Learning Center at Fishburn Forest
Concept Design

Virginia Tech, Blacksburg, VA

Prepared for the College of Natural Resources
with guidance from the Department of Forest Resources and Environmental Conservation
at Virginia Tech

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Learning Center at Fishburn Forest Concept Design

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The Fishburn property is a site of about 1,400 acres located about 6 miles west of the Virginia Tech Blacksburg campus. It was donated to Virginia Tech by Junius B. Fishburn, former president of the Southwest Virginia Trust Co. and former owner of the Roanoke Times. Approximately 1,350 acres is owned by Virginia Tech and the remaining 53 acres by the Virginia Tech Foundation. The Department of Forest Resources and Environmental Conservation (Dept of FREC) manages the property and uses it as a living lab for a variety of classes that require field work.

The Department of FREC would like to build a learning center that could serve a variety of uses including supporting the educational activities of the Department; renting the facility to other groups for meetings, conferences, weddings, and community functions; and opening the site more formally to the public. Two possible locations for the facility were selected by FREC representatives for consideration.

Preliminary programing elements for the building include a meeting hall for approximately 50 people, a kitchen, restrooms, offices, and a caretaker’s facility.
The Fishburn project began with an initial site visit to the property, guided by Dr. Mike Aust, Forestry Professor. During that visit, Dr. Aust shared some of the site’s past and more contemporary history with the CDAC design team. Two potential locations were identified for the learning center’s concept design. Qualities of each site were discussed with Dr. Aust as well as current uses by the College of Natural Resources and the university at large. The CDAC team photographed each site and conducted an inventory and analysis. Additional visits to the site were made to gather and confirm site analysis information.

After completing inventory and analysis for each site, the CDAC team prepared four preliminary design ideas for the learning center - two for each site. These design ideas were presented to faculty, staff, and administration in the College of Natural Resources and the Environment (CNRE). Additionally, a short survey was prepared. This survey along with 11x17 drawings of the design ideas were distributed to faculty for review and comment.

Based on comments received from faculty and staff as well as guidance from Dr. Janaki Alavapati, the CDAC team narrowed the design focus to what was termed “Site 2” and developed two conceptual design options for that site. Conceptual designs were presented to Joshua Galloway (Community Housing Partners) and Mark McConel (Summit Studio), architects on the CDAC Design Review Panel. Refinements were made based on their feedback. The designs were presented in November 2013 to the client group. Slight revisions were made based on comments from this presentation and one final conceptual design for the structure and caretaker’s residence and one final site master plan were prepared for the learning center.

This short supporting report was prepared to document the design process and describe the design concepts prepared by the Community Design Assistance Center.
The Fishburn Forest property is a stunning property with a diversity of desirable natural attributes and layers of history that include the site of a Shawnee Indian and early settler confrontation, the grave of a confederate soldier, the first road and railroad in the area, and 29 deep coal bed mines which were active on site until the 1930s.

The site’s vehicular entry sequence is a rugged, one-way gravel road that will need to be carefully considered and strategically enhanced if a broader group of the public is welcomed to the site for the learning center. Two additional issues that need to be kept in mind throughout the design and implementation process are property security and the potential for fire. Currently there are some problems with unauthorized hunting and ATV usage. Future vandalism is a concern as well. Likewise, fire is a serious issue on site. The last fire was in 2011 and 200 acres burned. Controlled burns also occur in specific places on site for management and educational purposes. This will continue in the future, even if a structure should be sited in this area.

The CDAC team was charged with examining the potential for a learning center on the property. Two specific areas of study (see map, page 10) were presented to the CDAC team for consideration. Site 1 is a wooded area, located east of the electric station. There are two potential ways to access Site 1 if the learning center is sited here. The first and most reliable option is via the existing gravel road, which would need improvement as well as an additional half-mile of new road construction. The second option would be to access the site via an adjacent new development’s road (Oil Well Road). An additional quarter to half-mile of road would need to be constructed to connect the site to Oil Well Road. This connect would need to bridge private property and would require an easement.

Site 1 has Berks and Wykert soils. Its bedrock is composed primarily of Clyod Mountain Conglomerate and Sandstone. The area is well vegetated with the predominate overstory vegetation of Table Mountain Pine. A healthy blueberry understory is
present, along with maple seedlings. There are many signs and remnants of the recent fire in the area. Particular awareness and specific precautions would need to be made for susceptibility to fire on Site 1. Structure roofing should be something that is fire resistant. A good fire system would need to be a part of the building and a fair amount of clearing would need to be done to create a fire break area around the proposed structure.

Site 2 is an open meadow with sweeping, panoramic views of the region. On a clear day, one can see Kelly’s Knob, Mountain Lake, and Buffalo Mountain – from Plateau to the Blue Ridge. This area was cleared in 1995 for the Wildlife Department to create a demonstration area for homeowners to show how to manage a field for wildlife. Examples of both a hard edge (defined tree line meeting grasses) and a soft edge (“jagged” tree line “edge” that left some snags) were created. The field is burned every two to three years (students are involved in the process) and this would continue if a structure was built here.

Site 2 is located essentially in the center of the Fishburn property. Because of its openness, it serves as an easily located meeting place on site for outdoor activities. It also used to house an aircraft beacon in the 1930s.

The soils for Site 2 are Clymer and are quite conducive to a potential drainfield. Water and power would be easy to bring to a building because of the site’s close proximity to the water tower and existing site electricity.

The CDAC team conducted site analyses for topography, hydrology, and spatial conditions for both Sites 1 and 2. Additionally, general macroclimate, wind, and solar analyses were considered for Site 2 (which was later identified as the site of choice to pursue refined designs for the learning center). Drawings and diagrams of these analyses can be found on the following pages.
Exposure
1. Sunlight, rain, and wind exposure
2. Possibility of erosion, issues of runoff during construction

Aesthetics
1. Best views
2. Foreground rolling meadow
3. Exposed treeline
4. Mountains in the distance (270-degree view in winter)

Proximity to Utilities
Road: Length: 3.88 miles (site already accessible by vehicle)
Water: 830’ from site
Electricity: 850’ from site

Other Benefits
Site is already cleared
SITE TWO INVENTORY

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Legend
- Foreground
- Middle ground
- Extent of View

Exposure
1. Protected from elements

Aesthetics
1. High forest canopy, filtered light
2. Low groundcover
3. Views extend approx. 100 yards
How important are aesthetics to classes?

Proximity to Utilities
Road Length: Unknown (not accessible by vehicle)
Water: 1800’ from site
Electricity: 1800’ from site
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MACRO CLIMATE ANALYSIS, SITE 2

Blacksburg, Virginia
Latitude: 37.22 N
Longitude: 80.42 W
Elevation: 2132’

The following climate analysis represents yearly weather data collected in Blacksburg Va, to be used as a general guide for the recommendation of various siting and building techniques. Site-specific climate data would help inform development recommendations for the Fishburn forest micro-climate, in the future.

Thermal Comfort Zones
Average monthly temperatures indicate that the facility will need to be heated for the majority of the year.

Daylight Hours
As expected, the highest average hours of daylight fall within the summer months, when the sun is at its highest angle, (76 degrees), and longest path across the sky. Values are still well below the global average, indicating possible cloudy conditions even in the summer months.

Although Blacksburg does not have the highest rating for solar collection, considering the long term ownership of the facility, solar panels could still be a viable option for the Fishburn complex.
Wind Direction
Wind rose charts averaged over the winter and summer months indicate a slight change in the direction between the seasons: cold winter winds come out of the northwest, and cooler summer breezes out of the west.

The outer ring of the wind rose indicates the consistency of wind during the day, the second ring indicates the temperature, the final ring indicates the minimum, maximum and average wind speeds as it relates to direction.

Our final design is situated to take advantage of the wind, with breezes allowed through the facility in the summer, and blocking the colder winter winds out of the northwest.

Diurnal Temperature Cycle
The radiation chart indicates that Blacksburg experiences significant daily temperature swings, which lends itself to thermal mass storage systems that are able to retain cold overnight in the summer months, and heat from the ground in the winter.

Our final design utilized thermal mass storage with southern facing stone walls in both the conference area and outdoor classroom.
As part of the design development process, the CDAC team reviewed a number of educational centers both nationally and internationally. A list of the facilities reviewed can be found below. Case study image boards for a portion of the facilities can be found in Appendix A. Project examples reviewed include:

- Rufo House, Toldeo Spain

- Mystic Hills, Lavalleja, Uruguay
  http://www.archdaily.com/411979/mystic-hill-fds-arquitectos/

- Barn House, Eelde, The Netherlands
  http://www.archdaily.com/241282/barn-house-eelde-kwint-architects/

- French River Visitor Centre, Alban, Ontario, Canada

- North Mountain Visitor Center, Phoenix, AZ

- Volubilis Visitor Center, Meknes, Morocco
  http://www.archdaily.com/171917/volubilis-visitor-center-kilo-architectures/

- Boh Visitor Centre, Sungai Pass, Cameron Highland, Malaysia
  http://www.archdaily.com/6062/boh-visitor-center-zlg-design/

- Hahn Horticulture Garden, Virginia Tech, Blacksburg, VA
  http://www.hort.vt.edu/hhg/

- Selu Conservatory, Radford University, Radford, VA
  http://www.radford.edu/content/selu/home.html

- Bechtel Environmental Classroom, Smith College, Whately, MA
  http://living-future.org.case-study/bechtelenvironmentalclassroom#materials
Additional facilities referenced by FREC faculty for review and consideration included:

- Eagle Hill Institute, Steuben, ME
  http://www.eaglehill.us/resources/campus/campus.shtml

- Raystown Field Station, Entriken PA
  http://www.juniata.edu/services/station/

- Mountain Lake Biological Station, Pembroke, VA
  http://mlbs.org

- Clemson University Outdoor Lab, Clemson, SC
  http://www.clemson.edu/centers-institutes/outdoor-lab/center/

- University of Florida Learning Center, Gainesville, FL
  http://sfrc.ifas.ufl.edu/Learning_Center/

- Ganaraska Forest Centre, Cambellcroft, Ontario, Canada
  http://www.grca.on.ca/centre.html

- The River Company, Fairlawn, VA
  http://www.therivercompanyrestaurant.com/index1.php
After exploring the two project study areas, the CDAC design team developed four initial design ideas (two for each site) for the learning center. These ideas were presented to faculty and administrators in the College of Natural Resources and the Environment in September for review and feedback. The initial design ideas presented, along with 11x17 pullouts are described in further detail on the following pages.
Initial Design 1 broke the stated program into its various parts, in order to create an interconnected group of structures on the site. At center, the multi-purpose room may be configured to accommodate a variety of uses such as conferences, classes, meetings, presentations, or other events.

The building to the left of the conference room houses all of the functional aspects of the program: bathrooms, kitchen and storage on the first floor, as well as a small apartment for a caretaker on the second floor. The apartment overlooks the set of buildings, making it possible for the caretaker to keep a close watch on the facility.

The buildings are situated, bounding and defining a central open space which may be used as an outdoor classroom or meeting space for the students. Depending on the need, the bathrooms and kitchen may be accessed apart from the conference room, minimizing upkeep, while maximizing flexibility.

The design of the conference room as an elevated platform in the woods, sought to frame horizontal views of the forest, with as minimal visual obstruction possible for a conditioned space. To achieve this, the concept employs a glass perimeter wall, 4’ mullions, while the roof is held by 10” tube steel posts, 12’ on center.
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INITIAL DESIGN 1
SITE 1

- multi-purpose room
- restrooms
- kitchen
- caretaker’s apartment (second floor)
- support facilities (first floor)
In Initial Design 2, the proposed learning center is located on Site 1, a heavily wooded area. This design seeks to create a safe and beautiful place for those using the facility, while blending the building into the natural environment.

The building is composed of two irregularly shaped volumes. These volumes are created using a dark blue, rough textured concrete to allude to natural stones. This strong, solid material anchors the facility, creating a sense of stability and security within nature. The building’s glass walls create a sense of openness and offer framed views of the gorgeous forest. They also allow visitors outside the building a glimpse of events occurring inside the space.

A central entry and lobby divides the facility into two wings, with the multi-purpose room in one wing and offices, restrooms, and a kitchen located in the other wing. The independent yet connected two parts give flexibility to host meetings or weddings in the multipurpose room while ensuring school events could be continued in the other part of the building at the same time.

Wood panels are used as the inside finishing, highlighting a key aspect of the College of Natural Resources and the Environment (Forestry). Students also could design and fabricate wood furniture.
Learning Center at Flatbush Forest Concept Design

INITIAL DESIGN

SITE 1
Initial Design 3, on Site 2, offers two different proposals for the inhabitation of a 36’ diameter tower for the learning center. The cylindrical steel sections of the tower, and several interior supports provide adequate structure for the learning center below, and an observation deck above.

The first floor of the tower, accessed from an entrance below, holds the main lecture area large enough to accommodate 45 chairs, as well as bathrooms and an office. The second floor, accessed from above, provides a covered space to meet for field exercises, as well as a ramp to the observation deck above. The translucent roof of the tower rests on a 6’ space frame ring, which sits atop the steel structure. This 360 degree clerestory level provides adequate daylighting for the entire center, as well as minimizing visual obstructions from the observation deck above.

Floor plans and a perspective of the learning center are included on the following pages, followed by a floor plan of the caretaker’s facility.
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INITIAL DESIGN 3
SITE 2

Option 1
- Observation deck
- Multi-purpose meeting space
- Lecture area
- Ramp
- Stairs
- Stairs
- Deck
- Second floor
- First floor

Option 2
- Observation deck
- Multi-purpose meeting space
- Lecture area
- Ramp
- Stairs
- Deck
- Second floor
- First floor
INITIAL DESIGN 3
SITE 2: CARETAKER’S RESIDENCE

First Floor
- Bedroom/Office
- Kitchen/Living/Dining
- Bathroom
- Deck

Second Floor
- Deck

The most clear and strong character of Site 2 is its breath-taking view. Initial Design 4 takes full advantage of this view by creating an elevated platform to overlook the valley and the distant mountains. To honor the purity of the view, the proposed facility tucks all functional spaces and facilities into the lower level. The main level multi-purpose space blends into the landscape with clean lines.

People approach the building via a long ramp and enter into the elevated platform and the multi-purpose room in the upper lever. The multi-purpose room is 24 feet by 36 feet long. Constructed with a glass curtain wall, the two short sides are completely visually open to nature. The roof and side wall are extended out 6 feet at both sides at the longitude direction. This frames the view and creates a transition space between inside and outside. The curtain wall could also be physically opened up to extend the space to host bigger events in the summer.

The following pages include a floor plan with a section and a perspective of the building within the context of the site and the multi-purpose room.
Perspective of Building on Site

Perspective of Multi-Purpose Room
The CDAC team prepared a short survey to gather additional input from faculty regarding initial design ideas for the site. This survey was made available electronically to faculty. A copy of the survey instrument and complete description of all responses received can be found in Appendix B. A summary of the feedback is as follows:

- Maximize views
- Take advantage of natural lighting opportunities
- Liked the openness of some of the buildings
- Functional yet attractive
- Wheelchair accessibility to all spaces is important
- Place more focus on the facility supporting conferences and classes
- Reflect the department and the college in the design and material selection of the building/natural building materials
- Exterior should reflect the surroundings
- Liked open interiors with lots of natural light
- Would like a fireplace
- Would like a wrap around porch
- Want something that is low maintenance
- Should resist vandalism
- Classroom needs (sink, storage space)
- Restrooms closer to outdoor space
- Detached caretaker’s cabin
- Separation of uses (heavy use with boots for one area; less intense use for other spaces)
- Kitchen close to meeting room
- Outdoor storage for forestry equipment
- Indoor storage for AV, extra tables and chairs
- One mention of a water feature
The CDAC team used the feedback on initial design concepts from faculty and administrators to refine the design ideas and develop two preliminary design concepts for Site 2. It was decided, with guidance from College of Natural Resource and the Environment administrators, to focus on Site 2 as the location of the proposed learning center. The two design concepts explore two slightly different placements within Site 2. Separate small structures are also proposed in each concept for a potential site caretaker.

The CDAC team met with local professional architects Joshua Galloway (Community Housing Partners) and Mark McConel (Summit Studios) to discuss the preliminary conceptual designs. Feedback from both architects helped the CDAC team refine their ideas before presenting the concepts to the client.

The preliminary design concepts were presented on November 11th, 2013 to representatives of the College’s Advisory Board, faculty in CNRE, and to Dean Paul Winistorfer. The preliminary design concepts are described in further detail on the following pages and are accompanied by 11x17 pullout drawings and supporting sketches of each concept.
The main design aim behind Preliminary Design Concept A is to create an elevated platform to overlook the breath-taking view of the valley and surrounding mountains. The front part of the platform contains the multi-purpose room. It is extended out into the landscape and gently rests on the ground through supporting wood columns. The back part of the platform, which contains an indoor classroom, an outdoor classroom, a kitchen, restrooms and other supporting function rooms, is sited on a solid strong stone foundation. Two parts of the building are connected by a lobby space.

The proposed materials and supporting details address the main idea of the concept: the view. The more formal multi-purpose room extends out toward the view, with a full glass wall on the southern side and an extended roof line to frame the view. The majority of the interior and exterior is finished with horizontal wood panels. This gives the building strong directionality, directing one’s sight line toward the view. The wood supports and stone foundations are natural materials which reflect the character and identity of the FREC and CNRE.

Some design ideas for Preliminary Design Concept A are drawn from Initial Design 2, Site 2, with one major change: Concept A places everything on one level. This practical modification eliminates the need for an elevator, which significantly reduces the construction cost. The building floor plan allows for simultaneous events to happen harmoniously. For example, students could utilize the indoor and outdoor classrooms, while an event is hosted in the multi-purpose room without disruption.

Supporting this idea of simultaneous functions, two distinct entry sequences are available depending on the formality of use and familiarity with the site. For those arriving to use the multi-purpose room, one would enter the building through the main entrance and experience a lovely lobby where interior wooden materials, as well as informational displays, highlight the College’s strengths and character. A window in the front gives a small glance of the view to be enjoyed from the multi-purpose room. Then when guests enter the multi-purpose room or the deck, a breath-taking panoramic view is framed and opened up.

For those visiting the building for less formal academic activities, an additional entry experience is offered via the outdoor classroom. This space is covered by roof, which could provide a quick gathering space for classes that need a brief meeting point before venturing out on the Fishburn site. Storage opportunities are provided in the outdoor classroom to offer support for outside activities that do not require internal access to the building. Additionally, the indoor classroom can also be directly accessed via the outdoor classroom, allowing for conflict-free simultaneous uses of the building.

The following pages include a floor plan with two different seating layouts for the conference room, a perspective of the building on site, and a perspective of the conference room.
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PRELIMINARY DESIGN CONCEPT A
The proposed caretaker’s residence for Preliminary Design Concept A is located near the entrance road to Site 2, approximately 500 feet from the proposed learning center. A secondary gate could be added at the entrance to Site 2, which the caretaker could manage to control vehicular access to the buildings by unwanted visitors. The proximity of the caretaker’s residence to the learning center allows for easy observation and maintenance.

The proposed residence has a simple, compact layout: a 12’ by 12’ bedroom, a 12’ by 16’ living room, a small kitchen, a small laundry room, and bathroom. There is also a covered deck, which provides the caretaker a covered outside space to enjoy the beautiful view.

The same wood shingles and roof are used on this house as in the learning center, uniting the two structures with a similar aesthetic character.

An 11x17 pullout on the following page includes a floor plan of the caretaker’s residence as well as a perspective of the residence on the site.
PRELIMINARY CONCEPT DESIGN A: CARETAKER'S RESIDENCE
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PRELIMINARY DESIGN CONCEPT B

Approaching from the northeast, Preliminary Design Concept B is situated on the top of the cleared area overlooking the meadow which stretches out along the saddle of the mountain to the west. The program of the learning center is broken down into two buildings, perpendicular to one another, which define a common courtyard space between them.

The classroom of 650 square feet is designed to accommodate between 20-30 students. It offers a designated area for presentations, counter space for coring samples, sinks, as well as adequate permanent storage space for field equipment, and lockers for daily use. The classroom’s roof extends out over a portion of the courtyard, creating a covered area for informal meetings, shading, or a refuge from the rain.

The courtyard links the two buildings, creating a flexible overflow space for either classroom or conference use. It is a stone paved surface, stepped to match the contour of the hill as it recedes to the northeast, creating a natural amphitheater between the two buildings. The amphitheater provides another flexible area for outdoor exercises and presentations.

The classroom’s roof is an ideal location for solar panels, as it faces the southeast, and is free of shading. A grid of panels could easily be installed above with requisite battery storage below that would provide enough energy to power the facilities minimal requirements while it is not in use.

The conference building of 1,700 square feet, is located across the courtyard and perpendicular to the classroom. It provides for the functional aspects of the facility for both buildings, including bathrooms, a kitchen, and requisite mechanical space. The conference building’s lobby space provides a less formal conditioned area for meeting, and with the possibility of refreshments served from the attached kitchen. The conference room looks out to the northeast, seats up to 50, and may be reconfigured depending on need. Retractable blinds help to minimize unwanted daylight during presentations; however the clerestory level windows, positioned in relation to the sun, and generous roof overhang to the west all but eliminate any direct sunlight from entering the conference room.

The concept of indoor-outdoor shared space was an important feature of the design. Aside from the shared courtyard, the conference building opens out onto a deck that wraps around three sides of the building. The deck faces west, the most expansive view on site, and increases the overall area of the conference building by 1,200 square feet. It is covered by the roof which cantilevers out from the building, shading the deck, and shielding the walls of the building from direct thermal gain during the summer months. A large sliding glass door opens out onto the deck from the lobby,
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providing the necessary enclosure of the building envelope. Sliding wooden doors pull out from within the thickness of the walls, shuttering both lobby entrances from unwanted abuse when the facility is not in use.

The structure and fenestration of the classroom and conference buildings are the same. 10” x 10” timber beams, 12’ on center, make up the bays for both of the buildings, and hold up the roof. Six inch diameter round steel within the stone walls provide the structure for the roof along the northeast and southeast sides of the conference building, and the southeast side of the classroom. A secondary steel structure set within the primary structure supports walls doors and windows within both buildings. Wood infill walls, punctuated by slit windows ring the conference room and classroom, support a level of operable clerestory windows above.

The roof sits atop exposed wooden beams, running parallel to the bays, and is insulated with a layer of rigid insulation. The roof material is corrugated steel, and it slopes into the courtyard from the conference center, and to the southeast from the classroom. There are opportunities to capture, highlight, and reuse stormwater captured from the room in the courtyard and immediate landscape.

The following pages include a floor plan, with a perspective of the exterior, and a perspective of the conference room.
The caretaker’s residence is positioned as the road reaches the top of the ridge, strategically, as a gatehouse to the facility. The 700 square foot house provides for the basic needs of one who would look over the property. The kitchen, bathroom, laundry and storage are on the first floor, while the bedroom and adjoining deck are on the second floor. Attached to the main living area is a garage/storage area for the tools and equipment that are necessary for maintaining the property. Ideally, the presence of the caretaker would help to stabilize the area, eliminating vandalism and unauthorized hunting on the property, while looking after the facility as needed.

On the following page is a floor plan and perspective of the caretaker’s residence.
Preliminary Design Concept B was ultimately chosen as the final design concept for the Fishburn Forest Learning Center. After receiving feedback from the review committee, several changes were made to the design. These changes are described below.

The primary changes to the design related to materials in the proposed conference room. The northwest wall of the conference room became the glazed, view-framing wall instead of the northeast. The change of orientation accentuates the length and focus of the conference room, however necessitated the addition of floor-to-ceiling window shades, in order to adequately block sun from the space during presentations. Additional retractable shades were added above the clerestory level windows in order to achieve the same end. Interior finishes changed as well, including a cork floor for its durable and acoustic dampening properties, and horizontal wood slats with a natural stain/finish on the walls. An environmental analysis section was prepared, highlighting solar, thermal, and wind considerations for the complex.

The Caretaker’s Residence was also slightly revised. Additional storage space was added to accommodate large equipment, (such as a riding mower), for the maintenance of the property.

Lastly, a conceptual landscape master plan was prepared for the site. The landscape master plan used Firewise principles as the guiding structure for the design. Planting material complements the facility and possible uses without blocking important views. Where possible (ADA accessibility requirements place some parameters on material selection), pervious hardscape materials were selected to minimize impervious surfaces on site. Low maintenance, native plant materials were selected with consideration to seasonal interest and variety.

The following pages include 11x17 pullouts of the final design concept for the Fishburn Forest Learning Center, followed by the landscape master plan and planting plan detail.
The wind rose climate analysis charts indicate winds from the northwest in winter and west-northwest summer breezes as a general condition for Blacksburg. The Fishburn conference center is positioned parallel to the winter winds, and at an angle to the summer breezes, making it possible to utilize the summer wind for natural ventilation.

The roof, overhanging the deck on the southwest of the conference room, provides shade during the summer months, limiting direct solar contact with glazing and thermal mass, while allowing thermal heat retention during the winter, when the angle of the sun is lower.

Sliding wooden doors shutter the building envelope when the facility is not in use, protecting glass and enclosure from any unwanted abuse.

Operable clerestory level windows in the conference room provide natural ventilation by creating convection currents that move air through the space, as well as introducing additional, indirect daylight into the room.

With minimal shading of the buildings, the classroom's southeast facing roof is an ideal location for solar panels.
The Fishburn property is a stunning site with amazing views and natural assets that appeal to a broad audience of users. Opportunities abound for educational endeavors and demonstrations, as well as other private, public, and community activities. The creation of a learning center on site would establish a needed physical presence and also serve as a launching point for a plethora of new opportunities and collaborations.
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APPENDICES

Appendix A: Case Studies
Appendix B: Faculty Survey
APPENDIX A: CASE STUDIES

Rufo House, Toledo Spain

Mystic Hills, Lavalleja, Uruguay
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Mystic Hills, Lavalleja, Uruguay (cont.)

Barn House, Eelde, The Netherlands

French River Visitor Centre, Alban, Ontario, Canada
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Boh Visitor Center, Sungai Pass, Cameron Highland, Malaysia
A copy of the survey sent to FREC faculty, as well as response results, can be found on the following pages.
Dear FREC Faculty and Staff:
The Community Design Assistance Center is delighted to have the opportunity to work with you on development of conceptual design ideas for a Learning Center at Fishburn Forest. As you may have seen, we have prepared four preliminary conceptual ideas for the site and presented them to a small group of faculty on August 22nd for consideration and feedback. The programmatic guidelines we were given for the facility included:

- A meeting hall for approximately 50 people
- Kitchen
- Restrooms
- Offices
- Caretakers facility (possibly phase 2)

The two potential sites have amazing and distinct qualities. For identification purposes only we have labeled the flat wooded area near the power station as site 1 and the cleared wildlife management area as site 2. We received positive feedback regarding the aspiration for the new structure to blend the indoor and outdoor environments as seamlessly as possibly. Two additional qualities that we felt were important included:

- To highlight the transcendent qualities of the site (i.e.: accentuating the experience of being on a ridge top on site 2), taking advantage of the geographic location and magnificent vistas
- To respond to the passage of the sun overhead and offer as many opportunities for natural lighting

Below is a short survey that will not require too much time to complete. Your input will help us with refining/revamping design ideas for the site. Please send comments to ksteika@vt.edu

1. Reviewing the four preliminary concepts, are there any qualities you liked? What qualities or aspects did you dislike?
2. What character do you think the Learning Center should have (do any building examples come to mind?) What materials do you envision on the exterior of the building? What materials do you envision for the interior?
3. Do you think it is essential that the structure is single level?
4. Should the caretaker’s residence be a small space within the main structure or is it better to consider a small, detached structure to serve that purpose?
5. Is there any other feedback or guidance you would like to give us?
Learning Center at Fishburn Forest Concept Design

APPENDIX B: SURVEY RESULTS

Reviewing the four preliminary concepts, are there any qualities you liked?

1. delete 2013-09-03 11:48:27 The proposed structures have too much steel and glass. The water tank design is very unappealing. More wood used in design. Simpler design. Hahn Center building would be better. Current designs are too artistic, not very functional.

2. delete 2013-09-03 11:40:14 The proposed structures have too much steel and glass. The water tank design is very unappealing. More wood used in design. Simpler design. Hahn Center building would be better. Current designs are too artistic, not very functional.

3. delete 2013-09-03 12:29:08 Use of light, visibility, bringing natural environment into the built space. While it might be tempting to integrate natural materials (stone) in the exterior, I would think it would be cost prohibitive. I think a low-maintenance focus is important- we don't want a structure out there that will take constant attention and maintenance (e.g., cedar paneling). For the interior, use of wood would be nice- local wood species especially (hard maple or oak flooring, for example), at least in the teaching spaces. Low-maintenance, easy-cleaning materials in the work spaces (tile, vinyl, etc.).

4. delete 2013-09-03 12:59:49 I liked the views, I liked the openness of the concept with the white shadow people on it. I'm assuming the flooring is not really transparent. I like the innovative shapes and think the lighting/nature contact is a good guiding philosophy. Creative use of local wood products would be really cool. The exterior should reflect the surroundings. Use of glass and metal can do that if used properly. No, but you wouldn't want the profile to detract from the forest detached probably better from the caretaker's point of view The views opinions of local population and users (legal and illegal) need to be considered-also the structure needs to be able to stand up to vandalism. I understand some community involvement process is underway—but that is critical.

5. delete 2013-09-03 13:24:17 Didn't like the one that looked like a silo. Conceptually, the others looked nice, but appear very expensive to build/protect/maintain. I like the concept of open interior spaces with lots of natural light and immersed in the natural environment. traditional, organic, sturdy, low-maintenance, resistant to vandalism. http://www.clemson.edu/centers-institutes/outdoor-lab/center/

What qualities or aspects did you dislike?

Reviewing the four preliminary concepts, are there any qualities you liked?

1. delete 2013-09-03 11:40:14 The proposed structures have too much steel and glass. The water tank design is very unappealing. More wood used in design. Simpler design. Hahn Center building would be better. Current designs are too artistic, not very functional.

2. delete 2013-09-03 11:48:27 Since this is a structure mainly for FREC, I think as much wood as possible should be used. I couldn't tell from the drawings, but it really looks like they are predominantly steel and glass. Also, security of the buildings needs to be considered.

3. delete 2013-09-03 12:29:08 Use of light, visibility, bringing natural environment into the built space. While it might be tempting to integrate natural materials (stone) in the exterior, I would think it would be cost prohibitive. I think a low-maintenance focus is important- we don't want a structure out there that will take constant attention and maintenance (e.g., cedar paneling). For the interior, use of wood would be nice- local wood species especially (hard maple or oak flooring, for example), at least in the teaching spaces. Low-maintenance, easy-cleaning materials in the work spaces (tile, vinyl, etc.).

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The structure should be made of wood. Have a wrap around deck/porch. On the porch should be wooden rocking chairs and small tables for conversation. Floors should be made from native hardwoods. The structure might possibly be a log structure with small efficiency apartment in one end for the caretaker. This is very simple... in short, a nice wood frame open house concept with lots of covered outside area (a covered porch with a view looking down the mountain). This might be boring to you but this is what we want. Lots of native wood used throughout.

Wood or recycled materials would be appropriate. Also, some conference/meeting capabilities would be useful (internet connectivity for a start).

We are a forestry program and the best forestry programs have academic buildings with beautiful timber-frame structures and interiors that showcase the wide variety of colors and textures available from trees. Some examples from other field classrooms: Eagle Hill Institute (http://www.eaglehill.us/resources/campus/campus.shtml), Raystown Field Station (http://www.juniata.edu/services/station/), even Mountain Lake Biological Station owned by the University of Virginia is a good example (http://mlbs.org/). All of these examples typically have wood construction and "feel" like an environmental education center.

I am flexible on "character" except that there should be abundant windows and/or balconies for viewing and experiencing the outdoor environment.

The pictures I saw were metal/glass, modern looking buildings; one even looked like an ugly water tank....did you not know, were you not told, what we do in FREC? We need timber frame, log cabin....WOOD! With big stones in the foundation/fire place....we are CNRE! Go take a picture of the River Company in Fairlawn...that is what we need.

I liked the use of natural light, maximizing the views, the open designs. Did not care for the water tower design. Although I didn't care for the contemporary look of the exterior of Site 1/Design 2, I very much liked the concept of the two separate yet connected areas.

I think it must be very functional, yet it could still be extremely attractive by using natural materials and glass. Low maintenance interior and exterior is important. Polished concrete floors inside, not wood flooring, which is too easily damaged. Use beautiful wood in places that are not subject to heavy, damaging use-walls, mantles, etc. I think a good arrangement would be both a large covered outdoor area with tables and chairs for class use when the weather permits and also an indoor meeting space with adjacent kitchen. A stone fireplace for the
indoor room would be awesome! Restrooms should be located close to the outdoor space so
boots don't track dirt through the entire facility. Kitchen could have a pass-thru window/serving
counter into the meeting room so that coffee and refreshments could be set up. Some storage
space accessible from the outside deck for forestry equipment. And some indoor storage space
for A/V equipment, extra tables, chairs, etc. And how about a water feature near the deck?