



2025 Design Retreat

INTEGRATED DESIGN PRACTICE



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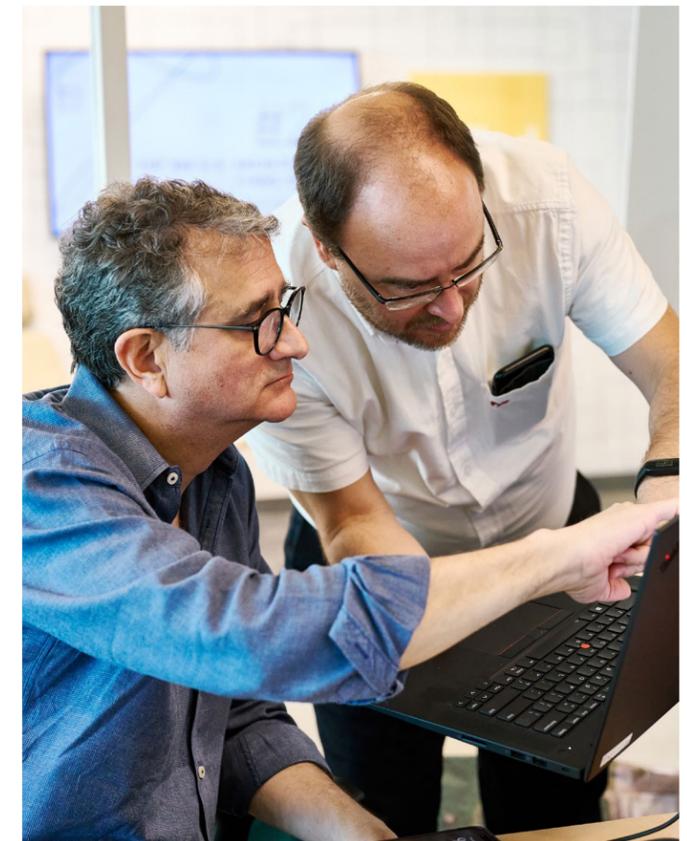


In our commitment to creating spaces for people who are changing, improving, and saving lives, we recognize that there are always new challenges requiring new methods and solutions. From incorporating the latest tools and technology to advancing sustainability initiatives, we continue to explore new ways to work and generate ideas to anticipate our clients' evolving needs.



At Flad, we believe that those great ideas can come from anyone and anywhere. We all learn from each other's unique experiences and perspectives, and collaboration inspires the best solutions for our clients. With that in mind, Flad recently hosted a national design retreat at its Raleigh office.

This forward-looking, biennial event brought together Flad's designers and professionals from varied disciplines across the country for a design sprint exercise. Participants shared their expertise and sharpened their skills using the latest tools and technology to create resilient, sustainable design solutions. Using real-world examples from healthcare, academic, and life science clients, teams presented their solutions to a jury of hand-selected clients to get real-time, unbiased feedback.



By sharing knowledge, learning together, and deepening the connections across Flad's 10 offices nationwide, we can better serve our clients.

COLLABORATING TO PUSH DESIGN FORWARD

Teams of participants were deliberately assembled across a diverse range of skill sets, experience levels, typologies, and office locations, encouraging dynamic idea generation. From those who are early in their career to 30-year veterans, the event helped reinforce our culture of cross-office teamwork and an integrated practice where knowledge flows laterally and vertically. The retreat offered the opportunity to collaborate with team members across the practice outside of typical project work, sparking creativity and innovation.



Flad invited legacy clients from our core markets of higher education, healthcare, and science & technology to critique the proposed solutions. While the clients gained insight into the way we work, designers were able to better understand client needs through direct, unbiased feedback from the stakeholders of the buildings we design. This helped teams to refine communication tools and more effectively present ideas while giving less experienced staff members the opportunity to observe and present directly to clients in a low-stakes setting.



Attendees were divided into three charettes, each assigned a different design challenge: an academic building renovation, a former retail mall adaptively reused as a healthcare clinic, and a greenfield biomanufacturing facility. The teams were given access to test emerging tools for their designs, including a variety of AI platforms.





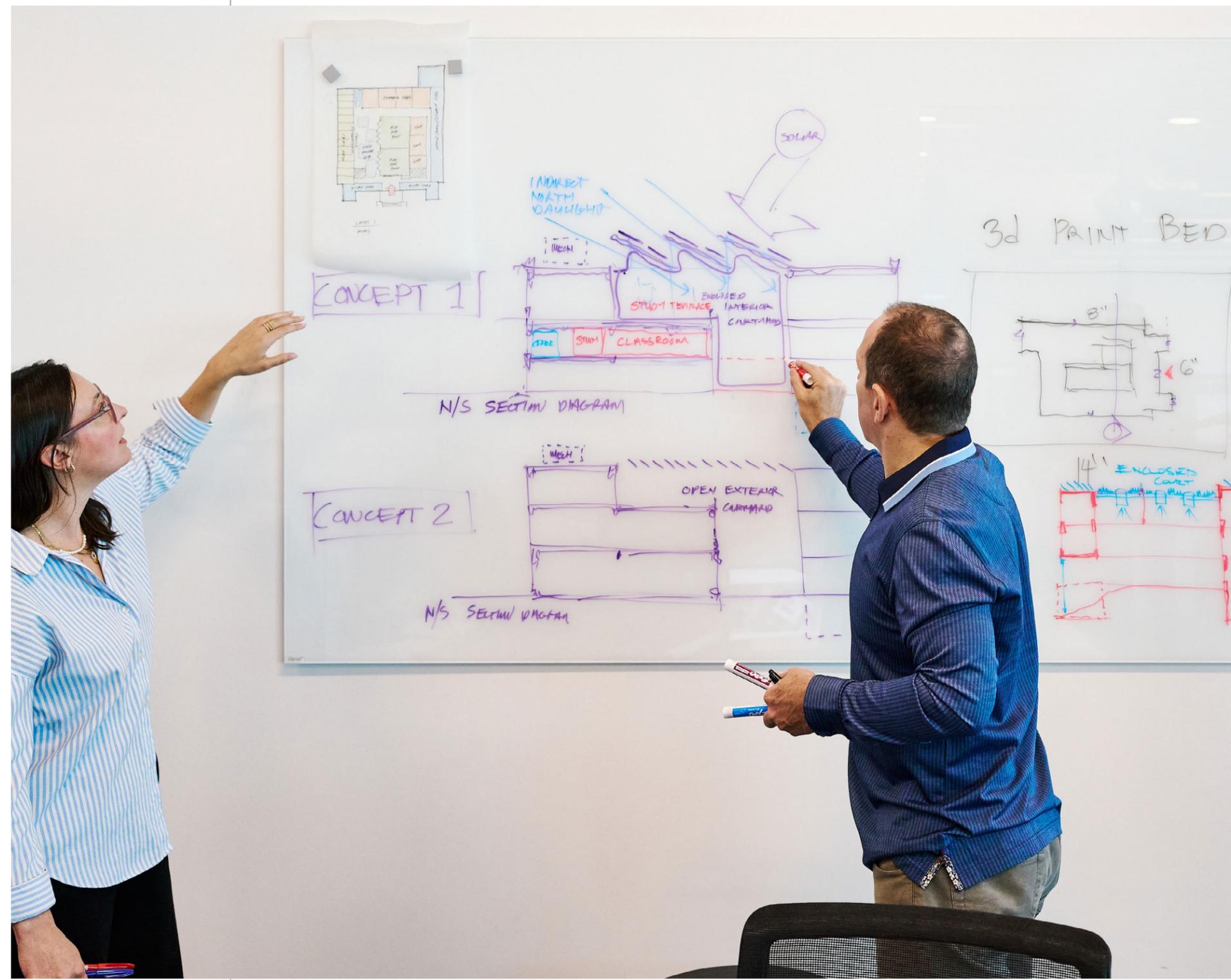
Designers have experienced firsthand how tools utilizing AI allow them to work more efficiently and streamline tasks such as massing, materiality, climate analysis, spatial analysis, and planning, among others. Design is an iterative process, and these AI-integrated tools allowed designers to generate more options more quickly. Because teams were tasked with pulling together design solutions in under a day, this was extremely valuable in accelerating early designs so designers could dedicate more time to exploring additional solutions and fine-tuning designs.

With a focus on ideation and collaboration, the designers worked together over the course of the day to create design solution options and present them to the jury of clients. The following pages feature the combined efforts generated during the charette.

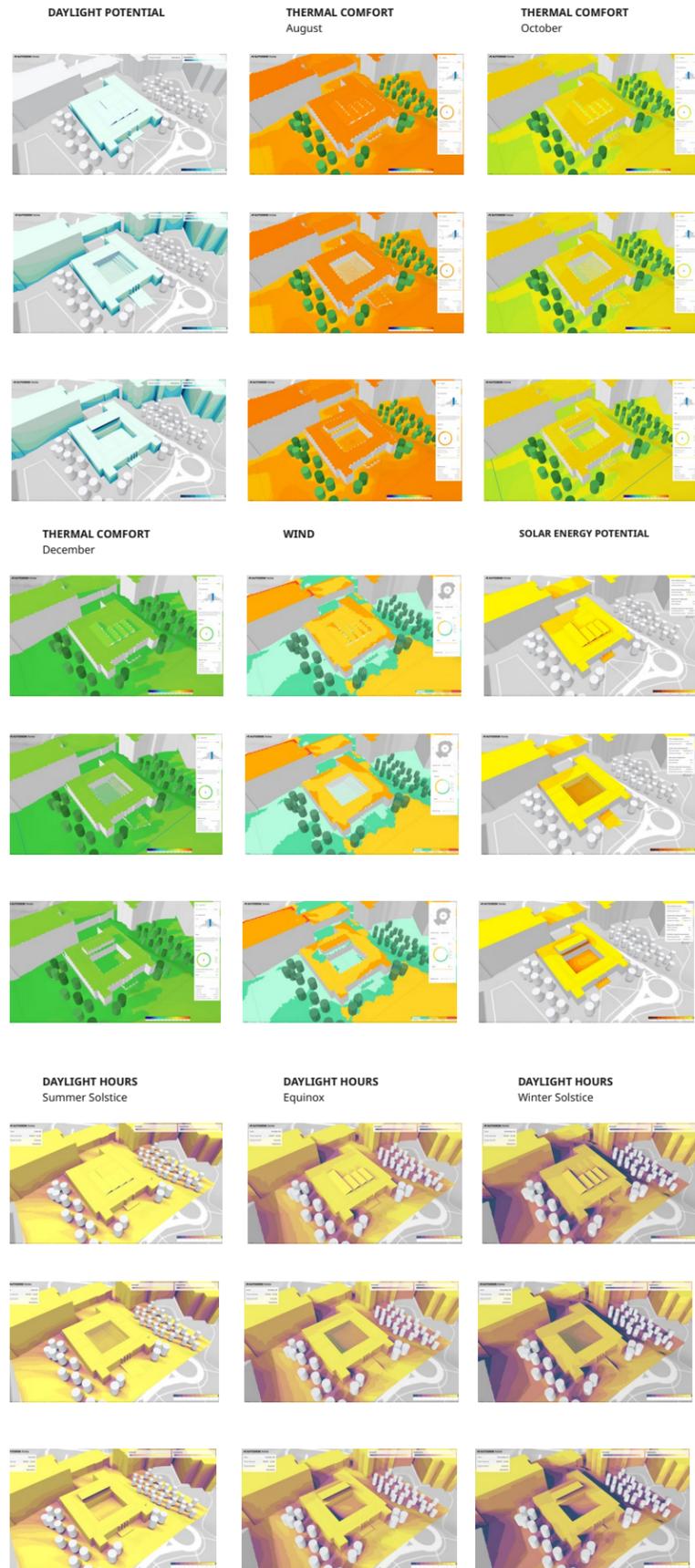
DESIGN CHARETTE: RENOVATION

ACADEMIC SCIENCE BUILDING RENEWAL

The academic charette explored renewal opportunities for an existing physics building on the campus of a top 10 R1 university, which is prioritizing renovation of existing assets over new construction.



The team first ran a high-level analysis to evaluate the potential impact on the whole-life carbon emissions intensity of four different design scenarios. First, to set a baseline, was a code-compliant renovation, which would not meet university sustainability goals and commitments.





**CONCEPT 1:
COLLABORATIVE COURTYARD**

The team then mapped out the estimated whole-life emissions intensity for a new, energy-efficient building as a replacement for the existing building. This would produce greater carbon savings than the code-compliant renovation, resulting in the equivalent of removing 3,200 cars yearly from the road.





**CONCEPT 2:
STUDY CASCADE**

The next option was an energy-efficient renovation, which demonstrated a reduction in energy use and reduced the environmental impact associated with materials and construction from the new building scenario.

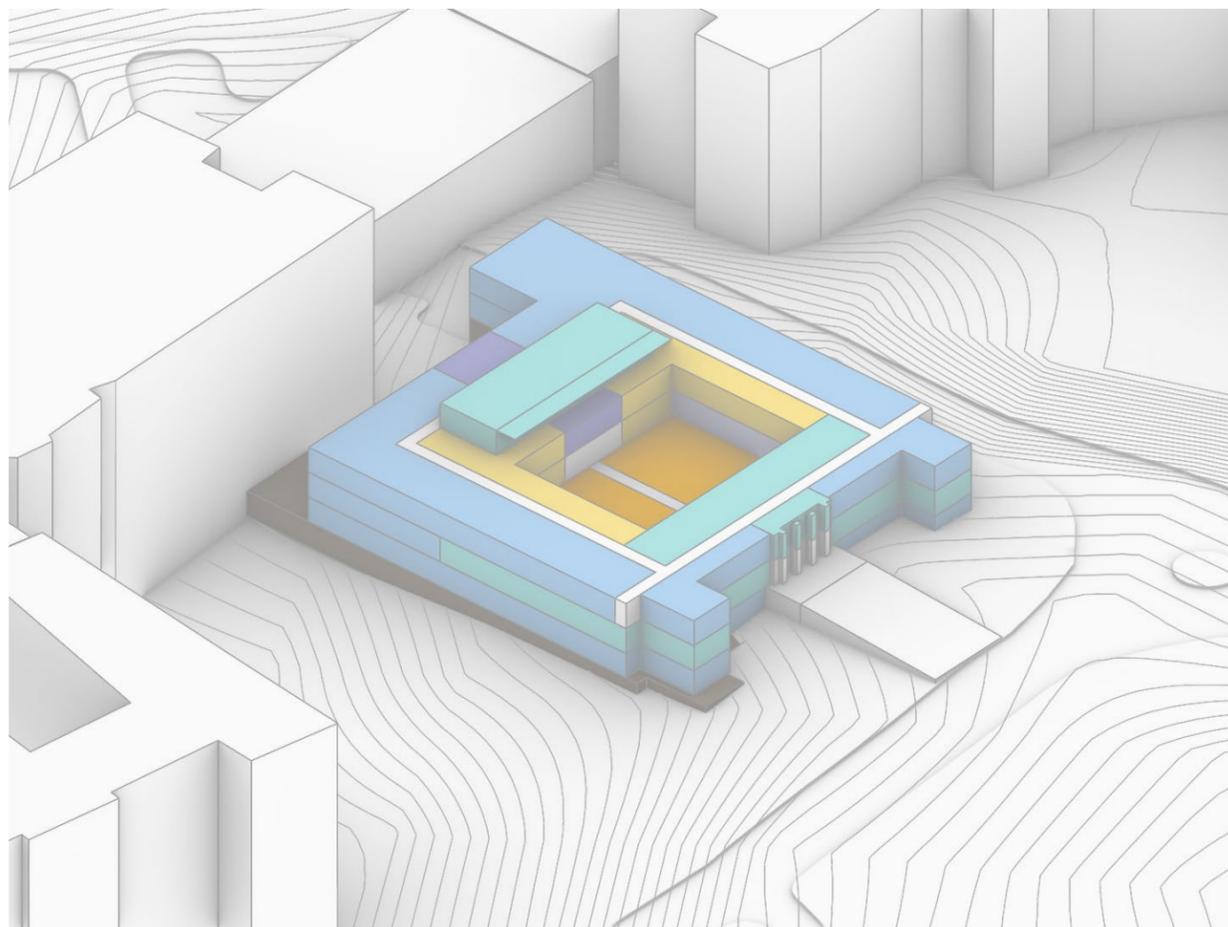




**CONCEPT 3:
CLOUD CHAMBER**

Finally, the scenario for an all-electric renovation, with renewable energy purchase, cut in half the lifetime environmental impact of the energy-efficient renovation option and showed an over 80% reduction in impact from the baseline code-compliant renovation. This solution would support the university's ongoing efforts to maintain carbon neutrality while building towards their new goal of net-zero emissions by 2050. It would also meet Flad's commitment to operational net neutrality on all projects by 2030.

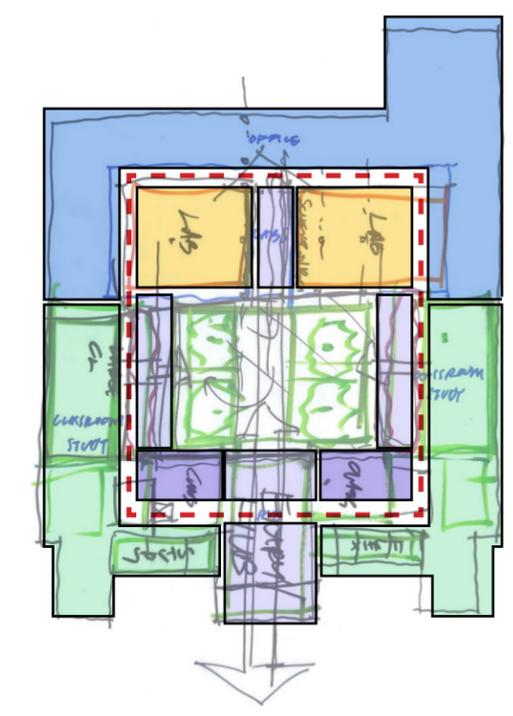




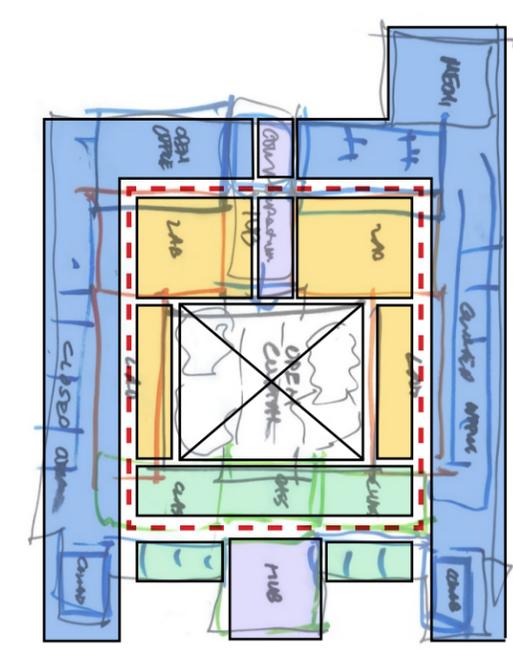
SPACE CATEGORIES

- Classroom
- Makerspace
- Lab
- Office
- Formal Collaboration
- Informal Collaboration
- Building Support
- Circulation

LEVEL 1



LEVEL 2

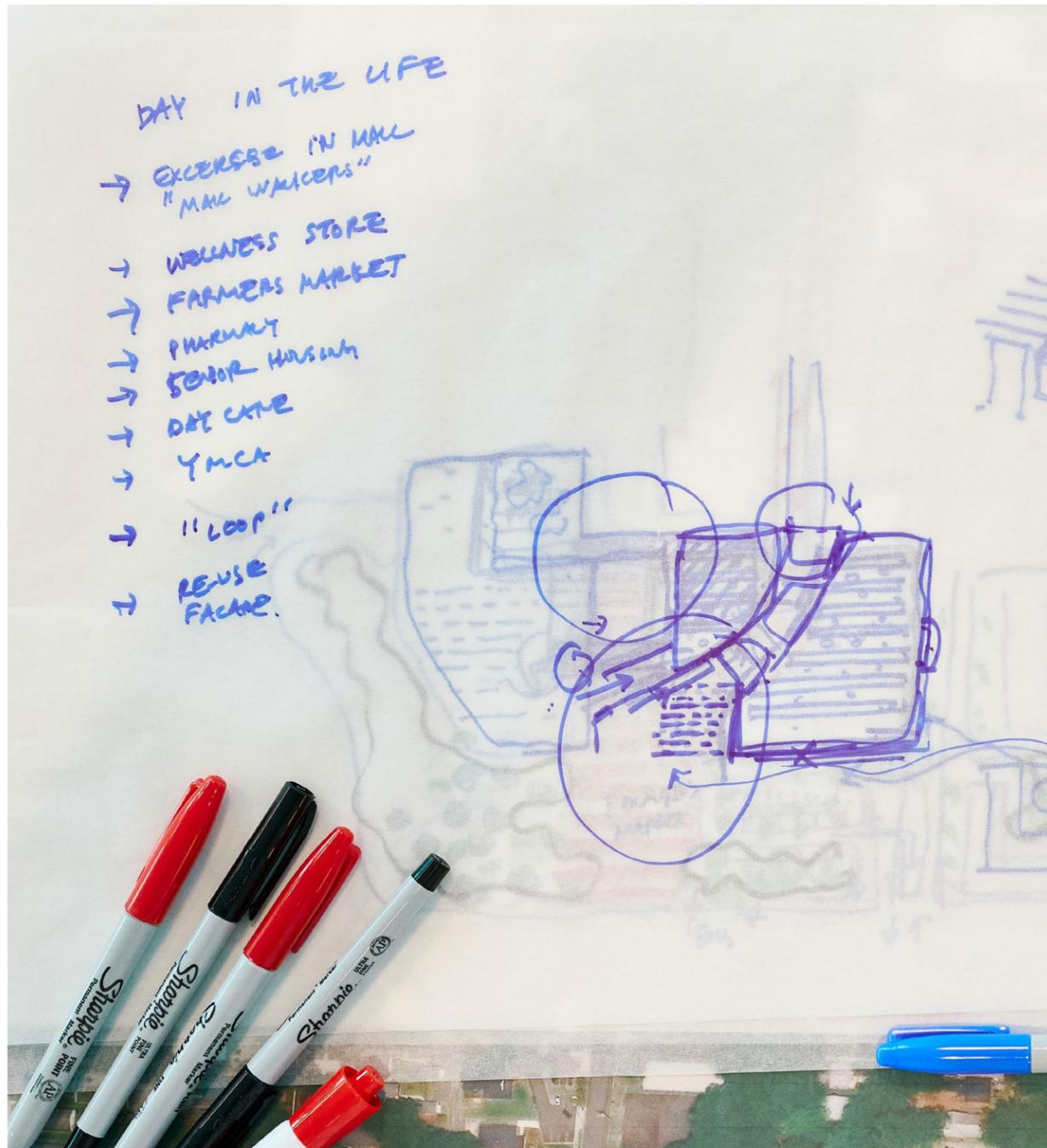


DESIGN CHARETTE: ADAPTIVE REUSE

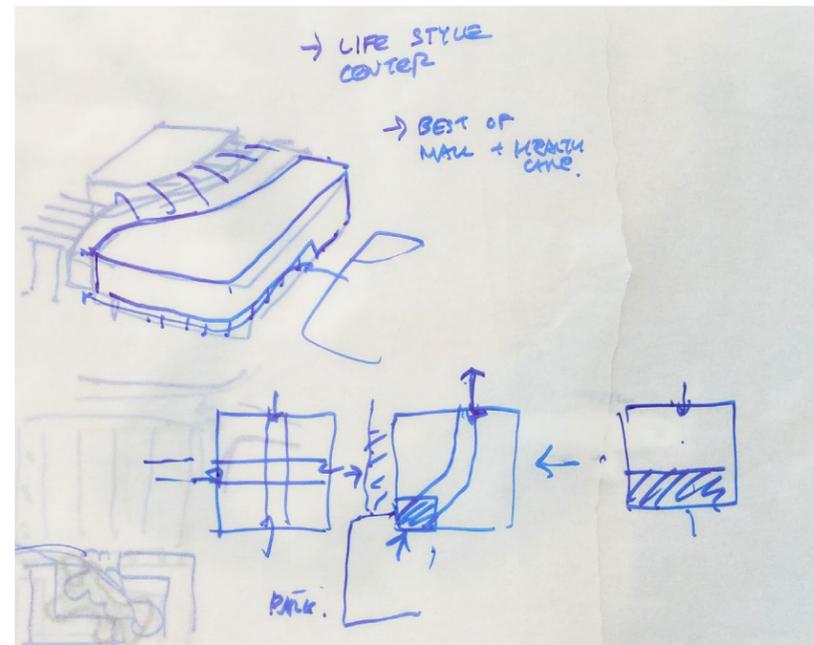
OUTPATIENT CLINIC AND HEALTHY LIVING CENTER

The healthcare charette was tasked with transforming an abandoned big-box retail mall anchor store into a new healthcare space. The program would focus on establishing a clinic and surgical center along with administrative offices.

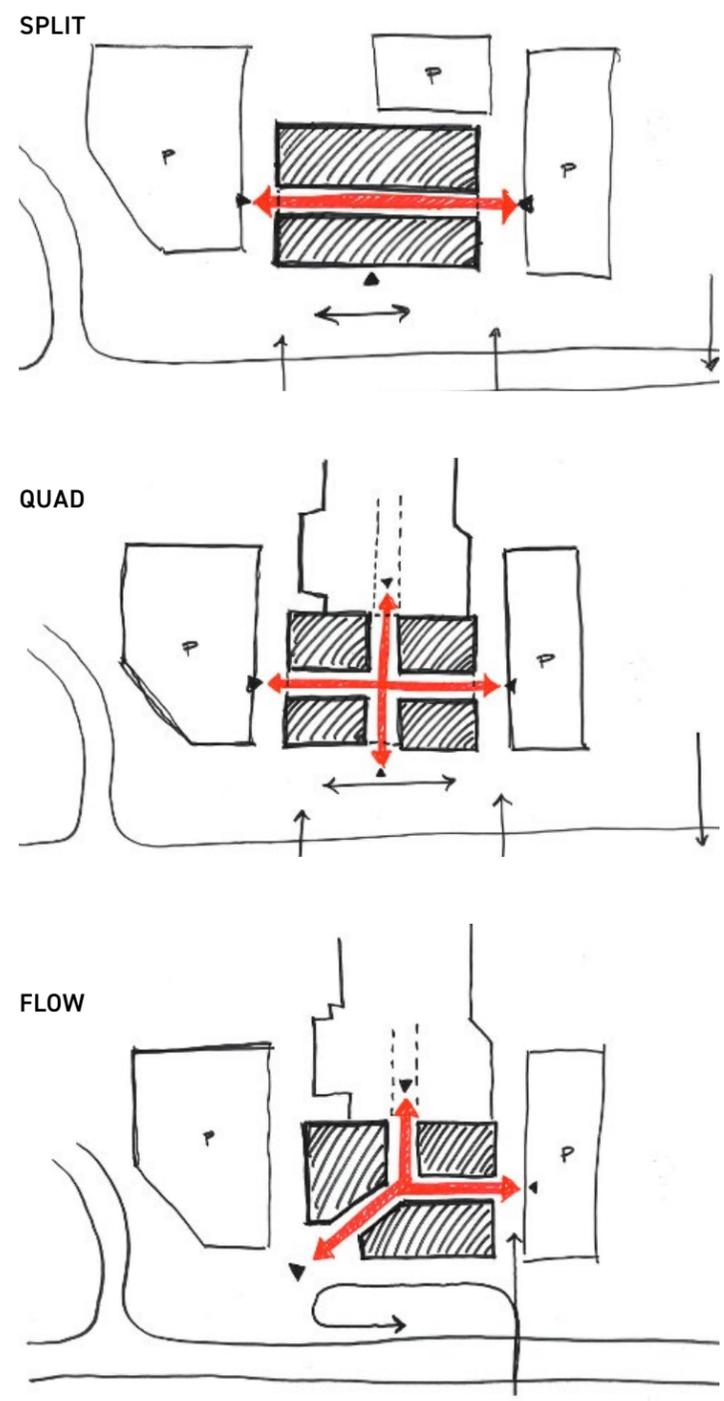




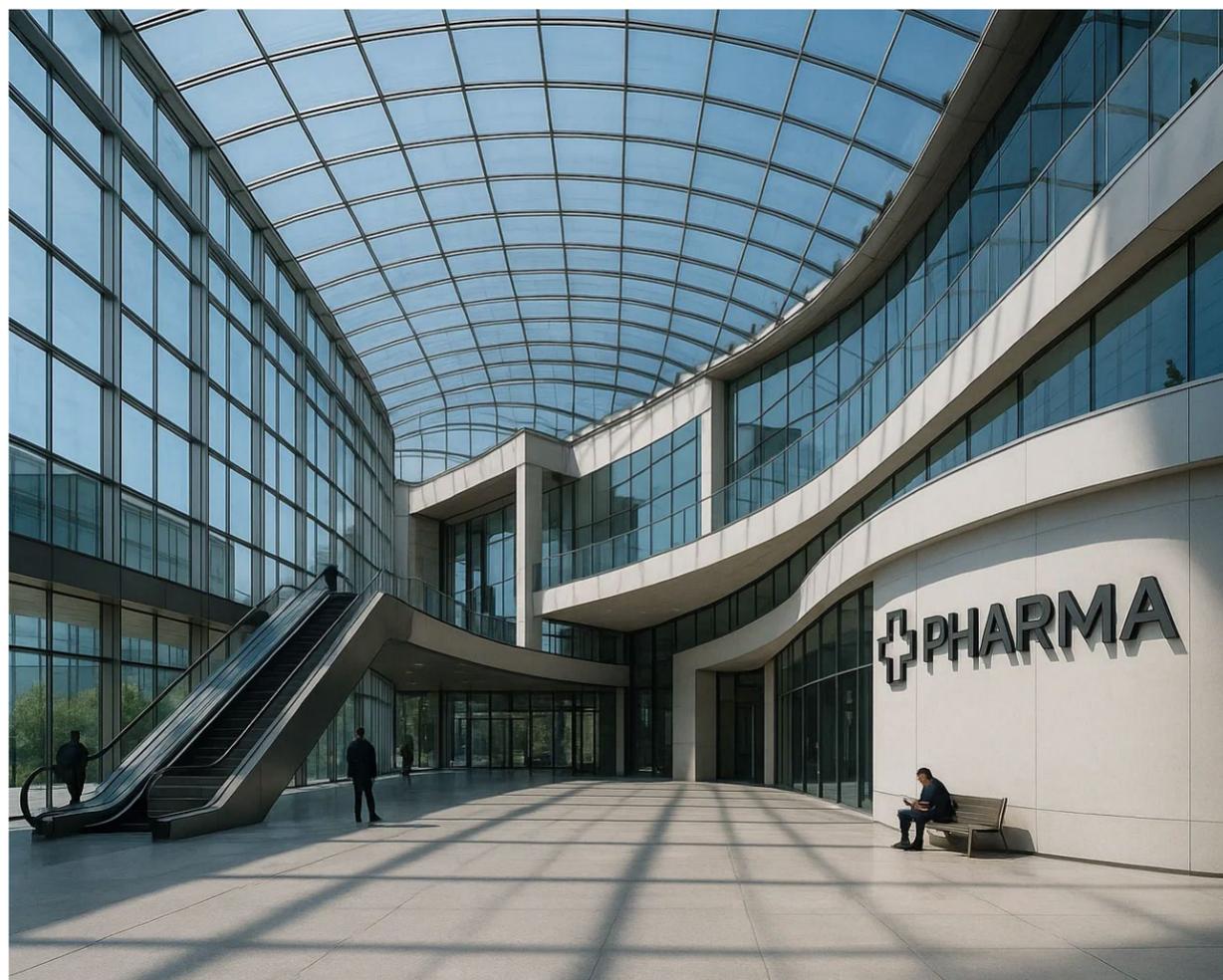
Because the two-story existing facility contains more space than is required for such a healthcare program, it allowed for greater design flexibility and the opportunity to activate public spaces to support community wellness. Like the other projects, it would focus on reducing environmental impact, doing so by reusing significant portions of the existing building in new ways to reduce use of new materials.



To establish more open circulation spaces, the team began with concept diagrams to insert a shaded central walkway through the center of the building. Originally used for retail, the existing undifferentiated, windowless floor plan was reimagined with clear circulation and biophilic elements, including access to daylight and natural spaces.

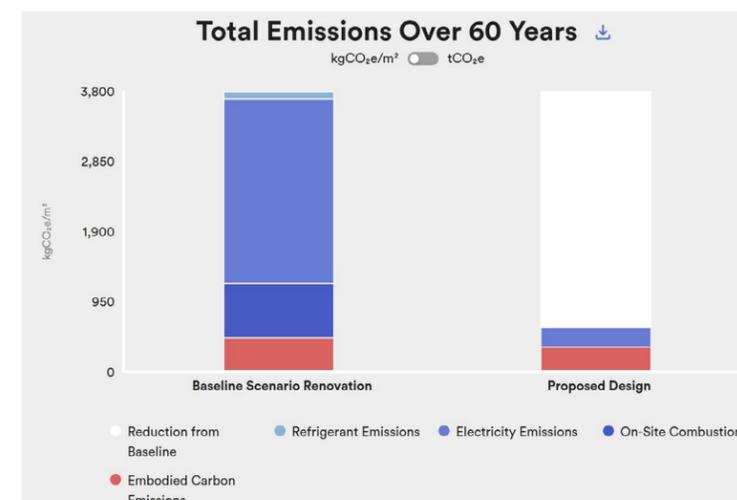


This created a more inviting connection to existing parking infrastructure on either side of the building and the businesses operating in the former mall. To increase access to natural light and create a more welcoming environment, the team also recommended strategic use of glazing in the design.



To create an inviting front door the proposed program placed more public-facing spaces – such as the pharmacy, a community kitchen, and a new plaza – closer to the main road. Meanwhile, clinical spaces were placed deeper inside the building for greater privacy. In addition, the plan allowed for spaces for elder care, rehabilitation, and additional community programs to draw people to the location.

HEALTHCARE BASELINE VS. PROPOSED SCENARIO



The design process included an analysis of what would be required to reduce operational emissions by 90 percent compared to a benchmark baseline. Through the installation of a PV array and all-electric utilities, it was possible to reduce energy usage from 105 kBtu/sf/yr to 9.45 kBtu/sf/yr. With extensive reuse of the existing structure and specifying low-embodied carbon for all new materials, the plan would reduce embodied emissions by over 25 percent.

BASELINE BUILDING

Refrigerant Emissions	97 kgCO ₂ e/m ²
Electricity Emissions	2,496 kgCO ₂ e/m ²
On-Site Combustion	739 kgCO ₂ e/m ²
Embodied Carbon Emissions	458 kgCO ₂ e/m ²
Total Emissions	3,790 kgCO₂e/m²
EUI	105 kBtu/sf/yr
Embodied Carbon Intensity	458 kgCO ₂ e/m ²

PROPOSED DESIGN

Refrigerant Emissions	0 kgCO ₂ e/m ²
Electricity Emissions	263 kgCO ₂ e/m ²
On-Site Combustion	0 kgCO ₂ e/m ²
Embodied Carbon Emissions	335 kgCO ₂ e/m ²
Total Emissions	599 kgCO₂e/m²
Reduction from Baseline	-3,191 kgCO₂e/m² (-84)%
EUI	63 kBtu/sf/yr
Embodied Carbon Intensity	335 kgCO ₂ e/m ²

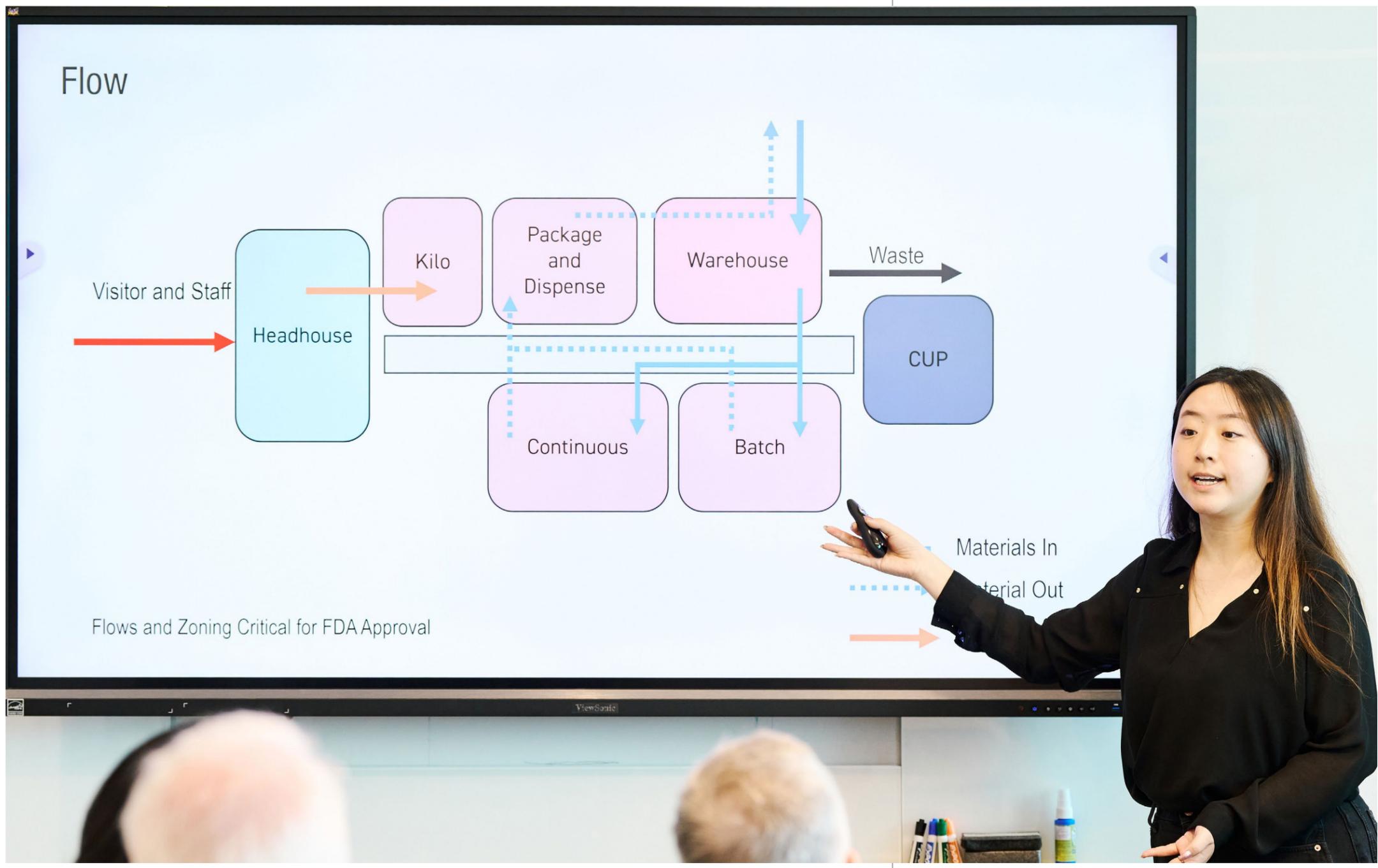


DESIGN CHARETTE: GREENFIELD SITE

BIOMANUFACTURING AND TECHNOLOGY HUB OF THE FUTURE

Finally, the science and technology charette's assignment was to conceptualize and design a clinical-scale manufacturing facility for a large pharmaceutical firm.



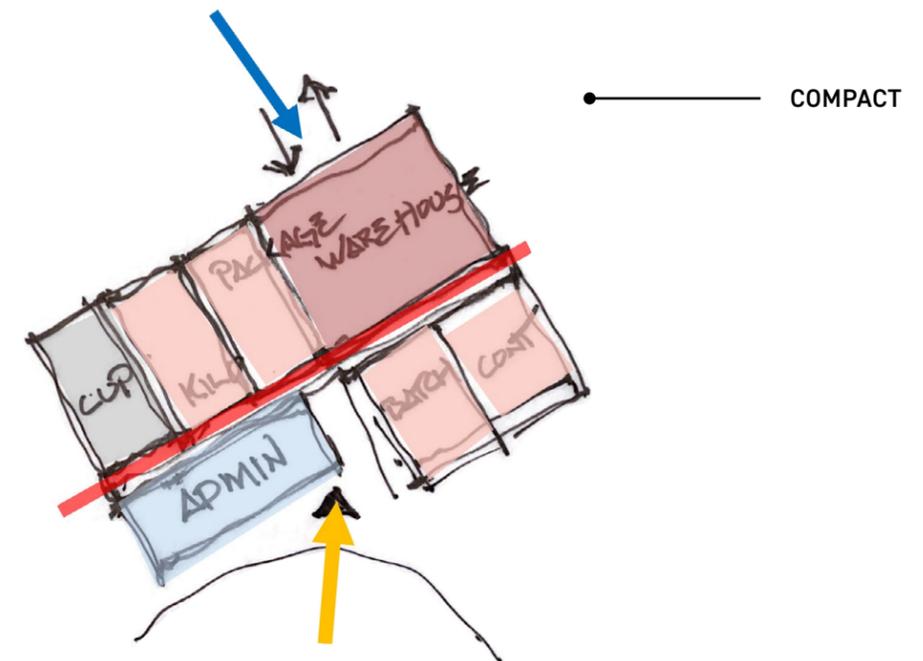
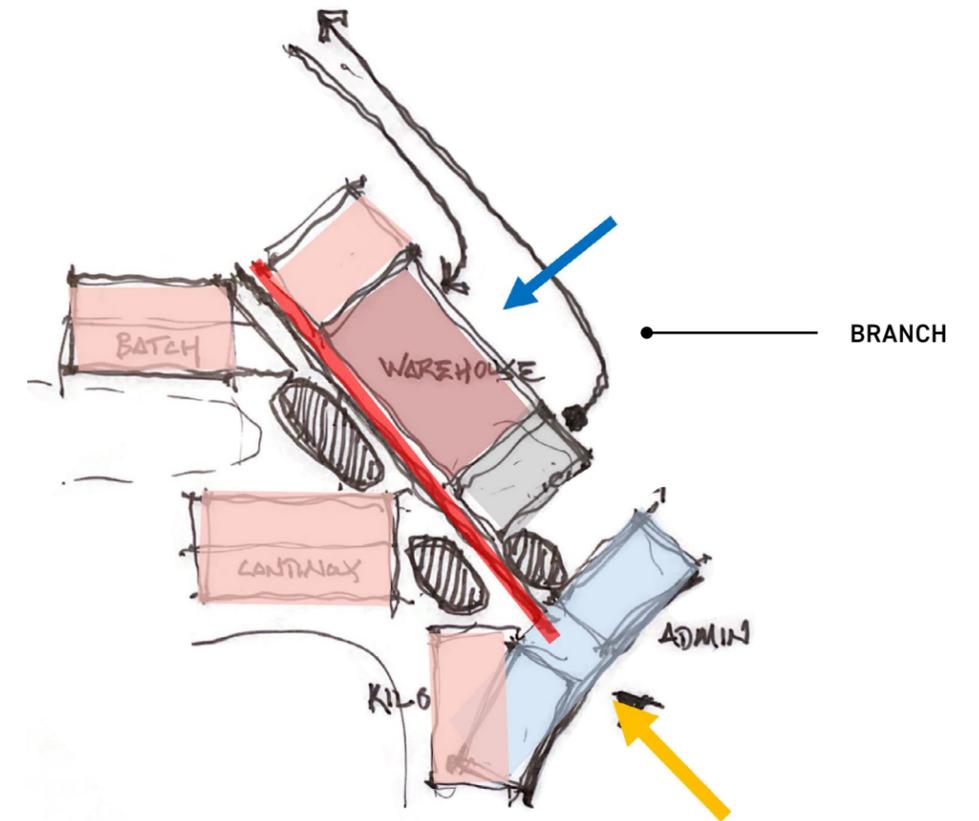
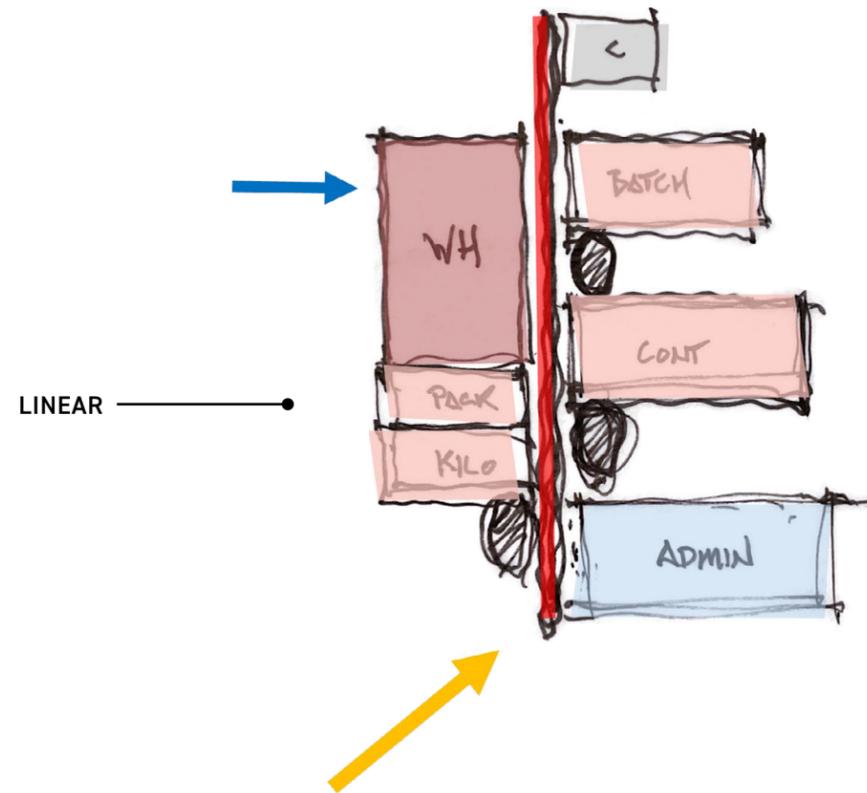


Envisioned as a flagship project and showpiece for prospective investors and candidates, the facility would feature a headhouse, manufacturing, warehousing, and laboratory operations while incorporating science-on-display concepts. The state-of-the-art facility would need to integrate advanced technology (e.g., AI, simulation, and visualization) and kick off the company's ambitious Net Zero 2040 initiative.

The design team started with a human-centric approach, considering the flow of people and materials throughout the manufacturing process as well as key adjacencies of program elements and their placement on the site.

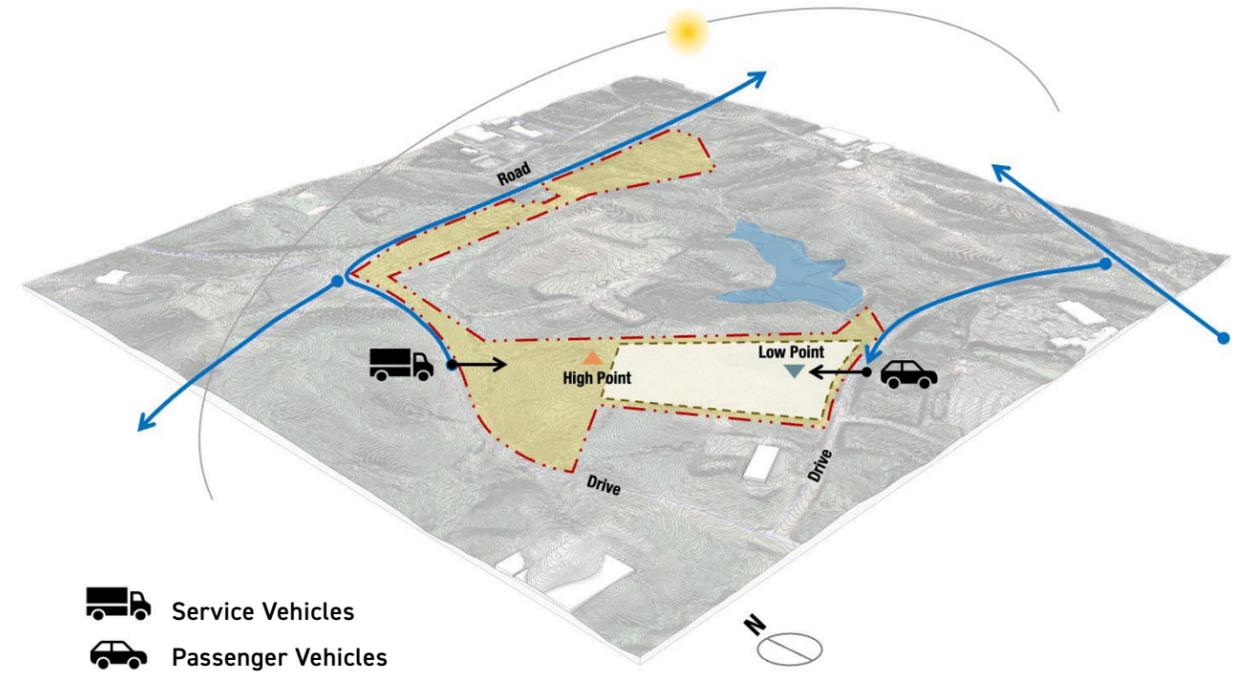
Based on a site analysis and workflows within the site context, the team created three distinct design schemes, each built around a central spine.

Prioritizing efficiency and employee well-being, the different options balanced opportunities to take advantage of site elevation and grade, incorporate natural light and green space, and minimize travel distances.

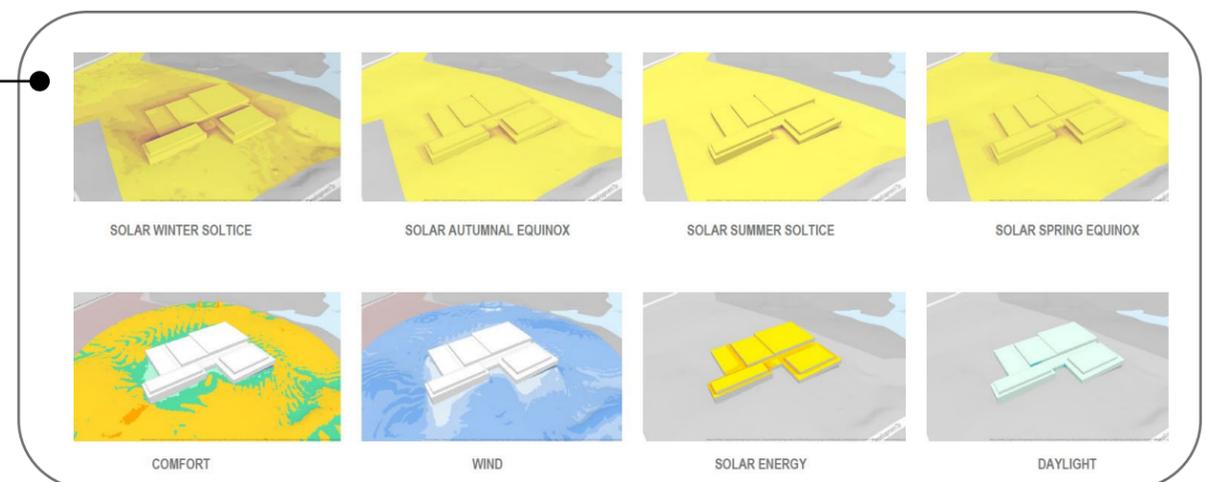
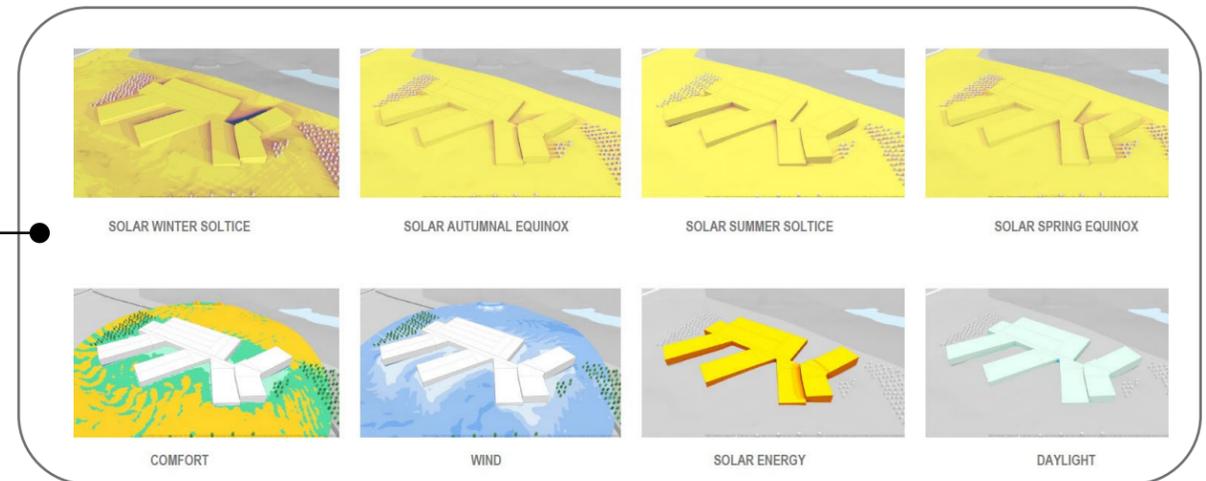
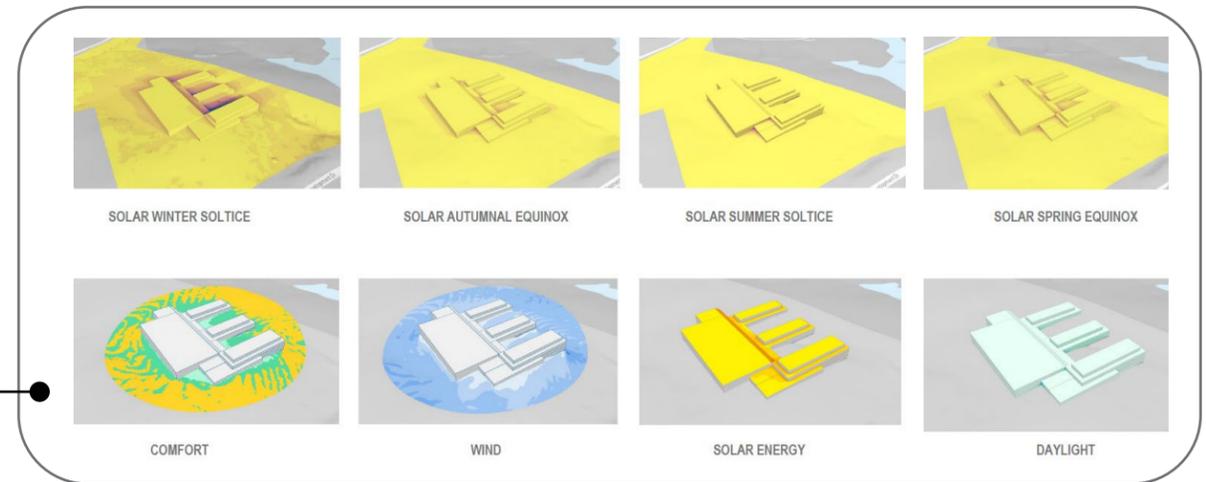
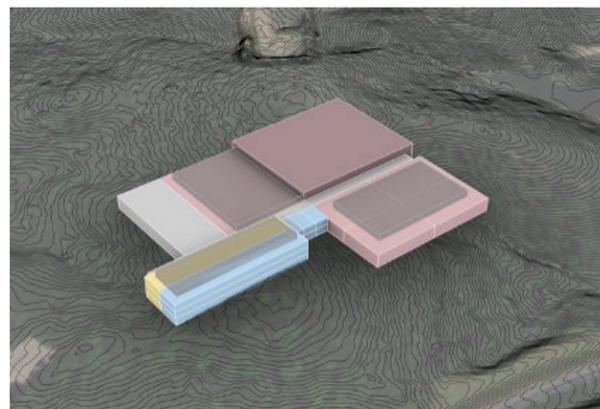
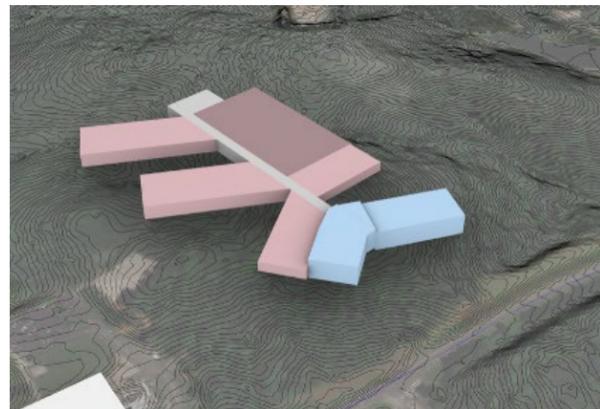
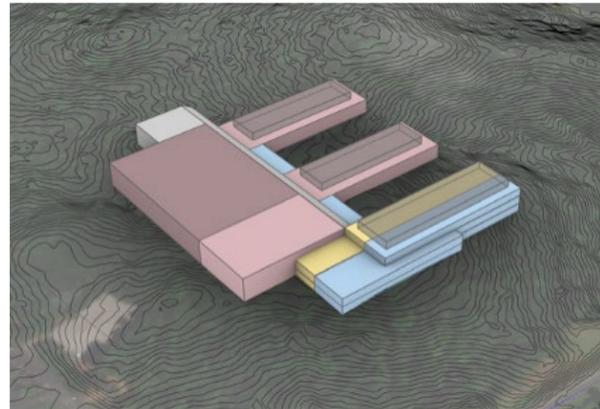




SITE CONTEXT



Using an iterative process and a variety of BIM tools, the team laid out 3D massing for each of the three options and then analyzed each scheme's performance with variables such as wind, daylight, and solar heat gain.





The team then took the process a step further and utilized AI tools to create detailed renderings of each potential option.



ENERGIZING IDEAS, GENERATING VALUE FOR CLIENTS

Charettes such as this one directly benefit our clients by fostering interdisciplinary collaboration and creative thinking, which both energizes designers and elevates the quality of design. We pride ourselves on managing projects in a collaborative environment where we listen, support, and incorporate design solutions that reflect an understanding of how people work and interact. These charettes create space for us to explore bold ideas and challenge assumptions through rapid ideation, resulting in more innovative and thoughtful solutions.

Our clients benefit from the collective knowledge and creative thinking generated through the charrette process, gaining access to more innovative design solutions tailored to their unique goals. Combining these ideas with our shared technical expertise and the latest tools results in more innovative and strategic solutions to our clients' greatest challenges, ultimately leading to better outcomes.





Flad Architects is a national planning and design firm committed to creating environments that enhance human potential. In partnership with leading research organizations, universities, healthcare institutions, and science-based companies, Flad designs innovative facilities that enable revolutionary discoveries that have a profound impact on society. Over 95 years of passionate and rigorous focus on buildings devoted to the sciences has earned Flad consistently high rankings among the top 20 architectural firms, both overall and in the specific areas of science & technology, academic, and healthcare design.



Flad