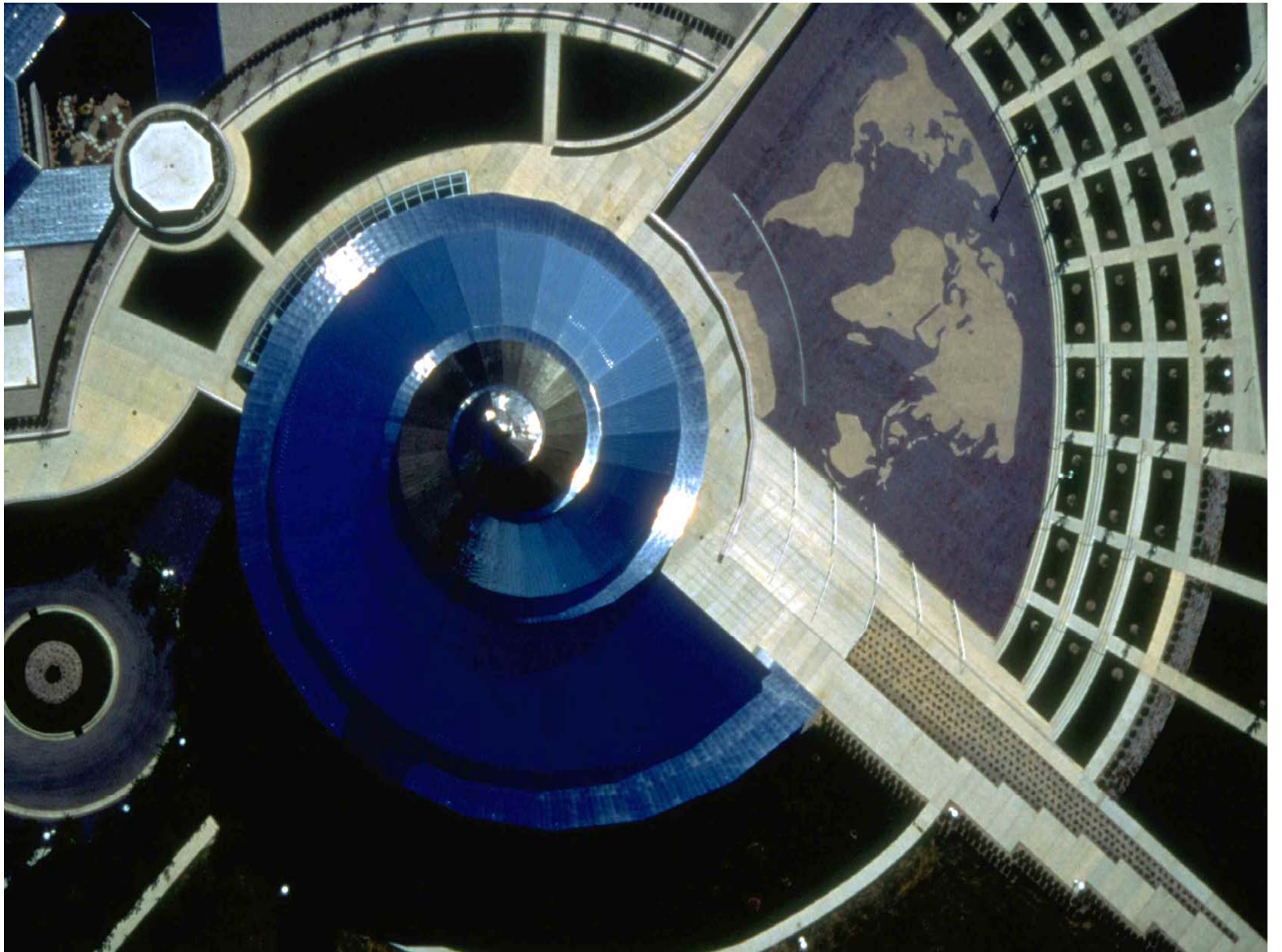


Architectural Sheet Metal

A. ZAHNER



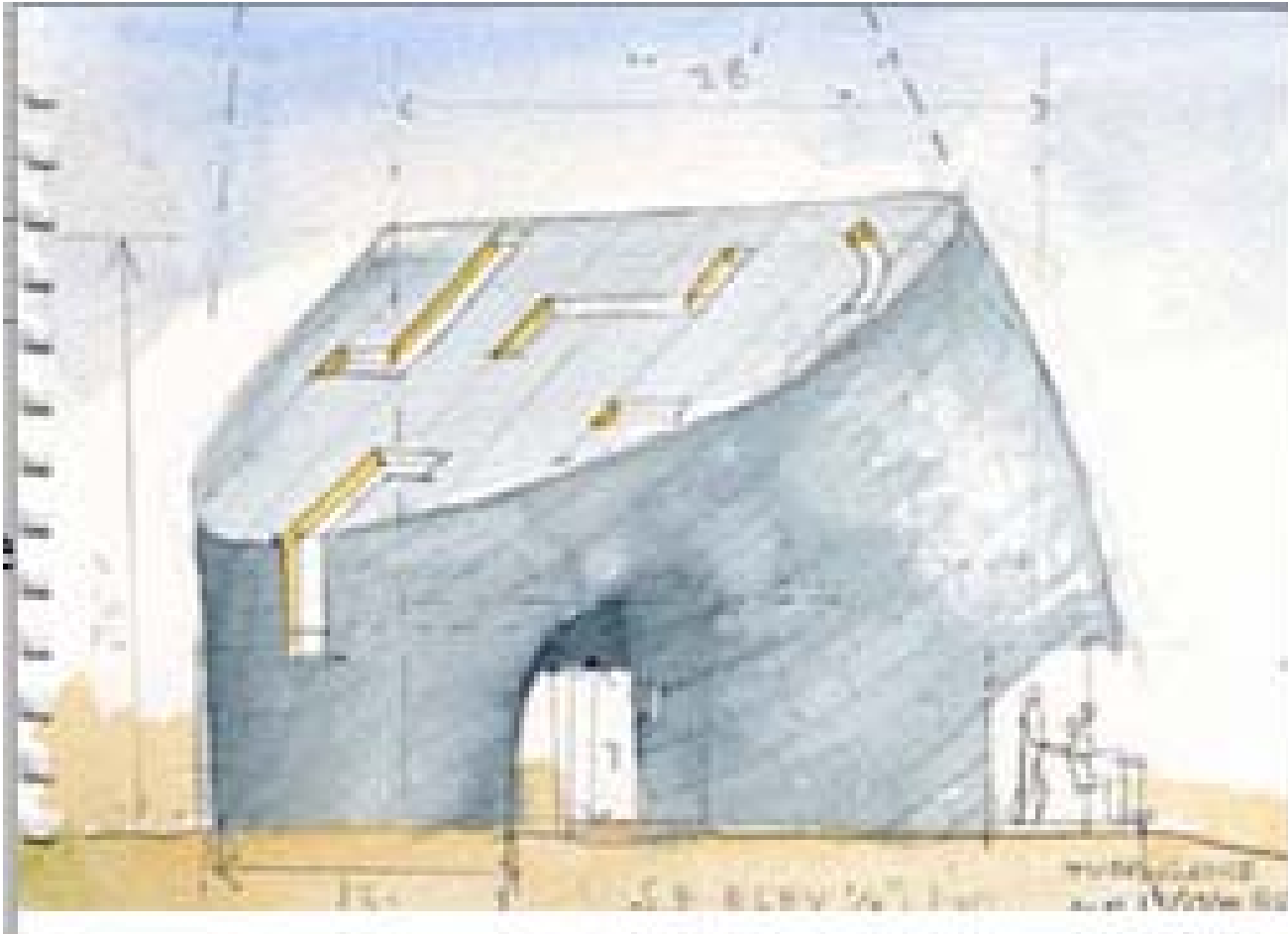


Architectural Sheet Metal

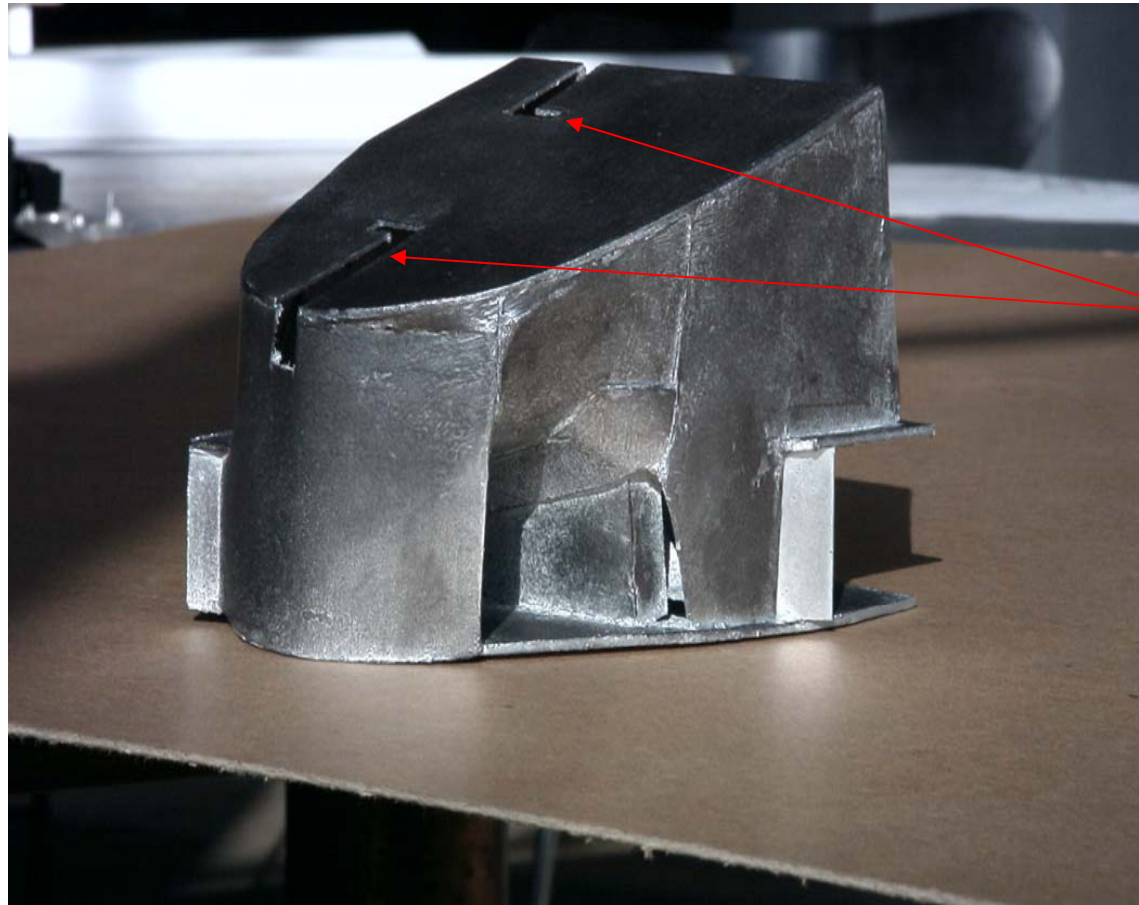


Case Study:

Tuttle Residence



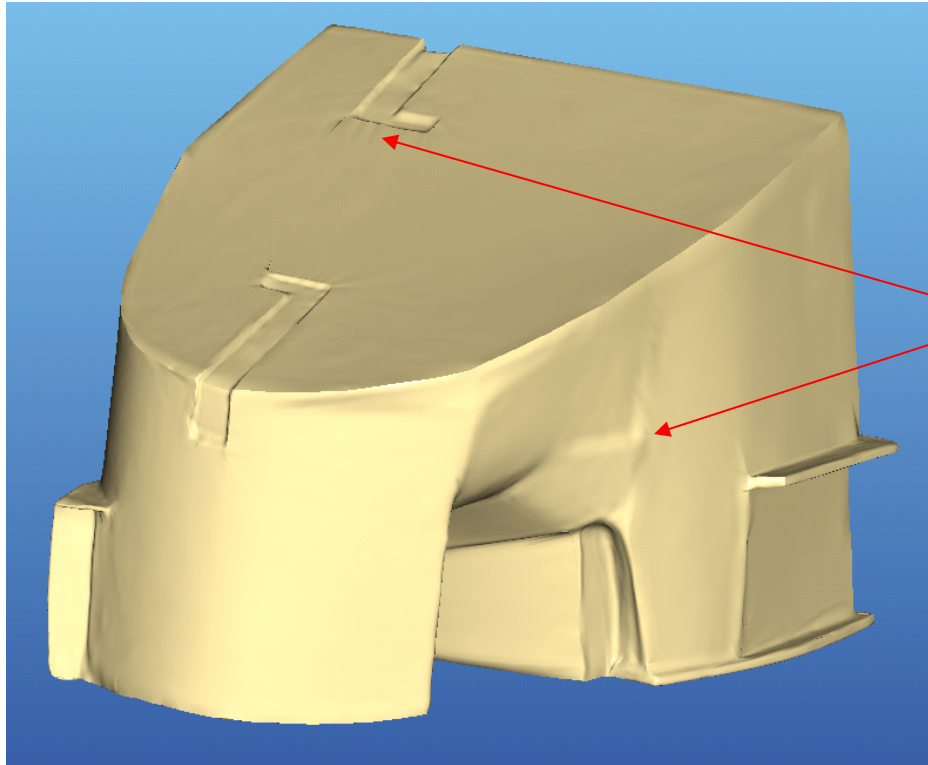
Steven Holl's water color sketch of the project.



Model size was approximately 4" tall.

Skylights.

Working from Holl's watercolor sketches, his office produced this cardboard model.



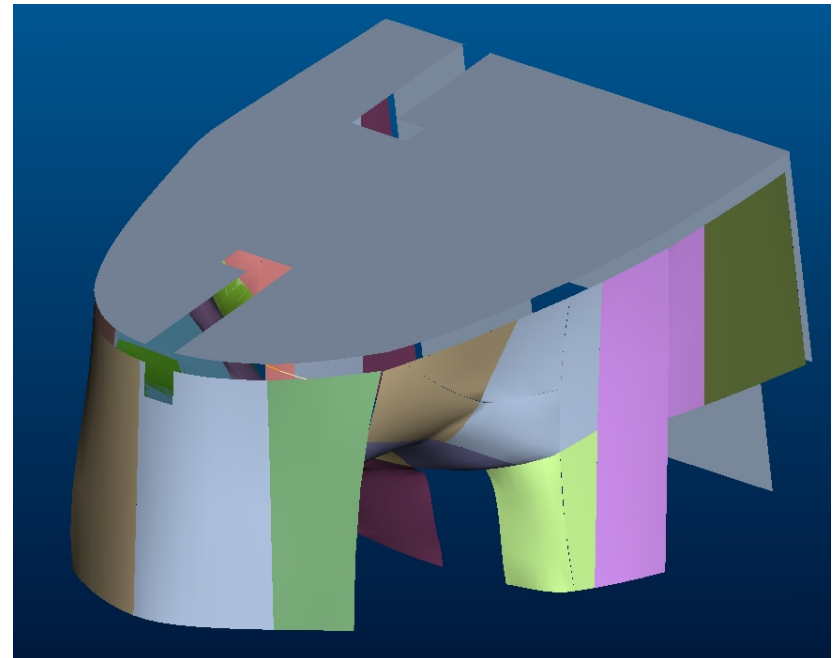
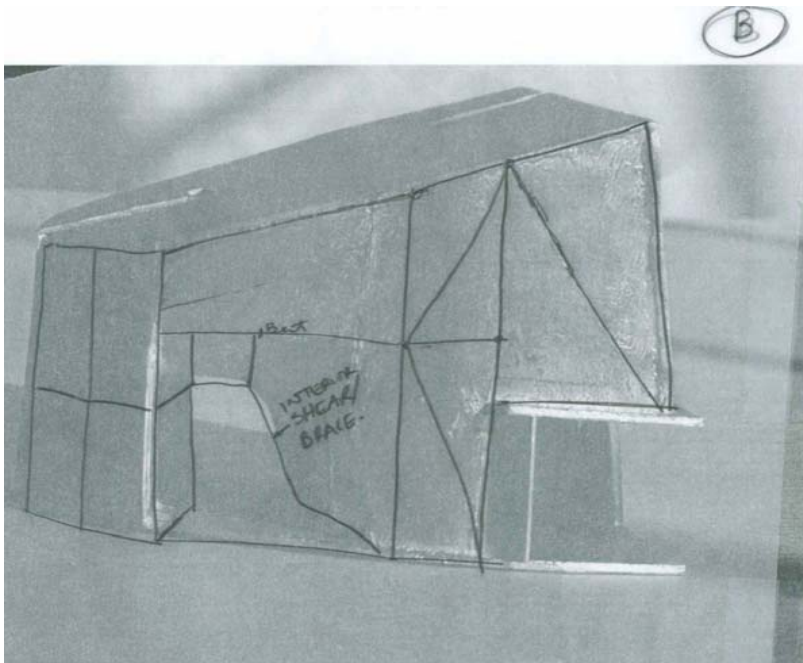
Resolution of our scan was extremely high.

Picked up crinkles in the card board and glue gun droppings.

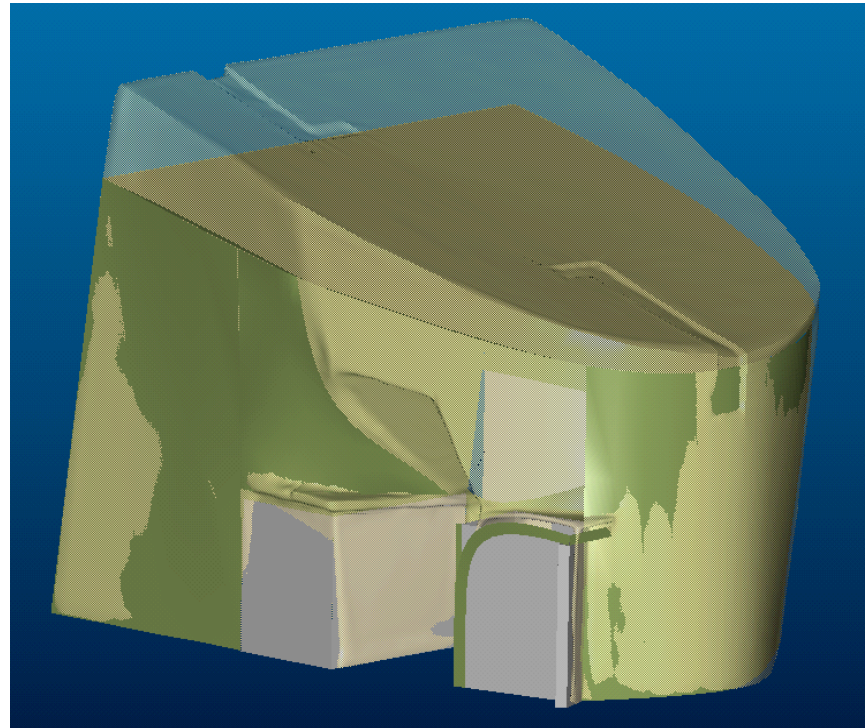
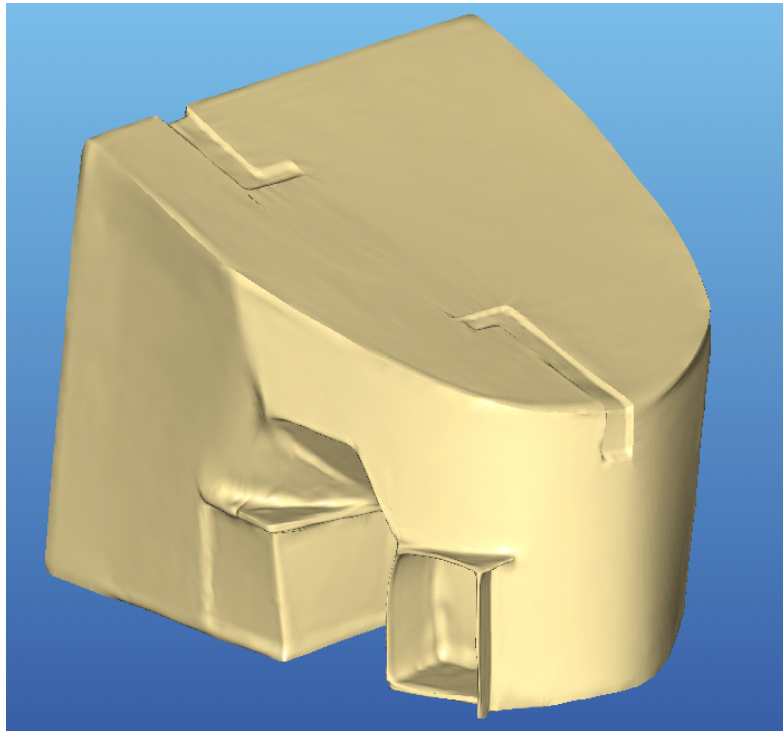
The surface of the model was captured using an X | Y | Z laser scanning device.

Scanning in the card board model resulted in a texture map of the surface.

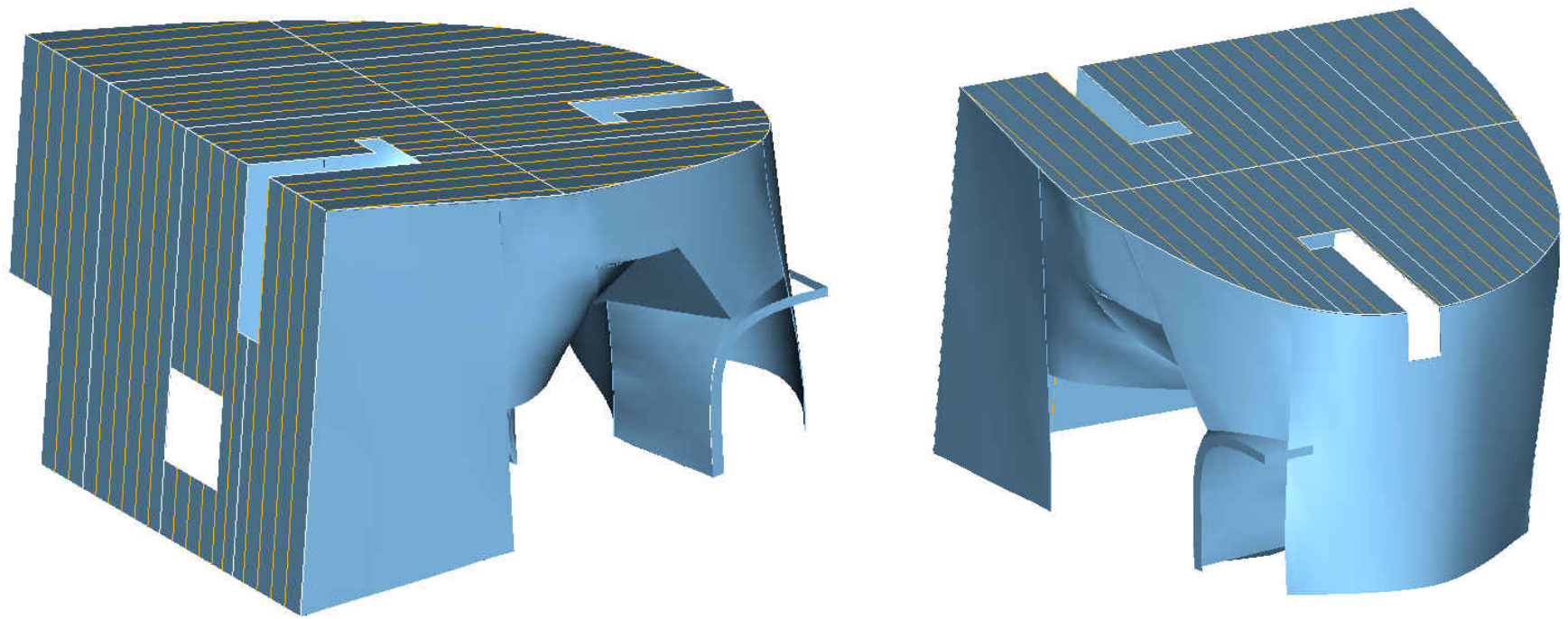
This information could then be imported directly into the computer.



- 1] Early study of panel layout using trace paper overlay on model photo.
- 2] From there, a panel break out map is generated and placed on the master model.

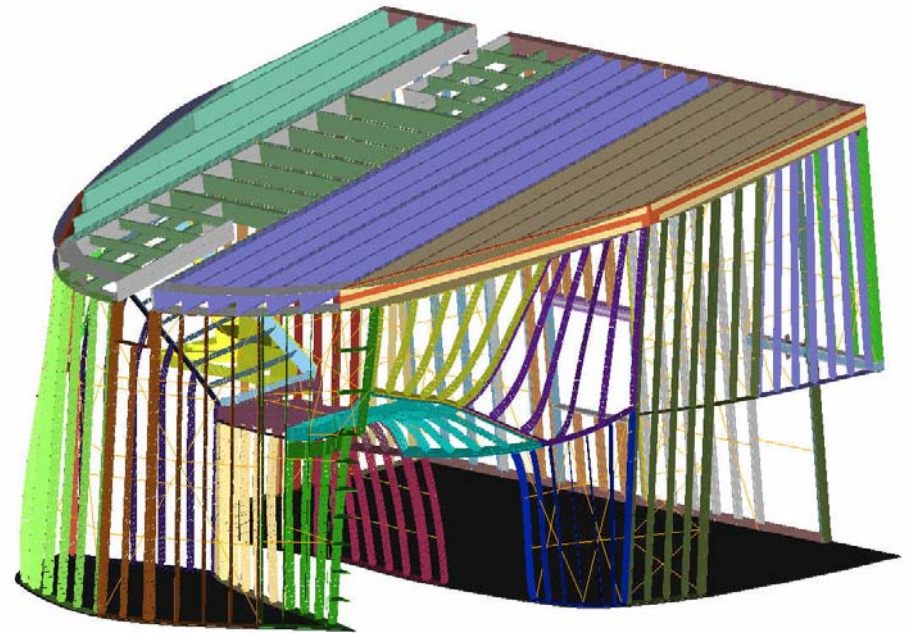
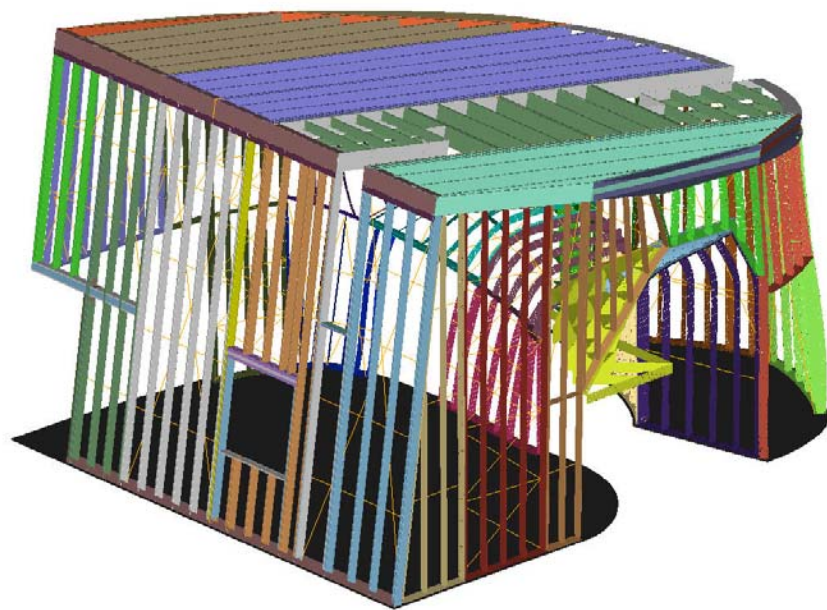


After review, the building was determined to be too tall so the computer model was adjusted to shorten the structure. The green areas on the right represent the surfaces that were impacted by the change in height.

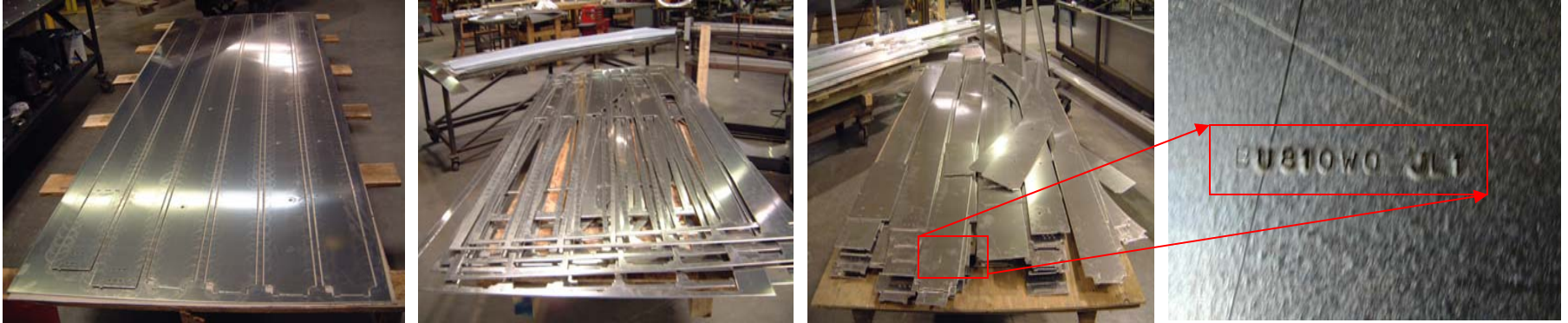


Panel break out.

The scanned surface was manipulated to provide the correct window openings.



Panel maps.



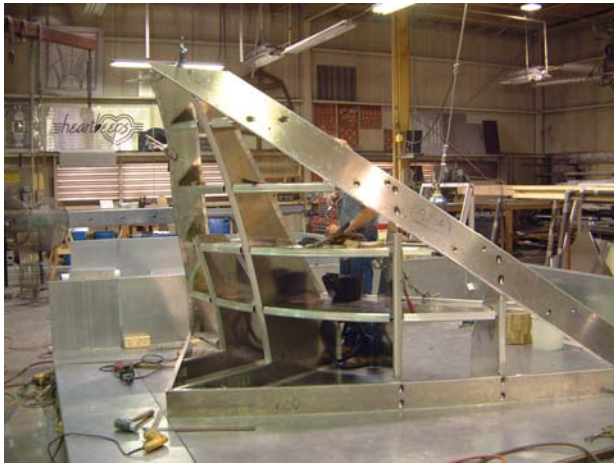
- 1] Parts are nested together in the computer before the material is cut.
- 2] Scrap material is collected for recycling.
- 3] Components are sorted for fabrication.
- 4] Parts are all numbered to identify components and their location.



- 1] Extrusions are attached to the flat component.
- 2] Finished ribs.
- 3] Kan Ban carts carry components to the assembly area.



- 1] Master jig controls proper orientation of the panel for assembly.
- 2] Components are assembled together. Slots & tabs are pre-punched into the individual parts. No layout and measurements required.



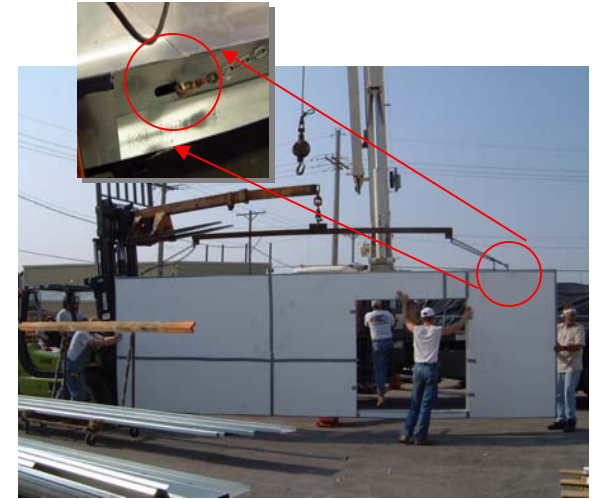
- 1] Completed panel substructure.
- 2] Exterior sheathing and waterproof membrane is applied.
- 3] Completed assembly, ready for shingle attachment.



- 1] Some panels are more complex than others.
- 2] Interior side of a completed panel.



- 1] Attaching the galvanized steel shingles.
- 2] Some panels were so complex, the order in which the shingles were installed was photographed.



- 1] Panel faces are wrapped with blue board for shipping.
- 2] Panels set out in yard prior to loading in storage containers.
- 3] Panel lifted into storage container for shipment.
Note that the panels have hooks designed right into the system.



We sent images of the tools that we needed to install the work.

The site.



A Minor Change in Scope?

TURBULENCE HOUSE- Vicenza, Italy



A difficult installation process. . .shipping around the world, language barriers, different electrical connections and swinging the parts through an arched opening onto a covered balcony. . .



The process begins. . .

- 1] The plywood template was CNC routed to the exact perimeter shape of the base by AZCO.
- 2] The first two panels are secured.
- 3] More panels are connected together.



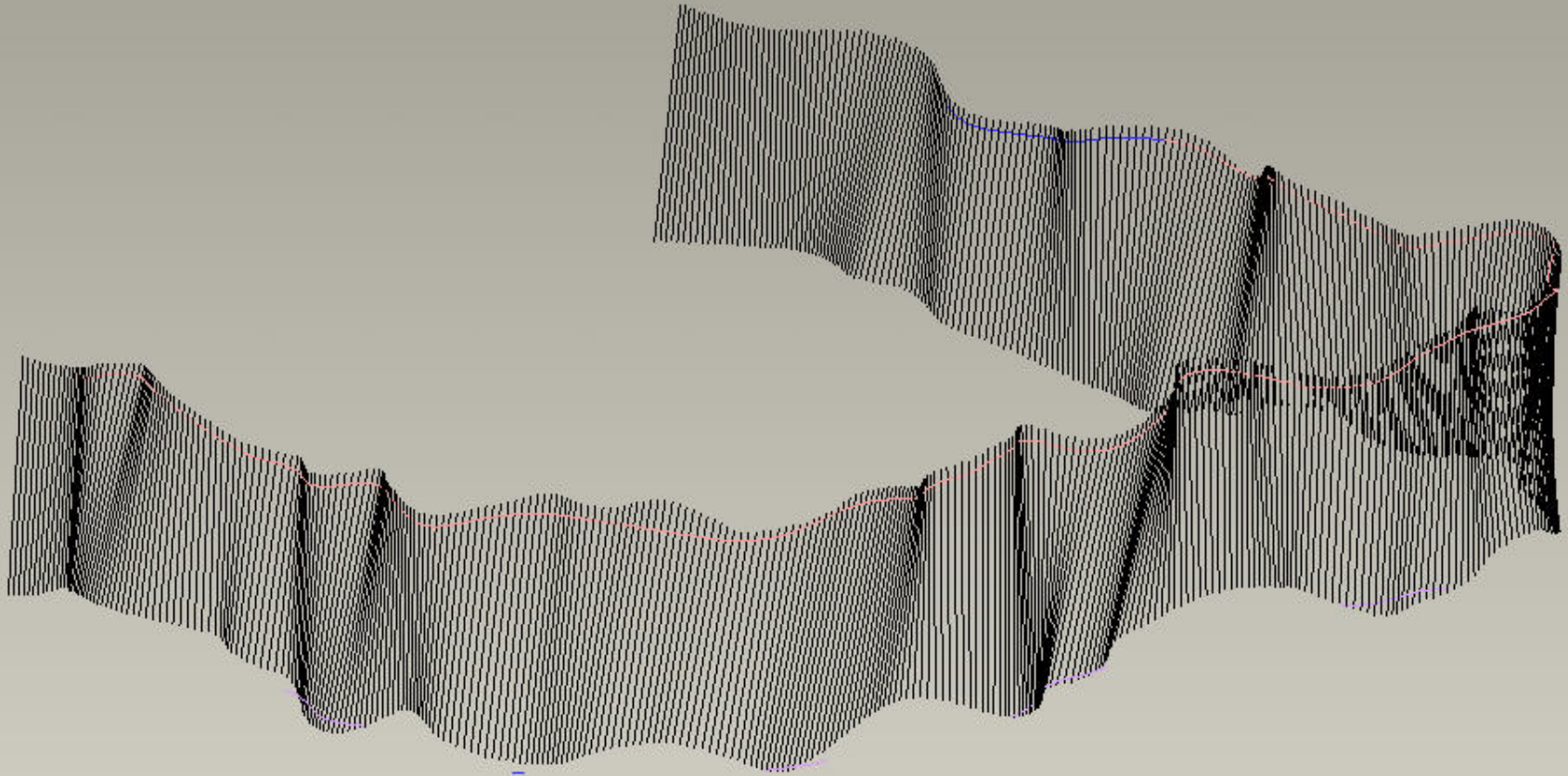
The installation process. . .





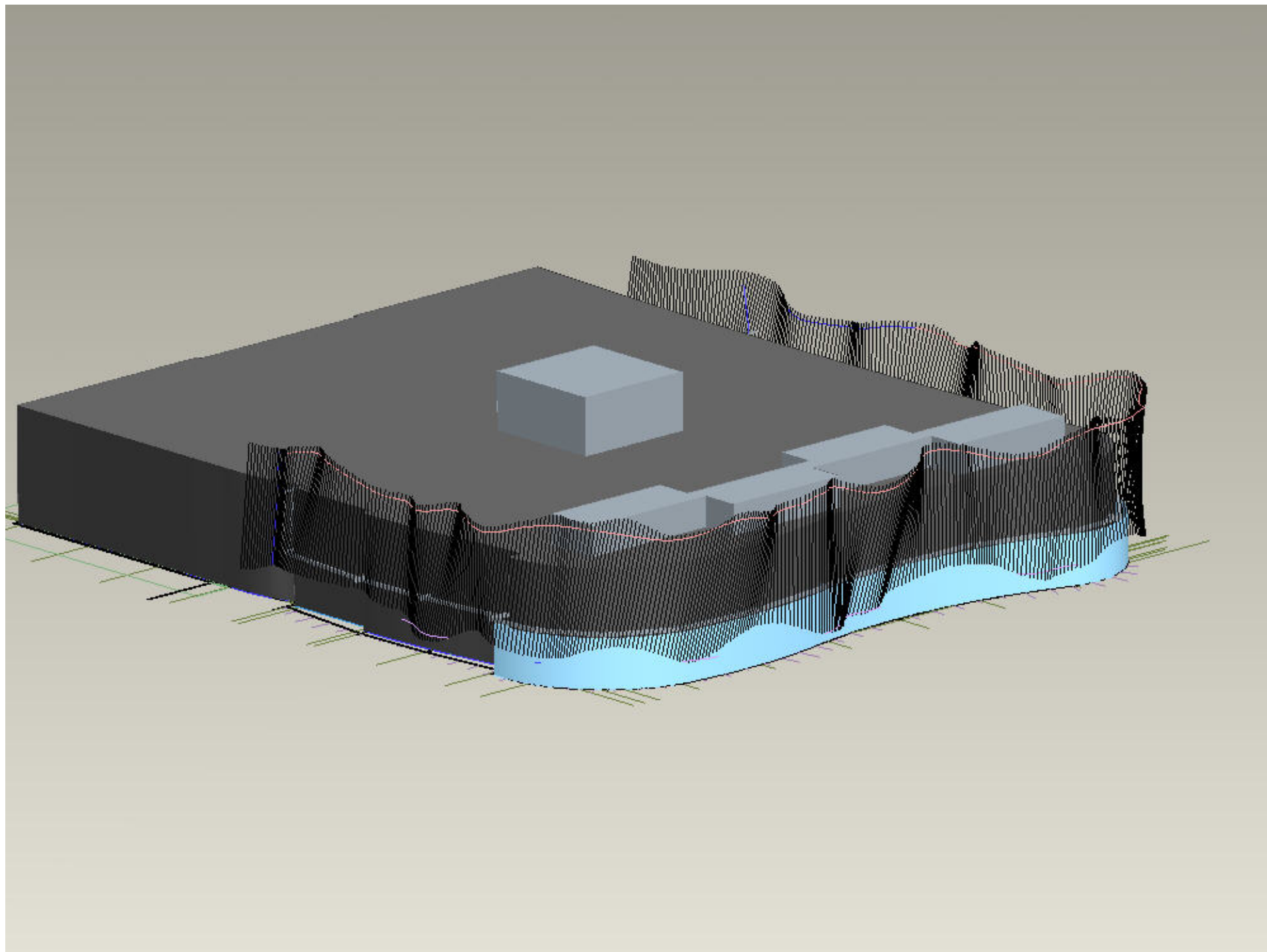


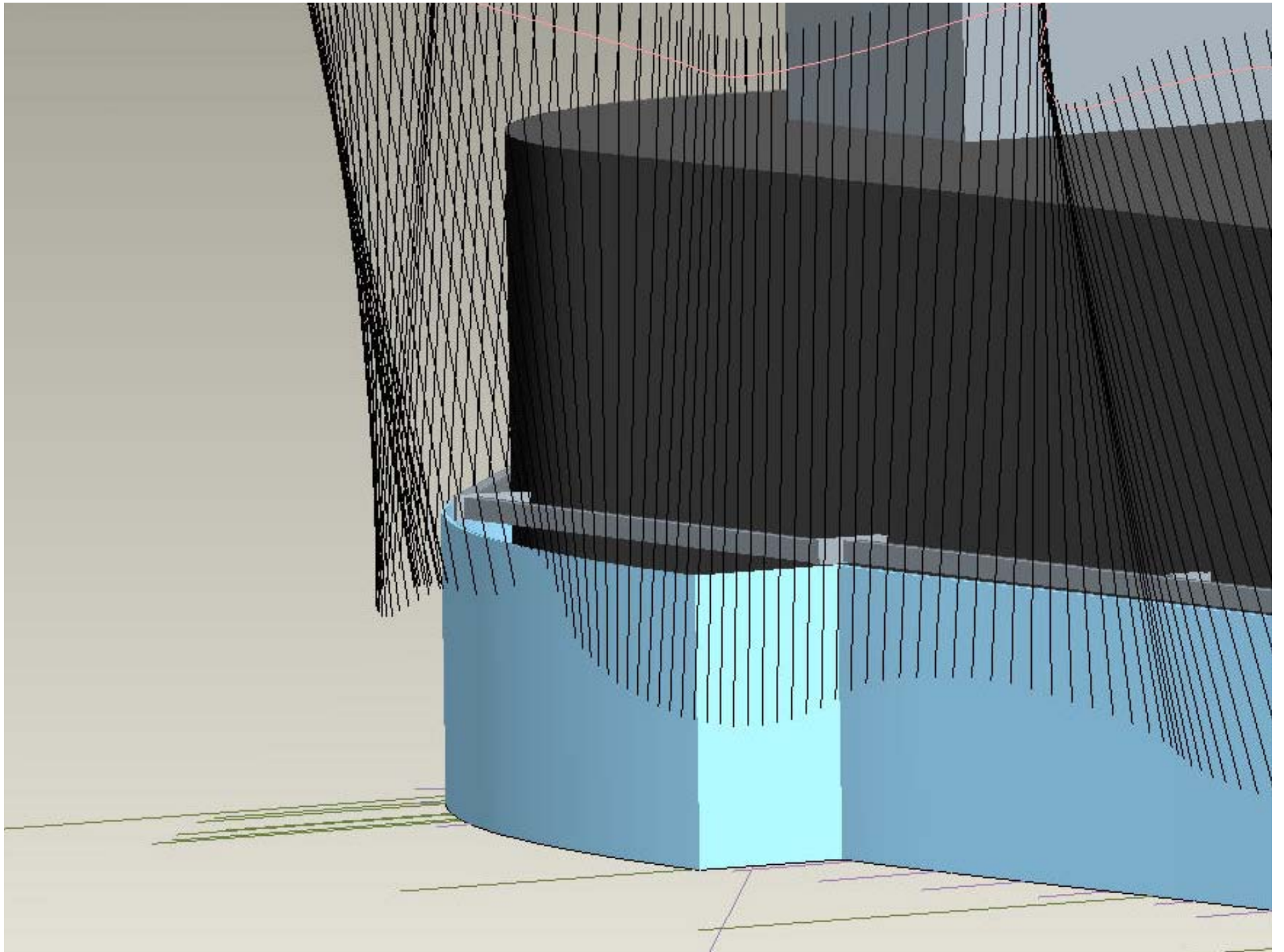
Architectural Sheet Metal

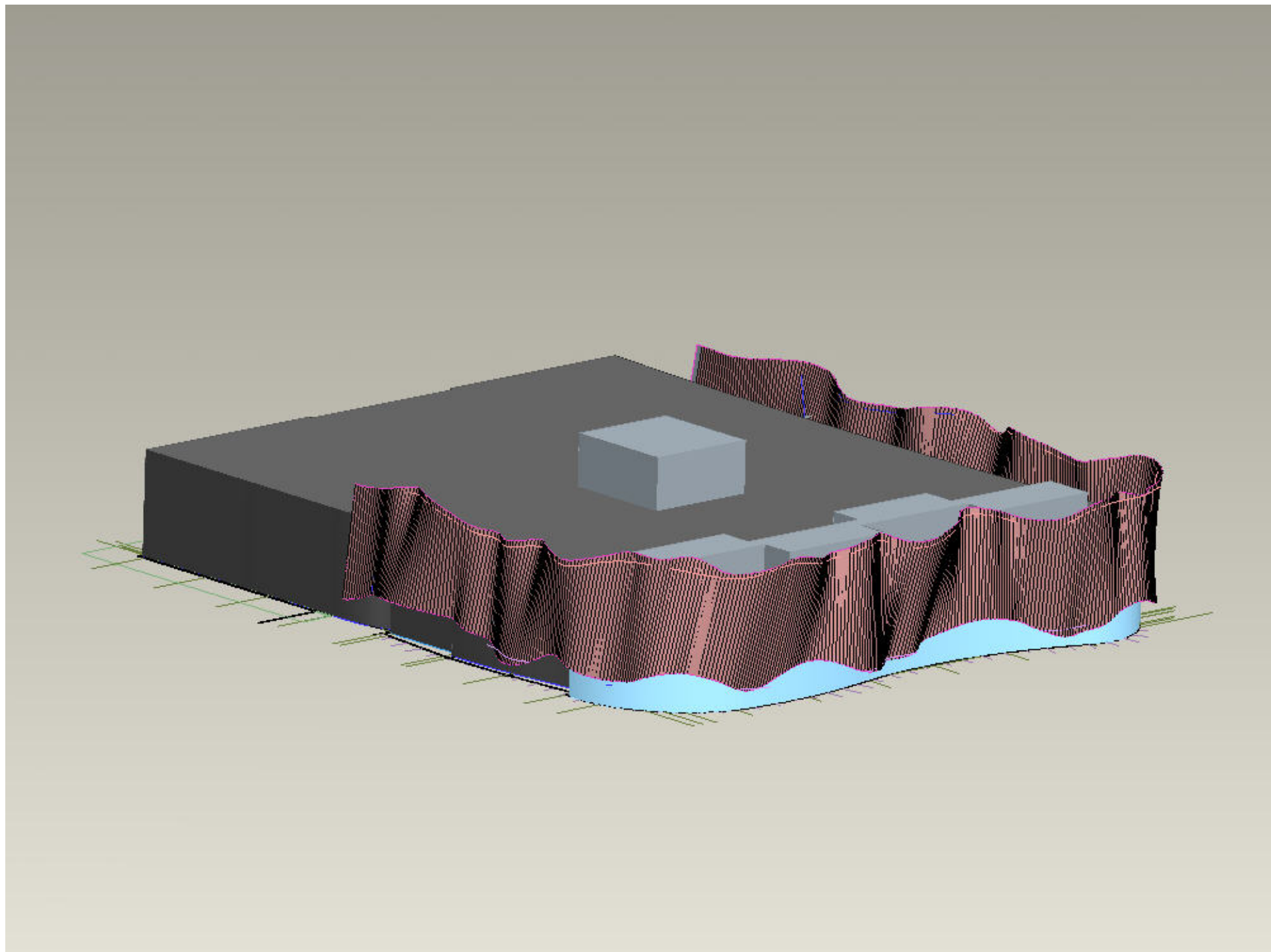


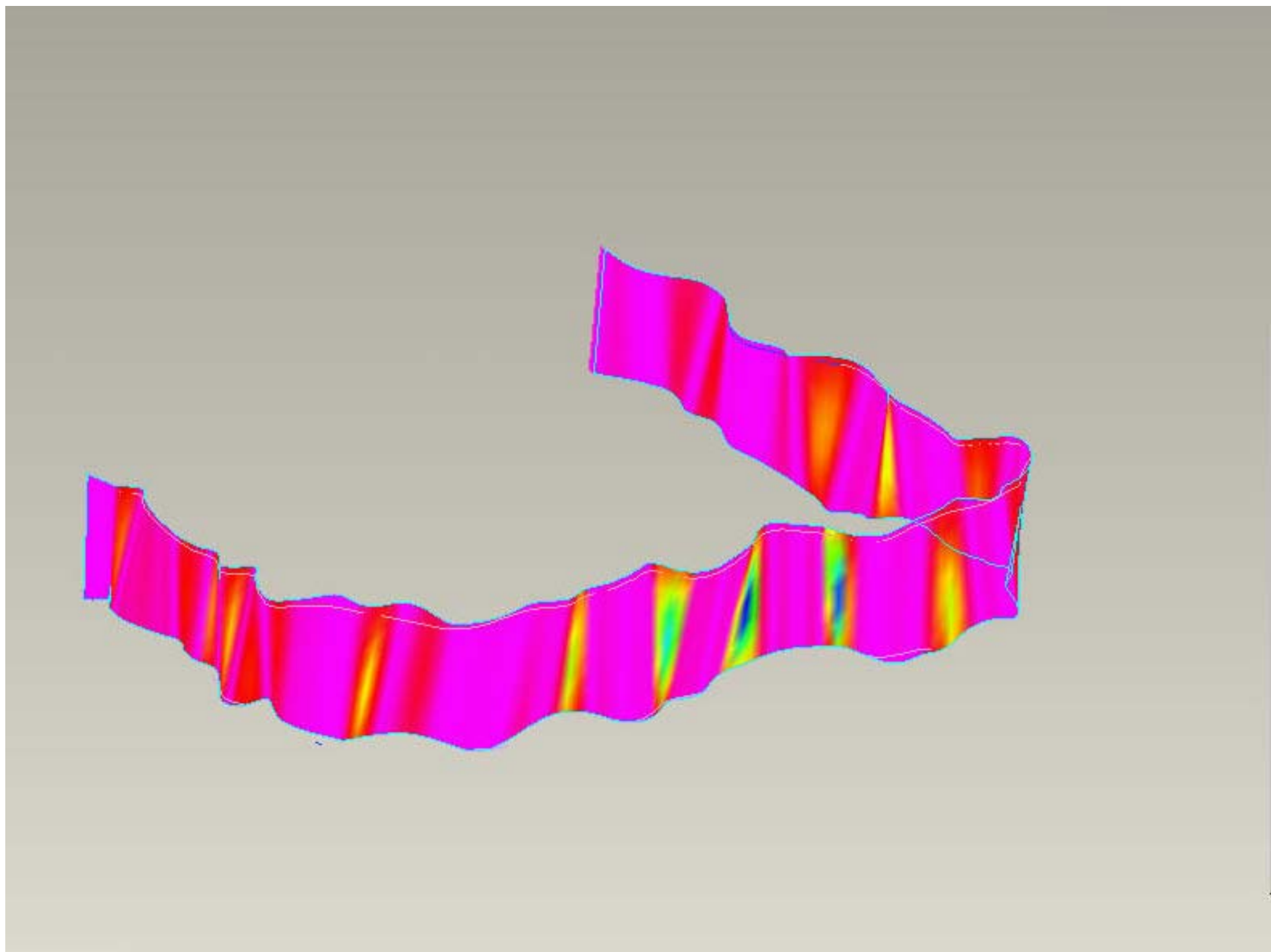
Case Study:

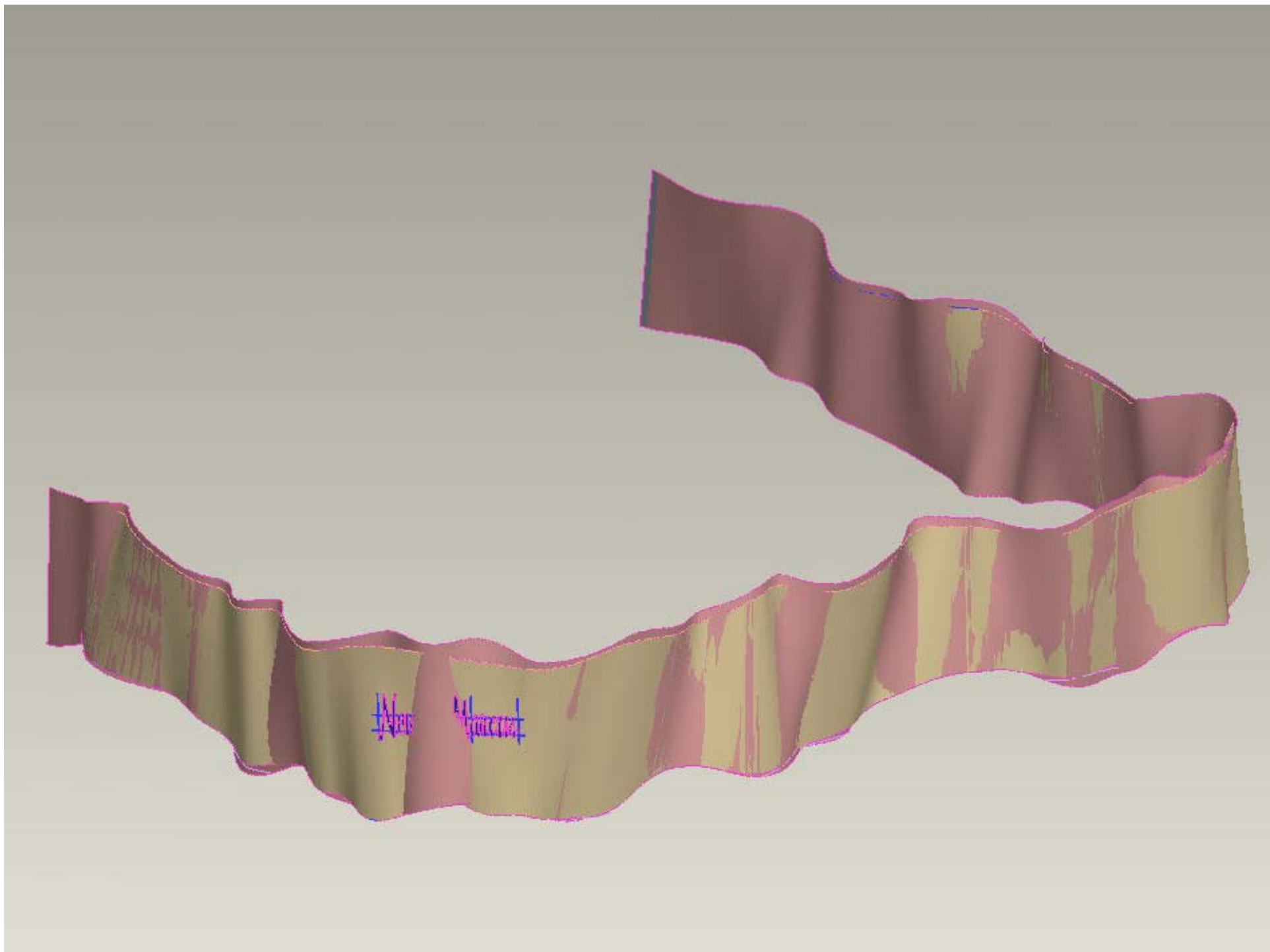
Neiman Marcus

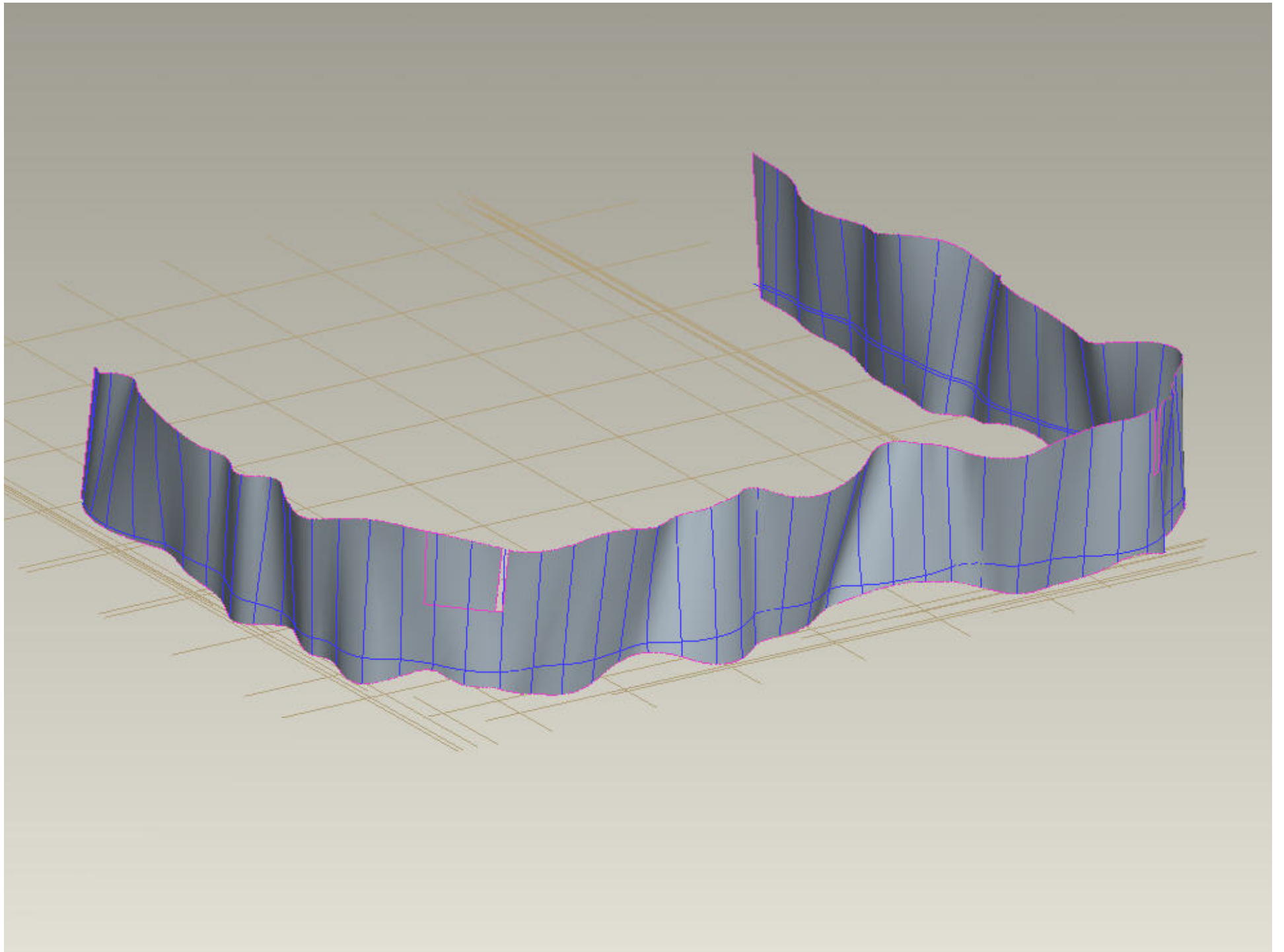


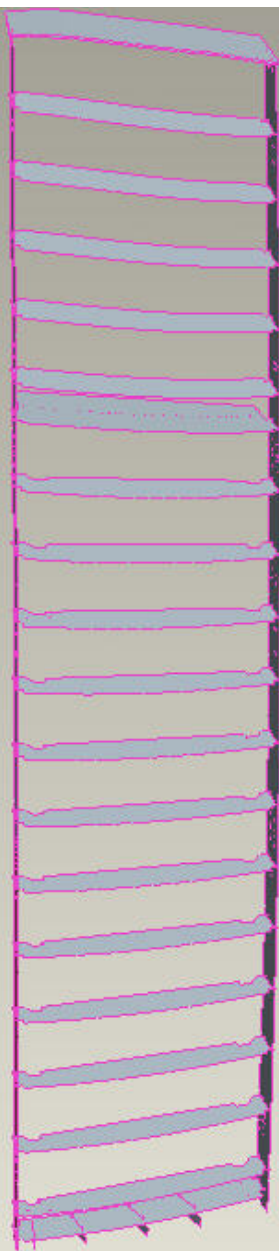


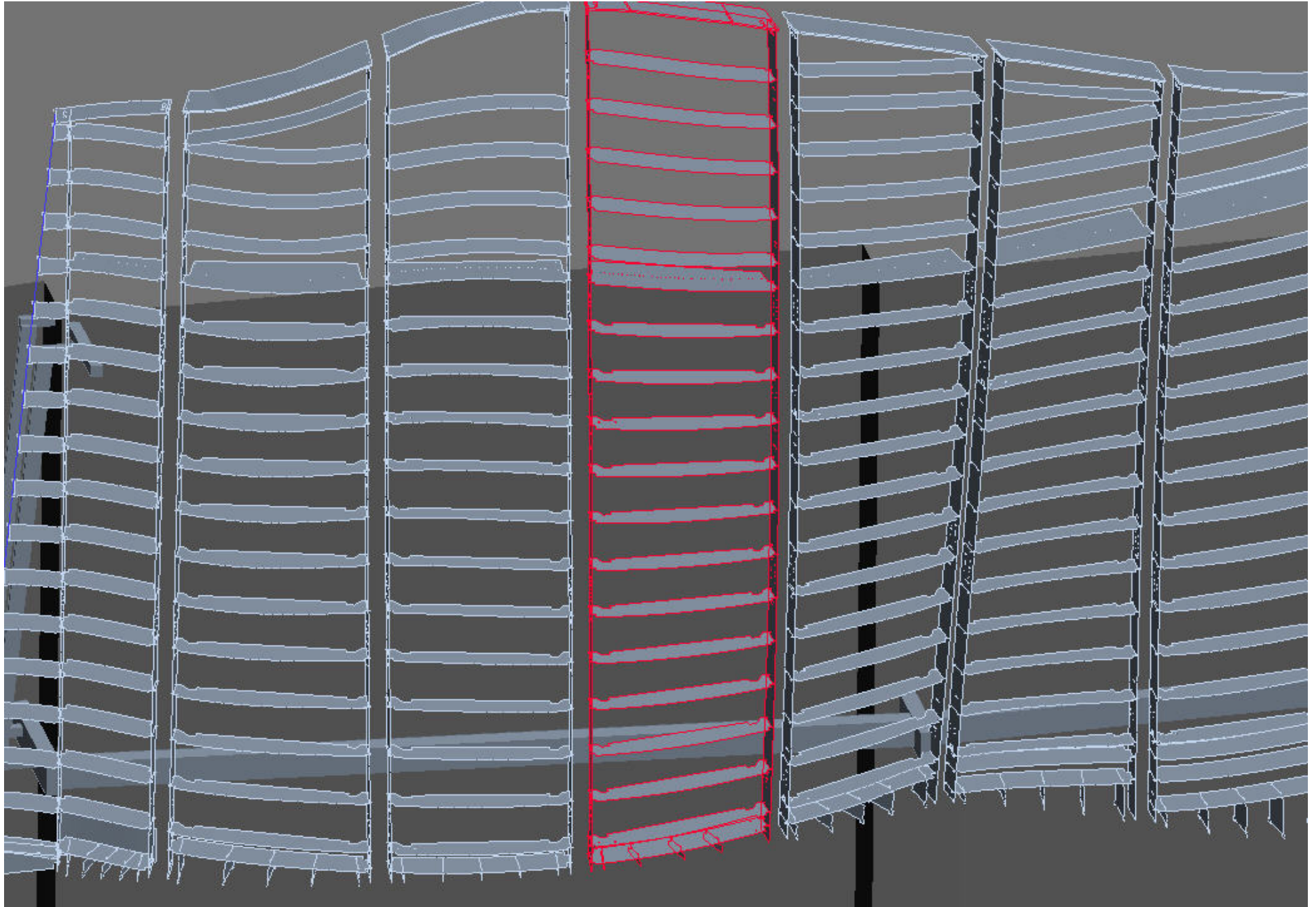


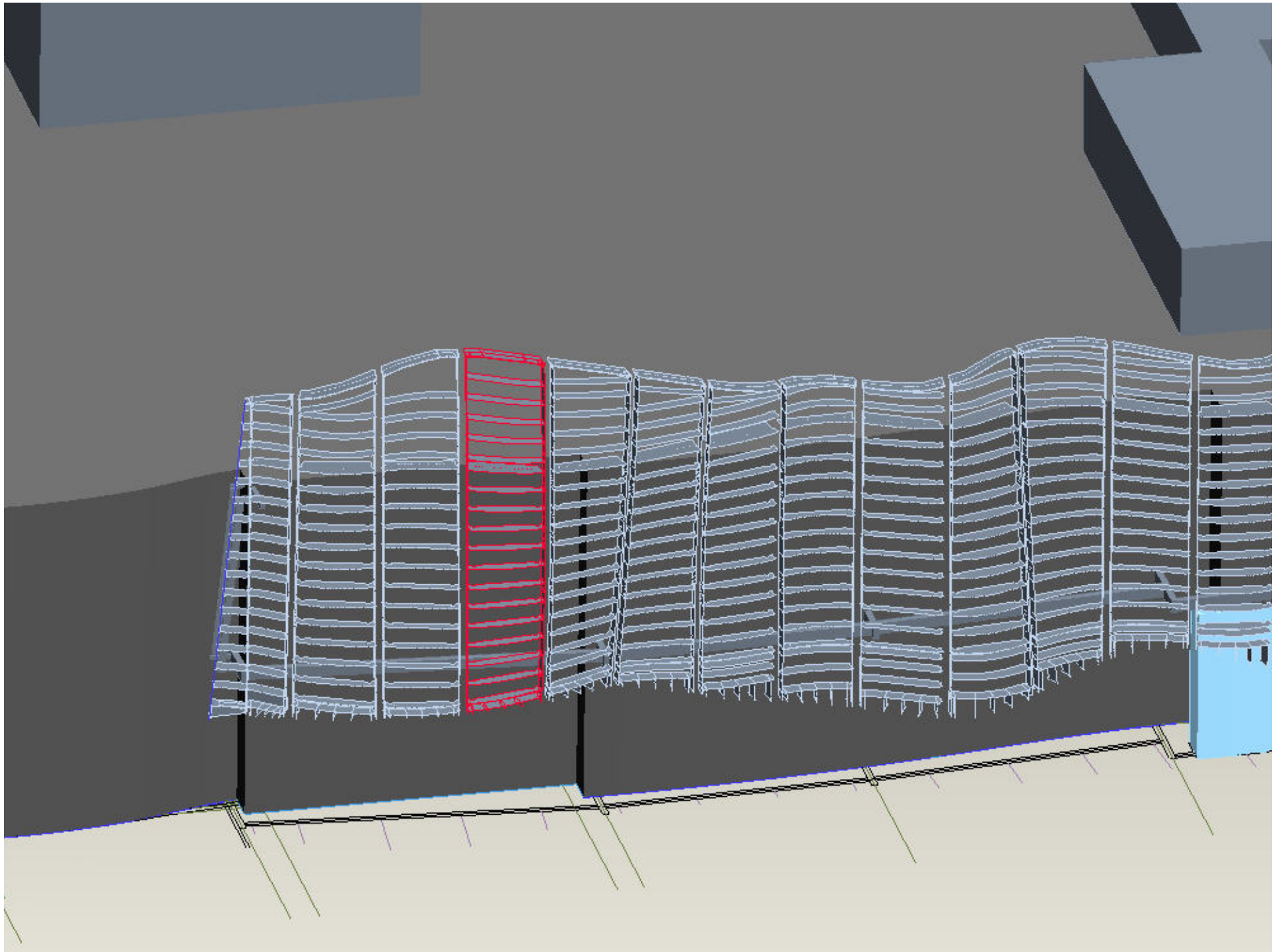


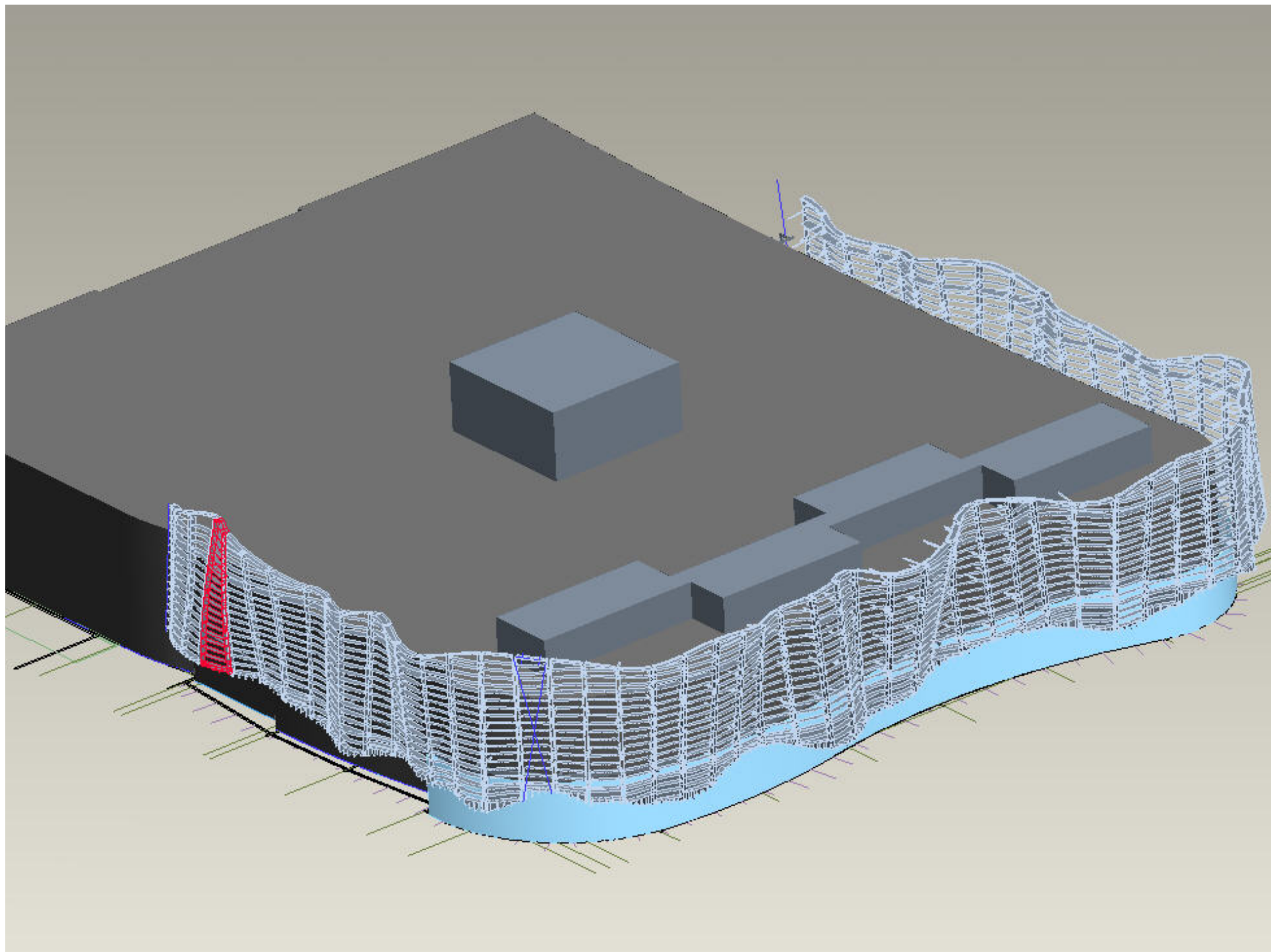






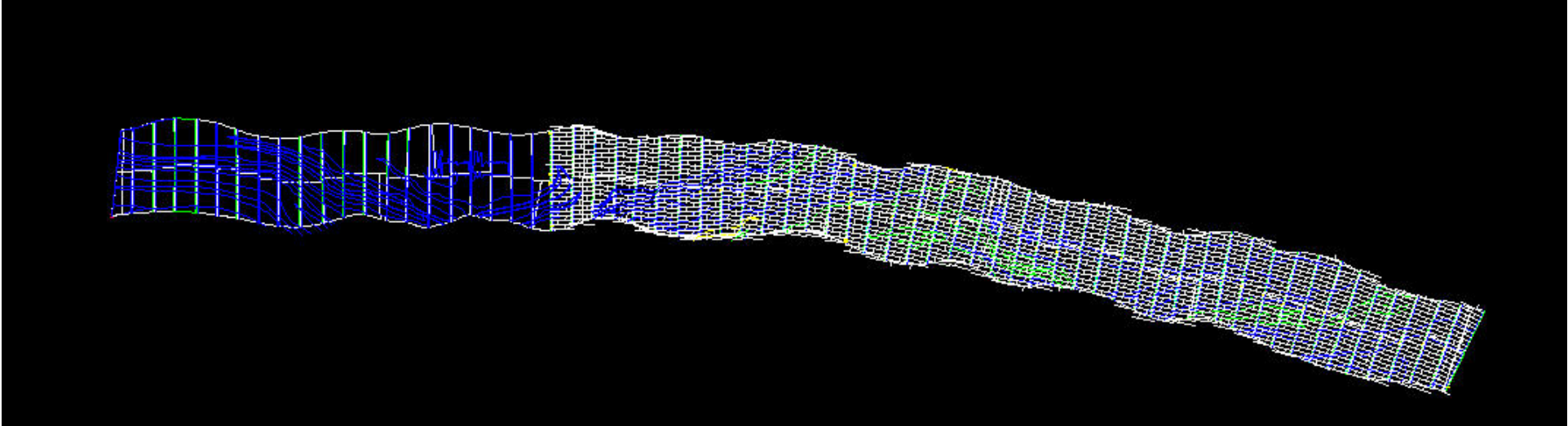


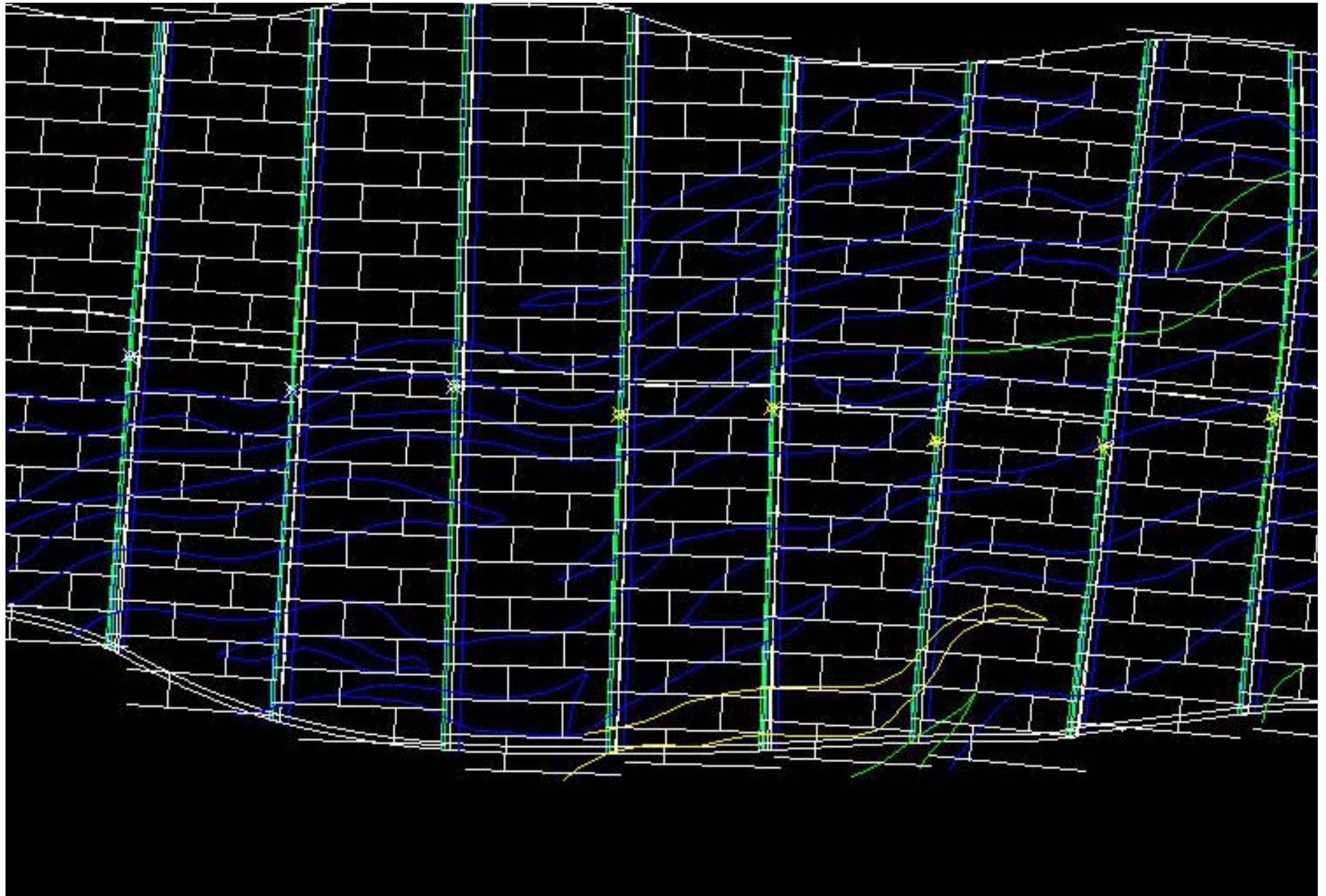




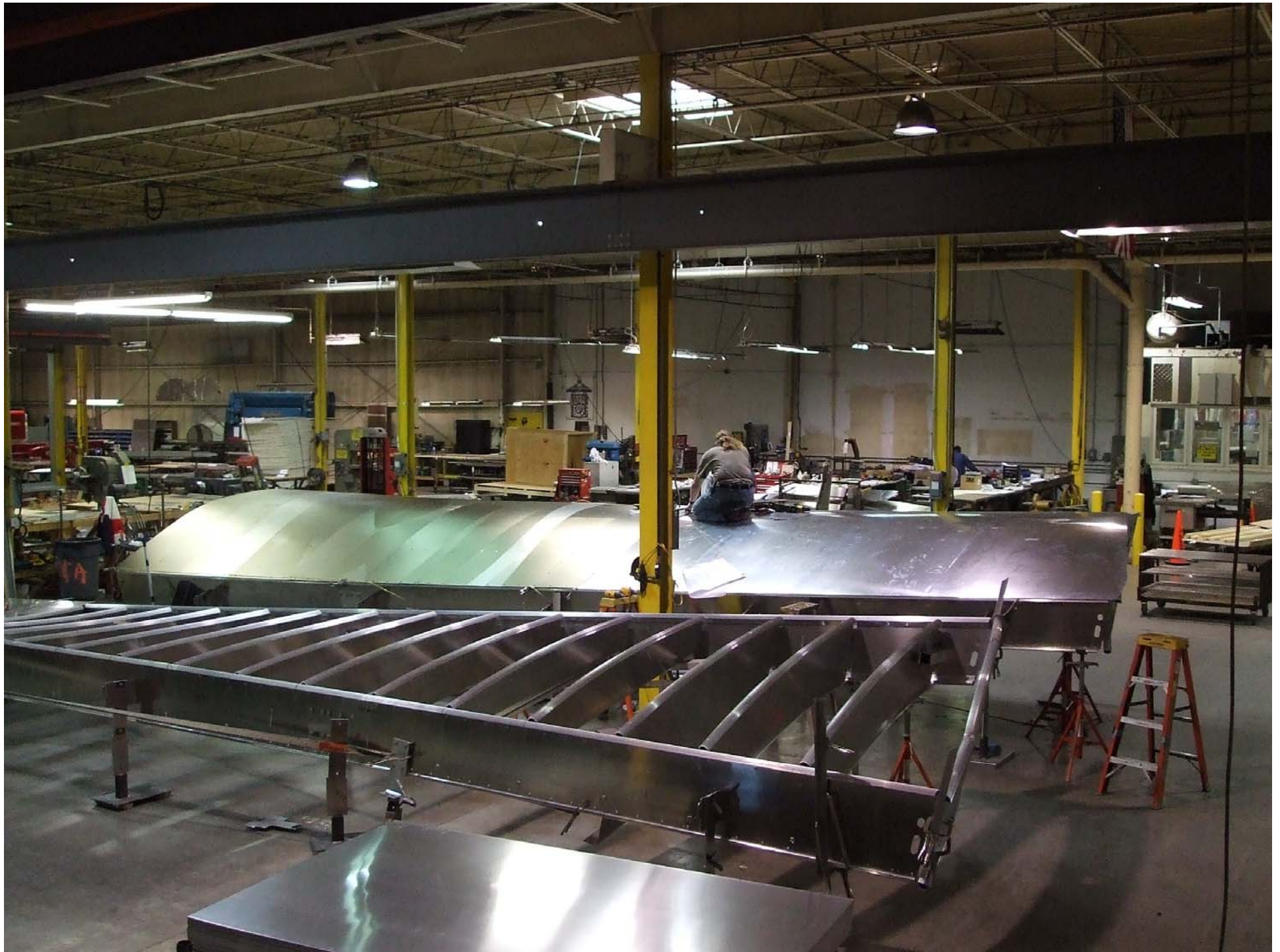










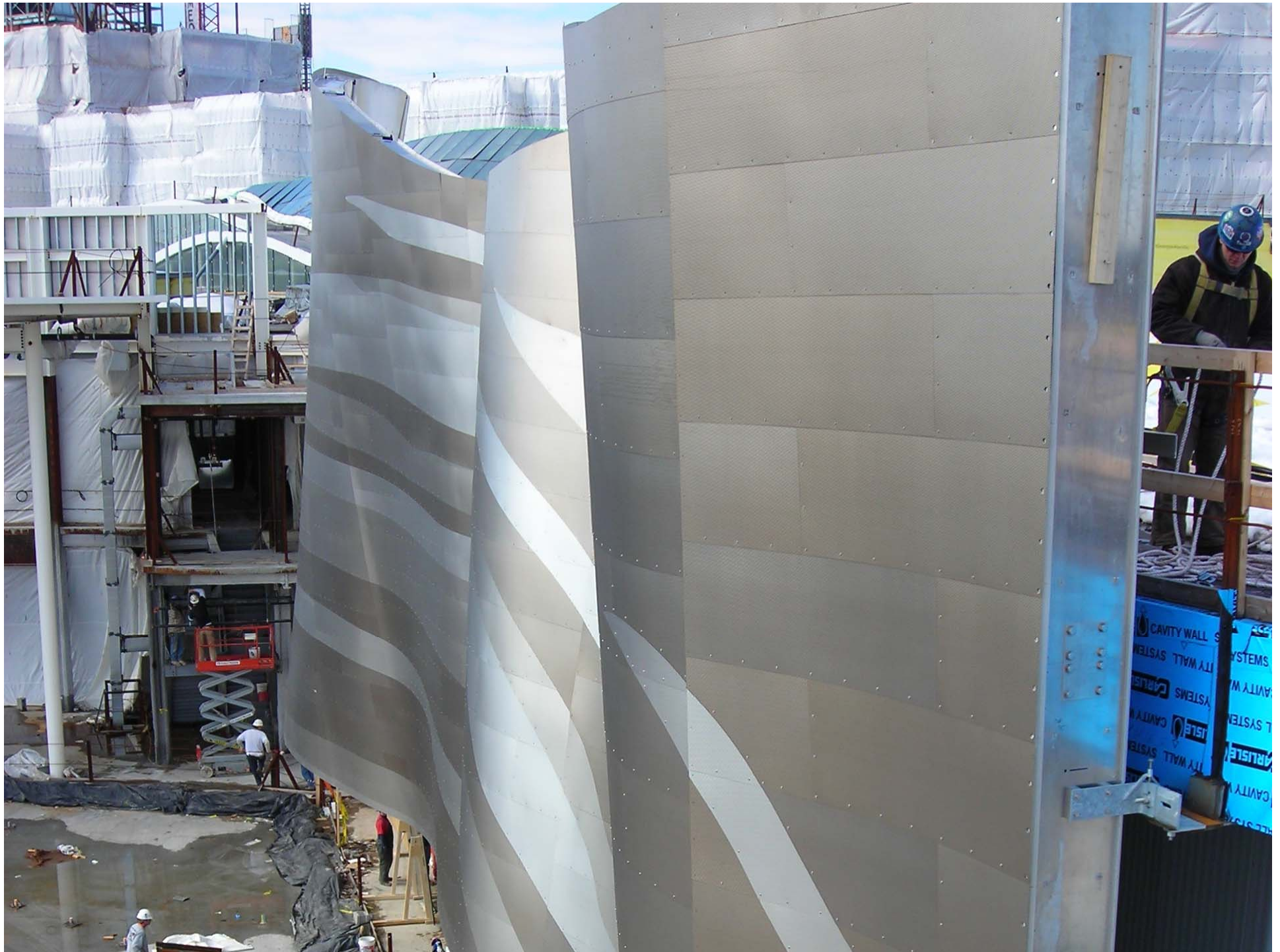






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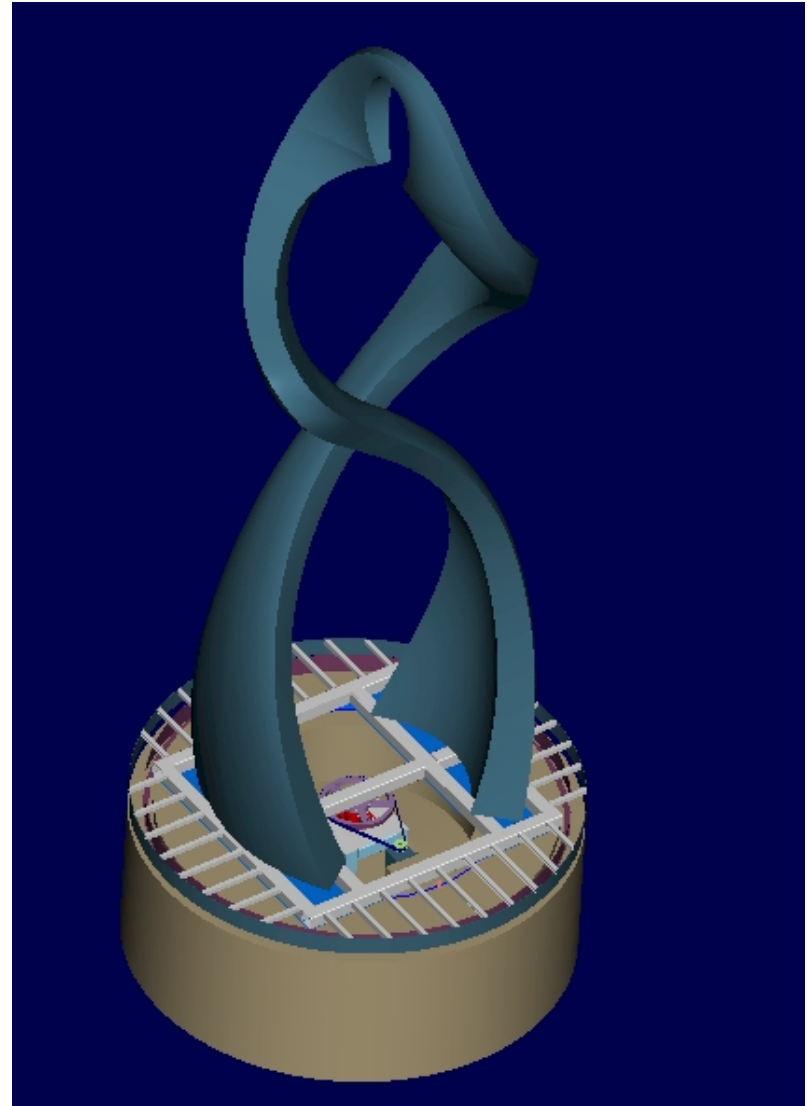






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Architectural Sheet Metal



STOWER'S INSTITUTE SCULPTURE- Kansas City, Missouri













Architectural Sheet Metal

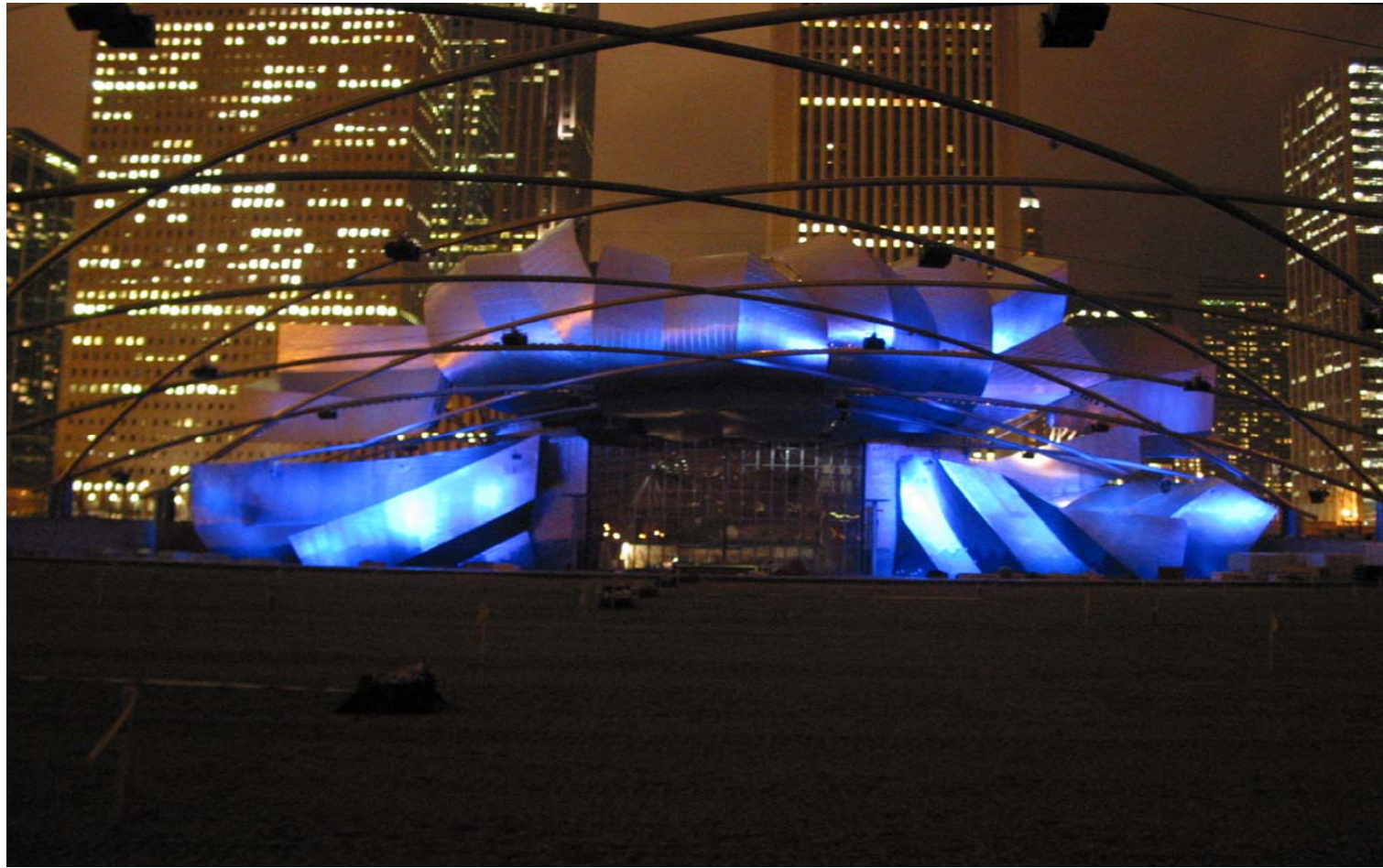


MILLENNIUM PARK- Chicago, Illinois

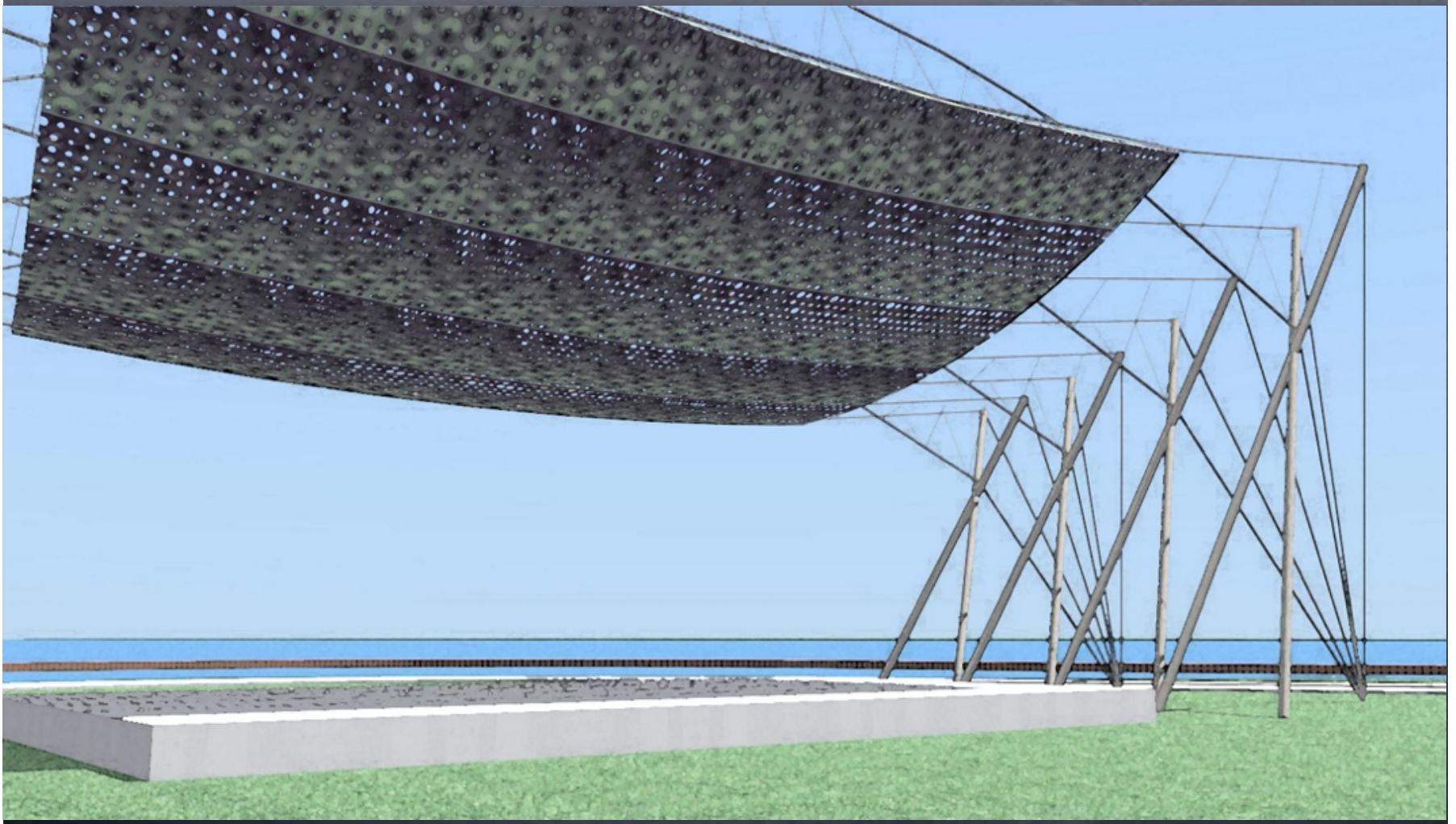




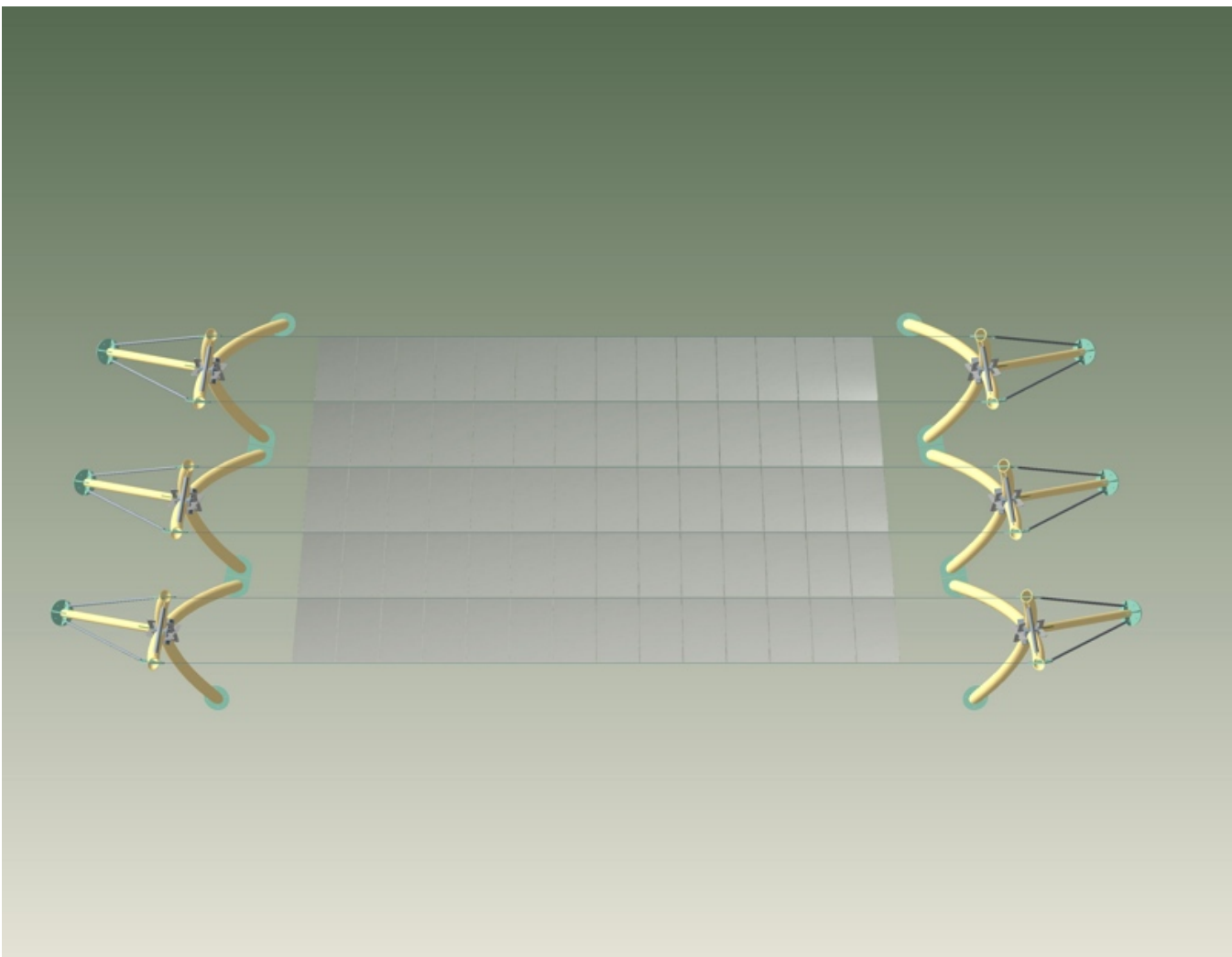


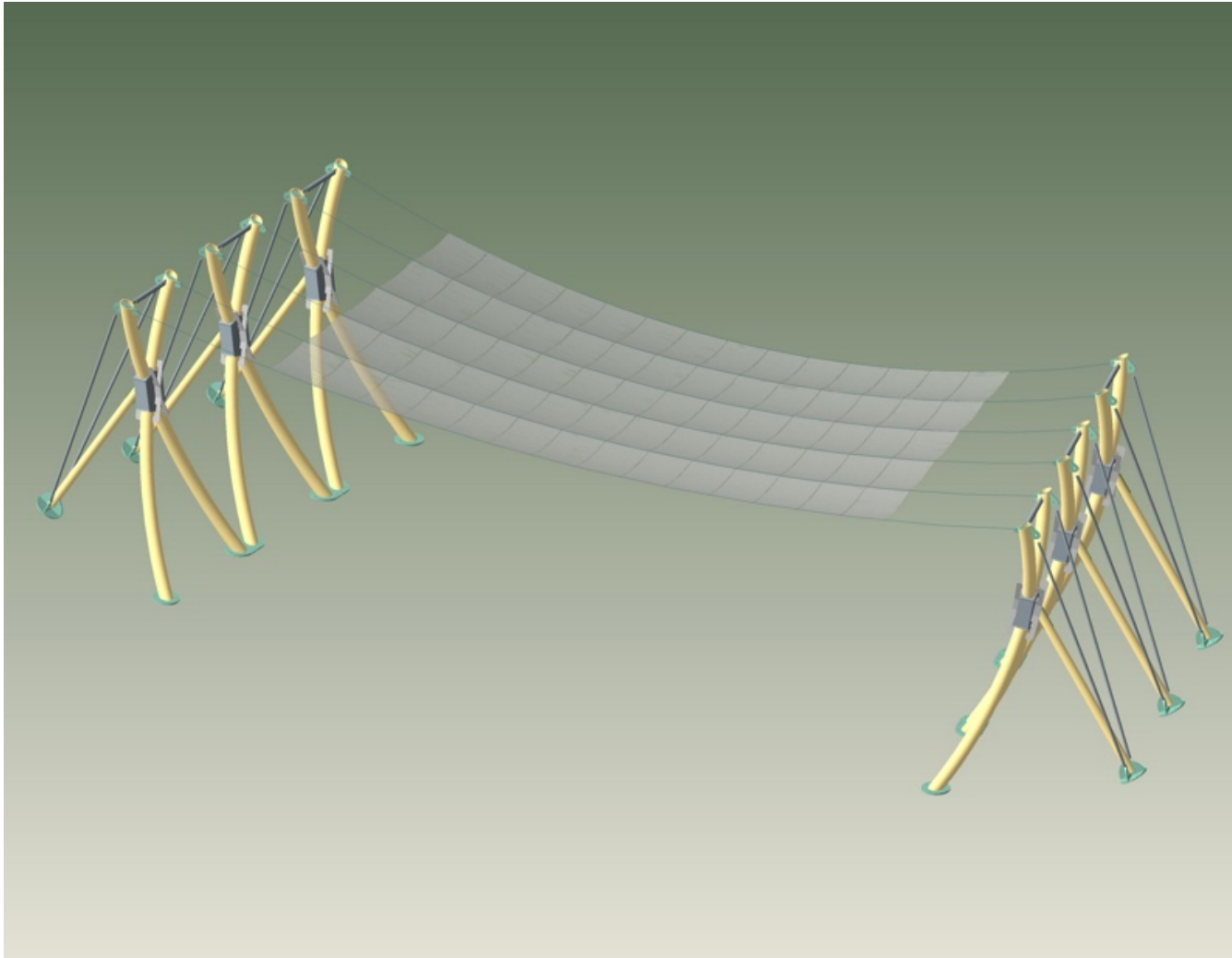


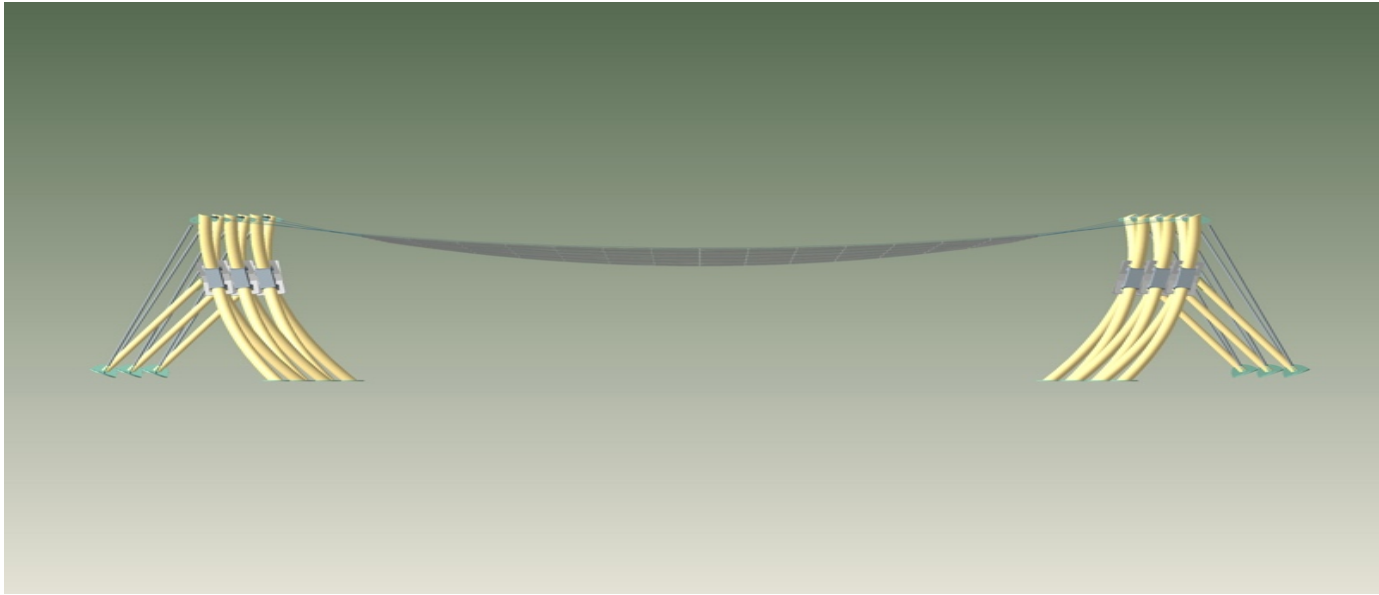
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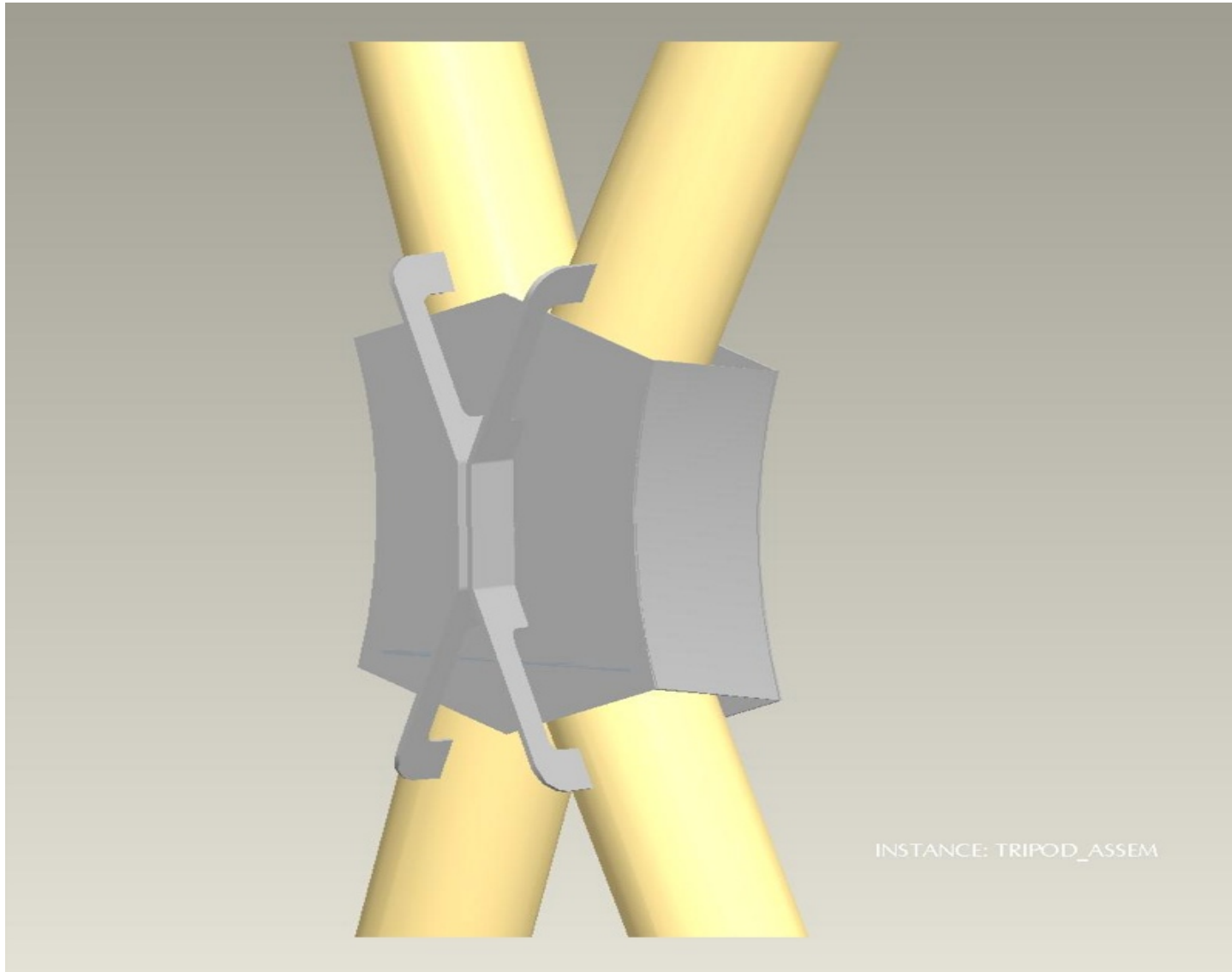
NOISETTE PARK- North Charleston, South Carolina





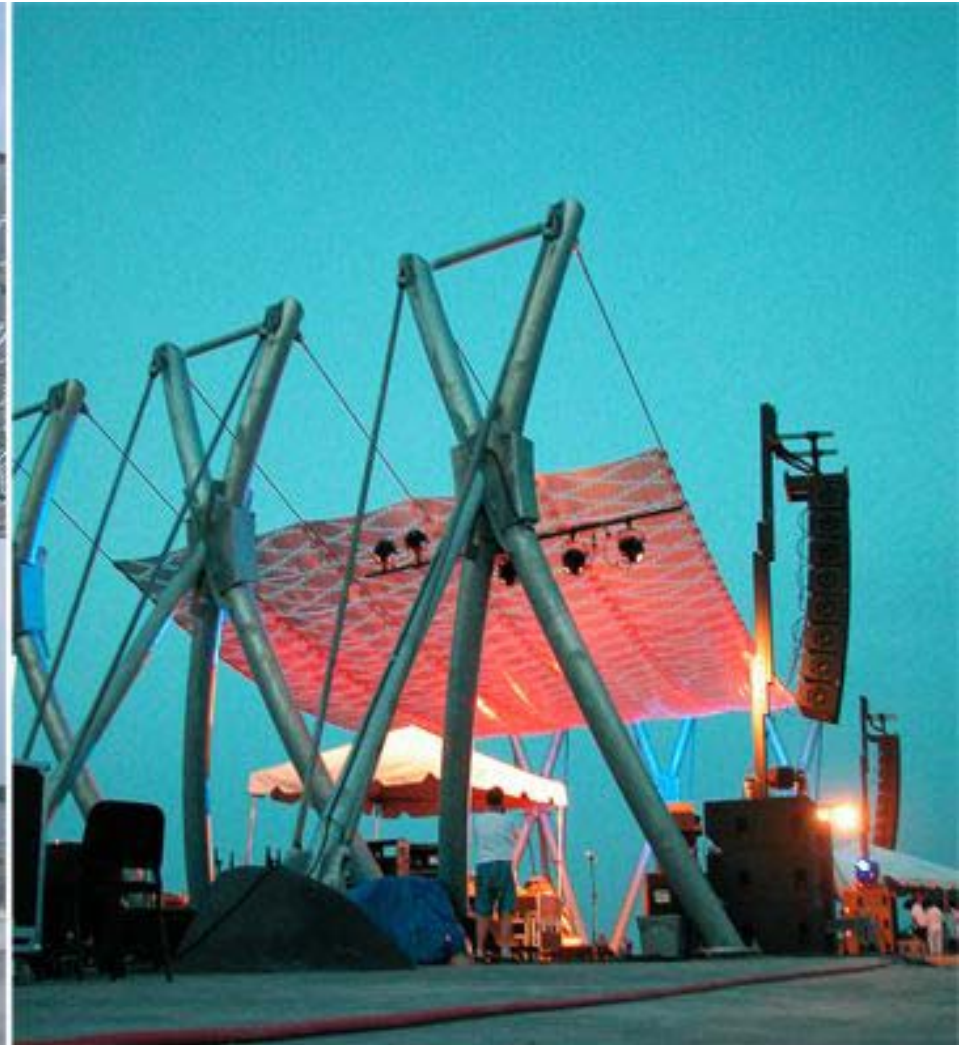






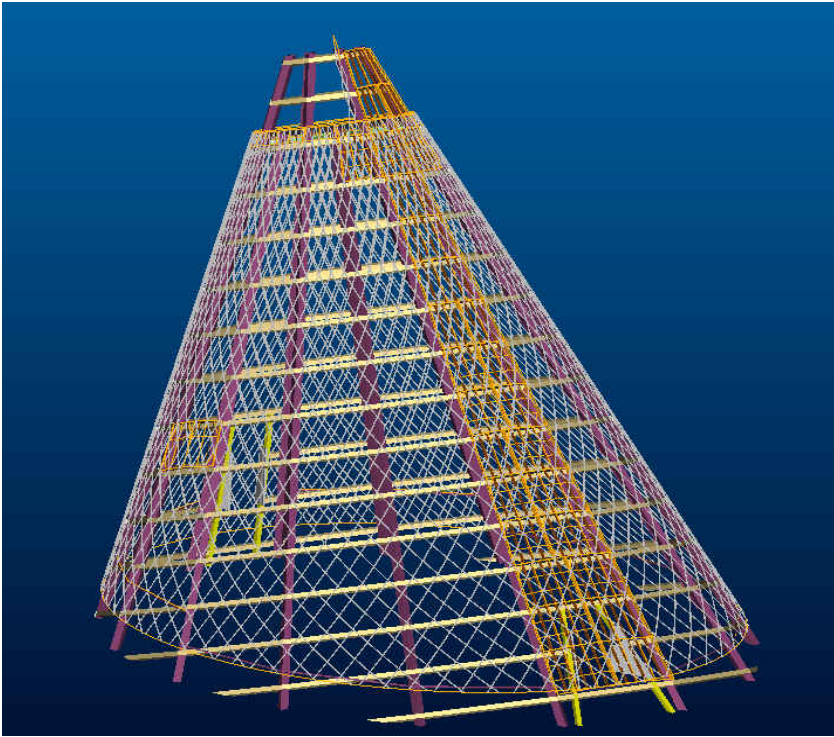








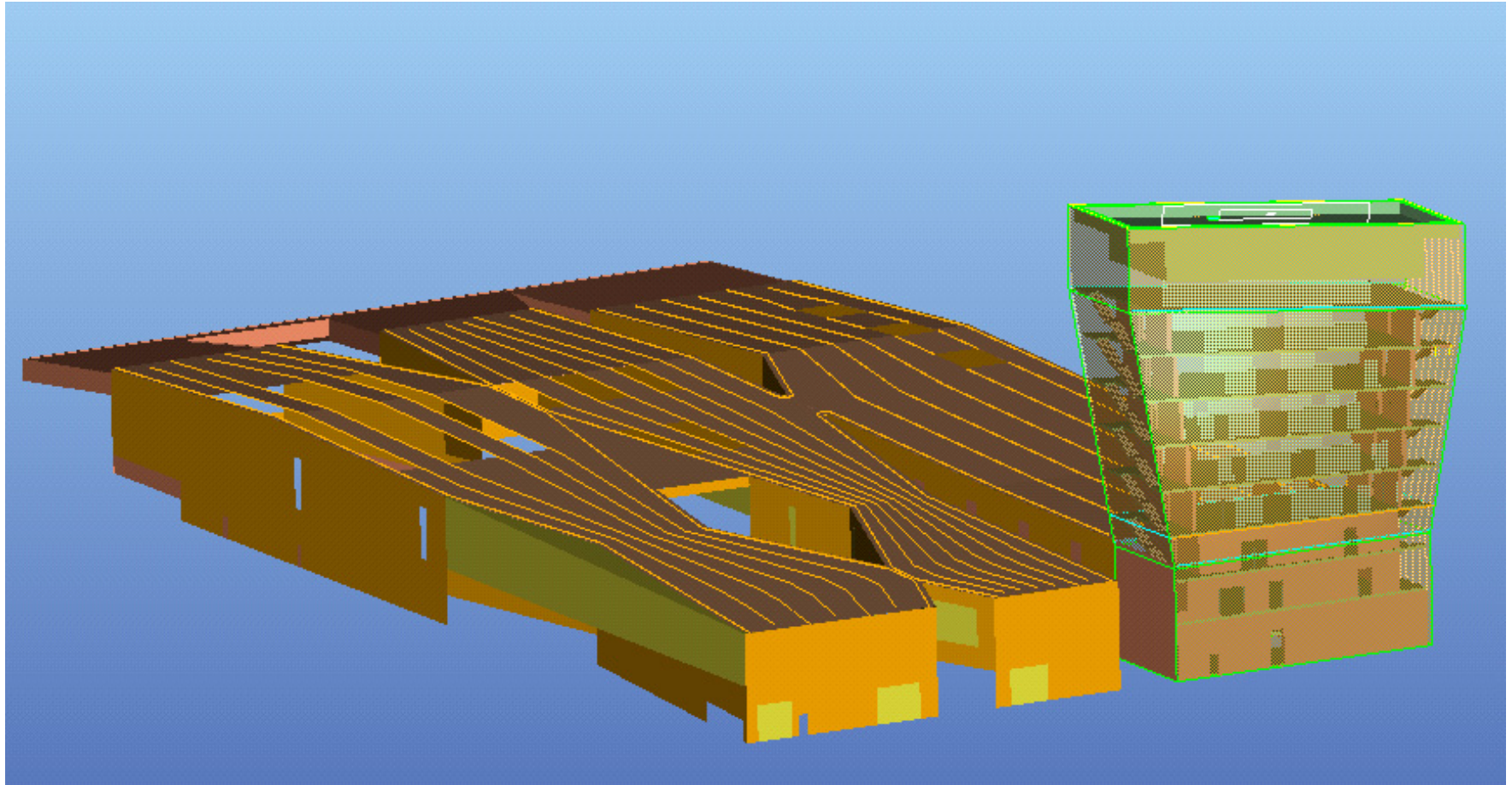
Architectural Sheet Metal



Architectural Sheet Metal



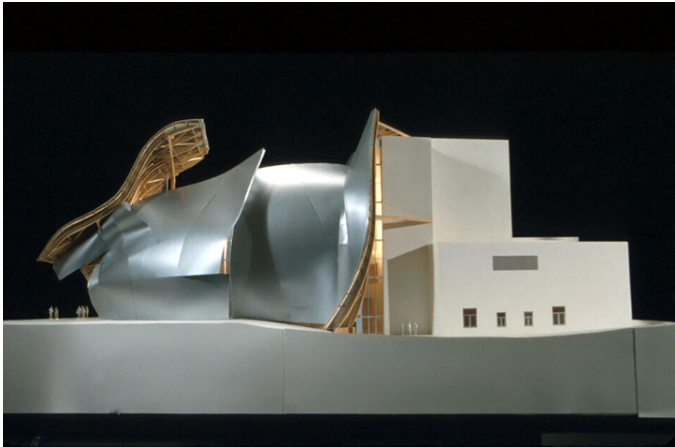
DE YOUNG MUSEUM OF ART-San Francisco, California







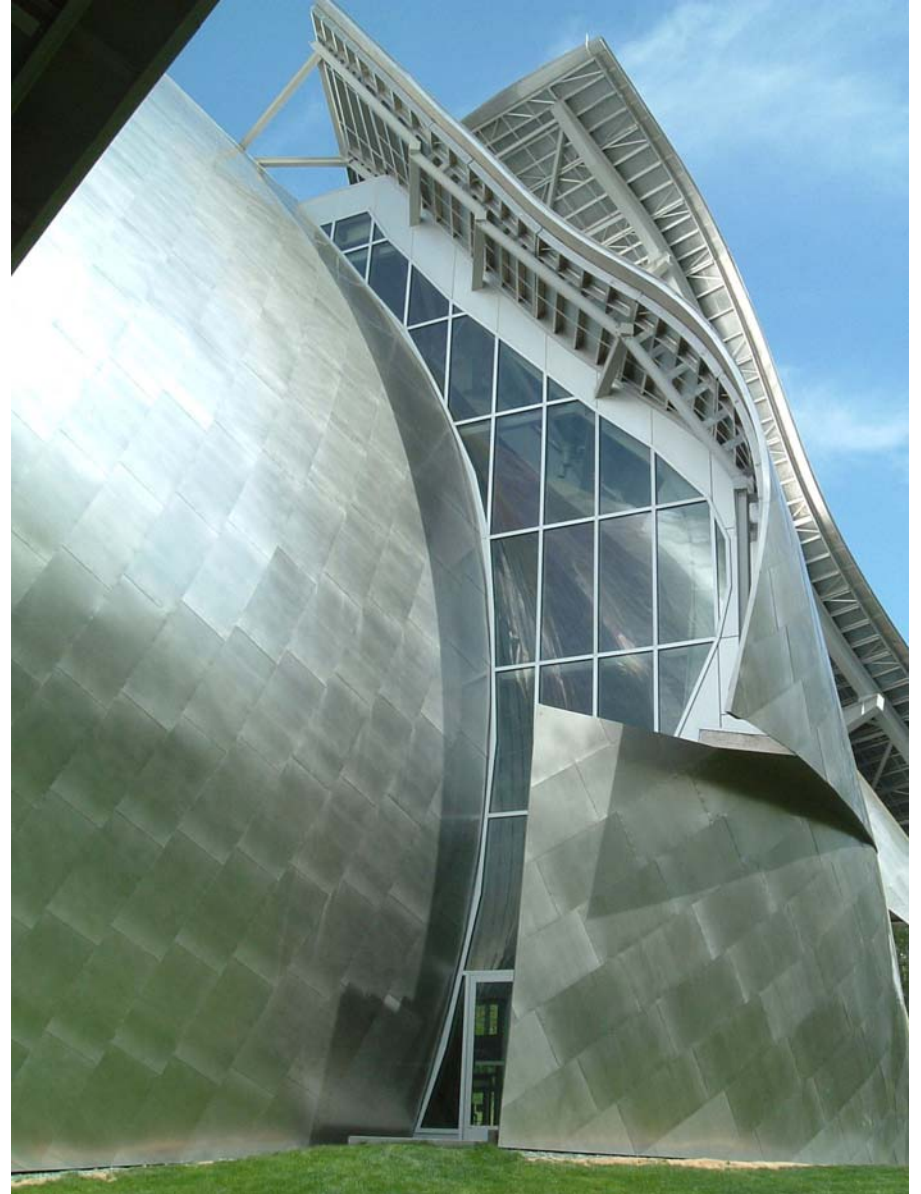
Architectural Sheet Metal



BARD COLLEGE-Annandale-on-Hudson, New York



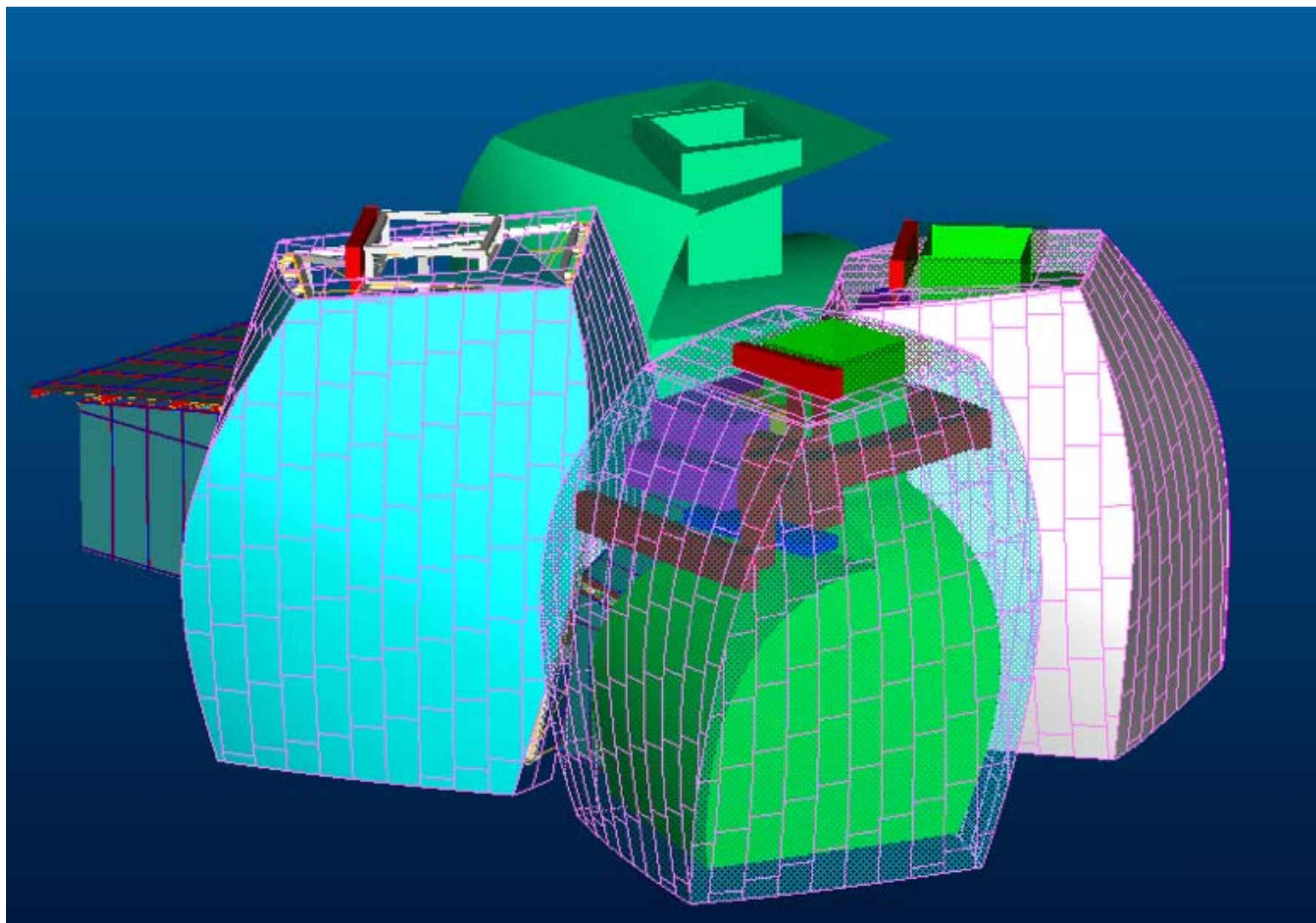


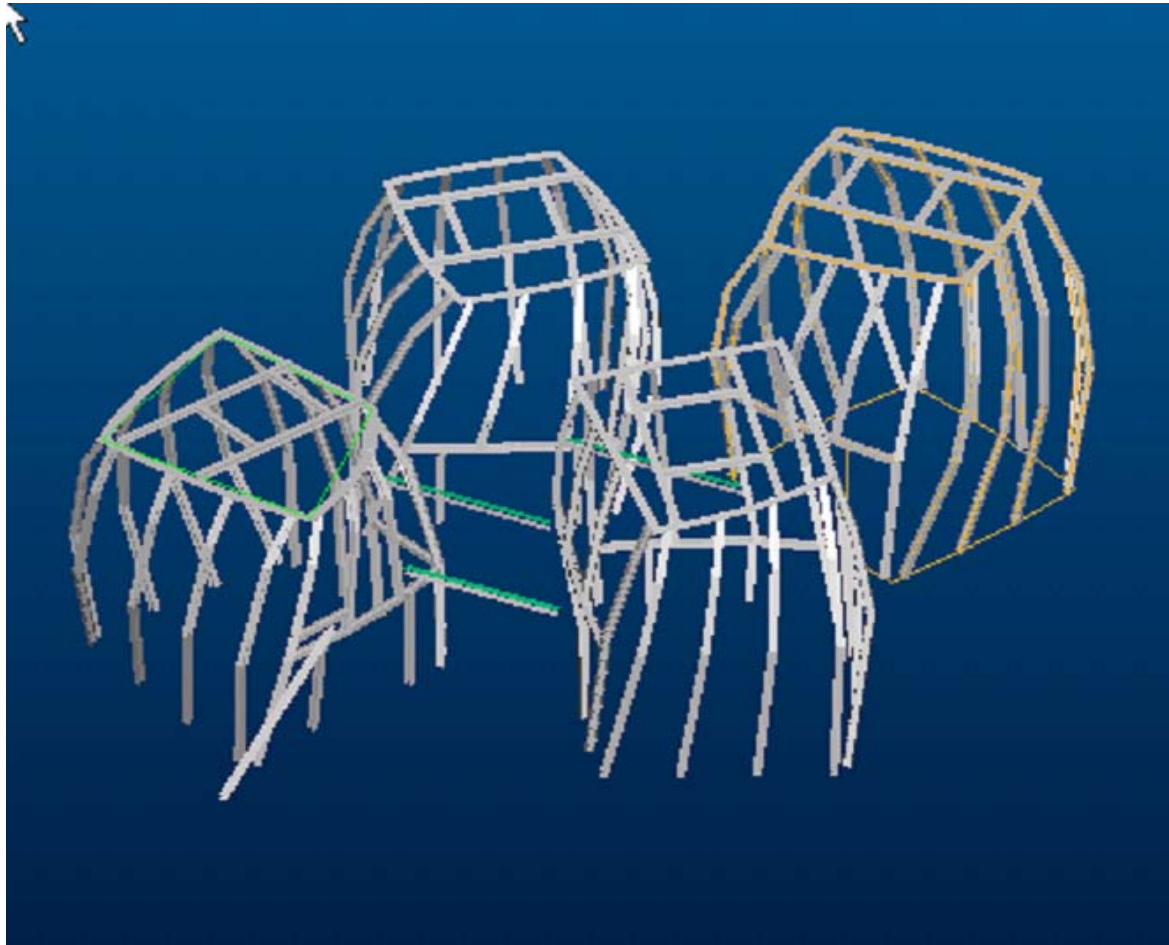


Architectural Sheet Metal



OHR O'KEEFE MUSEUM of ART-Biloxi, Mississippi









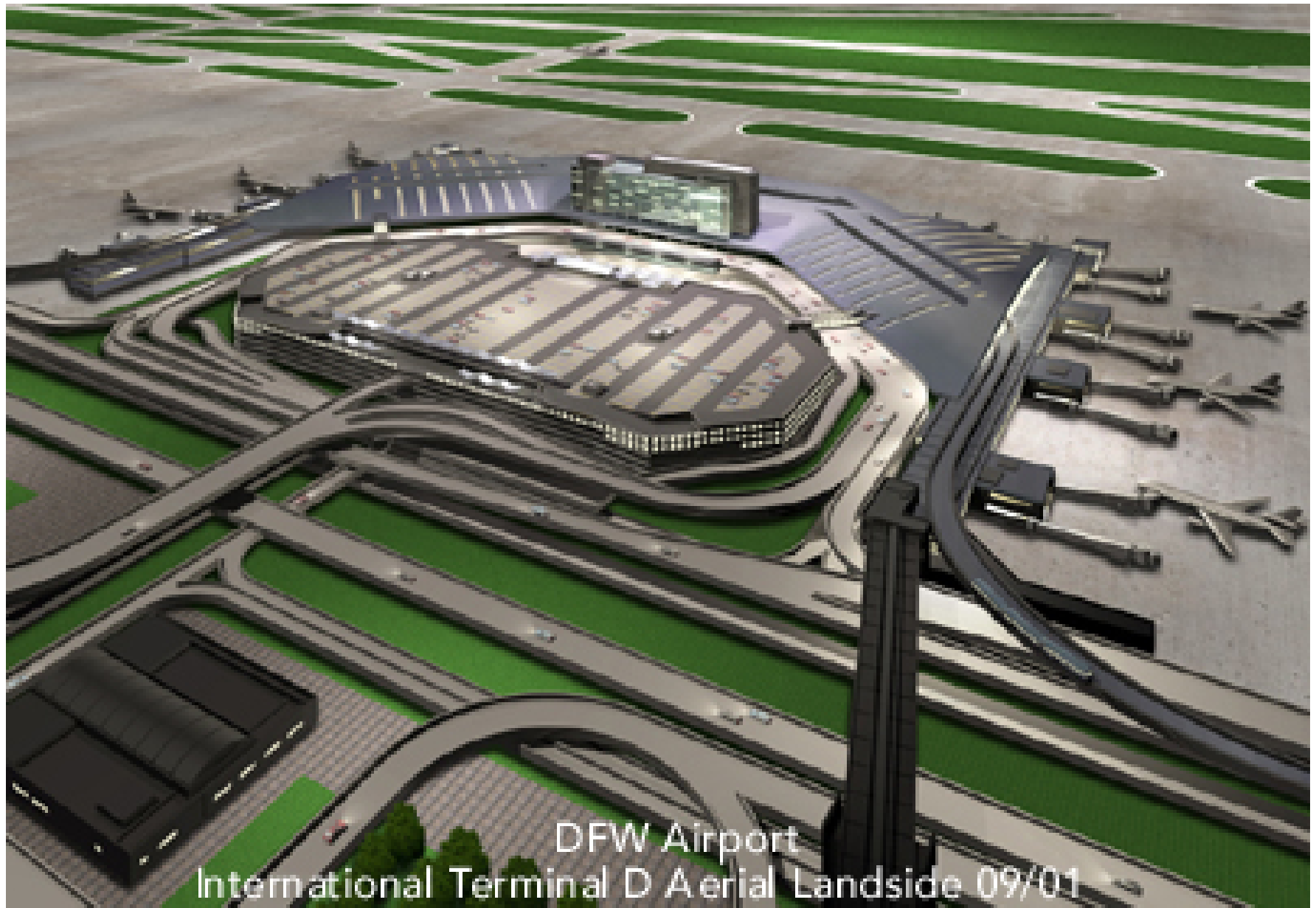








Architectural Sheet Metal



From sow's ear to silk purse. . .



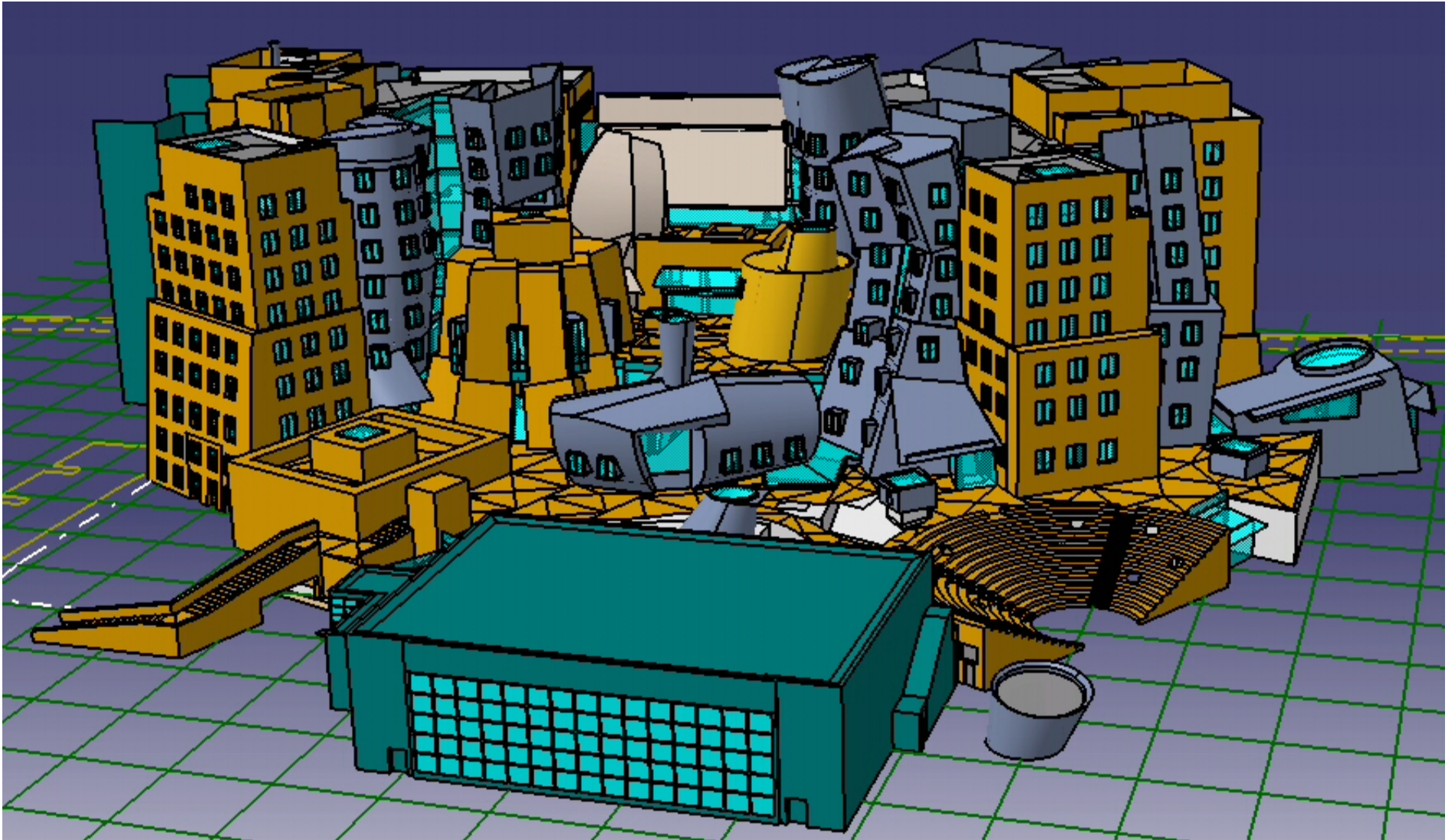




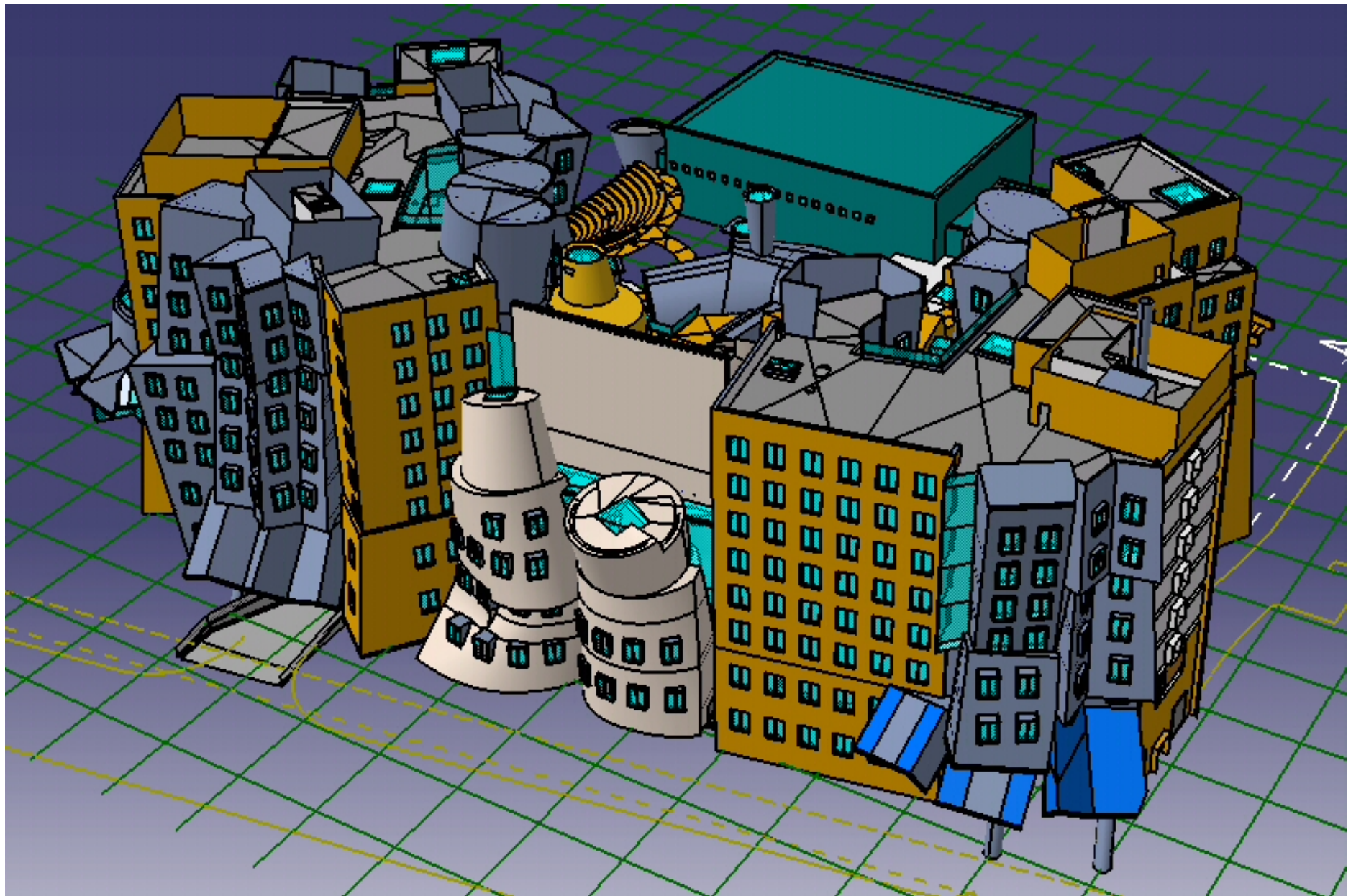


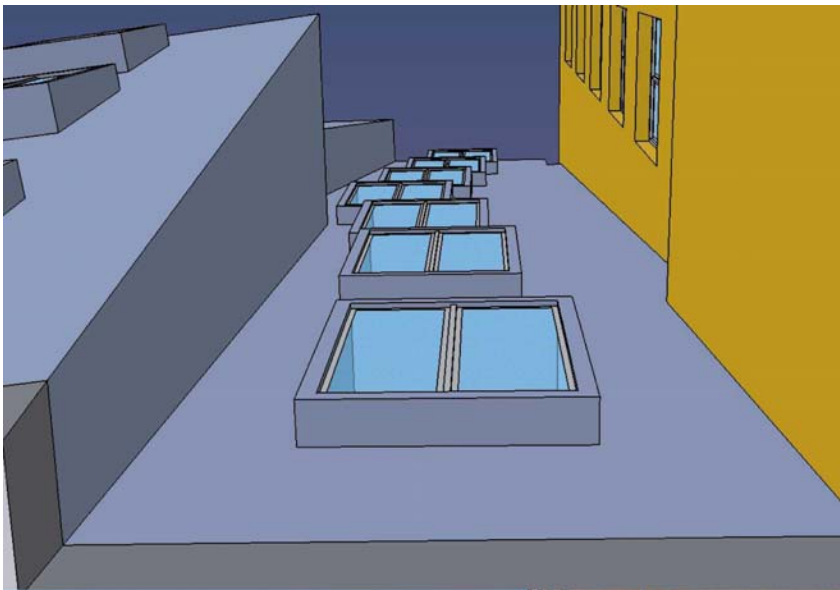


Virtual to Reality



MIT STATA CENTER- Cambridge, Massachusetts















Architectural Metal Skills

- Visualize in 3D
- Problem Solving (break things down into units you can get your mind around)
- Work to a positive solution, do not just get the job done (Quality)
- Begin with the end in mind (If you start heading in the wrong direction, God only knows where you will end up)

Leadership Traits

- **Communication:** Learn to listen (You have 2 ears and one mouth, God is smarter than us).
- **Understanding:** Treat people like Humans. They will succeed more often if they feel they are part of the solution.
- **Engaged:** Learn now to be engrossed and energized so when you have the opportunity to lead people you get their hearts involved also.
- **Passion:** Love what you do. The best leaders are those that desire to succeed but also succeed in their desires.

Top Three Processes a Leader Employs

- 1- Focus on what you are wanting to do and execute. Remember, if you are productive and get 10 hours work done in 8 hours, but it is wrong, it isn't efficient.
- 2- Communicate well to those who are there to support you.
- 3- Get their Hearts into the task not just their muscles. You accomplish a lot more with higher quality when they care.

Leadership Miscellaneous

Every task and project you are on you should learn something, or better yet you should take something away that you will remember and employ in the future. That way, whether a task is done right or done wrong, you will learn and do it better the next time. Too often we forget the little things.



Questions







































KANSAS CITY BOARD OF TRADE



