

THE GORE



PROJECT TITLE: SUGAR HILL INDUSTRIAL PARK PILOT RESEARCH FACILITY

PROJECT INITIATED: MID JANUARY 2023

PROJECT COMPLETED: MID MAY 2023

PROJECT OVERVIEW:

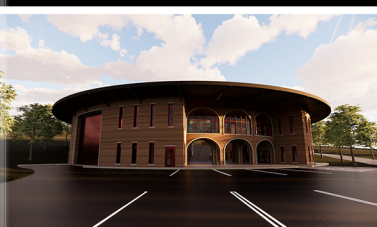
A semester-long project that condensed the entire process of designing an industrial research facility into 15 weeks. I was tasked with developing a highly detailed and realistic building that was tailored to the needs of a certain industry and product of my choosing.

SKILLS DEVELOPED:

A major component of this project was the biweekly progress reports and presentations. Every presentation touched on a different facet of the building's design; concept development, site considerations, sustainable design practices, structure, enclosure, life safety systems, accessibility, code compliance, and more. Each presentation had an associated report to be completed, which made me familiar with various building analysis programs, such as Autodesk Insight, COMcheck, and Tally.

THE CORE

INK PILOT RESEARCH FACILITY
Design Development Final Presentation
ARCH 8306 Justin Richards



Main Entrance View

Public Assembly & Lab Support Spaces Administration

Design Option 1 - The Core

The intent of this design option is to create a central space that can be used for dining, food testing, and laboratory support spaces. It is a central space that is accessible from two elevators in the building and is located along the upper level and the southern side along the lower elevation along with the public entrance.

Design Option 2 - The Renzo

Least efficient design option according to Autodesk Insight.

Design Option 3 - The Rational

Most efficient design option according to Autodesk Insight.

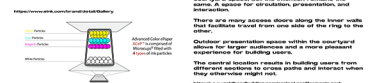
Concept Development

E Ink

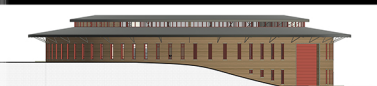
The facility is focused on expanding and creating what was once a small research facility into a large research facility. The facility is designed to be a research facility that is accessible from two elevators in the building and is located along the upper level and the southern side along the lower elevation along with the public entrance.

Apple Park

The core of the building is designed to be a research facility that is accessible from two elevators in the building and is located along the upper level and the southern side along the lower elevation along with the public entrance.



Site Plan (C)



Upper Level

The Core Idea

The Core is intended to represent the intersection between nature and technology. The building itself is inspired from the very soil that grows inside the site, and its purpose is to represent a new technology. The building is designed to be a research facility that is accessible from two elevators in the building and is located along the upper level and the southern side along the lower elevation along with the public entrance.

Design Statement



Courtyard View

Radiant Heating

The building will utilize a hydronic radiant heating system within the floor. Water is pumped through a network of pipes and is heated by a boiler. The water is then pumped through the pipes and is heated by a boiler. The water is then pumped through the pipes and is heated by a boiler.

Rammed Earth

The rammed earth is beneficial due to its thermal mass and its ability to store heat. The rammed earth is beneficial due to its thermal mass and its ability to store heat. The rammed earth is beneficial due to its thermal mass and its ability to store heat.

Ilumination

Natural light will be provided throughout the building by a series of skylights. The skylights will be provided throughout the building by a series of skylights. The skylights will be provided throughout the building by a series of skylights.

Ventilation

Natural ventilation will be provided throughout the building by a series of windows. The windows will be provided throughout the building by a series of windows. The windows will be provided throughout the building by a series of windows.

Design Strategies

COMcheck

Design Pass: 100% (10/10)

Interior Lighting Passes

Design Pass: 100% (10/10)

Cut / Fill

Design Pass: 100% (10/10)

LEEDv4

Design Pass: 100% (10/10)

Metrics



Parking Space



Director's Office View

Code Analysis

Accessible Toilet Room

Accessible Parking

Both parking spaces are adjacent to an access aisle that leads to a ramp. Both ramps are at a 1:20 slope, so no handrails are necessary.

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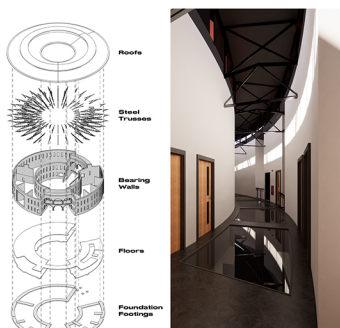
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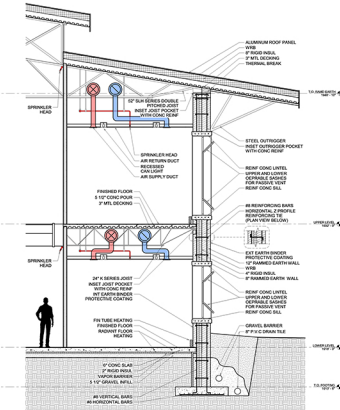


Detailed Wall Section



Structural Axon

Hall View



Lower Office RCP



HVAC Plans



Laboratory View

Ceiling Plan & HVAC

No lights or HVAC are present in the hallway ceiling due to the glass walkway. Sprinklers are present along either side of the hallway.

The layout of nearly all lighting, ventilating, and fire protection elements conform to the curved walls.

All of the ductwork is weaved through the steel trusses before it drops down.

Ceiling Plan & HVAC

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The Layout of Nearly All Lighting, Ventilating, and Fire Protection Elements Conform to the Curved Walls

All of the ductwork is weaved through the steel trusses before it drops down.

Factory Mechanical

One large air handling unit to serve both floors of the factory occupancy side of the building.

Eight batteries to store power from the solar array for backup power or to sell back to the grid.

One battery is assigned to the booster pump.

Solar control panels and inverters.

Electrical panel boxes.

Business Mechanical

One small air handling unit to serve both floors of the business occupancy side of the building.

Sprinkler manifold and booster pump.

Water heating and cooling systems.

Water storage tanks and circulation pumps for radiant floor heating system.

Mech Room Plans

North Elevation



West Elevation



South Elevation



East Elevation



Detailed Wall Section



