

GEORGE MASON UNIVERSITY SOUTHWEST SECTOR

Master Plan - August 2007

EHRENKRANTZ ECKSTUT & KUHN ARCHITECTS



Introduction

As George Mason University experiences tremendous growth, the university has begun planning for the evolution of its Fairfax campus over the next 25 years. The southwest sector master plan creates a flexible framework for growth that can respond to changing circumstances. At the core of the plan is the transformation of a 109-acre site, currently dominated by surface parking lots, into a mixed-use campus village.

By creating a master plan for the southwest sector, the university has the opportunity to identify specific concerns—such as parking, housing, services, and the natural landscape—and to adopt design principles that will carefully guide future growth to address and respect these issues. In fact, through efforts to solve some problems, exciting and unexpected solutions appear. Simple logistical needs, like that for more student housing, become chances to redefine a portion of the campus as an urban village, with walkable streets, plentiful amenities, and new places for students to live, relax, and study.

The designs and goals delineated in the southwest sector master plan will allow George Mason University to continue to improve its physical campus environment, as well as enhance the services and opportunities it offers its students.



Campus entrance - view of new Roanoke River Circle

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Executive Summary

The Plan

The new plan for the Southwest Sector is designed to change the character of the southwest sector from one of surface parking and automobiles to one of a vibrant campus community. Organized around the new Oval, the plan provides locations where new entries and gateways link the interior of the campus with the local community. This new place completes the space in front of the Center for the Arts, following in the tradition of great American university quadrangles and spaces.

Each gateway is conceived to frame arrival views of the campus and offer a more distinct university presence. A new system of campus drives and streets link to the existing Patriot Circle and provide more frequent and improved connections with the campus circulation system for vehicles and pedestrians alike.

The new program includes approximately 3,600 new undergraduate beds, 300,000 gsf of new research space, a 150-bed hotel, 20,000 gsf conference center with, and structured parking conceived to meet the needs of both the campus community and the Patriot Center.

These new additions to the campus and the southwest sector will increase the population of students living on the campus, provide more research space, and transform the quadrant into and area alive with student activities, intercollegiate sports, interactive research, and meeting facilities.

A key to that new circulation system is the proposed new entry at the western edge of the campus on Ox Road (Route 123). This new entry will help to alleviate overcrowding and back-ups at the Roanoke River entry and allow another path of

exit to the north for vehicles departing events at the Patriot Center. Additionally, the new hotel and conference center will give the university a greater presence on the west. A possible bridge overpass at this location would also link the main campus to parking and athletic facilities on West Campus.

Traffic and Parking

The plan relocates surface parking spaces into structured parking, eliminating vast areas of asphalt and creating a more pedestrian-friendly environment. Garages contribute less to polluting stormwater run-off, minimize the heat-island effect, and use land more efficiently. Parking requirements for the Patriot Center and the academic areas are divided on the east and west sides of Roanoke River Road. This minimizes conflicts between event traffic and university traffic. Re-organization of the lots and garage surrounding the Patriot Center make traffic patterns more effective and allow cars to exit the campus more efficiently.

Sustainability

The plan calls for measures to reduce the ecological impact of the campus. The design supports a “park once” concept for visitors, faculty, and students and improves pedestrian access. It also identifies sound practices for storm water management, resource efficiency, and retention of natural species and habitat.

Retail

The retail study suggests that the general trade area of the campus could easily support about 100,000 gsf of new retail development. Retail establishments that should be considered include a small grocery store, quick-bite and restaurant establishments, and campus oriented merchandise. These would be located close to the new hotel and confer-

ence center and along the new campus “Oval”. Successfully locating such establishments will also allow visitors to the Center for the Arts and other public venues in that part of the campus to patronize the new establishments as well as enabling resident students and others in the campus community to attend to some of their retail needs on campus and thereby reduce the number of automobile trips generated.

Staging and Phasing

The plan is designed to be constructed in stages based upon an increment of 1200 beds per residential community. 2400 beds are planned for the Southwest Sector with an additional 1200 to be constructed in the Northwest Sector adjacent to the existing campus entry from Route 123. Parking garages will be constructed in phases according to location and demand generated by other phased construction.

Client Team

George Mason University Southwest Sector Task Force

Co-Chairmen:

Jim Miller; University Architect
John Spaldo; Assoc. Vice President, University Operations

Committee Members:

Tom Calhoun; Vice President, Facilities
Barry Geisler; General Manager, Patriot Center
Sandra Hubler; Vice President, University Life
Barbara Lubar; Exec. Director, Events Management
Michael Lynch; Chief of Police
Charles McDade; Senior Associate Athletic Director
Cathy Wolfe; Director, Space Management

Consultant Team

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Street Sense

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Renderings by Dariush

Goals



1. Identify areas for university growth, with a focus on the southwest sector



2. Improve the university image as one arrives on campus



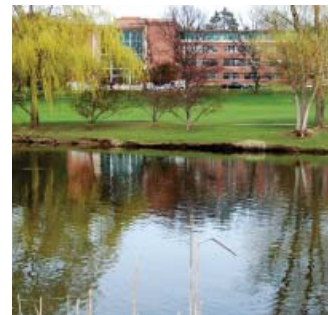
3. Upgrade circulation to resolve existing issues and accommodate future growth



4. Create signature places on campus



5. Conserve resources and habitats using sustainable design principles



6. Strategically locate a hotel and conference center on campus



7. Enhance the pedestrian environment

Southwest Sector Master Plan Program

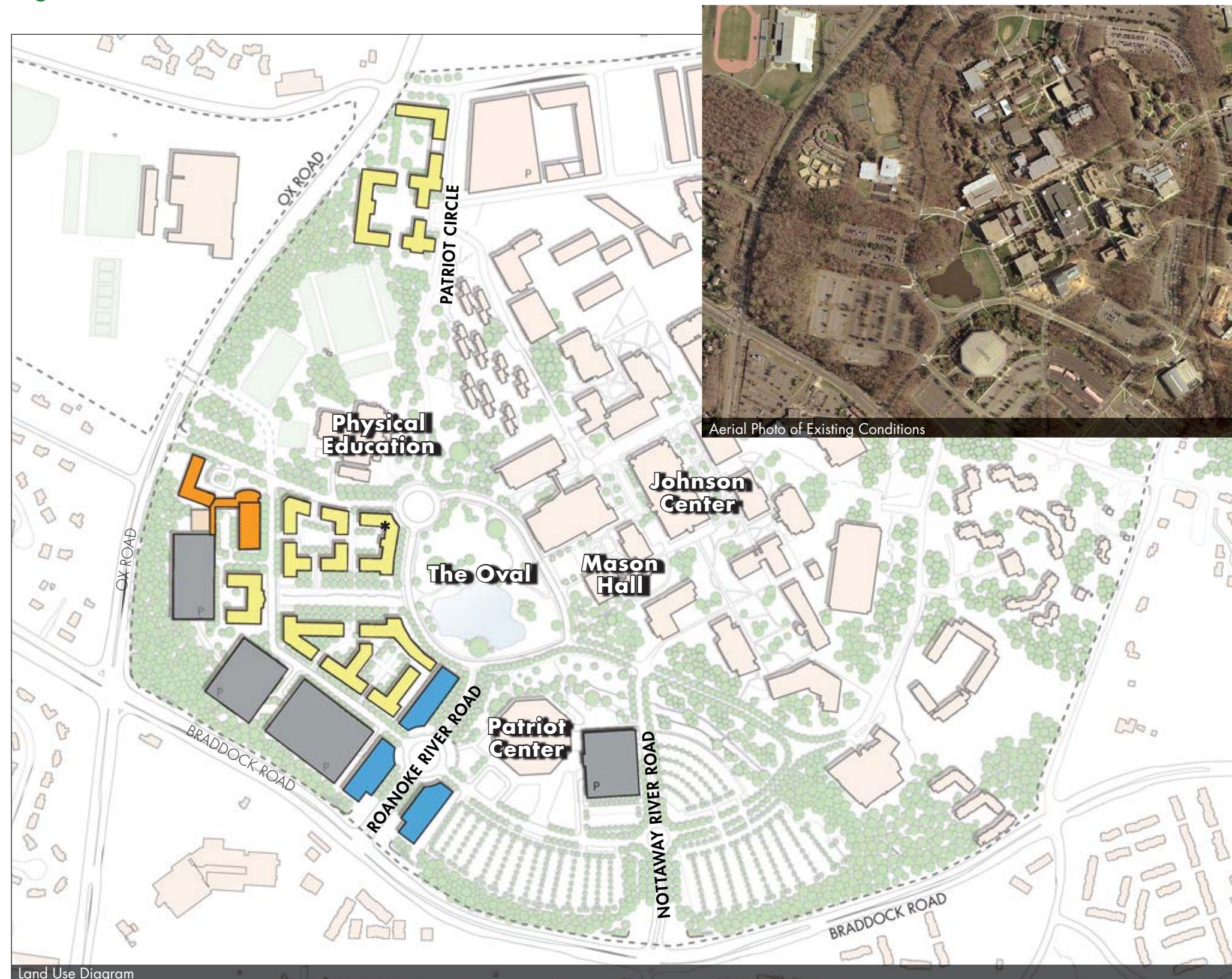
The Southwest Sector plan accommodates new areas for student housing, a hotel and conference center, research and office facilities, and campus-related retail.

Housing is clustered to create a community with shared dining facilities, courtyards, and common areas. The housing is located adjacent to the newly expanded campus gymnasium.

The hotel and conference center takes advantage of visibility along Ox Road (Route 123) and close to the core of the campus. Located at the west entrance, it avoids conflict with the Patriot Center circulation demands. New retail establishments will be located along West Gate Avenue, serving both the campus population and the hotel and conference center. Research and office buildings are located close to the core of campus along Roanoke River Road creating gateway elements at the entrance on Braddock Road.

Currently, much of the land area in the southwest sector is covered by surface parking. As building projects are phased in over time, parking lots will be converted to buildings sites, courtyards, natural areas, roads, and pathways. Structured parking is proposed to accommodate new parking needs.

- Hotel and Conference Center - 150 room hotel, 20,000 sf conference center
- Student Housing - 3600 beds with dining facility *
- Research - 300,000 sf
- Campus-Related Retail - 30,000 sf
- Parking - 7,000 spaces





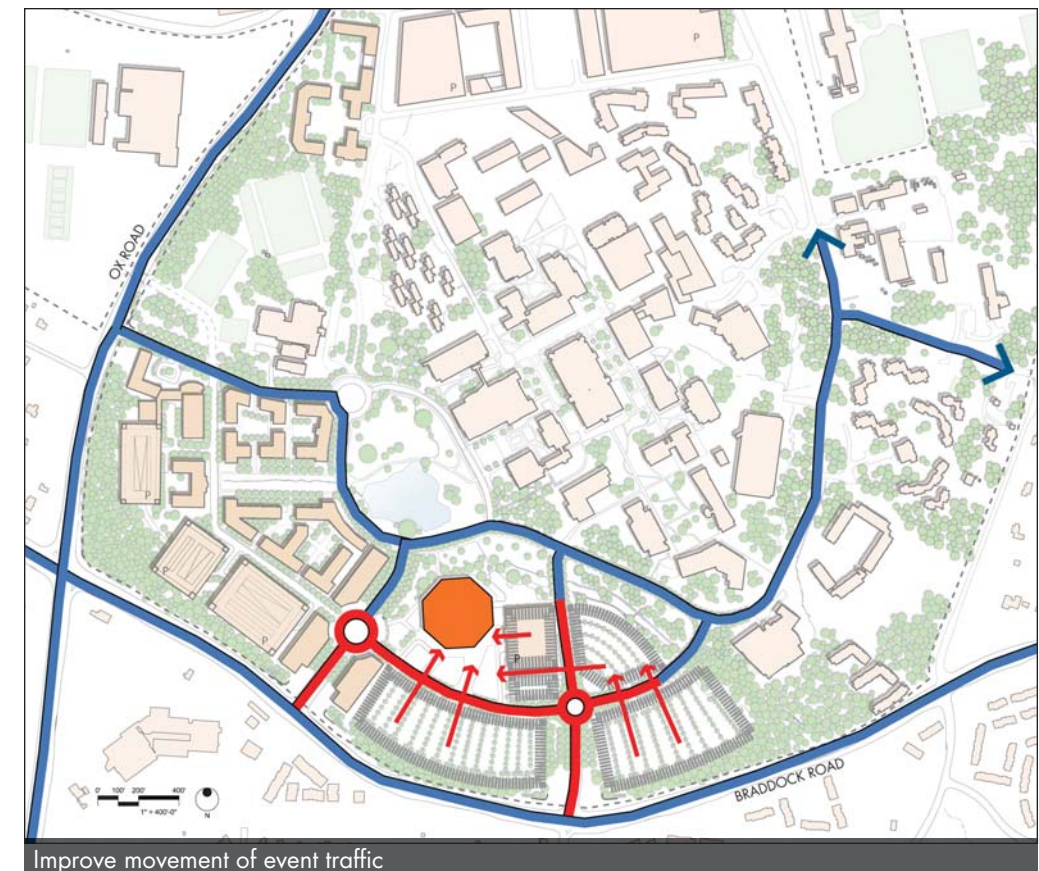
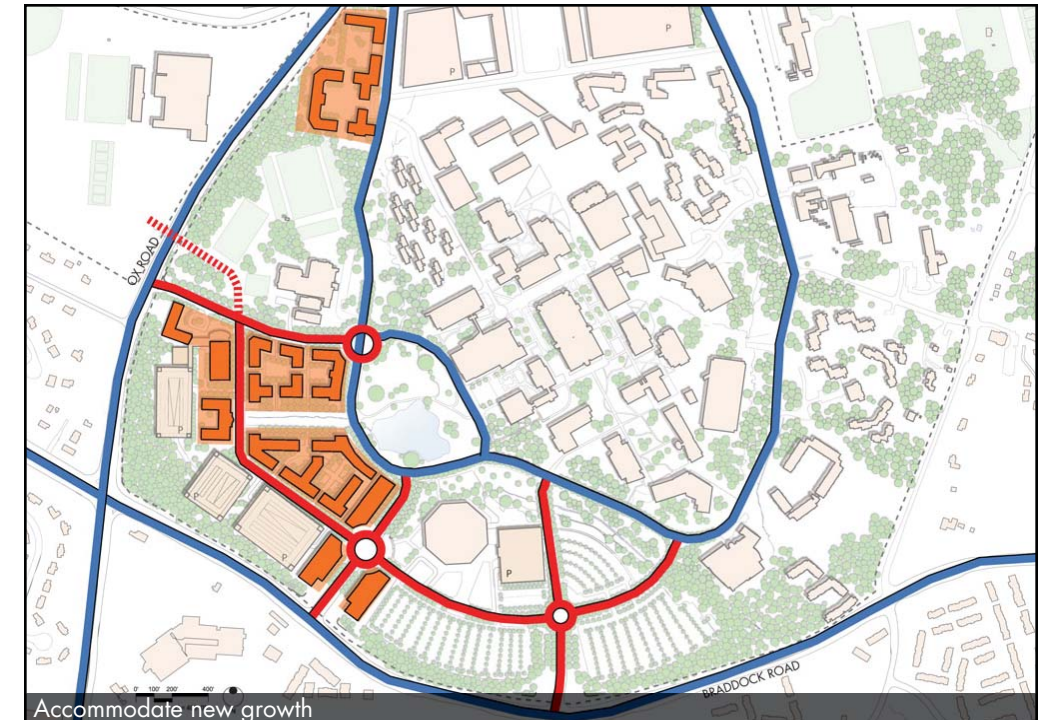
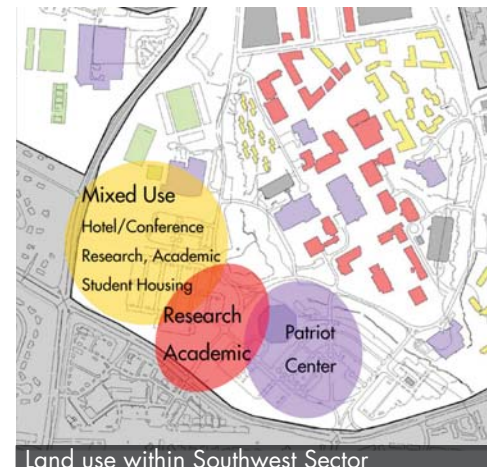
Southwest Sector Illustrative Master Plan

1 Design Goal: Identify areas for university growth, with a focus on the Southwest Sector

Expand Patriot Circle outward to provide space for new campus facilities including student housing, research and office space, and a hotel and conference center.

Design Principles

- Public and mixed-use program elements around Mason Pond build on the existing shared public uses at the Performing Arts Center, Mason Hall, and the Patriot Center
- Patriot Circle links with exterior roads to facilitate movement of daily and event traffic
- Pedestrian and vehicular conflict is mitigated by locating garages near entry points



2 Design Goal: Improve the university image as one arrives on campus

Create notable campus gateways for an improved sense of arrival at West Gate, Roanoke River Road, and Nottoway River Road.

Design Principles

- Add and improve campus gateways in the Southwest Sector using new architectural and landscape elements such as:
 - Signage
 - Bridges
 - Gates
 - Formalized Intersections
 - Towers/Visual clues
- Locate hotel and conference center at West Gate along Ox Road
- Frame views of campus landmarks, such as the Johnson Center and the Concert Hall, with new architecture and mature trees
- Connect to West Campus with a bridge over Ox Road that will announce the presence of the university and become a landmark feature



Precedent: Campus gate



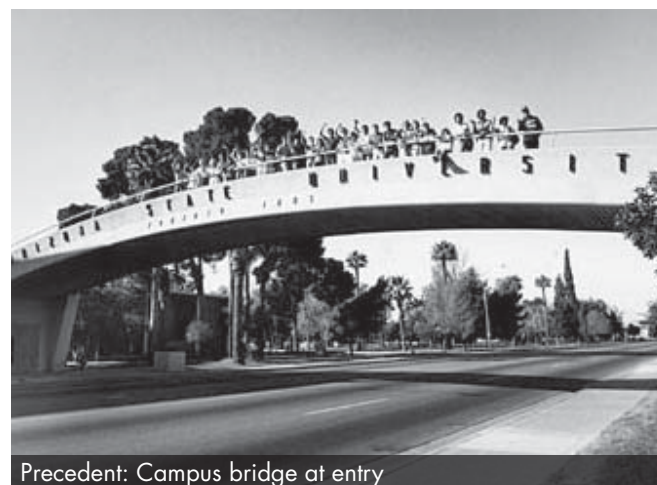
Existing entrance at Roanoke River Road and Braddock Road



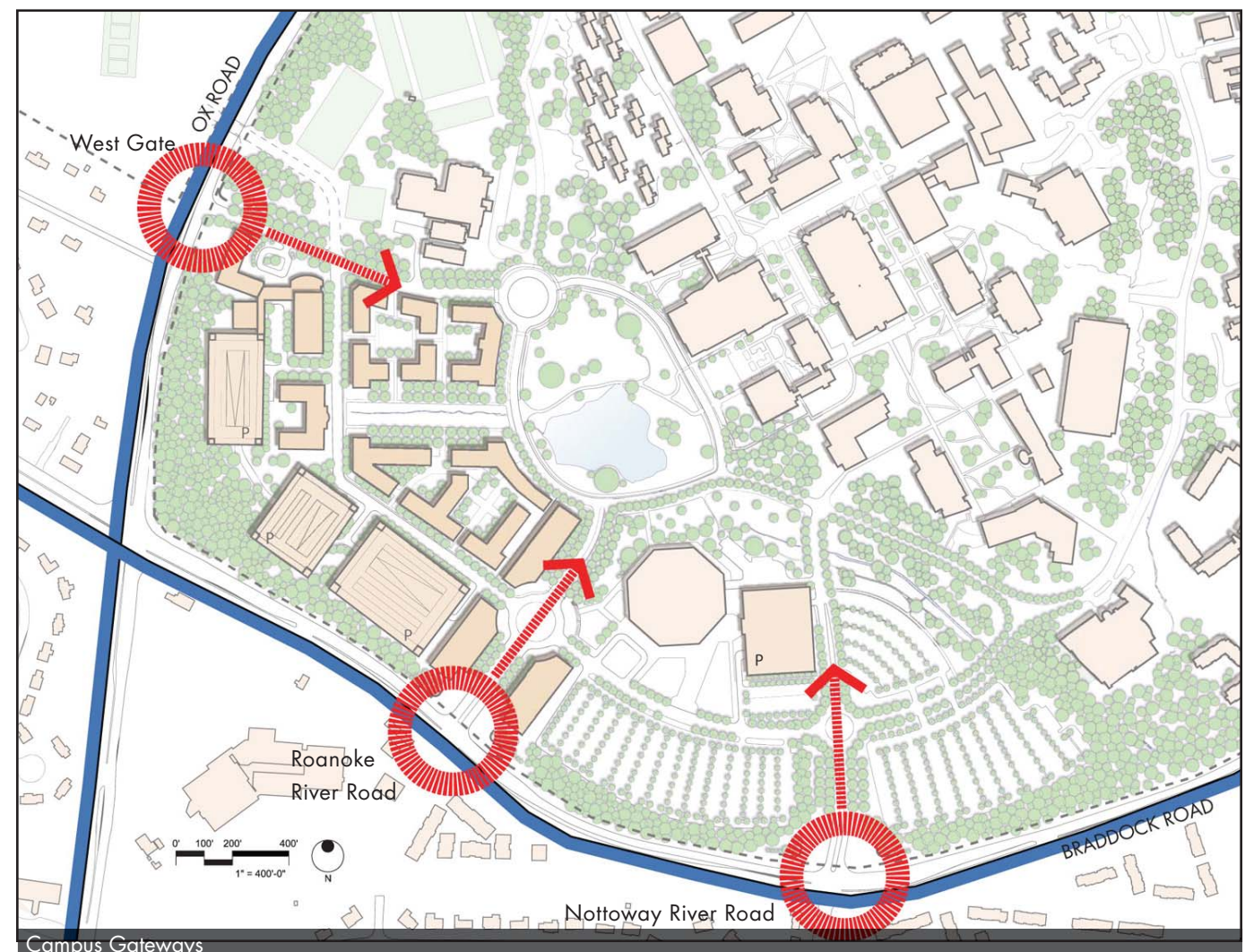
Proposed Roanoke River Entrance



Precedent: Gatehouse



Precedent: Campus bridge at entry



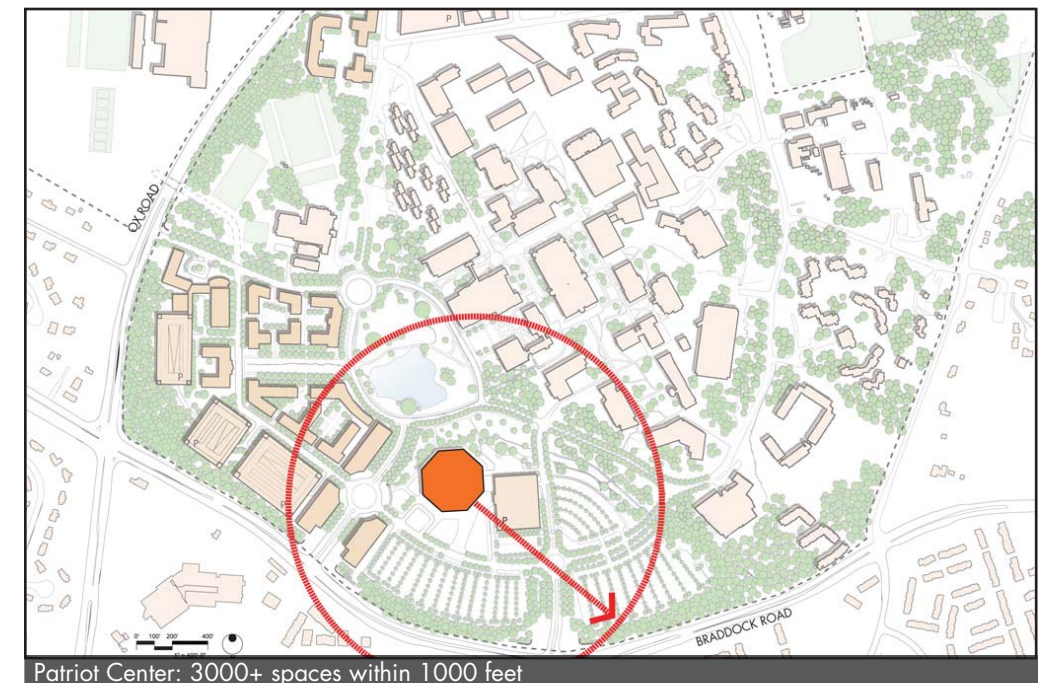
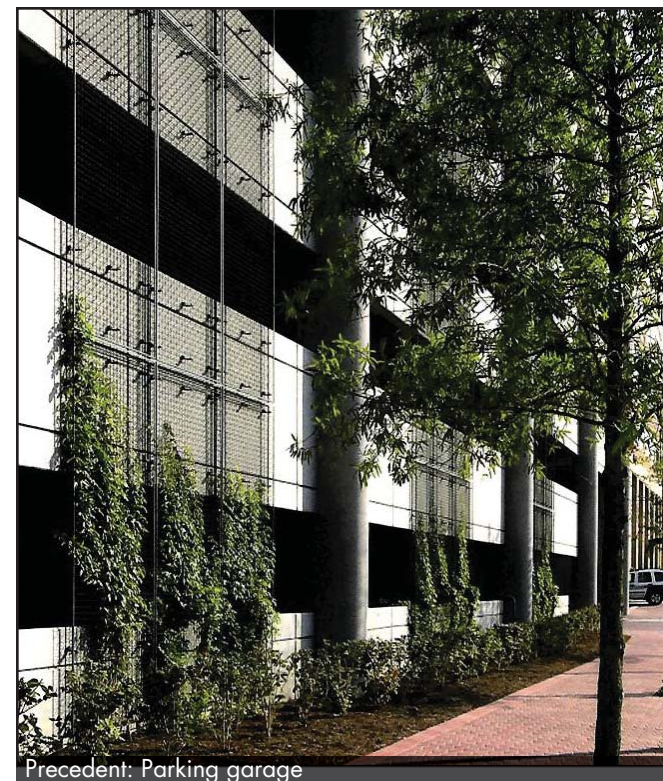
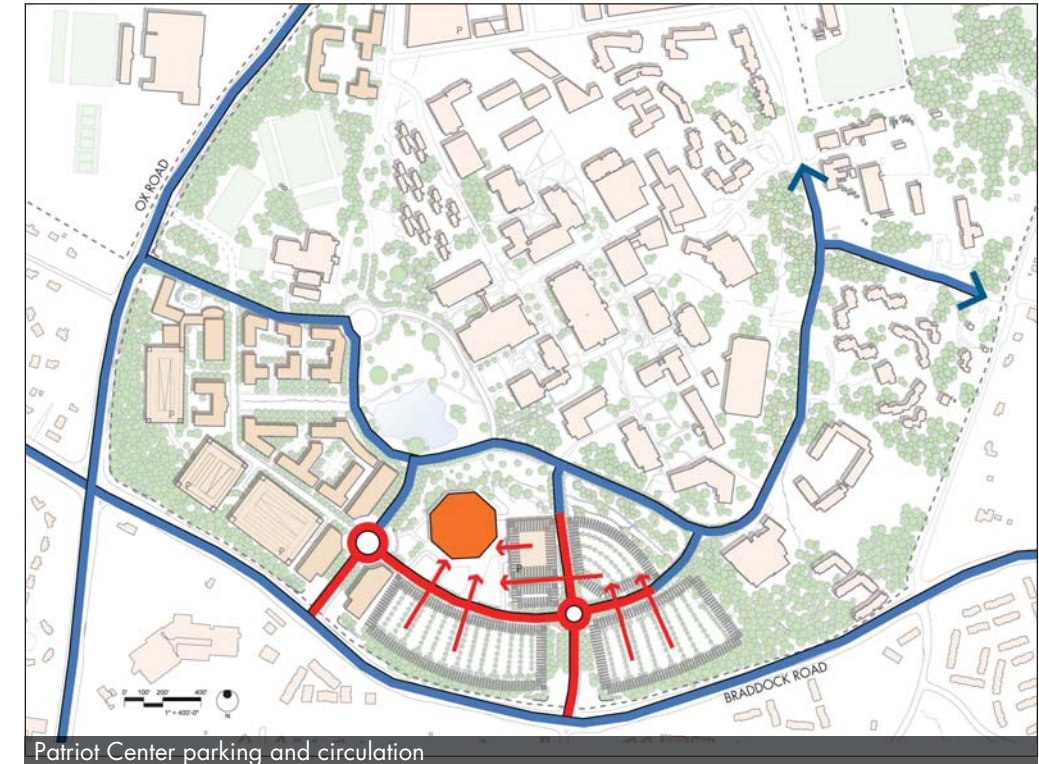
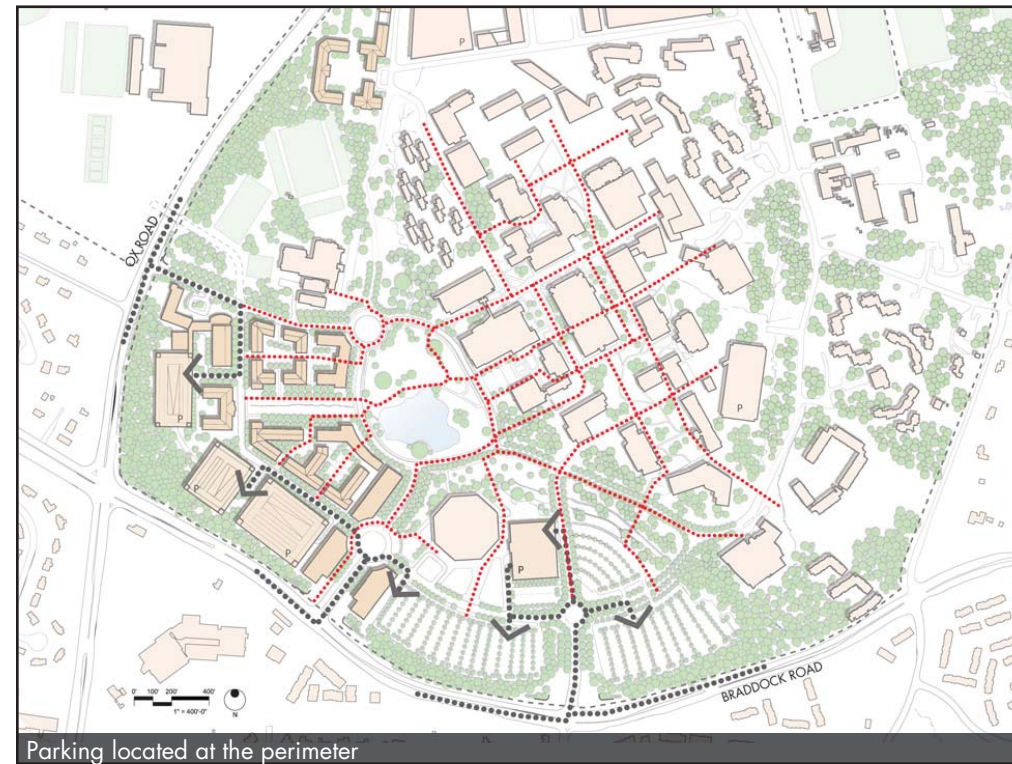
Campus Gateways

3 Design Goal: Upgrade circulation to resolve existing issues and accommodate future growth

George Mason University is historically a commuter campus and as such relies primarily on vehicular access. As the university begins to develop the southwest sector, parking strategies need to be reconsidered.

Design Principles

- Provide improved access to campus by adding a new entrance at West Gate, upgrading the existing entrances at Roanoke River Road and Nottoway River Lane, and linking new roadways into the existing network
- Strategically locate parking at the edge of campus and near entry points to minimize pedestrian and vehicular conflicts.
- 3,500 parking spaces are provided within 1000 feet of Patriot Center
- Parking decks are located with convenient access to new research, academic, and housing facilities
- Structured parking reduces impervious surfaces and the heat island effect
- Structured parking is screened from Ox Road, Braddock Road, and the campus by the natural forest and new buildings.

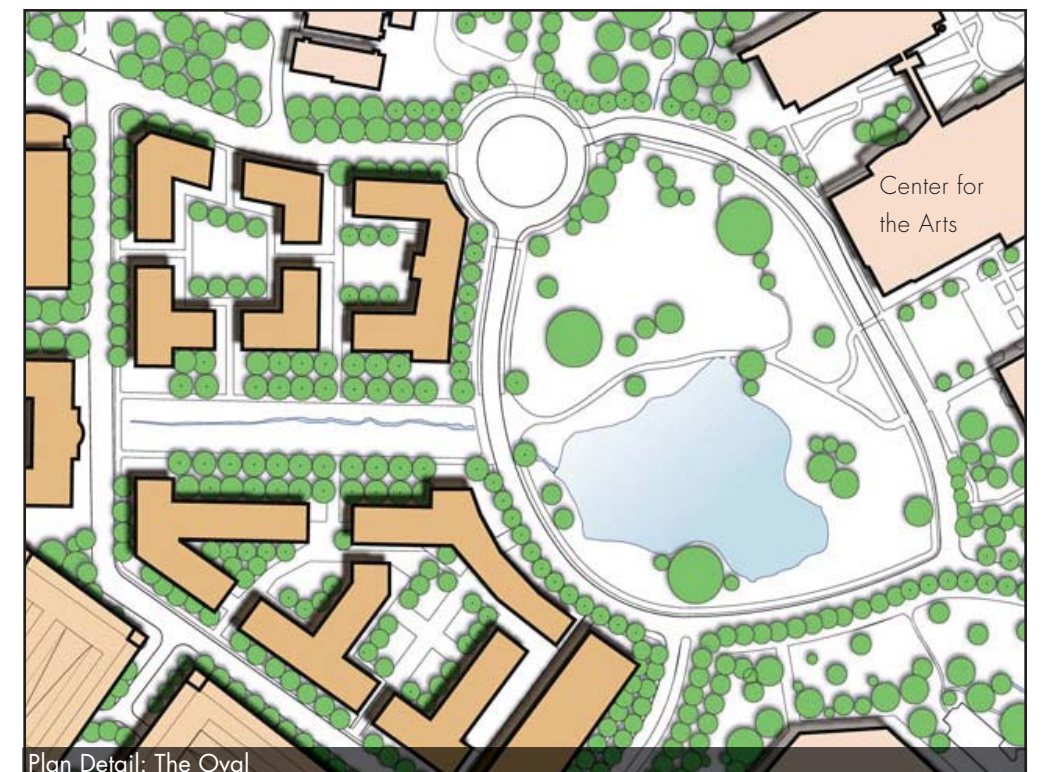
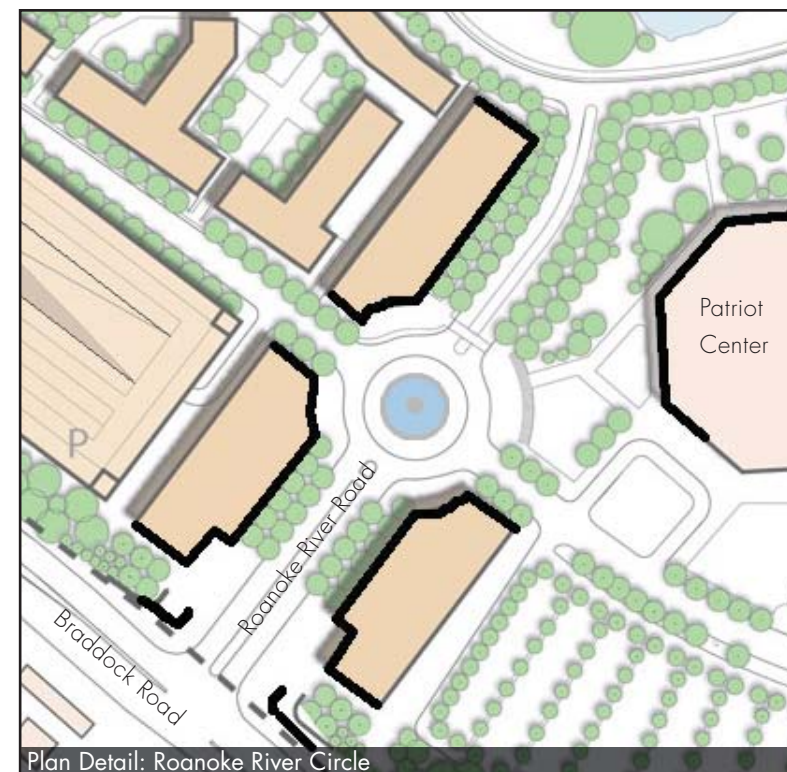
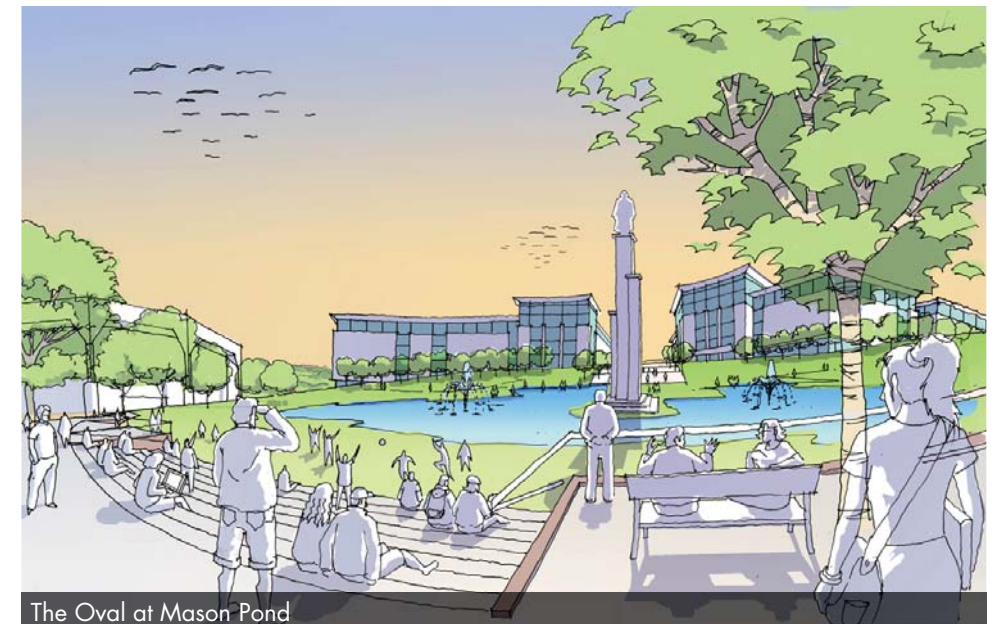


4 Design Goal: Create signature places on campus

George Mason has a series of campus spaces that help give identity to the campus and serve as gathering places for students, faculty, staff, and visitors. Development within the southwest sector builds on this tradition.

Design Principles

- Add new features within familiar locations to distinguish them further as George Mason landmarks
- The Oval: A new center for the campus at Mason Pond
- West Gate: A new campus threshold along Ox Road
- Roanoke River Circle: A sense of place along Roanoke River Road



5 Design Goal: Conserve resources and habitat using sustainable design principles

A commitment to sustainability will guide development as the southwest sector plan is implemented. Attention to these issues during planning and development results in a healthier campus environment. Careful planning preserves the natural habitat and reduces resource and energy expenditures.

Land Use and Transportation

A mixed-use environment with services and amenities for students encourages walking. Increased student housing, with 3600 new beds, reduces trips to and from campus. A shuttle service to Metro and surrounding neighborhood destinations will further reduce automobile dependence.

Land use efficiency is maximized by building in a compact manner, reducing building footprints, and replacing surface parking with structured parking. Preserve habitat areas, reduce the heat island effect, and minimize impervious surfaces.

Walkable Streets

A network of walkways and bike paths encourage pedestrian activity. Shade trees, appropriate lighting, ample sidewalk space, and pedestrian amenities promote alternate modes of travel.



Lake at University of Massachusetts - Amherst



5 Design Goal: Conserve resources and habitat using sustainable design principles

Environmental Preservation

Bio-retention cells absorb and filter runoff, retain stormwater, and replenish the aquifer. Best management practices should be implemented for erosion and sedimentation control during and after construction to preserve top soil and prevent sedimentation of existing streamways.

Porous pavement for parking, pathways, and plazas reduces stormwater runoff by allowing water to filter slowly into the ground table where it can be filtered naturally. Stormwater detained in ponds and cisterns can be reused for irrigation and fountains, reducing the need for potable water.

Night-sky glare is minimized by using streetlights with 100% cutoff range and LED lights in pedestrian areas.

Natural Habitat

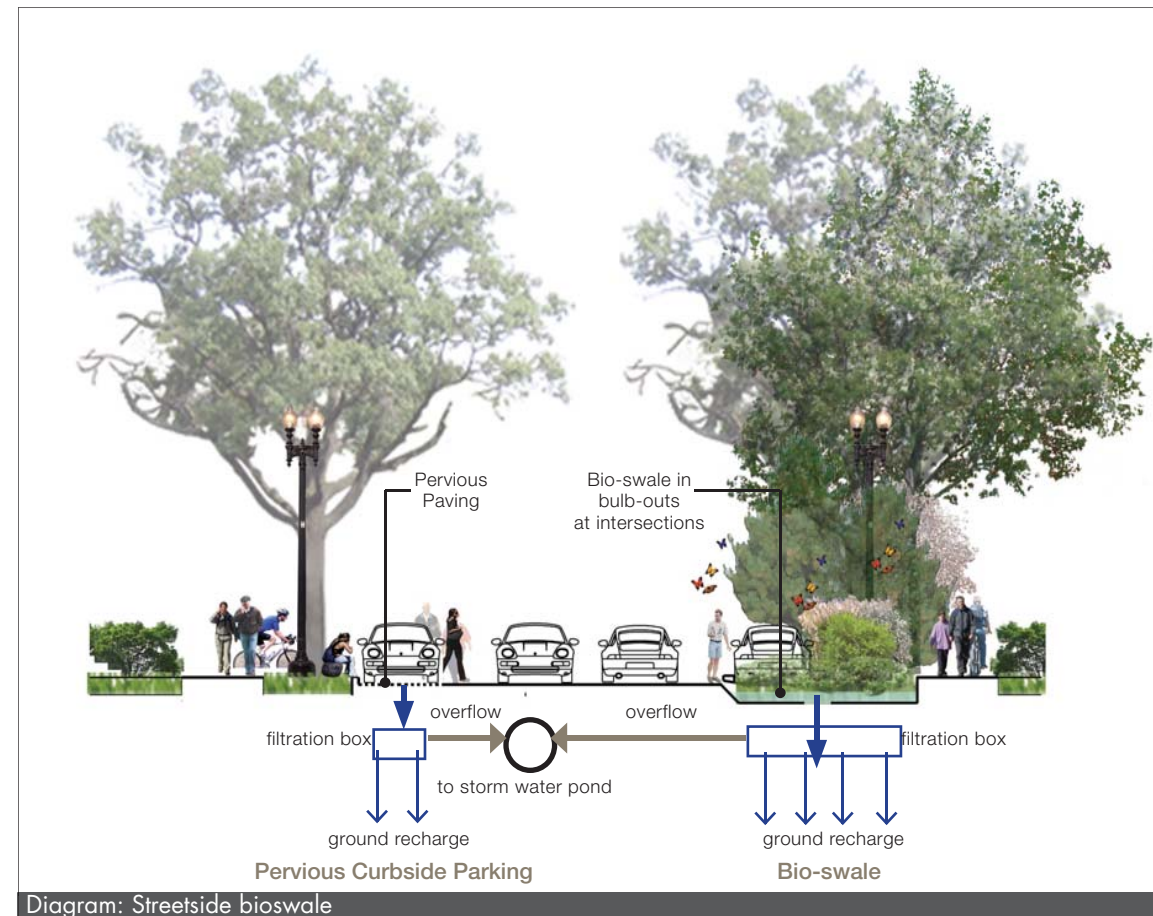
Using indigenous plant species reduces the need for irrigation, supports the local habitat, and increases the longevity of plants. Significant trees, shrubs, and ground-covers will be preserved and maintained to reduce the heat island effect, preserve habitat areas, and retain pervious areas.

Resource Efficiency

Using locally manufactured materials and resources reduces transportation costs and supports the local economy. New buildings will be designed for energy and water efficiency. The use of reclaimed or recycled materials can reduce energy expenditure and reduces the demand for raw materials.



Precedent: Bioswale at Nottingham University



Investment Strategies

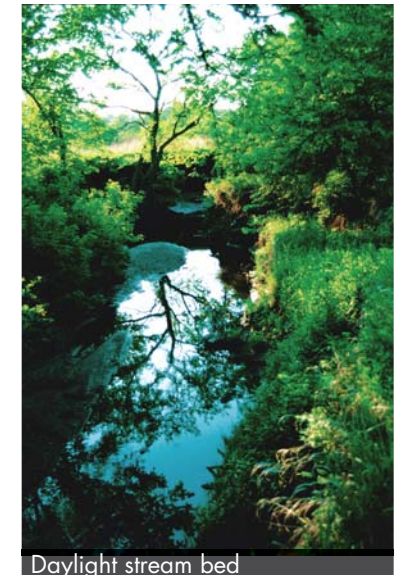
- Include the storm water management system within the natural preserve
- Interconnect open spaces to build effective urban ecosystem enriched by natural habitat
- Incorporate bioswales and rain gardens in sidewalks, medians, and pocket parks
- Construct sidewalks, curbside parking lanes, and paved medians with pervious unit pavers
- Dedicate wide planting strips with continuous tree root zone for street trees
- Use LED streetlights or lamps with 100% cutoff to decrease illumination level

Public Benefits

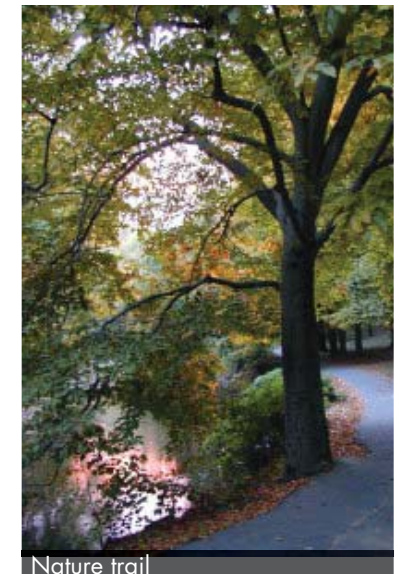
- Unique natural features that will help distinguish the community
- Increased public awareness
- Less cost impact on municipal sewer system
- Less recurring cost for street lighting
- Reduced infrastructure cost on urban irrigation

Environmental Benefits

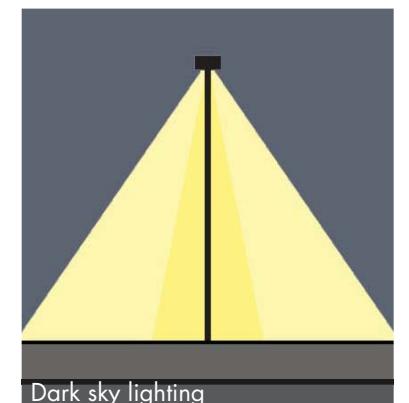
- Reduced storm water runoff and size of storm water management systems
- Increased ground recharge
- Increased absorption of carbon dioxide
- Reduced urban heat island effect
- Reduced night glow and energy consumption in illuminating public environment
- Less glare impact on the natural habitat



Daylight stream bed



Nature trail



Dark sky lighting

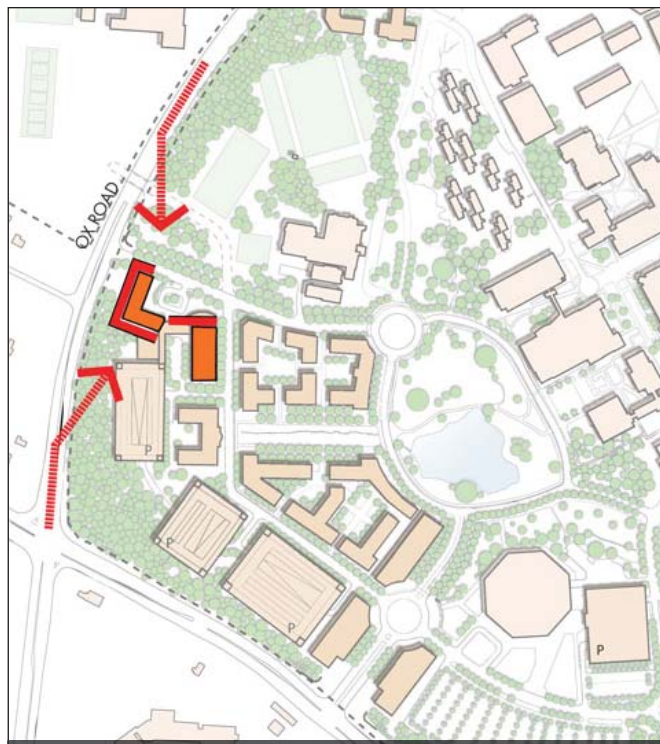
6 Design Goal: Strategically locate a hotel and conference center on campus

Locate hotel and conference center to accommodate both university and community functions.

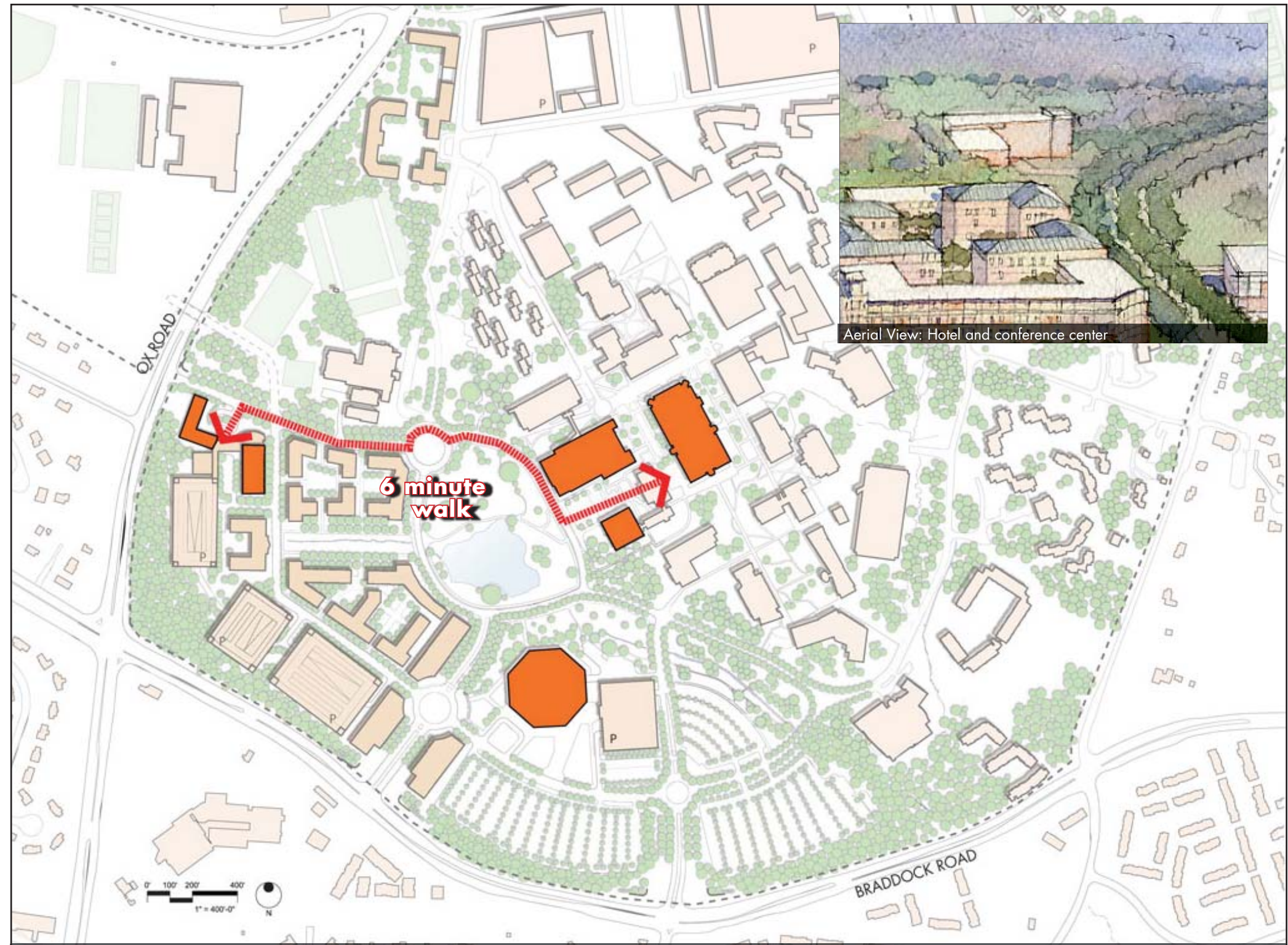
Design Principles

- Program requirements:

Hotel	150 rooms
Conference Center	20,000 SF
Parking	600 spaces
- Hotel and conference center is located within a 10-minute walk to the center of campus
- Enhance the pedestrian experience approaching the hotel and conference center with:
 - » Shade trees
 - » Pedestrian-scale facade
 - » Gentle slopes
 - » 10 to 12 foot wide pathways
- Position away from the Patriot Center to avoid traffic and circulation conflicts



Plan Diagram: Visibility of hotel and conference center



Plan Diagram: Six minute walk from hotel to campus center



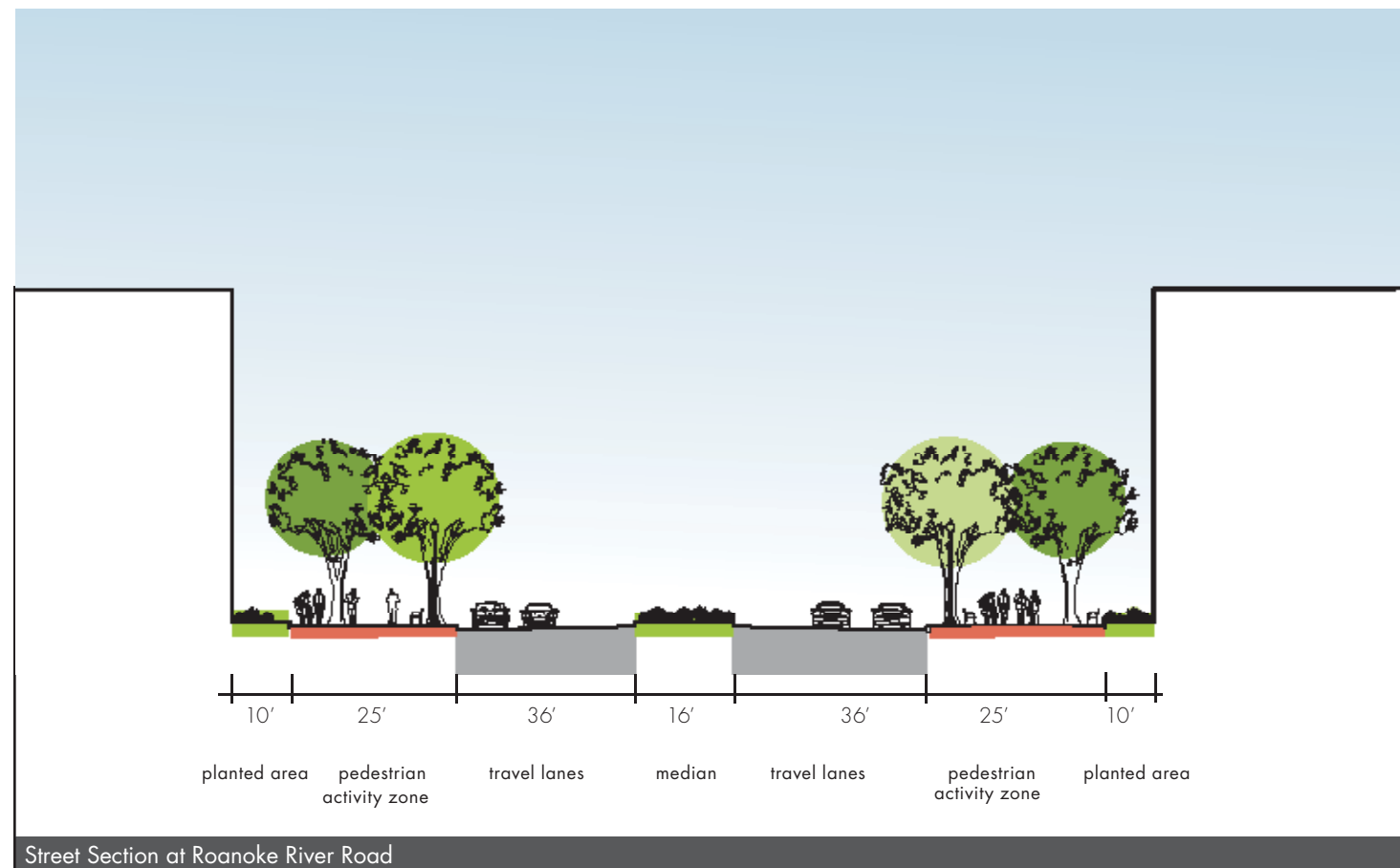
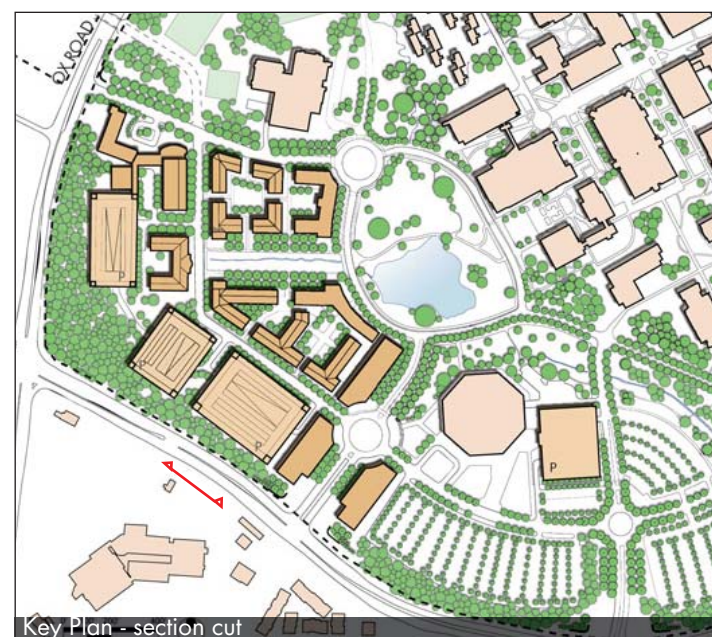
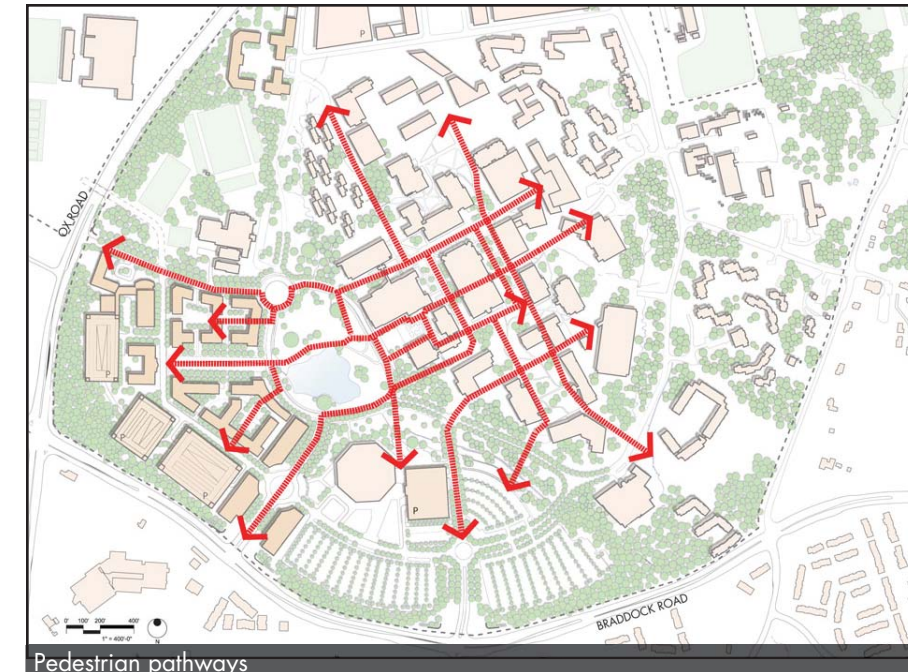
Aerial View: Hotel and conference center

7 Design Goal: Enhance the pedestrian environment

As the university begins to expand into the southwest sector, pedestrian paths will serve as the primary link between future development sites and the heart of the campus.

Design Principles:

- Connect the pedestrian network in the southwest sector to the existing system of paths within the campus core
- Line streets and pathways with trees to increase spatial definition, provide shade, and improve walkability
- Improve wayfinding, orientation, and safety by minimizing undergrowth and providing landmarks and visual clues
- Enhance the path system with lighting, unique paving, and signage



New Campus Places: The Oval

The Oval is a new campus place for active use. The existing topography that surrounds Mason Pond provides an ideal focal point for the campus. New residential and research buildings will define the space to the south and west, unifying the new development with the existing campus. Prominent buildings such as Mason Hall, the Center for the Arts, and the Patriot Center surround the Oval.

New plantings, walking paths, seating, and pedestrian-oriented lighting will enhance the visitor experience. The Oval will be an ideal setting for formal and informal activities such as Frisbee, studying, rallies, and outdoor lectures.



Key Plan



Proposed view across The Oval



Aerial view of new Southwest Sector

New Campus Places: West Gate and Hotel Conference Center

West Gate is a new intersection planned to provide additional access and enhance the presence of the university.

The new hotel and conference center will serve as a focal point as visitors arrive on campus. A low masonry wall creates a threshold and establishes the university gateway.

The planting of appropriate trees, shrubs, and perennials will add structure, color, texture, and seasonal variety to the gateway.



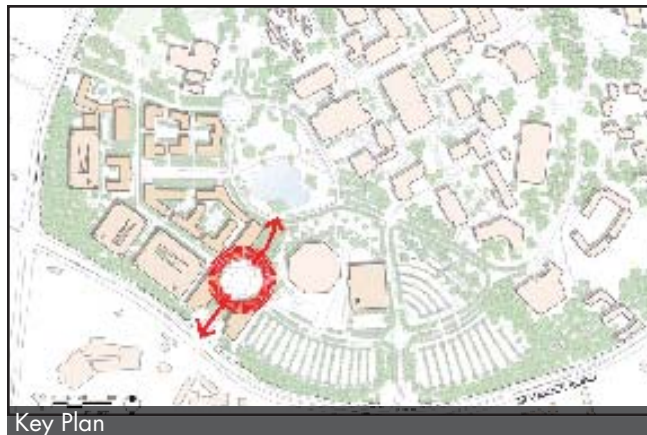
New Campus Places: Roanoke River Circle

Roanoke River Road is a primary entry point to the university. This plan proposes many improvements to enhance the sense of arrival and to create a new place within the campus.

New research and office buildings and an allee of trees will flank the road, framing a view of the Johnson Center. A new circle is proposed to create a distinctive place as visitors enter the campus and to calm automobile traffic.

The intersection of Braddock Road will be improved with a low masonry entry wall to create a threshold and establish the university's gateway.

The planting of appropriate trees, shrubs and ground covers will add structure, color, texture, rhythm and seasonal variety to the gateway.



Achievements of the Plan

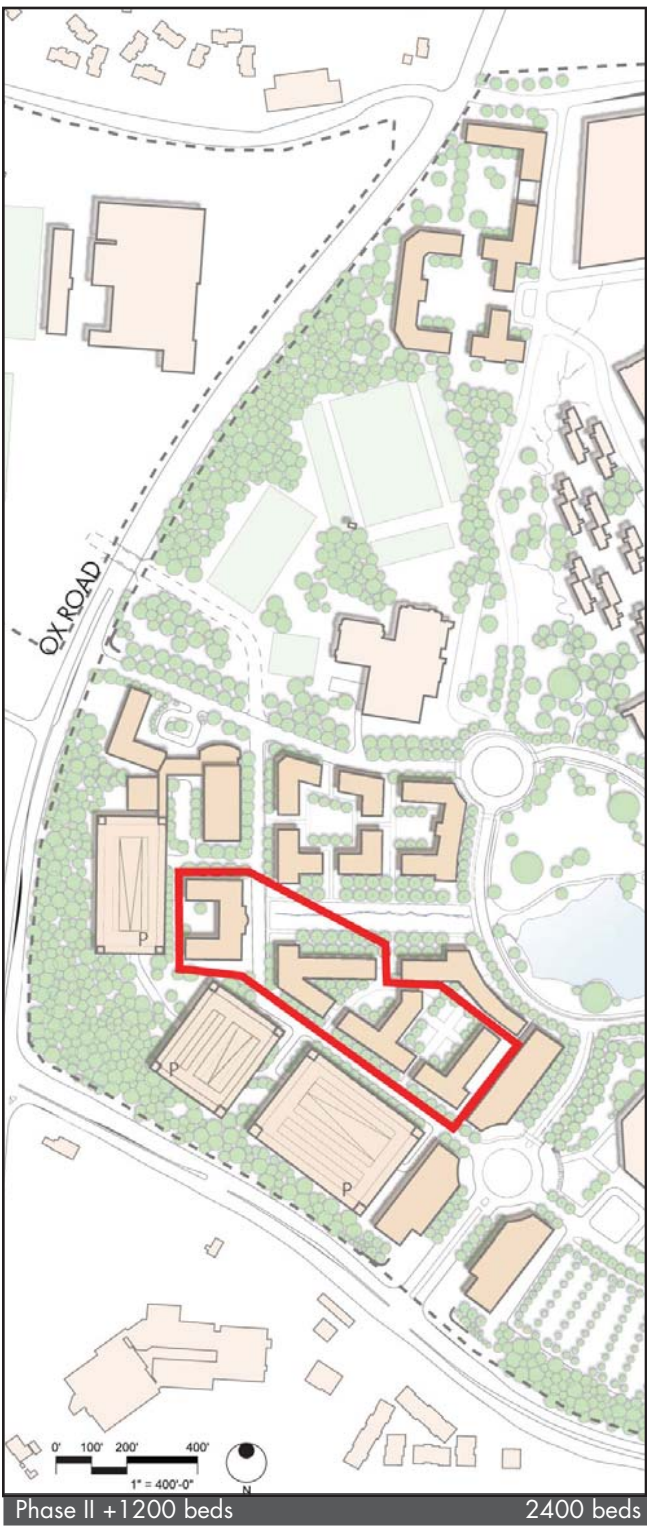
- Identifies new places for the campus to expand with more diverse uses such as research, residential, and parking
- Provides space for 3600 additional beds for student housing on campus
- Locates hotel and conference center with high visibility and easy access
- Improves visibility of campus by creating new gateways for a better sense of arrival
- Creates signature campus places such as West Gate, The Oval, and Roanoke River Circle



Southwest Sector Master Plan: Phasing for Housing

The finest institutions of higher education offer environments for students to live, study, socialize, and work. By increasing the density of on-campus housing and the accompanying amenities, George Mason University will continue its tradition of providing the highest standards for its students.

The clustered housing will create a true community of students, who can enjoy the best of campus living -- walking to class, cycling around the pond, studying beneath the trees, and forming life-long friendships and memories at every opportunity.



Parking

Parking Needs in Southwest Sector

Currently, surface parking lots dominate the south-west sector. As the plan is implemented, demand for additional parking will grow. In order to use the land efficiently, structured parking is proposed.

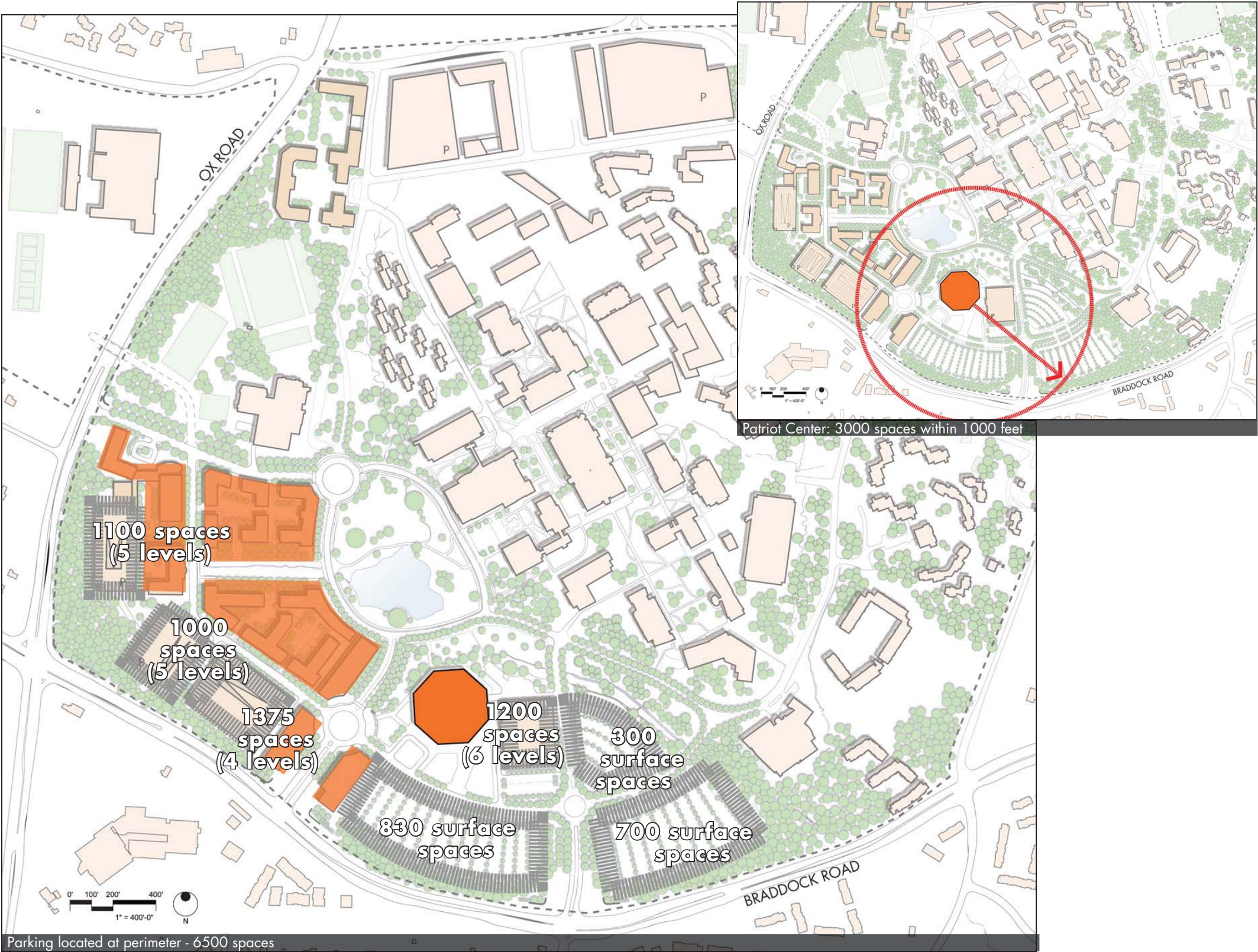
With more students are living on campus, the univer-sity will consider remote parking for student residents. 1000 parking spaces would be allocated on West Campus for students in university housing. Needs such as a pharmacy, cafe, and mini-grocery will be met on campus, within walking distance. Therefore, students will have less need for frequent access to their cars. A shuttle service would be provided to transport students from campus to the remote parking.

Program Element	Required Parking
Conference Center	450
Hotel	150
Research	600
Office	400
Retail	120
Student Housing	1800
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Total New Parking	3475
Existing Spaces	4330
Estimated Shared Spaces	-500
Remote Resident Parking	-1000
Total Required Spaces	6350
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Total Spaces Provided	6505

Patriot Center

In the area east of Roanoke River Road, new surface parking lots and a garage will allow automobiles to enter and exit the campus during Patriot Center events and non-event times.

6-level garage	1200 spaces
surface lots	1830 spaces
Total:	3030 spaces



Retail and Services

Retail and other services will be provided on campus to accommodate an increased population of on-campus students. The current student and faculty population can support a significant level of retail services. New campus residents will be attracted by the many amenities available on campus.

Suggested retail service types:

- mini-grocery
- dry cleaning
- drugstore
- print shop
- hair salon
- cafe
- mail service
- coffee shop



Appendix A: Retail Study

Office Market Summary

The short-term forecast for this area's office market calls for a continued interest in expansions, corporate relocations, and improvement in the financial, leisure/hospitality, and business services sector along the . Stable lease rates and the strengthening economy will continue to contribute to an increase in leasing activity, in addition to the expansion of the federal government. The overall office vacancy rate is expected to remain in the high single digits, with asking lease rates also remaining stable in the \$23-\$26 range (full-service). Additionally, 2006 net absorption is forecasted to remain positive, averaging over 50,000 square feet per quarter in our trade area; in the whole of Fairfax County this number rises to more than 350,000 square feet. The speculative multi-tenant office building remains quite risky given today's market conditions and the vacancy and net absorption rates in existing office space across Northern Virginia. Especially considering the fact that the Bridgewater Corporate Center, located less than 3 miles away, has not yet been leased, speculative office construction is ill-advised at this time.

More than half a million square feet of office space is currently under development or in the planning pipeline in our trade area at present. It is important to note, however, that almost all of this commercial development is taking place along the bustling I-66 Corridor; our primary trade area is virtually devoid of all office development, except for a small amount currently in the pipeline in Old Town Fairfax. Broadly speaking, this site is by no means located in a thriving commercial zone; rather it is an idyllic residential community whose commercial core is George Mason University.

This said, we believe that core and loft office space in addition to some office condo units will be the ideal product types at this site based on market conditions in our trade area, somewhere in the vicinity of 100,000 square feet. Since this is a university project, we also assume that there is built-in demand for administrative or other institution-related offices at this site, thus increasing our recommendation to 150,000-200,000 sq. feet of office development at this site over the next 3-5 years.

Retail Market Summary

The retail landscape in our trade area is far from saturated. Though there is significant retail development to the north of this site along the I-66 and Route 29/50 Corridors, there is hardly any in our immediate trade area, as discussed earlier. This is a reality that we can take advantage of at this site. By providing this underserved market with a high-quality, aesthetically pleasing retail offering, we anticipate that it will have the capacity to capture a large amount of the retail demand located in our trade area currently being exercised elsewhere. The only neighborhood goods and services within our primary trade area is the University Mall, a shopping center that leaves much to be desired from both aesthetic and practical standpoints. A wide array of quality retail does exist to the north and south of our site, but for those living in our immediate trade area and to the east and west along Braddock Road, the retail opportunities are few and far between. This is not a random occurrence; rather it is a result of the transient nature of this market. To elaborate, more than 80 percent of the students at George Mason University commute to school; additionally, a majority of those residing in our trade area commute long distances to their place of employment (the average travel time to work is 31.57 minutes). As such, much of the retail spending takes place outside of our trade area, causing our primary trade area to be weaker than the surrounding region from a retail standpoint.



Our recommendations for this development are hinged on the principles of vacancy, demand, and growth. Given the number of opportunity gaps in this market (indicated on the retail gap analysis on page 32) there is clearly not enough retail space for the demand that exists in the market. Demand is based on the population's desire to have more goods and services and retail environments to meet their needs. It is our opinion, looking at the statistical summary and demand analysis, that there is a minimum of 100,000 square feet being unmet in our immediate trade area at a relatively high price point.

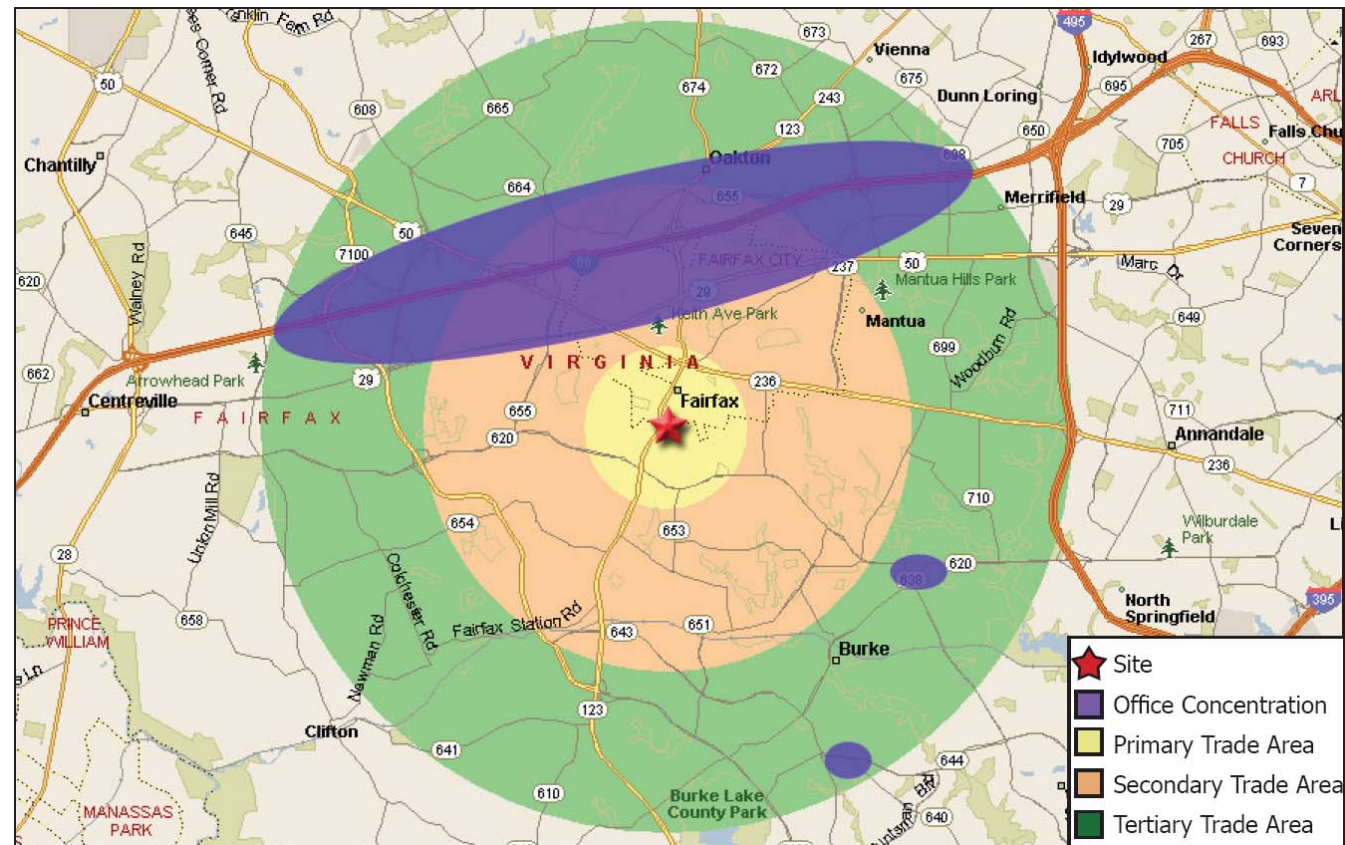
Though you may not be interested in building this much retail, it is important to note that doing so would be feasible. If you are able to lure a mix of tenants that speaks to the needs and wants of the consumers in your trade area at an appropriate price point, there is no doubt that you will find success here.

Hospitality Market Summary

Hotel demand is not generated by the hotel itself; rather, it comes from local businesses, convention facilities, tourist attractions, and other draws that bring travelers to a location. Unlike other classes of real estate, hotels cater to patrons from outside the local area. As noted earlier, a hotel on the George Mason University Campus would have a significant built-in demand base, as a result of parents visiting their children who attend the university, visiting

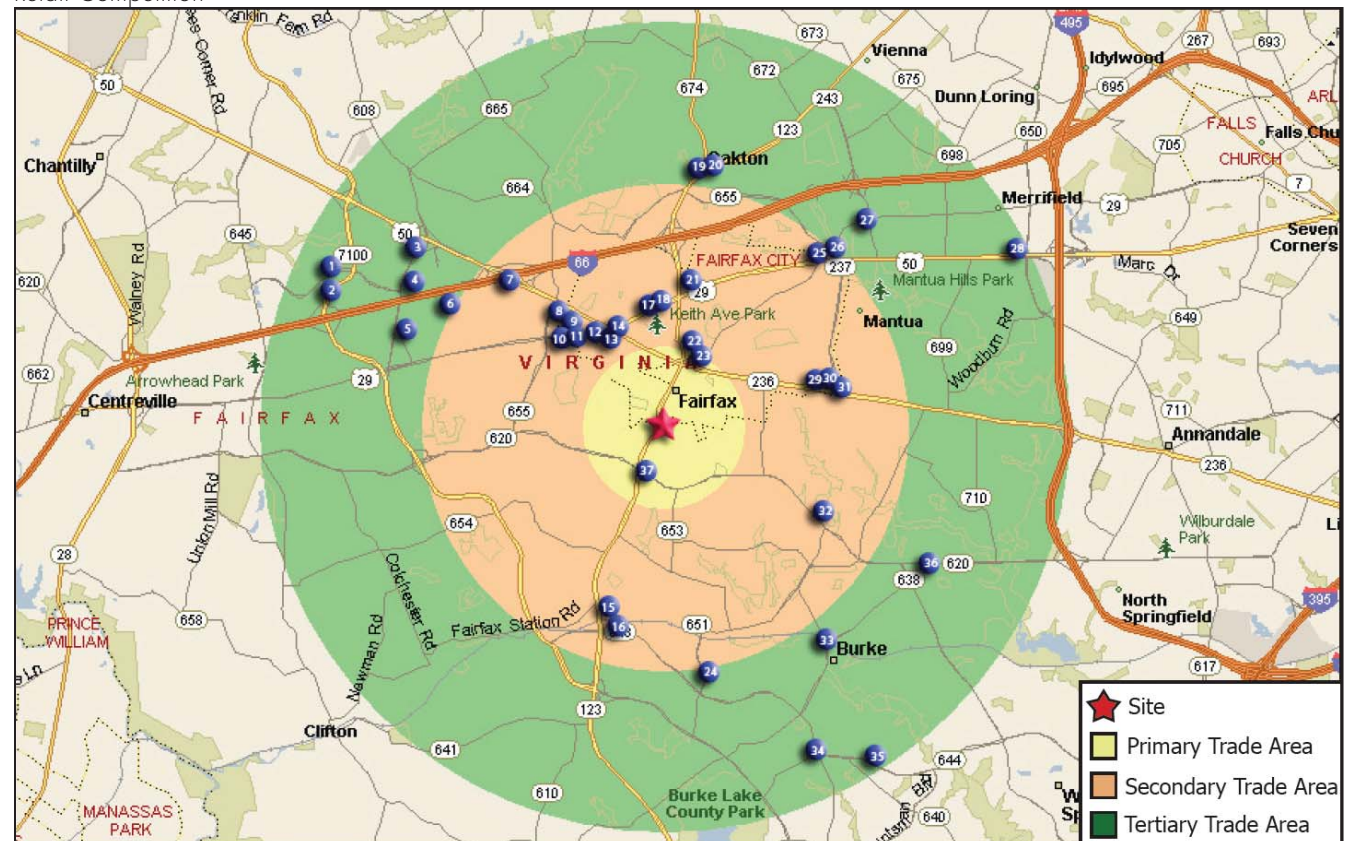
faculty/speakers, families with prospective students who are visiting the school, as well as out of town athletic teams, etc. Another factor to consider is the fact that there is a complete lack of hotel space in the southern half of the GMU trade area (as illustrated on the graphic on the page 42). The closest hospitality offerings to those living in the southern submarkets are the small-scale motels and bed and breakfasts in Old Town Fairfax City or those national chains located along the I-66 Corridor. Building a hotel on the University's campus would be a wise play in this currently under-served market.

It is our contention that this market can support a limited-service, possibly extended stay offering of approximately 120-150 rooms, that will have the capacity to attract out of town visitors to the University and surrounding community, visiting sports teams, as well as patrons of University-sponsored events. A small amount of meeting/ conference space to support University activities would also be warranted here. We contend that this offering should have a price point of approximately \$125-\$150 per night.



Trade Area Office Market

Retail Competition



Conclusion

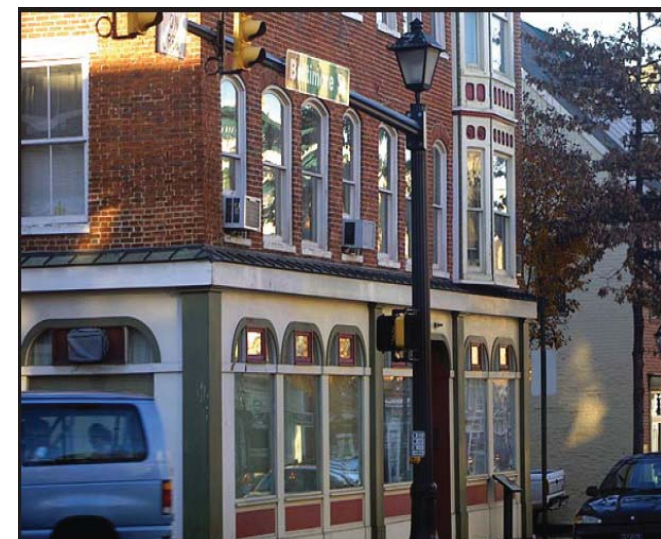
This an extremely interesting site, located in the heart of Fairfax County on the campus of George Mason University. Here you have an extremely unique opportunity to create an academic community that has more involvement and engagement with the local community and to give the institution a “public face lift,” so to speak. In order to achieve success in this endeavor, however, it is important to consider the market in which you are working. This area of Fairfax County is far less densely-populated and developed than others in close proximity to it.

This said, we recommend 150,000-200,000 square feet of office development at this site, in addition to a 120- 150 room limited service hotel offering. On the subject of retail, however, our recommendation is less concrete. Our study shows that there is sufficient demand to support upwards of 100,000 square feet of retail development at this site, specifically in the following categories: Grocery Store/Convenience Store, Pharmacy/ Drug Store, Personal Care Store, Office Supplies/ Stationery Store, and Limited Service Eating Place (i.e., fast casual/quick bite restaurant) Sectors. Since there is a large gap in each of these categories across our trade area, it can be deduced that these establishments will be visited by students and members of the surrounding community as well. In our primary trade area, there is also a lack of Book/Periodical/Music stores, a reality which you can capitalize upon at this site.

The discussion above lends empirical support to our belief that the retail located here should be predom-

inantly amenity-based, with low-to-medium price point restaurants, a convenience store, a book store, a coffee shop, a movie-rental outlet, a drug store, an office supply store, and perhaps a nail/hair salon included in the offering. Though you may not be interested in building this much retail, it is important to note that doing so would be feasible. If you are able to lure a mix of tenants that speaks to the needs and wants of the transient consumer base in your trade area at an appropriate price point, there is no doubt that you will find success here.

Overall, this is an excellent site with the potential to achieve great success on retail, commercial, and hospitality fronts. If this site is developed in a strategic manner, it is our contention that you and all other parties involved will reap significant rewards. Quite obviously, the University has the most to gain from creating a dynamic, multi-use offering at this site. By building an offering that both students, faculty and staff, and residents of the surrounding community can enjoy, the institution will be making great strides in improving relations between the community and the University. Indeed, integrating the campus with its surroundings will be advantageous for the school and community alike, providing students and Fairfax residents with a close-knit, college-town civic vibe that is noticeably absent from the disconnected campus and surrounding area at present.



Appendix B: Traffic & Transportation

Introduction

The main campus of George Mason University (GMU), located in Fairfax, Virginia, has experienced significant growth in recent years; both in student population and overall square footage of academic, auxiliary, and student life campus uses. In order to provide for consistent and manageable expansion opportunities, university planners have identified campus “sectors” to focus planning efforts on specific areas of the campus and to address growth constraints and/or barriers inherent to those areas. As of the date of this report, the Northeast Sector is currently under construction.

The Southwest Sector encompasses the portion of campus that fronts Braddock Road (Route 620) to the south and Ox Road (Route 123) to the west from Braddock Road to north of Kelly Drive. An overview of the Southwest Sector Plan is provided as Figure 1.

Existing features within the Southwest Sector include the Patriot Village (modular student housing), the P.E. Building, five surface parking lots, and, most notably, the Patriot Center event arena.

The expansion plan, as proposed by EEK, would develop the southwest sector with up to 400,000 square feet (SF) of academic research and university office facilities, 30,000 SF of campus-serving retail, a 150-room hotel and conference center, as well as new student housing. The existing Patriot Center would be preserved. These new campus uses, in association with other expansion projects across campus, would accommodate up to approximately 5,000 additional students.

Transportation has been identified as a critical component in future campus expansion. Because of its location along major regional highways and the presence of the Patriot Center, the Southwest Sector Plan, by necessity, addresses improvements/enhancements to campus circulation, parking, and access to the public roadway network. The transportation assessment is detailed in the following sections of the report.

Existing Conditions

This section outlines the existing transportation conditions within the planned GMU Southwest Sector. Transportation system constraints and opportunities are identified.

Campus Layout

The Fairfax Campus of George Mason University (excluding the Field House and intramural athletic fields), is generally bounded by the following public roadways:

- Braddock Road to the south
- Ox Road to the west
- University Drive to the north
- Roberts Road to the east

Direct access to the campus is currently provided from each of these roadways, except Ox Road. Patriot Circle is a two lane, undivided, roadway that acts as a vehicular and pedestrian beltway for the campus and encircles the majority of the academic and support buildings located in the campus’s interior.

While most of the campus buildings are located inside Patriot Circle, the majority of the parking supply is located outside Patriot Circle. The Southwest Sector is no exception, as the majority of the land area is developed as surface parking serving the main campus and the Patriot Center (also located within the Southwest Sector).

Because of the campus layout and the operation of Patriot Circle, vehicular access to the interior of campus is extremely limited. Except for Mason Pond Drive, no other roadways completely cross the campus’s interior connecting two different points of Patriot Circle. This creates a very pedestrian-friendly campus environment for patrons of the university visiting the interior of the campus. Without vehicular conflicts, the pedestrians can access multiple campus buildings with safety and ease.

Access

The selection of an access point by a visiting campus patron is primarily dependent on the origin or destination of travel. Campus directional signage provided along major highways in the vicinity of the university generally guide campus traffic to access points via Braddock Road. Eastbound I-66 and eastbound Route 50 traffic would tend to access the campus via western Braddock Road. I-495 (Capital Beltway) campus traffic would

access via eastern Braddock Road. A notable exception is that westbound I-66 campus traffic is directed through signage to southbound Route 123 via the City of Fairfax.

The Braddock Road/Roanoke River Lane campus entrance intersection is located directly adjacent to the major Route 123 (Ox Road) and Route 620 (Braddock Road) intersection on the southwest corner of the campus. Due to its close proximity to the intersection of these major highways and the placement of the Patriot Center, the Roanoke River Lane campus entrance has the most exposure to the surrounding roadway network and is among the most heavily utilized.

Circulation

As noted above, vehicular movements on campus are made primarily from the public roadways, through the access points, and to Patriot Circle. The majority of the parking supply is located adjacent to the circle. Drivers that park their vehicles outside of Patriot Circle must then cross to the academic core of the campus.

The circumferential flow of vehicles and the radial flow of pedestrians results in pedestrian-vehicle conflicts along Patriot Circle, but creates a walkable campus interior. While driver expectation of pedestrian activity results in a safe environment, the pedestrian crossings along Patriot Circle necessarily limit its carrying capacity. These conflicts are currently only a critical factor during special events.

Parking

With the exception of the newer Mason Pond and Sandy Creek Parking Decks, most of the parking on the Fairfax Campus is provided in surface lots. While the surface lots utilize more land area than structured parking, they spread out the pedestrian flow across a larger segment of Patriot Circle.

A total of 11,397 parking spaces are provided on-campus, of which, 4,334 spaces, or 38 percent, are located in the Southwest Sector. Of the 6,206 total parking spaces designated for general use, the Southwest Sector contains 4,141 spaces, or 67 percent.

During special events, the parking lots within the Southwest Sector provide the primary parking for the Patriot Center. Lots A and L are adjacent to the arena, while J, K, and C provide access for pedestrians through the use of traffic control officers on Roanoke River Road

and Nottoway River Lane.

Patriot Center Considerations

Events utilizing the majority of the seating capacity of the Patriot Center (10,000 seats), results in challenges on the surrounding transportation and parking network. Special events such as concerts, games, and graduations tend to have fairly compressed arrival times and very concentrated departure demands. Especially on weekday evenings, event traffic must compete with regional traffic on Braddock Road and Ox Road, as well as regular campus traffic. During such events, road facilities that typically operate efficiently, such as Nottoway River Lane and the northern portions of Patriot Circle, experience significant delays. The well utilized Roanoke River Road operates with capacity constraints during events, especially at its intersection with Braddock Road.

Prior to events, partial street closures are in effect and traffic control officers give pedestrian preference at crossings. These strategies aid in event traffic movement at the cost of limiting circulation options for non-event traffic.

Vehicles departing from events are necessarily directed along designated paths to minimize vehicular conflicts. Traffic management reduces the time required to empty the parking facilities, but results in even more disruption to the southern portion of the campus road network. During weekday evenings, through traffic on Braddock Road is also significantly impacted by the extension of green time for the side street movements and the additional demands of turning movements at Ox Road.

Southwest Sector Plan

This section highlights the transportation aspects of the Southwest Sector Plan. Key features, their benefits, and implementation challenges are identified.

Access

The Southwest Sector plan envisions Roanoke River Lane as an active, pedestrian-friendly avenue between Braddock Road and Patriot Circle. The plan seeks to balance this roadway’s function as a primary collector of campus vehicular traffic and the inherent needs of pedestrian circulation. In order to achieve this goal, emphasis and roadway capacity must be shifted away from Roanoke River Road to other campus portals. While other entrances, such as Shenandoah River Lane

and Rappahannock River Lane, have limitations on their ability to absorb additional traffic, the Plan includes revisions to Nottoway River Lane to improve its usage.

A key element of the Southwest Sector Plan is the addition of a new access to Ox Road, between Braddock Road and University Drive. This access will provide additional capacity and, through signage and marketing, attract trips that currently utilize Roanoke River Road. While only providing a single new portal to the campus, these combined changes will result in several major entrance points to the University, versus the single primary entrance that currently serves the campus.

To that end, members of the Southwest Sector planning team, including those from EEK, Wells + Associates, and GMU, met with representatives from VDOT to discuss the proposed new Ox Road access point. VDOT requested a traffic analysis to compare future Ox Road and Braddock Road operations with and without the additional access point. This analysis was provided to VDOT staff for review. A copy of the analysis memorandum (dated August 23, 2006) is provided as Attachment I. The analysis concluded that the new intersection point would greatly improve campus accessibility without negatively impacting the overall operation of the surrounding roadway network.

Roadway Network

Since vehicular traffic dominates the campus transportation network outside Patriot Circle, a challenge facing the Southwest Sector Plan is to recreate the pedestrian friendly environment as campus expansion occurs outside Patriot Circle and encroaches upon established traffic and parking patterns. This is accomplished primarily through the additional grid of streets that are planned as a part of these development areas. These streets serve to disperse traffic, provide alternative pedestrian paths, and reduce vehicle-vehicle and pedestrian-vehicle conflicts at any given location. The mix of uses serves to activate each of the streets, thereby expanding the driver expectancy to encounter pedestrians from the existing conditions on Patriot Circle outward to all of the campus roadways.

The enhanced network of streets will also provide a more pedestrian-scale environment that will encourage walking on a campus that was, at its founding,

a commuter school. This will serve to link this area of campus even more closely with the academic core.

A prominent feature of the proposed Southwest Sector transportation plan is the provision of roundabouts at several major internal intersections. In addition to being more visually appealing, these roundabouts offer improved and enhanced traffic operation and safety. Roundabouts improve intersection performance by allowing a continuously circulating flow of traffic, thereby reducing vehicle delay inherent at STOP-controlled intersections. Vehicular safety is also improved because each roundabout roadway approach yields to circulating traffic which reduces speeds and, by virtue of its geometry, channels the inbound traffic streams at safe merging angles. Pedestrian safety is improved because of these reduced vehicle speeds and the fact that pedestrians have fewer vehicular conflict points when compared with conventional intersections. Roundabouts have proven very effective and attractive at other colleges and universities such as Virginia Tech, Michigan State, and Utah Valley State College (UVSC, Orem) to name several examples.

For planning purposes, a Synchro/SimTraffic model was developed for the GMU Southwest Sector using both existing and future (planned) roadway networks. The purpose of the model was to examine roadway and traffic operations using typical baseline weekday PM peak hour campus traffic volumes (no Patriot Center event) and weekday PM event traffic volumes. The model included Braddock Road and Ox Road to illustrate the campus roadway network’s interaction with the surrounding public roadways. Screen shots of the Synchro/SimTraffic model are provided as Attachment II.

Utilizing this transportation model as an overall network evaluation tool, the team determined that the future proposed Southwest Sector network would operate adequately and efficiently. As stated above, the additional internal roadway links would aid in dispersing traffic and creating alternate paths of travel. The roundabouts would improve efficiency at key internal intersections by reducing vehicle delay. The surrounding public roadway network would continue to be a constraint on the overall effectiveness of the transportation plan. Intersection improvements to the Roanoke River and Nottoway River connections to Braddock Road

as well as the proposed new intersection on Ox Road would improve campus accessibility. A grade separated interchange would likely be needed for the Braddock Road/Ox Road intersection as a regional improvement at some time in the future.

Parking

Another key feature of the Southwest Sector Plan is its use of structured parking. The replacement of existing surface parking with garages allows the best use of the developable land while respecting the environment. Most importantly from a transportation perspective, parking decks encourage a pedestrian-friendly environment and flexibility through signage and wayfinding. For example, patrons of concurrent events at the Center for the Arts and the Patriot Center may be directed to specific parking decks to manage the traffic flows more easily than the existing open surface lots.

While the majority of the existing surface parking spaces will be replaced in garages, the sharing of spaces among various uses will continue. The same space may be used by a campus visitor in the morning, a retail patron at lunch time, a research assistant in the afternoon, and a concert goer during the evening.

Patriot Center Considerations

Even with the anticipated dispersion of traffic to other portals, Roanoke River Road and Patriot Center traffic will continue to present significant traffic issues in the future. Given the requirements of the basketball teams, and the niche that the Patriot Center serves in the Northern Virginia performing arts community, it is unlikely that the arena will be eliminated or relocated from the campus in the future.

One of the key challenges in implementing the Southwest Sector plan is to remedy the existing problem of event and non-event campus traffic interaction. This interaction is evident in the existing transportation network, as it disrupts day-to-day campus traffic patterns and negatively impacts overall campus arrival and departure times. This issue is addressed in the future transportation network by providing an enhanced grid of internal streets. This grid allows for alternate vehicle paths and the ability to sever or partition segments of the network in order to effectively segregate Patriot Center event and non-event traffic at times when needed.

While the public road system, especially Braddock Road, will continue to determine the time to empty the parking facilities after events for the foreseeable future, the internal roads and garages should be designed so as not to be the “weak link” in the system. No capacity improvements are planned along Braddock Road, other than the planned interchange with Ox Road. If the Fairfax County Comprehensive Plan were modified to recommend widening Braddock Road or provide alternative parallel capacity, the on-campus road network should have the capability to adapt to these changes. The proposed network of internal streets serves this function, and the proposed parking structures should continue that design.

Conclusions

Transportation must be a key element in the future development on the Southwest Sector of George Mason University. This area of campus is located at the intersection of two major roadways (Ox Road and Braddock Road) and, therefore, benefits from excellent visibility. For the same reason, significant access challenges are also present. Roanoke River Road is located within this sector and provides a major entrance to campus and the primary access for the Patriot Center. The reliance on this roadway and the capacity constraints of the public roads adjacent to campus dictate the efficiency of special event arrivals and departures. The Southwest Sector Plan addresses both the everyday traffic demands and special event operations through a new network of streets and the provision of direct access to Ox Road. The proposed additional portal will not only increase capacity, it will permit event traffic to be managed separately from the remainder of the regular campus traffic. Parking structures will replace the existing surface lots, resulting in a pedestrian-scale environment and promoting walkability. The Southwest Sector Plan, with its integral transportation framework, allows George Mason University to continue to grow into a true world-class university.



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