



University of Colorado
Anschutz Medical Campus

ANSCHUTZ MEDICAL CAMPUS 2022 FACILITIES MASTER PLAN

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With:

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ACKNOWLEDGMENTS

The CU Anschutz Medical Campus 2022 Facilities Master Plan represents a collaborative effort of many, over a period of more than a year. Creating this comprehensive plan would not have been possible without the participation of many people, and their contributions are gratefully acknowledged and appreciated. With their wisdom, vision, guidance, and willingness to help, this plan should shape the physical makeup of our campus for years to come.

Special thanks to the hundreds of CU Anschutz students, faculty, and staff, and representatives from the University of Colorado Hospital, Children's Hospital Colorado, CU Medicine, City of Aurora, Fitzsimons Redevelopment Authority, and the Veterans Affairs Medical Center who gave generously of their time, energy, and invaluable input.

As with any project of this magnitude, there may be individuals whose names were overlooked. We apologize for any oversights. A list of all participants is included in the Appendix.

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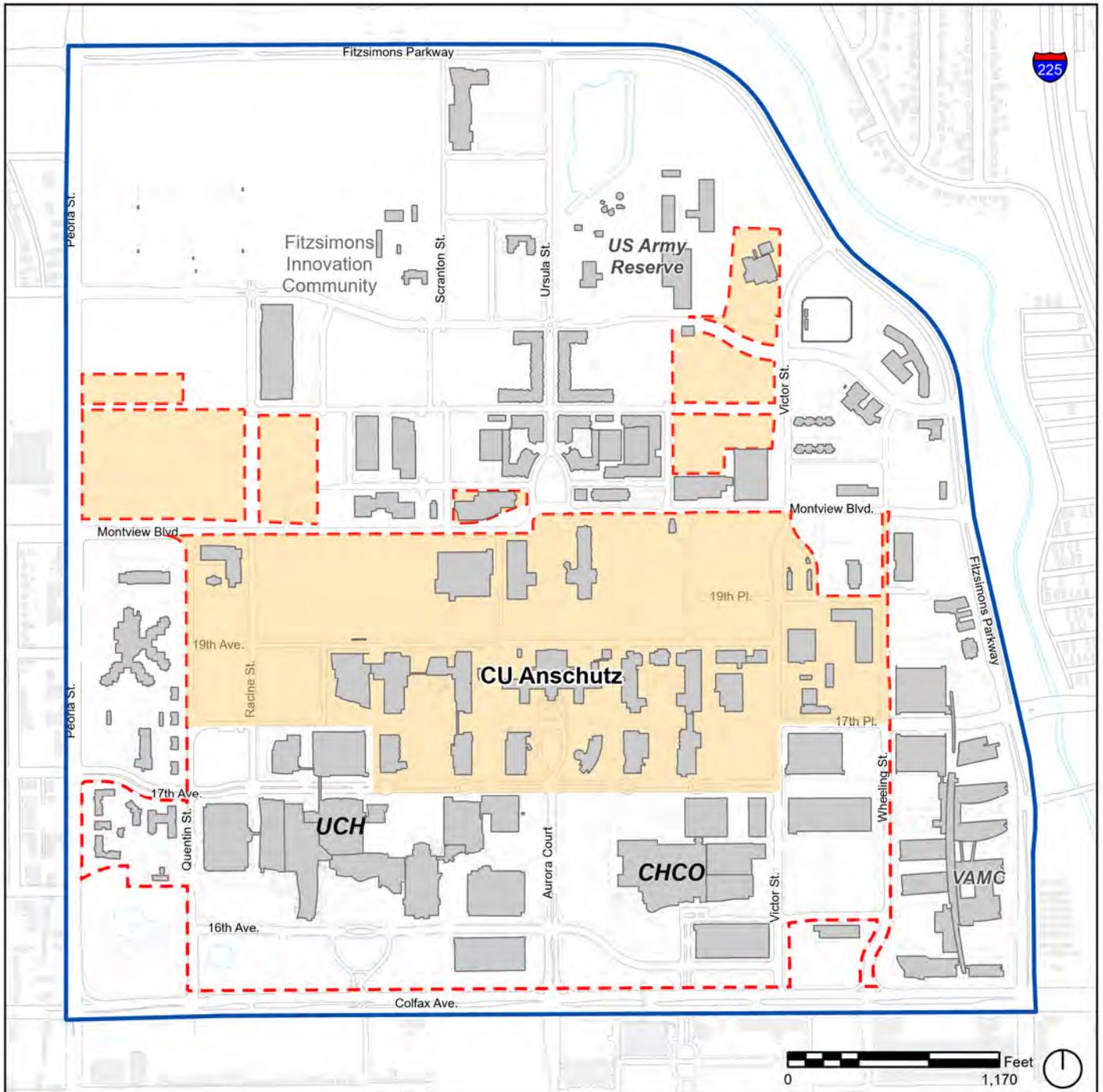
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- Former FAMC Site
- University of Colorado Anschutz Medical Campus
- Anschutz Medical Campus boundary
- Existing Buildings

Figure A.1 - Study Area Boundary Definitions

2022 FACILITIES MASTER PLAN TERMS AND DEFINITIONS

University of Colorado

The University of Colorado system is currently comprised of three institutions with distinct campuses at four locations: Boulder, Colorado Springs, Denver, and Aurora. The University of Colorado’s official abbreviation is CU.

University of Colorado Anschutz Medical Campus

The University of Colorado Anschutz Medical Campus in Aurora is home to the university’s health profession–related schools, colleges, and centers. Approved short-form names are:

CU Anschutz Medical Campus

CU Anschutz

the university

University of Colorado Health Sciences Center

The name of what is now referred to as the University of Colorado Anschutz Medical Campus, prior to 2004.

Anschutz Medical Campus

The official name of the 260-acre area owned by the University of Colorado on which are located CU Anschutz Medical Campus core facilities and the independent University of Colorado Hospital and Children’s Hospital Colorado.

Academic Health Center (AHC)

An academic health center encompasses all the health-related components of universities, including their health professions schools, patient care operations, and research enterprise. Thus, an academic health center consists of an allopathic or osteopathic medical school; one or more other health profession schools or programs (such as allied health, dentistry, graduate studies, nursing, pharmacy, public health, veterinary medicine), and one or more owned or affiliated teaching hospitals or health systems.

Facilities Master Plan

A facilities master plan provides direction for the physical development of the campus over a 10-year period based on current conditions, future trends, and institutional priorities. The Colorado Department of Higher Education requires a reassessment of any facilities master plan every 10 years.

Full-Time Equivalent (FTE)

A unit that makes calculating employees and/or students comparable across various contexts: A FTE of 1.0 means that the person is equivalent to one full-time worker or student.

Headcount

Headcount is an unduplicated actual count of employees and/or students (literally the number of heads) counted only once, whether the individual works full or part time and/or is enrolled in one class or a full course load.

Assignable Square Feet (ASF)

A term used to describe the space in a building that occurs within a room—from interior wall to interior wall—that can be assigned to an occupant. Excluded are building spaces such as restrooms and circulation (corridors, stairs, and elevators).

Gross Square Feet (GSF)

Gross square feet includes the total area of all floors of a building, including all areas within the outside faces of exterior walls and floor penetrations. GSF also includes all space above and below grade and building structural, mechanical, and infrastructure systems, all building circulation, restrooms, and support spaces.

Fitzsimons Army Medical Center (FAMC)

The former 578-acre (“square mile”) Department of Defense facility in Aurora, Colorado, closed in 1994 by U.S. Congress.

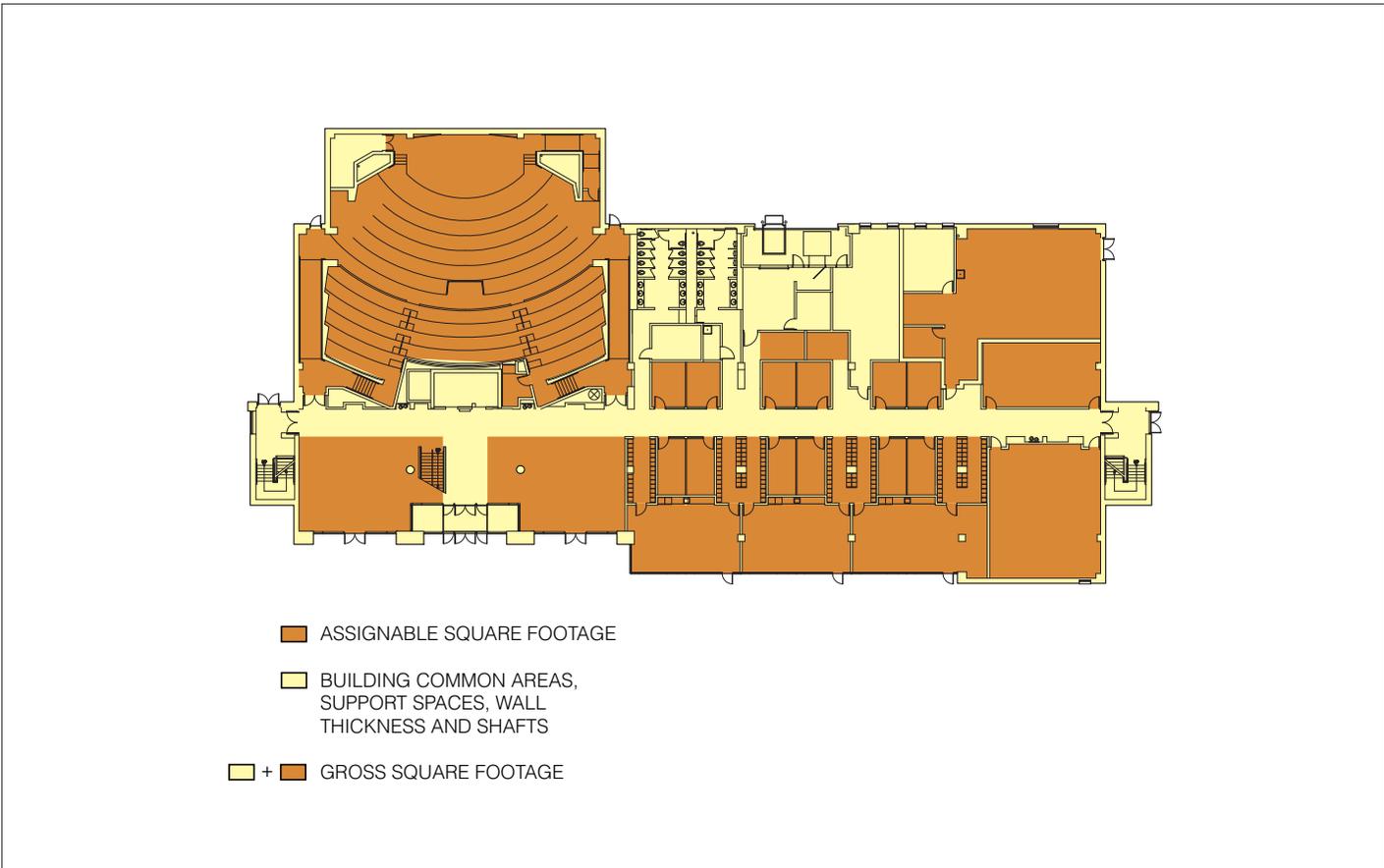


Figure A.2 - Assignable Square Feet (ASF) Versus Gross Square Feet (GSF)

Site-Wide

A term used to describe the 578-acre former Fitzsimons Army Medical Center site, also referred to as the square mile, that encompasses the Anschutz Medical Campus, State of Colorado Veterans Home, Center for Dependency, Addiction, and Rehabilitation (CeDAR), City of Aurora’s (CoA) facilities and General’s Park, Veterans Affairs Medical Center (VAMC), and Fitzsimons Redevelopment Authority (FRA).

Fitzsimons Redevelopment Authority (FRA)

The FRA directs the commercial developments in the Fitzsimons Innovation Community (FIC), also known as the Life Science District, along with its partner, Forest City Science + Technology Group. The land for development by the FRA is located primarily north of Montview Boulevard.

LIST OF ACRONYMS

AAN	American Academy of Nursing
ACP	Advisory College Program
ACPE	Accreditation Council for Pharmacy Education
ADA	Americans with Disabilities Act
AHC	Academic Health Center
AHSB	Anschutz Health Sciences Building
ASA	Academic and Student Affairs
ASF	Assignable Square Feet
AV	Audio Visual
BMO	Building Maintenance and Operations
BOR	Board of Regents
BRT	Bus Rapid Transit
BS	Bachelor of Science
CAIANH	Centers for American Indian and Alaska Native Health
CAPE	Center for Advancing Professional Excellence
CDHE	Colorado Department of Higher Education
CEDC	College of Engineering, Design, and Computing
CHCO	Children's Hospital Colorado
CHWE	Center for Health, Work & Environment
CIDA	Center for Innovative Design and Analysis
CoA	City of Aurora
CON	College of Nursing
CPHP	Center for Public Health Practice

| LIST OF ACRONYMS

CSA	Central Services and Administration
CSPH	Colorado School of Public Health
CSU	Colorado State University
CTRIC	Colorado Translational Research Imaging Center
CU Anschutz	University of Colorado Anschutz Medical Campus
CU	University of Colorado
CUP	Central Utility Plant
DI	Design Innovation
DEI	Diversity, Equity and Inclusion
DDS	Doctor of Dental Surgery
DNP	Doctor of Nursing Practice
DPH	Doctor of Public Health
DPT	Doctor of Physical Therapy
DRB	Design Review Board
DRCOG	Denver Regional Council of Governments
DTC	Denver Tech Center
EH&S	Environmental Health and Safety
EUI	Energy Use Intensity
FAAN	Fellows of the American Academy of Nursing
FAANP	Fellows of the American Association of Nurse Practitioners
FAMC	Fitzsimons Army Medical Center
FC	Finance Committee
FIC	Fitzsimons Innovation Community
FICM	Facilities Inventory and Classification Manual
FICMUS	Fitzsimons Innovation Campus Master Utility Study
FRA	Fitzsimons Redevelopment Authority

FY	fiscal year
GHG	greenhouse gas
GS	Graduate School
GSF	Gross Square Feet
IT	Information Technology
kW	kilowatt
kW-DC	kilowatts direct current
LEAD	Lifecourse Epidemiology of Adiposity & Diabetes Center
MD	Doctor of Medicine
MG	millions of gallons
MGD	millions of gallons per day
MLK	Martin Luther King Jr.
MPAS	Master of Physician Assistant Studies
MPC	multi-purpose classroom
MPH	Master in Public Health
mph	miles per hour
MS	Master of Science
MSCS	Master of Science in Clinical Science
NIH	National Institutes of Health
NCA	North Central Association of Colleges and Schools
ODAI	Office of Disability Access and Inclusion
ODEICE	Office of Diversity, Equity, Inclusion and Community Engagement
OIRE	Office of Institutional Research and Effectiveness
OIT	Office of Information Technology
OIT-TSS	Office of Information Technology – Technology Support Services
PASCAL	Preservation and Access Service Center for Colorado Academic Libraries

PharmD	Doctor of Pharmacy
PhD	Doctor of Philosophy
PI	Principal Investigator
PPA	power purchase agreement
pph	pounds per hour
PRA	professional research assistant
PV	photovoltaic
RMPRC	Rocky Mountain Prevention Research Center
RTD	Regional Transportation District
SDM	School of Dental Medicine
SF	Square Foot
SGL	small group learning
SOM	School of Medicine
SSPPS	Skaggs School of Pharmacy and Pharmaceutical Sciences
UC	University of Colorado
UCH	UCHealth University of Colorado Hospital
UCHSC	University of Colorado Health Sciences Center
VAMC	Veterans Affairs Medical Center
VC	Vice Chancellor
WSG	workplace space guidelines

Unless otherwise noted, all photographs in this document are provided courtesy of CU Anschutz Facilities Planning and Design, and/or the Office of University Communications.

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I. VISIONING FRAMEWORK

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I.1 Overview

The University of Colorado Anschutz Medical Campus is home to three renowned and nationally ranked institutions - the University of Colorado Anschutz Medical Campus (CU Anschutz), UCH Health University of Colorado Hospital (UCH), and Children's Hospital Colorado (CHCO). This Facilities Master Plan Update is being completed to address Colorado Department of Higher Education (CDHE) requirements for the university and to facilitate infrastructure planning between the institutional partners on campus. It builds on and reiterates the principles of the 2012 Facilities Master Plan, the five 2021-2026 Strategic Initiatives for CU Anschutz, and other university and stakeholder priorities.

In 1998, the then University of Colorado Health Sciences Center (UCHSC) completed its pivotal master plan to relocate all university health science schools, colleges, centers, and UCH from 9th Avenue and Colorado Boulevard in Denver to Aurora. This document facilitated the one-time opportunity to create one of the nation's premier academic health centers (AHCs).

The 1998 plan, and subsequent updates, recognized that a critical mass of prestigious institutions and enterprises creates an exceptional environment to improve health care, sustained wellness, and economic benefits. As the former Fitzsimons Army Medical Center (FAMC) developed into a health sciences ecosystem of collaborative innovators, connections between the three Anschutz Medical Campus institutions, adjacent partners, and the neighboring community have grown.

To recognize the opportunities presented by these developments, the most recent 2012 Facilities Master Plan established a flexible blueprint for future campus growth that will be maintained. A series of fixed roadway and infrastructure systems promoted connections within and outside the campus while also delineating sites for future facilities. The Campus Design and Development Guidelines were concurrently developed to promote flexible building designs that promote interdisciplinary collaboration and enhance the aesthetic character and visual unity of the campus. These two documents remain the guiding documents for campus development.

The Facilities Master Plan has been updated to reflect the university's new strategic initiatives, include current and projected student and faculty headcounts, and propose a 10-year development plan for university facilities and infrastructure. Appropriate sections of each guiding document have been developed to reflect proposed roadway and infrastructure projects by the City of Aurora and the Fitzsimons Innovation Community (FIC), improve pedestrian and vehicle movements on campus, recognize the increasing importance of sustainability, and further strengthen the university's connections to its neighbors. The appendices of the plan include supplemental information and other documents that also guide future campus development. As appendices, these can be independently updated, but they should be utilized as this plan's recommendations are utilized.

“We have made rapid advancements and elevated our competitive profile. Looking ahead, we will sustain progress in these areas while embarking on ambitious new initiatives that will further differentiate CU Anschutz as a leader and innovator.”

Strategic Initiatives 2021–2026: University of Colorado Anschutz Medical Campus



The Anschutz Medical Campus Art Walk, looking east from the Research Commons.

This plan is one strategy to accommodate growth based on the role and mission of the university as presented in this plan update. Successful implementation of it requires that adequate funding is in place to build or construct any of its proposed projects. Project size, scope and/or location may change to reflect available resources, adjacent development, or unforeseen circumstances.

The university is also committed to being a wise steward of state resources. Refinement of the campus workplace space guidelines (WSG) and smaller scale renovations will continue during the life of the plan to maximize use of existing facilities. Since the 2012 plan, the development of the Hub, Anschutz Health Sciences Building (AHSB), and the Campus Safety and Preparedness Facility show how the university has wisely used new facilities to provide innovative office environments, promote interdisciplinary collaboration, and improve the campus environment.

As evidenced over the COVID-19 pandemic, flexibility has allowed the university to quickly pivot in order to maintain its operations in a rapidly changing environment. The plan, in conjunction with continual improvement of campus policies and procedures, ensures that the facilities on the Anschutz Medical Campus can continue to reflect and further cement its leadership in interdisciplinary health sciences education, research, and practices and advance the wellbeing of individuals, families, and communities.

STRATEGIC INITIATIVES 2021 - 2026

The recently completed University of Colorado Anschutz Medical Campus Strategic Initiatives 2021-2026 provide a framework for this update. This ensures that the update's recommendations and proposed projects are in line with the overall direction and goals of the campus.

The Strategic Initiatives planning process included over 800 campus and community members who determined that the university will “focus on innovation and collaboration to better serve our students and trainees, our faculty and staff, our patients and the broader community.”

Working groups explored four mission areas within a strategic framework: education, patient care, community engagement, and research. A Design Innovation (DI) approach was used to facilitate this strategic process and focused on five core elements: people, process, methods, principles, and mindsets.

Each working group also included dedicated members to represent other critical areas: 1) mental health and holistic wellness, 2) innovation, 3) diversity, equity, and inclusion, 4) budget and finance, and 5) information technology. Many working group members also participated in the work groups for this 2022 Facilities Master Plan Update.

Five strategic initiatives emerged from this process:

- Leverage Data
- Build a Health Care Innovation Institute
- Enhance the Student Experience
- Partner on Patient-Centered Care
- Invest in Our People

For more information about the strategic plan process or to view progress towards campus goals visit the website <https://www.cuanschutz.edu/offices/strategic-initiatives>.

VALUES

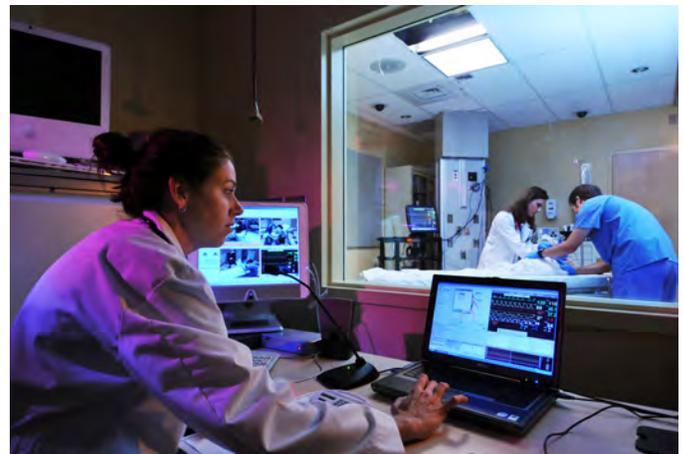
The 2012 Facilities Master Plan for CU Anschutz developed a set of values to guide the overall effort. These are still applicable and are being carried forward to guide this plan update:

Learning and Scholarship

The university respects academic freedom and the rigorous quest for knowledge and understanding. We share knowledge and foster student success through a continuous process of inquiry, critical thinking, reflection, collaboration, and application.

Discovery and Innovation

The university fosters an energetic, collaborative, and creative environment where we develop and employ new ideas and technologies. Our entrepreneurial culture enables us to expand the frontiers of knowledge and human experience.



Simulation Control Room at the Center for Advancing Professional Excellence (CAPE) in the School of Medicine.

Health and Care of Mind, Body, and Community

The university enriches the well-being and sustainability of communities and our cultural, living, and natural environments. We promote healthy lifestyles; prevent, diagnose, and treat disease; and deliver high-quality and compassionate health care.

Diversity, Inclusiveness and Respect

The university seeks the richness that an increasing diversity of our communities brings to our learning, research, and service endeavors. Our common humanity leads us to create an inclusive and respectful ethos characterized by caring, empathy, compassion, nurturing, collegiality, and mentoring.

Since the last master plan, the campus has increased its commitment to supporting diversity, equity and inclusion (DEI). The HEAL Lab and Center for Health Equity are helping medical providers better understand and address the needs of diverse populations. Community gathering spaces, such as the LGBTQ+ Hub, have strengthened connections between the campus and surrounding communities.

This plan builds on these efforts. Promoting diversity, respect, and inclusion is an ongoing effort that is all our responsibility. As such, the discussions and connections formed during this plan will continue to create and foster a more inclusive campus.

Citizenship and Leadership

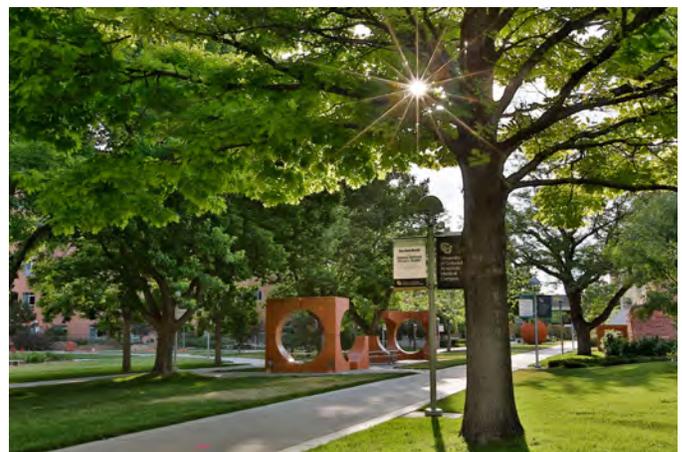
The university serves Colorado and the world as a recognized source of talent, knowledge, informed judgment, exemplary health care, and professional practice. We are responsible stewards of the resources entrusted to us and utilize them with integrity for the betterment of our community.

Stewardship

The university has a responsibility to be a wise steward of state resources. This plan was drafted in consideration of established State, University of Colorado System (CU System), and university sustainability commitments. In addition, future designed facility and infrastructure projects are planned to better advance and strengthen the resiliency of the campus population and its facilities.



Outdoor collaboration space.



Art Walk.

I.2 Purpose

The CDHE requires a master plan update every 10 years. The Anschutz Medical Campus 2022 Facilities Master Plan update refreshes and expands the goals of the previous plan and places them in the context of the campus strategic initiatives. The plan readdresses growth, provides adaptable solutions to changing academics, promotes campus ideas and partnerships, reconciles stakeholder differences, and celebrates university achievements. It also seeks to enhance the quality of life for its faculty, students, staff, patients, visitors, and neighbors.



Fitzsimons Building.



Doctors at the emergency department of the School of Medicine.

This plan promotes greater integration and connection among the campus institutions and adjacent site-wide partners. It also considers the timelines, costs, and possible locations of projected projects (buildings and infrastructure) within a 10-year window and models planning implications into an integrated whole.

The urban model of development will continue to balance increased density within facilities that are connected by safe, functional circulation networks and open spaces. As a result, more integrated and enhanced pedestrian, vehicular, and landscape areas consistent with the character and quality of each campus district are proposed.

This plan presents a vision for the campus. It is just one tool among many that the university utilizes to remain a nationally renowned academic, research, and clinical destination of choice. Those most salient to campus development and sustainability may be included as appendices to this document.

CONTEXT

The Anschutz Medical Campus is an inter-professional environment where the co-location of the university and two hospitals integrate academic, research, and clinical activities, and promote learning, creativity, and discovery. The three institutions are physically connected and are collaborative partners. University faculty and students perform clinical and patient care activities at CHCO and UCH while staff and faculty coordinate and cooperate with hospital colleagues on projects.

UCH and CHCO are both nationally ranked hospitals, each with several prominent programs recognized for their excellence. CU Anschutz has six prestigious schools and colleges, several of which are nationally ranked, and numerous centers recognized for their achievements.

The schools and colleges of CU Anschutz are the College of Nursing (CON), Colorado School of Public Health (CSPH), Graduate School (GS), School of Dental Medicine (SDM), School of Medicine (SOM), and Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS).

Key statistics for the Anschutz Medical Campus are below:

- Total 2022 on-campus population: 31,000+
- Total 2022 graduates: 1,224
- Total size: ~260 acres
- Total area of buildings: 12.6 million+ gross square feet (GSF)
- Overall economic impact to the State of Colorado of \$13.1 billion

An updated overview of the campus is included with this plan update as Appendix A.

The appendices also include an updated context document, list of participants, property conveyance guide, and the Design and Development Guidelines. The latter serves as a comprehensive design approach reflecting the appropriate integration of urban design, buildings, and open space within the context of identified character districts.

As the campus continues to promote and implement sustainability additional plans and documents, namely an energy master plan and climate action plan, will likely be completed. When approved they may be included as appendices to this document to guide implementation of the plan’s recommendations.

I.3 Planning

PROCESS

The goal of this update is to establish a framework for site-wide infrastructure and utility development that accommodates 10-year growth projections that are consistent with the newly established Strategic Initiatives. The process diagram is depicted in Figure I.1.

The Anschutz Medical Campus is part of the former FAMC and is at the heart of one of the nation’s most successful bioscience, health, and technology centers. Emerging and established companies generally choose to locate in the FIC not only for the latest in high-tech facilities, but for its ecosystem of collaboration, innovation, and support.

This plan update follows a “retain and refresh” approach to leverage the successes of 2012 Facilities Master Plan. As a result, this update exclusively focuses on the facilities and infrastructure on the Anschutz Medical Campus itself. The FIC has matured and is responsible for its own planning. This update will incorporate FIC plans, as appropriate, to provide consistency between the two entities.

Working within a 10-year planning horizon, this plan outlines population and program growth for the university, UCH, and CHCO. Growth in each area drives individual, institutional and campuswide facility, information technology, utility, infrastructure, and parking short (1–5 years) and long-term (6–10 years) needs.



Digital model of the Site-Wide area showing potential new facilities.

ENGAGEMENT

The university's commitment to campus-wide engagement is reflected in the inclusive, responsive, and communicative approach implemented in this effort. Due to the impacts of the COVID-19 pandemic, the work group meetings were conducted both in-person and online to provide flexibility for people to join the conversations, discussions, and meetings.

The Anschutz Medical Campus 2022 Facilities Master Plan Update crafted a comprehensive engagement strategy.

The strategy's framework defined the roles of the various committees, work groups, focus groups, and community forums. The organization framework and flow of process decision making is depicted in Figure I.2.

Stakeholders were organized into distinct groups with defined expectations and outcomes. These included three comprehensive categories:

- Core Participants
- Advisory/Consultative Participants
- Statutory Review and Approval

CORE PARTICIPANTS

Core participants were representatives from CU Anschutz and active contributors in all aspects of the planning process. They had representation on one or more committee or work group including:

- Executive Committee
- Steering Committee
- Planning Committee

Planning strategies, concepts, and schemes were vetted at each level, from task force ideas to feedback and direction from the Steering Committee to decision making from the Executive Committee. Ideas, expertise, and concepts originated at the work group level, which was organized around six focus areas: clinical, utilities + infrastructure, learning & technology, research, student life, and DEI. Each task force met at least two times.

This process resulted in a constructive feedback loop, with proposals returned to task forces for improvement or further development. This kicked off the next iteration of the decision-making cycle.

The Executive Committee will approve the final plan and forward it to the University of Colorado Board of Regents (BOR) for final adoption.



Figure I.1 - Process Diagram

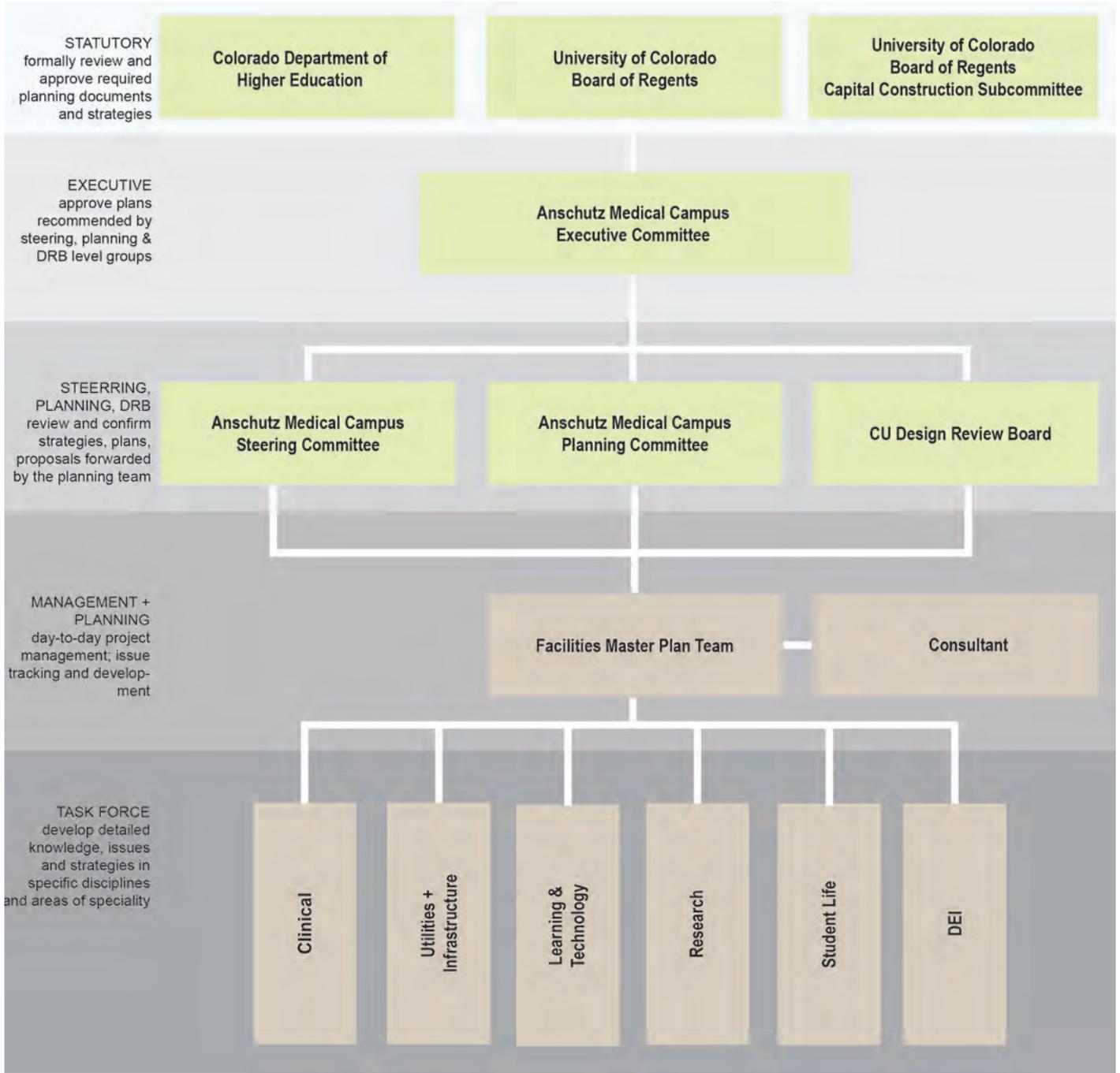


Figure I.2 - Organizational Framework and Decision-Making Process

Advisory/Consultative Participants

The following site-wide stakeholder institutions and entities were engaged in the plan through in-person and virtual meetings. This was done to ensure planning for CU Anschutz, its institutional partners, and neighbors was aligned and that adequate infrastructure could be provided to support all.

- CHCO
- City of Aurora (CoA)
- Fitzsimons Redevelopment Authority (FRA)
- CU Anschutz
- UCH
- University of Colorado Medicine (CU Medicine)
- Denver Veterans Affairs Medical Center (VAMC)

The plan was also presented to the University of Colorado Design Review Board (DRB). The DRB's role is to provide review and advice to parties charged with the design and development of proposed capital planning and development projects at all campus properties under control of the CU BOR. Comments received by the DRB were incorporated into the plan.

Statutory Review/Approval

The CU BOR is charged with the general supervision of all four CU campuses and the exclusive control and direction of all funds of and appropriations to the university, unless otherwise provided by law. The CU BOR Finance Committee (FC) reviews all building and master planning projects before they go to the full board for formal approval. The CU BOR FC will approve this plan update before it is submitted for approval to the full board.

The CDHE has the authority to prescribe uniform policies, procedures, and standards of space utilization and to review master plans and program plans for all higher education capital construction projects in Colorado. The ability to review master plans for state institutions of higher education allows CDHE and



Schools and Colleges Workshop.



2022 Block Party on Anschutz Medical Campus.



The Research Commons unites education and research on the Anschutz Medical Campus.

I.4 Mission and Vision

The CU Anschutz Strategic Initiatives 2021 – 2026 effort updated the mission and vision statements for the campus. As part of a thorough process, these two statements guide this plan.

Mission: With innovation, agility, and excellence, we improve humanity by preventing illness, saving lives, educating health professionals and scientists, advancing science, and serving our communities.

Vision: To provide the finest team-based healthcare, science, and education in the world by being collaborative architects that respond quickly to the changing needs of society and engage and honor the community around us through lenses of diversity, equity, and inclusivity, mental health and wellness, and data sciences.

To achieve the university's mission and vision, CU Anschutz strives to provide inclusive state-of-the-art research, academic, and clinical facilities; manage and utilize space efficiently; provide first-in-class learning, discovery, and working environments; and effectively manage future growth.

Extensive stakeholder engagement and consensus-building have established ambitious goals and principles that support a shared physical vision for the campus allowing CU Anschutz, UCH, and CHCO to realize their respective strategic plans.

The vision is consistent with the campus's current collaborative efforts toward creating a dynamic AHC with advanced and innovative programs, services, and facilities that make the Anschutz Medical Campus a global destination of choice.

I.5 Goals, Principles, and Criteria

The Anschutz Medical Campus 2022 Facilities Master Plan Update is intended to guide, influence, and clarify all campus-wide physical planning and design decision making. It establishes an overarching physical vision for the campus for 2022 and beyond. This includes:

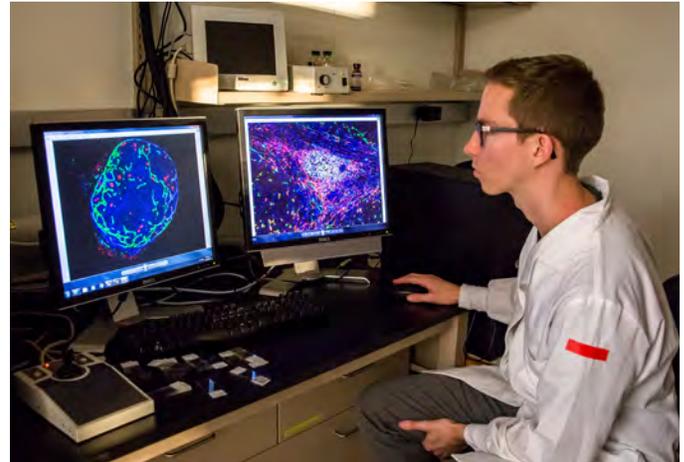
- Aspirational **goals** that are broad concepts to which one aims and are by definition difficult to achieve. These are the same as those from the 2021-2026 Strategic initiatives and serve as beacons for direction.
- Planning **principles** that direct us toward achieving our goals. Principles state clear intent and values to be embraced in planning and development.
- Assessment **criteria** that are metrics by which planning and development strategies and solutions are evaluated relative to realizing goals and remaining consistent with our planning principles.

A. Goal: Leverage Data

The future of healthcare is in the harmonization and smart application of data. We will build an integrated data infrastructure by investing in data analytics, health artificial intelligence and bioinformatics.

By closely coordinating the vast amounts of information available to our work, we bring real-time data to our fingertips and make vital insights more accessible. Integrating data will help us uncover possibilities in research and patient care to push the boundaries of what's possible to improve more lives across the Rocky Mountain region and beyond.

Creating a stronger data infrastructure will also give us an opportunity to monitor our success in diversity, equity and inclusion, and hold ourselves accountable to our goals.



Innovative research facilities support the growth of a premier academic and clinical environment.

PRINCIPLES

- Create a campus physical environment that is attractive, memorable, sustainable, and embodies our innovative identity.
- Create first-rate infrastructure, utility, information technology, and support services that enable continuous innovation within the planning horizon and beyond.
- Create highly efficient, inclusive, and accessible technology systems to reduce technological boundaries between students, faculty, staff, and the larger community.

CRITERIA

- Incorporate information technology into infrastructure, utilities, and parking management systems to achieve greater efficiency.
- Provide state of the art technology systems for easier collaboration across classrooms, meeting rooms, and large indoor gathering spaces.
- Plan and develop information technology systems that are accessible throughout campus for all populations.

B. Goal: Innovation

Working across disciplines is key to the continued success of CU Anschutz. A healthcare innovation institute will accelerate collaboration and speed breakthroughs to market.

Such an institute is more than a building or a center - it is a vehicle to create new partnerships and pathways to propel research discoveries.

A healthcare innovation institute will step up the collaboration across disciplines already taking place on campus and attract more industry partners interested in fostering innovation, entrepreneurship and delivery of patient care.



Our singular environment and highly collaborative approach to furthering innovative healthcare and medical solutions brings life-changing discoveries and treatments to fruition.

PRINCIPLES

- Plan for hybrid, multi-use facilities that enable interdisciplinary, inter-professional, and inter-institutional teamwork, cooperation and advancement.
- Create a comprehensive, advanced information technology system that maximizes opportunities for interaction and connectivity between site-wide educators, researchers, and clinical practitioners and their state, national and global peers.
- Consider hybrid shared and flexible facilities to enhance multi-disciplinary collaboration and promote co-ownership and access to instrumentation, equipment and data.
- Create an environment that fosters a sense of belonging on campus.
- Create shared spaces to interact, build and create through inter-professional and broader community activities.

CRITERIA

- Plan, configure, and develop the public realm to incorporate smart, innovative, and high-performance sustainability elements.
- Develop shared use spaces for diverse learning modalities that encourage inter-professional education.
- Utilize state-of-the-art technology systems to assist cross-collaboration between in-person and remote modalities.

C. Goal: Student Experience

At our core, we are an academic medical campus supporting learners to be the best in the healthcare workforce.

Connecting existing student support services and scaling up others will help ensure future leaders training here benefit from a strong sense of belonging and thrive in an environment that promotes wellness. Growing our base of services and making resources for mental health and wellness easy to access will help us accomplish this goal.

As our campus continues to expand and attract the best and the brightest students from diverse backgrounds, we are also committed to investing in their success. With an eye toward diversity, equity and inclusion, we will make the CU Anschutz Medical Campus a welcoming and accessible destination for a diverse community of learners.



Student Lounge in Education.

PRINCIPLES

- Create an exciting and lively community through a wide variety of activities and amenities that enhance the quality of life for students, faculty, staff and visitors.
- Create site-wide connectivity through a cohesive network of memorable, multifunctional public spaces that orient users and facilitate interaction.
- Foster linkages between the student experience and clinical care.
- Support and celebrate the significant contributions and achievements of students to the Anschutz Medical Campus, especially first-generation students and those from under-represented communities.
- Create destinations for students to spend quality time while being on the campus.
- Support mental health, different learning, career development, social interactions and wellness.
- Integrate the values of diversity, equity and inclusion in a safe and secure environment.

CRITERIA

- Develop building density that encourages interaction, collaboration, and shared resources through physical proximity and easy access.
- Develop amenities that facilitate convergence in key campus and site-wide locations to maximize planned and impromptu meeting opportunities.
- Prioritize open space to facilitate a variety of activities that promote health and wellness.
- Accommodate universal accessibility in the existing and proposed built environment.
- Recognize the surrounding Aurora communities and promote inclusivity in campus signage and artwork.
- Combine appropriate academic, student support and professional development services to expand the horizons of student knowledge.

D. Goal: Partner on Patient-Centered Care

One of our primary missions on this campus is to save and improve lives – not just in Colorado, but across the region, country and globe. Ensuring that patients are informed and have access to the resources they need to make educated decisions about their own care is a big part of how we do that.

Working closely with UHealth, Children’s Hospital Colorado and other healthcare partners, we will make medicine easier and more accessible for patients.

By bringing the latest and best technologies to improve access and care – telehealth, econsults, remote monitoring and more - we will empower our patients by giving them the tools to navigate their own care and by putting their own data to work for them.



Our uniquely capable experts provide unparalleled patient focused care and treatment to ensure their well-being.

PRINCIPLES

- Create opportunities—both indoor and outdoor—for integration, convergence, and collaboration between institutions, entities, schools, colleges, community and business partners, and their missions.
- Create an environment “without borders” that is physically and symbolically integrated with campus affiliates and with the larger city, region, and state.
- Create a patient- and visitor-friendly environment that is welcoming, understandable, and memorable.
- Create smart growth strategies to ensure that the campus has sufficient resources to accommodate their missions and strategic plans for short- and long-term expansion.
- Create collaborative spaces with state-of-the-art technology to support alternative working arrangements and remote access.
- Create facilities that support in-person and hybrid working styles, technological advancements, and opportunities to improve professional practices.

CRITERIA

- Locate patient and visitor parking and shuttle stops adjacent to key destinations such as clinics and support functions.
- Physically and symbolically connect university and hospital facilities to enhance interaction and ease of movement.
- Create integrated spaces for translational research and data collaboration.

E. Goal: Invest in Our People

Our people are our greatest asset. By investing in their growth and development, we help them reach even greater heights.

Over the next several years, we will identify new ways to help our employees advance in lasting, fulfilling careers within the University of Colorado system.

That is why we will be designing career pathways to expand access to employment, inspire professional growth, promote mental health and wellness, and accelerate career advancement.

We will also be pursuing hiring practices that promote a diverse and inclusive workforce, as well as evaluating innovative approaches to tenure and promotion. These are just a few of the strategies we will pursue in the coming years.



Student study support at Strauss Health Sciences Library.

PRINCIPLES

- Create enhanced opportunities for greater interaction and collaboration among schools, colleges, and centers.
- Create roadway, pedestrian, bike, trail, and transportation networks that interconnect the campus, site-wide area, and surrounding community.
- Create a high-performance built environment—landscapes, public realm, parking, and buildings—that reduce energy use and storm water outflow from the campus and site-wide area.
- Create a comprehensive site-wide shuttle system with a fleet of alternative-fuel vehicles that encourages use of alternative modes of transportation to campus and reduces intra-campus personal auto trips.
- Create a parking management strategy that promotes “right-sized” campus and site-wide surface and structured parking options that are environmentally, financially, and socially sustainable.
- Foster work environments with robust amenities and shared resources.

CRITERIA

- Discourage single-function silos and encourage mixed-use, multifunction development.
- Plan and design the site-wide public realm to function as an integrated and attractive system that reinforces identity and facilitates way finding.
- Provide and manage campus and site-wide parking through a collaborative and inventive system that reduces parking demand and private auto trips within the core environment.
- Enhance existing roadways and develop new roadways into and throughout the campus and site-wide area to maximize access and reduce congestion.
- Design streets to accommodate and balance the needs of all modes of movement and also serve as attractive, essential open-space corridors.
- Consider a multi-modal transit station within the site-wide area that creates greater connectivity between light rail and all other forms of circulation and transit.
- Create open spaces to provide passive or active recreation and serve as components of a comprehensive storm water management system.
- Design streets to reduce vehicle speeds and increase pedestrian safety.
- Develop alternative renewable energy resources, where possible.
- Develop inviting spaces that foster and support community health and wellness.

I.6 Sustainability & Resilience

Future development of the campus is to be designed to promote sustainability and resilience. The most recent example of which is the Net-Zero Campus Safety and Preparedness Facility. Through lessons learned from that effort and in light of changing state and federal regulations, a detailed Energy Study and Climate Action Plan is proposed to be completed after this plan.

CU has long been a leader in environmental sustainability planning and climate action initiatives. As we look into the future and determine strategies, priorities, and guidelines for campus development it is crucial to develop campus sustainability and resilience goals.

In 2021, the CU system pledged to achieve carbon neutrality and set interim targets for reducing greenhouse gas (GHG) emissions. The CU system sustainability and resilience principles guide CU Anschutz towards carbon neutrality, thus mitigating contributions to climate change, while ensuring the campus can continue to fulfill its mission. These principles are as follows:

GHG EMISSIONS

- Reduce GHG emissions 15% from 2019 levels by 2026.

BUILDINGS

- Prioritize renovation and repairs over new construction.
- Emphasize funding deferred maintenance projects, especially improvements that increase efficiency and reduce GHG emissions.
- Go beyond Leadership in Energy and Environmental Design (LEED) Gold and look for opportunities to incorporate net-zero energy conservation measures in building designs.

CAPITAL PROJECTS

- Conduct thorough life-cycle cost analyses to identify costs, environmental costs, energy savings opportunities, and to reduce operations and maintenance costs.

ENERGY

- Reduce Energy Use Intensity (EUI) in campus buildings by up to 10% from 2019 levels by 2026.

WATER

- Limit potable water consumption.
- Implement water conservation measures like low-flow fixtures and replace steam autoclaves and glass washers in labs.
- Plant native plant species.
- Install irrigation controls and rain sensors.

MATERIAL MANAGEMENT

- Maximize waste diversion.
- Encourage thoughtful purchasing decisions.
- Create reuse, recycling, and composting infrastructure.

TRANSPORTATION

- Promote alternative modes of transportation and use of alternative fuel vehicles.

The Physical Plan chapter elaborates on the sustainability and environmental issues relevant to CU Anschutz. It also provides more detail on applicable energy and water strategies that can currently be pursued.

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II. SPACE NEEDS ANALYSIS



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II.1 Overview

In 2022, the Anschutz Medical Campus had just over 12.4 million GSF of facilities between Colorado University (CU) Anschutz, University of Colorado Health (UCH), and Children’s Hospital Colorado (CHCO). This number includes the Campus Safety and Preparedness Facility, UCH Tower 3, and UCH Garage 2 that are under construction.



Of this, the university occupies just over 4.2 million GSF in 35 buildings and some leased facilities. Most buildings have been constructed since 1999, although ten buildings totaling 618,124 GSF, constructed by the U.S. Army, remain in use by the university.

Schools and Colleges

There are six schools and colleges on the Anschutz Medical Campus:

- School of Medicine (SOM)
- School of Dental Medicine (SDM)
- College of Nursing (CON)
- Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS)
- Colorado School of Public Health (CSPH)
- Graduate School (GS)

Central Services and Administration (CSA) departments are also located on campus to support overall university operations and the schools and colleges.

There are also several Academic and Student Affairs (ASA) office units that provide faculty and student support into all schools and college including faculty affairs, financial aid and scholarships, and the Strauss Health Sciences Library.

The following is a brief overview of each school and college. A listing of the programs and degrees offered follows each description.

School of Medicine (SOM)

The SOM offers nationally and internationally recognized education, research, patient care, and community service programs. It can trace its origins to 1883 when it was established at CU Boulder. It moved to Denver in 1924, and to the Anschutz Medical Campus in 2008.

The largest school at the Anschutz Medical Campus, the SOM has four main divisions: Administration and Finance, Academic Affairs, Education, and Clinical Affairs. Within these are 18 clinical departments and six basic science departments. The SOM also operates numerous clinics and research institutes.

The SOM's MD program is accredited by the Liaison Committee on Medical Education. Its faculty members serve as clinicians and physicians at UCH and CHCO. In addition, they also work at affiliated institutions such as National Jewish Health, Denver Health Medical Center, and the VAMC. Three faculty are members of the National Academy of Sciences, and eight are in the National Academy of Medicine

Among public medical schools in the country, the SOM ranks ninth for federal research grants and contracts and 22nd among all public and private medical schools, according to the Blue Ridge Institute for Medical Research. In the U.S. News & World Report 2023 ranking of medical schools, the SOM's primary care, pediatrics, and family medicine programs were ranked within the top 10 nationally at sixth, seventh, and tenth respectively.



Professional Degrees

- Master of Science (MS) in Anesthesiology
- Master of Physician Assistant Studies (MPAS)
- Doctor of Medicine (MD)
- Doctor of Physical Therapy (DPT)

Degrees Conferred through the Graduate School

Master of Science (MS) in:

- Biomedical Science & Technology
- Biophysics & Genetics
- Clinical Science: Master of Science in Clinical Science (MSCS)
- Genetic Counseling
- Modern Human Anatomy
- Palliative Care
- Physical Therapy

Doctor of Philosophy (PhD) in:

- Biochemistry and Molecular Genetics
- Cancer Biology
- Cell Biology, Stem Cells and Development
- Clinical Science
- Computational Bioscience
- Human Medical Genetics
- Human Medical Genetics and Genomics
- Immunology
- Integrated Physiology
- Microbiology
- Molecular Biology
- Neuroscience
- Pharmacology
- Physiology
- Rehabilitation Science
- Structural Biology and Biophysics

School of Dental Medicine (SDM)

The research-intensive, comprehensive SDM is home to a Doctor of Dental Surgery (DDS) program, an international dental program, a general practice residency, and advanced dental education (residency) programs in periodontics and orthodontics. In addition, SDM is a collaborative partner in the pediatric dental residency offered at CHCO.

Over 450 SDM students are taught to treat patients of all ages as members of a health care team. The school's collaborative research programs are focused on cancer biology, craniofacial developmental biology, and dental materials and bioengineering.

The dental scientists collaborate with the CU Cancer Center, SOM and CU-Boulder College of Engineering on funded research. In FY 21, the SDM was ninth nationally in overall funding from the National Institute of Dental and Craniofacial Research.

The SDM also has a long commitment to increasing access to dental care for disadvantaged populations. Its community-based education program serves as a national model for service learning in dental education. Students provide care in clinics around the state as well as from the school's Mobile Dental Clinic. Rural and global health tracks are also available for student participation.

The school is a leader in dental medicine education. First year SDM students participate in a human body systems course series with MD students that integrates the anatomy, physiology, and microanatomy of each major body system with clinical correlations. The school is increasingly using innovative virtual reality and simulation technologies to further develop the hand skills that are developed in traditional clinical settings.

Program Degrees

- Doctor of Dental Surgery (DDS)
- MS in Dentistry - awarded to Periodontics and Orthodontics residency program graduates.



College of Nursing (CON)

Founded in 1898, the CON began Colorado’s first baccalaureate nursing program and has offered graduate education since 1950. It also established the first nurse practitioner and first school nurse programs in the United States. It has played a role in the education of ten of the 126 living legends recognized by the American Academy of Nursing (AAN).

Ten fellows of the AAN and three fellows of the Fellows of the American Association of Nurse Practitioners (FAANP) hold faculty appointments in the CON. Six faculty members are also fellows in additional professional associations.

CON is accredited by the Commission on Collegiate Nursing Education and the Higher Learning Commission of the North Central Association of Colleges and Schools (NCA). The nurse midwifery master’s specialty is further accredited by the American College of Nurse Midwives, Division of Accreditation.

The CON is a national leader in remote education. The CON provides off-campus instruction in Lone Tree and will soon offer classes at Fort Lewis College in Durango. Along with planned growth in the campus student population, the CON is dedicated to the development of a well-trained population of nurses and nurse practitioners to meet the increasing need for such professionals throughout Colorado and nationwide.



An outdoor CON flu vaccination site.

Professional Degrees

- Bachelor of Science (BS) in Nursing
- Doctor of Nursing Practice (DNP)

Degrees Conferred Through the Graduate School

- MS in Nursing
- PhD in Nursing

Post-Graduate Certificates

- Acute Care Pediatric Nurse Practitioner
- Adult Gerontology Acute Care Nurse Practitioner
- Adult Gerontology Clinical Nurse Specialist
- Adult Gerontology Primary Care Nurse Practitioner
- Family Nurse Practitioner
- Health Care Informatics
- iLEAD Nursing Leadership and Health Systems
- Nurse-Midwifery
- Primary Care Pediatric Nurse Practitioner
- Psychiatric Mental Health Nurse Practitioner
- Veteran and Military Health Care
- Women’s Health Nurse Practitioner

Graduate Certificates

- Health Care Informatics
- iLEAD Nursing Leadership and Health Systems
- Nursing Education
- Veteran and Military Health Care

Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS)

The SSPPS is one of the top-ranked pharmacy schools in the nation. It is ranked 20th in the U.S. News & World Report 2023 rankings of Best Pharmacy Schools. The SSPPS is accredited by the Accreditation Council for Pharmacy Education (ACPE) and enrolls more than 900 professional and graduate students through both on-campus and distance-degree programs.

Students engage in experiential learning at sites across Colorado. The SSPPS provides Doctor of Pharmacy (PharmD) degree education and continuing professional development for working pharmacists.

Pharmacy postgraduate training residencies are offered in general pharmacy practice, ambulatory care-family medicine, critical care, and oncology. Fellowship programs in critical care/infectious diseases and neurology are also available. All residencies are accredited by the American Society of Health-System Pharmacists.

The school continues to adapt to broader changes in pharmacy and pharmaceutical sciences education. Pharmaceutical research is becoming more prevalent in postgraduate programs. This requires the increasing use of wet laboratory space that may need to accommodate array testing equipment with a large footprint.

SSPPS is consistently ranked in the top tier of U.S. pharmacy schools for federal research funding. Specialized focus areas include cancer, diabetes, cardiovascular disease, neurological disease, infectious diseases, HIV/AIDS, and critical care medicine.

Program Degrees

- MS in Clinical Pharmacy
- MS in Pharmaceutical Sciences
- Doctor of Pharmacy (PharmD) – Pharmacy

Degrees Conferred Through the Graduate School

PhD in:

- Pharmaceutical Outcomes Research
- Pharmaceutical Sciences
- Toxicology



Colorado School of Public Health (CSPH)

Collaboratively formed by CU, Colorado State University (CSU), and the University of Northern Colorado, the CSPH is the only collaborative school of public health west of the Mississippi River. It was ranked 19th in the 2023 U.S. News & World Report rankings of Best Public Health Schools and 18th in the Blue Ridge Rankings based on NIH funding.

Over 400 graduate students are enrolled in the CSPH in 15 public health programs. Outside the classroom, students work with faculty in national and international settings to integrate service, research and learning to improve the health of people and their communities.

Faculty at CSPH are nationally recognized experts in a variety of fields, including biostatistics and clinical trials, diabetes prevention and control, injury control, genetic epidemiology, risk assessment, environmental health, maternal and child health, nutrition in schools, health services research, health equity, health education, and many other health-related specialties.

Although a young school, the CSPH has experienced rapid growth. It now has the second largest amount of professional research assistants (PRAs) of all schools and colleges behind the School of Medicine. The Centers for American Indian and Alaska Native Health (CAIANH), Center for Global Health, Center for Health, Work & Environment (CHWE), Center for Public Health Practice (CPHP), Rocky Mountain Prevention Research Center (RMPRC), Injury & Violence Prevention Center and Lifecourse Epidemiology of Adiposity & Diabetes Center (LEAD) are mostly or entirely funded through grant awards.

The majority of the school's research consists of computational dry research activities. The Department of Biostatistics and Informatics and Center for Innovative Design and Analysis (CIDA) are campus-wide resources that support analysis of large translational research and clinical data sets. However, the school does collect and process samples from study participants. This requires some clinical examination space to collect samples and wet lab space in which they can be sampled and stored.

Professional Degrees

- Master in Public Health (MPH)
- Doctor of Public Health (DPH)

Degrees Conferred Through the Graduate School

MS in:

- Biostatistics
- Epidemiology
- Health Services Research, Policy, and Administration

PhD in:

- Biostatistics
- Epidemiology
- Health Services Research

Certificates

- Applied Biostatistics
- Global Public Health
- Health Analytics & Data Science
- Latino Health
- Public Health Preparedness & Disaster Response
- Population Mental Health & Wellbeing
- Public Health Science



Graduate School

The Graduate School administers and serves Master's programs, Doctoral programs, Certificates, and non-degree courses for CU Anschutz. Instruction in these programs is provided through the schools and colleges.

In the list of programs that follows, the school or college providing instruction is listed in parenthesis.

Program Degrees

MS in:

- Biomedical Science & Technology (SOM)
- Biophysics & Genetics (SOM)
- Biostatistics (CSPH)
- Clinical Science, MSCS (SOM)
- Epidemiology
- Genetic Counseling (SOM)
- Health Services Research, Policy, and Administration (CSPH)
- Modern Human Anatomy (SOM)
- Nursing (CON)
- Palliative Care (SOM)
- Physical Therapy (SOM)

PhD in:

- Biochemistry and Molecular Genetics (SOM)
- Biostatistics (CSPH)
- Cancer Biology (SOM)
- Cell Biology, Stem Cells and Development (SOM)
- Clinical Science (SOM)
- Computational Bioscience (SOM)
- Epidemiology (CSPH)
- Health Services Research (CSPH)
- Human Medical Genetics (SOM)
- Human Medical Genetics and Genomics (SOM)
- Immunology (SOM)
- Integrated Physiology (SOM)
- Microbiology (SOM)
- Molecular Biology (SOM)
- Neuroscience (SOM)
- Nursing (CON)
- Pharmaceutical Outcomes Research (SSPPS)
- Pharmaceutical Sciences (SSPPS)
- Pharmacology (SOM)
- Physiology (SOM)
- Rehabilitation Science (SOM)
- Structural Biology and Biophysics (SOM)
- Toxicology (SSPPS)

II.2 Facility Overview

Campus growth is guided by the 2022 Design and Development Guidelines. As such, the bulk of remaining development opportunities on campus will be within the C2 | Urban Campus character district. Development in this area will be designed to tie the campus to surrounding established neighborhoods and future development in the FIC.

Future roads will be developed as complete streets in a grid pattern to safely accommodate pedestrian and vehicular activity. They will include wide sidewalks and tree plantings to promote walking. Buildings will be placed close to sidewalks with on-street parking to increase the urban character of new development.

The flexible development sites on the campus will further promote interdisciplinary activities by accommodating multiple uses including research laboratories (both wet and dry), clinics, education, and supporting services.

2012 Plan Implementation

The 2012 plan forecasted a need for roughly 800,000 GSF of new facilities. However, the adoption of space guidelines, increased renovations of existing facilities, and innovative approaches to providing offices reduced the amount of new construction by 400,000 GSF.

Two new facility projects have also allowed the campus to begin to manifest the vision of the 2012 Plan.

Workplace Space Guidelines (WSG)

The university approved Workplace Space Guidelines (WSG) in 2016 to guide the design of offices in all renovation and new construction projects on campus. As applied, they have increased office utilization rates by over 30%.

The WSG are not a university policy, nor do they guarantee any faculty, administrator, student or staff a particular space type and size. Instead, they are intended to guide the assignment, planning, and design of university workplaces. As such, they define space typologies and assignable area maximums.



The Hub

In 2019, approximately 13,000 GSF of the first floor of the Academic Office 1 building was renovated to provide a more modern, sustainable, and responsive workplace environment. The renovation created a space that is more in tune with 21st century office culture.

Built upon the transient workspace model environments found within airports around the world, the Hub is intended to create a “Red Carpet” club atmosphere; allowing presently unaccommodated faculty access to office space on an as-needed basis. The Hub offers a variety of private, semi-private, and public accommodations to suit the workspace needs of current and future faculty members.

The Hub is available only to those predominantly clinical faculty members not in possession of a dedicated office space anywhere else on campus. This shared workspace environment offers a concierge service, food and beverages, and other amenities, making access to the space a more desirable alternative to a traditional private office. The Hub has saved the university over \$27 million in project cost avoidance and more than 85,000 GSF in real estate savings.

The university is currently working to expand and adapt this shared workspace model to accommodate other campus populations such as dry researchers, central services staff, and to accommodate post-COVID officing models.

Anschutz Health Sciences Building (AHSB)

The 395,479 GSF Anschutz Health Sciences Building (AHSB) is the first facility to be designed in accordance with the 2012 C2 | Urban Campus Character Zone Guidelines incorporating greater density, on street parking, and mixed-use programming. The AHSB is a direct response to rapid changes in health sciences education, research, and clinical care; placing emphasis on interdisciplinary learning, innovation, collaboration, and discovery.

The AHSB includes a tier 3 data center, a large conference center, office and clinical spaces, meeting rooms, and labs. A landscaped plaza provides a new western terminus to the 17th Place Art Walk.

The AHSB is the first LEED Version 4.0 Gold Certified facility on campus.

Campus Safety and Preparedness Facility

Completed in 2023, this 26,889 GSF facility is the first net-zero building on the Anschutz Medical Campus. The facility is essential to accommodate the immediate and future needs of the growing campus population and its need for a safe learning, working and research environment.

This new facility will allow the university to consolidate various growing departments and functions of our campus safety and preparedness team (previously housed in three locations on campus) into one, modern, code compliant structure.

Building Inventory

CU Anschutz's 35 buildings, parking structures, and leased facilities total just over 4.2 million GSF. A list and brief description of each CU owned building follows:



Photo credit: AMD Architects/Connie Zhou



Campus Safety and Preparedness Facility - first net-zero building on Anschutz Medical Campus.



Academic Office 1

The Academic Office 1 facility is sited on the southwest corner of the Research Quad. The building was completed in October 2007 to provide faculty offices and support space for the SOM.



Anschutz Health and Wellness Center

This 95,141 GSF facility was completed in early 2012 and named after the Anschutz Foundation in 2014 to recognize its ongoing support of the campus. It provides research, clinical, and office space for wellness studies and programs. The facility includes an exercise facility and wellness center for university employees and the public.



Anschutz Health Sciences Building

Completed in 2021, this 395,479 GSF facility provides the university with a programmatic and physical health sciences locus of interdisciplinary and inter-professional instruction, learning, discovery, and knowledge application. The mixed-use program integrates academic, research, clinical care, and auxiliary functions into one building within the research zone and in close proximity to the University of Colorado Hospital. The new facility is a significant step towards eliminating the “silos” that, in the past, have divided the campus and its users.

The Anschutz Health Sciences Building and plaza at the western end of the Art Walk.



The Barbara Davis Center

The Barbara Davis Center for Childhood Diabetes is the largest diabetes and endocrine care research and training program in Colorado. The 112,646 GSF research and clinical facility was completed in December 2005.



Bioscience 2

The 111,323 GSF, four-story medical research and academic facility, Bioscience 2 was delivered under a design/build contract for the Fitzsimons Redevelopment Authority and the University of Colorado Denver. The facility provides educational and private development space and laboratories, which encourage alliance and knowledge transfer across academia and commercial industry. The university's Bioengineering program is housed on the first floor of the facility.



The 400 Series Buildings

The U.S. Army constructed buildings 400, 401, 402, 406, and 407 in the 1940s for use by the FAMC. They are currently used as office and clinic space by the University Police, SOM, CSPH, and Central Services and Administration units. The buildings comprise just over 115,613 GSF; however their layout and age limit future reuse. As a result, they have been identified for replacement so that more modern facilities can be constructed on the site.

Buildings 400 and 401 showing Revere Court streetscape improvements completed with the Anschutz Health Sciences Building. UCHealth's Leprino Building is in the background.



Rendering of the new facility.



Campus Safety and Preparedness Building

This 26,889 GSF facility, scheduled for occupancy in March 2023, will accommodate the immediate and long-term safety needs of a growing campus. The building will provide a new, consolidated headquarters for the campus safety and preparedness team including Police Operations, Electronic Security, Emergency Communications, and Emergency Management. It will be the campus's first net zero energy facility.

Campus Services Building

The 68,333 GSF Campus Services Building houses the main CU Anschutz painting, carpentry, and mechanical works maintenance shops as well as offices for facilities management and Office of Information Technology (OIT) departments and staff. Between 2016 and 2017, two floors of this building were extensively renovated using the workplace space guidelines allowing the university to increase occupancy by over 30%.

Central Utility Plant

The 82,156 GSF Central Utility Plant (CUP) was completed in May of 2003. It was designed to allow expansions for additional steam and chilled water service. Three projects to expand the campus's chilled water and steam capacity were completed in October 2004, June 2007, and September 2021.



Education 1

The Education 1 building was completed in 2007 and lies to the east of the Fitzsimons Building. It contains multipurpose classrooms, lecture halls, and student community space. It provides specialized instructional laboratories and programs in anatomy, nursing, physical therapy, and pharmacy. Education 1 totals 115,251 GSF.



Education 2 North and South (Including Education Bridge)

Education 2 consists of two five-story structures connected by the education bridge. Completed in 2007, they are located east of Education 1 and form the eastern edge of the Education Quad. The first two floors of the buildings provide over 275,376 GSF of educational spaces including classrooms, lecture halls, computer stations, small group learning rooms, and student community space. Upper floors include offices for the College of Nursing, School of Medicine, Office of Information Technology and Student Services.



Environmental Health and Safety

This building houses the offices, support space, labs, and waste facilities for the Environmental Health and Safety (EH&S) department. It was last expanded in 2007 to 21,002 GSF and is required to support CU Anschutz research programs, teaching educational labs, and facilities operations.



Fire Station

Constructed in 1940 as the FAMC’s fire station, this building is now primarily used by the University Police. The building will need to be demolished to realign Uvalda Street with the portion of it north of Montview Boulevard. The university police will move their functions into the Campus Safety and Preparedness Facility when it is complete.



Fitzsimons Building and Annexes 533 and 534

The Fitzsimons Building is the central and main iconic structure at CU Anschutz. It was originally constructed as the Fitzsimons Army Hospital in 1941 and at the time was the largest structure in Colorado. In 1999, upon closure of the hospital, the university began to occupy the 479,660 GSF building. The university renovated portions of it for use by Central Services and Administration, SOM, CSPH, Academic and Student Affairs, University Counsel, Graduate School, Research Administration, and the Eisenhower Museum on the eighth floor.

Since the 2012 plan, 71,551 SF of renovations have occurred in this building. Of this amount, 44,776 SF were renovated based on the workplace space guidelines.

Directly adjacent to the Fitzsimons Building are Building 533 and 534. These annexes house research equipment and offices for the SOM.





Former Fisher House (V07)

This 5,024 GSF facility, formerly known as the Fisher House, was purchased by the university in 2018 from the VAMC. It had previously served as a residence for military and veteran families during hospital stays. Given that the building was designed for short-term residential use, it is now being used by the Chancellor's office for similar short-term stays by distinguished visitors.



Fulginiti Center for Bioethics and Humanities

The Fulginiti pavilion was constructed in 2007 to house the Center for Bioethics and Humanities. It provides 9,850 assignable square feet (ASF) of exhibition, meeting, seminar, and office space. The 19,475 GSF building forms the northern end of the Education Quad between the Education 1 and Education 2 buildings.



Henderson Parking Garage

The university completed construction of its first parking structure in September 2007 to complement and reduce the amount of surface parking. It consists of seven levels and provides 1,544 parking spaces.



Nighthorse Campbell Native Health Building

The 45,396 GSF Nighthorse Campbell Native Health Building was constructed in May 2002 and was the first building constructed by the university on the campus. It houses the CAIANH.



Preservation and Access Service Center for Colorado Academic Libraries (PASCAL)

This 28,906 GSF central library storage facility was completed in January 2001. The building provides climate-controlled housing for certain materials requiring specialized storage in the library collections of CU Anschutz, CU Denver, CU Boulder, and the University of Denver. An expansion of 11,350 SF was completed in 2009.



Perinatal Research Facility

The Perinatal Research Facility is located in the northeast corner of campus north of Montview Boulevard. It was completed in January 2002 and includes 24,128 GSF of research laboratories, environmental chambers, and office space. Two modular buildings support the activities within the facility.



Research 1 (North and South)

The university built this two-building research complex in 2004. It is located west of the Fitzsimons Building and forms the eastern and northern edges of the Research Quad. The buildings contain wet and dry research laboratories, core laboratories, lab support space, offices, conference rooms, a central vivarium, auditoriums, and building support space.

Including both towers, the complex has a combined square footage of 628,423 GSF and is the largest facility at CU Anschutz.



Research 2

This 479,085 GSF building opened in June 2008 as the second major research facility on campus. It is located west of Research 1 North and forms the northwest edge of the Research Quad. In addition to research laboratories, offices, and support spaces, it also contains the large Krugman Conference Hall which can host special events, large gatherings, and lectures.



School of Dental Medicine Building

The 116,060 GSF School of Dental Medicine Building is located between the Nighthorse Campbell Native Health Building and the Education 2 South building. It forms the southwest edge of the Education Quad and houses the SDM's general dentistry, oral surgery, emergency dentistry, pediatric dentistry, and orthodontia clinics. It also includes offices for the dean of the School of Dentistry and faculty. The building opened in August 2005, and the university added a 13,000 GSF fourth floor in 2010.



View of the Skaggs School of Pharmacy from the Red Cross Plaza.

Skaggs Pharmacy and Pharmaceutical Sciences Building

The 171,416 GSF home of the SSPPS opened in 2011. This facility houses research laboratories, laboratory support, faculty, and administrative offices. The school was renamed in honor of the Skaggs family for their long-standing support of the school.



Strauss Health Sciences Library

Located north of the Fitzsimons Building, the campus library provides 113,005 GSF of collection, study, computer access, and administration space. It provides state-of-the-art library and technology services to CU Anschutz to meet the ever-evolving needs of health sciences education. It was completed in October 2007 and renamed in April 2018 in honor of Mr. Henry Strauss's relationship with the university.

Building Name	Number	Year Built	GSF	Address¹	Primary Uses
Academic Office	L15	2007	204,974	12631 E. 17th Avenue	Administrative
Anschutz Health and Wellness Center	V08	2012	95,141	12348 E. Montview Blvd.	Research/Clinical
Anschutz Health Sciences Building	P12	2021	395,479	1890 N. Revere Court	Research/Clinical
Barbara Davis Center	M20	2005	112,646	1775 N. Aurora Court	Clinical/Research
Bioscience 2	Y18	2015	111,323	12705 E. Montview Blvd.	Lab/Education
Building 400	Q09	1940	31,331	12469 E. 17th Place	Research/Clinical
Building 401	R09	1940	22,656	1784 Racine Street	Administrative
Building 402	S09	1940	22,632	12474 E. 19th Avenue	Administrative
Building 406	T09	1940	19,485	12477 E. 19th Avenue	Administrative
Building 533	R24	1980	5,080	13001 E. 17th Place	Research/Clinical
Building 534	S25	1990	3,299	13001 E. 17th Place	Administrative
Campus Safety and Preparedness Facility	P34	1983/2022	26,889	13309 E. 17th Place	Police/Public Safety
Campus Services Building	T36	2007	68,333	1945 N. Wheeling Street	Office/Facilities (shops)
Central Utility Plant	S34	2002	82,156	13350 E. 19th Avenue	Facilities (physical plant)
Education 1	P26	2007	115,251	13070 E. 19th Avenue	Academic
Education 2 - North	P28	2007	160,454	13120 E. 19th Avenue	Academic
Education 2 - South	L28	2007	114,922	13121 E. 17th Avenue	Academic
Environmental Health & Safety	R30	2004	21,002	13178 E. 19th Avenue	Research
Fire Station (Building 531)	X28	1940	4,829	1997 Uvalda Court	Facilities
Fisher House	V07	1993	5,024	1954 N. Quentin Street	Facilities
Fitzsimons Building	Q20	1941	479,660	13001 E. 17th Place	Office
Fulginiti Center for Bioethics & Humanities	R27	2007	19,475	13080 E. 19th Avenue	Conference
Henderson Parking Structure	V17	2007	495,499	12706 E. Montview Blvd.	Parking
Nighthorse Campbell Native Health Building	M24	2002	45,396	13055 E. 17th Avenue	Office/Assembly
PASCAL	P30	2001	28,906	13188 E. 19th Avenue	Student Support (storage)
Perinatal Research Facility (Building 260)	AK32	1980	24,128	13243 E. 23rd Avenue	Research
Perinatal Research Facility Modular East	AL32B	2005	4,014	-	Research
Perinatal Research Facility Modular West	AL32A	2015	1,168	-	Research
Research 1 - North	P18	2004	344,703	12800 E. 19th Avenue	Research/Office
Research 1 - South	L18	2004	283,720	12801 E. 17th Avenue	Research/Office
Research 2	P15	2008	479,085	12700 E. 19th Avenue	Research/Office
School of Dental Medicine Building	L26	2005	116,060	13065 E. 17th Avenue	Clinic/Education
Skaggs School of Pharmacy	V20	2011	171,416	12850 E. Montview Blvd.	Academic/Research
Strauss Health Sciences Library	V23	2007	113,005	12950 E. Montview Blvd.	Student Support/Study/Office
University Police (Building 407)	U09	1942	19,509	124540 E. 19th Place	Police/Public Safety
Building Count:	35	Total GSF	4,248,650		

1) All addresses are in Aurora, CO 80045.

Figure II.1 – Official Facility Gross Square Footage, August 2022

Campus Facilities Inventory by Unit

The university has 2,438,639 ASF of space within its facilities. This number excludes building level facility support spaces such as open corridors and mechanical spaces

Figure II.2 allocates the total university ASF to schools, colleges, and administrative units. The SOM occupies the majority of university space, followed by administrative departments and ASA programs. After the SOM, the SSPPS and SDM are the schools occupying the most amount of space on campus.

The totals for ASA include the Strauss Health Science Library and the centralized learning space inventory maintained by Office of Information Technology – Technology Support Services (OIT-TSS). These spaces include all small group learning (SGL), classroom, and non-departmental meeting rooms. All schools and colleges can reserve these spaces.

Description - Space Inventory	Fall 2012 ASF	Fall 2022 ASF	2012 - 2022 Change
Academic and Student Affairs (ASA) ¹	247,872	269,788	21,916
Administration ²	399,759	486,370	86,611
Inworks / College of Engineering, Design, and Computing (CEDC) ³		1,639	1,639
College of Nursing (CON)	29,026	36,330	7,304
School of Dental Medicine (SDM)	78,266	106,287	28,021
School of Medicine (SOM)	1,137,087	1,364,785	227,698
Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS)	93,891	104,073	10,182
Colorado School of Public Health (CSPH)	59,266	69,366	10,100
Overall Space Inventory Total	2,045,167	2,438,639	393,472

1) The ASF for ASA units includes the Strauss Health Sciences Library and all OIT-TSS learning spaces.

2) The Graduate School's administrative offices are included in these figures.

3) This area is used by the Inworks program in the Strauss Health Sciences Library. The Bioengineering program is included in the SOM figures.

Figure II.2 – University Space Inventory by School

II.3 Enrollment and Population Projections

In the academic year 2011–2012, the total headcount at CU Anschutz including faculty, staff (Central Services and Administration), residents, and students was 12,860. In Fall 2022, this total headcount was 17,329. This growth of 4,476 is above the 2012 master plan projection of 3,137.

Headcount data provided by the Office of Institutional Research and Effectiveness (OIRE) formed the basis of this analysis. During the planning process, each school and college verified their past data and developed projections for future student and employee growth.

Figure II.3 shows change in population growth and Figure II.4 shows breakdown of population by schools/colleges: faculty, staff, residents, and students. The table also shows the total anticipated increase in headcount over the next 10 years. The plan projects an overall increase of 2,794 in headcount to 20,123. This represents an annual growth of approximately 1.6%. The annual growth of students is estimated at 2.07% per year for a total increase of 970 students over the planning period.

Description	2022	2032	Change	% Change
Faculty	6,130	6,979	849	14%
Staff	5,248	5,985	737	14%
Residents	1,254	1,492	238	19%
Students	4,697	5,667	970	21%
Total	17,329	20,123	2,794	17%

Figure II.3 – Population Growth

Description	Fall 2022 Actual	2022–2032 Projected	Total # Increase	Annual % Increase
Faculty				
Academic & Student Affairs (ASA) ¹	2	3	1	5.00%
Central Services & Administration (CSA)	6	11	5	8.33%
School of Medicine	5,425	6,212	787	1.45%
School of Dental Medicine	138	159	21	1.52%
College of Nursing	170	185	15	0.88%
Skaggs School of Pharmacy	171	171	0	0.00%
Colorado School of Public Health	189	207	18	0.95%
Bioengineering Program (CEDC)	28	30	2	0.71%
Graduate School	1	1		
Faculty Subtotal	6,130	6,979	848	1.38%
Staff				
Academic & Student Affairs (ASA) ¹	59	68	9	1.53%
Central Services & Administration (CSA)	1,003	1,150	147	1.47%
School of Medicine	3,514	3,987	473	1.35%
School of Dental Medicine	177	203	26	1.47%
College of Nursing	127	161	34	2.68%
Skaggs School of Pharmacy	100	100	0	0.00%
Colorado School of Public Health	251	294	43	1.71%
Bioengineering Program (CEDC)	12	17	5	4.17%
Graduate School	5	5		
Staff Subtotal²	5,248	5,985	728	1.39%
Residents Subtotal	1,254	1,492	238	1.90%
Students				
School of Medicine ³	1,683	2,011	314	1.87%
<i>Affiliated with Graduate School</i>	462	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
School of Dental Medicine	443	450	-14	-0.32%
<i>Affiliated with Graduate School</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
College of Nursing	1,079	1,605	486	4.50%
<i>Affiliated with Graduate School</i>	44	208	164	37.27%
Skaggs School of Pharmacy	598	685	129	2.16%
<i>Affiliated with Graduate School</i>	88	99	11	1.25%
Colorado School of Public Health	709	691	15	0.21%
<i>Affiliated with Graduate School</i>	99	108	9	0.91%
Bioengineering Program (CEDC)	185	225	40	2.16%
<i>Affiliated with Graduate School</i>	87	137	40	<i>n/a</i>
Students Subtotal	4,697	5,667	970	2.07%
<i>Affiliated w/Graduate School</i>	780	552	224	2.87%
Total Headcount	17,329	20,123	2,784	1.6%

1) Includes employees of the Health Sciences Library.

2) PRAs are included in the staff category due to recoding of PRA positions by the SOM.

3) As of February 2023, all PhD programs affiliated with the SOM are now directly managed by the school.

Figure II.4 - Headcount Detail

II.4 Classroom Utilization

The Education 1 and Education 2 North and South buildings provide most of the shared-use general instruction classrooms and lecture halls on campus.

Over the course of a semester, a number of learning spaces are utilized above recommended rates. However, during peak-week periods, many become used above recommended capacities. During these periods of heavy use, the university uses conference rooms and other spaces to help meet needs.

The College of Nursing (CON), Skaggs School of Pharmacy and Pharmaceutical Sciences (SPPSS), and School of Dental Medicine (SDM) often conduct classes for full cohorts that fall within the 100-200 range. Currently, these classes are mostly scheduled in the heavily utilized 200-seat lecture halls. There is also high demand for 80-160 classrooms to suit cohorts and their divisions.

Many program pedagogies now include small group (problem solving and critical thinking exercises) learning in addition to larger traditional lecture-style classes. OIT-TSS data confirms that classes of 20-40 people have had the greatest requests for space over the past two years.

The growth of multi modal skills-based and teams-based learning is driving demand for 40-80-160 sized flat floor classrooms.

Learning Space Inventory

The learning space inventory includes one 600-seat auditorium, one 225-seat auditorium, six 200-seat lecture halls, one 100-seat lecture hall, twelve 16-seat multi-purpose classrooms (MPCs), and 20 classrooms. The university uses these shared spaces to better facilitate scheduling and to encourage interdisciplinary programs and education.

The classrooms include two 30-seat classrooms, nine 60-person classrooms, one 72-seat tiered distance learning classroom, seven 84-seat tiered classrooms, and one 168-seat classroom. The 168-seat classroom can be divided for use as two 84-seat classrooms.

The 30-, 60-, and 168-seat rooms have furniture that can be easily reconfigured to accommodate different learning styles. This allows them to be reconfigured for different types of large and small group learning.

The lecture halls generally do not allow instructors to conduct large group learning and small group activities in the same space. Currently, if a large lecture needs to break up into smaller groups, additional small classrooms, such as the MPCs, must also be reserved and used.

The university has recognized that the two-floor tiered 200-seat lecture halls in Education 1 have the potential to be reconfigured to address this issue. Both spaces could be designed to provide a single-story lecture hall on the second level. The first-floor area under each

Classroom Type	Fall 2019 Utilization		Fall 2022 Utilization	
	Academic	Total	Academic	Total
200-Seat Lecture Hall	62.9%	76.7%	69.1%	74.7%
168-Seat Classroom	38.9%	51.1%	58.3%	64.9%
100-Seat Lecture Hall	21.6%	45.9%	39.1%	49.6%
70 to 80-Seat Classroom	53.6%	76.5%	60.6%	66.2%
60-Seat Classroom	55.5%	75.5%	54.0%	59.7%
30-Seat Classroom	55.2%	66.2%	42.4%	46.8%
All Classroom Types	54.7%	73.3%	58.1%	63.8%

1) Utilization is calculated using 693 total hours for a fall semester.

Figure II.5 – Utilization of Shared General-Use Classrooms

could provide smaller classrooms, simulation labs, and student support spaces. The new lecture halls would be designed to allow students to break into smaller workgroups as needed.

All buildings with centrally scheduled learning spaces also house SGL rooms. These are designed for informal use by students for study. They are generally not reserved for class use.

An additional divisible 72-seat classroom, two 32-seat conference rooms, three 30-40-person break-out rooms, and a divisible 320-person conference space in the AHSB were added to the centrally scheduled shared use learning space inventory in 2022.

Additional Educational Spaces

CONFERENCE ROOMS

In general, peak-weeks occur when student clinical rotation schedules converge so that most students are on campus at the same time. This clinical training makes it difficult to schedule many classes using a traditional fixed weekly schedule.

Use of conference rooms for instruction allows the university to effectively use its existing space portfolio to meet acute needs.

Ten additional departmentally controlled conference rooms are now provided in the AHSB. These may also be used for classes if they are available once departmental uses have been accommodated.

DEPARTMENT CLASS LABORATORIES

Many schools and colleges also operate clinical skills laboratories, simulation rooms, and specialized classrooms. These specialized simulation and instructional spaces are used by the Center for Advancing Professional Excellence (CAPE) program, the CON, and for gross anatomy, nursing, physical therapy, pharmacy, and dental medicine training. These spaces are directly scheduled, managed, and programmed by the schools, colleges, and programs.

Future growth in these types of spaces will vary based on program and educational requirements.

Future Trends

Even prior to the COVID-19 pandemic, the use of distance-learning was growing. Although students have returned to campus, classes will still utilize these technologies. Learning spaces will need to continue to accommodate remote sessions.

For students who attend class in person, adequate charging capacity and wireless support will need to be provided. This will ensure students can keep their devices charged and access internet resources as needed.

Currently, the 200-seat lecture halls are designed to accommodate an entire class of first year medical students. If the cohort size of any program on campus increases, additional seating will need to be provided in these rooms or they will need to be redesigned. If neither is possible, new lecture spaces could be constructed or a cycle of smaller cohorts throughout the year could be pursued.



Photo credit: AMD Architects/Connie Zhou

Classroom Analysis

To determine the potential classroom needs of the projected student growth from the previous section, a classroom analysis was completed for this effort. The project team used two years of OIT-TSS scheduling data and a space model to estimate that 12,312 ASF of additional learning space may be needed to meet current and future needs. This would provide the following with associated support spaces:

- Four 10-seat small group classrooms (250 ASF each/1000 total ASF)
- Four 20-seat classrooms (500 ASF each/2,000 total ASF)
- Two 40-seat classrooms (1,000 ASF each/2,000 total ASF)
- Two 160-seat divisible classrooms (3,200 ASF each/6,400 ASF)
- Associated support space

OIT-TSS provided information on room scheduling between August 2021 to May 2023 to quantify demands based on actual scheduling practices. This covers four traditional 16-week semesters (two spring, two fall) and two summers, including the semester currently under way (Spring 2023), provides a historic and current snapshots of demands and how they are met within the existing classroom inventory.

Class Size	Total Hours Reserved
21 - 40 students	10,864
20 students or less	10,732
41 - 59 students	5,448
161 - 180 students	2,902
101 - 120 students	2,674
81 - 100 students	1,524
121 - 140 students	932
141 - 160 students	732
181 - 199 students	329
Total Hours	36,136

Figure II.6 – Space Requests by Class Size (August 1, 2021 to May 31, 2023)

Breaking the OIT-TSS class requests into 20-person increments illustrates how class demands are accommodated in the existing learning space portfolio. 21–40-student and less than 20 student classes requested space for the greatest amount of class hours. More than 10,000 hours of instruction for each category were scheduled over the two-year period. Classes that were not accommodated in the two 30-seat classrooms were then assigned to the 60- and 80-seat classrooms.

Meanwhile, classes of between 81 and 160 students requested space to provide close to 6,000 class hours over the past two-years. As there are only two spaces on campus that could accommodate classes of this size, many of these classes are scheduled in the 200-seat lecture halls increasing their utilization, often above CDHE standards.

Further analysis of the Fall 2022 semester identified the hours booked by each school for each of the classroom types for core classes and electives. Online and in person student population growth for each school were differentiated to fine-tune anticipated demands. Each school's scheduled hours for each space type was multiplied by anticipated in-person growth to determine the additional projected semester hours that may be needed for each class size.

These data were cross referenced against OIT–TSS utilization data, and confirm that the 16-seat MPCs, 60-seat classrooms, and 200-seat lecture halls would be needed at higher rates. Based on scheduling practices, many smaller class needs would be accommodated in the 60-seat spaces pushing some of these classes into larger spaces. The consistent heavy use of the 12 MPCs is a further barometer of the demand for smaller classrooms.

In order to reduce the upwards scheduling pressure, meet existing and growing small class demands, and enhance maintenance, new classrooms seat counts are proposed. The 20- and 40-seat classrooms will address the need for small learning environments and increase scheduling flexibility. The divisible 160-person classrooms will improve scheduling flexibility for mid- to large- size classes at the university and reduce demands on the 200-seat conference rooms. These pressures will likely increase as the CON expands its cohort sizes.

Design Considerations

The following issues were identified during work group, school and college, and ancillary meetings for this master plan update. As future learning spaces are provided, these observations can assist final design so that the rooms provide an optimal learning environment.

- Many current classrooms do not allow seamless use for in-person and remote learners. The university has updated a few classrooms to enable remote learning and is beginning a multi-year project to upgrade others. Audio/video connectivity will be improved, and new equipment installed in the rooms to better support hybrid learning modalities. This effort should modernize the existing classroom inventory, though future spaces should be designed to support distance learners.
- Flat floored spaces that could be used for a variety of concurrent teaching methods are desired. These rooms would allow for large group and small group learning to occur in the same space. Movable furniture could allow for use of physical teaching aids and accommodate small group critical thinking exercises. Surveys conducted with the schools and colleges confirmed these findings and noted a need for 10- to 20-person small group rooms and divisible 80-100 plus person, flat-floored classrooms.

II.5 Future Space Needs

For this plan, FY 11 to FY 21 Webspace data were used to determine growth in facilities since the last master plan. Webspace is a facilities space inventory system maintained by the university finance office using self-reported data from each school and college. To develop FY 22 figures, data from Archibus, the space management software utilized by the Office of Planning, were used to adjust the FY 21 Webspace data. Starting in FY23 Archibus will be the university's sole source of space information.

As of Fall 2022, CU Anschutz occupies 2,438,639 ASF. This figure forms the basis of the future space needs analysis. The current campus total includes 95,351 ASF of site-wide leased space. It includes leases in both Fitzsimons Innovation Community (FIC) and CU Medicine facilities north of Montview Boulevard. The leased square footage has decreased since 2012 because several leases have been terminated as space needs were accommodated on-campus.

Description - Space Inventory	Fall 2022 Actual ASF	Fall 2032 Projected ASF	Area Increase/Decrease (ASF)	Growth % Increase/Decrease
All Research/Clinical/Support	1,486,188	1,644,698	162,257	10.92%
Academic/Administrative/Other	952,451	1,127,720	175,269	18.40%
Overall Space Inventory Total	2,438,639	2,772,419	337,526	13.84%

Figure II.7 - Campus Space Inventory and Projection Summary

Description - Space Inventory	FICM Codes	FY22 ASF	Estimated Increase	Projected FY32 ASF	% Change
Classroom/Class Laboratory		172,058	14,673	186,731	8.53%
Classroom	110-115	98,189	12,312	110,501	12.54%
Class Lab, Class Lab Service & Simulation ¹	210-225	73,869	2,361	76,230	3.20%
Office/Administrative	305-320/350-355	942,538	115,559	1,058,096	12.26%
Research Laboratory and Support		744,762	127,623	872,386	17.14%
Wet Research	250, 251,253,255	626,097	103,711	729,808	16.56%
Dry Research	252	62,670	14,637	77,306	23.36%
Core Facilities	254, 256-260	55,995	9,275	65,271	16.56%
Animal Facilities	570-575	93,476	26,538	120,013	28.39%
Clinical Space	540-545/810-880	114,213	21,108	135,321	18.48%
Clinical Examination	810 - 880	53,375	16,340	69,715	30.61%
Community Clinic	810 - 880	53,400	4,768	58,168	8.93%
Wellness Center	810 - 880	7,438	0	7,438	0.00%
Library/Study/Media Production	410-455/530-535	73,502	6,615	80,117	9.00%
Ancillary Services (Assembly/Food/Lounge/Merchandising/Meeting)	610-685	91,845	9,184	101,029	10.00%
Operational Support (Central Computer/Telecom/Shops/EHS/Storage)	710-792	95,518	1,433	96,951	1.50%
Building Services/CUP (Assignable to Units)	70/91-93/95	76,856	11,870	88,726	15.44%
Physical Education	520-525	30,126	2,922	33,048	9.70%
Other	599	3,746	0	0	0.00%
Total		2,438,639	337,526	2,772,418	13.84%

1) As there is no FICM code for simulation space (e.g., virtual reality, clinical practice testing and simulation) it is included in the class lab category.

2) Service areas to support each space category are included in the figures for each row

Figure II.8 - Future 10-Year Space Projections by Space Type

A. Space Projection for Current Programs

The 2022 - 2032 space needs analysis indicates an additional 337,526 ASF may be needed to accommodate anticipated growth over the next 10 years.

This is an increase of 13.84% and includes an estimated 162,257 ASF (10.92%) for research and 175,269 ASF (18.40%) to meet academic and administrative support needs. Figure II.7 shows campus-wide existing ASF and future growth projections.

When analyzed by space type, the additional 337,526 ASF needed over the 10 year master plan update period breaks down into space categories as shown in Figure II.8 along with the percentage of growth in each.

B. Classroom and Class Laboratory

As Figure II.8 shows, the space model indicates an additional 14,673 ASF may be needed to meet classroom and instructional space needs by 2032. Current and proposed simulation spaces are considered class labs to simplify discussion.

This figure differs from that in the prior classroom analysis as SGLs are now included. These rooms not only provide breakout space to classes but are primarily intended for informal small group learning activities by students when they are not in class. Thus, there is an important need for these spaces outside formal use and additional SGLs are provided to further enhance and support the student experience.

Less classroom space is proposed than what was provided over the past ten years. In FY2012 Classroom and Instructional Lab Space accounted for 143,358 ASF and rose by 28,700 to 172,058 ASF in FY2022. As most professional programs are maintaining, or likely only slightly increasing, their enrollments while other programs are returning to their historic highs, the existing space portfolio can continue to meet these demands. As noted earlier, the proposed classrooms would help meet space demands due to shifting pedagogies and growth in small classes. The new space types would help optimize scheduling and better balance use of existing university resources.

C. Research Laboratory and Support

Based on Principal Investigator (PI) headcount growth projections from each school and college, the university is estimated to need an additional 127,623 ASF for research activities by 2032 (see Figure II.8). This includes all wet, dry, and core facility spaces. It is anticipated that moderate increases in lab utilization could absorb a portion of this growth though ultimately new facilities will be needed.

The calculation used an annual PI growth rate of 2.2% and resulted in an increase of 138 PIs over the next 10 years. The number of anticipated wet and dry PIs in each school and college was multiplied by the current average of space for each type of PI. These school and college figures were then combined.

As existing research space on campus is limited, traditional bench-based wet laboratory spaces will be needed to meet demands even with ongoing space optimization efforts. To support this growth, it is estimated that an additional 26,538 ASF of vivarium space will be needed. This calculation is based on the ratio of research space in the AHSB, R1 North, and R2 to the existing vivarium. Such space will need to be designed to reflect NIH guidance recommending increased translatability of research that may require more space for small mammal, non-primate, research subjects.

In 2019, the university began to track dry research spaces in its space inventory using Facilities Inventory and Classification Manual (FICM) code 252. Through the planning process, participants noted there was an increased need for such data analysis, software development, or computer simulation spaces. Some dry research may be directly tied to traditional wet research activities, and future facilities may provide such “damp” research labs. This would further promote interdisciplinary collaboration described in more detail in Section II.5.H.

The planning process also identified a desire for additional core facilities available to all PIs on campus. These spaces provide common technologies (such as

imaging) or storage (such as for bio-specimens). 9,275 ASF of additional core facilities may be needed based on the overall growth rate of wet research space.



Photo credit: AMD Architects/Connie Zhou

D. Office and Administrative

Figure II.8 shows the total anticipated 10 year increase in office space. Based on headcount growth projections provided by each school and college, 1,058,096 ASF of office areas will be needed in 2032, marking an increase of 115,559 ASF above the 2022 amount. This accommodates annual headcount growth of 1.4% or a total increase of 1,824 people.

To calculate office space demand for the future, university workplace space guidelines were applied. These are comprised of a standard square footage per person based on that person's title. In thinking about the future of work, however, new work formats must be taken into consideration - from remote work to shared Hub-like spaces.

As such, the calculation for space was refined to allow for a certain percentage of faculty, staff, and PRAs to be housed in planned future Hub-like spaces. Specifically, those doing clinical research and administrative work would ideally use such new work environments. Thus, 775 people are assumed to be working in these spaces to reduce office needs by estimated 25,000 ASF.

Reflecting the growth in dry lab space and the fact that many researchers use their offices for this work,

the office calculation was further adjusted to subtract the number of PIs undertaking dry research from the population used in the office calculation.

E. Clinical Space



Photo credit: AMD Architects/Connie Zhou

The university is estimated to need an additional 21,108 ASF of clinic space over the next 10 years (Figure II.8). The calculation multiplied the average clinic space used by clinical PIs by the average growth in wet and dry PIs. The resulting 18.48% increase is anticipated to provide both clinical examination and community clinic spaces.

The majority of the university's current clinical exam space is in the Barbara Davis Center and the AHSB. In addition, there are several research use examination spaces in partner institutions. Use of such space is expected to continue and meet most demands for examination space. As such clinics are often in neighborhoods and may provide other medical and support services, they would be more accessible and useful to patients and research subjects.

The SDM's Dental Clinics and the AHSB's mental health clinics provide the bulk of the university's community clinics. The AHSB has been designed to accommodate some clinic growth. The SDM's dental clinics are in heavy and increased demand, though further expansion is hindered by adjacent office and student support spaces. Relocation of these would allow cost-effective expansion of the clinics as opposed to providing newly constructed clinic space.

The AHC also provides examination and community clinic spaces and is part of the SOM. Such spaces may be made available to university units upon request and if space permits. However, clinics with a focus on wellness, physical fitness, nutrition, and weight loss would be most compatible with the overall mission and goals of the center. Further expansion of the facility is not envisioned as it is a self-supporting university unit.



other uses on campus over the past ten years. As traditional stack storage becomes less relevant, the opportunity to renovate such space in the library to study rooms should be pursued. These spaces are aligned with the library's mission and would expand similar recent and successful renovations in the facility.

- Ancillary Services – The space model indicates a



F. Non-Research/Academic/Clinical/ Administrative Support Functions

To support all the previous university functions and meet other needs of the university community, an additional 32,025 ASF may be needed. A brief explanation of each need follows.

- Building Services / Central Utility Plant – 11,870 ASF is planned to support the projects proposed in the Physical Plan (Chapter III). Most notably, space is provided for an ancillary chiller plant to augment the supply of chilled water provided to the hospitals.
- Operational Support – The new AHSB data center is anticipated to meet all central IT expansion for the future 10 year period. Some additional facilities may be needed to support technological changes but will be programmed as needed.
- Library/Study Rooms – 6,615 ASF of study space is proposed due to the conversion of such space to

potential need for 9,184 ASF for these services. Relocation of the campus bookstore may afford an opportunity to place it in a more central location for the campus community and provide additional learning space in the Education Quad. Other food and merchandise options may be provided in future projects based on need and location.

- Recreation – An additional 2,922 ASF of recreation space is anticipated over the next ten years. However, the Anschutz Health and Wellness Center can accommodate additional memberships. It saw its membership drop by roughly half during COVID-19, and can support approximately 4,500 memberships. If this number is reached, it could trigger the need for such space, although the center can adjust its operations and off-peak pricing to better balance demands throughout the day even if this threshold is crossed.

G. Technology

As noted earlier, through the planning process participants voiced a desire for improved audio visual and information technologies in university facilities. OIT is currently undertaking two significant projects that will address many of the vocalized needs. As the university pursues new facilities, ongoing coordination with OIT will provide an opportunity to combine and streamline projects to ensure the university enhances its overall existing and future learning environment in a strategic, consistent, and cost-effective manner.

CLASSROOM/CONFERENCE ROOM MODERNIZATION

The audio visual and information technology in most campus facilities that have been built by the university date to their construction. These systems may have been updated on a room or project level since their installation.

As a result, OIT-TSS is undertaking a six-year phased AV update of their central learning and meeting space inventory. The goal is to replace outdated systems with ones better able to accommodate in-person, hybrid, and remote classes and meetings. During and after the COVID-19 pandemic, the limitations of the existing AV systems in these rooms was evident.

The project will complete an in-depth audit of the systems in each of the approximately 125 class and meeting rooms managed by OIT-TSS. They will then be prioritized for improvements. However, the meeting rooms in the Fitzsimons Building and one 16-, 30-, 60-, and 80-seat classroom will take precedence.

The project will not update furniture in the rooms as currently scoped. However, the proposed classrooms will help provide more adaptable learning environments

Departmentally controlled conference rooms are not included but may be incorporated as the effort is under way.

WIFI

The campus WiFi network infrastructure is nearly 10 years old. It was initially designed to support basic email and web browsing capability. As more complex applications have been developed and used on the network, it has been challenging to reliably maintain WiFi on campus.

As a result, OIT is in the process of replacing the WiFi systems in the Education, Fulginiti Research, and Skaggs School of Pharmacy Buildings and the Fulginiti Pavilion. Longer-term, the goal is to build out and restore WiFi coverage in specified outdoor areas. The new Red Cross plaza will be the first campus location with outdoor WiFi ahead of this effort.

This effort is currently estimated to cost \$6.5 million. However, equipment costs are subject to upward price pressures.

As this project is implemented, additional monitoring, research and study will be needed. The presence of metal ductwork and motors may interfere with signals and different equipment may be required to extend service to all spaces.

Finally, it should be noted that the lifespan of WiFi technology and license agreements are usually shorter than 10 years. Over the life of this plan, further replacements and upgrades to WiFi are likely. These will be needed regardless of any new facility or renovation projects on campus.

H. New Program Initiatives and Related Space Needs

The University set up six work groups to consider future academic, health and administrative needs in relation to the 2022-2032 master plan update. Five addressed issues that directly relate to academic planning: Learning and Technology; Research; Clinical Research; Student Experience; and Diversity, Equity, and Inclusion. These discussions along with additional focused conversations and meetings with the schools and colleges identified the following issues that could impact provision of space on campus.

- Wet lab space is one of the largest components of the university’s space inventory and will continue to grow. Due to recent efforts by the SOM to optimize space in the research towers, the wet lab portfolio is likely able to accommodate two years of growth in the PI population. In addition, benchmarking of peer institutions suggested that the area per PI and per team member could be reduced from the current averages. Future lab renovations or new construction could consider the possibility of a 10% to 20% reduction in space provision per PI in future planning activities.
- These discussions identified the potential to modify wet lab support space for shared core facilities. These would encourage interdisciplinary, team-based lab use, would serve to increase collaboration, reduce operational costs and afford opportunities to realize the wet lab efficiencies described above. Core facilities could include centralized storage and processing, equipment with large footprints (e.g., spectrometry/testing), co-located freezers, fridges and incubators, biorepository and tissue culture data visualization, and computational and informatics space.
- According to surveys conducted with the schools and colleges, the growth rate in dry labs used for data analysis, software development, and computer simulations will be the highest of all lab space types. The space demand model differentiates this growth by each school and college.

- Building on the interdisciplinary and dry lab themes, discussions noted there was interest in creating “damp” research environments. This would co-locate wet labs, clinical coordinators, data analytics, and collaborative meeting space together in future lab projects and renovations.



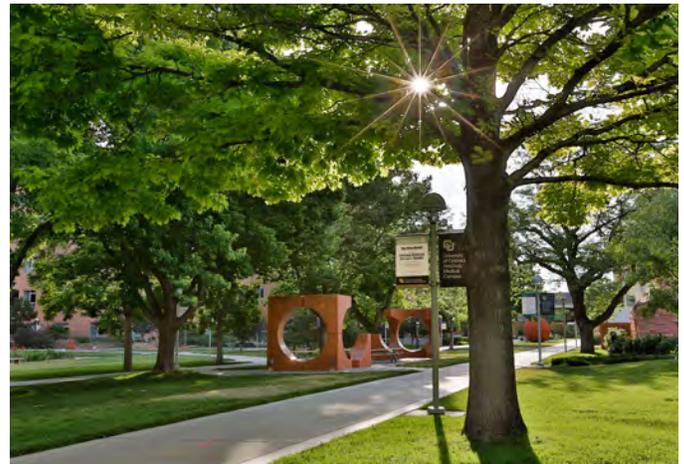
- “Hub” style space for mobile clinical coordinators adjacent to wet lab space provides a way to avoid duplicating office space. The need for greater mixing of uses was further emphasized in discussions about providing learning space adjacent to clinical lab spaces.
- There is a potential to expand phase 1 trials linked to infusion/cell-based therapy. Such growth could be exponential because of the nature of scientific discovery and the possibility to build on existing investments in cell biomanufacturing infrastructure, such as the Gates Biomanufacturing Facility. Current infusion space in the hospital is quite limited and additional space may be needed. As clinical space increases, attention should be paid to ensure that it provides appropriate data analytics resources.
- As many of the university-owned facilities date to the initial relocation of campus to Aurora, some improvement to the patient and clinical subject experience should be expected in future projects. This would include efforts to improve parking, wayfinding, public access to clinics, and quality of reception, waiting, and examination or interview space. Increased women’s health is a major growth

area that has required subcontracting services off campus to help meet the community need.

- Co-location of academic support and student services could be pursued to enhance the student experience on campus. However, any consolidation of these uses must balance different approaches to meeting student life and study needs. Noisy activities in close proximity to quiet areas in the library may end up creating conflicts between student needs for study and social spaces.
- Concerns for enhancing the well-being of students were also voiced through a desire to increase accessible physical fitness programs and recreational equipment rentals like CU Denver.
- There are opportunities to elevate the visibility of the educational mission on the northern side of campus between the FIC and rock lots and campus facilities through public art, cultural murals, and public gardens. The student life commons or one of the potential new roadways could be designed as an "Academic Promenade" and provide signage or other amenities to focus on and promote student expression.
- Universal design principles will continue to be a core component of projects. Attention will continue to be paid to all community members in the design process to ensure the campus remains an inclusive, accessible, and supportive physical environment. The university is continuing to grow and expand its DEI initiatives. The Center for Health Equity and LGBTQ+ Hub have become campus resources that increasingly draw the surrounding community to campus and similar spaces and programs may be provided in future projects.
- The campus could further acknowledge the contributions of historically under-represented populations to its growth. Public art, photographs, and exhibits could present cultural histories and highlight trailblazers from these communities. This would provide a way for the campus community and neighboring ones to better relate to campus. The plaza at the former Red Cross site shows how such history can be presented through public amenities

and signage. Similar types of exterior installations combined with internal displays could present other historic, cultural, and biographical information.

- Bilingual signage and wayfinding can provide another way to expand institutional accessibility to the neighboring community. In addition, the campus should continue to provide and improve accessible wi-fi on campus to bridge the digital divide for all visitors.



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III. PHYSICAL PLAN



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The CU Anschutz Medical Campus is a destination for healing and hope, creativity and innovation, learning and discovery, and bold breakthroughs with untold potential. Our mission is more important today than ever before, and with the best minds in medicine and health at the helm, the future is bright.

Chancellor Don Elliman

III.1 Overview

The Anschutz Medical Campus physical environment developed swiftly and successfully based on the planning and financial strategies established in the original 1998, and subsequent 2002 and 2012 Facilities Master Plans. These plans served the campus well, as evidenced by the rapid construction of facilities well ahead of original schedules and the robust growth in programs and services at CU Anschutz, UCH, and CHCO.

Notwithstanding these successes, many aspects of the 1998 Master Plan resulted in unintended drawbacks; foremost being the physical and symbolic “silos” that essentially separated academic, clinical, and research functions, thereby hindering full attainment of the overarching campus goals of collaboration and connectivity.

Furthermore, the Anschutz Medical Campus continued to be faced with a dynamic and evolving health care, research, academic, and funding environment that required a vision for the future that allowed for extreme flexibility and creativity.

To correct these unintended drawbacks, the 2012 facilities Master Plan proposed highly flexible planning strategies to achieve its goals and was predicated upon seven primary objectives:

- Accommodate an anticipated 24% population growth on campus from 2012 through 2022, with a 32% student population growth.
- Create one integrated campus community, promoting collaboration and connectivity.
- Blend formerly separated functional zones.
- Maximize the use of existing facility and land assets.
- Enhance connectivity with the surrounding community.
- Establish a methodology that will allow the university to adapt to rapid changes in strategic priorities and funding strategies.
- Establish a developmental framework that accommodates disparate priorities among campus affiliates.

III | PHYSICAL PLAN

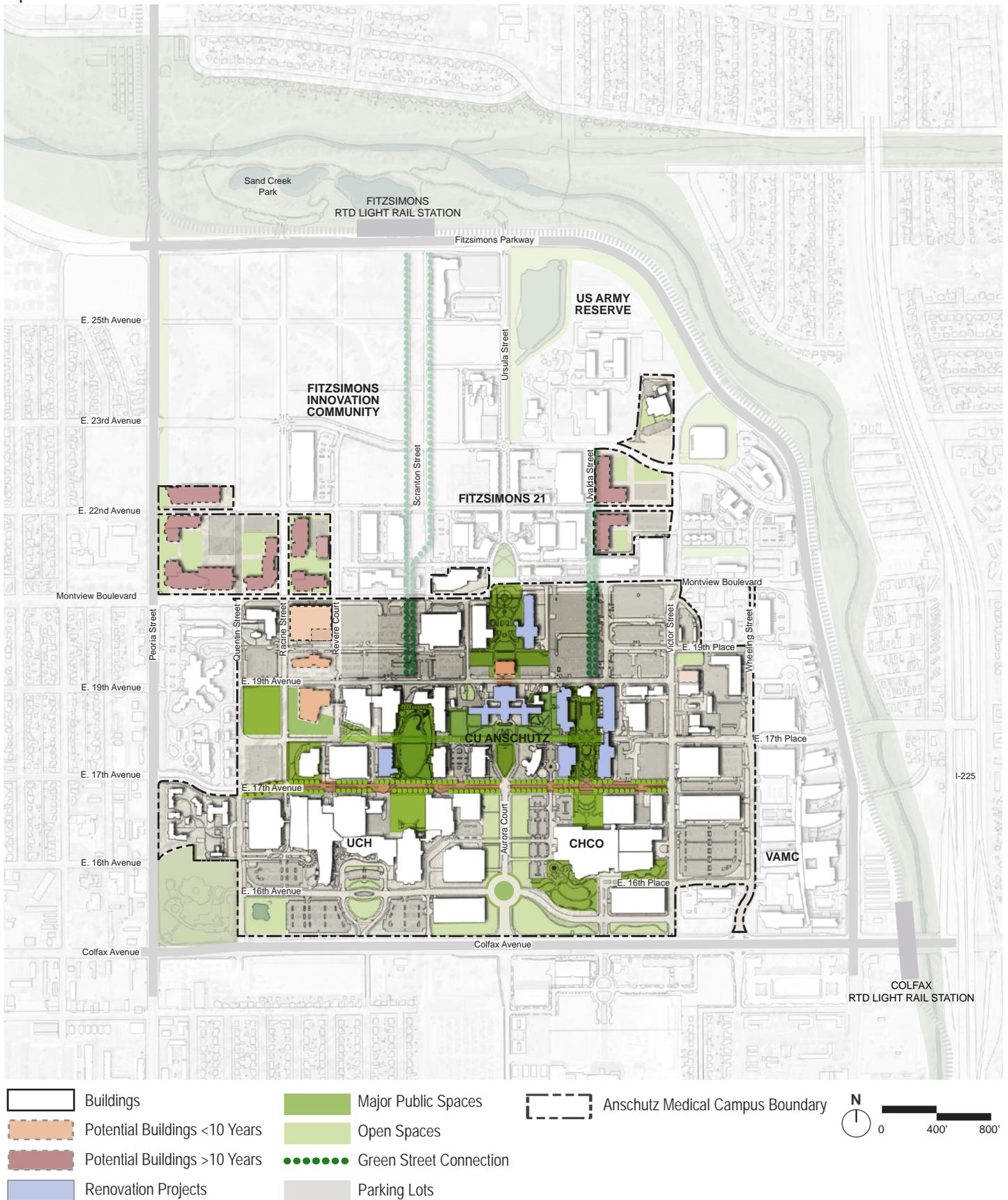


Figure III.1 - Potential Build-Out

This 2022 Facilities Master Plan builds upon the vision, goals, and objectives identified in the 2012 effort. Retaining the organizational framework established by the 2012 Plan, this plan outlines a strategy to accommodate the next decade of growth for the Anschutz Medical Campus through a proposed development scenario.

Campus Framework

To create an adaptive plan that could accommodate the unexpected and changing conditions and priorities of the campus, the 2012 master planning process explored a variety of planning scenario options that dealt with campus issues both big and small. Planning through scenario exploration allowed for learning about the future by understanding the nature and impact of the most uncertain and important driving forces affecting the campus. Through an iterative group process that encouraged knowledge exchange, stakeholders developed a deeper understanding of the central issues facing the Anschutz Medical Campus. Specific needs and criteria changed; some became less important, and others became more so.

A logical outgrowth of this scenario exploration process was the decision to discard traditional land-use planning that emphasizes distinct use zones and to create instead a focused framework for development based on achieving a desired campus character, quality, and form regardless of use. The framework emphasized the following relationships: buildings in relation to each other; form, scale, and mass of block development; and the types and scale of the streets and open spaces that comprise the public realm.

Four distinct concepts emerged from the 2012 planning process:

- Connectivity to the larger urban context: Develop the streets as the public realm, make them pedestrian friendly, and connect to city streets at perimeters. Make strong connections across Montview Boulevard to visually and symbolically unify the university and the FRA. Make the campus a part of the city rather than an enclave within the city. The

goal of connectivity translates easily to the realm of planning—physical connections help to create connections between institutions, departments, and individuals that promote innovation in teaching, research, and clinical services.

- An understanding of the development patterns unique to established campus districts: Based on an analysis of the development typologies ranging from hospital “superblocks” to the adjacent Academic Village, define the unique form and character of each Character District within the campus.
- Density goals in relation to each of these districts: Develop a target percentage of building footprint, paved area, and landscape area for each part of the campus. In addition to supporting the goal of connectivity, increased density promotes stewardship in a couple of important ways. Most importantly, it preserves land for further expansion. In addition, density also helps strengthen the pedestrian environment, reducing the amount of vehicle transportation needed within the campus. This idea of increasing density and creating a more urban environment is consistent with City of Aurora’s (CoA) vision of northwest Aurora as a hub of business, education, and health care, and an economic engine of the city.
- Defining the framework as a set of fixed and flexible systems: The plan works to preserve flexibility to accommodate rapidly changing programs within existing and future building sites while laying out a framework of fixed infrastructure to support future development. The fixed framework includes the streets and circulation, utilities (water sewer, etc.), and the system of major open green spaces. The flexible elements include developable areas for future building and parking sites. This distinction of fixed and flexible systems is intended to provide the infrastructure for innovation by preserving the flexibility to develop innovative responses to future opportunities.

All the propositions in this plan communicate intended character, scale, and nature of areas of the physical campus. However, they were developed to encourage individual and unique future solutions with the ability to respond to the needs of projects, priorities, and programs at the time of development.

This framework for future campus development was predicated upon an understanding of the physical and operational features unique to a variety of existing character districts and to their future developmental goals. District-specific guidelines were developed to build upon the existing strengths and established developmental patterns of each district, reflecting the appropriate scale, image, functionality, and integration of buildings with open spaces. The 2012 Facilities Master Plan made strong recommendations for a denser, more urban, and walkable environment. The proposed built character of future development was intended to create more integrated pedestrian areas in order to connect Anschutz Medical Campus programs to neighboring uses.

The 2022 Facilities Master Plan preserves this established framework, along with its underlying goals and objectives, while incorporating the following new priorities for our next decade of development:

- Accommodate an anticipated 17% population growth on campus from 2022 through 2032 as shown in Figure II.3 (with 21% in student population growth)
- Further investigate environmental, social, and economic equity and sustainability goals
- Continue to explore hybrid work models and their impact on future space requirements
- Incorporate the Five Strategic Campus Initiatives established in 2021 which are as follows:

Leverage Data

The future of healthcare is in the harmonization and smart application of data. We will build an integrated data infrastructure by investing in data analytics, health artificial intelligence, and bioinformatics.

Build a Healthcare Innovation Institute

Working across disciplines is key to the continued success of CU Anschutz. A healthcare innovation institute will accelerate collaboration and speed breakthroughs to market.

Enhance the Student Experience

Connecting existing student support services and scaling up others will help ensure future leaders training here benefit from a strong sense of belonging and thrive in an environment that promotes wellness.

Partner on Patient-Centered Care

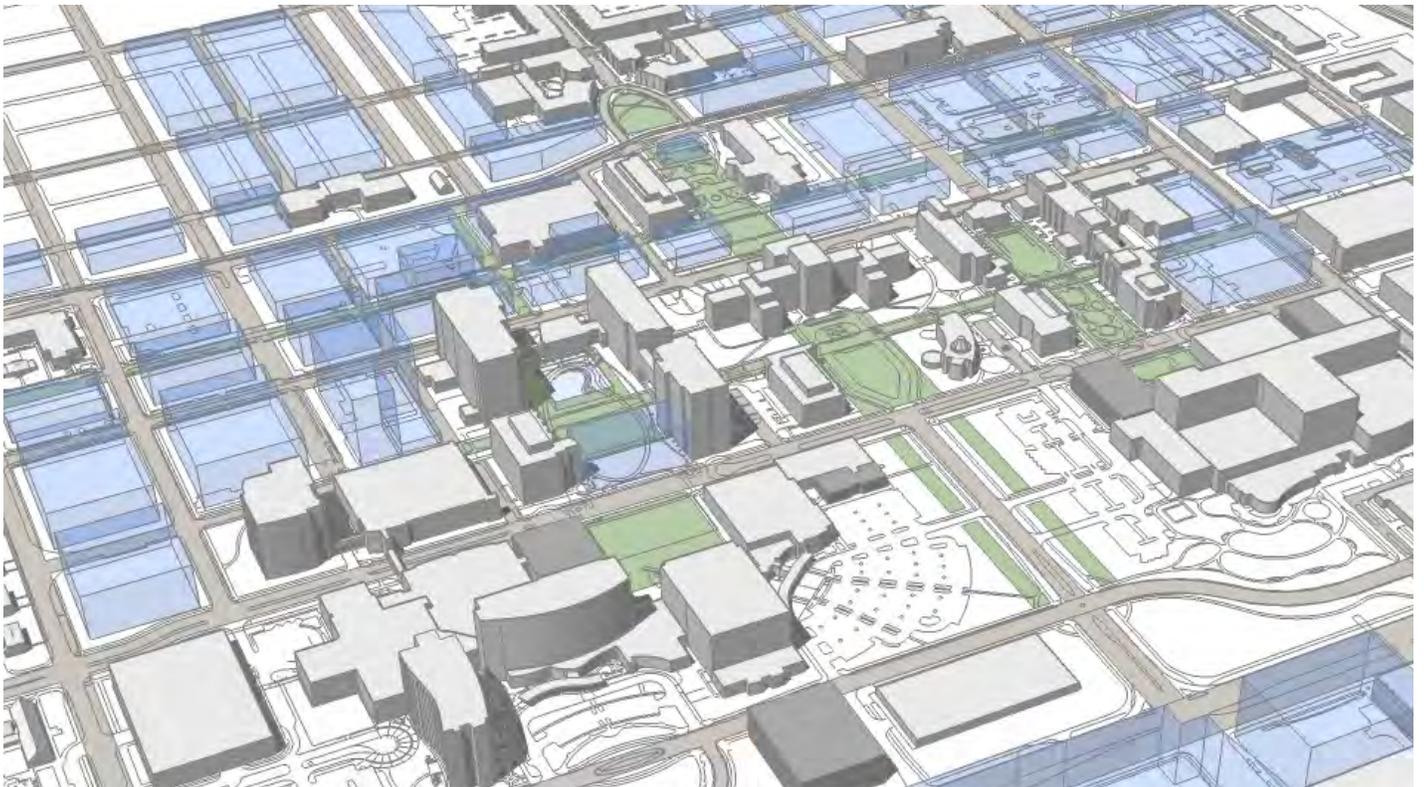
Working closely with UCHHealth, CHCO, and other healthcare partners, we will make medicine easier and more accessible for patients.

Invest in our People

Our people are our greatest asset. By investing in their growth and development, we help them reach even greater heights.

All recommendations in this plan are examined in greater detail in the Design and Development Guidelines, included in the Appendix. Each document is a companion to the other, and they should be reviewed and implemented as complementary documents.

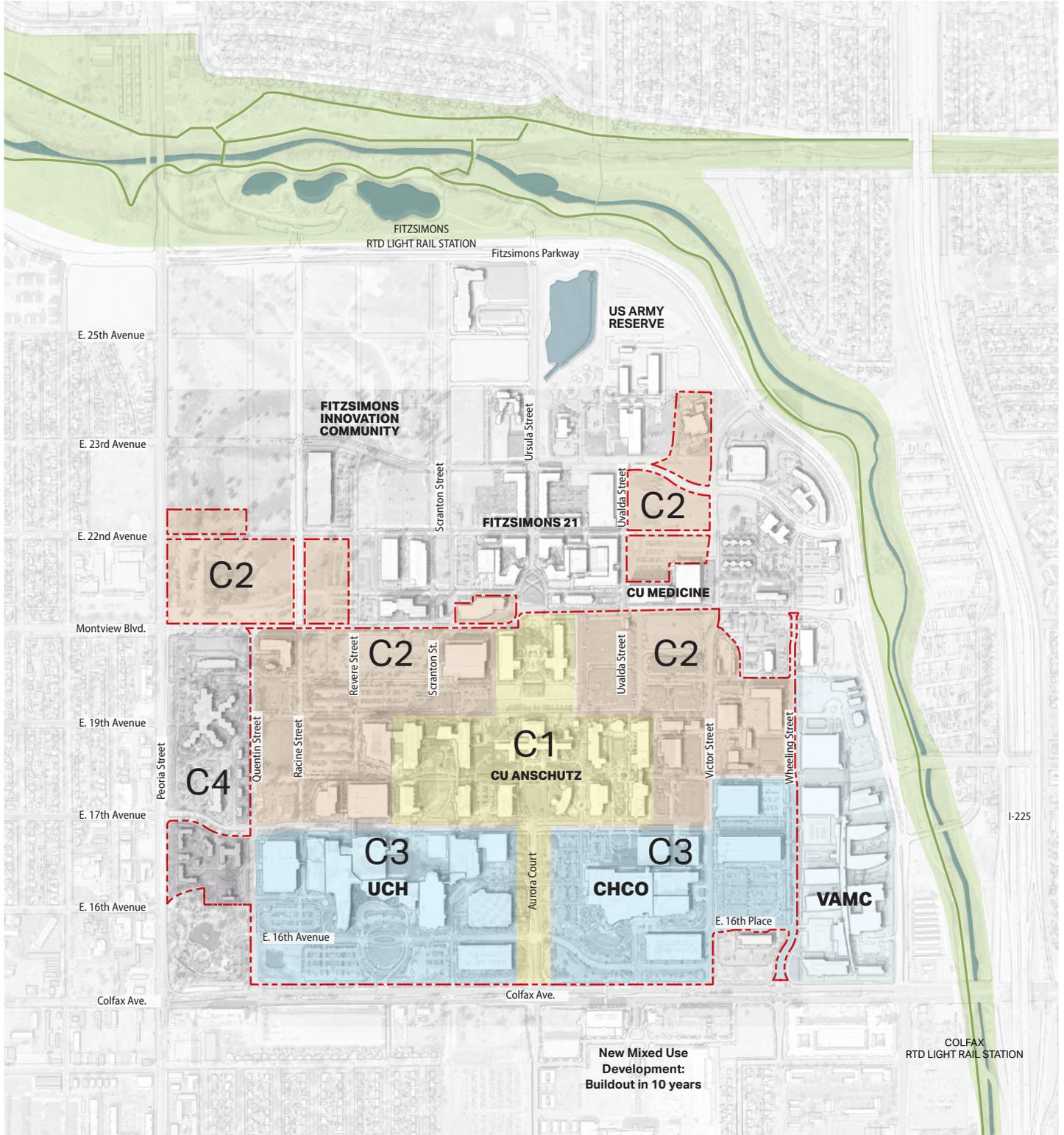
Proposals herein have resulted from a broad, inclusive process that enlisted the input of campus leadership, academic and student leaders, site-wide stakeholders, and the university planning team. All elements of the physical plan have been developed and vetted in multiple workshops with the input noted above.



Massing study of the university and surrounding redevelopment areas showing development envelopes, looking north.



Massing study of the university showing proposed future development from 2022 through 2032.



- C1 | Academic Village
- C2 | Urban Campus
- C3 | Hospital District
- C4 | Special
- Anschutz Medical Campus Boundary



Figure III.2 - Character Districts

III.2 District and Form

The original physical framework for the redevelopment of the campus was predicated upon the creation of individual districts within the then 230-acre campus for research, education, and clinical facilities. The campus was to be organized around the concept of planned open spaces and groupings of buildings with one unifying image or character. It was critical to achieve this quality of development early to establish the Anschutz Medical Campus as a national and international center for excellence in teaching, clinical care, and research.

Over time, these initially planned zones have established their own unique patterns of development based upon the pragmatic requirements inherent to their individual programmatic needs and goals.

The hospitals have developed in such a way as to accommodate large, interconnected structures set back from lot lines to allow for the substantial parking

requirements of visiting patients. The educational district has taken on a collegiate formal arrangement, with buildings delineating discrete campus quadrangles as centers for civic gathering. Other areas on campus have developed with more of an urban typology of higher densities and mixtures of uses, with streetscapes and plazas constituting their major civic spaces.

The “urban transect” diagram in Figure III.3 presents a simplified landscape of the different types of space that can be found on campus. It compares existing development typologies to highlight differences in developmental patterns and the relationship between buildings and open space.



Figure III.3 - Urban Transect



C1 | Academic Village.



C2 | Urban Campus.



C2 | Urban Campus - Leprino Outdoor Seating.

Form/Character Districts

The framework for future campus development is predicated upon an understanding of the physical and operational features unique to a variety of existing Character Districts and to their future developmental goals. District-specific guidelines have been developed to help designers build upon the existing strengths and established development patterns of each, reflecting the appropriate scale, image, functionality, and integration of buildings and open spaces. This plan organizes the Anschutz Medical Campus within the context of four Character Districts, each with its own unique goals, recommendations, and organizational structure. The four Character Districts are:

- C1 | Academic Village
- C2 | Urban Campus
- C3 | Hospital District
- C4 | Special

Less emphasis is put on building and land usage. Instead, planning efforts are devoted to encouraging strong relationships between buildings and their context. The interaction between streets and buildings in terms of scale, massing, form, and frontage areas attempts to create a predictable character for the public realm. An appropriate mix of uses is encouraged along with the prioritization of civic spaces. By acknowledging the benefits inherent in a variety of organizational frameworks, specific development patterns can be matched with programmatic functions best suited for each other.

INDIVIDUAL DISTRICT DEFINITIONS

C1 | Academic Village

The Academic Village portion of the site has been organized in accordance with traditional campus planning concepts and is home to some of its most successful and memorable spaces. It is a fully walkable and sociable environment within a superblock structure. Buildings delineate cohesive civic spaces rather than being experienced as isolated objects unto themselves.

C2 | Urban Campus

With medium-density mixed-use buildings within a hierarchical network of streets and plazas, this district is characterized by wide sidewalks, steady street tree planting, and buildings set close to the sidewalks. It is a fully walkable environment with a balance of pedestrian and vehicular activity.

The Urban Campus presents a unifying framework that ties together developments on the north and south sides of Montview Boulevard as well as with the greater surrounding community. The Health Sciences building is part of the Urban Campus.

C3 | Hospital District

Much larger than a traditional city block with greater building setbacks, these zones are typically bounded by widely spaced, high-speed arterial or circulating routes rather than by local streets. They allow for the development of large, interconnected mega-structures.

C4 | Special

The Special districts accommodate existing special-use functions such as the Center for Dependency, Addiction, and Rehabilitation (CeDAR) along Peoria Street.

For greater detail on the Character District definitions, refer to the CU Anschutz Medical Campus Design and Development Guidelines.



C3 | Hospital District.



C4 | Special (CeDAR).

III.3 Fixed Campuswide Systems

During the planning process, the team looked at a variety of strategies to deal with the largely unknown nature of future development within the Anschutz Medical Campus. Actual growth on campus has varied from past planning; it has been slower than projected in areas like the FRA and faster than projected at, most notably, the hospitals. To allow for such unpredictability, the plan recommends a high degree of flexibility to accommodate the changing nature of health care, education, and research. In order to foster flexibility, fixed systems should be in place to support new projects as they come online. Thus, the plan is broken down into “fixed” and “flexible” systems.

Fixed systems, which include roadways, pedestrian and bicycle accommodations, utilities, and significant public open spaces, comprise the bones of the campus. The fixed systems determine the layout of developable blocks (as shown in Figure III.4), upon which buildings or parking structures could develop in any number of ways to deftly accommodate shifting programmatic needs and funding sources.

The fixed campuswide systems provide an armature of infrastructure that will support a wide variety of possible future development scenarios. The fixed systems are designed to come online as demand warrants. Blocks

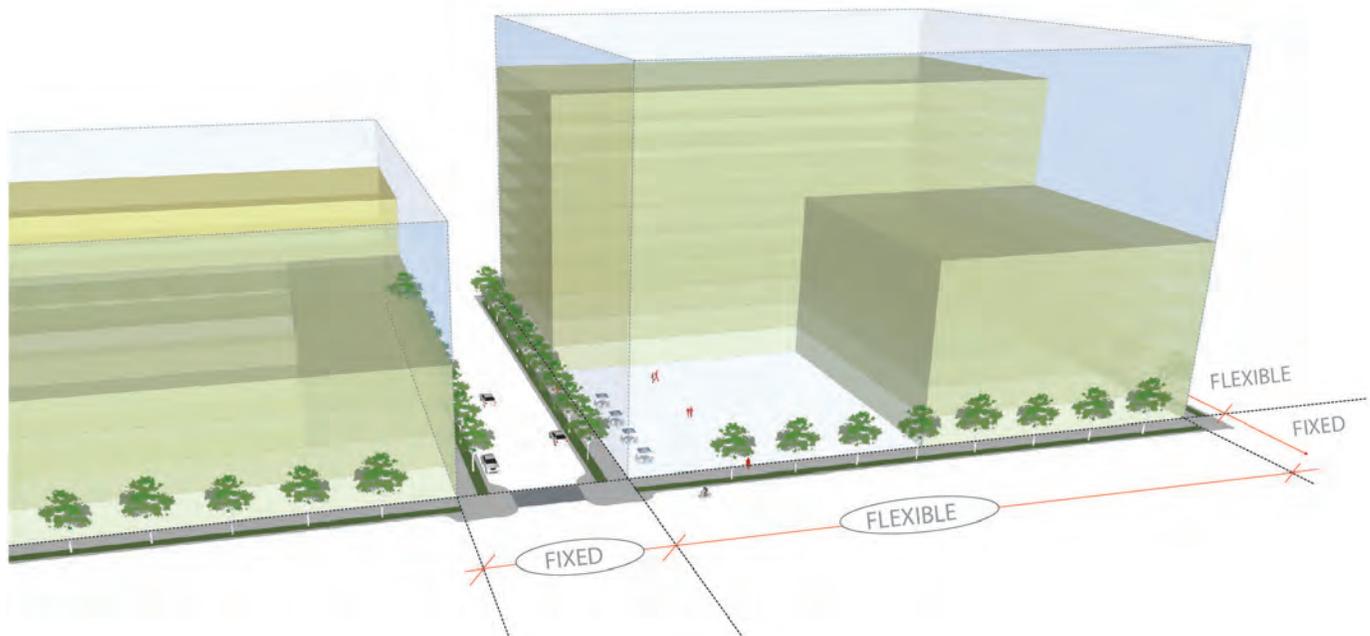


This aerial view looking north-northwest shows potential for campus north-south connectivity.

sized to be consistent with the surrounding urban fabric are a prime organizing system moving forward-making roadways the most critical fixed system within the site-wide area. Other fixed systems, including utilities and service access, work within the roadways framework to enhance connectivity of those systems between the university and its campus affiliates.

The fixed systems support two of the primary goals of the 2012 Master Plan: connectivity and stewardship; goals being carried forward through this 2022 master planning effort. The plan addresses increased physical connectivity through pedestrian, bicycle, vehicle,

and transit systems, as well as virtual connectivity by incorporating future information technology systems. The plan strives to create stronger physical connections among the three Anschutz Medical Campus institutions. The circulation systems are also intended to reduce transportation energy use by improving public transit and human-powered transportation options, which support the goal of stewardship. Good stewardship is also reflected in the importance of the campus's impact on the natural storm water system.



FIXED INFRASTRUCTURE ELEMENTS:

- Roadways (street sections including sidewalks; streetscape; trees; lawns; parking, bike and drive lanes)
- Utilities (in-ground utilities including water, sanitary, electrical and steam/chilled water)
- Storm Water (both in-ground and surface conveyance, retention and treatment)
- Service Access (building service access off tertiary streets)

FLEXIBLE SITE ELEMENTS:

- Individual building sites (street frontage, primary building entrances, setbacks, percentage site coverage, building height, and program)
- Individual site landscapes (paved areas and permeable landscape areas)
- On-site parking

Figure III.4 - Fixed Versus Flexible Development Area

A. Circulation

A safe and efficient street system to accommodate the movement of people and goods is essential to build internal and external connections with the campus. Quality infrastructure should provide multiple modes of travel to campus, help determine on which roadways to drive or bike, support transit use, and allow individuals to orient themselves. Understanding existing travel patterns can prioritize investments to make walking and biking more comfortable, getting to campus and finding parking more convenient, and taking light rail or bus service to campus easier.

As shown in Figure III.5, more than 85% of all typical weekday trips to campus are conducted either by driving or as a passenger to someone else driving.

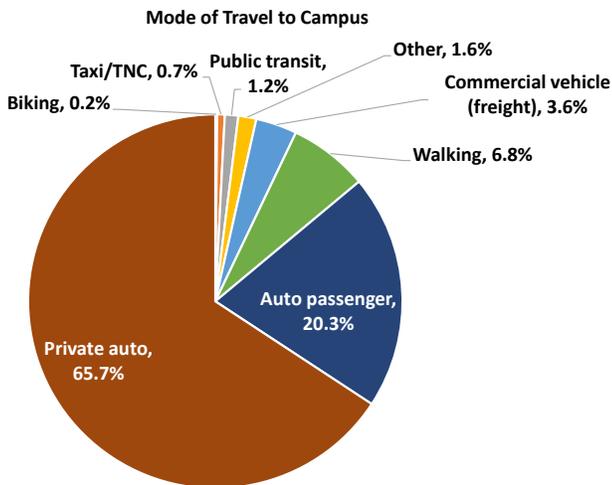


Figure III.5 - Mode of Travel to Campus (Data Source: Typical Thursdays in 2021 from Replica)

REGIONAL ACCESS

On a typical weekday, more than 42,000 vehicular trips take place between campus and the rest of the region (Data Source: Replica Typical Thursdays in 2021). A breakdown of the major roads used to access in and out of campus is shown in Figure III.6.

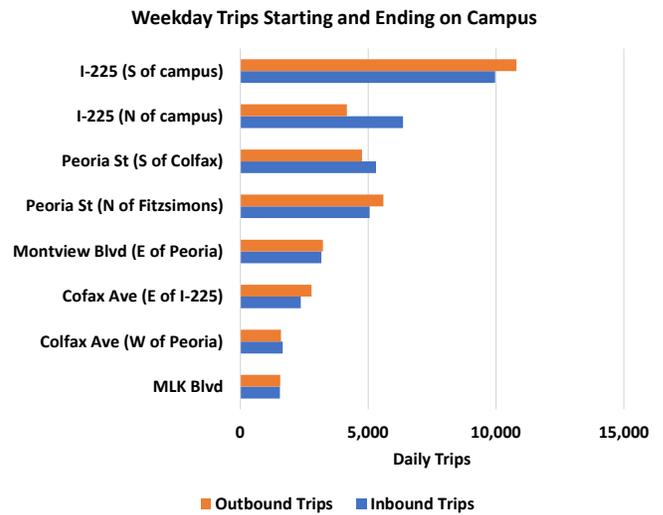


Figure III.6 - Weekday Trips Starting and Ending on Campus

Based on this evaluation of travel data, more than 40% of all Anschutz Medical Campus trips involve I-225, a north-south interstate on the eastern edge of the Denver metropolitan region.

I-225 connects to I-70 about 1.5 miles north of campus and to the Denver Tech Center (DTC) and I-25, approximately 10 miles to the south. I-70 is an east-west highway that connects the campus to Denver and the mountains to the west. I-25 is the primary north-south highway through the Front Range region between Colorado Springs and Fort Collins.

Drivers use the Colfax Avenue and 17th Place exits on I-225 to access campus. From these points, Fitzsimons



Figure III.7 - Entry and Exit from Colfax Ave.

Parkway, Wheeling Street, Aurora Court (which becomes Ursula Street south of Colfax Avenue and North of Montview Boulevard), and 17th Place collectively serve approximately one-half of all daily traffic that enters and exits the campus.

ROADWAY PLAN

The proposed roadway network illustrated in Figure III.8 shows both the campus road network and how it connects to the surrounding area. The network was developed based on designs from previous planning efforts, stakeholder input, and urban design concepts that promote connectivity, ease of navigation, and comfort for all modes on a local and regional level.

Critical design issues in establishing the street layout were to connect to the city grid at the edges where possible and to increase connectivity to the north to integrate the university and the developing FRA over time. The size of blocks created by the streets create an accessible pedestrian scale while framing viable future development sites. Analysis of future forecasts and operations were conducted as part of previous master planning efforts but were not conducted as part of this update.

The network features a hierarchy of street classification types that define each roadway's functionality and character. These classifications facilitate the design of the roadway, which influences how and when a roadway is used. These factors help determine the volume of traffic and trip types (pass-through or local access) that use a roadway.

Roadways are defined as being either arterial, collector, primary, secondary, or service roadways or pedestrian promenades. Arterials carry the largest amount of traffic among these classifications by providing regional connectivity with higher capacities and speeds. Collectors bring traffic to/from arterials and clusters of land uses.

The remaining classifications cater to localized traffic within the campus, and primary roadways are designed to carry more vehicles than secondary and service roads. To summarize, higher classifications focus on

moving a large number of vehicles for longer distances while lower classifications focus on access to land uses and accommodating a mix of travel modes.

The perimeter roadways of Colfax Avenue, Peoria Street, and Fitzsimons Parkway represent the arterial system for the campus. The central core area between 17th and 19th Avenues, namely 17th Place, will remain exclusive to pedestrian activity. Flanking this area are north-south collector roadways (Quentin and Victor Streets) that span the entire campus from Colfax Avenue to Fitzsimons Parkway. Other collector roads include portions of 16th Avenue, Wheeling Street, and 17th Place. North of the core exists a typical city block system of streets comprised of primary and secondary roadways.

The most notable differences in the roadway plan compared to previous transportation plans is the integration of several new roadways including the reconstruction of Montview Boulevard which focuses on improving access for all modes of travel including the integration of bicycle facilities and sidewalks.

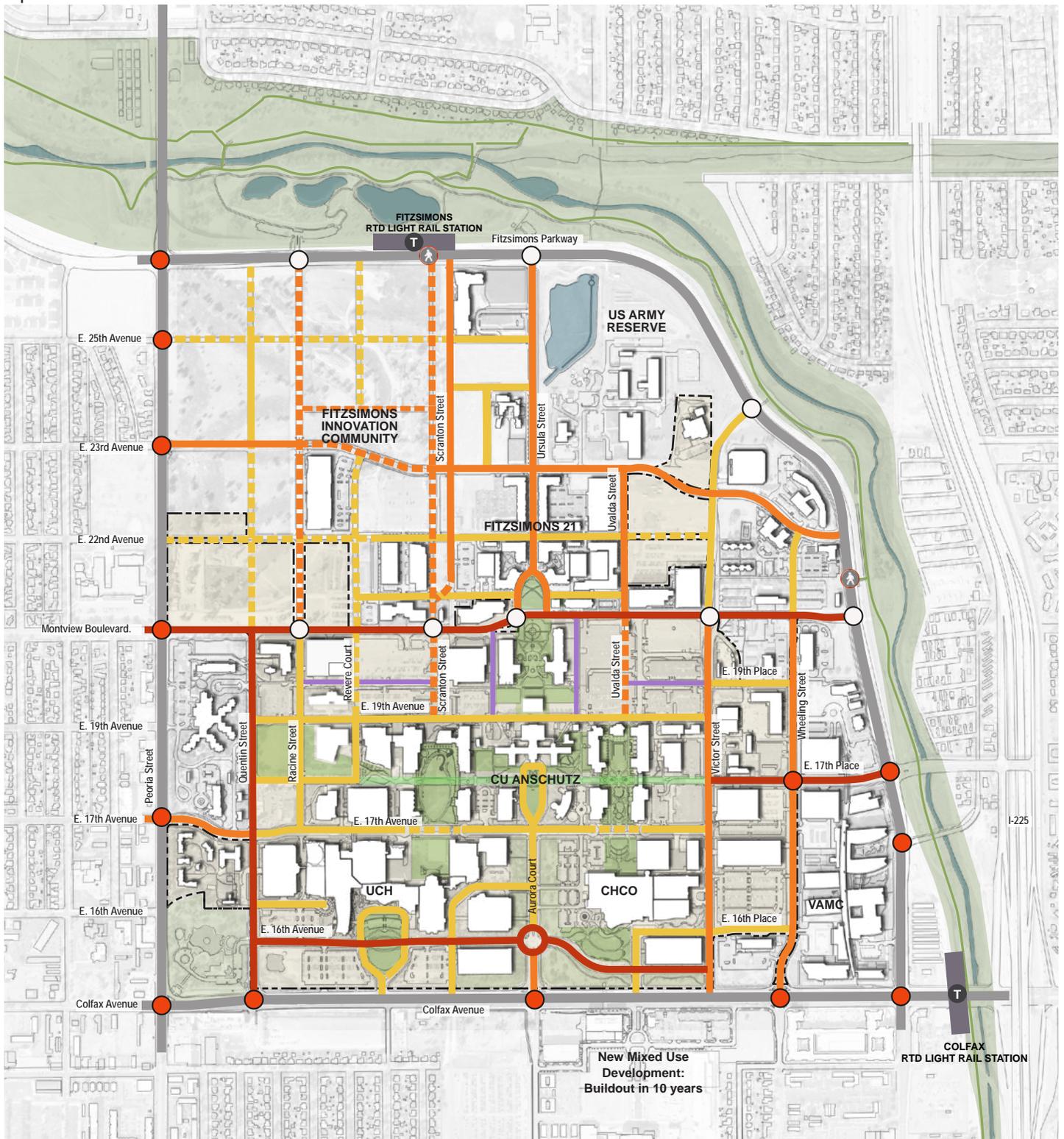
INDIVIDUAL SITE SERVICE AND ACCESS

As noted in the previous discussion on individual building sites, main building entrances should face public spaces and pedestrian streets. Service access and building support elements such as waste handling, electrical transformers, and loading areas should be located off service roads whenever possible. If there is no service road access, a service court should be designed in order to screen the back-of-the-house elements from the building entrances and main pedestrian routes.

STREET SECTIONS

The increased emphasis on the importance of the street grid as public realm in the Master Plan drives the need to improve the existing streets and defining the nature of future roadways to accommodate multi-modal transit alongside a friendly and active pedestrian environment. This plan includes the following proposed street character diagrams, and further detail of street treatment is included in the Design and Development Guidelines.

III | PHYSICAL PLAN



- Collector Street
- Primary Street - Existing
- Primary Street - Proposed
- Secondary Street - Existing
- Secondary Street - Proposed
- Service Roadway
- Perimeter Street
- Art Walk
- Existing Signalized Intersection
- Future Signalized Intersection
- T Transit - RTD Light Rail Station
- Anschutz Medical Campus Boundary
- P Future Pedestrian Signal



Figure III.8 - Proposed Roadway Network

Collector Streets

The street sections are intended to harmonize with FRA standards to provide better connections across Montview Boulevard. On-street parking not only provides convenient parking for visitors but helps to emphasize the pedestrian nature of the streets by buffering the sidewalk and slowing vehicle speeds as drivers enter and exit their cars. The bike network is also reflected in the street typologies, with dedicated lanes on most of the major campus bike routes.

Campuswide street design emphasizes connectivity and provides a unifying framework throughout the campus. Consistent street character creates rhythm and visual impact, highlights areas of significance, and ties all four Character Districts together to form a comprehensive whole.

Primary and Secondary Streets

These streets are the primary vehicular pathways throughout the site and provide the major organizational framework for the Urban Campus environment. They provide on-street parking in most instances and include dedicated bike lanes in some instances.

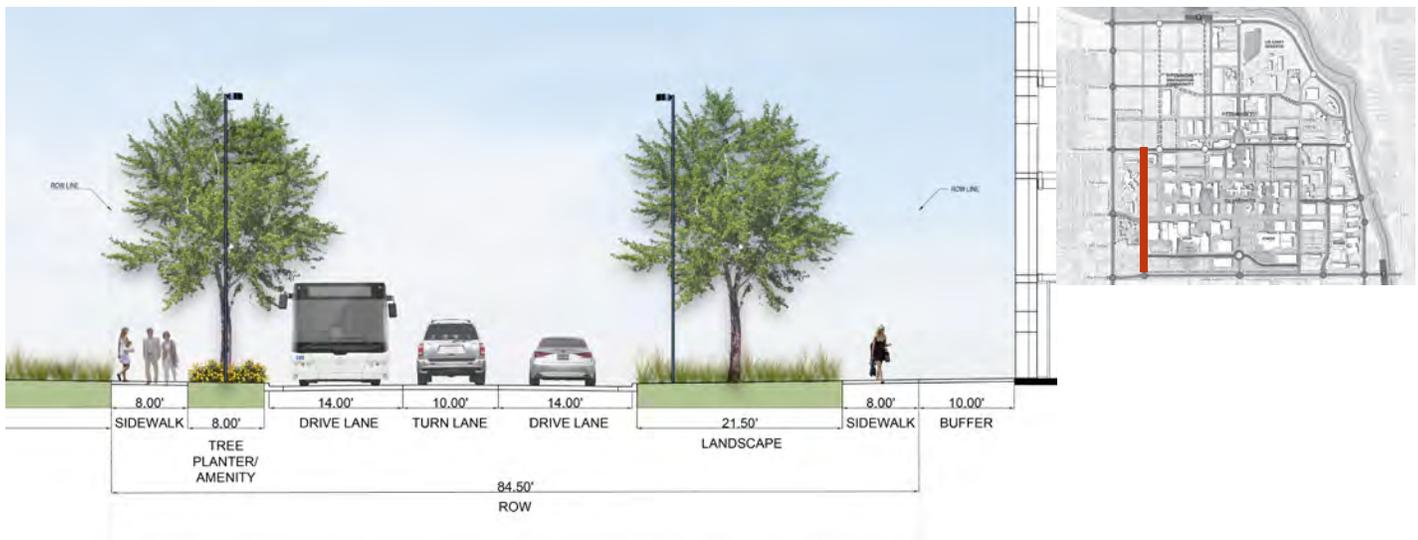
Road widths should be minimized when possible to encourage reduced speeds while not sacrificing vehicular or pedestrian safety. Traffic speeds may not exceed 15 miles per hour (mph).

Traffic calming methods are proposed at regular intervals along minor roads, including clearly-marked crosswalks, varying paving surfaces near high-use pedestrian areas, neckdowns, and roadside landscaping. These traffic calming methods could potentially be balanced by the need for efficient transportation movement and other issues such as efficient plowing in the winter and long-term maintenance of the campus road system. Roadbeds are to be separated from pedestrian paths by concrete curbs and elevation changes.

Following are proposed roadway cross sections and intersection improvements along Montview Boulevard.

Category: Collector Street

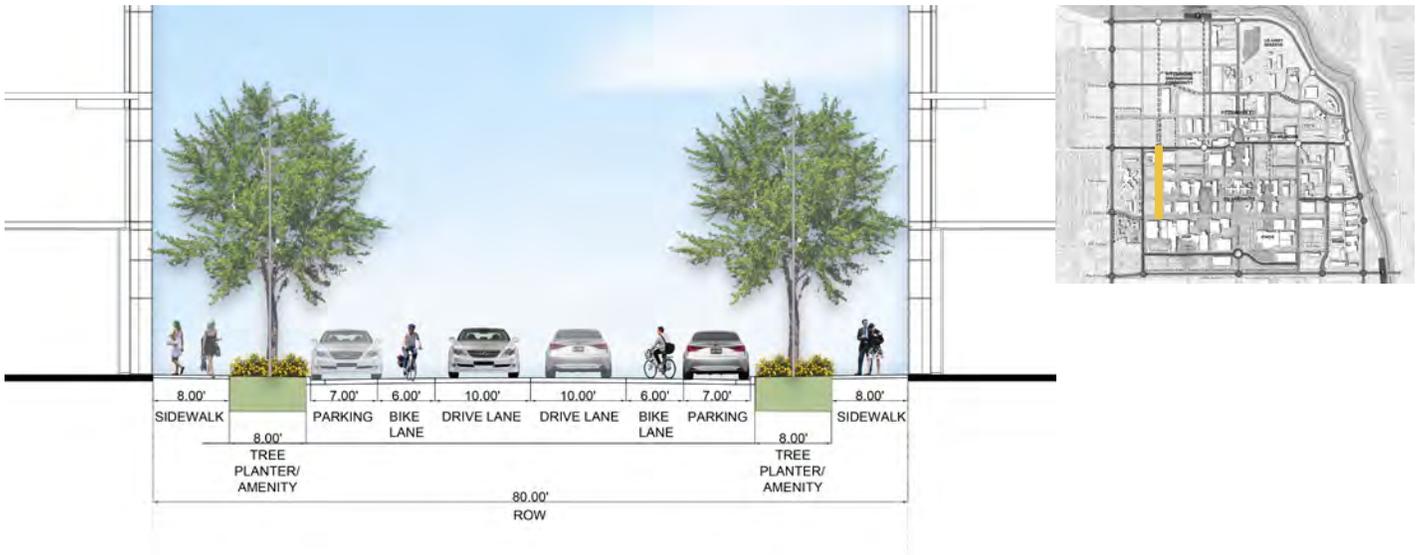
Quentin Street



Quentin Street is an existing two lane collector street with a center turn lane that connects to Colfax Avenue.

Category: Secondary Street

Racine Street

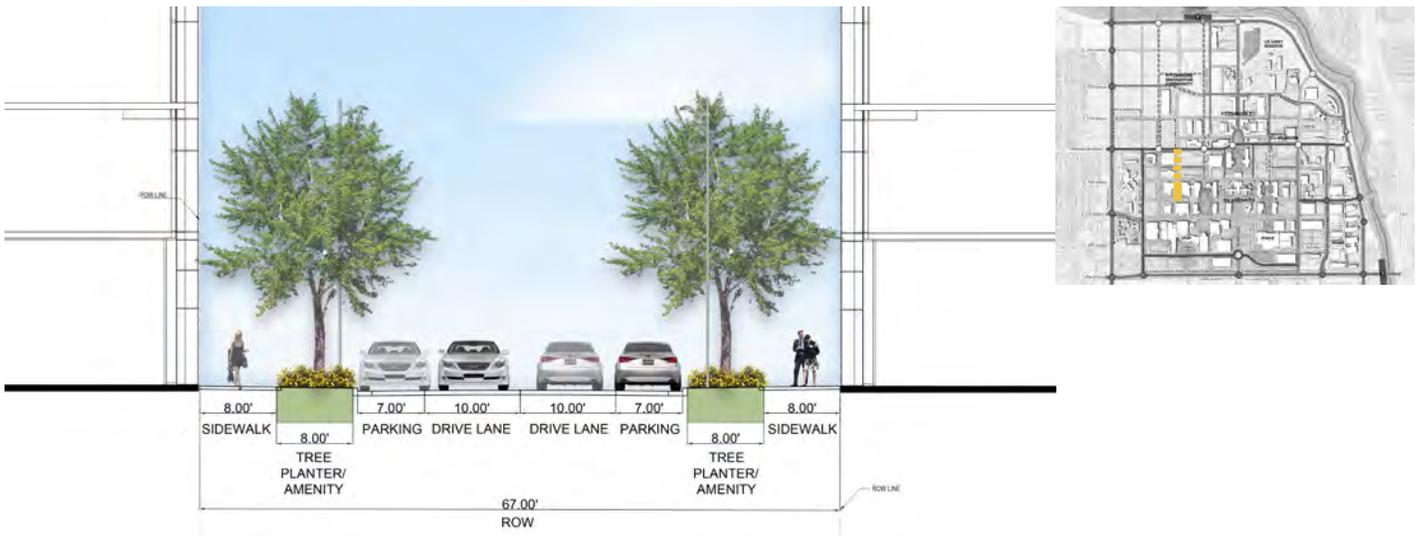


Racine Street currently exists as a two-lane road with a center turn lane between 17th Avenue and Montview Boulevard. With the future continuation as a primary

street into FIC north of Montview, it is recommended to re-allocate existing street space to implement on-street parking and a bike lane.

Category: Secondary Street

Revere Court

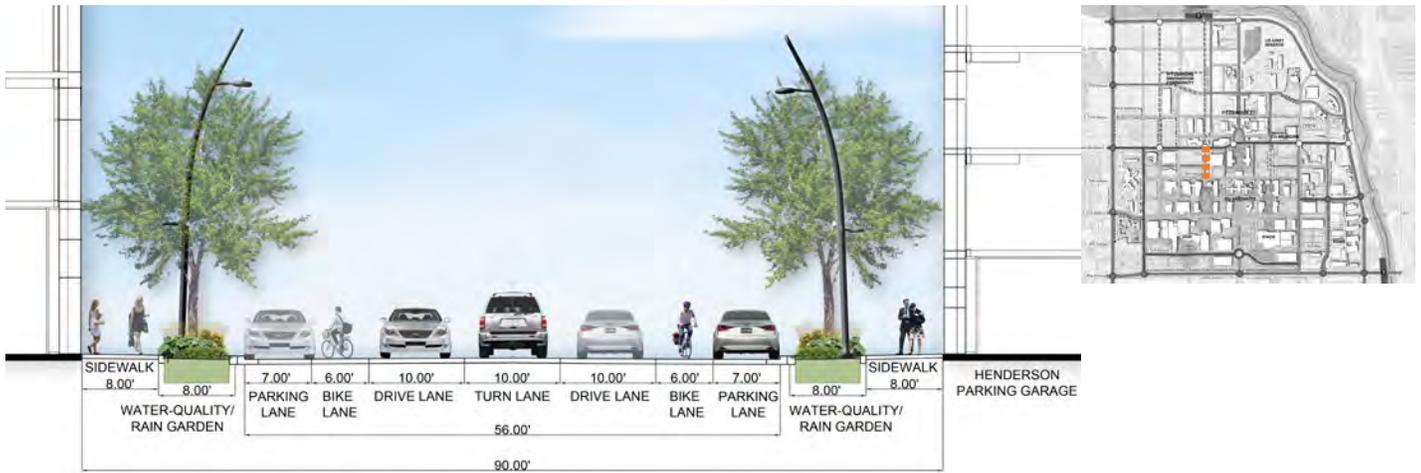


Revere Court is a secondary two-lane street that currently connects 17th Place to 19th Avenue.

When extended to Montview Boulevard, the continuation of the drive lanes and addition of on street parking is recommended.

Category: Primary Street

Scranton Street

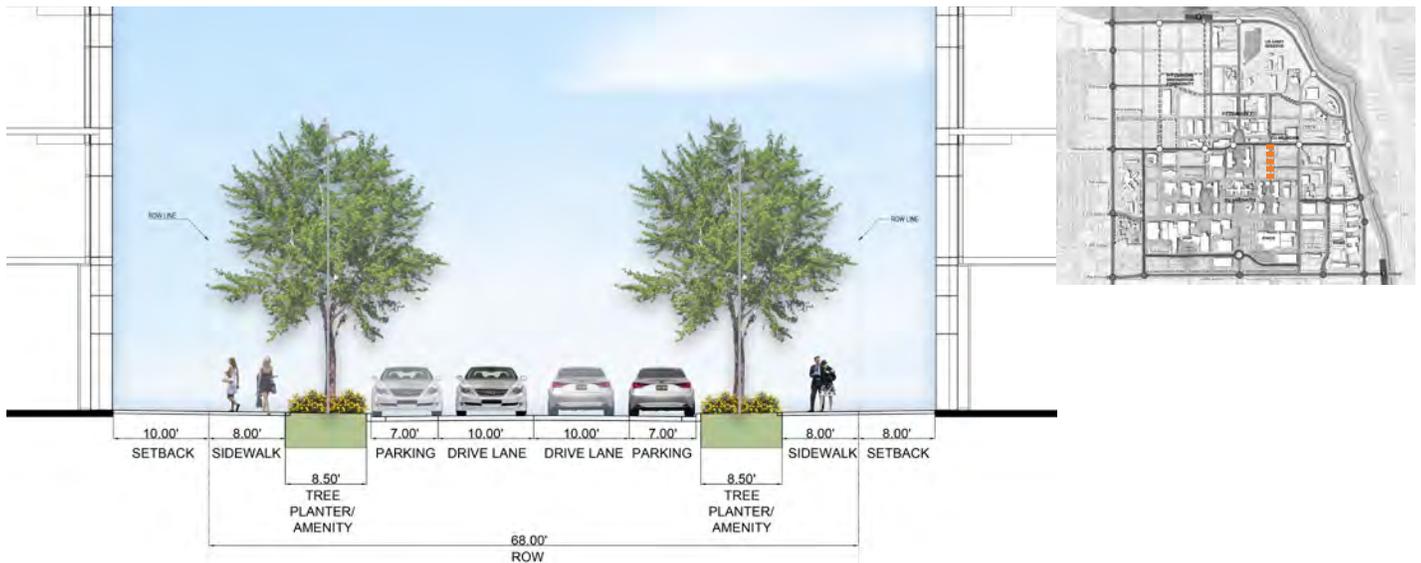


The planned Scranton Parkway north of Montview Boulevard includes on-street parking and a bike lane. This treatment will continue onto campus, although the future roadway will be realigned to that proposed by the

FIC. As a result, the entrance to the Henderson garage will need to shift from Montview Boulevard to the west side of the facility along the new Scranton Street.

Category: Primary Street

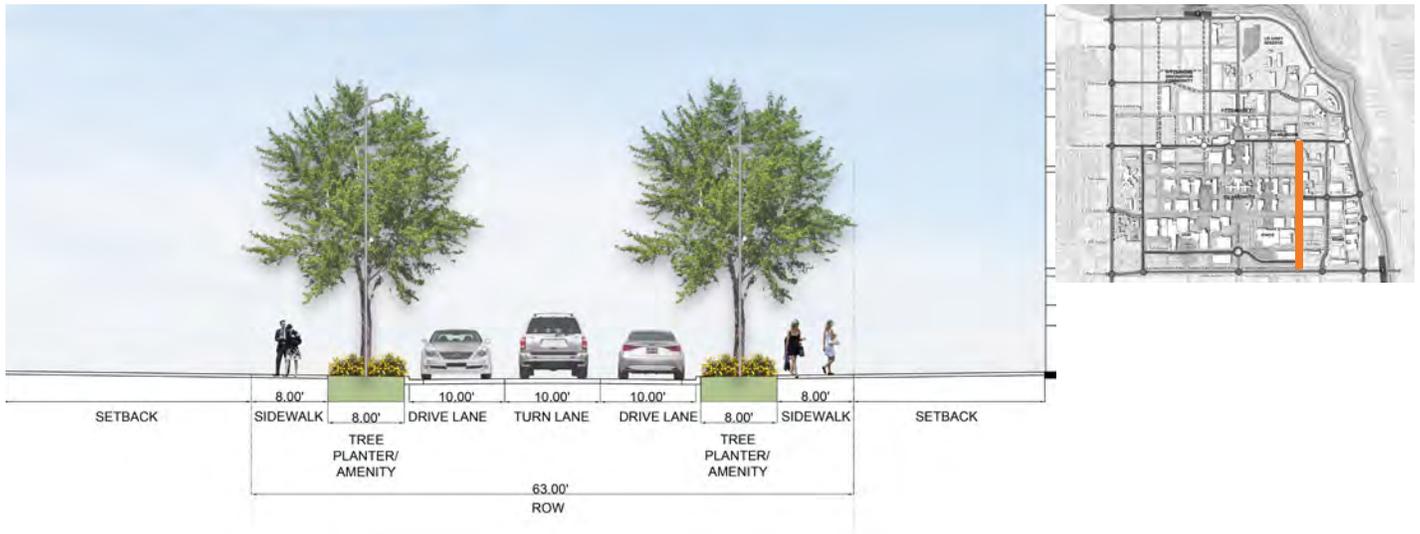
Uvalda Street



Uvalda Street is a planned primary street between 19th Avenue and 23rd Avenue to link pedestrians and includes on street parking.

Category: Primary Street

Victor Street

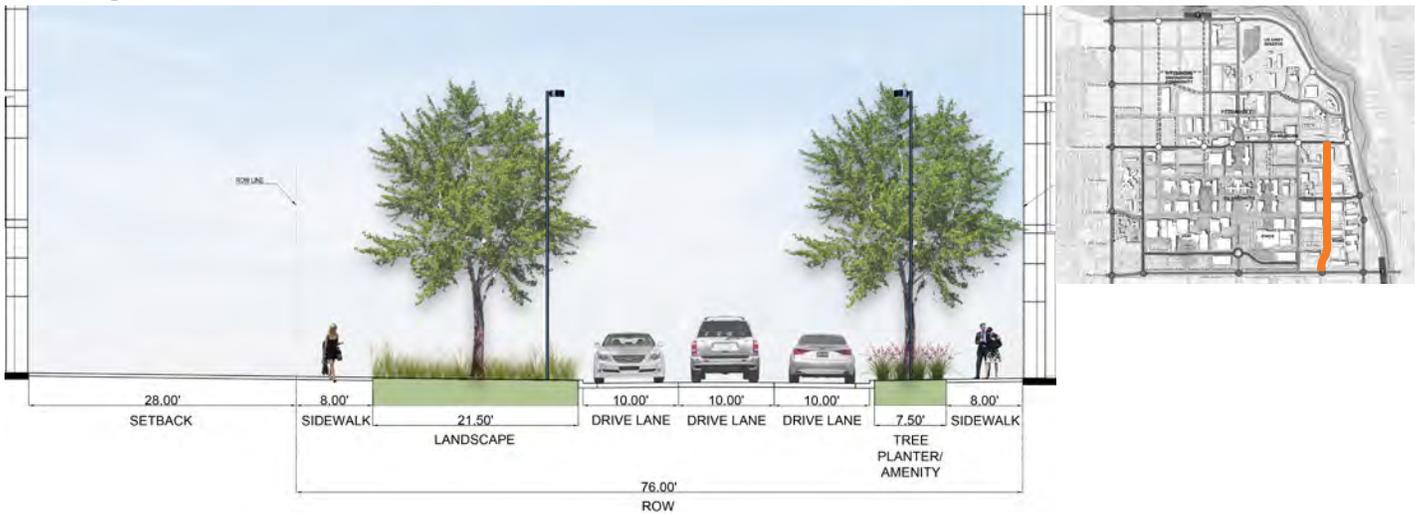


Victor Street is a primary entrance off Colfax Avenue that currently includes two through lanes in each direction. A revised cross section reduces the number of through

lanes and adds a turn lane to improve pedestrian crossings. However, north of Montview Boulevard, Victor Street will be classified as a secondary street.

Category: Primary Street

Wheeling Street

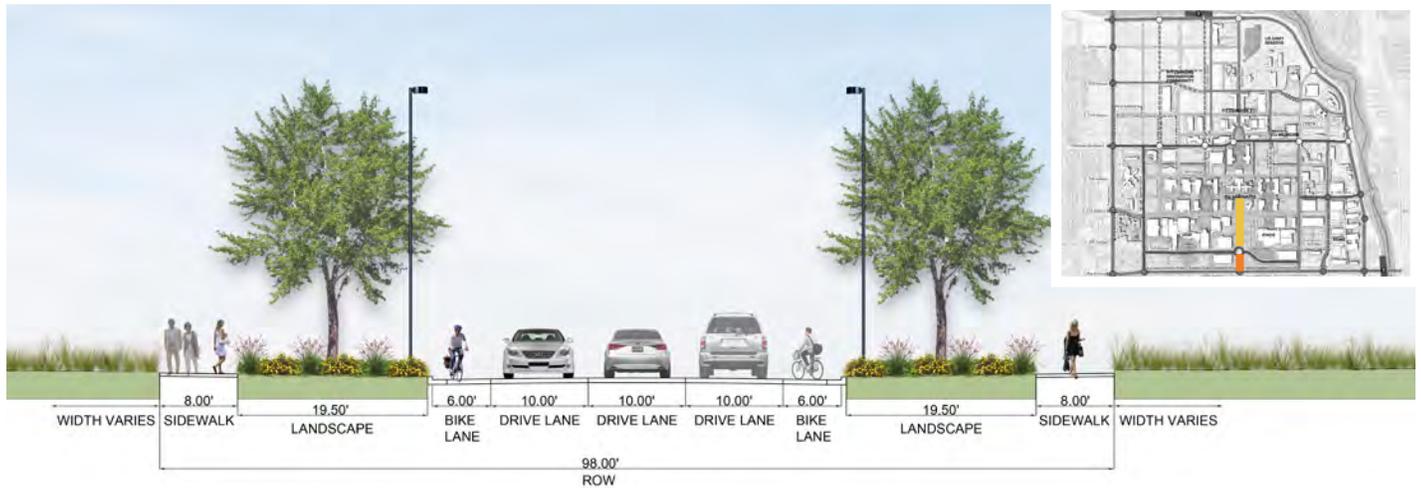


Wheeling Street is an existing connection between Colfax Avenue and Montview Boulevard. It serves as the primary access to the VAMC and provides secondary

access to the parking structures and facilities on the east side of campus. It will transition to a secondary street north of Montview Boulevard.

Category: Primary Street and Secondary Street

Aurora Court

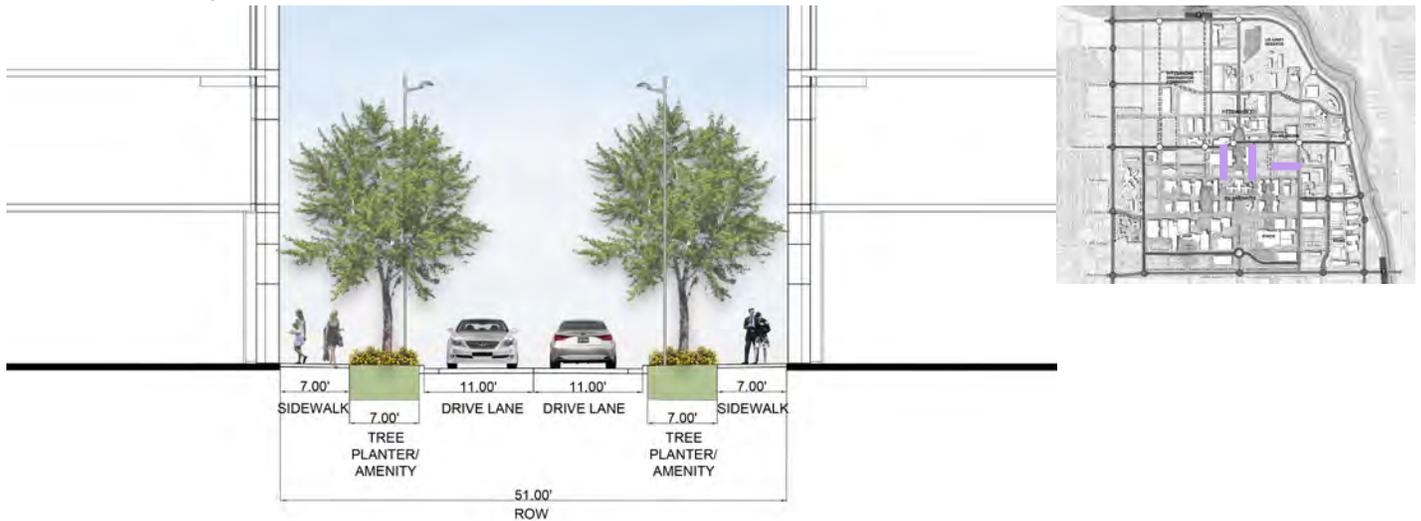


Aurora Court is a primary entrance from Colfax Avenue that connects to 16th Avenue and continues north to the Fitzsimons Building. The road is used as a bicycle connection south of campus. The road is also an

important pedestrian access route connected by public transit. Landscaping is set back allowing views to the Fitzsimons Building.

Category: Service Roadway

Service Roadway

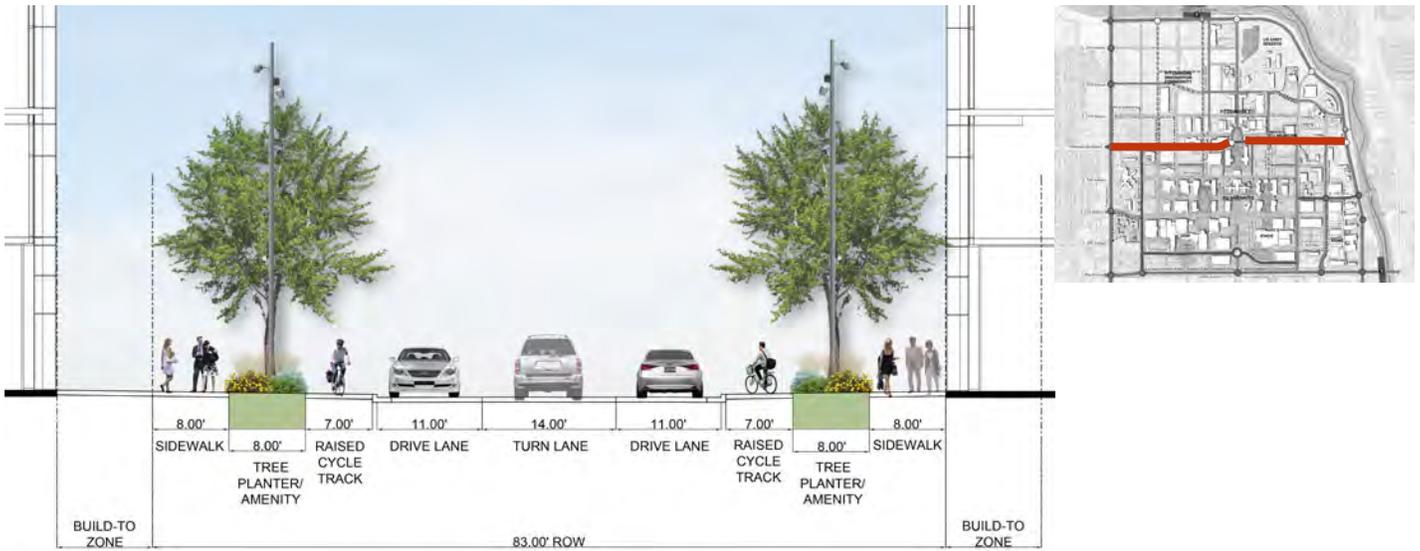


A Service Roadway functions as a commercial service drive. Service roads should be separated from pedestrian travel. Appropriate service access should be accommodated in the design of all new

campus buildings. Service access should typically be consolidated to only one location for each building. The sights, sounds, and possible odors from the service areas should be minimized from pedestrians by the use of landscaping, topography, or other visual barriers.

Category: Collector Street

Montview Boulevard - Typical

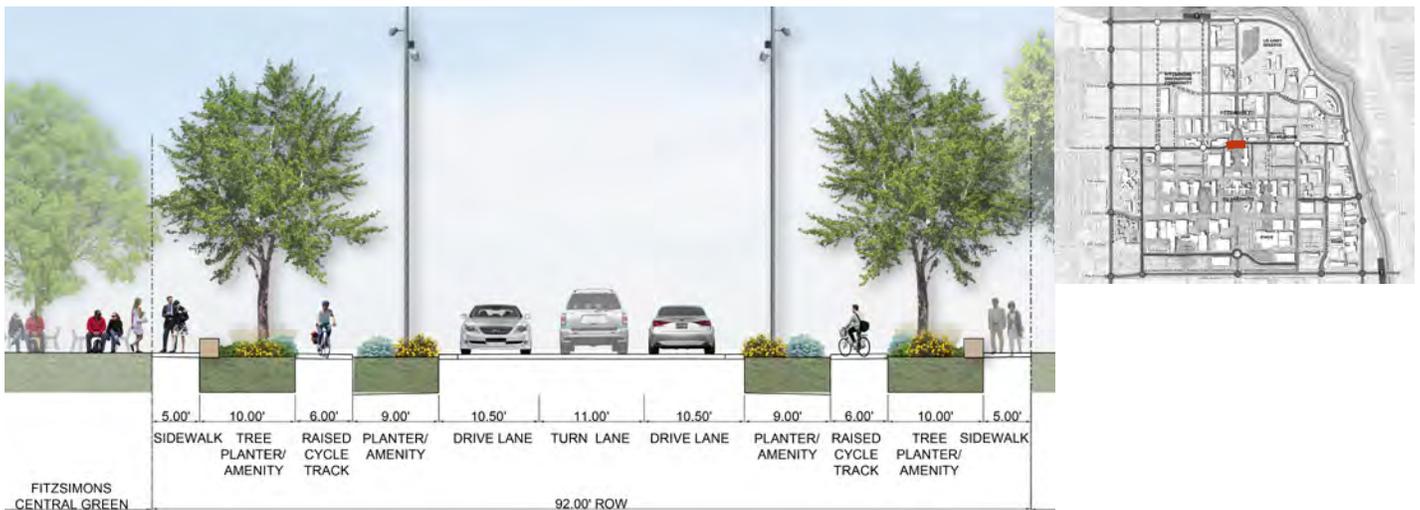


Montview Boulevard is a major access route that has typical sections of 11' drive lanes, 14' turning lane, and

raised cycle track lanes separated from pedestrian sidewalks with tree planters.

Category: Collector Street

Montview Boulevard at Commons Green and Student Commons

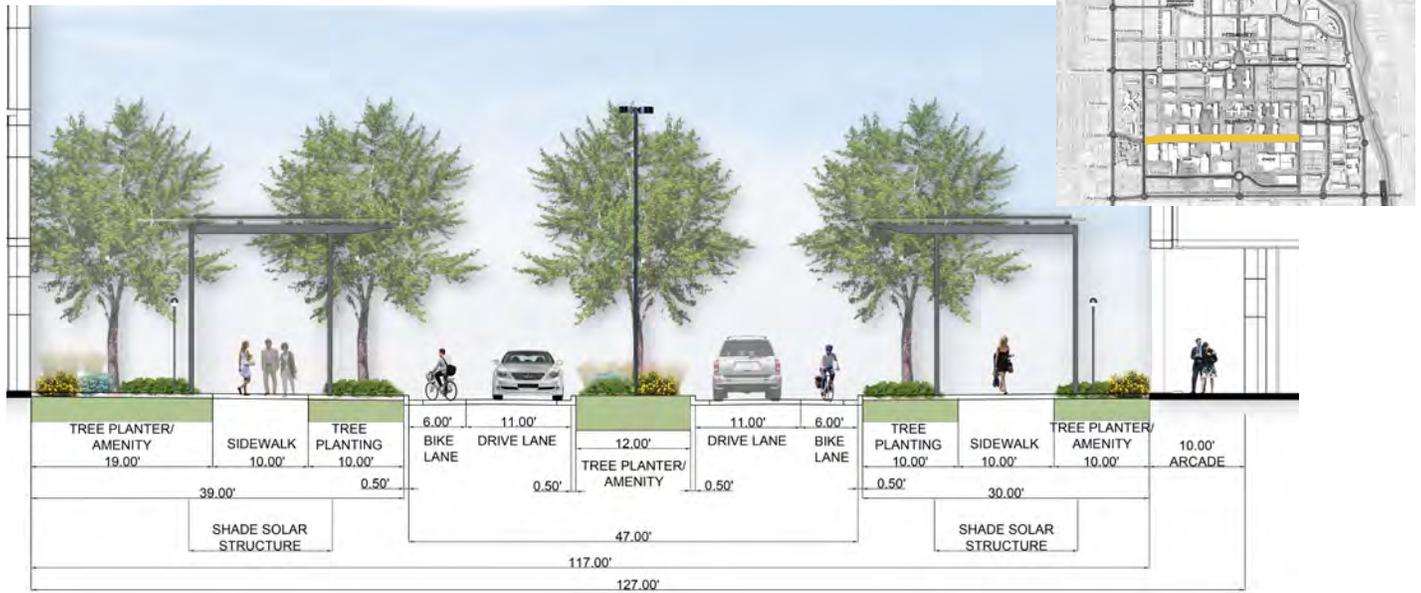


Montview Boulevard at the Commons Green and Student commons is a "raised table" with tighter drive

lanes of 10.5' and center turning lane of 11' to create a pedestrian friendly crossing zone.

Category: Secondary Street

17th Avenue

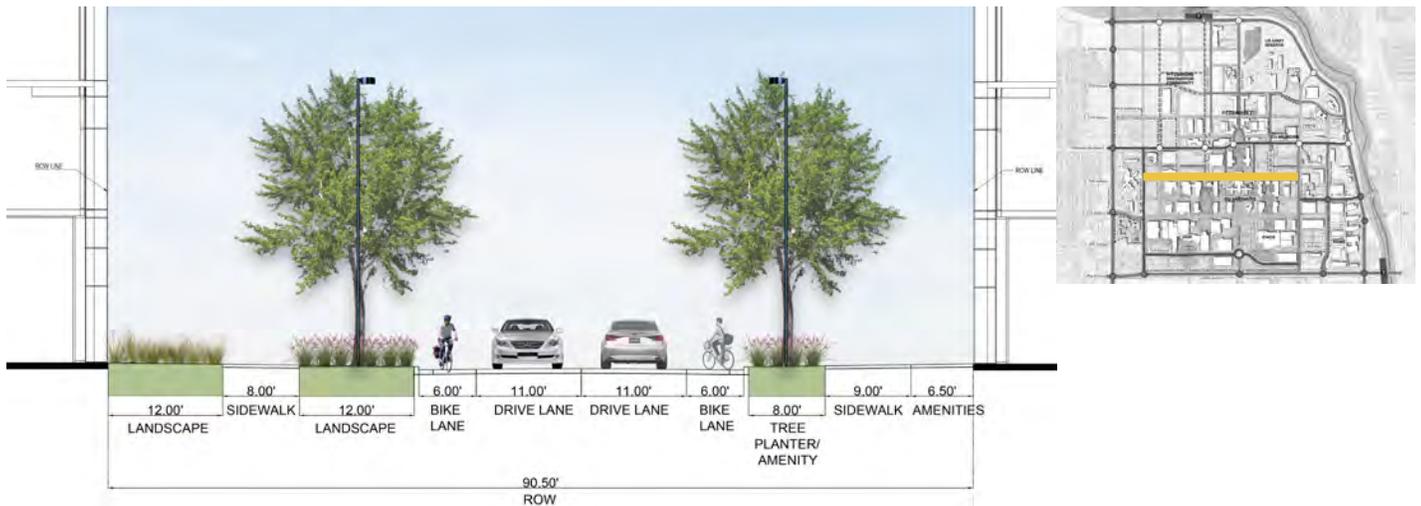


17th Avenue is an important corridor to connect the campus hospitals on the east and west sides of the campus. Amenities may include shade structures,

perhaps with solar panels, bike lanes, sidewalks and pull out areas for service vehicles.

Category: Secondary Street

19th Avenue



19th Avenue connects the east and west side of the campus with 11' side drive lanes and 6' wide bike lanes with generous sidewalks and landscaped zones.

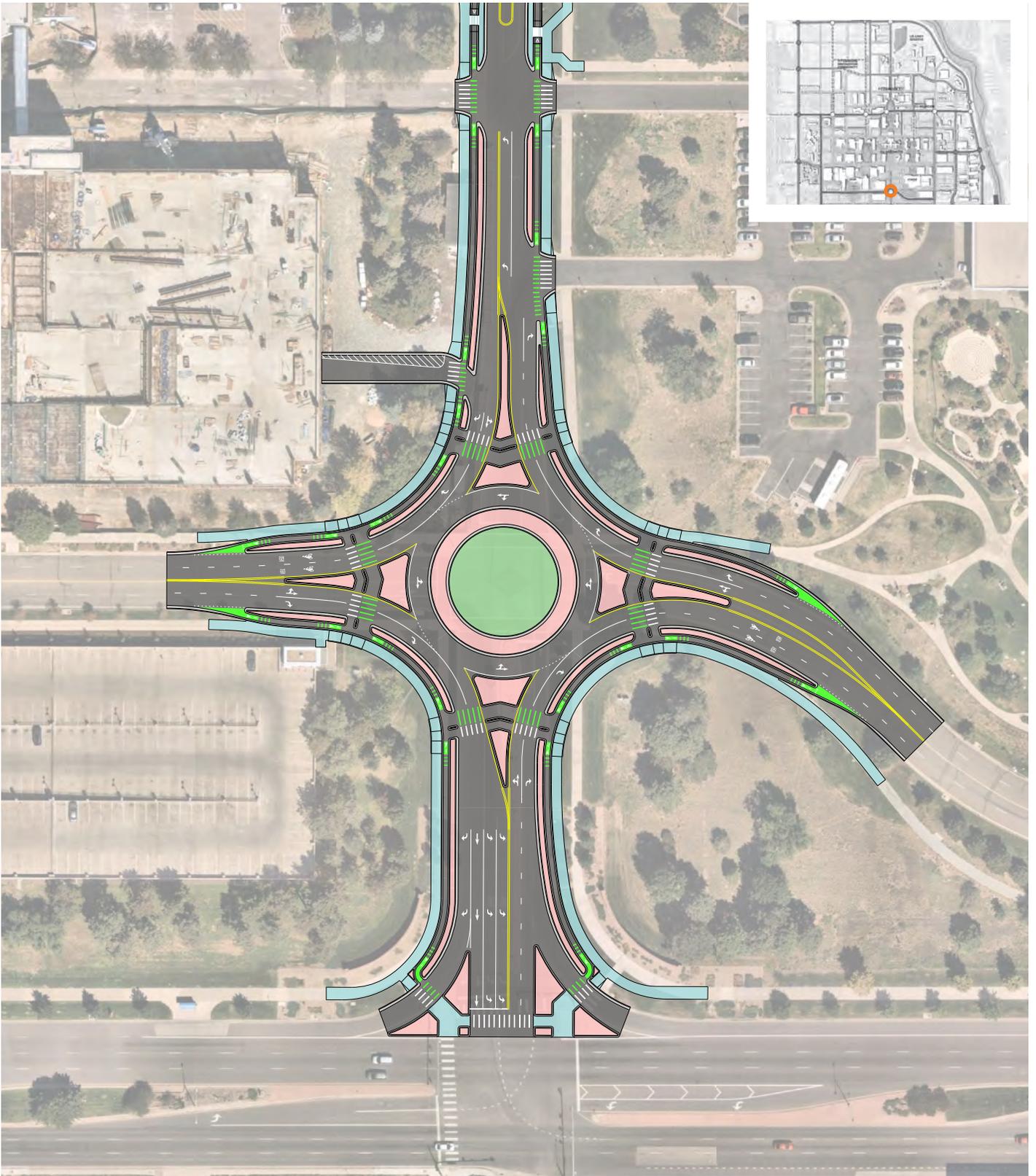


Figure III.9 - Proposed Roundabout at Aurora Court

PROPOSED ROADWAY PROJECTS

The following proposed roadway projects reflect the 10 year improvements that should be pursued in support of the proposed build-out of the Anschutz Medical Campus:

- A roundabout at Aurora Court and 16th Street could be considered to improve traffic operations, especially with the addition of UCH Garage 2. This roundabout could serve as a multimodal gateway entrance with an emphasis on connected and separated sidewalks and bicycle lanes from Colfax Ave and between hospitals. During future design, prioritizing emergency access to Children's Hospital and vehicular circulation to Garage 2 will be important.
- Aurora Court could be potentially re-striped to emphasize recent widening improvements.
- A potential for a "road diet" along Victor Street could be explored, given the significant increase in traffic projected and the fact that there are numerous driveways serving heavy traffic-generating uses (such as parking structures). The "road diet" would consist of converting four through-lanes of traffic (two in each direction) to three lanes, where the center lane is a continuous dedicated turn lane, similar to Racine Street. Pedestrians would also benefit as they would only need to cross three lanes of traffic rather than four. Refuge islands could also be provided to further improve the safety of pedestrian crossings. This action would likely improve the safety of the roadway, and projected traffic volumes would not exceed the capacity of a three-lane section. North of Montview Boulevard, widening Victor Street would improve traffic operations.
- 17th Avenue could be enhanced to strengthen the connection between the hospitals and the university. These fixed infrastructure improvements could include opening the road to through traffic, accommodating buses, adding enhanced crosswalks at the commons, and adding additional on-street parking. The roadway design would provide a careful and safe balance of vehicular traffic and on-street

parking within a bicycle-friendly environment. Public and visible program functions could be placed on 17th Avenue to create a vibrant internal main street for the Anschutz Medical Campus. This "translational corridor" is envisioned as a primary gathering space for the exchange of knowledge, ideas, goods, and services.

Montview Boulevard Redesign

Montview Boulevard, a collector roadway, needs safety and efficiency improvements for vehicle, bicycle, and pedestrian users. The city is currently in the process of redesigning the roadway from Oswego Street to Fitzsimons Parkway. This provides an opportunity to strengthen and improve connections between the Anschutz Medical Campus and the FIC.

As a City of Aurora street, Montview Boulevard's improvements will be up to the city or the Metropolitan District to implement. The City of Aurora's proposed draft design typical section includes 11-foot drive lanes in each direction with a 14-foot center median/turn lane. The typical section also includes a 7-foot cycle track, an 8-foot amenity zone, and an 8-foot sidewalk in each direction.

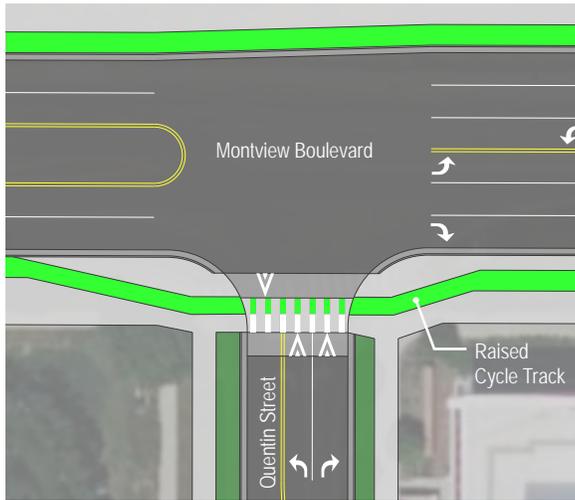
In addition to the changes in the roadway section, the design also calls for softening the jog between Scranton Street and the western segment of Ursula Street. It also reconfigures many of the intersections and side street/driveway approaches. Traffic signals will be maintained at Peoria Street and added at Racine Street, Scranton Street, and Victor Street.

The most consequential change to an intersection would be the shift of the Scranton Street intersection with Montview Boulevard to the west side of the Post Chapel from its east. An additional FIC project will convert it into a boulevard north of East 21st Avenue with a wide median and pedestrian/bicycle friendly design elements.

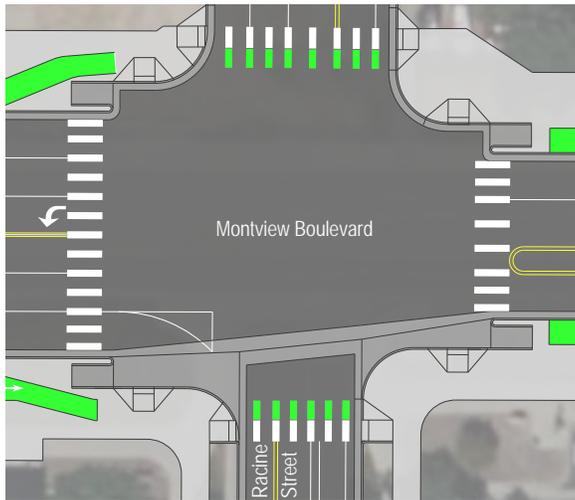
The ability of campus to harmonize with these improvements and development north of Montview is important. The roads on campus south of Montview Boulevard will become complete streets that are designed for cars, transit, bikes, pedestrians, landscape, and activities to coexist and create vibrant places.

- In the interim, the university can consider pedestrian-activated traffic controls at critical crossings to promote easy pedestrian access between the university and the FIC.
- Sidewalk improvements similar to those described in the design guidelines would be an asset to both the north and south sides of the boulevard.
- The proposed alignment of Scranton Street will shift to the east to match plans to the north. As a result, the Henderson Garage entrance may need to move from Montview Boulevard to its west side.
- Uvalda Street and Scranton Street are envisioned as potential north-south streets to bridge Montview Boulevard and provide safe, pleasant routes for pedestrian traffic between the university and the FIC. A lively street environment with retail and other public uses at the ground level is encouraged along these green streets. These two greenways could incorporate storm water planters and/or bioswales in their design and could become educational showcases for storm water management systems.

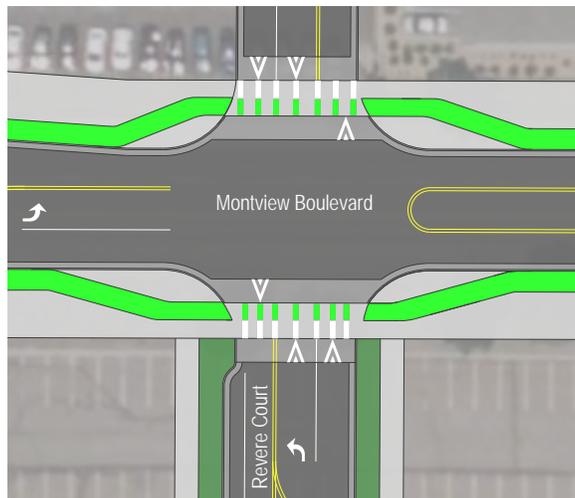
Intersection of Quentin Street and Montview Boulevard



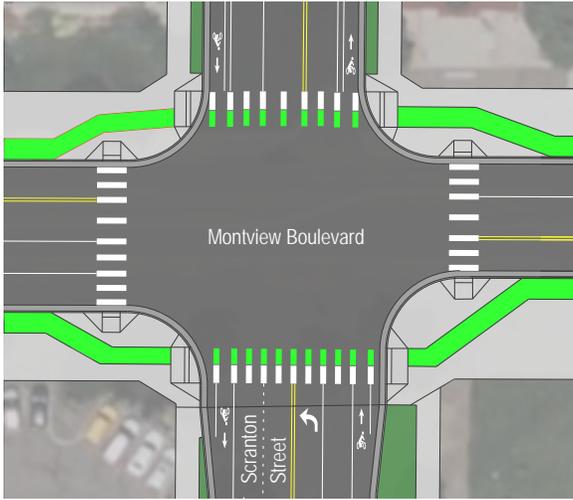
Intersection of Racine Street and Montview Boulevard



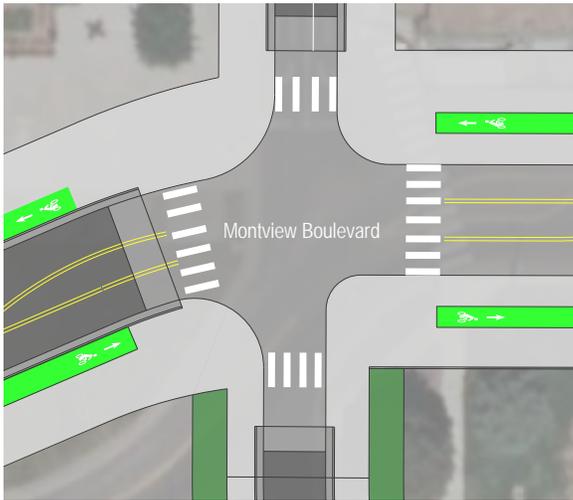
Intersection of Revere Court and Montview Boulevard



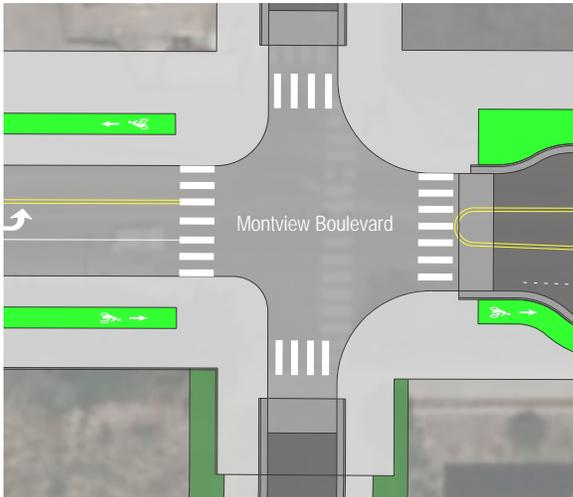
Intersection of Scranton Street and Montview Boulevard



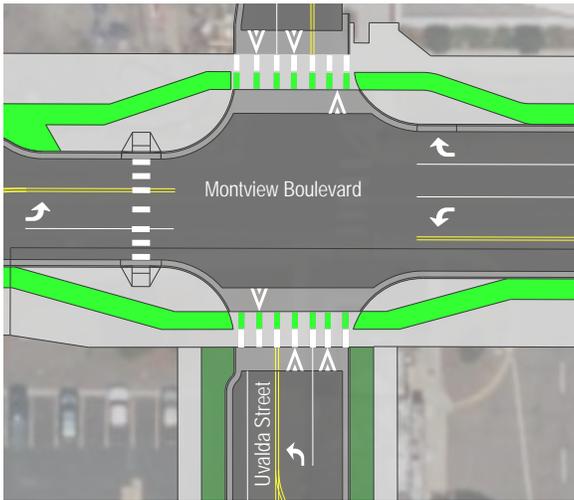
Intersection of Ursula Street at Montview Boulevard - West



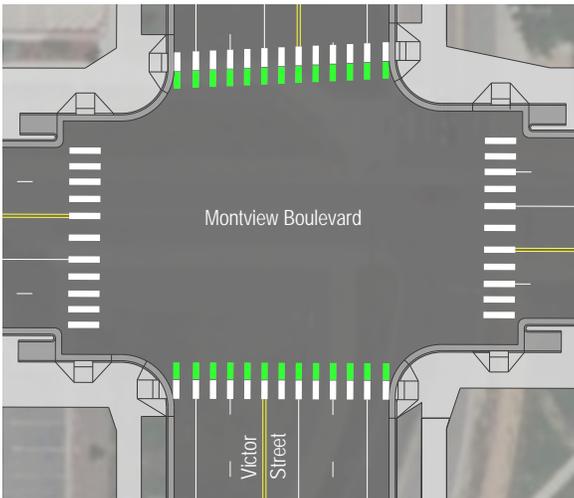
Intersection of Ursula Street at Montview Boulevard - East



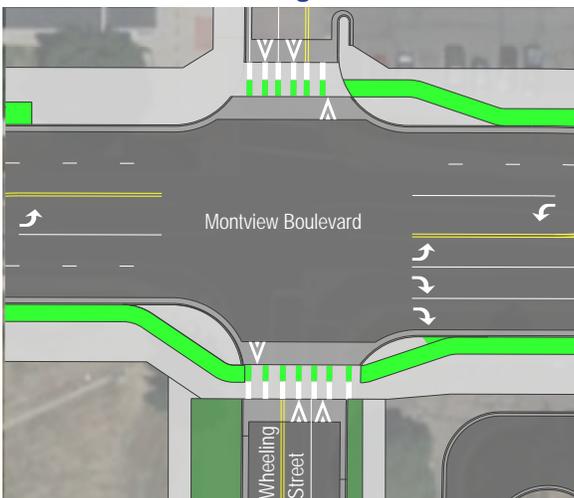
Intersection of Uvalda Street and Montview Boulevard



Intersection of Victor Street and Montview Boulevard



Intersection of Wheeling Street and Montview Boulevard



III | PHYSICAL PLAN

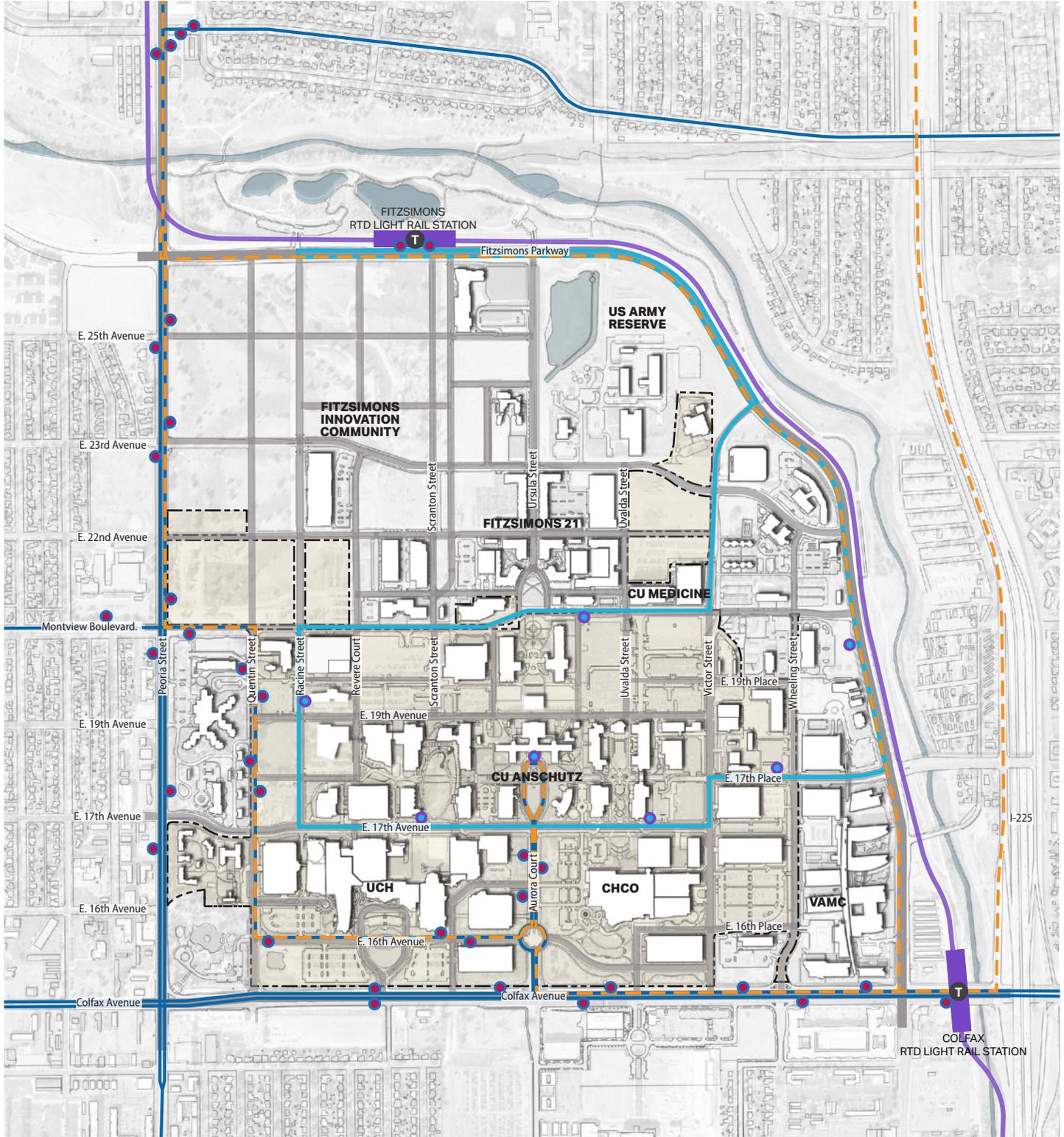


Figure III.10 - Existing RTD Network

TRANSIT

The Regional Transportation District (RTD) is the primary transit provider for the Denver metropolitan region and the Anschutz Medical Campus. It provides local bus, limited bus, and light rail services. The university has augmented these with a light rail shuttle service and an internal demand-response courtesy shuttle.

A map of existing transit routes that provide service to the campus can be found in Figure III.10.

A transit analysis was conducted of transit trips starting and ending within the campus (Note: the analysis was conducted using Replica data for typical weekdays). Figure III.11 shows that the most utilized transit routes to and from campus are the 15L and 15 bus lines with the R line (including transfers to A line) as the next most utilized. Other bus routes adjacent to campus include the 20 and 121; each also carry a significant amount of transit users.

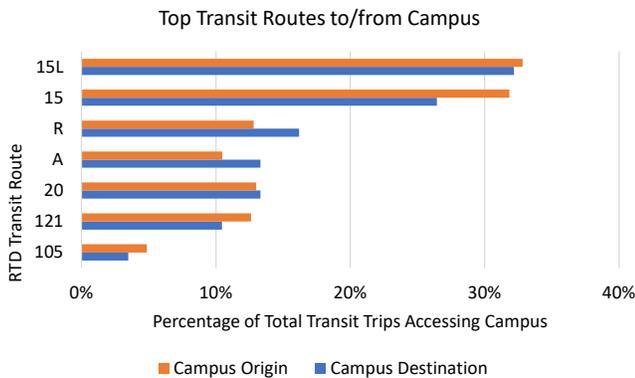


Figure III.11 - Top Transit Routes to/from Campus

Transit ridership trends have varied greatly in the last few years, and Figure III.12 shows the trend of ridership for trips starting and ending at campus. Ridership declined dramatically in March 2020 with the onset of COVID-19. Since then transit ridership has been steadily increasing; however, transit trips are still almost half of what they were at their peak in 2020.

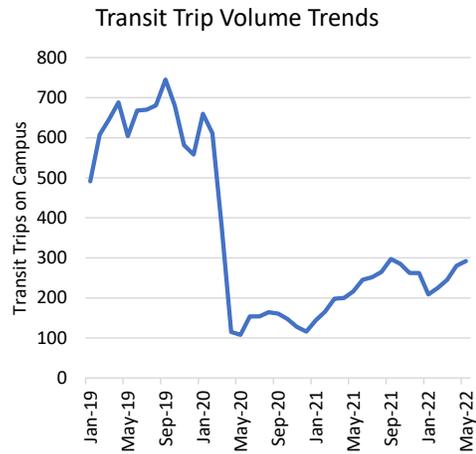


Figure III.12 - Transit Trip Volume Trend

UNIVERSITY TRANSPORTATION SERVICES

Rail Shuttle

The CU Anschutz Medical Campus Rail Shuttle provides service to and from six locations on campus to the Fitzsimons RTD Station.

Under normal operations, it runs from 6:00 AM to 5:00 PM on weekdays on a fixed schedule tied to the arrival and departures of light rail at the station. The Rail Shuttle does not operate on weekends. Holiday hours are posted at stops and in buses as well as through the Campus Shuttle app.

Courtesy Shuttle

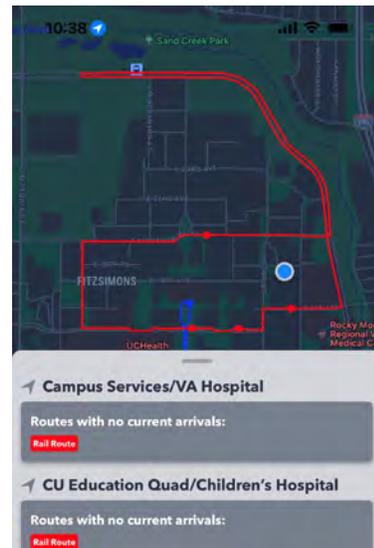
The university runs a courtesy shuttle within the Anschutz Medical Campus that services the three campus institutions referred to as the Campus Circulator Service. This service operates from 7:30 AM to 5:00 PM Monday through Friday. The service transports individuals internally (when requested) via small electric cart vehicles. This is a demand-response system that serves the core area bounded by Montview Boulevard, Colfax Avenue, Wheeling Street, and Quentin Street. Ridership varies depending on activity.

Proposed Transit Projects

RTD and the City of Denver's Colfax BRT project will replace 15 and 15L service with a single BRT service that includes a dedicated lane from Broadway to Yosemite Street in Denver and mixed flow service in Aurora. BRT with increased frequency is expected to begin revenue service in 2028 and will reduce travel times and increase ridership along the Colfax Corridor.



CU Anschutz Shuttle.



CU Anschutz Cart.

BICYCLES

Currently, the only designated bicycle lanes on the Anschutz Medical Campus are along 17th Avenue. In addition, the 17th Place Art Walk is a designated pedestrian promenade that is closed to vehicular traffic. Otherwise, bicycles typically ride along unmarked roadways or on adjacent sidewalks.

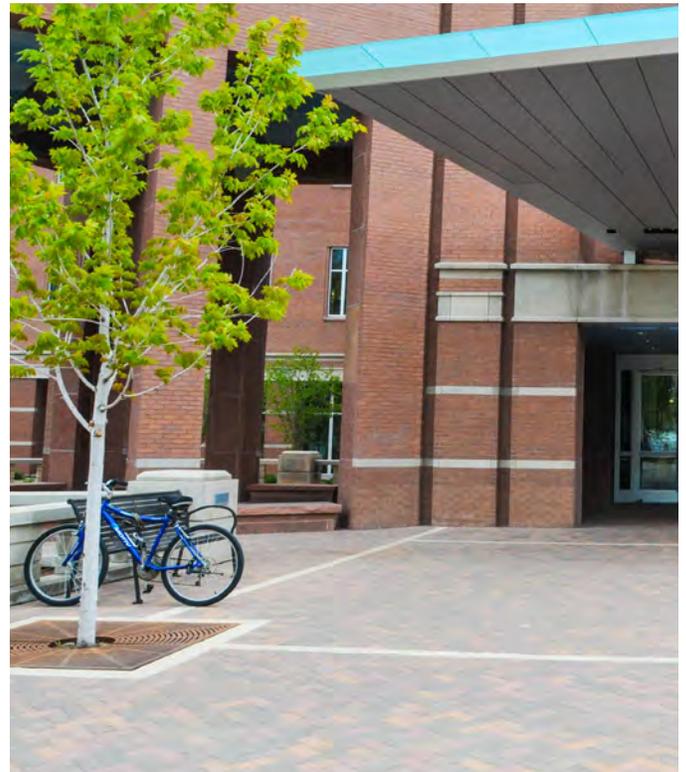
Proposed Bicycle Improvements

A campuswide plan for major bikeways is shown in Figure III.13. The plan is characterized by the goal of providing dedicated connections to CoA bicycle facilities along the perimeter of the campus at 17th Avenue, Montview Boulevard, the Sand Creek and Toll Gate Creek Trail System to the north and east, and Ursula Street and Xanadu Street to the south.

New and renovated roadways will provide bicycle accommodation. Designated bicycle facilities are proposed within the campus along Quentin Street, 17th Avenue, 19th Avenue, 23rd Avenue, Scranton Street, and Victor Street. In addition, sections of Ursula Street, Aurora Court, and 17th Place are identified as providing accommodations for bicycling.



Bike racks see consistent use in the Research Commons.



Bike rack at Library building.

III | PHYSICAL PLAN

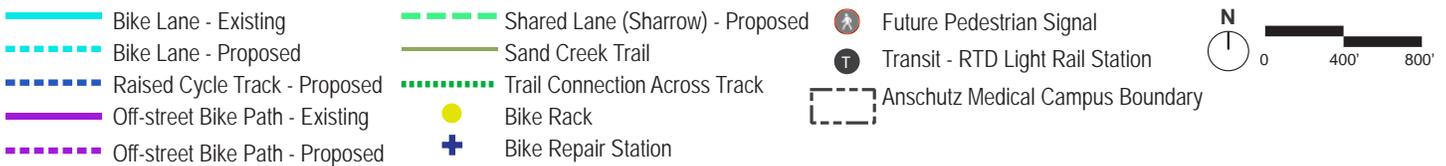
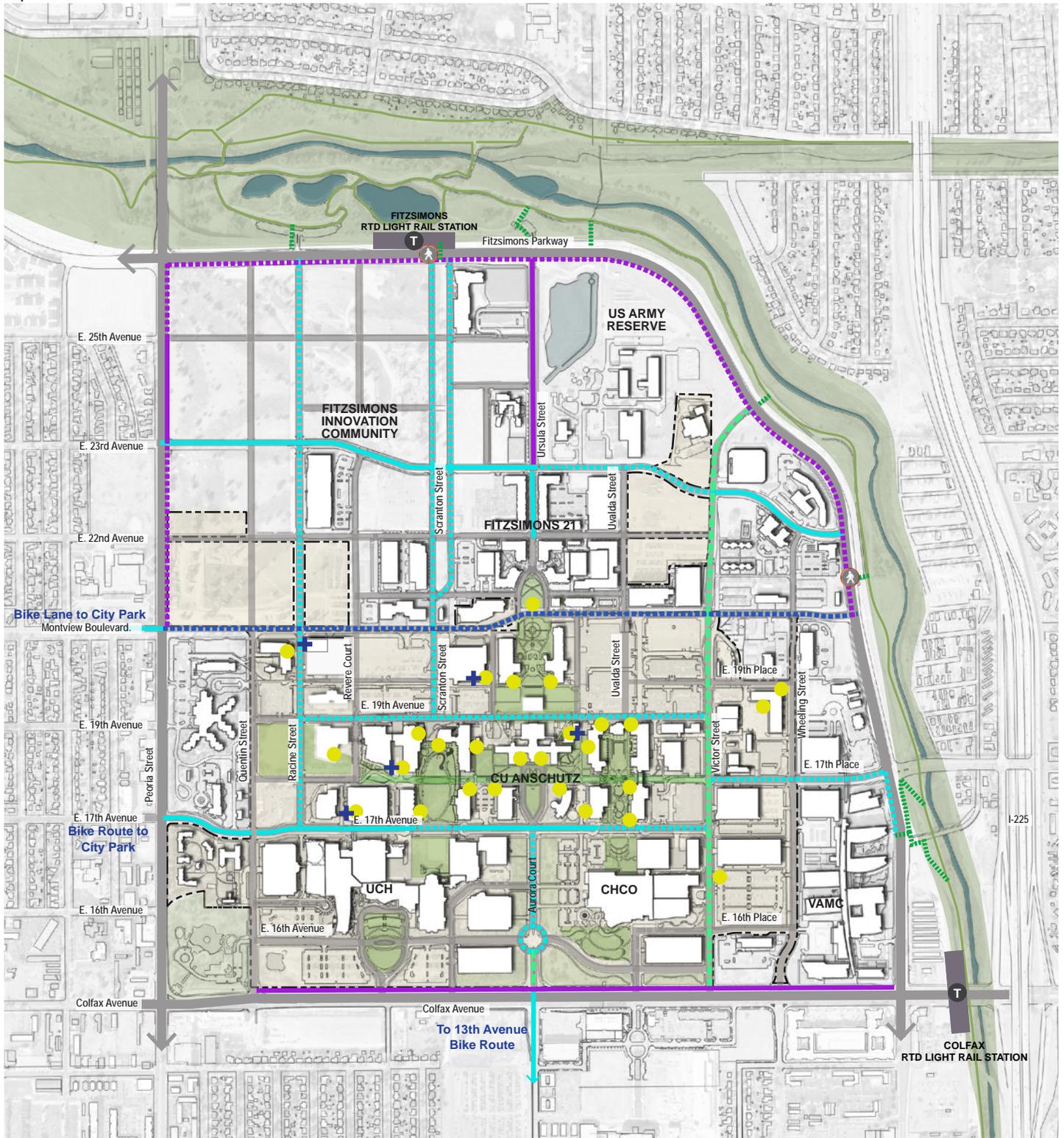


Figure III.13 - Proposed Bicycle Network

Some key considerations regarding bicycle improvements are to:

- Prioritize crossing improvements to Fitzsimons Parkway to improve safety and access to established trail connections. This will allow bicyclists easier access to the campus core.
- Plan for 17th Avenue through the campus core so it continues to provide generous bicycle lanes along both sides of the roadway in addition to multi-use pathways. This should extend through the Peoria Street intersection so that it connects with CoA's signed bicycle route along 17th Avenue to the west.
- Potentially enhance bicycle accommodations along Aurora Court to strengthen the campus's connection to 13th Avenue to the south. If the intersection at Aurora Court and 16th Avenue is reconstructed to a roundabout, the design should account for multimodal access. With the 13th Avenue I-225 underpass, this connection is beneficial for bicycle users, particularly those traveling to the opposite side of the interstate and users traveling west to Denver in areas south of Colfax Avenue.
- Provide bicycle facilities along the west end of Montview Boulevard to properly connect to those that exist along Montview Boulevard to the west of Peoria Street.
- A bicycle facility on a shared use path along Colfax Avenue is separate from the roadway as part of the Colfax Frontage Exercise Trail. This path could be shared between bicyclists and pedestrians or could delineate separated pedestrian and bicycle areas.

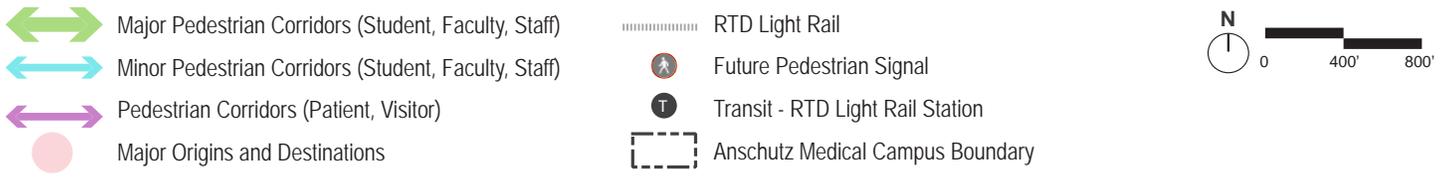
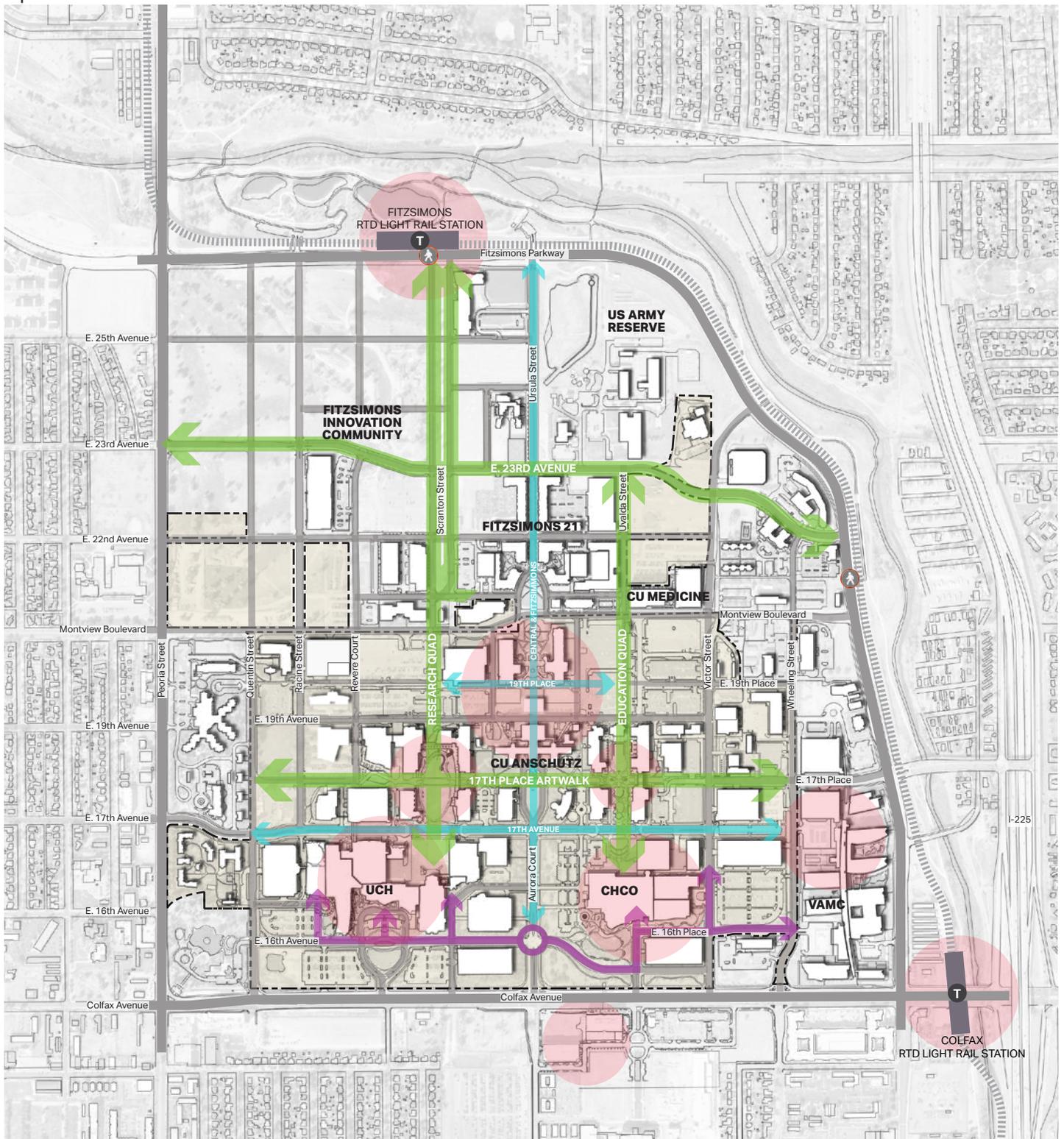


Figure III.14 - Proposed Pedestrian Hierarchy

PEDESTRIANS

CU Anschutz is committed to providing accessible pedestrian travel and ensuring an inviting pedestrian atmosphere. The pedestrian experience drives the open-space, roadway, and bicycle network propositions. The confluence of these systems creates a dynamic network of pedestrian-oriented streets, greenways, and promenades that connect to campus landmarks and open spaces.

Proposed Pedestrian Improvements

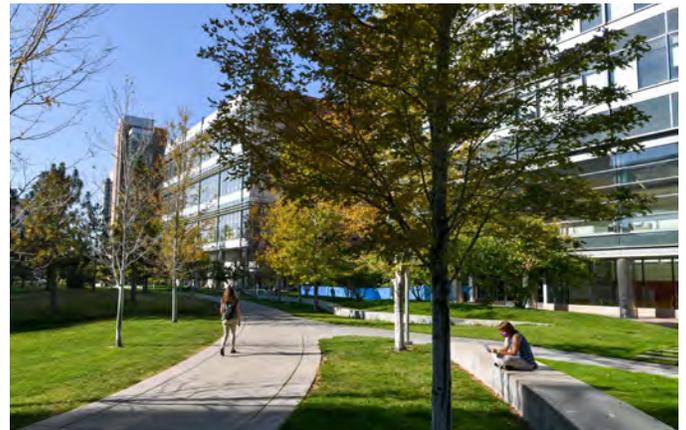
Pedestrian accommodations should be improved concurrently with new building and roadway construction and/or renovation.

All future roadways and retrofit projects should consider accommodations for pedestrian activity as illustrated in the street sections presented on pages III.15-21. Design elements to improve pedestrian travel include traffic calming methods such as well-marked crosswalks, varied paving surfaces for pedestrian corridors and crossings that experience a large volume of pedestrians, bulb-outs, and buffers between pedestrian facilities and the roadway (topography changes, landscaping and greenery, sidewalk furniture, etc.). Figure III.15 presents the proposed pedestrian network and where the potential for these improvements could be applied on the Anschutz Medical Campus.

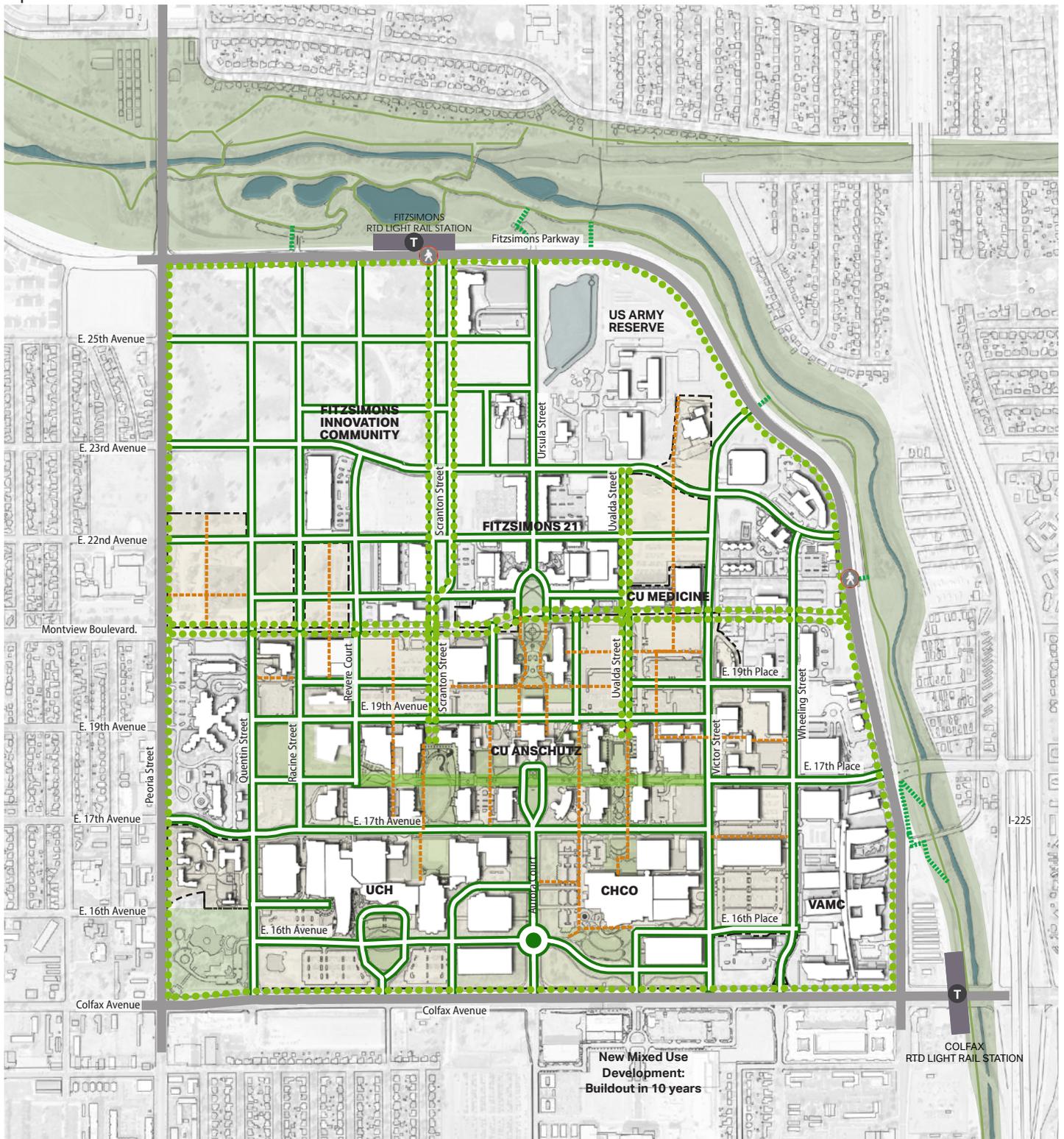
To the extent possible, sidewalks should be detached from busier roadways to create a comfortable environment for pedestrians. Also, a wider sidewalk where significant pedestrian activity is anticipated would be appropriate. Americans With Disabilities Act (ADA) requirements will be met and, whenever possible, exceeded. Given the medical focus of campus, pedestrian accommodations that exceed these requirements would be appropriate, especially where patient activity is anticipated. Some areas may potentially be developed such that pedestrian plazas are incorporated and place-making is implemented such as in the area north of the Fitzsimons Building.

Notable permanent gaps in the sidewalk network exist along the south side of Montview Boulevard, behind the Fitzsimons Building on the south side of 19th Avenue, and along the west side and south sides of Fitzsimons Parkway north of campus. Portions of the sidewalk network may also be temporarily closed to accommodate construction or maintenance activities.

As noted earlier, Montview Boulevard will be improved by the CoA. When this project is completed, sidewalks will be provided along the southern side. In addition, as the FIC is further developed, additional sidewalks will be provided along Fitzsimons Parkway.



Sidewalks provide connectivity in the campus.



- Tree-lined Pedestrian Promenade
- Pedestrian Sidewalk Along the Streets
- 'Through Block' Route
- Sand Creek Trail
- Trail Connection Across Track
- Park and Open Space
- ⤴ Future Pedestrian Signal
- T Transit - RTD Light Rail Station
- Anschutz Medical Campus Boundary



Figure III.15 - Proposed Pedestrian Network

Several campus roadways have significant pedestrian crossing activity. Traffic-calming measures like speed tables, special pavements, and bump-outs have been introduced on them to alleviate pedestrian/automobile conflicts. However, due to the volume of crossings, the following areas remain of concern especially at the start and end of work days and during clinical hours, classes, and special events.

Victor Street

CHCO’s parking structures are located on the east side of this roadway between 16th Avenue and 17th Place while the hospital facilities are on its west. Signs and pavement marking have been added to alert motorists of the presence of pedestrians.

19th Avenue

Pedestrian crossing activity along 19th Avenue between Victor and Scranton Streets is high due to parking being on its north while campus facilities are located to its south. Raised crosswalks have been installed and a 15-mph speed limit implemented to slow vehicular traffic.

16th Avenue in Front of UCH

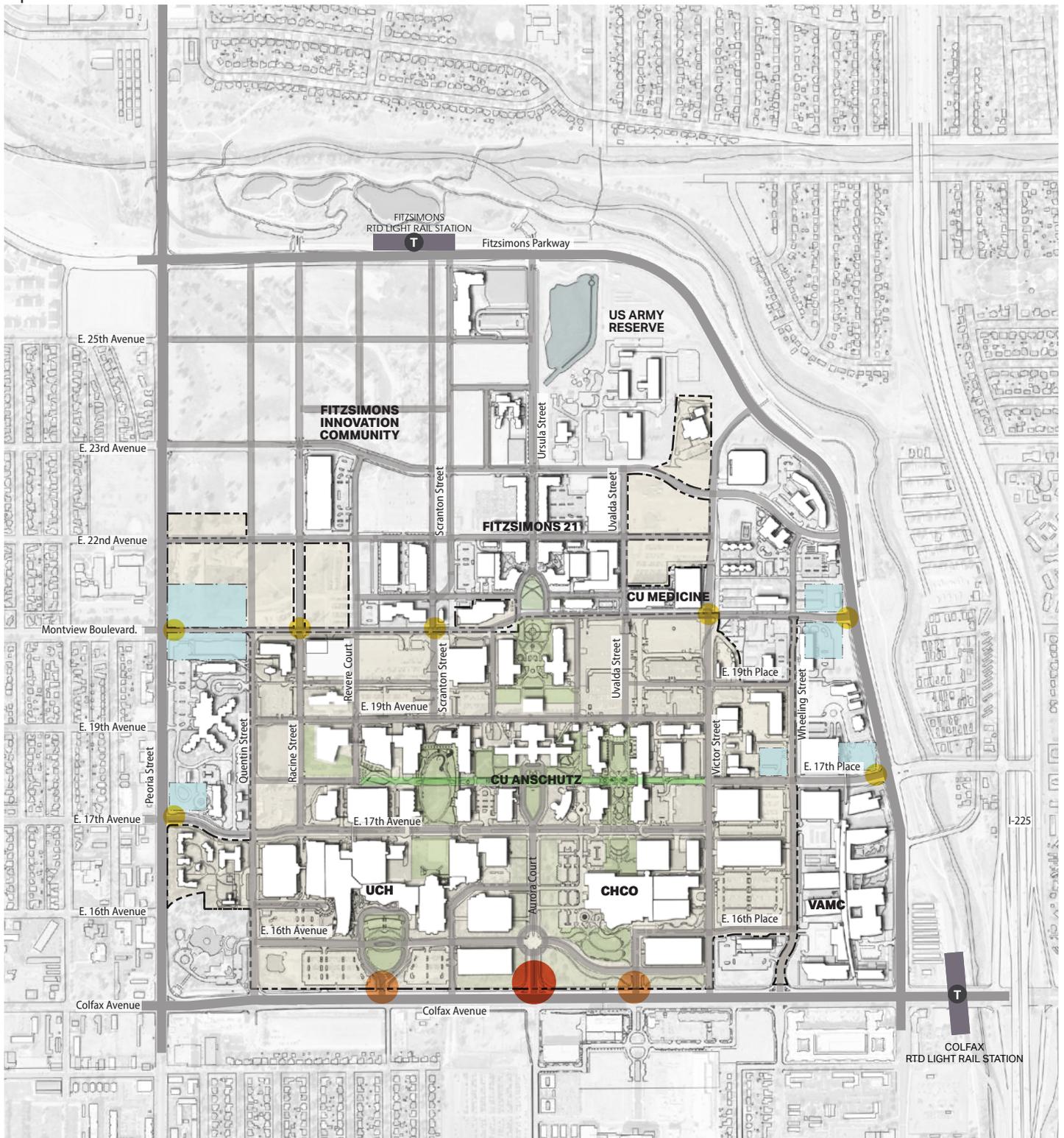
UCH visitor parking is located on the south side of 16th Avenue while hospital facilities are on the north. As a result, during normal UCH operating hours, pedestrian crossings are high.

Some traffic calming measures such as all-way stop signs and a curved oval-sized median to slow motorists have been installed. In addition, attendants may be located at major crossings to stop traffic to allow pedestrians to cross.

Additional traffic calming measures may be installed as the need arises or funding allows along 19th Avenue, Victor Street, and 16th Avenue. As these roadways separate the clinical and educational facilities from parking facilities, they are heavily crossed by pedestrians. Such measures may include signage, raised crosswalks, crossing attendants, and curb bump outs similar to those already installed on campus.



The Art Walk shows connectivity within the proposed network of pedestrian corridors.



- Primary Monumental Signage
- Secondary Monumental Signage
- Tertiary Monumental Signage
- Gateway Sites
- T Transit - RTD Light Rail Station
- Anschutz Medical Campus Boundary



Figure III.16 - Gateway Sites and Monumental Signage

GATEWAYS AND EDGES

The edges of the Anschutz Medical Campus are designed to be porous and welcoming, consistent with the goal of the campus institutions to reach out to the community and provide services and opportunities. The identity of the campus is reinforced by a consistent language of gateway elements and prominent buildings along the edges.

A new signature gateway has been constructed at Aurora Court and Colfax Avenue. It provides clear expression to both vehicular and pedestrian traffic as to the mission, stature, and branded image of the Anschutz Medical Campus. The gateway manifests a welcoming gesture that recognizes and honors the collaborative partnership between three institutional stakeholders.

The gateway consists of two curved walls prominently elevated upon planted berms and flanking the entrance to Aurora Court. The walls delineate arrival at the CU Anschutz Medical Campus, and reflect the generosity of the university's most significant philanthropic donor, Philip Anschutz.

Secondary gateway elements were also constructed at major entry-ways off Colfax Avenue for UCH and CHCO. These signs—although somewhat lesser in scale and prominence—are of equal importance in delineating arrival and conveying the character of these

two institutions. Each includes the branded logos of each respective hospital along with title text scaled for vehicular speed legibility.

Several prominent gateway sites have been identified at key intersections leading into the university that could, over time, be developed with signature buildings and signage. These would further enhance the arrival experience on campus and better connect it to the adjacent community.



The entrance to the Children Hospital as the secondary gateway from Colfax Avenue into the campus.



The signature gateway into the southern edge of campus at Aurora Court and Colfax Avenue.

III | PHYSICAL PLAN

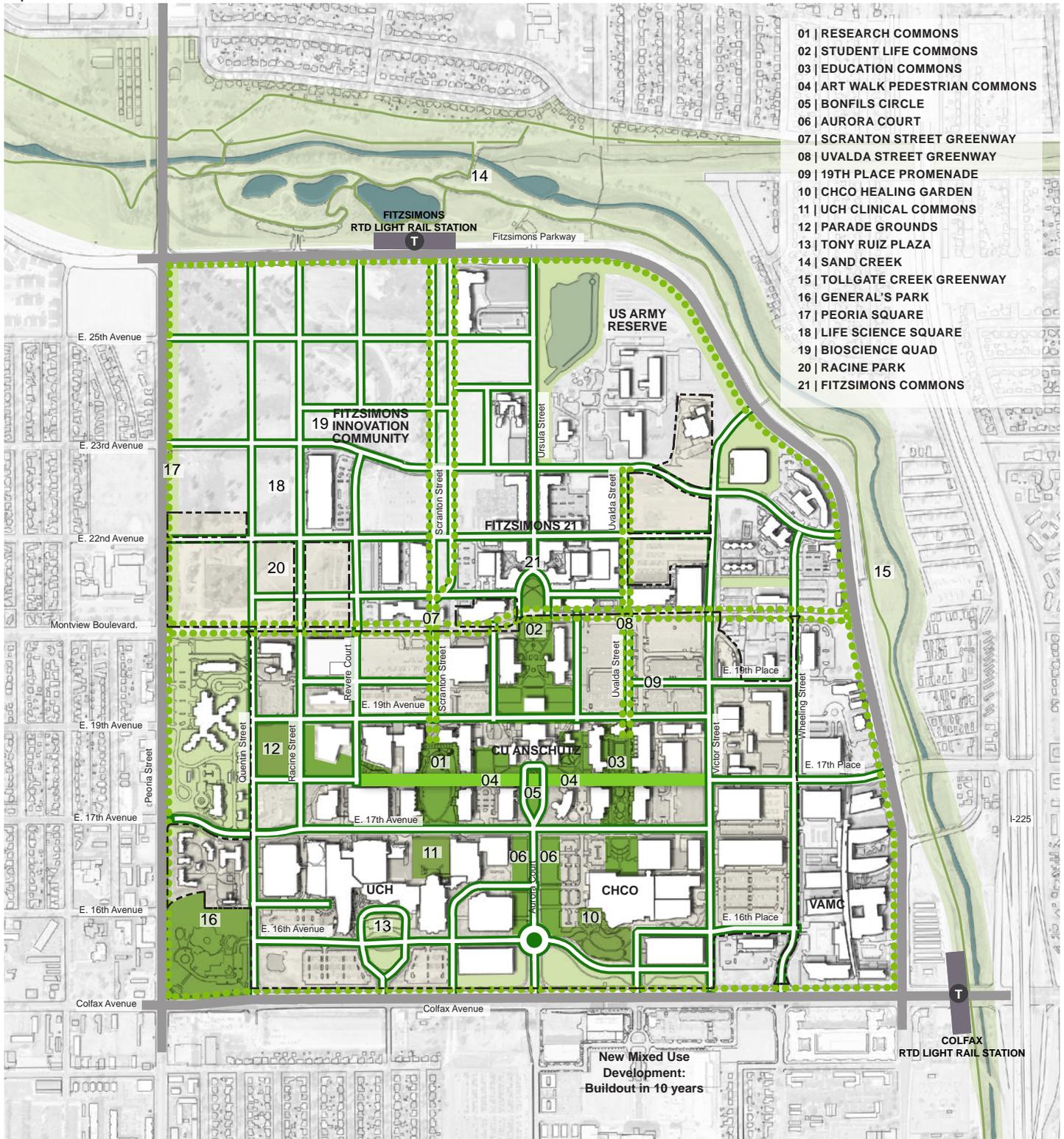


Figure III.17 - Proposed Open Space

B. Open Space

Open space is a broad category that includes all elements of the public realm from large ceremonial quadrangle spaces to street plantings and entry courts. Section III.4 explains how open space that is part of a specific building project falls under the “flexible” category, as open space can manifest on a particular building site in any number of ways based on its Character District and the unique variables of each building project.

The public open spaces that organize the campus, however, comprise a fixed system that provides clarity and navigability to the campus environment, as well as opportunities for gathering and recreation. The major open spaces are knit together by streets and pedestrian walkways that may also accommodate storm water management features. These connections in turn link campus open spaces to regional trail and open space resources.

The CU Anschutz Design and Development Guidelines provide detailed material, lighting, and site furnishing recommendations for each type of open space on campus. Implementation of these measures will reinforce the character and experience of each space and further enhance the campus environment.



Outdoor gathering spaces provide a nice setting for students to collaborate outside of classrooms.



Research Commons as one of major open space providing amenities and public art, as well as pedestrian connectivity.

CAMPUS COVERAGE

The original 1998 Facilities Master Plan for what became known as the Anschutz Medical Campus was based upon the following percentages for building, impervious pavement and open space coverage across the 230-acre site:

- Buildings: 40% maximum
- Pavement: 30% maximum
- Open Space: 30% minimum

However, the percentages above do not reflect development density as they do not account for the height of buildings, the number of occupants within them, or the type of activity being performed.

To better account for different development densities on campus, the 2012 Facilities Master Plan established Character Districts. The recommended coverage ratios within each were adjusted to better reflect surrounding activities and still maintain those for the overall campus.

For example, the C1 | Academic Village District proposes a higher percentage of open space due to the pedestrian amenities and quads within it. On the other hand, the C3 | Hospital District accommodates more paved areas to allow larger hospital facilities and associated patient and visitor parking.

Since 2012, the university has acquired land north of Montview which is in the C2 | Urban Campus Character District. The long-term goals for campus coverage are provided below.

Character District	Total SF	2022 Campus Coverage ¹			Campus Coverage at Buildout		
		Buildings	Impervious	Pervious	Buildings	Impervious	Pervious
South of Montview Blvd.	9,934,907	2,204,294	4,592,830	3,137,783	3,851,561	3,638,587	2,444,759
C1 Academic Village	2,232,935	474,935	818,587	939,413	669,880	781,527	781,527
C2 Urban Campus ²	3,389,047	434,305	2,014,850	939,892	1,525,071	1,186,166	677,809
C3 Hospital District	4,027,257	1,246,147	1,708,808	1,072,301	1,610,903	1,610,903	805,451
C4 Special	285,668	48,906	50,585	186,177	45,707	59,990	179,971
North of Montview Blvd.	1,370,692	68,263	86,309	1,216,121	616,811	479,742	274,138
C2 Urban Campus	1,370,692	68,263	86,309	1,216,121	616,811	479,742	274,138
Total Area	11,305,599	2,272,557	4,679,138	4,353,904	4,468,373	4,118,329	2,718,897

Notes

1) Since 2012, the university acquired ~29 acres north of Montview Boulevard and the former Fisher House South of Montview.

2) Coverage is calculated using guidance in the Campus Design & Development Guidelines for each character district.

Figure III.18 - Historic, Current, and Future Campus Coverage Comparison, University of Colorado Anschutz Medical Campus

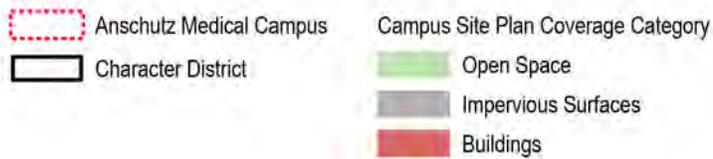


Figure III.19 - Campus Coverage Map

OPEN SPACE PROJECTS

Over the full build-out period, the proposed recommendations of this plan include a number of expansions to existing open spaces and greenways as well as the construction of new ones. As new infrastructure and building projects move forward, opportunities should be sought to tie landscape improvements to individual projects to incrementally further the campus's open space vision.

Following are the proposed future fixed open space projects, listed north to south.

Uvalda Street and Scranton Street Greenways

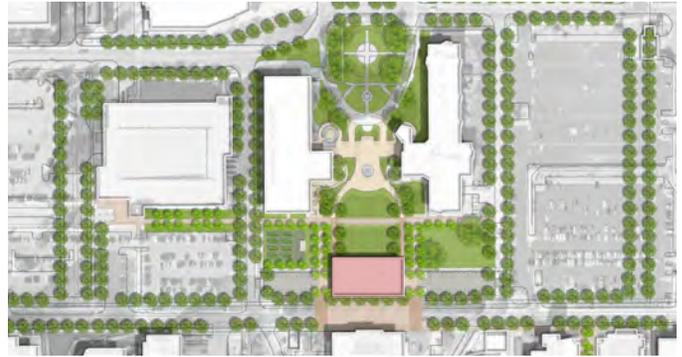
As noted above, Scranton and Uvalda Streets could be potential greenways that connect to the FIC. As such, they could become educational showcases for storm water management systems by incorporating storm water planters and/or bioswales in their design. The alignment of Scranton Street may also allow the preservation of three significant oak trees that can be incorporated into the landscape design of this walkway.

Student Union

The open space between the Health Sciences Library and the Skaggs School of Pharmacy Building surrounding 19th Place is identified as the area for a new Student Union with the potential for outdoor dining and community gardens. The Student Union would be available for unstructured recreation and civic purposes and could be the central gathering space of the 19th Place Promenade.

19th Place Promenade

19th Place is proposed as a potential pedestrian walk similar to the Art Walk. It can serve as connective tissue between the Uvalda Street and Scranton Street greenways as well as to the Student Life Commons. The promenade will connect at either end to pedestrian-friendly streets tying into the city street grid.



Proposed Student Union Open Space.



Proposed Student Union Building Massing.



The open space between the library and the School of Pharmacy, the Student Union and University Plaza, will be strengthened.



The pathway through the quad south of the Health Sciences Library will develop into a more-robust 19th Place Pedestrian Promenade.

17th Place Art Walk Extensions

This popular pedestrian route links the Research and Education Commons. Not only does it provide access through the heart of campus, but it also offers a place to stop, enjoy art, and socialize. Potential extensions could strengthen both the green space and pedestrian networks, connecting east to the new gateway sites along Victor Street that will be developed as university parcels in the future.

Parade Grounds

When the square mile was still the Fitzsimons Army Medical Center, the Parade Grounds filled an important symbolic role. In the first decade of the Anschutz Medical Campus Master Plan, the space became a place for active and passive recreation. In the future, this site will link to important east-west and north-south connective elements and will continue to be used for wellness activities and other special events.

Colfax Frontage Exercise Trail and Landscape

The traditional landscape buffer along the north side of Colfax Avenue from General's Park on the west to Fitzsimons Parkway on the east should be maintained. This will continue to provide the hospitals with a strong public presence on the primary public street adjacent to the campus as well as to preserve the historic viewshed to the Fitzsimons Building. This plan carries forward the vision for the bike/pedestrian exercise loop that would encircle the entire site-wide area connecting to the Toll Gate Creek and Sand Creek Trails. The landscape buffer along the north edge of Colfax Avenue can incorporate an exercise path and exercise stations, and eventually form a quarter of the full loop.



The 17th Place Art Walk will extend west toward the Parade Grounds.



The Parade Grounds will connect to the Art Walk to the east as well as the Health and Wellness Center (shown above) to the north.



An exercise trail will develop in the landscape buffer on the northern edge of Colfax Avenue (roadway along left edge of photo).

Bonfils Circle

Centrally located, this space is intended to be the symbolic heart of the campus. It provides definition to the terminus of the existing view corridor from Colfax Avenue toward the Fitzsimons Building and is meant to reinforce the mission, stature, and image of the campus and its affiliated institutions.

Currently, an underutilized green is encircled by a two lane, 24-foot-wide, vehicular turnaround providing patient and visitor access to the Fitzsimons Building porte cochère. RTD buses utilize an abbreviated portion of this turnaround with stops located along its perimeter. Pedestrian access to the central green space has been effectively cut off by this predominantly vehicular-oriented condition.

The design goals are to retain these operational qualities while allowing for more active, pedestrian-oriented uses. The intent is to allow the space to accommodate formal outdoor gatherings and activities such as graduations, presentations/lectures, dedications, press conferences, etc. without adversely impacting the pragmatic need for vehicular drop-off accommodations in close proximity to the Fitzsimons Building.



Block Party 2022 at the Bonfils Circle.



Bonfils Circle, the turnaround in front of the Fitzsimons Building is proposed to become a ceremonial green space.

Proposed 17th Avenue Translational Corridor

17th Avenue could be enhanced to strengthen the connection between the hospitals and the university. These fixed infrastructure improvements could include opening the road to through traffic, accommodating buses, and enhanced crosswalks at the commons. The

roadway may be opened to a careful and safe balance of vehicular traffic and on-street parking, which will coexist within a primarily pedestrian- and bicycle-friendly environment. The infrastructure can support additional building sites along 17th Avenue, which will help to increase the desired density to spur interaction and collaboration among the various institutions. Locating

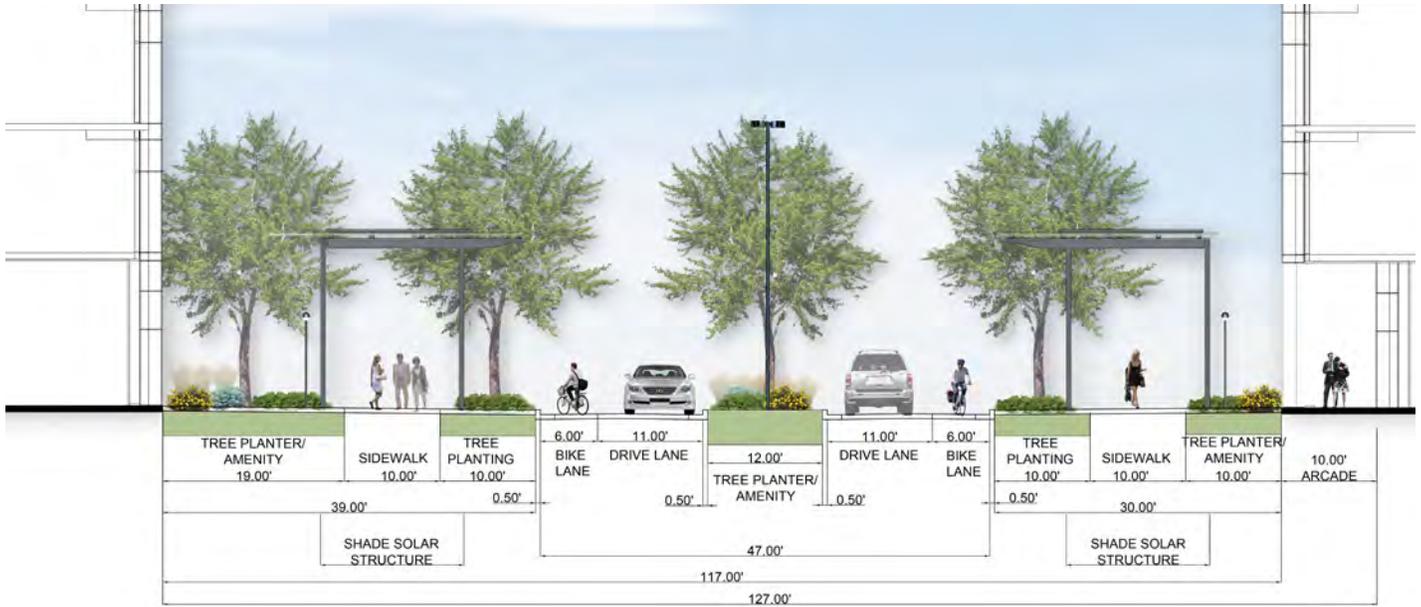


Figure III.20 - Proposed Section of 17th Avenue



Existing condition of 17th Avenue looking west.

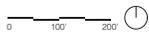
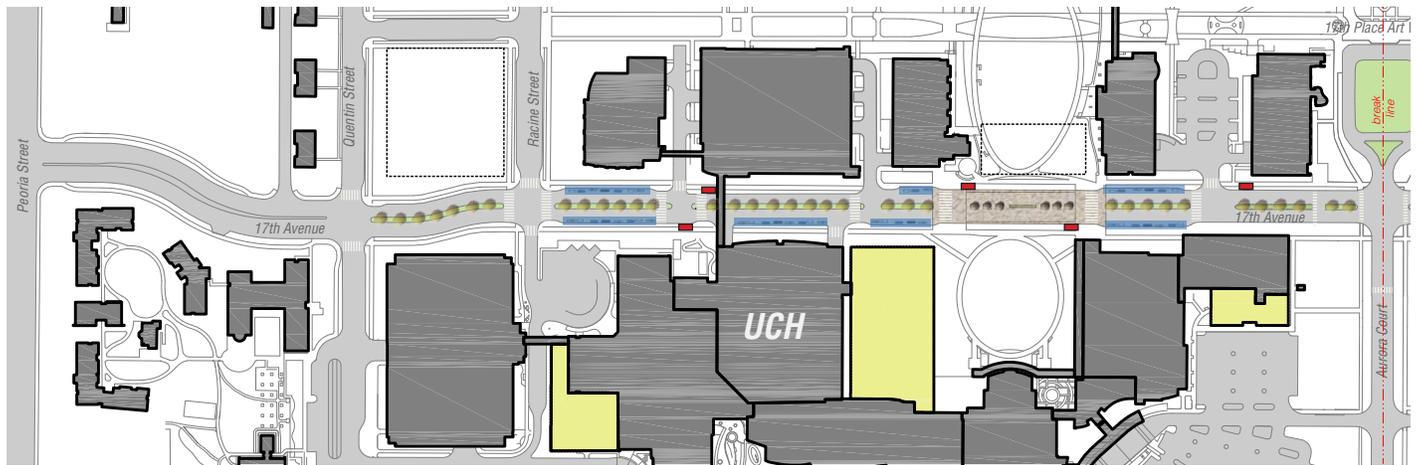
public and visible program functions along the street will help 17th Avenue to become a vibrant internal main street for the Anschutz Medical Campus.

Improved east-west connectivity will culminate in a new “translational corridor” along 17th Avenue. It is envisioned to be a connected ribbon of mixed-use

development between the academic village and hospital character districts, encouraging and facilitating the migration of expertise, researching findings, and clinical knowledge between institutions and across disciplines.



Figure III.21 - 17th Avenue Aerial (2020) - Peoria Street to Fitzsimons Parkway



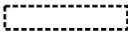
- | | | | |
|---|---------------------------|---|-------------------------------|
|  | Future Construction |  | Pedestrian Crossing |
|  | Future Site |  | Bus Shelter |
|  | Green Median |  | Parallel Parking (Short-term) |
|  | Pedestrian Roadway Paving | | |

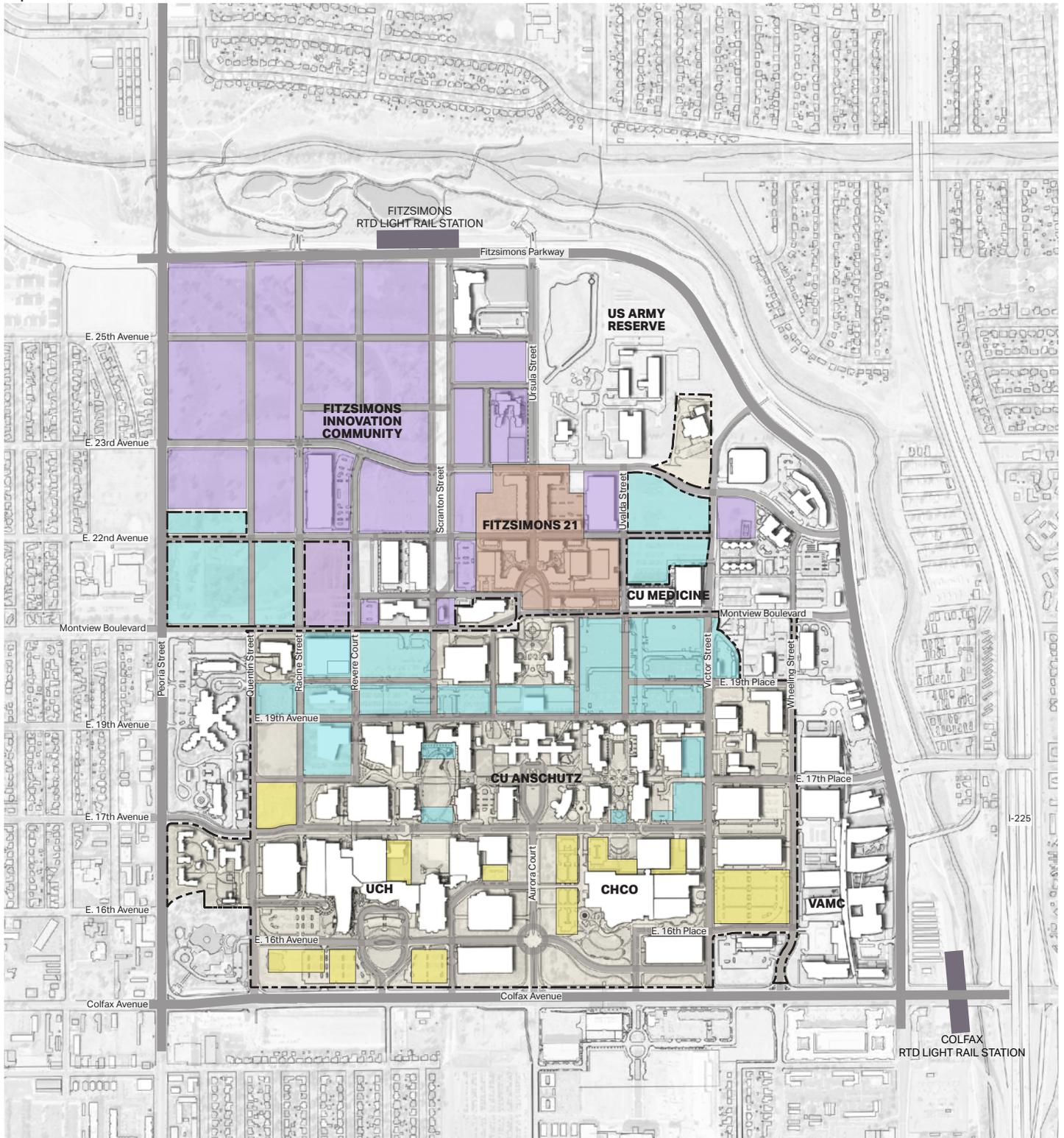
Figure III.22 - Proposed 17th Avenue Street Plan - Peoria Street to Fitzsimons Parkway



Figure III.21 - 17th Avenue Aerial (2020) - Peoria Street to Fitzsimons Parkway (Continued).



Figure III.22 - Proposed 17th Avenue Street Plan - Peoria Street to Fitzsimons Parkway (Continued).



- University Building Sites
- Hospital Building Sites
- FIC Building Sites
- Fitzsimons 21 (AIMCO)
- Anschutz Medical Campus Boundary



Figure III.23 - Potential Full Build-Out Sites

III.4 Flexible Site Development Elements

INTRODUCTION

This plan defines the flexible elements as those occurring within the building sites, including buildings, parking, individual project landscape and open space, and local storm water components. Future projects should be evaluated in accordance with site selection criteria provided in the Design and Development Guidelines. Program—the type of use that will occupy a particular space i.e. academic, clinical, retail—may not determine a project’s form; each new development should be guided by the nature of its Character District to support flexibility, predictable organization, and memorable campus character.

This flexible strategy evolves from the goal of innovation that guided the 2012 Facilities Master Plan. The campus entities have found that collaboration across institutions and fields drives innovation. This flexible future project site strategy is intended to encourage new buildings and parking facilities that support integration, collaboration, and convergence. This includes not only interdisciplinary programs, but also the integration of common spaces such as cafes and restaurants that facilitate informal collaboration that can lead to innovation.

INDIVIDUAL SITE LANDSCAPES

Public open spaces that help organize the campus are presented as fixed projects in Section III.3, but within each individual building site, open space is part of the flexible system. The Design and Development Guidelines offer direction on frontage, setbacks, and percentage of site coverage of permeable landscape in each Character District. How these guidelines are fulfilled, however, will vary substantially depending on specific programmatic drivers and site opportunities. Plazas, forecourts, and courtyards may all be incorporated depending on the proposed uses for the building, orientation, and connection to related parts of the campus. Environmental sustainability will be a consideration in the landscape design within individual sites, and incorporating best storm water management

practices will help disperse the load on the storm water system. Solar orientation should be addressed to provide outdoor spaces that can be warmed by the sun in the winter and shaded during the warmest parts of the summer.

INDIVIDUAL BUILDING SITES

Future building sites are defined in relationship to the roadways. New buildings are encouraged to extend out to the edges of the site to help define the street and bring public ground-floor functions close to the sidewalk to reinforce the idea of a vibrant pedestrian environment. Primary building entrances and lobbies should face onto significant pedestrian streets and acknowledge programmatic desire lines that connect new buildings to existing facilities.

Buildings within campus are expected to be in the four-to six-story range, which provides an efficient use of available land while keeping the construction cost below the high-rise code definition. Height exceptions outside this range will be studied by future design teams in conjunction with the client institution, recognizing that certain programs such as research may require structure greater than six stories in height. The programmatic use of the building will not be determined by traditional functional zoning, but more by logical programmatic adjacencies to existing facilities and parcel ownership. Future projects are increasingly likely to be joint ventures among various campus stakeholders, capitalizing on opportunities for collaboration; a far greater mixture of uses is envisioned in the programming of all future developments.

Similar to future building needs, future parking can be accommodated within the armature of the roadway and utility networks. Flexible building sites can be used for parking lots and structures within the limitations illustrated in Figure III.23. These proposed limitations are intended to preserve the character and livability of the core campus by thoughtfully locating parking that is accessible without being intrusive.

A. Planned and Proposed Projects

This section contains a list of the specific proposed new building projects and a brief description of each. Projected program needs and the infrastructure to support the buildings drive these projects.

BUILDING PROJECTS

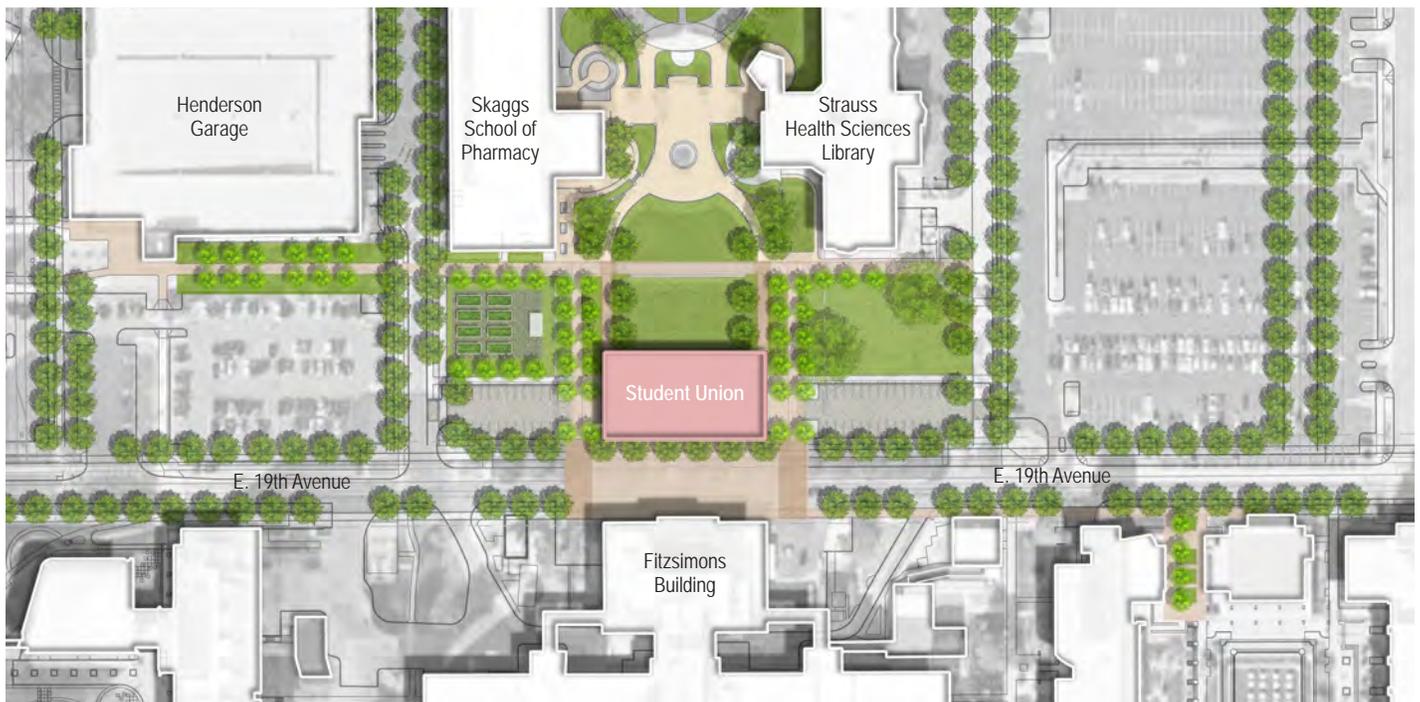
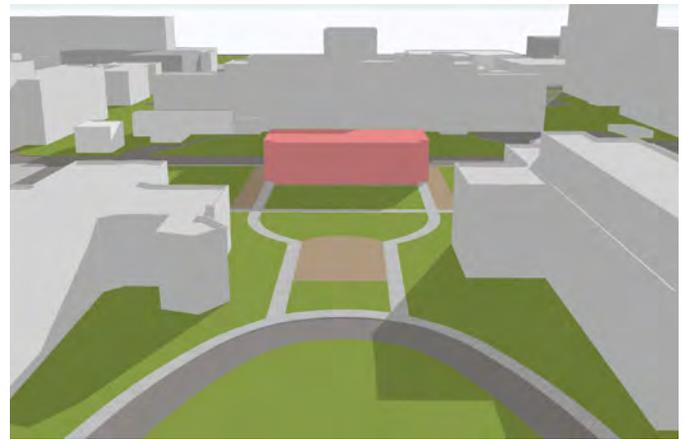
Student Union Building

A new 32,080 GSF Student Union building is proposed north of the Fitzsimons Building at the south end of the Student Life Commons on the Ignacio Parking Lot. The green space just south of the Skaggs School of Pharmacy and Pharmaceutical Sciences and the Strauss Health Science Library would remain. The project could consolidate student services that are scattered in multiple smaller buildings across campus, mainly in Education 2 North.

The facility has the potential to be a student-focused space composed of classrooms, small group learning areas, student resources, student services (including financial aid, bursar, registrar), lounges, offices, and a

bookstore. It is intended as an active, lively, and dynamic space that provides a desired gathering space and social hub for the student body.

Surface parking on each side of the new building can be provided to replace some of the visitor spaces in the Ignacio Lot. On its south side, a plaza on 19th Avenue will extend to the north entrance of the Fitzsimons Building, providing a new arrival experience that still maintains loading dock and service access.



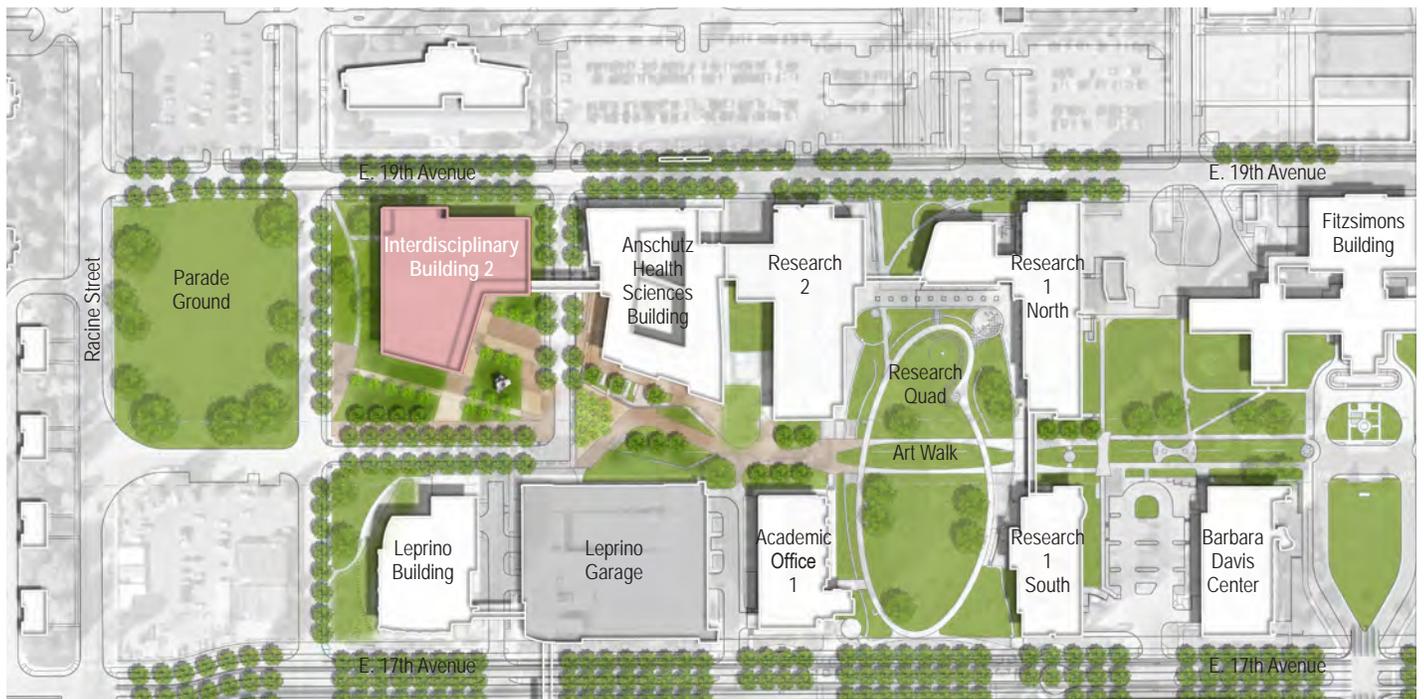
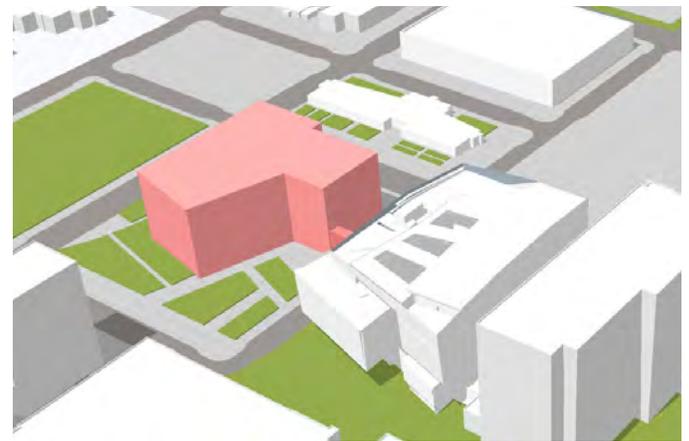
Proposed Student Union building.

Interdisciplinary Building 2

All schools and colleges will continue to grow their wet and dry research activities. As these grow, collaboration between these activities will increase. Interdisciplinary Building 2 is proposed as a mixed-use research building similar and just to west of the AHSB. It could potentially provide 347,038 GSF of additional research, classroom, and office space.

The building could also provide an opportunity to connect the Parade Grounds to the terminus of the Art Walk in front of the AHSB. By following the Campus Design and Development Guidelines, the site will further establish the campus grid.

The facility will need to provide additional vivarium space to support growth in wet laboratory space. Due to campus utility infrastructure in 19th Avenue, this location is best suited for below-ground vivarium expansion based on current practices and technologies.



Proposed Interdisciplinary Building 2 with Vivarium Expansion.



- Existing Surface Parking Lots (# of Spaces)
- Existing Parking Structures (# of Spaces)
- Temporary Parking Lots (# of Spaces)
- Leased Parking Lots (# of Spaces)
- Anschutz Medical Campus Boundary



Figure III.24 - Parking Proposals

B. Parking

FUTURE PARKING DEMAND PROJECTIONS

The Anschutz Medical Campus is currently supported by a mix of structured parking garages and surface parking lots. UCH, CHCO, and VAMC have added new garages and provide a large percentage of their total parking inventory within these structures. CU Anschutz currently has only one garage (Henderson), with roughly 1,540 spaces. This garage provides spaces for monthly permit holders and several hundred visitor stalls. The remaining parking inventory on the university campus is surface parking, with many of these lots located within the core area of the campus as indicated in Figure III.24.

As the campus develops, it is the university's intention to use existing surface parking lots as "land banks" for eventual development for new buildings. As this development occurs, much of the surface parking on the university campus will likely need to be replaced by garages and should be moved outward toward the campus periphery to reduce the traffic impacts to the campus core.

This relocation of parking will also encourage a higher density of university-related uses in the center of the campus and continue the trend toward a denser and more pedestrian-friendly environment. Garage sites on university property north of Montview may also be considered as a possibility and would be developed in conjunction with a future shuttle system to make them more convenient for future student and employee permit holders.

The hospital parking evaluation uses findings from prior demand studies from 2009 for CHCO and from 2010 for UCH.

Unlike other development types where parking demand can be calculated based on square footage, universities and hospitals tend to be highly variable in the amount of parking needed for each individual building. Instead, projections of future parking demand are calculated on a campuswide basis using a projection of future population

growth for all user groups, including employees, patients, and visitors.

This planning effort has not recalculated 10 year parking demand as the parking patterns have changed with post COVID-19 travel patterns. To calculate estimated 10 year parking demand, more work on matching projected new uses with parking is needed.

Figure III.24 shows a summary of the parking proposals based on the developments described in this section.

The existing patient/visitor garage at UCH is roughly 600 spaces. UCH is currently adding a second visitor parking garage that addresses parking deficits. This new garage has a capacity of approximately 1,300 spaces.

CHCO has no immediate plans for an additional visitor parking garage. CHCO can also add more parking by expanding their employee parking garage. However, based on previous analysis and existing parking usage, this need is not likely to occur in the near future unless bed capacity is increased at a faster rate than previously assumed. In the interim, some excess capacity may be available at CHCO and could be leased (on a short-term basis) to other entities such as the university and/or the VAMC.

For CU Anschutz, no new structured or surface parking facilities are anticipated for the campus core. This core area is defined as the blocks located between 17th Avenue and Montview Boulevard and between Revere Street and Victor Street, as indicated in Figure III.24. In keeping with the objective for increased campus density, there is a potential to add future garages to the central area north of 19th Avenue. A strategic location would be south of Montview Boulevard between Racine and Revere Streets.

A summary of the parking proposals, as well as parking needs with new development, can be seen in Figures III.25 and III.26.

<i>Institution</i>	<i>Estimated Spaces</i>
CU Anschutz	5,219
Parking Displaced by Development	-477
Parking Added by On-Street Spaces	240
Parking Added by Future CU Anschutz Garage	1,000
Total CU Anschutz	5,982

Assumptions:

- 1) Projected displacement possible on 10-year building sites.
- 2) Additional street spaces added to the academic campus core.
- 3) This analysis assumes the development of a new garage triggered by future development.
- 4) CHCO and UCH are not included as they do not project the need for additional parking capacity within 10 year horizon.

Figure III.25 - Projected Campuswide Parking Needs (10 Year Plan)

<i>Institution</i>	<i>Estimated Spaces</i>
CU Anschutz	5,219
UCHealth University of Colorado Hospital	6,865
Children's Hospital Colorado	4,366
Total	16,450

Assumptions:

- 1) UCH and CHCO did not anticipate a shortage of parking based on existing usage and current growth plans.
- 2) Previous parking studies conducted before 2020 indicated a deficit in parking, but current usage patterns have changed those assumptions. Changes in usage patterns and/or development could trigger future parking demand.

Figure III.26 - Projected 10 year CU Anschutz Parking Needs with New Development

FUTURE PARKING DEVELOPMENT FRAMING CONCEPTS

Based on the previous analysis of parking needs and input received from Anschutz Medical Campus stakeholders, the following core concepts should be applied to future parking management and development scenarios.

- Staff, student, faculty, and visitor parking could potentially be provided using a zone-based pricing system. Fees for remote parking and commuter surface lots will be set lower than lots and garages near the center of the campus. Pricing zones should be established to provide an incentive to use remote parking alternatives as well as the light rail. Pay parking is assumed for all parking facilities so as to avoid the precedent that any campus or site-wide parking is free of charge.



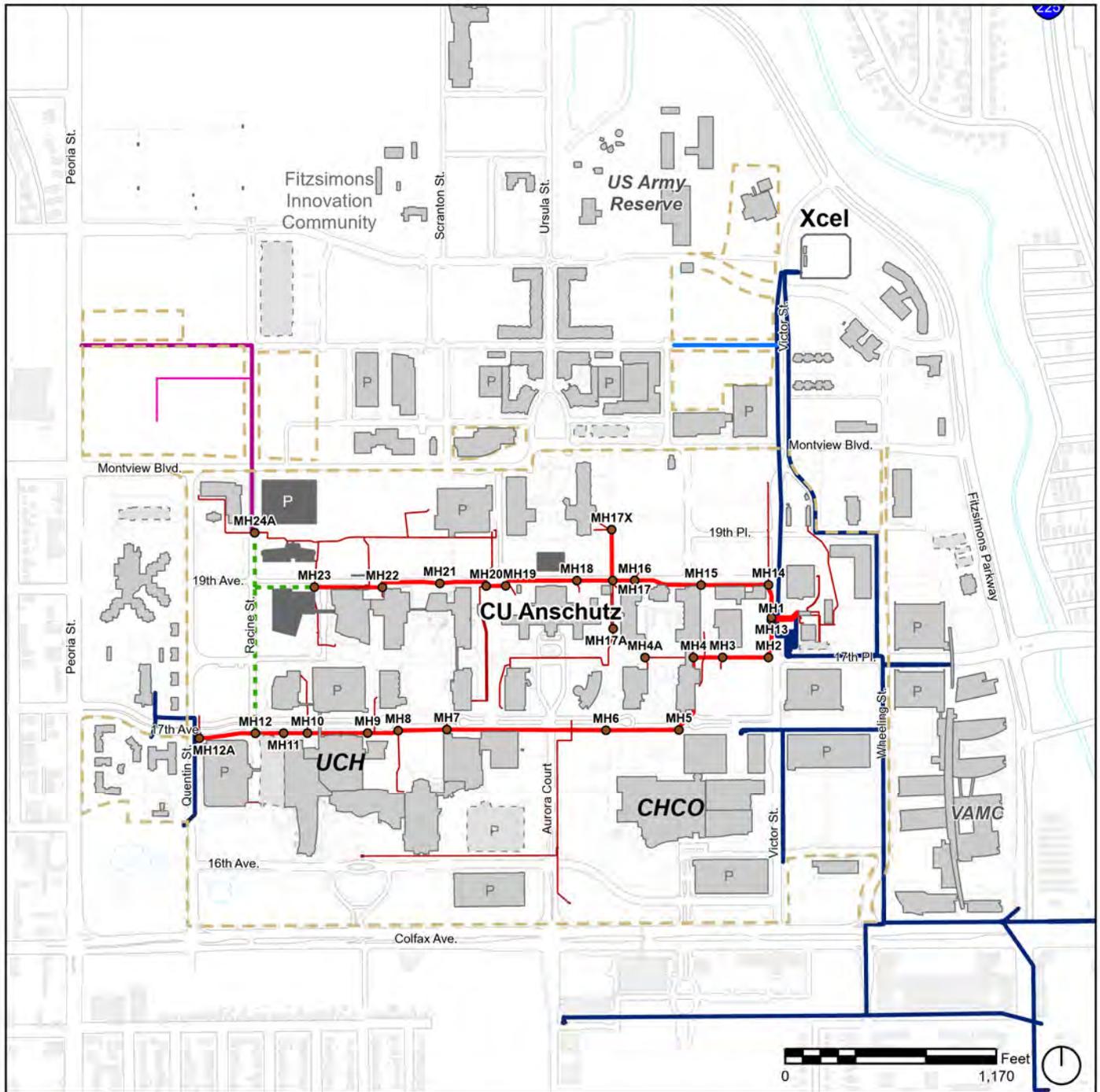
Currently, a few on-street parking spaces exist in front of the Leprino Building.

- Future development efforts can promote on-street parking from 19th Avenue north into FRA. On-street and visitor parking is proposed to be managed in a way to promote turnover (using time limits and/or graduated fees) to ensure that these spaces are not occupied by long-term parkers.
- No new parking structures should be built in the central area university campus or immediately adjacent to CHCO's clinical facilities.
- Future parking needs for CU Anschutz can be addressed through the addition of on-street parking spaces.

CU ANSCHUTZ GOALS FOR THE 10 YEAR MASTER PLAN

For the 10 year master plan, the university should focus on the following recommendations to address the potential need for parking:

- For new buildings and uses, construct appropriate parking to meet the new uses.
- When a parking need is identified by higher parking utilization, consider one new structured parking garage south of Montview Boulevard on the west side of campus outside of the campus core area.
- Participate with other Anschutz Medical Campus entities in order to promote shuttle service, parking lease agreements between entities, transit alternatives, and demand management strategies such as zone-based pricing.



- | | |
|--|--|
| Anschutz Medical Campus | Existing Campus Electrical Service |
| Existing Building | Xcel Energy Electrical Service |
| Building Planned or Under Construction | Planned Campus Duct Bank |
| Proposed Buildings | Suggested Campus Electrical Service |
| Electrical Service Maintenance Hole | Suggested Campus Duct Bank |
| Existing Campus Duct Bank | Suggested Xcel Energy Electrical Service |

Figure III.27 - Electrical

C. Utilities

This section of the Facilities Master Plan Update outlines approaches to augment the existing utility infrastructure to support the projected growth of the Anschutz Medical Campus, enhance supply resilience, and meet campus sustainability goals. Projections are based on anticipated growth in the development plans of the three campus institutions for the 10 year planning period.

A future Energy Master Plan and Climate Action Plan could better define energy conservation and efficiency, energy management, on-site energy generation and storage, and decarbonization of energy supply strategies for the campus.

ELECTRICAL

Future Demand Estimates

A review of the Anschutz Medical Campus medium-voltage electrical distribution system determined short-term and long-term needs of equipment and system infrastructure to meet the anticipated growth of the campus from 2022 to 2032.

In 2013, a second 15,000 kilowatt (kW) Xcel feeder was added to Switchgear B to accommodate growth projected from the 2012 Facilities Master Plan. With this modification, the campus switchgear can provide adequate capacity for several years.

This data was used to calculate projected electrical peak demand values. The peak utility values are based on demand per square foot values obtained from actual metering of similar buildings on the campus.

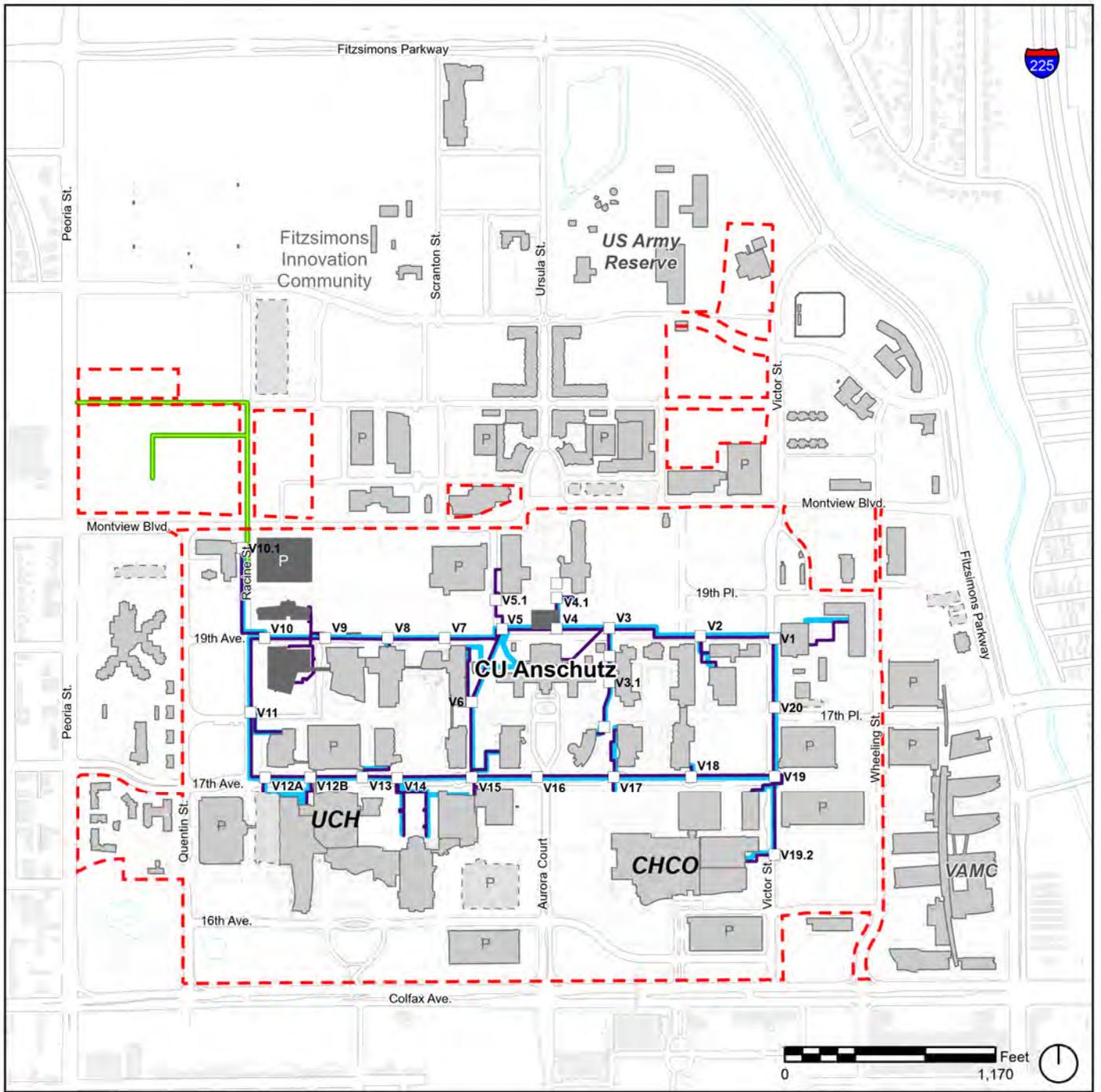
Figure III.28, Estimated Building and CUP Peak Electrical Demand, shows the addition of buildings on campus that will be fed from the campus switchgear. The table shows the loading of switchgear buses and Xcel feeders as buildings are added between now and 2023.

To summarize Figure III.28:

1. All three campus switchgears (1A, 2A, and B) appear to be adequately sized to accommodate the proposed growth.
2. Xcel campus feeders 1A and 2A should be sufficient to accommodate the proposed growth.

FY	Org.	Item	GSF	ATO BUS 1A (kW)		Non-ATO BUS B (kW)		ATO BUS 2A (kW)	
				Reserve Capacity 11,000 kW		2 Xcel Feeder Capacity 30,000 kW		Reserve Capacity 11,000 kW	
2024									
	UCD	CON Simulation Space Expansion	12,082			52			
		New GSF/Total	12,082	15,000	9,420	30,000	16,363	15,000	9,776
2025									
	UCD	Day Care Center	33,000			141			
		New GSF/Total	33,000	15,000	9,420	30,000	16,503	15,000	9,776
2026									
	UCD	Student Union	32,080			137			
	UCD	Academic 1 - HUB expansion	17,500			75			
		New GSF/Total	49,580	15,000	9,420	30,000	16,715	15,000	9,776
2028									
	UCH	B1 Outpatient Expansion	200,000			420		800	
	UCD	Strauss Library Renovation	22,202			95			
	UCD	Ed 2 North Backfill	7,466			32			
	UCD	Ed 2 South Backfill	3,500			15			
		New GSF/Total	233,168	15,000	9,420	30,000	17,276	15,000	10,576
2029									
	UCD	SDM Clinic Expansion	3,500			15			
	UCD	Interdisciplinary Bldg 2	347,038		1,735	608			
		New GSF/Total	350,538	15,000	11,155	30,000	17,899	15,000	10,576
2030									
	UCD	Ed 1 Lecture Hall Renovations	10,400			44			
		New GSF/Total	10,400	15,000	11,155	30,000	17,944	15,000	10,576
2031									
	UCH	B2 Inpatient Expansion	500,000			1,050		2,000	
		New GSF/Total	500,000	15,000	11,155	30,000	18,994	15,000	12,576
2032									
	UCD	Ancillary CUP Facility and Parking Structure	490,000			100			
	CHCO	C1 Tower	250,000			678			
	UCD	Fitzsimmons 3rd Floor - CSPH Hub	6,134			26			
		New GSF/Total	746,134	15,000	11,125	30,000	19,798	15,000	12,576

Figure III.28 - Estimated Building and CUP Peak Electrical Demand



- Anschutz Medical Campus
- Existing Building
- Building Planned or Under Construction
- Proposed Buildings
- Existing Chilled Water Service/Return
- Existing Steam/Condensate Return
- Steam/Chilled Water Vault
- Suggested Steam/Condensate Return
- Suggested Chilled Water Service/Return

Figure III.29 - Proposed Steam and Chilled Water

STEAM/CHILLED WATER AND GAS

Future Demand Estimates

Based on the implementation plan in Chapter IV, the thermal supply infrastructure, both distribution and central utility plant, were evaluated to determine the short- and long-term infrastructure needs. This includes campus steam, chilled water, and natural gas, and their ability to meet the needs of the utility demand projections presented in this section.

Generation capacities for steam and chilled water were also evaluated to see if additional boilers or chillers are needed. The option of an ancillary chilled water plant was evaluated as a means of providing additional chilled water capacity to the west side of campus and to overcome piping and pumping problems in delivery from the CUP.

The calculated projected steam and chilled water peak demand values are shown in Figure III.30. The peak utility values are based on demand per square foot values, obtained from actual metering of similar existing buildings on the campus.

Growth in UCH facilities is tied to broader trends in patient care that can be especially difficult to forecast. To assist planning for the steam and chilled water system, this plan includes a 200,000 GSF outpatient expansion project in 2028, along with a 500,000 GSF inpatient expansion in 2031. The expected utility demand per square foot for these new facilities is the same as for

similar existing facilities. They will be served by the existing CUP and the proposed ancillary CUP to support the additional chilled water demand and flow.

CHCO anticipates they may need an additional 250,000 GSF in-patient tower later in the 10 year planning window. The expected utility demand per square foot for these new facilities is the same as for similar existing facilities.

Figure III.30 lists the projected peak steam and chilled water demand for each year of the planning period in which building projects are expected. The data start with measured peak values for the year 2022 and adds the projected growth values to those numbers from completed projects each year. These projected peak demand values are used to predict the need for adding additional chillers and boilers to the CUP.

The steam and chilled water demand is projected to increase by 20% and 26% respectively by 2032 due to the projected growth over this period.

CUP Steam Generation

Evaluation of projected growth determined that the current steam and condensate campus distribution system pipe sizes should be able to adequately handle the projected steam and condensate flows.

Building					
Name	Total Size (GSF)	Peak Steam Usage (PPH)	Peak CHW Demand (Tons)		
2024				End of 2024 - Predicted	
CON Simulation Space Expansion	12,082	242	24	Peak Campus Demand	
				Steam (PPH)	CHW (Tons)
Subtotal 2024		242	24	285,335	16,332
2025				End of 2025 - Predicted	
Day Care Center	33,000	660	66	Peak Campus Demand	
				Steam (PPH)	CHW (Tons)
Subtotal 2025		660	66	290,380	16,659
2026				End of 2026 - Predicted	
Student Union	32,080	642	64	Peak Campus Demand	
Academic 1 - HUB expansion	17,500	350	35		
				Steam (PPH)	CHW (Tons)
Subtotal 2026		992	99	291,372	16,758
2028					
UCH Outpatient Expansion	200,000	6,000	600		
Strauss Library Renovation	22,202	866	56	End of 2028 - Predicted	
Ed 2 North Backfill	7,466	291	19	Peak Campus Demand	
Ed 2 South Backfill	3,500	136	9		
				Steam (PPH)	CHW (Tons)
Subtotal 2028		7,293	683	301,279	17,534
2029				End of 2029 - Predicted	
SDM Clinic Expansion	3,500	210	9	Peak Campus Demand	
Interdisciplinary Bldg 2	347,038	20,822	868		
				Steam (PPH)	CHW (Tons)
Subtotal 2029		21,032	876	322,311	18,410
2030				End of 2030 - Predicted	
Ed 1 Lecture Hall Renovations	10,400	406	26	Peak Campus Demand	
				Steam (PPH)	CHW (Tons)
Subtotal 2030		406	26	322,716	18,436
2031				End of 2031 - Predicted	
UCH Inpatient Expansion	500,000	15,000	1,500	Peak Campus Demand	
				Steam (PPH)	CHW (Tons)
Subtotal 2031		15,000	1,500	337,716	19,936
2032				End of 2032 - Predicted	
Ancillary CUP Facility and Parking Structure	490,000			Peak Campus Demand	
CHCO Tower	250,000	7,500	750		
Fitzsimmons 3rd Floor - CSPH Hub	6,134	239	15		
				Steam (PPH)	CHW (Tons)
Subtotal 2032		7,739	765	345,456	20,702

Figure III.30 - Building and CUP Peak Steam and Chilled Water Demand - Projected

Figure III.30 shows the projected demand for steam on the campus for each year of the planning period correlated with the number of boilers in the CUP. The Fixed Firm Capacity is what is used for meeting the Expected Peak Demand and dictates whether additional boiler capacity is required.

Figure III.31 shows that, after the replacement of Boiler B-5 in 2020, there is adequate capacity to handle the steam load until 2030, when a larger boiler will need to be added to replace Boiler B-1. Boiler B-1 will be replaced at that time with a 110,000 PPH boiler, adding an additional plant capacity of 50,000 PPH. New growth should also investigate the use of an ancillary CUP to meet heating needs utilizing the heat recovery chillers or other decarbonization heating strategy.

Year	Boiler Tag	Peak Generation Capacity (PPH)	Fixed Firm Capacity (PPH) (1)	Expected Peak Demand (PPH)	Comments
	B-1	60,000			Original CUP Boiler
	B-2	60,000			Original CUP Boiler
	B-3	60,000			Original CUP Boiler
	B-4	60,000			Original CUP Boiler
	B-5	30,000			Original CUP Boiler
	B-6	90,000			Expansion 3 Boiler
2020		360,000	270,000	242,799	Actual Measured Peak Demand
	Replace B-5	110,000			Replace Old Boiler with Larger One
2021		440,000	330,000	285,335	
2022		440,000	330,000	286,905	
2023		440,000	330,000	289,478	
2024		440,000	330,000	289,720	
2025		440,000	330,000	290,380	
2026		440,000	330,000	291,372	
2027		440,000	330,000	293,985	
2028		440,000	330,000	301,279	
2029		440,000	330,000	322,311	
2030		440,000	330,000	322,716	
	B-1	110,000			Replacement for Old B-1
2031		490,000	380,000	337,716	
2032		490,000	380,000	345,456	

1) Definition of Fixed Firm Capacity: Capacity of remaining boilers in case the largest boiler fails.

	Current Conditions
	Future Projections

Figure III.31 - CUP Boiler Capacity

Year	Chiller Tag	Peak Generation Capacity (Tons)	Fixed Firm Capacity (Tons) (1)	Expected Peak Demand (Tons)	Comments
	CH-1	1,200			Original Chiller
	CH-2	1,200			Original Chiller
	CH-3	2,000			Expansion 1 Chiller
	CH-4	2,000			Expansion 1 Chiller
	CH-6	2,200			Expansion 2 Chiller
	CH-7	2,200			Expansion 2 Chiller
	CH-8	2,200			Expansion 2 Chiller
	CH-9	2,200			Expansion 2 Chiller
	CH-5	2,200			Expansion 4 Chiller
2020		17,400	15,200	13,279	Actual Measured Peak Demand
	CH-10	2,200			Added Chiller in Old PFHX Location
2021		19,600	17,400	16,332	
2022		19,600	17,400	16,422	
2023		19,600	17,400	16,569	
2024		19,600	17,400	16,593	
2025		19,600	17,400	16,659	
2026		19,600	17,400	16,758	
2027		19,600	17,400	16,851	
	CH-11	2,200			Expansion Chiller
2028		21,800	19,600	17,534	
2029		21,800	19,600	18,410	
2030		21,800	19,600	18,436	
	CH-12	2,200			Ancillary CUP
2031		24,000	21,800	19,936	
2032		24,000	21,800	20,702	

1) Definition of Fixed Firm Capacity: Capacity of remaining chillers in case the largest chiller fails.

	Current Conditions
	Future Projections

Figure III.32 - CUP Chiller Capacity

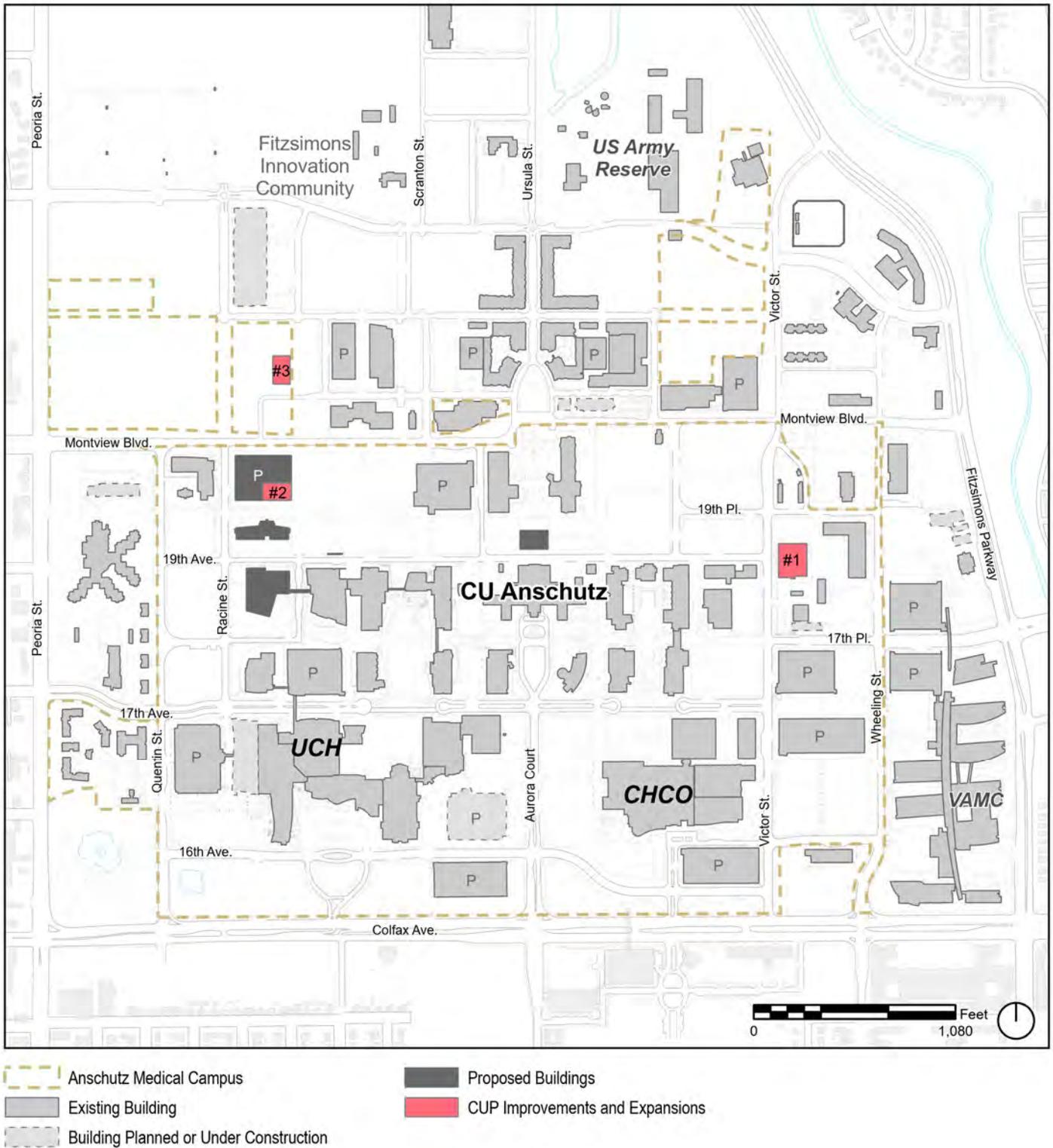


Figure III.33 - Potential Central Utility Plant (CUP) Satellite Locations and Expansion

CUP Chilled Water

Evaluation of the projected growth during the planning period determined that the current chilled water campus distribution system pipe sizes cannot adequately handle the projected chilled water flows in the existing CUP and therefore an ancillary CUP will need to be constructed.

The Fixed Firm Capacity is what is used for meeting the Expected Peak Demand and dictates whether additional chiller capacity is required. With the installation of a 2,200-ton chiller in 2020, there is projected to be adequate cooling capacity at the CUP (Site #1, Figure III.33) until 2030. At that point, a 1,200-ton chiller will be relocated to a smaller, empty bay to make room for a new 2,200-ton chiller to be added in its place, along with associated pumps and cooling towers.

Either as part of this effort, or independently of it, a second supply line is proposed for the CUP. This would provide a second tie-in to the Aurora Water distribution network that is currently lacking.

After the 2030 project, there will be a total of 11 chillers in the existing CUP, which is the maximum number that can be accommodated. In order to meet the demand of the CHCO and UCH projects and provide adequate chilled water flow to those campuses, an ancillary CUP with a new 2,200-ton heat recovery chiller and associated pumps and cooling towers is proposed.

West-Side Chilled Water Plant

The need for an ancillary CUP on the west side of campus has been discussed for several years. Based on the projected increase chilled water demands on the campus, the existing CUP will run out of space to accommodate any additional chillers after a chiller replacement around 2028.

Figure III.33 displays three potential sites to improve CUP service and operation to all existing and proposed facilities. Site #2 is envisioned as an ancillary CUP with heat recovery chillers to provide additional chilled water capacity to boost the existing chilled water loop flow and capacity while also providing hot water for new facilities. This facility may also provide an opportunity for the

university to begin to explore the use of hot water rather than steam distribution to meet heating needs.

Site #3 located north of Montview Boulevard may be constructed as an additional ancillary CUP to meet needs for heating and cooling from any longer-term development on the northwest side of campus. This could serve as either a stand-alone CUP or be looped into the existing chilled water loop across Montview Boulevard.

This could provide an opportunity to turn the existing CUP into a peaking plant and utilize a more efficient and carbon-reducing ancillary CUP. The ancillary CUP is covered in Chapter 4 of this document including discussion of heat recovery chillers.

NATURAL GAS

Based on the projected growth during the planning period, the natural gas line is sufficient to handle any additional gas loads. The loads will likely be reduced when implementing decarbonization strategies on campus.



A chiller outside the CUP is about to be installed.

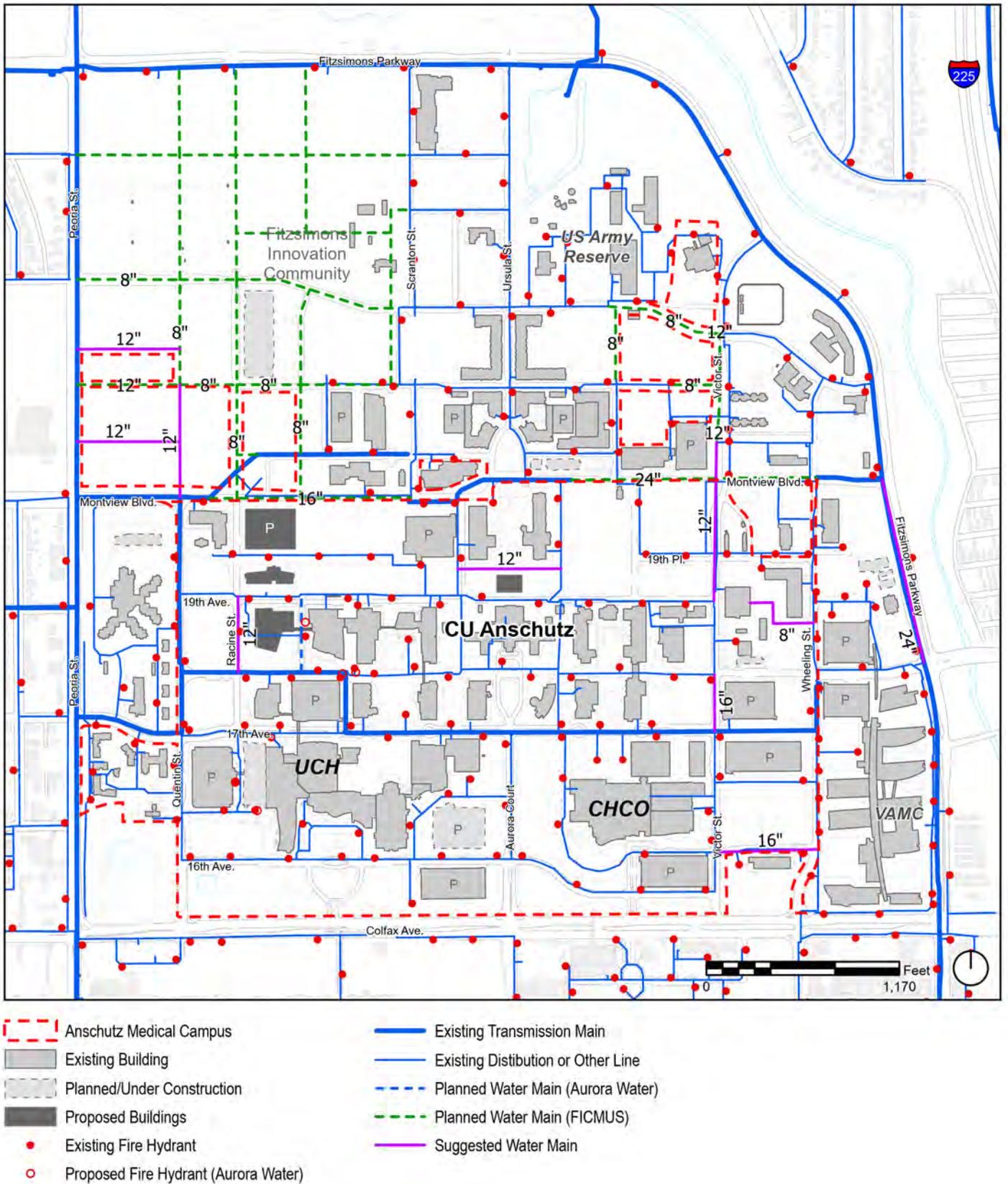


Figure III.34 - Water Master Plan

WATER

The following upgrades to the water infrastructure are proposed to support the ultimate build-out of the Anschutz Medical Campus. A utility study and coordination with Aurora Water will be conducted at a future date to verify the following improvements.

- Replace the existing 10-inch line with a 12-inch main in Victor Street from E 19th Avenue to E 21st Avenue.
- Replace the existing 16-inch line with a 24-inch main in E Fitzsimons Parkway between E 17th Place and E Montview Boulevard.
- Replace the existing 12-inch line with a 16-inch main in Victor Street from E 17th Avenue to E 17th Place.
- Replace the existing 12-inch line with a 16-inch main in E 16th Place from Victor to Wheeling Streets.
- Install a 12-inch main in N Quentin Street from E Montview Blvd to E 22nd Avenue.
- Install a 12-inch main approximately 340 feet north of north of E Montview Blvd from N Peoria Street to N Quentin Street.
- Install a 12-inch main approximately 220 feet north of E 22nd Avenue from N Peoria Street to N Quentin Street.
- Install an 8-inch main from Wheeling Street to the CUP for redundancy.
- Install a 12-inch main north of E 19th Avenue and south of the Skaggs School of Pharmacy and Health Sciences Library connecting to the existing 12-inch mains on either side.

- Install a 12-inch main in N Racine Street from E 17th Place to E 19th Ave.

The portion of the CU Anschutz site north of Montview was included in the 2021 Fitzsimons Innovation Campus Master Utility Study (FICMUS). The proposed waterline improvements from the FICMUS needed to serve the CU Anschutz property are:

- 16-inch main in E Montview Boulevard from Scranton Court to the existing 16-inch main at the approximate midpoint between Quentin Street and Racine Street, replacing the existing 6-inch line.
- 24-inch main in E Montview Boulevard from Wheeling Street to the existing 24-inch main northeast of the Health Sciences Library, replacing existing 6-inch and 8-inch lines along the alignment.
- 12-inch main in E 22nd Avenue from N Peoria Street to N Quentin Street.
- 8-inch main in E 22nd Avenue from N Quentin Street to the future street west of the Bioscience 3 Garage.
- 8-inch main along the future street west of the Bioscience 3 Garage from E 22nd Avenue to E Montview Boulevard.
- 8-inch main in N Racine Street from E Montview Boulevard to E 22nd Avenue.
- 8-inch main in N Quentin Street from E 22nd Avenue to approximately 220 feet north of E 22nd Avenue.
- 8-inch main in E 21st Avenue from N Racine Street to approximately 120 feet east.
- 8-inch main in N Uvalda Street from E 22nd Avenue to E 23rd Avenue.

<i>Average Daily Demand (MGD)</i>	<i>Maximum Daily Demand (MGD) (1)</i>	<i>Peak Hourly Demand (MGD) (2)</i>
3.88	10.86	17.45

- 1) The Maximum Daily Demand is 2.8 times the average daily demand per discussions with the City of Aurora.
- 2) The Peak Hourly Demand is approximately 4.5 times the average daily demand per discussions with the City of Aurora.

Figure III.35 - Campus Water Demands at Full Build-Out

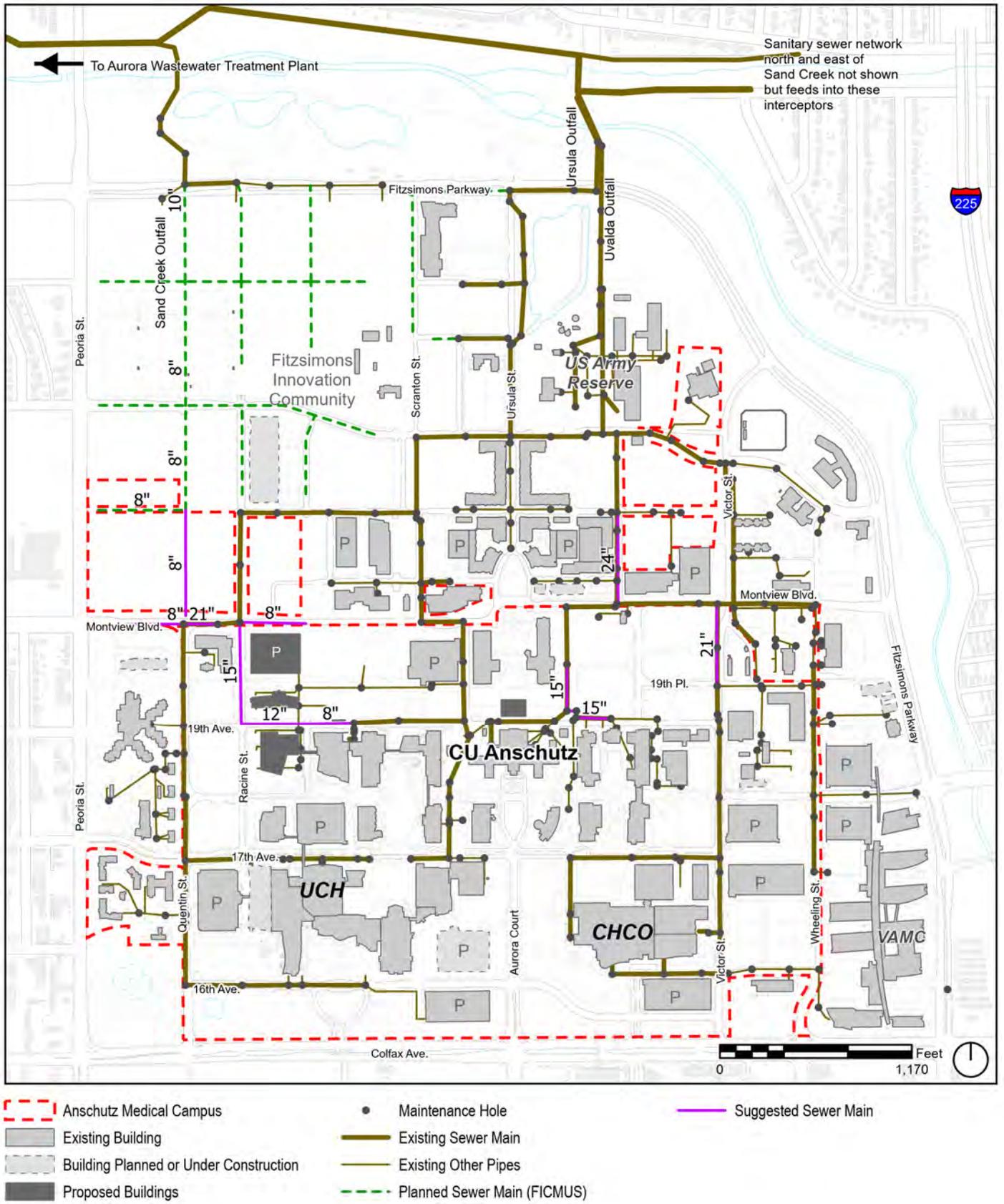


Figure III.36 - Sanitary Sewer Master Plan

- 8-inch main in E 23rd Avenue from N Uvalda Street to N Victor Street.
- 12-inch main in N Victor Street from E 23rd Avenue to E 21st Avenue.
- 8-inch main in E 22nd Avenue from N Victor Street to the existing 8-inch main north of the CU Medicine Parking Structure.

Per the Infrastructure Master Plan, dated October 11, 2001, the Fitzsimons campus water demands at full build-out are shown in Figure III.35.

Future development will drive phasing new water lines into the existing system to support building loads.

Water use is a critical issue in Colorado and the arid West, especially during periods of drought and rapid population growth. CU Anschutz will implement water efficient fixtures in both new construction and renovation projects, in alignment with industry standards. In an effort to reduce water use in landscaped areas, both improved irrigation techniques and lower-water landscape material may be pursued, which may also reduce connection fees. As development progresses, the potential to use reclaimed water and/or graywater systems for new buildings will be explored.

SANITARY SEWER

The following upgrades to the sanitary sewer infrastructure are proposed to support the ultimate build-out of the Anschutz Medical Campus. A utility study and coordination with Aurora Water will be conducted at a future date to verify the following improvements:

- Install an 8-inch PVC main in E Montview Boulevard from the midpoint of Peoria Street and Quentin Street to Quentin Street.
- Replace the existing 18-inch sewer main with a 21-inch PVC main in E Montview Boulevard from Quentin Street to the midpoint of Quentin Street and Racine Street.
- Install an 8-inch PVC main in E Montview Boulevard from Racine Street to Revere Court.
- Install a 15-inch PVC main in Racine Street from E 19th Avenue to E. Montview Boulevard.
- Install a 12-inch PVC main in E 19th Avenue from Racine Street to Revere Court.
- Install an 8-inch PVC main in E 19th Avenue from Revere Court to the existing manhole just west of Research 2.
- Replace the existing 12-inch main with a 15-inch PVC main just north of E 19th Avenue from the approximate midpoint of Fulginiti Center for Bioethics and Humanities to the drive just east of the Health Sciences Library.
- Replace the existing 21-inch PVC main in Uvalda Street from E Montview Boulevard to the connection with the existing 24-inch sewer main south of E. 22nd Avenue.
- Replace the existing 18-inch sewer main with a 21-inch PVC main in Victor Street from E 19th Place to E. Montview Boulevard.
- Install an 8-inch main in N Quentin Street from E Montview Blvd to E 22nd Avenue.

Sanitary sewer improvements were identified in the FICMUS for the CU Anschutz property north of Montview Boulevard. Proposed improvements that may be needed to serve the CU Anschutz property are:

- 8-inch main in E 22nd Avenue from N Peoria Street to N Quentin Street.
- 8-inch main in N Quentin Street from E 22nd Avenue to E 25th Avenue.
- 10-inch main in N Quentin Street from E 25th Avenue connected to the existing 12-inch main in N Fitzsimons Parkway.

Per the 2021 FICMUS, the full build-out of the Fitzsimons Innovation Campus will produce approximately 0.8 MG of flow on an average day. Approximately 10.5 MGD of peak flows will be conveyed through the sanitary sewer infrastructure located on the Fitzsimons campus, which includes on-site and off-site flows.

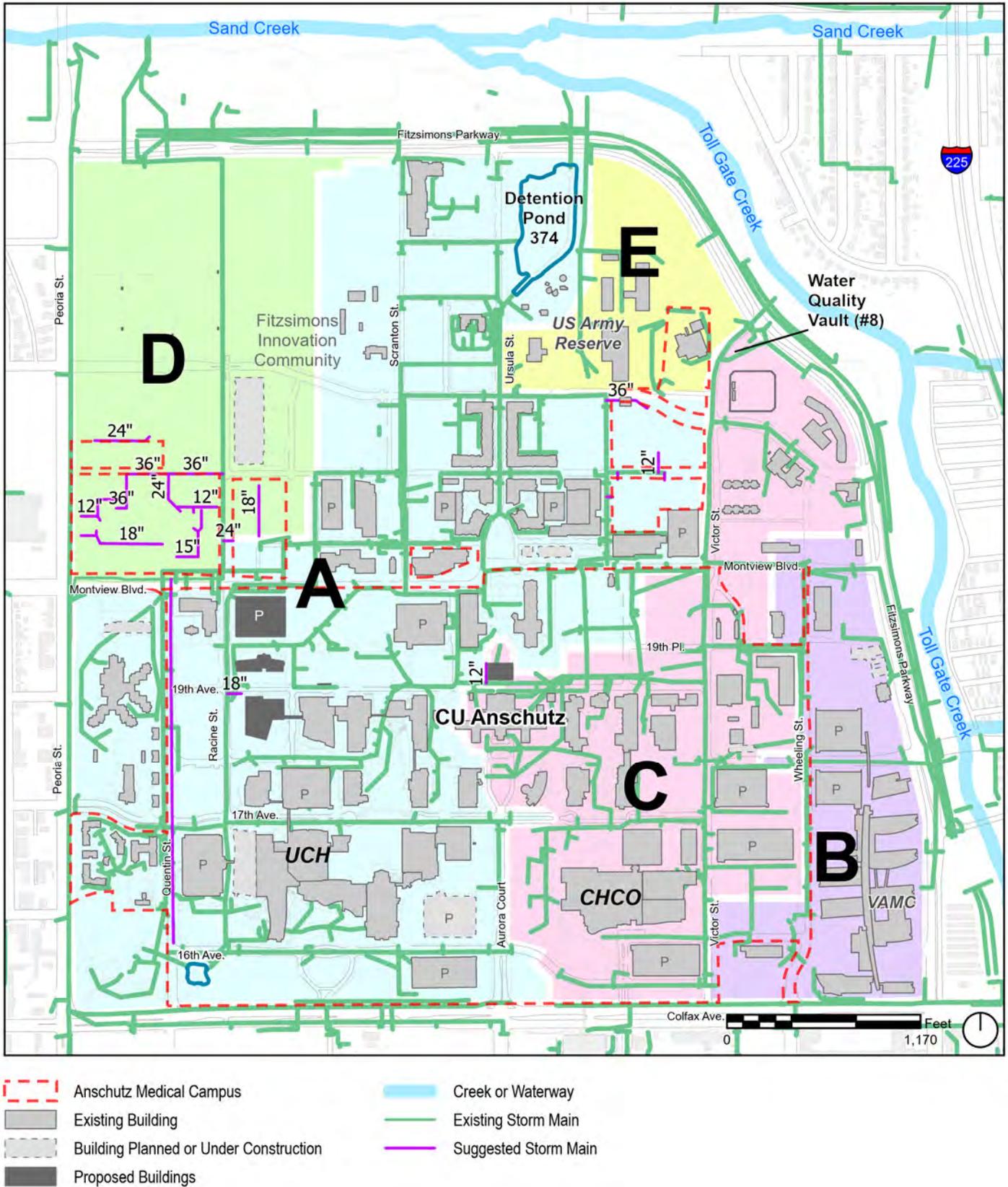


Figure III.37 - Storm Water Master Plan

Future sanitary improvements should be conveyed to the main trunk line system as improvements are made across the site. As future phases of the Master Plan progress, the existing sanitary line will require improvements.

STORM WATER

The following conceptual augmentations to the storm sewer infrastructure are proposed to support the ultimate build-out of the Anschutz Medical Campus. The information shown is subject to change based on more detailed information. Specifically, a detailed storm drainage study to confirm alignment and sizing of the infrastructure should be conducted at a future date. The updates presented herein are based on available existing storm sewer data and the build out conditions identified in the DRAFT Fitzsimons Innovation Campus Master Drainage Report (Master Drainage Report) prepared by Matrix Design Group, Inc., dated October 2021.

Drainage sub-basins encompassing proposed buildings within north of Montview Boulevard were identified within the Master Drainage Report and reviewed to develop preliminary storm drain design and water quality features. Considerations including the layout and orientation of proposed buildings coupled with topographic considerations and proximity of existing storm drain infrastructure were used to identify preliminary interior storm drain features. Schematic water quality basin features identified within the Master Drainage Report were incorporated within the projected open space areas within the campus. Efforts were made to minimize the impact of the proposed basin within the campus by incorporation of a maximum of 10:1 basin side slope and maximum 1-foot ponding depth.



Regional Detention Pond 374.

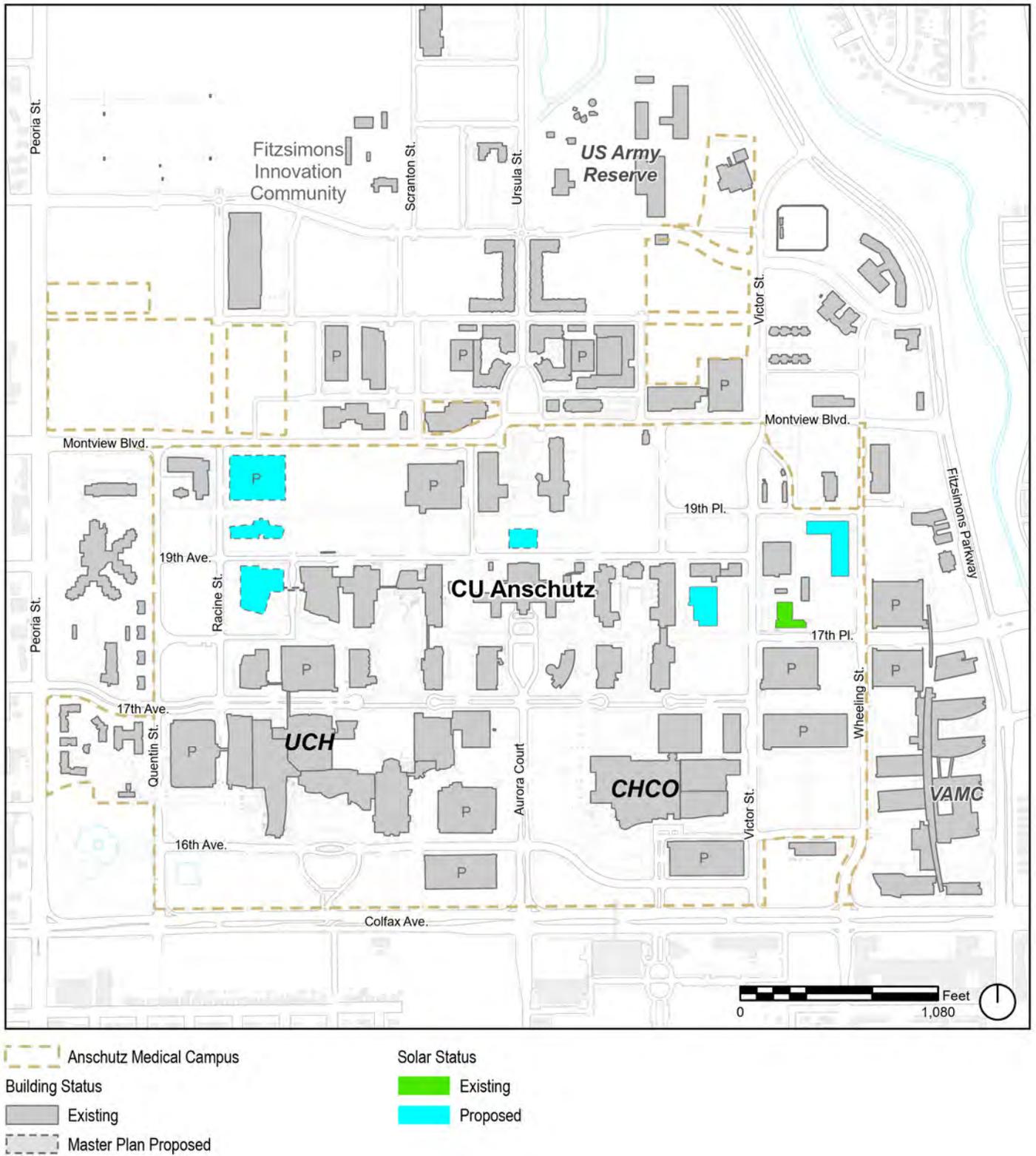


Figure III.38 - Solar Exhibit

D. Strategies for Future Study

The following items were identified during the planning process for consideration in the Facilities Master Plan update. However, they will require further study and development before they are pursued.

On-Site Energy Generation

Solar PV panels could be provided, as appropriate, to assist with campus LEED certification, reduce energy costs, and make progress towards campus GHG emission reduction goals. This will also cement the campus commitment to overall sustainability and energy resilience. A study conducted by McKinstry in 2020 investigated sites for potential solar development. The recommended portfolio included parking lot canopy PV systems in numerous parking lots as well as ground-mount solar on the university's 12-acre parcel northwest of Peoria Street and Montview Boulevard, and the Ignacio lot.

Figure III.38 shows potential PV locations. To finance the installation of solar PV, the option of entering into a power purchase agreement (PPA) with a third party may be explored. In this scenario, a third party would install a large solar array on campus and sell the energy generated to CU Anschutz at a predetermined rate. The PV arrays could be installed on the roof and south-facing walls of a building to minimize the land required for a large PV array. In this scenario, CU Anschutz would not own the system but would need to provide land for the array and permit access to the third party for operation and maintenance.

Recent changes to federal regulations have made solar PV more financially feasible for non-profit institutions such as the university. It is recommended to revisit the solar study conducted in 2020 to quantify these changes.

In addition to on-site energy generation, battery energy storage can be an essential component of a resilient campus electrical grid. Energy storage works to match supply to demand and could allow the campus to make use of its available on-site generation resources during a utility outage.

At the building scale, this could result in facilities with on-site solar, battery energy storage, and emergency diesel generators being established as “nanogrids” that can operate in isolation from the grid for extended periods, beyond what conventional emergency generators and diesel fuel storage would allow. Constraints to development of battery energy may include sizing/siting constraints, interconnection capacity, and environmental permitting or building code limitations.

Heat Recovery Chiller

All the existing chillers at the CUP are powered with electricity. A heat recovery chiller is a traditional screw-type chiller where the heat of condensing is absorbed by a water loop, which is then used for heating. Modern heat recovery chillers can produce hot water that reaches up to 140°F that can be used for space heating or domestic hot water.



The CUP can accommodate boiler and generator expansions within the existing building envelope.

Heat recovery chillers could be installed in the ancillary CUP to provide additional required chilled water capacity to the existing chilled water loop as well as provide hot water to any new construction facilities on the west side of campus. Additional heat recovery chillers may be installed over time to not only provide adequate chilled water capacity and flow but assist in the transition from a steam distribution loop to hot water distribution on campus. Future energy planning should be conducted to determine if this strategy could be pursued by the university.

Waterside Economizer

As the campus has grown, the demand for chilled water cooling in the winter months has also grown significantly. The current demand is above 4,000 tons. A waterside economizer at the CUP allows chilled water to be produced on cold days by only running cooling towers, without the need for running chillers. This results in a large cost savings. There are two waterside economizers currently at the CUP with a capacity of 2,000 tons each, for a total of 4,000 tons. There is room for a potential additional 2,000 tons of capacity, which can be further explored to meet chilled water demands up to 6,000 tons, at which point chillers may be needed to meet demand.

Steam to Hot Water Conversion

Converting steam heating systems to a low or ambient temperature, water-based system is another strategy to study to facilitate the campus's transition away from natural gas consumption. This type of system is not only less energy-intensive but would allow CU Anschutz to use low-grade heat for space heating and would open the door to alternative and low carbon heat sources such as electric heat pumps or waste heat recovery.

Options for conversion range from a fully centralized low temperature hot water system with limited building-level supplemental heat to a fully decentralized approach that decommissions the existing steam system and uses building-level systems to provide heat. Other solutions such as a fifth-generation ambient loop system that leverages a mix of centralized and decentralized

equipment or a district system that supplies a mix of low and high-temperature hot water are also viable alternatives.

Heat recovery chillers could begin to be installed in the ancillary CUP to begin providing hot water to any new construction facilities and move buildings off steam and transition to hot water one building at a time as feasible. A centralized low-temperature hot water system may be most beneficial for CU Anschutz. UC Health and CHCO are well-positioned to transition to low-temperature hot water supply from the CUP, however coordination will be required to ensure a smooth conversion.

IV. IMPLEMENTATION



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IV.1 Overview

A 10-Year Plan: 2022–2032

The Anschutz Medical Campus 2022 Facilities Master Plan Update presents one development scenario that could potentially meet space needs for the next decade. Each building project has been generally described, programmed, and assigned a date of anticipated completion. Costs for each have been developed based on their proposed programs and scheduling.

The projects were scheduled over the next 10 years based on anticipated need and/or availability of funding. The dates were determined through discussions between Facilities Planning and Design, Facilities Projects, the project team and the schools and colleges. These dates were then reviewed by the executive committee to ensure they align with overall university priorities. The projects are shown in Figures IV.4 and IV.5.

IV.2 Phasing

A moderate amount of growth is planned for the Anschutz Medical Campus over the coming 10 years. The phasing plan is organized into two five-year windows: Phase I (2022–2023 to 2026–2027, or five years out), and Phase II (2027–2028 to 2031–2032, or 10 years out from submittal). The projects have also been organized into three categories: new construction, renovation, and campus infrastructure.

Renovations were scheduled based on availability of space after movement of current occupants to other locations. Phasing of any project may shift based on funding availability or change in priority due to program needs or new requirements.

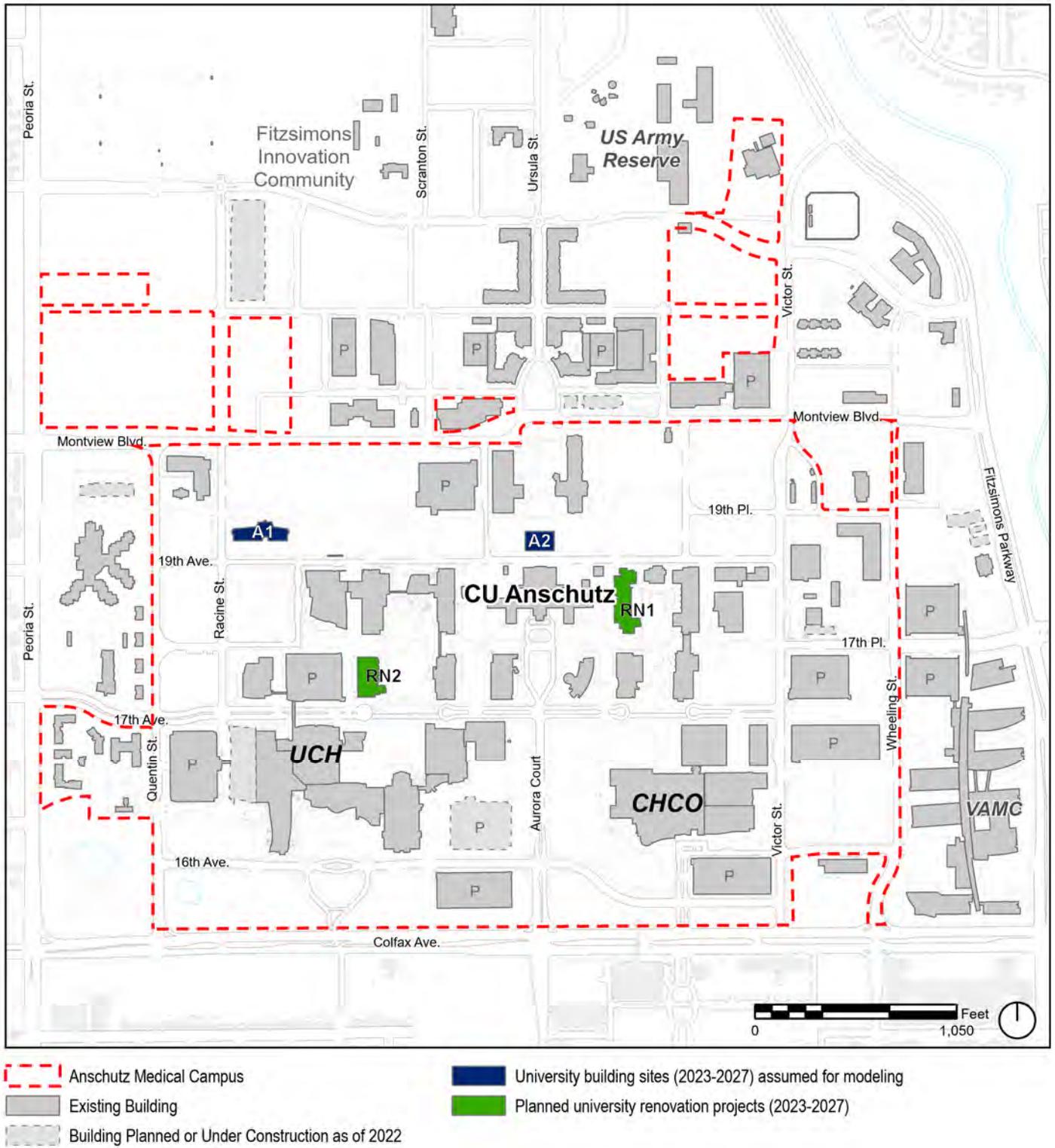


Figure IV.1 - New Construction and Renovation Phase I: 2023–2027

A. New Construction and Renovation: Phase I (Years 1–5)

NEW CONSTRUCTION - CU ANSCHUTZ

A1: Day Care Facility

To meet pressing needs for childcare by the campus community, the Day Care Center for toddlers and infants is being considered in partnership with UCH. Buildings 406 and 407 will need to be demolished to accommodate this project. Both facilities will be mostly vacant once the University Police moves into the new Campus Safety and Preparedness Building in 2023.

A2: Student Union

This project has the potential to consolidate student services in a central location and improve the south end of the Student Life Commons. This project has been scheduled early in Phase I as relocation of units into the new building will create opportunities for backfill renovations. Student services currently located on the third floor of Education 2 North and bookstore located on the first floor of Education 2 South are proposed to be relocated to the student union building.

RENOVATIONS

RN1: CON Simulation Space Expansion

This project is currently being developed and could be initiated in FY23. The project will enable the CON to improve its simulation training offerings on the 4th Floor of Education 1. This investment will support the university's commitment to increase enrollment in the CON to meet pressing needs for trained nursing professionals in Colorado.

RN2: Academic Office 1 – Hub expansion

This renovation is proposed early in Phase I to help the SOM provide office space to clinical and other professionals with duties at UCH or CHCO. UCH Tower 3 will be completed in 2023 and UCH Health will likely hire additional physicians to expand programs that will move into the tower. At the same time, the SOM continues to recruit new faculty, further increasing the need for office

space. Current SOM occupants of the space will need to be relocated elsewhere on campus or accommodated in the new facilities.

Hospital Renovations

UCH Inpatient Tower 3 will open in late 2023, and some existing hospital functions will move into the new facility. This will allow UCH to relocate units within its existing facilities and complete renovations of its existing spaces. The renovations and relocations can be supported by the existing CUP utilities.

CHCO plans to expand many of its services off site. As a result, build-out of existing shelled spaces, mainly in the Gary Pavilion, can accommodate current plans. The renovations and relocations can be supported by the existing CUP utilities.

DEMOLITION

D1: Fire Station Demolition

Once the University Police moves into the Campus Safety and Preparedness Facility, the Fire Station will be vacant. It is currently used for physical fitness training. If it is not being used, it can be demolished as in the long-term it lies within the realigned Uvalda Street across Montview Boulevard. Ultimately the realignment will occur in conjunction with the City of Aurora's Montview Boulevard redesign efforts.



The proposed Student Union is proposed between the Fitzsimons Building and the Student Life Commons in the middle of the parking lot. It would be south of the Strauss Health Science Library and the Skaggs School of Pharmacy and Pharmaceutical Sciences.

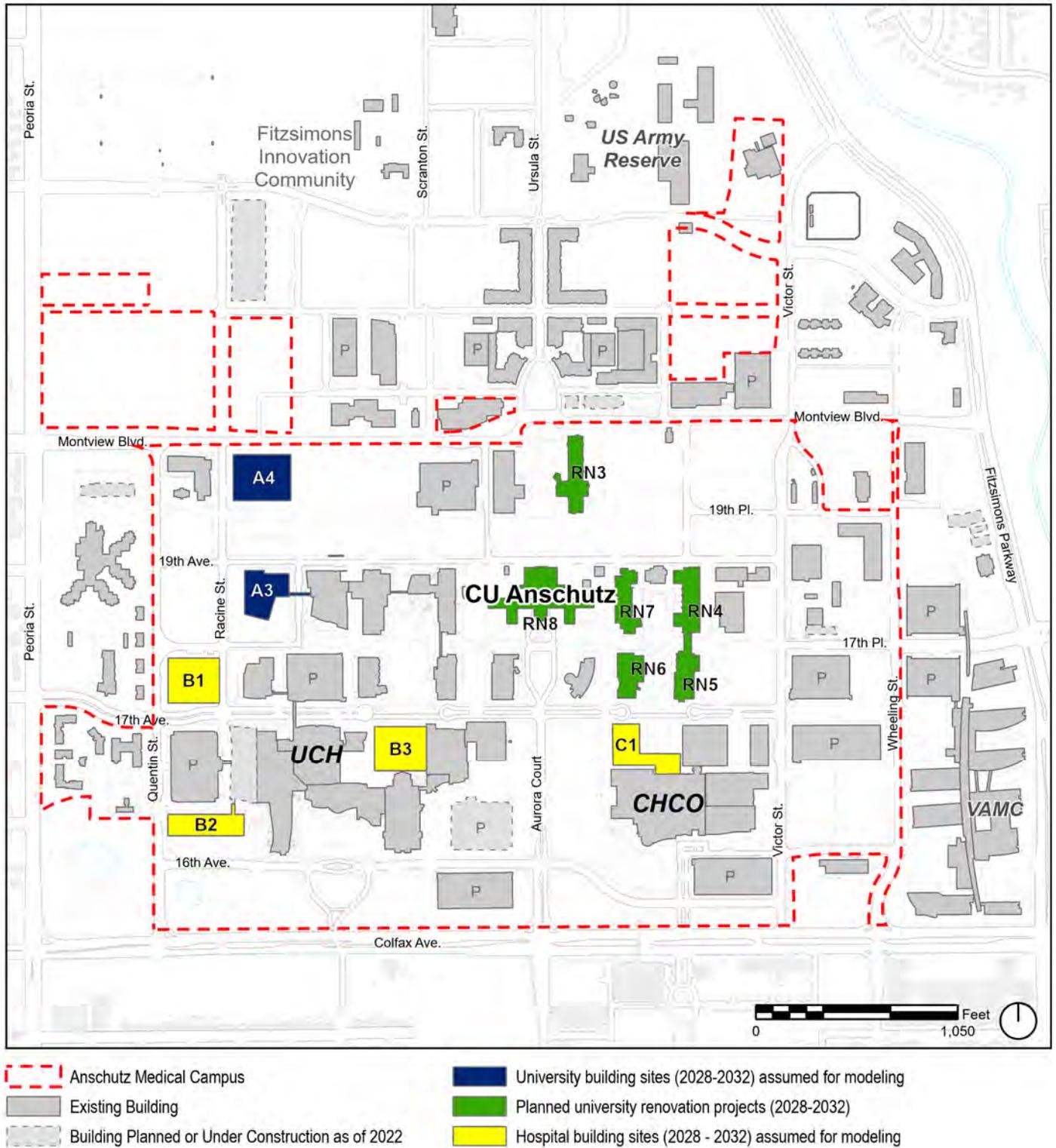


Figure IV.2 - New Construction and Renovation Phase II: 2028-2032

B. New Construction and Renovation: Phase II (Years 6–10)

NEW CONSTRUCTION - CU ANSCHUTZ

A3: Interdisciplinary Building 2

Growth in wet and dry research activities across all schools and colleges will require additional space and these demands are likely to become acute within 3-5 years. This would potentially require design and construction of Interdisciplinary Building 2 to begin in Phase I.

As wet laboratories are needed, the site chosen for this potential new facility allows for a connection to the existing Vivarium facility. Campus utility infrastructure in 19th Avenue hinders its expansion to the north. As a result, the proposed location is on the site of Buildings 400-402.

These older facilities will be demolished as part of this project. Existing clinical operations in B400 would need to be temporarily relocated. Ultimately, they would become tenants in the proposed facility due to its proximity to other clinical spaces in the AHSB and UCH.

A4: Ancillary CUP Facility and Parking Structure

An Ancillary CUP Facility is proposed to begin design and construction in Phase II to support future demands for steam and chilled water from the hospitals. Planned chiller and boiler replacements will accommodate increased demands for these utilities in Phase I and early in Phase II.

The project could be built with an additional parking structure to provide more covered parking for the campus community.

NEW CONSTRUCTION - HOSPITALS

The following projects are further on the planning horizon and could possibly begin design in Phase II. They may ultimately be pursued outside the 10 year period of this plan update.

However, development of an Ancillary CUP Facility in

Phase II to support these expansions would potentially begin in advance of these efforts. The need for these projects will be reverified to adequately size any proposed Ancillary CUP improvements.

UCH PROJECTS

B1: Outpatient Expansion

UCH currently plans to meet demands for outpatient procedures and visits using its offsite facilities throughout Colorado. However, overall growth in these operations may require construction of additional outpatient facilities on campus. This project is being placed in Phase II to help address any unanticipated ancillary growth in outpatient procedures associated with operations in Inpatient Tower 3 and UCH Phase I renovation projects.

B2: Inpatient Expansion

The completion of UCH Inpatient Tower 3 should accommodate planned growth in these operations by UCH. However, due to population growth and aging of the population, UCH anticipates that it will begin to consider and possibly need to develop an additional Inpatient Tower 4.

B3: Outpatient Expansion

UCH may also need to expand its outpatient facilities to meet demands in later years of Phase II. Needs for such a facility would be verified by UCH during Phase I.

CHCO PROJECTS

C1 - Inpatient Tower

A proposed Inpatient Tower would expand the hospital to the northwest to provide additional patient beds. This project would possibly begin design and construction later in Phase II.

RENOVATIONS

RN3: Strauss Health Sciences Library Renovation

This project is proposed for Phase II in order to provide additional student study space in the Strauss Health Sciences Library in underutilized stack space. As more periodicals and publications shift to digital formats, the need for such traditional physical storage of books is diminishing and the space is becoming underutilized.

Consolidation of the library staff could provide an opportunity to move services that support educational development of students, such as pre-professional advising, counseling, or other supportive services into the library. This project would provide an opportunity to reduce the oversized main library desk.

RN4: Education 2 North – Backfill

This project could only be completed when existing student services and personnel move from Education 2 North. These spaces would be used to provide additional office space to the SDM. The school has limited opportunities to provide additional administrative areas without adversely impacting clinical operations in its building. For costing, this project is assumed to be completed as a Hub-like space. If the need to provide additional dental clinic space in the SDM building becomes more acute, this project could facilitate earlier execution of any such expansion and accommodate SDM office needs.

RN5: Education 2 South – Backfill

This renovation effort is dependent on the relocation of the student bookstore. Currently, the space would be moved into the Student Union. As the store is on the ground level and across from the SDM, it can provide additional space to expand the school's non-clinical activities. It could be renovated into office space for any additional SDM clinical faculty and practitioners, expand SDM virtual reality spaces already present in the building, or provide student support.



RN6: School of Dental Medicine – Clinic Expansion

The renovation projects proposed in Phase II should meet current and planned administrative space needs of the SDM. As existing SDM office space is vacated, it can be used to expand clinical space in the SDM. The current clinics are heavily used, and there are very limited options to expand them in the facility. Additional space would be needed for any future expansions.

RN7: Ed1 Lecture Hall Renovations

The existing tiered lecture halls cannot support changes in pedagogy for large and small group learning activities in the same space. By limiting their footprint to one floor, the university will create space on the other floor for other educational uses. The lower spaces could be used to support the SOM's Advisory College Program (ACP) and COMPASS Program, provide additional physical simulation space, or smaller classrooms if other projects in this plan are not able to be completed.

RN8: Fitzsimons 3rd Floor – East Wing Renovation (CSPH Hub)

The CSPH is experiencing growth in programs and in its dry research activities. This project would renovate a portion of their current space on the 3rd Floor of the Fitzsimons Building to provide a Hub for faculty and staff and student/faculty interaction space. This project is proposed later in the plan as the potential Interdisciplinary Building could meet some future needs.



C. New Construction and Renovation: (10+ Years)

Since the 2012 Facilities Master Plan, the university acquired approximately 28.5 acres north of Montview Boulevard. Except for Bioscience 2, these parcels remain undeveloped.

The campus and FIC fixed system grids will be extended and outline the development sites. The parcels will be developed according to the university’s Design and Development Guidelines.

However, as stipulated in the land acquisition agreement between the university and the FIC, future project designs will be reviewed by the FIC Design Review Board and not the CU DRB.

Although the university does not anticipate development of these parcels over the next 10 years, the following concept plans were prepared. They are intended to assist infrastructure planning for the land and to present one vision that can be further refined as their development proceeds.

A5 - NORTH OF MONTVIEW (WEST)

The university occupies 20.2 acres west of Ursula Street and north of Montview Boulevard. All land was purchased from the FRA in a series of transfers between 2014 and 2019. Only the 1.3 acre Bioscience 2 parcel has been developed. The East Rock Lot is currently on the land and the remainder is being used as contractor parking. The remaining 18.9 acres are shown with capability to support approximately 1 million GSF of mixed-use research and office facilities plus associated parking.



Proposed Development North of Montview (West).

A6 - NORTH OF MONTVIEW (EAST)

Three parcels acquired from the FRA, totaling 8.3 acres, lie between the Perinatal Research Facility and the CU Medicine Building. The East Rock Lot currently occupies the area.

The urban design framework is flexible. Site planning and final design of any future facilities would occur when these projects are ultimately needed or required. This space is envisioned for mixed-use research and office facilities. The concept plans show an additional 300,000 GSF of development plus associated parking.



Proposed Development North of Montview (East).

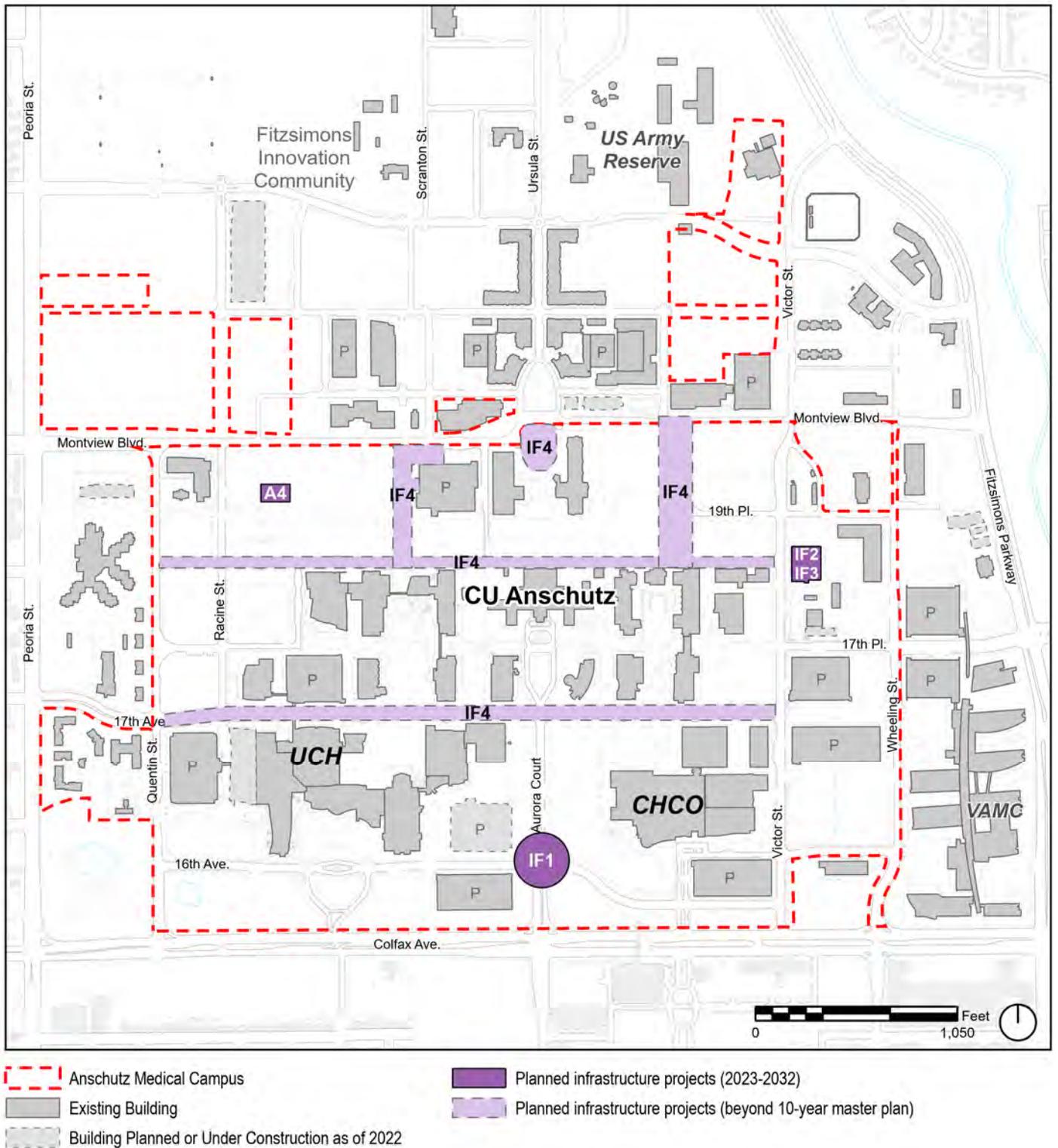


Figure IV.3 - Infrastructure and Utilities Phases I and II: 2023–2032

D. Infrastructure and Utilities: Phases I and II

PHASE I

IF1: Aurora Court Roundabout

Construction of UCH's new Garage 2 will be complete in early 2023. Based on traffic patterns associated with the garage's design and current use, it is likely that the existing signed intersection may create further traffic backups on Aurora Court.

Construction of a roundabout at 16th Avenue is proposed to improve circulation and reinforce previous gateway entrance improvements. The roundabout will be designed so that emergency vehicle access to CHCO can be expedited through it. Currently, traffic growth on Aurora Court has interfered with such access.

IF2: CUP Chiller Expansion

Based on potential development plans, the chilled water generating capacity of the CUP will need to be expanded. This project would increase the CUP's capacity. The equipment will be selected to support the university's carbon-reduction strategies and be placed in the remaining available chiller bay within the CUP.

PHASE II

IF3: CUP Boiler Expansion

Recent CUP improvements will allow the CUP to better meet the steam demand of anticipated development. However, by Phase II, growth will require another boiler for additional steam generating capacity.

Equipment will be selected with an eye towards supporting the university's carbon-reduction strategies, which may be further refined in future climate action and/or energy master planning efforts. As appropriate, these may be included as appendices to this plan.

NEW CONSTRUCTION AND RENOVATION: (10+ YEARS)

IF4: Circulation/Roadway Improvements (Roadway, Pedestrian, Bike)

Roadway improvements along 17th Avenue, Uvalda Street (between 19th Avenue and Montview Boulevard), Scranton Street (between 19th Avenue and Montview Boulevard), Revere Street south of Montview Boulevard, and other minor projects are proposed.

Many of these efforts, including 19th Avenue and streets that connect it to Montview Boulevard, would be completed in conjunction with the City of Aurora's Montview Redesign Project. However, as funding allows, pieces of these projects may be completed as separate smaller efforts.

The 17th Avenue Translational Corridor does not directly connect to the other roadways. As such, it could be initiated as a separate effort as funding allows. It may also be initiated based on demand from one of the three campus partners.

A summary Development Schedule of proposed Phase I and Phase II projects, including new facilities, renovation, and infrastructure, for the Anschutz Medical Campus is presented on the following pages.

Development Schedule Anschutz Medical Campus		DEVELOPMENT SCHEDULE												
Proposed Project	GSF	Year	2022 MASTER PLAN TIME PERIOD										10+ YRS	
			1	2	3	4	5	6	7	8	9	10	11	12
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34
A1 Day Care Facility	33,000													
Day Care Facility	33,000													
Total	33,000													
A2 Student Union	32,080													
Student Lounge	3,500													
Bursar	400													
Financial Aid	1,300													
Office of Disability, Access, Inclusion	900													
Registrar	1,000													
Student Resources, Support and Services	3,200													
Classroom/Learning Space	13,912													
Office	4,668													
Bookstore	3,200													
Total	32,080													
A3 Interdisciplinary Building 2	347,038													
Research	176,011													
Clinical	28,496													
Teaching Lab, Classroom	7,924													
Office	86,400													
Vivarium	35,826													
Assembly	12,381													
Total	347,038													
A4 Ancillary CUP Facility & Parking Structure	490,000													
Ancillary CUP Facility	20,000													
Parking Structure	470,000													
Total	490,000													
TOTAL NEW FACILITIES CU Anschutz Medical Campus	902,118													
New Facilities Total	432,118													
New Parking Structures Total	470,000													
UCH & CHCO NEW FACILITIES:														
Children's Hospital Colorado (CHCO)	250,000													
C1 Tower	250,000													
University of Colorado Hospital Projects (UCH)	900,000													
B1 Outpatient Expansion	200,000													
B2 Inpatient Expansion	500,000													
B3 Outpatient Expansion	200,000													
TOTAL NEW FACILITIES UCH & CHCO	1,150,000													
New Facilities Total	1,150,000													

Figure IV.4 - 10 Year Development Schedule - New Facilities

Development Schedule Anschutz Medical Campus			DEVELOPMENT SCHEDULE											
Proposed Project	GSF	Year	2022 MASTER PLAN TIME PERIOD										10+ YRS	
			1	2	3	4	5	6	7	8	9	10	11	12
			2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34
RN1 CON Simulation Space Expansion	12,082													
CON Sim space expansion														
Total	12,082													
RN2 Academic Office 1 - HUB expansion	17,500													
Academic Office 1 - HUB expansion														
Total	17,500													
RN3 Strauss Health Sciences Library Renovation	22,202													
Strauss Health Sciences Library Renovation														
Total	22,202													
RN4 Ed 2 North Backfill	7,466													
Ed 2 North Backfill														
Total	7,466													
RN5 Ed 2 South Backfill	3,500													
Ed 2 South Backfill														
Total	3,500													
RN6 SDM Clinic Expansion	3,500													
SDM Clinic Expansion														
Total	3,500													
RN7 Ed1 Lecture Hall Renovations	10,400													
Ed1 Lecture Hall Renovations														
Total	10,400													
RN8 Fitzsimons 3rd Floor - East Wing Renovation (CSPH Hub)	6,134													
Fitzsimons 3rd Floor - East Wing Renovation (CSPH Hub)														
Total	6,134													
D1 Fire Station Demolition	4,829													
Fire Station Demolition														
Total	4,829													
TOTAL RENOVATION CU Anschutz Medical Campus	87,613													
TOTAL New and Renovation CU Anschutz Medical Campus	519,731													
New Facilities and Renovation Total for all of Anschutz	1,669,731													
New Parking Structures for all of Anschutz Total	470,000													
INFRASTRUCTURE - Projects Not Required for Building Construction														
IF1 Aurora Court Roundabout	133,832													
Auraria Court Roundabout														
Total	133,832													
IF2 CUP Chiller Expansion	n/a													
CUP Chiller Expansion														
IF3 CUP Boiler Expansion	n/a													
CUP Boiler Expansion														
IF4 Circulation/Roadway Improvements	885,806													
Circulation/Roadway Improvements														
Total	885,806													
TOTAL INFRASTRUCTURE DEVELOPMENTS CU Anschutz Medical Campus	1,019,638													
Note: Demolition of Existing Buildings- Included in Project Costs														
Total program and space requirements above exclude affiliates. KEY: Bars represent time required for planning and construction. The lighter portion of the bar represents the planning phase; the darker portion, construction.														

Figure IV.5 - 10 Year Development Schedule - Renovation and Infrastructure

IV.3 Financing Strategy

FINANCIAL PLAN SUMMARY

CU Anschutz prepared a Financial Plan to support the development identified for the campus in the 2022 Facilities Master Plan Update. The Financial Plan was developed using financial models to estimate projected construction costs for new facilities, renovation, new facility operating and maintenance, and infrastructure to support the new facilities and campus community. The process used to develop the Financial Plan includes the following steps:

- First, requirements were identified for construction of new and renovated space, infrastructure development, controlled maintenance of existing space, and operating costs for new space.
- Next, funding strategies were identified that include CU Anschutz resources as well as other options such as public/private partnerships.
- Rather than applying projected resources to space requirements, the funding strategies serve as guidelines that can be applied to specific projects as resources become available or other options are identified.
- If resources are not available to fund a project shown at a specific time on the development timeline, the project has the potential to be moved farther out on the timeline.

The Financial Plan Update is included in this report as a companion document, and it contains the following information:

- Overview of the existing development of the campus and its economic impact to the state of Colorado and the surrounding region,
- Description of the 2022 development plan,
- Current funding climate,
- Financial Plan methodology,
- Major assumptions for the Financial Plan requirements,

- Major assumptions for the Financial Plan funding strategies, and
- Financial Plan summary.

Figure IV.6 summarizes the financial requirements identified for this plan including the following information for the 2022 Facilities Master Plan Update:

- The total projected costs (in 2023 construction dollars) for the development plan are **\$697,761,000** and they include the anticipated costs to construct new facilities, renovate space, operate and maintain new space, and develop infrastructure to support the new space and campus community.
- Because some of the projects are anticipated to begin in the later years of the planning horizon from 2022–2023 to 2031–2032, they are scheduled to be completed after this 10 year time period. These costs are not included in this analysis.

Figure IV.7 summarizes Phase I and Phase II implementation phasing and costs. Figure IV.8 provides a comprehensive look at the implementation phasing and shows both Phase I and Phase II new construction project sites, as well as potential developable areas for sitewide area build-out. Figure IV.9 summarizes the Master Plan implementation process.



New construction projects, like the UCH Garage 2 shown above, will continue to better the Anschutz Medical Campus.

<i>Description</i>	<i>Ten Years 2022-2032 (in 2023 Dollars)</i>
New Facilities	
A1 Day Care Facility	\$26,700,000
A2 Student Union	\$33,300,000
A3 Interdisciplinary Building 2	\$417,400,000
A4 Ancillary CUP Facility & Parking Structure	\$95,600,000
Total New Facilities	\$573,000,000
Renovations of Existing Spaces	
RN1 CON Simulation Space Expansion	\$4,560,000
RN2 Academic Office 1 - HUB Expansion	\$8,000,000
RN3 Strauss Health Sciences Library Renovation	\$8,800,000
RN4 Ed 2 North Backfill	\$3,400,000
RN5 Ed 2 South Backfill	\$1,200,000
RN6 SDM Clinic Expansion	\$2,000,000
RN7 Ed1 Lecture Hall Renovations	\$4,900,000
RN8 Fitzsimons 3rd Floor - East Wing Renovation (CSPH Hub)	\$2,800,000
Total Renovation	\$35,660,000
Demolition	
D1 Fire Station Demolition	\$267,000
Total Demolition	\$267,000
Infrastructure	
IF1 Aurora Court Roundabout	\$8,500,000
IF2 CUP Chiller Expansion	\$12,800,000
IF3 CUP Boiler Expansion	\$6,500,000
IF4 Circulation/Roadway Improvements	\$42,434,000
IF5 Campus Utilities	\$18,600,000
Total Infrastructure	\$88,834,000
Grand Total	\$697,761,000

1) Budget \$ estimate amounts are in 2023 dollars and do not include inflation for future years

Figure IV.6 - Summary of the Projected Financial Requirements

Escalation in the past ten years has been much more volatile than at any point in the past thirty years. Even in the high inflation period of the early 1980s, escalation trends were much more stable. The rate of change of escalation, and the variation between market sectors and regions, has been far higher than in prior years. The indications are that the coming five years will exhibit similar levels of volatility. Tensions between austerity in the highly indebted economies and excessive growth in the stronger economies, together with associated interest rate and currency movements, are likely to exacerbate the commodity price fluctuations, particularly where these tensions affect the pricing of the US dollar.

Material prices have fluctuated much more widely than previously experienced, with several key commodities showing increases of over 100%, and as much as 400% in transient spikes. In the past six months, many material prices have fallen, but most material prices are still appreciably higher than they were a year ago. The high degree of variability across materials and the high volatility make it very difficult to measure the increase accurately. Published indexes vary significantly, depending on their selected basket of goods, and the point in the supply chain that prices are measured—and even on the date that the data are gathered.

Labor prices have been much steadier, but they have shown steady growth over the past twelve months, and there remains a concern that there will be increasing wage pressure as consumer prices increase.

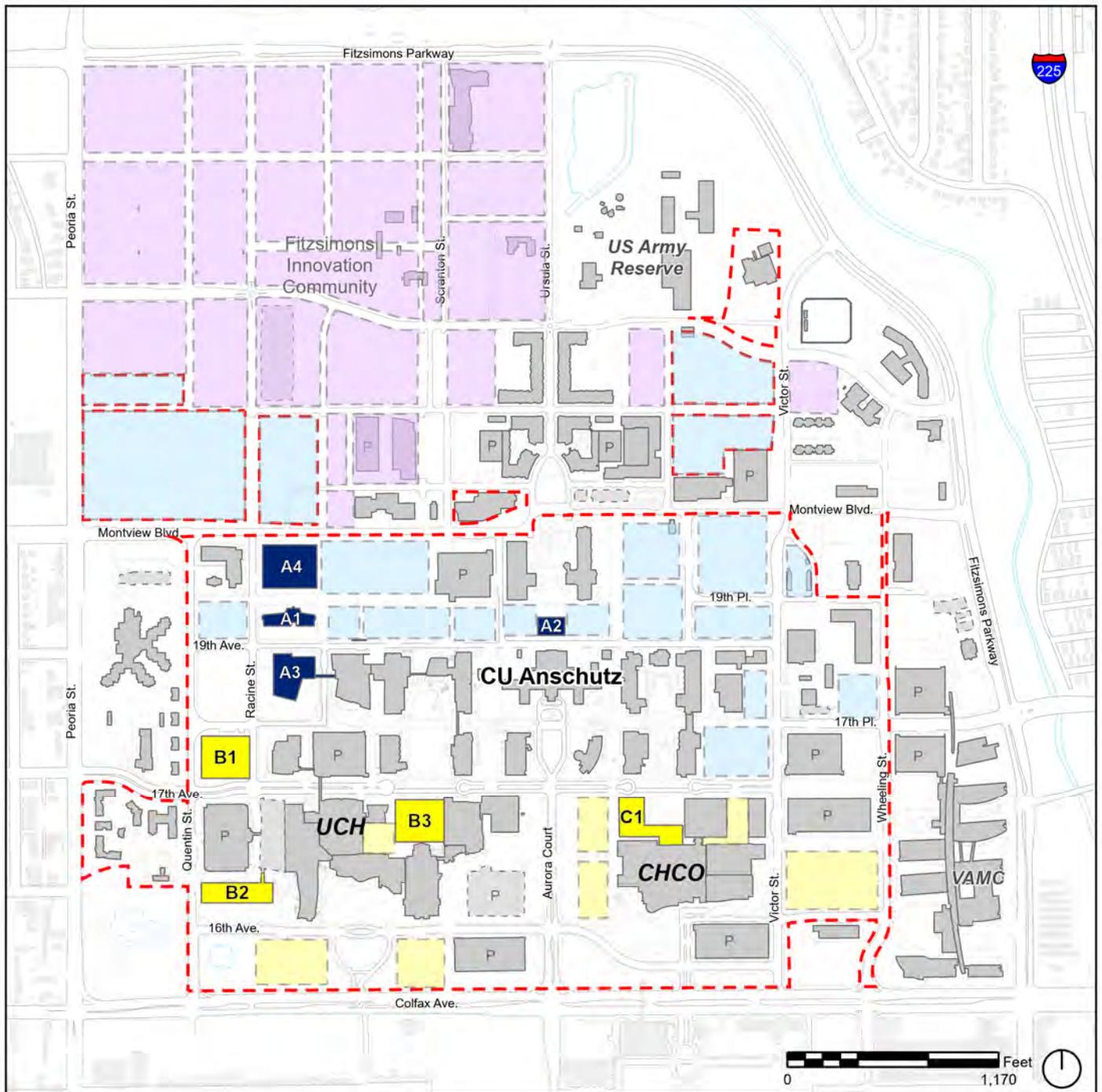
While inflation for construction materials appears to be abating to some degree, the dramatic fluctuations in prices have created significant risk to bidders. Price volatility and the ongoing supply chain concerns make it very difficult for bidders to establish fixed prices and schedule commitments. As a result, bidders are continuing to include risk premiums in their bids, which can add as much as 5% to the contract sum.

We anticipate modest cost increases and transient bid spikes in certain markets or trades, continuing through 2023. Provided there are no further widespread waves of COVID or other large-scale disruptions, we anticipate that the moderation in commodity prices continue, and perhaps even fall as recessionary forces increase, but that the bulk of the cost increase experienced in 2022 will become embedded in the long-term price. Volatility should diminish, but the fear and risk premiums will take longer to move out of pricing. Transient spikes should also decrease as bid capacity returns to the market.

ref.	Proposed Projects	CU Anschutz Estimated GSF	Anticipated Year of Development Completion	(in 2023 Dollars)	
				Phase I (2023-2027)	Phase II (2028-2032)
Facilities					
A1	Day Care Facility	33,000	2025	\$26,700,000	
A2	Student Union	32,080	2026	\$33,300,000	
A3	Interdisciplinary Building 2	347,038	2029		\$417,400,000
A4	Ancillary CUP Facility & Parking Structure	490,000	2032		\$95,600,000
Renovations of Existing Spaces					
RN1	CON Simulation Space Expansion	12,082	2024	\$4,560,000	
RN2	Academic Office 1 - HUB Expansion	17,500	2026	\$8,000,000	
RN3	Strauss Health Sciences Library Renovation	22,202	2028		\$8,800,000
RN4	Ed 2 North Backfill	7,466	2028		\$3,400,000
RN5	Ed 2 South Backfill	3,500	2028		\$1,200,000
RN6	SDM Clinic Expansion	3,500	2029		\$2,000,000
RN7	Ed1 Lecture Hall Renovations	10,400	2030		\$4,900,000
RN8	Fitzsimons 3rd Floor - East Wing Renovation (CSPH Hub)	6,134	2032		\$2,800,000
Demolition					
D1	Fire Station Demolition	4,829	2026	\$267,000	
Infrastructure					
IF1	Aurora Court Roundabout	133,832	2026	\$8,500,000	
IF2	CUP Chiller Expansion	n/a	2027	\$12,800,000	
IF3	CUP Boiler Expansion	n/a	2030		\$6,500,000
IF4	Circulation/Roadway Improvements	885,806	2034		\$42,434,000
IF5	Campus Utilities	n/a		\$3,600,000	\$15,000,000
Totals		2,009,369		\$ 97,727,000	\$ 600,034,000

1) Budget \$ estimates are based upon 2023 dollars and do not include inflation for future years

Figure IV.7 - Project Implementation Phasing and Costs



- Anschutz Medical Campus
- Existing Building
- Building Planned or Under Construction as of 2022
- Near-term university building sites assumed for modeling
- FRA building sites (long-term)
- Hospital building sites (long-term)
- University building sites (long-term land bank)

Figure IV.8 - Potential 10 Year and Long-Term Building Sites

Master Plan Implementation Process

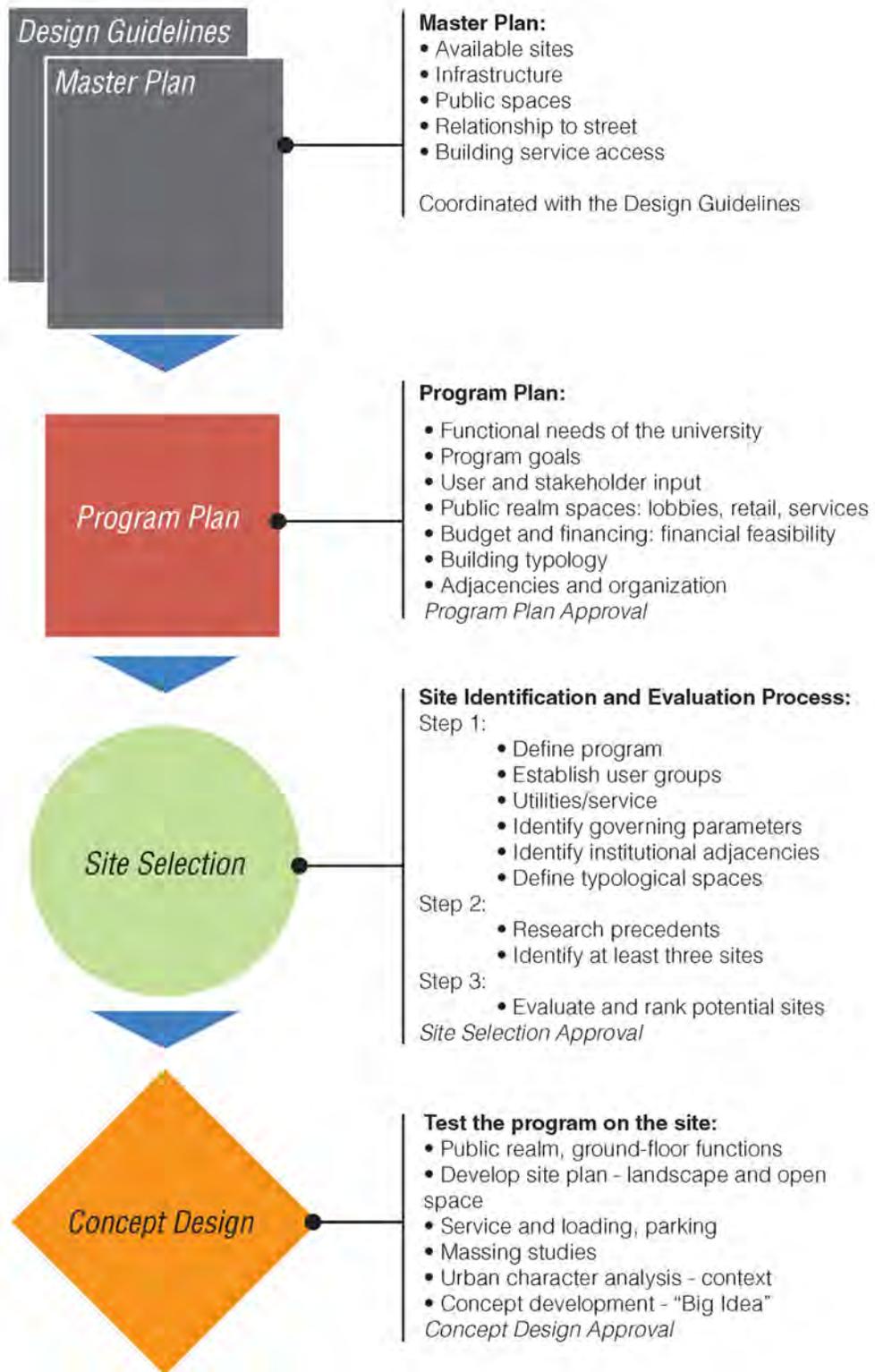


Figure IV.9 - Master Plan Implementation Process

IV.4 Keeping the Vision

The 2022 Facilities Master Plan Update process resulted in broad consensus on an exciting physical vision for the 21st-century Anschutz Medical Campus. It is supported by commendable goals and realistic principles from the five strategic initiatives that together inform the plan's proposed projects, recommendations, and design and development guidelines.

However, a worthy vision without a clear implementation strategy oversight may never be realized. Success requires stakeholders put forth a concerted effort to sustain the vision for the campus in this plan through subsequent actions. Implementation should maintain the spirit of stakeholder collaboration and consensus from the Strategic Initiatives and Facilities Master Plan processes.

The proposed building program is a preferred strategy to meet projected university needs. Unforeseen circumstances may require the university to shift its priorities to accommodate emergent needs or to realize new opportunities to execute any project. Flexibility and adaptation of this plan are inherent to its successful implementation.

Fortunately, the three Anschutz Medical Campus stakeholder institutions all came to our campus for proximity, connectivity, and collaboration. Together, they acknowledge that they share the campus and its fate. The character and quality of their buildings and grounds affect the "fabric" of the larger environment. Each institution understands its stake in and role in creating an inclusive, positive, and functional campus.

IV.5 Design and Development Guidelines

A. Overview

PURPOSE

The Design and Development Guidelines have been prepared to help direct the planning and design of future site development and building construction. The guidelines are a part of the 2022 Facilities Master Plan Update and are included, in their entirety, as an appendix to this document.

The guidelines emphasize the consistent application of concepts, materials, and details. They are intended to provide standardized, but flexible, design recommendations to assist in implementing the university's developmental goals and principles as established in the 2022 Facilities Master Plan Update.

Used in concert with principles of good design, applicable jurisdictional regulations, and with input and guidance from Facilities Planning and Design staff and the CU DRB, the guidelines should expedite the approval process and facilitate the development of quality environments throughout the campus.

USE OF THE GUIDELINES

The guidelines should be used primarily by staff, consultants, and the DRB. They will provide guidance for all physical additions, improvements, expansions, and renovations.

DESIGN REVIEW BOARD

The DRB, as advisory to the president of CU, is responsible for reviewing and consulting at the time of pre-design, conceptual design, schematic design, and design development phases of each project. All capital projects are reviewed to determine their compliance with the intent of the 2022 Facilities Master Plan Update and the Design and Development Guidelines.

AUTHORITY

The guidelines are part of the Anschutz Medical Campus planning and design process. They were developed as part of a collaborative process of engagement with the university and its affiliates, partners, and neighbors and constitute a consensus-driven framework for future development.

In order to meet unforeseen situations in either the master plan or the Design and Development Guidelines, it may be necessary for the university administration to consider variances pertaining to certain requirements. Any variance granted is considered to not be precedent-setting. In addition, the university administration may find it necessary to amend the guidelines to respond to changing factors in the university or marketplace.

B. Framework

The guidelines are intended to assist in improving the overall aesthetic character and visual unity of the whole Anschutz Medical Campus. Each new project should contribute to this goal through an integrated design approach that creates a desirable sense of place and reflects the appropriate scale, image, functionality, and integration of building and open space within the context of identified Character Districts. These design guidelines represent the university's commitment for future projects to create a more vibrant and collaborative campus environment.

C. Circulation

PUBLIC REALM

Campuswide roadway design should promote connectivity and provide a unifying framework throughout the campus. Its design should create rhythm and visual impact, highlight areas of significance, and tie all four Character Districts together to form a comprehensive whole.

A hierarchy of street types has been developed to assist in pedestrian and vehicular wayfinding. Streets expected to have higher pedestrian activity are meant to incorporate a greater level of detailing and upgraded

paving materials. This upgrade should enhance the pedestrian experience to create a more unique and dynamic space. Streets that are anticipated to receive more vehicular circulation should be treated with a more simplified design.

WALKWAYS

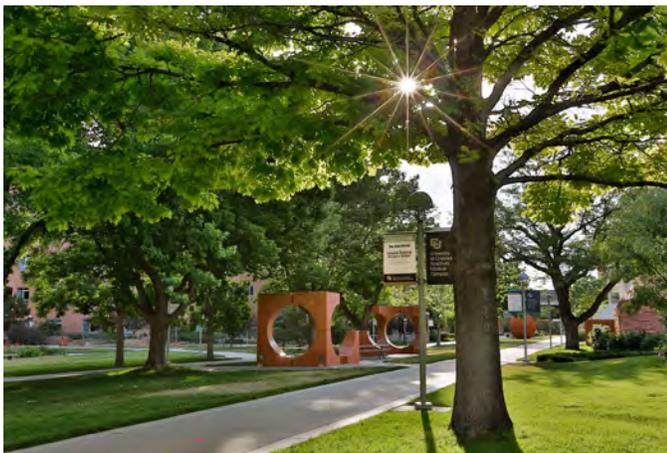
CU Anschutz is committed to providing accessible pedestrian travel. Path locations generally follow the natural “desire line” between destinations, with the recognition that in most cases 90-degree turns are not comfortable and, therefore, not realistic for pedestrian movement.

Similar to how streets have been treated, a hierarchy of walkways has been developed to assist in wayfinding and general pedestrian orientation with defined vocabularies of lighting, signage, and site furnishings.

D. Parking

The experience of arriving to and departing from campus by car is to be a positive experience. Parking is proposed to be located toward the perimeter of the campus and accessed primarily by streets contiguous with off-site roadways, thus reducing traffic on interior roads.

On-street parking is proposed to be incorporated into street design throughout the Urban Campus as well as along 17th Avenue.



The Art Walk encapsulates desired qualities of beautiful streetscape, convenience and common corridor, which contributes to wayfinding on the site.

As facilities are developed over the next 10 years, the reservoir of existing parking may be diminished as new roadways are constructed and surface parking areas are claimed as sites for new buildings. As demand continues to increase, it will be necessary to consider constructing parking structures and/or providing parking as an integral component of new buildings.

E. Open Space

Open spaces on campus should contribute to a sense of wellness and healing. Landscaping should visually unify the campus and simultaneously provide interest. It should enhance comfort and provide shelter for people using exterior spaces. By creating unique qualities, patterns, and character with the landscape, it can serve as a wayfinding mechanism by helping to orient and direct individuals to their destination. Open spaces should be planned and designed to contribute to energy conservation and, as a consequence, lower utility costs. Landscapes should respond to sun and climate in such a way as to create distinctive spaces, and landscape should enhance the image of the campus.

Campus edges, corners, and entrances are critical in establishing a positive first impression and a memorable sense of place. Landscaping along edges should be simple but elegant, with emphasis on major visitor entrances and prominent corners. To relate the campus to the surrounding community, the landscaping of campus edges is to complement the edges of the surrounding properties including the native landscape of nearby Sand and Toll Gate Creeks as well as General’s Park.

F. Buildings

Facades are to relate to surrounding conditions and help to create a unified campus identity. Buildings should reinforce the integrity of adjacent open spaces and support the structural organization of the Character District in which they are located. They should be sympathetic to adjacent façades, major datum, cornice lines, etc. Secondary façades shall be of comparable quality to the primary façade with walls, windows, doors, and façade articulations designed to accentuate human scale.

Public entrances to buildings should be welcoming and easily found and accessed. Building entrances and adjacent lobby spaces should be designed to encourage interaction. They should be readily visible, prominent, and contribute to the life and vitality of the pedestrian environment.

G. Sustainability

The university recognizes the importance of sustainable practices and has committed to reducing natural resource use, reducing greenhouse gas emissions, and constructing superior facilities built for the long term. For this reason, the university has adopted green building design policies to establish a basis for incorporating the principles of environmental stewardship, energy efficiency, and resource conservation into the design of new campus buildings and major renovation projects. Its goal is to pursue holistic, integrative, and collaborative

design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants.



Fulginiti Pavilion for Bioethics and Humanities in summer.

IV.6 Proposed Future Studies

During the planning process, a number of future efforts were identified to develop specific systems in greater detail. These studies are proposed to be done within the context of the master plan framework, which should serve as a consistent basis for coordination among the studies. These may be included as future appendices to this plan to ensure they are used when implementing plan recommendations.

SITE-WIDE STORM WATER MASTER PLAN

CU Anschutz exists within a complex storm water drainage system that encompasses the entire square mile of the original Fitzsimons Army Medical Center. The Anschutz Medical Campus spans three of the five major drainage basins within the site-wide area, and it shares those basins with a number of other institutions. The natural drainage pattern flows to the two adjacent creeks, and as the site-wide area gets closer to the site capacity and water quality standards rise, the site-wide stakeholders will need to work together to develop appropriate storm water strategies. Among those strategies, the team should consider integrated, sustainable methods for treating and retaining storm water.

CAMPUS SUSTAINABILITY MASTER PLAN AND CLIMATE ACTION PLAN

Issues and discussions relating to sustainability were woven through the master plan process, but a comprehensive effort at examining options, setting goals, and developing holistic campus strategies warrants a separate, extended effort. A future Campus Sustainability Master Plan and Climate Action Plan would delve into carbon issues as well as analyze the risks and potential impacts of climate change on the campus while meeting state carbon targets.

Water issues relating both to use within buildings and to landscape irrigation are particularly important in Colorado's dry climate. Linked to water issues are the issues of storm water retention and treatment. The plan could engage utility pricing and escalation and look

for efficiency strategies throughout the system as well as opportunities to incorporate sources of renewable energy. Potential benchmarks for incrementally reducing energy use could be evaluated for adoption on campus.

Another issue for future study is expansion of the solid waste reduction and recycling program. The evolving plan for alternative transportation including infrastructure for electric vehicles could be addressed as well. CU Anschutz's core mission includes research and teaching, so the arenas of innovation and public education about sustainability are a natural fit.

ENERGY MASTER PLAN

A comprehensive Energy Master Plan is recommended in order to systematically address and prioritize investments to decarbonize campus and build more resilient energy and infrastructure networks. A holistic approach would analyze strategies to reduce overall energy use, maximize efficiency and investigate renewable energy opportunities. A road map for implementation should be considered to maximize limited resources. The plan should be completed in concert with the campus Sustainability Master Plan and Climate Action Plan.



Research Quad.

APPENDIX A: CONTEXT AND CURRENT CONDITIONS



Photo: Jeff Perry Photography

II. CONTEXT

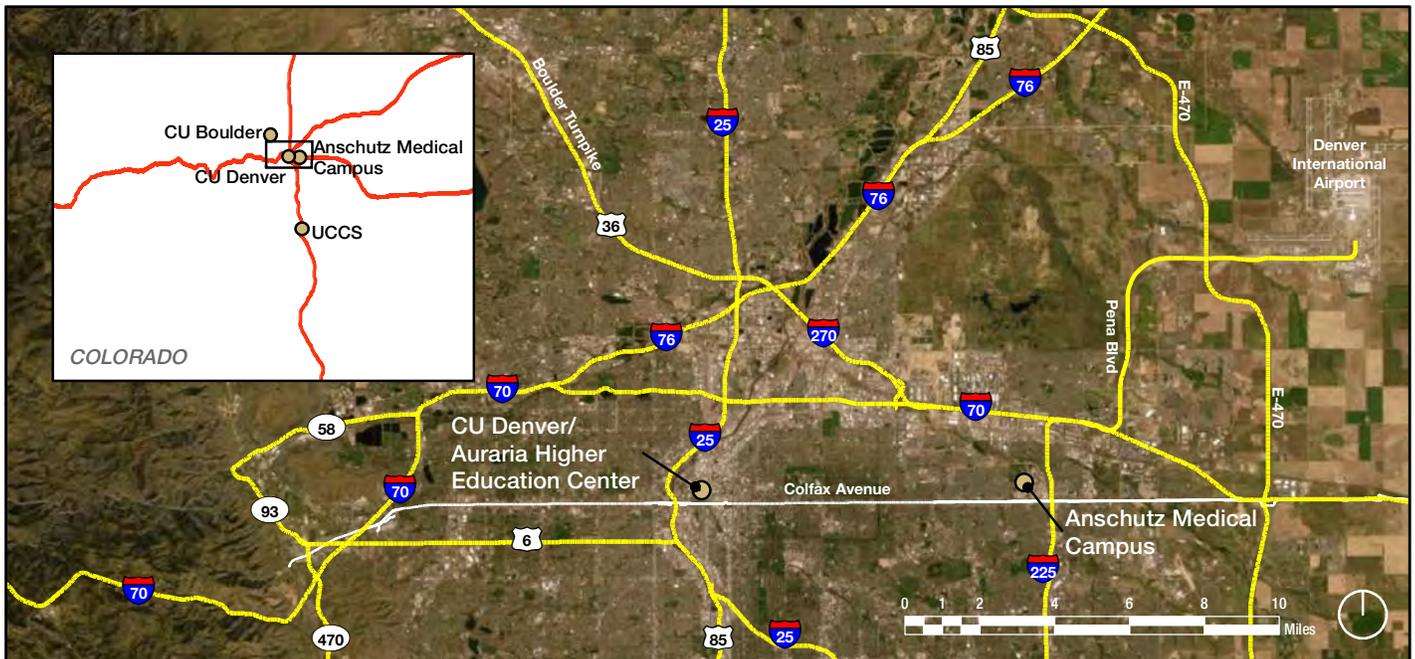
II.1 OVERVIEW

Currently comprised of 259.6 acres, the Anschutz Medical Campus is home to CU Anschutz and its partner and affiliated hospitals, UCH and CHCO. CU's health-related schools, colleges, centers, and research and clinical care facilities are located on the campus.

Much of the property was conveyed to CU through the U.S. Department of Education (DOE). UCH and CHCO occupy parcels that are long-term land leased to them. To date, the three campus institutions have invested over \$5 billion dollars in new facilities and infrastructure.

The Anschutz Medical Campus is located in the northwest of the City of Aurora within Adams County, Colorado. The city is part of the Denver-Aurora-Lakewood Metropolitan Statistical Area (MSA) which as of July 2021 is the nation's 19th-largest MSA, with an estimated population of 2,972,566 according to the U.S. Census Bureau.

The campus is approximately nine miles east of CU Denver and the two campuses are directly linked by Colfax Avenue, the region's primary east-west arterial.



Data Sources: Colorado DOT, Esri, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Figure 1 - Regional Context

In 2022, the Anschutz Medical Campus had a total employee population of over 26,000 people (not including patients or visitors).

In 2022, the 11,547 employees at CU Anschutz included 6,130 faculty and 5,248 staff, and 1,254 medical residents. These individuals support the education of 4,512 degree-seeking students.

Several of CU Anschutz's schools, colleges, and programs are consistently nationally ranked in the top 10 and/or 50 by *U.S. News and World Report*. UCH is also consistently ranked as the #1 hospital in Colorado by *U.S. News and World Report*. CHCO was also ranked 6th in *U.S. News'* 2020 National Honor Roll.

The SOM was ranked 6th in Primary Care, 7th in Pediatrics, 10th in Family Medicine, and 27th in Research in the country. The CSPH was ranked 19th, the SSPPS 20th, and the CON masters program 23rd in the country. The SOM is also the 9th ranked Public University School of Medicine based on federal awards.

In 2023 *U.S. News and World Report* ranked CHCO number seven on the Best Children's Honor Roll with 10 nationally ranked pediatric specialties. They also rank UCH with five nationally ranked adult specialties and rated it high performing in five adult specialties and 17 procedures and conditions.



Aurora Court is a ceremonial entry point to the Anschutz Medical Campus

II.2 BACKGROUND

The notable history of achievement and excellence of the University of Colorado Anschutz Medical Campus dates back to 1883. In that year, the SOM was established as the Department of Medicine and Surgery at CU Boulder.

In 1924, Frederick G. Bonfils, the publisher of *The Denver Post*, donated 17 acres of land to construct a new medical center three miles east of downtown Denver. In the same year, the SOM moved to this new campus at Colorado Boulevard and 9th Avenue. The school initially shared a building with the University of Colorado Hospital until 1965. Soon after, the CON and SDM joined the SOM at the 9th Avenue Campus.

In 1975, the CU Medical Center became an autonomous CU campus, and in 1979 it was renamed University of Colorado Health Sciences Campus (UCHSC). In 1988 CU's SOP relocated from Boulder to the UCHSC and in 1992 into a new facility. Around this time, it became clear that the 46-acre 9th Avenue Campus no longer could support existing programs and future growth.

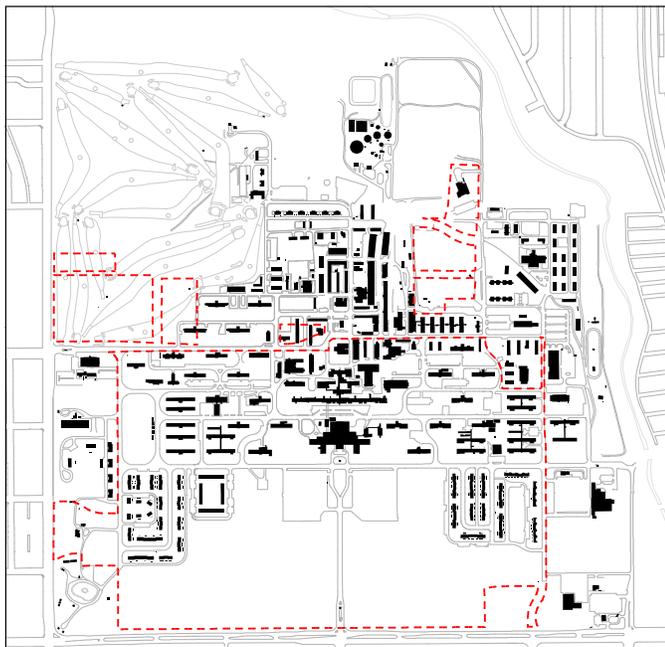
CU'S AURORA MEDICAL CAMPUS

In 1995, the U.S. Congress voted to approve the Base Realignment and Closure Commission (BRAC) bill. It included closure of the 578-acre Fitzsimons Army Medical Center (FAMC) in Aurora. In the fall of 1997, the CU BOR unanimously voted to move the entirety of its health sciences programs to a proposed 192-acre site on the former FAMC. UCH's Board of Directors also unanimously voted to move to the new site.

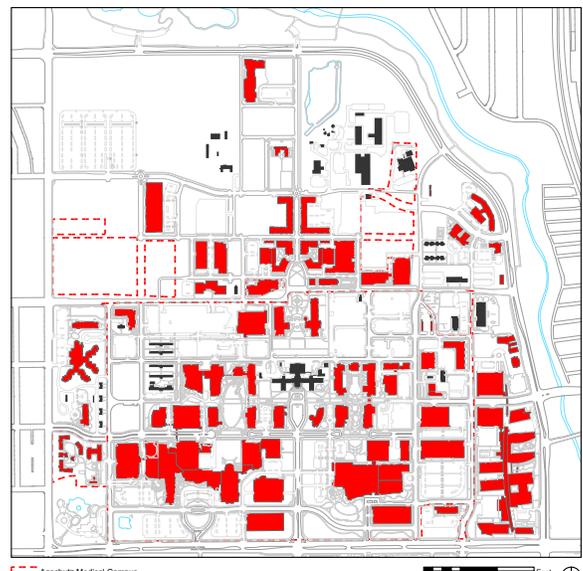
Many of the U.S. Army's properties were conveyed to federal and state agencies prior to the FAMC's 1999 formal closure. In 1998, the DOE conveyed an initial 87.5 acres on five parcels to CU. The university received the remainder of the initial 192-acre transfer in late 2000.

Since then, the university acquired, by transfer or purchase, additional land to bring the overall Anschutz Medical Campus to approximately 260 acres.

The first move of administrative units into the partially renovated former Army Hospital (Fitzsimons Building) occurred in 1998. The planning and design of new campus facilities started in 1999.



1993



2022

Figure 2 - 1993 Fitzsimons Army Medical Center | 2022 Anschutz Medical Campus

After the first newly built facility on campus, the Nighthorse Campbell Building, was completed in 2002 the university started its move to the new site. By January 2009, all CU and UCH operations had been completely transferred from the 9th Avenue Campus.

By 2020, investment by CU, UCH, and CHCO in facilities and infrastructure on the Anschutz Medical Campus had totaled more than \$3 billion. Between 1997 and 2021, the university alone completed approximately \$1.2 billion of construction projects.

CU ANSCHUTZ MEDICAL CAMPUS

Raising this level of financing required the assistance of multiple partners, including the CoA, state legislators, and private philanthropists. In recognition of the largest individual contribution to the new campus, it was renamed the Anschutz Medical Campus in November 2007, in honor of businessman Philip Anschutz.

Today, the Anschutz Medical Campus includes over 8.7 million GSF of facilities that support education, including classroom, laboratory, library, support space, research, institutional administrative support, and health care facilities, including all typical hospital and ambulatory medical services and general physical plant operations. In addition, CU Anschutz, UCH, and CHCO have a combined total of 3.7 million GSF of structured parking facilities. In total, the Anschutz Medical Campus has just over 12.4 million GSF of built facilities.

In academic year 2021–2022, CU Anschutz graduated 1,461 students, including 468 from the SOM, 163 from the SDM, 168 from the CON, 192 from the SSPPS, and 142 from the CSPH. Many of these students have received part of their training at on-campus clinical facilities and/or at several university affiliate/partner hospitals, including UCH, CHCO, Denver Health, and the VA.

The relocation of UCH (2000) and CHCO (2007) to the Anschutz Medical Campus further enhanced faculty and staff access to clinical areas and facilities. This has enhanced the flow of discoveries made from bench to bedside, and ultimately to the community.



Aerial View of the Anschutz Medical Campus.

College/School	2012	2022
School of Dental Medicine	105	163
Graduate School	93	328
School of Medicine	275	468
College of Nursing	317	168
Skaggs School of Pharmacy and Pharmaceutical Sciences	193	192
Colorado School of Public Health	90	142
Total Degrees Awarded	1,073	1,461

Figure 3 - Degrees Awarded in 2020



Commencement

II.3 CAMPUS CONTEXT

A. Campus Location

OVERVIEW

The Anschutz Medical Campus occupies most of the southern half of the former 578-acre FAMC. Most campus facilities are located between Montview Boulevard to the north, North Wheeling Street to the east, Colfax Avenue to the south, and Quentin Street to the west. The university also owns land north of Montview Boulevard which includes the Bioscience 2 Building and the Perinatal Research Facility.

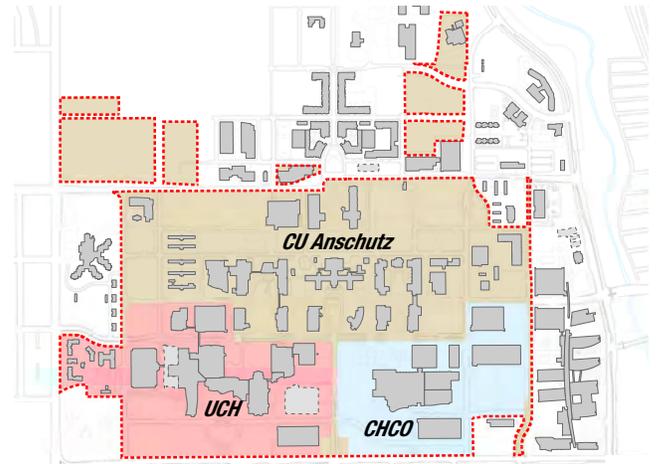
The Anschutz Medical Campus institutions each occupy a portion of the 260-acre campus south of Montview Boulevard. CU Anschutz occupies the northern portion of the site between 17th Avenue and Montview Boulevard. The hospitals occupy the area south of CU Anschutz and north of Colfax Avenue with UCH in the southwest and CHCO in the southeast.

After its transfer to the university, the former FAMC land quickly and significantly changed. Most onsite buildings were razed to accommodate newer, more specialized facilities. Notable FAMC buildings such as the former Army Hospital, now the Fitzsimons Building, and Colonel's Row, four former officers' residences just outside the campus boundary, were retained.

FAMC SITE

In 2001, the CoA designated three Urban Renewal Areas (URAs) on the former FAMC site and adjacent roadways. Colorado municipalities designate URAs to redevelop blighted areas. This provides them access to special financing mechanisms, planning tools, and powers to facilitate development within them.

The Fitzsimons Redevelopment Authority (FRA) was established by the City of Aurora to use these tools, acquire former FAMC land, and guide its redevelopment. The FRA has no oversight of state (CU) or federal (VAMC) properties in the URAs, or those that were separately conveyed to other entities through the BRAC process.



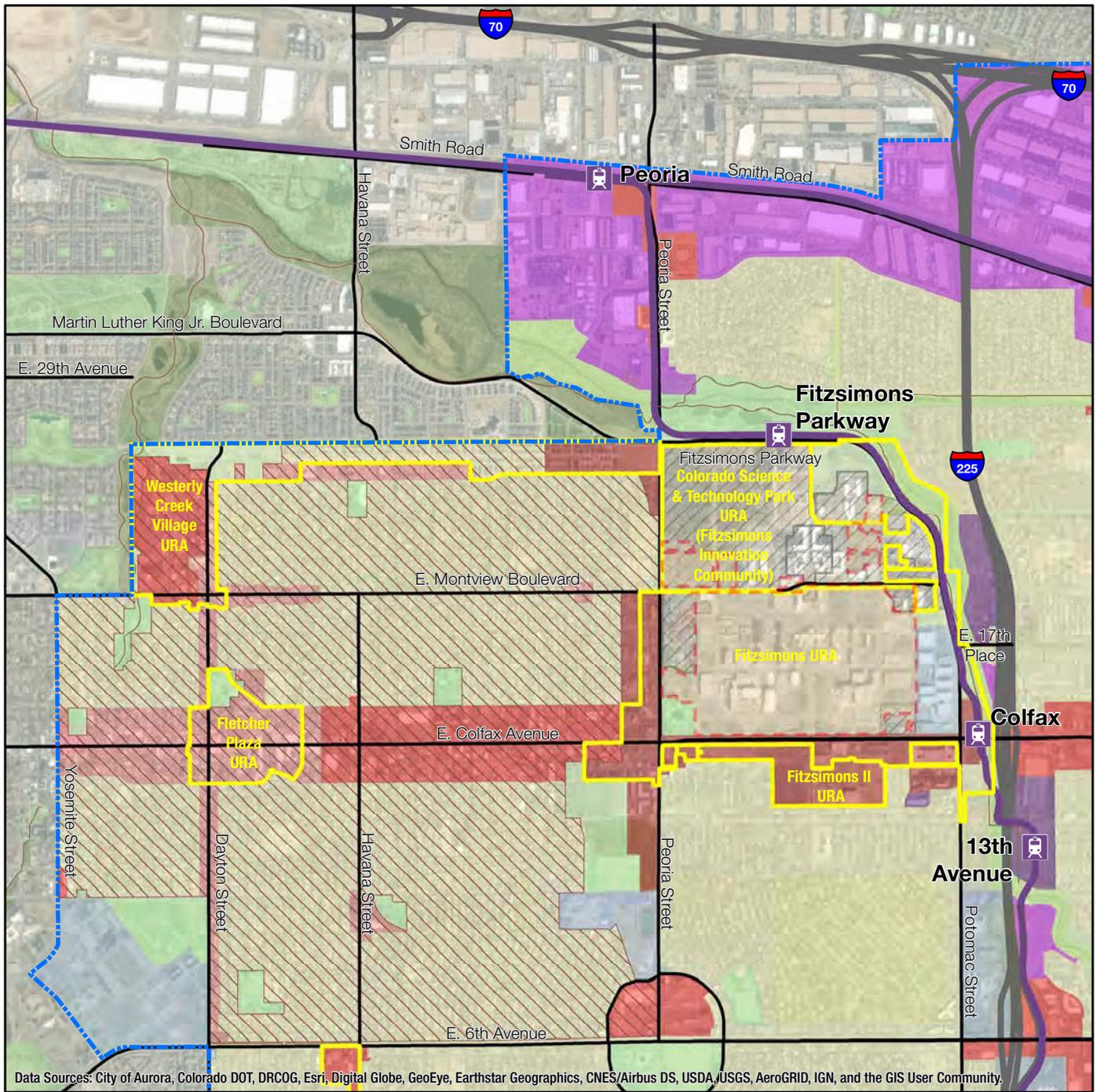
Institutions on the Anschutz Medical Campus



Fitzsimons Army Medical Center, 1941.



The Fitzsimons Building today.



Data Sources: City of Aurora, Colorado DOT, DRCOG, Esri, Digital Globe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community.

Generalized Aurora Zoning

- Industrial and Business
- Mixed Use Corridors
- Mixed Use Fitzsimons Boundary
- Mixed Use Office Institutional
- Original Aurora Main Street
- Park and Open Space (POS)
- Planned Development (PD)
- Residential Areas
- Transit Oriented Development

- RTD Station
- RTD Light Rail
- Major Road
- Interstate
- Regional Trail
- Park
- Greenway
- Open Space
- Anschutz Medical Campus
- Urban Renewal Area (URA)
- City of Aurora Boundary



Figure 4 - Local and Regional Context

South of Montview Boulevard, the campus and the adjacent VAMC, Colorado State Veteran's Home, and General's Park are within the Fitzsimons URA. This area also includes the parcels on the west side of Peoria Street and some on the south side of Colfax Avenue.

Parcels owned by the City of Aurora, including the District 1 Police Station, Xcel Energy and the US Army Reserve north of Montview Boulevard are also included in this area. The remainder of the former FAMC site north of Montview Boulevard is within the Colorado Science and Technology Park URA. This area is now called the Fitzsimons Innovation Community (FIC) and is overseen by the FRA.

The FIC has supported development of the Fitzsimons Federal Credit Union, The CHCO Day Care Center, CU Medicine, the Fitzsimons 21 Apartments, the Fremont Residences, and Bioscience Buildings 1 through 3. A hotel is also under construction. Many buildings have ground floor retail or service uses which are frequented by many within the campus community.

The Fitzsimons II URA was also created to address the redevelopment of additional parcels on the south side of Colfax Avenue.

LOCAL AND REGIONAL CONTEXT

Figure 4 shows the zoning around the campus and connections to the regional road and transit networks. In general, major roads near campus are surrounded by mixed-use development on at least one side with residential neighborhoods lying between them.

Meanwhile, the campus is linked to the metropolitan region via Peoria Street, Colfax Avenue, and U.S. Interstates 225 and 70. Two RTD light rail stations adjacent to campus link it to all regional transportation destinations including Union Station and Denver International Airport. Downtown Denver is approximately 10 miles directly west of campus via Colfax Avenue.

The street frontages along the west side of Peoria Street and south side of Colfax Avenue across from campus are zoned for mixed use development. The zoning is designed to support and enhance redevelopment within the associated URAs.

The Anschutz Medical Campus and VAMC are shown as being located within a mixed use office institutional district. This designation recognizes their institutional nature. However, the City of Aurora's zoning regulations do not apply on these state and federal parcels.

The FIC is shown as a planned development. This indicates that development within the area is subject to its own master planning efforts.

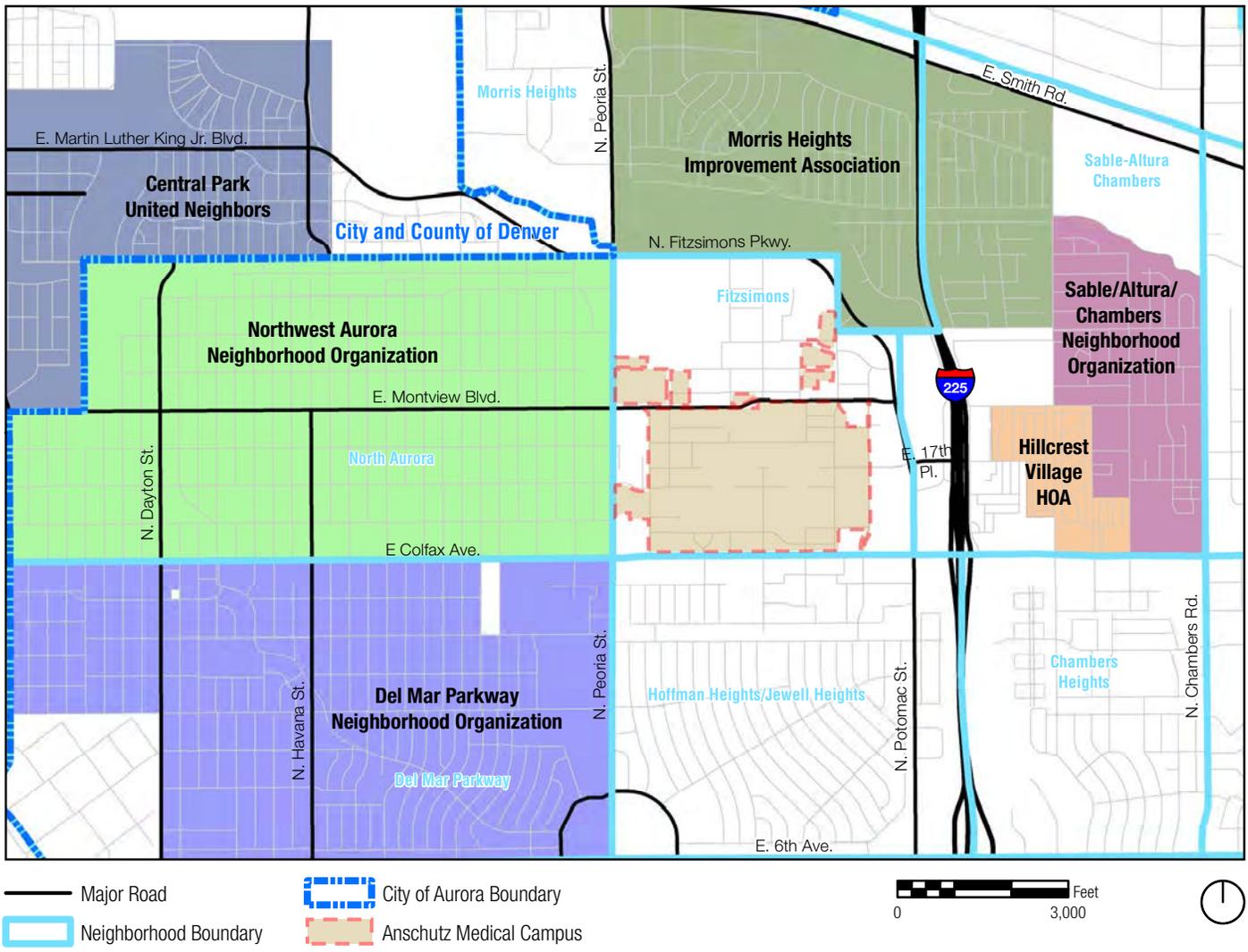
Colfax Avenue to the south of the campus once served as Aurora's Main Street. Consequently, Northwestern Aurora – between East 6th Avenue to the south, Peoria Street to the east, and the City's boundary with Denver to the north and west – once served as the city's governmental and commercial center.

To reflect this history, the area west of campus is officially referred to as Original Aurora. It has densely developed neighborhoods with a traditional urban grid of streets and pedestrian-scaled residential blocks. The City's zoning for the area aims to maintain these characteristics.

Colfax Avenue and Montview Boulevard are its main commercial corridors. The city has also established URAs within Original Aurora for the Westerly Creek Village and adjacent East 25th Avenue corridor and for the Arts District/Fletcher Plaza along Colfax Avenue. The Stanley Marketplace, a retail and dining complex within the Westerly Creek URA is frequented by many campus users.

Sand and Toll Gate Creeks lie to the north and east of campus and limit road connections in these directions. However, they provide trail access to the regional trail and open space system.

The area to the east of campus across Toll Gate Creek is predominately residential. Meanwhile development along Peoria Street, north of campus and Sand Creek closer to I-70, is predominately focused on industrial and business activities. The land between this area and Sand Creek is a mostly residential.



Shaded areas on the map Represent Registered Neighborhood organizations with the City of Aurora.

Figure 5 - City of Aurora Neighborhoods

SURROUNDING NEIGHBORHOODS

The Anschutz Medical Campus is within the City of Aurora’s designated Fitzsimons neighborhood (see Figure 5). Clockwise from the north, the established Morris Heights, Sable-Altura Chambers, Chamber Heights, Hoffman Heights/Jewell Heights, Del Mar Parkway, and North Aurora surround the Fitzsimons neighborhood.

In addition, the northwest corner of North Fitzsimons Parkway and North Peoria Street is located in the Central Park neighborhood within the City and County of Denver.

Many of these neighborhoods have active associations that are registered with the City of Aurora. These are shown as shaded areas in Figure 5.

The City of Aurora provides registered neighborhood organizations with notice of nearby proposed developments so they have the opportunity to comment on them. In addition, the city provides them with information about events, programs of interest and important city notifications.

B. Economic Impacts

In FY 2022, CU Anschutz had annual operating revenues of \$2.4 billion. This includes \$135 million in tuition and fees, \$483 million in grants and contracts, \$192 million in gifts, and \$1.2 billion in clinical income. Overall, the institutions on the Anschutz Medical Campus had operating revenues of \$5.1 billion in FY 2019.

In 2022, the Business Research Division of the Leeds School of Business prepared a report titled *Economic Contribution of the University of Colorado on the State and Counties of Operation*. It provides the most recent information on the economic impacts of the Anschutz Medical Campus in Colorado.

- CU Anschutz and CU Medicine directly hired and supported 23,501. Salaries combined with purchases, ranging from food services to energy to equipment, generated an economic impact of \$3.9 billion in the State of Colorado in FY2022.
- Every \$1 in direct and indirect salary supported by CU Anschutz and CU Medicine added an additional \$1.2 to the value of Colorado's economy.
- The combined contributions of CU Anschutz, CU Medicine, UCH, and CHCO supported up to 54,976 direct and indirect jobs for a total state economic impact of more than \$13.3 billion in FY 2022.
- The University of Colorado as a whole is among the five largest employers in the State of Colorado.

Based on data available from the Metro Denver Economic Development Corporation (EDC), UCH and CHCO are the 1st and 3rd largest private employers in Adams County in 2022. Per Metro Denver EDC UCH employs 12,970 and CHCO 6,020.

As a public institution, CU Anschutz is not listed in these rankings. However, in FY 2022, the university employed 14,033 (including students) which would make it a larger employer than UCH.

The university and its affiliate hospitals are active research centers. In FY2020, the campus supported over \$692 million in research grant awards. Over the past five years, the campus community received 478 patents and there were over 800 faculty inventions.

Since 2008 this campus research activity has resulted in the creation of more than 50 companies that further contribute to research and overall economic activity in Colorado.



The SDM's clinics are an example of direct economic impacts.



Food truck purchases are an example of value added to the economy.

II.4 GROWTH ASSUMPTIONS AND TRENDS

A. Population Growth

In fall 2022, CU Anschutz consisted of 17,144 persons, which includes all faculty, staff (central services and administration), PRAs, medical residents, and students.

When combined with UCH and CHCO, the total 2022 campus-wide headcount was over 26,000. In the same year, the campus had over 2.1 million outpatient visits, while UCH and CHCO had 48,000 inpatient admissions.

Between 2012 and 2022, the student population at CU Anschutz increased by 15.4% and employee population by 62.8%.

Graduate School and CSPH programs experienced the highest rates of student growth over this time. It should be noted that the SOM's and SODM's professional programs have enrollment caps that are set during their regular accreditation process which limits their growth.



The annual Anschutz Block Party brings together the entire campus community.

Full-time CU Anschutz faculty grew at a higher rate than staff over the previous 10 years. For this document, staff also includes PRAs. In 2022, the SOM reclassified nearly all its PRAs to other staff categories.

School	2012	2022	Increase	
			Students	Percentage
School of Dental Medicine	391	443	52	13.3%
Graduate School	402	693	291	72.4%
School of Medicine	1,077	1,221	144	13.4%
College of Nursing	910	1,035	125	13.7%
Skaggs School of Pharmacy and Pharmaceutical Sciences	838	510	-328	-39.1%
Colorado School of Public Health	293	610	317	108.2%
Total Students	3,911	4,512	601	15.4%

Figure 6 - CU Anschutz Student Headcount

Description	2012	2022	Increase	
			Individuals	Percentage
Faculty	3,486	6,130	2,644	75.8%
Staff (Including PRAs ¹)	3,239	5,248	2,009	62.0%
Resident	1,033	1,254	221	21.4%
Faculty/Staff Employees	7,758	12,632	4,874	62.8%
Student Faculty/Other Student Employees	677	728	728	107.5%
Student Hourly Employees	507	673	673	132.7%
Student Employees²	1,184	1,401	217	18.3%
Total Employees	8,942	14,033	5,091	56.9%

Notes:

1) In 2022, the SOM reclassified most PRAs to staff job classifications. PRAs are included in staff to ease comparison.

2) Student employees are a subset of student headcount.

Figure 7 - CU Anschutz Employee Headcount

B. Space Growth

To illustrate campus space growth since the 2012 Facilities Master Plan FY 11 to FY 21 Webspace data were obtained. Webspace is a facilities space inventory system maintained by the university finance office. Space data is annually verified by each school and college through an inventory and survey process.

Starting in FY 2023, the data for this annual process is being maintained in Archibus. This space management software will be managed by the Facilities Planning and Design to better track space changes throughout the year. Preliminary Anschutz Health Sciences Building data from this system were added to FY21 Webspace data to capture the total space on campus prior to move and backfill efforts associated with the building.

In Fall 2022, university units utilized 2,438,639 ASF. This is a 393,472 ASF above the 2012 total of 2,045,167 ASF.

This figure includes 91,351 ASF of site wide leased space located on the former FAMC. This includes leases in both Fitzsimons Redevelopment Authority and CU Medicine facilities.

In fall 2022, the university leased approximately 263,000 ASF. As noted above, only the leases on the former FAMC are included in this space analysis.

The 2012 plan estimated space growth of 19.4% over 10-years while actual growth was 19.2%.

It should be noted as the data used in the 2012 plan were from FY11, they did not yet contain information from the Anschutz Health and Wellness Center (AHWC) or the School of Dental Medicine Expansion. The next section will present a growth analysis that includes these projects.

Description ¹	FICM Codes	2012 ² ASF	2022 ASF	Increase	% Increase
Classroom/Class Labs/Service	110-225	143,359	172,058	28,699	20.0%
Library/Study Room/Media Production ³	410-455/530-535	86,937	73,502	-13,436	-15.5%
Office/Service	305-320	696,797	825,799	129,002	18.5%
Conference Room/Service	350-355	89,021	116,739	27,718	31.1%
Research Laboratory/Research Support/Service	250 - 260	655,305	744,762	89,457	13.7%
Animal Facilities/Service	570-575	82,017	93,476	11,459	14.0%
Assembly/Lounge/Merchandising/Meeting	610-685	54,635	91,845	37,209	68.1%
Central Computer/Telecom/EHS/Storage	710-792	87,444	95,518	8,074	9.2%
Clinical Space/Service	540-545/810-880	64,477	114,213	49,736	77.1%
Building Services/CUP	70/91-93	79,726	76,856	-2,870	-3.6%
Physical Education ³	520-525	5,447	30,126	24,679	453.1%
Other	399/590		3,746	3,746	
Total Assignable Space Inventory		2,045,166	2,438,639	393,472	19.2%

Notes:

- 1) This table reflects space assignable to units and for the space codes listed.
- 2) From the 2012 Facilities Master Plan.
- 3) Decrease due to recoding of library and AO1 space to other uses and conversion of study rooms in Education 2 to merchandising.
- 4) The data used in the 2012 Facilities Master Plan did not include the Anschutz Health and Wellness Center.

Figure 8 - CU Anschutz 2012 and 2022 Space Inventory

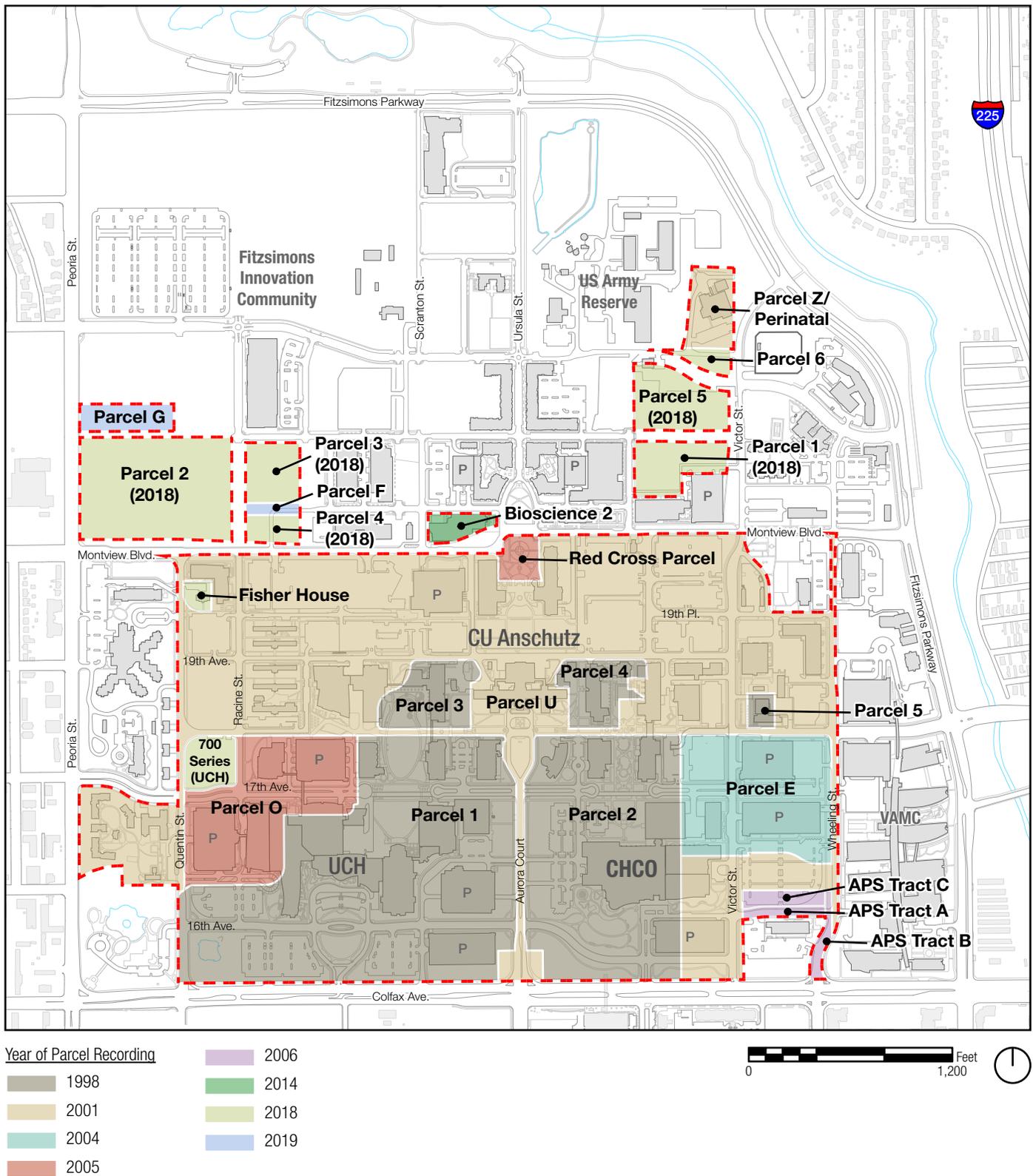


Figure 9 - Conveyance History

II.5 REGULATORY FRAMEWORK

A. Land Ownership and Conveyance

CONVEYANCE

The Anschutz Medical Campus initially comprised 195.9 acres that were obtained through the federal BRAC process. Additional land was either conveyed or purchased from the FRA and CHCO to bring the campus' size to 259.7 acres in February, 2021.

The university made an initial BRAC request for FAMC land to the U.S. DOE through an Application for Public Benefit Transfer of Surplus-Federal Real Property for Educational Purposes. The key stipulation was that the university would develop the site to further an educational mission for the good and benefit of Colorado citizens.

In 1998, as a public higher-education entity, CU acquired 87.6 acres on land at no cost through an early conveyance from the DOE. This included Parcels 1, 2, 3, 4, and 5 (see Figure 9). CU, UCH and CHCO facilities are now located on this land.

An additional 105.3-acre conveyance from the DOE as a part of a Lease in Furtherance of Public Benefit Conveyance (LIFPBC) was completed in 2001. This property, known as Parcel U included the Fitzsimons Building and the 400 Series of buildings which are still in use. Parcel U completed the original request for FAMC land by the university.

The DOE also conveyed the 3.0 acre Parcel Z to the university in 2001. It is located in the northern portion of the FAMC site, near the U.S. Army Reserve Center, and houses the university's Perinatal Research Facility. The parcel is also subject to DOE restrictions.

This last conveyance was the last through the BRAC process and brought the campus to 195.8 acres.

The FRA was established to also conform to the Department of the Army's BRAC property acquisition process. As a redevelopment authority, it utilized federal economic development conveyances to obtain former FAMC lands from the U.S. Army. As a result, FRA owned land is generally free of development restrictions.

In 2004 and 2005 the FRA conveyed Parcels E, the Red Cross Building, and Parcel O to the university. These acquisitions brought the campus to 228.2 acres.

In 2006 CHCO conveyed 2.48 acres to CU to complete a realignment of Wheeling Street. In turn, CU transferred 0.25 acres of the old roadway ROW within Parcel U to the FRA and CU Medicine who in turn transferred the land to the VAMC.

CHCO had purchased this land from Aurora Public Schools (APS) who had acquired it from the U.S. Army through the DOE. The three tracts acquired by CU included 16th Place from Victor Street to Wheeling Street and increased the campus to 230.4 acres.

In 2012 the university acquired 0.051 acres of Wheeling Street in front of Bioscience East. It also acquired two parcels north of Montview Boulevard in 2014 to construct the Bioscience 2 Building and a parking lot. These acquisitions brought the campus to 232.9 acres.

The university purchased six additional parcels totaling a little more than 26 acres north of Montview Boulevard from the FRA in 2018. Also in 2018, the 0.6 acre Fisher House was transferred to the university.

This last acquisition brought the Anschutz Medical Campus to its present size of 259.7 acres. This area includes the 2.1 acre 700 series parcel which the university sold to UCH in 2018 for their future development.

Finally, in 2019 the university and the FRA conducted a land swap of roughly 2.6 acres. The FRA required land that had been purchased by CU to accommodate a road realignment. This land swap enabled the FRA to acquire the necessary right-of-way while still maintaining the size of the Anschutz Medical Campus.

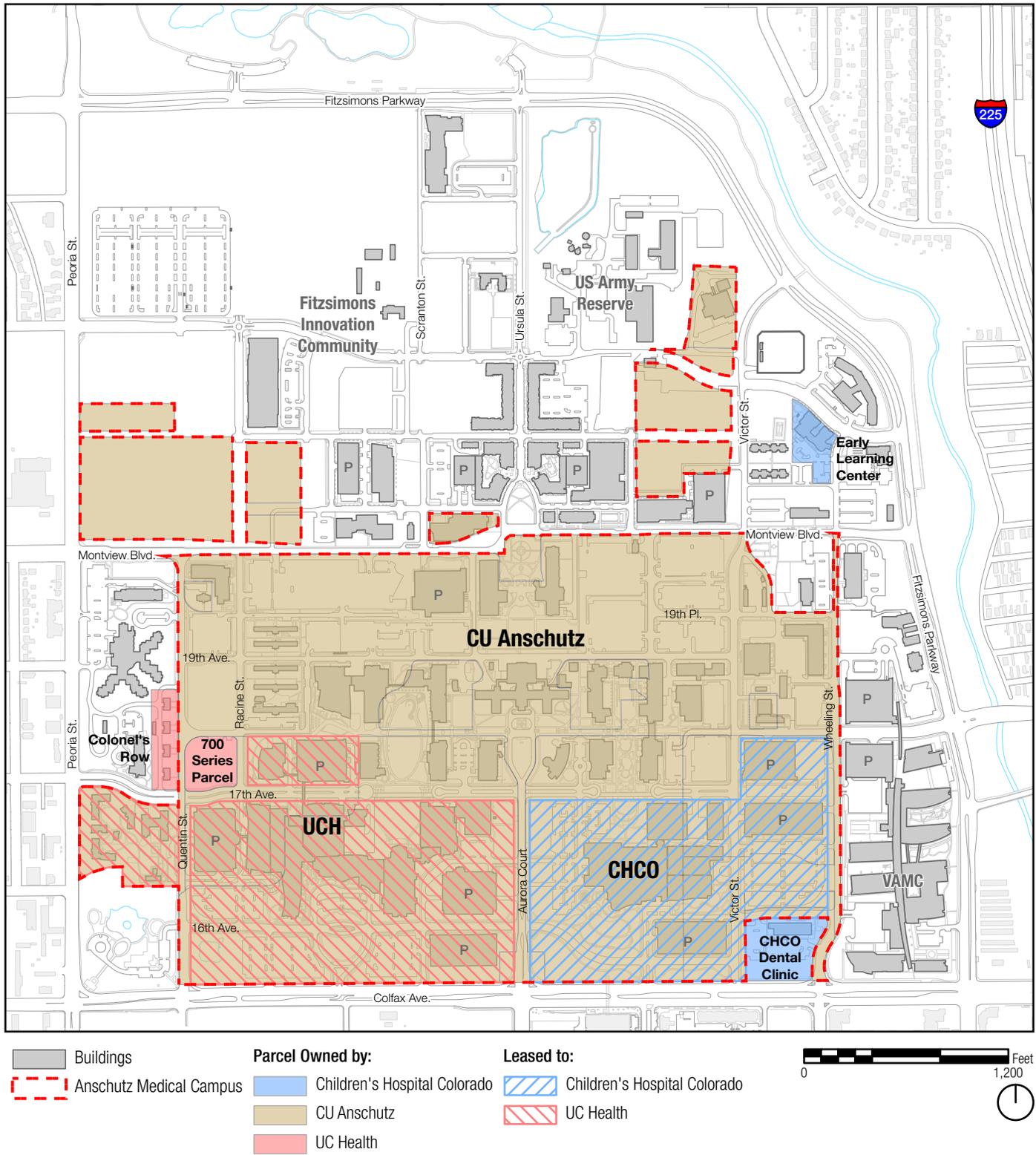


Figure 10 - Land Ownership and Leases

LAND OWNERSHIP AND LEASES

The nearly 260-acre Anschutz Medical Campus is owned by the university, with the exception of the 2.1-acre 700 Series Parcel which CU sold to UCH in 2018.

CU leases portions of its land to both UCH and CHCO under 99-year terms. UCH currently leases 57.6 acres and CHCO leases 42.34 acres.

All property within the Anschutz Medical Campus, whether occupied by CU Anschutz or leased to its affiliate hospitals is subject to planning and design coordination and review by the CU BOR and its DRB.

UCH and CHCO both own property either adjacent to the campus boundary or within the larger FAMC area. UCH owns a 2.1-acre parcel known as Colonel's Row, and CHCO owns both a 2.8-acre parcel known as the Children's Dental Clinic in addition to the Fitzsimons Early Learning Center. Facilities developed on these lands do not require CU design review.

How the combination of land ownership, lease areas, and development restrictions affects campus development will be explained in the next section.

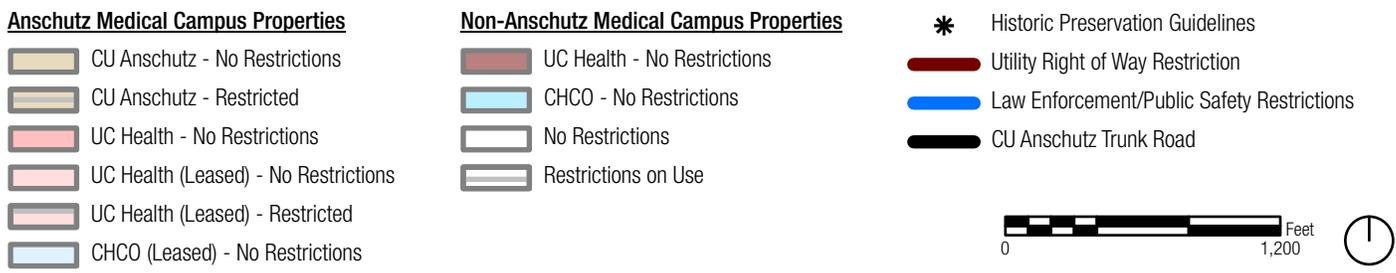
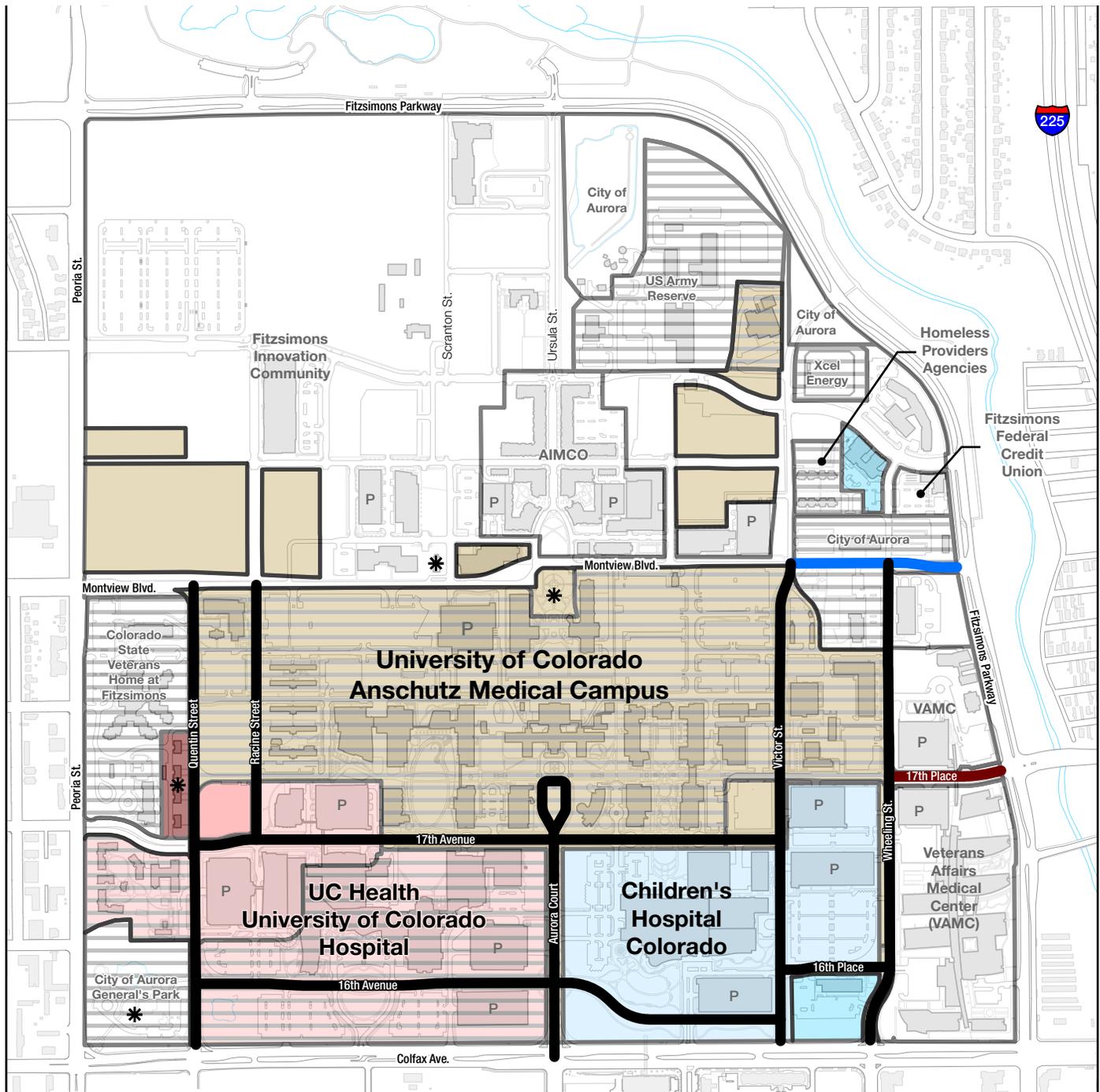


Figure 11 - Development Restrictions

RESTRICTED PARCELS

Through Public Benefit Conveyances (PBCs), the DOE required that the 195.9 acres acquired by the university be developed in pursuit of educational goals. Generally, academic, research, clinical, and administrative support facilities are allowed.

These restrictions are binding and are written into the parcel deeds. Failure to adhere to them can result in reversion of the properties back to the federal government.

However, prior to moving to campus, CHCO paid the DOE fair market value to abrogate the use restrictions on the portions of Parcels 2 and U that it now leases from CU. As a result, 63% of the current campus area, or approximately 165.4 acres, remains subject to the terms of the DOE transfers.

The remaining restrictions will expire in 2028, 2029, and 2031 - 30 years after the property conveyances were completed. The land south of Montview Boulevard under these requirements includes nearly all that owned by CU Anschutz and most UCH leased land.

They have limited the university's ability to establish some creative and innovative partnerships that are practiced at other AHCs. Most notably, hybrid translational research environments that allow university and private researchers to work side by side are difficult to implement.

The unrestricted properties on campus are therefore highly valued development opportunities.

Development on the Red Cross Parcel is also subject to historic preservation guidelines. Although the historic structure has been demolished any future development must be coordinated with the FRA and the Aurora Historic Preservation Commission.

Additional properties on the larger FAMC site, close to the Anschutz Medical Campus, are also subject to development restrictions. These will vary from site to site depending on the terms of the specific transfer or use of the property.

UNRESTRICTED PARCELS

In general, there are no use restrictions on land that the university did not acquire directly from the DOE.

CU acquired Parcel O, east of Quentin Street and south of 17th Place, from the FRA. In turn, the university leased most of the land to UCH. The Leprino Building, Leprino Garage, UCH Staff Garage, and part of the Anschutz Inpatient Tower are on this land. In 2018, the university sold the remaining undeveloped portion of the parcel to the hospital.

The FRA also conveyed Parcel E to the university. CU leased the portion south of 17th Place, west of Wheeling Street, and north of Parcel U, to CHCO for 99-years. The Kempe Center and two CHCO staff parking garages are now located in this area. CU Anschutz has control over the remaining part of the unrestricted parcel.

Between the area it occupies on Parcel E and on other university land on which it abrogated use restrictions, CHCO can freely construct facilities. However, it remains committed to develop them in a way that supports the university's overall mission.

Most of the campus north of Montview Avenue does not have development restrictions as the university acquired the parcels from the FRA. The exception is the Perinatal Research Facility which was acquired from the DOE.

Figure 11 shows the status of development restrictions on the Anschutz Medical Campus and the rest of the former FAMC site.

Additional conveyance, lease, and use information can be found in the March 25, 2021 Property Conveyance Guide.

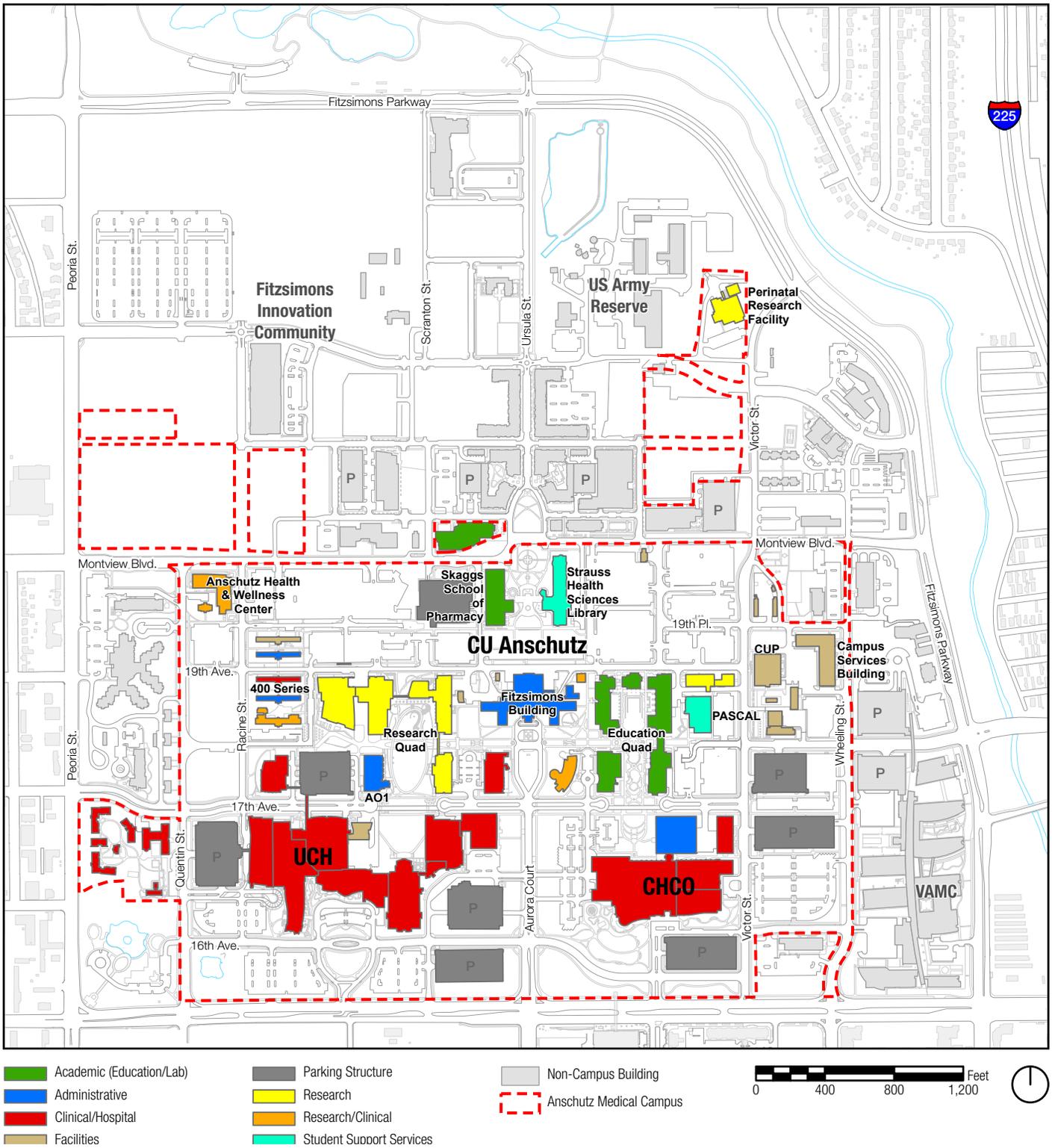


Figure 12 - Building Use (>60% of Total Use)

B. Land/Building Use

The development of the Anschutz Medical Campus is guided in large part by covenants that were part of the initial U.S. DOE property conveyances. Figure 12 shows how each campus building is generally used.

The facilities described below all advance the academic, clinical, and research activities that are integral to the educational mission of the Anschutz Medical Campus.

The majority of the clinical activities on campus occur in the large UCH and CHCO hospital facilities south of 17th Avenue. They are mostly surrounded by parking.

CU Anschutz, north of 17th Avenue is centered on the Fitzsimons Building that houses most of the campus' general administrative offices. To its east, the facilities on the Education Quad are focused on academics and contain most of the general use classrooms on campus.

The Research Quad, west of the Fitzsimons Building, houses the majority of research laboratories on campus. AO1 on this Quad is ideally located between UCH and CU Anschutz for administrative use by personnel working in both institutions.

It houses SOM departmental administrative offices and "The Hub", a facility that provides day-use administrative amenities to SOM clinical faculty. They can reserve these office spaces when they are not teaching, on clinical duties, or as needed or required.

West of the research quad, the 400 Series Buildings are five original U.S. Army housing facilities. Long-term most of these buildings will be replaced as they are nearing the end of their useable life. They house the University Police, some small clinical research offices, and administrative offices.

Immediately north of the Fitzsimons Building the Skaggs School of Pharmacy and the Strauss Health Science Library provide academic/lab space and student support services, respectively.



Children's Hospital Colorado.

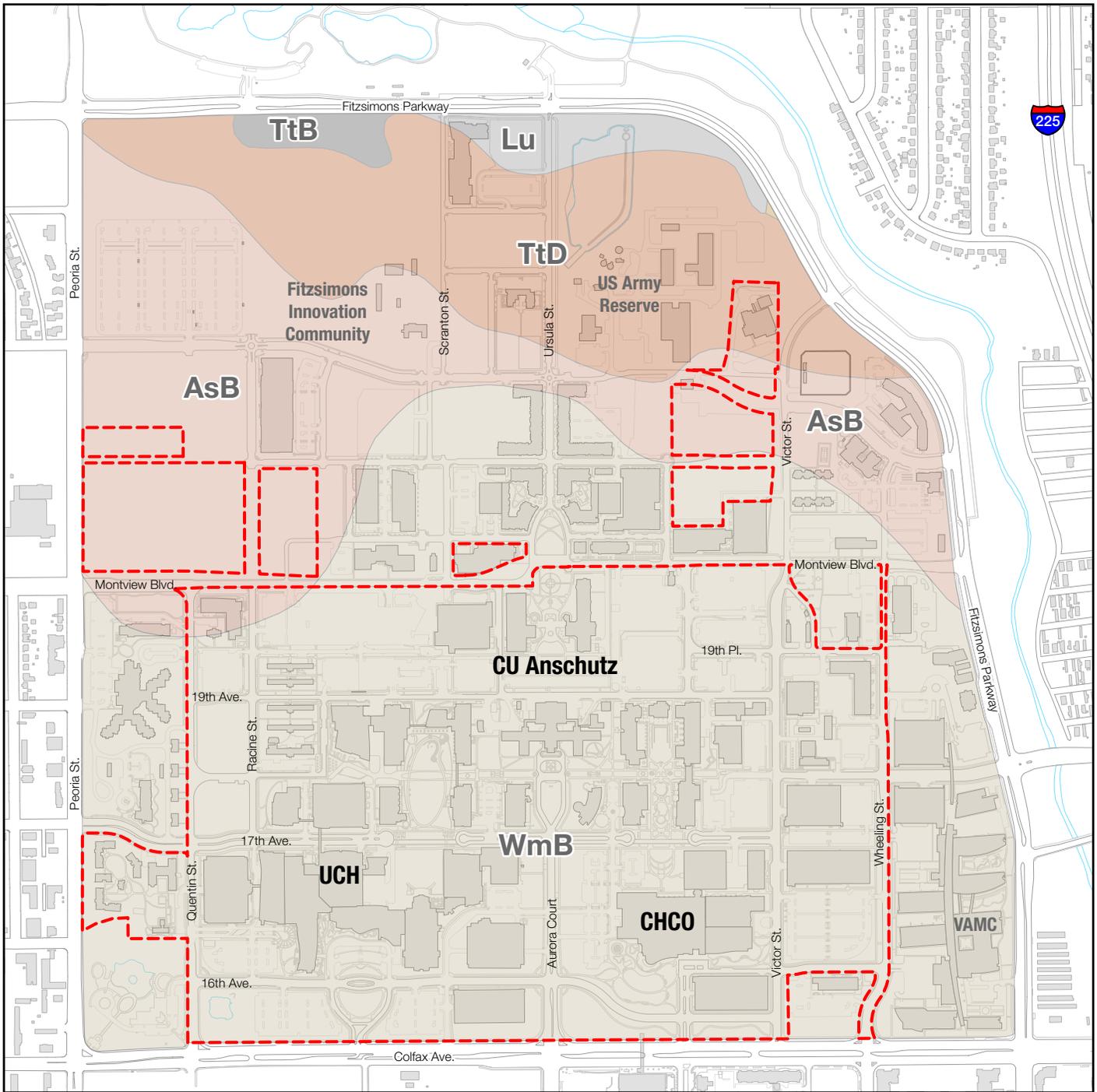


Academic Office Building 1

The northwest corner of campus houses the Anschutz Health and Wellness Center. It provides clinical space as well as physical fitness and research facilities.

The northeast corner of campus is dedicated to facilities services. The CUP supplies the steam and chilled water used by most all other facilities. The Campus Services Building houses Facilities Management shops and offices.

Finally, north of Montview Boulevard the Bioscience 2 building and Perinatal Research Facility provide additional academic and research facilities.



- WmB
- AsB
- TtD
- Lu
- TtB
- EgA

- Anschutz Medical Campus
- Building



Figure 13 - Soils

II.6 NATURAL SYSTEMS

A. Soils

The soils underneath the Anschutz Medical Campus do not pose significant challenges to development. However, past use of the FAMC site has affected soil quality in some locations.

The sites of demolished buildings often contain high levels of asbestos, metals, and other substances that are no longer used in modern construction. Redevelopment of these areas has afforded the university an opportunity to remove problematic soils from the campus. However, the need for proper removal, handling and disposal of any found contaminants can increase project costs.

Per the Natural Resources Conservation Service (NRCS), the former FAMC site consists of the following soil units (only those present in more than 1 percent of the larger site are listed):

- 63.1 percent Weld loam (WmB)
- 21.5 percent Ascalon sandy loam (AsB)
- 13.9 percent Truckton loamy sand (TtD)
- 1.6 percent Loamy alluvial land (Lu)

The first two soils units comprise 99% of the soil underneath the campus with Weld loam accounting for 88.5% of the total campus area, mainly south of Montview Boulevard, while Ascalon loam comprises 10.6%.

These soils indicate that 86.1% of the FAMC site has a slope of 3% or less. These soils largely fall into Hydrologic Soil Groups B and C and feature well-drained soils, depth to water table of more than 80 inches, and pose slight limitations to construction of foundations.

SOIL DETAILS

The Soil Survey Geographic Database (SSURGO) maintained by the NRCS, which is a division of the U.S. Department of Agriculture (USDA), provides detailed information on soils. Based on field observation and surveys, soils in the database are grouped into classes, or units, based on their properties. These are then grouped into similar series that only differ in the texture of the top layer of the soil column.

The campus contains three soil units.

Weld loam is generally well-drained in nearly level uplands. These soils formed in wind-worked loamy materials with slow permeability. Characteristics of weld loam series (WmB) at 0–3 percent slopes include:

- Medium surface runoff; moderate to severe water erosion hazard
- Severe hazard of soil blowing in unprotected areas with below normal rainfall
- Suitability as a source of:
 - Topsoil: generally poor (top 6 inches good)
 - Sand and gravel: unsuited
 - Road Fill: poor to fair
 - Irrigation: moderate intake rate with good available water capacity
- Foundation limitations: slight

Ascalon series is well-drained in nearly level to moderately sloping soil on uplands. These soils were formed in loamy material containing sand and gravel with moderate permeability. Characteristics of Ascalon sandy loam (AsB) are:

- Slow to medium surface runoff; slight to moderate water erosion hazard
- Severe hazard of soil blowing in unprotected areas
- Suitability as a source of:
 - Topsoil: fair to poor
 - Sand and gravel: poor
 - Road fill: good to fair
 - Irrigation: moderate to high water capacity
- Foundation limitations: slight to moderate, low to moderate shrink/swell potential

Truckton loamy sand is generally well-drained to excessively drained in nearly level to moderately sloping soils on uplands and stream channels. These soils formed in wind-worked sandy material containing loamy sand with rapid permeability. Characteristics of truckton (TtD) at 3–9 percent slopes include:

- Slow surface runoff; slight water erosion hazard
- Severe hazard of soil blowing in unprotected areas
- Foundation limitations: slight

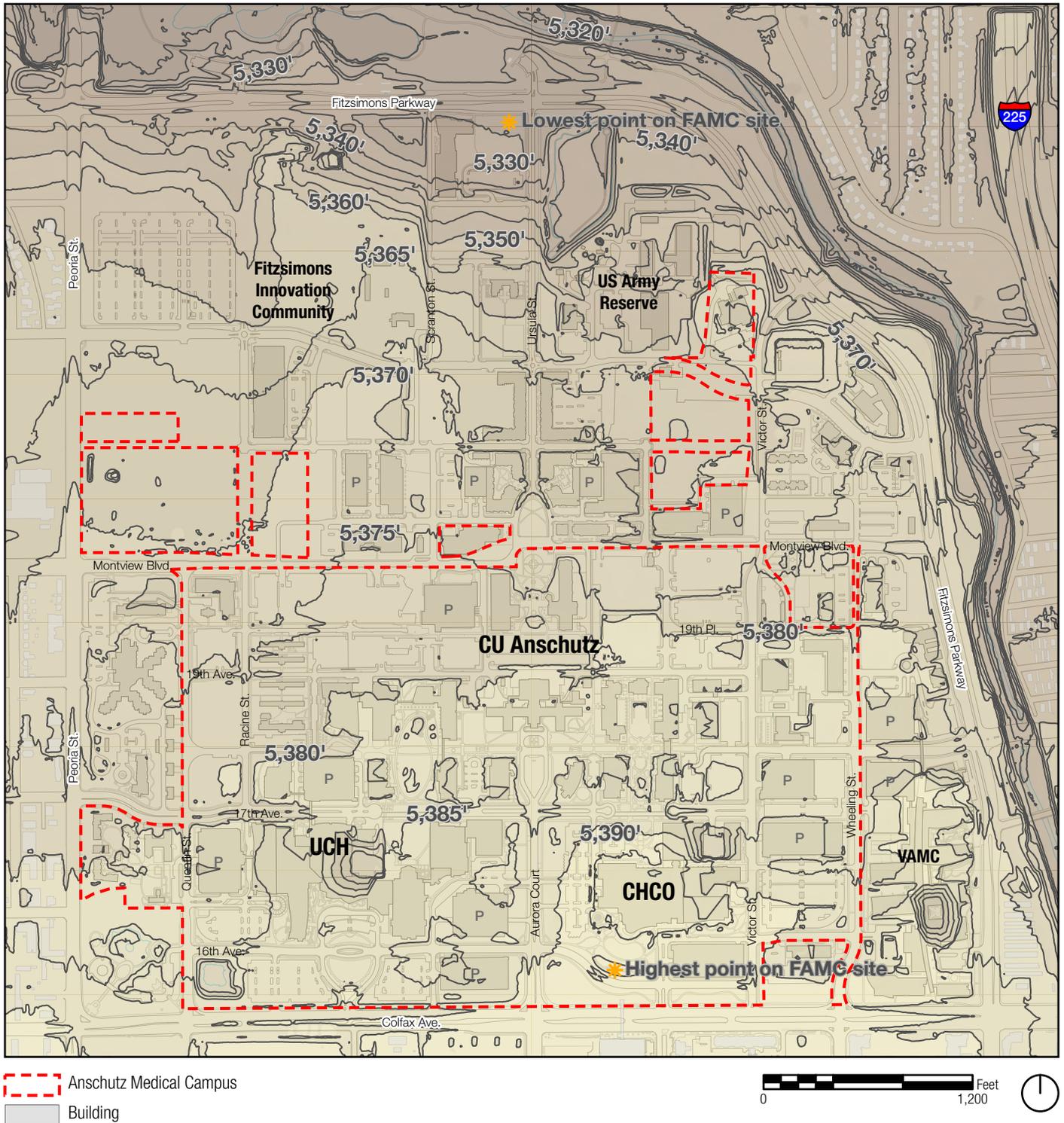


Figure 14 - Topography

B. Topography

The Anschutz Medical Campus, and the larger FAMC site, are located on a relatively flat nearly one square mile portion of land. Elevation changes do not pose limitations on campus development.

This area generally slopes from higher elevations to the south towards the north. There are steep slopes, generally no more than 5%, to the east and northeast of campus towards the channels of Sand and Toll Gate Creeks. In small localized areas these slopes may be closer to 9%.

Aurora Water's stormwater and sanitary sewer systems have been designed to use this topography to help convey flows through these networks. The campus is tied to them and they are described more fully later in this chapter.

Generally speaking there is less elevation change as one moves in an east-west direction on campus than in the north-south direction. There is only 80 feet of elevation difference between the highest point on the former FAMC, just south of CHCO, at an elevation of 5,400 feet to its lowest point, at 5,320 feet, on FRA property just south of Fitzsimons Parkway.

The Anschutz Medical Campus is flatter than that of the FAMC area as a whole. It varies by only 40 feet in elevation, from 5,360 feet near the Perinatal Facility to 5,400 feet near CHCO.

Overall, the City of Aurora ranges from a high point of 6,229 feet above sea level southwest of the Aurora Reservoir to a low point of 5,285 feet at the Sand Creek Water Reclamation Plant, just three quarters of a mile northwest of the campus.



Sand Creek Park has some of the steepest slopes on the FAMC site.



The CHCO Healing Garden is one of the highest areas on campus.

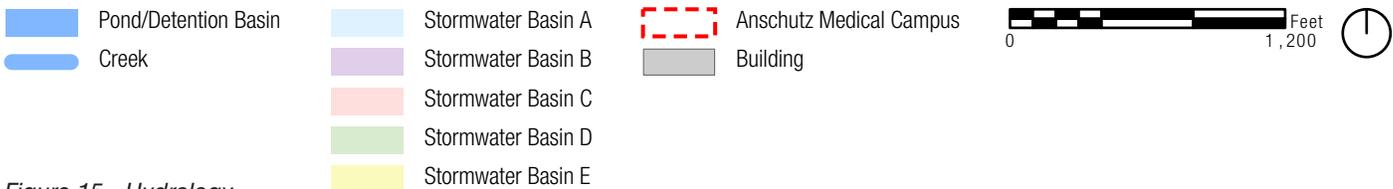
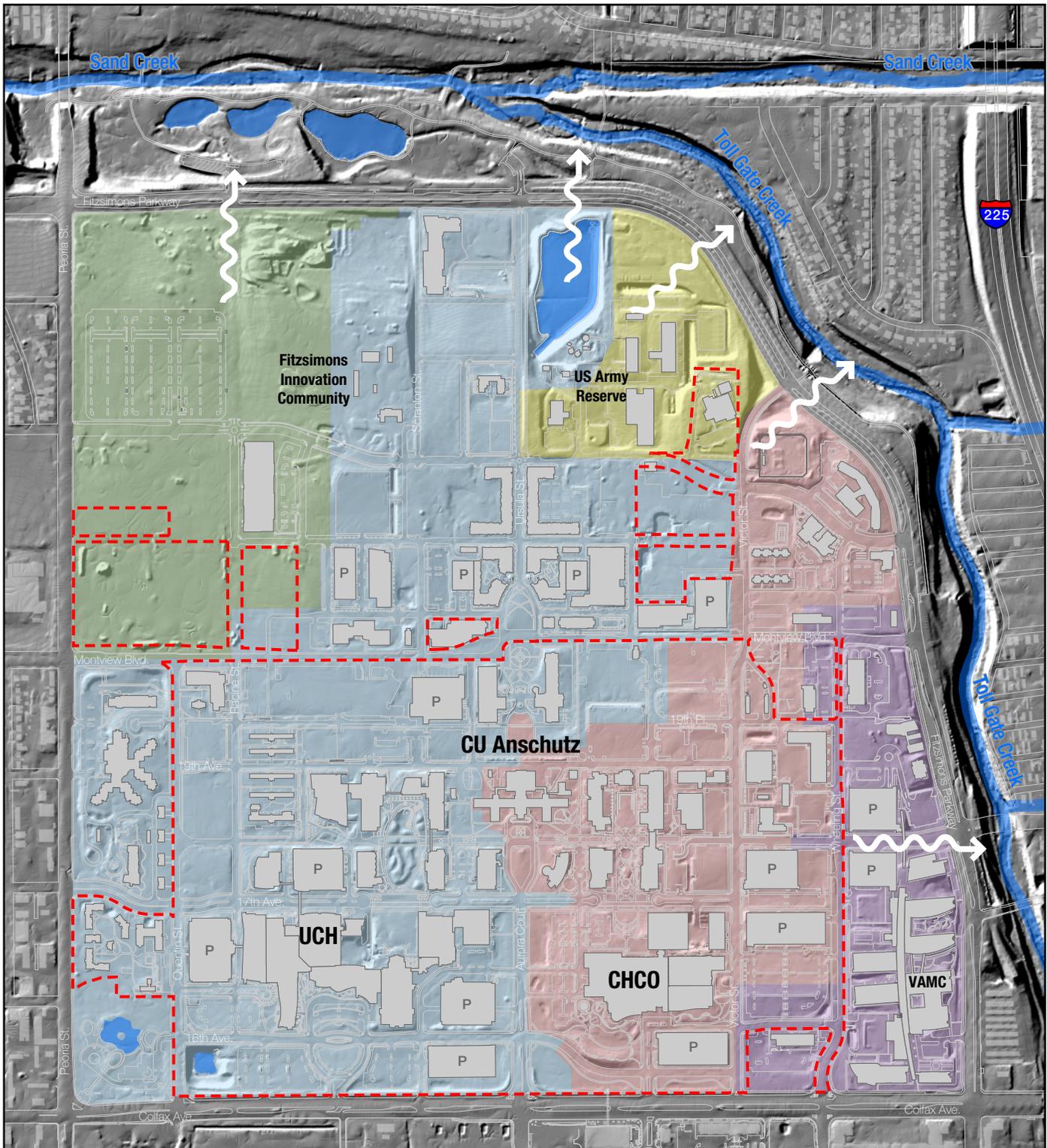


Figure 15 - Hydrology

C. Hydrology

As noted in the previous section, Toll Gate and Sand Creeks lie just east and north of campus. There are no creeks or waterways on the campus itself. Storm water is conveyed to these creeks naturally over the surface or through the man-made storm water conveyance system which is described later in this plan.

Toll Gate Creek flows into Sand Creek just northeast of the former FAMC. Sand Creek then flows into the South Platte River which joins with the North Platte River in Nebraska to form the Platte River. The Platte River, in turn, is a tributary to the Missouri and the Mississippi Rivers and ultimately drains into the Gulf of Mexico.

Storm water runoff from the Anschutz Medical Campus is mostly divided between Master Basin A and Master Basin C (see Figures 15 and 44). There is minimal on-site storm water detention and quality treatment on the campus.



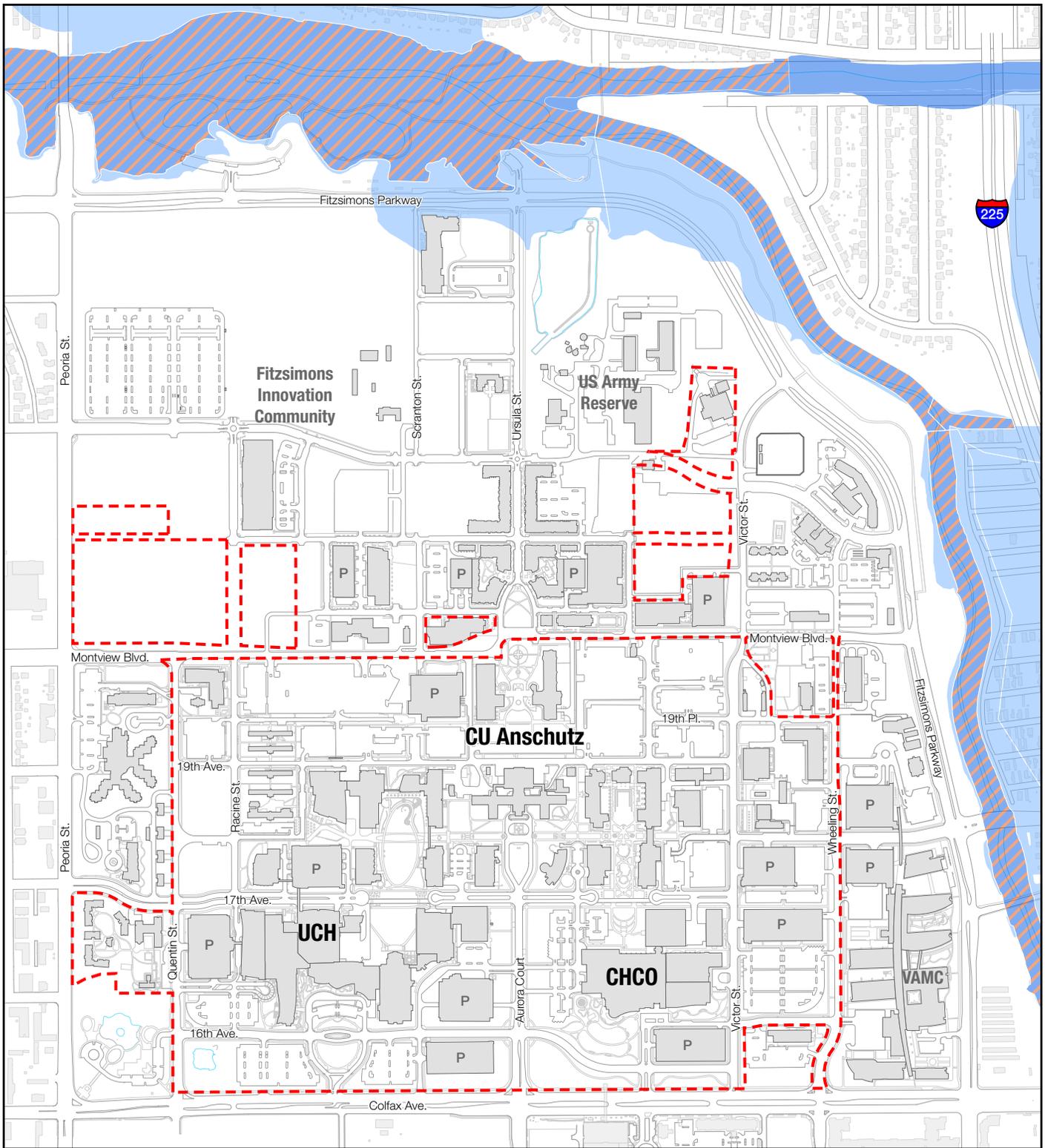
A retention pond north of the CUP looking towards Campus Services.



Retention pond north of CUP looking west from Campus Services.



Retention pond in front of UCH at Quentin Street and Colfax Avenue.



- Areas of 0.2% chance of annual flood;** areas of 1% annual chance of flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levee from 1% annual chance floods.
- Special flood hazard area subject to inundation by 1% annual chance of flood.**
- Special flood hazard area subject to inundation by 1% annual chance of flood; the floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment to prevent substantial increase in flood heights.**

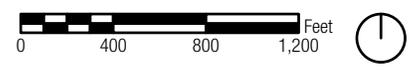


Figure 16 - FEMA Flood Map

D. FEMA

The National Flood Hazard Layer (NFHL) maintained by the Federal Emergency Management Agency (FEMA) can be used to identify flood hazard areas on the Anschutz Medical Campus. The campus is in a designated Zone X area, considered to be an area of minimal flood hazard.

Flood insurance is not required of private landowners within a Zone X area nor are floodplain management measures required. However, the Mile High Flood District (MHFD) that oversees flood and stormwater management in the Denver Metro region still encourages landowners in areas of minimal flood hazard to purchase flood insurance.

Sand Creek to the north of campus and Toll Gate Creek to the east are both within a Special Flood Hazard Area (SFHA) with 1% annual chance of flooding. These SFHAs do not cross over Fitzsimons Parkway onto the FAMC site or the Anschutz Medical Camps. However, a small portion of an area with 0.2% annual chance flooding associated with Sand Creek does extend south across Fitzsimons Parkway onto a very small portion of the FAMC site.

The NFHL is a geospatial database that is constantly being updated with the latest flood hazard data for the City of Aurora, Adams County, Colorado, and the rest of the country. For the Anschutz Medical Campus, the NFHL is based on Flood Insurance Rate Map (FIRM) panel 08005C0177K, with an effective date of December 17, 2010 and has been updated with any Letter of Map Revision (LOMR) that have been subsequently approved by FEMA.



Detention ponds in Sand Creek Park hold excess capacity for special flood events.

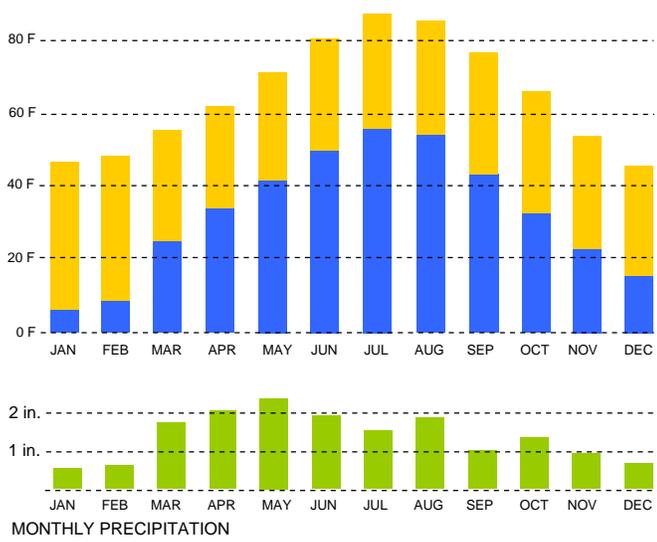
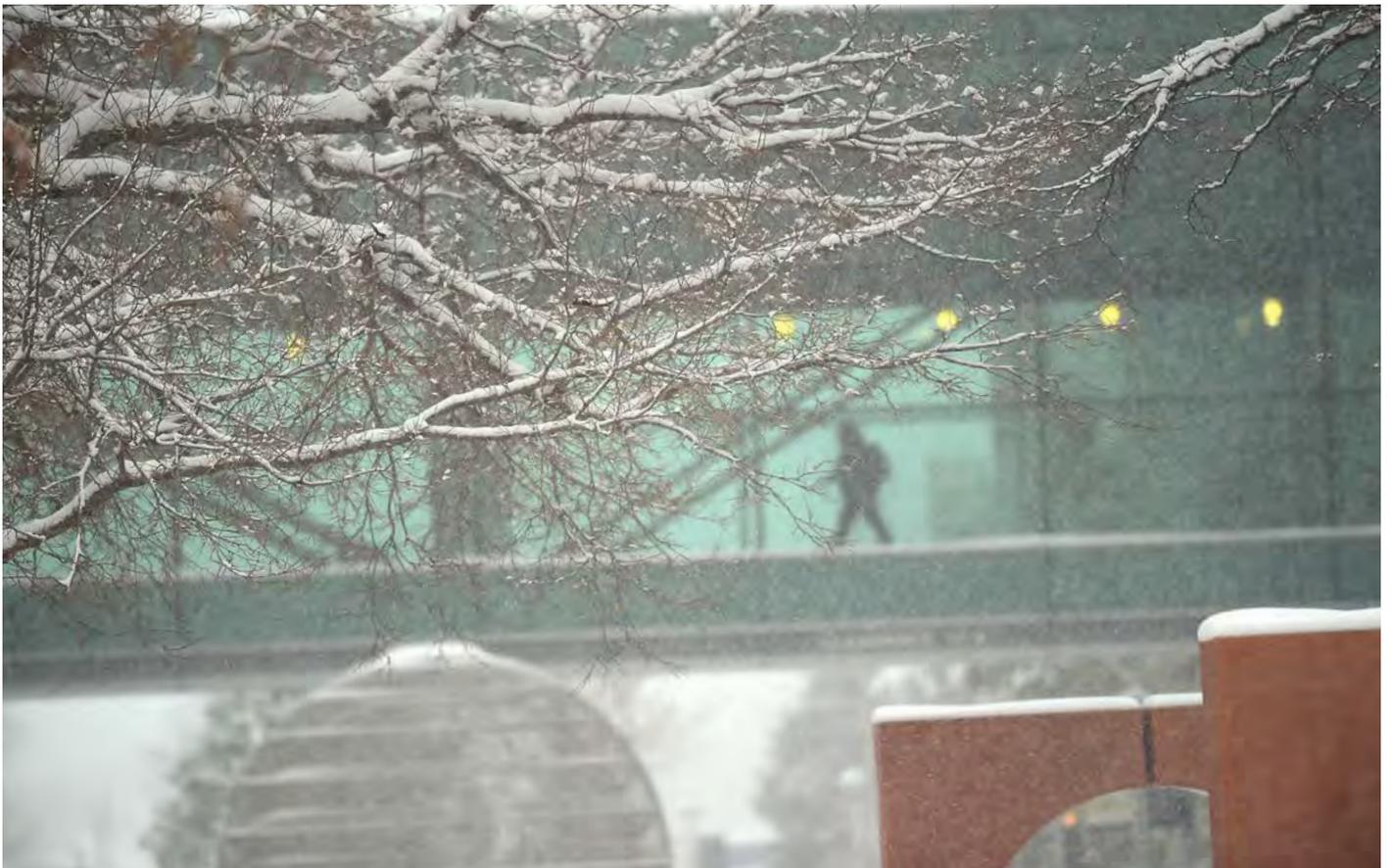


Figure 17 - Monthly Average High/Low Temperatures and Precipitation



Snowstorm on the Anschutz Medical Campus.

E. Climate

Denver is located in the semi-arid high plains region of the United States. More specifically it is classified as a tropical and subtropical steppe Climate (BSk) in the Köppen Climate Classification system. The 147 year average temperature is 50.5°F with annual rainfall of 14.30 inches. Of this precipitation total, 6.79 inches, or 47%, generally falls between June and September.

On average there are 115 clear days, 130 partly cloudy days and 120 cloudy days in Denver. The region receives approximately 69% of total possible sunshine which is higher than San Diego, California.

The 1981-2010 annual mean daily temperature is 50.1°F with an annual mean daily maximum temperature of 64.0°F and an annual mean minimum temperature of 36.3°F. However, the maximum recorded temperature in Denver is 104°F and on average there are 36 days each year with temperatures above 90°F. The minimum recorded temperature is -25°F.

Winds generally blow from the south and southwest with an annual average wind speed of 8 MPH. However, the highest maximum recorded wind speed is 70 MPH from the northwest.

This is because the Front Range of the Rocky Mountains, approximately 20 miles west of the campus, creates conditions that can often send powerful föhn winds from the north and northwest towards Denver. A unique characteristic of these winds is that as they descend they get warmer, which partially explains why the difference between maximum and minimum recorded temperatures is greatest during the winter months.

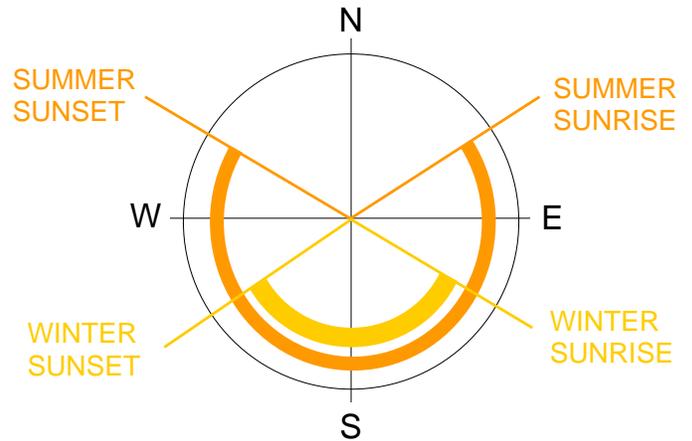


Figure 18 - Degree of Sunrise and Sunset at Solstice

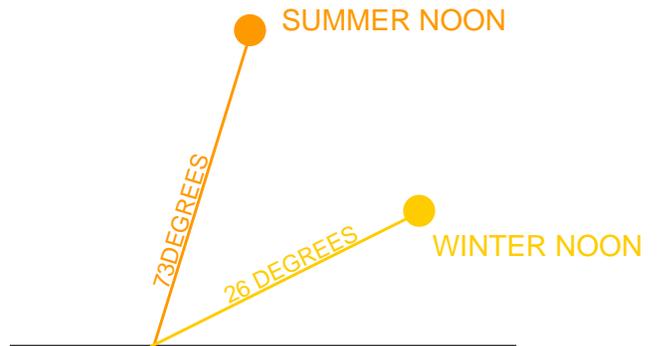


Figure 19 - Sun Angle above Horizon at Solstice

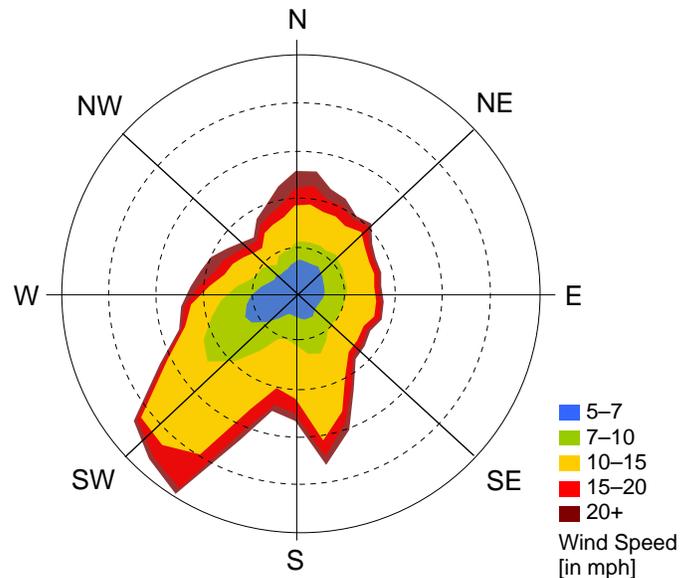


Figure 20 - Prevailing Winds

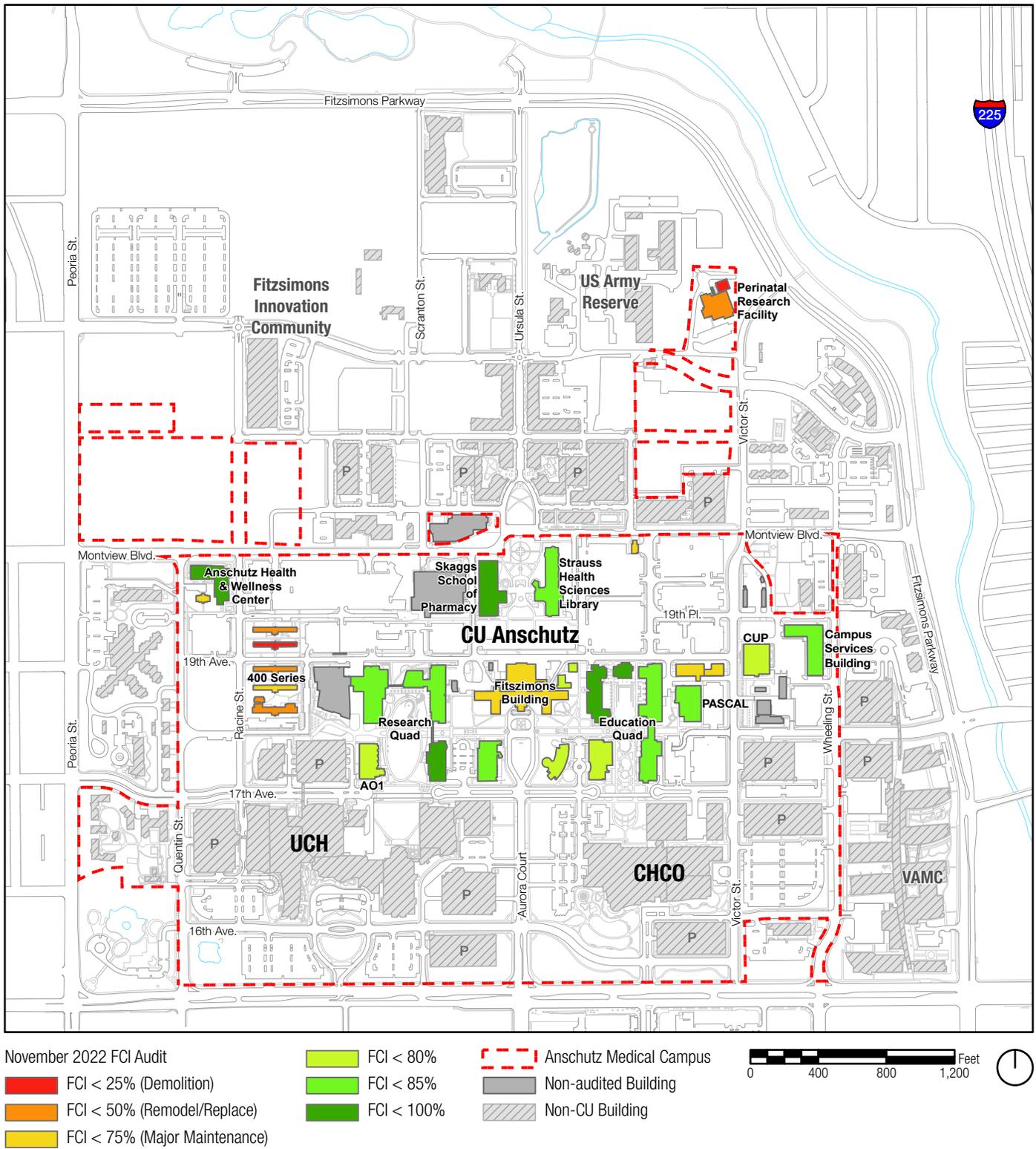


Figure 21 - Facility Condition Index

II.7 FACILITIES CONDITION ASSESSMENT

CU Anschutz generally targets to keep buildings at a Facilities Condition Index (FCI) 80 or 85 percent or better. Of the 31 campus facilities for which recent audits are available, eight (8) meet or are above this threshold in good condition.

All 10 of the facilities constructed prior to the university's arrival on campus, in addition to the former Fisher House, were below their target FCI. The "400 series" buildings and the Fire Station were constructed in the 1940's and are slated for long-term demolition. As portions of the Fitzsimons Building are renovated, appropriate systems improvements will be made to improve its FCI above 73%.

The other 12 facilities are below their target FCIs. Seven are within 5% of their target FCI with the remainder more than 5% below. Strategic replacement of system components and additional maintenance should improve these FCIs.

CU Anschutz completes a Facility Condition Audit for each of its buildings every three to five years to assess the condition of the systems within each as part of the Office of the State Architect (OSA)'s State Buildings Program (SBP). A FCI is calculated for each building using these audits to determine the magnitude of repairs needed in each to remain in "like new" condition.

The FCI is used to recommend whether routine or minor maintenance, major replacement and upgrade, or demolition are required for each building. The systems that are evaluated include foundation, skin, floors, roof, ceilings, interior partitions, windows, doors, heating, ventilating, cooling, plumbing, and safety.

McKinstry recently completed new audits for all but four campus facilities in November 2022. The university decided to develop a more robust, consistent, and comprehensive assessment methodology for this annual process. To establish the new system, an outside third-party was hired to ensure the new system reflected current best practices and guidance.

In the past, the costs to improve a given system were based on a percentage of overall building cost. The new methodology aggregates estimated repair costs for individual system components.

As a result of the new audits, nearly all campus facilities saw a decrease in their FCI. Only the Anschutz Health and Wellness Center, Skaggs School of Pharmacy and Pharmaceutical Sciences, Research 1 South, Education 1, and Barbara Davis Center saw improvements and meet or are above their target FCIs. The Fulginiti Pavilion, PASCAL, and a trailer at the Perinatal Facility make up the rest of the eight buildings that meet or are above their target FCI.



The original 400 Series Buildings have low FCI scores.



The Barbara Davis Center meets its FCI target score.

Building Name	Building Number	Year Built	Current Replacement Value (CRV) 2021\$	Last Audit	Actual FCI	Target FCI
Anschutz Medical Campus - General Funded						
Academic Office	L15	2007	\$59,215,882	November 2022	78%	85%
Anschutz Health and Wellness Center ⁴	V08	2012	\$43,813,658	November 2022	94%	85%
Anschutz Health Sciences Building ⁴	P12	2021	\$265,129,000	N/A		
Barbara Davis Center	M20	2005	\$52,392,209	November 2022	85%	85%
Building 400	Q09	1940	\$9,045,914	November 2022	34%	80%
Building 401	R09	1940	\$6,541,261	November 2022	70%	80%
Building 402	S09	1940	\$6,534,331	November 2022	33%	80%
Building 406	T09	1940	\$5,625,727	November 2022	23%	80%
Building 533	R24	1980	\$1,466,702	November 2022	76%	85%
Building 534	S25	1990	\$952,490	November 2022	79%	85%
Campus Safety & Preparedness Facility ⁴	Q34	2023	\$15,900,000	N/A		
Campus Services	T36	2007	\$29,442,696	November 2022	84%	85%
Education 1	P26	2007	\$58,377,384	November 2022	87%	85%
Education 2 - North	P28	2007	\$63,964,518	November 2022	84%	85%
Education 2 - South	L28	2007	\$45,813,319	November 2022	83%	85%
Environmental Health & Safety	R30	2004	\$9,334,831	November 2022	75%	85%
Fire Station (Building 531)	X28	1940	\$1,394,233	November 2022	52%	85%
Fisher House	V07	1993	\$1,466,497	November 2022	51%	
Fitzsimons Building	Q20	1941	\$207,104,261	November 2022	73%	85%
Fulginiti Center for Bioethics & Humanities	R27	2007	\$11,903,518	November 2022	90%	85%
Nighthorse Campbell Native Health Building ¹	M24	2002	\$22,761,816	November 2022	80%	85%
PASCAL	P30	2001	\$14,207,991	November 2022	85%	85%
Perinatal Research Facility ¹	AK32	1980	\$13,932,515	November 2022	42%	85%
Perinatal Research Facility Modular East	AL32B	2005	\$869,194	November 2022	0%	85%
Perinatal Research Facility Modular West	AL32A	2015	\$2,234,749	November 2022	99%	85%
Research 1 - North	P18	2004	\$246,456,079	November 2022	81%	85%
Research 1 - South	L18	2004	\$202,854,395	November 2022	86%	85%
Research 2	P15	2008	\$382,414,902	November 2022	82%	85%
School of Dental Medicine Building ¹	L26	2005	\$58,565,197	November 2022	77%	85%
Skaggs School of Pharmacy ⁴	V20	2011	\$86,842,256	November 2022	95%	85%
Strauss Health Sciences Library	V23	2007	\$54,184,620	November 2022	83%	85%
University Police (Building 407)	U09	1942	\$5,632,656	November 2022	27%	80%
Subtotal General Funded			\$1,986,374,801			
Anschutz Medical Campus - Auxiliary Funded						
Bioscience 2	Y18	2015	\$56,035,147			85%
Central Utility Plant ²	S34	2002	\$120,953,603	November 2022	77%	90%
Henderson Parking Structure ²	V17	2007	\$36,411,993			85%
Subtotal Auxiliary Funded			\$213,400,743			
Campus Infrastructure		2002	\$129,455,982			90%
Total			\$2,329,231,526			

Notes:

- 1) SB-102 building
- 2) Enterprise that is self supporting from cash sales of services and not general funded activities. Non-academic GSF.
- 3) Campus infrastructure project (multiphase) includes site prep/demo, storm/sanitary/water, electrical, steam & chilled water distribution.
- 4) Structures built within the last 10 years (after 2010) are not yet eligible for state Controlled Maintenance funding.

Figure 22 - January 2021 Facility Condition Index

The university provides FCI updates to the State of Colorado when it submits its annual Controlled Maintenance (CM) request to the OSA. The OSA/SBP then visits the university each summer to review CM needs and the status of ongoing CM projects. The state will provide CM funding to address the building deficiencies based on most critical needs and availability of funds for generally funded buildings.

Based on SBP guidance, the FCI reflects the total costs to improve the building to its target. Each building system is assigned a scaled value that reflects its condition against its new or original condition. Based on this value, the cost to maintain, renovate, retrofit, restore or repair each is estimated.

The sum of these maintenance costs for each facility are compared its full current replacement value (CRV) to calculate a system deficiency total as shown in the formula below:

System Deficiency Total = (sum of all building system maintenance costs/CRV)

This figure is then used to compute a building level FCI using the following SBP guidance:

FCI = (1 – System Deficiency Total) x 100%

In general, a lower FCI indicates that a building requires more significant repair and renovation to return to a good condition. A FCI below 25% indicates that a facility's systems have deteriorated to point that it would be more cost-effective to construct a new building.

Figure 21 shows the current FCI and replacement value for each of university building.



The Nighthorse Campbell Native Health Building was built in 2002.



The Barbara Davis Center for Childhood Diabetes



The glass faces of the Research Buildings in the Research Quad.

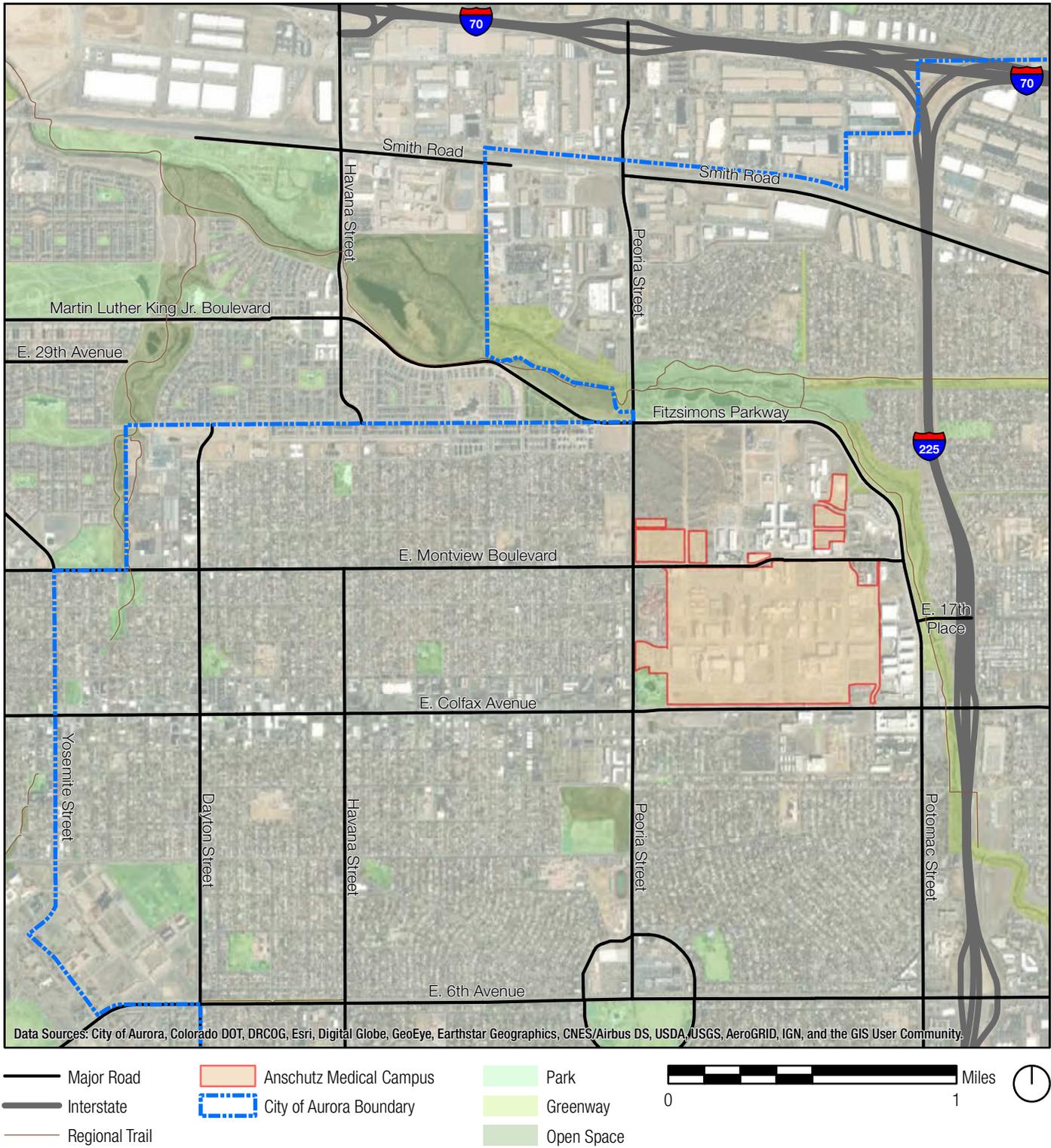


Figure 23 - Regional Roadway Access

II.8 CIRCULATION SYSTEMS

A. Circulation Network: Regional, Local, Internal

REGIONAL ACCESS

Based on historic traffic data counts, approximately 15 to 20 percent of all Anschutz Medical Campus trips involve I-225 South. The highway is a north-south interstate on the eastern edge of the Denver metropolitan region.

I-225 connects to I-70 about 1.5 miles north of campus and to the Denver Tech Center (DTC) and I-25, approximately 10 miles to the south. I-70 is an east-west highway that connects the campus to Denver and the mountains to the west. I-25 is the primary north-south highway through the Front Range region between Colorado Springs and Fort Collins.

Drivers use the Colfax Avenue and 17th Place exits on I-225 to access campus. From these points, Fitzsimons Parkway, Wheeling Street, Aurora Court (which becomes Ursula Street south of Colfax Avenue), and 17th Place collectively serve approximately one-half of all daily traffic that enters and exits the campus.

LOCAL ACCESS

Sand and Toll Gate Creeks act as natural barriers to local campus access to the north and east.

Colfax Avenue, one of the Denver region's primary east arterial roadways, forms the southern campus boundary and provides local access to the east. It also directly connects the Anschutz Medical Campus to downtown Denver and CU Denver to the west. While 17th Place also crosses the Creek to the east, it ends at I-225.

Peoria Street, is an arterial roadway to the west of campus and connects it to I-70 and other points north. Fitzsimons Parkway, another arterial, runs between Colfax Avenue and Peoria Street and forms the eastern and northern boundaries of the former FAMC site.

Potomac Street, the continuation of Fitzsimons Parkway south of Colfax Avenue, and Peoria Street, are the two arterials providing local campus access from the south.

The campus has better local access to its west. In addition to Colfax Avenue, 17th Avenue, Montview Boulevard, and Martin Luther King Jr. Boulevard connect the Anschutz Medical Campus to downtown Denver.

MLK Boulevard was extended to Fitzsimons Parkway from Moline Street in 2019. It is the most northern of the four major roadways mentioned above. It provides two travel lanes in each direction and connects the campus to Denver's Central Park neighborhood and downtown Denver.

Montview Avenue is a collector roadway that connects the campus to Denver's City Park five miles to the west. It provides two travel lanes in each direction between the campus and Central Park Boulevard and one travel lane in each direction from Central Park Boulevard to City Park.

While 17th Avenue is considered a primary roadway, it only provides one travel lane in each direction between the campus and Monaco Parkway in Denver. As such, it is the smallest of the four roadways.



Colfax Avenue connects the campus to downtown Denver.

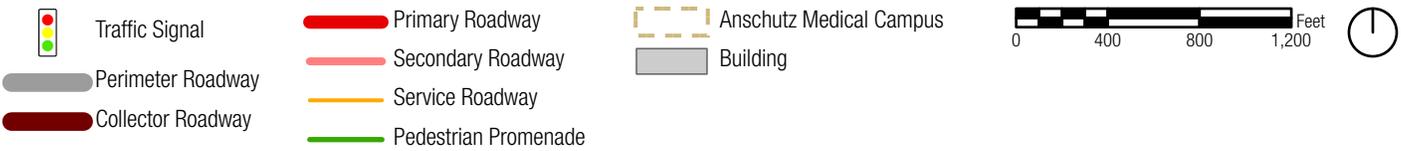
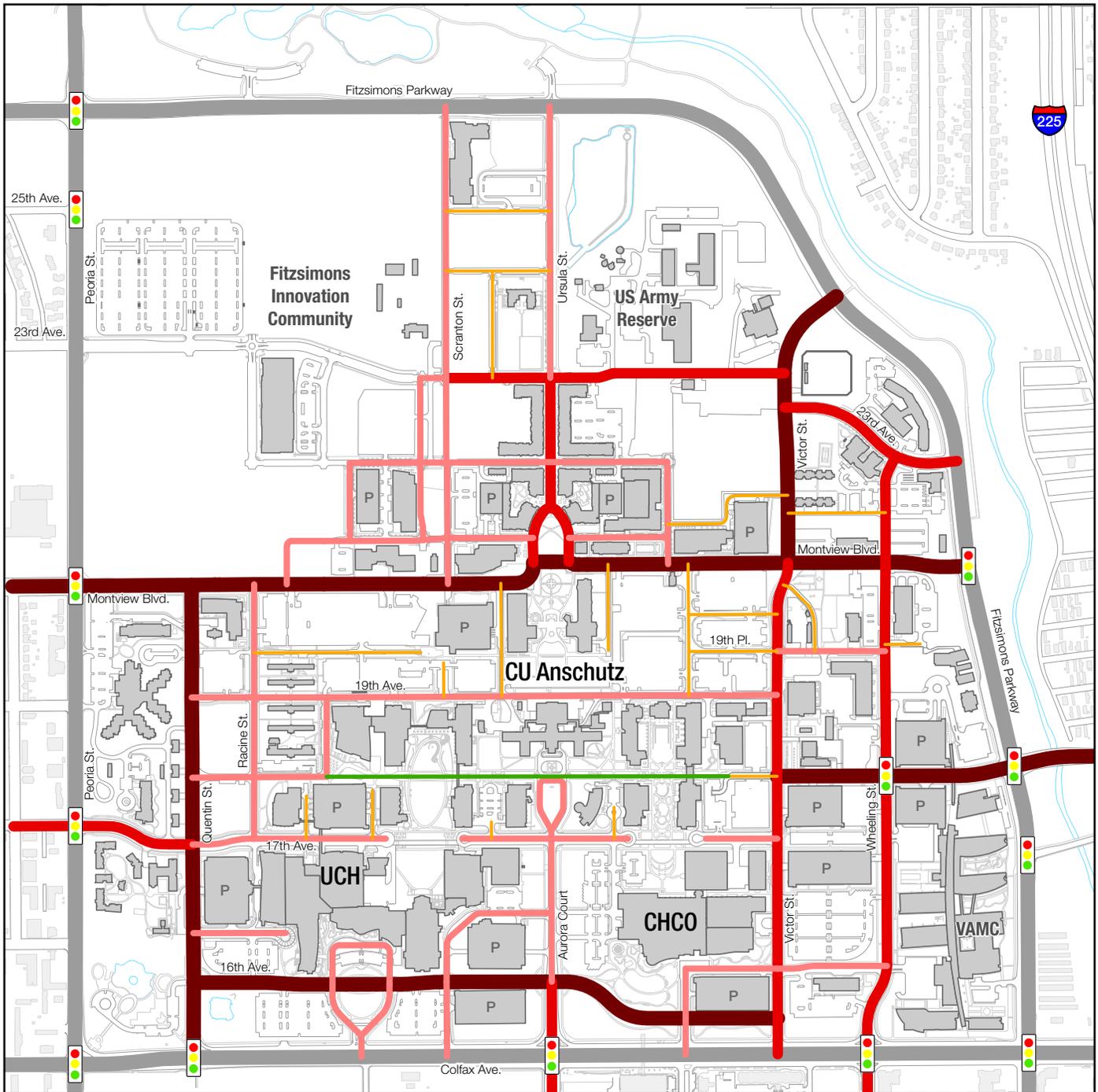


Figure 24 - Existing Roadway Network

INTERNAL ROADWAYS

The existing roadway system within the campus is based on a modified loop road concept. The loop is comprised of four trunk roadways, which include Montview Boulevard, Victor Street, 16th Avenue and Quentin Street.

Parking lots and structures lie along the loop. From these drivers reach their campus destination on foot. This allows the campus core centered on East 17th Place to remain closed to vehicular traffic. This pedestrian promenade, also referred to as the Art Walk, is restricted to pedestrian and bicycle activity.

Montview Boulevard is the only east-west roadway that extends the entire width of the FAMC area and is also used by non-campus users to access the FIC, VAMC, and I-225. It currently provides one travel lane in each direction of traffic and is planned for expansion to two lanes in each direction. Signals are located at its intersections with Fitzsimons Parkway and Peoria Street.

Pedestrians often cross Montview Boulevard from campus to reach the FIC to the north. Most crosswalks are signed to alert drivers of potential activity and there is only one stop sign along its length. Crossing volumes are high and will increase with further FIC development.

Victor Street, the east leg of the loop, also has a high level of pedestrian crossing activity. This is due to CHCO staff parking and hospital facilities being on opposite sides of the road. As a result, it has been “calmed” with pavement treatments and signage to raise driver awareness of pedestrians.

16th Avenue, the southern edge of the loop, provides access to the hospitals. In front of UCH, pedestrian crossing volume is high as parking is located south of the roadway and hospital facilities are to its north.

19th Avenue provides a continuous connection through campus and forms the northern edge of the campus core. It experiences significant pedestrian crossing activity, as parking is north of it and most campus destinations are to its south. Several raised crosswalks have been installed along its length help calm traffic.

17th Avenue forms the southern edge of the campus core. However, it is discontinuous for automobile traffic except for authorized vehicles. The portion of the road between School of Dental Medicine Building and Education 2 was opened to traffic in 2012 across a wide, raised pedestrian crossing.

B. Service Activity

All campus facilities require regular service vehicle access for maintenance activities and deliveries. 17th Avenue and 19th Avenue currently accommodate this type of traffic should continue to do so.

17th Avenue provides service access to the CU Anschutz facilities along its north side. These include the Barbara Davis Center, Nighthorse Campbell Building, and the School of Dental Medicine Building.

Loading docks for Research 1 North, Research 2, Building 500, and Education 1 and Education 2 North are on the south side of 19th Avenue. The service area for Education 1 in particular is of limited size so that parked delivery trucks often protrude into the roadway.

Wheeling Street to the east of campus also provides access to CU, CHCO, and VAMC parking and campus support facilities.

The location of the service areas at the two affiliate hospitals and the VAMC, and how they are accessed, are described below:

- UCH has service receiving areas along 17th Avenue. Vehicles access these from the Quentin Street/17th Avenue intersection. They make use of 17th Avenue or Quentin Street to reach either Peoria Street or Colfax Avenue.
- CHCO also has a service receiving area along 17th Avenue. Vehicles enter it via the 17th Avenue/Victor Street intersection and make use of Victor Street, 16th Avenue, 17th Place, or Wheeling Street, depending on their direction.
- VAMC has a service area that is accessed from Wheeling Street.

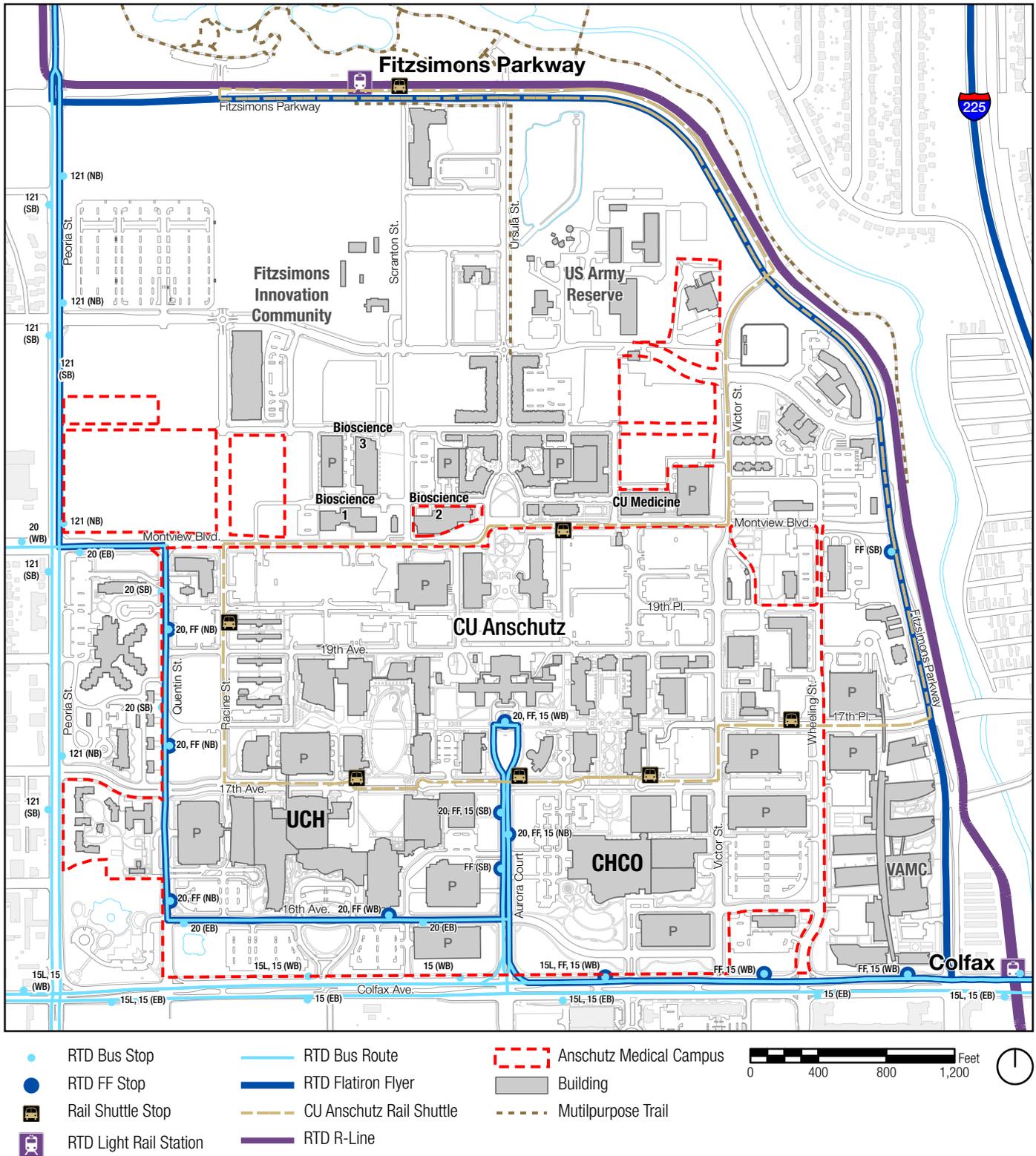


Figure 25 - Existing RTD Network

C. Transit

The Regional Transportation District (RTD) is the primary transit provider for the Denver metropolitan region and the Anschutz Medical Campus. It provides local bus, limited bus, and light rail services. The university has augmented these with a light rail shuttle service and an internal demand-response courtesy shuttle.

A map of existing transit routes that provide service to the campus can be found in Figure II.26.

RTD “R” LINE LIGHT RAIL

In early 2017, the RTD opened the “R” Line light rail transit service between the Peoria Station on the University of Colorado “A” Line and the RidgeGate Parkway Station in Lone Tree, Colorado. The line roughly follows the I-225 and I-25 corridors over its 10.5-mile length. Two of its 16 stations, Colfax Station and Fitzsimons Station, service the campus

The Colfax Station is located east of campus and is an elevated structure over Colfax Avenue. Stairs and elevators connect it to both sides of the roadway. From the northern entrance one must cross Fitzsimons Parkway and then walk approximately 1,100 feet to the eastern campus boundary along Wheeling Street.

The Fitzsimons Station is located on the north side of Fitzsimons Parkway immediately west of its intersection with the future extension of Scranton Street. A pathway that extends Ursula Street provides a pedestrian connection to the Anschutz Medical Campus. As area between the station and the campus is further developed, more pedestrian connections to the station will be provided.

RTD BUS ROUTES

RTD operates five bus routes as part of its larger transit service network to provide access to and from the site. The routes that currently serve the campus are Route 15, Route 15L, Route 20, Route 121, and Route FF5.

Route 15 - East Colfax Avenue

Route 15 provides 24-hour service along East Colfax Avenue between Union Station in downtown Denver and Airport Road and Colfax Avenue in Aurora. The major activity centers along the route include Denver’s Central Business District (CBD), National Jewish Health, and the Anschutz Medical Campus. The route turns off Colfax Avenue onto Aurora Court, with a bus stop in front of the Fitzsimons Building.

Route 15 service is frequent though headways vary by day of week and time of day. During AM and PM peak hours, service runs approximately every 30 minutes. However, not all trips along the route travel its entire length so some buses that depart Union Station do not arrive at the campus.

Route 15L - East Colfax Limited

Route 15L provides limited stops between RTD’s Decatur-Federal station in the west to Aurora Town Center. For most of this route it runs alongside Route 15.

There are stops along Colfax Avenue at Peoria Street, Ursula Street/Aurora Court and Potomac Street/Fitzsimons Parkway. It does not turn onto Aurora Court.

The RTD and City of Denver’s Colfax Connections project will replace 15L service with a Bus Rapid Transit (BRT) lane from Broadway to Syracuse Street in Denver. This will reduce travel times and allow for more frequent service along the Colfax Corridor.



The East 17th Place and Aurora Court RTD stop.

Route 20 - 20th Avenue

Route 20 provides service between the National Renewable Energy Laboratory (NREL) in Golden in the west to the Fitzsimons Building in the east. The route primarily runs along 20th Avenue, 17th Avenue, 23rd Avenue, and Montview Boulevard and loops into and out of the Anschutz Medical Campus.

Weekdays it runs every 15 minutes during AM and PM peak hours, every 30 minutes between peak hours and hourly from 8:00 to 11:00 PM.

Route 121 - Peoria Street

Route 121 provides 24-hour service from the 40th Avenue & Airport Boulevard Station south to RTD's Nine Mile Station. While this route does not run through the campus it stops along Peoria Street at Montview Boulevard, East 17th Avenue, and Colfax Avenue.

Route FF5 (Flatiron Flyer) Boulder-Anschutz

Route FF5 is a regional route that provides service from Boulder to the Anschutz Medical Campus. It begins at the Downtown Boulder Station, making 8 stops before making two stops on the campus at the Fitzsimons Building and the Anschutz Health and Wellness Center. It then returns to Boulder.

The FF5 provides seven morning trips, between 5:18 and 8:41 AM, and four evening trips, between 2:08 and 4:28 PM, from Boulder to the Anschutz Medical Campus to accommodate commuters. There are three morning trips, between 7:02 and 8:34 AM, from campus to Boulder and seven evening ones, between 3:15 and 6:15 PM. All trips are scheduled approximately 30 minutes apart within these periods.

D. University Transportation Services

RAIL SHUTTLE

The CU Anschutz Medical Campus Rail Shuttle provides service to/from six locations on campus to the Fitzsimons Station. Currently due to the impacts of COVID-19 on campus operations it is running as an on-request service.

Under normal operations, it runs in a one-way clockwise loop from the station. The shuttle operates between 6 AM and 5:00 PM during weekdays with 15-18 minute frequency of service between stops. Holiday hours will vary and are posted at the designated stops and in the buses.

The shuttle does not operate on Saturdays or Sundays.

COURTESY SHUTTLE

The three entities operate courtesy shuttles within the Anschutz Medical Campus, referred to as the Campus Circulator Service. This service operates from 7 AM to 3:30 PM Monday through Friday. The service transports individuals internally (when requested) via small electric cart vehicles. This is a demand-response system that serves the core area bounded by Montview Boulevard, Colfax Avenue, Wheeling Street, and Quentin Street. Ridership varies depending on activity.



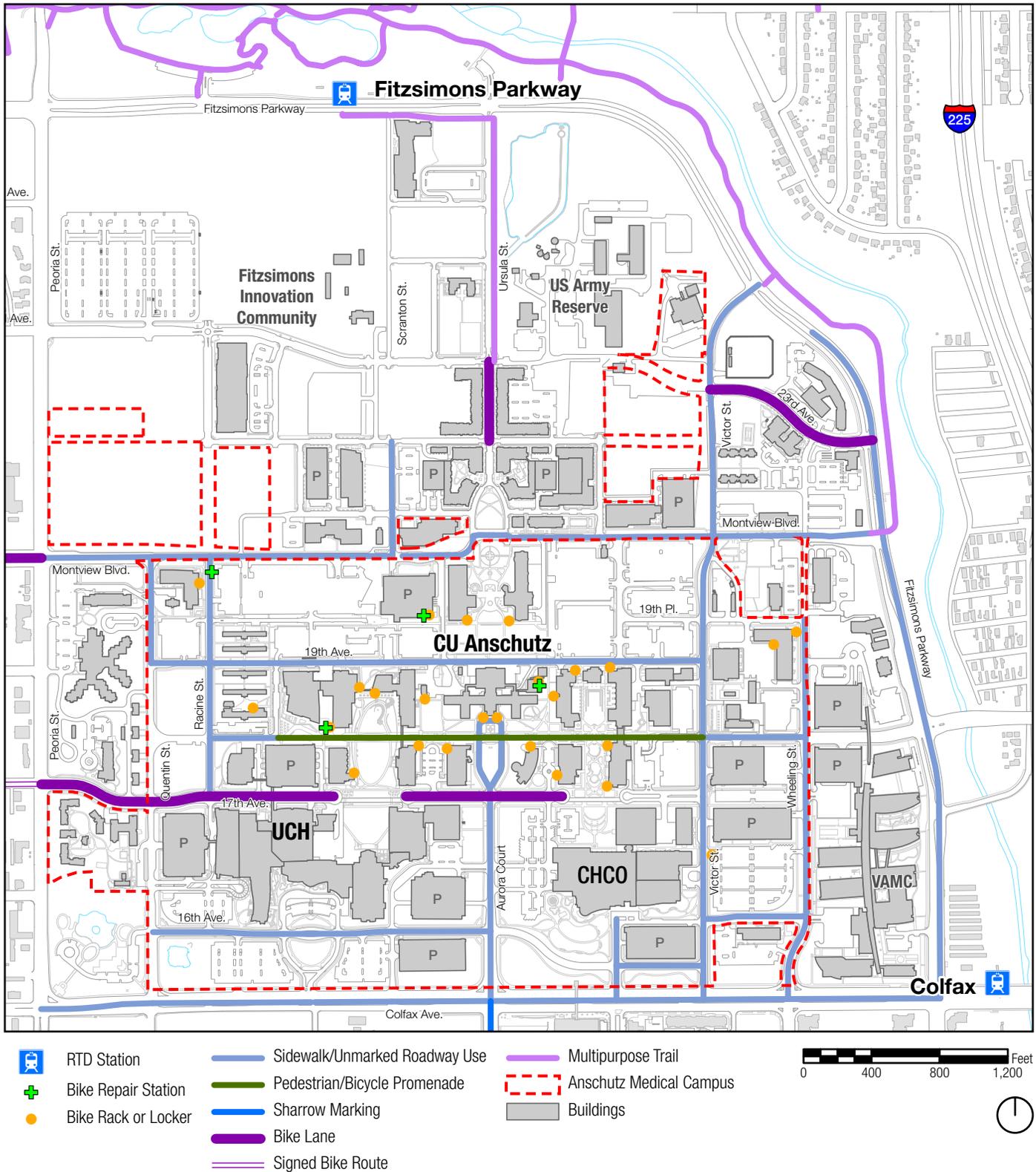


Figure 26 - Existing Bicycle Network

E. Bicycles

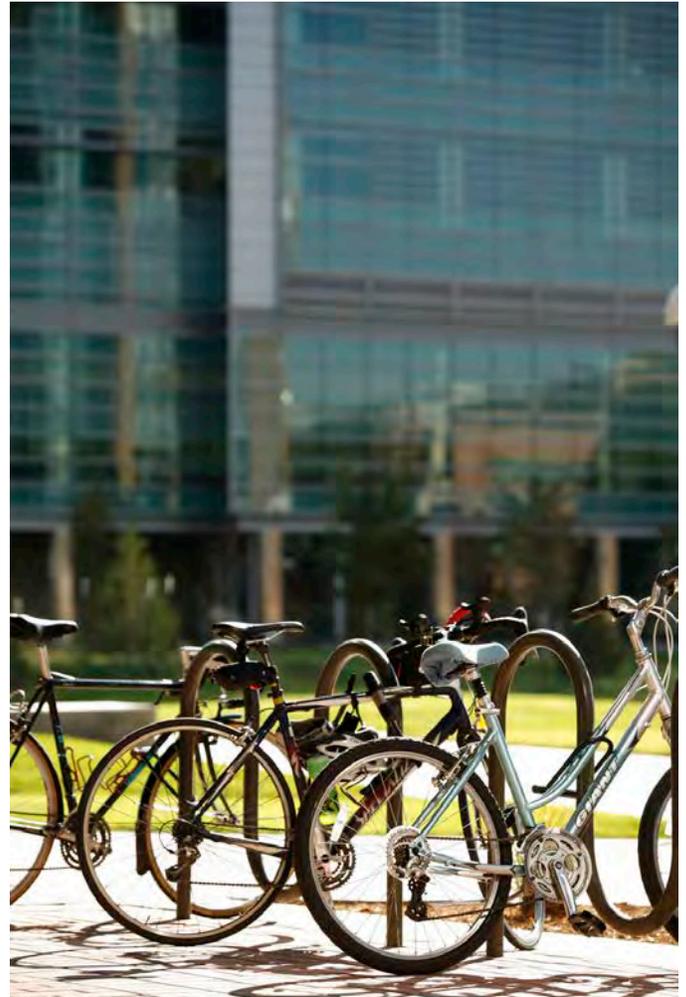
Currently, the only designated bicycle lanes on the Anschutz Medical Campus are along 17th Avenue. In addition, the 17th Place Art Walk is a designated bicycle/pedestrian promenade that is closed to vehicular traffic. Otherwise, bicycles typically ride along unmarked roadways or on adjacent sidewalks.

Over 20 bicycle parking racks/lockers are provided throughout the campus. Most of these are located between 17th Place and 19th Avenue. Bicycle lockers are also available in the Henderson Parking Structure. In addition, there are four bicycle repair stations on campus that allow cyclists to perform simple repairs.

Connections to surrounding bicycle and regional trail networks are described below:

- Montview Boulevard provides a designated bike lane along its 5-mile length between Denver's City Park and the Anschutz Medical Campus. The lane is currently not continued across Peoria Street onto campus. The City of Aurora plans to provide such bicycle lanes when Montview Boulevard is improved.
- East 17th Street is a signed City of Aurora bike route.
- Ursula Street south of campus provides a sharrow marking to guide cyclists and alert motorists to their presence. At 13th Place a short trail connects to a signed bike route on 13th Avenue.
- A multi-purpose trail along Ursula Street north of campus connects the Fitzsimons station to the intersection of East 23rd Avenue and Ursula Street.
- The Sand Creek and Toll Gate Creek trail system are just outside the campus boundary. Connections are provided at the intersections of Fitzsimons Parkway with Montview Boulevard, Victor Street, Ursula Street, and the future Racine Street.

Figure 26 shows the existing campus bicycle network.



Bike racks see consistent use in the Research Commons.



Cyclists lock their bikes east of Research 1 North.

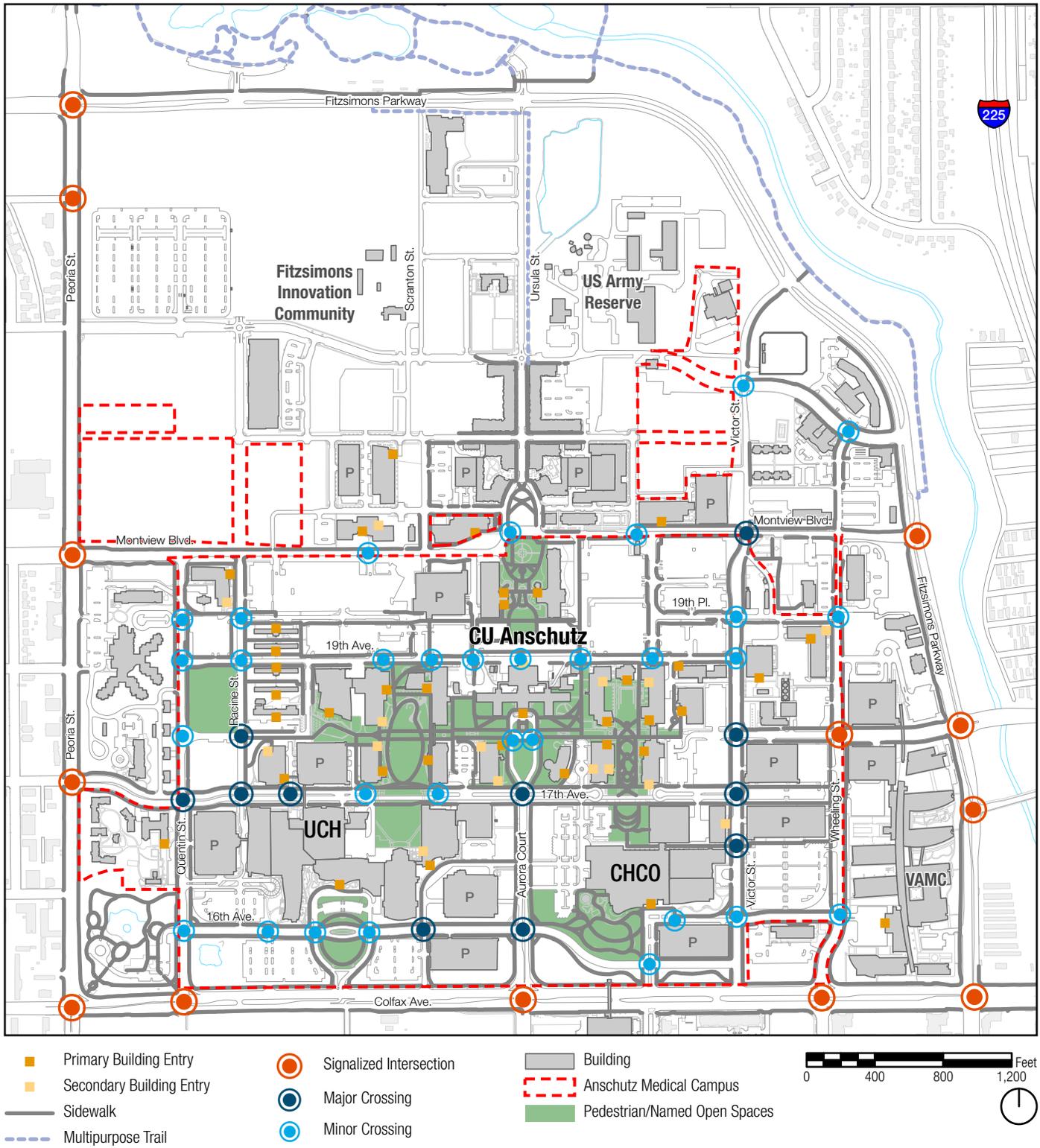


Figure 27 - Existing Pedestrian Network

F. Pedestrians

Most campus roadways have sidewalks along their length. In addition, pedestrian-only zones and plazas have been established along 17th Place in the center of the campus. These urban place-making amenities help to visually define the campus and also provide outdoor seating and congregation areas.

Skywalks are also provided between several buildings to enhance pedestrian connectivity, especially when temperatures are extreme or during periods of inclement weather. A pedestrian overpass on Colfax Avenue connects the campus to the Fitzsimons Village development south of CHCO.

Notable permanent gaps in the sidewalk network exist along the south side of Montview Boulevard, behind the Fitzsimons Building on the south side of 19th Avenue, and along the west side and south sides of Fitzsimons Parkway north of campus. Portions of the sidewalk network can also be temporarily closed to accommodate construction or maintenance activities.

As noted earlier, Montview Boulevard will be improved by the City of Aurora in the future. When this project is completed sidewalks will be provided along its entire southern side. In addition, as the FIC is further developed additional sidewalks will be provided along Fitzsimons Parkway.

As noted earlier, several campus roadways have significant pedestrian crossing activity. Traffic-calming measures like speed tables, special pavements, and bump-outs have been introduced on them to alleviate pedestrian/automobile conflicts. However, due to the volume of crossings the following areas remain of concern especially at the start and end of work days and during clinical hours, classes, and special events.

VICTOR STREET

CHCO's parking structures are located on the east side of this roadway between 16th Avenue and 17th Place while the hospital facilities are on its west. Signs and pavement marking have been added to alert motorists of the presence of pedestrians.

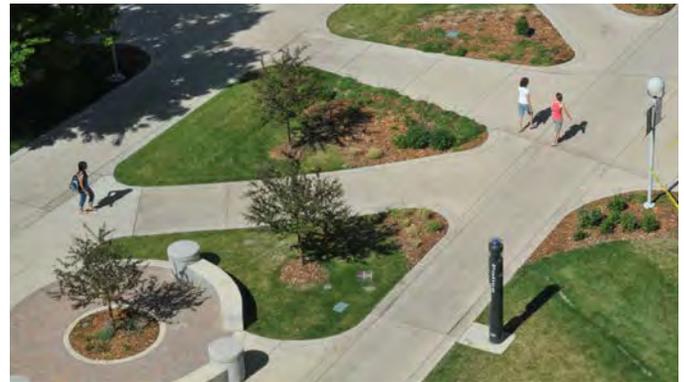
19TH AVENUE

Pedestrian crossing activity along 19th Avenue between Victor and Scranton Streets is high due to parking being on its north while campus facilities are located to its south. Raised crosswalks have been installed and a 15-mph speed limit implemented to slow vehicular traffic.

16TH AVENUE IN FRONT OF UCH

UCH visitor parking is located on the south side of 16th Avenue while hospital facilities are on the north. As a result, during normal UCH operating hours pedestrian crossings of it are high.

Some traffic calming measures such as all-way stop signs and a curved oval-sized median to slow motorists have been installed. In addition, attendants may be located at major crossings to stop traffic to allow pedestrians to cross.



Sidewalks provide connectivity in the Education Commons.



Jaywalking on campus is common at certain locations.

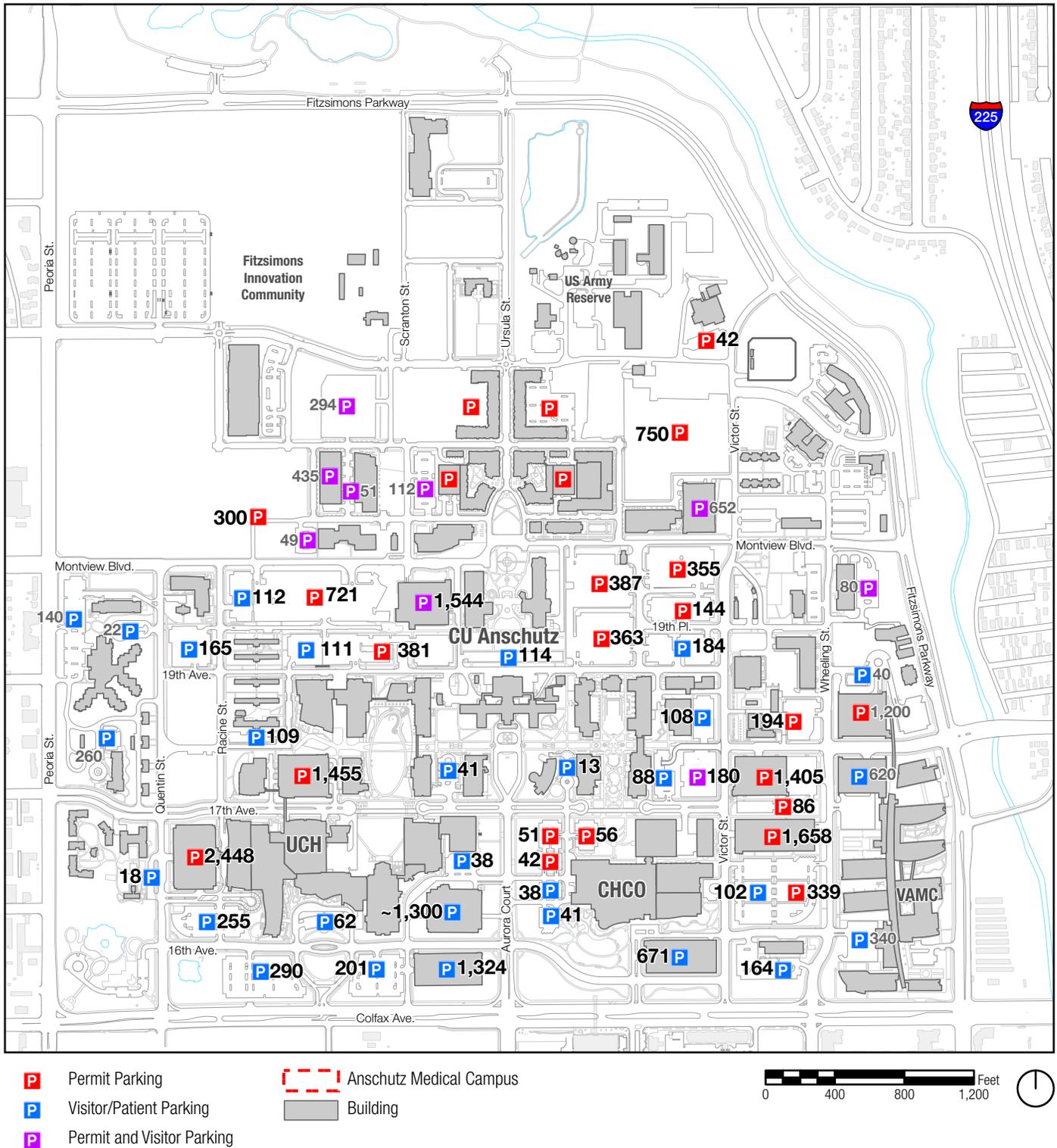


Figure 28 - Existing Parking Locations

II.9 PARKING SYSTEMS

A. Type and Ownership

The three institutions on the Anschutz Medical Campus have developed specific parking resources to meet their individual needs. As a result, each entity sets its own parking rates and policies.

In total, over 18,500 parking spaces will be available throughout the Anschutz Medical Campus when UCH completes its Garage 2. Although parking demands are variable by day and time of year, for the most part, existing resources and those under construction can meet most needs with adequate enforcement and management. However, there may still be periods when additional parking is needed.

Each institution offers pay parking with gated controls for students, faculty, and staff. Monthly parking rates vary and reflect different institutional approaches on how to subsidize the cost of monthly parking.

Paid visitor parking is provided in kiosk and gated parking facilities at CU Anschutz. CHCO and UCH provide free visitor and patient parking in their visitor lots and garages.

Figure II.30 shows the current location of parking lots and garages for the university, UCH, and CHCO. A more detailed breakdown of each institution's parking inventory and policies follows. For a breakdown of parking counts by parking facility, see Appendix VII.3.

There is currently little coordinated effort to address parking demand through alternative approaches, such as reducing single-occupancy vehicle trips to and from the campus.

Though not a part of the campus, adjacent sites such as CU Medicine, FIC, and VAMC provide other parking facilities. These may help meet existing and potential future parking demands, though more study and coordination with these entities is required.

The apartments and residences north of Montview Boulevard also provide garage and surface lot parking. However, these spaces are generally assigned to residents for their use and are not publicly accessible to the campus population.



CU Anschutz surface parking lots are north of East 19th Avenue. The Henderson Garage is the large building visible on the middle right.

Institution	Parking Type	User	Estimated Spaces	March 2019 Average Occupancy	Percent of Capacity	Recommended Spaces ¹	Effective Surplus
CU Anschutz²							
	Garage	Mixed ³	1,544	1,352	88%		
	Lot	Permit	2,767	2,462	89%		
	Lot	Mixed ^{3,5}	200				
	Lot	Visitor ⁵	949				
	Rock Lot	Permit	1,150	868	75%		
CU Anschutz Subtotal			6,610				
UC Health							
	Garage	Employee	3,905				
	Garage	Visitor ⁴	2,624				
	Lot	Visitor	911				
UCHealth Subtotal			7,440				
CHCO							
	Garage	Employee	3,063	2,605	85%		
	Garage	Visitor	671	657	98%		
	Lot	Employee	776	265	62%		
	Lot	Visitor ⁵	202				
CHCO Subtotal			4,712				
Total Spaces			18,762				

Notes

- 1) **Will need to be recalculated when plan is developed.** Recommended Spaces takes into account existing demand for parking plus an adjustment for Effective Supply. Effective Supply refers to the useable parking supply within each system after factoring in a cushion of spaces that is recommended to allow for proper circulation, temporary loss of spaces (due to minor construction), etc...
- 2) Occupancies for CU Anschutz are based on data collected by the parking operator.
- 3) The Henderson Garage and East Overflow Lot can be used by both permit holders and visitors.
- 4) Planned additional Visitor Garage expected 2022 - est 1300 stalls, reduction of 263 lot spaces
- 5) Utilization of visitor lots is not calculated. The main visitor's garage handles most of CHCO's visitor parking demands.

Figure 29 - Campuswide Parking Capacity and Estimated Utilization

B. Capacity

The actual supply of parking spaces on the Anschutz Medical Campus is not a fixed number. Inventories can vary significantly depending on construction activity, the use of temporary parking lots, and relatively low-cost activities such as realignment or restriping of existing parking areas.

Figure II.29 provides estimates of each institution's parking inventory and estimated usage as of March 2019. The recommended space figures for each institution account for the effective supply reductions mentioned above. This calculation is used to better determine parking capacity within the system (Figure II.31, footnote 1).

March 2019 was used for the analysis as it tends to be one of the busier times for class schedules and hospital patient activity. 2019 also represents the most recent year of full demand for parking on campus.

CU Anschutz recently created two staff/student permit-only gravel "Rock Lots" north of Montview Boulevard. Without them, the university would not be able to meet its current parking demands.

Even with them, the lots closest to campus facilities are highly utilized. Only 4% or less of the spaces in the Breckenridge, Frisco, Purgatory, Aspen, and Durango lots are vacant during peak periods.

UCHealth is also constructing a new parking garage to meet an increase in visitor parking demands. The new structure will be located in close proximity to the Anschutz Outpatient Pavilion on the north side of 16th Avenue. It will accommodate patients and visitors associated with the construction of a 3rd Inpatient Pavilion.

The parking demand analysis will take into account some variable factors such as overflow parking usage. For example, some students and employees may park illegally north of Montview Boulevard out of convenience or to avoid paying for parking, though these spaces are not currently counted toward the campuswide inventory.



The Leprino Garage on 17th Avenue also boasts first-floor retail uses.

C. Parking Management

The three institutions on the Anschutz Medical Campus manage their own parking systems in terms of setting policies, allocating permits, and collecting fees. Common to all is separation of visitor/patient parking from student, faculty and staff parking. Third-party vendors are used for some services at each institution.

The campus institutions support alternative modes of transportation by offering carpool programs, free or discounted EcoPasses, and/or limited golf cart shuttle service for visitors who may have to park far away or have problems walking to their destination. However, these programs are not coordinated between or implemented at all three institutions.

The Anschutz Medical Campus as a whole does have an active transportation management association (TMA). However, as it is currently administered, the TMA does not oversee any transportation policies that apply to all three entities.

A brief discussion of current parking rates and policies for CU Anschutz, UCH, and CHCO follows.

CU ANSCHUTZ MEDICAL CAMPUS

CU Anschutz charges various rates for an assigned permit in gated employee and student lots south of Montview Boulevard and in two gravel Rock Lots north of Montview Boulevard. A third-party vendor manages parking enforcement and revenue collection for CU Anschutz.

Students and faculty/staff can also include a RTD EcoPass in their part- or full-time parking permit with no additional fee. Otherwise, a RTD EcoPass can be obtained through the parking office for a fee of \$25/month.

Monthly CU Anschutz parking fees are listed below:

- Students:
 - Student monthly: \$40/month
 - Reserved parking: \$96/month
 - Carpool: \$42/month
 - Short-term weekly parking (1–8 weeks): \$16/week
 - East Rock Lot: \$14/month
- Staff/Faculty
 - Part time (less than 20 hours/week): \$42/month
 - Carpool: \$42/month
 - Faculty/staff: \$71/month
 - Non-university affiliates: \$71/month
 - Reserved parking: \$96/month
 - Rock Lot parking: \$35/month
 - Short-term weekly parking (1–8 weeks): \$21/week

A Rock Lot permit does not allow the permit holder to utilize any of the gated lots on campus.

Visitor parking is accommodated in a number of lots throughout the university campus. Visitors pay for parking at automated pay stations where their license plates are entered and payment collected. Daily visitor parking fees are as follows:

- \$1.00 per hour up to 8 hours
- \$8.00 daily max
- \$1.00 flat rate on weekends and evenings after 4:00 PM
- Parking meters are 25 cents for each 15 minutes with a maximum stay of 4 hours

CU Anschutz also offers free reciprocal parking access to visiting permit holders from CU Boulder, CU Denver, or UCCS.

It should be noted that the Henderson Parking Facility and the East Overflow Lot at CU Anschutz can be used for both employee and visitor parking. These are the only such “mixed” parking facilities on the entire Anschutz Medical Campus.

UNIVERSITY OF COLORADO HOSPITAL

Paid monthly parking is reserved for employees in employee garages and surface lots. Monthly UCHHealth employee permit rates are currently \$95 per month for garage parking. UCHHealth does not currently participate in the EcoPass program.

Visitor and patient parking is free. The garage south of the Anschutz Outpatient Pavilion (AOP) is signed for visitor and patient parking in addition to several other surface lots. In 2021, the visitors lot south of the Rocky Mountain Lions Eye Institute (RMLEI) and east of the AOP will be replaced with a new parking structure to meet additional demands from construction of a 3rd Inpatient Tower.

Third-party vendors provide valet parking and manage parking enforcement for UCHHealth.

CHILDREN'S HOSPITAL COLORADO

Monthly employee permit parking at CHCO is \$24 per month, and most permit holders are assigned to one of the two employee garages east of the hospital. The \$24 rate is the lowest monthly rate curreffered by any entity on the Anschutz Medical Campus.

CHCO's visitor parking includes the following:

- Patients, families, and visitors may park 24 hours a day in the South Parking Garage free of charge.
- For patients and families receiving emergency services, there are clearly identified lots west of the Emergency Department entrance.
- Additional visitor parking is located on the east end of the CHCO site for the Behavioral Health Sciences services and Kempe Center in the Gary Pavilion.
- CHCO also offers RV parking for families of inpatients staying for a minimum of five days.

A third-party vendor provides valet parking.

CHCO participates in the EcoPass program.



Surface parking spaces in front of Anschutz Inpatient Pavilion 2.



CHCO's visitors garage and surface lots. The UCH visitors garage is also visible in the upper left of the photo.

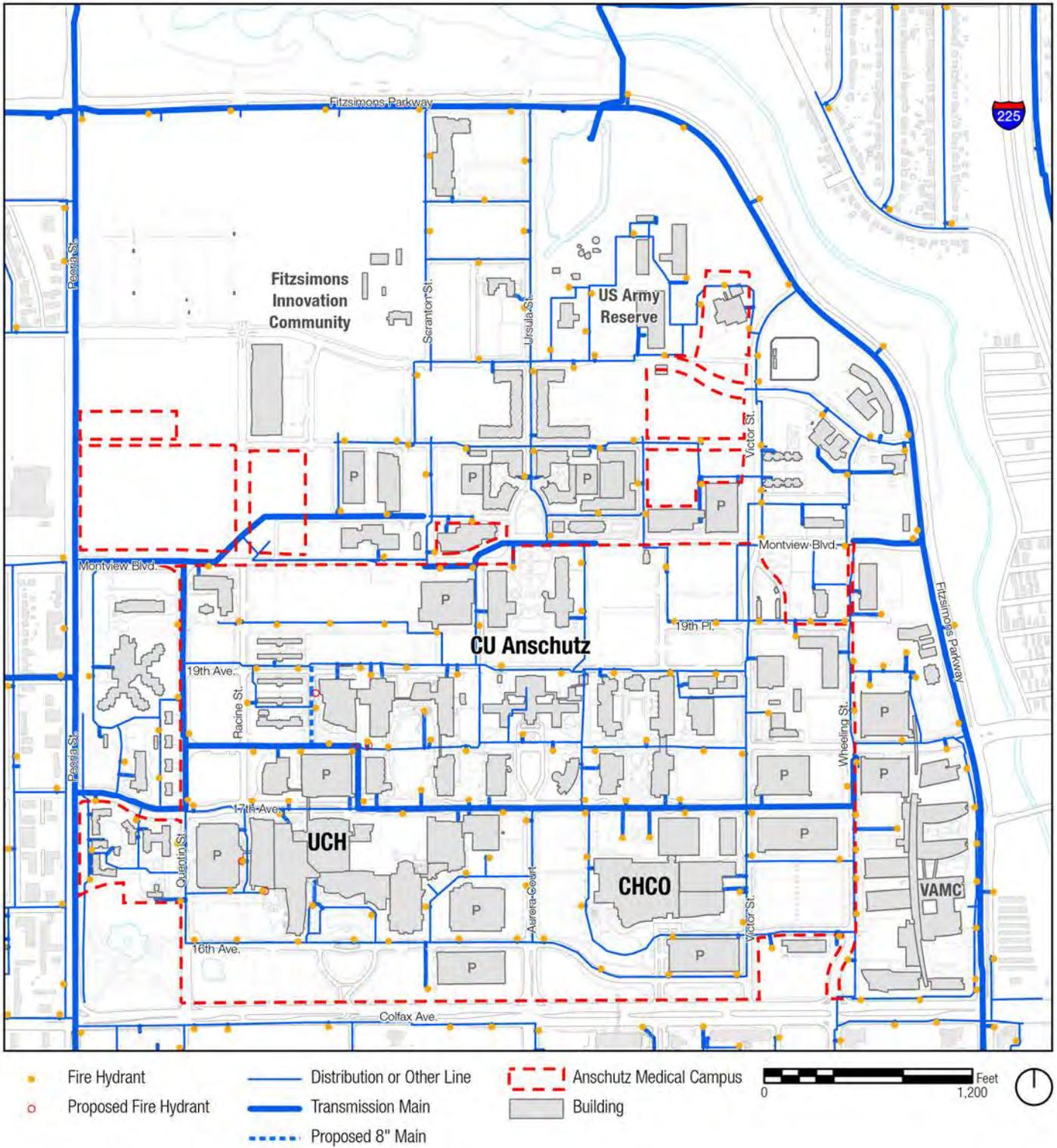


Figure 30 - Existing Potable Water Network

II.10 UTILITY SYSTEMS

A. Water

Aurora Water supplies potable water to the Anschutz Medical Campus through its city-wide distribution network (Figure 30). The university constructed most of the mains and laterals on campus and then transferred most of their ownership to the utility. Aurora Water owns maintains the potable water infrastructure it owns on campus through an Intergovernmental Agreement between the university and the City of Aurora. The system provides adequate service for current campus activities.

NETWORK DESCRIPTION

Two mains primarily supply water to the campus from the east and west. The Fitzsimons Parkway main to the east is 30 inches in diameter from Colfax Avenue to 17th Place. North of 17th Place this line reduces to 24 inches before it is further reduced to 16 inches between Montview Boulevard and the Peoria Street main. This western main is 24 inches in diameter between Colfax Avenue and Fitzsimons Parkway.

On campus, a 16-inch main between 17th Place and 17th Avenue serves as the primary connection between the two supply lines. Additional smaller mains and laterals then convey potable water to campus facilities and fire hydrants. Of note, a 12-inch main loops north of this line and another 12-inch one loops south to provide secondary paths to CU Anschutz and the two affiliate hospitals respectively.

The network also connects to the Peoria main to the west of campus through a 16-inch line in Montview Boulevard. A 24-inch line also connects to the Fitzsimons Parkway main to the east.

These multiple connections ensure that the campus will have an interrupted supply of potable water. However, the CUP is only supplied water through a 6-inch lateral connection to the 8-inch main that runs under Victor Street.

If the Victor Street main were not in service the CUP would not be able to ensure a reliable supply critical chilled water and steam to campus facilities. An additional lateral connection to the 12-inch main under Wheeling Street could provide a redundancy in water supply to the CUP to increase its operational resiliency.

Such future improvements to the network can be funded and constructed by the university, private developers, or the City of Aurora. The exact financing and responsible party will be determined through discussions as these new projects are identified and scheduled. Ultimately, all new mains and laterals must be constructed to Aurora Water’s standards as they will be part of their system.

Water demands at full build-out of both the campus and the larger FAMC site as calculated in the October 11, 2001 Infrastructure Master Plan are provided in Figure 31. The full build-out scenario for the campus in the plan has not yet been realized.

In 2016, the FIC used these projections to update to its Infrastructure Master Plan. This ensures that adequate water infrastructure is provided for current and anticipated build-out conditions on campus and the FIC.

Average Daily Demand (MGD)	Maximum Daily Demand (MGD) ¹	Peak Hourly Demand (MGD) ²
3.88	10.86	17.45

Notes:

- 1) Maximum Daily Demand is 2.8 times the average daily demand per discussions with the City of Aurora.
- 2) Peak Hourly Demand is approximately 4.5 times the average daily demand per discussions with the City of Aurora.

Figure 31 - Full Build-Out Campus Water Demand

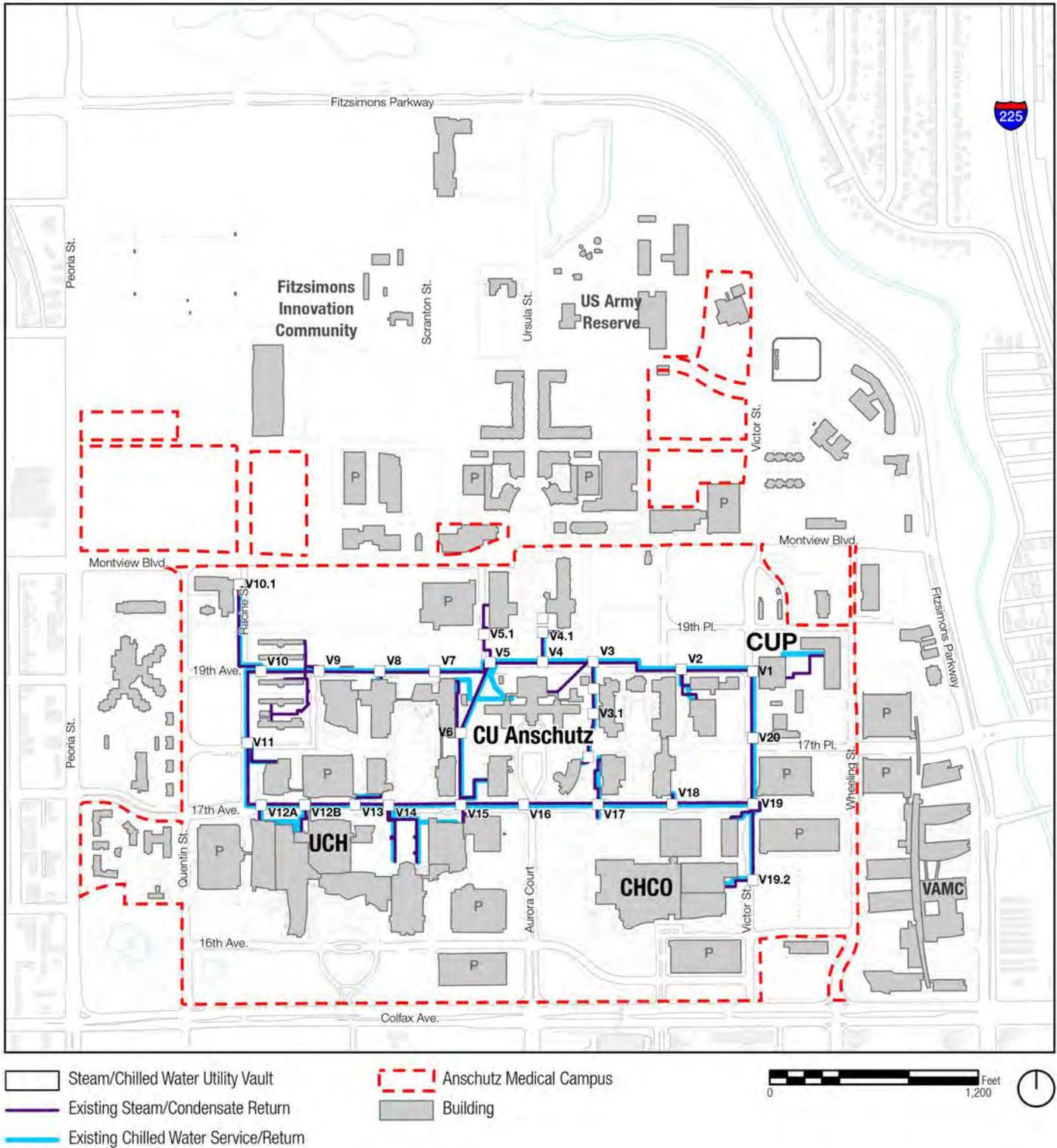


Figure 32 - Existing Steam and Chilled Water System

B. Steam/Chilled Water and Gas

INTRODUCTION

The CUP generates steam and chilled water as a heating, cooling and process utility source for CU Anschutz, UCH, and CHCO. Water used to generate these utilities is provided through the potable water network described in the previous section. The CUP is operated as a CU Anschutz auxiliary service that is funded through utility charges to the institutions supplied by its steam and chilled water.

The generating units for each utility, boilers for steam and chillers for chilled water, are configured in an N+1 arrangement, meaning that they are sized to meet projected demands, even if the largest is not operating. This allows the campus to accommodate and plan for routine maintenance of the generating units or unexpected shutdowns of any one unit. The resulting figures represent the fixed firm capacity (FFC) for each utility on campus that must meet the needs of the institutions.

Figure 33, Peak Steam and Chilled Water Demands, provides historic peak demands for these utilities for each facility connected to these networks. CU Anschutz figures are updated annually based on the metering of each building. Measured overall peak demands for the campus as a whole are also provided. With recent CUP improvements there is adequate generating capacity for current campus facilities and those under construction.



Exterior view of the CUP prior to recent improvements.

STEAM

As of the end of 2020, the peak campus steam load of 258,271 pounds per hour (pph) was recorded in 2015. There is adequate steam generating capacity at the CUP to meet current demands as the CUP has 330,000 pph of FFC.

The CUP has approximately 44,665 pph of steam generation capacity available to accommodate further growth. If demands increase above this amount, the CUP will need to expand its generation capabilities.

At the end of 2020, the CUP's six boilers generate steam at a pressure of 125 pounds per square inch gauge (psig). There are four boilers rated at 60,000 pph, one at 90,000 pph, and one at 110,000 pph. Exclusion of the 110,000 pph unit results in the current total peak steam FFC of 330,000 pph. Figure 34 shows the demand for steam on the campus from 2009–2020.

The steam and associated condensate piping network consists of buried piping and a series of vaults with a capacity of approximately 400,000 pph. As shown in Figure 32, the network forms a rectangular loop beginning and ending at the CUP. It approximately follows North Victor Street, East 17th Avenue, North Racine Street, and East 19th Avenue. A branch runs east of Research 1 North and Research 1 South to connect the two major east/west runs.

The piping along the entire loop consists of a 20-inch high pressure steam main and an 8-inch low pressure condensate pipe. Smaller pipes branch off the mains to connect to buildings.

Building Name	Total Size (GSF)	Vault Connection	Peak CHW Demand (Tons)	Peak Steam Usage (PPH)
CU Anschutz Buildings¹				
Academic Office 1	204,974	V13	348	4,817
Anschutz Health Sciences Building	395,479	V9	TBD	TBD
Barbara Davis Center	112,646	V15	445	7,157
Fitzsimons Building	478,211	V3(S),V5(C)	838	14,172
Fulginiti Center for Bioethics & Humanities	19,475	V3.05	100	1,000
Central Utility Plant	82,156	N/A	N/A	N/A
Education 1	115,251	V3.05	276	7,182
Education 2 - North and South	275,376	V18	673	10,542
Environmental Health & Safety	21,002	V2	321	5,457
Campus Services	68,333	CUP Direct	120	2,481
PASCAL	28,906	V2	56	1,194
Health Sciences Library	113,005	V4.1	198	2,218
Nighthorse Campbell Native Health	45,396	V3.2	76	2,030
School of Dental Medicine	116,060	V17	320	3,826
Research 1 - North & South	628,423	V6	2,418	44,748
Research 2	479,085	V8	3,359	21,171
Temp Reuse 400's Buildings	115,613	V9.1	0	1,000
School of Pharmacy	171,416	V4.1(C),V5.1(S)	422	10,878
Anschutz Health & Wellness Center	95,141	V10	303	4,259
CU Anschutz Subtotal	3,565,948		10,273	144,132
UC Health Buildings²				
Anschutz Inpatient Pavilion	478,000	V14	1,564	32,765
Anschutz Core Expansion	304,000	V12B	1,005	12,250
Anschutz Inpatient Tower 2	590,318	V14	1,931	40,464
Anschutz Cancer Pavilion	165,102	V14	0	6,707
Anschutz Outpatient Pavilion	514,792	V14	0	20,913
Rocky Mountain Lions Eye Institute	65,000	V14(S),V15(C)	215	2,619
Leprino Office Building	276,660	V11	503	520
UC Health Subtotal	2,393,872		5,218	116,238
Childrens Hospital Colorado Buildings²				
CHCO Main Hospital	836,936	V17	2,093	33,484
CHCO Outpatient Clinic	189,366	V17	427	6,861
CHCO Office Building	294,789	V17	523	8,218
CHCO East Pavilion	149,445	V19	273	4,295
CHCO East Tower	443,571	V19	1,109	17,746
Childrens Hospital CO Subtotal	1,914,107		4,425	70,604
Totals Through 2020	7,873,927		19,916	330,974

End of 2022 - Actual	
Peak Campus Demand	
CHW (Tons)	Steam (PPH)
13,279	258,271

Notes:

- 1) CU Anschutz data from energy metering.
- 2) Peak loads for UCHealth and CHCO are not available to CU. Values shown are estimates.

Figure 33 - Peak Steam and Chilled Water Demands

Year	Boiler Tag	Peak Generation Capacity (PPH)	Fixed Firm Capacity (PPH)	Expected Peak Demand (PPH)	Comments
	B-1	60,000			<i>Original CUP Boiler</i>
	B-2	60,000			<i>Original CUP Boiler</i>
	B-3	60,000			<i>Original CUP Boiler</i>
	B-4	60,000			<i>Original CUP Boiler</i>
	B-5	30,000			<i>Original CUP Boiler</i>
2009		270,000	210,000	212,000	<i>Actual Measured Peak Demand</i>
2010		270,000	210,000	212,000	<i>Peak Demand Exceeds FFC</i>
2011		270,000	210,000	223,855	<i>Peak Demand Exceeds FFC</i>
	B-6	90,000			<i>Expansion 3 Boiler</i>
2012		360,000	270,000	228,000	<i>Actual Measured Peak Demand</i>
2013		360,000	270,000	228,000	<i>Actual Measured Peak Demand</i>
2014		360,000	270,000	251,000	<i>Actual Measured Peak Demand</i>
2015		360,000	270,000	258,271	<i>Actual Measured Peak Demand</i>
2016		360,000	270,000	211,529	<i>Actual Measured Peak Demand</i>
2017		360,000	270,000	242,610	<i>Actual Measured Peak Demand</i>
2018		360,000	270,000	238,631	<i>Actual Measured Peak Demand</i>
2019		360,000	270,000	254,501	<i>Actual Measured Peak Demand</i>
2020		360,000	270,000	242,799	<i>Actual Measured Peak Demand</i>
	B-5	-30,000			<i>B-5 Replaced with larger B-7</i>
	B-7	110,000			<i>Expansion 5 Boiler</i>
2021		440,000	330,000	293,297	<i>Actual Measured Peak Demand</i>
2022		440,000	330,000	301,777	<i>Actual Measured Peak Demand</i>

Figure 34 - CUP Boiler Capacity

CHILLED WATER

As of the end of 2020, the peak chilled water demand at the CUP of 13,600 tons was recorded in 2015. There is adequate capacity at the CUP to meet current demands as it has 17,400 tons of FFC.

The CUP has approximately 1,068 tons of chilled water generation capacity available to accommodate further growth. If demands increase above this amount, the CUP will need to expand its generation capabilities.

At the end of 2020, there are ten chillers in the CUP. Two are rated at 1,200 tons of cooling, two at 2,000 tons, and six at 2,200 tons. Exclusion of one of the largest units, results in the current peak chilled water production FFC. Figure 38 shows the existing demand for chilled water on the campus correlated with the number of chillers.

The chilled water piping network follows the same route and passes through the same vaults as the steam piping system as shown in Figure 32. There are two chilled water piping loops originating at the CUP, called the inner (eastern) and outer (western) loops.

Along each, there is a 20-inch supply pipe and a 20-inch return pipe. On the east side of campus the outer loop overlaps the inner loop, and there are four chilled water pipes running alongside one another. Smaller pipes branch off the main pipes to connect buildings.

Figure 35 also shows that chilled water demand on the campus has increased from 2012 to 2020 by 3,000 tons.



Chillers at the CUP.

VAULT NETWORK

There are 22 below-ground vaults that provide access to both the steam and chilled water distribution loops on campus. Many of these were constructed prior to, or along with, campus building efforts starting in 2001. As a result, the earliest vaults are close to 20 years old.

In July 2020, the university completed a study of the structural, mechanical, and electrical infrastructure in each to document deficiencies and identify needed repair or replacement projects. \$2.4 million of improvements are required to reduce outages, shorten downtimes during shutdowns, and lower overall costs of ownership.

The costs to complete the identified repairs to deficiencies and/or replace components within each vault were estimated in the study. These projects were then prioritized for immediate, short-term (1-5 years), or long-term (5-10) completion or for ongoing monitoring.

The deterioration of these systems can be primarily contributed to ground water intrusion, piping leaks, and extreme temperatures in the vaults. Ongoing monitoring, improved pipe insulation, and increased ventilation of the vaults will minimize future deterioration and extend the life of the vaults.



Installation of steam, condensate return, and chilled water lines in vault 11.

Year	Chiller Tag	Peak Generation Capacity (Tons)	Fixed Firm Capacity (Tons)	Expected Peak Demand (Tons)	Comments
	CH-1	1,200			<i>Original Chiller</i>
	CH-2	1,200			<i>Original Chiller</i>
	CH-3	2,000			<i>Expansion 1 Chiller</i>
	CH-4	2,000			<i>Expansion 1 Chiller</i>
	CH-6	2,200			<i>Expansion 2 Chiller</i>
	CH-7	2,200			<i>Expansion 2 Chiller</i>
	CH-8	2,200			<i>Expansion 2 Chiller</i>
	CH-9	2,200			<i>Expansion 2 Chiller</i>
2009		15,200	13,000	12,000	<i>Actual Measured Peak Demand</i>
2010		15,200	13,000	12,000	
2011		15,200	13,000	10,820	
2012		15,200	13,000	10,300	
	CH-5	2,200			<i>Expansion 4 Chiller</i>
2013		17,400	15,200	12,394	<i>Actual Measured Peak Demand</i>
2014		17,400	15,200	12,410	<i>Actual Measured Peak Demand</i>
2015		17,400	15,200	13,600	<i>Actual Measured Peak Demand</i>
2016		17,400	15,200	12,498	<i>Actual Measured Peak Demand</i>
2017		17,400	15,200	12,928	<i>Actual Measured Peak Demand</i>
2018		17,400	15,200	13,019	<i>Actual Measured Peak Demand</i>
2019		17,400	15,200	12,525	<i>Actual Measured Peak Demand</i>
2020		17,400	15,200	13,279	<i>Actual Measured Peak Demand</i>
	CH-10	2,200			<i>Expansion 5 Chiller</i>
2021		19,600	17,400	13,671	<i>Actual Measured Peak Demand</i>
2022		19,600	17,400	12,904	<i>Actual Measured Peak Demand</i>

Figure 35 - CUP Chiller Capacity

NATURAL GAS AND FUEL OIL

To generate steam, the CUPs boilers primarily burn natural gas. A 6-inch 150 psi gas line from Xcel Energy supplies natural gas to the CUP's gas meter / regulator station on the facility's southern exterior. At that point, the gas pressure is reduced to 20 psi for use in the CUP's boilers and enters an 8-inch gas pipe in the building.

The standby generator at the CUP primarily uses fuel oil which is also a backup fuel for the boilers. Three 105,000 gallon above ground No. 2 fuel oil storage tanks store this fuel southeast of the CUP.



Fuel oil tanks located south of the CUP.

C. Electrical

INTRODUCTION

The medium voltage electrical distribution system for the Anschutz Medical Campus consists of three components: Xcel supply feeds, campus switchgear, and the campus distribution system. Each component will be described on the following pages.

Xcel Energy supplies medium-voltage electrical power from two substations to CU Anschutz and UCH. Power is conveyed from Banks 1 and 2 at Xcel's Fitzsimons Substation to the northeast of campus as well from Bank 1 at Xcel's East Substation Bank to the southeast.

Five independent feeder paths with MV 105, 1000 MCM copper conductor lines with a combined capacity of 15 megawatts (MW) carry power to the main campus switchgear in the Automatic Throw Over (ATO) building (R34) just south of the CUP. From the switchgear dual feed power (A and B) is provided and distributed to facilities at CU Anschutz and UCH through an underground distribution network.

There is adequate capacity to handle current peak loads and accommodate growth. However, improvements could be made to further increase capacity, resiliency, and safety.

As CHCO works independently of CU Anschutz to meet their power needs from Xcel, its electric needs are not addressed in this plan.

PRIMARY MEDIUM-VOLTAGE ELECTRICAL SUPPLY

Two Xcel feeders supply each of the three campus switchgear assemblies in the ATO Building. Although five feeders supply campus, one is shared between two of the assemblies. This redundancy allows power to continue to be provided to each switchgear if one feeder fails or is unavailable.

- Feeder circuit 1515 originates at the Fitzsimons Substation Bank 2 and routes to ATO Bus-1A (CU Anschutz) and to ATO Bus-2A (UCH) in a shared feeder arrangement.
- Xcel Feeder circuit 1577 originates at the East Substation Bank 1 and routes to ATO Bus-1A (CU Anschutz).
- Xcel Feeder circuit 1513 originates at the Fitzsimons Substation Bank 1 and routes to ATO Bus 2A (UCH).
- Xcel Feeder circuit 1510 originates at the Fitzsimons Substation Bank 1 and routes to MTO Bus B (CU Anschutz).
- Xcel Feeder circuit 1519 originates at the Fitzsimons Substation Bank 2 and routes to MTO Bus B (Anschutz).

Each Xcel Energy feeder to the campus switchgear systems goes through Xcel Energy medium-voltage switches located in an allocated space northeast of the intersection of 17th Place and Victor Street. The feeders between the Xcel switchgear and campus switchgear systems have ampacity as shown in Figure 36.

Xcel Feeder Number	Size	Xcel Feeder total Capacity (MVA)	Feeder Ampacity, per Phase ¹	Xcel Substation	Load	Comments
1510	1000 MCM Cu	15	690	Fitz-Bank 1	MTO BUS B	
1513	1000 MCM Cu	15	690	Fitz-Bank 1	ATO BUS 2A	
1515	1000 MCM Cu	15	690	Fitz-Bank 2	ATO BUS 1A and ATO BUS 2A	<i>Shared common feeder</i>
1519	1000 MCM Cu	15	690	Fitz-Bank 2	MTO BUS B	
1577	1000 MCM Cu	15	690	East-Bank 1	ATO BUS 1A	
	Future Planned Feeder for Campus Growth				ATO BUS 1A or ATO BUS 2A	<i>Unshare current common feeder</i>
	Future Planned Feeder for Campus Growth				MTO BUS B or ATO BUS 3A	
	Future Planned Feeder for Campus Growth				MTO BUS B or ATO BUS 3A	

Notes:

1) From 2012 Facilities Master Plan - Based on NEC Table 310.60(c)(77) for MV-105, 15kV Cable in Ductbank

Figure 36 - Xcel Feeder Ampacity

Capacity

Each of the incoming Xcel cables is rated for 690 amperes presuming that the duct bank enclosing the feeders is appropriately designed to limit mutual heating between conductors and other banks. Further study is necessary to make this determination.

However, each of the Xcel-owned switches northeast of the intersection of 17th Place and Victor Street have a maximum capacity of 650 amperes. As a result the power that can be provided through each feeder is reduced down to this amperage.

In order to ensure that each campus switchgear assembly can meet demands, all loads on each must be able to be provided by a single feeder. Present load on BUS B, the switchgear supplying power to the CUP and campus non-critical loads, is 13.19 megawatts. The associated measured peak current was 565 amperes, or 87 percent of the 650 amp capacity of an Xcel feeder. Meanwhile BUS 1A is at 59 percent and Bus 2A at 53 percent of a single feeder's capacity (See Figure 37).

The electric loads supplied through BUS B are nearing 650 amperes. If loads increase and exceed this limit, facilities operations will need to identify loads that can be shed. As BUS B supplies the CUP, the supply of necessary heating and chilled water for campus facilities that support clinical and research activities could be interrupted or stopped and power shut off to the non-critical buildings on this switchgear.

Substation Connections

BUS 2A and BUS B are fed from the Fitzsimons Substation. However, the two feeders that supply each switchgear assembly come from different transformer banks within the station providing some protection if one feeder were to fail.

If the substation, or a segment of the transmission line that feeds it, to completely fail these buses would no longer convey power. All steam and chilled water generation at the CUP would shut down and power to buildings connected to BUS 2A and BUS B no longer be provided.

However, ATO BUS 1A is fed from Xcel Energy's Fitzsimons Substation and its East Substation. This provides good protection from the possibility of a single total Xcel substation failure. The other two switchgear systems could benefit from a similar arrangement.



Xcel Energy Fitzsimons Substation.

BUS	BUS Type ¹	Connected Load	BUS Amps	Peak Demand (kW)	Peak Amps	% BUS Cap	% Xcel 1 Feeder Cap ²	ATO Reserve Capacity (kW) ³
BUS 1A	ATO	CU Anschutz Critical	1,200	9,370	383	32%	59%	11,000
BUS B	MTO	Non-Critical	2,000	13,190	565	28%	87%	NA
BUS 2A	ATO	UC Health Critical	1,200	7,790	343	29%	53%	11,000

Notes:

- 1) ATO = Automatic Throw Over, Main-Tie-Main, Double Ended Split BUS; MTO = Manual Throw Over, Main-Tie-Main, Double Ended Split BUS
- 2) If 1 Xcel feeder to switchgear is failed and all load is on single feeder, 650 amp basis
- 3) Contractual reserve capacity with Xcel on feeder for automatic load transfer from one feeder to the other

Figure 37 - Campus Switchgear Bus Capacity

CAMPUS MEDIUM-VOLTAGE SWITCHGEAR

The existing 15kV main distribution outdoor switchgear was installed in 2000, and it is housed in a weatherproof metal-clad walk-in enclosure. Within this facility power received from Xcel is routed into the campus distribution system. Switchgear Buses 1A, 2A, and B are in good physical condition, and, at 20+ years of age, are still serviceable and expandable. All three systems should provide many years of continued service under normal operating conditions in dual feed split BUS arrangement.

Switchgear Facility

The switchgear structure sits over a cable vault with multiple levels of cable tray for conveyance of distribution circuits to breaker cubicles. The breakers are accessible from the interior aisle of the structure. The cable termination bussing is accessible from outdoor cubicle doors.

Each circuit breaker is supervised by a Schweitzer Electric Laboratories (SEL) multifunction protective relay. Types and current transformer ratios of the relays vary. Facilities does not remotely monitor these devices at this time. How to notify staff of events that cause the breakers to trip for more rapid response may be worthy of examination.

The equipment was manufactured by Square D. Circuit breaker control power is provided via a battery system consisting of a DC charger and battery rack. The fire detection system on the original plans was not installed. Investigation is needed to determine if it is required.

Switchgear Capacity

The ratings and load connections for BUS 1A, BUS 2A, and BUS B are shown in Figure 38.

At the end of 2020 both BUS 1A and BUS 2A are within contractual reserve capacity limits with Xcel. Each switchgear assembly is each rated 1200 amperes, 15kV, 36 KAIC, 750 MVA. Their main and tie breakers are rated 1200 amperes. BUS1A and BUS 2A have no spare breaker cubicles. BUS 2A feeder total derated ampacity is greater than BUS amps so consideration of derating a feeder should be considered.

BUS B is the switchgear closest to reaching 650 amperes of demand, but was designed to accommodate four feeders and has 2 spare incoming feeder bays. It is rated 2000 amps, 15kV, 36 KAIC, 750 MVA and its main and tie breakers are rated 2000 amperes. It has 8 spare breaker cubicles and 2 spare breakers rated at 1200 amps each.

BUS B is a manual throw over (MTO) system. It will also need further analysis for single feeder arrangement if all load is on one feeder.

BUS	Feeder Circuit	Conductors	Circuit Peak Amps(1)	Derated Ampacity (2),(3)	Peak % of D.A.	Amps Available	Comments
BUS 1A	1A-1	750 kcmil Cu	169	321	53%	152	
	1A-2	500 kcmil Cu	89	265	34%	176	
	1A-3	500 kcmil Cu	141	265	53%	124	2021 - Addition for AHSB
BUS B	B-1	Spare Feeder Breakers in Switchgear for Campus Expansion					
	B-2	500 kcmil Cu	109	265/530	41%/20%	156/421	Full load/Split Loop Feeder Arrangement
	B-3	500 kcmil Cu	26	265/530	10%/5%	239/504	Full load/Split Loop Feeder Arrangement
	B-4	2x500 kcmil Cu	461	530/1060	87%/43%	69/599	Full load/Split BUS CUP MTO Arrangement
	B-5	Future Planned Feeder for Campus Expansion					
	B-6	Future Planned Feeder for Campus Expansion					
	B-7	Future Planned Feeder for Campus Expansion					
	B-8	Future Planned Feeder for Campus Expansion					
BUS 2A	2A-1	500 kcmil Cu	130	265	49%	135	
	2A-2	750 kcmil Cu	126	321	39%	195	
	2A-3	2x750 kcmil Cu	105	642	16%	537	2021 - Addition for AIP Tower 3

Notes:

- 1) Peak amps of A-side plus B-side of split loop feeder combined
- 2) BUS 2A Feeder Total Derated Ampacity is greater than designed BUS Amps. Consider derating a feeder to match BUS amps.
- 3) Derated ampacity from IPE Phase 1 Infrastructure asbuilts Sheet E2.06

Figure 38- Campus Switchgear Capacity

CAMPUS MEDIUM-VOLTAGE DISTRIBUTION SYSTEM

There are two separate systems of concrete-encased conduit duct banks of 15kV circuits that distribute electricity to campus facilities from the switchgear. These are the North System and the South System.

The north duct bank has spare conduit capacity to accommodate two looped circuits that would originate from the ATO. It can be extended to MH#24. A limiting factor to future expansion is that there are only four spare conduits between MH #16 and MH #17.

The south duct bank has the spare conduit capacity to accommodate one looped circuit that would originate from the ATO. The limiting factor is that there are only two spare conduits between MH #5 and MH #6.

Figure 39 shows the general arrangement of these systems. Field verification can resolve any minor discrepancies between it and the following descriptions.

North System

The North System duct bank originates at the ATO building and routes west to manhole (MH) #13. Circuits 1A-1, 1A-2, 1A-3, and B-3 loop through this system and there are eight empty five-inch conduits. The North System proceeds north from MH #13 to MH #14, west along 19th Avenue through MH #15, and MH #16.

Between MH #16 to MH #17 there are only four empty four-inch conduits. From MH #17, a new duct bank consisting of 10 empty four-inch conduits routes north to MH #17X. Loop feeder B-3 loops through MH #17X and returns to MH #17.

The duct bank with loop feeders 1A-1, 1A-2, and 1A-3 continues west to MH #18. It contains six empty four-inch conduits. Loop feeders 1A-1 and 1A-3 then continue to MH #19 and MH #20. This duct bank contains 12 empty four-inch conduits.

From MH #20 loop feeder 1A-3 continues to MH #21. This duct bank contains 14 empty four-inch conduits. From MH #21 to MH #22, a duct bank continues to the west containing 16 four-inch empty conduits.

In 2020 the duct bank was extended from MH #22 to MH #23 located at 19th Ave and Revere Ct. This duct bank is planned to extend to MH #24 at Racine St. based on future growth on the west end of campus.

South System

Circuits 2A-1, 2A-2, 2A-3, 2A-3B, and 2B loop through in the South System. From the ATO building it leads west to MH #1 and has six empty five-inch conduits. The same looped circuits and empty conduits continue south along Victor Street to MH #2 and then west to manholes MH #3 and MH #4 and south to MH #5.

At MH #5 the duct bank downsizes to 12 five-inch conduits of which two are empty. Circuits 2A-1, 2A-2, 2A-3-A, 2A-3-B, and 2B continue west through manholes MH #6 and MH #7.

From MH #7, circuits 2A-2, 2A-3-A, 2A-3-B, and 2B continue to MH #8 and the empty conduits increase to four. Circuits 2A-2, 2A-3A, 2A-3-B, and 2B and the empty conduits then continue west through MHs #9 to #12.

From MH #12, 12 empty five-inch conduits route west to MH #13. From MH #13, six empty five-inch conduits reroute to the south along Quentin Street through MH #13.1 and extend to East 16th Avenue, where they are capped for future extension.

It should be noted that MH#13 on the South System is a duplicated in the North System. It should be renumbered as it was added after the North System's.

The original campus electrical distribution master plan also included a duct bank to connect MHs #12 and #24 between the two systems. Until it is constructed the distribution system will not be a truly looped feeder system as each feeder's A and B sides travel through the same duct banks.

When this duct bank is completed and feeders routed through both the North and South Systems the electrical distribution system will follow nearly the same path as the chilled water and steam systems with a loop around the main core of the campus.

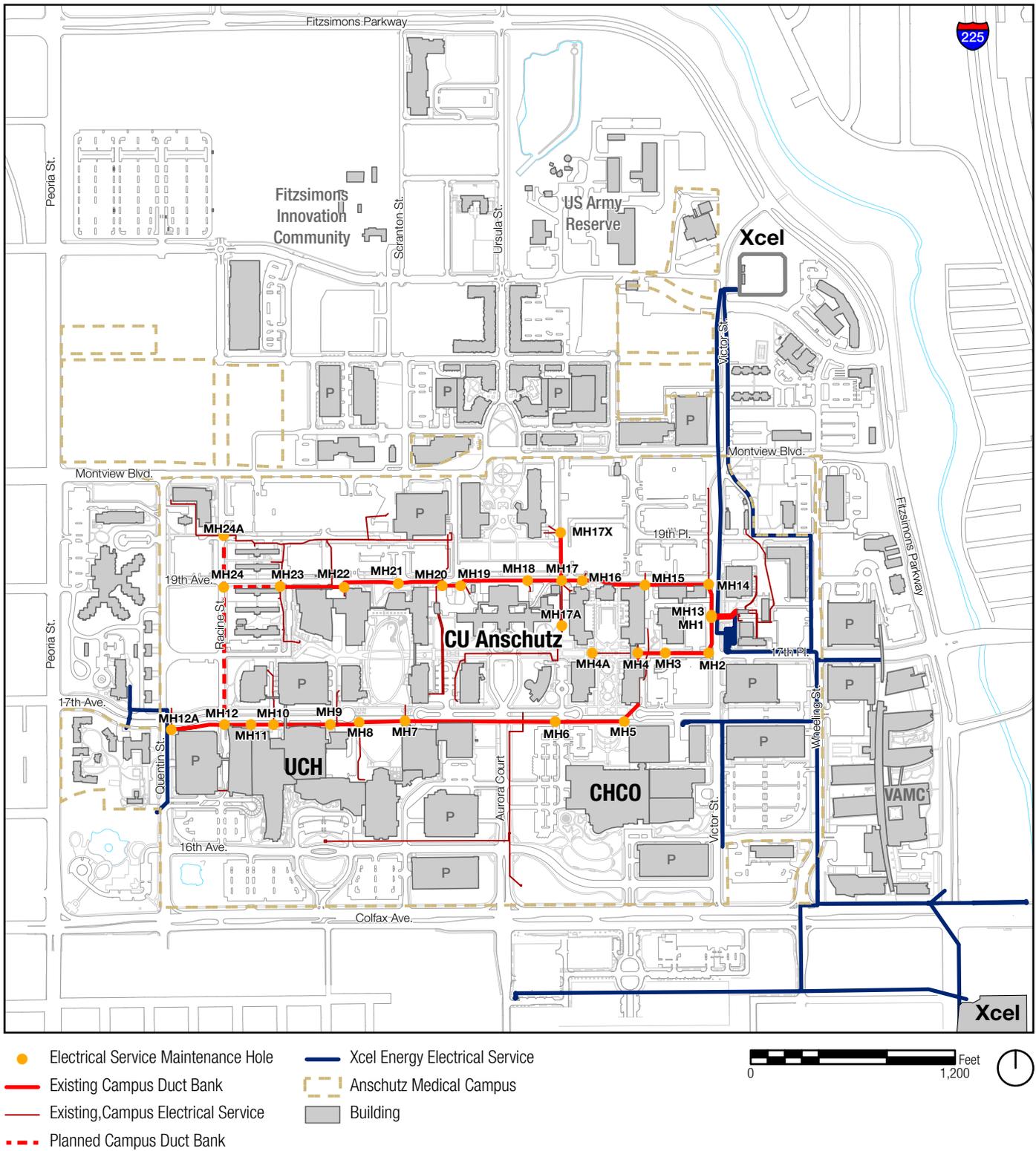


Figure 39 - Existing Medium-Voltage Electrical System

CUP POWER SUPPLY

Two feeders from BUS B in the ATO lead to the CUP's main-tie-main switchgear. The two per phase 500 MCM, 15kV copper conductors have a combined ampacity of 1060 amperes.

The maximum measured current on the CUP switchgear is 461 amperes. This indicates that in dual feed arrangement the feeders are loaded at 43 percent in single feed configuration, the feeder supplying the CUP will be loaded to 87 percent. There is adequate feeder capacity for future expansion over the next 10 years.

CUP Switchgear

The CUP switchgear is a freestanding indoor assembly installed in 2001 and 2006. The switchgear was manufactured by GE in 2001 and Eaton in 2006. Circuit breaker control power is provided via a battery system consisting of DC charger and battery rack. Switchgear buses are rated for 1200 amperes, 15kV, 36kA, 750 MVA

Both main breakers and the tie breaker are also rated for 1200 amperes. With a present load of 461 amperes, the switchgear is loaded to approximately 38 percent. Thus, there is significant spare capacity in the CUP switchgear.

Each circuit breaker is supervised by a SEL multi-function protective relay. Exact relay types and current transformer ratios vary.

POTENTIAL IMPROVEMENTS

While there is adequate capacity for current electric loads on campus, improvements could be made to various portions of the medium-voltage distribution system to better accommodate future growth and expansion.

Increased Capacity and Resiliency

Discussions with Xcel Energy are needed for these efforts that could help improve the capacity and resiliency of the campus power supply.

The feeders should be studied to verify their rating in cases of mutual heating. Assuming that the ratings are valid, the PMH switches near 17th Place and Victor Street could then be upgraded to fully accommodate the feeder ratings.

BUS 2A and BUS B are fed from a single Xcel substation. If these two bus systems were fed by an additional substation the campus would be better protected from a complete substation shutdown that would affect the facilities connect to them.

BUS B Capacity and Automation

BUS B is currently at 87% capacity of a single feeder. Although it receives two feeders, it was originally designed to receive a total of four. As loads continue to increase, it should be determined whether or when two additional feeders could be connected to it. Ideally, any new feeders would be supplied by the Xcel's East Substation to reduce reliance on one facility.

BUS B's MTO system which requires facilities personnel to physically switch over feeds when, should also be updated to an ATO. This would allow feeders and loads to more quickly be shifted.

Switchgear Safety and Monitoring

The campus ATO facility lacks a fire detection system and does not allow for remote monitoring of circuit breakers. A fire detection system would improve the safety of the facility while automated monitoring could provide more rapid response when breakers trip.

Completed Distribution Loop

A connecting duct bank between the North and South distribution systems could be installed to create a true looped distribution system. At the same time renumbering of the South System's MH#13 would eliminate the campus having two manholes with the same number.

D. Technology

INTRODUCTION

The Office of Information Technology (OIT) provides information technology (IT) services at CU Anschutz. Guided by its IT master plan, OIT offers effective infrastructure, interconnectivity, and data access to the campus. Future plans will improve the efficiency and enhance the reliability, availability, and maintainability of the information technology systems administered at CU Anschutz.

INFRASTRUCTURE

OIT provides wired, wireless, and telecommunications IT infrastructure to CU Anschutz. The OIT-designed and administered outside plant (OSP) in Figure 40 connects campus facilities and is the primary campus IT backbone.

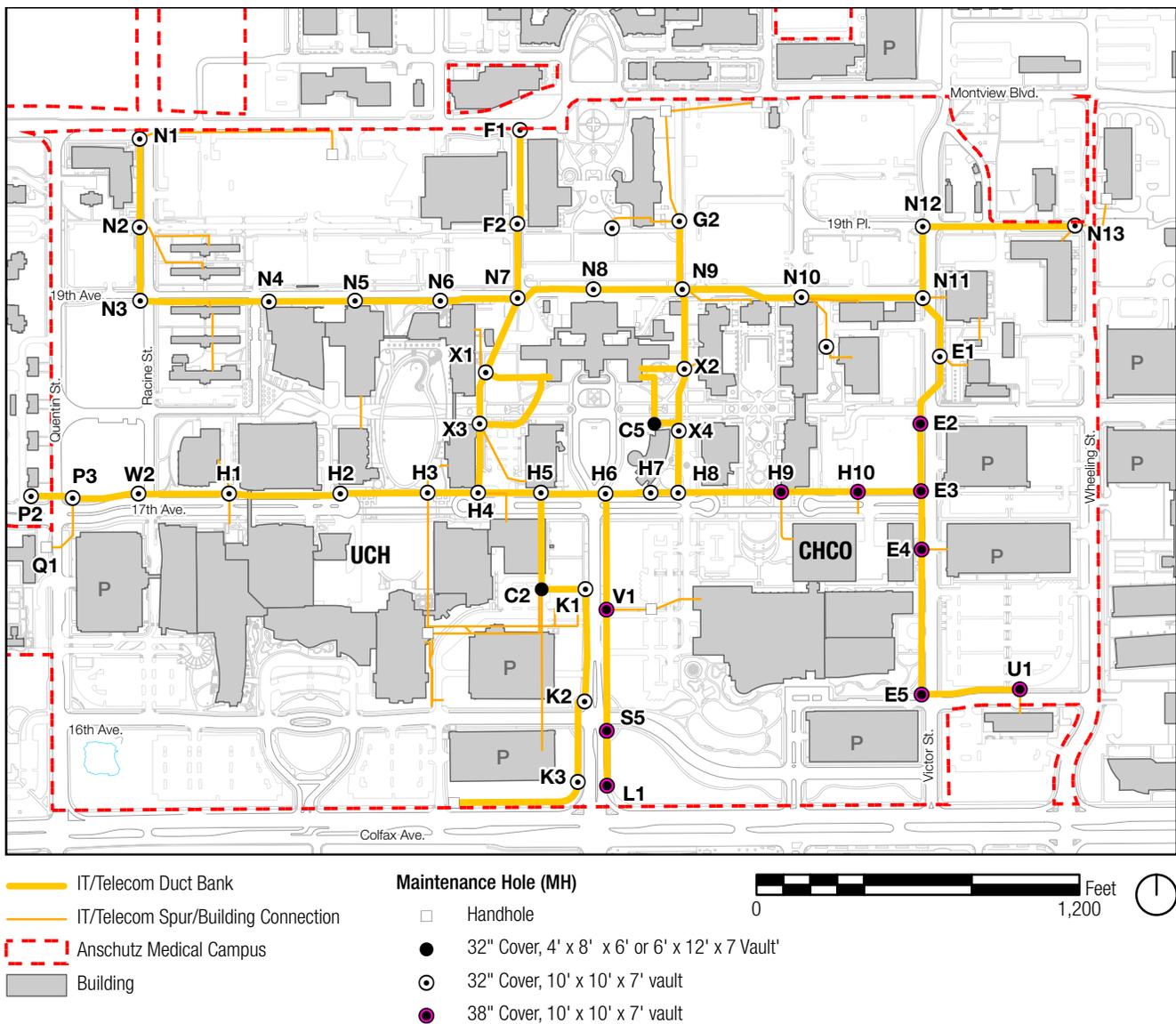


Figure 40 - Underground IT Duct Bank Infrastructure

Wired and Wireless Networks

The university provides Cisco-supported networking in both the wired and wireless environments. The wired network offers full duplex 1 Gb/s to the desktop, a minimum of 10 Gb/s to the networking core, and up to 10 Gb/s to the Internet.

There are two connections between each floor of a building, and from each building to the networking core to provide redundancy in service (see Figure 38).

To enhance the fault tolerance of the network, the Anschutz Medical Campus and CU Denver are connected by dual 100 Gb/s connections and can rely on each other should either individual campus experience network difficulty. To enhance research networking, OIT has procured multiple network connections of various speeds to CU Boulder, UCCS, and UIS.

Telecommunications

OIT supports over 8,000 telephones. About 95 percent of these phone lines support Voice over IP (VoIP) phones with the remainder being legacy analog connections serving emergency services, fax connectivity and the like.

In addition to standard Voice over IP services, OIT manages and deploys softphone technology that allows CU Anschutz staff to access and use their provided office phone from any network attached computer.

In addition, with the use of Teams, CU Anschutz staff can utilize an integrated chat feature with any other CU Anschutz Medical Campus or CU Denver staff member.

DATA CENTERS

OIT maintains three data centers on the university's two campuses. At CU Anschutz, OIT operates the 1,000-square-foot Communications Center Annex (CCA) and the Anschutz Health Sciences Building data center which will be opened in Fall 2021. The new Anschutz Health Sciences Building data center is designed to meet the latest standards and will serve as the primary data center for CU Denver and CU Anschutz.

INTERCONNECTIVITY

OIT provides nearly seamless connectivity to other affiliated institutions. It provides high-speed connectivity to CU Boulder, and UCCS via four-campus fiber.

OIT created an Affiliate Network to provide high-speed connectivity to CU health care affiliates of CU Anschutz including UCH, CHCO, UPI, National Jewish Hospital, the VAMC, and Denver Health Hospital.

Finally, they have developed connectivity with the other higher-education entities located at AHEC, including Metropolitan State University of Denver and the Community College of Denver.

These connections are fast, reliable, maintainable, and always improving.

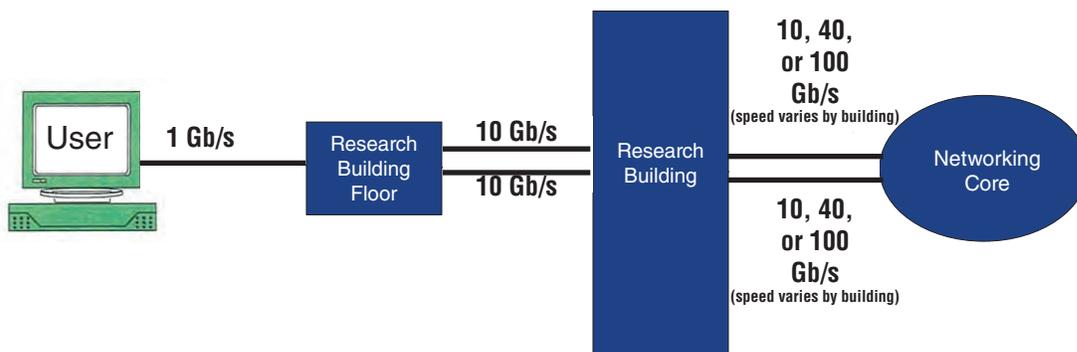


Figure 41 - Research Network Connectivity

Future enhancements to our affiliate connectivity may include 100 Gb/s connectivity, federated authentication, shared resources, and shared services. These enhancements would increase OIT efficiency, the effectiveness of the CU system, and the user experience of those at multiple campuses.

DISTRIBUTED ANTENNA SYSTEM

OIT also maintains the campus distributed antenna system (CDAS) to provide cell phone and mobile radio services within buildings that house CU Anschutz programs and units.

Without CDAS the buildings are unfriendly to radio frequency sources. Figure 42 shows the university's CDAS coverage. UCH and CHCO provide similar services within their facilities.

CDAS supports these carriers and radio-based services: AT&T, T-Mobile, Sprint, Verizon, USA Mobility pagers, and public safety radios. Future improvements will add buildings to CDAS coverage and provide long-term evolution (LTE) 700 MHz service support.

COLLABORATIVE SYSTEMS

OIT provides support for the cloud-based Microsoft O365 office to provide email, Teams file storage and communications, shared calendars at CU Anschutz. This allows for access to these services across multiple devices using both wired and wireless infrastructure.

In addition, OIT coordinates a number of contracts for software for the benefit of CU Anschutz such as Adobe Creativity Suite, Zoom, and many others. Additional cloud-based services are being considered to enhance connectivity and productivity for remote work.

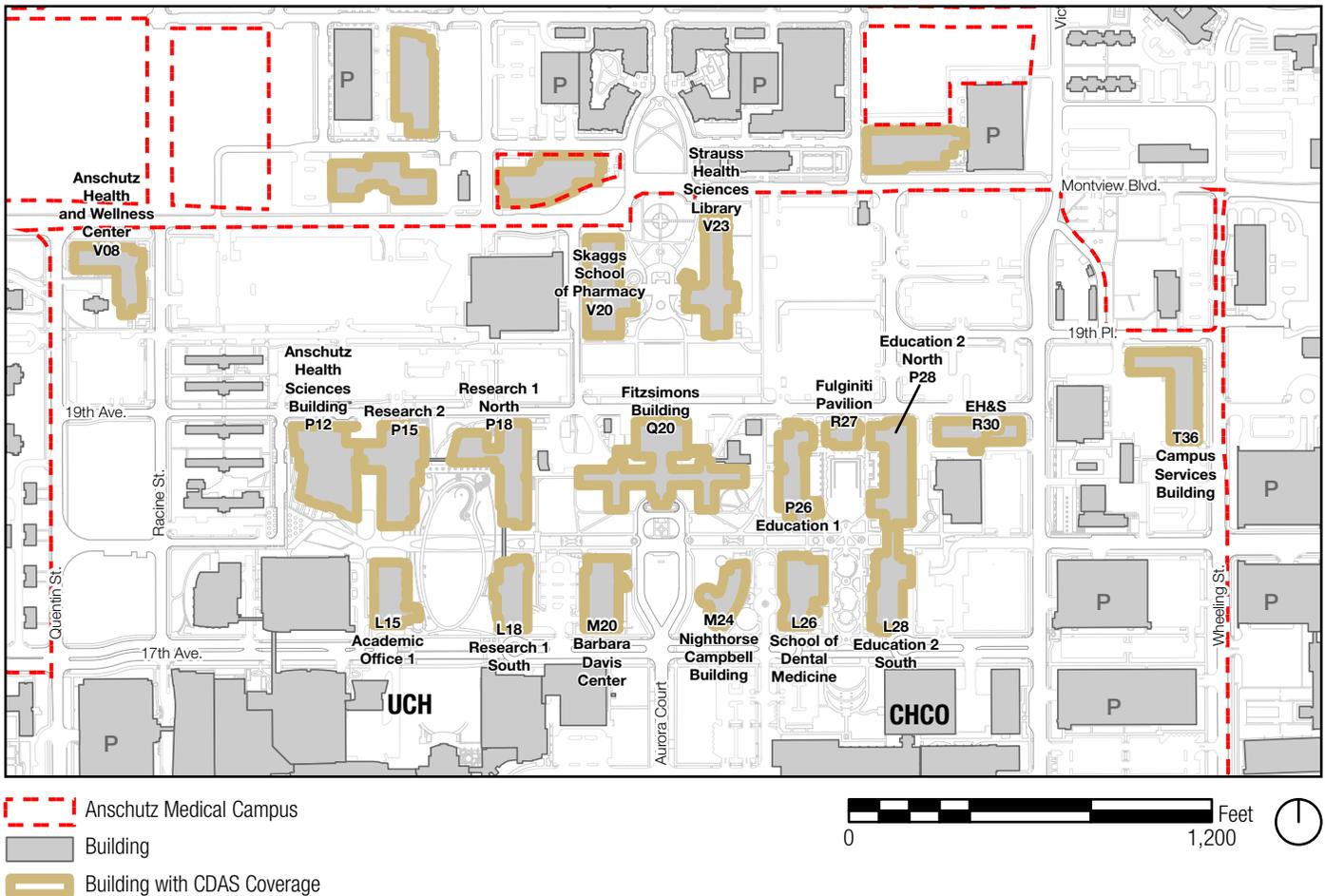


Figure 42 - Campus Distributed Antenna System (CDAS) Coverage

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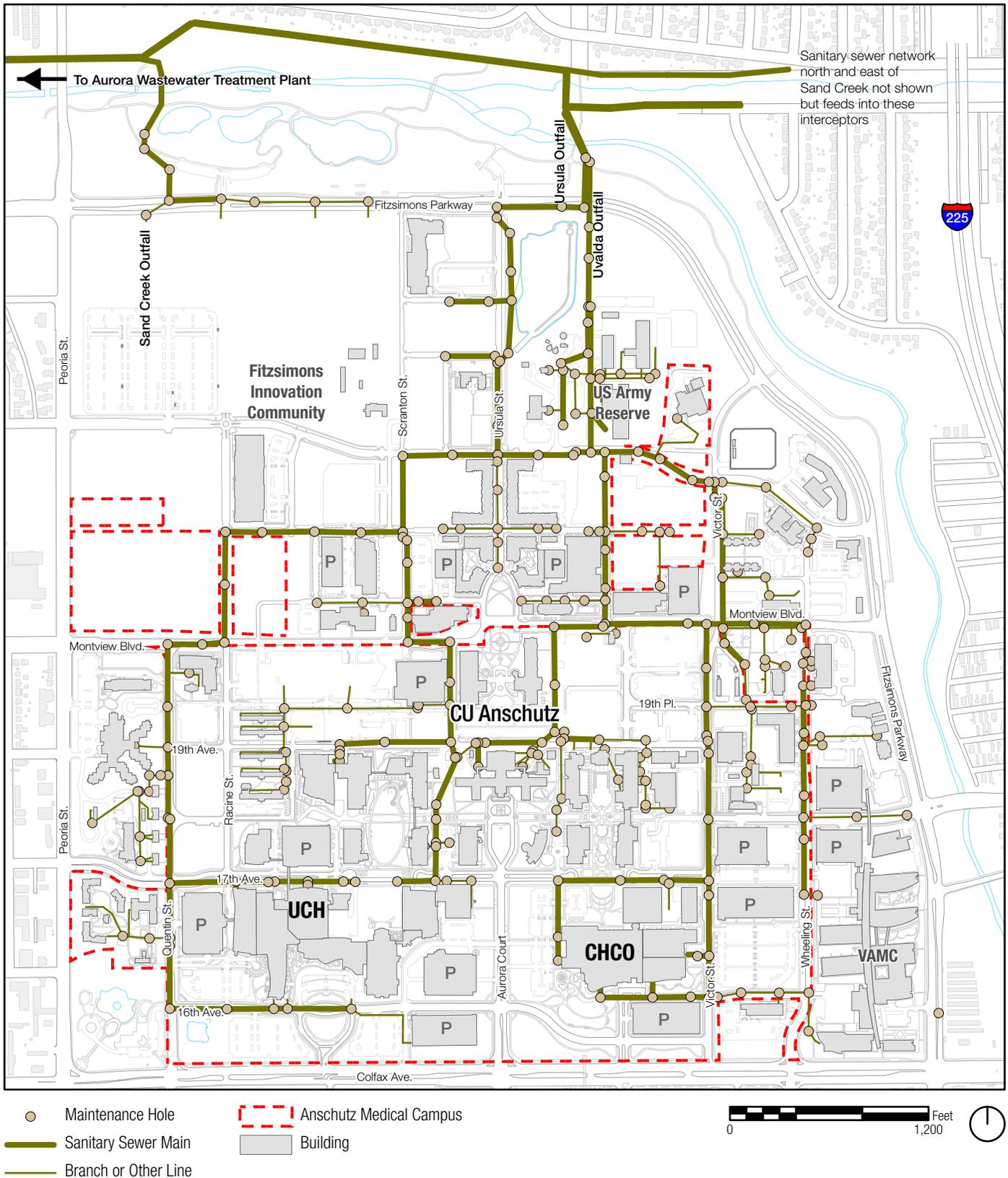


Figure 43 - Existing Sanitary Sewer Network

E. Municipal Utilities - Sanitary Sewer

All waste water generated on the Anschutz Medical Campus is conveyed through the Aurora Water waste water network (Figure 43). The university constructed most of the mains and laterals on campus and then transferred most of them to the utility. Aurora Water maintains the sanitary sewer infrastructure it owns on campus through an Intergovernmental Agreement between the university and the City of Aurora.

The waste water generated by new development on campus must be reviewed by the City of Aurora before new facilities are allowed to connect to Aurora Water's infrastructure. This allows the utility to ensure the system has adequate capacity and plan any needed improvements. The existing network can accommodate current and known planned campus development.

NETWORK DESCRIPTION

Following the site topography, sewers generally convey wastewater from south to north. Stub out, branch, and main lines on campus convey sanitary sewer flows into three primary 18-inch mains and one 15-inch main.

North of Montview Boulevard the mains connect to larger ones through the Fitzsimons Innovation Community (FIC). Campus wastewater is combined with that generated by the FIC and ultimately directed to either a 21-inch (via Uvalda Street) or a 30-inch (via Ursula Street) outfall main that go under Sand Creek.

These two lines discharge into two 42-inch interceptor lines that run east-west along the north side of Sand Creek. These also convey wastewater from the residential and commercial neighborhoods to the north and east of Toll Gate and Sand Creeks. They carry wastewater to the Aurora Wastewater Treatment Plant for initial treatment. It is then conveyed to the Metro Wastewater Reclamation District's Robert W. Hite Treatment Plant for further processing.

As the FIC is further developed, the portions of it west of Scranton Street that have not already been developed will have their waste water flows directed through new infrastructure to the 12-inch Sand Creek outfall. Only the two university owned parcels along Peoria Street north of Montview Boulevard will connect to these new mains.

The 2016 FIC Infrastructure Master Plan (IMP) amendment contains a more detailed description of the waste water system through the FIC.

Future campus growth will require that the capacity of the three existing waste water outfalls be monitored to determine if expansion is needed. In addition, the university will need to consider the waste water generated by surrounding neighborhoods with its own growth to ensure that the 42-inch interceptors are able to continue to convey flows.

Ongoing coordination with the FIC and Aurora Water will facilitate this monitoring. Funding and construction responsibility for future improvements among these entities, private developers, and the university will be determined prior to the initiation of any specific project.

Historically, the sanitary sewer system conveyed all Anschutz Medical Campus sanitary sewer flows to a wastewater treatment plant in the northern portion of the FAMC site. The U.S. Army Corps of Engineers decommissioned the wastewater treatment plant in 1998 and the campus was then connected to the Aurora Water sanitary sewer network.

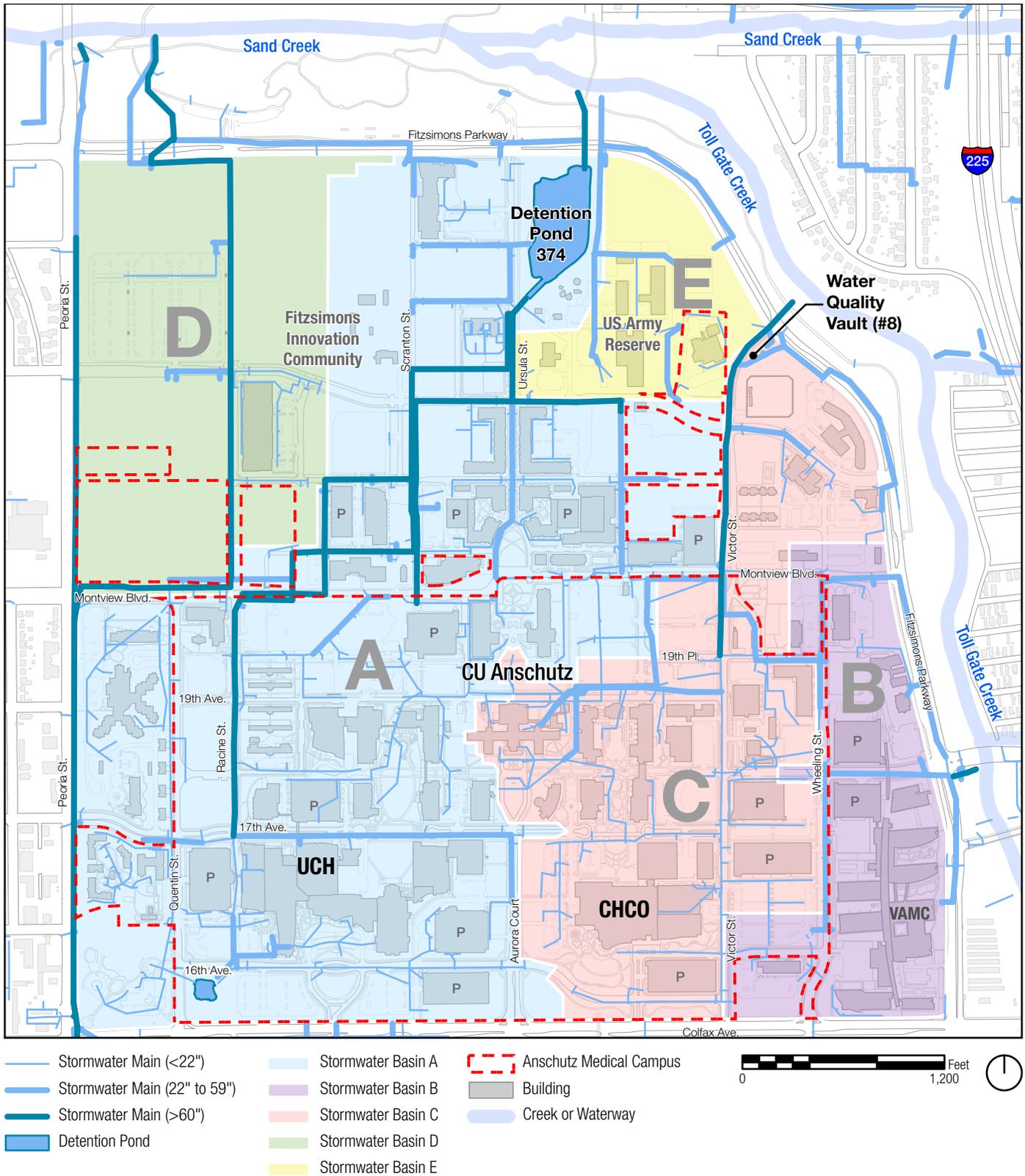


Figure 44 - Existing Storm Water Network

F. Storm Water

Following the topography of the larger FAMC site, stormwater is conveyed from campus in a northerly direction. Runoff is carried by Aurora Water's storm sewer network and surface flows and ultimately discharge into Sand and Toll Gate Creeks (Figure 44).

The existing network can accommodate current and known planned campus development. The university constructed most of the storm water mains on campus and then transferred most of them to Aurora Water. The utility maintains the storm water infrastructure it owns on campus through an Intergovernmental Agreement between the university and the City of Aurora.

The storm water generated by new development on campus must be reviewed by the City of Aurora before new facilities are allowed to connect to Aurora Water's network. This allows the utility to ensure the system has adequate capacity and plan any needed improvements.

The City of Aurora must comply with federal standards as part of its municipal separate storm sewer system (MS4) permit. The campus also has a separate non-standard MS4 permit. As such, stormwater generated by both the City and the campus must meet certain water quality standards,

The larger FAMC site has been divided into 5 stormwater basins to better plan, detain, and distribute stormwater discharges. The campus north of Montview Boulevard is mostly within Basin A with the parcels along Peoria Street within Basin D.

The campus south of Montview Boulevard is divided between Basins A and C. The portion of the campus west of Aurora Court is in Basin A while the area east of the line is generally in Basin C. However, the Fitzsimons Building is entirely within Basin C and the Strauss Health Sciences Library is in Basin A.

Due to topography some surface flows from south of campus may need to be considered when planning infrastructure. The following sections describe how stormwater is conveyed, detained, and discharged in each basin.

Stormwater Basin A

The stormwater within Basin A is directed to detention Pond 374 before discharge through a 108-inch outfall into Sand Creek. The network provides adequate capacity to handle runoff from a 100-year storm event.

Per the FIC's 2016 IMP, the pond and surrounding planned improvements have 33.7 acre-feet of detention capacity with peak discharge of 520 cubic feet per second (cfs). Stormwater from south of Montview Boulevard is conveyed to the pond via two large mains.

A 60-inch main starts at Scranton Street and Montview Boulevard and conveys stormwater from CU Anschutz. This includes runoff from the areas and parking lots around the Barbara Davis Center, Bioscience 2, the 400-series buildings, Henderson Parking Garage, the Research Quad, Skaggs School of Pharmacy, Strauss Health Sciences Library, and University Police.

A 72-inch main under Racine Street conveys runoff from areas around all UC Health facilities, the Anschutz Health and Wellness Center and Fisher House.

Runoff from three university parcels north of Montview Boulevard along Victor Street will be conveyed eastwards towards Ursula Street where it will enter an 84-inch main that discharges to Pond 374.

Future development should include site-level stormwater best management practices (BMP) to improve runoff quality and reduce quantity before it enters the system.



Water quality treatment infrastructure at Pond 374.

Stormwater Basin B

There are no university facilities within this basin. It is primarily occupied by the Veterans Affairs Medical Center. However, a portion of CHCO's 500 space parking lot southwest of the hospital lies within this basin.

No detention is provided in Master Basin B. As a result onsite stormwater BMPs are recommended for development within the basin to improve the quality of runoff. A 76-inch elliptical outfall discharges stormwater to Toll Gate Creek at 236 cfs near the intersection of 17th Place and Fitzsimons Parkway.

Stormwater Basin C

The eastern portion of the campus south of Montview Boulevard lies within this basin. Runoff within it is collected through a 72-inch main under Victor Street.

There is no detention pond within the basin though a water quality vault on the main can treat 4.13 acre-feet of runoff and provide 68 cubic yards (cy) of sediment storage. Water is released from the vault at a maximum rate of 147 cfs. It is discharged into Toll Gate Creek near the intersection of Victor Street and Fitzsimons Parkway.

Areas and parking lots around Building 610, the Campus Services Building, CUP, Environmental Health & Safety (EH&S), Education Quad, Fitzsimons Building, Nighthorse Campbell Building, and Preservation and Access Service Center for Colorado Academic Libraries (PASCAL) are in this basin. Due to the lack of detention facilities in this basin onsite stormwater BMPs should be considered and provided to the extent possible.



Pipes for the storm sewer system laid out pre-installation.

Stormwater Basin D

This basin comprises most of the former Fitzsimons Golf Course and will accommodate the bulk of future FIC development. Currently, there are no university facilities within Basin D.

However, three areas of university owned land at the corner of Montview Boulevard and Peoria Street are within the basin. A recently constructed 72-inch main will convey flows in the basin to Sand Creek.

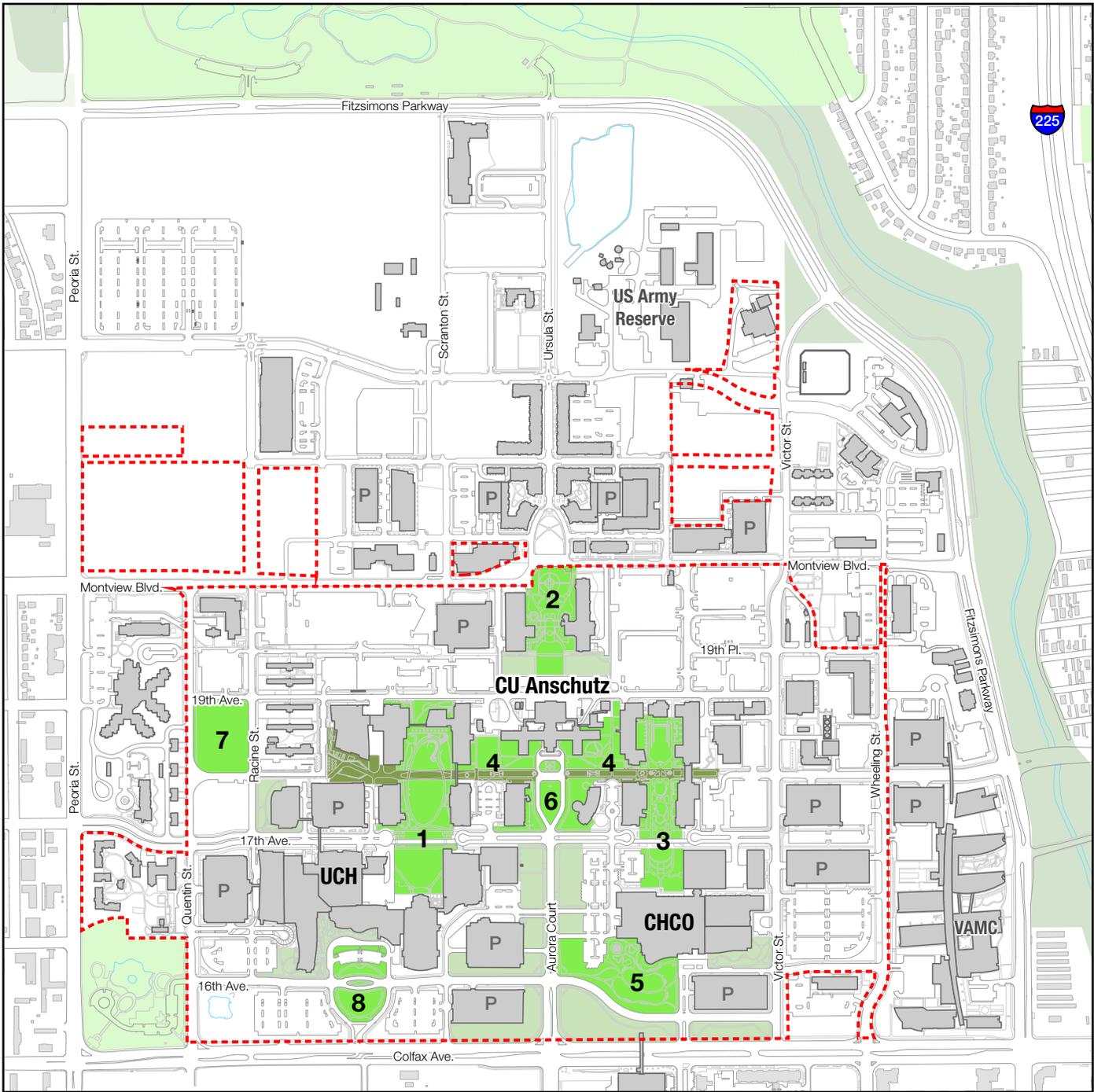
The water quality structures and detention basins in the basin provide 9.45 acre-feet of treatment and storage. Peak discharge into Sand Creek will be 117 cfs.

Stormwater Basin E

The Perinatal Research Facility and US Army Reserve are located within this basin. A 48-inch outfall with riprap discharges runoff to Toll Gate Creek at 134 cfs. Low flows are routed into a water quality basin in Sand Creek Park with capacity of 0.9 acre-feet.

The small outfall reflects the size of the basin and its development patterns.

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- Named Open Space
- Open Space
- Pedestrian Promenade/Greenway
- Anschutz Medical Campus
- Building

- Named Open Spaces**
- 1) Research Quadrangle
 - 2) Student Life Commons
 - 3) Education Quadrangle
 - 4) Art Walk Pedestrian Commons
 - 5) Children's Hospital Healing Garden
 - 6) Bonfils Circle
 - 7) Parade Grounds
 - 8) Tony Ruiz Plaza



Figure 45 - Open Space Network



A courtyard in front of the PASCAL facility.



Bonfils Circle and Aurora Court in front of the Fitzsimons Building.



The Student Life Commons is an example of a plaza.

COURTYARD

A courtyard is an area wholly or partially surrounded by walls or buildings. Landscaping within them is intended to complement surrounding buildings and programs.

In larger courtyards, formal perimeter landscaping might be used to reduce the overall feeling of scale. If buildings do not provide adequate enclosure for a courtyard, formal plantings or other design amenities can be used to define the space.

PLAZA

A plaza is an open public gardscape for community gatherings. They provide firm ground for open markets, music concerts, political rallies, and other events. The most notable example on the campus is the Student Life Commons between the Skaggs School of Pharmacy Strauss Health Sciences Library

A plaza is commonly found in the heart of a traditional urban district or town. One is usually centered on a feature such as a fountain, well, monument, or statue. Subspaces can be clearly defined through plantings, seating, elevation changes, or landscape elements.

FORE COURT

Forecourts are paved area that are smaller than plazas. They are located at building entrances or at intersections of major pathways. A notable campus example includes Bonfils Circle and Aurora Court south of the Fitzsimons Building.

PARK

Parks, like General's Park just outside the campus boundary, are natural preserves available for unstructured or structured recreation. They are generally independent of surrounding building frontages. They consist of paths and trails, meadows, bodies of water, woodlands, and open shelters.

II.11 OPEN SPACE

The Anschutz Medical Campus has several significant open spaces that contribute to campus place-making. These are shown in Figure II.45. They help organize the campus, create wayfinding landmarks, and provide social gathering places. Iconic places as the Education Quadrangle and Bonfils Circle also help establish campus identity.

The major open spaces are knit together by streets and pedestrian walkways that may also accommodate storm water management features. These connections in turn link campus open spaces to regional trail and open space resources.

The CU Anschutz Design and Development Guidelines provide detailed material, lighting, and site furnishing recommendations for each type of open space on campus. Implementation of these measures will reinforce the character and experience of each space and further enhance the campus environment.

A. Open Space Typology

The open space types defined in the Guidelines will be summarized below and examples of each will be presented. Please refer to the full Guidelines to learn more about the intent, design strategies, and recommended activities for each type of space.

QUADRANGLE

Quadrangles are large-scale courtyards framed by several buildings in a rectilinear arrangement. They are crossroads that are designed for walking, waiting, playing, and gathering. Quadrangles are frequently used for formal ceremonies and informal social activities. The Education and Research Commons are the most notable examples of this space on campus.

On a standard day on campus, students make active informal use of the Education Quadrangle. They socialize, eat lunch, or play games on the grassy area. When weather permits, many formal occasions, such as matriculation and commencement ceremonies, are held in the same location.



Informal student use of the Education Quadrangle.



The Research Quadrangle.

COMMONS | SQUARE

Squares or commons are open spaces available for unstructured recreation and civic purposes. They are defined by building frontages and are located at the intersection of important thoroughfares. They consist of paths, lawn, and trees in a formal arrangement.

GARDEN

A garden is a planned outdoor space set aside for the display, cultivation, and enjoyment of plants and other forms of nature. They may include patio areas, tables, benches, fountains, etc. Three notable examples on campus are CHCO's healing garden, the southern part of the Education Commons, and landscaping around the Anschutz Health and Wellness Center.

Garden plantings should provide year-round interest through a variety of scales, seasons, and plant materials. Xeriscape gardens use local, native plants adapted to the environment. These do not require irrigation or extensive use of other resources and still provide the benefits of a garden environment.

PROMENADE

A promenade is a linear corridor linking significant campus locations and are dedicated to pedestrians. The 17th Place Art Walk that links the Research and Education Commons is an example of such a space.



The Fulginiti Pavilion at the northern edge of the Education Quad.



CHCO's healing garden is between the hospital and E. 16th Avenue.



Unnamed open space lines Aurora Court.



The 17th Place Art Walk

B. Character and Quality

Outdoor spaces are multifunctional and offer many benefits. Most importantly, for a university campus, they support informal meeting and collaborative exchange of ideas. Even with advanced communication technologies, the COVID-19 pandemic has shown that there are benefits to in-person meetings. Providing outdoor space for such unplanned interactions on campus is desirable.

Outdoor spaces also support overall health and wellness and promote healing. For everyone who works on or visits the campus, the system of pedestrian-friendly spaces and routes allows exercise and recreation to be integrated into daily activities. Connections to the outdoors also helps patients and families deal with the stress of medical treatments.

Sustainable design initiatives to provide storm water management, heat island effect mitigation, and natural habitat on campus are best implemented using campus open spaces. Good design of open spaces will also allow them to be used throughout all four seasons. Due to Colorado’s arid climate water-efficient plant species should be used to landscape them whenever it is possible to do so.

Outdoor spaces and routes should be fully accessible including their connections to campus facilities. Sidewalks and other connections from the open spaces can help link the campus to the regional park and trail network as well as public transportation.

C. Campus Coverage

The original 1998 facilities master plan for what became known as the Anschutz Medical Campus was based upon the following percentages for building, impervious pavement and open space coverage across the 230-acre site:

- Buildings: 40% maximum
- Pavement: 30% maximum
- Open Space: 30% minimum

Based on the current campus site plan (Figure II.45), the campus is currently below the building coverage maximum, slightly above pavement coverage maximum, and above the open space minimum.

To better account for different development densities on campus, the 2012 Facilities Master Plan established Character Districts. The recommended coverage ratios within each were adjusted to better reflect surrounding activities while maintaining the overall campus coverage guidelines from 1998.

For example, the C1 | Academic Village District proposes a higher percentage of open space due to the pedestrian amenities and quads within it. On the other hand, the C3 | Hospital District also accommodates more paved areas to allow larger hospital facilities and to accommodate associated patient and visitor parking.

Character District	Total Area (SF)	Building Footprints (SF)	Percentages		Pavement (SF)	Percentages		Open Space (SF)	Percentages	
			Current	Target		Current	Target		Current	Target
C1 Academic Village	2,232,935	474,935	21%	30%	818,587	37%	35%	939,413	42%	35%
C2 Urban Campus	3,389,047	434,305	13%	45%	2,014,850	59%	35%	939,892	28%	20%
C3 Hospital District	4,027,257	1,246,147	31%	40%	1,708,808	42%	40%	1,072,301	27%	20%
C4 Special	285,668	48,906	17%	16%	50,585	18%	21%	186,177	65%	63%
South of Montview	9,934,907	2,204,294	22%		4,592,830	46%		3,137,783	32%	
C2 Urban Campus	1,370,692	68,263	5%	45%	86,309	6%	35%	1,216,121	89%	20%
North of Montview	1,370,692	68,263	5%		86,309	6%		1,216,121	89%	
CAMPUS TOTAL	11,305,599	2,272,557	20%		4,679,138	41%		4,353,904	39%	

Figure 46 - Campus Coverage by Character District



Figure 47 - Campus Coverage Map

Existing 2022 coverage percentages, within Character Districts, are shown in Figure II.46.

Land use/land cover from the campus site plan was used for this analysis so the figures may differ from those provided in the last plan. For instance, the new data classifies medians within parking lots and larger areas of crusher fine that provide some level of groundwater infiltration as pervious pavement.

For the area south of Montview Boulevard, the overall amount of pavement is well above recommendations. In part, However, the C2 | Urban Campus district does include vast areas of surface parking. As these land banks are developed in the future, the amount of paved area within the district should decrease as buildings are constructed and more landscaping is provided.

Name	Title	Committees				Focus Groups					
		Executive	Steering	Planning	Campus Directors Group	Clinical	Diversity, Equity, and Inclusion	Education, Learning, & Technology	Research	Student Life	Utilities & Infrastructure
Anthony Airhart	CON Associate Dean of Finance and Administration						E				U
Todd Akey	Senior Director of Facilities Projects		S		D	C	E	R	L		U
Ralph Altieri	Dean of the Skaggs School of Pharmacy and Pharmaceutical Sciences		S								
Scott Arthur	Vice Chancellor of Advancement		S								
Erik Balsley	Senior Planner			P		C	I	E	R	L	U
Elshimaa Basha	CAPE Director					C	E				
Pete Bloomquist	Department of Facilities Energy Engineer										U
Laura Borgelt	Associate Vice Chancellor of Strategic Initiatives		S							L	
Fara Bowler	CON Senior Director of the Experiential Learning Team					C	E				
Cathy Bradley	CSPH Associate Dean for Research							R			
Don Brandes	CU Design Review Board Chair		S								
Danielle Brittain	CSPH Associate Dean for Academics and Student Affairs						E				
Tina Brock	SSPPS Associate Dean for Education						E				
Peter Buttrick	SOM Senior Associate Dean for Academic Affairs		S					R			
Jay Campbell	Associate Vice Chancellor for Facilities Management		S		D						
Terri Carrothers	Executive Vice Chancellor for Administration and Finance and Chief Financial Officer	E									
Rachel Copeland	SSOPPS Associate Dean for Finance & Budget						E				
Brian Davis	SDM Associate Dean for Finance Budget and Strategic Projects			P							
Ryan Davis	Associate Vice Chancellor for Budget and Planning		S								
Duncan Davis-Hall	Student Senate Representative			P							
Tracy de Peralta	SDM Senior Associate Dean of Academic Affairs and Innovation						E				
Kevin Deane	Associate Professor of Medicine, William P. Arend Endowed Chair in Rheumatology Research					C					
Dave Deffenbacher	Assistant Vice Chancellor Office of Institutional Research and Effectiveness			P							
Melissa Desantis	Director of the Strauss Health Sciences Library						E		L		
Will Dewese	Director of Title IX, Equity Office						I				

Name	Title	Executive	Steering	Planning	Campus Directors Group	Clinical	Diversity, Equity, and Inclusion	Education, Learning, & Technology	Research	Student Life	Utilities & Infrastructure
Brian Dwinnell	SOM Associate Dean for Student Affairs									L	
Lotte Dyrbey	SOM Senior Associate Dean of Faculty and Chief Well-being Officer						I				
Donald Elliman	Chancellor	E									
Christopher Evans	Professor, Associate Division Head - Research								R		
Thomas Flaig	Vice Chancellor for Research	E									
Lauren Fontana	Associate Director of the Office of Disability, Access & Inclusion						I	E			
Anne Fuhlbrigge	SOM Senior Associate Dean for Clinical Affairs					C					
Emily Gamm	CON Interim Behavioral Health Clinical Lead						I				
Amy Gannon	Associate Vice Chancellor for Financial Services, Grants and Contracts and Bursar		S						R		
Jan Gascoigne	Associate Vice Chancellor for Student Affairs		S							L	
Ted Geissler	OIT Director of Technology Support Services							E			
Gregory Gibson	Senior Director of Building Maintenance and Operations			P	D			E			U
Christine Gillen	CSPH Associate Dean for Administration and Finance			P							
Tracy Gray	CON Director of Human Resources, Faculty Affairs and Facilities		O	P							
Kathy Green	Vice Chancellor for Marketing and Communications		S								
Melissa Haendel	Chief Research Informatics Officer (CRIO)		S						R		
Brian Hemstreet	SSOPPS Associate Dean for Student Affairs									L	
Teri Hernandez	CON Associate Dean of Research and Scholarship								R		
Todd Hinshaw	SDM Facilities Manager										
Robert Holzwarth	Project Manager, Facilities Projects				D						U
Cerise Hunt	CSPH Associate Dean for Equity, Diversity and Inclusion						I				
Carl Johnson	Student Engagement Director			P						L	
Lonnie Johnson	SDM Associate Dean of Clinics and Professional Practice					C					
Denise Kassebaum	Dean of the School of Dental Medicine		S								
Neil Krauss	Associate Vice Chancellor of Initiatives and Community Engagement			P							
Allison Lakin	Associate Vice Chancellor for Regulatory Compliance		S						R		
Mackenzie Leiter	Principal Planner					C	I	E	R	L	U
Jori Leszczynski	Assistant Vice Chancellor of OLAR								R		
Christopher Lieu	Associate Director, Clinical Research CU Cancer Center					C					

Name	Title	Executive	Steering	Planning	Campus Directors Group	Clinical	Diversity, Equity, and Inclusion	Education, Learning, & Technology	Research	Student Life	Utilities & Infrastructure
Tim Lockie	Administrative Director Colorado Clinical Translational Science Institute					C					
David Lowry	OIT Director of Planning, Strategy and Analysis			P				E			
Katelyn Martin	Student Engagement Coordinator							E			
Dominic Martinez	Assistant Vice Chancellor for the Office of Inclusion and Outreach and Undocumented Student Services									L	
Kerrie McLean	Department of Facilities Assistant Director										U
Rick Mediavilla	SDM Associate Dean of Student Affairs and Admissions									L	
Rosario Medina	CON Associate Dean of Clinical and Community Affairs					C					
Michael Miller	SOM IT Director							E			
Vimol Mitchell	Assistant Director of Building Maintenance and Operations							E			U
John Moore	SOM Associate Dean of Finance and Administration										
Laura Morris	Associate Vice Chancellor for Information Technology and Chief Technology Officer		S					E	R		
Roderick Nairn	Executive Vice Chancellor for Academic and Student Affairs	E									
Corey Parham	A/V Projects Design and Operations Manager							E			
Elias Provencio-Vasquez	Dean of the College of Nursing		S								
Del Quiel	Facilities Director			P	D						U
Elizabeth Ramos	SDM Assistant Dean for Academic Achievement and Equity						I				
John Reilly Jr.	Vice Chancellor of Health Affairs and Dean of the School of Medicine	E									
Randy Repola	Executive Director, Chief of Police		S								U
Regina Richards	Vice Chancellor of Diversity, Equity, Inclusion and Community Engagement		S				I				
Kristi Rodriguez	CON Director of Admissions and Student Affairs						I			L	
Scott Roen	Manager of Engineering and Central Utility Plant										U
David Ross	SSPPS Associate Dean for Research and Graduate Studies								R		
Andrew Rotz	Anschutz Staff Council Chair and SSPPS Facilities Manager			P					R		
Jon Samet	Dean of the Colorado School of Public Health		S								
Joseph Saseen	SSOPPS Associate Dean for Clinical Affairs					C					

Name	Title	Executive	Steering	Planning	Campus Directors Group	Clinical	Diversity, Equity, and Inclusion	Education, Learning, & Technology	Research	Student Life	Utilities & Infrastructure
Nara Shagdar	Senior Director Finance Office/ Financial Services			P							
Jackie Sivahop	Associate Professor, Child Health Associate/Physician Assistant Program									L	
Chris Smith	Vice Chancellor for Information Systems and Services		S					E	R		
Jarrett Smith	Sustainability Officer			P							U
Suzann Staal	SOM Director of Facilities and Planning			P	D	C		E	R	L	U
Kelly Stamp	CON Associate Dean of Academic Programs							E			
Jeffrey Stansbury	SDM Associate Dean for Research			P					R		
Lori Sussel	Associate Vice Chancellor for Basic Science Research and Barbara Davis Center Research Director		S								
Steve VanNurden	Associate Vice Chancellor for Biotechnology		S								
Andre Vite	Assistant Vice Chancellor of Facilities Planning and Design		S			C	I	E	R	L	U
David Weil	Manager of Operations & Educational Technology Center for Bioethics and Humanities									L	
Aimee Woznick	Program Director of Strategy Implementation, Office of Strategic Initiatives			P						L	
Shanta Zimmer	SOM Senior Associate Dean for Education							E			
Steve Zweck-Bronner	Vice Chancellor and Senior Managing Associate University Counsel	E									

Name	Title	Executive	Steering	Planning	Campus Directors Group	Clinical	Diversity, Equity, and Inclusion	Education, Learning, & Technology	Research	Student Life	Utilities & Infrastructure
Children's Hospital Colorado (CHCO)											
Dan Coxall	Vice President of Support Services				D						U
Susan Cain	Director of Planning, Design and Construction				D						U
Stephanie Cooper	Space Program Manager				D						U
Kathy Hurley	Director of Facilities Operations				D						
Eric Taylor	Senior Manager of Facilities Operations				D						
City of Aurora											
Vern Adam	Aurora Water Engineering Services Manager										U
Aja Tibbs	Senior Planner										
Huiliang Liu	Principal Transportation Planner										
Carlie Campuzano	Traffic Manager										
Mac Callison	Transportation Supervisor										
CU Medicine											
Augie Trujillo	Facility Manager				D						U
Fitzsimons Redevelopment Authority (FRA)											
Lyle Artz	Site Manager				D						U
April Giles	Vice President, Business Development			P							U
Rocky Mountain Regional VA Medical Center (VAMC)											
Greg Reiff	Senior Resident Engineer				D						
Richard Wulff	Facilities Manager				D						U
UCHealth University of Colorado Hospital (UCH)											
Michael Dulaney	BIM Manager										
Richard Klepper	Senior Director of Facilities Management				D						
John Morrow	Director of Facilities Management				D						
Rick Redestke	VP of Facilities, Design and Construction.				D						U
Brazilia Vela	Parking Coordinator										U
John White	Director of Design + Construction				D						U

**PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER
With Controlling Interests & Development Options**

Maintained by CU Anschutz
Updated: March 25, 2021

Property	Original Conveyance	Current Controlling Interest	Current Development Options
<p>Parcel 1 Deed: 5-12-1998 Acres: 48.6</p>	<p>Transferred from the US Army to the US DOE which conveyed to CU Anschutz with the following restrictions:</p> <ul style="list-style-type: none"> For 30 years, the property will be used solely and continuously for educational purposes in accordance with the proposed program set forth in the application. During this time, the Grantee will: <ol style="list-style-type: none"> Not sell, resell, lease, rent, mortgage, encumber, or otherwise transfer any interest in any part of the property except as authorized in advance in writing by the Grantor. Provide biennial reports to the Grantor on the operation and maintenance of the property. Remain a tax supported institution or exempt from taxation under 501(c)(3) guidelines. Comply with federal programs including civil rights, non-discrimination, Americans with disabilities, and Title IX. Penalty for non-compliance: reversion of the property to the federal government. <p>Abrogation Option:</p> <ul style="list-style-type: none"> Grantee may seek abrogation (repeal) of the restrictions by obtaining written consent of the Grantor for payment of the property at fair market value. 	<p>Roadways 16th Ave., 17th Ave., and Quentin St.:</p> <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Trunk roadways restricted for public access per agreements with the City of Aurora (see Roadways-Trunk).
		<p>Property north of 17th Ave.:</p> <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per CU Anschutz role and mission.
		<p>Property south of 17th Ave. and east of Quentin St.:</p> <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. Leased by CU Anschutz for a nominal amount to UCH. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per UCH role and mission that includes supporting the clinical mission of CU Anschutz.

PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options			
			Maintained by CU Anschutz Updated: March 25, 2021
Property	Original Conveyance	Current Controlling Interest	Current Development Options

<p align="center">PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options</p>			
			<p>Maintained by CU Anschutz Updated: March 25, 2021</p>
Property	Original Conveyance	Current Controlling Interest	Current Development Options
Parcel 2 Deed: 5-12-1998 Acres: 30	<ul style="list-style-type: none"> Same as for Parcel 1. 	Roadways 16 th Ave., 17 th Ave. and Victor St.: <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Trunk roadways restricted for public access per agreements with the City of Aurora (see Roadways–Trunk).
		Property north of 17 th Ave.: <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per CU Anschutz role and mission.
		Property south of 17 th Ave.: <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. CHCO paid fair market value to the US DOE for abrogation of the property. Leased by CU Anschutz for a nominal amount to CHCO. 	<ul style="list-style-type: none"> No restrictions on use. Development per CHCO role and mission that includes supporting the clinical mission of CU Anschutz.
Parcel 3 Deed: 5-12-1998 Acres: 4.5	<ul style="list-style-type: none"> Same as for Parcel 1. 	<ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per CU Anschutz role and mission.
Parcel 4 Deed: 5-12-1998 Acres: 3.7	<ul style="list-style-type: none"> Same as for Parcel 1. 	<ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per CU Anschutz role and mission.
Parcel 5 Deed: 5-12-1998 Acres: .8	<ul style="list-style-type: none"> Same as for Parcel 1. 	<ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per CU Anschutz role and mission.

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			<p>Maintained by CU Anschutz Updated: March 25, 2021</p>
Property	Original Conveyance	Current Controlling Interest	Current Development Options
<p>Parcel E Deed: 1-29-2004 Acres: 14.6</p>	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<p>Roadways 17th Ave. and Victor St:</p> <ul style="list-style-type: none"> Purchased by CHCO from the FRA under the terms of an early buyout agreement between the FRA and CU Anschutz. Conveyed by CHCO for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Trunk roadways restricted for public access per agreements with the City of Aurora (see Roadways-Trunk).
		<p>Property north of 17th Ave. and west of Victor St.:</p> <ul style="list-style-type: none"> Purchased by CHCO from the FRA under the terms of an early buyout agreement between the FRA and CU Anschutz. Conveyed by CHCO for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> No restrictions on use. Development per CU Anschutz role and mission.
		<p>Rest of property:</p> <ul style="list-style-type: none"> Purchased by CHCO from the FRA under the terms of an early buyout agreement between the FRA and CU Anschutz. Conveyed by CHCO for a nominal amount to CU Anschutz. Leased by CU Anschutz for a nominal amount to CHCO. 	<ul style="list-style-type: none"> No restrictions on use. Development per CHCO role and mission that includes supporting the clinical mission of CU Anschutz.

PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options			
			Maintained by CU Anschutz Updated: March 25, 2021
Property	Original Conveyance	Current Controlling Interest	Current Development Options
Parcel O Deed: 4-29-2005 Acres: 16.3	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	Roadways 17 th Ave. and Racine St.: <ul style="list-style-type: none"> Purchased by UCH from the FRA under the terms of an early buyout agreement between the FRA and CU Anschutz. Conveyed by UCH for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Trunk roadways restricted for public access per agreements with the City of Aurora (see Roadways-Trunk).
		Property north of 17 th Ave and west of Racine St.: <ul style="list-style-type: none"> Purchased by UCH from the FRA under the terms of an early buyout agreement between the FRA and CU Anschutz. Conveyed by UCH for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> No restrictions on use. Development per CU Anschutz role and mission.
		Rest of property: <ul style="list-style-type: none"> Purchased by UCH from the FRA under the terms of the early buyout agreement between the FRA and CU Anschutz. Conveyed by UCH for a nominal amount to CU Anschutz. Leased for a nominal amount from CU Anschutz to UCH. 	<ul style="list-style-type: none"> No restrictions on use. Development per UCH role and mission that includes supporting the clinical mission of CU Anschutz.

<p align="center">PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options</p>			
			<p>Maintained by CU Anschutz Updated: March 25, 2021</p>
Property	Original Conveyance	Current Controlling Interest	Current Development Options
Parcel U Deed: 12-12-2000 Acres: 105.3	<ul style="list-style-type: none"> Same as for Parcel 1. 	Roadways: <ul style="list-style-type: none"> Conveyed for nominal amount from US DOE to CU Anschutz. Quentin St. north of Parcel 1 and south of Montview Blvd. Racine St. from 17th Place to Montview Blvd. Aurora Court from Colfax Ave. to 17th Place Victor St. from Colfax Ave. to Parcel E. Wheeling St. from Colfax Ave. to Montview Blvd. 16th Ave. from Parcel 2 to Victor St. 	<ul style="list-style-type: none"> Trunk roadways restricted for public access per agreements with the City of Aurora (see Roadways-Trunk).
		Property north of 17 th Ave.: <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per CU Anschutz role and mission.
		CeDAR property: <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. Leased by CU Anschutz for a nominal amount to UCH. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per UCH role and mission that includes supporting the clinical mission of CU Anschutz.

<p align="center">PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options</p>			
			<p>Maintained by CU Anschutz Updated: March 25, 2021</p>
Property	Original Conveyance	Current Controlling Interest	Current Development Options
Parcel U Continued	<ul style="list-style-type: none"> See above. 	Property south of 17 th Ave. and between Parcel 2 and Wheeling St.: <ul style="list-style-type: none"> Conveyed by US DOE for a nominal amount to CU Anschutz. CHCO paid fair market value to the US DOE for abrogation of the property. Leased by CU Anschutz for a nominal amount to CHCO. 	<ul style="list-style-type: none"> No restrictions on use. Development per CHCO role and mission that includes supporting the clinical mission of CU Anschutz.
		Property north of Colfax Ave. and east of Aurora Court (note: the small areas north of Colfax Ave. were conveyed with the roadways): <ul style="list-style-type: none"> Conveyed by US DOE for a nominal amount to CU Anschutz. CHCO paid fair market value to the US DOE for abrogation of the property. Leased by CU Anschutz for a nominal amount to CHCO. 	<ul style="list-style-type: none"> No restrictions on use. Development per CHCO role and mission that includes supporting the clinical mission of CU Anschutz.
		Property north of Colfax Ave. and west of Aurora Court (note: the small areas north of Colfax Ave. were conveyed with the roadways): <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. Leased by CU Anschutz for a nominal amount to UCH. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per UCH role and mission that includes supporting the clinical mission of CU Anschutz.

<p align="center">PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options</p>			
<p align="right">Maintained by CU Anschutz Updated: March 25, 2021</p>			
Property	Original Conveyance	Current Controlling Interest	Current Development Options
Parcel U Continued	<ul style="list-style-type: none"> See above. 	<p>The realignment of Wheeling St. north of Colfax Ave. required several property transfers:</p> <ul style="list-style-type: none"> South of 16th Place – northern section: <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. Conveyed by CU Anschutz for a nominal amount to the FRA. Sold at fair market value by the FRA to VA. South of 16th Place – southern section: <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. Conveyed by CU Anschutz for a nominal amount to UPI. Sold at fair market value by UPI to VA. 	<ul style="list-style-type: none"> No restrictions on use. Development per VA role and mission.
Parcel Z Deed: 7-17-2001 Acres: 3	<ul style="list-style-type: none"> Same as for Parcel 1. 	<p>Perinatal Research Facility property:</p> <ul style="list-style-type: none"> Conveyed by the US DOE for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per CU Anschutz role and mission.

**PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER
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Property	Original Conveyance	Current Controlling Interest	Current Development Options
<p>APS Transfers Deed: 7-31-2006 Acres: 2.2</p>	<p>Transferred from the US Army to the US DOE which conveyed to Aurora Public Schools (APS) with the following restrictions:</p> <ul style="list-style-type: none"> For 30 years, the property will be used solely and continuously for educational purposes in accordance with the proposed program set forth in the application. During this time, the Grantee will: <ol style="list-style-type: none"> Not sell, resell, lease, rent, mortgage, encumber, or otherwise transfer any interest in any part of the property except as authorized in advance in writing by the Grantor. Provide biennial reports to the Grantor on the operation and maintenance of the property. Remain a tax supported institution or exempt from taxation under 501(c)(3) guidelines. Comply with federal programs including civil rights, non-discrimination, Americans with disabilities, and Title IX. Penalty for non-compliance: reversion of the property to the federal government. <p>Abrogation Option:</p> <ul style="list-style-type: none"> Grantee may seek abrogation (repeal) of the restrictions by obtaining written consent of the Grantor for payment of the 	<p>Roadways - 16th Place from Victor St. to Wheeling St.</p> <ul style="list-style-type: none"> With approval by the US DOE, purchased from APS at fair market value by CHCO. Conveyed by CHCO for a nominal amount to CU Anschutz. 	<ul style="list-style-type: none"> Trunk roadways restricted for public access per agreements with the City of Aurora (see Roadways-Trunk).
		<p>CHCO Dental Clinic property south of 16th Place and west of Wheeling St.:</p> <ul style="list-style-type: none"> With approval by the US DOE, purchased from APS at fair market value by CHCO. 	<ul style="list-style-type: none"> No restrictions on use. Development per CHCO role and mission that includes supporting the clinical mission of CU Anschutz.
		<p>Property north of 16th Place:</p> <ul style="list-style-type: none"> With approval by the US DOE, purchased from APS at fair market value by CHCO. Conveyed by CHCO for a nominal amount to CU Anschutz. Leased by CU Anschutz for a nominal amount to CHCO. 	<ul style="list-style-type: none"> No restrictions on use. Development per CHCO role and mission that includes supporting the clinical mission of CU Anschutz.

PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options			
			Maintained by CU Anschutz Updated: March 25, 2021
Property	Original Conveyance	Current Controlling Interest	Current Development Options
	property at fair market value.		

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			<p>Maintained by CU Anschutz Updated: March 25, 2021</p>
Property	Original Conveyance	Current Controlling Interest	Current Development Options
APS Transfers Continued	<ul style="list-style-type: none"> See above 	<p>The realignment of Wheeling St. north of Colfax Ave. required several property transfers:</p> <ul style="list-style-type: none"> South of 16th Place – northern section: <ul style="list-style-type: none"> With approval by the US DOE, purchased from APS at fair market value by CHCO. Conveyed by CHCO for a nominal amount to FRA. Sold by the FRA at fair market value to the VA. South of 16th Place – southern section: <ul style="list-style-type: none"> With approval by the US DOE, purchased from APS at fair market value by CHCO. Conveyed by CHCO for a nominal amount to UPI. Sold by UPI at fair market value to the VA. 	<ul style="list-style-type: none"> No restrictions on use. Development per VA role and mission.
Daycare Center - CHCO	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Sold by the FRA at fair market value to CHCO. 	<ul style="list-style-type: none"> No restrictions on use. Development per CHCO role and mission that includes supporting the clinical mission of CU Anschutz.
Colonel's Row	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Sold by the FRA at fair market value to UCH. 	<ul style="list-style-type: none"> No restrictions on use. Development per UCH role and mission that includes supporting the clinical mission of CU Anschutz.

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			<p>Maintained by CU Anschutz Updated: March 25, 2021</p>
Property	Original Conveyance	Current Controlling Interest	Current Development Options
			<ul style="list-style-type: none"> Development per historic preservation guidelines.
<p>Red Cross Parcel Deed: 11-10-2004 Acres: 1.4</p>	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal Economic Development Conveyance. 	<p>The property was conveyed by the FRA under a Quit Claim Deed to CU Anschutz for the following considerations:</p> <ul style="list-style-type: none"> CU Anschutz’s agreement to maintain and renovate the Red Cross Building in accordance with historic preservation guidelines. CU Anschutz’s providing the FRA with its plan for completing the improvements. Penalty for non-compliance: injunction, including specific performance and/or reversion of the property to the FRA. Other renovation or demolition requires coordination with the FRA and the Aurora Historic Preservation Commission. 	<ul style="list-style-type: none"> No restrictions on use. Development per CU Anschutz role and mission. Development in accordance with historic preservation guidelines.
<p>Wheeling St. ROW Deed: 12-3-2012 Acres: 0.05</p>	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal Economic Development Conveyance. 	<p>The property was conveyed by the FRA under a Quit Claim Deed to CU Anschutz.</p>	<ul style="list-style-type: none"> Restricted for public access under agreements with the City of Aurora (see Roadways-Trunk).
<p>Bioscience 2 Deed: 2-4-2014 Acres: 2.4</p>	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal Economic Development Conveyance. 	<p>Purchased from FRA by CU Anschutz.</p>	<ul style="list-style-type: none"> No restrictions on use. Development per CU Anschutz role and mission.
<p>V07 (Old Fisher House) Deed: 5-6-2018 Acres: 0.61</p>	<ul style="list-style-type: none"> Conveyed from the US Army to the FRA for consideration that the FRA would lease the property to the VA for a specified number of years. 	<ul style="list-style-type: none"> Leased by the FRA to the VA. VAMC vacated the Fisher House after it constructed a facility at the VAMC. CU Anschutz purchased the vacated property from the FRA. 	<ul style="list-style-type: none"> No restrictions on use. Development per CU Anschutz role and mission.

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Property	Original Conveyance	Current Controlling Interest	Current Development Options
<p>FRA Golf Course Parcels Deed: 7-10-2018 Acres: 26.22</p>	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal Economic Development Conveyance. 	<p>Purchased from FRA by CU Anschutz.</p> <ul style="list-style-type: none"> Six parcels in total were purchased, they are numbered from 1 to 6. Only Parcel 1 had been previously platted and its acreage has been recorded. Parcels 2 – 6 have not been platted and the acreages have not been recorded. 	<ul style="list-style-type: none"> No restrictions on use. Development per CU Anschutz role and mission.
<p>FRA Land Swap Deed: 12-18-2019</p>	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal Economic Development Conveyance. 	<p>Zero-sum land transfers between CU Anschutz and the FRA:</p> <ul style="list-style-type: none"> CU Anschutz gave up portions of Parcels 3 & 4 acquired in 2018 to accommodate a realignment of Revere Street. CU Anschutz also conveyed the Bioscience 2 Parking Lot to the FRA. The FRA conveyed Parcels F & G to CU Anschutz 	<ul style="list-style-type: none"> No restrictions on use. Development per CU Anschutz role and mission.

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Property	Original Conveyance	Current Controlling Interest	Current Development Options
Roadways – In-Tract	<ul style="list-style-type: none"> Conveyed in the various parcels described above for the AMC. 	<ul style="list-style-type: none"> All roadways within the CU Anschutz footprint except Trunk Roadways. Controlling interest: CU Anschutz. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per CU Anschutz role and mission. CU Anschutz operations and maintenance.
		<ul style="list-style-type: none"> All roadways within the UCH footprint except Trunk Roadways. Controlling interest: UCH. 	<ul style="list-style-type: none"> Restricted to educational uses. Development per UCH role and mission. UCH operations and maintenance.
		<ul style="list-style-type: none"> All roadways within the CHCO footprint except Trunk Roadways. Controlling interest: CHCO. 	<ul style="list-style-type: none"> No restrictions on use. Development per CHCO role and mission. CHCO operations and maintenance.
Roadways - Trunk	<ul style="list-style-type: none"> Conveyed in the various parcels described above for the AMC. 	<p>Trunk Roadways – controlling interest CU Anschutz:</p> <ul style="list-style-type: none"> Quentin St. from Colfax Ave. to Montview Blvd. Racine St. from 17th Ave. to Montview Blvd. Aurora Ct. from Colfax Ave. to 17th Place Victor St. from Colfax Ave. to Montview Blvd. Wheeling St. from Colfax Ave. to Montview Blvd. 16th Ave. from Quentin St. to Victor St. 16th Place from Victor St. to Wheeling St. 17th Ave from Quentin St. to Victor St. 	<ul style="list-style-type: none"> Restricted for public access under agreements with the City of Aurora. CU Anschutz manages and maintains the roadways under the AMC Infrastructure Development & Maintenance Agreement. UCH and CHCO share the costs of the Trunk Roadways with CU Anschutz under the AMC Site Operating Agreement.
21 Fitzsimons Apartments	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Sold by the FRA at fair market value to Paul's Corporation. On 8/4/2014, Paul's Corporation sold property to AIMCO. 	<ul style="list-style-type: none"> No restrictions on use. Development per Paul's Corporation role and mission. Developed as apartments with parking and

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			commercial space on the ground floor of Phase 1.
Bioscience Center East	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Leased by the FRA to various tenants. Controlling interest: FRA. 	<ul style="list-style-type: none"> No restrictions on use. Development per FRA role and mission.
Bioscience Park Center	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Leased by the FRA to various tenants. Controlling interest: FRA. 	<ul style="list-style-type: none"> No restrictions on use. Development per FRA role and mission.
Buildings 301 & 302 - Homeless Provider Agencies	<ul style="list-style-type: none"> Conveyed for a nominal amount from the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Leased for 30 years by the FRA to Aurora Mental Health and the Comitis Crisis Center. Controlling interest: FRA. 	<ul style="list-style-type: none"> Restricted to use by homeless provider agencies for the lease term. Development per FRA role and mission.
Chapel	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. Windows remain the property of the US Army and must be returned to the US Army if the building is demolished or the windows removed. 	<ul style="list-style-type: none"> Controlling interest: FRA. 	<ul style="list-style-type: none"> No restrictions on use. Development per FRA role and mission. Development per historic preservation guidelines.
City of Aurora Police Station #1 and Police and Fire Training Academy	<ul style="list-style-type: none"> Transferred by the US Army to the US Department of Justice which conveyed the property to the City of Aurora. 	<ul style="list-style-type: none"> Conveyed by the US Department of Justice for a nominal amount to the City of Aurora. 	<ul style="list-style-type: none"> Restricted to use by law enforcement and public safety. Development per City of Aurora role and mission.
Colorado State Veteran's Home	<ul style="list-style-type: none"> Conveyed for a nominal amount from the US Army to the FRA for consideration that the FRA will convey the property to the State of Colorado for construction of a state veteran's home. 	<ul style="list-style-type: none"> Conveyed by the FRA for a nominal amount to the State of Colorado Department of Human Services (CDHS). 	<ul style="list-style-type: none"> Restricted to use by the FRA under the Homeless Provider Agreement with CDHS. Development per CDHS role and mission.

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			<p>Maintained by CU Anschutz Updated: March 25, 2021</p>
Property	Original Conveyance	Current Controlling Interest	Current Development Options
Fisher House	<ul style="list-style-type: none"> Conveyed from the US Army to the FRA for consideration that the FRA will lease the property to the VA for a specified number of years. 	<ul style="list-style-type: none"> Leased by the FRA to the VA. Controlling interest: FRA. 	<ul style="list-style-type: none"> Restricted to use by the VA for the duration of the lease. Development per VA role and mission.
Fitzsimons Federal Credit Union (FFCU)	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Sold by the FRA at fair market value to the FFCU. 	<ul style="list-style-type: none"> No restrictions on use. Development per the FFCU role and mission.
General's Park	<ul style="list-style-type: none"> Conveyance document not available. Understood that the property was conveyed with restrictions for use as a public park. Transferred by the US Army to the US Department of the Interior which conveyed the property to the City of Aurora. 	<ul style="list-style-type: none"> Conveyed by the US Department of the Interior for a nominal amount to the City of Aurora. 	<ul style="list-style-type: none"> Restricted to use as a public park. Development per City of Aurora role and mission. Development per historic preservation guidelines.
Open areas north of Montview Blvd.	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Controlling interest: FRA. 	<ul style="list-style-type: none"> No restrictions on use. Development per FRA role and mission.

<p align="center">PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options</p>			
<p align="right">Maintained by CU Anschutz Updated: March 25, 2021</p>			
Property	Original Conveyance	Current Controlling Interest	Current Development Options
Roadways - City of Aurora	<p>Sold at fair market value by the US Army to the FRA under a federal economic development conveyance:</p> <ul style="list-style-type: none"> Fitzsimons Pkwy. north of 17th Place. Ursula St. from Montview to 23rd Ave. 23rd from Victor St. to Fitzsimons Pkwy. Uvalda from Montview Blvd. to 21st Ave. Wheeling St. from 23rd Ave. south approximately 250 feet to the northern edge of the City of Aurora police station. 	<ul style="list-style-type: none"> Conveyed by the FRA for a nominal amount to the City of Aurora. 	<ul style="list-style-type: none"> No restrictions on use. Development per City of Aurora role and mission. After re-construction, all of Montview Blvd. will be conveyed from the FRA to the City of Aurora.
	<p>Transferred by the US Army to the US Department of Justice which conveyed to the City of Aurora with the police parcel:</p> <ul style="list-style-type: none"> Montview Blvd. from Fitzsimons Pkwy. to Victor St. 	<ul style="list-style-type: none"> Conveyed by the US Department of Justice for a nominal amount to the City of Aurora. 	<ul style="list-style-type: none"> Restricted to use by law enforcement and public safety. Development per City of Aurora role and mission.
Roadways – FRA	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<p>17th Place from Wheeling St. to Fitzsimons Pkwy.:</p> <ul style="list-style-type: none"> Controlling interest: FRA. 	<ul style="list-style-type: none"> Restricted development per utility right of way easement to the City of Aurora under the roadway. Roadway will be closed for approximately 2.5 years during construction of the VA. After construction is complete, the roadway will be conveyed from the FRA to the City of Aurora.
		<p>Other roadways controlled by the FRA:</p> <ul style="list-style-type: none"> Most of Montview Blvd. Victor St. from Montview Blvd. to Fitzsimons Parkway. Scranton St. north of Montview Blvd. 23rd Ave. west of Victor St. 	<ul style="list-style-type: none"> No restrictions on use. After re-construction, all of Montview Blvd. will be conveyed from the FRA to the City of Aurora. Victor St. and Wheeling St. will be conveyed from the FRA to the City of Aurora when they are

<p align="center">PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options</p>			
			<p>Maintained by CU Anschutz Updated: March 25, 2021</p>
Property	Original Conveyance	Current Controlling Interest	Current Development Options
			constructed in their final configurations.
UPI Building	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Sold by the FRA at fair market value to UPI (now CU Medicine). 	<ul style="list-style-type: none"> No restrictions on use. Development per UPI role and mission.
US Army Reserve	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> The FRA exchanged this property with the US Army Reserve for their original property north of Colfax Avenue and west of Fitzsimons Parkway. Controlling interest: US Army Reserve. 	<ul style="list-style-type: none"> Restricted to use by the federal government. Development per US Army Reserve role and mission.
Veterans Affairs Medical Center (VAMC)	<p>FRA property east of Wheeling St. and south of 19th Place:</p> <ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Sold by the FRA at fair market value to the VA. 	<ul style="list-style-type: none"> No restrictions on use. Development per VA role and mission.
	<p>Former US Army Reserve property north of Colfax Ave. and west of Fitzsimons Parkway:</p> <ul style="list-style-type: none"> Transfer from the US Army to the US Army Reserve. 	<ul style="list-style-type: none"> The US Army Reserve exchanged this property with the FRA for the property that is now the current site of the US Army Reserve. Sold by the FRA at fair market value to the VA. 	<ul style="list-style-type: none"> No restrictions on use. Development per VA role and mission.
	<p>Former Fitzsimons Federal Credit Union (FFCU) property located north of 17th Place and east of Wheeling St.:</p> <ul style="list-style-type: none"> Land lease from the US Army to the FFCU. FFCU owned the building. 	<ul style="list-style-type: none"> Sold by the FFCU at fair market value to the VA. 	<ul style="list-style-type: none"> No restrictions on use. Development per VA role and mission.
	<p>Former City of Aurora swimming pool located south of 19th Place and east of Wheeling St.:</p> <ul style="list-style-type: none"> Transferred by the US Army to the US Department of the Interior 	<ul style="list-style-type: none"> After the US Department of the Interior removed deed restrictions, the City of Aurora conveyed the property for a nominal amount to the VA. 	<ul style="list-style-type: none"> No restrictions on use. Development per VA role and mission.

<p>PROPERTY CONVEYANCE GUIDE FOR THE FORMER FITZSIMONS ARMY MEDICAL CENTER With Controlling Interests & Development Options</p>			
<p>Maintained by CU Anschutz Updated: March 25, 2021</p>			
Property	Original Conveyance	Current Controlling Interest	Current Development Options
	<p>which conveyed the property for a nominal amount to the City of Aurora.</p>		
Xcel Energy Substation	<ul style="list-style-type: none"> Sold at fair market value by the US Army to the FRA under a federal economic development conveyance. 	<ul style="list-style-type: none"> Sold by the FRA as part of the Gas and Electric System Total Sale Package to Xcel Energy. 	<ul style="list-style-type: none"> Restricted to use for an electric substation and distribution center. Development per Xcel Energy role and mission.



University of Colorado
Anschutz Medical Campus
2022 Facilities Master Plan

**Design & Development
Guidelines**

Office of Institutional Planning

Design & Development Guidelines

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I. GOALS

I.1 INTRODUCTION

These Design and Development Guidelines are intended to provide guidance and recommendations to assist staff and consultants in implementing the university's goals and principles as established in the Facilities Master Plan.

All physical improvements, additions, expansions, and renovations should contribute to enhancing the overall aesthetic character and visual unity of the Anschutz Medical Campus as a whole. Each new development on campus will contribute to this goal through a comprehensive design approach reflecting the appropriate integration of urban design, buildings, and open space within the context of identified character districts.

These guidelines represent the university's commitment to create a more vibrant and collaborative environment on campus. They are part of the Anschutz Medical Campus 2022 Facilities Master Plan and a companion document to the University of Colorado Denver | Anschutz Medical Campus 2020 Guidelines and Standards*.

*The complete 2020 Guidelines and Standards document can be accessed at the following web site:

<https://www.cuanschutz.edu/offices/facilities-management/construction-projects/guidelines-and-standards#ac-part-0-general-information-0>

The Anschutz Medical Campus is committed to improving the interdisciplinary unity of the campus as a whole. Each new project should be designed to enhance the campus's image, functionality, and collaborative opportunities. The design intent for all projects should include promoting a sense of community derived from actively shared spaces providing opportunities for both planned and chance encounters.

The following principles should guide the future design of the campus.

A Built Environment Promoting Intellectual and Social Exchange: Public space, comprised of exterior spaces (streets, promenades, plazas, etc.) and interior spaces (lobbies, atria and internal connectors), provides opportunities for the coming together of a diverse campus population. These spaces provide opportunities for intellectual and social exchange. The public realm should be designed to accommodate a variety of active and passive spaces for conversation, relaxation, recreation, and collaboration.

Respect for Context: The Anschutz Medical Campus can be perceived at multiple levels; as a whole, as a grouping of districts, and as a variety of individual buildings and spaces. All new projects should successfully contribute to a sense of cohesiveness as well as being

individually strong works of architectural design on their own. They should be sited and designed in a manner so as to compliment their surroundings in materials, scale, and proportion. New buildings should be designed so that they enhance the quality of adjacent buildings, streets and open spaces. They should be sympathetic to the character of their districts as well as contribute to the campus identity as a whole.

Flexibility: The campus must effectively meet the current and foreseeable future needs of its diverse population of users. It should be designed for flexibility and adaptability. As user needs and requirements evolve over time, the built environment should be able to accommodate some level of reconfiguration without exorbitant expense or operational disruption.

Quality: It is essential that the campus continue to be designed and constructed to the highest standards of quality possible within the funds available. The sense of permanence and care communicated by high quality planning, design, execution, and maintenance has a significant impact on prospective students, faculty and staff that are considering joining the university as well as on the confidence and peace of mind of the patients relying upon campus clinical services.

Economy: The long-term operating costs of the built environment far exceed the original cost of construction. As a state supported institution committed to excellence in learning, research, clinical care, and community service and engagement, it is important that projects be constructed in a cost effective manner. The university's focus, to the extent practical, is to design environments that are economical over their total anticipated life-cycle and not simply based upon lowest first cost.

Stewardship: The university recognizes the importance of sustainable practices and has committed to reducing natural resource use, greenhouse gas emissions, and to the design and construction of high quality "green" facilities and environments on campus. Principles of environmental stewardship, energy efficiency, and resource conservation should be incorporated into all new campus developments and major renovation projects.



Students enjoy a game of volleyball on the Educations Commons.



The Barbara Davis Center for Childhood Diabetes, while a predominately clinical use building, was designed with the ability to accommodate future wet-lab research.



Anschutz Health and Wellness Center - Green roof garden.

II. URBAN DESIGN GUIDELINES

II.1 PRINCIPLES

Twentieth Century urban and regional planning has typically focused upon the segregation of land use types and property uses. The conventional tools used for directing development densities have been FAR, height limits, setbacks, parking ratios, etc. The unfortunate consequence this sort of land use regulation has been the development of planned environments often judged to be less than successful in terms of their ability to generate any sort of cohesive and substantive public realm.

This segregation of use planning has often resulted in stagnant, rigid communities, lacking in flexibility, adaptability, and the vibrancy found in mixed-use environments of the past. Contemporary open space is often handled as something of an afterthought with roadways being viewed as nothing more than pragmatic connections within and between discrete developmental zones. Seldom is the desired character of the public realm considered nor is it adequately communicated through the Master Planning process.

Form-Based developmental planning attempts to address these shortcomings of traditional land use regulation by focusing more on the physical form of development. Less emphasis is made upon building and land usage. Instead, planning efforts are devoted to encouraging strong relationships between buildings and their context.

The interaction between streets and buildings in terms of scale, massing, form and frontage areas attempts to create a predictable character for the public realm. A flexible and adaptable mixture of uses is encouraged along with the privatization of civic spaces.

The Cecil Group

These Design Guidelines advocate this form-based approach to the continued growth and development of the Anschutz Medical Campus.

The existing campus can be understood within the context of four specific form-based districts, each having its own defining character and organizational structure:

- C1 | Academic Village,
- C2 | Urban Campus,
- C3 | Hospital District, and
- C4 | Special Districts

II.2 CHARACTER DISTRICTS

The framework for future campus development is predicated upon an understanding of the physical and operational pragmatics unique to a variety of existing campus conditions and to their future developmental goals. District specific guidelines have been developed to help designers build upon the existing strengths and established development patterns of each, reflecting the appropriate scale, image, functionality, and integration of buildings and open spaces.

The original physical framework for the Anschutz Medical Campus (formerly the Fitzsimons Army Medical Center) was predicated upon the creation of programmatic usage zones within the then 230 acre campus for research, education and clinical facilities. The campus was to be organized around the concept of planned open spaces and groupings of buildings having one unifying image or character. It was critical to achieve this quality of development as early as possible in order to facilitate the move from 9th and Colorado and to establish a cohesive physical identity for the Anschutz Medical Center as a national and international center for excellence in teaching, service and research. The success of this initial endeavor has been unprecedented.

Over time, these initially planned zones have established their own unique patterns of development based upon the pragmatic requirements inherent to their individual programmatic needs and goals. The hospital zone has developed in such a way as to accommodate very large, interconnected structures set far back from street lines to allow for the substantial parking requirements of visiting patients. The education and research zones have taken on a very collegiate formal arrangement with buildings delineating discrete campus quadrangles as centers for civic gathering. Other areas on campus have developed with more of an urban typology of higher densities and mixtures of uses with minimal setbacks having streetscapes and plazas constituting their major civic spaces.

The 2012 Facilities Master Plan organized the Anschutz Medical Campus within the context of four distinct character districts, each having its own unique goals, requirements and organizational structure: C1 | Academic Village, C2 | Urban Campus, C3 | Hospital District, and C4 | Special District. The 2022 Facilities Master Plan is intended to build upon this established framework. Less emphasis is made upon “zoned” building and land usage. Instead, planning efforts are devoted to encouraging strong relationships between buildings and their context.

The interaction between streets and buildings in terms of scale, massing, form and frontage areas attempts to create a predictable character for the public realm. An appropriate mix of uses is encouraged along with the prioritization of civic spaces. By acknowledging the benefits inherent in a variety of organizational frameworks, specific development patterns can be matched with programmatic functions best suited to each existing district.



C1 | Academic Village



C2 | Urban Campus



C3 | Hospital District



C4 | Special District

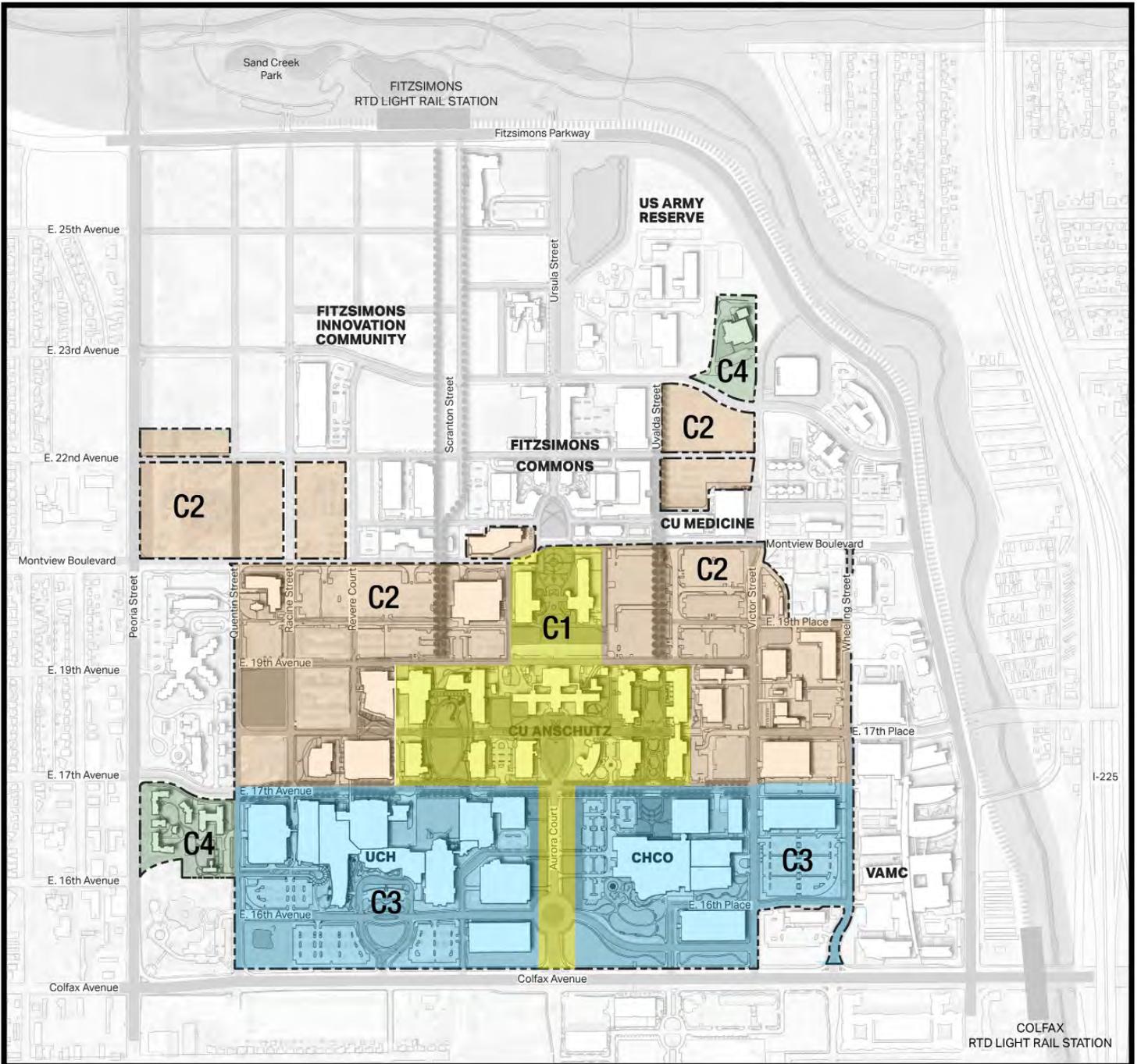


Figure II.2A - Character Districts

II.2.1 C1 | ACADEMIC VILLAGE

The Academic Village portion of the site has been organized in accordance with traditional campus planning concepts and is home to some of its most successful and memorable spaces. It is a fully walkable and sociable environment within a superblock structure. Buildings delineate cohesive civic spaces rather than being experienced as isolated objects unto themselves.

Organizational Structure:

Quadrangles | Promenades

Priorities:

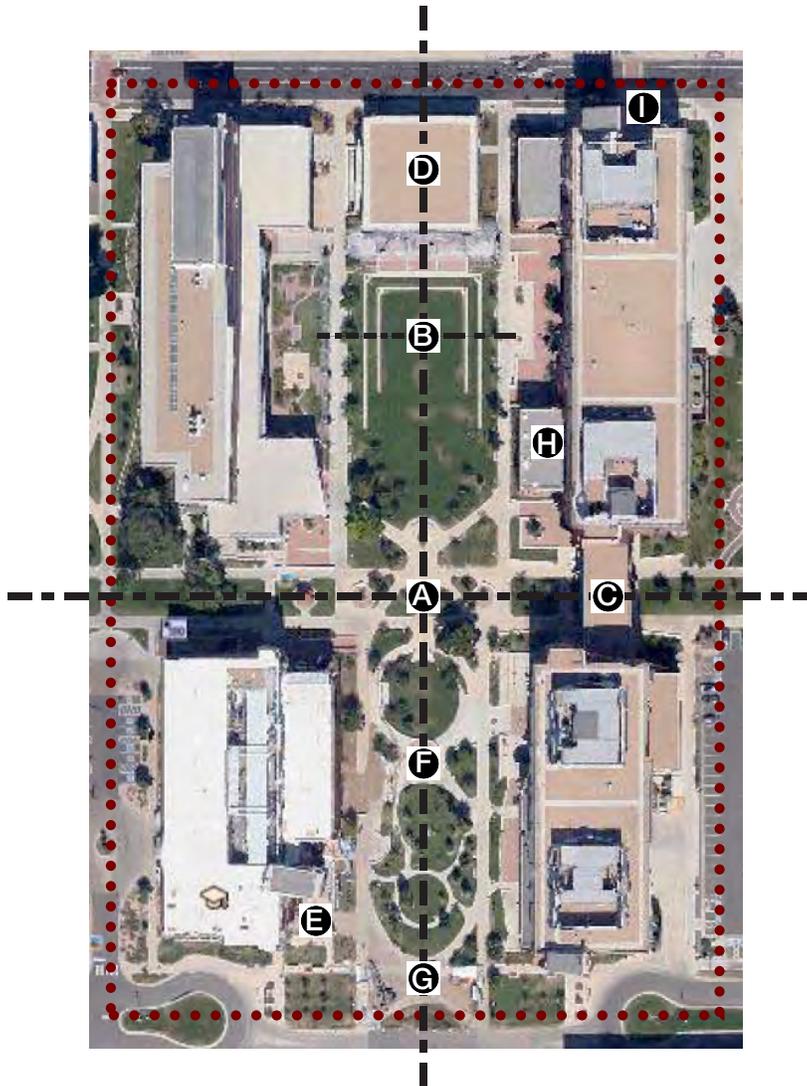
Safety | Collegiate Character | Places for Social & Intellectual Exchange | Pedestrian Scale | Memorability

Development Goals:

- Continue to create a variety of open spaces, of varying scales, to accommodate a full range of outdoor activities and to encourage collaboration, social interaction, vitality, as well as personal reflection.
- Design new buildings and renovations to be architecturally compatible with features of existing adjacent structures and to be harmonious with their contextual surroundings.
- Recognize historically significant aspect of the district.
- Minimize environmental impacts and maximize resource conservation through compact land use and increased density.
- Integrate public art and donor recognition | memorials appropriate to surrounding context.

C1 - Character Guidelines

Building Placement	Building frontages define edges of civic open spaces
Frontage Types	Forecourts, Courtyards, Colonnades
Civic Space Typology	Quadrangles, Promenades, Greens, Plazas, & Gardens
Wayfinding Methodology	Promenade - landmarks within civic spaces
Building Height	4 story min., 6 story max. (up to 12 stories w/ DRB approval)
Setbacks	Front: N/A Rear: N/A Side: N/A
Frontage Buildout	N/A
Thoroughfare Typology	Promenades and Pedestrian Pathways
Lighting	Package A
Site Furnishings	Package A
Signage	Package A



Existing Education Quadrangle to illustrate key Urban Design Concepts within the C1 | Academic Village

- A** Use building forms to define civic space.
- B** Develop a network of collaborative open spaces to serve both formal & informal gathering
- C** Connect buildings at grade and with bridges above.
- D** Create visual landmarks at condition terminations to aid in wayfinding.
- E** Delineate building entries with wayfinding forms.
- F** Create relationships between buildings and across public spaces.
- G** Develop a hierarchical sequence of spaces.
- H** Consider providing accessible outdoor space on upper floors as public amenities.
- I** Provide secondary entrances off of secondary streets.

Figure II.2.1A - C1 | Academic Village, Urban Design Concepts

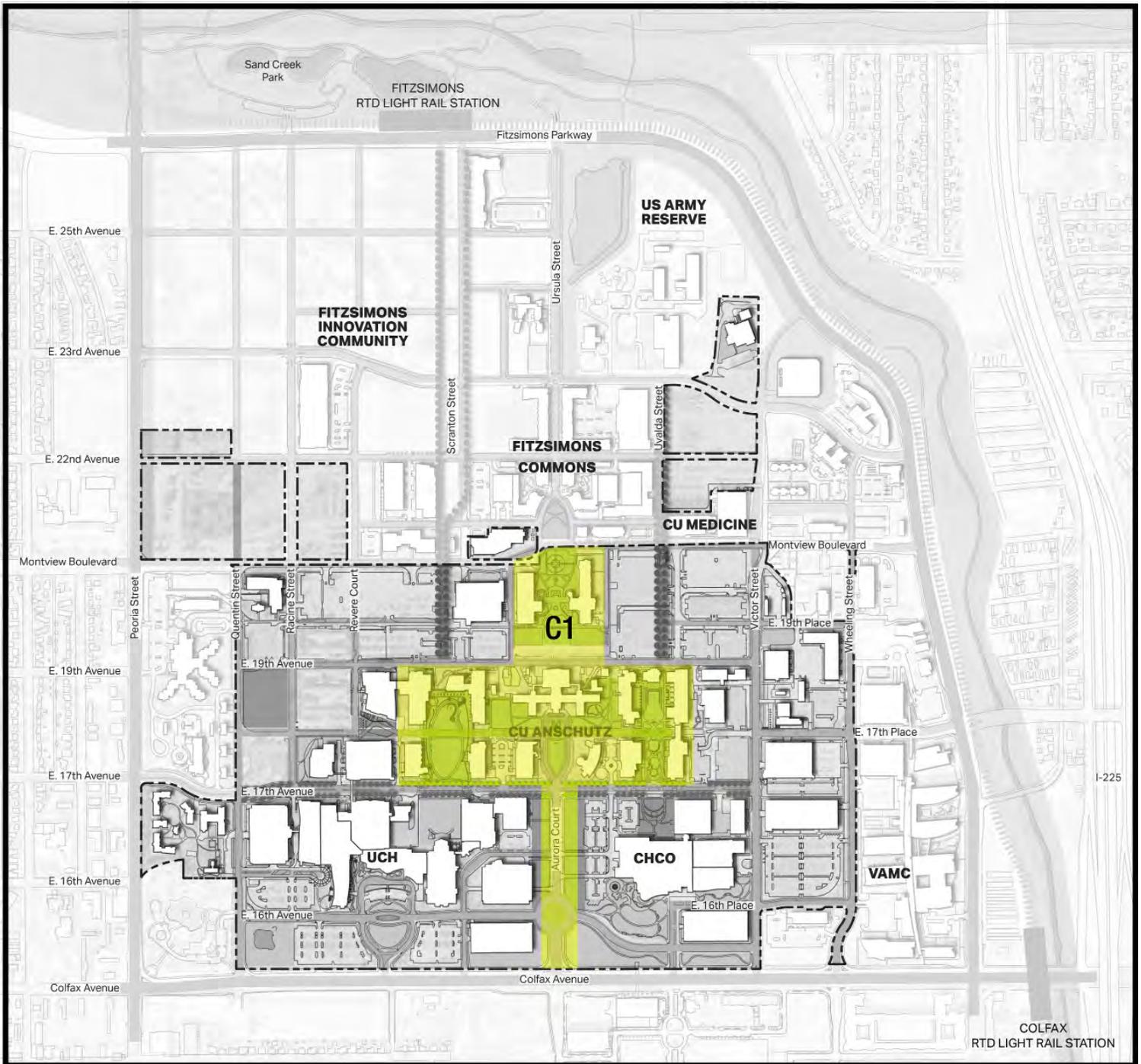


Figure II.2.1B - C1 | Academic Village

C1 | Open Space Typologies

Quadrangles

Quadrangles are large scale courtyards framed by several buildings arranged in a rectilinear manner. They are gathering spaces of heavy and frequent use. The Education & Research Quadrangles stand as the major organizing elements for the Academic Village portion of the site. They constitute a symbolic landscape that clearly states “this is a traditional American educational campus.” They often serve as ceremonial spaces on campus; both formal and informal in nature.

They are the pedestrian crossroads. As such, quadrangles express and facilitate the collegiality of the university environment. They are designed for walking, waiting, playing, and gathering.

Promenades

Linear gathering spaces connecting a string of formal and informal sub-spaces, promenades serve as major pedestrian corridors linking critical destinations within the Academic Village environment; and as such, they constitute the major way-finding system. They are intended to accommodate quiet activities such as strolling, study, relaxation and people watching.

Primary building entrances should be oriented towards the promenade with a vocabulary of forecourts, portico, loggias and arcades providing transition zones between the two.

Common | Green

Commons or Greens are open spaces available for unstructured recreation and civic purposes. They allow for formal outdoor gatherings and can accommodate graduations, presentations/lectures, dedications, press conferences, etc. A common or green is spatially defined by building frontages. Its landscape consists of paths, lawn and trees, formally disposed. They are typically located at the intersection of important thoroughfares.

Plazas

A Plaza is an open public space commonly found in the heart of a traditional urban district or town used for community gatherings. Most Plaza are hardscapes suitable for open markets, music concerts, political rallies, and other events that require firm ground. Being centrally located, Plazas are usually surrounded by small shops, restaurants and civic buildings. At their center is often a



Education Quadrangle



17th Place - Art Walk Promenade



Campus Green

fountain, well, monument, or statue. A variety of activities can occur within a single plaza if the space is large enough to accommodate it and a hierarchy of uses is well defined. Clear definition of sub-spaces can be accomplished through plantings, seating, elevation changes, or other landscape elements.

Forecourts

Forecourts are paved area – far lesser in scale than a plaza - existing at building entrances, or at the intersections of major pathways, providing focus to the pedestrian experience. The design of forecourts should be appropriately scaled for their intended activity and associated structure – sheltering trees or shrubs located close together to provide quiet areas, open areas for larger gatherings, and benches in areas for resting and talking in small groups.

Courtyards

An area wholly or partially surrounded by walls or buildings. Courtyards are to vary in size and character and are to be integrated with adjacent buildings. Landscaping within courtyards is also intended to complement surrounding buildings and programs. In larger courtyard spaces, formal landscaping might be used around the perimeter of the space to reduce the overall feeling of scale. When buildings do not provide adequate enclosure, formal plantings shall be used to reinforce a sense of order and provide further definition to the space. Informal landscaping presents the flexibility to respond to programmatic needs.

Courtyards are important people places for passive activities such as waiting, resting, studying, and visiting. They warrant shelter from inclement weather, separation from high pedestrian traffic, unique paving materials, and appropriate site accessories to enhance user comfort.

Gardens

A garden is a planned outdoor space set aside for the display, cultivation, and enjoyment of plants and other forms of nature. They may include patio areas, tables, benches, fountains, etc.. Plantings should have seasonal variety and interest with a variety of scales and plant materials. Xeriscape gardens use local native plants that do not require irrigation or extensive use of other resources while still providing the benefits of a garden environment.

The character and image of each garden space is to vary throughout the campus and each is to reflect the function of the adjacent campus buildings.



University Plaza between the Health Sciences Library & the Pharmacy Building.



The forecourt of Education 2 provides a variety of seating options for students to study and relax.



Courtyard/Garden along east facade of Education 1.

C1 | Architectural Character

Colonnades

A highly successful vocabulary of colonnades has evolved within the Academic Village. These architectural elements provide richness to the building vocabulary; taking advantage of the ample Colorado sunlight to create a play of shade and shadow. They aid in the delineation of shared open space boundaries and provide transition zones between quadrangles or plazas and their adjacent sub-spaces.

The continued use of these colonnades in the form of arcades, loggias, and pergolas is highly encouraged in future campus development.

Towers

Towers play a crucial way-finding role within the Academic Village district. They are key landmarks of the built environment, allowing users to visually orient themselves as they move throughout the campus.

As landmarks, they should be used judiciously. Their presents should be limited to major civic buildings, important intersections of circulation routes, and critical destination points within a view shed.

Bridges

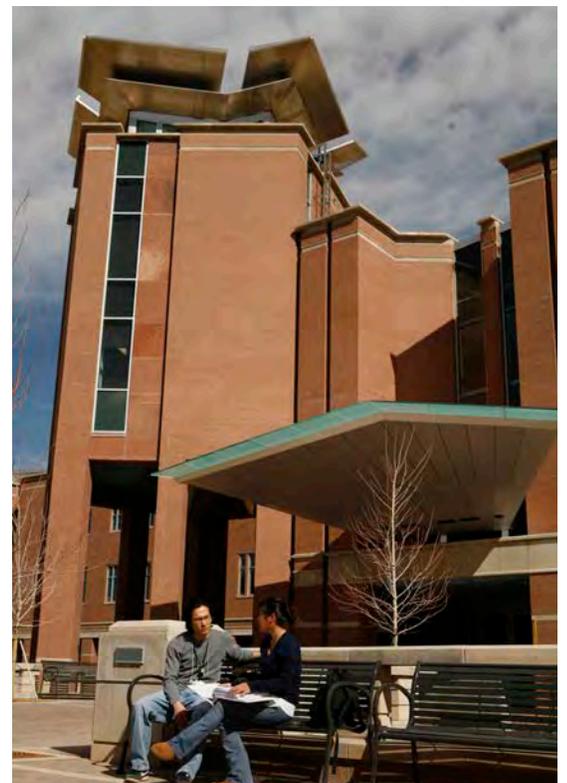
Bridges between structures have been found to be critical to the interconnectivity of programs throughout the campus. They are physical manifestations of the universities commitment to inter-disciplinary collaboration and translational research.

Similar to towers, bridges play a significant role as visual landmarks throughout the campus. Their role as gateways between differing environments should be considered, as well as their impact upon the pedestrian experience when used to establish a rhythm along a linear path or promenade.

Bridges are encouraged not only within individual character zones but should span between them. Linkages between the Academic Village and the Hospital District, across the 17th Avenue- Translational Corridor, are particularly desirable.



Colonnade at the Fulginiti Center for Bioethics & Humanities.



Health Sciences Library tower.



Bridge connecting Research 1, north & south towers

II.2.2 C2 | URBAN CAMPUS

Medium density mixed use buildings within a hierarchical network of streets and plazas, this zone is characterized by wide sidewalks, steady street tree planting and buildings set close to the sidewalks. It is a fully walkable environment with a balance of pedestrian and vehicular activity.

The Urban Campus is a unifying framework tying together developments on the north and south sides of Montview Boulevard as well as the greater surrounding community.

Organizational Structure:

Formal Street Grid

Priorities:

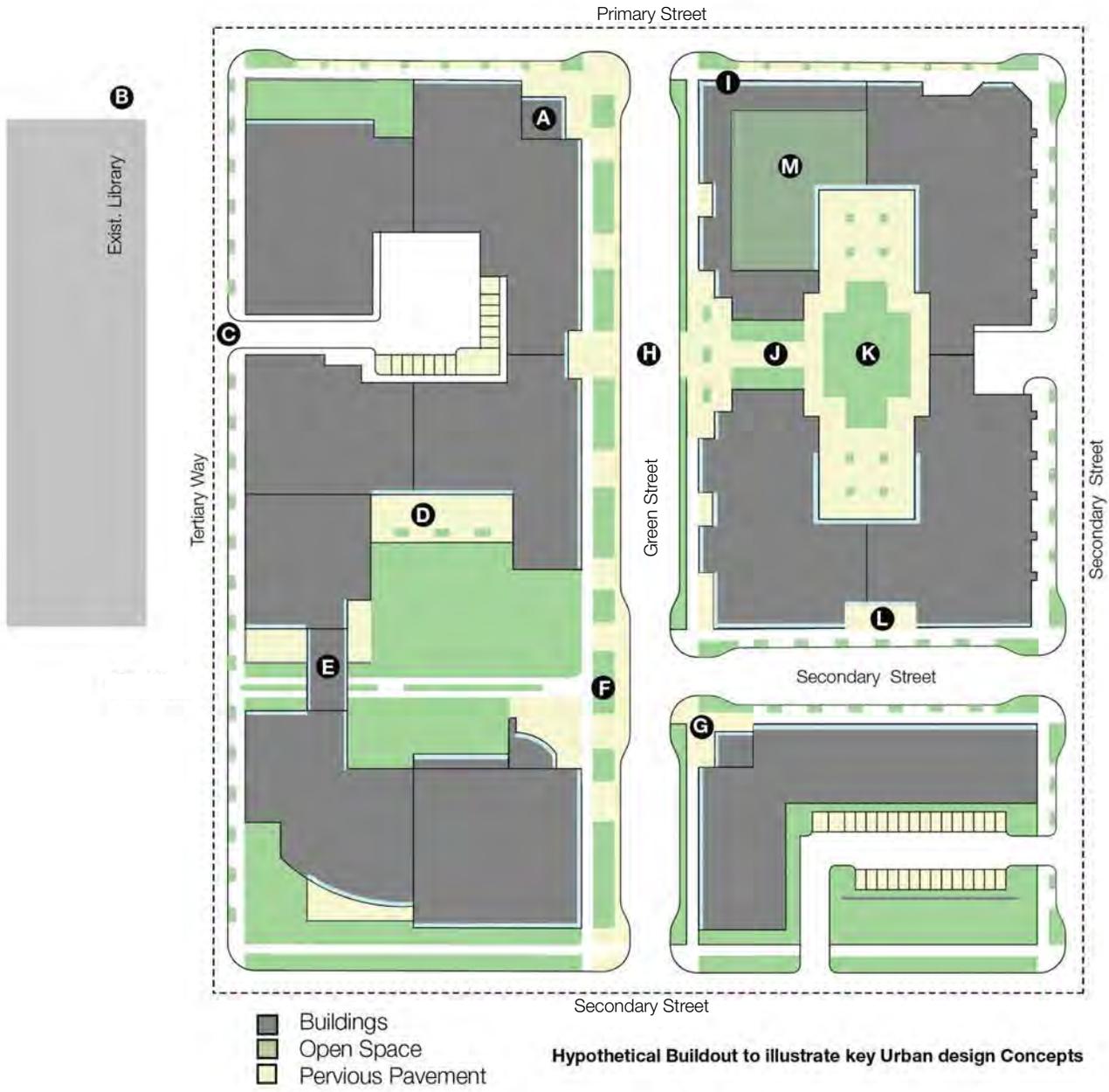
Safety | Pedestrian oriented streets | Connectivity with surrounding community and districts | Flexibility in vehicular movement and development opportunities.

Development Goals:

- Organize the arrangement and design of buildings and exterior spaces to encourage interaction and foster a sense of shared community.
- Acknowledge that the campus is part of the larger surrounding community through compatible character, land use relationships, and circulation patterns.
- Minimize environmental impacts and maximize resource conservation through compact land use and increased density.
- Design all roads to be complete streets - designed and operated to enable safe, attractive, and comfortable access and travel for all users.

C2 - Character Guidelines

Building Placement	Shallow to no setbacks. Main building entrances oriented towards primary streets.
Frontage Types	Store fronts, Colonnades
Civic Space Typology	Streets, Plazas, Courtyards, Parks, & Gardens
Wayfinding Methodology	Street Grid
Building Height	4 story min., 6 story max. (up to 10 stories w/ DRB approval)
Setbacks	Refer to following Table
Frontage Buildout	80% min. on primary streets
Thoroughfare Typology	Hierarchy of streets within an orthogonal grid.
Lighting	Package A - (Package B at Scranton & Uvalda)
Site Furnishings	Package A - (Package B at Scranton & Uvalda)
Signage	Package A



- A** Use building forms to define campus gateways.
- B** Respect alignment of existing adjacent buildings.
- C** Locate service access off of tertiary roadways.
- D** Develop a vocabulary of courtyard terraces on south facades.
- E** Connect buildings at grade and with bridges above.
- F** Create visual landmarks at condition terminations to aid in wayfinding.
- G** Activate intersections with building entries and wayfinding forms.
- H** Create relationships between buildings and across public spaces.
- I** Active ground floors with transparency on main and secondary facades.
- J** Use building forms to create a sequence of spaces.
- K** Consider interior courtyards as public amenities and access to natural daylight.
- L** Provide secondary entrances off of secondary streets.
- M** Consider green roofs.

Figure II.2.2A - C2 | Urban Campus, Urban Design Concepts

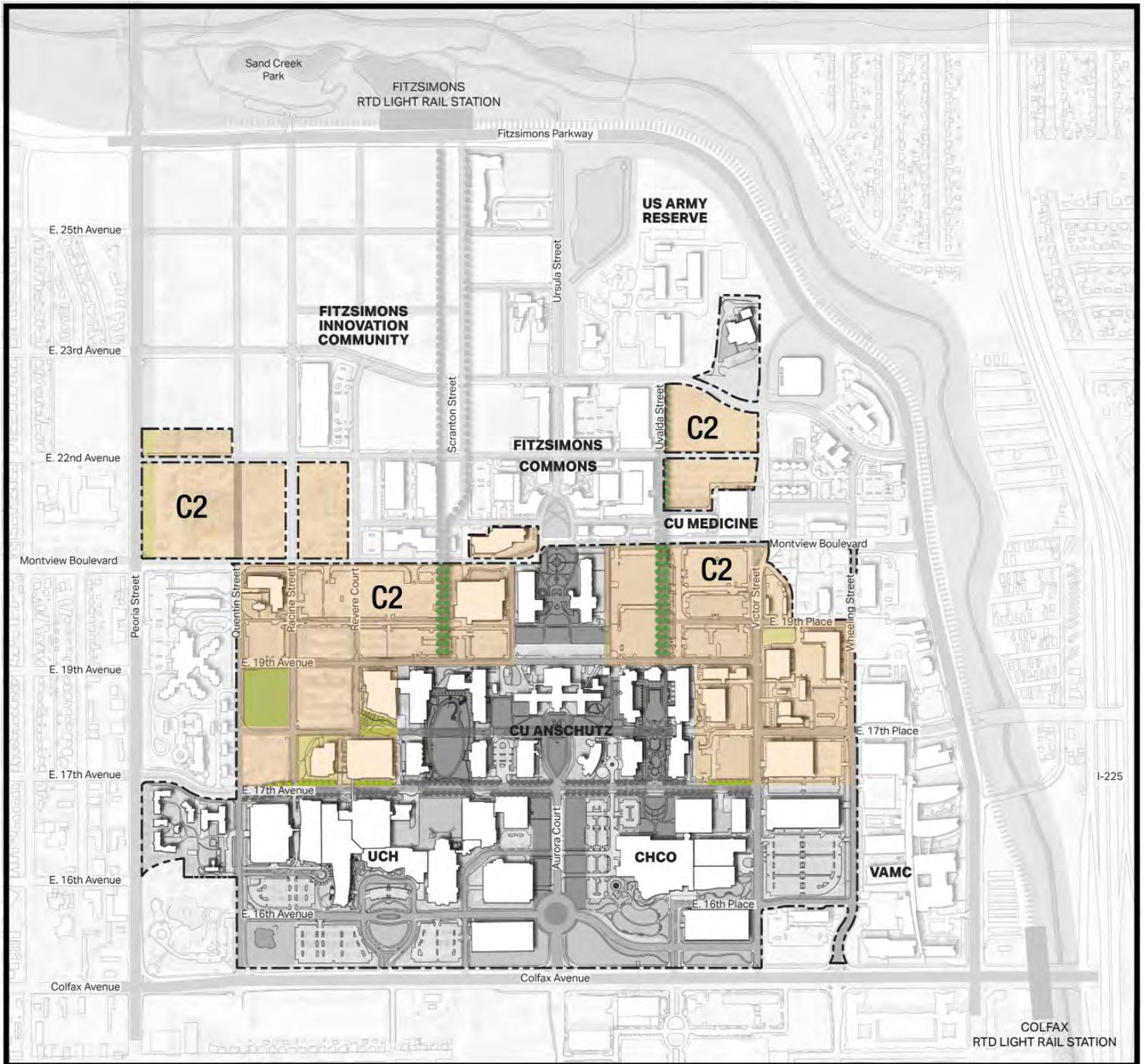


Figure II.2.2B - C2 | Urban Campus

C2 | Open Space Typologies

Plazas

A Plaza is an open public space commonly found in the heart of a traditional urban district for community gatherings. Most Plaza are hardscapes suitable for open markets, music concerts, political rallies, and other events that require firm ground. Being centrally located, Plazas are usually surrounded by small shops, restaurants and civic buildings. At their center is often a fountain, well, monument, or statue. A variety of activities can occur within a single plaza if the space is large enough to accommodate it and a hierarchy of uses is well defined. Clear definition of sub-spaces can be accomplished through plantings, seating, elevation changes, or other landscape elements.

Courtyards

An area wholly or partially surrounded by walls or buildings. Courtyards are to vary in size and character and are to be integrated with adjacent buildings. Landscaping within courtyards is also intended to complement surrounding buildings and programs. In larger courtyard spaces, formal landscaping might be used around the perimeter of the space to reduce the overall feeling of scale. When buildings do not provide adequate enclosure, formal plantings shall be used to reinforce a sense of order and provide further definition to the space. Informal landscaping presents the flexibility to respond to programmatic needs.

Courtyards are important people places for passive activities such as waiting, resting, studying, and visiting. They warrant shelter from inclement weather, separation from high pedestrian traffic, unique paving materials, and appropriate site accessories to enhance user comfort.

Parks

Parks are natural preserves available for unstructured recreation. They are generally independent of surrounding building frontages. Their landscape consists of paths and trails, meadows, water bodies, woodland and open shelters, typically naturalistically disposed.



Portland State University - Academic & Student Recreation Center. Photo by Christian Columbres



Courtyard adjacent to the Campus Services Building.



General's Park

Gardens

A garden is a planned outdoor space set aside for the display, cultivation, and enjoyment of plants and other forms of nature. They may include patio areas, tables, benches, fountains, etc.. Plantings should have seasonal variety and interest with a variety of scales and plant materials. Xeriscape gardens use local native plants that do not require irrigation or extensive use of other resources while still providing the benefits of a garden environment.

The character and image of each garden space is to vary throughout the campus and each is to reflect the function of the adjacent campus buildings.



Gardens surrounding the Health and Wellness Center.

Discovered Spaces

Discovered spaces have the potential to be the most intimate and special places on campus. They can be designed small-scale places or can constitute an unpredictable circumstance that creates a lasting impression (benches overlooking a pond; a small patch of lawn under a magnificent tree; or a warm sun pocket of space on a cold winter's day, etc.).



Pond outside of the Nighthorse Cambell Native Health Building.

C2 | Architectural Character

A primary goal for the Urban District is the establishment of a continuous vertical building surface along the majority of length for each streetscape. The “street wall” is to be achieved by aligning facades with the back edges of sidewalks and limiting building setbacks to strategic locations adjacent to major public open spaces.

Minor variations in the massing and articulations in fenestration for each building will provide diversity. The nature of each building’s street wall presence will ultimately be defined by the functional opportunities and constraints of its programmatic requirements. Special emphasis should be given to the articulation of building entrances and street corner elements.

All buildings shall have their primary entrances located on primary street facades. Entrances should integrate with the streetscape design and directly connect with the public sidewalk except in cases where primary entrances front plazas or major open spaces. Entrances and lobbies with through-block connections will be incorporated into the design of buildings having parking areas located behind the building they serve.

Buildings shall be articulated by three major horizontal divisions to express base, middle, and upper level conditions. The base zone should be designed to give the appearance of greater height than any other single floor and should be composed of masonry and window systems, with the sill of ground floor storefronts being as close as reasonably possible to the exterior ground plane. Ground level activities should be oriented toward the street and contain a richness of architectural details and materials along with a variation in wall depth. This zone should directly relate to the street edge treatment.

The middle zone, above the base, establishes the primary massing of the building. The upper zone should be easily distinguishable. It is meant to create a distinct termination to the vertical street wall and should address a relationship between the building and the sky above.

Opportunities for structured and underground parking should be explored in the design of buildings within the Urban Campus.



Rendering of future Academic Building 1



Conceptual rendering of an urban campus streetscape by Anderson Mason Dale Architects.

II.2.3 C3 | HOSPITAL DISTRICT

Much larger than a traditional city block, with greater building setbacks, these zones are typically bounded by widely spaced, high-speed, arterial or circulating routes rather than by local streets. Framework allows for the development of very large, interconnected, mega structures.

Organizational Structure:

Interconnected buildings within the landscape.

Priorities:

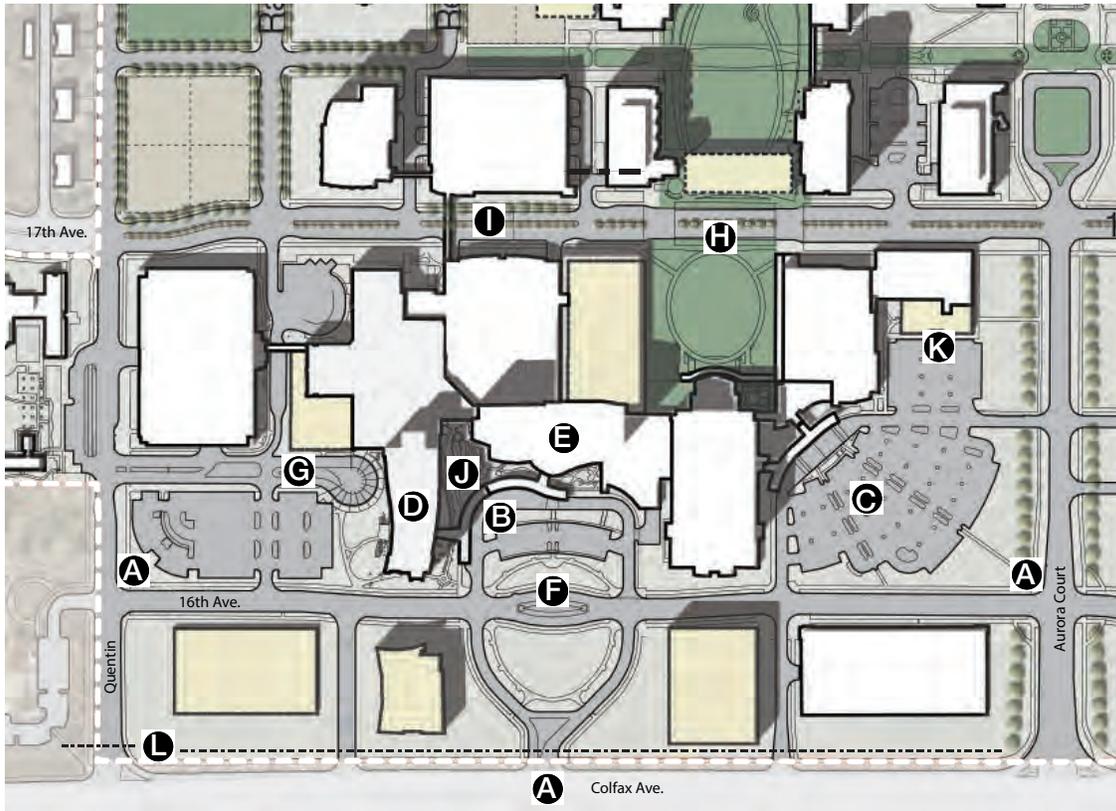
Safety | Patient Access | Parking | Way-finding

Development Goals:

- Enhance the patient|visitor centered experience through improvements in accessibility, way-finding and parking.
- Enhance connectivity between the C3|Hospital and C1|Academic districts.
- Protect and enhance open space providing an appropriate balance, both qualitative and quantitative, to the build environment.
- Effectively integrate with the regional transportation network.
- Encourage interdisciplinary and inter-institutional collaboration.

C3 - Character Guidelines

Building Placement	Greatest density located at center of superblock with lower density development toward the perimeter.
Frontage Types	Porte Cochere, Healing Gardens, Canopies
Civic Space Typology	Internal Atria, Commons, & Gardens
Wayfinding Methodology	Towers Canopies Signage
Building Height	4 story min., 6 story max. (up to 14 stories w/ DRB approval)
Setbacks	Front: N/A Rear: N/A Side: N/A
Frontage Buildout	N/A
Thoroughfare Typology	Collector Ring Road
Lighting	Package A
Site Furnishings	Package A
Signage	Package A



Existing and Hypothetical Buildout of UCH to illustrate key Urban Design Concepts within the C3 | Hospital District

- A** Provide clear and comprehensive wayfinding for patients and visitors.
- B** Utilize a vocabulary of canopies and porte cocheres to designate points of arrival.
- C** Prioritize the arrival and parking experience of patients over that of others.
- D** Use of visual landmark towers to aid in wayfinding.
- E** Create an interconnected complex of structures with a clear hierarchical sequence of spaces.
- F** Implement traffic calming measures along internal roadways.
- G** Separate service access conditions from public access.
- H** Strengthen the north|south physical relationship between C1 & C3 districts.
- I** Build upon the character established along 17th Avenue at Leprino.
- J** Design residual spaces as gardens and places of discovery.
- K** Activate ground floors with transparency on main and secondary facades.
- L** Colfax frontage to retain a character sympathetic to Governor's Park

Figure II.2.3A - C3 | Hospital District, Urban Design Concepts

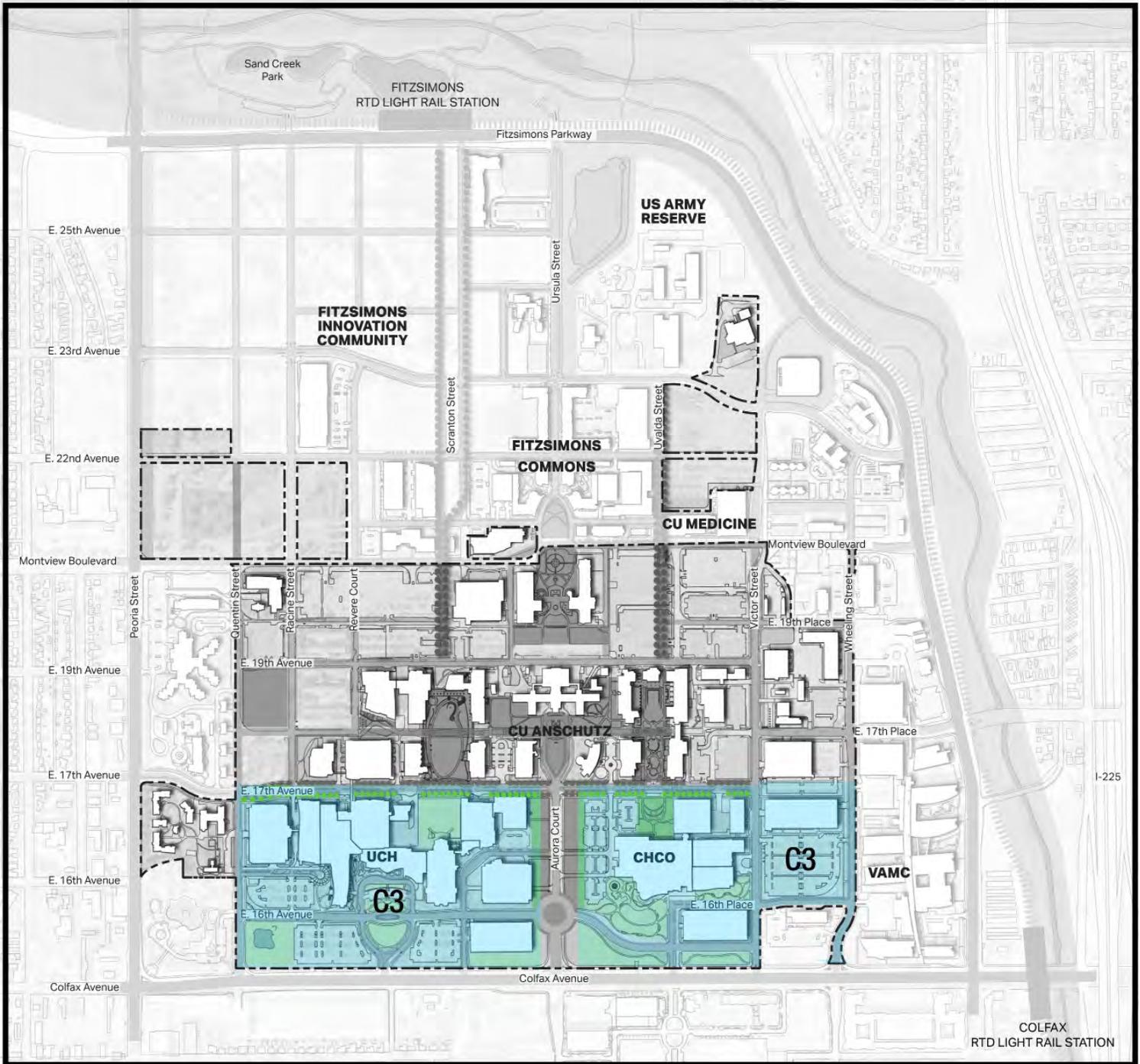


Figure II.2.3B - C3 | Hospital District

C3 | Open Space Typologies

Common | Green

Commons or Greens are open spaces available for unstructured recreation and civic purposes. They allow for formal outdoor gatherings and can accommodate presentations/lectures, dedications, press conferences, etc. A common or green is spatially defined by building frontages. Its landscape consists of paths, lawn and trees, formally disposed. They are typically located at the intersection of important thoroughfares.



University of Colorado Hospital - Tony Ruiz Plaza

Gardens

A garden is a planned outdoor space set aside for the display, cultivation, and enjoyment of plants and other forms of nature. They may include patio areas, tables, benches, fountains, etc. Healing gardens are found throughout the campus providing places for quiet contemplation and reflection within serene and calming environments. Plantings should have seasonal variety and interest with a variety of scales and plant materials. Xeriscape gardens use local native plants that do not require irrigation or extensive use of other resources while still providing the benefits of a garden environment.

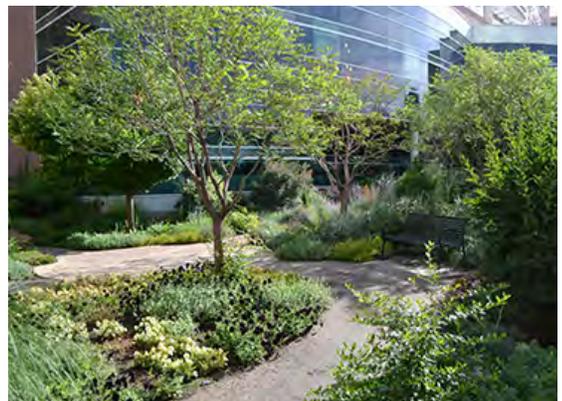
The character and image of each garden space is to vary throughout the campus and each is to reflect the function of the adjacent campus buildings.



Children's Hospital of Colorado - Healing Garden

Discovered Spaces

Discovered spaces have the potential to be the most intimate and special places on campus. They can be designed small-scale places or can constitute an unpredictable circumstance that creates a lasting impression (benches overlooking a pond; a small patch of lawn under a magnificent tree; or a warm sun pocket of space on a cold winter's day, etc.).



University of Colorado Hospital - Discovered Space

C3 | Architectural Character

Development within the Hospital District has most closely followed the original vision of the 1999 Master Plan in terms of creating an environmental character of “Buildings in a Park”. This has allowed for the development of very large, interconnected, mega structures that allow for the level of controlled public/private interaction required by these institutions.

Healing gardens provide formally designed sub-spaces within the naturalistic landscapes surrounding structures and easily accessible patient/visitor parking.

Atria

Atria constitute the major civic gathering spaces within the Patient zone. As such they should be designed with the highest level of architectural detail and patient/visitor amenities as allowable within the project budget. They shall be located immediately adjacent to the buildings primary entrance with ample connectivity to the outdoor environment. Natural lighting shall be utilized to the greatest extent possible. Clear and consistent way-finding shall make itself evident through the architectural design of the space with a minimal use of signage needed to supplement patient/visitor orientation.

Porte Cocheres | Canopies

A safe, secure, and efficient arrive sequence for patients and visitor is of the utmost importance with this zone. Porte Cocheres and canopies should be designed to integrate with the architectural expression of the building and should not appear as additive afterthoughts. Their role as way-finding element should be recognized and leveraged in such as to minimize signage.



CHCo's Main Tower - "Building in a Park"



Children's Hospital of Colorado atrium



University of Colorado Hospital - Cancer Pavilion

II.2.4 C4 | SPECIAL

Special districts constitute unique developments within the campus that for a variety of reasons (historic significance, unique ownership and/or conveyance regulations) do not fit within the other 3 district categories.

Organizational Structure:

Unique to each development.

Priorities:

Unique to each development.

Development Goals:

While there are no defined future developmental goals for these unique developments, their influence of the character of development within adjacent districts should be noted. Future development within the Urban Campus and Hospital District along Quentin Street must be sensitive to the residential scale and character of this special district.

C4 - Character Guidelines

Building Placement	Deep Setbacks
Frontage Types	Porches, Fences, Lawns, & Naturalistic tree plantings
Civic Space Typology	Shared Yards, Courts
Wayfinding Methodology	Signage
Building Height	One & Two Story
Setbacks	Front: Varies – Relatively Deep Rear: Varies Side: Varies – 30’ on average
Frontage Buildout	Varies
Thoroughfare Typology	Varies – Sidewalks & Informal Pathways
Lighting	Package A
Site Furnishings	Package A
Signage	Package A

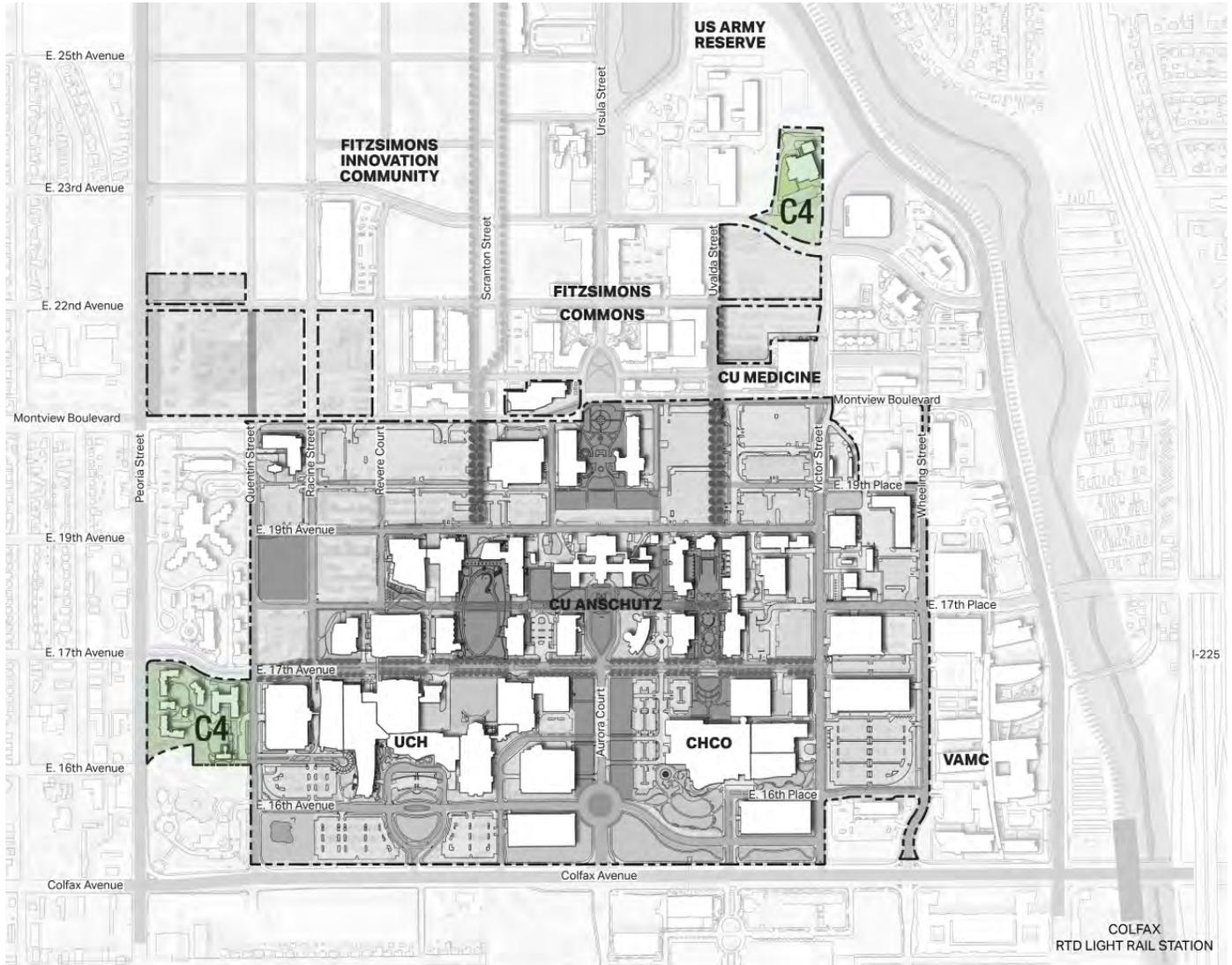


Figure II.2.4A - C4 | Special District

C4 | Architectural Character

Any future development within the area of CeDAR will need to be sensitive to the residential scale of these unique structures as well as to their spatial organization. The CeDAR development forms a discrete compound of buildings, all sharing a similar vocabulary of materials and architectural features.

Any renovations, alteration, or additions to these structures (including fencing, plantings, etc.) will require evaluation by the University Design Review Board.



CeDAR's main treatment facility

II.3 STREETSAPES

Campus wide streetscape design will promote connectivity and provide a unifying framework throughout the campus. Their design will create rhythm and visual impact, highlighting areas of significance, and tying character zones together to form a comprehensive whole.

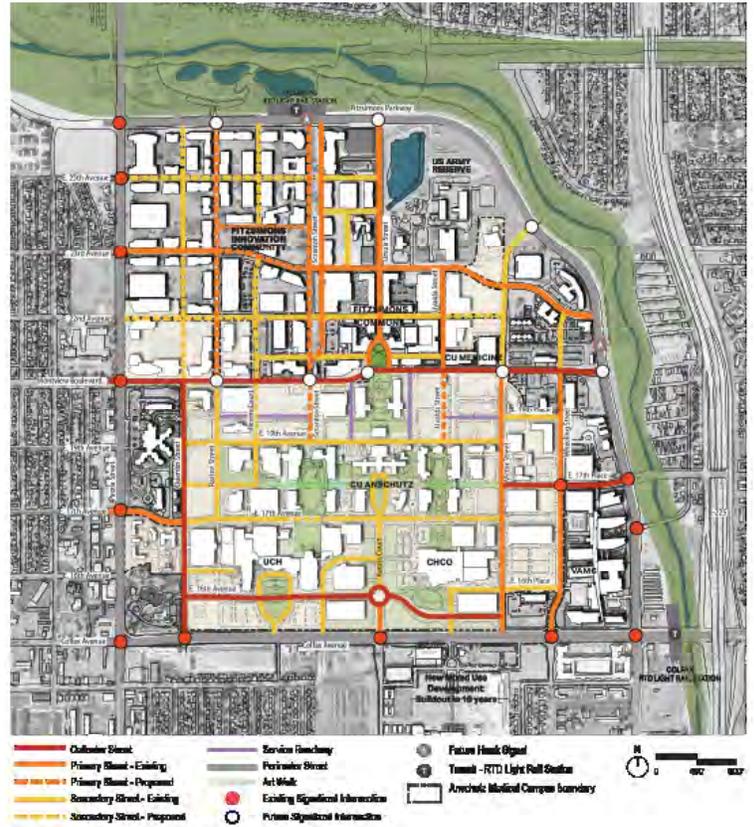
A hierarchy of streetscape has been developed to assist in pedestrian and vehicular way-finding. Streets expected to have higher pedestrian activity will incorporate a greater level of detailing and upgraded materials. This will enhance the pedestrian experience creating a more unique and dynamic space. Streets that are anticipated to receive higher speed vehicular circulation will be treated with a more simplified design.

Lighting will further assist in way-finding through a vocabulary of predominantly pedestrian scale lighting fixture being used throughout with vehicular scale fixtures helping to delineate major vehicular routes along collector and service drives.

To add visual interest to the urban streetscape, primary building entries shall be enhanced to create a break in the streetscape paving pattern. Paving material that is reflective of the adjacent building’s architecture shall extend uninterrupted from the doors to the back of curb. This change in paving will alert pedestrians that they are approaching a special area as building entries are to be the only place where the streetscape paving pattern is to be broken. Paving material(s) selected at building entries may consist of colored concrete, exposed aggregate concrete or specialty porous pavers.

Site furnishings shall be located adjacent to building entries and within the furnishing zone indicated on the illustrative street sections. Street trees and lights should stop on the edge of the building entry to allow for an unimpeded entry to the building. Utility access should be coordinated to be placed away from building entries.

The location and layout of streetscapes in the Urban District are designed to be compatible with the surrounding community and sympathetic to City of Aurora standards.



Concept rendering of an urban streetscape by Anderson Mason Dale Architects.

II.4 OPEN SPACE

Open spaces on campus should contribute to a sense of “wellness” and “healing”. Landscaping should visually unify the campus while simultaneously providing interest. It should enhance comfort and provide shelter for people using exterior spaces. By creating unique qualities, patterns, and character with the landscape, it can serve as a way-finding mechanism by helping to orient and direct individuals to their destination. Open spaces are to be planned and designed to contribute to energy conservation and, as a consequence, lower utility costs. Landscapes should respond to sun and climate in such a way as to create distinctive spaces. They should enhance the image of the campus.

The campus is to be a safe and enjoyable environment. For security reasons, shrubs and other site elements that obscure views are to be used sparingly. The highest levels of illumination are to be at building entrances and at entrances to exterior spaces, with the next highest level of lighting occurring around the perimeter of open spaces. Such a lighting concept creates a sense of safety and well-being. To further encourage the use of exterior spaces, furnishings are to be ample, but carefully located to relate to views, programmatic needs, and pedestrian and vehicular circulation. Fixed seating located around the edges of exterior spaces provides views to the center as well as amenities to passing pedestrian traffic. Some flexibility should be designed into courtyard seating areas to allow users to manipulate the space to accommodate a variety of gathering conditions.

Open spaces are to be designed to encourage multiple uses. Landscaping, site features, and functions that distract from this flexibility are strongly discouraged. Grading design and the placement of trees, lighting, and furnishing are to accommodate a variety of short and long-term uses. Appropriate design minimizes hard surfaces, barriers, and other obstacles within large open spaces that compromise flexibility. Vehicular access, services areas, storage, parking, and other uses that conflict with pedestrian enjoyment are also to be minimized or landscaping is to be used to mitigate such conflicts. Landscaping is to enhance building facades and building entrances.

Campus edges, corners, and entrances are critical in establishing a positive first impression and a memorable sense of place. Landscaping along edges is to be simple but elegant, with emphasis on major visitor’s entrances and prominent corners. To relate the campus to the

surrounding community, the landscaping of campus edges is to compliment edges of surrounding properties including the native landscape of nearby Sand and Tollgate Creeks as well as General’s Park.

The following is a list of considerations that should be accounted for in the design of any open space planned for the campus regardless of where it falls within the defined character zones:

- The ability to allow movement through the space is an important design element and should not adversely impact the desired primary planned activity.
- The relationship between the planned open space and the surrounding buildings and significant landscape features should be the most important consideration in the design.
- Stairs should be minimized.
- Views to and from the space should be accommodated.
- Texture of surfaces should be used to define spaces and suggest intended activity.
- Sculpture or other “hard” elements should be interactive and stimulating.
- Seating arrangements should consider a variety of activities – intimate discussions, people watching, quiet study, group gathering, etc.
- The design should consider the micro-climate of the area including sun exposure and seasonal conditions.
- Spaces should be strategically lit and attractive in the evening as well as in daylight.
- In larger spaces, power should be provided for the occasional outdoor event.
- An appropriate number of trash and recycling bins should be provided in strategic places around the perimeter.
- Slopes of paved plazas or other open gathering areas should be 1% minimum for drainage but not more than 2% for accessibility.

Site Programs

Recreation

The physical layout of the campus should be designed to promote health and wellness for a diversity of users and physical capabilities. The intent is to encourage as much activity as possible, in as many spaces as possible. Therefore, open spaces must be designed for flexibility; establishing both formal and informal spaces to encourage a variety of interactions amongst students, faculty and staff.

Recreation spaces should also compliment the functions of surrounding buildings.

In order to accommodate the diversity of users on the campus, the following design criteria has been established.

- Formal recreation shall continue to occur at the Parade Grounds.
- Informal recreation is currently centered within the Academic Quadrangle. It is anticipated that informal recreation could similarly occur within a redesigned Campus Green.
- Jogging paths wrap the campus and connect with other site-wide and regional trails.
- Trees are to be planted at the edges of turfed areas to delineate open areas to be used for informal recreation.

Commencement | Convocation

Several of the open spaces established on campus can be used for formal events such as commencements and convocations. The Anschutz Medical Campus has developed a variety of spaces to allow the entire academic community to gather in one area for commencement and to then disperse to other more intimate spaces for convocations.

While establishing the commencement plan, several principles have been established:

- Spaces have been identified where commencement for all schools may occur with enough open area to accommodate faculty, graduates, friends and family (3,000 people). They are the Education Quadrangle and potentially within a redesigned Campus Green.
- A hierarchy of spaces have been planned where convocations of a variety of sizes can occur simultaneously.
- Walking distances between commencement and convocations spaces have been minimized.
- Spaces have been oriented to take advantage of topography (slopes no greater than 3%) and solar angle: Stages should face to the south or to the east.

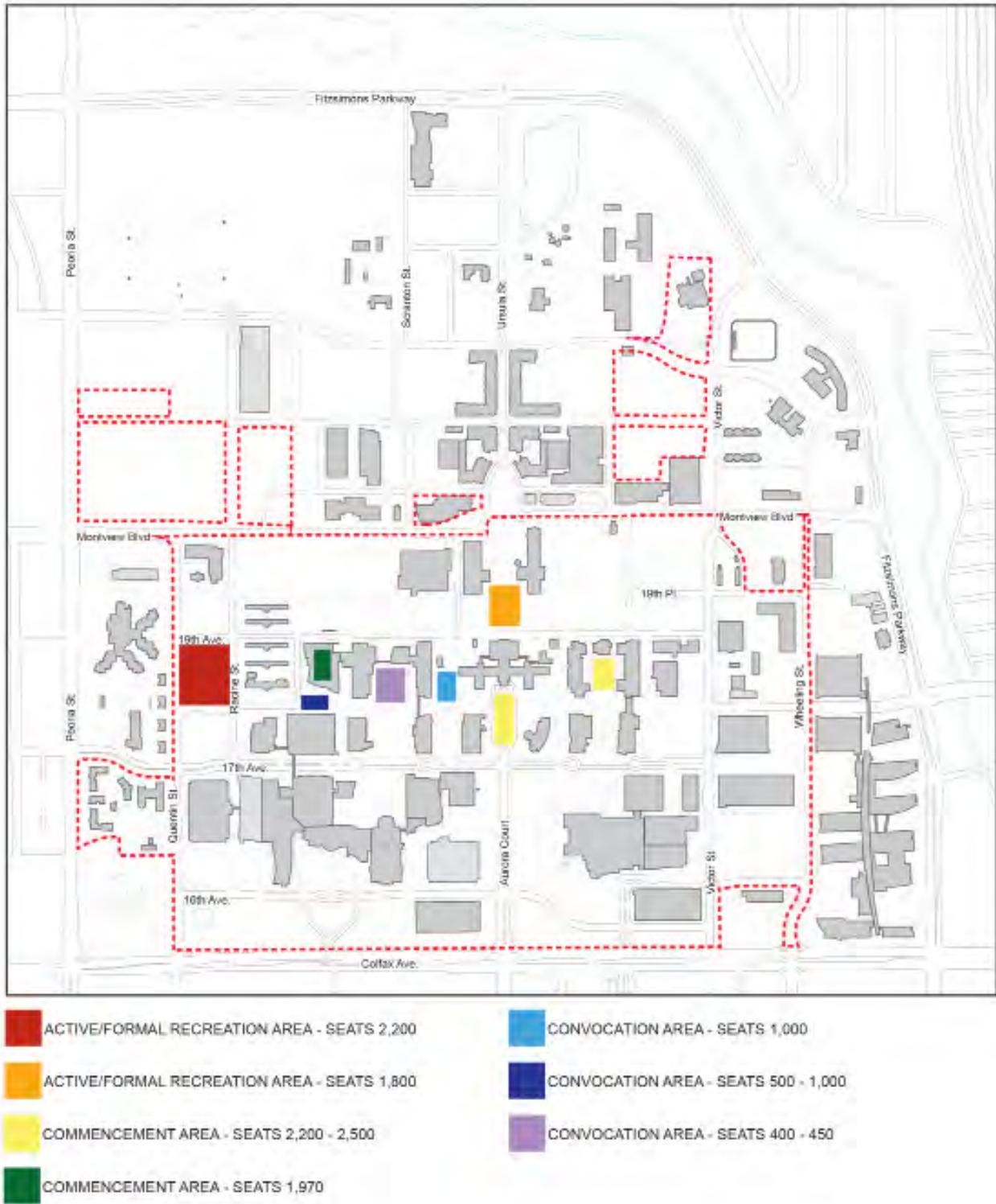


Figure II.3 - Open Space | Site Programs

II.5 WALKWAYS

Pedestrian walkways currently constitute the major circulation network within the C1 | Academic Village district and can also be found within the C3 | Hospital district.

Walkways should enhance the pedestrian experience providing safe, convenient, and enjoyable passage throughout the campus. They should generally follow the natural “desire line” between destinations.

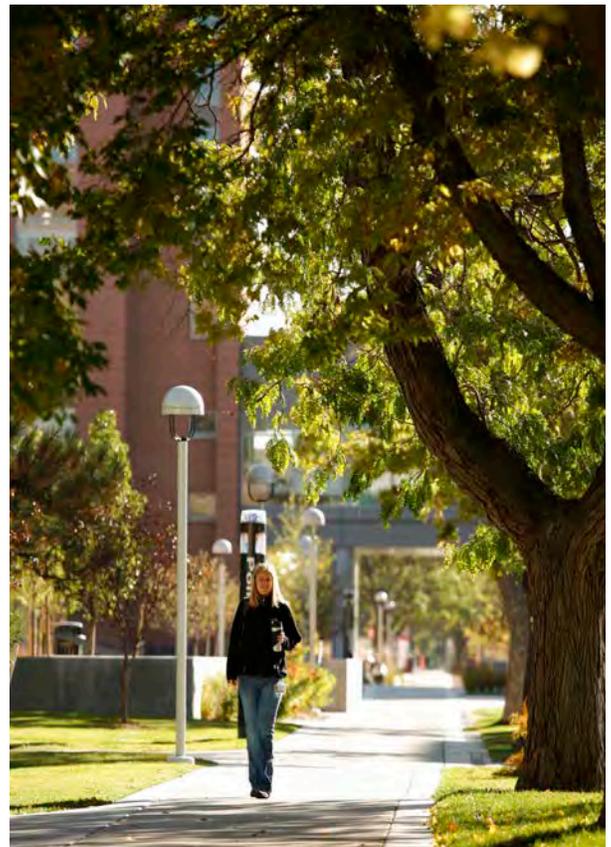
All walkways should be wheelchair accessible however the use of other alternative modes of transportation, such as bicycles, roller blades, etc., are discouraged from using the walkway network. These form of transport are encouraged to travel by way of dedicated lanes made available to them on the majority of campus streets.

Primary Walkways

- A primary walkway will typically follow a direct line between two major destinations. These pathways will often lead to the entrance of major buildings, to and from heavily used open spaces, transportation hubs, large parking lots or structures, or - in the case of promenades - form an organizational spine linking to other pathways.
- The width of any walkway should be evaluated in terms of the amount of traffic to be accommodated. Primary pathways should be 10'-0" in width. In no case should a major path be less than 8'-0" in width.
- A walkway may need to double as a fire lane. Rather than widening the paved area, the use of turf reinforcing systems on one or both sides of the walkway is encouraged at these locations.
- The intersection of primary walkways should emphasize and accommodate seating areas, lighting, special plantings, and way-finding elements.
- Primary walkways should be made of concrete. They should be designed to be sympathetic with other major campus paths to maintain a comprehensive whole.
- Primary walkways are to be handicap assessable and stairs should be avoided.
- Trash and recycling bins should be located along the

path at regular intervals and major intersections.

- Walkways should be well lit and encourage a feeling of safety and security. This needs to be accommodated in a manner that consistent with the Universities' commitment to light pollution reduction.
- Walkways should merge when approaching streets to reduce the number of crossings to a minimum. When a primary walkways cross vehicular roadways, it should always be at right angle with and open view of the street.



The Anschutz Medical campus Art Walk provides the central spine of our pedestrian walkway network.

Secondary Walkways

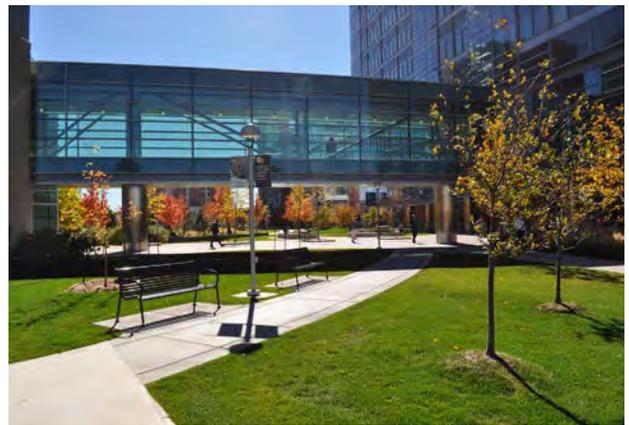
Secondary walkways accommodate fewer pedestrians than primary walkways. They might connect a major destination with a minor destination, or lead to a primary walkway or to a secondary entrance to a building.

Attempts should be made to reduce the number of secondary walkways whenever possible. The location of each walkway should be carefully evaluated to maximize its efficiency in allowing pedestrians to reach their desired destinations.

- The preferred width of a secondary walkway is 8'-0". In some limited cases the walk may be reduced to 6'-0" in width. It should be assumed that most walkways will require plowing by a truck having a min. 6' wide plow blade.
- Secondary walkways should follow desire lines to their destination. In cases where the desire line is not feasible or appropriate, an alternate route can be provided with landscaping features to encourage the use of the alternate route.
- Secondary walkways will accommodate less pedestrian traffic than primary walkways and the surrounding landscape should accommodate smaller, more intimately scaled features.
- Paths should be well lite and encourage a feeling of safety and security. Bollard lighting or pedestrian scale light poles should be utilized. Lighting needs to be accommodated in a manner consistent with the universities' commitment to light pollution reduction.
- Stairs should be discouraged as part of the secondary walkway system.
- Secondary walkways should accommodate trash and recycling bins near building entrances.



A quiet place to rest and reflect along a secondary walkway.



Walkways should follow "desire lines" between destinations.

II.6 PARKING

The experience of arriving to and departing from campus by car is to be a positive experience. It is encouraged that parking be located towards the perimeter of the campus and accessed primarily by streets contiguous with off-site roadways thus reducing traffic on interior roads.

On-street parking is to be incorporated into the design of streetscapes throughout the Urban Campus district as well as along the 17th Avenue - Translational Corridor.

As facilities are developed over the new 10 years, the reservoir of existing parking will be diminished as new roadways are constructed and surface parking areas are claimed as sites for new development. As demand continues to increase it may become necessary, where programmatically appropriate, to construct parking structures and/or provide parking as an integral component of new buildings.

- Entryways and vehicular circulation should be accessed with safe viewing angles for oncoming traffic. Clear signage should be provided at each main entrance.
- Lots should have the appropriate number of service and handicapped spaces to accommodate the surrounding buildings.
- Pedestrian access to and from lots should be carefully considered to minimize vehicular-pedestrian conflicts.

Surface Parking

- Concrete curb should be installed along the edge of all lots.
- Consideration should be given to the use of natural drainage systems with porous surfaces to maintain local groundwater.
- A minimum of 5% of surface parking area should be vegetative landscaping. Landscaping should be used to break up parking rows that exceed 15 spaces. Terminal islands should be placed at the end of every row.
- Surface lots larger than 120 spaces should have median rows at least ten feet wide and occurring at least every three rows.
- Rows at surface lots should be oriented perpendicular to building facades whenever possible.

- Each surface lot should minimize the number of curb cuts in order to maintain the continuous streetscape character of adjacent streets.
- Lots should be appropriately lit for safety. Lights should be directional to reduce glare and limit light pollution.
- Where parking lots border sidewalks or campus roads, the edges of lots should be landscaped to provide a min. 5' wide buffer zone with vegetative screening.
- The layout of surface parking lots should allow for efficient plowing and provide locations to store snow.

Sustainable Strategies for Parking

The following strategies should be considered for all future and redesigned surface lot projects:

- Minimize the dimensions of parking spaces. Current spaces on campus are approx. 8'-6" wide by 18' in length with drive aisle being approx. 23' in width. Consideration should be given to future parking being designed with 45-degree double parking bays with line-way drive aisles allowing for the potential reduction in hardscape lot areas by 25%.
- Pervious concrete, pervious pavers, grass paving blocks and gravel pave systems should be considered as alternatives that provide environmental benefits over asphalt.
- Bio-swales, infiltration basins and rain gardens should be considered to help reduce runoff and instead allow water to recharge into the soil and area groundwater.
- High albedo surfaces should be considered (with solar reflectance rates of 25% or higher).
- Maximize tree canopies: The environmental benefits of having trees in parking areas include reduced vehicle emissions, filtration of air pollutants, improved urban stormwater runoff management and the mitigation of urban heat island effect.
- Consideration should be given to the use of photo-voltaic, battery powered lighting in lieu of hard wired metal halide luminaires.

II.7 ENVIRONMENTAL CONDITIONS

Solar Orientation

Appropriate solar orientation in Aurora's high plains climate, with its lack of humidity and moderate temperatures, is a critical consideration in the creation of comfortable interior and exterior spaces.

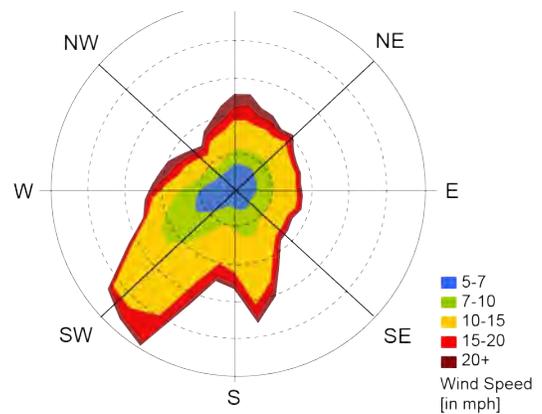
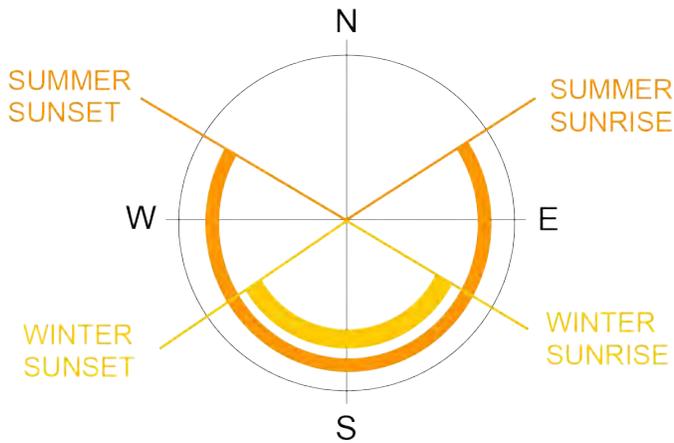
Exterior spaces oriented to receive winter sun allow some outdoor use during most days of the year. In Colorado, snow typically melts quickly in sunny areas. Melting snow may result in greater than average amounts of icing in shading areas.

Pedestrian paths, building entries and outdoor areas should be configured to have their greatest exposure from the south, thereby encouraging daylight and snow melting to occur naturally. Larger more formally defined outdoor spaces should attempt to allow solar penetration into the southern corners and edges of outdoor areas. Buildings defining southern perimeters of open spaces should consider architectural setbacks at upper-levels to allow for the maximum amount of sunlight to reach as deep as possible into shaded areas.

The use of protected sidewalks and attached or integral building arcades should be considered in the design of buildings that are located on the south side of major open spaces or streets and therefore would protect pedestrian circulation routes.

Wind

Warm (Chinook) winds and cool summer breezes air generally from the southwest. Cold winter winds are predominately from the north and northwest.



II.8 SITE DRAINAGE

Site drainage must accommodate efficient movement of surface water across pavement, turf or planting beds towards an inlet or drainage system; or allow subsurface water movement through the soil to a drainage system.

An efficient stormwater drainage system is to be maintained.

- Stormwater management is subject to the recommendations of the Fitzsimons Redevelopment Authority.
- Sites to drain into site wide detention/retention ponds
- Grading for each project to meet existing grades at project boundaries.
- Building location and site planning to respect existing grades at project boundaries.
- Avoid adverse impact of stormwater on adjacent parcels.
- On site stormwater retention and treatment strategies are encouraged for all new developments regardless of the district in which they occur.
- Utilization of surface water runoff for supplemental irrigation is encouraged.

Stormwater drainage areas are to be attractive and easily maintainable.

- Stormwater drainage areas should be located and shaped for ease of maintenance.
- Landscape for detention/retention areas should be functionally appropriate.
- All sites shall slope to drain.
- Sites should drain away from sidewalks and plazas.
- The use of impervious materials should be minimized.

Sites should be graded to appear that natural contours have not been disturbed.

- Minimize grading.
- Berms are to have gradual, natural appearing undulating slopes.
- Avoid slopes greater than 2 to 1
- Streets and surface parking should closely match with topography.

Lawns and shrub beds should be sloped for proper drainage.

- Lawn should be sloped between 1.5% and 25%
- Minimum 2% surface slopes should be provided in planting beds relying on surface drainage.
- Minimum 3% surface slope in turf areas that rely on surface runoff.
- Embankments greater than 25% should be planted with shrubs or ground cover.

Subsurface drainage should be accommodated in raised planters and tree pits.

- Provide subsurface drainage in raised planters where a 2% slope is not possible.
- Subsurface drainage should be provided beneath all tree grates and trees in paved areas.
- Provide subsurface drainage where landscaping abuts building walls.

II.9 HEIGHTS OF STRUCTURES

Building height should be sympathetic to the scale of adjacent structures and to the streets and open spaces surrounding them. In cases where buildings must be significantly taller than surrounding structures, the use of set-backs should be considered for portions of the building above the height of adjacent structures.

Care should be taken to limit the casting of shadows on open spaces or public ways. The potential for ice and/or snow accumulation on sides of buildings should be analyzed as part any design and appropriately mitigated.

In general, future buildings should be constructed between 4 and 6 stories in height. The 4 story minimum is intended to ensure adequate stewardship of campus resources, understanding that our land is finite and that this minimum level of density is necessary to avoid future sprawl. The 6 story maximum is set to encourage safety and economy in construction. The International Building Code defines high-rise construction as any building with an occupied floor located more than 75 feet above the level of fire department access. The 6 story limit is intended to avoid having to respond to the additional requirements and financial implications associated with high-rise construction.



The orientation of Research Towers 1 & 2 allow sunlight into the Research Common throughout the year.

II.10 BUILDING ENTRANCES

Major public entrances to buildings should be welcoming, easily identifiable, and accessible. They should be located off of primary streets or primary walkways at major open spaces. Building entrances and lobby spaces are gathering places for those using the building and should be designed to encourage interaction. They should be readily visible, prominent and contribute to the life and vitality of the adjacent streetscape or open space.

It is highly encouraged that the activities occurring within buildings, as appropriate, be visible from the exterior. Windows should be placed to maximize the availability of natural light to the interior as well as views outward.

- The main entrance to any building should be handicap accessible with direct access to an elevator provided near the lobby.
- Building identification signage should be located near the main entrance of the building in view of the closest major pathway.
- Landscaped areas should be located near the building entrance as an amenity to building occupants during lunch breaks, between classes, etc.
- Appropriately scaled landscaping should frame the building and lead to the entrance doors.
- Service entrances should not be located in view of the main entrance. Locate service areas near tertiary or secondary entrances.



The Health and Wellness Center presents a clearly articulated entry condition along an activated streetscape.

- Bicycle parking should not be located adjacent to, or should be shielded from view of, primary building entrances. Locate bike racks near secondary entrances.
- Outdoor transition space, such as porte cochers and canopies, should be provided for protection from snow and rain. Their design should relate to the materials, scale, and articulations used on the buildings exterior and have some relation to those of the interior lobby.



The University of Colorado Hospital provides a welcoming entry sequence for both vehicles and pedestrians.

II.11 LIGHTING

Lighting shall be designed to enhance the pedestrian experience and provide an element of continuity throughout the site. Sufficient light levels shall be provided for pedestrian and vehicular safety and comfort. Over-lighting shall be avoided with upward facing luminaires prohibited and light trespass minimized.

Fixture placement shall reinforce the special and conceptual definition of open spaces. Lighting should be used to help define spaces and to allow for people to find their way. Lighting should highlight building entries and should enhance the pedestrian experience by offering visual interest. Entries shall be defined by lighting that balances with interior lobby illumination creating a sense of visual hierarchy. Facades may be softly illuminated at the top to provide a subtle skyline presence. Additional lighting may also be provided to highlight or accent particular architectural details and open spaces when deemed appropriate.

Lighting will play a key role in producing a campus environment that is safe and enjoyable. Orientation is enhanced by lighting destinations such as building and parking area entrances. Lighting of other landscape elements, entry walls and signs can further assist orientation and way-finding.

In most instances, pedestrian and vehicles will share a roadway. Lighting must be designed to honor the safety and security of users and to distinguish various areas of the campus as vehicular, mix of vehicular and pedestrian, and pedestrian only.

In all cases, the campus will offer safe and secure lighting for pedestrians at night. Lighting will be designed to minimize glare and potential light pollution.

Pedestrian Walkways & Open Space Lighting

Along heavily used pedestrian walkways, lighting must not only guide the pedestrian from one point to the next but must also provide the lighting required for safety and security.

Plazas and quadrangles are unique, being surrounded by key academic buildings. Building entry and facade lighting should play a key role in how these spaces are perceived

at night. Buildings should look inviting and be a welcome boundary to these spaces. Pedestrian pole lighting can be kept to a minimum if the building facade lighting is well designed. This can help to emphasize the openness of the plaza or quadrangle by minimizing lighting equipment located in the space. Formal landscape features should be well lit within plazas. This will not only increase the sense of security but also provide a pleasing visual vista for the pedestrian only areas.

Fixtures shall be located in a manner responding to architectural and landscape design elements. Lower fixtures should be utilized to emphasize the pedestrian scale. Feature lighting of landscape and art elements should be utilized to provide a safe, warm and inviting atmosphere. Where building entries occur adjacent to open spaces, the lighting should help define the entry and the connection to the open space. Lighting may be integrated in site walls or landscape areas to minimize the appearance of fixtures. Fixture styles may respond to the architectural and landscape design elements occurring within the immediate context.

II.12 SITE FURNISHINGS

Site furnishings for streetscapes and open spaces have been developed to delineate the nature of the various Character Districts and, in some instances, provide a unifying vocabulary between them. Elements include benches, bike racks, trash receptacles, and tree grates. These amenities further animate the site at a human scale and establish the design continuity necessary to create unique sense of place.



Pedestrian lighting and signage within the Academic Village.

Fixture Vocabulary A

Vehicular Luminaire

Gardco “Round Form 10” CA Style
 Material: Aluminum, RAL7038
 Height: 30’ (RA5)



Pedestrian Luminaire

Gardco “Round Form 10” MP Style
 Material: Aluminum, RAL7038
 Height: 10’ (RA4)



Bollard Lighting

Gardco “Round Form 10” MP Style
 Material: Aluminum, RAL7038
 Size: 16” Diameter



Exterior Building Wall Lighting

Philips “Stonco” LPW16
 Material: Aluminum
 Color: Bronze Anodized



*See University of Colorado Denver | Anschutz Medical Campus, Facilities Management - Guidelines and Standards, Section 26 56 00 for addition information & requirements.

Fixture Vocabulary B (Scranton & Uvalda)

Vehicular Luminaire

Hess Canto

Material: To match north of Montview

Height: To match north of Montview



Pedestrian Luminaire

Hess Canto

Material: To match north of Montview

Height: To match north of Montview

Bollard Lighting

Lumec OVB

Material: To match north of Montview

Color: To match north of Montview



Exterior Building Wall Lighting

Philips "Stonco" LPW16

Material: Aluminum

Color: Bronze Anodized



Vocabulary A

Tree Grates

Supplier: Neenah Foundry

Model: No. R8712

Sizes: 60" x 60"

Material: Standard raw cast gray iron



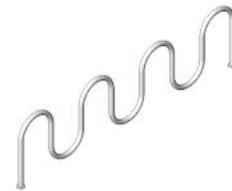
Bike Rack

Supplier: Huntco BRP Series

Model: BRP7, in-ground

Sizes: 97" X 36"

Material: Hot dipped galvanized metal



Streetscape Bench

Supplier: Landscape Forms

Model: "Stay" backed, surface mount

Sizes: 69" length

Material: Powder coated steel

Color: Silver



Streetscape Trash Receptacle

Supplier: Landscape Forms

Model: "Chase Park"

Sizes: 36 Gallon, 24" dia x 40"h

Material: Powder coated steel

Color: Silver



Public Space Bench

Supplier: Landscape Forms
Model: "Scarborough", backed w/ 2 arms
Horizontal strap seat
Sizes: 72"
Material: Powder coated steel
Color: Stormcloud



Public Space Chair

Supplier: Landscape Forms
Model: "Scarborough", backed w/ 2 arms
Sizes: 24"
Material: Powder coated steel
Color: Stormcloud



Public Space Table

Supplier: Landscape Forms
Model: "Catena"
Sizes: 30" dia. or 36" dia.
Material: Powder coated steel
Color: Stormcloud



Public Space Trash Receptacle

Supplier: Landscape Forms
Model: "Scarborough" vertical straps
Sizes: 25" dia x 40"h
(side opening , surface mount)
Material: Powder coated aluminum
Color: Stormcloud



Vocabulary B (Scranton & Uvalda)

Tree Grates

Supplier: Urban Accessories

Model: "Fan"

Sizes: 3', 42", 4', 5', 6', 8' SQ3'

Material: Standard raw cast gray iron



Bike Rack

Supplier: Landscape Forms

Model: "Ring"

Sizes:

Material: Stainless Steel



Streetscape Bench

Supplier: Landscape Forms

Model: "Stay" backed, surface mount

Sizes: 69" length

Material: Powder coated steel

Color: Silver



Trash Receptacle

Supplier: Landscape Forms

Model: "Chase Park"

Sizes: 36 Gallon, 24" dia x 40"h

Material: Powder coated steel

Color: Silver



II.13 LANDSCAPING, TREES AND IRRIGATION

High quality and well-designed landscaping is desired in all areas not covered by buildings and streets. Landscaping areas are to be continuous from one parcel to the next and should incorporate materials that are comparable with building use, site improvements, street scapes, drainage corridors and easements.

Landscapes should strive to create cohesiveness between the various character districts while simultaneously enhancing the unique characteristics of each.

- Campus edges and corners are to be visually defined and present positive impressions to visitors and the surrounding community.
- Landscaping is to be environmentally sensitive and reactive to the impact of sun and shadow.
- All trees and shrubs shall be non-invasive species well suited for the central plains of Colorado.
- It is encouraged to reduce overall water usage by incorporating drought tolerant species aiding in the creation of durable landscapes.
- To reduce maintenance needs, the campus encourages the use of plants that do not require heavy ongoing pruning.
- Trees or shrubs that produce fruit should be located far enough away from pedestrian walkways that fruit does not fall on to sidewalks.
- Landscape, graphics, and lighting should be coordinated to create a positive impact and should not interfere with the intended function of each.
- Landscape placement should enhance views and axes.
- Accent landscaping should be used in front of uniform masses of plant material.

Landscaping is to be environmentally responsive.

- Landscaping should be used to shade buildings, parked cars, and appropriate outdoor functions.
- Landscaping should be used to reduce erosion.
- Position landscaping to screen cold winter winds and channel summer breezes. South side of buildings should be shaded with deciduous trees to conserve energy. North sides of buildings to be planted with evergreens to conserve energy.

- Avoid over-planting of “mono-cultures” susceptible to disease, insects, etc.

Planting are to fit appropriate spacing when mature.

- Plant groundcovers and low shrubs in areas less than 5’-0” wide.
- Provide turf at least 5’ wide for effective irrigation and maintenance.
- Minimize the need for excessive pruning by selecting species whose growth suits the limitations of proposed locations.

Space large shrubs 8’-0” to 10’-0” apart.

Space medium shrubs 5’-0” to 8’-0” apart.

Space small shrubs 3’-0” to 4’-0” apart.

At-grade planting beds are to be contained.

- Contain at-grade planting beds by steel edging, concrete mow bands or adjacent concrete pavement. Plastic or rubber edgings are not permitted.
- Mulch all planting beds with shredded wood mulch to a depth of 3 inches.
- needs; locate where irrigation can be supplemented.
- Locate perennials and annual in areas where easy maintenance can be provided.

Perennials and annuals are to be planted to enhance specific sites.

- Select species suitable to soil conditions.
- Meet or exceed campus minimum size for materials.



Native ornamental grasses used to enhance balustrade

- Only plant annuals in designated pots or planting beds.
- Annuals require higher maintenance and watering

Trees

The legacy of the existing site development is in the trees, many of which date from a landscape enhancement program initiated by the Army in the mid-twenties. This legacy is to be preserved and enhanced in future campus development.

Major existing trees are to be preserved.

- Building or utility construction near existing trees shall be constructed in such a manner as to ensure their survival.
- Existing trees 6" caliper or larger are to be noted on site plans and are not to be removed without prior approval.

Trees are to fit appropriately when mature.

- Spacing for deciduous trees is 30'-0" minimum.
- Spacing for columnar trees is 15'-0" minimum.
- Spacing for ornamental trees is 12'-0" minimum.
- Minimum 3" caliper when trees are planted in grates.
- Near traffic, branch trees no less than 13'-6" above grade.
- Minimum branching height for pedestrian is 8'-0" above sidewalk.
- Trees are not to be located closer than 36" from face of curb.
- Minimum distance between trees and street lighting is 10'-0"
- Minimum planting strip for shrubs at building foundation is 5'-0" wide.
- Trees should not be planted within 10 feet of steam lines, electric lines, water, sewer or drainage lines.

Trees shall not interfere with traffic movement.

- Do not plant trees within 15'-0" of the corner of street intersections.
- Do not plant trees within 10'-0" of the corner of service drive intersections.
- Trees shall not interfere with the views of traffic control

devices or signage.

- Tree grates shall be used when trees are planted in paved areas.

Trees are to be used in pavement where appropriate

- Install grates or removable pavers around trees planted in pavement.
- Install campus standard tree grates measuring at least 5'-0" by 5'-0".
- Plant trees of at least 3" caliper.
- Provide root zones with sub-drains and separate zoned drip irrigation.

Inspired by the Colorado climate and altitude, the CUAnschutz campus incorporates landscape materials that are built upon predominately native with adaptive planting palettes. As the landscape character on campus evolves and becomes further defined, the following are highly encouraged:

- Native plant palettes sensitive to the aid climate
- Landscape habitats such as pollinator gardens
- Community gardens
- Bioswales for stormwater infiltration

The following plant species are identified by street location and type. Plant species have been coordinated to harmonize with streetscapes planned for north of Montview.

Quentin Street

As collector street the street trees along Quentin Street are selected for their primary oval growth shape and character. These trees are similar in height and will create a beautiful massing unifying the streetscape as a special place, while providing shade for pedestrians and bicyclists.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Turkish Filbert
- Autumn Blaze Maple
- Maple PlaneTree
- Prospector Elm
- Valley Forge Elm
- Heritage Oak

Racine Street

Street trees for Racine Street vary in form yet provide unity with impressive canopies. The columnar oak is introduced to add additional variety and can be used as an accent to create a unique punctuation in the rhythm of street trees. A range of golden, rusty orange, and vibrant red color will enhance Racine Street in the Fall.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Greenspire Linden
- Maple Plane Tree
- Shade Master Honeylocust
- Autumn Blaze Maple
- Chinkapin Oak
- Columnar English Oak
- Turkish Filbert

Revere Street

A variety of trees with multiple growth habits can be grouped and patterned to create a rhythm through the Revere Court. These trees vary in fall colors and can be arranged in various ways to have a spectacular impact in the Fall.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Greenspire Linden
- Maple Plane Tree
- Swamp White Oak
- White Oak
- Lacebark Elm
- Maple Plane Tree
- Japanese Pagoda Tree

Scranton Street

Scranton Street is envisioned as a stately entry to CU Anschutz from the light rail station through Scranton Parkway. A variety of impressive oaks have been selected to march down Scranton Street providing gracious canopies that invite pedestrian strolling and bicycle use. In the Fall, the street trees foliage transitions from rich greens to stunning rusty oranges and golden hues.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Swamp White Oak
- English Oak
- Heritage Oak

Uvalda Street

Street trees along Uvalda Street vary in form finding unity in their impressive canopies. The columnar oak is introduced to add additional variety and can be used as an accent street tree. A range of golden, rusty orange, and vibrant red color will wash Uvalda Street in the Fall.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Shade Master Honeylocust
- Lacebark Elm
- Valley Forge Elm
- Japanese Pagoda Tree

Victor Street

As a primary street, Victor Street's tree recommendations have been selected to provide ample shade. These trees have a similar oval to rounded form to create a unified canopy as well as an exciting Fall color showing.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Greenspire Linden
- Lacebark Elm
- Autumn Blaze Maple
- Chinkapin Oak

Wheeling Street

As a primary street, Wheeling Street's tree recommendations have been selected to provide ample shade. These trees have a similar oval to rounded form to create a unified canopy as well as an exciting Fall color showing.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Greenspire Linden
- Lacebark Elm
- Autumn Blaze Maple
- Swamp White Oak

Service Roadways

Street trees along the Service Roadways can be a selection of suggested street tree types. These trees can be grouped in numerous ways to that may begin to distinguish public versus private space. Trees can also be arranged to highlight Fall color, growth habit and tree characteristics.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Greenspire Linden
- Maple Plane Tree
- Shade Master Honeylocust

19th Avenue

A variety of trees with multiple growth habits can be grouped and patterned to create a rhythm through 19th Avenue as Secondary Street. These trees vary in Fall colors and can be arranged in various ways to have spectacular impact in the Fall.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Greenspire Linden
- EXCLAMATION!™ London planetree
- Maple Plane Tree
- Swamp White Oak
- White Oak
- Lacebark Elm
- Maple Plane Tree
- Japanese Pagoda Tree

17th Avenue

17th Avenue serves as translational corridor, so recommended trees have primarily lacy canopies casting intriguing shadows on the ground, creating a unique quality of light, to be enjoyed by those using the street and multi-use path. This selection of trees is accompanied by the Japanese Pagoda tree offering creamy blooms in the late Summer and early Fall. The graceful Lacebark Elm and its mottled bark creates colorful patterns that pedestrians will enjoy. Ornamental trees cap the street trees at intersections and midblock calling attention to entry points and pedestrian connections by providing a contrasting form to the street trees and showy spring flowers.

Deciduous Tree Species

(Alternate species in groups of at least 3)

- Shade Master Honeylocust
- Lacebark Elm
- Valley Forge Elm
- EXCLAMATION!™ London planetree
- Chinkapin Oak

Ornamental Tree Species

(Groups of at least 2)

- Japanese Pagoda Tree
- Cardinal Crabapple
- Spring Snow Crabapple
- Peking Lilac
- Japanese Tree Lilac

Autum Blaze Maple
Acer x freemanii Autumn Blaze



- Mature Height: 40-50'
- Mature Spread: 30-40'
- Canopy Form: Oval
- Water Requirements: Medium
- Fall Color: Orange Red

Maple Plane Tree
Acer pseudoplatanus



- Mature Height: 40-50'
- Mature Spread: 40-50'
- Canopy Form: Oval to Rounded
- Water Requirements: Medium
- Fall Color: Greenish Yellow
- Other: Salt Tolerant

Turkish Filbert 
Corylus colurna



- Mature Height: 30-45'
- Mature Spread: 25-30'
- Canopy Form: Pyramidal
- Water Requirements: Low
- Fall Color: Yellow

Prospector Elm
Ulmus wilsoniana 'Prospector'



- Mature Height: 35-40'
- Mature Spread: 25-30'
- Canopy Form: Vase Shape
- Water Requirements: Medium
- Fall Color: Yellow

Valley Forge Elm
Ulmus americana 'Valley Forge'



- Mature Height: 60-70'
- Mature Spread: 45-60'
- Canopy Form: Upright Vase Shape
- Water Requirements: Medium
- Fall Color: Yellow
- Other: Resistant to Dutch Elm disease

Lacebark El
Ulmus parvifolia



- Mature Height: 40-50'
- Mature Spread: 30-40'
- Canopy Form: Rounded to Oval
- Water Requirements: Medium
- Fall Color: Reddish Purple
- Other: Resistant to Dutch Elm disease

 Xeriscape  Drought Tolerant

Shademaster Honeylocust 
Gleditsia triacanthos inermis
 'Shademaster'



- Mature Height: 60'
- Mature Spread: 45'
- Canopy Form: Pyramidal
- Water Requirements: Low
- Fall Color: Yellow

Japanese Pagoda Tree
Sophora (Styphnolobium)
japonica



- Mature Height: 60'
- Mature Spread: 45'
- Canopy Form: Pyramidal
- Water Requirements: Low
- Fall Color: Yellow

Greenspire Linden
Tilia cordata 'Greenspire'



- Mature Height: 60'
- Mature Spread: 45'
- Canopy Form: Pyramidal
- Water Requirements: Low
- Fall Color: Yellow

White Oak 
Quercus alba



- Mature Height: 40-60'
- Mature Spread: 40-60'
- Canopy Form: Rounded
- Water Requirements: Medium
- Fall Color: Wine Red

Swamp White Oak 
Quercus bicolor



- Mature Height: 40-60'
- Mature Spread: 40-60''
- Canopy Form: Conical
- Water Requirements: Low
- Fall Color: Gold Orange

Chinkapin Oak 
Quercus muehlenbergii



- Mature Height: 35-50'
- Mature Spread: 35-50'
- Canopy Form: Irregular to Round
- Water Requirements: Low
- Fall Color: Yellow Brown

 Xeriscape  Drought Tolerant

Heritage Oak
Quercus Heritage



- Mature Height: 50-60'
- Mature Spread: 30-40'
- Canopy Form: Pyramidal
- Water Requirements: Medium
- Fall Color: Gold Yellow

English Oak 
Quercus robur



- Mature Height: 40-60'
- Mature Spread: 30-40'
- Canopy Form: Conical
- Water Requirements: Medium
- Fall Color: Gold Yellow

Columnar English Oak 
Quercus robur 'Fastigiata'



- Mature Height: 40-60'
- Mature Spread: 15-20'
- Canopy Form: Columnar
- Water Requirements: Medium
- Fall Color: Gold Yellow

EXCLAMATION™ London Planetree
Platanus acerifolia 'Morton Circle'



- Mature Height: 60'
- Mature Spread: 45'
- Canopy Form: Pyramidal
- Water Requirements: Low
- Fall Color: Yellow

 Xeriscape  Drought Tolerant

Downy Hawthorn 
Crataegus mollis



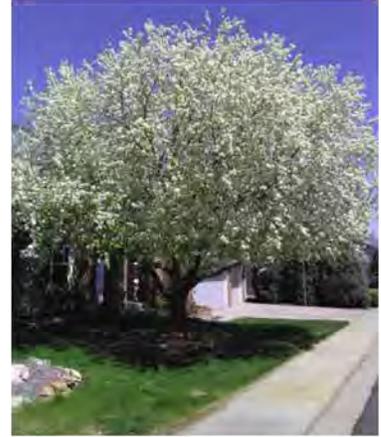
- Mature Height: 15-20'
- Mature Spread: 15-20'
- Canopy: Rounded
- Water Requirements: Low
- Fall Color: Red
- Other: White Flowers

Cardinal Crabapple 
Malus 'Cardinal'



- Mature Height: 15-20'
- Mature Spread: 15-20'
- Canopy: Vase Shaped
- Water Requirements: Medium
- Fall Color: Red
- Other: Red Pink

Snowspring Crabapple 
Malus 'Snowspring'



- Mature Height: 20-25'
- Mature Spread: 20-25'
- Canopy Form: Pyramidal
- Water Requirements: Low
- Fall Color: Yellow
- Other: White blooms in Spring

Peking Lilac 
Syringa pekinensis



- Mature Height: 15-25'
- Mature Spread: 10-15'
- Canopy: Rounded
- Water Requirements: Low
- Fall Color: Yellow Orange
- Other: White blooms in Spring

Japanese Tree Lilac 
Syringa reticulata



- Mature Height: 15-25'
- Mature Spread: 15-20'
- Canopy: Rounded
- Water Requirements: Low
- Fall Color: Golden Yellow
- Other: White blooms in Spring

 Xeriscape  Drought Tolerant

Ohio Buckeye 
Aesculus glabra



- Mature Height: 30-40'
- Mature Spread: 20-30'
- Canopy: Rounded
- Water Requirements: Medium
- Fall Color: Orange, Yellow, Red

Horsechestnut 
Aesculus hippocastanum



- Mature Height: 50-70'
- Mature Spread: 40-60'
- Canopy: Upright Oval
- Water Requirements: Medium
- Fall Color: Yellow

Western Hackberry 
Celtis occidentalis



- Mature Height: 50-60'
- Mature Spread: 40-50'
- Canopy: Rounded
- Water Requirements: Low
- Fall Color: Yellow

Kentucky Coffeetree 
Gymnocladus dioica



- Mature Height: 50-60'
- Mature Spread: 40-50'
- Canopy: Rounded
- Water Requirements: Low
- Fall Color: Golden Yellow

Goldenrain Tree 
Koelreuteria paniculata



- Mature Height: 20-30'
- Mature Spread: 20-30'
- Canopy: Rounded
- Water Requirements: Low
- Fall Color: Yellow, Red-Orange

Western Catalpa 
Catalpa speciosa



- Mature Height: 40-60'
- Mature Spread: 30-50'
- Canopy: Oval
- Water Requirements: Low
- Fall Color: Yellow Green

 Xeriscape  Drought Tolerant

Pinon Pine 
Pinus edulis



- Mature Height: 20-30'
- Mature Spread: 10-20'
- Canopy: Pyramidal
- Water Requirements: Very Low

Austrian Pine 
Pinus nigra



- Mature Height: 40-60'
- Mature Spread: 30-40'
- Canopy: Pyramidal
- Water Requirements: Low

Ponderosa Pine 
Pinus ponderosa



- Mature Height: 60-80'
- Mature Spread: 30-40'
- Canopy: Pyramidal
- Water Requirements: Low

Scotch Pine 
Pinus sylvestris



- Mature Height: 30-50'
- Mature Spread: 20-30'
- Canopy: Conical to Rounded
- Water Requirements: Low

 Xeriscape  Drought Tolerant

 Xeriscape  Drought Tolerant

SHRUBS AND PERENNIALS

Decisuous Shrubs

Name	Species	
Alpine Currant	Ribes alpinum	△
Blue Mist Spirea	Caryopteris x clandonensis 'Blue Mist'	△
Crimson Pygmy Barberry	Berberis thunbergii 'Atropurpurea Nana'	△
Red Twig Dogwood	Cornus stolonifera 'Bailey'	
Russian Sage	Perovskia artiplicifolia	△
Dwarf Burning Bush	Euonymus alata 'Compacta'	△
Miss Kim Lilac	Syringa patula 'Miss Kim'	△
Spreading Cotoneaster	Cotoneaster divaricatus	△
Anthony Waterer Spirea	Spiraea japonica 'Anthony Waterer'	⬡
Nana Burning Bush	Euonymus alata 'Nana'	△
Cranberry Contoneaster	Cotoneaster Apiculatus	△
Lodense Privet	Ligustrum vulgare 'Lodense'	△
Little Princess Spirea	Spiraea japonica 'Little Princess'	⬡
Yellow Shrub Rose	Rosa x 'Gold Wings'	△
Red Fragrant Shrub	Rose Rosa x 'John Franklin'	△
Snowmound Spirea	Spiraea nipponica 'Snowmound'	△
Peking Cotoneaster	Cotoneaster lucidus	△
Dwarf Korean Lilac	Syringa meyeri 'Palibin'	△
Red Flowering Quince	Chaenomeles japonica 'Rubra'	△
Isanti Dogwood	Cornus stolonifera 'Isanti'	
Compact Purple Butterfly Bush	Buddleia davidii nanhoensis 'Petite Plum'	△
Three Leaf Sumac	Rhus trilobata	△
Diabolo Ninebark	Physocarpus opulifolius 'Diabolo'	△

△ Xeriscape ⬡ Drought Tolerant

SHRUBS AND PERENNIALS (CONT'D)

Evergreen Shrubs

Name	Species	
* Calgary Carpet Juniper	Juniperus sabina 'Calgary Carpet'	
* White Bud Mugo Pine	Pinus mugo 'White Pine'	
* Calgary Carpet Juniper	Juniperus sabina 'Monna'	
* Slowmound Mugo Pine	Pinus mugo 'Slowmound'	
* Compact Oregon Grapeholly	Mahonia aquifolium 'Compacta'	
* Icee Blue Juniper	Juniperus scopulorum 'Monber'	
* Alpine Carpet Juniper	Juniperus communis 'Alpine Carpet'	

Orna,ental Grasses

Name	Species	
△ Blue Avena Grass	Helictotrichon sempervirens	△
△ Blue Fescue	Festuca 'Elijah Blue'	△
△ Feather Reed Grass	Calamagrostis arundinacea 'Karl Foerster'	△
△ Hardy Fountain Grass	Pennisetum alopecuroides 'Hameln'	△
△ Pampas, Plume Grass	Saccharum ravennae	△
△ Purple Maiden Grass	Miscanthus sinensis 'Purpurescens'	△

Perennials

Name	Species	
△ Autumn Joy Sedum	Sedum spectabile 'Autumn Joy'	△
△ Bee Balm	Monarda 'Cambridge Scarlet'	△
△ Black Eyed Susan	Rudbeckia fulgida 'Goldsturm'	△
△ Basket of Gold	Aurinia saxatilis 'Gold Ball'	△
△ Moonbeam Coreopsis	Coreopsis verticillata 'Moonbeam'	△
△ Stella D'Oro Daylily	Hemerocallis 'Stella D'Oro'	△
△ Prairie Coneflower	Ratibida columnifera 'Red'	△
△ Rocky Mountain Penstemon	Penstemon strictus	△
△ Scarlet Penstemon	Penstemon barbatus	△
△ Salvia, May Night	Salvia sylvestris x 'Mainacht'	△
△ Shasta Daisy	Chrysanthemum leucanthemum	△
△ Thyme, Woolly	Thymus praecox pseudolanuginosus	△
△ Periwinkle	Vinca minor 'Bowles'	△

Vines

Name	Species	
* Boston Ivy	Parthenocissus tricuspidata	
* Virginia Creeper	Parthenocissus quinquefolia engelmannii	
Purple Clematis	Clematis x jackmanii	
* Trumpet Vine	Campsis radicans	

Note: This plant palette is not intended to be all inclusive. It is a sampling of the plant material to be used within the campus and demonstrates the character of plant material to be used. Final plant selection should target consistency with the City of Aurora Code.

△ Xeriscape  Drought Tolerant



Native pollinator garden with low-water use plants to create habitat and enhance vibrancy throughout the campus



Community Garden example

Irrigation

Landscape areas must include a properly designed, automatic irrigation system that provides full coverage on all plants. Supplemental irrigation to be supplied to existing trees or vegetation that has had water diverted or eliminated due to site development or construction.

Campus standard irrigation equipment is to be used.

- Select irrigation equipment suited to the design of the irrigation zones, where plants are grouped based upon similar watering needs, and growing conditions.
- Provide and replace sprinkler heads using standardized parts that will maintain the desired level of irrigation.
- Provide controls to irrigate shrubs, flowers, and trees separately from turf. Utilize controllers with timing systems that permit use of low-volume systems over longer cycles.
- Use pop-ups with low-pressure, low-volume spray heads. Irrigate shrubs and trees with drip or low-volume heads. Pop-up heads in turf areas are to have risers at least 4 inches high.
- Irrigate groundcovers with fixed risers or shrub high pop-ups, bubblers, or drip systems.

Spray Patterns are to be adjusted to fit site conditions.

- Coordinate foundation planting with irrigation to provide at least 5-foot offset for spray irrigation and 3-foot offset for drip irrigation from face of building.
- Operate irrigation when pedestrians are not likely to be present.
- Confine normal spray patterns to mass vegetated areas or root zones of trees. Provide 100 percent overlap in these areas.
- Avoid spraying walks, courtyards, plazas, roadways, buildings and fences. If spraying of walks and bike-ways cannot be avoided, the controller must be timed to spray at night.

*See University of Colorado Denver | Anschutz Medical Campus, Facilities Management - Guidelines and Standards, Section 32 84 00 for addition irrigation requirements.

II.14 LANDSCAPE ADJACENT TO BUILDINGS

Plantings should not obscure building entrances but rather enhance its clarity and frame views toward the building.

- Residual spaces, adjacent to and between buildings, should be designed and planted to be part the total composition of development and not as an afterthought.
- Plantings should be located far enough from building facades so as to allow for air movement.
- Planting should not obstruct important views from windows. Plants located near windows may be used to filter glare and bright sunlight, but should be distant enough from the facade to maintain views outward.
- Planting should not be located in a way to create unsafe environments and should not create darkened areas near entrances or along walkways.
- Provide gravel borders or mulch planting beds around buildings to protect foundations and facades from lawnmower damage.

II.19 MAINTENANCE, MANAGEMENT AND OPERATIONS

The Campus landscape is to be assessed annually

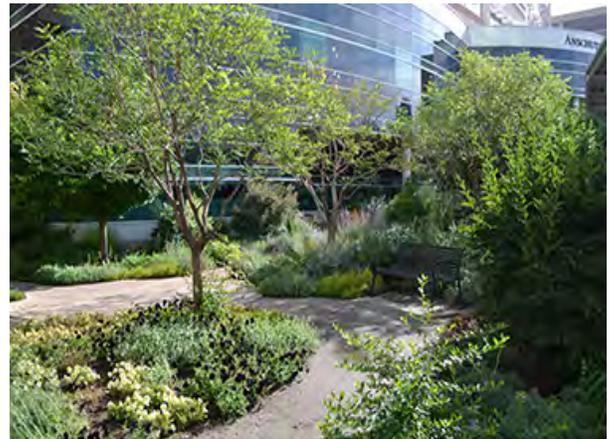
- Retain horticulturist and landscape architect to access planting areas and make recommendations concerning spacing, massing, size and to determine:
 1. Health of plants
 2. Appropriateness of plant selection for location
 3. Recommended maintenance and management practices
 4. Recommended replacement of plants if necessary
 5. Irrigation management and watering needs of plants

Landscape maintenance and warranty contracts are to be maintained.

- 2-year warranty and contractor maintenance for all woody plant material installed as part of a Campus construction project.

Excessive planting shearing is to be minimized.

- Where shearing is necessary, shear shrubs together and concisely for form a hedge. Do not prune individual plants.
- Plants requiring shearing should be easily accessible



Discovered space in front of UCH Inpatient Tower



Courtyard garden in front of Education 1.

II.15 GATEWAYS & SIGNAGE

Gateways

Gateways celebrate entry, providing symbolic thresholds onto the Campus. They create a strong first impression upon visitors in relation to the goals, principals and ideals at the heart of the institutions making up the Anschutz Medical Center.

Signage

The Anschutz Medical Campus has established prescriptive design guidelines for present and future implementation of campus signage.

The goals and objectives for this future campus signage study are summarized below:

- Signage shall clearly, concisely and consistently communicate; providing identification, directional, regulatory and operational information.
- Signage shall perpetuate the identity of the University of Colorado | Anschutz Medical Center by adhering to established graphic standards for logo, shape, colors, scale and typography.
- Signage shall provide a vehicle with which to distinguish the various districts and programmatic functions of the campus using shape, color or other means of coding.
- Signage shall complement the established palette of architectural and landscape materials and colors.
- It shall provide tools with which those navigating the campus may establish and maintain their orientation by reinforcing their proximity to campus landmarks.
- Signage shall reflect the character of a high quality campus environment.
- It shall accommodate and enhance existing and future programs and the needs of those navigating throughout the campus, while remaining sensitive to the site and environment.
- Signage shall be durable, economical and designed to have the flexibility to accommodate future growth and change.
- A hierarchy of signage shall be established, communicating directions to campus landmarks, thereby requiring fewer signs to efficiently direct visitors.
- Signage shall be appropriately designed to function both during the day and in the evenings.



Signature gateway onto campus at Aurora Court and Colfax Avenue



Entrance to the Children Hospital from Colfax Avenue

II.16 PUBLIC ART, DONOR RECOGNITION|MEMORIALS & INTERPRETIVE SIGNAGE

Public Art

The Art in Public Places Program (AIPP) was established by the Colorado Legislature in 1977. Under the program, 1 percent of the cost of building or renovation of any state facility must go toward the purchase or creation of public art near the facility. Works of art purchased through this program are located in publicly accessible spaces inside and outside of state buildings.

These art installations form the state art collection and are developed and administered by Colorado Creative Industries. The works selected through this program represent great diversity in style, imagery, materials and techniques. By uniting artists, architecture, and host institutions, AIPP integrates the art experience into the built environment and civic spaces.

The University of Colorado Anschutz Medical Campus contains over \$1.6 million in public art making it the largest public art program in the state.

Public art enriches the physical and intellectual environment and should be sited in strategic locations throughout the campus. Art should give physical form to the goals and values of the university. The following criteria shall be used to evaluate works of art:

- The aesthetic significance of an individual work of public art.
- Appropriateness to site, including (for outdoor sites) appropriateness to the site's adjacent architecture, hardscaping, and landscaping.
- The contribution an individual work of art can be expected to make to the University's educational mission, as well as to the existing collection of public art.
- The significance of the artist or artists.
- The relative uniqueness of the work of art, including factors of originality and authenticity.
- The University's ability to assure the proper long-term care of the individual work of public art, including security, conservation, and maintenance.
- The safety of the work of public art, as well as the safety of users interacting with it.
- Where works of art come as donations, the University's ability to manage effectively the long-term stewardship of donor relationships.



Corpus Callosum by Thomas Sayre along the 17th Place Art Walk.

Donor Recognition|Memorials

Due to the unique history of the campus and its physical design, a range of donation and memorial opportunities exist. The university has undertaken a comprehensive study to identify options for types and locations for many such opportunities. The ideas established in this study are to be expanded by committees established to integrate appropriate memorial and donor opportunities within the future development of the campus. The key principals are as follows:

- Guidelines have been developed for memorials and donor recognition opportunities appropriate to the role and mission of the Anschutz Medical Campus.
- A memorial committee will identify a hierarchy of suitable memorials.
- Significant historical memorials currently existing on campus shall be preserved.
- The history of the Fitzsimons site shall be acknowledged through memorials.
- Memorials and donor recognitions shall create a consistent identity throughout the campus.
- Memorials shall be displayed within the landsc



Origin by Kendra Fleischman within the Education 1 courtyard

II.18 SITE SAFETY

Designs should adhere to three basic environmental design principles concerning crime prevention:

- 1) Natural Access Control - a design concept aimed at reducing the opportunity for crime. The intent is two-fold. One is to deny access to a potentially vulnerable situation. The second is to create a perception of risk in potential offenders.
- 2) Surveillance Strategy - a concept that encourages “eyes” on a space without physically being in the space. For example, through placement of windows or low shrubs, people in a building can observe an adjacent open space.
- 3) Territorial Reinforcement Strategies - the creation of boundaries identifying public, semi-private and private spaces. By marking private space in particular, the campus community is encouraged to develop ownership of the space.

II.18 SUSTAINABILITY

In 2019, the Colorado General Assembly passed House Bill 19-1261, Climate Action Plan to Reduce Pollution. The bill established the following mandated GHG emission minimum reduction goals, relative to 2005 levels:

- 26% reduction by 2025
- 50% reduction by 2030
- 90% reduction by 2050

CU has a longstanding commitment to fostering sustainability systemwide as well as leading the state in such efforts. More than a decade ago, the CU Board of Regents passed a Sustainability Resolution directing the university president and chancellors to incorporate Leadership in Energy and Environmental Design (LEED) standards in construction projects wherever possible; develop comprehensive plans to reduce greenhouse gas emissions; and incorporate the mandates of the Governor’s Climate Action Plan into each campus’ efforts to attain climate neutrality.

To the furtherance of these goals, CU Anchutz has committed to the following as part of the 2021 CU System Wide Sustainability Report:

<https://www.cu.edu/doc/2021cusustainabilityreportpdf>

Greenhouse Gas Emissions: The university has set a goal of reducing GHG emissions 15 percent from 2019 emission levels by 2026.

Energy Consumption: The university has set a goal of reducing its energy use consumption (EU) in campus buildings by up to 10 percent from 2019 levels by 2026.

Sustainable Planning: Concurrent with this Facilities Master plan Update, CU Anschutz is in the process of developing their 2023 Climate Action Plan and Energy Master Plan. CU Anschutz is use savings from the Xcel Energy Rebate program to conduct energy studies and full energy audits, which in turn are used to identify energy conservation projects.

Life-Cycle Cost Analysis: CU Anschutz requires the design of all potential capital projects to identify first costs, environmental costs, and energy savings opportunities in order to help reduce operations and maintenance costs.

LEED: CU Anschutz aspires to go beyond LEED Gold and requires the design of all facilities to look for opportunities to incorporate net-zero energy consumption measures.

Deferred Maintenance: the university maintains a strong emphasis on funding deferred maintenance projects, with particular attention to making improvement that increase efficiency and reduce GHG emissions.

Facilities: CU Anschutz prioritizes renovation and repairs over new construction.

Water: CU Anschutz limits potable water consumption through conservation measures such low-flow fixtures and replacing steam autoclaves and glass washers in labs. The campus limits water use for landscaping by planting native plant species and installing irrigation controls and rain sensors.

Waste Diversion: CU Anschutz promotes sustainability through waste diversion, thoughtful purchasing decisions and creating an infrastructure that supports reuse, recycling and composting

Transportation: CU Anschutz promotes the use of alternative modes of transportation and the use of alternative fuel vehicles to reduce GHG emissions from travel to and through its campuses

PART III BUILDING DESIGN GUIDELINES

III.1 CONTEXT

Buildings are to be compatible with the Facilities Master Plan and should reinforce the quality, character, and cohesiveness of the individual districts in which they are located as well as that of the campus as whole.

Facades should relate to surrounding conditions and help to create a unified compositional identity. Buildings should reinforce the integrity of adjacent open spaces and support the structural organization of the character zone in which they are located. They should be sympathetic to adjacent facades, major datum, cornice lines, etc.. Secondary facades should be of comparable quality as the primary facade with walls, windows, doors and facade articulations designed to accentuate human scale.

Building massing and facades should exhibit a rationality reflective of the organizational structure within.

Buildings should be designed to be responsive to environmental conditions; incorporating solar orientation studies and dynamic wind analyses in the most early phases of the design process.



The School of Dental Medicine Building relates well in terms of scale and materiality with the adjacent Art Walk.



The curtainwall articulations on the UCH Anschutz Center for Advanced Medicine respond well to a human scale.



Building 500 exhibits a richness in architectural detail



A cohesive composition of interrelating masonry buildings define the Education Quadrangle.

III.2 EXTERIOR CLADDING MATERIALS

In the last decade, the campus has developed a primary vocabulary of brick buildings to define a general character of permanence and fortitude. Materials complimentary to brick, such as natural stone, have also been used successfully. While not required, the campus has a strong preference for masonry as the material of choice for exterior cladding.

Materials conveying a “high-tech” quality, such as metal panels and glazed curtainwall assemblies, have helped define the character of our research quadrangle and Hospital district. Their ability to communicate an image of a modern, state-of-the-art academic health science community makes the use of these materials particularly suitable in these applications.

Any choice of exterior materials should strive to achieve an impression of quality and durability. Considerations of texture, and richness of detail should occur within the context of adjacent structures and the scale of surrounding open spaces.

Cladding materials are to be cost effective over the life-cycle of the building. They are to reinforce order and a consistency of architectural character with neighboring buildings and open spaces.

The use of materials and/or systems new to the market will only be considered if the architect can provide product data sufficient to convince the university’s facilities staff of their durability, reliability, and relevance to the design. Sustainable materials, systems, and processes should be given special consideration whenever possible.

Glazing

Windowless, inward-looking buildings are to be discouraged. It is highly encouraged that the activities, when appropriate, occurring within buildings be visible from the exterior. Reflective or highly tinted glass should therefore be avoided. Building fenestration should respond to solar orientation and include glazing that maximizes energy efficiency.

Roofing Types and Materials

Sloped and flat roof types are acceptable as design approaches however all roofs should be designed to augment and enhance color and material selections and the overall aesthetic expression of the building.

Building massing and roof silhouettes should be responsive to the functional and symbolic nature of the building as well as its relative location on campus.

Exposed roofs should be consistent with the buildings architectural expression in scale, surface material and general color. Rooftop mechanical equipment should be enclosed in structures that are integrated with the building design.

Flat roofs visible from surrounding buildings, either in the present or potentially in the future, must be orderly and coherent in design.

Flat roofs should be of ballast type construction where the inside of parapets are sympathetic to the exterior skin and ballast is of either a complimentary color to the off white gray or reddish brown dominant colors of the established campus palette.



Roofs should be organized to present their best possible appearance from above.



Research 2 Towers, while diverging from a primarily masonry vocabulary, still relate well to the human scale of the campus.

III.3 SITE SELECTION

In the effort to devise a systematic methodology for evaluating the most appropriate site for future buildings, the following process has been established. The intent is to provide university leadership with a clear and concise means of understanding the pros and cons inherent in any number of potential building sites in relation to a project's intended program, user population, and environmental impact.

Step 1

Goal: To establish a program plan allowing university leadership the ability to evaluate economic, programmatic, and strategic perimeters of the proposed project.

- Define program
- Establish primary user groups for the building
- Identify governing parameters of the buildings program (EMI, vibration, etc.)
- Identify any Institutional adjacency requirements
- Define primary typological spaces

Step 2

Goal: Research programmatic precedents to gain an understanding of how similar projects have responded to the needs and requirements identified in Step 1.

With the conclusion of Steps 1 & 2, a minimum of three sites shall be proposed to leadership as potential building opportunities.

Step 3

These three potential sites shall then be evaluated and ranked in accordance with their relationship to the following:

1) Where does the potential site exist in relation to the campus core?

In order to encourage greater density within the core of the campus, potential building sites will be ranked in accordance to their relative distances from Building 500. A site located within a one minute walk from the center of Building 500 will be awarded the maximum raking of 10 points. 1 point will be deducted from the 10 for each 1 minute walking distance that a potential site falls outside of the initial 1 minute ring.

2) Is the site located along the 17th Avenue Translational Corridor?

To encourage greater density of development along the 17th Avenue, 10 points will be awarded to sites located along, and fronting on to, the Translational Corridor.

3) Are site utilities present or will they need to be extended?

To avoid unnecessary added infrastructure costs for future projects, higher points will be awarded for sites located within the boundaries of 19th Avenue to the north, Victor Street to the east, 17th Avenue to the south, and Racine Street to the west. These are the major utility pathways for campus infrastructure housing the "utility loop" for the campus. A reduction in total points will be awarded to site falling outside of this loop proportionate to their relative distances from it.

4) Are parking needs accommodated within acceptable distances?

These points are in addition to the mandatory requirement that handicap parking spaces be located near building entrances and accessible pedestrian routes.

- Patient parking within 300 feet of destination
10 points if applicable to program
- Visitor parking within 300 feet of destination
5 points if applicable to program
- Physician parking within 300 feet of primary destination
5 points if applicable to program
- Staff parking within 1000 feet of primary destination
5 points if applicable to program
- Student parking within 1000 feet of primary destination
5 points if applicable to program
- Service vehicle parking within 100 feet of destination
5 points
- Potential for car pool spaces at close-in locations to encourage participation
5 points

5) Does the proposed scale of the development fit within the existing context?

This is a simple "yes" or "no" evaluation of a potential site with an affirmative earning an additional 10 points with no earning none. An example would be the potential for a 10 story structure (with an approved EIR report)

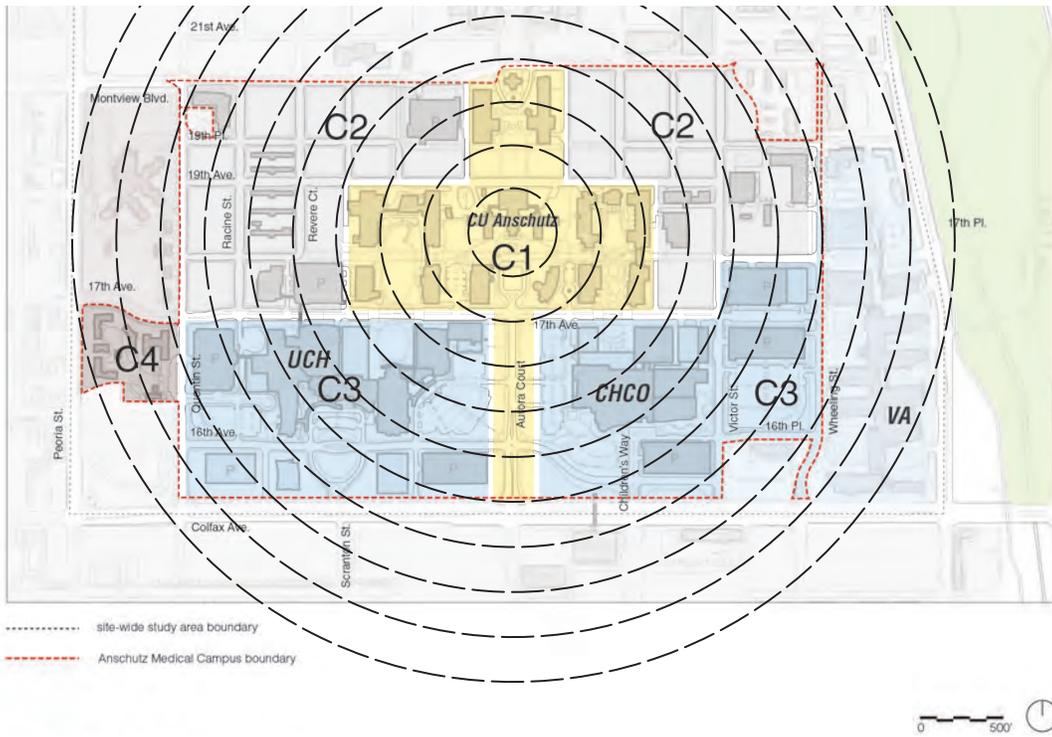


Figure III.3A - Site Selection | Campus Core Point Zones

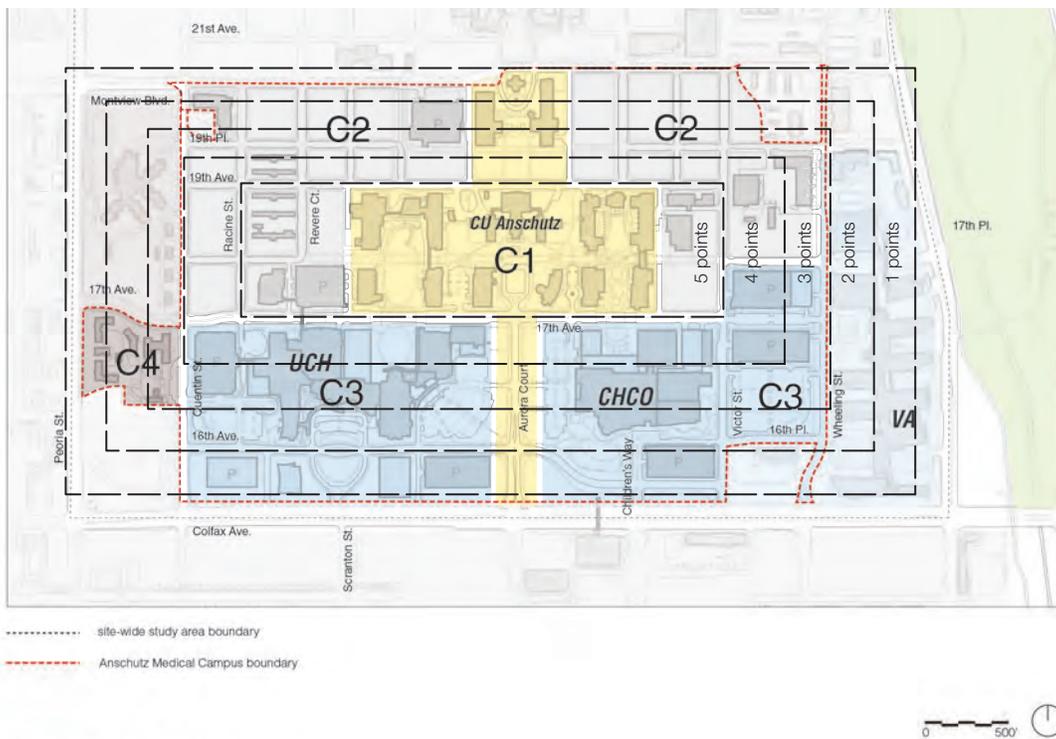


Figure III.3B - Site Selection | Utility Point Zones

being constructed north and adjacent to the education quadrangle as opposed to on 17th Avenue near the research quadrangle. The former would receive no additional points while the latter would achieve ten points.

6) Does the character zone support or detract from programmatic requirements?

This is a simple “yes” or “no” evaluation of a potential site with an affirmative earning an additional 10 points and “no” earning none.

C1 | Academic Village - Is the proposed building collegiate in program, having a low visitor to student/faculty ratio and subsequently do users have a high familiarity navigating within the zone?

C2 | Urban Campus - Is the proposed building program enhanced by a connectivity with the Colorado Science and Technology Park at Fitzsimons? Is this a mixed-use development with a relatively high potential for reprogramming and occupant turn-over (flexibility). Is on-street visitor parking beneficial?

C3 | Hospital District - Is patient/visitor access the primary driver?

Final points are then tallied and presented to university leadership for consideration.

III.4 STRUCTURED PARKING

Mixed use functions should be considered for incorporation into all structured parking developments. When feasible, ground floors fronting open space should be activated by public uses.

All structured parking facades should be designed to be compatible with the pattern, articulation, scale and massing of surrounding structures.

Special attention should be given to the design and articulation of the ground floor fenestration, particularly how it integrates with the design of the adjacent sidewalks and streetscape to create a quality pedestrian environment.

Lighting should be bright enough to provide a proper level of safety and security but should be properly controlled to not spill out beyond the exterior walls.

Emphasis should be placed upon the design and articulation of elevator lobbies and stair towers as components of the pedestrian experience, and should be properly separated from vehicular ingress and egress locations.

Internal vehicle ramps should be located off of a tertiary way or relegated to the center of garages with three or more parking bays. Whenever possible, garage entrances should be located on a secondary street or tertiary way and avoid vehicular entrances across from public open spaces.

III.5 FUNCTIONAL AND MECHANICAL FACILITIES

Functional and mechanical areas devoted exclusively to building services, deliveries, trash removal, or mechanical equipment access or service, should be located away from public areas and be designed to be as visually unobtrusive as possible. Any negative environmental effects such as noise or a potential reduction in air quality on the surrounding environment should be carefully considered and mitigated to the greatest extent possible within the projects budget.

III.6 ACCESSIBILITY

The Anschutz Medical Campus is committed to providing an environment in which everyone is respected and valued and to providing equal and dignified access to those with disabilities. All new construction must comply with the Americans with Disabilities Act (ADA). Renovations to historic buildings should strive to improve access in a manner compatible with their historic integrity.

III.7 WELLNESS

WELL Building Standards is the leading tool for advancing health and well-being in buildings globally and has developed a comprehensive system of standards for improving health and the overall experience of occupant satisfaction through design. WELL Building Standards takes a holistic approach to health in the built environment addressing behavior, operations and design.

While the university has not adopted WELL certification as a requirement for its projects, CU Anschutz encourages the incorporation of the 7 concepts of WELL Building Standard™ version 2 (WELL v2™) as a vehicle for buildings to deliver more thoughtful and intentional spaces that enhance human health and well-being.

III.8 INDOOR ENVIRONMENTAL QUALITY

The university encourages adherence with the recommendations for building air handling systems provided by CDC and ASHRAE:

<https://www.cdc.gov/coronavirus/2019-ncov/community/ventilation.html>

<https://www.ashrae.org/technical-resources/filtration-disinfection>

III.9 MAINTENANCE, MANAGEMENT & OPERATIONS

The Facilities Condition Index or FCI is based on a systematic methodology to audit a building condition by breaking it into components. The components include foundation, skin, floors, roof, ceilings, interior partitions, windows, doors, heating, ventilating, cooling, plumbing, conveying and safety. Each system is evaluated and rated based against its new or original condition. If a part of the building has a deficiency, it is assigned a reduction value. The goal of the State Building program is to keep buildings at an FCI 80% or better. The State provides Controlled maintenance funding to address the building deficiencies based on most critical needs and availability of funds for academic or generally funded buildings. The large majority of the buildings located on the University of Colorado Anschutz Medical Campus are above the 80% FCI rating and are serving the campus mission and function.

All buildings are to be reviewed annually each summer and their FCI reported to the Office of the State Architect. Critical controlled maintenance needs are identified and ranked each year for potential funding to fix deficiencies.

An aerial photograph of a city, likely Denver, Colorado, showing a dense urban area with numerous buildings, parking lots, and roads. In the foreground, a large stadium is visible. The background features a range of mountains under a clear blue sky. The text "APPENDIX E: STAKEHOLDER ISSUES" is overlaid in the center of the image.

APPENDIX E: STAKEHOLDER ISSUES

Photo: Jeff Perry Photography

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Overview

This summary of issues facing each school, college, and institutional partner on campus provides a snapshot of considerations that guided development of the 2022 Anschutz Medical Campus Facilities Master Plan. If any component of the plan requires change, a concise reference of previous planning priorities and assumptions can expedite needed modifications and updates.

The 2022 Anschutz Medical Campus Facilities Master Plan Update was primarily executed to meet CDHE requirements. It also provided an opportunity for CU, CHCO, and UCH to identify utility and roadway projects that will benefit all institutions.

These baseline considerations can be verified and updated as needed in the future. This list is not prescriptive and highlights the major concerns or assumptions that are more likely to affect how facilities will be designed for each stakeholder.

Process

Two sessions were conducted with the following organizations to review and update the previous list of stakeholder issues 2012 Plan:

- School of Medicine
- Skaggs School of Pharmacy and Pharmaceutical Sciences
- School of Dental Medicine
- College of Nursing
- Colorado School of Public Health
- University of Colorado Hospital
- Children's Hospital Colorado

The school and college sessions were composed of the senior leadership of each organization. The institutional partner meetings consisted of facility management and operations personnel who meet monthly through the established Director's Meeting to discuss facility projects and infrastructure needs.

Staff level conversations were also conducted to better define and clarify specific issues and concerns as needed. In addition, representatives of each school and college were on each work group and committee including:

- Steering Committee
- Planning Committee
- Work Groups:
 - Clinical
 - Diversity, Equity and Inclusion (DEI)
 - Learning and Technology
 - Research
 - Student Life
 - Utilities and Infrastructure

Commonalities

The following statements reflect current conditions and present questions raised by many participants that require further discussion or can help guide future developments. This list is not definitive. Other issues and considerations may not be listed or may arise in the future.

PROCESS

- **Site-wide Coordination**
The monthly Director's Meeting allows facilities management staff from each campus institution to coordinate development projects with neighboring entities such as the FIC, AIMCO, and the VAMC. Can this group, or another, be empowered to enhance site-wide planning and improve site-wide transportation?
- **Master Plan Coordination**
How can each campus institution and neighboring entity execute its individual plans and still create a larger site-wide community?
- **Infrastructure Costs**
The current cost-sharing process for infrastructure projects has facilitated project execution. Can further

refinements be made?

- **Campus Sustainability**

How can future development occur in an environmentally sustainable way? Efforts to reduce carbon footprints and analyze the risks and potential impacts of climate change on campus will continue.

Infrastructure

- **Vehicle Site Access / Circulation**

How can vehicle circulation be enhanced to improve access in an efficient and visitor-friendly way? What can be done to make the loop road system more viable? How can intra-campus north-south and east-west vehicular circulation be improved?

- **Orientation and Wayfinding**

Are further signage improvements needed so visitors can better navigate to their destinations?

- **Pedestrian-Environment**

How can pedestrian connectivity to campus be enhanced? As perimeter sites are developed, how can walking longer distances be better facilitated and supported?

- **Institutional Connectivity**

With three major hospitals in the site-wide area, is there a way to improve connections between them for physicians, staff, and visitors?

- **Montview Character**

How can the connections across Montview Boulevard be further improved to enhance movement between the FIC and campus while still allowing for east-west multi-modal transportation?

- **Colfax Character**

How can physical connections across Colfax Avenue be improved to better connect and support new and future developments in the City of Aurora? Can further hospital services and support functions be

encouraged on the south side of Colfax?

- **Utilities**

How can coordination between campus institutions, neighboring entities, Aurora Water, and Xcel be improved to ensure that utility systems maintain needed capacities to support future projects and buildout capacity?

Programming

- **Interim Uses**

How can available sites accommodate immediate needs and not preclude their long-term development goals?

- **Density and Open Space**

How can buildings be sited and designed to promote collaboration as distances between facilities grow? As new facilities are built, how can open spaces be provided to balance increased density?

- **Clinical Support**

For faculty with a significant amount of clinical duties, office space would ideally be near patients. Where can office space be located to better benefit patients, the university, and institutional partners?

- **Educational Pedagogy**

If the student enrollment continues to grow, there may be a need for more classroom and specialized instructional facilities such as simulation labs, anatomy labs, etc. Where would these be located and how might they be funded?

- **Interdisciplinary Mixed Use**

While the Plan focuses on educational, research, clinical, and administrative spaces, these should not be siloed. How can these functions be placed in proximity to each other to better develop knowledge and skills?

DETAILED STAKEHOLDER ISSUES

SCHOOL OF MEDICINE

The following issues that may influence the future growth of the School of Medicine (SOM) were identified during the planning process.

Research

- The continued growth in interdisciplinary research may require closer proximity of “wet” and “dry” functions. Future projects will need to ensure these functions are proximate to each other.
- The average size of research teams has been decreasing. The research towers were also designed for PI teams that are larger than the current average team size. This has resulted in an existing need for additional offices that will grow as research increases.
- The SOM has undertaken efforts to optimize use of existing wet lab spaces. In 2-4 years, labs will be fully utilized, and additional wet lab spaces will likely be needed.
- Future lab renovations or new construction could consider the possibility of a 10% to 20% reduction in space provision per PI in future planning activities.

Clinical

- Use of clinical spaces at partner and affiliated institutions is expected to continue. Some of these may be off campus. Subjects may prefer to visit such facilities as they may house other services or are closer to their homes.
- Future projects may require closer proximity of clinical and research spaces for sample processing and/or patient consultation.
- Further development of clinical trial capabilities may require new types of facilities, technology, or spaces that are not currently on campus.
- Expansion of clinical operations at partner institutions will continue. As more physicians are hired, office needs on campus will increase.

Education/Learning

- The lecture halls on campus can accommodate a potential expansion of the MD cohort to 200. Further increase will require redesign of spaces and/or shifting didactic learning pedagogies.
- The SOM’s research-oriented PhD programs are growing, and additional small classroom and learning spaces may likely be needed.
- Rooms with flexible furnishings could accommodate different educational pedagogies.
- Enhanced AV/IT resources would benefit distance/remote education initiatives.
- The COMPASS program will enhance pre-professional advising of students. Consultation and associated learning and administrative support spaces will be needed.

Administration

- Faculty and staff growth provide an opportunity to expand or offer additional Hub-like work environments to reduce space needs for appropriate personnel.
- As noted above, as research teams have decreased in size, more office space is needed to support wet lab activities due to the design of existing research facilities.



The CAPE simulation space in the AHSB is a clinical training resource for campus and outside practitioners and students.

Photo credit: Connie Zhou/AMD Architects

DETAILED STAKEHOLDER ISSUES

SKAGGS SCHOOL OF PHARMACY AND PHARMACEUTICAL SCIENCES

The following issues that may influence the future growth of the Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) were identified during the planning process.

Education

- Pharmacy and Pharmaceutical Sciences education is shifting towards clinical practice and patient care from product delivery.
- This shift will require additional use of small group learning and small classroom spaces for critical learning and patient care trainings. Flexible furnishings would be ideally provided in them for multiple activities.
- Remote education and hybrid learners comprise roughly 10% of the SSPPS student body and require improved AV/IT technologies in learning spaces.
- The annual PharmD cohort varies between 100 to 140 students and instruction of a full cohort is usually accommodated in a 200-seat lecture hall. Appropriately sized 160-seat learning spaces would be beneficial to instruction.
- The SSPPS student body is still returning to its historic highs, and the plan does not foresee expansion above these levels.

Research

- Due to broader shifts in pharmaceutical sciences, growth in wet and clinical research activities will continue and further expand with new faculty hires.
- Dry research is expected to increase in the SSPPS. The Center for Pharmaceutical Outcomes Research and the Colorado Consortium for Prescription Drug Abuse Prevention are programs expected to see such high demand growth.
- Additional larger, room-sized spaces may be needed for large pieces of spectrometry or testing equipment.

Clinical

- The AHSB provided a compounding pharmacy that will see sustained use as it supplies studies throughout campus. Though designed with growth of clinical activities in mind, demands are tied to overall campus growth.
- As the field evolves, clinical activities will continue to grow and use space on campus and in institutional partner facilities.

Office

- Additional faculty, staff, and PIs are expected as more faculty and chairs are hired. The current SSPPS building can be used to meet most needs through judicious space ~~sharing and office assignments.~~
- The SSPPS is working to reduce hybrid schedules and is starting a Work-from-work initiative where employees work on campus at least one day a week.



Pharmaceutical research and clinical patient care are becoming more prominent than product delivery at the SSPPS.

DETAILED STAKEHOLDER ISSUES

SCHOOL OF DENTAL MEDICINE

The following issues that may influence the future growth of the School of Dental Medicine (SDM) were identified during the planning process.

Clinical

- The SDM's clinics are in heavy use and community demands are growing.
- Relocation of offices and student support spaces from the SDM Building will provide an opportunity to expand existing clinic areas to meet growing demands and provide additional services.

Education

- The SDM is a leader in advancing dental medicine education and uses physical modeling, virtual reality, digital, and haptics simulation labs in addition to traditional didactic and clinical training.
- The technologies in simulation labs within the SDM building are older and may not support future technologies. Relocation of these labs to state-of-the-art spaces may be preferred and provide opportunities to expand clinics.
- The annual DDS cohort is 80 students in years 1 and 2, and 120 students in years 3 and 4, due to two advanced standing student cohorts of 40 each. The current simulation labs are not able to accommodate a full cohort at one time. Additional simulation space may be needed to accommodate new technologies, to fit a full cohort in one space, or other demands.

Research

- The digital design studio for education and research purposes is an opportunity to attract and recruit top-quality faculty.
- The SDM uses research space in the Research Quad for wet research activities. These will continue to be used and needs are expected to grow based on faculty hiring.

- Dry research is growing the SDM, and additional space for computational analysis or to support other wet and clinical research activities is needed.
- Spaces that can accommodate wet, dry, clinical, and office functions to support interdisciplinary research are preferred.

Office

- To meet the needs of clinical faculty and to help recruit additional faculty, a "Blue Carpet" club is desired. This would be a Hub-like space, and any existing office space vacated in the SDM building could be repurposed for clinical or lab use.
- If offices are not provided in the SDM Building, it is preferred they are in proximity to the SDM clinics, ideally in the Education Quad.



The SDM Clinics are a resource for both the campus and greater Aurora communities.

DETAILED STAKEHOLDER ISSUES

COLLEGE OF NURSING

The following issues that may influence the future growth of the College of Nursing (CON) were identified during the planning process.

Education

- The college is increasing its program cohort sizes to address a lack of trained nursing professionals in Colorado. The goal is to increase enrollment by 50 percent.
- The BS in Nursing program annual cohort will grow to 240 students, with two cohorts on campus each year. Current strategies to provide instruction would break each cohort into 3-4 sections for didactic learning. Additional 60- to 80-person classrooms are needed to help reduce demands for current classrooms of this size.
- Additional classrooms with flexible furniture and improved AV/IT technologies would help meet ~~these~~ demands.
- Most of the college's masters and PhD programs provide didactic training online with students coming to campus 1-2 times a semester for in-person intensive training. Enhanced AV/IT technologies to support remote learners would enhance delivery of these programs.
- To provide nursing professionals in areas where they are needed, the college offers in-person courses at the Douglas County School District Legacy Campus in Lone Tree and is working with Fort Lewis College in Durango to provide nursing programs in southwest Colorado.

Clinical

- The college is completing a project to renovate space on the 4th floor of Education 1 to expand its clinical simulation training facilities for all programs.
- The college owns and operates four nurse-led practices in nine locations. One of the locations,

the Campus Community Health (CCH) clinic in the AHSB, serves the needs of anyone who works or studies on campus.

Research

- The college currently has no officially assigned wet research lab facilities on campus. However, some faculty may be working with other researchers on projects and using their space.
- As the college grows, it will need to hire more faculty, and it is likely they will request or be provided wet laboratory space as part of their hire.
- Dry research activities form the bulk of the college's current research activities.

Office

- The college can accommodate additional faculty and staff growth in its existing spaces. Clinical staff and faculty may provide an opportunity to explore Hub-like office environments.



An outdoor CON flu vaccination site.

DETAILED STAKEHOLDER ISSUES

COLORADO SCHOOL OF PUBLIC HEALTH

The following issues that may influence the future growth of the Colorado School of Public Health (CSPH) were identified during the planning process.

Research

- The CSPH has the second highest number of PIs on campus, only behind the SOM. Most projects are dry research though some research teams and projects may make use of wet laboratory space.
- Approximately 70% of CSPH's budget is funded through grants and other research awards. Several CSPH centers are entirely grant-funded.
- The Environmental and Occupational Health (EOH) and Center for Health, Work and Environment (CHWE) conduct some wet lab research in the SSPPS Building.

Office

- The CSPH mostly occupies space in the Fitzsimons Building, and most of it reflects the original floor plans and does not reflect the campus Workplace Space Guidelines (WSG) or modern office environments.
- Improved space would greatly assist attraction and retention of faculty. This is a priority as the CSPH is among the top-20 schools of public health in national rankings and continues to improve.
- Many CSPH faculty and staff can complete work in hybrid environments which may facilitate efforts to develop a Hub-like space for the school with some space dedicated to administrative activities.
- To foster collaboration between students, staff, and faculty, a school-wide dedicated area for informal interaction with appropriate conference and consultation rooms would be beneficial.
- There is a desire to place departments and associated centers in closer proximity to each other (e.g. EOH and CHWE).

Clinical

- Space that allows for research participant interactions in close proximity to the space that already exists would benefit some CSPH research activities. Currently, individual researchers make their own arrangements for space as needed.

Education

- The CSPH schedules many classes with 20-40 persons and can benefit if more small classrooms are provided.
- Remote and hybrid learning often requires the use of teleconference and video technologies. Learning spaces should be designed to accommodate this technology which is also used for research interviews and consultations with public health professionals in the field.
- Classrooms with furniture that can easily be moved would allow the CSPH to conduct classes using multiple pedagogies.



CSPH's Center for Innovative Design & Analysis (CIDS) is in renovated space designed for biostatistical data analysis.

DETAILED STAKEHOLDER ISSUES

UNIVERSITY OF COLORADO HOSPITAL

The following issues that may influence the future growth of the UCH Health University of Colorado Hospital (UCH) were identified during the planning process.

Growth

- As Tower 3 nears completion, UCH Health will hire additional clinicians that will have university affiliation and likely split time between CU and UCH facilities.
- UCH will continue to expand its offsite patient care offerings to meet patient needs and demands. CU employees will continue to use these facilities for clinical care and research activities in addition to campus facilities.

Utilities

- The facilities master plan estimates of UCH facility growth are not prescriptive and are intended to guide future CUP utility planning for the next 10 years. Changes in medical care can rapidly change and are not always tied to changes in associated educational programs.
- There have been some operational impacts during past chilled water outages that reduced the ability to perform some procedures. The ability to boost chilled water supply on the west side of campus prior to delivery would be beneficial.
- Steam supply from the CUP has generally been more reliable and able to support hospital operations.

Transportation and Circulation

- Garage 2 has altered traffic patterns on Aurora Court. A proposed roundabout at 16th Avenue and Aurora Court will need to be carefully designed to accommodate traffic and maintain operations.
- The location of RTD and Light Rail Shuttle bus stops may not be near buildings and result in jaywalking. Additional jaywalking frequently occurs on 16th Avenue between hospital parking and facilities. Further crosswalk and traffic calming improvements along roadways could better direct pedestrians and improve safety.

- A shuttle between UCH and CHCO may be useful as some patients may visit each hospital, most notably for maternal and fetal health.
- Efforts to improve 17th Avenue as a translational corridor would need to accommodate bike lanes and maintain emergency vehicle access. There are concerns that traffic could increase on the road if it were continuous and that drivers may stop to pick up passengers and back up traffic.
- Traffic exiting the hospital may need to be better directed to roads able to handle vehicle flows and not result in traffic backups, especially if 17th Avenue is improved.
- There is interest in exploring an electric bike program with docking stations and collection areas to improve connections between the hospital, CHCO, CU, and neighboring institutions.

Public Realm

- Further retail development along 17th Avenue would be supported to expand the successful active pedestrian environment on the ground floor of the Leprino Garage to other institutions.
- Campus wayfinding and signage has been improved, and further projects and refinements could be made to improve the patient arrival experience and guide patients and visitors.
- Efforts to better coordinate projects to allow each institution to develop its own character but also contribute to a campus-wide identity would be supported.



The Cancer Center is a partnership between CU and UCH. Patients and care providers travel between both institutions.

DETAILED STAKEHOLDER ISSUES

CHILDREN'S HOSPITAL COLORADO

The following issues that may influence the future growth of Children's Hospital Colorado (CHCO) were identified during the planning process.

Growth

- CHCO is a system with facilities on the Anschutz Medical Campus, in Aurora, and other locations in the Front Range. Over the next 10 years, it will likely expand its operations at off-campus locations at a greater rate than on campus.

Transportation and Circulation

- Maintaining emergency vehicle access to the CHCO Emergency Room is a priority. Increased traffic due to UCH Garage 2 has resulted in backups on Aurora Court. The proposed roundabout at 16th Avenue and Aurora Court will need to be designed to ensure emergency vehicles are not delayed entering CHCO.
- The 17th Avenue Translation Corridor would be a beneficial east-west multimodal connection that improves how patients, practitioners, and students navigate between campus institutions. This is especially true for families that travel between CHCO and UCH.
- There is an interest developing campus-wide solutions or locations for EV charging. Currently, each institution maintains its own charging stations and programs.
- RTD service and connections to bus stops and stations can be further improved.

Utilities

- An expansion of inpatient facilities at CHCO may occur in the later years of the master planning period. To assist with CUP utility planning over the next 10 years, a rough estimate of its size is included though no formal programming has occurred.

- CHCO lies at the end of the campus chilled water distribution loop which can be problematic during CUP shutdowns. The ability to use mobile units to augment supply or efforts to enhance system reliability and resiliency needs to be explored. CHCO operations have been impacted in the past as high chilled water temperatures during shutdowns reduced cooling capabilities and some procedures were delayed in the short-term until the system returned to full operations.
- Stormwater drainage on the north side of CHCO can be improved as there are periodic problems with runoff and freezing. The stormwater system can get overloaded also, especially along Victor Street.

Public Realm

- CHCO would encourage the use of common elements and design vocabulary by neighboring hospitals and institutions. This would address signage, wayfinding, street furnishings, and connections.
- If the 17th Avenue Translational Corridor is pursued, appropriate shading, alternate means of transportation, and amenities should be provided given potential use by families and those with mobility issues.



Patients and practioners at the Maternal Fetal Medicine Program may utilize UCH, CHCO, and CU facilities.