



## 5. FACILITIES MASTER PLAN

### GUIDING PRINCIPLES

The Facilities Master Plan includes building, landscape, and infrastructure projects that illustrate the full capacity of the campus. The proposed new facilities allow Salisbury University to meet their projected needs over a ten year period as well as into the future. It provides a framework that organizes new development to ensure that the cumulative impact of these individual projects on the campus is greater than the sum of its parts.

Guiding Principles communicate the intended outcomes of the Facilities Master Plan. They direct the plan and provide a way to evaluate whether individual proposals line up with the overarching goals of the institution. They reflect findings from the Assessment and Analysis phase and consistent themes articulated by members of the campus community in focus group and listening sessions.

#### *CREATE A UNIVERSITY DISTRICT*

While the core academic functions are consolidated west of US Route 13 on the Main Campus, Salisbury University's presence extends further to the east. The Facilities Master Plan takes a holistic view of the campus, considering the university district area from Camden Avenue east to S. Division Street and from W. College Avenue south to the University Park apartments. Within this district, there are and will continue to be properties that Salisbury University does not own. However, this entire area contributes to the campus experience.

Architectural and landscape elements on the Main Campus are part of what defines Salisbury University. Creating a university district requires that the East Campus and Main Campus have a unified character.

#### *DEFINE OUR EDGES*

First impressions are important, and they are made quickly. When guests, including prospective students, parents, and members of the Eastern Shore community, enter the university district from any direction, the built environment should clearly communicate that they have arrived at a specific destination. It should welcome them in a manner commensurate with the quality and stature of Salisbury University.

Gateways help achieve this sense of welcome. Buildings, plantings, signage, paving, and other site furnishings can all be used to define a gateway. Each gateway location identified on the Salisbury University campus has a slightly different condition. The gateway configuration

must respond to adjacent property ownership and land use as well as circulation patterns and modes to appropriately mark the transition from city to campus.

#### *CONNECT OUR CAMPUS*

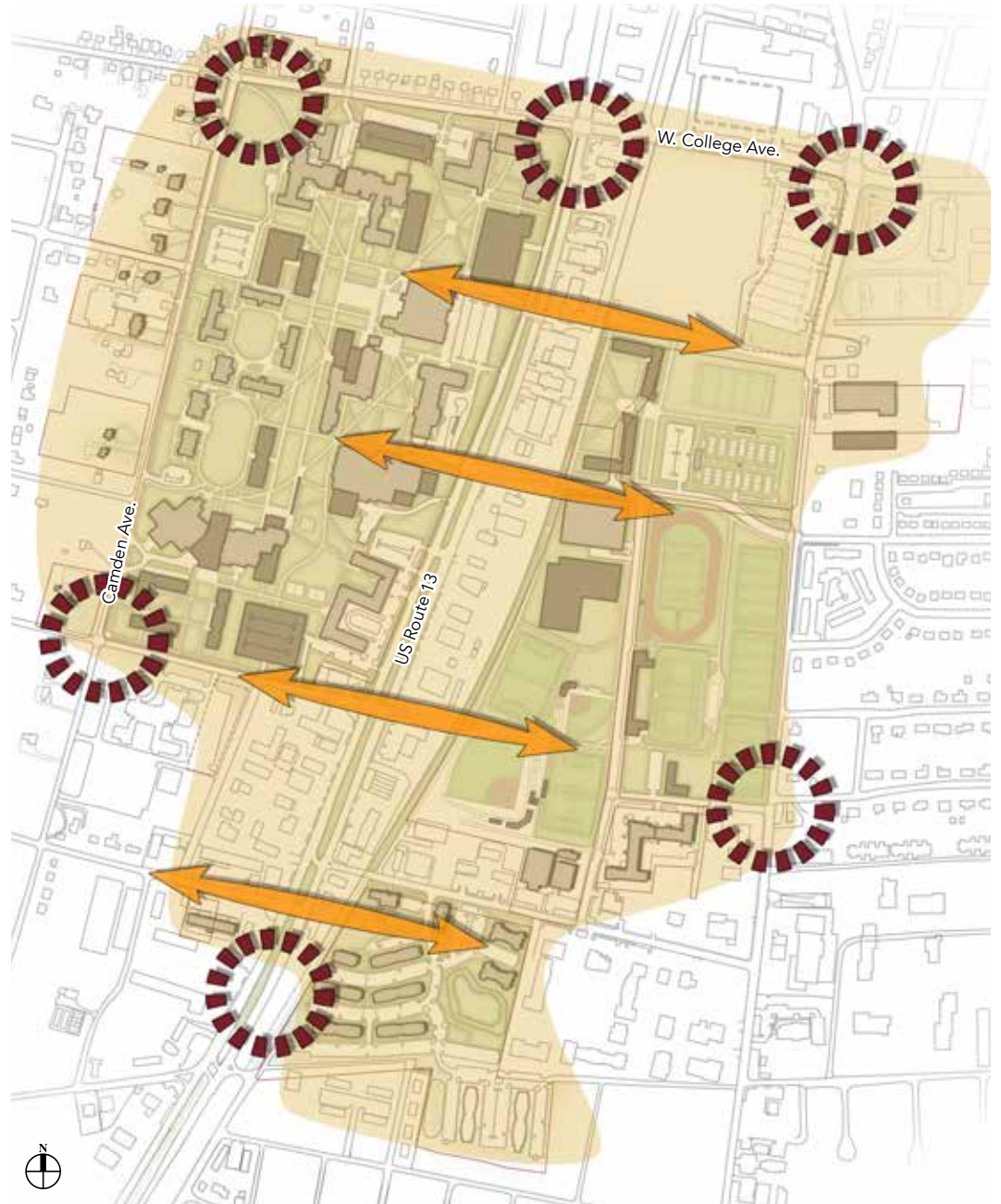
The Main Campus has a rich network of pedestrian connections that makes it easy for students, faculty, and staff to travel between academic buildings, residence halls, dining areas, and gathering spaces. Conflicts between pedestrians, cyclists, and vehicles on streets surrounding the Main Campus make circulation less pleasant and safe as people move out from the campus core. Crossing US Route 13 to access the facilities on the East Campus presents even more significant challenges.

As new facilities are added in the future, the campus footprint will expand, and circulation patterns will shift in response to the new uses.

Extending strong and safe campus connections to the edges of the university district and establishing critical new connections is a top priority.

5.1 CONCEPT DIAGRAM

- University district
- Campus gateway
- Desired connections





5.2 FACILITIES MASTER PLAN (p.80 & 81)

Existing Building  
New Building

PROPOSED PLAN

The 2014 – 2023 Facilities Master Plan provides academic, residential, athletics, recreation, student service, and parking facilities to support the mission and vision of Salisbury University through new construction and renovation. It adds significant new built space to the Main Campus while strengthening the open space framework to provide a series of interconnected open spaces and a clear hierarchy of pedestrian paths. The plan further activates the East Campus with new housing, athletics and recreation facilities, and fields. These projects offer an opportunity to extend the Main Campus architectural and landscape character across US Route 13, strengthen pedestrian connectivity back to the Main Campus and to nearby student residential areas, and begin to establish an open space framework. Public streets surrounding the campus

are opportunities for partnerships with city, county, and state agencies, and the plan includes ideas of how they might safely and pleasantly accommodate all modes of travel, especially pedestrians and cyclists.

The Facilities Master Plan addresses campus needs without the acquisition of new property with the exception of the Wicomico County Board of Elections Office and the Wayne Street Parking Lot. However, the University will evaluate available, strategic property on a case-by-case basis. As indicated in previous master plans, it continues to be the University’s desire to acquire the Dresser Property if and when the environmental remediation of the site is completed.



Camden Ave.

Dogwood Dr.

US Route 13

Bateman St.

Wayne St.

S. Division St.

W. College Ave.

Dresser Property



### 5.3 MAIN CAMPUS – NORTH

#### MAIN CAMPUS – NORTH

Today, the northern portion of the Main Campus includes many of the University’s academic and administrative facilities, residence halls on The Quad, and Chesapeake and St. Martin residence halls.

The Patricia R. Guerrieri Academic Commons project (under construction, N-1) will add a hub of campus activity along US Route 13 and free up the Blackwell Library to be used as swing space and then ultimately redeveloped for academic uses (N-2). To bring the activity from the Academic Commons outside the building, the Facilities Master Plan calls for a renovation of Red Square (N-3).

Salisbury University’s desire to expand its impact as the cultural hub of the Eastern Shore by establishing a Fine and Performing Arts Complex is an exciting and transformational component of the Facilities Master Plan. Chesapeake and St. Martin Halls will be removed and replaced with new housing on the East Campus to make way for new facilities adjacent to Fulton Hall. The Fine and Performing Arts Complex would potentially include:

- N-4. Performing Arts Building
- N-5. Fulton Hall Renovation and Addition for Fine Arts, to include a gallery space on the ground level facing the new Arts Quad
- N-6. Demolition of St. Martin and Chesapeake Halls (Phase I); a new Arts Quad accommodates significant pedestrian traffic from the mall northeast to the TETC Building, provides additional space for passive recreation, and presents an opportunity for art installations in conjunction with adjacent programs (Phase II)
- N-7. North Parking Deck, a 4-story parking garage with up to 500 spaces accessed from W. College Ave, supports event and daily campus parking needs and have sympathetic design to the neighborhood context

An addition to Henson Hall will accommodate additional lab facilities (N-8). The site provides an opportunity to create a first floor atrium connection between the new wing and the existing northeastern wing of Henson Hall.



5.4 MAIN CAMPUS  
NORTH

- Existing Building
- New Building



## 5.5 MAIN CAMPUS – SOUTH

### MAIN CAMPUS – SOUTH

The southern portion of the Main Campus houses residence halls, student service facilities, and the Maggs Gymnasium. Devilbiss Hall is the academic building located furthest south on campus. The Facilities Master Plan proposes new facilities that allow this area to better accommodate the size of the student body and have stronger open space connections to the northern part of the Main Campus.

Projects include:

- S-1. New Commons Lawn adjacent to residence halls and the Commons to replace the existing parking lot and provide passive outdoor recreation area, particularly for residents
- S-2. Devilbiss Hall removed to establish a direct open space and visual connection from the north to the south end of campus in the second phase of the plan; a new building site on Commons Lawn replaces and expands current Devilbiss Hall uses; Devilbiss will be partially renovated in the first phase of the plan
- S-3. Maggs Gymnasium renovated and expanded to better accommodate teaching and recreation needs of the campus
- S-4. Connection of the Commons to the Guerrieri University Center (GUC) through an addition that accommodates servicing facilities for both buildings on its lower level
- S-5. Renovated GUC in the first phase of the plan; expansion of GUC in the second phase to accommodate growing needs for student services, collaboration, and social gathering spaces
- S-6. Dogwood Village removed and replaced with new student housing
- S-7. A new parking structure expands capacity of an existing parking lot





5.6 MAIN CAMPUS  
SOUTH

- Existing Building
- New Building



### 5.7 EAST CAMPUS

#### EAST CAMPUS

Currently, the East Campus is used predominantly for athletics and recreation and campus support services. The addition of a parking garage has brought more pedestrian traffic east of US Route 13. In addition, many upper division students live east of the core in both University and privately operated housing and pass through the East Campus on their way to academic buildings in the core. The Facilities Master Plan proposes a combination of projects that will further activate this area, provide opportunities to unify architectural and landscape character with the Main Campus, and improve connectivity and pedestrian safety.

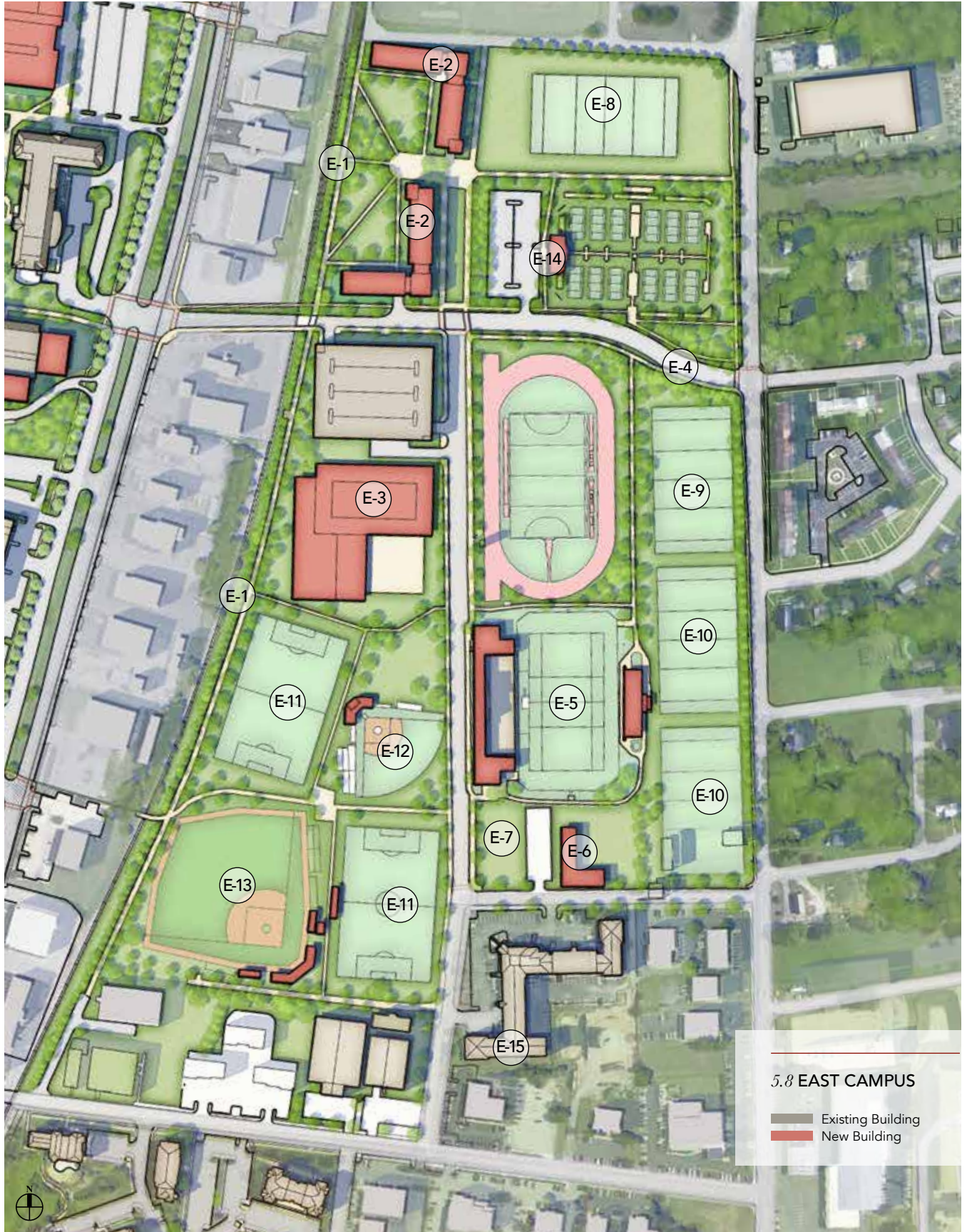
East Campus improvements include:

- E-1. New trail for cyclists and pedestrians alongside the existing rail line
- E-2. Two new residence halls housing lower-division students
  - Support Services & IT building relocated and Board of Elections building acquired

- E-3. Field house
- E-4. Realignment of Bateman Street
- E-5. New stadium
- E-6. Maintenance facility
- E-7. Champions Plaza

The Facilities Master Plan reflects the reorganization of athletic fields proposed in the Athletics Master Plan. As a result of these improvements, East Campus will house the following fields:

- E-8. New intramural field
- E-9. Hammer throw & intramural field
- E-10. Practice fields
- E-11. Competition soccer fields
- E-12. Softball field
- E-13. Baseball field
- E-14. Tennis Center building
- E-15. Renovated East Campus Complex (former Power Professional building)



5.8 EAST CAMPUS

- Existing Building
- New Building



POCOMOKE HALL

ESPEC

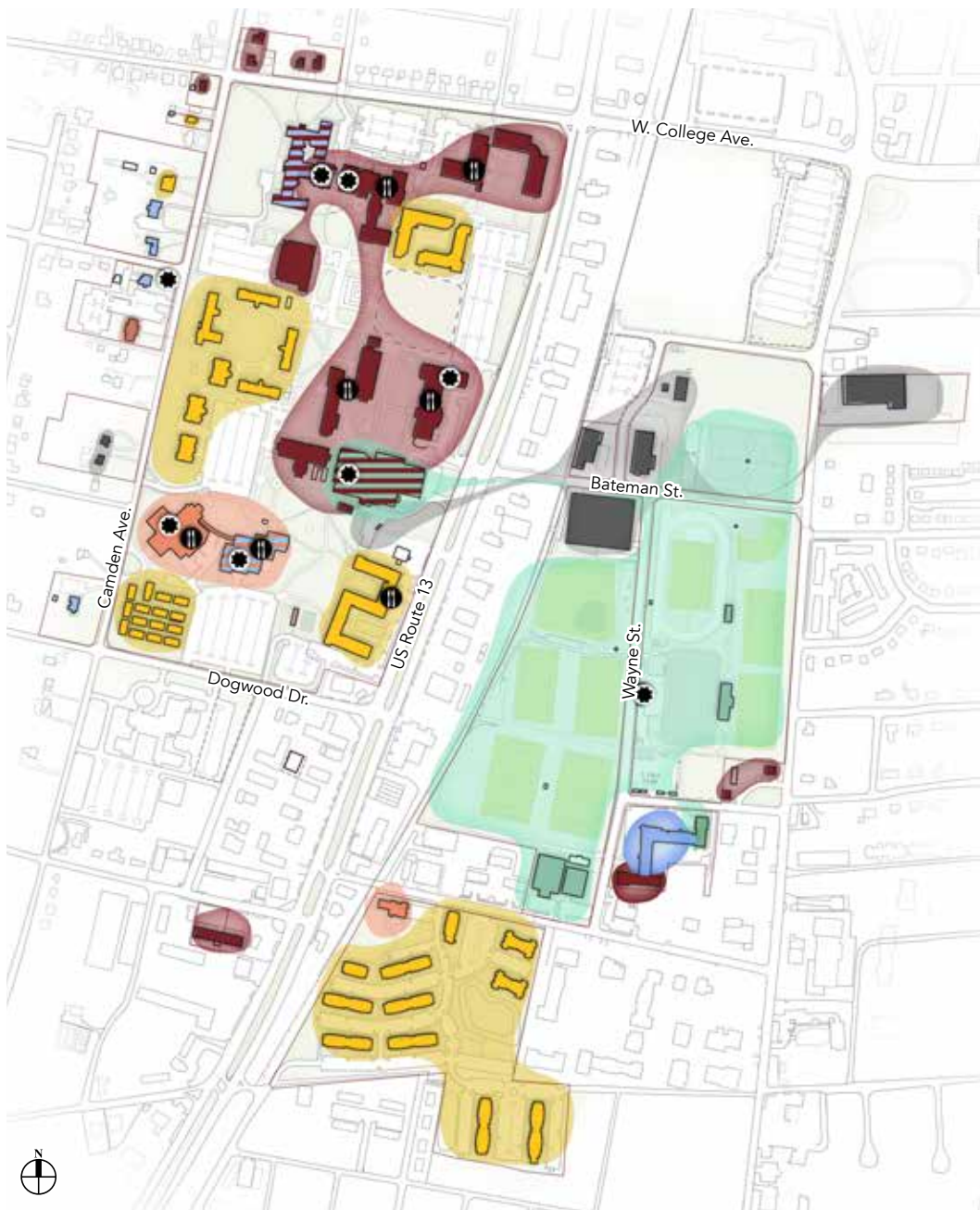
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### CAMPUS CAPACITY









The Facilities Master Plan shows how Salisbury University can meet its projected needs for the next ten years within its current land holdings. It establishes capacity for over 800,000 GSF of new space to support the University's endeavors in academics, athletics and recreation, and student services. Additionally, it allows the University to add 300 beds to the campus and replace about 600 beds in need of upgrades. It plans for updated infrastructure needed to serve the campus including utilities, parking, and stormwater management.

The plan's legible framework organizes these facilities by reinforcing and strengthening the existing structure of the campus.










The Main Campus remains a compact, walkable, mixed-use district including academic, residential, student services, and administrative uses. By adding new facilities in the Main Campus, the plan strengthens the clarity of academic uses clustered in the northeast and student life facilities concentrated to the southwest. With new and improved facilities and clarified organization, the East Campus continues to serve as a precinct for residence life, athletics and recreation, and campus support.

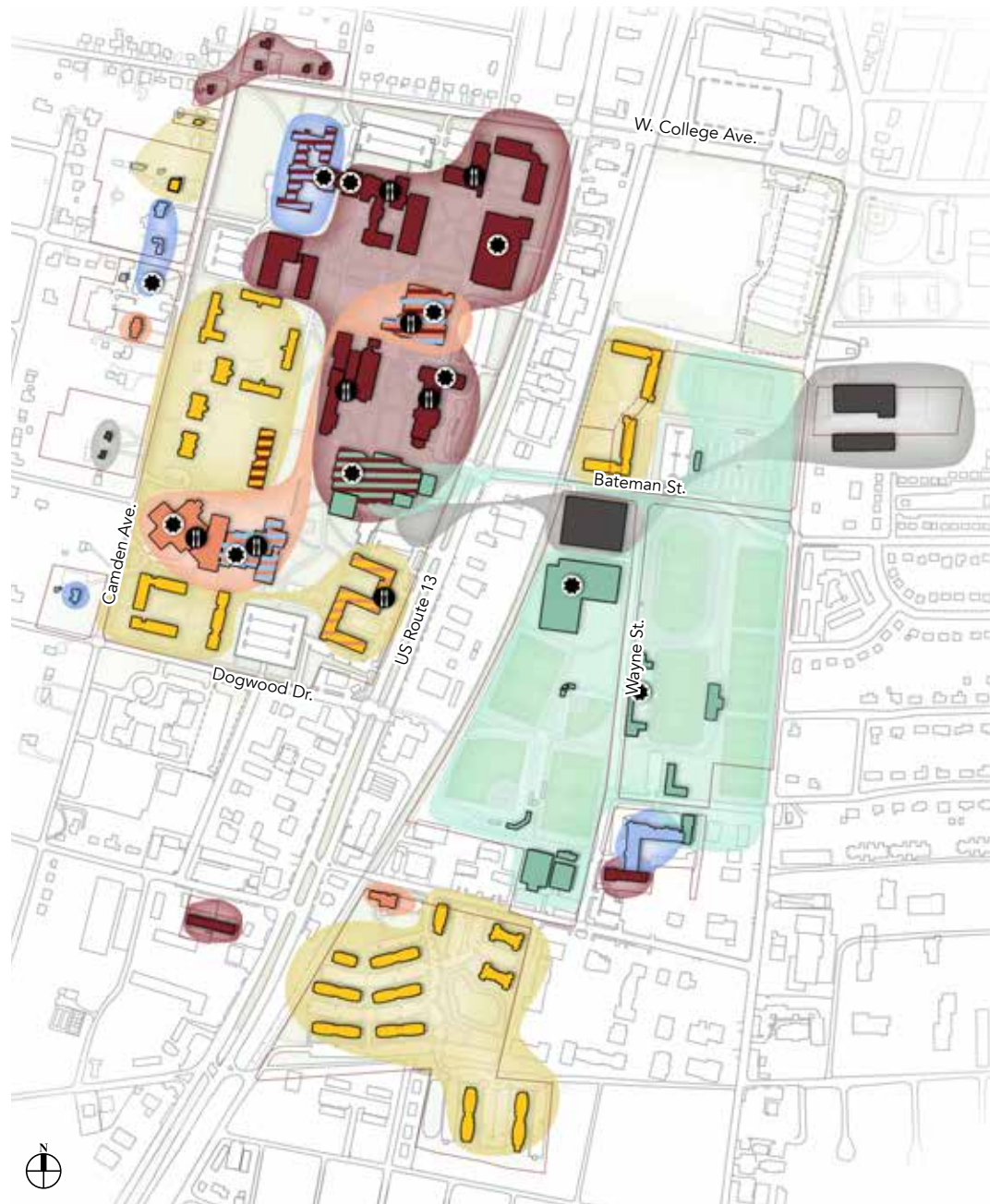


5.9 EXISTING  
LAND USE

-  Mixed Use
-  Academic
-  Residential
-  Student Life
-  Administration
-  Athletics and Recreation
-  Support
-  Dining
-  Public Venues

5.10 PROPOSED  
LAND USE

-  Mixed Use
-  Academic
-  Residential
-  Student Life
-  Administration
-  Athletics and Recreation
-  Support
-  Dining
-  Public Venues







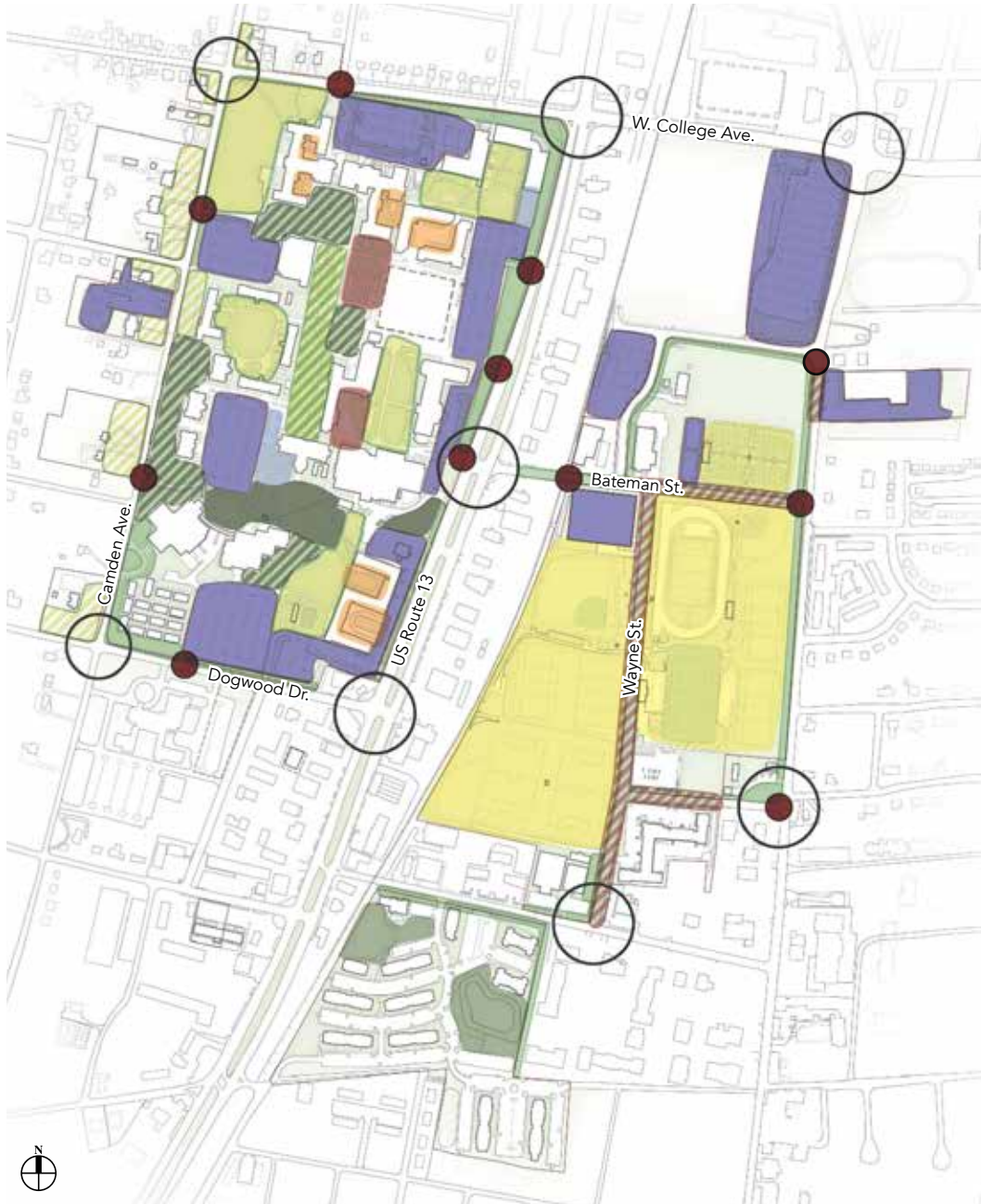
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## OPEN SPACE

The proposed open space system includes enhanced existing spaces as well as new spaces that reinforce the network.

The Facilities Master Plan recommends several overarching strategies to enhance existing and proposed open spaces, including:

- Selectively remove trees or provide new tree planting to better reinforce spatial definition
- Continue to limb trees to maintain increased minimum branching heights to allow for greater visibility
- Continue to incorporate new arboretum plantings, particularly on the East Campus, while also providing a more unifying planting palette to tie individual specimens into a larger landscape
- Add shade tree planting adjacent to and throughout surface parking areas
- Take advantage of building perimeter areas to integrate innovative stormwater management strategies like rain gardens and bio-retention into the overall design of the space
- Reserve and utilize open lawn areas for geothermal systems
- Establish a clear path hierarchy and utilize campus paving standards for walkway repairs and new path construction
- Create gathering areas at key circulation nodes
- Enhance campus perimeters and internal streets with unified street tree plantings and streetscape treatments, including continued use of brick piers and fencing
- Provide trees between athletic fields where possible to divide the athletic fields into smaller “rooms,” provide shade and scale, and add definition to the East Campus
- Name and label existing unnamed spaces to make them more prominent and elevate their importance (Note: Names used in the Facilities Master Plan are for descriptive purposes only; actual names should be determined through an institutional process and may provide donor sponsorship opportunities)



5.11 EXISTING  
OPEN SPACE  
TYPOLOGIES

- Natural/Undisturbed
- Naturalistic – Grove
- Naturalistic – Lake
- Mall
- Quads/Open Lawn
- Courtyard
- Plaza
- Gardens/Special Places
- Perimeter – Front Lawn
- Perimeter – Streetscape
- Entrance/Gates
- Internal Streets
- Recreation/Fields
- Parking
- Gateway Intersection



5.12 PROPOSED  
OPEN SPACE  
TYPOLOGIES

- Natural/Undisturbed
- Naturalistic – Grove
- Naturalistic – Lake
- Mall
- Quads/Open Lawn
- Courtyard
- Plaza
- Gardens/Special Places
- Perimeter – Front Lawn
- Perimeter – Streetscape
- Entrance/Gates
- Internal Streets
- Recreation/Fields
- Parking
- Gateway Intersection





5.13 PATHWAY STANDARDS

The proposed hierarchy of primary, secondary, and tertiary pathway typology standards for Salisbury University builds upon pathway design implemented on recent campus projects. Tertiary pathways should be 6' in width and utilize a single cross score spaced 4' on center. Secondary

pathways should be 8' in width and utilize 4' x 4' scoring. Primary pathways should be 16-20' in width. For these walks, an equal scoring of 4' x 4' – 5' x 5' matches current practices. In some instances, a scoring pattern that defines a wider center panel (8-12' in width) with smaller side panels (2-4' in width) can further distinguish primary pathways with more visual appeal.



5.14 EXISTING CAMPUS PATHWAY

5.15 PATHWAY STANDARDS



PRIMARY PATHWAY: 16-20'



PRIMARY PATHWAY ALTERNATIVE: 16-20' (Recommended)



SECONDARY PATHWAY: 8'



TERTIARY PATHWAY: 8'

The Facilities Master Plan identifies several existing open spaces as candidates for improvement and revitalization:

- A. Expanded naturalistic open space on the Main Campus with the creation of Maggs Grove
- B. Enhanced definition and extension of the Mall to the north (to include Fulton Grove) and to the south with the removal of Devilbiss
- C. Improved Henson Lawn with the addition of shade trees along the perimeters
- D. Revitalized “Henson Quad” with less hardscape and stronger spatial definition from new shade trees
- E. Renovated Red Square including additional tree planting and new paving while still accommodating gatherings and events

The plan also creates several opportunities to establish new links in the interconnected campus open space network, including:

- F. Commons Lawn, a new recreational space in place of Camden Parking Lot E
- G. Arts Quad, a significant new open space adjacent to the proposed Fine and Performing Arts Complex, that incorporates artistic expressions of landscape
- H. South Quad, a new recreational space adjacent to proposed residence halls
- I. Wayne Street Mall, a pedestrian extension of Wayne Street north of Bateman
- J. Wayne Street Walk, a significant pedestrian path through the new mall north of Bateman Street and running alongside Wayne Street south of Bateman Street to Milford Street through the athletic precinct

- K. East Quad, a new open space associated with the residence halls on the East Campus
- L. East Walk, a new east-west pedestrian pathway linking South Division Street with the new bike trail through the East Quad

#### STORMWATER MANAGEMENT

The bucolic nature of a campus setting affords opportunities for progressive stormwater management strategies that are sometimes constrained in more densely developed urban areas. In order for the University to comply with state stormwater regulations, open areas throughout the campus will need to be designated specifically for stormwater management.

The Maryland Department of the Environment (MDE) administers the state’s stormwater management requirements, and in recent years MDE has guided development efforts with Environmental Site Design (ESD) as the primary objective. As a result, according to the 2009 MDE design manual, all ESD practices seek to replicate natural hydrology. These practices include green roofs, permeable pavements, microbioretention, infiltration swales, and other techniques designed to keep stormwater from immediately entering a traditional utility infrastructure or conveyance system.

The ESD ethic attempts to handle rainwater “where it falls.” This approach represents a departure from traditional site engineering conventions that involve locating a single, monolithic stormwater facility – a big pond, for example – in a low spot on the project site. The shapes of bioretention facilities are sometimes amorphous but also can be designed to fit in long, linear spaces. Numerous locations on campus are



5.16 OPEN SPACE

candidates for such facilities. Parking lot edges, plazas, walkways, and strips of open grass all provide opportunities for ESD installations. Several constraints govern location selection for ESD features. The soils should ideally be hydrologic soil group A or B in order to ensure infiltration. The USDA web soil survey categorizes the majority of the Salisbury University campus west of US Route 13 as Urban Land. While the USDA information does not designate the hydrologic soil group, the Urban Land classification typically signifies poor (Type D) soils. For master planning purposes it is advisable to assume that any microbioretention practices introduced in Urban Land zones on the campus would require an underdrain. Additionally, high water tables in the region are a potential constraint, so geotechnical investigations for specific proposed locations will be needed. This will reveal the soil property parameters that will inform precise ESD design decisions.

The available dimensions of the space for proposed ESD practices and the size of the associated drainage area being managed are important considerations. Some devices, such as rain gardens, are only recommended for drainage areas of 2,000 square feet or less. The campus must manage larger drainage areas, especially rooftop surfaces for large buildings. Micro-bioretention practices are feasible for such applications. For example, alongside the proposed Henson Hall expansion on the northwest corner (A), there are candidate spaces for micro-bioretention facilities in the green areas between the building and the pedestrian walkway. Similarly, the area now occupied by St. Martin Hall and Chesapeake Hall could have


dedicated spaces for micro-bioretention as that area is redeveloped into another formal quad (B). In the southwestern corner of the Mall, the new Commons Lawn (C) could potentially host a series of narrow micro-bioretention facilities as the space is developed. Existing spaces in front of Nanticoke and the other residence halls around the Quad have the potential to accommodate ESD features as well (D).

Micro-bioretention practices vary in depth. The depth of the feature is often governed by the depth of receiving storm drain lines as underdrains are typically linked to existing infrastructure and rely on gravity to convey effluent. The Salisbury University campus is relatively flat and nearby storm drain lines are not likely to be significantly deep. Designers may not have much depth for gravity-flow outfall connectivity, and as a result, infiltration practices are likely to require wide and shallow depressions. This configuration would mean the ESD practices would occupy more horizontal space between the buildings, walkways, parking lots, and drives. As campus development progresses, project design teams should examine estimated drainage areas in conjunction with nearby storm drain lines early in the process to determine the length, width, and side-slope dimensions necessary for potential infiltration facilities.

Some ESD practices require well-defined edges instead of natural borders. In conjunction with the architectural design, ESD practices can enhance the pedestrian experience and complement the architecture. For example, along pedestrian walkways, seat walls, or curb elevations that correspond to building details can delineate



5.17 STORMWATER  
MANAGEMENT

 Potential Locations for  
Stormwater  
Management Facilities





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### 5.18 ENGAGEMENT WITH NATURAL LANDSCAPE PROVIDES EDUCATIONAL OPPORTUNITIES

the stormwater facilities. New ESD facilities in historic areas of the campus might employ a brick paver edge treatment that suggests a traditional approach, while edging for a proposed facility near new buildings might employ more contemporary details. Such treatments not only contribute to corridor definition for pedestrian circulation but also provide places for students to have impromptu meetings or to pause under the shade of a nearby tree.

Maryland Department of the Environment (MDE) guidelines promote the use of native species in bioretention swales, open channels, filter strips, and other similar devices. The state manual defines natives as “those species which lived in Maryland before Europeans explored and settled

in America.” Sustainable stormwater features in the mid-Atlantic region may include trees such as Red Maple (*Acer rubrum*), River Birch (*Betula nigra*), and various native oaks near the outer or high zone of an infiltration area. The middle zone of a bioretention facility may have shrubs such as Bottlebrush Buckeye (*Aesculus parviflora*), Highbush Blueberry (*Vaccinium corymbosum*), and some small holly varieties (*Ilex glabra*, *Ilex verticillata*). The middle and low zones could be full of herbaceous plants, including Joe Pye Weed (*Eupatorium purpureum*), Blue Flag (*Iris versicolor*), Switchgrass (*Panicum virgatum*), and others. Open spaces adjacent to science buildings, such as Henson Hall and the proposed addition, would be strong candidates for stormwater management facilities that include a wide-ranging plant palette that could be closely linked to the biology curriculum.



## CIRCULATION AND ACCESS

### PEDESTRIAN CIRCULATION

The Facilities Master Plan concentrates development along existing pedestrian circulation system and enhances the strong diagonal relationship between the future Fine Arts Complex and the Guerrieri University Center.

Additionally, the growth of the East Campus will increase pedestrian volumes through the Bateman Street underpass. The underpass cannot adequately handle these loads. As a result, the Facilities Master Plan incorporates curb extensions along US Route 13 to facilitate safer at-grade crossings. These interventions are proposed in the following locations.

- College Avenue & US Route 13 intersection including:
  - the removal of the channelized right turn lanes
  - narrowing the existing lanes of College Avenue and US Route 13 to shorten the crossing distance
  - crosswalk markings at all four sides of the intersection
  - extending or building additional sidewalks to meet adequate ADA standards for intersection crossings
- Bateman Street & US Route 13 intersection including:
  - the removal of the access lane along US Route 13
  - narrowing the existing lanes on US Route 13 to shorten the crossing distance
  - crosswalk markings at all four sides of the intersection
  - building new sidewalk on the north side of Bateman Street and an ADA crossing to the west of the railroad tracks to connect to the parking garage without using the underpass (which may not be ADA-compliant)
- extending or building additional sidewalk on the north side of Bateman Street to the east of the railroad tracks to connect to future development on the East Campus.
- Dogwood Drive & US Route 13 intersection including:
  - the removal of the channelized right turn lanes (US Route 13 turning westbound only)
  - narrowing the existing lanes of Dogwood Drive and US Route 13 to shorten the crossing distance
  - crosswalk markings at all four sides of the intersection
  - extending or building additional sidewalks on Dogwood Drive from Camden Avenue to US Route 13 on both the north and south sides
  - extending and building additional sidewalks to connect to the future rail-trail east of US Route 13

In addition to the pedestrian improvements along US Route 13, the plan incorporates improvements to Camden Avenue, including raised pedestrian crossings at the existing crossings north and south of Loblolly Lane and adjacent to the Admissions House.

The plan also proposes installation of raised intersections and/or curb extensions at secondary intersections, including:

- College Avenue & Camden Avenue
- Camden Avenue & Dogwood Drive
- Bateman Street & Wayne Street
- Onley Road & Bateman Street/Division Street
- Division Street & Milford Street
- Wayne Street & Milford Street

5.19 CURB EXTENSIONS  
COLLEGE AVE

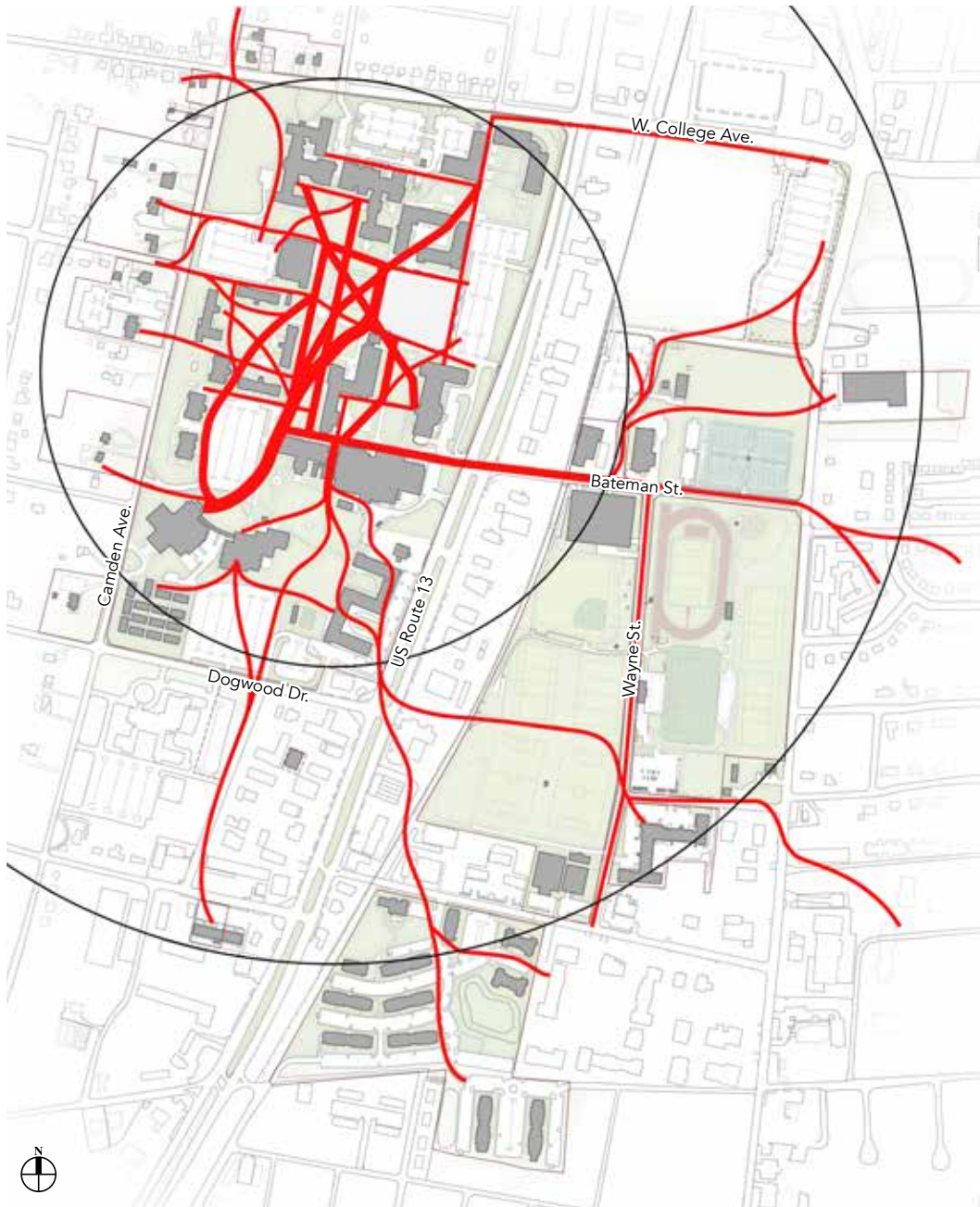


BATEMAN STREET




DOGWOOD DRIVE



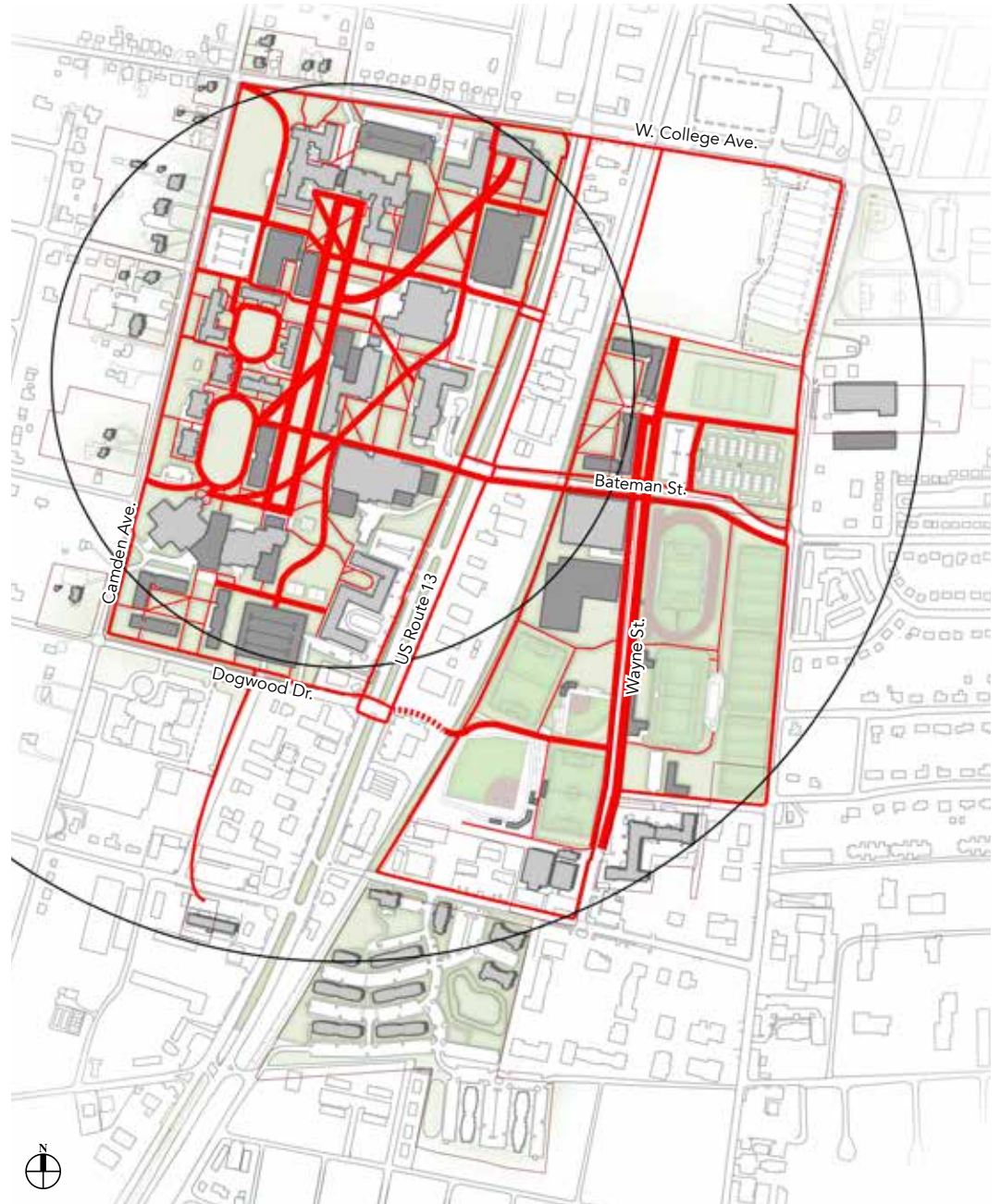


5.20 EXISTING  
PEDESTRIAN  
NETWORK

 Pedestrian Paths

5.21 PROPOSED  
PEDESTRIAN  
NETWORK

 Pedestrian Paths





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### 5.22 RAISED TABLE CROSSING IN CAMBRIDGE, MA

#### VEHICULAR CIRCULATION

##### *Automobile*

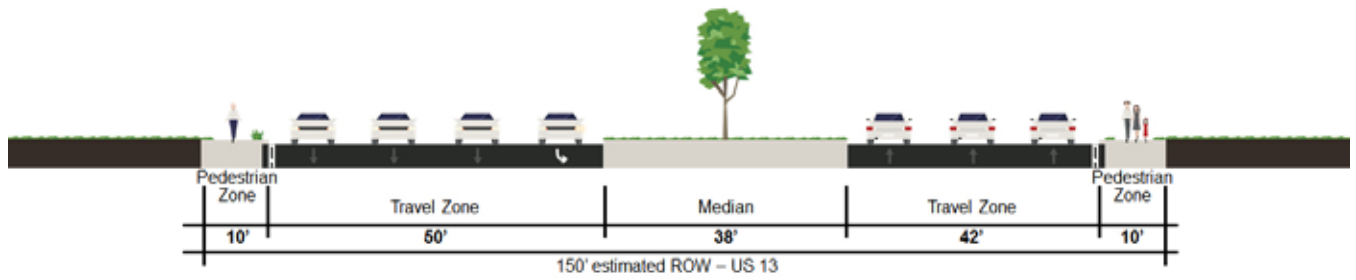
The Facilities Master Plan seeks to balance all transportation modes that access the campus by treating all campus streets as “complete streets.” Complete streets are designed and operated to enable safe access for all users (automobiles, cyclists, pedestrian, transit riders, etc.). In general, a complete street employs narrow travel lanes, bicycle-specific facilities, on-street parking to buffer pedestrians from the travel zone, and adequate space for landscaping, street furniture, and pedestrian travel. US Route 13 is the top priority for interventions. Collaboration with city, county, and Maryland State Highway officials resulted in a proposal for the optimal configuration of US Route 13.

The generalized existing section of US Route 13 includes:

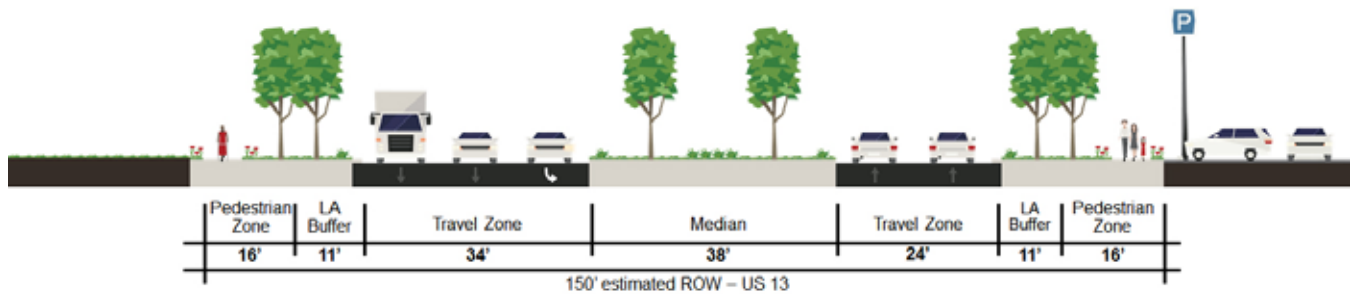
- 10' pedestrian zone
- 50' southbound automobile travel zone (with no bike facilities)
- 38' landscape median
- 42' northbound automobile travel zone (with no bike facilities)
- 10' pedestrian zone

US Route 13 is inadequate, offering very little buffer between pedestrians and automobiles traveling at speeds of 35-45 mph. Also, nearly 11 feet in each direction is being used as a quasi-access, slow-down paved shoulder that creates confusion for drivers and extends the distance and crossing time for pedestrians.





EXISTING SECTION



PROPOSED SECTION

5.23 US ROUTE 13

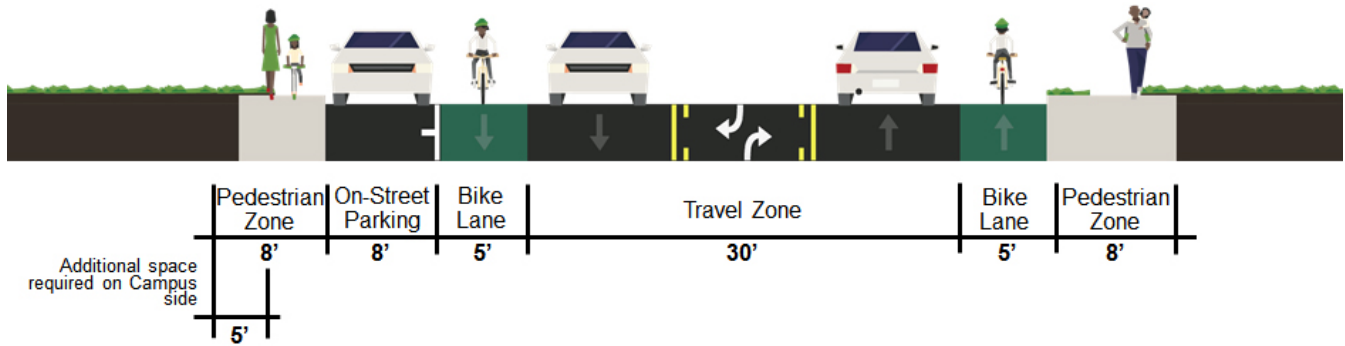
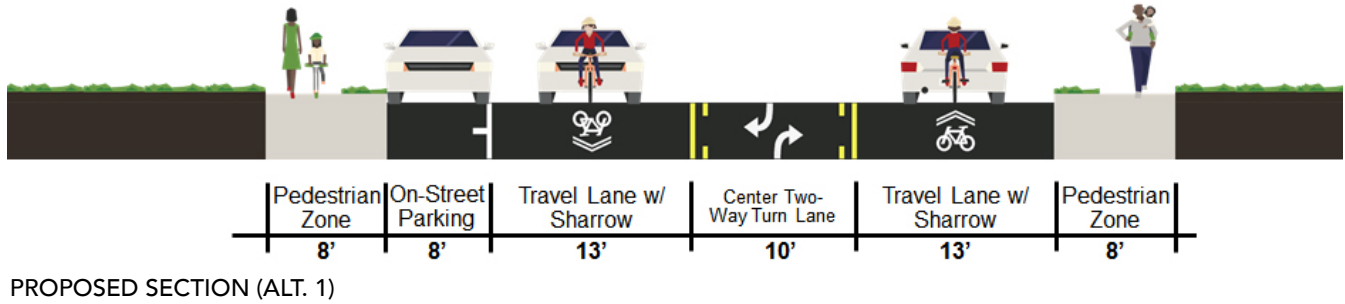
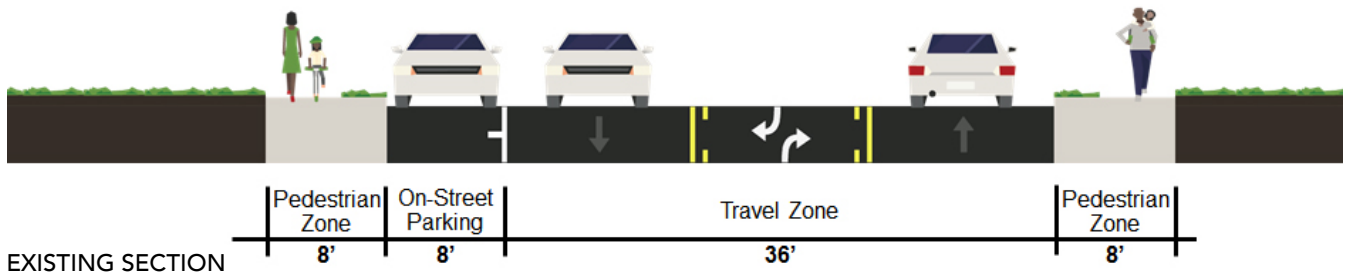
The proposed configuration:

- increases the pedestrian zone to 16' on both sides
- creates a new 11' landscape zone to buffer the adjacent traffic on both sides
- reduces the southbound travel zone 34'
- leaves the median the same width
- reduces the northbound travel zone to 24'

*BICYCLE*

Complete streets include accommodations for cyclists as well as vehicles and pedestrians. The Facilities Master Plan proposes bike lanes on College Avenue, Camden Avenue, and Dogwood Drive. Due to high travel speeds on US Route 13, the plan proposes a rail trail adjacent to the road instead of bicycle accommodations within the right-of-way.

This new section will decrease the crossing distance by 34 feet. For an average person walking at about 2.5 miles per hour, this would result in nine second decrease in crossing time, improving pedestrian safety and operational aspects of traffic signal timing. The enlarged landscape buffer area could incorporate stormwater filtration features and provide more tree canopy to help shade the lengths of sidewalk.



5.24 COLLEGE AVENUE

### *College Avenue*

On College Avenue, the overall right-of-way width is approximately 60'. The section varies between Camden Avenue and US Route 13; however, the center turn lane is required for access to the residential properties to the north.

Two potential street section configurations could improve multimodal access on College Ave.

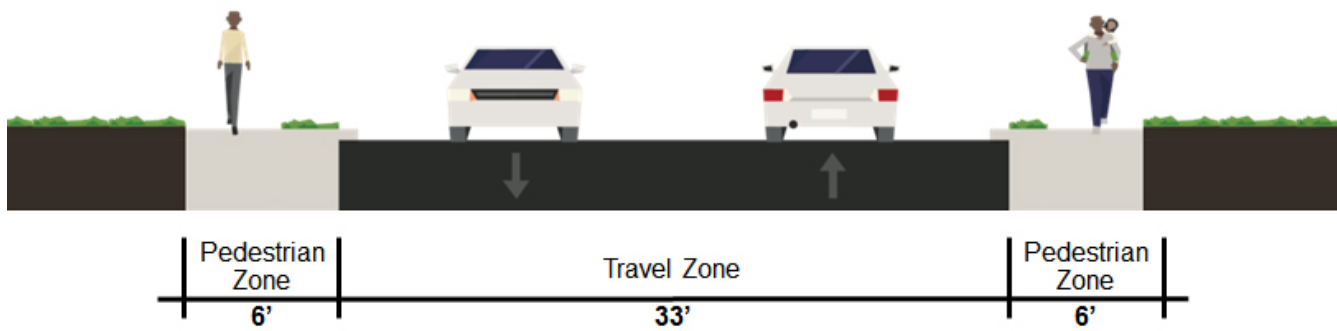
Alternative 1 would divide the right-of-way into:

- 5' sidewalks on the north and south sides within an 8' pedestrian zone
- 8' on-street parking spaces on the south side with bulb-out landscape areas at intersections and driveway entrances
- 13' shared bicycle and vehicular travel lanes with sharrows in each direction
- 10' center two-way left turn lane that turns into left turn lanes at intersections

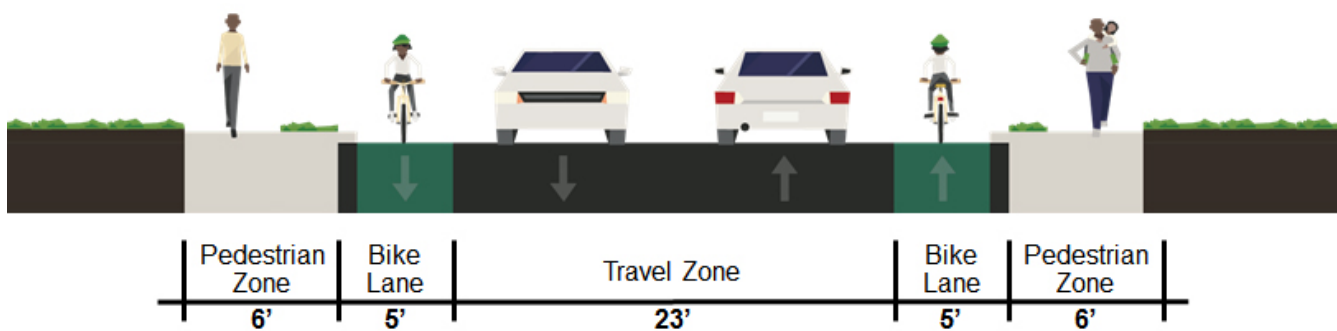
Alternative 2 would add an additional 5'-0" on the south side of the right-of-way (currently campus property) so that the existing right-of-way could be organized into:

- 5' sidewalks on the north and south sides within an 8' pedestrian zone
- 8' on-street parking spaces on the south side with bulb-out landscape areas at intersections and driveway entrances
- 6' dedicated bicycle lanes in each direction
- Three 10' lanes including the center turn lane, which turns into left turn lanes at intersections

The additional space on the campus property would provide for the added six-foot bike lanes. These wider bike lanes provide cyclists adequate distance from both the narrowed travel lane and car doors opening into the bike lane from on-street parking on the south side of the street. Landscape and tree plantings are needed on the campus side of the right-of-way as much of the existing canopy along the street is located on the non-University side.



EXISTING SECTION



PROPOSED SECTION

### 5.25 CAMDEN AVENUE

#### Camden Avenue

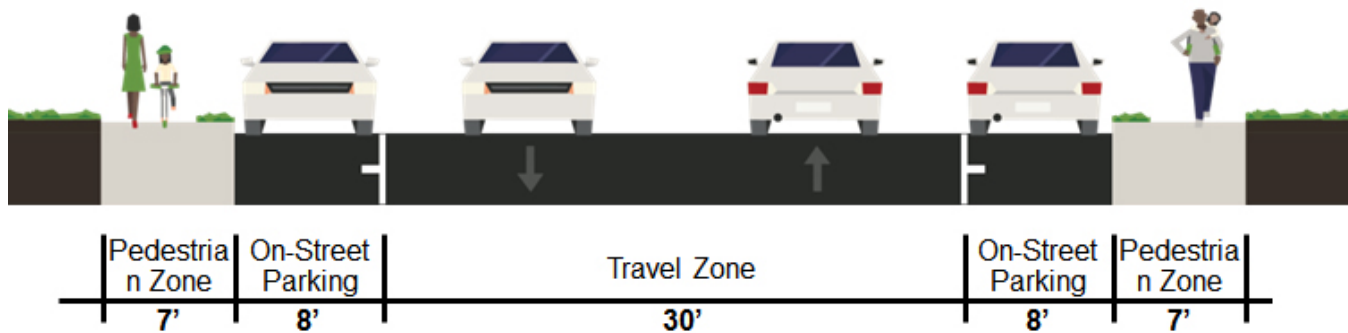
On Camden Avenue, the existing section includes 33' of travel zone from the back of curb to the back of curb. While the proposed section does not expand the pedestrian zone due to the significant landscape on either side of the sidewalk, it narrows the drive lanes to 11'-6" in each direction and creates 5' bike lanes in each direction. This would extend the City's existing bike facility north of campus and connect south to Dogwood Drive while also providing safe connections to the Main Campus. These interventions would supplement the addition of two raised pedestrian crosswalks along the Camden Avenue corridor to improve safety for all modes.

#### Dogwood Drive

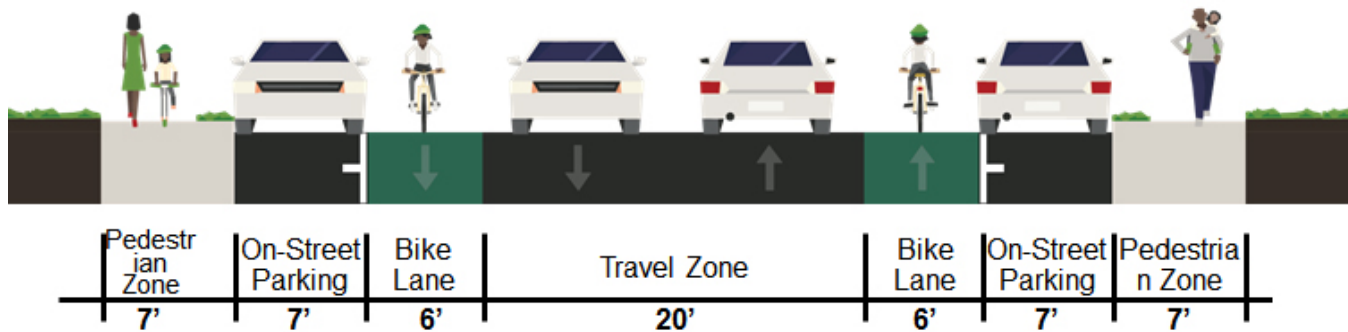
Similar to College Avenue, Dogwood Drive has an overall right-of-way width of approximately 60'. The existing section width varies between Camden Avenue and US Route 13, but currently has no center turn lane and would not require one in the future.

In the typical proposed condition with no turn lane, the section for Dogwood Drive would include:

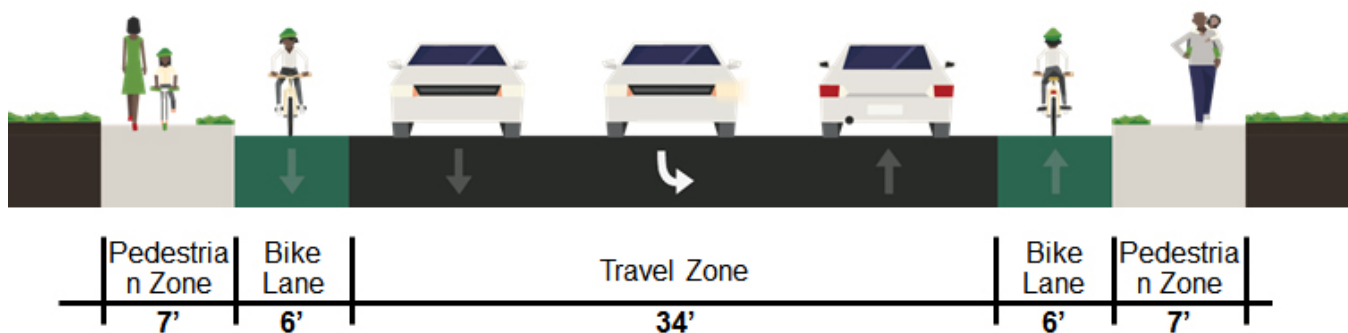
- 5' sidewalks on the north and south sides within a 7' pedestrian zone
- 7' on-street parking spaces on the north and south sides with bulb-out landscape areas at intersections, driveway entrances, and various



EXISTING SECTION



PROPOSED SECTION (TYPICAL)



PROPOSED SECTION AT INTERSECTION

5.26 DOGWOOD DRIVE

points along the corridor to provide shading

- 6' bicycle lanes in each direction
- 10' travel lanes in each direction

Six-foot bike lanes are proposed because of the narrower on-street parking lane and the narrower travel lanes. The bike lanes could be reduced to 5'-0" and the additional width could expand either the on-street parking or the travel lanes. However, the narrower travel lane and on-street parking would encourage slower speeds and improve the pedestrian comfort in the corridor.

While Dogwood Drive does not require a center two-way turn lane, it does require the existing right-turn only (turning southbound onto US 13) lane at the intersection of Dogwood Drive and US 13. The right turn only lane is required for existing and future volumes. For the 250 feet leading up to the Dogwood Drive and US Route 13 intersection from the west, the proposed section would drop the on-street parking and transition to:

- Two 5' sidewalks within a 7' pedestrian zone
- 6' bicycle lanes in each direction (cyclists could access the proposed Rail Trail using the proposed raised crosswalks)
- 11' right-turn-only lane (southbound on US 13)
- 12' through & left turn lane (eastbound to adjacent parking lot or northbound on US 13)
- 11' thru lane (westbound from US 13 onto Dogwood Drive)

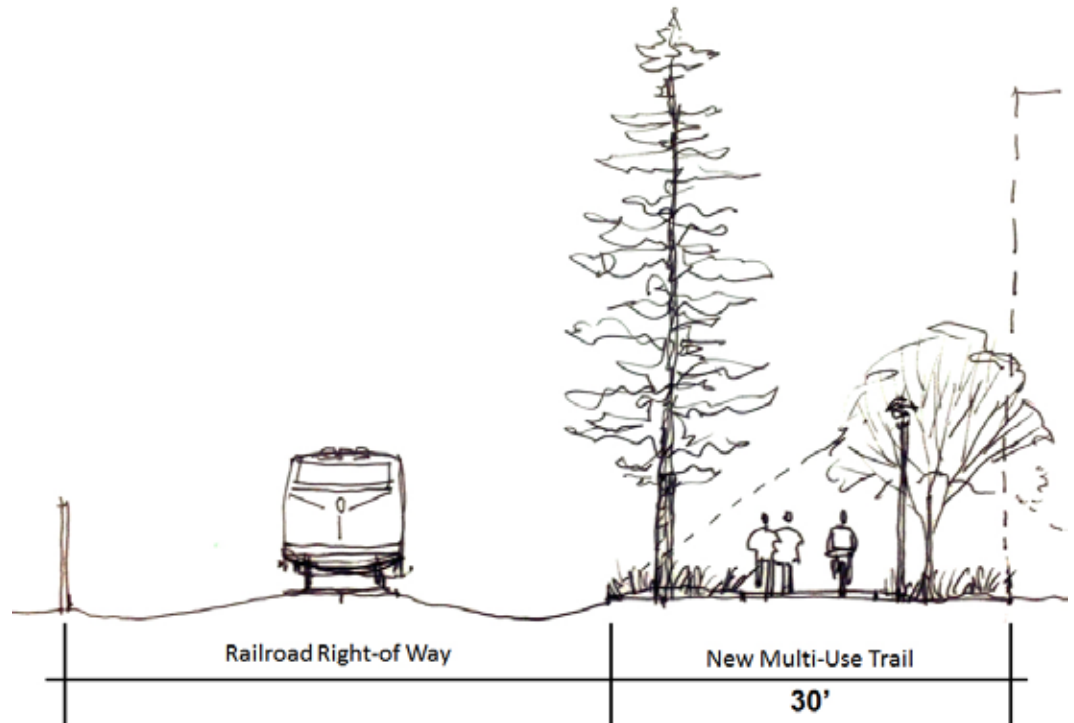
#### *Rail Trail*

Because of the traffic and speed conditions on US Route 13, bike lanes are not advisable. However, the city and county have been working towards creating a "rails-to-trails" network along the railroad to the east of US 13 that could provide an alternate bike route.

A narrow, 30' wide strip of campus property should be set aside to facilitate this rail-to-trail connection and could include evergreen plantings to buffer the rail line and a minimum 12' multi-use paved and well-lit path. This rail trail would connect much of the East Campus and could introduce users to other elements of the proposed master plan including landscape meadows, rain gardens, and athletic event spaces.

The focus of new bicycle circulation and access is on the adjacent campus streets and the rail trail traversing the east campus south to north. This peripheral focus is important because once a cyclist reaches campus, he or she should be directed to adequate bike parking facilities and dismount. This dismount zone should be signed and include the primary pedestrian zones of campus. The location of bike facilities and entrance points should also be coordinated with these pedestrian zones. Similarly, the proposed bike facilities on the adjacent campus streets should be coordinated with larger efforts by the City of Salisbury, bikeSBY, and County Trail systems.

5.27 RAIL TRAIL  
TYPICAL SECTION



*SHUTTLE*

While the existing shuttle system functions for the campus today, the Facilities Master Plan includes new residence halls, academic buildings, and new arts buildings that will increase the demand for parking and access. A more robust shuttle system could help to alleviate these transportation needs and could be implemented with other regional partners over time to help connect the University to the city and regional amenities. Planning a more efficient and comprehensive shuttle network will require in-depth knowledge of the campus and surrounding area's existing and future desired destinations, productive origins, and patterns of use. A separate transit study that includes site visits, projected growth of demand, and interviews with shuttle riders and operators is recommended to acquire sufficient data to improve the current shuttle system and coordinate the campus system with the regional county and city systems.

*PARKING*

Access to alternative means of transportation, location and density of housing for students, faculty, and staff, compact campus development, and access to safe walkable pathways all impact parking demand. With an integrated transportation plan, there may not be a direct relationship between increased enrollment and parking demand. As enrollment increases, the University will also need sites for new facilities. Main Campus surface parking areas are good candidates for new buildings to maintain a compact campus, preserve open space, and minimize impervious surfaces. If the University maintained the same ratios of parking spaces to students that exist today, they would need to add approximately 280 spaces in addition to replacing the spaces lost to construction. However, the Facilities Master Plan shows improved amenities for cyclists, pedestrians, and shuttle riders that will encourage fewer people to drive to campus. In



5.28 DOGWOOD PARKING LOT

In addition, more on campus housing is proposed, which should reduce the need for students to bring cars to campus. As a result, fewer new spaces would be needed.

The Facilities Master Plan sets aside two new parking garage sites on the Main Campus to accommodate the need for replacement parking and minimal new demand: (1) at the College Ave Parking Lot H north of Fulton Hall and (2) at the Dogwood Parking Lot D adjacent to the Guerrieri

University Center. The net result of lost parking due to redevelopment and new structured parking includes the potential capacity of approximately 150 more parking spaces on campus than exist today.

With more parking comes more complexity in the circulation patterns, the volumes of trips at the intersections surrounding campus, and the heavy loading/unloading during event days. The proposed parking plan adequately disperses the



5.29 SERVICE ACCESS THROUGH PEDESTRIAN PATHS AT SEAGULL SQUARE



large parking areas to help with potential volume and circulation issues, but moving towards an integrated parking/shuttle/event planning system would greatly benefit the University in the future.

#### *SERVICE ACCESS*

In addition to the existing service access points, new pedestrian paths should be designed with removable bollards so that they can also be used for student moving days and service and emergency access when needed.

#### *UTILITIES INFRASTRUCTURE*

##### *UTILITY CORRIDORS*

The proposed master plan buildings could efficiently be supported by the existing grid arrangement of utilities on perimeter streets and would require only minor modifications to piping mains. The proposed realignment of Bateman Street would necessitate some revisions to mains in that area.

##### *ELECTRICAL POWER*

Based on Delmarva Power's records of electrical demand on the existing 25kV loop system, the existing 25kV feeders are currently half loaded and can accommodate the projected loads for new buildings proposed in the Facilities Master Plan. The location of the following proposed buildings will create conflicts with existing West Campus Electrical Loops:

- New Addition Gallery & Fine Arts (Fulton Hall Addition)
- Maggs Gym East Addition
- Maggs Gym Southwest Addition
- New Dining Commons

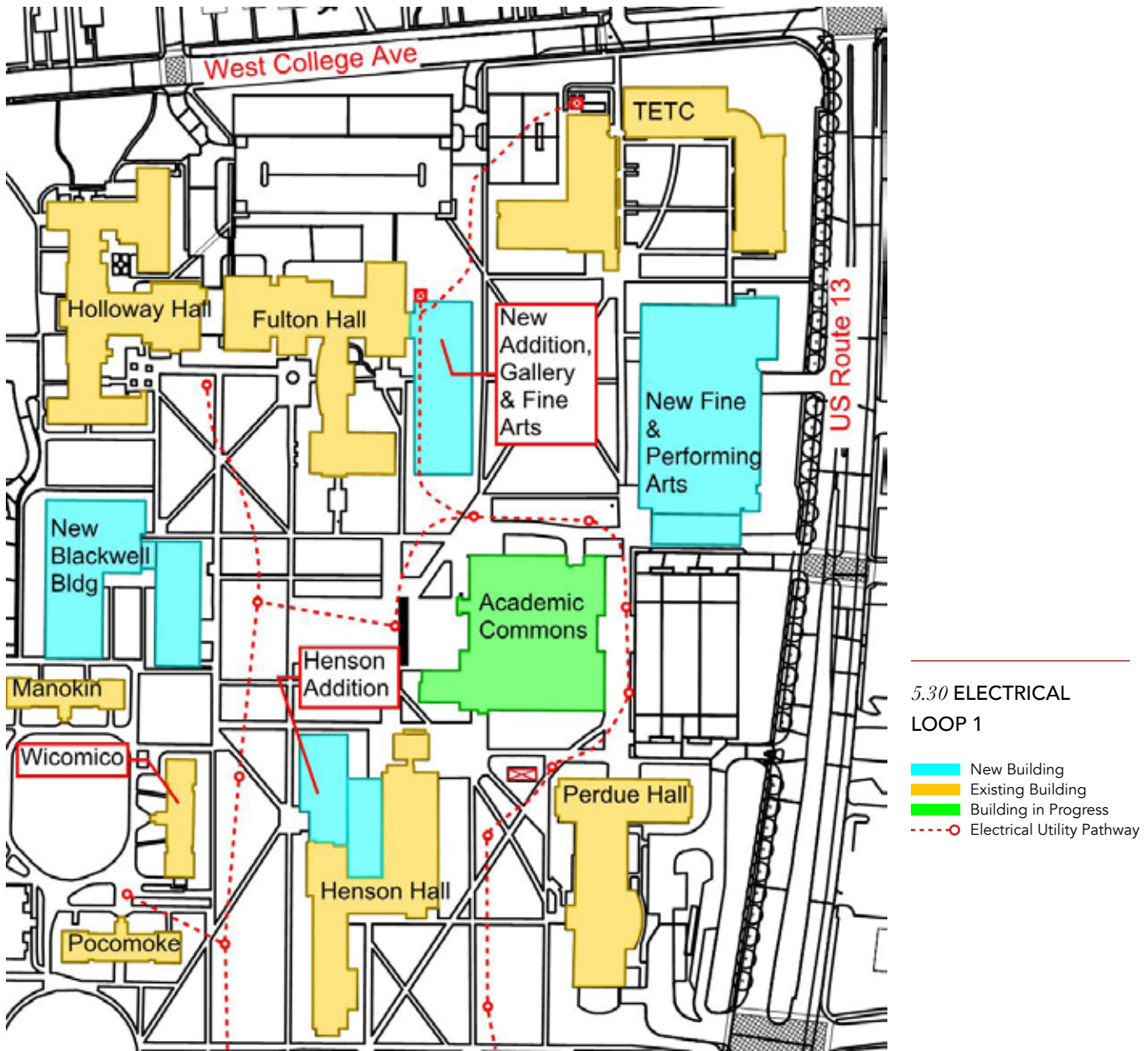
The duct banks will need to be rerouted around the areas of conflict.

The University's East Campus has individual secondary electric service from Delmarva Power to each of the individual buildings. The individual loads are somewhat smaller than on West Campus. Delmarva Power stated that they would prefer to keep providing secondary service on the East Campus due to the smaller electrical loads. Delmarva Power noted that changing to primary 25kV service on East Campus would be very expensive. Delmarva has adequate capacity to feed electrical power to the loads projected for the buildout of the plan.

##### *NATURAL GAS*

A natural gas building load summary evaluated existing natural gas demand and estimated potential future demand of proposed buildings. It is estimated that on-going and near-term projects will result in a 25% increase of peak gas demand to approximately 71,000 CFH. It is estimated that the full Facilities Master Plan will result in a peak gas demand increase to approximately 78,000 CFH.

Existing high pressure gas mains at the campus perimeter can accommodate the anticipated natural gas demand. Potential modifications to gas utilities will include installation branch piping to serve proposed buildings, and re-routing of existing piping that resides in the footprint of proposed buildings. As an example, the 2-inch natural gas branch piping serving Commons Building and Guerrieri University Center will require modification to accommodate the proposed addition to those buildings.



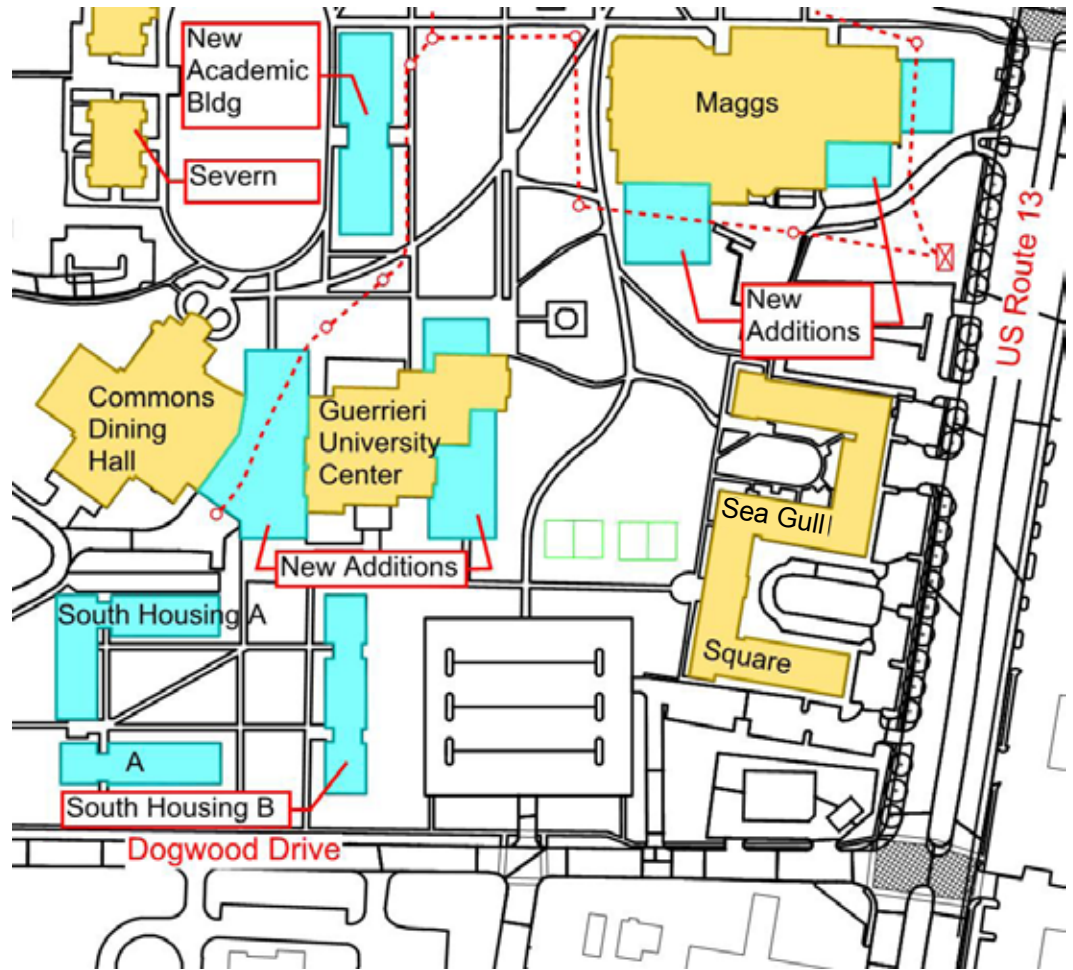
#### FUEL OIL

Modifications to underground fuel oil storage tanks to accommodate Facilities Master Plan projects will include the following:

- Removal and remediation of fuel oil tanks at buildings designated to be demolished (Chesapeake, Devilbiss and Blackwell)
- Relocate or replace fuel oil tanks that conflict with proposed building additions (Dining Commons and Guerrieri University Center)
- Supplement capacity of fuel oil storage as necessary to accommodate building expansion (possibly Henson Hall)

5.31 ELECTRICAL  
LOOP 2

- New Building
- Existing Building
- Building in Progress
- - - ○ Electrical Utility Pathway



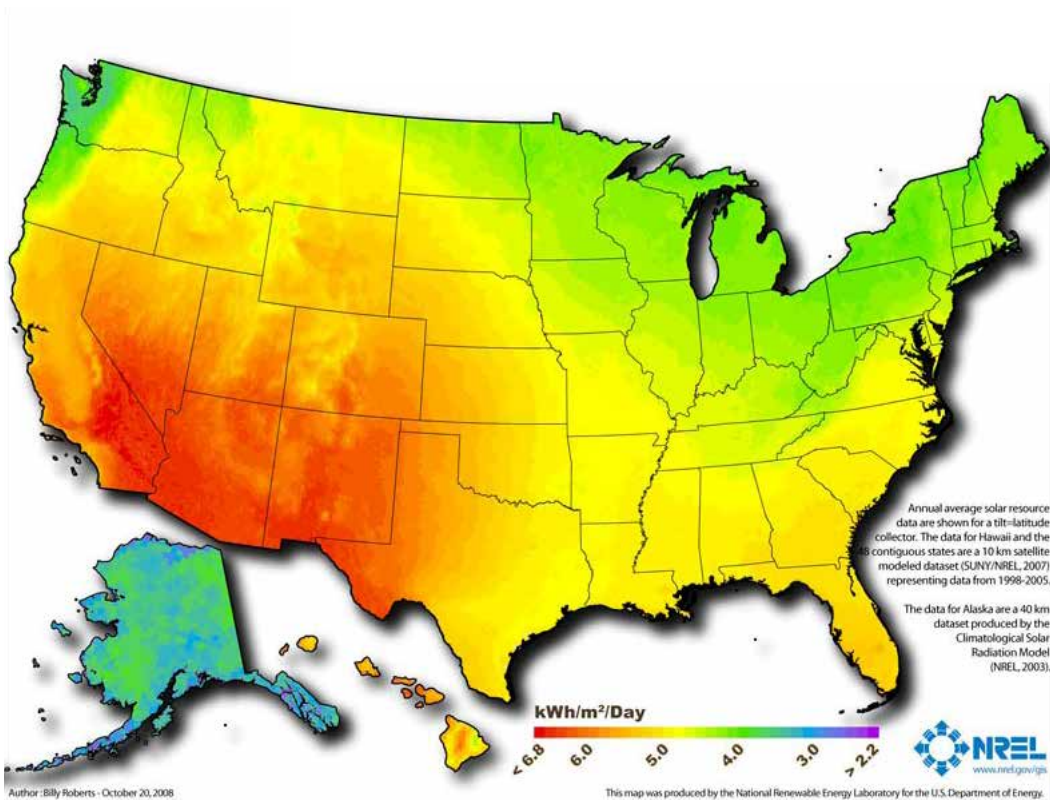
MECHANICAL SYSTEMS - CENTRAL PLANT  
CONSIDERATIONS

Salisbury campus buildings typically have dedicated in-building heating and cooling equipment. A few exceptions include the boilers in Fulton Hall that also serve Holloway Hall, and the chilled water system serving Guerrieri University Center and Commons Dining Hall. The following guiding principles should be considered for future master plan heating/cooling system design:

- Consider system design that operates at pressure below 15 PSI and 30 horsepower to mitigate requirements for additional personnel required under the Maryland

Stationary Engineers Act.

- Consider use of low temperature condensing boilers operating at low return water temperature to maximize efficiency.
- Consider use of innovative chiller technology to maximize efficiency (variable frequency controlled compressors, magnetic bearing compressors, and provisions for colder condensing temperatures, ect.)
- Minimize (optimize) differential temperature between supply and return water to minimize pumping energy.
- Minimize distribution losses and piping construction costs by utilizing “in-building” heating/cooling plants and/or regional



## 5.32 PHOTOVOLTAIC SOLAR RESOURCE

satellite central utilities plant (SCUP) with minimal underground piping required. As an example, a SCUP could be located in the proposed north west parking structure, or in the proposed Performing Arts Building, to serve cooling and/or heating water to the new construction at the north west portion of the campus. A similar regional SCUP could be located at the northeast section of campus to serve the proposed construction, or to supplement geothermal system capacity (refer to figure below).

- Consider implementation of geothermal heat pump systems where land area is available to accommodate wells.
- Consider implementation of renewable energy (solar thermal, photovoltaics, etc).

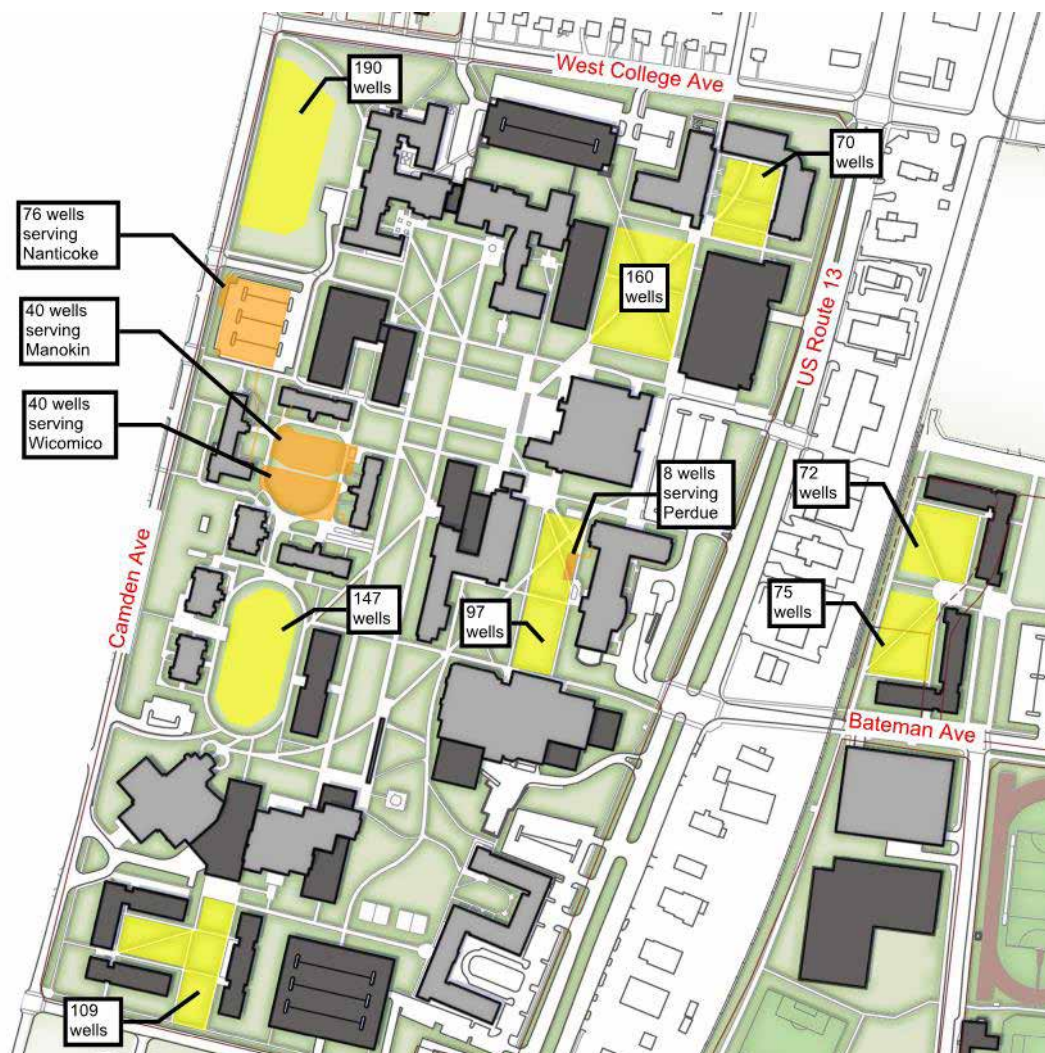
### POTENTIAL FOR RENEWABLE ENERGY SOURCES

#### Solar Energy

Typically, solar collector systems generate thermal energy used to heat domestic water or building heating water and/or for generate electricity (photovoltaic system). Residence hall buildings are good candidates for solar collection systems due to their relatively high domestic water demand. Salisbury University has recently installed a solar domestic water heating system at Nanticoke Hall. A number of recent studies for this type of application have indicated simple payback in the 10 – 15 year range. Incentives are available to improve economic viability of solar energy systems, including Solar Renewable Energy

5.33 POTENTIAL  
GEOTHERMAL WELL  
FIELD LOCATIONS

- Existing Well Fields
- Potential Well Field Sites



Certificates, Empower Maryland Utility Rebates, and MEA Commercial Clean Energy Grant. Solar photovoltaic systems provide an alternative to solar thermal heating systems. A solar-photovoltaic system includes collector panels in a location that receives the maximum amount of direct sunlight possible. The collectors provide DC electrical power to an inverter system that transforms the power to an AC voltage suitable for use by the building's electrical system. As

indicated in the graphic below, Salisbury has a "moderate" potential for solar photovoltaic implementation.

If solar collectors were to occupy 40% of the roof area of proposed Facilities Master Plan buildings (approximately 200,000 square feet of collector area), the University could avoid using approximately 2.8 million KWh per year and save approximately \$300,000 in electric utility cost.

Installed cost for systems totaling 200,000 square feet would typically be approximately \$8 million, resulting in a simple payback of approximately 27 years. Like solar thermal systems, the economic viability could be improved by pursuing rebates and incentives.

#### *Wind Energy*

The areas of Maryland that are estimated to have good-to-excellent wind resources include the barrier islands along the Atlantic Coast, the southeastern shore of Chesapeake Bay, and ridge crests in the portion of the state west of Cumberland.

Community scale wind development projects typically utilize wind turbines with hub heights of 50 to 60 meters above ground. Salisbury is located in an area considered as having poor wind resource potential. A wind energy project in the Salisbury area is unlikely to be economically viable and would likely serve only as an educational or demonstration project. However, the NREL documentation notes that wind resources at a micro level can vary significantly. As a result, a professional evaluation of the specific area of interest is recommended prior to initiating a wind energy project.

#### *Potential for Implementation of Geothermal Heat Pumps Systems*

Geothermal systems are ideally suited for housing applications due to their high energy efficiency, capability for providing individual zone level control, and ease of maintenance. Residential buildings exhibit relatively even heat and cooling load characteristics and low cooling loads as compared to other academic buildings. These characteristics are also favorable factors for geothermal implementation. Salisbury University has already successfully implemented geothermal projects in Nanticoke Hall, Wicomico Hall, and Manokin Hall. The Facilities Master Plan includes several new student housing projects on the East Campus and the current Dogwood Village site. It also includes provision for green space adjacent to proposed buildings that could accommodate geothermal well fields.