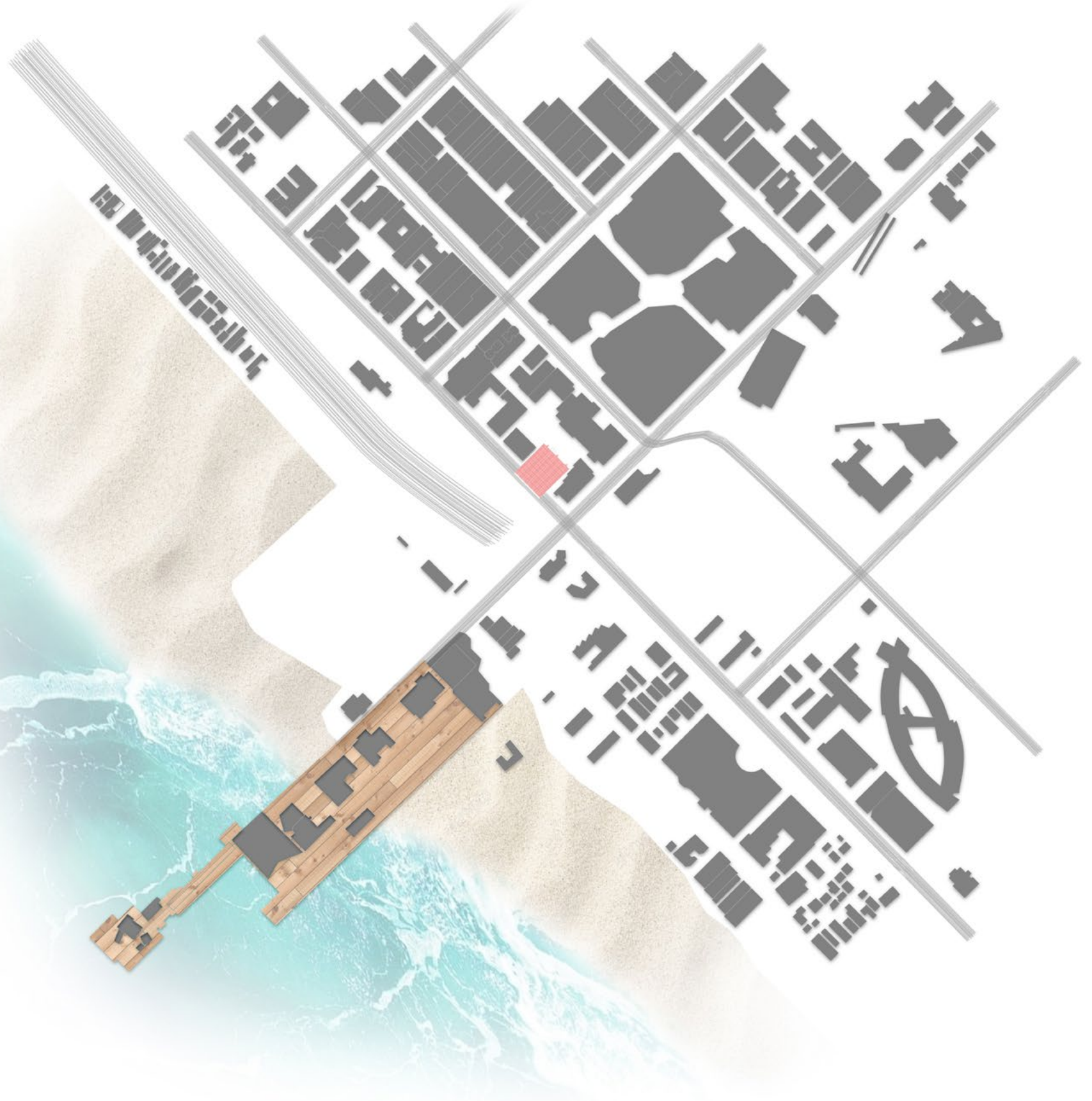


Although the National Corvette Museum was restored after the 2014 damage, as a museum it is outdated. Similarly, the location of the museum in Bowling Green Kentucky is away from major tourist routes, As a possible site, for a new corvette museum I envisioned Los Angeles California, famous for its urban automobile generated landscape and perhaps a good place to enjoy the lineage of the Corvette.

LOS ANGELES AS A SITE

Near the Santa Monica Beach and Pier 1541 Ocean Ave, Santa Monica, CA is a prime location in greater Los Angeles. Almost everyone who comes to Los Angeles will visit, the beach, pier, ferris wheel and the walkways lined with palms.

At this site, the program calls for the presentation of 65 years of production resulting in seven generations Corvettes, from C1 to C7, and also the present eighth generation.

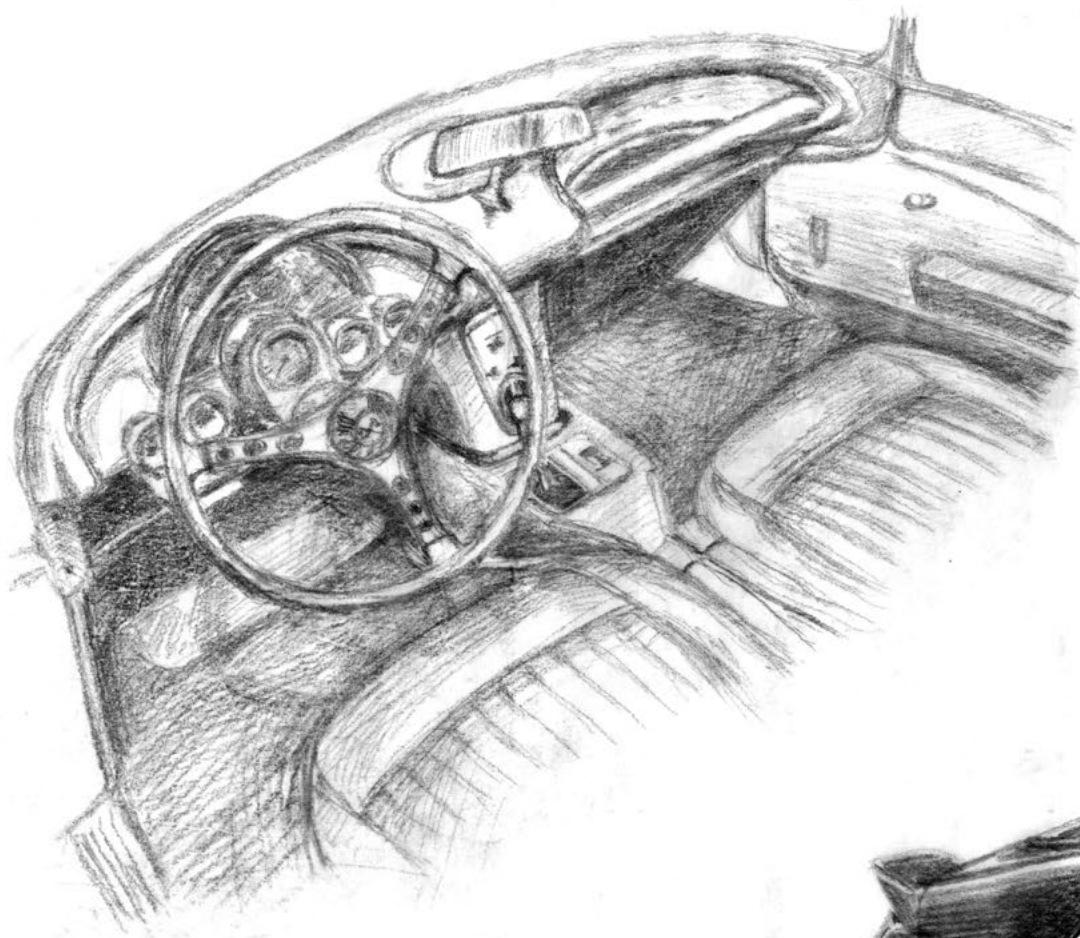




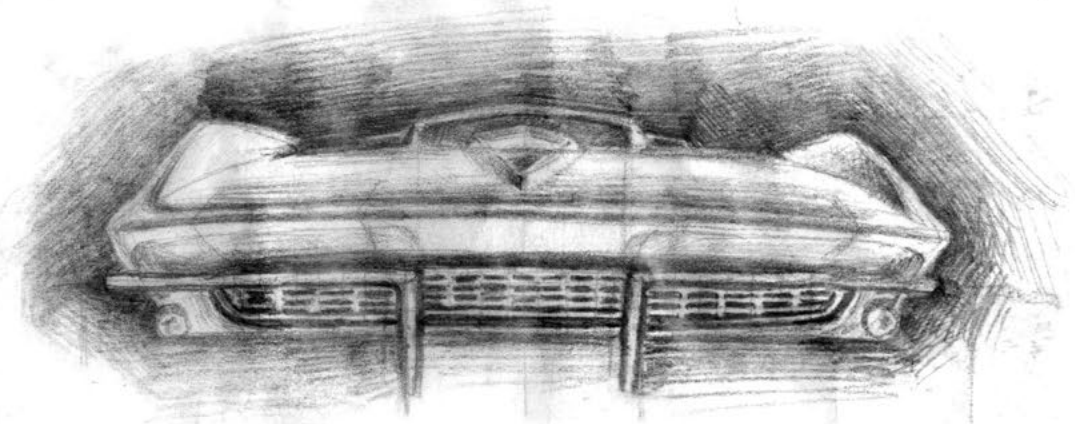
CHAPTER TWO

INITIAL INVESTGATIONS

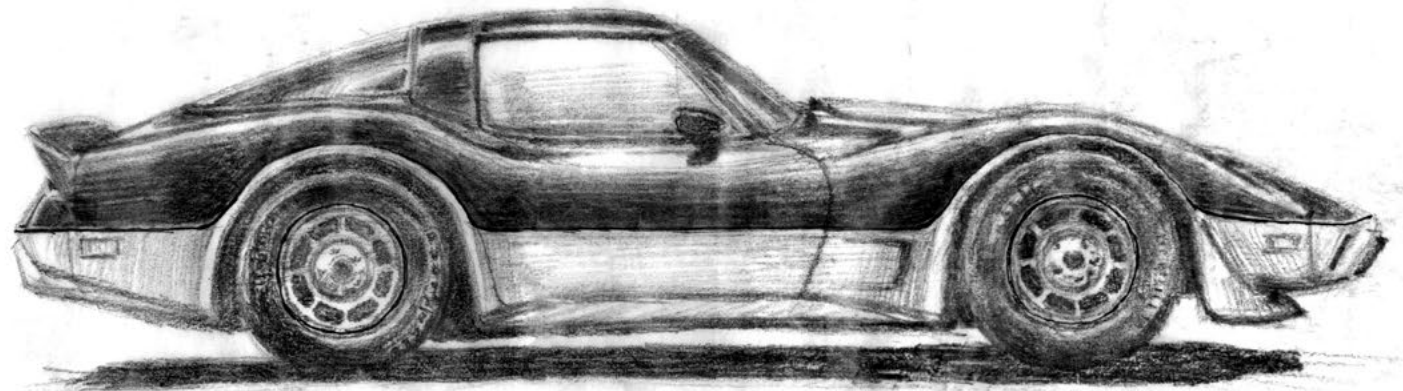
I studied the form of several classic Corvettes in an attempt to discover formal principles that might be applicable in architecture.



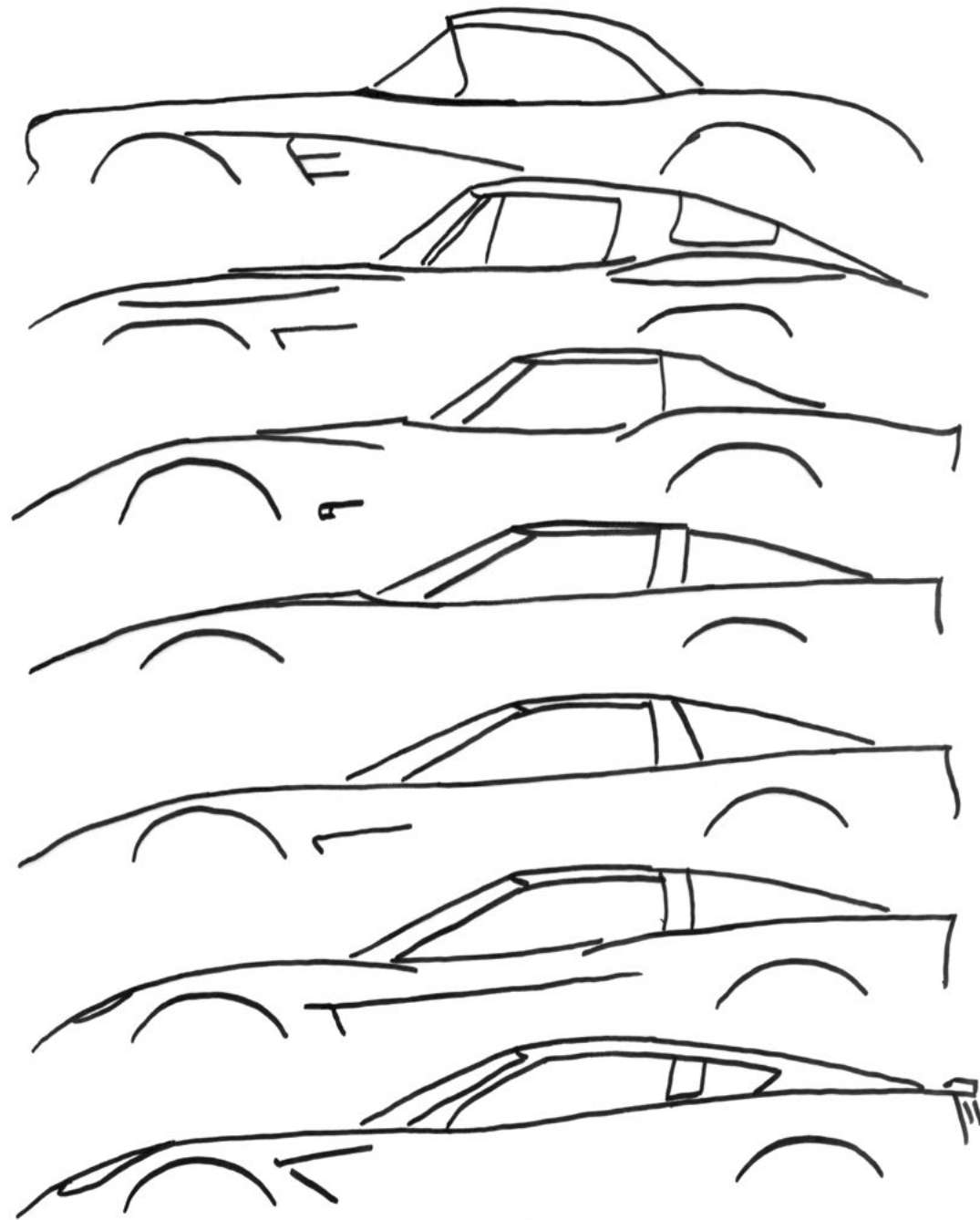
The interior of 1958 Corvette



Front end of 1966 Corvette



Side view of 1978 Corvette



Corvette Silhouette from C1 - C7

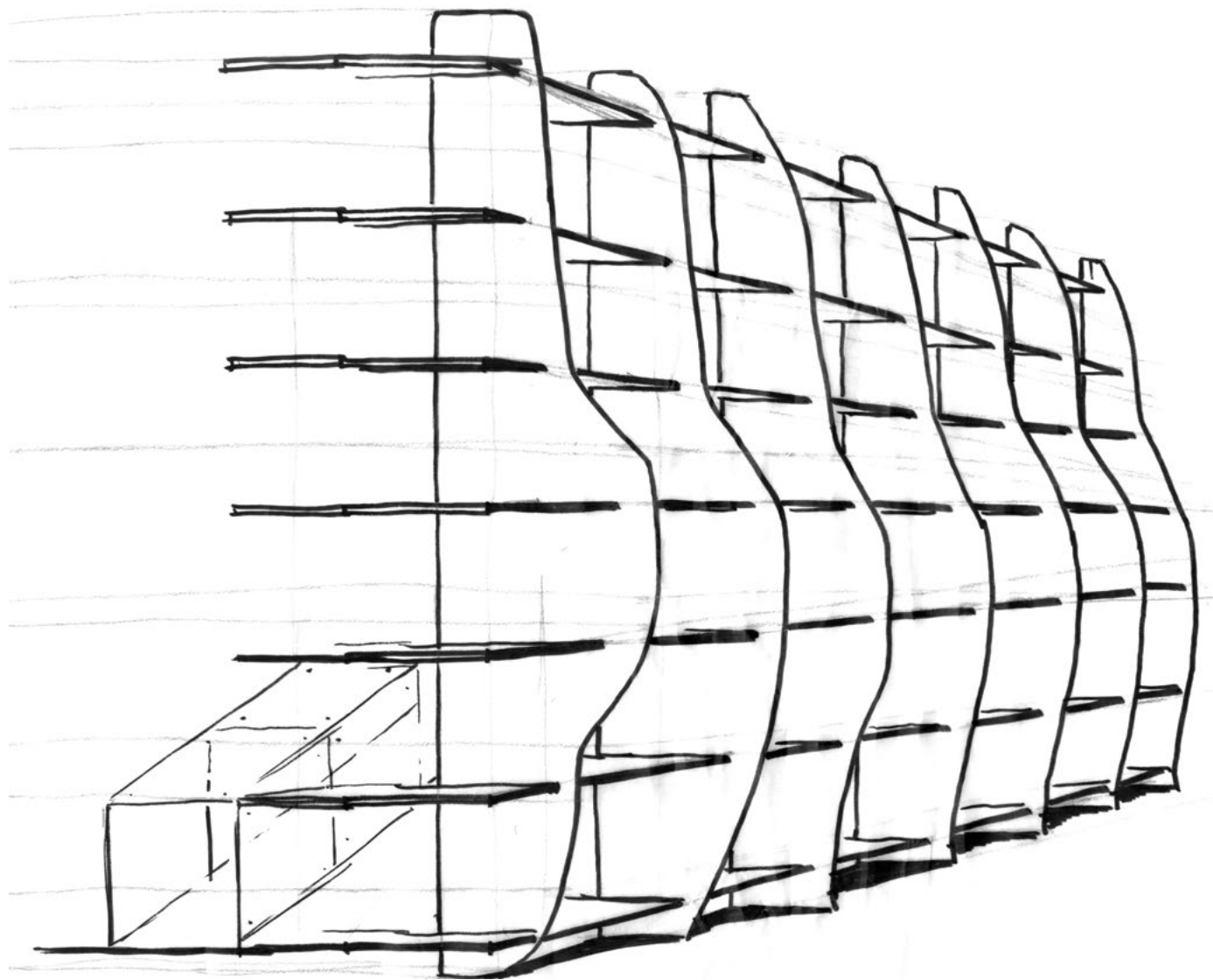
Like the iconic sports car Porsche 911, the Corvette is also known for its streamlined silhouette. A study of the lines of the classic Corvettes offered themselves to help understand a possible formal link between automobile and architecture.

Initially, the architectural idea called for cars to be presented on platforms to be moved along a rail on the floor. Additionally, the higher floor levels of the museum become an observatory for the city, beach, and the Pacific as the background of the Corvettes.

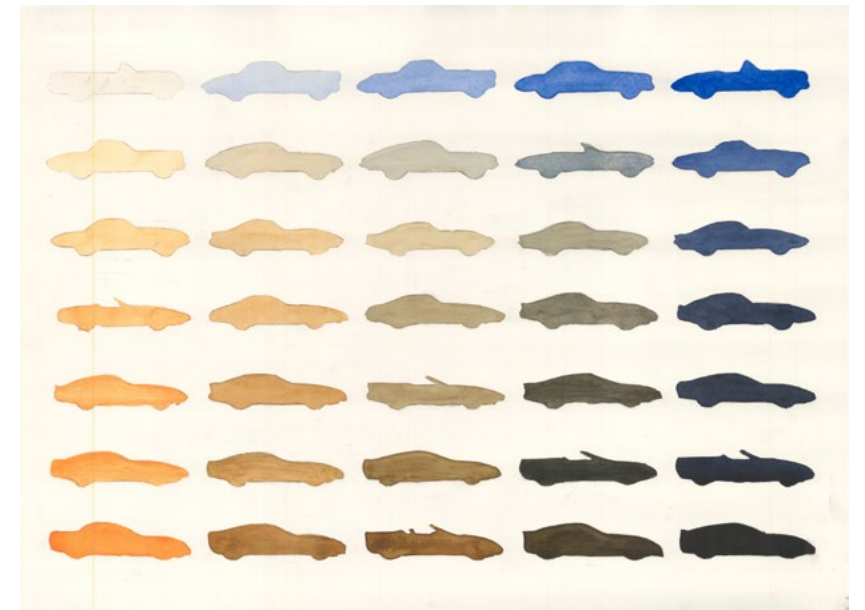
Interior rendering of initial design



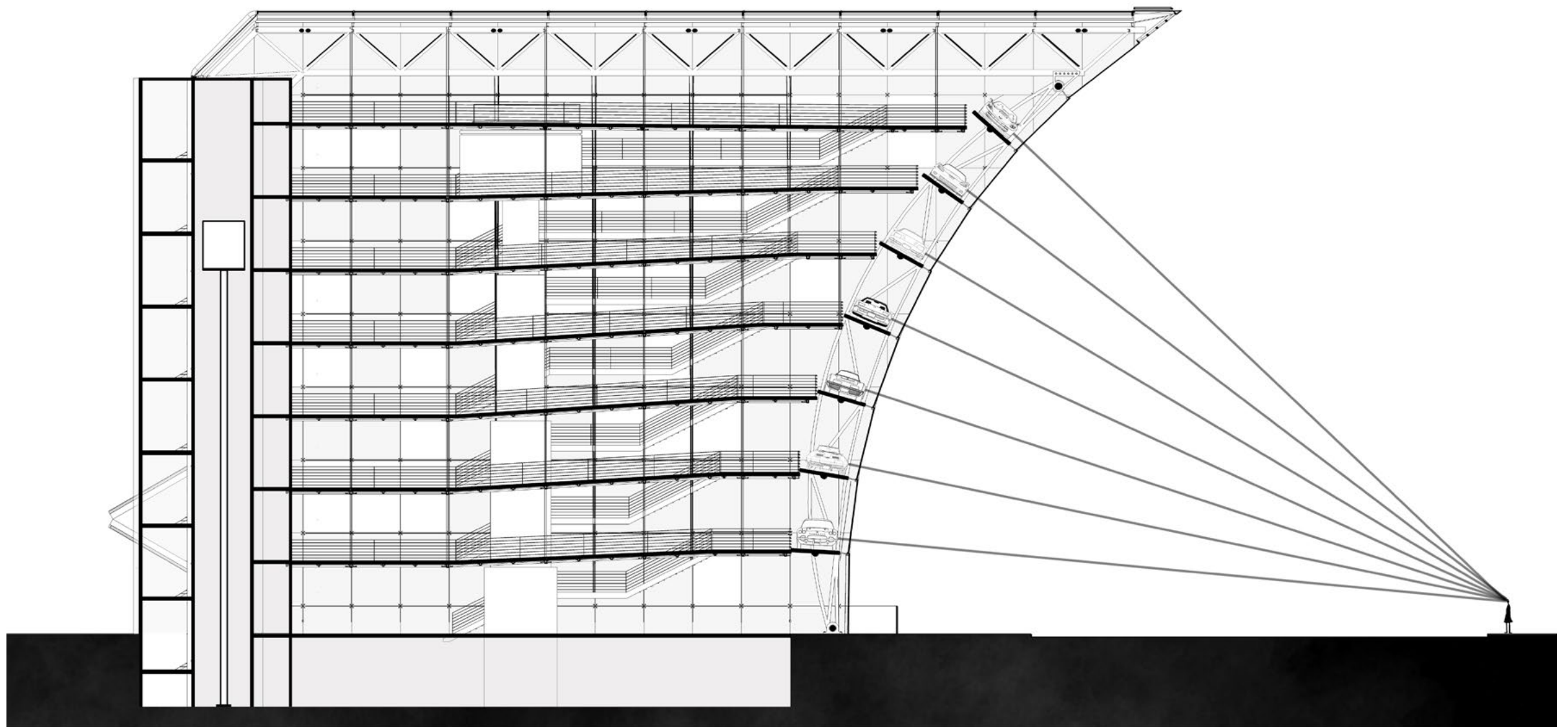
In an initial idea, silhouette-derived elements are guiding both horizontal and vertical dimensions of the building. Seven floors display Corvettes from C1-C7, from bottom to top. Connected with a stair behind the car wall, the architecture offers a linear walk-through the history of the Corvette. Seven concrete walls offer the silhouettes of each generation Corvette in plan.

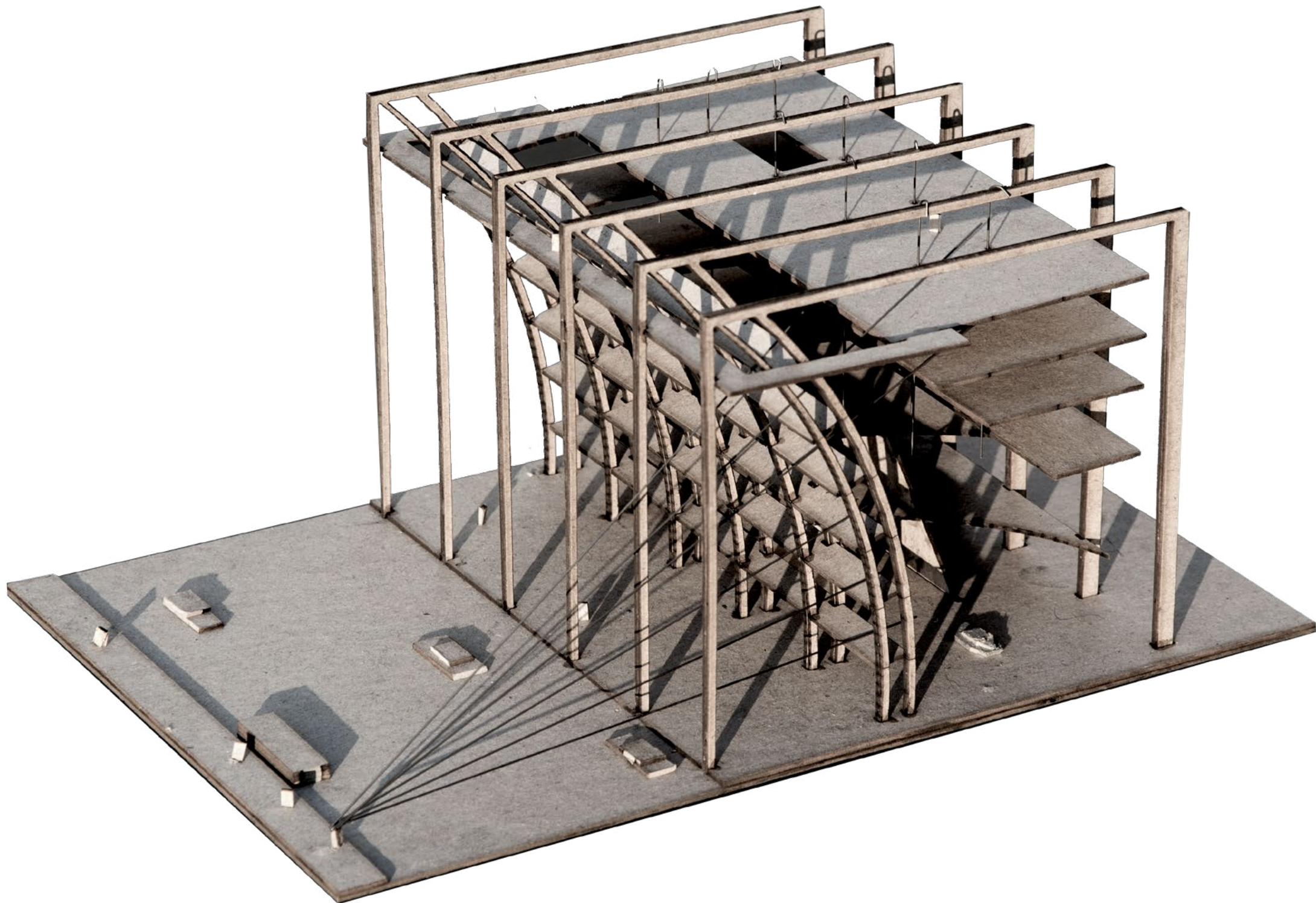


Typical car museums tend to display cars for museum visitors after purchasing a ticket. Pedestrians without tickets have no access to the cars. In my proposal I abandoned the concrete silhouette walls and modified the initial silhouette idea into a curved frontal façade wall filled with cars presented to street and waterfront. The curved facade wall is based on the profile of each car and the perspective lines of sight from sidewalk paralleling the shore.



Watercolor Corvette from 1953-2015

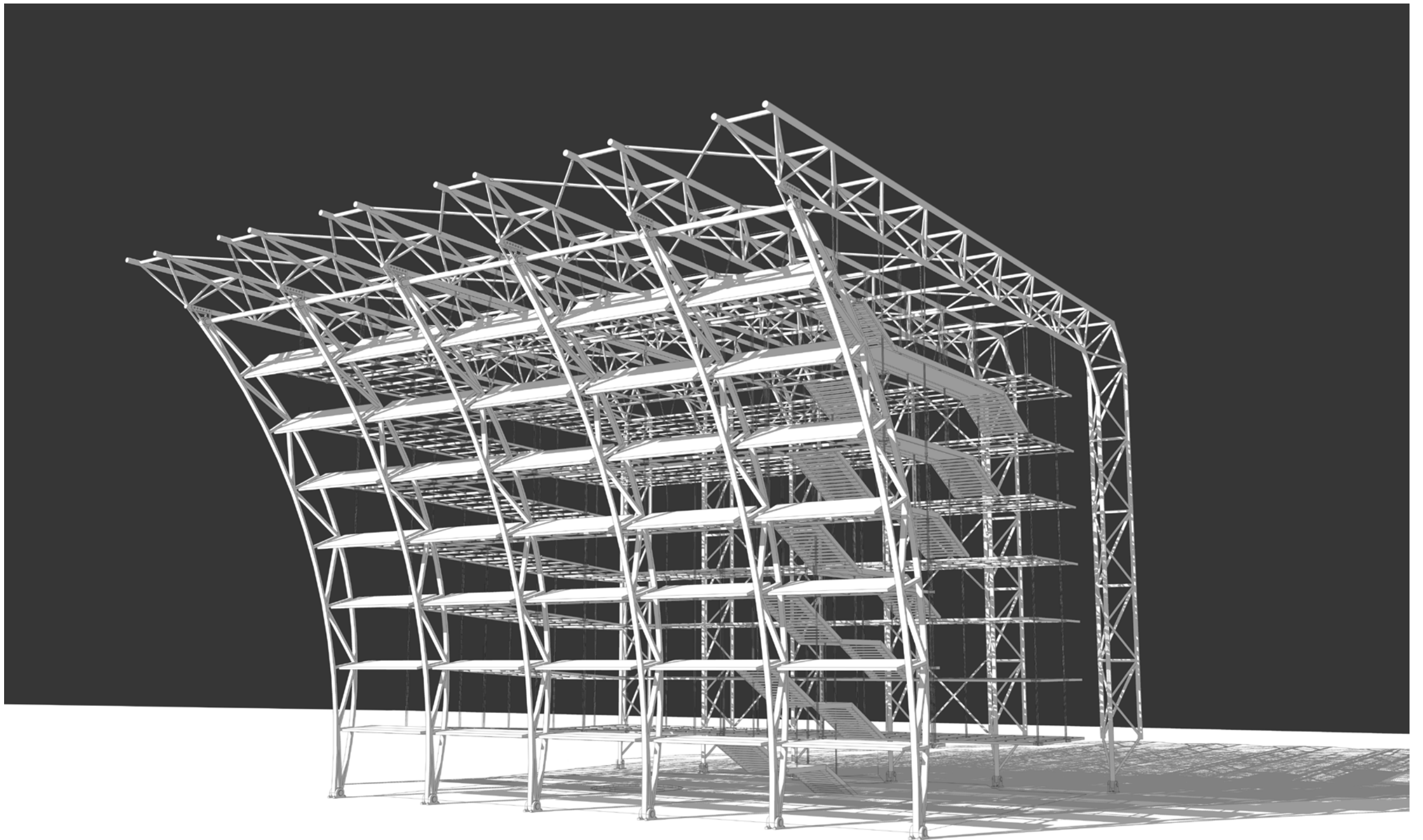




Model of the initial idea, the steel wire simulate the view from the sidewalk.

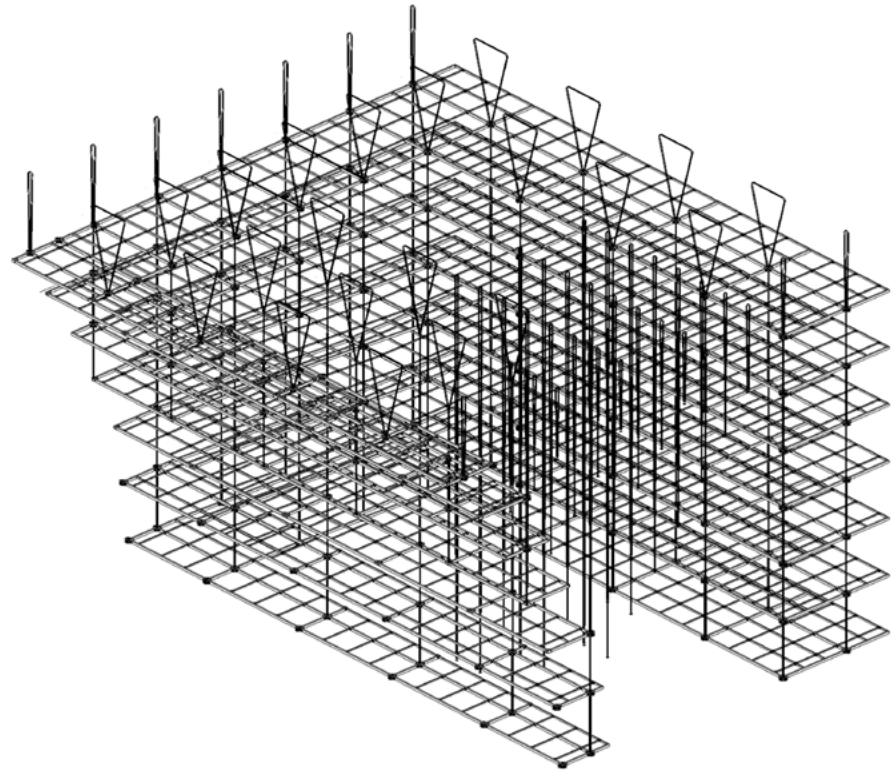
CHAPTER THREE

STRUCTURE AND ENCLOSURE

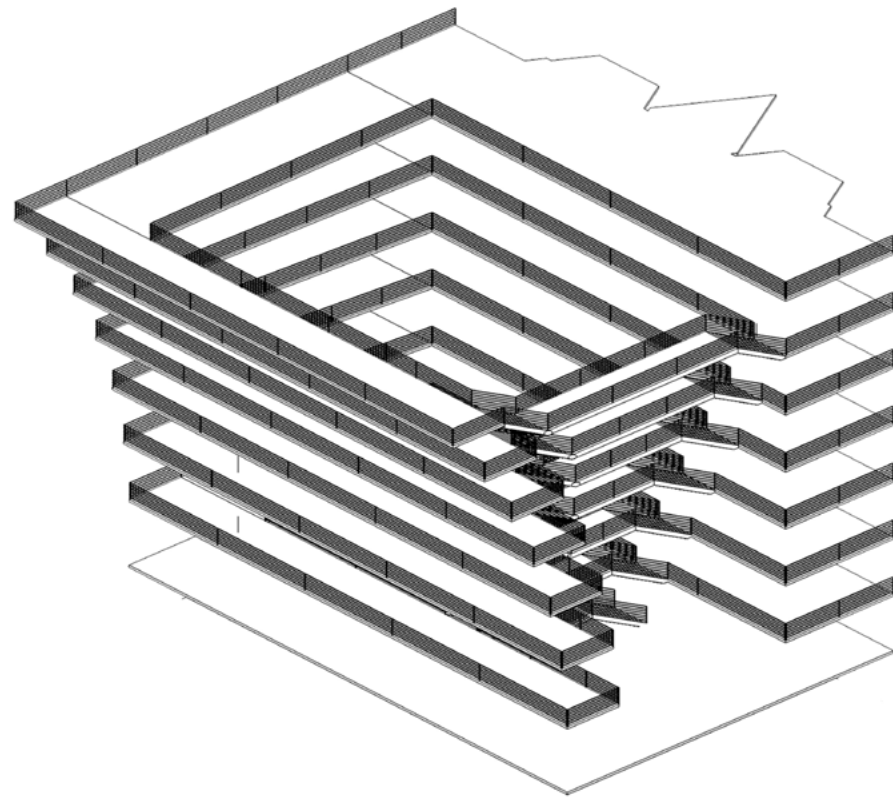
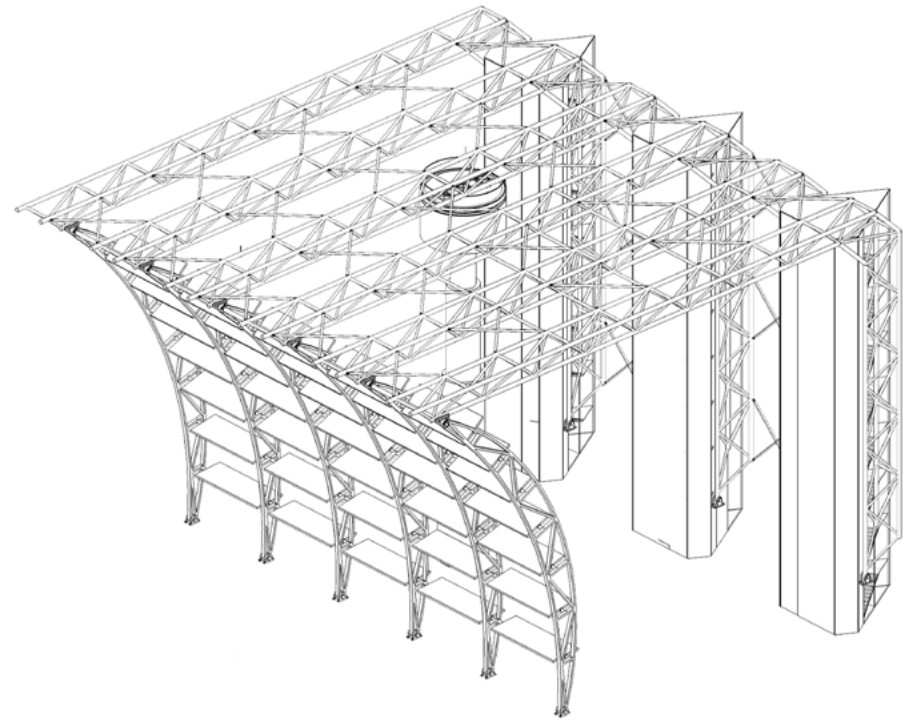


Roof, walls and also the curved facade wall are conceived as a triangulated steel truss systems where steel tensile cables suspend the floor slabs and stairs from the trussed roof system. Three concrete traffic cores stiffen the back walls of the building and anchor the floors to prevent swinging. The glass enclosure is stabilized with a cable truss. As a result, there is no column in interior.

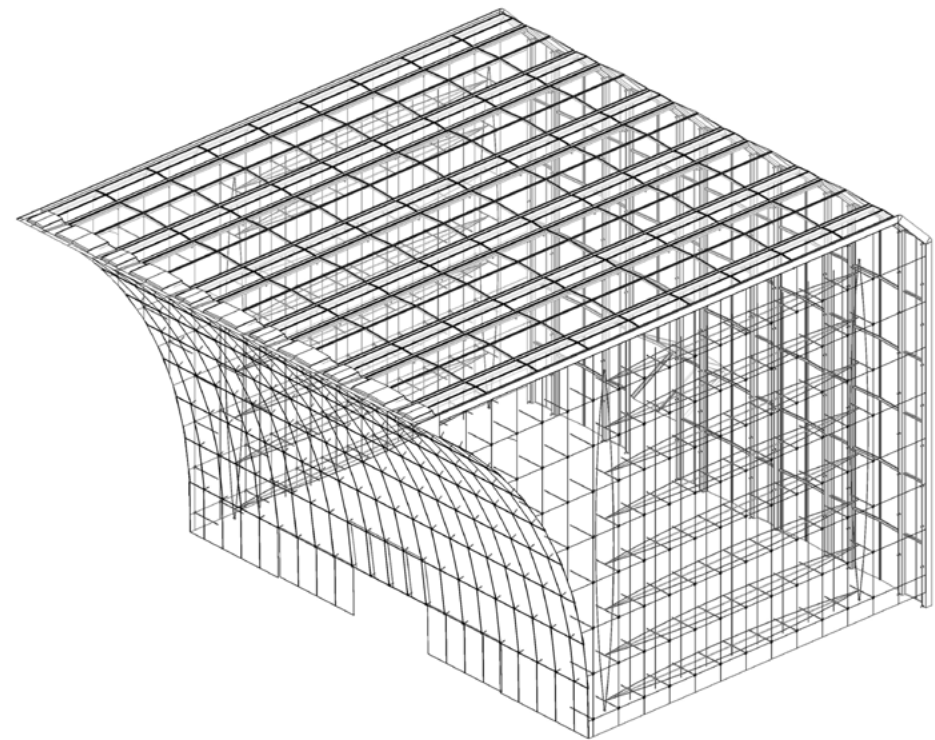
Floor frame and cable



Triangle steel truss and traffic core

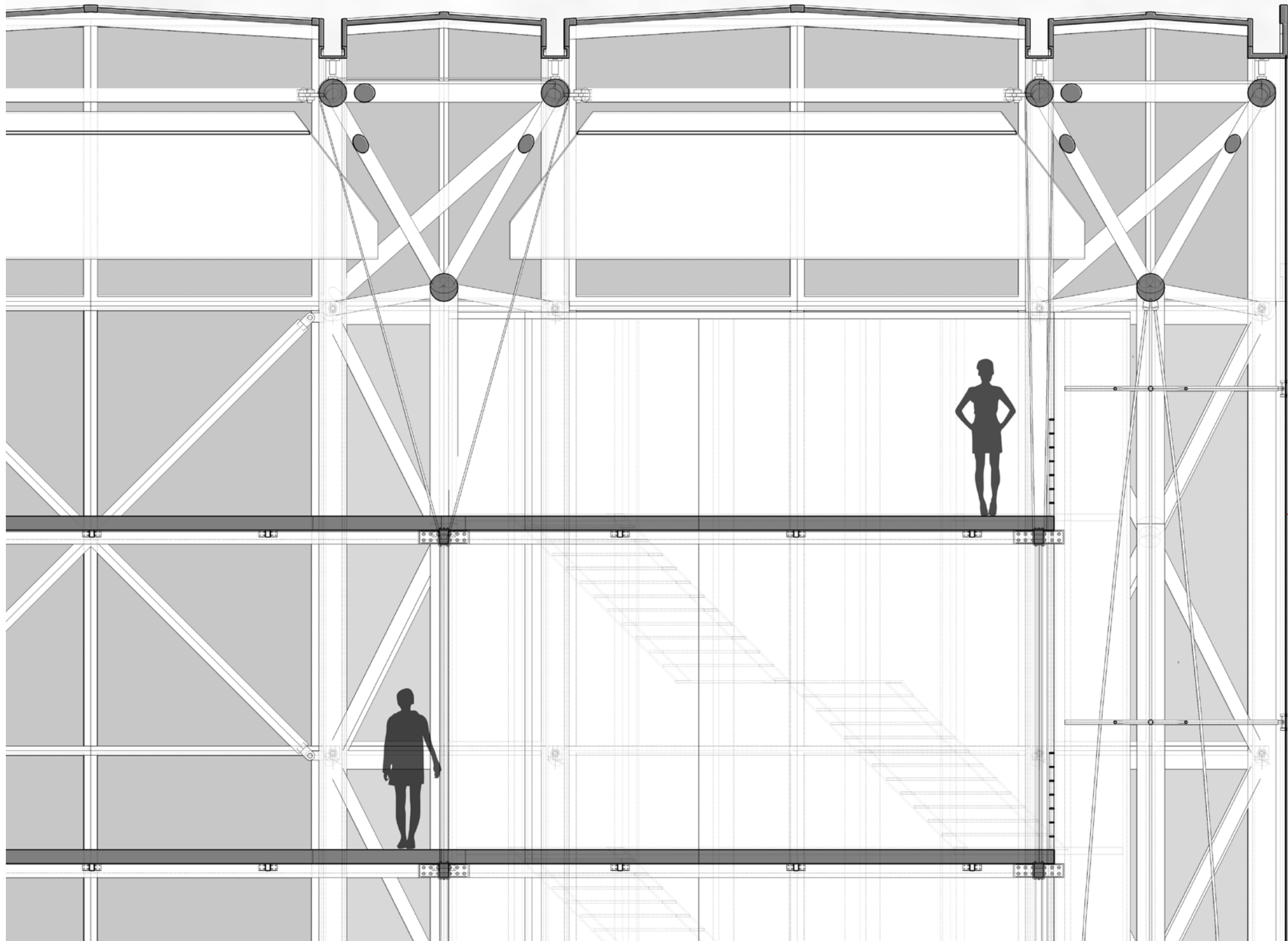


Floor and stair

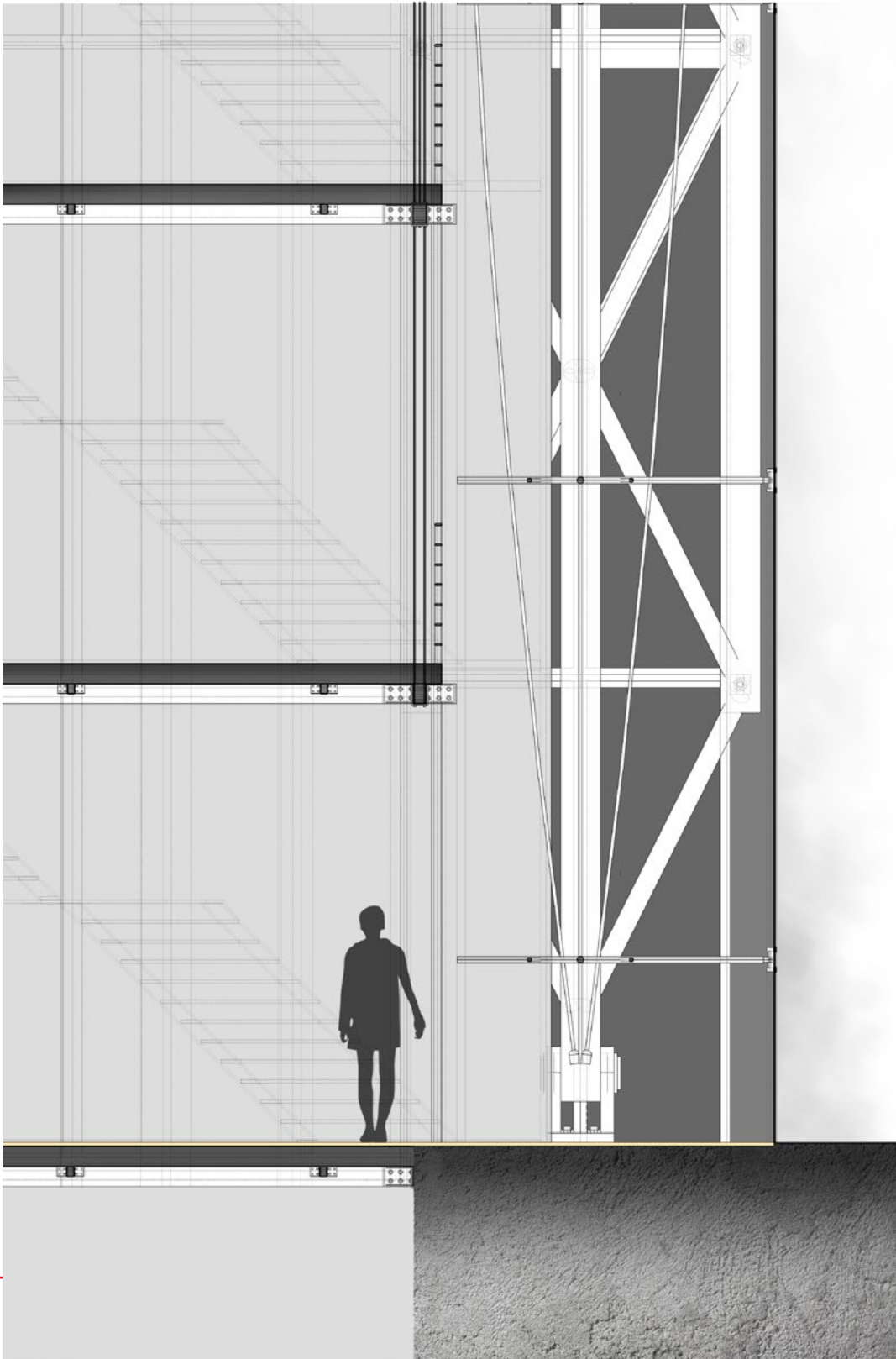
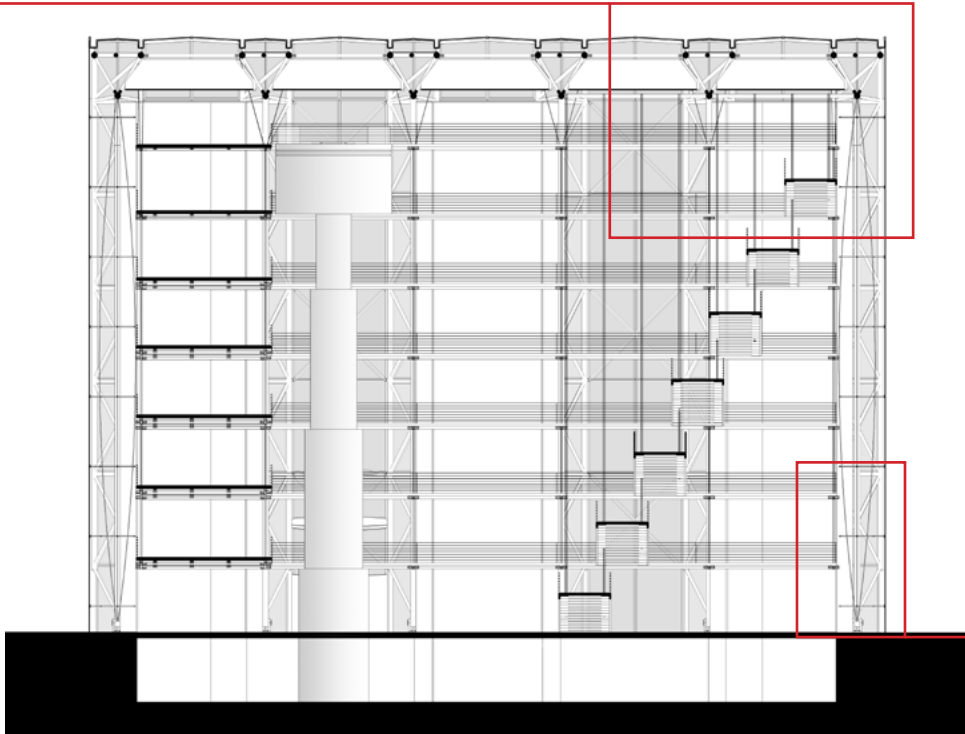


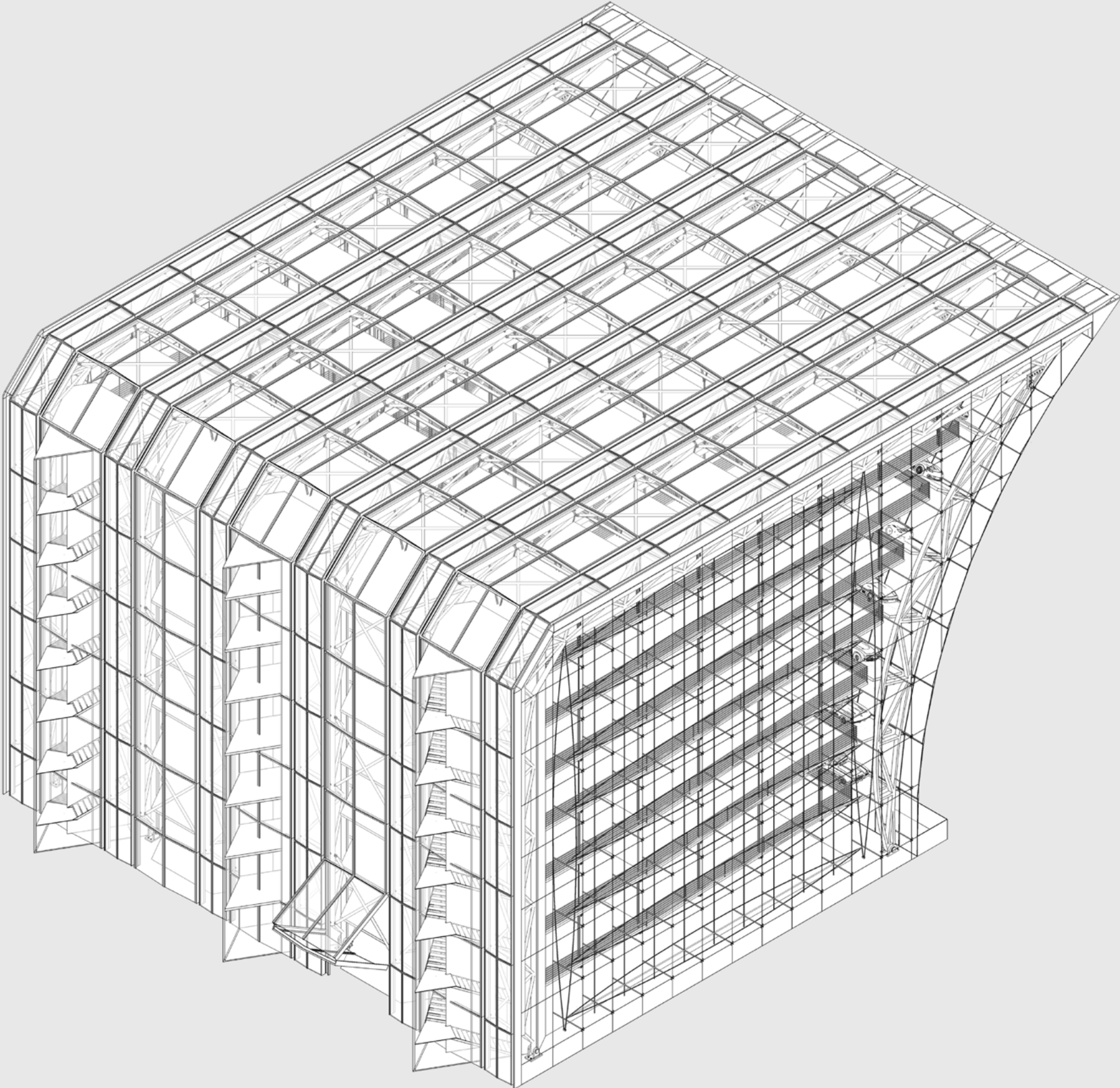
Cable truss glass envelop enclosure

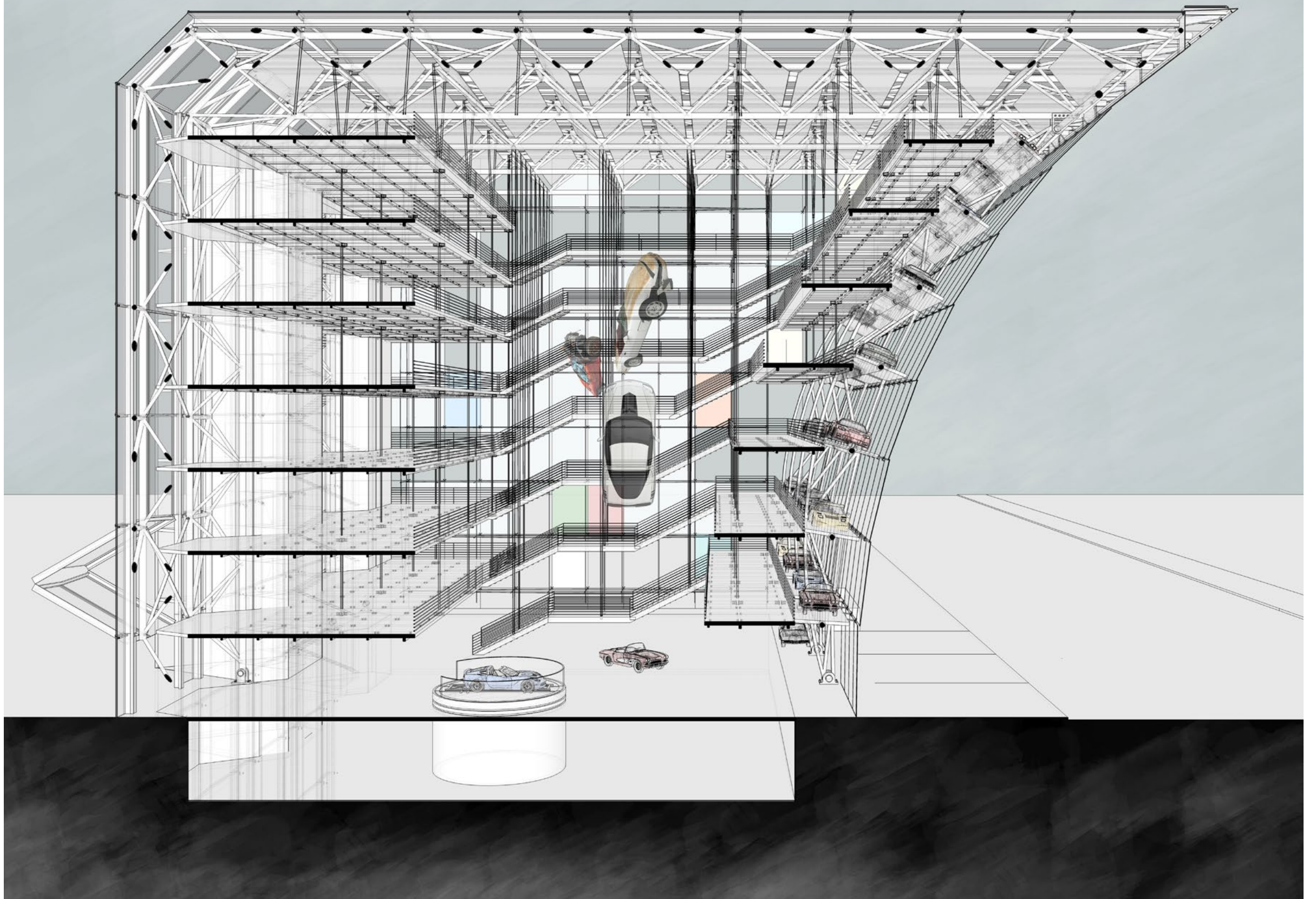
Detailed drawing of the upper levels and corner condition of building.



Detailed drawing of the ground of building.



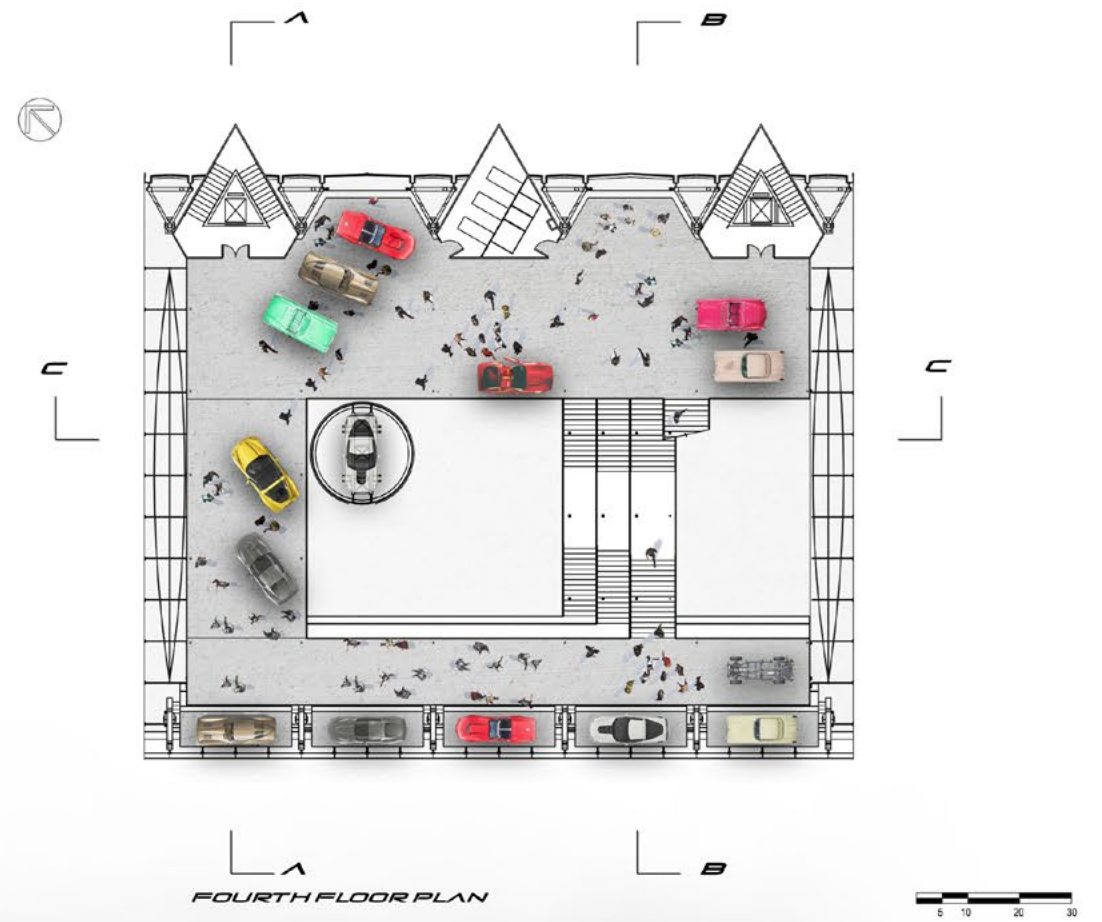




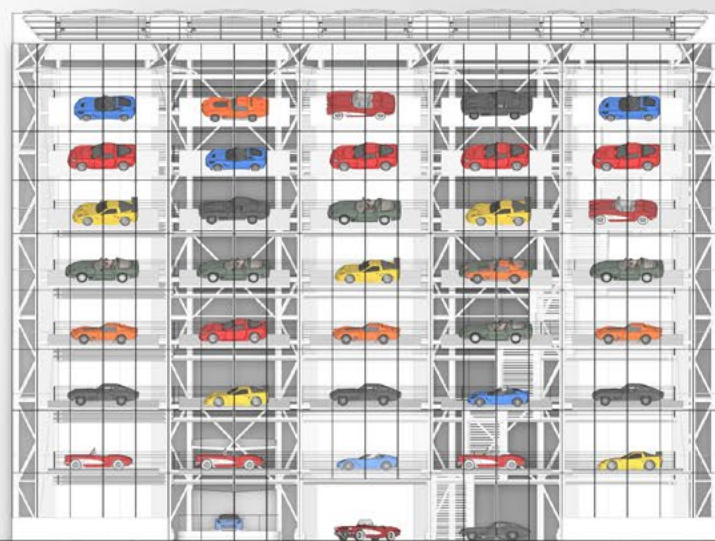
CHAPTER FOUR

RELATIONSHIP BETWEEN VISITOR AND CAR

The relationship between the section and plan



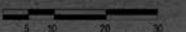
FOURTH FLOOR PLAN

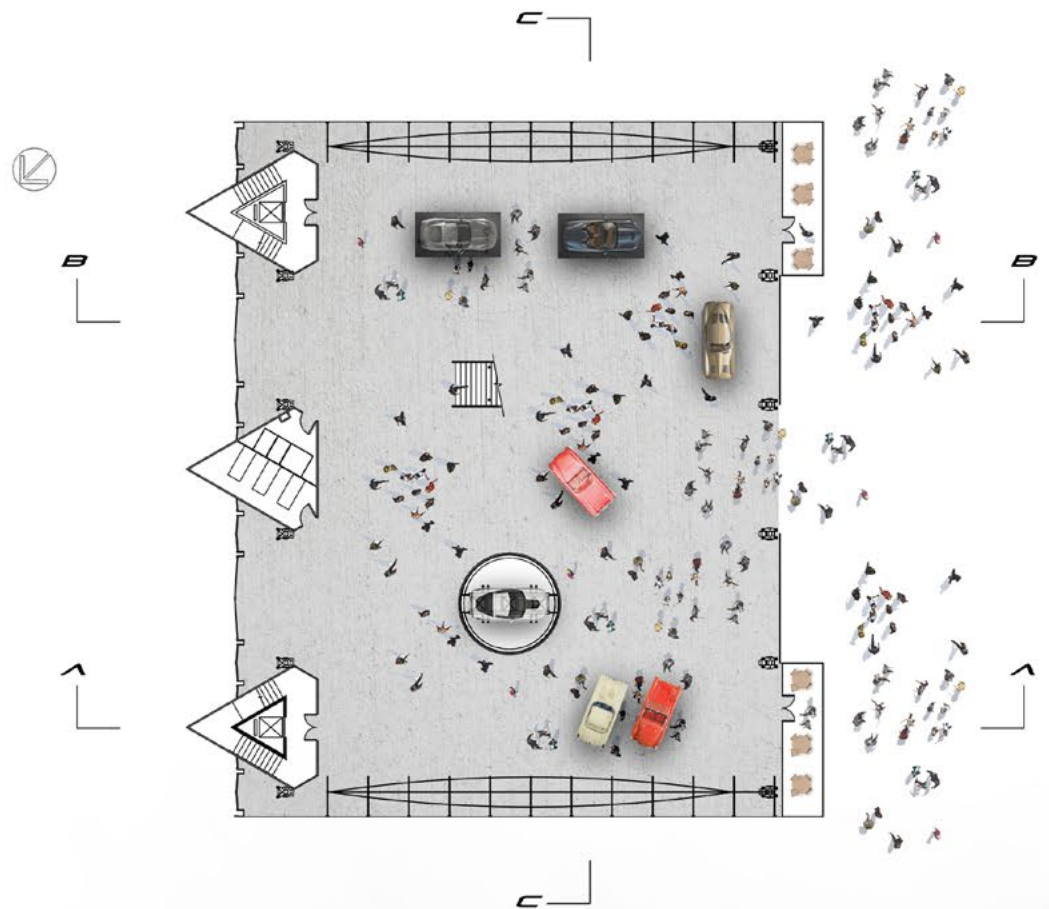


WEST FACADE

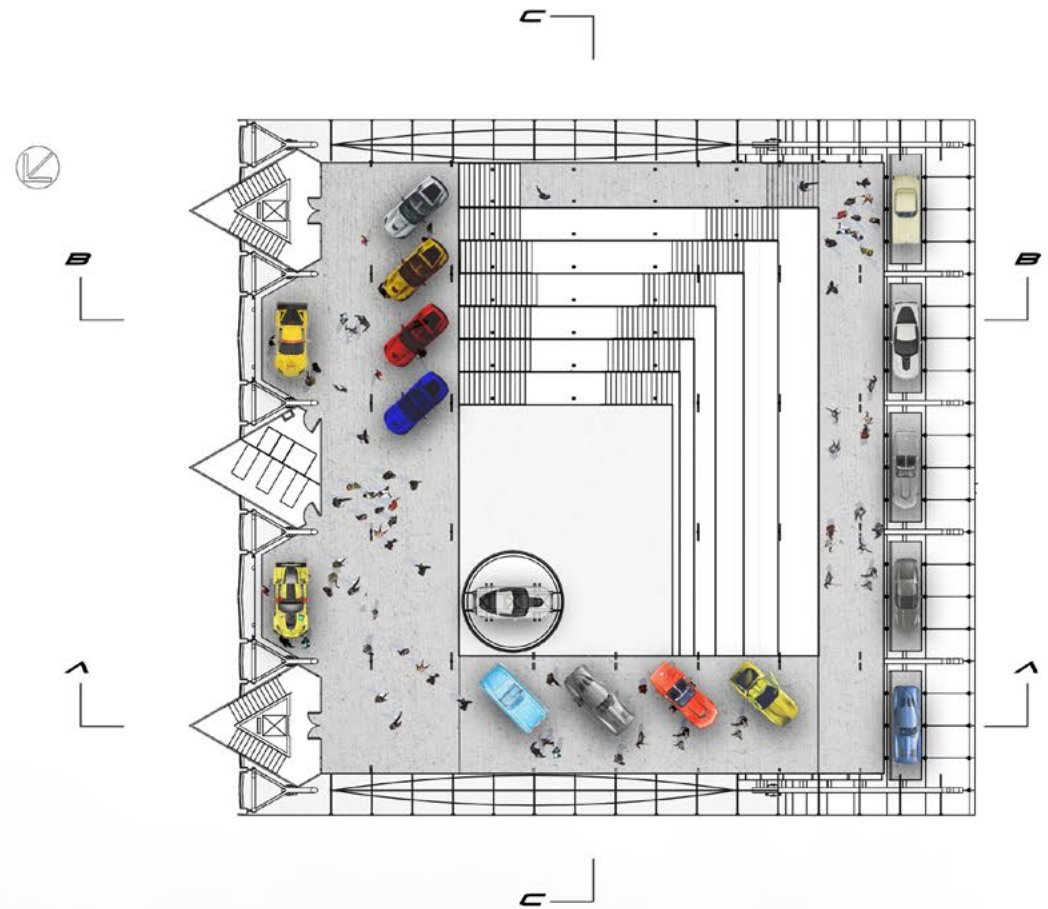


SECTION C-C

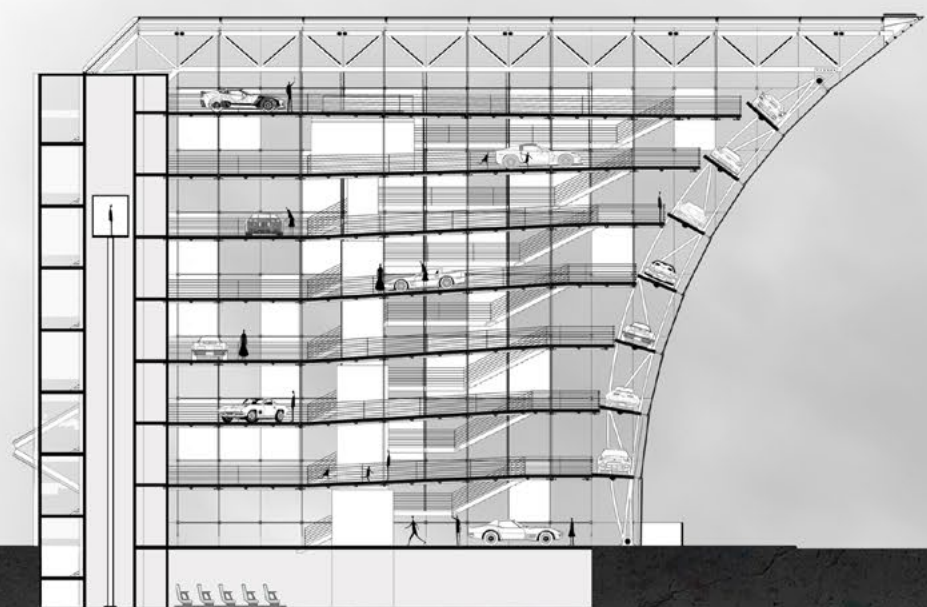




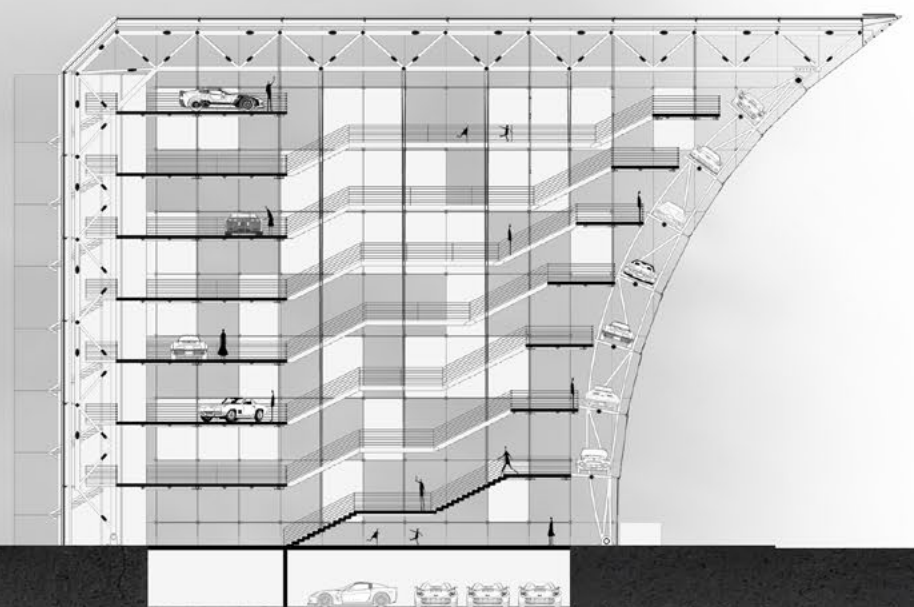
GROUND FLOOR PLAN



TOP FLOOR PLAN



SECTION A-A

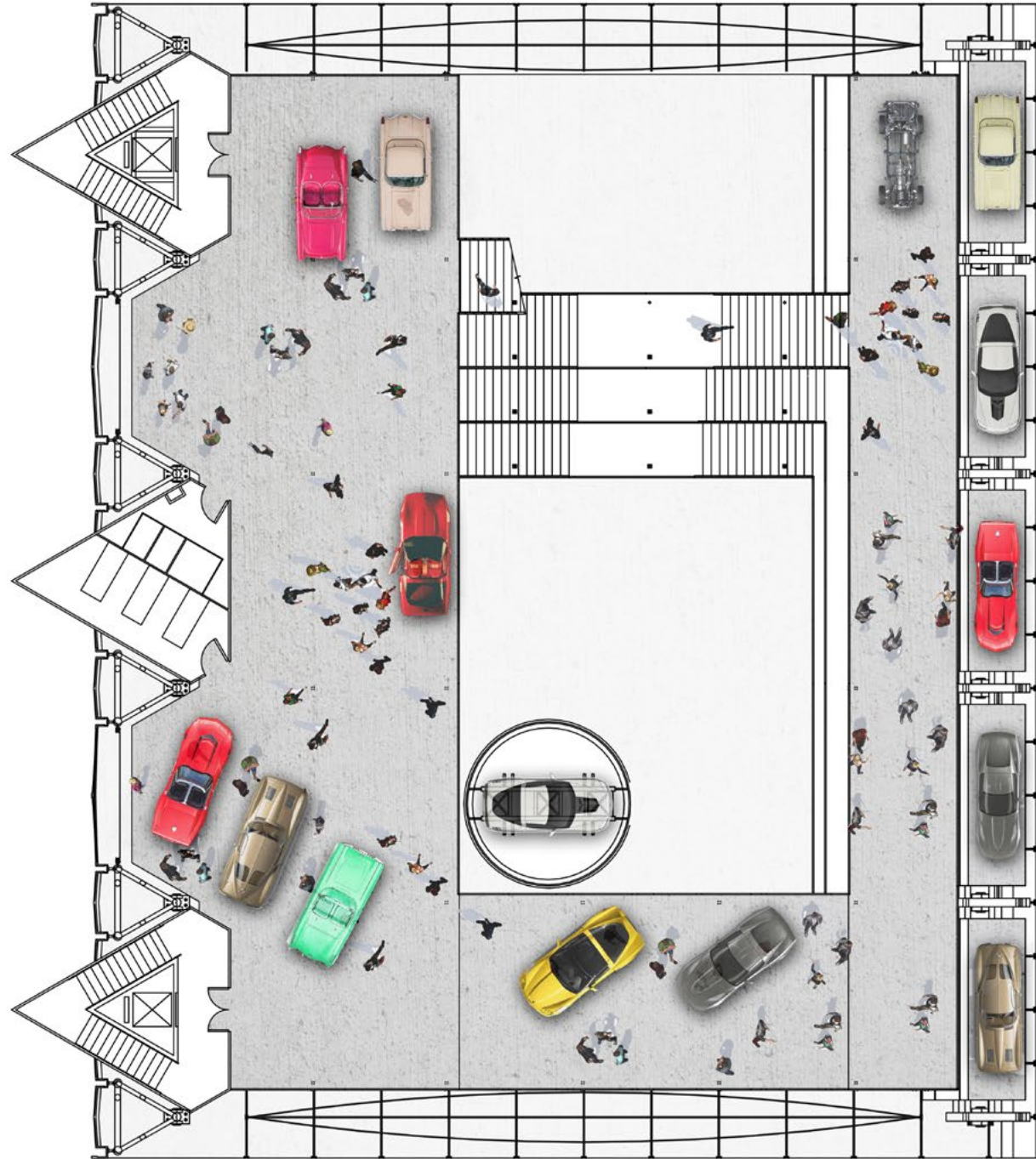


SECTION B-B



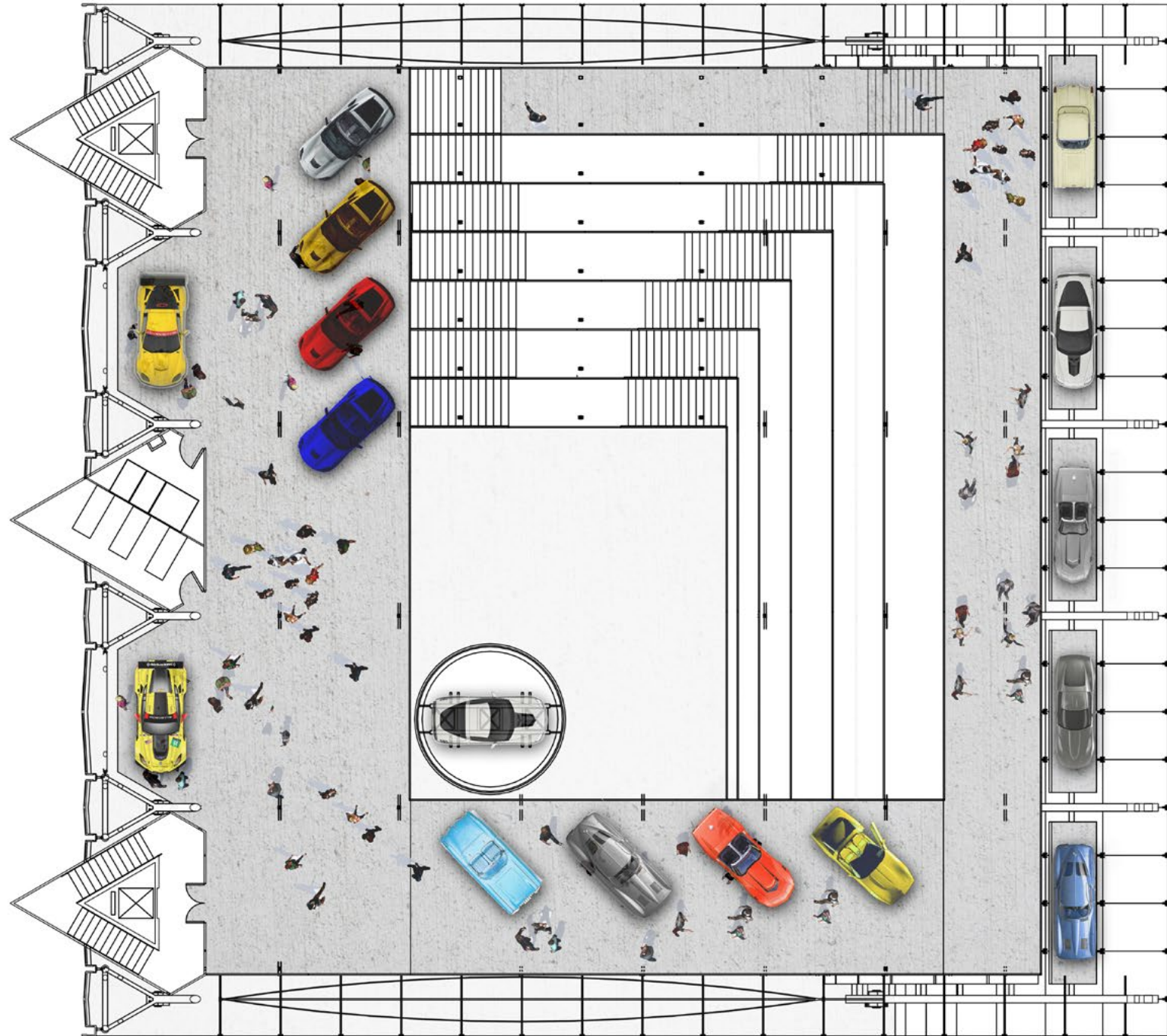


GROUND FLOOR PLAN



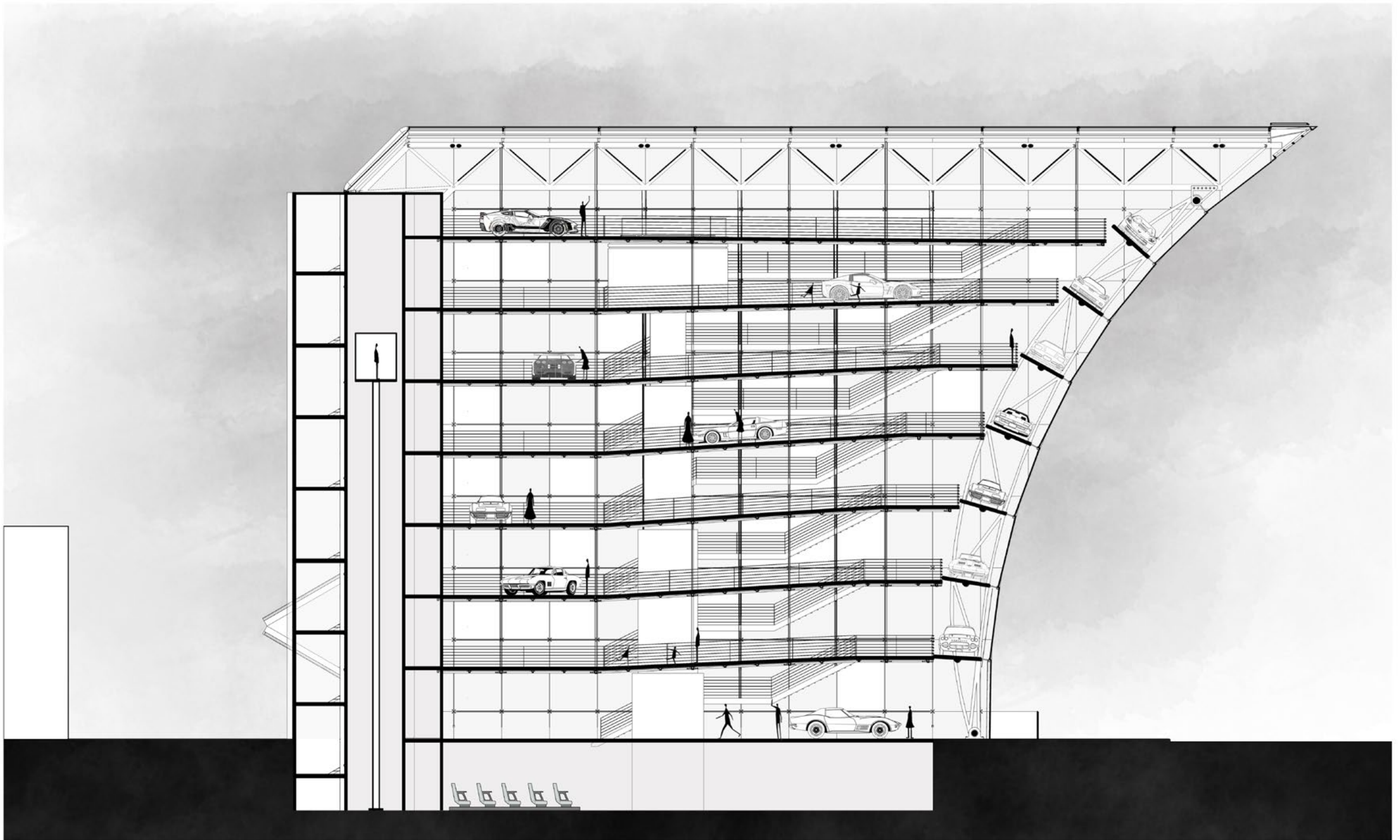
FOURTH FLOOR PLAN





TOP FLOOR PLAN





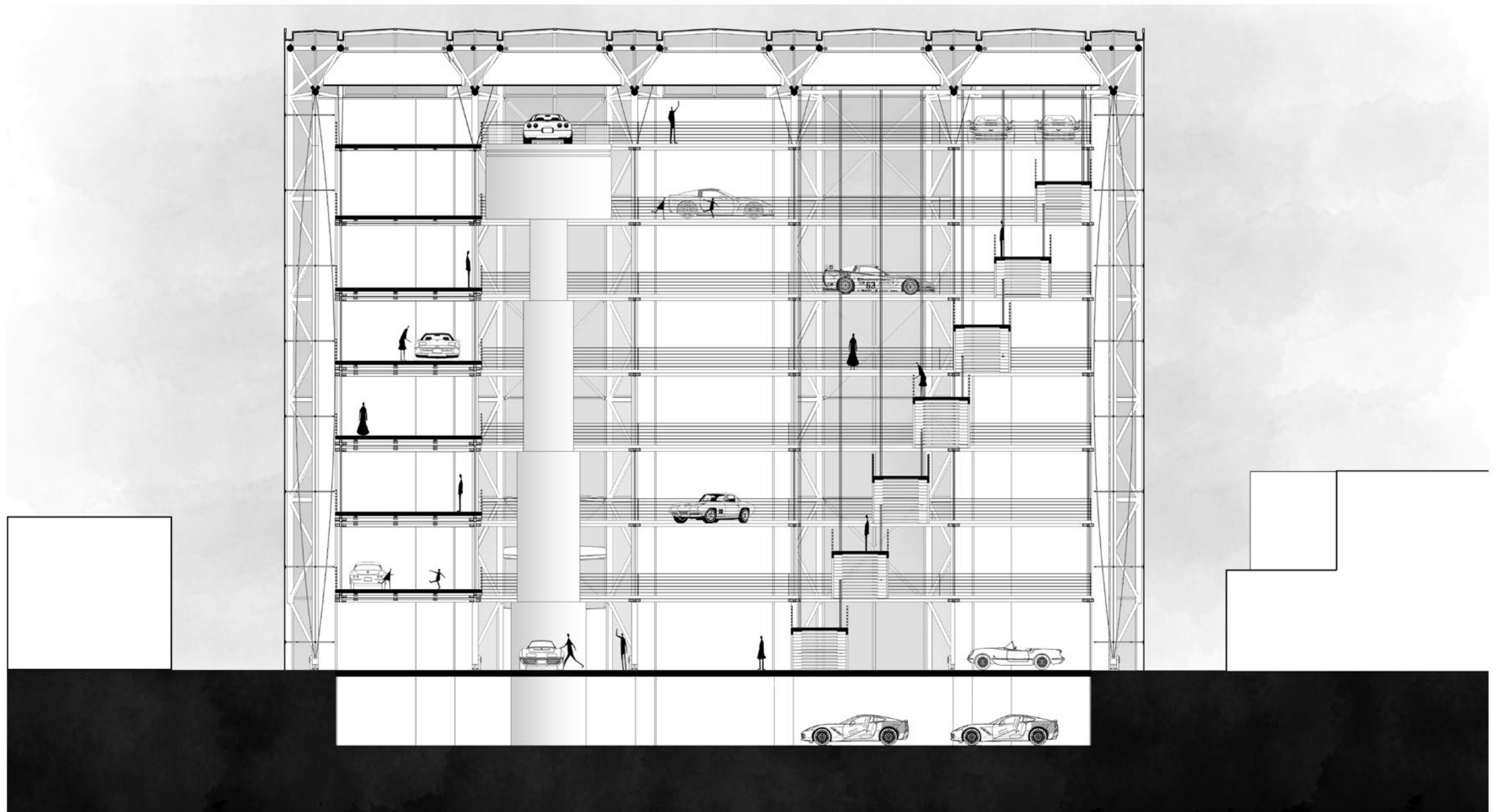
SECTION A-A





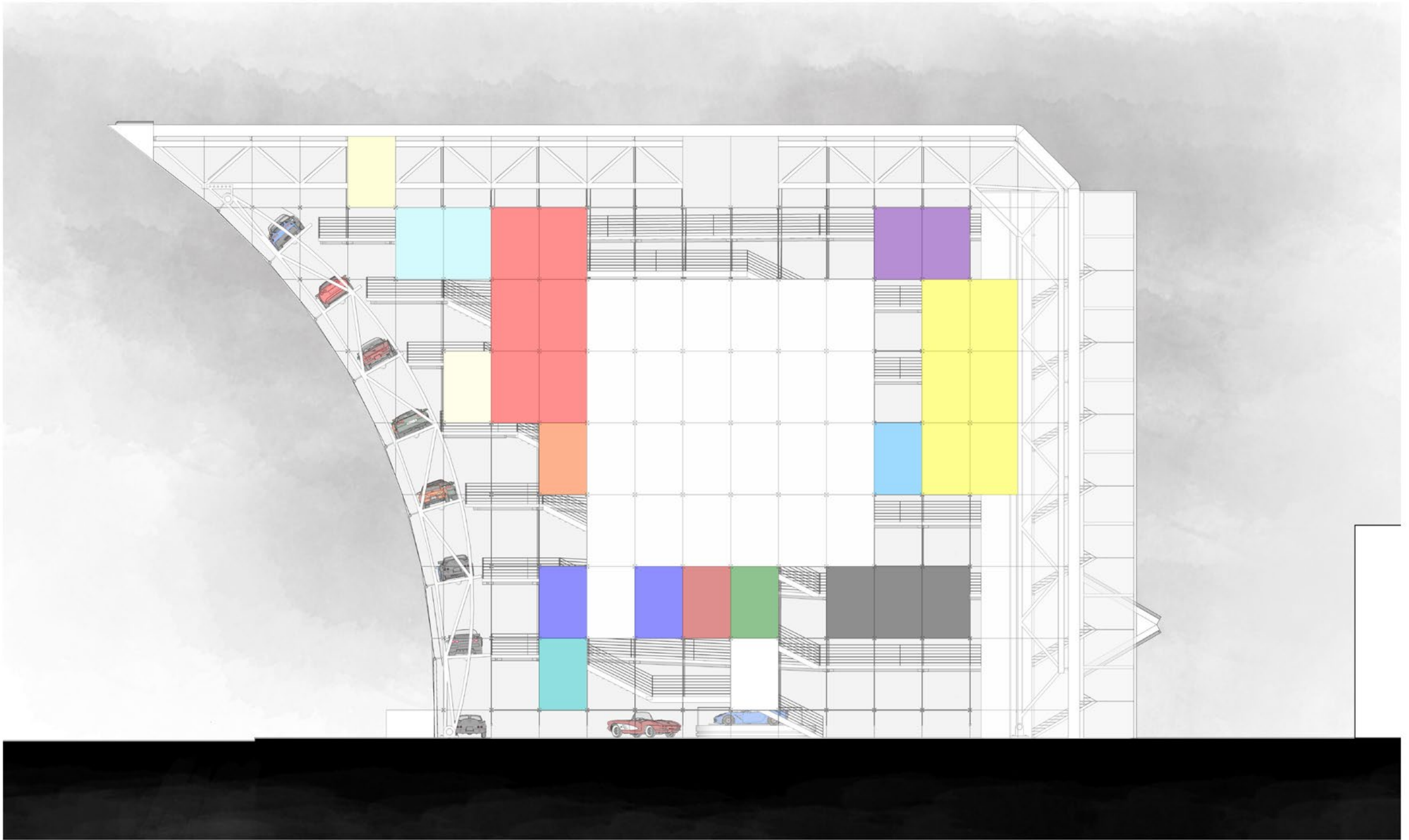
SECTION B-B





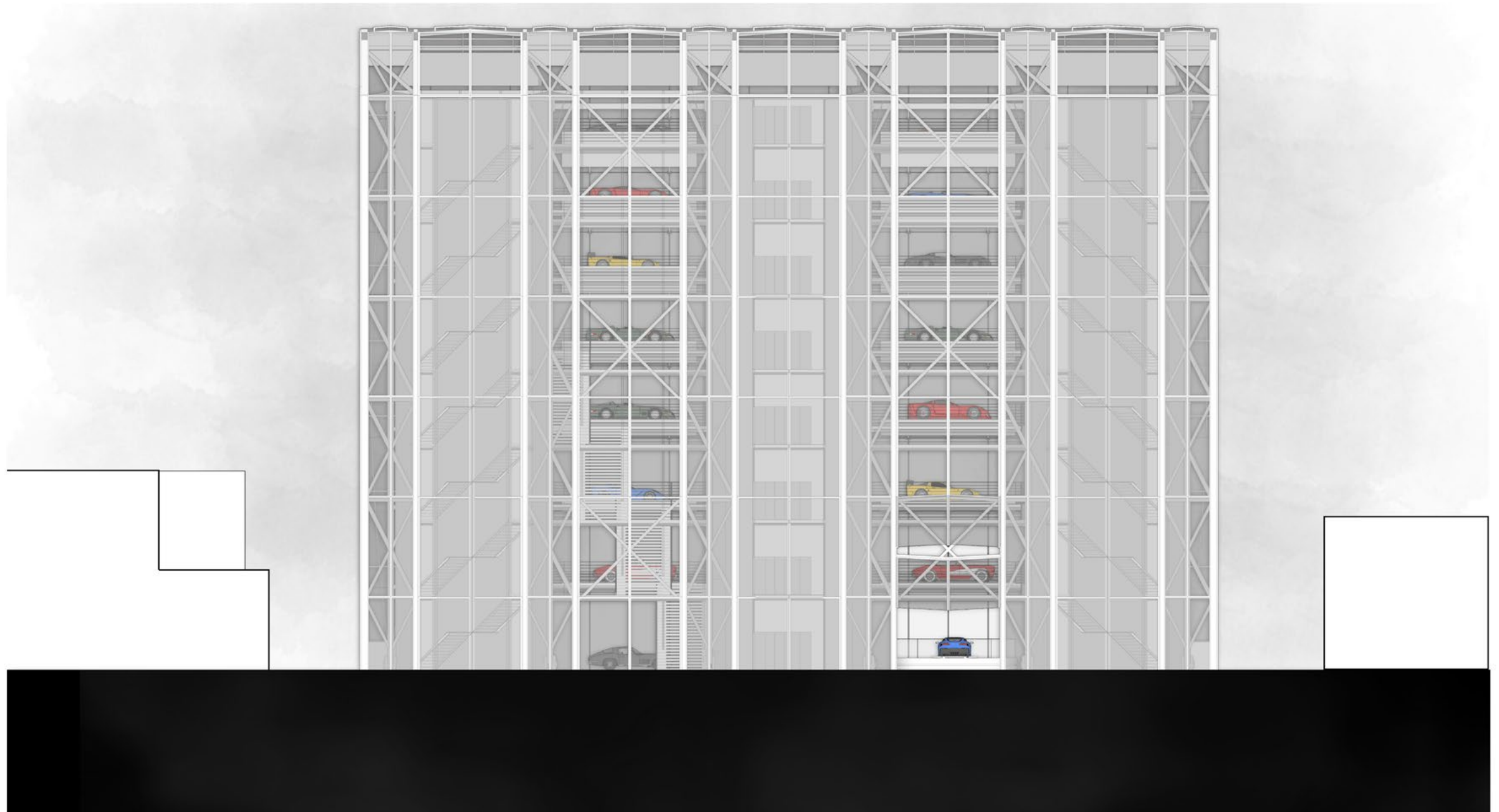
SECTION C-C





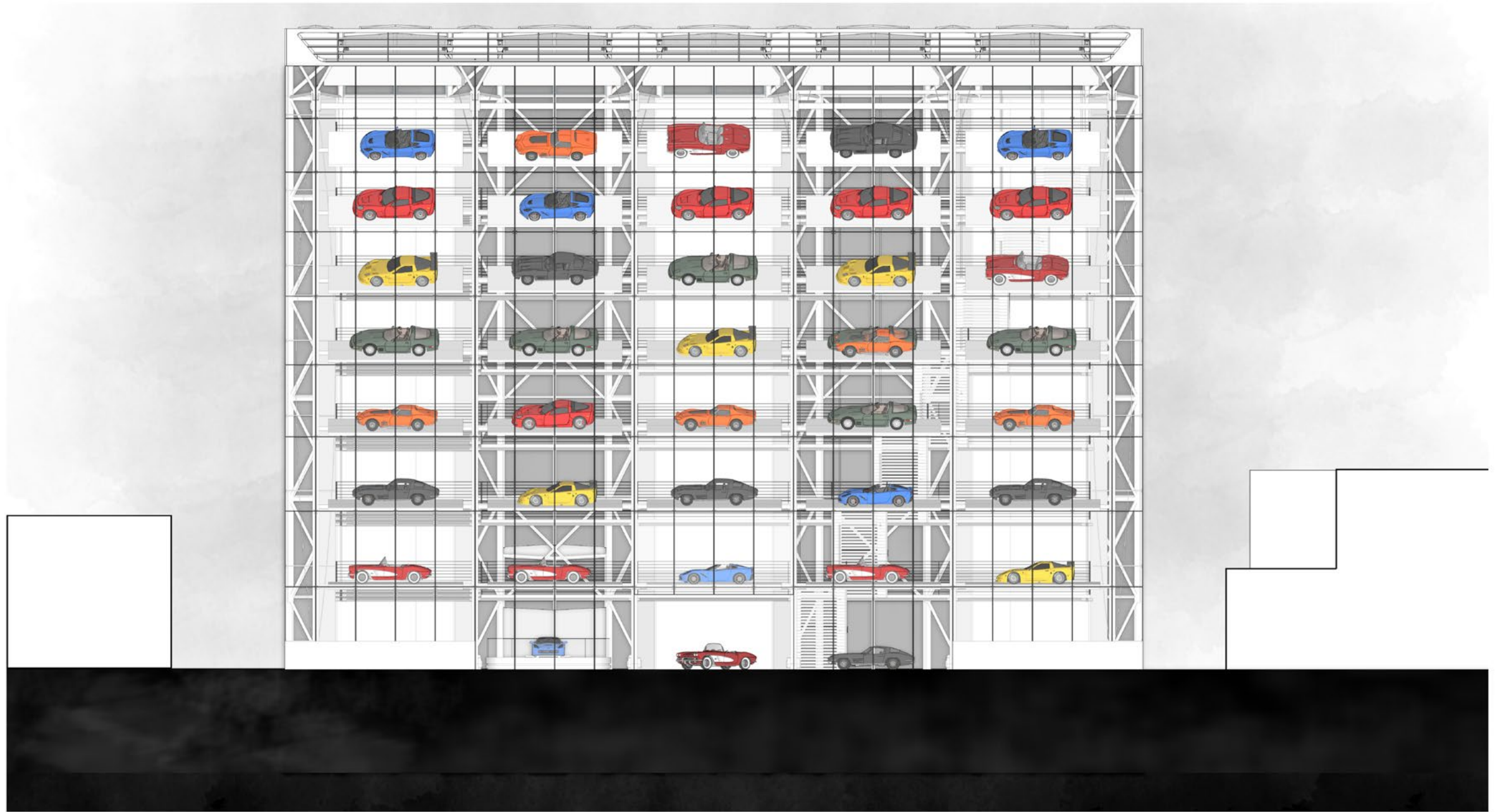
SOUTH FACADE





EAST FACADE

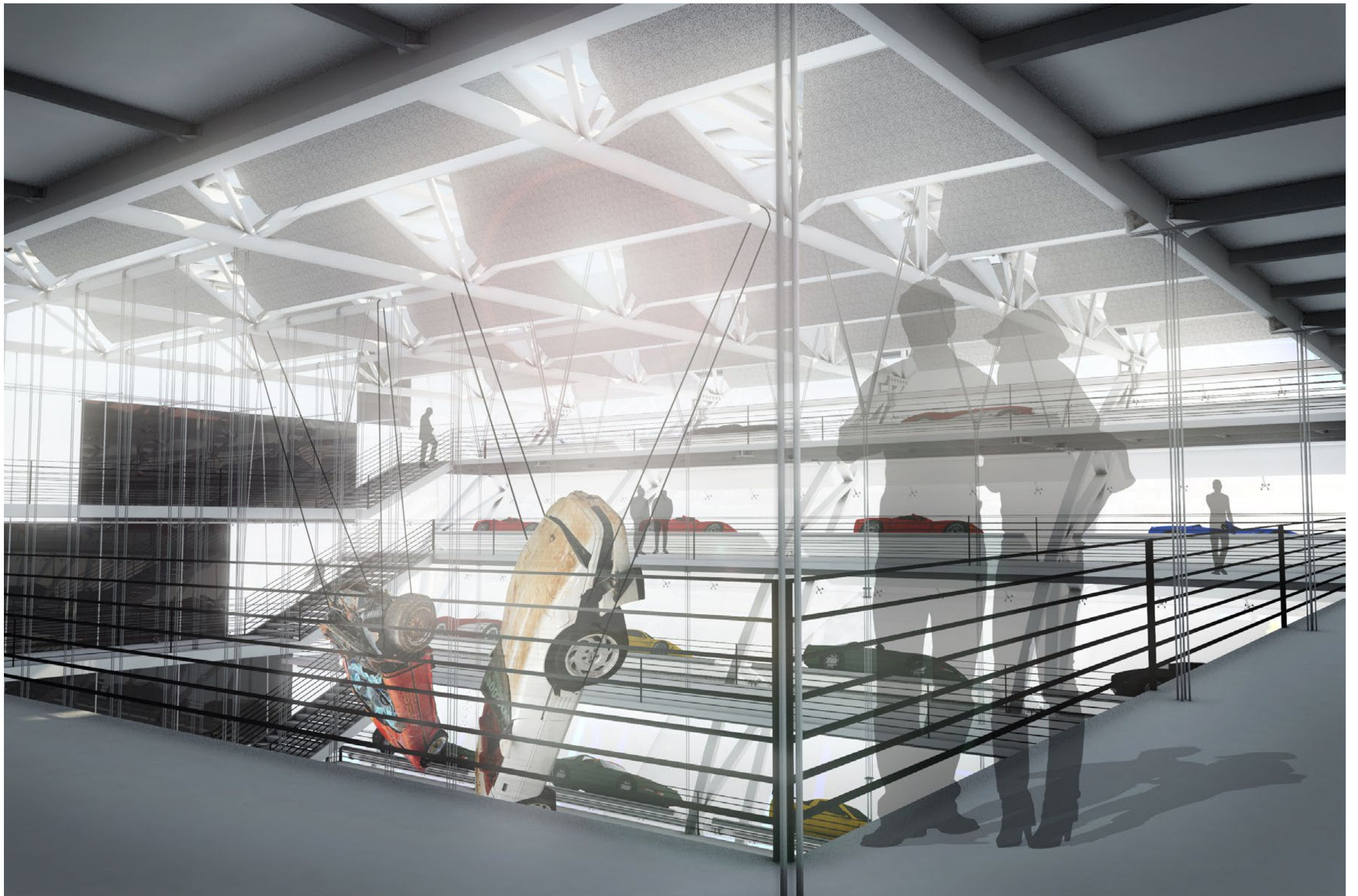




WEST FACADE

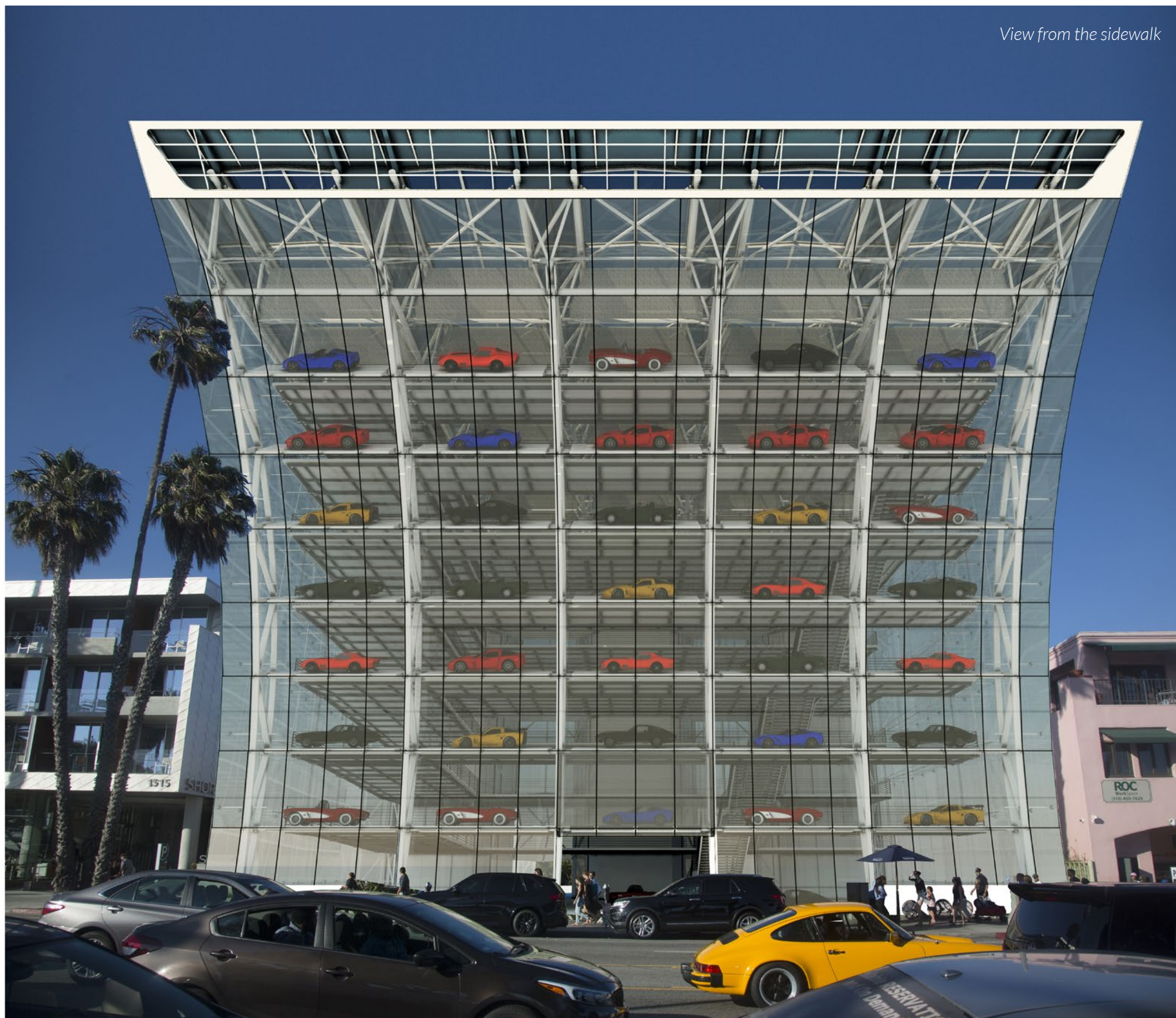


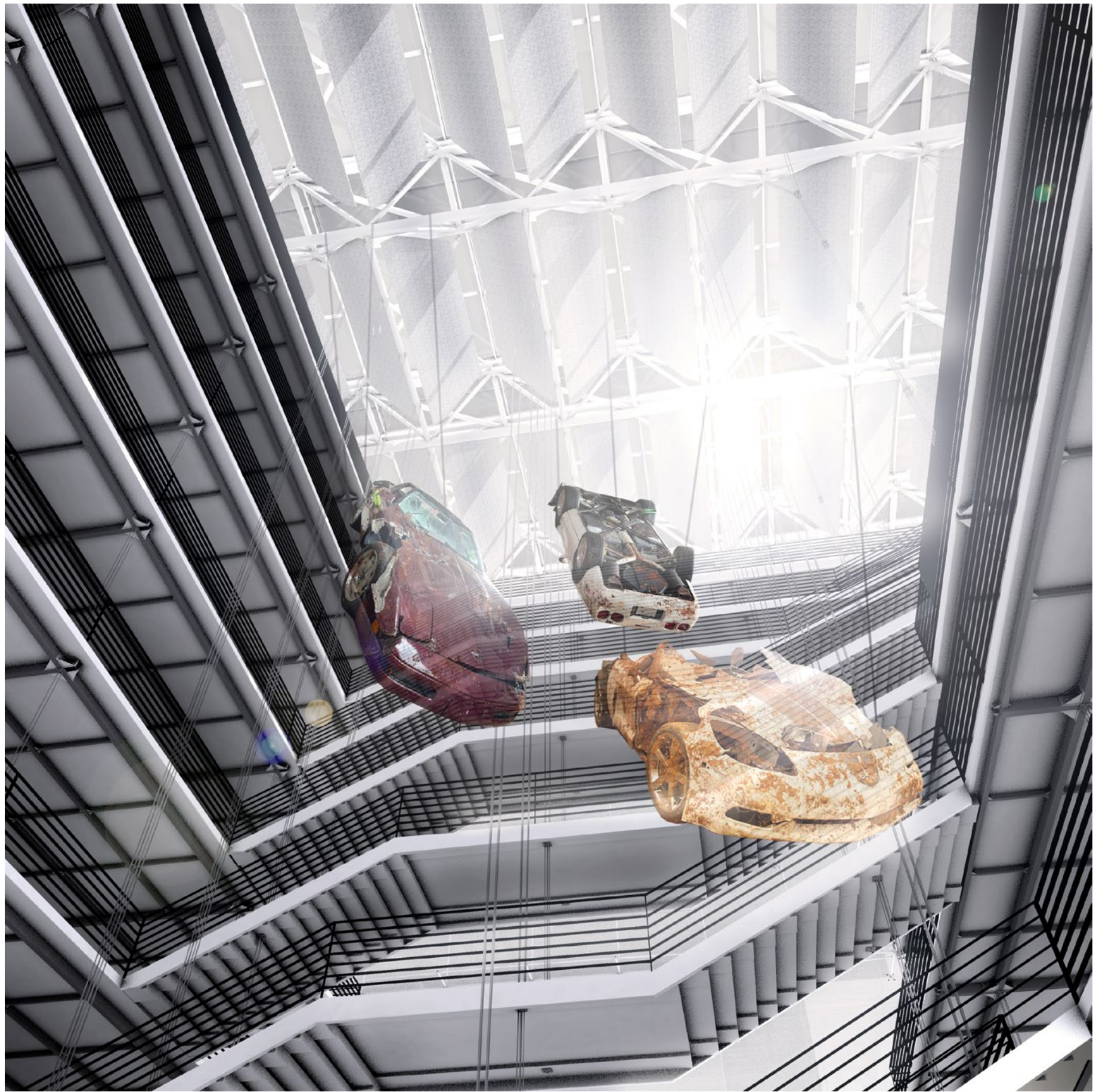




The interior of the museum hints toward historic events such as the sinkhole accident and other events in the life of the Corvette. The organization of the Corvette Museum is based on the New York Guggenheim Museum with a ramp descending around the building. The center atrium of the building holds suspended Corvettes damaged in 2014 accident.

View from the sidewalk





CONCLUSION

The museum aims to give people an unprecedented experience in an automobile museum. Automobiles are presented similar to a framed picture. Unlike other museums, the critical collective part of the collection can be best appreciated from the sidewalk. The building itself does not use any car elements directly, but is inspired by the structural frame and the advancements in the technologies of the Corvette. With an absence of columns the interior of the museum offers the entire collection at once without any obstruction. Aside from the perfect vehicles on display, the museum also houses a part of the old museum with a place for the Corvettes damaged in the 2014 sinkhole accident

BIBLIOGRAPHY

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