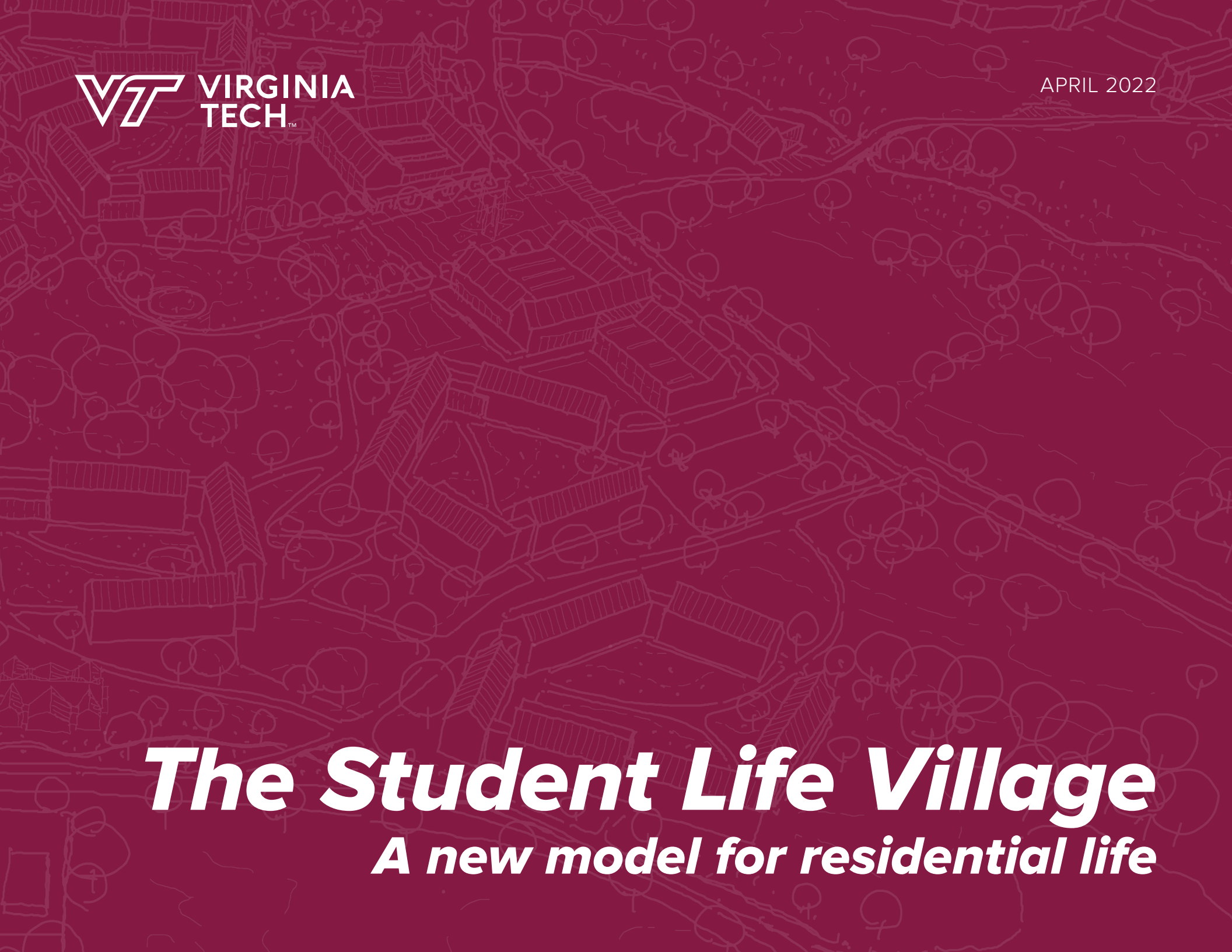
VIRGINIA TECH™

APRIL 2022



The Student Life Village

A new model for residential life

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01

Introduction

STRATEGIC FRAMING

The Student Life Village is a 5000-bed residential district conceived of as an affordable solution to enable Virginia Tech to advance broader institutional goals.

01 *Thriving*

The Student Life Village (Village) Master Plan ensures Virginia Tech is positioned with a long-term strategy to expand and enhance on-campus residential living to be competitive and prosper well into the 21st century. The Village will crease new housing inventory and meet growing demands for affordable on-campus living-learning programs as well as offer the flexibility to refurbish and modernize existing legacy on-campus residential facilities.

Keeping it on campus

On-campus housing is a critical part of the VT experience. Living on campus catalyzes the formation of a thriving student community, especially in the first-year, but opportunities to stay on-campus should be available to students at any point in their educational career. On-campus housing allows the university to integrate residential life with other academic and social missions in “living-learning communities.” It enables students to thrive by giving students close proximity to campus amenities, social life and support resources.

Staging

The Student Life Village will be implemented in phases to ensure residential operations may grow at a pace to appropriately support the new infrastructure. A phased approach will ensure the university's financial resource may be invested strategically while building revenue to stimulate future development. As the campus' total housing inventory increases, space will be freed up to pursue renovations on legacy housing stock.

02 Affordability

The Student Life Village must be a cost-effective initiative for the university, and it must be a cost-effective choice for students. Affordability is a key principle and core consideration in every planning decision and explains many of the strategies adopted by the Village plan. The location is intentional to allow for design and construction methods that focus on 40-year life products with flexibility and optionality to replace and renew economically in the future.

Design

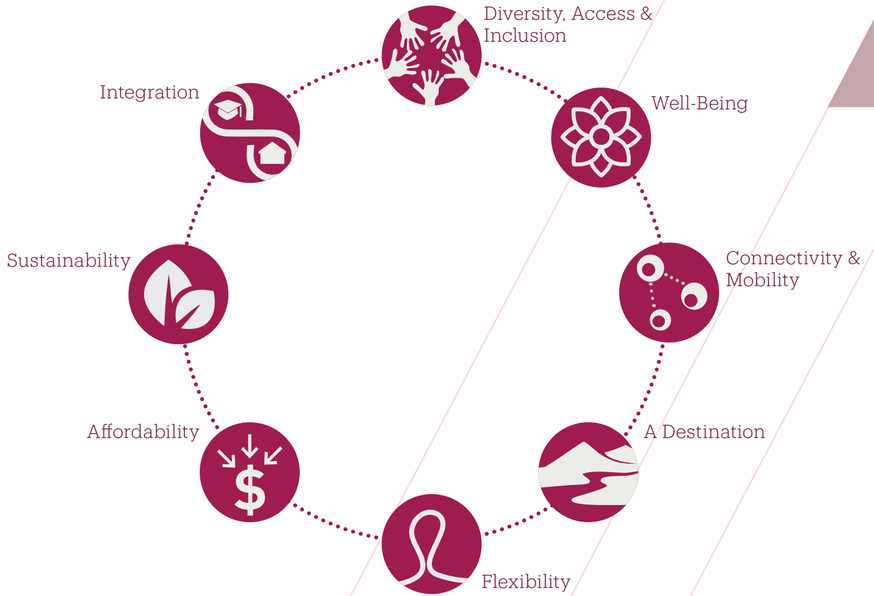
Virginia Tech has a long-standing tradition of pairing locally quarried dolomitic limestone, affectionately known as “Hokie Stone”, with collegiate Gothic architecture. This pairing has been codified in the Campus Design Principles, and applies to all buildings in the core of campus. However, this cladding, and its structural armature, are large, long-term investments, not in keeping with the vision of the Student Life Village as an affordable and 40-year lifespan, consumable residential product. To meet the challenge of affordability, the Student Life Village will adopt simple architectural forms that can be constructed using low-cost construction techniques like stick-built framing.

03 Distinctiveness

The land bank formed by the Virginia Tech Golf Course and the Special Purpose Housing at Oak Lane, a small residential district reaching the end of its useful life-cycle, was selected for striking a balance between proximity to the core campus and visual distinctiveness from it. This land bank is large enough to sustainably and comfortably accommodate 5000 beds of residential development. Site development and mobility infrastructure decisions all occurred in the context of the core tension between needing the Student Life Village to be close to core campus for connectivity and integration goals, but being unable to construct Hokie Stone collegiate Gothic buildings as an affordable and consumable residential product. This meant the Student Life Village would have to fall outside of a “demarcation line”, a boundary that separates the Gothic core from other districts of the campus that have complementary, yet distinct architectural character.

04 *Principles*

While affordability and distinctiveness pose challenges for the planning of the Student Life Village, they create unique opportunities. The planning of the Student Life Village follows 8 principles which are discussed in detail in chapter 2:



05 *Advancing Student Life*

The Student Life Village is a strategic initiative that enables a number of other student life goals to be realized within a broader campus context. It will become part of a complete community that includes existing on-campus housing and amenities.

Enrichment and Amenities

The Student Life Village will augment Virginia Tech's high-quality student life offerings with a well-being themed residential district that provides amenities, public spaces and living-learning programs to attract and enrich both on and off-campus students.

Student Retention

The Student Life Village will create better connectivity to the curricular, extracurricular and social activities of the campus beyond the first year by providing affordable on-campus housing options appropriate to the needs of upper division students.

The Student Life Village Planning Report is a vision for a new model of on-campus housing at Virginia Tech's Blacksburg campus. It provides an actionable guide intended to be used by Virginia Tech stakeholders, consultants and contractors as they advance the design and implementation of this development project. This report documents the decisions, ideas and opportunities identified during an eight-month-long planning process that engaged Virginia Tech's staff, faculty and student communities.

This report is both descriptive, informing the reader of knowledge gathered and decisions made during the planning process, as well as aspirational, identifying opportunities for future study. It is not a construction document, but a guide to coordinate future design, engineering, construction and implementation activities.

PLANNING GOAL

To collaboratively produce an actionable plan that campus stakeholders can use to imagine and implement the development of a new on-campus student community.

THE PLANNING PROCESS

The Student Life Village planning process was divided into three phases. Each phase included work sessions with three different Virginia Tech advisory groups consisting of interdisciplinary leaders from across the university.

PHASES

AUGUST 2021 – OCTOBER 2021

PHASE 1: DISCOVERY

During the discovery phase, the planning team analyzed the existing conditions of the study area, including topography, infrastructure, ecology and climate and collaborated with the advisory groups to identify critical aspirations for the project.

NOVEMBER 2021 – JANUARY 2022

PHASE 2: CONCEPT ALTERNATIVES

During the concept alternatives phase, the planning team prepared several concepts to stimulate a conversation around the spatial and land-use planning issues of the site. From these conversations, priorities were identified, conflicts resolved and pros and cons weighed to arrive at an advanced concept.

FEBRUARY 2022 – MARCH 2022

PHASE 3: DEVELOPMENT & DOCUMENTATION

During the development and documentation phase, the planning team produced this planning report and presented it to the advisory groups for iterative feedback and refinement before final submission and presentation.

WORK SESSIONS

1 KICKOFF

The consultant team met with each advisory group to identify key project goals and constraints.

2 FINDINGS

The consultant team presented analysis on the planning site, creating a guide and set of strategies to inform the planning process.

3 THE CHARRETTE

The consultant team met with the advisory groups in a two-day charrette to review four concept alternatives. The conversations surrounding the concept alternatives informed the development of an advanced concept.

4 ADVANCED CONCEPT

The advanced concept defined the land-use and spatial plan for the Village with considerations about program, buildings, landscape design and operations. The advanced concept was presented to the advisory groups before the documentation phase.

5 FEEDBACK

The consultant team met with the advisory groups to solicit feedback on the draft planning report.

6 FINAL PRESENTATION

The consultant team presented the final planning report to the advisory groups and other members of the Virginia Tech community before final submission.

ADVISORY GROUPS

EXECUTIVE LEADERSHIP GROUP

Consisting of institution-wide leadership, the Executive Leadership Group connected broader strategic goals of the institution with the goals and vision for the Student Life Village project.

LEADERSHIP GROUP

Consisting of department leaders, all members of the Leadership Group were also coordinators of Technical Advisory Groups. The Leadership Group consulted on strategies to enable the Village to meet the goals of the institution within parameters of budget, site, institutional resources and infrastructure.

TECHNICAL ADVISORY GROUPS

Consisting of a broad cross section of Virginia Tech staff with interdisciplinary expertise and first-hand experience of the technical and operational components of VT's on-campus student housing and infrastructural systems, the Technical Advisory Groups consulted on how to actualize the strategies set forth by the Leadership Groups. The Technical Advisory Group was further subdivided into 6 disciplinary groups:

BUSINESS AND FINANCE

Consulted on issues of financing and phasing the project.

PROGRAMMING AND STUDENT LIFE

Consulted on the specific activities, facilities and features of housing and student life amenities.

BLUE-GREEN INFRASTRUCTURE

Consulted on green spaces, stormwater and recreation.

ENERGY

Consulted on thermal energy delivery and electrical systems.

MOBILITY AND ACCESSIBILITY

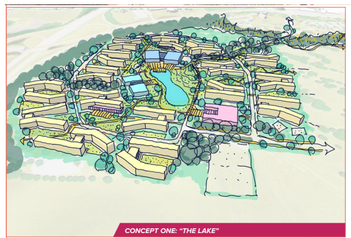
Consulted on pedestrian and vehicular mobility and accessibility of grounds and facilities.

CONSTRUCTION AND TECHNOLOGY

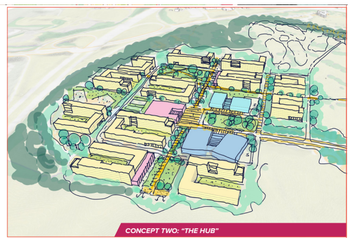
Consulted on construction techniques, implementation strategies and information infrastructure.

THE STUDENT LIFE VILLAGE CHARRETTE

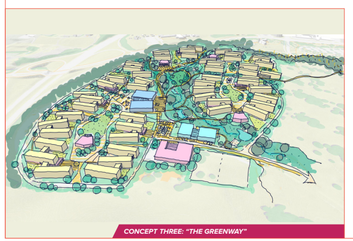
The Student Life Village Charrette was a two-day event held on October 28-29, 2021 that engaged all advisory groups as well as other Virginia Tech students, faculty and staff in a collaborative and interdisciplinary discussion surrounding four concept alternatives for the future Student Life Village.



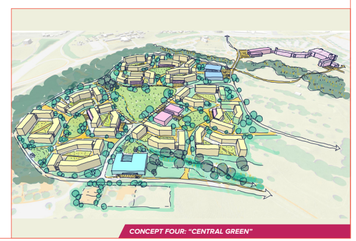
CONCEPT ONE: "THE LAKE"



CONCEPT TWO: "THE HUB"



CONCEPT THREE: "THE GREENWAY"



CONCEPT FOUR: "CENTRAL GREEN"

DAY ONE: CONCEPT ALTERNATIVES

On day one, the advisory groups gathered to review the four concept alternatives prepared by the consultant team. The concept alternatives each demonstrated a different set of priorities and variables. The participants were mixed into four interdisciplinary and interdepartmental groups and rotated between each of the four concepts in stations. The discussion at each station helped the participants identify, prioritize and visualize trade-offs between different Village goals and pre-existing constraints.

MORNING OF DAY TWO: SYNTHESIS

On the morning of day two, the consultant team synthesized the feedback and priorities identified in day one and distilled a single concept that addressed five key principles:

1. Keeping the Village connected to the academic core via an accessible route that is as expedient as possible within site constraints.
2. Creating a centralized hub of amenity functions that is easily accessible to non-Village residents.
3. Creating a centralized green space that preserves existing landscape character, heritage trees and views for enjoyment by the entire Village.
4. Locating dining facilities such that they function both as a destination for non-Village residents and are positioned on the accessible route to and from core campus.
5. Phasing the Village such that each phase is buffered from the next by green space and that at least 3000 beds are constructed before any existing Oak Lane residences are demolished.

AFTERNOON OF DAY TWO: SYNTHESIZED CONCEPT

On the afternoon of day two, the consultant team presented the synthesized concept to the advisory groups. Each of the six disciplinary Technical Advisory Groups met to review the synthesized concept. The comments made on the synthesized concept were used to refine the plan over the following month.

INTEGRATION WITH "BEYOND BOUNDARIES 2047"

This planning document integrates with, and in some cases supersedes, plans outlined in the 2018 Campus Plan entitled "Beyond Boundaries 2047." This was Virginia Tech's most current campus plan at the time of publication and reflects a number of strategies which are adopted or modified in the Student Life Village Plan.

THE WESTERN PERIMETER ROAD

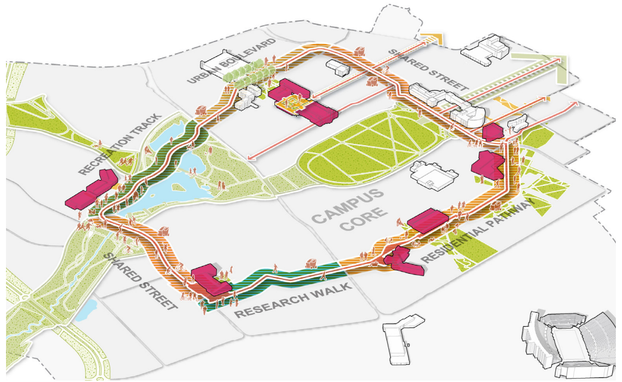
The Western Perimeter Road was proposed in the 2018 Campus Plan to better connect traffic exiting highway 460 on Prices Fork Road and Southgate Drive to the commuter parking lots on the west edge of campus and divert traffic from West Campus Drive and Duck Pond Drive. The Student Life Village plans for an alternative traffic configuration.

21ST CENTURY LIVING-LEARNING DISTRICT

The 21st century living-learning district was a proposed residential district in close proximity to the core of campus, following established campus design principles. The Student Life Village Plan tables this proposal and addresses many similar goals for living-learning and well-being in on-campus residential life.

LIVING-LEARNING FOR THE GLOBAL BUSINESS AND ANALYTICS COMPLEX (GBAC)

Housing previously proposed for the living-learning component of GBAC will now be directly integrated into phase I of Village construction alongside other living-learning programs and enrichment amenities.



THE INFINITE LOOP

The Student Life Village will benefit from increased connectivity, accessibility and recreational amenities introduced by the Infinite Loop project. While not directly on the loop itself, the Village plan includes paths which will connect to the loop.

MULTI-MODAL TRANSIT FACILITY (MMTF)

The Student Life Village's residents will introduce a large demand for public transit to and from core campus. The completion of a proposed Multi-modal Transit Facility (MMTF) in the north academic district will be critical for handling the increased volume of transit.

THE PERRY STREET EXTENSION

The Student Life Village plan relies on the completion of the Perry Street extension, a spur road linking the north academic district's Perry Street with Duck Pond Drive and Oak Lane in a way that bypasses flood hazard areas. Existing roadways will be insufficient to support the bus traffic from the Village to the Multi-Modal Transit Facility (MMTF) on North Campus, a critical component of the Village's mobility goals.

THE AGRICULTURAL BELT

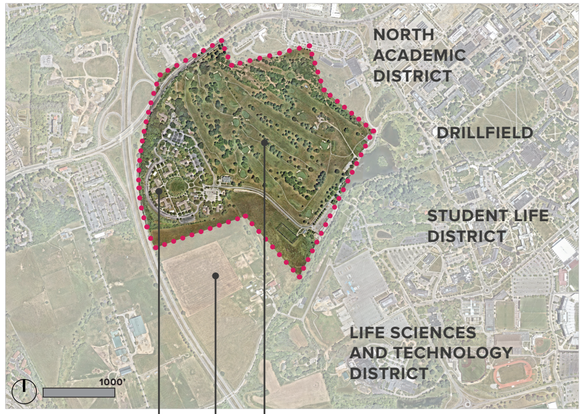
In the 2018 Campus Plan, an agricultural belt was identified, in concert with the Western Perimeter Road, as a westward development boundary for the core campus to preserve the agricultural legacy and rural character of the VT campus. The Student Life Village maintains the Agricultural Belt to the south of the project site, but does utilize the portion of agricultural land identified to the northeast of existing Oak Lane.

THE CENTRAL SPINE

The 2018 Campus Plan identified the Stroubles Creek corridor as a high priority for conservation while recognizing the need for connectivity to future research districts west of Highway 460. Likewise, the meadows west of The Inn at Virginia Tech were slated for conservation as a drainage corridor and unique landscape on campus while providing a northward connection across Prices Fork to the future Glade Road District. Both initiatives remain possible within the land-use framework of the Student Life Village and will benefit its strategic goals.

PLANNING STUDY AREA

The planning study area includes Virginia Tech's existing 600-bed Oak Lane community and the 9-hole Virginia Tech Golf Course.



VIRGINIA TECH GOLF COURSE

AGRICULTURAL LAND

SPECIAL PURPOSE HOUSING (THE OAK LANE COMMUNITY)

SITE SELECTION

The planning study area was selected in response to four core criteria for development:

CAPACITY

The area is large enough to support the facilities and infrastructure necessary for a 5000-bed community at a scale consistent with its surroundings.

PROXIMITY

The area is near the north academic core of campus and maintains additional proximity to the life sciences and technology district and south campus student life district.

POTENTIAL

The site's current residential offerings are approaching the end of their useful life cycle, providing an opportunity to increase the development potential of this site. The golf course has long been identified as a land bank for campus development, including in the 2018 Campus Plan.

DEVELOPABILITY

The land is lightly developed with no large obstructions to development. No major topographical, hydrological or geotechnical problems are currently known. Existing housing will be reaching the end of its lifespan in sync with new construction proposed in this plan.

PLAN SUMMARY

The Virginia Tech Student Life Village Planning Report establishes a vision for a vibrant and diverse residential district. Envisioned as a new model for living and learning, the Student Life Village features the amenities and services necessary to support a population of 5000 students including **dining, enrichment and well-being** facilities (indoor and outdoor) that act as a **destination** for the entire Virginia Tech community.

The plan is the result of an interdisciplinary process that balanced a variety of needs. Dominant in shaping the plan was a commitment to **accessible pathways** and respect for existing topography and **iconic landscapes**. The development is at a scale similar to the core campus, with quads and other **gathering spaces** which organize social life and community structure. The plan takes cues from the local landscape that result in a unique and organic layout. Maintaining existing drainage patterns, high-value heritage trees and areas of rugged topography free from development begins to carve out the shape of development.

The Student Life Village is conceived of as an integral part of the Virginia Tech campus, augmenting its student life and enrichment programs. Within the campus it will be a distinct district with new opportunities to innovate in well-being, living-learning experiences, building technology, and sustainability. Ultimately this report outlines **a new model for residential life** that remains true to the **Hokie Spirit.**

PHASING SUMMARY

The Student Life Village requires significant capital investment that cannot be completed in a single phase of work. Implementation of the Village, therefore, is proposed to fall in three phases. Each phase builds a revenue source for investing in future phases. Phase boundaries should be revisited to respond to the availability of resources in the design and implementation process.

PHASE I

- 1752 BEDS IN 4 RESIDENTIAL QUADS
- PHASE I DINING
- WELL-BEING AND ENRICHMENT WING
- VOLLEYBALL ARENA
- INTERFAITH CHAPEL
- TRANSIT PLAZA
- VILLAGE TRAIL
- ECOLOGICAL BUFFER REFORESTATION

PHASE II

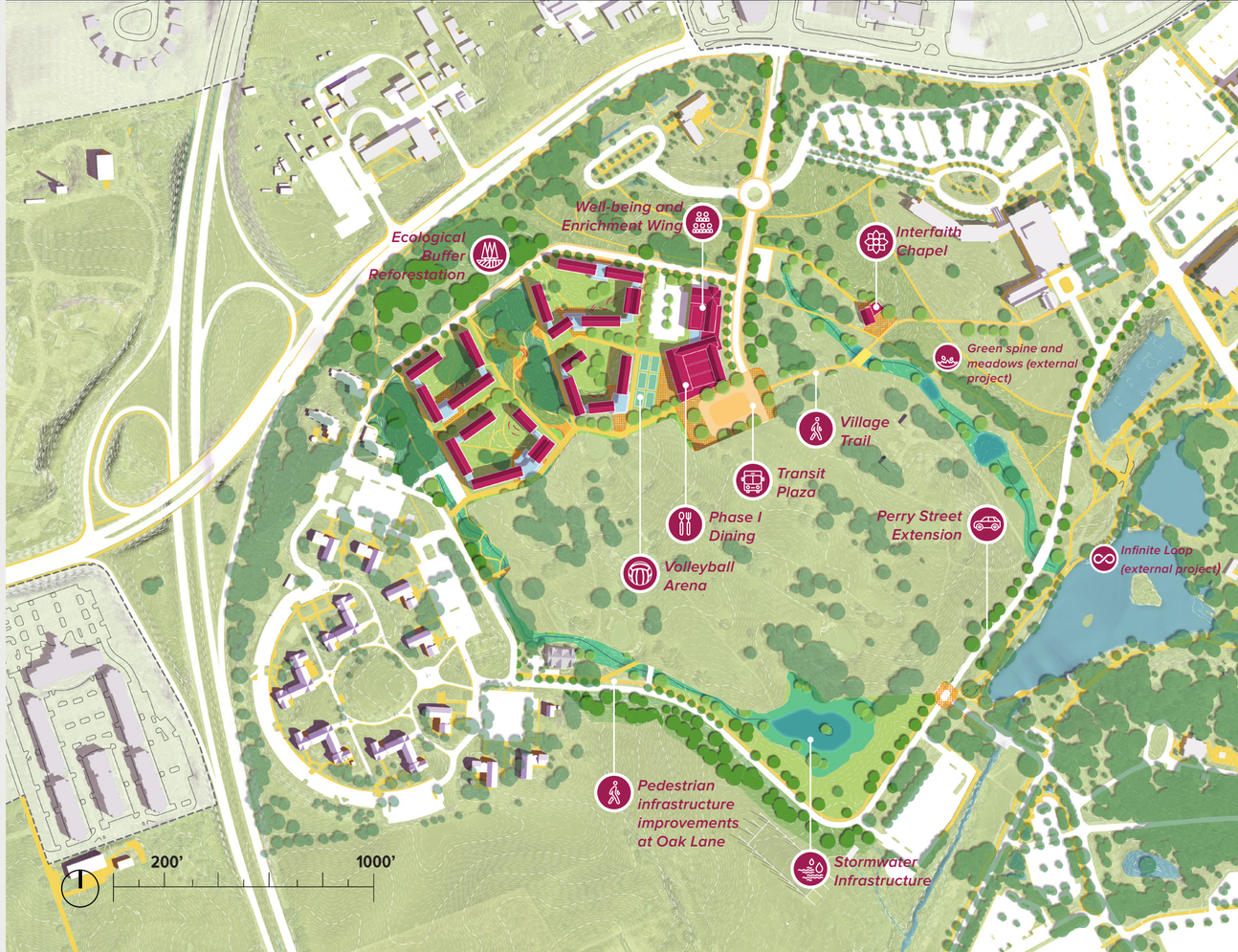
- 1384 BEDS IN 3 RESIDENTIAL QUADS
- STUDENT LIFE COMMONS
- REC COURTS AND FIELDS
- CENTRAL GREEN
- OPERATIONS CENTER

PHASE III

- 1864 BEDS IN 4 RESIDENTIAL QUADS
- PHASE III DINING
- TRANSIT PLAZA
- ECOLOGICAL BUFFER RESTORATION

PHASE I

To minimize infrastructure burden, phase I uses the existing Oak Lane loop and a new connection to Prices Fork Road to provide two means of ingress. Critical pedestrian connectivity is established with the construction of the Village Trail. Dining, well-being and enrichment programs are introduced with Phase I Dining found north of the Transit Plaza which will act as a hub for transit connections. The dining facility will also benefit existing Oak Lane residents. The plan recommends constructing above-ground stormwater infrastructure, in full, as part of phase I.



PHASE II

Phase II adds an additional 1384 beds in 3 quads. The Gateway to the Village is completed with the construction of the Student Life Commons, a well-being, recreation and enrichment building south of the Transit Plaza. In this phase the central green is completed adding the southern portion to the Village Trail at this location.

PHASE III

Phase III adds an additional 1864 beds in 4 quads by redeveloping the existing Oak Lane Community, for a net increase of approximately 1200 beds. A smaller satellite dining facility and plaza anchor this final phase. Additional ecological buffer restoration should occur following demolition of parking and housing in the buffer zone.

02

Planning Principles

HOKIE SPIRIT

The Student Life Village will represent a unique take on the Virginia Tech identity, embedding Hokie Spirit in its planning and design.

Landscape Experience

The Hokie landscape experience is characterized by a nested hierarchy of open spaces, each of which connects to a different scale of campus life. The Student Life Village is likewise structured as a carefully orchestrated series of walkable, accessible open space experiences, from a central green, corollary to the core campus' Drillfield; to vibrant neighborhood greens, crossroads of daily residential life; and intimate quadrangles nestled between buildings. Like the core campus, the Student Life Village creates an experience of bucolic landscapes, near and far, which reaffirm Virginia Tech's identity as a land-grant university embedded in agricultural and rural heritage. Whether catching glimpses of the distant hills framed by gabled roofs, or meandering through groves of trees up to three-centuries old, the Village will have a rich sense of place empowered by its respect for the landscape.

Hokie Stone

Hokie Stone is a material not only symbolic of Virginia Tech's architectural identity, but its connection to the local mountain landscape, the literal bedrock upon which this community is built. Driven by an imperative for an affordable and short-term housing investment, the Student Life Village's buildings will not use Hokie Stone as a cladding, but will continue to evoke this material's connection to the landscape through strategic use in site walls and furnishings emerging from the rolling hills. The selective use of Hokie Stone in the landscape will ensure this venerable character-defining material provides a visual connection to campus, and reflects the importance of the land.

Place-Making

The Village will include design features and elements that reflect the character and image of the Virginia Tech campus, beginning with its human scaled, 4-story buildings organized into quadrangles. With gabled-roofs and subtle shifts of elevation that follow the natural topography, these buildings will have a familiar residential form and intimate scale that still enables a pedestrian-friendly and accessible district. Responding to the native topography, buildings take on an organic layout that creates nooks and nodes of complexity out of simple forms. Even with different materiality, this scale and massing of the Village will feel very much like that of the core campus. That connection will be augmented by use of Virginia Tech standards like banners, signage and wayfinding, light fixtures, street furnishings and plant selections, while leaving open opportunities for the student community to create and express their own identities.

Diversity, Access and Inclusion

Virginia Tech is committed to ensuring all students have access to the spaces and infrastructure they need to thrive in their academic career, regardless of gender identity, orientation, ethnicity, race, age, physical abilities, socioeconomic background or national origin. Further, the Student Life Village embraces the principle of inclusivity, meaning spaces support a diversity of identities without stigmatizing or disadvantaging individuals or groups. In the spatial planning of the Village, Diversity, Access and Inclusion means:

- Primary routes of pedestrian circulation occur at grades less than 5% so that everyone can access the Village's buildings and amenities via the same pathways.
- Primary building entrances are located along accessible routes so that everyone can participate in the same shared entry experience.
- A high proportion of housing units are single-occupancy, providing opportunities to accommodate diverse medical and mobility needs without stigma as well as encourage upper-division student retention and multi-generational living-learning programs.
- Flexible spaces are provided in each residential building for identity and affinity groups to create, collaborate and express themselves as they see fit.
- A diversity of unit types is provided within shared quads and neighborhoods to suit a wide spectrum of housing needs and price-points.
- Housing blocks and bathrooms are gender inclusive.
- Shared public spaces and the single "Gateway" to the Village spatially reinforce a sense of belonging to the same community. These spaces are designed to promote spontaneous encounters between students.
- An interfaith chapel provides a technology-free space for diverse spiritual, meaning-making and religious expressions.

Well-Being

Virginia Tech's Well-Being Initiatives are based on the five-dimensions of well-being: career, social, financial, physical and community. They emphasize a holistic approach that includes mental health, physical fitness, spiritual and identity expression, physical health, nutrition, financial stability, social support and emotional wellness.

Indoor and outdoor spaces are designed to diversify Virginia Tech's well-being facilities. Outdoor spaces support a spectrum of activities from team sports to personal reflection. Indoor well-being spaces are intended to maximize flexibility and accommodate a range of well-being practices like group fitness, meditation, art therapy or new practices as they emerge. The technology free zone at the Interfaith chapel and surrounding landscape provides students an opportunity to unplug and practice mindfulness on a daily basis.

Well-Being is embraced by the spatial design of the Village through measures like:

- Ecological buffer spaces to reduce traffic noise, promote better sleep and improve air quality.
- An emphasis on walking, cycling and personal mobility infrastructure encourages healthy mobility choices and reduces noise, air and light pollution from single occupancy vehicles.
- An engaging pedestrian network including parks, amenity buildings and a number of "stepping stone" landmarks that make active mobility journeys pleasant and more mindful.
- Hubs and gateways which funnel Village residents together in shared gathering spaces to promote spontaneous encounters and allow neighbors to support each-other.
- Shared residential bathroom clusters, communal kitchens and student lounges which give communities causal means of checking in on their neighbors' emotional and physical health.
- Buffers between phases of work that mitigate exposure of Village residents to air and noise pollution from future construction activities.

Connectivity & Mobility

Village residents need to be well connected to academic and amenity destinations outside the Village. Additionally, non-residents will need connectivity into the Village to join the Village residents in the use of new dining, well-being and recreational amenities and programs. The Student Life Village will be located outside the historic core of the Virginia Tech campus. This will create a high number of trips between the Village and core campus destinations every day. Virginia Tech's commitment to a safe, healthy and climate-conscious transportation system means a reduction in reliance on single occupancy vehicles for daily mobility needs.

To prioritize personal mobility choices like cycling, walking, and e-mobility, while maximizing connectivity to the core campus, is necessary to make paths as expedient as possible and structure the Village in a way that prevents students from making redundant trips or "back-tracking" during their daily routine. The Gateway to the Village which contains dining, well-being and enrichment spaces is strategically located to be on-the-way for students going to, or returning from, the core campus. Breaking the pedestrian mobility journey up with a series of destinations like these also reduces the perception of distance. The paths of travel will be as flat and straight as possible within existing site constraints.

Transit mobility will be promoted with express bus routes planned directly from the Village to the Multi-Modal Transit Facility (MMTF) in the North Academic District. Transit stops are also strategically located to correspond with dining and well-being destinations that attract non-residents.

As the use of virtual learning technology expands, connectivity also means digital connectivity. The Village will provide indoor and outdoor Wi-Fi access and flexible use learning spaces to enable learning to happen anywhere and anytime.

A Destination

The Student Life Village will be an entirely new residential district for the Virginia Tech campus with dining, well-being, recreation, event and learning spaces open to the entire Virginia Tech community. As a destination, the Village will encourage diverse encounters between on-campus and off-campus students, faculty and staff allowing the Village to feel like part of the broader campus community.

The design of the Village will need to successfully leverage those features that make it a unique destination on campus, while maintaining the Hokie Spirit. Its landscape will become the context of new recreational opportunities that take advantage of heritage trees, complex topography and bucolic views. Programming of student life facilities will augment the offerings of the campus with flexible indoor and outdoor event spaces.

Flexibility

Change is inevitable, so the Student Life Village Plan is created to maximize Virginia Tech's ability to adapt to an unknown future. This plan provides a framework to make sure development is well coordinated without restricting future evolution.

- The decoupling of phases using open spaces allows the possibility for each subsequent phase to be developed without overly impacting the completed phases.
- Phased implementation allows development to be calibrated to financial resources and changing demographic needs. Phased implementation means a phased end-of-life which allows the institution to better manage the transition of housing to future solutions.
- MEP Infrastructure is laid out so that it forms a complete system at the end of each phase. Completed phases will not need to wait for future phases to achieve full functionality. The system changes to absorb new phases.

Spaces are designed to maximize flexibility of use. This will increase the utilization of Virginia Tech's assets and capacity to adapt to changes in student lifestyles, technologies and operational practices.

- Multi-purpose well-being and enrichment spaces are intended to adapt to a variety of programs. Purpose-built spaces are limited as much as possible.
- A mix of housing units and types ensures near infinite configurations of residential communities that can nimbly adapt to changes in participation in living-learning, fraternity and sorority life and other residential programs as well as different ratios of class years.

Affordability

A commitment to inclusivity also means a commitment to affordability in the housing that Virginia Tech offers its students. Conscientious of limited resources, the Student Life Village plan takes a number of measures to reduce investment costs without compromising well-being and safety. Affordability is not about cutting corners, but making sure that limited resources are creatively focused on the things that affirm Virginia Tech's values.

- Working with the topography, not against it, the Village plan limits the amount of investment that will be required for regrading, cutting and filling.
- An emphasis on active mobility and transit reduces the investment and land dedicated to parking and road infrastructure.
- Structuring the Village around a single dominant hub improves economies of scale for both construction and operation.
- Re-utilizing existing roads, parking and infrastructure, wherever possible, limits the initial infrastructure burden of the project.
- Conceiving of building massing at 4 stories or less ensures that future contractors can use the most cost-effective structural framing systems available at the time of construction.
- Adopting a simple massing strategy, and focusing architectural interest at gateways and main entrances, ensures that investment in materials and detailing can be focused on those places where they will be most communally visible.
- Taking advantage of the site's native topography, heritage trees and existing landscapes reduces the cost burden of landscaping.
- Laying out buildings in quads of 400-500 students reduces the number of infrastructural connections and improves economies of scale for both construction and operation.
- Tactical investments in high energy performance, alternative energy and divestments from fossil fuels will create long-term reductions in operating costs when balanced against the 40-year life-cycle of the consumable housing product.

Sustainability

Coming on the heels of Virginia Tech's bold 2020 Climate Action Commitment, the Student Life Village will be a perfect opportunity to demonstrate the University's continued focus on sustainable built environments. At a planning scale, the structure of the Student Village seeks to:

- Actively encourage use of alternative mobility and public transit choices to replace single occupancy vehicles.
- Conserve high value trees and landscapes to improve thermal comfort, reduce wind exposure and allow the plant-soil system to continue sequestering carbon.
- Maintain existing landscape hydrology and use vegetation enhanced stormwater infrastructure to address drainage needs in a way that adds ecological and aesthetic value.
- Distribute infrastructure efficiently and work with native topography to minimize the energy expended on site development.

At a building scale, the Village plan provides opportunities for future designers to integrate sustainable building technologies and energy systems. These technologies will change over time, but some principles remain:

- Maximizing east-west orientation of buildings to control solar gains and improve natural lighting.
- Maximizing solar generation potential on south facing roofs.
- Utilizing recycled and rapidly renewable materials and structural systems with low embodied carbon.
- Introducing high performance envelope systems.

Operationally this plan recommends working with the student community to:

- Adapt user culture surrounding thermal comfort, lighting, water use and waste.
- Use low carbon food production and preparation methods.

Integration

Virginia Tech believes learning does not stop at the classroom door and views all its facilities, indoors and out, as opportunities to advance educational and research missions. As a residential district, the Student Life Village adopts the principles of a “Living-learning Community” where co-curricular and extracurricular enrichment happen side by side with residential life. The Student Life Village plan:

- Allocates “enrichment” space in every residential block, as well as the amenity buildings where living-learning programs, flexible-use learning, collaborative study and co-creation can occur.
- Provides a flexible housing structure which can accommodate diverse and ever-changing living-learning communities.

The Student Life Village Plan also views the design and construction of new facilities as opportunities to showcase technological and social innovations and transform buildings and landscapes into teaching tools. Some potential opportunities include:

- Integrating autonomous vehicle technology into the transit system.
- Using smart infrastructure that allows Village residents to view real time sustainability metrics like energy use, water consumption and waste.
- Providing public spaces and shared facilities that emphasize Virginia Tech’s principles of community and social responsibility.
- Utilizing novel energy generation and delivery systems and providing opportunities for students to “go behind the scenes” and view these systems at work.

03

Land Use

LAND USE PLANNING

The diagrams that follow describe how the land use plan emerged from an interdisciplinary and collaborative process that considered topography, accessibility, connectivity, viewsheds, hydrology, existing infrastructure and ecological conservation as drivers.

THE STUDY AREA

The area analyzed for land use planning includes the present-day Virginia Tech Golf Course and Oak Lane residential community. This area is far greater than what is necessary to develop 5000 beds of housing so the land use planning process focused on eliminating land that is unsuitable for development.

Buildings

Pavements

Canopy cover

Lawns and fairways

Meadows and roughs

Pasture

Sand traps

Riparian buffer

Water bodies

EXISTING LAND COVER

The existing land cover of the vicinity is characterized by the agricultural belt to the south, golf course landscaping on the north and east, and the lawns and ornamental plantings of the Oak Lane community. Existing trees on the highway buffer and between golf course fairways are mature, offering ample canopy coverage in some areas. Riparian landscapes line the Stroubles Creek corridor and around Duck Pond and are identified as a buffer for resilience and ecological health.

Buildings

Pavements

Canopy cover

Lawns and fairways

Meadows and roughs

Pasture

Sand traps

Riparian buffer

Water bodies

AGRICULTURAL HERITAGE

As a land grant university in a semi-rural setting, Virginia Tech's agricultural landscapes are a keystone of its identity and heritage. This land use plan reaffirms an "agricultural belt" at the edge of campus and respects existing agricultural lands. This preserves scenic views from the highway toward campus while embedding the Village in a living agricultural landscape that is important to establishing a sense of place for the community.

Buildings

Pavements

Canopy cover

Lawns and fairways

Meadows and roughs

Pasture

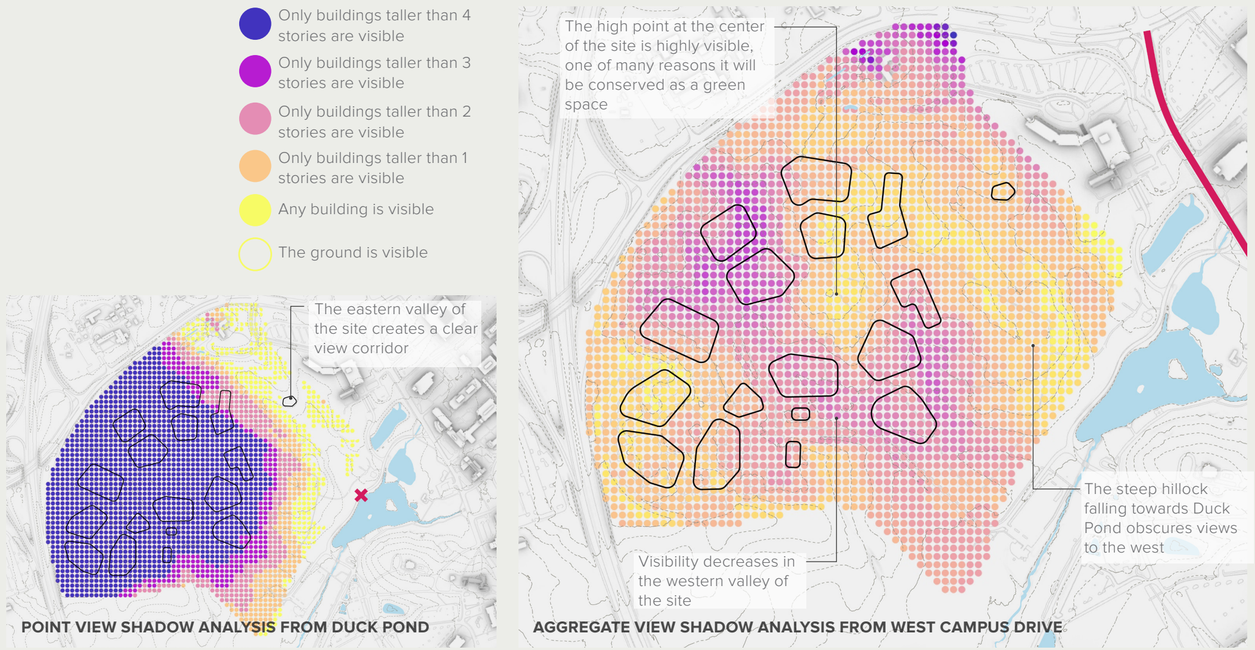
Sand traps

Riparian buffer

Water bodies

ECOLOGICAL BUFFER

The existing buffer between the Oak Lane community and adjacent high speed, high traffic roads is at places narrow. The land use plan calls for widening and enhancing the buffer in order to attenuate noise, protect the Village from cold northwestern winter winds, visually hide unattractive highway infrastructure and reduce particulate pollution and fumes entering the Village. The buffer will have additional benefits as a wildlife corridor and recreational amenity for the Village.



VIEW SHADOWS

Land use planning for the Student Life Village was shaped by a tension between keeping the Village well connected to core campus yet physically and visually distinct so that alternative construction and operating models can be pursued without detriment to the core campus's architectural consistency. View shadow analysis was used to identify the level of visibility of potential built development from various vantage points on the core campus. Proposed development areas are overlaid on the analysis. This analysis was aggregated to arrive at a demarcation line that separated the highest visibility areas from low visibility areas.

DEMARCATION LINE

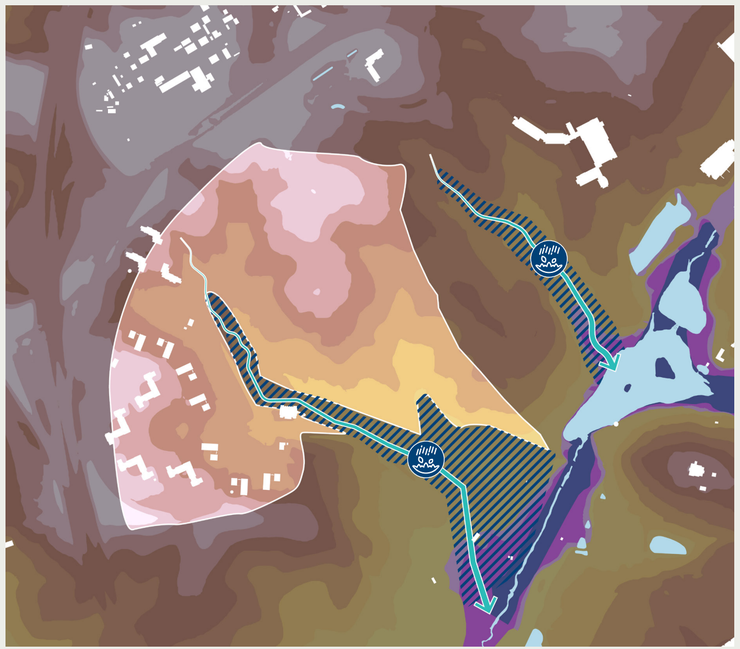
The view shadow analysis informed the location of a proposed demarcation line which designates an approximate line beyond which any new construction will be highly visible from campus locations like the Duck Pond, the future Infinite Loop and West Campus Drive. To maintain the visual consistency of the core campus, Village development is planned west of this line where a new, yet complementary, architectural character will be less visible from the core campus.

HYDROLOGY AND FLOOD RESILIENCE

Flood events are increasing in severity and frequency and the future Village will be developed to limit the exposure of Village residents and built assets to flood risk. Areas in the floodplain and natural drainage corridors are unsuitable for development. Preserving the existing drainage patterns of the site as much as possible will increase the efficiency of stormwater management without expensive infrastructure. The use of intermediate green spaces will reduce the volume and velocity of stormwater leaving the development sites. Flood data is as of October 2020 and should be reviewed for updates at the time of design and construction.

- 2090' AMSL
- 2080' AMSL
- 2070' AMSL
- 2060' AMSL
- 2050' AMSL
- 2040' AMSL
- 2030' AMSL
- 2020' AMSL
- 2010' AMSL
- 2000' AMSL
- 1990' AMSL

- Water Bodies
- Regulatory Floodway
- 100 year flood hazard area
- 500 year flood hazard area
- Drainage corridor



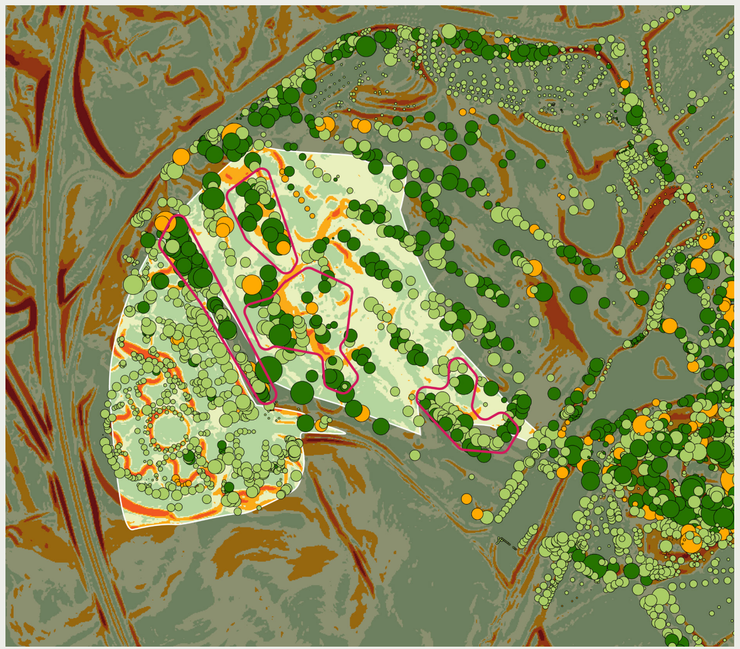
- Fully accessible
- Accessible with minor regrading
- Moderately steep
- Very steep
- Extremely steep

ACCESSIBILITY AND SLOPE

Ensuring that pathway connections to and from the core campus are accessible was an early priority of the land-use planning process, requiring a detailed understanding of existing topography. To that end, a primary "Village Trail" of connectivity was threaded between areas of rugged topography in order to create a route that is naturally accessible or that can be easily regraded to create accessible slopes with a minimum of cost and disruption to the native landscape. Areas of dramatic slope were avoided for development as much as possible.

HERITAGE TREES

Parts of the study area have been undisturbed since Virginia Tech's founding and have trees 200 years of age and older. On the western edge of the golf course, towering oaks, walnuts and hickory remain well preserved. Other mature trees are associated with wind breaks and dividers between the golf course fairways and Prices Fork road to the north. Conserving some of these trees will add aesthetic and ecosystem values and save money on future landscaping.

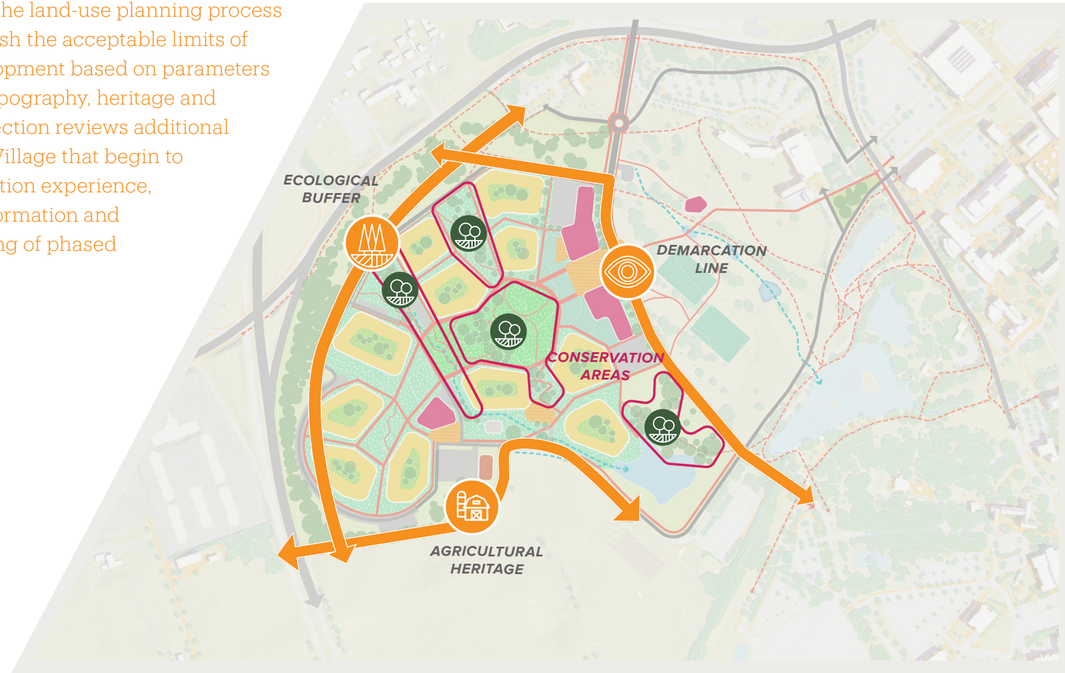


CONSERVATION AREAS

Conservation areas are set aside by combining the most topographically challenging land with areas dense in high value trees. These conservation areas are incorporated into the design of the Village's open space network.

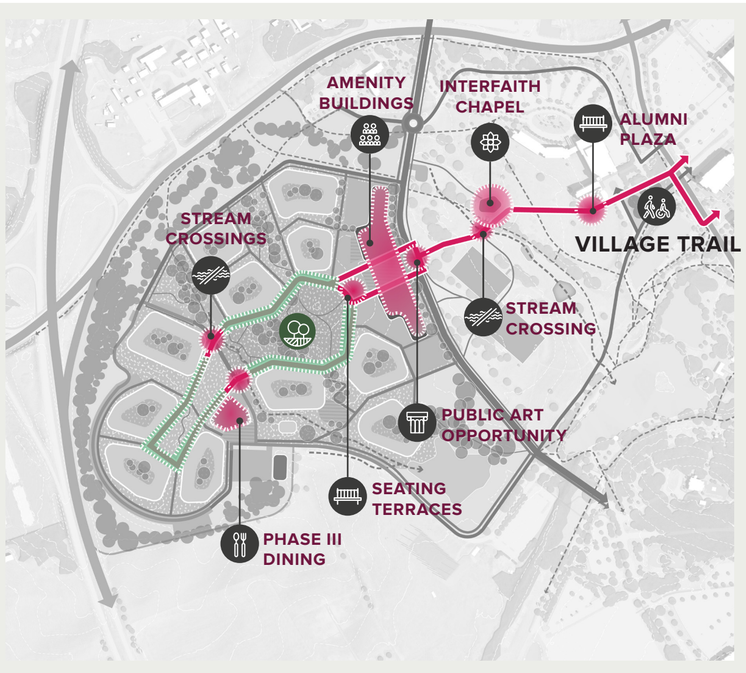
VILLAGE STRUCTURE

The result of the land-use planning process was to establish the acceptable limits of Village development based on parameters of ecology, topography, heritage and views. This section reviews additional layers in the Village that begin to define circulation experience, community formation and the sequencing of phased development.



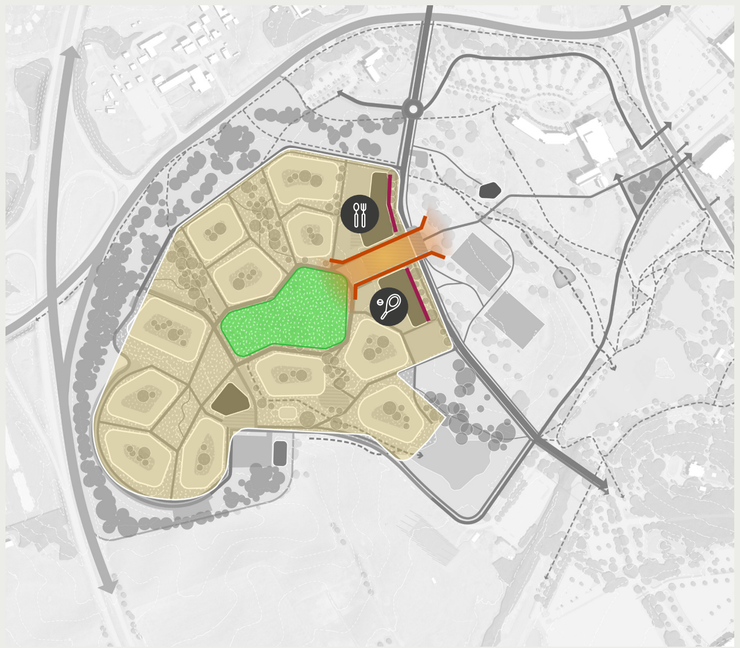
STEPPING STONES

The Village Trail is the main link connecting pedestrians to and from campus and thus will become a core part of the daily Village experience. To make this journey more engaging and reduce the perception of travel distance, the Village structure places key landmarks along the spine in a “stepping stone” pattern.



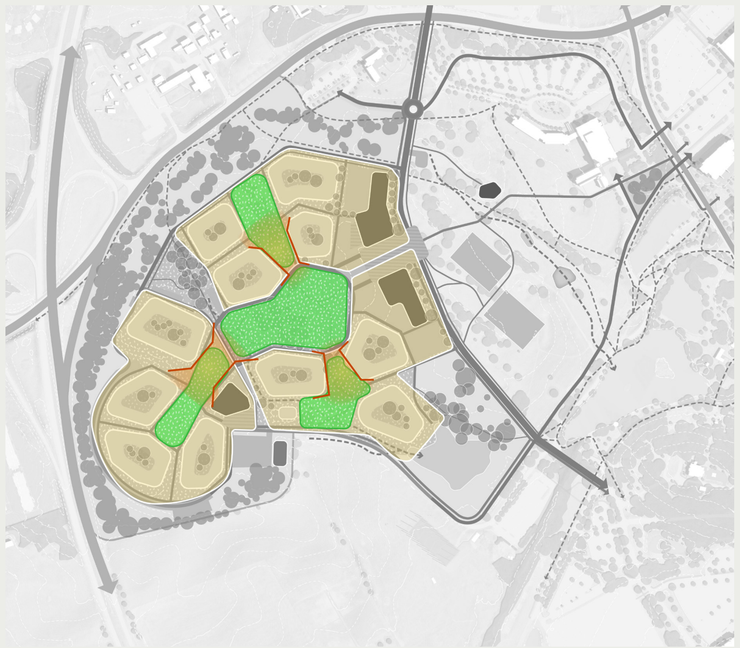
THE GATEWAY

The Gateway is the symbolic entry to the Village, framed by two amenity buildings which will be highly visible when approaching the Village from campus. This Gateway leads to the heart of the Village, a large central green space. This central green space will be the iconic feature of the Village and will organize the open space structure and development pattern in a way similar to the Drillfield on core campus.



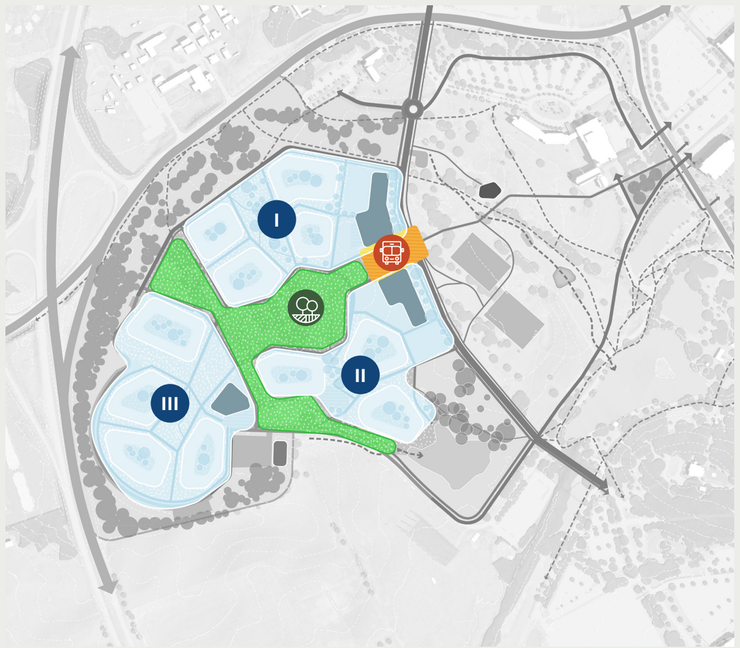
NEIGHBORHOODS

From the central green, Village residents will have access to the three neighborhoods, each of which is defined by its own “neighborhood green”. These green spaces will create opportunities to define the unique identities of each neighborhood and act as local gathering spots.



QUADRANGLES

Each neighborhood is further subdivided into a series of quadrangles (quads) each with about 400-500 residents. These quads are centered around a green space that provides outdoor enrichment and opportunities for residents to define their individual identities within the larger neighborhood.



DIVISIONS BETWEEN PHASES

The Village structure has been strategically laid out to ensure that each phase of work is decoupled from the others by an ample buffer. This will allow construction activities in each subsequent phase to proceed with minimum disruption to completed facilities.

LAND USE PLAN

The Student Life Village land use plan carefully balances the eight planning principles with existing conditions of the site. It makes best use of the site's existing assets and unique character. It achieves a logical, hierarchal structure in its neighborhoods and quads, while remaining organic and responsive to the native topography. It achieves accessibility and high standards of ecological stewardship, while limiting capital outlay for infrastructure and landscape.

GROUNDS

LANDSCAPES

- *CENTRAL GREEN*
- *NEIGHBORHOOD GREENS*
- *QUADS*
- *LANDSCAPE THEATER*
- *RECREATIONAL FIELDS AND COURTS*
- *STORMWATER MANAGEMENT*

HARDSCAPES

- *PLAZAS*
- *PARKING*

FACILITIES

RESIDENTIAL USES

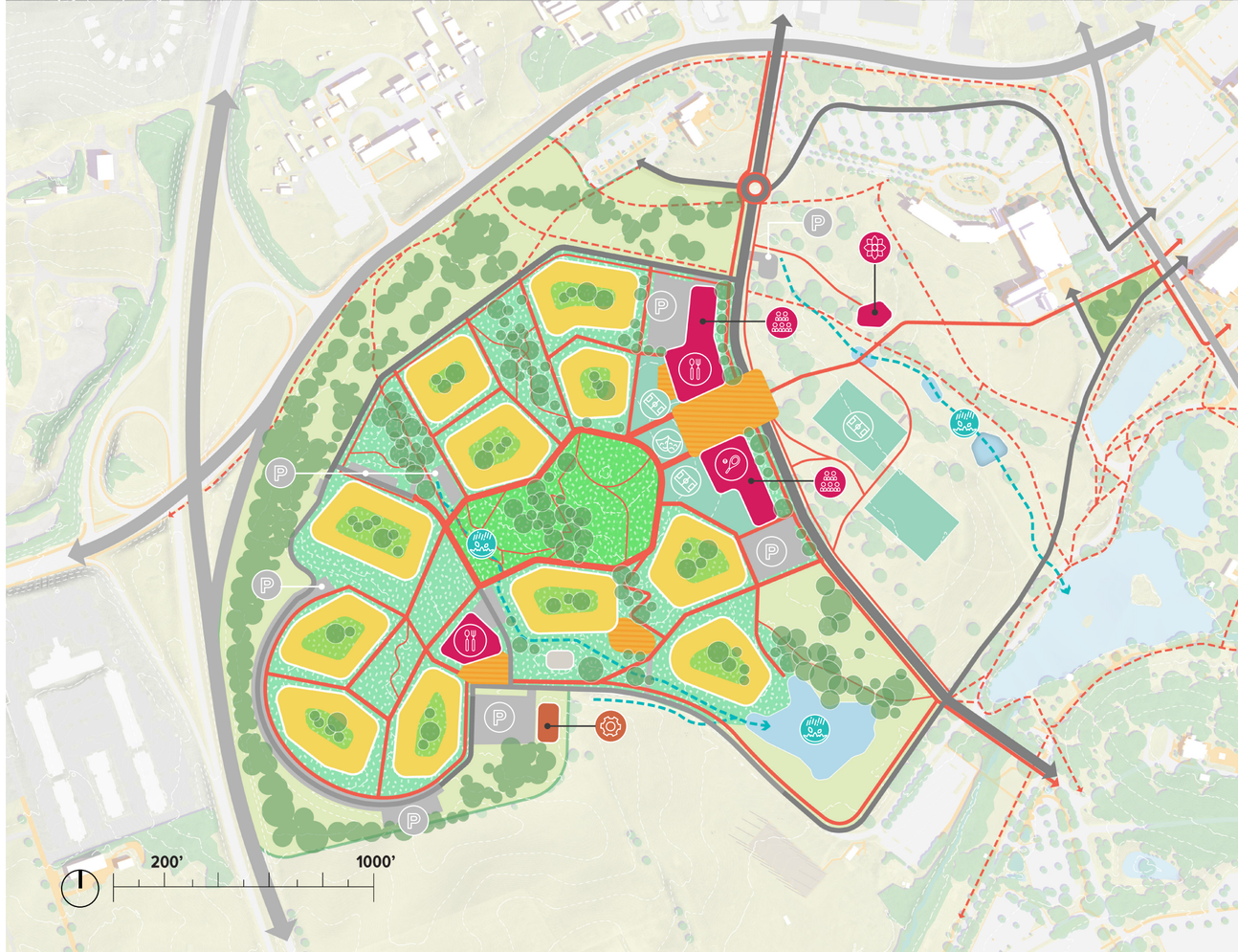
- *RESIDENTIAL PARCELS*
  (Land parcels for residential development)

STUDENT LIFE USES

- *ENRICHMENT*
  (Spaces for curricular and co-curricular activities, LLP programs and student life.)
- *DINING*
  (Spaces for dining services, with mail and other residential support functions.)
- *WELL-BEING AND RECREATION*
  (Spaces to support student physical, social, emotional and mental well-being.)
- *SPIRITUAL AND MEDITATIVE*
  (Interfaith Chapel.)

SUPPORT USES

- *OPERATIONS CENTER*
  (Grounds and facilities maintenance, equipment and supply storage.)



04

Infrastructure

INFRASTRUCTURE

The Student Life Village will be built on land that is lightly developed, lacking in the infrastructure necessary to support 5000 residents. Preparation of the land for development requires a well-coordinated strategy for investment in infrastructure. The Student Life Village adopts a multi-purpose infrastructure strategy, limiting infrastructure burden by combining different systems into shared corridors. With affordability in mind, existing infrastructure is integrated with new systems and/or used for interim solutions in the phasing plan.

Mobility

- Accessibility
- Pedestrian
- Transit
- Vehicular
- Parking

Water

- Domestic Water
- Sanitary Sewer
- Stormwater Management

Information

- Telecommunications
- Safety & Security
- Smart Infrastructure

Phasing

- Civil Phasing
- Coordination

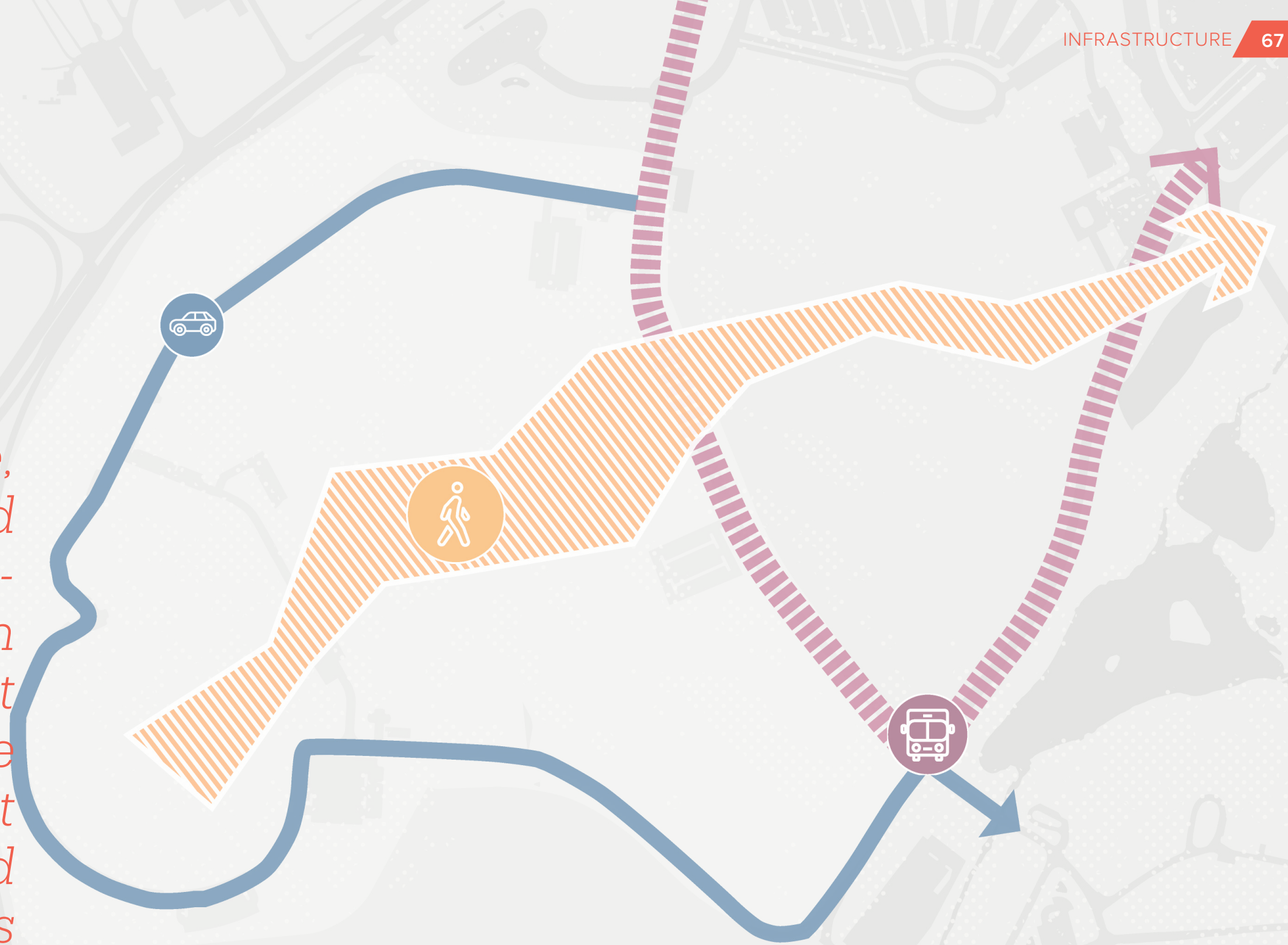
Mobility

To be a destination, well-integrated with the academic and social activities of the university and accessible to all users, the Student Life Village requires a robust and well-considered mobility system.

- Accessibility
- Pedestrian
- Transit
- Vehicular
- Parking

STRATEGY

An accessible, engaging and pedestrian-focused circulation experience that encourages Village residents to adopt active mobility and transit choices



ACCESSIBLE MOBILITY

The Village's accessibility strategy adopts a universal design approach which seeks to make the mobility experience of all Village residents the same, regardless of mobility needs.

RECOMMENDATIONS

WINTER MAINTENANCE

Accessible pathways should be prioritized for winter maintenance. Snow should be cleared to form paths at or greater than minimum width. Care should be taken that plowing of roads and sidewalks does not unintentionally obstruct accessible curb-cuts and paths.

TRANSIT PLAZA

All transit stops, including the transit plazas, will comply with the ADA and be designed with all users in mind.

ACCESSIBLE PATHWAY NETWORK

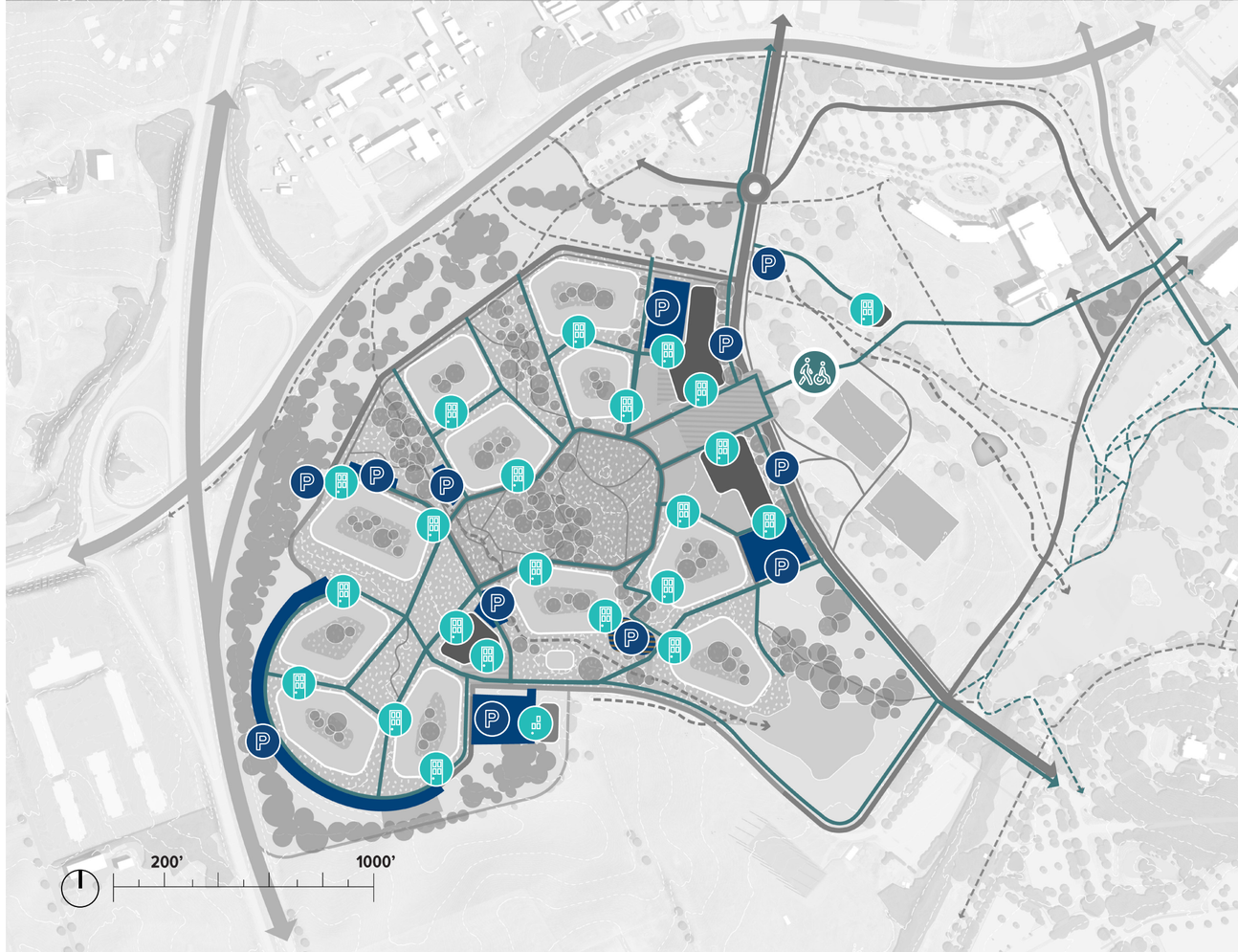
The accessible pathway network encompasses most of the pedestrian paths in the Village core, meaning the primary circulation experience of all Village users will be the same regardless of physical ability. The accessible pathway network has been graded to less than 5% for its entire length to meet wheelchair accessibility requirements. This is intended to reduce physical effort and make journeys more expedient for all users of the network.

ACCESSIBLE ENTRANCES

The main entrances to all buildings are located along the accessible pathway network. Accessible entrances are the same entrances used by all Village residents so there is no stigmatization created by separate building entrances for different ability groups.

ACCESSIBLE PARKING

Accessible parking is provided within 250 feet of all accessible entrances along the accessible pathway network. In addition to formally marked and permitted ADA spaces, accessible parking will also provide parking for those with temporary health and life situations requiring special mobility considerations.



PEDESTRIAN MOBILITY

Pedestrian Mobility: A high-quality pedestrian experience will be essential to the success of the Village. The plan identifies a hierarchy of pathway types and recommendations to enhance the pedestrian experience.

RECOMMENDATIONS

WAYFINDING

Provide clear, high-quality pedestrian wayfinding to ensure an easy pedestrian experience. Wayfinding should leverage the identities of Village neighborhoods and quads.

CROSSINGS

The plan minimizes roadway crossings to enhance the pedestrian experience. Where crossings are required, they should be situated for maximum visibility and minimum crossing distance with traffic calming features like speed tables.

E-MOBILITY

Transportation technology is rapidly changing with the broad advent of e-scooters, e-bikes, and related technologies. The plan is technology-agnostic, recognizing that personal mobility will evolve and should be accommodated in building and site designs.

WINTER MAINTENANCE

Winter maintenance of sidewalks and key paths is essential. Nature trails may be unmaintained.

ILLUMINATION

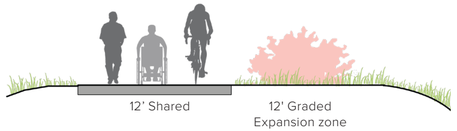
Illumination of the spine and paths will be important, with higher lighting levels provided along the spine. Nature trails are assumed to have no or minimal illuminations.

MULTI-MODAL PATH

Primary loops of connectivity within the Village serving pedestrians and bicycles in dedicated lanes

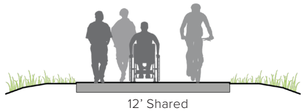
VILLAGE TRAIL

Connection between the Village and Core Campus with the capacity to expand in the future



NEIGHBORHOOD PATH

Pathways connecting the spines to the residential quads

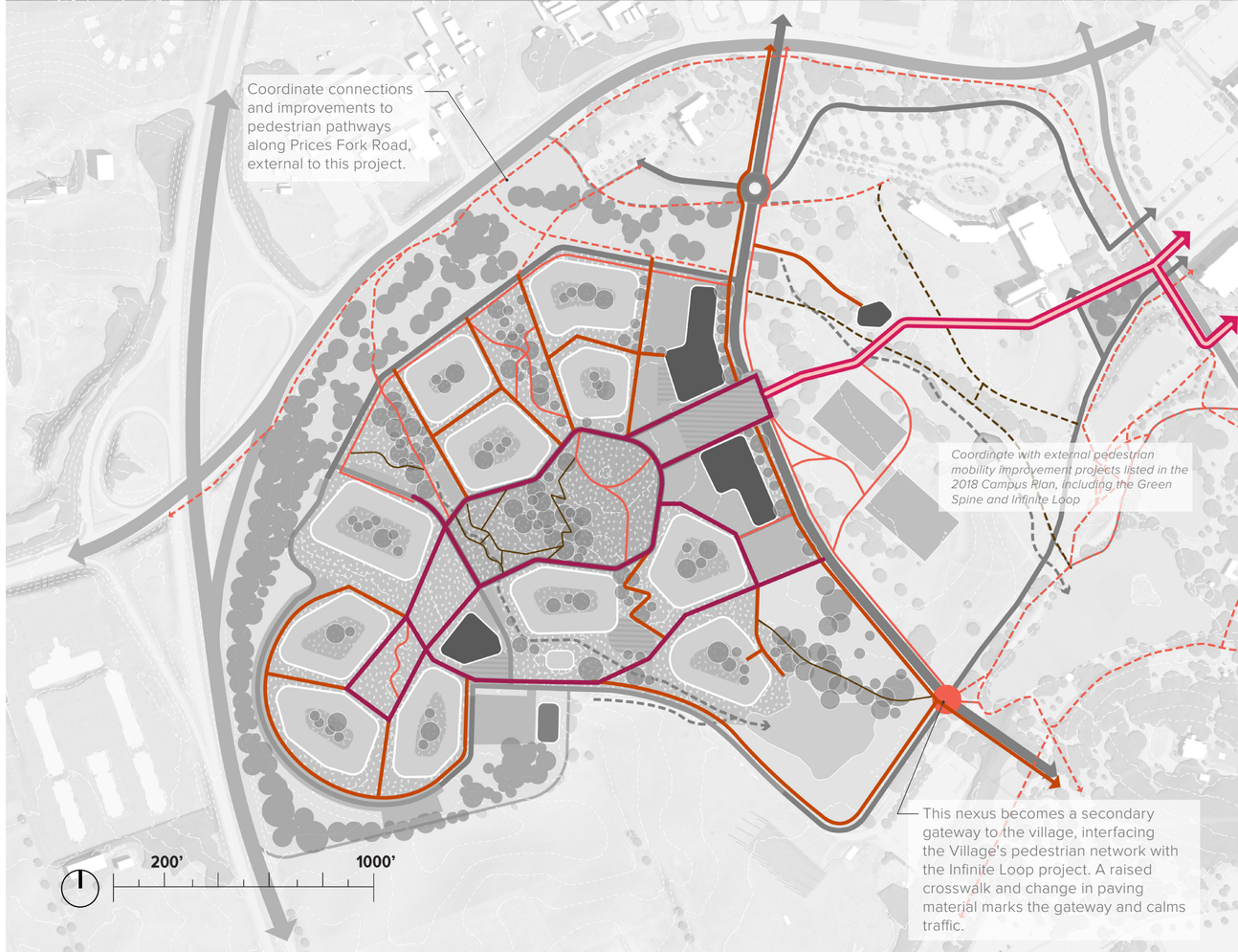


PATHWAY

Local pathways for internal connections within greens and quads

NATURE TRAIL

Low-volume trails for recreational experiences in conservation areas. Paving choices should reflect landscape design goals.



BIKEWAYS

Biking will offer many Village residents an expedient means to reach on and off-campus destinations. The Village provides a through connection for cyclists traveling north and south on the street and a direct connection to the North Academic District via the Village Trail. Additional bikeways facilitate movement between residential and amenity buildings through a hierarchy of dedicated and shared lanes.

RECOMMENDATIONS

WAYFINDING

Provide clear, high-quality bike wayfinding that keeps bikes from entering pedestrian-only areas. Clearly demarcate bike and pedestrian modal splits with signage and changes in paving material or color.

WINTER MAINTENANCE

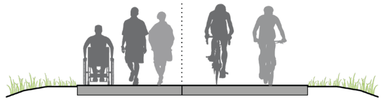
Do not use bikeways as a snow storage facility. Plow and de-ice bikeways as with other pedestrian facilities.

ADAPTIVE CYCLING

Bikeways should be accessible to users of adaptive bicycles, bicycles that meet the individual needs of the cyclist, including handcycles, recumbent bikes, trikes and more.

DEDICATED LANE

Cyclists have a dedicated lane either on a path or road.



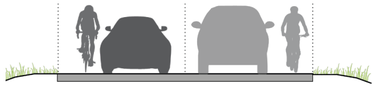
Where provided on the street bike lanes should be separated from traffic or parking by a buffer marked with striping or flexible reflective delineators.

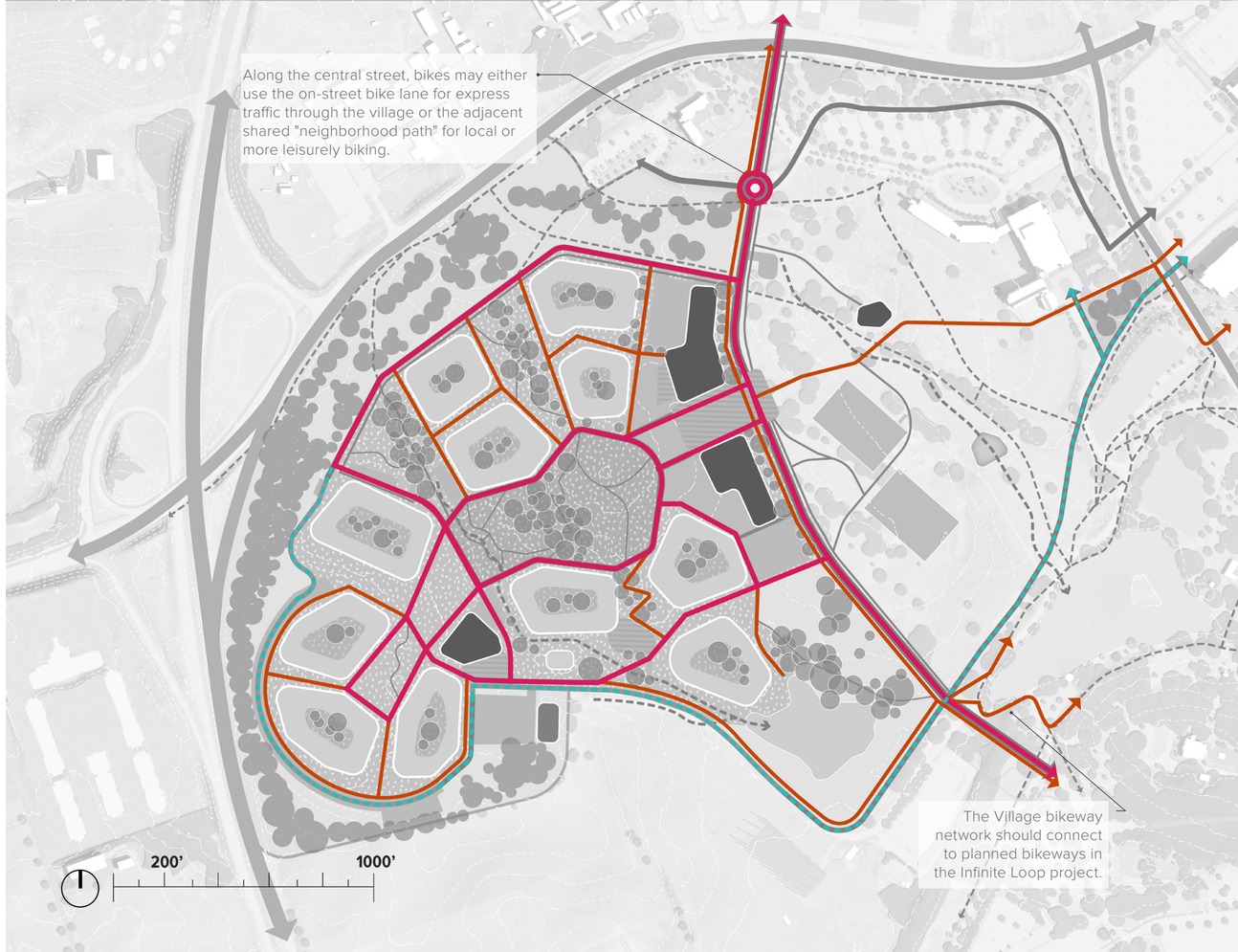
SHARED PATH

Cyclists use the same path as pedestrians and other devices.

SHARED LANES

Shared lanes allow cyclists to share the same lane as vehicular traffic. This is only proposed in the low traffic areas of Oak Lane where existing roadways are being reused and other bike facilities will be built near or adjacent to the roads.



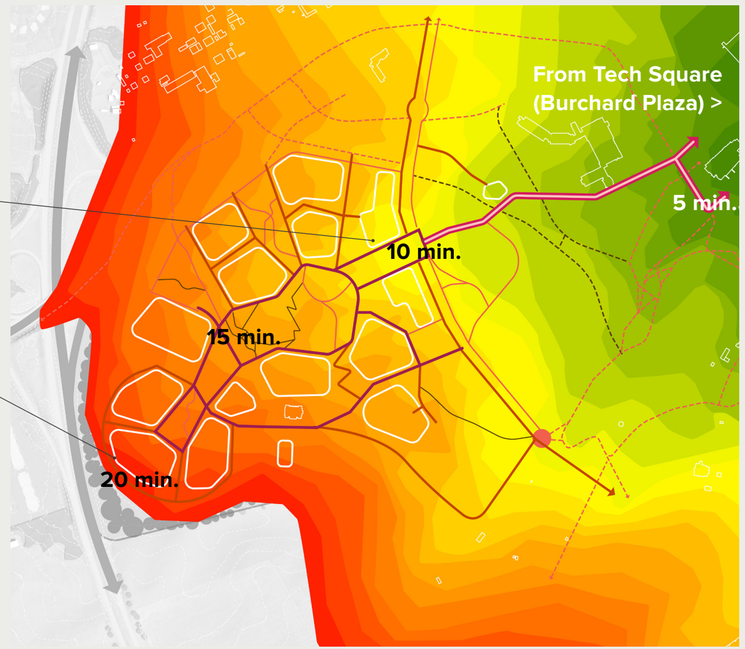


ISOCHRONES

Isochrones provide an understanding of the travel times between the Village and the North Academic District. Travel times are shown from Tech Square (Burchard Plaza)

At just a 10-minute walk, the amenities found at the Gateway are easily reached by students attending classes in the north academic district. This will help increase mid-day utilization.

Graduate student housing will be placed in the 18-20-minute zone. Graduate students will have the option of adjacent long-term parking.



PEDESTRIAN ISOCHRONE ANALYSIS

At an average walking rate, the Village Gateway can be reached from Tech Square (Burchard Plaza) in under 10 minutes. All residences can be reached in 20 minutes or less.

CYCLIST ISOCHRONE ANALYSIS

By bike, a typical cyclist can reach the Village Gateway from Tech Square (Burchard Plaza) in under 5 minutes. All residences can be reached in 8 minutes or less.

TRANSIT MOBILITY

Integrating the Village into the existing transit network will be critical to connecting Village residents to daily academic and student life activities and, in-turn, allow the Village to be a destination for the entire Virginia Tech community.

RECOMMENDATIONS

USER EXPERIENCE

Virginia Tech will continue to work with Blacksburg Transit to ensure that students are able to conveniently use public transit with intuitive tools, signage and service design.

STOPS

There should be one focal stop which will be served at all hours. Additional stops may be used during evenings and weekends.

SCHEDULES

Service will need to be frequent in the peaks of class schedules to accommodate student demand. Service should include late-night service.

SMART INFRASTRUCTURE

The transit plazas should offer maps with real-time arrivals in addition to links to Blacksburg Transit's tracker and other information sources.

ACCESSIBILITY

All stops will comply with accessibility requirements, ensuring easy use by all.

EXPRESS ROUTES

These are high-frequency, limited-stop routes, likely going directly from the Transit Plaza to the MMTF in the North Academic District. These will operate mostly in the daytime and schedules should be tailored to class schedules.

LOCAL ROUTES

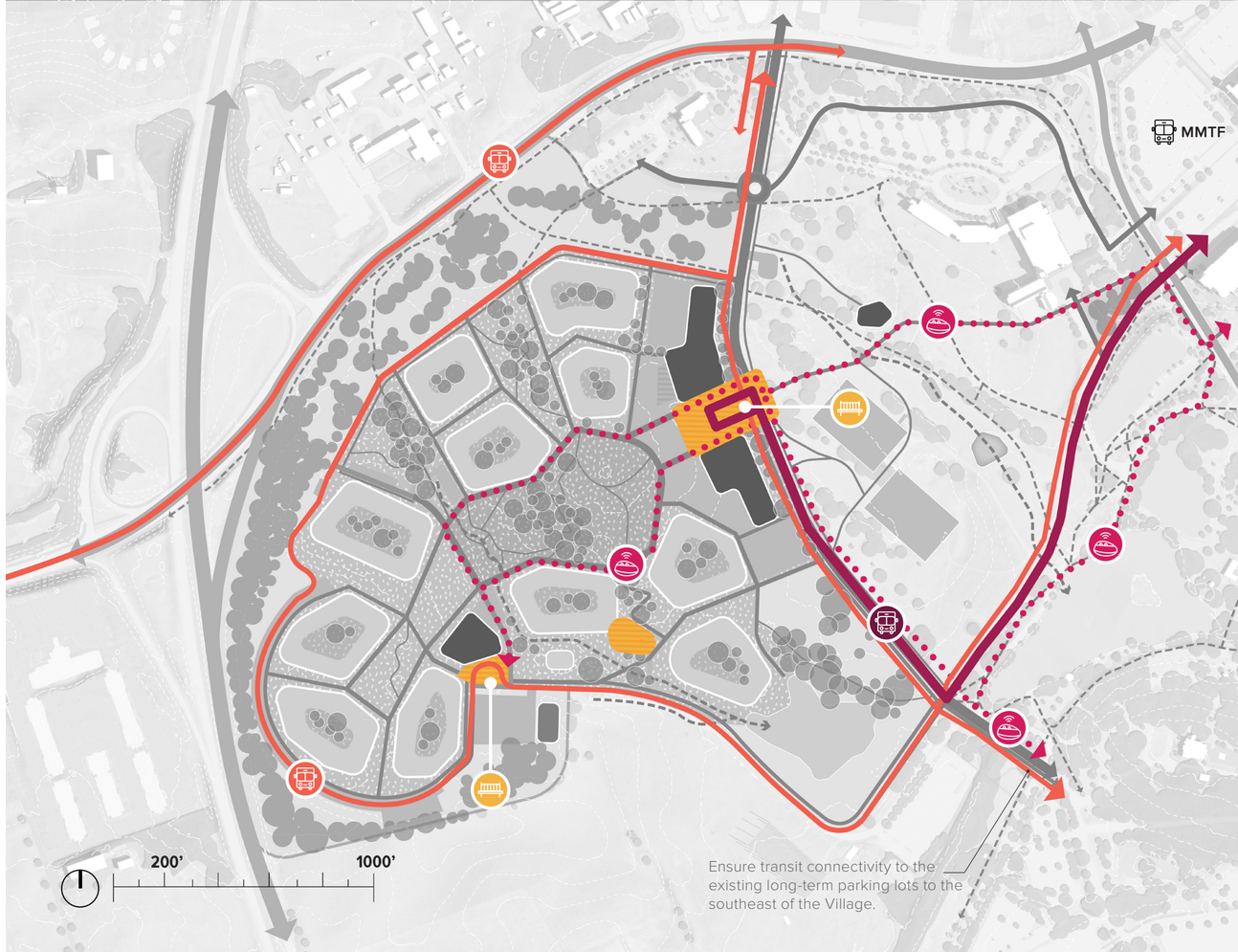
These routes provide additional access to individual neighborhoods. These will primarily operate at night and on weekends. These routes are especially important to accessing amenities, shopping off-campus and remote long-term parking facilities.

TRANSIT PLAZAS

These provide a key nexus for transit at the Village and will include access to real-time information and sheltered waiting areas, integrated into adjacent facilities. The primary Transit Plaza will be at the Village "Gateway", a complex consisting of Phase I Dining and the Student Life Commons. A smaller transit plaza will be constructed as part of Phase III, integrated with Phase III Dining.

AUTONOMOUS PODS

Virginia Tech is an innovator in transportation technologies and the Student Life Village will be a prime opportunity to field test low-speed autonomous vehicles that transport small numbers of passengers along the Village Trail and secondary spine. It is recommended that autonomous vehicles be used only as supplemental transit serving low-frequency, low-demand and localized routes as current autonomous pod technology would be overwhelmed by the Village's full transit demands. Autonomous vehicles could be used to create additional intra-village transit connections between transit plazas and the Village neighborhoods.

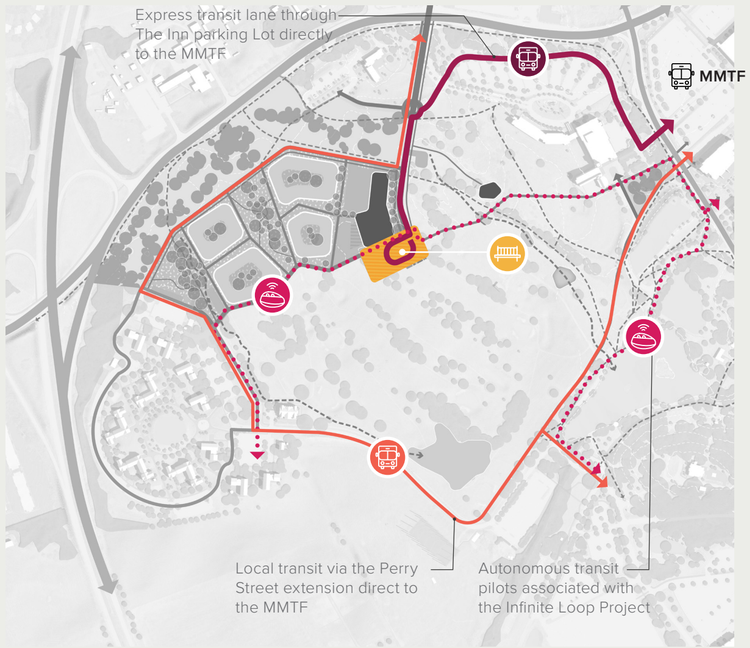


TRANSIT PHASING & FLEXIBILITY

In phase I, transit service will be both essential for its success and challenged by the in-process road network. The phase I proposal seeks to give transit providers maximum flexibility to design appropriate routes.

PHASE I TRANSIT PROPOSAL

The plan envisions transit service could be routed through the Inn parking area to avoid congestion associated with Prices Fork Road. Coordination with Blacksburg Transit should determine which route is more expedient. Alternatively, current Oak Lane service, aka, “Hokie Express” could be extended to the Transit Plaza and back track along Oak Lane and the Perry Street Extension.



TRANSIT PLAZAS

Transit plazas provide a key nexus for buses to reliably wait, load/unload passengers and change directions with minimal conflict with other vehicular traffic. They are designed to make the transit experience enjoyable for Village residents and functional for bus operators.

BRANDED LIGHTS & SIGNAGE

To create a sense of place and Hokie Spirit the Transit Plaza should incorporate VT branded lights and promotional signage along with informational signage displaying real-time bus schedules.

BUS BAY

Bus bays on either side of the Plaza maximize the flexibility for operators to design routes and schedules. A counterclockwise flow is assumed.

CENTRAL LIGHTING FEATURE

The central lighting feature acts like a beacon, prominently marking the Plaza’s location and acting as a central feature of the Plaza during events.

PLANTING BEDS

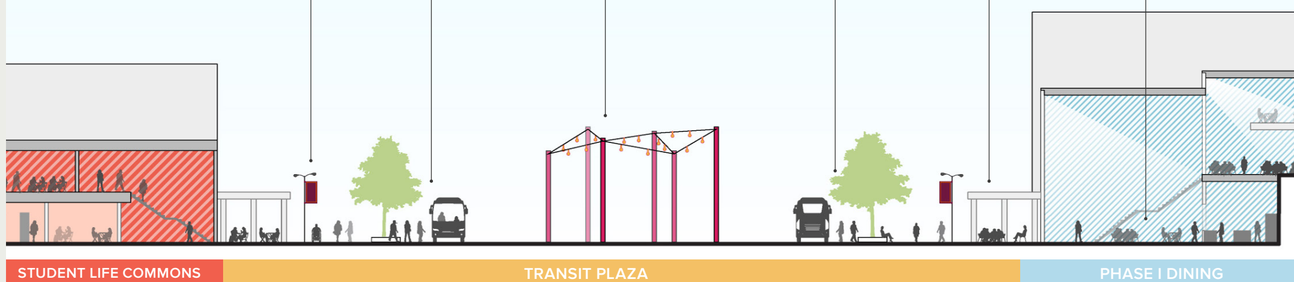
Planting beds and seat walls can be used to delineate pedestrian and transit zones during normal operations.

ARCADES

Arcades are integrated into the amenity building design as sheltered outdoor waiting areas and extensions of indoor dining/student life programming

INDOOR WAITING

Indoor spaces facing the plaza should function as indoor waiting space with signage displaying bus arrival times and clear sight lines to the bus bays



VEHICULAR MOBILITY

The Village is envisioned to have public vehicle access at the periphery only, limiting vehicle-pedestrian interaction and discouraging unnecessary driving to and within the Village.

DESIGN SPEED FOR ALL ROADS: 15 MPH

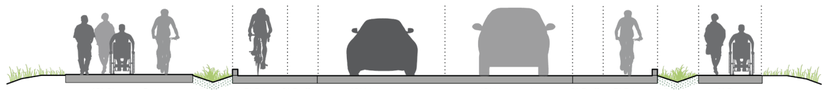
STREET WITH PARKING

Mid-speed road with dedicated bike and pedestrian facilities and one side of parallel parking. Bike lanes should divert around parking with a buffer to prevent dooring.

Street with Parking 74'

STREET

Mid-speed road with dedicated bike and pedestrian facilities. There should be separation between bicycle lanes and sidewalks.



Street 66'

LOOP ROAD

Low-speed road with on-street bicycle lanes.

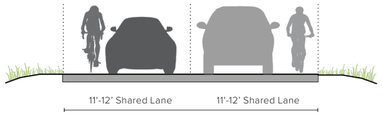
Loop Road 50'

ROAD

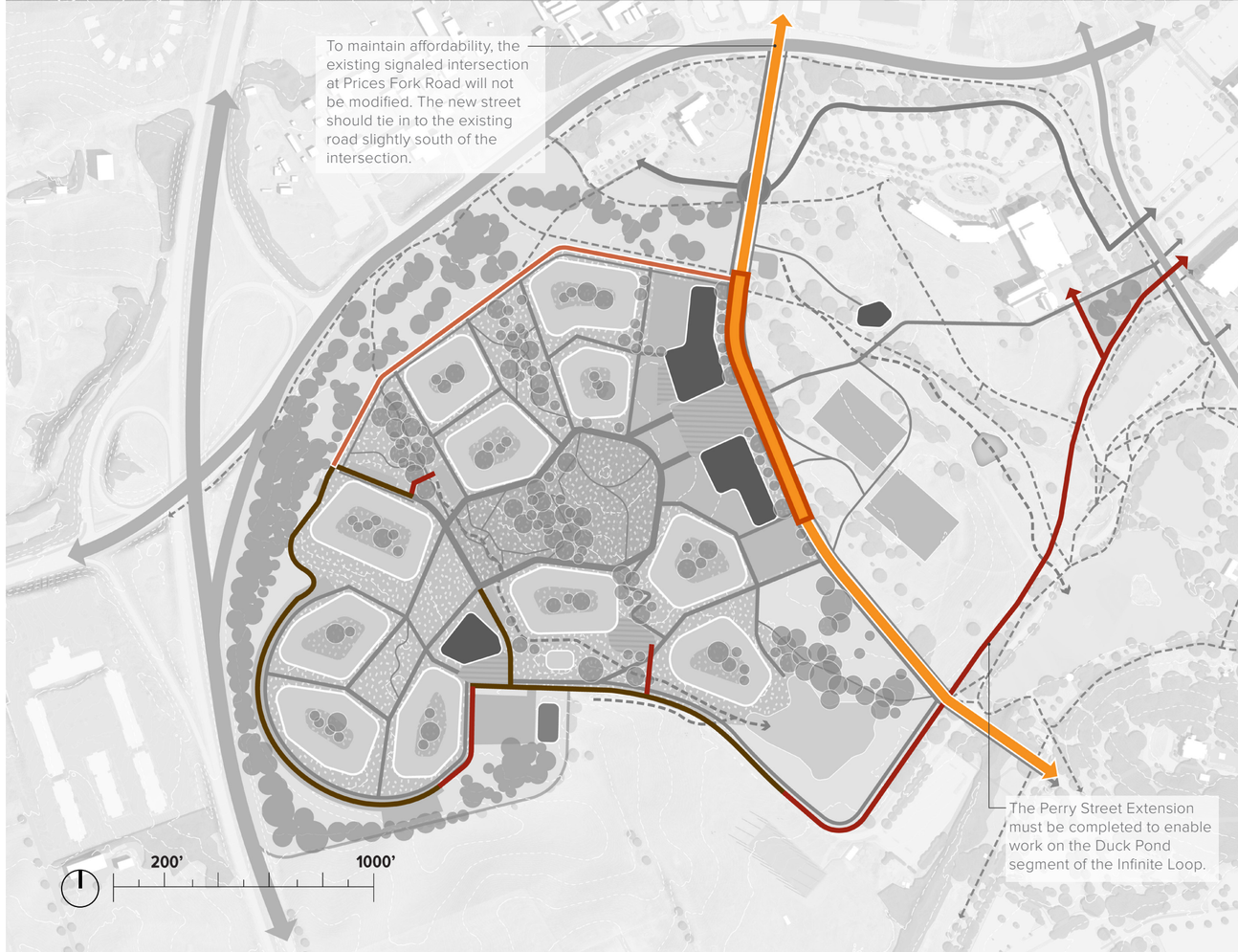
Roads that do not have dedicated pedestrian or bike facilities because they are adjacent to other facilities.

EXISTING ROAD

Existing roads or roadways that will be reused in the Village plan. Refurbish the roads as required to integrate into the new network. Add shared lanes ("sharrows") to accommodate bike traffic.



Road 22-24'



RECOMMENDATIONS

SPEED

Facilities should be low speed to discourage speeding and cut-through traffic. Design of streets should emphasize that the Village is a pedestrian-oriented zone.

BICYCLES

Bicycles should be accommodated in dedicated facilities wherever possible. Share-the-road signage should be included wherever dedicated bike lanes are not provided.

ILLUMINATION

Lighting is appropriate for streets where bicycle facilities are provided as well as adjacent pedestrian facilities. Lighting along the Loop Road may be minimal to reduce glare and promote a transition to the ecological buffer. Crossings should be well illuminated.

WINTER MAINTENANCE

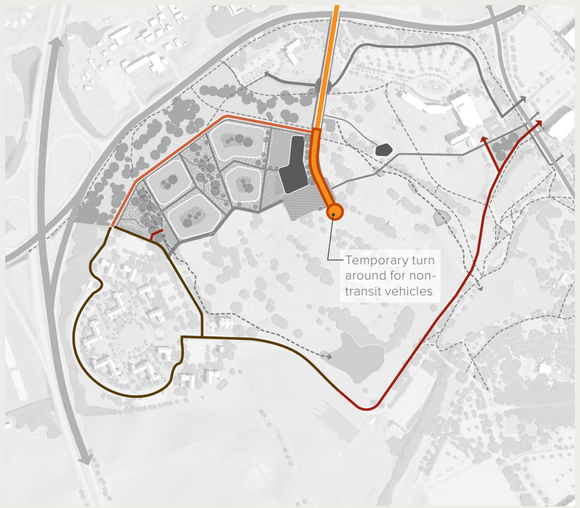
Maintenance of the bike lanes will be essential to enabling bike mobility choices. Snow storage for roadway and bicycle facilities must be provided without relying on pedestrian pathways as a snow storage location.

BRIDGES AND CULVERTS

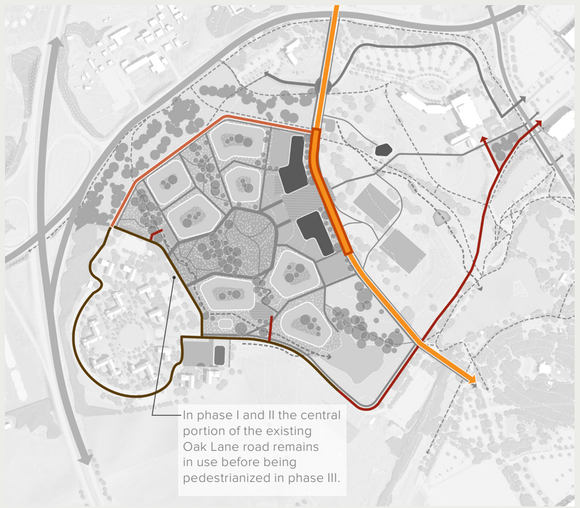
Bridges and culverts are proposed on roads and pathways in the Village which pass over stormwater corridors or Stroubles Creek. These features will require additional investment but can add interest to the landscape and act as landmarks in the daily circulation experience. Culverts are earthwork features over the stormwater stream channel, designed to permit ample stormwater flow. They can be naturalized and protected from erosion through use of vegetation and rocks.

PHASING OF THE ROAD NETWORK

In order to minimize infrastructure investment in phase I, the Village will maximize use of existing roads. With phase II, the road network will be expanded to allow full access to the Village.



PHASE I ROAD NETWORK



PHASE II ROAD NETWORK

SERVICE ROUTES

Service routes will be important to delivering goods and removing waste from the Village. The strategy of service routes is to keep heavy traffic from entering the center of the Village.

RECOMMENDATIONS

SCHEDULE

Coordinate waste collection at hours when students are unlikely to be home to minimize disturbances. Coordinate major deliveries at times when pedestrian traffic in the Village will be low, generally early morning.

PARKING

A small number of parking spaces will be dedicated to service vehicles.

PRIMARY SERVICING

Large trucks serving the dining and Student Life Commons facilities through dedicated loading docks designed into the buildings. To reduce noise and conflicts with other traffic these loading areas are located on the perimeter of the Village.

WASTE COLLECTION AND SECONDARY SERVICING

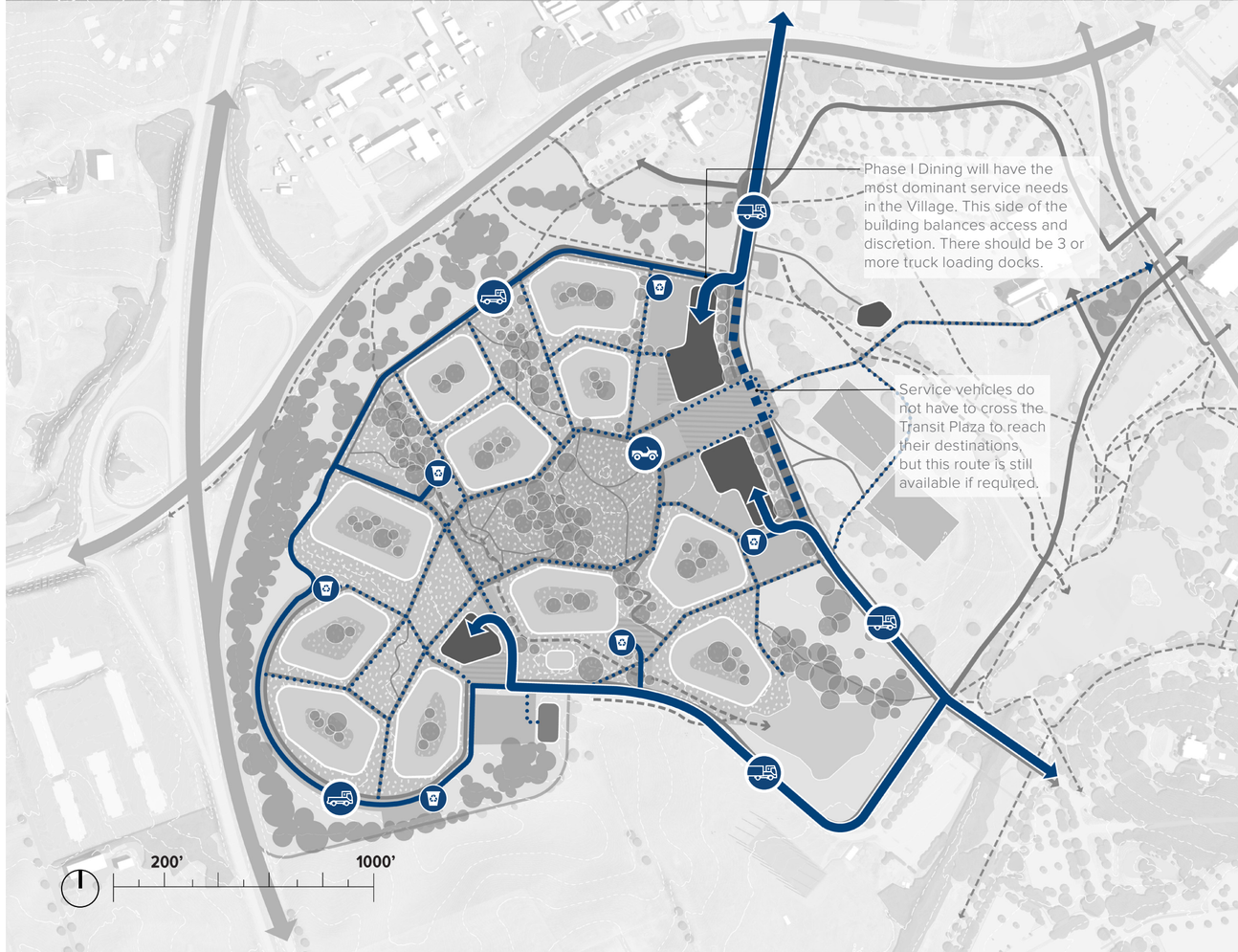
Waste collection trucks gathering garbage and recycling from waste collection points.

WASTE COLLECTION POINTS

Waste and recycling bins located in accessible yet discrete locations, usually in conjunction with parking lots. Consider the use of landscape features to conceal bins from view of residential buildings and outdoor gathering areas. One waste collection point has been identified for every two quads. Waste collection for amenity buildings would happen via the dedicated loading bays designed into each building.

UTILITY CARTS AND CARGO BIKES ONLY

Additional maintenance of the Village's core facilities and landscapes should occur via small utility carts or cargo bikes that can safely ride on the Village's wider pedestrian paths.



EMERGENCY VEHICLE ACCESS

The creation of a pedestrian-first Village that respects existing topography and landscape means that emergency vehicles will need to be able to utilize pedestrian routes to access facilities. This should not come at the expense of landscape character and pedestrian comfort.

RECOMMENDATIONS

WINTER MAINTENANCE

Emergency access design solutions like reinforced turf require special winter maintenance considerations. Emergency vehicle routes must always be cleared of snow shortly after a winter storm. The fire marshal may require the use of snow stakes to mark the edge of access routes and any obstructions.

WAYFINDING

In the event of an emergency, first responders need to be able to clearly identify different buildings and routes. The use of directional signage and visible building names and numbers will be required.

BARRIERS

Some emergency access routes cross over pedestrian-first landscapes. General vehicular drivers in the Village should not mistake emergency access routes for roads. To discourage illegal use of emergency access routes, consider using removable and/or automatic bollards, especially at the Transit Plaza. Changes in paving material, street furnishings, vegetation, mountable curbs and signage can also help drivers clearly distinguish between vehicular and non-vehicular routes.

COVERAGE AREA

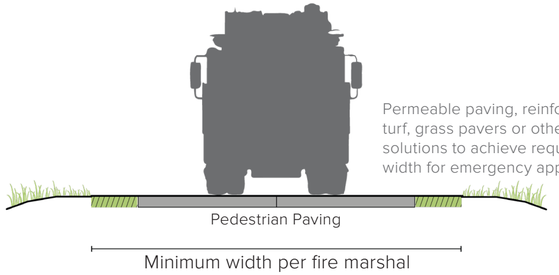
150’ from access routes

EMERGENCY VEHICLE ACCESS VIA ROADWAY INFRASTRUCTURE

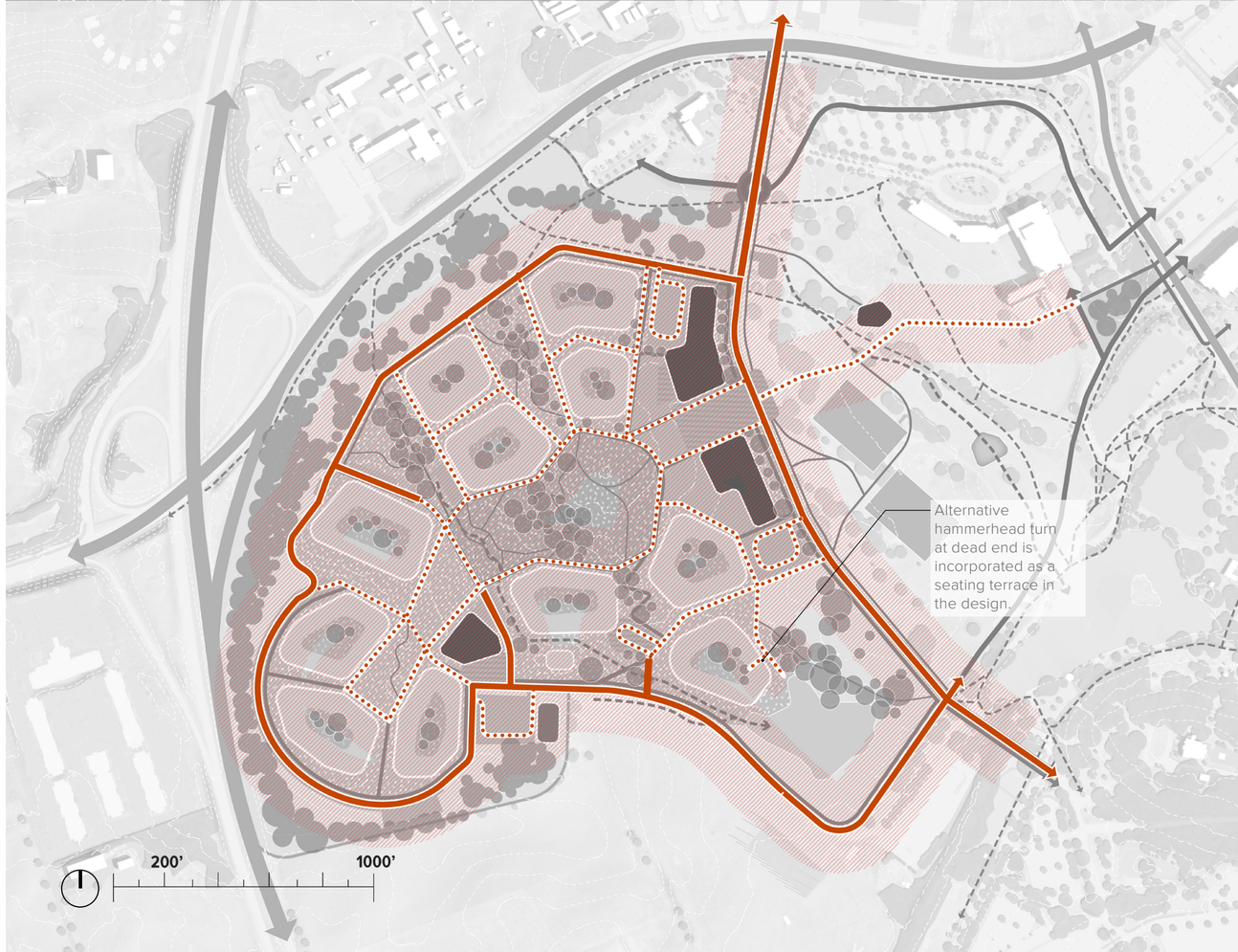
All roadway infrastructure is sized appropriately to accommodate emergency apparatus.

EMERGENCY VEHICLE ACCESS VIA PEDESTRIAN ROUTES

To limit the amount of roadways in the Village, additional emergency vehicle access is proposed via pedestrian routes. These routes are sometimes not of sufficient width to accommodate emergency apparatus. Features like permeable paving, grass pavers, reinforced turf or other solutions can be used to add width without major changes to the character of the landscape. Path intersections should be designed to account for apparatus turning radii. Dead end conditions will require turn-arounds. These have been integrated into seating terraces or plazas in the design.

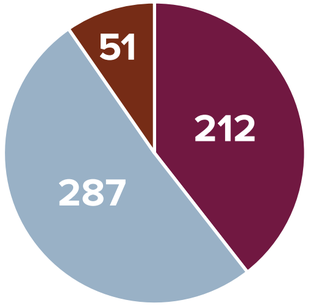


Permeable paving, reinforced turf, grass pavers or other solutions to achieve required width for emergency apparatus.



PARKING

To encourage active and transit mobility choices the Village is designed as an accessible, walkable community. Parking will be limited to the perimeter of the Village to avoid disrupting the pedestrianized core. Most spaces are allocated for accessibility and staff working in the Village. Some additional parking at the Phase I Dining, Student Life Commons and Interfaith Chapel lots can be used for visitors and events. The Student Life Village Plan does not provide any long-term parking for undergraduate residents. Long-term student parking will need to be made available off-site in a location accessible by pathways and transit.



LONG-TERM = 212 SPACES

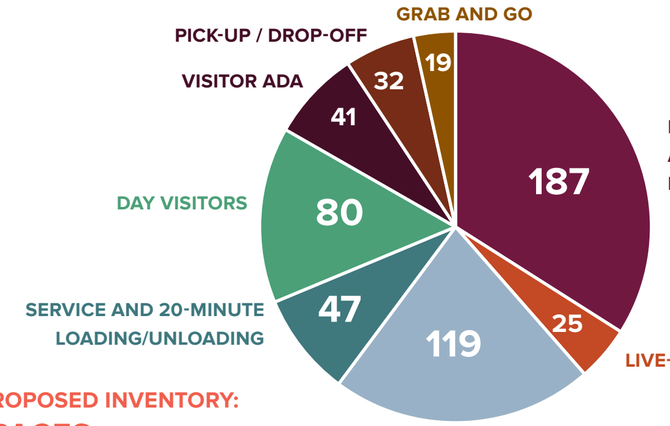
over-night parking for access and medical needs, car-share programs live-in staff and graduate students.

DAY PERMITS = 287 SPACES

for staff, visitors and service providers staying in the Village generally no longer than a work shift.

SHORT-TERM = 51 SPACES

for pick-ups, drop-offs and grab and go users standing for 15 minutes or less.

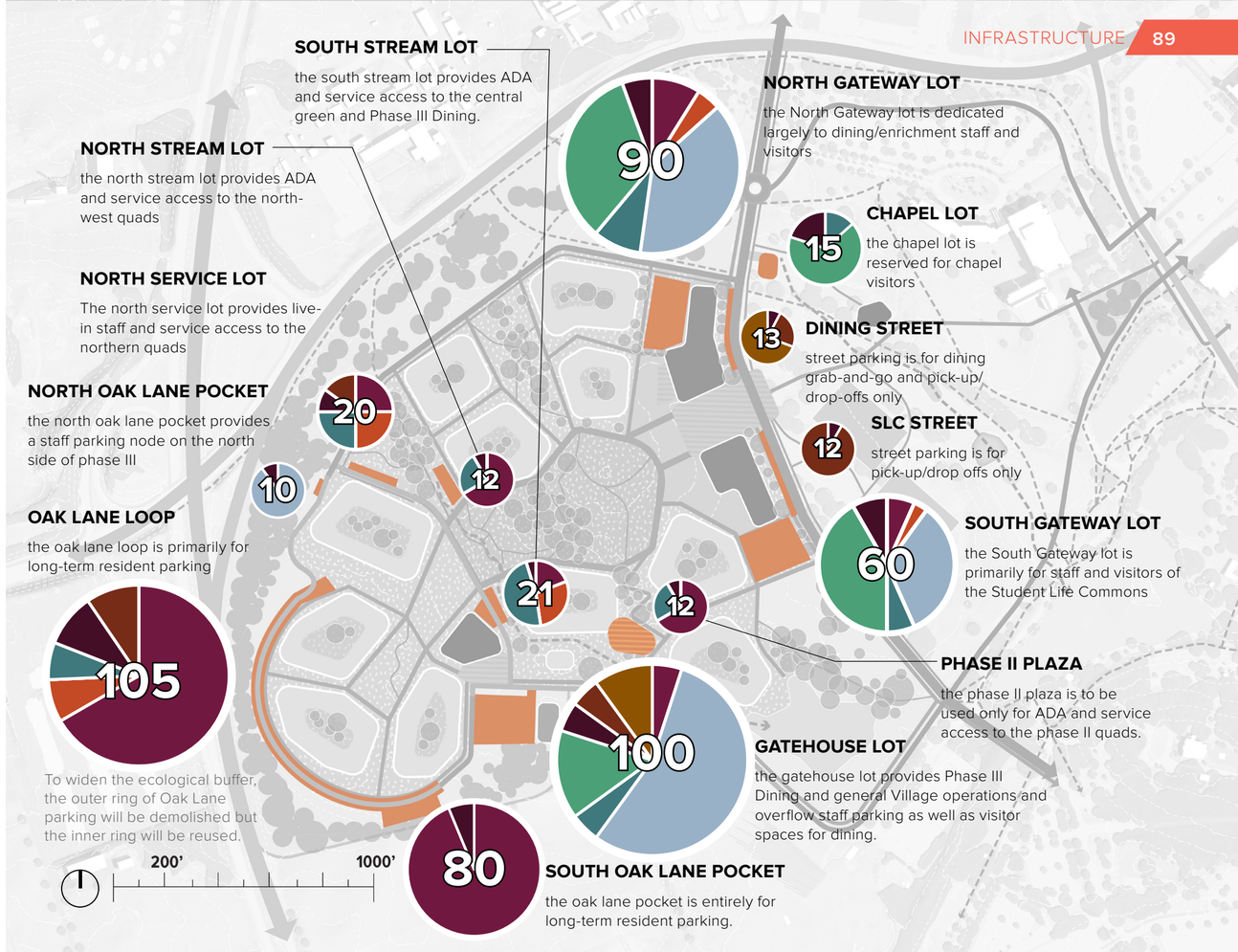


FLEXIBLE LONG-TERM PERMITS: ADA ACCESS, MEDICAL, CAR-SHARE PROGRAMS, FAMILY NEEDS AND GRADUATE STUDENTS

TOTAL PROPOSED INVENTORY:

550 SPACES

315 EXISTING + 235 NEW



PARKING RECOMMENDATIONS

SMART PARKING

Increased use of technology could assist visitors to find a space and enhance enforcement as well as be an opportunity for testing technology with VTTI and other researchers. Parking space occupancy sensors would notify enforcement when a space was occupied and allow for automatic notifications when a time-limit is exceeded. Where visitor parking is allowed, the campus parking app can allow for easy session extensions up to the allowable time limit.

FEES AND GATES

Parking fees will need to be commensurate with the rest of campus to align expectations. Gates may be required for the standalone lots to limit illegal parking. The majority of the parking, as it will be on-street, will not be gated and require active enforcement. Some parking meters may be required but enforcement should be technology-focused to limit the burden on enforcement staff.

PERMIT POLICIES

Given the limited number of parking spaces in the Village, parking permits for the area should only be issued to staff whose primary place of work is within the Village. Resident parking permits should be issued to any faculty or staff residing within the Village as well as to students who qualify for an ADA permit. If sufficient parking is available, graduate students should be offered the opportunity to purchase parking in the Village. All other residents are expected to use remote resident parking zones.

ENFORCEMENT

Regular enforcement will be required, particularly at the beginning of the academic year, to establish behavioral norms. With the limited amount of parking, there is the potential for abuse of both short-term parking at dining and the Student Life Commons and resident-adjacent parking. Parking Services will need to work closely with the residents to determine if weekend enforcement is required or appropriate.

SHORT-TERM PARKING

Short-term parking will need effective enforcement to establish good behavior and discourage abuse. There will need to be different tiers of short-term parking with slightly longer parking, up to 20 minutes, allowed near the residences to allow unloading of groceries or other items and shorter parking, up to 5 minutes, for app-based pick-ups.

RESIDENT LOADING/UNLOADING - 20 MIN MAX

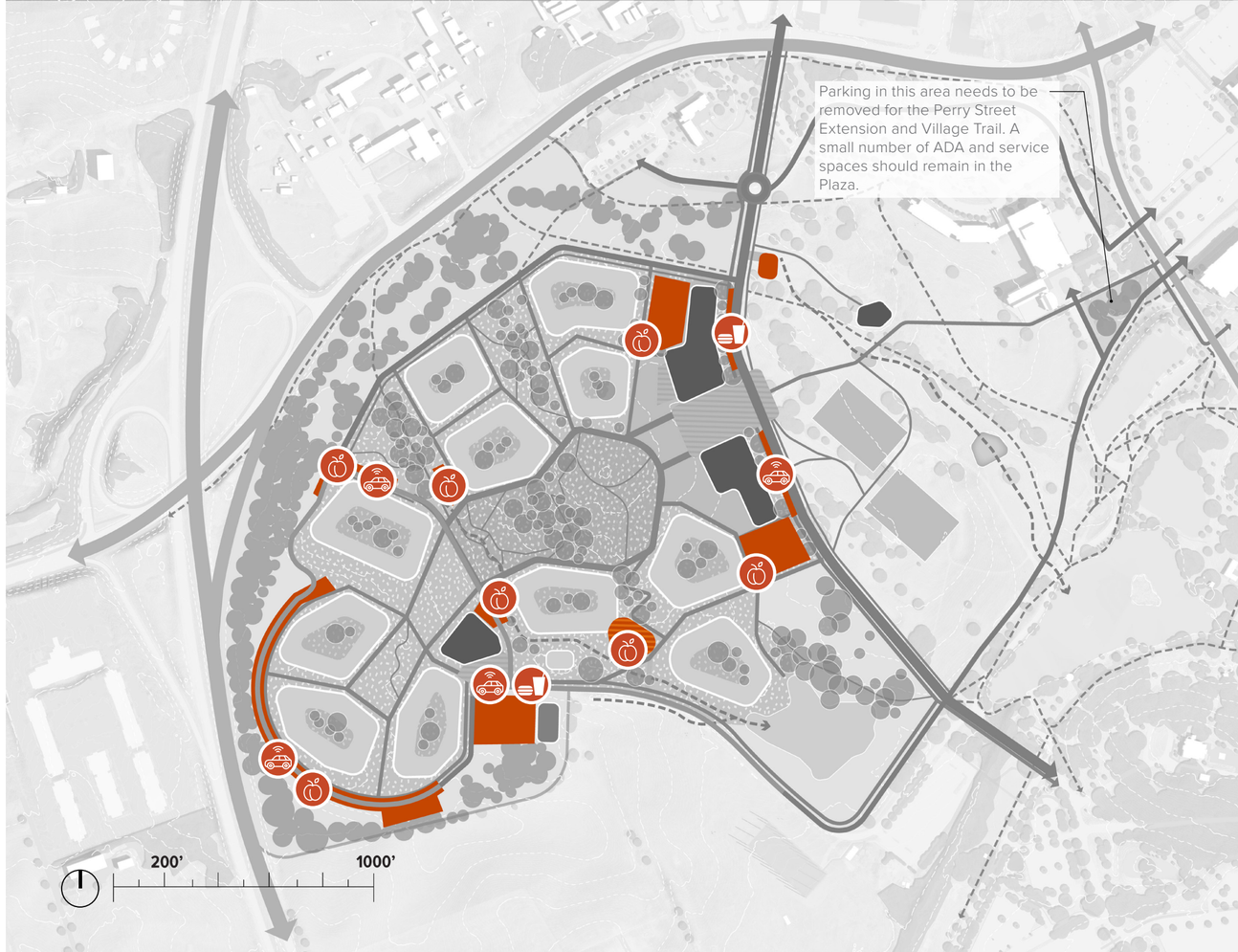
Village residents who do not have parking on-premises will still need spaces where they can load/unload personal items, groceries, etc. A 20-minute time limit is recommended for these spaces.

GRAB-AND-GO DINING - 15 MIN MAX

To support increased demand for grab and go offerings, several spaces will be offered street side to allow off-campus students and professional delivery drivers to pick-up food quickly.

RIDESHARE, TAXI AND APP-BASED PICK UPS - 5 MIN MAX

Accommodation of these services throughout the Village will be important. The plan identifies pick up zones and VT may need to work with individual companies to enforce these zones so that only the acceptable locations show up as options on apps.



MOVE-IN DAY

Virginia Tech has an orchestrated move-in day process that seeks to minimize traffic problems by assigning residents time-windows in which to unload their possessions. The Village plan provides for parking near, but not directly at, each residential quad for unloading personal items. The Village plan strongly advises against driving on pedestrian routes and quads during move-in day to avoid establishing bad habits and damaging landscapes/paving at a time when they will be seen by the greatest number of people.

RECOMMENDATIONS

LOT PARKING

On move-in day, most if not all lot parking spaces should be dedicated to move-in. On this day, most staff will need to park off-site.

STREET PARKING

Use traffic cones to designate the one-way traffic street parking pattern on the Village loop road.

CART PATHS

Designate cart paths to each residence with colored signage. When designing the pedestrian network consider this use-case and avoid bumpy paving, curbs and pavement notches which could obstruct cart movement.

WAYFINDING

Clear temporary signage, color-coding systems and path markers will be essential to a smooth parking and unloading process for residents.

VEHICULAR ACCESS

CART PATHS TO RESIDENTIAL ENTRANCES

Residents will not be allowed to drive straight up to building entrances. Carts should be used to move items between vehicles and building entrances along pedestrian pathways. The university may consider employing student helpers to expedite the process.

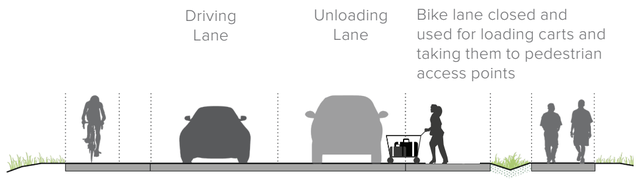
MOVE-IN DAY PARKING CAPACITY

640 SPACES

phase I: 207 spaces for 1752 beds - move-in 9 time slots

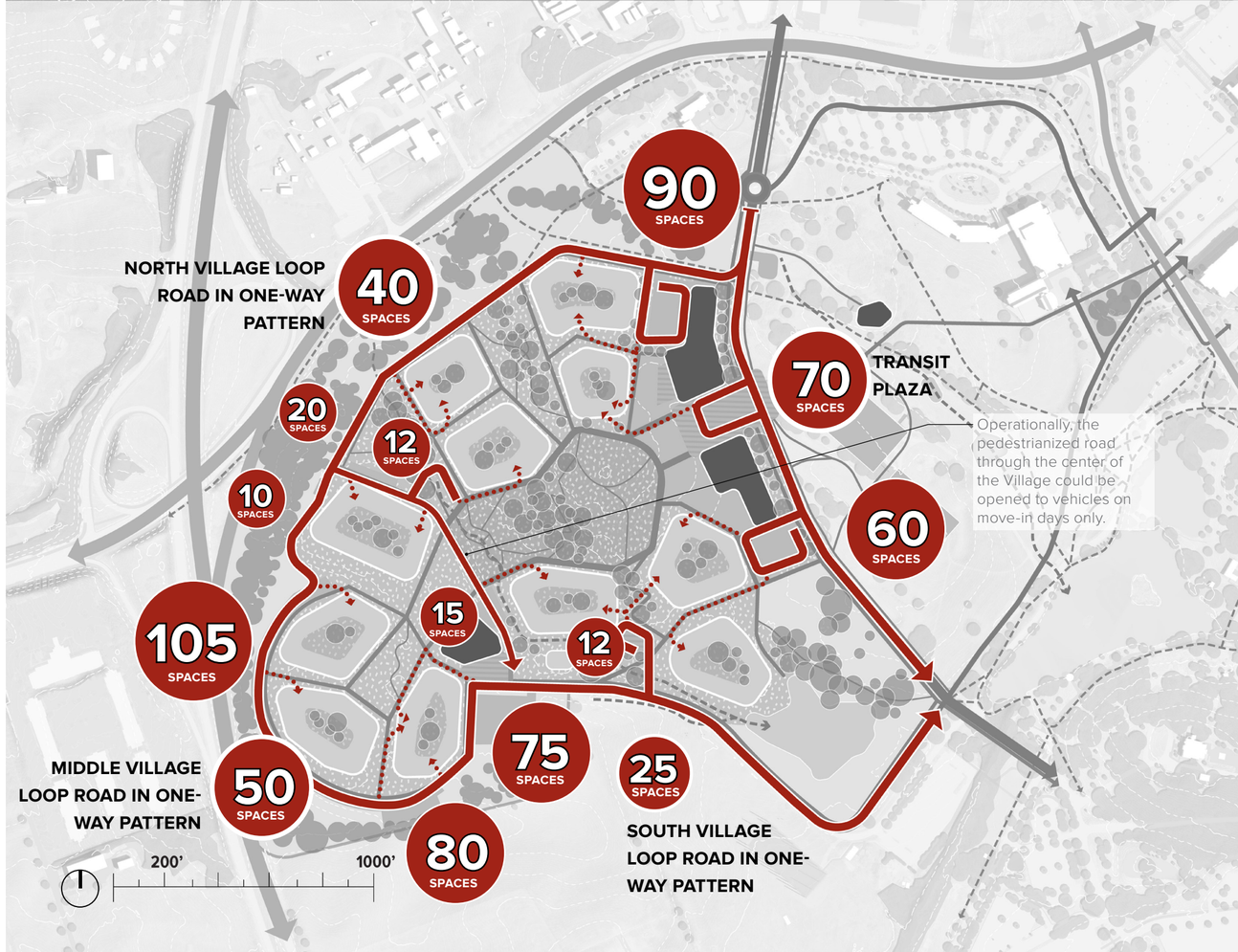
phase II: 188 spaces for 1384 beds - move-in 8 time slots

phase III: 245 spaces for 1864 beds - move-in 8 time slots



ONE-WAY TRAFFIC PATTERN ON VILLAGE LOOP ROAD

The use of a one-way traffic pattern on the Village loop road during move-in days will add to the total number of available parking spaces on move-in day and thus reduce the number of time-blocks needed to move-in the full Village population.



PERSONAL MOBILITY PARKING

To encourage Village residents to choose healthy, sustainable and low-impact mobility modes like bikes, e-scooters and e-bikes means giving them secure and weather protected locations to lock their vehicles.

RECOMMENDATIONS

E-SHARE AND BIKE SHARE PROGRAMS

Work with app-based e-device sharing programs and VT's own bike share program to designate device "round-ups" near building entrances, but out of the way of pedestrian and vehicular traffic.

INDOOR PARKING

Provide ample indoor, long-term/overnight bike, scooter and stroller parking at residences in the form of ground-level rooms accessed from both the exterior and interior of the building via the resident's RFID.

OUTDOOR PARKING

Provide outdoor racks capable of accommodating diverse lock types and two points of contact. Prioritize the public plazas and terraces for outdoor, short-term bike parking. Locate racks under awnings or free-standing shelters where feasible.

WINTER MAINTENANCE

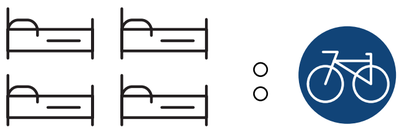
Keep outdoor racks and the entrances of indoor parking rooms free from snow during winter maintenance. Avoid locating racks in common snow dumping areas like swales.

DIY BIKE REPAIR

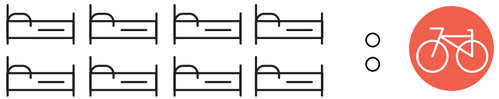
Maintain both indoor and outdoor locations for DIY bike repair that include a bike-pump (preferably electric) and tools tethered to a chain for theft-prevention.

RECOMMENDED SPACE ALLOCATION

2500 SPACES



INDOOR RESIDENTIAL BIKE STORAGE - 1,250

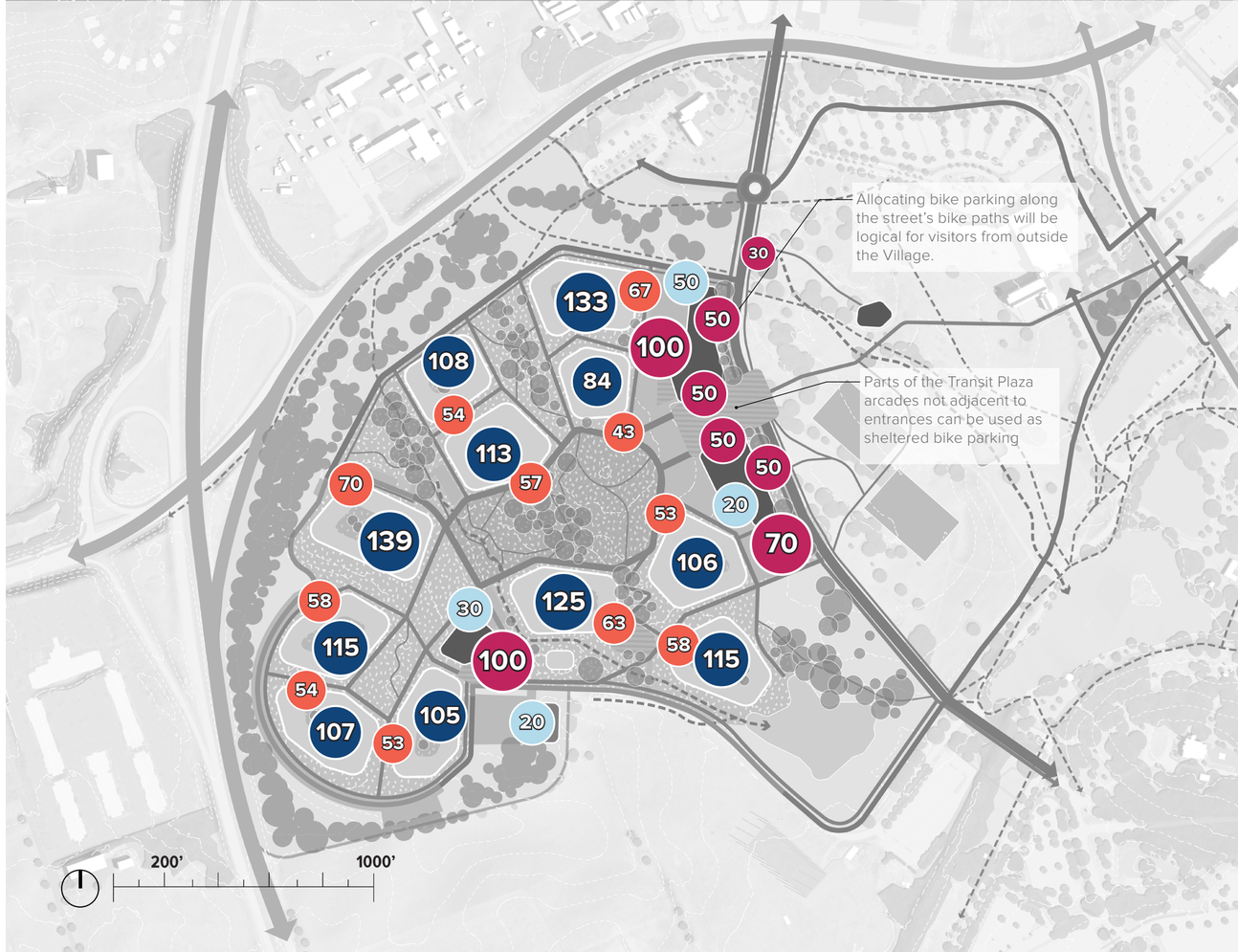


OUTDOOR RESIDENTIAL BIKE PARKING = 630

AMENITY BIKE PARKING = 500

INDOOR STAFF BIKE PARKING = 120

This quantity is equal to the number of staff car parking spaces. In addition to providing secure indoor bike spaces, providing staff with showers and lockers can make alternative mobility choices easier.

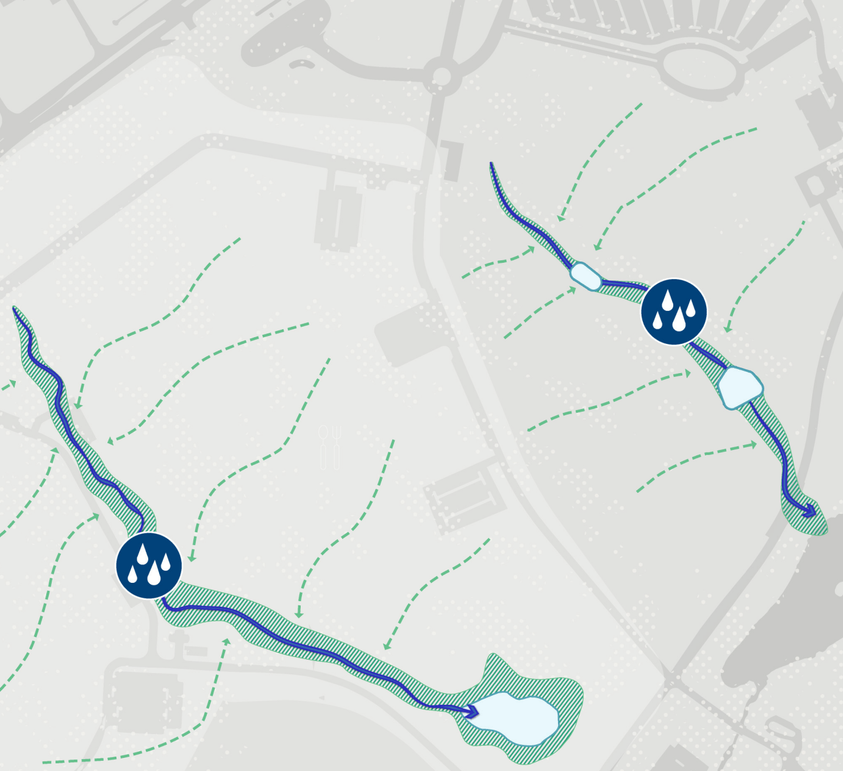


Water

A resilient water system is essential to resident health and well-being. Robust stormwater management, adopting current best practices, will help protect Stroubles Creek and improve resilience to flood hazards.

- Domestic Water
- Sanitary Sewer
- Stormwater Management

Water delivery and stormwater management will work with the existing landscape for affordability and ecological stewardship



DOMESTIC WATER

A sufficient and reliable supply of water will be required to accommodate the 5000 residents on this site.

RECOMMENDATIONS

MAINTENANCE ACCESS

Use roads and pathways to run pipes for ease of maintenance and to prevent redundant trenching.

DUAL-FEED

At least two points of connection to each quad should be used to reduce potential for water service gaps due to fault, repairs or emergencies.

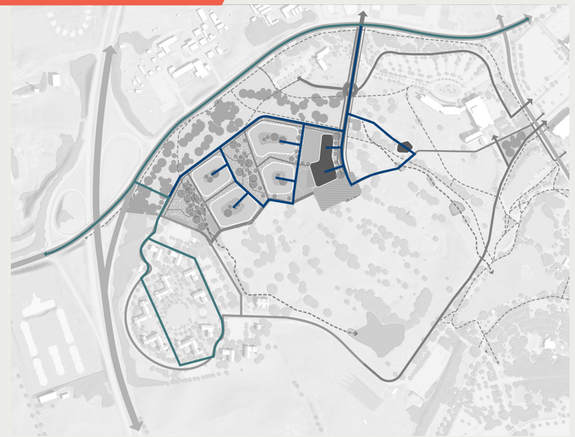
EXISTING

Based on public data, the existing domestic water main is located at Prices Fork Road. The capacity of this main to accommodate the increased load of the Village has not been verified in this planning process.

PROPOSED

Water supply piping should be laid out efficiently along roads and paths.

PHASING



SCALABILITY

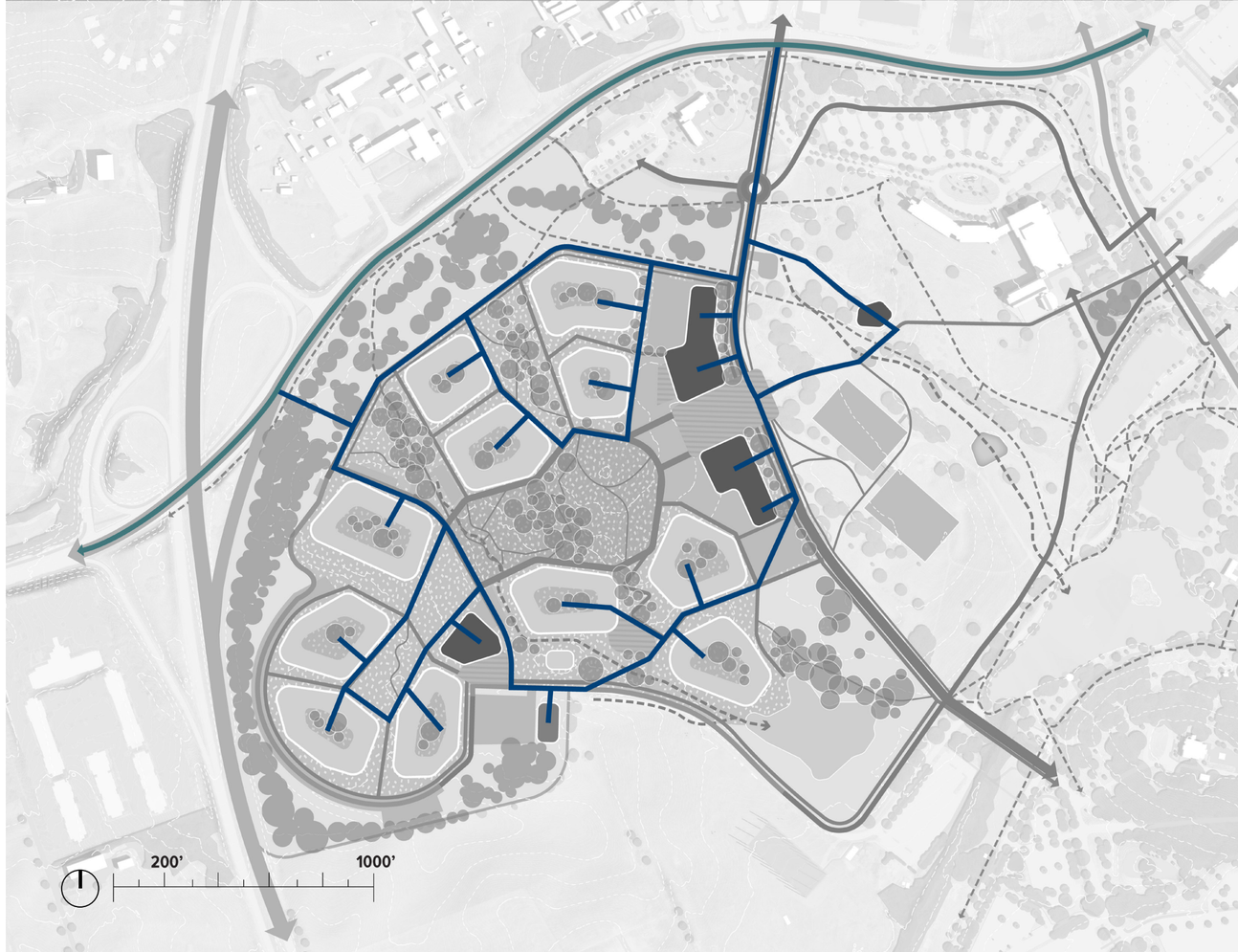
A challenge of the water system design is maintaining the right amount of pressure in early phases, while sizing the system large enough to accommodate increased loads in the future. Connecting to the main at two points provides the maximum control over pressure in the early phases.

REDUNDANCY

Connecting into the water main at two points also ensures redundancy which will allow continuity of water service during future construction activities as well as provide resilience to disasters and faults. While “completing the loop” in this way adds cost, it is recommended for long term reliability of the water system.

PHASE I WATER SUPPLY

In order to complete a loop in phase I, consider an interim tie-in to the existing Oak Lane water line until the full system is constructed.



SANITARY SEWER

Sanitary sewers should follow roadways for ease of maintenance access while working with the natural topography.

RECOMMENDATIONS

SEWAGE WASTE HEAT EXCHANGER

A viable thermal energy strategy for the Village may include a sewage waste heat exchanger (SWHE). These devices use the ambient energy found in sewer mains to heat or cool buildings via a heat pump as part of an ambient low-exergy loop. Positioning this device below the connection of the Village line to the existing main will allow the capture of waste heat from the entire Virginia Tech campus.

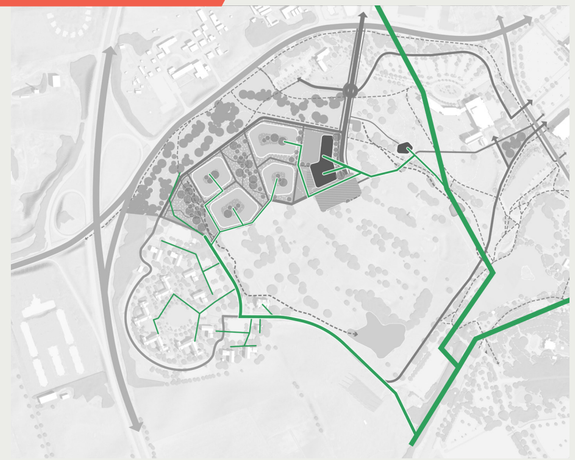
EXISTING MAIN

Based on public data, the existing sanitary sewer water main is located along the Stroubles Creek corridor. The capacity of this main to accommodate the increased load of the Village has not been verified in this planning process.

PROPOSED SANITARY LINES

New sanitary lines should follow topography as close as possible from building to existing mains while remaining in open and accessible locations.

PHASING



PHASE I SANITARY SEWER

The existing route of the sanitary trunk line along Oak Lane should be reused for the Village. Engineers should verify if the existing pipe can support the loads of phase I and/or II in order to avoid disruption to the existing Oak Lane sanitary system during construction. If required, the line should be replaced in its existing location with the capacity to accept the full future design load of the Village. This replacement should happen in conjunction with refurbishments and improvements to Oak Lane and adjacent pedestrian facilities.

STORMWATER MANAGEMENT

The stormwater management strategy adopts a regional approach that directs most stormwater loads to a single retention facility. The regional approach minimizes capital outlay, reduces maintenance and allows ease of monitoring and control.

RECOMMENDATIONS

LANDSCAPE DRAINAGE

Large open spaces should direct stormwater away from buildings and pathways and via storm pipe or dry swales as appropriate for design and programming goals. Smaller enclosed open spaces like quads and terraces should utilize yard inlets connected to storm pipes. To assist drainage, avoid the creation of landscapes that are too flat.

ROOF DRAINS

The lowest maintenance solution for draining building roofs will be to channel loads directly to storm pipes. This further reduces the risk of ice and water on paths of travel and other landscape features.

PHASING

It is recommended to complete the wet pond and stream channels in their entirety in phase I. Future phases can then easily "plug-in" to this existing infrastructure.

ACADEMIC/RESEARCH INTEGRATION

Virginia Tech has many research programs and public initiatives geared at studying, improving and raising awareness for water quality and flood resilience. Consider ways to engage research and stewardship efforts like the VT Stream Team, Stroubles Creek Coalition, Learning Enhanced Watershed Assessment System (LEWAS) Lab, and the Stream Research Education and Management (StREAM) Lab.

STORM PIPE

In areas of high pedestrian traffic, storm pipe keeps drainage off of paths and lawns completely by conveying stormwater loads underground until they reach the stream channel. Storm pipe will also be used to direct roof drainage to the stream channel.

DRY SWALES

Relying on low impact development guidelines, grass swales along roads convey water short distances to storm pipe while allowing some level of infiltration and quality improvement.

STREAM ZONE

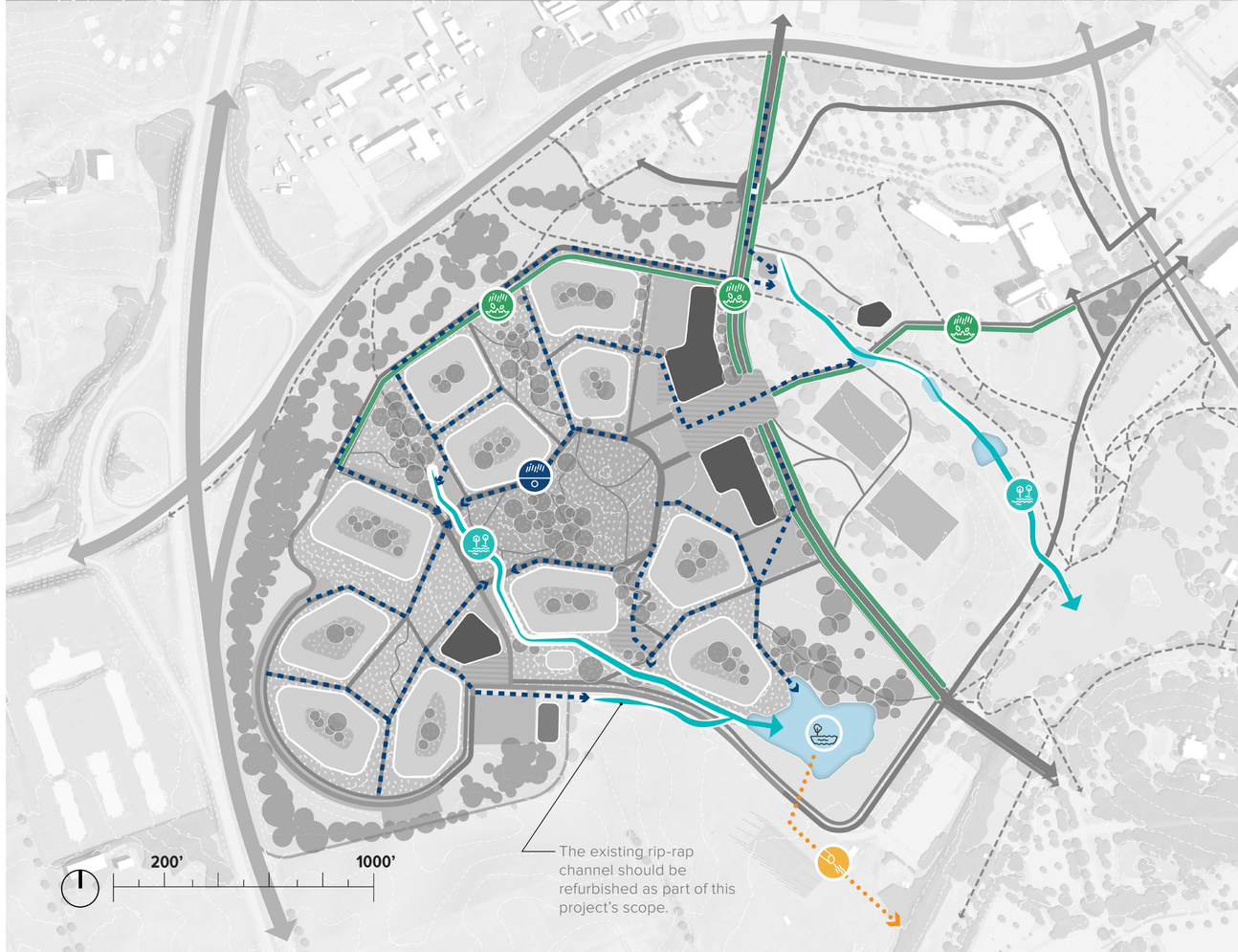
An above-ground conveyance channel that utilizes the native drainage pattern of the site as much as possible to reduce cost. Enhanced by vegetation, the stream channel mimics the look and stability of a natural stream while reducing flow velocity and improving water quality. The stream zone may not always have water and will be designed to fluctuate with changes in precipitation.

WET POND

The pond is shown at maximum capacity for a 100-year storm with full build out of the Village. The actual water level will be lower most of the time.

SPILLWAYS

Should retention infrastructure overflow, spillways provide a means of directing excess water towards the Stroubles Creek corridor.



BLUE INFRASTRUCTURE

Conveying and retaining stormwater in above-ground facilities not only offers quality and quantity credits, but can add character to the design of landscapes, attract wildlife and provide ecosystem services.

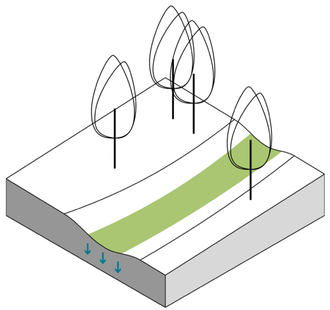
RECOMMENDATIONS

VEGETATION

Vegetation and natural plantings along bio-retention and conveyance infrastructure is aesthetically pleasing but adds maintenance. Vegetation should be deployed strategically in high visibility, high use areas. In other areas, sod is preferred for ease of maintenance. Species should be selected to align with maintenance capacities and resilience to stresses.

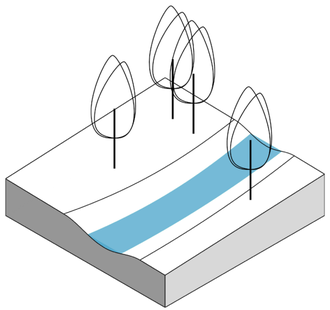
MAINTENANCE

Blue infrastructure is a gathering place for debris and sediments. Dredging will likely be required to maintain blue infrastructure but proper erosion control can reduce the frequency of dredging. Trash accumulation can be reduced through education of the Village residents as well as stewardship programs which encourage residents to clean up litter and increase their sense of responsibility for the well-being of the landscape.



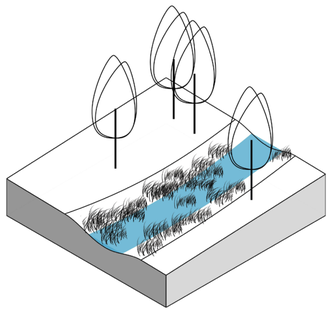
DRY SWALES

Dry swales are slight depressions in the landscape, usually along roads and parking lots, that enable the infiltration of small loads while conveying overflow to storm pipe inlets.



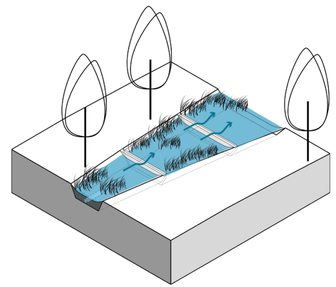
STREAM ZONE - GRASS SWALE

Where the stream moves through developed and high-traffic areas with limited room for naturalization, it takes on the form of a wet grass swale.



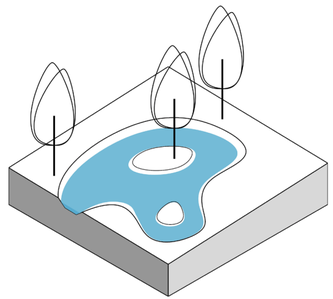
STREAM ZONE - NATURALIZED

Wherever feasible, the stream can be naturalized with a meandering ripple and pool structure and vegetation enhancements that will reduce water velocity while improving quality.



STREAM ZONE - STEP POOLS

Where the stream falls down steep topography, step pools should be used to slow water down and prevent erosion. Step pools are created with a series of rock check dams which trap sediments and reduce water velocity. Step pool spacing is based on slope steepness.



WET POND

A wet pond is a permanently wet retention facility that is designed to safely accommodate fluctuations in water level. Wet ponds can be designed to mimic natural water bodies. The slopes of the edge of the wet pond will periodically fill with water and may take on the character of a wetland.

CIVIL PHASING

The design of the Village's civil infrastructure permits phased implementation where-in each phase is both a fully functional unit on its own, as well as a segment that will integrate into a future complete system.

RECOMMENDATIONS

DESIGN COORDINATION

In order to achieve a phased infrastructural system that works as a complete whole, design needs to be coordinated early on with designers considering the entire development site, not just the active phase of work.

ROAD REFURBISHMENT

Refurbishment of existing roads should be coordinated with the installation of new sanitary and water pipes to avoid redundant road resurfacing.

EXISTING INFRASTRUCTURE

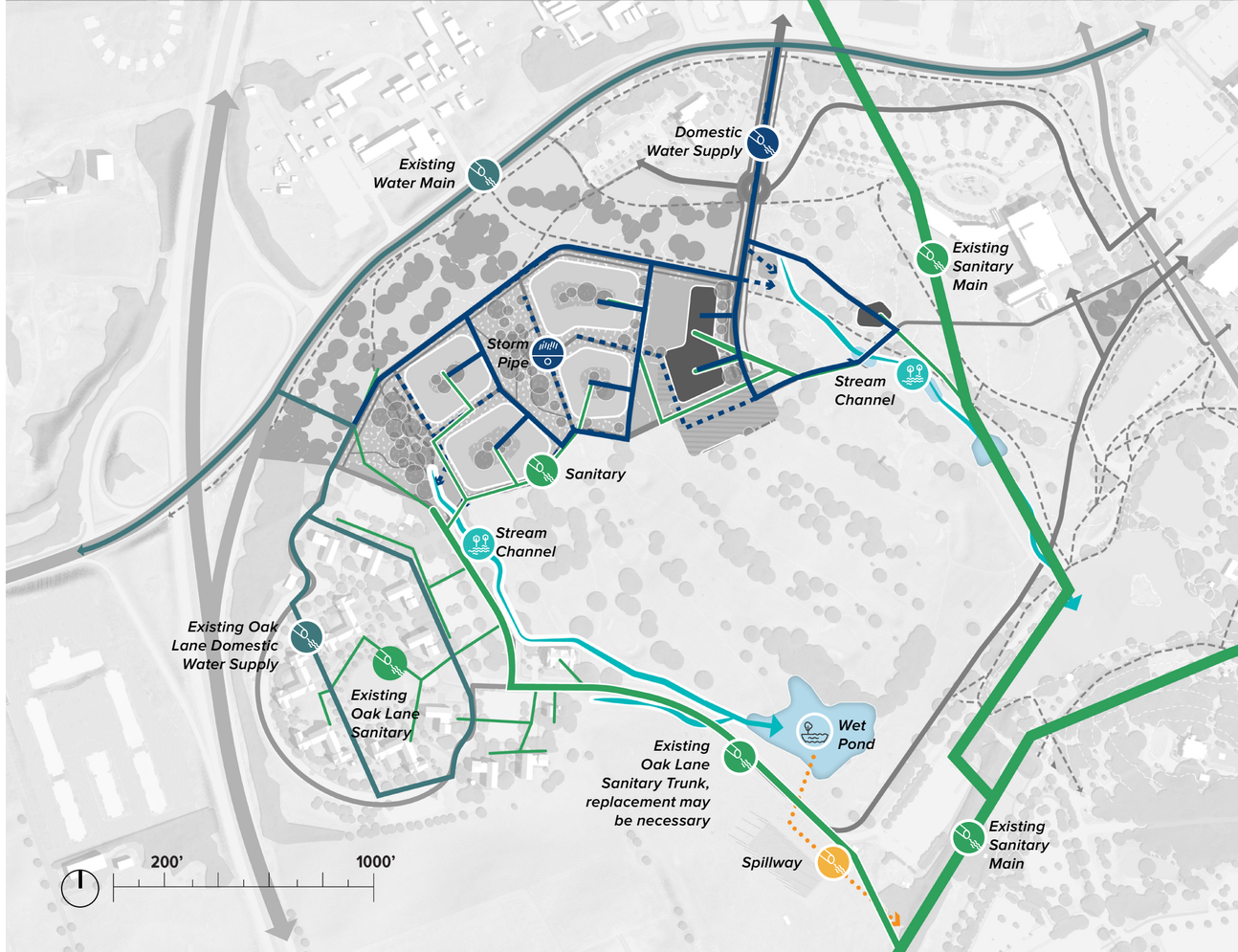
Existing Oak Lane civil infrastructure needs to remain operational until commencement of phase III. If possible, phase I and II systems will connect to Oak Lane systems. This may require that some pipes are replaced in-kind with new pipes capable of handling increased loads.

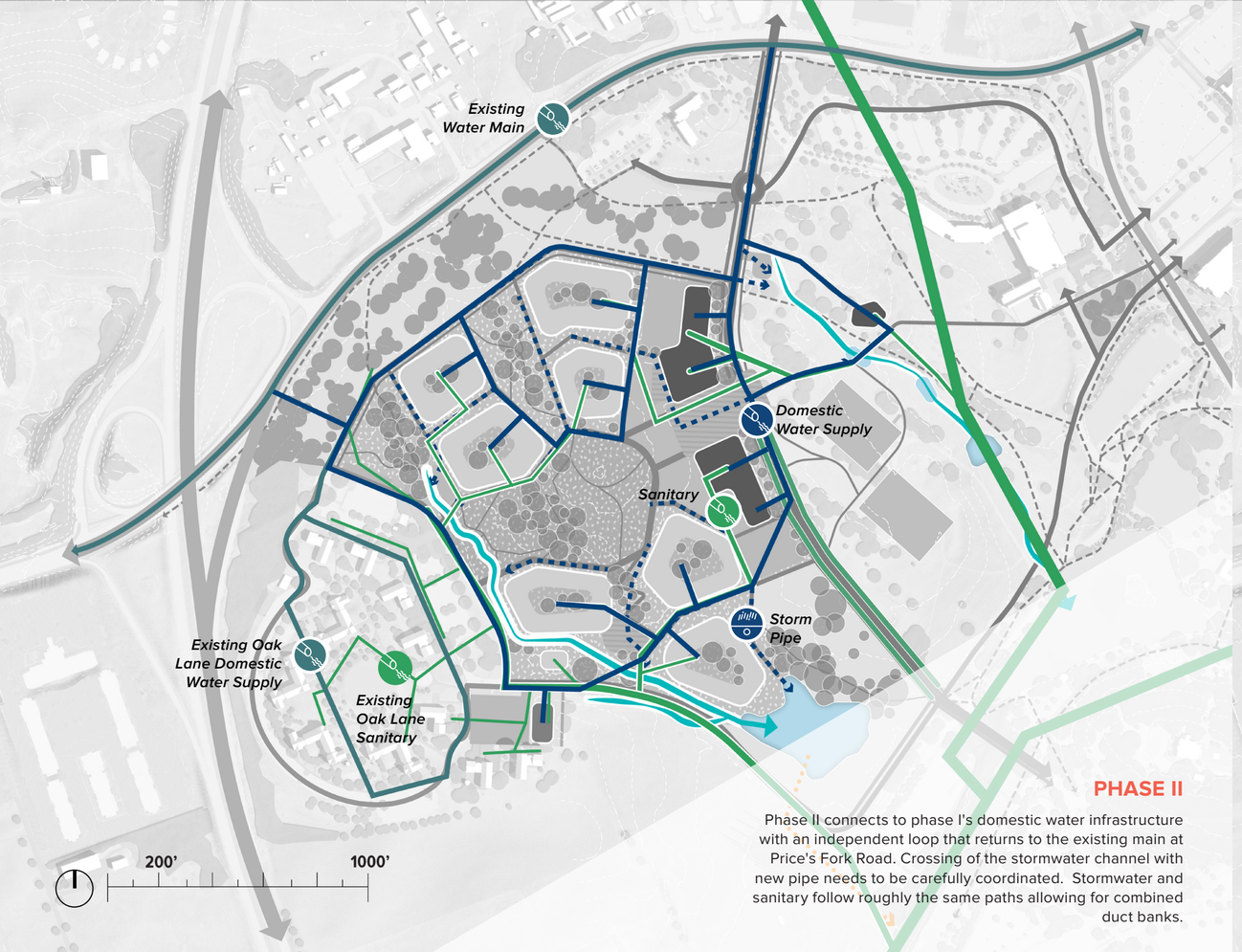
BUILDING AHEAD

With the exception of stormwater facilities, the plan has been laid out to avoid the infrastructure burden of having to "build-ahead" in order to achieve fully functioning phases. The phase II site remains untouched by infrastructure serving phase I. Maintaining this in principle means working closely with the topography so that outflowing stormwater and sanitary pipes can reach their respective destinations without crossing the phase II area of work.

PHASE I

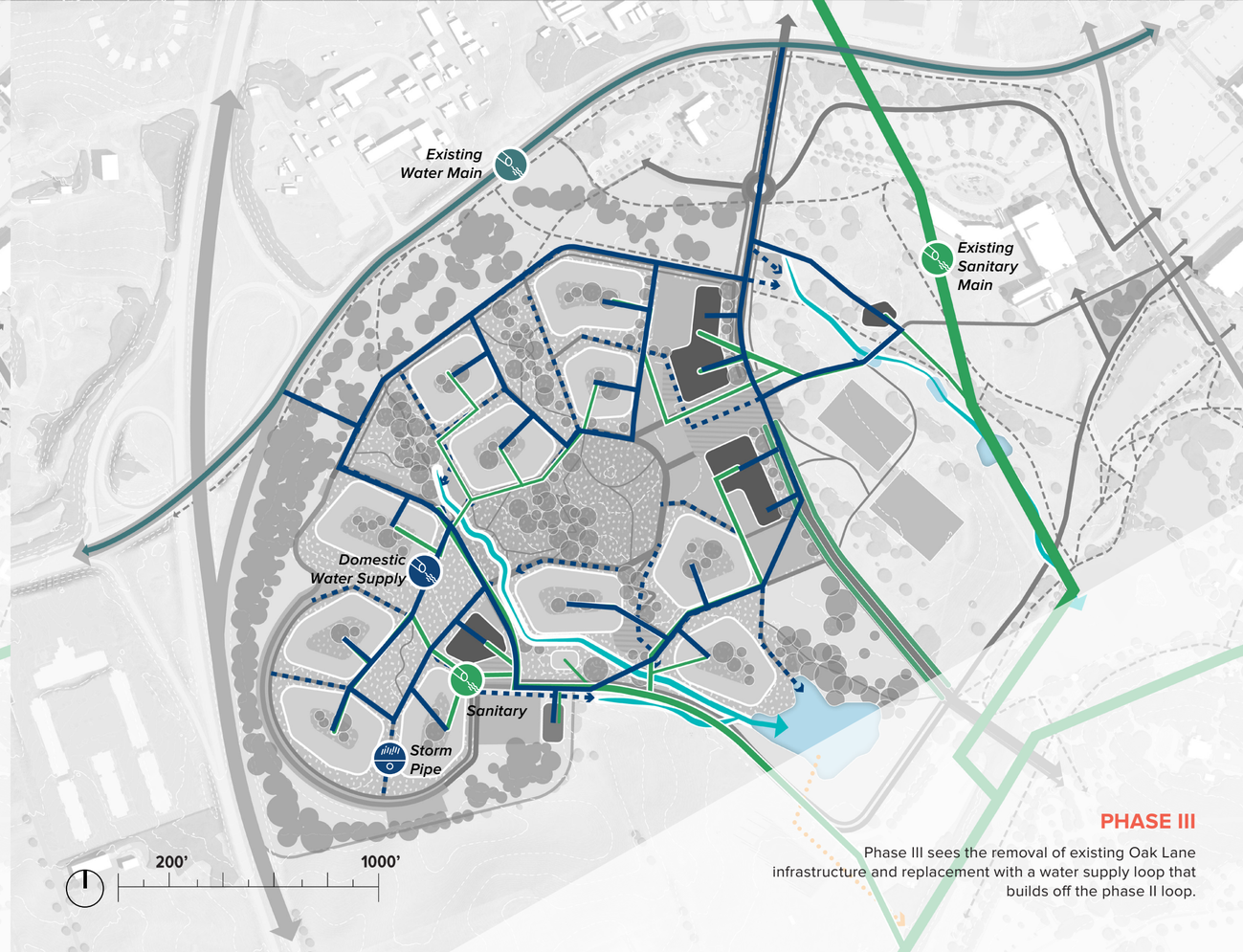
New road construction provides a path of ingress for domestic water from the north. Sanitary on the site's east slope flows towards the existing main running north-south. On the west slope it flows towards the existing Oak Lane trunk line. Storm pipe follows a similar pattern with distinction between eastward flows to the eastern stream channel and westward flows to the western stream channel. Above ground stormwater facilities must be constructed in full during phase I. Electrical and telecom conduit banks should be laid in Phase I by following new pathway and road construction routes for site ingress.





PHASE II

Phase II connects to phase I's domestic water infrastructure with an independent loop that returns to the existing main at Price's Fork Road. Crossing of the stormwater channel with new pipe needs to be carefully coordinated. Stormwater and sanitary follow roughly the same paths allowing for combined duct banks.



PHASE III

Phase III sees the removal of existing Oak Lane infrastructure and replacement with a water supply loop that builds off the phase II loop.

Information

With more and more education and research happening outside the classroom, robust information infrastructure is critical to the Village's integration and connectivity goals.

- Telecommunications
- Safety & Security
- Smart Infrastructure

STRATEGY

Information technology will provide additional connectivity and integrate Village and academic life

TELECOMMUNICATIONS

Telecommunications infrastructure includes Wi-Fi, Internet cable, cellular signals, voice over Internet phone and emergency communications networks.

RECOMMENDATIONS

SHARED CONDUIT BANKS

Telecommunications cabling can share trenches with other systems but must be encased in their own protected conduit.

OUTDOOR WI-FI

Indoor Wi-Fi may have the capacity to extend to adjacent outdoors spaces, but in most cases, wireless access points should be installed on building facades and light poles in order to extend the service reach.

CELLULAR SERVICE

To improve the reach of cellular communications, traditional, 4G and 5G cell sites may be located on buildings, light poles and other landscape structures in coordination with cellular service providers.

VIRTUAL LEARNING

Consider needs for specialized virtual learning technology to serve flexible learning spaces proposed in the amenity buildings.

HARD WIRING

At the time of building design, the university should consider whether hard-wired Ethernet connections and co-ax cable are still needed in student rooms or if investment should be focused on robust Wi-Fi speed and coverage area. Hardwiring will still be appropriate for devices like emergency phones and virtual learning, teleconferencing and VOIP systems.

SWITCH AND CABLING CENTER

A switch and cabling center for the Village would be most logically located in the Phase I Dining facility to receive cables directly from core campus before fanout.

TECHNOLOGY-FREE ZONE

The interfaith chapel and its immediate landscape are designated as a technology free zone to encourage mindfulness and respect for its role as a spiritual sanctuary. Emergency call boxes, security cameras, access control devices and staff telecommunications should still be installed at the interfaith chapel.

WI-FI COVERAGE PRIORITY

The highest priority for Wi-Fi coverage will be residential buildings and immediate adjacent outdoor spaces, especially transit plazas and residential quads.

WI-FI COVERAGE PREFERENCE

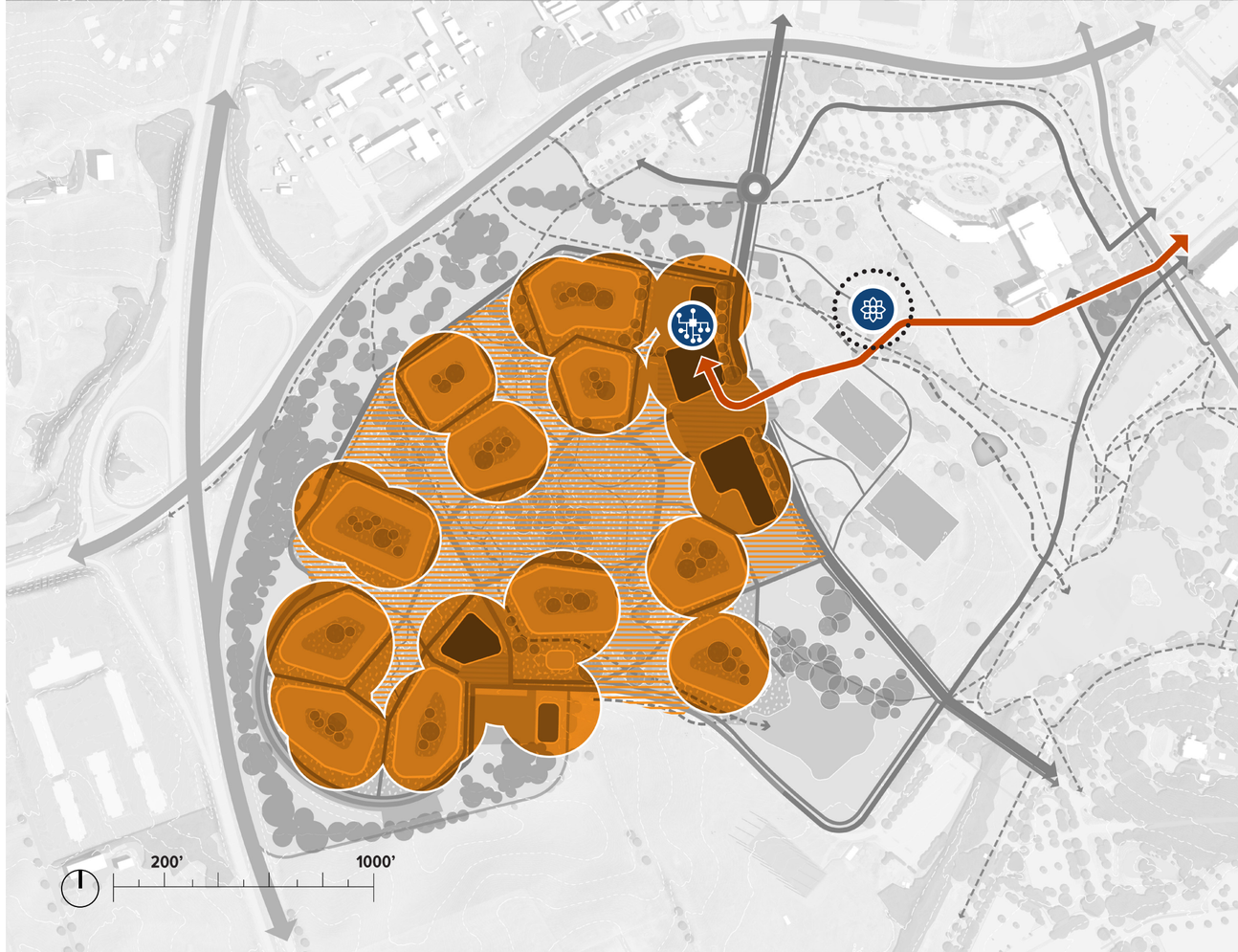
With remote learning and research ever-increasing, using the outdoor landscape as an extension of the classroom can contribute to well-being and give Village residents more options for places to study. Wi-Fi coverage for the entire Village landscape should be pursued if in alignment with affordability goals.

REDUNDANCY

Consider the use of dual fiber feeds to each quad to reduce or eliminate service downtime in the event that one feed experiences faults or repairs.

FLEXIBILITY

Given the rapid change in telecommunication technologies, infrastructure should be planned with the capacity to be changed to newer systems in the future. At the time of design and construction, use of the most up-to-date standards can increase the longevity of the system.



SAFETY & SECURITY

Virginia Tech currently employs a number of safety and security information systems on the core campus. This plan assumes those systems would also be extended to cover the Village community.

HOKIE PASSPORTS

Virginia Tech uses personal Mag-stripe/RFID cards (Hokie Passports) to control access to facility entrances and distinguish between staff and student entrances. At the time of building design, the university should consider whether Hokie Passports are a viable substitute for brass keys to access individual residential units.

OUTDOOR EMERGENCY PHONES (BLUE LIGHTS)

Blue lights are outdoor phone pylons that remain illuminated at all times and have direct voice connection to an emergency dispatcher. Work with campus safety to ensure appropriate blue-light coverage in the Village and along pathways connecting to the Village.

INDOOR EMERGENCY PHONES (BLUE BOXES)

Blue boxes are push-to-talk two-way speakers with direct voice connection to emergency dispatchers. At least one blue box is recommended in a central location of each building. Public buildings should have at least one blue box in common areas and another in staff areas.

SECURITY CAMERAS

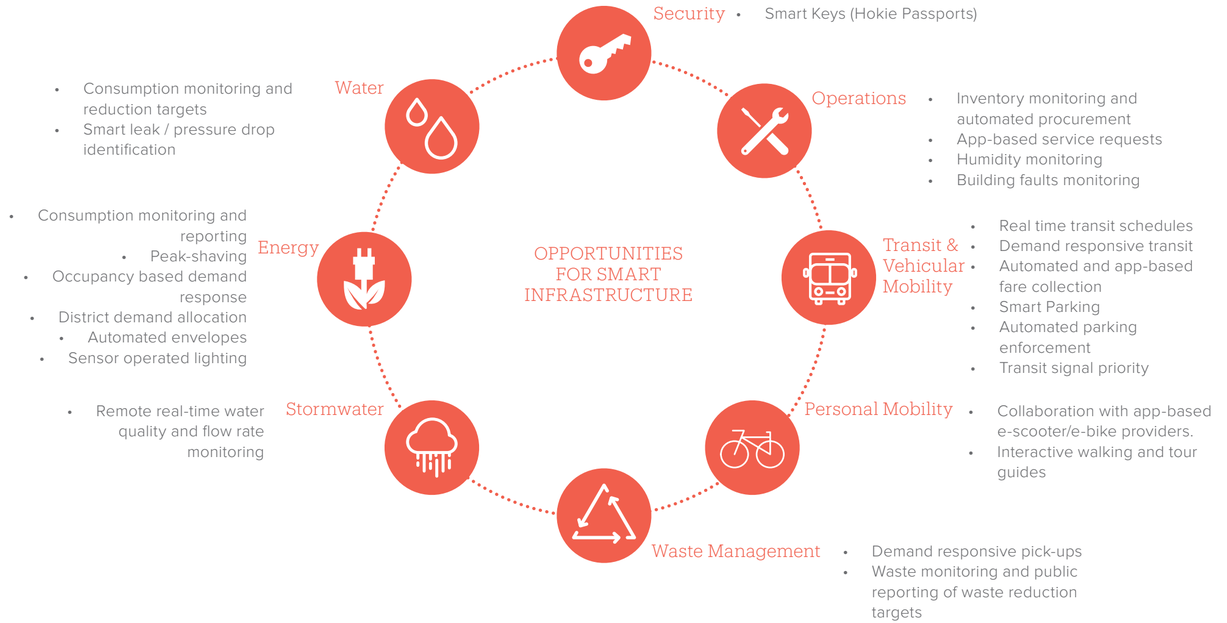
Security cameras should be located at critical public areas and in close consultation with law enforcement. Monitoring protocols should be transparent and shared with students and staff prior to move-in.

SIRENS AND LOUDSPEAKERS

The core campus' existing emergency notification sirens and voice annunciators may not be audible from the Village. If so, additional sirens and loudspeakers should be placed in the Village.

SMART INFRASTRUCTURE

Smart infrastructure is a general term describing infrastructure that integrates information technology and software to improve performance. Smart infrastructure is increasingly becoming the norm in the specifications of many infrastructure systems, but can also be an opportunity for Virginia Tech to test and demonstrate innovations in the field. Successful implementation requires coordinating with IT and network teams early in the design process.



05

Landscape

LANDSCAPE

The landscape framework for the Student Life Village is responsive to the topography of the site and the heritage trees that define the existing fairways of the golf course. Where possible, existing trees are maintained and incorporated into the proposed open space structure. A network of accessible pathways further structures the land use plan and landscape framework for the Student Life Village.

CENTRAL GREEN AND VILLAGE OVERLOOK

A high point at the center of the Village's central green provides sweeping views of the surrounding landscape and campus, including the iconic Burruss Hall, and will be an core place-making feature of the design.

“FOUND” LANDSCAPE

The existing golf course is a beautiful, undulating terrain with centuries-old trees framed by pasture land and Stroubles Creek. These existing landscape values should not be lost in the design and construction of the Village landscape.

RECOMMENDATIONS

CONSERVATION

Maintain the fairways and heritage trees where possible as character-defining features. Tree conservation protocols need to be written into construction documents so that site development, material storage and the movement of machinery does not permanently damage trees identified for conservation.

GRADING

Minimize grading to preserve the existing character and features of the site.

HIGH POINT

Leave the high point at the center clear as a platform for sweeping views of the campus landscape.

Gentle slopes are framed by mature trees

The existing high point of the landscape provides a vantage point from which to appreciate the surroundings and views back toward central campus. The golf course outbuildings should be removed.

LANDSCAPE STRUCTURE

The overall structure of the landscape in the Student Life Village is defined by the following areas, each of which is laid out in response to the topography and existing heritage trees of the site.

THE CENTRAL GREEN

The central green is the signature open space of the Student Life Village. Located at the highpoint of the site, the central green is analogous to the Drillfield as an overall organizing open space. Unlike the Drillfield, however, the central green occupies a highpoint, not a low point, in its surroundings.

NEIGHBORHOOD GREENS

Each phase of construction forms a neighborhood that centers around a green space. The neighborhood greens incorporate existing trees and topography in the areas between the residential quads. These areas will each have a unique character based on their native topography which begins to define the individuality of each neighborhood.

QUADS

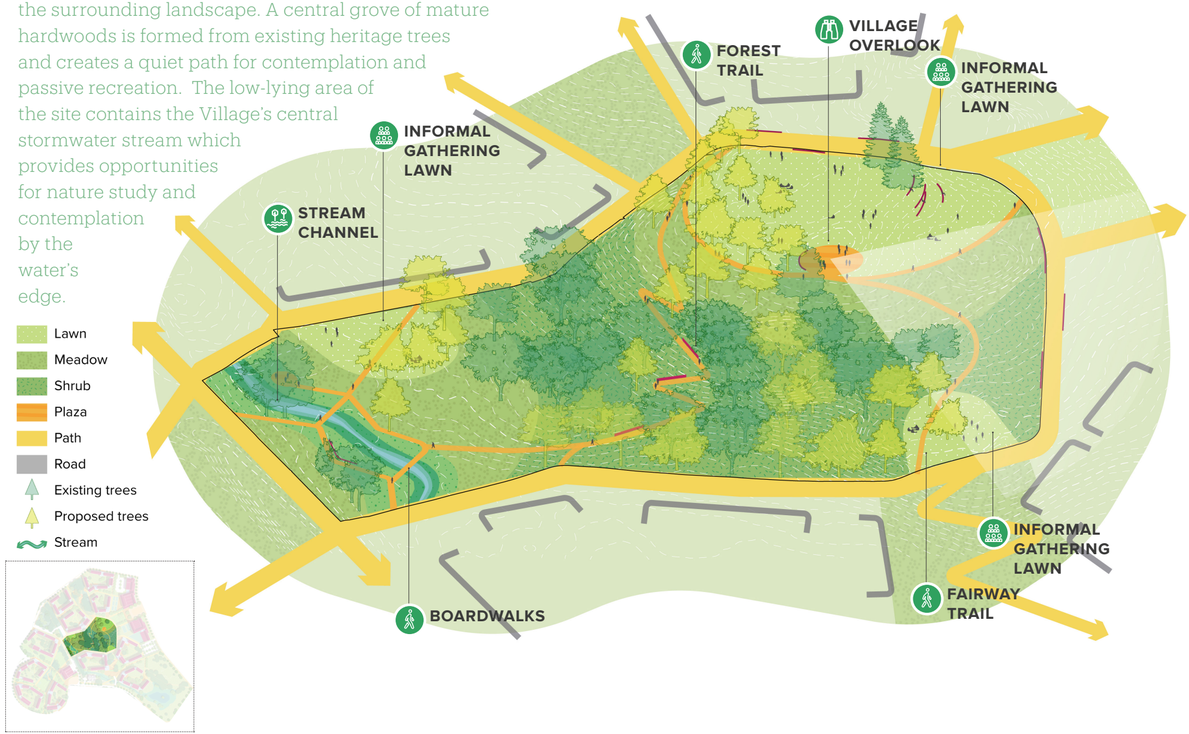
A series of quads is proposed as the formal expression of residential development. The quad landscapes are envisioned as areas for passive recreation and outdoor gathering for the surrounding residential communities. Each includes open lawn areas, stormwater management zones, and patios located adjacent to the major lobbies of the residential buildings.

PLAZAS

Each phase of construction has a plaza to facilitate gathering and to provide locations for events and activities. In both phase I and III, the plaza is also a transit hub associated with the major public buildings and dining halls. These plazas can flexibly adapt to accommodate both transit and special events.

CENTRAL GREEN

The central green includes informal gathering lawns which adapt existing golf course fairways. The high point of the site is left clear as a gathering area and overlook from which to view the surrounding landscape. A central grove of mature hardwoods is formed from existing heritage trees and creates a quiet path for contemplation and passive recreation. The low-lying area of the site contains the Village's central stormwater stream which provides opportunities for nature study and contemplation by the water's edge.

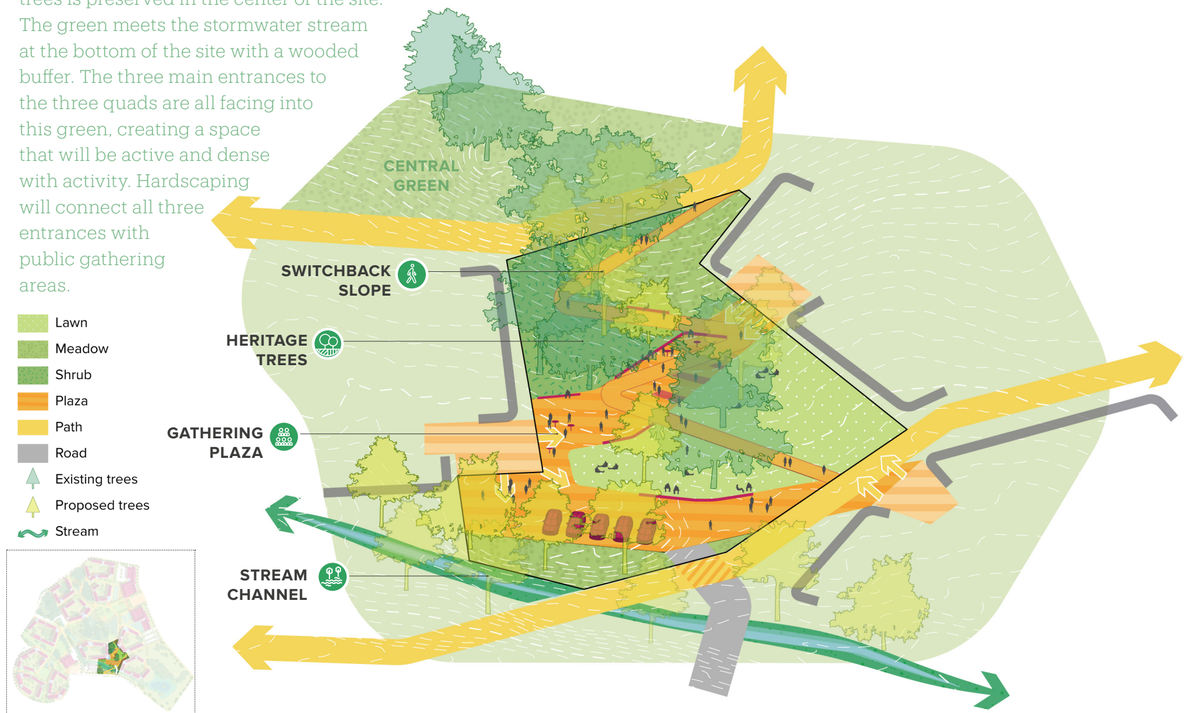


NEIGHBORHOOD GREEN - PHASE I

Each neighborhood, corresponding with each phase of development will have its own green space that defines the identity of the neighborhood. Phase I's neighborhood green is characterized by its grove of existing mature hardwood trees hugging a sloped landscape. Small picnic terraces for grilling, relaxing and social events are tucked into this grove. Paths meander through the green, hugging the contours.

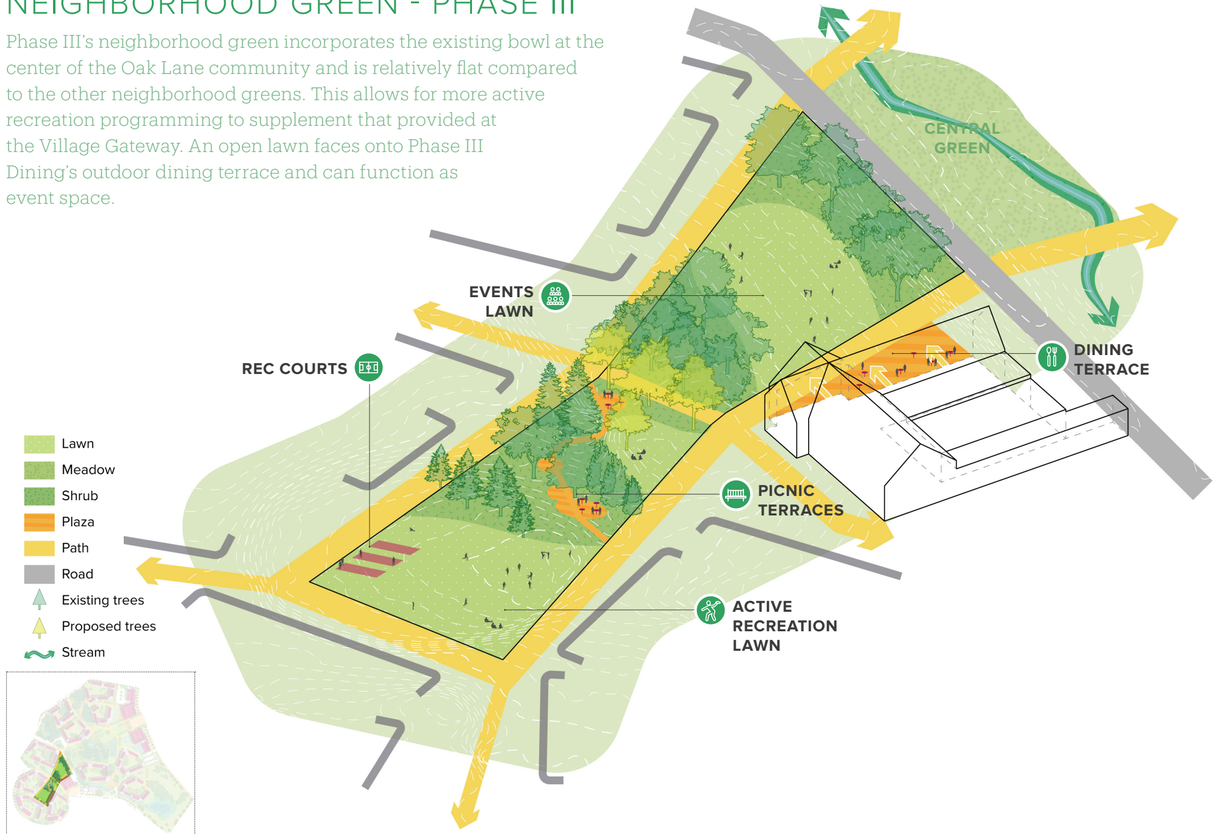
NEIGHBORHOOD GREEN - PHASE II

Phase II's neighborhood green is located along a slope that leads down to the phase II plaza. Switchbacks navigate the slope with accessible paths. An existing grove of golf course trees is preserved in the center of the site. The green meets the stormwater stream at the bottom of the site with a wooded buffer. The three main entrances to the three quads are all facing into this green, creating a space that will be active and dense with activity. Hardscaping will connect all three entrances with public gathering areas.



NEIGHBORHOOD GREEN - PHASE III

Phase III's neighborhood green incorporates the existing bowl at the center of the Oak Lane community and is relatively flat compared to the other neighborhood greens. This allows for more active recreation programming to supplement that provided at the Village Gateway. An open lawn faces onto Phase III Dining's outdoor dining terrace and can function as event space.

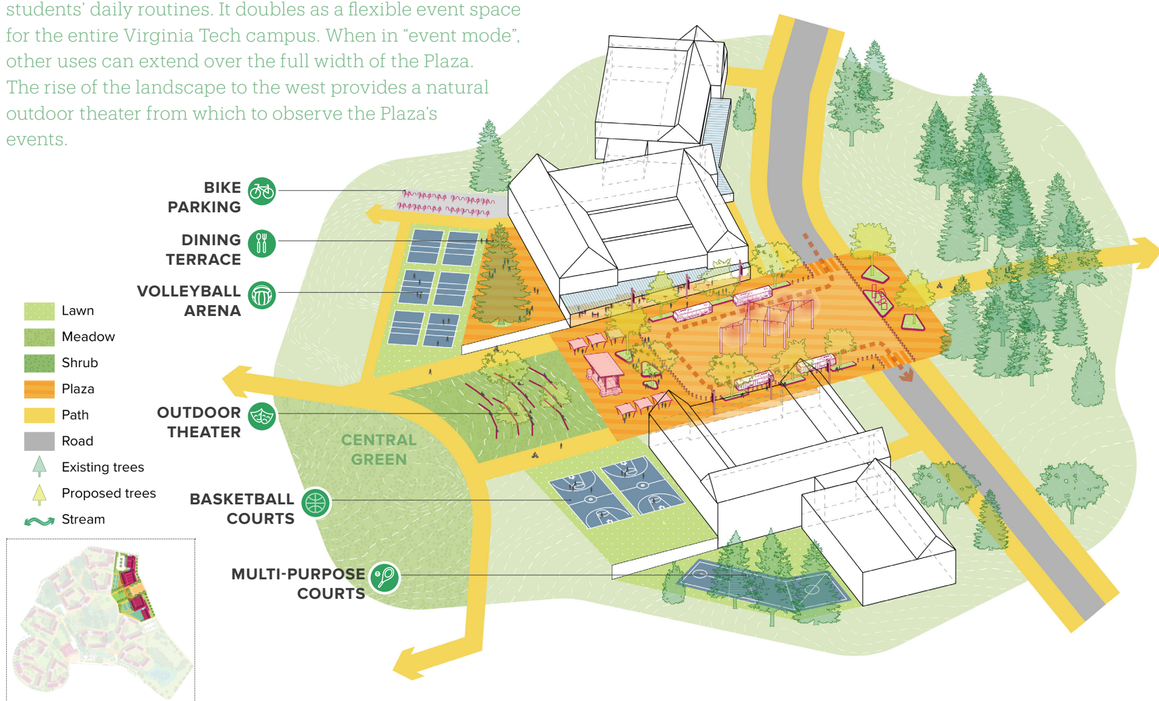


QUADRANGLE

The landscape of each quadrangle is a place for residents to express their own identity. To that end, the goal is to maximize flexibility and accommodate public activities surrounding the "Living-Learning Porches", a multi-purpose space at the main entrance of each building which connects through to the quad. Where possible, quads should conserve existing trees. Roof drains should lead directly to storm pipes, but a local yard inlet and rain-garden is recommended for collecting stormwater falling on the quad landscape itself.

TRANSIT PLAZA & THE GATEWAY

The Transit Plaza provides a space where buses can wait for passengers and change direction of travel. Adjacent amenity buildings are lined with colonnades that act as bus shelters. The Plaza is a critical component of the transit system and will be a vibrant stop on students' daily routines. It doubles as a flexible event space for the entire Virginia Tech campus. When in "event mode", other uses can extend over the full width of the Plaza. The rise of the landscape to the west provides a natural outdoor theater from which to observe the Plaza's events.



OUTDOOR RECREATION AND PROGRAMMING

A well-designed landscape is one that can accommodate many different uses with the same spaces. These suggested outdoor programming ideas are only some of the possible uses to which the Village's dynamic landscape could be devoted in the future.

PASSIVE

- **FLEXIBLE EVENT SPACE**
- **INFORMAL GATHERING**
- **LANDSCAPE THEATER**
- **GRILLING/PICNICKING**
- **OUTDOOR DINING**

CONTEMPLATIVE

- **NATURE STUDY**
- **HIKING**
- **MEDITATION AND SPIRITUAL PRACTICES**

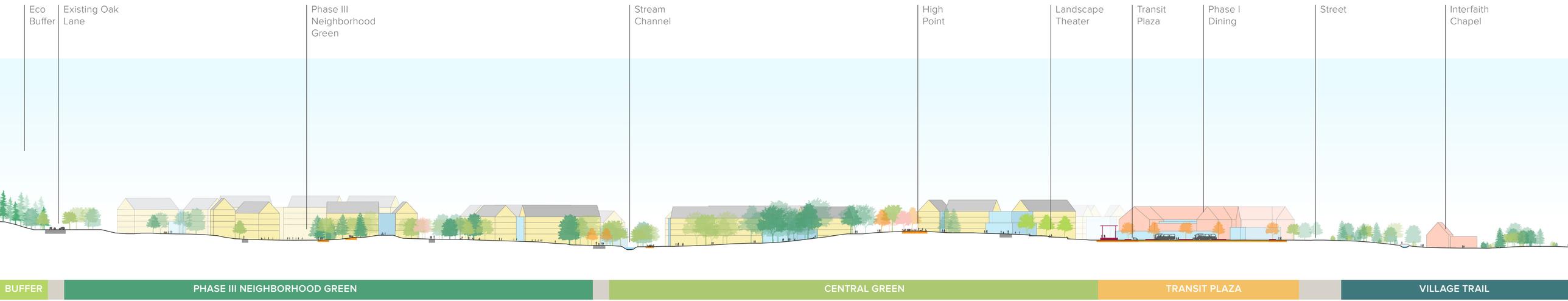
ACTIVE

- **BEACH VOLLEYBALL**
- **MULTI-PURPOSE COURTS**
- **BASKETBALL**
- **FIELD SPORTS**

Section A

WEST CAMPUS DRIVE TO HIGHWAY 460

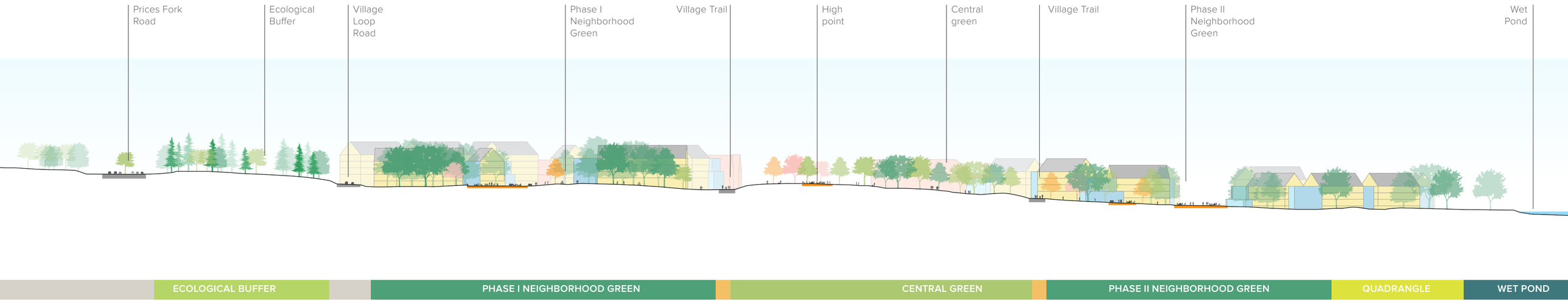
The Student Life Village is laid out in response to the topographic conditions of the existing golf course and Oak Lane residential area. In the east–west direction, an accessible multi-modal pathway connects the Village to the North Academic District crossing West Campus Drive at the Perry Street intersection. The accessible pathway moves through the proposed Transit Plaza of the Village and continues around the central green which occupies the highpoint of the site. The central green transitions from the highpoint downhill toward the west where an existing drainage swale is integrated as a site feature. As the Green continues to the west, it transitions up to the elevation of the existing Oak Lane area and beyond to the ecological buffer.



Section B

PRICE FORK ROAD TO THE POND

In the north – south direction, the topography in the area of the Student Life Village transitions from the elevation of Prices Fork Road up and over an existing hillock, at the base of which the proposed loop road is located. From there, the northernmost residential quads slope upward toward the highpoint of the site where the central green is positioned. From the central green, the topography transitions downhill toward the southernmost residential quads and beyond to the proposed stormwater management pond and Stroubles Creek.



LANDSCAPE PHASING

The phased nature of the Student Life Village's development means there will be periods of time between phases when land is not utilized. Interim strategies for recreational, operational and educational uses of the landscapes should be explored.

PHASE I

In order to construct phase I, the existing Virginia Tech golf course will be taken off line. Only two fairways will remain unaffected by the development; they should not remain in use out of respect for the comfort and safety of the Village residents. Instead, the land could be dedicated as a nursery for growing trees at a low cost so that they are mature and ready to be transplanted into future phases of development.

This land could also be made available for short term vegetation, land and water quality research.

Reforestation and enhancement of the ecological buffer should occur in or before phase I in order to ensure that a mature tree line has formed to protect future development.

Above-ground stormwater infrastructure needs to be constructed in phase I but finish landscaping can wait until Phase II.

THE MEADOWS

The meadows and green spine proposed as part of the 2018 Campus Plan should be completed only after the disruption of phase I's road and pathway construction.

PHASE II

To minimize capital outlay in phase I, the central green will not be completed until phase II. This space should be prioritized for landscape investments as it will become the Village's iconic green space feature. Trees that have been cultivated in phase I can be moved to this landscape so that it has the appearance of mature age even shortly after completion.

SUSTAINABLE LANDSCAPES

The way landscapes are constructed and maintained are part of the site's overall greenhouse gas emissions portfolio as well as a crucial part of the health of the local ecosystem.

EMISSIONS AVOIDED THROUGH CONSERVATION

The conservation of heritage trees for reuse in the Village's new green spaces will reduce the embodied carbon footprint associated with growing, transporting and planting new trees on the site. The possible use of undeveloped land in the period between phase I and II as a tree nursery will also reduce the transportation emissions associated with sourcing new trees for the landscape.

SEQUESTERED CARBON

The conservation of the site's most mature plant-soil systems ensures that carbon remains locked away in biomass rather than released to the atmosphere. The possible use of undeveloped land in the period between phase I and II as a tree nursery will also contribute to the sequestration of additional carbon into the site's plant-soil system.

DEAD AND DECAYING MATERIAL

Wherever possible, leaving dead and decaying material in place contributes to the long-term fertility of the soil and sends some carbon back into the site's soil biomass rather than the atmosphere.

LANDSCAPING WASTES

Depending on how it is processed, landscape wastes can have large or minimal climate impacts. Aerobic decay of landscape wastes releases carbon which is preferable to anaerobic decay which releases the more potent greenhouse gas, methane. Landscape waste can be conventionally composted to recycle nutrients back into the soil or sent to bio-gas digesters where it is converted to a carbon-neutral fuel.

TREE SELECTIONS

Consider tree species, especially fast-growing hardwoods, that have high carbon sequestration potential. The department of energy provides resources on tree carbon sequestration potential for each climate zone. Select trees that are resilient to the local climate conditions and human disturbance to prevent the additional emissions associated with frequent tree replacement.

SOIL HEALTH

Healthy soils are a critical carbon sink. Erosion, fertility loss, compaction and pollution all reduce soil health and thus the ability of the soil to sequester and store carbon. Protecting soil health is a holistic effort that has two main components, protection during construction and life-cycle maintenance:

- During construction heavy machinery has the potential to permanently damage soil health requiring that new soil be introduced at additional expense and emissions. Confine traffic to designated routes to limit impact to soil. The Village site work requires a small amount of cut and fill. Cut soil should be relocated to fill sites as quickly as possible. If soil must be stockpiled, keeping it dry prevents nutrient leaching and compaction.
- Throughout its lifetime, the residents and operators of the Village will have a responsibility to safeguard soil health. Education and engagement early on is critical to creating a culture of stewardship. Keeping soils vegetated year-round prevents erosion and nutrient loss. Damaged planting areas should quickly be replaced or protected.

SUSTAINABLE STORMWATER MANAGEMENT

The Village's stormwater strategy directs stormwater loads to a regionalized infrastructure of a vegetation enhanced stream channel and centralized wet-pond. Most water from roofs and pavements is sent directly to storm pipes which daylight in the vegetation enhanced stream channel. This limits pollution and erosion impacts on the landscape areas of the central green, neighborhood green and quads, protecting soils.

THE WET POND

The wet pond, when properly maintained, has the potential to act as a carbon sink and wildlife asset for the Village. The most important measures are to control erosion to limit sediment deposit and turbidity of the pond and maintain proper dissolved oxygen levels to prevent the emission of methane. Features like cascade and riffles can contribute to aeration of the water while maintaining a natural appearance.

MAINTENANCE

Lawnmowers are sources of greenhouse-gas emissions. Where programming of the landscape allows, designing low-mow lawns and meadows reduces the use of lawnmowers. Selecting plants well adapted to local climates and pests can limit the need for chemical fertilizers or pesticides. Consider the use of manual or electric landscape tools instead of gasoline engines.

WILDLIFE CORRIDORS

The structure of the Village landscape creates a series of continuous wildlife corridors through which local fauna can move. This is critical to seed dispersal, maintaining trophic balance on the site (prey-predator balance) and keeping wildlife off roads.

WILDLIFE CONSERVATION

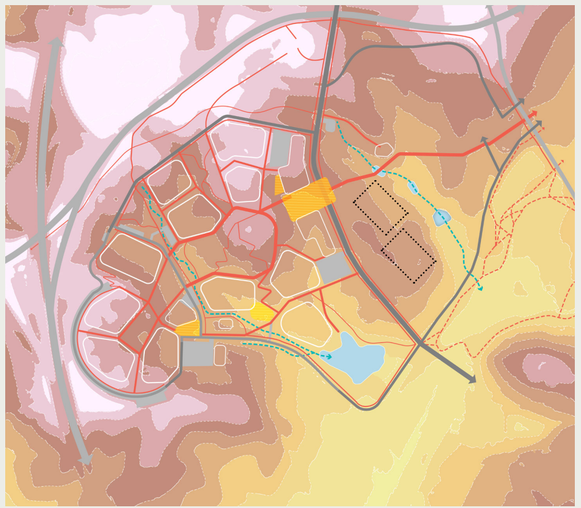
The most common wildlife visitors to the Village will most likely be birds. Bird conservation efforts can be improved by adopting bird collision deterrents on glazed surfaces. Use of animal-proof waste bins is critical to avoid accumulation of pest species and prevent native fauna from ingesting waste and pollutants. Consider the use of dark-sky association (IDA) compliant outdoor lighting and sensor activated lighting that is in off or low-light mode when users are not present.

THE ECOLOGICAL BUFFER

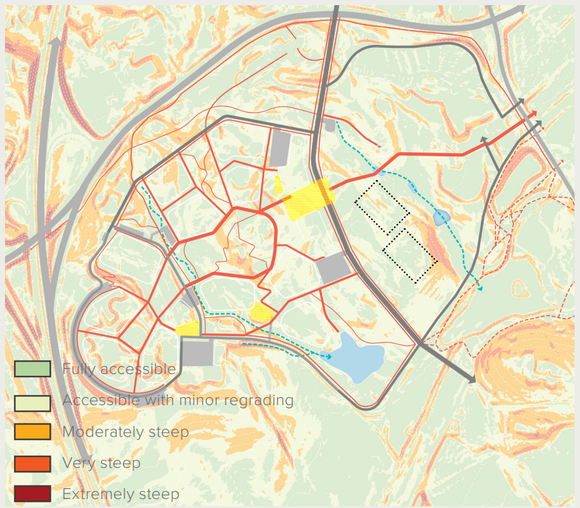
The proposed ecological buffer will protect both human and nonhuman residents of the Village from deleterious noise, light and particulate pollution from the adjacent highway 460 as well as function as a wildlife corridor and area where native vegetation should be allowed to grow more thickly. It is recommended to leave dead and decaying wood in the ecological buffer to help restore soil health and build up a robust forest ecosystem that is resilient against invasive species and human disturbance. Early in the ecological buffer's restoration and reforestation, active control of invasive species will be required.

GRADING STRATEGY

The Student Life Village Plan works with the native topography as much as possible to maintain accessible routes and acceptable road grades with a minimum of cut and fill.



EXISTING ELEVATION



EXISTING SLOPE

RECOMMENDATIONS

NATURALIZED REGRADING

Where possible, naturalized regrading is the preferred design strategy. Regraded slopes should be gentle and incorporate variations that mimic natural micro-topography.

SEAT WALLS

If required, retaining walls should be low and subtle stone walls with caps that can double in function as seating. A portion of any seat walls, as with all site amenities, should be made accessible.

DISPOSAL

In phases where there is more cut than fill and soil disposal is required, limit the distance soil needs to be hauled for disposal by coordinating with other projects. If appropriate within the landscape design, consider the use of extra soils to construct earthen berms at strategic locations.

TREE PROTECTION

The roots of trees to be conserved should be protected during regrading. Soil around roots should not be excavated nor buried with additional soil. Cut and fill should not encroach on critical root zones whenever possible.

CUT AND FILL DIAGRAM

A preliminary analysis shows that the site will require excavation in phase I in order to construct the Transit Plaza, Phase I Dining and adjacent parking and roads. Additional excavation will be needed for the pathways to climb the edges of the central green at an accessible slope. A large amount of fill will be required to construct the embankment to retain the wet pond to the south. In detail design, the engineering and design team should work to balance cut and fill and optimize for the least possible regrading.

06

Program

Program

The Student Life Village will be more than a place to sleep. It will be a complete community, a home and place to extend the educational and social missions of Virginia Tech into students' daily life. To create a Village that is both a complete home for its residents and a destination for the rest of the Virginia Tech community, requires a mix of programmed space for connecting, creating, collaborating and caring.

5000
Student Beds

3312
Residential Units

1250
Indoor Dining Seats

385
GSF per bed

Program Overview

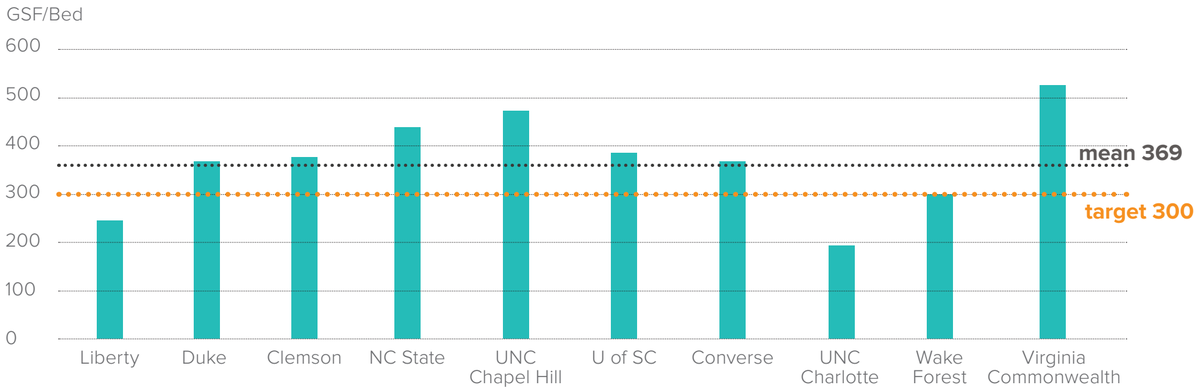
total / 1,927,344 GSF

Residential Program

As a residential district, the residential program is core to the Student Life Village's goals. With affordability and flexibility as key principles, the program seeks to establish a framework in which many different residential communities can form and change overtime. Affordability will mean finding a balance between resident privacy and space efficiency. Benchmark data from recent student housing projects in Virginia and the Carolinas were used to set a target for the residential space efficiency of the Student Life Village.

BENCHMARKS

Space efficiency of recent student housing projects in Virginia and the Carolinas



STRATEGY

provide inclusive and diverse housing options for a student's full educational career through a balanced and efficient mix of unit types

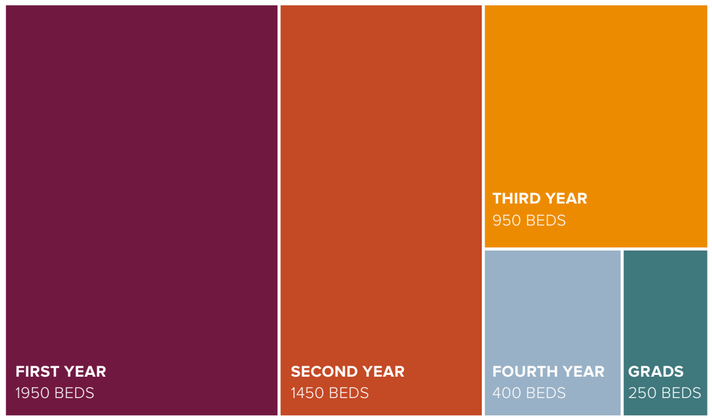
RESIDENTIAL TARGETS

These demographic targets for the residential community are provided to help guide the design and programming of buildings with the understanding that demographics change and the Village should be flexible enough to adapt to changes in program affiliation and student cohort distributions year to year.

5000 =

TOTAL BED TARGET

The total bed count for the Village was proposed by Virginia Tech as a high target to ensure the University is positioned with options and flexibility to increase and modernize its on-campus housing. This will maximize the flexibility to accommodate current demand for living-learning programs and compensate for future loss of housing inventory on campus as existing stock is renovated.



TARGETS BY ACADEMIC YEAR

The targets by academic year are goals that will never be perfectly met year to year. These targets emphasize the strategy of the Village residential program to retain students as they enter upper division years through living-learning programs and age appropriate housing choices.

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TARGETS BY RESIDENTIAL PROGRAM AFFILIATION

Residential programs are communities of residents engaged in common missions, co-curricular and extracurricular activities and who work together to form a unique identity within the Village. The Student Life Village will take the bold step of having all students affiliated in a residential program of some kind to encourage community formation and long-term retention.

FRATERNITIES AND SORORITIES

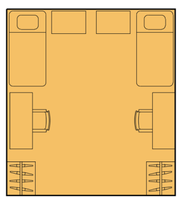
The existing housing community at Oak Lane is composed mostly of fraternity and sorority residents and these residents need to be rehoused within phase II of the Village project in order to prepare Oak Lane for phase III development. The Student Life Village will provide flexible housing for fraternities and sororities in the same kind of spaces used by Living-learning Programs (LLPs), such that, as fraternities and sororities ebb and flow, residential units can easily be rededicated to other programs.

GRAD LIFE

Graduate students will be the only group with purpose-built housing in the Village geared specifically towards the needs and community structure of older students.

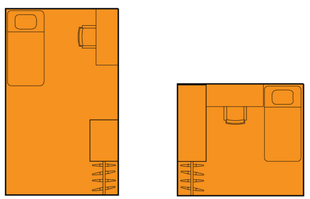
UNIT TYPES

These unit types were developed to cover a diversity of living styles and needs for the Village. Architectural configurations are for demonstration only and variations within these types can be further explored through architectural design.



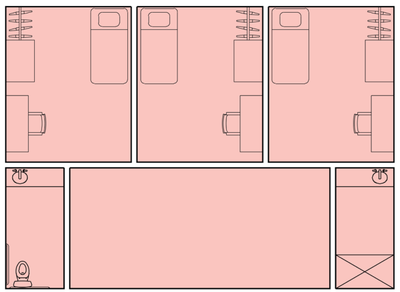
COMMUNITY DOUBLE

A community double is a double occupancy room without a private bathroom or kitchenette, most appropriate for students new to the Virginia Tech community, whose roommate will be a catalyst in the development of their social network. Bathrooms are located in shared clusters within the resident's corridor.



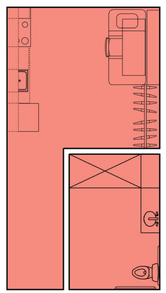
COMMUNITY SINGLE

A community single is a single occupancy room without a private bathroom or kitchenette, most appropriate for upper division students and students who have medical needs. Singles will have two different sizes to provide a range of price points for students: standard and pod. Bathrooms are located in shared clusters within the resident's corridor.



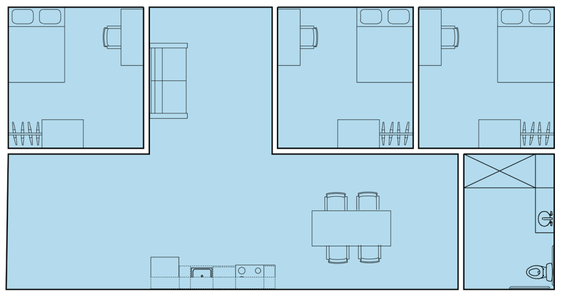
SUITE

A suite is composed of multiple single occupancy rooms connected to a shared corridor and bathroom(s). A suite is most appropriate for groups of friends who want to live together and who value the privacy of a bathroom shared between fewer students.



MICRO

A micro is a single occupancy unit with a space-saver bed, small kitchenette and private bathroom, suitable for graduate students and upper division students transitioning to independent lifestyles.

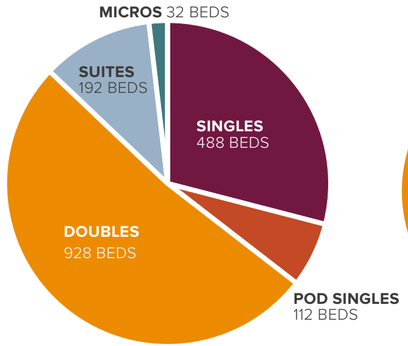


APARTMENTS (2 AND 3 BEDROOM)

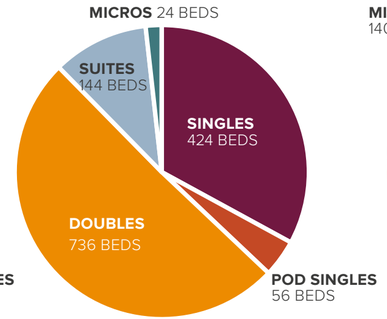
Apartments have multiple large single occupancy rooms connected to a full kitchen and living space and private bathrooms. Apartments are most suitable for graduate students and adult staff. They are not envisioned for use by undergraduates in the Village.

UNIT MIX

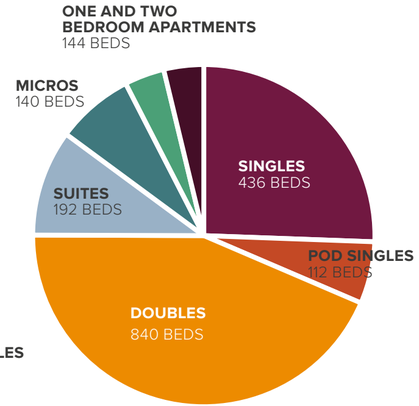
The unit mix strategy provides mostly community style single and double occupancy units in order to maintain affordability and increase the amount that can be invested in attractive amenities and enrichment programs. This mix of units should continue to be refined to represent a balance of the needs of space efficiency and affordability with a desire to provide privacy and age appropriate living situations that will retain upper division students.



PHASE I
1752 beds



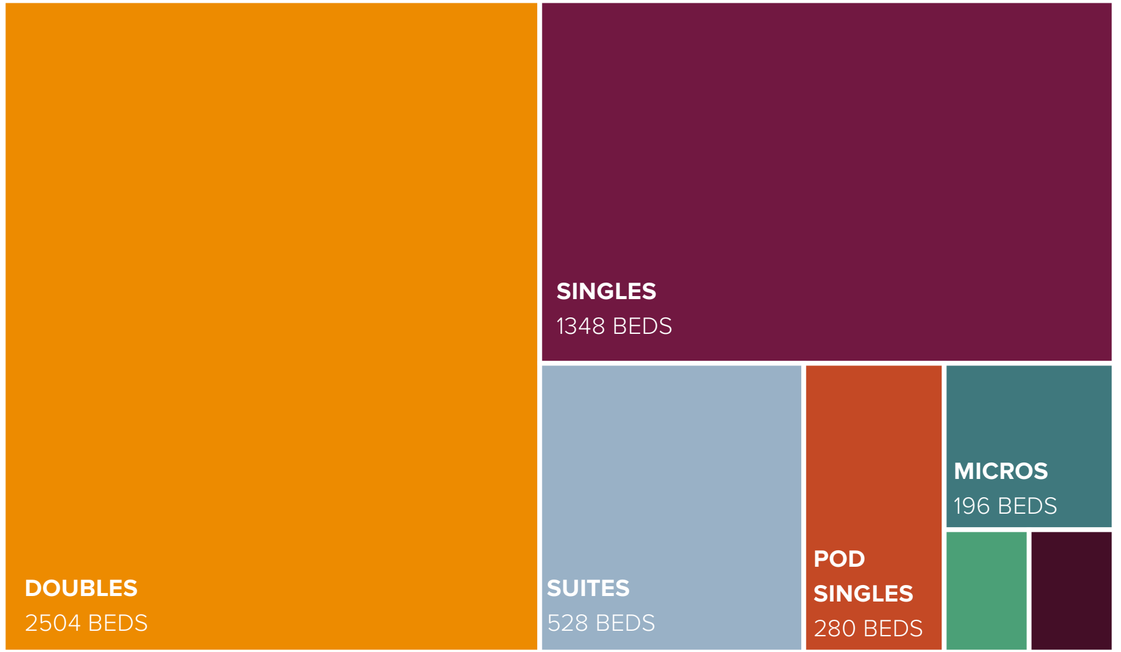
PHASE II
1384 beds



PHASE III
1864 beds

UNIT MIX BY PHASE

Phase I and II of work will concentrate on providing undergraduate housing to meet growing demand and free up space for core-campus renovations. Phase III will add graduate housing to the mix.



UNIT MIX AT FULL CONSTRUCTION

5000 beds

TWO-BEDROOM
72 BEDS

THREE-BEDROOM
72 BEDS

BATHROOM STRATEGY

For unit types that do not have a proprietary bathroom, a "Cluster" bathroom strategy is proposed. Cluster bathrooms will include single-occupancy toilet and shower rooms along common wet-walls. This will save money on plumbing and reduce the total number of fixtures needed by improving the utilization rate of each fixture. These preliminary bed-to-fixture ratios are proposed as a starting point but can vary from building to building and as the Village evolves.

STAFFING STRATEGY

Virginia Tech's housing staff system is currently undergoing changes to increase flexibility in community structure while advancing well-being goals. There are three kinds of residential staff:

STUDENT LEADERS

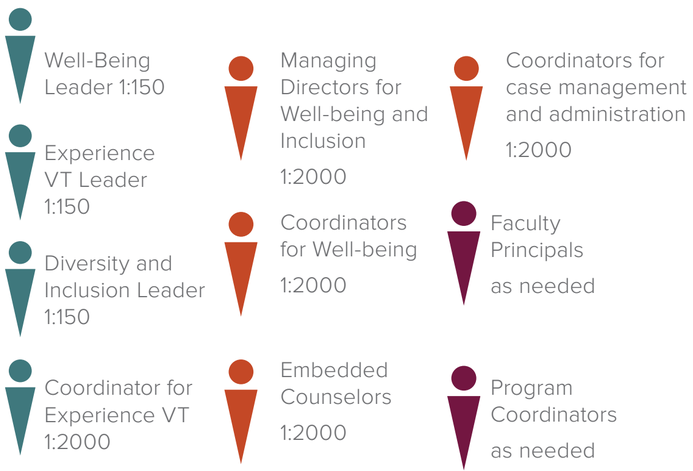
Student leaders are enrolled students who receive a stipend and free housing in exchange for supporting the residential community. They live in the community in student housing units.

PROFESSIONAL COORDINATORS

Professional coordinators are full-time adult staff who support student well-being and support daily life. Some professional coordinators need to live in the Village.

LLP STAFF

Living-learning Programs require various staff roles depending on the nature of the program and can include program directors and faculty principals. Faculty principals live in the community.

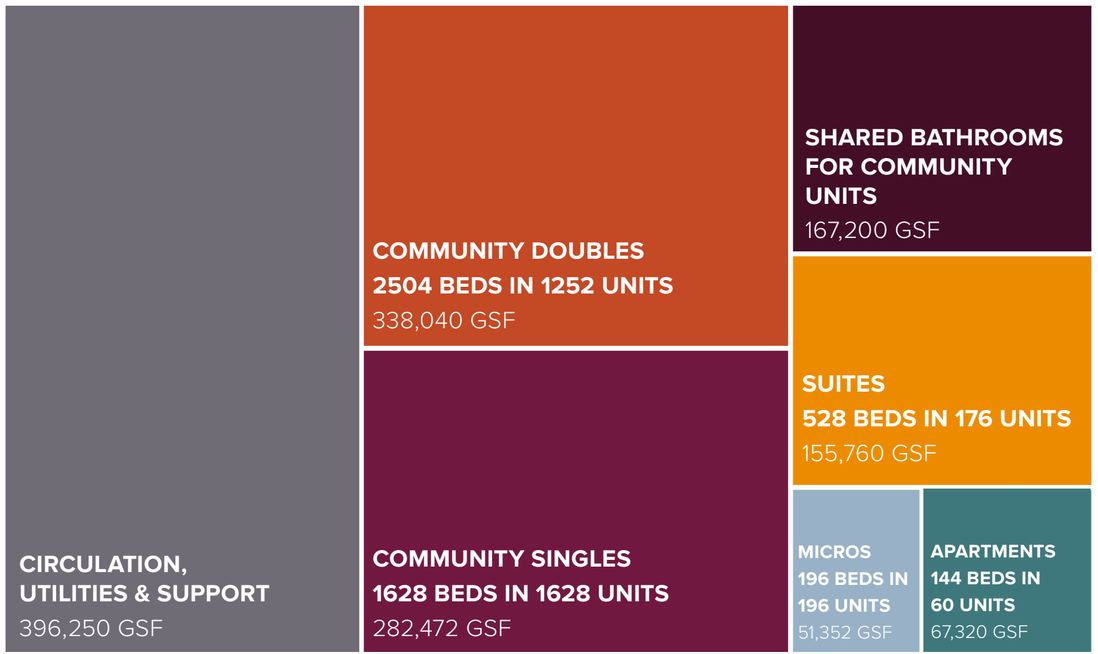


PRELIMINARY STAFFING RATIOS (STAFF PER RESIDENT)

RESIDENTIAL SPACE NEEDS

A large portion of residential space needs falls under circulation, utilities and support. This graphic provides a visualization of how the number of units translates to disproportional space needs based on their comparative efficiency.

1,458,394 GSF
292 GSF/BED



Dining Program

Dining at The Student Life Village builds on the successful model of existing “destination concept” dining facilities on the Virginia Tech campus. These facilities mix commercial franchises and unique serving venues to give students a diversity of options within a single marketplace setting.

BENCHMARKS

Space use and transaction efficiency of existing Virginia Tech “Destination Concept” dining facilities

September 2017 transaction data provided by Virginia Tech dining services

	WEST END MARKET	TURNER PLACE	OWENS	**AVERAGE**
WEEKLY TRANSACTIONS PER SEAT	86.09	64.94	91.35	80.79
GSF OF SPACE PER SEAT, including all back of house, support, kitchen and servery space	69.62	53.61	81.71	68.31

STRATEGY

leverage the power of food to provide a sense of community and belonging to a diverse student population, continuing the expected standard of excellence in the Virginia Tech dining system.

SEAT NUMBERS AND SPACE NEEDS

Seat and space needs were calculated using Dining Services data from September 2017. This provides a rough, order-of-magnitude understanding of the space needs for dining in the Student Life Village, but additional demand analysis should be performed during architectural design phases.

CALCULATION

WEEKLY TRANSACTIONS PER STUDENT
15.4

X

5000 STUDENTS

=

77,000 WEEKLY TRANSACTIONS

77,000 WEEKLY TRANSACTIONS /

WEEKLY TRANSACTIONS PER SEAT
80.79

=

953 SEATS

953 SEATS **X**

SPACE PER SEAT
68.31 GSF

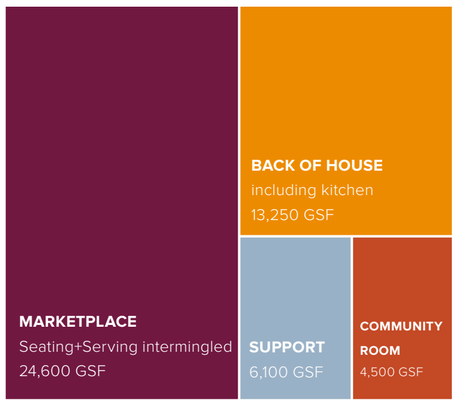
= 65,099 GSF
minimum dining space recommended to support the Student Life Village

DINING SPACE NEEDS BY PHASE

Phasing dining spaces is difficult because of the large amount of fixed equipment. To accommodate the growth of the Village, while still having sufficient dining space at all phases, the Student Life Village will be equipped with a large dining facility in phase I and a smaller satellite facility in phase III. The surplus of dining room space needs experienced between the completion of phase I and II can become additional enrichment space and/or attract customers from outside the Village.

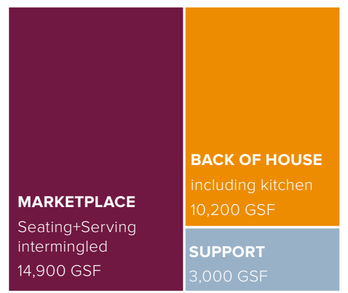
PHASE I DINING = 48,450 GSF

600 seats in the marketplace hall +
300 seats in the community room*



PHASE III DINING = 28,100 GSF

350 seats in the marketplace hall



*COMMUNITY ROOM

In addition to the seats required to support routine transactions, the Student Life Village should have a community room, a flexible use space for private events associated with dining. Seats in the community room will be in addition to those supplied in the marketplace halls so they can be closed off during normal operations.

TOTAL DINING SPACE

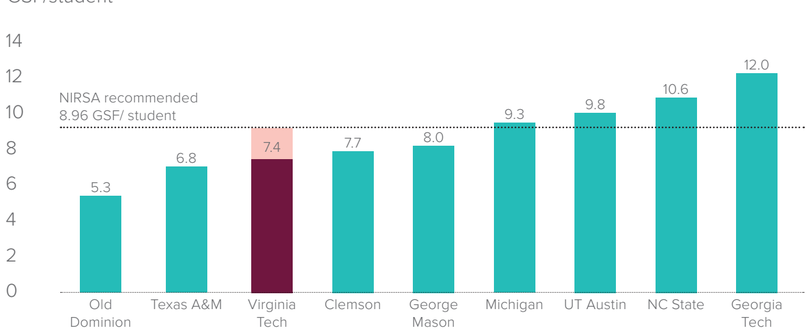
76,550 GSF

Well-Being Program

Well-Being is about more than fitness. A holistic approach to well-being includes emotional, social, physical and mental components. The Student Life Village emphasizes flexibility in its well-being spaces in order to allow residents to practice well-being in the way that makes sense for them. A focus on shared spaces, gatherings and spontaneous interactions also helps foster a sense of community which is critical to all aspects of human well-being.

BENCHMARKS

GSF of indoor recreation space per student at Virginia Tech and peer institutions.



Existing needs: 1.56 gsf x 30,500 = 47,800 gsf

Village growth: 8.96 gsf x 3,770 = 33,779 gsf

47,800 gsf + 33,776 gsf =

RECOMMENDATION = 81,579 GSF

Virginia Tech currently provides 7.4 GSF of indoor recreation space for every enrolled student. To meet or exceed the NIRSA recommendation of 8.96 GSF/student while accommodating the increased population represented by the Village (net gain of ~3770 beds) would require building no less than 81,579 GSF of indoor recreation space.

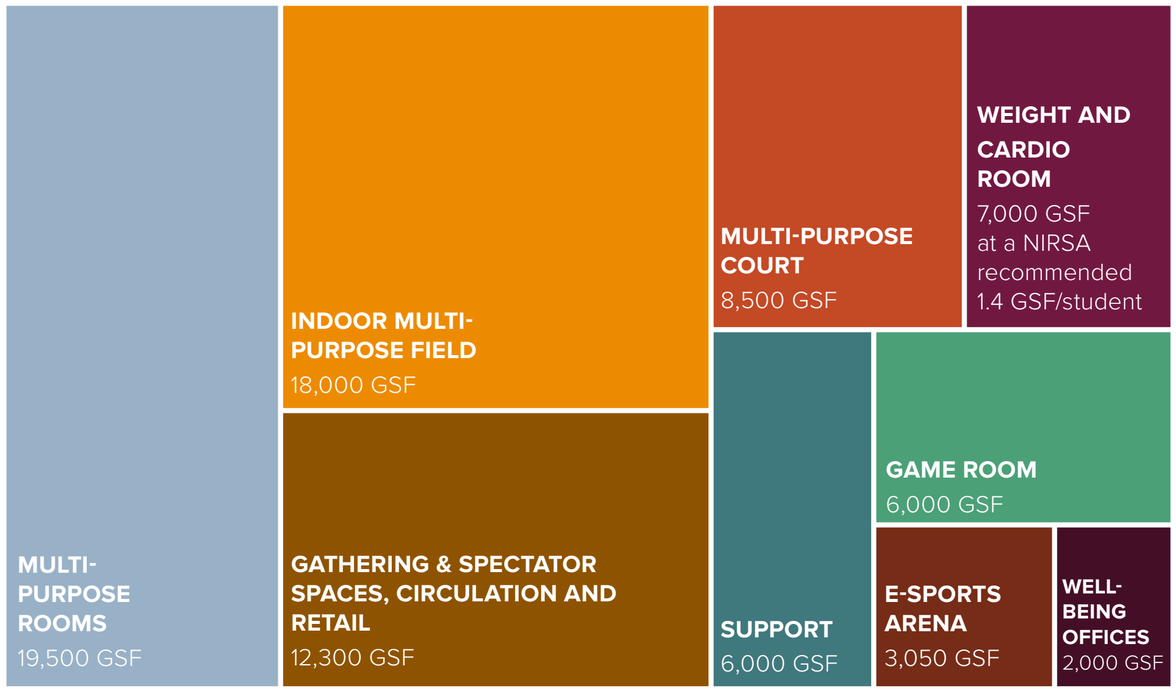
STRATEGY

provide the variety of spaces needed to practice holistic well-being with the flexibility to adjust to ever-changing preferences

INDOOR WELL-BEING SPACES

While most recreation spaces should be as flexible as possible, some purpose-built spaces were identified during the planning process. Additional space is allocated for support functions like staff and locker rooms.

81,600 GSF



PHASING STRATEGY

Well-being spaces will be needed to serve residents in all phases. A small amount is proposed in phase I to correspond with the construction of Phase I Dining, while the remainder will be constructed in phase II as part of the Student Life Commons. This will balance the level of amenity provided with the need to minimize phase I capital outlay. Well-being spaces which do not require access to specialized recreation staff or access to a locker room should be included in Phase I. This would include multi-purpose rooms, game rooms and the e-sports arena.

OUTDOOR WELL-BEING SPACES

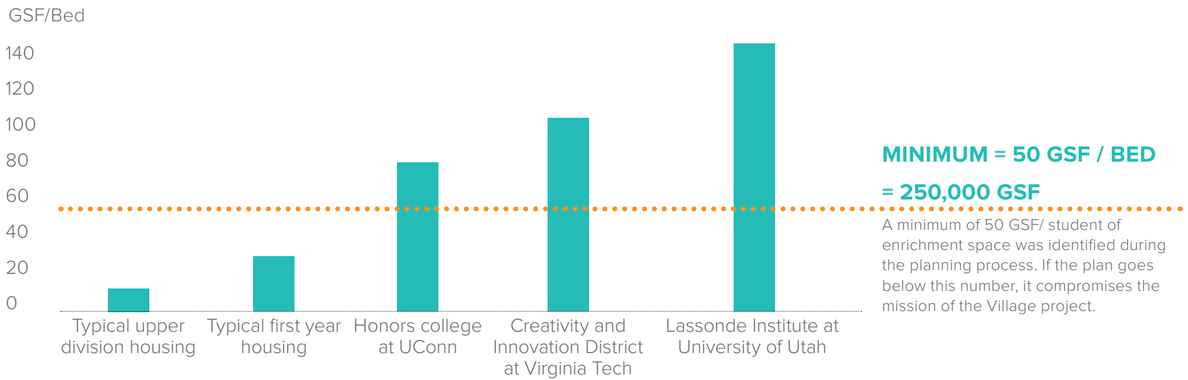
The entire Student Village landscape provides a diversity of outdoor spaces for well-being practices, from the meditative, technology-free zone at the interfaith chapel, to active basketball, volleyball and sports fields. Connections between indoor well-being programs and outdoor recreation facilities are important. The volleyball arena is located near Phase I Dining to utilize the outdoor dining terrace as spectator area. Rec fields abut the Student Life Commons so that its indoor training and locker-room spaces can be used in conjunction with sports. See chapter 5 for more on outdoor recreational spaces.

Enrichment Program

Enrichment includes any space that integrates the university's educational, social and developmental missions into residential life and helps accomplish the planning principle of Integration. Enrichment programs are what make the Village a "Living-learning Community." Enrichment space is divided into two types 1) Residential enrichment is located within residential buildings themselves and supports student socialization and Living-learning Programs within the residence; and 2) Shared enrichment space is located in amenity buildings and can be used for enrichment activities open to the entire Virginia Tech community as well as the Village's own living-learning communities and other groups.

BENCHMARKS

GSF of Enrichment Space per bed in different types of student life projects



MINIMUM = 50 GSF / BED

= 250,000 GSF

A minimum of 50 GSF/ student of enrichment space was identified during the planning process. If the plan goes below this number, it compromises the mission of the Village project.

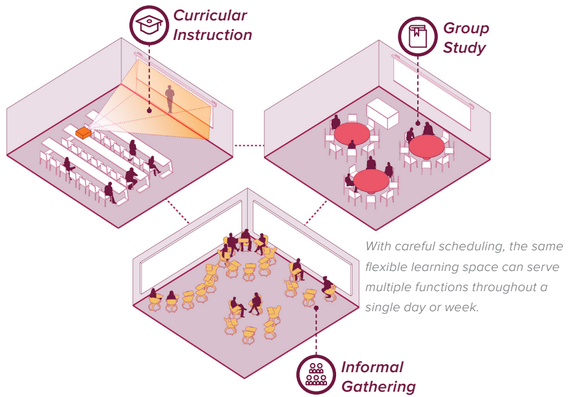
STRATEGY

provide flexible spaces that can be routinely transformed to meet the needs of changing living-learning communities

CATEGORIES OF ENRICHMENT SPACE

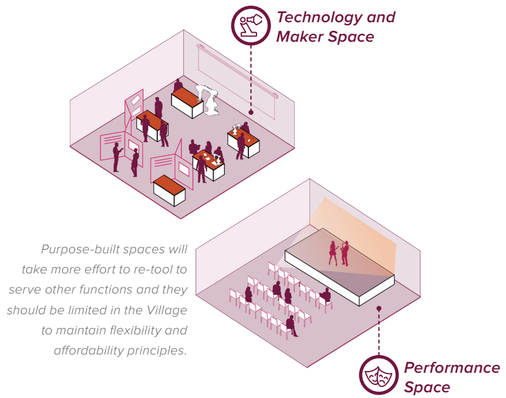
SHARED ENRICHMENT 31,250 GSF

Shared enrichment will be located in public amenity buildings where it is open to the entire Virginia Tech community while still supporting the programs of the Village's living-learning communities. Shared enrichment will be distributed through each phase as a small component of each amenity building that will benefit from adjacency to dining and well-being programs.



FLEXIBLE LEARNING SPACES

Flexible learning spaces are spaces like classrooms and study lounges that can be adapted to move between formal curricular instruction, co-curricular collaboration, group study and informal gathering based on the time of day.

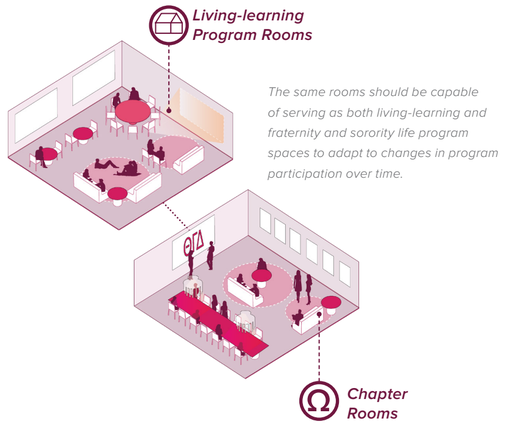


PURPOSE-BUILT SPACES

Some living-learning programs and enrichment activities will require purpose-built spaces. Things like maker spaces, workshops, music rooms, performance space, and technology labs require certain fixed infrastructure that is difficult to change throughout the day and needs a dedicated space.

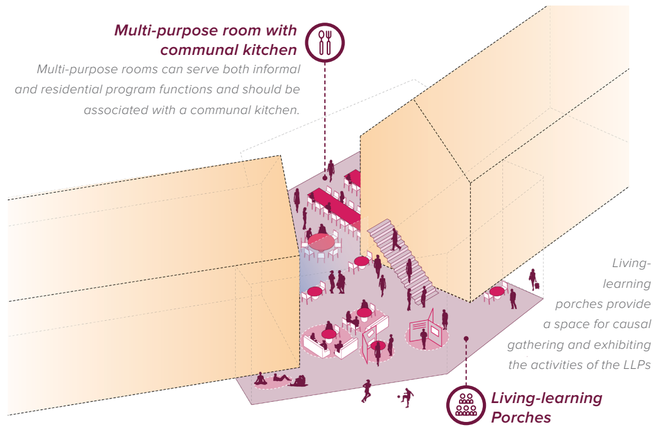
RESIDENTIAL ENRICHMENT 251,050 GSF

Enrichment spaces located within residential buildings. These spaces are important to realizing the goals of living-learning communities and creating individual identities for each building. Because there are many buildings in the Student Life Village, Residential Enrichment has a far greater space need than shared enrichment.



AFFINITY SPACES

Affinity spaces are proprietary to the Village's living-learning programs and would always be located within residential buildings themselves. Affinity spaces should be flexible enough that they can be furnished to meet the needs of a wide range of living-learning programs that change from year to year. These spaces should provide opportunities for individual expression and branding associated with residential programs.



GATHERING SPACES

Building gathering spaces include living-learning porches and multi-purpose rooms located at building entrances. These are not specifically dedicated to a single residential program but available to anyone in the building and their guests.

OTHER SPACE NEEDS

MAIL & RESIDENT SUPPORT = 7,000 GSF

Mail services should be located at dining facilities for both student convenience and proximity to loading docks. Mail is proposed to be included in both Phase I and Phase III Dining facilities so no residence is too far from a mail center. Mail centers may also be used as a support desk for students to address other housing and operational needs. The use of package lockers should be considered to handle large volumes of online shopping deliveries while minimizing labor costs to the university.

OPERATIONS CENTER = 14,550 GSF

Operations spaces support the maintenance of both facilities and grounds at a Village scale and are in addition to custodial space already included in the gross square foot calculations of the other programs. The Operations Center includes garages, repair workshops, warehousing, and offices/touch down space for operations staff.

THE INTERFAITH CHAPEL = 6,950 GSF

The interfaith chapel is a special purpose program to support all student spiritual, meaning-making and meditative practices. It should include general purpose assembly and sanctuary space.

07

Buildings

Buildings

This chapter describes the basic building typologies required to create the student Village. It describes characteristics, including: building distribution, entry locations, general massing, and strategies for accommodating a range of student life programs. These typologies and characteristics are critical to the success of the Village, while still allowing for flexibility as the individual phases, projects, and specific programs are refined and scheduled.

GOALS

01 AFFORDABLE

The buildings must be constructed to achieve the highest value for the available resources. Materials and construction technology will be selected to meet this goal. This criterion supports the mandate of providing financially accessible housing for all Village residents.

02 HOKIE SPIRIT

The spirit of Virginia Tech must be manifest in the Village such that the community is an integral part of the larger campus environment. This spirit includes organizational principles, such as human scaled residential quadrangles as well as supporting iconography such as use of Hokie Stone in the landscape, campus standard elements and opportunities for seasonal and celebratory signage.

03 SITE RESPONSIVE

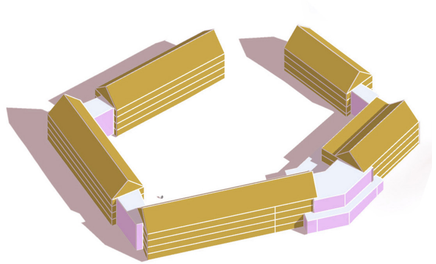
The existing site is a tremendous resource to help define the character of the future Village. The buildings will be arranged to respond to existing topography, heritage trees, views and accessible pathways. This responsiveness will tie the Village to the unique sense of place that is characteristic of the region.

04 HUMAN SCALED

It is important that this community of 5000 students is defined by human scale. All buildings must be responsive to human scale in terms of massing, fenestration and their role in shaping the size and character of open spaces including quadrangles, open spaces, pathways and roads. Residential forms should communicate a sense of home.

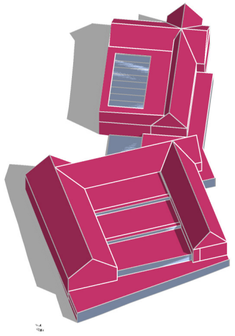
BUILDING TYPES

Three basic building types are proposed to support program objectives of the Student Life Village and to physically define the new student life environment.



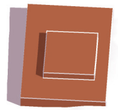
RESIDENTIAL

The majority of the proposed buildings are student residences. These are distributed across the site and will provide the overall fabric of the Village and shape student communities.



AMENITY

Amenity buildings support non-residential student life programs, including dining and recreation. These buildings are generally larger than the residential building stock, fewer in number, and have a privileged location at mobility nodes. Each phase of development will be anchored by an amenity building so that amenity space grows in tandem with the growth of the Village population.



UTILITY

Utility buildings are positioned to maximize operational efficiency while remaining in the background of open space definition. These buildings will be practical while maintaining appropriately detailed public-facing facades.

RESIDENTIAL BUILDINGS

The following parameters should be met when designing the residential buildings. These are intended as an inclusive set and when addressed together will reflect the desired scale and character of these buildings within the Village.

PARAMETERS

SHORT SPANS

Reflecting the unit types, creating thin footprints, ample access to daylight, and allowing for a range of construction technologies including stick built.

FOUR STORIES

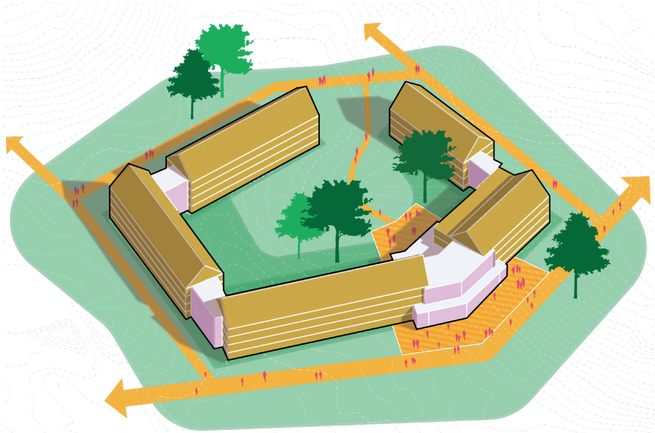
Maintains human scale and allows most floors to be easily accessible by stairs.

FLOOR-TO-FLOOR

Prioritize common areas for high ceiling heights will limiting floor-to-floor dimensions in residential areas for efficiency.

ROOF SCAPE

Utilize gabled roof profiles to provide a residential character and human scale. Where appropriate with programming goals and budgetary constraints, traditional and shed dormers can add additional interest to the roof-scape and conceal MEP equipment.



SPACE USE FOR EXAMPLE RESIDENTIAL QUAD

452 beds + 1 staff apartment — Total: 151,203 GSF

Doubles: 224 beds | Pod Singles: 28 beds | Micros: 12 beds

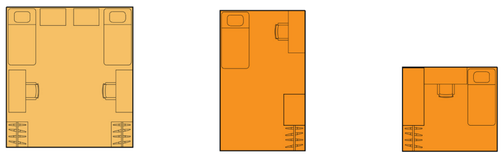
Singles: 116 beds | Suites: 72 beds | Staff apartment: 2 beds

RESIDENTIAL UNITS 82,112 GSF	**CIRCULATION** 18,800 GSF	**COMMUNAL BATHROOMS** 16,650 GSF
	ENRICHMENT 18,650 GSF	***UTILITY** 14,991 GSF

*The attics of each building (found within the gable roof) are envisioned as tempered space for horizontal utility runs and concealing mechanical equipment. This space is not reflected in this calculation.

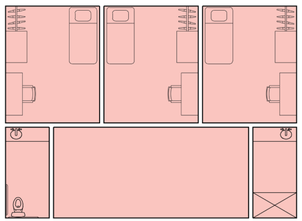
UNIT TYPES

The residential buildings will include a range of unit types designed in response to the range of communities represented, financial needs, and student development goals. These unit types include:



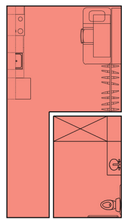
COMMUNITY DOUBLES, SINGLES AND PODS

These bedrooms, located off a common hallway, share lounge spaces, community bathrooms with privacy gradients, and are most suitable for first- or second-year students. Pods offer an option for students desiring private space on a tight budget.



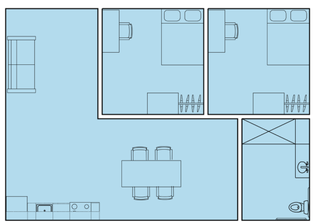
SUITES

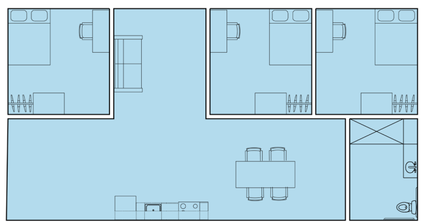
These units include bathrooms dedicated to their specific occupants. These are most suitable for second-and-third-year students, but are also able to accommodate first years



MICROS

A micro is a single occupancy unit with a space-saver bed, small kitchenette and private bathroom, suitable for graduate students and upper division students.





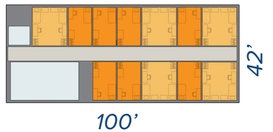
APARTMENTS (2 AND 3 BEDROOM)

Apartments have multiple large single occupancy rooms connected to a full kitchen and living space and private bathrooms. They are envisioned for use by graduate students in the Village.

BLOCK TYPES

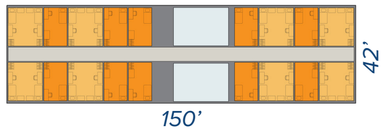
Blocks are conceived of as standard modules of four floors. Each floor is identical for maximum framing and plumbing efficiency. Bathroom clusters for community units are shown in light blue.

SHARED BATHROOMS : A, B & B-2



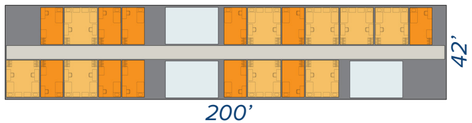
TYPE A = 68 BEDS

40 beds in 20 doubles
28 beds in 28 standard singles



TYPE B = 104 BEDS

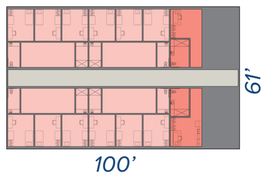
64 beds in 32 doubles
40 beds in 40 standard singles



TYPE B-2 = 128 BEDS

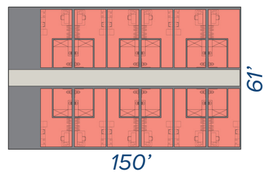
80 beds in 40 doubles
48 beds in 48 standard singles

PRIVATE BATHROOMS: C, D & E



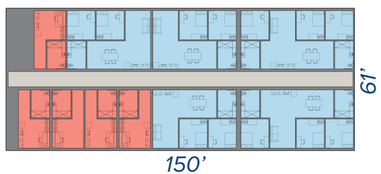
TYPE C = 56 BEDS

48 beds in 16 suites
8 beds in 4 micros



TYPE D = 48 BEDS

48 beds in 48 micros



TYPE E = 68 BEDS

20 beds in 20 micros
24 beds in 12 two-bedroom apartments
24 beds in 8 three-bedroom apartments

MIXED BATHROOMS: F

TYPE F = 96 BEDS

40 beds in 20 doubles
28 beds in 28 pod singles
24 beds in 8 suites
4 beds in 4 micros

Type F blocks are unique in that they mix units with and without private bathrooms. From a plumbing perspective this introduces inefficiencies, so Type F blocks are deployed sparingly to diversify unit type offerings within quads.

DISTRIBUTION CONCEPT

Blocks are organized into quads to match the target distribution of unit types for each phase and ensure that no quad or neighborhood is dominated by a single type of unit. The proposed distribution of blocks and units by phase is as follows:

	Block Type	Block QTY	Singles	Pod Singles	Doubles	Suites	Micros	2 bed	3 bed	PHASE TOTALS
	A (68)	4	112	0	160	0	0	0	0	
	B (104)	7	280	0	448	0	0	0	0	
	B-2 (128)	2	96	0	160	0	0	0	0	
	C (56)	2	0	0	0	96	16	0	0	
	D (48)	0	0	0	0	0	0	0	0	
	E (68)	0	0	0	0	0	0	0	0	
	F (96)	4	0	112	160	96	16	0	0	
PHASE I			488	112	928	192	32	0	0	1752
	A (68)	6	168	0	240	0	0	0	0	
	B (104)	4	160	0	256	0	0	0	0	
	B-2 (128)	2	96	0	160	0	0	0	0	
	C (56)	2	0	0	0	96	16	0	0	
	D (48)	0	0	0	0	0	0	0	0	
	E (68)	0	0	0	0	0	0	0	0	
	F (96)	2	0	56	80	48	8	0	0	
PHASE II			424	56	736	144	24	0	0	1384
	A (68)	5	140	0	200	0	0	0	0	
	B (104)	5	200	0	320	0	0	0	0	
	B-2 (128)	2	96	0	160	0	0	0	0	
	C (56)	2	0	0	0	96	16	0	0	
	D (48)	1	0	0	0	0	48	0	0	
	E (68)	3	0	0	0	0	60	72	72	
	F (96)	4	0	112	160	96	16	0	0	
PHASE III			436	112	840	192	140	72	72	1864

MASSING STRATEGY

Building forms should be simple rectangular shapes and respond to the local topography of each specific site, stepping in parallel to the change in the elevation of the ground plane. Overall richness, scale, character and connection to the local environment will be established by this stepped massing. Subtle shifts in placement accommodate site conditions rather than through highly articulated volumes or complex shapes.

Section

This section demonstrates how the use of individual housing blocks joined by flexible "connector" spaces allows built form to navigate changes in grade with a minimum of cut and fill.

RESIDENTIAL ENRICHMENT AND IDENTITY

The identity of the residential communities will be established by their unique position and orientation within the overall Village district as well as in the enrichment spaces where Living-learning Programs (LLPs) will furnish and co-create spaces to suit their missions. The local character of the landscape, building orientation, entry placement and transparency to interior common spaces will be perceived by students walking among the neighborhoods and provide an enriched environment, community identity and individual orientation.

LIVING-LEARNING PORCHES

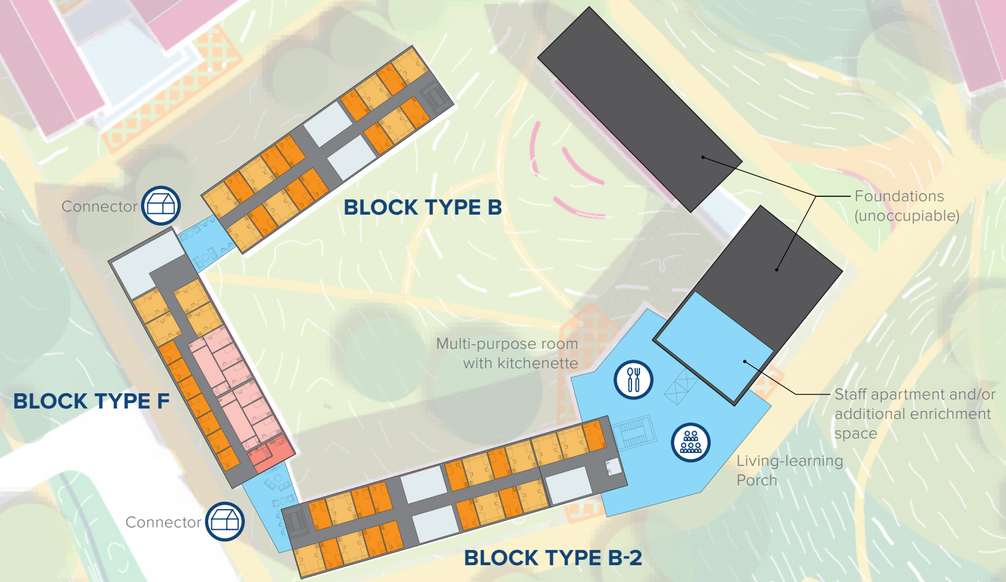
Enrichment activities center on a main entrance, called the living-learning porch, which contains the building's primary vertical circulation and creates a space of interaction between the building's living-learning programs (LLPs) and the public. Aptly named a "porch", these spaces are moments of interface between the indoors and outdoors, between the building and the Village. These spaces will be constantly shaped and reshaped by the LLPs as they exhibit their work and establish identity.

CONNECTORS

To maintain human scaled development, a dynamic roofscape and the granular texture of a Village, each residential block should appear as its own building. However, for ease of operations, economy of scale and to limit the number of vertical circulation and utility cores, several blocks will be linked together as a residential quad. Connectors are spaces between the blocks that allow the quad to read as individual units while functioning as a single building. These are also important spaces for carving out proprietary affinity spaces, chapter rooms and lounges specific to the activities of the living-learning programs.

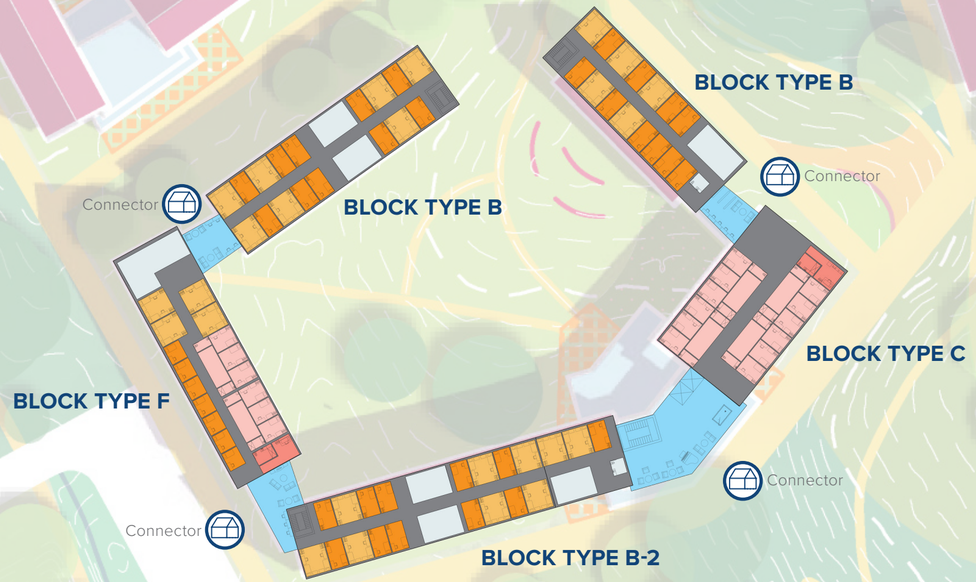
FLOOR PLANS

Block types should be assembled into floor plans forming residential quadrangles or quads. While all four floors of a block should be identical for framing and plumbing efficiency, different blocks can be mixed within each quad to provide a diversity of unit types. Common spaces should be placed at the intersection of the residential block types providing central social spaces and formal opportunities for resolution of differing site-driven geometries. Building entries should be located at these intersections and be closely coordinated with the accessible pathway network. Careful attention should be given to maintaining the proper bed to plumbing fixture ratio across the blocks. These blocks primarily indicate student units and bathrooms; however, they need to be coordinated with the overall building floor plans to ensure proper distribution and inclusion of mechanical support areas.



GROUND FLOOR

The accessible entrance to the building, the Living-learning Porch, acts as the vertical circulation core connecting the different levels of the quad's east and west wings.



TYPICAL FLOOR

On a typical floor, connectors allow movement between different blocks and become a place for informal gathering and affinity spaces.

SUSTAINABILITY OPPORTUNITIES

The architectural design process should explore a number of opportunities to meet Virginia Tech's climate action commitments and sustainability goals. Overall buildings should be climate responsive, taking advantage of "free" energy available from the sun and wind.

ORIENTATION

To the degree possible with the topographical constraints of the site, residential rooms are oriented with windows facing north or south to optimize solar control.

DAYLIGHTING

Most spaces, especially the connector and enrichment spaces will have ample daylighting, reducing demand on electric lighting and adding to winter solar gains.

PASSIVE VENTILATION

The public spaces and vertical circulation cores can be passively ventilated via heat stack effects and operable/automated fenestration for cross ventilation.

SOLAR PV

Roof-top solar PV panels take advantage of sloped roof structures to generate clean, cost-effective electricity.

SPACING

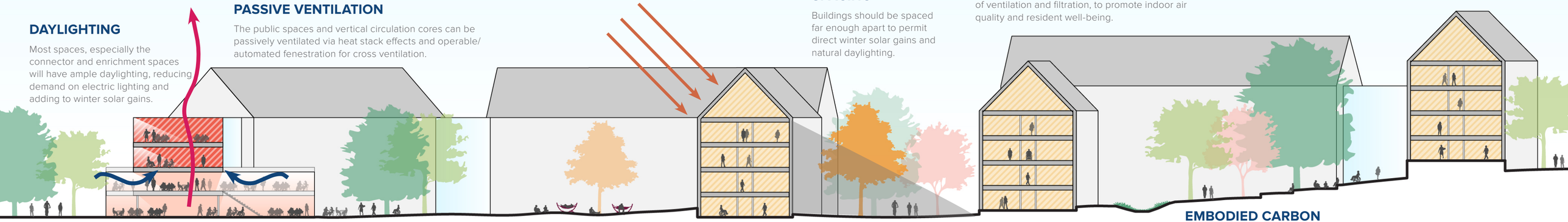
Buildings should be spaced far enough apart to permit direct winter solar gains and natural daylighting.

INDOOR AIR QUALITY

Building design should select for low VOC and allergen-aware materials and achieve high rates of ventilation and filtration, to promote indoor air quality and resident well-being.

ENVELOPE DESIGN

A energy efficient and cost effective envelope will have R values in excess of code minimums and double glazed fenestration. Residential areas should have a window to wall ratio of no greater than 30%



OUTDOOR THERMAL COMFORT

Quads will be well protected from wind and full of vegetation to keep the air cool. Variations in shady and sunny sides of the quads will allow uses to adapt to seasonal change.

STORMWATER MANAGEMENT

Water falling directly on the quad should drain to a yard inlet set back from building surfaces. A "rain garden" can be planted around this inlet to mitigate loads on stormwater infrastructure and maintain cool evapotranspiration.

EMBODIED CARBON

Embodied carbon is a measure of the amount of greenhouse gas emissions involved in the production, distribution and installation of building materials. High embodied carbon materials like concrete should be kept to a minimum in residential buildings. These buildings are not envisioned to have basements, minimizing the amount of concrete required in foundations. The 4-story design can be built with dimensional lumber framing, with low embodied carbon.

AMENITY BUILDINGS

The following parameters should be met when designing the amenity buildings. These are intended as an inclusive set and when addressed together will reflect the desired scale and character of these buildings within the Village.

PARAMETERS

PERMEABLE FACADES

Indoor-Outdoor relationships - To provide connection and encourage engagement with interior programs

GLAZING AND NATURAL LIGHT

Ample glass facades and clerestories to deliver daylight to the center of deep footprints and enhance general well-being

SCALE

Utilize strategies to reduce the perceived size of the buildings into smaller components

ROOF SCAPE

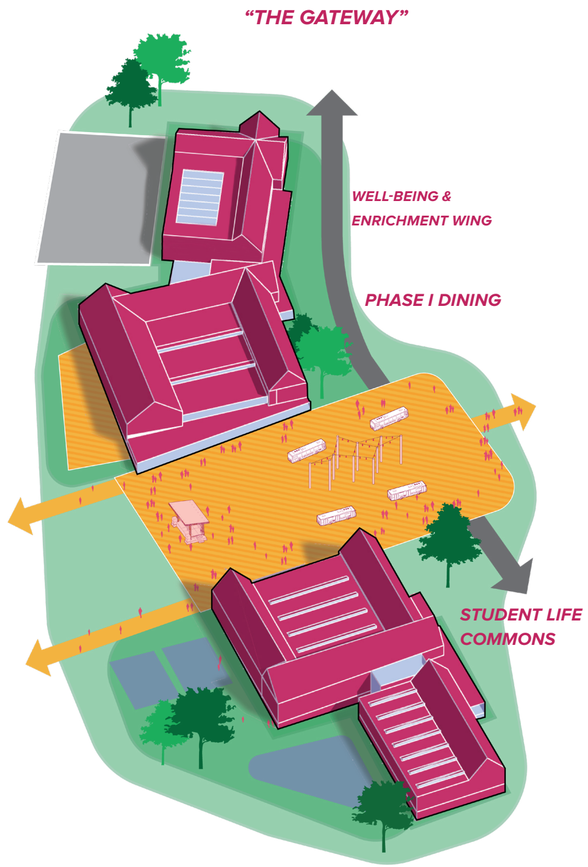
Utilize roof profiles to articulate building zones and provide scale, see above

STREETSCAPE AND PUBLIC REALM

Design building facades as components of an articulated public realm and associated streetscape including utilizing arcades, porches, and trellises to support outdoor informal and programmed activities.

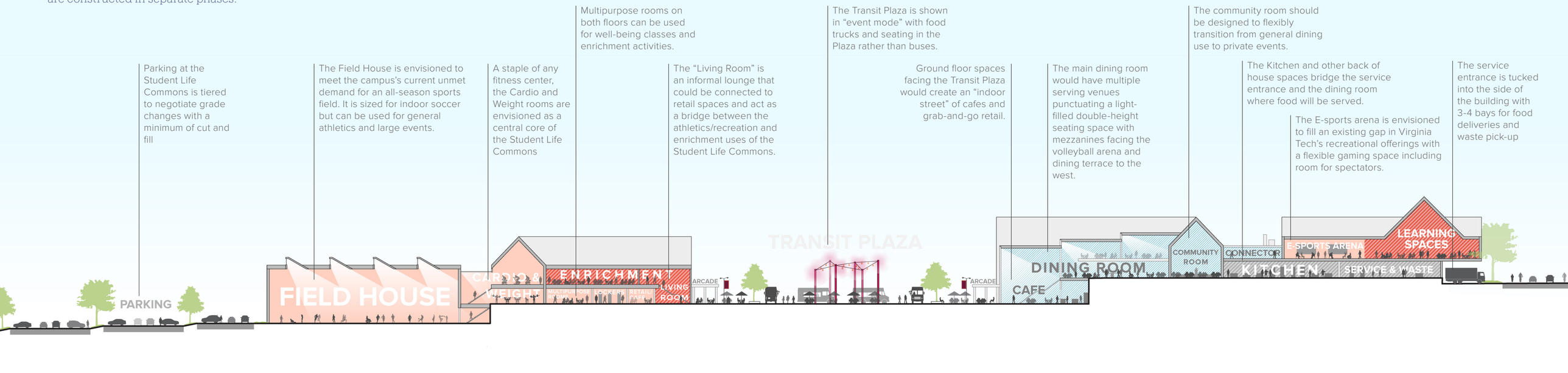
CLEAR FRONT AND BACK

Service and loading areas should be removed from public facing building frontage, while still providing space for ease of operations



THE GATEWAY

Together the Phase I Dining, Student Life Commons and Transit Plaza form a gateway to the Village providing a common point of entry and exit for all residents that allows them to conveniently access amenities on their way to and from home and promotes spontaneous encounters between neighbors. The concept for the Gateway negotiates a change in topography from the north to the south of the site. Design of transit, landscape and both buildings should be approached as a comprehensive whole, even if components of the Gateway are constructed in separate phases.

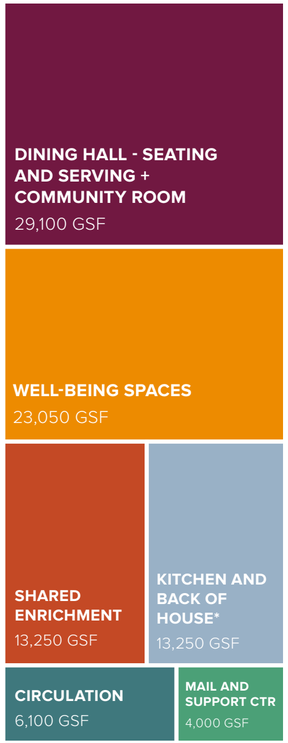


THE GATEWAY

The Gateway reinforces the experience of a shared journey to and from campus by funneling visitors into a common gathering space. The Gateway has a highly visible facade that forms a streetscape looking toward campus. The design and landscape of this facade should receive special attention.

THE GATEWAY - SPACE USE

The Gateway buildings create a blend of dining, well-being and enrichment spaces that should function together as a whole in which each use provides positive adjacency to the next.

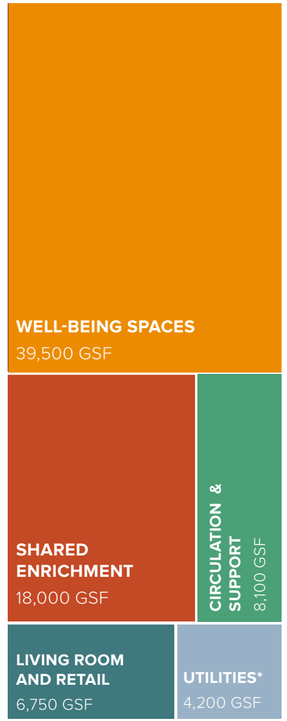


PHASE I DINING = 88,750 GSF

The Phase I Dining building would be used mostly as a dining space but also includes a wing for general purpose well-being and enrichment spaces that supports phase I until the Student Life Commons is complete in phase II.

PHASE II: STUDENT LIFE COMMONS = 76,550 GSF

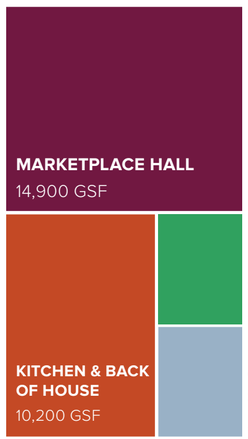
The Student Life Commons is dedicated to well-being and enrichment spaces for use by the entire Virginia Tech community. The Commons supplements existing on-campus recreational spaces and provides opportunities for holistic well-being programming with support offices, social spaces, multi-purpose rooms, indoor courts and an indoor field.



*Attic and basement utility spaces are not included in this calculation

PHASE III DINING

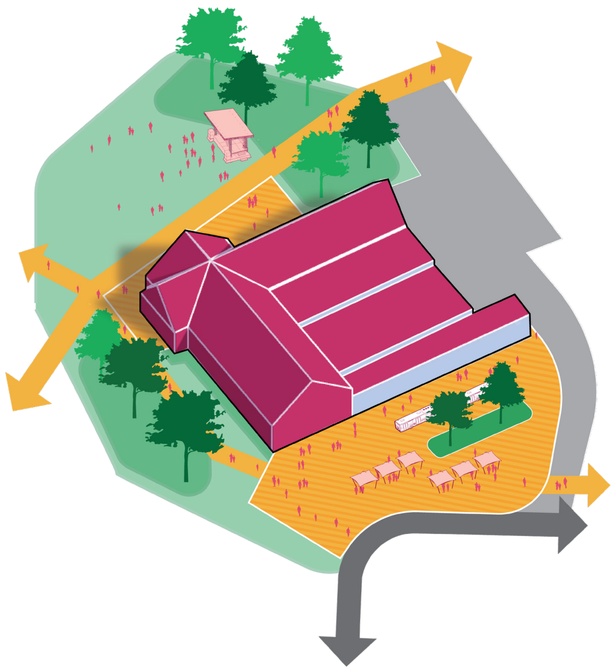
Phase III Dining will supplement the main, Phase I Dining with a smaller "marketplace" hall concept that offers a food option closer to the residents of phase II and III. It is critical to allowing food service capacity to grow in tandem with the Village's growth. It will also act as a transit hub and anchor for events in adjacent outdoor spaces.



MAIL & RESIDENT SUPPORT CENTER
3,000 GSF

CIRCULATION & SUPPORT
3,000 GSF

PHASE III DINING = 31,100 GSF



UTILITY BUILDINGS

The following parameters should be met when designing the utility buildings. These are intended as an inclusive set and when addressed together will reflect the desired scale and character of these buildings within the Village.

PARAMETERS

SIMPLE CONSTRUCTION

Utilize simple, economical construction that easily addresses specific program need

FLEXIBLE USE

Able to accommodate changes in program without significant renovations

CONTRIBUTION TO THE PUBLIC REALM

Be discrete and unobtrusive, but still be designed to acknowledge their public presence and contribution to the community

THE OPERATIONS CENTER

The Operations Center will be a flexible, warehouse-like space with garage bays for service vehicles/utility carts, repair workshops, carpentry shops, storage and operations staff offices and touch down space. This facility will likely need to adapt to changing needs overtime. A public plaza on the operations center's street facade can be used for pedestrian/bike access and opportunities outdoor seating and amenities for the Village staff.

SUSTAINABILITY OPPORTUNITIES

Amenity buildings will have large spaces with high occupant loads. Tactical investments in sustainable technologies will have high returns for these buildings and they should be considered for certification programs like LEED or WELL.

OVERHANGS & LOUVERS

Extensive curtain walls like those on the amenity buildings should have south facing overhangs to block the high-altitude mid-summer sun and east and west vertical louvers to control glare at dawn and dusk.

PASSIVE VENTILATION

Clerestory windows, skylights and large curtain walls can be automated for passive ventilation and night flushing of the double and triple height spaces.

INDOOR AIR QUALITY

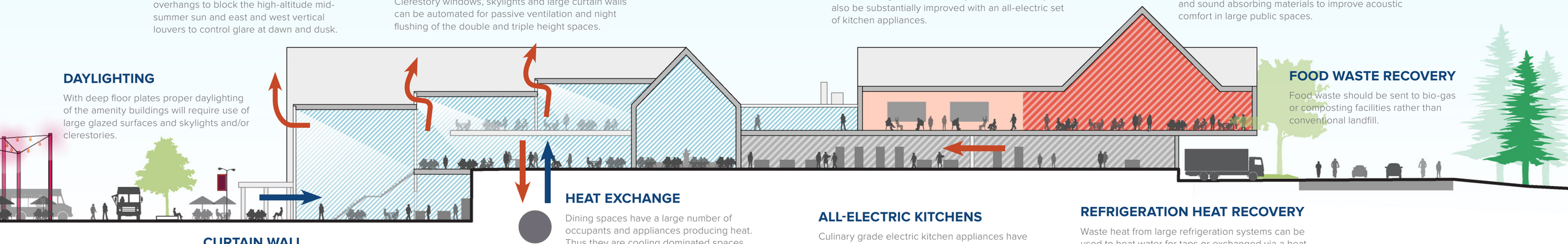
Proper ventilation of kitchens is extremely important to maintaining indoor air quality. Indoor air quality will also be substantially improved with an all-electric set of kitchen appliances.

NOISE POLLUTION

Utility spaces and student spaces should be separated by assemblies with high acoustic ratings. The design should incorporate acoustic paneling, sound clouds and sound absorbing materials to improve acoustic comfort in large public spaces.

DAYLIGHTING

With deep floor plates proper daylighting of the amenity buildings will require use of large glazed surfaces and skylights and/or clerestories.



FOOD WASTE RECOVERY

Food waste should be sent to bio-gas or composting facilities rather than conventional landfill.

CURTAIN WALL

The large curtain walls needed to light the amenity buildings should have high performance specifications. Consider the use of a double skin, low-e glass and fritting.

HEAT EXCHANGE

Dining spaces have a large number of occupants and appliances producing heat. Thus they are cooling dominated spaces, even in winter. Waste heat from these spaces can be used for heating-dominated residential buildings (see thermal energy).

ALL-ELECTRIC KITCHENS

Culinary grade electric kitchen appliances have advanced to the level where almost all of a dining hall's menu items can be produced without the use of fossil fuels. Adopting these appliances will reduce the carbon footprint of the university food system.

REFRIGERATION HEAT RECOVERY

Waste heat from large refrigeration systems can be used to heat water for taps or exchanged via a heat pump loop (see thermal energy).

CONCEPTUAL RENDERING OF THE STUDENT LIFE VILLAGE

In overall texture and massing, the buildings of the Student Life Village should remain simple and contextually appropriate, a frame that accentuates the landscape and draws attention to student life and place-making activities.

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VIRGINIA TECH | SASAKI