

Tourism Infrastructure Design

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Contents

Preface ... 6

1 Visitor Center Design ... 8

Introduction ... 10

Visitor Center Design Guidelines ... 12

Planning ... 12

Criteria for Supporting Visitor Center Proposals ... 13

Decision Criteria for Proposing a Visitor Center ... 17

Interpretive Master Planning ... 20

Site Design ... 24

Building Design ... 29

Visitor Center Projects ... 34

Strømbu Service Center and Rest Area ... 34

Fogo Island Natural Park Headquarters ... 42

Visitor Center 'Kasteeltuini Slot Assumburg' ... 50

Wasit Nature Reserve Visitor Center ... 56

Yew Dell Botanical Gardens Visitor Center ... 62

Wild Turkey Bourbon Visitor Center ... 68

Visitor Center for Architectural Miniatures Park ... 76

Fazer Visitor Center and Meeting Center ... 82

Red Rock Canyon Visitor Center ... 88

Naples Botanical Garden Visitor Center ... 98

Villers Abbey Visitor Center ... 104

Coedy Brenin Visitor Center ... 114

Cabañeros National Park Visitors Center ... 122

Visitor Center of Mont-Tremblant National Park ... 132

2 Scenic Overlook Design ... 140

Introduction ... 142

Scenic Overlook Design Guidelines ... 142

The Influencing Factor ... 143

Minimizing Site Disturbance ... 144

Sustainable Organization and Appearance ... 144

A Quality Visitor Experience ... 145

Circulation ... 146

Grading ... 148

Landscaping ... 149

Public Services ... 149

Site Furnishings and Amenities ... 149

Supplemental Facilities/Built Structures ... 150

Scenic Overlook Projects ... 152

Aurland Lookout ... 152

Austin Observation Tower ... 158

Viewing Platform Trautmansdorff ... 166

Mountain Peak Platform on Top of Tyrol ... 170

Quilotoa Crater Overlook ... 176

Viewpoint from Palm Grove ... 182

The Pyramid Viewpoint ... 188

Löyly ... 194

The Infinite Bridge ... 200

Sky Walk ... 204

The World Championship Ski Jump ... 210

3 Campsite Facilities Design ... 218

Introduction ... 220

Campsite Facilities Design Guidelines ... 222

Campground Layout ... 222

Campground Utilities and Trash ... 223

Campsite Parking Spurs ... 225

Campsite Layout and Components ... 225

Accessible Campsites ... 226

Campground Projects ... 228

International Self-driving and RV Campground at Ranwu Lake ... 228

Xinduqiao RV Campground along No.318 National Road ... 240

Jiange Cuiyunlang RV Campground along No.318 National Road ... 256

Home of Freedom-Mount Huang Qiyun Campground ... 268

Ga-pyeong Glamping ... 286

Parque Tejo ... 294

Index ... 306

Preface

Joaquín Alvaro Bañón

Fitting with the title of the book, a broad variety of tourist infrastructure projects and practices are featured here. There are more than 26 architectural projects from over 16 countries all over the world. The touristic development approaches highlighted are unusual and express personal points of view. All these works show the potential of uniting the landscape and the architecture in a single image.

Over the years, a special relationship between architecture and tourism has been developing. Each can be said to depend on the other. Today, we cannot deny the global condition of the architectural practice and the geographical open relations due to touristic experiences. Architecture, in terms of tourism, is now an integral element of designing for cities and their surroundings all over the globe.

In ancient times, architecture, as a touristic site, had a very important role. Temples, theaters, and stadiums were built as public monuments, expressing the culture and the society from which they arose. Nowadays, they have become attractions for a new era. In many cities throughout Europe (e.g. Paris, Rome, Athens, Venice, Barcelona and many others), tourism relies solely on the culture of monuments, the culture of the society when these monuments were created.

The brand of these cities is their history, but the rapid increase in the consumption of heritage culture destabilizes city centers. The tremendous tourist demand and the problematic relationship between citizens and tourists require rethinking our tourism infrastructure. We need a new cultural perspective and a contemporary approach to tourism that holds a close connection to the landscape. When we talk about landscape, we talk about creating a new identity for the place and a new way of consuming space. This book shows a new veer towards sustainability, a new touristic architectural approach to the natural environment. The viewpoints, sports infrastructure, visitor centers, and RV camps presented in these pages introduce to the reader a new way to understand the landscape, a sustainable approach to the contemporary relation between architecture and tourism.

For examples of this sustainable approach, this book contains plenty: the Aurland Look Out in Norway taking nature as its primary guide in design with architectural considerations playing a secondary role; the Austin Observation Tower in the United

States elegantly integrating efficient use of materials with thoughtful structural design; the Mountain Peak Platform Top of Tyrol in Austria, designed as a spiritual place where even stressed mountaineers can find peace and recuperate enjoying the seemingly endless expanses of mountains; and the Quilotoa Crater Overlook in Ecuador, where architecture creates opportunities for the visitor to see the landscape in different ways than from every position in the crater. In all these examples and in others presented, architecture is designed to highlight, preserve and protect the landscape.

The book is also filled with examples of architecture providing tourist experiences while preserving and interpreting the territory: the Infinity Bridge in Denmark, a footbridge designed to enable visitors to experience the magnificent landscape of the bay and become aware of its relationship with the city; the Sky Walk in the Czech Republic, a piece of architecture that allows visitors a unique experience of walking through the clouds; the World Championship Ski Jump in Oslo, Norway, a design that unifies various amenities into one holistic design; and the Fogo Island Natural Park Headquarters in Fogo, Cape Verde, where the body of the building is made up of a continuous surface, composed of local black masonry block—a mixture of cement and ashes from the volcano. All these works are presented as examples where buildings experiment with nature to instill new meaning for the place and generate economic activities as cultural landscapes for touristic destinations.

This is a compilation of projects concerning how to develop tourism and at the same time preserve a certain set of landscape values. Modern tourism ought to be closely linked to sustainability and the elements of nature itself. The infrastructure depicted here shows that when combined with tourism, architecture gives the landscape certain effects, which further highlights the need for strategies to achieve sustainable development. The architecture presented transforms territory into an attractive landscape to allow a complete experience of nature.

As I have said, contemporary architecture and tourism must find a new direction to sustainability in order to protect and respect the landscape. This book aims to explore how architecture values ecosystems, landscape experiences and its impact on the environment as a basis for developing new practical methods to preserve nature.

1 Visitor Center Design



Introduction

Krizsán András

The ancient Romans believed that all natural or human-made space is inspired and protected. The unique purity of a landscape is always a passionate experience, focused on the climate of the region, the diversity of the environment and the culture of people living there. Through these experiences, people, wherever there is wonder in the world, feel as if being personally addressed. The heavens, the earth, dwellings, and cities are just like human beings. They have their own history, tradition, spatial features and details, which in any case make our orientation easier, allowing us to be more identified by the location. Every inch of a land, a cliff, or a tiny valley has its own character and identity that can hardly be described by personal concepts and experiences. Almost everything may change, but man's aspiration to relate his identity to collecting these experiences do not. Although the civilization of our time tries to conjure up for itself the spirit of universal culture, to merge the landscape and natural features of different continents into a homogenous mass, but these attempts are in vain. Every single piece of the earth has its own character and identity. It is especially true for historical sites or natural attractions, where the spirit of the place is concentrated in the 'genius loci.'

It is not an easy task to design in such a sensitive and intensive environment, at such a concentrated mixture of attractions and experiences, and to construct a new building. To do so, respect for the landscape is essential. Humility for the environment, morphological analysis, and conscious preparatory work is the only way to understand the landscape, the trees, the people, and to carry on what the Creator exalts and blossoms.

When creating buildings, we are part of two complementary processes. In one case we attack, break the existing environment, the balance created by nature and history. However, on the other hand, we are building a new state of balance through construction and giving a new interpretation to the surrounding landscape and countryside. Between our personal self and our environment, architecture, the architect is the mediator, the 'guiding principle,' which is able to give human dimensions to the world around us. Good architecture is healing architecture and a building sacrifice at the same time.

Now, this sensuous attitude, humility to the place's spirit, appears in architecture, especially in designing visitor centers all around the world. Architects think of visitor centers as a reality that attaches particular importance to the specific factors of the construction site, landscape and historical traditions, rejecting the sculpted version of architecture specific in the modern era. Architects today no longer look for 'high-tech' enchantment, but distance themselves from the emotional, formalistic tendencies that are too arbitrary to make a real contact with the landscape. They do not refer neither to stereotypes typical of didactic architecture nor the self-realization of the fine art, emphasizing individuality over all. They try to remain in the background, in the environment, or in the spirit of the place, and they prefer to add a signal to the landscape so that the visitor can have an experience of his or her own. This architecture can understand the beauty of the landscape, its historical sights, and help to renew and further let live the 'genius loci.'

Traditional architectural concepts originated essentially from the importance of tradition and heritage and, as such, visitor centers of historical monuments or antique ruins were designed in historical styles. Their objective was 'telling tales' from the past, didactically summoning the heroes of long-gone eras, utilizing the historical elements in constructing the tourist attraction. However, the natural beauty of the landscape itself would be hidden.

Contemporary architecture, on the other hand, seeks the simplicity of rational, clean interior spaces and shapes in designing a visitor center. Avoid using special forms and uninteresting, unnecessary decorations, but instead shape the architecture around the function. After all, visitor centers are contemporary buildings that deal with contemporary features. Their exterior design, homogeneous façades, and materials from their surroundings—all have their origin in the landscape and place. Their structure can be understood at first glance. The simple generosity of the architectural concept becomes tangible. A good visitor center does not want to compete with the surrounding landscape and attractions, but tries to create its own aura and functional meaning. It is an artwork that creates its own inner intimacy and at the same time opens the gaze and the soul to the attractions.

A visitor center is a multifunctional center where the layout of the building is maximally adapted to functional requirements. It is easy to use, taking advantage of terrain opportunities, providing accessibility access and safe usage. In its internal layout, there is not only a checkpoint, but also information and communication features. An important element and role of today's visitor centers is the organization of exhibitions, screenings and performances that enrich the local knowledge, to provide new experiences and add further programs to local attractions, focusing more on the surrounding landscape and sights in the cultural life of the wider surroundings. In most cases, the social, cultural, and tourist events are grouped around these 'memorial places.' These are such complex building entities, where contemporary interior design, exhibitions, installations, information, lecture and 3D auditoriums together offer attractive and new experiences for visitors.

This book is made up of a diverse collection of visitor centers built over recent years all around the world. The book introduces designs of visitor centers, some adjusted to the natural or historical environment, others created as a counterpoint. The samples presented are examples of contemporary architecture illustrating the inspiration's inexhaustibility. Sometimes, visitor centers are made of special materials and modern design elements, and on the other hand sometimes interpreting centuries-old building traditions. These examples pay close attention to the most important topics in modern construction theory such as sustainability, reuse and recycling.

Visitor centers are such interactive buildings where, through our personal impressions and experiences, we can have a spontaneous dialogue with a location and even become its friend. We can feel the spirit of the place, an unmistakable experience we are allowed to call our own.

Visitor Center Design Guidelines

Visitor centers are a primary type of recreational infrastructure for creating a dedicated educational space for interpretive displays and programs. Visitor centers generally have support facilities (e.g., parking lots, attractive grounds, outdoor seating, walkways, and vistas) and conveniences for visitors (e.g., toilets, water, maps, literature, telephones, and vending machines).

Visitor centers, which include their associated facilities, services, and programs, serve to:

- Effectively educate the public about the surrounding scenery and tourist-related activities.
- Enhance the tourism opportunities for all visitors, especially those with disabilities.
- Introduce other opportunities and facilities that are available within the project.
- Provide information on the natural, cultural, and historical features of the project area.
- Ensure visitor safety and enjoyment.
- Promote environmental preservation and safety issue.

The designer and other personnel working on the project can use these guidelines to ensure that visitor centers are planned, developed, and managed in accordance with the overall philosophy and goals of sustainable development in an appropriate and cost-effective manner. The guidelines are derived from American Bureau of Reclamation. Reclamation's Visual Identity Program Online Manual; Museum Property Manual and Standards; and other Reclamation manuals will apply when planning, developing, and managing visitor centers.

These guidelines will be re-evaluated and revised as new information, technology, or materials are developed. Designers and engineers should note that site-specific architectural and engineering specifications are beyond the scope of this manual. This book should be shared with all local public agencies and cooperating associations helping to manage visitor centers on project lands.

Planning

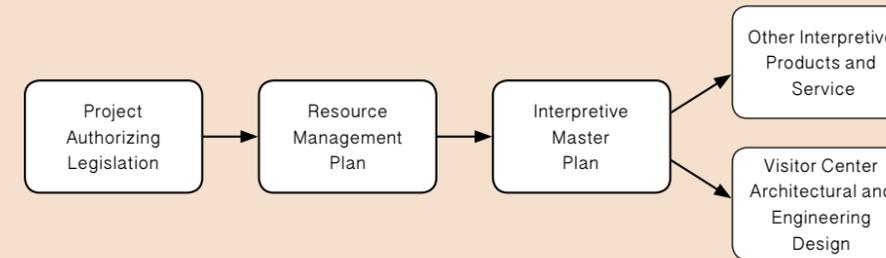
There are several levels of planning that influence the development, management, and operation of visitor center facilities. Figure 1 displays the hierarchy of planning involve, which can be referenced for visitor center planning purposes.

Authorizing legislation is the legal foundation for all project operations, facilities, programs, and services. Authorizing legislation provides justification and guidance for visitor centers. Planning and operating with proper authorization is a legal responsibility of project managers.

The Resource Management Plan is the next level of planning for visitor centers. This plan provides comprehensive goals and objectives for project resources and can serve as a decision document to determine if a visitor center is appropriate and suitable.

A visitor center may or may not be an appropriate tool to achieve the project's interpretive goals and objectives. Interpretive master planning is the primary process for assessing if a visitor center is appropriate for a project. If a visitor center is deemed appropriate, the interpretive planning process should also suggest what type of center would be

Figure 1 / Visitor center planning



suitable. Interpretive master planning is a process that enables managers to develop a systematic and comprehensive approach to interpretation for the project or site.

If a visitor center is deemed appropriate and suitable, the interpretive master planning process can also serve to define various qualities of the visitor center, such as the project's uniqueness, possible interpretive tools, and central themes. The guidelines outlined in this book briefly describe the interpretive planning process, but do not address the development of specific interpretive media (e.g., exhibits, signs, or brochures).

Architectural and engineering design for the visitor center is the final level of analysis. Detailed guidance and specifications would be provided by the designer and are beyond the scope of this manual. (The principles of Crime Prevention through Environmental Design (CPTED) and Terrorism Prevention Through Environmental Design (TPTED), as outlined in the 'Visitor Center Security' chapter of these guidelines, should be incorporated in the design.)

Criteria for Supporting Visitor Center Proposals

Constructing visitor centers is one method of providing an interpretive program. Developing interpretive programs and products is limited only by one's imagination. Some examples of common interpretive media are: wayside exhibits, kiosks, brochures, videos, displays, guided hikes, nature centers, living history programs, presentations, and visitor participatory projects. Choosing the right interpretive medium depends on the goals of the interpretive program, the needs of the agency, the needs and types of visitors, and the sources available to be interpreted.

Visitor centers are often recommended as the desired interpretive approach before proper consideration has been given to other interpretive options. In the proper environment, a visitor center can be a very effective interpretive approach. However, good interpretive planning is needed to determine if and when a visitor center should be used.

Below are questions that should be answered before a decision can be made as to whether a visitor center is the best interpretive option.

1. Is a visitor center the most effective interpretive medium to use for the specific location, audience, resources, and purpose of the interpretive program?

a. Has an interpretive plan been completed that identifies the interpretive program goals, objectives, and themes?

(1) A visitor center is an expensive interpretive tool and should be chosen only after it is determined to be the most cost-effective means of accomplishing the educational objectives of the project. This decision should be obtained through the development of an interpretive master plan that will help identify the interpretive goals, objectives, and themes for the overall interpretive program. The interpretive master plan should also identify areas, in addition to a visitor center, where interpretive media will be used to accomplish the program's objectives.

(2) Before any design work is started, there should be clear goals, objectives, and themes developed specifically for the visitor center and the entire interpretive program. A facility planning session should be held that includes all the involved domain specialists and potential partners. Everyone should be clear about the purpose of the overall interpretive program and any proposed visitor center as part of that overall program.

(3) Interpretive themes should be coordinated between agencies and other local facilities so as to avoid overlaps in content. Many regions of the United States of America interpret unique topics, such as desert ecology, the Lewis and Clark expedition, southwest Indian culture, the gold rush, and western settlements. Coordination with regional providers will help each facility complement an overall theme so the visitor has a more holistic understanding of the area.

(4) A visitor center can help implement an interpretive program. Visitor centers are very effective in providing a focus for the interpretive programs. Tours and special events are often easier to organize when there is a visitor center. Guides can use many of the visitor center exhibits to help explain concepts and ideas before going out on the trail or taking visitors on a tour. Visitor centers, however, should not be viewed as the interpretive program. They are only one of many strategies for reaching the public with information and education about the project and the agency's mission.

(5) Large visitor center projects often result from a proposal growing beyond its original intent or from an economic development project for a local community. The success of a visitor center as an economic development effort depends on many factors, such as proximity to major travel routes, promotional efforts, the quality of the exhibits and interpretive program, and the potential market for the topics in the visitor center. A market evaluation and cost-benefit analysis should be completed before design work starts on a visitor center that is to serve as an economic development project.

b. Has the Interpretive Master Plan analyzed the potential audiences?

(1) A market analysis or audience analysis regarding the types and diversity of potential visitors is critical to determining the need for a visitor center. (See Haas and Wells, 2006.) Information may be collected using approved visitor survey instruments.

- **Demographics:** Demographics provide descriptive information about current and potential visitors (e.g., age, gender, nationality, income, disability, group size, how far they travel, as well as various social, physical, cultural, or economic factors of the area).

- **Psychographics** (interests, opinions, and expectations): Psychographics are used to determine why visitors come to your site and what specific experiences are they seeking (e.g., being with friends and family, getting away from daily stress, and seeking challenging outdoor recreation).

(2) Type, placement, and design of a visitor center depend also on the interests, expectations, and abilities of visitors. Visitor centers can serve both an orientation function and an education function. Therefore, decisions about the best proportion of each function should be made during interpretive planning.

- **Orientation:** Visitor centers are very effective at orienting first-time visitors who are unfamiliar with the area and who wish to learn information about the local facilities, recreation opportunities, and the cultural and natural resources. They are also very effective for repeat or recreational visitors who travel to an area for a specific recreation activity, such as rafting, fishing, or boating. These users typically have their equipment and are ready to start their recreation activity. Their main interest is to gain information on conditions related to their chosen recreation activity, such as where the fish are biting or current river flows.
- **Education:** Visitor centers are also effective in reaching visitors with specific interests. Beyond orientation to a location, visitors are often interested in supplemental educational information about the site, its resources, or its functions. This information can include natural or cultural history; sometimes it will include specific history of the area, specific functions of a historic heritage, special provisions at the site, and so forth. Specific goals and objectives for this level of education should be addressed in an interpretive planning process.

c. Are the visitor and recreational objectives already being served by another facility in the area? Before a visitor center proposal is approved, there should be a thorough survey of other visitor centers and interpretive efforts in the region. This survey should identify whether visitor needs are already being met by other facilities and if the recreational objectives could more easily accomplish their mission by entering into a partnership with any of the existing facility managers. Whenever possible, visitor centers should be inter-agency centers. Visitors do not generally know or care about different agencies. They usually go to a visitor center for orientation information about an area or resource that interests them.

d. Has the interpretive plan determined the best location for a visitor center? The purpose of the interpretive program and visitor center is the main criteria for deciding the best location of a visitor center. Orientation and information visitor centers are best located at places visitors encounter before deciding where to go. If the visitor center was built to reflect a specific regional theme, the best location will probably be near the main access road. Visitors should be able to find the visitor center easily and shortly after they enter the area. In general, poor locations for visitor centers include the end of long dirt roads, more than a few miles off the main road, deep inside the area of interest, or away from the main entrance to a resource.

2. Does the proposed visitor center relate to the tourist mission and management objectives?

a. There should be a direct relationship between the tourist mission, the management objectives of the project, and the interpretive program.

b. An effective visitor center is supported by a resource management plan and is not a separate part of the overall efforts of the visitor services. The goals and objectives of building a visitor center should be clearly identified in planning documents related to the site and interpretive program. These goals include addressing some of the challenges visitor centers bring to an area, such as the potential to concentrate or coordinate visitor use.

c. An important objective of any visitor center is to help the public appreciate and discover the resource diversity and recreational opportunities in the area. In addition, helping visitors feel a sense of ownership and involvement in protecting these resources is important. The visitor center should be supported by an appropriate array of accessible current publications, exhibits, and programs to help visitors discover and appreciate resources on nearby recreation lands.

3. Are there documents showing clear commitment from partners and State or Federal congressional support for the visitor center?

a. A cost analysis should be done showing how the involved partners will share predicted costs. Cost sharing should be realistic, reflecting the true ability of partners to live up to their promises. For instance, if a private group, such as a cooperative association, will staff the project it should be shown that the association is truly prepared and able to take on this responsibility. These partnerships and economic commitments can be used to explain the project to the relevant governmental bodies.

b. The agreement should also clearly identify the responsibilities of each partner, including who is responsible for accessibility retrofits on identified deficiencies, expected in-kind services, as well as procedures for maintaining and canceling the agreement.

c. Congressional members and local legislators should be able to show support for the project, including operations and maintenance funding. However, all congressional support should be consistent with the project management goals and should consider sound fiscal commitment.

d. The scope and magnitude of the project should be clear, so that it does not expand beyond fiscal reach. Often, as more partners get involved, more ideas are adopted and, as a result, the facilities grow bigger to accommodate these ideas. The interpretive plan should include discussion about the specific purpose and scope of the project and should include criteria for making decisions that might affect the scope of the project. The proposed construction project should also be divided into phases to maximize funding options and accountability.

4. Is the operator prepared to accept the long-term commitment that a visitor center requires? Has a cost analysis been prepared that shows the following:

a. Have staffing needs been met?

(1) Visitor centers should be open when public demands are highest. Usually, this means weekends and late hours on Friday and Saturday. It is poor customer service to have the doors closed when visitors expect them open.

(2) Interpretive programs should be well staffed. This is needed, especially by students. Teachers and students are better served when the ratio of students to guides does not exceed 10 to 1.

(3) Presentations should accommodate the general public. Visitors enjoy personal presentations that go beyond the materials in the exhibits and enable them to ask questions. People also have different learning strategies and preferences. Some people learn best by reading the materials, others by listening, others through sign language or alternative formats, and others by experimental involvement. A successful program will use several different interpretive techniques, including those that take into account the needs of persons with sensory or cognitive impairments.

(4) Staff should help in scheduling interpretive events, managing volunteer programs, and coordinating special exhibits and events. Staff should be experienced and prepared to create temporary exhibits covering contemporary issues.

b. Is the operation and maintenance budget for the visitor center complete?

(1) Repairs are needed occasionally for all exhibits, and exhibits should generally be replaced every 10–12 years. This means future funding commitments.

(2) Printed posters, brochures, and other supplies are needed for the interpretive program, tours, and other activities. If there is a cultural theme to the interpretive program, there should be funds for purchasing sample artifacts, replicas, and period attire.

(3) Additional funds are needed in case electronic, technological, or mechanical equipment for the exhibits and interpretive programs wear out or become otherwise unusable. A future funding commitment will be required.

(4) Maintenance is needed for the building and internal facilities, such as lights, heat, audiovisual equipment, assistive listening systems, and special lighting equipment.

c. Should fee collection facilities be considered in the design?

Almost all visitor centers collect revenues, whether they are in the form of donations, program fees, vending machine revenues, or sales.

d. Are there steps for a value engineering review of the project?

Value engineering should be done on all visitor centers to ensure that the proposed design of the building best serves the established goals and objectives of the facility. A value engineering study should address important issues, such as the location of the restrooms and any potential sales area.

e. Has a cost-benefit analysis been completed to show the long-term cost per visitor?

During the first 5 years, there should be only minor repair and maintenance costs for the visitor center. After 5 years, many of the exhibits will need updating, and major repairs may be needed for some of the exhibits and for the building itself.

Decision Criteria for Proposing a Visitor Center

Arbitrary decisions are those made without any principles or reasoning. A list of explicit decision criteria can serve several important functions in proposing and planning a visitor center, such as helping to (a) make the decision process transparent and trackable; (b) develop a full set of reasonable alternatives; (c) ensure a full, fair, adequate, and deliberate evaluation of consequences for alternatives; (d) improve communication and increase meaningful public participation; and (e) create an administrative record.

The decision criteria should fully reflect the circumstances at hand and be commensurate with the potential consequences of the decision to be made. The number of criteria needed to adequately assess development of a visitor center increases as the potential consequences of that decision increase. The following criteria are commonly used when proposing a visitor center.

1. Is a visitor center the most effective interpretive medium for the specific location, audience, and purpose of the interpretive program?

a. Does an interpretive plan or similar document provide specific rationale for why a visitor center is the best interpretive technique for the type of visitor interest and type of use in the area?

High—The interpretive plan provides sound rationale for why a visitor center is appropriate.

Medium—The interpretive plan provides some rationale for why a visitor center is one of many techniques that could be used to reach the intended audience, but other media may also be appropriate.

Low—No interpretive plan was completed; no proper visitor analysis of the intended audience was conducted; or a plan was completed, and other techniques are more appropriate.

b. Are the visitors' and agency's public information needs being served by other means (e.g., other regional visitor centers or visitor contact stations)?

High—Other centers and stations do not exist.

Medium—Other centers or stations are more than a day's drive away.

Low—Other centers or stations are within a day's drive.

2. Does the proposed visitor center relate to recreational mission and management objectives?

a. Does the visitor center's purpose relate directly to the mission of Reclamation, its programs, or its legislative mandates?

High—The proposed center strongly relates to recreational mission.

Medium—The proposed center generally relates to the project's mission.

Low—The proposed center relates only slightly to the project's mission.

b. Does a publicly reviewed resource management plan, plan amendment, or other planning document identify a visitor center as part of the preferred management strategy?

High—Plan(s) recommend building a visitor center.

Medium—Plan(s) list a visitor center as a possible approach.

Low—Plan(s) state that a visitor center is not necessary or do not consider a visitor center.

3. Is there clear legislative authority and valid commitments from partners showing clear economic and congressional support for the visitor center?

a. Is there support from relevant national and local government agencies?

High—Documentation shows sufficient support from relevant national and local governmental entities.

Medium—Documentation shows some support from relevant national and local governmental entities.

Low—There is no clear commitment to the visitor center.

b. Is there a partnership agreement for operation and maintenance if partners are proposed?

High—A partnership agreement for more than 10 years contains clearly stated responsibilities for staffing and operation and maintenance costs. There are clear provisions for regular review and updating of the agreement.

Medium—A partnership agreement for more than 5 years contains stated responsibilities for staffing and operation and maintenance costs. There are some provisions for regular review and updating of the agreement.

Low—A partnership agreement for no more than 3 years states general responsibilities for staffing and operation and maintenance costs. There are poorly stated or nonexistent provisions for regular review and updating of the agreement.

4. Has the long-term staffing, maintenance, and funding commitment required to support the visitor center been determined?

a. Was a cost analysis completed that considered proper staffing and the operational and maintenance costs related to a visitor center?

High—A cost analysis was conducted. No problems are evident.

Medium—A cost analysis was conducted. Potential problems are evident.

Low—No cost analysis was conducted, or a cost analysis was conducted and problems are certain.

b. Is there a process for conducting a value engineering review?

High—Funding for a value engineering review is available and a review will be conducted.

Medium—A value engineering review is planned, but funding is not yet available.

Low—There is no plan for a value engineering review.

c. Has consideration been given to the benefits of contracting specific services such as maintenance and security?

High—A cost analysis was conducted. Benefits such as cost savings are evident.

Medium—A cost analysis was conducted. Benefits such as cost savings are limited.

Low—A cost analysis was conducted. Benefits such as cost savings do not exist.

Interpretive Master Planning

Interpretive master planning is a strategic process that, in its implementation, provides a plan for achieving management objectives through interpretive media and education.

Interpretive planning analyzes all of the project needs and existing resources then recommends a wide array of interpretive services, facilities, products, and programs to most effectively and efficiently communicate the themes and significance of the recreational resources. This section shall touch upon the objectives and methods of interpretive planning as well as the type of feedback interpretive planning is expected to provide.

Principles of Interpretive Planning

Interpretive planning defines how an organization will handle the task of facilitating interpretive visitor experiences, enjoyment, and learning. Interpretive planning should adhere to the following principles:

- Consider the client (such as tourist, family, senior, person with disabilities, or local school group) and describe the desired visitor experiences at the site.
- Define the location's unique attributes.
- Set up key goals for facilitating visitor learning in concert with management goals.
- Recommend and outline appropriate approaches and strategies for orienting and educating the visitor in ways that communicate the project's most significant and compelling stories while protecting and preserving the integrity of the natural and cultural resources.
- Prescribe the best mix of methods, media, and messages based on current research and reflects knowledge about visitor expectations, demographics, and changing social trends and needs.
- Create a set of guidelines that are flexible, ongoing, interdisciplinary, and responsive to client needs.
- Set a style for interpretive media.
- Consider the timing and financing of programs in the project development.
- Is facilitated by a person or team of people who have an understanding of and have demonstrated competence in interpretive planning.
- Ensure universal accessibility.

Interpretive Planning Process

Interpretive planning is a process of describing an existing situation and need, inventorying and analyzing current resources, identifying major stories or themes, recommending a set of specific interpretive approaches and media, and implementing and evaluating products and services. It is essential for guiding the development of a visitor center that then considers the following processes.

Purpose of Planning

Why is this plan being done? This stage is often referred to as scoping and can include, but is not limited to, the following analysis:

- Existing situation, vision, or mission of the area, resource, site, or project—What does the enabling legislation suggest about the purpose of the project? What is the mission of the tourist project in terms of resource management and visitor services? What is the existing situation that creates a demand for a visitor center or interpretive projects or both?

- Site or project goals—Why do the interpretation at this site? Why is a visitor center considered for this site or facility? What specific goals will the interpretation at this site or visitor center help achieve?
- Background or history of the area, resource, or project—What is the historic, cultural, social, and political context for planning an interpretation at this location?
- Context for planning—Are there funding, staffing, or political considerations that might influence resource management? Are there new or unusual forces exerted on the resource that necessitate interpretive planning?

Resources Inventory

This part of the plan inventories all of the available resources, possible themes for the project, and potential audience. Each of the following sections should include an inventory of the resources. The inventory describes what exists, and why that inventory is important or relevant to planning for interpretation.

Resource Inventory

- Bio-physical—outstanding natural and biological features.
- Socio-cultural—outstanding cultural features or phenomenon.
- Recreational resources or facilities—marinas, boat ramps, campgrounds, picnic areas, trails, etc.

Facilities and Programs Inventory

- Existing infrastructure—roads, bridges, buildings, dams, power plants, canals, fish hatcheries, etc.
- Existing interpretation or education—interpretive exhibits and publications and/or educational collections such as skins, skulls, rocks, artifacts, and plants; library resources; and visitor orientation materials such as kiosks, bulletin boards, and orientation signs.
- Existing accommodations—provisions made for effective communication and equal opportunity to experience for persons with disabilities.

Management Inventory

- Resource management summaries
- Security issues and requirements.
- Existing plans that will affect visitor services and education.
- Any existing and relevant resource management issues (urban-wild land interface and conflicts, user conflicts between personal water craft and anglers, sensitive natural or cultural areas, etc.) that affect the visitor experience and that should be interpreted for the visiting public.

Audience and Stakeholder Inventory

- Current visitors—number of visitors, demographics, motivations, interests, market segments, etc.
- Stakeholders of the area, resource, or site—partners, funders, and interest groups that might have a stake in either the management of the resources of the area or in the education of visitors to the area.

Again, it is not sufficient to just collect this information. Analysis involves deliberate thought, discussion, deliberation, reflection, and judgment. Consider why and how this information is useful for the project, and how this information is helpful for making decisions about the project.

Significant Themes and Visitor Experiences

This section of an interpretive plan summarizes the project's fundamental importance and its relevance to the visitor experience.

Statements of significance, compelling stories, and site-wide themes are all used to describe the distinct qualities of resources at the site, including natural, cultural, scientific, recreational, and inspirational resources. Statements of significance are based on the site's specific legislation and general management plan, and they answer the question: 'What are the major stories, issues, ideas, or characteristics that make this area distinctive and should be conveyed to the visitors?' Statements of significance can be a line, a paragraph, or a page.

Visitor-experience opportunities or desired visitor experiences describe how the interpretive program facilitates physical, social, intellectual, inspirational, and emotional experiences for visitors. These statements include the activities we hope visitors engage in, the facts we hope they learn, the feelings we hope they experience, and the scenery we hope they appreciate. In an interpretive plan, these opportunities are expressed as broad, recreation-related goals that suggest desired visitor experiences. Visitor-experience opportunities can be written as bullets or as narrative descriptions.

Example Visitor Experiences

From the Interpretive Addendum to the Poudre-North Park Scenic and Historic Byway Corridor Management Plan, 1998:

Water/Poudre River: From tundra to plains, the Poudre River reflects the story of water law in the West. The river's water storage and diversion projects are vital to industry, wildlife, agriculture, and recreation. Understanding the river's management and recognizing its uses are important to preserving this natural treasure.

Scenery: The Byway is a significant 'Gateway to the Rockies,' providing travelers a first-hand look at narrow canyons, wild rivers, great gorges, piedmont, high peaks, cirques, and sweeping parks. The Byway's geological richness and scenic beauty should be an integral part of visitor education.

From the North Park Watchable Wildlife Plan, Colorado Division of Wildlife, 1995:

Partnerships: Nearly 75 percent of North Park is publicly owned, requiring a unique partnership between Federal, State, and private landowners to manage and protect its abundant natural resources of wildlife, range, water, forests, minerals, and recreation opportunities.

Lifestyle preservation: The current lifestyles of the citizens of North Park are an integral part of the area's overall natural and cultural heritage. As such, past and present lifestyles and values should be infused into watchable wildlife interpretation.

From the Blue Ridge Music Center Interpretive Plan, National Park Service:

The park will provide opportunities for visitors to:

- Listen to a wide variety of traditional music of the Blue Ridge, including both live and recorded music.
- Become acquainted with musicians from the region whose backgrounds, life histories, and artistry illustrate important themes in history.
- Participate in informal music and dance activities at the site.
- Have an enjoyable recreational experience without impairing the natural and cultural values of the site.

From the Lakota Tatanka Heritage Plan, National Park Service:

As visitors travel through the park, they are exposed to the vastness of the prairie with an occasional but exciting glimpse of buffalo, elk, and perhaps even a band of Lakota people crossing the prairie. When they arrive at the visitor center, they are exposed to enjoyable learning experiences designed to enrich the minds of all ages and cultural backgrounds. These learning experiences focus on three elements that form the management objectives of the park . . . first, the prairie that nurtures a vast array of plants and animals, second, the Sioux Indians, and last, the park management program itself.

Program, Product, and Service Recommendations

This part of the plan recommends specific programs, products, and services as they relate to the existing resource inventory, statements of significance, and visitor experience opportunities. The recommendations are a strategy or prescription for the best set of programs and services to meet the visitors' needs, while at the same time preserving the site's resource integrity. Often, the best set of programs and services is selected from a set of recommended alternatives using criteria such as those previously described in the 'Decision Criteria for Proposing a Visitor Center' section.

In an interpretive master plan, recommendations are made concerning a variety of accessible media that best meet site or park goals for visitor education. The objective is to select the most appropriate media based on available resources (time, money, personnel, and expertise) and the purposes of the plan. Choices for media recommendations can include any of the following:

Facilities

- Visitor centers
- Kiosks
- Waysides
- Visitor contact stations

Personal Programs

- Guided walks and talks
- Campfire programs
- Storytelling
- Living history programs
- Oral histories
- Demonstrations

- Environmental education activities
- Puppet shows and dramatic presentations
- Roving interpretations
- Visitor information stations

Manufactured or Printed Products

- Publications, including Grade II Braille, audio recordings, and computer disk of text
- Kits and adventure packs
- Discovery boxes and traveling exhibits
- Exhibits, including tactile features, and audio recording or computer disk of feature exhibits
- Signs, including tactile features, and audio recording or computer disk of feature exhibits
- Maps and brochures for self-guided activities, including Grade II Braille, audio recording, or computer disk

Electronic Technology Products

- Web pages with audio description of slides provided
- Audiotape tours with printed script
- Video programs (open or closed caption)
- PowerPoint slide programs
- High-tech programming (animatronics, augmented reality, computer interactive programs, video-equipped microscopes, virtual reality, etc.)

The section of the interpretive plan that specifies final recommendations should also include resources for the successful design, fabrication, and installation of the recommendations, including all personnel, materials and equipment, money, and time.

Site Design

The development of a visitor center design is the process of integrating structure(s), utilities, and visitor circulation at a specific location. The process includes initial site inventory and assessment, alternative analysis, detailed design development, and construction procedures and services. This section begins with guidance for site selection, followed by site access, and utilities and waste systems. The following section continues this discussion related to building design.

Site Selection

Selecting a visitor center site for recreation area may include any of the following: reservoir, lake, beach, river, marine areas, compelling landform, scenic view, cultural resource, canal, dam, and so forth. When siting visitor facilities, consideration should be given to both natural and cultural features of an area. The site inventory and analysis should clearly identify the quality and extent of these features, possible impacts to the existing environment, and potential mitigation measures that might be necessary.

Possible mitigation measures might include minimizing new disturbance by using existing facilities (such as parking, access roads and graded areas), conducting pre-disturbance surveys on ecological resources (such as water bodies, natural habitats and sensitive species populations), preparing a restoration plan for habitat and the construction site to minimize negative impacts on wildlife, and so on. The characteristics that make an area attractive to visitors may also pose problems. Some attractive areas may be very sensitive to disturbance and unable to withstand impacts of human activity. Other attractive areas may be too remote to justify development for direct visitor use. Some areas may be too close to safety hazards or too developed to be appropriate for visitor center development. Conversely, some degraded areas may, in fact, provide opportunities for development, allowing more options for site preservation and ecological restoration. Some areas may have terrain issues that will increase the cost of compliance with accessibility standards. The site selection process must address the following questions:

- Will the anticipated impact of development on the site be acceptable?
- What inputs (energy, materials, labor, and products) would be necessary to support development and are the required inputs available?
- Can waste outputs (solid waste, sewage effluent, exhaust emissions) be dealt with at acceptable environmental costs?
- Will the terrain increase costs for compliance with accessibility standards (i.e., additional earthwork to meet the slope and cross slope requirements of parking spaces, accessible routes, wheelchair seating spaces in outdoor areas, required clear space at telephones, drinking fountains, waste receptacles, and other facilities)?

The process of site selection for a visitor center is one of identifying, weighing, and balancing the attractiveness (e.g., compelling natural and cultural features, access, and sense of place) of a site against the costs inherent in its development. The characteristics of a region or site should be described spatially (using either conventional or computer-generated maps) to provide a precise geographic inventory. Spatial zones meeting programmatic objectives within acceptable environmental parameters are likely development sites.

The programmatic requirements and environmental characteristics of site development vary greatly, but the following factors should be considered in site selection:

Site compatibility

When deciding the site of a visitor center, consider (a) visual compatibility (will the visitor center look like it belongs in that location?), (b) cultural compatibility (will the visitor center respect local social and cultural history of the site?), and (c) ecological compatibility (will the visitor center honor and/or complement the surrounding geology, vegetation, and water forms?).

Visitor capacity

Every site and/or facility has a capacity for human activity. A detailed site analysis should determine this capacity based on the sensitivity of site resources, the ability of the land to regenerate, and the desired visitor experiences.

Density

When siting facilities, carefully weigh the relative merits of concentration versus dispersal. Natural landscape values may be easier to maintain if facilities are carefully dispersed. Conversely, concentration of structures leaves more undisturbed natural areas.

Climate

The characteristics of a specific climate should be considered when locating facilities so that human comfort can be maximized, while protecting the facility from climate extremes such as heat, cold, dryness, or volatile and unpredictable weather.

Slopes

In many environments, steep slopes predominate, requiring special siting of structures and costly construction practices. Building on steep slopes can lead to soil erosion, loss of hillside vegetation, inaccessible walkways and routes, damage to ecosystems, and costly ground surface impacts to provide access to persons with disabilities. Generally, appropriate site selection should locate more intense development on gentle slopes, dispersed development on moderate slopes, and no development on steep slopes.

Views

Views are critical, reinforcing a visitor experience. Site location should maximize desired views of natural features and facilities in order to support visitor experiences (visitor experiences include the perceptions, feelings, and reactions a visitor has in relationship with the surrounding environment).

Natural hazards

When considering site locations, avoid naturally hazardous situations, such as precipitous topography, dangerous animals and plants, and turbulent water areas. Site layout should allow controlled access to these features.

Access to natural and cultural features

Good siting practices can maximize pedestrian access to the wide variety of onsite and offsite resources and recreational activities. Low-impact development is the key to protecting vital resource areas.

Landscape considerations

Consideration of the natural landscape is important during site selection and planning. It is generally less expensive to care for landscape during construction than to restore a badly degraded landscape after construction. These efforts include carefully defining the construction zone and not 'clearing and grubbing' soil areas unnecessarily. Placement of vegetation requires careful planning to allow growth to maturity without costly maintenance and will not infringe on an accessible route. Natural vegetation can be an important aspect of the visitor experience and should be preserved to the degree possible. If new planting is needed, using native plant species and avoiding or controlling exotic or invasive species in landscape and site design is highly recommended.

Support facilities and public use areas

Safety, visual quality, accessibility, noise, and odor are all factors that need to be considered when siting support services and facilities. These areas need to be separated from public use and circulation areas. In certain circumstances, utilities, energy

systems, and waste systems areas can be a positive part of the visitor experience. For more information, see the 'Utilities and Waste Systems' section further on in the book.

Proximity of goods, services, and housing

Visitor center developments require the input and delivery of numerous goods and services, as well as staffing for normal operation. Siting facilities should consider the frequency, availability, and nature of these elements and the costs involved in providing them.

Site Access

Site access refers to not only the means of physically entering a development, but also the en-route visitor experience. For example, the en-route experience can dramatize the transitions between origin and destination with obvious sequential gateways and can provide opportunities for interpretation or education along the way.

Designers can consider utilizing corridors to limit the impact to environmental and cultural resources and to control development along the corridor leading to the facility, and providing anticipation and drama by framing views or directing attention to landscape features along the access route.

For a visitor center project, a sense of arrival at the destination is very important. Sense of arrival means an emotional and mental state that accompanies the end of a visitor's travels and the beginning of their visit experience. For some visitors, at a visitor center marks the end of a journey involving both lengthy planning and travel. For some, a sense of arrival is created by the clear opportunity to park their car, and begin their exploration of the site with the assistance of exhibits, signs, guidebooks, trails, shuttle buses, etc. For others, this sense of arrival begins with the first sight of clear way-finding and signage.

Besides the above tips, designers should also consider allowing simplicity of functions to prevail, while respecting basic human needs of comfort, safety, and access for persons with disabilities.

Site access can be achieved by various means of travel, such as by foot, private vehicles, off-highway vehicles, boats, and aircraft. Transportation means that are the least polluting, least noisy, and least intrusive in the natural environment are the most appropriate for a sustainable development. Where environmental or other constraints make physical access impossible, remote video presentation maybe the only way for people to access the site.

Utilities and Waste Systems

With the development of a site comes the need for some level of utilities (e.g., water, waste, energy). Thus when planning the site design of a visitor center project, the layout of utilities and waste systems should also be taken into consideration ahead of time.

Developments that are more elaborate have more extensive systems to provide water, waste treatment, and energy for lighting, heating, cooling, ventilating, etc. The provision of these services and the accessories associated with them may adversely impact the landscape and the functioning of the natural ecosystem. Early in the planning process, utility systems must be identified that will not adversely affect the environment and will work within established natural systems. After appropriate systems are selected, careful site planning and design are required to address secondary impacts, such as soil disturbance and intrusion on the visual setting.

In addition, aim to buffer the noise associated with mechanical equipment and the odors associated with waste treatment by manipulating the landscape through the placement of trees and shrubs.

Utility corridors

Because of the impact created by utility transmission lines, onsite generation and wireless microwave receivers are preferable alternatives in many cases. When utility lines are necessary, they should be buried near other corridor areas that are already disturbed, such as roads and pedestrian paths. Where possible, locate overhead lines away from desirable view sheds and landform crests.

Night lighting

The nighttime sky can be dramatic and contribute to the visitor experience. Light intrusion and the glare from over-lighting can obscure night sky viewing and may disorient migratory birds. Care is required to keep night lighting to the minimum necessary for safety and security. Urban lighting standards do not apply. Low-voltage lighting with photovoltaic collectors should be considered as an energy-efficient alternative. Light fixtures should remain close to the ground to minimize eye level glare. Fixtures should be of a type that directs light downward rather than outward or upward.

Storm drainage

In a modified landscape, consideration must be given to the impact of storm drainage on the existing drainage system and the surrounding structures and systems that will be necessary to handle the new drainage pattern. The main principles in storm drainage control are to regulate runoff in order to provide protection from soil erosion and to avoid directing water into unmanageable channels. Removal of natural vegetation, topsoil, and natural channels that provide drainage control should be avoided to the extent practicable. An alternative is to stabilize soils, capture runoff in depressions (to help recharge groundwater supply), and re-vegetate areas to replicate natural drainage systems.

Irrigation systems

Low-volume irrigation systems are appropriate in most areas as a temporary method to help restore previously disturbed areas. Irrigation piping can be reused on other restoration areas or incorporated into future domestic hydraulic systems. Captured rainwater, recycled gray water, or treated sewage should also be considered for use as irrigation water.

Waste treatment

In modified landscapes, it is often appropriate to attach waste treatment systems to existing municipal systems; however, if it is not possible to attach to a municipal system, it is important to consider treatment technologies that are biological and non-mechanical and that do not involve soil leaching or major soil disturbance. While a septic system can be considered, treatment methods that result in useful products, such as fertilizer and fuels, should be investigated. Constructed biological systems are increasingly being put to use to purify wastewater. They offer the benefits of being environmentally responsive, nonpolluting, and cost effective.

Building Design

Visitor center building design considers the process of facility location, design, materials, and construction. In this process, visitor access and site entry; orientation, information, and visitor comfort needs; and programmatic needs such as educational, interpretive, and sales should all be considered. This section begins with an overview of general building design considerations, which is followed by guidance for visitor flow and floor planning. Finally, a series of environmental, cultural, and sensory considerations are provided as they relate to building design.

Designing for Enhancing Visitors' First Impression

Visitors form initial impressions at the first encounters with the site and related facilities. Their initial reactions can influence their overall visitor experience. In order to enhance visitor experience, considerations for the following factors should be taken during the designing process.

Entry

- Road design should follow natural contours and respect topography and landscapes, reflecting the visitor center's overall theme(s).
- Design should help slow entering vehicles and heighten awareness of surroundings.

Parking

- Parking lot placement should not encroach on the visitor center building and should allow for transitional passage to the center.
- A drop-off loop is often appropriate and should be provided for buses and visitors with mobility issues.
- Service and emergency entrances and pathways should be screened or routed to minimize visual impact.
- Main parking lots should provide natural shading and landscaping that is consistent with landscaping throughout the rest of the site.

Walkways

- Walkways from the parking areas to the visitor center should be visible or clearly indicated. A view of the visitor center is desirable.
- Walkways to the visitor center and around the site need to consider visitor capacity, scale, and other design elements and should meet requirements under the relevant regulations.
- Lighting should be modest; it should provide for safety but avoid light spillover. Lighting should be sufficient to light trails or walkways to and from visitor center and parking areas.
- A view of the visitor center entry should be clear from major walkways.

Information Area or Lobby

- A porch or patio should be provided as an informal or formal meeting place outside the main lobby area.

- The visitor lobby should be large, open, well-lit, and should provide a barrier-free (i.e., include access for wheelchairs and children) entry with grates and floor mats.
- Floors, walls, and ceiling surfaces should be designed to minimize noise.
- The information desk should be brightly illuminated.
- Visitors prefer both personal (a person at a desk) and non-personal (brochures, maps, interactive computers) forms of information.

Comfort Areas

- Restrooms and drinking fountains should be easy for visitors to access upon entering the visitor center.
- Benches or appropriate seating areas should be provided around the building so visitors have several places to rest.
- Food and drink services may be considered.

High-Quality Wayfinding

Visitor experience and satisfactions are directly influenced by the convenience of navigating the visitor center. This means, a high-quality wayfinding system is an important part in the visitor center design. During this process, designers need to take the following elements into consideration.

- After-hours information that is easy to find, well lit, and comprehensive should be provided.
- Telephones should be provided for emergency use. Public telephones should be clearly signed and meet the technical standards for persons with hearing impairments.
- Orientation maps and instructions for site use should be provided.
- Bench seating, bathrooms, and shelter in staging areas where visitors are expected to gather or wait should be provided. These staging areas should also include secure and protected areas for storing program equipment and supplies.
- Wayfinding signs should be placed near the entrance to an area and should be on an accessible route for persons with mobility impairments. Wayfinding signs should incorporate features that aid persons with visual and cognitive impairments, such as the use of tactile characters and symbols, color to separate and clarify themes, pictographs, and pictograms.
- Accessible features of the site should be marked with the International Symbol of Accessibility (wheelchair symbol) on the wayfinding sign.

Cultural Considerations

The value and desire of cultural activities is part of a rich, robust, and rewarding visitor experience. Destinations, particularly urban cities, have an opportunity to showcase cultural activities and provide cultural experiences through the formation of cultural districts.

Archeological Resources

Preserve and interpret archeological features to provide insight into the successes and failures of previous cultural responses to the environment.

Local Architecture

Analyze local historic building styles, systems, and the materials used to find time-tested approaches in harmony with natural systems. Use local building material, craftsmen, and techniques to the greatest extent practicable in the development of new facilities.

Historic Resources

Reuse historic buildings, whenever possible, to assist in their preservation and to contribute to the special quality of the place.

Local Culture

Understand the local culture and the need to avoid the introduction of socially unacceptable or morally offensive practices. Seek the views of the local population as well in order to foster a sense of ownership and acceptance. Include environmentally sound local construction techniques and materials in the development of new facilities.

Incorporate local expressions of art, handiwork, detailing, and, when appropriate, technology into new facility design and interior design. Provide opportunities and space for the demonstration of local crafts and performing arts.

Sensory Considerations

Sensory considerations not only make the visit more interesting and memorable, but they will determine the success or failure of effectively communicating information to visitors (especially those with disabilities). The most effective interpretive methods employ as many of the senses as possible. Increasing the number of senses used in communication dramatically increases the effectiveness of the learning experience.

Visual

Provide visitors, including those with disabilities, with ready access to educational materials to enhance their understanding and appreciation of the local environment and the threats to it. Incorporate views of natural and cultural resources into even routine activities to provide opportunities for contemplation, relaxation, and appreciation. Use design principles of scale, rhythm, proportion, balance, and composition to enhance the complementary integration of facilities into the environmental context. Provide visual surprises within the design of facilities to stimulate the educational experience. Limit the height of development to preserve the visual quality of the natural and cultural landscape. Use muted colors that blend with the natural context unless environmental considerations (reflection/absorption), cultural values (customs/taboo), or safety (needed contrast for persons with visual impairment) dictate otherwise.

Sound

Locate service and maintenance functions away from public areas. Space interpretive stops so that natural or site-specific sounds dominate. Use vegetation to muffle sound between public and private activities and orient openings toward natural sounds such as the lapping of waves, babbling of streams, and rustling of leaves. Limit the volume of unnatural sounds such as those from radio and television.

Touch

Allow visitors to touch and be in touch with the natural and cultural resources of the site. Tactile models, built to scale, offer a full experience to many visitors, including persons

with visual disabilities. Vary walking surfaces to give different qualities to different spaces. Use contrasting textures to direct attention to interpretive opportunities.

Smell

Allow natural fragrances of vegetation to be enjoyed. Direct air exhausted from utility areas away from public areas.

Cradle-to-Grave Analysis

Sustainable design also considers building materials. The complete life cycle of resources, energy, and waste implications of possible building materials can be analyzed before building construction. A cradle-to-grave analysis traces a material or product (and its byproducts) from original, raw material sources (plant, animal, or mineral) through extraction, refinement, fabrication, treatment, transportation, use, and eventual reuse or disposal. This analysis includes the tabulation of energy consumed and the environmental impacts of each action and material.

Questions that guide a cradle-to-grave analysis include:

- What is the source of the raw material? Is it renewable? Sustainable? Locally available? Nontoxic?
- How is the raw material extracted? What energy is used in that extraction process? What other impacts result from the extraction (e.g., habitat destruction, erosion, siltation, pollution)?
- How is the material transported? How far does it have to be transported? How much fuel is consumed? How much air is polluted?
- What is involved in processing and manufacturing the material? How much energy is required; what air, water, and/or noise pollution will result from the processing? What type of waste, and how much, is generated in processing and manufacture?
- Are any treatments or additives used in the manufacture of the material? What types of treatments are necessary? Are those treatments hazardous?
- How is the final product used? What type of energy does it require? How long will it last? How does its use affect the environment? How much waste does it generate?
- When the product is obsolete, how is it disposed of? Can it be recycled? Does it contain solid or toxic wastes?

Selection of building materials should consider local materials when possible and materials that require less energy to manufacture, transport, operate, and maintain. Prioritizing materials by source can be helpful for making building material decisions.

- Primary materials are materials found in nature such as stone, earth, and flora (cotton, hemp, jute, reed, wood, and wool). If new lumber is used, consider using only lumber from certified sustainable forests or certified naturally felled trees. Use caution with any associated treatments, additives, or adhesives that may contain toxins or with materials that off-gas volatile organic compounds and thus may contribute to indoor air pollution or atmospheric pollution.
- Secondary materials are materials made from recycled products such as wood, aluminum, cellulose, and plastics. Verify that production of the material does not involve high levels of energy, pollution, or waste. Verify that materials and products salvaged from old buildings are functional and safe to use. Look closely at the

composition of recycled products; toxins may still be present. Consider cellulose insulation; ensure that it is fireproof and provides a greater R-value per inch thickness than fiberglass. Utilize the aluminum from recycled materials; recycling aluminum uses 80 percent less energy to produce than initial production. Evaluate the use of products containing recycled hydrocarbon-based products; they may help keep used plastics out of landfills but may do little to reduce production and use of plastic from original resources. Keep alert for new developments; new, environmentally sound materials from recycled goods are appearing on the market every week.

- Tertiary materials are manmade materials (artificial, synthetic, and nonrenewable) such as plywood, plastics, and aluminum that vary in the degrees of their environmental impact. Avoid use of materials and products containing or produced with chlorofluorocarbons or hydro-chlorofluorocarbons because these chemicals deplete the ozone layer. Avoid materials that off-gas volatile organic compounds because they contribute to indoor air pollution and atmospheric pollution. Minimize use of products made from new aluminum and other materials that are resource disruptive during extraction and high-energy consumers during refinement.

References

Recreation Facilities Design Guidelines, U.S. Department of the Interior, Bureau of Reclamation, 2013



Visitor Center of Mont-Tremblant National Park

Location / Mont-Tremblant National Park, Canada
 Area / 6458 square feet (600 square meters)
 Completion / 2014
 Architect / Smith Vigeant Architectes
 Photography / Stéphane Brugger
 Client / SÉPAQ
 Budget / CAD \$ 2.7 million

Located in the Mont-Tremblant National Park in Québec Canada, the Discovery Center offers a stunning view of Lake Monroe and its surrounding hills and mountains. The building consists of three distinct sections: an amphitheater, a discovery zone, and service facilities, all grouped into two main buildings connected by a large canopy. A continuous ribbon of rustic wood folds is used to create walls, floors and ceilings, defining the shape and organization for the structures.

The architects' main intention was to connect the project with the surrounding landscape. A continuous glass façade offers views toward the lake and gives visitors the sensation of being a part of nature while the wooden path between the main structures alternatively provides visitors with a physical connection to the lake. This relationship with nature was carried through into the amphitheater whose screen walls allow viewers to lookout and feel as if they are sitting in the forest. Additionally, a reflective surface on the west façade was incorporated to project the surrounding landscape onto the building itself.

Given its pristine location in the heart of nature, the use of wood as the primary material allowed for the harmonious insertion of the building into the unspoiled setting. A wide variety of wood species were used on both the exterior and interior, thus reinterpreting the site's richness in textures and colors, while providing the building with durability and resistance. Among the varieties were: hemlock for the ribbon and the amphitheater, white pine for the wood ceiling, American elm for the furniture, Canadian east cedar for the exterior cladding and western red cedar for the curtain wall.

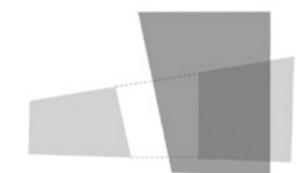
The Discovery Center was designed around the site's natural and climatic features and in respect to bio-climatic principles. The development of the project was founded on the assiduous integration of the building into the site as well as its sensitivity to the surrounding area.

Translated from French, the architects believe that 'the illuminated spaces, both interior and exterior, offer an interesting play of volumes. The unique building form awakes the senses and invites it to be discovered. The use of abundant and diverse wood types creates the warm and welcoming interior spaces.'

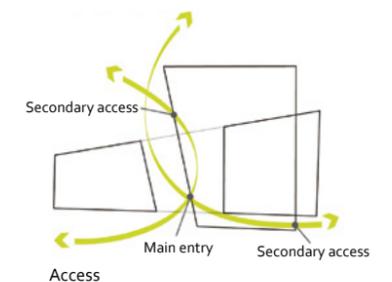


- Site plan
- | | |
|-------------------|--|
| ① Scenic view | ⑦ Preservation zone for aquatic vegetation |
| ② Main road | ⑧ Center access |
| ③ Visitor parking | ⑨ Mineral garden |
| ④ Bike path | ⑩ Beach |
| ⑤ Passage | ⑪ Recreational dock |
| ⑥ Lake Monroe | ⑫ Visual connection to discovery center |

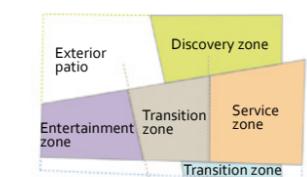
01 / Outside patio and lake access



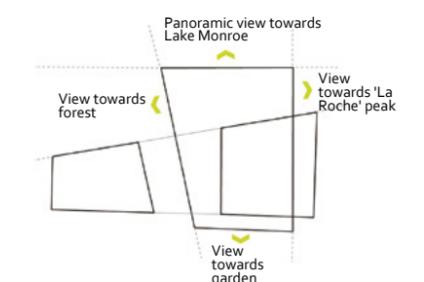
Volumes



Access



Interconnected zones



Visual connections with surrounding landscape

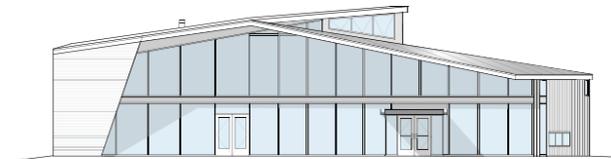
02 / Mirror reflecting nature
03 / Entrance



Southeast elevation



Northeast elevation



Southwest elevation



Northwest elevation

0 5m



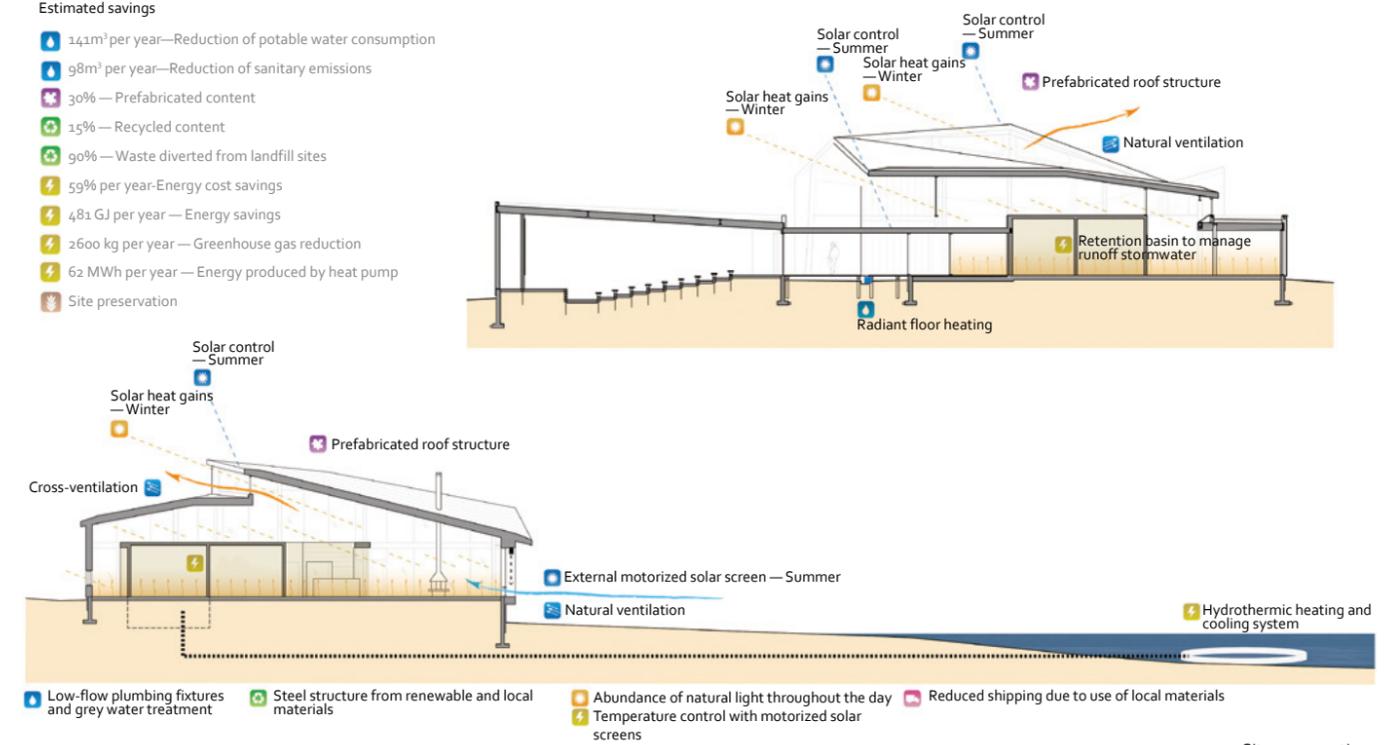
03



02

Estimated savings

- 141m³ per year—Reduction of potable water consumption
- 98m³ per year—Reduction of sanitary emissions
- 30% — Prefabricated content
- 15% — Recycled content
- 90% — Waste diverted from landfill sites
- 59% per year—Energy cost savings
- 481 GJ per year — Energy savings
- 2600 kg per year — Greenhouse gas reduction
- 62 MWh per year — Energy produced by heat pump
- Site preservation



- Low-flow plumbing fixtures and grey water treatment
- Steel structure from renewable and local materials
- Abundance of natural light throughout the day
- Temperature control with motorized solar screens
- Reduced shipping due to use of local materials
- Site preservation

Site preservation



04

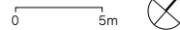


05

- ① Multipurpose area
- ② Reception desk
- ③ Main entrance
- ④ Secondary entrance
- ⑤ Circulation hall
- ⑥ Outdoor terrace
- ⑦ Ramp towards lake
- ⑧ Boutique
- ⑨ Rental equipment room
- ⑩ Multipurpose room
- ⑪ Shower and dressing room
- ⑫ Restroom
- ⑬ Employee space
- ⑭ Storage area
- ⑮ Maintenance room
- ⑯ Amphitheater stage



Building floor plan



06

- 04 / Terrace
- 05 / Information center
- 06 / Circulation

- 07 / Front view of amphitheater
- 08 / Side view of amphitheater
- 09 / Circulation area



Index

p114-----

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p286-----

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pp62, 68-----

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