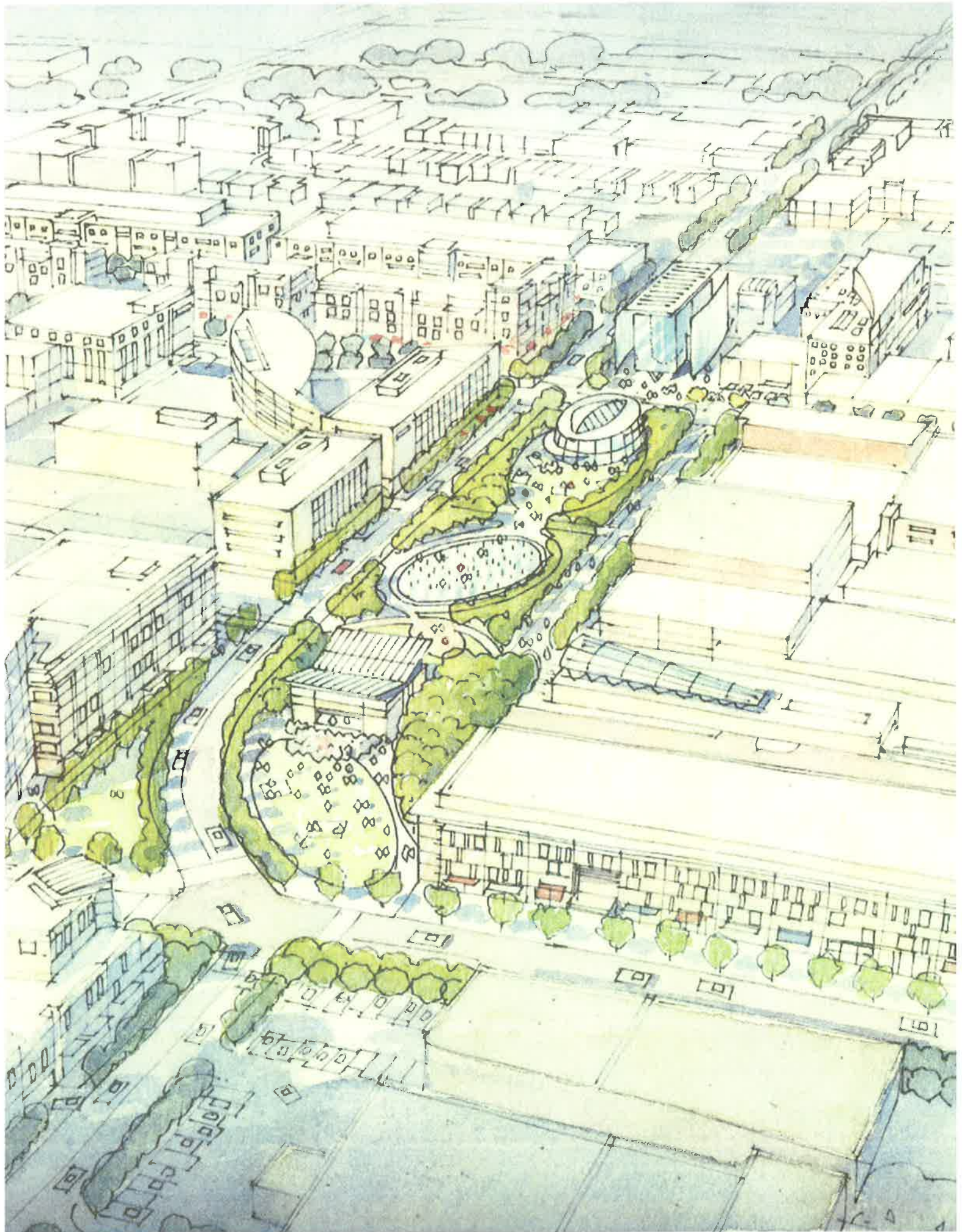


Master Plan



CORTEX Knowledge Community

November 2012





Massachusetts Institute of Technology, Cambridge, MA

Knowledge Community

Introduction

For years, laboratory and research campuses have stressed functional and economic considerations over quality design and place-making. This imbalance is best illustrated through the typical research park, a loose collection of suburban, single-use buildings surrounded by parking lots. Over the past few decades, numerous universities have followed this model to accommodate their applied science activities and form stronger ties to commercial science ventures.

But the quality of these environments rarely reflects the university's accomplishments or aspirations. In

fact, too many research parks fail to spark the kind of innovation and collaboration sought by most institutions. Demographic shifts among university faculty and entrepreneurs—think younger, smaller, smarter companies—along with emerging trends in research design suggest the physical settings of research environments need to change to support this changing culture and its influence. Today, a more integrated approach to research environments is emerging—one that recognizes the equal importance of function, community and artistry in the making of these places.

A vibrant and stimulating physical environment is essential to a successful research community.



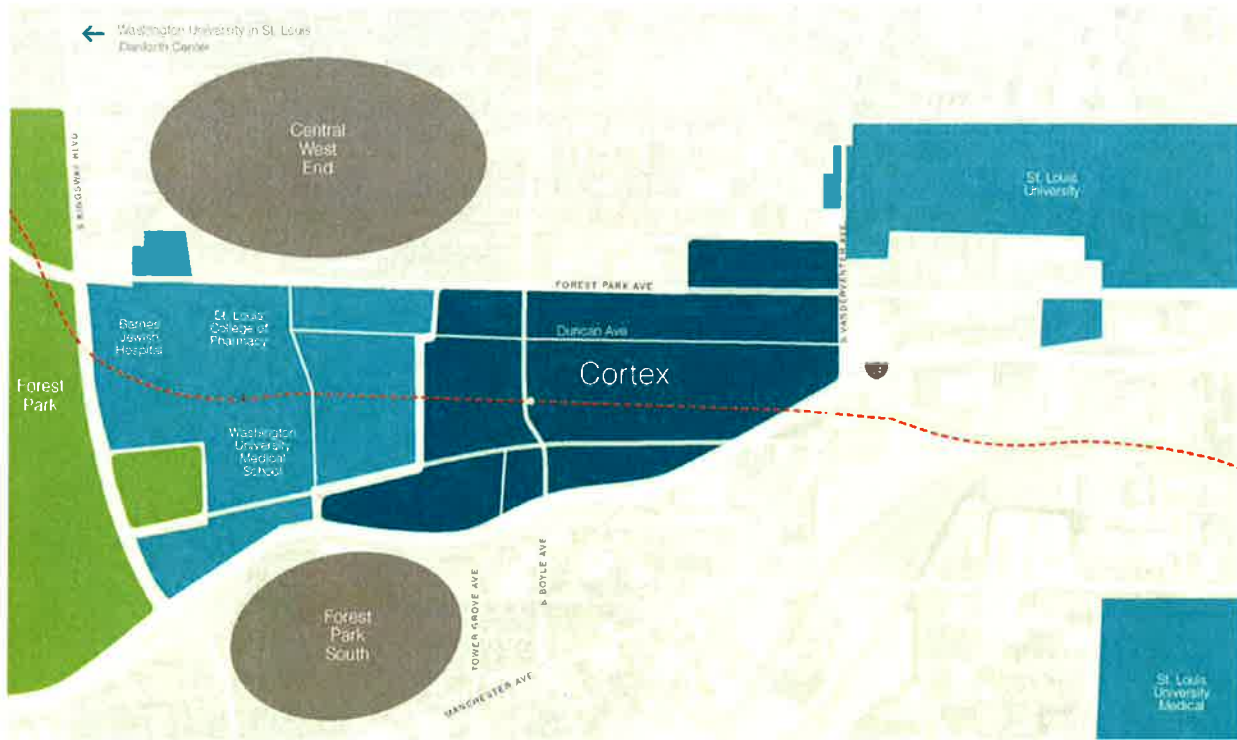
Knowledge Community Components

The CORTEX District is being planned as a knowledge community, a lively setting for work, play and living. It will encompass far more than laboratories and offices for research. In contrast to past models of research parks as an isolated suburban enclaves, a knowledge community is designed to become an urban neighborhood full of 24/7 activity. Housing, retail, hotels, open spaces and public amenities are all part of the development to attract young entrepreneurs and small companies in addition to seasoned scientists, corporate executives and local residents.

Architecturally, the research buildings of knowledge communities are open and dynamic to reveal the

innovations taking place inside. Existing structures can be retrofitted with flex/cool space -- open, unstructured work areas -- to support unconventional workplace arrangements. Ground-floor spaces support retail, restaurants, cafes and "street science" -- visible work places exposing scientific and research activities to passersby.

A knowledge community may incorporate an iconic center at its heart. This unique space provides a place for tenants to congregate and stage key events, and establishes a memorable identity for the research district.



CORTEX District's surrounding context

Existing Conditions and Opportunities

Local Context

The Center of Research, Technology and Entrepreneurial Exchange (CORTEX) is a not-for-profit partnership of major institutions based in St. Louis. This consortium was formed in 2002 by Washington University, Saint Louis University, the Barnes-Jewish Hospital Foundation, the University of Missouri-St. Louis and Missouri Botanical Garden.

The 240-acre CORTEX District is strategically located near to these institutions to take advantage of their resources as well as community amenities and cultural assets. Located to the west of the district is Forest Park, home to a zoo, an art museum, a science center and an outdoor theater. Between the park and CORTEX is the top-ranked Washington University Medical School and Barnes Jewish Christian Hospital.

Anchoring the district's east end is Saint Louis University and its medical school. Nearby, the Center for Emerging Technologies, sponsored by the University of Missouri-St. Louis, has expanded to accommodate burgeoning start-up companies.

Further to the east is the Grand Center neighborhood, a cultural district supporting the Pulitzer Foundation for the Arts, Sheldon Concert Hall and Powell Hall, home to the St. Louis Symphony Orchestra.

To the south is the Missouri Botanical Garden where research into biodiversity is ongoing. To the north is Central West End, an historic mixed-use neighborhood, and to the south is the Grove neighborhood featuring a variety of restaurants, shops, and galleries.



Washington University,
Danforth Campus



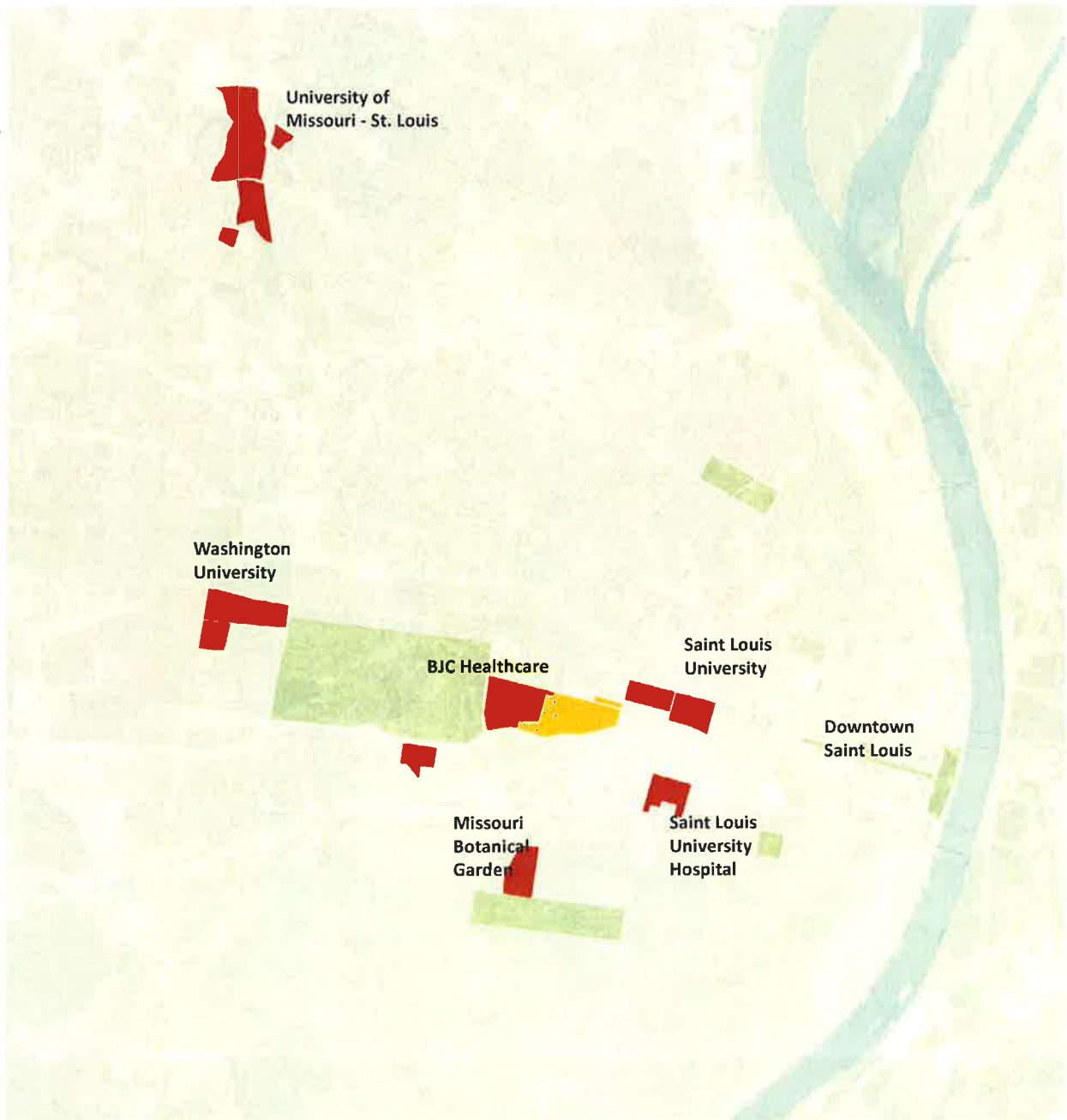
Barnes Jewish Hospital



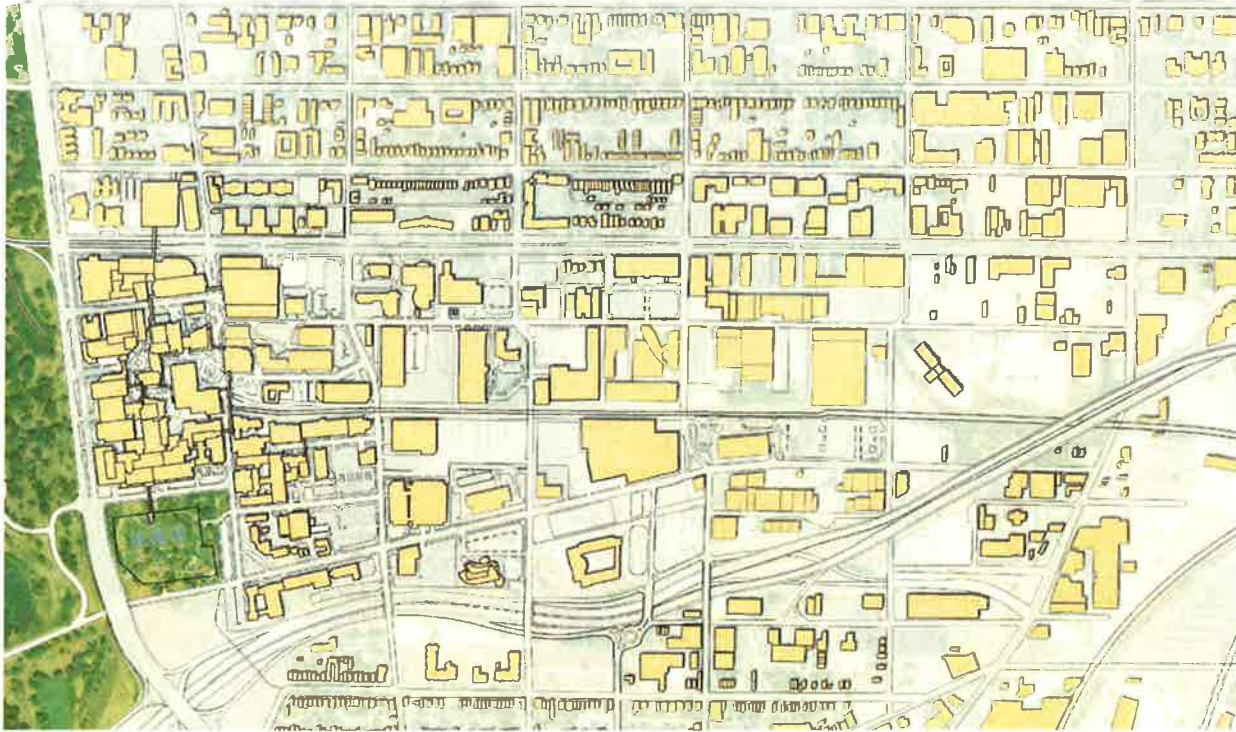
Missouri Botanical Garden



Downtown St. Louis



Location of the CORTEX District within Greater St. Louis



Existing conditions

CORTEX Assessment

Site Challenges

The Master Planning process included interviews with entrepreneurs, city officials, university and hospital leadership, researchers and local developers to determine their needs. Their comments highlighted deficiencies within the current physical environment of the CORTEX District as follows:

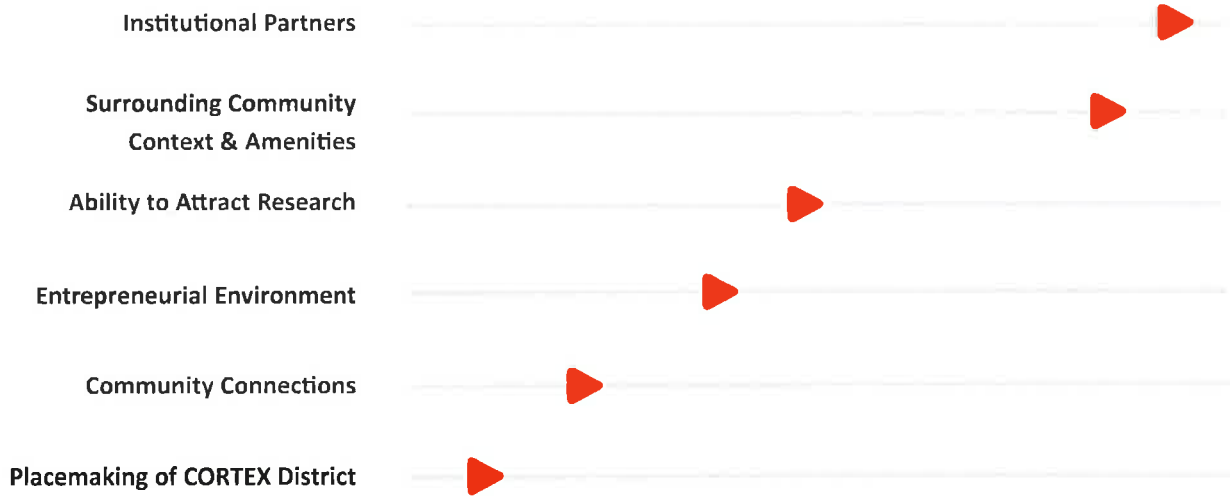
- Overall, the area is industrial in character and lacks green space.
- Public spaces and streets are currently neglected.
- Recently completed buildings in the district are inwardly focused, surrounded by fences and difficult to enter from a public street.
- Structures within the eastern portion of the district primarily accommodate parking, services, utility infrastructure and support staff, rather than researchers.

The chart at the top of page 9 was developed through discussions with key stakeholders, city officials and the development community. It illustrates how CORTEX performs in key areas. The consortium's institutional partners and surrounding amenities, such as Forest Park and the Central West End neighborhood, are important assets in attracting talent and companies to the district. However, the current connections to these assets and the place-making qualities of the CORTEX district are poor and may severely limit its overall success. But if CORTEX is able to improve its place-making and connectivity, it will also improve the entrepreneurial environment and the ability to attract research.

This chart should be periodically revisited to benchmark how CORTEX is advancing each of these indicators.

Limiting Attribute

World Class Attribute



Existing Boyle Avenue



Existing Duncan Avenue



Existing parking areas



Existing historical assets



Proposed CORTEX Common along Boyle Avenue

Guiding Principles

Think Like a Community

- 1 Innovate and Collaborate
- 2 Connect Ideas and People
- 3 Generate, Attract and Grow Companies

Act Like A Community

- 1 Place-Making Matters
- 2 Create Nodes of Activity
- 3 No Back Doors

In a Community, Every Decision Counts

Existing Land Use



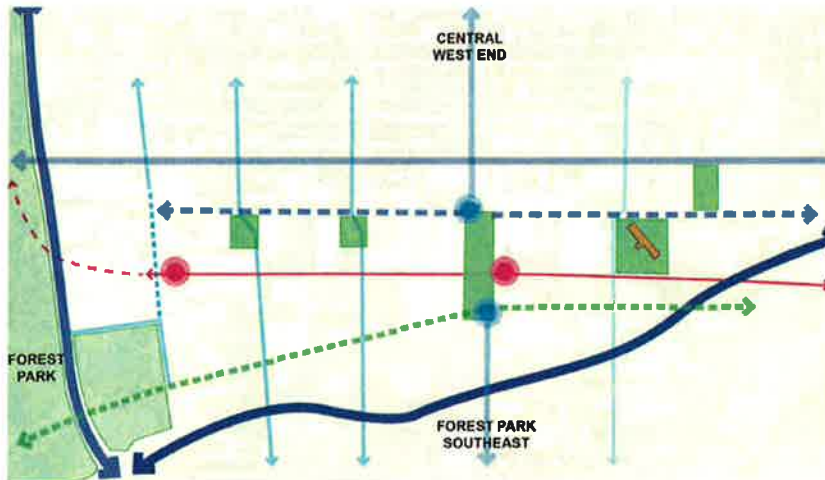
Intense Focus of Activity

Forest Park to Euclid
Clinical, Research, Teaching

Support and Service

Taylor to Newstead
Parking, Utility, Support Services

Tap into existing community and institutions



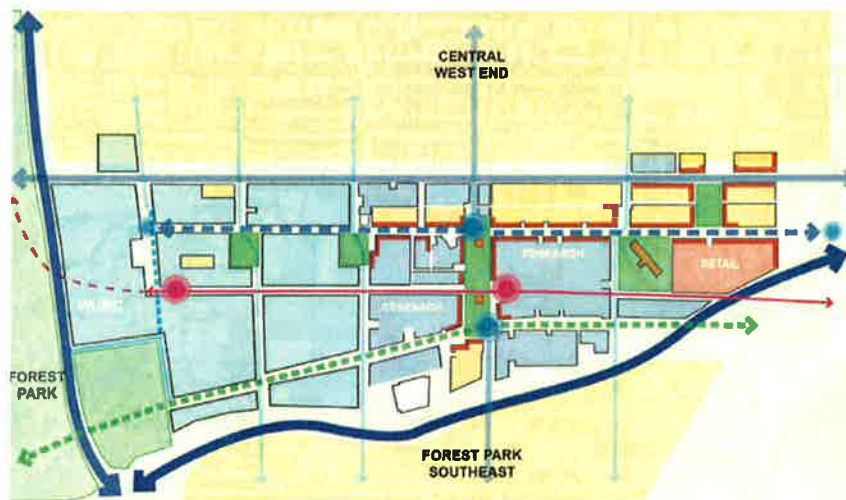
North-South Streets

Boyle, Newstead, Taylor, Sarah
Residential Connectors – Central West End, Forest Park Southeast

East-West Streets

Duncan, Clayton
Institutional Connectors – WUMS, BJC, College of Pharmacy, SLU

Integrate uses and strengthen connections

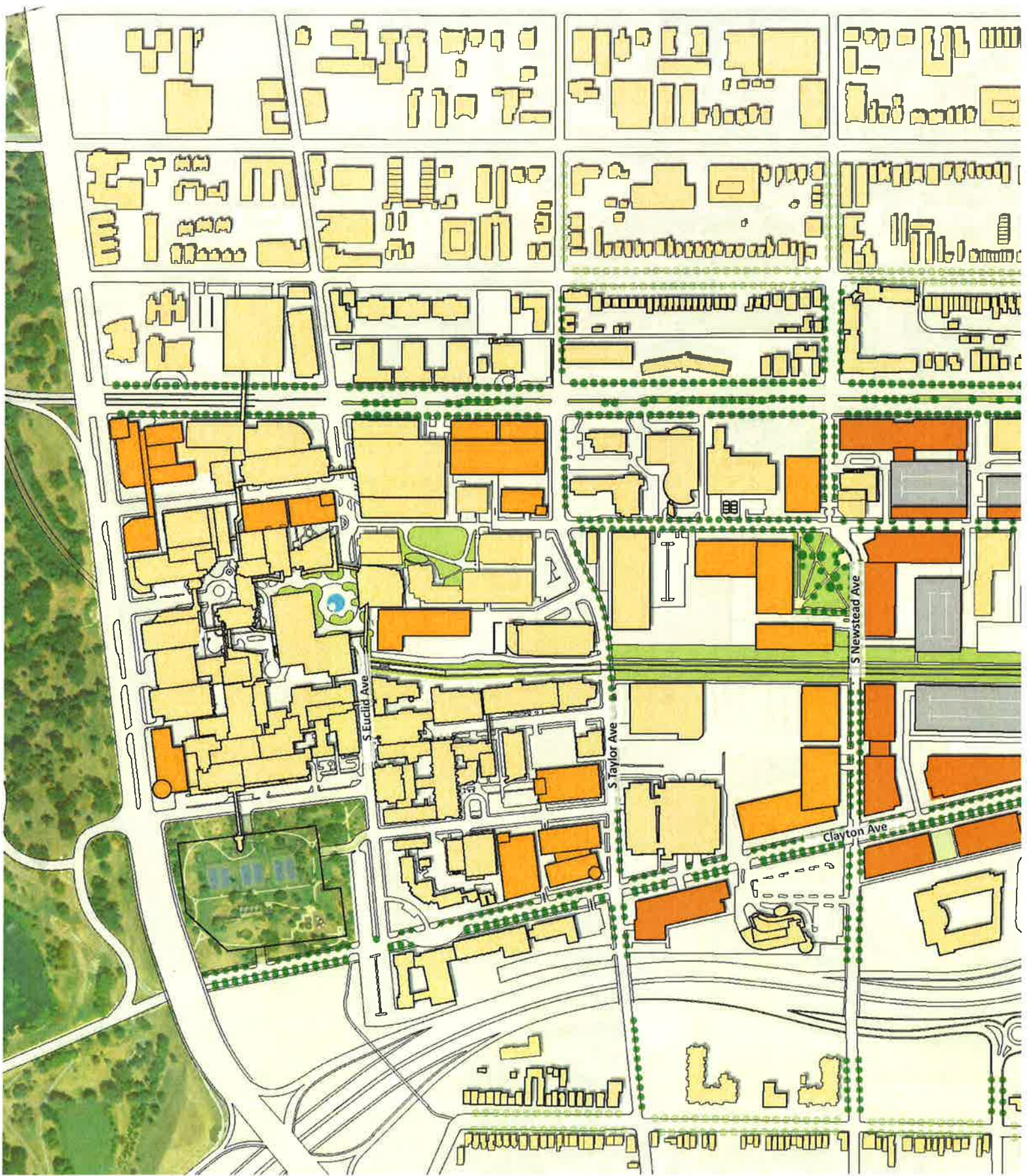


Research / Clinical

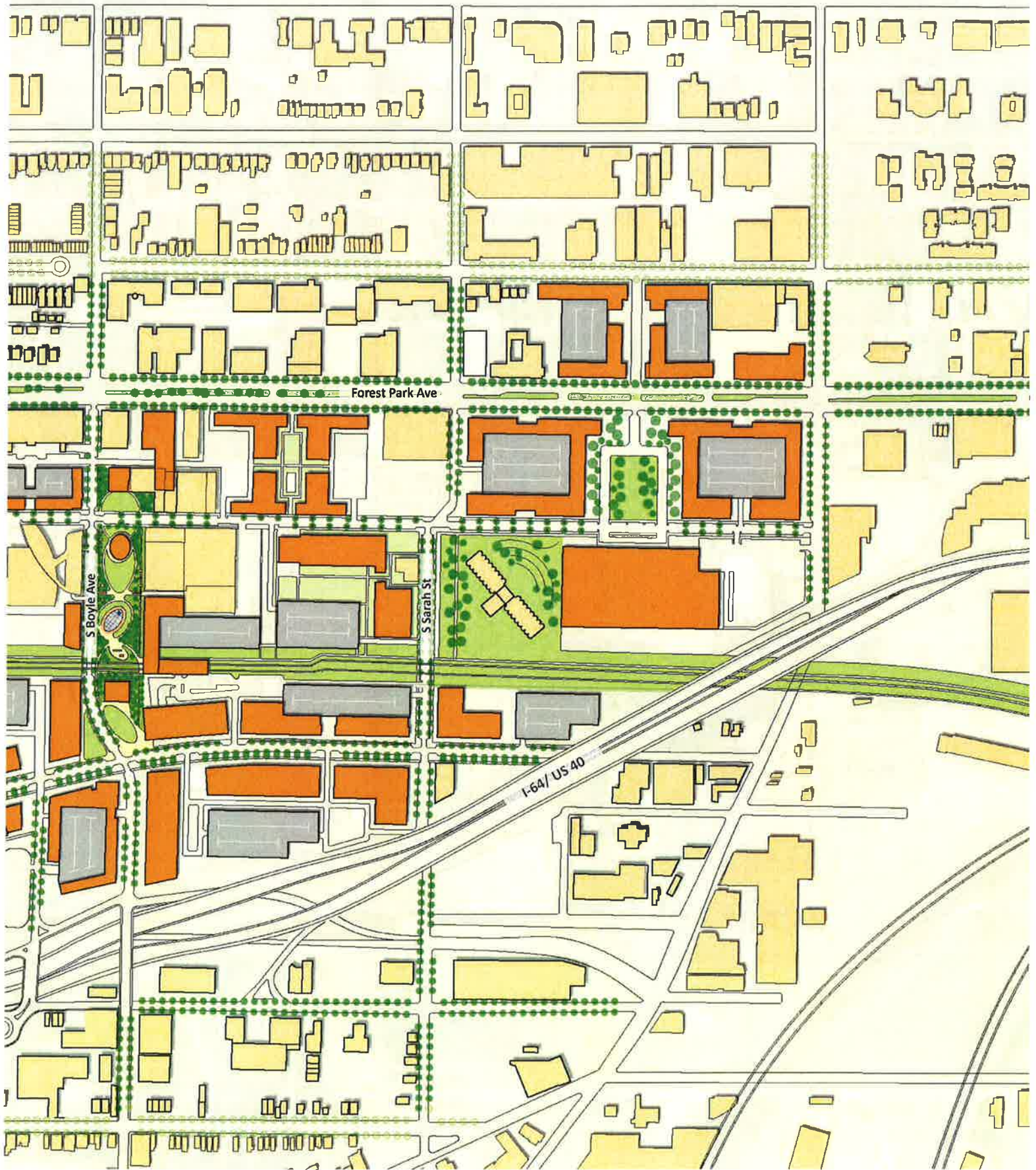
Specific Uses
Lab-Office, Iconic Center(s), Flex/
Cool Space [CIC], Conferencing, Street Science

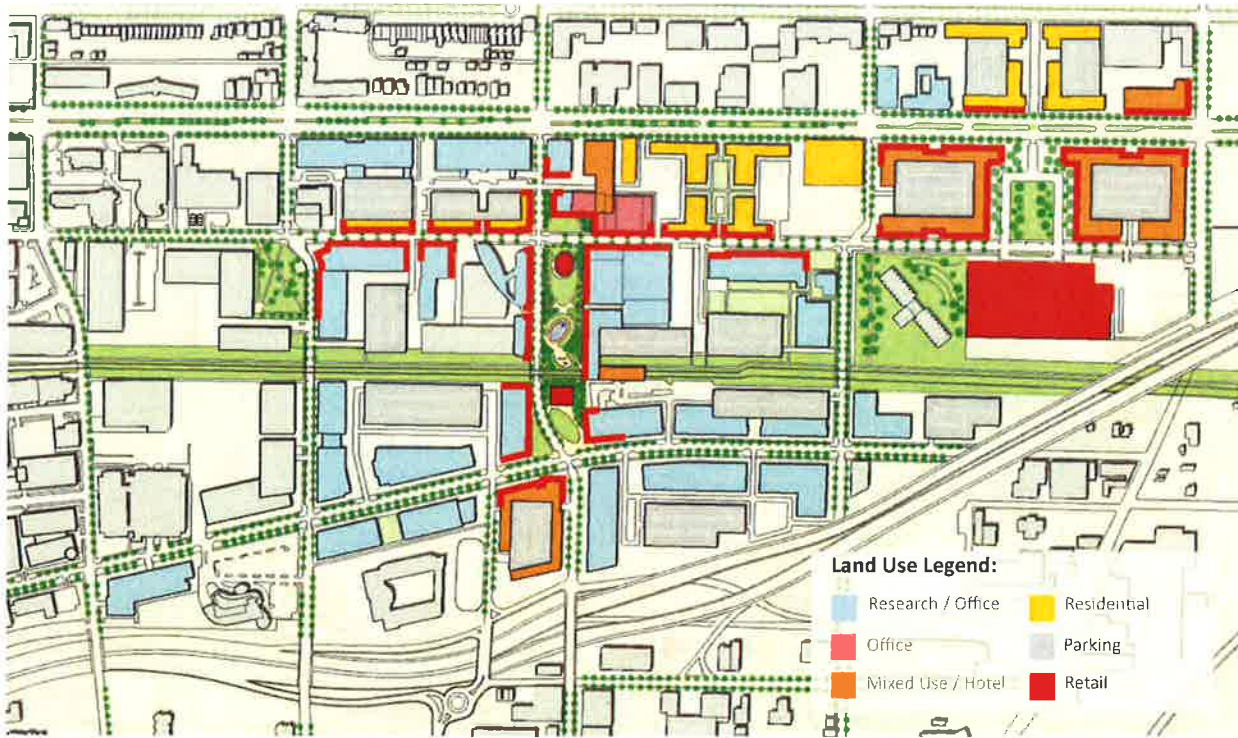
Community

Specific Uses
Residential/Hotel, Retail, Streetscape, Open Space



Proposed Master Plan





Proposed Master Plan Land Use

Master Plan

Goals

The Master Plan establishes a vision for the CORTEX District as a mixed-use knowledge community that will seek to:

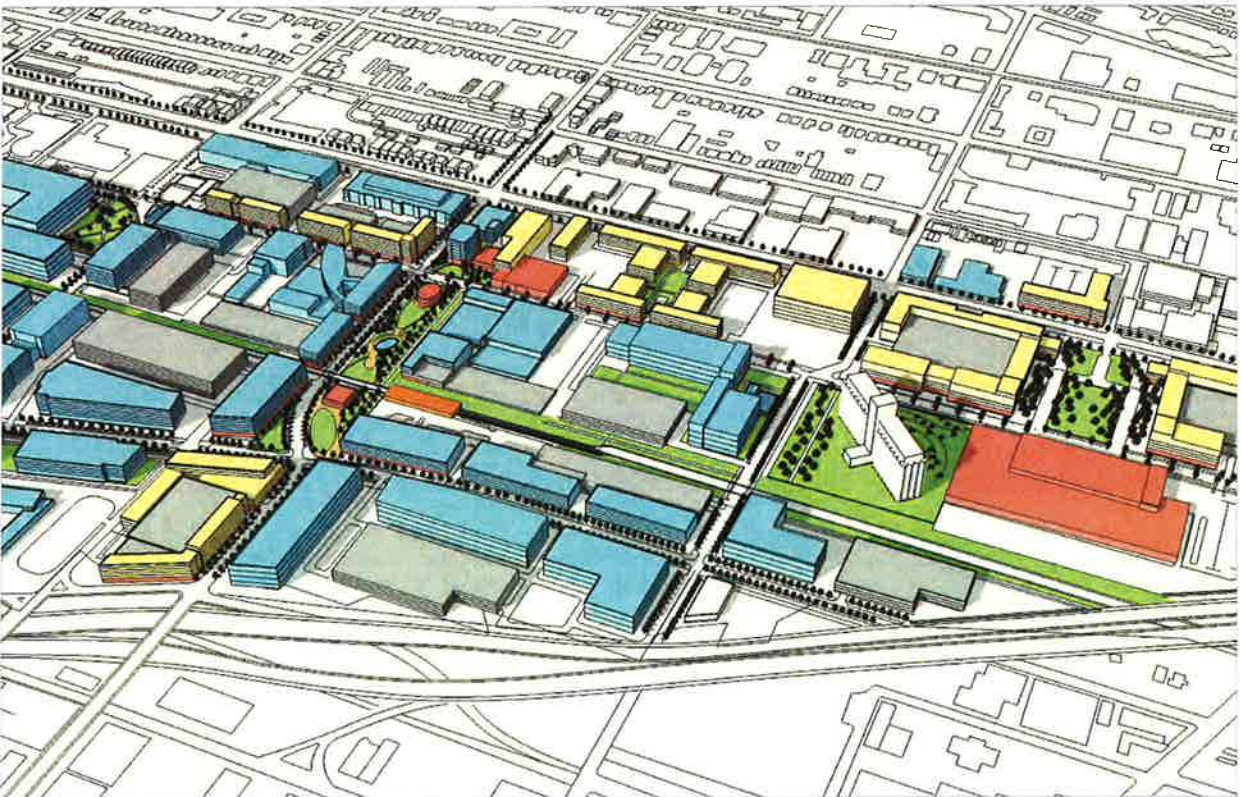
1. Attract and retain top research and entrepreneurial talent.
2. Connect to surrounding amenities and neighborhoods.
3. Create a cohesive community through a structure of open space and complete streets.
4. Revitalize existing industrial buildings.
5. Strengthen connections to Forest Park through a greenway along Clayton Street.
6. Establish a public realm activated by ground-floor uses, such as retail, meeting spaces, public amenities and street science.

Land Use

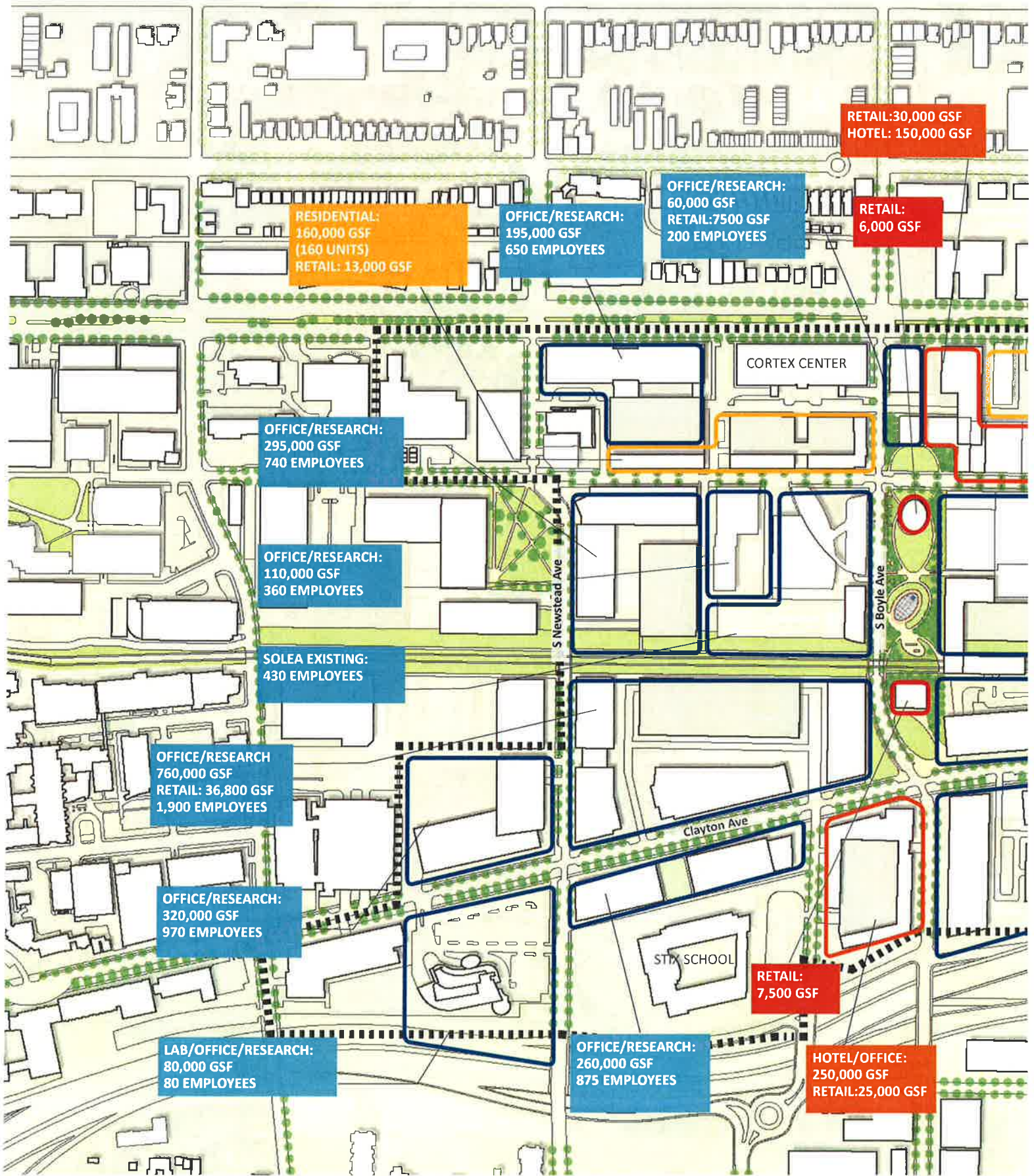
Research uses are grouped around the proposed CORTEX Commons and extended west to Newstead Avenue and east to Sarah Street. This cluster is connected to the medical campus through improved infrastructure, including pedestrian and bicycle paths, along Duncan and Clayton avenues.

Along Duncan Avenue, a mix of housing and research is activated through ground-floor uses such as retail, street science and residential amenities, such as meeting spaces, fitness facilities and lounges.

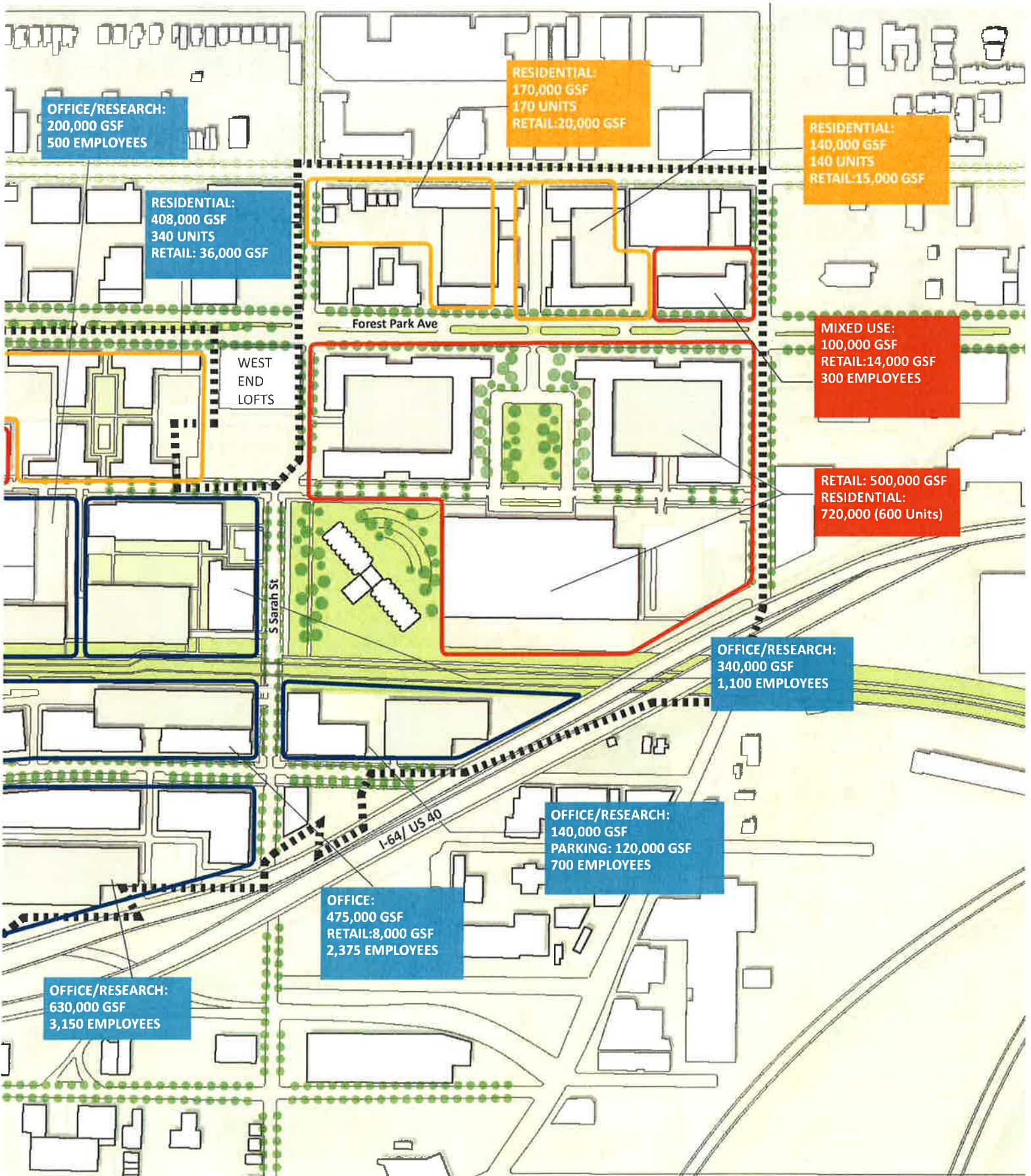
To the west, a proposed retail node anchored by a significant tenant takes advantage of the visibility from the nearby highway and multiple access points from Forest Park, Vandeventer and Duncan avenues. To the north of the anchor tenant, small retailers on the ground floor of residential buildings enhance the walking experience along Duncan Avenue.

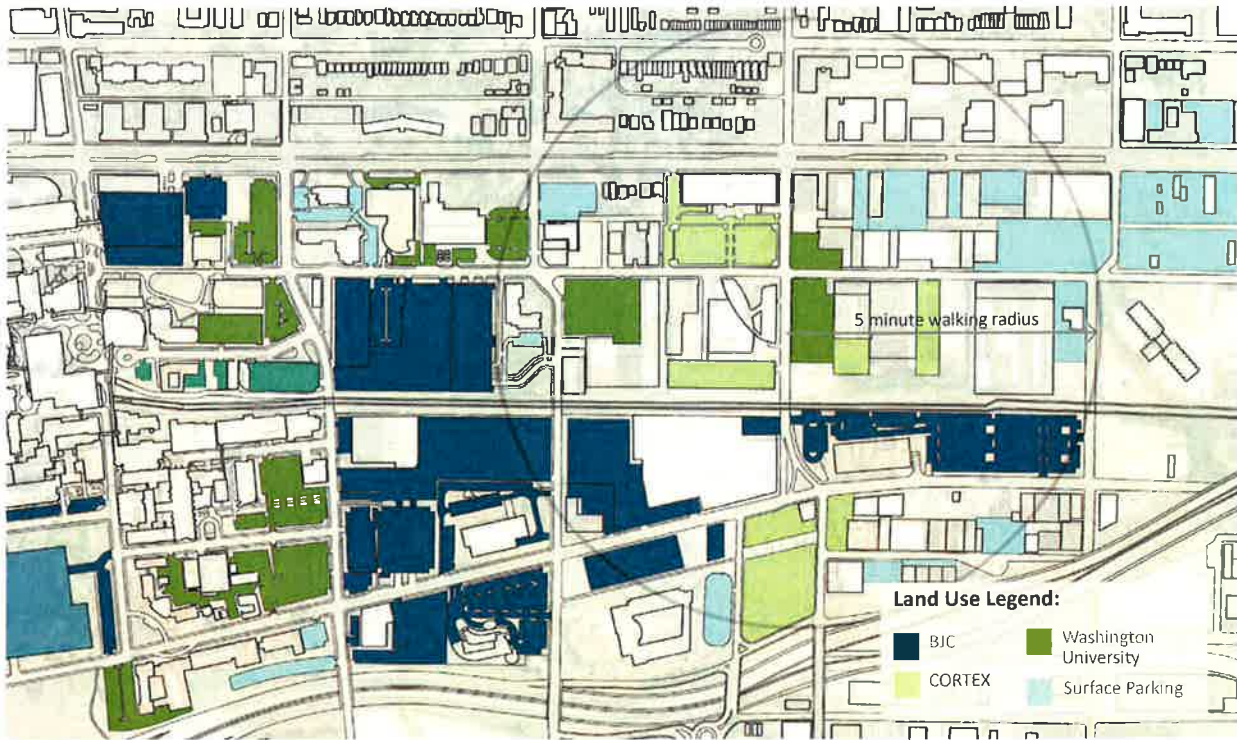


Proposed Master Plan Land Use



Potential Future Development





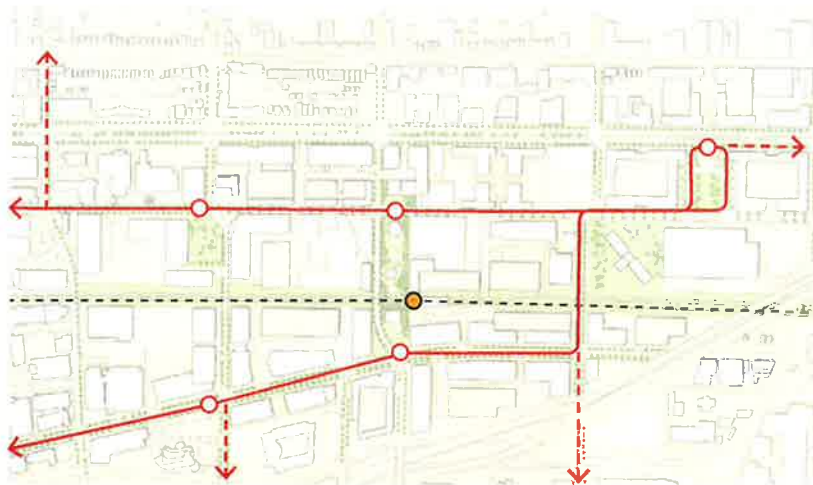
Existing parking ownership

Transportation Planning

A comprehensive transportation planning needs to be undertaken to address the needs of the CORTEX District as well as those of adjacent institutions, including BJC Healthcare and Washington University Medical School. Currently, each institution or business manages its individual parking and transportation policies, and coordination of parking and transportation among these entities only occurs to solve specific needs as they arise.

The transportation plan should consider sharing parking resources and shuttle routes, establishing a bicycle program and exploring the creation of a single transportation authority for the district. This scale of planning will allow the transportation infrastructure to be designed to efficiently and serve the collective needs of the entire district.

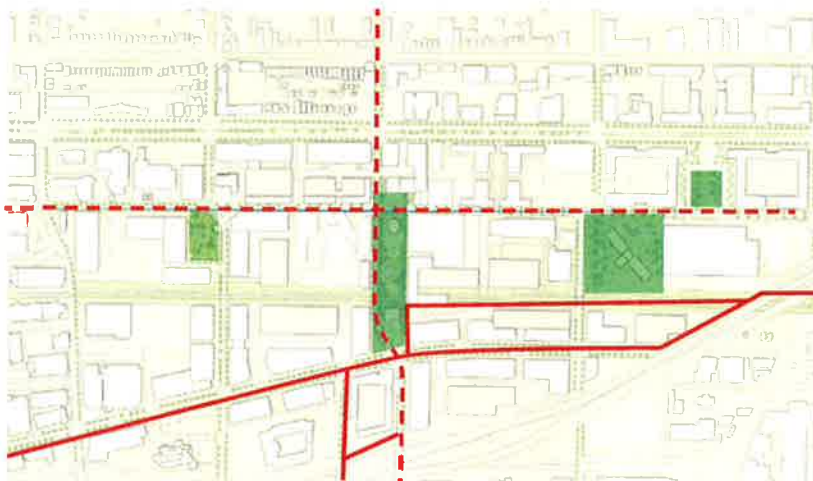
Shuttle & MetroLink



Bus: Large parking structures, key destinations and CORTEX Commons should be connected by an efficient shuttle bus system. A neighborhood shuttle route should be considered over the long term to strengthen connections between the district and surrounding neighborhoods and institutions.

- Shuttle Stop
- ← Connection to Barnes Jewish Hospital
- Shuttle Route
- - - Future Connection
- MetroLink Station
- - - MetroLink Line

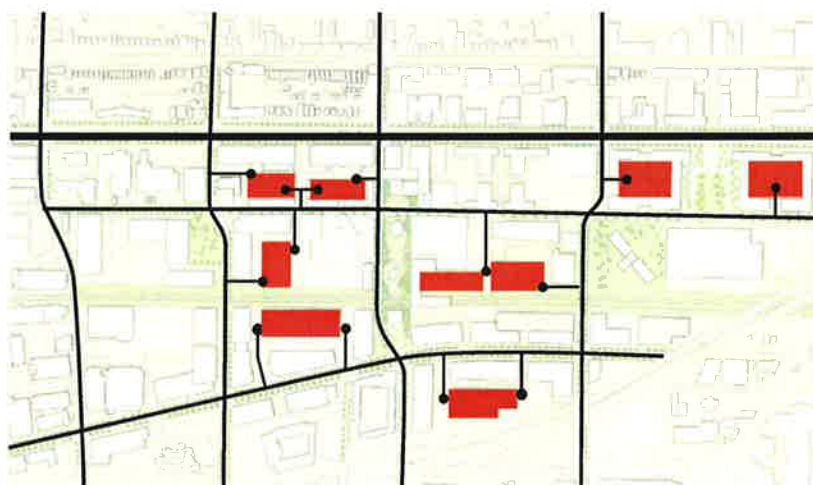
Bicycle Network



Bicycle: Clayton Avenue will incorporate a designated bike path to serve as a greenway extension of Forest Park. Boyle Avenue will have striped bike lanes to serve as a north-south neighborhood connector. To foster a cycling culture, each building should provide bike-share facilities in the lobby or another public space. The bikes can be checked out with the building receptionist, thus increasing the mobility of the tenants. This program can be a precursor to a more managed bicycle-sharing effort integrated with surrounding neighborhoods and institutions.

- - - On-Street Bike Lane
- Dedicated Lane
- Open Space / Parks

Parking Access



Parking: The large dimensions of the blocks that run between Duncan and Clayton avenues allow freestanding parking garages to be mostly hidden from public view. Locating the garages within the blocks minimizes the negative impact of parking structures on the district's streetscapes and open spaces. It provides two ways for vehicles to exit and allows cueing within the block to mitigate stacking within the garage and nearby streets.

- Access Road
- Street
- Parking Garage



City Garden, an example of native plantings and bioretention

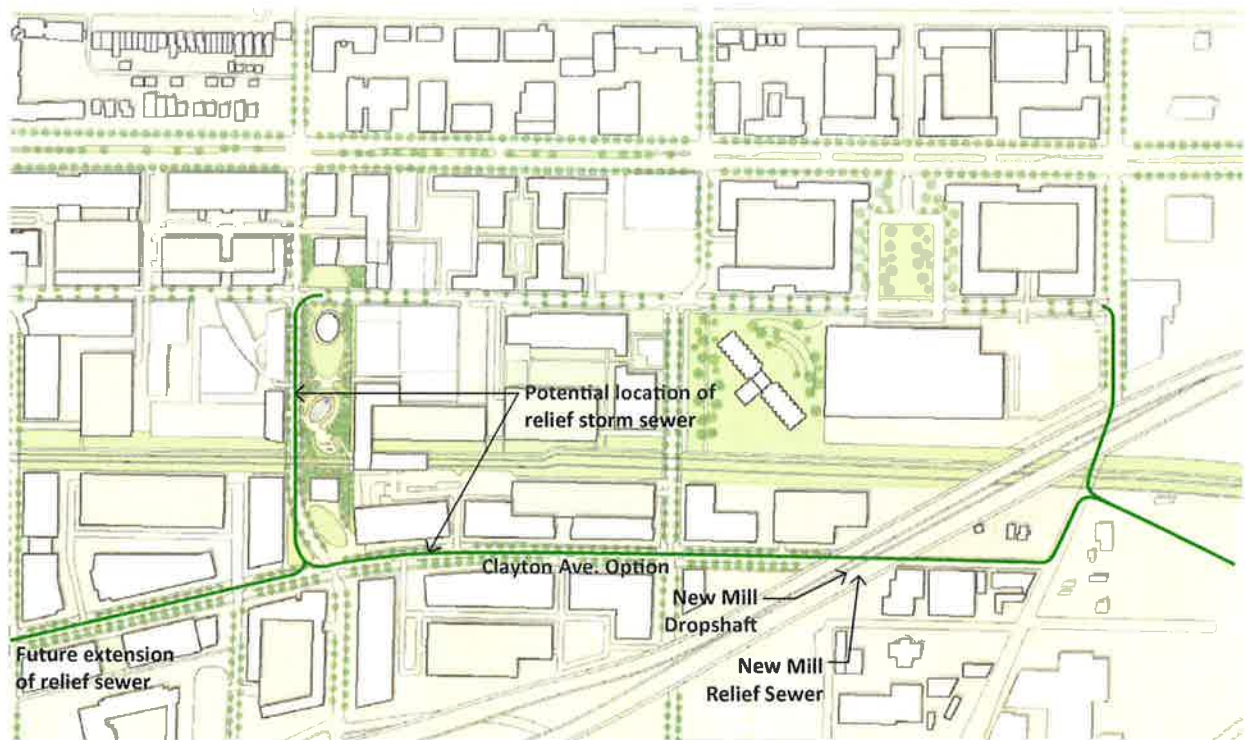
Stormwater Management

Sustainable Practices

Open space and streetscapes within the CORTEX District are planned to advance sustainable practices. They should comply with the regulations and best management practices of the metropolitan St. Louis sewer district, not only in public right-of-ways but in development sites within the CORTEX District to support a comprehensive approach to stormwater management.

Furthermore, landscape improvements should utilize low-impact development techniques (LID) and manage water as close to the source as possible. Plantings and vegetation in green spaces surrounding buildings should incorporate native species and sustainable measures aimed at:

1. Minimizing stormwater runoff from the surrounding streets, parking lots and buildings.
2. Limiting post-development net gain in runoff volume.
3. Installing porous and permeable pavements in hardscape and some parking areas to absorb rainwater.
4. Harvesting and reusing rainwater through the use of water conservation techniques.
5. Using recycled products.
6. Implementing soil management techniques.
7. Adopting and integrating renewable energy measures where applicable, including – but



Storm relief sewer location

Storm Relief Sewer

- not limited to – solar-powered landscape lighting.
- 8. Incorporating green roofs into building designs.
- 9. Placing bioretention features adjacent to hardscape areas, such as streets, sidewalks and parking lots, to store and filter stormwater runoff and allow it to infiltrate within the site.

limitations of the existing sewer infrastructure in the Mill Creek sewer shed. To resolve these issues further, the Master Plan locates a storm relief sewer below the Clayton Avenue right-of-way. CORTEX has requested that MSD place this as a priority on their capital improvement list.

These LID strategies will manage the 1.14 inch runoff as a whole district verse individual development projects.

These measures are especially important to the CORTEX District because of surcharging issues and



Proposed design of CORTEX Commons

Phase 1 Improvement Goals

1. Support two major nodes of activity that are focused on existing buildings and projects currently being planned.

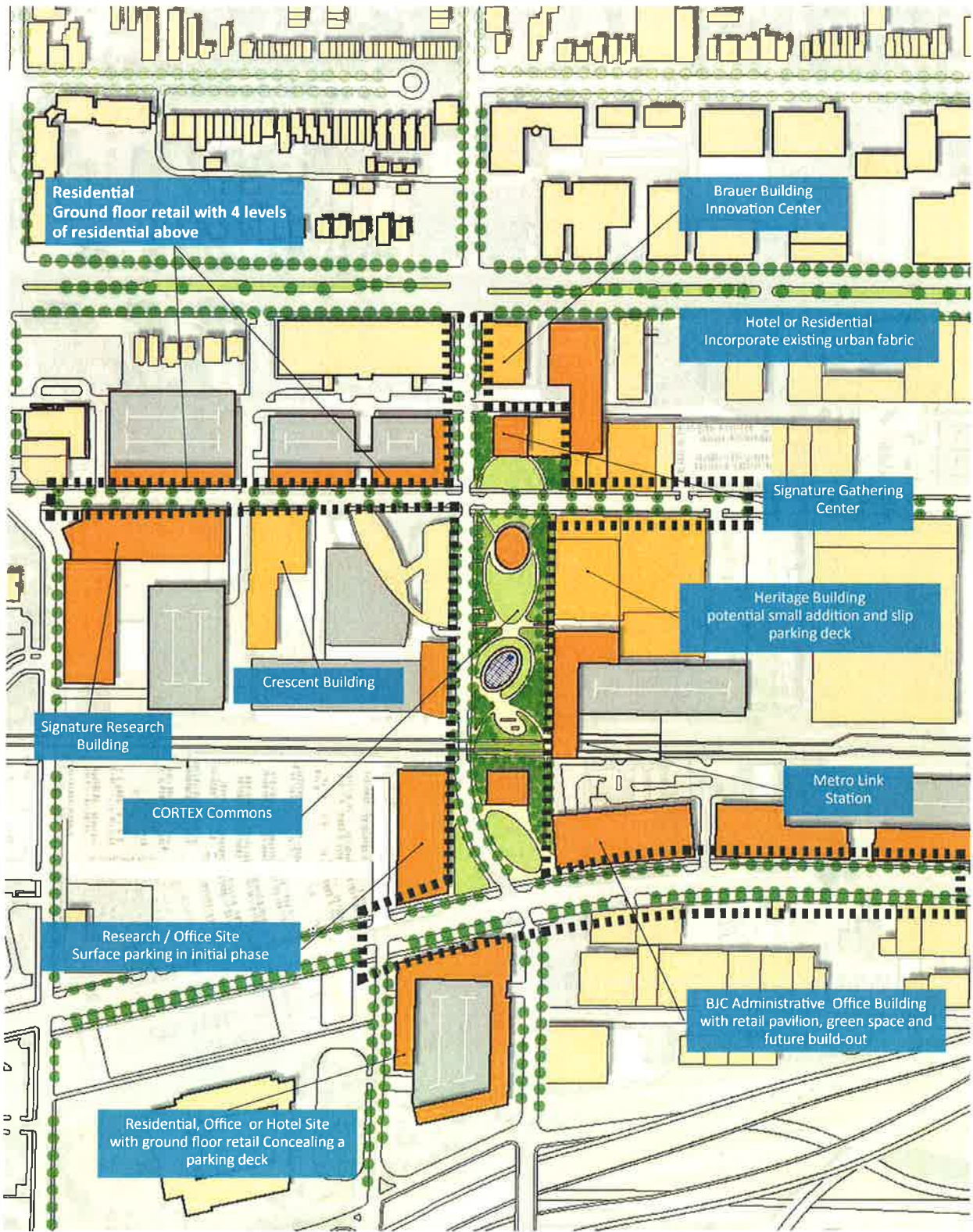
One of these nodes is located at the intersection of Clayton and Boyle avenues where a new building is proposed for the Barnes Jewish Center. The other node is situated at the intersection of Boyle and Duncan avenues adjacent to the Heritage, Breuer, Solae and CORTEX 1 buildings.

2. Provide the urban framework for stimulating key projects in the near term.

These projects include a signature research building at corner of Newstead and Duncan avenues, potential housing sites to the south of CORTEX 1, a mixed-use site to the south of Clayton Avenue at the intersection of Boyle Avenue, the Breuer Building at Boyle and Forest Park avenues, and the redevelopment of single-story warehouses along Duncan Avenue.

3. Establish the principles for future development along major streets.

This development will occur along Duncan and Clayton avenues as well as Newstead Avenue and Sarah Street, the other neighborhood connectors in the district.



Residential
Ground floor retail with 4 levels
of residential above

Brauer Building
Innovation Center

Hotel or Residential
Incorporate existing urban fabric

Signature Gathering
Center

Heritage Building
potential small addition and slip
parking deck

Crescent Building

Signature Research
Building

Metro Link
Station

CORTEX Commons

Research / Office Site
Surface parking in initial phase

BJC Administrative Office Building
with retail pavilion, green space and
future build-out

Residential, Office or Hotel Site
with ground floor retail Concealing a
parking deck

- Proposed Building
- Signature Building
- Existing Building
- Parking Garage
- Landscape and Streetscape improvements



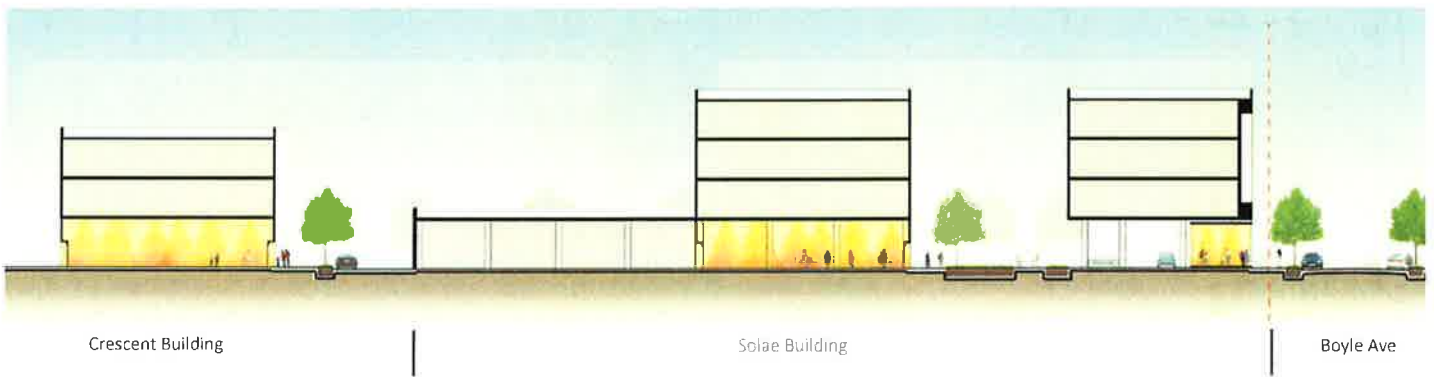
View of CORTEX Commons looking south

CORTEX Commons and Boyle Avenue

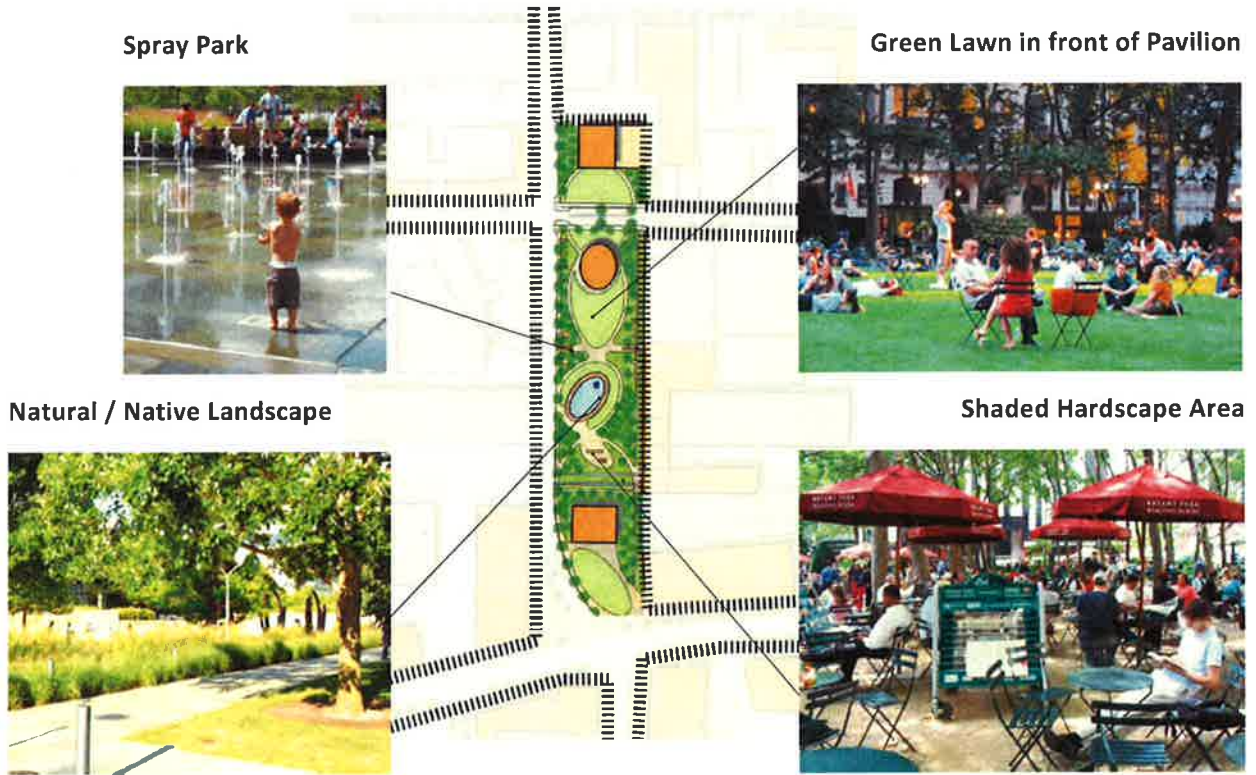
The CORTEX Commons is the district’s Central Park, an open space at its heart that serves to unify the entire knowledge community. The two-acre park stretches between Clayton and Boyle avenues, and is bisected by a rail line. Where the tracks intersect the park, a future Metro Link stop will be located and incorporated into the design of the Commons.

The Master Plan envisions the park as an active, sustainable place that could:

1. **Reference research and innovation:** Physical features of the Commons could represent the innovations and research taking place within the district to inform and inspire visitors about the important work being pursued by CORTEX.



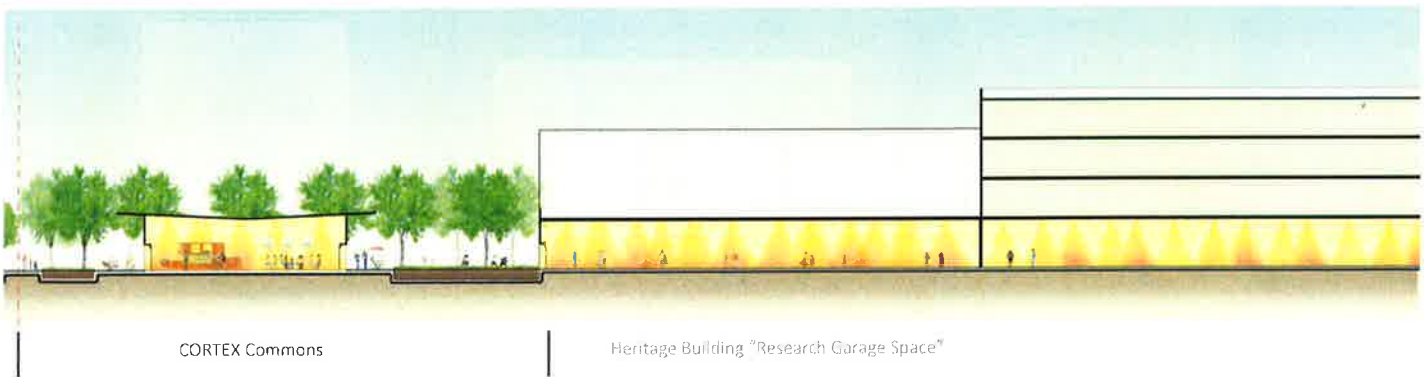
Section through Duncan Avenue Looking North



Outdoor spaces: lawns, pavilions, plaza and spray park

2. **Activate open spaces:** Public spaces come alive with activity. At the center of the CORTEX Commons, a lawn, two pavilions and a water spray park may accommodate recreational sports, book readings, outdoor games, fitness classes, performances and children’s activities.
3. **Advance sustainable practices:** Plantings and vegetation will incorporate native species and sustainable measures aimed at minimizing runoff from streets, parking lots and buildings.

Recycled products, soil management techniques and renewable energy measures, such as solar-powered outdoor lighting, will be incorporated.





Proposed view looking east down Duncan Avenue

Duncan Avenue Streetscape

Extending along the northern edge of the CORTEX Commons, a portion of Duncan Avenue will be landscaped to create a tree-lined, pedestrian-oriented thoroughfare. The street is limited by a narrow, 60-foot right-of-way (ROW) with buildings developed to the property line in many places. This ROW is difficult to set back further because many existing buildings along the street will be maintained.

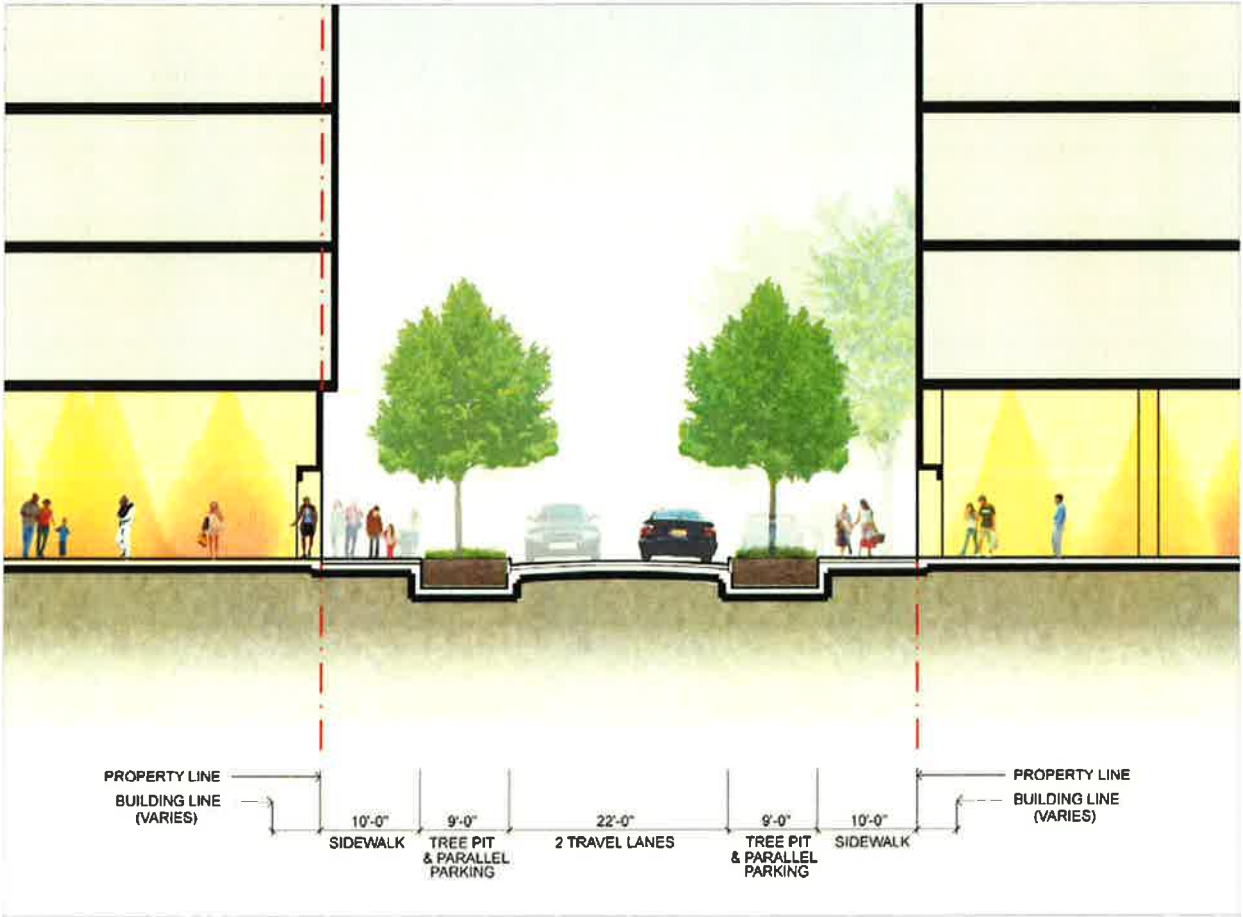
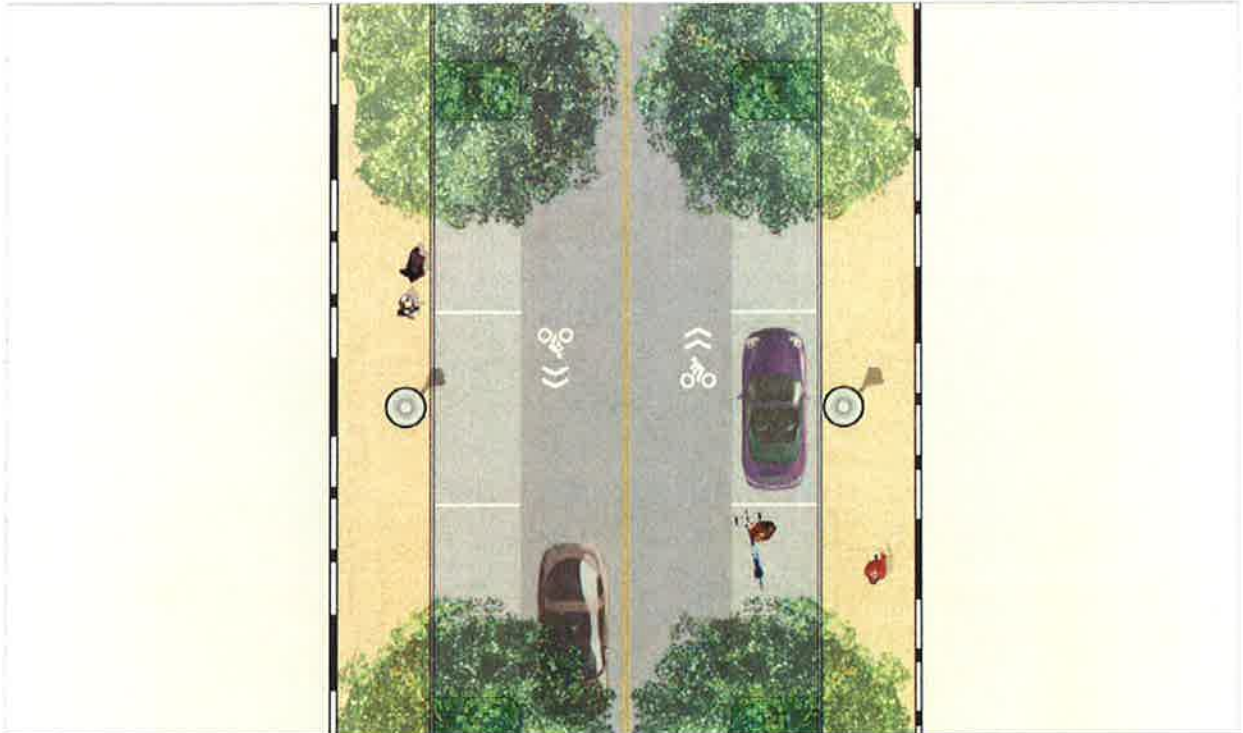
The street is envisioned in the Master Plan as key to a mixed-use area of renovated warehouses, new housing and research buildings. It connects the Washington University Medical Center at its western end to proposed retail around an existing grain silo to the east. Street plantings are planned to enhance the pedestrian connections between the medical center and retail.



Existing Duncan Avenue



Trade Street in Winston-Salem, NC





Cyclists in Forest Park

Clayton Avenue Streetscape

Extending to the south of the CORTEX Commons, a portion of Clayton Avenue will be established as a green, highly trafficked right-of-way (ROW). While Clayton Street encompasses a 60-foot ROW, the buildings are offset from the property line to create an effective ROW of 110 to 120 feet.

The Master Plan proposes using a portion of this additional setback area to allow for a tree-lined, pedestrian greenway that will eventually connect Vandeventer Avenue on the eastern side of the district to Forest Park on the western end.

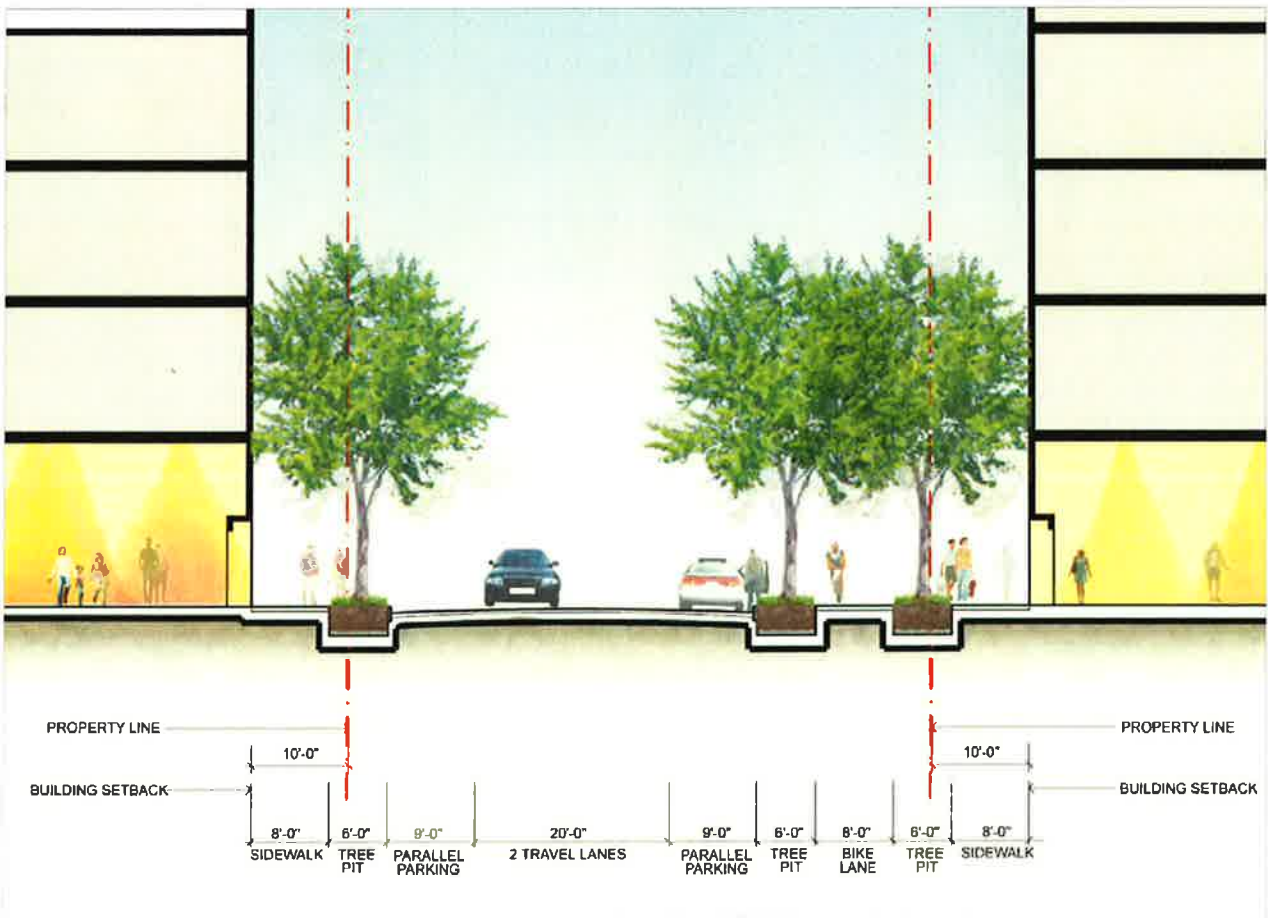
In addition to sidewalks and street plantings, this area could incorporate a designated bike path that will eventually connect Vandeventer Avenue to Forest Park.

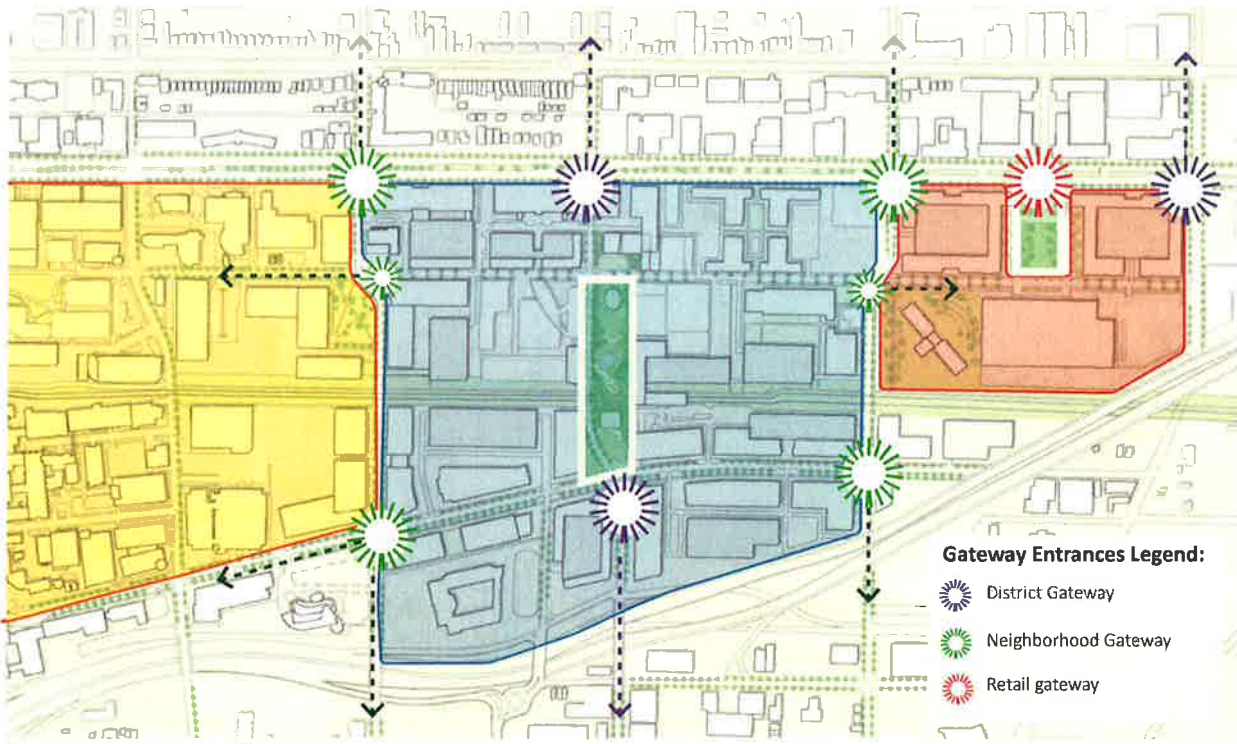


Existing Clayton Avenue



Dedicated bike lane, Vancouver, British Columbia





Access gateway nodes around the campus

Gateway Entrances

Distinguishing the edges of the district and marking entrances with gateways are critical to establishing a strong identity for CORTEX. Three of the edges are situated along the important regional connecting routes of Forest Park Avenue, Vandeventer Avenue and Interstate 64. They offer opportunities to define the CORTEX District within the city from the perspective of daily commuters.

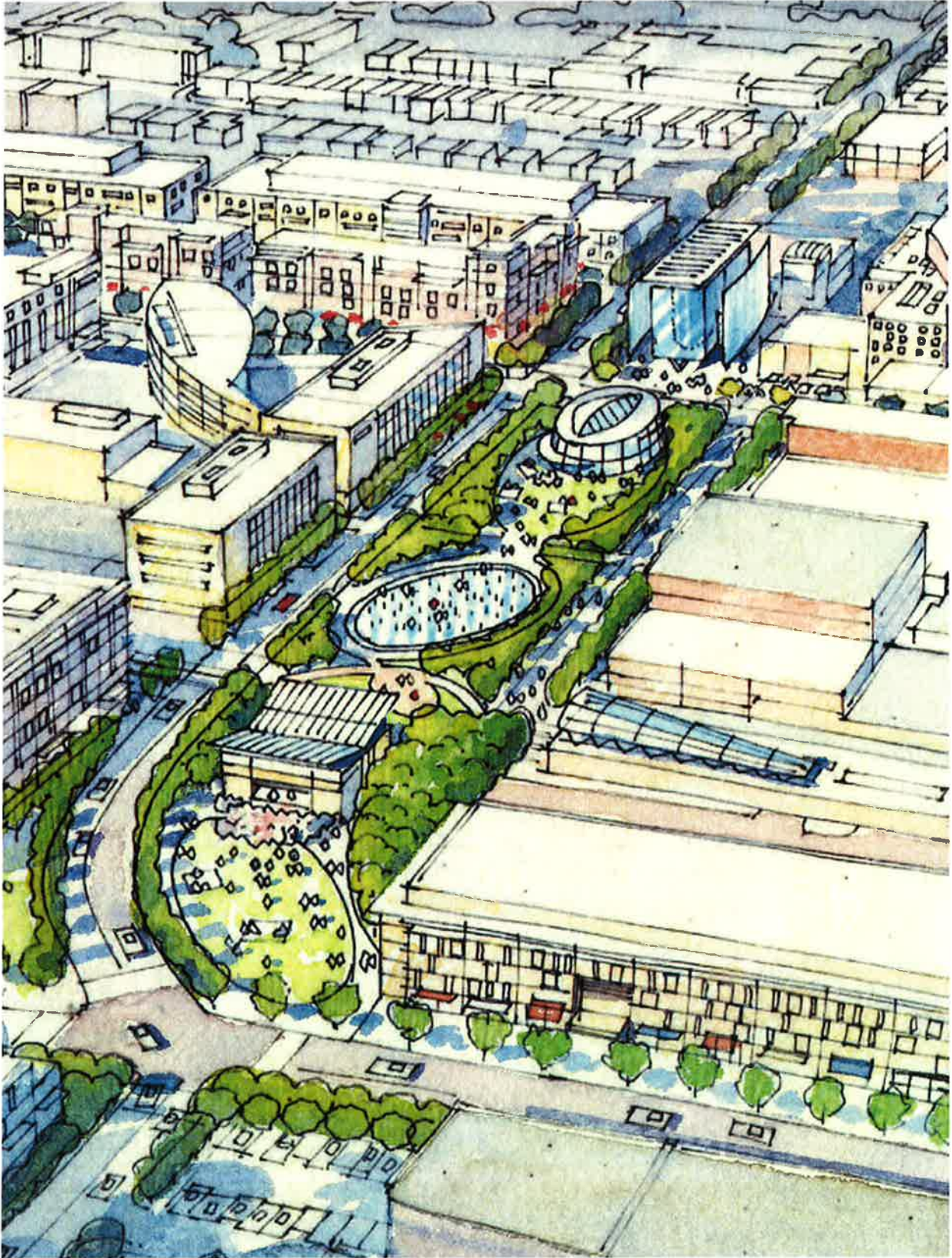
To clarify entrances along Forest Park Avenue, the Master Plan proposes building setbacks at key intersections to create a heightened sense of arrival. Adding landscape features and monument signage, and increasing the sidewalk dimensions can also enhance arrival.

These gateway features must address the pedestrian and vehicular scale to be effective. A good example of this approach is the medical center entranceway at the corner of Forest Park and Euclid avenues.

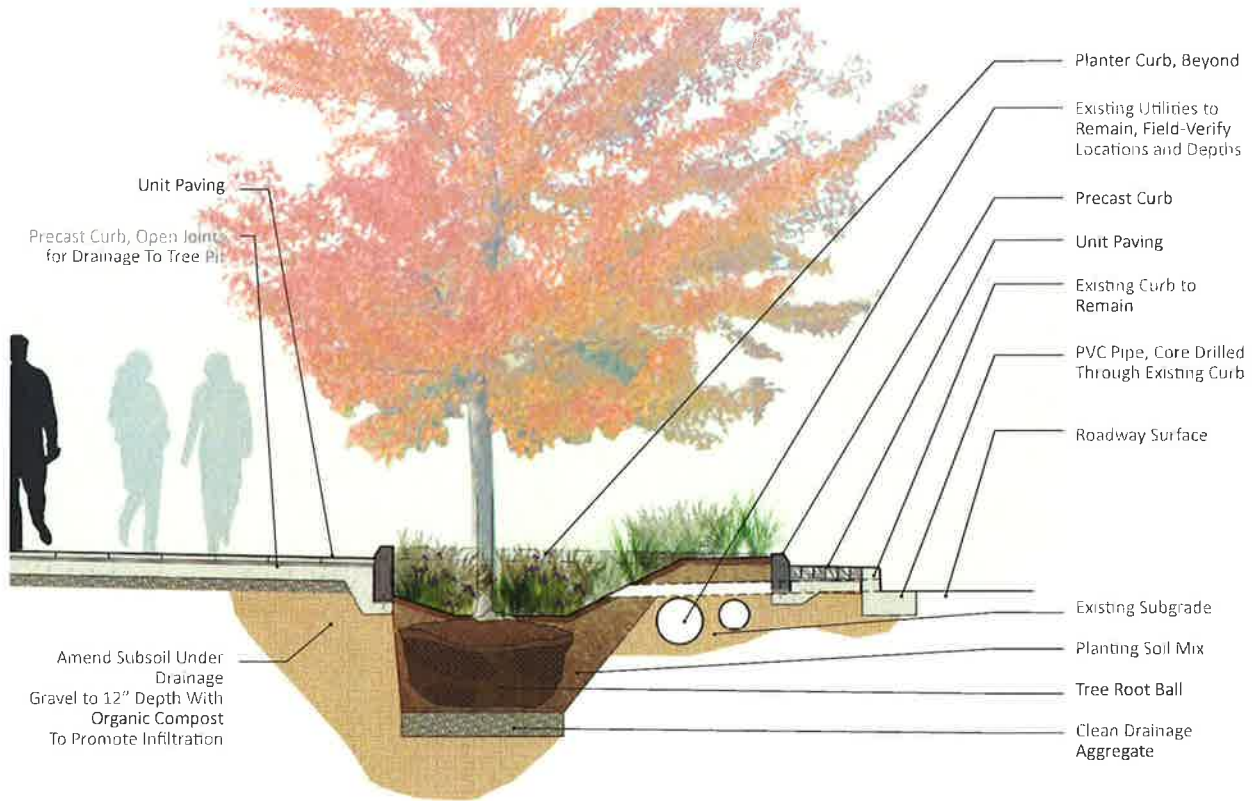
The frontage along Interstate 64 provides an opportunity for both the district and individual development sites to take advantage views from the highway. It includes the retail development node to the east, the hotel site south of CORTEX Commons and a series of research, office and clinical building sites.

The visibility of the tall grain silo from the highway provides another opportunity to create an iconic marker for the district. Using lighting and signage in creative ways can make this feature an asset and distinguishing landmark of CORTEX.

Gateways within the district are important. They include transitional entry points from the CORTEX District to the medical center campus to the west and the retail node to the east. These entrances offer opportunities to reinforce the identity of CORTEX as a knowledge community while still integrating it within the larger district of institutions.



CORTEX Commons serves both as a public space and the main gateway to the site



Streetscape Details

Site Furniture



Benches



Bus stops



Tables and chairs



Bollards



Bike racks



Trash receptacles

Tree Pits



Paved



Grate



Hole

Tree Fence



Lighting



Tree Canopies



Shade



Color



Form



Market Street in Philadelphia, PA

Site-Wide Design Principles

Site-wide design principles will guide developers and designers as they begin to plan and shape the CORTEX District so that buildings and open spaces follow a cohesive and principled development pattern. These guidelines seek to ensure that new development achieves high-quality urban design; enhances the public domain; encourages research and innovation; and contributes to the vitality of the CORTEX District.

Urban Design

Good urban design requires the careful arrangement of buildings, public spaces, transportation systems, services and amenities within a large site. The best urban design helps to achieve identifiable neighborhoods, site-specific architecture, active public places, prominent landmarks and focal points, and a human scale established by well-proportioned

buildings and pedestrian-oriented environments. In order to achieve the goals of the Master Plan, designers and developers should pay careful attention to core urban design practices as follows:

- Create focal points, such as fountains, plazas, and courtyards, to establish a sense of place and orientation within key public and open spaces.
- Activate streets with public or semi-public uses, such as retail, on the ground floors of buildings and provide direct entry from the street where feasible.
- Develop and strengthen pedestrian connections within the CORTEX District by designing streets and pedestrian pathways to be pleasant and safe.

Public Realm

The Master Plan envisions a diverse, vibrant and pedestrian-friendly public realm, with well-defined streets and high-quality open spaces. The public realm within the CORTEX District consists of streets and open spaces, such as plazas and parks. These elements are defined and framed along their edges by building façades.

Street Frontage

The pedestrian experience within the CORTEX District is completely shaped by the character and activities of the streetscape. The zone between the roadway curb and the building face, called frontage, will vary according to the building types associated with the space.

Retail street frontage is an indispensable component of any active neighborhood. The Master Plan suggests such retail-oriented spaces are suitable along Duncan and Forest Park avenues, and clustered around proposed open spaces such as CORTEX Commons.

Café and restaurant seating zones can be integrated into the streetscape; retail kiosks with merchandise, food, and beverage, and other services can be provided; and features such as interactive fountains and movable seating can be incorporated to promote the street as a destination.

Lab office buildings are the workhorses of a knowledge community. They provide the infrastructure to support state-of-the-art research undertaken by the community's institutions and companies. It is important that these building contribute to the vibrancy of the urban environment by:

- Expressing the great research happening inside by exposing science to the street.
- Creating lobbies that turn the building inside out.
- Making a welcoming and an engaging transition from the public to the private realm.



Palmer Square, Princeton, NJ



Bruges, Belgium



Xintiandi Outdoor Cafe, Shanghai, China

Street Frontage Principles

- Focus retail into clusters at destination retail locations; prioritize activating retail uses (general merchandise, apparel and accessories, service, and food and beverage establishments) over storefronts filled with offices, professional services and other uses inconsistent with a dynamic pedestrian experience.
- Coordinate development of planned open spaces with adjacent retail uses to ensure a vibrant mix of uses that generates activity at multiple periods during the day and evening.
- Compose retail building fronts in a manner that encourages active streetscape environments.
- Incorporate lobbies, entrances and other elements into storefronts, while maintaining a predominantly retail character.
- Retain or implement these design recommendations even in high-security environments where trees, landscaping and hardened street furniture are preferred over barriers and bollards.

Public Sidewalks

A sidewalk describes the configuration of the sidewalk, landscaping and street furnishings in the area between the street curb and the build-to line.

Sidewalk Components

The components of the public sidewalks are labeled in the illustrations that follow, indicating:

Sidewalk Clear Zone: This area is intended to provide unobstructed passage for pedestrians along a sidewalk. The provided range of dimensions is based on the overall sidewalk width and frontage type.

Street Tree and Furnishing Zone: This zone is immediately adjacent to the curb and is defined primarily by street trees contained in tree pits or planting strips. It may include furnishings, such as lampposts, benches, trash receptacles, planters



Santana Row, San Jose, CA



Bethesda Row, Bethesda, MD



Las Ramblas, Barcelona, Spain



and similar street furnishings. On some commercial frontages, this area may be integrated into a café zone, described below.

Café/Shy Zone: This area only occurs on retail frontages. In addition to seating in front of restaurants and cafés, this realm can be used for outdoor retail display and other retail-related activities. In the absence of such uses, the zone can be furnished with benches, planters, and other items consistent with a retail environment. It may be located adjacent to the building frontage or integrated with the Street Tree and Furnishing Zone, in which case the Café/Shy Zone should be no less than the required width of the Street Tree and Furnishing Zone. The position of the Café/Shy Zone should be the same for all businesses along a block frontage.



Pearl District, Portland, OR

Non-Retail Street Shy Zone: This zone only occurs on non-retail frontages and is intended primarily as a landscape buffer between the building face and the sidewalk. Landscaping elements may include yards, raised planters and continuous planting beds.

Sidewalk Material Standards

Paving Materials: Paved surfaces may consist of special paving, untreated poured concrete or some combination of these surfaces. However, for the portion of the sidewalk comprising the Clear Zone, the treatment will be concrete or stamped concrete. Additionally, the choice and installation of paving materials must comply with Americans with Disabilities Act (ADA) requirements.



Boston, MA

Tree Pits: These recesses should be large enough to allow water and air to enter the roots of the tree. It is important to restrict pedestrian foot traffic around the tree to prevent soil compaction. Tree pits can be protected with low fencing around the perimeter where heavy pedestrian traffic is expected. A tree's viability and vitality is directly correlated to the volume of soil in which its tree roots can seek water and nutrients. Consider expanding the soil volume for each tree by utilizing techniques such as Silva Cells and porous pavement over engineered soil.

Tree Pit Landscaping: Vegetation may include flowering plants and shrubs, but no plants with thorns or other sharp protrusions. Plants should be maintained below a height of 30 inches for safety and visibility.

Continuous Planting Strip: This design should be used on frontages with lower intensity of uses and where there is no adjacent on-street parking.

Other components of the public sidewalk frontage are the same regardless of sidewalk width or frontage type. They include typical tree spacing of 40 feet on center and centering of light fixtures between trees.

Open Space

Public open spaces in urban areas assume many forms, such as plazas, parks, squares and greenways. These spaces can differ substantially in type, particularly with respect to programming, character, size, landscaping and uses. When planned as a system, public open spaces should provide a range of activities to meet the needs and interests of the community. A well-designed system will appeal to people of all ages and encourage social gatherings.

The intent of the CORTEX Master Plan is to create well-designed public open spaces that will contribute significantly to the quality of life within the district, community and city. The Master Plan calls for the creation of the CORTEX Commons, a public park that will be accessible to all who work and live in the district and surrounding neighborhoods.

The Master Plan focuses on improving the quality and utilization of public open space, whether new or proposed, by increasing accessibility, visibility, programming and appearance. Recommended build-to lines are also established to define the proposed open spaces that will have limited flexibility in location and orientation, and are illustrated to represent the approximate demarcation between the public open space and sidewalk. The following principles were developed to achieve the stated goals for open space within the CORTEX District:



Bethesda Row, Bethesda MD



American Tobacco, Durham, NC



LID Tree Pit, Portland, OR



Las Ramblas, Barcelona, Spain

Open Space Principles

- Ensure open spaces are accessible, usable, and designed to be safe and secure.
- Distinguish effectively between private and public spaces by reinforcing a strong sense of openness and accessibility in those spaces planned for public use.
- Provide new development areas with high-quality landscape features, using a blend of plant species found on the site and new types of vegetation.
- Locate retail plazas and parks so they have direct access to the street; office plazas, landscaped medians, and landscaped street setbacks are less desirable.
- Encourage and expand opportunities for festivals, concerts, farmers markets and other activating uses, particularly for the CORTEX Commons.
- Public art could be incorporated into the architecture and open spaces of the district, and artistic lighting could highlight the CORTEX Commons during the evenings.
- Crime Prevention through Environmental Design (CPTED) principles could guide the design of the Commons.
- Wind turbines and/or solar panels could be used in artistic ways to educate visitors about environmental conservation and supply power for pavilions within the Commons.
- Low Impact Design (LID) features could include pervious paving, water filtration gardens, and cisterns within the CORTEX Commons and adjacent buildings to capture rainwater for park irrigation.



Lab Office Building, Cambridge, MA

Building Design Strategies

Service and Loading

To support vibrant street life, the Master Plan limits service entrances and garage doors placed on or near important streets. Ideally, these elements will face alleys, internal courtyards or areas within the block where consolidated service and loading is provided for a building or multiple buildings.

Parking

Parking will be screened from view at key locations and major streets by being set behind buildings. In certain situations, non-enclosed surface parking areas will be screened from rights-of way by landscaping or walls consistent with the architectural designs of adjacent buildings.

Structured parking garages are to be hidden from major rights-of-way, such as Duncan and Clayton

avenues, and other key view corridors. If an above-ground parking garage is exposed to a public street, the structure should be clad in such a manner so it is indistinguishable from surrounding building elements. Elevator towers within parking garages should be designed as prominent features to mark entrances and introduce visual interest.

Refuse Collection

Refuse collection areas and dumpster locations will be fully enclosed within the principal buildings they serve. They will be screened from sight so as not to affect views from nearby areas.

Architecture

Architectural Features

Architectural features, such as projecting bays, roofs, towers, prominent corners and angles, should be used to create visual interest, emphasize major view

corridors and mark significant places throughout the CORTEX District. An example of such an architectural element is featured in the Georgia Tech Global Learning Center (photo at bottom right) where the street corner is marked by a brightly illuminated bay.

Building Height, Proportions and Materials

Critical to creating a dynamic urban environment is exciting architecture. Varied building heights and massing, well designed facades and expression of key internal functions on the exterior are fundamental to design vibrancy.

To ensure new construction is coherent and compatible with existing structures within the CORTEX District, these guidelines strongly recommended that each building façade incorporate three horizontal layers: base, middle and top. The specific qualities and relationships among these layers will be particular to an individual building’s design and may be explicit or subtle. Architects should consider the following:

Base

The role of the base is to address and resolve the relationship of the façade to the ground in terms of design, construction, visual perception and access. This ground layer could be one to two stories in height and correspond with the base height of an adjacent building. The design of the base should be consistent with, though not necessarily identical to, the design of the façade layers above.

Middle

The middle layer comprises the standard pattern of façade division within a building. It is recommended that this section consist of a minimum of two floors between the base and top.



200 block of Forest Park Ave. Freestanding parking garage screen by buildings



Tenleytown, Washington, DC



Georgia Tech Global Learning Center, Atlanta, GA

Top

The role of the top layer is to address and resolve the termination of the upper portion of the façade where it meets the sky. The design of the top should be integral and consistent with, though not necessarily identical to, the middle and base.

Materials

High-quality construction materials are recommended to ensure building integrity and longevity. They include masonry (brick and stone), metal (zinc, steel, aluminum), concrete (cast-in-place or precast), tile (ceramic or terracotta) and glass (transparent, translucent, fritted). Three or fewer primary building materials, including glass, are recommended to maintain visual coherence.

Exterior materials not recommended for use are any type of stucco or render, including exterior insulation finishing systems (EIFS); concrete masonry units (CMU); painted concrete; fiber-cement panels; and vinyl.

Storefront and Retail Facades

Storefronts, entranceways and awnings should promote a welcoming sense of openness. Designs should be visually accessible with displays that encourage active street life and window shopping.

Retail storefronts can incorporate display windows amounting to a minimum of 50 percent of the surface area of the entire ground floor façade. The area between 3 and 8 feet above grade should reach a minimum of 80 percent transparency.



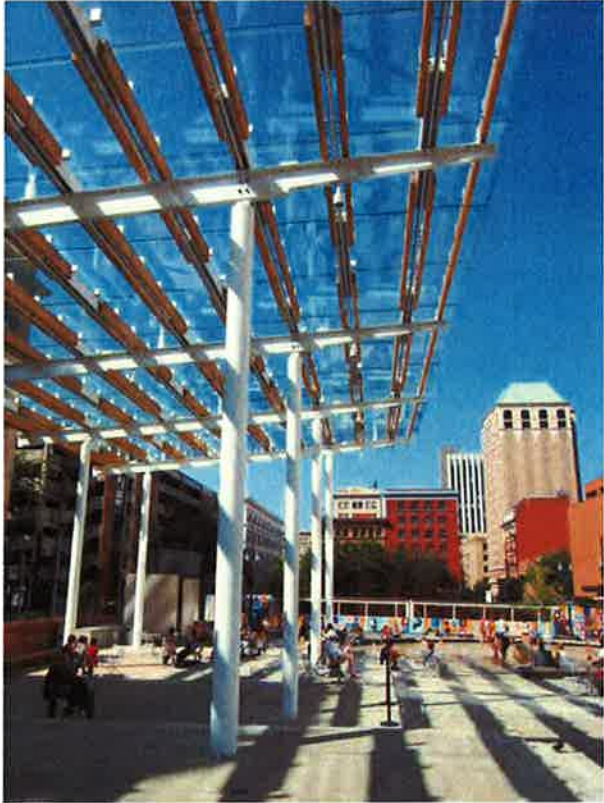
Pearl District, Portland OR



Pearl District, Portland OR



Pearl District, Portland OR



Pearl District, Portland OR

To maintain accessibility, retail floors should match the grade of exterior sidewalk wherever possible. Store entrances should be spaced along frontage at intervals that encourage active streetscapes, not more than 60 feet apart on average.

Canopies

Canopies and awnings are encouraged as they provide weather protection and provide visual interest and delight to the streetscape environment. These elements are to be decorative, lightweight and varied. Canopies can be constructed of metal or fabric with retractable elements. Lettering and logos are permitted on the valence flap of the awning but discouraged on the main body of the awning.

Signage and Lighting

A wide variety of signage types and locations, including rooftops, canopies and vertical marquees, are envisioned for the CORTEX District. Signage should be integral with a building design and pedestrian-oriented in size, placement, material and color.

In designated areas, larger, iconic signage can be auto-oriented and designed to be seen from a long distance. Lighting for signage should come from direct, shielded sources and be carefully integrated into the overall design of the building so as to avoid glare and light pollution. Neon signs may be allowed so long as they are carefully designed to complement the architecture of the building and the district.



American Tobacco, Durham NC



Proposed CORTEX Commons along Boyle Avenue

Implementation

Priorities and Keys to Implementation

Enhancing the sense of place is critical to the success of CORTEX. The following strategies are key to achieving this goal.

- **Nodes of activity:** Focus on creating two fully built-out corners at Boyle and Duncan avenues, and Boyle and Clayton avenues.
- **Center for Innovation:** Attract and properly site a shared environment for entrepreneurs and small companies.
- **Active public realm:** Create pedestrian-oriented streetscapes, open spaces and building entrances.
- **Community connections:** Strengthen connections to the Medical Center, Forest Park, College of Pharmacy, St. Louis University and the Central West End and Forest Park Southeast neighborhoods through bicycle paths, improved sidewalks, signage and parks.

- **Integrated transit:** Design the public space and built environment to support the integration of the proposed MetroLink station.
- **Defined edges:** Clearly identify the edges of the district through signage, graphics, lighting, plantings and landscape and building elements.

Key to each of these strategies is consistent implementation of the urban design principles as outlined in this document.

Continuity and Design Review

CORTEX has developed a vision for its physical environment with stakeholders and design and planning advisors. Successful implementation of the plan hinges on the details of design. It is recommended that the Master Plan team and other key stakeholders review future landscape, infrastructure and building projects to ensure that the intent of these designs is consistent with the vision established through the Master Plan process.



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