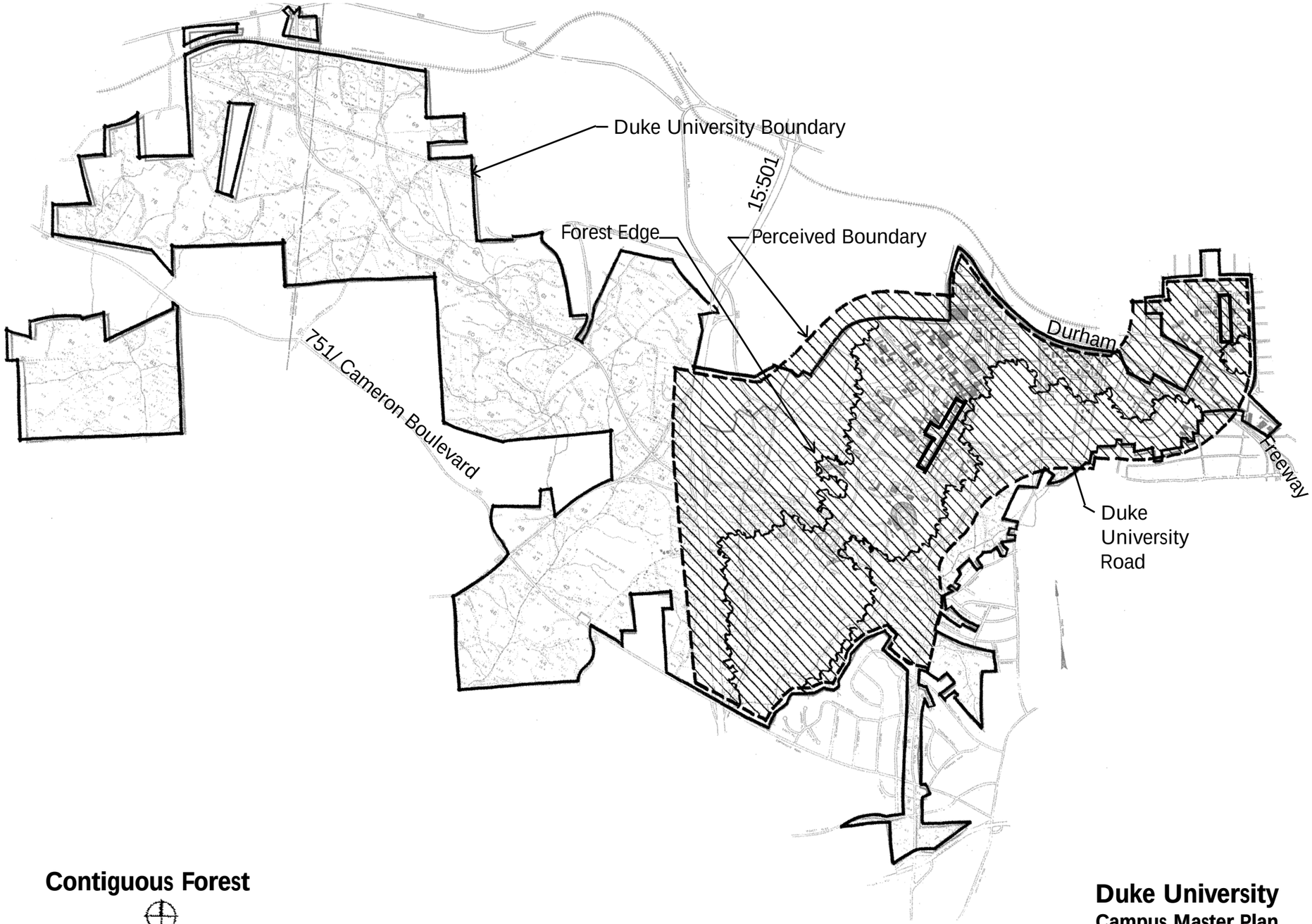
IV. APPLICATIONS



Contiguous Forest

Conserving the Campus

One of the first challenges of the master plan is to ensure that the unique assets of Duke are preserved and enhanced for the future. For this reason, Conservation Zones have been established, along with criteria for development within them. The Strategies section is considered earlier in this document as a regulatory tool for conservation.

This section provides further background narrative discussing the balance between conservation of existing elements and the addition of new facilities and interventions required by a dynamic institution in an era of rapid technological change.

Assets to be conserved include forested areas, fragile ecological areas, riparian corridors, open spaces such as the historic quadrangles, the Sarah P. Duke Gardens, and the historic architecture of the East and West Campuses.

The opposite page illustrates the Duke Forest contiguous to the campus. As the wooded areas diminish with development in the Triangle, the value of Duke's forest land will increase. It is also very difficult to reforest compromised portions of woodland. Because of the value and irreplaceability of the forested area, it is critical to protect important stands of forest.

Forested Areas

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Forested Areas

The forest plays a large role in the identity of Duke University. However, since the founding of the campus, a substantial portion of the original forest has been cleared or degraded, so the plan recommends identifying remaining areas that cry out to be preserved, enhanced and managed.

Off the immediate campus, Duke owns some 7900 acres of forest and recovered farmland spanning 4 counties. On the campus itself, as shown on the opposite page, substantial tracts of forest remain, some providing a buffer around campus, and others remaining within the heart of the campus.

The buffer areas include the forested areas along parts of Erwin Road, Duke University Road, Cameron Drive, Campus Drive and Towerview. The purpose of leaving the forested buffer is to retain the character of the campus. In the past, widths have been proposed for these buffers. The campus plan recommends a 300 foot buffer width plus variations that take into account local variety of the woodland ecology, topography, and water courses.

Within the campus, there has been an unwritten agreement to leave a ring of wooded area around the West quad, especially near the Chapel. This forested ring highlights the contrast between the idealized campus architecture and the woodland, and increases the perception of connectivity between the segments of the campus. While this forested area will need thoughtful protection, it also needs improvement and should be enhanced and upgraded.

Managed Landscape

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Managed Landscape

The Duke campus contains a rich variety of open space that, unlike the forested area, is tended and managed. This includes the lawns of the residential quadrangles, the distinct areas within the Sarah P. Duke Gardens, and smaller landscaped spaces such as building entries and streetscapes. This matrix of managed open space is the context for campus architecture and the activities of campus life such as recreation, relaxation, or socializing.

The managed landscape, in large part, creates the overall character of campus and has a direct effect on the quality of everyday life at Duke. With numerous architectural styles and functions throughout campus, the landscape can tie the campus together with a consistent, high quality green overlay.

The areas of managed open space should consist of both the "outdoor rooms" where gatherings occur, and the connections that glue together Duke's many precincts. The managed landscape also serves an important function along walkways between different areas of the campus: well-landscaped pedestrian routes encourage walking as a pleasant and healthful option to driving and parking or using shuttles.

Much of the existing landscape at Duke is exemplary. This campus plan looks for opportunities to add to the stock of open space with new development, and to improve existing open space where appropriate. The intent of the plan with regard to open space development is that new open space should be memorable in character and well-defined by strong edges.

Gargoyle Overlooking West Quad

Baldwin Auditorium and East Quad

Structuring the Campus

Duke's original campus structure was clear and easily navigable. The nucleus is formed by the historic Duke quadrangles and the Chapel, with their pronounced hierarchy and axial relationships. Outside the historic quads, the campus is developed with picturesque, winding drives responding to the topography and contrasting with the intense formality of Chapel Drive. While the clarity of this original structure remains, new road systems and buildings have since been added that now make the campus very confusing.

Today, one of Duke's unique challenges is linking a campus that stretches beyond comfortable walking distances—for instance, the location of the East and West Campuses makes an internal transit system imperative. Circulation on the Duke campus now includes a number of systems serving pedestrians, cars, service vehicles, buses and bicycles. These systems give form to the campus, create various levels of convenience, and have a profound impact on the character of the collegiate and Medical Center environment.

A major issue in this plan is to identify opportunities to improve the cohesiveness of the campus by better integrating its major precincts. Additional circulation options should play an important role in increasing the perception of a cohesive campus, primarily where there are gaps in the existing pedestrian and bicycle networks.

Parsons Brinckerhoff studied transportation issues on campus, releasing a report in November of 1995 that covered transit, bicycles, parking for faculty, students, staff, and visitors, wayfinding for visitors, and potential modifications to traffic management and the existing roadway system. Although this report was done four years ago, the issues and recommendations still appear applicable.

At the time of the study, there were no significant transportation or parking problems on campus; however, there was and is potential to improve the transportation system. The most pressing issues were identified as visitor parking, better allocation of parking on West Campus, improved routes and storage facilities for cyclists, and planning for the Duke transit system. Recommendations for visitor parking have been studied since the 1995 report, and several projects have been completed.

Existing Pedestrian Zones

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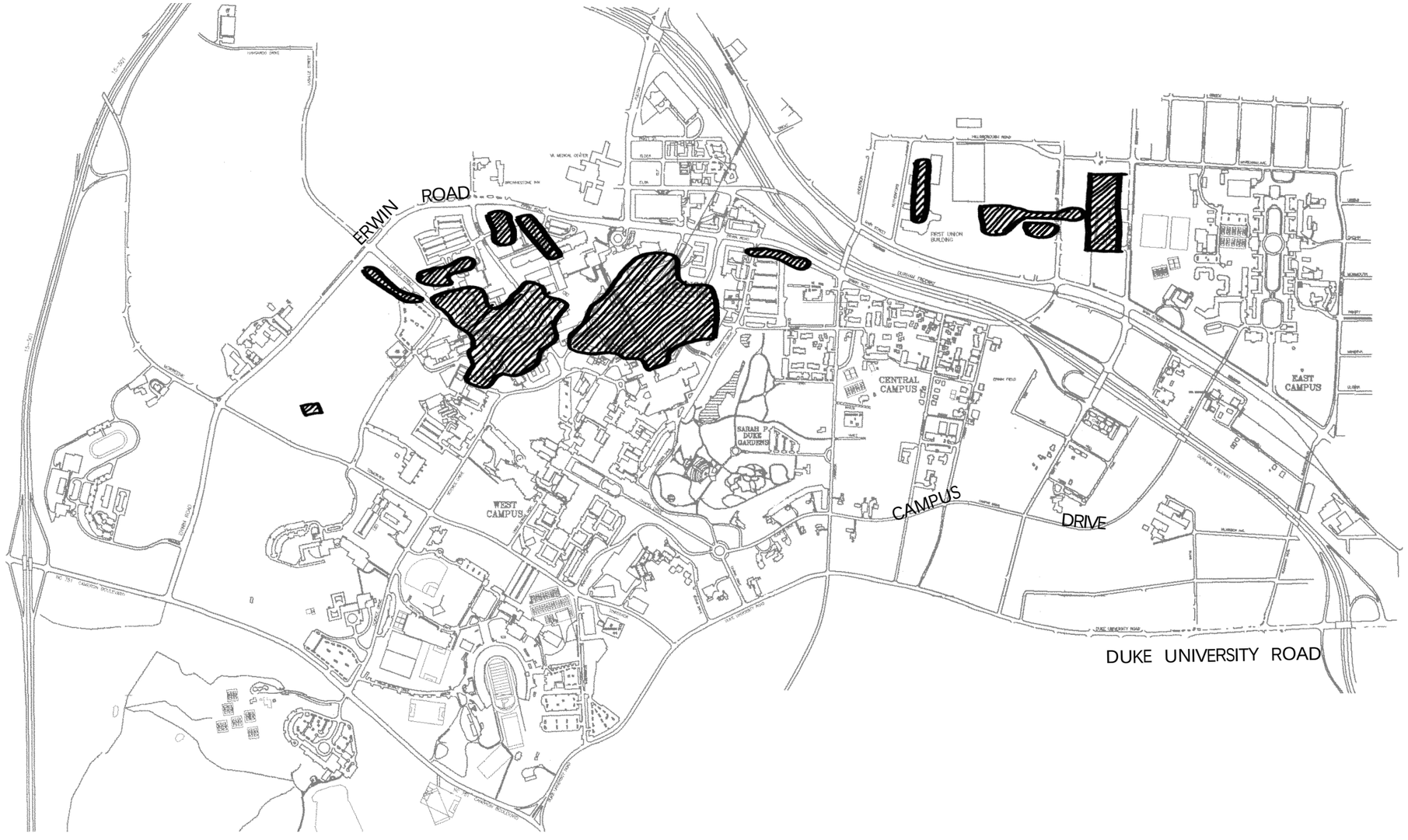
Pedestrian Networks and Zones

Traditionally, college campuses have been designed and appropriately scaled for walking. Pedestrians move through common green spaces and walk past buildings set within the landscape.

The 20th century literally made many inroads in these traditional designs, however. As cars have become increasingly dominant, many colleges and universities have begun to reassess the trade-offs between convenience and campus character. For instance, Emory University has adopted "a walking campus" as one of its guiding principles: "Emory's outdoor spaces must be designed predominantly for pedestrians and bicyclists, with shuttle buses, service, emergency and VIP vehicles elegantly accommodated. Existing surface parking lots must be incrementally restored from car places to people places." The University of Virginia, the University of Georgia and Georgia Tech are among many reemphasizing pedestrian precincts in the heart of campus.

Duke was designed at the romantic beginning of the automobile era, with winding park-like roads skirting the perimeter of the quadrangles. The quadrangles were clearly meant to be pedestrian in character. Subsequent development, starting with the brick science buildings, began to front on roads and parking lots rather than green spaces. The science buildings no longer used the siting of buildings to create common open space, but were placed primarily for functional convenience and service access. With the recent construction of the LSRC complex, however, this trend has been reversed, with building configurations again emphasizing common green spaces and de-emphasizing vehicular access.

The Duke campus includes a series of pedestrian zones–West and East campuses are both excellent examples—where numerous pathways and open spaces link a series of buildings. Many people's daily activities center on one or both of these pedestrian



Expanded Pedestrian Zones

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Duke University
Campus Master Plan

zones. The Medical Center is also a pedestrian zone in the sense that there are walkable links—primarily indoor or covered routes—between related sites. The Sarah P. Duke Gardens are an excellent pedestrian zone, though used primarily as a visitor destination and for recreation. The Gardens are also, however, an important walkable connection from Central Campus to West Campus.

Duke is fortunate to have an excellent pedestrian core with the West quad as its heart. From there, a series of pathways radiate outward, extending into the Gardens, into the science area, into the residential areas and into the sports and recreational precinct. Likewise, the East Campus quadrangle is a powerful example of a well-designed, walkable precinct.

These existing pedestrian zones have the potential to be reinforced and expanded by extending to adjacent areas. For instance, by de-emphasizing vehicles on Science Drive, the West Campus pedestrian zone could be better connected to the science precinct and the professional schools north of Science Drive. Reducing or eliminating traffic on a portion of Towerview would unite the sports and recreation precinct and the residential quads of the West Campus. On East Campus, selective pedestrian improvements could strengthen links to the vibrant Ninth Street retail area.

Existing Major Streets and Highways

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Major Streets and Highways

Major streets and highways are in many ways “givens” in the planning process, bringing people to campus and determining the points of entry. The major streets form the edges of Duke or travel through the campus, presenting a public face of the institution. Portions of major streets, including Erwin Road, Cameron Drive and Duke University Road, are forested on either side. Others, such as Fulton Road and a segment of Erwin Road, are urbanized and heavily traveled. Duke has some control over the character of these streets, and even high-volume roads can be landscaped to have a boulevard rather than “strip” character.

The following is a description of the existing major streets and highways near campus. The Streetscape section of this report details recommended improvements to these existing streets:

Durham Freeway
Completed in 1995, the Durham Freeway is a state highway connecting Interstate 40 and Interstate 85 and separating East Campus from the Central and West campuses. The full effect of this road is still not understood, especially as it relates to the Medical Center vehicular traffic and various points of entry to the University as a whole.

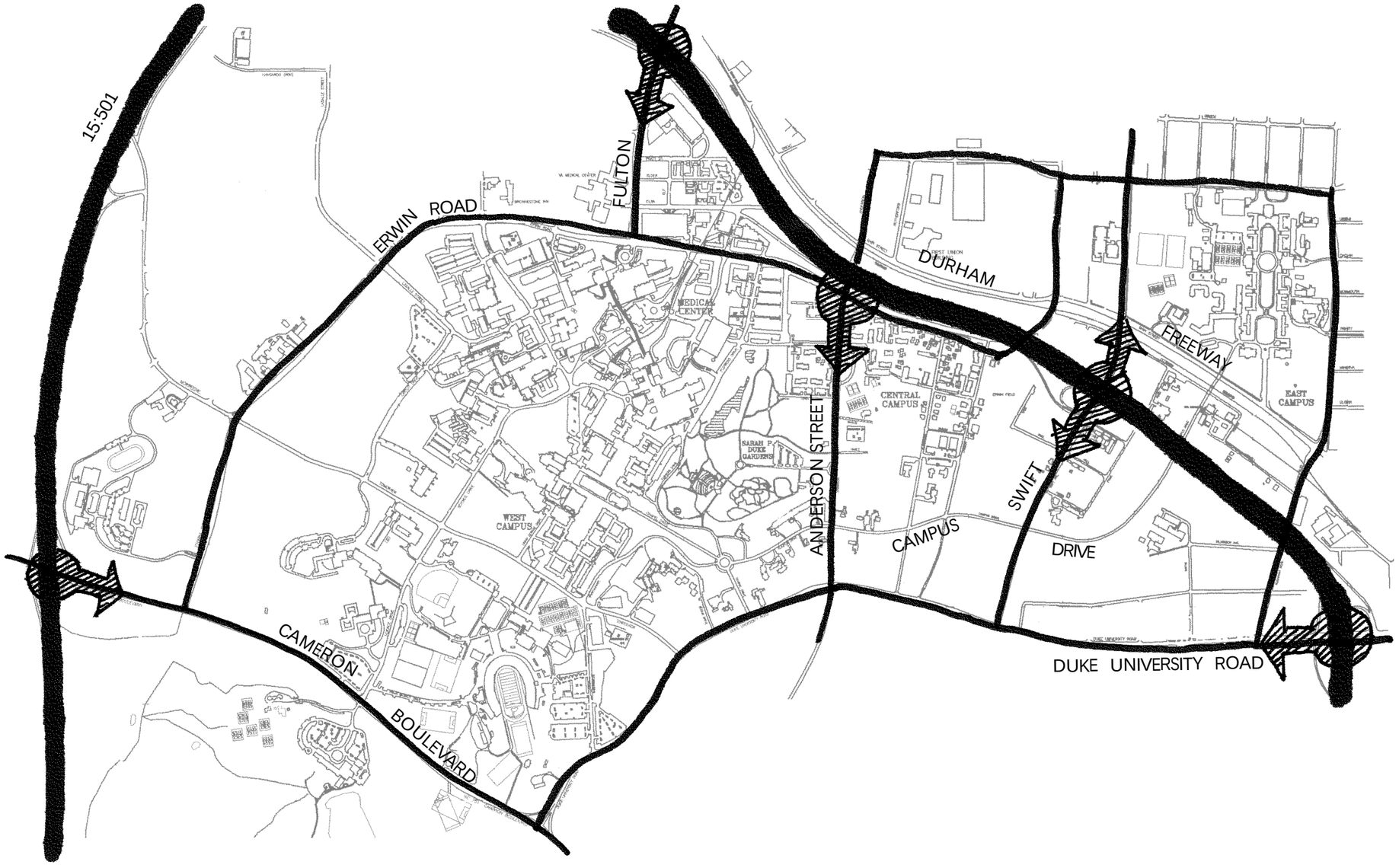
N.C. State Route 15-501
This four lane highway connects Durham and Chapel Hill. It is one of the busiest roads in the state.

Cameron Boulevard
Also known as State Route 751, Cameron Boulevard is a primary access to campus via the 15-501 Bypass. From Cameron Boulevard, the campus can be reached from Erwin Road, Science Drive or Duke University Road. Cameron Boulevard runs through over four miles of the Duke Forest between Hillsborough Road and Chapel Hill Boulevard.

Erwin Road
In the vicinity of the campus, Erwin Road is a four-lane thoroughfare coming off of Cameron Boulevard, heading north and east past the Medical Center and connecting to Main Street via an underpass at the Durham Freeway. A major access road for the Medical Center, especially for employees commuting to work, Erwin Road is perceived as a western edge of the campus. From the intersection with Cameron to Research Drive, Erwin Road is primarily forested on both sides. To the east of Research Drive, as the road services the VA Hospital and the Duke University Medical Center, Erwin Road degrades in character, and has more of a “strip” feel. Erwin intimidates pedestrians, and because there are Medical Center uses on both sides of Erwin, ease of pedestrian crossing is an issue.

The landscape plan recommendations for Erwin Road showed the addition of street trees to create a boulevard. A landscaped island could also offer a place of refuge for people crossing the street from the parking or clinics north of Erwin Road with the boulevard plantings continuing on Erwin to the intersection of Oregon near the Durham Freeway underpass. Specific recommendations from the Olin Partnership’s Conceptual Landscape Structures Plan were:

> *“Add tree-planted median within the road, leaving room for turn lanes. Add street trees adjacent to road/sidewalk. Replace existing Cobra lights with Tear Drop lights. Upgrade traffic lights at intersections to match Tear Drop lights in color and manufacturer. Consolidate signage where possible. Coordination will be required with State and Local Departments of Transportation.”*



Highways Serving the Campus Exits

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Main Street

Main Street, or Business Route 70, parallels the Durham Freeway in the vicinity of the campus, forming the south boundary of East Campus, with the stone wall of East along the north side of Main. Downtown Durham is approximately one mile southeast of East Campus along Main Street.

The landscape plan recommended reinforcing the street trees along the stone wall of East Campus along Main Street.

Anderson Street

Anderson Street is a major public connection between Erwin Road, Campus Drive, and Duke University Road. Forming a portion of the ring of access surrounding West Campus, it serves Central Campus, the primary entry to the Sarah P. Duke Gardens, and will likely provide access to a new Art Museum in the future. With parking allowed on both sides of the street, Anderson is a popular place to park, partly because of the pleasant walk through the Gardens into West Campus.

The plan recommends improving Anderson Street into a planted boulevard, recognizing its importance as an entry to the Duke campus and a spine to a more accessible Central Campus. Anderson Street should take advantage of its ability to serve Duke's public attractions such as the Gardens. In the future, other Duke activities requiring a "public face" may be located off of Anderson Street.

Fulton Road

Fulton Road is designated as an entry for the Duke University Medical Center from the Durham Freeway. Fulton Road becomes the entry to the Medical Center across Erwin, and this terminus of Erwin/entry to the Medical Center is being improved as a landscaped oval with drop-off area. The landscape plan recommended a similar treatment for Fulton as was suggested for Erwin Road.

Duke University Road

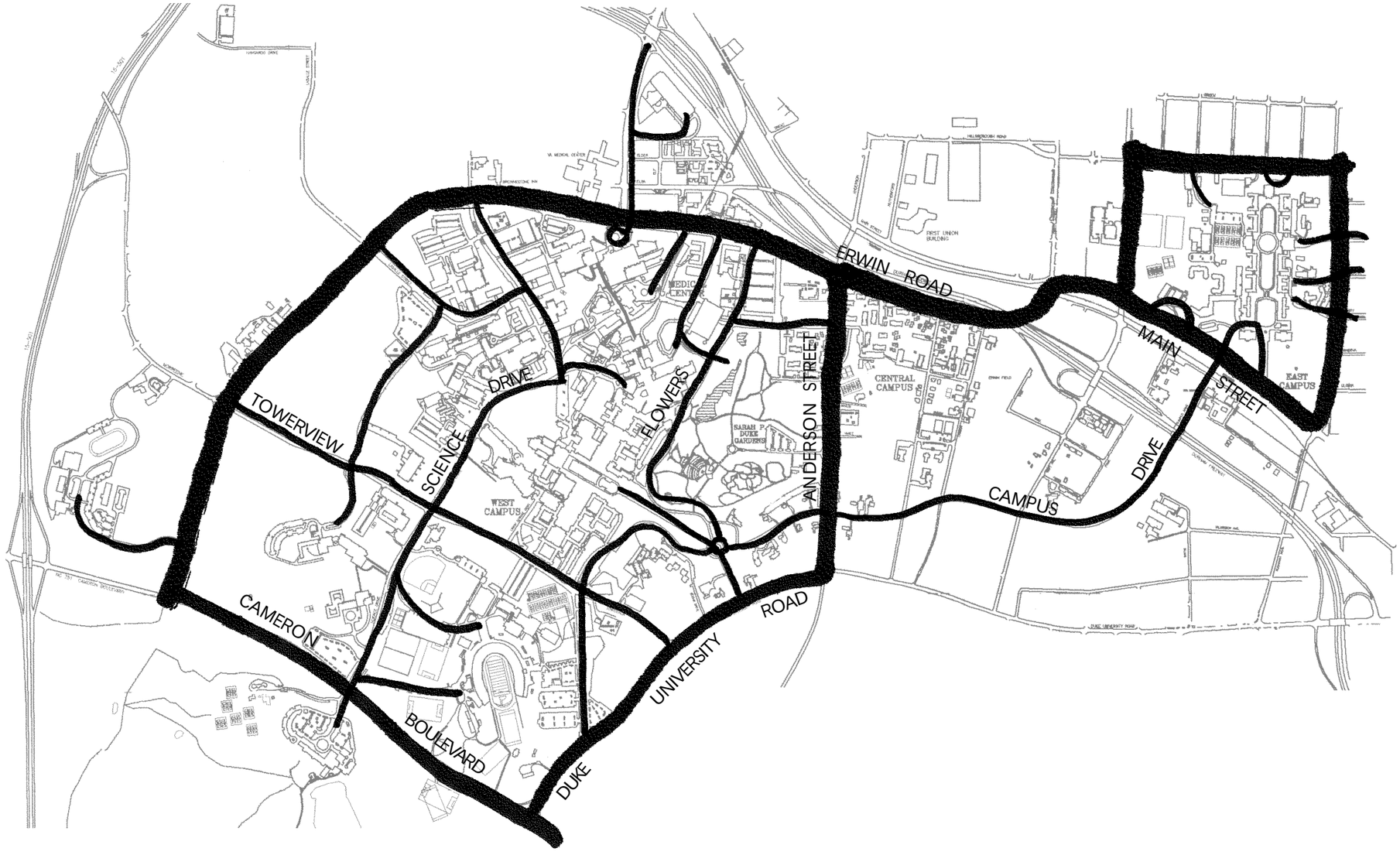
Duke University Road is an important piece of the entry sequence to campus from Cameron Boulevard. There is now a landscaped area at the intersection of Cameron and Duke University Road that marks an entry to campus. From this intersection, Duke University Road provides access to Chapel Drive and the formal entry to the West quadrangle. Other roads—including Wannamaker Drive, Towerview, Edens Drive and Anderson Street—enter campus from Duke University Road.

Near campus, Duke University Road is mostly forested on both sides, though some degradation has occurred as land has been cleared for parking areas.

Entries

From Duke University Exterior Sign Standards

Entries to Duke have two primary roles: to help direct people unfamiliar with the campus to their destination, and more symbolically, to indicate perceived boundaries of campus and gateways into it. Some of the most notable and important entries on campus are made of Duke stone. This typology should be encouraged for other primary campus entries. The Exterior Sign Standards adopted in 1998 designated signage for "off-campus directional signage"—such as the exits from the regional road system shown here—and "gateways" to the campus. The Durham Freeway identifies Exit 14 as the exit for East Campus, Exit 15 A-B for the Medical Center and 16B for West Campus. Swift Avenue/ Main Street is also a key decision point for drivers. Signage at these exits is directional in nature, and will need to be coordinated with both the State Department of Transportation and the City of Durham in accordance with the Exterior Sign plan.



Existing Internal Routes

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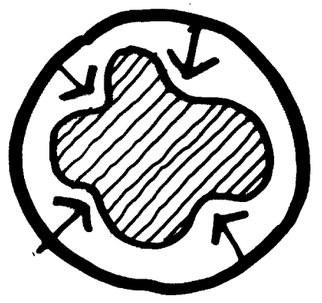
Internal Routes: Existing

Surrounding the campus with a ring of circulation is a proven strategy for minimizing traffic through the pedestrian core while still allowing access to campus. The diagram to the right illustrates the concept of keeping circulation along the edge of campus, allowing access to, but not through, the center.

East Campus is an excellent example, with Main Street, Broad Street, Markham Avenue and Buchanan Boulevard forming the peripheral ring, with discreet access to parking located off the periphery.

West Campus is a less literal reflection of the diagram, with a ring formed by Cameron Boulevard, Erwin Road, Anderson Street and Duke University Road. However, internal roads continue through the campus, including Science/Research Drive, Towerview, Flowers and Wannamaker. The graphic at far left, titled Existing Internal Routes, indicates the network of internal streets and the peripheral circulation around both the East and West Campuses.



Circulation Diagram: peripheral circulation allows for an internal pedestrian zone

Through routes:

Campus Drive

Campus Drive is a Duke-owned road included in the original plans for a Duke University with dual campuses. Created as a private connector between the two, Campus Drive is a pleasant, wooded route from the Chapel Drive circle to the East Campus entry, passing under both the Durham Freeway and Main Street. Buildings once used as faculty residences, now used for academic programs, are set back along both sides of Campus Drive. No new development along this route has occurred until recently with the completion of the Center for Jewish Life at the intersection of Campus Drive and Swift Avenue in 1998.

Campus Drive is used by the Duke Transit buses to provide access between East and West campuses. It is also used as a bicycle route, but the bicycle lanes do not extend the full length of Campus Drive, and serious conflicts exist at the underpass near East Campus.

Towerview

A University-owned street, Towerview is also used as a through route from Morreene Road to Duke University Road. Towerview is wooded on both sides between Erwin Road and Circuit Drive, but the forest has been removed in the vicinity of the Science Drive intersection. Towerview runs between the south end of the original West Campus residential buildings and the sports and recreation precinct to the south before terminating at Duke University Road.

Science Drive/Research Drive

Science Drive runs from Cameron Boulevard through the professional school precinct and the science area to the signalized intersection at Research Drive. The Thomas Center, the Fuqua School, the Law School and the School of Public Policy are accessed from Science Drive, but their entries tend to favor car rather than pedestrian access. Beyond Towerview, several science buildings have entries from Science Drive, including Gross Chemistry, Biology, Math/Physics, the Teer Engineering Library and

Engineering. Despite all these entries, the character of the street is primarily vehicular though there are multiple pedestrian crossing points where paths from the West Campus quad connect to building entries.

Research Drive continues from Science Drive to Erwin Road, providing service to science and medical research buildings on both sides of the road. Buildings in this area tend to run parallel to the topography rather than relating to the street. As on Science Drive, many students cross the road; fewer choose to walk along it on the sidewalks.

The 1995 Transportation Study found that Research Drive/ Science Drive would benefit from reduced traffic because of the considerable amount of pedestrian traffic crossing the road. The plan recommended changing access to the parking lots in this area to Circuit Drive rather than from Science Drive.

In order to change the character of the street and improve walkability, the Olin Partnership's *Conceptual Landscape Structure Plan* recommends numerous improvements: additional street trees, pedestrian lighting, replacement of the Cobra lights, new signage, new landscaping, and parking lot relocations.

Circuit Drive

Currently, Circuit Drive is a relatively short segment of road connecting the LaSalle Street Extension and Towerview. There is parking on both sides of the street.

The Transportation Plan considered Circuit Drive as a potential access route for parking areas now served by Science Drive, reducing traffic on Science Drive.

LaSalle Street Extension

LaSalle Street Extension is primarily access to parking from Erwin Road and a parking reservoir.

Wannamaker Drive

Wannamaker Drive runs from Duke University Road to the Chapel Drive Circle. South of Towerview, Wannamaker Drive provides access to numerous surface parking lots. North of the signal at Towerview, Wannamaker runs between the housing of the West quad and the Edens area housing toward the Chapel Drive Circle, providing access to "oceans" Parking and to the reservoir of parking east of the Athletic Area.

Trent Drive

Trent Drive is the entry from Erwin Road to the Clinic area. The Conceptual Landscape Structure Plan offered the following recommendations:

> *"This road has an existing width of 70 feet in the clinic area. Add tree-planted median within the road in order to reduce the width of pavement, especially in areas which are already painted out. Add street trees near Erwin. Street trees should be located closer to the street than those newly planted in front of the Clinic Parking Garage. Note that the street improvements here should be coordinated with any ongoing work in the Clinic area.This road has an existing width of 70 feet in the clinic area. Add treeplanted median within the road in order to reduce the width of pavement, especially in areas which are already painted out. Add street trees near Erwin. Street trees should be located closer to the street than those newly planted in front of the Clinic Parking Garage. Note that the street improvements here should be coordinated with any ongoing work in the Clinic area."*

Flowers Drive
Flowers Drive provides egress and ingress from the Medical Quad, the entry to West Campus from Erwin Road, and the parking along the roadway. One of the streets laid out in the original Plan, Flowers Drive begins at the Campus Drive circle and winds along the Sarah P. Duke Gardens, providing access to parking at the Allen Lot and structured and surface parking used by the Medical Center. The character of the road deteriorates near the Medical Center where it has been widened to provide angled parking on both sides. Flowers continues north between surface parking areas to Erwin Road.

The plan recommends reestablishing the character of Flowers intended in the original plan. The angled parking would be removed; although it is slightly more convenient than the garage, there appears to be sufficient capacity to absorb the removed parking. The plan also recommends removing the connection of Flowers to Erwin Road, turning Flowers toward Central Campus and thereby extending the character of the original drive along the north edge of the Gardens into the Central Campus.

Yearby
In its current configuration, Yearby runs approximately two blocks from Flowers Drive to Anderson. It serves the surface parking areas on its north side, and carries a portion of the traffic coming to and from the structured parking garage off of Flowers Drive. Yearby forms a portion of the northern boundary of the Duke Gardens and is an important vehicular access to the Central Campus. Yearby officially ends at Anderson Street, but cars can continue eastward through Central Campus through a series of connected parking lots to Alexander Street.

The plan illustrates a reconfiguration of Yearby that extends through the Central Campus. The Transportation Plan also recommends reconfiguring and extending this road through the Central Campus.

Lewis Street
This one block section of street forms the southern edge of a residential block in the Central Campus.

Alexander Street
Publicly owned Alexander Street connects Erwin Road and Campus Drive. It serves University owned housing and other uses in the Central Campus.

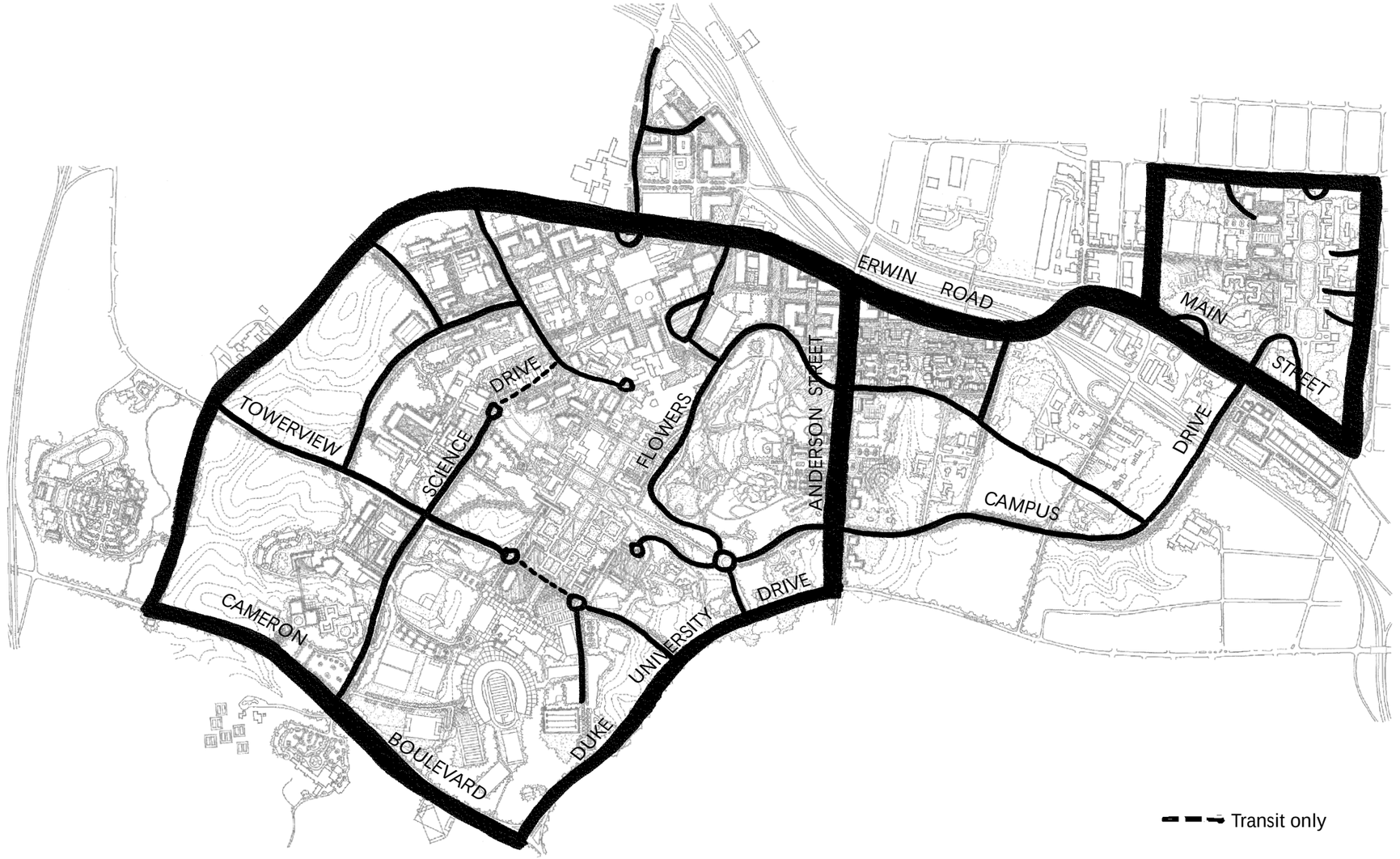
Oregon Street
Owned by the city, Oregon Street also connects Erwin Road and Campus Drive. It lies one block east of Alexander Street and serves University owned uses in the Central Campus. The topography drops to the east.

Chapel Drive
Duke-owned Chapel Drive is the formal axial entry into the West quad. Chapel Drive begins at Duke University Road, then becomes a formal circle connecting Chapel Drive with Campus Drive, Wannamaker Drive and Flowers Drive.

Union Service Drive
This major service route provides access to the West Campus Union, running below the pedestrian overpass to the Bryan Center.

Frank Bassett Drive
This road offers access from Science Drive to the area west of the football stadium, mostly for parking.

Whitford Drive
Whitford Drive provides access from Science Drive into the sports and recreation area, and to parking. People purchasing tickets use Whitford Drive and require short term parking. Whitford Drive is also used by people walking from the professional schools to the recreational uses and the West quad.



Proposed Internal Routes

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Duke University
Campus Master Plan

Internal Routes: Recommended Changes

The proposed internal routes map illustrates changes that will bring traffic more in line with the idea of peripheral circulation rather than internal circulation. A range of street closures is recommended.

For instance, Towerview would have limited access between Wannamaker and Union Service Drive. This change would prevent the use of Towerview as a shortcut through campus, and would result in a pedestrian zone expansion from the West quad to the recreation precinct. The proposed internal routes map illustrates changes that will bring the existing situation more in line with the idea of peripheral circulation dominating internal circulation. A range of street closures are recommended.

Science Drive would terminate at the visitor parking lot for the Bryan Center. The closure of Science Drive at this point would allow a new character to develop in the science area, and a new quadrangle in front of "Old Red." However, some transit and/or service access may be desirable for all or part of the day on Science Drive.

Circuit Drive would take on some of the functions of Science Drive, providing access to service routes for buildings in the science and research area and a connection to Towerview. Circuit Drive could nonetheless be an attractive rather than "service-oriented" route.

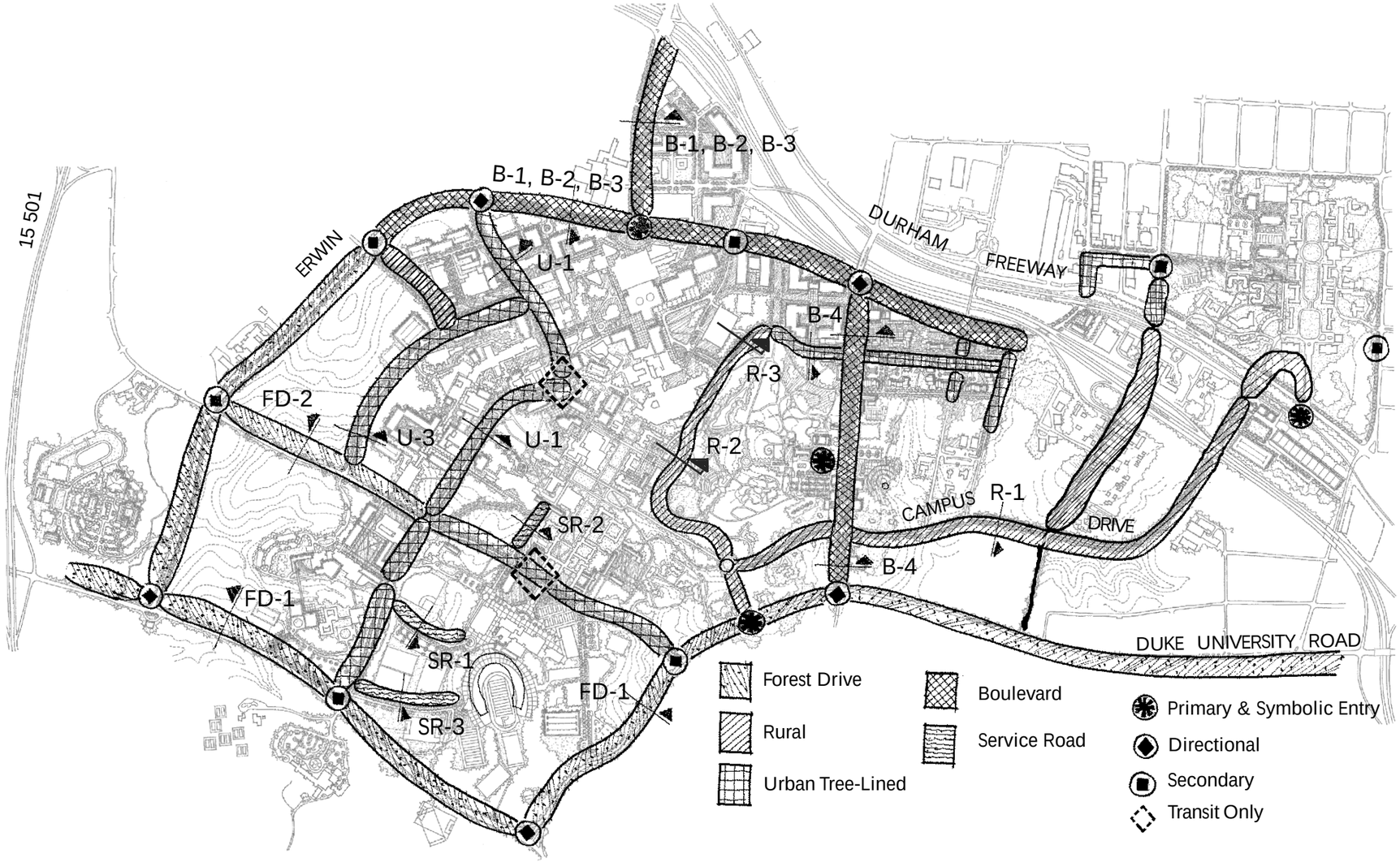
In the proposed plan, Flowers Drive no longer connects to Erwin Road. Cars on Flowers would turn along the north edge of the Gardens and continue through a newly constructed route through Central Campus.

Emergency access would remain on Towerview and Science Drive, perhaps with some service and transit allowed during limited times of the day. Complete street closure, however, would allow landscaping, building, or the creation of bicycle paths or pedestrian zones.

Duke's unique situation with an East, West, and Central Campus, a partially forested perimeter, and a large Medical Center complicate a simplistic circulation diagram. However, the West and East Campuses could both follow the peripheral circulation concept quite closely.

As for the Central Campus, differentiated by its low density and the lack of a central, pedestrian quadrangle, a different notion makes sense–a more "urban"one. In a "village" typology, a grid with low traffic volumes allows good access with streets that are still friendly for pedestrians.

Another issue with Duke's multiple campuses is the connection between them. Erwin Road and Campus Drive are the existing connections, but there is no route through the Central Campus other than a series of parking lots. The construction of a connection for cars, transit, pedestrians, and bicycles through Central Campus is fundamental to the accessibility and viability of this area within the overall Duke context.



Street Typologies

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Streetscape Typologies

The streetscape is one of the most powerful opportunities for improving the character of Duke outside the original cores of East and West Campuses.

In some places—along Campus Drive, for example—the existing streetscape represents the best of the Duke landscape. Chapel Drive is a dramatic example of what a street can offer in terms of axial views and entry sequences. Portions of Duke University Road, Towerview and Erwin Road retain the wooded character that distinctively belongs to Duke. Other streets, though, merit improvements in character and in accommodations for pedestrians.

Each street should be memorable, appropriate to its use, and pleasant. A list of typologies is suggested here, outlining a range of characteristics for campus streets:

1. **Boulevard:** Formal; roadway with landscaped median; multiple rows of large canopy street trees forming "cathedral"-like space. Grand in nature; deciduous trees regularly spaced and matched. Sidewalks and bicycle lanes incorporated into section; uniform pedestrian lights and overhead street lights; integration of signing, wayfinding and other site furnishings.

2. **Urban Tree-lined:** Formal; provide the street an identity and continuity; deciduous trees regularly spaced and matched; street hierarchy to determine size and species of tree to be used. Sidewalks and bicycle lanes incorporated into section; uniform pedestrian lights and overhead street lights; integration of signing, way-finding and other site furnishings.

3. **Rural:** Informal, bucolic or pastoral in character; country estate. Strengthen street character with new street tree plantings integrating new planting with existing adjacent plantings whether they be forest, meadow-like, or garden.

4. **Forest Drive:** Informal character; maintain existing forested edge along roadway; infill with willow oaks or other species as appropriate and groupings of small deciduous flowering trees. Woodland areas to be strengthened with native, understory species.

Streetscape Recommendations

The following is a set of recommendations for streets and roads on campus. These have been developed in conjunction with the grounds staff at the University and have incorporated many of the recommendations of the Olin landscape plan. These recommendations represent schematic intent of a desired character for University streets; they are not meant to display actual design details. All streetscape design will be subject to detailed, site-specific review. Trees listed with asterisks indicate trees of choice suggested by the City of Durham.

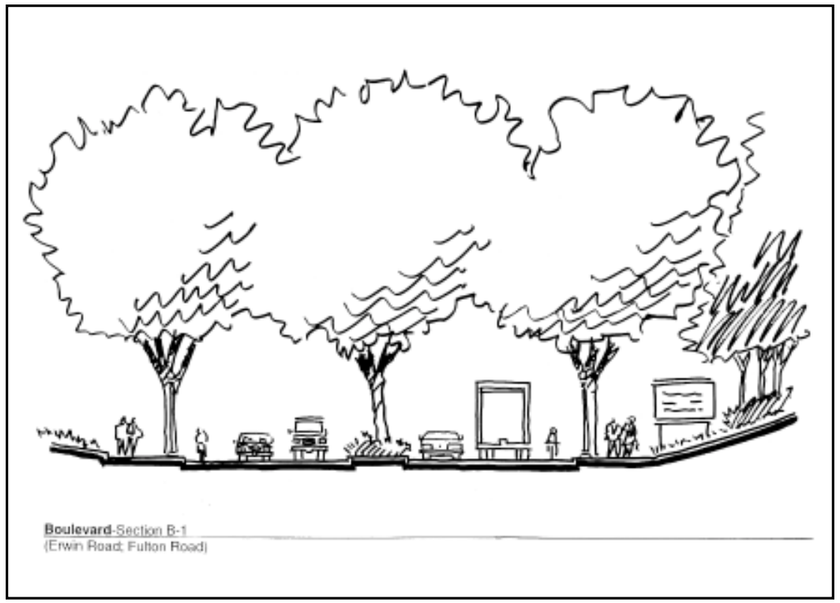
<u>BOULEVARD TYPOLOGY</u>

Erwin Road - (between LaSalle Street & underpass to East Campus; *refer to road sections B-1, B-2, B-3)*

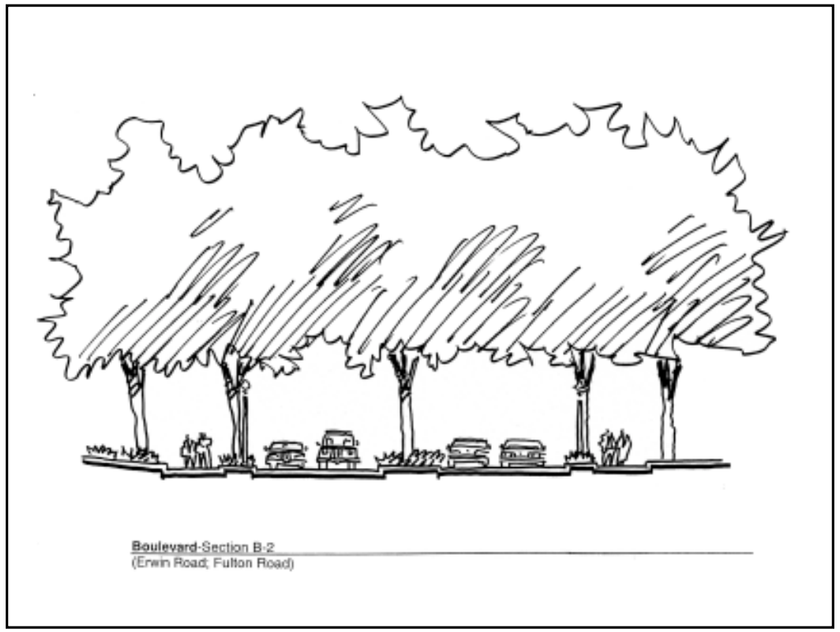
- multiple rows of large deciduous trees
- plant ornamental accent of flowering trees between buildings and formal canopy trees
- <u>Suggested trees:</u>
  - Willow oak, (Quercus phellos)*
  - Red oak, (Quercus rubra)
  - Scarlet oak, (Quercus coccinea)

Fulton Road - (*refer to road sections B-1,B-2, B-3)*

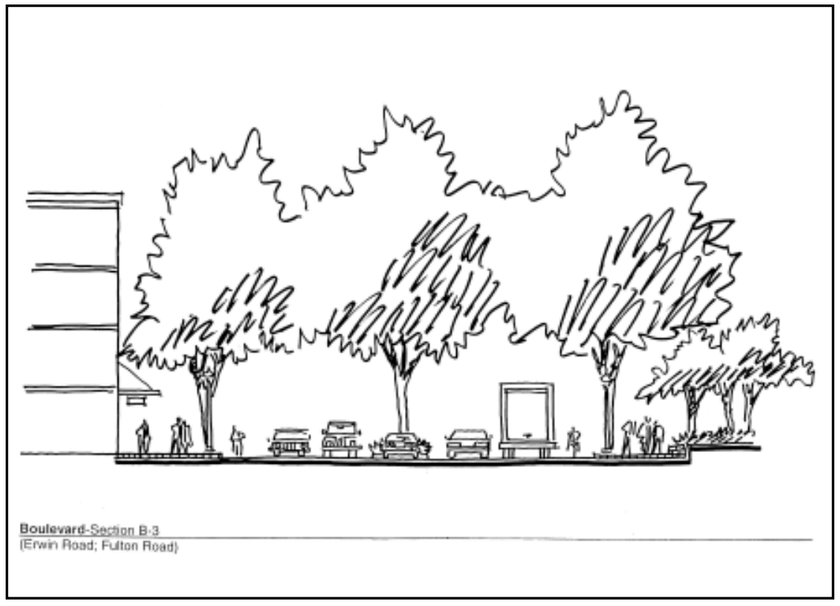
- multiple rows of large deciduous trees
- plant ornamental accent of flowering trees between buildings and formal canopy trees
- <u>Suggested trees:</u>
  - Willow oak, (Quercus phellos)*
  - Red oak, (Quercus rubra)
  - Columbia London plane tree, (Platanus acerifolia 'Columbia')



Boulevard-Section B-1
(Erwin Road; Fulton Road)

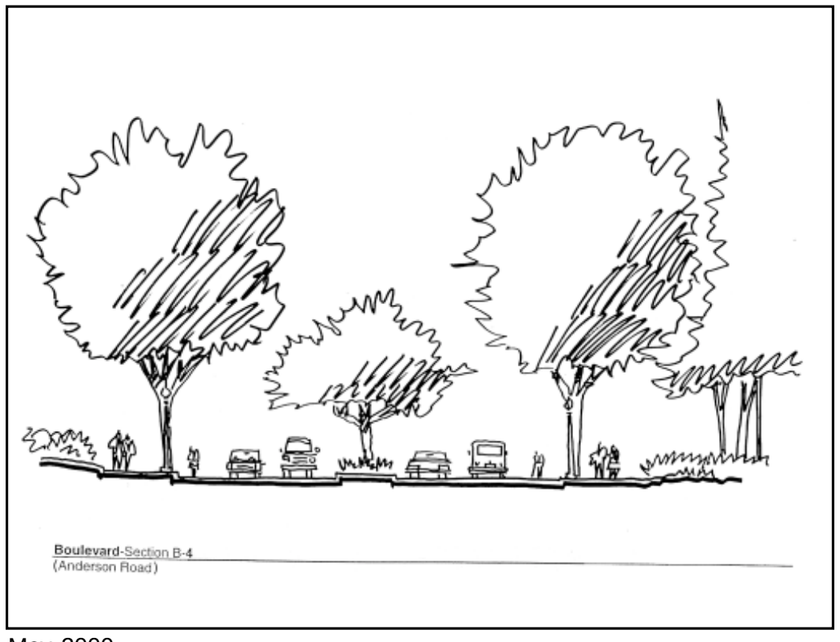


Boulevard-Section B-2
(Erwin Road; Fulton Road)



Anderson Street - (between Erwin Road & Lewis Street and between Campus Drive & Duke University Rd; *refer to section B-4)*

- large deciduous trees along the outside of the blvd. and small deciduous trees with horizontal branching habit within the median
- incorporate Duke Stone entry at Erwin Road
- Suggested trees:
    - Willow oak, (Quercus phellos)*
    - Columbia London plane tree, (Platinus acerfolia 'Columbia')
    - Yoshino flowering cherry, (Prunus X yedoensis)
    - Okame cherry, (Prunus X okami)



Anderson Street - *(refer to road section B-4)*

- large deciduous trees along the outside of the blvd. and small deciduous trees within the median
- incorporate Duke Stone entry at Erwin Road
- Suggested trees:
    - Willow oak, (Quercus phellos)*
    - Red oak, (Quercus rubra)
    - Columbia London plane tree, (Platinus acerfolia 'Columbia')
    - Yoshino flowering cherry, (Prunus yedoensis)
    - Okame cherry, (Prunus X okami)

URBAN TREE-LINED TYPOLOGY

Towerview Road - (between Science Drive & Duke University Road; *refer to road section U-1)*

- Suggested trees:
  - Zelkova species
  - Lacebark elm, (Ulmus parvifolia 'Allee')

Science Drive - (between Research Drive & Towerview; *refer to road section U-1)*

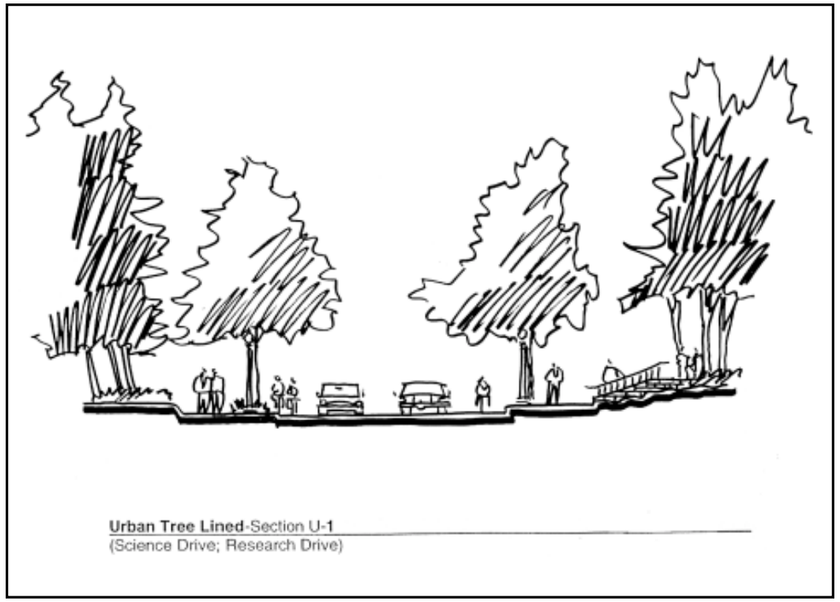
- Suggested trees:
  - Red oak (Quercus rubra)
  - Sawtooth oak, (Quercus acutissima)
  - Columbia London plane tree, (Plantanus acerfolia 'Columbia')

Research Drive - *(refer to road section U-1)*

- Suggested trees:
  - Red oak (Quercus rubra)
  - Sawtooth oak, (Quercus acutissima)
  - Columbia London plane tree, (Plantanus acerfolia 'Columbia')

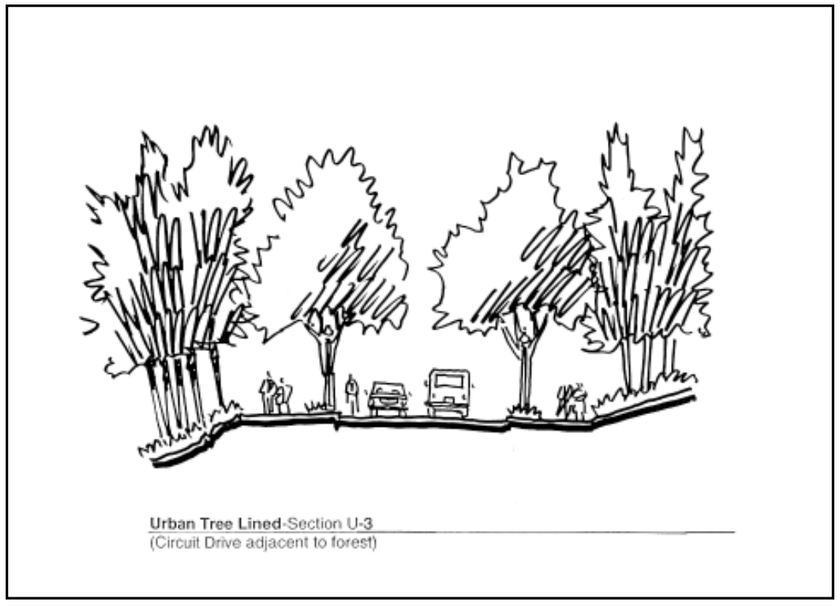
Yearby Extension - *(refer to road section U-2)*

- Suggested trees:
  - Red oak (Quercus rubra)
  - Sawtooth oak, (Quercus acutissima)
  - Columbia London plane tree, (Plantanus acerfolia 'Columbia')



Urban Tree Lined-Section U-1
(Science Drive; Research Drive)

Urban Tree Lined-Section U-2
(Yearby/Lewis Extension)



Urban Tree Lined-Section U-3
(Circuit Drive adjacent to forest)

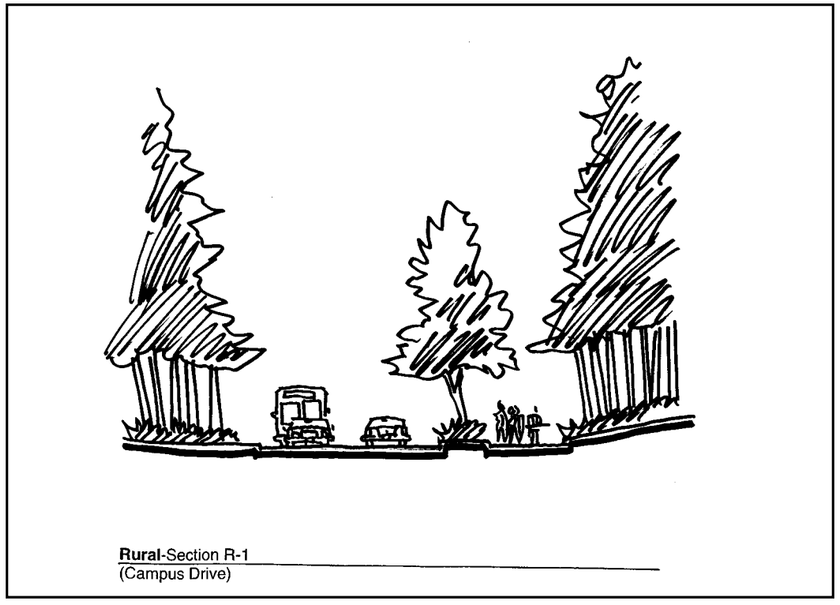
Circuit Drive - *(refer to road section U-3)*

- Circuit Drive will become a major campus arterial serving new development and parking structures. Approximately 40% of the roadway will have a forest edge that should be maintained. However, the urban street tree plantings are to be continuous whether in adjacent to structure or forest.
- <u>Suggested trees:</u>
    - Red oak (Quercus rubra)
    - Lacebark elm, (Ulmus parvifolia 'Allee')
    - Fagus species

RURAL TYPOLOGY

Campus Drive and Swift - *(refer to road section R-1)*

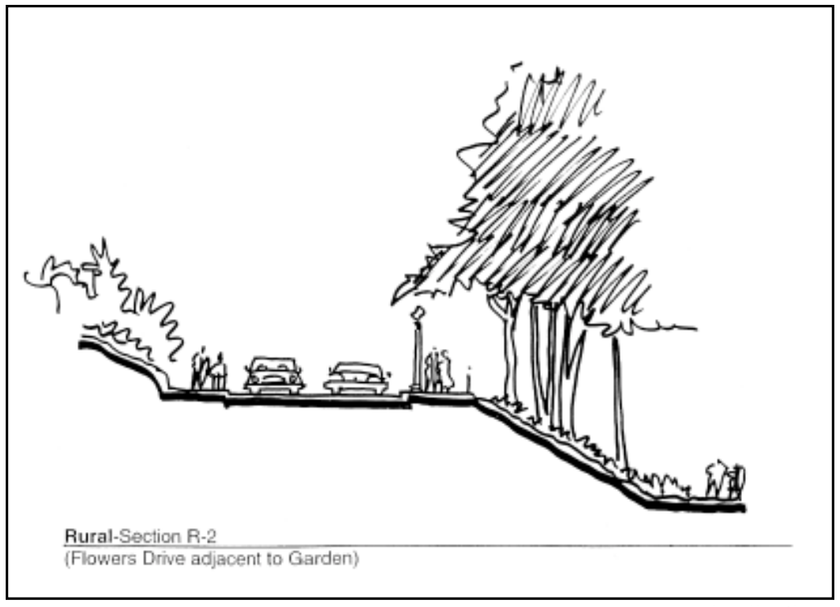
- Reinforce with under-story of native material
- Suggested trees:
  - Willow oak (Quercus phellos)*
  - Other species where appropriate



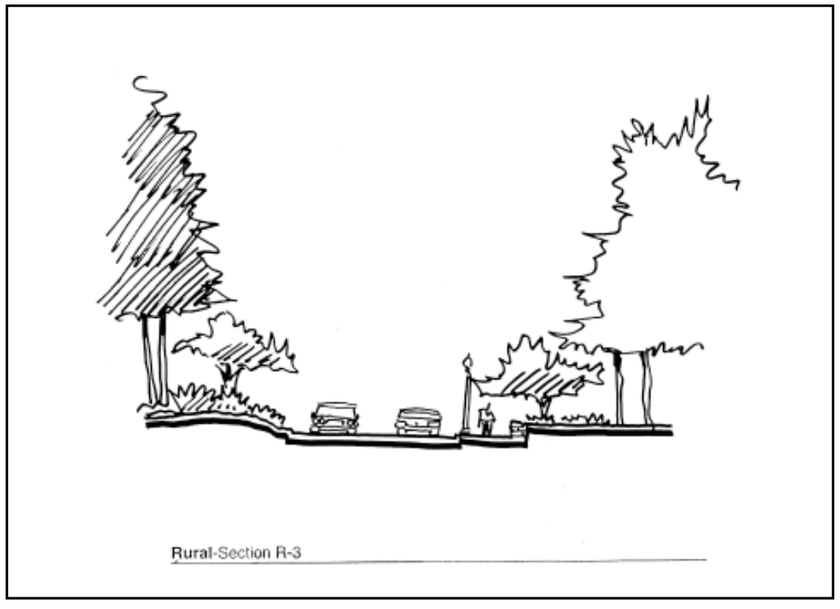
Rural-Section R-1
(Campus Drive)

Flowers Drive (along edge of Gardens; *refer to road, section R-2)*

- Infill with street trees where needed and reinforce seam with native under-story vegetation
- Suggested trees:
  - Red maple, (Acer rubrum)
  - Other maple species



Rural-Section R-2
(Flowers Drive adjacent to Garden)



Flowers Drive - *(refer to road section R-3)*

- Reinforce with under-story of native material
- Suggested trees:
    - Willow oak (Quercus phellos)*
    - Other species where appropriate

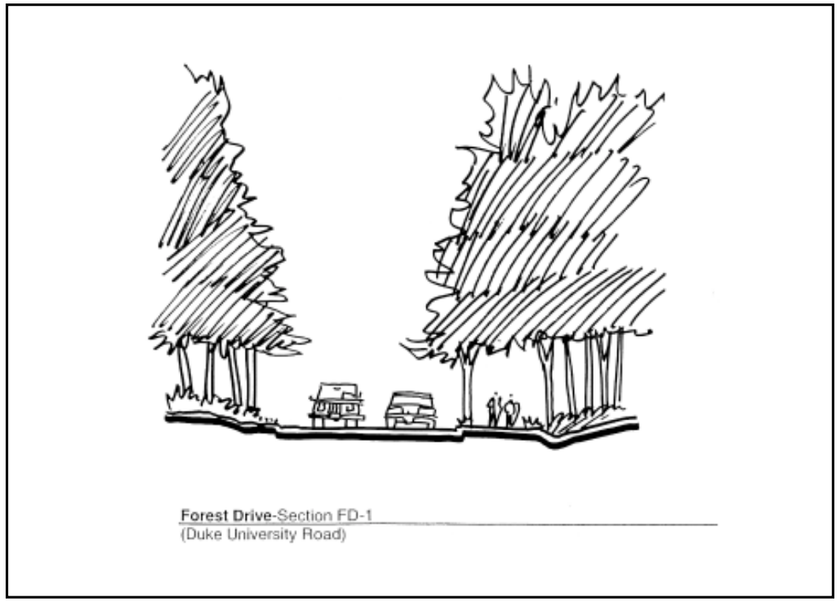
FOREST DRIVE TYPOLOGY

Duke University Road - *(refer to road section FD-1)*

- Suggested trees:
  - Willow oak, (Quercus phellos)*
  - Other species where appropriate

Cameron Road - *(refer to road section FD-1)*

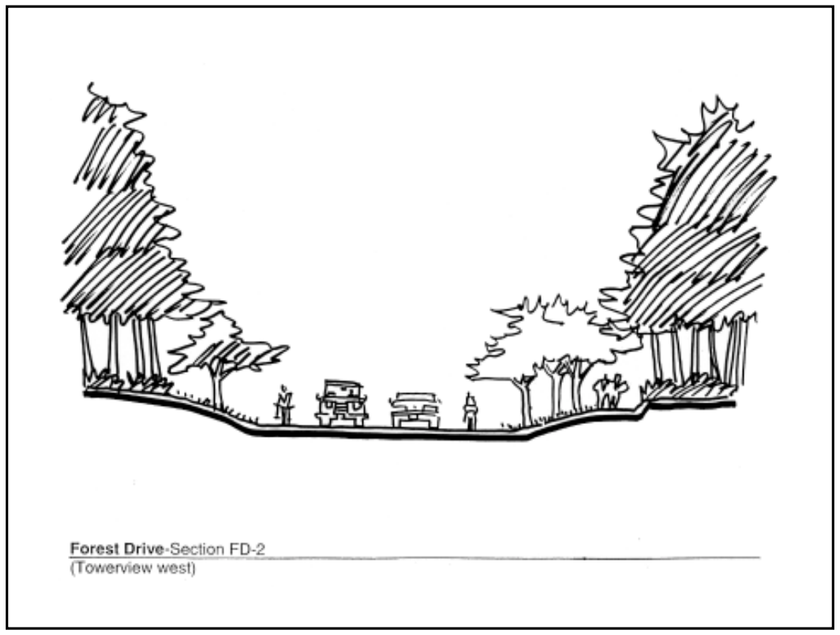
- Intersection at Science Drive is predominately willow oaks and should be reinforced
- Suggested trees:
  - Willow oak, (Quercus phellos)*
  - Other species where appropriate



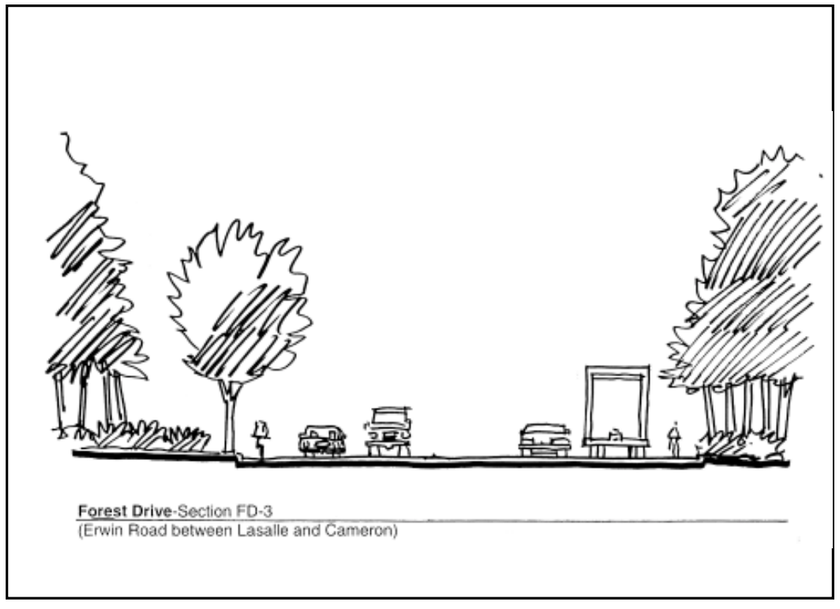
Forest Drive-Section FD-1
(Duke University Road)

Towerview Road (between Erwin Road & Science Drive; *refer to road section FD-2)*

- A ribbon of lawn parallels the road on either side with the forest edge adjacent.
- Plant groupings of deciduous flowering trees within lawn area along roadway.
- Suggested trees:
  - Okame cherry, (Prunus X kami)
  - Yoshino cherry, (Prunus X yedonisis)
  - Serviceberry, (Amelanchier arbora 'Autumn Sunset'; 'Forest Prince')
  - Milky way dogwood, (Cornus kousa 'Milky Way')
  - Ivory silk lilac tree.



Forest Drive-Section FD-2
(Towerview west)



Forest Drive-Section FD-3
(Erwin Road between Lasalle and Cameron)

Erwin Road (between LaSalle and Cameron; *refer to road section FD-3)*

- This section of Erwin is very wide. The east side of the roadway is heavily wooded and should be maintained. The west side has been eroded and should be strengthened. Any future development along this side should respect the 300-350 ft. wooded buffer.
- <u>Suggested trees:</u>
    - Willow oak (Quercus phellos)*
    - Zelkova species
    - Other species where appropriate

SERVICE ROAD TYPOLOGY

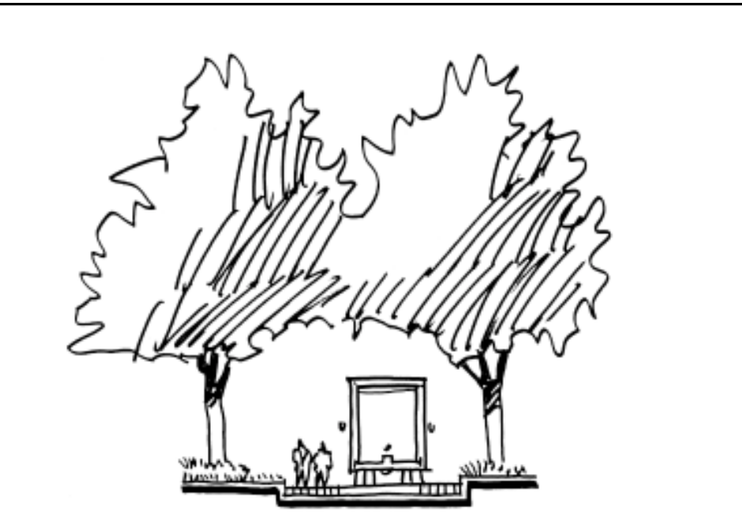
Whitford Drive - *(refer to road section SR-1)*

- Improve character to stress pedestrian access while still allowing service.
- Screen the parking to the south.
- Eliminate parking along roadway.
- Pave walkways and road with pedestrian scale pavers.
- Plant street trees and install acorn lights to provide processional.
- Suggested trees:
    - Okame cherry, (Prunus X kami)
    - Yoshino cherry, (Prunus X yedonisis)

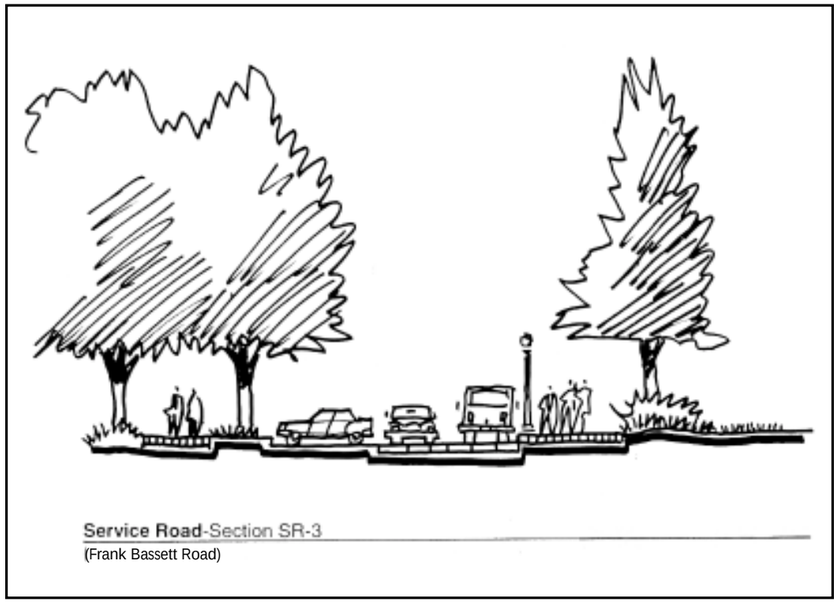
Service Road-Section SR-1
(Whitford Drive)

Union Service Access Road - *(refer to road section SR-2)*

- Restore to pedestrian friendly connection while allowing service access.
- Suggested trees:
    - Red Maple (Acer rubrum)
    - Other maple species



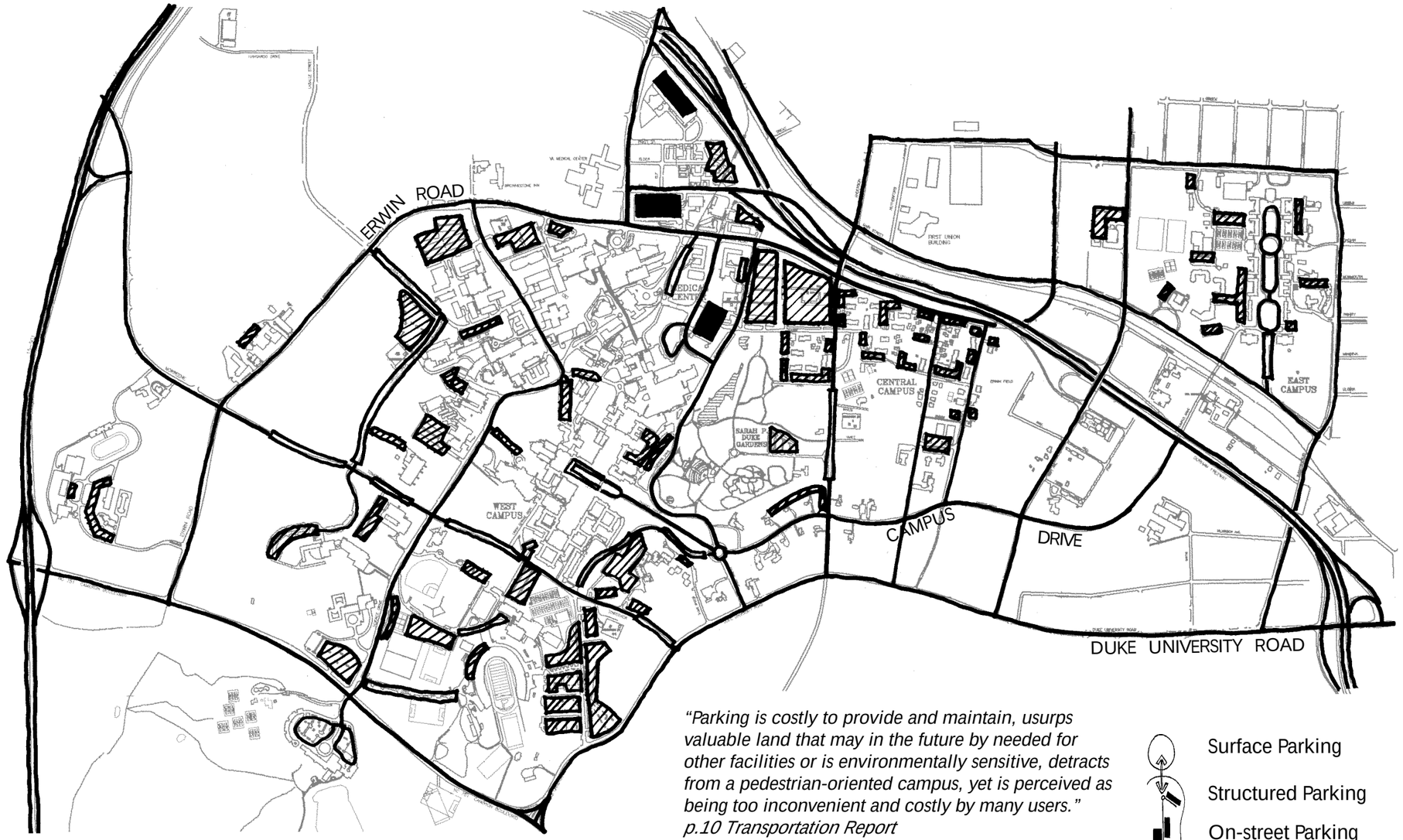
Service Road-Section SR-2
(Union Service Access Road)



Service Road-Section SR-3
(Frank Bassett Road)

Frank Bassett Road - (*refer to road section SR-3)*

- Reinforce existing tree canopy.
- Improve pedestrian character.
- <u>Suggested trees:</u>
    - Willow oak (Quercus phellos)*
    - Zelkova species
    - Red Oak (Quercus rubra)



"Parking is costly to provide and maintain, usurps valuable land that may in the future by needed for other facilities or is environmentally sensitive, detracts from a pedestrian-oriented campus, yet is perceived as being too inconvenient and costly by many users."
p.10 Transportation Report

Surface Parking

Structured Parking

On-street Parking

Existing Parking

0 100 200 400 800
SCALE IN FEET

Duke University
Campus Master Plan

Existing Parking

Parking is typically one of the most contentious issues on a campus, and Duke is no exception. The advantages of convenient parking adjacent to destinations need to be balanced with the advantages of a humane environment where asphalt and automobiles do not dominate. The Existing Parking graphic illustrates that a significant percentage of the campus is devoted to surface parking, much of it located off of campus through-routes. This brings commuters into and through the core of the campus. Large garages and surface lots serve the Medical Center.

The 1995 transportation report concluded that there is an adequate overall (though not necessarily surplus) parking supply on the University campus and at the Medical Center for faculty, staff and students for the foreseeable future. At the time of the report, the University had 7,173 spaces and the Medical Center had 10,890 spaces. Compared to most other university campus environments with a student population of 10,000 and proportional faculty and staff, 18,000 parking spaces provides a high ratio of parking spaces to population. The two parking systems are funded and managed separately.

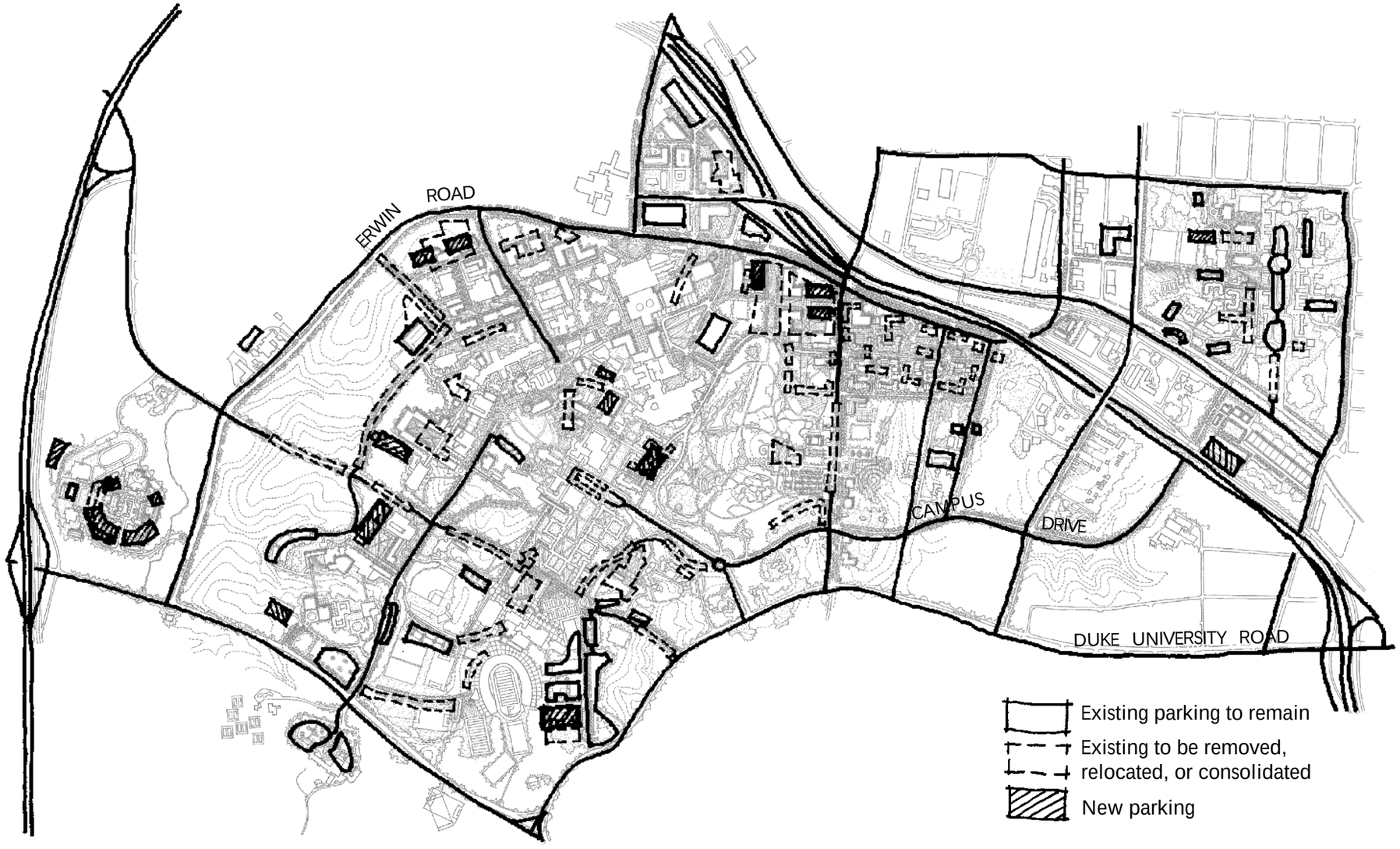
Distribution of parking is more problematic than the amount of parking. In comparison with other major universities, parking on the Duke campus is convenient, with most users having a five to seven minute walk to their destinations. People on East and Central Campuses have parking within a five minute walk. However, some feel that parking is inconvenient–partly, perhaps, because employees in the Triangle area expect to park within a few hundred feet of their worksite, at no cost.

Parsons Brinckerhoff studied parking areas with excess demand, where permits were oversold and where illegal overflow parking was in evidence. Such lots include the on-street parking on LaSalle Extension and Circuit Drive used by Medical Center employees who could purchase a permit in the garage, the G lot near the Thomas Center, the H lot near Erwin Road, the inner portions of the RT lots on Wannamaker, and the W lots near Towerview, including “oceans” and the parking in front of the gym.

Considerable vacancies were found in the lower portions of the lots on Wannamaker Drive and the Whitford Drive lot. However, observations of any particular parking situation depend greatly on the day of the week, the time of day, and the season.

The Parsons Brinckerhoff Report considered two strategies for future parking— first, structured parking around the periphery of the West Campus core; second, the location of surface parking lots in more remote areas. They felt that structured parking should be considered if convenience were a high priority, if the parking deck did not have adverse visual impact, if security were acceptable, and if funds were available for construction and operation. Parking at the outer edge of the campus is less costly and minimizes traffic in the campus core. However, no wooded areas should be cleared for peripheral parking.

The Dober Report of 1987 also looked at parking strategies. Their recommendation was for structured parking at the outer edge of the West Campus core in preference to existing surface parking. The report identified a 500-car garage in the Divinity School parking lot near the intersection of Science Drive and Research Drive, a 486-car garage in the Allen parking lot east of the West Campus quad, and a third potential deck at the southeast corner of the intersection of Wannamaker and Towerview. The intent was to design parking structures that could fit into the landscape unobtrusively by taking advantage of the sloping topography.



Recommended Parking Changes

0 100 200 400 800
SCALE IN FEET

Duke University
Campus Master Plan

Recommended Parking Changes

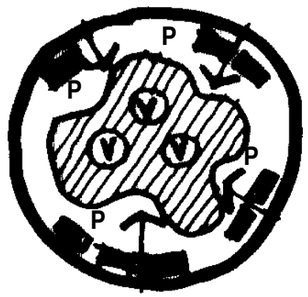
The goal of the proposed parking changes is to de-emphasize the predominance and visibility of parking on campus without sacrificing the need for convenience, and to reclaim important portions of campus as pedestrian space. To this end, the plan recommends removing all or a portion of parking on the East and West quads, and removing surface parking between the West quad and recreation area as well as between the West quad and Edens housing. On-street parking throughout campus should also be removed. This would be replaced by a series of parking structures placed in the most unobtrusive locations possible. At the same time, the transit system should be designed to be more responsive to users' needs. The figure titled "Recommended Parking Changes" indicates existing parking to remain, existing parking to be removed, and suggested locations for new structured or surface parking areas.

Peripheral Access

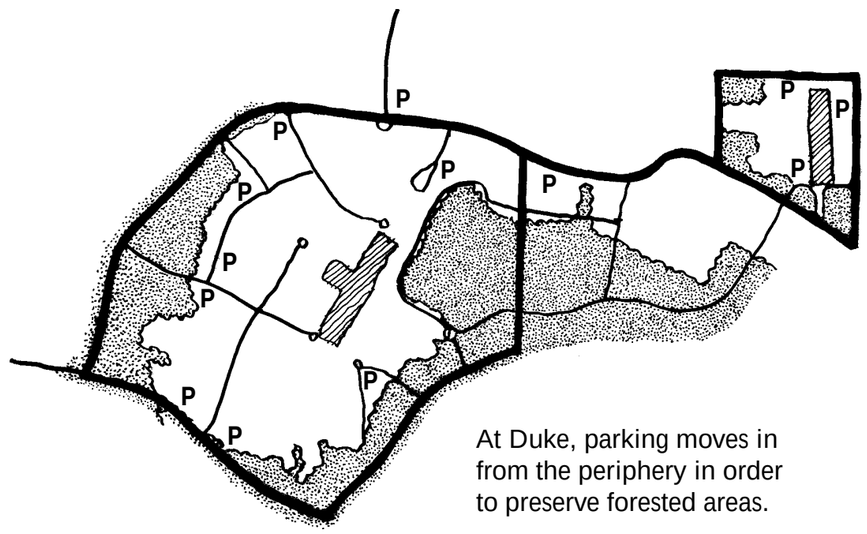
With a circulation system that emphasizes access from a peripheral ring, the usual strategy is to locate parking areas close to the perimeter. This keeps cars outside of the campus center but requires walking or shuttle service into the heart of campus, as shown on the diagram at right. Visitors, who have different needs than all-day users, are accommodated in smaller lots more centrally located.

The peripheral access concept requires adaptation to Duke. The edge of Duke in many areas is forested—one of the campus' unique characteristics. Therefore, the perimeter circulation at Duke needs to move inward to preserve the forested areas and bring parking reserves closer to destinations. Circuit Drive, rather than Erwin Road (west of LaSalle) becomes the parking access road. Using Circuit Drive for commuters will take this traffic off of Science and Research Drives.

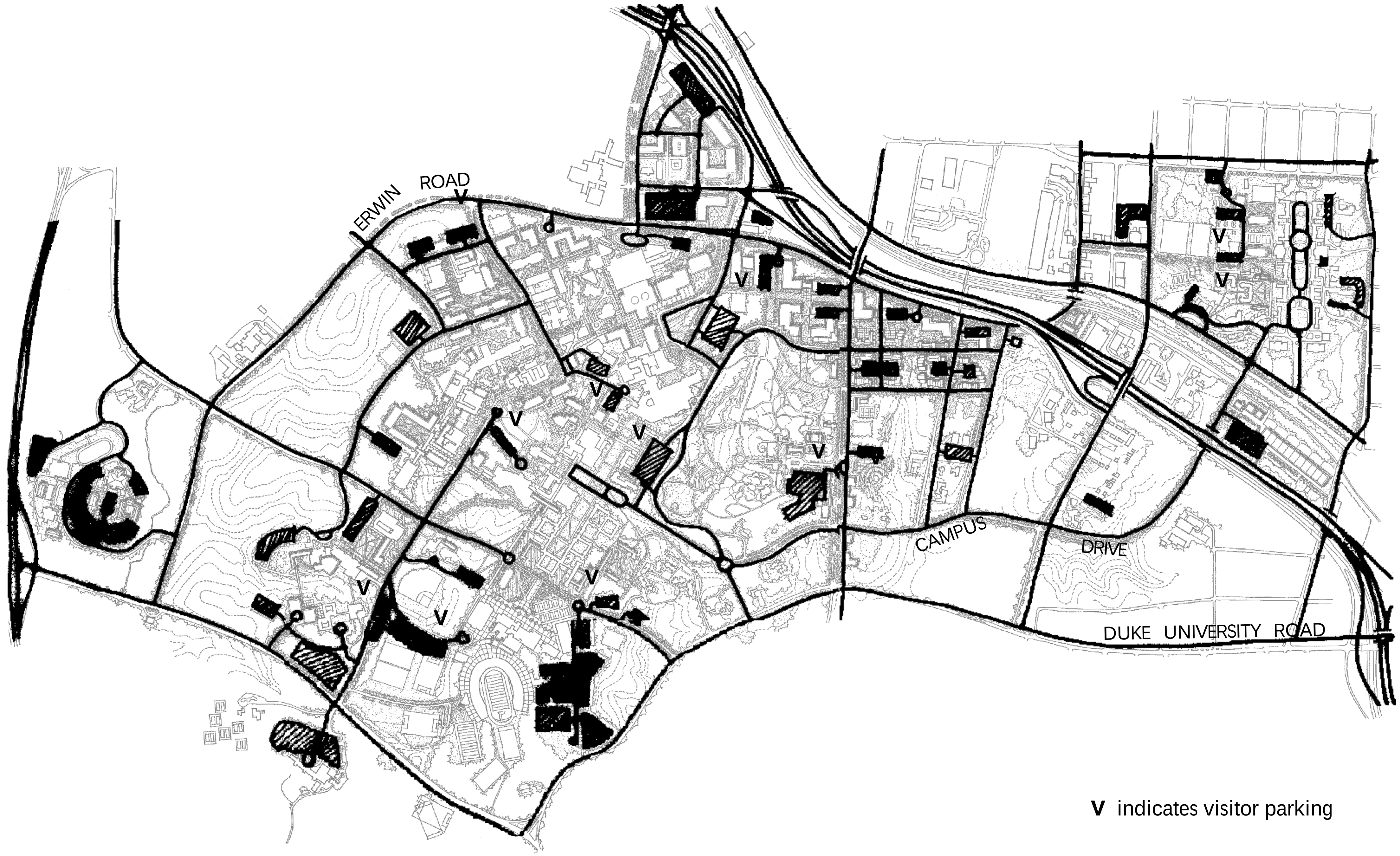
The proposed changes would locate new parking within an easy walk of the West quad and the Science area. For most commuters, a quarter-mile, approximately a 5 or 6 minute walk, is acceptable. The acceptability of that walk greatly depends on the quality of the route, however, and is one reason why landscaping and pedestrian improvements are important elements for parking solutions.



Peripheral Access Diagram: parking areas are found on the edge of campus; only walkers, transit and visitors are allowed in the heart of campus



At Duke, parking moves in from the periphery in order to preserve forested areas.



V indicates visitor parking

Proposed Plan of Parking

Use Different Strategies for Different Parking Needs

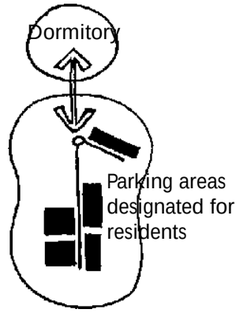
People using the campus fall into several categories, each having different needs. Locational and operational strategies for parking need to take these different needs into account.

Several categories of commuters use the campus, and most commuter lots can be located toward the campus edge. Graduate students are primarily commuters who use the campus for an extended period of time. Faculty are commuters accustomed to parking near their offices. Staff commute to the campus, some on a regular workweek schedule, others—especially at the Medical Center–on evening or night time shifts.

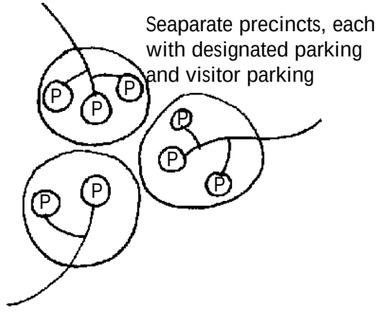
Visitors are a subset of campus users that need special attention because of a lack of familiarity with the layout of Duke, and because they generally have short term parking needs. Visitor parking needs to be located near major visitor destinations and be easy to find. Operationally, these spaces are usually metered, and it may be advantageous to limit the ability of campus commuters to take up visitor parking spaces. Parking will need to be provided for visitors to the West quad and the Chapel, the Bryan Center, the athletic facilities and ticket sales, the admissions office, the Sarah P. Duke Gardens, the East campus, and the Medical Center. People visiting the residence halls will also need short term parking.

Patients at the Medical Center and others who use the campus have varying levels of physical abilities, and need parking very near their destination. Small pockets of handicap accessible parking need to be provided in central locations and in specific areas near medical services. Because many parts of the Duke campus are sloped, handicap parking may need to be located with access to elevators.

Students living on campus can walk to most of their destinations from day to day but need storage for their car. Safety is a major concern of students, who often use their cars at night and need to walk back to their dormitory. One strategy for providing safe residential parking is to designate one area near the dormitories for residential students only (see diagram below at left). This area could have restricted access, good lighting and possibly an attendant at night.



Residential Parking Area



Parking by Precinct

Parking by Precinct

In order to not sacrifice convenience, parking location needs to be tied to each precinct at the university (see diagram above at right). In this way, a faculty member who teaches at the Law School would be assigned a parking space in the professional school precinct, and a research assistant would have a parking space in the Medical Research precinct. Similarly, visitors to each precinct would find visitor parking available within it. People coming to the campus to pick up tickets to a basketball game, for example, would find visitor parking in the sports and recreation precinct.

Parking by precinct cuts down on traffic through the university, but makes it less convenient to drive from one location to another on campus. Thus Duke requires not only a carefully thought-out parking layout, but a well-designed transit system as well.

Transit

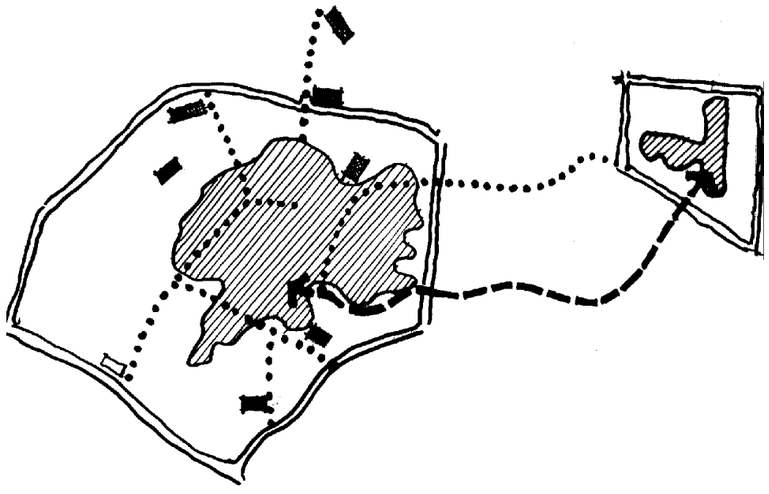
Internal transit is essential given the distances between the campuses. The existing Duke University Transit system consists of East/Central/North/West routes, East/West routes, East/Science Drive and Central/North-Science Drive routes, a Medical Center van and five parking shuttles. Annual ridership on Duke University Transit was estimated at 2.1 million passengers in 1994. The cost of operating and maintaining the system, not including debt service, was approximately $2 million dollars in 1994. Duke University Transit serves both the University and the Medical Center.

Both the University and the Medical Center provide point-to-point van service. The University system runs only at night and allows students to travel safely after dark. Over a ten-month period, the system carried 33,000 students. The Medical Center also offers 24-hour point-to-point service, which carried 1,440 patients and staff in an average week. The Medical Center considers the van an important patient service because of the special physical needs of patients and their families.

Some users are more easily satisfied: the bulk of students moving from East Campus to West Campus in the morning are a predictable ridership, for instance. The less predictable movement of people throughout the campus during afternoon and evening hours is more challenging, though, and the quote below from the transportation report summarizes the difficulties facing Duke's transportation system.

"The Duke University Transit service is costly to operate and may not meet the expectations of all users."

p.23 Transportation Report



Transit connects major desinations, running to and through the campus, and links parking reservoirs

Proposed Transit Concepts

Decisions regarding transit cannot be considered in isolation; they are by necessity linked to other campus systems. The parking system and pedestrian routes on campus, for example, both strongly affect transit. The parking system and management options are currently under consideration at Duke. The resolution of these issues, in concert with the proposed parking changes in the Master Plan, will begin to allow reconsideration of the Duke Transit system.

In addition, rethinking the transit system at Duke requires an assumption of an acceptable walking distance between destinations. On many American campuses, a quarter mile or a five to seven minute walk is considered acceptable; whether or not this is the case within the culture of Duke and the Health System is a decision that the University administration needs to make.

It is beyond the scope of this master plan to redesign the transit system. However, a comprehensive study should be undertaken to better understand and meet the unique transit needs of the campus. In the meantime, we offer the following suggestions relating to the Plan. Duke Transit should:

be easy to understand
In considering an internal transit system at even the most schematic level, it is clear that there is a trade-off between providing access to every location, and the complexity of the system. There are advantages to a simplified transit system B first, that it is easy to understand and use, and second, that the wait between buses is minimal and predictable.

include a Transit Hub with a link to regional service
It is recommended that transit be removed from the center of West quad and the East quad, and a Transit Hub be developed at the edge of the West quad on the site of the existing Allen parking lot. Duke Transit and regional buses could serve the transit center, which would sport a reasonable number of parking spaces. This hub would be designed to allow easy pedestrian access to the West quad, with an elevator and possibly an escalator from the bus area to the level of the quadrangle. This vertical circulation would also allow easier access to the West quad from the Gardens and the Central Campus. The transit stop serving the East quad may be relocated to the open area between Jarvis Residence Hall and Gilbert Addams Residence Hall as shown on the illustrated plans in the following section.

prioritize the East to West Campus connection
The most important route on campus is the connection from East Campus to the West quad, particularly in the mornings when many students need to travel from East to West in a relatively short period. Campus Drive is the shortest route; buses should continue to use this drive as the primary route between East and West campuses.

provide convenient shuttle service from parking areas
Shuttle service is an important component of the transit system, with parking concentrated on the campus periphery. Like the transit service from East to West Campus, this service will have varying demand over the course of the day.

utilize a new through-route in the Central Campus
The changes proposed for the Central Campus in the Master Plan will improve transit by consolidating service along the Yearby extension. Instead of having numerous routes, one bus could loop along Yearby. Transit through the Central Campus should also efficiently serve the Ninth Street area and the regional transit stop if it is built near the Durham Freeway.

meet special needs of the University and the Medical Center
The campus needs to be accessible, especially to those with physical limitations, and transit will need to specifically address those needs. In addition, the Medical Center has different needs than the University. The transit system must serve a wide range of users, including patients and their families as well as staff who serve the hospital round the clock.

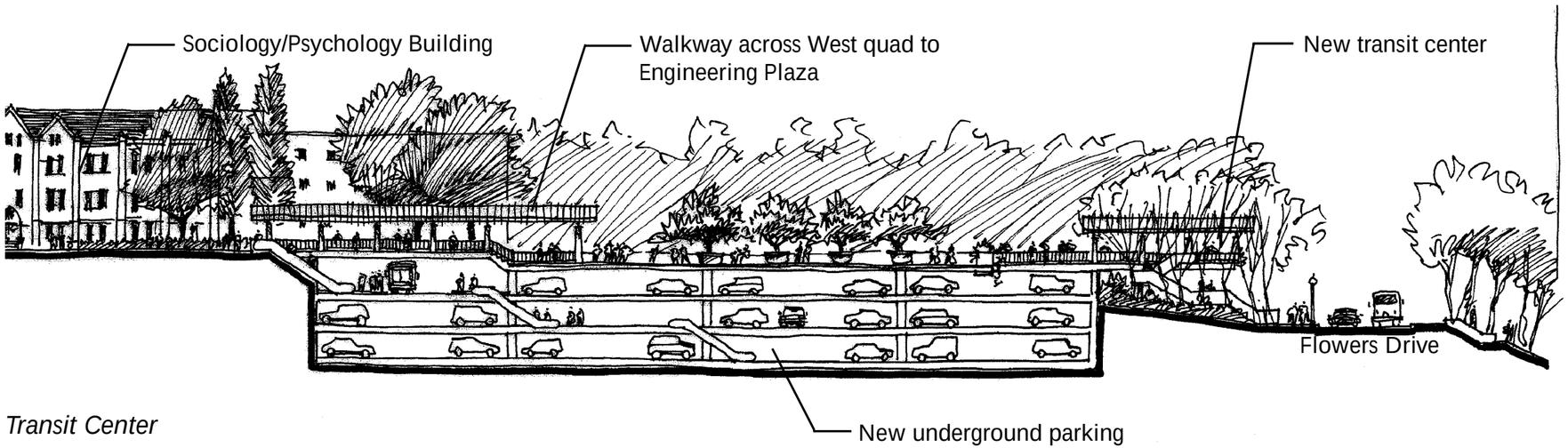
emphasize safety
Safety must be paramount. Transportation must be available for students during weekends and late hours, and special care must be taken to safeguard students waiting for transit after dark. Location of telephones, lighting, design of shelters and parking areas must all be considered first in terms of safety.

consider the use of smaller vehicles
While efficiency may dictate the use of larger buses on the routes with highest demand, smaller vehicles or vans should be used when possible to lessen the impact of transit on the campus.

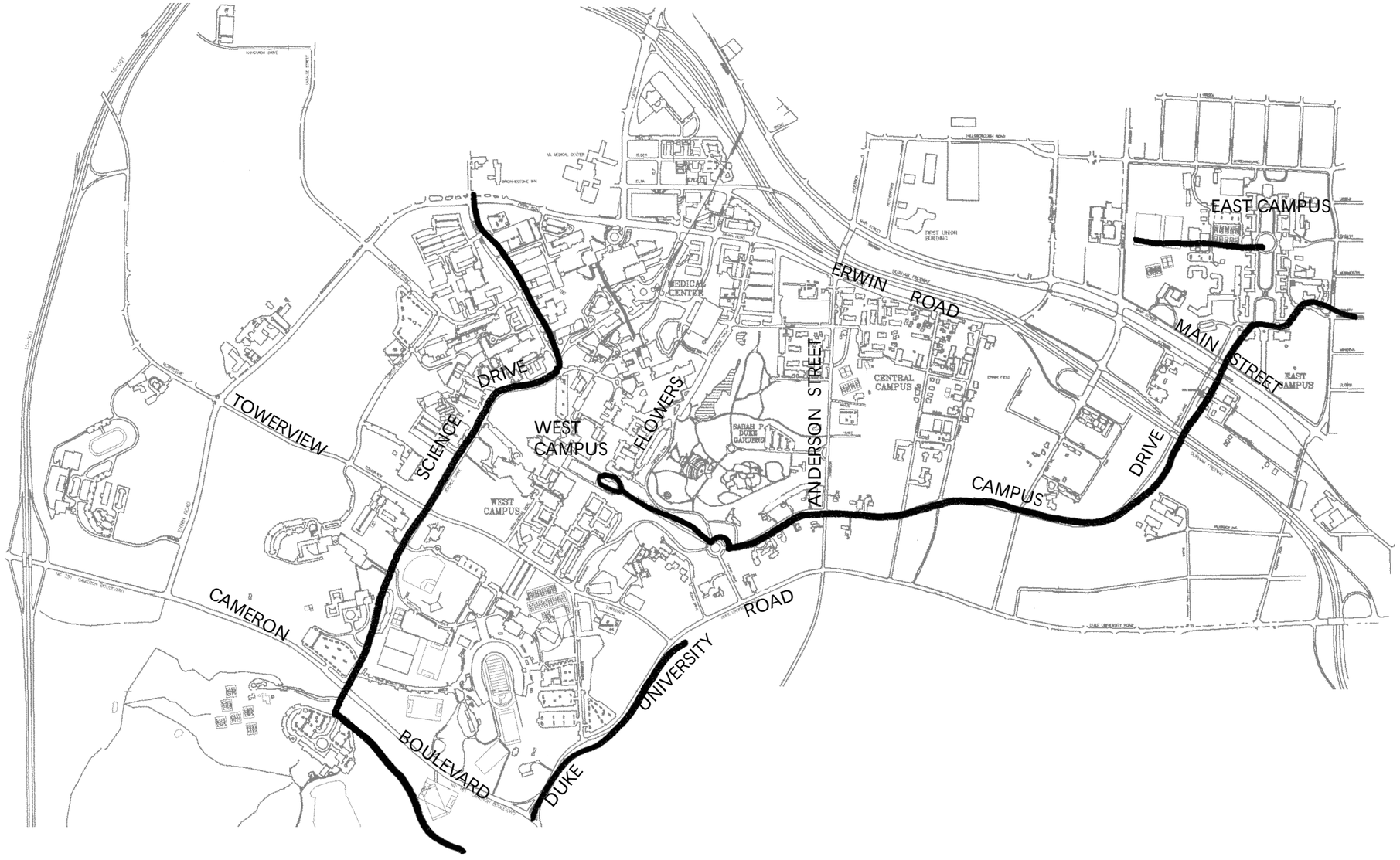
consider the use of alternate fuel vehicles
Diesel fumes from buses detract from the campus. A number of alternative fuel types are available that reduce pollution and fumes, and their use should be considered.

consider the use of new technologies
One recently available technology is a system that allows people at the bus stop to know when the next bus will arrive. On a larger scale, there may be new transportation technologies that can more efficiently connect the East and West Campuses, or be a cost-effective replacement for the PRT.

be a pleasant experience for the user
Waiting areas for the bus should be comfortable and protected from weather. Bus stops become gathering places for the community and should be treated as such, rather than simply in a utilitarian manner.



Transit Center



Existing Bicycle Routes

0 100 200 400 800
SCALE IN FEET

Duke University
Campus Master Plan

"Overall, the respondents were very concerned about their safety getting to Duke from Durham areas. The major areas for concern were Erwin Road, 751, Hillandale/Fulton, LaSalle and Morreene Road. All of these roads connect to major housing areas for Duke students and employees and all of these roads are so poorly equipped for bicyclists that most people would rather drive one to two miles than walk or bike to Duke.

Once on campus, the primary concerns centered around three issues: Towerview Drive needs a bike lane, a bike path is needed between Chapel Drive and Science Drive to cut through the Quad (because Wannamaker and Towerview are not bicycle friendly), Campus Drive bike lanes should be cleaned up and completed for the entire length of the road. A number of separate bike paths were requested to go from Anderson Street to Flowers Drive, Trent Drive and finally to Research Drive. I think these requests can be safely interpreted as various ways to avoid Erwin Road and get around campus. Many people seem to cut across Erwin Road and into smaller Duke roads and then maneuver through campus, simply because the more standard access routes (e.g. Erwin Road to Research Drive) are not safe."

Bike Trail Survey December 1998

Existing Bicycle Circulation

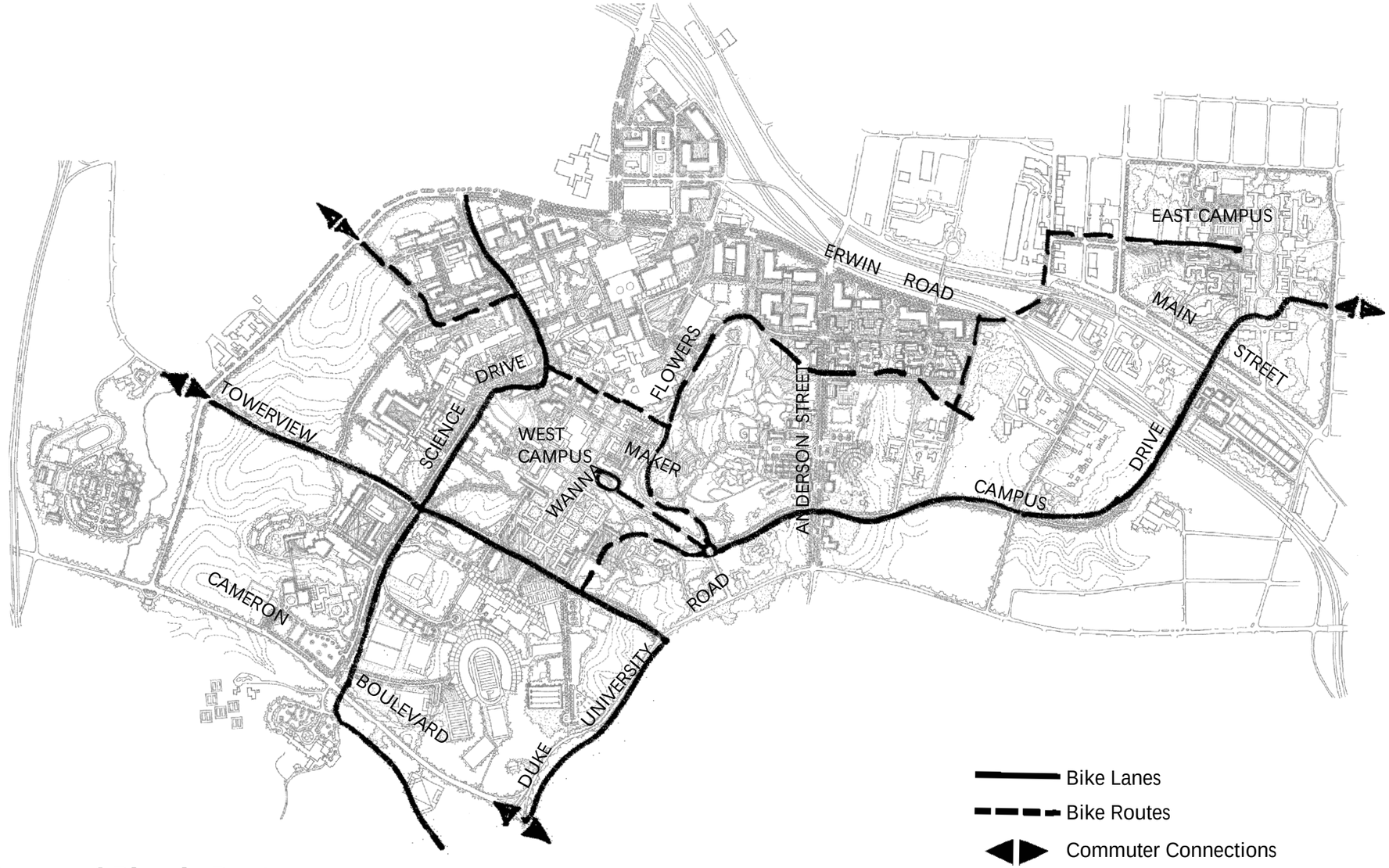
Bicycles are less visible on the Duke campus than at many other universities. For those who live and study primarily on West Campus, daily activities are within short walking distances and cycling may not seem necessary. For those who live on East Campus and Central Campus, the bus may be considered more convenient. And for many people living off campus, the regional system of bicycle routes is considered inadequate for commuting.

Other factors that discourage bicycle use include a lack of safe connecting routes on the campus itself, the hilly topography and a lack of bicycle storage. There are no good connections for cyclists through the West quad or the Medical Center area.

The University may wish to encourage bicycle use as an option in order to de-emphasize cars and parking lots and to allow a convenient way to travel quickly between districts of the campus. Bicycles are an excellent mode of transportation for the distances at Duke. It should be noted that a mix of pedestrian traffic and bicycles is not safe, so cyclists may need to dismount in heavily used pedestrian zones such as the West quad. This may preclude a designated bicycle route there.

Bicycle lanes now exist on Research Drive, Chapel Drive, a portion of Science Drive, and a segment of Duke University Road. Campus Drive has bicycle lanes, but they are of inconsistent width, and cyclists cite safety concerns. On East Campus, a bicycle lane runs from Broad Street to the quadrangle, and a through connection is available to bicycles from Main Street to Trinity. A bicycle path runs off campus from the Washington Duke Inn parking lot through the wooded area southeast and then south, parallel to Cameron Boulevard.

Although both Erwin Road and Cameron Boulevard are signed as bicycle routes, no lanes exist–and as both roads carry significant amounts of vehicular traffic, they do not appear to be safe bicycle routes despite the good intentions of the signage.



Proposed Bicycle Routes

SCALE IN FEET

Duke University
Campus Master Plan

Proposed Bicycle Circulation

The first proposal for improved bicycle circulation is a connection through West quad to the science area. The best location for this connection would be a link from the Allen parking area (the future Transit Hub) across the quad at the grade change near the north end, and down the hill along a new path past the 1980 library addition to the new Engineering Plaza, to be developed as a forecourt to Hudson Hall.

The second proposal of this plan is to improve the bicycle lane along Campus Drive in order to make an attractive bicycle route between East and West Campuses; this route continues on into Durham via Trinity Street.

Third, a connection should be retained for cyclists from Campus Drive to Towerview, even with the construction of new housing along Wannamaker on West Campus. Bicycle lanes are also recommended on Towerview.

Ideally, the improved internal bicycle routes would connect beyond the campus to a safe system of neighborhood commuter routes for bicycles. Recommended improvements include bicycle lanes on the portion of Anderson Street between Campus Drive and Duke University Road, bicycle lanes on Duke University Road to Towerview, bicycle routes on Cameron Drive, Morreene Road and LaSalle Street. Because the University does not own these streets, bicycle improvements would require coordination with City of Durham agencies.

Central Campus should be a bicycle-friendly area. With the future extension of Yearby, accommodations should be made for good bicycle access, although this could take the form of bicycle paths rather than a widened road with bicycle lanes. Connections can be made from the Central Campus to Campus Drive along Alexander and Oregon Streets without the addition of bicycle lanes so long as the traffic volumes on these roads remain low. Bicycle lanes on Anderson Street are a possibility in order to provide good bicycle access to the Sarah P. Duke Gardens, and space could be made available by removing parking along the road. Cyclists should also be able to access Ninth Street easily from the Central Campus.

"Bicycles have the potential to be a significant mode of transportation for internal and external trips, thereby reducing parking needs and traffic; however existing facilities are inadequate."

Transportation Report, p 33

Placemaking

The concept of "placemaking"—the creation of discrete outdoor spaces activated by a variety of uses, surrounded by harmonious architecture—is central to the Duke master plan. The distinctiveness of Duke's campus is built upon powerful qualities of place in both the West and East Campus quadrangles. Placemaking in the spirit of those quadrangles is encouraged in all aspects of the Master Plan.

Previous plans at Duke have addressed architectural style, the best example being the 1964 Duke University Planning Study prepared by Caudill Rowlett Scott, which included an excellent section on Campus Design at Duke. It spelled out elements of character found in the Gothic and Georgian architecture, and included guidelines for addressing such architectural traits as richness and unity; verticality in the Gothic and horizontality in the Georgian; human scale; structural expression; and use of material. However, for all this discussion, little of this wisdom appears in subsequent architecture at Duke.

This Master Plan primarily depends for its realization over time on an Implementation Program, rather than delineating aesthetic guidelines for promoting good architecture on campus. The reason for this approach is the belief that the best predictors of good architecture are 1) the selection of the best architects for the design and review, and 2) direction from the University regarding the siting and contextural relationship of the project. In addition, the University must ensure that each construction project is designed within the context of a larger plan, and that each project contributes to the larger context. It is assumed that design professionals chosen for work at Duke integrate the concepts of placemaking. In order for decision makers at the University to achieve a common purpose, the major principles of placemaking on the Duke campus are proposed here for discussion and consensus.

Principles of placemaking on the Duke campus:

Create outdoor rooms by enclosing space with buildings.
The design of buildings needs to pay as much attention to outdoor spaces as indoor spaces. Each new building becomes a fragment of a greater whole, part of a composition with its neighboring buildings. The resulting outdoor space should be coherent and usable rather than "leftover." The buildings along Research Drive are examples of site planning that results in leftover space, with mere service access rather than entries along the street.

The architectural styles of the enclosing buildings should be harmonious and mutually supportive.
The composition of architecture enclosing the outdoor space needs to provide attractive "walls" for the space rather than competing and distracting forms. The Gothic architecture of the West Campus and the Georgian architecture of the East Campus clearly unify the spaces they create. The LSRC quad is composed of more contemporary architecture, but creates a unified, high-quality open space.

The proportions of the enclosed space should be pleasing in both plan and section.
Creating a good outdoor room takes as much design attention as a good indoor space. The shape and orientation of the space to sunlight, the height of the surrounding buildings and the hierarchy of buildings that form the space must be artfully conceived. Good examples on the Duke campus are the historical West quad, East quad, and the recently developed LSRC quad.

Individual buildings should not overwhelm their context.
Unified placemaking was easier at the time of the construction of West Campus. The siting and design was done at one time and with one vision. There has been a temptation in recent times, though, to make each building stand out as a monument to its

department or patron, and to call attention to itself. In order to create a coherent campus, the context of the campus must take precedence over the individual identity of new buildings. Unified placemaking was easier at the time of the construction of the West Campus. The siting and design was done at one time, and with one vision. There has been a temptation in recent times to make each building stand out as a monument to its department, or patron, and to call attention to itself. In order to create a coherent campus, the context of the campus must take precedence over the individual identity of new buildings.

Places must have a recognizable character
The variety of Duke's landscape can provide character to the places made on the campus by taking advantage of topography, views, and the forest edge. The function of the buildings will differ from one place to another, and the expression of function should also be a recognizable source of character. Also, each place should represent the time in which it was built. The variety of Duke's landscape can provide character to the places made on the campus by taking advantage of topography, views, and the forest edge. The function of the buildings will differ from one place to another, and the expression of function should also be a recognizable source of character. Also, each place should represent the time in which it was built.

Vehicular access should be de-emphasized
All buildings require service, emergency access, and ADA access, but such requirements should not dominate the streetscape (as is the case along Research Drive). Where drop-off exists at the front of a building, the pedestrian space should still dominate. Paving materials and patterns can be used to emphasize pedestrians while still accommodating vehicles.

Front doors should relate to the primary pedestrian connections, and should be used as front doors, not just ceremonial entries.
Buildings such as the new Law School have included parking lots as part of the development, with the entry from the parking as the "front door," turning the building's back to Science Drive. This isolates the Law School from the rest of the campus, and makes a vehicular forecourt to the building rather than a space meant to be inhabited by people.

The entry to a place should be carefully considered, and connections to other places on campus incorporated into the design.
Well designed places often have an interesting entry sequence. For example, the West quad is approached on the highly formal, symmetrical axis aligned with the Chapel for a dramatic entry. This formality is appropriate to the character of the West quad and its importance on campus.