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Goody Clancy
ORW

Rickes Associates

Resource Systems Group (RSG)
Goody Clancy

Lead Consultants
Goody Clancy is a 110-person planning, urban design, architecture, and preservation firm based in Boston. The firm specializes in planning and design for institutional clients, including academic facilities, student housing, recreational facilities, research buildings, and campus master plans. Balancing skill and vision in developing new designs for campuses or dense urban sites, Goody Clancy has expertise in renovation of existing buildings and preservation of historic structures, often finding new uses for treasured places.

More than three-quarters of Goody Clancy’s work is for college and university clients. The firm’s planning and urban design division has built a significant national practice in strategic planning for institutional growth and change, with extensive experience creating effective master plans and capital improvement strategies for urban institutions. Goody Clancy assists colleges and universities in creating the flexible strategies they need to handle a rapidly changing higher education environment. The firm is also known for its work in helping institutions build successful working relationships with their host cities and communities, enabling these schools to better respond to changing opportunities and challenges.

In just the past five years, Goody Clancy’s campus planning and institutional design work has garnered significant national and regional attention, including three national awards from the Society for College and University Planning (SCUP). Work for Campus Partners and The Ohio State University, as well as for Boston’s North Allston neighborhood and Harvard University, have collectively won national awards from SCUP, the Congress for the New Urbanism (CNU), and the American Institute of Architects (AIA). During this same period, Goody Clancy’s planning and urban design work, all of which focuses on urban development and community-building, has received national awards from CNU, the American Society of Landscape Architects, and the AIA.

ORW Landscape Architects & Planners

Landscape Architects
ORW Landscape Architects & Planners’ experience spans the practices of landscape design, site planning, environmental planning, urban and village design, transportation design and historic preservation. The firm is committed to preserving the integrity of the natural and cultural landscape in their work. ORW prides itself on its ability to create landscapes that integrate the natural and built environments. ORW has extensive expe-
rience throughout northern New England and beyond, and has completed projects of national significance. The firm has received numerous awards from the American Society of Landscape Architects, the American Institute of Architects, the American Planning Association and the American Society of Consulting Engineers. To date, ORW has participated in the planning and design of over twenty public and private schools and colleges. Based in Norwich, Vermont, ORW’s employees have a long history of public involvement both as professionals and as active citizens who care about their communities and region.

Rickes Associates

Academic and Office Space Utilization Consultants
Rickes Associates works with colleges and universities on issues dealing with both people and space. Their clients reflect institutions ranging in size from 500 to 50,000 students, and have included research universities, community colleges, statewide boards, and public and private four-year institutions with a diversity of missions. Rickes Associates’ work is grounded in a thorough understanding of the broad forces that are shaping the future of higher education, including the new demands on colleges and universities in terms of services, academic programs, and operational structure. The firm understands the subtleties of educational and organizational environments, and specializes in providing the quantitative analysis needed to evaluate current and future space needs.

Resource Systems Group (RSG)

Transportation Consultants
Resource Systems Group is a transportation planning and engineering firm that offers a multidisciplinary approach to identifying issues and developing solutions. For 20 years the firm has devoted itself to advancing the state-of-the-art in transportation planning, traffic engineering, and design to the benefit of its clients. RSG’s staff members have backgrounds in civil and transportation engineering, transportation planning, environmental science, economics, policy, statistics, and computer science. The firm is headquartered in White River Junction, Vermont, and maintains an office in Burlington. Resource Systems Group has one of the largest and most experienced transportation planning and traffic engineering staffs in northern New England (45 professional staff). Its early work focused primarily on applications in Vermont, and this work formed the foundation of a practice that now extends to 32 U.S. states, four Canadian provinces, Asia, and Europe. From its Vermont based offices, RSG have conducted over 750 studies of transportation issues throughout northern New England.
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introduction

The landscape master plan addresses the conceptual treatment of outdoor space at the college to reinforce the design goals and vision of the Champlain College Master Plan, and help create a cohesive identity for the campus. The Champlain College Landscape Master Plan will also help create a better sense of orientation on the site, assist in navigating on foot, and in integrating the campus into the larger neighborhood. The plan addresses areas for landscape preservation and redefinition, and includes a recommended planting palette and landscape management approaches.

This is the first time that a master plan has been prepared for the Champlain College campus, and provides an important opportunity to look at the campus as a whole, as well as to shape the direction for the future. The intent of the plan is to define the core structural elements that give the campus good form and function, while allowing latitude for a rich diversity of design expression for specific sites.

Goals of Plan

The goals that have guided the development of the landscape master plan are as follows:

**Strengthen the image and identity of Champlain College.**

The plan envisions a unified campus image that references elements from the surrounding Hill neighborhood. The aim is to create an identity that integrates an identifiable campus entity into the surrounding neighborhood. To date, the College has been very successful in expressing the image and identity of the campus through its architecture. Elements of the landscape, specifically landscape planting and design, paving, street furniture, and light fixtures should be similarly well-considered to strengthen the overall image and identity of the campus. There are several places where unattractive views and areas can be addressed through landscape design.

**Develop a series of usable outdoor “rooms” that reinforce campus activity.**

This goal recognizes the value of open space as an integral part of the educational experience, as well as the value of open space within an urban setting. Well-structured outdoor space that accommodates ceremony, social gathering, recreation, and enjoyment of the outdoors can enrich the educational experience and provide meaningful places for students, faculty, the neighborhood and larger community. Today, much of the open space on the campus is within front yard areas that are visually important, but less conducive to social gathering and recreation. Several existing open spaces can be better structured for human activity, and there is the opportunity to create a new outdoor campus space at Perry Lawn in association with new residential buildings and reuse of the Perry (Cannon) House.
This diagram shows key landscape related issues and opportunities on the campus site, including a clear framework of streets, campus gateways, views, landscape rooms, landscape corridors or front yard spaces, significant changes in elevation and potential stormwater storage areas. These physical features of the campus landscape form some of the underpinnings of the landscape master plan. Other features of the landscape master plan relate to human use and activity within the landscape.
Clarify the pedestrian network and sense of orientation within the campus.

By nature of its relatively compact configuration and setting within Burlington, the Champlain campus is very walkable. There are several ways in which pedestrian circulation can be enhanced on the campus to provide greater accessibility and a sense of orientation for walkers. The hillside topography presents a challenge in accommodating mobility impaired individuals, and routes that are accessible for wheelchairs need to be identified and defined through path design and signage. There should be a hierarchy of path design, ranging from broad promenades for heavier pedestrian volumes along major campus activity centers, to smaller more intimately scaled paths that provide efficient linkages to lesser points. Finally, the campus could benefit from a system of wayfinding signage to assist pedestrians in locating their destinations. A campus often has visitors or students that are navigating the area for the first time, and are in need of orientation. Attractively designed signage need not be visually intrusive, and will help to dispel anxiety for those who are navigating an unfamiliar territory.

Improve college streetscapes.

Champlain College is fortunate to be set within an attractive framework of streets that are scaled to the pedestrian. The hillside grid of streets that traverse the campus are the primary corridors for pedestrian, bicycle, and automobile movement for the campus and the larger neighborhood and city. The design of streets can make them a barrier that separates uses and activities on either side, or a seam that brings these uses and activities together. Streets which are conceived as public space and designed to accommodate multiple users and activities need to be attractive, safe and to bring places together. At Champlain College, streetscapes can be enhanced through street tree planting, attractive pedestrian-scaled lighting, and curb extensions ("bump outs") that channel pedestrian crossings and make them safer. In this manner, Champlain College can support the larger city goals to create pedestrian friendly streets.

Define campus edges and gateways.

The open, permeable nature of the campus mimics the building pattern of the surrounding homes and creates a gracious presence in the neighborhood. This character should be maintained. Gateways mark the transition from the public realm of the sidewalk and streetscape to the campus and are important symbolically to provide a sense of entry. Gateways can range from subtle to grand, depending on the context. At Champlain College, entry to the core campus is celebrated through architectural statements, which provide a clear sense of transition from the public realm of the street and sidewalk to the campus. These entry points can be strengthened as pedestrian-friendly – rather than automobile – oriented gateways. In other areas, landscape and architectural treatments can be combined to enhance the sense of entry. In areas where there are abrupt transitions between the campus and private residences, better definition of edges through landscape design may be desirable to improve privacy in both areas.
Maintain a healthy urban ecosystem.

An urban ecosystem is a place where natural and human habitats overlap. The campus is not a pristine environment, yet the natural elements of green space at Champlain College, particularly trees and planted areas, provide a number of important benefits to the environment including: cooling of the urban heat island effect, filtering air to remove particulates, screening out noise, supporting urban wildlife, and improving water quality. Trees in urban environments face harsh conditions, including compacted soils, road salt, air pollutants, and barriers to root growth. Over time, through man-made and natural causes, the tree canopy of the campus has eroded. Through tree-planting and management practices that help to remediate urban stresses, trees can live a longer, healthier life, and, in turn, improve the quality of the human environment. Improved management of stormwater on the Hill is another important component of the urban ecosystem. Champlain College has included a green roof on one building, which is an exemplary approach to stormwater management in this developed setting. Other ways to manage stormwater, and potentially improve the environment for trees and plants, would be of benefit as well. A stormwater management study is currently underway.

Overview of the Landscape Master Plan

The landscape master plan is organized into six sections which contain recommendations for improving and maintaining campus outdoor space. The recommendations are summarized below:

Image and Identity

The Image and Identity section of the plan addresses strengthening the campus’ identity through a consistent visual vocabulary of signage, lighting, furniture (benches, trash receptacles, ash urns, tree grates and guards) bicycle racks, fencing and planting. Establishing a campus-wide wayfinding signage system is an important element of this section as well

Landscape Spaces

This section addresses defining new outdoor space and strengthening existing space to better accommodate campus social gathering, recreation, and passive enjoyment of the outdoors. The major recommendations are as follows:

- **Front Yard Spaces.** Maintain the residential character of “front yard” spaces along street frontages to serve as visual space and outdoor foyers to College buildings.
- **Internal Public Space.** Enhance internal green spaces, courtyards and promenades for social gathering, recreation, ceremony, picnicking, and quiet enjoyment of the outdoors. The major spaces for living are summarized below and on the plan diagram.
- **Summit Entry.** Transform this area from a predominantly auto-oriented space to a pedestrian promenade into the core of the campus.
- **Academic Quad.** The green space behind Aiken Hall should be strengthened with
large canopy tree planting and connecting paths to animate the space and better accommodate activities such as informal social gathering, people watching, sitting, and throwing a Frisbee.

- **Rozendaal Courtyard.** The Rozendaal Courtyard, together with the Academic Quad, represents the heart of the core campus, a busy space for social gathering and movement. The stark appearance of the courtyard should be ameliorated through seating walls, pavement patterns, tree planting, and benches.

- **Perry Lawn.** The secluded nature of Perry Lawn makes this area ideal as a flexible, natural outdoor space with restored gardens. Perry Lawn could support a variety of activities, including recreation, quiet study, and snowshoeing, as well as formal gatherings such as graduation and alumni events.

- **McDonald-Whiting Quadrangle.** A new residential quad is envisioned for the current site of the McDonald-Whiting parking lot. The residential quad should cater the dorm residents, providing green space, trees and space for seating, informal recreation, and people watching.

- **Campus Promenade.** A broad promenade from Main Street to the Perry House is a principal organizing element of the west campus area. The promenade will run parallel to South Willard Street and provide an efficient internal circulation system that offers varied experiences along its path: open views to the lake, intimate spaces between buildings and within arcades, and connections with the McDonald-Whiting Quadrangle and Perry Lawn.

### Pedestrian and Bicycle Circulation

This section examines the circulation network internal to the Champlain College campus. The primary recommendations of this section revolve around establishing a hierarchy in the path system, visually differentiating primary and secondary routes through path design in terms of width, paving materials, signage, lighting and furniture. Given the hillside setting of the campus, establishing and reinforcing accessible routes is another concern of this section. This section also contains recommendations for wayfinding.

### Vehicular Circulation and Streetscape Design

This section recognizes that Champlain College is set within the grid of the Hill neighborhood and seeks to work with the City and the neighborhood to improve streetscape design to best accommodate pedestrian movement. Recommendations include mid-block crossings, splitters, traffic calming approaches to roadway design, incorporating grand street trees, attractive pedestrian scale light fixtures and street furniture, and, over the long-term, undergrounding of power lines. This section also addresses the treatment of parking areas and fire lanes on the campus, and provides recommendations for transforming auto-dominant spaces to welcoming pedestrian zones at important campus gateways.
Transitional Spaces: Edges and Gateways
The private realm of the College intersects with the public realm of the city at transitional areas of edges and gateways. At these areas the College demonstrates both its separate-ness as an institution as well as its connection with the Hill neighborhood. General recommendations for edge and gateway treatments are set forth, as well as ideas for defining the College gateway at Main Street.

Landscape Management
The final section of the plan addresses key elements of maintaining a healthy urban landscape focusing on the tree canopy in particular. This section recommends that an inventory of the campus’ mature trees be undertaken, and provides procedures for protecting trees during construction and planting new trees. This section also addresses remediation of compacted soils, and removal of invasive plants. Stormwater management is discussed in a general sense, and details can be found within the Champlain College Stormwater Management Plan.

Recommended Planting Palette
The final section of the plan includes a recommended planting palette, trees and shrubs, to be used as the “bones” for landscape planting.
image and identity

Strengthen the image and identity of champlain college through the implementation of a shared visual vocabulary.

With the construction of the new buildings in its campus core, Champlain College has begun to develop a signature style that combines the Victorian sensibility of its old halls and residences with a contemporary stylization of that period’s defining features. Sloping copper and slate roofs, the combination of green painted shingle, brick and sandstone, and the repetition of arching windows and doorways, solid masonry chimneys, octagonal and square towers, gabled dormers, and glassed cupolas, all help to integrate the new with the old. Likewise, in the campus landscape, shared elements such as a comprehensive signage system, lighting fixtures, benches, paving, bicycle racks, tree protection, and a common planting palette, can help to reinforce the campus’ identity and to lend unity to the many disparate parcels owned by the College.

Signage
A new campus-wide signage system would have multiple benefits. First, the repetition of a consistent and distinctive graphic statement in association with the College’s name would serve to reinforce campus identity, in effect, branding its properties. The College should work with a graphic designer to develop signage that effectively communicates the College’s identity.

In addition, a signage system would assist with wayfinding on the campus, announcing significant gateways, revealing pedestrian networks within the campus, and introducing individual facilities. To be effective, signs should include a clear hierarchy of different sign types and sizes for various applications. Outward-oriented gateway signs, for example, should be larger and more iconic than building-specific signs, which should be smaller, more refined, and less conspicuous. Signs sharing the same level of intimacy should be the same size, shape, color and height as all other signs in their category, in order that the signage system might be easily comprehended and followed. Signs could be coded to convey additional information such as bike routes, handicap-accessible routes, and emergency call station locations, and could also contain campus-wide maps to further assist with navigation.
Lighting
Campus lighting falls into five categories: streetscape, campus pedestrian, building mounted, parking area, and bollards. Streetscape lighting would reside within or follow alongside the public right of way, and should be chosen by the Hill neighborhood and the City of Burlington, in the context of the City’s streetscape and lighting plan. Pedestrian-scaled pole-mounted lighting fixtures within campus grounds should be used to reinforce campus identity and should have a unique style distinct from City fixtures. The recommended pedestrian fixtures have been selected from Architectural Area Lighting’s Universe Collection of medium-sized cut-off luminaries (UCM). Three options are discussed in this section. Only one standard fixture and pole base should be chosen by the College from the three options given. All would feature a horizontal reflector and metal halide lamp with a flat glass lens and LDL finish. Fixtures would be mounted on a 4” round, 12’ tall, aluminum pole with a curved SLA7 arm. The fixtures and poles would be finished in black or dark green. The first option is the simple ANG fixture on a decorative DB6-4R12 pole. The second is the bell-shaped BEL on a plain PR4-4R12 pole with a decorative BC6-4 base cover. The third option is the solid- ringed SR STR on a decorative DB12-4R12 pole. Colored rings could be used in place of solid rings to complement the signage system, designating handicap-accessible routes or emergency call station locations. The Universe luminaire is reminiscent of the historic street fixture used in the neighborhood around the turn of the last century and mimics the wide rooflines of campus structures.

For parking lot fixtures, the College should continue to use the unobtrusive Gardco mounted square Form 10 EH-style cut-off light now used in the neighborhood around the turn of the last century. The historic Grassmount building, along Maple Street, is shown above.
as the dominant pole-mounted fixture on campus, but with a metal halide lamp replacing the high pressure sodium lamp currently installed. Bollards should continue to be Kim Lighting’s Compact Bollard CB32 with a metal halide lamp and a black or custom blended dark green finish. Wall mounted lights on academic and administrative buildings should, where compatible with the architecture, match the lights installed on the Student Life Complex: Louis Poulsen’s Orbiter Maxi. Where a lower level of light is desired on buildings, Louis Poulsen’s Saturn Maxi wall fixture may be used. Alternately, in place of the Saturn Maxi, the Kenall rough service wall mounted compact fluorescent fixtures found on the Miller Information Center and the Business Center may be used on exterior walls.

Exterior lighting at the college should use Illumination Engineers Society of North America (IESNA) guidelines for appropriate lighting levels for specific outdoor functions and in consideration of the college setting in a residential neighborhood. All of the pole-mounted fixtures recommended in this Master Plan are dark skies certified cut-off fixtures that control glare and spillover lighting. Metal halide lamps are recommended for the best representation of colors in the nighttime environment balanced with considerations of energy efficiency.

Sources: Chittenden County Regional Planning Commission, Outdoor Lighting Manual for Vermont Municipalities, 1996.
Benches
Two styles of outdoor bench are recommended. For areas adjacent to academic and administrative uses, the Victor Stanley Steelsites RB-28 benches in black, found in the courtyard adjacent to Joyce Learning Center, should be used. Near residence halls, a more domesticated, wooden selection, Victor Stanley’s Teaksites bench, is preferred. Both benches are sturdy and durable, and can be securely mounted in place.

Trash Receptacles and Smoke Urns
Over time, as the campus’ Rubbermaid trash receptacles require replacing, the College should look to Victor Stanley’s Dynasty Series™ Side-Door-Opening Litter Receptacle (DYN6-SD-36), which has a similar form and complements the Steelsites bench. A color-coded domed lid may be added to the Dynasty receptacle to designate separate containers for trash and recyclables. Matching smoke urns are also available.

Bicycle Racks
Although the wave-style bicycle rack installed in Hauke Courtyard is attractive, its design can hamper users wishing to adequately secure their bikes. It is recommended that the wave rack remain in place until it requires replacing, and that all other freestanding racks be replaced with Cycle-Safe’s U/2 bike racks. The racks are installed in-ground as individual units. They can be used in a series of any size to meet bicyclist
demand and fit the allotted space. The rack’s design is minimal, unobtrusive and repeats the arching form found on campus doorways and windows. A black coating is preferred. Bike racks should be located at the outside edge of heavily trafficked courtyard areas and promenades, preferably near windows and in areas receiving heavy through-traffic, where they are likely to receive regular surveillance.

**Tree Grates and Guards**

Tree grates and guards should match those already installed in the courtyard adjacent to Joyce Learning Center. These are Urban Accessories’ Kiva Grate and the AD Tree Guard, also by Urban Accessories.

**Fencing**

There are areas where fencing will be necessary to provide stronger edges, in particular providing a boundary between the college property and adjoining parcels. Fencing should be attractive and durable while fitting in with the aesthetic vocabulary of the other site furnishings. The college has employed a variety of fencing styles on campus, many of which are attractive, although inconsistent from one place to another. One possible alternative, Ameristar’s Montage is made of durable welded steel with a black finish that carries a 20-year warranty. The style of the fencing can vary somewhat to reflect its location within the campus. For example, fencing within the realm of the pedestrian may include greater ornamentation, but within a within a consistent overall pattern. Consideration should be given to replacing chain link fencing along pedestrian walkways and in highly visible locations such as adjacent to the Edmunds Elementary School.
Planting Palette

Plants may also be used to reinforce campus identity. A number of tall canopy trees, including the Tuliptree, Oak, and Ginkgo, are recommended for spatial definition in front yards and for shade in enclosed greens. Medium and small trees, such as the Yellowwood, Kousa Dogwood, and Witchhazel are selected for their ornamental characteristics: fall color, showy flowers, and interesting bark. Perennials should be used to bring bold color, movement, and texture to those intensively used active spaces within the campus, principally, Rozendaal Courtyard and the proposed West Campus Walk adjacent to South Willard Street. Such perennials include Black-Eyed Susans, Salvias, perennial grasses, and other low-maintenance, high-performance plants. By using a common selection of plants in areas receiving similar types of use, a familiar pattern is established that communicates degree of privacy as well as an association with the College. For example, residence hall yards should be planted with a different assortment of understory plants from those used on semi-public front lawns, while the canopy tree selection may be the same. A palette of recommended plants, though not exhaustive, is included as an appendix to this plan. The use of annuals should be limited to very small areas at the entrances of the “homes” along Willard, Maple, Main, and Prospect.

It is recommended that Champlain College use signage, site furnishings, and plants to complement its architecture and strengthen campus identity. Signage, furnishings and plants should be chosen from a limited palette that communicates an association with the College. Furthermore, these landscape elements should be used to reinforce cues about the ways in which spaces are used and to assist with wayfinding.
Landscape Spaces

Develop a series of usable outdoor “rooms” that reinforce campus activity.
Champlain College’s landscape contains a variety of spaces for the campus community to look at, pass through, and inhabit. With the potential addition of new facilities, the College has the opportunity to expand and diversify the range of outdoor spaces on campus. Champlain should also continue to improve the quality of existing spaces, both to enhance the educational life of current students and faculty, and to attract prospective ones.

Currently, a number of ‘front yard’ spaces along Maple, Main, and South Willard streets present a gracious façade, consistent with the building and lot pattern of the surrounding residential neighborhood. These are primarily visual spaces and are not structured for human activity. They receive limited use as outdoor foyers to campus buildings. Formalized gateways to the campus define entrances and include the marble signs located at the intersection of Main and South Willard Streets, the arch between the Hauke Family Campus Center and Ireland on Maple Street, and the arch between the Miller Information Commons and Foster Hall on the south edge of campus.

Significant campus corridors include the grand staircase adjacent to Alumni Auditorium; the paved Rozendaal Courtyard between Hauke Campus Center and the Student Life Complex; and the Summit Street entrance to the Academic Quad between Miller Information Commons and the Ireland Center for Global Business and Technology. As the campus develops, new paths will be needed to connect the ‘desire lines’ of new spaces and existing corridors. Proposed paths and promenades will contribute significantly to pedestrian convenience and comfort. These new corridors will create direct links between new and existing buildings, and will also engender opportunities for the creation of gathering spaces along them. The campus’ most public corridors, its streetscapes, must balance the needs of automobiles, pedestrians and bicyclists. While streetscape corridors involve the public right of way, the College can advocate for improvements that enhance safety, aesthetics, and campus identity.
The arrangement of existing campus structures has resulted in the creation of several well-defined outdoor rooms. The Academic Quad has the potential to resemble the quintessential college quadrangle, while the northern portion of the Rozendaal Courtyard is ably suited to accommodate heavy student use. Perry Lawn is a new acquisition that will provide a serene counterpoint to the bustle of the Academic Quad and Rozendaal Courtyard. In determining the direction of future campus changes, the College should strive to preserve the integrity of its existing outdoor rooms, while using careful placement of new buildings to create ancillary outdoor living spaces.

This section provides a discussion of existing and proposed campus landscape spaces, identifying opportunities for their creation and improvement.

**Spaces for Living: Outdoor Rooms**
Landscape rooms – quads, greens, and courtyards – play a significant role in the learning environment. Outdoor places for informal gathering, ceremony, recreation, quiet contemplation, and enjoyment of the outdoors enrich the educational experience and are as memorable as the campus buildings themselves. Many of these types of spaces already exist on Champlain College’s campus, and, with the potential expansion of College facilities, new ones will be created.
Improving Existing Rooms

The Academic Quad

The Academic Quad of the core campus is located centrally within the College’s busy core. Characterized by a large rectangular lawn and circumscribed by pedestrian walkways connecting the buildings at its perimeter, the Academic Quad lacks paths through the lawn, which seems to complicate movement between buildings. Paths would better connect the buildings and large canopy trees would add to the sense of shelter suggested by the courtyard’s masonry walls. The trees would also provide comfort on hot days. Though the courtyard has magnificent edges, these could be improved to include more formal opportunities for sitting and gathering.

The following improvements are recommended for the Academic Quad:

• Create overlooks with benches where paths enter the lawn. Use brick paving with granite border at landings and provide low walls for added comfort. These will accommodate informal gatherings and facilitate people-watching.
• Remove the bicycle rack from the small terrace adjacent to Aiken Hall and reclaim the space for gathering. Bike racks should be placed at the courtyard’s periphery.
• Animate the lawn with paths to draw people through, honor desire lines, and improve connections between the Academic Quad and the Rozendaal Courtyard below.
• Regrade the lawn to provide a more uniform slope at its easternmost edge and plant the slope with groundcover to reduce maintenance demands.
• Regenerate the lawn with compost (see the Landscape Management section) to improve water retention.
• Plant grand trees in a formal pattern within the green to create a parklike atmosphere and provide shelter from the sun. Be careful to avoid utilities.
• Add plantings to the edges that have greater seasonal variety and attraction.
• Consider irrigation of the lawn, particularly if water can be recycled from the stormwater system.
Academic Quad today

Academic Quad as it could be
Rozendaal Courtyard

The Rozendaal Courtyard adjacent to the Hauke Family Campus Center is largely paved in concrete, with sandstone planters softening the transition between building walls and the ground plane along some edges. The courtyard receives heavy through-traffic and is one of the campus’ gathering places. The undifferentiated expanse of concrete in the space give the area a rather stark appearance during quieter periods, and would benefit from some enhancement to encourage people to linger on fine days. The north end of the courtyard is heavily paved and receives snow from the Hauke Center’s ample roof and elsewhere. If snow storage were relocated to a less traveled area of the campus, more room could be allocated to human enjoyment of the space. The courtyard has a strong beginning at the intermediate landing to the Ireland Center and an equally strong ending as it approaches the entrance to the Student Life Complex. The shared design vocabulary and pedestrian amenities that make these areas so delightful and urbane should be distributed throughout the entire Rozendaal Courtyard to improve the cohesion of the space and increase opportunities for outdoor study, al fresco lunches, and student gatherings.

Recommendations for the Rozendaal Courtyard are as follows:

- Build sandstone sitting walls around north and west walls of Hauke to match the walls shaping the staircase adjacent to the Ireland Center. Create planting beds behind the walls and fill them with flowering perennials, grasses & prostrate shrubs that will survive a heavy snow load (see Appendix for plant lists).
- Repave the courtyard using the paving pattern recommended for courtyards in the Pedestrian and Bicycle Circulation section of this document. The combination of concrete, brick, and granite will resonate with the paving on the stairs and at the entrance to the Student Life Complex.
- Use the repaving as an opportunity to install heating under the courtyard to aid with snow management.
- During the repaving, create a small bosque of Honeylocusts on the north and east sides of the courtyard. Treat the planting as it was addressed adjacent to Joyce Learning Center, with tree grates in the courtyard paving. Place the trees so that they fit naturally into the grid of the paving pattern.
- Provide benches along the edges of the courtyard facing the social life of the space.
The Rozendaal Courtyard as it is today and as it could be after landscape enhancements.
**Perry Lawn**

The ample and secluded Perry Lawn will offer a protected refuge for passive recreation, quiet study, Frisbee, or in the wintertime, snowshoeing. Adjacent to admissions and other administrative functions, the space should present an appealing scene to prospective students and their families, and should also be suitable for formal gatherings such as graduation. The lawn would serve the campus best as a multi-purpose space that does not take on the character of a residential quadrangle.

One particularly noteworthy resident of the Perry (Cannon-Phelps) House, Nellie Waite Flynn (1861–1922), was a leading botanist with a specialty in the wild flora of Vermont. Her garden in Burlington contained many of the hardy plants for this region. Her studies were documented in her book *The Flora of Burlington and Vicinity* and her private collection is at the Pringle Herbarium at UVM. The landscape design for this property may reference this illustrious resident through planting design, a small arboretum or a native plant garden incorporating her plantings. *(Source: Preservation Burlington, “Spotlight on the Cannon-Phelps House,” The Sentinel, Volume 6, Issue 2, Spring 2004.)*

The plan recommends the following for Perry Lawn:

- Provide strong walking connections to other areas of campus. Making Perry Lawn the terminus of the West Campus Walk will help to ensure it remains open to, and actively used by, the entire campus population.
- Maintain or recreate a strong vegetated edge between the lawn and the proposed student residence hall along its north side. Provide a generous portal between Perry Lawn and the adjacent residence hall, and supply the residents with a separate small south yard for private use to discourage appropriation of Perry Lawn for domestic purposes.
- Maintain the informal appearance of the lawn. Remove the brush and invasive species from the interior, the edges, and around the carriage house. The grand oak and ash trees should be retained. Keep the space as unprogrammed as possible.
- Planting design and programming of outdoor space at the Perry House should consider incorporating references to the work of Nellie Waite Flynn.
Perry Lawn could be enhanced as a vibrant College and neighborhood open space.
Creating New Rooms

New dormitory construction along Maple Street is organized around a large internal courtyards and is adjacent to a new West Campus Walk that would traverse to campus from Main Street to Perry Lawn.

- Like the Academic Quad in the campus core, the McDonald-Whiting Quadrangle should consist mainly of large trees on a lawn traversed by paths.
- Provide benches along the edges of the courtyard.
- Construct terraces along the south facing buildings.

A number of small courtyards, paved and soft, will be created with the construction of new campus facilities. The character of these spaces will vary according to adjacency and need, and should be designed to provide a variety of outdoor experiences.

A broad campus promenade that is aligned parallel to South Willard Street and runs from Main Street to Perry House is a principal organizing element of the west campus area. The West Campus Walk is envisioned as a lively place for campus circulation and social gathering, consistent with its function of linking residence halls with food, leisure and classroom spaces. The plan recommends the following for the West Campus Walk:

- The West Campus Walk should be a minimum of 15 feet in width and widen out into small courtyard at gathering spaces. The promenade should work with the varied conditions along its length, providing a variety of experiences ranging from intimate enclosed spaces between buildings or within a building arcade to areas with open views of the lake and connections to major open spaces.
The West Campus Walk would provide a lively social gathering space as well as a circulation spine.

- The West Campus Walk should employ a consistent and identifiable paving treatment along its length.
- The West Campus Walk should serve as a social gathering space as well as a circulation spine. It should connect building entries and open spaces. Seat walls, benches, landscaping, lighting and signage should be placed along the promenade consistent with the campus vocabulary.
- The mid-block crossing along Maple Street should be raised and, to the extent possible, identifiable as part of the West Campus Walk.
This section examines the pedestrian and bicycle network internal to Champlain College’s campus. Significant internal corridors currently include the grand staircase connecting the Hauke Street parking lot with the Rozendaal Courtyard; the route traversing the Rozendaal Courtyard from Maple Street to the entrance of the Student Life Complex; and the route connecting Summit Street to the Rozendaal Courtyard. These heavily traveled ways are situated within a warren of smaller, less traveled paths linking the many terraces that define the landscape of the core campus. Proposed bicycle and pedestrian paths accompanying new construction will contribute significantly to pedestrian convenience and comfort. The new corridors will create direct links between new and existing buildings, and will also engender opportunities for the creation of gathering spaces along them. In the melding of old and new routes, the entire circulation system should be designed to create a hierarchy of paths, improve and reinforce handicap accessibility, and facilitate wayfinding.
Pedestrian and Bicycle Circulation Plan and Path Hierarchy
This plan suggests reconfiguring existing pathways to reduce redundancies, accommodate entrenched desire lines, and convert fire lanes to multi-function pedestrian routes (see Vehicular Circulation and Streetscape Design). New pathways have been added that create a strong pedestrian spine for the west campus and connect new residences with the core campus.

**Primary Routes: Proposed**

The location of the campus on a steep hillside has a strong influence on the proposed organization of the internal circulation system. Primary north-south routes will run along the contours of the hill, parallel to South Willard and Summit streets, creating nearly level connections between destinations occurring at a similar elevation. These will include:

- The West Campus Walk, a wide, shared-use axis (pedestrians, bicycles, emergency and service vehicles) connecting the Main Street gateway near Skiff Hall to the Perry House and Lawn, and organizing the new residential quads.
- In the core campus, a path connecting Bader Hall to the Student Life Complex.
- Moving uphill, several routes connecting Maple Street to the core campus, including a transit and pedestrian route east of Bader Hall and an emergency access/pedestrian route entering between Hauke and the Ireland Center.
- The Rozendaal Courtyard itself, which connects Maple Street with the Student Life Complex.
- A path connecting the Juniper Terrace gateway with Ireland Center.
- And a path spanning the eastern edge of the Academic Quad from Aiken to Foster halls.

Primary east-west routes will run up and down the hill, connecting spaces at different elevations. Some east-west routes will move through campus buildings, using elevators and internal stairs to navigate transitions from one level to the next. The primary east-west routes will be:

- A route that begins at the Summit Street gateway and continues through the Academic Quad and Rozendaal Courtyards before descending the grand staircase to South Willard Street.
• A variation on the route described above that crosses the Rozendaal Courtyard to the Student Life Complex and descends to South Willard through an internal stairway or elevator.
• A second entrance to the Academic Quad from the corner of Maple and Summit Streets, accommodating bicycles, pedestrians and service vehicles.

Secondary Routes
Secondary routes will be numerous and often run parallel to primary routes, providing an alternate means of access to buildings and outdoor spaces. They will sometimes employ a building’s elevator to offer an accessible alternative to a primary route. Secondary routes will include:
• A series of paths linking Main and South Willard streets to the West Campus Walk
• Two accessible paths ascending the lawn between Bader Hall and the IDX Student Life Complex
• An accessible route linking the Academic Quad and Rozendaal Courtyard through the Hauke Center
• A second accessible route through Freeman Hall
• Short connections on the north and south sides of the Academic Quad
• A connection from the Academic Quad to Maple Street via the east entrance of Ireland
• An east-west route from Summit Street to the west edge of the Academic Quad
• Two bicycle, pedestrian, and service routes into the campus core from Summit Street – one following Juniper Terrace and the other entering from the corner of Summit and Maple Streets
• A north-south connection from the front door of Aiken Hall to East House
• And a bicycle and pedestrian route linking the bicycle path on South Prospect Street to the intersection of Summit and Maple streets through the properties adjacent to Summit Hall

Building Access and Public Walks
Walks accessing buildings from primary and secondary routes are too numerous to receive individual mention here. The plan arranges these as efficiently as possible, to reduce unnecessary paving and accommodate desired lines of travel. Public walks include sidewalks within the public right-of-way.

Path Design
Paths will receive different paving treatments according to their place in the circulation plan hierarchy. Accordingly, the most prominent paths will receive the most elaborate paving, and vice versa, as described below:
• Major Courtyards - Major courtyards will be predominantly concrete, broken with interweaving bands of brick, and accented with granite blocks. The brick courses connect
the ground plane with the vertical brick walls of the buildings defining the courtyards. The granite should match the stone used on the landing adjacent to the Rozendaal Courtyard entrance of Ireland.

• Primary Routes and Promenades – These walks will generally be 12’-20’ wide, to accommodate heavy use by a mix of pedestrians, bicyclists, and occasional service and emergency vehicles. The recommended paving pattern is a simplified version of that used in major courtyards, combining concrete with brick runners and granite blocks.

• Secondary Routes – Secondary routes will vary from 6-8’ wide and consist of a concrete walk with brick running course on each edge. The secondary routes on Juniper Terrace and the Summit Hall block would receive special treatment due to their use by bicyclists and pedestrians. On Juniper Terrace, a 5’ concrete walk will be provided for pedestrian use, with a tree lawn separating it from the street. Bicycles may share the road. On the Summit Hill block, the shared bicycle and pedestrian path would be 10 feet wide, but would otherwise resemble other secondary routes.

• Building Access and Public Walks – These should be concrete walks, approximately 5 feet wide.

Improving and Reinforcing Accessible Routes
The campus’ location on a steep hillside presents barriers for accessibility that are important to overcome. Terraces and buildings in the core campus are closely spaced, limiting opportunities for ramps. The best option for improving accessibility within the core campus lies in improving the use of existing buildings to navigate the hillside. Furthermore, some opportunities exist for improving paths that are nearly accessible through minor regrading, the installation of railings and, where needed, improved landings. Providing handicap access to the west side of the campus can generally be accomplished with outside paths, though grade differences also present a challenge between South Willard Street and the West Campus Walk.
The following steps should be taken to improve and reinforce accessible routes through the campus:

- Provide an accessible route within each building that contains an elevator and has entrances at different levels. Accessible doors should be installed at uphill and downhill entrances. Doors should be power-assisted and should comply with Section 4.13 Doors of the ADA Accessibility Guidelines (ADAAG) for Buildings and Facilities. Hallways between accessible entrances should be wide enough to comply with section 4.3 Accessible Routes of the ADAAG. Elevators should comply with Section 4.10 of the ADAAG. Existing buildings that would be suitable for adaptation are the Student Life Complex, Hauke Center, Ireland, and Joyce Learning Center. Some of these already contain one or more accessible entrances.

- Regrade, repave, and add railings and landings to the existing ramps on the north sides of Foster Hall and Wick Hall to make them ADAAG compliant.

- Provide handicap reserved parking spaces near all accessible buildings. These may be located in paved courtyards and other limited access areas, if necessary, provided that signage and striping requirements are met in a manner consistent with the aesthetic of the space.

- Install accessible curb ramps at all mid-block and corner street crossings.

**Wayfinding**

Wayfinding describes the ability to understand and navigate through a space. It can be facilitated through the creation of a legible path system, the use of landmarks to provide reference points, and the use of repetition to develop visual patterns linking similar elements. To assist wayfinding, routes should be logically arranged, explained, and labeled; gateways should be clearly established and signaled; and campus properties should receive consistent treatment. Because Champlain College owns several properties located at a distance from its core campus, wayfinding at Champlain will not only entail the identification of gateways to and routes within the core campus, but will also involve navigation between satellite properties and the core.
The grid of city streets provides a strong organizational frame for disparate campus properties. Where the consistent treatment of routes between college properties isn’t an option, the College can provide maps on gateway signs that relate outlying properties to the campus as a whole. Treating the edges of campus properties in a consistent fashion, as described in the Edges and Gateways section, will make parcels in the campus system easy to identify. Furthermore, the affiliation of campus properties can be reinforced by the internal use of a visual vocabulary specific to the College.

In and around the core campus, the plan recommends the following wayfinding improvements:

- Provide a few straight, long paths that parallel the city grid and connect campus buildings to create a legible framework for the campus path system.
- Use paving patterns and path width to indicate the hierarchy of routes through campus, as discussed above.
- Install landmarks at significant intersections and gateways. These should have a clear form and should stand out distinctly from the dominant College and neighborhood edge treatments. Bring gateway elements out to the public right-of-way. These recommendations should be visually prominent, but do not have to be tall.
- A coordinated system of signage should be developed, as discussed in the Image and Identity section. Parallel and visually compatible families of signs should be developed to communicate with drivers and pedestrians. Building and directional signs should not only address public rights of way, but should also face into internal pedestrian routes.
- City landmarks, campus landmarks, or some aspect of the up- and down-hill orientation of the campus could be incorporated into campus place names to help reinforce spatial relationships.
- Additionally, new students should receive an initial orientation from the top floor of Miller Information Commons, which has a view of much of the core campus.
spaces for automobile movement – vehicular circulation & streetscape design

Introduction
The grid of streets of the Hill neighborhood provide an efficient and direct armature for vehicular traffic. The components of the street space, the dimensions of the rights-of-way, broad tree lawns, sidewalks, and space for on-street parking, all work together to attractively accommodate both pedestrian and vehicular movement. On some streets, however, there is a need for traffic calming to slow speeds and better facilitate safe pedestrian movement. The master plan vision of growth in the number of students living on campus will add to pedestrian volumes in this area, particularly crossings of South Willard, Maple, and Summit to the core campus. Streetscape design features that direct pedestrian traffic and provide traffic calming are recommended.

On the campus itself, driveways and parking areas disrupt the pedestrian-dominant campus environment. Over the long-term, vehicular access into the core campus will be scaled back from its current extent, however, space for deliveries, trash pickup, emergency vehicles and potentially a future transit shuttle path, will be accommodated on the campus core. These vehicular spaces can be modified to be more attractive and more appropriate to a pedestrian-oriented campus setting, while still maintaining their functional characteristics.

Streetscape Improvements
Champlain College is fortunate to be set within an attractive framework of shaded streets laid out in the early 19th century as gracious landscaped boulevards. Although the neighborhood supports an impressive number of mature trees, many large street trees have died, leaving gaps in the continuity of the canopy. The streets in the vicinity of the campus have generous tree belts, typically 8 to 10 feet in width, where a canopy of large street trees can once again be cultivated.

As car ownership and regional growth have increased over time, streets in the area have carried higher and higher volumes of through traffic. South Willard Street through the campus area is the continuation of Route 7, which carries high volumes of peak hour traffic as well as truck traffic that is excluded by Federal interstate highway weight limits. The speed and volume of through traffic erodes the quality of the neighborhood and

Historic view down College Street.
creates conflicts for pedestrians and bicyclists. The College, together with Hill neighbors, should continue to advocate for streetscape improvements that would calm traffic and improve the environment for pedestrians.

Ultimately, streetscape improvements are completely within the purview of the City of Burlington. The College should be proactive in working cooperatively with the City to make improvements to the streetscape environment that would be of benefit to the college, neighborhood and city as a whole.

**Road Design Improvements**

With the addition of student residence halls near the campus core, pedestrian volumes in the area are be expected to increase. The intersections of South Willard and Maple streets and Summit and Maple streets will become significant crossing locations for pedestrians, as will mid-block crossings on South Willard and Maple streets. The conceptual streetscape plan is shown in Figure __.

Curb-extensions or bulb-outs are proposed at all four of the intersections along the campus core, to reduce pedestrian crossing distances and to improve the visibility of pedestrians at crossing points. Bulb-outs are proposed to extend into the parking lane where right of way is available. Similar curb extensions have been implemented in Burlington, most recently on North Avenue.

Mid-block pedestrian crossings are also proposed at significant campus entrances. Mid-block crossings are similarly constructed over the parking lane where right-of-way is available and visibility would be enhanced. To
reinforce slower speeds along South Willard Street approaching the mid-block crossing, splitter islands are recommended at Cliff Street and between Cliff Street and the first mid-block crossing.

The heaviest pedestrian volumes are expected at the intersections of South Willard and Maple and Summit and Maple. At these intersections treatment of the entire road area with special paving (such as brick, cobbles, granite block or a combination of materials) is recommended to strengthen the visual prominence of this significant pedestrian crossing.

**Street Trees**

Perhaps more than any other feature, a mature canopy of street trees planted between the street right of way and sidewalk contribute immensely to the quality of the street environment for cars, pedestrians, bicyclists and neighbors. Formally planted rows of spreading street trees define and enclose the street space and provide a gentle separation between cars and pedestrians, adding comfort particularly to the pedestrian experience. Street trees should be selected, sited, and maintained with care to preserve sight lines at intersections for pedestrians, and to keep street signs visible to bikers and motorists. Species that develop higher crowns as they mature should be favored. Replacing trees in the vicinity of the College is a City priority. Burlington’s arborist is interested in experimenting with new disease resistant strains of Elms along South Willard Street, which would tremendously improve the appearance and pedestrian environment of this street. Unfortunately, overhead power lines restrict what trees can be planted beneath them. Typically, smaller trees such as crabapples are used, which yields a less pleasing overall appearance. Placing power lines underground should be a priority for the long term improvement of the streetscape environment; in the meantime, the
College can consider planting large canopy trees along its frontage beside the power lines as allowed by underground structures to help create a more aesthetically pleasing streetscape environment.

A recommended list of street trees is included in the appendix. The recommendations were compiled in consultation with Burlington’s City arborist, and chosen for their shape and cultural suitability for planting in a street environment. Light fixtures should be of an appropriate height to cast light onto both the sidewalk and the street without undue interference from the tree canopy.

**Lighting and Furniture**

Pedestrian scale street lights that convey a civic identity distinct from the college lighting, as well as benches, trash receptacles, and mailboxes, would also add to the street environment.
Driveways and Parking Areas

IDX Service and Loading Area
Currently the driveway exiting the core campus onto South Willard Street, along with the associated parking and service functions, presents a rather unappealing face along prominent campus frontage. This service area is critical to the functioning of the IDX Student Life Complex, and is expected to remain in place for the long term. This area can be made to present a more attractive and welcoming appearance while still functioning well as a service and loading area. Vehicular movement on the exit drive is low volume and slow speed. Yet due to the uphill slope of the frontage along South Willard, the expanse of asphalt for the existing drive is particularly prominent, more attractive paved pattern that appears more like a hardscape promenade (using materials such as brick or cobbles with concrete sidewalks) would greatly improve the appearance of the drive, while also reminding drivers to travel slowly and with caution. This drive does not lead to a campus or building entry, so the primary pedestrian movement will be to walk across, rather than along, the drive. Screening the dumpster, parking, and loading areas through hedges and an architecturally compatible gate and wall structure, along with use of campus light fixtures, would also improve view into the campus at this location.

The service area next to Cushing Hall could be significantly improved without compromising functionality.
Summit Entry Drive

The drive between Aiken Hall and Miller Information Commons is another example of a visually prominent frontage that should be improved as a gateway to the campus for pedestrians and bicycles. This drive is on axis with the Academic Quad and is an important portal into the heart of the campus. Changing the paving of this drive from the automobile vocabulary of asphalt to an attractive paved promenade, and reinforcing the visual importance of the entry promenade through tree planting, lighting and informational or directional signage, would greatly improve the gateway without compromising its function as a fire lane.

Paving, landscape, signage, and lighting improvement would make this Summit Street entrance more welcoming.
Transit Mall

The long term plan for the campus envisions a transit shuttle lounge as an addition to the Hauke Center. As they do today, some shuttles ultimately may pass through the campus between Hauke Center and Bader and connect to the IDX lot before returning to South Willard Street. This space should be carefully enhanced as an attractive open mall or plaza dominated by pedestrians but sharing the space with transit vehicles. Like other hardscape spaces on the campus, the transit mall should include attractive paving, amenities including benches, lighting, and trees. A narrow lane for bus vehicles can be demarcated through changes in grade, lighting and street furniture.

Treatment of Campus Drives and Fire Lanes

In looking at the campus as a whole, there will be a continuing need to provide service drives, fire lanes, parking and loading areas on site. The design approach to these areas should respond to the setting in which they are placed. All drives into the core campus from South Willard, Summit and Maple streets should not be treated as asphalt roads, but rather as attractively paved promenades that accommodate vehicles as well as pedestrians and bikes. This approach reinforces the campus core as a pedestrian precinct. In other areas of the campus, the design should be determined in consideration of whether the drives will also serve as pedestrian or bicycle routes. For example, the West Campus Walk, which is planned to extend from Main Street to Perry Lawn, is expected to be a promenade with heavy pedestrian volumes, and should accommodate bikes as well. In other areas, smaller drives which lead to parking areas may benefit from a sidewalk or pedestrian path, but would be expected to accommodate primarily vehicle traffic, and would therefore be appropriately constructed from asphalt.

Treatment of Parking Areas

For both existing and new parking areas, the design approach should be to minimize the visual prominence of these areas while providing appropriate lighting, pedestrian accommodation and directional signage to aid motorists. In general, parking areas should be located behind and beneath buildings to the extent possible, to mitigate their visual prominence. Parking areas should be screened from important public views, primarily from the street, with plantings, low walls, or both, when necessary. The Gardco ‘shoebox’ light fixtures which are very durable, provide downward light and do not draw attention
to themselves are appropriate in parking areas. Connections from parking areas to pedestrian paths should be clear and visible, with directional signage to aid visitors’ navigation through the campus.

**Recommendations**

**Streetscape**
Work with the Hill neighbors and the City of Burlington to install streetscape improvements as follows:
- Planting tree belts with large canopy trees (see recommended street trees) that would provide continuous cover along the street.
- Implement mid-block crossings, splitter medians, curb extensions and special intersection treatments at Maple and South Willard and Maple and Summit.
- In concert with Burlington Public Works, develop a plan for street lighting and street furniture in the vicinity of the College.

**Driveways, Fire Lanes and Parking Areas**
- Use materials and design vocabulary of attractive pedestrian lanes and streetscapes for driveways and fire lanes into the campus.
- Improve the appearance and pedestrian environment of the IDX service area and the fire lanes from Summit Street.
- Use landscape and architectural features to create attractive screening of parking and service areas.
Define Campus Edges and Gateways.

Transitional spaces such as edges and gateways are where the private realm of the College intersects with the public realm of the Hill neighborhood. These places comprise a semi-public territory that is neither fully dedicated to campus use nor entirely open to public enjoyment, other than as a visual amenity. At its edges and through its gateways, the campus defines its relationship with the surrounding community, asserting its separateness as an institution, while demonstrating its connection to the Hill neighborhood.

Edges

The College communicates with the outside world at its periphery. Its edges are central to neighbor relations and play a large role in defining campus identity. These spaces include front yards abutting public rights-of-way and back yards adjacent to privately owned properties.

The College’s front yards should provide a visual and social transition between the College and the Hill neighborhood, defining campus territory while continuing to conform to the character of its urban context. Traditionally, front yard areas in the Hill neighborhood were treated as greenswards dotted with mature canopy trees. Foundations were handsomely constructed, obviating the need for foundation plantings. Some small trees and shrubs were used around the buildings to soften constructed edges and provide color and seasonal interest. Vines were allowed to grow on masonry walls, cloaking homes in a green mantle. As fashions have changed, houses in the neighborhood have acquired foundation plantings in mulched beds, often containing an elaborate mix of shrubs and perennials.

To differentiate College buildings from residential neighbors while preserving a sense of visual and historical continuity, a return to a simplified front yard aesthetic is recommended along public rights-of-way:
• Replace shrub beds around campus buildings with lawn and low-maintenance groundcovers such as low-growing shrubs and spreading vines.
• Plant a single or double row of grand shade trees along public sidewalks on campus property.
• Use small trees and shrubs as specimens, placing them sparingly around buildings.
• Use low, decorative fences and/or low hedges along public sidewalks to discourage foot traffic through lawns where excessive use is a problem.
• Plant vines around foundations and allow them to climb masonry structures.

In a few areas, the transition between the campus and private residences is more abrupt. Screening may be of benefit to both the College and neighbors to maintain a sense of privacy. Candidates for screening include places where private homes back onto a campus parking lot, where equipment is stored, and where a residence hall abuts a neighboring lot without open space or streets in between.

In such instances, the plan recommends the following:
• Use a mix of evergreen and dense-growing deciduous trees and shrubs to screen yard edges.
• Screening may be completely opaque, where conflicts between uses are greatest, or filtered, where outstanding views would be compromised or a secondary form of separation (such as a grade change) exists.

**Gateways**

Gateways define pedestrian and vehicular entrances to the campus, assisting with wayfinding and orientation and marking the transition from the public to the private realm. Striking gateways into Champlain College’s campus already exist in the architectural portals providing entry to the Academic Quad and Rozendaal Courtyard. McDonald Hall’s brick and sandstone arches, the lantern-like belvedere feature repeated as a light-
ing element at the south end of IDX Student Life Complex, and Jensen Hall’s dramatic lighthouse-turret all evoke a sense of welcome and arrival, and could serve as inspiration for additional gateway elements that could occur within the landscape or as part of new buildings.

The structural gateways described above can be used as part of a landscape sequence designed to convey the experience of arrival. In this section, the College’s Main Street gateway is used as an example to show how transitions into the campus could be enhanced through the navigation of specially designed landscape spaces.

The Main Street gateway is located at one of several campus entrances. It currently consists of a marble sign oriented toward Maple and South Willard streets and located several feet inboard of the public way. The sign is fairly unobtrusive, due to its low height, dark color, and deep setback from the sidewalk. It renders unusable a nicely proportioned area of lawn adjacent to Skiff Hall. A renovation of the Main Street gateway would replace the sign with a series of welcoming entrance spaces intended for human occupation, reaching out into the public realm through the following improvements:

• Construct an open pavilion of brick and sandstone adjacent to South Willard Street. Emblazon it with the College’s name and place benches under its roof. The pavilion will serve multiple purposes as sign, landmark, and gathering space.
• Construct a lighted, open air structure within view of the pavilion and the road, at the northern terminus of the West Campus Walk.
• Create a paved path from the brick pavilion out to the corner of Main and South Willard Streets. Use the campus paving pattern for major courtyards as described in the Pedestrian Movement section.
• Connect the brick pavilion to the lighted pavilion with a brick and granite walkway.
• Replace the asphalt sidewalk along Maple Street with concrete.
• Use the neighborhood’s standard lighting fixture along the public right-of-way. Use the campus’ fixture along interior paths.
• Plant a hedge at the top of the hill overlooking Edmunds School, to screen the playground while maintaining views of Lake Champlain.

Architectural elements provide gateways into the campus.
While the Main Street gateway’s prominent location at a busy intersection earns it an elaborate gateway treatment, many smaller gateways to the campus will also need to be designed. These may employ more modest gateway gestures, such as decorative paving, a structural element, or iconic entry signs, singly or in combination. The following principles should be applied to all gateways, whether big or small:

- Extend gateways to the edge of the public realm.
- Incorporate signage and landmarks to facilitate wayfinding. Signs should include the College’s name and should also use maps or diagrams to orient pedestrians to their location within the campus.
- Use light for emphasis and to increase nighttime visibility and safety.
Maintain a Healthy Urban Landscape.

Over the last several hundred years, the landscape now occupied by Champlain College has evolved from an open landscape to a residential neighborhood to a college campus. Natural and man-made factors have both had a major role in the evolution of the landscape. The division of the land into blocks and parcels, the development of streets, buildings, and driveways, and the planting of street trees and broad lawns are all significant man-made efforts. The spread of Dutch Elm disease which was introduced into New England from Europe in 1928, as well as the ice storm of 1999, radically changed the appearance of the Hill neighborhood by killing many mature trees.

The campus trees form an important piece of Burlington’s urban forest, providing critical species diversity and canopy continuity. It is important to maintain and supplement the College’s canopy as a component of the larger urban forest. As the College continues to grow and mature, the health of the landscape can be managed to improve its vigor and to additionally strengthen the campus’ physical identity and sense of fit within the larger neighborhood and city.

Ensuring that mature trees continue to characterize the campus and neighborhood is critical.

In looking at the Hill neighborhood, one is struck by the extent of the mature tree canopy. In recent years, however, trees have undergone stress from both natural and man-made factors, and the canopy must be managed to maintain its health and vigor. Within the campus, broad lawns and generous tree belts along the sidewalks provide a good growing environment for trees. Within the campus core, however, the environment is harsher, and requires additional steps to improve the environment for trees. At the core, where construction and human activity have compacted the soils and altered water runoff and recharge patterns, intervention into the landscape, particularly with respect to soil conditioning, is needed to ensure tree retention during construction and to ameliorate the harsh growing conditions that recent transplants have experienced.

Perhaps due to the difficult growing conditions encountered on the College’s grounds, a number of recent plantings include species that are easy to find in the landscape trade, reasonably priced, and tough as nails. Unfortunately, some of these plants are also recognized as invasive non-native species and are no longer recommended for planting in the northeast. Although inconvenient, because a number of landscape stalwarts have been eliminated from the available planting palette, there is no question that certain invasive
non-natives are harmful to the environment in the long run and should be removed from the College’s grounds.

This section will explore the challenges and opportunities facing Champlain College’s landscape and will culminate in recommended priorities for landscape improvement.

**Tree Inventory**

A tree inventory is used to catalogue a tree collection, and includes, at a minimum, a description of each tree’s age, size, location, condition, maintenance schedule, disease and pest history, and growing conditions. Aside from providing an overview of the campus’ landscape assets, a tree inventory can help with the planning of routine and event-related maintenance activities, aid with the establishment of an age-balanced campus forest, and assist with budgeting for tree planting and maintenance.

A tree inventory could be performed by a hired consultant, by students, by the physical plant staff, or by some combination of the above. In any case, a member of the physical plant staff would need to be involved in the inventory’s design and upkeep. Many tree inventory software packages are available to help organize the information collected, ranging from GIS-based computer mapping systems to simpler databases keyed to a paper map. Depending upon the resources allocated to the task, hiring a certified arborist to perform and maintain the inventory may be the simplest path to take. Alternatively, a member of the physical plant’s staff could perform the survey, perhaps with the help of students. Given the size of Champlain College’s forest, the College could consider electing a member of the physical plant staff for training as a certified arborist.

The Mobile Community Tree Inventory (MCTI) system is a free tree inventory software program available through the USDA Forest Service. It can be downloaded at no cost from the following website: http://www.umass.edu/urbantree/mcti/. MCTI requires no additional software to run and uses paper maps, computer desktop software, and handheld PDAs to build a database. Currently, Vermont’s Urban and Community Forestry (UCF) Program offers an overview of the MCTI system, as part of their Stewardship of the Urban Landscape (S.O.U.L.) training program. The training takes place over 8 weeks and costs $50. It is offered through UVM Extension and is similar to a Master Gardener’s program, with a focus on community forests. The UCF Program also offers a free one-day training in MCTI about once a year, and can arrange a one-on-one session. If the campus were to undertake a tree inventory on its own, the MCTI system seems like a logical choice, based upon the ample availability of free and low-cost, local training.
and technical support. Furthermore, if the College can demonstrate a need for funding, resources may be available to help with a campus tree inventory through Vermont UCF’s “Trees for Local Communities” cost-share grant, which awards funds based on a 50/50 match. Regardless of whether the inventory is performed by an outside professional or campus staff, there is clearly an educational component to the work, and students could be recruited to help with both the initial tree survey and subsequent updates.

Vermont’s UCF Program also provides scholarships for arborist certification through the International Society of Arboriculture. A certified arborist on staff would help the campus to make more informed decisions regarding tree selection, planting, and maintenance, and could save the campus money over the long term by reducing consulting fees.

**Removal of Invasive Non-Native Species**

Invasive non-native species are plants that originated from someplace outside of a particular ecosystem and whose ability to spread rampantly is likely to harm the environment and/or the economy. Many non-native plants are in common use in the northeastern United States, and most of them pose no threat to native plant communities. A few, however, have been found to be quite aggressive and overwhelm native ecosystems, replacing indigenous species and altering fundamental ecological processes. These plants share in common an ability to send their seeds far from the parent plant, enabling their offspring to quickly colonize a wide area. Federal and State environmental agencies recognize the threat posed by rapidly spreading non-native plants and recommend their avoidance and removal. For the worst offenders, quarantines are imposed.

The Vermont Agency of Agriculture, Food and Markets passed the Noxious Weed Quarantine Rule in 2002. The rule has the force of law and regulates the importation, movement, sale, possession, cultivation and/or distribution of 32 invasive plants. Plants on the Noxious Weeds List are quarantined in Vermont, and their movement, sale and distribution are prohibited. Appearing on the State’s list of Class B Noxious Weeds (plants that occur in Vermont and pose a serious threat to the state) are several species which may occur on the Champlain College campus. These include*:

* _Aegopodium podagraria_, Goutweed
* _Ailanthus altissima_, Tree-of-Heaven
* _Alliaria petiolata_, Garlic Mustard

Celastrus orbiculatus, Oriental Bittersweet
Fallopia japonica, Japanese Knotweed
Lonicera tatarica, L. morrowi, L. x bella, and L. mackii, Honeysuckle (four species)
Lonicera japonica, Japanese honeysuckle
Rhamnus cathartica and R. frangula, Buckthorn (two species)

Japanese Knotweed occurs on campus as a foundation planting along Whiting Hall and Cushing Hall and as a mass planting in Perry Lawn. Invasive plants should be avoided and/or removed.

In addition, the Vermont Invasive Exotic Plant Committee has compiled a watch list for potentially invasive species in Vermont, which has no regulatory force. Inclusion on the list is based, in part, on the species’ behavior in other northeastern states. Species on the Watch List that may occur on campus include*:

Acer ginnala, Amur Maple
Acer platanoides, Norway Maple
Alnus glutinosa, European Black Alder
Amorpha fruticosa, False Indigo
Ampelopsis brevipedunculata, Porcelainberry
Anthriscus sylvestris, Wild Chervil
Berberis thunbergii, Japanese Barberry
Berberis vulgaris, Common Barberry
Centaurea maculosa, Spotted Knapweed
Elaeagnus angustifolia, Russian Olive
Elaeagnus umbellate, Autumn Olive

Some invasive and potentially invasive plants have become wildly popular as landscape plants because their ruggedness and high success rate have made them “sure bets.” These include Norway Maple, Japanese Barberry, and Winged Euonymous, many of which have been planted on campus.

* For the complete Watch List, refer to the website: http://www.uvm.edu/mastergardener/invasives/watchlist.htm
Other species, such as the Buckthorns, Honeysuckles, Porcelainberry, and Oriental Bittersweet are more likely to be found in the untended edges of the campus, i.e. in the wooded fringes of Perry Lawn. These species should be located and eradicated. The control of invasive non-native plants can be challenging, however, because the characteristics that make them invasive are precisely those that help them to spread and survive. Since reproductive mechanisms vary from species to species, there is no one method that will control all invasives. Good sources for species-specific information regarding the control of invasives are the web-published PDF Vermont Invasive Exotic Fact Sheet Series (http://www.uvm.edu/mastergardener/invasives/invasives.htm) and the publication Invasive Plants: Weeds of the Global Garden, John M. Randall and Janet Martinelli, eds., published by the Brooklyn Botanic Garden in 1996 (ISBN: 0-945352-95-6).

It is recommended that the campus establish a policy of not planting species that occur on the Noxious Weeds List and Watch List, in addition to any cultivars and subspecies of those plants. Intentionally planted invasive plants should be replaced with non-invasive alternatives when they succumb or as landscaping is reconfigured. Invasive plants that occur spontaneously on campus should be eradicated and the campus should be monitored for their unintended reappearance.

**Trees and the Urban Campus**

The urban campus presents a unique set of challenges for establishing and maintaining a vibrant landscape. A host of invisible factors such as soil compaction, underground utility corridors and urban fills shape Champlain College’s grounds in more ways than meet the eye. Operating beneath the campus’ surface, these hallmarks of a rapidly developing campus can impact the health of existing trees and affect the ability of new transplants to survive. This section prescribes some antidotes to some of the urban stresses faced at Champlain College - protecting trees during construction, remediation of compacted soils, and giving new transplants a fighting chance in adverse soil conditions.

**Protecting Trees During Construction**

Generally speaking, a tree’s root system is shallow, wide and horizontally oriented. Although commonly understood to occupy the area beneath the canopy of the tree, in fact, a tree’s roots extend beyond the dripline and can extend to two to ten times the area under the canopy. Most of a tree’s roots lie within the top three feet of the soil and the roots that are most critical in providing the tree with water and nutrients are within the top foot. Therefore, even a shallow excavation, such as that required to strip the surface of duff or prepare a subbase for paving, can cause significant harm to the health of a tree.

Root growth patterns vary widely from tree to tree and can be hard to anticipate. Sometimes root distribution is profoundly asymmetrical, with the majority of the tree’s roots occurring on one side of the tree. In other cases, large roots can be found below the first three feet of soil, or at a considerable distance from the tree. On a previously developed
site, such as the Champlain College campus, underground obstructions and variable soil conditions make it particularly difficult to predict where root growth will occur.

These two basic facts of root growth – that they are shallow and asymmetrically distributed - make it impossible to avoid impacting trees during construction. It is possible, however, to reduce inevitable impacts by requiring that contractors follow responsible construction practices, some of which are described below.

Prior to construction, a certified arborist should be consulted to help prepare and implement a tree protection plan. Trees to be preserved will need to be identified based on their location, significance and likelihood of survival. By virtue of their age, species, structure, and vigor, some trees will be unlikely to survive the stresses associated with construction and these should be taken down.

To invigorate the affected trees and increase their chances for survival, treatments may be applied that will promote new growth, and help the trees to compartmentalize their wounds. These include irrigation, fertilization, pest control, and pruning. Treatments should be applied as early as possible to mature trees, since they take time to respond. The specific application of treatments will vary from tree to tree depending upon factors such as condition, history of care, and potential to respond to treatment.

The best way to protect trees during construction is to fence an area around them with chain link and allow no construction activity within that area, including such activities as dumping, materials storage, fires, parking, utilities & irrigation line placement, and grading. Ideally, the entire root area and crown would be protected, but the unpredictability of root growth makes this approach impractical, particularly in a densely developed campus setting. The most common practice is to protect an area within the canopy for broad canopied trees and up to 1.5 times the canopy for narrow canopied trees. A better approach uses the tree's trunk diameter, age, vigor, and species tolerance of construction impacts to calculate an optimal protection zone. This method takes into account the factors that make a tree more or less susceptible to impacts and is more precisely tailored to each tree than the first. As a worst case option, in the tightest of situations, a minimum of 6’ around the tree should be protected.
During construction:

• Where grading must occur within the tree protection zone, make an effort to match surrounding grades to the base trunk elevation – if necessary, use retaining walls to reduce cuts and fills within the tree protection area. If it is not possible to retain an adequate tree protection area, cut the tree and plant a new one.

• Where paving must occur within the root protection zone, use the thinnest possible paving section, locate heavy-load areas away from the tree, and construct the pavement on top of the natural grade to avoid cutting roots. Add extra reinforcement to the paving material to allow the elimination of a compacted subbase. Place a layer of geotextile fabric between the pavement sub-base and the existing grade. Smooth and compact the surface by hand, where possible, to avoid excessive impacts.

• Where structures must be placed near trees, custom footings that bridge over tree roots may be designed by an engineer. Alternatively, the structure can be cantilevered outward from the footing, or piers with a raised foundation can be used. Place the structure to allow for the tree’s growth in trunk diameter and canopy size.

• Where utilities must encroach on the tree root protection zone, place multiple services within one trench, where possible. Shore the walls of deep trenches to reduce their width. Tunneling under tree roots for services such as electric, gas, telephone, cable TV, and service drops for water and sewer, can reduce damage. An arborist can help to determine when and how to use tunneling.

• Where excavation must occur within the root protection zone, prune roots cleanly to avoid the pulling and tearing caused by excavation equipment.

• Where heavy equipment must travel within the root protection zone, apply a 6” mulch of wood chips or a 4” mulch of ¾ inch crushed gravel on the surface of the soil. A layer of geotextile fabric may be placed under the mulch to facilitate its removal after construction has been completed. Mulching has been proven effective in reducing soil compaction.

It is important to avoid placing soil against the trunk of the tree. Soils against the trunk will affect gas exchange and lead to disease and decay in the root crown and buttress roots. The effects may not appear for many years after construction, when the tree will suffer from structural failure. In addition, allow no irrigation within 5’ of the trunks of protected trees.

After construction, treatments such as irrigation, pruning, applying a 4”-6” layer of organic mulch around trees, pest management, and fertilization will benefit stressed trees. Trees that have died should be removed, and fill soils placed under driplines should be removed, where possible.
Remediation of Compacted Soils

One of the primary landscape management issues at Champlain College is the problem of compacted soil. Soil compaction is the reduction of pore space in the soil. The removal of pore space reduces the movement of air and water through the soil, thereby affecting root growth. Soil compaction is the main factor limiting plant growth in urban soils, and is brought about by construction activity, foot traffic, and the impact of falling water in the form of rain or irrigation. On the Champlain College campus, the compaction resulting from extensive construction is compounded by continuous foot traffic in unpaved areas, as students seek the shortest route between destinations and recreate in lawn areas.

Compaction can be avoided or reduced by taking a few simple measures. To avoid compaction during construction, fence off areas to be protected with chain link, or any other kind of fence that will deter trucks and heavy machinery. To reduce foot traffic in lawn areas, provide paved walkways along desire lines. Mulch with a 3” to 4” layer of wood chips over unpaved areas that continue to receive unintended foot traffic. Despite these measures, some soils will inevitably be compacted during construction and students will continue to recreate and study in lawn areas, as is expected. Remediation measures may then be used to improve the porosity of compacted soils.

Compacted soils may be remediated in several ways. Subsoiling, injecting air into the soil, and vertical mulching are methods that are currently advocated, but that are not recommended for Champlain College. Adding a layer of topsoil over compacted soils, mixing in sand, or adding gypsum are not recommended because they could harm soil quality and impede plant growth. Another method, removing soil from trenches arranged radially from the trunk of the tree and replacing the soil with porous soil material, has been demonstrated effective and may be worthwhile in cases of severe soil depletion. Perhaps the most effective and simplest remediation method, however, involves applying a layer of organic compost to the soil.

Applying compost to turf areas has many benefits. It adds organic material and bulk to the soil. It helps to suppress plant pests and diseases. It restores soil structure and increases porosity, reversing the effects of compaction. It also improves stormwater retention, having been shown in studies to reduce surface runoff by 29%-50%. One of compost’s best qualities is that using it as an alternative to conventional turf management
techniques reduces the use of water, fertilizers, and pesticides, potentially resulting in lower costs.

In open lawn areas where tree roots and shallow utilities aren’t an issue, compost can be tilled directly into the soil. In spring or fall, the ideal times for lawn installation, the existing lawn is sprayed with a non-selective herbicide, left alone for two weeks, and then cut with a sod trimmer and removed from the site. The soil is then tilled up to a depth of eight inches, and a layer of custom-blended plant-based compost or manure-based compost is incorporated. As a general rule, a 2 to 1 ratio of existing soil to compost should be used to determine the correct application rate. This works out to a depth of about three to four inches over the lawn. After incorporation, a new lawn is established by seeding or laying sod. Another method involves tilling the existing lawn into the soil, waiting several months for the grass to decompose, and then incorporating compost and establishing a new lawn. Because the second method involves a longer period during which the soil is exposed, the first is recommended for Champlain College.

A soil scientist should be consulted to test the soils on the campus in order to determine their bulk density and nutrient requirements. These tests can help the College to determine which lawns require renovation. The soil scientist can develop a custom compost blend suited to each area’s needs and recommend specific application methods and rates.

**Planting Trees**

Trees have five basic requirements for survival: an adequate amount of good soil, sufficient moisture, proper drainage, proper aeration of the soil, and a supply of nutrients. In compacted urban soils, and in tree wells, both of which can be found on the Champlain College campus, conditions are unfavorable for root growth. Selecting tree species that can survive urban stressors such as fluctuations in water availability, excessive heat, and pollution, is an important consideration in establishing the campus forest, but also important is the attention given to tailoring the method of planting to the conditions at hand.

Trees planted in compacted soils require larger, deeper pits filled with special soil mixes. Where surrounding soils are more compacted than soils in tree pit, water will collect in the tree pit, drowning the tree during the dormant period, because it is not able to drain through the surrounding soils. Conversely, in drought situations, the compacted soils will draw water from the pit, causing the tree to wilt. The right backfill mixture will help to alleviate this problem, when used in conjunction with underdrains, which will prevent flooding. The backfill mixture should be engineered by a soil scientist to work with the hydrologic limitations of the site. Where possible, multiple trees can be placed in linear planting pits, backfilled entirely with a special planting mixture and outfitted with an underdrain. When it is not possible to excavate large areas, for example, due to the presence of underground infrastructure, a self-draining specified soil mixture may be placed in a
berm above the compacted soils with drainage tiles laid over the original soil surface. The trees may then be planted directly into the berm.

Trees require a minimum soil depth of 30 to 42 inches. Consequently, trees planted over construction fill would need approximately 3 feet of decent soil in which to become established. Ideally, this would be placed on top of the construction fill in a uniform layer over as large an area as possible, but under limited circumstances, link tree pits with a continuous band of soil 3’ deep. Similarly, in areas where trees are planted in wells and covered by impervious surface, structural soil can be used under the pavement to connect tree wells with continuous bands of growing space.

**Stormwater Management**

Champlain College is part of an urban watershed that drains into Lake Champlain. Runoff from impervious surfaces on the campus enters a municipal stormwater system operated by the City of Burlington. The City’s main plant continues to operate a combined sewer outfall (CSO) into the lake, which is also the source of Burlington’s drinking water. With the construction of new buildings on Champlain College’s campus, the College’s contribution to the municipal system will grow. As a matter of good environmental stewardship, the College should seek ways to reduce its dependence on the municipal stormwater system, and explore alternative futures for the water that currently runs from its grasp. Dealing responsibly with stormwater is increasingly a matter of choice, as State permit requirements for stormwater discharge move closer to meeting stringent EPA mandates. The green roof constructed as part of the new Student Life Complex represents a positive step toward increasing the amount of stormwater that remains on site, closing an important loop in the hydrologic cycle, and pointing the way for future development.

A stormwater management plan is recommended in order to investigate ways in which the College can increase on-site treatment, infiltration, and storage of stormwater. Within this plan should be an analysis of the ways in which runoff from the campus is currently generated and conveyed, and recommended methods for reducing the amount of stormwater run-off leaving the campus, including on-site infiltration and biological treatment. A stormwater management study is currently underway.
Porous paving may be another option to improve storm water management on the campus. As the name implies, porous paving includes pores or openings that allow storm water and snowmelt to pass through it, improving infiltration, decreasing runoff, and providing filtering of some pollutants. Pervious paving is typically placed over a layer of gravel or crushed stone which acts as a storage reservoir for runoff. The use of porous paving is restricted to areas with relatively level grades and with soil and subsoil conditions that are suitable. In general, deep, well-drained soils are required, although soils should not be grossly permeable so as to allow untreated water to percolate into the ground water. Pervious paving is also not recommended within 20 feet of a building with a basement or in areas where water infiltration would pollute the groundwater (i.e., over toxic soils). In addition, maintenance is required to keep the pores open and functioning. Sand and cinders cannot be used in the winter time, as these materials would clog the paving openings, and vacuum sweeping at least four times per year followed by high pressure washing is recommended.

Pervious paving materials range broadly, from aggregates (i.e., crushed stone) to turf blocks, open jointed paving blocks to porous concrete and asphalt. In thinking about the applicability of pervious paving in our northern climate and in consideration of Champlain College’s hardscape areas, two possible approaches seem most applicable: open jointed paving blocks and pervious asphalt. Open jointed paving blocks along level pedestrian walkways and within courtyards can bear heavy traffic while also being highly permeable. Porous asphalt is another potential use at Champlain College for remaining surface parking areas. Some installations have suffered from clogging of pores/air space by the asphalt binder; however the use and technology of pervious materials, asphalt in particular, is undergoing ongoing research and experimentation and will likely improve through time. The specific application of pervious pavement materials for Champlain College should be considered on a project by project basis, as conditions warrant, and in consideration of the latest developments in this evolving field.

**Landscape Improvement Recommendations**

In response to the above considerations, the following landscape improvement priorities have been identified for Champlain College:

- **Focus the use of color inwardly to internal courtyards, starting with the Rozendaal Courtyard.** Rely on mixed perennial borders – use grasses and flowering shrubs for structure and avoid costly annuals. Use perennial beds to soften the edges around the main concrete courtyard.

- **Create simple lawns with grand trees in public-facing lawns.** Tree placement should be informal in residential areas, and more formal around the campus core. Remove decorative planting beds and clipped hedges.

- **Phase out clipped evergreen foundation plantings.** Use the architecture of the buildings to define intimate landscape spaces for smoking, reading, phone calls and socializing.
• **Collaborate with the City Arborist in the selection of grand trees for campus streetscapes.** The College may wish to consider assuming the cost of tree planting in the greenbelts to move up the planting timeframe and/or have more control of the species planted.

• **Create an inventory of existing trees.** Hire a consultant or work with Urban and Community Forestry to use the MCTI Program

• **Work toward creating a forest with an even balance of ages represented.** Identify life cycle gaps and plant trees to fill those niches, ensuring the continuous succession of canopy trees.

• **Phase out invasive non-native species.** Begin with plants that have self-seeded around the campus periphery. Work toward replacing all intentionally planted invasives with suitable alternatives.

• **Actively improve soil quality on campus grounds.** Engage a soil scientist to identify compacted areas and determine priorities for soil improvement. Explore using compost to increase soil porosity and encourage root growth.

• **Develop comprehensive specifications for tree protection during construction.** Work with an arborist to draw up fines and penalties for encroachment in tree protection areas. Designate a site representative to monitor construction activities.

• **Pursue training opportunities for grounds staff.** Enroll a staff member in S.O.U.L. training. Consider electing a staff member for certified arborist training or, at the least, cultivate a relationship with a professional certified arborist.

• **Use tree planting practices appropriate to conditions.** Create planting pits that respond to a tree’s basic needs. Provide as large a continuous growing area as possible.

• **Develop a stormwater master plan.** Take steps to reduce the campus’ contribution to the municipal stormwater system and increase on-site capture, treatment, and infiltration of stormwater run-off.
appendix

Recommended Planting Palette

Gingko
Kousa
Tulip
Red Oak
Lilies
Sedum Pennisetum Bergenia
Yellowwood
Salvia Grass Rudbeckia
<table>
<thead>
<tr>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>HEIGHT</th>
<th>SHAPE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Street Trees (Also Suitable for Broad Lawns)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CELTIS OCCIDENTALIS</td>
<td>Common Hackberry</td>
<td>60'</td>
<td>Vase</td>
<td>Summit Ave.</td>
</tr>
<tr>
<td>QUERCUS RUBRA</td>
<td>Northern Red Oak</td>
<td>60'</td>
<td>Round</td>
<td>Summit Ave.</td>
</tr>
<tr>
<td>ULMUS AMERICANA ‘NEW HARMONY’</td>
<td>New Harmony Elm</td>
<td>70'</td>
<td>Vase</td>
<td>South Willard St.</td>
</tr>
<tr>
<td>ULMUS AMERICANA ‘PRINCETON’</td>
<td>Princeton Elm</td>
<td>70'</td>
<td>Vase</td>
<td>South Willard St.</td>
</tr>
<tr>
<td>ULMUS AMERICANA ‘VALLEY FORGE’</td>
<td>Valley Forge Elm</td>
<td>70'</td>
<td>Vase</td>
<td>South Willard St.</td>
</tr>
<tr>
<td>ZELKOVA SERRATA ‘GREEN VASE’</td>
<td>Green Vase Zelkova</td>
<td>55'</td>
<td>Vase</td>
<td>Maple St.</td>
</tr>
<tr>
<td><strong>Grand Trees for Broad Lawns</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GINKGO BILOBA</td>
<td>Ginkgo</td>
<td>70'</td>
<td>Upright Oval</td>
<td>Use males</td>
</tr>
<tr>
<td>GYMNOCLADUS DIOICUS</td>
<td>Kentucky Coffeetree</td>
<td>70'</td>
<td>Irregular</td>
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</tr>
<tr>
<td>LIRIODENDRON TULIPIFERA</td>
<td>Tuliptree</td>
<td>75'</td>
<td>Upright Oval</td>
<td>Interesting leaves</td>
</tr>
<tr>
<td>QUERCUS ALBA</td>
<td>White Oak</td>
<td>75'</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td>QUERCUS MACROCARPA</td>
<td>Bur Oak</td>
<td>75'</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td><strong>Medium Trees for Constrained Lawns and Accent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACER X FREEMANI ‘AUTUMN BLAZE’</td>
<td>Freeman Maple</td>
<td>55'</td>
<td>Upright Narrow</td>
<td></td>
</tr>
<tr>
<td>AESCLULUS HIPPOCASTA- NUM</td>
<td>Horse Chestnut</td>
<td>55'</td>
<td>Upright Oval</td>
<td>Historic landscape tree</td>
</tr>
<tr>
<td>BETULA NIGRA ‘HERITAGE’</td>
<td>Heritage River Birch</td>
<td>55'</td>
<td>Upright Oval</td>
<td>Ornamental bark</td>
</tr>
<tr>
<td>CLADRASTIS KENTUEKA</td>
<td>Yellowwood</td>
<td>40'</td>
<td>Round</td>
<td>June flowers Attractive bark</td>
</tr>
<tr>
<td>PRUNUS SARGENTII</td>
<td>Sargent Cherry</td>
<td>30'</td>
<td>Upright Oval</td>
<td>May flowers Attractive bark</td>
</tr>
<tr>
<td>SOPHORA JAPONICA</td>
<td>Scholartree</td>
<td>40'</td>
<td>Round</td>
<td>August flowers</td>
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<tr>
<td><strong>Small Trees for Accent</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>AMELANCHIER X GRANDIFLORA</td>
<td>Apple Serviceberry</td>
<td>20’</td>
<td>Upright</td>
<td>Flowers early spring Attractive bark</td>
</tr>
<tr>
<td>CHIONANTHUS VIRGINICUS</td>
<td>Fringetree</td>
<td>13’</td>
<td>Upright Oval</td>
<td>June flowers</td>
</tr>
<tr>
<td>CORNUS KOUSA</td>
<td>Kousa Dogwood</td>
<td>20’</td>
<td>Upright Oval</td>
<td>June flowers Interesting fruit</td>
</tr>
<tr>
<td>HAMAMELIS VIRGINIANA</td>
<td>Common Witchhazel</td>
<td>13’</td>
<td>Vase</td>
<td>October flowers</td>
</tr>
<tr>
<td>MAGNOLIA STELLATA</td>
<td>Star Magnolia</td>
<td>13’</td>
<td>Upright Oval</td>
<td>May flowers</td>
</tr>
<tr>
<td>Shrubs for Accent and Screening</td>
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<td></td>
</tr>
<tr>
<td><strong>BUXUS SINICA VAR. INSULARIS</strong></td>
<td>Korean Boxwood</td>
<td>4-5’</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td><strong>CLETHRA ALNIFOLIA</strong></td>
<td>Summersweet</td>
<td>3-6’</td>
<td>Upright Oval</td>
<td></td>
</tr>
<tr>
<td><strong>CORNYMAS</strong></td>
<td>Corneliancherry</td>
<td>20-25’</td>
<td>Oval Rounded</td>
<td></td>
</tr>
<tr>
<td><strong>CORNYSERICEA</strong></td>
<td>Redosier Dogwood</td>
<td>5-8’</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td><strong>COTONEASTER HORIZONTALIS</strong></td>
<td>Rock Spray Coto-</td>
<td>2-3’</td>
<td>Spreading</td>
<td></td>
</tr>
<tr>
<td></td>
<td>neaster</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ENKIANTHUS CAMPANULATUS</strong></td>
<td>Redvein Enkianthus</td>
<td>6-10’</td>
<td>Upright Oval</td>
<td></td>
</tr>
<tr>
<td><strong>FORSYTHIA ‘NORTHERN SUN’</strong></td>
<td>Northern Sun For-</td>
<td>8-10’</td>
<td>Arching</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sythia</td>
<td></td>
<td>Yellow flowers in April</td>
<td></td>
</tr>
<tr>
<td><strong>FOTHERGILLA GARDENII</strong></td>
<td>Dwarf Fothergilla</td>
<td>3-4’</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td><strong>FOTHERGILLA MAJOR</strong></td>
<td>Large Fothergilla</td>
<td>7-9’</td>
<td>Upright</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Oval</td>
<td></td>
</tr>
<tr>
<td><strong>ILEX VERTICILLATA</strong></td>
<td>Winterberry</td>
<td>6-10’</td>
<td>Oval</td>
<td></td>
</tr>
<tr>
<td><strong>KALMIA LATIFOLIA</strong></td>
<td>Mountain Laurel</td>
<td>6-8’</td>
<td>Oval to Round</td>
<td></td>
</tr>
<tr>
<td><strong>KERRIA JAPONICA</strong></td>
<td>Japanese Kerria</td>
<td>4-5’</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td><strong>LEUCOTHOE FONTANESIANA</strong></td>
<td>Drooping Leucothoe</td>
<td>2-3’</td>
<td>Oval</td>
<td></td>
</tr>
<tr>
<td><strong>PHILADELPHUS CORONARIUS</strong></td>
<td>Sweet Mockorange</td>
<td>8-10’</td>
<td>Vase</td>
<td></td>
</tr>
<tr>
<td><strong>PHYSOCARPUS OPULIFOLIUS ‘NANUS’</strong></td>
<td>Dwarf Ninebark</td>
<td>5-6’</td>
<td>Oval</td>
<td></td>
</tr>
<tr>
<td><strong>PIERIS FLORIBUNDA</strong></td>
<td>Mountain Andromeda</td>
<td>4-5’</td>
<td>Oval</td>
<td></td>
</tr>
<tr>
<td><strong>RHODODENDRON ‘BOULE DE NIEGE’</strong></td>
<td>Boule de Niege</td>
<td>5’</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td><strong>RHODODENDRON ‘ROSEUM ELEGANS’</strong></td>
<td>Roseum Elegans</td>
<td>6-8’</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td><strong>RHODODENDRON ‘ROSY LIGHTS’</strong></td>
<td>Rosy Lights Azalea</td>
<td>6-7’</td>
<td>Upright</td>
<td></td>
</tr>
<tr>
<td><strong>SPIRAEA X BUMALDA</strong></td>
<td>Bumald Spirea</td>
<td>3-4’</td>
<td>Round</td>
<td></td>
</tr>
<tr>
<td><strong>SPIRAEA NIPONICA ‘SNOWMOUND’</strong></td>
<td>Snowmound Spirea</td>
<td>6’</td>
<td>Upright Oval</td>
<td></td>
</tr>
<tr>
<td><strong>SYRINGA LACINATA</strong></td>
<td>Cutleaf Lilac</td>
<td>5-6’</td>
<td>Upright Oval</td>
<td></td>
</tr>
<tr>
<td><strong>SYRINGA MEYERI ‘PALBIN’</strong></td>
<td>Korean Lilac</td>
<td>4-6’</td>
<td>Round</td>
<td></td>
</tr>
</tbody>
</table>

*Hedge Specimen
*Late Summer Flowers
*Screen May flowers
*Red stems
*Red fruit in fall
*Red fall color
*Yellow flowers in April
*May flowers
*Good fall color
*Red berries in winter
*Evergreen screen
*May flowers
*Evergreen facer or bank cover
*White flowers May-June
*Hedge
*Evergreen Spring flowers
*Evergreen screen May flowers
*Deciduous May flowers
*June flowers
*Early spring flowers
*May flowers
*Late May flowers
### Woody Groundcovers

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Height</th>
<th>Shape</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donald Wyman Lilac</td>
<td>Syringa x Prestoniae 'Donald Wyman'</td>
<td>8-10'</td>
<td>Upright</td>
<td>Screening Hedge</td>
</tr>
<tr>
<td>Common Lilac</td>
<td>Syringa vulgaris</td>
<td>12-15'</td>
<td>Upright</td>
<td>Screen May flowers</td>
</tr>
<tr>
<td>Dense Spreading Yew</td>
<td>Taxus x media densiflorus</td>
<td>3-5’</td>
<td>Spreading</td>
<td>Evergreen Hedge</td>
</tr>
<tr>
<td>Hatfield Yew</td>
<td>Taxus x media ‘Hattefieldii’</td>
<td>12’</td>
<td>Broadly Upright</td>
<td>Evergreen screen</td>
</tr>
<tr>
<td>Dark American Arborvitae</td>
<td>Thuja occidentalis ‘Nigra’</td>
<td>10-30’</td>
<td>Upright</td>
<td>Evergreen screen</td>
</tr>
<tr>
<td>Koreanspice Viburnum</td>
<td>Viburnum carlesii</td>
<td>6-8’</td>
<td>Upright</td>
<td>May flowers</td>
</tr>
<tr>
<td>Allegheny Viburnum</td>
<td>Viburnum x rhytidophyloides ‘Allegheny’</td>
<td>8-10’</td>
<td>Upright</td>
<td>Flowers and fruit</td>
</tr>
<tr>
<td>Siebold Viburnum</td>
<td>Viburnum sieboldii</td>
<td>15-20'</td>
<td>Rounded</td>
<td>May flowers</td>
</tr>
<tr>
<td>Old-fashioned Weigela</td>
<td>Weigela florida</td>
<td>5-7'</td>
<td>Rounded</td>
<td>Early spring flowers</td>
</tr>
<tr>
<td>Greeen Sargent Juniper</td>
<td>Juniperus chinensis ‘Sargentii’</td>
<td>2'</td>
<td>Spreading</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Compact Andorra Juniper</td>
<td>Juniperus horizontalis ‘plumosa compacta’</td>
<td>2'</td>
<td>Spreading</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Broadmoor Juniper</td>
<td>Juniperus sabina ‘broadmoor’</td>
<td>2'</td>
<td>Spreading</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Russian Cypress</td>
<td>Microbiota decussata</td>
<td>1-2’</td>
<td>Spreading</td>
<td>Evergreen</td>
</tr>
<tr>
<td>Wintercreeper</td>
<td>Euonymous fortunei</td>
<td>1’</td>
<td>Spreading</td>
<td>Can climb</td>
</tr>
<tr>
<td>Japanese Pachysandra</td>
<td>Pachysandra terminalis</td>
<td>6-10”</td>
<td>Spreading</td>
<td>Evergreen Glossy Leaves</td>
</tr>
<tr>
<td>Cutleaf Stephanandra</td>
<td>Stephanandra incisa ‘crispa’</td>
<td>2-3’</td>
<td>Spreading</td>
<td>Deciduous Roots along stems</td>
</tr>
<tr>
<td>Vinca</td>
<td>Vinca minor</td>
<td>6”</td>
<td>Spreading</td>
<td>Evergreen</td>
</tr>
<tr>
<td>White Vinca</td>
<td>Vinca minor ‘alba’</td>
<td>6”</td>
<td>Spreading</td>
<td>Evergreen White flowers</td>
</tr>
</tbody>
</table>

### Perennials for Borders and Groundcover

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Height</th>
<th>Color</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yarrow</td>
<td>24”</td>
<td>Yellow</td>
<td>Massing Borders</td>
</tr>
<tr>
<td>Common Lady’s Mantle</td>
<td>12-18”</td>
<td>Chartreuse</td>
<td>Borders Groundcover</td>
</tr>
<tr>
<td>Ornamental Onion</td>
<td>35-50”</td>
<td>Purple</td>
<td>Bulb Borders</td>
</tr>
<tr>
<td>Dwarf Chinese Astilbe</td>
<td>12-24”</td>
<td>Pink</td>
<td>Mat forming</td>
</tr>
<tr>
<td>Saxifrage</td>
<td>18”</td>
<td>Pink</td>
<td>Front borders</td>
</tr>
<tr>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Height</td>
<td>Color</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------------------------------------------</td>
<td>--------</td>
<td>----------------</td>
</tr>
<tr>
<td>CALAMAGROSTIS X ACUTIFLORA ‘KARL FOERSTER’</td>
<td>Feather Reed Grass</td>
<td>4-6'</td>
<td>Tall grass</td>
</tr>
<tr>
<td>CERASTIUM TOMENTOSUM</td>
<td>Snow-in-Summer</td>
<td>3-6”</td>
<td>White</td>
</tr>
<tr>
<td>COREOPSIS VERTICILLATA ‘MOONBEAM’</td>
<td>Threadleaf Coreopsis</td>
<td>18-24”</td>
<td>Yellow</td>
</tr>
<tr>
<td>DENNSTAEDTIA PUNCTILOBULA</td>
<td>Hay Scented Fern</td>
<td>35”</td>
<td></td>
</tr>
<tr>
<td>ECHINACEA PURPUREA ‘MAGNUS’</td>
<td>Purple Coneflower</td>
<td>36”</td>
<td>Purple</td>
</tr>
<tr>
<td>ECHINOPS BANNATICUS ‘BLUE GLOBE’</td>
<td>Globe Thistle</td>
<td>48”</td>
<td>Blue</td>
</tr>
<tr>
<td>EUPATORIUM MACULATUM (PURPUREUM) ‘GATEWAY’</td>
<td>Joe-Pye-Weed</td>
<td>5’</td>
<td>Lilac</td>
</tr>
<tr>
<td>GALIUM ODORATUM</td>
<td>Sweet Woodruff</td>
<td>8”</td>
<td>White</td>
</tr>
<tr>
<td>GAILLARDIA ARISTATA ‘BIJOU’</td>
<td>Bijou Blanket Flower</td>
<td>10”</td>
<td>Yellow and red</td>
</tr>
<tr>
<td>GERANIUM SANGUINEUM</td>
<td>Bloody Cranesbill</td>
<td>15-18”</td>
<td>Magenta</td>
</tr>
<tr>
<td>HELICOTRICHON SEMPERVIVENS</td>
<td>Blue Oat Grass</td>
<td>18-24”</td>
<td>Blue foliage</td>
</tr>
<tr>
<td>HEMEROCALLIS SPP.</td>
<td>Repeat Blooming Daylilies</td>
<td>18-36”</td>
<td>White to red</td>
</tr>
<tr>
<td>HOSTA FORTUNEI ‘AUREOMARGINATA’</td>
<td>Gold Crown Plantain Lily</td>
<td>18-24”</td>
<td>Yellow margins</td>
</tr>
<tr>
<td>HOSTA PLANTAGINEA ‘ROYAL STANDARD’</td>
<td>Royal Sandand Plantain Lily</td>
<td>36”</td>
<td>White</td>
</tr>
<tr>
<td>IRIS SIBERICA</td>
<td>Siberian Iris</td>
<td>24”-36”</td>
<td>Purple</td>
</tr>
<tr>
<td>LIATRIS SPICATA ‘FLODISTAN VIOLET’</td>
<td>Gayfeather</td>
<td>24”-30”</td>
<td>Pink-purple</td>
</tr>
<tr>
<td>LIRIOPE SPICATA</td>
<td>Creeping Liriope</td>
<td>12”</td>
<td>Grasslike</td>
</tr>
<tr>
<td>MACLEAYA CORDATA</td>
<td>Plume Poppy</td>
<td>5’-8’</td>
<td>Light pink</td>
</tr>
<tr>
<td>MATTEUCCIA STRUTHIOPHYSUS</td>
<td>Ostrich Fern</td>
<td>4’</td>
<td></td>
</tr>
<tr>
<td>NEPETA X FAASENII ‘SIX HILLS GIANT’</td>
<td>Persian Catmint</td>
<td>24”</td>
<td>Dark purple</td>
</tr>
<tr>
<td>OSMUNDA CINNAMOMEA</td>
<td>Cinnamon Fern</td>
<td>2-3’</td>
<td></td>
</tr>
<tr>
<td>PANICUM VIRGATUM ‘HAENSE HERMS’</td>
<td>Red Switch Grass</td>
<td>36-48”</td>
<td>Red in fall</td>
</tr>
<tr>
<td>PEROVSKIA ATRIPLICIFOLIA</td>
<td>Russian Sage</td>
<td>36-48”</td>
<td>Light purple</td>
</tr>
</tbody>
</table>
### Plant Selections

<table>
<thead>
<tr>
<th>Plant Name</th>
<th>Common Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLYSTICHUM ACROSTICHOIDES</td>
<td>Christmas Fern</td>
<td>18” Clump Naturalizing</td>
</tr>
<tr>
<td>RUDBECKIA FULGIDA ‘GOLDSTURM’</td>
<td>Black-Eyed Susan</td>
<td>24” Gold Massing Borders</td>
</tr>
<tr>
<td>SALVIA X SYLVESTRIS ‘MAY NIGHT’ (MAINAечT)</td>
<td>Victoria Sage</td>
<td>24” Violet-blue Massing Borders</td>
</tr>
<tr>
<td>SEDUM X TELEPHIUM ‘AU-TUMN JOY’</td>
<td>Sedum</td>
<td>18-24” Pink Massing Borders</td>
</tr>
<tr>
<td>TRADESCANTIA VIRGINIANA X ANDERSONIANA ‘CONCORD GRAPE’</td>
<td>Spiderwort</td>
<td>18” Light purple Massing Borders</td>
</tr>
<tr>
<td>YUCCA FILAMENTOSA</td>
<td>Yucca</td>
<td>30” with 6’ spikes White Accent</td>
</tr>
</tbody>
</table>

### Sources:


