SACRAMENTO STATE
Redefine the Possible

THE HUB

SACRAMENTO STATE RESEARCH PARK

MASTER PLAN

FINAL VERSION

OCTOBER 2021

The Hub is a new research, education, and training facility that is a partnership between Sacramento State and the California Mobility Center, California Department of Justice, City of Sacramento, and Sacramento Municipal Utility District. This project is envisioned to become the heart of the larger Sacramento Center for Innovation—a major regional and national destination for innovation and economic development.

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THE HUB
SACRAMENTO STATE
RESEARCH PARK

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The University would like to thank the following Master Plan Task Force members who helped lead the vision, programming, and design of this important project and the Master Plan.

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Contents

List of Figures and Tables

CONCEPT: CALIFORNIA MOBILITY CENTER

The Hub will become a regional and national center for innovative research, prototyping, and manufacturing centered around future mobility. The California Mobility Center, and its key partners SMUD and PEM Motion, will create a world-class Ramp Up Factory and test track area so researchers and companies can design, build, and test mobility technology in a controlled, but realistic setting. This facility also includes a rooftop event space and employee garden that can be used by students, visitors, and guests to get a clear view of the vehicles being tested on the site.

CHAPTER 1
INTRODUCTION

The Hub—Sacramento State Research Park (The Hub) is a public-private partnership to create a world-class research, technology, forensic science, and academic facility that will incubate new mobility, promote scientific discoveries, spur economic growth, support education and new jobs for the local community, and become the anchor for a broader Innovation District in Sacramento. It will become a showcase facility for Sacramento State and a model for integrating higher education, research, and private industry in California and beyond.

This chapter provides an introduction to the project and a summary of the project partners and overall Development Concept. It also provides a snapshot of the purpose and major components of this Master Plan document.

Project Overview

Creating the future model for an integrated, sustainable, inclusive, and equitable research facility focused on innovation and technology.

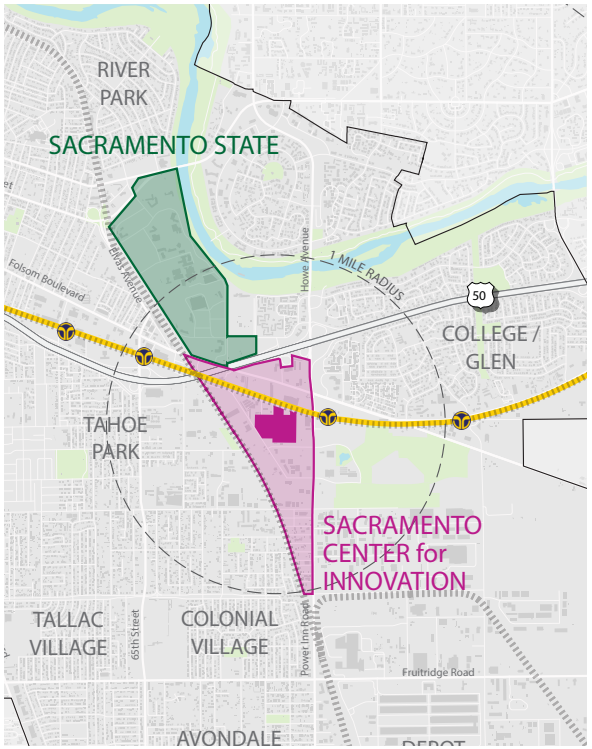
The Sacramento region has long been the center for innovative and transformational research that has benefited the lives of countless people. More than just a public-private partnership, The Hub is envisioned to foster the development of innovative technologies, products, and processes while also supporting University and regional academic, research, and economic development goals.

The Hub will become the heart of the Sacramento Center for Innovation neighborhood by embodying innovation and collaboration; it will help ensure the Sacramento region stays at the forefront of technology and science research.

LOCATION

The project is located just south of the Sacramento State campus in the heart of the Sacramento Center for Innovation (SCI) neighborhood. The 25-acre site is owned by Sacramento State; the surrounding area is envisioned to transition over time into a walkable neighborhood focused on innovative industries and employment growth.

It is also located in the center of the Northern California Mega Region (San Francisco Bay Area, Sacramento Region, Reno-Tahoe Region), which is one of the nation's largest population and economic centers. This provides a strategic opportunity for the University and its partners to create a world-class research park that supports innovation, grows the local economy, trains and hires the local workforce, and supports mutual inclusion and equity goals.



PROJECT PARTNERS

The Hub project is a public-private partnership between Sacramento State, the California Mobility Center, and the California Department of Justice. **Sacramento State** owns the property and anticipates having classroom and research space on the project site, with various academic programs benefiting from the research and training that will be a part of the project.

The **California Mobility Center,** which provides future mobility innovators and industry incumbents with access to programs and resources that accelerate the pace of commercialization in California and worldwide, anticipates developing offices, event space, a prototyping factory, and a mobility test track on the site.

The **California Department of Justice** is looking to consolidate a variety of statewide programs related to research, science, law enforcement, and training on the site, with a focus on creating the nation's leading criminalists institute.

In addition to these three core partners, the City of Sacramento, Sacramento Municipal Utility District, Los Rios Community College District, and Sacramento Regional Transit are also partnering in the vision and implementation of The Hub project.

SACRAMENTO STATE

Founded in 1947 as Sacramento State College, Sacramento State is the eleventh oldest school in the 23-campus California State University system. The University enrolls approximately 31,500 students annually, has an alumni base of more than 250,000, and awards 9,000 degrees annually. The University offers 151 different Bachelor's degrees, 69 Master's degrees, 28 types of teaching credentials, and five Doctoral degrees.

CALIFORNIA MOBILITY CENTER

The California Mobility Center (CMC) orchestrates commercially meaningful interactions between future mobility early-stage companies and industry-leading members. CMC members are corporations, institutions, and government agencies with a vested interest in future mobility commercialization and a desire to observe and/or partner with entrepreneurs and innovators who are on the front lines of transforming the global mobility landscape.

CALIFORNIA DEPARTMENT OF JUSTICE

The California Department of Justice (CA DOJ) is a statewide investigative law enforcement agency and legal department of the California executive branch under the elected leadership of the California Attorney General. The agency carries out complex criminal and civil investigations, prosecutions, and other legal services throughout California. As California's top-level investigative law enforcement agency and legal department, CA DOJ has statewide authority with over 4,700 employees working in research, science, law enforcement, and criminal justice.

DEVELOPMENT CONCEPT

The Hub is envisioned to become the heart of activity and collaboration within the Sacramento Center for Innovation (SCI) neighborhood. As a zero-net energy project, it will exemplify a model for redevelopment of underutilized urban neighborhoods that bring together human-scale urban design, natural open spaces, new economic development opportunities, STEM education promotion, and access to quality jobs to improve sustainability and equity in Sacramento.

The Development Concept for The Hub, as shown on the next page, is organized around a "Central Green" that is connected by pedestrian and bicycle pathways, open spaces, and a street grid. These common spaces are complemented by buildings and special uses that frame the public realm. This approach allows The Hub to combine streets, buildings, and stormwater and drainage elements within an open space network of paths and natural spaces. Together, this approach forms a vibrant neighborhood center that exemplifies the sustainable and natural qualities of the main Sacramento State campus, while also focusing on science and innovation through state-of-the-art infrastructure and systems.

Major design components of the Development Concept include:

A. The **California Mobility Center**, who will develop a Showcase Building (office, event, classroom space), a Ramp Up Factory to design and prototype future mobility vehicles, and a Test Track to safely test these vehicles in the real world.

B. The **California Department of Justice**, who will develop a state-of-the-art forensic sciences and criminalistics institute that will include a range of research and science programs, criminal justice divisions, and training activities.

C. Additional spaces for **Future Users** that are not known at this time, but will likely include a combination of public and private research, academic, and commercial spaces.

D. A range of **Shared and Secured Parking Areas**, as well as a **Bicycle Hub**, that will accommodate the parking needs of each user, including operations and fleet vehicles. While parking is included on this project, the design allows for these areas to transition to other uses as multimodal systems are created and parking demand is reduced.

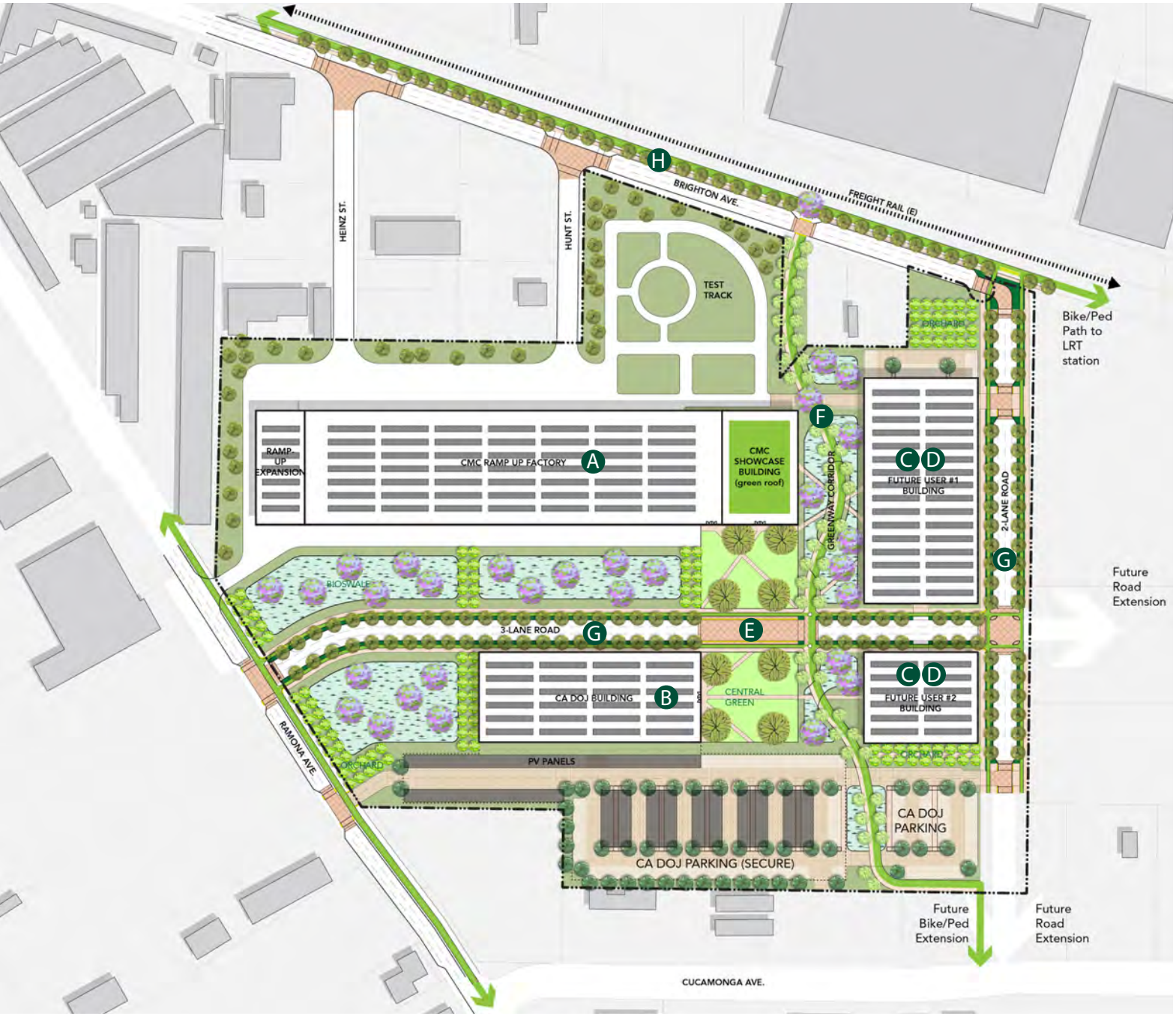
E. A **Central Green** that will become a community gathering and collaboration space in the center of the project. This area will be designed and programmed with both active and passive uses, and a range of sustainable landscaping elements.

F. A **Greenway Corridor** that will serve as the primary active transportation and open space spine through the project site (like the Green Hornet Trail on the main campus), and provide important multimodal connections throughout The Hub.

G. An **internal street network** that will act as the primary multimodal corridor and entrance to The Hub. These streets will provide connections to Ramona Avenue and Brighton Avenue, and will help improve neighborhood circulation.

H. Improvements to **Brighton Avenue** that will include a new multimodal streetscape with a separated pedestrian and bicycle trail on the north side, connecting The Hub to the Sacramento State campus and the Power Inn Light Rail Station.

FIGURE 1.1: Development Concept



LEGEND

- Drought Tolerant Perimeter Planting
- Green Roof
- Central Green
- Stormwater/ Bioswale
- Permeable Paving

Trees:

- Parkway/Edges
- Central Green
- Orchard
- Parking
- Stormwater/ Bioswale

- **A** California Mobility Center
- **B** Department of Justice
- **C** Future Users
- **D** Shared Parking
- **E** Central Green
- **F** Greenway Corridor
- **G** Internal Street Network
- **H** Brighton Avenue

N 0′ 120′ 240′ 480′

Master Plan Overview

Framing a process to ensure The Hub is designed, developed, and operated consistently with the Vision and Guiding Principles—resulting in a research park that is innovative, collaborative, sustainable, and inclusive to benefit Sacramento, the nation, and beyond.

MASTER PLAN PROCESS

In Summer 2020, Sacramento State engaged the project partners, other stakeholders, and members of the community in a 12-month process to develop a vision, program, and development concept for The Hub project. This was a robust process (as identified in Chapter 3), and included numerous Master Plan Task Force and Working Group meetings. These discussions were invaluable to the refinement of the various concepts included in the Master Plan.

This robust engagement and design effort resulted in a Master Plan document that coalesces the various design, infrastructure, sustainability, and implementation approaches that will make The Hub a success. The process will culminate in the adoption of the Master Plan and certification of the associated Environmental Impact Report in early 2022 by the California State University Board of Trustees. [TO BE UPDATED TO MATCH FINAL PROCESS]

DOCUMENT STRUCTURE

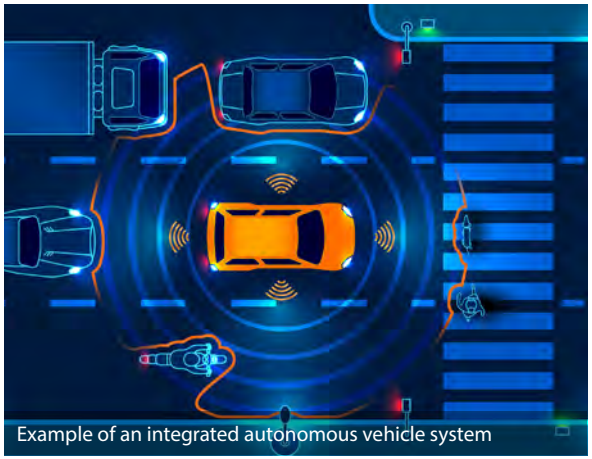
The Hub Master Plan is a strategic, action-oriented document that presents a clear vision, followed by specific strategies and actions necessary to achieve positive change in the coming years. Each of chapters in this document help to tell the story of how The Hub will become a leading center of innovation. The following pages provide a snapshot of the contents and components of each chapter of the Master Plan.

FIGURE 1.2: Perspective View of the Development Concept

View of the existing site (2020)

CHAPTER 2
EXISTING CONDITIONS

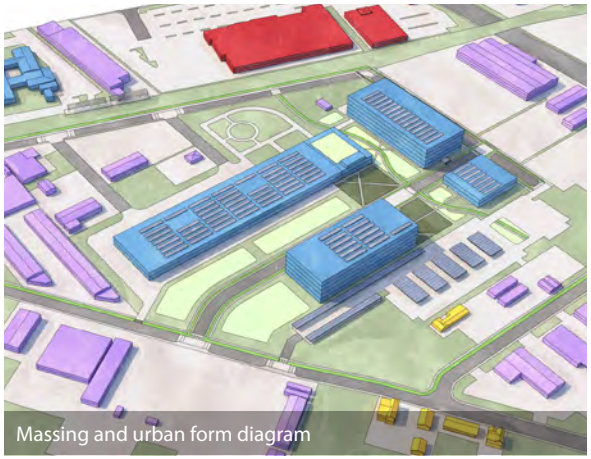
This chapter provides a summary of existing conditions for the project site, surrounding neighborhood, and Sacramento region. It includes an analysis of the physical conditions (sidewalks, infrastructure, street trees), existing policy and regulatory documents that influence future development, and a community social, economic, and equity profile. This existing conditions assessment was used to help inform stakeholder and community discussions, develop on- and off-site design concepts, and support the environmental analysis.



Example of an integrated autonomous vehicle system

CHAPTER 3
VISION AND GUIDING PRINCIPLES

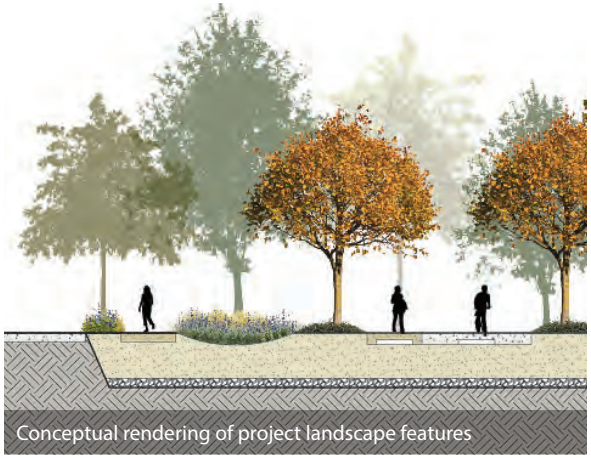
This chapter summarizes the Master Plan Task Force and Working Groups processes, and how the collaborative discussions and engagement led to a unified vision for the project. The vision is further supported by a series of guiding principles for project design, innovation and research, collaboration, inclusion, equity, and implementation. These help form an important values statement that will influence Sacramento State, development partners, and future design teams as they implement this project.



Massing and urban form diagram

CHAPTER 4
DEVELOPMENT CONCEPT

This chapter provides a detailed overview of the Development Concept for the project, including the purpose, use, size, and other assumptions for all buildings and spaces. The concept also integrates the design of The Hub project seamlessly into the surrounding neighborhood. This chapter also identifies the major physical elements that are necessary to support the Development Concept, including the integrated multimodal transportation network, a variety of public and private utilities, and telecommunications infrastructure. These systems will provide a significant influence upon the ultimate development of The Hub, and the relationship between the site and the surrounding neighborhoods.



Conceptual rendering of project landscape features

Conceptual rendering of the CMC building and test track

CHAPTER 5
DESIGN GUIDELINES

This chapter provides specific design guidance for the ultimate development of The Hub. The design guidelines are written to focus on desired performance, design, and character elements of all future buildings, landscapes, infrastructure, and open space areas. Sustainability provides an overall framework for the design guidelines, with the goal of ensuring the full project reaches a minimum LEED Silver rating (as required by the California State University System). However, the guidelines also encourage the University and all partners to go beyond these standards and identify creative and unique sustainability solutions as the project is further designed and refined.

CHAPTER 6
IMPLEMENTATION

This chapter provides a strategic action plan for project implementation. The Hub is a collaborative effort between a range of public institutions and private entities, and will require a coordinated and combined effort to implement. In order to help organize this effort, this chapter includes a summary of project phasing, development costs (by space and user), and initial funding sources.

CONCEPT: GREENWAY CORRIDOR

The Hub concept includes a central Greenway Corridor spine that will become a unifying feature of the project. It will be a major multimodal circulation artery connecting the project to Brighton Avenue, and eventually to Ramona Avenue and the main Sacramento State campus. The Greenway will also function as an active and passive outdoor space, and is an integral part of the on-site stormwater retention and filtration infrastructure—promoting sustainability and health for the project.

CHAPTER 3
VISION AND GUIDING PRINCIPLES

Core to the Master Plan process was the development and confirmation of a Vision Statement and set of Guiding Principles that will be used by the University and its partners to implement the project. The University met with a wide range of project partners, technical experts, community members, and neighbors in order to develop the Vision Statement. This chapter provides a summary of the process the University and its partners undertook to discuss, develop, refine, and ultimately confirm a combined vision for the project: a vision that builds on the space and programming needs of each project partner while also encompassing the research, academic, and community priorities of Sacramento State and the City of Sacramento.

Developing the Vision

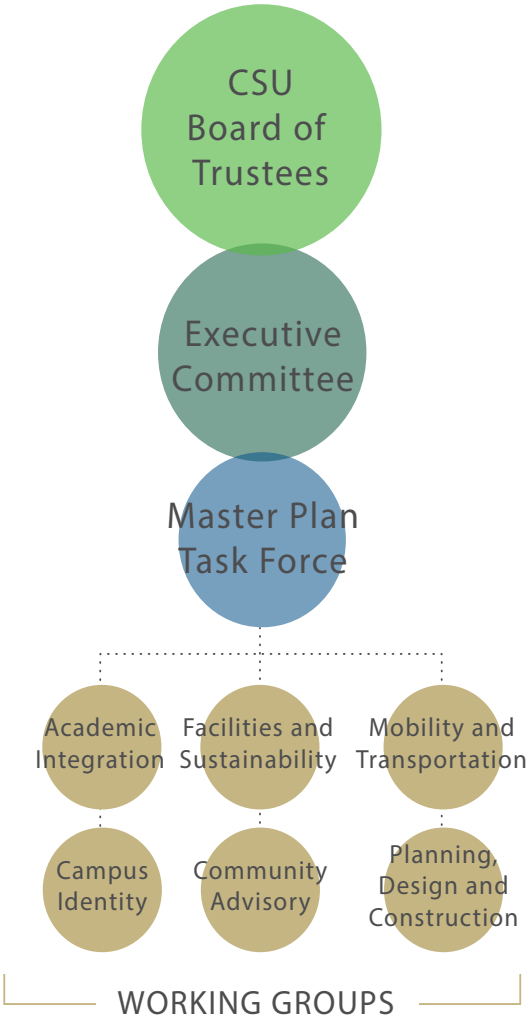
The Hub will become the central part of the Nation's leading research park for the advancement of future mobility and forensic science innovations.

The development of the Master Plan for The Hub has been a collaborative effort between Sacramento State, the various project partners, and a range of University and community stakeholders. During the eight-month process to develop the draft Master Plan, the University hosted over 30 meetings with the various groups and committees.

To organize the engagement process, the project team formed a **Master Plan Task Force** in the Summer of 2020 to help guide the project and develop the Vision Statement and Guiding Principles for the Master Plan. The project team also formed six **Working Groups** that included technical experts, University and agency staff, decision makers, and members of the community that were tasked with reviewing and providing feedback on specific topic areas.

In addition, the project team met with the Sacramento State **Executive Committee** and **California State University (CSU) Board of Trustees** on several occasions to present and solicit feedback on the draft Vision Statement, Guiding Principles, and design components. All of these meetings were conducted in a series during each major phase of the project. This way the project team was able to present major concepts to all participants and move through a decision-making structure that ultimately resulted in senior Sacramento State and CSU leadership providing direction on the project.

FIGURE 3.1: Master Plan Organizational Structure

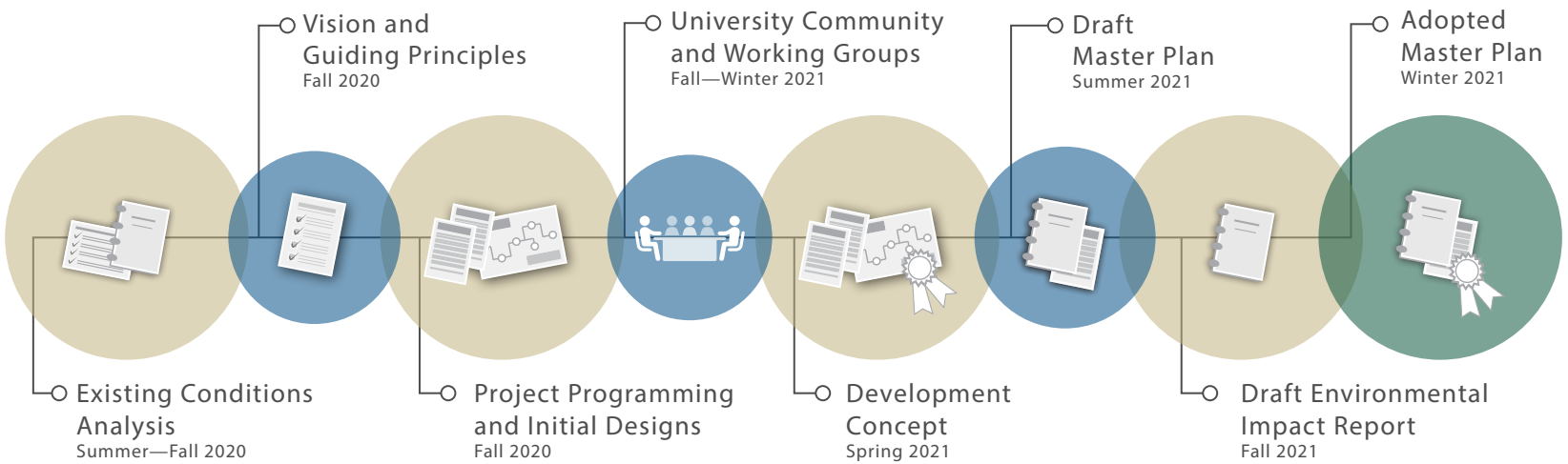


The diagram below highlights the overall process that the project team conducted to develop the draft Master Plan. This process consisted of several phases, starting with an existing conditions analysis in Summer 2020 that led to a draft Vision and Guiding Principles in Fall 2020, and ultimately a Development Concept for the project in Spring 2021.

There was extensive engagement conducted during each major phase of the project. The project team led multiple virtual meetings and workshops with the Master Plan Task Force, various Working Groups, and leadership committees. The conclusion of each phase and round of engagement resulted in clear direction on desired Master Plan components and design direction for The Hub.

One of the most critical phases during this process was the Vision and Guiding Principles phase in Fall 2020. This phase included lengthy discussion with all project partners and stakeholders on the potential opportunities for the project site, and importantly, what desired outcomes are most important for the University and all stakeholders. The following chapter discusses the engagement process in detail that led to the formation and confirmation of a Vision Statement and set of Guiding Principles that are the foundation for The Hub project.

FIGURE 3.2: Master Plan Process



WORKING GROUP MEETINGS

PURPOSE AND ROLE

The University formed a series of Working Groups early in the Master Plan process to help inform the process and provide specific feedback and ideas based on their areas of expertise or interests.

COMPOSITION

Each Working Group included a combination of University staff, project partners, other agency staff, and members of the community (please see the Credits at the beginning of the Master Plan for a complete list of Working Group participants). The following is a summary of the assigned roles for each Working Group.

- **Academic Integration.** This Working Group included University leaders, faculty, and staff. They provided advice and feedback on academic and strategic planning related to connectivity and opportunities between research and academic departments.

- **Facilities and Sustainability.** This Working Group included University and City of Sacramento staff focused on operations, facilities, sustainability, and environmental health. They provided advice and feedback on space needs, buildings and uses, landscapes, utilities and infrastructure, and opportunities to promote sustainability.

- **Mobility and Transportation.** This Working Group included members of the University, City of Sacramento, and Sacramento Regional Transit staff who helped identify strategies to address parking, create an integrated multimodal network of circulation, and identify ways to create connections with the main campus and the greater community regardless of mode type.

- **Campus Identity.** This Working Group included members of University staff who provided guidance on consistency with campus branding and student experience, as well as goals towards equity and inclusion.

- **Community Advisory.** This Working Group included members of the local community (neighborhood associations, students, youth) who identified areas of concern related to their constituents and provided feedback on draft components of the Master Plan.

- **Planning, Design, and Construction.** This Working Group pre-reviewed formal presentations to the Executive Committee or public forums, and served as moderators at all working group/advisory meetings.

PROCESS AND MEETINGS

The various Working Groups met several times during the Master Plan process. Each meeting was held virtually through Zoom, and they typically included a presentation by the Project Team followed by interactive discussions around key questions or draft concepts. This format allowed participants to both provide comments and feedback, and also hear comments and ideas from other participants.

In total, nearly 60 people participated in the Working Groups and their input, ideas, concerns, and suggestions were used to further refine the concepts and design approach that is presented in this Master Plan.

MASTER PLAN TASK FORCE

PURPOSE AND ROLE

The University formed a Master Plan Task Force early in the process to help guide the development of the Master Plan concepts and document. The role of this group was to develop a set of planning principles, goals, and vision statement informed by the Working Groups and other stakeholders.

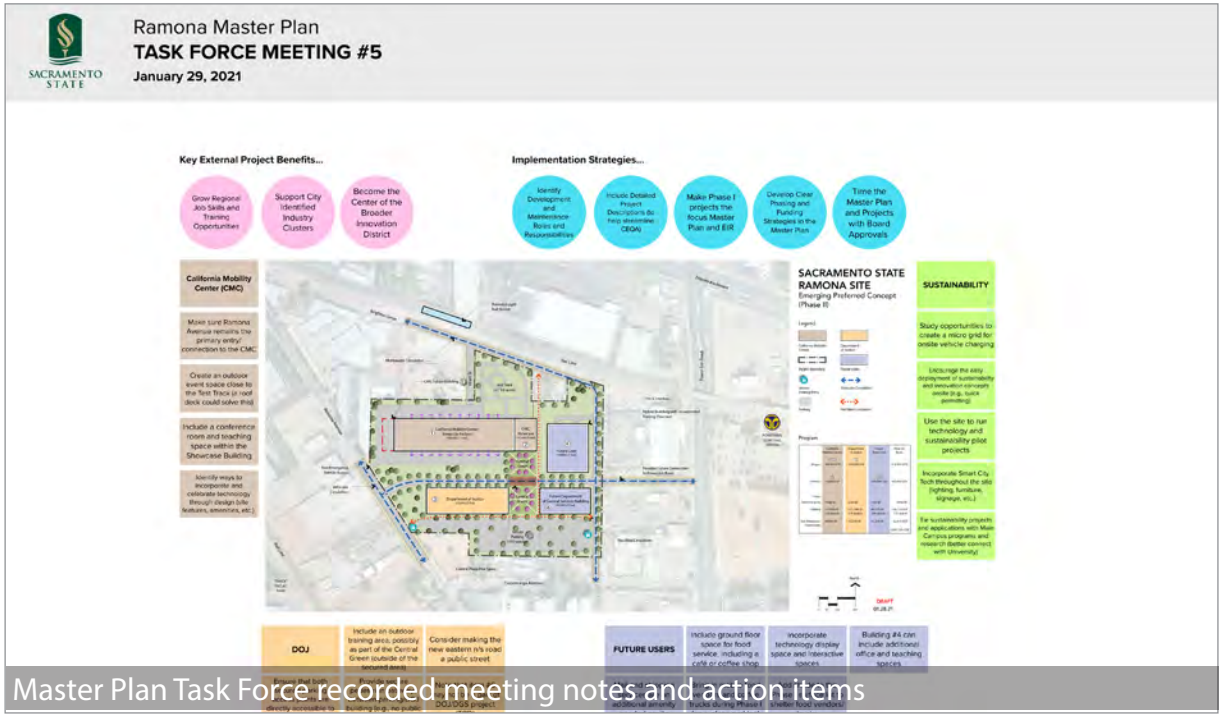
COMPOSITION

The Master Plan Task Force was made up of members of University leaders, project partners (CMC, CA DOJ, DGS), and staff from the City of Sacramento, Sacramento Regional Transit, and SMUD (please see the Credits at the beginning of the Master Plan for a complete list of Task Force participants). This group included all of the main project partners who have a role either in the development, operations, or funding of The Hub project.

PROCESS AND MEETINGS

The Master Plan Task Force met six times during the development of the Master Plan. Each meeting included updates from the project team, an overview presentation of draft planning and design concepts, and an interactive discussion on key questions or decision points. Each meeting was held virtually through Zoom and the format allowed participants to both provide comments and feedback, and also hear comments and ideas from other participants.

The main goal of this group was to ensure that the project met the needs and design requirements of the project users, while also achieving the economic development, innovation, and inclusion/equity goals of the City of Sacramento for this project and the larger SCI area. In essence, the Master Plan Task Force was the client team for the project and the various meetings and discussions helped to build partnerships and exchange ideas between the various public agency and private industry representatives. Since this is a unique public-private project with multiple partners, this collaborative approach was critical to creating a working framework and partnership on this project.



Master Plan Task Force recorded meeting notes and action items

VISION

A successful project needs an inspired vision and a strategy for achieving it. The University- and project partner-defined Vision Statement establishes the conceptual framework that will shape the future planning and development of The Hub. Much thought and discussion has gone into the framing of these ideas, with the ultimate goal of ensuring that the project fully serves the needs of Sacramento State, the California Mobility Center, the California Department of Justice, the City of Sacramento, and the other public and private project partners.

The University and its partners will use the Vision Statement, as articulated on the following page, to evaluate future individual buildings and projects located on The Hub site. While much interest in The Hub has already been generated, there is an ongoing need to ensure that all ideas match the ultimate desires for the project as outlined in this document.

This aspirational Vision Statement encouraged a forward-thinking Master Plan design – thinking holistically to create synergies between technology, built, and natural systems. It does not specify every aspect of potential use on the project site, but enables future detailed design and construction to embody progressive design. To further support the Vision Statement, the Master Plan also includes a series of focused, detailed Guiding Principles (shown in the next section) that will also be used by the University and its partners to ensure The Hub is designed and developed to meet all programmatic, academic, research, and inclusion needs identified during the Master Plan process.

VISION STATEMENT

"To create an **Innovation Hub** focused on technology, forensic science, and academics that will incubate new mobility, promote scientific discoveries, spur economic growth, support education and new jobs for the local community, and become the anchor for a broader Innovation District in Sacramento. It will be a showcase facility for Sacramento State and a model for integrating higher education, research, and industry in California and beyond."

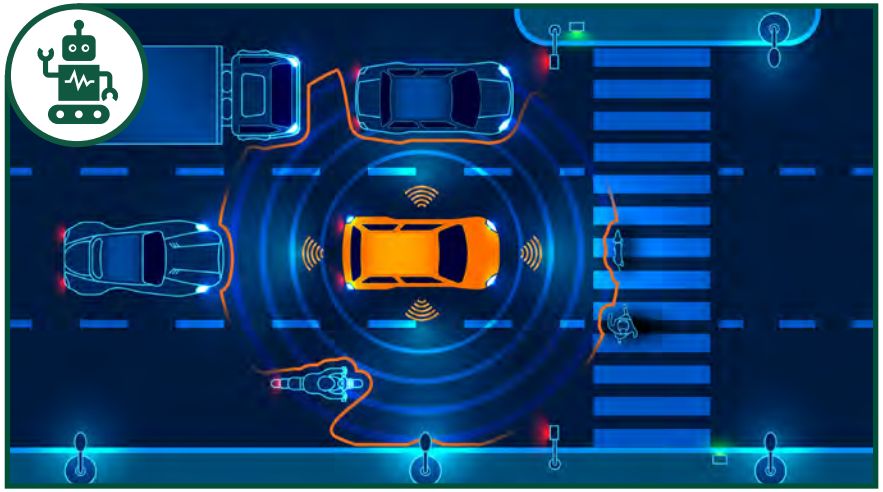
GUIDING PRINCIPLES

Building from the aspirations coalesced in the Vision Statement, the project's Guiding Principles provide specific detail on strategies and criteria that will be used to ensure the project objectives identified by the University, project partners, and the broader Sacramento community are met. These principles were critical throughout the Master Plan process, as they were used by the Working Groups, Master Plan Task Force, and University Executive Committee to refine and finalize the programming and design concepts for The Hub.

The Guiding Principles can be thought of as broad policy statements that form the foundation for the Master Plan concepts, design guidelines, and implementation strategies. They provide more specific detail around each major element of the project, both from a physical design perspective and an economic/social perspective. And they will be used by the University to ensure that all future designs and activities on the project site fully reflect the Vision Statement and ultimate goals for the project.

The following pages present in detail the 10 Guiding Principles for The Hub project:

1. **Innovation**
2. **Collaboration**
3. **Emerging Technologies**
4. **Teaching and Research**
5. **Functional Design**
6. **Elegant Design**
7. **Seamless Integration**
8. **Sustainability**
9. **Equity and Inclusivity**
10. **Strategic Implementation**



GUIDING PRINCIPLE #1: INNOVATION

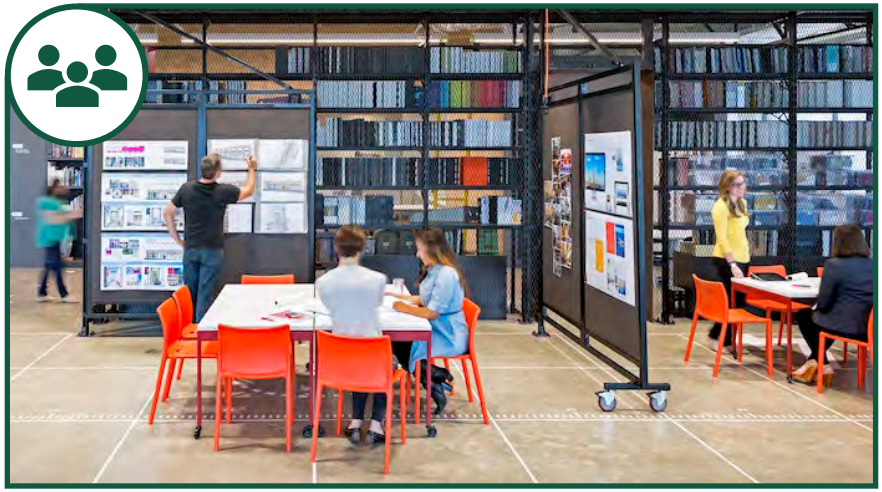
The Hub will become a world-class facility focused on cutting-edge research on future mobility, sustainability, criminal justice, forensic sciences, and a range of other disciplines. To achieve this, the University and its partners will:

A. Encourage **hyper-creativity** among the various users on the site that leads to new innovations, technologies, and patents.

B. Use the design and programming of the site to promote Sacramento and the broader region as an **academic** and **research** epicenter.

C. Create **demonstration areas** to showcase research and emerging technologies to the broader community.

D. Include **incubator spaces** and access to research that will help educate local students and grow local start-ups.



GUIDING PRINCIPLE #2: COLLABORATION

The Hub will be designed as an open campus that encourages interactions between all users and visitors. To achieve this, the University and its partners will:

A. Develop an **outward-facing research park** that brings attention to emerging high technology research, new products and discoveries, and the missions of each project partners.

B. Promote **interactions** between students, teachers, researchers, inventors, and manufacturers through an integrated site layout and a range of shared spaces and uses.

C. Create a **welcoming experience** for employees, researchers, academics, students, investors, legislators and regulators, industry leaders, and other visitors to the site.

D. Provide **limited access and controlled spaces** when it is necessary for safety and security, especially around the Test Track and within secured portions of the CA DOJ facility and grounds.

GUIDING PRINCIPLE #3: EMERGING TECHNOLOGIES

The Hub will support current and emerging technologies in both its design and ultimate operations. To achieve this, the University and its partners will:

A. Support the **clean tech**, **bio tech**, **forensic science**, and **future mobility** industries.

B. Protect **intellectual property** and sensitive operations through building and site security, outdoor staging area covers, and other similar methods.

C. Promote the concept of **"California Mobility Center Certified"** technology as a key selling point for the CMC portion of the project.

D. Provide **security and access control** to sensitive research, criminal justice, and forensic science work, and other activities on the CA DOJ portion of the project.

GUIDING PRINCIPLE #4: TEACHING AND RESEARCH

The Hub will become an extension of the Sacramento State main campus and provide additional academic and research space for University faculty, students, and staff. To achieve this, the University and its partners will:

A. Create an open and welcoming environment where **students can achieve success**.

B. Provide opportunities for students to learn from, and interact with, **science and technology research** being conducted on the site.

C. Create **shared academic spaces** including classrooms, laboratories, and lecture spaces.

D. Consolidate multiple Department of Justice **programs**, **research,** and **academic** uses.

GUIDING PRINCIPLE #5: FUNCTIONAL DESIGN

The Hub will incorporate flexible and functional designs that allow users and uses the ability to evolve over time as needed to support research, academic, and law enforcement needs. To achieve this, the University and its partners will:

A. Offer **cutting-edge facilities** with modern equipment and amenities to make the site an educational and research destination.

B. Create **smart buildings** that have flexible interior layouts, high floor plates, and a large enough size so they can be **re-programmed** for a variety of uses and users.

C. Encourage community and stakeholder **access** and **openness**, while allowing the ability to have demonstration areas on the site.

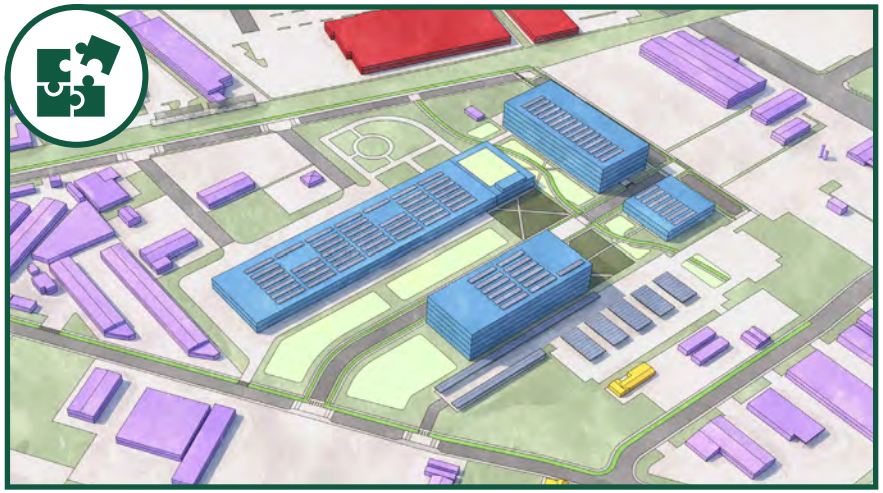
GUIDING PRINCIPLE #6: ELEGANT DESIGN

The Hub will incorporate beautiful and elegant design to create a unique and easily identifiable project that showcases the activities and innovations taking place on the site. To achieve this, the University and its partners will:

A. Build a **thematic identity and unifying design** for the site that attracts students, researchers, industries, and partners, while reflecting the style and feel of the Sacramento State main campus.

B. Ensure the site fits the **scale and character** of the immediate neighborhood and surrounding areas.

C. Focus on **placemaking** elements so the site can become a unique showcase destination and identifiable on a national scale.



GUIDING PRINCIPLE #7: SEAMLESS INTEGRATION

The Hub will become the center of the larger Sacramento Center for Innovation (SCI) neighborhood, and will be designed in such a way that it blends with future surrounding uses and activities. To achieve this, the University and its partners will:

A. Design the site so buildings and uses can **blend together** with the existing and future surrounding SCI Innovation District.

B. Ensure uses and users on the site that **promote local economic development** and **employment** opportunities for residents.

C. Connect the site to existing and future **light rail stations** and bus transit connections, and create convenient and safe **pedestrian** and **bicycle** connectivity to the Sacramento State main campus.

GUIDING PRINCIPLE #8: SUSTAINABILITY

The Hub will be designed, developed, and operated with a strong focus on sustainability in order to reduce energy usage and greenhouse gas emissions, promote community health, and showcase innovative research. To achieve this, the University and its partners will:

A. Promote and highlight **future mobility technology.**

B. Incorporate **on-site energy** production to help the University and its partners move towards a zero-net energy project.

C. Include **sustainable buildings concepts** in the design and operations of all facilities.

D. Integrate **low water landscaping** and sustainable drainage systems.

E. Capitalize on **adjacent transit connections** and walkability/ bikeability to the Sacramento State main campus, adjacent housing, and adjacent retail/employment uses.

GUIDING PRINCIPLE #9: EQUITY AND INCLUSIVITY

The Hub will become a model for promoting local equity and inclusivity by providing courses and events for local students, job training for the local workforce, incubator spaces for local start-ups, and revenues to support citywide economic development. To achieve this, the University and its partners will:

A. Build on the **diversity of Sacramento** while improving social equity and removing barriers to higher education.

B. Make higher education programs **affordable** and good paying technical/research jobs **accessible** to area residents.

C. Identify strategies for **recruiting top talent** to the site through various incentives or other citywide programs.

GUIDING PRINCIPLE #10: STRATEGIC IMPLEMENTATION

The Hub will be funded and developed through a unique Public-Private Partnership (P3) that includes the University, California Department of Justice, California Department of General Services, California Mobility Center, and other partners. This approach will require a coordinated effort to ensure that the final project reflects the vision for this site and the programs and activities it will house. To achieve this, the University and its partners will:

A. Develop a **clear phasing approach** that will allow The Hub to incrementally grow while reflecting the Vision and Guiding Principles included in this Master Plan.

B. Integrate **infrastructure** being developed as part of the broader SCI neighborhood to make for a more cost-efficient project.

C. Identify a process for acquiring and incorporating **adjacent property** if needed to support future partners and collaborators.

D. Identify and **prioritize funding opportunities** in collaboration with a range of financial partners.

CONCEPT: AN INNOVATION-FOCUSED RESEARCH PARK

The Hub is envisioned to be the heart of activity and collaboration within the Sacramento Center for Innovation (SCI) neighborhood. As a net-zero project, it will exemplify a model for the redevelopment of underutilized urban neighborhoods that bring together human-scale urban design, natural open spaces, new economic industries, and access to jobs to improve sustainability and equity.

The Hub can be completed in multiple phases and provides buildings for individual users, multimodal streets that connect to the City network, an autonomous vehicle test track, green infrastructure, renewable energy, and bicycle and pedestrian paths within an open space network that creates a community center.

CHAPTER 4
Development Concept

The University closely coordinated with its project partners and stakeholders to develop and refine the Development Concept for The Hub Master Plan. The process explored several alternatives that led to the Development Concept presented in the Master Plan. The Development Concept meets the needs of the University and its faculty and students; is integrated with the surrounding area's planned mobility improvements; incorporates flexible and sustainable spaces; and supports the aim of providing a state-of-the-art employment center focused on innovative research. This chapter includes an overview of the Development Concept for The Hub, including pre-programming for each user space and buildings. The concept and designs presented in this chapter are accompanied by detailed design guidelines in Chapter 5.

Development Concept

The Hub is envisioned to become the catalyst development for the Sacramento Center for Innovation (SCI) neighborhood.

The Development Concept for The Hub is organized by its pedestrian pathways, open spaces, and streets. These common spaces that connect The Hub with the surrounding neighborhood are complemented by buildings and special uses that frame the public realm. This approach allows the first phase of the Development Concept to incorporate all of the streets, buildings, and required stormwater elements. This will provide a desirable and sustainable network of paths, greens, and trees for users to enjoy without compromising any future development plans included in Phase II. Combined, the Development Concept forms a vibrant neighborhood center that exemplifies the natural qualities of the main Sacramento State campus while also promoting research and innovation.

This approach was developed so the programming needs of all users could be integrated into one cohesive project. The California Mobility Center (CMC) will occupy approximately 11 acres on the northern half of the site and the California Department of Justice (CA DOJ) will occupy approximately 8 acres on the southern half. There is space available on the eastern part of the project site for two Future User buildings (Phase II). These buildings will be developed over surface parking that is included under Phase I.

Open Space areas are the circulatory system for The Hub and serve multiple purposes. They provide stormwater capture and treatment, areas for leisure and respite, and opportunities to restore natural ecosystems. A Central Green will be the primary open space area, anchoring all buildings and acting as a linchpin to allow

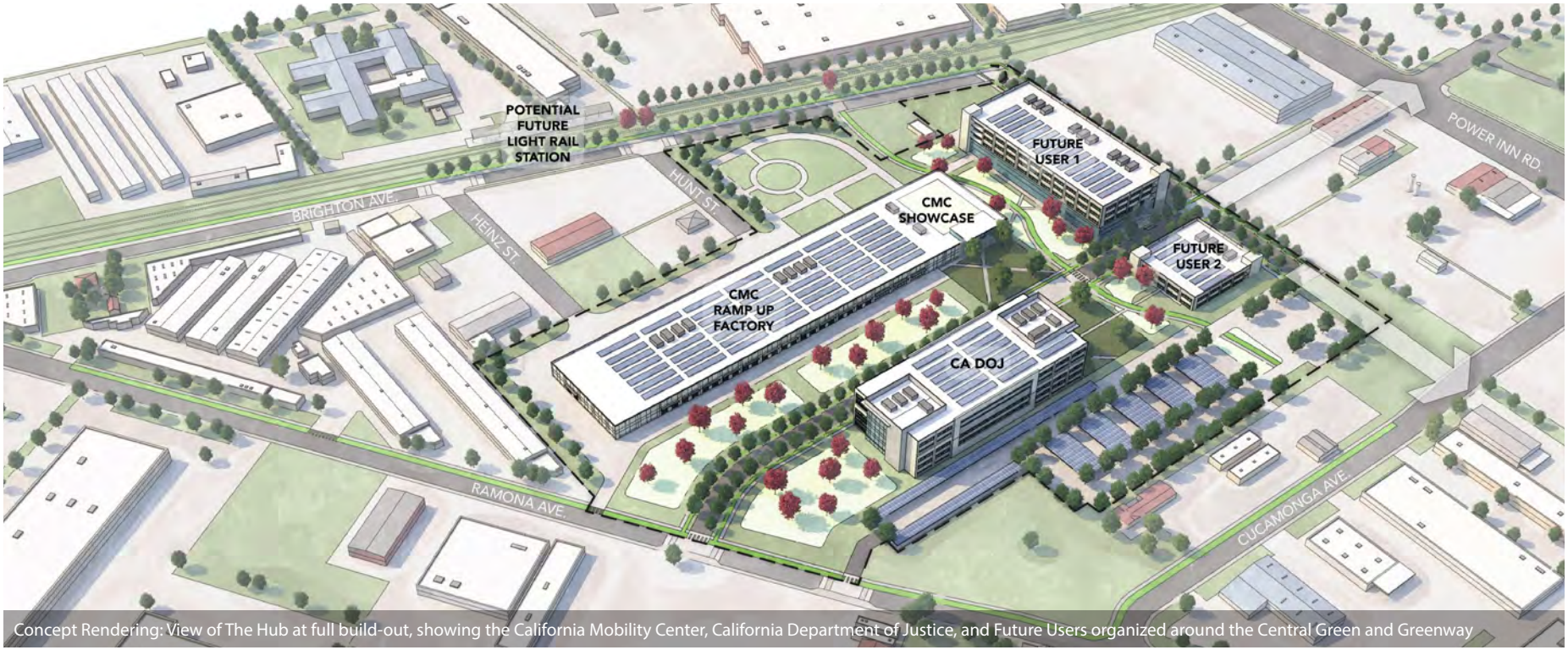
Concept Rendering: View of the Central Green and Greenway

opportunities for interactions and the safe movement of pedestrians, bicyclists, and vehicles through the project. A Greenway corridor, resembling the Green Hornet Trail, will form an important north-south spine through the project.

Connectivity to surrounding areas is of utmost importance, and is created through a combination of multimodal streets and the Greenway. During Phase I, an east-west street connection is made to Ramona Avenue that will serve as the main entrance to The Hub. A secondary street creates a north-south connection to Brighton Avenue on the eastern side of the site. Both of these streets are sited so they could be extended to connect with the City street grid, as envisioned in the SCI Specific Plan.

These public spaces are framed by state-of-the-art **research and science buildings** serving the unique needs of each user and the University. There will be a common architectural language used to unify the site, while also allowing design flexibility so each user can highlight their specific roles and functions.

Infrastructure and renewable energy production close the circle of an integrated project. The Hub will include a backbone of sustainable infrastructure systems that will provide utilities, telecommunications, and renewable energy production to the site while maximizing green infrastructure (e.g., low energy and sustainable). In this way, The Hub can become a "living laboratory" of sustainability that embodies innovation through all designs, uses, and operations.



Concept Rendering: View of The Hub at full build-out, showing the California Mobility Center, California Department of Justice, and Future Users organized around the Central Green and Greenway

PHASE I

Phase I of the Development Concept incorporates the major elements of the space program requirements for both initial users and lays the groundwork of infrastructure and amenities for future development. This phase includes a California Mobility Center (CMC) Ramp Up Factory, Showcase Building, and Test Track, and the California Department of Justice (CA DOJ) criminalistics institute, a variety of forensic sciences and law enforcement programs, and training facilities. It also includes areas for visitor parking, fleet and staff parking, open spaces, and the backbone circulation and utility infrastructure.

Phase I focuses on the two main users and maintains a cohesive overall site design strategy that allows flexibility for future users. Primary elements of Phase I include:

A. The **California Mobility Center**, who will develop a Showcase Building (office, event, classroom space), a Ramp Up Factory to design and prototype future mobility vehicles, and a Test Track to safely test these vehicles in the real world.

B. The **California Department of Justice**, who will develop a state-of-the-art forensic sciences and criminalistics institute that will include a range of research and science programs, criminal justice divisions, and training activities.

C. A range of **Shared and Secured Parking** areas that will accommodate the parking needs of each user, including operations and fleet vehicles. While parking is included on this project, the design allows for these areas to transition to other uses as multimodal systems are created and parking demand is reduced.

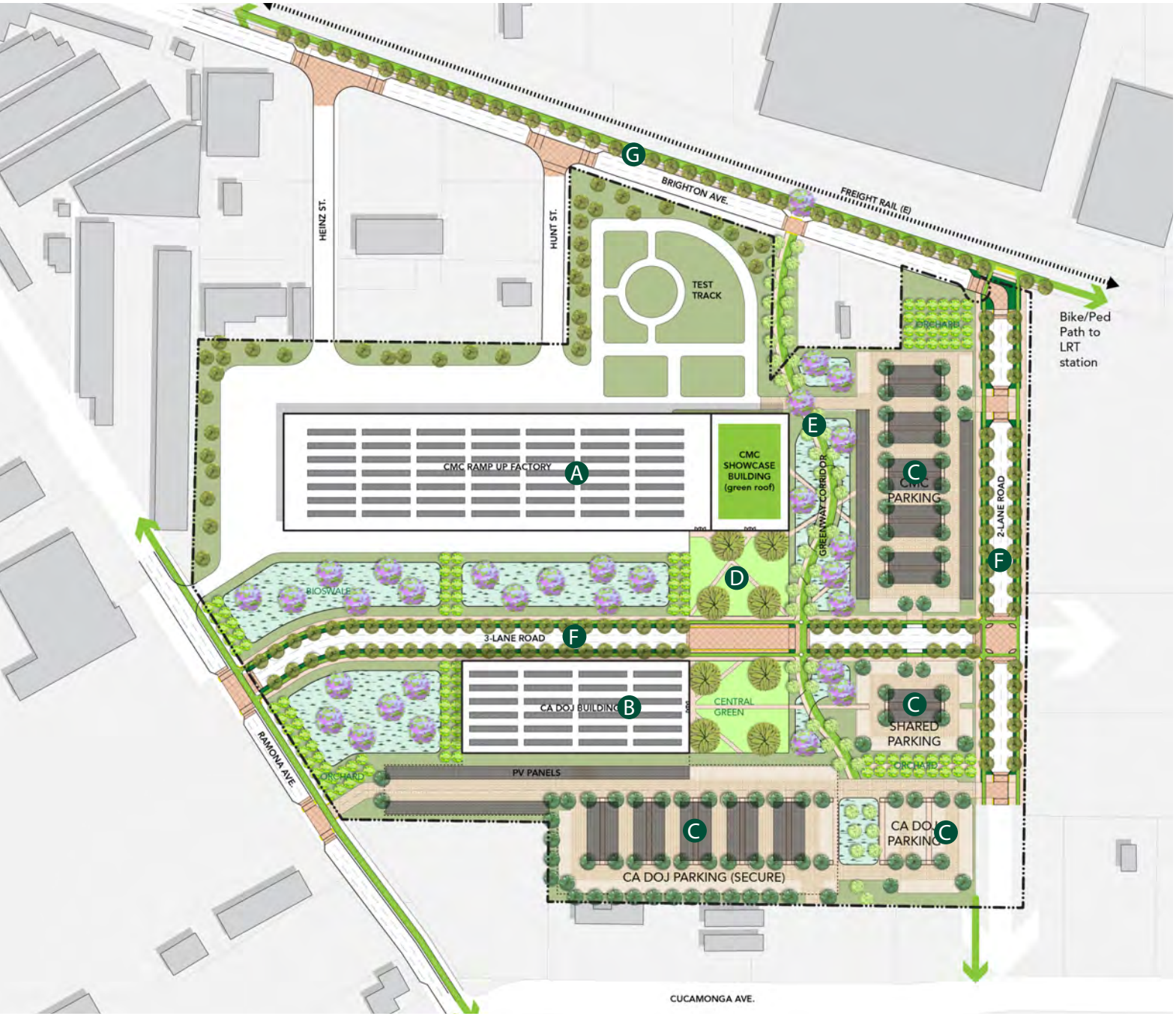
D. A **Central Green** that will become a community gathering and collaboration space in the center of the project. This area will be designed and programmed with both active and passive uses, and a range of sustainable landscaping elements.

E. A **Greenway Corridor** that will serve as the primary active transportation and open space spine through The Hub (like the Green Hornet Trail on the main campus), and provide important multimodal connections through the project site.

F. An **internal street network** that will act as the primary multimodal corridor and entrance to The Hub. These streets will have connections to Ramona Avenue and Brighton Avenue, and will help improve neighborhood circulation.

G. Improvements to **Brighton Avenue** that will include a new multimodal streetscape with a separated pedestrian and bicycle trail on the north side connecting The Hub to the Sacramento State campus and the Power Inn Light Rail Station.

FIGURE 4.1: Phase I Development Concept



LEGEND

- Drought-Tolerant Perimeter Planting
- Green Roof
- Central Green
- Stormwater/ Bioswale
- Permeable Paving

Trees:

- Parkway/Edges
- Central Green
- Orchard
- Parking
- Stormwater/ Bioswale

N 0′ 120′ 240′ 480′

PHASE II

Phase II includes additional buildings, open spaces, transportation linkages, infrastructure, and renewable energy production. This phase represents the full build-out of The Hub project as envisioned under this Master Plan.

Phase II allows for additional users to come onto the project site through two new buildings located on the eastern portion of the site. Primary elements of Phase II include:

- (H) Two new **Future User Buildings** that will be constructed over Phase I surface parking lots between the north-south road and the Greenway. The future users could include University academic space or additional partnerships with complementary office/research/development uses. The northern building would include some structured parking.

- (I) Additional **Renewable Energy Infrastructure** at locations throughout the site. The two new Future User buildings could potentially reuse the parking solar panels by placing them on the building rooftops.

- (J) **Extension of Greenway Corridor** to the southern property line and then turning east to the North-South road, enabling connections to Cucamonga Avenue and further south as part of the City of Sacramento's areawide mobility improvements.

Phase II also identifies potential off-site improvements that are not part of The Hub Master Plan scope, but are included in the City of Sacramento's ultimate vision for the neighborhood. These specific improvements include:

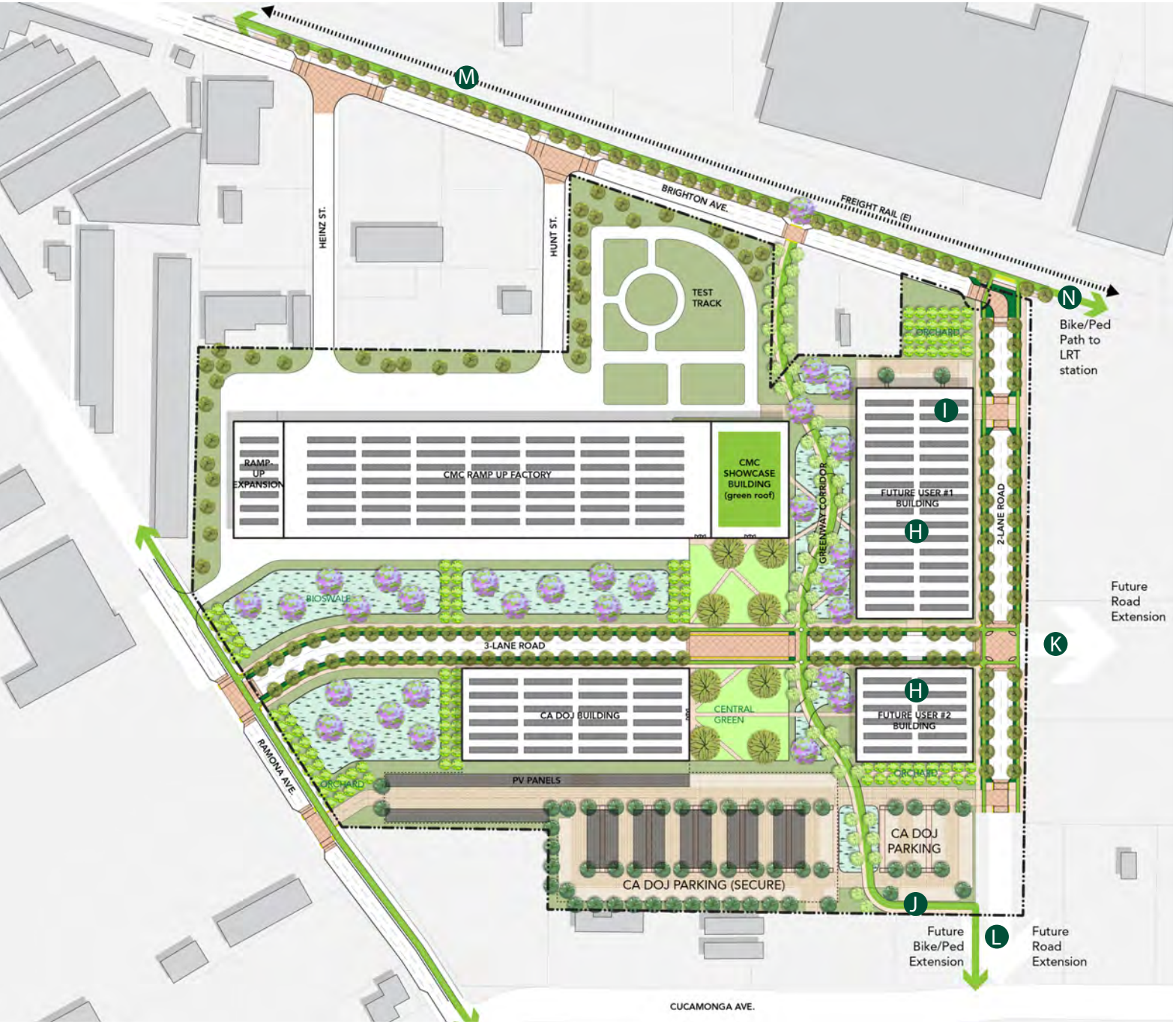
- (K) **An extension of the East-West Road** from The Hub to Power Inn Road, providing better access to the Power Inn intersection, potentially a new main entrance for the project.

- (L) **An extension of the North-South Road** to Cucamonga Avenue, and ultimately 14th Street, as envisioned by the City of Sacramento.

- (M) **A New Light Rail Station** directly north of The Hub, near the CMC Test Track.

- (N) **A new Power Inn Road Bicycle/Pedestrian Bridge** extension for the multi-use path along Brighton Avenue, connecting the neighborhood to the Power Inn light rail station.

FIGURE 4.2: Phase II Development Concept



LEGEND

- Drought-Tolerant Perimeter Planting
- Green Roof
- Central Green
- Stormwater/ Bioswale
- Permeable Paving

Trees:

- Parkway/Edges
- Central Green
- Orchard
- Parking
- Stormwater/ Bioswale

N 0′ 120′ 240′ 480′

PHASE II

SOUTHERN ACCESS OPTION

The Phase II Southern Access Option includes the same programming, building and site features as Phase II, except for a different connection route to access Cucamonga Avenue. This alternate connection option allows flexibility in the final implementation of the Master Plan.

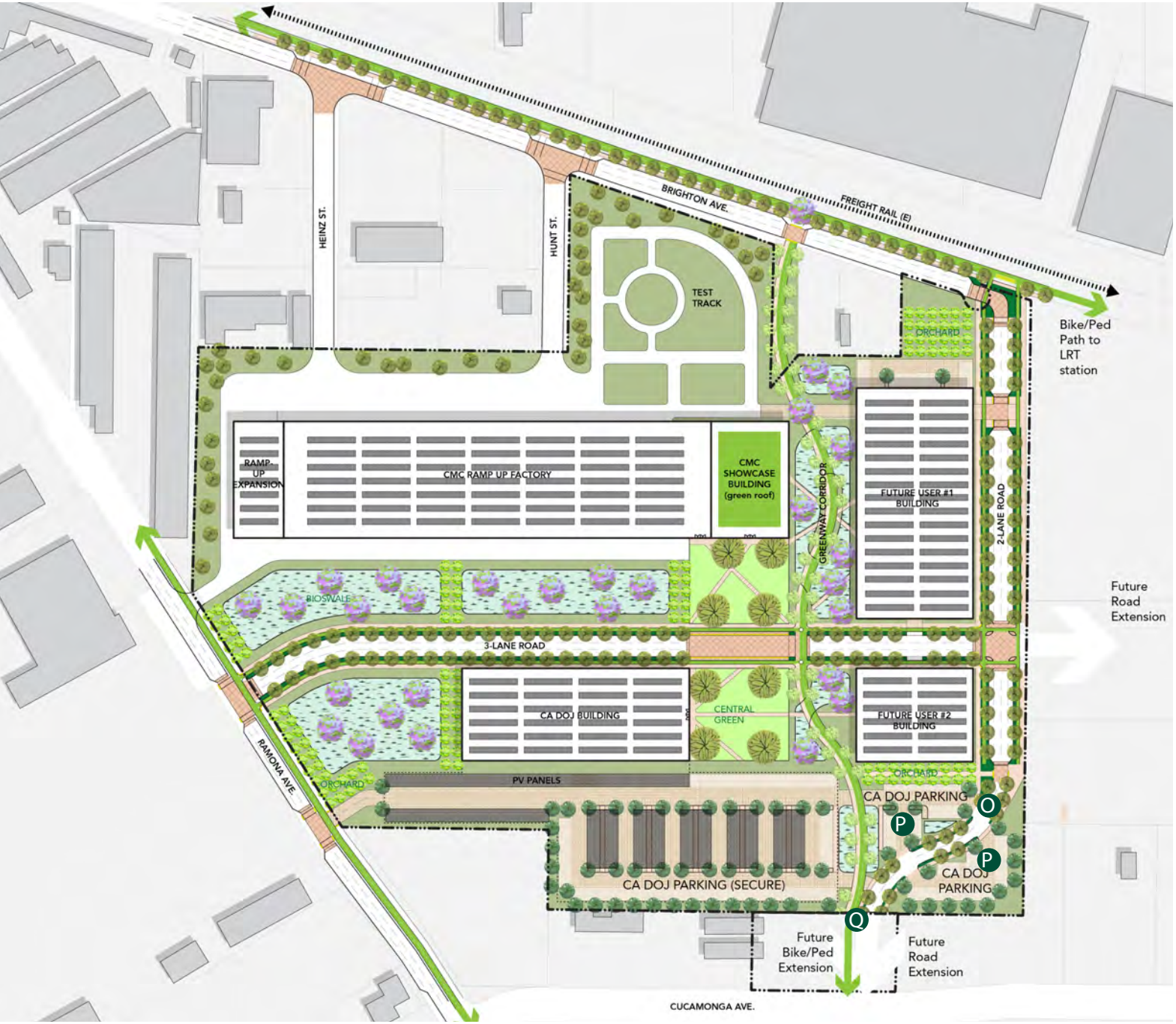
Figure 4.3 shows an optional alignment for access from The Hub to Cucamonga Avenue. This option is included in the Master Plan to provide flexibility for how the project could connect to Cucamonga Avenue. Specific features of this option for Phase II include:

O South of Future User Building #2, the **North-South Road** is designed with an S-curve that moves the road alignment to the west. The North-South road would fit between the Greenway Corridor (that now continues directly south) and the eastern boundary of the Cucamonga Property. The development of this option for access to Cucamonga Avenue could be developed in Phase I or Phase II.

P As a result of the road realignment, the **unsecured CA DOJ parking lot** would be bisected by the North-South Road. The amount of parking in this area remains unchanged. Additionally, these parking lots follow the same design standards and provide opportunities for pedestrian paths, bioswales, and trees.

Q The **extension of the Greenway Corridor** continues directly south to The Hub property line rather than turning east. The Greenway Corridor would follow the North-South road through the Cucamonga Property and connecting to Cucamonga Avenue.

FIGURE 4.3: Phase II Development Concept (Southern Access Option)



LEGEND

- Drought-Tolerant Perimeter Planting
- Green Roof
- Central Green
- Stormwater/ Bioswale
- Permeable Paving

Trees:

- Parkway/Edges
- Central Green
- Orchard
- Parking
- Stormwater/ Bioswale

N

0′ 120′ 240′ 480′

Detailed Program

Pre-programming study for build-out of the site to meet the needs of initial users.

The Detailed Program presented on the following pages is a high-level look at the space needs for the site based on the requirements of each user and space. It is not intended to account for all individual space needs, but rather the primary functions and spaces for each user and their specific functions. The Detailed Program is inclusive and comprehensive, including numerous opportunities for the University and partners to refine when each individual building goes into design. Confirmation of the program was provided by the Master Plan Task Force and the Sacramento State Executive Committee.

In order to develop the Detailed Program, the project team reviewed and validated pre-programming information provided by the University, the California Mobility Center, and the California Department of Justice. The project team then developed an initial pre-program for the project based on estimations made from the following documents:

- PEM Motion Feasibility Study (2019)
- The Hub (at that time referred to as the Ramona Site) Conceptual Site Plans (2012)
- Capital Outlay Budget Change Proposal (COBCP) for the Northern Region: Consolidated Forensic Science Laboratory Campus (FY 2021)

The tables on the following pages summarize the Detailed Program for The Hub project. This program is the basis for the Master Plan and all assumptions around gross sizes of buildings, number of people, and number of trips (vehicle, transit, and bicycle).

The tables use the following abbreviations and acronyms, defined as follows:

- **Building Gross Square Feet (BGSF).** BGSF is the measure of the total building or site space. In addition to net usable square feet, BGSF captures all non-occupied space.
- **Component Usable Square Feet (CUSF).** CUSF includes all space that can be actually occupied by a given organization or function, including all net square footage elements, plus all floor space required for partitions and walls.
- **Floor Gross Square Feet (FGSF).** FGSF represents the overall footprint of the floor.
- **Net Square Feet (NFS)**. NSF is the measure of space that includes the footprint of an enclosed office or office-systems furniture workstation as measured from the inside face of all walls or partitions.

TABLE 4.1: Overall Development Program

	PHASE I			PHASE II			TOTAL		
	FGSF	GSF	PARKING	FGSF	GSF	PARKING	FGSF	GSF	PARKING
CALIFORNIA MOBILITY CENTER									
CMC Showcase Building	21,600	32,400					21,600	32,400	
CMC Ramp Up Factory	118,800	118,800		15,600	15,600		134,400	134,400	
Subtotal	140,400	151,200		15,600	15,600		156,000	166,800	
Surface Parking	*72,000*	*72,000*	*180*	*(72,000)*	*(72,000)*	*(180)*			
CALIFORNIA DEPARTMENT OF JUSTICE									
CA DOJ Consolidated Facility Building	50,000	250,000					50,000	250,000	
Surface Parking	*140,000*	*140,000*	*310*				*140,000*	*140,000*	*310*
FUTURE USER #1									
Office / Academic				64,000*	189,500		64,000*	189,500	
Retail					9,000			9,000	
Bicycle Hub					5,500			5,500	
Usable Space Subtotal					204,000			204,000	
Structured Parking				*64,000*	*180,000*	*400*	*64,000*	*180,000*	*400*
Building Total				64,000	384,000	400	64,000	384,000	400
FUTURE USER #2									
Office / Academic				26,000	52,000		26,000	52,000	
SHARED SITE IMPROVEMENTS									
Surface Parking	*26,000*	*26,000*	*60*	*(26,000)*	*(26,000)*	*(60)*			
TOTALS									
Usable Space	190,400	401,200		41,600	271,600		232,000	672,800	
Structured Parking				*64,000*	*180,000*	*400*	*64,000*	*180,000*	*400*
Building Total	**190,400**	**401,200**	**-**	**105,600**	**451,600**	**400**	**296,000**	**852,800**	
Surface Parking	*238,000*	*238,000*	*550*	*(98,000)*	*(98,000)*	*(240)*	*140,000*	*140,000*	*310*
								Total Parking	**710**

* Note: Square feet for Office/Academic indicates footprint above structured parking; not included in Building Total FGSF.

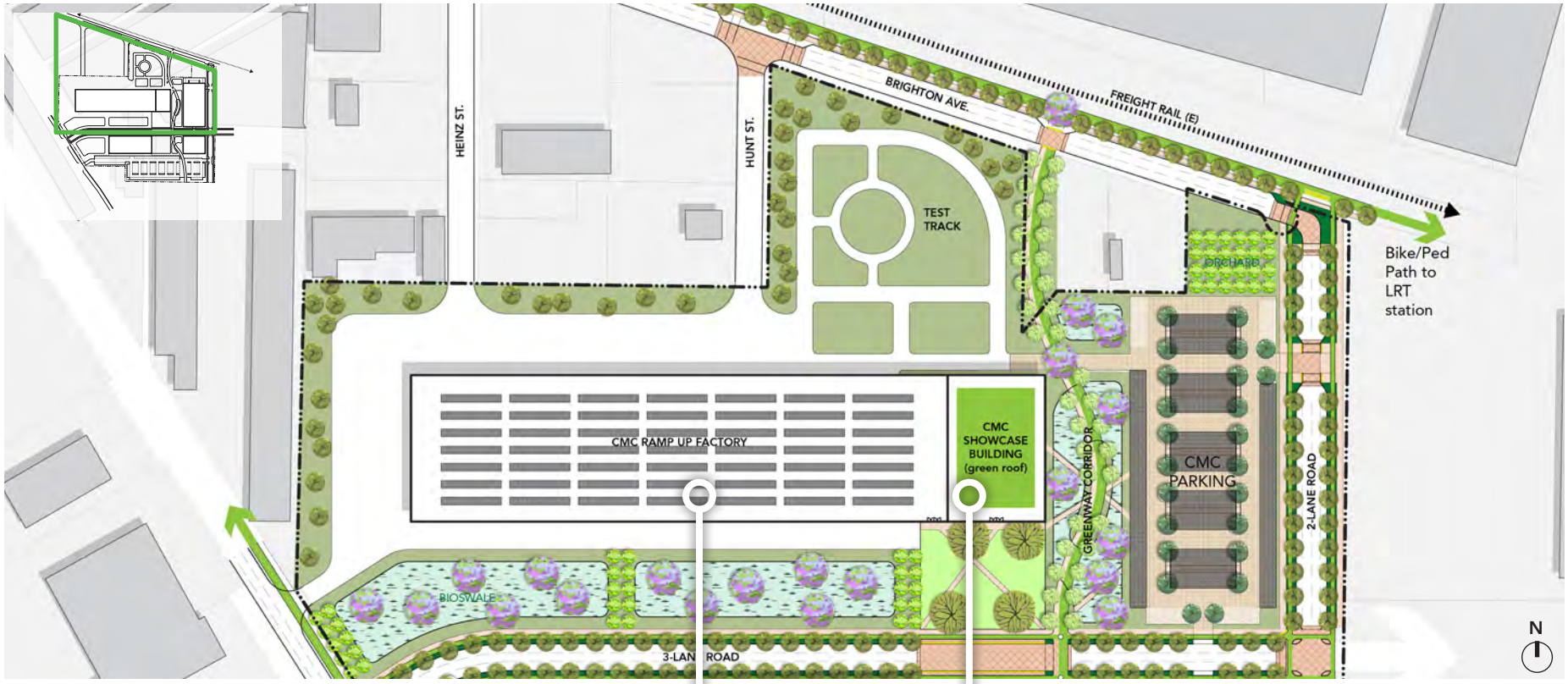
California Mobility Center

The California Mobility Center (CMC) orchestrates commercially meaningful interactions between future mobility early-stage companies and industry-leading members. They provide future mobility innovators and industry incumbents with access to programs and resources that accelerate the pace of commercialization in California and worldwide. Their core areas of focus include:

- Identifying and supporting smart and shared mobility solutions at all scales;
- Designing, prototyping, and testing fueling and charging infrastructure to support all modes of transportation; and
- Designing, prototyping, and testing automated, connected, and electric vehicles for on- and off-highway use.

The California Mobility Center (CMC) will create a showcase research, prototyping, and testing facility centered around future mobility technology at all scales. They will occupy approximately 11 acres on the northern part of the project site. The site will accommodate a Showcase Building, Ramp Up Factory, a Test Track, outdoor media space, and parking for staff and fleet vehicles.

CMC has partnered on this project with PEM Motion, an autonomous vehicle manufacturer based in Germany with existing operations in the United States. In 2020, CMC and PEM Motion partnered with the Sacramento Municipal Utility District (SMUD) to begin operations in the Depot Park on Power Inn Road (within a SMUD-owned building). The Hub site will allow for a permanent home for CMC and the ability for them to expand their research and prototyping operations within three to five years. The diagram and conceptual renderings on the following page identify the initial location, massing/sizing, and design for the CMC facilities.



Concept Rendering: CMC Ramp Up Factory and vehicle test track

Concept Rendering: CMC showcase building with green roof and vehicle test track

California Mobility Center Programming Summary

Using the PEM Motion experience and their facilities in Aachen, Germany as a starting point, the CMC will construct an 118,800-gross square foot Ramp Up Factory with an additional 32,400-gross square feet of office, administration, and academic space housed in a Showcase Building. The following is a summary of each individual building and use that is part of the CMC program.

SHOWCASE BUILDING

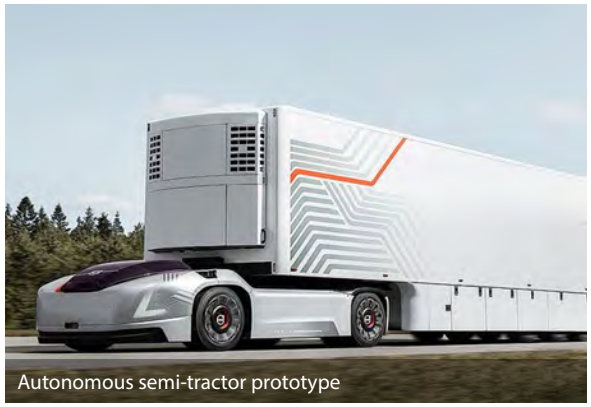
The program for the Showcase Building includes a two-story lobby/entrance/showcase, meeting rooms, two 200-person academic spaces, offices, storage, and building support spaces. This 32,400-gross square foot building will be located in the center of The Hub, fronting the Central Green. It includes an extensive roof deck and garden that will be used as a staff garden and event space, with views looking down on the Test Track.

RAMP UP FACTORY

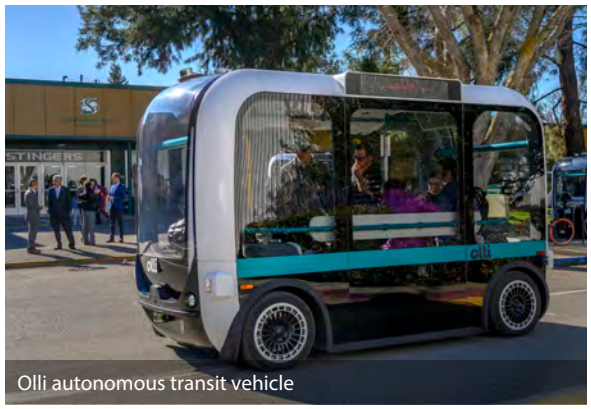
The 118,800-gross square foot program for the Ramp Up Factory is based on the facility at Depot Park and includes logistics, body shop, mechanical workshop, assembly logistics, plastic components, power train, parts assembly, testing, lab for electronics, measuring room, metallography, ancillary (offices, observation, etc.) storage, and building support. The design and layout will allow for the sub-division of the factory space so it can be reprogrammed as needed to support different vehicle production and research activities.

TEST TRACK

The Test Track will be located directly north of the Ramp Up Factory and Showcase Building, and will provide a controlled site for initial testing of vehicles developed by CMC and its partners. It will be approximately two acres in size and designed to provide a variety of real-world conditions, including curves, intersections, different paving materials, curb and curbless conditions with bollards, variable street widths, traffic calming elements, street trees, elevation changes, and other features.



Autonomous semi-tractor prototype



Olli autonomous transit vehicle

PEM Motion research facility in Aachen, Germany

TABLE 4.2: California Mobility Center Programming Summary

	CALIFORNIA MOBILITY CENTER				Phase 1
	BUILDINGS				
	Description	SF	QTY	CUSF	Notes
1.1	**CMC Showcase Building**				
	Showcase/Meeting			0	
	Entrance	795	1	795	
	Meeting Rooms	2,786	1	2,786	
	Showrooms	2,786	1	2,786	
	Storage	796	1	796	
	Building Support	796	1	796	RR, Mech Rms, Elec Rms, Brk Rm,etc.
	Subtotal Admin (USF):			**7,959**	
	Office/Academic				
	Academic	6,366	1	6,366	
	Offices	6,367	1	6,367	
	Support	1,592	1	1,592	
	Building Support	1,592	1	1,592	
	Subtotal Manufacturing (CUSF):			15,917	
	Total (CUSF):			23,876	
	Circulation Factor:			4,298	Interdepartmental Circulation
	Building Grossing Factor:			4,226	Building Envelope & Shafts
	Total (BGSF):			32,400	
	Total Footprint:			*21,600*	
1.2	**CMC Ramp Up Factory**				
	Manufacturing Spaces				
	Logistics				
	Body Shop				
	Mechanical Workshop				
	Assembly Logistics				
	Plastic Components				
	Powertrain				
	Part Assembly	87,546	1	87,546	
	Testing				
	Lab for Electronics				
	Measuring Room				
	Metallography				
	Ancillary (office, observation, etc.)				
	Storage				
	Building Support				
	Subtotal Manufacturing (CUSF):			**87,546**	
	Circulation Factor:			15,758	Interdepartmental Circulation
	Building Grossing Factor:			15,496	Building Envelope & Shafts
	Total (BGSF):			118,800	
	Footprint:			*118,800*	180 ft (3-60 foot bays) x 660 ft
	Total Phase I (BGSF):			**151,200**	

California Department of Justice

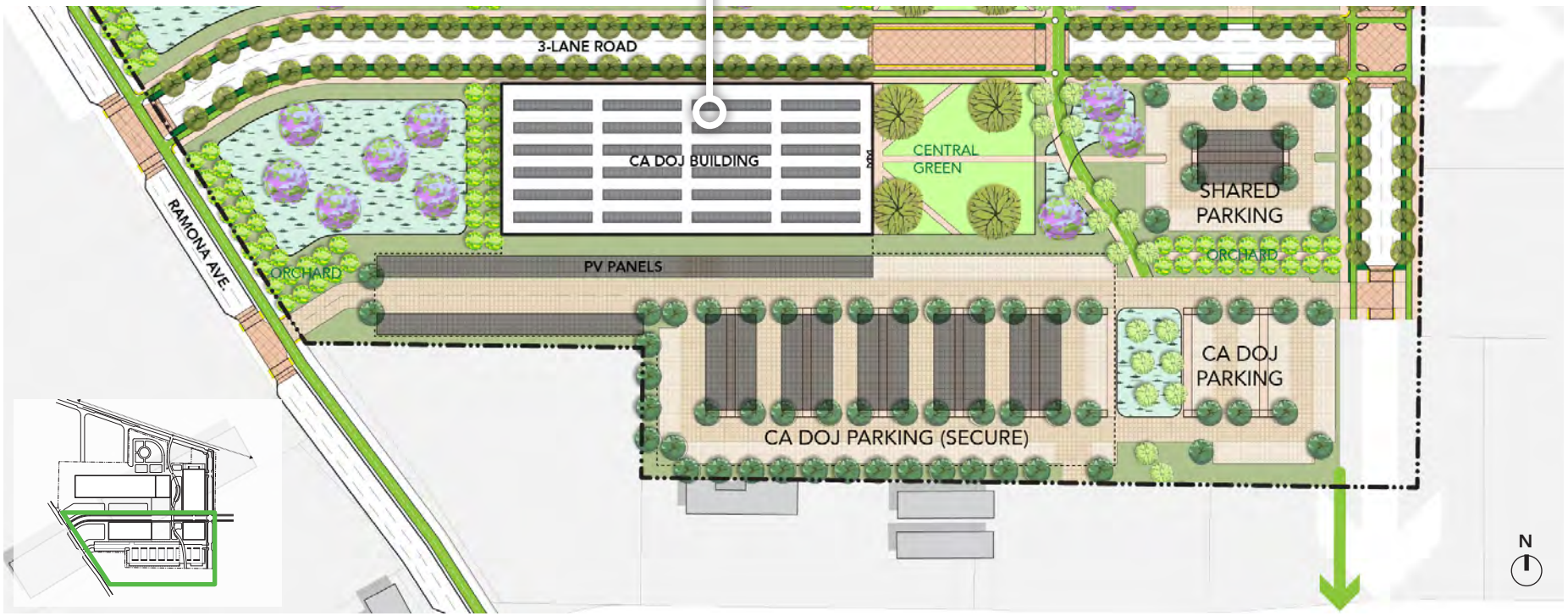
The California Department of Justice (CA DOJ) Bureau of Forensic Services (BFS) is the scientific arm of the Attorney General's Office whose mission is to serve the people of California on behalf of the Attorney General's Office. Their forensic scientists collect, analyze, and compare physical evidence from suspected crimes. They provide analysis of evidence in toxicology, including alcohol, controlled substances and clandestine drug labs, biology, and firearms; impression evidence such as shoeprints, tire marks, or fingerprints; trace evidence including hair, fibers, and paint; and crime-scene analysis of blood spatter patterns and evidence collection. They also testify in State and Federal court cases about their analyses in criminal trials.

The California Department of Justice (CA DOJ), and more specifically the Bureau of Forensic Sciences (BFS), will create a state-of-the-art forensics and criminalistics facility on The Hub site. This new facility will be a consolidation of several existing facilities and could include: a laboratory, the Sacramento Regional Crime Laboratory, the California Criminalistics Institute (CCI), and the Bureau of Forensic Service's headquarters staff. By consolidating these various departments, CA DOJ envisions the ability to increase collaboration and scientific discoveries through this new facility.

The CA DOJ will occupy approximately 8 acres of The Hub site. This area will include the Consolidated Forensic Science Laboratory Campus (CFSLC) building, a building footprint for a future building (if needed), outdoor media space, 270 secured parking spaces for staff/fleet vehicles and evidence pick-up/drop-off, outdoor training space, outdoor academic space, a hazardous materials sump, and a building generator. Their portion of the project also includes visitor parking and designated spaces for evidence drop-off. The diagram and conceptual rendering on the following page identify the initial location, massing/sizing, and design for the CA DOJ facilities.

The CA DOJ building will include crime scene evidence and research laboratory space

Concept Rendering: CA DOJ building fronting the Central Green and Greenway corridor



California Department of Justice Programming Summary

CONSOLIDATED FORENSIC SCIENCE LABORATORY CAMPUS (CFSLC) BUILDING

As previously noted, the new CFSLC building will consolidate several existing uses from around northern California:

1. The California Criminalistics Institute located in Rancho Cordova;
2. The Bureau of Forensic Services headquarters located in downtown Sacramento; and
3. The Sacramento Crime Laboratory located on Broadway in Sacramento.

As the CA DOJ is still refining its final program, other facilities and uses, such as laboratory space, could also be included.

The CFSLC building is estimated to be 250,000 square feet and will have approximately 255 staff. The building features access on the first floor for vehicles to be brought in for evidence collection as well as a public lobby and secured lobby. The program for the CFSLC includes the following:

- Public Lobby and Secured Lobby (separate)
- Laboratory spaces
- Bureau of Forensic Services HQ
- Sacramento Regional Crime Lab
- California Criminalistics Institute
- Academic Spaces for use by CA DOJ and Sacramento State
- Amenity and Building Support Spaces

In should be noted that California Criminalistics Institute has more public functions and could, therefore, be separated from the main building if needed or desired.

FUTURE BUILDING

The Detailed Programming for the project allows for future expansion of an approximately 26,000-square foot building footprint. This would likely be a new standalone building, but could also be an extension of the main building if desired.

CA DOJ officer training classroom

CA DOJ laboratory space

CA DOJ criminalistics research and laboratory space

TABLE 4.3: California Department of Justice Development Program

	CALIFORNIA DEPARTMENT OF JUSTICE				Phase 1
	BUILDINGS				
	Description	SF	QTY	CUSF	Notes
2.1	**CFSLC**				Roll-up doors at first floor, firing range
	Secured Lobby	3,685	1	3,685	
	Labs	88,430	1	88,430	
	Forensic Services	18,423	1	18,423	
	Crime Labs	18,423	1	18,423	
	Criminalistics	18,423	1	18,423	
	Amenity Spaces	9,211	1	9,211	Café, etc.
	Academic Spaces	9,211	1	9,211	
	Building Support	18,424	1	18,424	RR, Mech Rms, Elec Rms, Brk Rm,etc.
	Subtotal (CUSF):			184,230	
	Circulation Factor:			33,161	Interdepartmental Circulation
	Building Grossing Factor:			32,609	Building Envelope & Shafts
	Total (BGSF):			250,000	
	Total Footprint:			*50,000*	144 feet (4 -34 foot bays) x 370 feet
	Total Phase I (BGSF):			**250,000**	

Note: CA DOJ continues to adapt program needs. The program presented here is estimated based on current information and precedent facilities, and is subject to modification.

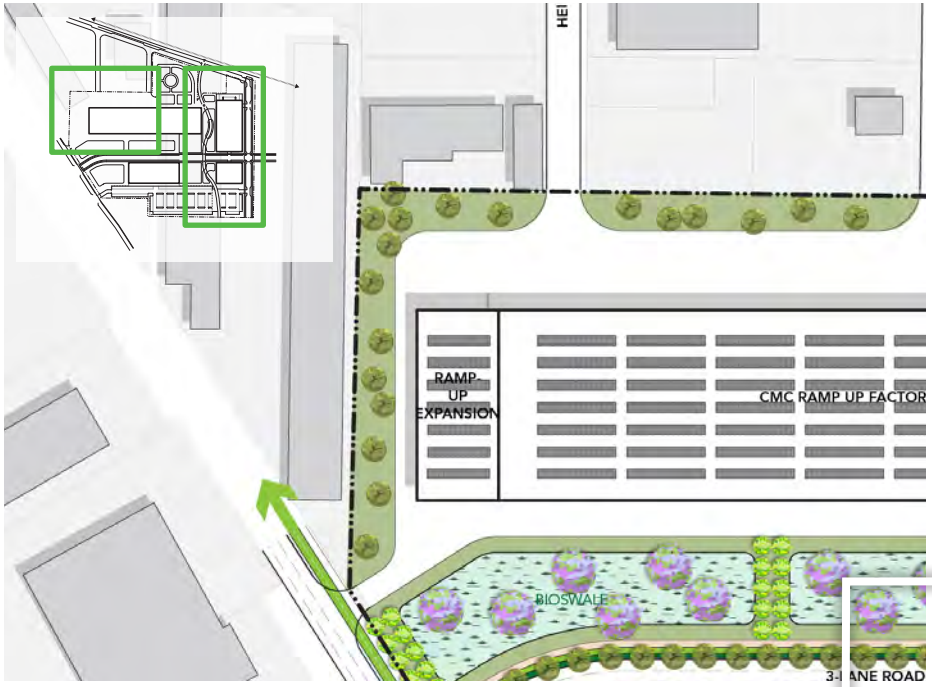
Future Users

The Hub Master Plan provides space and programming for additional future user buildings and spaces. Future users could include any number of uses that complement Sacramento State and the research and innovation taking place at The Hub. This could include:

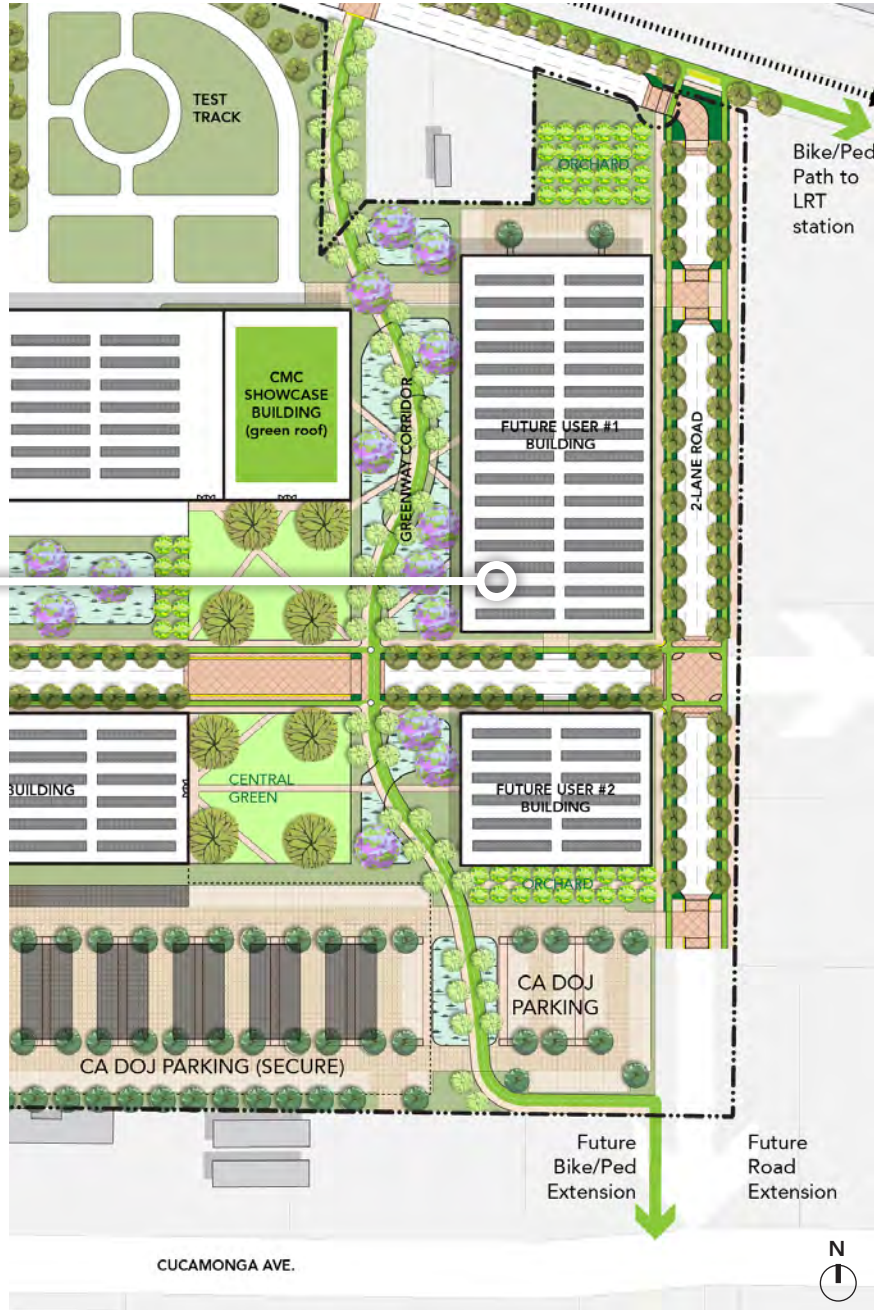
- University academic programs that would leverage existing users to provide unique training and education programs;
- Expansion spaces for the initial users if their programming needs grow in the future;
- New research and development private partners;
- Manufacturing and light industrial uses developing new, sustainable technologies and products; and
- Retail or commercial uses that support the programs at The Hub and help to create a more complete neighborhood.

Phase II of the project includes an expansion of the CMC Ramp Up Factory and two additional future user buildings on the project site. The following is the initial programming concept for each building and space included in Phase II:

- **CMC Ramp Up Factory Expansion:** The location of the Ramp Up Factory allows it to be expanded to the west by CMC if needed to support future growth in operations. The Development Program includes 15,600 gross square feet of future expansion space.
- **Northern Building:** The northern building is envisioned to be a mixed-use ground-floor retail, parking, and office/classroom building sized at approximately 384,000 gross square feet. This building would be located on the northern surface parking lot – an area of approximately 64,000 square feet. As a result, it will incorporate the parking that is removed (e.g., surface lot that is the building pad for the new building) and a reasonable amount of additional parking to meet additional staff demand. It would also include a bicycle hub on the ground level facing the Greenway and Central Green.
- **Southern Building:** The southern building is envisioned to be either an extension of the CA DOJ facility or a separate future user space for office or research uses. The approximately 52,000-gross square foot building would be developed on the shared surface parking lot south of the east-west road – an area of approximately 26,000 square feet. The parking located on this surface lot would be incorporated into the Northern Future User Building; the Southern Future User Building would not include any structured parking. While the Southern Building is anticipated as a approximately 52,000-gross square foot, two-story building, the size and number of stories could increase depending upon the needs and program of the future user.




Concept Rendering: Mixed use Future User building fronting the Greenway

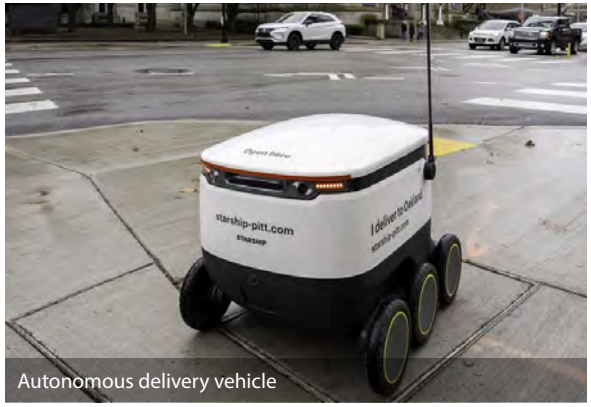


California Mobility Center Expansion Programming Summary

TABLE 4.4: CMC Expansion Program Summary

	CALIFORNIA MOBILITY CENTER				Phase 2
	BUILDINGS				
	Description	SF	QTY	CUSF	Notes
1.3	**CMC Future Expansion**				
	Office	4,775	1	4,775	
	Building Support	531	1	531	RR, Mech Rms, Elec Rms, Brk Rm,etc.
	Subtotal Admin (CUSF):			**5,306**	
	Manufacturing	6,190	1	6,190	
	Subtotal Manufacturing (CUSF):			6,190	
	Total (CUSF):			11,496	
	Circulation Factor:			2,069	Interdepartmental Circulation
	Building Grossing Factor:			2,035	Building Envelope & Shafts
	Total (BGSF):			15,600	
	Footprint:			*15,600*	
	Total Phase II (BGSF):			**15,600**	

PEM Motion research facility in Aachen, Germany



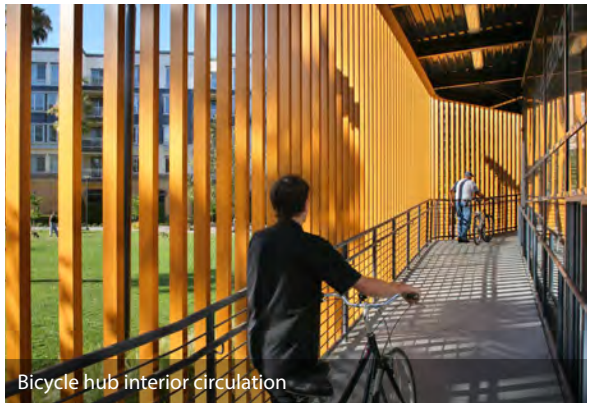
Autonomous delivery vehicle

Autonomous micro-transit vehicle

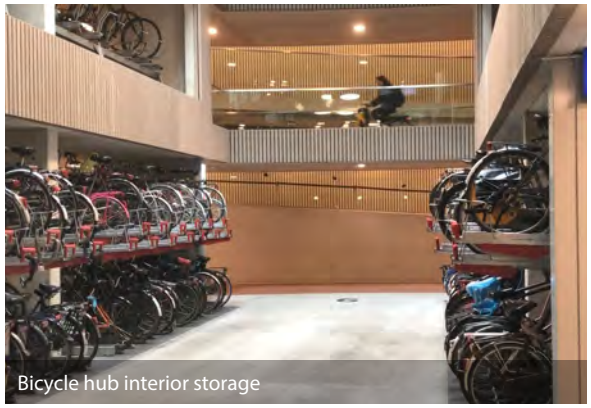
Future Users Programming Summary

TABLE 4.5: Future Users Program Summary

	FUTURE USERS				Phase 2
	BUILDINGS				
	Description	NSF	QTY	CUSF	Notes
3.1	**Future User - Northern Building**				
	Usable Spaces	99,593		139,430	
	Lecture				
	Teaching Lab				
	Graduate Research				
	Faculty Space				
	Storage				
	Support				RR, Mech Rms, Elec Rms, Brk Rm,etc.
	Other				Amenity, etc.
	Retail			6,767	
	Bicycle Hub			4,135	
	Subtotal:			150,332	
	Circulation Factor:			27,060	Interdepartmental Circulation
	Building Grossing Factor:			26,609	Building Envelope & Shafts
	Subtotal:			204,001	
	Structured Parking:			180,000	400 stalls
	Total (BGSF):			**384,001**	
	Total Footprint (FGSF):			*64,000*	
3.2	**Future User - Southern Building**				
	Office			31,372	
	Storage			3,863	
	Building Support			3,863	RR, Mech Rms, Elec Rms, Brk Rm,etc.
	Subtotal (CgSF):			39,098	
	Circulation Factor:			7,038	Interdepartmental Circulation
	Building Grossing Factor:			5,865	Building Envelope & Shafts
	Total (BGSF):			52,000	
	Total Footprint:			*26,000*	
	Total Phase II (BGSF):			**412,000**	



Bicycle hub interior circulation



Bicycle hub interior storage

Mixed-use building with parking integrated

Mobility and Connectivity

Multimodal circulation within an open space network at The Hub will support growing connectivity within the site and to the surrounding neighborhood.

Connectivity between The Hub and the surrounding neighborhood is of critical importance. Not only because the movement of people to and through the site is important, but also because the site is envisioned to be the future center of innovative mobility research and testing. As the heart of a "world-class Innovation District," mobility connections to the surrounding neighborhood will emphasize the mobility of the future that will address global climate challenges, local ecosystem health, and a just and equitable economy.

During Phase I, a new east-west connection will be made to Ramona Avenue that will serve as the main entrance to The Hub. A second north-south connection will be created to Brighton Avenue providing multimodal and service vehicle access to the site.

For the most part, regional connectivity will be unchanged by development of the Master Plan. The Hub is envisioned to resemble the functionality of the Sacramento State main campus, such as prioritizing pedestrian and bicycle modes by creating natural landscapes to support an enjoyable and functional pedestrian atmosphere.

Despite the high quality of open space and active transportation networks, additional off-site improvements will be needed to fully connect The Hub to surrounding destinations and the citywide transit and mobility networks. The project does include a minimal amount of on-site parking necessary to support fleet vehicles, staff parking, and visitor parking.

The Master Plan also promotes the development of a transit shuttle (potentially autonomous) between the main Sacramento State campus and The Hub. This connection can help reduce vehicle traffic to/from the main campus and integrate with existing light rail stations (Power Inn and 65th Street).

Raised pedestrian crossing

Pedestrian pathways and open spaces are reminiscent of the main Sacramento State campus

Fully-separated bicycle and pedestrian pathways

New technologies for public transit and University shuttle

Parking areas that enhance pedestrian realm and sustainability

Greenway Corridor

The recent (2019) Ramona Avenue extension will provide the most direct route between The Hub and the main Sacramento State campus. The Ramona Avenue connection would serve pedestrian, bicycle, public transit/shuttle, and vehicular traffic coming from Power Inn Road and Cucamonga Avenue, as well as from Folsom Boulevard and the southern extent of the main campus. The Master Plan was developed to further enhance that connection.

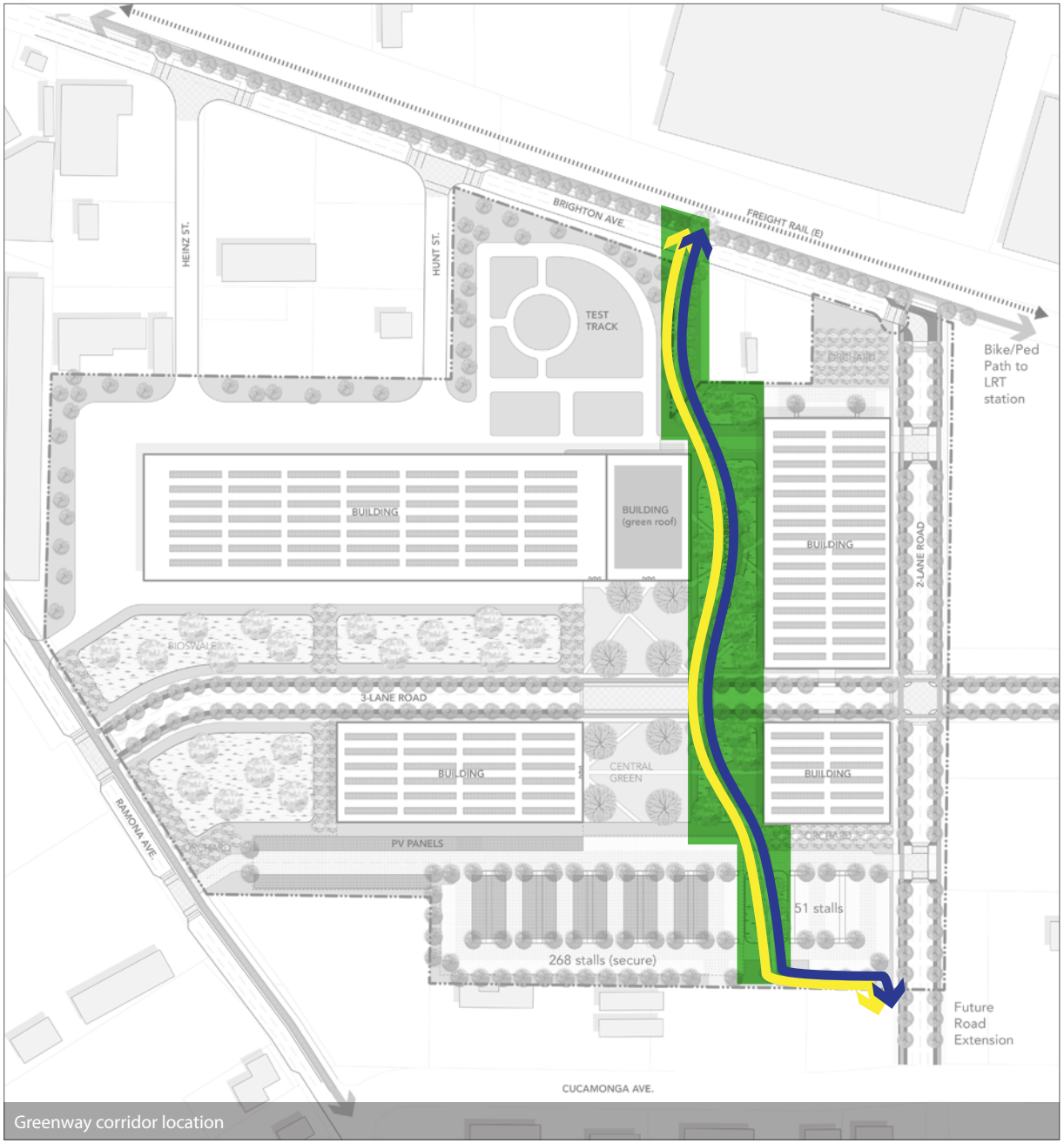
GREENWAY CORRIDOR

A major Greenway is included in the Master Plan as a key circulation system through the site. The Greenway will incorporate pedestrian and bicycle paths with rain gardens and be a spine for active transportation. Ultimately, this feature will create a connected network from the Power Inn light rail station (via improvements to Brighton Avenue), The Hub, and the main Sacramento State campus, as well as other areas within the Sacramento Center for Innovation neighborhood.

The Greenway is meant to closely replicate the Green Hornet Trail on the main University campus. It combines separated pedestrian and bicycle paths with multiple types of open spaces: bioswales/rain gardens, courtyards, and potentially orchards. Additionally, the Greenway is envisioned to connect to or be adjacent to the Central Green. These open spaces serve multiple purposes: at times acting as stormwater capture and treatment, as areas for leisure, connecting new buildings to each other or to parking, and as part of the public protected bikeway network to be used for neighborhood users to travel through The Hub.

The north-south linking multi-use path connects the center of the development concept to Brighton Drive and includes a focused concentration of open space between parking areas and buildings. Along with the Central Green, it organizes the site elements to provide green linkages between buildings, parking areas, and surrounding areas.

Cross-section of the Greenway corridor concept



Greenway corridor location


Example of the existing greenway features on the main campus


Example of integrating passive uses within a greenway

Pedestrian and Bicycle Circulation

PEDESTRIAN CIRCULATION

The Hub site has been designed around safe, efficient, and convenient pedestrian travel. With the exception of a few secured areas (Test Track, CA DOJ secured parking and access areas), the Master Plan uses pedestrian circulation to define the overall design of the site and locations for building entrances, parking area entrances, open space areas, and gathering spaces. Exemplifying a university campus feel and character, vehicles will defer to pedestrians, allowing modes to share spaces.

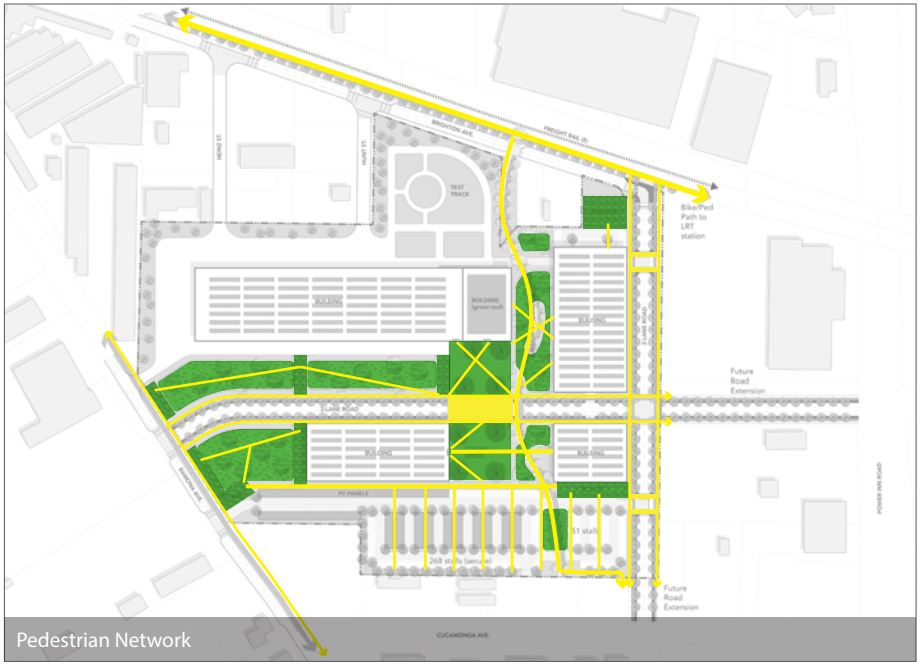
Primary and secondary pedestrian circulation routes are diagrammed on the following page. The primary pathways are intended to resemble promenades and provide formal connections between destinations: buildings, bike hub, open spaces, and parking. Secondary paths provide more indirect, informal pathways that meander through the site, creating the natural, campus atmosphere.

BICYCLE CIRCULATION

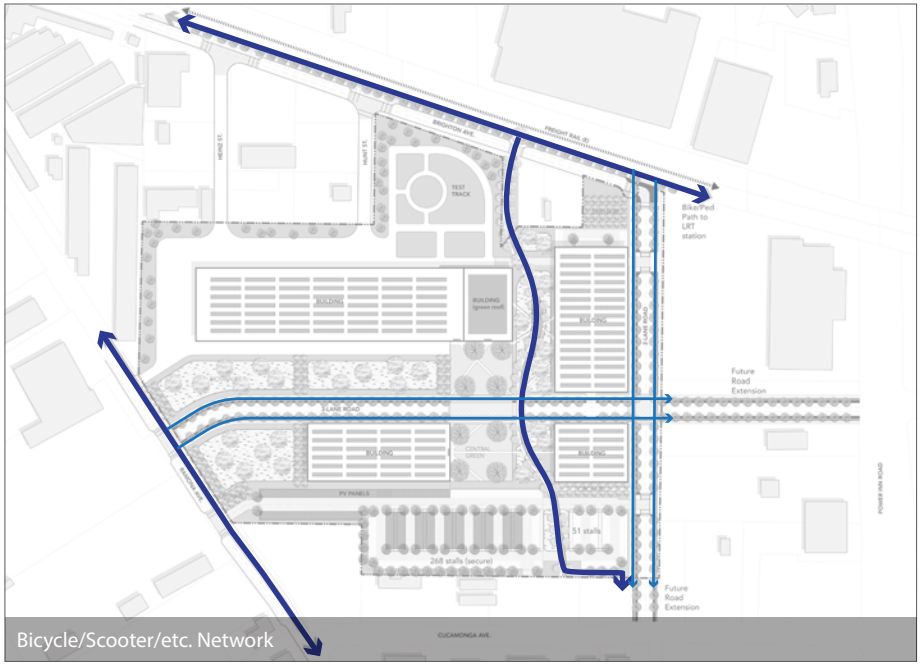
Along with pedestrians, active transportation modes that move at similar speeds to bicycles are planned to be given priority on The Hub site. This means providing a network of bicycle paths that are always protected from vehicles or form their own active transportation corridor and can access every destination on the site.

Protected bicycle lanes are included on all project streets (north-south and east-west internal roads). Additional bicycle facility improvements are envisioned off-site to create connections through the neighborhood and between The Hub, the main Sacramento State campus, and Power Inn light rail station.

Creation of a standalone active transportation infrastructure is encouraged. This can include outdoor and indoor bicycle parking areas, repair station, scooter and bike share docks, and other similar amenities. Short-term bicycle racks are located throughout The Hub near building entrances and other destinations.



Pedestrian Network



Bicycle/Scooter/etc. Network


Comfortable and safe pedestrian areas


Bike share system with solar charging


Bicycle storage system

Vehicle and Transit Circulation

VEHICLE CIRCULATION

Vehicle circulation within The Hub is facilitated by two new streets: an east-west road through the center of the site, and a north-south street on the eastern side of the site. Both are intended to eventually connect to other city streets and function within the surrounding public street network. The east-west road provides the primary connection while the north-south road is more secondary and would facilitate higher volumes of pedestrians, bicycles, public transit/shuttle, and vehicles from the northern extent of the site.

Additionally, the Master Plan is organized to maximize vehicle connectivity on a grid system, which can accommodate future evolution of the site. For example, the northern surface parking lot drive aisle and entrance preserves vehicle access from Ramona Avenue, the north side of the CMC buildings, Test Track, and the north-south road; when this lot is redeveloped in Phase II, the ground level is proposed to still preserve this connection.

There are opportunities for trucks to directly access the site both from Ramona Avenue and Brighton Avenue. From Brighton Avenue, there is potential for Heinz Street and Hunt Street to provide truck access into the site, as well as accommodate truck movements to allow for back-in loading for future buildings. Along with truck access from Ramona Avenue, this would allow for trucks to travel one-way (in either direction) through the site and not require turn-arounds within the site.

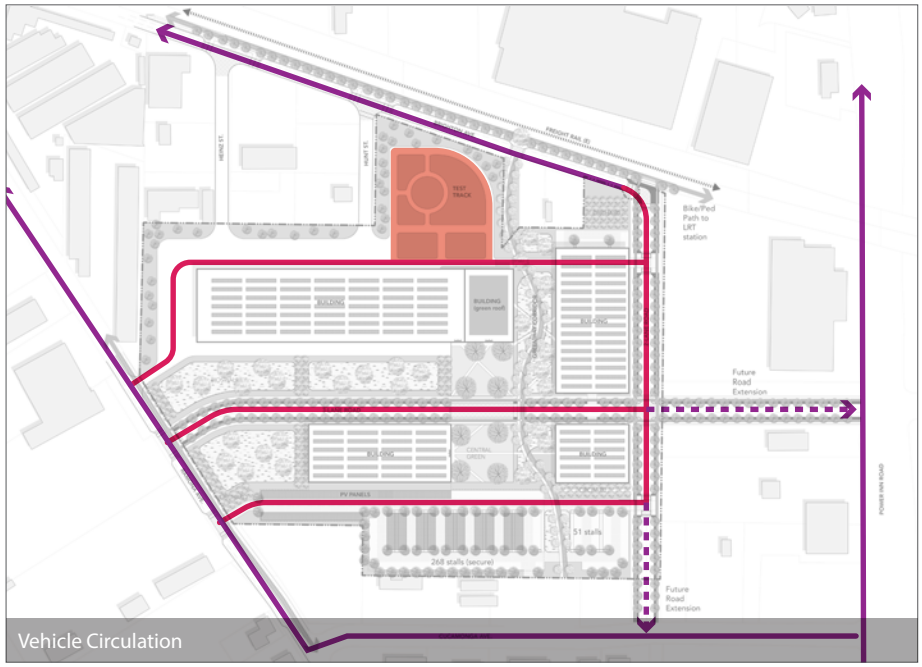
TRANSIT CIRCULATION

The Master Plan was designed to accommodate University and public transportation through the site. A shuttle between the main Sacramento State campus and The Hub is proposed to circle the site from Brighton Avenue, turn right on the north-south road, turn right on the east-west road, and finally turn right on Ramona Avenue to return to the main campus; providing multiple stops. This shuttle could also connect to the Power Inn light rail station with future street connections. This shuttle could also leverage autonomous shuttle technologies to be developed at The Hub.

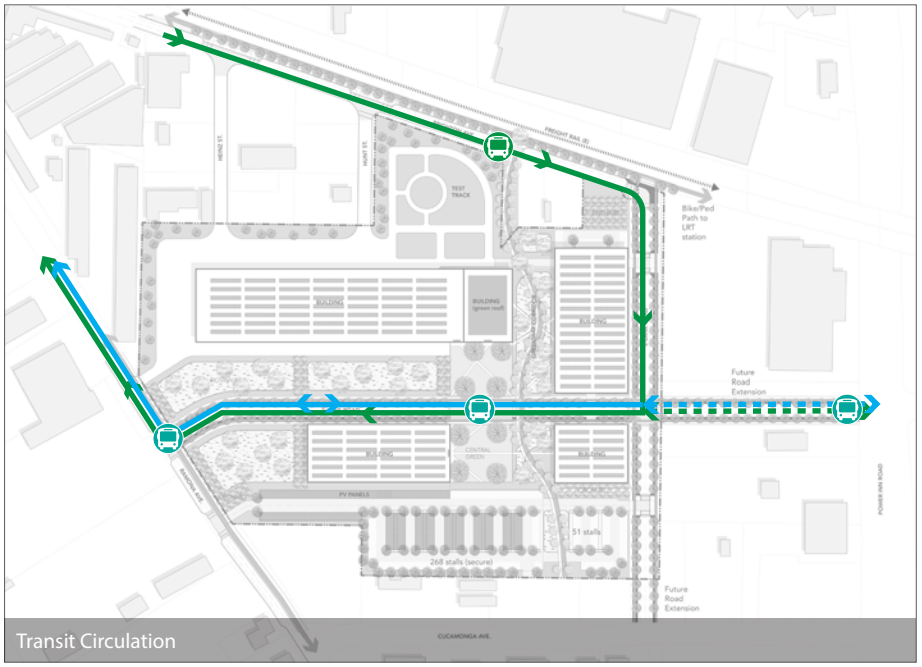
The primary east-west road is proposed with three lanes so one can serve as a transit-only lane to maximize travel times and headways for transit. This would accommodate a University shuttle, as well as city and regional public transit routes.

POTENTIAL NEW LIGHT RAIL STATION

The City of Sacramento and Sacramento Regional Transit have also pre-planned a new light rail station located directly north of The Hub, between the Power Inn and University/65th stations. Development of The Hub would support a new light rail station with access and connections; however, the development of this project is not dependent on a new station being constructed.



Vehicle Circulation



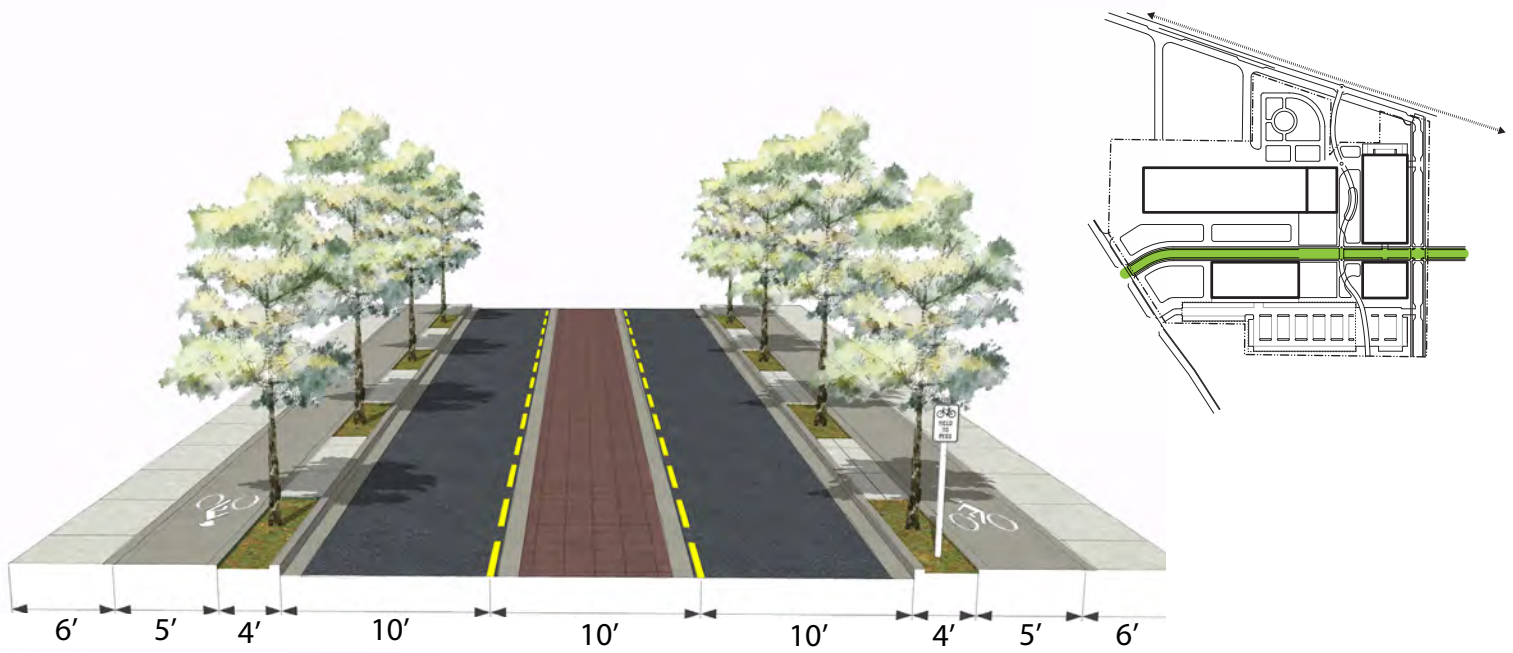
Transit Circulation


Flexible street allowing for a range of users and programming options

Sacramento Regional Transit bus with incorporated bike rack

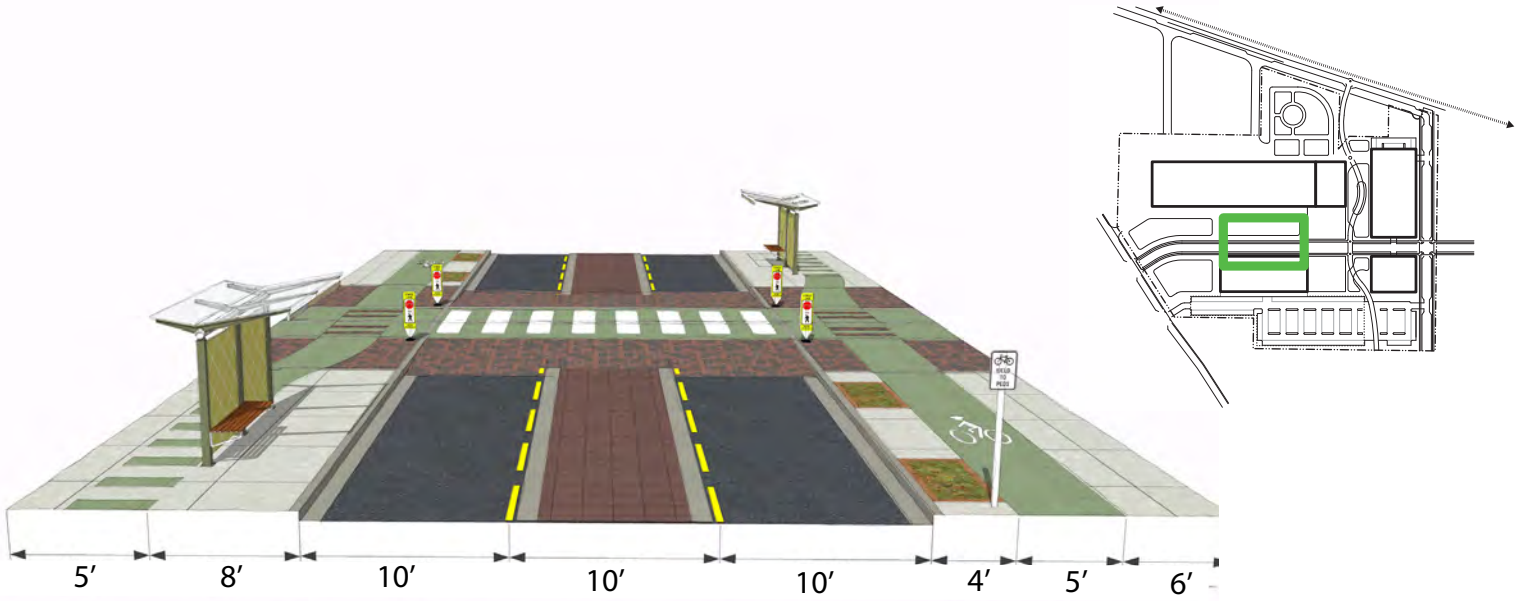
EAST-WEST ROAD

The new East-West Road is envisioned to be a multimodal facility, with two vehicle/transit travel lanes, a flexible middle lane (for truck and transit movement), separated bicycle lanes, and wide sidewalks.



EAST-WEST ROAD AT THE CENTRAL GREEN

The new East-West Road will have a flexible format when it reaches the Central Green, accommodating a raised plaza space that will slow traffic while allowing primary crossings for pedestrians, bicyclists, and transit riders.



BRIGHTON AVENUE

The improved Brighton Avenue will include a sidewalk on the southern side and a completely separated pedestrian/bicycle multi-use pathway. This pathway will connect to the existing Ramona Avenue improvements and ultimately (through a new bridge over Power Inn Road) to the Power Inn light rail station. Essentially, it will create a pedestrian and bicycle "highway" between the main campus, The Hub, and the Power Inn light rail station.

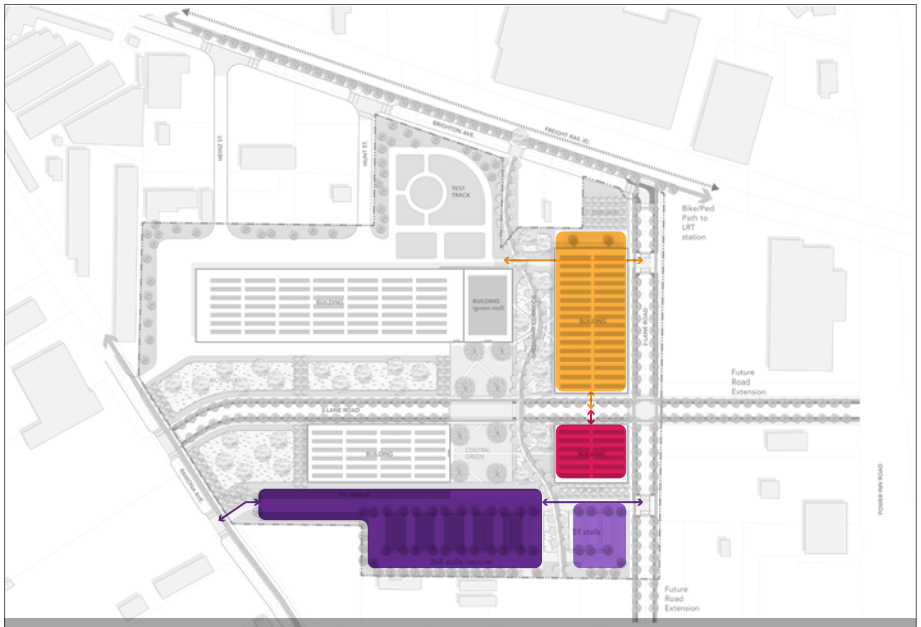
NORTH-SOUTH ROAD

The new North-South Road will include completely separated bicycle and pedestrian facilities on both the west and east sides. While the road will be aligned with the eastern boundary of The Hub site, the University and City of Sacramento envision future development east of The Hub to also front this new roadway. So the design allows maximum flexibility to ensure all future uses in the neighborhood have access through the area.

Parking

Both the CMC and CA DOJ are proposing to include individual surface parking lots during Phase I. CMC parking is provided east of their buildings across the Greenway (orange). CA DOJ can be provided up to 270 secured parking spaces for fleet vehicles (dark purple) adjacent to the proposed CA DOJ building. This secured parking is shown with multiple entrances for ease of circulation and is not bisected by pedestrian/bicycle traffic.

Two additional surface parking lots along the north-south road provide at least 50 visitor parking spaces as well as overflow parking (pink and red). In Phase II, the surface parking lots will be redeveloped for additional buildings. These buildings will incorporate structured parking, but enhanced connections to light rail stations, shifting transportation policies and behaviors, and input from stakeholders can reduce the amount of parking. Street design is flexible to accommodate on-street parking (with curb extensions at intersections) to enhance character and use as public streets.



Public and fleet vehicle parking locations

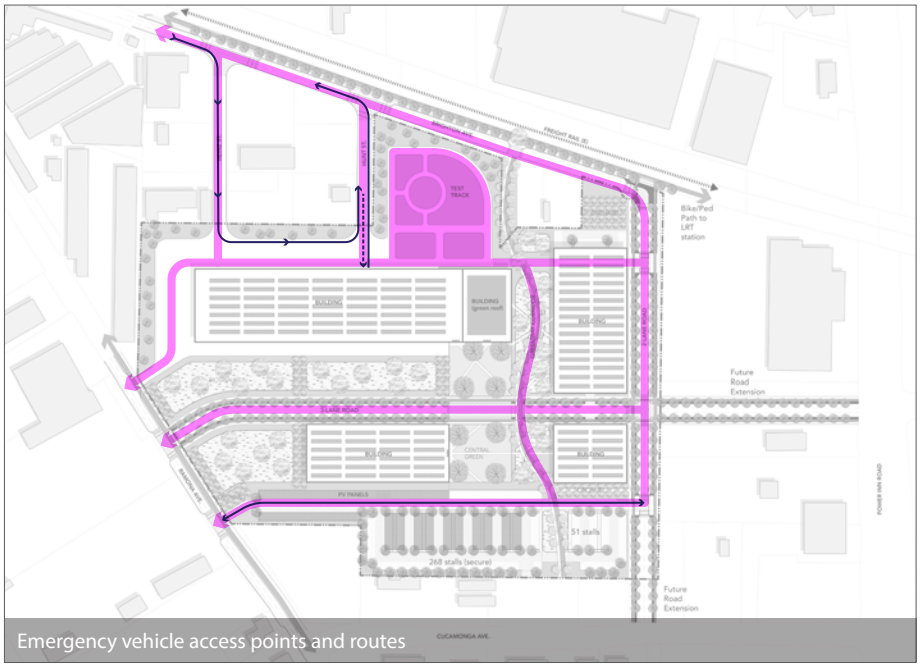

Parking lot with solar panels and bioswales


Structured parking incorporated into a building

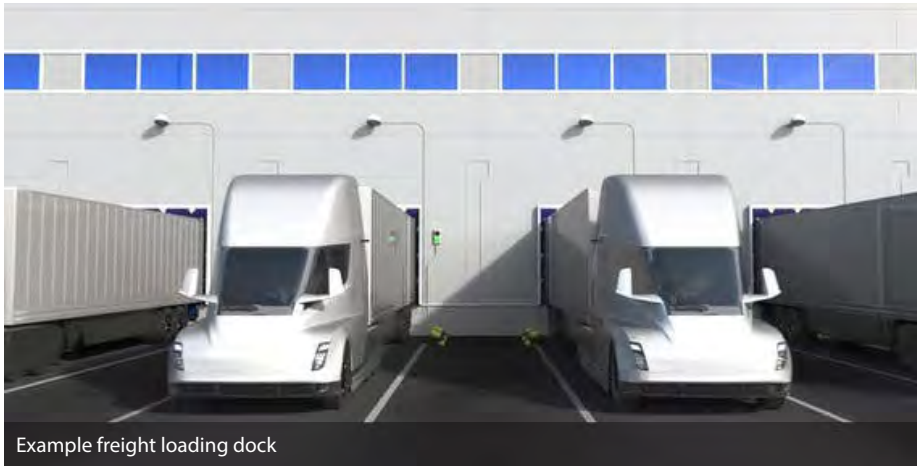
Freight and Emergency Access

Hunt Street and Heinz Street will serve as focused connections to the CMC facilities for service, delivery, and other heavy trucks. Semi-trucks can enter on Heinz Street, turn left within the CMC drive area, turn left onto Hunt, then back into the CMC for deliveries, and finally exit The Hub via Hunt. This sequence could also occur in reverse order, providing two separate locations for loading within the CMC buildings. Some improvements for Heinz and Hunt may be required. Deliveries for CA DOJ are proposed to occur within their secured parking area.

Emergency vehicles will have access to all roadways within The Hub, including access to the CMC Test Track. Additionally, the Greenway is proposed for adequate widths and tree canopy height to allow emergency vehicles to access the Greenway adjacent to buildings proposed in Phase II. The northern future user building is proposed to maintain vehicle circulation through the ground level between the Test Track and north-south road.



Emergency vehicle access points and routes


Example freight loading dock

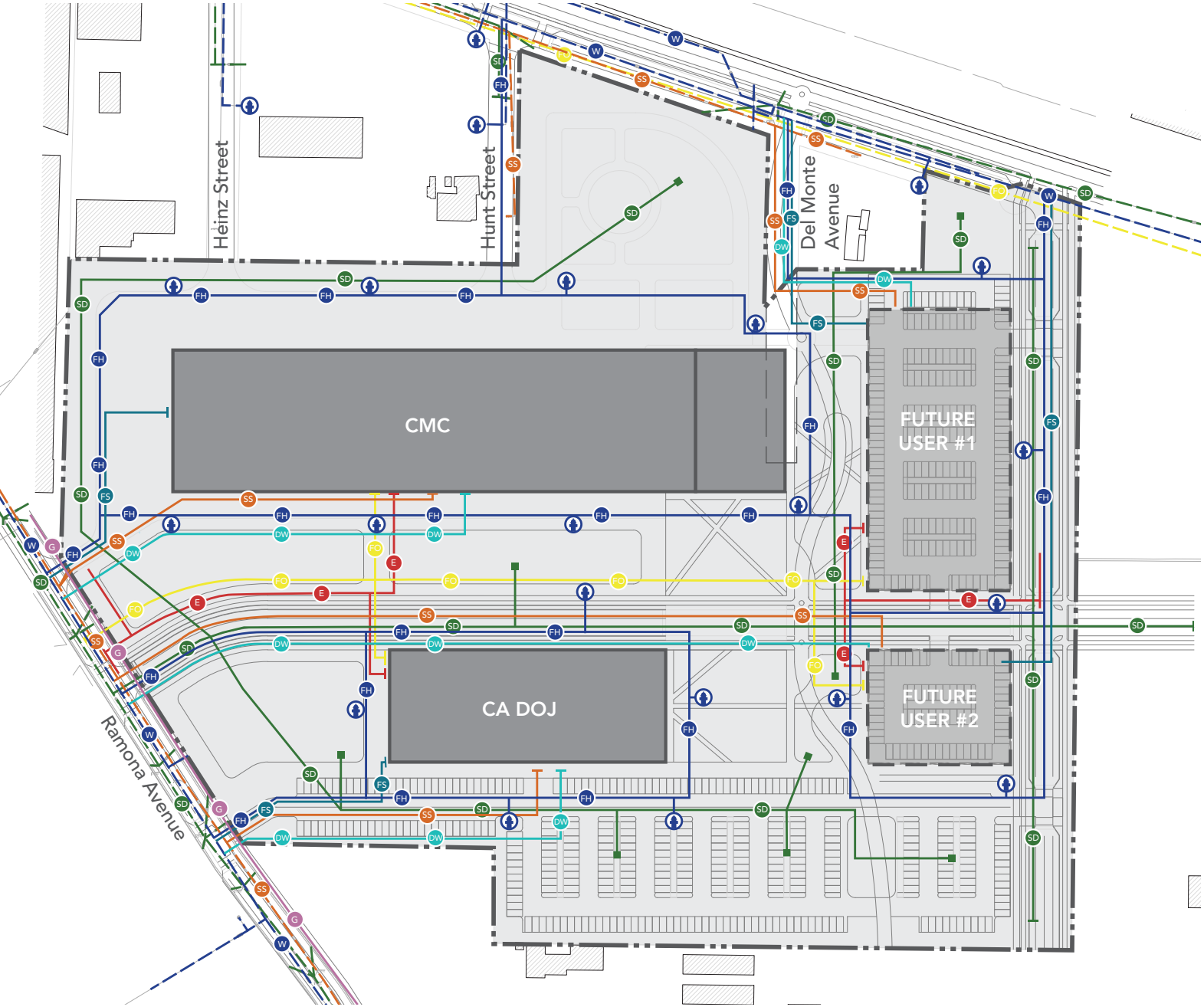
Infrastructure

Integrating innovative urban design with green and modern infrastructure to make The Hub a 'living laboratory' for sustainable development.

As a future center for creative research and technology, The Hub is envisioned to become a model project for innovative and sustainable development. This includes designing and operating a range of sustainable systems to reduce greenhouse gas emissions, reduce energy costs, utilize clean electricity, and reduce water demand/reuse stormwater. Chapter 5: Design Guidelines includes detailed concepts and guidance on many sustainable infrastructure approaches.

This section provide a specific summary of the infrastructure approach and details for the project site. As an overall guide to this section, **Figure 4.3** on the following page identifies that connections, alignment, and overall anticipated design of the major components of the infrastructure system. The following pages provide more detail on each specific system.

FIGURE 4.4: Utility Master Plan



Water and Sewer

DOMESTIC WATER

The existing water system includes two metered connections to the City of Sacramento's 12-inch water main line in Ramona Avenue, an 8-inch water main line in Brighton Avenue, and an 8-inch water main line in El Monte Avenue. All of these facilities eventually connect to a 48-inch transmission water main in Brighton Avenue.

The system proposed for the project site will include three separate connection points to the existing water main, one for each building site/area. This will include one connection for the fire sprinkler, one connection for the domestic water line, and one connection for the irrigation line (excluding the fire hydrant service line). Since there will be four independent buildings, there will be a total of 12 water connections to the City of Sacramento's existing water system for these services. The project will need to make new connections to the existing water mains and disconnect the existing water connections.

FIRE SERVICE

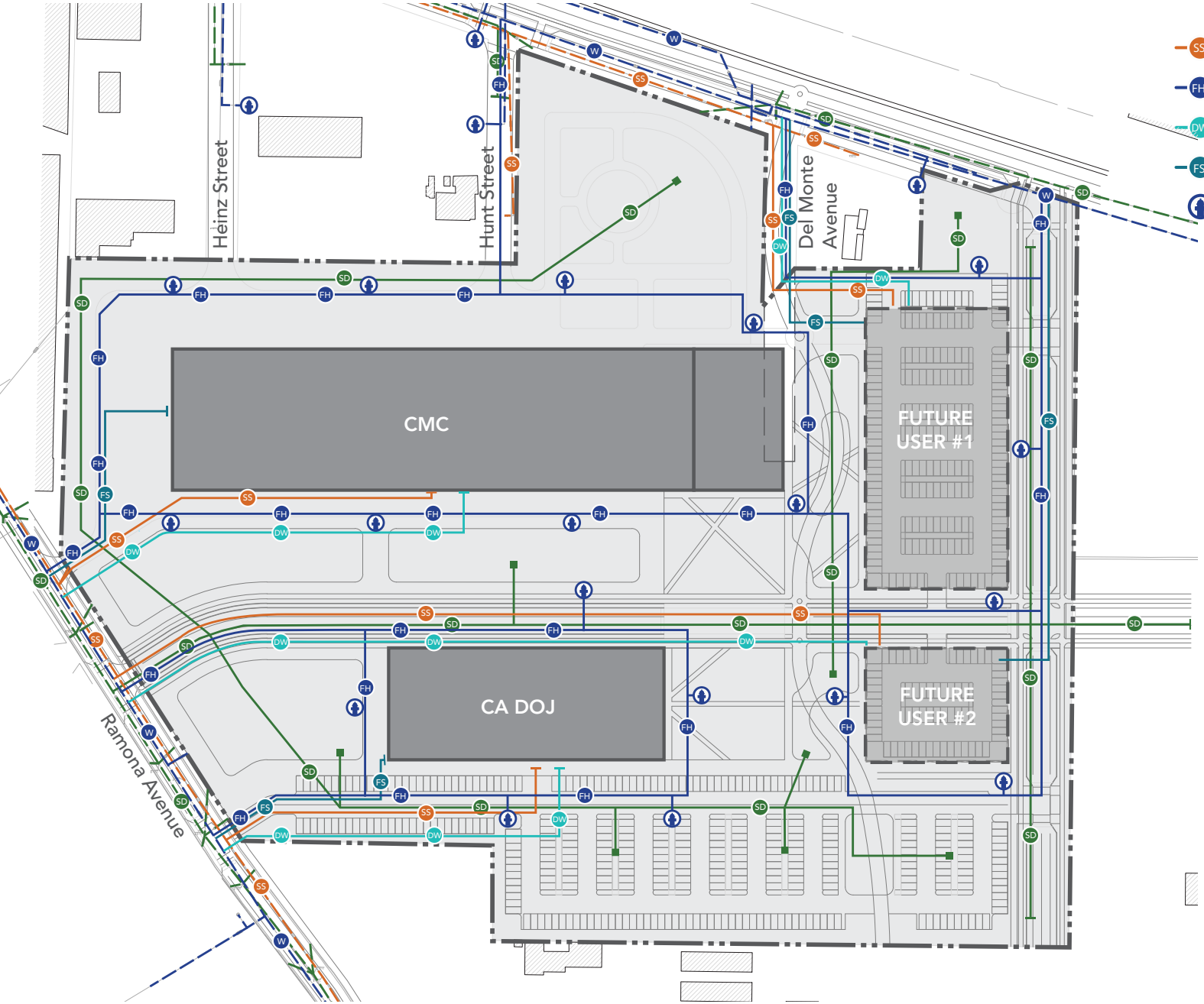
Fire hydrants will be required for the main drive aisles and they will also be shared. The fire hydrant lines are not metered nor do they need to be separated, which is different than the water lines discussed previously. The fire hydrant spacing will make it possible to share hydrants in order to cover more than one building and minimize the hydrants within The Hub project site. This approach also helps reduce pressure losses in the system and provides better coverage of the buildings, drive aisles, and parking lots that can be a concern for fire departments. Considering each building to have a separate service for the other water services, it is reasonable for fire hydrants and sensible for coverage to share the water lines and fire hydrants.

SANITARY SEWER

The Hub project site has access to an existing 10-inch sewer line in Ramona Avenue, an 8-inch sewer line in Brighton Avenue, a 12-inch line in Cucamonga Avenue, and an 8-inch line in Power Inn Road. The existing infrastructure around the project site will be able to accommodate sewer flows generated by the project. The most cost-effective option would be to install one sewer main from the existing sewer main into the site from Ramona Avenue and provide sewer services to each of the proposed Phase I buildings (CMC and CA DOJ facilities), and sewer stubs to the two Phase II Future User buildings.

However, considering that each building is envisioned to have separate service (e.g., not sharing facilities) and each building will have its own lateral line to the public sewer system, it is envisioned that the project will include three sewer lines from Ramona Avenue (one to the CMC facility, one to the CA DOJ facility, and one to the two Future User facilities). It is also assumed that the northern Future User #1 building will be served from Brighton Avenue with a separate service lateral from the sewer main.

FIGURE 4.5: Water and Sewer Systems



Stormwater and Green Infrastructure

Stormwater runoff is the leading source of pollutants for water bodies that fail to meet water quality standards. The stormwater management objectives of the Master Plan are to prevent stormwater-related pollution, protect and enhance water quality in area creeks and rivers, and comply with all applicable State and Federal regulations.

DRAINAGE SYSTEM

The project site will capture, treat, and retain stormwater to meet the Sacramento Region Stormwater Quality Design Manual. This includes capturing, treating, and retaining stormwater from the building roofs, concrete areas, pavement areas, and landscaped areas within the project site. The site has access to an existing 30-inch storm drain line to the west on Ramona Avenue. Since the project will require the treatment and reduction of stormwater on the streets running through the site, it is reasonable to run a main storm drain through the main drive aisle street then branch off to pick up each building and associated site storm water.

This approach will allow each user area to be treated independently by having to capture, treat, and retain what is required of their site, and then discharge this amount into the main shared drive aisle which will also be required to do the same with the street runoff.

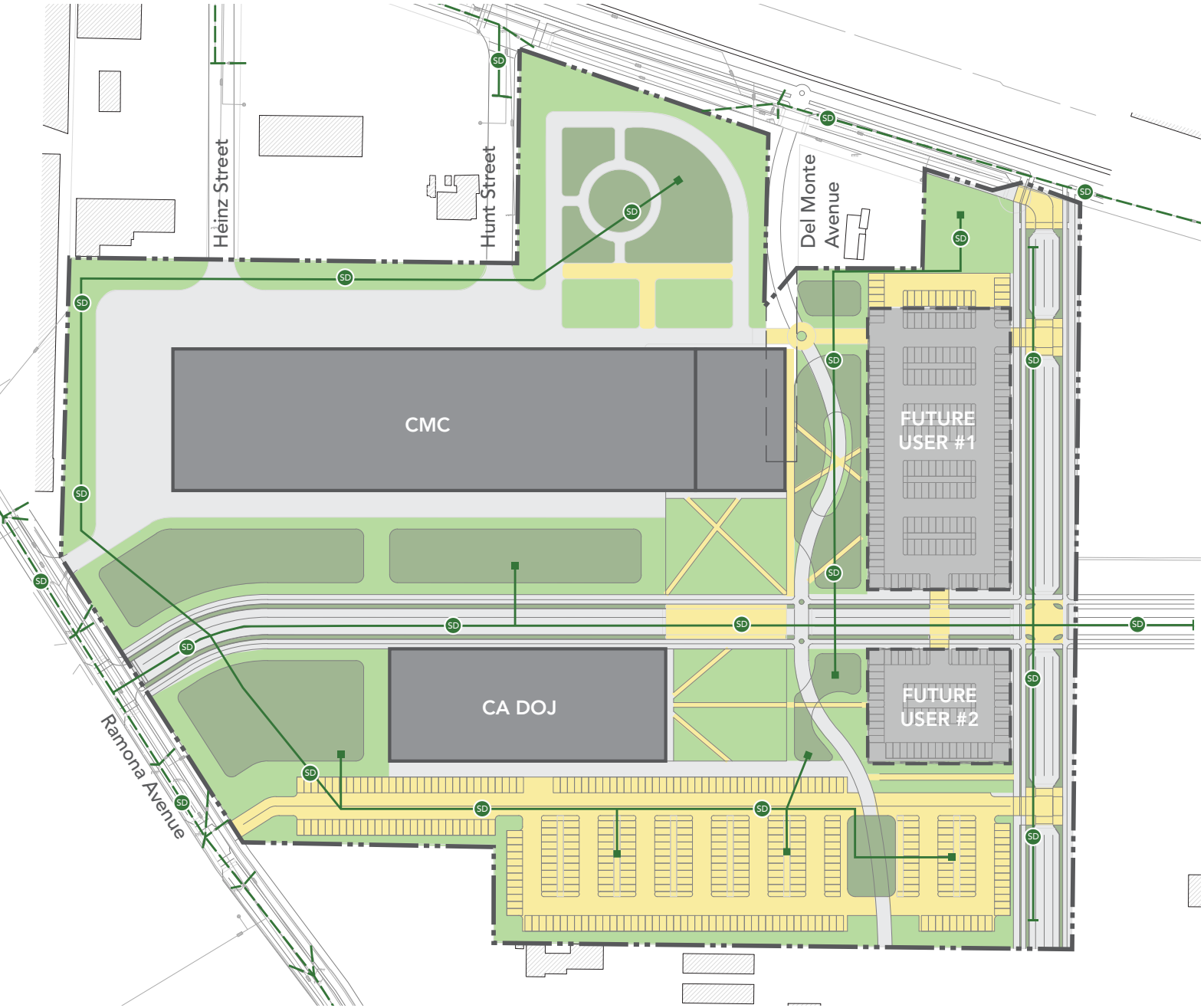
ONSITE RETENTION AND BIOSWALES

In addition to required onsite stormwater system, The Hub is also envisioned to be an innovative project and test proven and new ideas for sustainable landscaping and Low Impact Development (LID). Onsite retention and reuse of stormwater is a key strategy for addressing sustainability on the project site. This strategy, as further detailed in Chapter 5: Design Guidelines, will utilize the following design elements:

- Large and small bio-retention areas that provide landscape and aesthetic beauty in drought and flood conditions
- Bioswales
- Permeable paving for vehicle surfaces
- Permeable paving for pedestrian paths
- Natural ground cover such as decomposed granite and landscape

These bio-retention areas are located throughout the project site so stormwater runoff from all impervious surfaces and buildings can be directed to adjacent bio-retention basins and bioswales where water will naturally infiltrate. In addition to bio-retention areas, a majority of the project site will be comprised of permeable paving or permeable landscape areas. These areas will enable water infiltration in place and will not rely on directing water flows to bio-retention areas.

FIGURE 4.6: Stormwater and Green Infrastructure Systems



Electrical, Natural Gas, and Communications

ELECTRICAL SYSTEMS

SMUD is the local electrical utility that will be serving the project site. A new dedicated SMUD service will be brought to each of the three user areas (CMC, CA DOJ, and Future Users) so they can be metered separately. In addition, a fourth SMUD service will be used for overall site electrical need, which will be the responsibility of Sacramento State. The utility primary connections will be extended to the project site from the existing 12kV SMUD underground circuits on Ramona Avenue. The size of each 277/480V, three-phase service for each of the users is shown on the table below.

In addition to SMUD service, the project site has the potential for significant onsite photovoltaic electrical generation. The Master Plan proposes to integrate renewable energy production throughout the project site as one of the primary ways electric technologies are promoted throughout the project. While the final placement of these facilities will be determined during the detailed project design phase, solar energy production should be located on building rooftops and above parking areas. Additional strategies are also encouraged, including solar facilities that provide shade for pedestrian paths and gathering areas, are integrated into bus shelters, located at vehicle and bicycle charging stations, and other similar site facilities.

NATURAL GAS

Electrical energy is envisioned to be the primary energy source for the project site. However, specific uses within the CA DOJ facility will need natural gas hookups. This include laboratory equipment and other ancillary uses. As such, the CA DOJ building can connect to the existing natural gas service located in Ramona Avenue. The final connection and sizing will be determined as part of the design process for the CA DOJ building when refined programming needs are determined.

TELECOMMUNICATIONS

Both AT&T and Comcast are the telecom companies serving this area. AT&T will be providing the telecom service to the project site. An existing vault is located on Ramona Avenue at the center of the property where the new fiber lines will tie into. A separate service will be brought to each of the four new buildings to the main distribution facility (MDF) in each building. Sacramento State will have their own separate IDF in each building to separate the tenant and University networks.

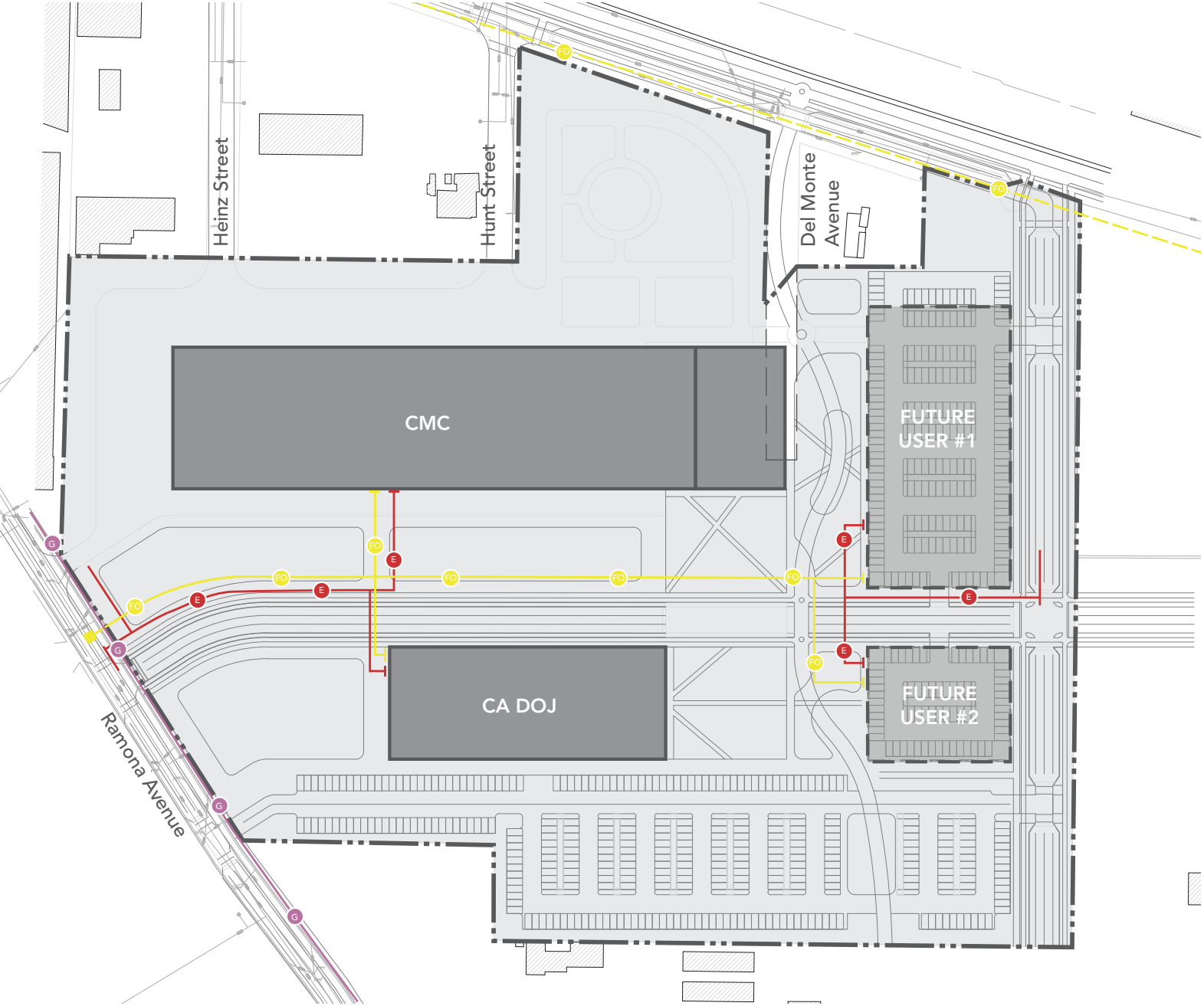
EMERGENCY "BLUE PHONES"

Similar to the main Sacramento State campus, The Hub project site will include the placement of blue phones to provide added safety and security. These phones are envisioned to connect to the University's main campus system through an extension along Ramona Avenue. The final location and placement of the blue phones on the campus will be determined during the detailed design phase of the project.

TABLE 4.6: Electrical Demand Estimates

	CMC	CA DOJ	Future User #1	Future User #2	Site	Total
Total SF	182,400	250,000	200,000	90,000		
W/SF	18	15	12	12		
kVA	3,283	3,750	2,400	1,080		
Amps @ 480V	3,951	4,513	2,888	1,300		
SERVICE SIZE	**4,000 A**	**5,000 A**	**3,000 A**	**2,000 A**	**600 A**	**14,600A**

FIGURE 4.7: Electrical, Gas, and Telecommunications Systems



CONCEPT: CENTRAL GREEN

The Central Green is the physical embodiment of the Vision and Guiding principles developed through the engagement process. The Hub Central Green will become the heart of the project. It will be a place for gathering, collaborations, activities and programming, outdoor learning, and relaxation.

CHAPTER 5
DESIGN GUIDELINES

The site and building design vision for The Hub is to create an integrated, sustainable, healthy, and functional project that serves the unique needs of all users. This chapter provides guidance to design and develop The Hub project based on the Development Concept (Chapter 4). The Development Concept balances the realities of implementation with a sustainable, healthy, and inclusive design project. To enable the ability to find creative, holistic solutions, these design guidelines primarily focus on desired performance outcomes; with more specific standards for particular topics when appropriate. Altogether, these guidelines ensure flexibility for future designers and decision makers to implement specific details according to changing circumstances and influence from preceding design decisions.

Introduction

Thoughtful, functional, beautiful, and sustainable design for The Hub is critical to implement the Vision for The Hub and to support each user's needs.

The following design guidelines build from the 2015 Sacramento State Campus Master Plan (CMP), and are tailored to the specific uses, functions, and users that will call The Hub home.

From this starting point, the University design guidelines were adapted based on best practices, specific programs, and unique site conditions. The Hub's location within the Sacramento Center for Innovation (SCI) area further motivated the potential of each design guideline to exemplify innovation.

Innovation does not necessitate technology solutions, nor is it limited to creating building shells for companies to develop new products and technologies. Technology is only a complement to the fundamental changes needed to transform the built environment into sustainable communities designed for people. This Master Plan guides urban design innovations on The Hub site using ordinary elements that have long existed. For example, a raised intersection exemplifies a return of public space for people: it makes crossing easier for pedestrians, reduces vehicle speed, and when made of permeable pavers, provides visual prominence and allows water infiltration. If there are any challenges to implementing a raised intersection because it is uncommon, there is no better place than an innovation district to work through requirements – and provide a model for environmental justice in urban design that can extend through the city.

These design guidelines provide a bridge between issues that directly impact, influence, or generally relate to a project at the macro scale (citywide or regional) with the individual details that enable its implementation. It is only through support at each individual detail that broad goals and objectives can be achieved. Guidelines that consider emerging and long-standing macro considerations with existing specific guidelines and standards will ensure The Hub will be an extension of the aesthetic theme of the main University campus as well as fulfill Sacramento State's commitment to sustainability and improving quality of life.

CHAPTER STRUCTURE

The design guidelines included in this chapter are organized into three categories, each containing specific topics that will enable flexibility while encouraging a consistent design theme, as shown on the following page.

PART 1
SUSTAINABILITY GUIDELINES

- Overview
- Water Cycle
- Renewable Energy and Electrification
- Site Use and Behavior

PART 2
SITE AND LANDSCAPE GUIDELINES

- Overview
- Open Spaces
- Hardscapes and Paths
- Streets and Parking
- Transition Areas
- Wayfinding and Signage
- Lighting and Shade Structures
- Site Furnishings
- Site Utilities
- Safety and Security
- Low-Impact, Low-Maintenance, and Low-Water Design
- Interactive Landscape
- Innovation and Technology
- Plant Palette

PART 3
BUILDING GUIDELINES

- Overview
- Exterior Character
- Massing
- Placement
- Building Utilities
- Interior Systems
- Parking Structures

Part 1
Sustainability Guidelines

The Hub will become a model for sustainable research park design, focusing on community health and the local ecosystem.

Located in the capital of the Nation's leading center of sustainable policy, Sacramento State champions the highest standards in environmental stewardship, respect for cultural diversity, and responsibility for the careful investment of public and student dollars. This "Triple Bottom Line" – an accounting framework that incorporates three dimensions of performance: social, environmental, and financial sustainability – defines success for a broad set of perspectives from the University's many stakeholders including students, faculty, biologists, policy makers, regional planners, and the University's neighboring communities. These principles and approach were codified in the 2015 CMP and form the basis of The Hub's sustainability guidelines.

There is not a single decision that does not have sustainability implications. At the most detailed level, screws and bike lanes need source materials; they are fabricated and transported to the site. At the macro level, design choices like the siting of buildings can influence future development and contribute to, or hinder, development of a walkable neighborhood fabric, which moves people away from the current over-reliance on personal vehicles. Each development step can occur through unchanged processes or there can be a truly sustainable means to an end. The following sustainability guidelines provide the sustainability framework for all design elements at The Hub.

SUSTAINABILITY GUIDELINES

1. Sustainability considers both the environmental footprint from human systems and benefits to the health of natural systems. Sustainability considerations are all-encompassing and should be maximized throughout the entire project.

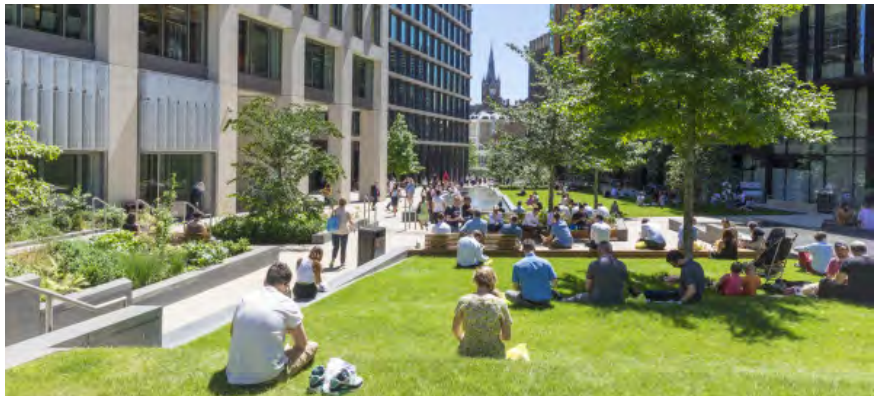
2. Design decisions should minimize total environmental impacts and maximize benefits. The environmental impact should measure the total life-cycle costs and embodied energy across the supply chain.

3. The Hub is envisioned to be a Net-Zero Energy project. There is flexibility for the variety of strategies to achieve the overall Net-Zero target, but a design approach that maximizes net-zero energy on-site (through minimal building energy use and maximum renewable energy production) is the ideal.

4. The Hub will be designed as LEED Silver, as required by the California State University (CSU) system. It is encouraged that individual projects be designed as LEED Gold or Platinum.

5. Sustainability infrastructure should be designed to benefit the visual and performance qualities of the public realm.

6. Well-designed and engaging information and exhibits should be incorporated with all sustainable designs to increase awareness.



SUSTAINABILITY IN HUMAN SYSTEMS

This perspective considers the human climate impact: carbon emissions, energy use of buildings, or percent of people who drive alone to work. Individual elements, and their relationship to other elements, should be designed to respond to future climate conditions as well as minimize human impacts.

SUSTAINABILITY IN NATURAL SYSTEMS

This perspective considers the health of natural ecosystems from wildlife habitat to the water cycle. Design decisions should not just seek to minimize human impact, but should also increase the health and vitality of natural systems.

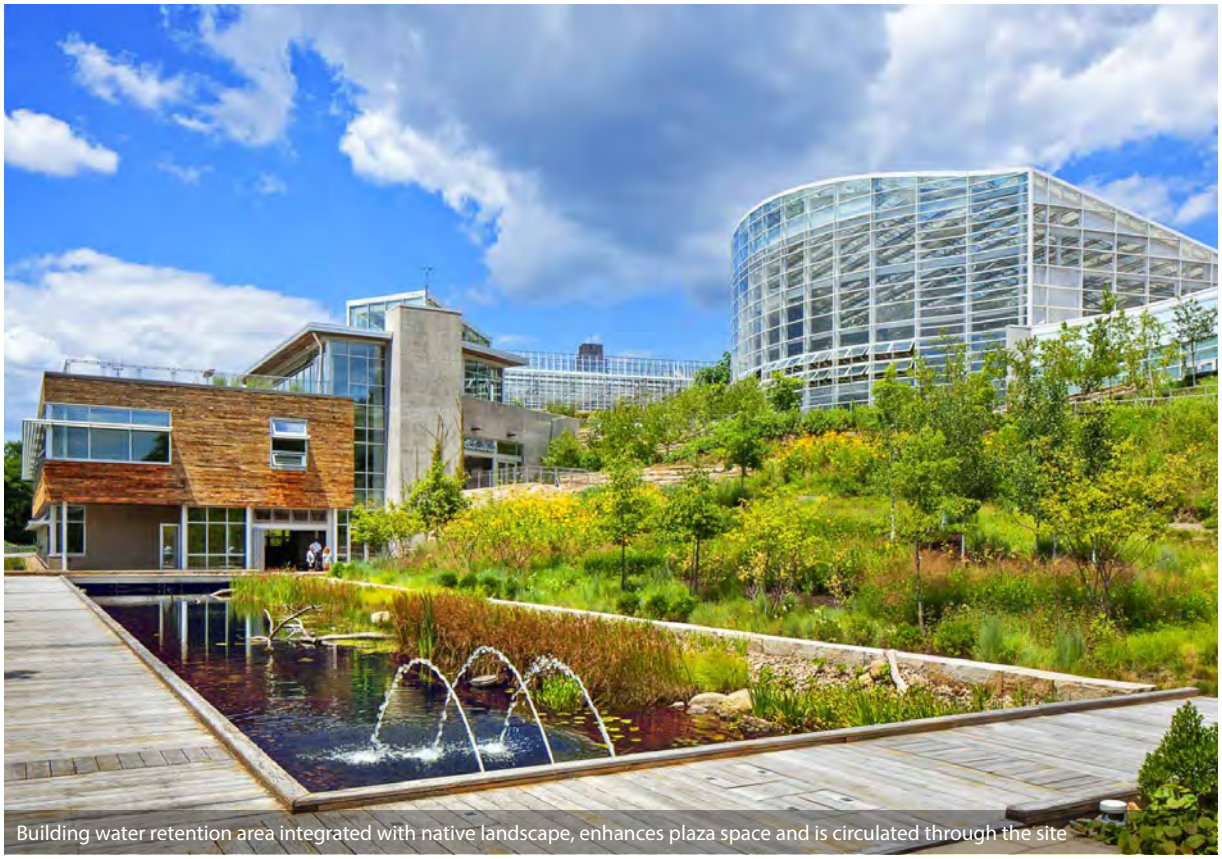
Water Cycle

The complete cycle of water should be designed as an integrated system throughout all elements of The Hub. The project can act as a closed loop system for capturing and circulating water that works between the public realm and individual user buildings/ open spaces. As The Hub will not have a central plant facility, an integrated system for water that each building can connect to will rely upon site and landscape design. Elements for water could include:

- Rainwater harvest for building use
- Building greywater for plant irrigation
- Bioswales and rain gardens
- Natural filtration of water

DESIGN GUIDELINES

1. All rainfall that falls on-site should remain on-site.
2. The site and buildings should maximize water use from rain collection and recycling; they should minimize imported water.
3. The Hub should support Low-Impact Development (LID) standards and strategies.
4. Individual building stormwater approaches should be integrated with other buildings and site stormwater.
5. Green infrastructure (e.g., bioswales) that support natural flows, filtering, and subterranean percolation should provide for all stormwater management. Grey infrastructure (e.g., concrete stormwater systems) should be avoided.
6. Water storage and circulation elements should be designed as visible and useful infrastructure as much as possible – creating shallow pools, fountains, bird baths, etc.
7. Incorporate water features into the design of open spaces to provide cooler micro-climates.
8. Landscape should be integrated with water elements to provide animal habitat and natural filtering of water.



Building water retention area integrated with native landscape, enhances plaza space and is circulated through the site

Water retention located next to building also acts as an outdoor amphitheater

Open air rainwater collection integrated with plaza space

Water features for passive cooling and interaction integrated with irrigation, rain capture systems

Open air rainwater collection leads to fountain and landscape

Renewable Energy and Electrification

The Hub is envisioned to become a Net-Zero Energy project. Currently, Net-Zero status is mostly achieved by buying carbon offsets and/or developing renewable energy infrastructure off-site rather than developing design solutions to minimize energy use and maximize energy production on-site. Industrial-scale solar and wind farms may be more efficient, but they do not account for their total externalities.

As a result, there are a number of variables which, alone or in combination, may bring the project closer to Net-Zero Energy:

- More aggressive Energy Unit Intensity (EUI) reduction targets for new buildings
- Increased production of on-site solar power
- Ground-source heat-exchange technology
- Reductions in projected building square footage (e.g., parking garages)
- Purchase off-site renewable power

DESIGN GUIDELINES

1. The Hub will support the need to reduce environmentally harmful emissions caused by fossil fuel energy generation and to improve the energy security as a driving policy for major infrastructure decisions.
2. The Hub should be 100% electric, including all site infrastructure and buildings – except for specific programs that require natural gas (e.g., California Department of Justice lab uses).
3. Every renewable energy production method (solar, wind, geothermal, industrial processes, data furnace, and hydro in project water circulation systems) should be incorporated into the site and/or building designs where possible.
4. Renewable energy infrastructure should be incorporated throughout the site as a way to enhance the pedestrian environment and provide aesthetically attractive designs. For example, solar panels structures can be designed not only as utilitarian structure, but interesting arrangements over parking lots; they can contribute to the articulation and visual interest of building facades; and they can be special features for elements such as bus shelters and active recreation facilities.
5. Electricity storage and battery systems should not be treated as utilitarian and back-of-house services; they should be designed to contribute to the pedestrian environment.
6. The renewable energy and electric grid system for The Hub should be designed to connect to a citywide electric grid system.

Building facade made of glass and solar panels

EV charging stations

Solar panels and green roof bus (or micro-transit) shelter

Conventional solar panel structures organized to create public gathering space and natural landscape

Solar panels incorporated into handball and basketball courts

On-street parking vehicle charging station

Site Use and Behavior

How the project is used by people will support, or work against, the sustainability (GHG emissions), natural ecosystem restoration, and renewable energy/electrification goals of The Hub. How people travel to The Hub and how they interact with the physical environment while on-site should advance actions that promote environmental sustainability and human health.

DESIGN GUIDELINES

1. The project should be designed so human environments are symbiotic with natural ecosystems; infrastructure and human environments should not come with any expense to nature.
2. The Hub should create sustainability targets for categories that can be influenced through design:
   - Commute by active transportation modes vs. private vehicle
   - Amount of recycled vs. compost vs. trash materials collected
   - Water usage
3. The Hub should develop a program (and supporting infrastructure) for monitoring and collecting data on individual targets; reporting and sharing the performance among the University, The Hub users, and general public.
4. Policies should be developed to update physical infrastructure and/or policies to ensure those targets from Guidelines 2 and 3 are met.
5. The site should incorporate elements for human physical activity and enjoyment (e.g., swings, trampolines, etc.) that are small enough to not create liability issues. See interactive landscape for more details.
6. Access to The Hub should prioritize active transportation modes: walking, walking from bus and light rail stops, bicycle, scooter, skateboarding, roller-blading, etc. Opportunities to ensure priority for active transportation modes includes: financial investment prioritized for active transportation, inclusion of a bicycle hub and shared mobility docking stations, facilities protected from vehicles, and locational priority given to active transportation, among others.
7. Active transportation parking will be prioritized to be closer and more convenient to buildings than vehicle parking.
8. Vehicle parking does not need to maximize convenience and minimize distance between parking lots and destinations. Only exceptions are to meet accessibility requirements and the minimum spaces and loading areas needed to temporarily drop-off secure evidence for CA DOJ.
9. Buildings should be designed to encourage individuals to use stairs rather than elevators – providing health benefits to users and lowering building energy use.

Bike and pedestrian counter monitors and encourages use

Bicycle hub incorporates a sloped green roof as a pedestrian gathering and activity space


Relationship between buildings and open spaces should create a vibrant setting that supports active and passive uses together

Part 2
Site and Landscape Guidelines

Project site and landscape elements will be functional, beautiful, and sustainable, while reflecting the University's design style.

Sacramento State is designated as a "Tree Campus USA;" and the quality of the main campus landscape is a recognizable part of the University's "brand." The site and landscape guidelines will not just extend that character to The Hub site, but it will provide the foundation for site and landscape design.

Similar to the landscape guidelines in the CMP, the following site and landscape guidelines should be viewed as a holistic plan and provide a way for the natural environment to:

- Embody the University Arboretum;
- Unify the appearance of the project and continue the University tradition of maintaining a diverse collection of trees, shrubs, and groundcovers;
- Showcase buildings, open spaces, and other project/site elements;
- Provide a hierarchy and diversity of outdoor spaces and develop or reinforce the recognizable character of the major Hub open spaces;
- Support an integrated, human-scale pedestrian network;
- Respond to the range of climatic conditions by establishing comfortable micro-climates and providing shade along walkways and in outdoor seating and gathering areas;
- Use lighting, open space, and furnishings to contribute to the perception and actuality of a safe and secure project;
- Minimize the visual and acoustic impacts of automobiles and parking facilities; and
- Conserve human and natural resources by recognizing the need to reduce water and maintenance requirements for planted areas.

RELATION TO SUSTAINABILITY FRAMEWORK

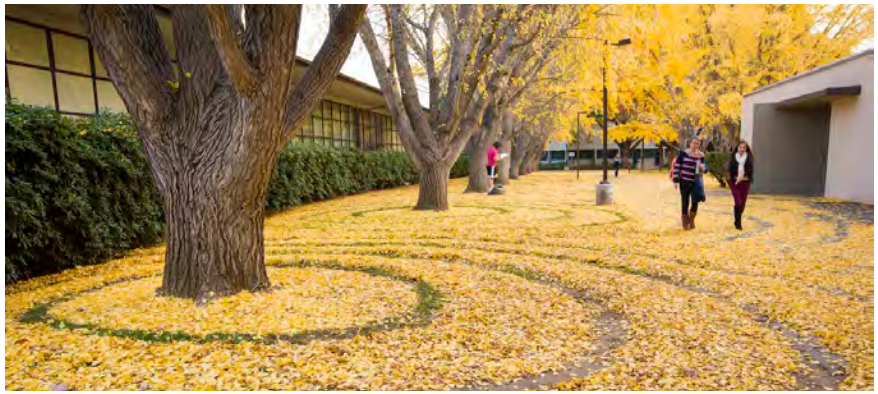
The University CMP states to, "Incorporate landscape into the overall campus sustainability program." Similarly, all site and landscape guidelines will support the sustainability guidelines that form the overall framework for development. Site and landscape guidelines are additive to the sustainability guidelines.

DESIGN GUIDELINES

1. Design the built environment with nature.
2. The Hub shall be a regenerative project that restores natural ecosystems.
3. Landscape and site development and design elements should provide both aesthetic and performance benefits.
4. Performance benefits address both humans and natural ecosystems.
5. Site and landscape development should restore and improve the health of natural ecosystems.
6. Any site development should be designed to maximize ease of future upgrades and ongoing maintenance.
7. All site development should minimize waste. For example – in conjunction with Guideline 6 – to update utilities under an asphalt road requires tearing up the asphalt road and creating waste. Alternatively, a road made of brick pavers, or similar materials, can be deconstructed to access utilities and then reassembled, creating zero waste.

MULTI-PURPOSE AND INTEGRATED LANDSCAPE SYSTEMS

Allow for spaces to respond to changing environmental conditions: temporary flooding creates a new courtyard experience, etc.



BUILD UPON UNIQUE UNIVERSITY AND REGION FEATURES

Sustainability begins by designing with the natural conditions of a place; this also supports authenticity and the unique character of a place.

Open Spaces

All beautiful university campuses exist because of the quality of their open spaces. The Hub will be organized like the University's series of quads, courtyards, plazas, and tree-lined paths to create a beautiful pedestrian district.

These open spaces will form a hierarchy for The Hub site organization, the pedestrian circulation system, and serve a variety of programmed and informal uses. Some open spaces are furnished with seating and function as destination points for students, faculty, staff, and project visitors.

There are six primary types of open spaces planned for The Hub that will accommodate human activities, stormwater, and/or sustainability:

- Rooftop Gardens
- Central Green
- Greenway Corridor
- Courtyards/Plazas
- Rain Gardens/Bioswales
- Orchards

Specific planting for each open space area will be based on the plant palette section of the design guidelines.

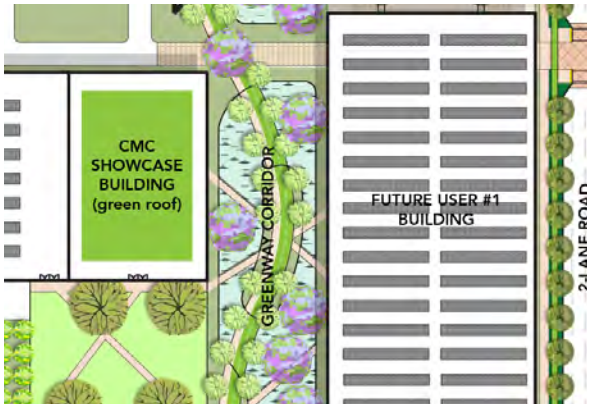
ROOFTOP GARDEN

Rooftop garden located on the CMC Showcase building.

1. All buildings are encouraged to have rooftop gardens.
2. Access to a rooftop garden should be a focal element of building design and integrated into the primary vertical stair and elevator circulation.
3. Rooftop gardens can be developed to support a diversity of uses: pollinator landscape, edible garden, gathering space, and many others.
4. Rooftop gardens can be designed to focus on one use (e.g., community garden), but should be designed to accommodate multiple uses.
5. Solar panels should be integrated with rooftop garden design – e.g., as a canopy for gathering spaces and/or provide adequate amounts of shade for specific herbs/vegetable species.
6. Gathering spaces should be designed to accommodate: events, interactive gathering areas, dining terraces, work collaboration areas, and quiet personal spaces such as reading gardens.

Gathering and event garden rooftop with solar panels

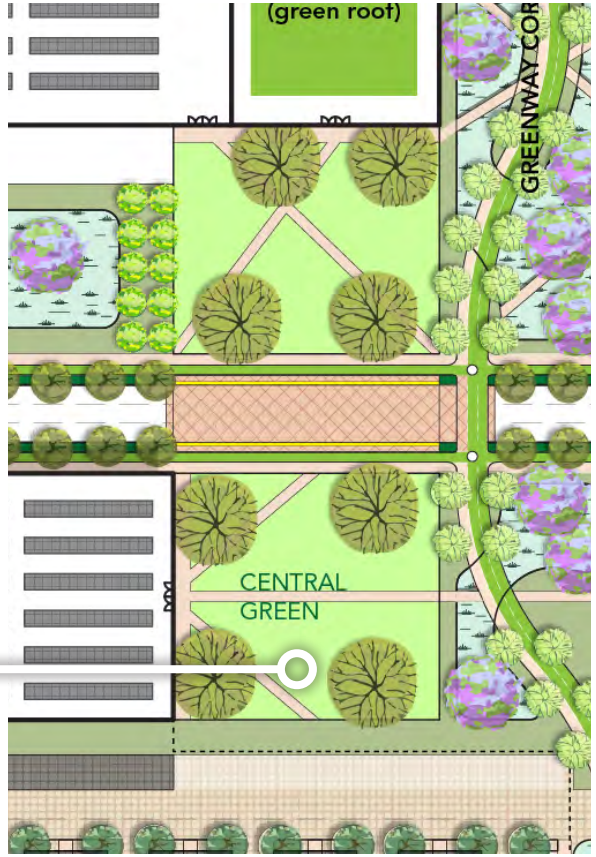
Community vegetable garden rooftop



CENTRAL GREEN

The Central Green will be the signature open space at The Hub, similar to the University's Grand Central Quad, but with some noteworthy differences. Specifically, the Central Green:

7. Shall be publicly-accessible.
8. Will act as the commons space for all buildings; all buildings should be oriented to the Central Green.
9. Used for passive recreational activities, outdoor classrooms, scheduled events, and similar activities.
10. Characterized by drifts of large canopy trees and drought-tolerant plantings.
11. Bordering pathways and open spaces should have the effect of reinforcing the large central open space.
12. Central Green will not use turf grass. Ground cover should utilize a variety of low groundcover, ornamental grasses, and other shrubs to allow for pedestrian use of the central green landscape areas in addition to pathways through the Central Green.



Central Green will be landscaped with a variety of drought-tolerant, native grasses, shrubs, and ground cover; no grass turf

GREENWAY CORRIDOR

Design of the Greenway Corridor is intended to resemble the Green Hornet Trail on the main campus. It extends through the project incorporating plantings, pathways, and stormwater management features, and will become an indelible component of the University's identity and brand.

13. The Greenway Corridor provides the spine of the pedestrian and bicycle pathways through The Hub site; paths can be placed on its edges and crossings at numerous points.

14. A multi-use path includes separate bicycle and pedestrian areas. Elements like lighting and seating can provide buffer between bicycles and pedestrians.

15. The multi-use trail should be covered by a continuous shade canopy in formal arrangement. Solar panel sculptures integrated with the tree pattern can also be used to provide continuous shade canopy.

16. Incorporates bioswales/rain gardens as the stormwater management system consists of a series of linked landscape areas constructed to capture and filter stormwater and irrigation water runoff.

17. Within the bioswale/rain gardens, plantings will consist of trees, shrubs, groundcover, and indigenous plants set in a more informal manner.

Continuous tree canopy over path; planting adjacent to path

Light poles separate bikes and pedestrians; formal tree arcade

COURTYARD/PLAZA

The courtyards and plazas for The Hub should follow the current main campus system of formal spaces in the Academic Core. Plazas and courtyards can be associated with one or more buildings, or with other open space typologies.

18. Entrance plazas will provide more formal and distinct thresholds to building entrances.

19. Courtyards can be more informal in character than plazas and will be developed to provide for a diversity of uses, including: interactive gathering areas, dining terraces, outdoor classrooms, work collaboration areas, and quiet personal spaces such as reading gardens.

20. The proposed character of courtyards/ plazas will reflect, and be in concert with, the proposed uses for the adjacent building(s). Open spaces can be activated through the selective location of program elements such as cafes, lounges, and building entries.

21. A variety of seating should be provided in courtyards and plazas – variety of seating within spaces and/or between spaces.

22. Small gathering areas will be provided at key building entries and key pedestrian intersections to encourage increased social interaction between project users.

23. The landscape character for courtyards will continue with the manicured, somewhat more formal character of these open spaces.

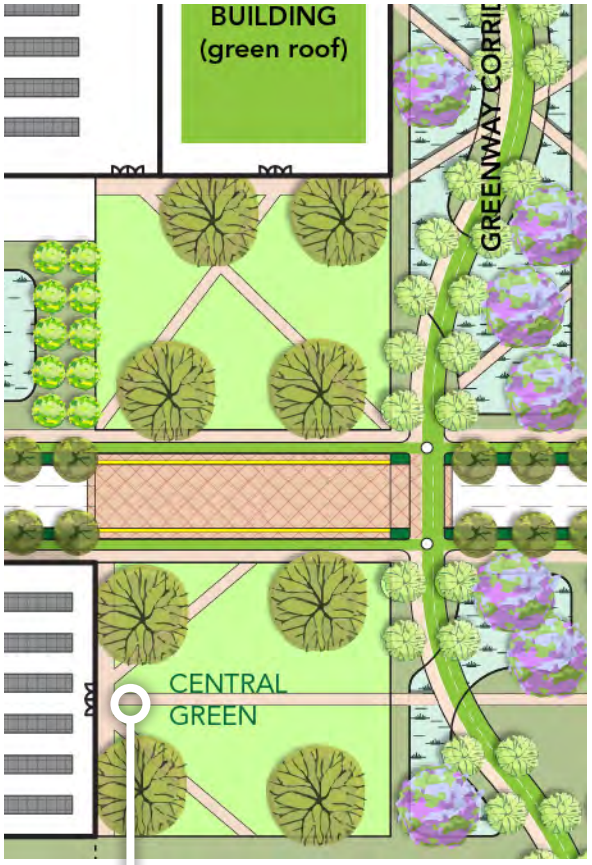
24. Special accent planting, such as flowering trees and shrubs, should be used to highlight building entries and add visual interest to outdoor gathering spaces. The use of low walls and other special landscape elements is also encouraged in order to define spaces and create focal points.

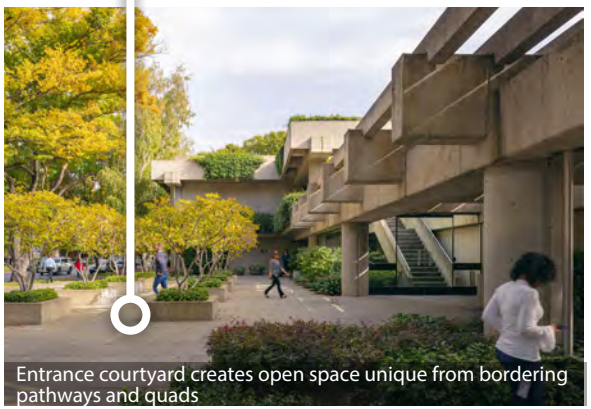
25. The landscape of courtyards should respond to the Sacramento climate of hot summers and mild winters. Planting of deciduous trees provides shade in the summer and light, sunny spaces that take advantage of mild winter days.

26. Selected and limited use of water in key gathering areas can provide a cool retreat or oases in hot summer months.

27. Low shrubs and groundcovers should be planted adjacent to buildings to soften the edges of the structures and add an element of human scale.

28. Additional bosques of flowering and canopy trees should be planted as appropriate to create focal areas within the courtyards and quads.





Entrance courtyard creates open space unique from bordering pathways and quads

RAIN GARDENS AND BIOSWALES

Rain gardens and bioswales provide a way for the project to manage stormwater as it comes off building roofs and horizontal elements. Rain gardens refer to large areas where water collection occurs and can also act as pedestrian spaces. Bioswales refer to small, local landscape areas that drive stormwater away from hardscape areas (e.g., buildings, streets, and parking lots) toward planted areas.

29. Rain gardens and bioswales should support the overall Low-Impact Development (LID) strategy.

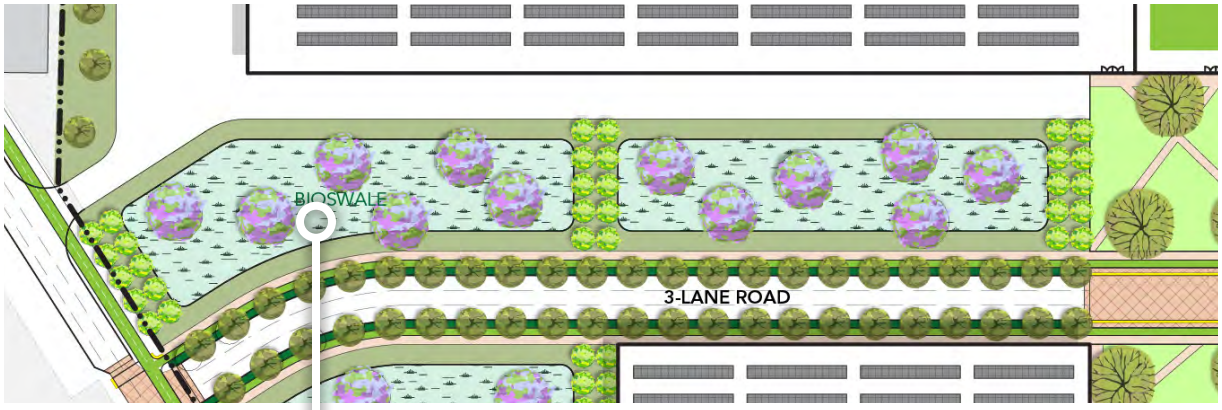
30. Each rain garden will help manage and mitigate stormwater for the building infrastructure and hardscape within its immediate surroundings.

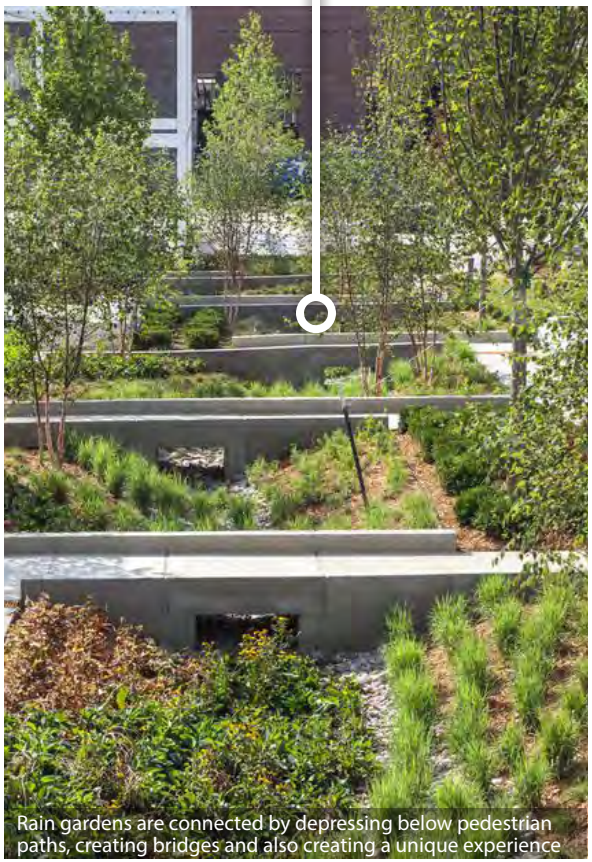
31. Water collected from building rooftops and parking will be directed into an adjacent rain garden for filtration and detention. All other runoff will infiltrate back into the water table.

32. Rain gardens should be depressed from pedestrian paths and other landscapes.

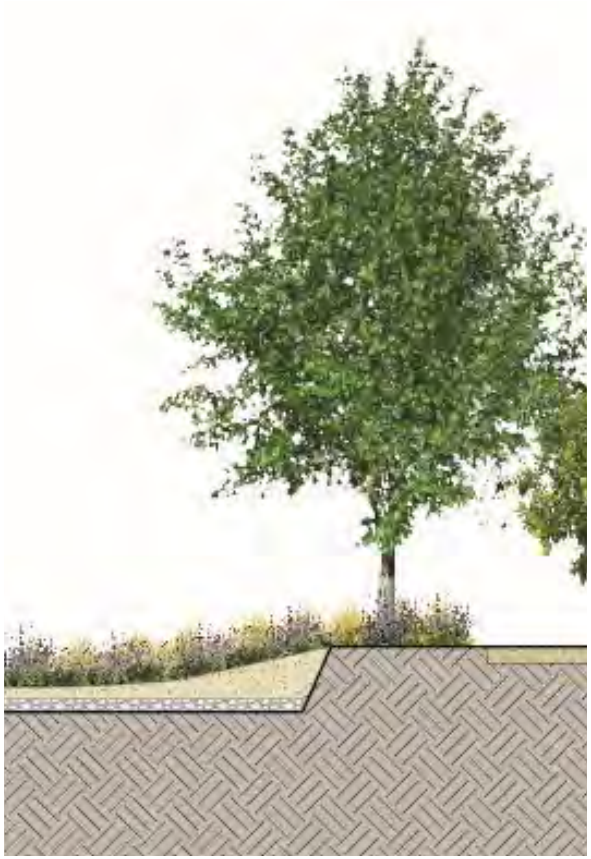
33. Pathways can travel through rain gardens, but should still allow for a connected water collection area.

34. Rain garden plantings should create a sense of place by adopting the characteristics of site surroundings and extending the site landscape to the areas near buildings.





Rain gardens are connected by depressing below pedestrian paths, creating bridges and also creating a unique experience

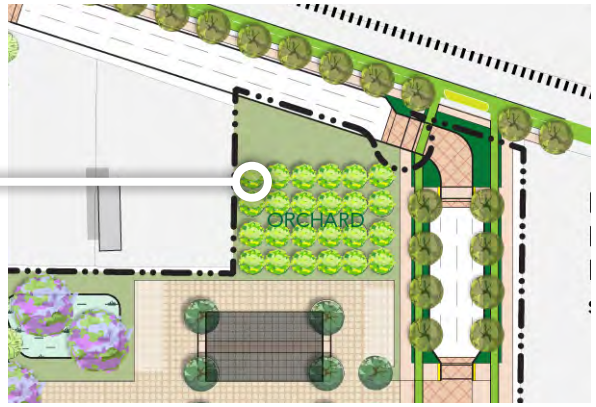


ORCHARDS

Orchards are edible gardens that add to the extensive tree canopy of The Hub. Orchards are envisioned to be complementary spaces to the larger open spaces: Central Green, Rain Gardens, and Greenway Corridor.

35. Orchards should be located throughout the project as complementary spaces.
36. Orchards should consist of at least two rows of trees planted formally/ symmetrically.
37. Orchards act as places themselves – a central path and/or seating/gathering areas under the canopy.
38. Decomposed granite or other similar natural material should be used for groundcover.

Orchard as its own gathering space with communal tables



Regular tree planting creates formal axis; natural groundcover

Hardscapes and Paths

DESIGN GUIDELINES

1. All areas of pedestrian circulation should be designed for universal accessibility.
2. Hardscape areas should maximize permeable design to support Low-Impact Development (LID) and allow water infiltration in place: decomposed granite, permeable pavers, and concrete pads separated by permeable strips.
3. When impervious concrete is used, it should be designed for water to flow to adjacent permeable areas.
4. The CMP Landscape Guidelines highlight primary pathways as promenades.
5. Primary pathways will be treated with a consistent quality of landscape, hardscape, signage, and lighting. Pedestrian-scale lighting and formal plantings of canopy and flowering trees should be used to reinforce the hierarchy of the promenades within the pedestrian network and orient pedestrians to the circulation network.
6. Primary pathways should be approximately 10 feet wide where possible in order to accommodate groups, as well as emergency /service vehicles.
7. Individual seating areas (e.g., benches) can be incorporated along primary pathways and can define their edges.
8. Secondary walks are meant to be more informal in character, and are based on a loose 'network' of walks and paths that are narrower than the primary pathways. Secondary walks can diverge from a formal grid to reinforce diagonal desire lines.
9. Secondary walks should be planted informally with trees to provide interest and shade.
10. Group seating areas should be incorporated along secondary paths.
11. Walks providing universal access, with a maximum slope of 1:20, are preferred over ramps or stairs. The unavoidable length of ramps will acknowledge, and be incorporated into, site design with stairs provided at the sides as complementary elements.
12. Where possible, the University should install permeable paving at hardscape areas to reduce stormwater runoff and mitigate oils and heavy metals commonly found in hardscape runoff. Candidate locations include existing surface parking areas, new plaza spaces, pedestrian promenades, and expansive hardscape areas.
13. The University should install open cell-type pavers in lawn and planting areas to accommodate the Emergency Vehicle path of travel while minimizing hardscape.
14. In areas where permeable paving is proposed, soil should be tested to determine its infiltration rate and load-bearing characteristics. With this data, recommendations can be made for underdrain systems and subsoil stabilization. A permeable paving strategy should be selected to minimize the need for underdrain systems.
15. Permeable paving should be regularly maintained per best management practices to ensure efficient and long-term functionality.

Decomposed granite and concrete paths

Decomposed granite seating area

Seating and landscape define the pathway edge

Pathway covered by lemon orchard and supporting trellis

Separate materials, design, and facilities for multi-use path

Group seating and landscape along secondary path

Streets and Parking

STREET GUIDELINES

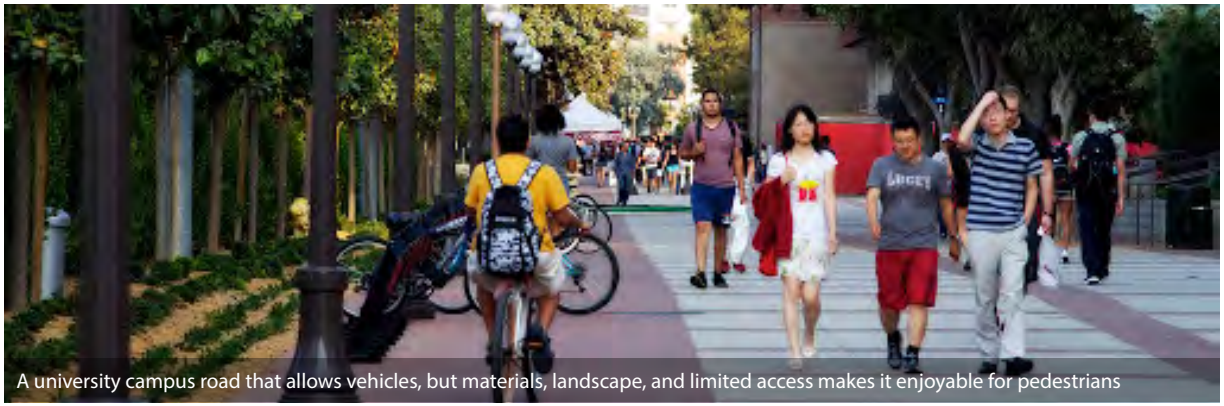
1. Streets should be located that would enhance an interconnected neighborhood street grid.
2. All streets should provide separated facilities for pedestrian and bicycle users, both protected from vehicle traffic.
3. Streets should be designed based on future, forward-looking concepts for integrating landscape, autonomous vehicles, and returning space to pedestrians.
4. Streets should incorporate NACTO traffic calming elements in order to be designed to limit vehicle speeds to 20 mph.
5. Streets should be made of permeable pavers; brick pavers reduce the need for stormwater infrastructure and reduce vehicle speeds.
6. Crossing areas should utilize curb extensions to minimize crossing widths.
7. All street intersections, or other places where vehicle traffic crosses pedestrian pathways, should have a consistent design as raised intersections utilizing permeable paving material.
8. Streets should allow testing of autonomous vehicles; pedestrian street design will be a good test.

MULTIMODAL PARKING GUIDELINES

9. The Hub should include an active transportation parking hub (bike hub) that accommodates bicycles, scooters, etc.
10. The bike hub should be an architecturally significant building that advances sustainable, innovative design.
11. The bike hub should include facilities/tools for repairing bicycles, scooters, etc.
12. Shared-use bicycles and scooters should be incorporated into the bike hub.
13. The bike hub should be located to maximize: visibility, convenience to destinations (e.g., buildings), and relation to multi-use/bicycle pathways.
14. Active transportation parking should incorporate changes in elevation and materials to enable sightliness, delineate areas, and facilitate natural drainage.
15. Short-term bicycle, scooter, etc., parking should be included around the project.
16. Short-term active transportation parking should maximize convenience to building entrances.
17. Short-term active transportation parking should be covered and incorporate solar panels, pollinator plants, etc.

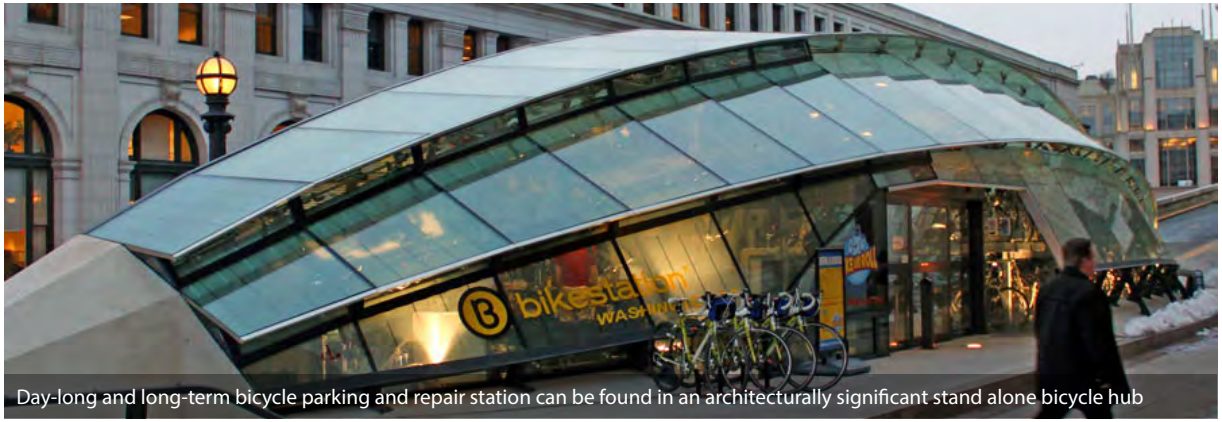
VEHICLE PARKING GUIDELINES

18. Parking capacity and location should be designed to be reduced throughout the project over time.
19. The priority for all aspects of parking lot(s) design is to maximize a pedestrian district; results to maximize convenience and minimize distance from parking to destinations are dependent upon developing the pedestrian environment.
20. Parking lots should be made environmentally clean and sustainable materials, not asphalt.
21. Parking lots should be permeable surfaces and/or incorporate bioswales so all water runoff infiltrates into the ground on-site.
22. Parking lots should not use solar panels where their use would preserve the continued use of a parking lot.
23. Parking lots should be at the same level as bicycle pathways and sidewalks. The transition from the street level to the parking lot level should occur on the street, creating a raised intersection at the parking entrance.
24. Parking lots should be designed to reduce heat island effect – tree canopy, solar panels, ground materials, etc.



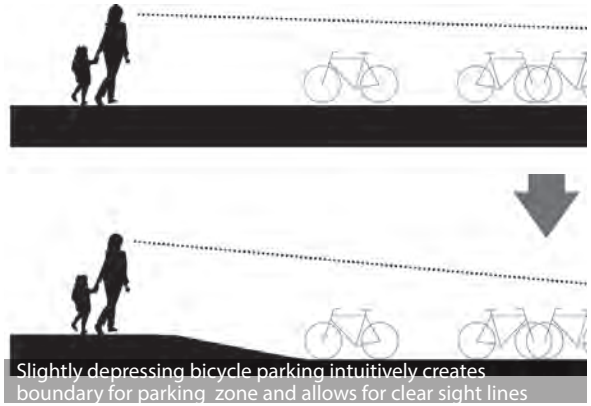
A university campus road that allows vehicles, but materials, landscape, and limited access makes it enjoyable for pedestrians

Raised intersection

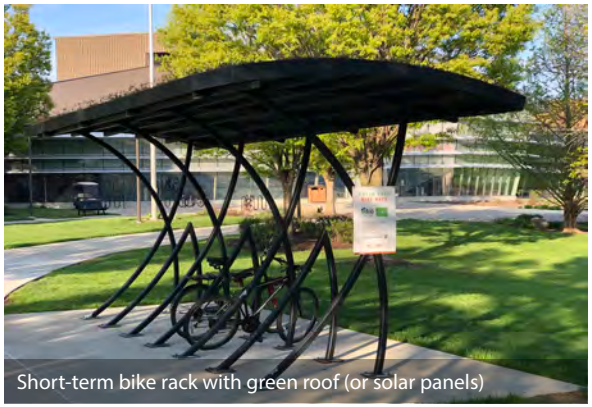


Day-long and long-term bicycle parking and repair station can be found in an architecturally significant stand alone bicycle hub

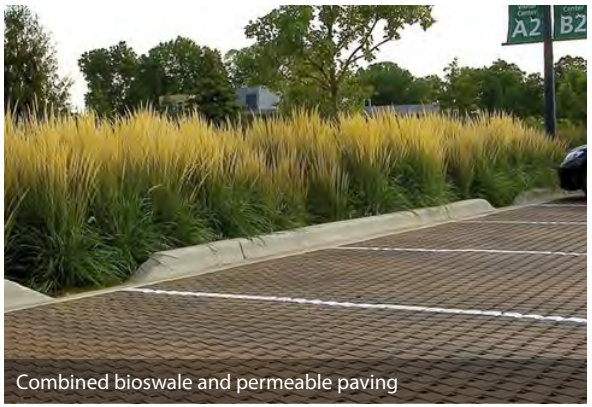
Pedestrian path separated from vehicles by bioswale



Slightly depressing bicycle parking intuitively creates boundary for parking zone and allows for clear sight lines



Short-term bike rack with green roof (or solar panels)



Combined bioswale and permeable paving

Transition Areas

There are multiple typologies of transition areas within The Hub:

- The boundaries of The Hub site and the surrounding neighborhood – both along private properties and public rights-of-way
- Between public and semi-public spaces on-site (e.g., transition from the Central Green to individual building plazas and/or courtyards), which can extend to include building lobbies
- The boundary of secure, outdoor areas (e.g., the CMC Test Track and loading/unloading of CA DOJ secure evidence)

All of these transition areas can be defined and designed based on individual elements. Typically these elements include placement of trees, design of crosswalks, fences, or building entrance location. Another way to influence transition areas is through the overall organization of the site. In this way, building placement and orientation, the design of street cross-sections, and arrangement of uses including secure/non-secure can provide the broader frame for individual design elements. The guidelines consider both approaches.

THE HUB SITE BOUNDARIES

1. The Hub should be open and accessible to the public. Individual areas within the project that need to be secure can be provided with authorized access.
2. The Hub should have an unique aesthetic character (i.e., identity) and should also support a seamless integration with the surrounding neighborhood based on the future build-out guidelines.

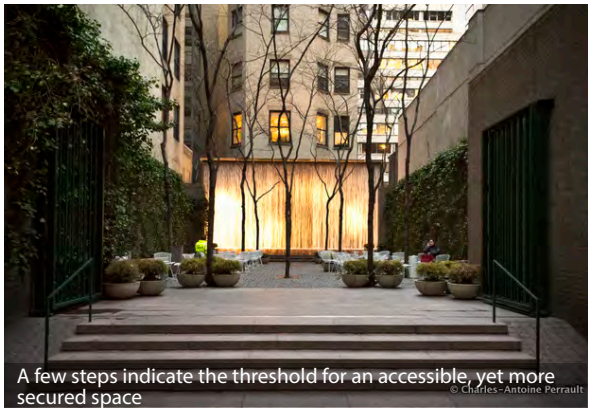
PUBLIC TO SEMI-PUBLIC / BUILDINGS

3. Prioritize landscape and hardscape design elements over built structures to define transition areas between public spaces and building entrance plazas.
4. Security checkpoints should occur within building lobbies.
5. Buildings can utilize key access for secondary entrances/exits; primary building entrance should allow for public access.

SECURE AREA BOUNDARIES

6. Fencing should be limited within the project. Other strategies like location of circulation and building facades should also be utilized to define the area of secure areas to limit fencing.

Landscape berms create outdoor spaces and frame a civic plaza while limiting vehicle access



A few steps indicate the threshold for an accessible, yet more secured space

Transparent fencing protects a secure parking area without creating isolated areas for pedestrians

Clear building base enables a variety of outdoor spaces with different levels of openness to public

A university campus with its own identity and accessible to the city visually and physically

Wayfinding and Signage

There are expected to be multiple types of signage within The Hub:

- Site wayfinding and identification (buildings, parking lots, etc.) – this is the base condition that will be consistent with the main University campus.
- Interpretive and interactive signage for site elements (e.g., sustainability elements) – consistent with the base condition.
- Branding for The Hub.
- Branding for individual users.
- Public realm signage (street names, on-street parking regulations, vehicle traffic signs, etc.).

Additionally, there also needs to be consideration for signage outside The Hub site (on the main University campus and within the surrounding neighborhood) that directs users and visitors to the site.

DESIGN GUIDELINES

1. Create clear and intuitive wayfinding. Wayfinding should first be intuitive rather than reliance upon signage. Facilitate wayfinding by reinforcing pedestrian circulation, framing vistas, and complementary building structures.
2. There should be a consistent overall theme for signage on The Hub that aligns with the main University campus (base condition).
3. The base signage condition specific colors, fonts, size, materials, etc., should be based on University signage standards.
4. If a signage and wayfinding plan is developed for a neighborhood area that includes The Hub (e.g., SCI Specific Plan), there should be some consistencies.
5. Reinforce the University's identity and signage/wayfinding system by using an integrated approach to landscape at the project entries.
6. Other than standard vehicle traffic signage, other public realm signage can be consistent with the base signage condition.
7. It is recommended that The Hub signage standards should be utilized for directional signage to The Hub within the surrounding neighborhood.
8. Wayfinding and signage should be thought about and designed with other project systems (e.g., signage for transit/shuttle considered along with electric signage for next arrival, bus shelter structure, solar panels, and connecting utilities).
9. Signage variations for individual users should still be consistent with the base signage condition in one or more elements. For example, they can use a different font and logo, but colors could remain the same, or vice versa.
10. Users can have their names at the roof level of the building in one location. Only one user name per building.
11. No large billboards on the site or on buildings; electronic signage should be limited.
12. Bus shelters can incorporate advertising signage. Use electronic advertising signage only if the bus shelter includes solar panels that provide enough to power the signage.
13. Streets and intersections should aid in wayfinding – indicated by special (i.e., permeable) paving.
14. Public art pieces can be incorporated throughout the project to aid in wayfinding.

FIGURE 1: Figure Title Goes Here

Existing main campus signage showing building use

University main campus identification signage


Solar panels as sculptures for placemaking and wayfinding

2015 CMP recommended new signage types


Site natural systems interpretive signage

California Mobility Center (CMC) branding


CA DOJ building with seal

Lighting and Shade Structures

LIGHTING

The Hub is located within an underutilized industrial area that is relatively dark at night and may feel unsafe to students, faculty, and staff to travel to or walk through at night.

DESIGN GUIDELINES

1. All lighting should be pedestrian scale; no highway scale lighting.
2. All lighting should maximize energy efficiency such as LED lighting or similar.
3. Color of lighting should foster an attractive atmosphere; avoid harsh lighting.
4. The Hub should be a model to eliminate light trespass from the project and reduce impact on night sky access.
5. Fixtures that direct light downward (e.g., "cut-off" fixtures) reduce sky glow and light pollution effects, and should be used in all instances.
6. Use a variety of lighting typologies for different outdoor spaces as a wayfinding and placemaking element.
7. Use lighting to reinforce/highlight buildings, landscape, and program uses.
8. Use lighting to contribute to the perception and actuality of a safe project.

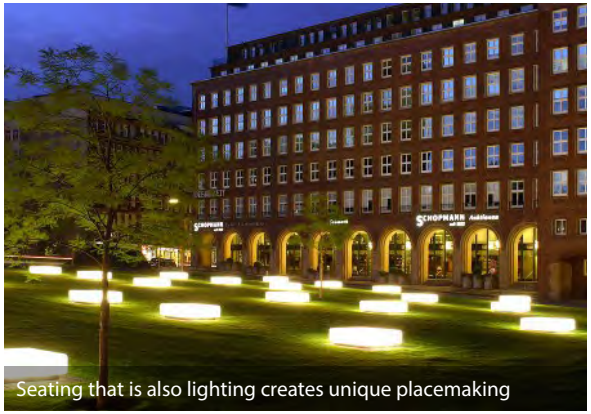
SHADE STRUCTURES

Shade structures include structures specifically for supporting solar panels (photo-voltaic – PV) as well as other structures like trellises, arcades.

DESIGN GUIDELINES

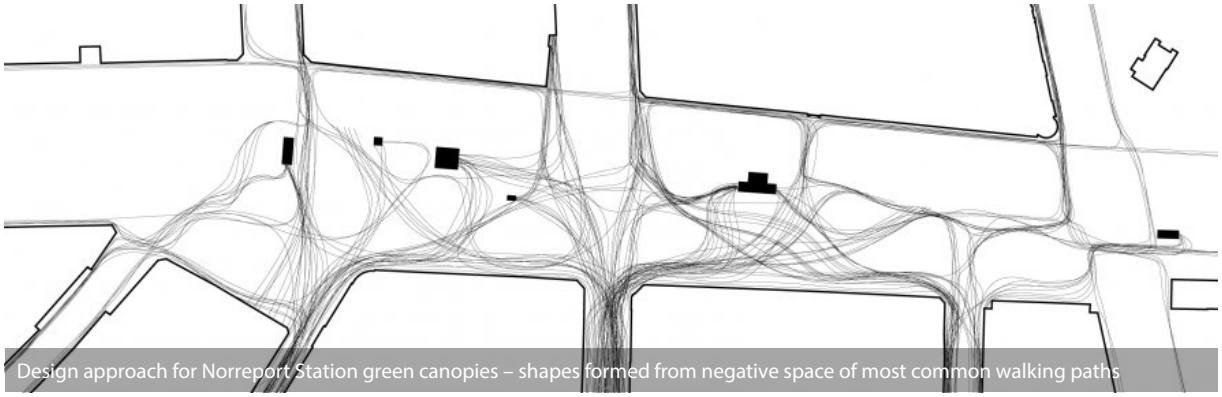
9. Use a variety of shade structures for different outdoor spaces to support wayfinding as a placemaking element, and still maintain project consistency.
10. Integrate shade structures with lighting.
11. Unless design intent is for finely filtered light, shade structures should incorporate landscape/green roof and/or solar panels.
12. Shade structures should be designed to complement mature growth of trees and be integrated with groundcover landscape.
13. PV panels over parking lots should be designed to allow for redevelopment of parking lots into buildings. PV panels and structures can be disassembled and reused on the building roof; underground utilities serving PV panels can serve as utility corridors for future buildings.
14. Wood shade structures and wood trellises should be used on ground and second floor facades to provide visual interest, divide the building face, and create human scale.

Building lighting designed to highlight entrance


Seating that is also lighting creates unique placemaking


Bollard lighting – unique designs and downward, well-lit paths

Shade structures designed around existing and new trees



Design approach for Norreport Station green canopies – shapes formed from negative space of most common walking paths

Multiple green canopies for Norreport Station still feel integrated along the street

"Cut-off" reflects light downward, reducing light pollution

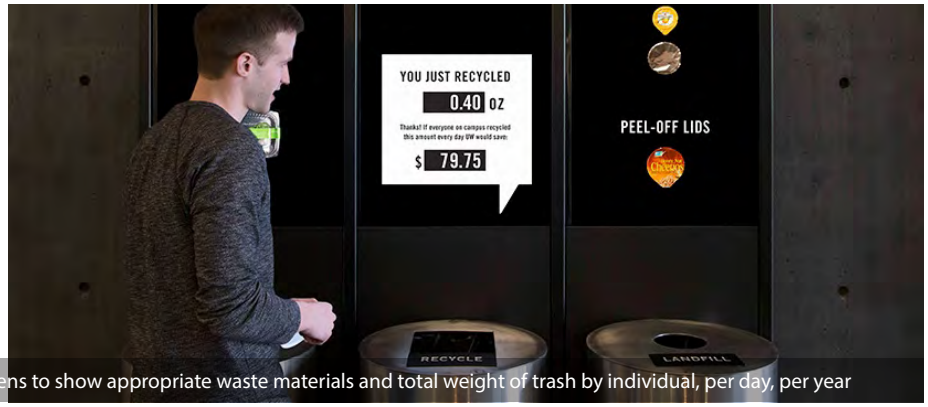
Pedestrian-scale lighting with warm colors for soft atmosphere and top covers to reduce night light pollution

Site Furnishings

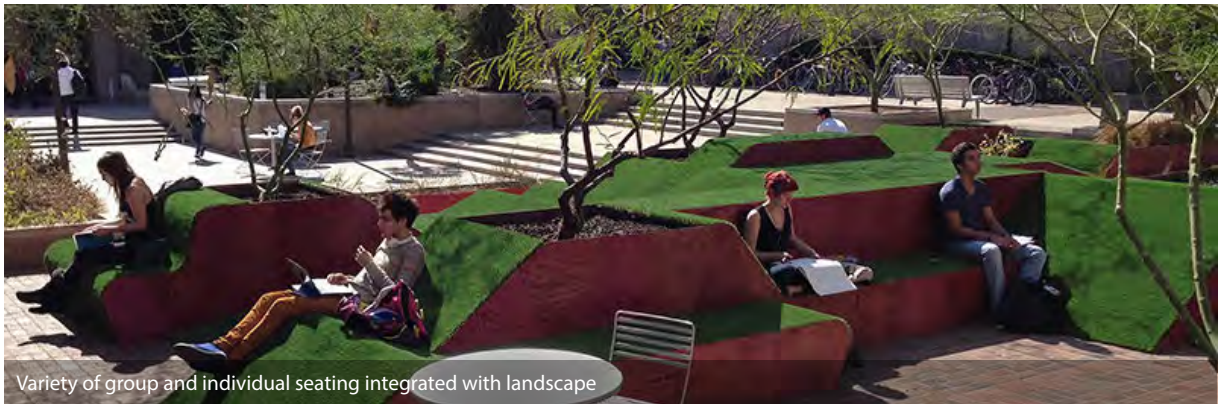
Recommendations from the 2015 CMP for site furnishings were selected for that document in order to stylistically blend in with main campus aesthetics while providing a clean, updated look. Based on the pastoral nature of the campus and the dense tree canopy, furnishings that are reminiscent of a classic park bench style, but with clean, simple lines were proposed. This classic look blends in with many of the existing furnishings on campus and is one that will not become dated over time.

DESIGN GUIDELINES

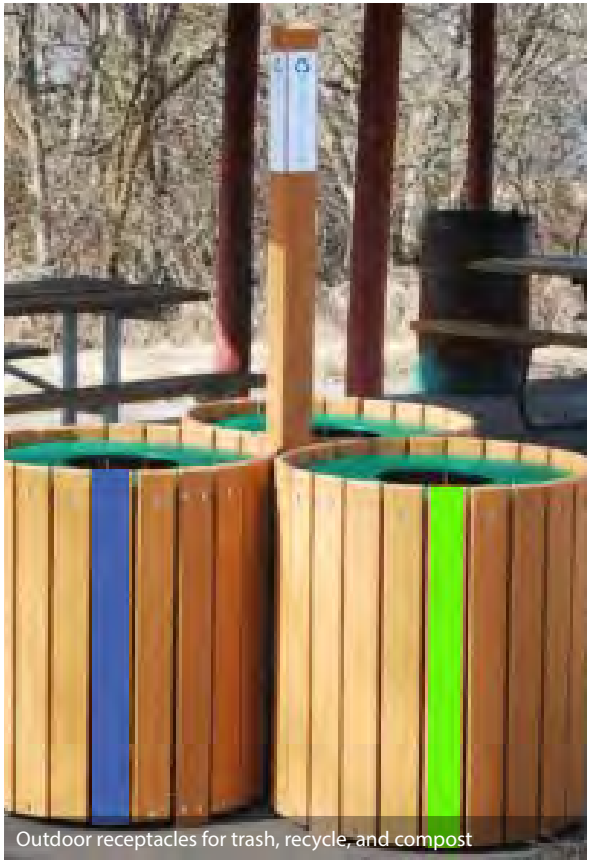
1. Site furnishings should be consistent with the aesthetic character of the main University campus.
2. Site furnishings should incorporate recycled materials.
3. Site furnishings should be designed and fabricated by local, minority-owned, or community owned small businesses.
4. Use a variety of seating and table site furnishings for different outdoor spaces to support unique placemaking elements and still provide project consistency.
5. In addition to aesthetics, sustainability, and equitable economic investment, important considerations in the selection of site furnishings include their comfort, ease of maintenance, and life-cycle costs.
6. The life-cycle cost of wooden products can vary based on the type of wood, but these products can be a sustainable, long-lasting option when Forest Stewardship Council (FSC)-certified hardwood is specified.
7. Wooden picnic tables are appropriate based on the aesthetic value that this material provides as well as the level of comfort associated with the material.
8. Movable furnishings such as café style tables and chairs can be used at appropriate locations, which experience high pedestrian activity. They must be robust in design and solidly constructed in order to withstand heavy use while also being light enough to be secured on a nightly basis, if necessary. Metal is the most suitable material for chairs to meet this criteria, but either wood or metal tables are appropriate.
9. Tables that are designed to accommodate an umbrella (or to include a small solar panel structure) can further enhance furnishings and ensure that metal chairs remain comfortable even in high temperatures.
10. All trash collection locations (interior and exterior) should include receptacle options for landfill trash, recycled materials, and compost materials. Receptacles should align with current products used on the main campus.
11. It is encouraged for trash collection locations to provide an interactive display showing collected levels of landfill trash vs. recycled materials vs. compost materials.
12. In addition to the classic, timeless style that will form the base condition for site furnishings, modern, unique, and interactive site furnishings are encouraged as accents.



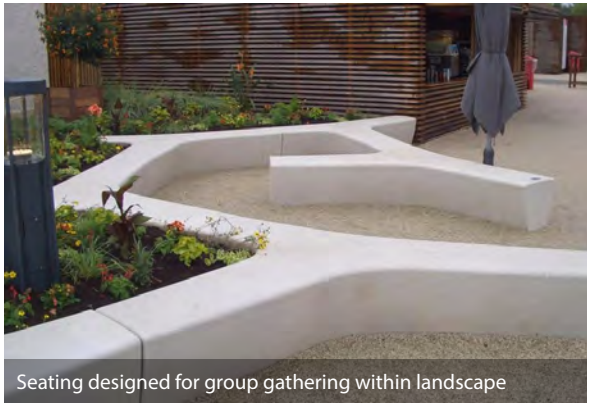
Waste receptacles with options for landfill, compost, and recycling connected to scales and digital screens to show appropriate waste materials and total weight of trash by individual, per day, per year



Variety of group and individual seating integrated with landscape



Outdoor receptacles for trash, recycle, and compost



Seating designed for group gathering within landscape

Contemporary design of classic wood park bench

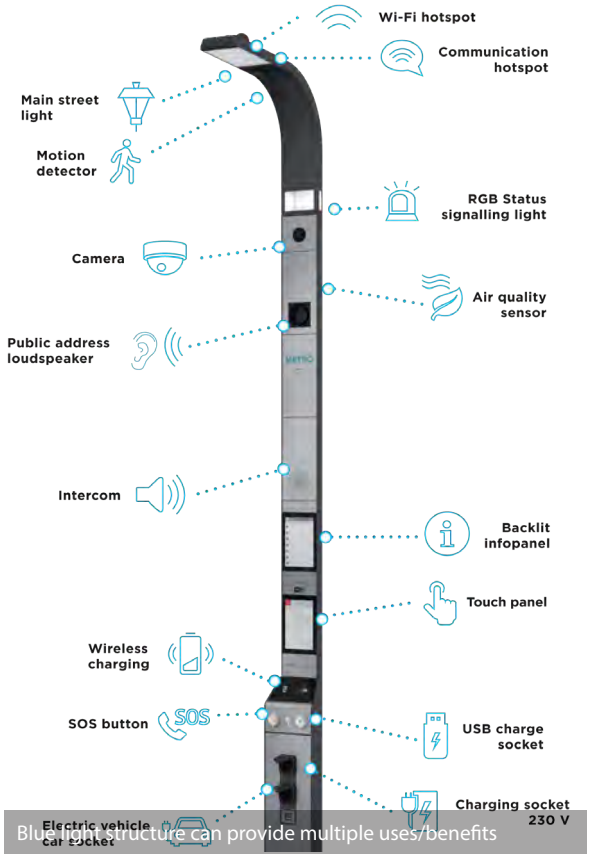
Site Utilities

While each individual building will develop and maintain its own utilities, these guidelines ensure a consistent application of technology and visual theme across The Hub.

DESIGN GUIDELINES

1. Visible site utilities should be consistent with the visual character of the main University campus.
2. Buildings will have separate connections to public utilities. If multiple buildings are controlled by one user, there should be one main line and connection point for all buildings.
3. Site utilities (e.g., emergency blue light, street lighting) will be maintained by the University.
4. Site utilities should be designed to support an attractive and engaging pedestrian atmosphere; they should not be designed as utilitarian structures.
5. Utility systems should be designed to accommodate (at-first or through future upgrades) full build-out of The Hub and surrounding neighborhood.
6. Utility systems should be designed to be able to connect to and work with (future) surrounding neighborhood systems.
7. Integrate utilities and other infrastructure with the landscape plan as appropriate, and the resulting landscape developments will allow the project to be used as a 'living laboratory' for sustainability, integrating the natural environment with project programs.
8. The Hub should incorporate an emergency blue light system.
9. Site utilities should be designed for multiple purposes. For example, emergency blue light structures can provide for multiple uses/benefits – e.g., from charging stations to air quality monitoring.
10. Utilities networks should be designed for ease of maintenance and to minimize, preferable to eliminate, waste from the updating or ongoing maintenance of utility systems.
11. Underground utilities should be located under removable (e.g., brick or other permeable pavers) surfaces rather than concrete or asphalt so maintenance and upgrades can be completed with minimum or no waste.
12. The east-west and north-south roads through the site, as well as the north-south Greenway corridor are recommended corridors for utilities.

Typical University emergency blue light



Blue light structure can provide multiple uses/benefits

Denny Substation shows how utility infrastructure can be redesigned as a sustainable civic landmark – designed to encourage interaction and engagement, not as a utilitarian structure to mitigate against

Safety and Security

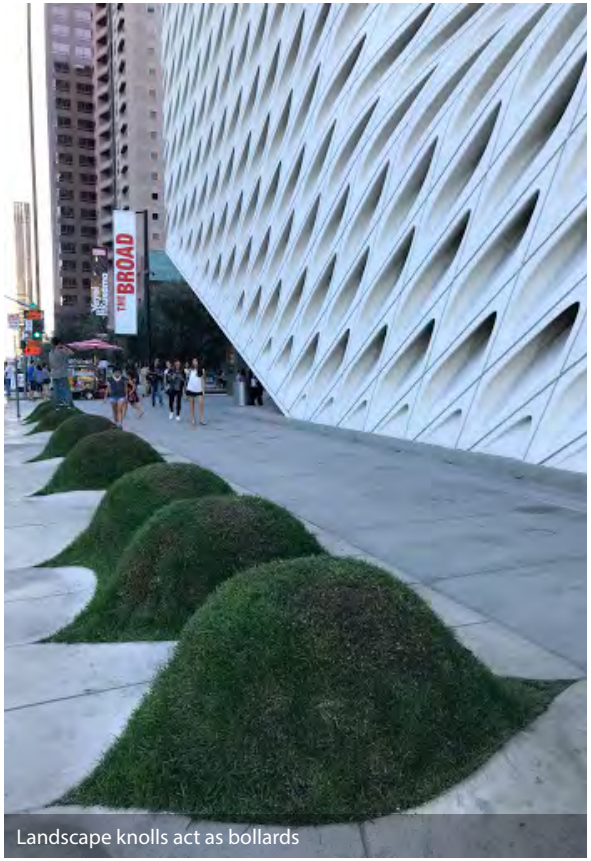
Crime prevention through environmental design (CPTED) has been the typical approach to safety and security. Its three elements – territoriality, surveillance, and access control – seek to limit negative outcomes rather than create attractive places; it follows the "Broken Windows Theory" approach focusing on policing. Recent conversations have begun to demonstrate how current CPTED strategies are often viewed as hostile and threatening for Black, Indigenous, and other People of Color (BIPOC) individuals and communities. While utilizing some CPTED strategies, these guidelines think about safety and security in a more holistic perspective that would develop a diverse, vibrant neighborhood center.

DESIGN GUIDELINES

1. Safety and security approaches should be consistent with main University campus approaches and goals for an inclusive project.
2. Approach safety and security from the perspective of creating safe and inclusive spaces rather than limiting activities and increasing surveillance and policing.
3. Think proactively about redevelopment potential of the neighborhood and seek partnerships to ensure safety and security on The Hub promotes a safe and inclusive neighborhood.
4. Active transportation (pedestrians, bicycles, scooters, etc.) safety will take precedence when planning and designing streets and vehicle routes.
5. Pedestrian safety will take precedence when planning and designing bicycle routes.
6. Develop bicycle routes through the project and identify bicycle and pedestrian zones that will help to increase safety and functionality.
7. The design of the vehicular circulation system will focus on safety (e.g., by limiting vehicle speeds, using traffic calming elements that enhance pedestrian realm, etc.), accessibility and support of emergency vehicle, service, and maintenance functions.
8. To enhance wayfinding and to help support pedestrian safety, special pavement is proposed at key pedestrian crossings.
9. If a project safety and security office, substation, etc., is developed, it should serve the full neighborhood.
10. Ensure a pruning and maintenance program for future landscape and tree canopy balances maintaining sight lines for wayfinding and security with landscape health.
11. Landscape materials should be used to provide visual screening without compromising visibility and safety.
12. Prioritize landscape solutions rather than built structures and surveillance for designs to promote site and building security.
13. Vertical circulation (e.g., stairs and elevators) should be designed so that their passengers are clearly visible to people outside. To increase visibility, vertical circulation should be integrated with primary circulation routes and gathering spaces.
14. While the project can use different fencing types to meet specific purposes and promote placemaking, consistency (e.g., material, landscape treatment, common design element, etc.) should be created across the project.
15. Large blank walls or an uninterrupted building mass should be avoided in order to enhance the visual and physical experience of buildings, and to reinforce the feeling of safety.

Smart lighting systems can use cell phone frequencies to alert emergency responders to the location automatically

Some elements of a smart light pole



Landscape knolls act as bollards

Fence of vertical fins is elegant and varies between transparency and privacy

Fencing incorporates covered walkway, variety of treatments, and landscape

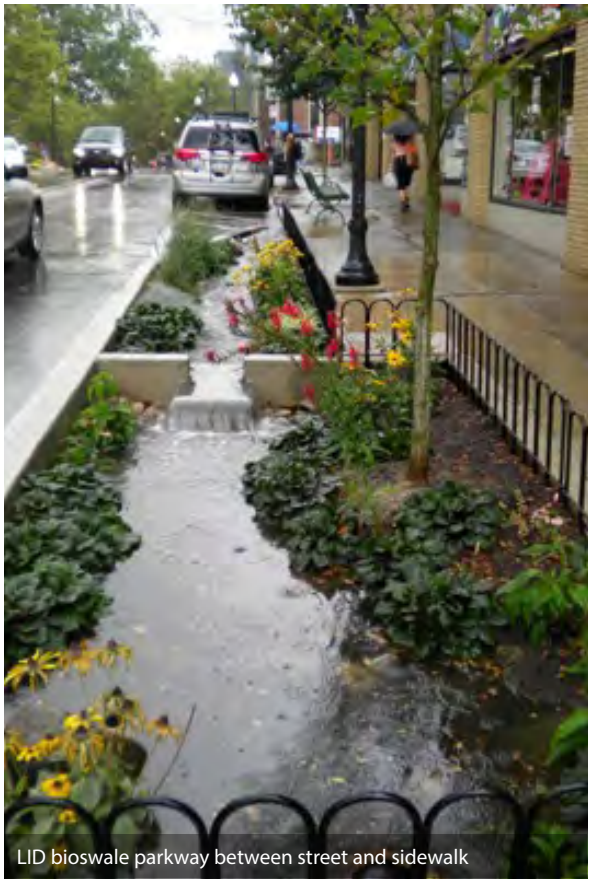
Low-Impact, Low-Maintenance, and Low-Water Design

Low-Impact Development (LID) refers to systems and practices that use or mimic natural processes that result in the infiltration, evapo-transpiration, or use of stormwater in order to protect water quality and associated aquatic habitat. Low-impact, -maintenance, and -water design supports the modern, sustainable approach to design within context. It does not need to sacrifice functionality or beauty; in fact, thoughtful design that responds to its natural and built context enhances these qualities. These approaches develop the initial conditions that reduce ongoing maintenance because their performance and mature growth are accounted for in design.

DESIGN GUIDELINES

1. Develop a holistic stormwater management system, which consists of the Greenway and project wide system of bioswale garden areas with low-water use plants, rainwater gardens, and permeable pavement to dramatically reduce storm-related water flows entering the pump system – known as Low Impact Development (LID).
2. It is recommended that all new and renovated irrigation systems on-site comply with the State's Model Water Efficient Landscape Ordinance.
3. All irrigation on-site should come from captured rainwater and/or building grey water.
4. Use LID strategy to reduce, if not eliminate, stormwater runoff from The Hub.
5. Ensure low-impact, -maintenance, and -water design also support sustainability, aesthetic, performance, safety, and programmatic design considerations.
6. The planting plan should be developed to minimize, if not eliminate, pruning and other maintenance in order to maintain sightliness for safety and security needs.
7. Integrate ground materials, plant selection, site location, and intended program to reduce necessary maintenance. For example, decomposed granite (DG) and other natural ground treatments can allow for fallen tree leaves and fruits to decay in place, which eliminates maintenance requirements and improves soil fertility.
8. Any updates to the plant palette should include low-water plants.

Natural ground materials let tree leaves (also flowers and fruits) fall and decay in place, no maintenance necessary



LID bioswale parkway between street and sidewalk

Drought-tolerant and pollinator landscape

Correct plant selection for bioswale area does not require any irrigation and crowd-out weed growth

Central channel provides no-tech solution for water flows

Interactive Landscape

The Hub is envisioned to include landscape elements that encourage interaction between people and the landscape in multiple ways: outdoor classroom and academic programs to learn from sustainable site/building design elements, moments of play and relaxation, community gardens and edible landscapes, as well as public art that highlights Sacramento State programs.

EDIBLE/COMMUNITY GARDENS

1. Edible gardens should be developed to create a viable food source and expose the public to urban agriculture practices. Edible gardens will consist of in-ground planting beds, raised planters, and orchard trees.
2. On-site edible gardens may serve several roles depending on programming and location, including making orchard trees available to all.
3. The Hub edible gardens have the potential to provide community and student engagement. Opportunities include:
   - Community educational and outreach programs;
   - Student education programs/ curricula-based programs; and
   - Providing food to the student dining hall through partnerships with the food service providers; and
   - Garden plots available for student use.
4. Provide for community gardens as community and student rental plots and/ or open availability plots.

INTERPRETIVE/INTERACTIVE EXHIBITS (SUSTAINABILITY)

5. The Hub should develop interpretive, interactive, and/or informational signage and exhibits highlighting elements around the project.
6. All sustainability design features should include interpretive/interactive exhibits or signage.
7. Interactive/interpretive exhibits and signage should support signage/ wayfinding guidelines.
8. Interpretive/interactive exhibits should provide community and student engagement activities.

PUBLIC ART

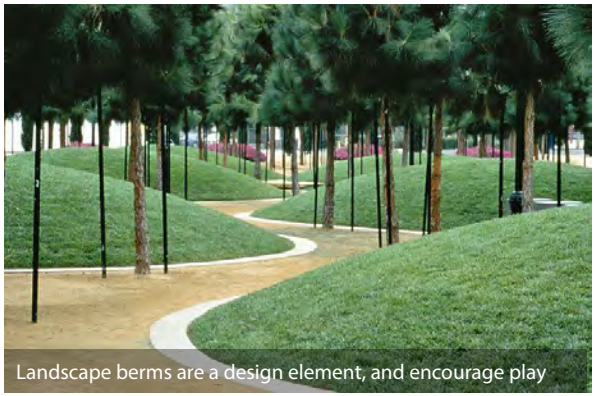
9. The Hub should incorporate public art (permanent, rotating, and/or temporary) through the project, which serves to support wayfinding, placemaking, and other aesthetic and performance benefits.
10. Public art should highlight the University's renowned art department and add another layer of identity and vibrancy to the project landscape.

Solar panel farm incorporates paths and learning groups

Community garden – harvest can be used by individuals or can be used as produce for project cafes or University food service

Swings provide short moments of relaxation and movement

Temporary landscape public art exhibit meant for interaction



Landscape berms are a design element, and encourage play

Innovation and Technology

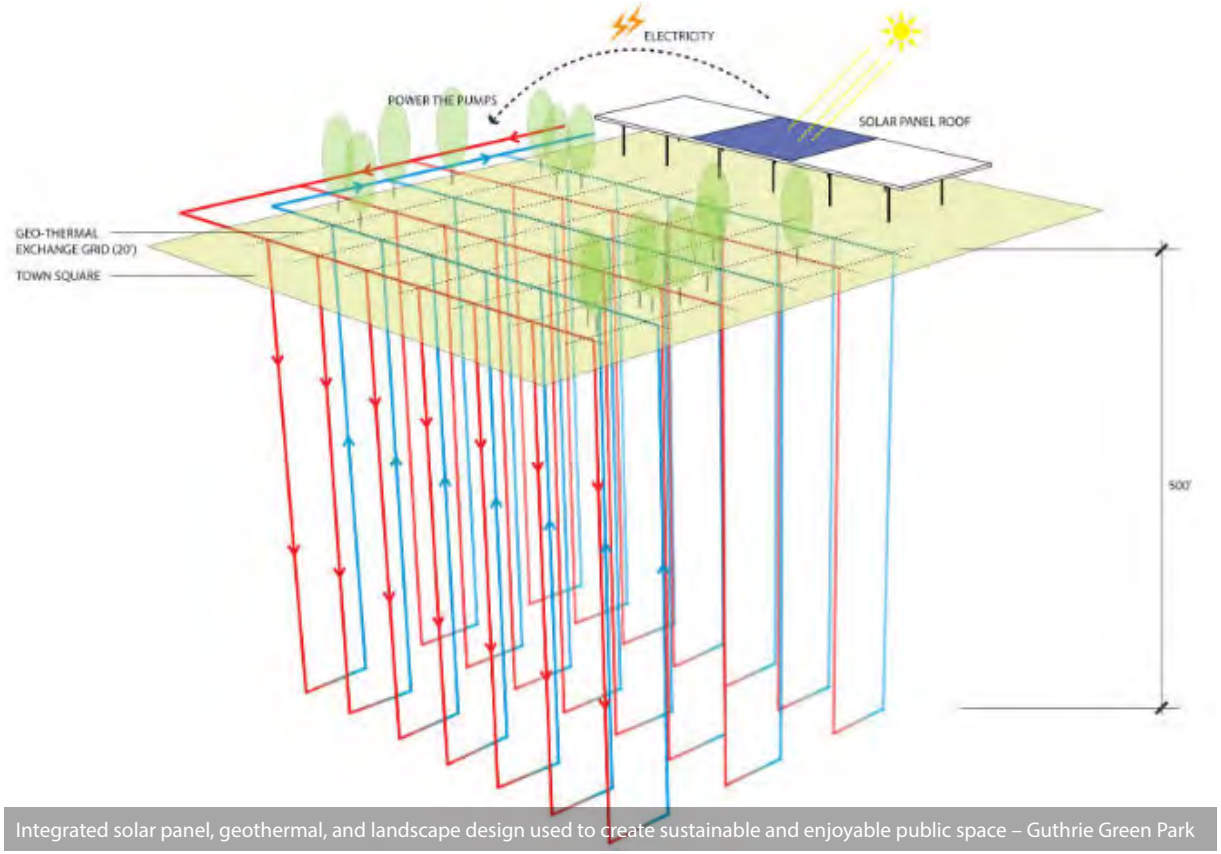
Innovation does not necessitate technology solutions. Technology is a complement to the fundamental changes that can transform the built environment into sustainable communities designed for people. Innovation also refers to human-centered urban design in the public realm using ordinary elements that have long existed.

DESIGN GUIDELINES

1. The Hub should embody innovation in every element to support improving total sustainability and quality of life.
2. Technology should complement the design of quality, sustainable places.
3. Encourage a high level of aesthetic quality and support an environment of technological change and aesthetic innovation.
4. Prioritize use of passive design principles toward attaining LEED credits such as the Innovation and Design Process credits.
5. Innovation strategies should support neighborhood-scale environmental justice.
6. All infrastructure should be given consideration, and designed where possible, to incorporate multiple functions. For example, solar panels are not just utilitarian structures for renewable energy – the placement and design of these structures should maximize energy production and maximize an enjoyable pedestrian atmosphere.
7. Leverage the all-electric site and LED lighting systems to incorporate 'smart city' technologies: bike/pedestrian counters, real-time air quality monitors, etc.
8. The Hub collection of buildings, considering all variations of style, size, function, and age, should share a common visual vocabulary and should appear related without stifling architectural innovation.

Solar panel bicycle path

Local air quality monitor integrated with LED street lighting



Integrated solar panel, geothermal, and landscape design used to create sustainable and enjoyable public space – Guthrie Green Park

Guthrie Green Park integrated with sustainable energy systems

Plant Palette

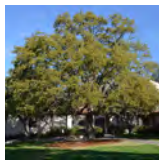
TREES

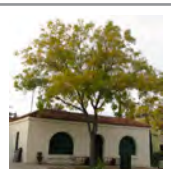
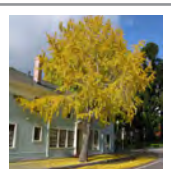
		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	Sun	Water	NOTES
Aesculus californica California Buckeye		✕						◯ ◐	⊘	(N) Height: 20′ Spread: 30′
Arbutus unedo Strawberry Tree		✕						◯ ◐ ●	💧	Height: 25′ Spread: 25′
Celtis occidentalis Common Hackberry		✕	✕					◯ ◐ ●	💧	Height: 50′ Spread: 50′
Cercis occidentalis Western Redbud		✕	✕					◯ ◐	⊘	(N) Height: 15′ Spread: 15′
Citrus × limon Lemon					✕			◯	💧	Eureka', 'Improved Meyer' Height: 20′ Spread: 15′

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	Sun	Water	NOTES
Citrus x sinensis Orange					✕			◯	💧	Cara Cara' Navel, 'Washington' Navel, Valencia, 'Moro' Blood Height: 20′ Spread: 15′
Feijoa sellowiana Pineapple Guava					✕			◯ ◐	💧	Height: 20′ Spread: 20′
Pinus canariensis Canary Island Pine		✕						◯ ◐	💧	Height: 70′ Spread: 35′
Pinus coulteri Coulter Pine		✕						◯ ◐	💧	(N) Dry fruit can be a litter issue. Plant 5′ - 10′ minimum away from paving. Height: 60′ Spread: 30′
Platanus x acerifolia London Plane Tree			✕				✕	◯	💧	Height: 60′ Spread: 40′

SUN: ◯ Full ◐ Part ● Shade WATER: ⊘ Very Low 💧 Low 💧 Medium 💧 High **(N)** California Native

TREES

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	NOTES
Prunus dulcis Almond				✕				
		○ 💧						
		Height: 15′ Spread: 15′						
Quercus agrifolia Coast Live Oak		✕						(N) Attracts wildlife, dry fruit can be a litter issue. Plant 5′ - 10′ minimum away from paving.
		○ ◐ ⊘						
		Height: 50′ Spread: 50′						
Quercus chrysolepis Canyon Live Oak		✕						(N)
		○ ◐ 💧						
		Height: 50′ Spread: 50′						
Quercus lobata Valley Oak		✕						(N) Attracts wildlife, dry fruit can be a litter issue. Plant 5′ - 10′ minimum away from paving.
		○ ◐ 💧						
		Height: 70′ Spread: 70′						
Quercus suber Cork Oak		✕						
		○ ◐ 💧						
		Height: 50′ Spread: 50′						

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	NOTES
Quercus wislizeni Interior Live Oak		✕						
		○ ◐ ⊘						(N)
		Height: 50′ Spread: 75′						
Sambucus mexicana Blue Elderberry		✕		✕				
		○ ◐ ● 💧						(N) Showy flowers, wildlife value
		Height: 20′ Spread: 15′						
Sophora japonica Japanese Pagoda Tree							✕	
		○ ◐ 💧						
		Height: 60′ Spread: 60′						
Ginkgo biloba Maidenhair Tree		✕	✕					
		○ ◐ 💧						
		Height: 50′ Spread: 40′						

SUN: ○ Full ◐ Part ● Shade WATER: ⊘ Very Low 💧 Low 💧 Medium 💧 High **(N)** California Native

Plant Palette (continued)

SHRUBS

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	NOTES
Achillea milliforium hybrids Common Yarrow		✕					✕	
		○ ◊ Height: 3′ Spread: Spreading						
Artemisia 'Powis Castle' Artemesia		✕						
		○ ◊ Height: 3′ Spread: 6′						
Baccharis pilularis Dwarf Coyote Bush		✕						
		○ ◐ ◊ Height: 2′ Spread: 6′						(N)
Carpenteria californica 'Elizabeth' Bush Anemone		✕						
		○ ◐ ◊ Height: 6′ Spread: 6′						(N)
Ceanothus maritimus 'Valley Violet' Valley Violet Maritime Ceanothus		✕						
		○ ◐ ◊ Height: 2′ Spread: 5′						

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	NOTES
Dietes iridioides Fortnight Lily		✕	✕	✕			✕	
		○ ◐ ◊ Height: 3′ Spread: 3′						
Epilobium canum California fuchsia		✕	✕	✕				
		○ ◊ Height: 3′ Spread: 4′						(N)
Eriogonum arborescens Santa Cruz Buckwheat		✕						
		○ ◊ Height: 2′ Spread: 2′						
Euonymus japonicus 'Silver Princess' Evergreen Euonymus		✕						
		○ ◐ ◊ Height: 3′ Spread: 3′						
Iris Douglasiana Douglas Iris		✕		✕			✕	
		○ ◐ ◊ Height: 2′ Spread: 3′						(N)

SUN: ○ Full ◐ Part ● Shade WATER: ⊘ Very Low ◊ Low ◊ Medium ◊ High **(N)** California Native

SHRUBS

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	NOTES
Mimulus aurantiacus Sticky Monkey Flower		✕	✕	✕				
		○ ◐ 💧						
		Height: 2′ Spread: 2′						
Myrtus communis *'Compacta'* Dwarf Myrtle		✕						
		○ 💧						
		Height: 3′ Spread: 3′						
Phormium tenax *'Maori Queen'* New Zealand Flax		✕						
		○ ◐ 💧						
		Height: 3′ Spread: 4′						
Rhamnus californica *'San Bruno'* Coffeeberry		✕						(N)
		○ ◐ 💧						
		Height: 5′ Spread: 5′						
Rhaphiolepis indica *'Clara'* Indian Hawthorn		✕						
		○ ◐ 💧						
		Height: 4′ Spread: 4′						

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	NOTES
Ribes malvaceum Chaparral Current		✕						
		○ ◐ 🚫						
		Height: 5′ Spread: 5′						(N)
Rosa californica California Rose		✕	✕	✕				
		○ ◐ ● 💧						
		Height: 3′ Spread: 6′						(N)
Ribes sanguineum var. glutinosum Currant		✕					✕	
		○ ◐ 💧						
		Height: 4′ Spread: 4′						
Salvia spp. Sage		✕	✕	✕				
		◐ ● 🚫						
		Height: 1′ Spread: Running						(N) Wildlife value

SUN: ○ Full ◐ Part ● Shade WATER: 🚫 Very Low 💧 Low 💧 Medium 💧 High **(N)** California Native

Plant Palette (continued)

GROUNDCOVER

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	Sun	Water	NOTES
Acacia redolens Acacia		✕	✕	✕				○	⊘	Height: 4′ Spread: 15′
Arctostaphylos 'Emerald Carpet' Groundcover Manzanita		✕	✕	✕				○	💧	Height: 1′ Spread: 5′
Cotoneaster microphyllus Rockspray Cotoneaster		✕	✕	✕				◐	💧	Height: 3′ Spread: 6′
Eschscholzia californica California Poppy		✕	✕	✕				○	⊘	Height: 1′ Spread: 1.5′
Juniperus horizontalis 'Blue Chip' Juniper		✕	✕	✕				○	💧	Height: 1′ Spread: 7′

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	Sun	Water	NOTES
Lantana 'Confetti' Lantana		✕	✕	✕				○	💧	Height: 3′ Spread: 8′
Mahonia repens Creeping Oregon Grape		✕					✕	◐	💧	(N) Height: 1′ Spread: 3′

SUN: ○ Full ◐ Part ● Shade WATER: ⊘ Very Low 💧 Low 💧 Medium 💧 High **(N)** California Native

GRASSES

		Parkway/Edges	Central Green	Green Roof	Orchard	Parking	Stormwater	NOTES
Bouteloua gracilis Blue Gamma		✕					✕	(N)
		○ ◐ 💧						
		Height: 2′ Spread: 1′						
Calamagrostis 'Karl Foerster' Reed Grass		✕					✕	(N)
		○ 💧						
		Height: 3′ Spread: 4′						
Deschampsia cespitosa Tufted Hairgrass		✕					✕	(N)
		◐ 💧						
		Height: 2′ Spread: 2′						
Muhlenbergia rigens Deer Grass		✕					✕	
		○ 💧						
		Height: 4′ Spread: 4′						
Sisyrinchium bellum Blue-Eyed Grass		✕					✕	
		○ ◐ 🚫						
		Height: 2′ Spread: 2′						

SUN: ○ Full ◐ Part ● Shade WATER: 🚫 Very Low 💧 Low 💧 Medium 💧 High **(N)** California Native

Part 3
Building Guidelines

The style, character, and form of all buildings at The Hub will reflect the innovation, research, and sustainability mission of the University and its project partners.

INTRODUCTION

All buildings on The Hub will be designed and engineered to maximize the efficiency of orientation, building envelope, glazing, sun shades, and solar roof panels. Building placement and systems, material choices, landscape, and others should all play a role in creating an environment that meets the goals and vision the University has established.

The following guidelines will inform the design, layout, and engineering of all buildings at The Hub.

SUSTAINABILITY ELEMENTS

Sustainability is an integral thread that impacts all elements of The Hub. It provides a link between the program and use of individual buildings and the public realm (site and landscape) those buildings are set within. Together, all the buildings and public realm that comprise The Hub will become the center for innovation, economic growth, activity, and walkability within the surrounding neighborhood. The design of each building will align with University standards and individual program needs, while also responding to the sustainability and site and landscape frameworks included in this Master Plan.

DESIGN GUIDELINES

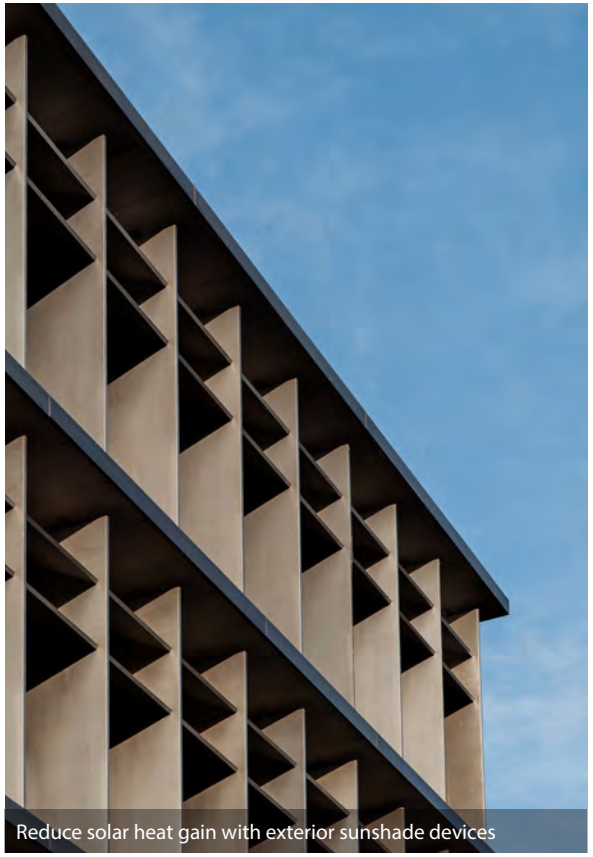
1. Orient buildings to minimize internal loads and maximize passive heating and cooling to make them more efficient. Proper orientation for daylighting ventilation and cooling should be the baseline approach to the design of all new buildings.

2. Building orientation and massing shall optimize solar control with appropriate glazing strategy for daylighting and views. Exterior sunshade devices should be considered at glazing locations where glare or heat gain adversely effect the interior environment.

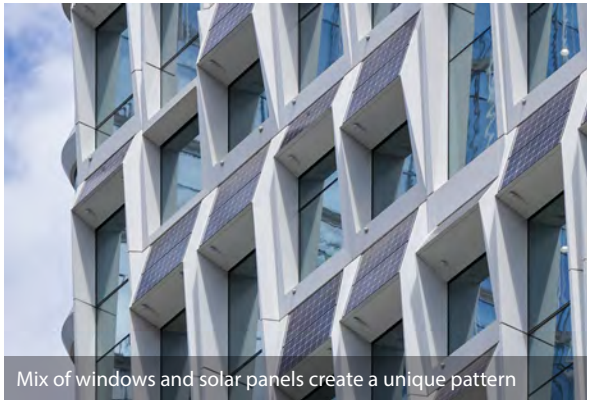
3. Floor plans should be designed to block solar heat gain from the western sun and to maximize passive heating during the winter months.

Create opportunity for outdoor spaces with building massing

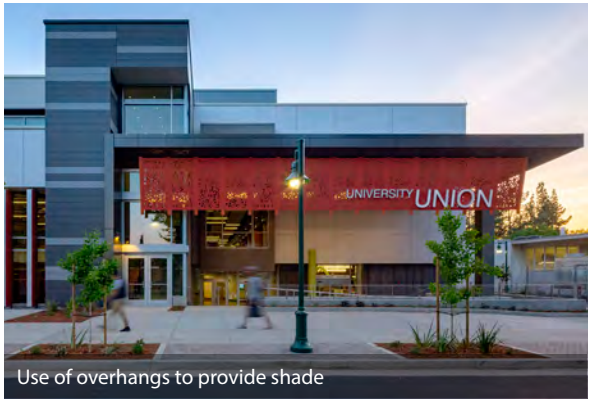
Building integrates mass, overhang, paths, and bioswale areas



Reduce solar heat gain with exterior sunshade devices



Mix of windows and solar panels create a unique pattern



Use of overhangs to provide shade

Divert rain water collection to landscape areas

4. Building form and orientation should be used to take advantage of the sun, and, with solar roof panels, assist buildings to generate self-sustaining energy power.

5. Model energy performance and compare various cost strategies to achieve optimum and economical building envelope combinations to help maximize energy efficiency and minimize operating costs.

6. Generate daylighting models to determine the effect of daylight on spaces to minimize electric lighting and resource consumption.

7. Use lightweight construction materials with low thermal mass, particularly on walls exposed to the sun. Light-weight construction materials, such as timber, respond quickly to cooling breezes, allowing the building to cool faster. These materials will be provided with insulation to prevent direct heat transfer and to improve the efficiency of mechanical cooling.

8. Use high thermal mass construction materials in conjunction with a well-shaded building to avoid heat gain; incorporate internal insulation to reduce heat transfer. Well-insulated and shaded thermal mass designs lower night time temperatures by 3 to 4°C, decreasing temperature fluctuation between day and night.

9. Passive approach to building ventilation and cooling should be explored in connection with energy efficient strategies to reduce mechanical system energy consumption.

10. Ensure landscaping is drought-tolerant and uses 100% reclaimed water.

11. Require parking areas and pedestrian pathways to utilize high performance LED lighting to reduce light pollution, glare, and energy use.

12. Use of bioswales and stormwater detention should be considered to control on-site stormwater runoff to improve water quality and recharge groundwater systems.

SOLAR ENERGY SYSTEMS

Renewable energy technologies utilizing solar will be evaluated to offset a portion of the overall facilities energy consumption and minimize greenhouse gas emissions. The following renewable systems should be pursued:

1. Use solar hot water to minimize the use of natural gas consumption.

2. Use of photo voltaic (PV) panels to offset a portion of the facilities' electrical energy.

3. Explore the use of hybrid PV/Thermal hot water heating systems(e.g., Cogenra Solar).

DESIGN EVALUATIONS

4. All materials and systems designed should be evaluated based on life-cycle costs to reduce facilities maintenance and operations costs.

See also Mechanical/Plumbing, Lighting, Power Sections.

Angle of solar panels captures sun, and shades the interior

Solar panels integrated with overall building design

Alternative energy production and distribution via PV panels and EV charging stations

Exterior Character

INTRODUCTION

Sacramento State is a campus of trees; integration with greenspace and landscape is part of the integral 'language' of the campus. The Hub should feel like an extension of the main campus while reflecting its context as well as the unique building functions.

The buildings along with the landscape can be used to define and enhance The Hub's sense of permanence. This may be achieved through building materials, size and shape of buildings, quality of master planning and architectural design, landscape, and site and building maintenance.

Visually speaking, all buildings should contribute as supporting members of Sacramento State's image and as components of the network of public spaces. Buildings should be designed to be explicitly collegiate in character and should include good proportions, visible points of entry and well-crafted expression of human-scaled elements such as windows, doors, door frames, steps, ramps, and rails.

The economic investment demands enduring materials. Likewise, to acquire enduring materials requires adequate economic investment in the structure and the quality of design. A simple, consistent color palette can do more to provide a sense of visual unity across an area than any other element.

A color palette is closely tied to the actual materials, but a variety of materials and textures can be unified by sharing a common color. Guidelines for this context must rely upon establishing a relatively limited palette of colors and materials that, when applied over time, begins to establish a sense of harmony and consistency.

LANGUAGE AND STYLE

The architectural guidelines developed for the Sacramento State campus have as their primary focus a strong notion of a "family of buildings" as should The Hub. This means that the collection of buildings, considering all variations of style, size, function, and age, should share a common visual vocabulary and should appear related without stifling architectural innovation. In general, each individual building should first establish its identity within the greater whole of the project fabric and then present its individual identity.

DESIGN GUIDELINES

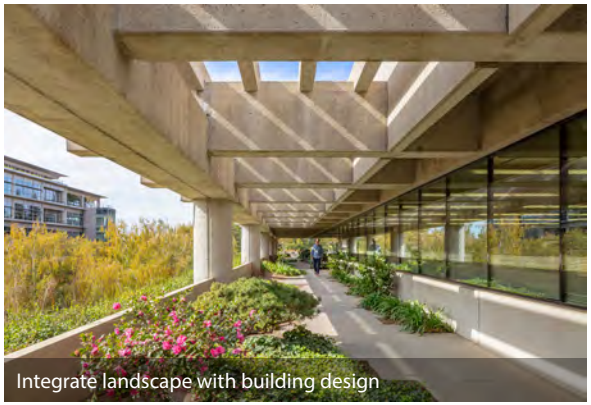
1. Building character should consider the main campus vocabulary of integrating with greenspace and landscape, but be of its place and time.

2. Style should reference the current design guidelines, but note the importance of being respectful of each building's function.

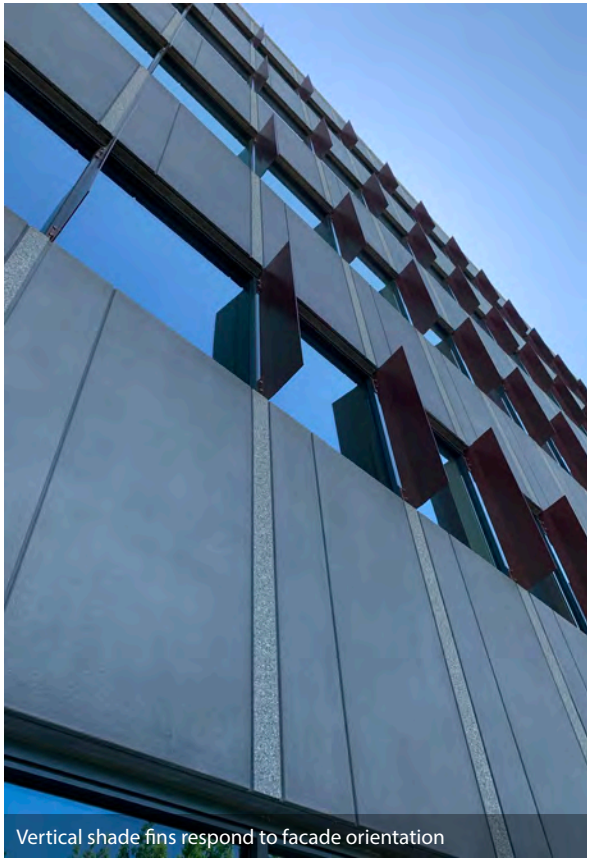
3. Balance security needs with the requirement of an open and transparent site. Use passive security measures that blend with the natural environment.

4. Color should align with the main campus Master Plan. Accent colors can be useful in highlighting unique building features and giving a sense of volumetric hierarchy to building massing.

5. Color should play a significant role in site and building wayfinding, and serve as a unifying element for the entirety of the site.



Integrate landscape with building design



Vertical shade fins respond to facade orientation

Use color to highlight architectural features

MATERIAL

The primary design tool for unifying The Hub is use of materials. The following guidelines suggest a specific palette of materials that can be deployed by future architectural designers to acknowledge the character of the building being designed.

The material palette for the project must be compatible with that of the main campus, but still reflect the industrial characteristic of The Hub.

The recommended materials palette is based on the dominant and defining character of Sacramento State's campus landscape: wood tone materials that evoke the trees and are consistent with the context of the existing Sacramento State campus aesthetic.

DESIGN GUIDELINES

1. Exterior building materials should be used to unify the collection of project buildings.

2. Exterior cladding should blend with the 'urban forest': building exteriors should be durable, low-maintenance materials that may have wood-like features relating to color and use.

3. Concrete form liners should provide a texture. Faux replication of material texture should be avoided.

4. Wood alternatives include: Hemp, Wood Composites, Synthetic Wood, and Bamboo (although often considered a wood, bamboo is a grass). Other cladding materials include Terra Cotta Rain-Screen facade panels and Fiber Cement Board.

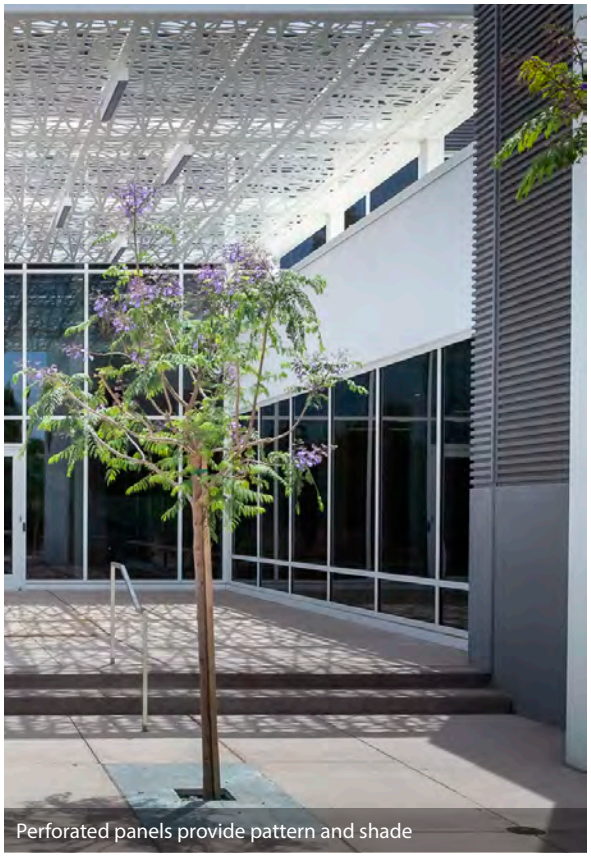
5. Natural wood accent units, wood shade structures, and wood trellises can provide visual interest and create human scale. Wood accents and shade structures will also evoke and coordinate with the wood trellis structures that currently provide exterior seating on the main campus. Proposed natural wood elements must be reviewed and approved by the University.

6. Clear, high-performance glass should be used to introduce natural light into structures as well as allowing true color views into and out of spaces, offices, and other buildings.

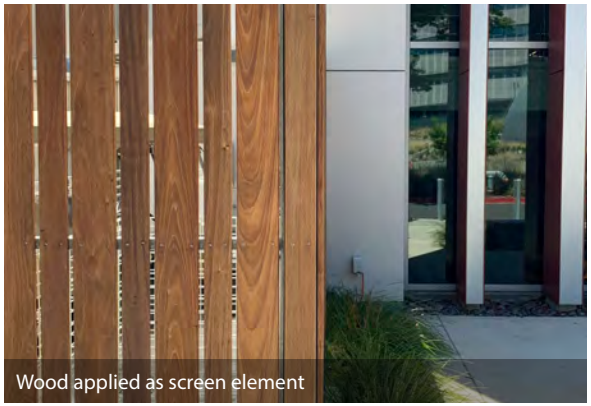
7. Polished/reflective metal materials should not be used. However, the use of metal for exterior skin is appropriate for industrial settings. Exterior building colors should be used to unify the collection of buildings.

8. Large building volumes should tend towards a more neutral or muted tones, reserving colors for accents and significant building features.

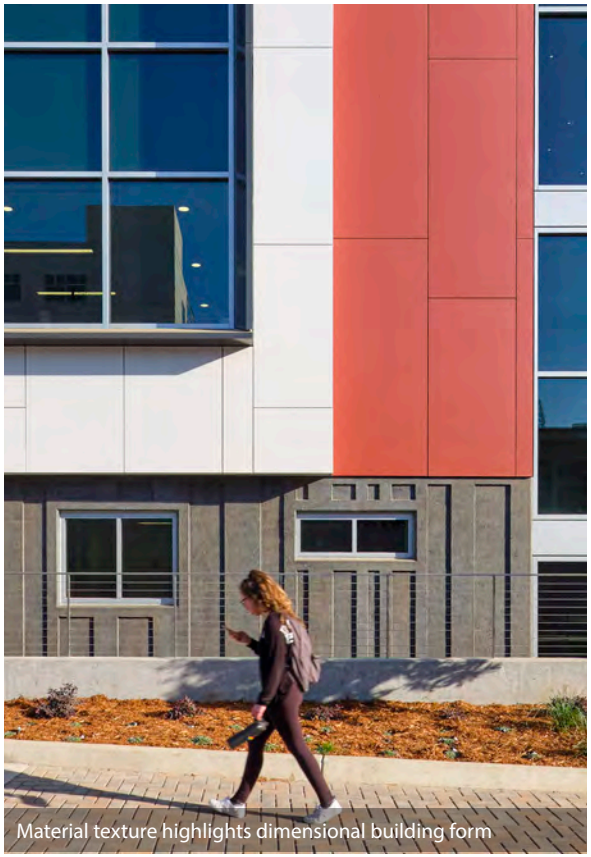
9. Material choices should characterize a sense of permanence of the built structure.



Perforated panels provide pattern and shade

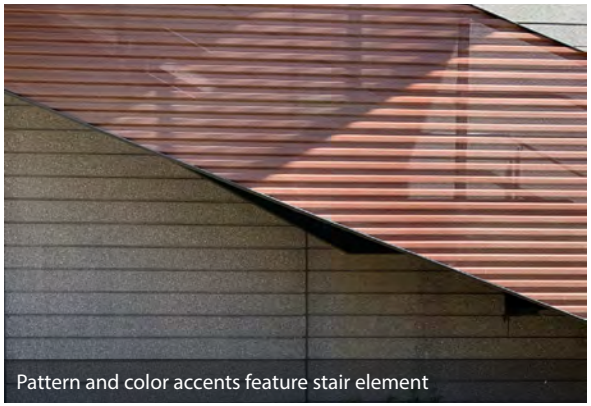


Wood applied as screen element

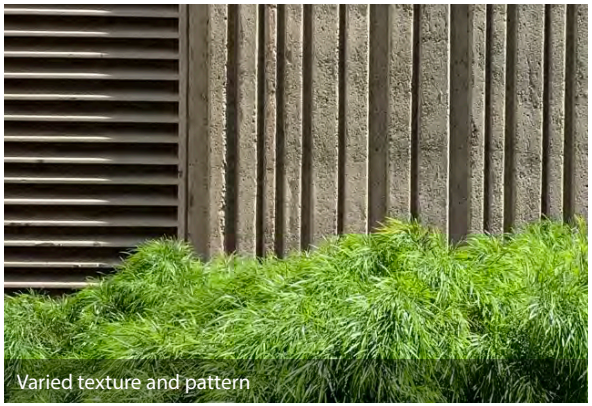


Material texture highlights dimensional building form

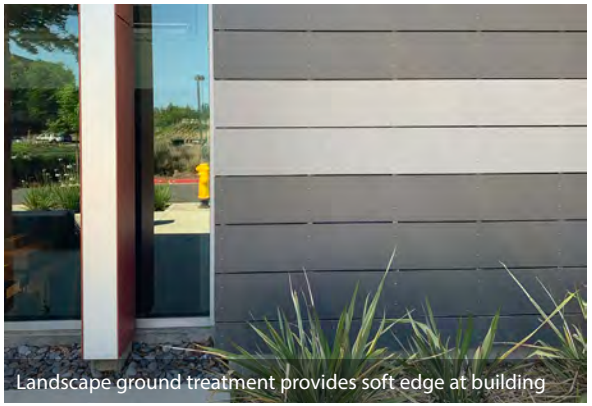
Canopy at walkway provides pedestrian scale and wayfinding to building entry



Pattern and color accents feature stair element



Varied texture and pattern



Landscape ground treatment provides soft edge at building

COLORS

The Hub must develop an official color palette to guide the development of buildings. The guidelines and examples below provide direction for this palette.

The Master Plan recommends a color palette that is oriented around light colors with darker accents. The hue examples that follow are only suggestions for the orientation of the color palette.

DESIGN GUIDELINES

1. Primary colors. A limited palette of light neutral colors should be used as building primary colors. Off-white colors should tend toward warm tones.

2. Secondary colors. Secondary colors should be a limited palette of warm earth-tone colors.

3. Accent colors. Accent colors for building details can be warm earth-tones or green.

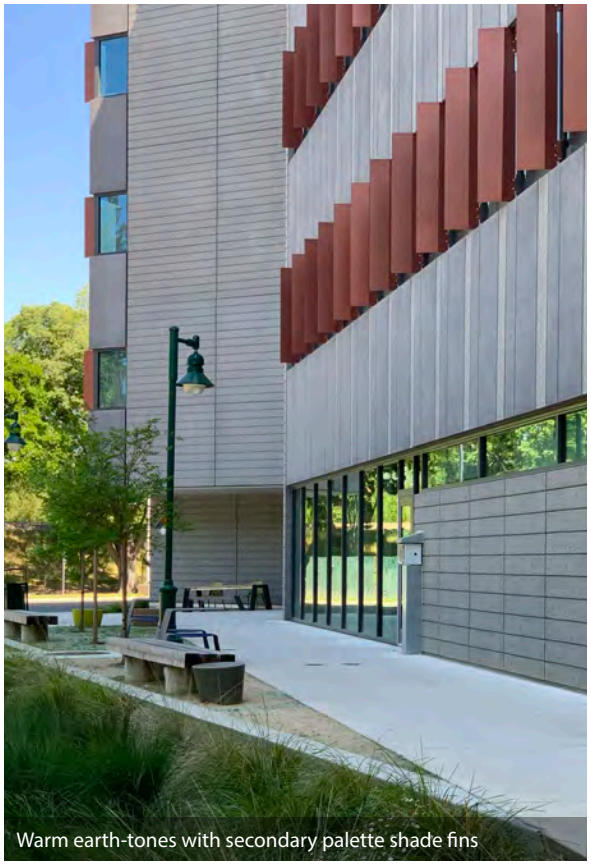
4. The use of green. Where paint is required, a very few specific green hues should be established for use on project buildings to establish a consistent 'tie-in color.'

5. The green hues should be warm (incorporating yellow) rather than cold (incorporating blue) to better blend with and evoke the greens of nature that serve as the connection, inspiration, and tie-in to The Hub landscape, which represents the project's strongest visual feature. The examples to the right are provided as guides to the choices of the official Hub color palette.

6. The official green color that is used for the University's print materials is not an appropriate color for exterior building details. Deviations from the official University color palette must be approved by the campus body, committee, or department that administers the campus design guidelines.

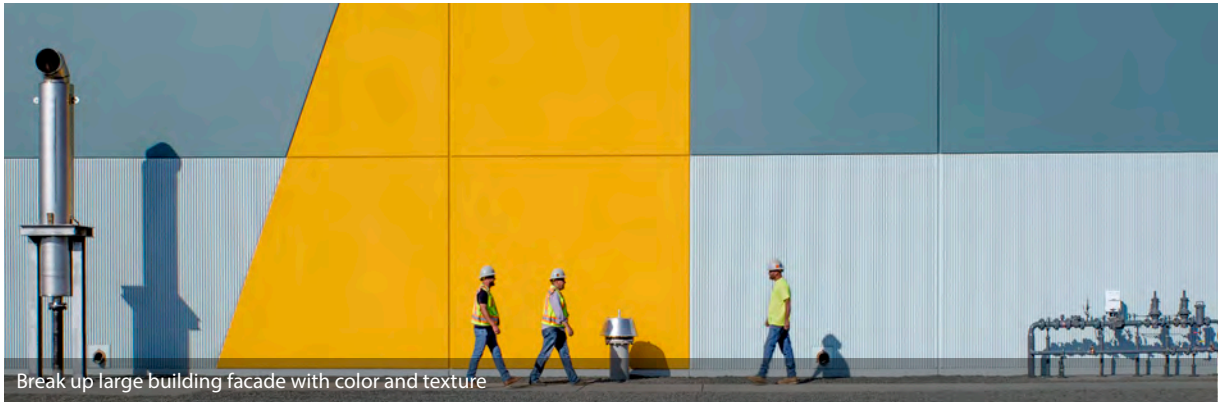
7. When possible, colors should be used to further divide building facades into human-scale elements at the ground floor level.

8. Warmer earth-tone colors in light hues should be used on buildings where there is heavy shade created by dense tree plantings.



Warm earth-tones with secondary palette shade fins

Bold color at building entry signage



Break up large building facade with color and texture

Neutral primary color with bold accent

Massing

INTRODUCTION

The massing of a building can be defined as the overall geometry (length, width, and height) of its perceived form. Massing is a significant factor that contributes to establishing the "character" of a specific building.

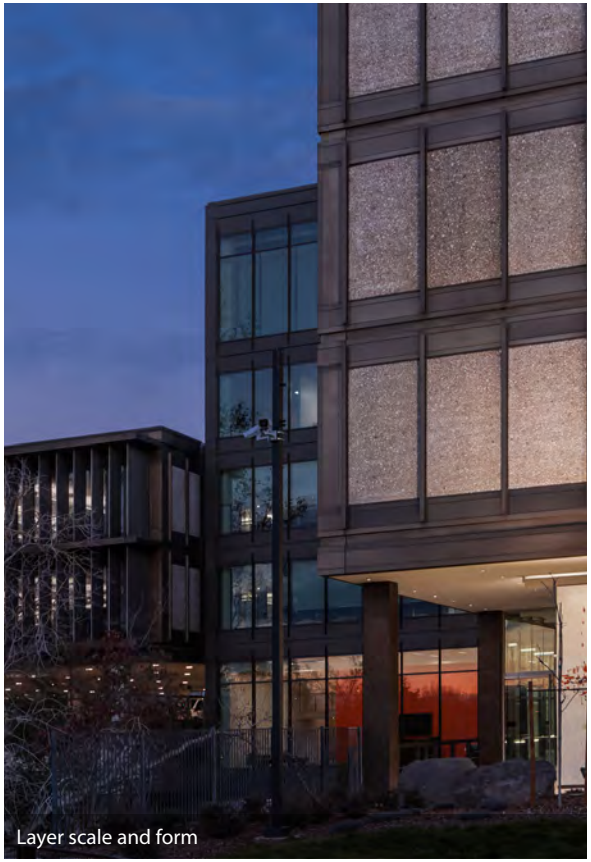
A building's massing can be articulated through a variety of visual effects that are used to articulate the facade of a large building or visually give the impression of a change of plane. Building massing should be developed to create a comfortable relationship between the scale of the building and the scale of a person. This is especially important for over-scale buildings such as parking structures.

Of particular importance in defining the massing of a building is the overall height of the form (actual and perceived) as well as the geometry of its roof. Two factors must be considered when determining the appropriate building height for a particular location:

1. Future development must make the highest and best use of the limited land remaining for development.
2. Buildings should be tall enough and massive enough (building length and width) to provide appropriate spatial relationships to existing adjacent buildings and open spaces.

DESIGN GUIDELINES

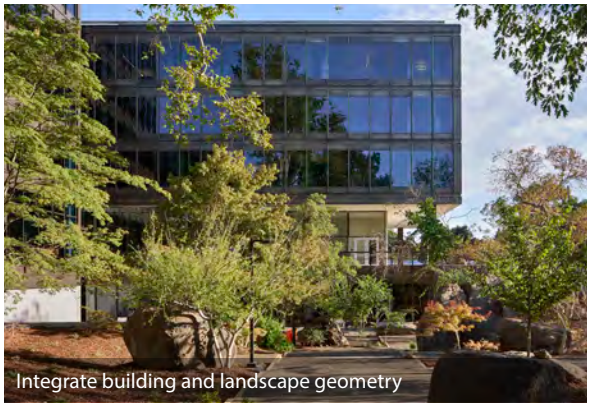
1. Buildings are to support the project civic structure, giving architectural definition to streets, plazas, and other open spaces. Buildings are to front directly on these spaces and to support them by their form, massing, and the design of their facades.
2. Buildings are to be three to five stories tall, and generally a maximum of four stories tall.
3. Building facades are to be articulated into constituent parts to mediate between the pedestrian scale and the scale of the building, provide visual continuity with neighboring buildings, and engage the landscape design of open spaces.
4. Buildings should have a base, middle, and top. An articulated ground floor is especially important, as it reinforces a building's connection to the public space upon which it fronts.
5. Where appropriate, place public functions on the ground floor and less public or more utilitarian functions on the upper floors. For example, classrooms should be placed on the ground floor and specialized classrooms on the upper floors.
6. Large blank walls or an uninterrupted building mass should be avoided in order to enhance the visual and physical experience of buildings, and to reinforce the feeling of safety.
7. Building frontages along streets and major paths must create a welcoming and attractive street environment for pedestrians.
8. Building transparency plays a large role in achieving safe, comfortable, human-scale pedestrian environments. The more transparent a building can be, especially at grade, the more welcoming and friendly it is to the pedestrian and the more it is able to integrate and engage the student, faculty, staff, and visitor population.
9. Roof structures that allow for clerestory windows to allow for natural light should be considered.
10. Buildings with rooftop equipment should incorporate a screening strategy as an integral part of the massing. Rooftop elements should be fully screened from view corridors throughout the site.



Layer scale and form

Provide depth and shadow on large-scale facades with sunshades and key architectural features

Vary massing and form while maintaining similar aesthetic



Integrate building and landscape geometry

Placement

INTRODUCTION

The placement of the buildings must consider many factors including solar orientation, prevailing winds, views, vehicular circulation, pedestrian circulation, and services.

Placement should consider the environmental effects of immediately adjacent buildings when selecting an orientation and building massing strategy.

Interior to exterior connections are encouraged through building siting and design. Topography, existing vegetation, and site features should all be factored into properly locating the most appropriate building area.

ORIENTATION

Building orientation is a critical aspect of planning: the position of the building vis-a-vis its neighboring structures, adjacent open space, and the pedestrian pathway system; and the building's orientation to environmental elements such as wind and sun are central to a building's function as well as its aesthetics.

DESIGN GUIDELINES

1. Orient buildings to major pedestrian pathways, views, and visual axis; as well as to minimize internal loads and maximize passive heating and cooling to make them more efficient. Proper orientation for daylighting, ventilation, and cooling will be the baseline approach to the design of all new buildings.

2. Provide building features that visually and functionally connect with the pedestrian environment.

3. Building orientation should encourage energy efficiency by creating optimum conditions for use of passive and active solar strategies.

4. Orientation should be focused to maximize the natural benefits of the region's climate as it relates to cool breezes in the hotter months and providing respite from the summer sun and winds in the winter.

5. Where security or privacy is a concern, efforts should be made to design such features using natural elements and passive strategies where possible.

RELATIONSHIP TO OPEN SPACE

1. When possible, use building placement and orientation to create new open spaces such as courtyards, quads, and plazas.

2. Buildings should be placed to enclose open space and in concert with adjacent buildings, create congenially-sized open spaces throughout The Hub.

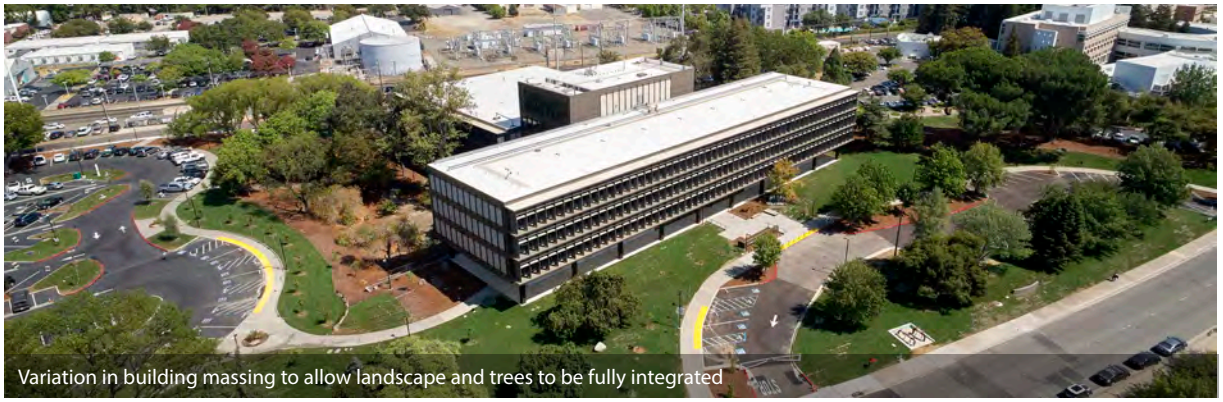
3. Buildings constructed along the perimeters of the Greenway and Central Green have a special responsibility to the development of these project features, and should be oriented to face these open spaces, as shown on the illustrative Master Plan (Chapter 4).

4. Open spaces between buildings should be designed to accommodate a variety of programmed and informal activities.

RELATIONSHIP TO PEDESTRIAN CIRCULATION

1. Buildings and their entrances function as important components of the pedestrian pathway system.

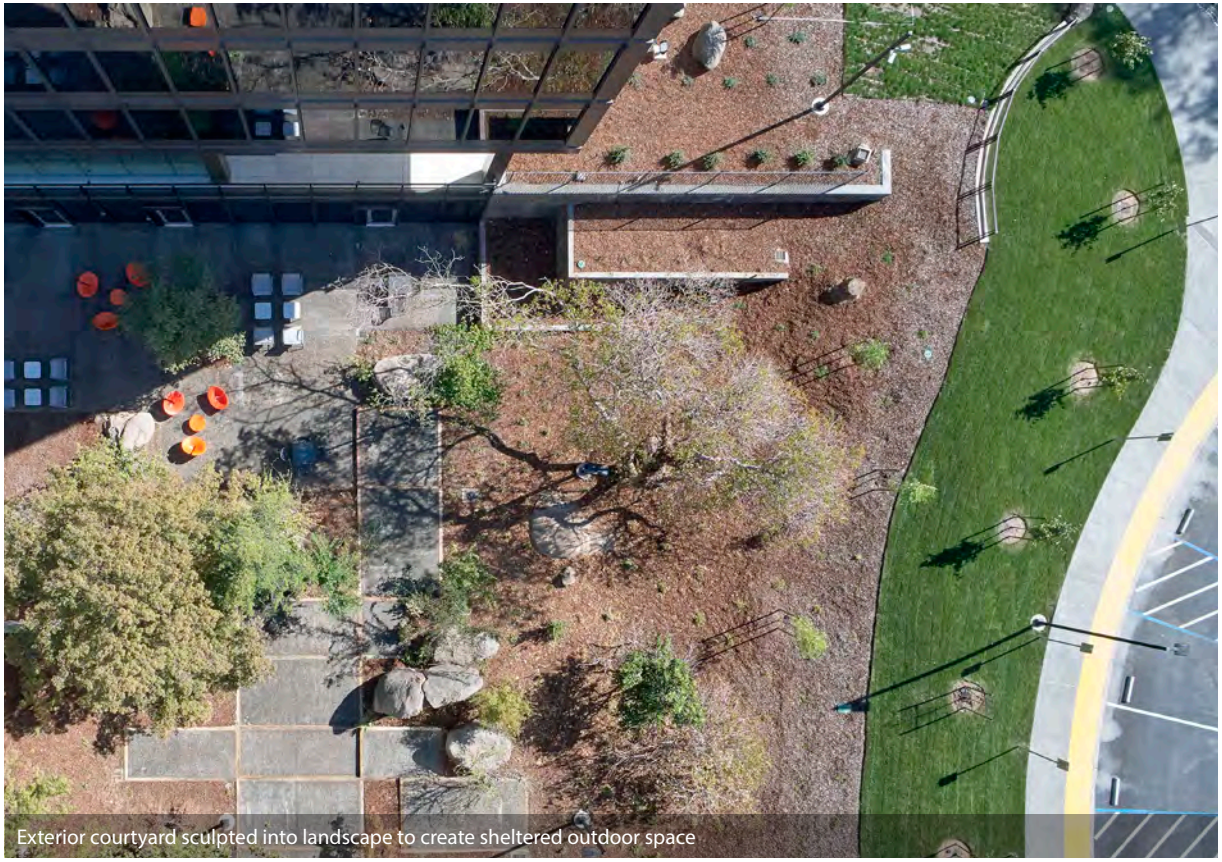
2. Buildings may address more than one pedestrian pathway and may have more than one entry point. The design and orientation of building lobbies should acknowledge their role in the pedestrian experience and wayfinding.



Variation in building massing to allow landscape and trees to be fully integrated

Design of wall and overhang collects morning water and shields afternoon sun

Hardscape plazas connect through open ground floor



Exterior courtyard sculpted into landscape to create sheltered outdoor space

RELATIONSHIP TO SERVICES

1. Building Service Areas include gas meters, fire water connections, trash collections, food services, etc. These services should not be located on the primary facades and should be consolidated, where possible, along a shared service corridor.

2. Building service areas located near pedestrian zones should be designed to complement the building's massing and material to provide adequate screening of service equipment.

RELATIONSHIP TO NATURAL ENVIRONMENTAL SYSTEMS: SUN AND WIND

1. Natural lighting should be introduced into building interiors through windows, clerestories, and light shelves. Exterior window shading devices should protect windows from direct sun exposure to help minimize building heat gain and glare, while still affording views of the landscape.

2. Building orientation should encourage energy efficiency by creating optimum conditions for use of passive and active solar strategies. If optimal orientation can be achieved, heating and cooling requirements can be reduced, saving energy costs and reducing greenhouse gas emissions.

3. Buildings should be oriented to maximize benefits from cooling breezes in hot weather and shelter from undesirable winds in cold weather. If natural ventilation is employed, use internal spaces and structural elements to channel air through the building in different directions to achieve good cross-ventilation.

4. Buildings featuring courtyards should orient the courtyard to maximize wind in the courtyard and cross-ventilation through the building for cooling in the summer.

5. Buildings should have a pedestrian-friendly zone that blends the open space with landscaped areas directly adjacent to the building.

ENTRIES

1. Primary building entries should be oriented to major pathways and open spaces. This allows for the entries and immediately adjacent outdoor spaces to be highly activated people spaces.

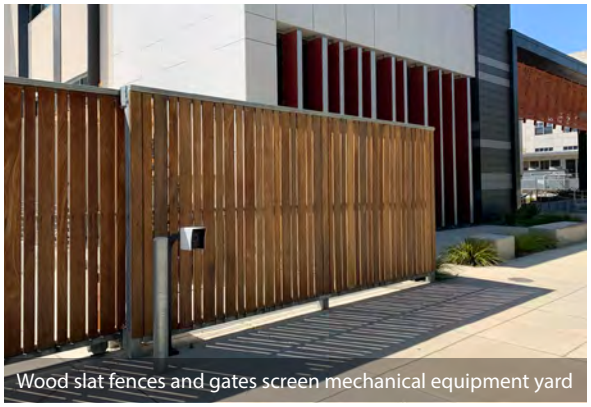
2. If the building site makes it possible, primary building entries should be placed at the end of pathway axes.

3. The primary building entry should distinguish itself from the building massing. It should have a scale appropriate to the building's function and incorporate additive elements to increase viability and intuitive wayfinding.

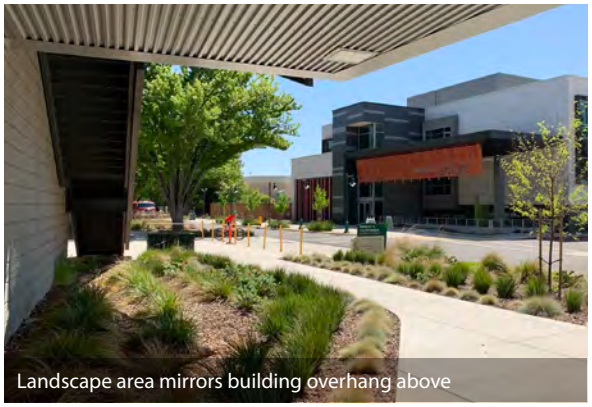
4. Secondary, but clearly identified entries should access courtyard areas or pathways.

5. Primary and secondary building entries should receive architectural enhancements as a way of establishing a visual focus and a hierarchy of facade elements. Typically, such architectural enhancements include:

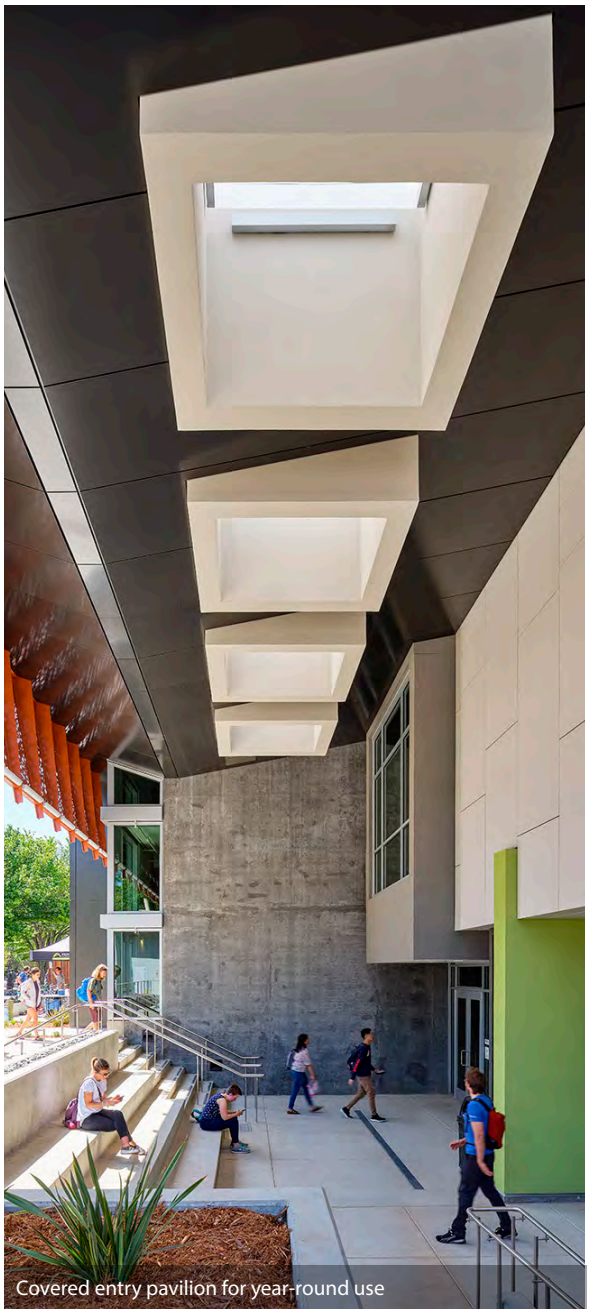
    - The use of accent forms and materials that clearly identify the entry from the building massing;
    - Enhanced materials and/or contrasting colors; sun shades; clear glass; special lighting; and/or special entry pavement.



Wood slat fences and gates screen mechanical equipment yard

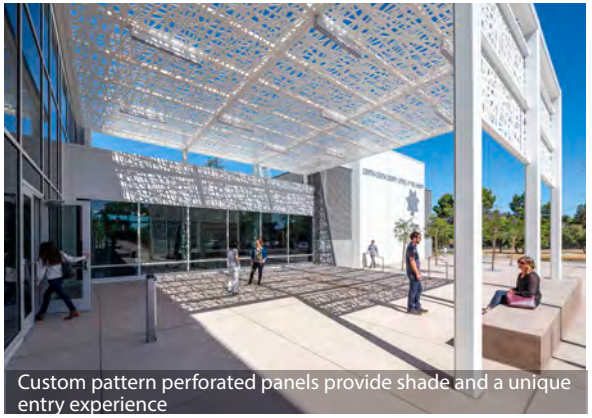


Landscape area mirrors building overhang above

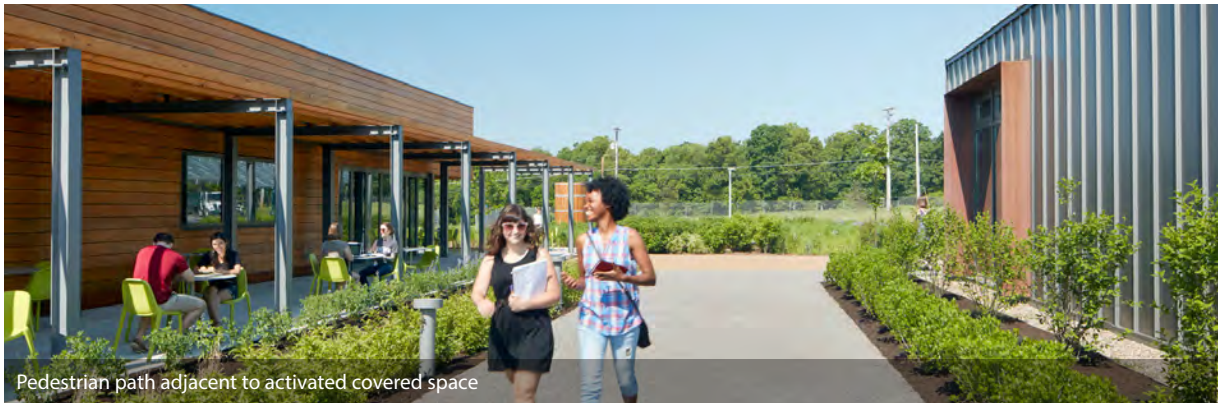


Covered entry pavilion for year-round use

Interior courtyard softened with landscape



Custom pattern perforated panels provide shade and a unique entry experience



Pedestrian path adjacent to activated covered space

Building Utilities

INTRODUCTION

The existing conditions of the utility infrastructure located within the The Hub site are made up of a multitude of existing underground utility services, such as electrical, gas, fiber, sanitary sewer, storm drain, and domestic water. However, site infrastructure has not been used since approximately 2003 and is outdated. A largely new system of utilities and backbone infrastructure will need to be created to serve The Hub. The following design guidelines will inform the design, placement, and functionality of new utility systems.

SEWER

The existing infrastructure around the project site will be able to accommodate sewer flows generated by the project. One option would be to separate the flows for each building and connect to the sewer main in different street locations. However, the preferred and likely more feasible option would be to install one sewer main into the site from Ramona Avenue and provide sewer services from the sewer main to each of the proposed buildings for the CA DOJ and the CMC, and sewer stubs to the future user sites identified. The new sewer main will be proposed in the new streets created by the The Hub Master Plan.

DRAINAGE

Each individual user/site will need to capture, treat, and retain stormwater to meet the Sacramento region's Stormwater Quality Design Manual. This includes capturing, treating, and retaining stormwater from the building roofs, concrete, and pavement areas, as well as any landscaped area within the project site.

WATER

Since the existing water network is out-of-date, a new water loop system will be proposed in the new streets created by the The Hub Master Plan. The new system will likely have at least three connection points, possibly four, to the existing water mains, depending on the needs of the system and connections to the existing public streets. This system will be able to accommodate domestic water, irrigation, and fire services.

Since the existing City of Sacramento's points of connection are fairly old, it is assumed The Hub site will need to make new connections to the existing water mains and disconnect the existing water connections. The services to each building will include irrigation, domestic water, fire sprinkler, and possibly a fire hydrant line to connect any on-site fire hydrants proposed within the two building sites for the CA DOJ and the CMC. Additionally, domestic water, irrigation, and fire service stubs will be provided to the future user sites identified. On-street fire hydrants will connect to the new looped system on the internal streets and designed/spaced per City of Sacramento standards.

SMUD is the local electrical utility that will be serving the project. Unlike the main Sacramento State campus where a campus-owned medium voltage distribution system is in place, each building will have its own electrical service.

DESIGN GUIDELINES

1. Each building will have its own 277/480V, three-phase electrical service. A SMUD-owned, pad-mount utility transformer will be located outside of each building, and serve a main electrical switchboard where the utility meter will be located.

Electric vehicle charging stations

Interior Systems

INTRODUCTION

The Master Plan calls for multiple buildings with various functions. It is important for designers to consider how the interior environments of these disparate functions create a cohesive aesthetic with the exterior skin of the building. Unique, building-specific solutions should respond individually while maintaining a overall clean and modern style.

The public interior space is to have an abundance of natural light and be connected to the main circulation and outdoor spaces and amenities on-site. Consideration should be given to create a welcoming feel to spaces serving as a transition from exterior to interior environments.

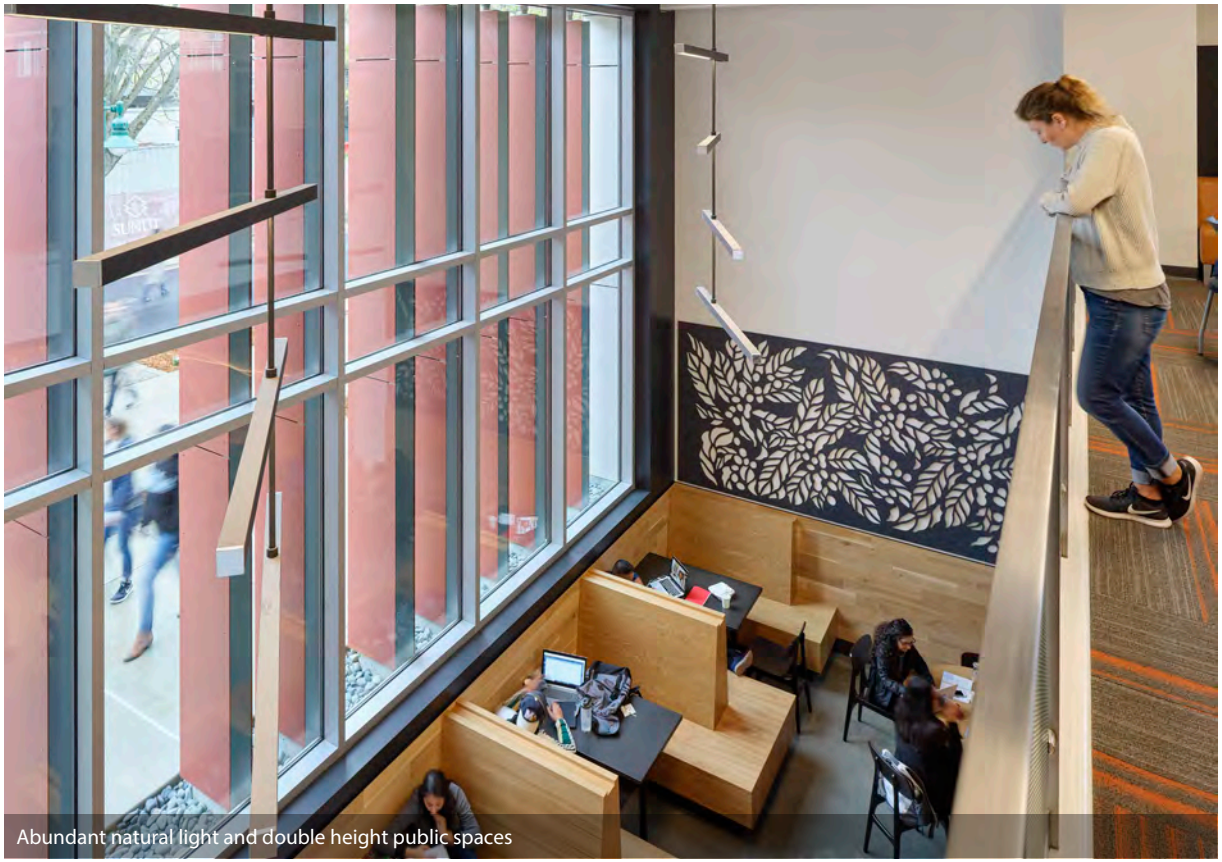
The following guidelines will help inform the design and functionality of interior spaces within new buildings.

MATERIALS, COLOR, AND WELLNESS

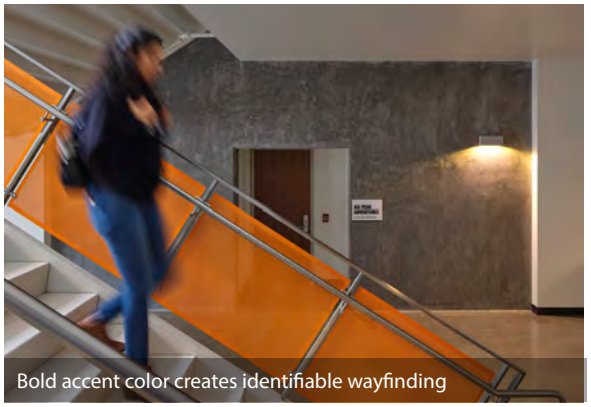
1. Interior materials and color palette should reference the Sacramento State Master Plan guidelines for general guidance.
2. Materials should be of durable materials appropriate for the function of the building. Industrial uses would require a higher level of durability to ensure quality over the life of the building.
3. Interior colors should have an overall neutral palette with color used to highlight key social areas and features. A change in material can also be used to highlight specific areas.

DAYLIGHTING

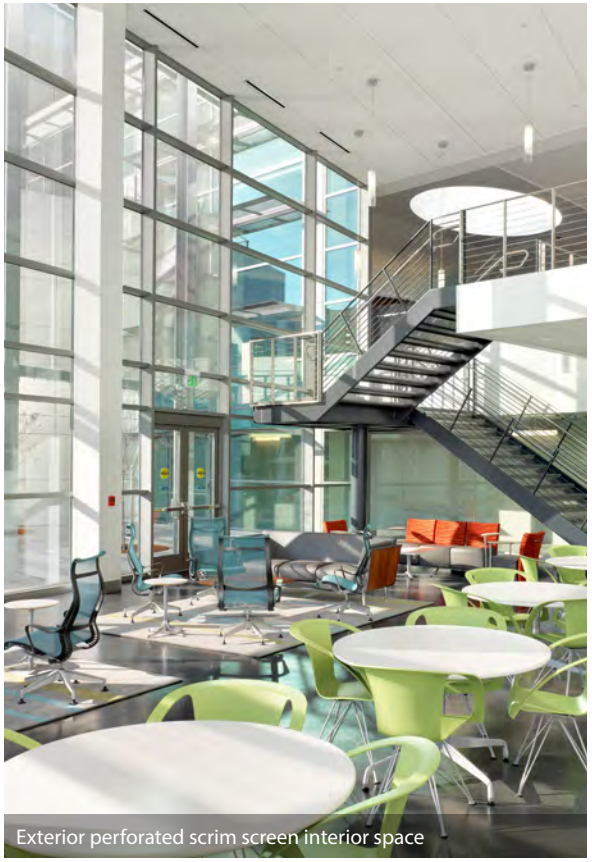
4. Good daylight performance promotes building occupant well-being, improves overall productivity, and minimizes lighting energy costs. Designers should take every opportunity to introduce natural light into buildings, particularly into the lobbies, gathering areas, and shared spaces within the building.
5. Natural daylighting strategy should include controls to mitigate undesirable effects of direct daylight.
6. Interior lighting will utilize daylight sensors to take full advantage of natural daylight in all spaces with natural light.
7. Skylights or solo tubes should be used where possible to provide even daylighting to public and work spaces.
8. Glazing at work areas should have interior sun shades that may be connected to a lighting control system.
9. The overall project will consider achieving a spatial daylight autonomy (sDA300/50%) of at least 55 percent and annual sunlight exposure (ASE1000/250) of no more than 10 percent. This performance threshold is in-line with LEED v4 BD+C Indoor Environmental Quality – Daylight Credit (Option 1) and functions as a good performance goal to balance useful daylight levels and visual comfort.



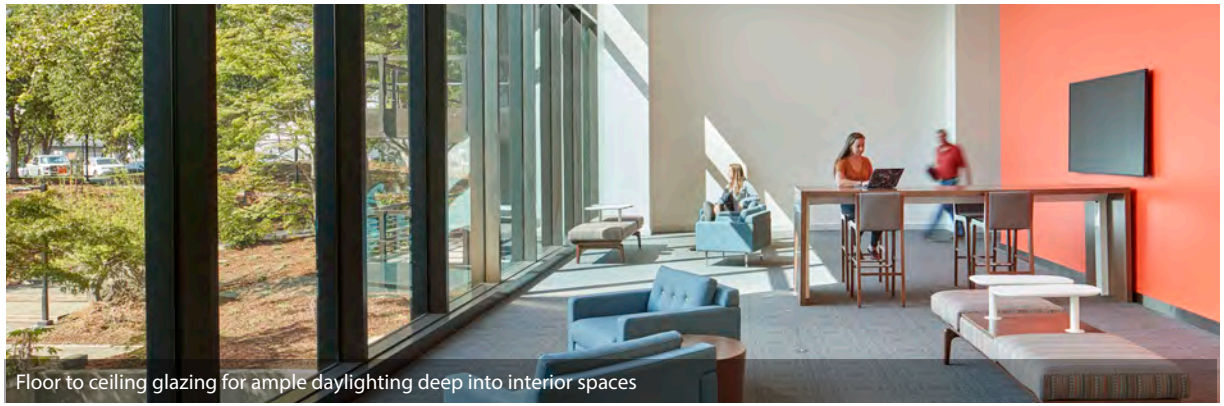
Abundant natural light and double height public spaces



Bold accent color creates identifiable wayfinding



Exterior perforated scrim screen interior space



Floor to ceiling glazing for ample daylighting deep into interior spaces

MECHANICAL

The buildings at The Hub shall use design strategies to optimize the building's energy efficiency without compromising the comfort of the occupants or degrading the system's useful life or maintenance. Natural ventilation may be incorporated where appropriate to the space and location.

The mechanical systems for the building at The Hub shall provide for low energy use intensity (EUI), zero carbon emissions, and low maintenance with the underlying goals of simplicity and quality. Life span, energy efficiency, indoor air quality, comfort, reduction of waste and pollutants, life-cycle costing, and flexibility are major considerations to be accounted for in the design and construction of the HVAC systems.

DESIGN GUIDELINES

1. Provide a highly-efficient thermal envelope by making maximum use of the building orientation (solar and wind), and glazing ratios, and by providing seasonal solar access and shading to reduce interior heating and cooling.

2. Mechanical systems shall be zoned by room usage, solar exposure/orientation, and interior/exterior exposure.

3. The design shall provide outside air ventilation rates in accordance with Title 24 and the California Mechanical Code to ensure excellent indoor air quality.

4. The air handling systems will be provided with an economizer cycle to allow "free cooling" with outside air when the outside air temperatures are cool enough (spring, fall, mornings, evenings).

5. Demand control ventilation controlled by CO2 sensors shall be provided for any space with an occupant density greater than 25 people per 1000 square feet.

6. Temperature controls shall be Alerton's DDC energy management system per guidelines, and shall be connected to the existing Alerton campus system and provided with appropriate graphics.

PLUMBING

According to proposed University goals and in alignment with LEED criteria, users should be able to reduce individual building water consumption by 20% in new buildings, using LEED criteria and by auditing existing buildings.

Plumbing systems shall be designed in support of the water conservation goals of The Hub. Such strategies may include, but are not limited to heat recovery for domestic hot water preheat and high-efficiency plumbing systems.

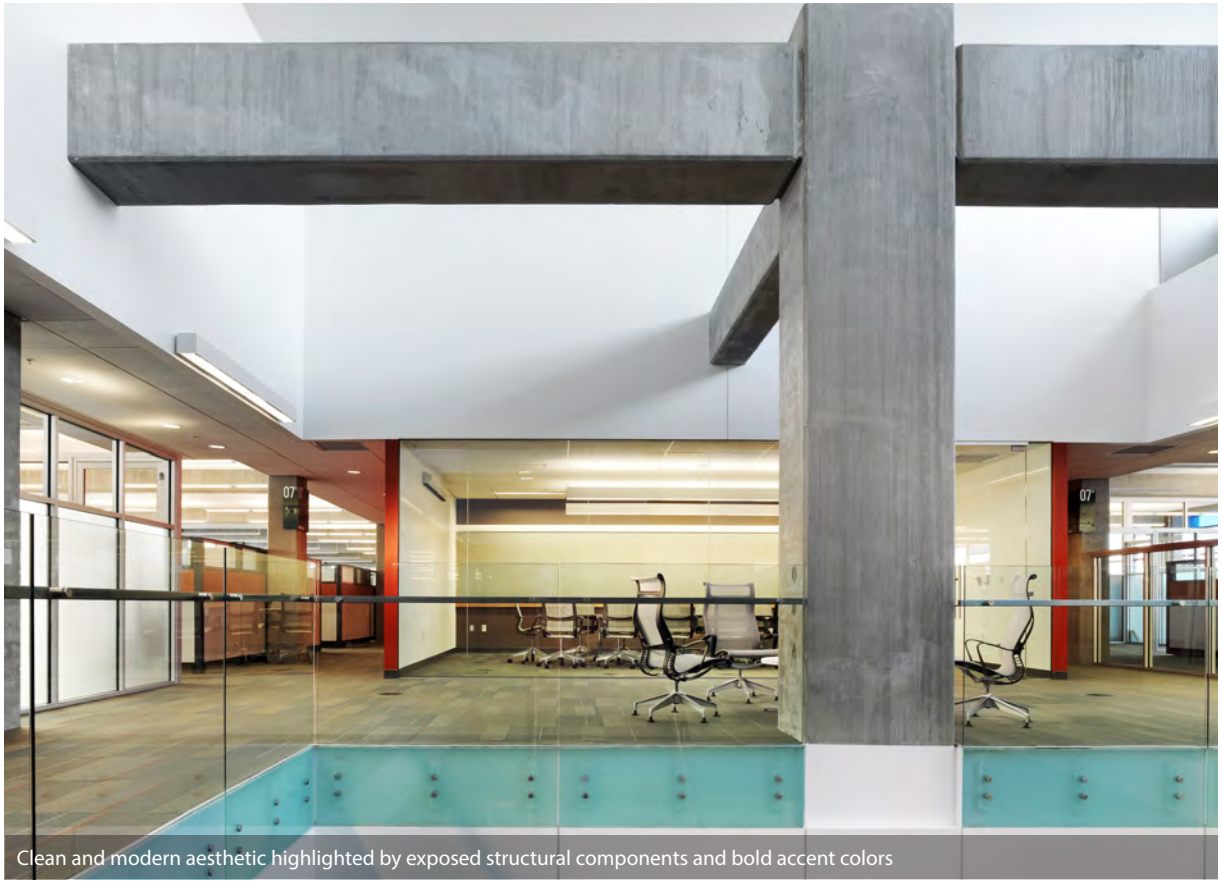
DESIGN GUIDELINES

1. New construction should incorporate water-saving fixtures to reduce potable water use by at least 30% and sewage conveyance by 50%, below the baseline case usage based on the Energy Policy Act of 1992 and LEED methodology.

2. Responsible conservation strategies for reduced potable water consumption in the building shall be applied whenever practical. Ultra-low flow fixtures, automatic sensor controls, and reduced flow aerators shall be utilized at all new fixtures to meet or exceed current CALGreen Water Efficiency measures and as required for LEED Certification.

3. Roof drains to be directed into either adjacent rain gardens or bioswales or both.

Industrial materials blend with modern aesthetic


Clean and modern aesthetic highlighted by exposed structural components and bold accent colors

LIGHTING DESIGN GUIDELINES

1. Artificial lighting should be used to supplement the natural daylight from windows and skylights for work and public spaces.

2. All interior lighting will be comprised of high-quality LED fixtures with a color temperature of 3500K and 80+CRI.

3. All interior lighting systems shall exceed California Title 24 requirements by at least 15%, as required by the California State University system.

4. Light fixtures shall be selected based on architectural aesthetic, performance and efficacy, ease of maintenance, durability, visual comfort, glare control, and budget.

5. Lighting controls will incorporate dimming and occupancy sensors in each space to maximize performance.

6. Lighting control systems shall be a digitally networked, distributed dimming system consisting of a central communication network, distributed network control components, and other features.

ELECTRICAL DESIGN GUIDELINES

1. The electrical systems for the buildings, including power distribution, emergency and standby power, UPS power, grounding system, and metering system shall provide high-energy efficiency, ease of maintenance, spare capacity, and flexibility for growth and change.

2. In general, the three-phase building-level electrical distribution system will use 277/480V panels, 480V-120/208V step-down transformers, and 120/208V panels.

3. Panels and transformers will be located in electrical rooms, with additional panels located in high-density areas such as kitchens as required.

4. Emergency/standby power will be from diesel generators. These will require at least two automatic transfer switches to switch power sources appropriately.

5. The telecom rooms will utilize UPS power for backing up critical systems.

6. Each type of electrical load (lighting, HVAC, plug loads, etc.) shall be segregated per California Title 24, and metered separately.

TELECOM DESIGN GUIDELINES

1. Each building will be served by a separate telecom utility service.

2. The incoming fiber lines from the utility will terminate in the main distribution facility (MDF) on the building first floor.

3. A separate telecom room will be required to serve the Sacramento State classrooms in each building in order to separate the tenant and Sacramento State networks.

DISTRIBUTED ANTENNA SYSTEM (DAS) DESIGN GUIDELINES

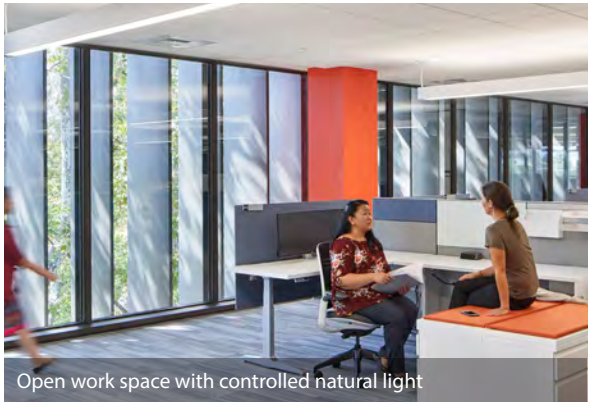
1. Each building will require an in-building RF distributed antenna system in order to support radio communications from the local public safety entities (Sacramento Metro Fire, Police, etc.) as per the State and Local codes. Each building will also be required to support cellular voice/data service (from AT&T, Verizon, and Sprint).

BLUE PHONES DESIGN GUIDELINES

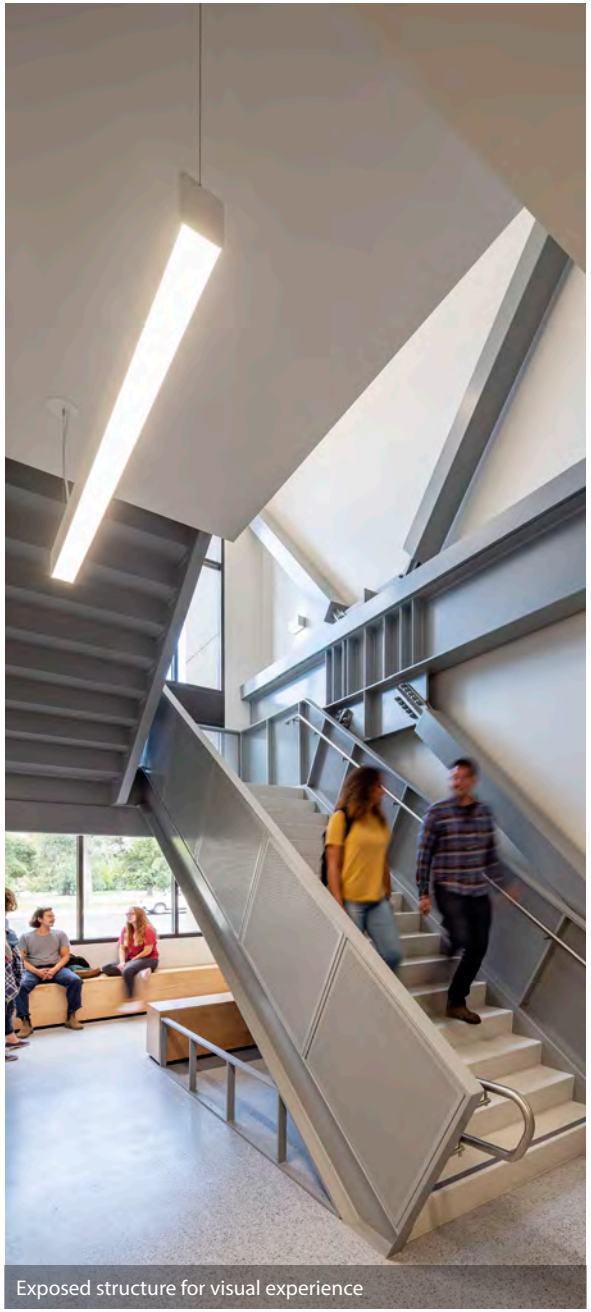
1. Blue phones matching the Sacramento State Campus standard will be located around the site.

2. The location and placement of blue phones on the project site will be determined in close coordination with the Sacramento Police Department, Sacramento State, and the specific users of the site (e.g., CMC, CA DOJ).

Typical University emergency blue light


Open work space with controlled natural light


Large skylight allows abundant natural light into workspace


Exposed structure for visual experience

Parking Structures

INTRODUCTION

Parking structures tend to be larger structures on a site and provide utilitarian functions. The massing, articulation, and design element details (stair towers and facade materials) of parking structures are critical to creating a congenial, pedestrian-scale site.

This Master Plan design guidelines for parking structures address the design of the parking structure buildings in a way that keeps these large facilities sensitive to scale, form, and safety in ways that do not detract from the image of the site.

With regard to the size and capacity of parking structures, the University will make decisions about the height of parking structures based on need. However, the need for parking should be reduced over time through use of a Traffic Demand Management program, with the added benefit of reducing the height of parking structures.

SUSTAINABILITY

Parking structures shall meet credit requirements for Parksmart Silver minimum. At the completion of project, provide the University with documentation aligning with chosen Parksmart measure strategies.

SIZE AND LOCATION

1. Parking structures should be multi-purpose buildings, including ground floor activation to academic programs above parking.

1. Parking structures should be limited to six levels, including parking on the roof level. It is preferable for parking structures to be no more than five levels.

FORM AND MASSING

1. Parking structures should be designed to be convertible to other uses. In order to allow for this, they should incorporate: flat floor plates, adequate floor to ceiling heights, and consolidated ramp and loading areas.

2. Large blank walls and continuous sloped strip openings on structure facades should be avoided. Ramped areas should be located inside the structures and not at the perimeter.

3. Structures should be designed for passive surveillance by maximizing openings and minimizing walls.

4. Stair towers should be designed to be the primary vertical circulation mode. They should be visible, well-lit, and constructed without solid walls for safety. Lighting for stair/elevator towers should allow those elements of the structure to serve as a beacon to pedestrians at night.

5. Elevators should be close to the main entrance with the entire interior of the elevator in view when the doors are open. Elevators should be designed so that their passengers are clearly visible to people outside or so that they are clearly visible or audible to security staff via television or sound monitoring equipment.

6. The inclusion of office, academic, or retail space in the exposed sides of parking structures will humanize adjoining open spaces and should be explored if the program permits.

7. Scrims and screens on the exterior must follow code requirements for natural ventilation.

8. Landscape materials should be used to provide visual screening without compromising visibility and safety.

COLOR, MATERIALS, AND WAYFINDING

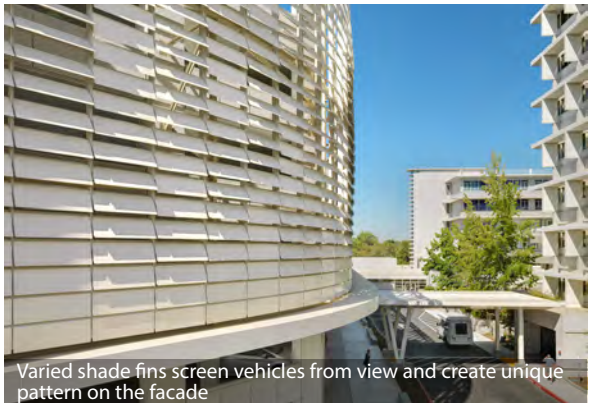
1. Parking structures should be designed to match the vocabulary of color materials and scale of the buildings on site.

2. Parking areas and driving lanes should be well-lit. The most effective way to increase the perception and reality of safety within a parking structure is to make walls and ceilings white or a very light color. This will reflect and distribute light from light fixtures and reduce shadow areas.

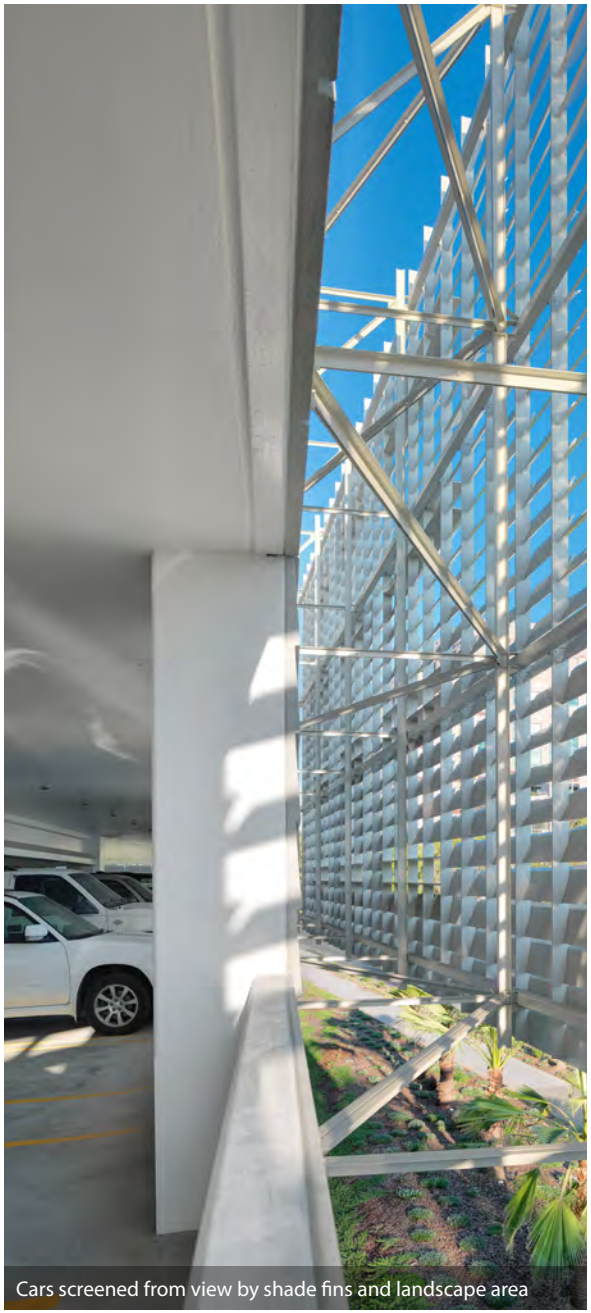
3. A well-designed graphics and signage system will effectively communicate necessary information to students, faculty, staff, and visitors navigating a large, complex, and confusing building.

4. Sign messages should be simple and succinct. Level identification theming and other wayfinding aids provide an opportunity to enhance parking interior environments.

Mixed-use building and parking integration



Varied shade fins screen vehicles from view and create unique pattern on the facade



Cars screened from view by shade fins and landscape area

CONCEPT: SHOWCASING THE FUTURE OF MOBILITY

The California Mobility Center (CMC) orchestrates commercially meaningful interactions between future mobility early-stage companies and industry-leading members. To support their mission, the CMC Showcase building is envisioned to be a welcoming, interactive facility that allows students, researchers, investors, decision makers, legislators, and other guests the ability to learn about and interact with emerging mobility technology. The Master Plan program includes the creation of a rooftop garden and event space that can be used by employees and visitors alike. The rooftop space will provide an excellent viewing platform looking over on the Test Track and the various vehicles and devices being tested.

CHAPTER 6
Implementation

The Master Plan provides a road map to the desired physical form of The Hub and outlines the anticipated route and mechanisms to realize the vision for the project. While the Master Plan is intended to be visionary, it also recognizes that there are many variables impacting timing and funding, which necessitates an approach to implementation that is nimble and flexible. This chapter provides the framework for project implementation, including the phasing strategy, initial cost estimates, individual project responsibilities, and Master Plan administration.

PHASING STRATEGY

Project success will be determined by a coordinated yet flexible approach to development phasing and implementation.

The Hub presents a tremendous opportunity for Sacramento State to partner with a variety of public institutions and private companies in creating a truly unique and innovative research park—spurring discovery, education, economic development, and inclusion throughout the Sacramento region. Given the unique nature of this project and the combination of multiple partners, implementation will be more complex than typical projects developed on the main University campus. Final programming and project components, funding and financing agreements, and project approvals will all need to be coordinated and agreed upon. As such, the specific project phasing included in the Master Plan may change over time to take advantage of new opportunities and potential additional partners.

PARTNERSHIP APPROACH

This project represents a major partnership between Sacramento State, the California Mobility Center, and the California Department of Justice. There is programming included in the Development Concept for two additional Future User buildings. While the actual tenants of those buildings are not known at this time, these buildings provide an opportunity for additional partners to be added to the project at a later date.

There are several strategic advantages for having multiple public and private partners involved in the Master Plan. First, it provides an opportunity to create a true Innovation District that provides a range of different interests and research to interact and work side-by-side. This has proven to be an effective model for promoting innovation and the discovery of new ideas. Second, these partnerships also reduce individual partner costs and risk, and can help accelerate or otherwise impact the timing of design and construction.

FACILITY APPROACH

Some facilities may be self-supporting and others will depend on debt financing, public funding, or donor funding. Regardless of the funding mechanism ultimately employed for each individual project or user, each step in the implementation process must carefully allocate and deploy precious resources to maximize impact. The implementation strategy outlined throughout this chapter summarizes the phasing and development approach recommended to achieve the Master Plan's vision for The Hub.

This multi-faceted approach is based on the following considerations:

- **Uphold the foresight and guiding principles** that support the vision for the Development Concept. Planning recommendations and project phasing are based on identified planning and design goals that support the vision for this plan.

- **Employ a systems approach to project development** that focuses on three fundamental design and land use systems, which are open space, buildings, and circulation. The approach recognizes that each of these systems is equally important to the success of The Hub and that each system is linked to the other two. A change to one system affects the others.

- **Protect the desired project form and character.** Emphasis should be placed on the importance of the Central Green, Greenway Corridor, roadway and multi-modal pathway ingress and egress points, open spaces, and other major organizing features. The importance of these features is critical to the ultimate design and functionality of The Hub, and adherence to the core design principles outlined in the Master Plan needs to be included in the decision-making process for each individual project.

- **Ensure consistency with other planning efforts.** The Master Plan process resulted in extensive coordination with concurrent and future efforts, as well as other documents and studies that affect The Hub and the surrounding neighborhood. This level of coordination and collaboration between Sacramento State, the City of Sacramento, Sacramento Regional Transit District, the Sacramento Municipal Utility District, and other public partners should be continued after Master Plan adoption and through implementation.

PHASING APPROACH

Phasing is an essential part of the approach to implementing the Master Plan. The phases developed for the implementation strategy represent two time periods to organize University/partner priorities and optimize efficiencies. To increase flexibility, each individual partner's projects are clearly identified, allowing separate and independent development to occur under each phase.

This approach will significantly reduce the risk of a single delay or change stalling an entire phase of develop and overall progress. It also allows for greater flexibility in responding to potential funding and partnership opportunities throughout the life of the Master Plan. The following pages provide an overview of the major components of each project phase.

Phase I (0-5 years)

Phase I includes the major components of the project that are necessary to fully support the programming needs for the two key partners, the California Mobility Center (CMC) and the California Department of Justice (CA DOJ). Given that this is an integrated project with multiple partners, this phase also includes the creation of the major backbone infrastructure (water, sewer, storm drainage, electrical, and telecommunications), onsite road networks, multi-modal bicycle and pedestrian network, and parking.

MASTER PLAN PROJECT COMPONENTS

Phase I includes the following major project components (see Chapter 4 for detailed programming assumptions).

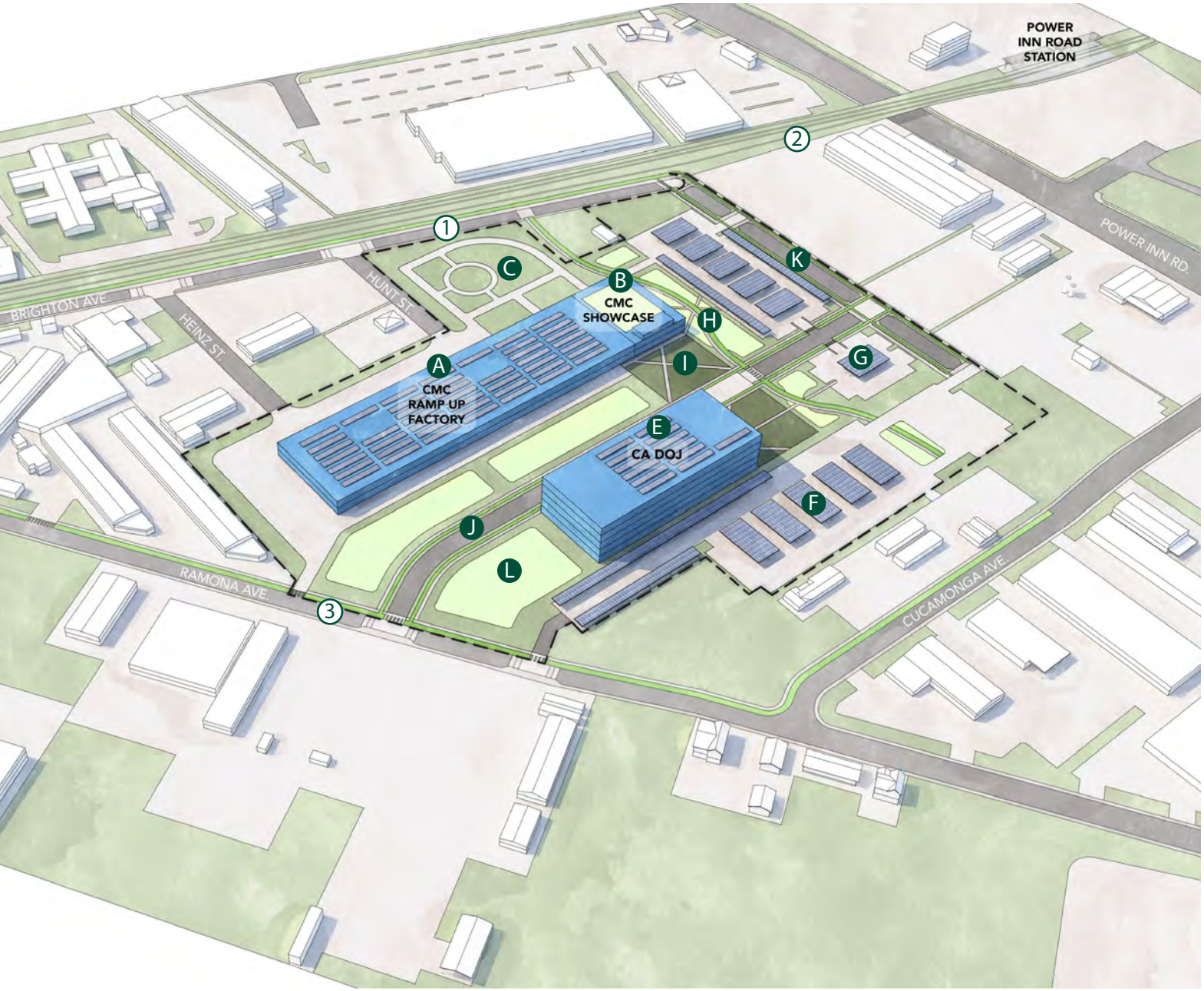
- (A) CMC Ramp Up Factory
- (B) CMC Showcase Building
- (C) CMC Test Track
- (D) CMC Parking and Solar Panels
- (E) CA DOJ Facility
- (F) CA DOJ Shared Parking and Solar Panels
- (G) Visitor Parking
- (H) Central Greenway
- (I) Central Green
- (J) East-West Road
- (K) North-South Road
- (L) Landscaping and Bioswales

RELATED COMPONENTS

The Hub Master Plan covers the 25 acres owned by Sacramento State. The City of Sacramento, Sacramento Regional Transit District, and other public agency partners have identified additional conceptual neighborhood improvements that relate to the project site. While these improvements are not part of the Master Plan, they are worth noting as they will support this project and surrounding properties as the neighborhood transitions into an integrated and connected Innovation District.

1. Brighton Avenue Multi-Modal and Infrastructure Improvements
2. Brighton Avenue Bicycle and Pedestrian Pathway Extension to the Power Inn Light Rail Station
3. Ramona Avenue Multi-Modal and Infrastructure Improvements

FIGURE 6.1: Phase I Diagram



LEGEND

Master Plan Phase I Project Components

- Ⓐ CMC Ramp Up Factory
- Ⓑ CMC Showcase Building
- Ⓒ CMC Test Track
- Ⓓ CMC Parking and Solar Panels
- Ⓔ CA DOJ Facility
- Ⓕ CA DOJ Shared Parking
- Ⓖ Visitor Parking
- Ⓗ Central Greenway
- Ⓘ Central Green
- Ⓙ East-West Road
- Ⓚ North-South Road
- Ⓛ Landscaping and Bioswales

Related Components

- ① Brighton Avenue Improvements
- ② Brighton Avenue Pathway Extension
- ③ Ramona Avenue Improvements

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Phase II (5+ years)

Phase II includes two additional Future User buildings and the additional infrastructure necessary to support them. Both of these new buildings are anticipated to be developed over surface parking lots created during Phase I. The Future User 1 building incorporates three floors of structured parking to replace the Phase I surface parking for CMC and CA DOJ. This building also includes additional parking to support the uses in both Future User buildings. However, the actual amount of structured parking in Phase II is flexible and can be reduced as transit linkages and mobility options are increased in the neighborhood.

MASTER PLAN PROJECT COMPONENTS

Phase I includes the following major project components (see Chapter 4 for detailed programming assumptions).

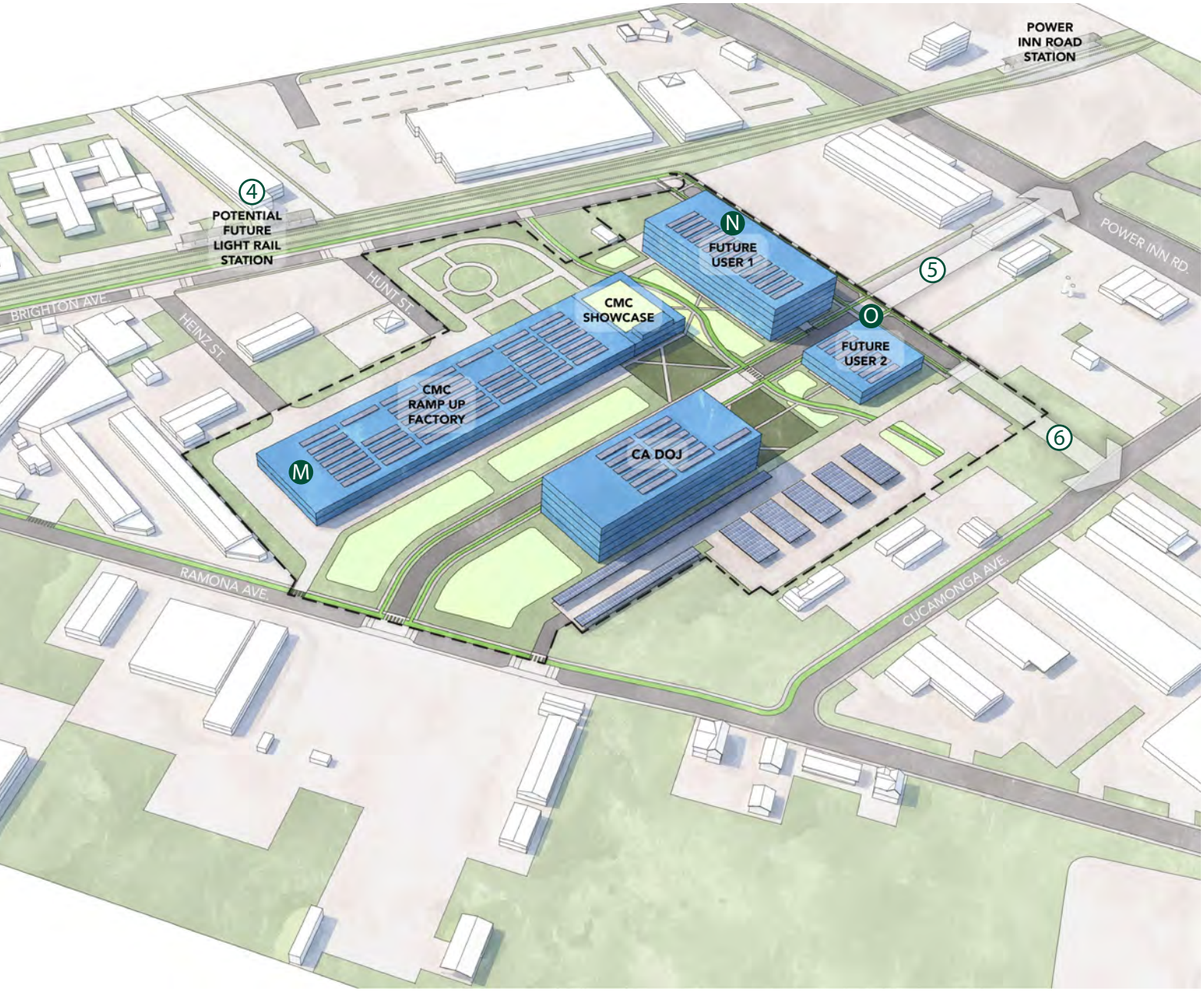
- Ⓜ CMC Ramp Up Factory Expansion
- Ⓝ Future User 1 Building
- Ⓞ Future User 2 Building

RELATED COMPONENTS

The Hub Master Plan covers the 25 acres owned by Sacramento State. The City of Sacramento, Sacramento Regional Transit District, and other public agency partners have identified additional conceptual neighborhood improvements that relate to the project site. While these improvements are not part of the Master Plan, they are worth noting as they will support this project and surrounding properties as the neighborhood transitions into an integrated and connected Innovation District.

- ④ Potential Future Light Rail Station
- ⑤ Potential Power Inn Connection
- ⑥ Potential Cucamonga Avenue Connection

FIGURE 6.2: Phase II Diagram



LEGEND

Master Plan Phase II Project Components

- Ⓜ CMC Ramp Up Factory Expansion
- Ⓝ Future User 1 Building
- Ⓞ Future User 2 Building

Related Components

- ④ Brighton Avenue Improvements
- ⑤ Brighton Avenue Pathway Extension
- ⑥ Ramona Avenue Improvements

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COST ESTIMATES

The Hub will be created through a shared financial partnership between Sacramento State and the project partners.

At a master planning level, cost estimation for a development project with multiple partners and incremental phasing is necessarily high level, relying on assumptions and contingencies to produce a relatively conservative range for cost estimates. Actual project costs will depend on inflation, programming refinement, general market conditions at the time of design and construction, the presence and nature of development partnerships, and funding approaches. These assumptions are based on local costs for similar types of buildings, site improvements, and infrastructure. However, the actual design of each users individual buildings and site improvements may vary when projects are ultimately designed and implemented.

Table 6.1 provides a high-level overview of the assumed costs for The Hub project. A more detailed summary, clarifying details, assumptions, and the specific approach to the cost ranges for the various buildings and spaces anticipated at The Hub over the next 3 to 10+ years can be found in the appendix.

COSTS BY PHASE

The Hub is anticipated to be developed in two major phases. However, the CMC and CA DOJ facilities and associated site improvements are not intricately linked to each other, and both may start development at the same time, or one partner may start earlier than the other. The anticipated project cost by phase is:

Phase I	$383,495,514
Phase II	$236,381,531
Total	$619,877,045

COSTS BY PARTNER

Each project partner (CMC, CA DOJ, and Future Users) is anticipated to secure funding, design, and develop their portion of the project. As part of the cost estimating process, the Master Plan includes detail on estimated costs by partner. These costs are based on general assumptions about building types, materials, and construction processes. However, the actual cost may vary depending on the final designs and project components included by each partner. The anticipated project cost by partner is:

CMC	$128,154,804
CA DOJ	$251,517,911
Future Users	$226,492,479
Shared Site Imp.	$13,711,851
Total	$619,877,045

TABLE 6.1: Master Plan Cost Estimates

	PHASE I PROBABLE COSTS			PHASE II PROBABLE COSTS			TOTAL PHASE I AND II COSTS
	GSF	Cost Per GSF	Total	GSF	Cost Per GSF	Total	Total Probable Cost
CALIFORNIA MOBILITY CENTER							
CMC Showcase Building	32,400	$612.17	$19,834,330	-	-	-	$19,834,330
CMC Ramp Up Factory Building	118,800	$567.22	$67,385,643	-	-	-	$67,385,643
CMC Site, Utilities, and Photovoltaics	449,725	$49.73	$22,366,528	-	-	-	$22,366,528
CMC Future Expansion of the Ramp Up Factory	-	-	-	15,600	$633.91	$9,889,052	$9,889,052
Escalation*	0.33%	7.92%	$8,679,251	-	-	-	$8,679,251
Subtotal			**$118,265,752**			**$9,889,052**	**$128,154,804**
CALIFORNIA DEPARTMENT OF JUSTICE							
CA DOJ Consolidated Facility Building	250,000	$761.96	$190,489,028	-	-	-	$190,489,028
CA DOJ Equipment and Furnishings	144,000	$165.10	$23,774,400	-	-	-	$23,774,400
CA DOJ Site, Utilities, and Photovoltaics	262,543	$71.59	$18,796,163	-	-	-	$18,796,163
Escalation**	0.33%	7.92%	$18,458,320	-	-	-	$18,458,320
Subtotal			**$251,517,911**			**-**	**$251,517,911**
FUTURE USERS							
Future User Building #1	-	-	-	384,000	$398.59	$153,058,359	$153,058,359
Future User Building #2	-	-	-	52,000	$584.98	$30,418,912	$30,418,912
Future Site and Utilities	-	-	-	168,625	$33.10	$5,581,560	$5,581,560
Escalation*	-	-	-	0.33%	19.80%	$37,433,648	$37,433,648
Subtotal						**$226,492,479**	**$226,492,479**
SHARED SITE IMPROVEMENTS							
CMC/CA DOJ Shared Site and Utilities	225,913	$56.24	$12,705,570	-	-	-	$12,705,570
Escalation*	0.33%	7.92%	$1,006,281	-	-	-	$1,006,281
Subtotal			**$13,711,851**			**-**	**$13,711,851**
TOTALS							
Total Probable Project Cost**			**$383,495,514**			**$236,381,531**	**$619,877,045**

* The Cost Estimates assume an escalation factor of two years for Phase I and five years for Phase II from Master Plan adoption.

** The Cost Estimates are based on general construction, materials, and labor assumptions for similar building and site developments. The actual specific final costs for each project will be determined by the various partner/user as part of their individual design/build process.

ADMINISTRATION

Implementation of the Master Plan will involve a coordinated effort, led by Sacramento State, and supported by the project partners.

Implementation of the Master Plan requires a clear vision and a logical strategy for phasing key improvements that will stimulate, frame, and complement new projects. Rather than establish one preferred scenario for implementation, the implementation methods delineated in this chapter provide direction with the flexibility to adjust to unforeseen challenges and opportunities.

The Master Plan outlines a Vision for the physical development of The Hub project, supported by a set of Guiding Principles, the Development Concept, and detailed Design Guidelines. This approach considers both near-term and longer-term needs of Sacramento State, the California Mobility Center, the California Department of Justice, and yet unidentified Future Users. To this end, the Master Plan should continuously be monitored and reviewed as it is implemented to ensure that the principles, concepts, and strategies remain relevant and effective.

As the property owner and lead agency, Sacramento State will have land use and development authority over the project site. Each partner will undergo their own design and construction process based on the various components of the Master Plan. Sacramento State, working closely with the California State University Board of Trustees, will review and approve each individual project. In order to do this, the CSU Board of Trustees will make a determination that the individual project substantially conforms to the Master Plan and the associated Environmental Impact Report.

PROJECT APPROVAL PROCESS

The following is the general process for individual project design, reviews, and approvals.

1. The Hub Master Plan and associated Environmental Impact Report will be approved by the CSU Board of Trustees (and any future amendments to these documents).

2. Individual partners will retain a design team to prepare detailed facility and site designs.

3. Sacramento State staff will review the detailed designs and make a determination on whether the project substantially conforms to the Master Plan.

4. The CSU Board of Trustees will then review and approve the individual project.

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THE HUB
SACRAMENTO STATE
RESEARCH PARK

SACRAMENTO STATE
Redefine the Possible