Phoenix Biomedical Campus

2008 COMPREHENSIVE MASTER DEVELOPMENT PLAN

FINAL 01 OCTOBER 2008

Ayers/Saint/Gross Architects + Planners

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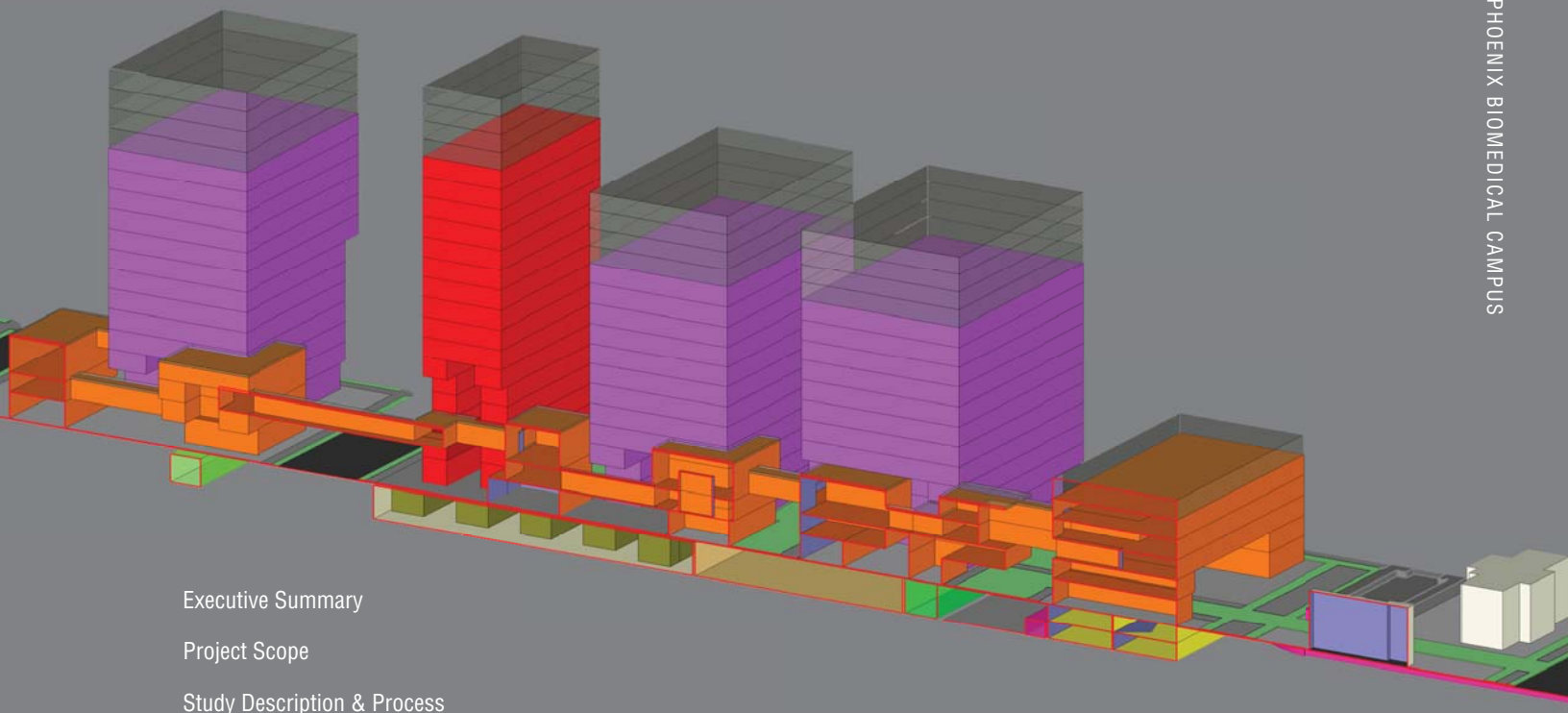


Phoenix Biomedical Campus

EXECUTIVE SUMMARY

Introduction

This design and development of the comprehensive planning document for the campus has been jointly commissioned by the University of Arizona and City of Phoenix, under agreement with Ayers Saint Gross.

The scope of the study provides the development and planning principles, functional adjacencies, infrastructure organization and determines long term land uses and campus capacities.

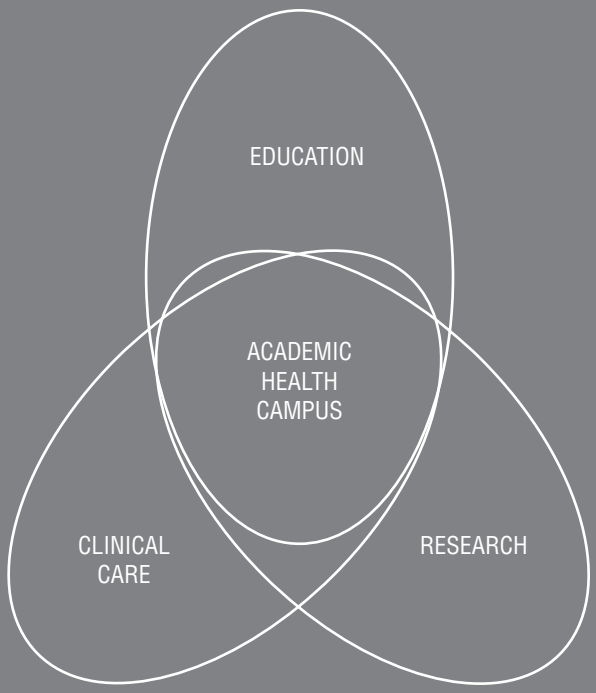
The design of the campus plan has been accomplished through comparative studies, work shops and the inclusion of advice from users and planning professionals, both locally and nationally.

Mission Statement

The campus is dedicated to advancing biomedicine and biosciences through research, education and clinical practice with continuing focus in the areas of medical specialties, bioengineering and bioinformatics.

Transformations of this Site

Over the past 100 years and across these 28 acres, dozens of households, public schools, city courts, offices and small businesses have been hosted. Now, this site has become the Phoenix Biomedical Campus. Today, this site bounded by 5th St and 7th St (on the west-east) and by Monroe and Garfield (south-north) has seen the recent restoration of the three historic Phoenix Union High School buildings, as well as the addition of TGen and ABC 1. As a combined vision of the City of Phoenix, Arizona Board of Regents, the University of Arizona, Arizona State University and Northern Arizona University the Phoenix Biomedical Campus is a consortium of user groups and program elements focused on healthcare, the education of healthcare professionals, related biomedical research and the application of clinical care.



Project Scope

Location

The location of the Phoenix Biomedical Campus (PBC) within the context of the downtown Phoenix core and the broader position within metro Phoenix is relevant because:

- The PBC complements the existing and developing ASU downtown Campus.
- The PBC anchors and completes the eastern edge of the downtown urban business core.
- Within close proximity to the PBC, several major regional and community clinical campuses already exist, including: Banner Good Samaritan, MIHS Roosevelt Campus and St Lukes.

Challenges

Primary issues framing the development and planning of the Campus: Three significant and formative factors define the opportunities and unique development response generated through the master planning process.

1. The functional program is a vibrant and collaborative set of academic healthcare programs, with extensive research capacity and significant clinical facilities. These three areas of expertise will coexist on an integrated campus and, as applicable, share facilities.

2. This unique downtown site requires respectful infill with an urban to highris density. The potential connections to neighboring downtown facilities and to the ASU downtown campus further embed this site into the city's fabric while fostering an urban character.

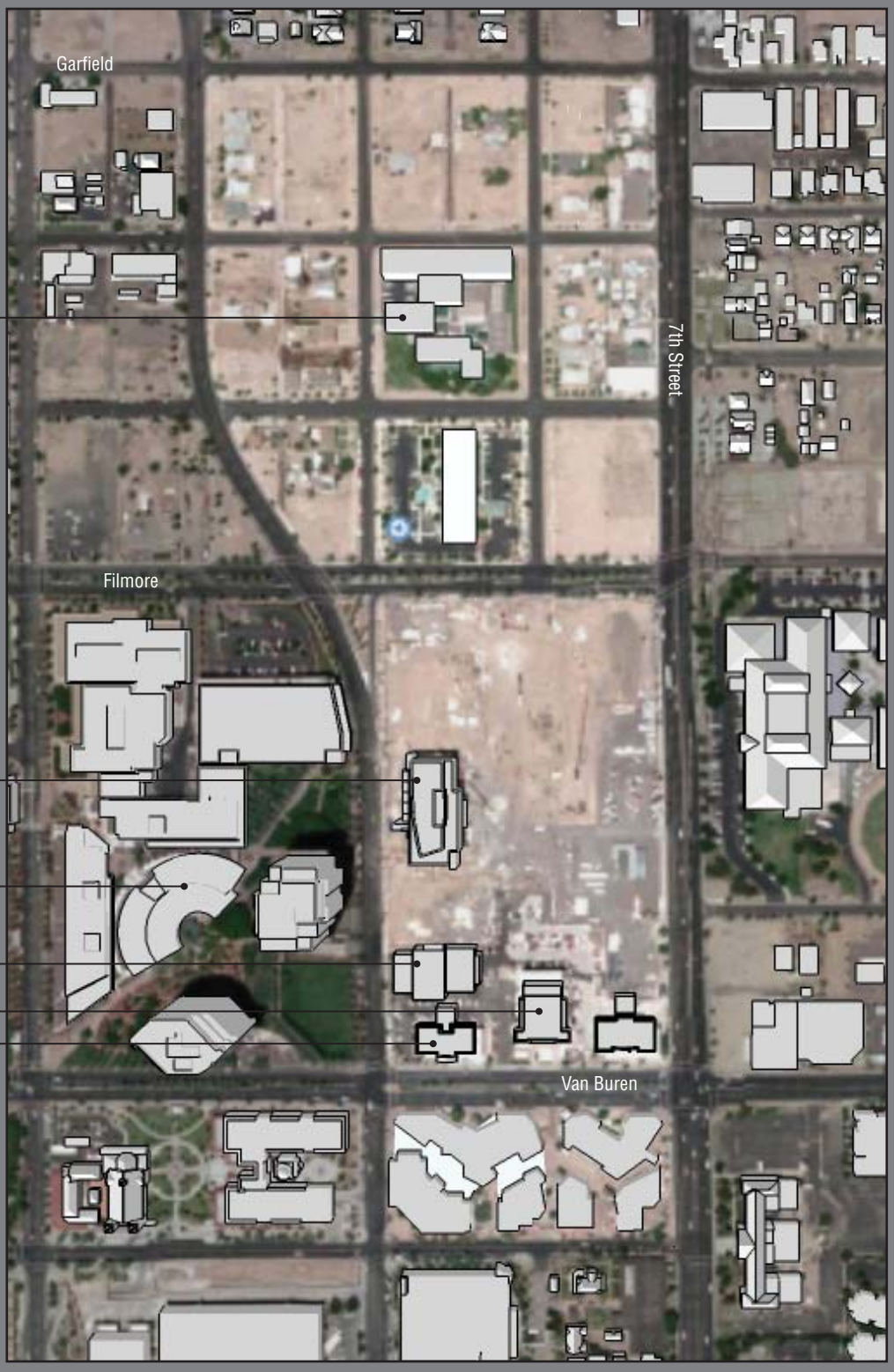
3. The majority of the site is an open framework for planning. Even the presence of the historic buildings anchor the site without pre-determining or confining the site plan options. This fortunate flexibility is an opportunity to define much of the long term planning without impediments. Often the legacy of existing buildings significantly interrupts the larger plan by restricting building size or placement - a common difficulty on comparable campuses.
   The proposed physical design of the Campus, resolves this comprehensive complex set of academic ideals and it's physical requirements on a practical and buildable template.

Process

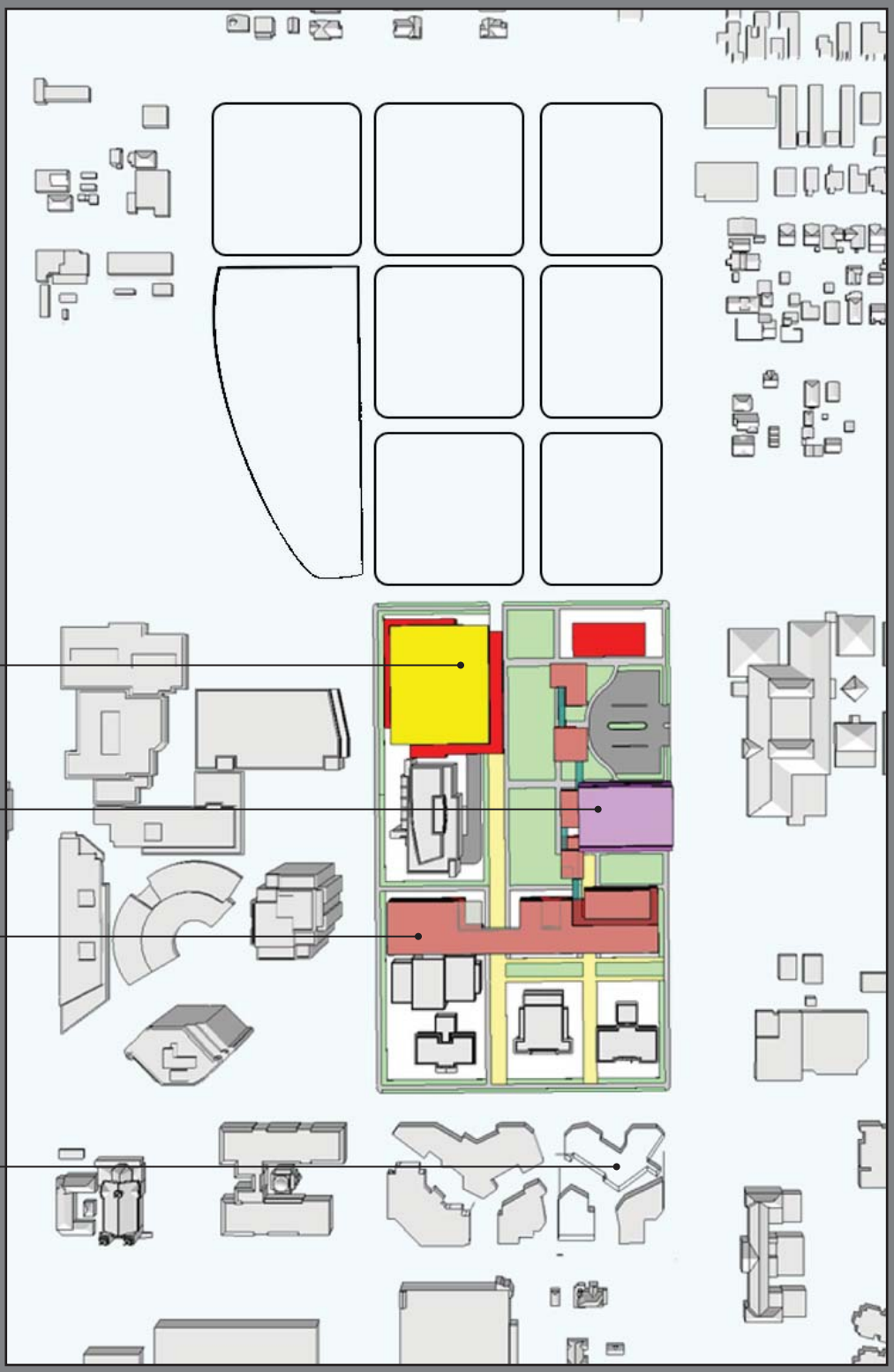
In an effort to explore as many site organizations as practical, multiple site plan options were generated, reviewed, discussed and edited on the path to this the final proposed master plan. This reiterative process of site plan development and subsequent reviews formulated many fundamental precepts. Those primary precepts include:

- Create a campus environment immediately by grouping development and programs
- A commitment to density yields long term site capacity as well as an urban character
- Flexibility and evolution of buildings over a long period of ownership is practical and realistic
- Shared functions and spaces by integrated user groups is desirable and practical
- Recognize that the campus has a transitional use between the neighborhoods and the downtown Phoenix core-both physically and conceptually

Existing Site



Immediate Phasing



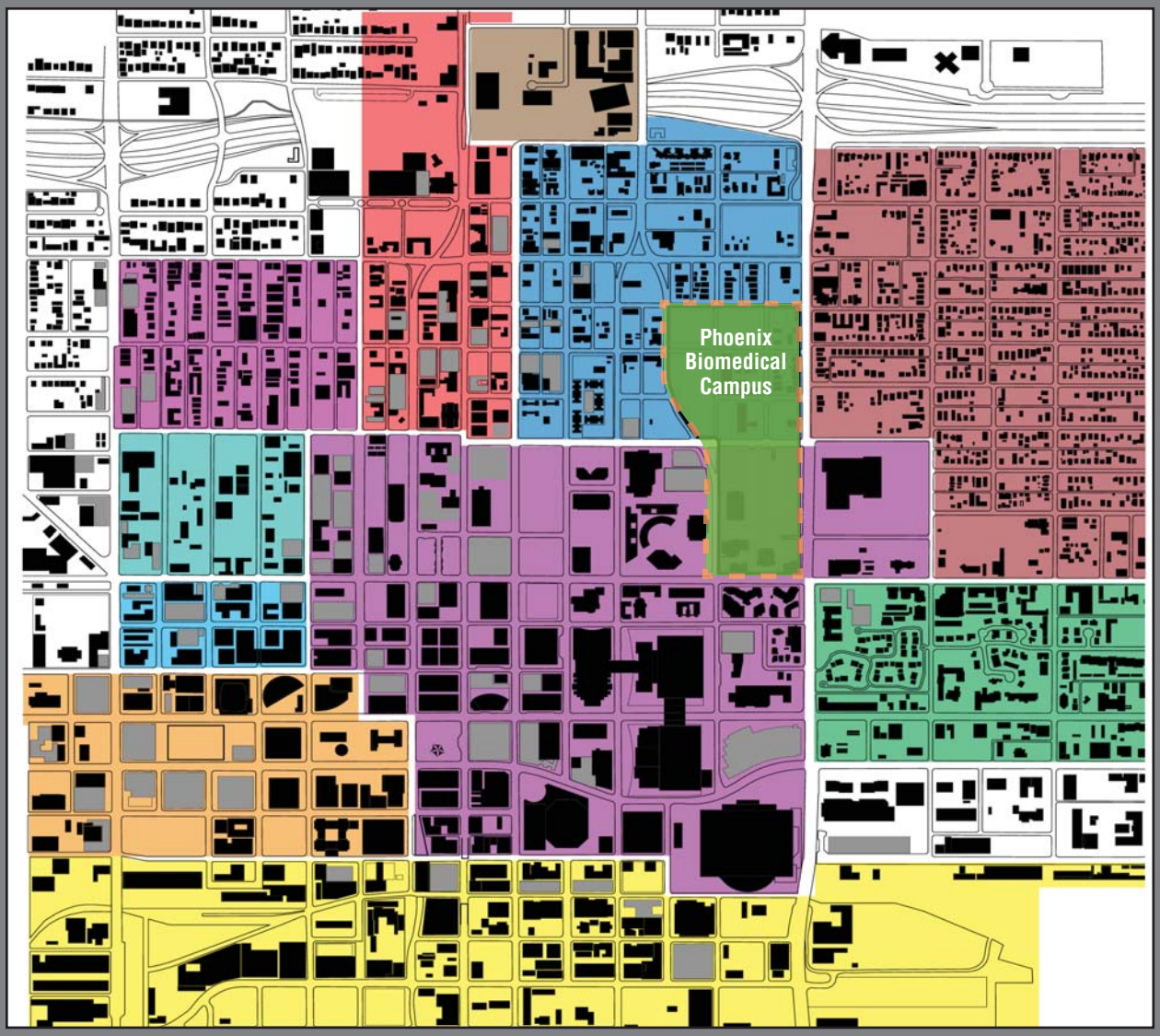
Full Build-Out

Parking/Multipurpose

Clinical Care Facilities

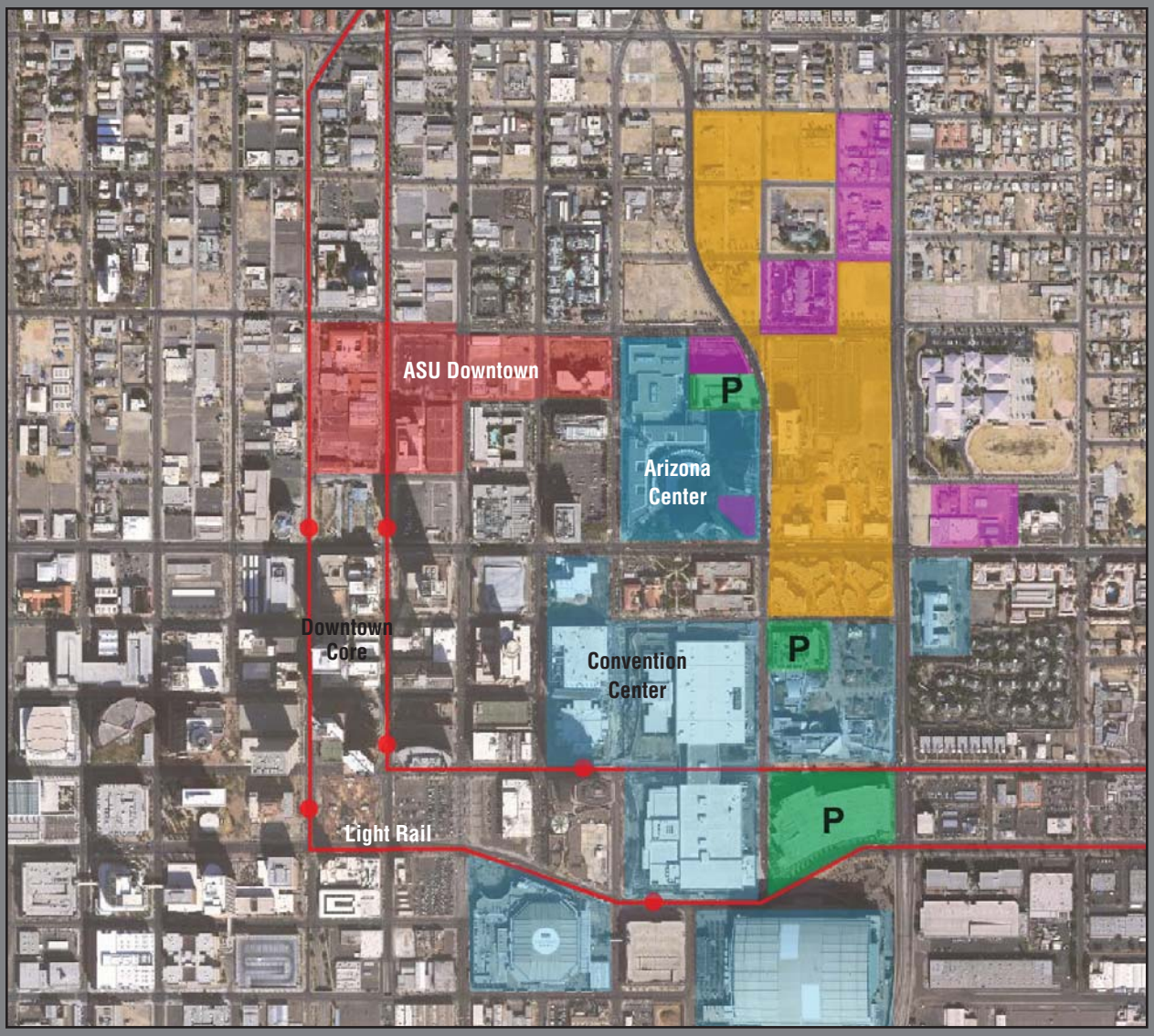
South of Van Buren/Mercado Redevelopment
ABC 6 and or additional Academic Facilities

Regional Context



- Central Corridor
- Arts South
- East Roosevelt
- Garfield Neighborhood
- Historic Roosevelt
- Historic Roosevelt Spd
- Fillmore West
- Monroe West
- Booker T. Washington
- Government Mall
- Warehouse

Proximity



Proximity of the Phoenix Biomedical Campus to other downtown facilities and primary uses.
Note “P” is for large public parking structures.

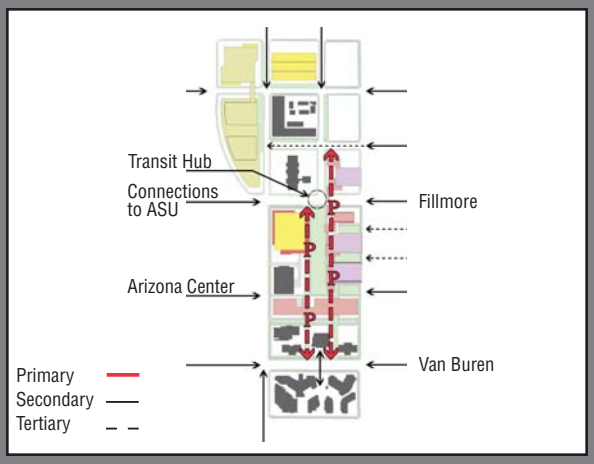
Program Elements

IN PROGRESS

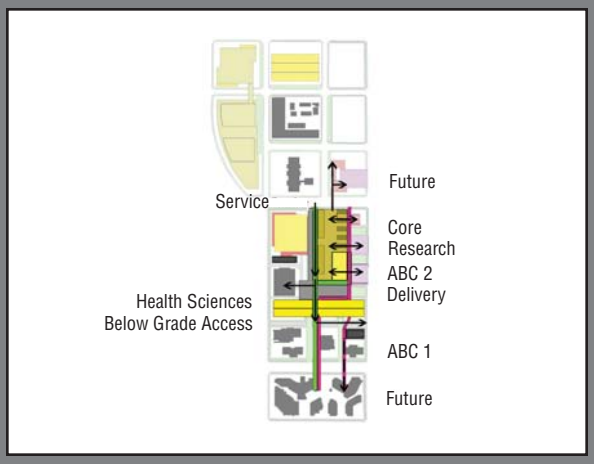
FUTURE PHASES

Phase 1	1. Existing	Research/TGEN Historic Buildings ABC-1	180,000 GSF 70,000 GSF 80,000 GSF
Phase 2	2. Academic 3. Research 4. Core Research & Imaging	Health Science Education Building (HSEB) Teaching, Labs & Offices Library Administrative Research Facilities Clinical Translation Building Support, Loading Dock	370,000 GSF 275,000 GSF 20,000 GSF 95,000 GSF
Structured Parking	5. Active Uses	Bookstore, Food Service, Meeting TBD	
Future Phases	6. Clinical Hospital	Phase One	750,00 GSF
Structured Parking	7. Covered Parking	Phase One (Research/Med) Phase Two (Clinical/Proposed)	2000 CARS 1500 CARS
Future Phases	8. Research	Multiple Research 3-5 Buildings	350-441,000 GSF
	9. Clinical	Hospital/Clinical/Out-Patient Medical Office Building (M.O.B.)	750,000 GSF 350,000 GSF
	10. Active Ises	Suppor/Meeting/Retail	TBD
	11. Structured Parking	Additional 2,000 cards	600,000 GSF

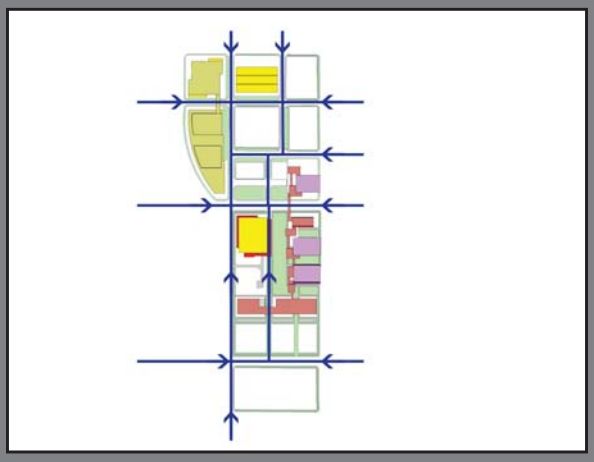
Design Guidelines - Principles



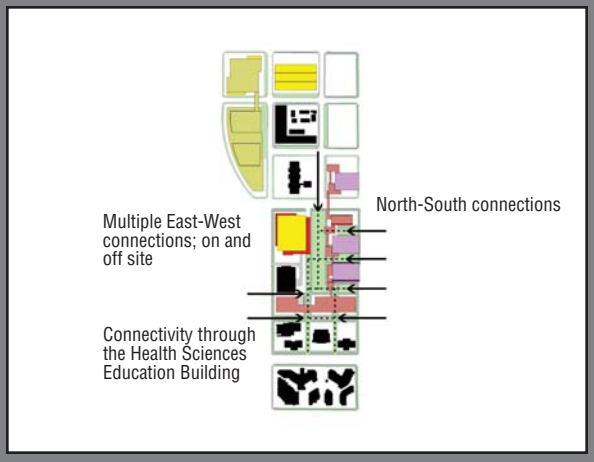
External



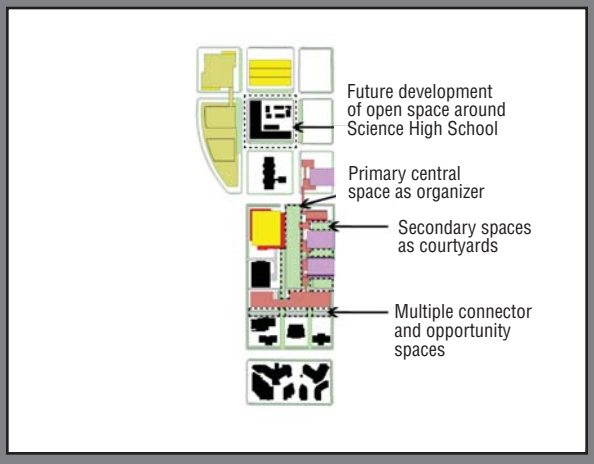
Underground



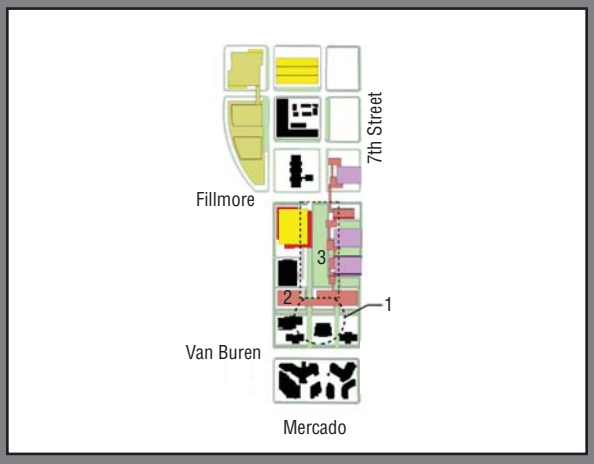
Pedestrian



Internal

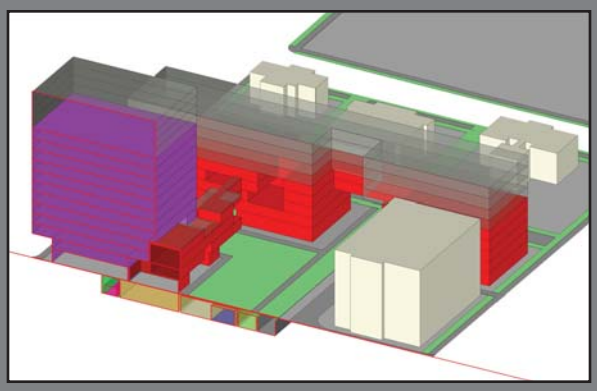


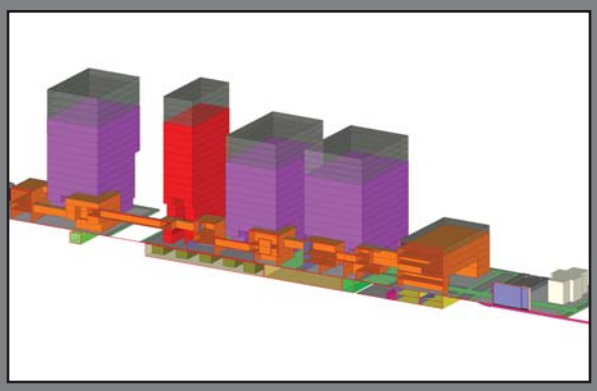
Open Space

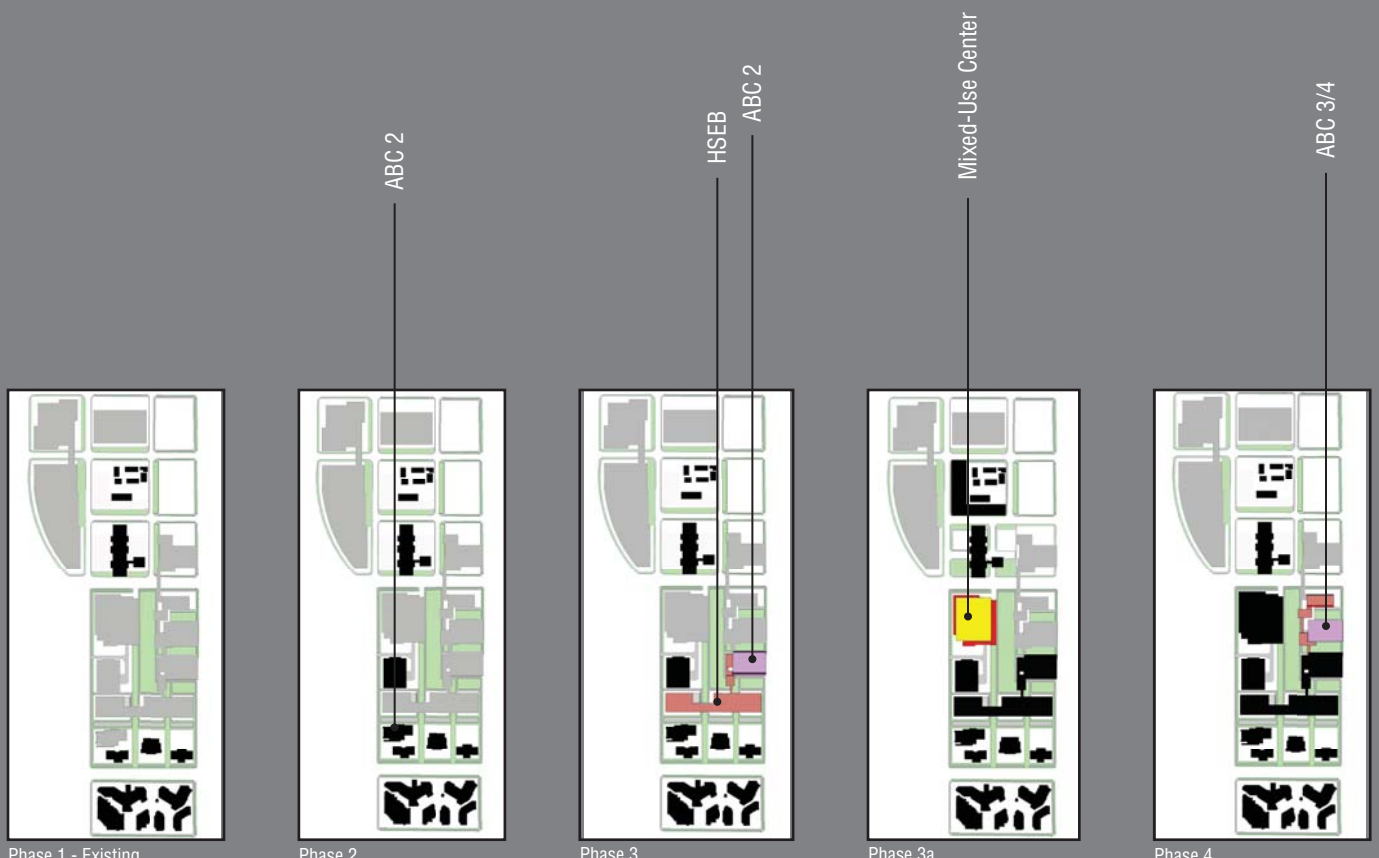


Parameter

Phasing Diagrams







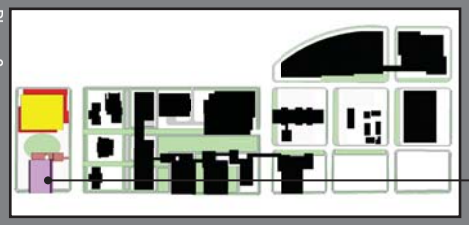
Phase 5

Clinical

Phase 6

ABC 5

Phase 8



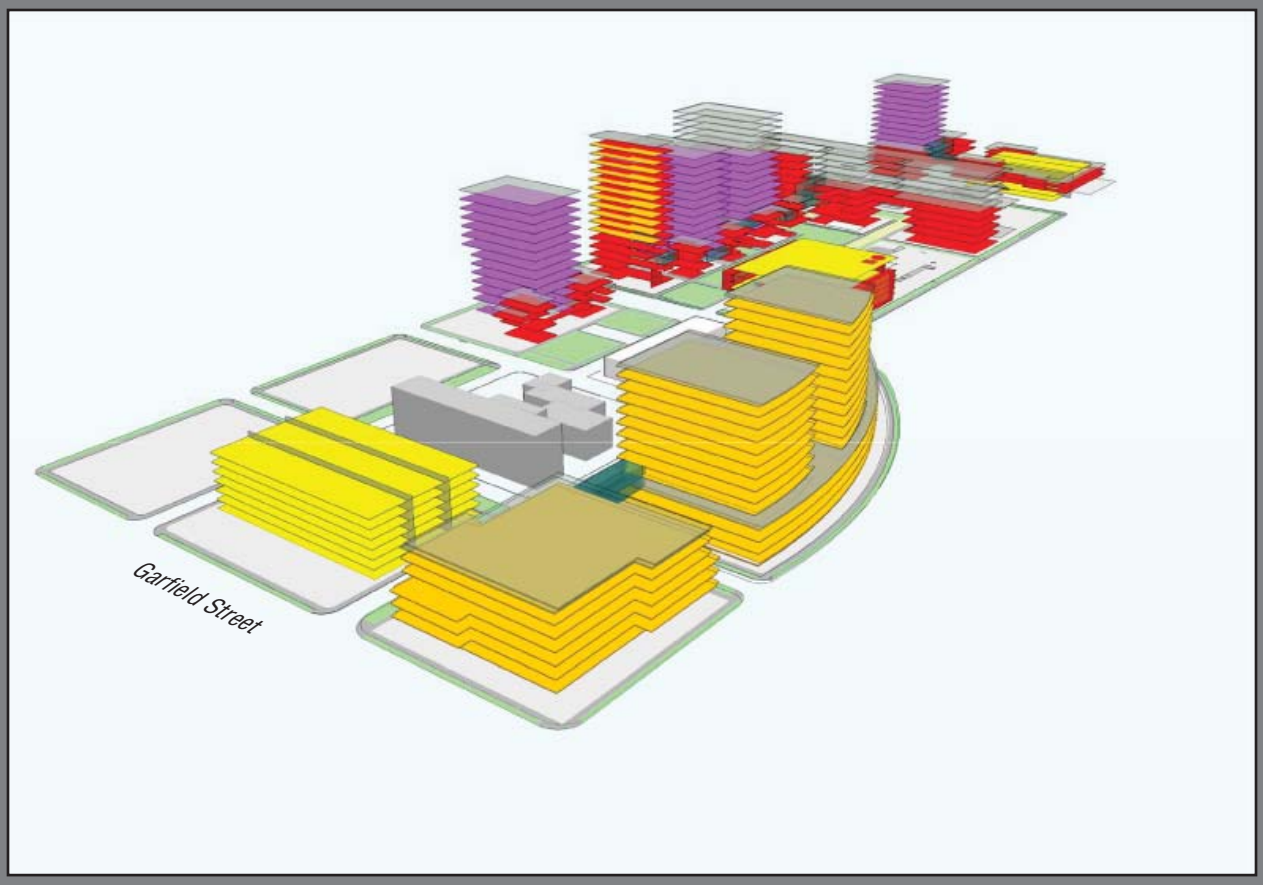
ABC 6 & Support Foundation

Phase 7

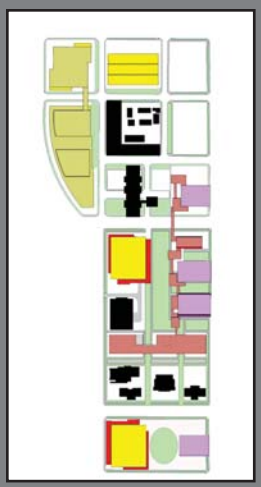
Clinical/Healthcare Center

Final Buildout

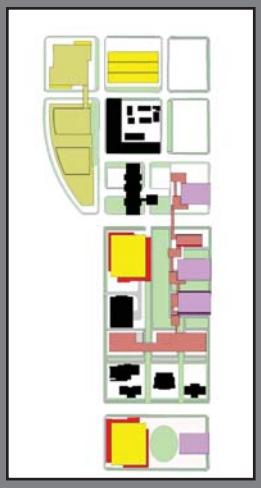
Full Buildout Campus Perspective



Northwest View



Southeast View



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Ayers/Saint/Gross, Architects + Planners
60 East Rio Salado Parkway
Suite 701
Tempe, Arizona, 85281
480.921.1515
www.asg-architects.com

Phoenix Biomedical Campus

PROJECT SCOPE

Project Scope

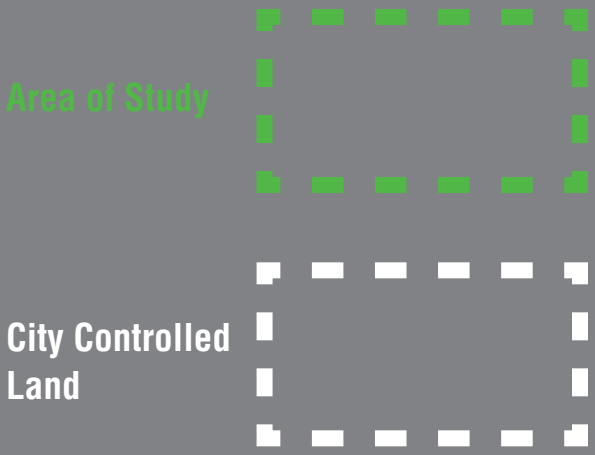
Area of Study

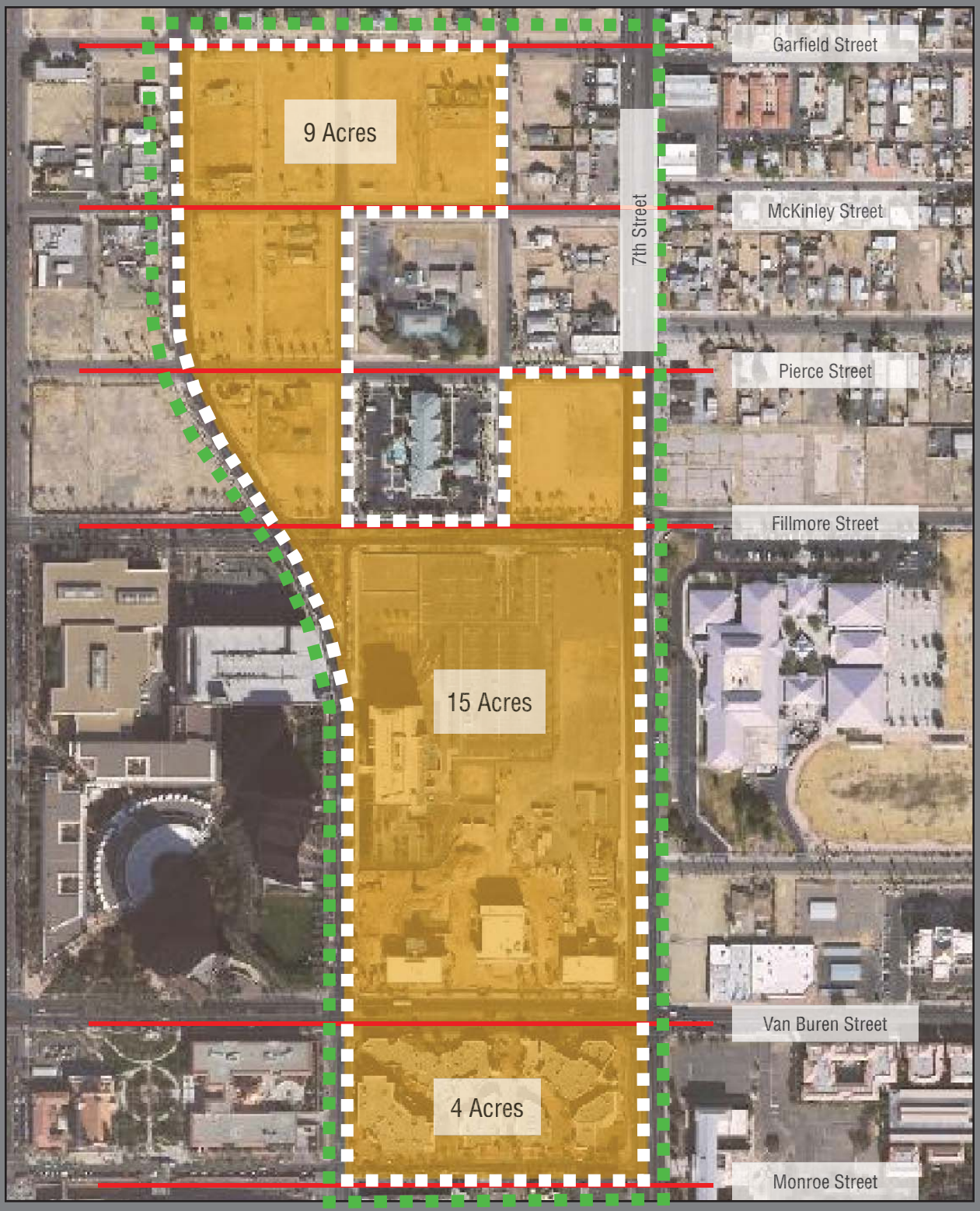
The plan will address approximately 28 acres: from Monroe Street, north, including the Mercado, to Garfield Street, and west from 7th Street to the 5th Street and 4th Street alignment.

This will be the first study that comprehensively plans the entire campus acreage.

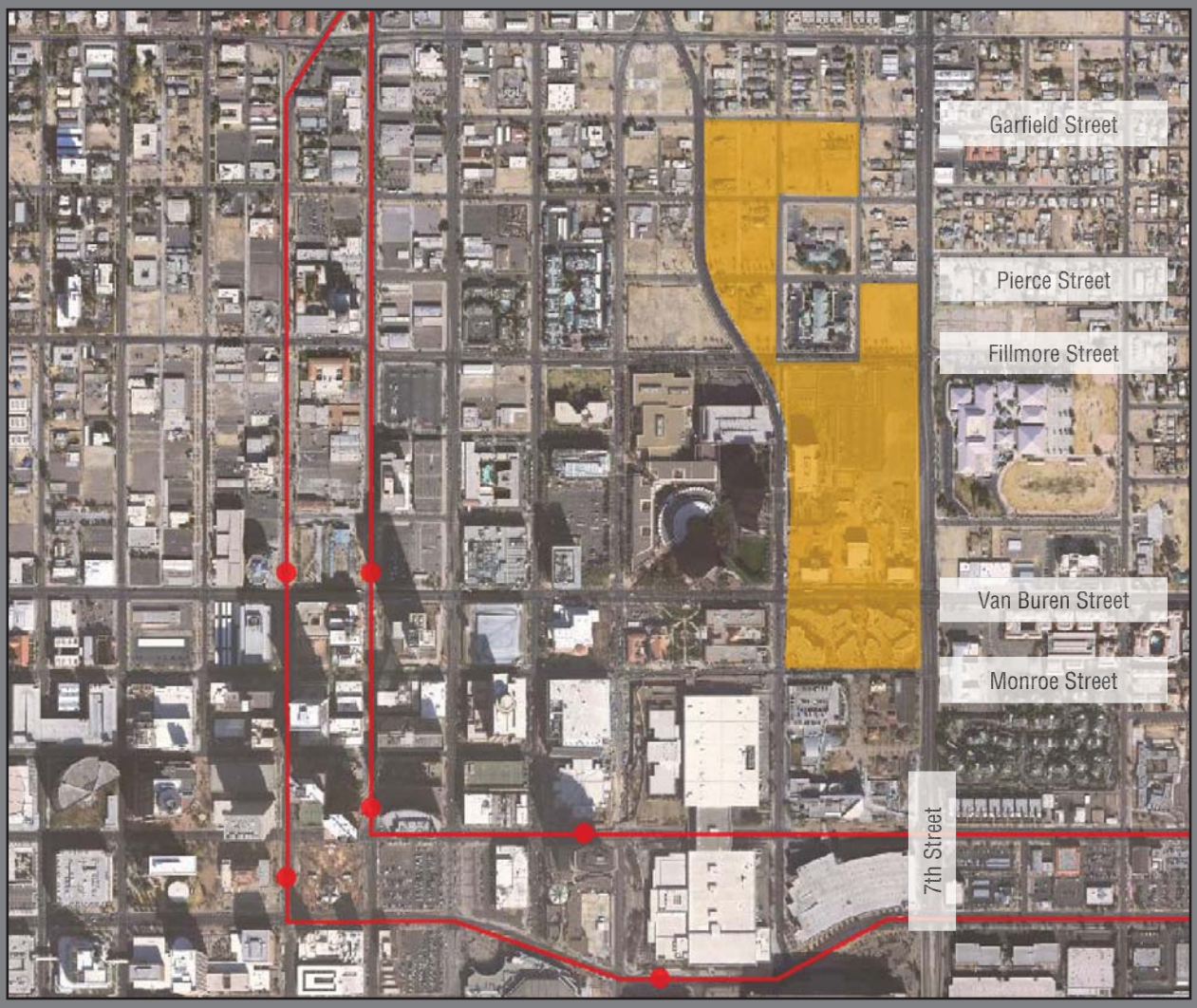
Connections between programs on campus as well as to related uses off campus will be analyzed and developed.

Project scope also includes strategies for utilities, site infrastructure, traffic, parking and landscape.



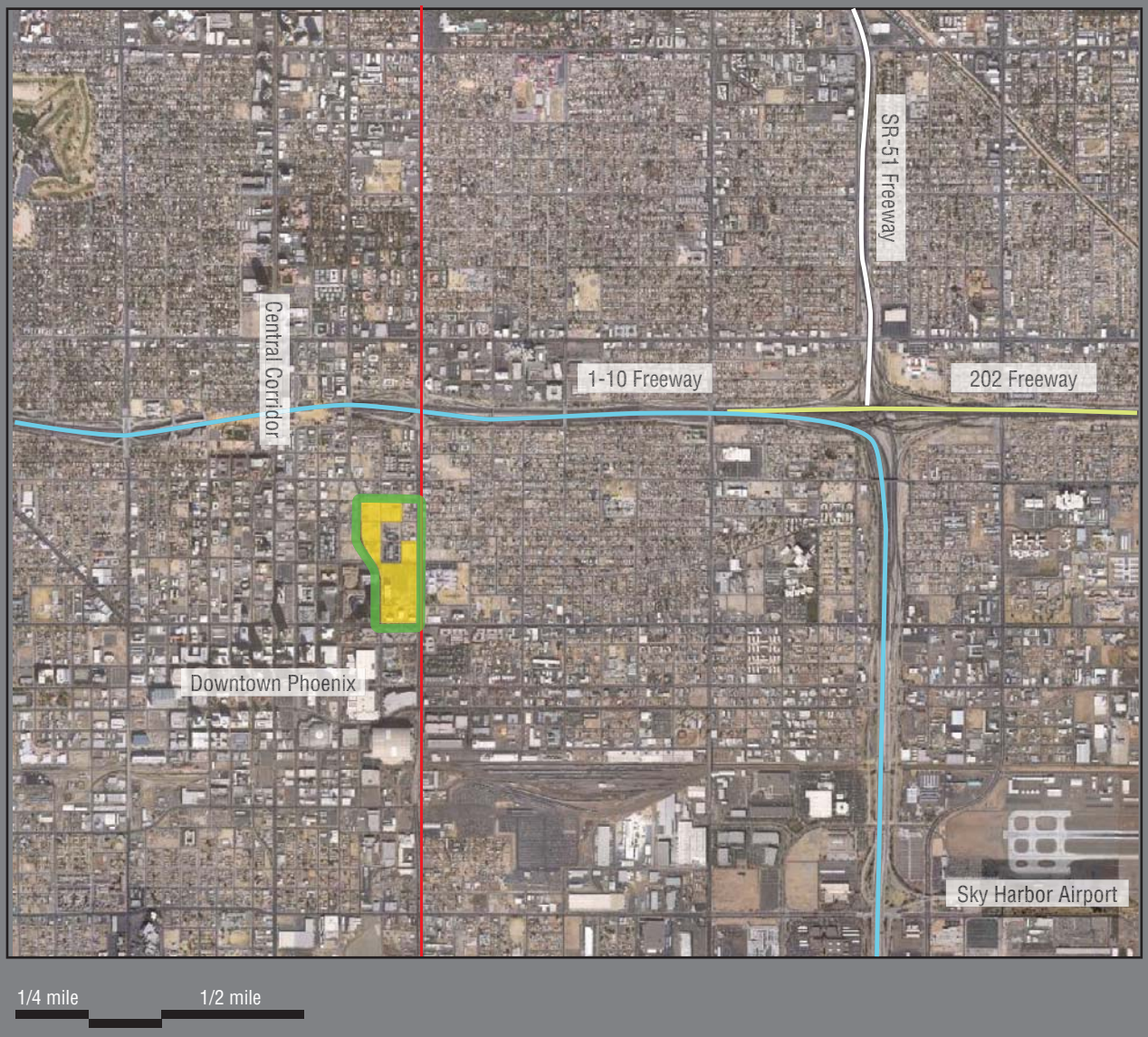

Garfield Street
9 Acres
7th Street
McKinley Street
Pierce Street
Fillmore Street
15 Acres
Van Buren Street
4 Acres
Monroe Street

Proximity to Light Rail

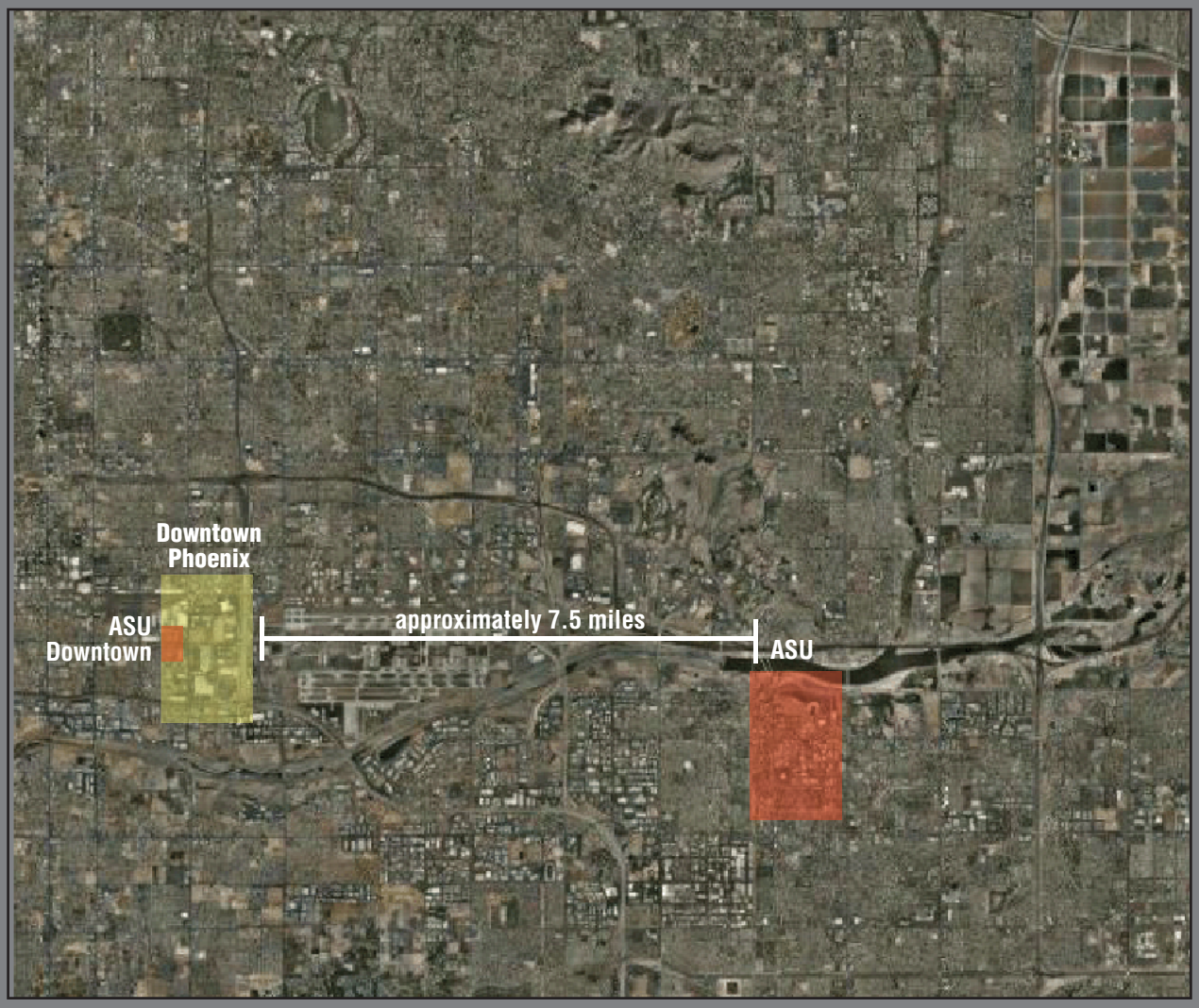


December 2008 - Access

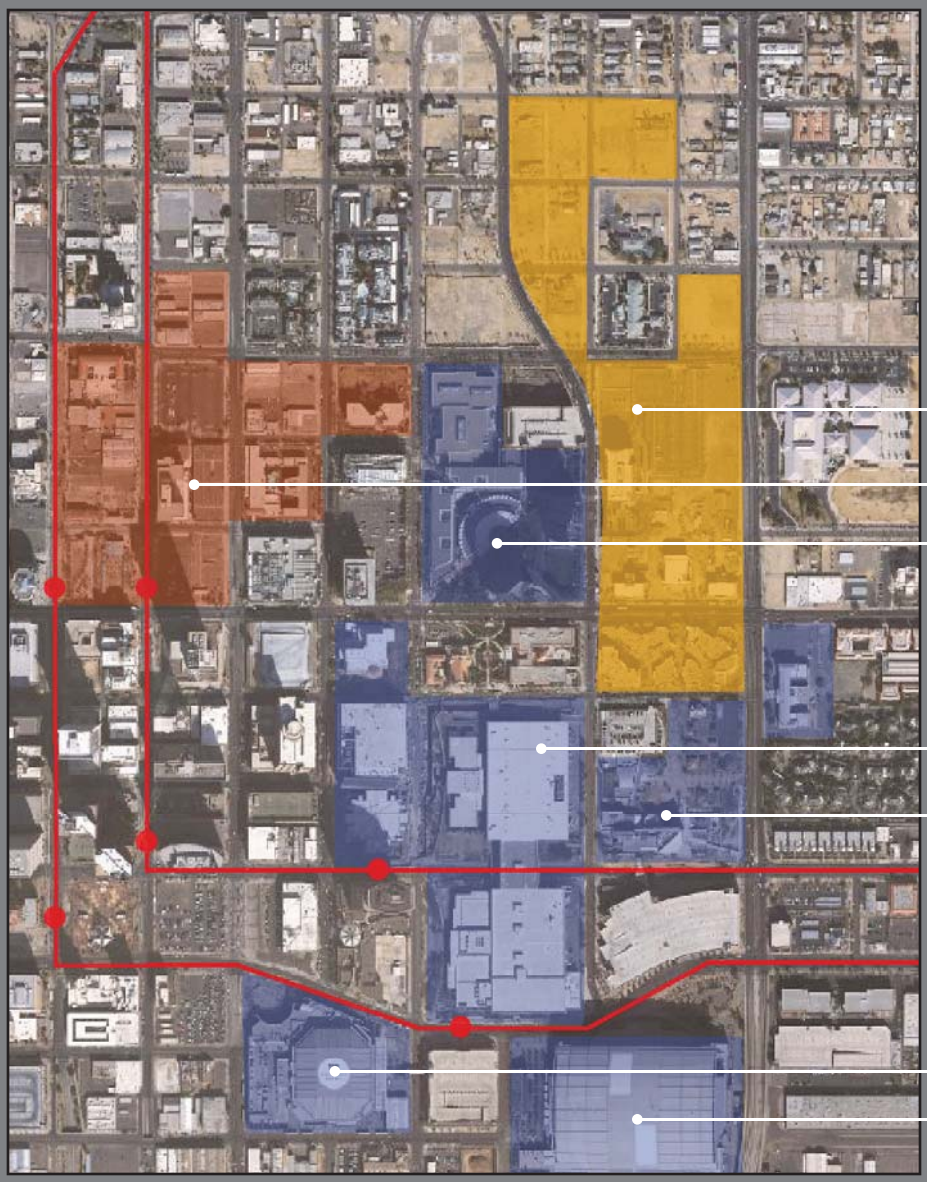
Proximity to Major Freeways & Urban Transportation



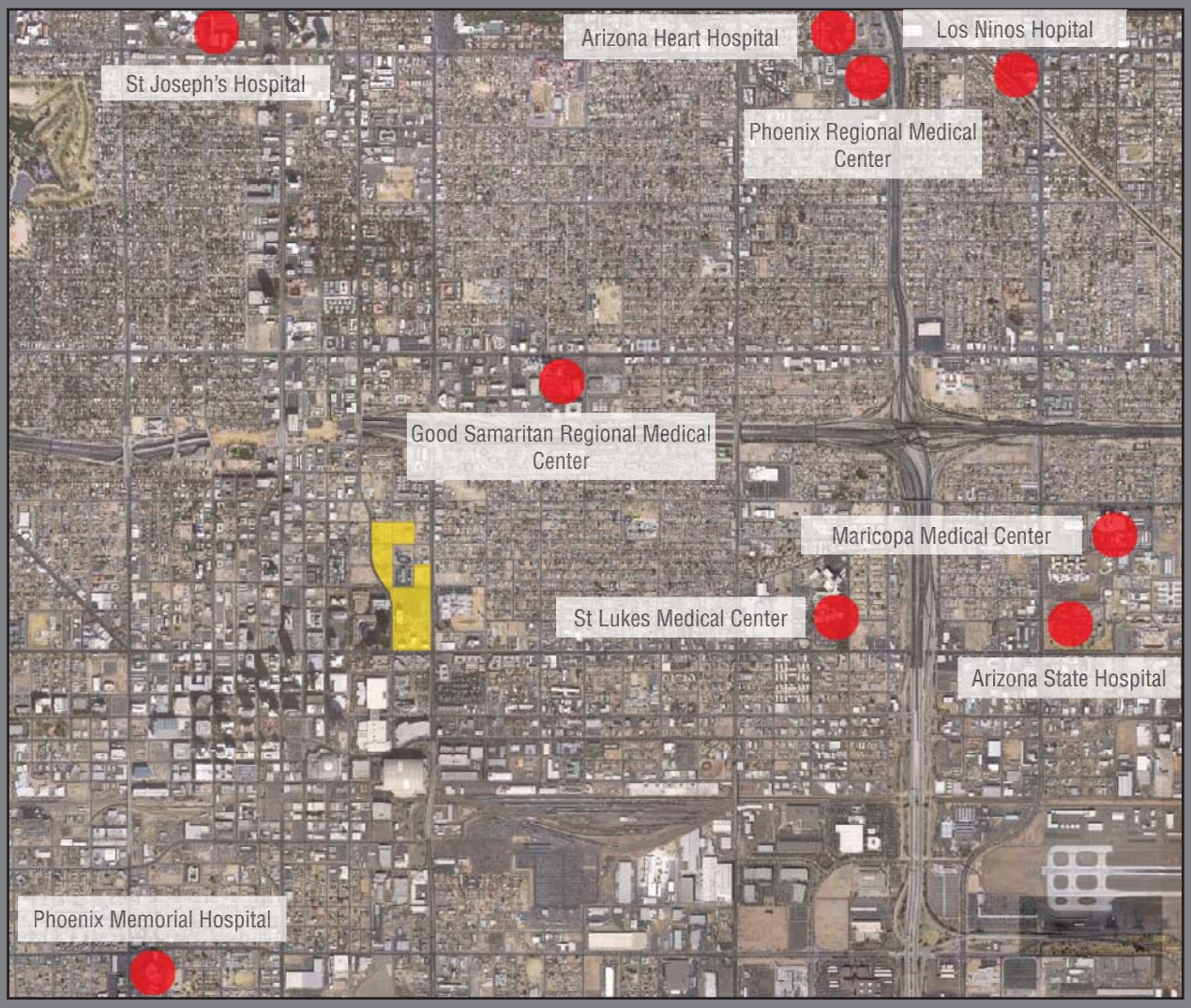
Distance from ASU Tempe Campus



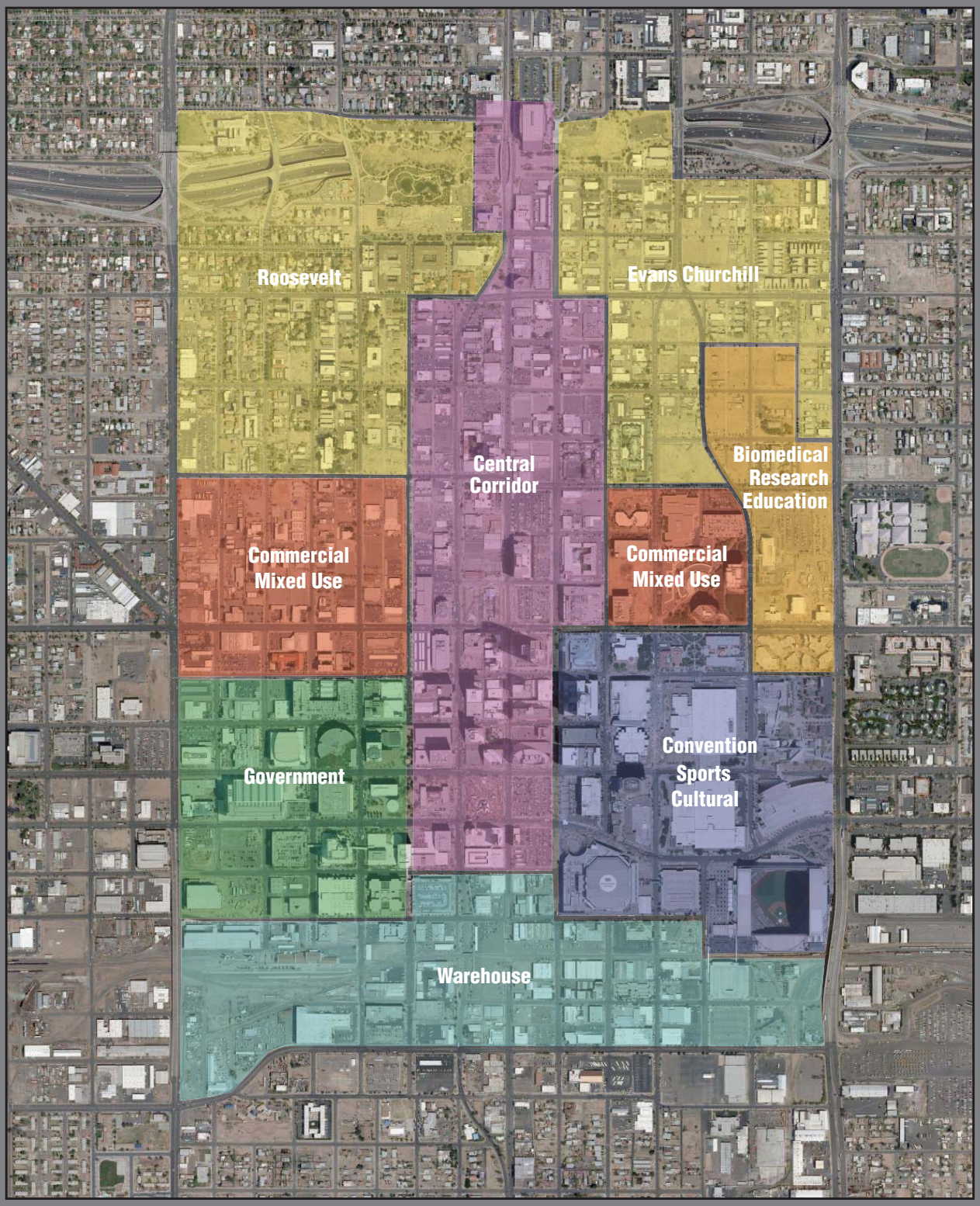
Proximity to ASU Downtown Campus & Entertainment District



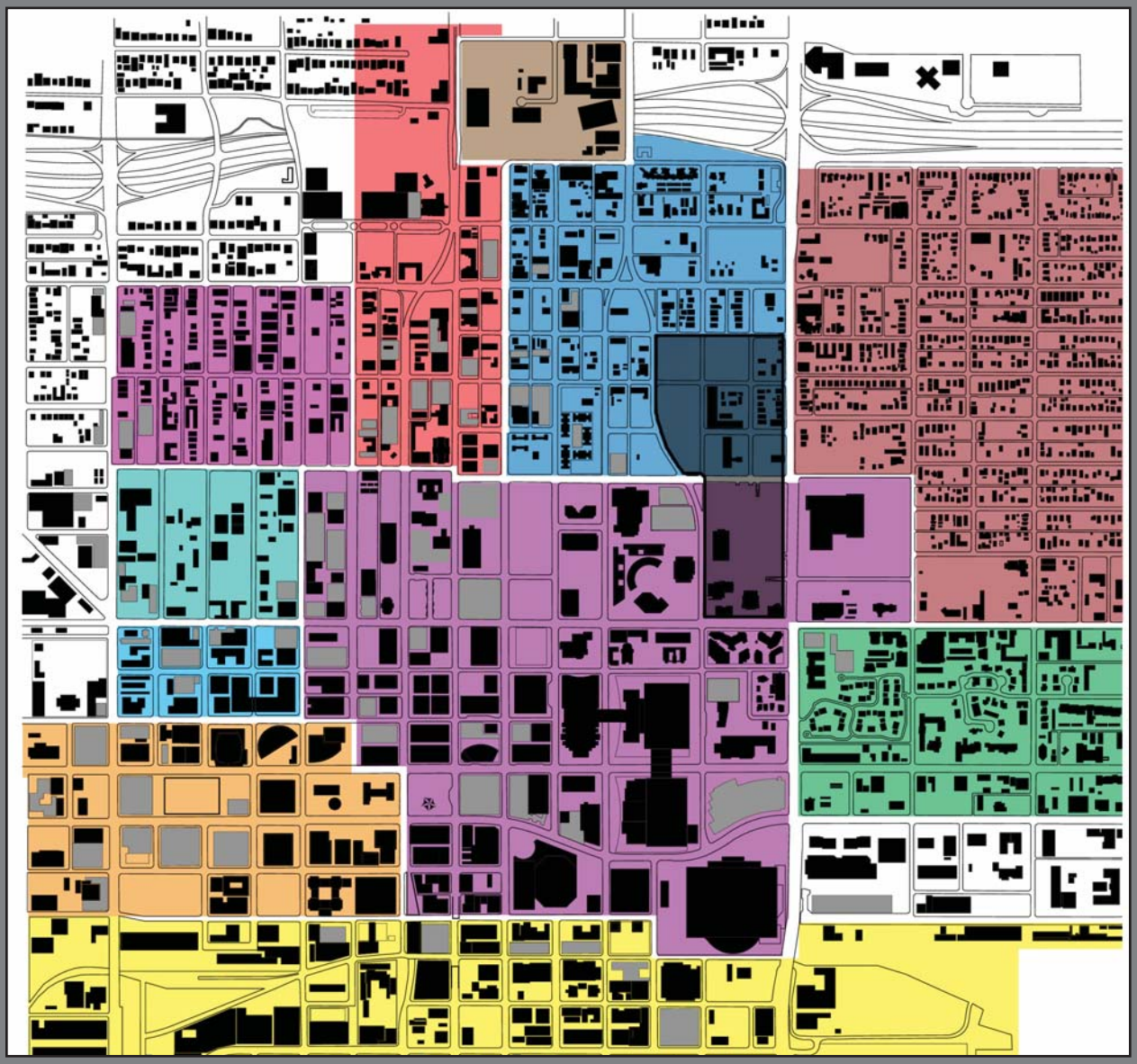
Proximity to Existing Medical Institutions



Downtown Planning Areas



Neighboring Districts



- Central Corridor
- Arts South
- East Roosevelt
- Garfield Neighborhood
- Historic Roosevelt
- Historic Roosevelt Spd
- Fillmore West
- Monroe West
- Booker T. Washington
- Government Mall
- Warehouse

Downtown Development

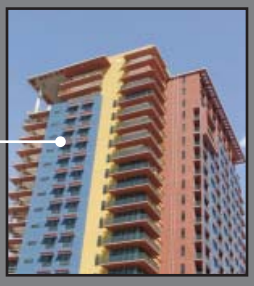
Phoenix Convention Center

1,000 room Sheraton Hotel

Light Rail

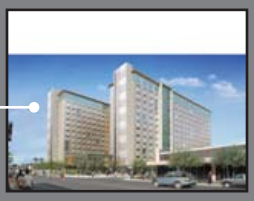
ASU Downtown Campus

The Summit at Copper Square



44 Monroe

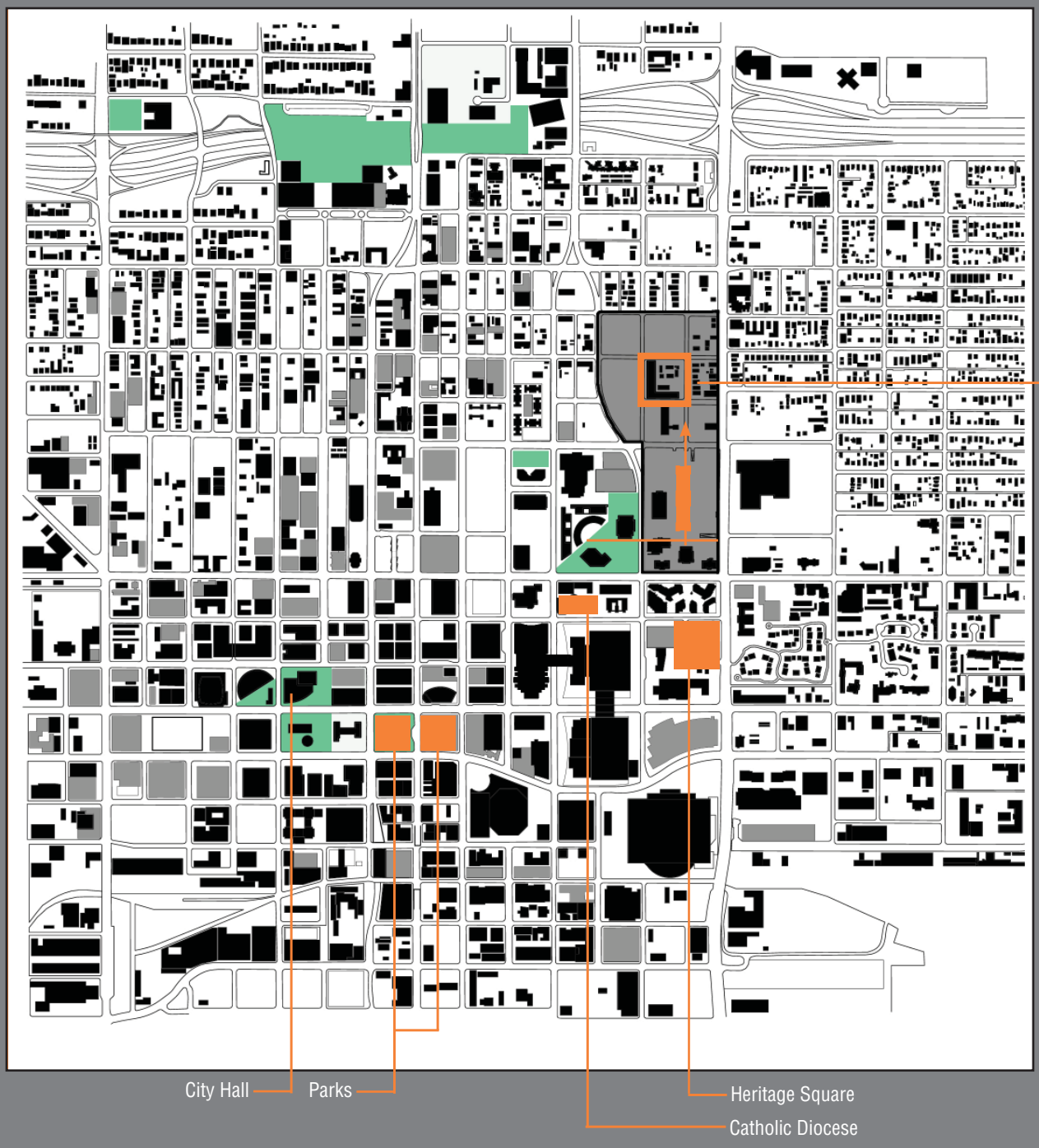
Taylor Place



CityScape Development

Jackson Street Entertainment District

Green Space


Perimeter
open space @
BioScience
High School
City Hall
Parks
Heritage Square
Catholic Diocese

Character & Scale of Context

1 Arizona Center

2 Arizona Center Parking Garage

3 One Arizona

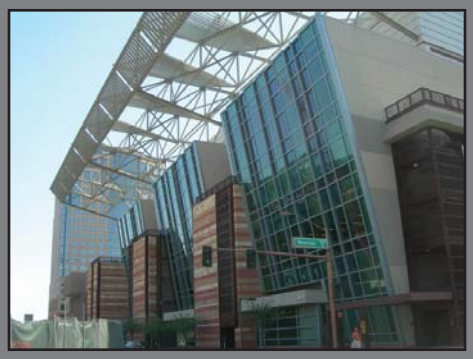
5th Street

1 Biosciences High School

2 North view along 5th St.

3 Existing Hotel

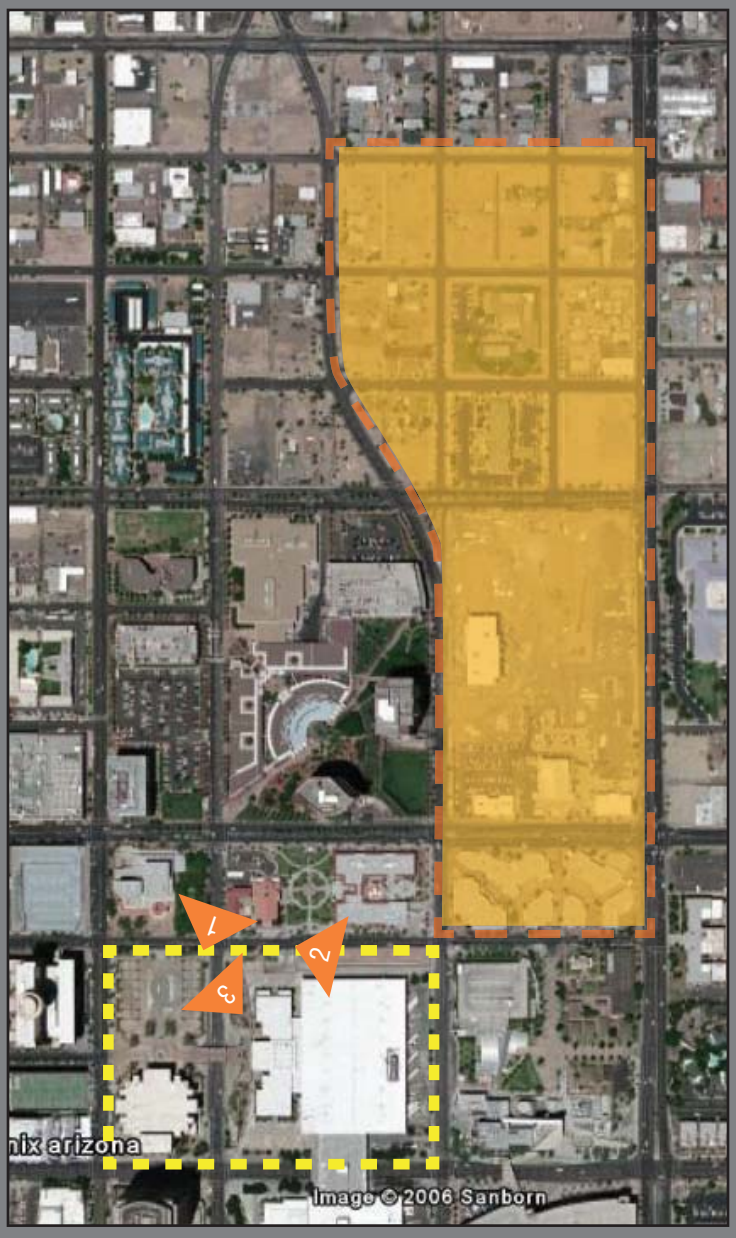
Convention Center & Catholic Diocese Complex



1 Phoenix Convention Center

2 Catholic Diocese

3 Phoenix Convention Center



PHOENIX BIOMEDICAL CAMPUS

Heritage Square a cultural desination in the valley anchors the far end of the site

1 Rosson House

2 Arizona Science Center

3 Heritage Square Park

Lower 7th Street

1 Phoenix Children's Museum

2 Phoenix Biomedical Plaza - future location

3 Artesian Lofts

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Phoenix Biomedical Campus

STUDY DESCRIPTION & PROCESS

Planning Process & Plan Overview

Master Plan and Comprehensive Development Plan

The process of planning the Campus is produced through:

- Workshops
- Meetings
- The translation of user programs onto the site
- Consultant and independent study input
- The integration of observations and advice from other comparable campuses and users
- The development and comparison of multiple development strategies

In an effort to explore as many site organizations as practical, multiple site plan options were generated, reviewed, discussed and edited on the path to the final proposed master plan. This reiterative process of option development and subsequent review formulated many fundamental precepts. Those primary precepts include:

- Create a campus environment immediately by grouping development and programs
- Commit to density to yield long term site capacity as well as develop an urban character
- Flexibility and evolution of buildings over a long period of ownership is practical and realistic
- Shared functions and spaces by integrated user groups is desirable and practical
- Recognize that the campus is a transitional use between the neighborhoods and the downtown Phoenix core-both physically and conceptually

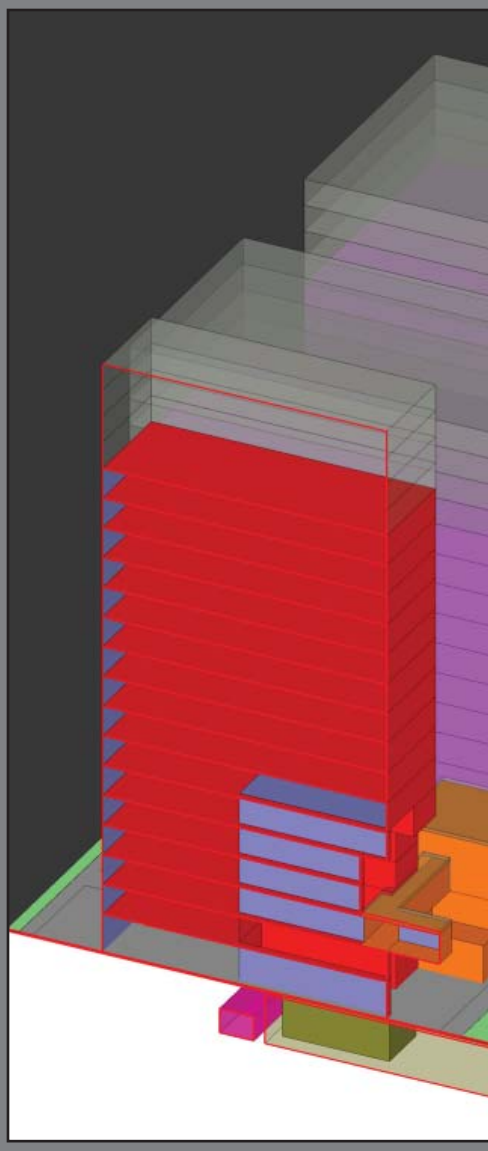
This plan's intent and content has been consistently prepared with input from a large spectrum of users, advisors, neighbors and city development staff. Multiple work sessions with both public and city staff were held to inform decision making, establish development criteria and make future campus provisions.

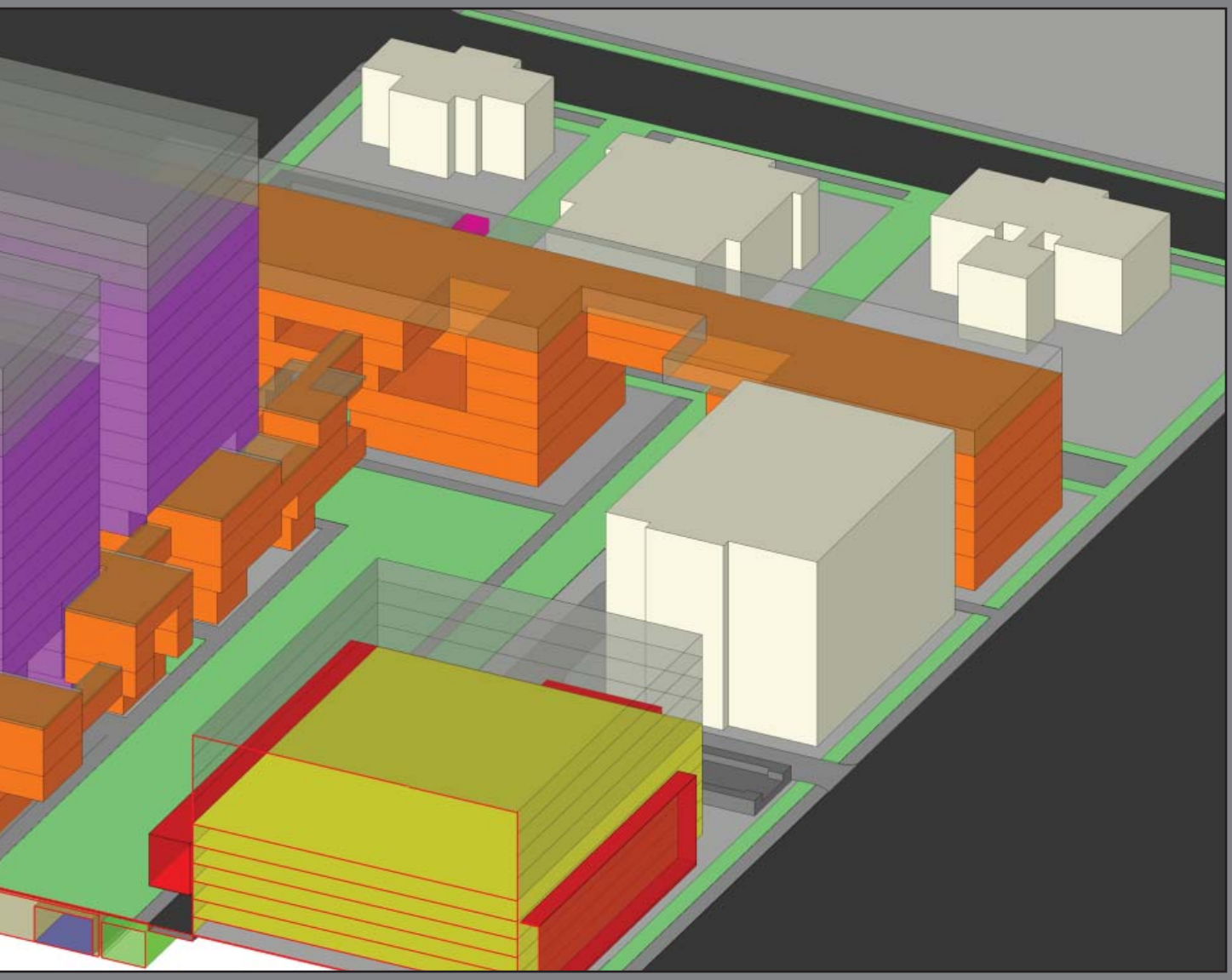
The Phoenix Biomedical Campus Plan was developed under the guidance and input of these primary user groups:

- The Arizona Board of Regents
- The University of Arizona
- Arizona State University
- Northern Arizona University
- The City of Phoenix

Constituents include:

- The adjacent downtown Neighborhood Associations, including Garfield and Evans Churchill
- The Downtown Phoenix Partnership
- Phoenix Community Alliance
- The Public





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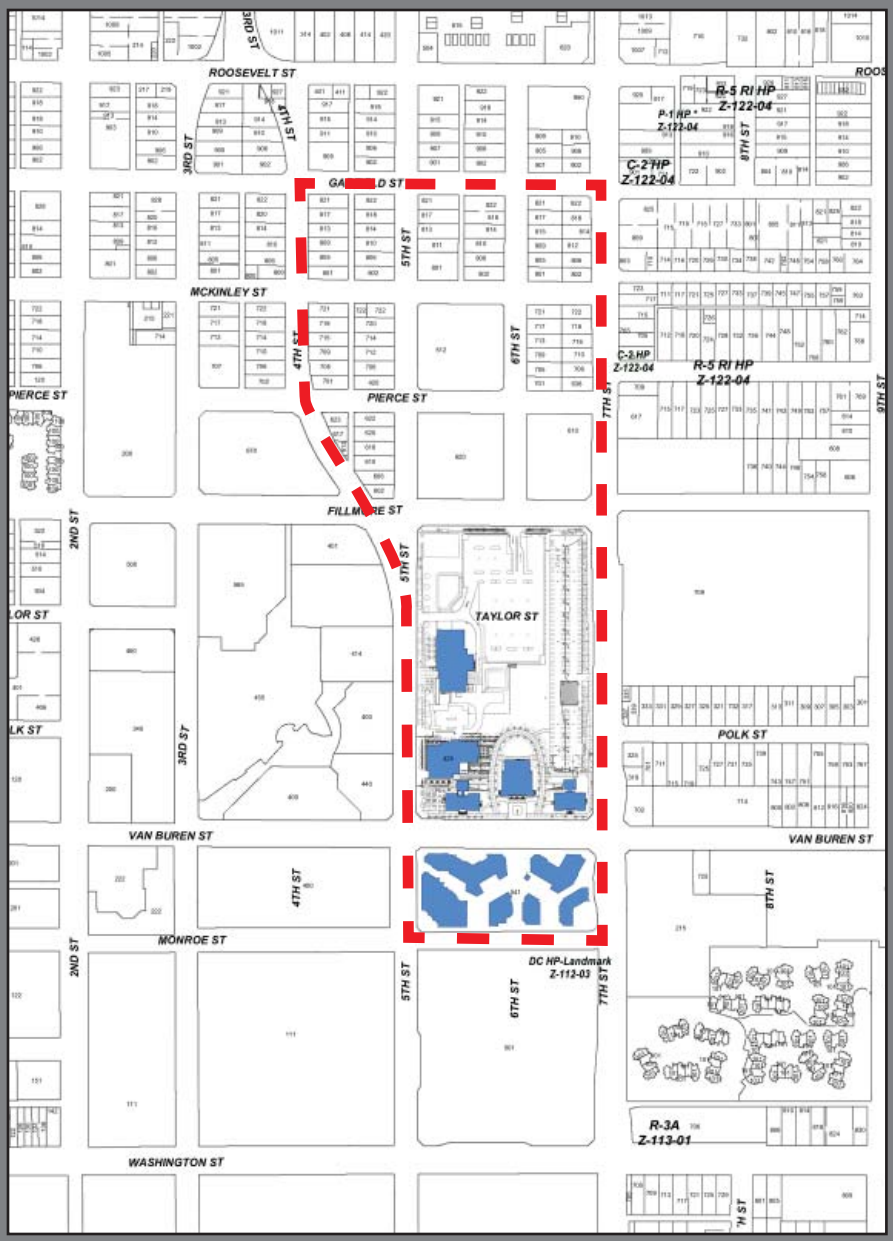
Phoenix Biomedical Campus

DESIGN GUIDELINES

Reference



Area of Study

Existing

Plat map for reference. This depicts the property boundaries as of 2007 within the area of study.

N

Proposed Land Use Distribution Plan

Use Distribution Legend

- Existing
- Research
- Academic
- Clinical
- Parking
- Open Space

Development Guidelines & Site Allocation

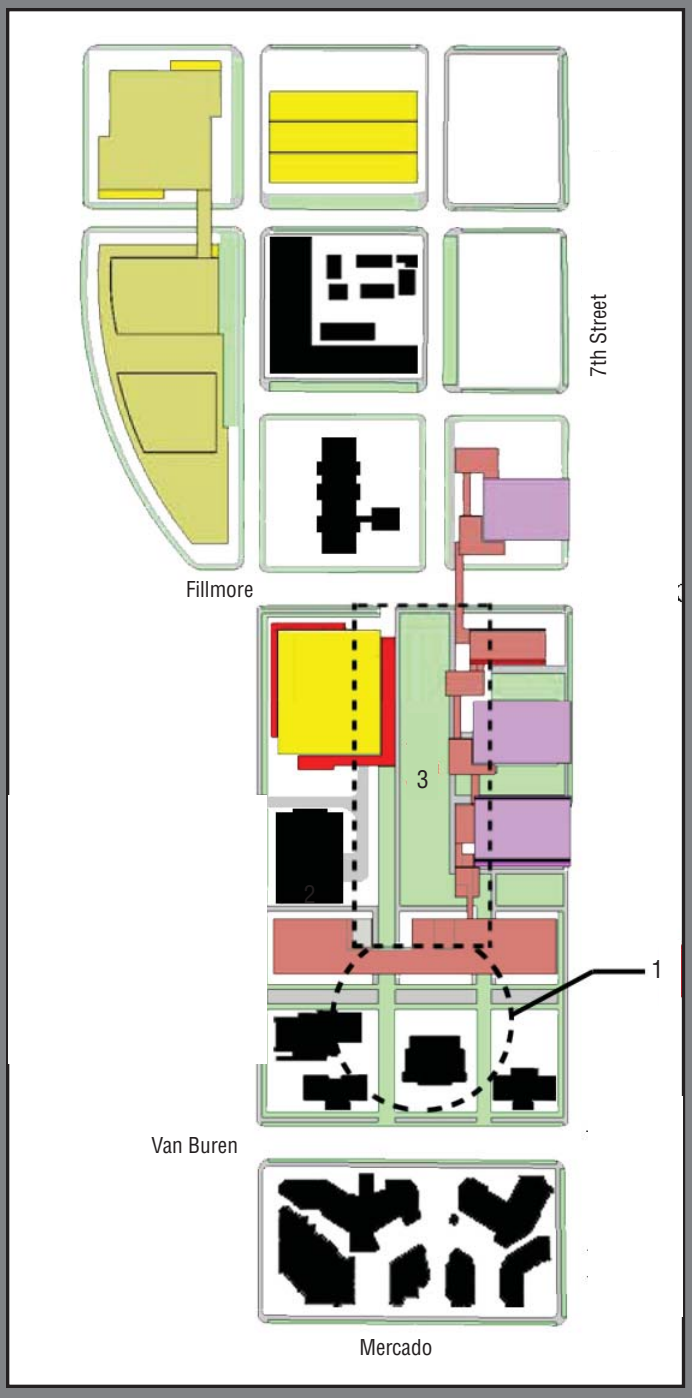
Three key physical planning issues drive the final layout and development solution of the Phoenix Bio Medical Campus. These points were agreed upon as essential elements in the successful design of the campus.

1. Placement of the Health Sciences Educational Building near the existing academic buildings reinforces shared use, consolidates education resources and creates an epicenter for students and faculty.

2. The physical nature of the limited footprint between the TGen and ABC1 facilities, prevents effective larger building plates and diminishes density. This site, however, when connected into a larger east-west site, spanning across the campus to 7th Street creates a significant building footprint that can be amassed.

3. The below-grade core research facilities and the related access for the program functions and the required service access point from Fillmore Street, places this facility element in the center of the campus which creates perimeter access. The secondary benefit of this location is the creation of a large central open space at grade to serve the campus as a shared amenity

Site Plan

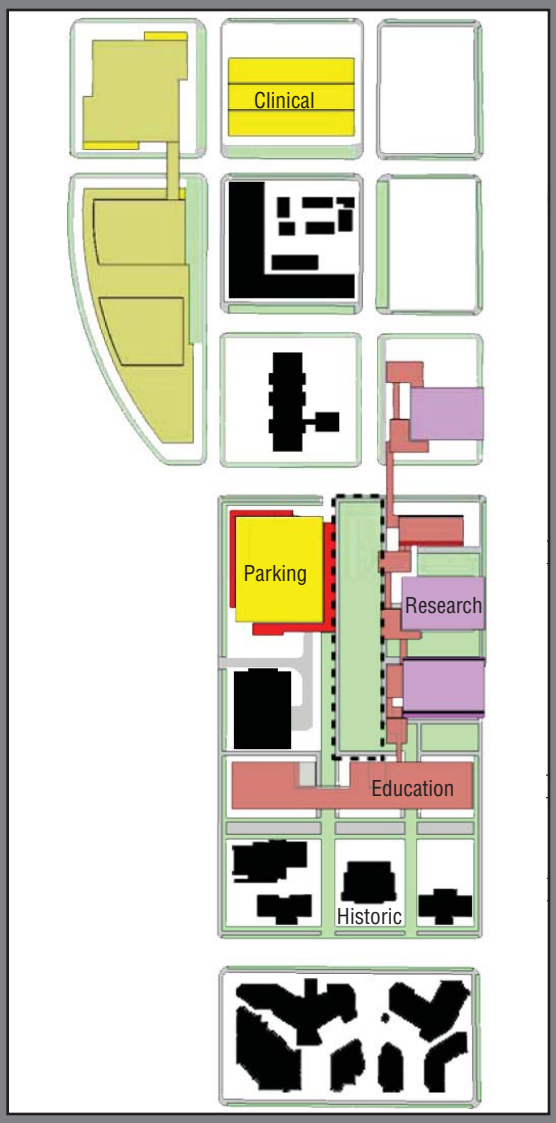


Functional Distribution & Site Allocation

With the above elements in place, the initial phases of the program are consolidated to the south end of the site, creating both critical mass an unencumbered area for future development.

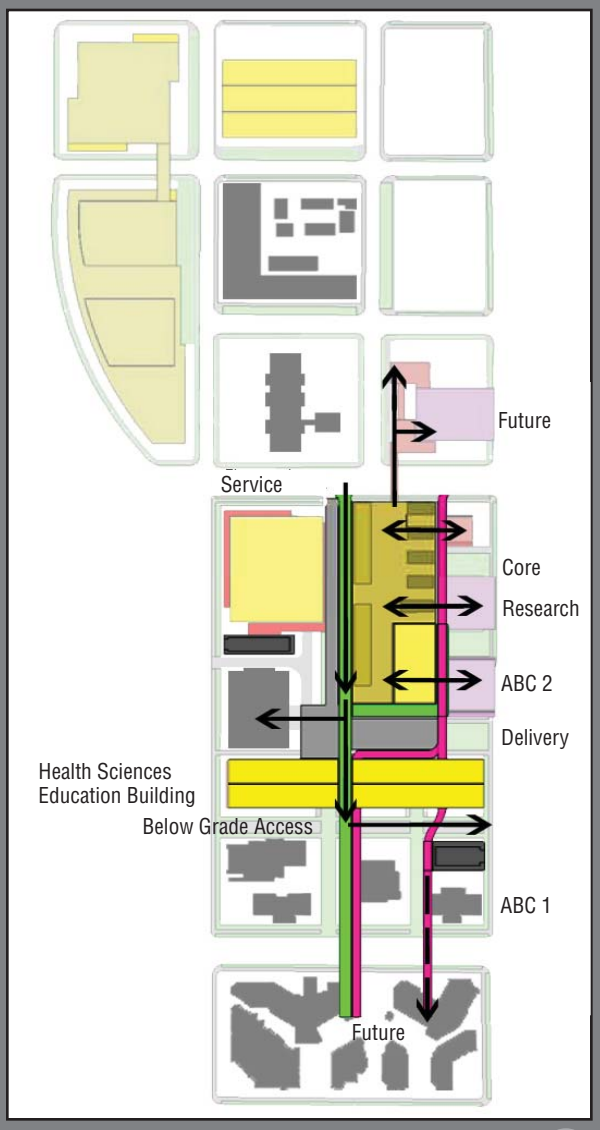
The site generates the following organization:

- Education to the South
- Research / Lab functions stacking to the north along 7th street
- Parking at the SW corner of Fillmore
- A Large Central Space Connecting all functions internal to the site



Support & Service Core - Below Grade

Access to the Support and Service Core drives its placement into the center of the site. Using the garage envelope, it's service drive can be integrated within the form of the garage providing secured access and monitored control. The nature of the user access to the core facilities and its related heavy service requirements make the organization of the perimeter of the facility, the key to maximum integration and convenience.



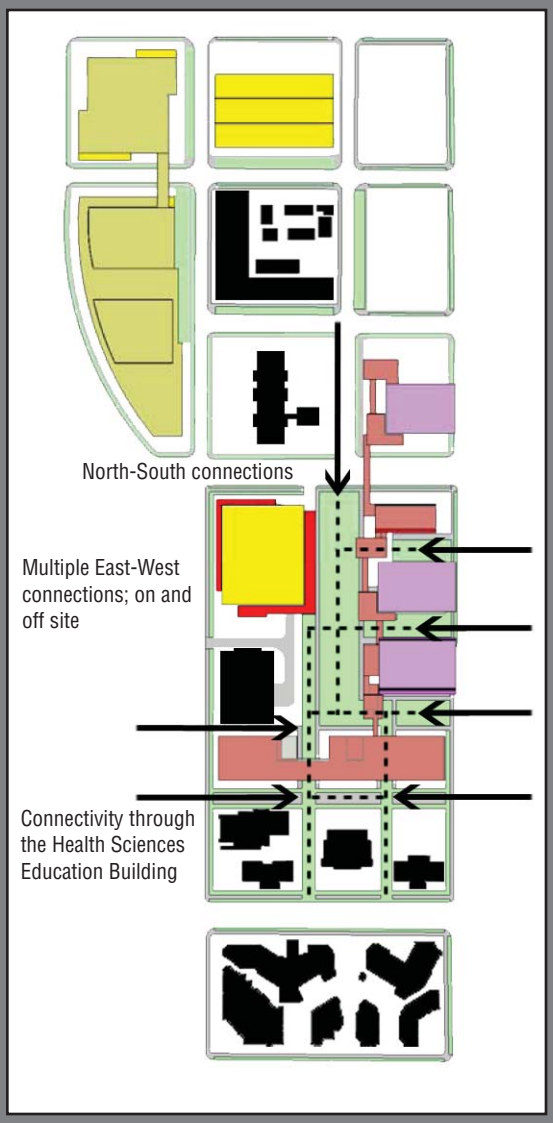
Pedestrian Connections Internal to Site

Internal pedestrian connections are facilitated by three strategies:

- Central space connects to all primary functions at ground level
- Health Sciences Education building spans grade to provide north-south connection
- East to West Lab and Research building orientation to encourage central space access through intermediate and defined exterior spaces

At grade pedestrian paths

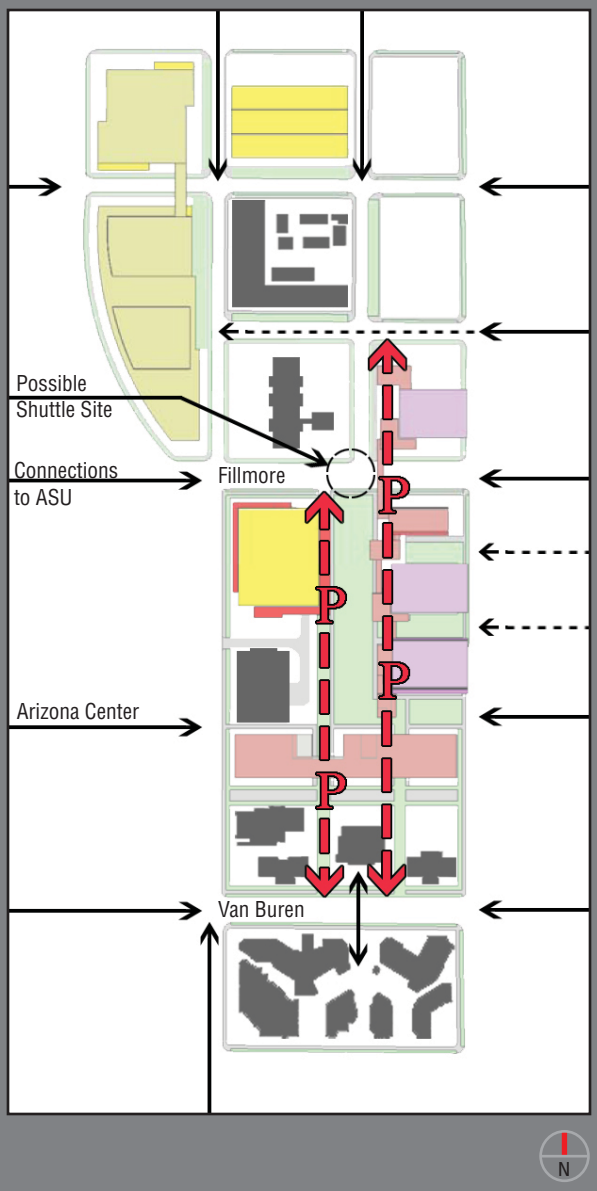
Pedestrian access points



Pedestrian Connections External to Site

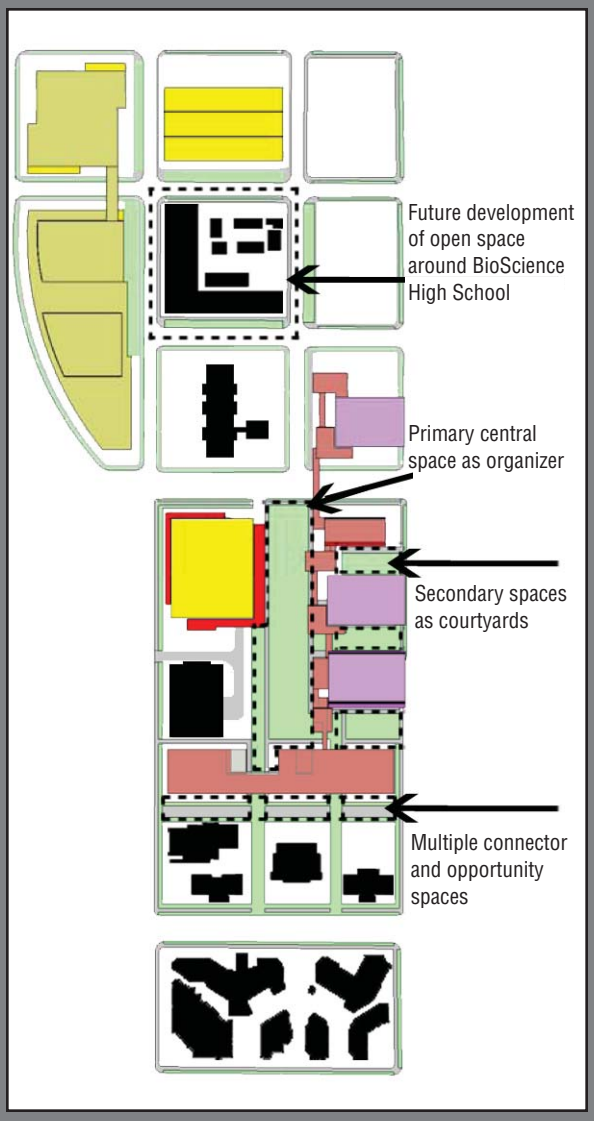
Along the North to South connector, and adjacent to the large central space, specific program
elements are located in the primary building program to facilitate interaction and cross-pollination between user groups.

Primary Connection
Secondary Connection
Tertiary Connection



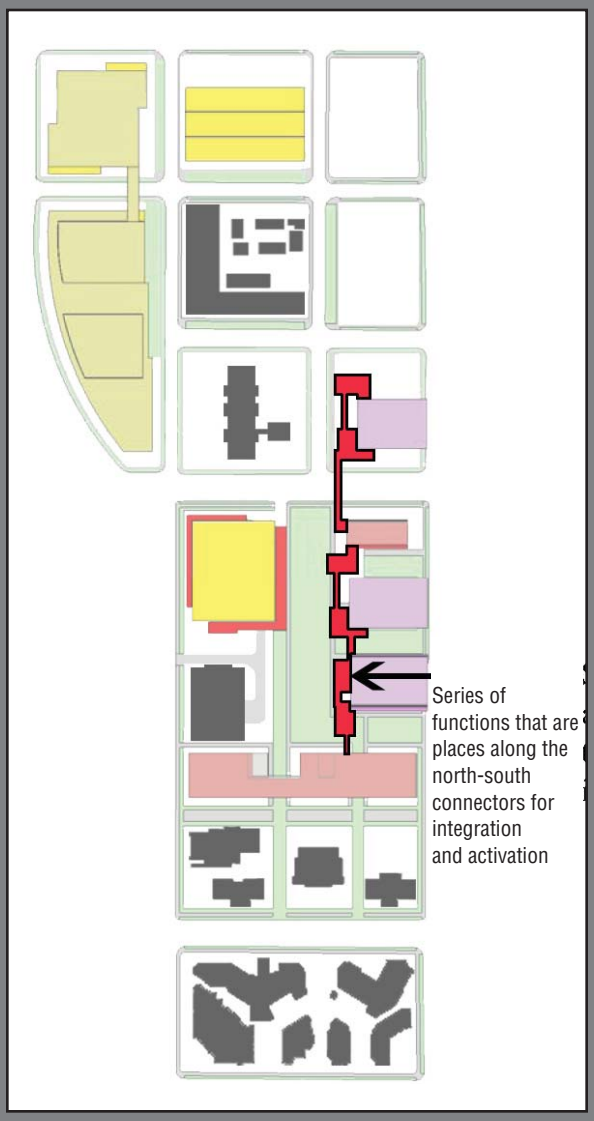
Open Space

The large central space organizes and connects all primary functions on the south end of the campus. A series of intermediate exterior spaces are defined by the Lab Research buildings, and linear connector spaces are predominately oriented north to south with minor east to west connectors.

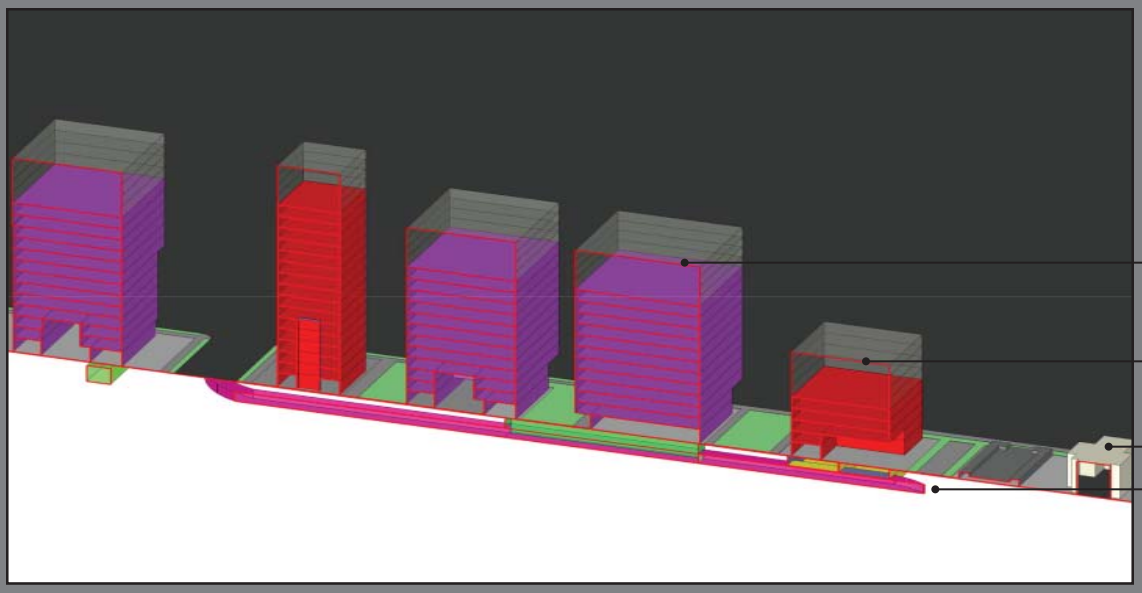


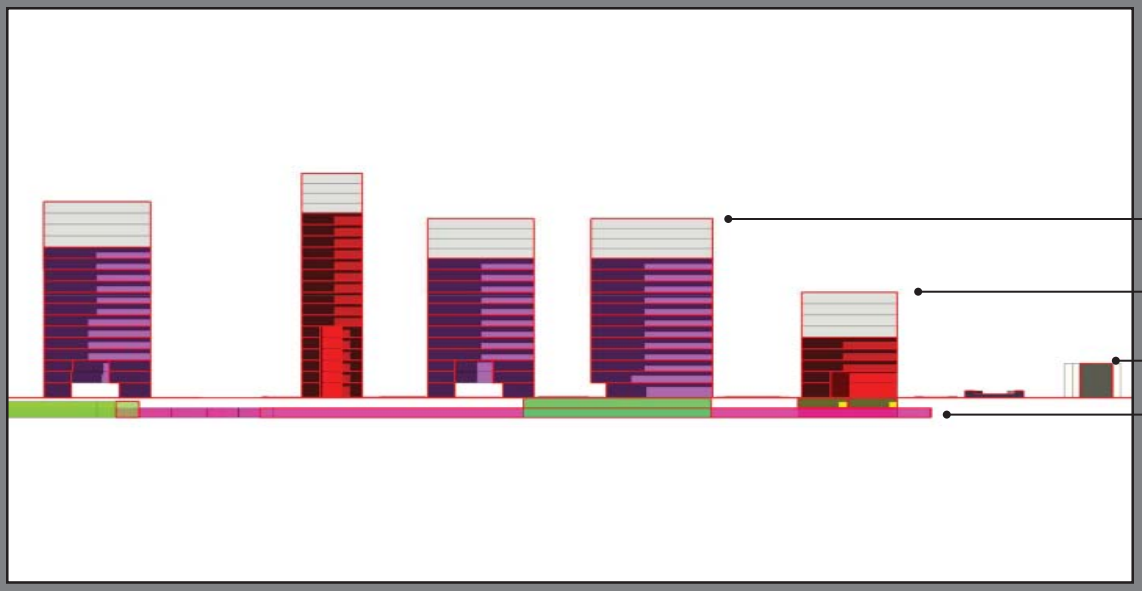
Activated Functional Elements

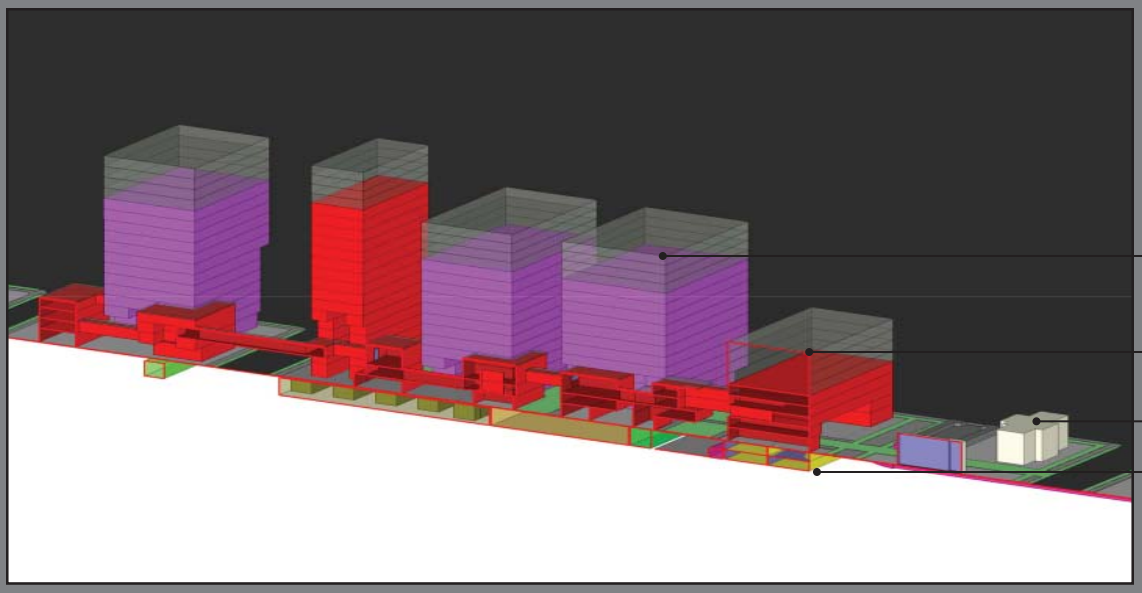
Along the North to South connectors and adjacent to the large central space, specific program elements have been relocated from the primary building structures to develop active interconnections between use types and indoor outdoor space.

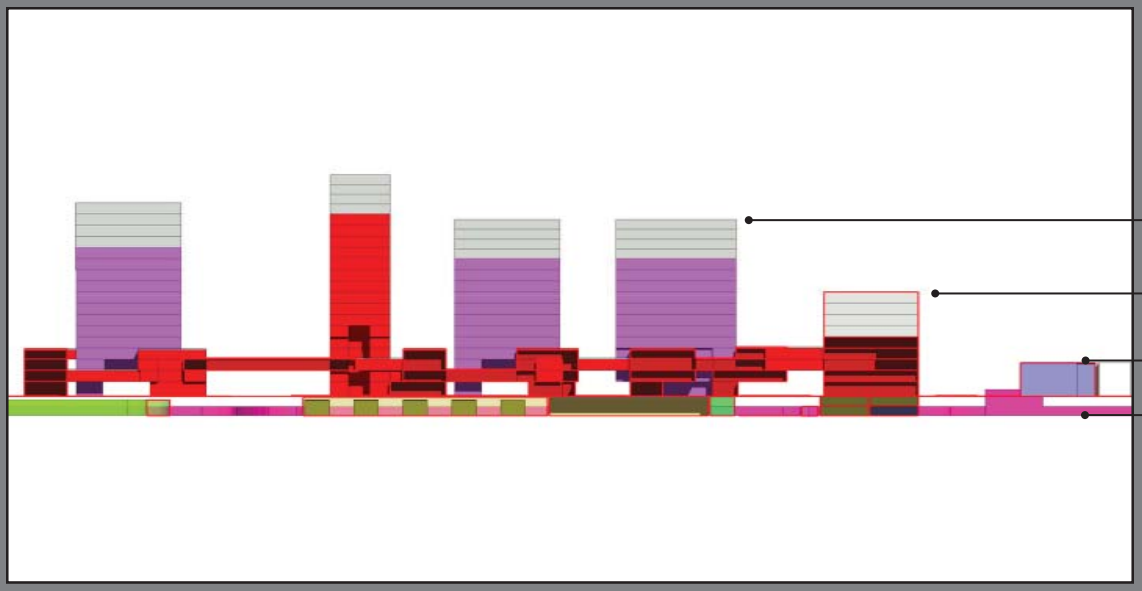


Building Height Diagrams

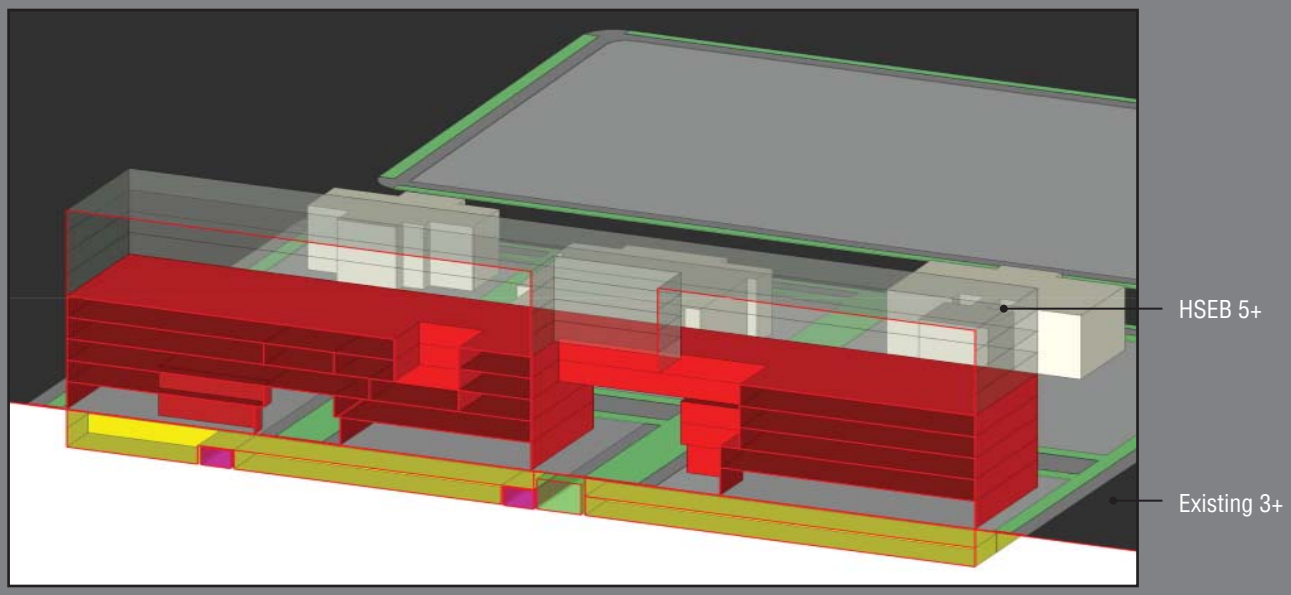


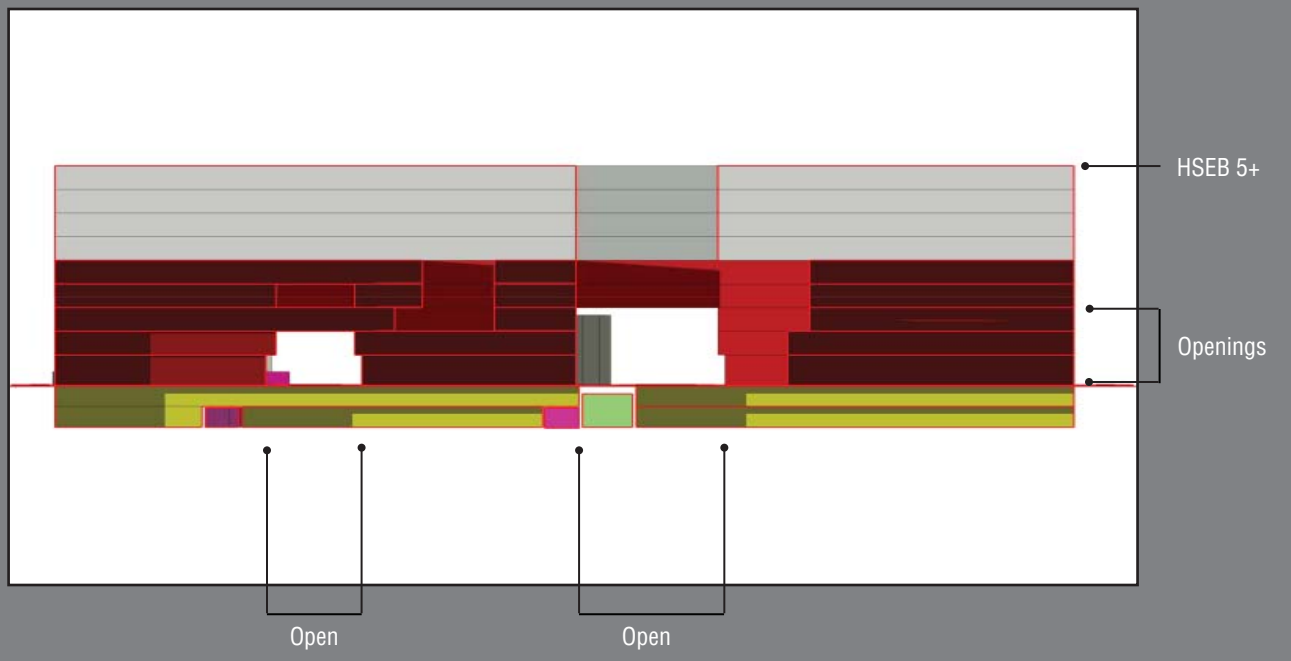



Research 12+
HSEB 5+
Existing 3+
Core -30 feet

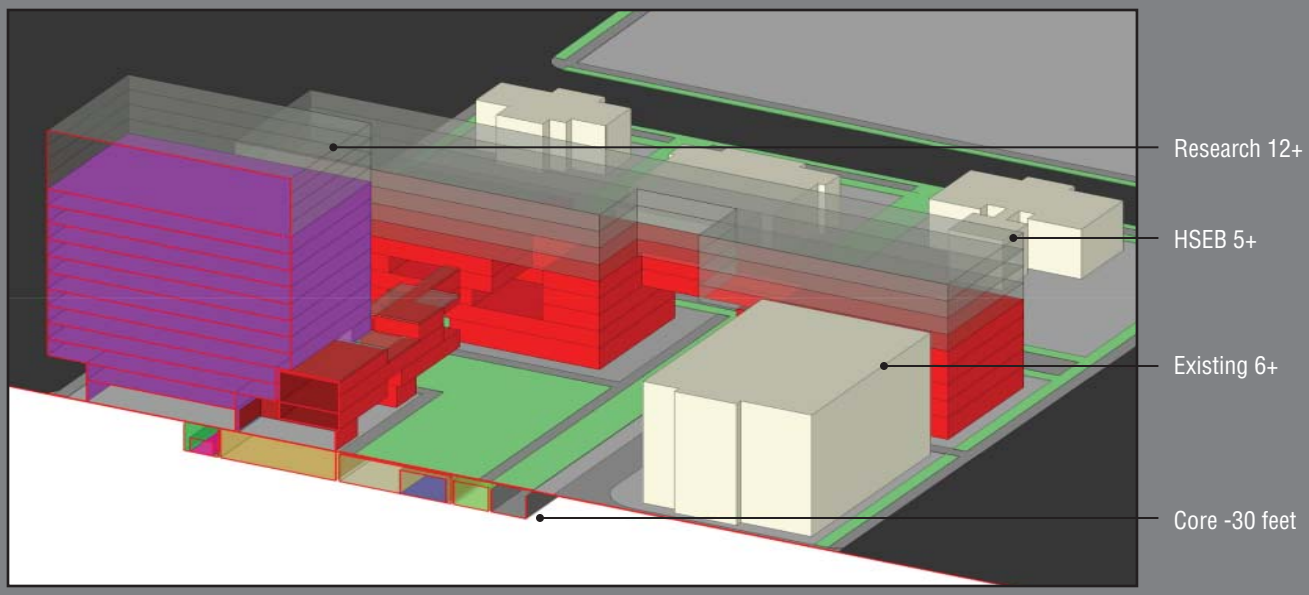

Research 12+
HSEB 5+
Active Use
Connections

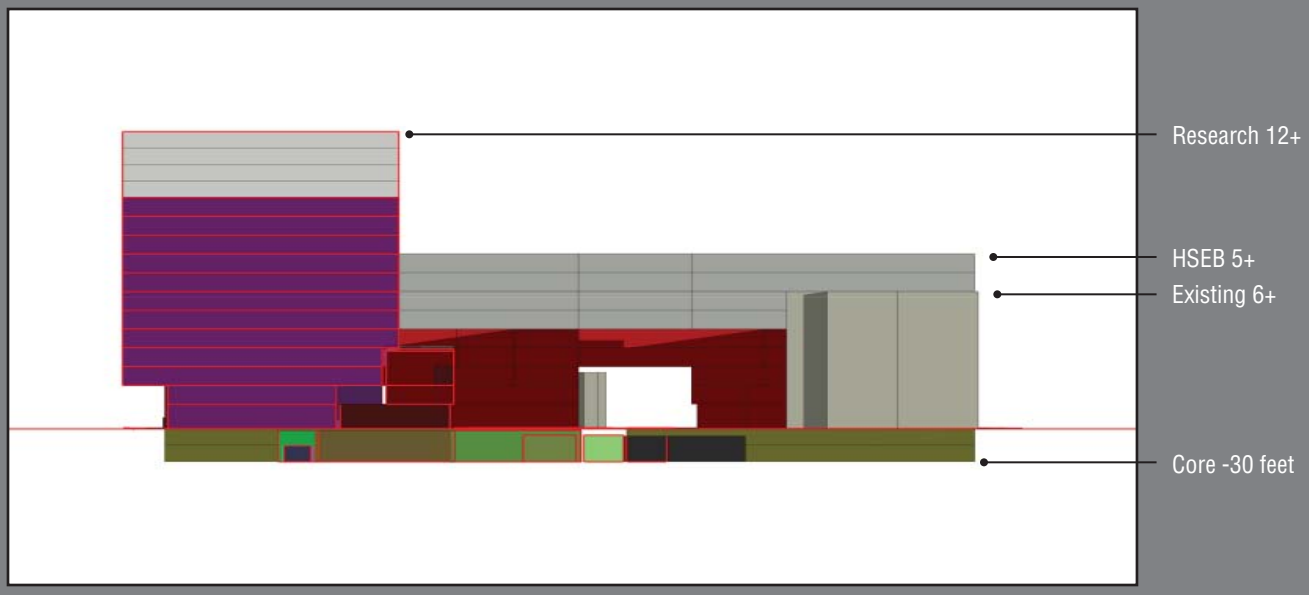
Building Height Health Sciences Education Building South



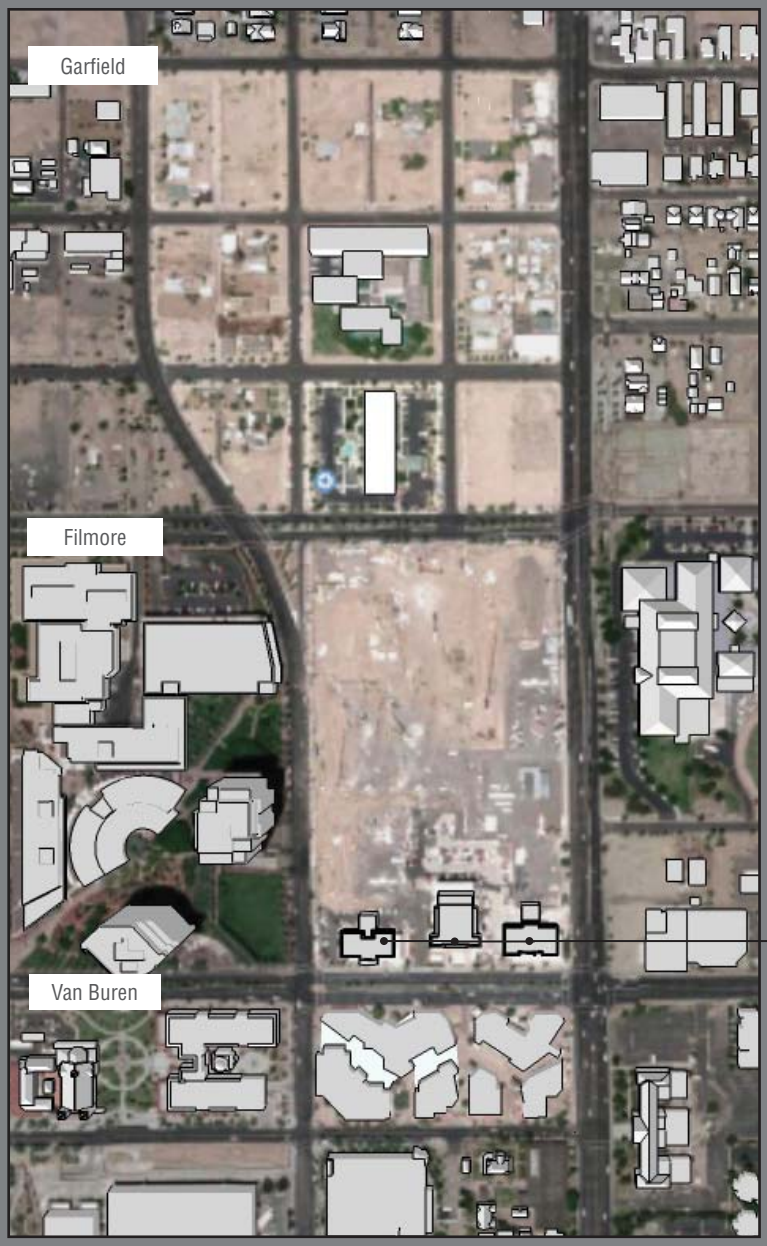


Building Height Arizona Biological Medicine Collaborative II South



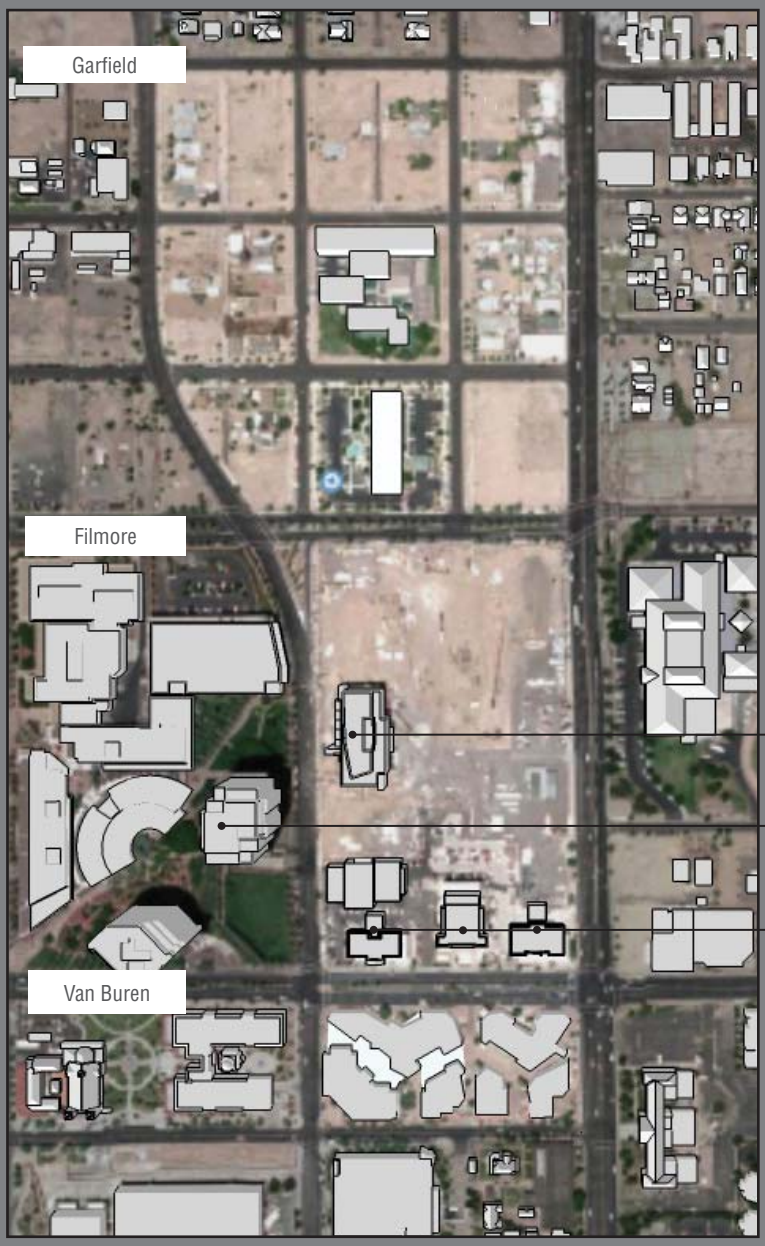


Phase 1 Original Site Uses



Historic Phoenix Union High School Buildings I, II, III

Phase 2 Existing (2007)

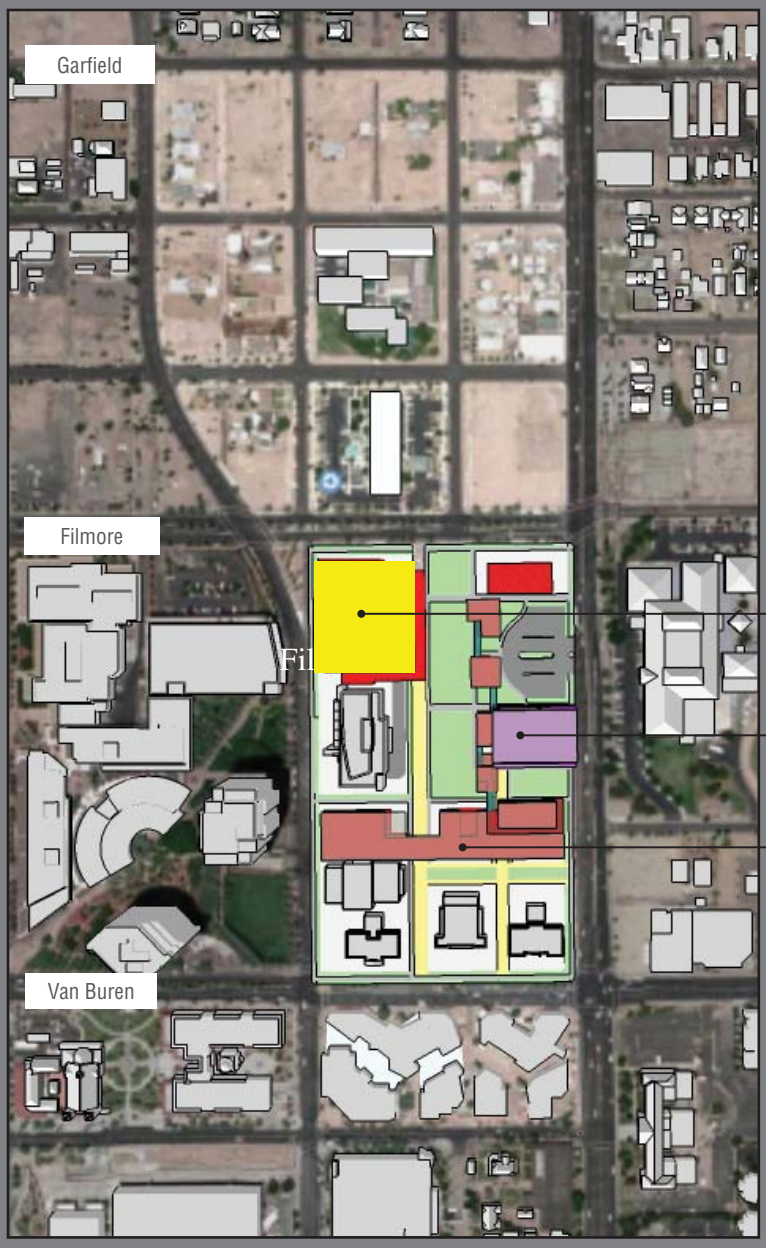


TGen

ABC 1

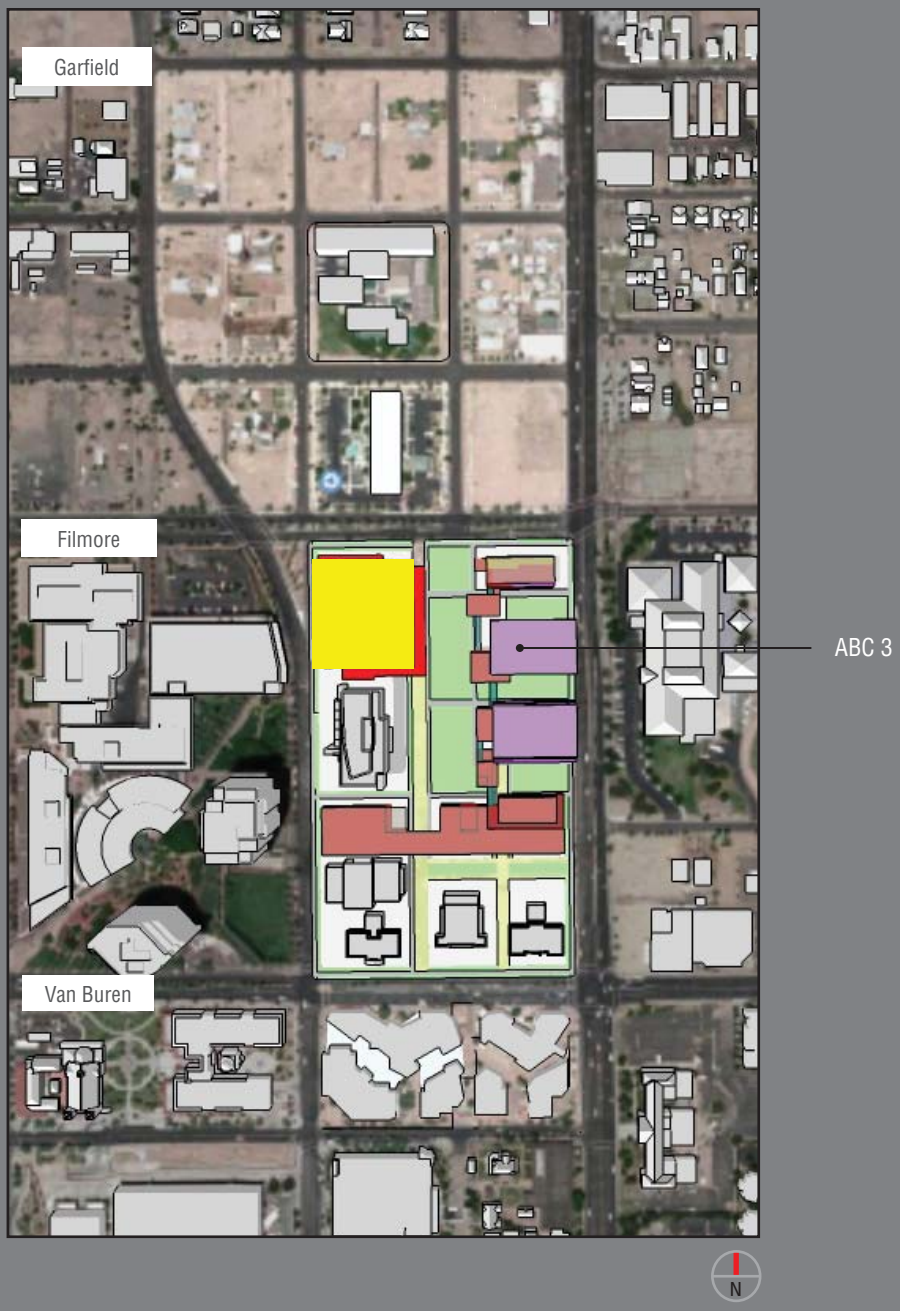
Historic Phoenix Union High School Buildings I, II, III

Phase 3 2012

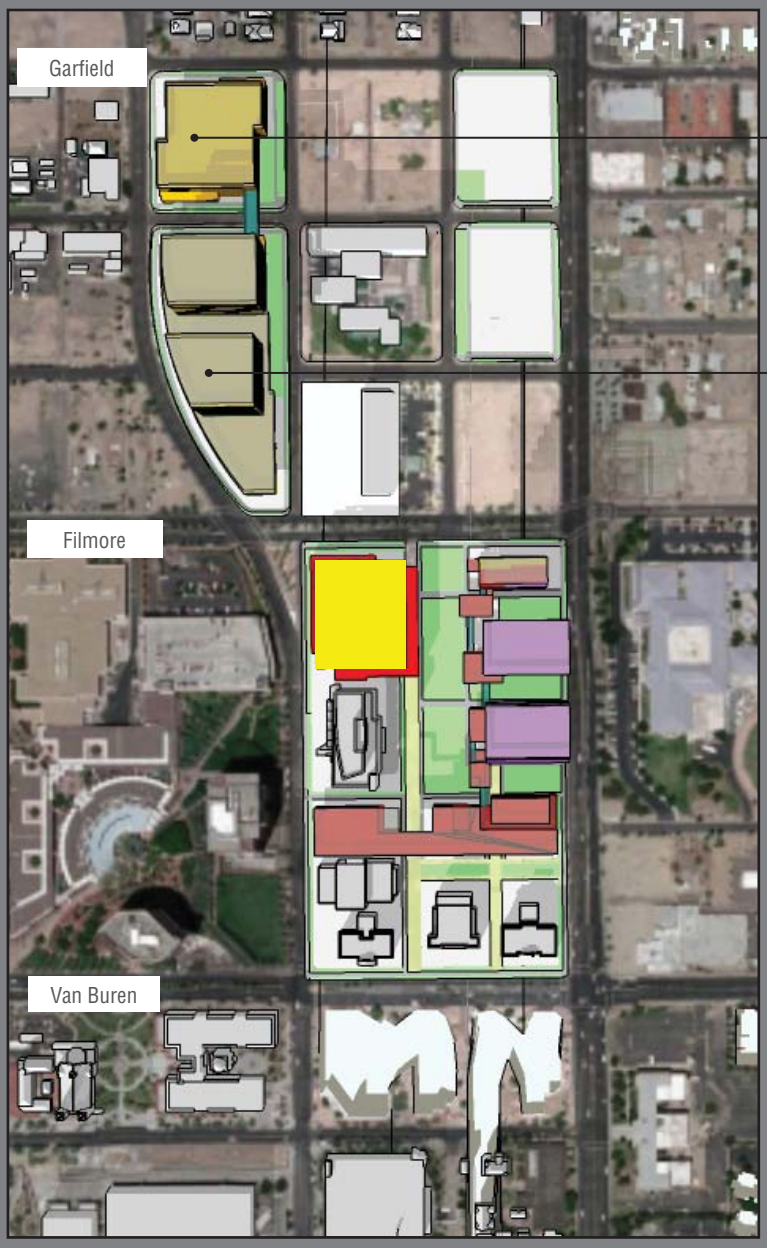


Phase 3A adds parking garage on Fillmore

Phase 4 2015



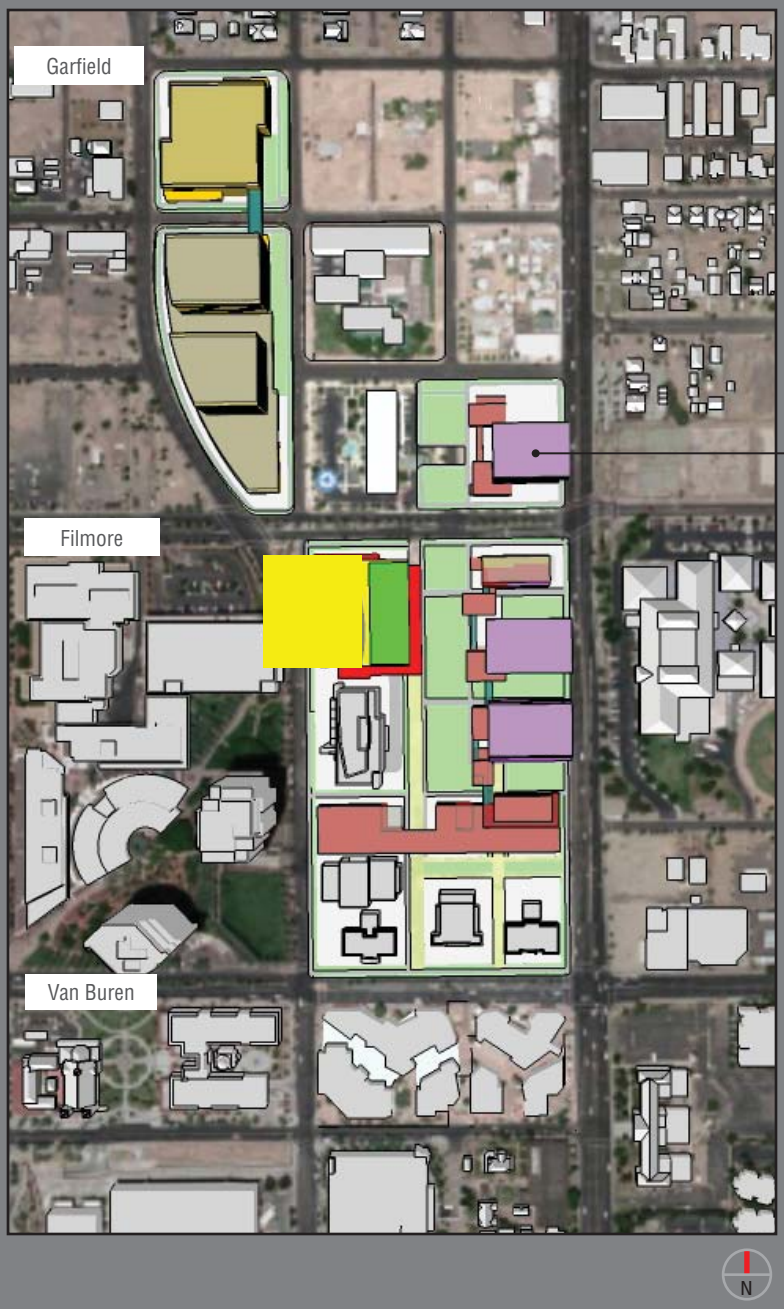
Phase 5 2015+



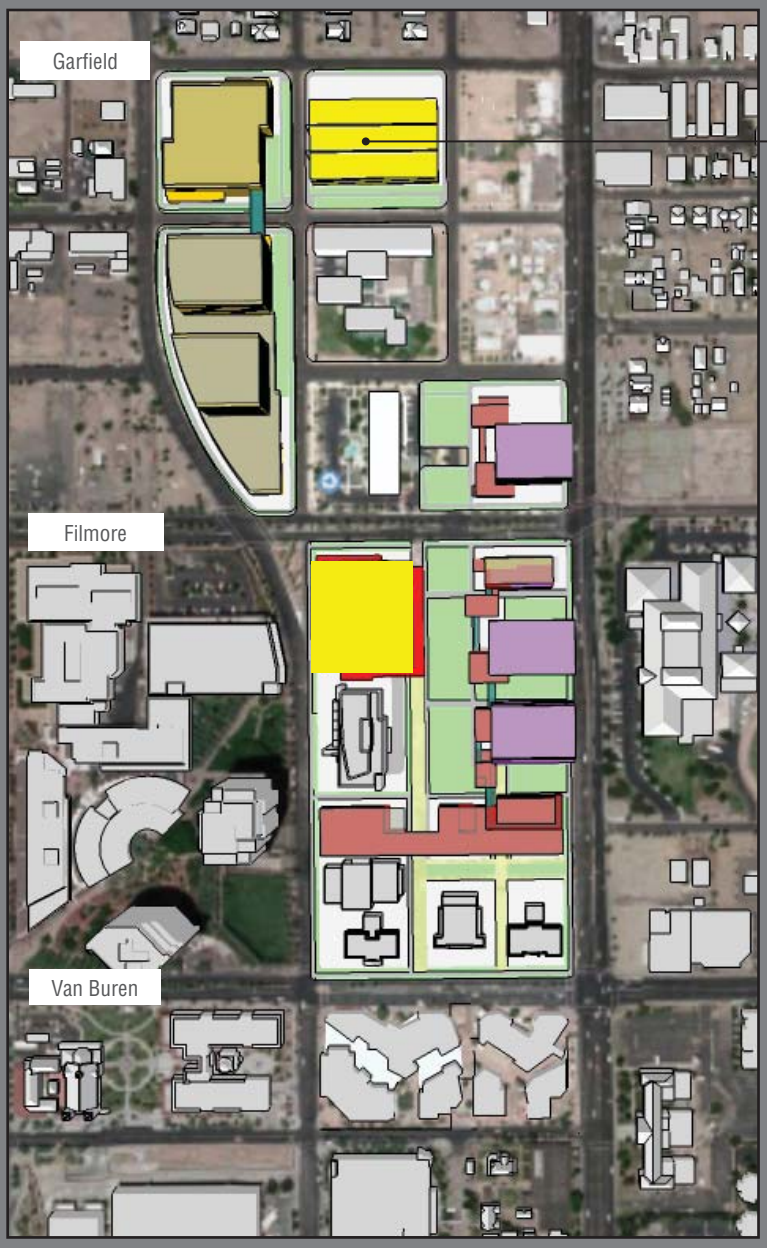
Clinical

Clinical - Center/Hospital Phase I
Additional Parking

Phase 6 2017

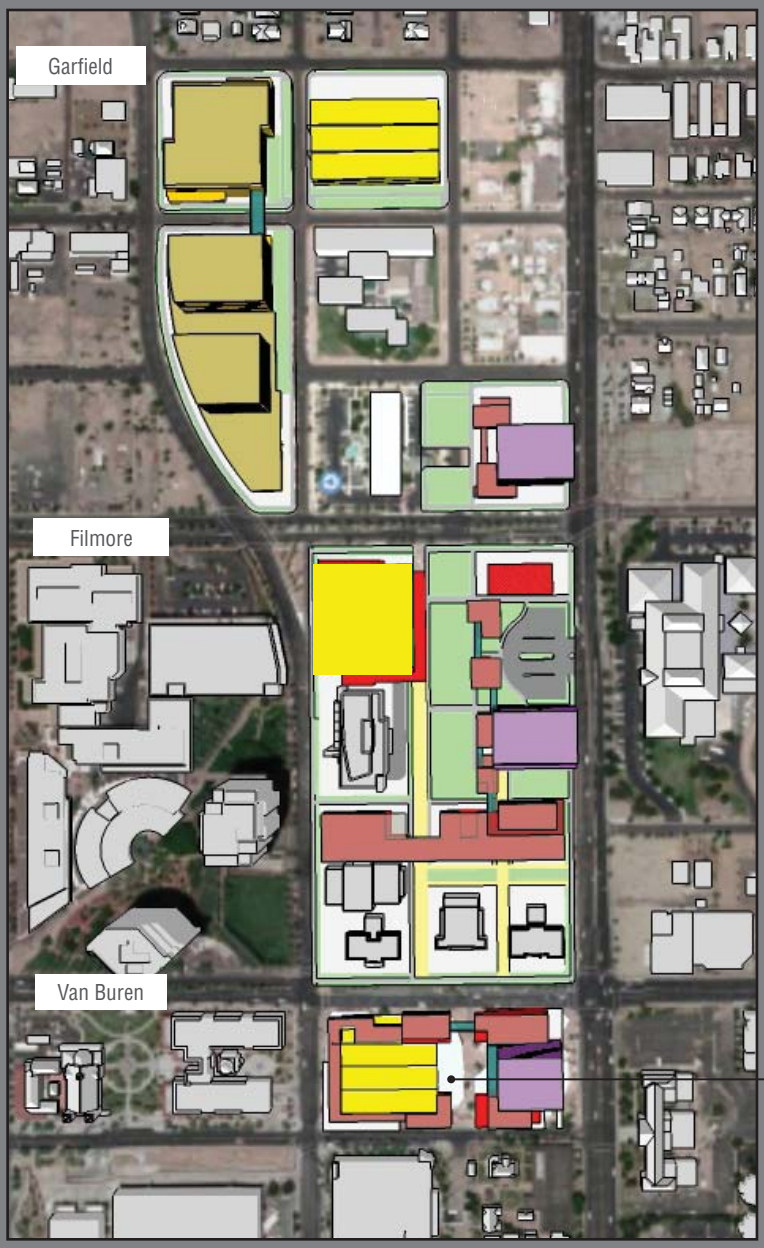


Phase 7 2020



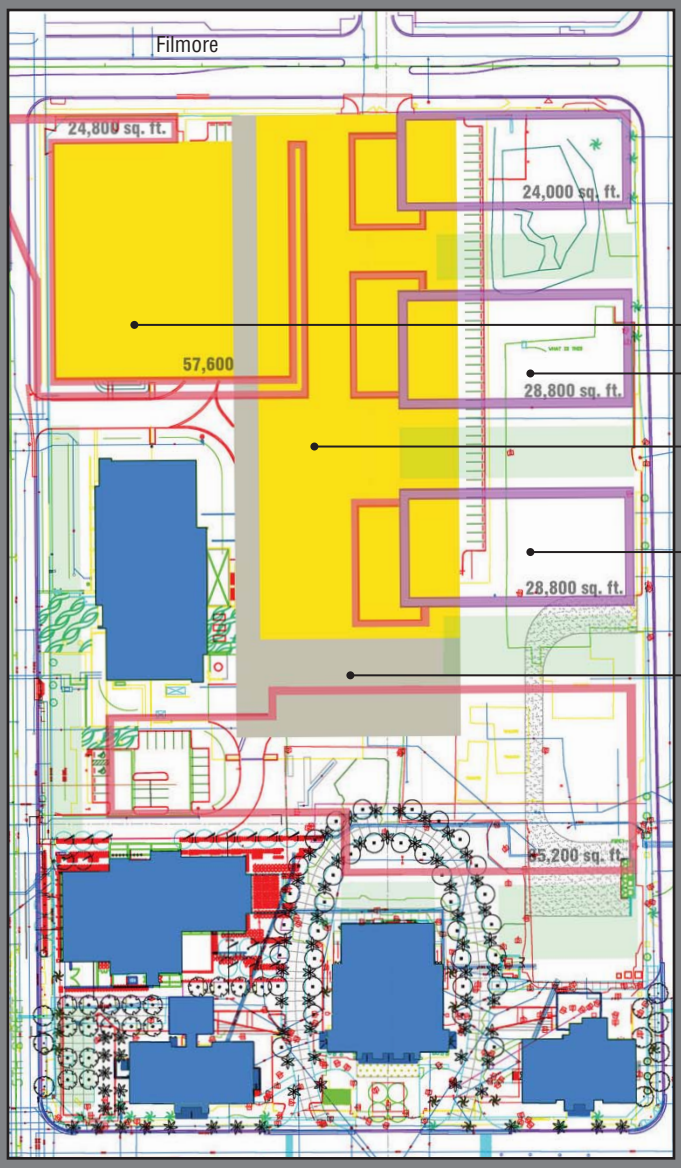
Clinical - Center / Hospital Phase I
Additional Parking

Phase 8 2020+



South of Van Buren
Mercado Redevelopment
ABC 5 and / or additional
Academic Facilities

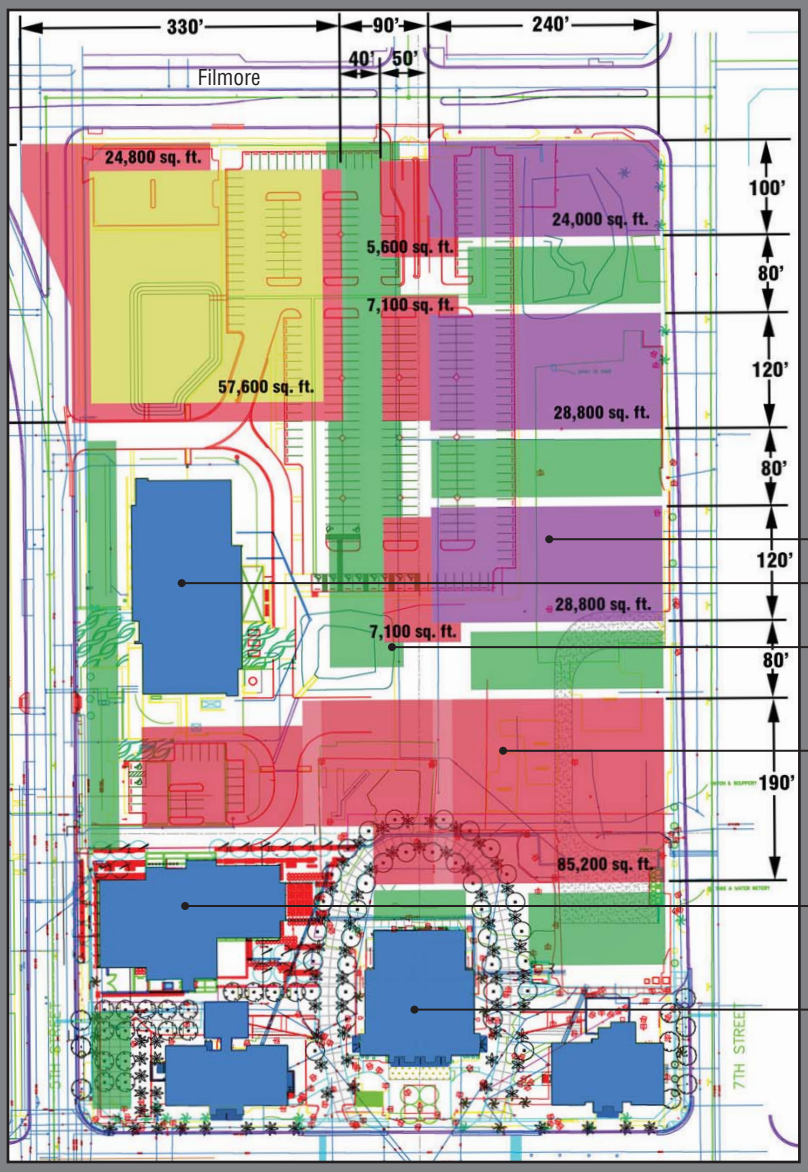
Function Allocations



South of Fillmore

Below Grade Function Allocations

This graphic depicts general site area allowed for below grade uses. Over lapping zones demonstrate possible areas for shared use or vertical cores providing access to above grade functions.



Use Distribution Legend

- Existing
- Research
- Academic
- Clinical
- Parking
- Open Space

South of Fillmore

At Grade Function Allocations

This graphic depicts primary functions at grade. Bridges walkways and other means of interconnectin are not shown but are highly desirable. The colored zones also demonstrate the possible extent of boundaries for the function not necessarily the volume or outline of the building.

Design Guidelines

Required Building Setbacks and Alignments

Building positions and edge conditions are generated to facilitate maximized lot coverage, street definition, pedestrian zones and reinforce urban character through density, profile and height. Perimeter alignments are responsive to the City of Phoenix's Urban Form Project (see appendix) for street sections and edge profiles.

Activated Ground Plane

The activated ground plane is a prime design initiative. This development plan provides the following devices to ensure an active ground plane and an energetic campus environment. First, active program uses such as lounges, stairs, and appropriate group conference space are located at or near the ground plane for both convenience and visible activity. Small but relevant functions such as these are to be identified from within each building use type and located near the ground plane. Service functions have been located below grade to minimize inactive or unfriendly uses at grade level. Circulation to reinforce active uses and pedestrian consolidation.

Building Heights

Building height is desirable due to increase site capacity and urban density. The proposed heights reflect site capacity needs and character desires. The height of the research/lab towers are informed by appropriate chemical management strategies and limitations by the IBC. The city and user groups have identified very preliminary working strategies to accommodate both user needs and restrictions.

Building heights are variable with a minimum height of 5-7 stories for HSEB, with possible taller tower elements on the east site. Research and Lab towers are a minimum of 10 stories up to 14 stories.

Garage profiles with a minimum of 6 stories are desirable with additional uses or air right functions. Potential roof top uses include conference center, cogeneration plant, office or hotel space.

Future clinical uses including patient bed towers or similar should be as tall as practical. The proposed planning provides for a 2 block, 3 story Diagnostic and Testing Platform with two patient towers. The towers are depicted as 14-20 stories.

Scale & Massing

A series of scale transitions and massing profiles are inherent in the plan. The primary transitions occur between the existing historic buildings and HSEB. This sequence uses the HSEB to step up from the historic buildings to the taller research towers. The research towers, in turn, transition from the south of Fillmore heights and profiles to the taller Clinical uses on the north side of campus.

Building Orientation & Solar Response

This master plan consistently orients new buildings east to west with maximized north and south exposures. This strategy develops these critical results:

- The north and south building exposures can be readily adapted for appropriate passive solar management
- The resulting intermediate courtyards facilitate east to west connections
- Long building elevations are eliminated from adjoining neighborhoods

Building Entries

Primary buildings entries and lobbies should activate both street frontages as well as address internal campus connections. Significant voids within building envelopes with projected overhangs or other similar devices should mark entry points. Internal lobby spaces, with multi-story

spaces should capture and reinforce the integrated elevated pathways and circulation zones.

Transparency

The quality of transparency should be integrated into all appropriate ground through third level uses and even beyond where applicable. Building configurations which demonstrate circulation and other active uses, such as lounges, lobbies, stair cases and gather spaces, convey the building's occupancy and energy.

Building Fenestration

Building fenestration will be responsive to:

- Solar Orientation
- Scale of use
- Context
- Internal Function

The intent is to include variety and diversity in the fenestration and the related systems of building enclosure. These variables will enhance the character of the individual buildings and relieve the final campus of a monolithic design style. Building surface texture can be generated by developing integral self shading devices which, in turn, create exposure specific responses to solar orientation and view opportunities. Size and scale of openings can describe interior functions.

Expressed Service Cores and Circulation Elements

Stairways, mechanical risers and other similar vertical elements provide an opportunity for surface, material and massing in contrast to other fenestration expressions. Appropriate expressions of these elements reinforce verticality and can compliment building rooftop profiles. The existing buildings incorporate these strategies by combining support functions into singular elements attached to the historic buildings, expressing vertical circulation with screened air towers, and using materials and related massing to develop scale.

Mechanical Penthouses and/or Floors

The consolidation and screening of rooftop mounted equipment is required. The significant quantity and magnitude of stacks, exhausts and equipment must be collected and screened within a design roofscape. The nature and scale of the roofscape should attempt to mitigate the magnitude and diversty of equipment while developing engaging relationships between the building and the sky. The proximity of buildings and the nature of functions require additional study and modeling to evaluate exhaust plume and prevent re-entertainment to neighboring facilities.

Parking

The development plan provides for two primary methods of integrating parking.

The first method, integrated parking within building footprints and below grade. This method will eliminate dead wall at the grade level, but is limited to building size and creates multiple access points across the site. This method is used minimally south of Fillmore but may be more applicable for north campus uses and building types.

The second method is a consolidated parking structure, shown on this plan at the southeast corner of 5th St and Fillmore. The consolidated model is a camouflaged garage proposed with a wrapping of mixed use tenants and retail. The program has several functional options which may fit this location well. City development criteria suggest that the roof of any garage be outfitted with additional uses such as conference center or cogeneration plant. High density strategies would transfer air rights of the garage to complimentary high rise use.
Review Parking and Traffic chapter for parking ratio profiles.

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Phoenix Biomedical Campus

PROGRAM ELEMENTS

Program Elements

IN PROGRESS

FUTURE PHASES

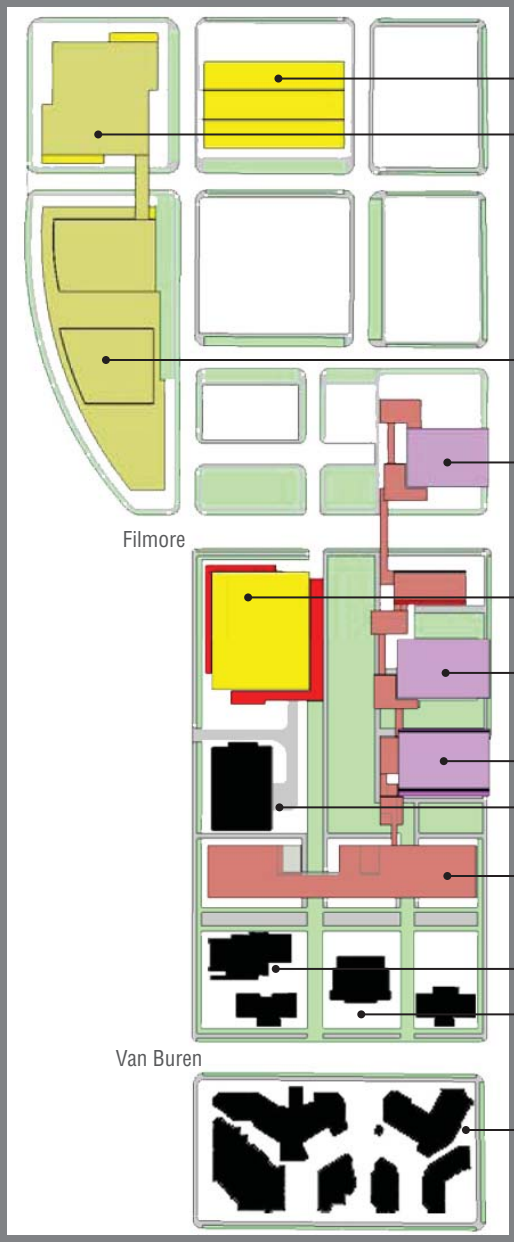
Phase 1	1. Existing	Research/TGEN	180,000 GSF
		Historic Buildings	70,000 GSF
		ABC-1	80,000 GSF
Phase 2	2. Academic	Health Sciences Education Building (HSEB)	370,000 GSF
	3. Research	Teaching, Labs & Offices	275,000 GSF
	4. Core Research & Imaging	Library	20,000 GSF
		Administrative	95,000 GSF
		Research Facilities	
		Clinical Translation	
		Building Support, Loading Dock	
Structured Parking	5. Active Uses	Bookstore, Food Service, Meeting TBD	
Future Phases	6. Clinical Hospital	Phase One	750,00 GSF
Structured Parking	7. Covered Parking	Phase One (Research/Med)	2000 CARS
		Phase Two (Clinical/Proposed)	1500 CARS
Future Phases	8. Research	Multiple Research	350-441,000 GSF
		3-5 Buildings	
	9. Clinical	Hospital/Clinical/Out-Patient	750,000 GSF
		Medical Office Building (M.O.B.)	350,000 GSF
	10. Active Ises	Suppor/Meeting/Retail	TBD
	11. Structured Parking	Additional 2,000 cards	600,000 GSF

Early Phases = +/- 2.1M to 2.5M GSF

Future Phases = 3.1M to 3.9M GSF

Total (Early Phases + Future Phases)= 5.5M to 6.5M GSF

Program Locations



Parking (Phase 7)

Clinical - Center/Hospital Phase I (Phase 5)

Clinical - Center/Hospital Phase II (Phase 7)

Research (Phase 5)

Parking & Services (Phase 3A)

Research (Phase 4)

Research (Phase 3)

TGen (Phase 2)

Health Sciences Education Building (HSEB) (Phase 3)

ABC 1 (Phase 2)

Phoenix Union High School Buildings I, II, III (Phase 1)

Mercado (Phase 8)

Future Uses

N

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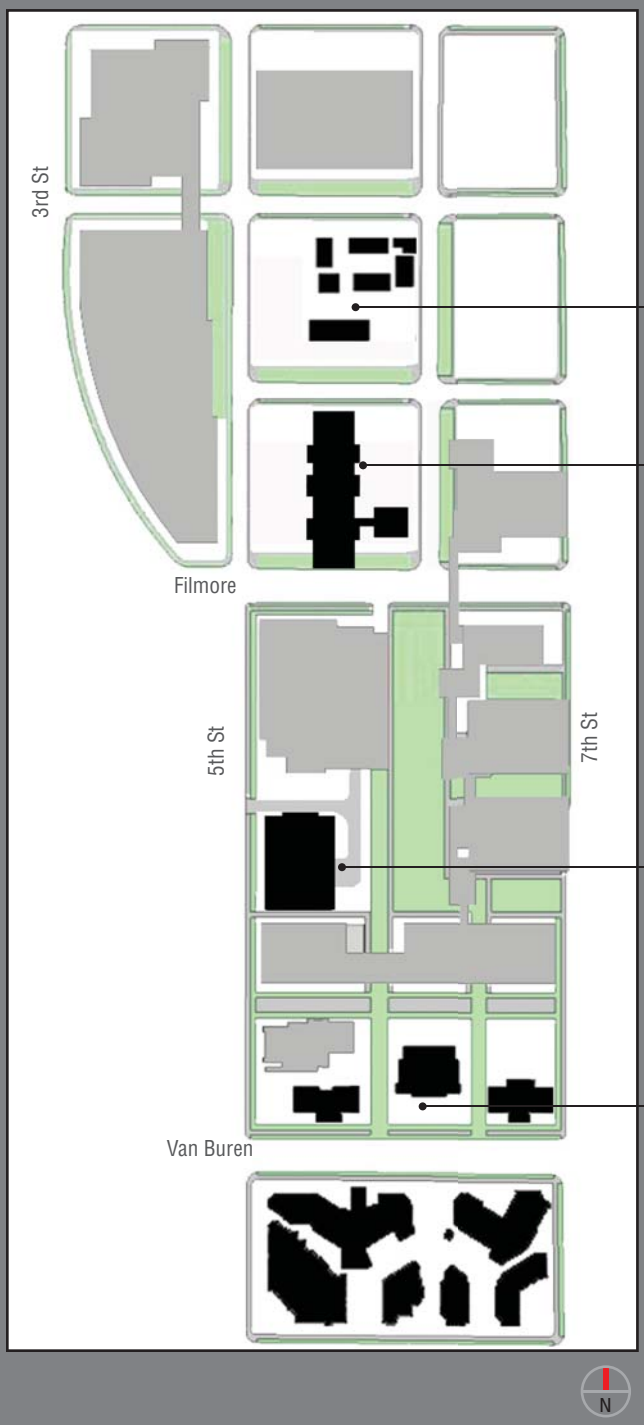
Phoenix Biomedical Campus

PHASING - SEQUENTIAL COMPOSITION

Phase 1 Original Site Uses



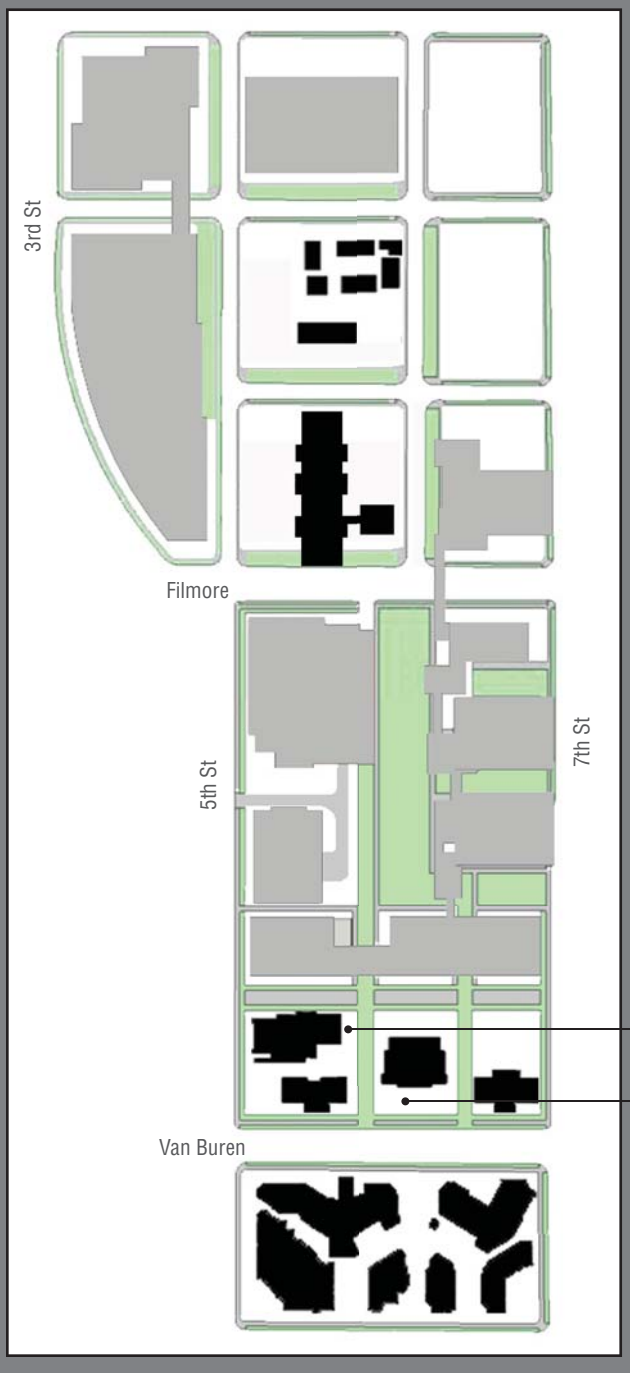
Bio Science High School

Hotel

TGen

Historic Phoenix Union High School Buildings I, II, III

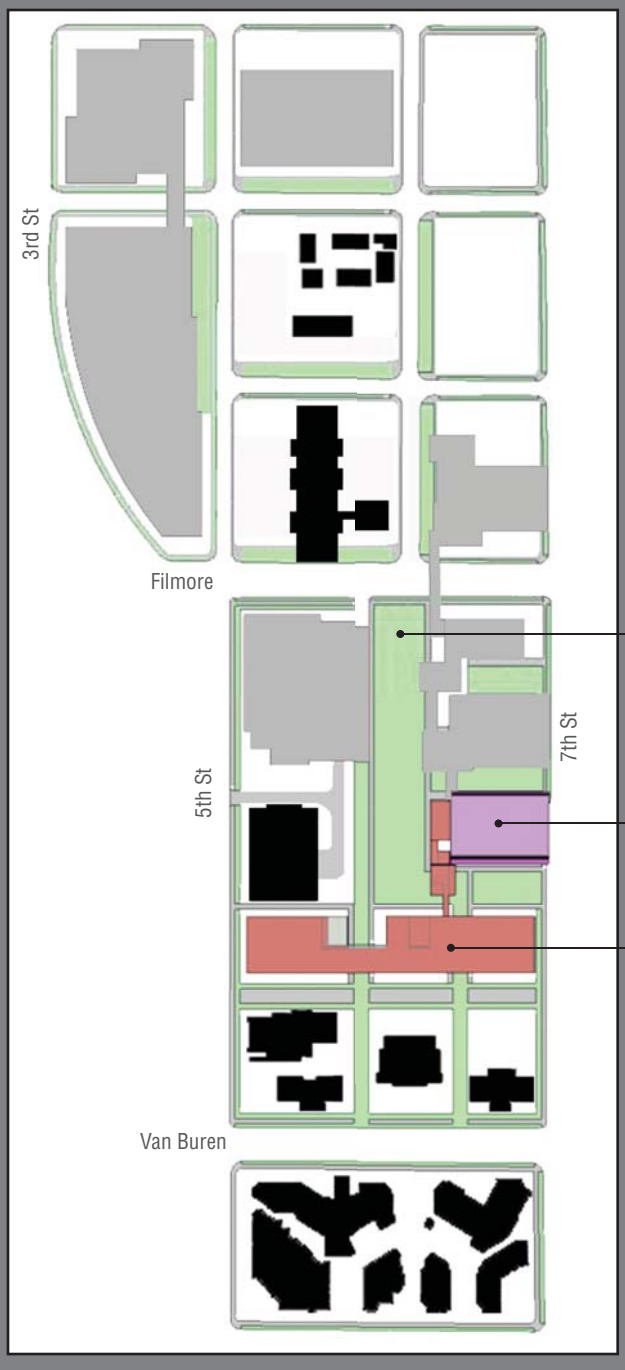
Phase 2 Existing (2007)



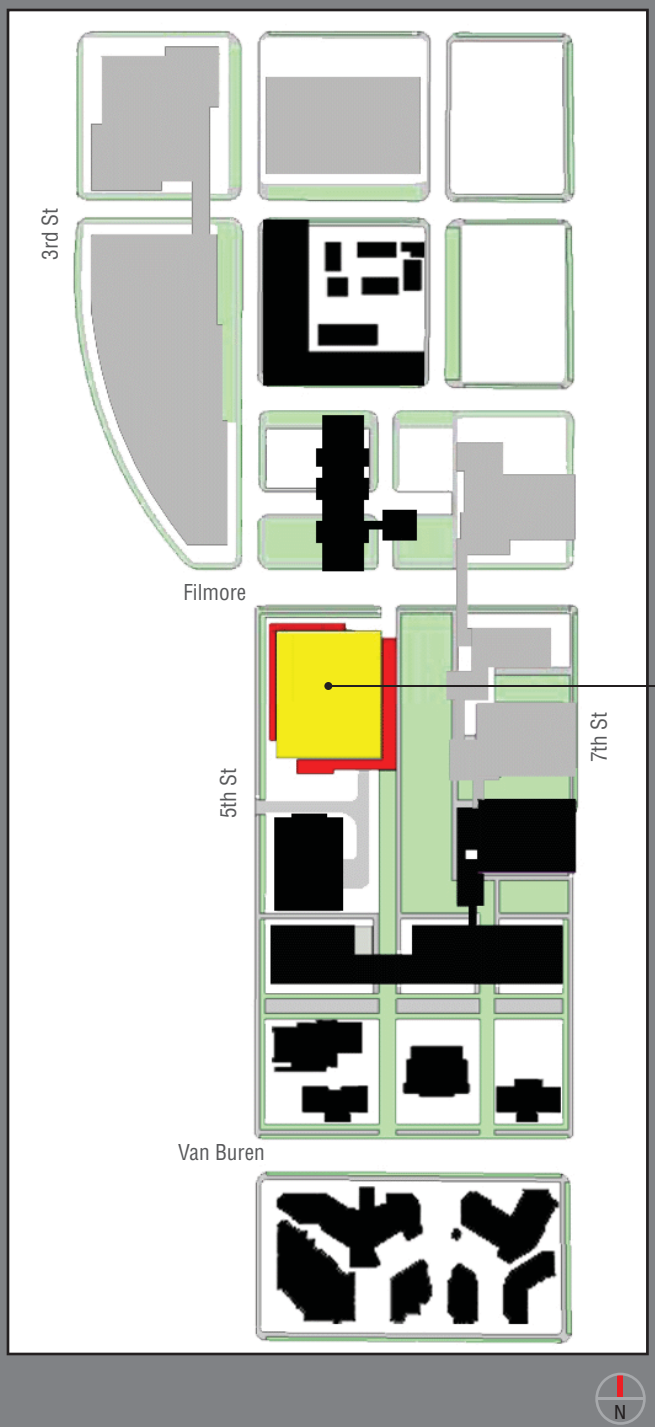
ABC 1

Historic Phoenix Union High School Buildings I, II, III

Phase 3 2012

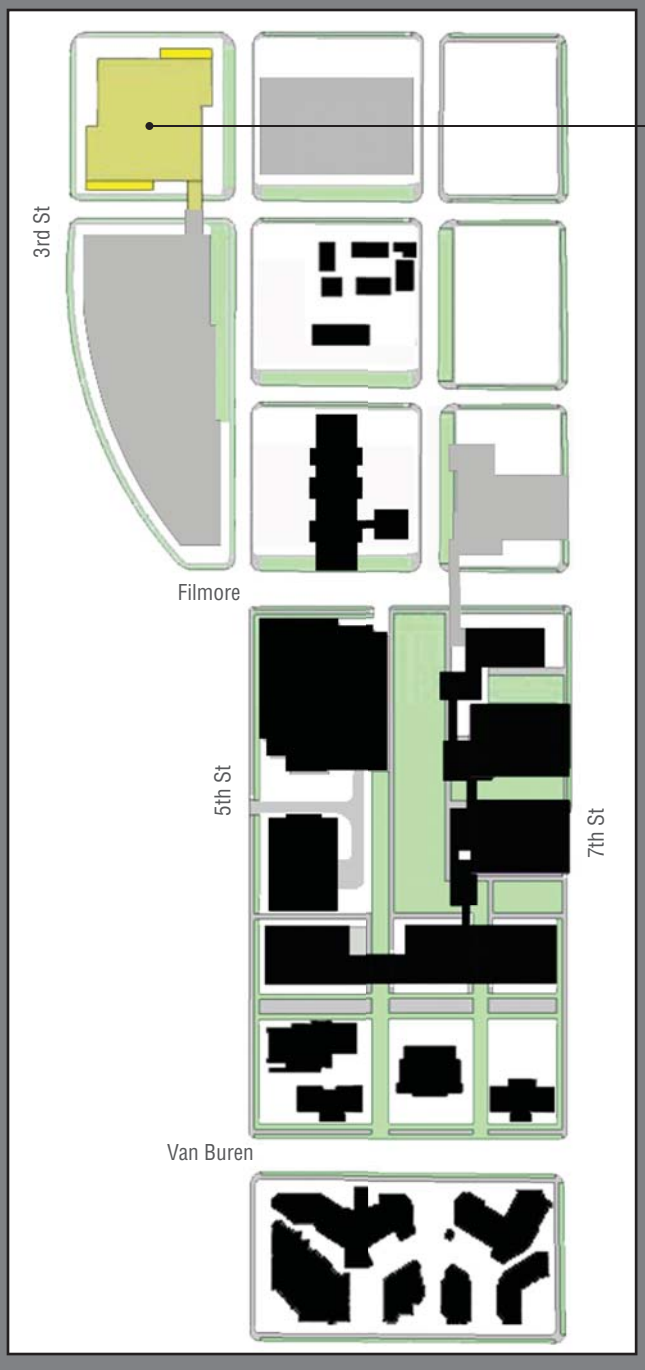

3rd St
Filmore
5th St
7th St
Van Buren
Core Research & Support
ABC 2
Health Sciences Education Building
N

Phase 3A 2012



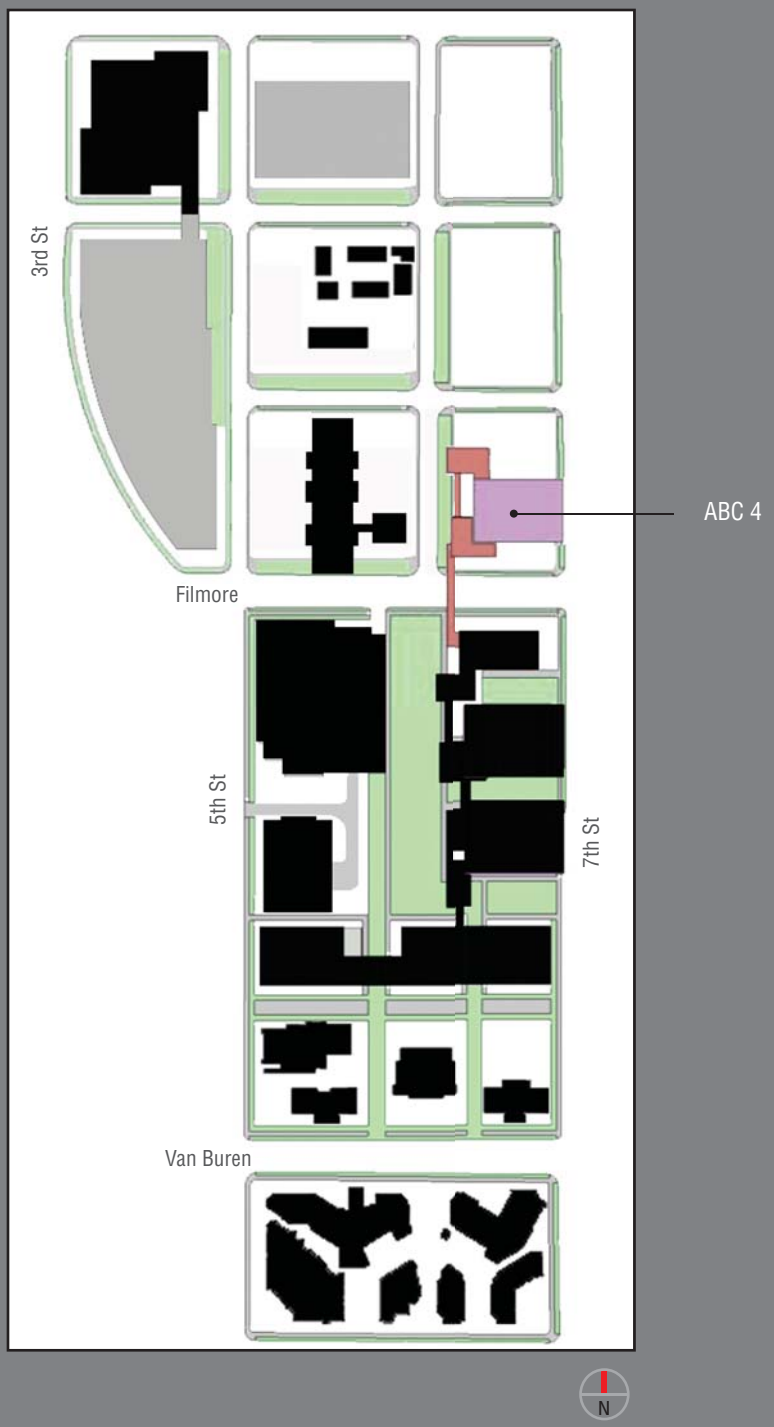
Phase 4 2015

Phase 5 2015+

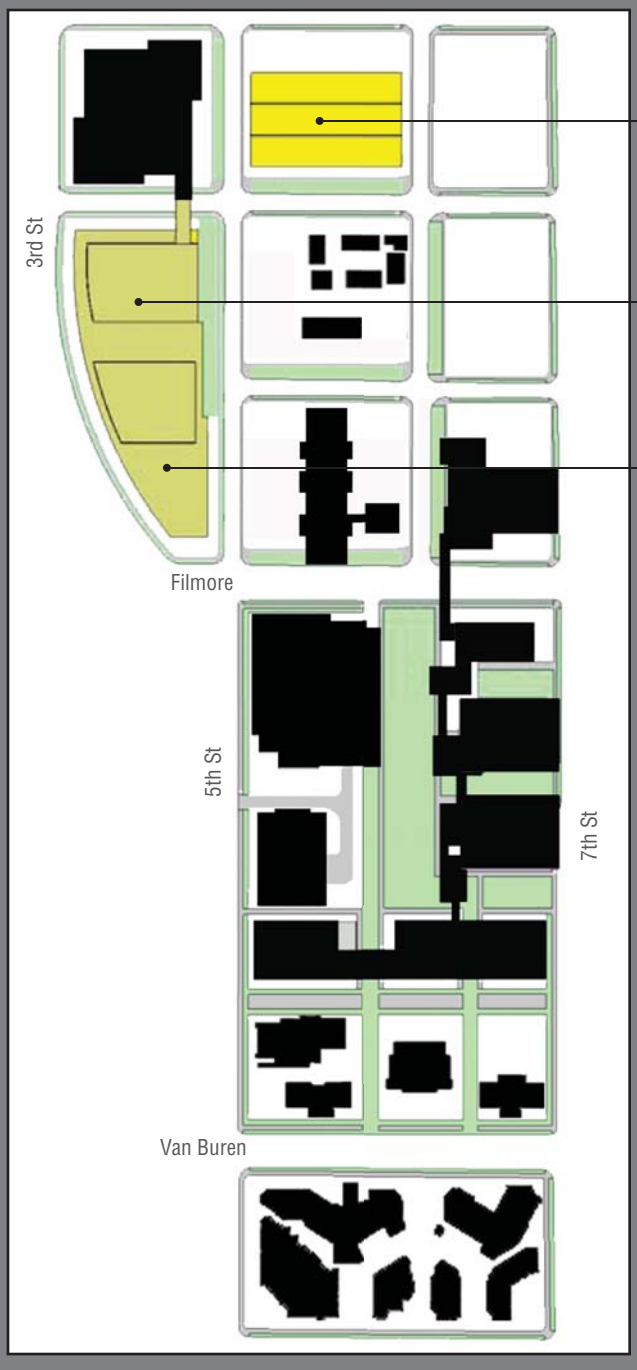


Clinical Center / Hospital Phase I
Additional Parking

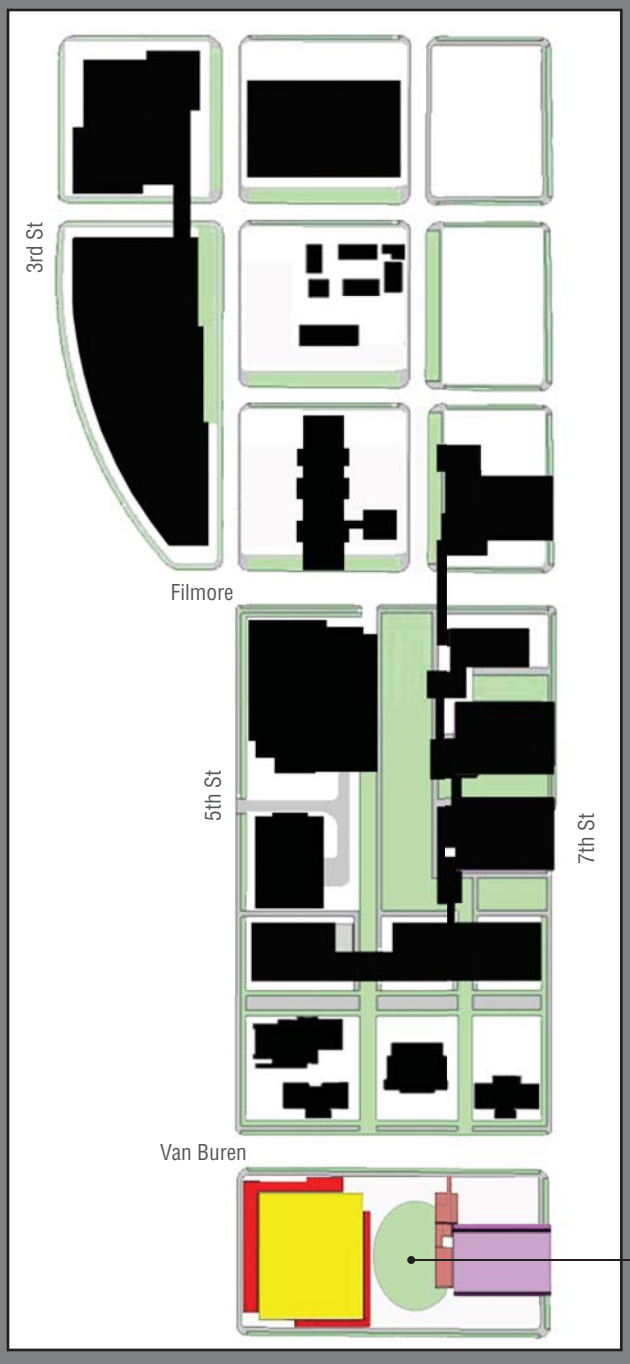
Phase 6 2017



Phase 7 2020


2nd Tower added at later date
2nd Tower added at later date
Clinical - Center / Hospital Phase I
3rd St
Filmore
5th St
7th St
Van Buren
N

Phase 8 2020+



South of Van Buren / Mercado Redevelopment
ABC 5 and/or additional Academic Facilities

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Phoenix Biomedical Campus

MASTER PLAN DIAGRAMS & IMAGES

Planning Principles

Site yield and urban character

Future campus development, as directed by this master plan, recognizes the prime importance of the buildable yield of the campus and the formulation of a responsive built character.

This completed plan nearly doubles the yield and density of previous studies. The goal for this planning effort was informed by thorough analysis of comparative campuses. Typically each similar campus suffers from a lack of early density, inefficient incremental growth planning versus a comprehensive campus yield.

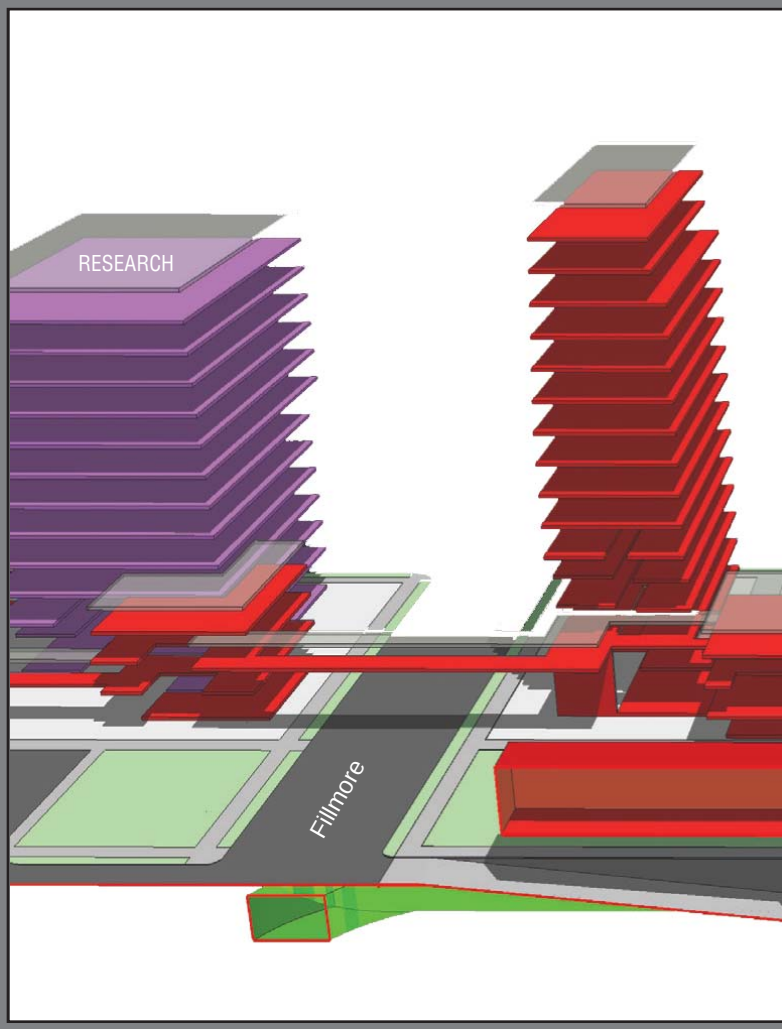
The PBC plan sets a campus target of 6 million square feet – options for height and pad uses can increase this number.

Urban character is specifically and consistently addressed through a variety of planning strategies and building devices. The campus location is intrinsically transitional. The built form must act as an urban threshold between the 20 plus story high-rise core of Phoenix as well as the existing downtown residential neighborhoods. The proposed building volumes and placements carefully consider street alignments, vistas and massing transitions across the campus and into the context.

Massing diagrams, planning principles and master development strategies

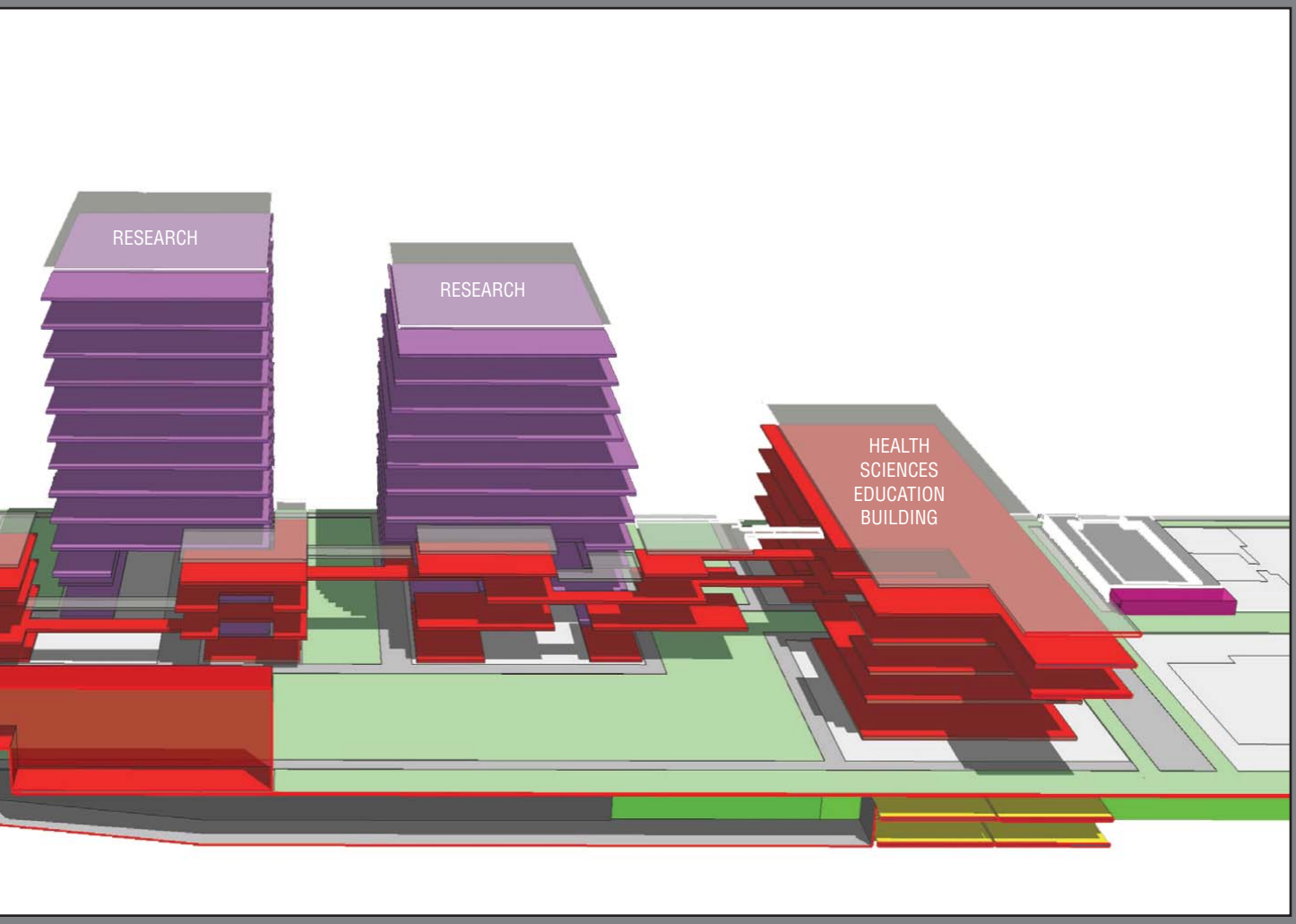
The proposed concept is produced and defined by the following guiding principles:

- The three dimensional design of this urban campus must optimize land yield through building density, height, and proposed building mass.
- The proposed organization of below grade programs and the related security and serviceability of these functions, organizes above grade development andimpacts planning options.
- The massing and volume of each building must maximize vertical development. This strategy preserves long term expansion options through efficient land use and creates building forms appropriately scaled to this zone of the downtown core.
- Development and placement of the future individual building projects must be evident and logical. The proposed plan defines districts for uses, long term infrastructure positions and connection points for those future uses as well as a phasing plan which describes a cohesive campus at each point of construction.
- Building footprints and resulting volumes must be responsive to climate and orientation. A fundamental



organizing device is optimizing east to west orientation for the buildings.

- The plan provides a worthy civic space that interconnects all campus users and facilities. Then in a more comprehensive view the campus makes significant connections to other existing urban spaces such as Heritage Square.

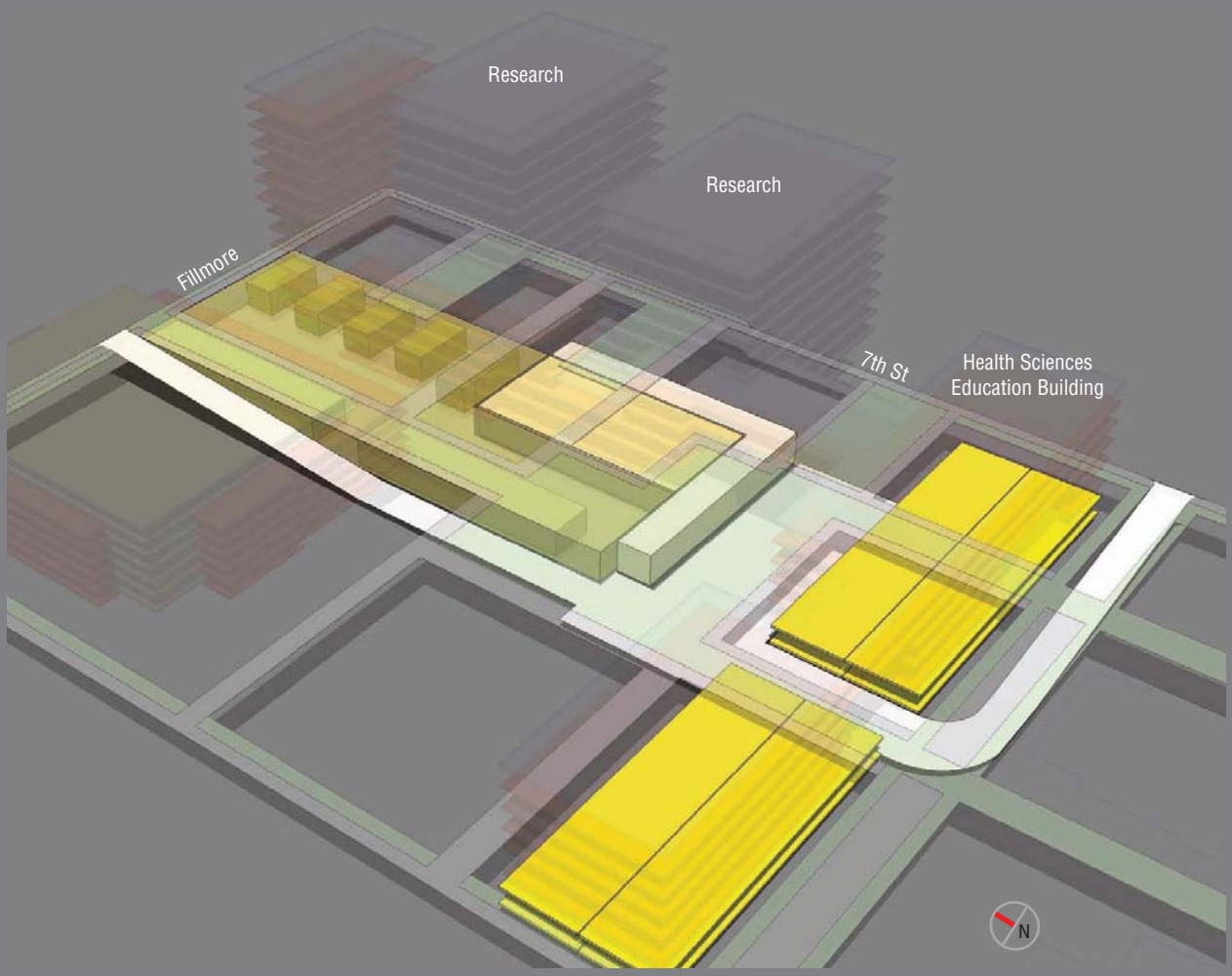


Planning Principles

Below grade research, support and infrastructure

The magnitude of the proposed program for the core research and support infrastructure is a defining element in the organization of the PBC's master plan. As currently programmed, these spaces total nearly 90k sf and with a potential below grade finished floor elevation of minus 30 feet, the size and access to this collective group of functions determines many of the above grade relationships and building placements. However, as demonstrated in the current plan by centrally locating the core research support, vivarium and campus support functions into the center and southern half of the campus, the access point is established and the following positive relationships are generated:

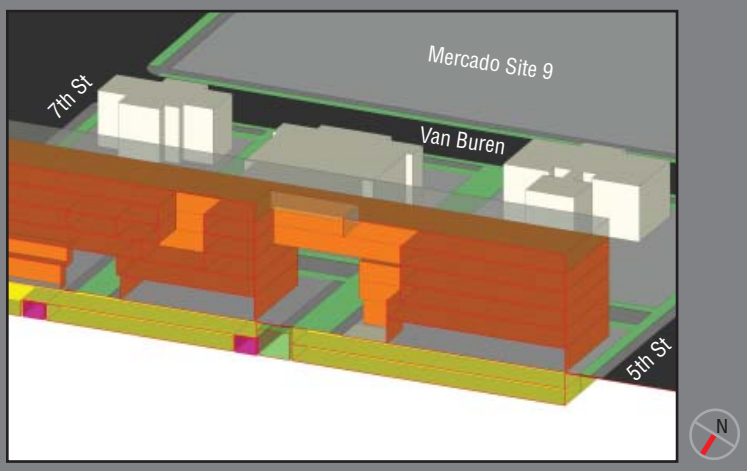
1. Service access to the below grade functions requires greater than 450 linear feet to accommodate both the ramp slope and the height of vehicles. By locating this access point on Fillmore and ramping down to the south, a central delivery and supply area can be located conveniently below grade and central to the key functions. The position as demonstrated, uses the envelop of the future garage to camouflage the ramp. This makes use of the air rights over the ramp and removes the potential of a large, non-pedestrian, unsightly service element to disrupting the campus.

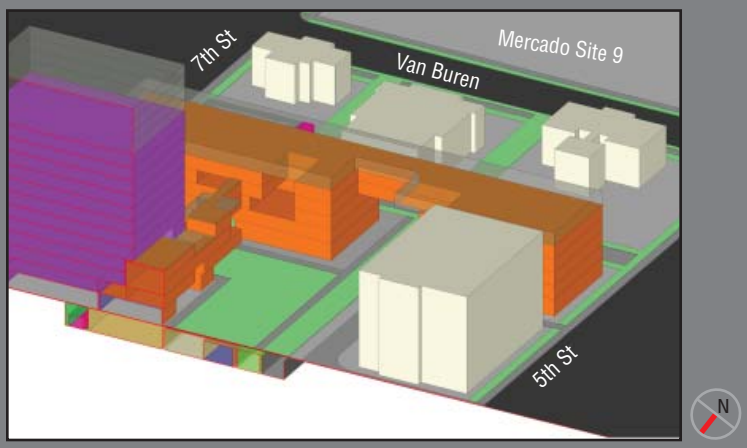


2. Additional research buildings can be added to the initial infrastructure with logical expansion to the north along 7th and eventually to the south PBC, the Mercado Site 9 (see diagrams).

3. The addition of sequential research buildings correlates to the phased expansion and interior development of the core elements.

4. The exterior space generated above these facilities, at grade level, is a significant organizing and civic scaled central space for the entire campus (see diagrams).



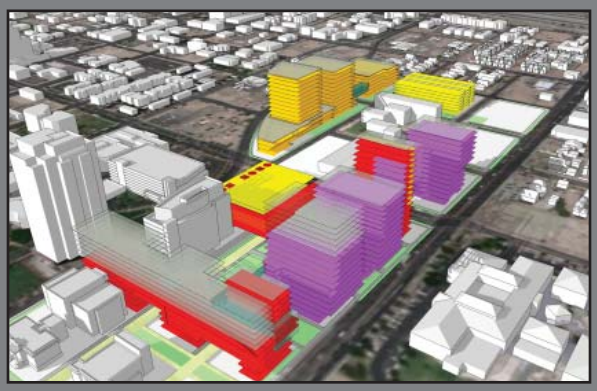


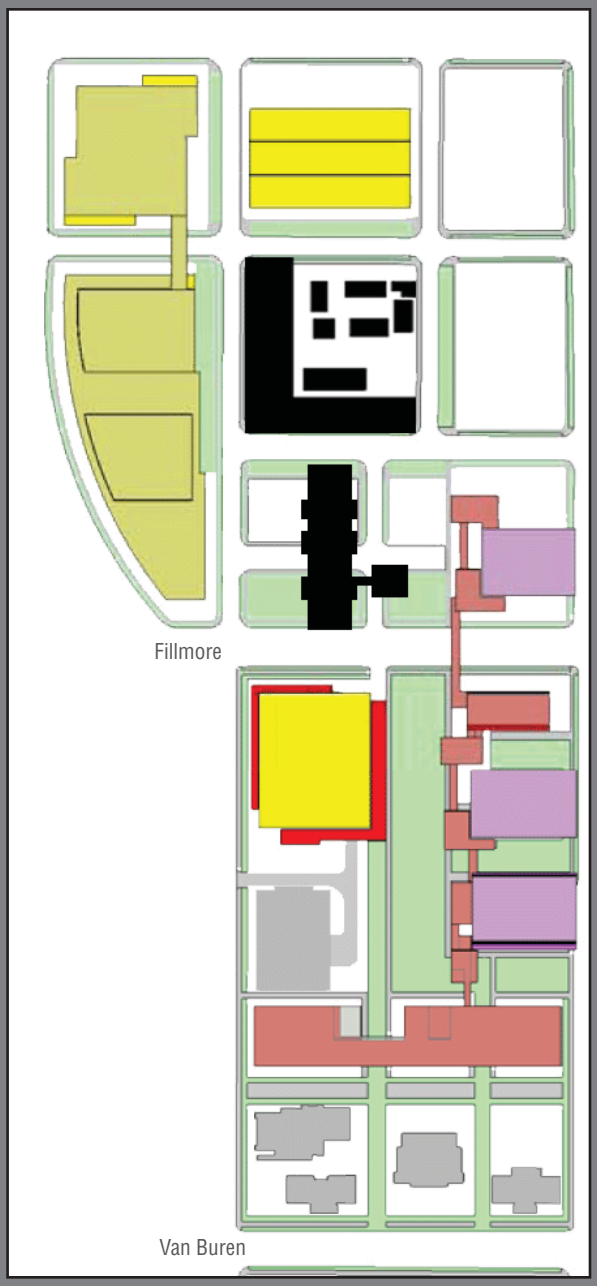
Planning Concepts

Academic and Instructional

A key precept in the planning of the PBC is the consolidation of academic and instructional spaces at the south end of the campus adjacent to the recently renovated historic buildings. This collocating of old with new facilities reinforces the long term use and viability of the historic buildings and establishes an academic hub. An additional site utilization benefit includes the opportunity to significantly improve the utility and integration of the narrow site between TGen and ABC 1.

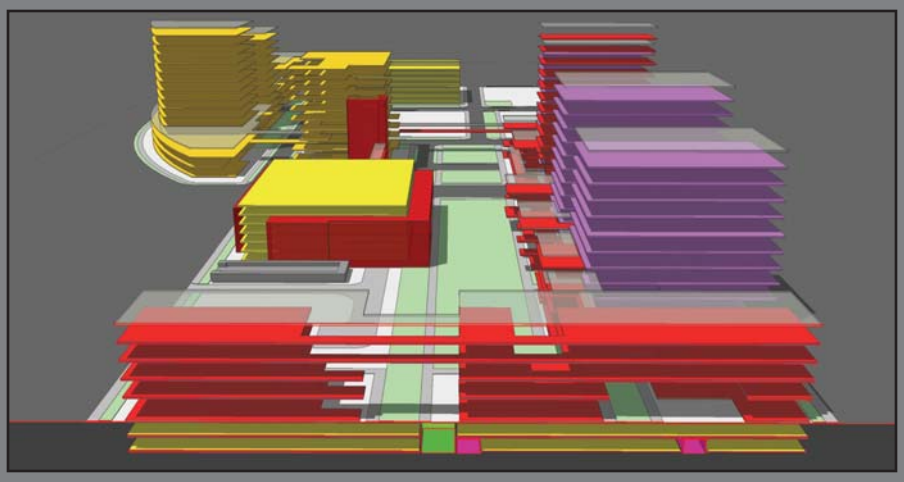
The resulting campus wide pad and building volume generated for the HSBE building delivers multiple development enhancements including providing mid scale transitioning from the lower scaled historic buildings to the taller research buildings, an east to west building orientation, and worthy building use to anchor the south end of the central civic space.

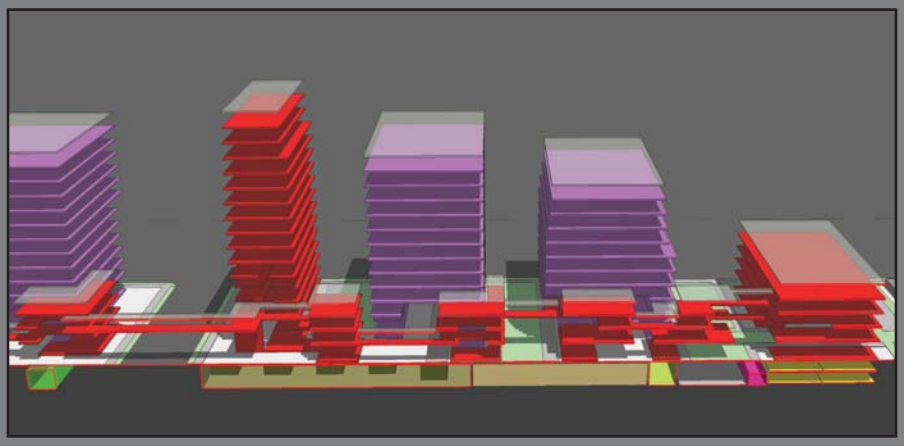


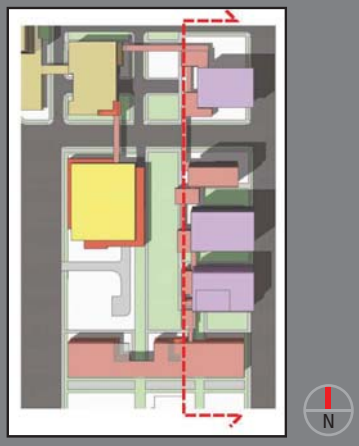


Academic Areas

- Purple - Academic Main Building
- Red - Academic Connectors
- Red on Yellow - Academic Wrap for Garage
- Gold - Clinical
- Yellow - Structural Garage







Planning Concepts

Academic Spine

An active ground plane is naturally generated by the position of the academic buildings and their use profiles. In a long term effort to physically interconnect the various campus uses and philosophically provide meaningful connections between research, academic and clinical uses, another set of specialized linkages is necessary.

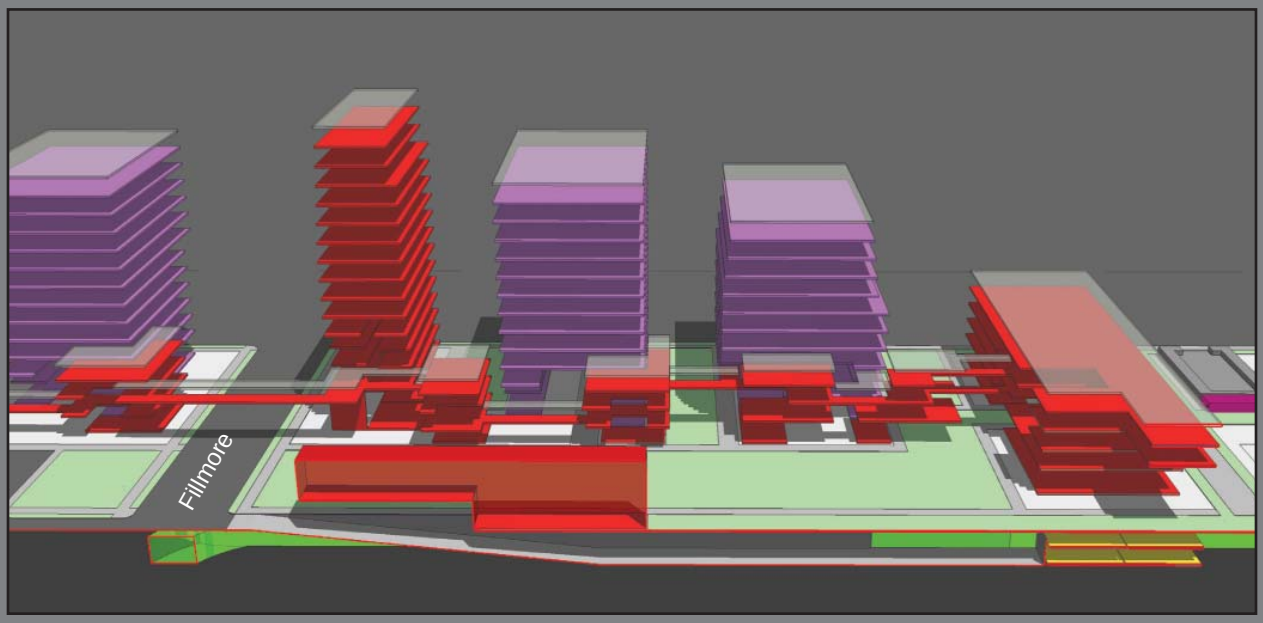
This set of connectors, 'the academic spine,' comprised of walk ways, open spaces and certain program functions, will architecturally weave the larger program uses together and provide multiple venues and casual opportunities for campus users to cross paths, cross train and cross pollinate.

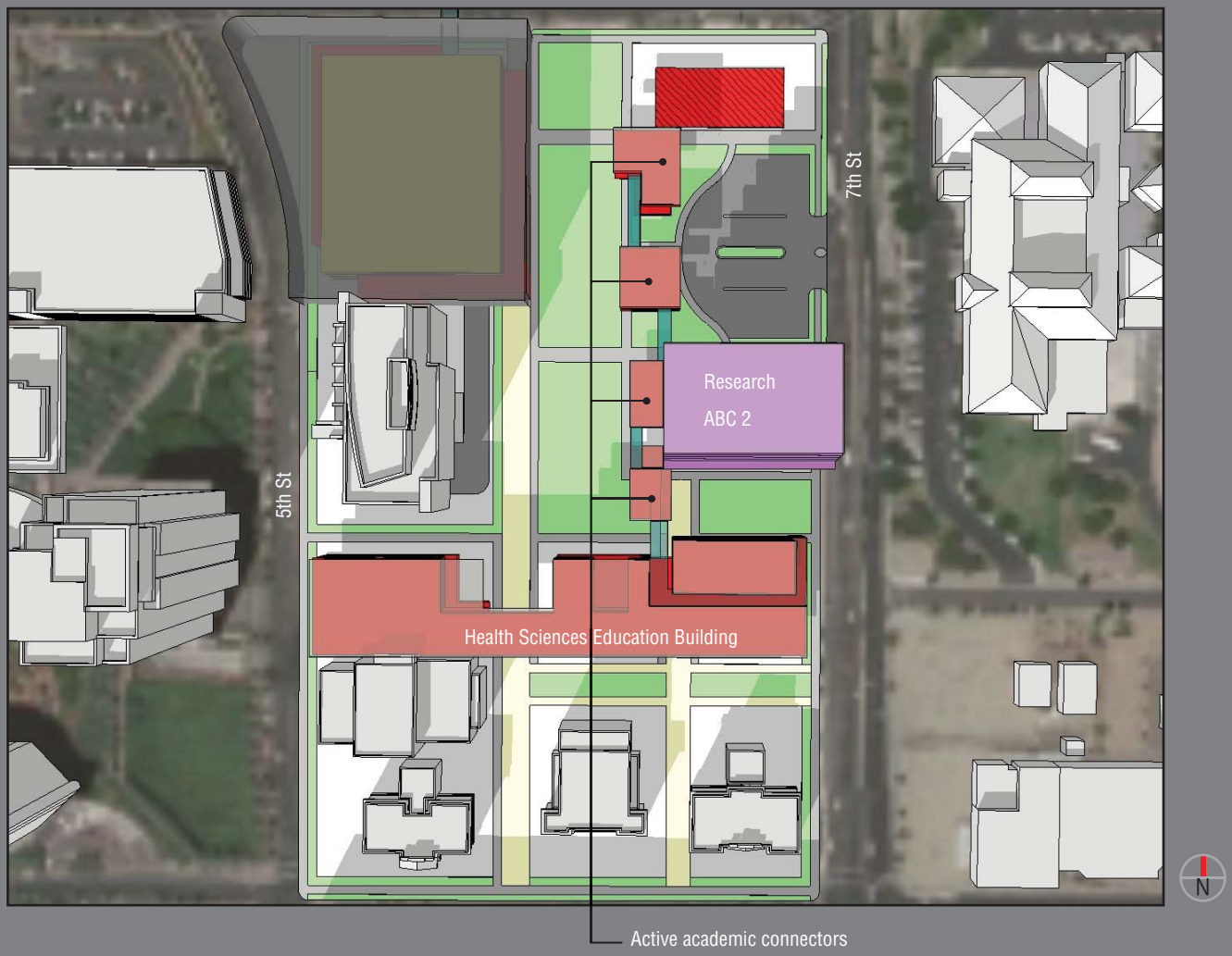
Demonstrated here, as a series of pavilions integrated into the HSEB and the research buildings, are highly visible spaces linked by elevated walkways, both interior and exterior. This system of elements duplicates the benefits of an active ground plane above grade and extends pedestrian presence and movement into and along the research building corridor (see diagrams).

A series of academic pavilions and inter-related walkways carries the educational programs, students and faculty beyond the walls of the HSEB. This site wide system of interconnected paths and spaces infuses the whole campus with activity and interdisciplinary association.

Lounges, open stairways, conference spaces, cafes and lobbies are examples of active use and space types which should be located along the academic spine. These types of functions display activity, show occupied space and create transparency along the spine and help activate the ground plane and civic space.

Greater opportunities exist to unite these functions and spaces with significant exterior development along the edge of the central space. The position and nature of these combined elements can mark courtyards with lobbies, create gathering and amphitheater spaces or establish interim entry nodes to the campus in the absence of future infill projects.



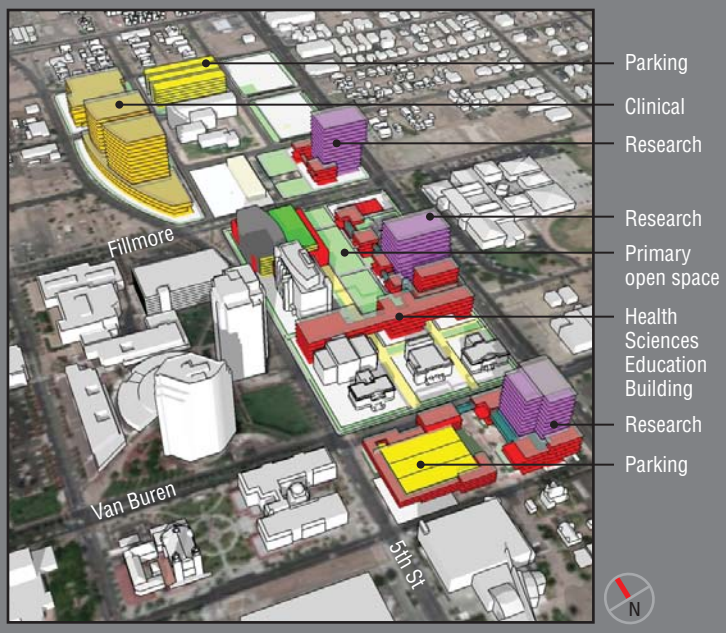

7th St
5th St
Research
ABC 2
Health Sciences Education Building
N
Active academic connectors

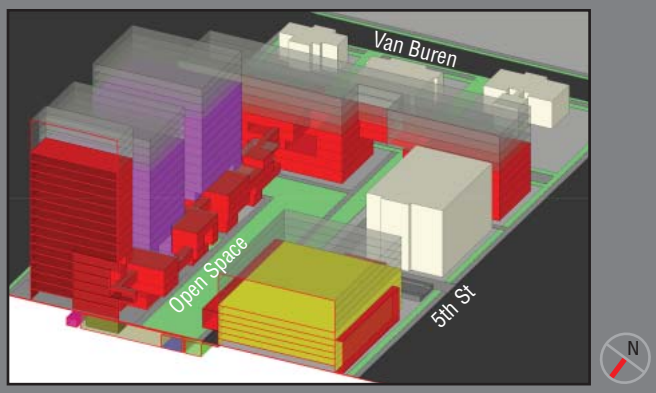
Planning Concepts

Open space and Building orientation

The Biomedical Campus Master Plan defines a network of scaled open spaces as carefully considered as the building volumes and their locations.

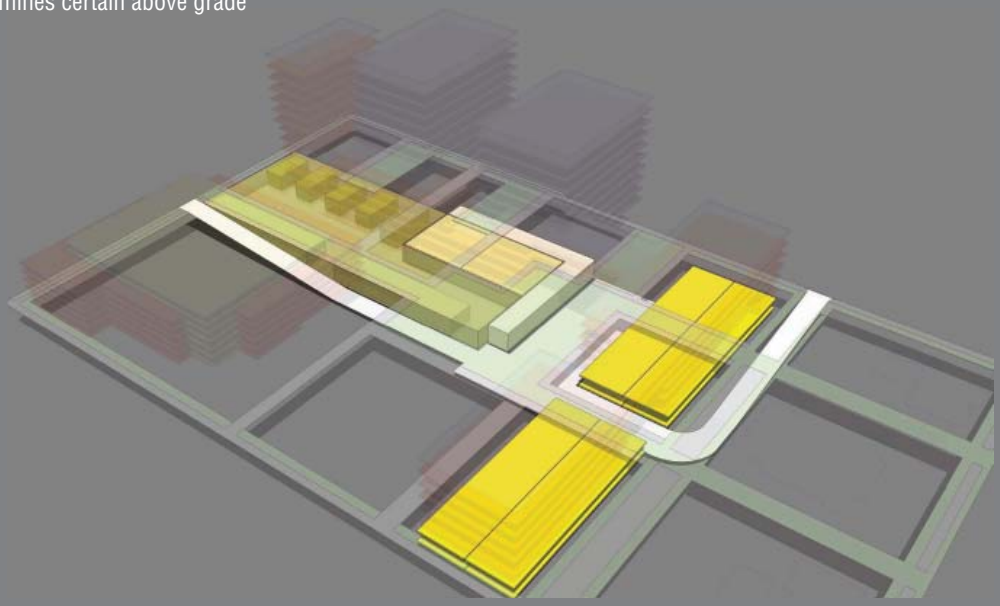
The primary open space anchors the central zone of the campus. Surrounded by existing buildings, the HSEB and future research buildings, this large open space visually and physically links all the built elements together. On the campus, the central space is the foundation for pedestrian activity and it's extension into and under buildings develops the desirable, critical active ground plane. The position and proportion of the central space reflects the presence of the below grade research and core elements and uses, which act as the air rights to functions that are undesirable to build over. The network continues with smaller pedestrian oriented branches emanating from the central space which make connections to an intermediate set of courtyards such as those at the research corridor. The open system works to the edge of campus where connectors and small open spaces align with important pedestrian points in the broader urban context.

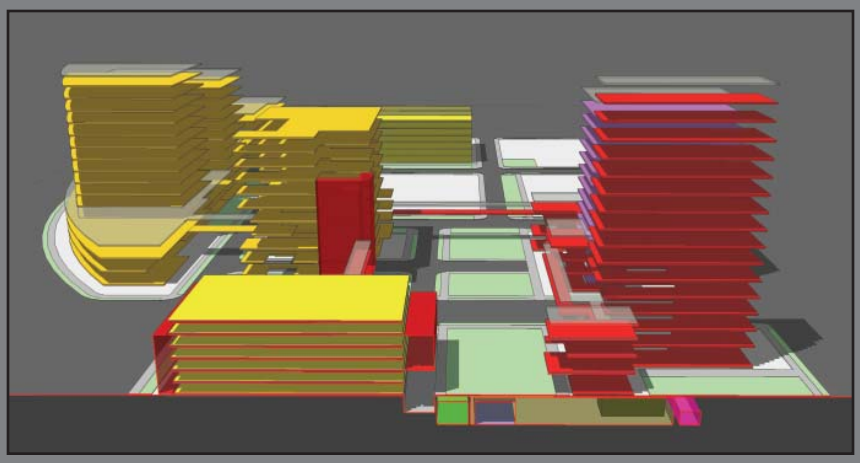




Below grade fuctions

The position and access to the below grade functions (including the core research and support functions, the vivarium and service facilities) set in place a series of programmatic interrelationships and access considerations. This graphic depicts access from Fillmore down a ramp to a centralized service core. From this central area all future buildings can be serviced. Service buildings and core research elements create a complex set of relationships, access issues and predetermines certain above grade building positions.





Planning Concepts

Research program placement

The master plan responds to the likely sequential growth of research on the campus.

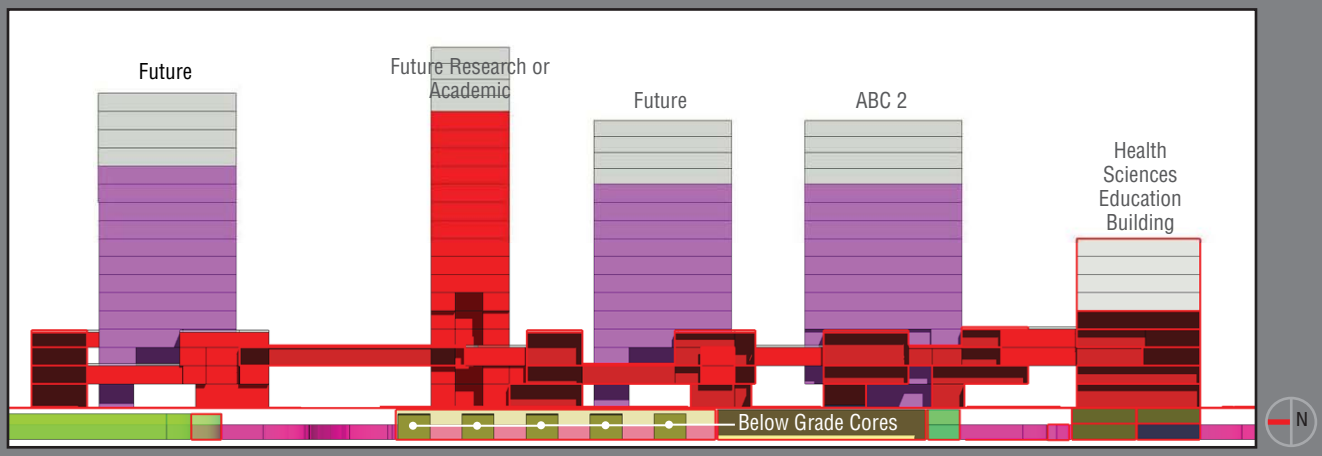
The volumes demonstrate incremental expansion of the programs with variable height options for greater yield.

The research building pads are aligned along 7th street with the opportunity for convenient visitor access and building identity development. This set of building placements also provides consistent and regularized below grade access to support the core facilities. Additional research building construction will coordinate with the similarly phased development and expansion of the below grade core facilities.

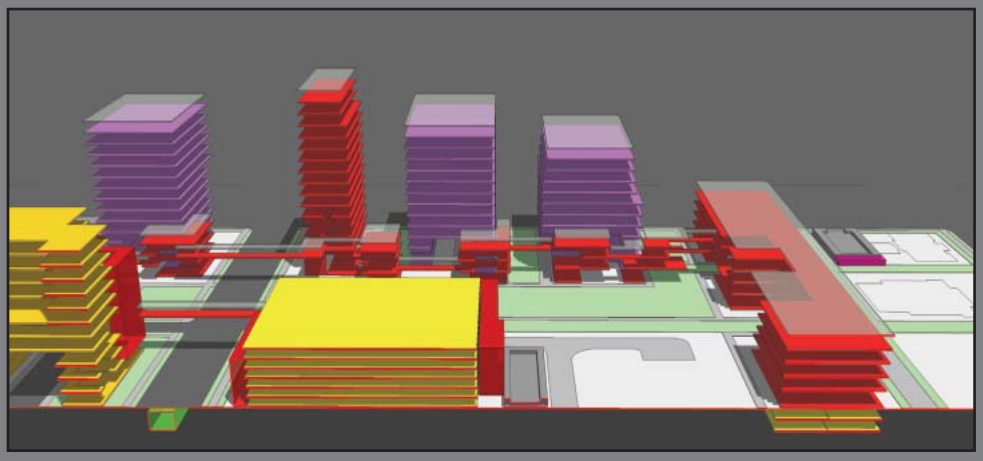
Above grade, the research program volumes reach up to 12 stories and lab planning configurations accommodate both layered and loop format wet labs. By maximizing north to south exposures, the building volumes provide the preferred solar orientation as well as define a series of courtyards. The vistas resulting from the courtyards, the interrupted building form and the proposed heights are all a combined effort to satisfy transitions from urban core to urban edge to residential neighborhoods along 7th St.

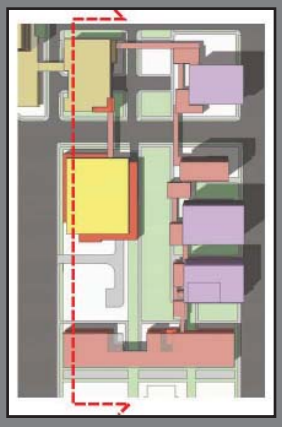
On the western edge of the research buildings, along the central space, a series of proposed embedded functions are shown in red. These red volumes represent programs with active, people oriented functions. The inclusion of these program pieces are a means of creating social exchange and reinforcing an active ground plain. Conceptually and philosophically this spine of elements is the campus highway.

Ultimately this spine will connect the north campus clinical uses, the research buildings and be anchored at the HSE.




7th St
Van Buren
N




N

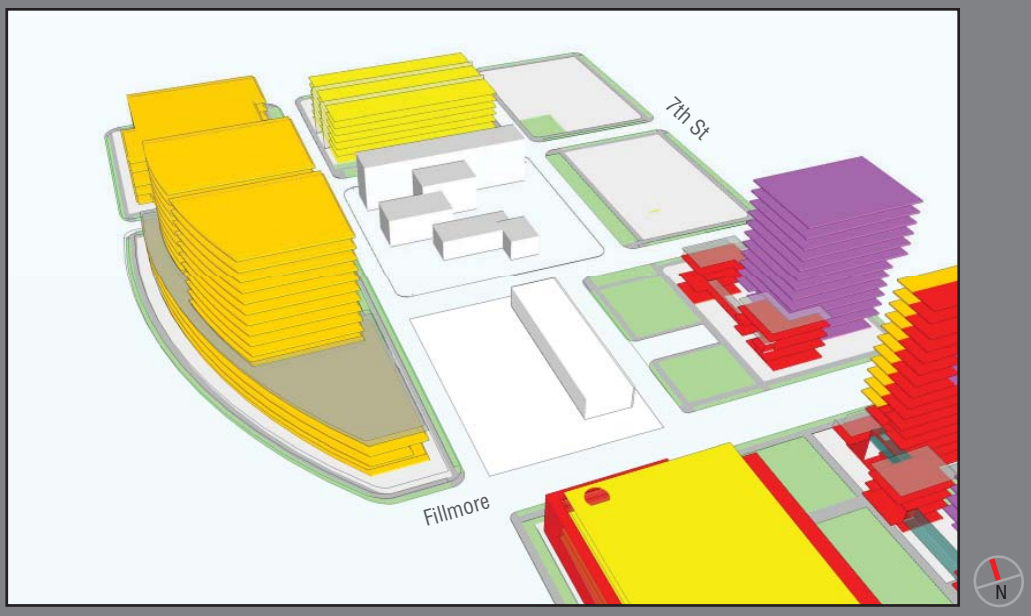
Planning Concepts

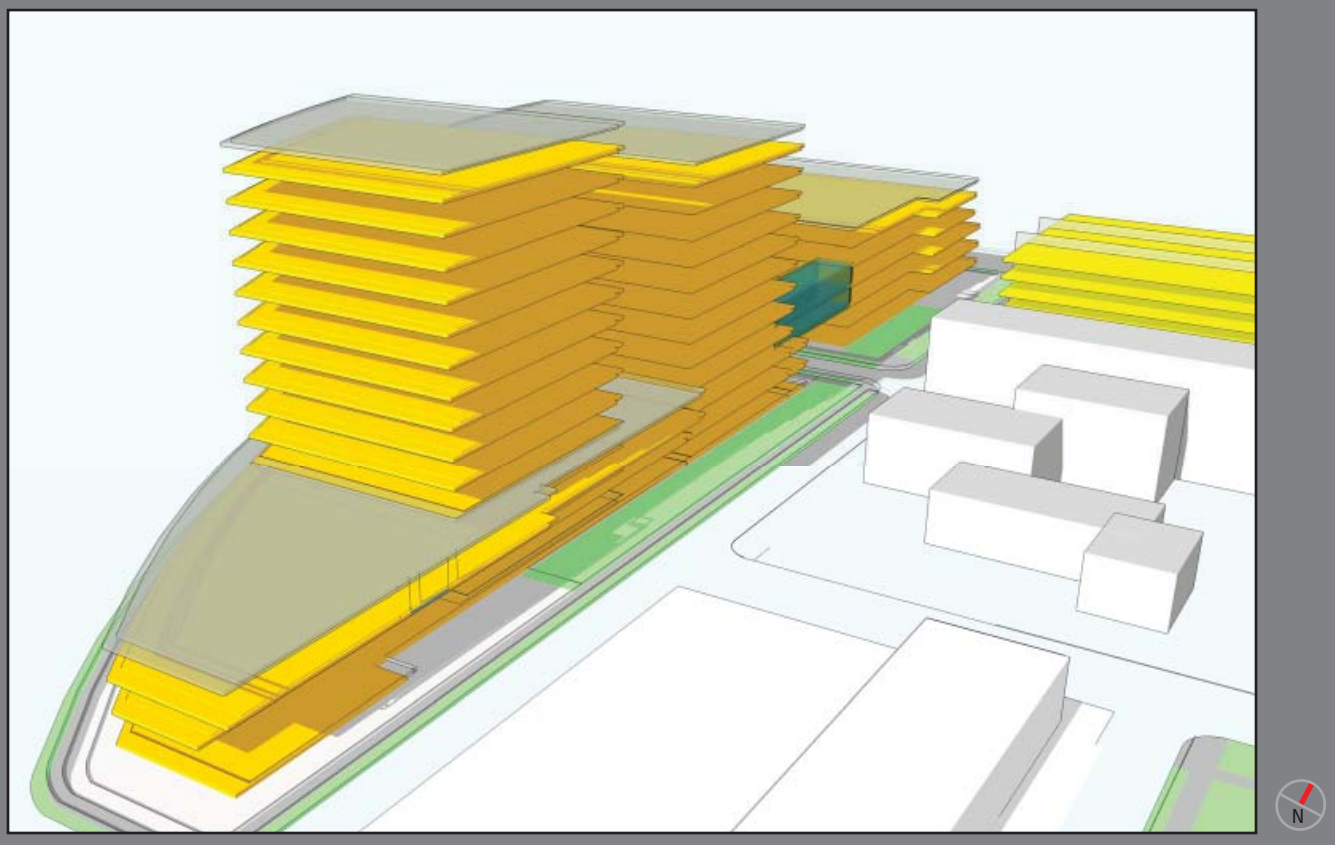
Clinical Program placement

A specialized clinic and community based healthcare facility has been located on the portion of the campus north of Fillmore and east of 5th street. This positioning reflects the consideration of multiple advantages to these proposed facilities as well as to the development of the campus as a whole.

The north of Fillmore sub-district offers multiple city block site assemblies. These blocks may be bridged above grade or be developed as continuous floor plates. The resulting large floor areas are appropriate to the second, third and fourth floors. This strategy generates a traditional diagnostic and testing platform with patient towers rising above the platform with public lobbies, service access, staff entrances and transportation requirements provided at grade. The projected clinical and healthcare program scenarios can be fully accommodated on these currently owned blocks, as shown, or with future acquisitions, an even greater spectrum of configurations is possible.

In this area of campus, access via the existing street grid is complimented by access from 7th street, 5th street, Garfield and Fillmore. This system of grade level vehicle access affords the greatest variety and opportunity for organized visitor, staff and emergency access. The service and delivery for the clinical functions has multiple location options, although a strong preference to avoid visibility to the neighborhood is expressed.


7th St
Fillmore
N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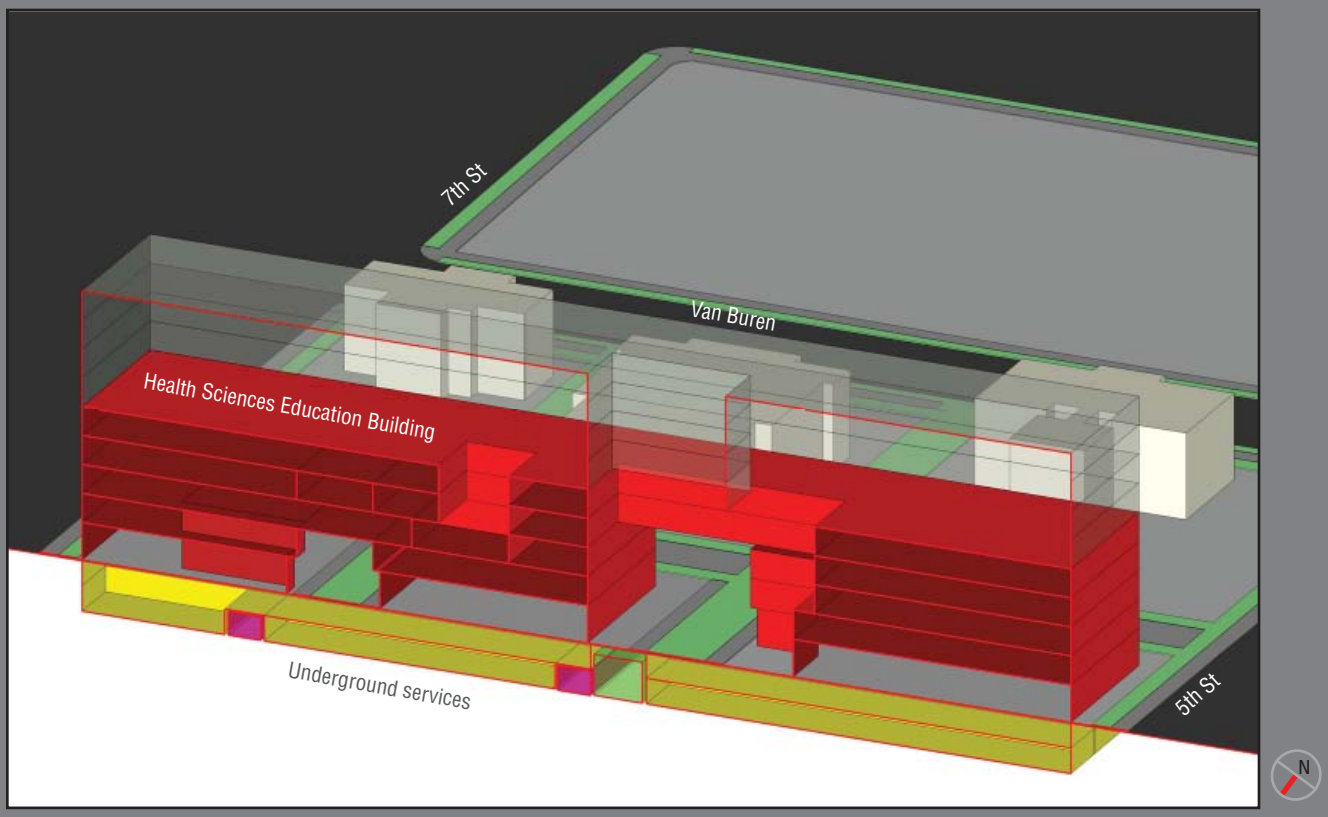
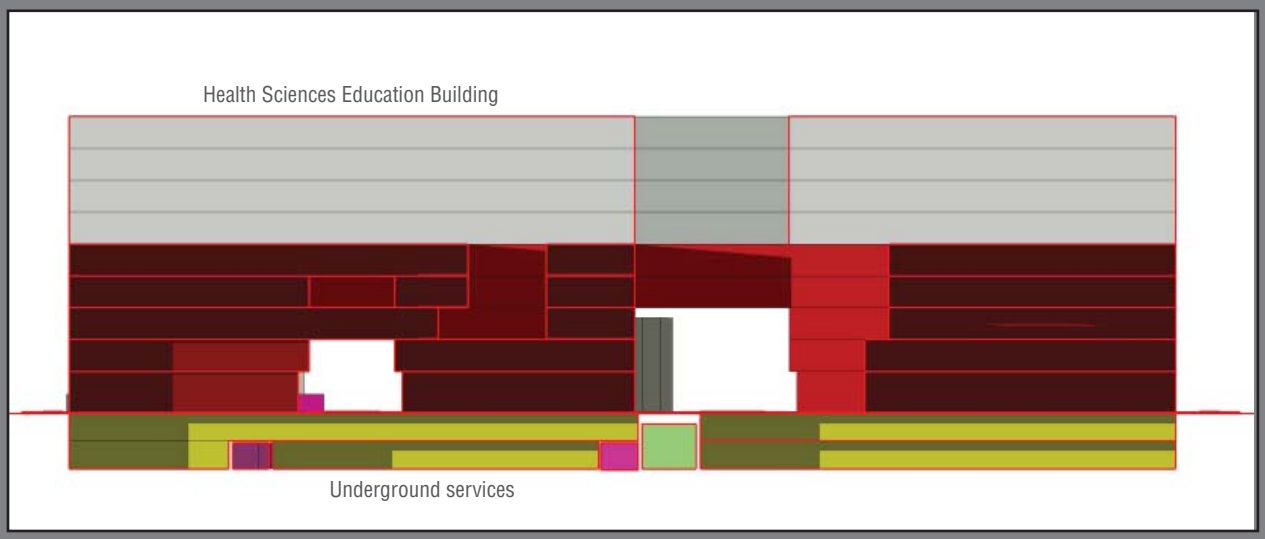
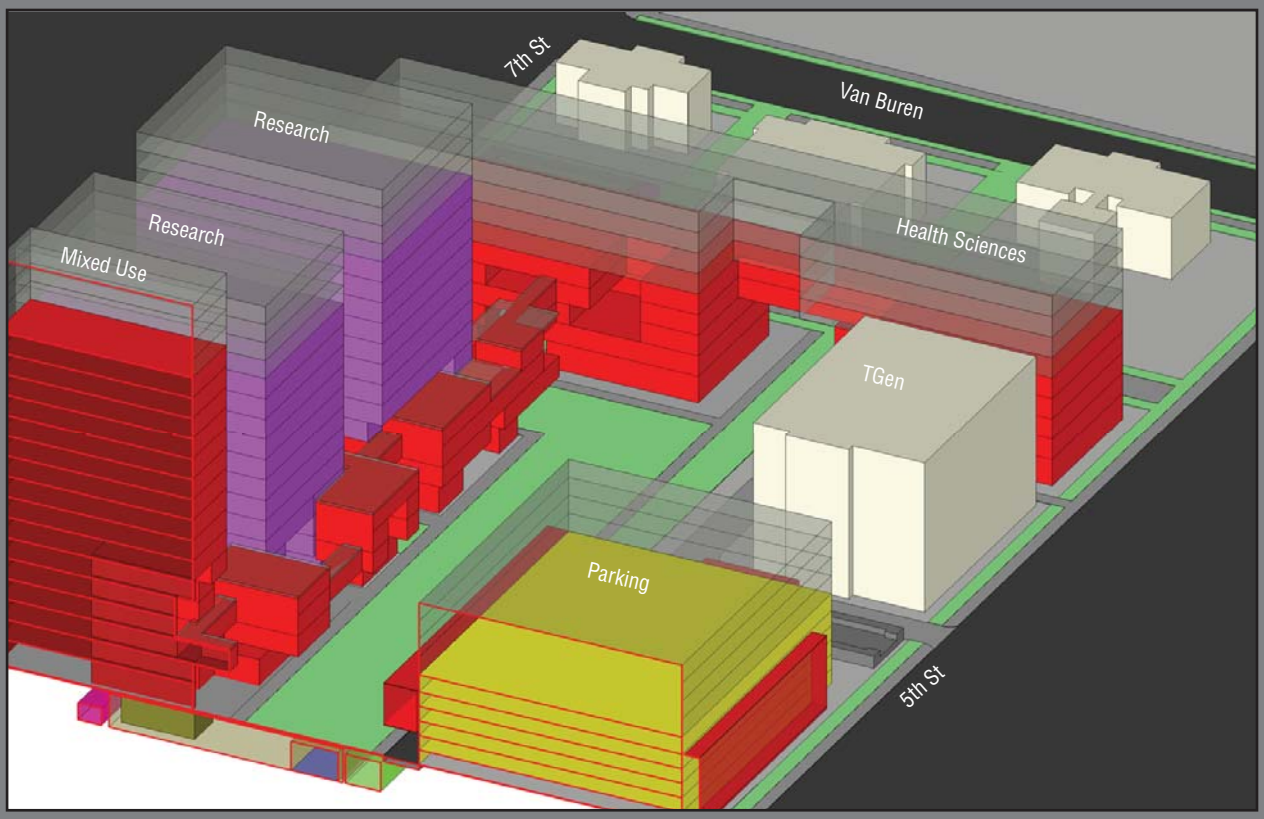
Planning Concepts

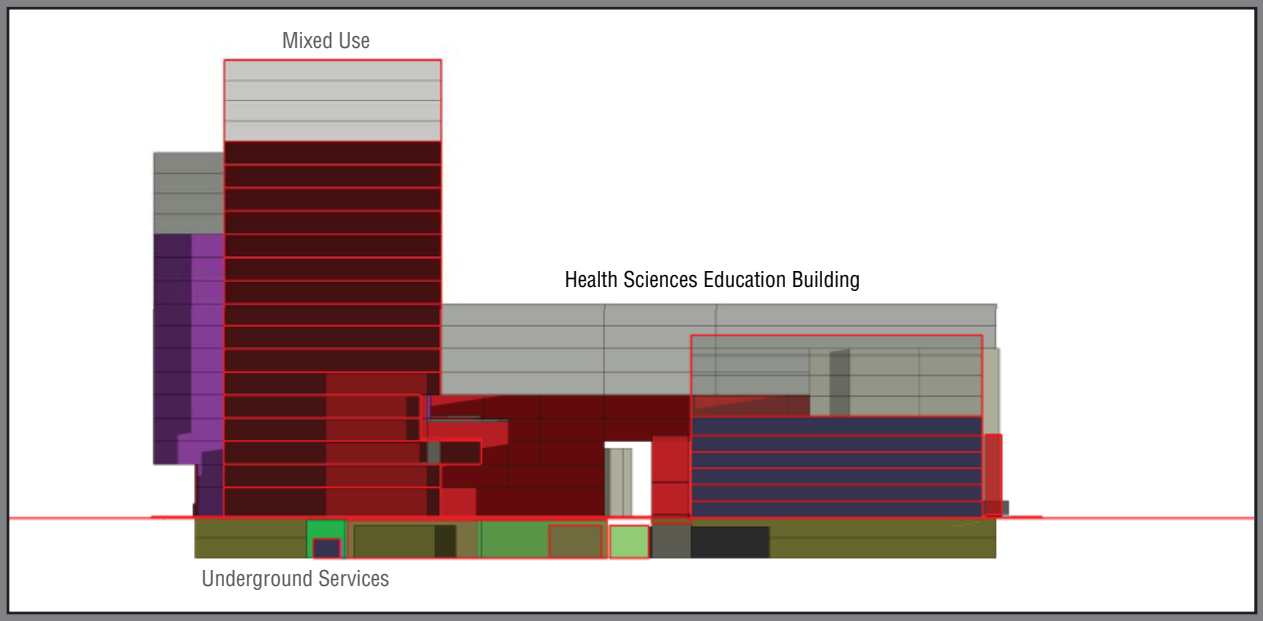


Section view south

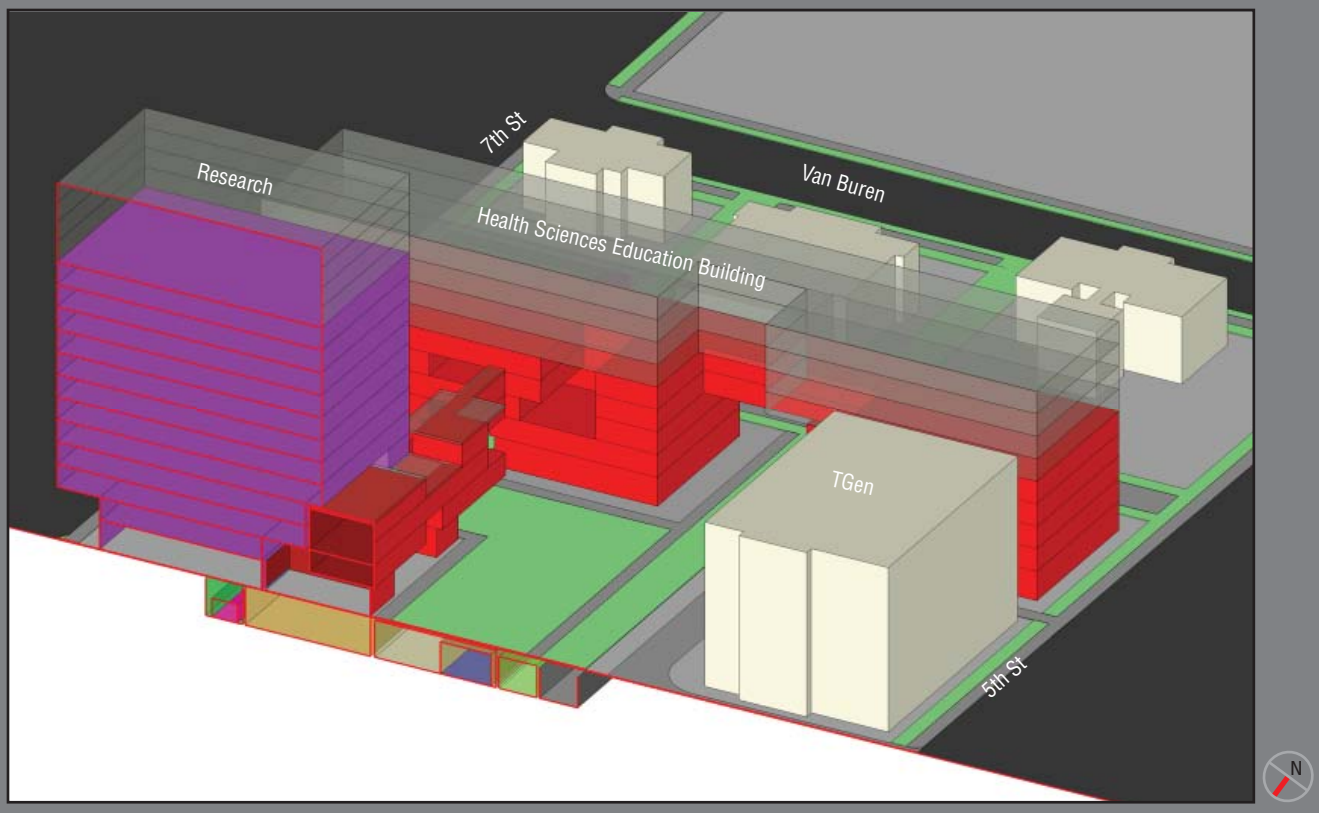




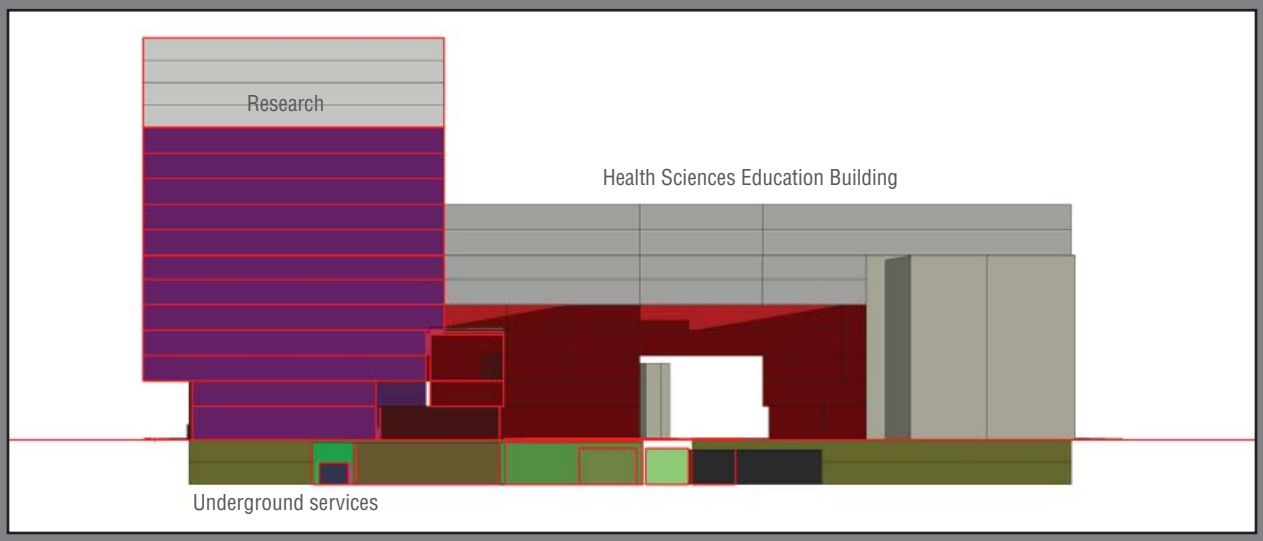
Section view south

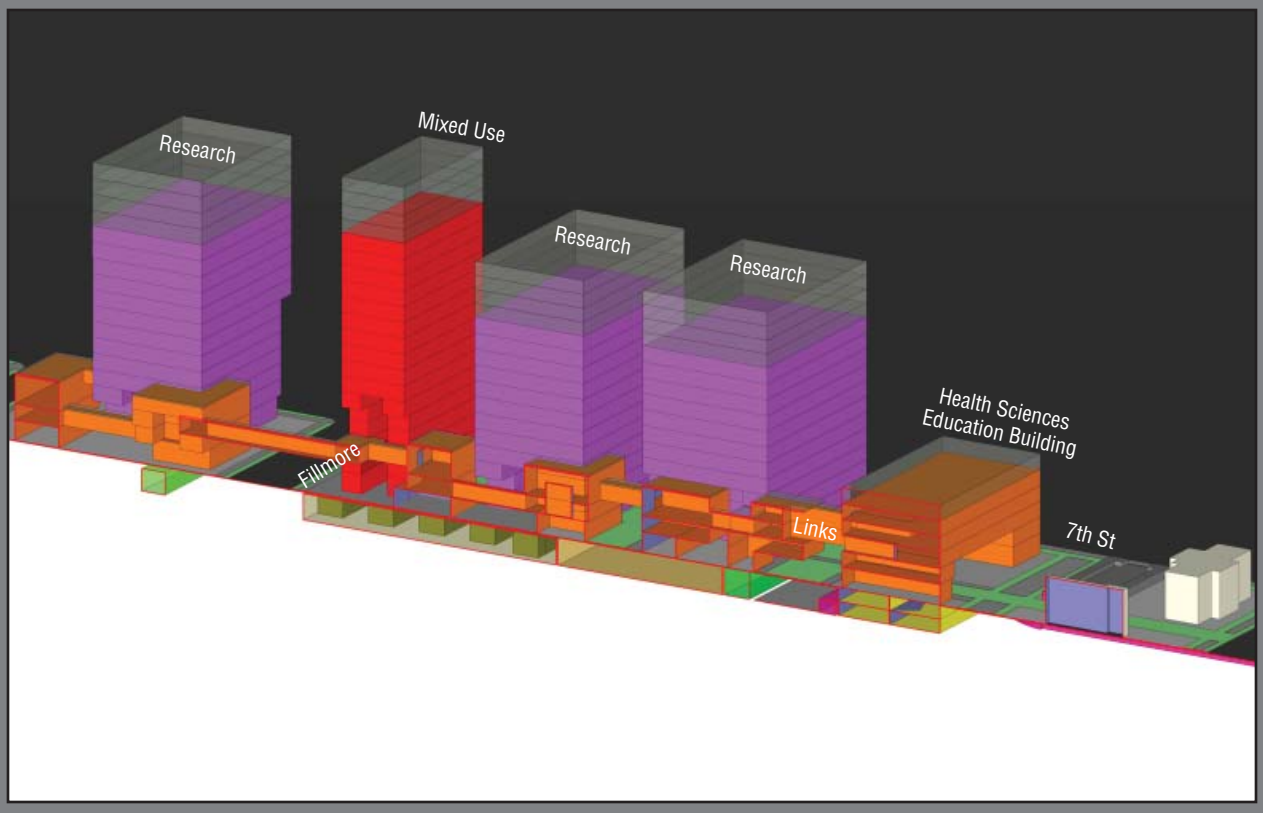


Planning Concepts

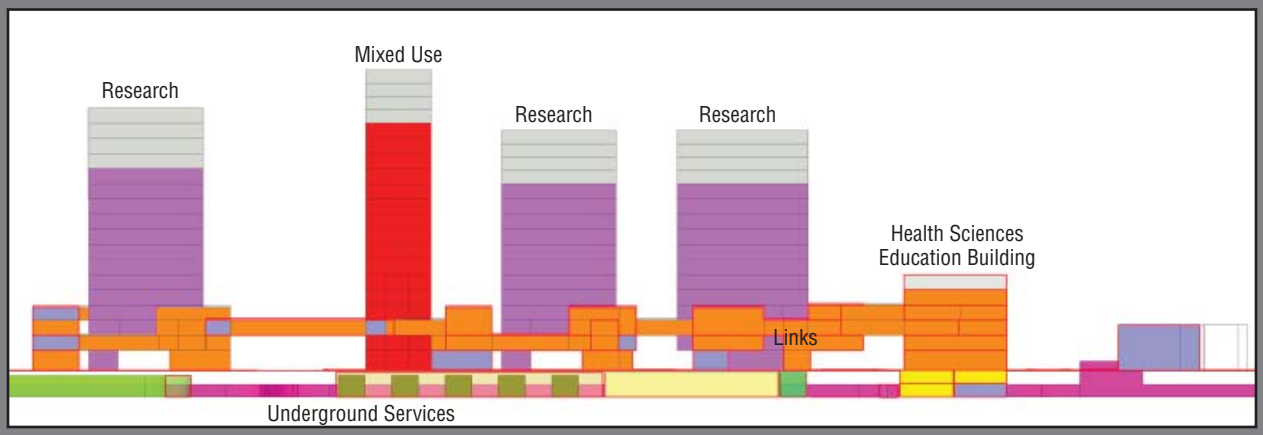


Section view south





Section view east



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Suite 701
Tempe, Arizona, 85281
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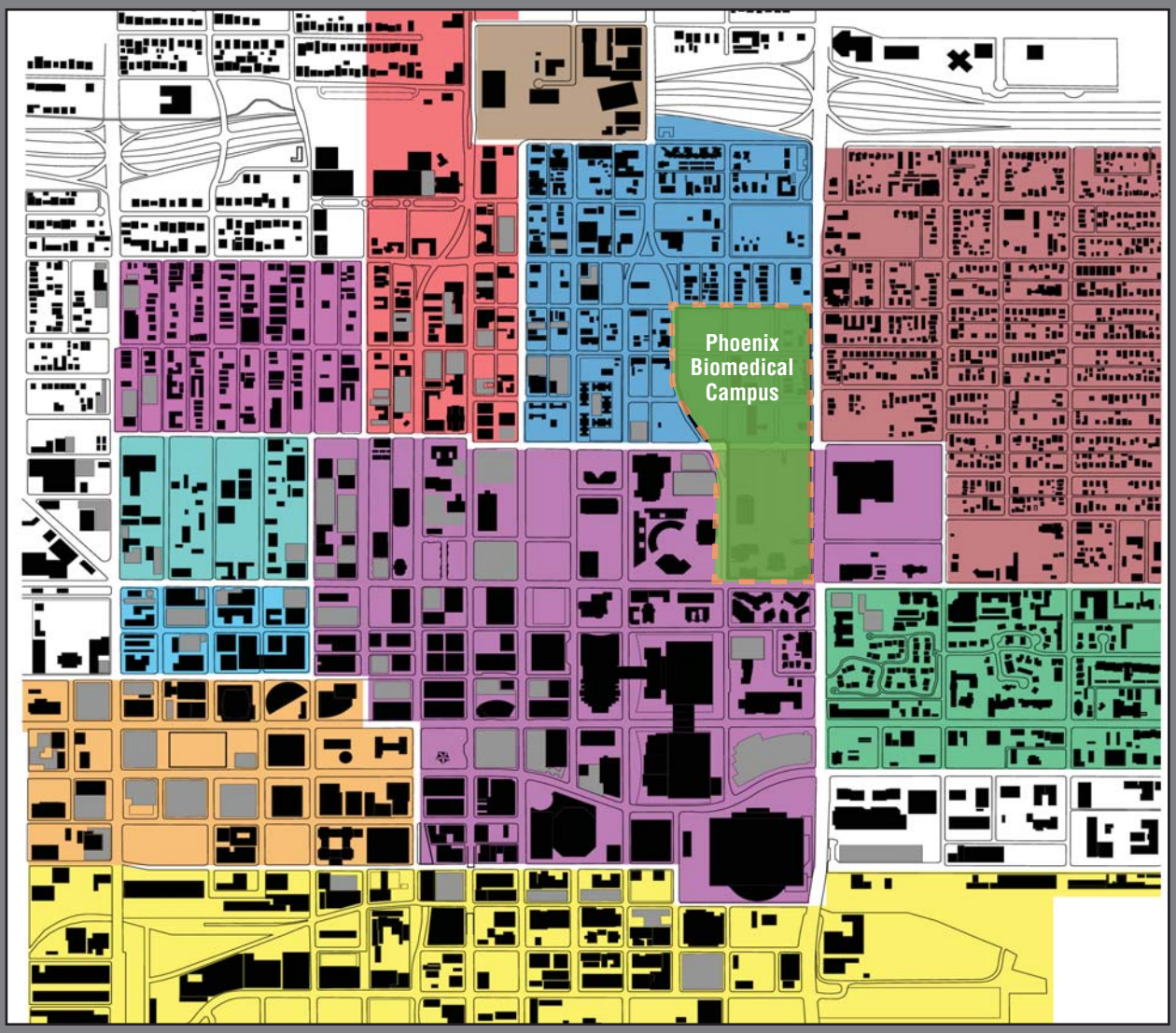
Phoenix Biomedical Campus

URBAN FORM

City of Phoenix Uses & District Map

The PBC occupies a critical area within the larger context of uses and neighborhoods in downtown.



- Central Corridor
- Arts South
- East Roosevelt
- Garfield Neighborhood
- Historic Roosevelt
- Historic Roosevelt Spd
- Fillmore West
- Monroe West
- Booker T. Washington
- Government Mall
- Warehouse

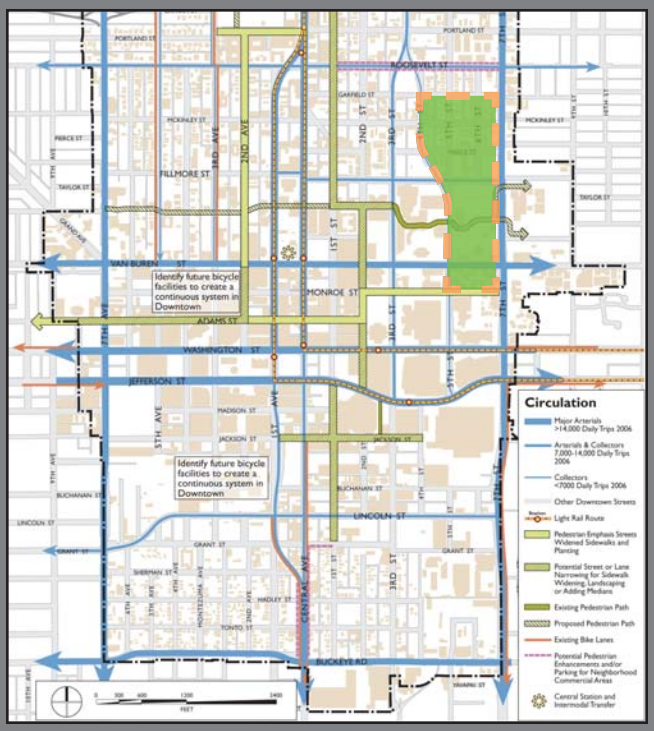
Urban Form & Overview

"The Downtown Phoenix Urban Form Project is a collaborative process to comprehensively revise downtown zoning – to shape future growth and to help realize the city's vision for a livelier, more integrated and sustainable downtown. The city has embarked on this project due to heightened development interest: a variety of residential, retail, and office projects are being proposed on vacant sites throughout downtown. The existing zoning is out of date and does not ensure that projects built will create an attractive downtown with shade, pedestrian-oriented streets and quality design. The zoning needs to be revised in order to achieve a great downtown that can be an exciting destination for the residents of Phoenix and the region.

The Urban Form Project is intended to establish the rules that will guide downtown as it continues to develop and transform. The actual transformation of downtown depends primarily on the initiative of the private sector and will be driven by market demand for housing, office, hotel, and retail. The city plays a key role by investing in streets, parks, art, and other improvements and by assisting critical "catalyst" projects such as the ASU Downtown Campus and the Phoenix Biomedical Campus.

The study area contains about 1,500 acres, roughly bounded by Seventh Avenue and Seventh Street, McDowell Road to the north and Buckeye Road to the south. The geographical heart of the city, the study area includes a business improvement district of 90-blocks in the core of downtown, where the majority of the area's office, convention, cultural, university, biomedical, entertainment and government uses are located. The study area also encompasses residential neighborhoods, historic districts, unique arts districts and many vacant and underutilized areas surrounding the downtown core that offer outstanding opportunities for continued growth. Finally, the area also is home to METRO, the region's new light rail system set to debut in late 2008".

City of Phoenix Planning Department, 2008.

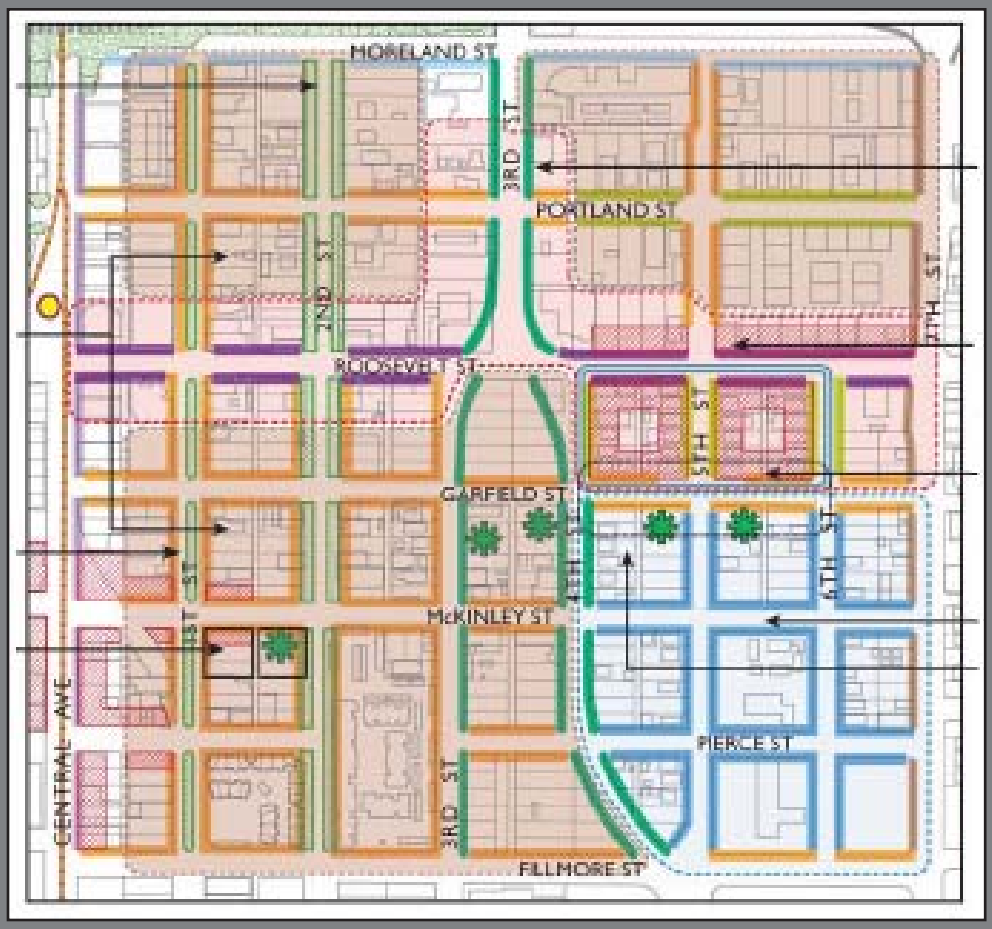


Urban Form & PBC

Urban Form and PBC

The goals of the Urban Form Project and the resulting built environment are very closely aligned with the vision for the PBC. The Comprehensive Master Development Plan, as presented, specifically addresses development in response to the Urban Form project in the following ways:

- Development of perimeter streetscape treatment (as described in the following diagrams). The designation of streetscapes and related open space reinforce campus identity.
- North to south continuity of 6th St. north of Fillmore as a pedestrian oriented route. This alignment corresponds to and extends the constructed spine south of Fillmore.
- East to west connections across the site at multiple points. These pedestrian routes connect with existing cross walks or street loctions and further integrate the campus into its context.



Commercial Zone on 3rd St. frontage instead of R-5 / HR-1

On-street parking during off-peak hours to serve retail

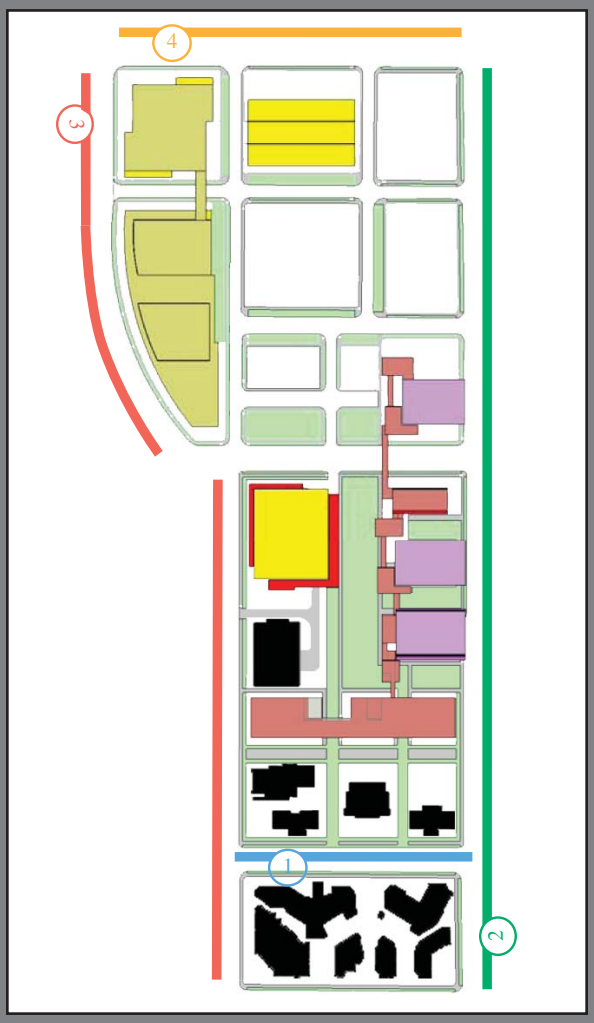
Height transition between Bio Medical and smaller scale residential / mixed use structures

New Bio Medical District Zone

Include public parking that also serves retail, restaurants, and galleries

Street Scape Configurations & Locations

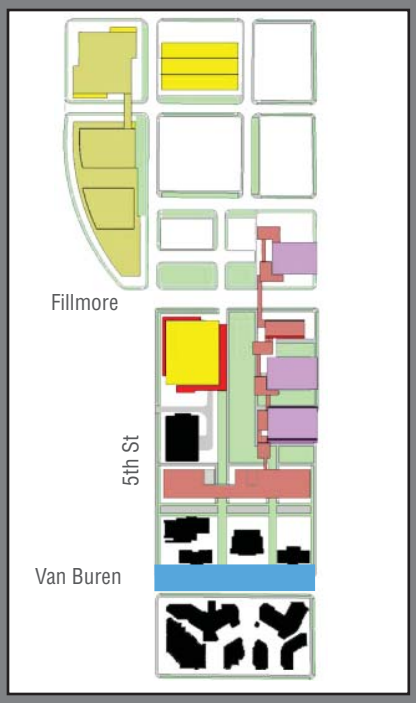
Proposed Street Scape development at the campus perimeter



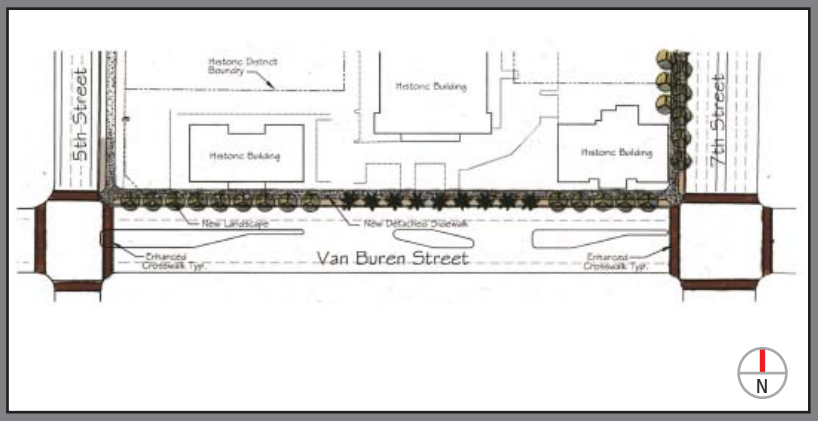
Legend - Street Scape

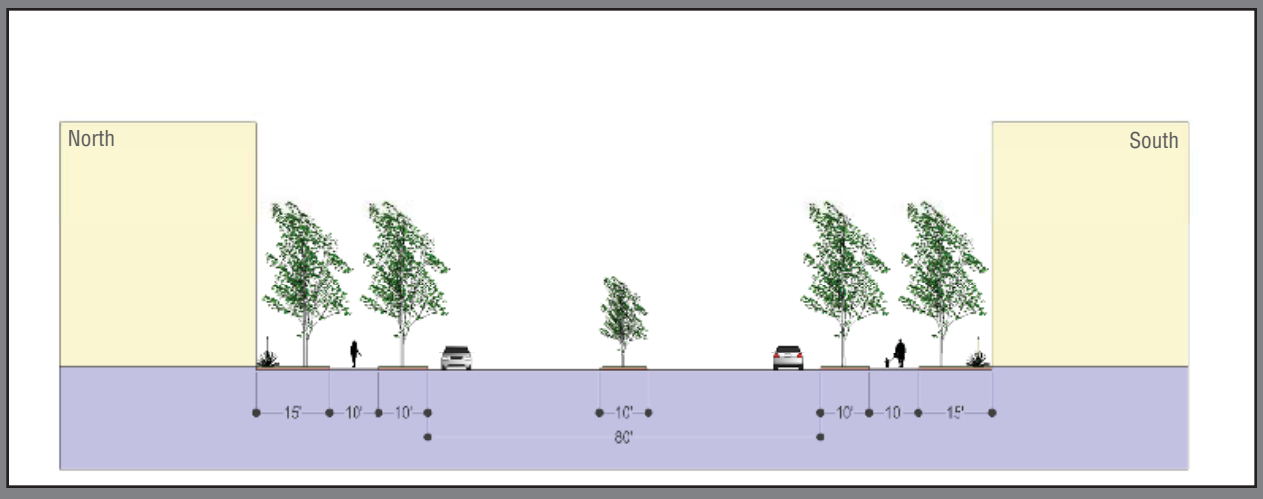
See following pages for configurations

Configuration 1



Van Buren Street Enhancements

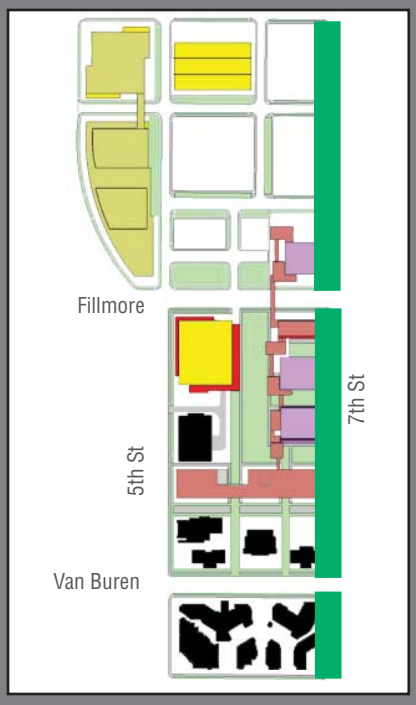


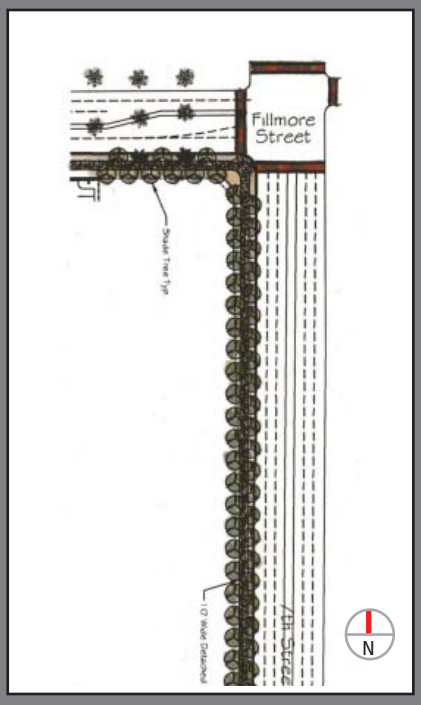


Arterial

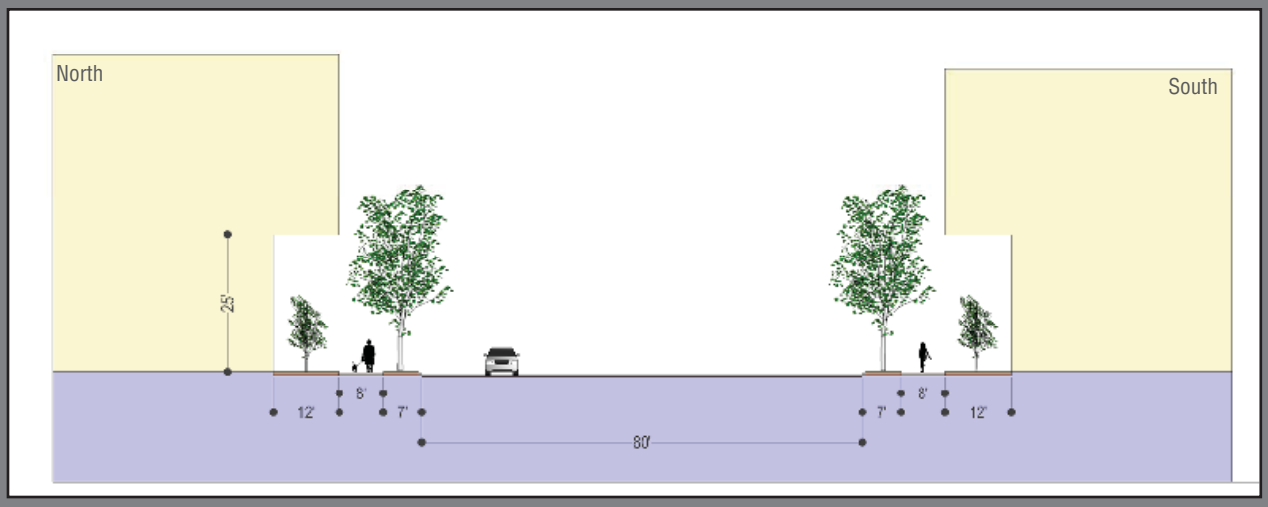
1

Configuration 2





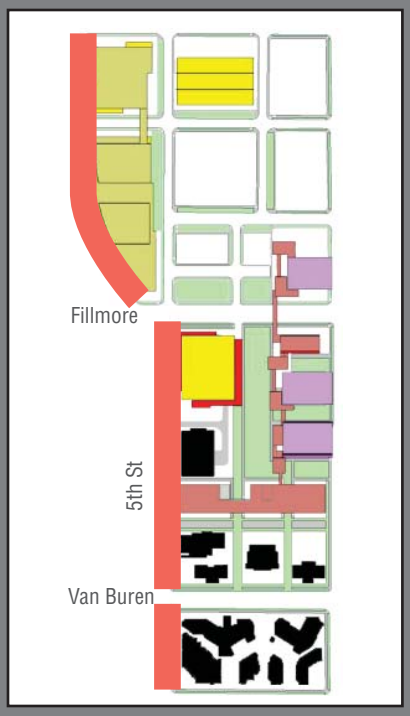
7th Street Enhancements



Arterial

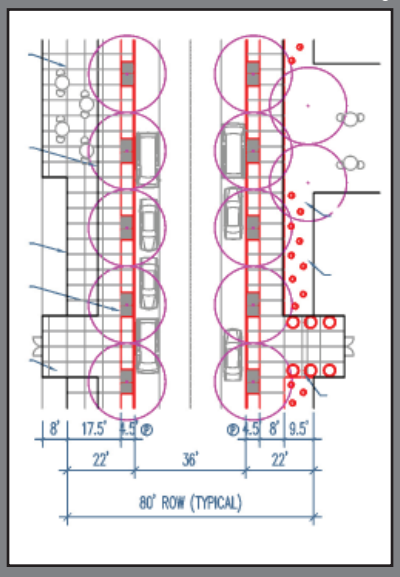
2

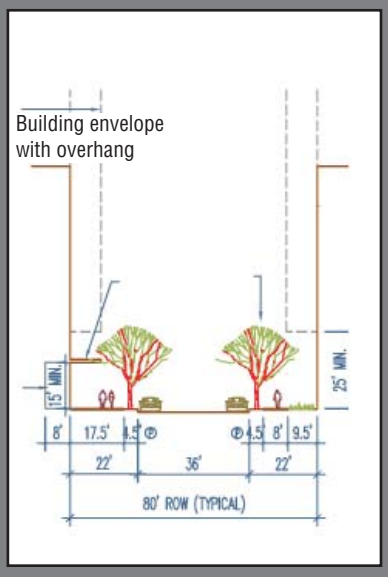
Configuration 3

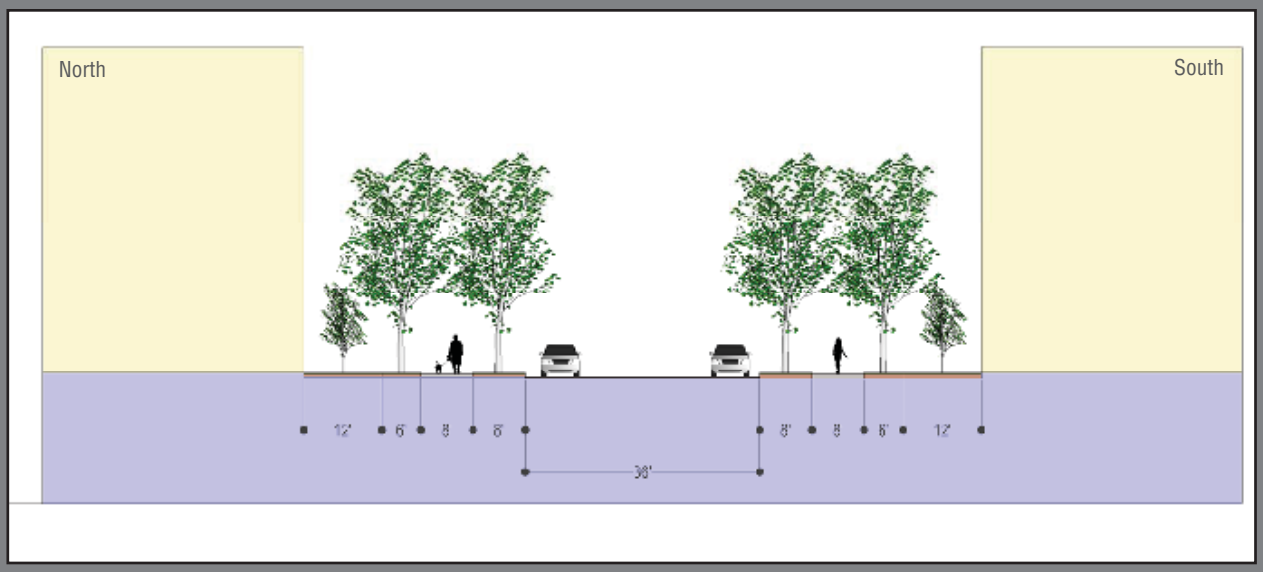


Option -
Wide sidewalk

Option -
Sidewalk & Planting



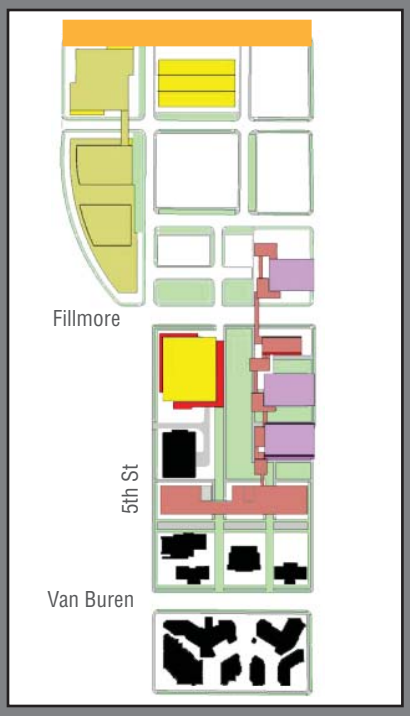


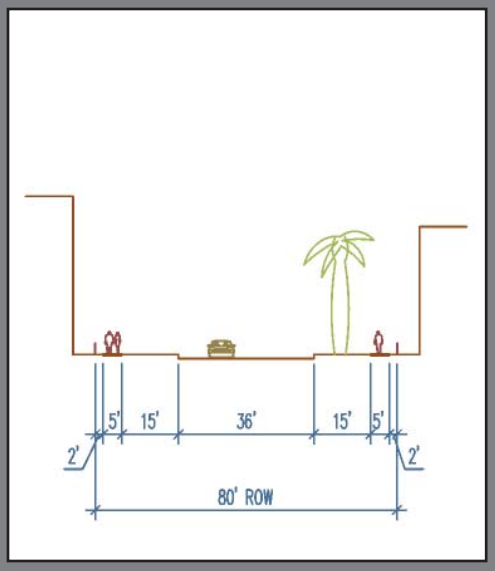


Collector

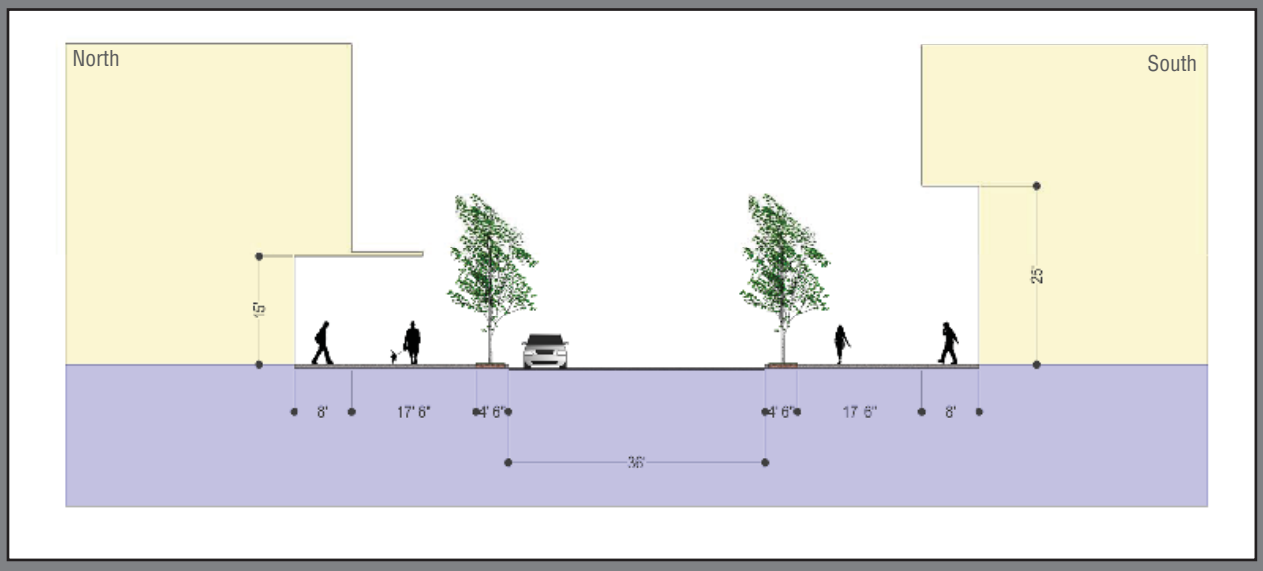
3

Configuration 4





Existing (Typ.)



Local

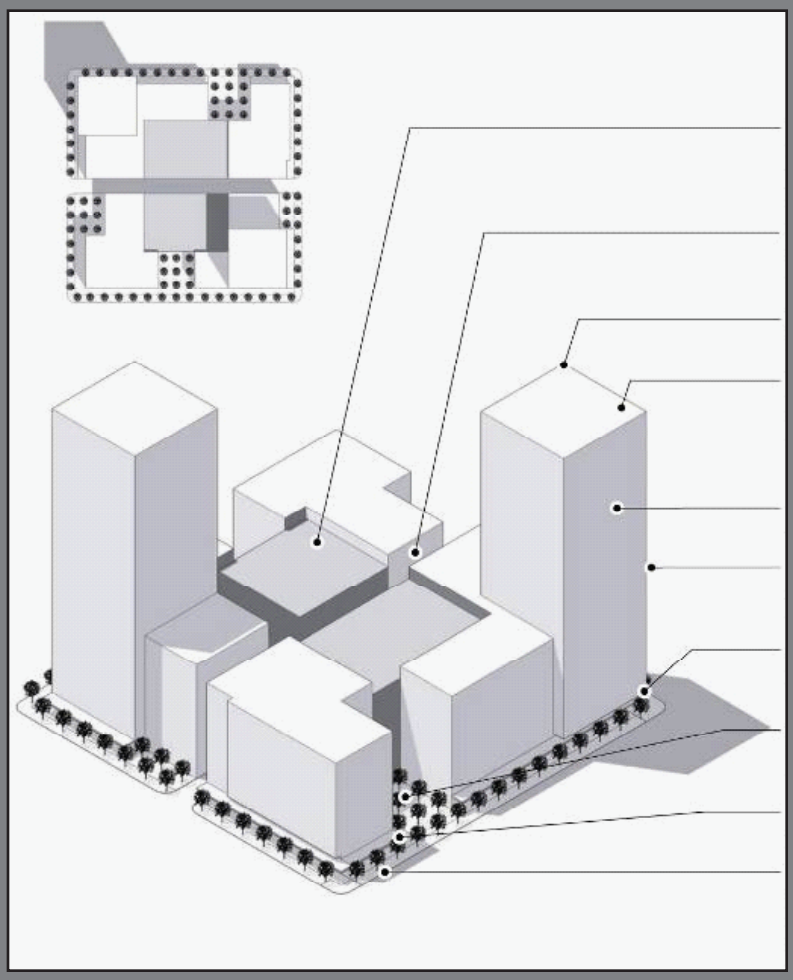
4

Urban Form & Building Development

Urban Form & Building Developement with Campus Street Scape

The Comprehensive Campus Plan also responds to the intent and goals of the Urban Form Project by including the following provisions:

- Increased building density (including height) with active functions at the building ground planes.
- Increased variety of user types within building programs to increase urban vibrancy.
- Building massing and height orchestrated across the campus to act as a transitional zone between the residential areas and the downtown core.
- Preserving the street pattern north of Fillmore subject to clinical uses.



Parking located behind buildings, not visible from the street, reduced parking requirements

Use alleys for secondary garage access, max. 1 street curb cut per side

Building height as per existing code 250'

Tower dimensions: Max. 100' - 200', set back from interior property lines, min. 60' separations

Towers @ 50% lot coverage, per existing code

Allow 80% lot coverage for building base, base height up to 8 stories: 95' - 100'

Bay windows and balconies overhang into right-of-way for shade

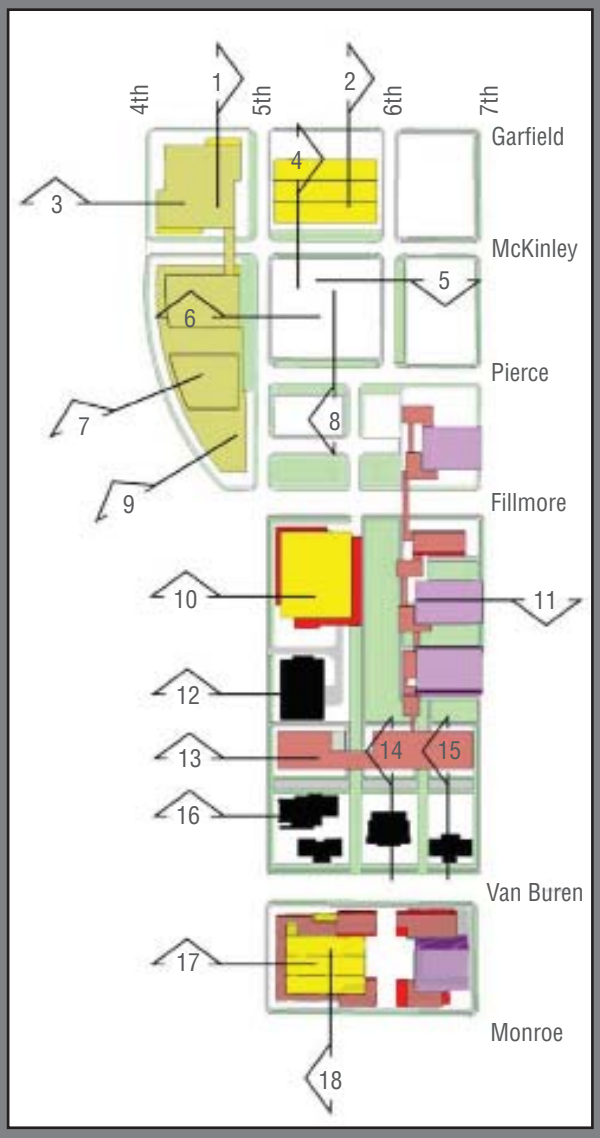
Plazas and courtyards visible and accessible from the street, min. 10% of site

Shade canopy over right-of-way

Sidewalks, landscaping, and front-yard setback requirements prescribed for each street, flexibility allowed instead of rigid 'build-to' line

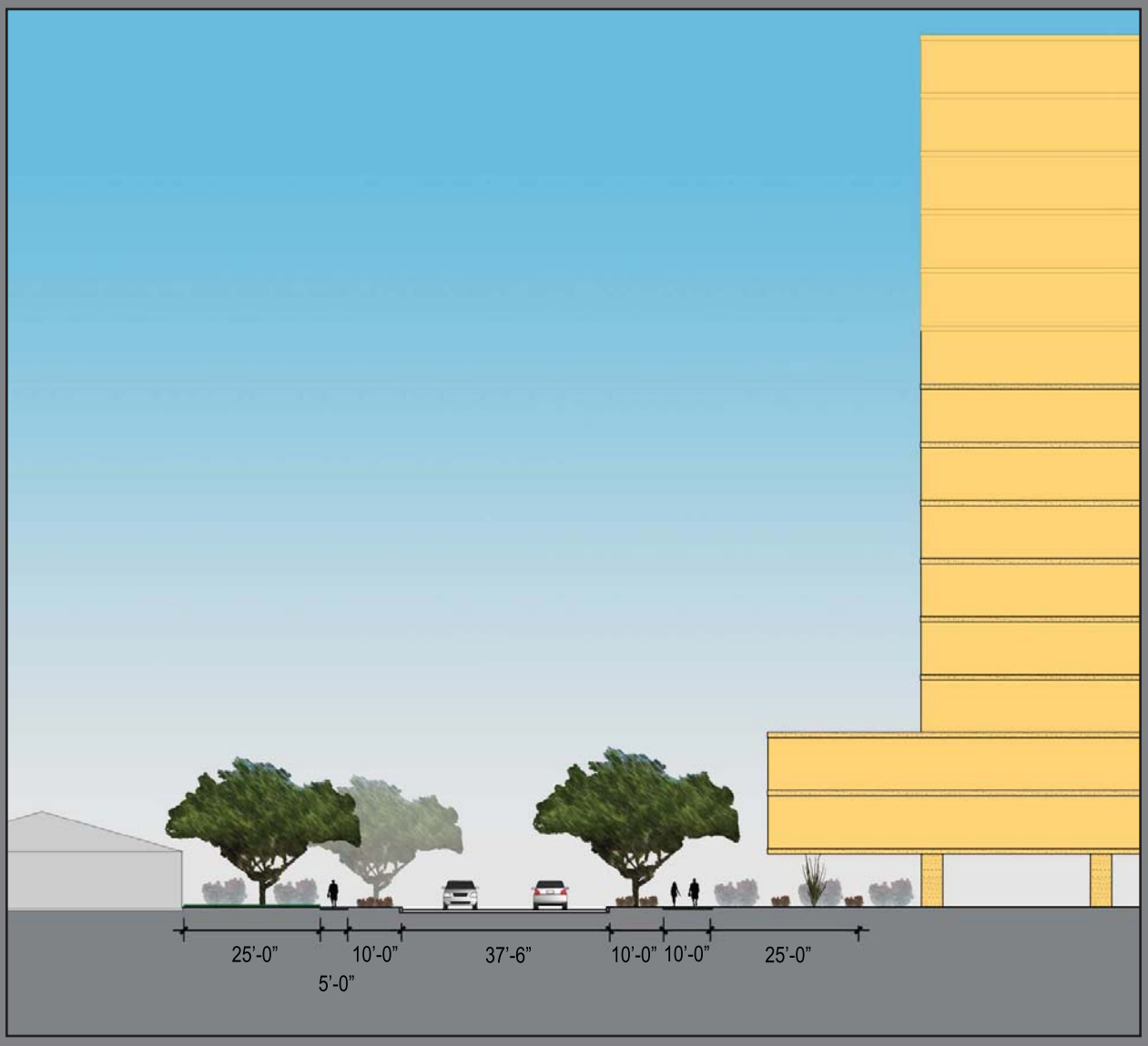
Street Section & Building Profile Concepts

Key Plan

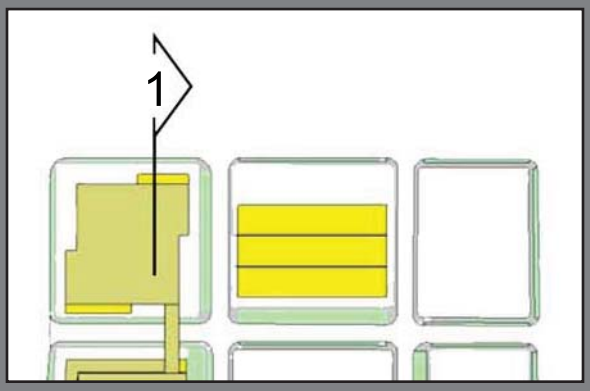


1 - Garfield at Hospital
2 - Garfield
3 - 4th Street
4 - McKinley
5 - 6th Street
6 - 5th Street
13 - ABC 2
14 - CoM 2
15 - CoM 3
16 - ABC 1
17 - Mercado
18 - Monroe
7 - Hospital Tall
8 - Pierce
9 - Hospital Short
10 - Parking
11 - Research
12 - TGen

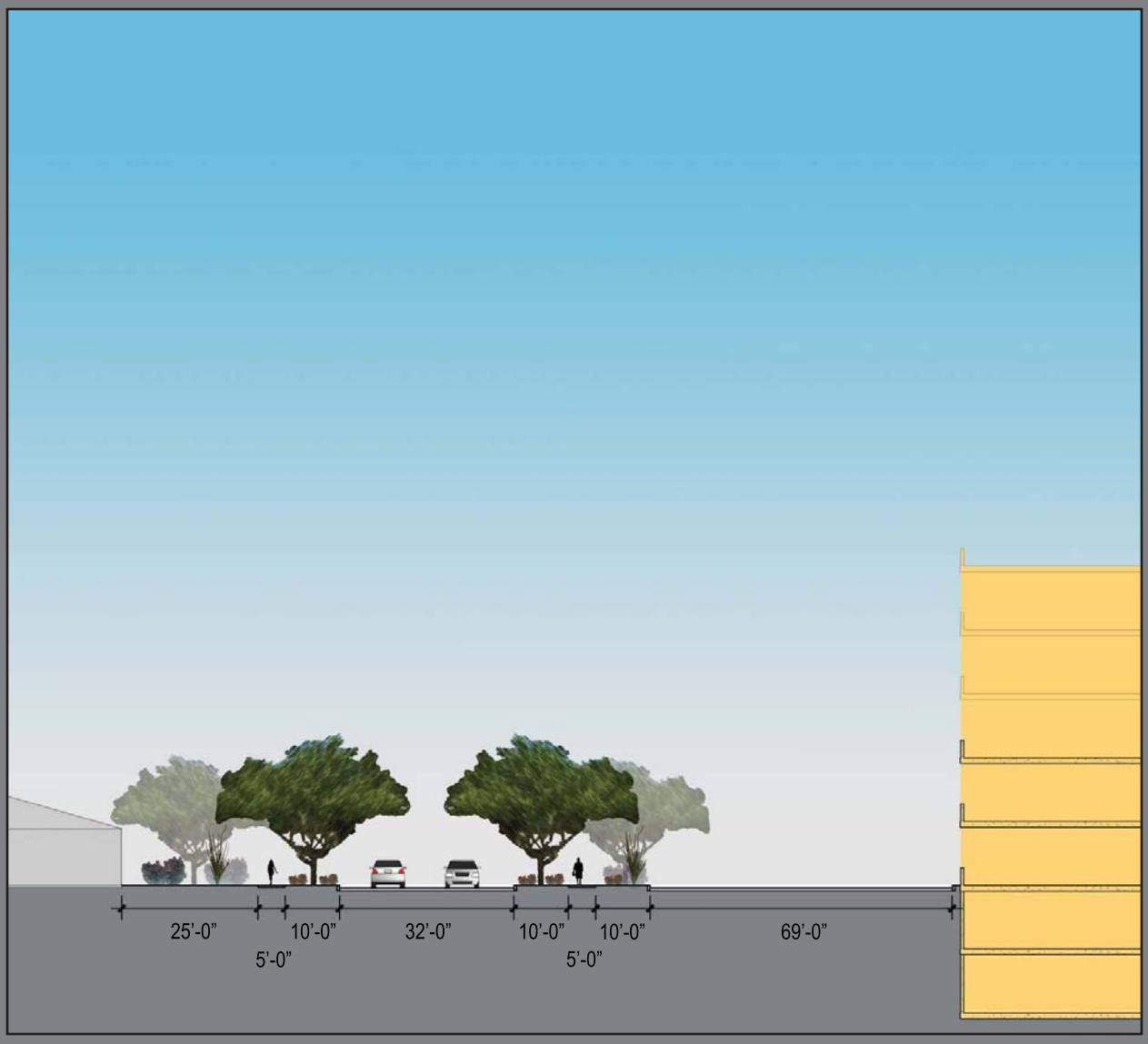
Section 1



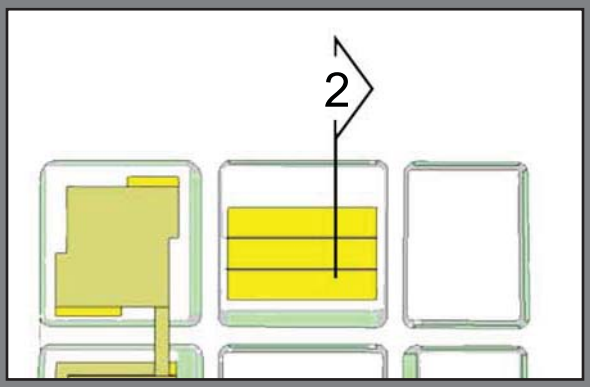
Garfield at Hospital



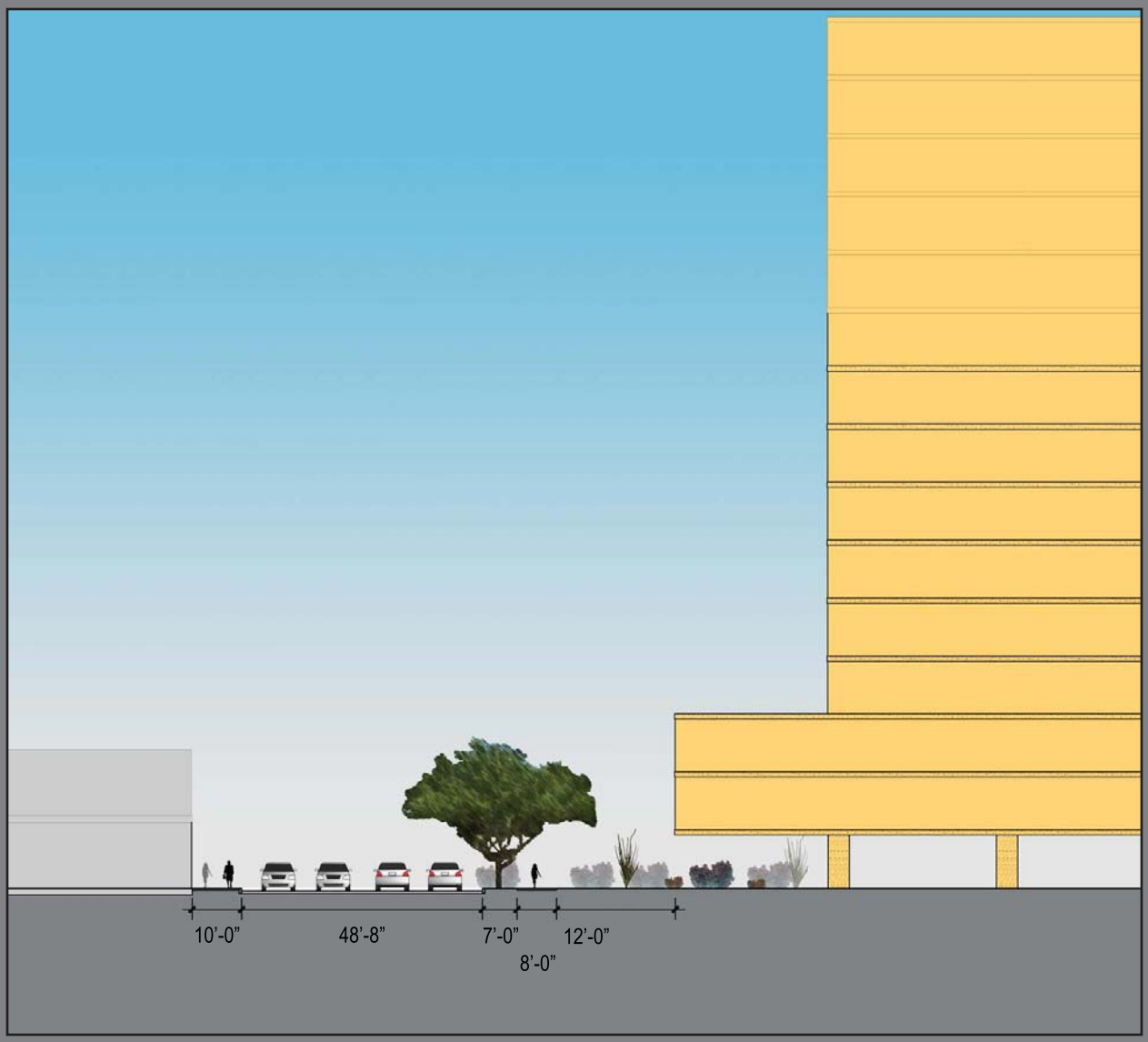
Section 2



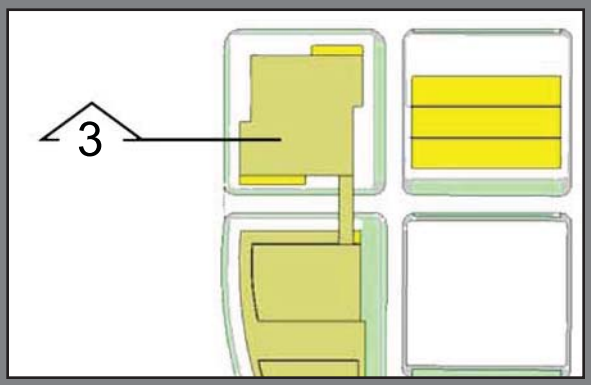
Garfield at Parking Garage



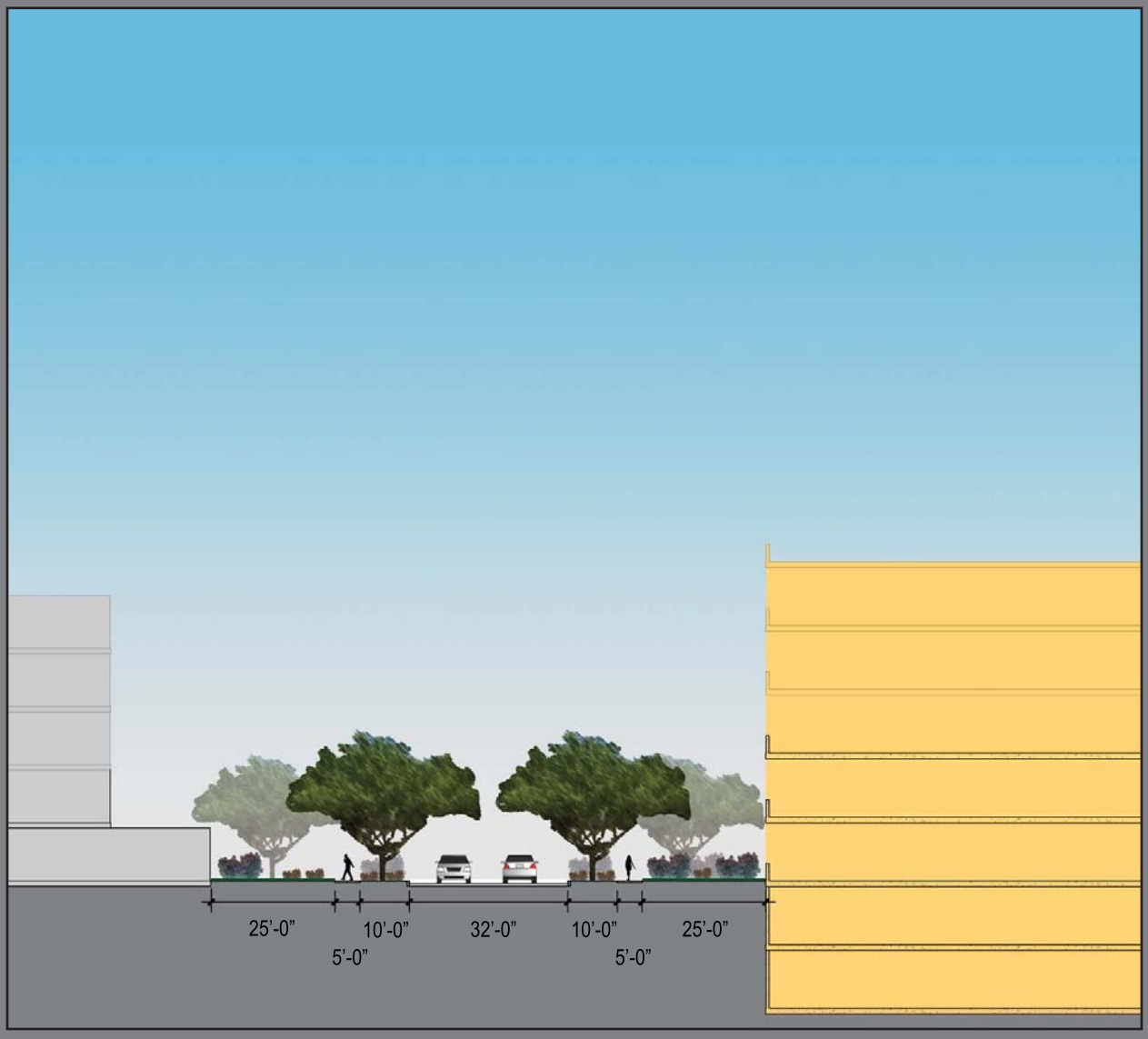
Section 3



4th Street at Hospital

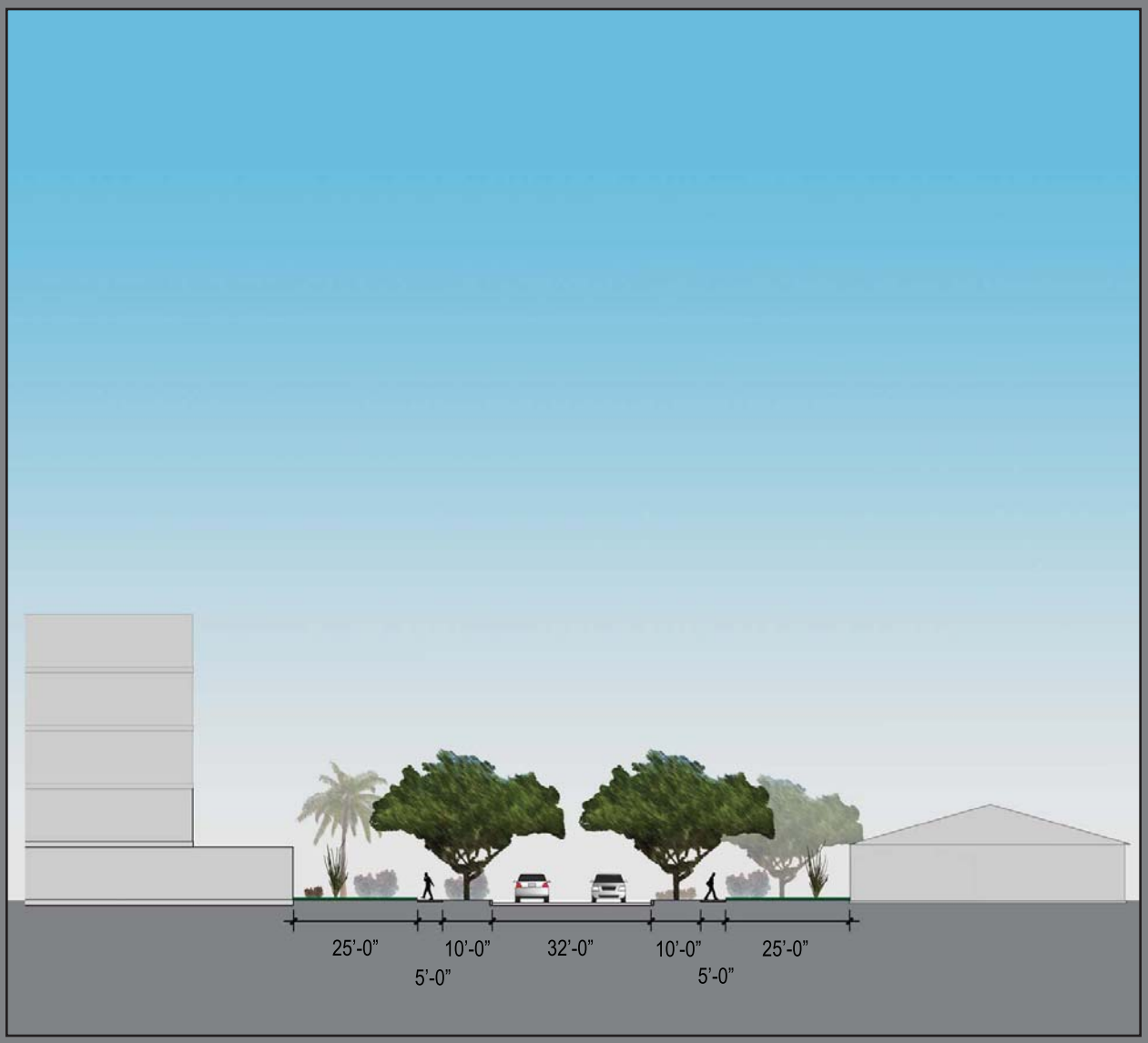


Section 4



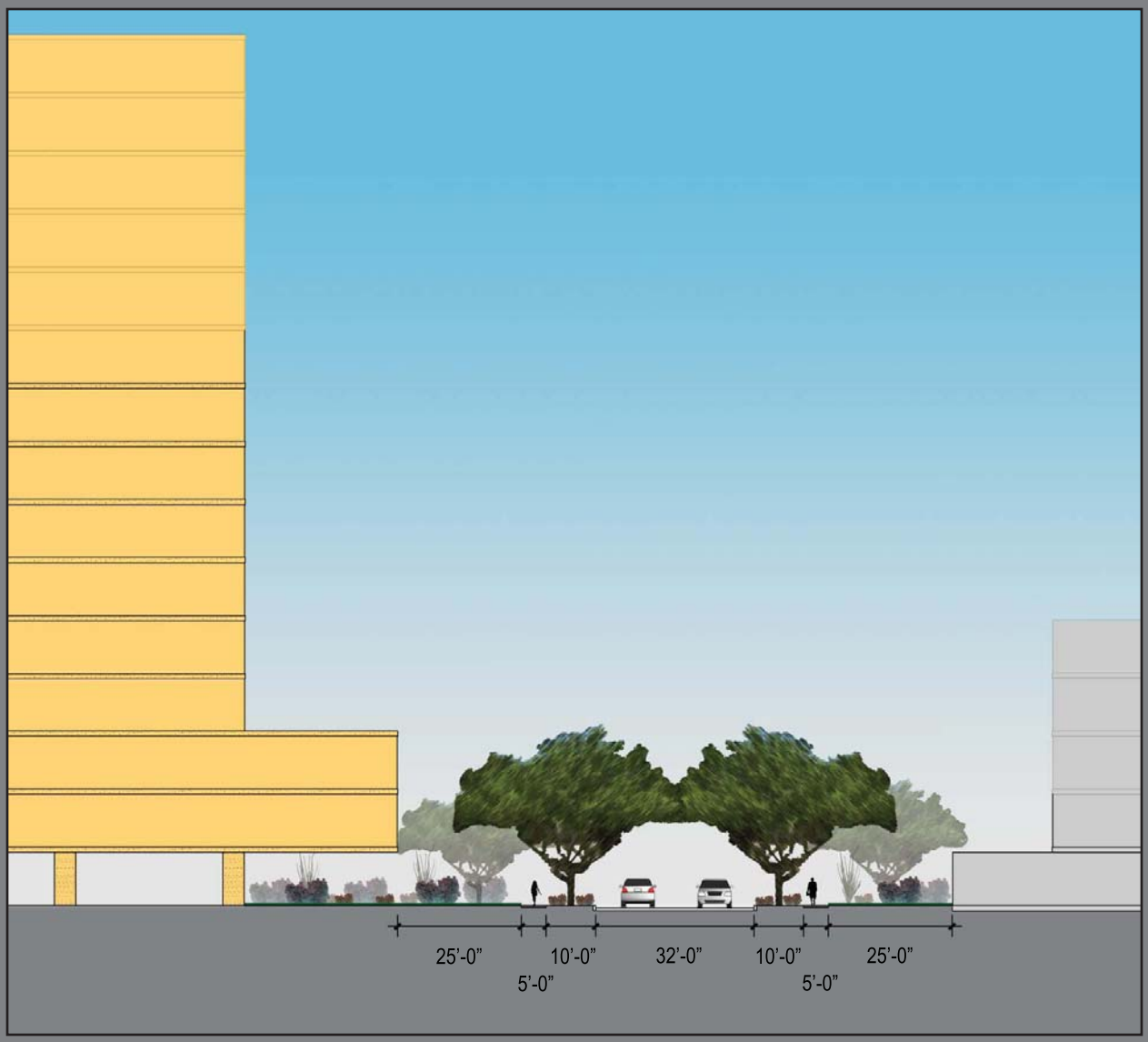
McKinley at School

Section 5

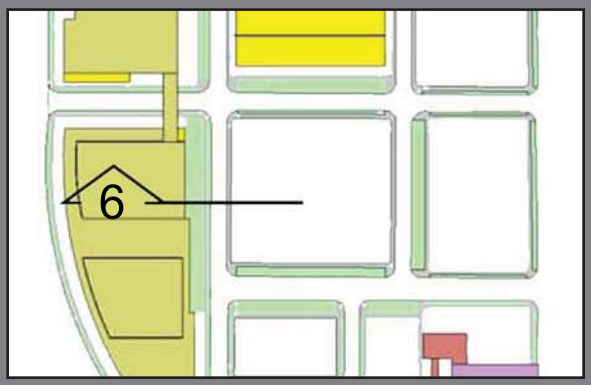


6th Street at School

Section 6

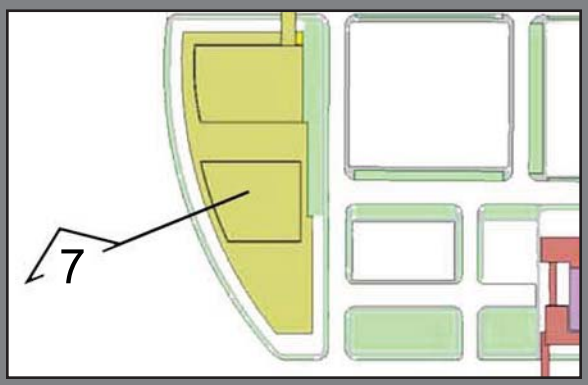


5th Street at School



Section 7

5th Street at Expansion



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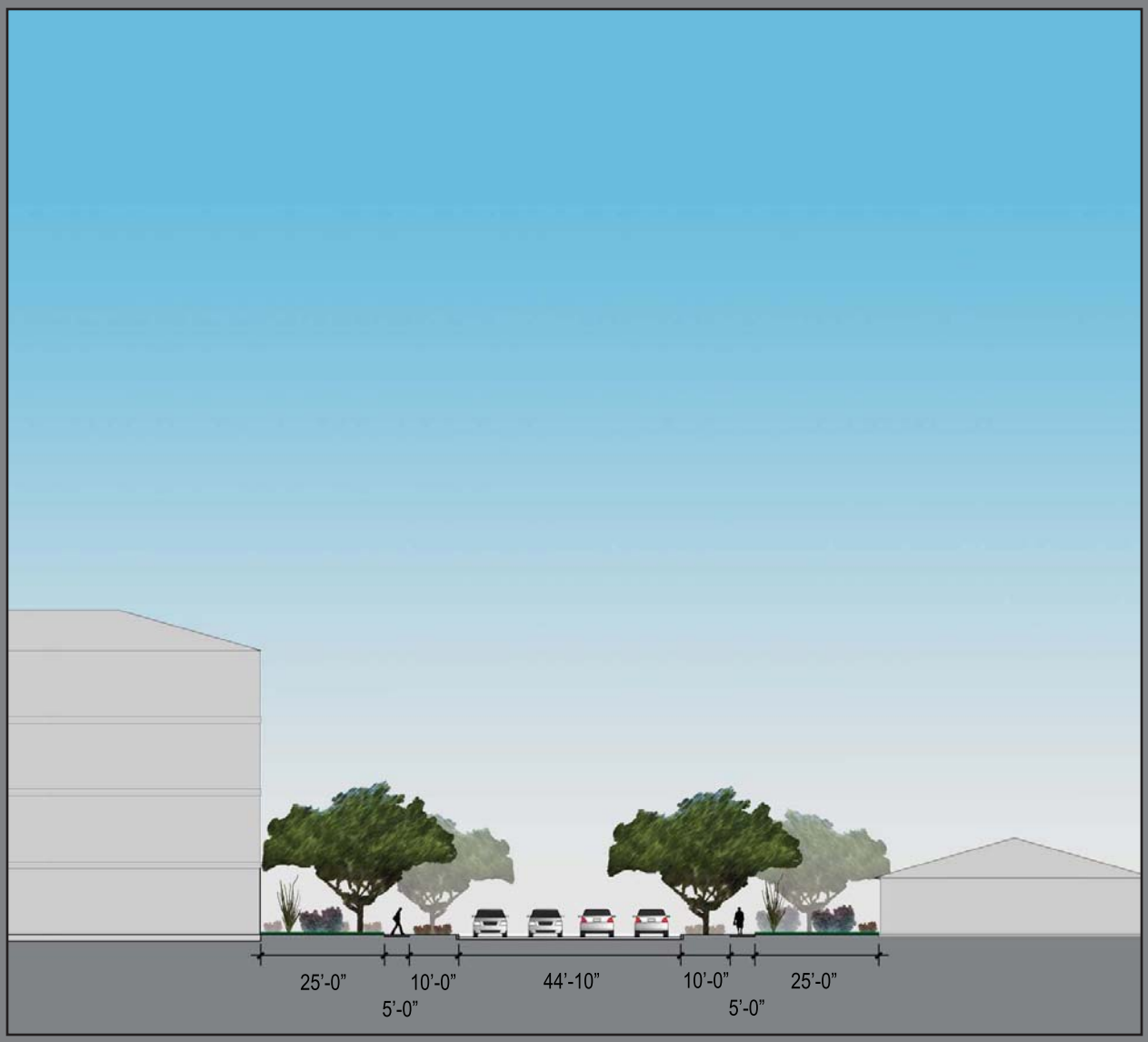
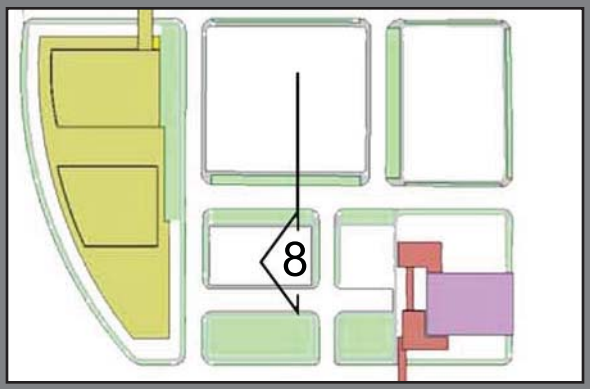


Pierce at Hotel

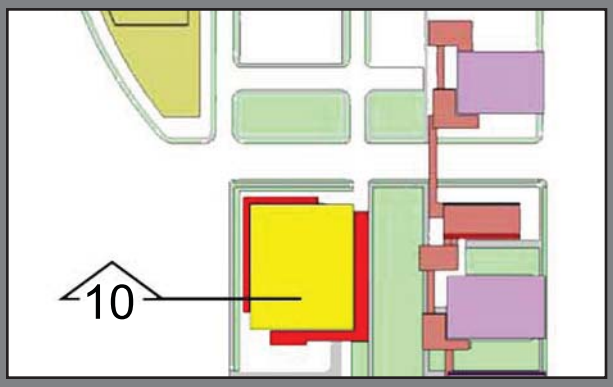


Section 9

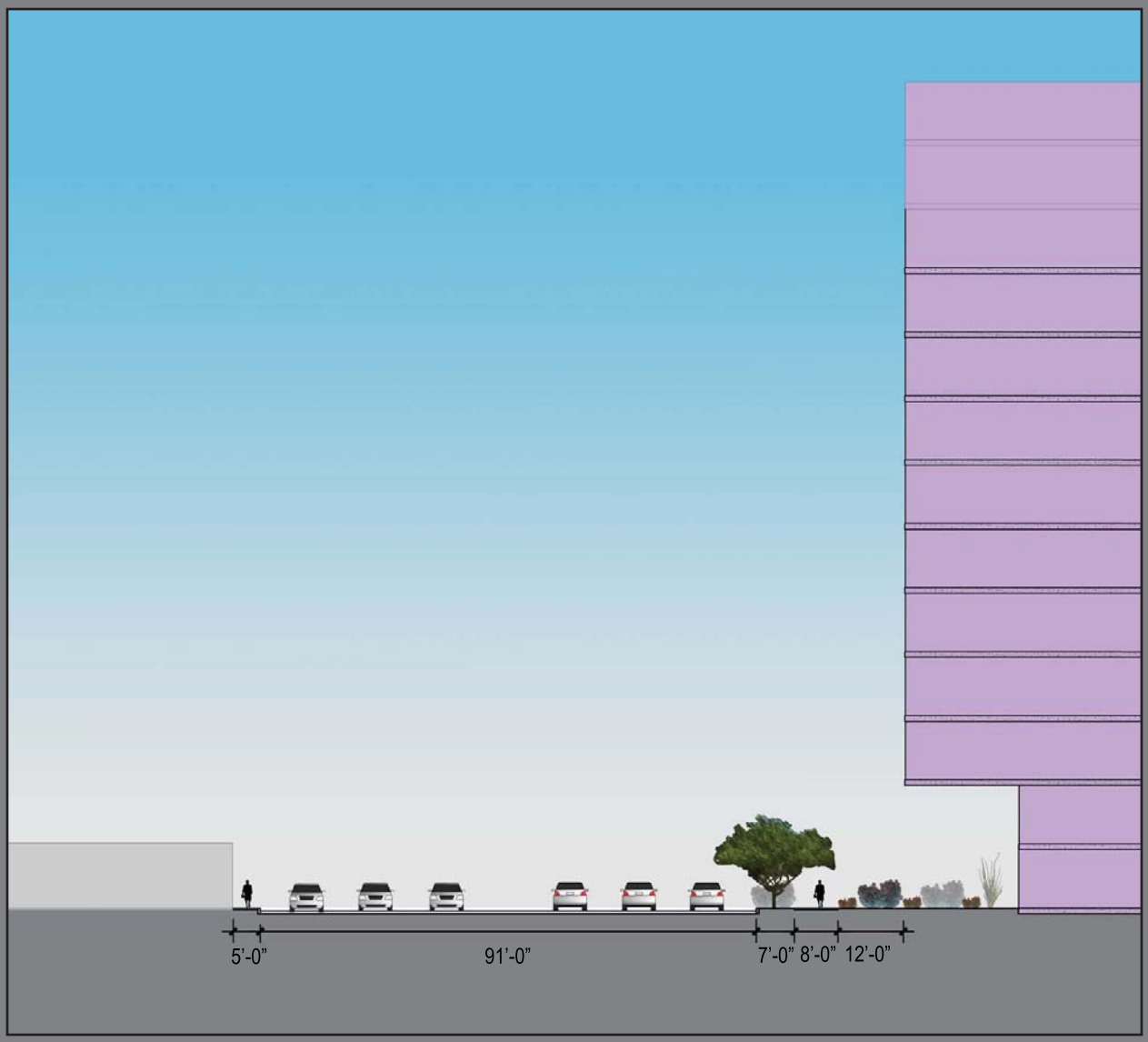
5th Street at Expansion

Section 10

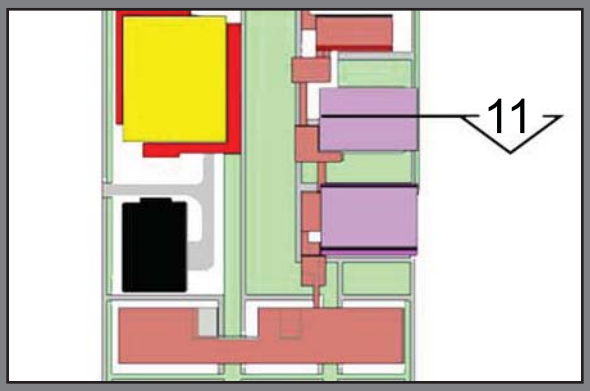
5th Street at Parking



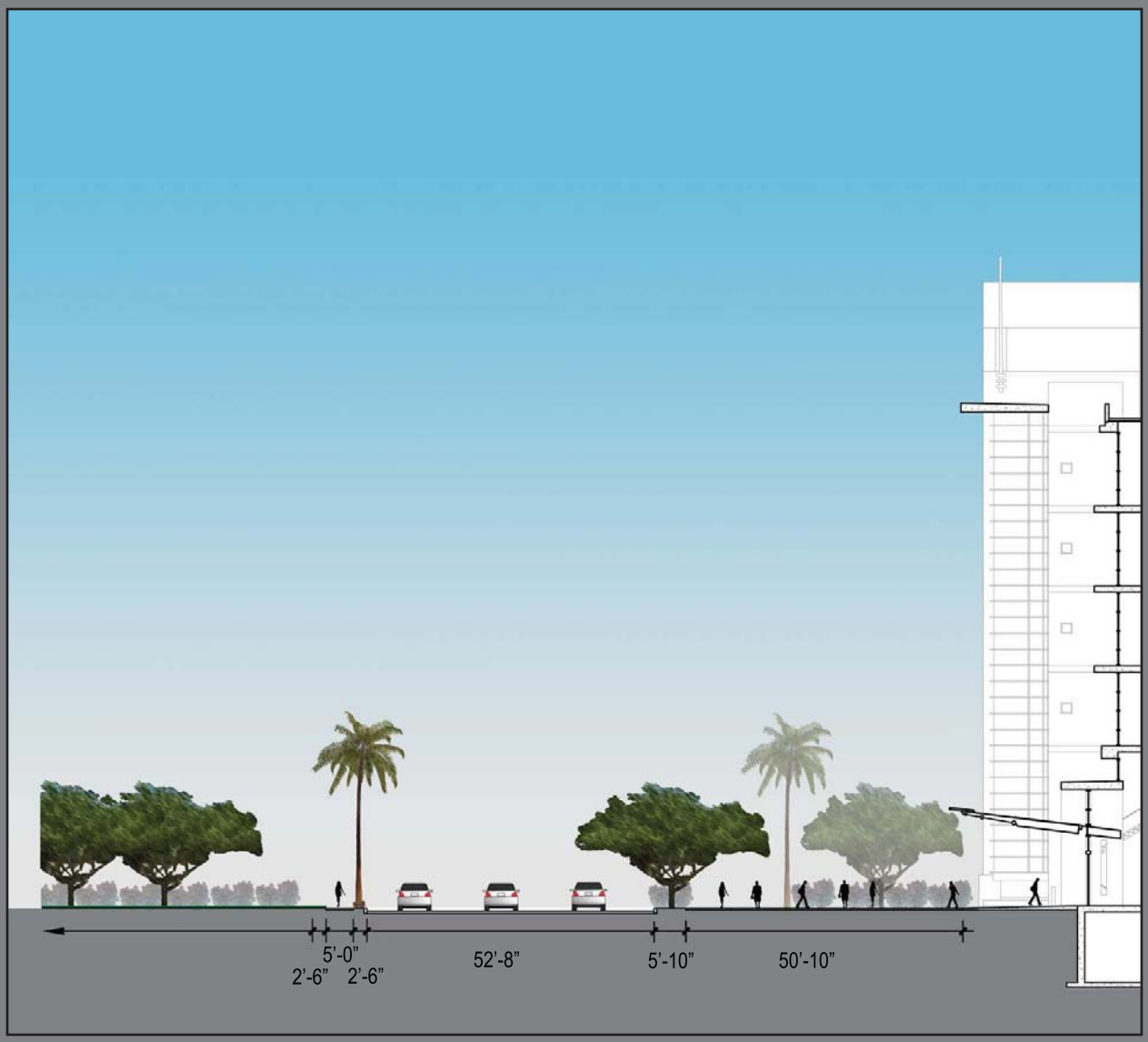
Section 11



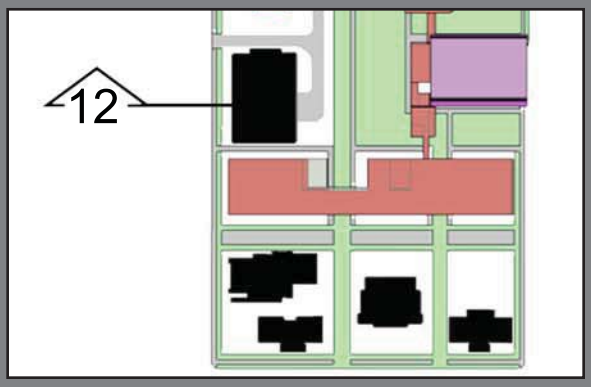
7th Street at Research



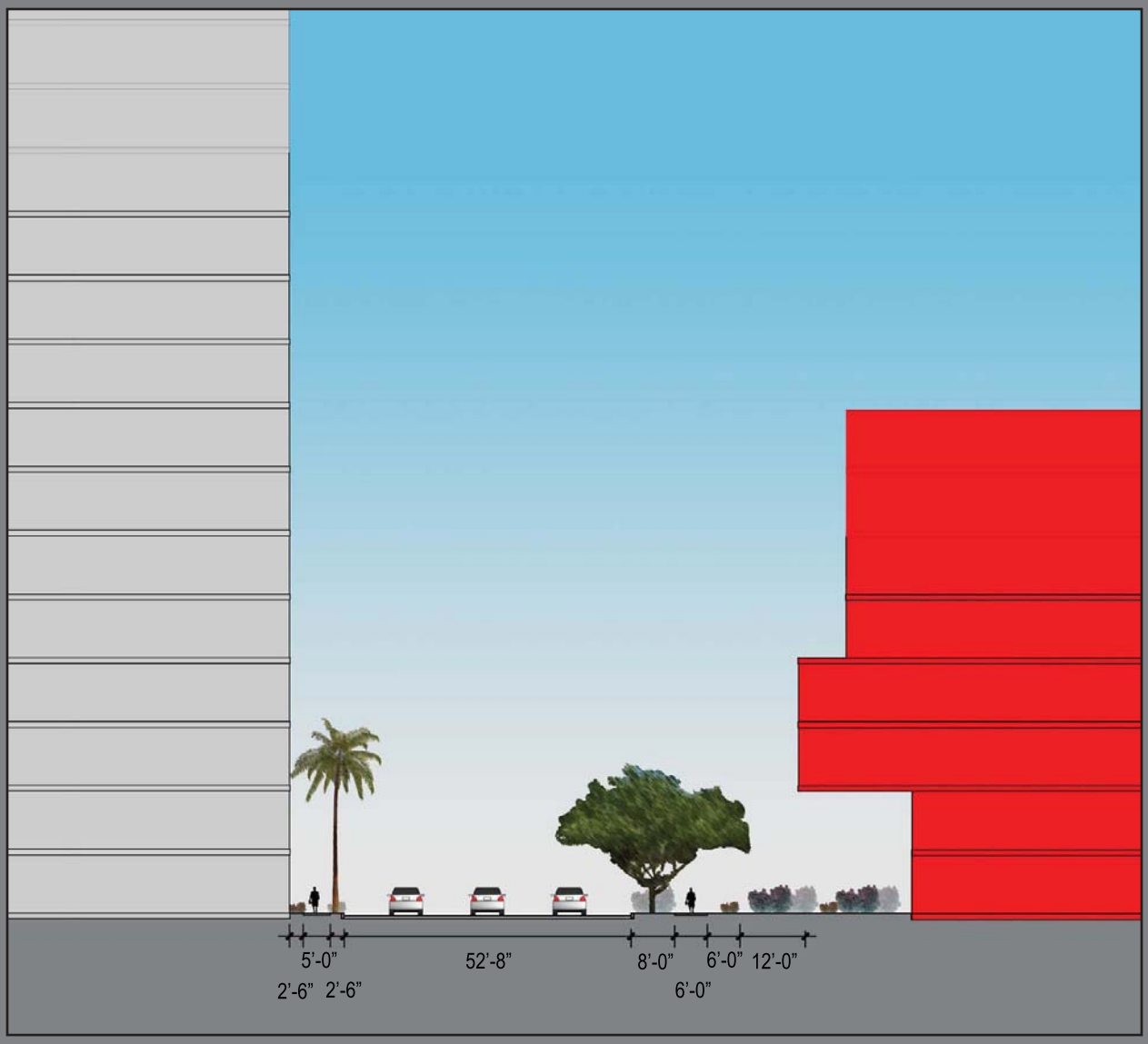
Section 12



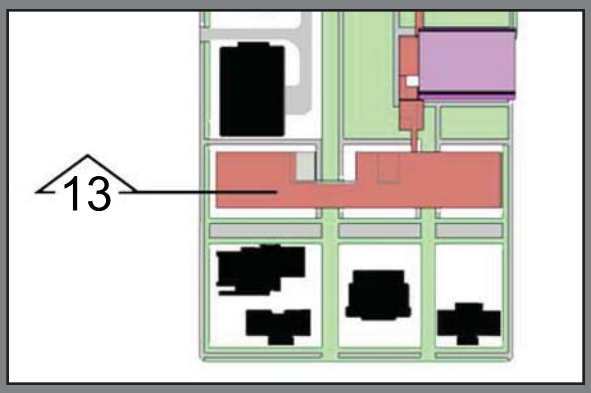
5th Street at T-Gen



Section 13

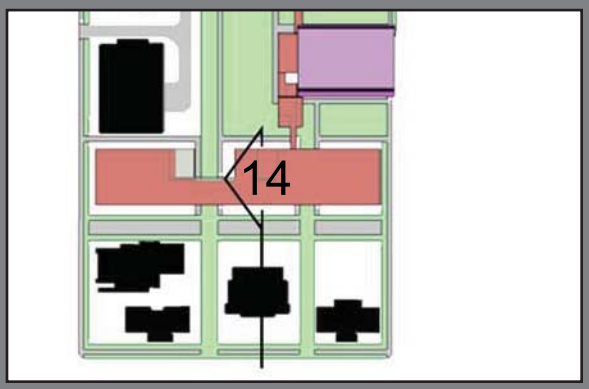


5th Street at ABC 2

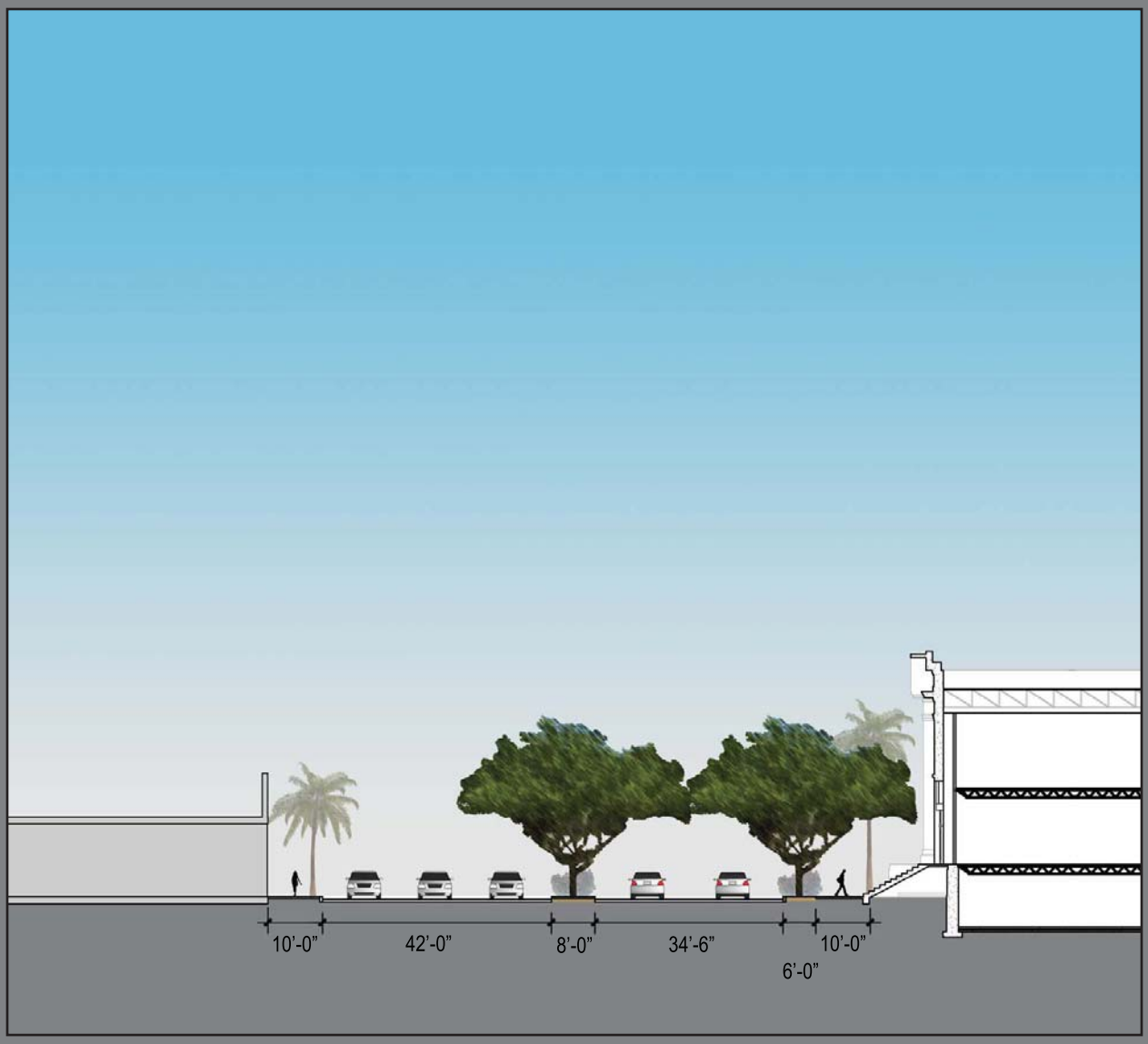


Section 14

Van Buren at CoM 2



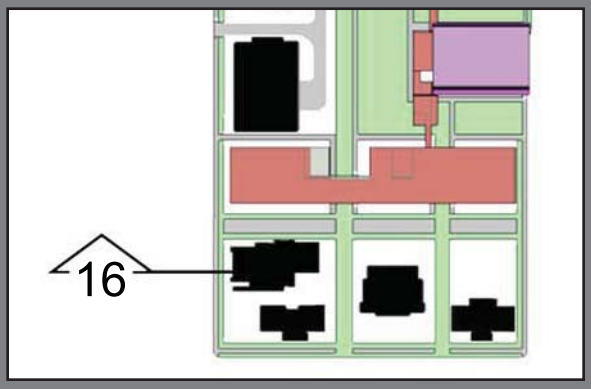
Section 15



Van Buren at CoM 3

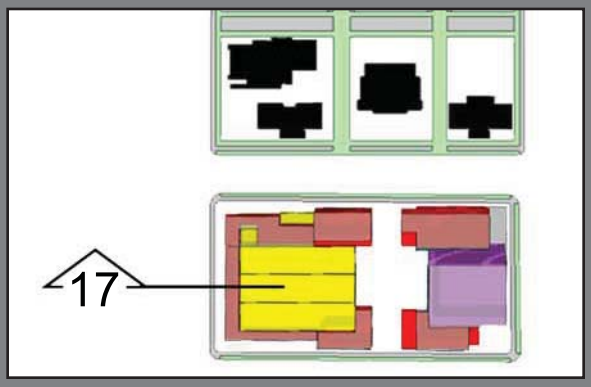
Section 16

5th Street at ABC 1

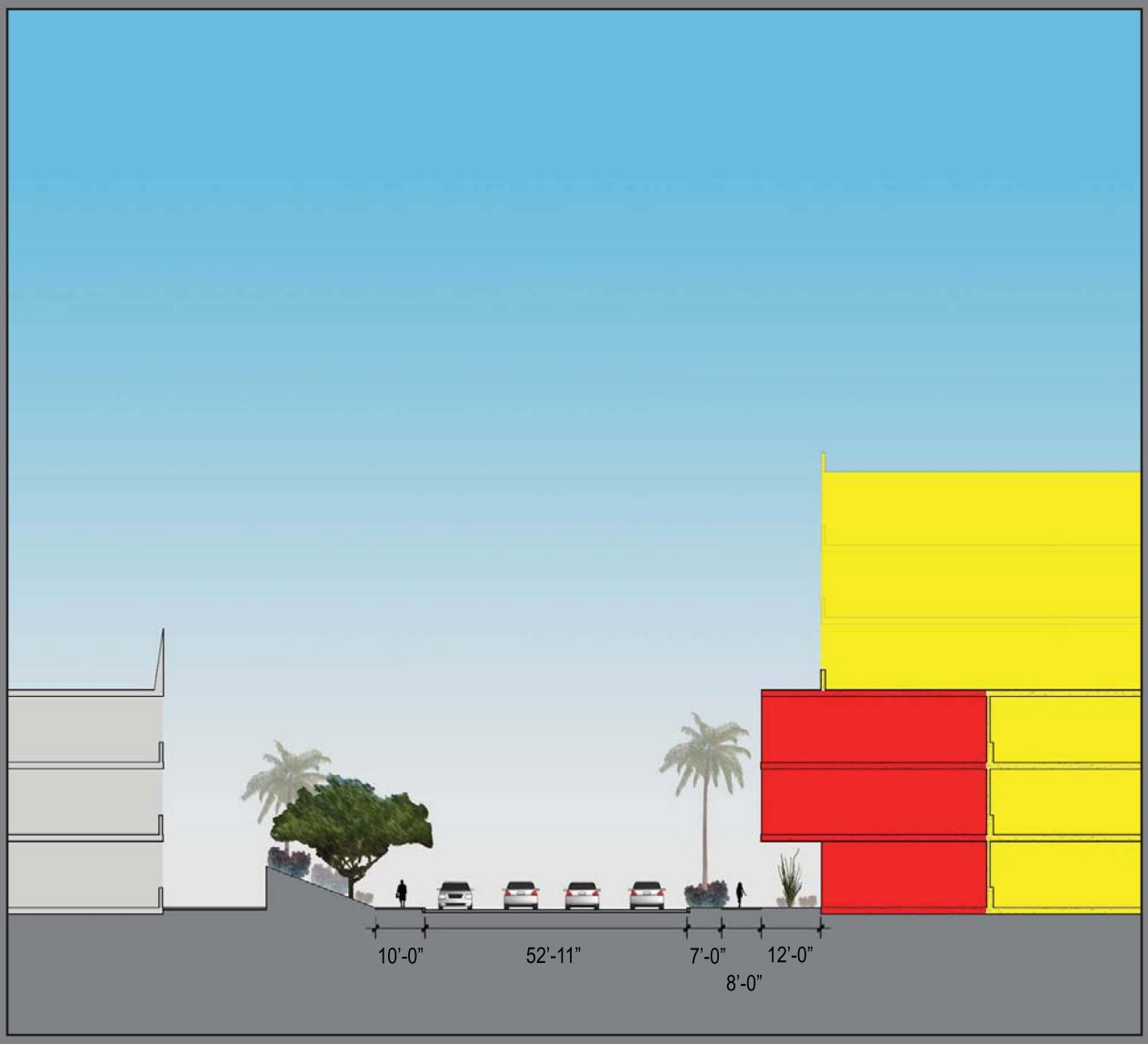


Section 17

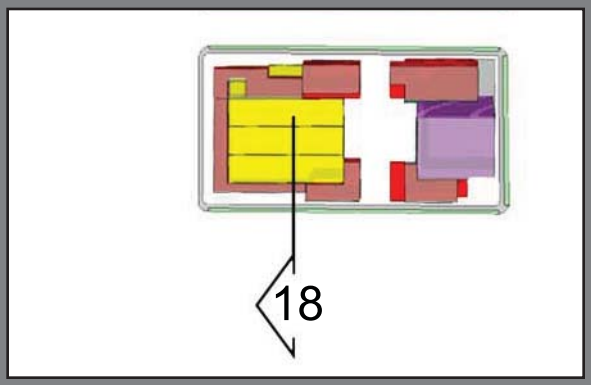
5th Street at Mercado



Section 18



Monroe



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Phoenix Biomedical Campus

PARKING & TRAFFIC

Parking Summary

Current Usage

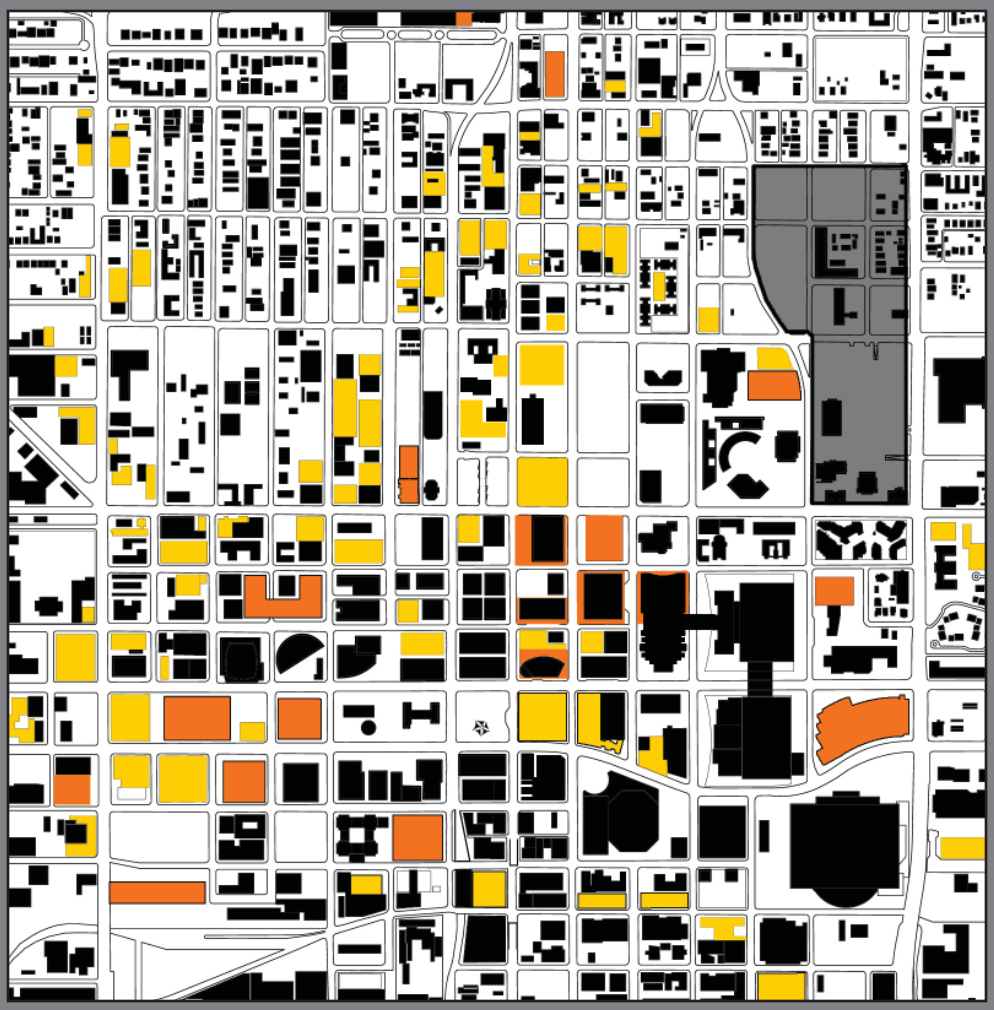
- Parking at PBC currently is built at 2.2 spaces per total square foot
- October 2007 parking ratio usage
- 1.2 for ICG/TGen
- 0.6 for ABC-1 & UACOM
- 0.9 For PBC overall
- Current PBC parking underutilized - full tenancy not yet realized.

Future Profile

- Ultimately need garage as development displaces surface lots
- Existing PBC parking and national ratios suggest parking ratio of 2.0 spaces per TSF likely higher than what is needed
- Parking ratio of 1.0 spaces per TSF could potentially work but there is risk of it being too low - may have to regularly rely on leased off-site parking

Future Expansion

- ASU and U of A experience suggests they should not have ASU or U of A owned shuttles for off-site parking. If used, they should be managed/owned by others (e.g., expand DASH circulator



Parking & Transit Resources

Potential Existing Parking Nearby - both public and private

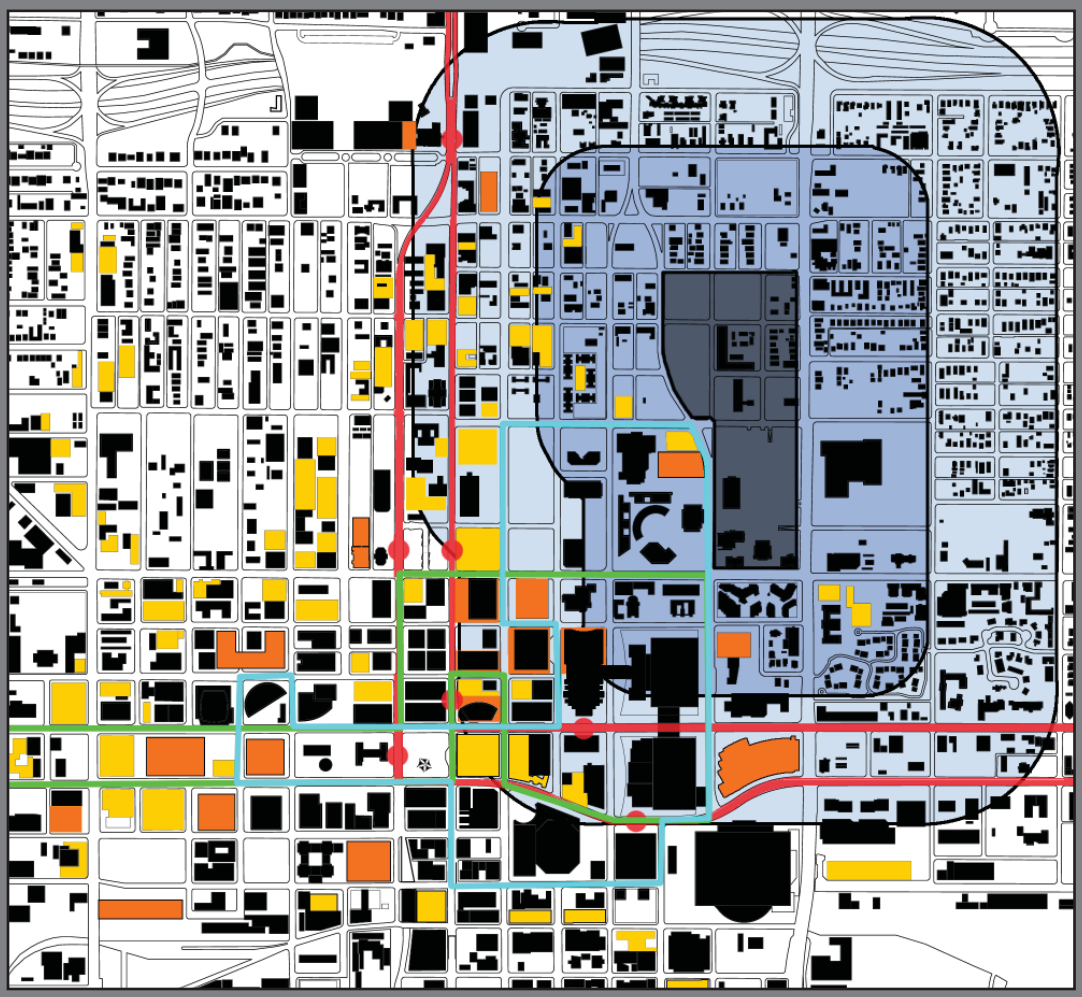
- 3,000+ spaces available within a 10-minute walk
- 2,600+ spaces available for events
- Location of available spaces shifts for events
- Some restrictions on uses

ASU Downtown Parking

- Existing garages have 629 spaces
- Lease ~200 spaces from AMCO west of 2nd Avenue
- Lease a few spaces from Heritage Square and East Garage (with event time restrictions)
- Will get 60 surface spaces for the School of Journalism/ KAET
- Students finding own on-street or off-site spaces
- Parking currently underutilized and under occupied

Alternative Transit Modes

- DASH connects nearby parking garages to PBC
- Several bus routes pass near PBC
- Light-rail transit stops are about a 10 minute walk away
- Central Station transit center is about a 10 minute walk away @ the NWC of Central and Van Buren
- Could create shuttle system from off-site parking to PBC



Analysis & Scenarios

Future PBC Parking

PBC Master Plan called for using ratio of 2.0 spaces per TSF (approximately 2,221 spaces) and a garage, due to:

- Convenience for employees/visitors
- Maximizes economic return of site by limiting space requirements for non-facility purposes
- Consolidates vehicular ingress/egress points
- Provides potential location for secure loading docks, service yards, utility connections
- Can incorporate non-parking uses into the parking garage

Option 1: Use 2.0 Ratio

- Build parking at 2.0 spaces per TSF approximately 2,221 spaces)
- Garage at maximum building footprint size with existing constraints would likely require 11 to 12 stories of parking
- May be able to reduce size of garage with underground parking for proposed Medical Education and Research buildings
- Likely will not promote use of alternative modes of travel (e.g., transit, bike, walk)
- Can allocate excess spaces to build-out of PBC

Option 2: Use 1.5 Ratio

Kimley Horn makes the following recommendations:

- Build parking at 1.5 spaces per TSF (approximately 1,666 spaces)
- Ratio more in line with current PBC parking, national ratios for downtown areas
- Garage at maximum building foot print size with existing constraints would likely require 8 to 9 stories of parking
- May be able to reduce size of garage with underground parking for proposed Medical Education and Research buildings
- Could promote use of alternative modes of travel
- May need to rely on off-site parking if actual parking demand exceeds supply

Option 3: Use 1.0 Ratio

- Build parking at 1.0 space per TSF (approximately 1,110 spaces)
- Garage at maximum building footprint size with existing constraints would likely require 5 to 6 stories of parking
- May be able to reduce size of garage with underground parking for propsed Med. Ed. and research buildings
- Likely will promote use of alternative modes of travel
- Will likely have to rely on. off-site parking if actual parking demand exceeds supply

For Reference:

Typical National Parking Ratios:

- Biomedical Centers-3.0 spaces per TSF
- University-1.2 spaces per TSF
- Downtown Office uses with priced parking and high quality transit nearby-2.0 to 4.0 spaces per TSF
- Existing PBC ratios of 0.6 to 1.2 spaces per TSF are lower than typical ratios for similar uses

U of A Medical School

- Current permit parking supply ratio of 1.5 spaces per TSF is accommodating demand
- 3 on-campus and 3 off-campus shuttle routes between parking lots and buildings with 15-20 minute travel time
- Shuttle routes cost~$350,000 per year to operate
- On per-space basis, a shuttle costs (includes off-site space leasing and shuttle costs) about the same as on-site parking garages (includes cost of land for parking garage and parking revenues)
- Estimate need ~1,500 spaces at PBC using population-based parking generation rates

Copper Square DASH

Nearby Parking & Transit

5

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Phoenix Biomedical Campus

UTILITY INFRASTRUCTURE

Utility Infrastructure

The Phoenix Biomedical campus utility infrastructure has been analyzed and organized into three zones:

South of Fillmore and North of Van Buren, North of Fillmore and the South PBC (the Mercado).

The Campus plan and building organization addresses the specific issues of these three physical configurations but the forecast of demand and system capacities are subject to further building programming and system analysis.

South of Fillmore and North of Van Buren

This area has been reconfigured to develop a loop system of all primary utilities. This work was accomplished in order to develop TGen, ABC 1 and the redevelopment of the historic buildings.

The utility and infrastructure free zone at the center of the campus also simplifies the development requirements for construction of the below grade core facilities.

For the upcoming phases of programming including the Health Sciences Education Building and the ABC-2 (research building) the primary access points are readily available and necessary relocations are complete. Specific points of contact including metering points and transformer locations will need to be confirmed through the design and engineering process.

North of Fillmore

This area of the campus is the likely site of the large Clinical uses and additional garage.

The urban character of this part of the campus seeks to maintain the primary street alignments and avoid block combinations except for the one needed for the hospital itself. Otherwise surface streets – although perhaps slightly reconfigured for streetscape design- will stay in place. The position of the 81 inch storm water line that runs north-south along 5th Street and returns east along McKinley to 7th Street limits the possible block combinations necessary for the large hospital platform floors.

The campus plan, as shown, accommodates these major storm water lines and develops a utility corridor along 6 th street for future development. This corridor will likely serve both north and south of Fillmore for power.

The north of Fillmore building capacities and program needs for these functions of the project are largely undetermined.

The study's strategy is to record current placement and sizes and make planning accommodations that substantially maintain existing utilities. The exception is the likely relocation of the sewer lines in the alley row's.

South PBC Blocks (the Mercado)

This area will develop last and in the fairly distant future. Planning scenarios include additional research and mixed use academic buildings. The existing construction removed primary utility elements from within the site. This area will function similarly to the south of Fillmore area with perimeter access to utilities in 5 th street Van Buren, 7 th Street and Monroe as needed. Due to the undefined program capacity requirements are not projected.

Garfield

Existing grid system access to supply North of Fillmore.

Fillmore

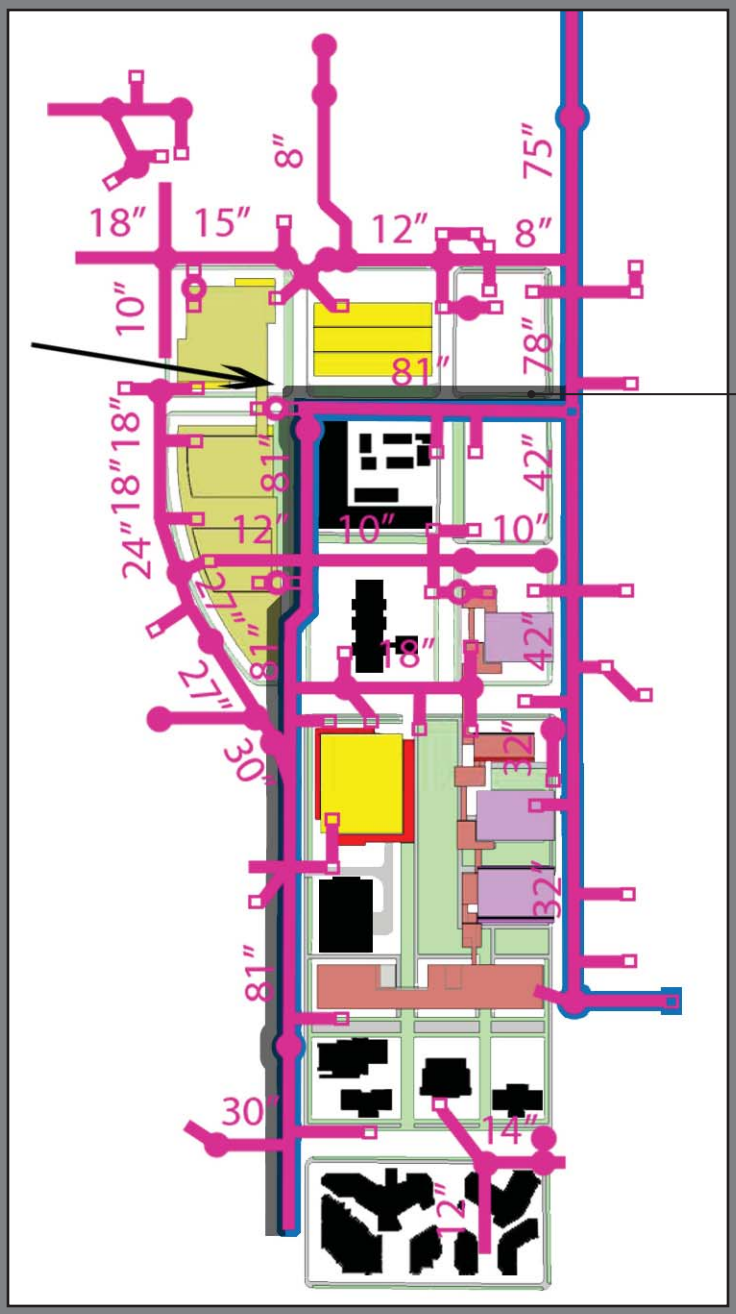
Permanent loop supply system South of Fillmore.

Van Buren

Permanent loop supply system South of Fillmore.

Storm Water

- South of Fillmore - existing system rerouted to 5th St. and loops existing facilities.
- North of Fillmore - no disruption to large lines.
- South PBC - no disruption, reuse existing configuration subject to demand sizing.

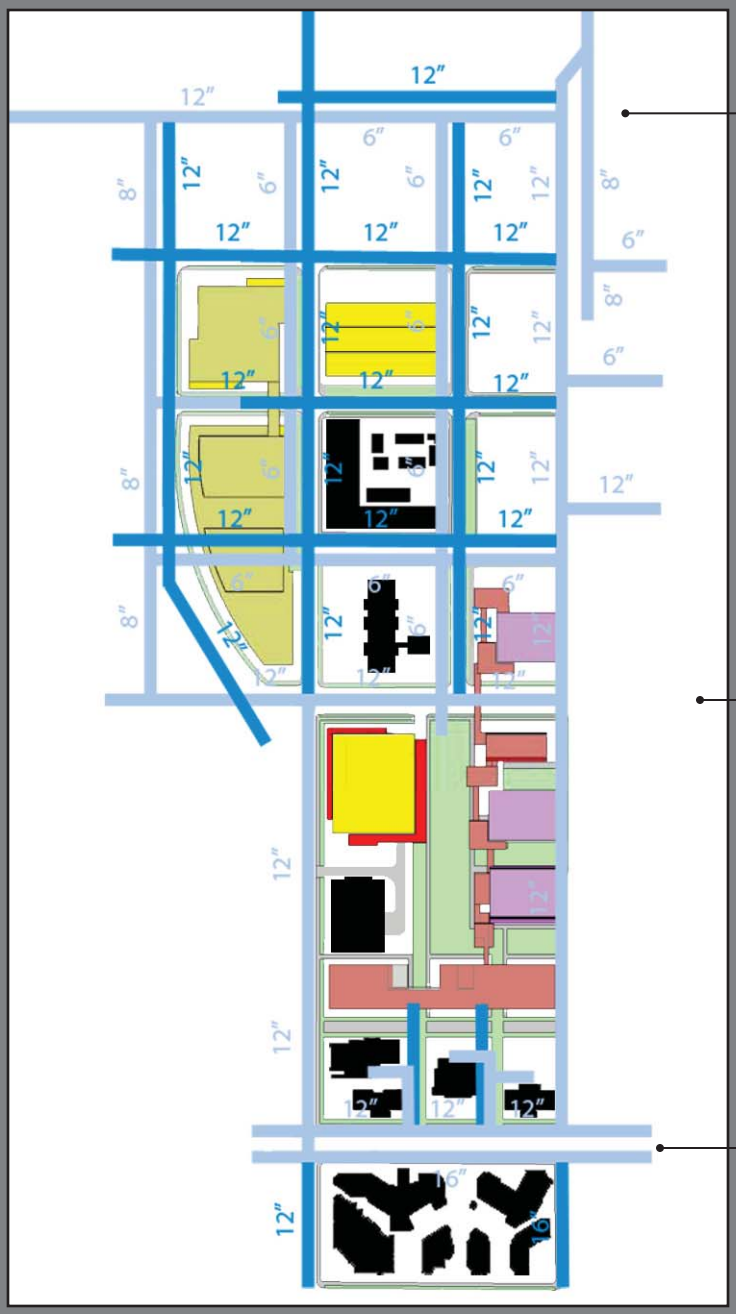


North of Fillmore this 81" storm water line prevents combining blocks into super blocks or large plates because the water line is not movable and does not permit overhead building.

South of Fillmore the campus is served by a perimeter loop system and does not impact building placement.

Domestic Water

- South of Fillmore - existing 5th St. trunk line and additional in 7th St.
- North of Fillmore - multiple lines within street grid. The 6” lines in the areawill need to be replaced with 12” lines.
- South PBC - primary lines in 5th St. and 7th St.

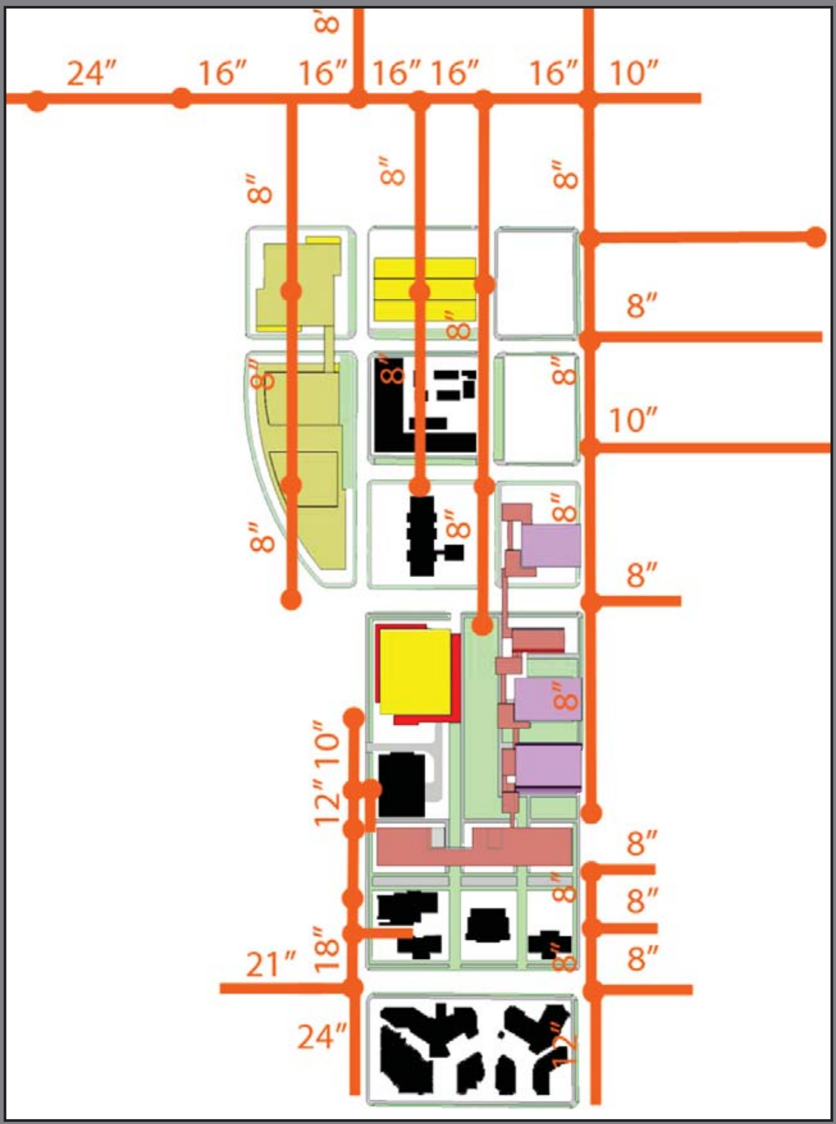


Existing grid system access to supply North of Fillmore.

Permanent loop supply system South of Fillmore.

Sanitary Sewer

- South of Fillmore - inter-block connections and lines have been relocated to the campus perimeter with multiple opportunities for connection.
- North of Fillmore - the existing lines remain located in the historic alley row's. These lines will need to be relocated for future development. Access to larger lines, which are likely required for clinical uses, will have to be constructed with access beyond the north end of campus, along Roosevelt.
- South PBC - existing relocated to perimeter.



Historic sewer locations are in the previous alley R.O.W.'s.

Perimeter sewer connections are accessible south of Fillmore.

Gas & Power & Northwind

Gas

- South of Fillmore - relocated and within loop with multiple opportunities for connection.
- North of Fillmore - multiple lines within street grid.
- South PBC - access to multiple lines.

Power

A complete study of demand and capacity for power within downtown does not exist.

However, we have identified 6 th st as a corridor for future line locations serving the North of Fillmore facilities and with future development it may also feed south of Fillmore facilities. Over time, capacity and demand will be resolved, and it is likely the campus and future clinical uses will require both network and radial feeds.

Northwind

Northwind is a privatized utility source for chilled water serving the downtown Core. Use of the service is optional based on capacity, value and access.

The existing system services the TGen, ABC1 and the historic buildins via ABC1. The system may need an additional chiller plant if the majority of planned development was to be serviced by Northwind. Significant studies determining such demand and capacities will need to be undertaken to determine best timing for subscribing or the construction of a campus central plant.

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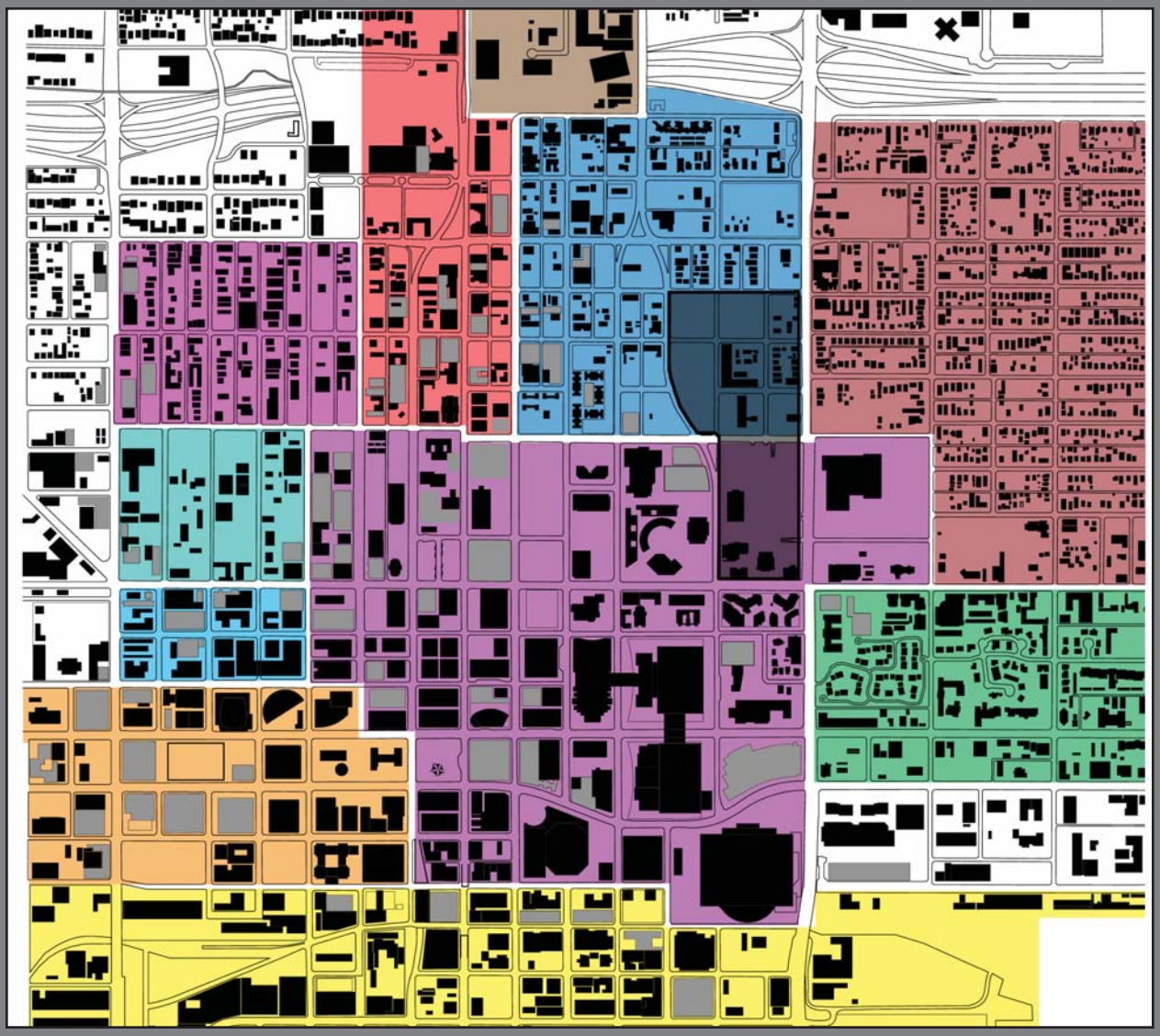
Phoenix Biomedical Campus

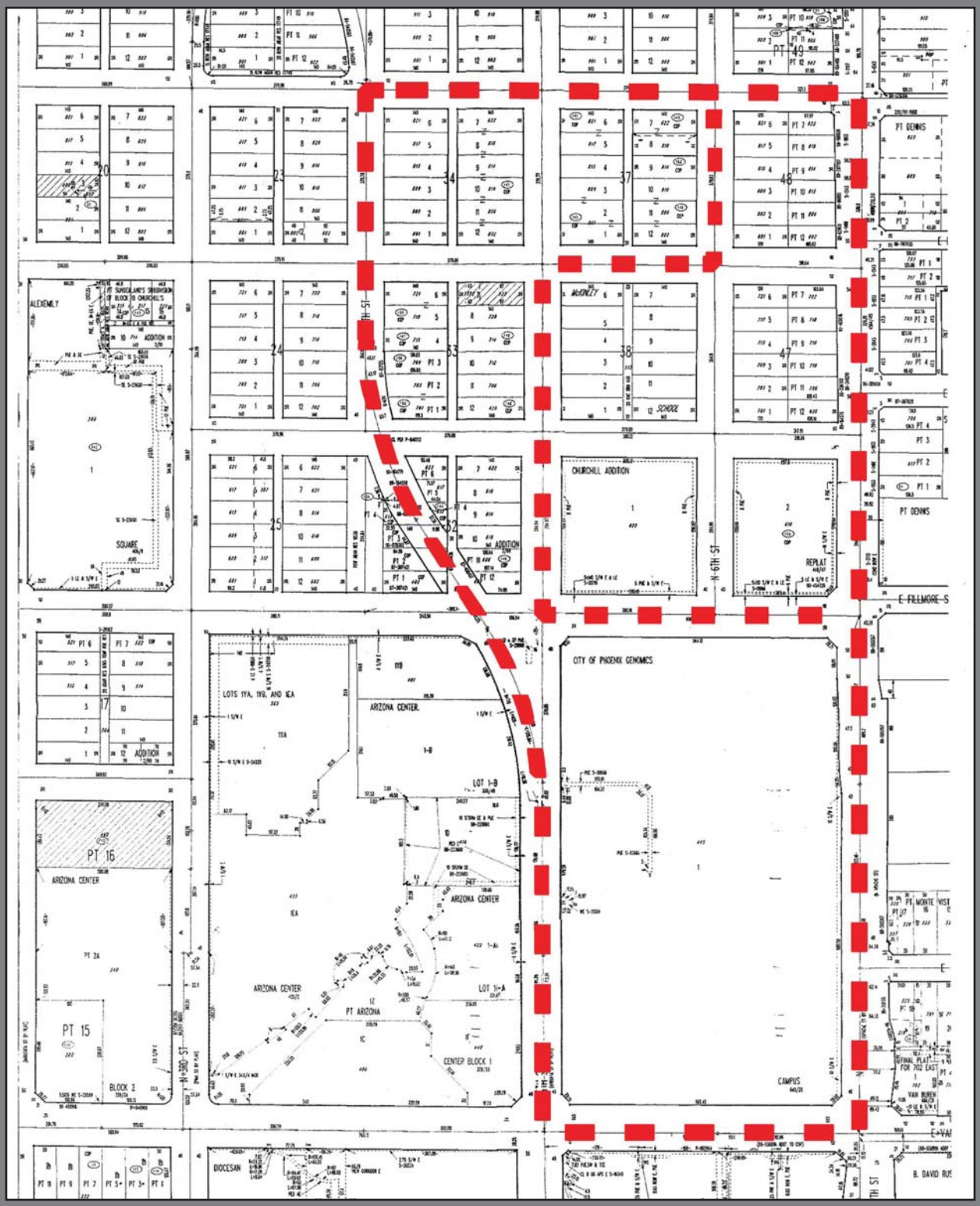
EXISTING ZONING & SITE USES

Regional Context

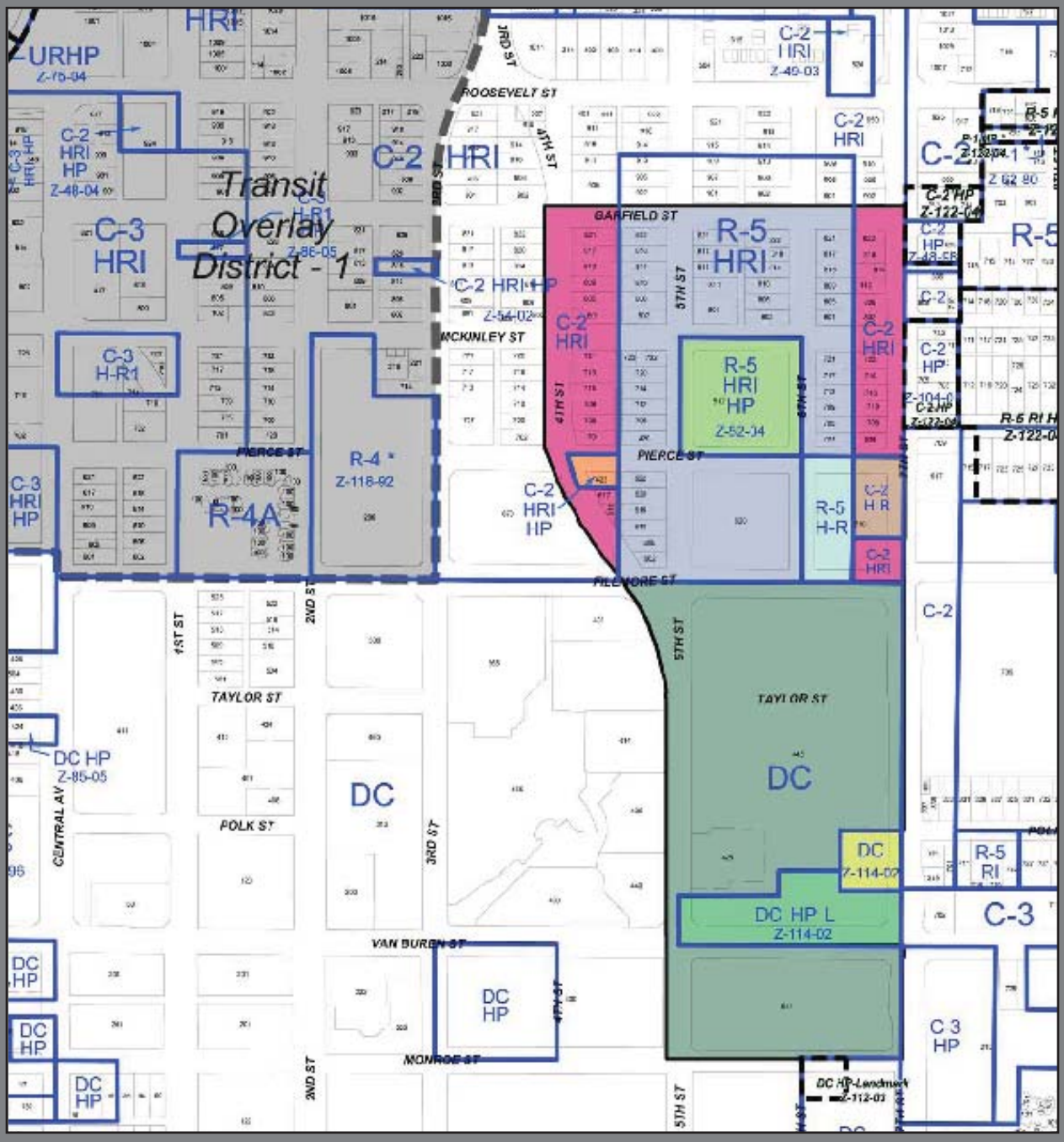


- Central Corridor
- Arts South
- East Roosevelt
- Garfield Neighborhood
- Historic Roosevelt
- Historic Roosevelt Spd
- Fillmore West
- Monroe West
- Booker T. Washington
- Government Mall
- Warehouse

Lot Sizes & Locations



Campus & Adjacent Zoning



R-5: Redisential

HRI: High Rise Incentive

DC: Downtown Core

HP: Historic Preservation

C-2: Commercial

Building Setbacks

C - 2	Large Scale	≥ 4 Stories or 48’
Lot Coverage	Primary 40% Total 50%	Primary 40% Total 50%
Front Yard	Min 60’ * 25’ - 30’	
Rear Yard Min 60’ *		
Side Yard Min 60’ *		
Height	35’ within 60’ of property line	0’
* 25’-30’ for 50% of frontage		

R - 5		≥ 4 Stories or 48’
Lot Coverage	Primary 40% Total 50%	
Front Yard		15’
Rear Yard		15’ – 20’
Side Yard		10’ – 15’
Height	2 stories and 30’	
Downtown Core; Comply with precedent block standards and “The Sky Harbor Zoning Ordinance” H – R and HRI; Comply with section 701 standards		

701	≥ 4 Stories or 48’	≤ 4 Stories or 48’
Lot Coverage	According to Zone	Primary 40% Total 50%
Front Yard	According to Zone	25’ – 35’ *
Rear Yard	According to Zone	15’ **
Side Yard	According to Zone	0’ – 25’
Height	According to Zone	Max 250’ ***
* incentives or reductions based on project parameters ** measured from centerline of min 16’ *** not to violate “Sky Harbor Airport Zoning Ordinance”		

C-2 Commercial

BUILDING SETBACKS				
Adjacent to Streets				
For structures not exceeding two stories or 30'		Average 25'	Minimum 20' permitted for up to 50% of structure,including projections	
For strucures exceeding two stories or 30'		Average 30'	[Same as above]	
Not Adjacent to Streets				
	When Adjacent Zoning is:			
	S-1, S-2. RE-43 TO R-3 (*)	R-3A, R-4, R-5, R-4A (*)	CP, Ind.Pk., PSC, RSC, MUA, DC, GC, RH, UR	C-1, C-2, C-3, A-1, A-2, CP, Ind.Pk., P-1, P-2
Maximum building height				
1 story (or 15')	10'	10'	0'	
2 story (or 30')	50'	15'	10'	0'
3 story (or 42')	100'	30'	10'	0'
4 story (or 56')	150'	45'	10'	0'
(*) An additional one foot setback shall be provided for every one foot of height above 30 feet. *26 *28				
e. Landscaping requirements/materials, except as provided in 623.E.4.f below: +26				
Streetscape +26				
Landscaped Setback	Average 25' for structures not exceeding two stories or 30', minimum 20' permitted for up to 50% of the frontage. Average 30' for structures exceeding two stories or 30', minimum 20' for up to 50% of the frontage.			

R-5 Residential

Standards	Conventional	Planned Residential Development
Minimum lot width (in the event of horizontal property regimes, "lot" shall refer to the width of the structure and exclusive use area) *14	55' minimum	45' minimum (unless approved by either the design advisor or the Single-Family Architectural Appeals Board for demonstrating enhanced architecture that minimizes the impact of the garage (see Section 507 Tab A.2.12.1 B(2)(b) [sic])) *14
Minimum lot depth	None, except 110' adjacent to freeway or arterial	None, except 110' adjacent to freeway or arterial
Dwelling unit density (units/gross acre)	5.0	6.5; 12 with bonus
Minimum perimeter building setbacks	Front: 15'; Rear: 15' (1-story), 20' (2-story); Side: 10' (1-story), 15' (2-story)	Street (front, rear or side): 15' (in addition to landscape setback); Property line (rear): 15' (1-story), 20' (2-story); Property line (side): 10' (1-story), 15' (2-story)
Common landscaped setback adjacent to perimeter streets	None	15' average, 10' minimum (Does not apply to lots fronting onto perimeter streets)
Minimum interior building setbacks	Front: 10'; rear: 10'; combined front and rear: 35', street side: 10'; sides: 13' total (3' minimum, unless 0')	Front: 10'; rear: none (established by Building Code); street side: 10'; sides: none (established by Building Code)
Minimum building separation	10'	None
Minimum garage setback	18' from back of sidewalk for front-loaded garages, 10' from property line for side-loaded garages	18' from back of sidewalk for front-loaded garages, 10' from property line for side-loaded garages
Maximum garage width	For lots <60': 2 car widths, for lots >=60' to 70': 3 car widths, for lots >70': no maximum *14	For lots <60': 2 car widths, for lots >=60' to 70': 3 car widths, for lots >70': no maximum *14

R-5 Residential (continued)

Standards	Conventional	Planned Residential Development
Maximum height	2 stories and 30'	2 stories and 30' (except that 3 stories not exceeding 30' are permitted when approved by the design advisor for demonstrating enhanced architecture) *14
Lot coverage	Primary structure, not including attached shade structures: 40% Total: 50%	Primary structure, not including attached shade structures: 40% Total: 50%
Common areas	None	Minimum 5% of gross area
Allowed uses	Single-family detached	Single-family detached
Required review	Development review per Section 507, and subdivision to create 4 or more lots	Development review per Section 507, and subdivision to create 4 or more lots
Street standards	Public street, or private street built to City standards with a homeowners' association established for maintenance	Public street or private accessway (1)
On-lot and common retention	Common retention required for lots less than 8,000 sq. ft. per grading and drainage ordinance requirements	Common retention required for lots less than 8,000 sq. ft. per grading and drainage ordinance requirements
Landscape standards		Perimeter common: trees spaced a maximum of 20 to 30 feet on center (based on species) or in equivalent groupings, and 5 shrubs per tree.

DC Downtown Core

Building height - shall not exceed the height limits as set forth in "The Sky Harbor Airport Zoning Ordinance."

There shall be no maximum lot coverage requirement.

There shall be no front, rear, or side yard requirements except as herein provided:

1. Buildings abutting a public street shall maintain at least an eight-foot setback from the curb to the outside edge of any building columns and to the outside edge of the third story and above. The first and second story must maintain a twenty-foot setback from the curb. In no case shall columns or upper floors extend into the public right-of-way.

2. In lieu of providing on-site landscaping between the building front and the property line, the property owner shall provide and maintain landscaping in the public right-of-way in accordance with approved streetscape plans or as approved by the City's Development Services Department staff.

3. Along the face of a block where a setback pattern has already been established for fifty or more percent of the block's length, new development or rehabilitation projects shall follow the existing setback pattern.

4. At least sixty percent of the building front on any parcel or block face shall be located within fifteen feet of the front property line.

5. Structures on corner lots shall be sited so as to maintain a thirty-three-foot visibility triangle at the intersection of two public streets unless approved otherwise by the Development Services Department.

6. Buildings or structures that abut single or multifamily residential use existing as of January 1, 1994, shall maintain a side or rear yard setback of not less than twenty feet.

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60 East Rio Salado Parkway
Suite 701
Tempe, Arizona, 85281
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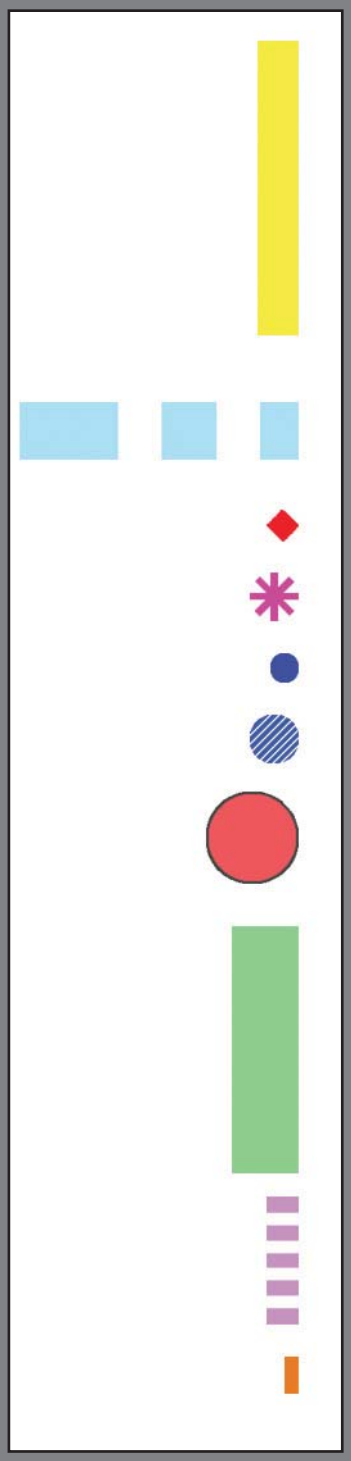
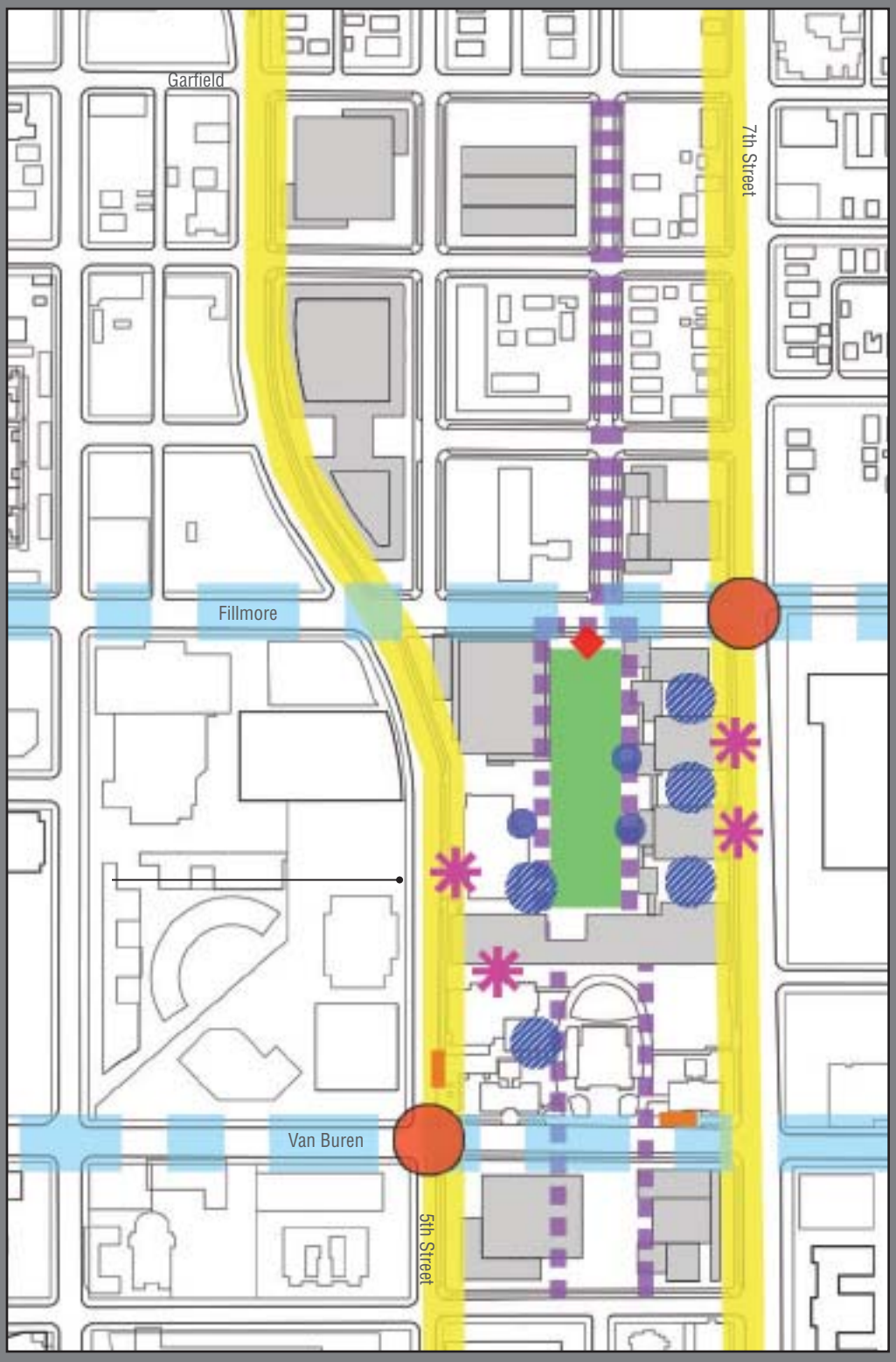
Phoenix Biomedical Campus

LANDSCAPE ARCHITECTURE

Overall Landscape Character

Site development guidelines are intended to balance the future growth of the campus with the existing vernacular of hardscape and landscape material palettes presently occurring on site. Complimentary use of similar materials will serve to unite the campus through a common language and help ease the transition from earlier phases comprised of historic building styles to the more modern, contemporary architecture of future development. A set family of materials will help to delineate the campus edge, provide for pedestrian scale, define the exterior uses through development of a subtle way-finding system throughout campus. With the early phases of the campus already completed, there currently exists ready examples of hardscape and landscape treatments that can serve as common threads to help direct the future campus development in a cohesive manner.




Garfield
7th Street
Fillmore
Van Buren
5th Street
N

Overall Project Identity

Two major potential campus entry points exist at the Northeast corner of campus on 7th Street and Fillmore and at the Southwest corner on 5th Street and Van Buren, respectively. These areas provide significant visual portholes into the campus interior and will often serve as the first imagery impressed onto campus visitors. These gateways also serve as an entry point to Copper Square and beyond as an invitation into the downtown Phoenix area.

Using vertical landscape forms is encouraged to highlight these areas and frame views inward. Smaller scale trees can act as secondary plantings to provide shade and color at the pedestrian level of entry plazas. These higher profile areas are appropriate for large open air plaza spaces and their generous proportions make for prime gathering/meeting spaces with opportunities for interpretive/educational signage, donor recognition and public art installations.

Northeast corner of VanBuren and 5th St.

Southwest corner of Fillmore and 7th St.

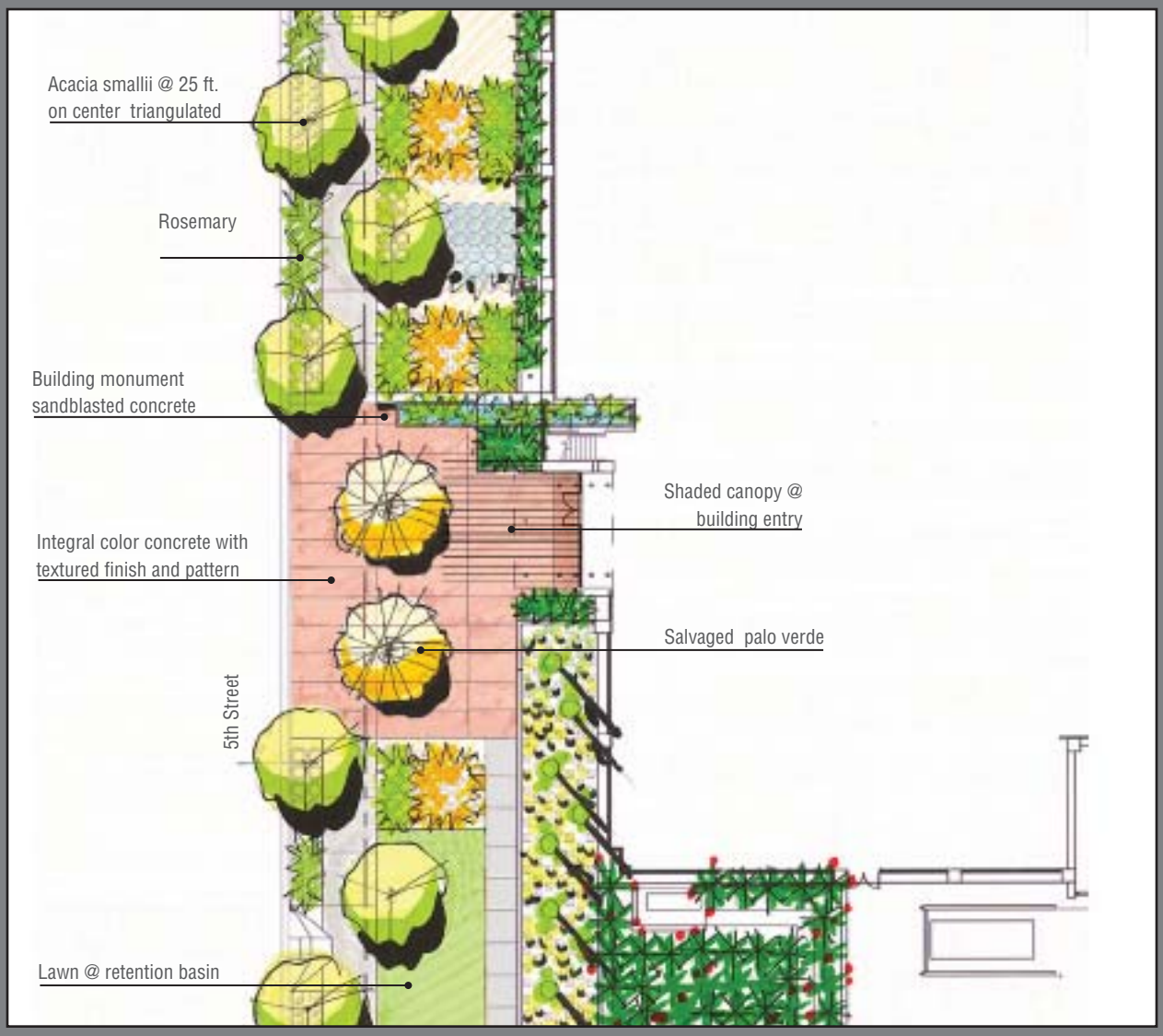

Cast-in-place
concrete seating
Transit stop
Date Palms as
landsmark landscape
form
Integral color concrete with
textured finish and pattern
Crosswalk
Traffic control
N

Building Identity / Main Entrance

Campus buildings will have a primary entry that addresses the street frontage, as well as a secondary entry that addresses the campus interior. Special landscape treatments including signage, vertical and horizontal hardscape elements and organized and mass plantings can serve to highlight and announce these entry points by providing a sense of arrival. These treatments should provide for way-finding while complimenting the architectural expression of the particular campus building. The exterior entry sequences should tie into and respect building interiors through use of similar materials, colors and textures. Larger entry areas or plazas can serve as canvases for interpretive/educational opportunities.

Covered entry at Arizona Biomedical Collaborative

Typical monument sign along streetscape

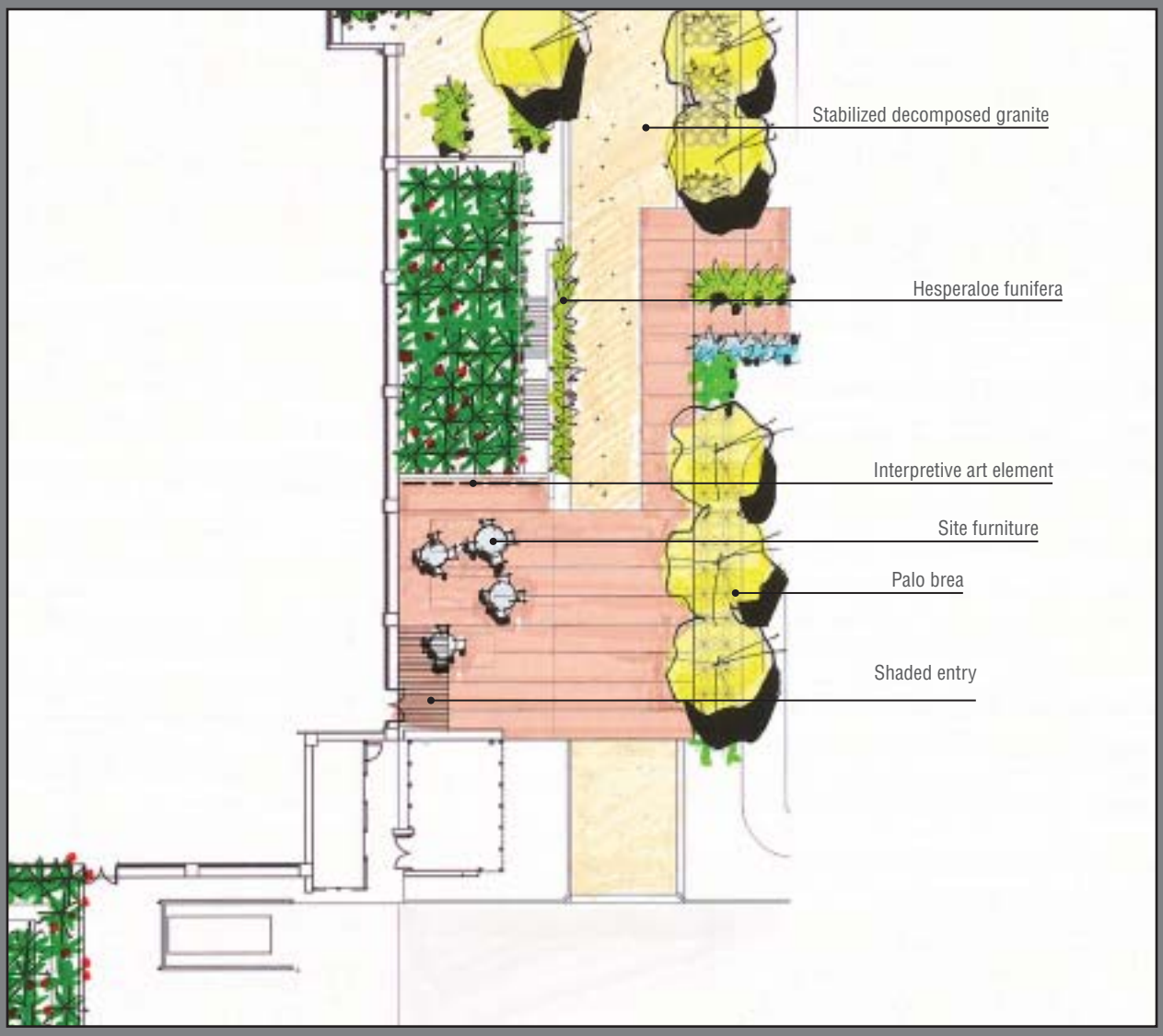

Acacia smallii @ 25 ft.
on center triangulated
Rosemary
Building monument
sandblasted concrete
Shaded canopy @
building entry
Integral color concrete with
textured finish and pattern
Salvaged palo verde
5th Street
Lawn @ retention basin
N

Secondary Entry

These secondary building entries are less formal than the primary entries and can serve to provide open spaces for smaller group meetings, impromptu gatherings and individual contemplation. The scale of these nodes should reflect the more intimate nature of the space with plantings that provide color, texture and ample shade to promote a relaxed, tranquil atmosphere. These areas should provide opportunities for seating.

Interior plaza near secondary entry

Mass planting and gathering space

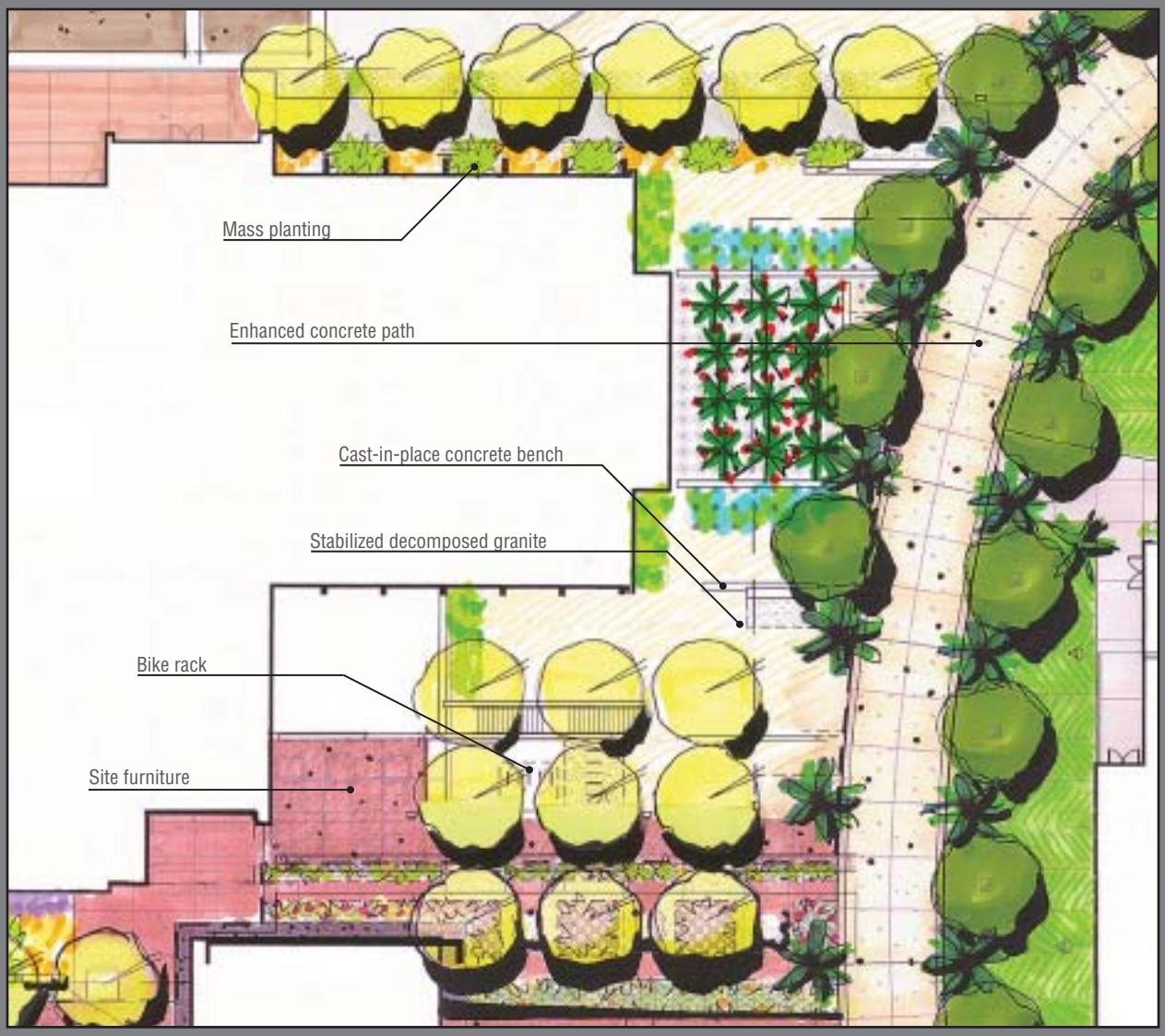

Stabilized decomposed granite
Hesperaloe funifera
Interpretive art element
Site furniture
Palo brea
Shaded entry
N

Informal Courtyards

The solid-void relationships between the buildings and exterior spaces of the campus layout provide for a collection of courtyards of varying scale and closure. These courtyards, coupled with the secondary building entries, can work together to form a string of connected spaces that can ring the larger, formalized central green space. Hardscape materials will compliment the nearby architectural palette and vary from space to space.

Themed plaza and enhanced hardscape

Shaded courtyard with cast-in-place concrete bench

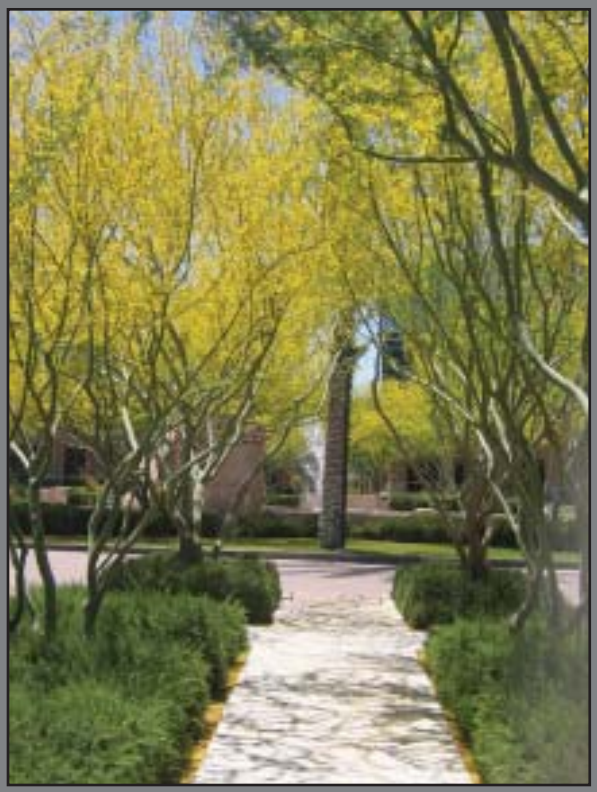

Mass planting
Enhanced concrete path
Cast-in-place concrete bench
Stabilized decomposed granite
Bike rack
Site furniture

Common Green

The central green area is a large linear open space running along the central north/south axis of the campus. With a transit hub and a future bridge to the northern portion of campus where the spine intersects Fillmore, this corridor acts as the backbone of the campus pedestrian circulation route. This directional landmark serves to funnel students into the campus interior. The pedestrian links of the corridor double as emergency vehicle access and serve as the main open air event terrace of the campus, making it ideal for large outdoor classrooms, lectures and special events or installations. This portion of the site ground plane rests over the garage structure below and will require special study in relation to available planting depths, which may require extensive use of raised planter beds or mounding earthwork on the ground plane.

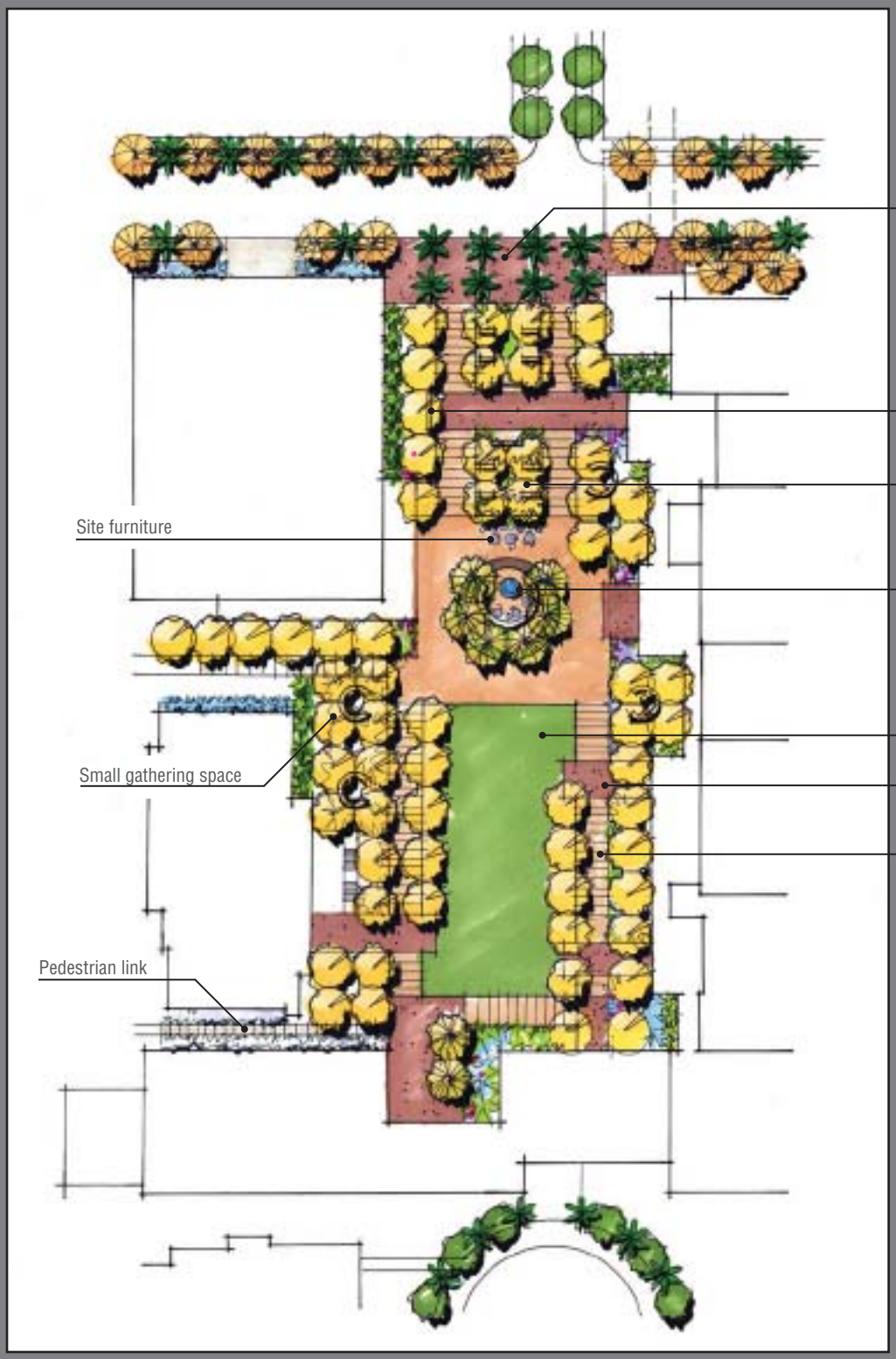
Water feature as focal element

Cast-in-place round concrete bench ringing central green



Tree-lined sidewalks for comfortable pedestrian use

Large central lawn with berming

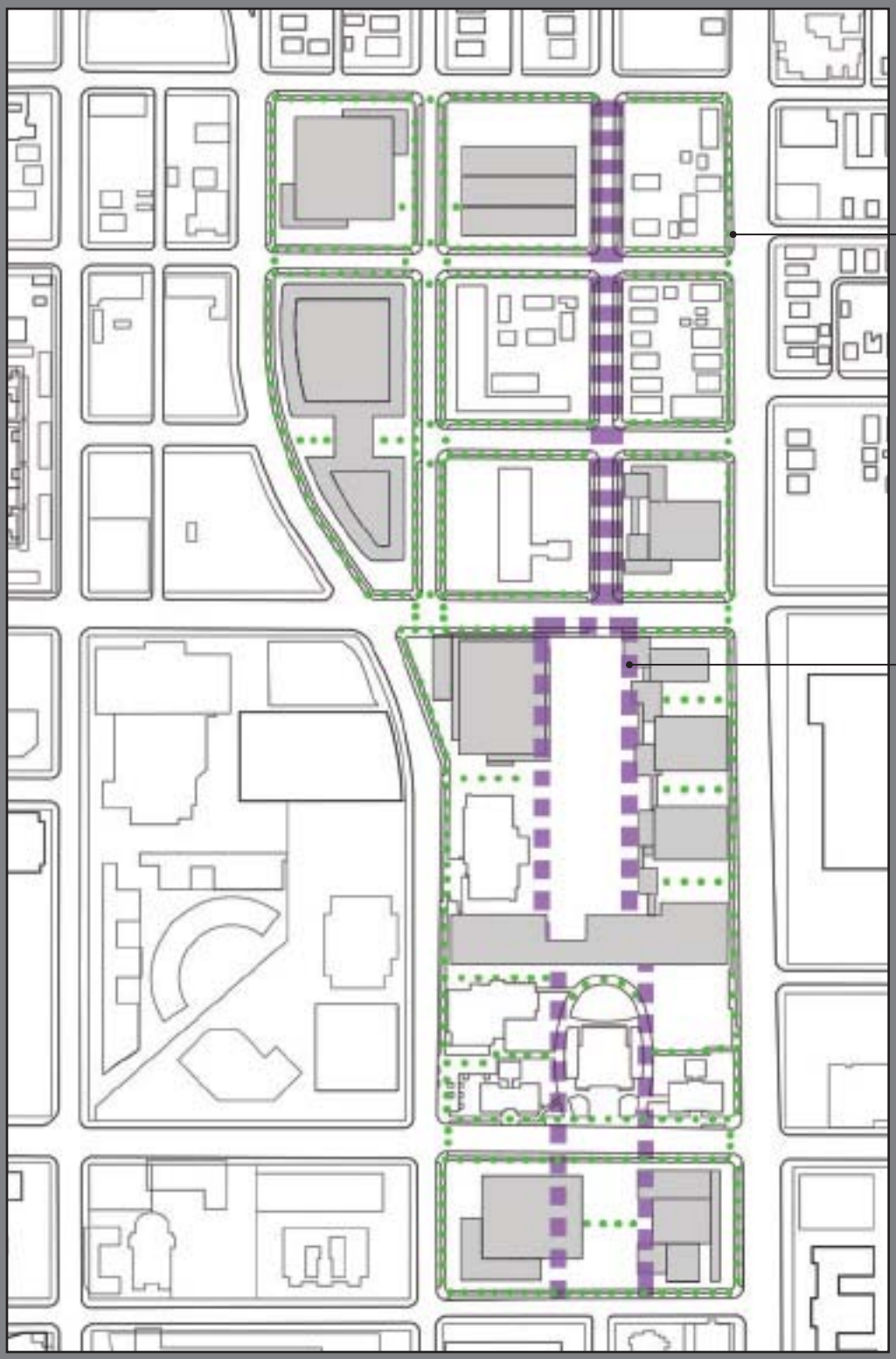

Transit hub
Cast-in-place concrete seat wall
Small group gathering space
Site furniture
Water feature
Lawn
Enhanced parking @ entry
Small gathering space
Shaded walk
Pedestrian link

Pedestrian Links

Pedestrian corridors serve as the primary means of circulation on campus. These links serve to connect a hierarchy of spaces with building and facilities and transition different spaces with buildings and modes of transportation from campus perimeter to interior. The larger pedestrian routes will double as vehicular access for maintenance and emergency services. Their construction, materials and layout should reflect and support these vehicular needs. Pedestrian routes are to be clearly defined to promote user safety and minimize conflict with service traffic. Pedestrian circulation routes should be fully accessible for ADA and provide ready shade to reduce solar exposure.

Walkways focus on defining architectural elements

Rhythm of site elements and mass planting create continuity

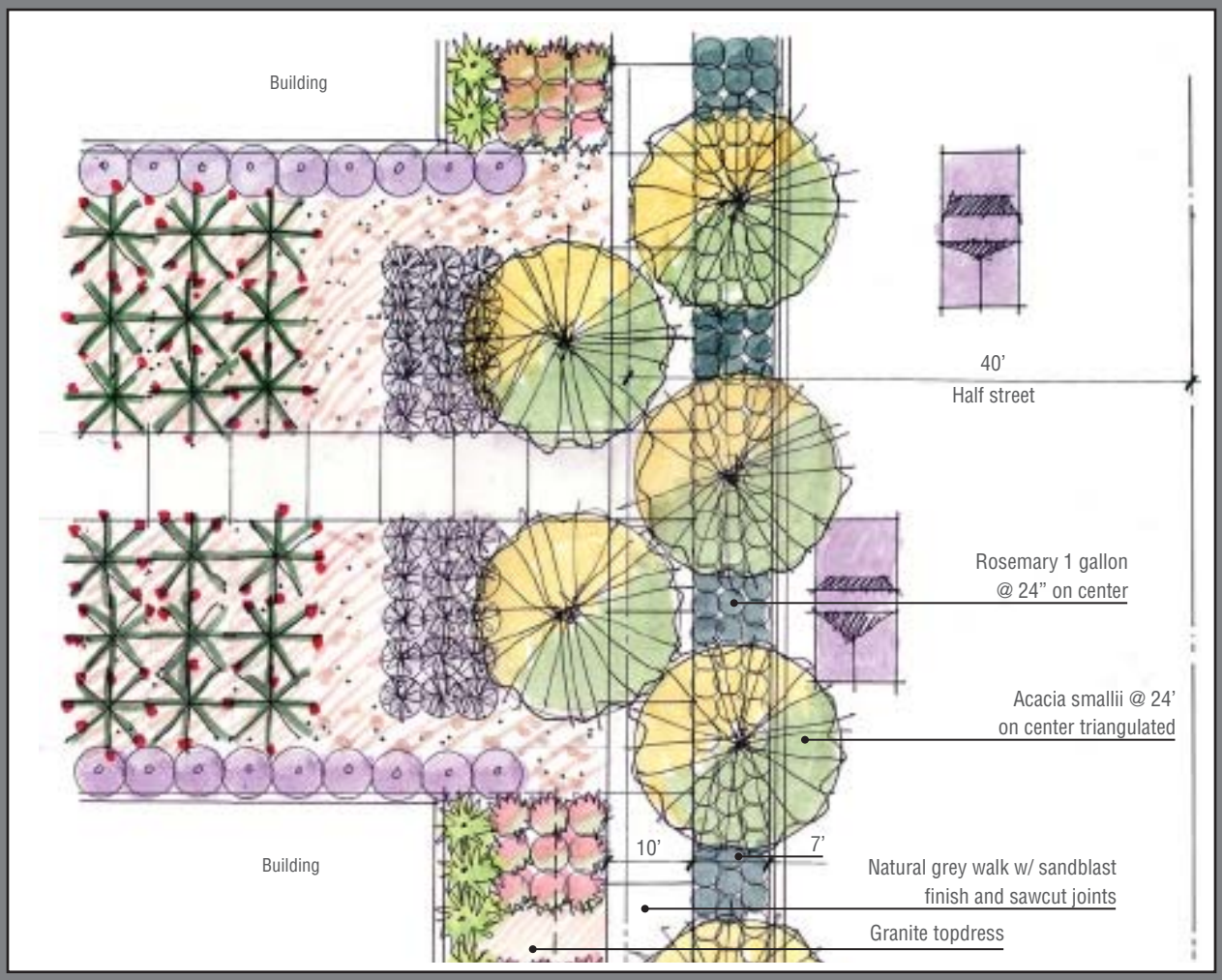

Minor
Pedestrian Link
Major
Pedestrian Link

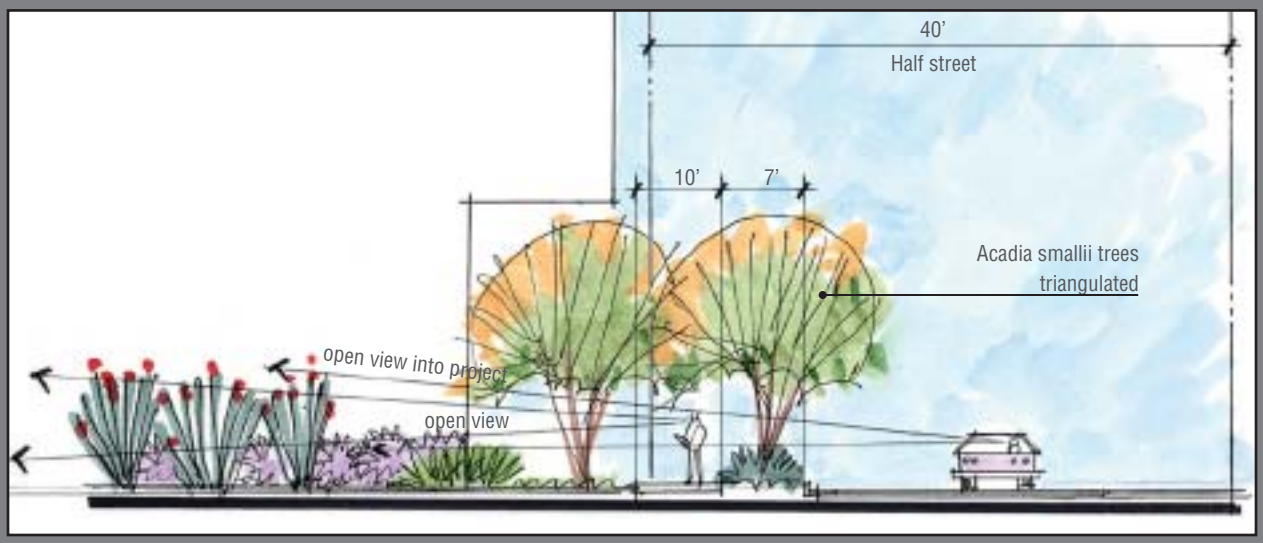
Major Arterial Streetscape

Streetscape design will promote a distinct campus identity on the perimeter. In major arterial street frontage areas, the sidewalks are to be set back away from the curb and separated by low planting to provide a buffer from vehicular traffic while allowing for unobstructed views into the site. Sidewalk widths for these streetscapes should be generous to provide for ease of multimodal circulation and be lined with trees or shade structures on a regular spacing to provide for a comfortable pedestrian environment during warmer seasons. City of Phoenix Ordinance and Copper Square Development Guidelines will dictate the species use along the north/south and east/west major arterial streets. Date Palms will be used in key locations to signify campus entry points, to compliment vertical building masses and to continue existing streetscape planting concepts where applicable. Existing tree and plant spacing recently installed along 7th Street will continue North from the College of Medicine.

Shaded sidewalk along 7th St.

Installed landscape along 7th St.


Building
40’
Half street
Rosemary 1 gallon
@ 24” on center
Acacia smallii @ 24’
on center triangulated
Building
10’
7’
Natural grey walk w/ sandblast
finish and sawcut joints
Granite topdress

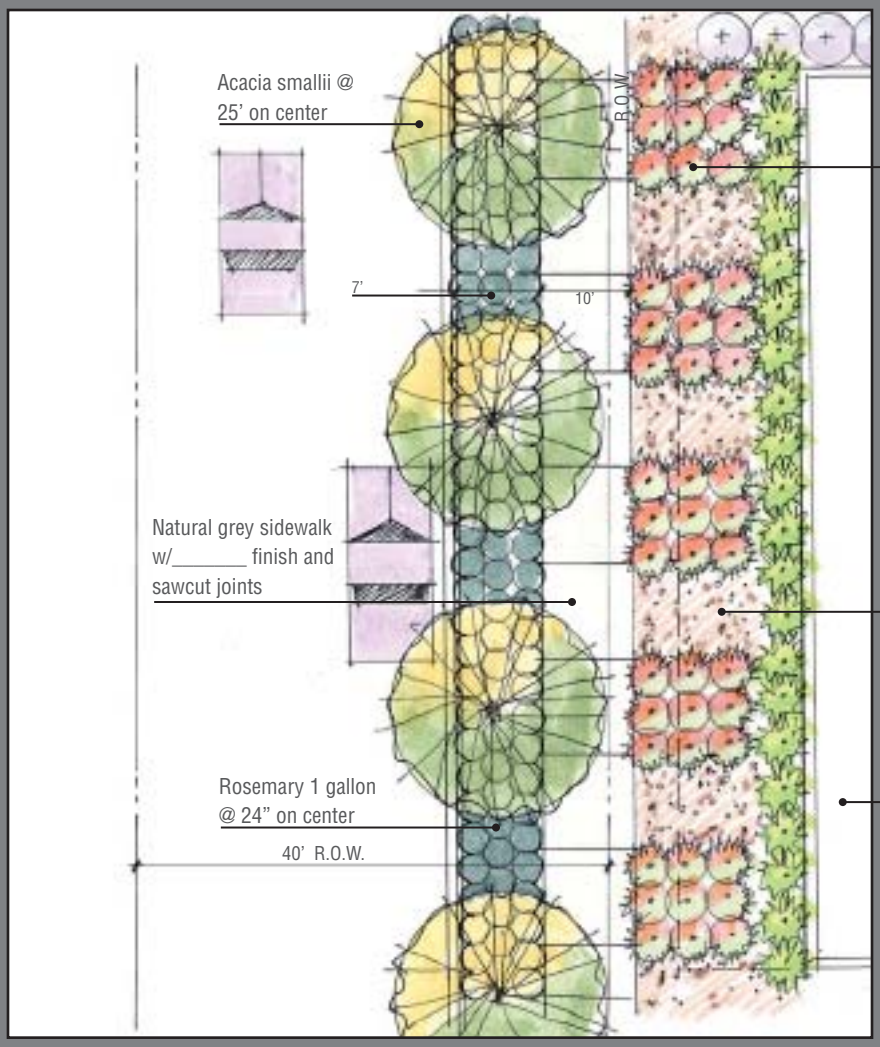

40’
Half street
10’
7’
Acadia smallii trees
triangulated
open view into project
open view

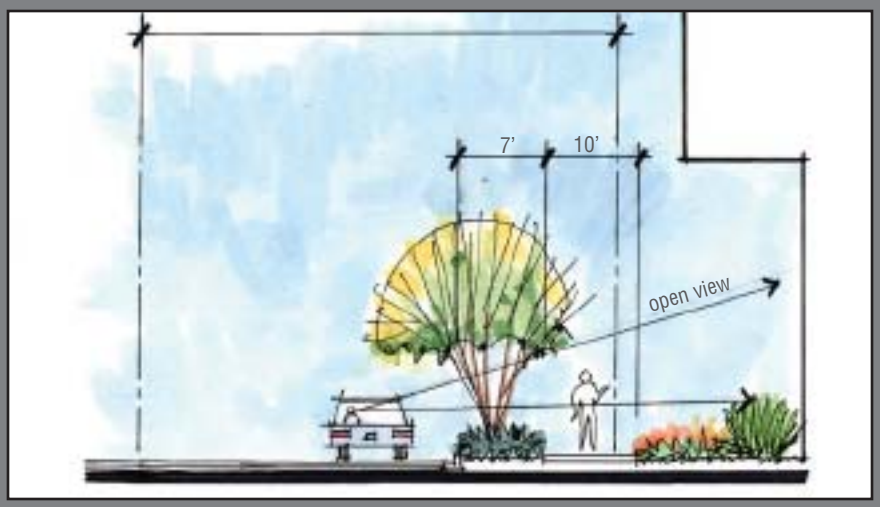
Arterial Streetscape

Arterial streetscapes will closely resemble those of Major Arterial streetscapes as they also exist on the perimeter of the campus. Double rows of trees in a triangulated arrangement provide shade along sidewalks and create a comfortable environment for pedestrians. Generous sidewalk widths and plant massing along buildings create consistency on the project's perimeter. Recently installed landscapes along 5th Street will continue North from TGEN.

Installed streetscape along 5th St.

Wide sidewalk along 5th St. R.O.W.


Acacia smallii @
25' on center
R.O.W.
Project landscape 60%
coverage w/plant material.
Plantings to be in mass plantings
7'
10'
Natural grey sidewalk
w/_____ finish and
sawcut joints
Granite topdress
Building
Rosemary 1 gallon
@ 24" on center
40' R.O.W.

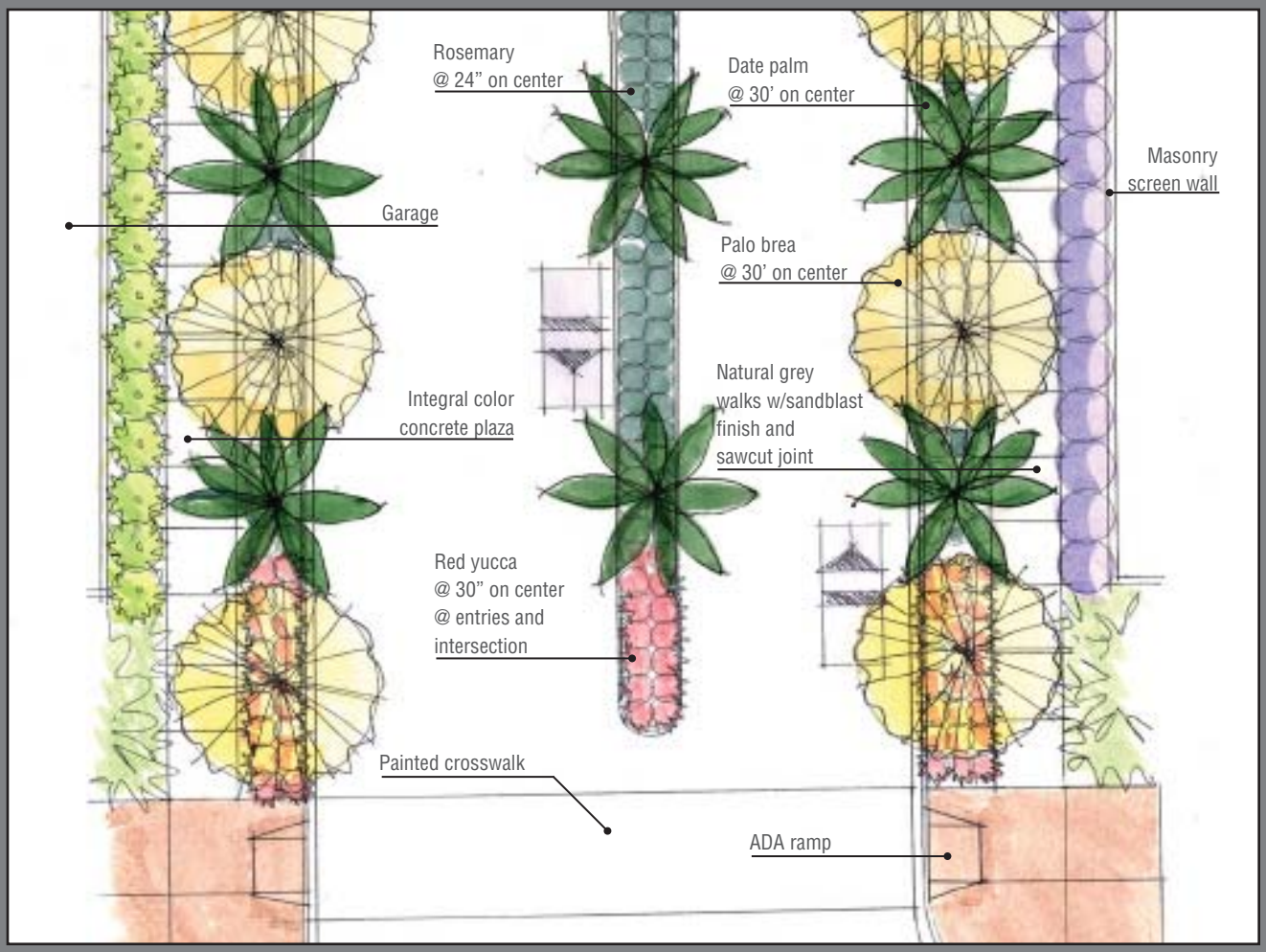

7'
10'
open view

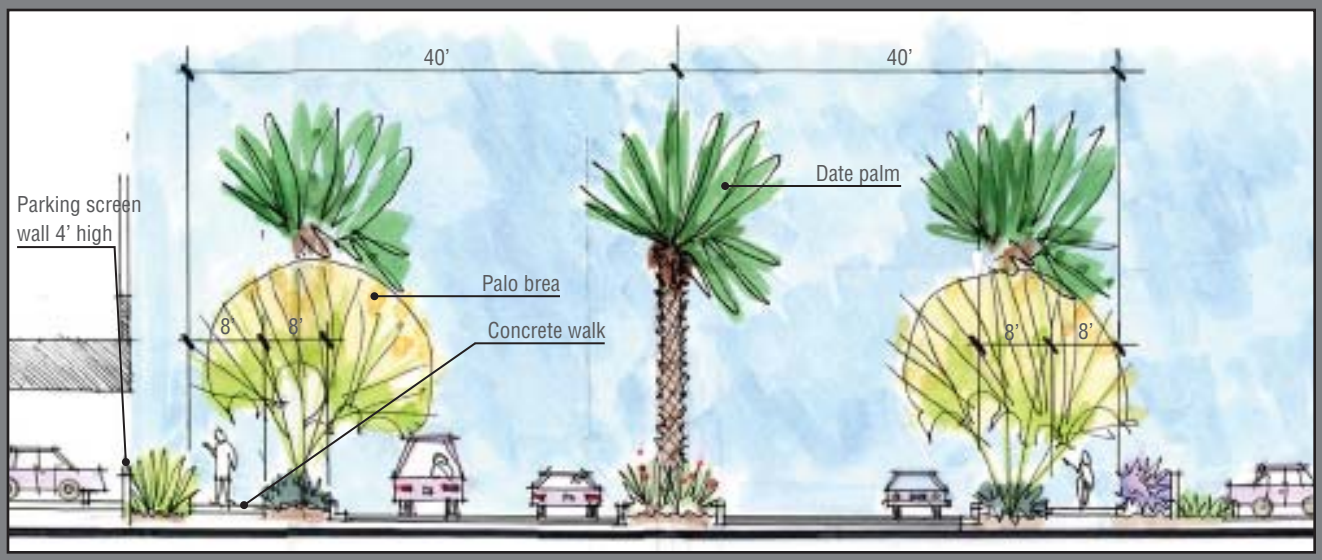
Collector Streetscape

Collector streets provide pedestrian links into and within the project. Sidewalks and landscape areas are slightly more intimate than the perimeter streetscapes, with 8' wide sidewalks separated from the curb by 8' wide landscape areas. Trees are spaced 24' o.c. with mass planting below. The existing streetscape along Filllmore will be continued within the project to emphasize the link to downtown Phoenix.

View West along Fillmore to Arizona Center

Installed streetscape along Fillmore


Rosemary
@ 24" on center
Date palm
@ 30' on center
Masonry
screen wall
Garage
Palo brea
@ 30' on center
Natural grey
walks w/sandblast
finish and
sawcut joint
Integral color
concrete plaza
Red yucca
@ 30" on center
@ entries and
intersection
Painted crosswalk
ADA ramp

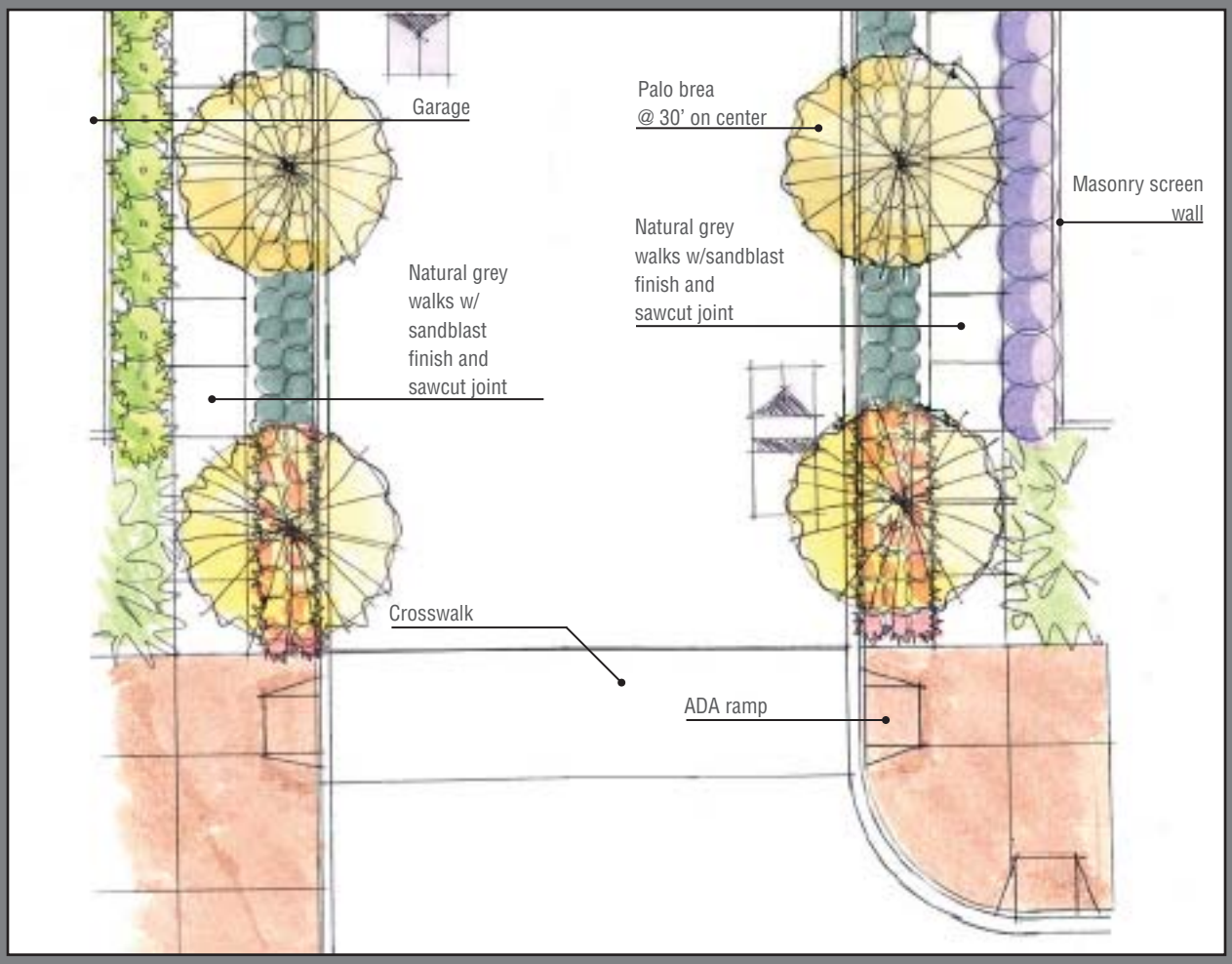

40'
40'
Parking screen
wall 4' high
Date palm
Palo brea
8'
8'
Concrete walk
8'
8'

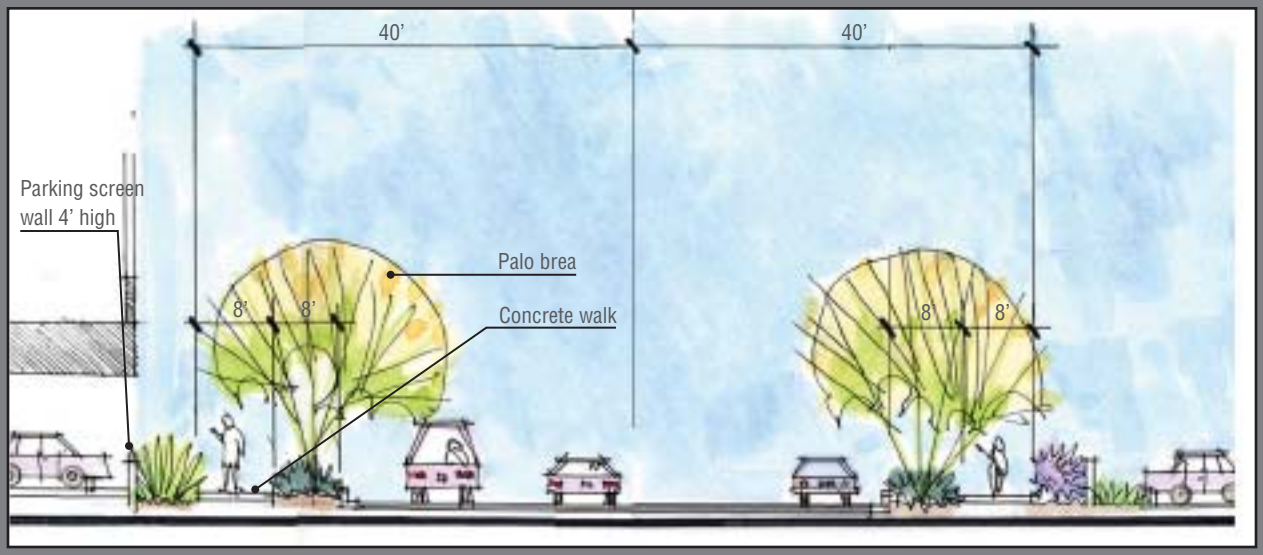
Minor Collector Streetscape

Minor Collector form the primary pedestrian links within the project. Sidewalks and landscape areas are slightly more intimate than the perimeter streetscapes, with 8' wide sidewalks separated from the curb by 8' wide landscape areas. Trees are spaced 24' o.c. with mass planting below. The existing streetscapes along all East/West streets will be improved to the City of Phoenix Ordinance and Copper Square Development Guidelines when applicable.

Existing streetscape on 5th St.

Existing streetscape on Pierce St.


Garage
Palo brea
@ 30' on center
Masonry screen
wall
Natural grey
walks w/
sandblast
finish and
sawcut joint
Natural grey
walks w/sandblast
finish and
sawcut joint
Crosswalk
ADA ramp


40'
40'
Parking screen
wall 4' high
Palo brea
Concrete walk
8'
8'
8'
8'

Materials Character

Paving materials and vertical wall elements should be of similar material and color that responds to the adjacent building architecture. Existing materials found on campus include materials such as stainless steel, rusted steel, integral color concrete and stuccoed masonry block. Future hardscape development should compliment this family of materials.

All site furnishings within the campus development should be of a similar aesthetic including material manufacture and style that compliments the specific building type and the greater campus collection. Site furnishings include all site furniture, waste receptacles and planters.

All campus areas should be illuminated in accordance with the City of Phoenix ordinance requirements. All building mounted and free standing light fixture types should compliment architectural styles and existing stock of fixtures with respect to material, scale and manufacture.


IGC
EMPLOYEE PARKING

Plant Character

Plant material selected for use within the campus is based on characteristics that provide visual interest, texture, fragrance and interactive qualities and movement. All plant selections should be comprised of native and regionally adapted species to minimize maintenance and maintain a reduced water budget. Ground plane top dress materials should match the color and texture of those existing on site. A minimum of 2" depth is required for all top dress materials for compliance with County dust control ordinances. An inventory of existing plant material is provided to illustrate the present use and location of trees and plants.

Common Name	Botanical Name	Location
Trees		
Date Palm	Phoenix dactylifera	Limit use to vertical forms in plazas and gateways
Desert Museum Palo Verde	Cercidium species	Use along interior pedestrian links
Native Mesquite	Prosopis velutina	Use along interior pedestrian links
Palo Brea	Cercidium praecox	Street Tree for Fillmore & Van Buren
Sweet Acacia	Acacia smallii	Street Tree for 5th Street and 7th street
California Fan Palm	Washingtonia filifera	Phoenix Union High School Historic District at wishbone path
Arizona sweet	Citrus species	Phoenix Union High School Historic District entry
Shrubs		
Chuparosa	Justicia californica	Interior gardens, informal plantings
Ruellia	Ruellia peninsularis	Massing
Texas sage	Leucophyllum species	Hedgerows, massing
Goldeneye	Viguera deltoidea	Interior gardens, informal plantings
Salvia	Salvia greggii	Interior gardens, informal plantings
Baja fairy duster	Calliandra eriophylla	Hedgerows, massing
Creosote	Larrea tridentata	Interior gardens, informal plantings
Brittlebush	Encelia Farinosa	Interior gardens, informal plantings
Groundcovers		
Yellow lantana	Lantana camara 'new gold mound'	Sight triangles, ground plane color massing
Pea bush	Dalea	Massing
Verbena	Verbena rigida	Sight triangles, ground plane color massing
Rosemary	Rosmarinus officinalis	Use within right of way along 5th street
Lawn	Cynodon dactylon	Phoenix Union High School Historic District at wishbone path, recreational/gathering areas
Accents		
Giant hesperaloe	Hesperaloe funifera	Building base
Red yucca	Hesperaloe parviflora	Sculptural massing
Nolina microcarpa	Bear grass	Sculptural massing
Muhlenbergia rigens	Deer grass	Sculptural massing
Bougainvillea	Bougainvillea species	Focal point, color mass
Agave desmettiana	Tropical agave	Sculptural massing
Ocotillo	Fouquierea splendons	Vertical form, massing

FLOOR associates

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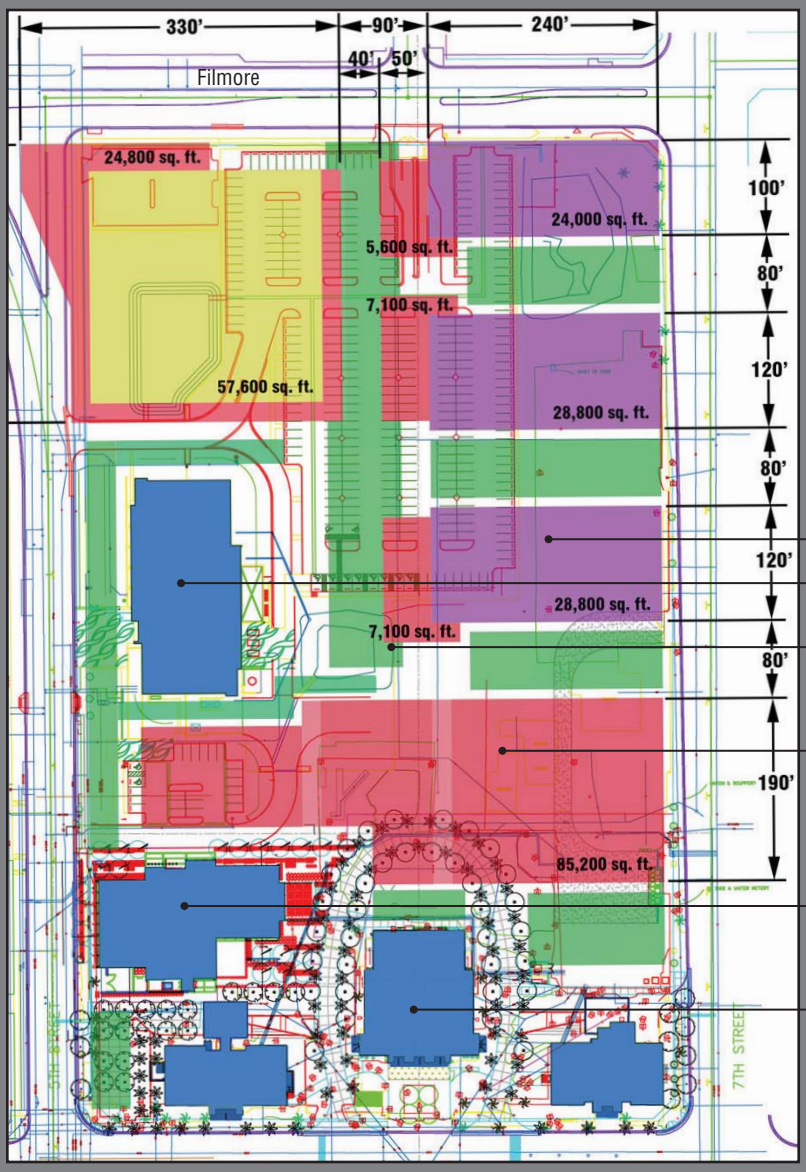
Phoenix Biomedical Campus

OPEN SPACE DIAGRAMS

Open Space - Campus

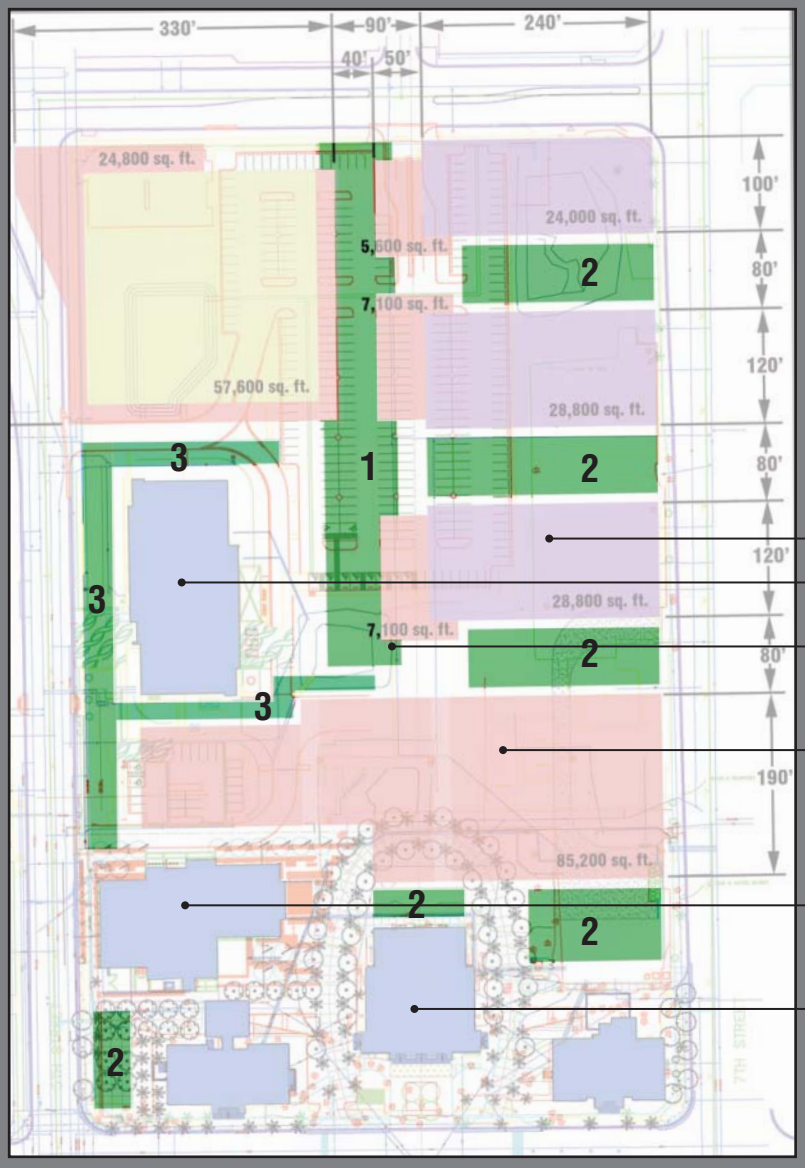


Use Distribution Legend

- Existing
- Research
- Academic
- Clinical
- Parking
- Open Space

Site allocation at grade

Open Space - Hierarchy



Green space highlighted

1. Primary civic green space
2. Sub-space: entry, courtyard, gathering
3. Connectors: paths, walkways, pedestrian area

Central Open Space

Fillmore Pedestrian Conenction

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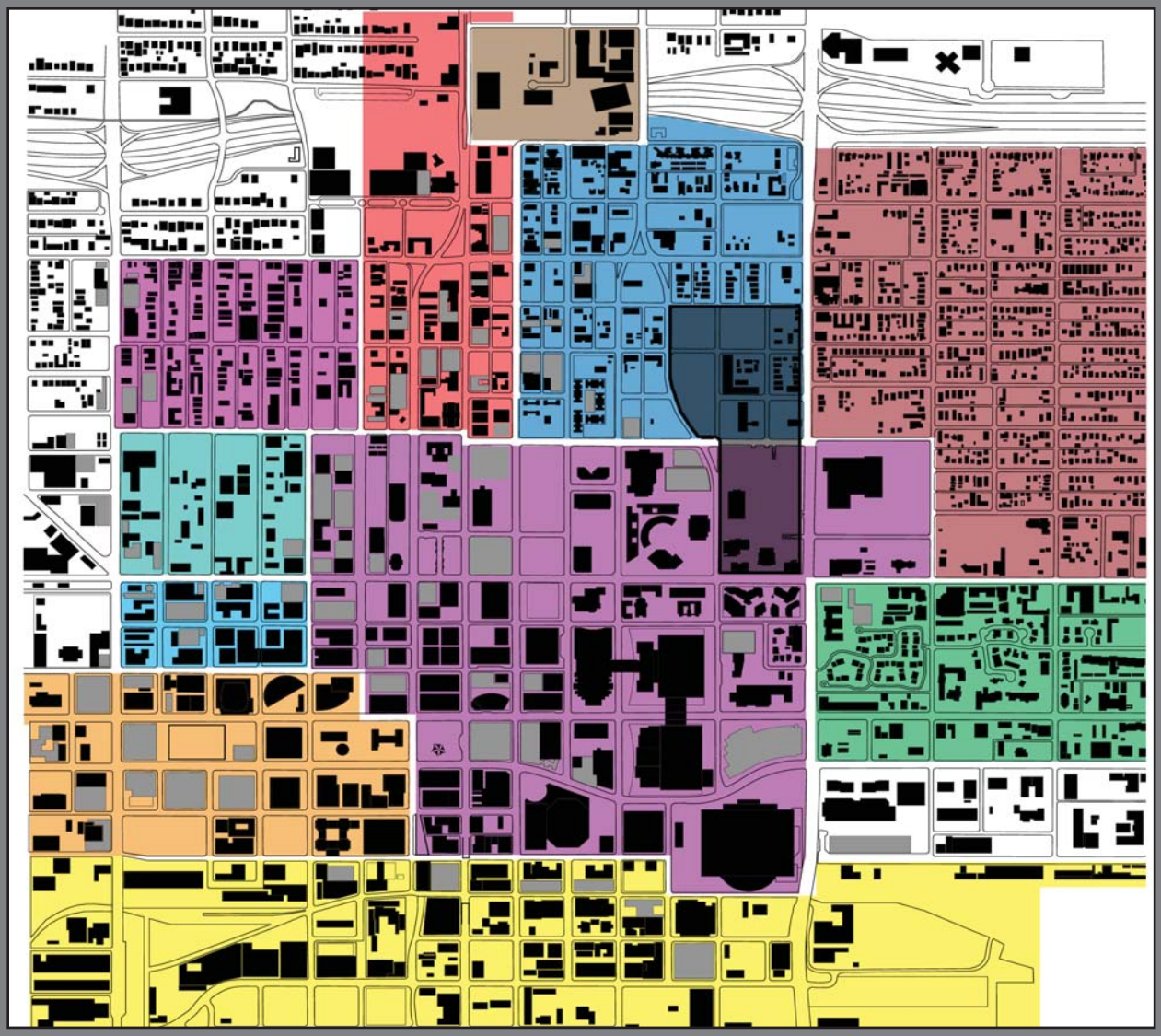
Phoenix Biomedical Campus

NEIGHBORHOOD & COMMUNITY

Regional Context



- Central Corridor
- Arts South
- East Roosevelt
- Garfield Neighborhood
- Historic Roosevelt
- Historic Roosevelt Spd
- Fillmore West
- Monroe West
- Booker T. Washington
- Government Mall
- Warehouse

Community Process

Neighborhood and Community

A series of public workshops and presentations were held to describe the project objective, receive feedback, consider advice and present final planning proposals. Organized by the City of Phoenix, these meetings included attendees from the following stakeholders:

- Neighborhood residents
- Neighbohood associations
- Business associations
- Affiliated academic interests
- Neighboring landowners both residential and commercial
- Developers or landowners considering projects within the vicinity of the Phoenix Biomedical campus
- Governmental agencies or representatives with vested responsibilities

These meetings were attended by a large cross section of these stakeholders and they were active and articulate about primary concerns, suggestions and support. A summary of results include:

- Preserive the Street grid as much as possible north of Fillmore
- Preserve east to west access across the site, south of Fillmore with structured developed green space and paths
- Do not develop a “wall building” along 7th Street
- Develop and provide parking on site to prevent over flow to neighborhood
- Density, height and population are positive features. These characteristics demonstrate an urban environment
- Heights should transition across the site and especially toward downtown
- Exterior spaces on the campus should be accessible to the public
- Reduce the impact of service vehicles and loading areas
- Complete the streetscape projects

Follow up presentations included an explanation and review of the essential campus planning proposal. The final campus plan demonstrates inclusion of these suggestions and qualities to a high degree.

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Suite 701
Tempe, Arizona, 85281
480.921.1515
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Phoenix Biomedical Campus

COMPARATIVE CAMPUSES

Comparative Campuses

In the earliest phases of the plan development, ASG developed a comparative matrix of similar campuses. This list of comparatives was drawn from a national reference point. The intent of this review was to establish bench mark program and development reference points of similar institutions to the projected characteristics of the Phoenix Biomedial Campus.

Areas of comparison included:

- Academic reference points
- College structure and composition~ this includes professional degree tracks and the population of respective classes.
- Existing Institutes or Centers.
- The nature and magnitude of Research efforts.

Campus development reference points:

- Institution age
- Patterns of development
- Relationship to the Institution's primary Academic Campus
- Relationship to Urban Cores or University towns
- Future development plans
- The existence or use of a Master plan

This group of Comparative Campuses includes:

- Emory University
- Johns Hopkins University
- University of Alabama at Birmingham
- University of California, San Francisco Parnassus
- University of Arizona
- Pennsylvania State University
- University of California, Los Angeles
- University of Maryland, Baltimore
- Texas Medical Center
- University of California, San Francisco, Mission Bay

Emory University

LOCATION - Atlanta, GA
CAMPUS ACREAGE - 64
YEAR FOUNDED - 1836

SPECIALTY
Avian Flu Resources
Influenza Center of Excellence
Emory Center for AIDS Research
Emory Eye Center
Emory Heart Center
Emory Vaccine Center
Winship Cancer Institute

SCHOOLS & CLASS SIZE
Medicine - 462
Pharmacy -
Nursing - 384
Public Health - 859
Dentistry

ASSOCIATED HOSPITALS
Emory Univ. Hosp. - 587 Beds
Grady Memorial Hosp. - 1,050 Beds
Crawford Long Hosp. - 583 Beds
Wesley Woods Hosp. - 100 Beds
Atlanta VA MC - 420 Beds
Egleston Children's Hosp. - 235 Beds

Johns Hopkins University

LOCATION - Baltimore, MD
CAMPUS ACREAGE - 44
YEAR FOUNDED - 1876

SPECIALTY
Multiple Institutes & Centers

SCHOOLS & CLASS SIZE
Medicine - 2,931
Pharmacy -
Nursing - 656
Public Health - 1,614
Dentistry -

ASSOCIATED HOSPITALS
Johns Hopkins Hosp. - 945 Beds
Johns Hopkins Bayview MC - 700+ Beds
Howard Co. General - 208 Beds

University of Alabama at Birmingham

LOCATION - Birmingham, AL
CAMPUS ACREAGE - 73
YEAR FOUNDED - 1936

SPECIALTY
Multitude Institutes & Centers

SCHOOLS & CLASS SIZE
Medicine - 1,536
Pharmacy -
Nursing - 569
Public Health - 345
Dentistry - 321

ASSOCIATED HOSPITALS
UAB Hospital - 900 Beds
UAB Medical West - 300 Beds
Cooper Green Hospital - 319 Beds
Huntsville Hospital - 881 Beds
VA MC - 313 Beds

University of California SF, Parnassus

LOCATION - San Franciso, CA
CAMPUS ACREAGE - 107
YEAR FOUNDED - 1848

SPECIALTY
Multitude Institutes & Centers

SCHOOLS & CLASS SIZE
Medicine - 600
Pharmacy - 754
Nursing - 602
Public Health -
Dentistry - 368

ASSOCIATED HOSPITALS
UCSF MC at Parnassus - 600 Beds
UCSF Children's Hospital - 150 Beds
UCSF MC at Mount Zion - 50 Bed inpatient unit
SF General Hospital MC -
Veterans Affairs MC -

University of Arizona

LOCATION - Tucson, AZ
CAMPUS ACREAGE - 48
YEAR FOUNDED - 1885

SPECIALTY
Arthritus Center
Cancer Center
Center on Aging
Emergency Medicine Research
Hispanic Center of Excellence
Respriratory Center
Sarver Heart Center
Valley Fever Center of Excellence
Steele Children's Research Center

SCHOOLS & CLASS SIZE
Medicine - 451
Pharmacy - 302
Nursing - 304
Public Health - 194
Dentistry -

ASSOCIATED HOSPITALS
University Medical Center - 355 Beds
VA Medical Center -

University of Pennsylvania

LOCATION - Philadelphia, PA
CAMPUS ACREAGE - 31
YEAR FOUNDED - 1855

SPECIALTY
Penn State Cancer Center
Bioengineering Institute
Central PA Center of Excellence for-
Research on Pregnancy Outcomes
Heart & Vascular Institute
Huck Institute of the Life Sciences
Jack Gitten Cancer Research Foundation
Kienle Center
Neuroscience Reseach Institute
Shock Trauma Center
Sleep Research & Treatment Center

SCHOOLS & CLASS SIZE
Medicine - 1,446 / Pharmacy -
Nursing - 940
Public Health
Dentistry - 590

ASSOCIATED HOSPITALS
Hospital of the Univ. of Penn - 695 Beds
Pennsylvania Hosptial - 515 Beds
Penn Presbyterian MC - 300+ Beds

University of California Los Angeles

LOCATION - Los Angeles, CA
CAMPUS ACREAGE - 124
YEAR FOUNDED - 1919

SPECIALTY
Multitude Institutes & Centers

SCHOOLS & CLASS SIZE
Medicine - 2,450
Pharmacy -
Nursing - 267
Public Health -
Dentistry - 488

ASSOCIATED HOSPITALS
UCLA MC (Westwood) - 600+ Beds
Santa Monica UCLA MC -
Resnick Neuropsychiatric Hosp. at UCLA -
Mattel Children's Hospital at UCLA - 120 Beds

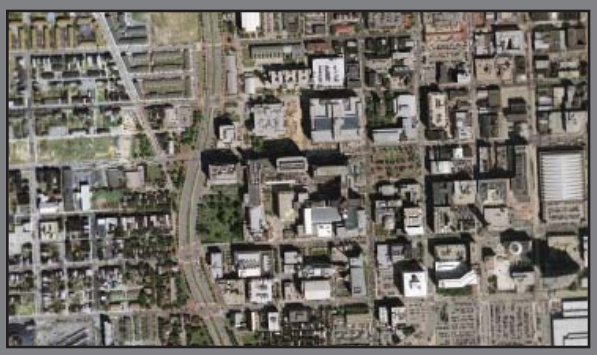
University of Maryland, Baltimore

LOCATION - Baltimore, MD
CAMPUS ACREAGE - 56
YEAR FOUNDED - 1807

SPECIALTY
Institute of Human Virology
Genome Sciences

SCHOOLS & CLASS SIZE
Medicine - 1,265
Pharmacy - 582
Nursing - 1,462
Public Health -
Dentistry - 618

ASSOCIATED HOSPITALS
University of Maryland MC - 665 Beds
VA Maryland HC System -
R Adams Cowley Shock Trauma Center -
Maryland Psychiatric Research Center -
Mercy Medical Center -



Texas Medical Center

LOCATION - Houston, TX
CAMPUS ACREAGE - 1,000
YEAR FOUNDED - 1945

SPECIALTY
Cardiac Cancer
Cancer Treatment
Neurosciences
Surgery
Organ Transplants

SCHOOLS & CLASS SIZE
Medicine -
Pharmacy -
Nursing -
Public Health -
Dentistry -

ASSOCIATED HOSPITALS
Harris County Hosp. District
The Houston Hospice and Palliative Care Systems
Memorial Hermann - Texas MC
Children's Memorial Hermann Hosp.
The Methodist Hosp.
St. Lukes Episcopal Hosp.
Shriners Hosp. for Children
Texas Childrens Institute
The Institute for Rehabilitation and Research
The University of Texas M.D. Anderson Cancer Center
Michael E. Debakey Veterans Affairs
MC in Houston

University of California SF, Mission Bay

LOCATION - San Franciso, CA
CAMPUS ACREAGE - 107
YEAR FOUNDED - 2003

SPECIALTY

SCHOOLS & CLASS SIZE
Medicine -
Pharmacy -
Nursing -
Public Health -
Dentistry -

ASSOCIATED HOSPITALS

Phoenix Biomedical Campus

LOCATION - Phoenix, AZ
CAMPUS ACREAGE - 28
YEAR FOUNDED - 2007

SPECIALTY

SCHOOLS & CLASS SIZE
Medicine -
Pharmacy -
Nursing -
Public Health -
Dentistry -

ASSOCIATED HOSPITALS

Comparative Campus Tours

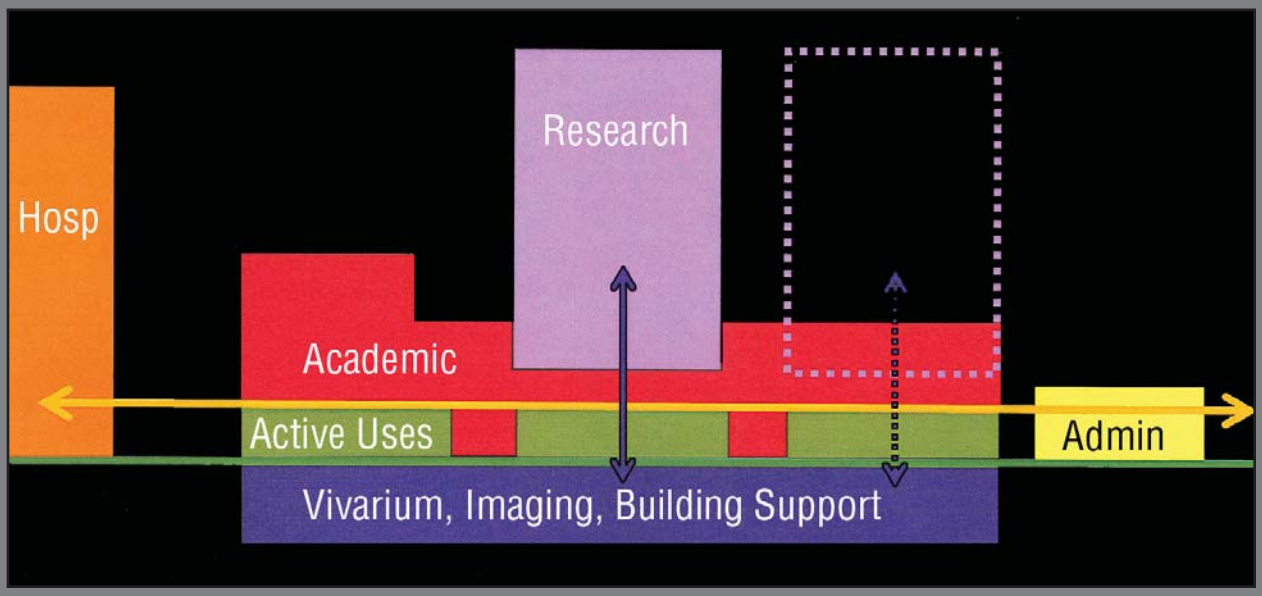
As part of the planning, the core team visited the following campuses:

- University of Maryland, Baltimore
- University of California, San Francisco-Mission Bay
- University of California, San Francisco-Parnassus
- University of California, Los Angeles-Westwood
- Johns Hopkins
- University of Pennsylvania
- M D Anderson-Texas Medical Center

Throughout the tours, healthcare professional, administrators and educators consistently reinforced the desirability of:

- Collaborative education
- Cooperatively shared facilities
- Community integration

The nature of the site, the program elements, and site users of the Phoenix Biomedical Campus sets the stage for these valued ideas to be effectively achieved.



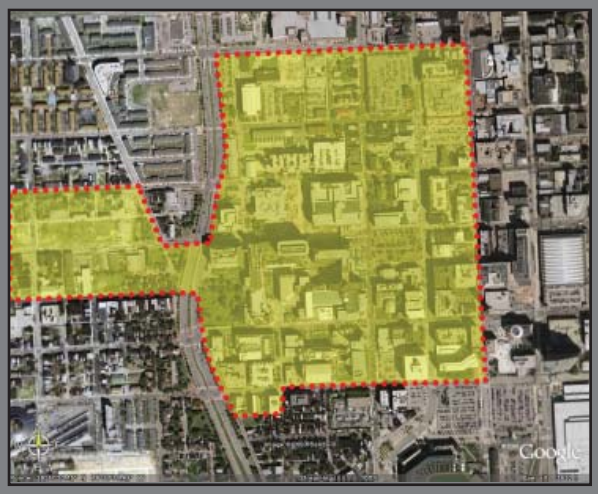
Tours

UCSF Mission Bay

- 107 acres (57.5 acres Mission Bay)
- Urban redevelopment site
- Street grid
- Large scale development
- Research/Medicine scope, similar to Phoenix Biomedical Campus

University of Maryland, Baltimore

- 56 acres
- Urban site
- Adjacent & integrated into downtown core
- High-rise buildings
- Multi-floor integrations
- Small pocket parks



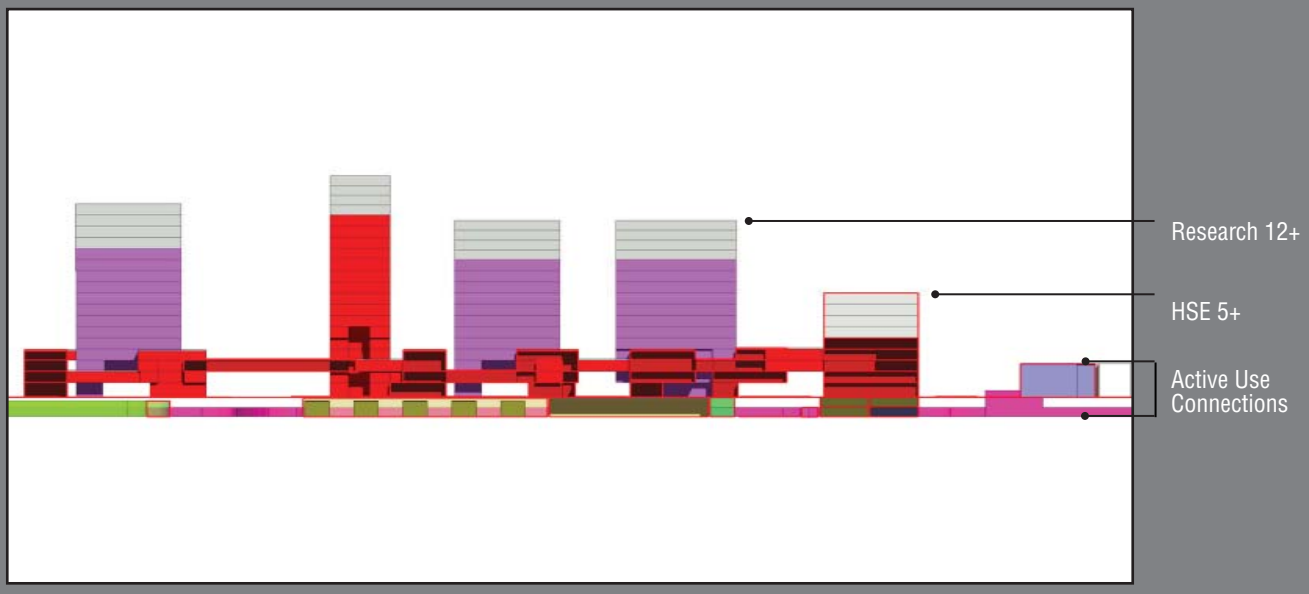
UNIVERSITY OF PENNSYLVANIA

- 31 Acres

Campus Tour Conclusions

The following statements are the practical results of our analysis and campus tours.

- Long-term yield based on short term diversity
- Research can be taller than 6-8 levels
- Build parking and accommodations early
- Campus requires common management of shared services
- Develop shared functions with common interdisciplinary areas
- Develop infrastructure early with streetscape, common areas and signage
- Building uses can evolve over time
- Share functions as applicable
- Intermix user groups as applicable
- Establish places for socialization
- Activate the lower levels of research buildings
- All modes of transit must be present



Building Height Diagram

Campus Master Plan Diagram

AYERS
SAINT
GROSS

Ayers/Saint/Gross, Architects + Planners
60 East Rio Salado Parkway
Suite 701
Tempe, Arizona, 85281
480.921.1515
www.asg-architects.com

Phoenix Biomedical Campus

APPENDIX

History

Site Development Plan History

In 2002 State leaders met in the Arizona State Capital building to discuss establishing Arizona as a player in bio-tech industry by establishing a one of a kind genomics research institute. Consequently a site was chosen and a development plan conceived. The project became known as the Phoenix Biomedical Campus, and is defined by its borders; 5th Street to 7th Street, and Van Buren to Fillmore in Downtown Phoenix (the former location of the Phoenix Union High School). The overall goal for campus site design is to create a sense of place for the Phoenix Biomedical Campus while respecting the heritage of the Phoenix Union High School component. The PBC Master Plan has gone through several versions since its conception, however in all versions three historic buildings remain on the south end of the site.

ZGF-Phoenix Biotech & ICG/TGen

ZGF-Phoenix Biotech Campus Study

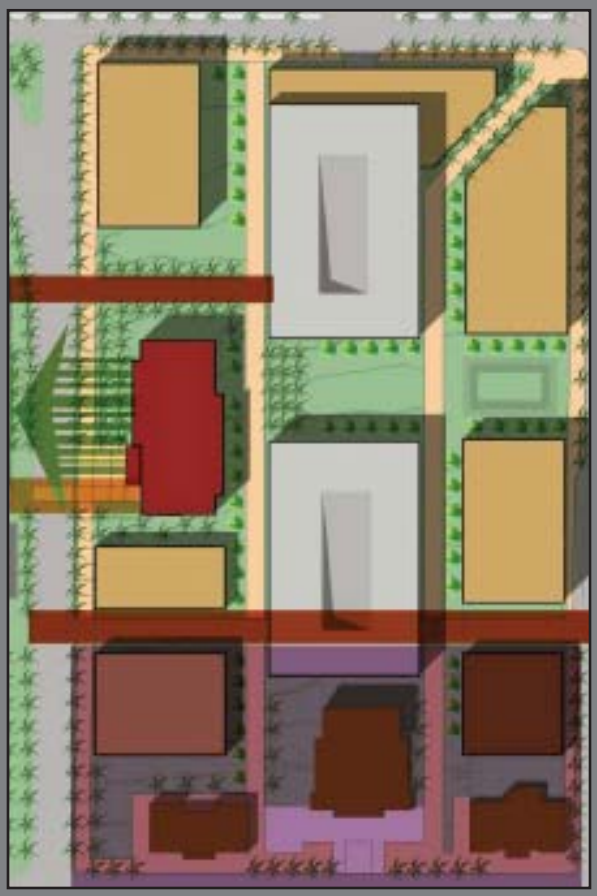
October 2002

Stantec Consulting Inc., the Stein-Cox Group, Economic Research Associates and Zimmer Gunsel Frasca provided the City of Phoenix with this study to locate the ICGv/TGen Facility and establish a development plan for site build out. This plan was used to establish a development plan pro-forma.

ICG/TGen Schematic Design Site Development

February 2002

DPR-SmithGroup provided this plan which solidified the parking garage locations and identified the phasing plan, which included a temporary surface parking lot to support the initial IGC/TGen Building.



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Acknowledgements

Phoenix Biomedical Campus

Phoenix, Arizona

University of Arizona

Arizona State People

Northern Arizona People

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Campus Master Plan and Brochure designed by Ayers/Saint/Gross, Architects + Planners
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