Electrothermal Integration

As manufacturers has been gradually switching from combustion to charging, for a cleaner, and renewable option source of energy. There will also be a gradual shift of space to accommodate vehicles in the future.

In this project, we explored how we can accommodate hybrid fuelled aircrafts by introducing Heliostats powered hangars spaces. And as companies move forward to create electric powered aircrafts, this project will serve as a charging station. That can easily be replicated into other sites because of its modular design. The endless runway implemented ensures a low noise pollution for the surrounding area. This runway design additionally guarantees a smaller site requirement compared to regular runway designs. Ideal for suburban zones such as Luddenham.

This hangar provides charging stations to allow multiple experimental flight runs. It has a circular structure to accommodate the heliostats rows around the central receiver tower, which generates power; and two storage tanks, which is used to produce steam and would ideally generate 36,000 kw per day of electricity. It can power a 4-9 seater hybrid-electric aircraft for up to 100 hours of flight by year 2025.

We wanted to implement masonry arches as our main design language as an homage to Australia's architecture style. While simultaneously utilizing the thermal aspects of masonry material, protecting the interior from the heat heliostats generate throughout the day. The tensile structure was then implemented to balance the masonry's heavy profile. Which provides much needed shade at the roundabout and the recharging stations.

Current experimental hybrid aircrafts.

magniX

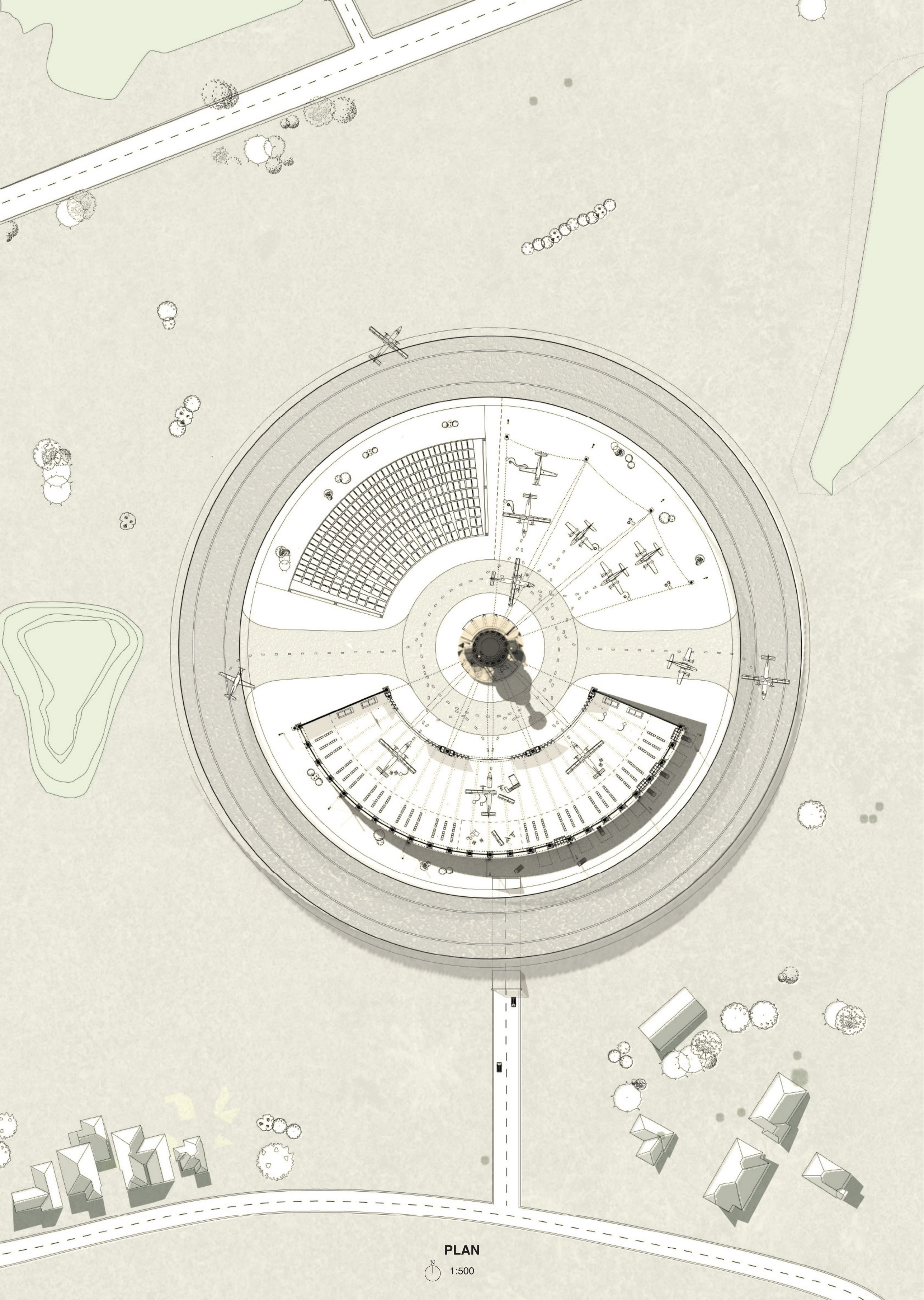

Pipistrel

magniX


Eviation

Aerospace

Ampaire



PLAN

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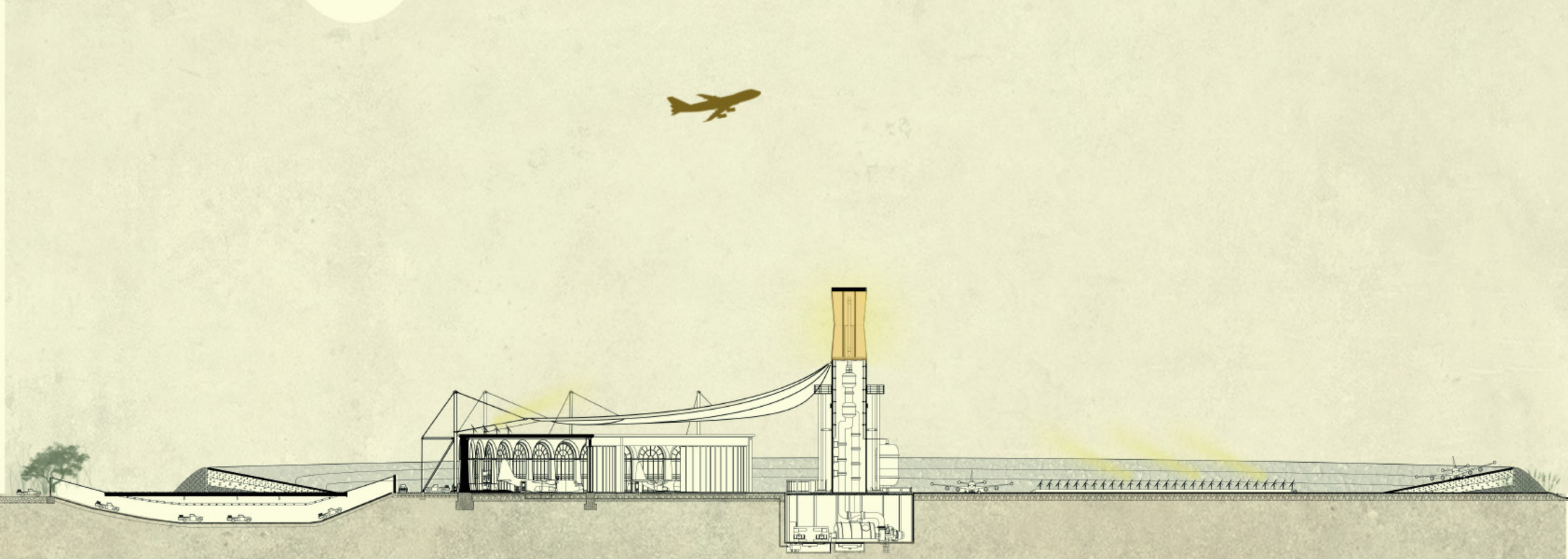

SECTION

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ELEVATION

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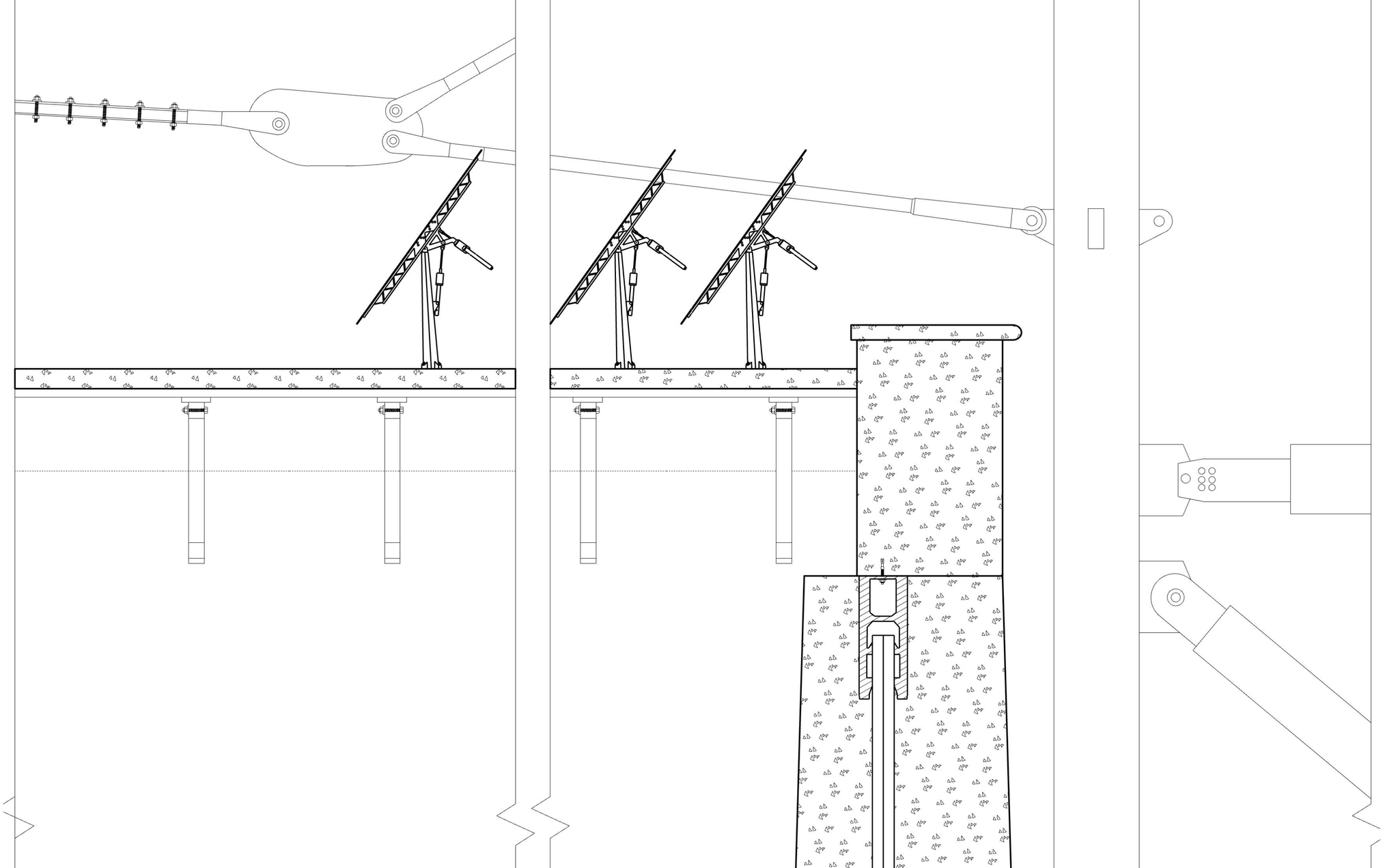

DETAIL 1

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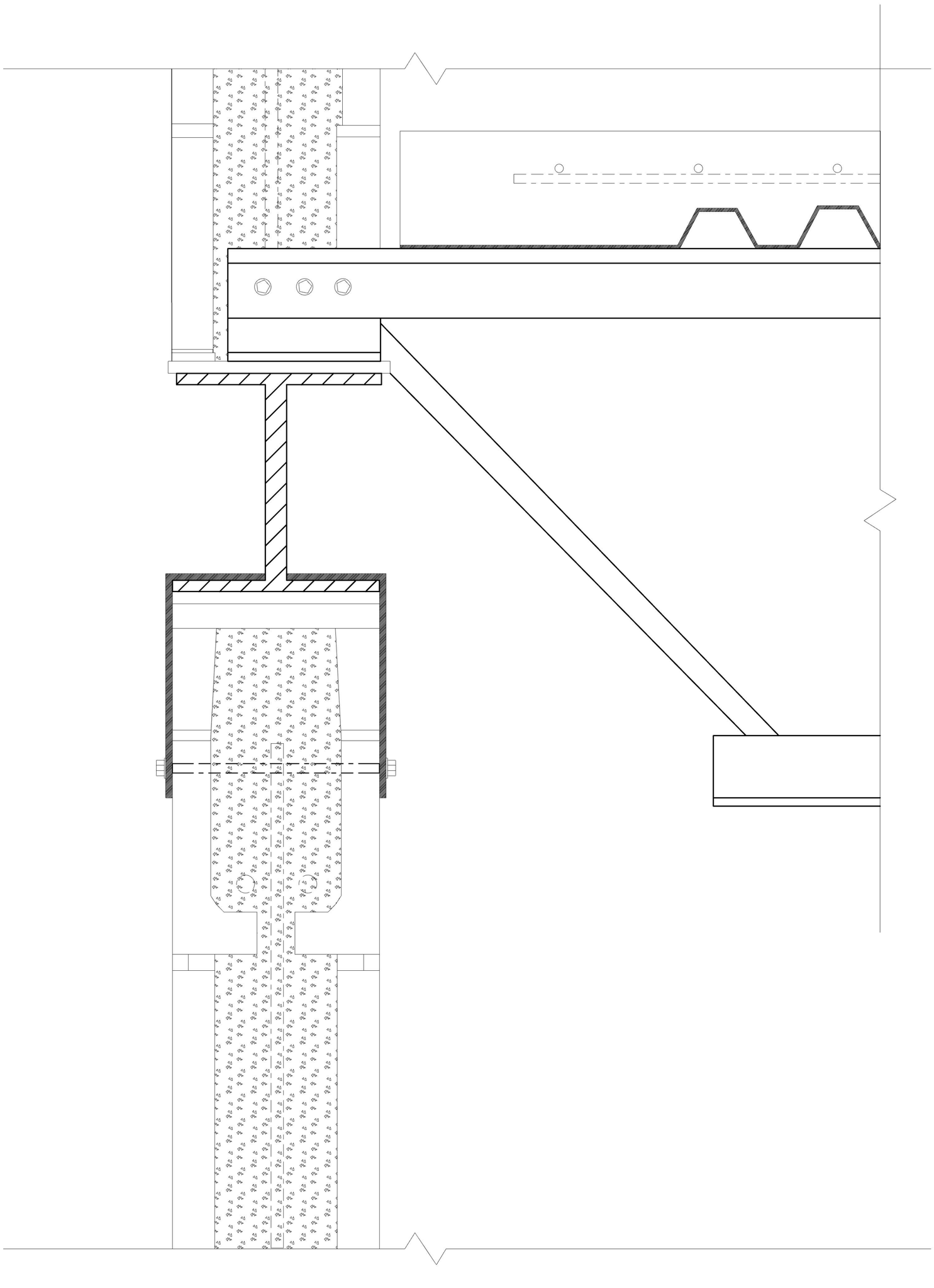

DETAIL 1

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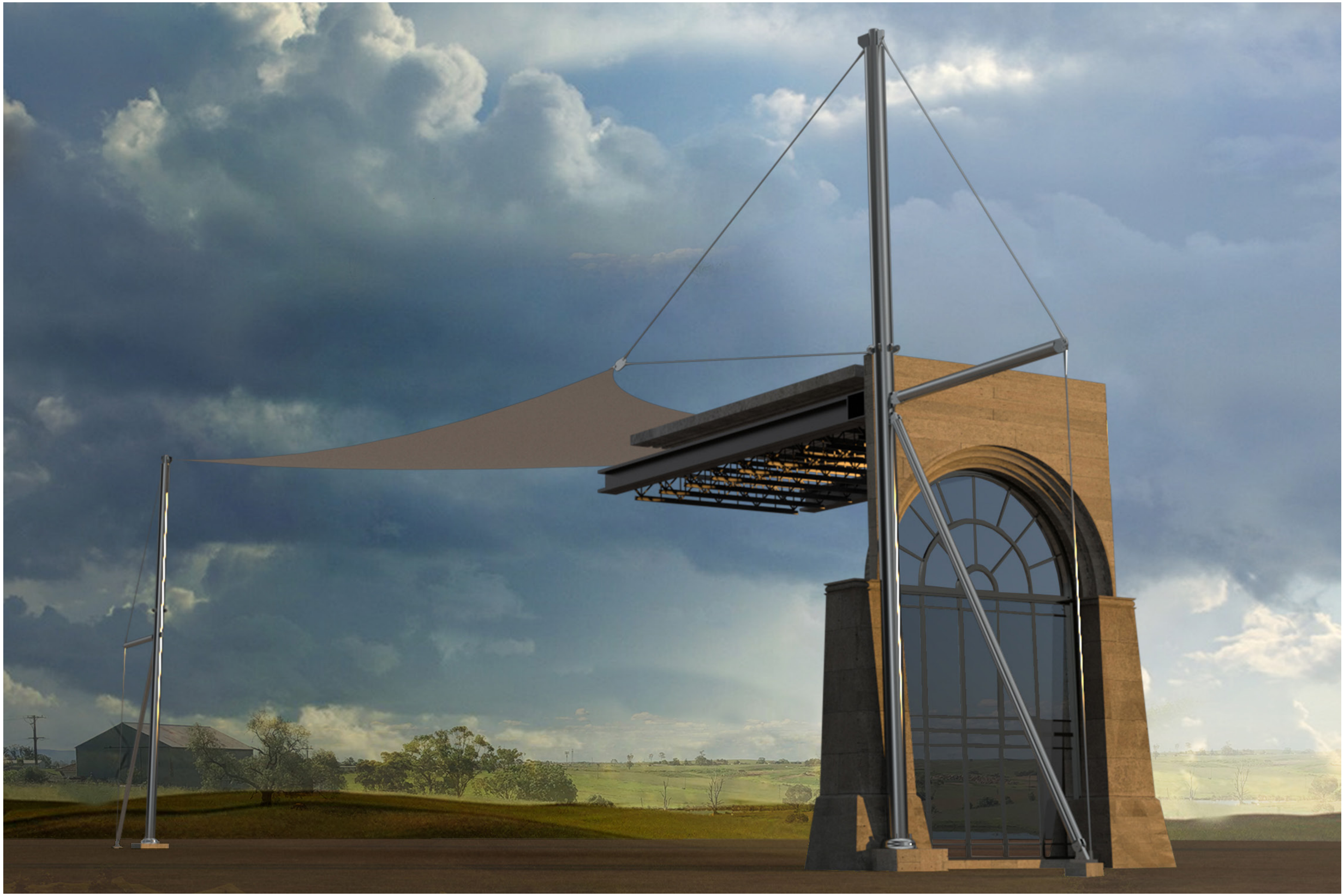
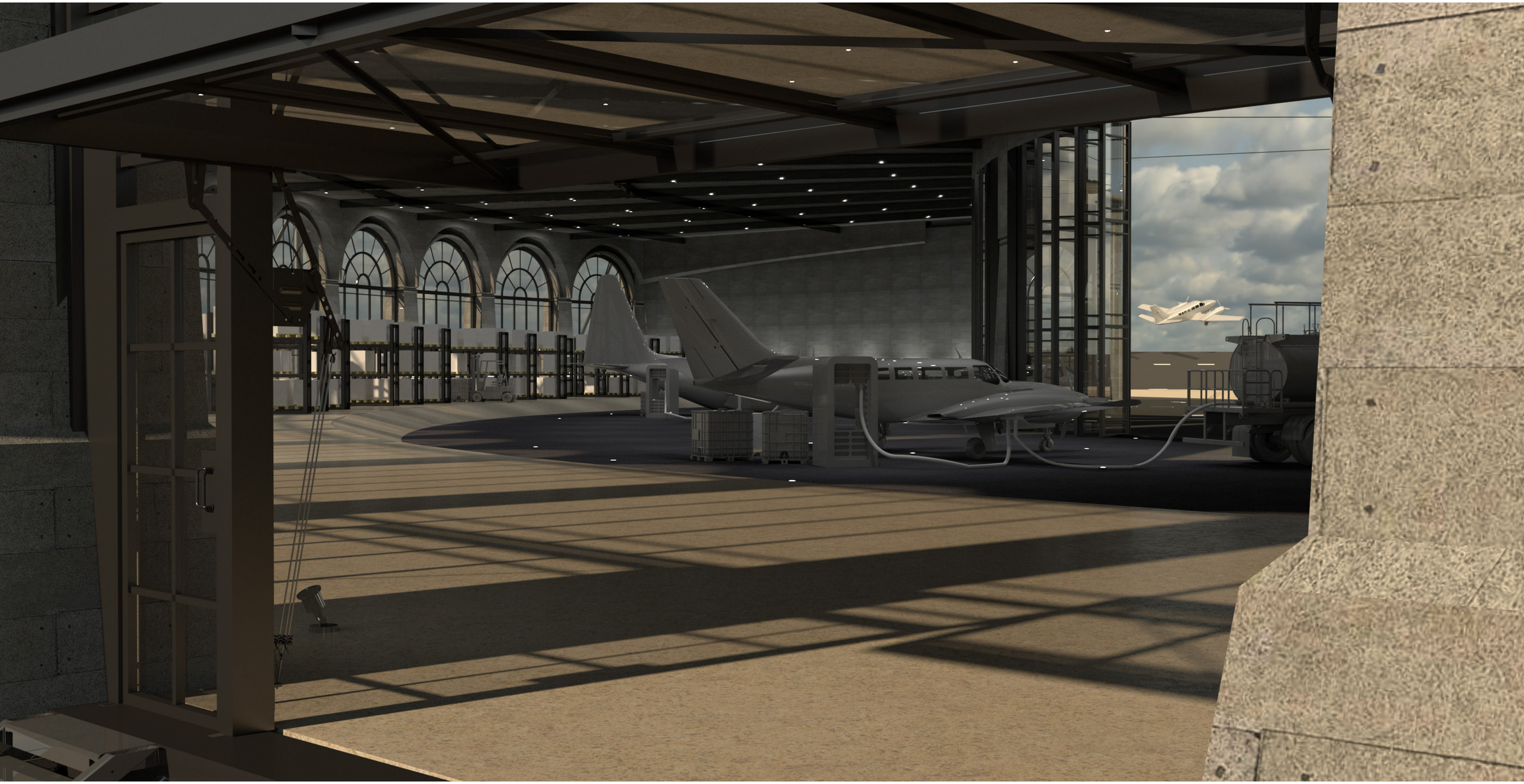
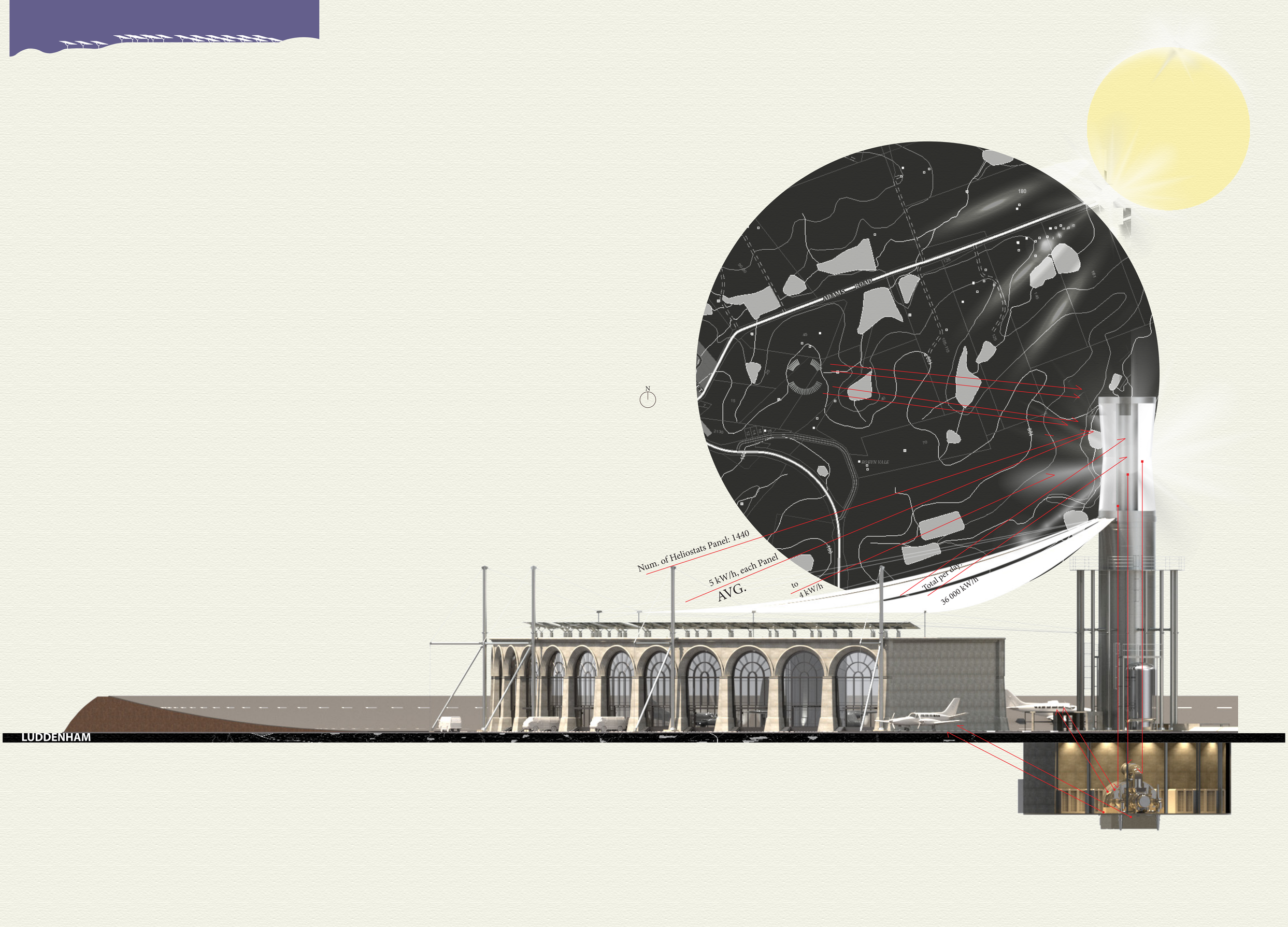


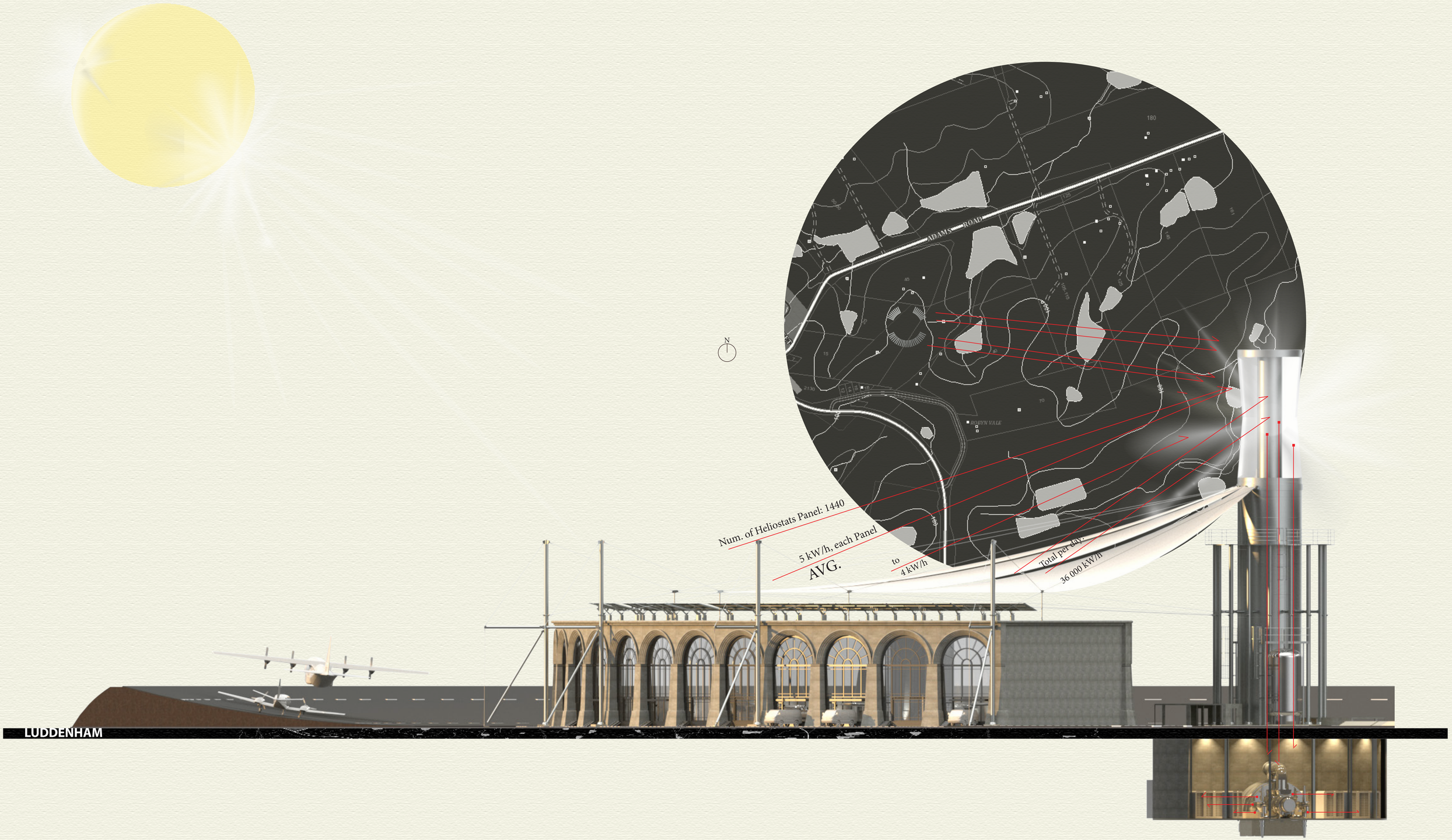
VIRTUAL MOCKUP

EXTERNAL IMAGE



INTERNAL IMAGE


ADAMS ROAD
180
N
Num. of Heliostats Panel: 1440
5 kW/h, each Panel
AVG.
to
4 kW/h
Total per day:
36 000 kW/h
LUDDENHAM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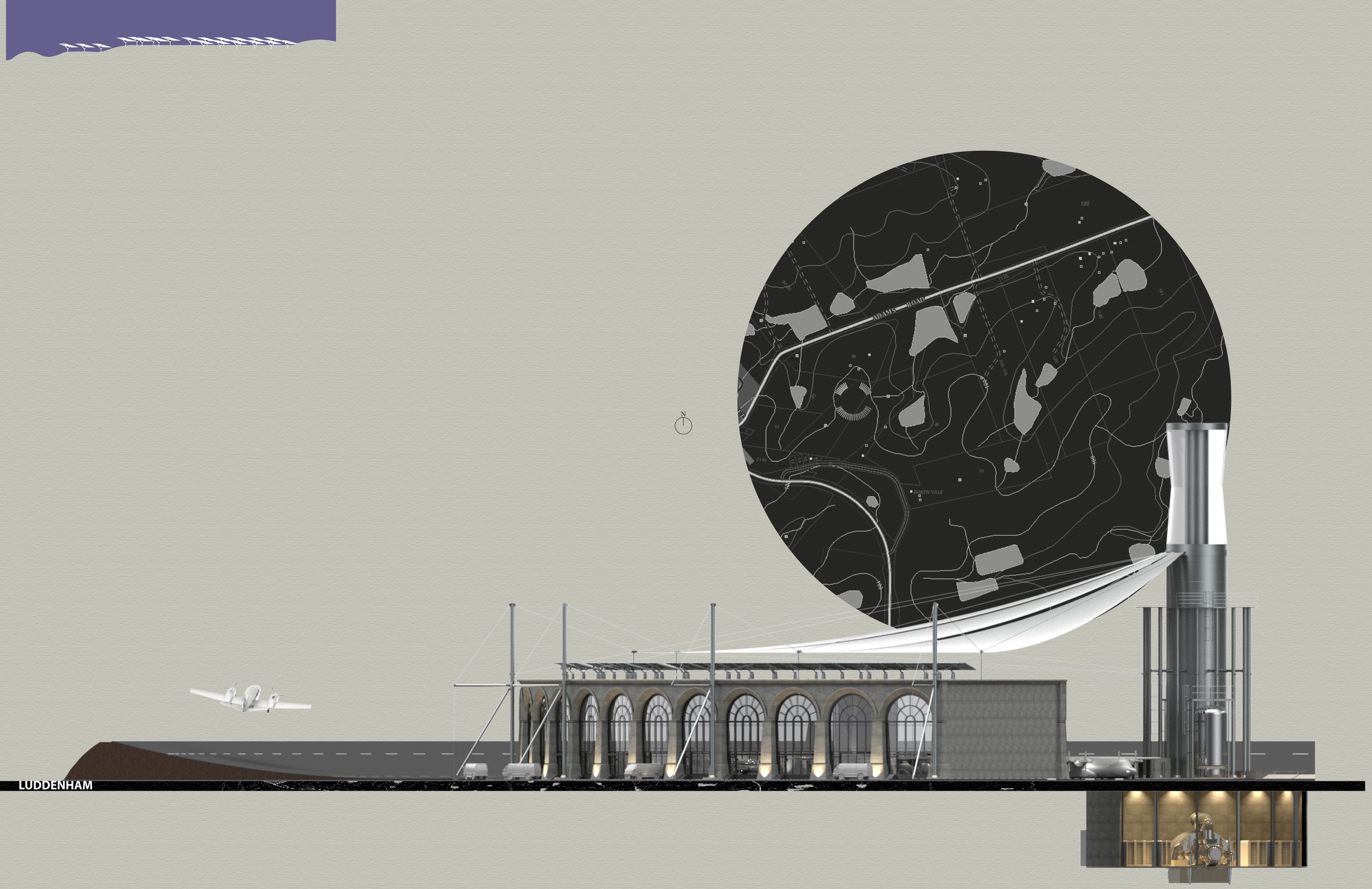
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