



 VirginiaTech

Virginia  
Polytechnic Institute  
and  
State University

June 7  
2010

VT Design and Construction Standards Manual 2020, Appendix A

Revised  
August 2010

S A S A K I

# Campus Design Principles



*"Now we are promised an architectural policy which proposes to give us a group of buildings worthy to shelter a great educational institution. Already a start has been made in this direction, and the McBryde Building of Mechanic Arts will serve as a type for the structures to come later."*

Joseph D. Eggleston, President  
1914 "Opening Number" of the College Bulletin





# Campus Design Principles

Virginia Polytechnic Institute and State University  
Blacksburg, Virginia



*prepared by*  
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June 7, 2010  
Revised August 2010



# CONTENTS

## I. CAMPUS

- A. Introduction
- B. Historical Overview
  - 1. Background
  - 2. Collegiate Gothic /  
An Architecture of Stone
- C. Guiding Vision
  - 1. Strategic Plan
  - 2. The Campus Master Plan
- D. Buildings and Landscape
  - 1. An Integrated Approach
  - 2. A Sense of Place
  - 3. Goals and Objectives

## II. LANDSCAPE

- A. Introduction
- B. Guiding Principles
  - 1. Landscape Structure
- C. Planting
  - 1. Space Definition
  - 2. Scale
  - 3. Plant Character & Fitness
  - 4. Tree Forms
  - 5. Pattern
  - 6. Composition of Species
  - 7. Native Plants
  - 8. Meadows
  - 9. Variety
- D. Specific Area Principles
  - 1. The Mall
  - 2. The Drill Field
  - 3. The Duck Pond Park
  - 4. The Quadrangles
  - 5. Core Area Linkages
  - 6. Campus Streets
  - 7. Campus Forest Areas
- E. Site Structures and Furnishings
  - 1. Lighting
  - 2. Emergency Call Boxes
  - 3. Structures
  - 4. Art
  - 5. Paving

## III. BUILDINGS

- A. Introduction
- B. Architectural Order
  - 1. Siting / Orientation
  - 2. Building Scale
    - Height*
    - Massing*
    - Volumetric Variation*
  - 3. Facades
- C. Architectural Elements
  - 1. Roof Forms
  - 2. Doors, Portals and Passages
  - 3. Windows and Openings
  - 4. Architectural Details
- D. Building Materials
  - 1. Walls
  - 2. Hokie Stone
  - 3. Roofs
  - 4. Doors and Windows
  - 5. Ornament
- E. Sustainable Design
  - 1. Approach





# I. CAMPUS



# I. CAMPUS

## A. INTRODUCTION

Campus design has always been rich in influences and diverse in response. The physical character of the Virginia Tech campus reflects its chronological and stylistic development as an institution, signifying periods of history, pedagogical trends, programmatic directives and general characteristics of stylistic preference and aesthetic selectivity. Such factors have been instrumental in the definition of the Virginia Tech "sense of place" for which it is so well known and remembered. The predominant theme of the built environment of the campus, however, has evolved with a strong unifying characteristic of Collegiate Gothic architecture and a consistent use of Hokie Stone as a building material.

While the design of each building on a campus should reflect its own time and place, it should also reflect the enduring values of elegance, quality and durability, and contribute in a meaningful way to form a coherent and memorable identity for the campus as a whole. The primary goal of this study is to reaffirm the university's design approach to the contemporary interpretation of revival Collegiate Gothic campus architecture, including massing, scale, groupings, arrangements, design features, colors, textures and other contextual design opportunities.

Equally important to the "sense of place" at Virginia Tech is the character of the open spaces, passages and outdoor 'rooms' which form such a memorable campus landscape. It is the careful integration of buildings and open space which ultimately define the physical presence of a campus.

It is the goal of this document to establish a commitment to the stewardship of these finite resources and to assure that the balance between built and natural form is sensitively developed over time in a way which respects the architectural language and landscape features of the campus. To do this effectively, principles have been developed which outline the history of the campus, the intricacies of its architectural detailing, the massing of its buildings and structures and the special characteristics of landscape features, trees and plant materials – those elements which are combined to form the physical and spatial characteristics of buildings and places.

The intent is to have these design principles used as a companion to the university's *Campus Master Plan* to offer the most sensitive and responsible design solutions for the growth and regeneration of the campus. The resultant building and landscape design solutions should strive to be flexible, creative, beautiful, respectful, sustainable and maintainable.

Additional guidance in understanding the goals and expectations of the university can be found in the Virginia Tech *Design and Construction Standards*. These standards are essential in understanding the detailed requirements of design specifications, constructability, energy management, space standards and integrated design.

Each design team seeking work on the Virginia Tech campus shall be required to affirm in writing that they have read these Campus Design Principles and agree contractually to adhere to them.

## B. HISTORICAL OVERVIEW

The planning and architectural design of the Virginia Tech campus reflect the changing character of the institution over time. Future buildings will likewise be a reflection of Virginia Tech's character, its culture, architectural legacy, and contemporary technology.

The following brief historical perspective is intended to help design professionals and interested university constituencies to understand the planning and architecture of the campus in a historical context. Such an understanding is a critical component of any planning and design process for the university due to the importance of extending a meaningful continuity of spatial form, outdoor spaces and architectural character for the campus.

### 1. Background

When Virginia Agricultural and Mechanical College, as Virginia Tech was first known, was founded, funding from Richmond was meager and inconsistent. The first presidents preferred to keep an architectural low-profile to avoid any appearance to the state legislature of extravagance. In fact, the early buildings were so unadorned that Tech's fifth president, Joseph Eggleston, compared them to "poverty stricken textile mills."

The earliest campus buildings, built between 1872 and 1905 for the Virginia Agricultural and Mechanical College, were simple, austere structures. Whether Greek Revival, Georgian, or Victorian, they shared a simplicity of massing, materials and fenestration. This simplicity reflected the practical character of the educational mission of Virginia Tech. For example, some buildings included foundries for training in the mechanical arts.

In its first quarter-century, the school's mission was constantly being questioned. Early on, President John McBryde realized Virginia Tech needed to establish an identity that would distinguish it as a progressive institution providing service to the commonwealth, not as a rural, struggling trade school. In 1899, a group of alumni hired Richmond architect W.F. West to design a YMCA for the campus. West's Romanesque-inspired building--today's Liberal Arts Building--was the first flagship building constructed of rough limestone quarried on campus.

### 2. Collegiate Gothic / An Architecture of Stone

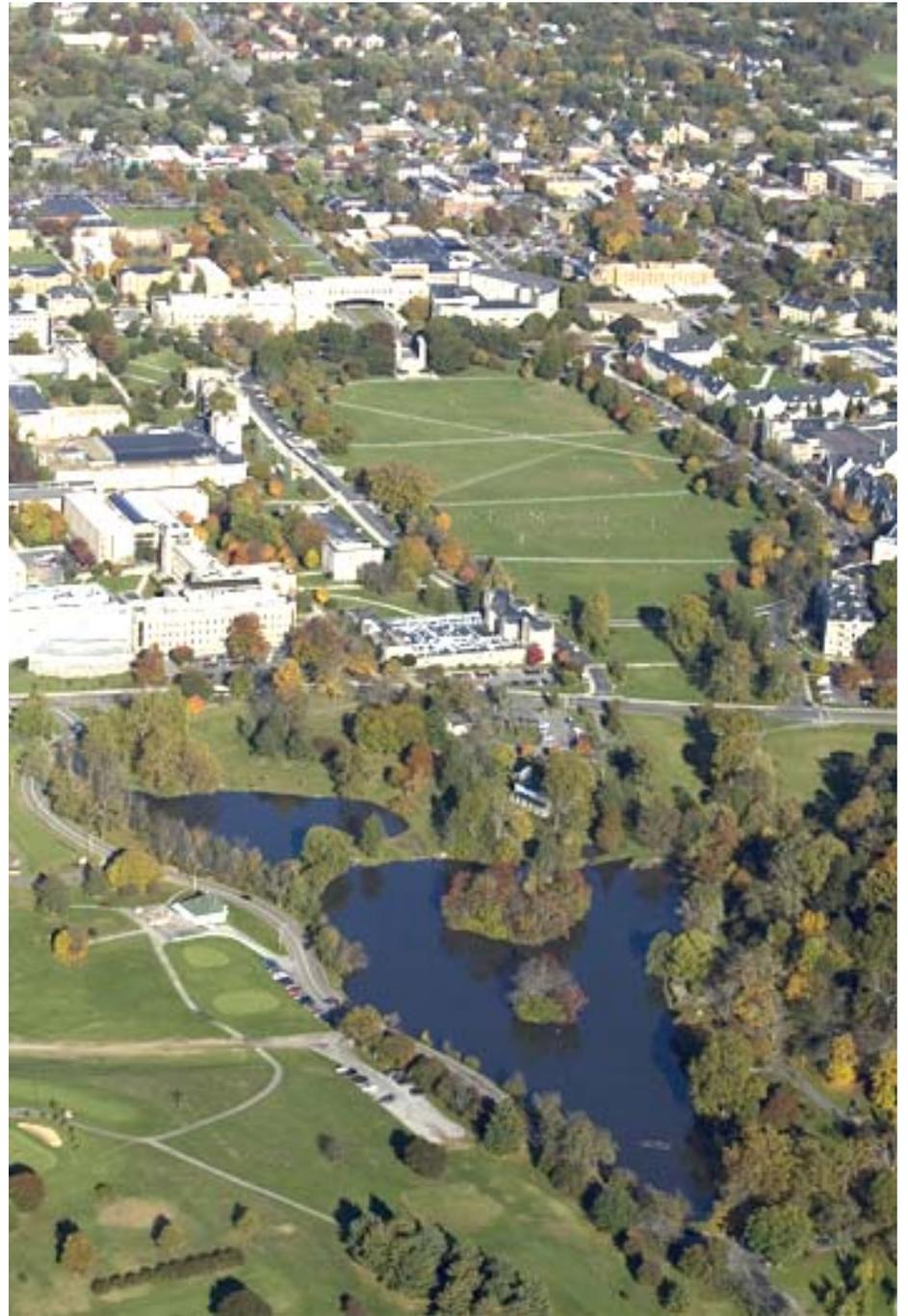
The gifted medievalist architect Ralph Adams Cram visited President McBryde around 1901 and suggested Collegiate Gothic as the architectural style. As defined by Cram, Gothic was the repository of "exalted ideals of education and religion." This style suited Virginia Tech's evolving identity perfectly, providing the campus with an image harkening back to venerable British universities such as Cambridge and Oxford.

The Collegiate Gothic (or Gothic Revival) style of architecture was undergoing widespread adoption on college campuses in the early 20th century. Presidents McBryde and Eggleston adopted this motif in order to visually underscore their desire for the still-young college in Blacksburg to be accepted as a full-fledged institution of higher learning.

The adopted stylistic approach called for the use of limestone quarried next to campus (in the vicinity of Derring Hall), saving on the transport of brick and employing dozens of local stonecutters. Brick construction continued on the Upper Quad, but the south and west areas of campus employed the local stone. Cram liked the limestone on the YMCA building and even suggested the older buildings be refaced.

President McBryde and his faculty became converts to what they called "our native limestone." The 1905 Chapel was Tech's first Collegiate Gothic building. Facing the unavailability of bricks, the builders turned to native limestone for the structure.





4 Aerial view of Virginia Tech campus showing Drill Field and Duck Pond Park

## C. GUIDING VISION

Whenever principles are developed as part of an institutional planning process, it is essential that such guidance is fully integrated with other initiatives which provide similar guidance as part of a comprehensive approach to establishing a clear vision for the university. Accordingly, the following summaries are provided to establish such associations as a condition of reference for the Campus Design Principles.

### 1. Strategic Plan

The 2006-2012 Strategic Plan Update, adopted by the Virginia Tech Board of Visitors in June 2006, reaffirms Virginia Tech's commitment to achieving excellence as a comprehensive land-grant university that makes innovative contributions in learning, discovery, and engagement to the Commonwealth of Virginia, the nation, and the world.

#### **Invent the Future:**

##### **Quality, Innovation, Results**

The 2006 - 2012 Strategic Plan Update reaffirms Virginia Tech's commitment to achieving excellence as a comprehensive land-grant university that makes innovative contributions in learning, discovery, and engagement to the Commonwealth of Virginia, the nation, and the world. The priorities expressed in the 2006 - 2012 Strategic Plan Update demonstrate Virginia Tech's ongoing commitment to transform itself as a 21st century university capable of responding effectively to opportunities presented in a dynamic and diverse domestic and global environment.



*President Steger unveiling the new branding strategy – "Invent the Future."*

During 2005 –2006, the process of updating the plan confirmed the university's commitments to its mission and core values. Virginia Tech values the educational contributions made by a high quality and diverse student body, faculty, and staff who contribute to the robust exchange of ideas.

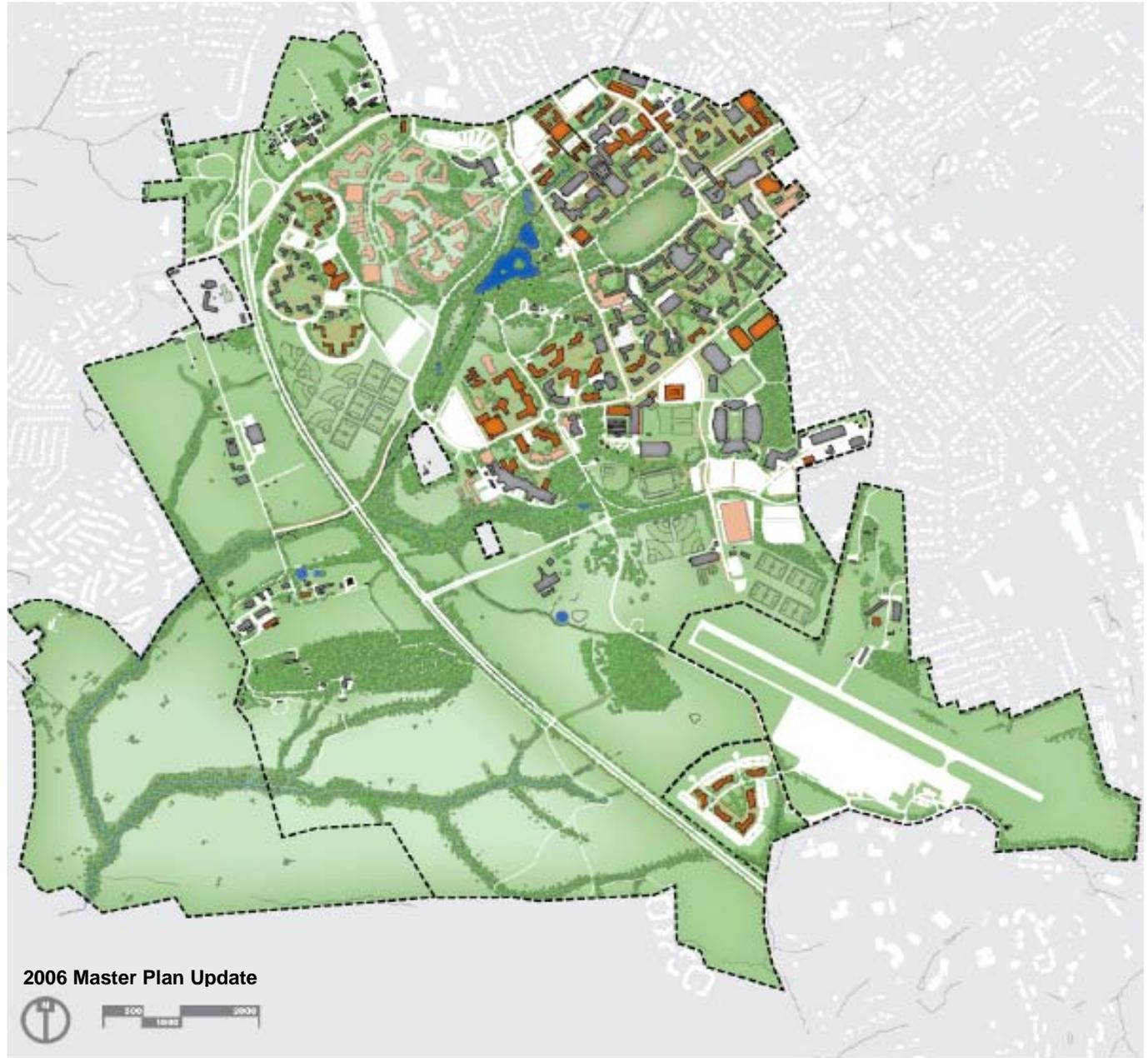
The updated plan introduces the terms *learning, discovery, and engagement* to articulate an updated understanding of the complexities of the university's integrated and multi-disciplinary Scholarship Domain areas. An important component of the plan is the commitment to link strategic goals to financial planning and outcomes in order to increase Virginia Tech's accountability to a variety of important stakeholders.

### 2. The Campus Master Plan

The university has been proactively engaged in the implementation and refinement of a Campus Master Plan for the last 25 years. The master planning process has been a key factor in the development of a more sensitive approach to the long range renovation and expansion of the campus.

A key part of this process has been a series of recommendations on general design principles for specific features related to landscape and building design. Within the context of the master plan, these recommendations were focused on building program, siting, phasing and general architectural character. Similar features were analyzed relative to campus landscape and open space preservation.

As a 'living document' with an inherent obligation for updating and reconsideration, the master plan sequence is useful to summarize during this first 25 year period. The design principles which emerge in this report are directly tied to multiple recommendations and values established in these planning efforts. All landscape and building projects must be carefully integrated with both the Master Plan and Campus Design Principles suggestions.



### **1983 Master Plan**

The first master plan effort in 1983 revealed a strong development pattern on campus structured by the Drill Field, the Alumni Mall and a system of academic and residential quadrangles. It was also noted that this spatial organization was ignored, for a short while, in the planning and design of the campus. During the late 1960s and early 1970s, buildings such as Derring Hall and Cowgill Hall were constructed on the periphery of the academic core with no relation or ties to the existing spatial structure. The trend during this period was to construct object buildings that consumed space rather than buildings that defined space.

The 1983 plan sought to reverse this trend and integrate buildings such as Derring Hall and Cowgill Hall into the campus structure. To that end, the plan initiated the infill concept. The infill concept called for refocusing campus development in the core by concentrating new development in and around existing buildings.

Consequently, the concept was instrumental in resurrecting the quadrangle building approach and added a contemporary sensibility regarding preservation of existing buildings. In addition to repairing the campus spatial structure, the concept was also intended to address a variety of other planning issues such as conserving campus land, maintaining a pedestrian-scale campus, leveraging investment in existing infrastructure, and allowing for flexible increments of development.

### **1994 Master Plan Update**

The frame of reference for the 1983 Master Plan was 10 years. In 1994, a Master Plan update was commissioned by the university. While many of the basic principles of the 1983 plan were confirmed and reinforced, the 1994 Update developed a series of additional recommendations which were intended to address further preservation of the heritage and core campus values of the institution. A summary of the key considerations includes:

#### ***Ridges and Valleys***

- The campus is laid out in accordance with a well-defined pattern of ridges and valleys. The central “valley” is the Stroubles Creek drainage basin in which the Drill Field and the Duck Pond are located. The basin, which is largely an open landscaped area, is flanked on the north and the south by ridges on which much of the core campus development has taken place.
- The 1994 plan reinforces the pattern of development and infill on the ridge areas and maintenance of the open space environment (park-like open land, play fields and agricultural fields) in the valley areas.

#### ***Town Fabric***

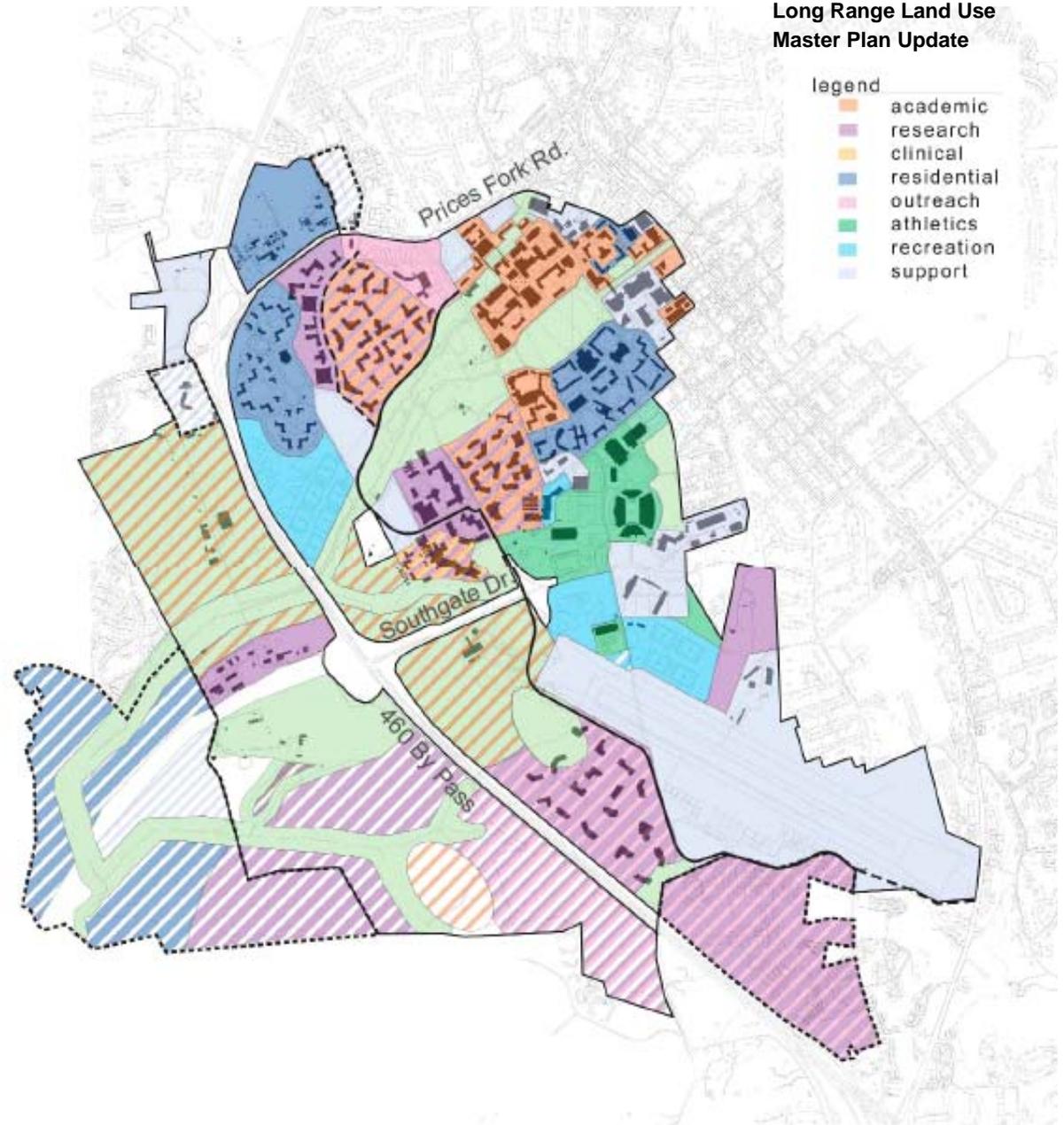
- The campus and the Town of Blacksburg come together in a relatively seamless way in the downtown area along streets such as College Avenue, Otey Street, Main Street and Stanger Street. That is, the scale, texture and intensity of development in these areas is such that the campus and town blend with and complement one another.

- The “town edge” affords a diverse and energetic environment for retail, food service, residential and entertainment activity that lends to the life of the campus. The 1994 Master Plan calls for program infill and urban design improvements that will add to the vitality and amenities on the downtown side of the campus.

#### ***Quadrangles and Courtyards***

- The Virginia Tech campus is organized as an interconnected system of quadrangles and courtyards following the traditional Oxford model that many American institutions have adopted. This system of pedestrian spaces (or, more pertinently, the policy of siting buildings to shape such spaces) is an appropriate framework that lends to the unity and amenity of the campus.
- The 1994 Master Plan emphasizes the creation of new quadrangles and courtyards and the enhancement of existing ones by building, siting and landscape improvements. The overarching conclusion of the 1994 Master Plan, based on the determinants summarized above, is that the next generation of campus development should continue to be concentrated in and around the core area.

**Long Range Land Use  
Master Plan Update**



## 2006 Master Plan Update

The same ten year horizon was applied to the 1994 Master Plan update. In 2006, the next update was completed to initiate another ten year vision. Similar reinforcement of the original planning guidelines was provided. Of particular interest was a restatement of the strategic goals of the master plan as well as several key design tenets to guide future projects. These are summarized as follows:

### ***Master Plan Strategic Goals***

- Support the University Strategic Plan by providing for development of physical resources which accommodate the strategic vision and program directions articulated in the plan.
- Preserve the core qualities of the campus while nurturing growth.
- Plan for the long range highest and best use of the university's significant land assets.
- Plan transportation and infrastructure systems to anticipate growth rather than react to demand.
- While the master plan will propose solutions based on current data, it is understood that a plan should be a 'living' document and therefore allow for future change within its framework.
- Celebrate the unique Virginia Tech Campus as PLACE.

## Design Tenets

- The dominant exterior building material will continue to be the local dolomite limestone (Hokie Stone) set in a random ashlar pattern.
- New building placement should help define outdoor campus space.
- Building heights should primarily range from two to four stories, appropriate in scale with the adjacent outdoor spaces.
- Building design should compliment the character of the core campus architecture, integrating simple building massing with simply ordered and well articulated facades.



2006 Master Plan Detail



*Main Eggleston Hall*

## D. BUILDINGS AND LANDSCAPE

### 1. An Integrated Approach

The system of quadrangles and plazas which characterize the academic and residential areas of the core campus creates a strong repetitive theme that results in a pleasing sense of order subordinate to the larger monumental spaces. The varied geometry, orientation, landscape treatment and elevations of the quadrangles add a welcome element of variety and complexity to the campus that complement the singular unity and simplicity of the Drill Field. A majority of the quadrangles and plazas are well defined spatially though the quality of their landscape treatment varies.

The character of the architecture which encloses and bounds the various landscape elements is equally important to the definition of these campus spaces. The architectural language of the major campus buildings is somewhat more dominant than the landscape features due to its stylistic character and scale.

The balance of landscape and building, however, is one of the attributes which makes the campus environment so memorable. There is a continuous dialogue between the buildings and the landscape which needs to be kept in equilibrium as the campus develops and changes. The design principles will help to both define and expand the nature of this integration.

The design of the monumental open space spine including the Mall, Drill Field, and Duck Pond is a strong composition that artfully exploits the existing terrain. It achieves campus unity through centrality and dominance, with the buildings creating a framework to enclose the landscape.

There are several primary aspects of form that account for the basic spatial structure of the core campus. These include the bowl shaped topography upon which the campus rests, the arrangement of buildings in upland areas in groups with similar size, shape, materials and alignment, and the central, unifying design of the Mall, Drill Field and Duck Pond open spaces. Collectively, these aspects of form create a campus that has an overall unity and coherence – a balance and artful dialogue between building and landscape.

The developed design principles must utilize these key attributes as a starting point in the recommendations for future renovation, growth and expansion plans. The successful interrelationship between built forms and landscape represents a key component of campus design integration.

## **2. A Sense of Place**

Campus buildings and outdoor spaces play a major role in helping to define institutional image and the unique campus ambiance which is so unique to Virginia Tech. The quality of landscape and building design has profound implications, not only for visual appearance of the campus, but also for how the university and the surrounding community are perceived and integrated. The qualities and physical attributes that make a place special or unique are interwoven with those characteristics that foster a sense of authentic human attachment and belonging to form the unique 'sense of place' that is Virginia Tech.

The 'sense of place' of a campus has a major influence on how social interactions originate, how people move about campus, how safety and security are perceived, and how the campus environment contributes to the inspirational aspect of campus life. The 'sense of place' attribute defines how the physical and academic environments support the human psyche.

As such, 'sense of place' is also a significant framework for the memories of students, faculty, staff and alumni. The unique qualities of the physical environment of the Virginia Tech campus have a profound impact on the total academic experience. It is critical that the nature of the campus be understood fully in terms of the integration of space, landscape, building fabric and physical character. Such an understanding provides the formative basis for developing appropriate design principles for the future growth and development of the campus.

## **3. Goals and Objectives**

The expectation in providing these design principles for the renovation, expansion and growth of campus buildings is to work in an integrated fashion with the Campus Master Plan to provide an overall vision and framework to guide such development in a coherent fashion, ensuring that each future project fits appropriately within the larger vision and character of the campus.

These principles are intended to assist design professionals, campus planning groups, campus staff and individual building committees to make informed decisions as projects progress through various stages of planning, design and construction. The resultant landscape and building solutions will reflect the values of the university, its tradition of design excellence, respect for its heritage and its relationship to the surrounding environment and sense of place.

The primary goals and objectives of the Campus Design Principles have been developed in support of several related planning studies and design standards, including the Campus Master Plan Updates of 1994 and 2006, as well as the university's Design and Construction Standards. The consensus of this related documentation suggests that the design principles for Landscape and Buildings support several key initiatives which are integrally linked to the vision of the university and its goals as an academic institution.

## ***Sense of Place***

- Strive to make the campus a distinctive and memorable place for students, faculty, staff, visitors and the surrounding community. Accommodate renovations, expansions and new building projects in a way that strengthens the overall appearance, spatial organization and functionality of the campus.
- Recognize that the campus is a working partner with the surrounding community, with special attention paid to the development of sensitive landscape and building solutions at the active interface between town and gown.

## ***Campus Context***

- Accommodate new building projects in a way which is respectful of the existing campus fabric and built environment, supporting the Campus Master Plan policies for compact, efficient development patterns.
- Develop landscape solutions which enhance the visual quality and user enjoyment of key open spaces on campus.

## ***Campus Wayfinding & Orientation***

- Improve campus wayfinding, orientation and visual coherence by better defining campus spaces, iconic features, circulation corridors, outdoor spaces, and entranceways.

## ***Sustainability***

- Embrace the tenets of sustainable design, incorporating design approaches which stress resource conservation, energy efficiency and the promotion of building and landscape durability.





## II. LANDSCAPE



## II. LANDSCAPE

### A. INTRODUCTION

The following principles set forth design strategies and standards for the campus landscape. The purpose of these principles is to encourage unity in the design of the landscape over time, while simultaneously allowing flexibility for positive innovation. These principles do not prescribe specific design solutions. They are a set of ideas intended to define a direction and positively influence those who design and manage the landscape.

The goal is to achieve an integrated campus design in which all of the parts relate to one another, regardless of when they are built. The areas addressed in the landscape principles include planting, site structures, and exterior lighting. The emphasis of the principles in each of these areas is on design issues and the steps that should be taken to ensure the continuity of desired landscape effects into the future. Issues related to the care and maintenance are not addressed in depth, however, the principles are based on the goal of simplifying the long-term maintenance requirements of the campus landscape.

While there has never been a formal landscape plan for the Virginia Tech campus, the landscape is widely considered to be one of the greatest assets of the university. During the 19<sup>th</sup> Century, when newly planted trees were small, the campus landscape was open and indistinguishable from the surrounding agrarian landscape. During the university's early history, individuals including President McBryde and Professor Smyth were strong advocates of campus beautification.

They were largely focused on planting trees and shrubs to bring "shade and dignity to areas once bleak and barren." The informal style adopted by McBryde and Smyth was the romantic style of the great 19<sup>th</sup> Century American parks, with large lawns and trees informally arranged for aesthetic enjoyment. The landscape was seen as a symbol of civilization, education and culture in the midst of forests and farms. This style has generally been followed by subsequent generations, and typifies much of the campus landscape today.

As the campus context has become increasingly developed in the last 40 years, the campus landscape has assumed new meanings. The campus landscape has become a naturalistic, pedestrian oasis in the context of expanding development, roads and parking lots. Rather than being a symbol of the human settlement of nature, it has become a symbol of the rapidly disappearing natural environment and our attachment to it.

## B. GUIDING PRINCIPLES

### 1. Landscape Structure

It is the general intent of the Master Plan that the existing structure of the campus landscape be reinforced and built upon. This is particularly true in the urbanized campus core area, which is composed of a green spine of large parklands (the Alumni Mall, the Drill Field, and the Duck Pond), a series of quadrangle and plaza spaces, and a network of pedestrian linkage spaces and vehicular streets.

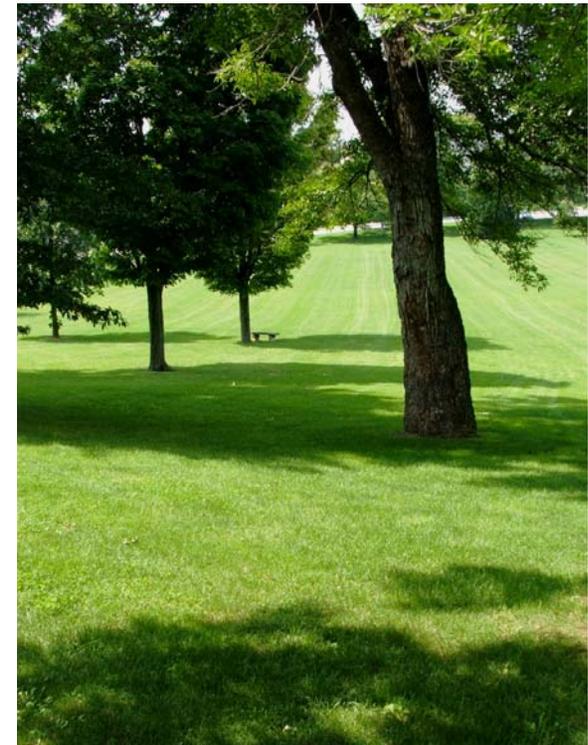
The parklands, quadrangles and corridors of the core campus are elements which require enrichment, improved definition and differentiation; they need to become more truly urban in their relationships and refinement. In the less densely developed areas surrounding the core, reforestation is proposed as a means of developing a spatially cohesive setting and regionally appropriate image which also creates a more sustainable relationship between the university and the natural environment of which it is a part. The traditionally rural area surrounding the core campus requires redefinition to become more cohesively ordered and symbolically representative of the purposes of the institution; it should become more truly rural rather than the victim of continued sprawl.

#### *Reinforce the Green Spine of the Core Campus and Extend it to the West*

- Improve the spatial definition of the Alumni Mall by planting formal trees along each roadway.
- Continue to rehabilitate the tree planting around the perimeter of the Drill Field and protect the Drill Field open space as the dominant landmark of the campus.
- Rejuvenate and enrich the planting of the Duck Pond Park and The Grove area, maintaining this area as a naturalistic park for the enjoyment of natural scenery. It is increasingly important to protect and maintain this park area as the campus continues to urbanize. It is also important to improve the Duck Pond and Stroubles Creek bank conditions by establishment of native aquatic plant edges
- Extend the qualities of the Duck Pond Park to the west, creating a green corridor extending from Main Street to Route 460.

#### *Reinforce and Extend the Existing Pattern of Residential and Academic Quadrangles*

- Establish stronger enclosure of the Patton Quadrangle.
- Improve tree and shrub plantings in all the campus quadrangles to establish a richer variety and greater seasonal interest, including colorful spring and summer flowers and fall foliage.
- Employ quadrangles as the organizing element for campus expansion north and west of Cowgill Hall, and at the corner of West Campus Drive and Washington Street.



***Enhance the orderly strength of all major campus streets by planting large canopy trees along them.***

The campus should be remembered for great avenues of trees as much as it is for the Drill Field or its architecture.

West Campus Drive, Washington Street, Kent Street and Stanger Street are particularly important in this regard because they serve as an inner edge of campus along which all visitors travel.



***Redefine the interstitial landscape areas that serve as the major pedestrian circulation routes of the campus.***

These least-attended-to areas of the campus should be planted with assemblages of woody native plants to improve their spatial definition, clarity and consistency; to assign them a regionally fitting character; to benefit from ecosystem functions such as erosion control, water quality improvement, air purification and cooling; and to reduce the long-term maintenance requirements of the campus landscape. Select areas should be reforested.

***Reforestation***

The campus landscape should be unified through the reforestation of approximately 350 acres of land of which approximately 80 acres are now maintained in turf grass.

Implementation of the reforestation concept requires careful study and fine tuning to ensure that key views of the regional landscape, campus open space, and campus landmarks are preserved. Perimeter campus lawn areas not used for casual activities, especially steeper sloped areas are the most desirable areas for reforestation.

These reforested areas will also carry the benefits of ecosystem functions such as erosion control, water quality improvement, air purification and cooling; and to reduce the long-term maintenance requirements of the campus landscape. Therefore, reforestation should be considered an integrated component of Virginia Tech's overarching commitment to improve campus sustainability.



## C. PLANTING

There are a number of principles that generally pertain to all areas of the campus, and which should form the basic framework for thinking about the landscape.

### 1. Space Definition

The spatial organization of the campus landscape is primarily determined by three major components: buildings, topographic form, and woody plants consisting of trees and shrubs. Paths and roads also play an important organizing function; however, their role is subordinate to the three-dimensional strength of buildings, land, trees and shrubs.

The limits, emphasis, and character of all views within and around the campus are defined largely by these elements. Trees and shrubs, therefore, should not be understood merely as superficial decorative objects to be arbitrarily set out on the campus grounds, but rather as elements that define the basic spatial order of the campus which, in turn, significantly affects the quality of campus life.

Trees and shrubs should be used purposefully to achieve desired functions and spatial effects such as limiting or directing views, creating microclimates, creating overhead enclosure for greater intimacy, framing spaces to create compositional closure, or to define and reinforce major spaces and pathways of the campus.

These statements are made with the recognition that spatial order and quality is indeed that with which campus design is centrally concerned. The buildings, trees and defining elements assume broader meanings only by virtue of the way they are arranged and the order of the positive spaces they define. While individual buildings or plants may possess characteristics that are attractive in themselves, the emphasis of campus design should be on the larger relationships of formative elements to space.



### 2. Scale

The size of trees, shrubs and plant beds should be considered with respect to their scale relationship to campus buildings, roads and spaces.

In general, plantings should be simple, rather than overly intricate, and be conceived in broad strokes that are appropriately scaled to the campus. Smaller, garden scale plantings and flower beds are important to the campus; however, they need to be related to the campus through proper hierarchies.

For example, the flower beds in front of Burruss Hall work well because they are part of an ensemble of steps, walls and paved terraces that are arranged and sized to fit with the building and the surrounding landscape.

### 3. Plant Character and Fitness

The plants selected for use on the campus should possess visual traits that are representative of or similar to the character of plants indigenous to the southwest Virginia region, and that are appropriately long-lived and refined to reflect the enduring quality of the institution. Plants that are highly exotic in their visual aspect should generally not be used on campus even though they may be in fashion from time to time.

Exceptions to this rule should only be permitted in very special circumstances, and such exceptions should be few. There is great intrinsic beauty in the native flora, and it should be the guiding purpose of the campus planting design to capitalize on it. The design of campus planting should be simple and seek to evoke a mood of tranquility similar to that found in nature. The design should be kept free of distracting elements. Such an approach will yield a campus that is unique, dignified, and practical to maintain.

The natural forms of plants should be retained through proper pruning. This is particularly noteworthy when considering shrubs. Shrubs should be planted in arrangements that allow for their natural shape to be retained through periodic renewal pruning.

There are many instances on campus now in which shrubs have been severely sheared to limit their size because they have not been provided adequate space to grow. The result is an unintentional design of sheared plants that is unattractive, often detracts from campus architecture and is relatively expensive to maintain.

Tree pruning should be started early in the life of campus trees to ensure that a proper form is established and the canopy is established sufficiently high to provide clear visibility beneath the trees and to allow adequate light to the grass areas below.

Significant large trees (over 20" diameter) should be mulched to their drip line with waste wood chips to reduce competition with turf grasses, and to build a looser, more forest-like rooting zone.



#### 4. Tree Forms

The dominant form of trees on the campus is rounded as distinct from conical, weeping or upright trees. The rounded forms of the trees create soft continuous lines between land and sky and a general sense of calmness.

The round-headed trees also complement the massiveness and severe lines of the campus architecture. The primary round-headed trees include oak, beech, sugar maple, tulip-tree, elm, and planetree. It is recommended that round-headed trees continue to be the primary type of tree used, and that conical, weeping and upright trees be used with restraint and only in circumstances where they remain subordinate to the dominant unity of round-headed trees.

For example, the soft outline of hemlocks, larch, Austrian pine, and white pine make them relatively easy to compose with round-headed trees, and their continued use in groups as evergreen accents is encouraged.

Spruces, however, present a more rigid form that does not blend as well with round-headed trees. It is suggested that they be used only in groups where the individual forms are less pronounced. The two spruces in front of Burruss Hall are anomalies that in the long term will increasingly conflict with the beech trees and other round-headed trees that also flank the central tower. Future use of conifers as individual specimens should be discouraged.

#### 5. Pattern

The general pattern of tree groups on the campus is almost entirely informal and non-geometric. As a rule, this practice should continue. An informal planting pattern has the advantage of being able to accept losses and additions while maintaining compositional wholeness. In several locations, regular rows of trees have been used successfully, and historically "Lover's Lane" was a beautiful elm allé.

Likewise, symmetrical patterns of trees and shrubs have been used appropriately in association with buildings and roads such as the Princeton American elms at Eggleston Quadrangle, the oaks north of Burruss Hall, the planetrees along the Mall, and the symmetrical plantings that flank the War Memorial. The limited use of formal patterns should continue as a subordinate design approach to the dominant naturalistic approach to the grounds. The proper opportunities to use geometrically arranged plants are along streets, along major axial walkways and in courtyards and plaza spaces regularly defined by architecture.

In the past, shrubs have been used as foundation plantings at campus buildings, often with single plants dotted along the foundation wall mimicking the repetitive pattern of walls and windows. Such patterns should be avoided in the future because the result is a planting design that lacks interest and is often out of scale with large campus buildings.

The preferred approach to foundation plantings is to employ large continuous masses of plants that create a unified composition properly scaled to the size of the building. The yew hedge on the north side of Holden Hall is a good example. The Holden Hall hedge would be even more successful if it were lowered to the height of the window sills behind it.

#### 6. Composition of Species

The most successful group plantings on the campus are those composed of single species or multiple species which share a high degree of visual similarity. Such groups evoke a peacefulness that derives from their visual balance and unity, yet they contain sufficient variety of branching, spacing and silhouette to sustain interest.

Good examples include the elms east of Owens and Eggleston and the sugar maples in the Williams Quadrangle. The idea of creating strong groups of single species or multiple species with similar form characteristics should be continued, both in naturalistic and geometric plantings.



*The pattern of tree groups on campus should continue to be primarily informal.*



*Considerations of landscape maintenance are paramount in the design process.*



*Plants should be used in broad strokes that are in keeping with the scale of the campus.*



*Spotty placement of foundation planting should be avoided.*

## 7. Native Plants

To the practical extent possible, tree and shrub plantings should consist of species that are native to the Appalachian Mountain region. This will in most cases enhance the possibility for long term adaptation of plants to the campus environment and create a visual setting that harmonizes with the characteristic beauty of southwest Virginia.

The preferred tree and shrub species are specified in the attached Campus Tree and Shrub List. If it is deemed that plants of other origin are preferable to native plants in certain situations, they should only be used if the plants have been demonstrated to be non-invasive.

The use of non-invasive, non-native plants may serve educational purposes and visually enrich the campus landscape; however, the fundamental planting strategy should be to employ long-lived native trees and shrubs that are adapted to the local climate and soils.

Ultimately, the use of indigenous plants will help create a distinctive, identifiable and imageable campus landscape.

## 8. Meadows

Select areas of perimeter lawn, especially steeply sloping lawn, may be converted into meadows where this treatment provides a transition to a more natural rural landscape. Meadows may be established by:

- 1) allowing existing turf to grow without mowing,
- 2) allowing turf to grow without mowing and supplementing with native grass and flower seed, or
- 3) removing the turf and seeding with native grasses and flowers.

Several meadow areas have been established on the campus perimeter.

## 9. Variety

Campus planting should be sufficiently diverse both in species and age of plants to maintain resilience in the event of unforeseen changes in the environment, such as disease or severe climate stress that may target plants of a specific type.

Simultaneously, however, visual unity should be fostered. Variety within unity can be achieved by planting in groups of similar species and by avoiding clashing forms and colors among the various planting areas on campus.

In the past there has been a tendency to exclusively plant single species in certain planting conditions. While this practice leads to visual unity and consistency, if taken to an extreme, it can be visually monotonous and possibly renders the plantings more vulnerable to insects or disease.

A preferred approach for large flowering shrubs would be to employ a variety of viburnum species along with native rhododendrons and shrub dogwoods in circumstances that require large shrubs.



## D. SPECIFIC AREA PRINCIPLES

### 1. The Alumni Mall

The planting objectives for the Mall should be to transform this street into a canopied boulevard. It should be a graceful shaded street; the historical and symbolic entrance to the university. It should be lined with large stately trees that when mature will possess symbolic value for the university as a whole.

The Mall should be planted with four rows of trees of the same species: two rows in the median, plus the existing rows of planetrees that flank the parking lanes.

The advantages of using London planetrees to accomplish the plantings are that the two outer rows are already in place, the planetree is relatively fast growing, it can withstand the urban limitations of the Mall environment and it can attain sufficient stature to canopy the Mall.

Alternatively, native trees that are tolerant of urban conditions could be used, leaving the existing healthy London planetrees in place. Future plantings should be protected from mower damage through the use of appropriately sized mulch rings.



## 2. The Drill Field

The planting objective for the Drill Field should be to maintain a frame of native deciduous trees on the slopes along the inside of Drill Field Drive, and keep the center of the space as open lawn.

The suggestion in the 1983 Master Plan of planting trees in fingers reaching from the perimeter towards the center of the Drill Field should not be followed beyond what has already been started in the southwest quadrant of the lawn.

The simplicity of the Drill Field space should be retained and the perimeter planting reinforced to become a more complete frame. The wide unplanted opening at Burruss Hall should remain.

In addition to the large deciduous tree frame, accent masses of conifers should be maintained at their existing locations. The existing conifer groupings should be reinforced, and the groups should generally be arranged in front of the deciduous trees as viewed from the interior of the Drill Field. This will create a pattern in which groups of conifer will form peninsulas or "promontories" projecting slightly into the Drill Field, with deciduous trees forming the "coves."

Conifers on the north facing slopes on the south side of the Drill Field should be western cedar, arborvitae, and fir, while the hotter south slopes should be planted with red cedar.

Understory trees should be added where opportunities allow in low-traffic, low-use areas where a high branched canopy is not essential. Large deciduous canopy trees most suitable for use around the Drill Field include:

*Quercus alba* -- White Oak  
*Q. coccinia* -- Scarlet Oak  
*Q. lyrata* -- Overcup Oak  
*Q. velutina* -- Black Oak  
*Q. macrocarpa* -- Bur Oak  
*Q. borealis* -- Red Oak  
*Q. palustris* -- Pin Oak  
*Celtis occidentalis* -- Hackberry  
*Ulmus Americana* -- American Elm (Dutch Elm Disease resistant cultivars)  
*Liriodendron tulipifera* -- Tulip Tree  
Magnolia acuminata -- Cucumber Magnolia  
*Tilia Americana* -- Basswood  
*Acer saccharum* -- Sugar Maple  
*Gymnocladus dioica* -- Kentucky Coffeetree

All of these trees will make enduring, majestic specimens. Less durable trees such as ash, sycamore, red maple should not be used extensively on the Drill Field if at all. Smaller trees suitable for use around the Drill Field include:

*Nyssa sylvatica* -- Black Tupelo  
*Amelanchier Canadensis* -- Shadblow Serviceberry  
*A. laevis* -- Allegheny Serviceberry  
*A. grandiflora* -- Apple Serviceberry  
*A. arborea* -- Downy Serviceberry  
*Cornus florida* -- Dogwood  
*Hamamelis virginiana* -- Witch-hazel  
*Oxydendron arborea* -- Sourwood  
*Sassafras albidum* -- Sassafras  
*Prunus serotina* -- Wild Black Cherry  
*Carpinus caroliniana* -- American Hornbeam  
*Ostrya virginiana* -- Eastern Hop-hornbeam  
*Cladrastis kentuckea* -- Yellowwood

The 2007 master plan prepared by a Arboretum Committee subcommittee should be implemented over a 25 year period to avoid large scale simultaneous tree loss caused by even-age forest conditions.



### 3. The Duck Pond Park

The planting objective for the Duck Pond Park and the area surrounding the President's House should be to maintain parklands and woodlands in their present extent and general composition of species. The parkland area, consisting of tree plantings in lawns should be rejuvenated. Old trees in poor condition should be pruned or removed, and new trees should be planted to establish a replacement generation.

The replacement planting should be diverse, to create a parkland with visual richness, and to foster the use of the parkland as an arboretum for educational purposes. Ideally, a long range planting plan should be developed that would establish goals for an arboretum that are consistent with the campus landscape design principles.

Plant material should be authenticated and formally accessioned so that it has value for teaching and research purposes. While other parts of the campus may also be incorporated into the arboretum, the Duck Pond and The Grove area should serve as its core.

Under no circumstances should the campus become a test area for plant hardiness, morphology studies, or other horticultural research that may require plants to be selected or composed in ways that would violate the landscape design principles.

The woodland areas around The Grove and in the Duck Pond Park should be managed as a natural assemblage of native canopy trees and woody and herbaceous understory plants. The primary canopy trees should continue to be oaks.

On the northern slopes, American holly, sugar maple and other shade tolerant forest trees can continue to be encouraged. The use of native rhododendrons should be extended in the northern exposures. The canopy and understory should be managed to encourage native plants, and remove invasive exotic plants as they may arise.

An overall master plan should be developed that restores the garden paths, stone steps and walls, the landscape around the rest rooms, and establishes a native aquatic plant edge around the ponds



#### 4. The Quadrangles

The quadrangles are all planted slightly differently; however, they all consist of lawn areas in which trees are planted. Shrubs are used to varying degrees, and are typically located around the perimeter as foundation planting.

The planting objective for the quadrangles should be to develop for each quadrangle a characteristic plant assemblage that will foster a distinct identity for the quadrangle and add to the overall variety of the campus landscape. The quadrangles represent a smaller, intimate type of campus space, different from the civic scale campus spaces which include the Mall, the Drill Field and the Duck Pond Park.

Tree planting in the quadrangles is essential to provide overhead spatial containment, the sensory interest that biomorphic forms offer in a dominantly architectural setting, and the environmental benefits of wind protection, shade, cooling, and improved air quality.

Trees with high branching canopies that form a space beneath them should be preferred over trees that are densely branched at a low level and are more object-like. This will prevent the quadrangle plantings from becoming too massive and preserve an openness which is desired for visibility and to allow sunlight to reach the lawns.

Elms are the best example of canopy trees that create a space beneath them. Other trees that are suitable for this purpose include white oak, red oak, black oak, bur oak,

scarlet oak, sugar maple (improves with age), and tulip trees. Lindens, horsechestnut, European beech, ginko and most of the conifers are examples of trees that branch low to the ground and do not typically create spaces below their canopies, or do so only in old age.

The idea of using one or two dominant characteristic tree types for each courtyard should continue, and the pattern of locating trees around the edges of the quadrangles in rows or informal groups should continue. In quadrangles where there is significant topographic change, informal groupings of trees should be favored.

The quadrangles whose terrain, shape and size support a formal planting are Payne Hall Quad, Eggleston Quad and the Newman Quad. In these quadrangles, single rows of trees framing the four sides of the space are a successful approach. The trees should be planted on the inside of the perimeter sidewalk.

Shrub layer and understory trees should continue to be planted around the perimeter areas. Openness at the centers of the quadrangles should be retained. In general, shrubs should not be planted in small groups or complicated configurations, but rather in broad strokes and simple patterns.

For example, the yews along the north wall of Miles Hall would be much more successful as a single continuous hedge along the sidewalk rather than in their present configuration. The shrubs in the Agriculture Quadrangle are a good example of an informal arrangement

of proper scale, and illustrate how shrubs can be successfully used inside of the perimeter walkway rather than simply confined to the area between the sidewalk and the building.

The selection of shrubs and understory trees for each quadrangle should be based on developing a characteristic theme for each and should seek to provide visual interest for more than one season of the year.

For example, one courtyard may develop a viburnum theme, another may be devoted to deciduous azaleas and dogwood trees, and another to large leaf rhododendrons or hollies. The shrub and small tree themes should be selected with an understanding of the soils and microclimate of each quadrangle, and may, where possible, create a logical association with the canopy trees.

In each case, the planting theme should be simple; a single strong idea carried out with excellence rather than a complexity of ideas from which nothing emerges with clarity. As each quadrangle is framed by large buildings with singular architectural expressions, so too the plantings should adopt a practical simplicity to avoid being trivial by comparison.

The quadrangles are excellent areas to develop herbaceous ground layer plantings including spring flowering bulbs. These should also be conceived in simple patterns that relate properly to the scale of campus buildings, walks and other plantings.

The tendency toward residential scale gardening with fussy combinations of plants should be avoided. The simple patterns and composition of natural landscapes should serve to guide the spirit of campus plantings.

Turf areas of high use, such as residential quadrangles should be closely monitored with management plans developed as required to maintain quality turf.

As stormwater management continues to increase in complexity and scope, it is important that responses are site appropriate. Urbanized areas will require more structured, artful responses, while other areas are more natural in design. ICTAS 2 and New Hall West are examples of successful site / storm water management approaches.

General observations and planting recommendations regarding the campus quadrangles are as follows:

### **Patton**

The use of ash should be discontinued in favor of native oaks. Informal placement of trees is recommended. Rejuvenation of shrub plantings as previously completed at Patton and Holden should be continued. Garden development at Norris should be of proper scale and respect the structure of the quad.

### **Williams**

The sugar maple theme should be retained and new trees should be high-branched specimens. As the trees continue to mature, waste wood chip mulch may need to replace the turf under the shade of the Maples.

### **Payne**

Maintain existing conditions.

### **Campbell**

Retain the American beech theme with informal layout and open ground plane. Re-evaluate shrub planting and rejuvenate and enrich shrub layer.

### **Ambler-Johnston**

Interplant large red maples with native trees. Rejuvenate and enrich shrub plantings to frame pedestrian circulation and new plaza spaces

### **Dietrick- Cassell**

Retain the oak and beech plantings and add shrub masses to frame pedestrian circulation and plaza spaces. The declining pine masses should be replaced with red cedar, and the birch plantings should be retained and reinforced, as should the viburnum hedge. The larger existing shade trees should be mulched with waste wood chips to improve long term tree health. A turf management plan should be developed due to heavy use by resident students.

### **Pritchard**

The existing informal tree planting should be maintained. Replacements should be made as required to maintain the frame effect that is sought. Strong wooded trees such as sugar maple or oaks should be planted. Larger trees should receive waste wood chip mulch. The building entrance shrub layers should be rejuvenated.

### **Eggleston**

The original American elms should be protected, and the Princeton elms maintained. The trees should be kept in formal rows along the perimeter walks. This quadrangle does not require a shrub planting except along the east and west sides where sidewalks are close to windows, and an intervening layer of shrubs would enhance separation. The hedges should be rejuvenated and supplemented. The small flowering trees along the edges near doors or portals should be maintained.

### **Newman**

The theme of formally arranged trees should continue on all four sides of the quad. At the building lines the yew plantings should be replaced with hedges backed with flowering trees, or simply beds with flowering trees.

### **Upper Quad**

The south side of Lane Hall should be generally maintained in its present configuration of informal trees and hedges. The hedges should not be sheared, but should receive periodic renewal pruning. To the north of Lane Hall, landscape areas made available as a result of the Upper Quad Conversion and the subsequent removal of the existing tennis courts, should be studied in greater detail to determine appropriate landscape treatments and furnishings. In general, it is recommended that the area consist of lawns and informally planted trees with potential for development of small edge plazas.

## 5. Core Area Linkages

The planting treatment of linkage spaces should be designed to make these areas more consistent and unified so that the pedestrian experience of moving through the campus is more coherent. It is recommended that turf grass be reduced and that ground cover and naturalistic shrub and wooded areas be developed similar to those already planted between Dietrick Hall and Slusher Hall. Grass should be retained in areas where it is valuable for informal use, and along the edges of paths where slopes permit easy mowing. In steeply sloping areas, or small areas that are impractical to maintain as turf, assemblages of native plants should be planted to replace the grass.

The long term goal of these areas should be to reduce their maintenance requirements to only periodic pruning and thinning. The specific plants for each area should be determined by soils, exposure, use, and space available at the location. The planting and management plans for various areas may also allow for the long-term succession of initial plantings to quite different ones. It may be accepted, for example, that oak seedlings be allowed to colonize a short-leaf pine planting; or indeed the plan may specify that acorns be planted at a given stage of the life cycle of a planting.

A mass shrub planting of gray dogwood or fragrant sumac used for bank stabilization may be purposefully and gradually replaced by a tree planting after the shrubs begin to naturally decline. The management process should be flexible and opportunistic.

It is recommended that initial plantings be dense enough to establish shade to limit grass and weed growth. This will typically be denser than the desired long term density. Relatively small size plants should be used to enhance acclimation, and limit the cost of dense plantings.

Species such as sassafras, sweetgum, red maple, black cherry and chokecherry are suggested as suitable trees for creating a canopy fairly rapidly in the proposed naturalized areas.

Examples of successful linkage spaces are the corridor between Campbell Hall and War Memorial Hall planted with Kentucky coffeetree and native hollies, and the embankment on the northeast end of Payne Hall planted with red fescue.

Other linkage spaces that may be naturalized are the north side of the Dietrick Hall service yard; the south side of Whittemore Hall; the upper quad corridor from McBryde to Turner Street; the embankments west of Owens Hall; the embankment south of the Owens Hall service yards and the mounded area immediately west of Burke Johnston Student Center.

## 6. Campus Streets

The planting objective for the streets of the core campus area should be to define the campus streets as continuous spatial corridors and to create a uniform appearance. This will help to control the variation of landscape and building conditions that currently exist along most streets. Uniform rows of trees are recommended to minimize the differences in building set-backs, alignment, materials and style.

As a general rule, campus streets should be planted with deciduous canopy trees that will provide foliage at a height from fifteen to forty or sixty feet above the ground, while allowing open vision below the branches. The trees should be on both sides of the street and the species should be the same along a given street.

Changes in species should be coordinated with logical changes in street alignment or at intersections. Arbitrary changes in species or mixing a variety of species on a given street should be avoided in the interest of maximizing visual continuity. Exceptions to this can be entertained if the mixed species have very similar size, form and texture characteristics.

## 7. Campus Forest Areas

The proposed campus forest areas consist of existing wooded areas and open areas proposed for reforestation. There are four long-term objectives for the forest areas.

- The first is to maintain stands of large native trees with associated understory and ground layer plants that will provide a regionally fitting visual theme for beautifying and unifying the university owned areas surrounding the core campus.
- The second is to provide the environmental benefits of cooling, carbon capture, enhanced storm water management, erosion control and water quality protection, increased species diversity and reduced water consumption and energy expenditure for grounds maintenance.
- The third is to provide areas for research, education, and passive recreation in close proximity to the campus.
- The fourth is to provide an example of environmental responsibility that will serve to heighten public awareness of the relationship between human society and the natural environment.

All of these objectives are supportive of the Virginia Tech Climate Action Commitment and Sustainability Plan. The university should investigate the establishment of forest easements as a means of gaining stormwater management credits.

In balancing these objectives, it should be recognized that in areas of high visual sensitivity along roadways, the aesthetic quality of the forest should be given priority. Research activities that may result in “unattractive” landscapes or the dominance of invasive exotic species over extended periods of time should be located in areas with limited public exposure.

The forest areas along roadways should be designed and managed to enhance and unify the campus image over the long-term with a minimum of short-term unattractiveness during periods of canopy establishment. The detailed planning of reforestation initiatives should also include, as an overarching design parameter, the maintenance of campus safety and security, and the preservation of significant views.

The forest areas should not be designed as strict restorations of the forest communities that naturally occur or occurred in the region during previous times. Rather, the forest areas should be designed to stimulate the general structure and ecosystem functions of naturally occurring forest communities of the region, with a composition of species that may not necessarily replicate the original forests of the area.

The designs and the management methods for each forest area should respond to the existing vegetation soils, hydrology, exposure, size, shape and context of each site.

The methods for establishing new forests should be adapted to the site conditions and budget available for each site.

The preferred method of forest establishment in areas of high public visibility is to plant canopy trees at densities and proportions of species similar to their final desired configuration, and to allow and encourage invasion by understory species as the forest canopy develops.

Examples of the canopy trees that would be included in the initial canopy plantings are listed below. The list will require refinement based on more detailed studies that would address issues of plant availability in required sizes, species transplant characteristics, and the matching of tree types to field conditions.

*Acer saccharum* -- Sugar Maple  
*Acer rubrum* -- Red Maple  
*Betula Lenta* -- Sweet Birch  
*Carya sp* -- Hickory  
*Fagus grandifolia* -- American Beech  
*Fraxinum americana* -- White Ash  
*Juniperus virginiana* – Eastern Red Cedar  
*Liquidambar styraciflua* – Sweet Gum  
*Liriodendron tulipifera* -- Tuliptree  
*Nyssa sylvatica* -- Black Tupelo  
*Prunus serotina* -- Black Cherry  
*Pinus rigida* -- Pitch Pine  
*Pinus strobus* -- White Pine  
*Pinus echinata* -- Short-leaf Pine  
*Quercus alba* -- White Oak  
*Q. coccinea* -- Scarlet Oak  
*Q. lyrata* – Overcup Oak  
*Q. macrocarpa* – Burr Oak  
*Q. prinus* -- Chestnut Oak  
*Q. borealis* -- Northern Red Oak  
*Q. shumardii* – Shumard Oak  
*Q. velutina* -- Black Oak  
*Tilia americana* -- Basswood

In the interest of minimizing the period for canopy establishment and increasing their immediate visual effect, trees should be planted at the largest sizes practical. Weed and grass competition should be reduced in the immediate area around the planted trees until such time that the new planting can successfully compete.

Existing grass and forbes should be allowed to grow without mowing in the remainder of the project area, until they are ultimately shaded out and colonized by woody plants. The grass should be removed if rodent control becomes necessary to protect young trees from girdling.

To maintain a neat edge along roadways, a narrow strip of lawn, free of trees, may be maintained during the establishment years, and later be phased out or maintained as a grass shoulder.

Other methods of planting may be employed in situations where less immediate visual effects are acceptable, or where soil conditions, exposure or the project budget will not allow planting large canopy trees at ultimate densities. These methods include:

- Planting desired canopy trees at lower densities in loose savanna configurations that will, over time, naturally close or can be supplemented with future planting.
- Planting desired canopy trees at higher than ultimate densities (probably with smaller size planting stock for cost reasons) to increase the rate of canopy establishment and the opportunity for development of an understory layer.

- Planting fast-growing pioneer tree and shrub species at medium to high densities to rapidly establish a canopy followed by inter-planting with longer lived shade tolerate canopy species. Variations of these methods are also feasible.

The planting of fast growing temporary shelter belts and hedgerows may also be desirable to provide protection for the new forests during the first several decades of their establishment. In proposed forest areas along the edges of large parking areas it would be desirable to include a large proportion of conifers for visual and wind screening.

## CAMPUS TREE AND SHRUB LIST

Preferred woody plants for use on the Virginia Tech campus. This is not an exhaustive list of all acceptable plants. Other plants that follow the design principles may be used.

### Canopy Trees

*Abies fraseri*—Fraser Fir  
*Acer rubrum*—Red Maple  
*Acer saccharum*—Sugar Maple  
*Betula lutea*—Yellow Birch  
*Betula nigra*—River Birch  
*Fagus grandifolia*—American Beech  
*Fraxinus Americana*—White Ash  
*Carya glabra*—Pignut Hickory  
*Carya ovata*—Shagbark Hickory  
*Carya alba*—Mockernut hickory  
*Carya cordiformis*—Bitter-nut Hickory  
*Liriodendron tulipifera*—Tuliptree  
*Liquidamber styraciflua*—Sweetgum  
*Magnolia acuminata*-- Cucumber Magnolia  
*Nyssa sylvatica*—Black Tupelo  
*Picea rubens*—Red Spruce  
*Pinus strobus*—White Pine  
*Pinus echinata*—Short-leaf Pine  
*Plantus occidentalis*--American Sycamore  
*Prunus serotina*—Black Cherry  
*Quercus alba*—White Oak  
*Quercus bicolor*—Swamp White Oak  
*Quercus coccinia*—Scarlet Oak  
*Quercus palustris*—Pin Oak  
*Quercus prinus*—Chestnut Oak  
*Quercus rubra*—Northern Red Oak  
*Quercus velutina*—Black Oak  
*Tilia americana*—Basswood  
*Thuja plicata* – Western Cedar  
*Quercus lyrata* – Overcup Oak  
*Gymnocladus dioica* – Kentucky Coffeetree  
*Ulmus americana* – Dutch Elm Disease resistant cultivars  
*Quercus macrocarpa* – Burr Oak  
*Quercus nuttallii*- Nuttall Oak  
*Platanus acerifolia* – London Planetree  
*Thuja occidentalis* – American Arborvitae  
*Celtic occidentalis* – Hackberry  
*Juniperus virginiana* – Eastern Red Cedar

### Understory Trees and Shrubs

*Amelanchier arborea*—Downy Serviceberry  
*Amelanchier canadensis*—Shadblow Serviceberry  
*Amelanchier laevis*—Allegany Serviceberry  
*Carpinus caroliniana*—American Hornbeam  
*Clethra alnifolia*—Summersweet Clethra  
*Cercis canadensis*—Redbud  
*Cornus florida*—Flowering Dogwood  
*Cornus amomum*—Silky Dogwood  
*Cornus racemosa*—Gray Dogwood  
*Hamamelis virginiana*—Common Witch-hazel  
*Ilex opaca*—American Holly  
*Kalmia latifolia*—Mountain Laurel  
*Ostrya virginiana*—Hop-Hornbeam  
*Oxydendrum arboretum*—Sourwood  
*Prunus pennsylvanica*—Chokecherry  
*Rhododendron calandulace*—Flame Azalea  
*Rhododendron catawbiense*—Catawba Rhododendron  
*Rhododendron maximum*—Rosebay Rhododendron  
*Sassafras albidum*—Sassafras  
*Vaccinium corymbosum*—Highbush Blueberry  
*Viburnum dentatum*—Arrowwood  
*Viburnum lentago*—Nannyberry  
*Viburnum prunifolium*—Blackhaw  
*Virbunum trilobum*—American Cranberrybush  
*Xanthoriza simplicissima*—Yellowroot  
*Crataegus viridis*– Winter King Hawthorne  
*Ilex glabra* -- Inkberry  
*Ilex verticillata* -- Inkberry  
*Viburnum cultivars*  
*Fothergilla major* – Large Fothergilla  
*Halesia carolina* – Carolina Silverbell  
*Aronia arbutifolia* – Red Chokeberry  
*Aronia melanocarpa* – Black Chokeberry  
*Fothergilla gardenia* – Dwarf Fothergilla



## E. SITE STRUCTURES

### 1. Lighting

The present system of standard light poles and fixtures should continue to be applied in new areas of the campus. The layout of fixtures should continue to follow the regular patterns of walks, roads and buildings so that the main lines of the campus structure are revealed by the layout of lights.

- New building-mounted lights should be low glare fixtures and employ lamps with good color rendition, particularly at building entrances.
- Bollards, well lights and fixtures embedded in walls or steps should not be used. These types of lights are prone to failure in exterior applications and require a high level of maintenance.
- Pole-mounted or wall-mounted fixtures consistent with the standard campus fixture should be used.
- Wall-mounted fixtures may adopt the style of the architecture on which they are mounted rather than follow the campus standard pole-mounted fixture.

### 2. Emergency Call Boxes

The existing emergency call boxes should be located in all academic and residential areas as well as highly traveled remote areas of the campus. The Virginia Tech Police Department shall be consulted regarding placement of the phones and to verify the phone model and proper programming to function with the existing system.

### 3. Structures

#### *Walls*

Site walls should be designed to be a direct extension of the architecture they are most immediately associated with. Materials and finishes shall match those of the adjacent architecture. Seat height walls located in association with building entrances and other natural gathering places are encouraged. The seat walls should have smooth cut stone or precast caps to encourage sitting, rather than rough Hokie Stone or brick.

The cheek walls that contain steps should be designed to be nearly flush with surrounding lawns or plant beds, rather than projecting above the adjacent grade level.

#### *Bike and Bus Shelters*

The transparent shelters presently used on the campus should continue as the campus standard.

#### *Pavilions and Trellises*

Several opportunities exist on campus to add trellis or small pavilion structures to enrich the campus landscape. One opportunity is in the Agriculture Quadrangle on top of the existing concrete slab that overlooks the lawn. Another is at the top of the steps between Brodie Hall and Major Williams Hall.

In each case the structure should be designed to be compatible in style and materials with the surrounding architecture. For example, the rustic wood pavilion at the Duck Pond, as appropriate as it is in that setting, would be out of place within the built campus, where stone, metal or more finished wood construction would be appropriate.

Pavilions should be designed as enjoyable places to sit and as gateways along paths that frame views or mark a transition from one place to another. The pavilion at the Duck Pond, for example, is inviting and attractive because of its design and siting.

### 4. Art

The use of elements of sculpture, relief and ornament in the development of the campus landscape is encouraged. Any such work of art, be it free standing sculpture, a fountain or an ornamental pattern in a plaza pavement, should always be carefully integrated with the landscape immediately surrounding it. The art and its setting should be developed together so that the art is a harmonious part of the landscape rather than a foreign or free element in the landscape.

The Visual Arts Properties Committee has been established to evaluate and control the design and placement of art on the campus. The committee works with the campus planning staff to identify locations for commissioned or gifted sculpture.

## **5. Paving**

### ***Street and Parking Lot Paving***

The pavement material for vehicular streets and parking lots should continue to be asphalt concrete.

All paint markings on parking lot and road pavements should be white, not yellow, except where required by VDOT standards.

### ***Pedestrian Pavements***

The pavement material for pedestrian walks should continue to be broom finished cement concrete. Score joints typically should be tooled and perpendicular to the tangent or arc length of the walk. The alignment of walks shall follow smooth continuous curves and tangents, free of kinks and misaligned curve-tangent intersections.

The preferred pavement for pedestrian plazas and terraces immediately adjacent to buildings is cut stone, or a unit paver of brick or concrete. The use of concrete on plazas and terraces is also acceptable.

To reduce glare, add interest, and provide color consistency, colored concrete may be used. The design of the plaza surface should be treated as an integral part of the surrounding architecture.

The pavement should meet adjacent buildings walls, steps in a planned way; as an interior floor would deliberately meet the walls of a building. Drainage inlets should be compatible with the adjacent architectural detailing.

### ***Curbing***

Street curbing shall be cast-in-place, or precast concrete.



### III. BUILDINGS



# III. BUILDINGS

## A. INTRODUCTION

These building design principles are a companion to the Campus Master Plan and are meant to assist architects in understanding the design and planning characteristics which make the Virginia Tech campus a special place. The architectural appearance and overall aesthetic quality of the Virginia Tech campus are important university and community resources which deserve special care and attention to assure continuity.

The image of the university's architecture and building forms should convey long term stability while encouraging an atmosphere for creative thinking. The majority of campus buildings should work essentially as groupings or compositions rather than as individual buildings both functionally and aesthetically. The architectural style of new buildings may vary to reflect current technology and program accommodation. Any such innovations, however, must maintain a harmonious, aesthetic connection with existing campus structures.

New buildings and their associated outdoor spaces must provide varied experiences while reflecting the existing heritage and character of the established campus architecture. Building elements must exhibit permanence, a human scale, visual richness and pleasing proportions.

In order to extend the architectural fabric of the campus, building materials must be carefully integrated in a manner which is compatible with the historic existing buildings. In addressing the design of renovations, additions or new construction, designers are required to find the proper balance between individual expression and overall contextual conformity.

In undertaking the requisite planning and design tasks, several considerations are paramount to the guidance of the design concepts, including:

- A consistent use of the principles of **design order**, such as building orientation, scale, massing and proportion.
- A careful integration of the **architectural elements** which are key factors in the defining characteristics of the Virginia Tech architectural language, including walls, roofs, windows, doors, openings and building materials.
- An appropriate response to the **campus context** through respect for the protection of views, setbacks and development patterns described in the Master Plan.
- Accommodation of projected growth and development in a manner which strengthens the overall **appearance, spatial organization** and **functionality** of the campus.
- A meaningful commitment to design strategies which embrace **sustainability** and are compatible with the regional environment and conservation of natural resources.

## B. ARCHITECTURAL ORDER

### 1. Siting / Orientation

The siting of new buildings and the location of building additions must be carefully considered with respect to several key considerations, including the master plan principles, existing landscape features, site utility infrastructure and solar orientation.

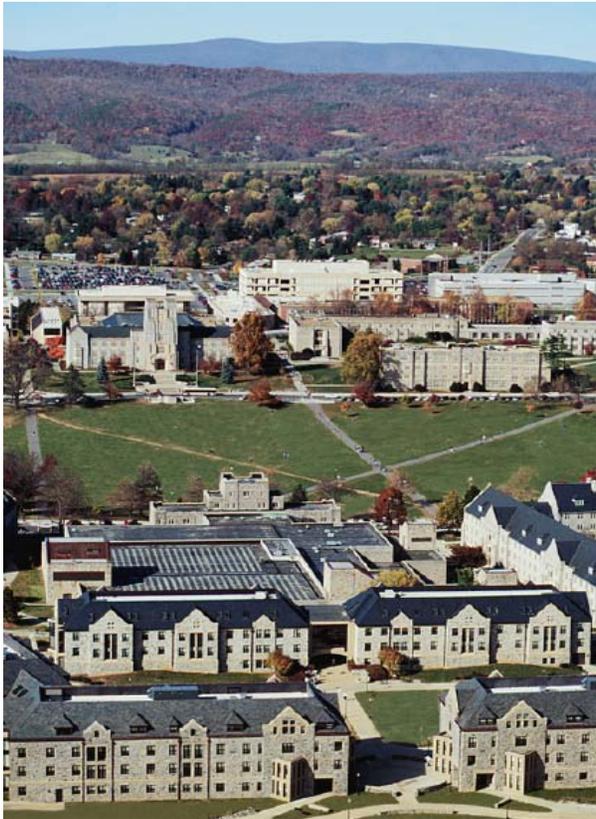
New structures are to be placed to help define outdoor campus spaces. Their locations and groupings, as illustrated in the Master Plan, express this intention. While specific program requirements will necessitate adjustments to these parameters, the space-making intentions of the Master Plan are to be honored.

A precinct plan, developed during the concept design phase of each project, will help maintain a focus on campus master planning issues such as spatial definition, circulation, building entries, and ground level uses.

The location of entries, arcades, and ground level internal activities can do much to animate campus spaces. Where possible, these functions should be incorporated into the building's design. Spaces should be activated with the addition or relocation of entry points. Designers are to consider how views into or from a building will create a connection between the new building and outdoor areas. A window frame can be thought of as a frame for a vignette of campus life, or as a frame for a view of a building's internal life.

The following outline identifies specific 'siting' considerations for review:

1. Buildings shall be sited to reinforce and enhance the **spatial structure** of the campus and its circulation patterns.
2. Building entries shall be clear and coordinated with **circulation patterns** and landscaping elements.
3. Ground level uses shall consider the **harmony** of interior and exterior activities.
4. Building placement should be oriented to shield **utilitarian components** (parking, loading, trash areas, and utility boxes) from the most prominent campus view 'corridors.'
4. Coordinate **shared facilities** as feasible, including walkways and parking areas.
5. Locate buildings to develop a network of varied **open spaces** that facilitate both formal and informal interactions.
6. Site buildings so as to create human-scaled spaces with **spatial sensibilities** that relate to the mass, proportion, and size of surrounding buildings.
7. Locate buildings to reduce impacts on the land and **environment**.
8. Arrange building forms to make the campus inviting and transparent with a strong sense of arrival and **clarity of orientation**.
9. Promote *compact development* to preserve the campus' greatest asset — its land — for future opportunities.
10. Orient buildings to maximize passive **solar opportunities** and allow active solar technology.



## **2. Building Scale**

The design of the original campus buildings was influenced by a broad range of factors that generated specific attributes of building size, organizational structure and volume. Many of these influences related to construction technology and available building systems with respect to structure and mechanical systems. For example, a desire for natural ventilation was a particularly important factor in determining building width in the historic campus structures.

The building design principles promote new design strategies which reflect the building's site, programmatic function, site considerations, surrounding environment, as well as their place in time.

### ***Height***

To maintain the sense of scale currently experienced in major spaces on campus, it will be important to controlling the height of buildings, particularly in the core area of campus.

- Generally, buildings are to be three to five floors in height above grade.
- If more than four floors above grade are needed, the upper floors and penthouses must be set back.
- Taller exceptional elements are to be designed and located in response to particular opportunities outlined in the campus master plan, including landmark locations described in the 2006 Master Plan update.
- Buildings of three and four stories in height should be subdivided into a base, body, and top. This delineation may be accomplished through changes in building plane, differentiation in material, or both.

### ***Massing***

While many of the buildings on campus are simple in their overall massing, there is wide use of smaller scale individual elements such as bay projections and porches. These elements are used to suggest special internal functions, draw attention to important areas like entrances, and provide visual and compositional balance. These elements help to provide the visual and psychological cues necessary for an understandable architecture. Their inclusion in new designs is encouraged.

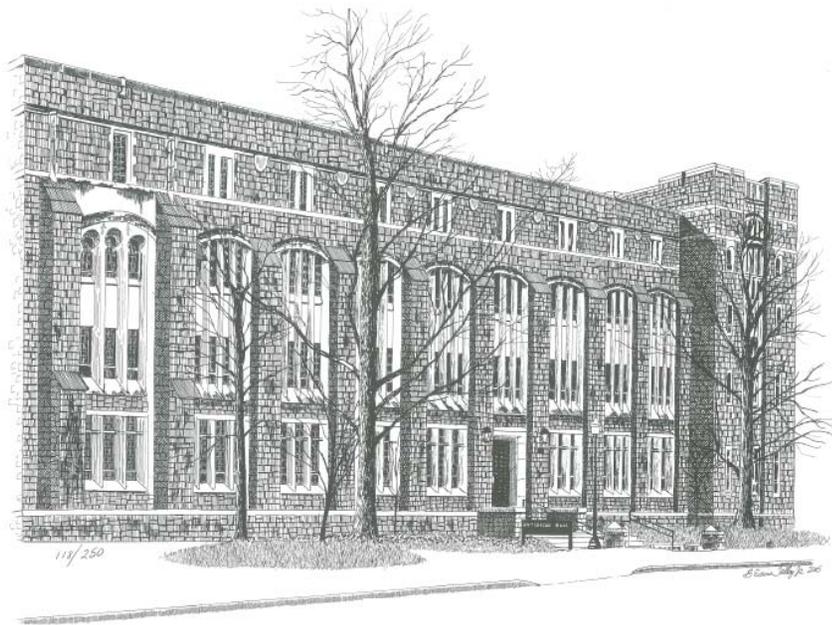
Simple massing allows constrained budgets to be focused on higher quality materials and careful detailing. The traditional buildings on campus exemplify how richness can be achieved through the use of durable materials and fine detail within the context of simple massing.

### ***Volumetric Variation***

Variation in the massing of buildings may be accomplished in several ways. The following considerations are recommended strategies for developing expression in the basic volume of new building forms.

- Bays, porches, towers, and other minor adjustments to massing are encouraged.
- Some expression of the building structure is encouraged in the design and rhythm of the facade, including options such as piers, buttresses and modulation of the wall plane.
- Openings in the masonry wall should have some level of correspondence to the building's structural rhythm, either in continuous openings or by combinations of smaller openings within the bays.
- Iconic structures, while an exception to the rule, are welcome as important campus landmarks. Substantial review and discussion should be held regarding the appropriateness of such proposals.

Of particular interest in understanding the preferred massing and spatial character of buildings in the campus landscape, please refer to the Agriculture Quadrangle for reference. The following renderings illustrate the range of building volumes and architectural language found in the quadrangle.



Hutcheson Hall



Smyth Hall



Price Hall



Seitz Hall



### 3. Facades

The traditional buildings on the campus have simply ordered and well articulated facades. Clearly delineated bases, middles and tops are the rule. In many cases, facades are symmetrical with the central and end bays pulled forward and emphasized with towers, pediments, or raised parapets. Bays and large order windows help organize the facades and, in some cases, indicate special interior spaces. Doors with carved surrounds, stairways, and wing walls clearly mark entries and often project several feet beyond the main facade.

When considering the key design considerations for building facades, the following principles identify specific considerations for review:

1. Facades shall be simple and well ordered.
2. General fenestration patterns shall be regular. Some vertical hierarchy is appropriate. Where affordable, cut stone window surrounds are preferred to precast concrete. Window openings shall be subdivided to create a vertical proportion where they form horizontal groupings.
3. The use of bays, giant order elements, or special accents to provide a large overall order is acceptable and encouraged.
4. Special detailing ornament and materials at significant locations are acceptable and encouraged.
5. Window frames and glass shall be set back approximately 6" to provide weather protection. Sills and heads shall be detailed to shed water and alleviate the possibility of unattractive weathering patterns.

Additionally, the following principles are provided for more specific façade design considerations:

- Buildings are to address primary campus spaces with main facades.
- Facades are to incorporate primary or symbolic building entrances.
- Main facades are generally more formal, elaborate, and make use of symmetry.
- Facades are to be divided into a base, a middle and a top.
- Facades will incorporate repetitive façade bays in accordance with their siting and scale.
- Repetitive bays are to be vertical in proportion.
- Facades will have differentiated or emphasized ends.
- Facades will be designed with three dimensional relief.
- Facades may incorporate decorative elements as appropriate to their style and importance.



*Main Eggleston Hall*



*Newman Library*



*Saunders Hall*



*Bioinformatics Building*



*East Campbell Hall*



*Holden Hall*

## C. ARCHITECTURAL ELEMENTS

### 1. Roof Forms

Special attention must be paid to the arrangement and design of building roofs and various attached appurtenances. Roofs must be organized and designed as carefully as the other primary elements of a building.

Equipment must be integrated into the building form or placed within enclosures well integrated with the roofscape.

In most cases, both sloped and flat roof solutions can be successful. Sloped roofs, parapets, and dormers are all extant on the campus. When successful, they are integral elements of the design and provide individual character to a particular building. Sloped roofs provide the opportunity for individualizing a building that is simple in plan and elevation.

Executed in slate or standing seam metal, sloped roofs are attractive in appearance and durable. Asphalt shingles, which have a shorter life span, and a less formal appearance, are not appropriate for central campus use.

Stacks, exhaust hoods, and vents should be grouped and incorporated into the architectural composition of the buildings they serve. Since such appurtenances are often visible from a considerable distance, it is important that they be designed with a high degree of uniformity so that the distant image is harmonious and composed.

If traditional forms of construction such as these are to be used, they should be carefully reviewed. The choice of color, size, and pattern of roof tiles are important design decisions. Standing seam metal roofs allow for a similar range of options including material, color, patterning, and method of seaming. Other details, such as snow clips, ridge and valley flashing, and vents are all essential elements and should be consciously evaluated.

Where parapets occur on the campus, they are most successful when trimmed in precast concrete or cut limestone. A full range of design and detailing possibilities may be considered for copings. The specific slope of a roof, whether it is hipped or gable-ended, and the incorporation of both functional and ornamental details, such as scuppers and gargoyles, add character and individuality to a building.

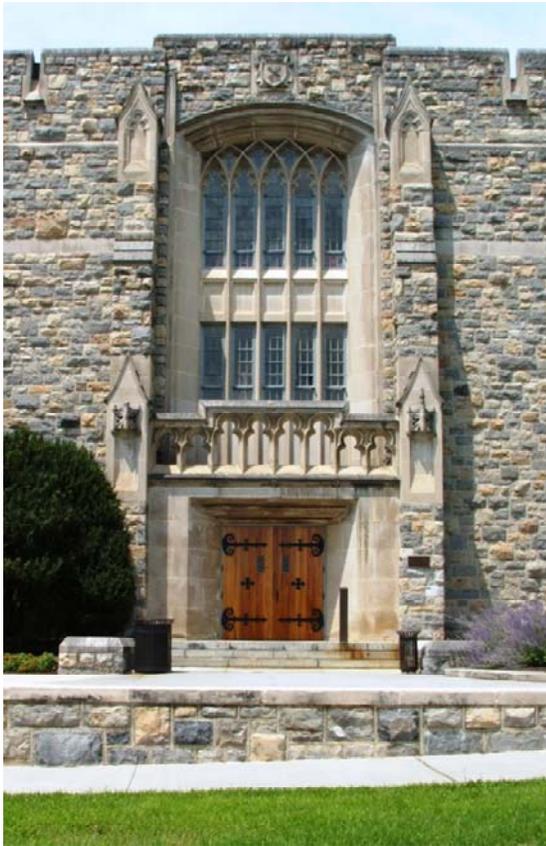
These traditional details also improve the weathering of a building and its appearance over time. Where copings are used and simplified to express their modernity, a consideration of their traditional function is beneficial. Dormers provide a lively accent along the tops of several existing buildings on campus. They provide a sense of the life within a building not unlike bay projections.



*War Memorial Hall*



*Career Services Building*



*Norris Hall*



*Main Campbell Hall*



*Main Eggleston Hall*

## 2. Doors, Portals and Passages

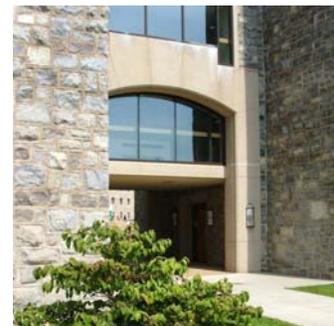
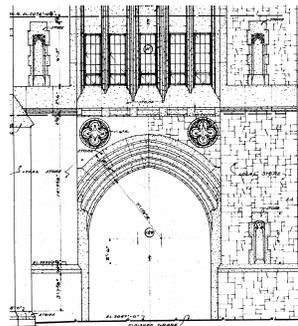
Entries should be logically placed to relate to building function and must be clearly recognizable by users. They must be open and inviting, well lit, and should provide a sense of security. The scale of building entries must be proportioned to clearly identify their location and importance while maintaining a human-scale relationship.

This requires that multi-story entries must have single-story element sets within. The entry may be used as an organizing tool for the entire facade, and may also be referenced by a feature such as a balcony at a higher floor.

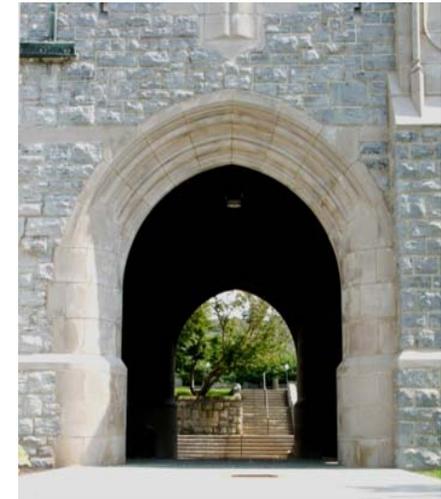
Another key element found in the more iconic buildings on campus is the presence of outdoor spaces and passages which are integrated into the campus circulation plan and specific entrance requirements for individual buildings. The interiors of passages through buildings which connect outdoor rooms and campus spaces have integrated seating ledges and wood beamed ceilings, creating a sense of place. Opportunities for such 'portal' conditions should be carefully reviewed for each project, particularly in conjunction with the Campus Master Plan.

The following basic considerations must be taken into account in the design of door and entry conditions for new buildings:

- Primary and symbolic entrances will receive elaboration and emphasis.
- Entrances will be clear, prominent, and aligned to the major space upon which the building fronts.
- The outdoor space at the entrance, the entry portal, and the building lobby are to be parts of a unified pedestrian experience.
- The building entrance is elaborated and celebrated by both architectural and landscape elements.
- The design will extend the exterior public space seamlessly into the building, and provide informal gathering and meeting spaces near the building entrances using a combination of paving, planting beds, low walls, benches, trees and steps.
- Service entrances are to be unobtrusive.

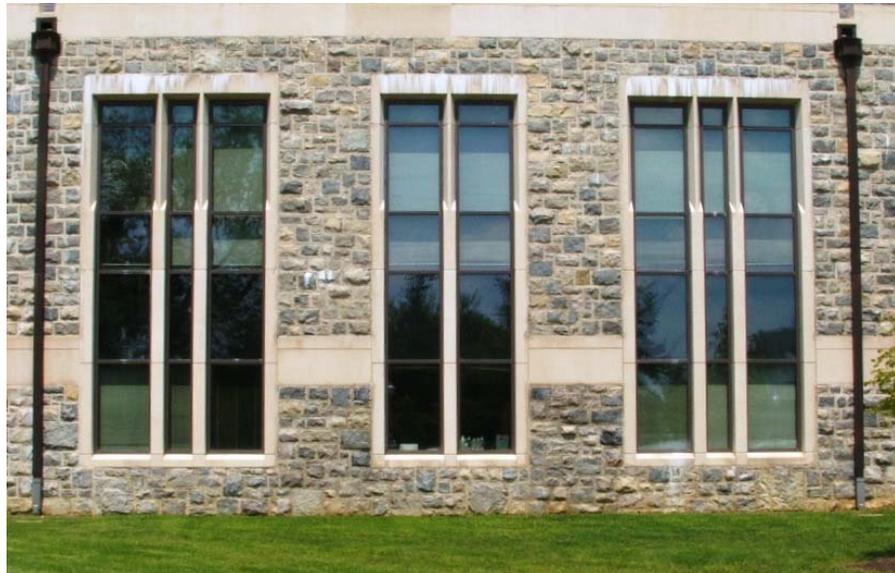
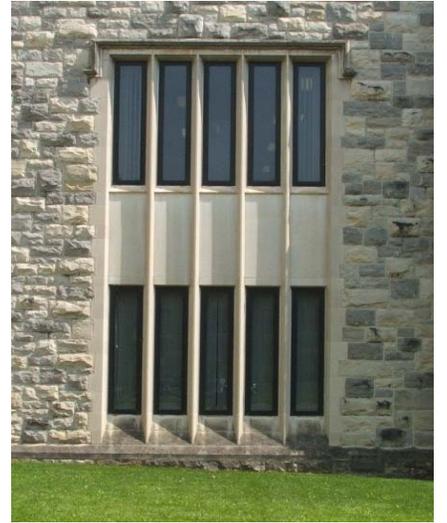


*Harper Hall*



*Main Campbell Hall*





### 3. Windows and Openings

Windows are anticipated to be placed visually in balanced compositions, both vertically and horizontally. Their sizes sometime vary from floor to floor to create a sense of hierarchy and order. They are generally vertically proportioned singly or through intermittent mullions, when arranged into horizontal groups.

Finished stone with surrounds (heads, jambs and sills) give a finely crafted quality to the buildings and allow window frames to meet the otherwise rough, split-faced Hokie stone. This finer finishing of materials at openings in the facade reveals an intelligent understanding and sensitivity to the reality of construction and the nature of materials.

In most cases, windows and doors in exterior walls should be recessed to represent a 'punched' or 'cut-out' expression of the openings which one would expect in a solid masonry wall. Windows and openings might also be grouped in larger configurations as a counterpoint to large areas of masonry construction.

The placement and proportion of windows must respect solar orientation, views and daylighting potentials, as well as the historical precedent of window forms within the older historic buildings of the campus. The use of oversized windows, common in some of the older buildings on campus, is encouraged on appropriate façade locations as long as configurations are integrated with a strong sustainable/solar design strategy. In general, larger openings should be used to signal principal entries, gateways or atrium features.

The use of windows promotes campus vitality. Windows allow people on the outside to be connected to activities within, while providing interest for people inside. At night, windows allow interior activities to illuminate and animate the public spaces outside and also provide a sense of security.

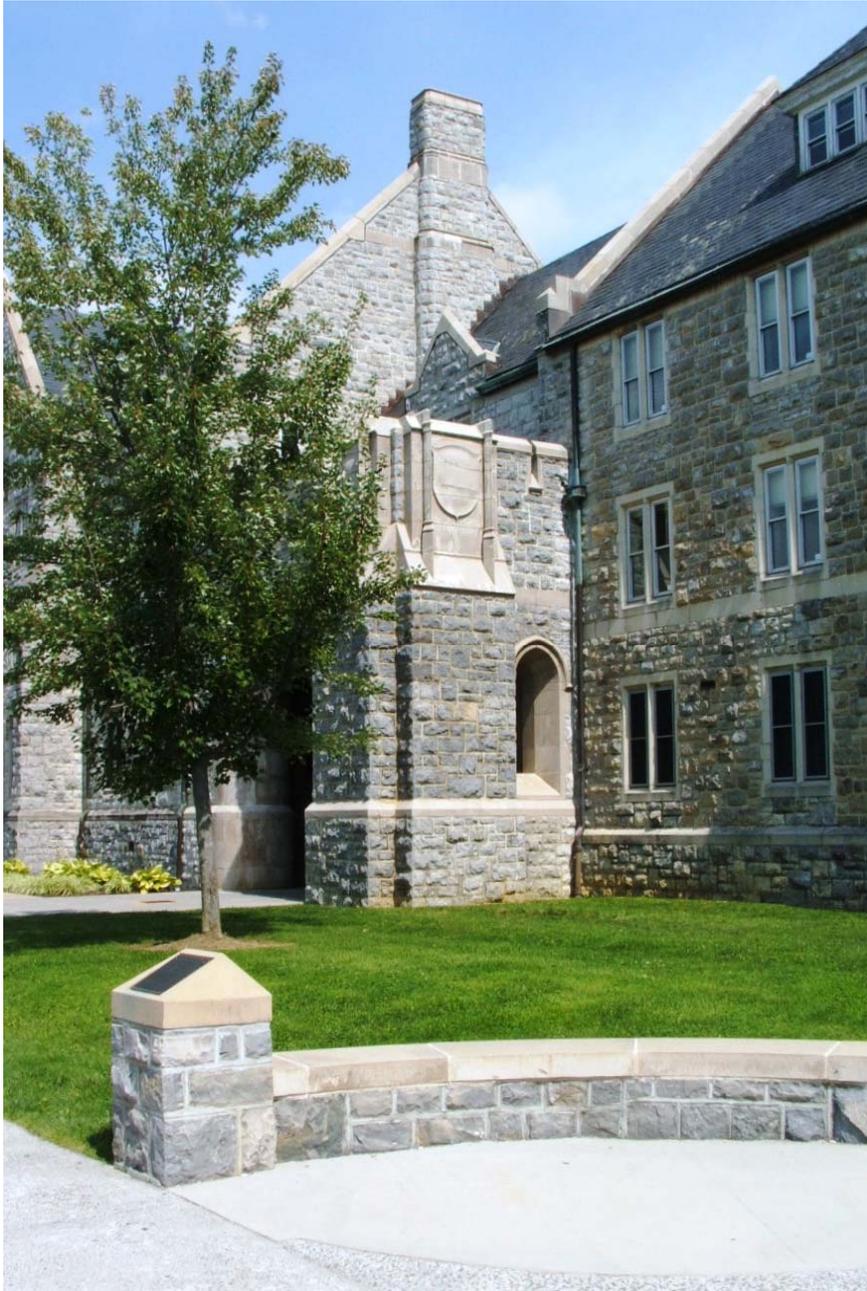
Natural light may be appropriate for many teaching uses, and when combined with blinds or curtains, classrooms may still have enough flexibility for computer or projection use. Glazing is very important along arcades and at building entries. Offices located at the exterior should have windows whenever possible.

Skylights help animate the interior of a building by providing natural light and color. They create an element of visual activity on the roof that can be seen on the skyline. Used as an icon or marker, a skylight system can help give the campus identity and texture.

The original campus buildings have been perceived as not having enough glass. Some of the newer buildings have more glass than the originals.

Individual panes of glass must be vertical or square. Window units may be linked together with a multi-segment mullion system. Large horizontal masonry openings can be achieved through the connection of many lites of glazing. Skylights and clerestories should be constructed from vertically oriented planes of glass and should be illuminated so that they may be seen both night and day.

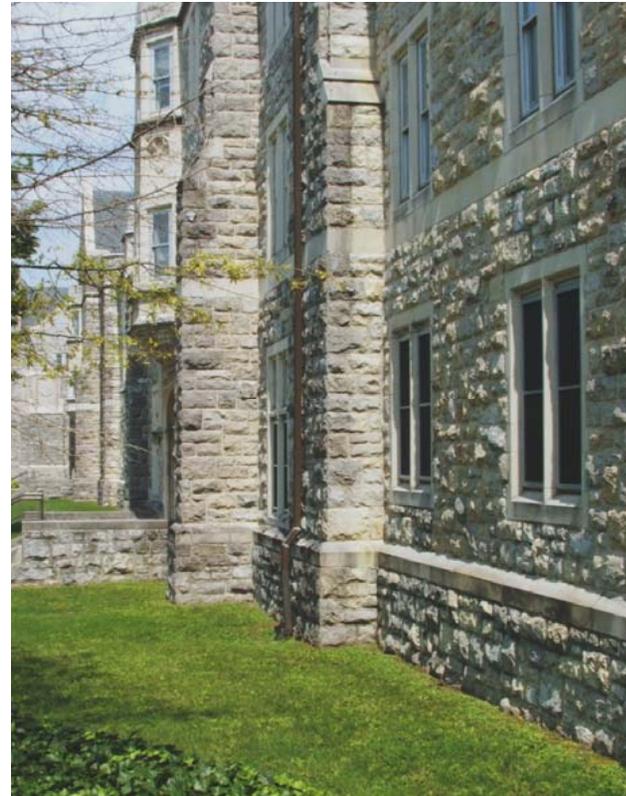
- Typical windows are to be 'punched'—as individual rectangular openings in the masonry walls.
- Typical windows are to be vertical in proportion.
- Windows are to be set deep within the thickness of the wall, not flush with its outer surface.
- Larger areas of glazing, where they occur, are to consist of grouped windows, not undifferentiated curtain walls and should be located to express aspects of the buildings' circulation system, lobbies, stairs, and major public rooms.
- Operable windows are encouraged in private rooms, subject to the need to meet energy consideration and LEED Silver requirements.
- Glass is to be clear (low-e coefficient), not noticeably tinted. Reflective glass is not allowed.
- Glazed areas are to be subdivided by true mullions.
- Window mullion patterns will be designed so as to enrich the reading of the façade.

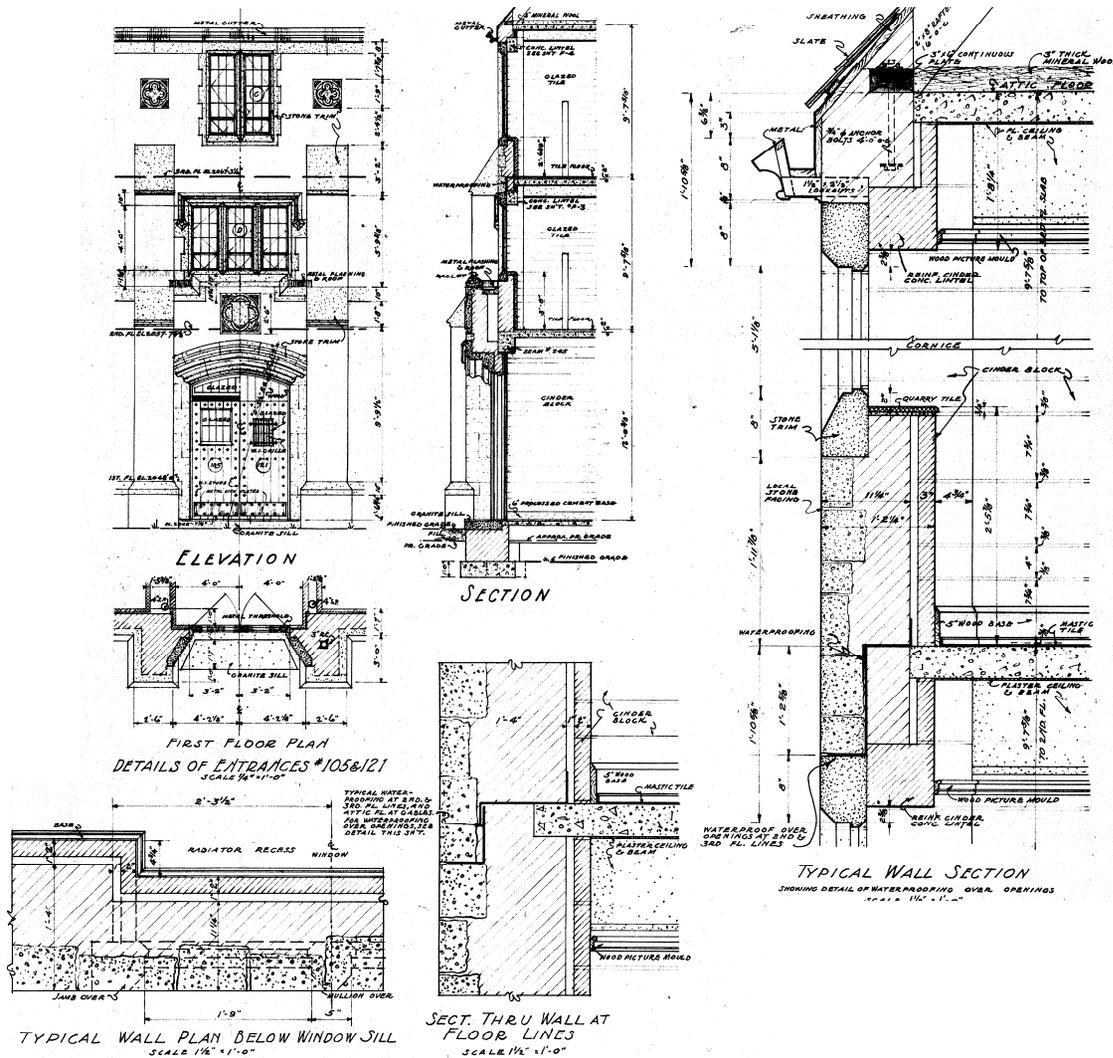


*West Campbell Hall*



*Bioinformatics Building*





#### 4. Architectural Details

Architectural details play an important role in the development of campus architecture. Buttresses, water courses, belt (string) courses, and copings help order these facades both horizontally and vertically. These elements increase the play of light and shadow on the facades. Many also enhance the buildings' weathering capabilities. In fact, the term 'weathering' is a traditional name for elements such as sills, copings and other water-shedding architectural details.

These architectural elements have evolved over centuries and are profoundly sophisticated. They shed water effectively due to their geometry. They also create shadow lines, highlights, and ridges, which help visually organize the facade.

Their functional purpose may also direct the inevitable and unavoidable residue of the weathering process into patterns which attractively reinforce the architectural order of the facade. Ironically, this type of low-tech traditional response to the natural environment is often a better technological solution than a 'high-tech' reliance on chemically exotic caulking.

## D. BUILDING MATERIALS

The vocabulary of materials for the campus built environment is a vital element in contributing to the special character of the Virginia Tech campus. Hokie Stone, brick and architectural concrete are the dominant building materials on campus. Their use generally follows a clear pattern. The Drill Field and its surrounding quadrangles are Hokie Stone. The buildings surrounding the inner Collegiate Gothic core along the Alumni Mall, College Avenue, and the west side of West Campus Drive are brick. Architectural cast-in-place and pre-cast concrete mixed with brick occur along the north edge of campus and in parts of south campus.

Where areas of different material-use interface, an evaluation must be made as to which materials or what blend of materials ought to be employed. Johnston Student Center and Hancock Hall illustrate the use of Hokie Stone buildings in an area of material-use interface. The insertion of these stone buildings effectively bridges between the two areas, creating a quadrangle and transforming Cowgill Hall into a positive accent. In fact, stone-clad buildings are planned or have been built in most campus precincts with the intention of extending the architectural character of the campus core to these outlying areas.

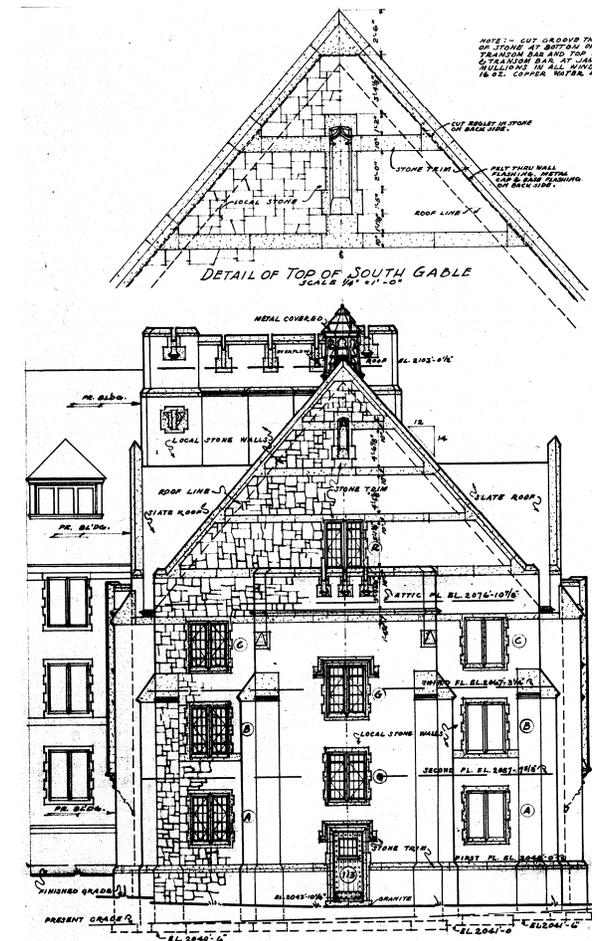
### 1. Walls

For buildings in the Academic Core of the campus there is a strong mandate to consider the use of Hokie Stone for the facades of all new buildings and expansion projects. Each project must be reviewed in terms of its program, location, prominence and place within the Campus Master Plan to determine the appropriate palette of materials, assuring that the selection and quality of materials used in the construction of buildings, associated facilities, and site elements should be honest to their form and function.

In most cases, masonry walls should have an expression of materials that provide a sense of solidity, texture, and a sense of human scale and proportion. To further enhance these qualities of scale and proportion, strong consideration should be given to emphasizing the thickness of exterior walls to create shadows on the façade.

Hokie Stone should continue the tradition of having split-faced units in a random ashlar pattern with flush mortar joints. Smooth limestone is used most appropriately for trim and ornament.

The incorporation of stone trim, accents, and ornamental elements in brick masonry campus buildings is encouraged. Pre-cast concrete, and cast stone can be aesthetically acceptable and cost-effective substitutes for limestone.



*SOUTH ELEVATION*



*Career Services Building*



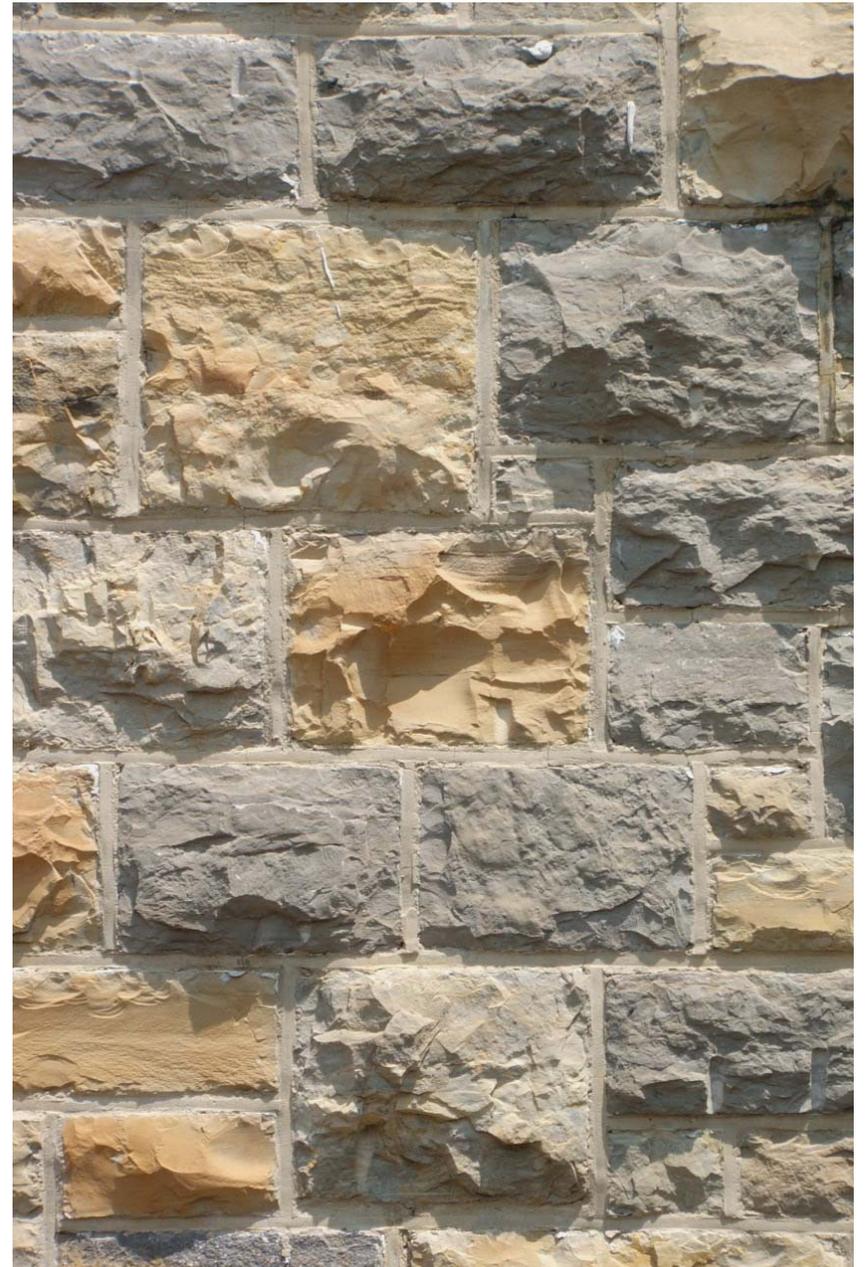
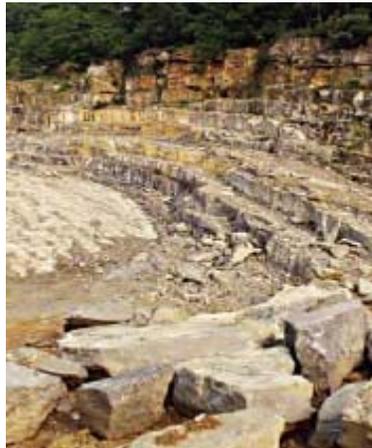
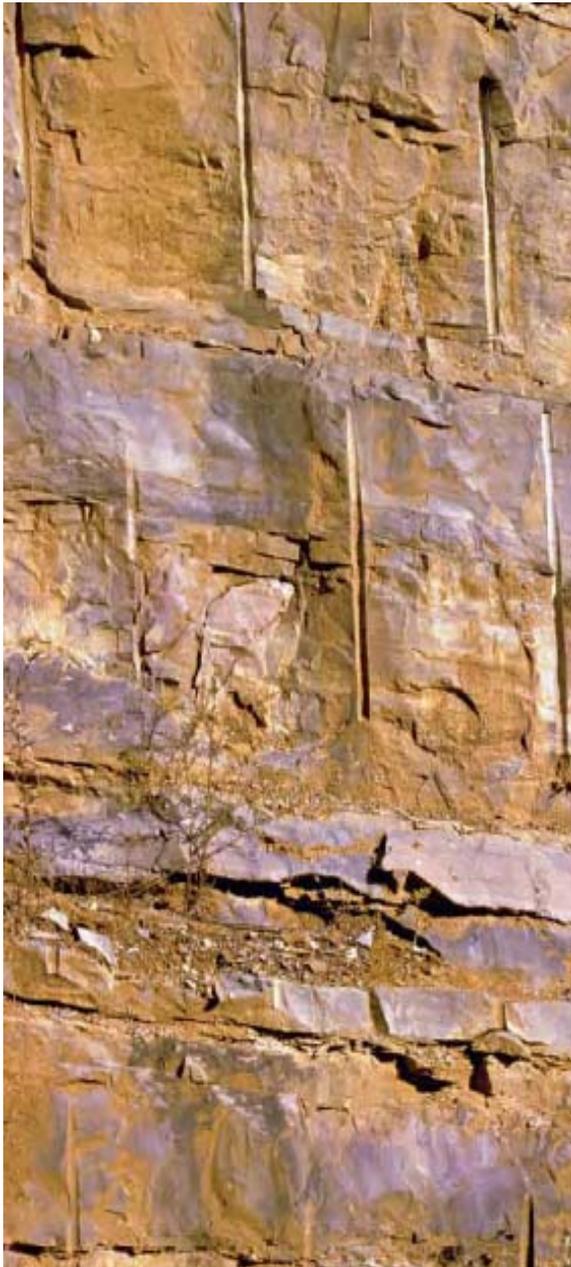
*Newman Library*



*Bioinformatics Building*



*Davidson Hall*

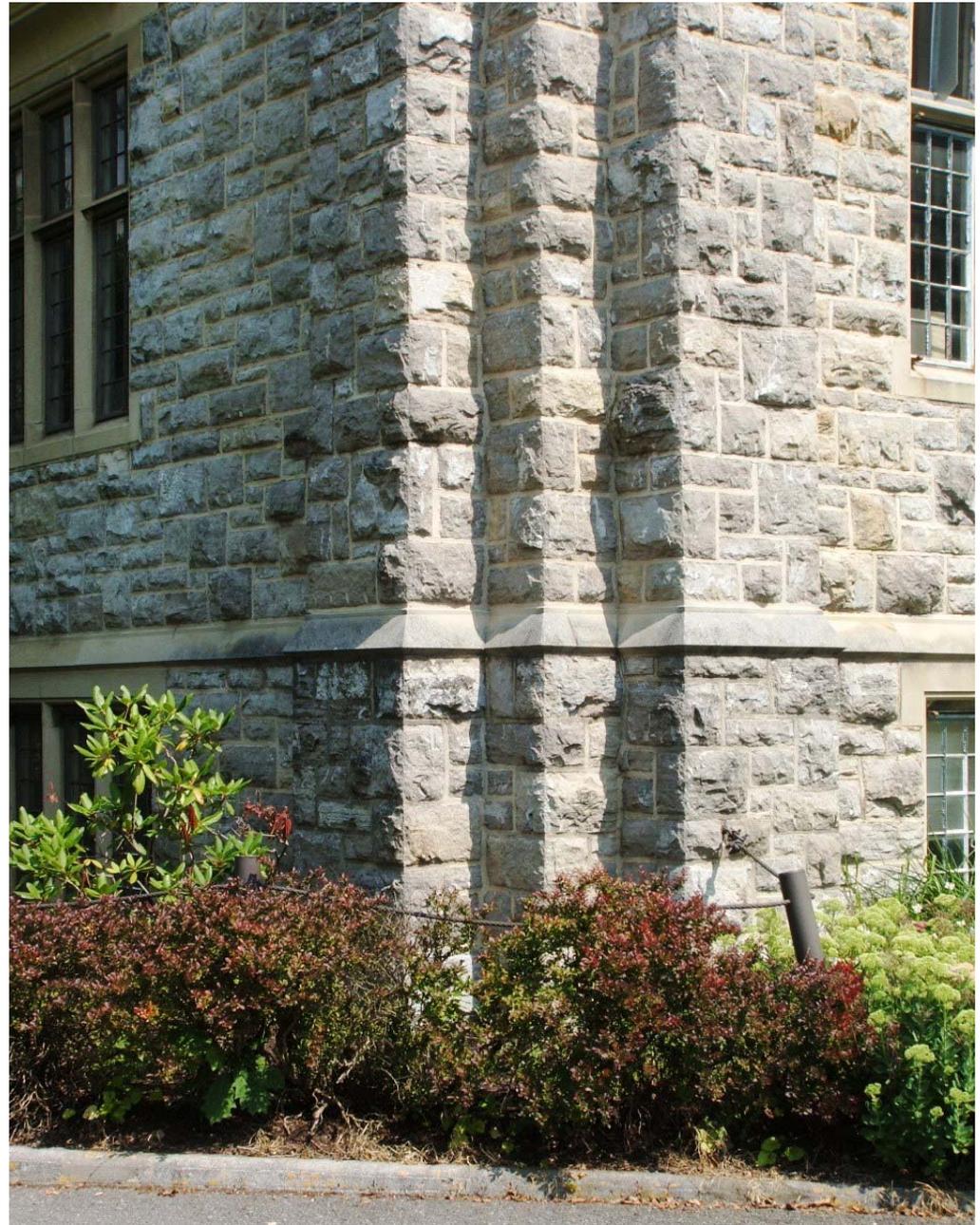


## 2. Hokie Stone

Virginia Tech was born as a land-grant college, and appropriately, its distinctive buildings have been constructed from the product of Southwest Virginia geology. Virginia Tech's Hokie Stone, set in the dignified Collegiate Gothic architectural style, embodies the identity the university set out to establish a century ago. Few alumni realize this progressive university began as a spartan technical college that adopted the Collegiate Gothic style in an effort to elevate its austere, utilitarian image.

The university mines the distinguishing limestone at its own quarry on the fringes of Blacksburg. Originally called "our native stone," the rock has become known more familiarly — and more affectionately — as Hokie Stone. These ancient stones are extracted and shaped by ancient methods — by humans as well as machines. Arms and hands, hammers and chisels craft the raw stone into building blocks.

In addition to the iconic Burruss Hall, every building around the Drill Field employs the material. The character and symbolic quality of Hokie Stone as a major building material has become synonymous with the Virginia Tech campus image. All new buildings in the Academic Core of the campus, including new precinct development, will consider Hokie Stone as a primary building material.



*Hokie Stone details on corner of Saunders Hall*

### 3. Roofs

Roofing materials need to be of equally high quality. Sloped roofs, as previously stated, should be slate, high quality artificial slate, or tern-coated stainless steel or weathered zinc.

Flat roofs need to be evaluated for their visual appearance to the degree they are visible from above or can be utilized as terraces. In these cases, roofing pavers, vegetated roof covering systems and ballast stone need to be reviewed for their aesthetic appearance. Careful consideration needs to be given to organizing and screening rooftop mechanical equipment

The following outline identifies specific recommendations with respect to roof design considerations:

1. Well-developed and articulated rooflines are encouraged.
2. Sloped roofs and flat roofs are both acceptable.
3. Parapets shall be well articulated and trimmed with pre-cast or cut stone. Profiles, scuppers, and other ornamental devices are acceptable and encouraged.
4. Dormers and pediments are also acceptable and encouraged as are cupolas, chimneys, and other traditional roofing embellishments. Their intersection with the main roof must be well detailed and will receive careful scrutiny. These elements shall not be viewed purely as ornamental elements without functional attributes.



*Payne Hall*



*Lane Hall*



*Bioinformatics Building*



#### 4. Doors and Windows

Doors and door hardware are important as they are constant points of contact between people and buildings. They denote much about the character and durability of a building. They also provide an opportunity to personalize a building and welcome users in a gracious manner.

Wood, metal, and glass can all be used acceptably on the Virginia Tech campus. Combinations may occur where inner and outer doors form a vestibule. Attention should be given to visibility through doors for safety and convenience.

Windows should be of high quality, durable construction. Profiles and mullions should respond to the delicate quality of the traditional casements. Window glass should appear as clear as possible within good energy management requirements.





*Traditional and modern interpretations of ornamentation in stone masonry walls*



Saunders Hall 1931



Eggleston Hall 1935



Holden Hall 1940

#### 4. Ornament

Ornament arranged into a coherent, topical and idiosyncratic program can enhance and elevate a building's design. It can speak to people on a symbolic and emotional level and help provide the Vitruvian "delight" so often missing in modern buildings.

Architectural ornament exists on the campus but has not been consistently addressed or implemented as a key design feature. Where it exists, it provides the type of individuality and expressiveness which make a campus memorable and unique. Heraldic shields, plant and animal imagery, and graphic designs can be integrated into an ornamental program in any traditional or contemporary building.

The creative use of unadorned construction elements can also produce a type of abstract ornament. Employing new methods for the production of ornament can suggest the eloquent advancement of technology. The use of scientific knowledge to invent methods – technologies – whereby ornament becomes feasible within the constraints of contemporary resources comes close to defining the very mission of Virginia Tech.

Particular reference is made to the newly published "A Catalog of Architectural Ornament" prepared by the University Planning, Design and Construction Department in conjunction with the School of Architecture and Design. This comprehensive photographic reference provides an invaluable documentation of the history of ornamentation on campus.

This invention is therefore an important and meaningful aspect of campus architecture. The existing ornamental programs on campus provide a basis upon which to start. Future programs should encourage the inclusion of ornament in innovative and symbolic ways for all of its buildings. Basic principles in support of this position include:

1. The campus currently has minimal ornament reflective of its lengthy history. Future buildings shall have well-developed **ornamental programs appropriate** to a university with such a broad contemporary mission.
2. **Heraldry, plant, animal, and geometric** motifs are all acceptable and encouraged in a coordinated program.
3. **Building identification** integrated into building facades are key elements of an ornamental program.
4. The use of **new technologies** to economically produce ornamental elements is acceptable and encouraged.
5. The creative use of **masonry patterning** is also acceptable as an ornamental strategy.





## E. SUSTAINABLE DESIGN

### 1. Approach

The initiative to strongly support sustainable design strategies in building design continues its long-standing commitment to the principles that establish a *sustainable community* — which can be defined as a place of interconnectivity of all things where attention is paid to how the physical development of the campus can be sustained over time.

In conjunction with the policies outlined in the Campus Master Plan, a broad-based sustainable approach involves how building development occurs, land is used, transportation is managed, natural resources are respected, conservation technologies are practiced, and social and economical issues are prioritized.

The following design principles support the achievement of fiscally sound and environmentally responsible development and the proactive stewardship of all campus resources.

#### ***Integrate Environments***

Recognize the basis of sustainable planning and design by integrating concerns for the social, economic and environmental realms. Express this commitment in plans and designs that reflect community goals, engage stakeholders, work with nature and perpetuate community heritage.

#### ***Design for Renewable Energy Systems and a Clean Atmosphere***

Promote human health and comfort. Reduce the reliance on non-renewable energy systems through conservation, emphasis on natural energy sources such as sun and wind and the integrated use of renewable clean fuels.

#### ***Champion Natural Habitats***

Enhance habitat diversity through open space preservation and the selection of native vegetation. Redevelop sites to regenerate natural habitats.

#### ***Enhance Water Resources***

Limit the need for inter-basin or inter-watershed transfers and plan for efficient water consumption and critical watershed protection strategies. Prevent toxins from entering the water supply and, through redevelopment of contaminated sites, restore polluted water resources.

#### ***Promote Transportation Options***

Motivate individuals' commitment to walking, bicycling and public transit by ensuring convenient alternative transit and a quality outdoor campus experience. Create a mix of uses and locate destination points to provide a safe and attractive campus realm. Think first of the pedestrian experience while realizing effective transportation systems that rely on human-powered and energy efficient systems.

#### ***Manage Materials for a Healthy Earth***

Employ materials management practices that promote environmental health and contribute to the economy through diversification of manufacturing and disposal practices. Design for longevity and materials reuse and specify non-toxic materials. Select products that are locally extracted, harvested and manufactured, fortifying the local economy and a commitment to design that embraces local cultures







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