

context

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This chapter describes the laboratory, its history and its values and gives perspectives on the current Campus and the key challenges looking ahead.

About the laboratory

Fermilab, the only U.S. national laboratory devoted to particle physics, was founded in 1968. Fermilab's 1,700 employees and 2,000 scientific users advance humankind's understanding of matter, energy, space and time by carrying out a world-leading program of discovery. The laboratory's core skills include experimental and theoretical particle physics, astrophysics and accelerator science; R&D for accelerator and detector technologies; the construction and operation of large-scale facilities; and high-performance scientific computing.

Fermilab is managed by the Fermi Research Alliance, an organization made up of the University of Chicago and a consortium of 86 universities called the Universities Research Association. All of the laboratory's buildings are used and owned by the Department of Energy. The usage is predominately divided among research and development space and administrative facilities.

The laboratory is home to one of the largest accelerator facilities in the world, including a complex of eight accelerators, test accelerators and infrastructure for the development of accelerator technologies. The laboratory's accelerator complex produces intense particle beams that are used by scientists around the world to explore subatomic particles called neutrinos and ultra-rare processes in nature. Its staff and users build, operate and lead experiments to investigate dark matter, dark energy and ultra-high-energy cosmic rays. Fermilab is a U.S. hub for research at the Large Hadron Collider and for R&D for the next generation of particle accelerators and detectors for use in science and society.

The Campus

The Fermilab Campus occupies 6,800 acres of primarily farmland 42 miles west of Chicago in Batavia, Illinois. The land was purchased by the State of Illinois and provided to the Atomic Energy Commission (a precursor to the Department of Energy). The site includes 362 buildings and 70 trailers taking up a total of about 2.4 million gross square feet of space. The laboratory includes 122 acres of parking lots and hundreds of miles of utility infrastructure including roads, electrical, natural gas, industrial cooling water, potable water and sanitary systems. The total replacement value of the property is \$1.8 billion. This includes the laboratory's programmatic accelerator and tunnel assets.

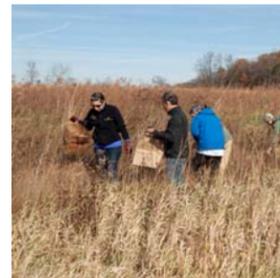
Fermilab's founding director, Robert Wilson, greatly influenced the design of the laboratory. Both a physicist and an artist, Wilson believed that a research laboratory should be a cultural center for the community and the nation.

Wilson helped design the centerpiece of the site, the stately 16-story Robert Rathburn Wilson Hall, inspired by a Gothic cathedral in Beauvais, France. The building serves as a central meeting place, housing the laboratory's cafeteria and the Campus' largest concentration of offices. Adjoining Wilson Hall to the

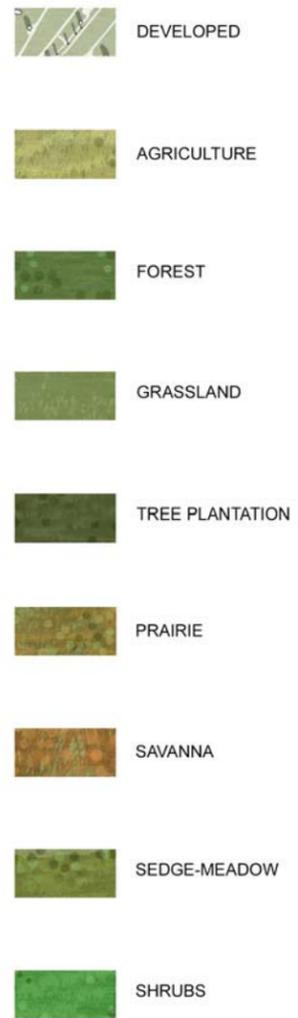
south is the 830-seat Norman F. Ramsey Auditorium, which hosts weekly talks and cultural events.

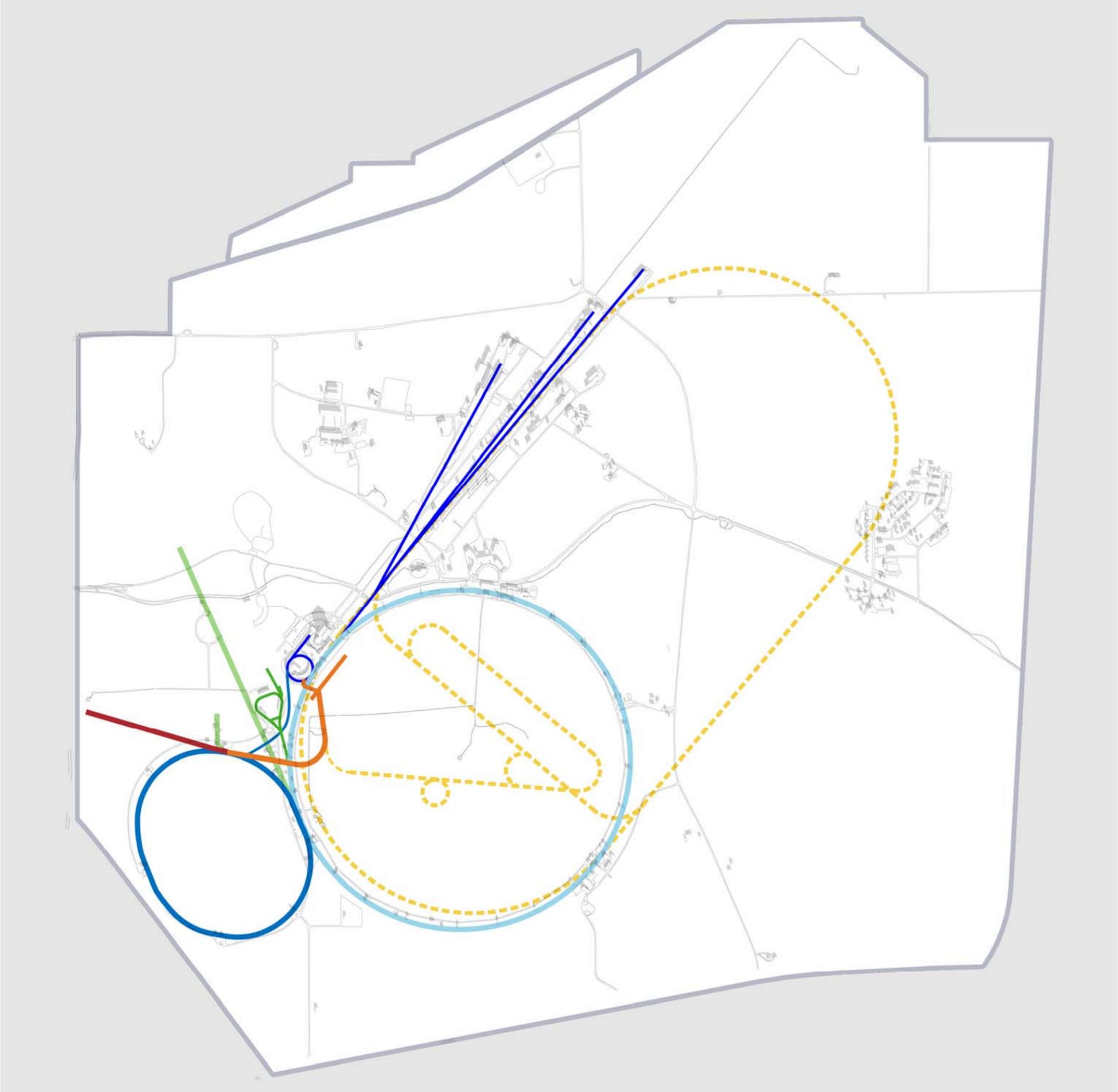
Wilson influenced the unique design and character of several buildings on Campus, including the Meson Laboratory, the Neutrino Laboratory, the Proton Laboratory and the Feynman Computing Center. He designed the Archimedes Spiral, a structure that covers the pumping stations at one of the site's ponds, and the utility poles, which are shaped like the Greek letter pi. He also created several of the site's iconic sculptures.

But these structures make up just a small portion of the Fermilab site. The Campus also includes 1,000 acres of restored prairie, oak savanna woodland and wetlands. This rich and diverse landscape provides habitat for many animal species, including upwards of 285 species of birds, numerous uncommon butterflies and other insects, and thriving populations of white tail deer, coyotes and other small mammals. Visitors to the site enjoy hiking, fishing, bird watching, bicycling, cross country skiing and photography.



Campus lands



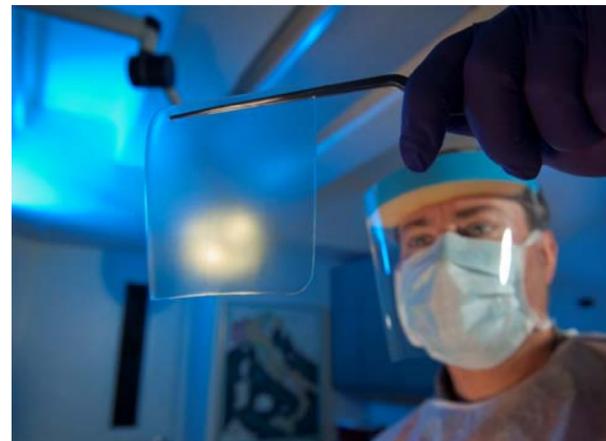
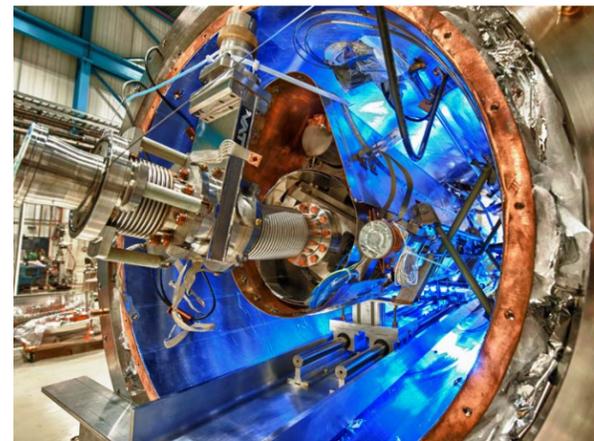


Campus Experiments

- Booster, Linac and fixed target beams (existing)
- Main Injector (existing)
- Tevatron (existing, inactive)
- Mu2e and g-2
- Nova
- Superconducting Linac Complex
- LBNE (Future)
- Muon Collider (Future)

**What
people
value most
about
Fermilab**

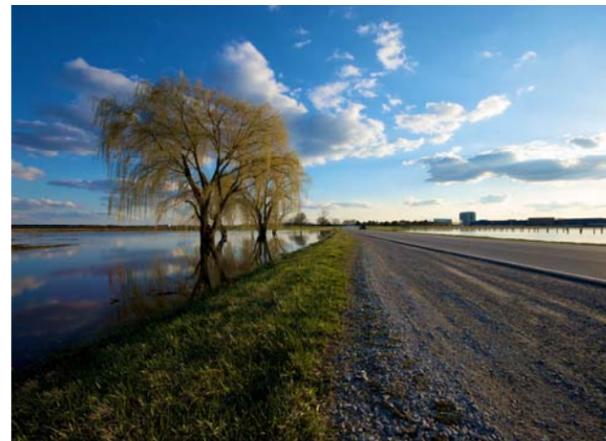
Science



Fermilab ”
helps overcome
the greatest
challenges of
our time.”

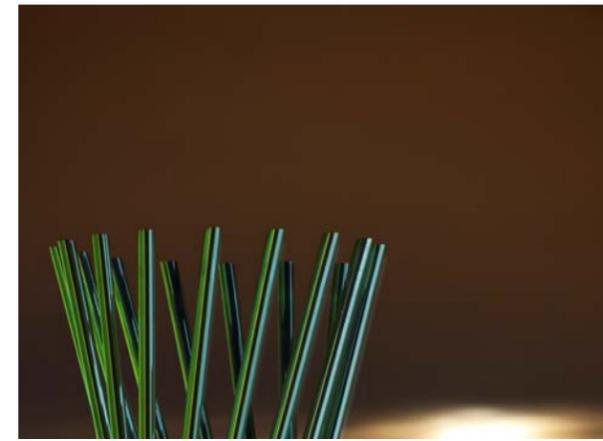
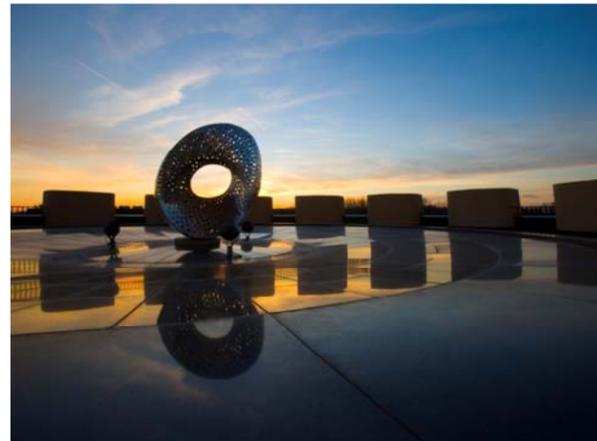
Bold and innovative ideas and technologies from particle physics have entered the mainstream of society to transform the way we live. From enabling the development of MRI machines to building the first proton accelerator for cancer treatment, Fermilab helps overcome some of the greatest challenges of our time. Fermilab is an R&D center for SRF cavities, the technology of choice for the next generation of accelerators. SRF technology has potential applications in medicine, nuclear energy and materials science.

Nature



Fermilab's 6,800-acre site has become an island of green, surrounded by residential, commercial and light industrial activity. Because of its "green island" character, Fermilab is viewed very positively, is very accessible and is regularly visited by our neighbors for recreation and simply to enjoy the natural landscape. Hiking, fishing, bird-watching, bicycling, cross-country skiing and photography are some of the activities enjoyed by visitors.

Art & Architecture

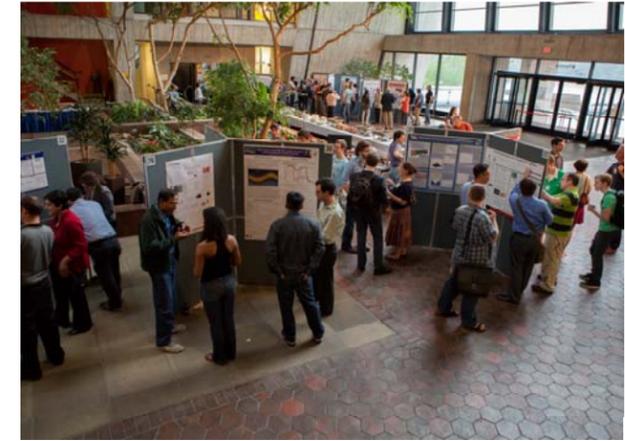


I have always felt that science, technology and art are importantly connected...”

Robert Wilson Fermilab founder

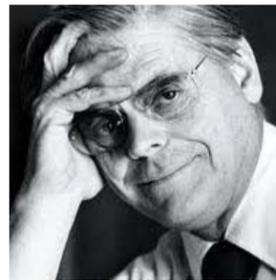
Fermilab’s respect for art and architecture is rooted in the founder’s philosophy. In the words of Fermilab founding Director Robert Wilson, “I have always felt that science, technology and art are importantly connected; indeed, science and technology seem to many scholars to have grown out of art. In any case, in designing an accelerator, I proceed very much as I do in making a sculpture. I felt that just as a theory is beautiful, so, too, is a scientific instrument—or that it should be. The lines should be graceful, the volumes balanced. I hoped that the chain of accelerators, the experiments, too, and the utilities would all be strongly but simply expressed as objects of intrinsic beauty.”

Community



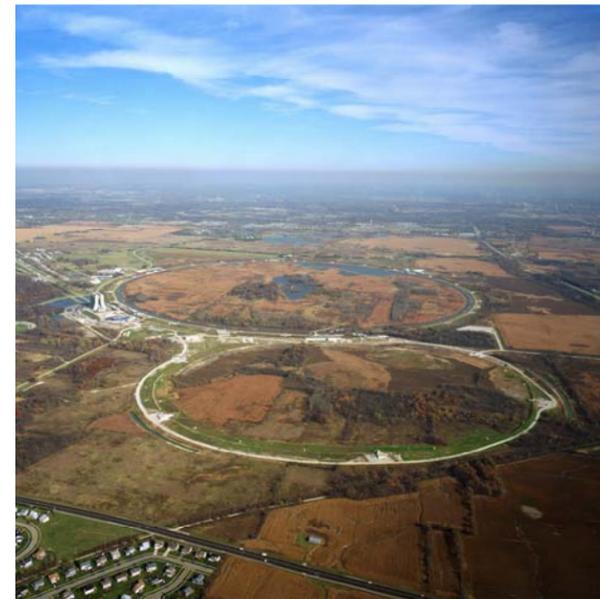
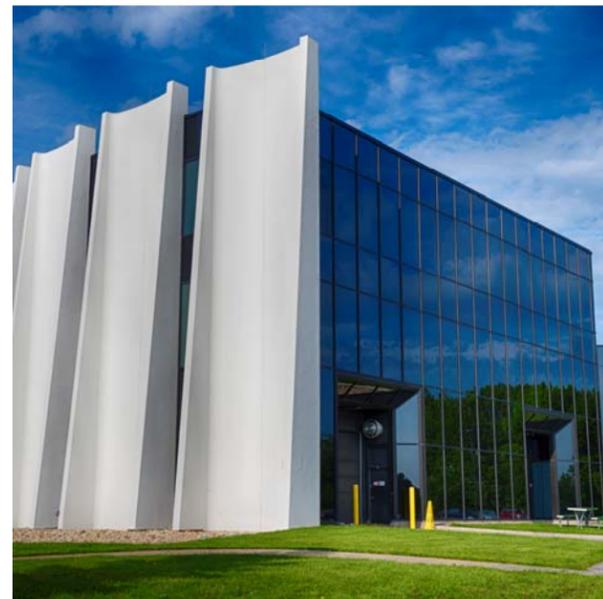
The people of Fermilab form an international community of scientists, engineers and support staff. Intellectual curiosity is energized by sharing a zeal for discovery and by working collaboratively and cooperatively on common goals.

A brief history of Fermilab Campus development



1968

1970's



1980's

1990's

2000's

Current perspectives on the Campus

The master planning design team considered perspectives on the Fermilab Campus as communicated to them by the general population, and current and planned future uses of the Campus, and agreed on the following points:

1. Fermilab employees and visitors appreciate the spirit in which the Campus was originally designed and would like it upheld.

The laboratory should continue to recognize and enhance the founder's utopian vision, on which Fermilab was based, and which informed the laboratory's early design.

Projects should be planned with a long-range, holistic vision of the Campus in mind, with a focus on safety, performance, accessibility, sustainability, environment, character and cost.

2. Many of the founding era buildings are not conducive to the workplace expectations of current and future generations of researchers.

Many of the early buildings do not prioritize quality of life or contribute a sense of place. Similar to many offices and industrial Campuses developed in the postwar period, the Fermilab Campus was meant to be experienced by automobile. Many of the buildings that house scientists and staff members feel as if they were designed from the outside in, prioritizing image or representation over more experiential and "quality of life" aspects.

Many of these early buildings are self-referential objects meant to be viewed as sculptures. They do not have useable outdoor spaces or clear and welcoming entrances that contribute a desired "sense of place." The architecture of Wilson

Hall is a prime example of this condition, as the building seems unfriendly and intimidating to some.

3. Some of the founding spirit seems to have been lost in the utilitarian and backward looking design of the post founding era buildings and utilities.

Site development and building design during the post founding era has been implemented around economy oriented imitations and replications of the original buildings. This process has resulted in a site populated by rather non-descript, utilitarian structures. This approach fails to acknowledge what has changed in terms of science, values, performance, technology, and sociology since the founding era.

4. Generally speaking, the Campus is not pedestrian friendly.

Getting around Fermilab generally means driving from point to point. This conflicts with the sense of community that Fermilab seeks to create among its scientists and staff members and presents a challenge to achieving sustainability goals. Fermilab needs a meaningful and effective system of pedestrian connections, bikeways and shuttles.

5. The Campus has a haphazard feel due to the scattered nature of the structures, roadways and utilities about the site.

The organizational principle that determined the siting of buildings is unclear and lead to a rather random and dissonant overall character.

6. The visitor experience needs improvement.

Visitors on Campus need to have a more welcoming and informative experience. The Campus has weak entry points that are easy to miss and convey no sense of arrival. The overall entry sequence is not a welcoming experience.

Public areas of the Campus are not distinguished from private areas, and it is not clear which Campus areas and buildings are open to the public and which are “off limits.”

Additionally, it is difficult for an outsider to understand what happens at Fermilab, and it is currently possible to pass through the site unaware that scientific research is taking place at all.

7. Some of the existing buildings tend to dominate, as well as distract from, the laboratory’s natural landscape.

The natural landscape is a significant identifying characteristic of the Fermilab Campus that makes it unique among laboratories. The design of current buildings is not well integrated into the landscape.

8. Many of Fermilab’s aging and inadequate facilities, including manufacturing, assembly, engineering and technical and general purpose facilities, will need to be updated or replaced to accommodate the laboratory’s scientific program plan.

Fermilab requires additional high-quality industrial, high-bay, and other technical spaces to accommodate the laboratory’s scientific program.

9. Fermilab needs to facilitate a more collaborative environment.

Concentrating the work spaces of a larger number of people in one area of the Campus will facilitate collaboration within and across departments and will improve the work lives of employees. Also, providing more communal spaces, both indoors and outdoors, will facilitate both intentional and unplanned collaboration. These spaces also provide more relaxed work settings, something that employees, especially recent graduates, expect to have as an option.

10. The laboratory should use space more efficiently.

Current allocations are not in line with comparable industry standards, General Services Administration guidelines and national laboratory trends. Additionally, buildings tend to be categorized by organization and divisions thereby not taking advantage of the possibilities and benefits of shared space. The culture should move from a “my space” concept to an “our space” model.

Key challenges

Responding to the current perspectives, the Campus Plan design team has identified three key challenges facing Fermilab.

Creating a modern, state-of-the-art research laboratory:

Facilities that enable Fermilab to design, build and test the scientific tools it needs to carry out its leading-edge research and development.

Creating a sense of community:

A place where researchers and staff work nearby, easily meeting together to exchange ideas.

Creating a sense of place:

A Campus noted for its natural, architectural and experiential qualities.



