VCU CAMPUS AMENITY GUIDELINES: TABLE OF CONTENTS

Introduction and Applicability of the Guidelines  2

A. Pedestrian Environment  4
   Paving materials
   Crosswalks
   Chokers
   ADA curb ramps
   Walkable spaces
   Courtyards
   Water features
   C.P.T.E.D. Principles

B. Site Furnishings  16
   Seating
   Trash and recycling
   Paving Medallions
   Bicycle racks
   Skateboard racks
   Moped parking
   Smoking shelter
   Ash urns
   Planters

C. Seat Walls, Fences and Bollards  26
   Seat Walls
   Fences
   Bollards

D. Lighting  30
   Street and pedestrian lighting
   Accent Lighting

E. Landscaping  34
   Street trees
   Courtyards
   Planting beds
   Rain gardens
   Community gardens
   Irrigation
   Cisterns

F. Signage and Gateways  40
   Campus gateways
   Wayfinding
   Historic markers
   Sustainability displays

G. Mobility Hubs  44
   Bus shelter
   Bike rack shelter
   Air compressor
   Bicycle fix it stand

H. Appendices  44
   Appendix 1 - Details
   Appendix 2 - Specifications
   Appendix 3 - Campus Gateways
INTRODUCTION

As with many urban campuses, VCU is both a part of the City and distinct from it. The 1996 Master Site Plan suggests that the physical identity of the campuses, as urban districts, can be enhanced by the definition of a “clear center, a clear edge and a consistent texture.” Augmenting the urban principles cited in the Master Plan, these Campus Amenity Guidelines provide the framework for developing a consistent texture across both campuses. The development of a clear center and a clear edge will be the topic of future guidelines.

The 1996 Master Plan states, “The single most important urban goal for both Campuses is re-establishing the continuity of urban space formed by streets passing through the Campuses.” Using the imagery of a “prosthetic urban suit” that the Campuses will wear to make them one with their urban setting, the Master Plan highlights four urban principles that will make the campuses “simultaneously continuous and subtly distinct.” They are: Street Trees, Paving, Curbs and Edges, and Amenities.

Standards promulgated by the City of Richmond, along with empirical knowledge of practical and successful urban landscape solutions, were instrumental in developing these Campus Amenity Guidelines.

Finally, it should be noted that VCU initiated a streetscapes plan in 1988 and implemented portions of it on the Monroe Park and MCV Campuses in 1989. The enduring quality of these streetscapes and the sense of place they embody is perhaps the most convincing example of how a consistent texture can be created through such simple means as employing the urban principles identified in the Master Plan and detailed in these guidelines.

APPLICABILITY OF THE GUIDELINES

These guidelines shall be used as the University standards for all development on both the Monroe Park and MCV Campuses. This includes new construction, renovations, landscape architectural projects, and streetscape materials. Any department wishing to construct a permanent improvement such as landscaping, community gardens, rain gardens, terraces, etc. must first submit plans to the Planning and Design office of VCU Facilities Management. Submittals shall be addressed to the University Architect. Landscape Architectural submittals shall be addressed to both the University Architect and University Landscape Architect. Two copies of each submittal is required. These plans will be reviewed by planning and design staff and returned to the applicant with comments and/or approval within seven (7) working days.

The University recognizes that there are instances when a departure from these standards is warranted and a process for granting variances must be followed. Typically a variance may be granted when the area in question is internal to a building and not visible from the street. Requests for a variance of these guidelines shall be submitted to the Planning and Design office of VCU Facilities Management to the attention of the University Architect. The request will be reviewed and returned to the applicant with comments and/or approval within 7 working days.
A. PEDESTRIAN ENVIRONMENT

University campuses are inherently pedestrian oriented and the pedestrian environment is what transforms a collection of buildings into a campus. Urban campuses such as VCU’s can often be hard to identify as they are woven into the urban fabric of a city. The defining element of an urban environment is the street with the sidewalks acting as arteries for moving people across the city and the campus. The importance of the elements that make up the streetscape cannot be ignored. A common streetscape creates a sense of identity needed for an urban campus and also defines its boundaries.

These components must fit within the context of the City of Richmond and VCU. The city uses many of the same types of materials, as we will detail in this section. The differences will be noticeable while still fitting in with current City standards. These standards must be noticeable to the pedestrian and the motorist. This section details standard streetscape components such as paving, site furniture, fencing, bollards, kiosks and bus shelters.

Most of these components will be placed within the city right of way and approval will need to be obtained from the City of Richmond Urban Design Committee and Planning Commission. Therefore, the details shown in this section conform to City of Richmond Department of Public Works standards.

The University began implementing amenity standards in the early 1990’s and as buildings have been constructed and renovated, the common treatment of the pedestrian environment has been defining the two campuses.

This section provides standards for pedestrian amenities when pedestrian amenities are required as part of new developments and major remodels on VCU’s Campus, and when pedestrian amenities are provided to meet the requirements of other code sections. Pedestrian amenities serve as informal gathering places for socializing, resting, and enjoyment along street frontages and contribute to a walkable district. Streetscape elements such as site furnishings, street trees, fences, and lighting are detailed in other sections.
PAVING MATERIALS

BRICK PAVERS
A consistent pavement treatment for sidewalks is an important design element to unify VCU’s two campuses. The use of brick pavers is a link to Richmond’s historic past and is an attractive alternative to concrete. There are many areas on the Monroe Park Campus where old brick pavers have existed prior to the development of VCU. Where these old pavers have either settled or deteriorated and now represent a hazard to pedestrians, the University should replace these with the campus standard brick paver as detailed in this standard. Even though these sidewalks may be the responsibility of the City of Richmond, the University should take the lead in encouraging the replacement of the paving in these areas.

Installation of brick pavers in sidewalks within the city right-of-way requires the approval of the city’s Urban Design Committee and must adhere to Department of Public Works standards. The city’s standard paver is a two and a quarter inch thick brick paver over a one inch sand setting bed over a four inch thick concrete base. Agreement by the city to maintain the walks is contingent on this detail being followed. See Appendix 1, figure A-1.

The campus standard brick paver is a 4” x 8” extruded brick paver. Other brick pavers exist on campus, some are old city bricks and some have been installed by the University as part of building projects. The goal is to eventually replace these with one paver for the entirety of each campus.

PEDESTRIAN AREAS
Manufacturer: Pine Hall
Product: Pathway
Size: 4” x 8” x 2 1/4”
Color: Full Range

VEHICULAR AREAS
Manufacturer: Pine Hall
Product: English Edge
Size: 4” x 8” x 2 3/4”
Color: Full Range

CROSSWALK AREAS
Manufacturer: Pine Hall
Product: English Edge
Size: 4” x 8” x 2 3/4”
Color: Full Range
**BRICK PAVING PATTERN**

The standard for the MCV Campus and most of the Monroe Park Campus shall be a full width brick sidewalk. The exceptions are the West Broad Street and Belvidere Street areas of the Monroe Park Campus, which have different standards in response to streetscape projects constructed by the City of Richmond.

The standard paving pattern shall consist of a full width brick sidewalk with an eight inch brick border course along the curb and the edge of the walk. The field pattern shall be a herringbone pattern with the paver set at a 45º angle with the pattern pointing along the direction of travel. Some variations on this shall be permitted at entrances to buildings and prominent intersections. See Appendix 1, figure A-4 for typical paving plan. Accent paving at building entrances should be of the standard brick paver and may take the form of accent bands and a change in field pattern. The use of accent colors is not allowed. Where brick sidewalks adjoin landscape beds, a concrete edge shall be used as an edge restraint.

Along West Broad Street on the Monroe Park Campus between Bowe and Belvidere Streets, the standard paving detail shall be a pattern that is similar to the City’s West Broad Street Streetscape Guidelines. A 5'-0" wide band of brick pavers with an 8 inch brick border shall run 7'-6" from the back of the curb with the remainder of the sidewalk concrete. The pattern of the brick shall be the same herringbone pattern as the campus standard sidewalk. Where there are tree wells, there shall be a two foot wide band of brick pavers along three sides of the tree well. See figure See Appendix 1, figure A-5. The standard for Belvidere Street consists of a concrete sidewalk with planting strips that are bordered by brick pavers. See Appendix 1, figure A-14.

Shafer Court has a paving pattern that combines 6'-0” squares of brick pavers and 3'-0" wide concrete bands. This style of paving should be limited to the area immediately adjacent to the Compass in Shafer Court between Hibbs Hall, Cabell Library and the Shafer Court Dining Center. See Appendix 1, figure A-15.
CROSSWALKS

The urban nature of the campuses of VCU are such that faculty, staff and students frequently are required to cross city streets to get to their destination. Crosswalks that are constructed of brick pavers are a visible signal to drivers to be mindful of pedestrians. Brick paver crosswalks exist on the Monroe Park campus on Floyd Avenue and on Belvidere Street and the use of them on campus should be expanded.

There are several locations on campus where the main north-south pedestrian corridor crosses busy streets that are heavily travelled throughout the day. The intersections of Shafer and West Grace Streets, Shafer and West Franklin Streets, Linden Court and West Main Street and Linden Court and West Cary Street are major intersections that would benefit from brick paver crosswalks.

The construction of these crosswalks shall be a heavy duty clay paver of the same color and manufacturer as the standard brick paver for vehicular areas described previously. This paver shall be set over a one inch sand setting bed over a six inch reinforced concrete base. The joints shall be swept with a polymeric sand which matches the color of the concrete bedding sand. The paver crosswalk shall be bordered by a twelve inch wide cast in place concrete border. See Appendix 1, figure A-2 and A-8. For typical section see figure A-16 for recommended brick crosswalk locations.

CHOKERS

In an urban setting such as VCU, chokers can enhance the streetscape by providing visual interest along asphalt roadways that crisscross the campus. Aside from their aesthetic value, chokers are highly functional. They help define parallel parking lanes as separate from the vehicular lanes of travel. Chokers prevent drivers from using parking lanes for travel thus creating a buffer between pedestrians using the sidewalk and moving vehicles. They also provide a measure of safety for pedestrians crossing the street by providing drivers with added visual definition at crosswalks.

The brick paving pattern for chokers at the MCV campus and Monroe Park Campus, excluding West Broad Street, shall be consistent with the herringbone field pattern of the adjacent brick sidewalk. An eight inch brick border course shall be constructed along the concrete curb. The brick pavers used in the construction of these chokers shall be of the same color and manufacturer as the standard brick paver for pedestrian areas described previously. See Appendix 1, Figure A-11.

Designers shall meet with the University Landscape Architect to discuss the specific aspects of projects requiring chokers to determine if they should be paved or landscaped. The context of the surrounding neighborhood shall be considered.
CURB RAMPS

Curb ramps provide an accessible route for people with disabilities to safely transition from a curbed sidewalk to the roadway. Ramps shall be located at street crossings, parking lots, and other public rights-of-way requiring access such as bus stops. Although the most recent version of the Americans with Disabilities Act (ADA) does not require the tactile warning strips, the City of Richmond still does and the majority of curb ramps at VCU are in the public right of way. Therefore, unless the City rescinds this requirement, the following standard applies.

The standard ADA curb ramp detail shall consist of a 24" x 48" tactile warning strip that abuts the concrete curb. An eight inch brick border course shall surround the remaining three sides of the warning strip and continue along the concrete curb on either side of the warning strip. The remainder of the ramp shall be brick laid out in a herringbone field pattern consistent with the pattern of the sidewalk. See Appendix 1, figures A-6, A-7, A-9, A-12 & A-13. The brick pavers used in the construction of these curb ramps shall be of the same color and manufacturer as the standard brick paver for pedestrian areas described in section A.1. The slope of the ramp shall be no greater that 1:12.

Refer to the most recent update of the Americans with Disabilities Act for federal regulations regarding the construction of ADA curb ramps.

For ADA curb ramps on concrete sidewalks, the detail is the same except the brick pavers are replaced with cast in place concrete.
WALKABLE SPACES

College campuses are inherently pedestrian oriented and the issue of walkability is one that must be addressed by creating a pedestrian friendly environment. VCU must address walkability within the framework of an urban campus in which high volumes of students and faculty will flood the sidewalks at multiple times throughout the day. There are several guiding principles of creating walkable spaces that are relevant to the Monroe Park and MCV campuses.

PROTECT THE PEDESTRIAN

Sidewalks are the primary pedestrian routes at VCU and proper planning is necessary to ensure they are functional and can accommodate the volume of pedestrians. Streetscape elements such as trees, light poles, signage, etc. can impede the pedestrian and should be located along the back of the curb line as much as possible so they are out of the main travel path. The area behind the tree wells is the main travel path and should be a minimum of five feet wide. There are many areas where this will be too narrow for the traffic flow and a wider sidewalk should be considered.

In areas where the sidewalk condition has deteriorated, whether it be heaving brick pavers or crumbling concrete, repairs should be made to reduce the hazard to the pedestrian.

Traffic calming should be encouraged throughout the campus as it has been shown that slower speeds for cars is safer for pedestrians. On street parking acts as a buffer to the sidewalk from moving traffic and should be encouraged. The use of chokers to define the parking lanes and reduce the distance pedestrians have to cross as well as provide for better visibility. Brick paver crosswalks increase the visibility of the crosswalk and can help calm traffic as well.

PLANT TREES

Trees are an essential part of any streetscape and they contribute to the walkability of an urban campus. When located along the back of the curb they add to the protection of the pedestrian from traffic. Street trees contribute to traffic calming which reduces accidents while also providing an environmental benefit. The shade provided not only helps reduce cooling demand on buildings but also makes the walkways more pleasant on hot sunny days. They also help bring the street down to a more human scale.

ACCESSIBILITY

Walkable spaces must accommodate those with disabilities and as such sidewalks, curb ramps, driveway crossings, benches and other basic amenities should be provided.

LIGHTING

Security at night begins with proper lighting. Public outdoor spaces such as streets, sidewalks, plazas etc. should be lighted. This lighting shall conform to the standards referenced in section B of these standards and should be of a sufficient level to deter crime and vandalism.

STREET LEVEL ARCHITECTURE

Buildings with street level activity including retail uses animate the sidewalk. Architecture that engages the street should be encouraged to entertain and create interest among the pedestrian.

CHOKERS

The use of chokers is encouraged to shorten the distance walked across streets. Choker are also a traffic calming strategy and pedestrians are better protected from traffic.

LINKAGES

Shafer Court and Linden Court were created specifically to link the campus together. This pedestrian highway is much wider than a typical sidewalk and removes the automobile from the equation. These spaces have also become places for students to gather and for students to interact with one another.
COURTYARDS

In its 1996 master plan, the university adopted the practice of designing buildings to meet the property line, having the sidewalk meet the building with no landscaped strip. This practice has enhanced the urban quality of the campuses and at the same time it has concentrated the open space in courtyards. These courtyards are buffered somewhat from the sounds of the city and offer privacy from the passing traffic. Below are the guiding principles for the design of courtyards.

PEDESTRIAN CIRCULATION

The circulation patterns into and through the space should be considered. Students will typically follow the most direct path through a space and those desire lines should be incorporated into the design. This will reduce or eliminate students trampling landscaping or wearing paths in lawn areas.

SEATING AREAS

A successful courtyard provides spaces for students to gather in groups both large and small. Seating can take the form of tables with attached seating or seat walls. Tables with seats allow students to sit for longer periods of time and work on laptop computers or eat lunch while seat walls are more informal and are used more as a short term option. These seating areas should use site furnishings that are part of this amenity standard. Although the space may not be visible from the street, the use of furnishings from the Campus Amenity Standards results in a unified look to the campus and is easier to maintain and replace damaged furnishings. Trash receptacles shall be provided in a location convenient to building points of entry as these spaces are frequently used for eating.

Courtyards or open spaces that are adjacent to the public way should be at a grade elevation higher than the sidewalk. This asserts a measure of privacy and deters entry for those who do not belong there.

GREEN SPACE

The master plan makes reference to the limited green space available and courtyards should be used to provide a respite from hardscape areas. Green space can take the form of planted landscape beds or open lawn areas. Ideally there is a mix of both. The landscape beds provide interest and accent to the architecture and the lawn areas give students the flexibility to sit on the grass or throw a Frisbee. Green spaces also have an environmental impact as they reduce the amount of impervious area on campus which reduces the storm water runoff.

SUN SHADE

The height of the buildings and the proportional size of the courtyards will produce shade and this should be considered in the design of these spaces. Lawn areas need sunlight daily to survive and plantings should be designed to respond to the amount of sunlight they will receive. Seating areas should be positioned to allow for both sun and shade as the seasons change.
HARDSCAPE MATERIALS
Given the internal nature of most courtyards, these spaces are not readily visible from the street. Therefore there is flexibility in the design of the hardscape. The paving materials may vary from the standard brick paver and should be in harmony with the architecture of the building. The use of permeable pavers is also encouraged to reduce the percentage of impervious area. However, any variances from the Campus Amenity Standards must be approved by the University Architect or the University’s Landscape Architect.

LIGHTING
Lighting is an integral part of security and should be a part of all courtyard designs. As with the hardscape materials, variance from the Campus Amenity Standards is permissible to allow the courtyard to be an extension of the architecture. The lighting should be pedestrian scale and the fixtures should be an ornamental type head and not a shoe box style fixture. In other words if the light fixtures are going to deviate from the standard, they need to add aesthetic value to the courtyard. The use of LED as a light source is encouraged. However, any variances from the Campus Amenity Standards must be approved by the University Architect or the University’s Landscape Architect.

TREES
Large shade trees shall be located in courtyards in sufficient quantities to produce an immediate impact. In the winter months when the sun angle is low, the courtyards tend to be shaded by the adjacent buildings. However in the warmer months, there is little shade in the middle of the day and the presence of large shade trees will make the courtyards more inviting. Another benefit of these trees is to reduce the scale of the space and to provide a sense of privacy. The adjacent buildings are usually at least three stories tall and the trees help to make the space more human scale. The minimum size at the time of installation shall be three and one half inch caliper.
WATER FEATURES

The use of water in urban design has been around for centuries going back to the days of ancient Rome. While once functional, it is now a purely aesthetic feature and one that can create memorable spaces on a university campus. Water features are few on the campuses of VCU but should be considered in the appropriate location. Currently water features exist in a small garden in front of the Anderson Gallery and as the central feature of Monroe Park. On the MCV Campus, water is present in the School of Nursing Garden, Patterson Memorial Garden and the Massey Cancer Center Roof Garden. The planned Institute for Contemporary Art has a reflecting pool.

LOCATION
There are several locations on campus that could benefit from a water feature. On the Monroe Park Campus, the plaza in front of Cary & Belvidere Housing was originally designed to accommodate a water feature and given its location at the intersection of two major commuter routes would be a highly visible addition to the urban streetscape. The following are locations where water features should be considered:

Monroe Park Campus:
- Institute for Contemporary Art
- Cary & Belvidere Housing - Plaza in front of retail
- Linden Court
- Scott House
- Although not owned by VCU, Monroe Park has a large fountain in its center.

- Newly created quads.

MCV Campus:
- 12th Street/Hunton Hall area

DESIGN
The design of water features should be of an appropriate scale in relation to its surroundings and how it is to be viewed or interacted with. In the plaza at Cary & Belvidere, it must be visible to passing motorists and also provide white noise to minimize the street sounds. The water action should not be so turbulent that the sound is too loud and prevents conversations with those around you. Turbulence also increases the likelihood of soap suds being added by students and the difficulty in cleaning up. Consideration should also be given to the appearance in the winter. Water features will be drained and not in operation from Thanksgiving through April 1 so thought needs to be given to what will be visible when water is not flowing.

In smaller, more intimate courtyards, the water should be non turbulent and provide soothing sounds. In spaces such as this, the experience is more personal and should be designed accordingly.

CONSTRUCTION
Construction detailing should consider ease of maintenance as the most important attribute. Basins should be designed as concrete with the appropriate use of waterstops, waterproofing, and tile. Pumps should be located remote from the basin and in a secure location such as a locked vault or pump room within a building. Submersible pumps if used should be located to minimize the possibility of vandalism.

"It is hard to imagine any planned landscape area - patio, garden, or public square - that would not benefit by the introduction of water in architectural or natural form. Its sound, motion, and cooling effects give it universal appeal."

John Ormsbee Simonds
Landscape Architecture,
A Manual of Site Planning and Design.
C.P.T.E.D. STRATEGIES

"Crime Prevention Through Environmental Design (CPTED is a multidisciplinary approach to deterring criminal behavior through environmental design. The two VCU campuses should comply with CPTED standards. CPTED strategies rely upon the ability to influence offender decisions that precede criminal acts by affecting the built, social and administrative environment." International CPTED Association website.

While VCU is interested in the protection of students, faculty and staff, the measures taken for security must be evaluated in the context of a collegiate environment. The campuses should convey a sense of welcome and openness and should not appear to be a "bunker."

NATURAL SURVEILLANCE
Natural surveillance decreases the threat of apprehension by taking steps to increase the perception that people can be seen. Natural surveillance occurs by designing the placement of physical features, activities and people in such a way as to maximize visibility and foster positive social interaction among legitimate users of private and public space. Potential offenders feel increased scrutiny and limitations on their escape routes. Consider the following:

- Design streets to increase pedestrian and vehicular traffic
- Create landscape designs that provide surveillance, especially in proximity to designated points of entry and opportunistic points of entry.
- Use the shortest, least sight limiting fence appropriate for the situation.
- When creating lighting design, avoid poorly placed lights that create blind spots for potential observers and miss critical areas.
- Ensure potential problem areas are well lit: Pathways, stairs, entrances/exits, parking areas, ATMs, bus stops, children's play areas, dumpster and recycling areas.
- Place lighting along pathways and other pedestrian use areas at proper heights for lighting the faces of the people in the space.

NATURAL ACCESS CONTROL
Natural access control limits the opportunity for crime by taking steps to clearly differentiate between public and private space. By selectively placing entrances and exits, fencing, lighting and landscape to limit access or control flow, natural access control occurs. Consider the following:

- Use a single, clearly identifiable point of entry.
- Use structures to divert persons to reception areas
- Eliminate design features that provide access to roofs and upper levels.
- Use low, thorny bushes beneath ground level windows. Use rambling or climbing thorny plants next to fences to discourage intrusion.
- Avoid Cyclone fencing and razor wire fence topping, as it communicates the absence of a physical presence and a reduced risk of being detected.

NATURAL TERRITORIAL REINFORCEMENT
Territorial reinforcement promotes social control through increased definition of space and improved proprietary concern. An environment designed to clearly delineate private space does two things. First, it creates a sense of ownership. Owners have a vested interest and are more likely to challenge intruders or report them to the police. Second, the sense of owned space creates an environment where "strangers" or "intruders" stand out and are more easily identified. By using buildings, fences, pavement, signs, lighting and landscape to express ownership and define public, semi-public and private space, natural territorial reinforcement occurs. Additionally, these objectives can be achieved by assignment of space to designated users in previously unassigned. Consider the following:

- Maintained premises and landscaping such that it communicates an alert and active presence occupying the space.
- Provide trees in residential areas. Research results indicate that, contrary to traditional views within the law enforcement community, outdoor residential spaces with more trees are seen as significantly more attractive, more safe, and more likely to be used than similar spaces without trees.
- Avoid Cyclone fencing and razor wire fence topping, as it communicates the absence of a physical presence and a reduced risk of being detected.
- Placing amenities such as seating or refreshments in common areas in a commercial or institutional setting helps to attract larger numbers of desired users.
- Scheduling activities in common areas increases proper use, attracts more people and increases the perception that these areas are controlled.
B. SITE FURNISHINGS

The use of site furniture shall be consistent throughout both the Academic and MCV campuses. Standard benches, trash receptacles and bicycle racks shall be used throughout the campuses. The goal of this plan is to eventually replace the many different styles of site furniture with one style. In the past, site furniture accompanied different building projects and was not coordinated with any campus standard. The site furniture shall be distinguishable from, but compatible with the City of Richmond's standards.

SEATING

BENCHES

Benches are the most common form of seating used at VCU and the most common bench is the metal ribbon bench. These benches are to be used on all streetscapes and spaces visible from the street. They should also be used in Residential Life courtyards as they are durable and resistant to vandalism.

The standard ribbon benches shall be shop painted steel and can be obtained from different manufacturers. The ribbon style bench in dark green is currently the City standard. VCU shall use this same bench in black. The benches shall be bolted to the pavement to prevent movement and theft. See appendix 1, figure B-2. Benches may also be used as a class gift. See Appendix 1, figure B-1.

There are spaces on campus in which different styles of benches may be used. These spaces are smaller, more contemplative style gardens and courtyards, such as the School of Nursing garden and the Tableith sculpture in front of the Anderson Gallery and Ginter House on Franklin Street. These spaces have six foot long teak, wooden benches. These wooden benches have subtle design features that make it easy to sit, settle, reach and rise. The Patterson Memorial Garden has teak benches that match the benches from they replaced from the original design. The use of teak benches is not encouraged and must be approved by the Director of Planning & Design.

### STANDARD RIBBON BENCHES

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Victor Stanley</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog No.</td>
<td>RB-28 - 6' Length</td>
</tr>
<tr>
<td></td>
<td>w/ center arm</td>
</tr>
<tr>
<td>Color</td>
<td>Black</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Timberform Renaissance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog No.</td>
<td>2806-6 - 6' Bench</td>
</tr>
<tr>
<td></td>
<td>w/ center arm</td>
</tr>
<tr>
<td>Color</td>
<td>Black</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Keystone Ridge Designs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog No.</td>
<td>P26C 6' Pullman w/ center arm</td>
</tr>
<tr>
<td>Color</td>
<td>Black</td>
</tr>
</tbody>
</table>

Standard Ribbon Bench - Victor Stanley

Standard Ribbon Bench - Timberform Renaissance

Teak Bench - Nursing Garden
TABLES WITH ATTACHED SEATING

Tables with attached seating are used frequently at student housing facilities in courtyards and other public spaces. The seating is attached to prevent theft and the seats have backs to be comfortable for long stays. The table top is perforated which is easier to maintain and is more durable. When specifying these in a courtyard, a minimum of one table should be handicap accessible and those should have either 3 or 5 seats with an opening for a wheelchair. Four or Six seat models may be used and the umbrella hole shall be provided. If an umbrella is desired, the manufacturer offers a matching metal umbrella (see bottom photo). These tables can be anchored to the pavement but due to their weight do not need to be. By not anchoring them, there is flexibility in their location and they can be removed for an event if needed. See Appendix 1, figure B-3.

<table>
<thead>
<tr>
<th>Manufacturer:</th>
<th>Landscape Forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model:</td>
<td>Carousel</td>
</tr>
<tr>
<td>Seat Type:</td>
<td>Backed</td>
</tr>
<tr>
<td>No. of seats:</td>
<td>3, 4, 5 or 6</td>
</tr>
<tr>
<td>Table top:</td>
<td>Perforated</td>
</tr>
<tr>
<td>Umbrella:</td>
<td>Optional metal umbrella</td>
</tr>
<tr>
<td>Include umbrella hole</td>
<td></td>
</tr>
<tr>
<td>Color:</td>
<td>Black</td>
</tr>
</tbody>
</table>

Note: 3 and 5 seat models are handicap accessible and one handicap accessible table shall be provided when using this type of seating.
TRASH AND RECYCLING

TRASH RECEPTACLES

Trash receptacles are among the most ubiquitous elements of campus furniture. In general, the number of trash receptacles should be based on a specific pedestrian use and reviewed on a block-by-block basis. The location of the receptacle should be coordinated to accommodate efficient trash removal. Trash collection is the responsibility of housekeeping. The trash receptacles shall be the Harmony I litter receptacle with elevated lid attached with a lanyard (32 gallon size) by Keystone Ridge. They shall have the raised tops to prevent rainwater from filling up the bags. Color shall be black to match the benches. See Appendix 1, figures B-4 & B-5.

These trash receptacles shall be typically located within 50 feet of all building entrances and exits and in areas where seating is provided as students will often have food or drink with them when using these spaces. A trash receptacle located in these areas will help keep the campus clean which adds to the overall image of the school. Care should be taken in the placement of trash receptacles. Care should be taken in the placement of trash receptacles and solar trash and recycling collection systems.
TRASH AND RECYCLING

Locations of these units must be approved by the Planning and Design office in Facilities Management. New construction projects should consider locations for these in consultation with the Planning and Design office and the university’s recycling manager. These should be located in high traffic areas and near food service areas such as Shafer Court and Linden Street where the volume of trash would overwhelm a standard trash receptacle. Along the travel route to and from large residential complexes such as Brandt and Rhoads Hall is an ideal location as is Monroe Park.

See Appendix 1, figures B-6.

Manufacturer: Max R
W248 N5499 Executive Dr.
Sussex, WI 53089

tel 855 204 3560
fax 888 888 7184

www.max-r.net
MEDALLIONS/DONOR PLAQUES

PAVING MEDALLIONS

Paving Medallions shall be used to commemorate locations on campus such as the site of a building no longer in existence that was of historical significance or an important event in the history of the university. These medallions may also be used to recognize class gifts. The photo below is of the medallion in Kontos plaza and recognizes the St. Philip School of Nursing. The Shafer Court stage, Founders Hall and the Birthplace of Cardiac Transplantation near West Hospital have been commemorated with similar plaques. These plaques are made of bronze and can be located in a paved plaza such as Kontos Plaza (photo below) or in a landscaped area such as in front of West Hospital (photo upper left). See Appendix 1, figure B-8 for a typical installation detail.

DEDICATION / DONOR PLAQUES

Acknowledges a building or item that has been donated by or dedicated to a person or group of persons. These can be used as a class gifts.

The plaque is treated in an individual manner. Specifications have been deliberately limited to provide guidance but not restrict creativity. Generally, some form of the university signature appears on each plaque. The Office of University Advancement administers the approval process for dedication and donor plaques. For further information, contact the Office of University Advancement at (804) 828-0763. In general, the university is very selective in its policies regarding the naming of rooms or buildings constructed with donated funds. Any buildings or open space that is named requires approval of the Board of Visitors.

Location is dependent on the nature of the commemorative item. When acknowledging an architectural space, place plaque inside the area to be identified, not at the entrance. Do not group plaques with other sign types. Follow standard heights listed for similar sizes of sign panels. Suit messages to the nature of the donated area or item; use dignity and good taste in wording.

See Appendix 1, figure B8.
**BICYCLE RACKS**

The availability of safe and convenient parking is as critical to bicyclists as it is for motorists and yet it is frequently overlooked in the design and operation of campus planning. Providing good quality bicycle parking that is going to be used and useful is not quite as easy as leaving a "fence" or "grid" style rack outside of VCU’s buildings.

Bicycle parking needs to be visible, accessible, easy to use, convenient, and plentiful. Racks need to support the whole bike (not just one wheel) and enable the user to lock the frame and wheels of the bike with a cable or U-shaped lock.

Bicycle racks shall be the ribbon type. The finish for these shall be different from the benches and trash receptacles. The bicycle racks shall have a galvanized finish. This is because the paint finish will not be durable with the bicycles rubbing against them. When installing a bicycle rack on an existing concrete pavement, a surface flange mount shall be used. In new concrete and brick pavements, a concrete footing shall be poured beneath the walk surface and core drilled. See Appendix 1, figure B-10.

The catalog numbers for the standard racks shown on this page indicate racks that can accommodate 11 bicycles. A shorter rack can be used when site conditions require.

**Manufacturer:** Brandir  
**Model No:** RB-11-1-G  
**Finish:** Galvanized

**Manufacturer:** Madrax  
**Model No:** HM238-11-SF  
**Finish:** Galvanized

**Manufacturer:** Columbia Cascade  
**Model No:** 2170-11  
**Finish:** Galvanized
SKATEBOARD RACKS

Skateboards are a mode of transportation students love. As such, providing a safe place for students to lock up skateboards with confidence is necessary. The use of racks such as this will help minimize skateboards in the classroom.

The product manufactured by Ground Control Systems allows for an installation that accommodate 10 boards and is expandable to accommodate 30 boards. These should be surface mount so as to be removable in the future without damage to the building. The Duraplas thermoplastic finish is standard. A galvanized finish is not acceptable.

These should be located near the entrance of buildings so as to be convenient. Aesthetics should be considered to these do not become the dominant architectural feature. Refer to manufacturer’s recommendations for spacing and clearances,

SKATEBOARD RACKS

Manufacturer: Ground Control Systems
Model No: SM10X Skatedock Surface Mounted Skateboard Rack
Finish: Duraplas Thermoplastic Finish
**MOPED PARKING**

The placement and design of such racks for increased use of mopeds/scooters should be provided to ensure the safety of pedestrians. Moped/scooters should not be driven on sidewalks any further than it takes to park at the racks. Moped/scooter parking on the VCU Campus is restricted as follows:

- Moped/scooters cannot be parked in the pedestrian or vehicle right of way - no parking on sidewalks.

- Moped/scooters cannot be parked in such a way as to obstruct vehicular entrances, exits, ramps, or breezeways.

- Moped/scooters must adhere to laws regulating the operation of vehicles.

- Moped/scooters are not permitted to park in a bicycle space.

The construction of moped racks shall be constructed of galvanized steel piping to match the bicycle racks. See Appendix 1, figure B-12. All moped parking racks shall be embedded mount. Surface mount is not an option as the weight of mopeds and scooters will make the rack unstable.

**Manufacturer:** None

**Finish:** Galvanized
SMOKING SHELTER

Where the shelter is sited will have an effect on adjoining properties and uses. The location will also have a potential effect on the character and appearance of an area and the architectural merits of a building.

Location of the proposed smoking shelter is extremely important to get right at the planning stage, as putting right any mistakes will be costly.

Smoking shelters should not be sited too close to sheltering walls or other structures which may prevent proper air-flow through the shelter, and may effectively render the structure as ‘substantially enclosed’. It is recommended, therefore, that the smoking shelter is sited at least 5 feet away from any sheltering walls or other structure.

Smoking shelters should also be sited so as to ensure, as far as possible, that second hand smoke will not be likely to infiltrate into smoke free areas of premises and give rise to complaints. Smoking shelters should not be located:

- under or near any openable windows of the same or adjoining property.
- under or near any air intake systems of the same or adjoining property
- directly at or in front of the entry and/or exits doors to any premises.

See Appendix 1, figures B-11. For typical detail.

ASH URN

The campus standard for ash urns is of the same materials and appearance as the standard trash receptacle.

Smoking is prohibited in classrooms, all enclosed buildings and facilities, and in covered walkways. Outdoor smoking areas should be located far enough away from doorways, open windows, covered walkways, and ventilation systems to prevent smoke from entering enclosed buildings and facilities. This shall be taken into account when siting ash urns, while keeping functionality in mind. They should be located at least 30 feet away from doors or other building openings.

See Appendix 1, figures B-13 for typical detail.
C. SEAT WALLS, FENCES AND BOLLARDS

Fencing is used on campus primarily as a means for controlling pedestrian traffic. It is used to separate parking areas from the sidewalk and to prevent people from walking on the grass in certain areas. Fencing is also used as a decorative element and to define the “front yards” in some cases throughout the Franklin Street district.

The 1996 Master Site Plan states “In the 1960’s, however, a succession of large suburban type buildings began to erode the physical environment of the Campus and create discontinuities with the surrounding communities. This has created the impression of two academic campuses: one centered around Franklin and Shafter Streets; the other, the Academic Core, centered around Main and Linden Streets.” These “suburban type” buildings have created the wrong kind of open space. The green spaces created by these buildings are often bordered by a row of shrubs and/or posts and chains. The lawn areas then are inaccessible but still require regular maintenance such as mowing, fertilizing and weed control.

Materials and design details for seat walls and fences within VCU shall be designed to compliment the architectural character of the campus. Both quality design and materials are critical to this initiative. Similar to screen walls and fences, the materials and style of non-screening walls and fences shall match or compliment those of adjacent buildings.

Chain link, wood, stockade or corrugated metal fencing is not appropriate for the use on the campus.

SEAT WALLS

The use of seat walls is encouraged in courtyards, near building entrances and along pedestrian walkways. Seat walls shall be constructed of materials that are compatible with the adjacent architecture. Brick is the material used in most seat walls on campus and the cap treatment varies between architectural precast concrete, stone and brick. Concrete block segmental retaining walls may be used in landscape areas where deemed appropriate by the office of Planning and Design.

Height of seat walls may vary due to the slope of the adjacent pavement and should be designed to be on average 21 inches tall. They should not be taller than 24 inches or shorter than 15 inches. Deterrence of skateboarders should be considered in the location, shape and cap materials.
METAL FENCES

Previous Master Plans list as a guideline “Buildings will occupy, or fill, the site to the sidewalk line.” The ornamental metal fence can be used to define the street where existing buildings do not meet that standard. The grass areas between the building and the sidewalk should be converted to a lower maintenance evergreen groundcover or shrub mass. The metal fencing will have a decorative cast post at major intersections and building entrances. This type of post is used throughout the Franklin Street area and the Fan District. This post will be unique to VCU. See Appendix 1, figure C-1. The metal fence itself will be a simple design of vertical pickets with two top rails and one bottom rail. See Appendix 1, figure C-2.

This fencing should also continue to be used in conjunction with plantings to border on campus parking lots. Its use on the MCV campus will be limited as a means of defining an “edge” since most buildings are built to the property line and define the street edge in that manner. The decorative end post is only applicable for the Monroe Park Campus. Decorative end posts on the MCV Campus should be of the obelisk style that exists along Marshall Street in Kontos Plaza. See Appendix 1, figure C-5.

BOLLARDS

Metal bollards shall be used to protect pedestrians from vehicles on wide pedestrian walkways such as Shafer Court and Linden Street. In the past a removable bollard was installed that would allow for emergency and service vehicle access. Over time these removable bollards would be removed and never replaced. The standard metal bollard for the Monroe Park Campus is manufactured by Reliance Foundry and shall be permanently anchored. See Appendix 1, figure C-3. Concrete bollards are not allowed on the Monroe Park Campus. Concrete pipe bollards may be used in areas such as loading docks and dumpster enclosures but should not be used where they will be prominent along pedestrian walkways or visible from the street.

On the MCV Campus, a precast concrete bollard may be used to prevent vehicles from entering pedestrian areas. The standard concrete bollard exists in front of the Massey Cancer Center at the corner of College and Marshall Streets.
Decorative post - Monroe Park Campus
**D. LIGHTING**

**STREET AND PEDESTRIAN LIGHTING**

The safety of faculty, staff, students and visitors is important to VCU and exterior lighting is critical to maintaining campus safety and security. Its appearance is equally important when considering what elements will help unify the campuses and create a sense of identity.

Presently, the Monroe Park and MCV Campuses have different standard street and pedestrian light fixture. The Monroe Park Campus standard is one that is used by the City of Richmond along Monument Avenue and West Franklin Street as well as parts of the Fan District. The LED version of this fixture on a 14 foot tapered aluminum pole with a decorative base is the campus standard. See Appendix 1, figure D-1. This fixture has three manufacturers which are approved as equals by the university so competitive pricing may be obtained. These fixtures shall be used in both streetscape designs as well as courtyards and plazas and other exterior spaces where people gather.

A different lighting standard exists on Broad Street between Bowe and Belvidere Streets. 400 watt “cobra head” fixtures exist along Broad Street and the city’s Broad Street Streetscape Design Guidelines (1992) specified switching the cobra head fixtures to 250 watts and adding a 100 watt ornamental “acorn” style fixture mounted to the existing pole at 13 feet above grade. See Appendix 1, figure D-2. This provides for better lighting along the sidewalk and increased the overall uniformity between the street and the sidewalk. This approach does not increase the power demand from the city grid.

**ACCENT LIGHTING**

The MCV Campus standard was originally specified in A Streetscape Plan of Medical College of Virginia in 1988. This fixture is used by the city throughout the Court End area of downtown. There are two different manufacturers that have been approved as equals so the university may obtain competitive pricing. See Appendix 1, figure D-3.

**MONROE PARK CAMPUS LIGHTING**

<table>
<thead>
<tr>
<th>Light Source</th>
<th>LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Black</td>
</tr>
<tr>
<td>Pole Height:</td>
<td>14 ft., tapered shaft</td>
</tr>
<tr>
<td>Pole Material:</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Manufacturer:</td>
<td>Philips (Hadco)</td>
</tr>
<tr>
<td>Catalog No:</td>
<td>VX8911-80-A-F-5-N-N</td>
</tr>
<tr>
<td>Pole:</td>
<td>316-14-BLK</td>
</tr>
<tr>
<td>Manufacturer:</td>
<td>Sternberg</td>
</tr>
<tr>
<td>Catalog No:</td>
<td>MS805BLED-4A1R40T5-MDL03-SV1, BKT</td>
</tr>
<tr>
<td>Pole:</td>
<td>3714T4-3-BKT</td>
</tr>
<tr>
<td>Manufacturer:</td>
<td>Beacon</td>
</tr>
<tr>
<td>Catalog No:</td>
<td>WIN40/AF/36NB-80/4K/UNVT/DRS/PT/BBT</td>
</tr>
<tr>
<td>Pole:</td>
<td>HOLL/S/14/4MTN/BBT</td>
</tr>
</tbody>
</table>

**MONROE PARK CAMPUS LIGHT FIXTURE**

<table>
<thead>
<tr>
<th>Light Source</th>
<th>Metal Halide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Dark green</td>
</tr>
<tr>
<td>Mounting Height:</td>
<td>13 ft.</td>
</tr>
<tr>
<td>Manufacturer:</td>
<td>Holophane</td>
</tr>
<tr>
<td>Catalog No:</td>
<td>Granville GV1A 100 MH MT F A</td>
</tr>
<tr>
<td>Manufacturer:</td>
<td>Sternberg</td>
</tr>
<tr>
<td>Catalog No:</td>
<td>Boulevard D650/508, 100W MH</td>
</tr>
</tbody>
</table>
Accent lighting shall be used to accentuate buildings and architectural elements and shall be complimentary to the architecture. The use of flood lights to wash the entire façade of a building is not encouraged. It is more desirable for accent lights to be used to highlight architectural features of a building such as columns, porticos, towers etc. When located near pedestrian walkways, down lighting is preferable to up lighting to avoid glare in the eyes of pedestrians.

**MCV CAMPUS LIGHTING**

<table>
<thead>
<tr>
<th>Light Source</th>
<th>LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color:</td>
<td>Black</td>
</tr>
<tr>
<td>Pole Height:</td>
<td>14 ft., tapered shaft</td>
</tr>
<tr>
<td>Pole Material:</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Manufacturer:</td>
<td>Beacon</td>
</tr>
<tr>
<td>Catalog No:</td>
<td>BOS40AC/36NB-80/4K/UNV/DIR3 or 5/PT/TRF/BBT</td>
</tr>
<tr>
<td>Pole:</td>
<td>316-14</td>
</tr>
</tbody>
</table>

| Manufacturer: | Hadco |
| Catalog No:   | Baltimore VX681-80-A-C-3 or 5-N-N |
| Pole:         | 316-14-BLK |

**FIXTURES**

The use of LED fixtures is encouraged as it will reduce the energy usage and the long term maintenance costs associated with replacing lamps. When fixtures are located in grade, tempered glass lenses shall be used for vandalism resistance. Lenses shall be crowned for drainage. A common problem with in grade fixtures is moisture intrusion so fixtures shall be selected that

When possible, accent lights shall be connected to the adjacent buildings electrical system and incorporated in the lighting controls for that building. The use of a central photocell is preferable to a timer for on/off operation. Landscape lighting can be low voltage LED fixtures but wiring should be placed in conduits and fixtures shall be permanently anchored in concrete. This will help deter vandalism and theft.

**CONNECTION TO CITY GRID**

Lights within the city right of way shall be connected to the city street lighting grid. The VCU contractor shall provide and install the fuse link and the city will make the final connection to city power.
Lighting
E. LANDSCAPING

This section recognizes the diversity of landscapes at VCU that present multiple “campus images” within the overall context of an “urban park”. It outlines the features and elements which enhance both the “urban” and the “park” images of the campus. The intent of the section is not to create visual homogeneity, but to provide an overall conceptual framework for the development of landscape elements which will establish and maintain a high level of quality in the design of landscape treatments at the VCU campuses, an order and structure to the campus, and which contribute to a distinct campus identity.

Effective and attractive landscaping can greatly enhance and contribute to the overall impression of the VCU campus. Landscaping is also a recommended material for use as a screening element provided it does not present a security risk.

Shade within the campus is a priority and the use of large shade trees is encouraged. Pedestrian spaces such as courtyards and streetscapes can be intimidating given the height of the buildings and the use of large shade trees can create a more pedestrian friendly human scale. Small flowering trees have their use to accent intersections and entrances but large shade trees should be a priority.

Street tree plantings are encouraged along roadways and pedestrian corridors. Care should be taken to maintain existing mature vegetation with the campus. The existing planting within campus should be enhanced with additional materials to form a consistent appearance with the campus.

STREET TREES

Another element of the streetscape design which helps to unify the campus are the street trees. There is not a standard street tree and diversity of species across the campus is encouraged. Green Vase Zelkova was used extensively in the 1980’s as it was required by the city of Richmond. The Zelkova was required by the city as its root structure does not push up sidewalk paving and it tolerates urban conditions. However the widespread use of a single species creates a monoculture which leaves the campus vulnerable if a disease should strike the Zelkova. For that reason, the Zelkova is not recommended unless it is to replace dead Zelkovas or to complete streetscape plantings on a block which already has them.

It is recommended that street trees be large deciduous trees and of a consistent species be used in contiguous sections of streetscape to avoid a disjointed appearance. Due to the location of most street trees within the public right of way, species selection will involve the City of Richmond Arborist. Size at time of installation shall be a minimum of 3” caliper balled and burlapped and have a minimum branching height of five feet above finished grade.

The use of tree grates is discouraged by the City and they shall not be used in sidewalks on either campus. The problems with tree grates are many. First, as the tree grows, the opening in the grate needs to be enlarged. This involves removing the grate and cutting the rings with a torch and then resetting the grate. This rarely happens and as a result, the grate girdles the tree which is not good for the tree’s health. Second, the gap between the grate and the grade on top of the root ball will eventually fill with trash, dirt and other debris making
them unsightly. Lastly, as the tree grows, the base of the tree will begin to lift up the grate causing a trip hazard.

A typical mature street tree will reach a height that will conflict with overhead utility lines. Along streets with overhead wires, Trident Maple (Acer Buergeranum) should be substituted. The Trident Maples mature at a height of approximately twenty five feet and will not substantially conflict with overhead wires. The Trident Maple shall be installed in the same tree wells as the larger street trees. Size at the time of installation shall be 2 1/2” caliper balled and burlapped. They shall be grown in the nursery as a tree rather than a shrub. Excessive pruning wounds on the trunk indicating a shrub like growth habit shall be cause for rejection in the field. Street trees shall have a straight, single trunk and be free pruning wounds below the five foot branching height.

It is important that street trees be planted in the center of the tree wells and that the trees be set plum. Since street trees are not typically irrigated, the use of “gator bags” is encouraged to help the trees survive the summer season. Their use can be discontinued once the tree is established.
**TREE WELLS**

The design of tree wells is critically important to the long term growth and health of the street tree. A suspended slab design which allows for growth of tree roots under the sidewalk without those roots causing an upheaval of the pavement is the standard tree well for the university. The suspended slab detail uses a reinforced concrete sub slab under brick pavers to span over a lightly compacted planting soil fill.

The slab is turned down to bear on a compacted subgrade along the back of the curb and the back of the walk while the slab is turned up at the border of the tree well to provide a solid edge restraint for the brick pavers. The tree well will be mulched which will allow for water infiltration but will not collect trash or be trampled by pedestrians. See Appendix 1, E-1 and E-2.

It is not always feasible to use the suspended slab detail due to sidewalk width or budget constraints or to maintain consistency with adjacent conditions. In those cases, an alternate tree well detail shall be used. See Appendix 1, E-4.

**PLANTING BEDS**

For new construction, planting beds shall contain a minimum of twelve inches of planting soil. For renovation projects, the soil should be tilled to a depth of twelve inches and amended as necessary to meet the university standard for planting soil. See Appendix 2 for planting bed specification.

**PLANTING SPECIFICATION**

See Appendix 2 for planting specification.

---

**RAIN GARDENS**

Rain gardens are designed to capture and infiltrate rainwater in the landscape. These gardens are also called bio retention or bio filtration. Rainwater is routed to the garden and filtered naturally by the plants and soils in the garden. This filtration process removes nutrients and pollutants. In its simplest form, a rain garden is a relatively small area of plantings near the drain spout of a building or paved area. However, large highly engineered gardens employing engineered soils and under-drains of varying designs may be required for gardens that receive runoff from a larger impervious area.

The use of rain gardens is encouraged and should be implemented when they will eliminate the need for underground storm water retention. The design of rain gardens should include a variety of plant materials that are suited to wet soils as they may be inundated for a period of several hours to a day or more. Selection of species should consider year round interest and include a mix of deciduous and evergreen shrubs and ground covers, small trees and perennial flowers. Consult with the state Department of Conservation and Recreation guidelines for bio retention.

---

**COMMUNITY GARDENS**

VCU unveiled the first Community Garden on the East side of Larrick Student Center on the MCV Campus. The garden plots are open for rental by students, staff, faculty and community members that may not have a place at home to garden. There are also plots that will be tended to by volunteers that will donate all fresh produce to local food banks.

Locations for community gardens shall be submitted to the planning and design office prior to commencing any design work for approval. Raised beds are commonly used in community gardens as they allow for good drainage, prevent contamination of soils by mixing with bad native soil, and are easier to work as they require less bending over. As such, the design of the raised beds shall follow the standard set by this manual. Design of the raised beds shall be approved by Planning & Design.

Raised beds shall be designed such that accommodations are made to be wheelchair accessible.
IRRIGATION

All landscape beds and turf areas on campus shall be irrigated. An urban environment such as VCU's is by nature warmer than an undeveloped location and reflected heat and pollution will add a level of stress to plant material. Irrigation will help to reduce that stress and protect the university’s investment in landscaping in periods of high temperature and drought.

Spray irrigation shall be used in all turf areas using six inch pop up heads. Planting beds shall use drip irrigation which is more efficient and reduces the amount of water used by eliminating overspray and evaporation losses.

Vegetative roofs shall be irrigated using spray irrigation. The soil in a vegetative roof drains very quickly and drip irrigation can be ineffective in distributing water to the plants.

The controller for irrigation systems shall be compatible with and connected to the university’s central control system (please note at this time the central control system has not been implemented).

CISTERNs

The use of cisterns is encouraged in new construction as a method of rainwater capture for irrigation use. When implemented on a project seeking LEED certification, this can allow you to capture as many as four LEED points for 100% reduction in the potable water used for irrigation.

Cisterns shall be of fiberglass construction with an access hatch to allow for maintenance. Sizing of the cistern shall be to accommodate three weeks supply. The pump shall be a shallow well jet pump with a cycle stop valve and located in a fiberglass enclosure. See appendix 1, figure E-3.

VEGETATIVE ROOFS

Vegetative roof systems are becoming more popular and have been used on recent new construction projects such as West Grace Street Housing South and 701 West Grace Street Housing. These roofs use an extensive pre vegetated tray system. Pre vegetated systems are grown off site and delivered to the site 95% vegetated and once installed provide an instant result. There are many different types of pre vegetated systems and there is no standard manufacturer. The system should not compromise the warranty provided by the roofing membrane manufacturer.

An extensive system planted with plugs was retrofitted onto the roof on the Pollak Building. Extensive systems that are planted on site such as this are vulnerable to the plugs being eaten by birds or blown by winds. They also would require significant maintenance to control weeds. Their use should be limited to areas that will receive regular maintenance.

Regardless of the type of system used, vegetated roof plantings shall be composed of a mix of succulent plants that are drought tolerant and provide year round interest.
PLANT SELECTION GUIDELINES

Select trees, shrubs, perennials and groundcovers that are well adapted to the conditions of the individual planting sites. Poorly sited plants will typically fail regardless of how carefully they are planted. Consideration should be given to exposure and the amount of sun and shade the plant will receive as well as the time of day the exposure occurs. Late afternoon sun will be hotter and more intense than early morning sun. In an urban setting such as VCU, the sun exposure may change within a planting bed along one face of a building so the selection of plants to implement a design concept is important.

Site drainage should also be considered as species that do not tolerate wet soils will die if subjected to those conditions. Raised beds with all new soil tend to drain better than excavated beds. Beds that are excavated as part of new construction should consider the quality of the surrounding soils as a factor in determining whether a site will retain water below the surface. For sites with poor drainage, consider using more water tolerant species such as Red Maple, Sycamore, Bald Cypress, Willow Oak or River Birch. For shrubs, try Inkberry, Red Twig Dogwood and Buttonbush. Avoid dogwoods, Azaleas, Boxwoods, Japanese Hollies and other plants that don’t like “wet feet” where drainage is poor.

Urban conditions such as pollution and reflected heat should also be considered when selecting a plant palette. Exhaust from vehicles and the proximity of the plants to the street are an important consideration. Examine soil for compaction before planting. If soils are compacted, consider replacement with a good loam soil, or incorporation of several inches of an organic material such as composted yard waste to a depth of at least 8 inches over the entire planting area. Do not incorporate small quantities of sand - compaction will increase and drainage decrease.
F
F. SIGNAGE AND GATEWAYS

VCU is a large urban campus that is accessed by its community through the automobile, bicycles, and on foot. Signage is very important to this community, especially to first time visitors and new students, faculty, and staff.

The signage at VCU should display a comprehensive visual system throughout the campuses of VCU. Creating a consistent, cohesive, informative and distinctive signage system not only makes wayfinding easier but also enhances the visual unity of each campus by distinguishing the university from the surrounding community. VCU Facilities Management is responsible for developing and ensuring adherence to these standards.

SIGNAGE GUIDELINES

- Directional signage for vehicles and pedestrians, entry signage, and building identification should be horizontal in format and installed lower to the ground in order to improve readability and minimize visual impact to the surroundings.
- Directional signage should be located at major vehicular and pedestrian site access points.
- As necessary, signs may be illuminated as long as they do not contribute to light pollution; halo lit signs are preferred over internally-lit signs and neon signs should be prohibited.
- All signage should be designed to complement the architectural style and setting of its adjacent structure.
- Sign letters and materials should be professionally designed and fabricated.
- Permanent signs should be constructed using high-quality materials such as metal, stone, or wood.
- Animated, moving, flashing, blinking, reflecting, and revolving signs detract from the campus aesthetic, and should not be permitted.
- Exposed conduit and tubing should be prohibited; all transformers and other equipment should be concealed.
- Wall signs may be well-mounted, projecting, or combined with awnings; they should not be placed on windows or painted directly on buildings.
- Roof signs should not be permitted.
- Freestanding identification signs should be limited to major site-entries at perimeter locations adjacent to existing arterials. They should be of a monument design and not exceed the height of any adjacent buildings.
- Monument signs should be designed to complement the architectural style of the buildings they serve and should utilize high quality materials such as stone, tile, cast concrete, or similar masonry materials.

VCU Facilities Management is responsible for developing and ensuring adherence to these standards.

For the VCU Signage Manual, see below for a link to the web site.

http://identity.vcu.edu/signage.html
HISTORIC MARKERS

The historical marker program identifies historically significant buildings, sites, structures, objects, and districts. The markers are mounted signs which contain information on the history of the resource. Markers spark further interest in local history and can call attention to historic preservation efforts. They are well-documented histories, easily accessible to the public and reflect the importance a community places on its heritage. Consult the University Architect’s office for the placement of historical markers such as the Egyptian Building sign shown below.

CAMPUS GATEWAYS

Campus gateways are an important element in developing the identity of an urban campus. In the case of VCU, the campuses are located along major commuter routes into Richmond and are passed by thousands of motorists every day. The goal of campus gateways is to develop monumental gateway elements that are architecturally complementary to the MCV and Monroe Park Campuses and define campus character.

In 2007, BCWH Architects, in conjunction with Mitchell Associates and Higgins & Gerstenmaier, produced a document titled “VCU Gateways and Signage” which produced concepts for the design of gateways at Cary & Harrison Streets, Franklin & Harrison Streets, Shafer Court, Leigh and 10th Streets, and Broad Street and I-95. The gateway at Shafer Court was later refined by Smith McLane Architects in 2010. See appendix 3 for concept designs for the campus gateways from this study.

WAYFINDING

An effective wayfinding system is based on:

...predictability, logic, legibility...

FORM FOLLOWS FUNCTION

Form follows function is a principle associated with modern architecture and industrial design in the 20th century. The principle is that the shape of an object be primarily based upon its intended function or purpose. American architect Louis Sullivan, mentor to Frank Lloyd Wright, coined the phrase, in 1896.

WHAT IS WAYFINDING?

Wayfinding is defined as the orderly structuring of information and graphics required enabling people to comfortably and successfully navigate the built environment. Functionally, wayfinding means reaching a destination within an acceptable amount of time and energy, and is measured in terms of efficiency in student and business productivity. Wayfinding also establishes an experiential relationship with architectural, urban and natural landscapes, and is essential as part of a modern campus environment, impacting all users of VCU and the surrounding community.

Wayfinding affects users emotions and attitudes about the University, and is more than a navigational tool, it is a way to market a specific area’s resources, alter negative perceptions, evoke a sense of history, character and pride, while improving the streetscape. Finally, wayfinding encourages accessibility and public safety, focusing on all modes of transportation, by foot, bicycle and automobile, reducing accidents and VCU liability. Wayfinding is essential for the success of VCU.
WAYFINDING SIGNS

Vehicular
The purpose of vehicular signs is to direct vehicular traffic to specific sites, facilities and parking.

Pedestrian
Pedestrian signs are used to direct pedestrian traffic to specific destinations within the interior campus, including: sites, facilities and parking.

SUSTAINABILITY DISPLAYS
The mission for VCU in regards to sustainability is to drastically reduce emissions produced by the three biggest carbon sources on VCU’s campus; electricity, transportation and heat.

VISION FOR SUSTAINABILITY
Driving the vision of sustainability on the VCU campus is that it is not only a learning and research institution, but as a living, growing community, locally focused and globally aware, natural and honest, expressive and healthy, vibrant and wise. Colleges and universities have the unique ability to not only incorporate the values of sustainability into all aspects of operations, but also to educate and prepare future leaders, employers and workers in sustainable values and practices that are critical to the future of society and the environment.

VCU GOES GREEN
VCU is building a campus culture of sustainability through its “VCU Goes Green” campaign which addresses the three key components: environmental protection, social equity and economic opportunity, with involvement from its three stakeholder groups: students, faculty and staff.

Campus consumption of resources and products shall not knowingly put people elsewhere at significant risk for environmental contamination or diminished social welfare. Products, building materials, furnishings and food used at VCU impact communities elsewhere in the course of resource extraction, manufacturing, distribution and disposal. Procurement will favor suppliers that demonstrate sustainability practices. When purchasing these items, departments should select vendors that strive to minimize negative impacts on all communities affected.

OPPORTUNITY
The green economy favors energy efficiency, reduced use of materials, minimized waste and pollution and corporate responsibility for the fate of materials over product lifetimes, so whenever possible the university should support the local green industry. In addition, VCU will continue to build a creative materials management program that promotes reuse, reduces consumption, minimizes waste and maximizes recycling.

VCU STATEMENT OF SUSTAINABILITY
“Sustainability is the goal of maintaining a good quality of life for those who presently experience it, while expanding the quality of life to those who lack it; and understanding and respecting the needs of future generations and the limits of natural systems within which quality human lives are necessarily embedded and dependent.”

-Adopted by the VCU Sustainability Committee, July 22, 2009
G. MOBILITY HUBS

BUS SHELTER

Both the Monroe Park and MCV Campuses are on the Greater Richmond Transit Company (GRTC) bus routes. The university operates its own shuttles that run between the two campuses and therefore bus shelters are a necessity. The city has installed shelters at many bus stops and the standard for VCU is a variation on this. See Appendix 1, figure G-1.

Mobility Hubs are places where different types of transit come together such as bicycles, Zip Cars, and buses. These should be located near the center of campus and adjacent to the main pedestrian corridors making it easy and convenient to move from one mode of transportation to another. The location and composition of a mobility hub must be approved by the University Architect’s office.

There are several elements that comprise mobility hubs and below is a list of their components.

BIKE RACK SHELTER

As more students bring bicycles to campus, the demand for covered bicycle racks will increase. Shelters were installed along Floyd Avenue adjacent to the Cabell Library and these have become the standard for free standing bike rack shelters in public areas. Bike shelters in enclosed areas such as courtyards of student housing can be a different design. This same shelter was installed at Ram Bikes on Belvidere and Grace Streets. See Appendix 1, figure G-2 for shelter details. Paving under these shelters shall be cast in place concrete with a broom finish.

Each shelter has space for two bike racks and those racks differ from the university standard bike rack. See Appendix 1, figure G-3. These racks shall be galvanized.

When bicycle shelters are not visible from the street and are in a courtyard such as the West Grace Street Housing project, the shelter should be an extension of the building architecture. These shelters shall include the standard bike rack shown in Appendix 1, figure B-9.

AIR COMPRESSOR

Air compressor shall be provided at Mobility Hubs. These require electrical power and should include chucks for both Presta and Shrader valves. See Appendix 1, figure G-4.
BICYCLE FIX IT STAND

With the large number of bicycles on campus, there is a need for the students to perform routine maintenance. The fix it stands are free standing and should be strategically located. The manufacturer has revised the design but the older model pictured at right is available upon request. The color shall be approved by Planning and Design. See Appendix 1, figure G-5.
APPENDIX 1—DETAILS

Figure A-1 - Typ. Brick Paver Section in Pedestrian Areas
Scale: 1" = 1'-0"

Figure A-2 - Typ. Brick Paver Section in Crosswalks
Scale: 1" = 1'-0"
Figure A-3 - Typ. Brick Paver Section in Vehicular Areas
Scale: 1" = 1'-0"

Figure A-4- Typical Brick Paver Sidewalk Paving Plan
Scale: 1/4" = 1'-0"
Figure A-5 - Typical Brick Paver Sidewalk Paving Plan - West Broad Street Corridor

Scale: 1/4" = 1'-0"
Figure A-11 - Choker Plan
Scale: 1/8" = 1'-0"

Figure A-12 - Corner Paving Plan
Scale: 3/16" = 1'-0"
Figure A-13 - ADA Ramps at Driveways

Scale: 3/16" = 1'-0"
Figure A-14 - Belvidere Street Paving

Scale: 3/16" = 1'-0"
Figure A-15- Shafer Court Paving

Scale: 3/16" = 1'-0"
Appendix 1

Figure A-16 - Proposed Crosswalk Locations

Scale: not to scale

BRICK CROSSWALK - TYP.

FULLY PAVED INTERSECTION - TYP.
Figure B-1 - Typical Bench - Class Gift

Scale: 1" = 1'-0"
Figure B-2 - Typical Bench on Brick Pavers and Concrete Paving

Scale: 1" = 1'-0"
Figure B-3 - Typical Table and Chairs Section on Brick Pavers
Scale: 3/4" = 1'-0"
Figure B-4 - Typical Trash Receptacle on Brick Pavers
Scale: 3/4" = 1'-0"

RAISED DOME TOP
TRASH RECEPTACLE
CORE DRILL AND FASTEN WITH GALVANIZED ANCHOR BOLTS IN EXPANSION SHIELDS PER MFR. INSTRUCTIONS
BRICK PAVERS - TYP.
SAND SETTING BED
4" CONCRETE SLAB

Figure B-5 - Typical Trash Receptacle on Concrete Pavers
Scale: 3/4" = 1'-0"

RAISED DOME TOP
TRASH RECEPTACLE
CORE DRILL AND FASTEN WITH GALVANIZED ANCHOR BOLTS IN EXPANSION SHIELDS PER MFR. INSTRUCTIONS
CONCRETE WALK
Figure B-6 - Typical Recycling Bin

Scale: Not to Scale
Figure B-8 - VCU Paving Medallion

Scale: 1" = 1'-0"
Figure B-9 - Typical Bicycle Rack

Scale: 3/4" = 1'-0"
Figure B-10 - Typical Bicycle Rack Plan

Scale: $1/2" = 1'-0"$

EDGE OF BUILDING OR PAVEMENT

2 3/8" O.D., SCH. 40 GALV. STEEL PIPE

CAMPUS STANDARD BIKE RACK ACCOMODATES NINE (9) BICYCLES.

MINIMUM CLEAR
Figure B-11 - Typical Smoking Shelter

Scale: 1/4" = 1'-0"
Figure B-12 - Typical Moped Parking Rack

Scale: 3/4" = 1'-0"
Figure B-13 - Ash Urn on Concrete Pavers
Scale: 1" = 1'-0"
Figure B-14 - Tree Donor Marker

Scale: 3" = 1'-0"
Figure C-1 - Metal Fences with Decorative End Post - Monroe Park Campus
Scale: 1" = 1'-0"

NOTE:
SIGNAGE MAY BE USED TO IDENTIFY BUILDINGS AND PLACES
NOTE:
1. WELD ALL PICKETS TO CHANNELS AND GRIND ALL WELDS SMOOTH PRIOR TO PRIMING AND PAINTING
2. FINISH: ALL METAL FENCE COMPONENTS TO BE SHOP PRIMED WITH TWO (2) COATS OF PRIMER AND FINISHED WITH TWO (2) COATS OF AN ALIPHATIC ACRYLIC POLYURETHANE PAINT - HIGH GLOSS, BLACK

Figure C-2 - Metal Fences
Scale: 1" = 1'-0"
Figure C-3 - Bollard - Monroe Park Campus

Scale: 1" = 1'-0"

CAST DUCTILE IRON BOLLARD
-MADE BY RELIANCE FOUNDRY
-CAT NO. R7591

1" DIA. ROD
-THREADED AT BOTH ENDS

6" DIA. ANCHOR CASTING

6" CONCRETE PAVING

EX. ASPHALT PAVING

EX. CONCRETE PAVING

1/2" CAulkED EXP. JOINT

COMPACTED SUBGRADE

VDOT #21A COMPACTED STONE BASE
Figure C-4 - Concrete Fixed Bollard - MCV Campus

Appendix 1

ARCHITECTURAL PRECAST
CONCRETE BOLLARD - COLOR
TO MATCH BLDG.

(4) #4 REBAR - CAST
INTO BOLLARD

DRILL INTO FOOTING &
SET W/EPOXY

EXISTING
BRICK PAVERS

EXISTING SAND
SETTING BED

EXISTING 4" CONCRETE
SLAB
CONCRETE FOOTING - 3000 PSI
@ 28 DAYS

Scale: 1" = 1'-0"
Figure C-5 - Obelisk End Post - MCV Campus

Scale: 1" = 1'-0"
NOTES:
1. Conduit elbows shall have 30' bend. The bend radius shall be in accordance with the NEC.
2. The bolt circle template shall be furnished by the lighting pole manufacturer.
3. The number, orientation and size of conduits entering and exiting foundation shall be as shown on plans.
4. Concrete pour shall be continuous with 3000 psi concrete. No mortar, grout, or concrete shall be placed between bottom of base plate and top of pedestal.
5. The anchor bolts shall be chipped galvanized and "L" type with the orientation parallel to the street.
6. The horizontal reinforcing bars shall be 4" above the bottom of the hole and 4" below the surface.
7. The vertical reinforcing bars shall be 4" from wall of the hole.
8. The lighting pole manufacturer will specify the bolt projection requirements.
9. The pole base shall be 30" from back of curb to center of the pole base.

Figure D-1 - Typical Light Post Base Detail
Scale: Not to Scale
Figure D-2 - Street Light (LED)  M.P. Campus

Figure D-3 - Street Light (LED)  M.C.V. Campus

Scale: 1/4" = 1'-0"
Figure D-4 - Typical Broad Street Light

Scale: 3/16" = 1'-0"

EXISTING COBRA HEAD Fixture, POLE, AND BANNER
CHANGE LAMP AND BALLAST TO 250 WATT METAL HALIDE

NEW ORNAMENTAL FIXTURE 100 WATT METAL HALIDE
ATTACHED WITH DECORATIVE MOUNTING BRACKET

ACCEPTABLE MANUFACTURERS:
*HOLOPHANE - GRANVILLE, GV1A 100MH MT F A
*STERNBERG - BOULEVARD D650/508, 100W MH
Figure E-1 - Suspended Slab Tree Well Detail—Without Curb Condition

Scale: 1/2" = 1'-0"
Figure E-2 - Suspended Slab Tree Well Detail—With Curb Condition

Scale: 1/2" = 1'-0"
Appendix 1

Figure E-3 - Cistern Section

Scale: 1/2" = 1'-0"

14,000 GAL. FIBERGLASS CISTERN - 10'
DIA. x 26'-11 1/4" LONG

4" PVC TANK VENT PIPE - VENT IN
ADJACENT LANDSCAPE BED

MAINTAIN MIN. 2' COVER OVER
CISTERN

FINISH GRADE

3/4" ELEC. CONDUIT

MANWAY W/LID

SPlice BOX FOR LEVEL
TRANSUDER WIRE

2" PVC RELIEF PORT LINE FROM CYCLE
STOP VALVE

TANK FILL/OVERFLOW PIPE -
SEE CIVIL DWGS.
LOW WATER LEVEL SENSOR

1 1/4" PVC SUCTION FROM
CISTERN W/FOOT VALVE
BACKFILL PER MFRS.
INSTRUCTIONS

(2) 14' LONG x 18" WIDE x 8 3/4" DEEP 4000
PSI CONCRETE DEADMAN W/ GALVANIZED
ANCHOR POINTS POINTS FOR TIE DOWN
STRAPS - PER MFRS. INSTRUCTIONS -
TYP. AT EA. SIDE
Figure E-4 - Alternate Tree Well Detail

Scale: 3/4" = 1' - 0"
Figure E-5- Typical Suspended Slab Tree Well Plan

Scale: Not to Scale
Figure G-1 - Typical Bus Shelter Elevation

Scale: 1/4" = 1'-0"
BIKE SHELTER
-MADE BY DUO-GARD
-PARACHUTE MODEL, CANTILEVER VERSION
-SIZE 9' x 30'
-COLOR: BLACK

BIKE SHELTER BASE PLATE
-INSTALL PER MANUF. INSTRUCTIONS

1/2" CAULKED EXP. JOINT

6" CONCRETE PAVING

STONE BASE

CONCRETE FOOTING
-TO BE ENGINEERED BY BIKE SHELTER MANUF.
TOP OF FOOTING TO BE AT SAME ELEVATION
-EXTEND FOOTING COLUMN TO ACCOMODATE FOR SLOPE

FINISH GRADE
-SLOPE SHALL BE FOR ILLUSTRATIVE PURPOSES

VARIES - 2' MIN.

1'-0' MIN.

NOTE:
MANUFACTURER SHALL SUBMIT SEALED ENGINEERED DRAWINGS

Figure G-2 - Typical Bike Shelter Side Elevation

Scale: 1/4" = 1'-0"
Figure G-2- Typical Bike Shelter End Elevation

Scale: 1/2" = 1'-0"
Figure G-3 - Typical Bike Rack at Mobility Hubs Section—Hi Roller

Scale: 1" = 1'-0"
Figure G-4 - Typical Air Compressor at Mobility Hubs Section

Scale: 1" = 1'-0"

SC05

SC05 Electronic Air Tower includes:
- 54" steel cabinet
- Electronic digital air gauge
- 1/4 HP high flow oil-less air compressor
- Built in heater
- Standard colors are red, green, blue, yellow
- 30' coil hose and chuck
- 1-year warranty
- Toll-free live support

Additional Options available:
- Pay option
- Stainless steel cabinet
- Internal heater and external chuckholder
- GPRS modem (online communications)
- 3 HP available for trucks
- Customized decals for orders of 5 or more
Figure G-5 - Typical Bicycle Fix It Stand

Scale: 3/4" = 1'-0"

BIKE REPAIR RACK
MADE BY DERO BIKE RACKS
FIX-IT MODEL AS SHOWN AT LEFT

NOTE - THIS MODEL HAS BEEN REDESIGNED BUT THE OLDER VERSION IS STILL AVAILABLE UPON REQUEST.

MOUNTING: SURFACE MOUNT PER MFR. INSTRUCTIONS
FINISH: POWDERCOAT
COLOR: TO BE APPROVED BY PLANNING & DESIGN

CONCRETE SIDEWALK
STONE BASE
SECTION 32 93 00 - PLANTS

PART 1  GENERAL

1.01  DESCRIPTION

A. Provide trees, shrubs, and ground covers as shown and specified. The work includes:

1. Trees, shrubs, groundcovers, perennials, annuals and bulbs.
2. Mulch and planting accessories.
3. Planting Mixture.

B. Related work:

1. Section 32 84 00: Planting Irrigation.
2. Section 32 91 13.26: Planting Bed Preparation.

1.02  QUALITY ASSURANCE

A. Plant names indicated; comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legible tagged.


C. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.

D. Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional cost, and providing that the larger plants will not be cut back to size indicated. Provide plants indicated by two measurements so that only a maximum of 25% are of the minimum size indicated and 75% are of the maximum size indicated.

E. Provide "specimen" plants with a special height, shape, or character of growth. Tag specimen trees or shrubs at the source of supply. The Landscape Architect will inspect specimen selections at the source of supply for suitability and adaptability to selected location. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval.

F. Plants may be inspected and approved at the place of growth, for compliance with specification requirements for quality, size, and variety.

1.03  SUBMITTALS

A. Submit the following materials certification:

1. Peat moss.
2. Plant fertilizer.

1.04  DELIVERY, STORAGE, AND HANDLING

A. Deliver fertilizer materials in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. Store in manner to prevent wetting and deterioration.

B. Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected. Spray deciduous plants in foliage with an approved "Anti-Desiccant" immediately after digging to prevent dehydration. Dig, pack, transport, and handle plants with care to ensure protection against injury. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrival, the certificate shall be filed with the Landscape Architect.

C. Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Landscape Architect. Water heeled-in plantings daily. No plant shall be bound with rope or wire in a manner that could damage or break the branches.
D. Cover plants transported on open vehicles with a protective covering to prevent windburn.

1.05 PROJECT CONDITIONS

A. Work notification: Notify Landscape Architect at least 7 working days prior to installation of plant material.

B. Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.

C. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.

1.06 WARRANTY

A. Warrant plant material to remain alive and be in healthy, vigorous condition for a period of 1 year after completion and acceptance of entire project.

1. Inspection of plants will be made by the Landscape Architect at completion of planting.

B. Replace, in accordance with the drawings and specifications, all plants that are dead or, as determined by the Landscape Architect, are in an unhealthy or unsightly condition, and have lost their natural shape due to dead branches, or other causes due to the Contractor's negligence. The cost of such replacement(s) is at contractor's expense. Warrant all replacement plants for the balance of the original warranty period.

C. Warranty shall not include damage or loss of shrubs caused by fires, floods, freezing rains, lightning storms, or winds over 75 miles per hour, or acts of vandalism.

D. Remove and immediately replace all plants, as determined by the Landscape Architect, to be unsatisfactory during the initial planting installation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Plants: Provide plants typical of their species or variety with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids and open spaces. Plants held in storage will be rejected if they show signs of growth during storage.

1. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock". Cracked or mushroomed balls are not acceptable.

2. Container-grown stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm and whole.

a. No plants shall be loose in the container.

b. Container stock shall not be pot bound.

3. Plants planted in rows shall be matched in form.

4. Plants larger than those specified in the plant list may be used when acceptable to the Landscape Architect.

a. If the use of larger plants is acceptable, increase the spread of roots or root ball if proportion to the size of the plant.

5. No pruning wounds shall be present with a diameter of more than 1" and such wounds must show vigorous bark on all edges.
6. Shrubs shall meet the requirements for spread and height indicated in the plant list.
   a. The measurements for height shall be taken from the ground level to the average height of the top of the plant and not the longest branch.
   b. Single stemmed or thin plants will not be accepted.
   c. Side branches shall be generous, well twigged, and the plant as a whole shall be full to the ground.
   d. Plants shall be in a moist, vigorous condition, free from dead wood, bruises, or other root or branch injuries.

2.02 ACCESSORIES

A. Peat Moss: Brown to black in color, weed and seed free granulated raw peat or baled peat, containing not more than 9% mineral on a dry basis.
   1. Provide ASTM D4427 sphagnum peat moss with a pH below 6.0 for ericaceous plants.

B. Fertilizer:
   1. Plant Fertilizer Type "A": Commercial type approved by the Landscape Architect, containing 12% nitrogen, 12% phosphoric acid, and 12% potash by weight. 1/4 of nitrogen in the form of nitrates, 1/4 in form of ammonia salt, and 1/2 in form of organic nitrogen.
   2. Plant Fertilizer Type "B": Approved acid-base fertilizer.

C. Anti-Desiccant: Protective film emulsion to provide a protective film over plant surfaces and allow transpiration. Mixed and applied in accordance with manufacturer's instructions.

D. Planting Mixture: 2 parts existing soil, 2 parts topsoil, 1 part peat moss.

E. Mulch: 6 month old well rotted shredded native hardwood bark mulch not larger than 4" in length and 1/2" in width, free of woodchips and sawdust.

F. Water: Free of substances harmful to plant growth. Hoses or other methods of transportation furnished by contractor.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.

3.02 PREPARATION

A. Time of planting:
   1. Evergreen material: Plant evergreen materials between September 1 and November 1 or in spring before new growth begins. If project requirements require planting at other times, plants shall be sprayed with anti-desiccant prior to planting operations.
   2. Deciduous material: Plant deciduous materials in a dormant condition. If deciduous trees are planted in-leaf, they shall be sprayed with an anti-desiccant prior to planting operation.
   3. Planting times other than those indicated shall be acceptable to the Landscape Architect.

B. Planting shall be performed only by experienced workmen familiar with planting procedures under the supervision of a qualified supervisor.

C. All plant bed edges shall be clearly staked for review by landscape architect and for coordination with irrigation contractor.

D. Locate plants as indicated or as approved in the field after staking by the Contractor. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plant locations have been selected.
E. Excavate circular plant pits with sloped sides, except for plants specifically indicated to be planted in beds. Provide shrub pits at least 12" greater than the diameter of the root system. Depth of pit shall accommodate the root system. Remove excavated materials from the site.

F. Provide topsoil planting mixture for use around the balls and roots of the plants with 1/2 lb. plant fertilizer Type "A" for each cu. yd. of mixture.

G. Provide pre-mixed planting mixture for use around the balls and roots of ericaceous plants and 1/2 lb. plant fertilizer Type "B" per cu. yd. of mixture.

3.03 INSTALLATION

A. Set plant material in the planting pit to proper grade and alignment. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure. Set plant material 2"-3" above the finish grade. No filling will be permitted around trunks or stems. Backfill the pit with planting mixture. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water.

B. After balled and burlapped plants are set, muddle planting soil mixture around bases of balls and fill all voids.
   1. Remove all burlap, ropes, and wires from the tops of balls.
   2. Remove burlap from ericaceous plants.

C. Mulching:
   1. Mulch shrub planting pits and shrub beds with required mulching material 3" deep immediately after planting. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.

D. Pruning:
   1. Prune branches of deciduous stock, after planting to preserve the natural character appropriate to the particular plant requirements. Remove or cut back broken, damaged, and unsymmetrical growth of new wood.
   2. Multiple leader plants: Preserve the leader that will best promote the symmetry of the plant. Cut branches flush with the trunk or main branch, at a point beyond a lateral shoot or bud a distance of not less than 1/2 the diameter of the supporting branch. Make cut on an angle.
   3. Prune evergreens only to remove broken or damaged branches.

3.04 MAINTENANCE

A. Maintenance of installed and accepted plantings will be performed by the Owner.

B. Maintenance until acceptance shall include pruning, cultivating, weeding, watering, and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.
   1. Re-set settled plants to proper grade and position. Restore planting saucer and adjacent material and remove dead material.
   2. Correct defective work as soon as possible after deficiencies become apparent and weather and season permit.
   3. Water shrubs beds within the first 24 hours of initial planting, and not less than twice per week until final acceptance.

3.05 ACCEPTANCE

A. Planted areas will be inspected at completion of installation and accepted subject to compliance with specified materials and installation requirements.

B. Inspection to determine acceptance of planted areas will be made by the Landscape Architect, upon Contractor's request. Provide
notification at least 10 working days before requested inspection date.

1. Planted areas will be accepted provided all requirements, including maintenance, have been compiled with and plant materials are alive and in a healthy, vigorous condition.

C. Upon acceptance, the Owner will assume plant maintenance.

3.06 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from planting operations.

END OF SECTION 32 93 33
Shafer Court Gateway

Scale: not to scale
Cary Street Gateway

Scale: 1" = 25'
Franklin Street Gateway

Scale: 1" = 25'
Appendix 3

Broad Street and I-95 Gateway

Scale: 1" = 25'
Leigh Street Gateway @ 10th Street
Scale: 1" = 25'

- VIRGINIA TREATMENT CENTER FOR CHILDREN
- 10th STREET
- Flowering ornamental trees
- Remove all concrete and replace with 6 ft. wide brick sidewalk
- Campus Pylon