

Clinch River Valley Regional Visitor Center Conceptual Design



*Prepared by the Community Design Assistance Center
for the Town of St. Paul and St. Paul Tomorrow, Inc.,
St. Paul Virginia*

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College of Architecture and Urban Studies
Virginia Polytechnic Institute and State University

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The Community Design Assistance Center (CDAC) is an outreach center in the College of Architecture and Urban Studies at Virginia Tech that assists communities, neighborhood groups and non-profit organizations in improving the natural and built environments, through design, planning and research.

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SOUTHERN GROUP
OF STATE FORESTERS

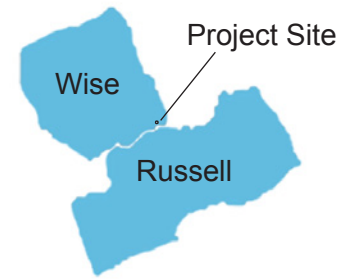
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Project Description



Virginia state map highlighting St. Paul and Wise and Russell Counties in blue;



Project site located within Wise and Russell Counties

St. Paul is a small but vibrant town in southwestern Virginia with a rich history. Situated along the Clinch River and holding land in both Russell and Wise Counties, it is strategically located and poised to serve as a gateway to the region's natural assets. The Clinch River is internationally renowned for its biological diversity and is a regional asset. Thus, the Clinch River and other complimentary assets (existing trail systems, Wetlands Estonia, etc.) are a primary focus for a new creative economy dealing with tourism.

To enrich the new plan for economic development and to communicate the ecological and tourism potential of Southwest Virginia, the region's advocates are exploring the concept of an entry gateway. This gateway would serve four counties and the City of Norton and act as a regional visitor center.

The Town and Russell County received permission from the Virginia Department of Transportation (VDOT) to develop an entry gateway along US 58 on a piece of property bound by US 58, St. Paul Road, and County Road 640 (Frosty Road) and recently conveyed the site to Russell County. Elements envisioned for the space include a LEED certified regional visitor center that highlights the four counties along the Clinch River in Southwest Virginia, enhanced plantings, signage, parking, an informational kiosk, and possibly a small covered shelter. Vehicular entry to the site will be provided from County Road 640. The site and structure would highlight and respond to the Clinch River, offering views to the nearby river as well as educational and recreational information about the Clinch.

Funding for this project has been provided by a USDA Forest Service (Region 8) Competitive Grant through the Southern Group of State Foresters in partnership with the Virginia Department of Forestry. In the spirit of this partnership, the project will build awareness of regional forestry-related industries through the thoughtful design, specification and implementation of landscape architecture material, architectural material and construction practices. The Community Design Assistance Center (CDAC) was asked to assist the Town of St. Paul and St. Paul Tomorrow, Inc. with a conceptual master plan for this entry gateway. CDAC worked with St. Paul Tomorrow, Inc., Town Council, VDOT, and the local community to refine the program and develop a concept for the visitor center. This report is a compilation of these design concepts.



Panorama of the site

Design Process



CDAC team member, Christopher Houck (l) and St. Paul Tomorrow President Lou Ann Wallace (r) discuss site characteristics and options for the placement of the building.



The CDAC team discusses preliminary design concepts with Michael Ermann (Virginia Tech Architecture professor).

This section summarizes the design process. The project began with an initial site visit by the CDAC team and meeting with representatives of St. Paul Tomorrow and various stakeholders from throughout the region. The purpose of the visit was to discover the needs and wants associated with the conceptual master plan of the regional visitor center. After some conversation about the expectations for the design and program of the visitor center, the CDAC team visited the site with project stakeholders, Lou Ann Wallace, Buzz Witt, and Mayor Kyle Fletcher. Additionally, the CDAC team searched for base mapping materials and then began to analyze the site.

The team also began to refine the program for the visitor center based on feedback from the stakeholders. The CDAC team visited four visitor centers in Southwest Virginia and West Virginia to find out their strengths and weaknesses. This information was useful in identifying a variety of visitor center functions and for helping determine relevant design ideas. CDAC also received feedback about the aesthetic preferences of the client based on a list of adjectives that the group responded to in a Doodle poll.

The team analyzed the site so that the design could respond to issues such as placement and aspect of various building locations. Accurate and usable topographic information was not available. The highest topographic resolution found were maps with ten foot contours. Performing a site survey to provide two foot contours, which is essential for project design, was not possible at the start of the project.

To augment conceptual design ideas and obtain more accurate site information, CDAC engaged two other groups within the Virginia Tech community: an architecture studio class and a sustainable land development group from Civil Engineering Department at Virginia Tech.

Student Studio - Supplemental Design Ideas: The CDAC team presented site analysis information and rough conceptual ideas for the building and site to Michael Ermann, an Architecture Professor at Virginia Tech. Professor Ermann visited the site and surrounding area and decided to have his students study the site. This led to several separate programs/design efforts for consideration, which is not included in this document.

Sustainable Land Development Group (SLDG): This civil service group is comprised of civil engineering students and faculty. This group was pivotal in providing the CDAC team with detailed 2ft contour information of the site by way of their relationship with the Virginia Geographic Information Network (VGIN). With this topographic information, the SLDG team was able to create a physical and digital 3D model of the site and proceed with formal conceptual design proposals.

Upon further investigation of the site the CDAC team realized that the client's desire to have a strong connection and view to the Clinch River was not as feasible as the team originally hoped. Therefore, the CDAC team suggests that the parcel across County Road 640 and directly adjacent to the river be secured to allow for a direct physical and visual connection to the river. Because this land acquisition is questionable, the final proposal suggested that the connection to the River be accomplished in other ways. One method is through vegetative management. The other, a pedestrian bridge that would span the river and provide both a visual connection to the river and a physical connection to the assets on the opposite bank.

Following design development, the CDAC team returned to St. Paul in April 2013 in order to present preliminary design options to stakeholders and receive feedback for a final conceptual design for the facility and site. A final presentation that combined the initial concepts with stakeholder feedback was given. The final design was then put on display for the public to view for several weeks during the Clinch River Valley Days festival for public review.

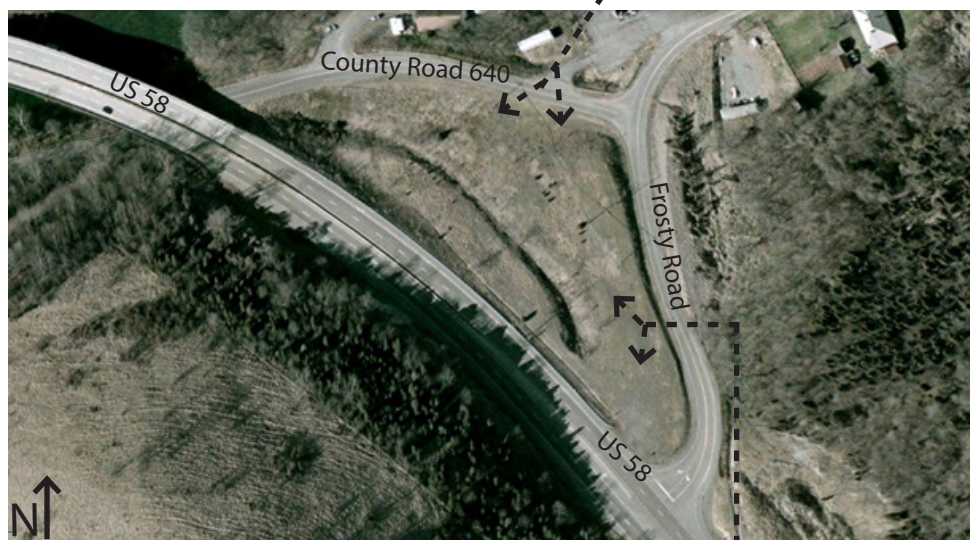
The remainder of this report documents the early and final design work by the project team.

Site Inventory & Analysis

Existing conditions of the site adjacent to US 58 were inventoried during the CDAC team's initial site visit in February of 2012. From this site visit we learned about the unusual topography of the site, the site access, and that the site does not have a strong sight line or physical connection to the river. Numerous photos were taken to document the site conditions.



Panoramic view from the north side looking south across the site to US 58.



Panoramic view of entire site from the southeast side.

Site Inventory & Analysis



View from NW corner bridge looking towards Frosty Road intersection (NE).



View of drainage ditch parallel to US 58.



View from the SW corner of the site showing what used to be a runaway truck ramp.



Panoramic view from South end of the site looking towards the river.



Panoramic view from the SW corner (intersection of Frosty Road and US 58) across the site.

Coeburn



St. Paul Visitor Center

Site inventory and Analysis : Context



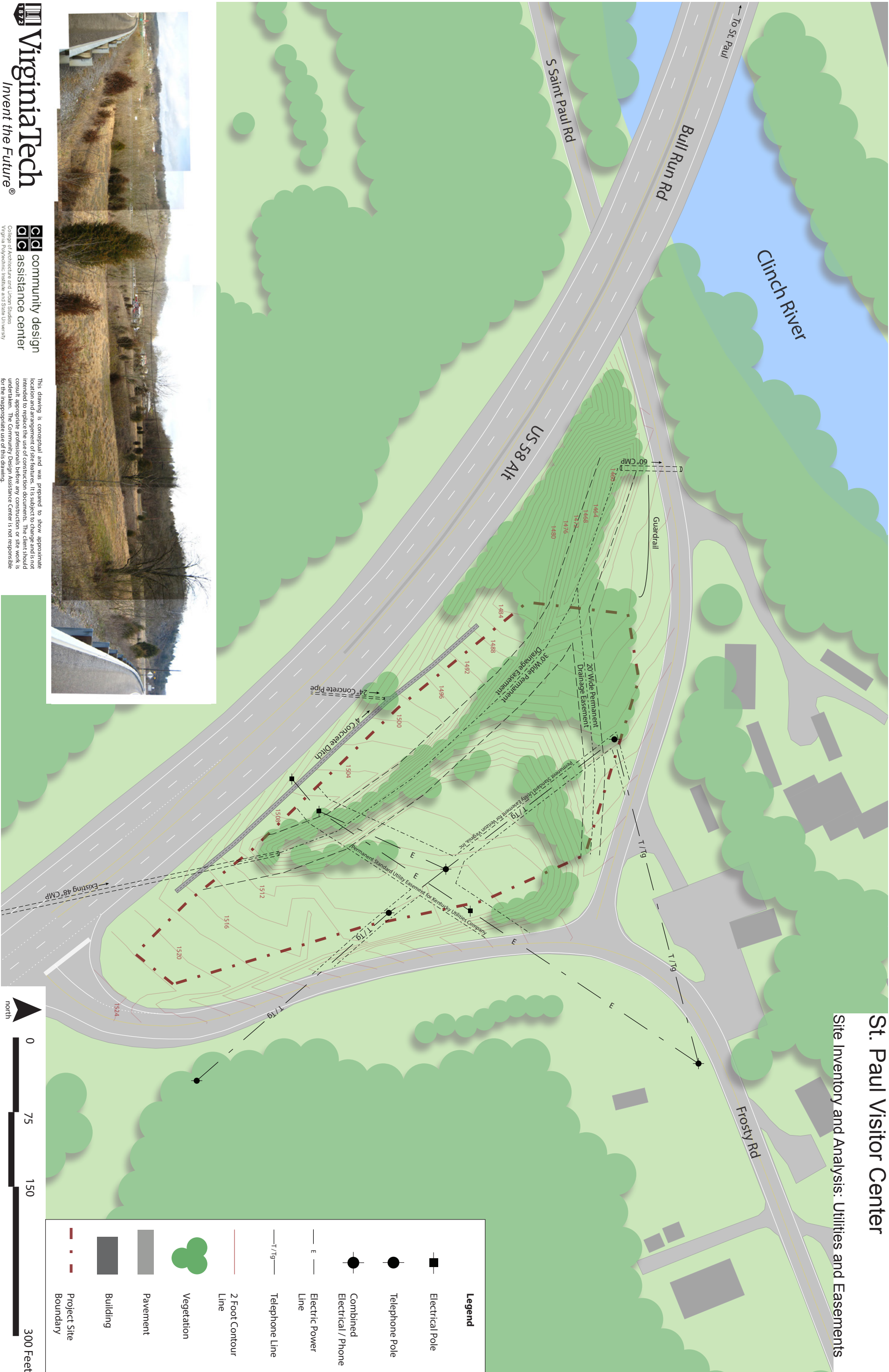
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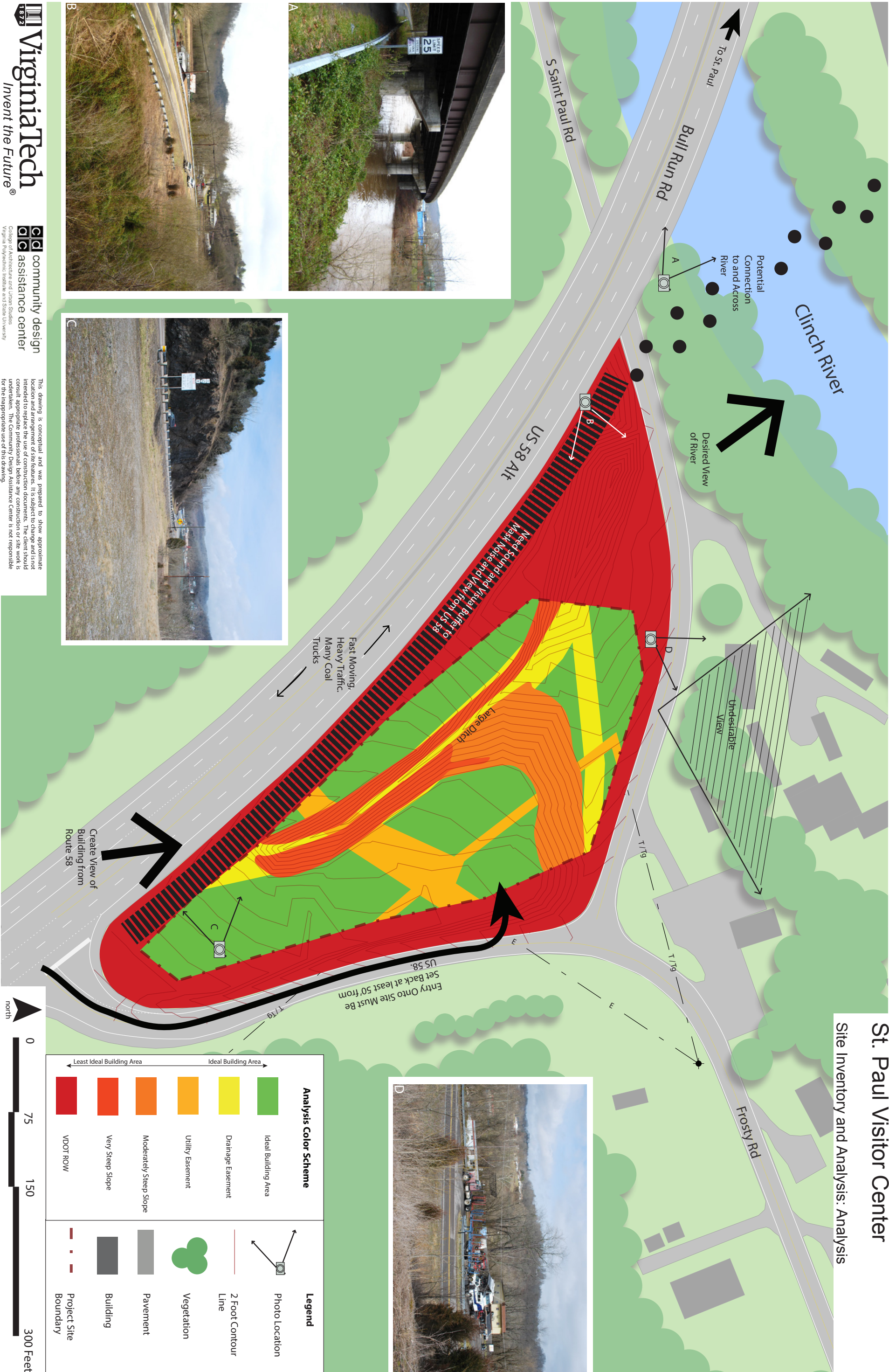
St. Paul Visitor Center

Site Inventory and Analysis: Utilities and Easements



St. Paul Visitor Center

Site Inventory and Analysis: Analysis



Case Studies



Dining area in Heartwood in Abingdon, VA



Outdoor picnic and stage area at the Wytheville Visitor Center

The CDAC team toured four facilities in Southwest Virginia and West Virginia to better understand the various roles of a visitor center in a town or region and examine what worked well and did not work well with each design. The sites visited included the Wytheville Visitor Center, Heartwood (Abingdon, VA), West Virginia Tourist Information Center (Princeton, WV), and Tamarack (Beckley, WV). Each of these stops were unique in their sizing and function; however, they are all labeled as visitor centers, welcome centers, or gateways. The team created a criteria for looking at these facilities and sites and recorded findings about each stop based on observations and discussions with visitors and employees. Information for two additional visitor centers, Bedford Visitor Center and Green Mountain Club Headquarters in Vermont, was also obtained although the team did not visit these locations. Source information for the visitors centers can be found in the appendixes.



Layout of Tamarack in Beckley, WV



Outdoor area at the West Virginia Tourist Information Center in Princeton, WV

Visitor Center Case Study Criteria

The CDAC team visited four visitor centers in the regional area to gather information which would aid in understanding the needs of travelers and visitor center staff. The team studied the buildings and spoke with staff members to address questions posed by five design criteria described below:

Functionality

Is the floor plan intuitive for a first time user? Do the spaces and layout compliment the programmatic needs of a visitor center? Are all of the spaces used regularly by patrons?

Features

What makes the visitor center a destination as well as a jumping off point to other points of attraction in the region? How does the center educate the user about the region's attractions? Are there any unique amenities?

Aesthetics

What is the visual impact of the building on the site and the surrounding area? Does the architecture of the building relate to the region's vernacular architecture? Is it iconic? Is it visible from the road?

Accessibility

Is parking adequate? Are RV hookups or parking spaces provided? Are special considerations made for elderly or disabled persons?

General Impressions

Each visitor center is unique and fulfills the role of a "visitor center" in a unique way. Are there any defining characteristics or subtleties worth noting?

Case Studies

Wytheville Visitor Center

Wytheville, VA

General Information

Visitor center is located as part of a larger complex which includes two museums, offices, an amphitheater, and park.

Functionality

One main room houses regional information and reception with restrooms adjoining. Organization is clear, partially because of the small scale. A covered corridor leads to an adjacent building housing a museum and offices. An outside trail leads to a secondary museum on site.

Features

An abundance of regional information in the form of brochures and maps are available. Restrooms and facilities are very clean. The adjoining park and picnic area are convenient for travelers with small children or pets. The center's geographic location, with proximity to the intersection of Interstate 81 and 77, allows it to serve as an ideal meeting spot for travelers arriving from different areas.

Aesthetics

The architecture reflects common regional building practices including features such as gabled roofs, covered front porches, and painted wood siding.

Accessibility

Parking is convenient to the visitor center and includes multiple spaces for RV's and buses. Visitors can only access the museums at special request as they are not permanently staffed. This prohibits casual viewing of the exhibits. The center, though located near the intersection of I-81 and I-77, is not visible from the highway and requires a short trip on local roads to be accessed.

General Impressions

The Wytheville Visitor Center functions well as a rest stop with clean restrooms and spacious outdoor areas. The museums may be frequented by local, and school groups, but are an unlikely destination for a long distance traveler. The center's location slightly off the highway, and lower visitation rate compared with the other case studies, allows it to function as a favorable meeting spot.

Case Studies

Wytheville Visitor Center Wytheville, VA



History display



A domestic 'front porch' architecture welcomes visitors - a different approach than the traditional/institutional model.



Side view of porches - neighborhood feel



Local crafts on display



Matching 'shed' out buildings (storage/stage/classroom)



Shaded leisure/picnic area



Regional map and 'points of interest' display

Case Studies

Heartwood: Southwest Virginia's Artisan Gateway

Abingdon, VA

General Information

Two story, 28,600 sq. ft., LEED Silver certified building (visitor center above, staff and services below). Spaces include galleries for music and local artisans, wine and coffee bar, restaurant, gift shop, terrace, and offices for multiple organizations.

Functionality

The center is organized around a large central space used for musical performances and dining with wings housing the building's other functions. The layout is easily understood with the restaurant and performance space taking prominence. However, circulation through the galleries is bifurcated by the central restaurant. The event space is great for large performances and gatherings, but cannot be subdivided to allow for smaller rentable spaces or for simultaneous events. The lower level office space is challenged. Partially underground, the offices receive little natural light. Moreover, the office layout is confusing. Kitchen and dining spaces are on different levels making food service difficult.

Features

The vaulted ceiling over the performance space provides superior acoustics. The restaurant features locally grown and regional dishes. Multiple interactive exhibits are located throughout the building including an interactive map kiosk with a trip planner function.

Aesthetics

Heartwood's iconic form is easily visible on a hill from the highway. The aesthetic is a kind of modernized vernacular with an adaptation of the forms of a barn and silo. The arrangement of forms allows for an abundance of natural light within the upper story of the visitor center and variable roof lines provide a variety of spatial conditions within.

Accessibility

Multiple parking lots permit Heartwood's hosting of large events. A circular traffic pattern is established allowing for a drop off area and for linear RV and bus parking. An accessible ramp is employed to connect the two tiers of the building's main level.

General Impressions

Heartwood is a destination for large events with substantial space allotted for performance and dining. While great for times when the visitor center is hosting many people, the space feels empty when the typical number of highway travelers occupy the building.

Case Studies

Heartwood: Southwest Virginia's Artisan Gateway Abingdon, VA



Performance/event space



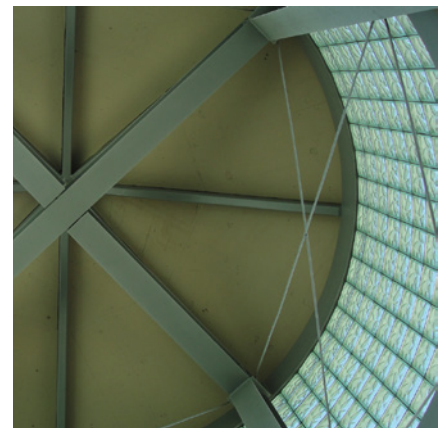
Main entrance



Vaulted ceiling over performance space



Diverse landscape material



Ceiling view of 'silo' entry/fourier



The design interprets the region's vernacular of barns and silos using modern materials and construction methods



Artisan information display

Case Studies

West Virginia Tourism Center Princeton, WV

General Information

The center consists of three pyramidal building on a relatively flat site joined by corridors or covered walkways. Each pyramid houses a specific function: reception, gift shop, and restrooms.

Functionality

The central pyramid (reception) acts as the circulation hub for the building. It leads to the gift-shop by a narrow, partially hidden, corridor and to the restrooms by an outdoor covered walkway. Each pyramid building is roughly the same size, which allocates space well to the gift shop and restrooms, but the reception building is large and disproportional to the small reception desk and information kiosk located on the side.

Features

In addition to the three buildings, the center offers an outdoor picnic area with multiple covered pavilions and adjacent green space for pets.

Aesthetics

In sharp contrast with the surrounding architecture, the building's pyramidal shape acts as a signpost for travelers.

Accessibility

The West Virginia Tourism Center is located at the intersection of Interstate 77 and US 460 and is visible from US 460. A loop and multiple pull-offs are provided for RV travelers. Paved pathways connect the outdoor pavilions, to parking, and to the center. The operational hours of the restrooms can be independent of the adjacent buildings as they are unattached.

General Impressions

This building serves exclusively as a rest stop and is designed to accommodate a fairly high volume of visitors. The site is bounded on all sides by high traffic roads which poses a multitude of design challenges. The building addresses the question of orientation and frontality by employing symmetrical forms to address all sides. The design seeks to overcome the visual and aural distraction from the highway by the extension of masonry walls from the building into the outside picnic area.



Main entrance - the 'mountain state' brand is not only conveyed by form but is also enforced by iconic building ornament



Stone reflects highway noise away from grounds

Case Studies

Tamarack: The Best of West Virginia

Tamarack, WV

General Information

The Tamarack facility includes 59,000 sq/ft dedicated to the display and sales of regional art and food. This also includes theater space and art studios. Adjacent to the visitor center is a 22,500 sq/ft conference center. The center serves over 500,000 visitors a year.

Functionality

The visitor center's plan is arranged radially around a large central courtyard. The circular plan allows all regional crafts to be displayed with equal prominence. The large loop can cause one to lose one's bearings in the building, but by continuing in one direction it is possible to see all the center has to offer in one pass and return to the entrance where one entered.

Features

The emphasis of Tamarack is on West Virginian arts, crafts, and food. The center houses spaces to make, display, and sell artisan goods, as well as to educate and train artists. A food court, A Taste of West Virginia, also takes prominence at Tamarack.

Aesthetics

The architecture of the visitor center is very unique to the region. Repetitious triangular shapes are employed to form the roofline. The building seems to symbolize the sun. According to the website, the architect intended the forms viewed from above to resemble a starburst quilt pattern (referencing a West Virginia craft) or viewed from the ground, the jagged or rugged terrain of West Virginia. Coincidentally, the circular and fanning needle pattern of the Tamarack tree can be appreciated within the scheme.

Accessibility

Tamarack has parking to accommodate large events. The lots are located on a slope which yields an inclined approach to the building. The building's iconic roofline is visible from Interstate 77. A small park and children's area is located at the rear of the building.

General Impressions

Tamarack is a destination, visitor center, and business all in one. This is achieved by its wide variety of services and spaces. The circular plan is very effective in displaying the goods. It also helps to make the spaces seem more intimate within a large, nearly 60,000 sq/ft building. The center of the building, the courtyard, was un-used despite the pleasant weather during our visit. Perhaps the scale and internally facing windows would make visitors feel exposed if in the courtyard. The outside children's area seemed very active though it was difficult to access and not visible from the building.



Tamarack trees used in landscape plan



Interior courtyard

Additional Case Study Buildings

In addition to studying first-hand the day to day operations of regional visitor centers, the CDAC design team gathered information through e-mail correspondence, website and aerial images for two additional relevant buildings.

Bedford Welcome Center

Bedford, VA

General Information

The Bedford Welcome Center is a 10,700 sq/ft facility situated on a flat site located in Bedford, Virginia, adjacent to US-460, and is visited by roughly 50,000 a year. Many out-of-town visitors come to the center to purchase tickets for the National D-Day Memorial which is located within sight of the Welcome Center. The Welcome Center offers extensive services to the local community in the form of rentable space. A meeting room, gallery, and terrace are available, as well as a variety of media equipment for conferences and meetings. The Center also houses offices for the City and County's joint Tourism Department.

The layout of the Bedford Welcome Center site was overlayed on the St. Paul site on the corner of US-58 and Frosty Road. The comparison illustrates the demanding space requirements of a similar facility with respect to parking and circulation for cars, RVs and tour buses. It is important to note that the Bedford Welcome Center is situated on a flat site. The current site for the Clinch River Valley Regional Visitor Center site presents challenges to circulation due to its topography. This comparison is for illustration purposes only and does not suggest a conceptual design solution.



Aerial view of the Bedford Welcome Center overlaid on the Clinch River Regional Visitor Center Valley site

Synthesis of Findings

After an analysis of the case studies, various trends with respect to the visitor centers' designs emerged. Common conditions were addressed and resolved in a variety of ways. Understanding these trends and conditions allowed for a refinement of the design approach.

The naming of the visitor centers from the case studies is somewhat ambiguous. Though all the buildings may be labeled "Visitor Center" or "Welcome Center," they serve to address the following functions in isolation, or more likely, some form of combination. These functions can be defined as follows:

Visitor Center – building which references an external destination.

Rest Stop – building which accommodates travelers' immediate needs of restrooms, food, or outside space.

Destination – building that is specifically worth traveling to because it houses something of interest.

Business or Office – building that is linked to an external organization which accommodates their operating needs.

Properly defining how a visitor center is to serve the needs of travelers or the local community will help to insure the final designed product is adequate and appropriate.

Each visitor center's architecture responded in some way to iconic form, vernacular form, or a combination of the two. Employing vernacular form and materials has the ability to educate visitors about local building practice and regional character. Iconic form can serve as a signpost for the building and can also become an icon to brand the building and region. A building such as this may be more memorable or recognizable.

Our study also yielded some general considerations for a well designed visitor center. Outside spaces were heavily utilized by travelers, especially children and pets. Staff areas should not be relegated to the worst part of the building. Staff will experience the building throughout the year, as opposed to a visitor who is in the building only briefly. Clarity of plan is essential. The facility will be used by people typically unfamiliar with the building or surrounding area. They often are weary from travel and have specific needs. The building ought to be arranged in a straightforward manner.

Visiting and researching other similar facilities was extremely valuable in helping the team to understand a number of factors and will serve as a strong foundation from the CDAC team explored ideas for the Southwest Virginia Gateway Center.

To build upon the case study research, comparative analysis in the areas of vehicular circulation, parking requirements, facility footprint, location, and orientation relative to site and highway views were also considered.

Program Development

The broadly defined functions for the Regional Visitor Center offer design opportunities to meet specific needs and creative economic development objectives. Would it simply be a place to stop on a long road trip? An iconic building filled with local food and crafts for sale? Or a building more focused on the region's recreational opportunities with space for renting canoes and kayaks? The options seemed to be endless. The following list of ideas was sent to the stakeholder group to narrow down the program. The main feedback was that this visitor center should interpret natural and cultural history, present the river as a way to understand the region, and send visitors into the region's communities for further exploration. One respondent described the visitor center as the region's front porch, meaning you don't always need to stay for long, and you're not really inside or outside of the house, but you are able to linger a moment, take in the view, get acclimated, and then head inside.

Program Suggestions for Seven Counties Regional Visitor Center in St. Paul:

Based on the wants and needs expressed at the meeting on February 23, 2012, the following list of items was compiled that may be included in the regional visitor center. This list was used as the framework for the design of the building and site.

Conference Room for Community Meetings/Gatherings

This space could be rented out. How will the building be funded after construction? Will the building need to generate revenue to operate?

Office Space

Heart of Appalachia and other regional businesses could take advantage of the prime location of the visitor center. The rent would also provide income.

Exhibition/Gallery

This space would showcase the region's qualities including recreation, history, river information, and tourist opportunities in the surrounding counties given through interactive exhibits. Maps of bike routes, hikes, and locations of river access in each county and the City of Norton would be available here.

Outfitters

Canoes, kayaks, and bikes (?) would be available for locals and tourists alike to take advantage of the region's eco-recreation. The outfitter could be operated by the visitor center or the space could be leased.

Outdoor Exhibition Space

The area surrounding the building would showcase the biodiversity of the river and other native vegetation. Demonstrations would allow visitors to explore the region even if they are simply stopping on their way through the area.

Wine Bar/Coffee Shop

This space would be used to sell local wines, snacks, or other foods to hungry visitors. This would not require a full kitchen, but could be more like a deli counter. This would also bring in revenue.

*list continued on next page

Display of Local Crafts/Gift Shop/Bookstore

This space would provide local artisans another venue to display their work, including pottery, books, music, jewelry, etc. If these items were for sale it would benefit the artists as well as the visitor center. Or they could just be on display with information on where to purchase.

RV hook ups, Restrooms, Other Amenities

Be sure to include the necessary facilities for people on longer trips. Bike racks, canoe/kayak storage, etc.

Suggested Design Adjectives

Visitor centers can have distinguishing architectural qualities that make them somewhat iconic in the region, such as Heartwood. However, other visitor centers focus more on the information that is within them or take on the role of a rest stop or meeting point. The CDAC team's goal was to design a building that aesthetically embraced the local character and uniqueness of the region while performing all of the necessary functions required of a visitor center.

In order to understand the visual preferences of the client group, the CDAC team presented a list of words to help define design qualities and characteristics for the visitor center. Each member of the client group was asked to chose five words that appealed to them the most. The most popular word chosen was "river." This exercise was intended to help the CDAC team understand qualities important to the client group.

River	6
Functional	5
Artful	5
Wood	4
Simple	4
Resourceful	4
Railroad	3
Efficient	3
Sophisticated	2
Rustic	2
Modern	2
Elegant	1
Humble	1
Curvy	1
Nestled	1
Coal Mine	1
Metal	1
Concrete	1

Preliminary Design Concepts

During the design process the CDAC team presented the two preliminary designs to the stakeholders. This meeting outlined the site analysis and the initial building concepts.



Fatemeh Saeidi-Rizi, Kyle Walker, Lou Ann Wallace, and Suzy Harrison discuss preliminary plans at the meeting on 4-11-13.



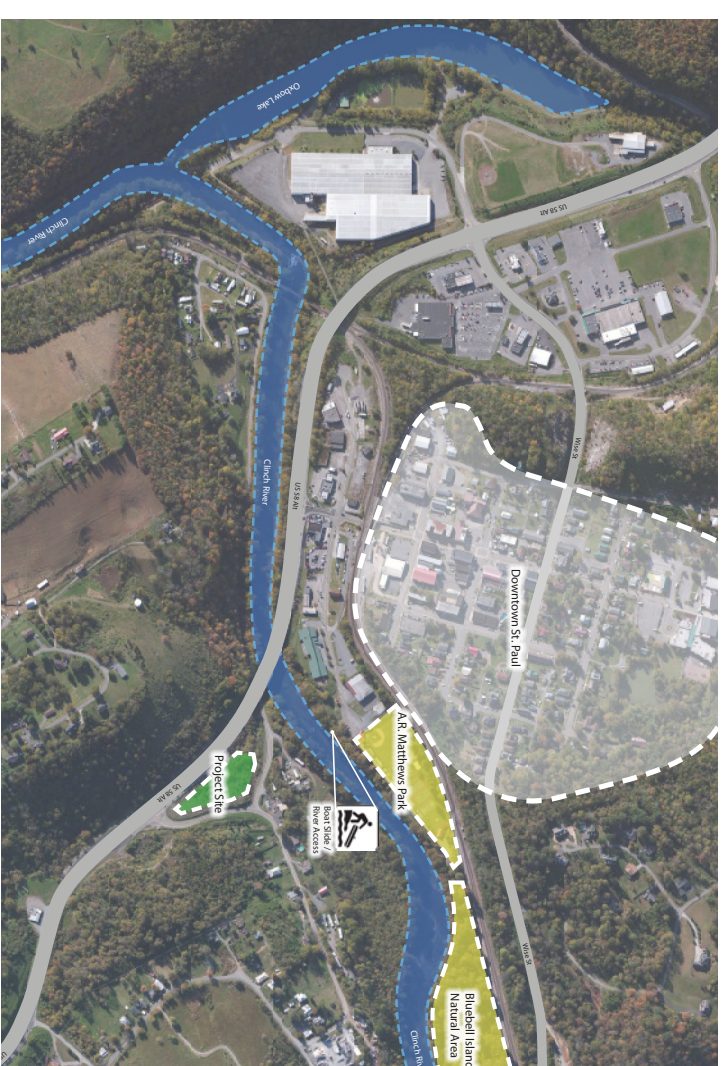
Kenneth Black reviews plans on 4-11-13.



Kenneth Black, Kyle Fletcher, and Suzy Harrison discuss options for the site plan on 4-11-13.

The purpose of the presentation was to receive feedback from local city officials and stakeholders. Two building plans, a smaller phased approach and a larger rectangular building were presented. The community members found characteristics of each design that were desirable and at the end of the meeting it was determined that the concept would be combined to take the best from both concepts. The two concepts, along with a brief description of each, can be found on the following pages.

St. Paul Visitor Center
Phased Construction
Preliminary Concept 1



Since the site is part of a larger vision for St. Paul, the Visitor Center and the surrounding complex is to be built in stages.

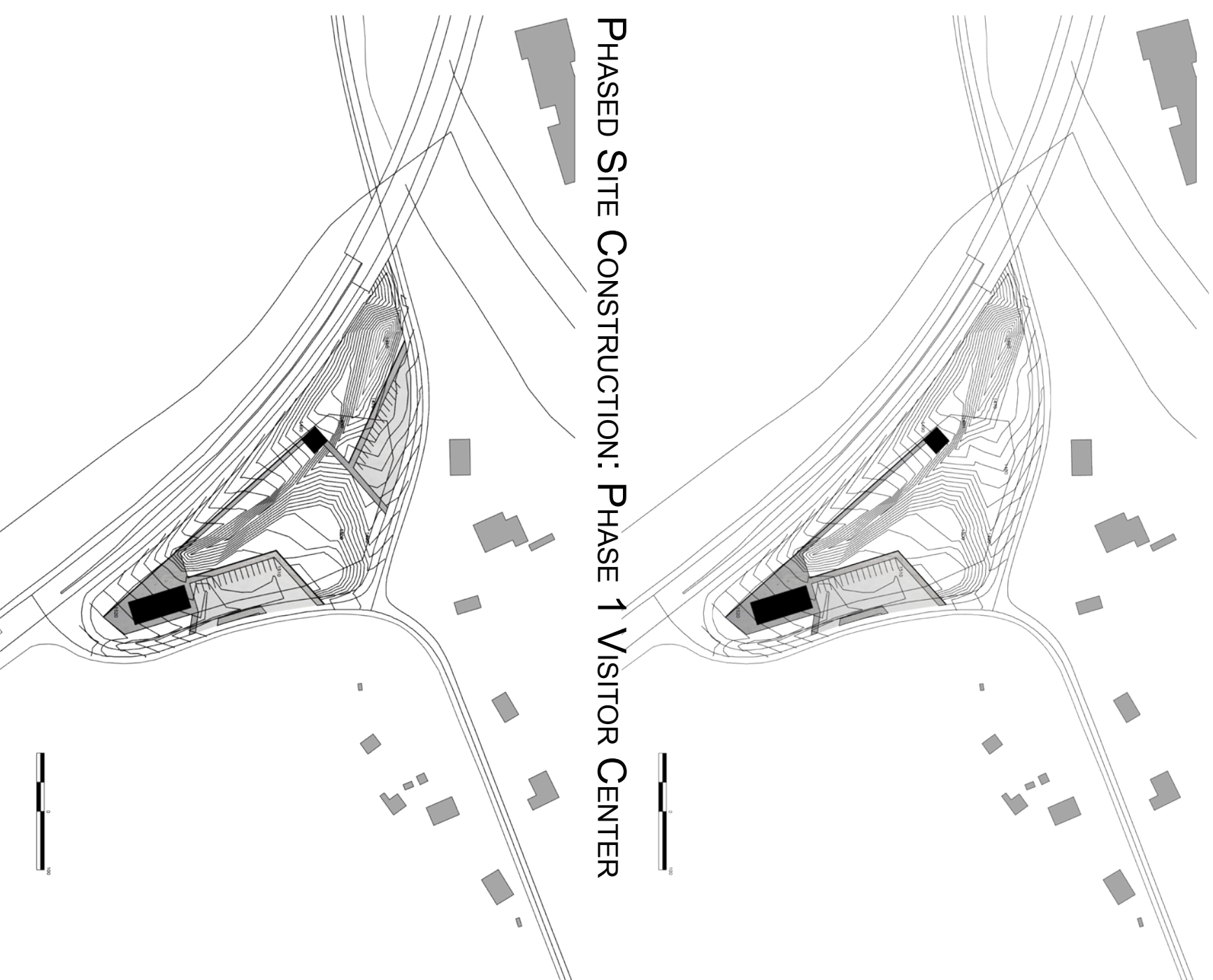
The interior of the visitor center is a series of bays to create a vaulted space from SIP panels and dimensional lumber frame trusses. The basement level is constructed in a similar manner to the marketplace, building off of the long, rectangular plan of the visitor center.

These different stages are in response to the desired development of the southern side of the town. The first phase is the visitor center; the visitor center will serve as an anchor for the other phases and the development of the area in general.

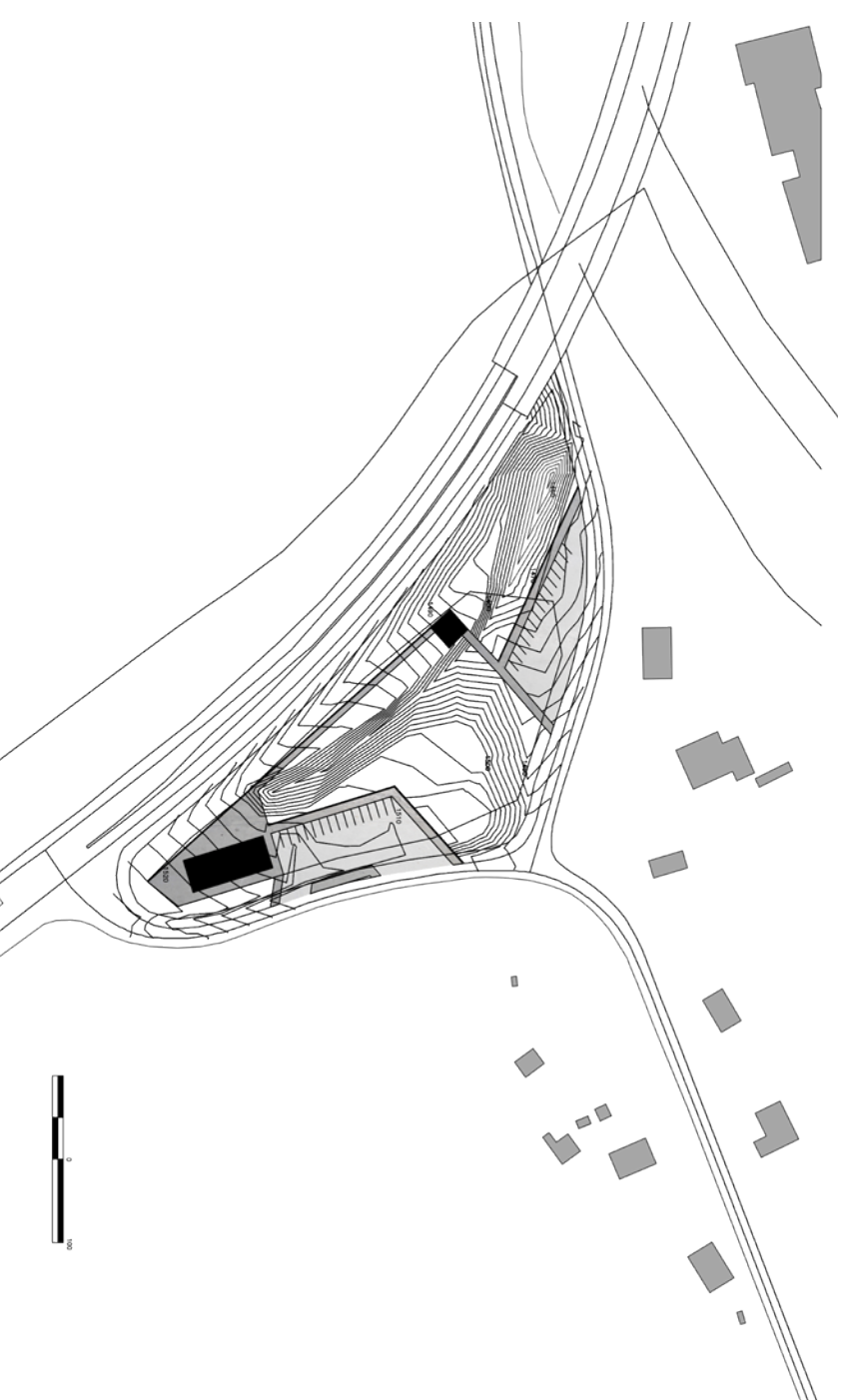
The second phase is tower. The tower will serve as a beacon on the site to draw motorists to the visitor center. The tower will also house different artisans shops and stores and the kayak rental and meeting place for trips on the Clinch River.

The third phase is the pedestrian bridge to the other side of the river. The pedestrian bridge will serve as the first link across the river.

PHASED SITE CONSTRUCTION: PHASE 1 VISITOR CENTER



PHASED SITE CONSTRUCTION: PHASE 2 TOWER EXPANSION



PHASED SITE CONSTRUCTION: PHASE 3 BRIDGE



- LEGEND: PLAN**
- A Small Plaza
 - B Main Visitor Center
 - C Parking + RV Turn-around
 - D Wall + Walking Path
 - E Pedestrian Bridge
 - F Existing Buildings
 - G US 58
 - H Access Road (Frosty Road)
 - I Access Road (S. St Paul Road)
 - J Clinch River
 - K Tower / Kayak Rental



St. Paul Visitor Center

Site Features

Preliminary Concept 1



The structure is located on the more level part of the site. However, given the length of the visitor center, the sunken first floor becomes exposed as the visitor walks from the southwest to northeast along the bays.

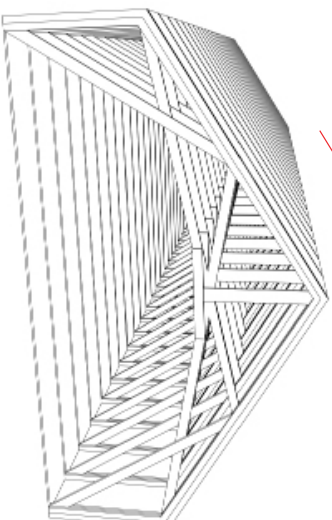
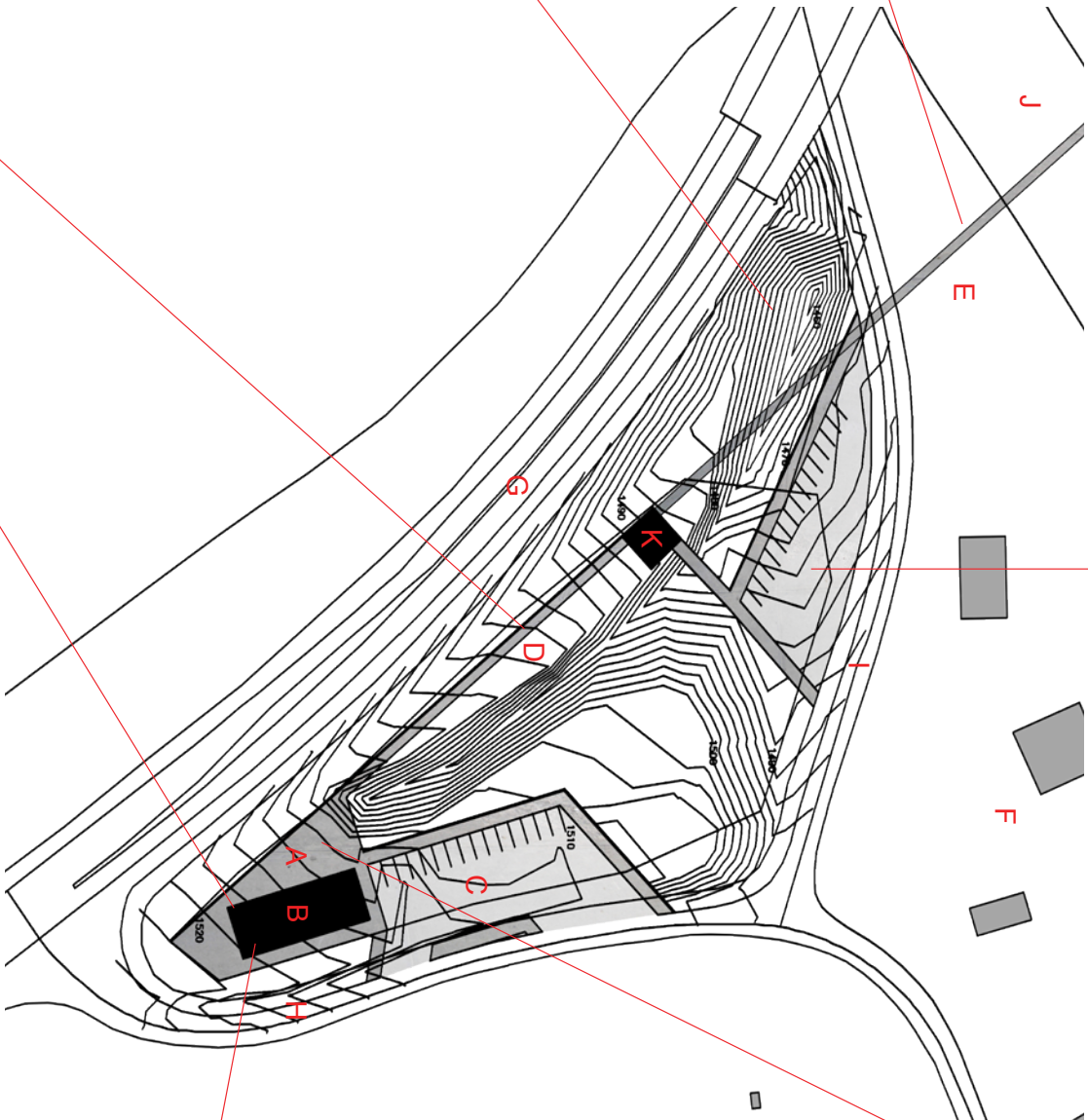
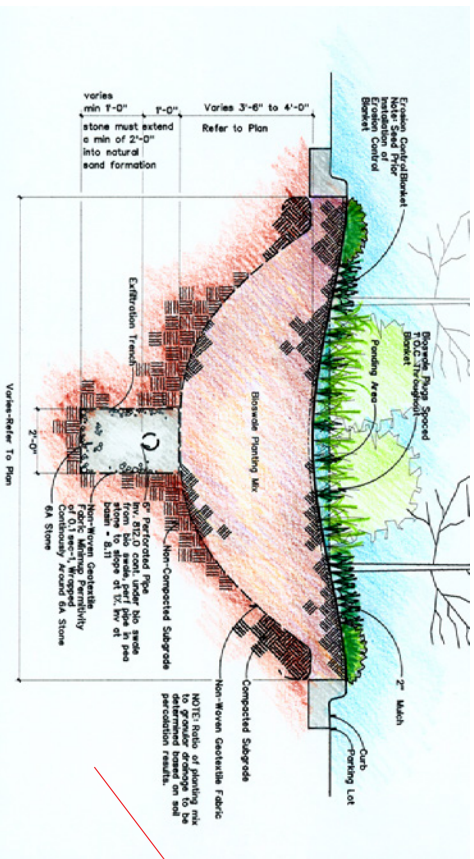
The site topography drops off to the northwest along the longer axis of the site. This section shows the tower and the visitor's center with a raised platform along the edge of the gallery floor for events or leisure.

The area between the two walking paths will be replanted to slow water movement and prevent erosion, but also to showcase different local species of trees and plants.



The sound wall, shown in section on the next page, runs the length of the site to visually block the highway, reduce noise, and serve as a beacon with the tower to motorists.

The wall starts out at a modest height, but as the site drops away the wall becomes a statement in the landscape. There are also benches built into the wall that correspond to the tower and visitors center for resting.

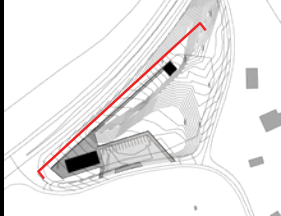
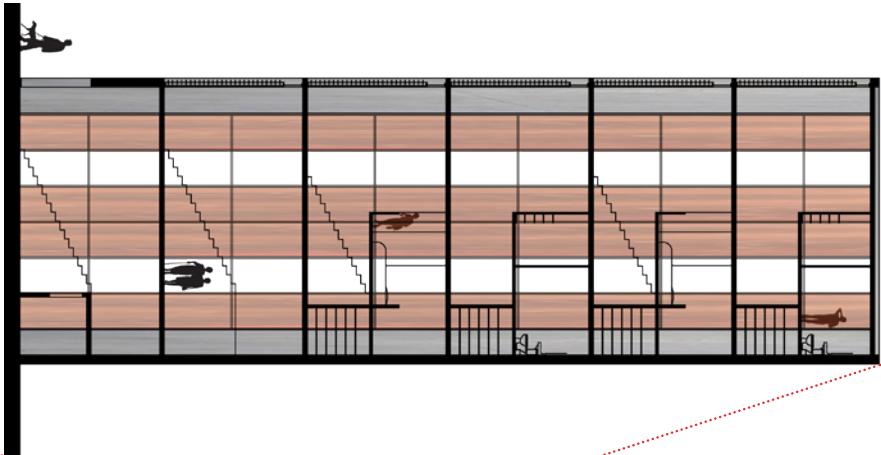
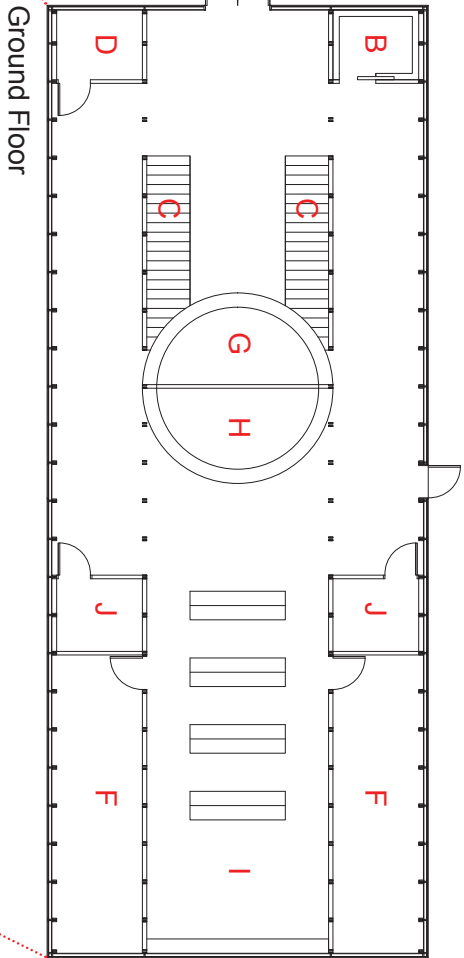
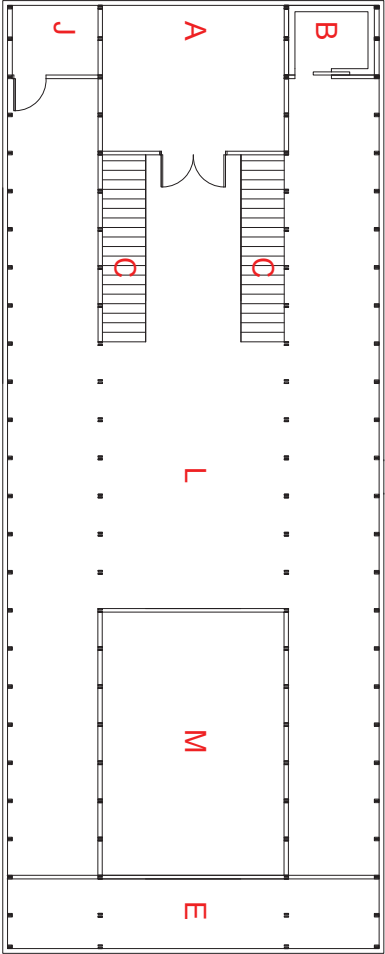


LEGEND: PLAN

- A Small Plaza
- B Main Visitor Center
- C Parking + RV Turn-around
- D Wall + Walking Path
- E Pedestrian Bridge
- F Existing Buildings
- G US 58
- H Access Road (Frosty Road)
- I Access Road (S. St Paul Road)
- J Clinch River
- K Tower / Kayak Rental

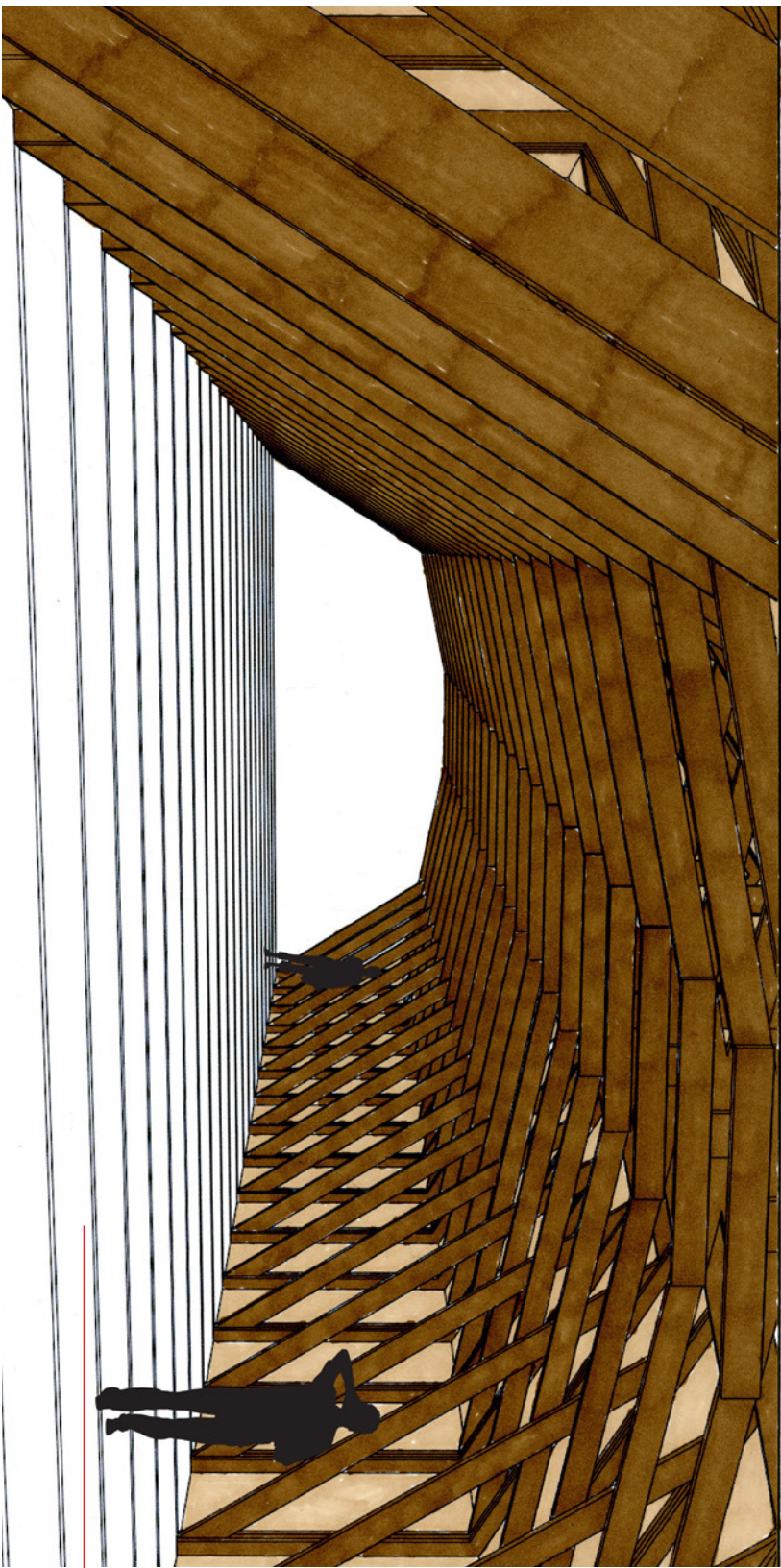
St. Paul Visitor Center
Plans, Sections, Elevations
Preliminary Concept 1

- LEGEND: PLAN
- A Lounge or Staff Room
 - B Elevator
 - C Stairs
 - D Janitor
 - E Mechanical/Electrical Storage
 - F Information Desk
 - G Cafe
 - H Bookstore or Shop
 - I Bathrooms
 - J Gallery
 - K Office Space
 - L Conference Room
 - M



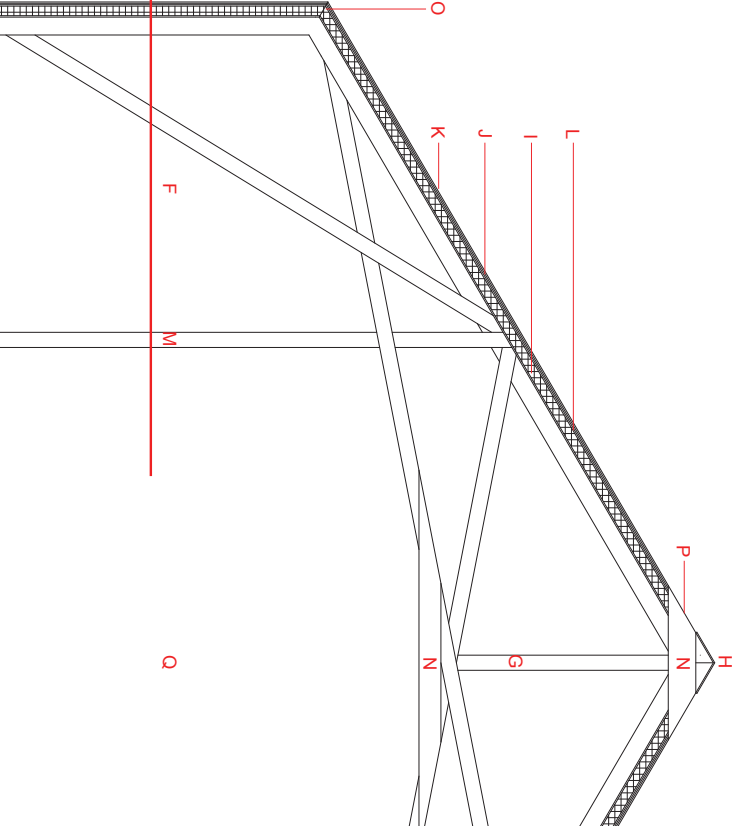
SITE SECTION FROM HIGHWAY 58

St. Paul Visitor Center
Interior Spaces
Preliminary Concept 1



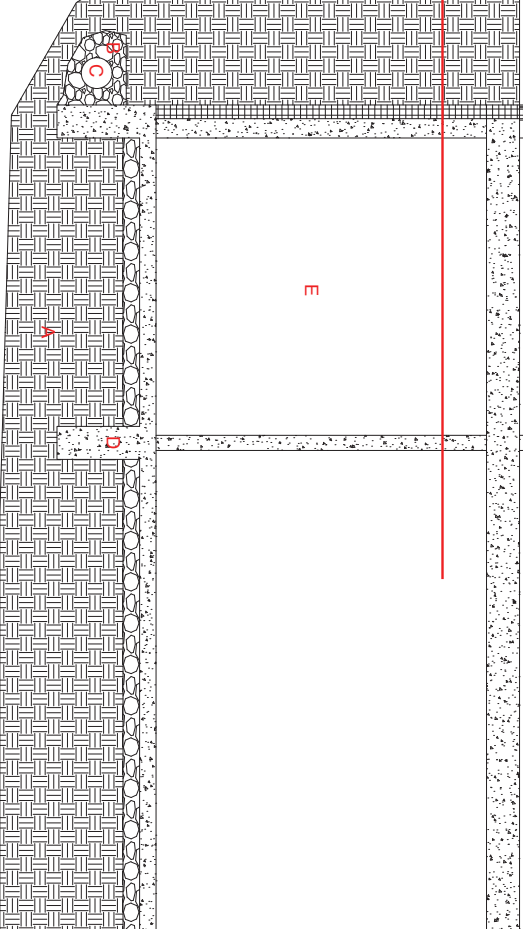
GROUND FLOOR

- LEGEND
- A Engineered Backfill
 - B Gravel
 - C Drain Pipe
 - D Concrete
 - E Staff room
 - F Gallery Space
 - G Wooden Truss
 - H Ridge Cap
 - I SIP Panel System
 - J Furring Strip
 - K Recovered Pallet
 - L Wood
 - M Vapor Retarder
 - N 4x4 Posts
 - O Lateral Brace (2x8)
 - P Beveled SIP Panel
 - Q Ridge Vents



BASEMENT ROOM

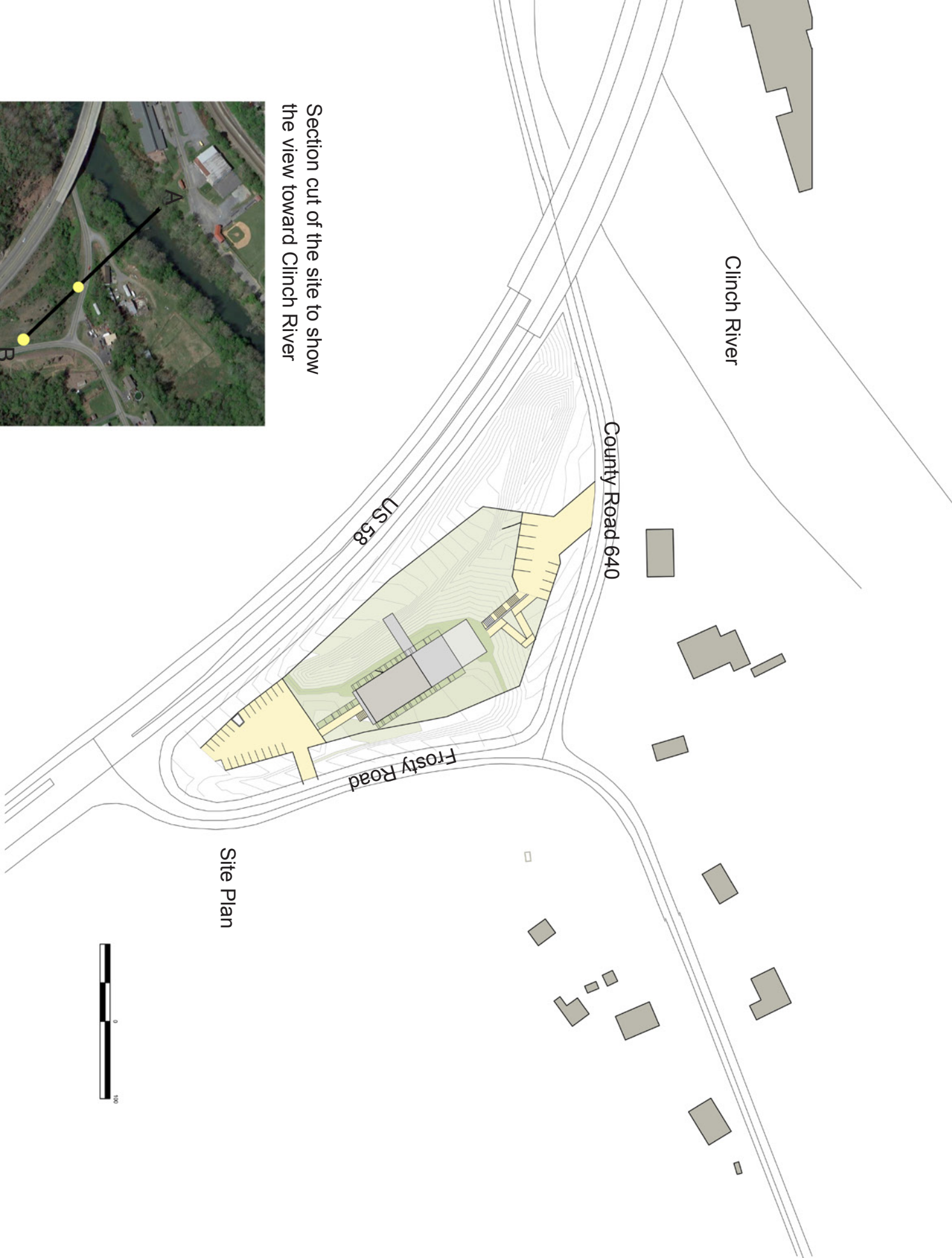
- Partial Visitor Center Section
- Scale: 0 16' 32' 48' 64'



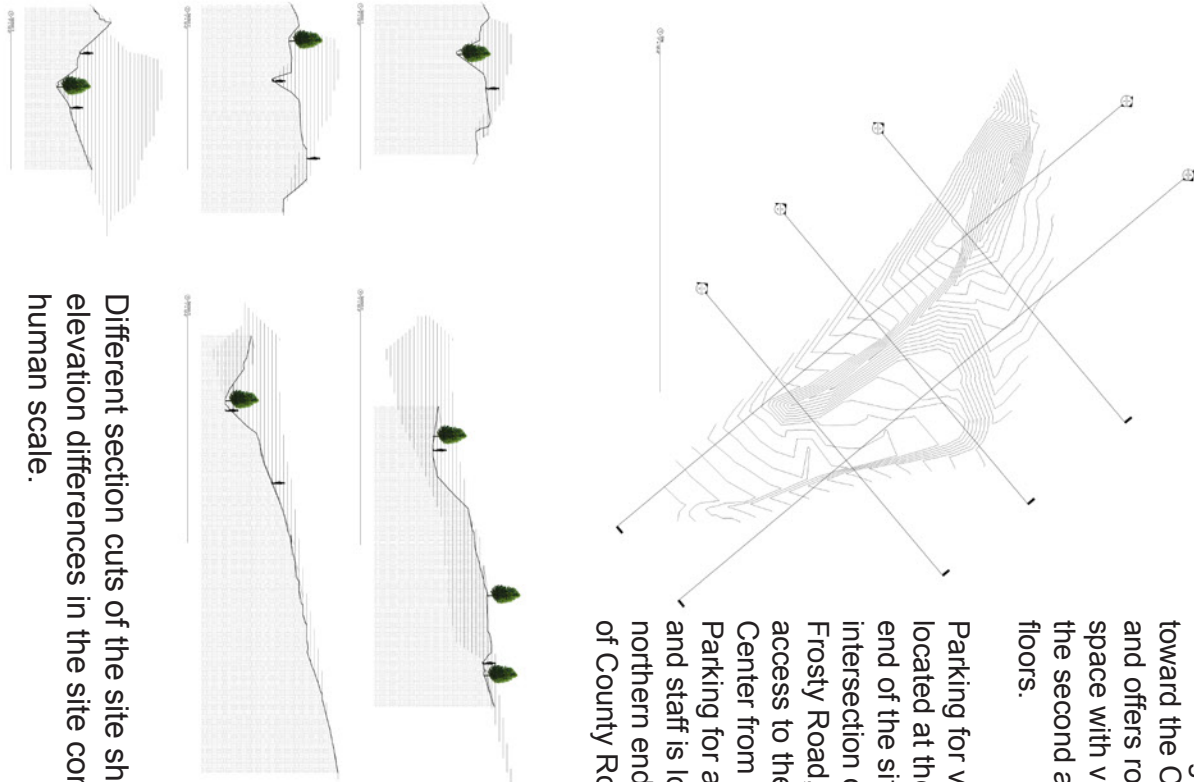
St. Paul Visitor Center
Site Features
Preliminary Concept 2

The building is oriented toward the Clinch River and offers roof garden space with views on both the second and third floors.

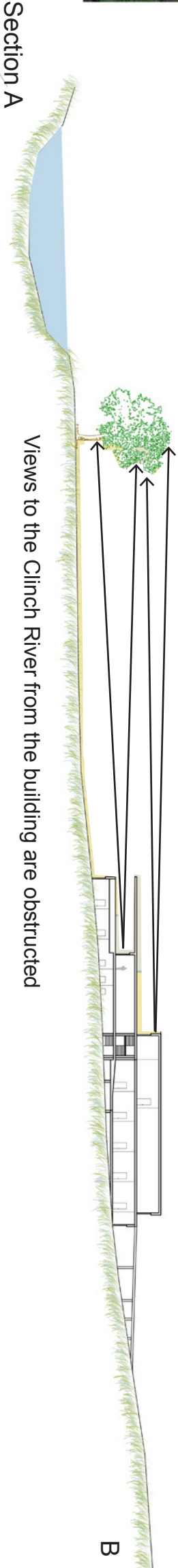
Parking for visitors is located at the southern end of the site near the intersection of US 58 and Frosty Road, offering easy access to the Visitor's Center from US 58. Parking for a few RVs and staff is located at the northern end of the site off of County Road 640.



Section cut of the site to show the view toward Clinch River



Different section cuts of the site show the elevation differences in the site compared to human scale.

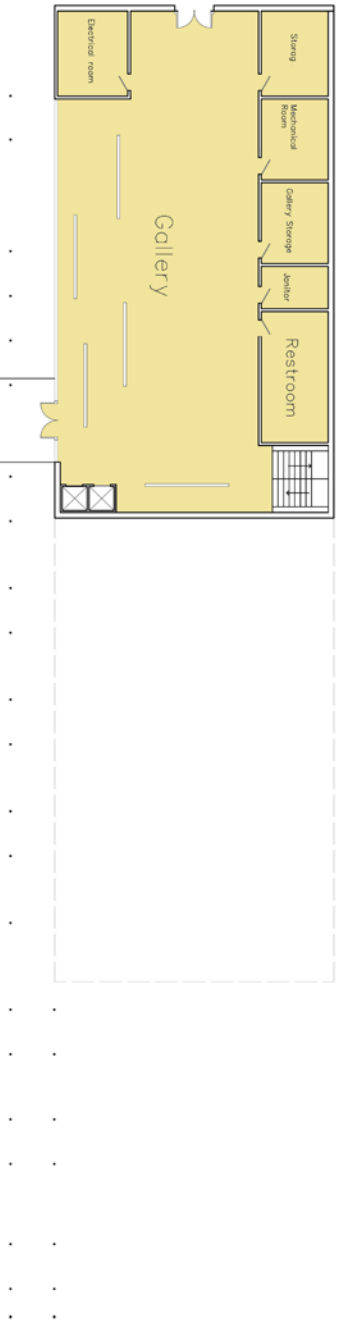


St. Paul Visitor Center

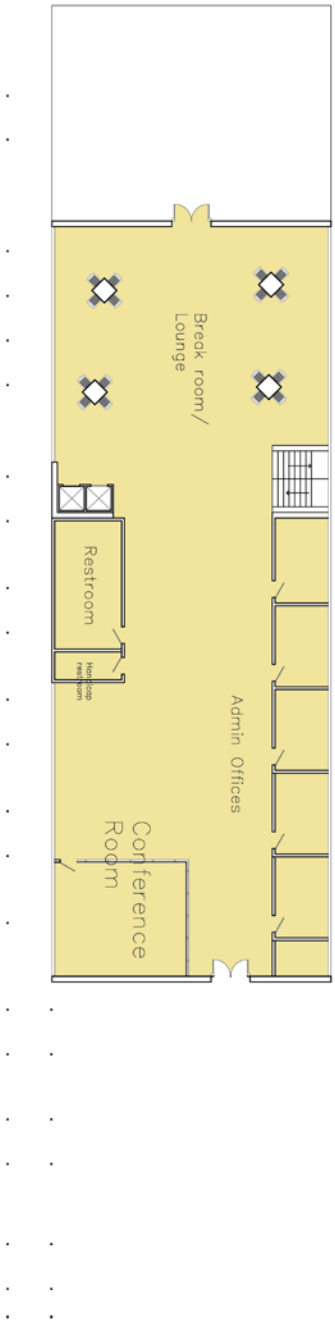
Plans/Elevation

Preliminary Concept 2

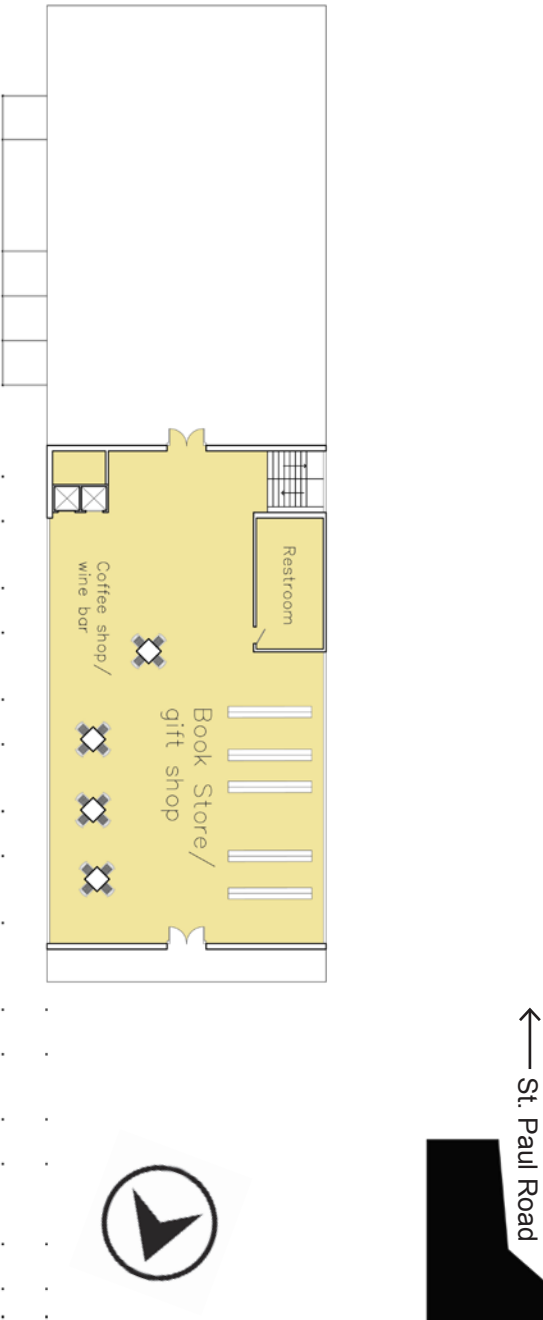
The proposed Visitor's Center is a steel frame building with green walls. The third floor serves as the main welcoming area for visitors with a coffee/gift shop and public restrooms. The second floor includes administrative and staff space. The first floor contains a gallery for the display of local crafts, storage and restrooms.



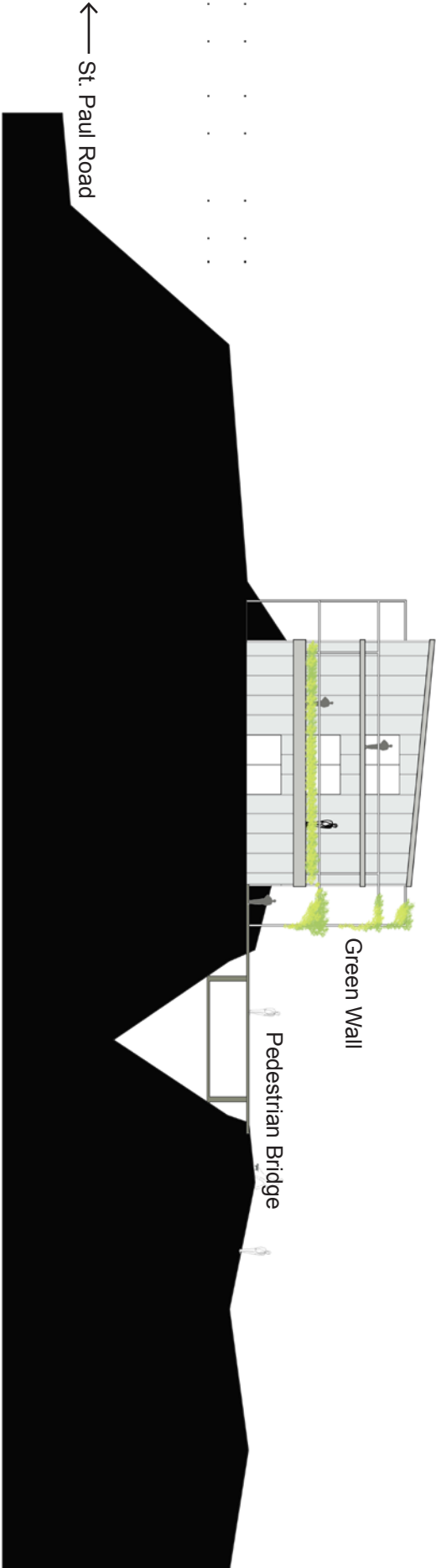
First Floor Plan



Second Floor Plan

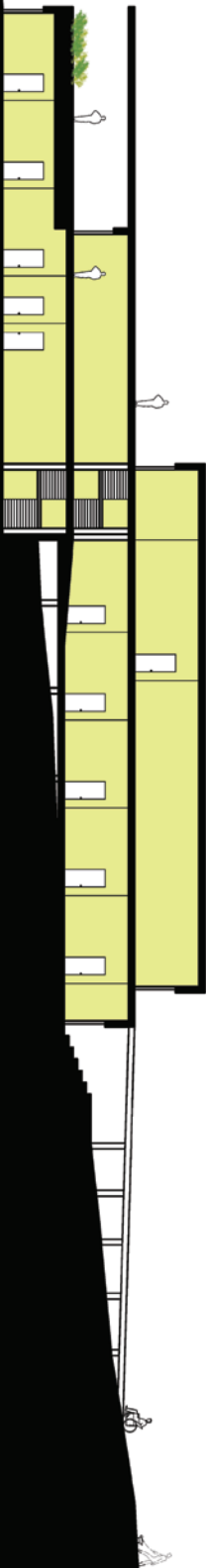
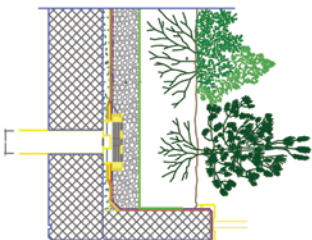


Third Floor Plan



South Elevation

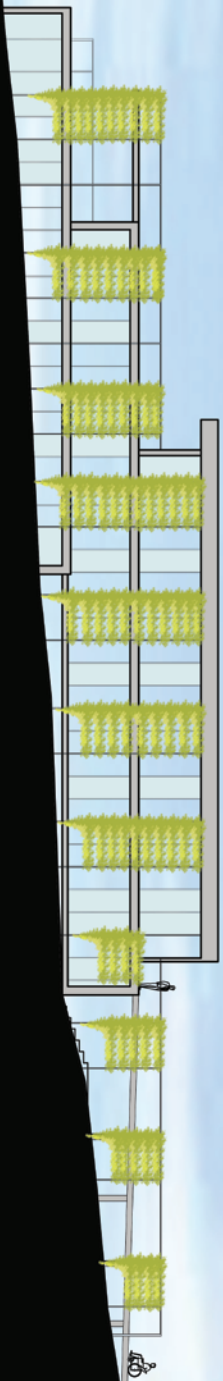
Raised planter on the outdoor space of the second floor.



Longitudinal Section



The foundation on the south façade of the Finnish Embassy in Washington D.C. provides an example of a green wall, which can be used to improve air quality, provide insulation (keeping the building cool in warm weather and warm in cold weather), and add beauty to the building.

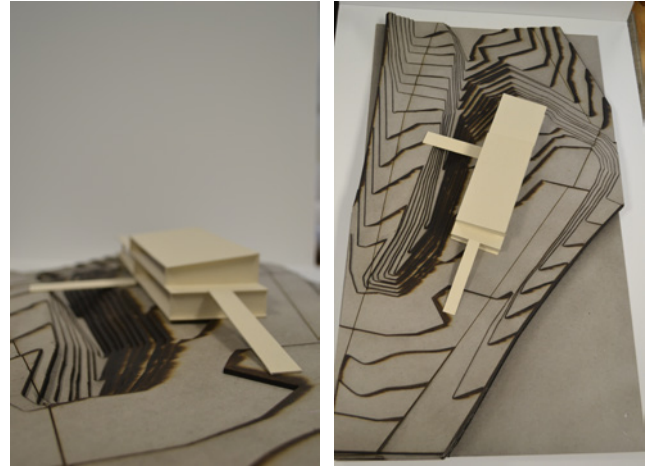


North East Elevation

Final Conceptual Design



Final conceptual design boards and supporting model



Physical model with the final building design

Based on feedback from the client, the CDAC design team revised the concepts presented in April 2013 and combined ideas from each concept into a single final conceptual master plan for both the site and the building design. The concepts of the design are described below and are accompanied by supporting drawings (11x17 pullouts).

The conceptual idea for this design is based on challenging site conditions (topography, utility lines, property boundaries, sight lines from roads, etc). The site presented these limits and informed the design of a building that must meet the site on its terms. To intervene in any other way would mean to change the site to fit a preconceived notion of architecture. The result is a building and a site that is united and work together as a whole.

The geometry of the site and characteristics of its topography, coupled with vehicular access and parking, determined building placement and orientation. A welcome circumstance of this orientation is solar aspect. The design offers its long façade to the sun in a south – southwest orientation. This provides opportunities to use passive solar concepts and natural day lighting solutions for the final design.

Two parking lots have been provided on the site. The upper parking area south of the building provides parking spaces for visitors. The lower parking area to the north provides parking spaces for a few RVs and staff. The vegetation on the western edge of the site provides a sound buffer for the site and building from VA Route 58 road noise (though a planting plan was not developed, see Appendix B for general recommendations for plant material for foundation).

The building emerges with the natural landscape and topography of the site. It adopts characteristics of the site and reflects these natural elements back in its architecture. For example, the roof garden on the second floor represents an elevated piece of the landscape that the building took away on its foundation.

Bridges and ramps also provide circulation connections throughout the site. Space for vertical circulation (stairs and lifts) have also been planned. The building consists of three stories. The program of the building is divided into public (visitor) and private (administrative, business) functions.

1st. Floor (public) - Main entrance from lower parking, information desk and gallery, public restrooms.

2nd. Floor (private) - Staff offices, administrative functions, partner business locations, restrooms, storage.

3rd. Floor (public) - Main entrance from upper parking, coffee and gift shop, information, public restrooms.

Steel scaffolding wraps around the building like a second skin and supports native vegetation that modulates daylight in the interior and changes exterior color and character seasonally. The vegetation on the scaffolding forms a canopy all around the building, which creates a pleasant and compelling place to visit and provides an oscillating experience for users of the building, both inside and out.

Outdoor spaces have been incorporated into the second and third floors to provide outdoor views for people visiting and those who work at the Clinch River Valley Regional Visitor Center. The building is oriented toward the Clinch River. Views of the Clinch will be accomplished in part through vegetative management along the riparian edge (thinning branches of mature trees and select underbrush clearing for “windows”). It is important, however that any clearing be done conservatively so as not to cause storm water run off or erosion issues due to reduced vegetations along the riverbank.

The main structural materials of the building are concrete and steel. Glass is prevalent to offer ample natural daylight. The use of wood products inside the building will soften the interior. Repurposed pallet wood is proposed for display panels, furniture, flooring, etc.

By combining both old and new material, and adopting landscape and vegetation in this concept, the proposal generates both a current relevance and traditional aesthetic to the architecture. This building will present both old and new characteristics that symbolically connects traditions and heritage to a new and exciting future for the region.

The following pages include:

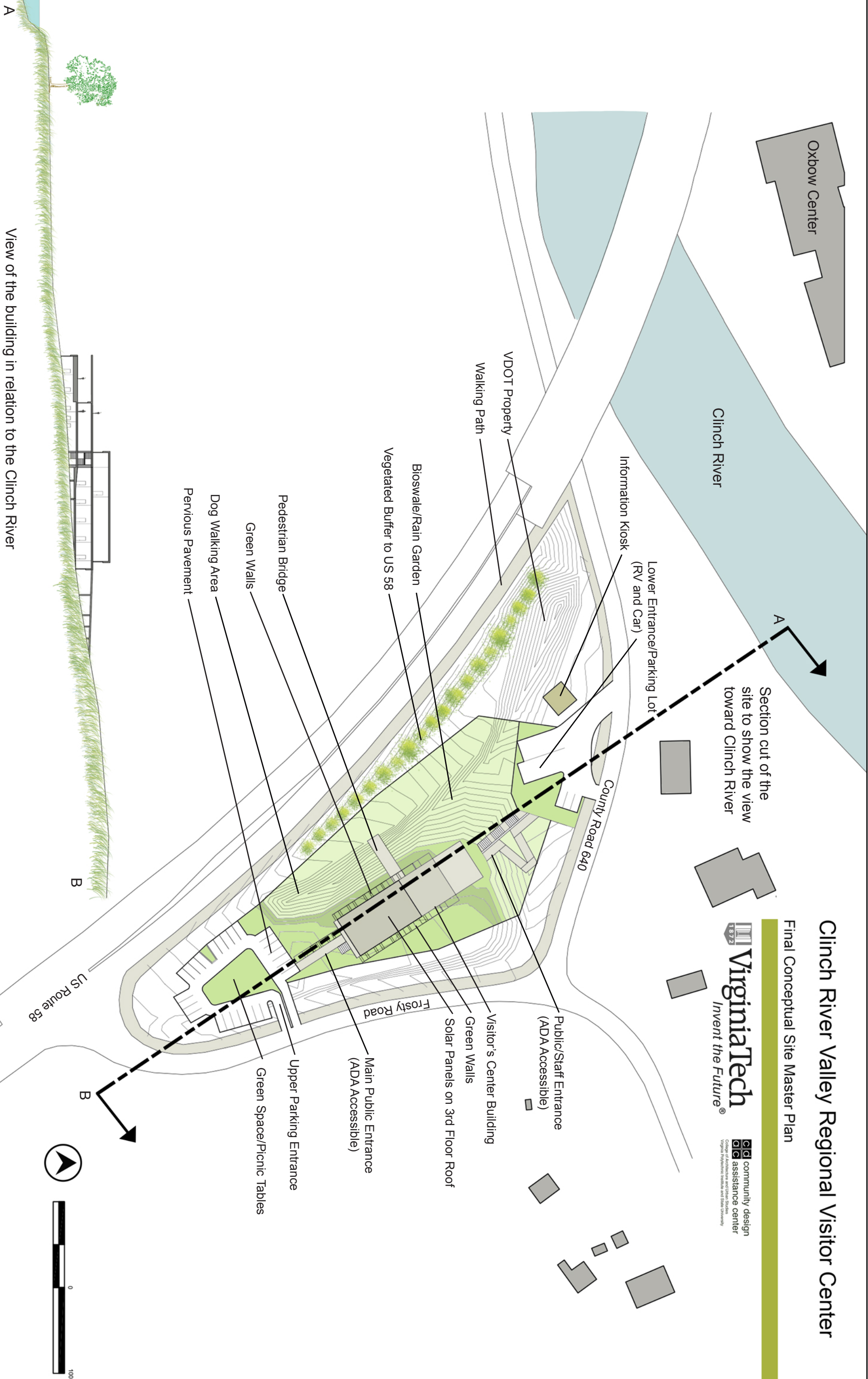
- Final Conceptual Site Master Plan
- Building drawings
 - 1. Final Conceptual Floor Plans
 - 2. Building Dimensions
 - 3. Floor Plan Dimensions
 - 4. Longitudinal Section, Northeast Elevation
 - 5. Entrance Rendering
 - 6. Interior Perspective
- Site Features and Elements
- Kiosk Concept
- Phasing Plan

Clinch River Valley Regional Visitor Center

Final Conceptual Site Master Plan



Section cut of the site to show the view toward Clinch River



View of the building in relation to the Clinch River



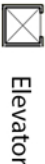
Clinch River Regional Valley Visitor Center

Final Conceptual Floor Plans

community design
assistance center
College of Architecture and Urban Studies
Virginia Polytechnic Institute and State University



LEGEND:



Elevator

• Green wall

First Floor:

- A. First floor entrance
- B. Storage
- C. Mechanical room
- D. Gallery storage
- E. Janitor
- F. Restroom
- G. Electrical room
- H. Gallery space
- I. Exit
- J. Pedestrian bridge

Second Floor:

- A. Entrance to the outdoor space
- B. Break room/ lounge
- C. Restroom
- D. Handicap restroom
- E. Conference room
- F. Administration offices
- G. Exit
- H. Outdoor space and roof garden

Third Floor:

- A. Main Entrance
- B. Welcome desk
- C. Sitting area
- D. Book store/ gift shop
- E. Coffee shop/wine bar
- F. Restroom
- G. Access to outdoor patio
- H. Outdoor patio

Public space
Private space

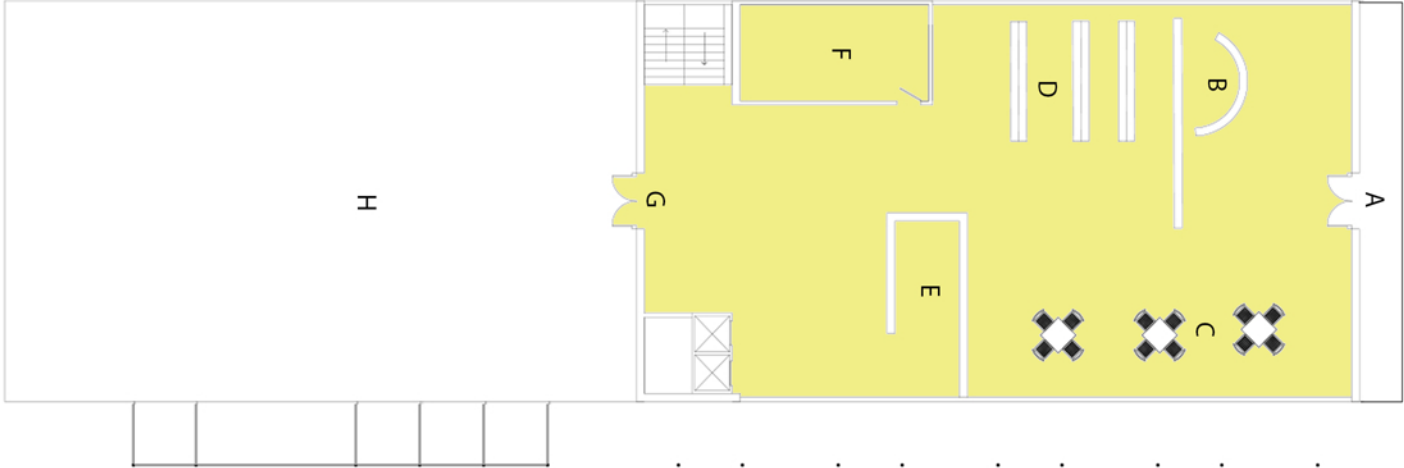
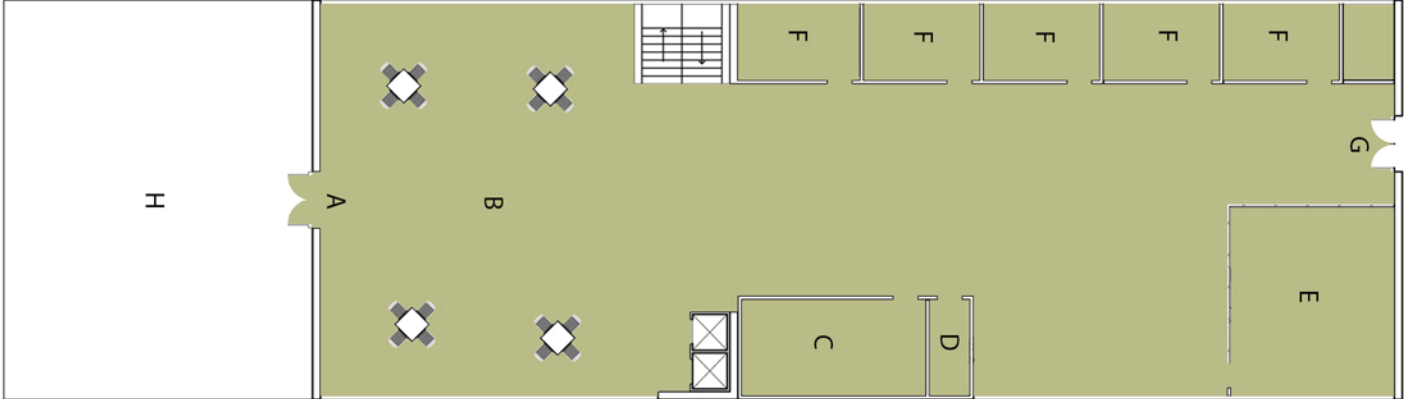
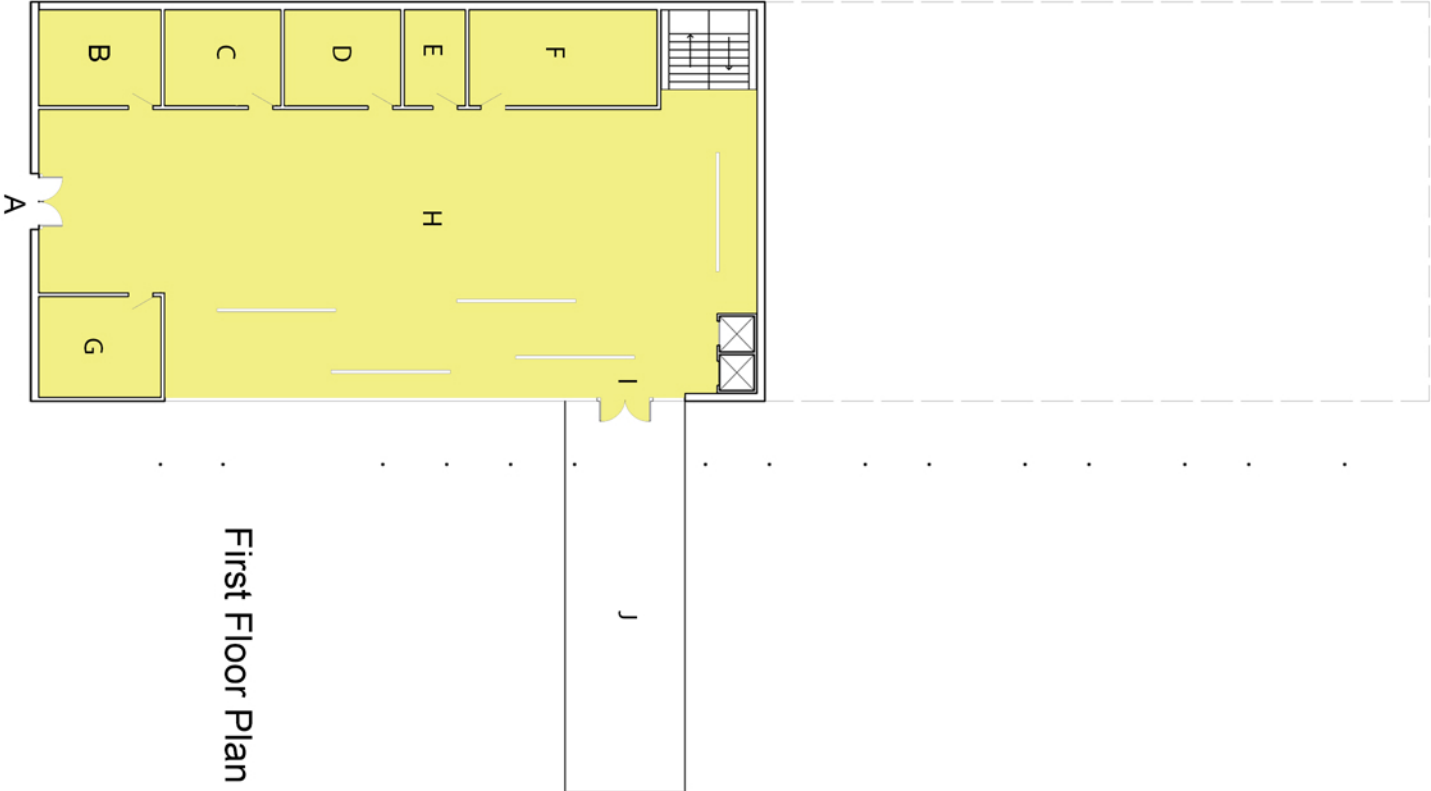


Not to Scale

Third Floor Plan

Second Floor Plan

First Floor Plan

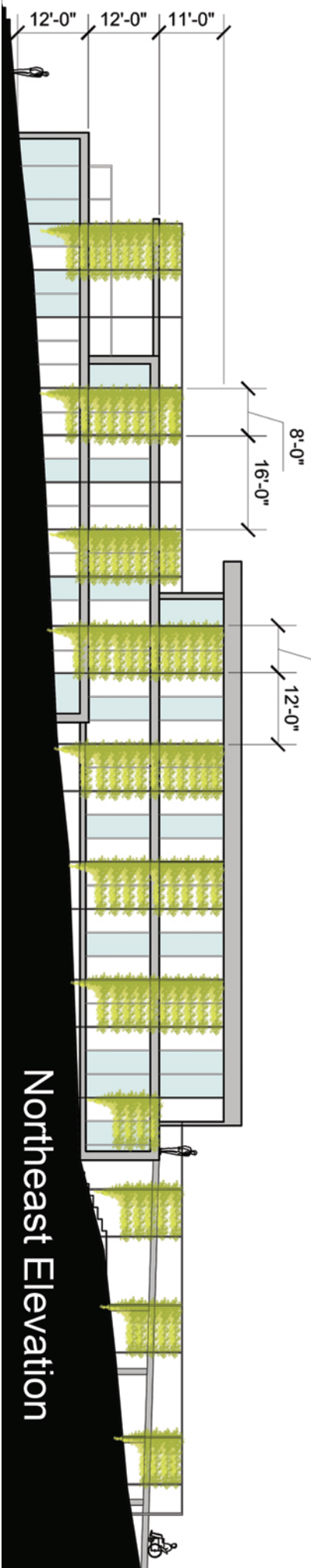
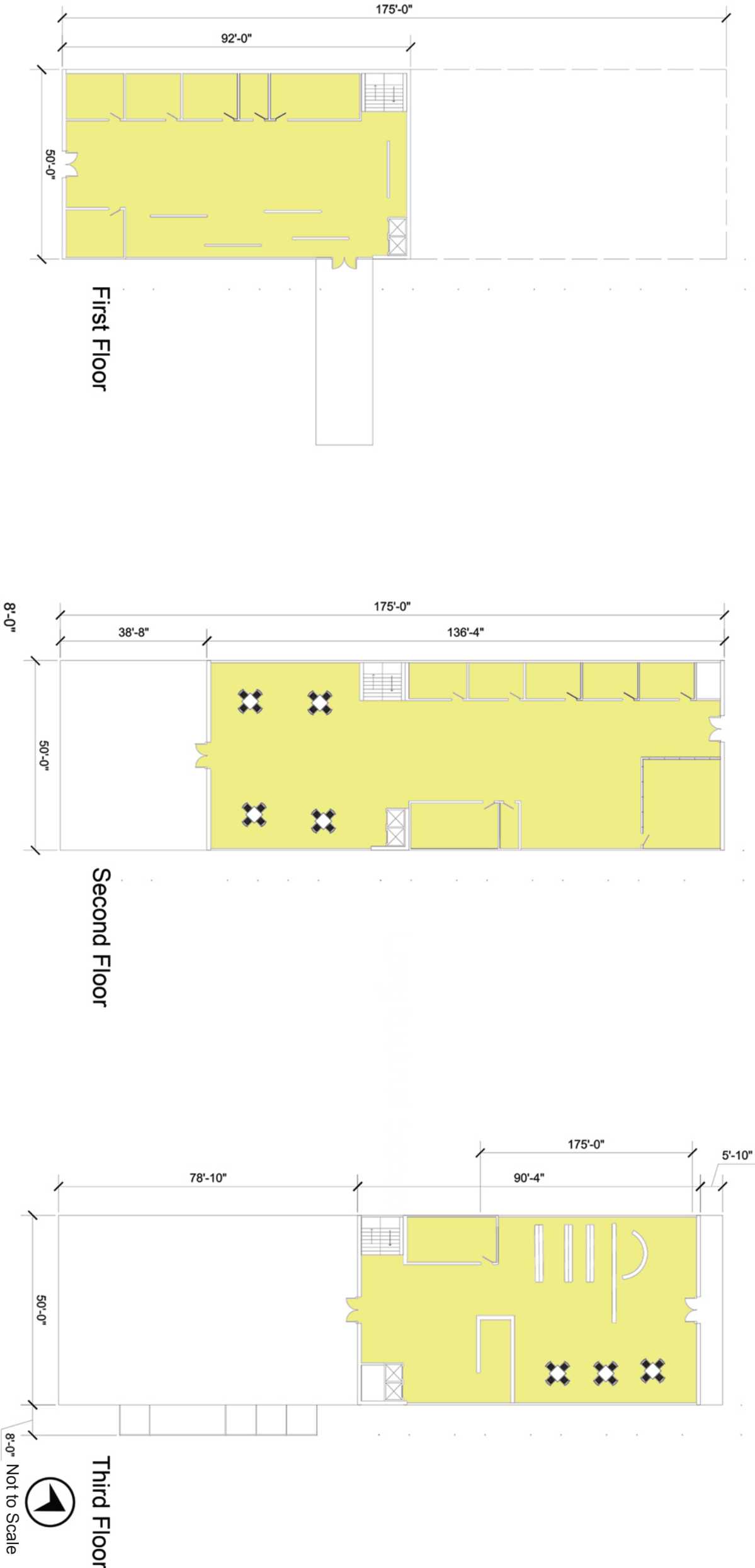


Clinch River Regional Valley Visitor Center

Building Dimensions



This drawing is conceptual and was prepared to show approximate location and arrangement of site features. It is subject to change and not for construction. The Community Design Assistance Center is not responsible for the inappropriate use of this drawing.



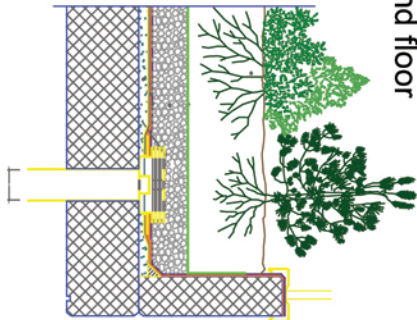
Northeast Elevation

Clinch River Regional Valley Visitor Center

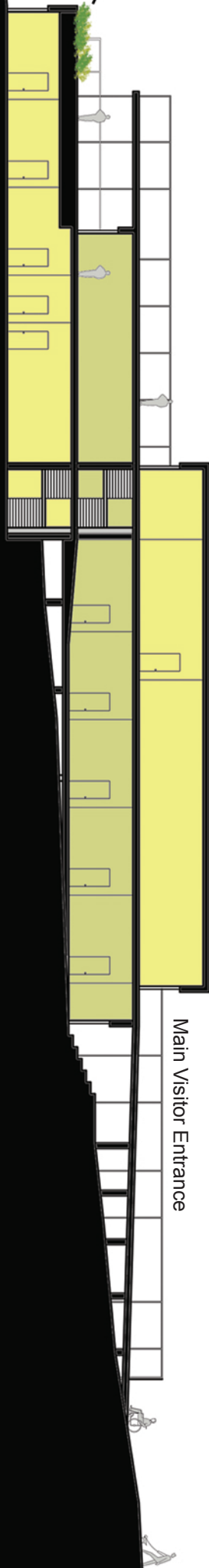
Longitudinal Section, Northeast Elevation



Roof garden at the outdoor
area of the second floor

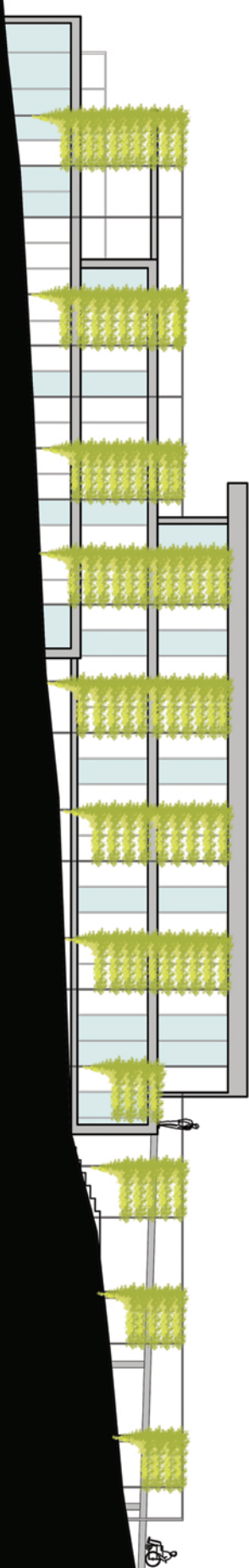


RV and Staff Parking



Main Visitor Entrance

Longitudinal Section



Northeast Elevation

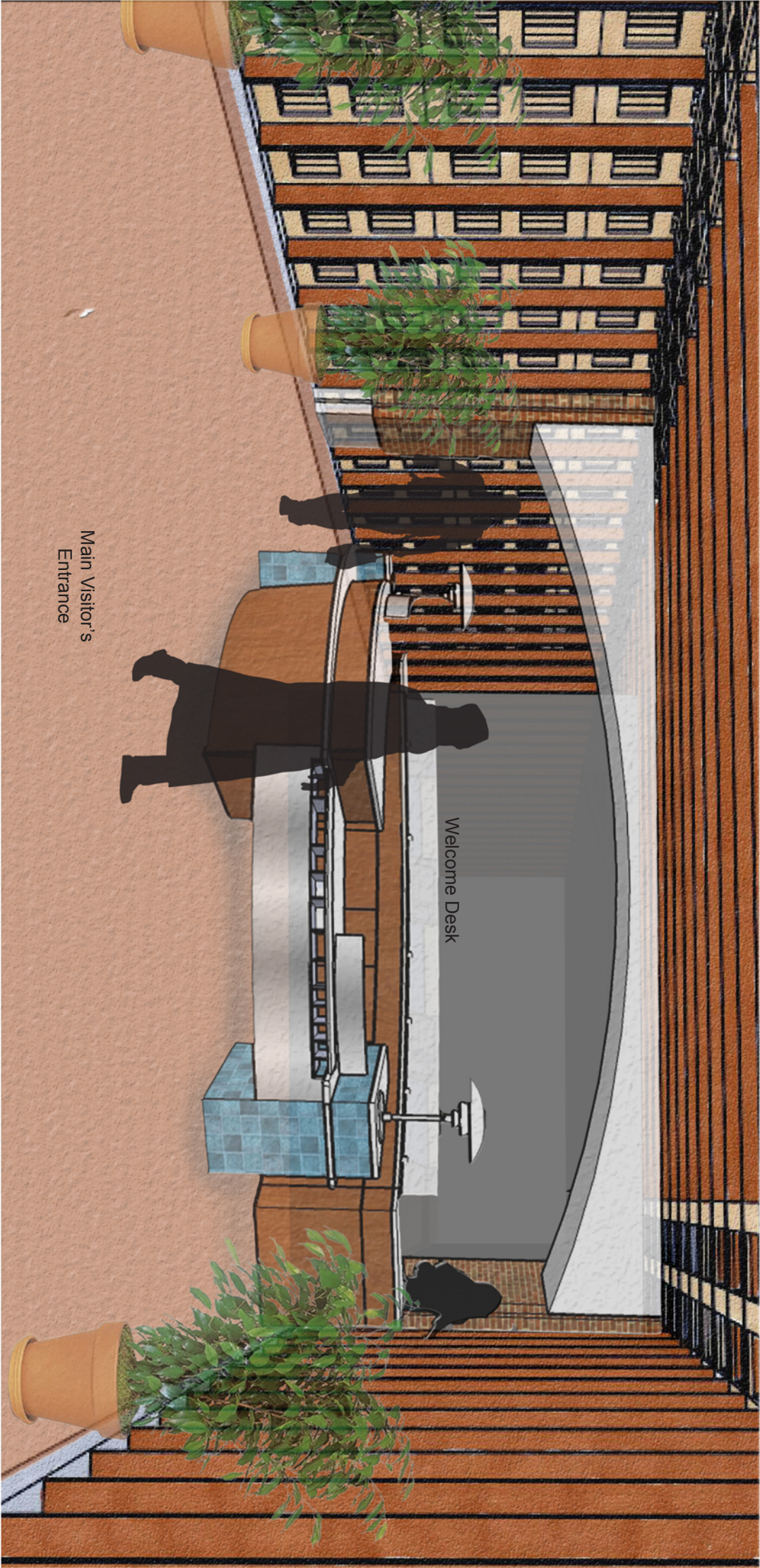
Clinch River Regional Valley Visitor Center

Entrance Rendering

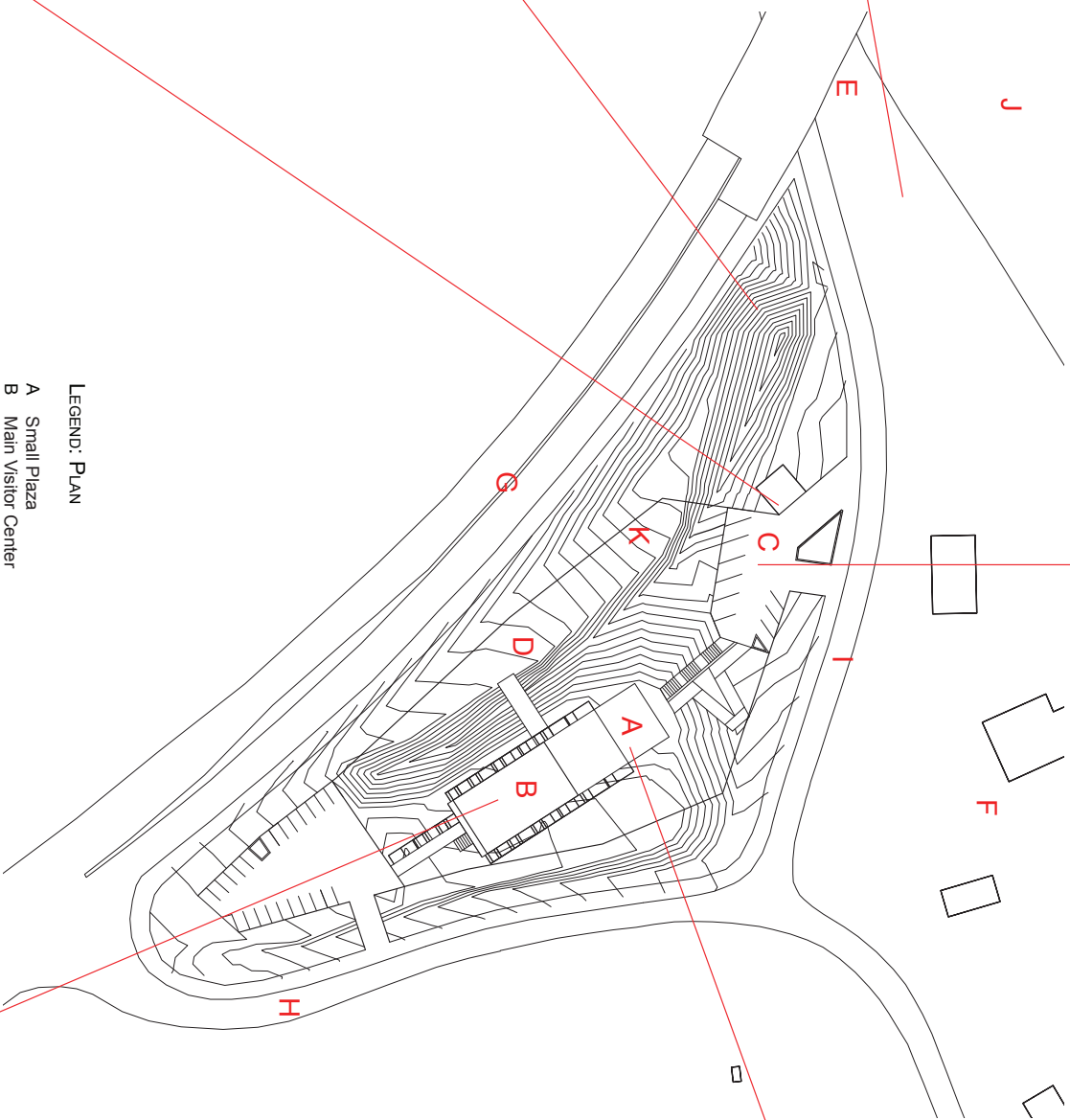
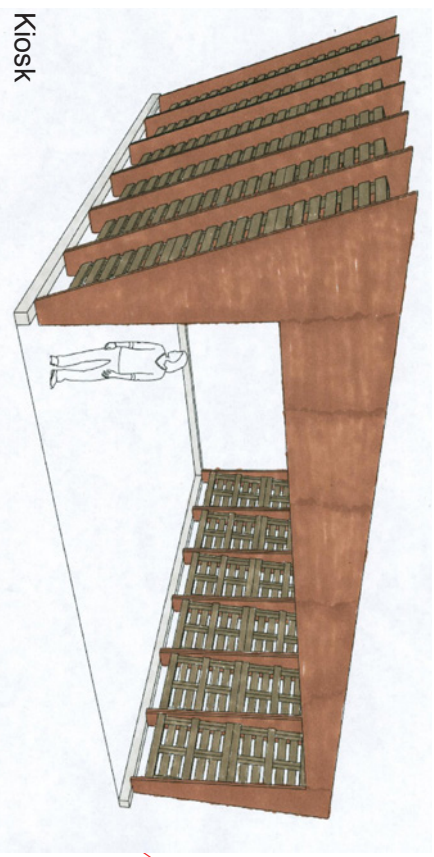
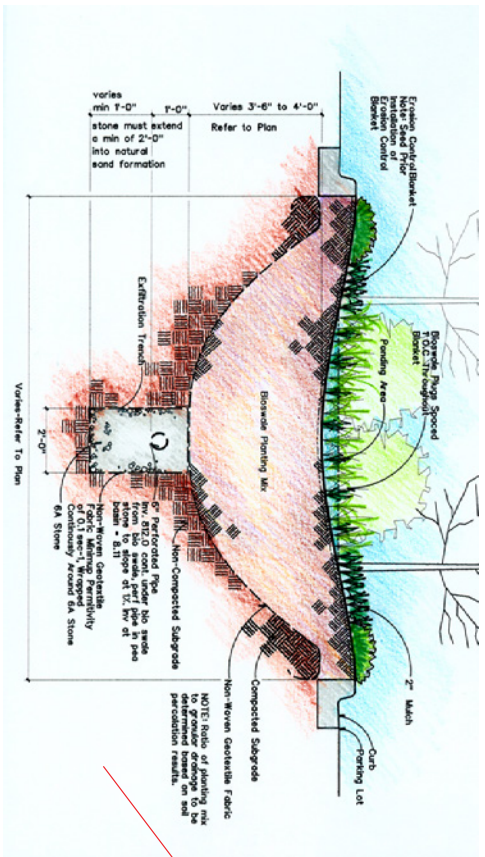


Clinch River Regional Valley Visitor Center

Interior Perspective



Main Visitor's
Entrance



Clinch River Valley Regional Visitor Center Kiosk Concept

PALLETS IN SECTION: Kiosk

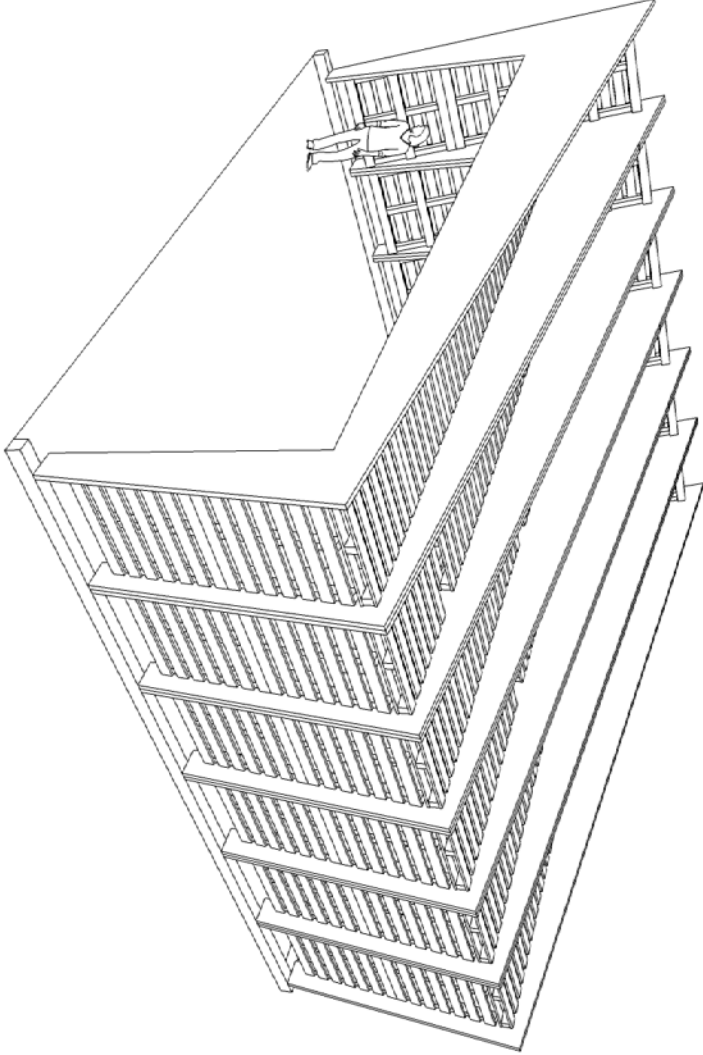
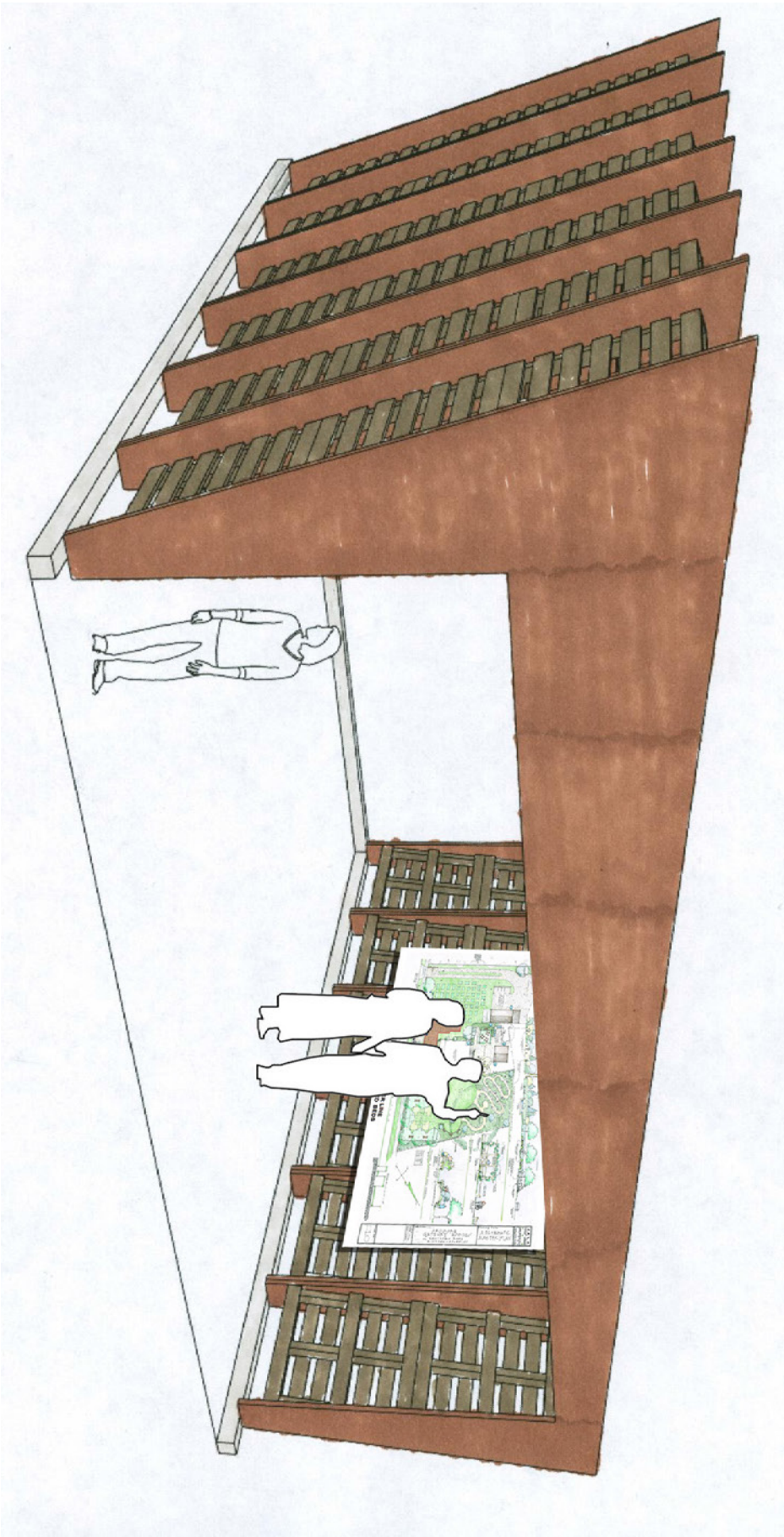
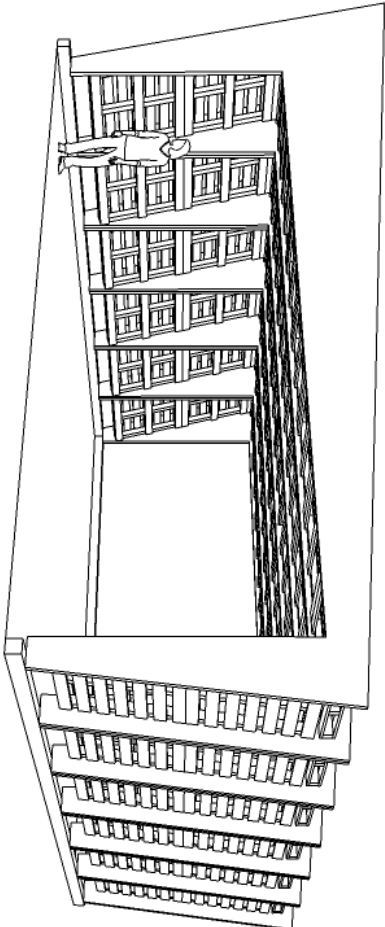
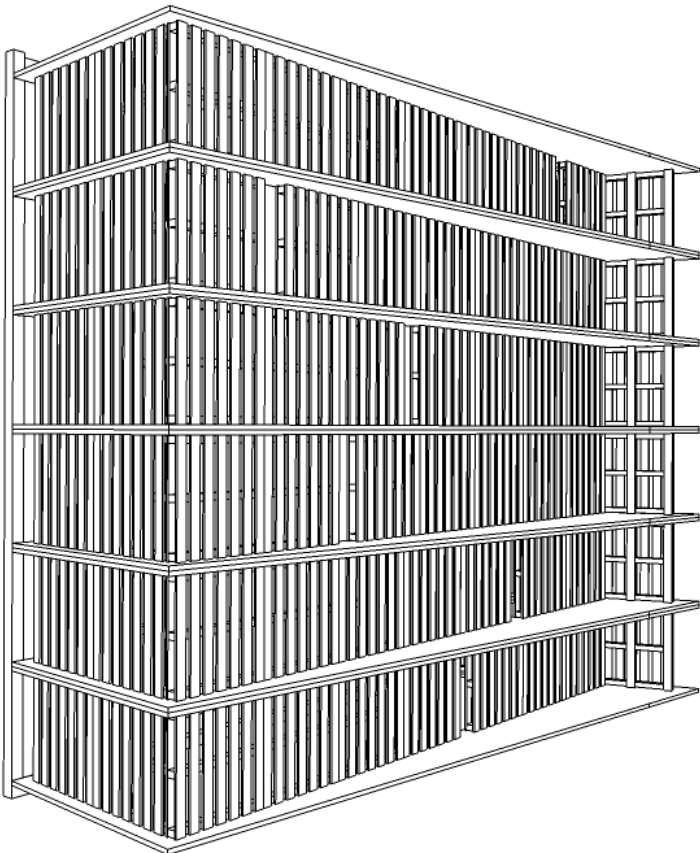
The visitor center is designed to be built in phases. In many cases rural areas cannot afford to have a large structure built all at once, therefore the kiosk is designed to both function as a landmark for the region, without becoming a burden financially to the community.

The kiosk would be the first step in the phased design, since the site is part of a larger vision for the region. By using phased construction the gateway center can grow and, expande as needed to meet the needs of visitors.

The kiosk is another adaptation of the original wooden exoskeleton, angling both of the walls outwards, while retaining a flat roof. As with the original exoskeleton the pallets serve as a rainscreen from driving rain and as a structural diaphragm.

The central span of the kiosk is 28 feet, which is managed by the micro-laminated beam, which ranges from a foot to four feet deep.

This kiosk design could be duplicated for other Clinch river Valley projects, thus bringing a recognizable architec-ture brand to the region.



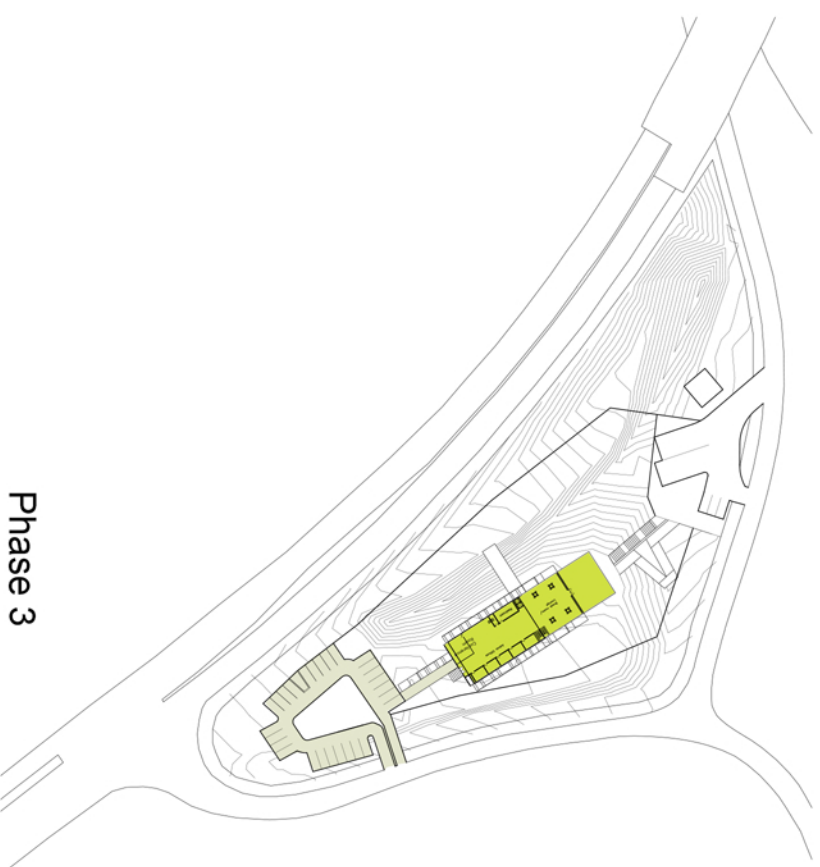
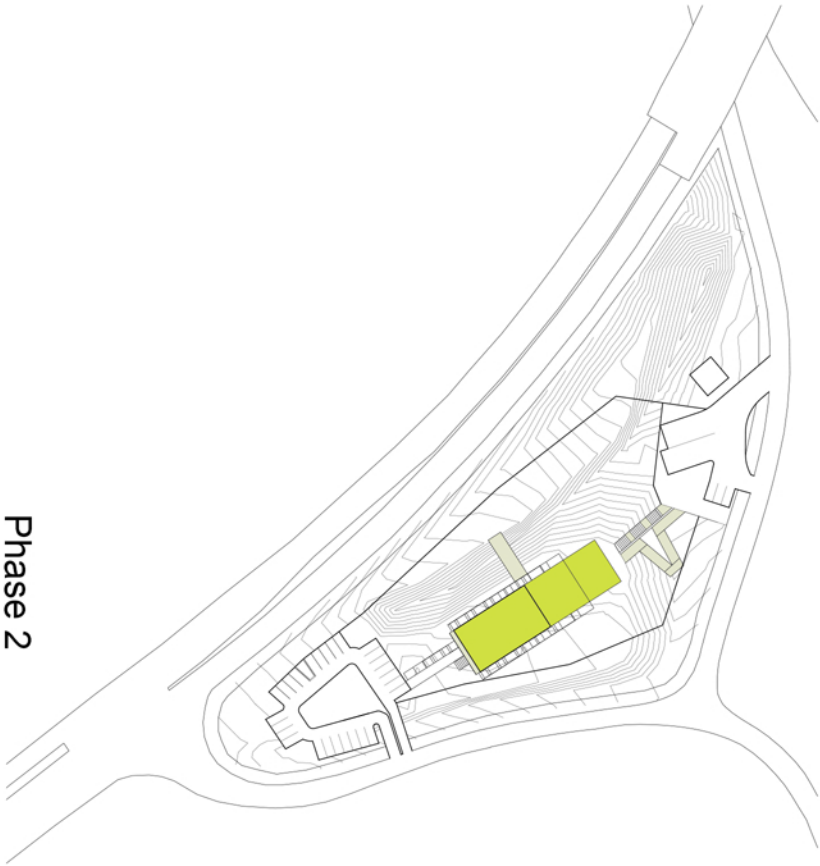
KIOSK-RECYCLING PALLETS



This drawing is conceptual and was prepared to show approximate location and arrangement of site features. It is subject to change and is not intended to replace the use of construction documents. The client should consult with the community design assistance center for any construction of site work is undertaken. The Community Design Assistance Center is not responsible for the inappropriate use of this drawing.

Clinch River Valley Regional Visitor Center

Phasing Plan

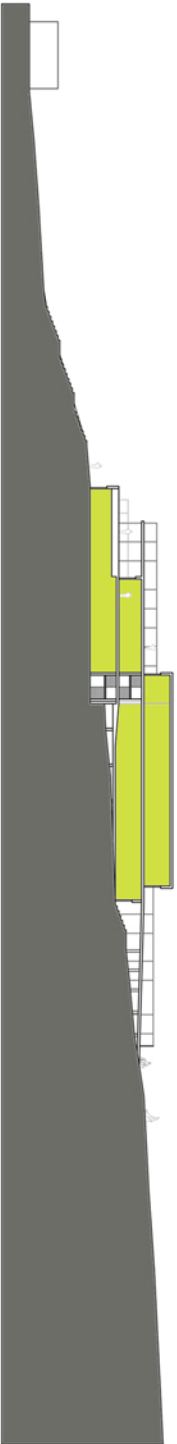
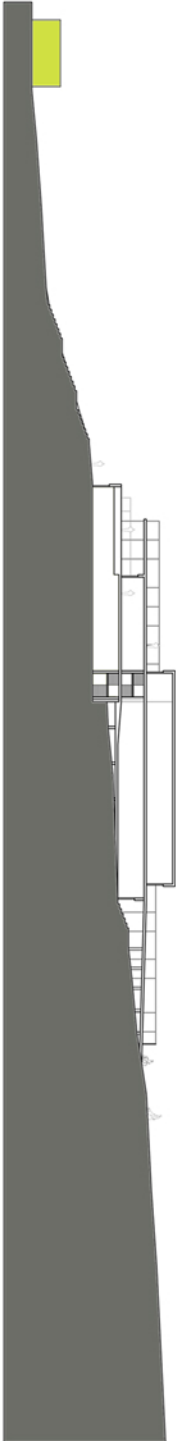


Not to scale

Phase 1

Phase 2

Phase 3



Phase 1

Phase 2

Phase 3

Since the site is part of a larger vision for the region, the Visitor Center and the surrounding complex is to be built in stages.

Phase 1 will be the construction of the small lower parking lot, a walking path that circles the site and an information kiosk.

Phase 2 will be the construction of the shell of the Visitor's Center main building, an ADA accessible connection to the lower parking lot and a pedestrian bridge that spans the ravine that separates the building from US 58.

Phase 3 will be the completion of the building's interior and the addition of the second, upper parking lot.

By using phased construction the gateway center can grow as the region develops, expanding to meet the needs of visitors.

Conclusion

The conceptual design for a regional visitor center was based on meeting a wide range of program requirements and limiting site conditions. These site limits were used to give form and structure to the overall site plan and the plan's primary components. The design team opted for designing for the site "as is" rather than recommending radical cut and fill schemes.

Because of the demanding program requirements, the concept of building in phases was promoted. Building in phases allows certain uses to be tested and refined as new features of the visitor center campus are implemented.

In these two key areas, the design concept provides solutions to both a challenging site and the implementation of diverse uses and building program.

Appendices

A: LEED information	46
B: Green Wall Resources	47
C: Case Study Sources	48
D: Plant Palette	49
E: Tree Topping	57
F: Pedestrian Bridge	58
G: Pallet Furniture	59

1 LOW ENERGY/HIGH PERFORMANCE

Achieved by making maximum use of natural light and ventilation as well as by using sunshades and/or light shelves, insulation and multi-layered facades and roofs, appropriate thermal inertia (high in temperate climates, low in tropical), solar heating, evaporative cooling, water chilled ceilings, displacement ventilation in tall volumes and the redefinition of comfort standards.

2 REPLENISHABLE SOURCES

Buildings as well as power plants can harvest the non-depletable ambient energies of the sun, wind, waves, gravity and geo-thermal power. Build with constantly replenished materials, such as wood, or near inexhaustible ones, such as clay (for brick) and sand (for glass).

3 RECYCLING: ELIMINATING WASTE AND POLLUTION

Reuse old building materials, design buildings that are easily reused and build them with easily reused materials and components. Recycle water and heat. Avoid materials that are toxic in use or manufacture, or need to be cleaned with toxic materials.

4 EMBODIED ENERGY

With energy efficiency, embodied energy becomes increasingly significant in relation to life-time energy use. The material with lowest embodied energy is wood, then brick, and that with most embodied energy is aluminum.

5 LONG LIFE, LOOSE FIT

Built with materials that endure and improve with age, green buildings not only accommodate change easily but are relatively timeless and pleasant in character so that people prefer to conserve them.

6 TOTAL LIFE CYCLE COSTING

Accounts for more than initial capital costs, to include running and wage costs. Also looks at costs to environment and society of all aspects of the building, right from extracting the materials to their eventual degradation back to earth.

7 EMBEDDED IN PLACE

Green buildings fit seamlessly into, help reintegrate and minimize negative impacts upon their settings. Depending on the projects, drawing on local wisdom and updating the vernacular, or using scientific surveys and predictive computer modelling, are equally appropriate approaches to achieving this.

8 ACCESS AND URBAN CONTEXT

To be green, a building must be close to public transport and other quotidian uses. Achieving a green built environment will involve rethinking not just buildings, but cities and other forms of human settlement.

9 HEALTH AND HAPPINESS

Natural light, fresh air and absence of toxic materials and off-gassing combined with the contact with outdoors and community life makes occupants of green buildings healthy and happy. This leads to diminished absenteeism and staff turnover as well as increased productivity.

10 COMMUNITY AND CONNECTION

To help achieve a sustainable culture, green buildings must regenerate a sense of community and connection with the natural world thus giving a sense of belonging and chance to discover one's deeper self in opening up to others and the cosmos.

LEED

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

Appendix A: LEED information



Sustainable Sites
Site selection and development are important components of a building's sustainability. The Sustainable Sites category discourages development on previously undeveloped land, seeks to minimize a building's impact on ecosystems and waterways, encourages regionally appropriate landscaping, rewards smart transportation choices, controls stormwater runoff, and promotes reduction of erosion, light pollution, heat island effect and construction-related pollution.



Water Efficiency
Buildings are major users of our potable water supply. The goal of the Water Efficiency category is to encourage smarter use of water, inside and out. Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-conscious landscaping outside.



Energy & Atmosphere
According to the U.S. Department of Energy, buildings use 39% of the energy and 74% of the electricity produced each year in the United States. The Energy & Atmosphere category encourages a wide variety of energy-wise strategies: commissioning, energy use monitoring, efficient design and construction, efficient appliances, systems and lighting, the use of renewable and clean sources of energy, generated on-site or off-site, and other innovative measures.



Materials & Resources
During both the construction and operations phases, buildings generate a lot of waste and use large quantities of materials and resources. The Materials & Resources category encourages the selection of sustainably grown, harvested, produced and transported products and materials. It promotes waste reduction as well as reuse and recycling, and it particularly rewards the reduction of waste at a product's source.



Indoor Environmental Quality
The U.S. Environmental Protection Agency estimates that Americans spend about 90% of their day indoors, where the air quality can be significantly worse than outside. The Indoor Environmental Quality category promotes strategies that improve indoor air as well as those that provide access to natural daylight and views and improve acoustics.



Locations & Linkages
The LEED for Homes rating system recognizes that much of a home's impact on the environment comes from where it is located and how it fits into its community. The Locations & Linkages category encourages building on previously developed or infill sites and away from environmentally sensitive areas. Credits reward homes that are built near already-existing infrastructure, community resources and transit – in locations that promote access to open space for walking, physical activity and time outdoors.



Awareness & Education
The LEED for Homes rating system acknowledges that a home is only truly green if the people who live in it use its green features to maximum effect. The Awareness & Education category encourages home builders and real estate professionals to provide homeowners, tenants and building managers with the education and tools they need to understand what makes their home green and how to make the most of those features.



Innovation in Design
The innovation in Design category provides bonus points for projects that use innovative technologies and strategies to improve a building's performance well beyond what is required by other LEED credits, or to account for green building considerations that are not specifically addressed elsewhere in LEED. This category also rewards projects for including a LEED Accredited Professional on the team to ensure a holistic, integrated approach to the design and construction process.



Regional Priority
USGBC's regional councils, chapters and affiliates have identified the most important local environmental concerns, and six LEED credits addressing these local priorities have been selected for each region of the country. A project that earns a regional priority credit will earn one bonus point in addition to any points awarded for that credit. Up to four extra points can be earned in this way

GOOD BAD

- a better building (quality of space)

building is more sustainable

educational capability of building recognition

tax rebates, zoning allowances
- building is worse

building is less sustainable

conforming to a checklist is not the best direction for a building's design

the desire to "get that extra LEED point" could result in energy *in-efficient* design

some technologies endorsed by LEED are still developmental and the efficiency is not proven



Appendix B:

Green Wall Resources

The following links provide some additional information on green wall construction and benefits, including limited case study examples.

<http://news.nationalgeographic.com/news/2013/03/pictures/130325-green-walls-environment-cities-science-pollution/>

<http://gsky.com/green-walls/>

<http://www.egreenwalls.com/>

<http://www.greenroofs.org/index.php/about/green-wall-benefits>

Appendix C:

Case Study Sources

The CDAC team's case studies were supplemented by general information found on each visitor center's respective website.

<http://www.greenmountainclub.org/page.php?id=31>

<http://www.visitbedford.com/welcomecenter.shtml>

<http://www.tamarackwv.com/>

<http://www.heartwoodvirginia.org/>

<http://www.visitwytheville.com/>

<http://www.transportation.wv.gov/turnpike/Pages/PrincetonWelcomeCenter.aspx>

Appendix D: *Plant Palette*

Foundation Plantings



Boxwoods (*Buxus* sp.): Low growing evergreen shrub. Below are three different globed-shaped species examples with similar height and spread.

-Height: 2'-3'

-Spread: 2'-3'

***Buxus* 'Wilson'** – Northern Charm boxwood

-Dark green foliage

***Buxus* 'Green Gem'** – Green Gem boxwood

- Kelly Green foliage

***Buxus* 'Green Velvet'** – Green Velvet Boxwood

- Bluish-green foliage



False Cypress (*Chamaecyparis* sp.):

Offering unique color and texture options.

***Chamaecyparis pisifera* 'Cream Ball'** – Cream Ball Sawara False Cypress

-Height: 2'-3'

-Spread: 2'-3'

-Light creamy green

***Chamaecyparis pisifera* 'filifera mops'** –

Goldmop Threadleaf Sawara False Cypress

-Height: 2'-3'

-Spread: 2' – 3'



Creeping Germander (*Teucrium*

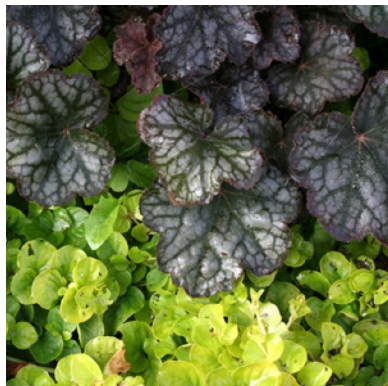
***chamaedrys* 'Prostratum')** Glossy, green foliage with a spreading habit. Evergreen unless winter is severe.

-Height: 2 to 6"

-Spread: 12"

-Bloom: purple flowers, spring/summer

-Low maintenance



Coral Bells (*Heuchera* sp.): Heuchera comes in many different colors; very interesting foliage with small flowers. Would be ideal for the low growing areas in the front of the building.

-Height: 12-18"

-Spread: 12-18"

-Bloom: Late spring/early summer

-Attracts hummingbirds

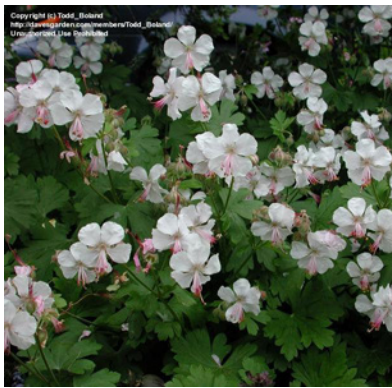
-Low maintenance

-Drought tolerant



Green and Gold (*Chrysogonum virginianum*): Semi-evergreen herbaceous perennial.

- Height: 6-9"
- Spread: 6-9"
- Bloom: Golden yellow star-shaped flower in spring and sporadically in the summer
- Needs well drained soil and prefers partial shade



Biokovo geranium (*Geranium x cantabrigiense* 'Biokovo'): Flowering perennial that tolerates full sun to partial shade. Foliage is aromatic, with a velvety texture. Attracts butterflies, birds, and bees.

- Height: 12-18"
- Spread: 24-36"
- Bloom: Pale pink/white flowers late spring through mid-summer



Daffodils (*Narcissus* sp.): Perennial bulb

- Height: depends on cultivar
- Spread: depends on cultivar
- Bloom: Flowers are usually yellow or white. Blooms in early spring.
- Foliage: strap-like green foliage



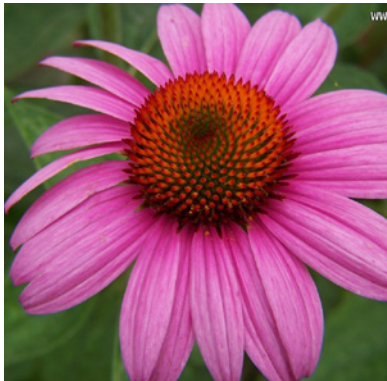
Lavender (*Lavandula angustifolia*): Small herbaceous semi-evergreen perennial with an upright clump habit. Prefers full to partial sun.

- Height: 1.5'
- Spread: 1.5'
- Bloom: blue-purple, lavender, violet-blue, or white-pink, depending upon cultivar from late June to early August
- Very Fragrant



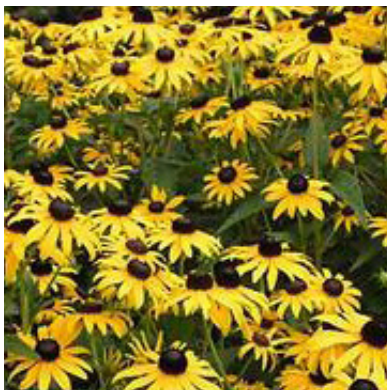
Autumn Joy Sedum (*Sedum 'Autumn Joy'*): Hardy and deciduous perennial with winter value

- Height: 18-24"
- Spread: 18-24"
- Bloom: Opens pink and matures to copper color. Bloom time ranges from August to September/November



Purple Coneflower (*Echinacea purpurea 'Kim's Knee High'*): Bright, long flowering perennial.

- Height: 1-2'
- Spread: 1'
- Bloom: Purple-pink petals with orange centers, blooming from June through September
- Native to the U.S.
- Attracts butterflies and bees



Orange Coneflower (*Rudbeckia fulgida var. sullivantii 'Goldsturm'*): Bright, long flowering perennial.

- Height: 18-24"
- Spread: 18-24"
- Bloom: Yellow flowers from July through September
- Native to the U.S.

Trees



Purple Leaf Plum: A moderate to fast growing beautiful small tree with brilliant purple foliage. It is relatively short lived and is known to be susceptible to pest problems. If this is a concern, consider substituting with 'Forest Pansy' Redbud.

- Height: 15-25'
- Spread: 15-20'
- Form: Upright/vase shape
- Bloom: White/light pink, fragrant flowers in early April
- Deciduous



Red Maple (*Acer rubrum* 'October Glory'):

A fast growing, tough tree. 'October Glory' is recommended for its outstanding fall color.

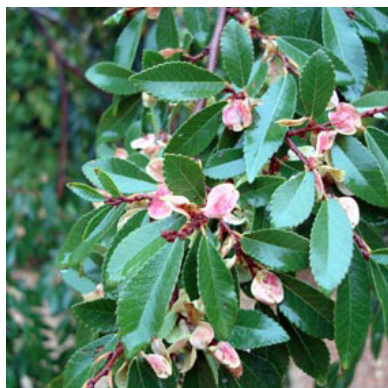
- Height: 40-50'
- Spread: 25-35'
- Form: Symmetrical oval/round shape
- Bloom: Showy red flower in the spring
- Fruit: Red, showy fruit
- Deciduous



Littleleaf Linden (*Tilia cordata*

'Greenspire'): add text

- Height: 40-50'
- Spread: 35-45'
- Form: Pyramid in youth; oval at maturity
- Bloom: Green/yellow to gold in the early summer
- Deciduous



Chinese Elm (*Ulmus parvifolia* 'Allee'): A beautiful, graceful tree.

- Height: 40-50'
- Spread: 40'
- Form: Round-headed tree with pendulous branches
- Bloom: Yellow-green inconspicuous flowers appearing August to September
- Fruit: Red-green, ripens in September-October
- Deciduous



American Hornbeam (*Ostrya virginiana*):

Handsome and hardy small to medium tree; makes excellent growth once established

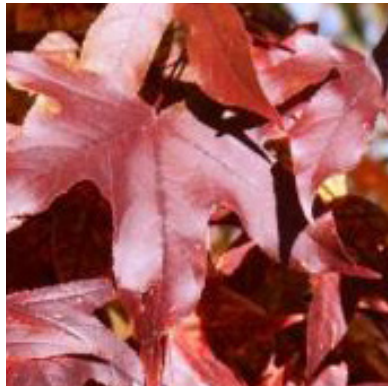
- Height: 25-40'
- Spread: 15-25'
- Form: Ovate to pyramidal, rounded when older
- Bloom: Male flowers are catkins
- Fruit: Nutlet enclosed in hop-like sac
- Deciduous



Winter King Hawthorn (*Crateagus virdis* 'Winter King'):

Small ornamental tree. This cultivar is selected for its excellent form and large, red fruit.

- Height:
- Spread:
- Form: Rounded habit with vase-like branching structure
- Bloom:
- Fruit: Bountiful white flowers in early to mid May
- Deciduous, but with excellent winter value because of the berries



Seedless Sweetgum (*Liquidambar styraciflua* 'Rotundiloba'):

Lovely medium to large tree with beautiful, glossy star-shaped leaves that turn deep purple in the fall.

- Height: 50-70'
- Spread: 35-45'
- Form: Pyramidal
- Deciduous
- Excellent fall color



Concolor Fir (*Abies concolor*):

Evergreen tree that can tolerate of most climates and city conditions. Consider planting near Winter King Hawthorn for interesting winter color contrast of berries and evergreen foliage

- Height: 50-75'
- Spread: 20-30'
- Form: Pyramidal
- Evergreen



Foster Holly (*Ilex x attenuata* 'Fosteri'):

Small evergreen with red berries

- Height: 15-25'
- Spread: 8-12'
- Form: Pyramidal
- Fruit: Heavy berry production that persists into the winter
- Evergreen

Bio-retention Plantings: Perennials & Grasses



Black-eyed Susan (*Rudbeckia hirta*):

Colorful edge plant for bioretention areas.

- Height: 3'
- Spread: 2'
- Form: Loose
- Bloom: Summer to mid-autumn
- Full sun to light shade
- Deadhead spent flowers to prolong blooming
- Choose cultivar that is a true perennial



Garden Sage (*Salvia nemorosa*

'Ostfriesland'): Colorful edge plant for bioretention areas.

- Height: 1-1.5'
- Spread: 1'
- Form: Upright
- Bloom: Purple flower spikes in summer
- Full sun, well drained soils
- Perennial



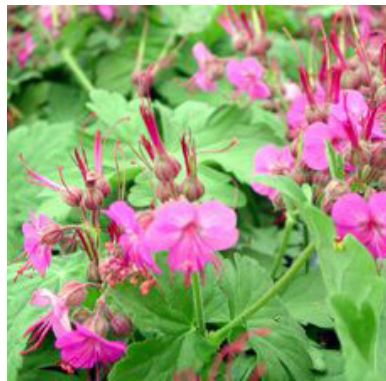
Fringed Sedge (*Carex crinita*): Vibrant green plant that does well in lower/wetter areas

- Height: 3-4'
- Spread: 3-4'
- Form: Generally upright, cascading
- Bloom: May through July
- Wet soils
- Perennial



Creeping Jenny (*Lysimachia nummularia* 'Aurea'): Lime green foliage throughout the growing season.

- Height: 3-6"
- Spread: 1-1.5'
- Form: Spreading groundcover
- Bloom: Yellow flowers early summer
- Full Sun to part shade
- Medium to wet soils
- Perennial



Bigroot Geranium (*Geranium macrorrhizum*): good upper edge plant

- Height: 1'
- Spread: 1.5-2'
- Form: Pyramidal
- Bloom: Magenta flowers late spring through early summer
- Red fall foliage
- Well drained soils
- Full sun to part shade
- Perennial



Purple Coneflower (*Echinacea purpurea* 'Kim's Knee High'): Bright, long flowering perennial. Best on upper edge of bioretention areas.

- Height: 1-2'
- Spread: 1'
- Bloom: Purple-pink petals with orange centers, blooming from June through September
- Full sun
- Well-drained soils
- Attracts butterflies and bees
- Perennial



Cinnamon fern (*Osmunda cinnamomea*): Lovely green foliage.

- Height: 3-4'
- Spread: 2-3'
- Bloom: Rust spike
- Sun to partial shade
- Moist to wet soils
- Perennial

Bio-retention Plantings: Trees & Shrubs



Witch Hazel (*Hamamelis virginiana*): Small tree or shrub

- Height: 10-15'
- Spread: 10-15'
- Bloom: Fragrant yellow flower that blooms in October and November
- Showy, yellow fall foliage
- Sun to partial shade
- Moist soils
- Deciduous



Redoiser Dogwood (*Cornus sericea*):

Loose, multi-stemmed shrub

- Height: 5-9'
- Spread: 5-10'
- Bloom: Small white flower in early summer
- Purple to reddish fall foliage
- Bright red twigs and bark making for interesting winter value
- Fast growing
- Sun to partial shade
- Tolerates wet and dry sites
- Deciduous



Sweet Pepper Bush (*Clethra alnifolia*):

Fragrant multi-stemmed shrub

- Height: 5-8'
- Spread: 4-6'
- Form: Upright
- Bloom: White, fragrant flowers in July and August
- Sun to partial shade
- Prefers moist, acidic soils
- Deciduous



Serviceberry (*Amelanchier canadensis*):

Multi-stemmed large shrub or small tree

- Height: 6-20'
- Spread: 15-20'
- Form: Pyramidal
- Bloom: White flowers in late March
- Fruit: Sweet, red edible fruit
- Sun
- Prefers wet sites
- Transplants easily
- Deciduous

Appendix E: *Tree Topping*

A successful anti-tree topping campaign, ***Experts Agree - Don't Top Your Tree***, was developed by the Missouri Department of Conservation to offer scientific information and helpful visuals to debunk frequent myths regarding perceived positive effects of tree topping. This presentation has been adapted and used in states across the U.S., including Virginia. Topping can be described as the indiscriminate cutting back of tree branches to stubs or lateral branches that are not large enough to assume the terminal role. Other names for topping include "heading," "tipping," "hat-racking," and "rounding over."

A topped tree is not a positive thing. Rather, a topped tree is more susceptible to disease and decay, needs more costly maintenance than a properly pruned tree, and loses its aesthetic qualities. A tree's lifespan may be reduced by topping, its branches may be more prone to breakage, and new growth will be weak. When choosing to plant a tree, consider the tree's spatial needs (height and width) at maturity, what obstacles it may encounter (overhead utilities, adjacent structures or signs, etc.) and then choose an appropriately sized species accordingly. Should pruning work need to be done, an International Society of Arboriculture (ISA) certified arborist should be contacted.

The Only Thing Tree Topping Reduces Is Your Property Values.



A topped tree is not only ugly, it's a liability. Many people believe that topping a tree - drastically cutting back mature limbs to reduce its height - makes a tree less dangerous. They could not be more wrong.

A topped tree is more susceptible to disease and decay which may weaken it and lead to early death - making it more likely to cause property damage.

Also, a topped tree will eventually need more costly maintenance than a tree that has been properly pruned, not to mention that topping destroys the tree's natural beauty and reduces property values for the entire neighborhood.

You can protect your home and its value by hiring only professional arborists. To find one near you, or for more information, call your local forestry agency.



For additional information about avoiding tree topping, visit the following websites:

- www.mocommunitytrees.com
- www.moreleaf.org
- www.righttreerightplace.com
- www.mdc.mo.gov/forest/urban/

Appendix F: *Pedestrian Bridge*

As part of the phased construction of the entire site, a pedestrian bridge was proposed to link the site with the town. A VDOT representative thought this would be a major undertaking and would be a very difficult and expensive venture.

In similar situations pedestrian bridges have sometimes been coupled with a bridge structural update or renovation. In the context of phased development, a pedestrian bridge might be best considered for when the bridge is scheduled for an update or renovation.

Appendix G: *Pallet Furniture*

Italian designer Andrea Scandella has created an open source series of DIY furniture pieces made from disused pallets. With a passion for designing furniture that incorporates eco-sustainability and the use of recycled materials, Scandella is offering his designs free to the public.

<http://www.gizmag.com/pallet-room-diy-pallet-furniture/27221/>

