VISITOR CENTER DESIGN EVALUATION

A Study Prepared
For The
Denver Service Center
National Park Service
U.S. Department of the Interior

By
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Appendices

Appendix A - Maintenance and Repairs, Safety and Security Problems, Functional Concerns, Alterations and Additions: as reported in NPS staff interviews and questionnaires for each visitor center

Appendix B - Research Instruments

Selected Bibliography
ACKNOWLEDGEMENTS

The successful completion of a study such as this requires the cooperation of many individuals ranging from the visitors and staff who took time from their vacation or work day to complete our questionnaire to the Director of the Denver Service Center who recognized the importance of design evaluation and authorized the study. Obviously the list is too long to include every name here. There are, however, a number of individuals whose help and assistance we wish to acknowledge specifically.

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We are indebted to the Park Superintendents, the Regional Directors and their respective staffs for helping us in the distribution and completion of staff questionnaires and in facilitating interviews. We also wish to acknowledge the generous cooperation of the designers of the visitor centers, who willingly undertook the completion of a lengthy questionnaire intended for evaluating their work.

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CHAPTER I: AN OVERVIEW

INTRODUCTION

An increasing number of programs and activities directed toward improving the quality of Federal design have been initiated in recent years. In 1973 and 1974, Federal Design Assemblies were sponsored by the National Endowment for the Arts (NEA) in Washington, D.C. to discuss design problems and review exemplary solutions. In 1975 a Federal Regional Assembly, sponsored by the NEA, was held in Denver, Colorado, and focused on the western regions of the country. The General Services Administration (GSA) has also prepared a draft Federal Design Policy and is exploring the possibility of its adoption for use by all Federal agencies having construction responsibilities (General Services Administration, 1975).

In both the 1974 and 1975 Assemblies, postconstruction evaluation was discussed as a potentially important tool for improving design quality by providing a means of systematically studying completed projects and learning from past successes and failures. Evaluation is also included as a component of the operational phase of facilities under the GSA draft Design Policy.

This study represents a step in the direction of developing a feedback mechanism for the planning-design process. It is a comparative study of twelve National Park Service visitor centers and addresses an array of design and design-related issues, including function, maintenance, visitor use patterns, safety, security, and aesthetics. The primary study objective is to develop information which can contribute to more enlightened and informed design decisions in the future, and in so doing, to identify components or attributes which contribute to or detract from the quality of the centers. These components or attributes may be physical, such as location, size or building materials; they may be perceptual, such as perceived attractiveness or suitability, and they may be procedural: that is, related to the process by which the facilities are designed.

SELECTED FINDINGS

The National Park Service has adopted the practice of employing or contracting for recognized design talent and encouraging quality design in support of park development programs. The Service has, in
this regard, come to be recognized as a leader among Federal agencies. The findings from this study indicate that this reputation is warranted. In the broadest terms, the visitor centers satisfy identified functional needs, are safe and easily maintained, are becoming barrier-free and are perceived by both visitors and staff as quality environments. This is not to suggest, however, that all centers are equal in all respects. There are distinctions among the centers that are important for consideration in the design of new centers or the renovation of existing centers.

Setting: Fifty percent of the centers have required alterations to accommodate the increased space demands for information and sales services, indicating an important pattern of visitor use and related spatial allocations. Several centers (Cape Cod-Province Lands, Great Falls and Rocky Mountain-Alpine) have also had to make provision for first aid services to attend to visitor injuries or disabilities due to accidents from activities such as climbing on the rocks at Great Falls or the effects of high elevation in Rocky Mountain National Park.

In addition, all the centers were built prior to the time in which barrier-free access to public facilities became an issue. Efforts of varying intensity are being made at most of the centers to rectify this shortcoming. However, the quality of design attendant on these modifications (e.g., access ramps) usually fails to meet that of the original facility and tends to be of a makeshift nature.

Maintenance of the visitor centers is in general exemplary in spite of the sometimes difficult conditions created by accommodating peak visitor levels over extended time periods. Maintenance issues which appear to be the most common and which are directly related to design decisions include mechanical systems failures and problems with flat roofs. Only one center, Gettysburg-Cyclorama, stands out as presenting an abnormal set of maintenance problems including settling of foundations, repeated mechanical systems failure, uneven heat distribution, interior surface finishes and roof covering.

Parking and arrival areas in most centers were designed and constructed prior to the emergence of campers and other forms of self-contained travel vehicles and the considerable increase in tour bus traffic. For this reason, few if any areas can adequately accommodate vehicles of such size or in the numbers in which they arrive. The result is chronic traffic problems.

The centers were designed to serve primarily an automobile-oriented public. The increase in group visitations, in tour busses, for example, poses problems at some centers in handling surges of visitors rather than the more continuous flow originally envisioned. As energy conservation concerns increase, it seems likely that this problem will also intensify.
**Context:** An analysis of the data on visitors' perceptions of the suitability of building exteriors, interiors, exhibit material, and audio-visual programs suggests that, while all centers were perceived to be suitable, centers in historic theme parks are generally perceived as more suitable than those in the natural or recreation theme parks. There is nothing that is generally identifiable in building exteriors or interiors that might explain this variability. There is, however, a noticeably greater use of artifacts in historic theme exhibits than in natural theme exhibits, where greater emphasis appears to be placed on the use of interpretive panels. Interviews with park historians and chiefs of interpretations suggest that artifacts are an important attraction for visitors and therefore probably serve as visible, tangible links with the historic event and hence enhance the perceived suitability of the exhibit.

One-third of the centers in this study are located in areas where the environmental conditions can be classified as extreme: Hoh in the Olympic rain forest, with annual precipitation in excess of 200 inches; Rocky Mountain-Alpine in an area of extreme snow loads, winds, tundra, and permafrost; and Cape Cod-Province Lands and Wright Brothers in sand dune areas of frequent, high velocity, salt-laden winds. Records of maintenance and repair provide one useful indicator of the quality of design of facilities in these extreme environments and suggest that these buildings were generally appropriate to their locations. Of perhaps greater concern is the capability of the fragile surrounding environments, particularly in Alpine and coastal areas, to accommodate ever-increasing numbers of visitors, particularly if the pattern of visitation becomes one in which more and more visitors arrive in groups by bus or other public transport system thus concentrating visitor impacts.

Another locational consideration of visitor centers is the relationship to the broader extra-park context, particularly if the center is in close proximity to sharply contrasting environments. Notable examples are the commercial, neon-lighted strip near the entrance to Gettysburg-Cyclorama and the clear-cut forests areas along the entry road to Olympic-Hoh.

**Users:** The two major groups of users of visitor centers are the visitors and the Park Service interpretive and maintenance staff. The ultimate test of the success of a design is its ability to satisfy and support the needs and values of these users. The visitors included in this study are best described as generally young (mean age of 31.9), well-educated (64.3 percent having some college education), frequent visitors to National Parks (55 percent visited four or more areas during the last three years), and having traveled a considerable distance to visit the parks (63 percent
traveled more than 300 miles from their homes and 30 percent traveled more than 1000 miles). The majority of the visitors spend between 15 and 30 minutes in the building.

Visitors and staff do not discriminate qualitatively between an architectural design based on traditional forms such as Bandelier and contemporary designs such as Gettysburg-Cyclorama or Rocky Mountain-Headquarters. The data indicate that visitors who have experienced contemporary architectural design in National Parks evaluate it equally favorably with the traditional.

Visitors' perceptions of the quality of the center are consistently positive and generally reflect higher perceived values than those of the park staff. The differences between visitor and staff perceptions may be attributable to greater knowledge of the center on the part of the staff, to a self-fulfilling expectation of quality on behalf of the visitors, or to the mediating influence of social experiences in the center such as discussions with particularly knowledgeable or engaging park rangers. Both visitors and park staff discriminate qualitatively among the components of visitor centers (e.g. arrival area, building exterior and interior, exhibits and audio-visual programs) and even among their related attributes (e.g. the informative nature compared to the attractiveness of exhibits or the crowedness compared to the suitability of interior spaces). For example, all components of the Petersburg and Gettysburg-Cyclorama Centers were perceived to be of generally high quality, while greater variability is noted for Great Falls Park and Rocky Mountain-Alpine, where exhibits and building interior respectively were rated as below the quality of the rest of the centers.

Design Activity: The findings provide strong support for the planning-design process employed by the NPS. Three factors in the process are identified as particularly significant to the design and construction of quality visitor centers: site selection, the use of multidisciplinary design teams, and the relationship of exhibit design to building-site design. The value of the General Management Plan as a mechanism for determining sites for visitor centers is clearly illustrated. Those few instances where there are specific problems, such as access at Yosemite-Valley (where the center is off the beaten track) or the conflict with park resource values at Gettysburg (where the center is located on top of the most important historic topographic feature) are indicative of the kinds of problems encountered when siting does not follow a master plan. Among the newer centers, such as Petersburg, Cape Cod-Province Lands, Fort Raleigh and Wright Brothers, which are generally perceived to be consistent in quality, there is also a common theme of team design. The team usually consist of architect,
landscape architect, interior designer and exhibit designer. Exemplary of these centers is careful attention to building-site relationship and the sequence of arrival, parking and entry. Another characteristic shared by these facilities is attention to detail in the design of all components ranging from the form of parking lots to trash containers, signage and furnishings.

A third important factor in the design process is the availability of interpretive programming and the timing of the design of the interpretive materials in reference to the design of the building. An essential ingredient for a successful visitor center is an interpretive prospectus which sets forth substantive content and recommends techniques for the interpretive program. Coupled with the need for the interpretive prospectus is the need for exhibit design to proceed in concert with or slightly ahead of the building design. The notion of fitting interpretive materials into a predetermined space as exemplified by the Great Falls Park center produces a set of conditions recognized by both staff and visitors as average at best and certainly not equal to expected National Park Service standards. Petersburg, on the other hand, provides a truly exciting example of the fruits of collaboration between the building and exhibit designers.

DESIGN OF THE STUDY

This study was designed using a conceptual framework which recognizes four major interacting factors relative to the evaluation of designed environments: the setting, the context, the users, and the design activity (Zube, 1974). Inherent in this conceptual framework is the assumption that an appraisal of the quality of a designed environment, of its ability to satisfy and support human activities and values, requires insight into each of these factors. The definition of the setting includes the physical, spatial and aesthetic attributes of the place under evaluation. It includes related supportive activities such as maintenance. The context is defined as the broader environment within which the center exists. It includes both the surrounding physical environment and the administrative context within which it exists. Users are defined as those for whom the facility was designed and constructed. It includes not only visitors but also staff and employees. It includes, to the extent possible, an understanding of their perceptions and values and of their actual behavior—their patterns of use. The design activity is defined as the process by which the facility is created. It extends beyond the acts of programming and the preparation of drawings to the factors which determined and influenced what a facility was to be and where it was to be located, who participated in those decisions, and it includes the evaluation of the completed product.
TABLE 1-1
VISITOR CENTERS SELECTED FOR STUDY

<table>
<thead>
<tr>
<th>Location-- NPS REGION (State)</th>
<th>Architect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southwest (New Mexico)</td>
<td>Unknown</td>
</tr>
<tr>
<td>North Atlantic (Mass.)</td>
<td>B. Biderman (NPS)</td>
</tr>
<tr>
<td>Southeast (N.C.)</td>
<td>L. Biond (NPS)</td>
</tr>
<tr>
<td>Mid-Atlantic (Penn.)</td>
<td>Neutra and Alexander Los Angeles, California Kent Cooper Associates Washington, D.C. C. Doty (NPS)</td>
</tr>
<tr>
<td>Nat'l. Capitol Parks (Va)</td>
<td></td>
</tr>
<tr>
<td>Pacific Northwest (Wa.)</td>
<td></td>
</tr>
<tr>
<td>Mid-Atlantic (Virginia)</td>
<td>B. Biderman (NPS)</td>
</tr>
<tr>
<td>Rocky Mountain ( Colo.)</td>
<td>W. Muchow, Denver Colorado Taliesien Associates Architects, Ltd., Arizona H. Baker (NPS)</td>
</tr>
<tr>
<td>Rocky Mountain Colo.</td>
<td></td>
</tr>
<tr>
<td>Midwest (Nebraska)</td>
<td></td>
</tr>
<tr>
<td>Western (California)</td>
<td></td>
</tr>
</tbody>
</table>
Selection of Visitor Centers for Study

Visitor centers were selected so as to provide: 1) geographic distribution, 2) representation of natural, historic and recreation themes, 3) examples from several construction periods (e.g. pre-World War II, Mission 66 and post-Mission 66), and 4) variability in quality according to nominations by Regional Offices, Harpers Ferry Service Center and Denver Service Center. Table 1-1 lists the centers which were thus chosen. The Minute Man National Historical Park Visitor Center was to have been included as representative of one of the most current designs. The delay in opening, originally scheduled for the summer of 1975, brought about the substitution of the Gettysburg Cyclorama Center. The Gettysburg Center, designed by an eminent architect, has been the subject of considerable debate--particularly in reference to maintenance and repair problems--and thus was a logical alternative facility for inclusion in the study.

TABLE 1-2

RELATIONSHIP OF STUDY METHODS TO EVALUATION FACTORS

<table>
<thead>
<tr>
<th>EVALUATION FACTOR</th>
<th>STUDY METHOD</th>
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<tr>
<td></td>
<td>Visitor Questionnaire</td>
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<tr>
<td>The Setting</td>
<td>X</td>
</tr>
<tr>
<td>The Context</td>
<td>X</td>
</tr>
<tr>
<td>The User</td>
<td>X</td>
</tr>
<tr>
<td>The Design Activity</td>
<td>X</td>
</tr>
</tbody>
</table>
FIGURE 1-1
VISITOR CENTERS

Bandelier NM

Cape Cod NS-Province Lands

Fort Raleigh NHS

Great Falls Park

Olympic NP-Hoh

Gettysburg NMP-Cyclorama
Methods

Multiple approaches were employed to obtain data relative to the setting, the context, the users, and the design activity. Table 1-2 indicates which methods were used in gathering data for each factor. Table 1-3 indicates the number of questionnaires collected and the number of observation periods and interviews conducted at each facility. All data were collected during the period of May to September, 1975. An average of eight man-days per facility was spent collecting field data. Observation data were collected by the same

<table>
<thead>
<tr>
<th>VISITOR CENTER</th>
<th>VISITOR QUESTIONNAIRES</th>
<th>STAFF QUESTIONNAIRES</th>
<th>OBSERVATION PERIODS</th>
<th>INTERVIEWS</th>
</tr>
</thead>
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<tr>
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<td>163</td>
<td>13</td>
<td>20</td>
<td>2</td>
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<tr>
<td>Cape Cod NS- (1st)</td>
<td>253</td>
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<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Province Lands (2nd)</td>
<td>147</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>152</td>
<td>6</td>
<td>20</td>
<td>3*</td>
</tr>
<tr>
<td>Gettysburg NMP- Cyclorama</td>
<td>250</td>
<td>8</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>199</td>
<td>13</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>256</td>
<td>17</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>153</td>
<td>9</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>353</td>
<td>10</td>
<td>20</td>
<td>2*</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>259</td>
<td>12</td>
<td>20</td>
<td>2*</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>154</td>
<td>9</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Wright Brothers NM (1st)</td>
<td>247</td>
<td>15</td>
<td>20</td>
<td>3*</td>
</tr>
<tr>
<td>(2nd)</td>
<td>129</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>350</td>
<td>23</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>3065</strong></td>
<td><strong>150</strong></td>
<td><strong>257</strong></td>
<td><strong>38</strong></td>
</tr>
</tbody>
</table>

*Interviews for Rocky Mtn.-Alpine and Headquarters and for Fort Raleigh and Wright Brothers were conducted simultaneously.
two observers at every facility. Correlation analysis of inde­
pendently obtained observation data indicates substantial inter-
observer reliability (Pearson r = .76) on frequency data relating
to the total number of visitors, who they are (age and sex) and
what their major activities were in each activity zone. Examples
of all questionnaires, schedules and checklists used in the study
are included in Appendix B.

Budget and time constraints precluded the use of a study
design based on random data-gathering procedures. Days were
selected for field studies, therefore, to coincide as nearly as
possible with periods of peak visitation at each center. Peak
visitation periods were selected because they represent the con­
ditions under which a majority of all visitors experience the
centers, and they also represent the time when the facility is
most heavily taxed to satisfy visitor needs. Retests were conducted
at Wright Brothers and Cape Cod-Province Lands in mid-August,
approximately five to seven weeks after the initial site visits,
to test the influence of time of season on visitor perceptions
and patterns of use. Retests included collecting of visitor
questionnaires and the conducting of an additional eight or nine
observation periods. There was no significant difference in
either observation or questionnaire data between the July 4 and
early August periods at Wright Brothers. At Cape Cod-Province Lands,
however, where the two dates represented preseason conditions (June)
and peak season conditions (July) respectively, significant
differences were obtained on the number of visitors in the re­
ception and exhibit areas of the center and in visitors' percep­
tions of the convenience, safety and attractiveness of the arrival
area and in the comfort, organization, light level, crowdedness
and noisiness of the interior of the building. There was no
significant difference in visitor perceptions of such attributes
as building attractiveness, quality of exhibits or quality of the
audio-visual program. These test/retest data suggest that there
is little variability in use patterns and visitor perceptions
during the peak season at Wright Brothers, and that variability
between pre and peak season at Cape Cod-Province Lands is related
to increases in numbers of visitors but this increase does not
apparently influence the perceived quality of the building, exhibits
or audio-visual program.

Questionnaires (Appendix B) were distributed to visitors on
an opportunity basis during the same days on which observation
periods were scheduled. The number of questionnaires distributed
per hour was, however, generally proportional to the frequency
distribution of visitors over time per day. The visitor centers
were divided into three groups according to level of visitor use
during the peak season and the minimum number of questionnaires
to be collected at each center was determined relative to the
visitation level of the three groups. Staff questionnaires were mailed to required office personnel and were distributed in the parks by the Chiefs of Maintenance, Park Historians and/or Chiefs of Interpretation.

Questionnaires were personally handed to visitors as they were leaving the center and subsequently collected by a member of the study team. This procedure greatly increased the rate of return of questionnaires, allowed visitors to ask questions about the study and allowed the team members to control the distribution of questionnaires throughout the day. Every effort was made to avoid bias in distribution. The normal procedure was for a member of the study team to approach the first visitor leaving the center after having handed a questionnaire to a previous visitor until the quota for that period was reached.

The questionnaires distributed to park staff (Appendix B) were shortened versions of the visitor questionnaire to which questions on maintenance and opportunities for open-ended comments were added. These comments, as appropriate, are included in Appendix A. The questionnaire sent to building architects was open-ended, in the form of a written interview (Appendix B).

In addition to questionnaires, interviews, systematic observation (normally scheduled at 75-minute intervals), and checklists were also employed in the field analysis. A barrier-free checklist was adopted from Tica and Shaw (1974) and a physical facilities checklist was developed especially for this study. The purpose of such checklists is to guide the study team in making a comprehensive and consistent appraisal at all sites, thus allowing for the comparative analysis of data across sites.

Two limitations on data availability merit mention. Historical data in the form of building plans, master plan reports and related documents were not uniformly available for all parks and centers. Hence, there are gaps in our knowledge as to salient design activity issues for all facilities studied. And finally, no data were available on maintenance and operations costs for the specific buildings and related areas being studied. This is particularly unfortunate as it precludes the inclusion of an important element--cost--in the evaluation of the facilities.

**ORGANIZATION OF THE REPORT**

The main body of this report is organized in four chapters, each chapter addressing one of the four evaluation factors. Chapter II discusses the setting in terms of functional issues, safety and
security problems, maintenance and repair problems, and aesthetics. Chapter III discusses the context in terms of locational considerations, varying relationships of centers to park administrations and visitors' perceptions of regional qualities in building forms and materials. Chapter IV discusses the users, who they are, their patterns of use of visitor centers and the perceptions of the buildings, their surroundings and their exhibit material, and, where appropriate, audio-visual programs. Chapter V discusses the design activity with a primary focus on the issues of site selection, on the procedures followed and the range of disciplines involved in the design of the facility, and on the relationship between the architect and the exhibit designer. Detailed data lists and research instruments are included in the appendices. Chapters II and V are introduced by reviewing the NPS policies and guidelines which are relative to the setting and the design activity respectively. When possible, the data are then analyzed in reference to these policies and guidelines which serve in part as evaluative criteria.
INTRODUCTION

In the past, design evaluation has primarily focused on user satisfaction as a way to evaluate the adequacy of designed environments. In an effort to provide designers with information that they will find more directly useful, this chapter deals with the physical aspects which are the setting for visitor behavior. It is these spatial and functional aspects constructed from various materials, features and structural elements which are the raw materials of the designer's profession.

While there is considerable variability in the two- and three-dimensional relationships and in the relative sizes of the twelve visitor centers in the study, they all share the same general functions. This chapter reviews and analyses the allocation of space, circulation and flow patterns, intensity of use, and functional, safety and maintenance attributes of these different centers. It also identifies issues which are unique to individual visitor centers and, when possible, those which are of a more general nature. In addition to the interior spaces of the visitor centers, the analysis considers the setting in its broader aspects, including the building's exterior and the surrounding site.

The data in the first half of the chapter deal with spatial issues and are extracted from visitor center plans, systematic observations of the use of the facilities, questionnaires and field notes. In the second half of the chapter specific issues relating to function, maintenance, barrier-free access, safety, and security are considered. In large part these data come from staff interviews and check lists designed to aid the research team in studying a variety of physical aspects in a comprehensive and uniform manner at each center in the study.

SPATIAL ALLOCATION

The functional distributions of space for the twelve visitor centers in this study are found to have many similarities, as shown in Table II-1. The general pattern consists of: approximately 25
percent of the floor area allocated to reception functions; another 30 percent devoted to interpretive exhibits; the auditorium, when present, occupying nearly 20 percent, leaving 10 percent for the comfort facilities and 15 percent for office space. The two major exceptions to this pattern are Rocky Mountain-Headquarters, which primarily houses the park's administrative functions, and Scotts Bluff, which lacks both an adequate reception area and an auditorium. Olympic-Hoh and Rocky Mountain-Alpine also lack auditoria.

While these major space allocations are relatively consistent across all centers, there is more diversity in the number and type of support functions, as shown in Table II-2. Some of these functions were not originally programmed for the building. Examples are first aid rooms and parking which accommodate trailers and service or delivery area. A large portion of these auxiliary functions deals with making life easier for the staff who work there. For example, the staff in some parks occasionally need a place to shower and change into a clean uniform and they have a general need for a quiet retreat from the public eye to drink a cup of coffee or calmly eat lunch with their associates.

CIRCULATION AND FLOW PATTERNS

An early Mission 66 document on visitor centers by Cabot (1958) identified the major activities of visitor centers as reception, assembly and interpretation. Cabot suggested that the logical sequence for a visitor was to progress from the reception area through the assembly on to the interpretive area and finally exiting to continue with outdoor exhibit areas and programs. Reception was defined as a lobby space for entering and for the dissemination of information; assembly was defined as an auditorium space for lectures and other audio-visual programs; interpretation was defined as museum exhibits. These are in fact the major public use functional areas, along with the necessary comfort facilities, which make up most visitor centers. However, some functional areas, such as reception, have evolved to include the additional activity of literature sales. Depending upon individual park needs and the physical location of the facility, some centers may also be included, structurally, with various other park administrative and operational activities. The relationship of centers to other such park activities is discussed in Chapter III.

Cabot, in his discussion, places considerable emphasis on circulation within the visitor center and on the use of architecture to encourage or guide the visitor in the right direction. He advocates the use of abstracted flow diagrams as a planning tool to communicate design intentions. The flow pattern of each visitor center is represented in Figure II-1 using arrows to represent potential visitor flow between each of the spatially discrete functional areas.
### TABLE II-1
MAJOR SPACE ALLOCATIONS

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Percent Total Area</th>
<th>Total Area in Square Feet*</th>
<th>Number of Parking Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lobby</td>
<td>Information</td>
<td>Sales</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>30</td>
<td>4</td>
<td>1</td>
</tr>
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<td>Cape Cod NS-Province Lands</td>
<td>19</td>
<td>3</td>
<td>4</td>
</tr>
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<td>Fort Raleigh NHS</td>
<td>24</td>
<td>3</td>
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<td>Gettysburg NMP-Cyclorama</td>
<td>21</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>13</td>
<td>1</td>
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</tr>
<tr>
<td>Olympic NP-Hoh</td>
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<tr>
<td>Petersburg NB</td>
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</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
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<tr>
<td>Yosemite NP-Valley</td>
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<td>4</td>
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</tbody>
</table>

*All areas are estimated from visitor center plans.

The several spatial arrangements and related flow patterns suggested by Cabot seem to be variations upon one of two basic themes. The first is a radial relationship of the assembly, interpretive and comfort areas to the reception area. This plan is reflected in the design of Bandelier, Cape Cod-Province Lands, Fort Raleigh, Rocky Mountain-Alpine and Scotts Bluff. The second theme is more sequential in nature with the assembly following reception and interpretation following assembly. Of the visitor
TABLE II-2
SPACE ALLOCATIONS FOR SUPPORT FUNCTIONS

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Staff Parking</th>
<th>Service Entrance</th>
<th>Bus/Recreation Vehicle Parking</th>
<th>Private Staff Space</th>
<th>Park Offices</th>
<th>First Aid Space</th>
<th>Separate Sitting Area</th>
<th>Inside Rest Room Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petersburg NB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

*Staff may use space in other parts of the building complex.

centers in this study only the Gettysburg-Cyclorama can be said to strictly follow this sequence, as suggested by Cabot. Great Falls, Petersburg, Wright Brothers and Yosemite, the other visitor centers designed to a sequential plan, all place the interpretive exhibits before the auditorium program. In retrospect, this plan has more to offer under crowded conditions than any other. Since
FIGURE II-1
INTERIOR SPACE RELATIONSHIPS
AND POTENTIAL VISITOR FLOW

KEY
- RECEPTION
- MAIN ENTRY AND EXIT
- EXHIBITS
- POTENTIAL FLOW
- AUDITORIUM
- STAIRS
- RESTROOMS

SEQUENTIAL
RADIAL

BANDELIER
PROVINCE LANDS
FORT RALEIGH
CYCLORAMA
GREAT FALLS
HOH
PETERSBURG
ALPINE
HEADQUARTERS
SCOTTS BLUFF
WRIGHT BROTHERS
VALLEY
FIGURE 11-2
REPORTED FLOW OF VISITORS

BANDELIER
PROVINCE LANDS
FORT RALEIGH
CYCLORAMA
GREAT FALLS
HOH
PETERSBURG
ALPINE
HEADQUARTERS
SCOTTS BLUFF
WRIGHT BROTHERS
VALLEY

---
First destination of 10% of visitors
Second destination of 10% of visitors

E Exhibits  A Assembly  R Reception  T Rest Rooms
it has been observed that visitor flow is hastened by more frequent audio-visual presentations, the auditorium program may be used to sweep the exhibit areas clear for a new group of incoming visitors. Only two visitor centers, Olympic-Hoh and Rocky Mountain-Headquarters, are so open and without definition between the reception and interpretation areas that they conform neither to a radial nor sequential model.

In five cases, as indicated in Figure II-1, functions or activities and flow patterns are distributed over two floors. At Great Falls, Petersburg and to a lesser extent Gettysburg-Cyclorama and Rocky Mountain-Headquarters, the two levels facilitate the separation of public spaces for reception and exhibits from park administrative offices. In several instances the rest rooms are also separated from the public spaces on another floor (see Figure II-3). The upper level at Cape Cod-Provence Lands is an extension of the exhibit space and serves as a vantage point from which to view the surrounding landscape and seascape.

The primary flow of visitors within a visitor center can be represented by mapping where each visitor went first and second upon entering as shown in Figure II-2. In general, these data indicate that the visitor either goes to look at exhibits or to the reception area to look at sales materials, obtain information or occasionally to sit and rest. Tables II-3 and II-4 present the specific place to which visitors went for each functional area. In most visitor centers there is a major cross flow between the reception and exhibit areas, as those who chose one first went to the other second.

The notion of a radial or sequential flow also reflects, or should reflect, the intended sequence a visitor is to follow. In a radial plan, the visitor should be given adequate information to make the choice of which direction he would like best to follow. Ideally this would lead to a relatively even distribution of flow. The plans for Rocky Mountain-Apline or Fort Raleigh, which both exhibit this even distribution, are shown in Figure II-4. With additional knowledge of the size of the functional areas, one can anticipate various points of flow conflict or congestion. For instance, an immense amount of traffic passes through the very small and frequently congested reception area at Scotts Bluff (see Figure II-5).

In a sequential plan, the designer makes an attempt to firmly take the visitor in hand and guide him through a predetermined sequence. While having some of the characteristics of a radial plan, Wright Brothers was consciously designed as a sequential plan (see Figure II-6). Visitors are meant to enter and be drawn into the exhibit area with only a passing encounter at the information desk. They then proceed to an assembly area containing a
replica of the Wright Brothers' aircraft and listen to an interpretive talk. This intended pattern is reflected in the reported visitor flow pattern. Most visitors see fit to pass through the reception area and proceed directly to the exhibits and aircraft displays after which they presumably exit to the flight area as intended by the designer. If this plan functioned in a more radial manner, one would expect to see more flow between the reception and assembly areas, a pattern which was not recorded.

Yosemite-Valley provides another example of a sequential plan where the design clearly intends the visitor to be funneled from the reception area through the interpretive exhibits (see Figure 11-6). While the reported visitor flow data are ambiguous as to whether visitors do in fact move in this direction, the observation data indicate it to be the case. It therefore appears that people entering the exhibit area return to the reception area via the outside courtyard as suggested in Figure 11-1. This circular flow is also apparent at Gettysburg, where visitors may exit from the Cyclorama auditorium on the second floor and go out to the battlefield or continue downstairs to the reception area.

As noted before, visitor flow is also determined in large part by administrative actions such as the scheduling of programs or the opening and closing of doors. At Olympic-Hoh, for instance, visitors were observed passing through an open door and taking a longer walk to their destination rather than opening a door which would shorten their walk (see Figure 11-6). The staff behind the information desk can also facilitate flow by suggesting that visitors proceed to a certain area in the center. For example, the staff at Petersburg consistently suggested to visitors that they might like to see the audio-visual battle program which had just started.

INTENSITY OF USE

Periods of peak use provide an important test of the functioning of visitor centers. In analyzing the intensity of use for each of the study centers, the size of the functional areas was calculated based upon the amount of circulation space available to the visitors, excluding areas occupied by exhibit panels, models and related objects. The data indicate that afternoons between twelve and four o'clock are normally peak visitation hours. Therefore, the calculations in Table 11-5 are based on the means from those hours. The more acute use intensity (Table 11-6) is calculated from the second highest recorded observation so as to describe the kind of condition that prevails several times per week rather than during the normal daily peak.
<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reception</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>38</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>27</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>35</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>46</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>27</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>20</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>25</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>18</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>38</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>28</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>17</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>33</td>
</tr>
</tbody>
</table>
### TABLE 11-4
SECOND DESTINATION AFTER ENTRY

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reception</td>
</tr>
<tr>
<td></td>
<td>Information</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>20</td>
</tr>
<tr>
<td>Cape Code NS-Province Lands</td>
<td>20</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>14</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>11</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>18</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>33</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>12</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>24</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>25</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>18</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>8</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>24</td>
</tr>
</tbody>
</table>
FIGURE 11-3

FLOOR PLANS OF MULTI-FLOOR VISITOR CENTERS

Key
A AUDITORIUM       L LOBBY
E EXHIBIT AREA      M MECHANICAL
I INFORMATION      O OFFICES
R REST ROOMS

0 25 50 75 100 FEET

upper

lower

CAPE COD ⊙

upper

lower

CYCLORAMA ⊙
FIGURE II - 4
FLOOR PLANS OF ROCKY MOUNTAIN-ALPINE AND FORT RALEIGH VISITOR CENTERS

FIGURE II - 5
FLOOR PLANS OF BANDELIER AND SCOTTS BLUFF VISITOR CENTERS

Key

- A: Auditorium
- L: Lobby
- E: Exhibit Area
- M: Mechanical
- I: Information
- O: Office
- R: Rest Rooms

Scale: 0 - 25 - 50 - 75 - 100 Feet
FIGURE 11-6
FLOOR PLANS OF WRIGHT BROTHERS, OLYMPIC-HOH AND YOSEMITE-VALLEY VISITOR CENTERS

Key
A  AUDITORIUM   L  LOBBY
E  EXHIBIT AREA  M  MECHANICAL
I  INFORMATION  O  OFFICES
R  REST ROOM

0  25  50  75  100 FEET

© WRIGHT BROTHERS

© YOSEMITE
### Table 11-5

**Intensity of Use for Daily Peaks**

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Reception</th>
<th>Exhibit</th>
<th>Auditorium</th>
<th>Rest Rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td>47</td>
<td>148</td>
<td>480</td>
<td>147</td>
</tr>
<tr>
<td>Cape Cod NS-Providence Lands</td>
<td>74</td>
<td>78</td>
<td>71</td>
<td>117</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>146</td>
<td>105</td>
<td>65</td>
<td>207</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>348</td>
<td>198</td>
<td>43</td>
<td>113</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>222</td>
<td>1600</td>
<td>2400</td>
<td>363</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>44</td>
<td>17</td>
<td>-</td>
<td>43</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>59</td>
<td>81</td>
<td>33</td>
<td>72</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>43</td>
<td>23</td>
<td>-</td>
<td>29</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>125</td>
<td>49</td>
<td>97</td>
<td>210</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>49</td>
<td>101</td>
<td>-</td>
<td>53</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>47</td>
<td>37</td>
<td>25</td>
<td>74</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>69</td>
<td>88</td>
<td>314</td>
<td>118</td>
</tr>
</tbody>
</table>

*Daily intensity of use is expressed in square feet per person for mean observed use during the daily peak period from noon to 4 o'clock.*

Analysis of the data on visitor perceptions of crowdedness suggests that overall Wright Brothers, Olympic-Hoh and Rocky Mountain-Alpine were perceived to be most crowded (Table 11-7). On a five-point scale running from uncrowded to crowded, only Rocky Mountain-Alpine actually was perceived to be on the "crowded" side of the scale (i.e. with a value greater than 3). Quite obviously a number of other factors such as ceiling height, psychological set and social milieu enter into a person's perception of the crowdedness of a visitor.
## TABLE 11-6

**INTENSITY OF USE FOR WEEKLY PEAKS**

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Reception</th>
<th>Exhibit</th>
<th>Auditorium</th>
<th>Rest Rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td>24</td>
<td>46</td>
<td>44</td>
<td>83</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>22</td>
<td>13</td>
<td>36</td>
<td>42</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>71</td>
<td>29</td>
<td>26</td>
<td>100</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>178</td>
<td>99</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>86</td>
<td>267</td>
<td>240</td>
<td>97</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>31</td>
<td>16</td>
<td>-</td>
<td>24</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>100</td>
<td>57</td>
<td>15</td>
<td>66</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>25</td>
<td>19</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>32</td>
<td>46</td>
<td>30</td>
<td>56</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>22</td>
<td>35</td>
<td>-</td>
<td>27</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>33</td>
<td>16</td>
<td>16</td>
<td>48</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>40</td>
<td>50</td>
<td>45</td>
<td>49</td>
</tr>
</tbody>
</table>

*Weekly intensity of use is expressed in square feet per person for the second highest observed use of each functional area.

Center in addition to the amount of floor area available per individual. A comparison of the data in Tables 11-5, 11-6, and 11-7 suggests, however, that with higher intensities of use, the higher range of perceived crowdedness seems to cluster around spatial allocations of 16 to 20 square feet of circulation space per person. This is not, however, an intensity of use which appears to diminish the users' perception of other qualitative characteristics of the building (see Chapter IV). Most of the center interiors are perceived as comfortable, attractive and
inviting, even though intensity of use is considerably higher in some than in others. Whether or not there is a threshold level beyond which this relationship will change is an important issue that these data cannot address.

It is frequently assumed that most people come to visitor centers primarily to use the rest rooms. However, the data do not support this notion. Rather they indicate that most visitors are seeking information or come to look at the exhibits. The data also indicate that the number of rest room users are normally fewer than the number of available stations. Rocky Mountain-Alpine, where the user demand exceeded the capacity in approximately 30 percent of the recorded observations, is the one significant exception.

These findings indicate that normally the visitor centers studied provide adequate space during the peak hours of the day, giving each visitor a reasonably spacious and comfortable social environment. The three most notable exceptions are Rocky Mountain-Alpine, Wright Brothers and Olympic-Hoh. It appears that most of the visitors going through the Fall River Pass want to stop at the Alpine Visitor Center, possibly attracted by the neighboring curio shop or simply because of the need for a rest stop. This pattern of intense use is exacerbated by the additional constraints of maintaining a building in the fragile tundra environment and by the additional physiological stress that this environment exerts on visitors (e.g. frequent need to administer oxygen to visitors).

<table>
<thead>
<tr>
<th>Location</th>
<th>Overall</th>
<th>Peak Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td>1.68</td>
<td>1.63</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>1.83</td>
<td>1.82</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>1.36</td>
<td>1.24</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>1.27</td>
<td>1.29</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>1.28</td>
<td>1.27</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>2.52</td>
<td>2.70</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>1.36</td>
<td>1.44</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>3.13</td>
<td>3.34</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>1.72</td>
<td>1.67</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>1.45</td>
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<td>2.30</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>1.87</td>
<td>1.91</td>
</tr>
</tbody>
</table>

Range in value on a 5 point scale
1 = uncrowded to 5 = crowded
The high intensity of use at Wright Brothers is in part attributable to the need to give lecture-type presentations to very large crowds in what was intended to be primarily exhibit space. The frequent result is a hundred people trying to listen to a description of the feats of the Wright Brothers, with many of the visitors sitting on the floor or leaning against the walls. At the same time there is a constant flow of visitors through the space who do not want to listen to the interpretive talk but do want to view the exhibits. It is evident that a separate auditorium-type space would be a useful addition here.

The major problem at Olympic-Hoh stems from the size of the building: hardly larger than a one-room schoolhouse. It is likely that the popularity of the rain forest was not anticipated a decade ago. While the building does not appear crowded when two parties of backpackers with their gear are seeking a permit and help in planning their trip, that appearance changes as soon as a small group of more typical visitors comes inside seeking information or a place to rest. Of particular importance also is the lack of an adequate exhibit space.

All the visitor centers in the study, except Great Falls, seemed to share these problems sometime during our visit this high intensity of use may also in part be due to a new pattern of arrival at visitor centers. With the increase of public transportation, the arrival and flow of visitors will undoubtedly become more pronounced as will the sense of crowdedness.

FUNCTIONAL ISSUES

One indication of the fit of a building with the functions and activities it houses is the number and kinds of alterations and additions which have been made. The floor plans for Scotts Bluff and Bandelier, the only two centers studied which have had additions constructed, are shown in Figure 11-5. Shortly after Scotts Bluff was completed, the existence of the Civilian Conservation Corps made it possible to add the wing which houses the paleontological exhibits and toilets as well as providing administrative office space. In the early 1960s an additional room was added to house the William H. Jackson historical materials. The addition at Bandelier to expand the exhibit space was combined with a renovation of the entire exhibit area. The addition and renovation was completed in 1975. In both these instances, the additions and alterations were related primarily to expanding and updating exhibit areas—a reflection both of the passage of time and of increased use.
Among the ten other centers, there were no additions but there were a number of alterations, most of which tend to fall into two groups. The first group includes alterations in information-sales areas and the second includes alterations to accommodate storage needs. Changes have been made in information-sales areas by either separating the counters for sales and information activities (Gettysburg-Cyclorama, Rocky Mountain-Alpine and Headquarters) or providing a separate display case away from the counter to accommodate browsers (Wright Brothers, Yosemite-Valley and Cape Cod-Province Lands). In 50 percent of the centers studied, some change was required to accommodate greater than anticipated numbers of people seeking information or the purchase of books and pamphlets. This obviously required pre-empting space from other areas--most notably from reception and sitting or rest areas--and resulted in more intensive use in those places.

The second group includes alterations that were made to accommodate unmet needs for storage. These alterations included improving access to basement storage space at Cape Cod-Province Lands, converting space for storage purposes at Petersburg and Wright Brothers and simply adding shelving at Great Falls and Petersburg. At centers sharing the site with the administrative offices, Bandelier and Fort Raleigh, for instance, storage has been found in adjacent buildings. The problem of storage is not always independent of the demand for increased information and sales space, as both these activities require storage space for information and sales materials.

Changes were also made in the auditoria at Yosemite-Valley and Rocky Mountain-Headquarters. At Yosemite a projection booth was added and accoustical tile installed and at Rocky Mountain the projection booth was moved from the floor to the balcony to eliminate the problem of viewers' heads intruding into the line of projection.

Additional functional or operational problems are identified with the auditoria or audio-visual spaces and equipment in other centers. At Cape Cod-Province Lands, the absence of doors allows sound from the audio-visual program to permeate the exhibit area and also light to be reflected off the wing walls at the entrance of the auditorium. At Great Falls, the entry doors on either side of the stage and screen area present intense light contrasts when opened while a program is in progress. At Fort Raleigh, Rocky Mountain-Headquarters and Yosemite-Valley, light levels were judged to be so low during the program that late comers were observed to have difficulty in finding seats, a condition that can be remedied with aisle lighting or slightly higher ambient light levels.
A final issue relates to the design of parking lots and the enhanced appearance of those following a gently curving alignment such as at Gettysburg-Cyclorama, Cape Cod-Province Lands and Olympic-Hoh rather than the rectangular form found at Scotts Bluff and Great Falls. In a purely physical sense both forms probably function equally well. From the vantage point of relating to surrounding topography and minimizing visual impact of the parking area, the curving forms generally provide a superior solution. The straight line linear perspective which reinforces the apparent size of rectilinear lots is eliminated and in its place is a curving perspective which frequently serves to screen numbers of cars from view.
MAINTENANCE ISSUES

The primary source of data on maintenance issues was the interview conducted with the chief of maintenance or his counterpart at each park. These data were supplemented with comments from open-ended items from the questionnaires administered to park staff and from the team's observations as noted using the physical facilities checklist. Based on these sources, lists of maintenance and related problems and issues were prepared and returned to each park for review and correction. Table 11-8 presents a summary of the kinds of maintenance problems reported for each of the centers. It does not, however, indicate the magnitude of such problems. The reader is referred to Appendix A for a complete listing of the maintenance problems and related issues reported for each center.

Several recurring issues can be discerned from these data for specific maintenance categories. First is the problem reported at three centers with sprayed acoustic plaster ceilings which are soft, easily marked—sometimes enthusiastically so by visitors—and which are reported virtually impossible to repair. A second issue is that of the flat roof and attendant problems of moss build-up, snow removal or ponding and leaking, depending upon the region in which the center is located. A third issue is that of heat loss through large areas of noninsulating glass or single-entry doors rather than an entry with doors before and after a transition space. A fourth issue, related to heat loss and on which it is less easy to generalize, is that of inadequate capacity of heating and air conditioning systems. The kinds of site maintenance problems reported ranged from excessive grass areas to mow at Scotts Bluff to keeping visitors off the tundra at Rocky Mountain-Alpine and controlling the growth of ground cover at Petersburg. Sewer and water problems include removal of sewage at Hoh and Alpine and the delivery of water during winter months at Bandelier. Foundation problems appear to be attributable to differential settling. Floor problems include materials, such as textured concrete at Yosemite-Valley, which are difficult to keep clean, and the use of multiple floor surface materials, which require different cleaning techniques, thus complicating the task of maintenance. Problems reported with building materials included the use of nonstandard materials (e.g., lighting fixtures) which are difficult if not impossible to replace, excessive cracking of concrete walls at Gettysburg-Cyclorama and insect infestations at Bandelier (termites) and Great Falls (carpenter bees).

The routine maintenance of the centers under study was consistently impressive during our field studies, regardless of the day of the week or number of visitors. Littering, for example, which is a serious potential problem in all intensive public use areas was reported as a problem at only one center, Great
TABLE II-B
MAINTENANCE PROBLEMS

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Maintenance Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Site</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>X</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>X</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td></td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>X</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>X</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td></td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>X</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>X</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td></td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>X</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>X</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>X</td>
</tr>
</tbody>
</table>

NOTE: Table indicates the nature, not the magnitude, of maintenance problems.

Falls, and then only in reference to the snack bar. There are, however, maintenance issues of a different nature which were observed at several centers. The extent of mowed lawn was mentioned as a problem only at Scotts Bluff. This issue, however, can also be raised at Gettysburg-Cyclorama and Petersburg where large areas of lawn are also maintained. Pasture or meadowlike areas may be both
more relevant to the historic Civil War landscape, and easier to maintain. The installation of an irrigation system at Yosemite-Valley and the close-cropping or pruning of shrubs at Wright Brothers seem similarly out-of-place at these centers—and probably contribute to maintenance requirements rather than reduce them.

These findings on maintenance issues are also reflected in the questionnaire ratings by the park staff on the issue of the ease or difficulty of maintaining arrival areas, building exteriors and interiors. Table 11-9 indicates the ratings for all staff who responded, including administrative, maintenance and interpretive personnel for each visitor center. Several centers stand out as relatively more difficult to maintain, most notably Gettysburg-Cyclorama and Yosemite-Valley and to a lesser extent, Great Falls and the two Rocky Mountain Centers. It is important to note, however, that only the building at Gettysburg is rated as more difficult than average (i.e. a scale value greater than 3).

In summary, the centers are exceptionally well maintained and, to the best of our knowledge, with one exception, are not unique in the kinds or magnitude of problems they present. The one obvious exception is the Gettysburg-Cyclorama Center, which is beset with an impressive, if not alarming, array of recurring problems, some of which remain unresolved. Some of the problems, such as those associated with energy loss, failure of mechanical systems and nonstandard materials, are partially attributable to both the requirement for acceptance of the lowest bid, accompanied by the assumption of 'or equal' materials and systems and the not infrequent practice of substitutions and alterations to reduce the construction cost to match appropriations when bids come in too high. The substitution of single-pane glass for insulating glass at Gettysburg is an apt example.

Finally, it should be noted that it was not possible to analyze and evaluate the centers in terms of costs for either routine or special maintenance activities. This kind of analysis, which could be particularly revealing and supportive of the more qualitative approach we were obliged to take, is not possible at the present time because cost records are not maintained in a way that allows one to disaggregate for individual areas of buildings. Such cost data would not only be useful for comparative facility evaluations such as this study, but equally important, they could provide a basis for projecting maintenance costs for proposed facilities. The preparation of maintenance plans, including skill requirements, projected routine maintenance activities and time allocations could also become an important part of the design process.
TABLE 11-9
STAFF RATINGS OF EASE OF MAINTENANCE

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>AREA</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ARRIAL</td>
<td>BLDG. EXTERIOR</td>
<td>BLDG. INTERIOR</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>2.17</td>
<td>2.17</td>
<td>2.33</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>1.73</td>
<td>2.21</td>
<td>1.88</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>1.50</td>
<td>1.83</td>
<td>1.67</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>2.38</td>
<td>3.13</td>
<td>3.38</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>2.91</td>
<td>2.53</td>
<td>2.25</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>1.80</td>
<td>1.93</td>
<td>1.80</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>1.88</td>
<td>2.00</td>
<td>2.00</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>2.40</td>
<td>1.80</td>
<td>2.30</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>2.17</td>
<td>2.00</td>
<td>2.83</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>1.67</td>
<td>2.11</td>
<td>1.89</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>1.58</td>
<td>2.17</td>
<td>2.08</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>3.00</td>
<td>2.64</td>
<td>2.77</td>
</tr>
</tbody>
</table>

BARRIER-FREE DESIGN

It has become National Park Service policy to make visitor facilities accessible to all the people, including those with physical handicaps. While the general public normally thinks of the removal of barriers to wheelchair access, other handicapped people—the deaf, the blind or those with special medical conditions such as weak hearts or respiratory ailments—must also be considered. Such efforts also benefit other segments of the population, for example parents with strollers or the very young and very old. Developing designs which are able to accommodate these people can also have the added benefit of providing a more enjoyable and secure experience for others.
In 1971, the Director of the National Park Service, George B. Hartzog, Jr., issued "a specific invitation to the handicapped" with the distribution of the National Park Guide for the Handicapped. This booklet provides potential park visitors with brief descriptions of "what the handicapped may expect in the way of facilities and limitations in the National Park System." The barriers in each center in this study were also evaluated using a "Barrier-free Checklist" (Barrier-free Design, 1974). The results are summarized in Table 11-10 indicating that all of the centers have made substantial progress toward achieving barrier-free environments. There is however, still room for improvements.

The most common problem involved telephones with coin slots too high for children to reach, that are not equipped with a volume control for those who are hard of hearing and which lack push button dials, which many people find easier to manipulate. The next most common barriers are located somewhere between the parking lot and reception area. While ramps and suitable aids are frequently installed along this route, there is commonly one step remaining somewhere, frequently at the curb of the parking lot or right at the threshold to the main entry. Restrooms provide another example where improvements have obviously been made but where there is normally some doorway which is still not negotiable by a wheelchair. Other common barriers are slippery floor surfaces, stairs with abrupt nosing which may cause someone to trip, ramps that are too steep and drinking fountains that are either too high for children or from which it is difficult for a seated person to get a drink.

Improvements continue to be made. For instance, the staff at Great Falls have improved the trail to one of the overlooks to the falls so that it is negotiable by a wheelchair. In the past they have coordinated group "wheel-ins" and touch-and-smell walks as well as special programs for other handicapped persons. At Petersburg, the Meade Station Trail is equipped with braille signs. However, there is no warning for a blind visitor approaching a trail sign and the signs, which are in disrepair, frequently refer to things that are out of reach of the visitor. There does seem to be a growing practice of grooming the trails on the immediate site of the visitor center. For example, a wheelchair and a baby carriage were seen in the rain forest at Olympic-Hoh. Perhaps most encouraging of all is the positive response from all the staff at the various visitor centers we visited. There really does seem to be a concern and interest on their part for everyone to be able to see their visitor center.
### TABLE 11-10

**BARRIER-FREE ACCESS**

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Parking Area</th>
<th>Curb Cuts</th>
<th>Walks</th>
<th>Ramps</th>
<th>Entrance</th>
<th>Doorways</th>
<th>Stairs</th>
<th>Floors</th>
<th>Rest Rooms</th>
<th>Drinking Fountains</th>
<th>Phones</th>
<th>Rank Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td>L</td>
<td>L</td>
<td>P</td>
<td>P</td>
<td>L</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>NA</td>
<td>11</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>P</td>
<td>P</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>L</td>
<td>L</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>L</td>
<td>L</td>
<td>A</td>
<td>P</td>
<td>L</td>
<td>L</td>
<td>L</td>
<td>A</td>
<td>P</td>
<td>L</td>
<td>NA</td>
<td>11</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>L</td>
<td>L</td>
<td>A</td>
<td>P</td>
<td>A</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>L</td>
<td>P</td>
<td>P</td>
<td>4</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>P</td>
<td>P</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>L</td>
<td>1</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>L</td>
<td>L</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>A</td>
<td>NA</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>L</td>
</tr>
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<td>Petersburg NB</td>
<td>P</td>
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<td>P</td>
<td>P</td>
<td>P</td>
<td>6</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>L</td>
<td>L</td>
<td>P</td>
<td>L</td>
<td>A</td>
<td>P</td>
<td>NA</td>
<td>P</td>
<td>P</td>
<td>NA</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>P</td>
<td>L</td>
<td>A</td>
<td>L</td>
<td>L</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>L</td>
<td>A</td>
<td>L</td>
<td>9</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>P</td>
<td>A</td>
<td>P</td>
<td>L</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>L</td>
<td>9</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>L</td>
<td>L</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>L</td>
<td>6</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>NA</td>
<td>L</td>
<td>P</td>
<td>P</td>
<td>A</td>
<td>A</td>
<td>P</td>
<td>P</td>
<td>P</td>
<td>L</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

**KEY**: A - Adequate   L - Lacking   P - Partially adequate   NA - Not applicable

*See Appendix B for checklist and rating criteria.*
SAFETY AND SECURITY

In general, the safety records of the visitor centers are impressive, with few if any accidents reported. The most frequently reported concern of superintendents and maintenance personnel (in interviews and questionnaires) was with security of footing, both indoors on wet terrazzo floors, a condition noted at Great Falls, Gettysburg-Cyclorama, Rocky Mountain-Alpine and Headquarters, and outdoors on slippery entrance ways in the winter, a condition noted at Bandelier and Yosemite-Valley.

Of perhaps greater concern is the absence of emergency fire exits in the auditorium at Great Falls and from the Cyclorama auditorium at Gettysburg. Points of potential vehicular traffic conflict also exist at Rocky Mountain-Headquarters, Cape Cod-Province Lands and Olympic-Hoh. At Headquarters, vehicle access to the parking lot, for most visitors entering the park, requires a left turn across the major entry-exit road, the most heavily traveled road in the park. At Province Lands the vertical alignment of the entry road limits the line-of-sight so that the major pedestrian crossing is not clearly visible until the driver is within approximately 100 feet of the crossing and at a time when the focus of attention is directed to the visitor center building and the view beyond. At Hoh, visitors drive unexpectedly into a parking area after becoming accustomed to a relatively high speed on a country road. During five observation periods totalling approximately one and a half hours, 45 percent of the entering traffic was observed braking suddenly, causing the front end of these cars to dip noticeably. Almost 60 percent of the entering traffic is unable to make the intended right turn into the first parking bay and maintain a counterclockwise circulation by remaining in the right lane. Upon leaving the parking area, the circulation is predominantly counterclockwise and thus conflicts with entering traffic that fails to negotiate the entrance turn.

One of the attributes of a National Park is the area may be potentially hazardous. For instance, two people were struck by lightning during the summer of 1974 at Rocky Mountain-Alpine, one fatally. During our field visit the center had to be closed early one day to accommodate 35 young men who suffered hypothermia while attempting to bicycle over the pass during a thunderstorm. Because of the sudden change in altitude experienced by the visitors coming to the Alpine Center, there are also frequent cases of altitude sickness or aggravation of heart conditions which necessitates the administration of oxygen. The Great Falls have long been a favorite place for suicide attempts in the Washington, D.C. area. Other people fall into the Potomac while exploring the rocks along the banks and every year there are several deaths. As a result the
staff at the Great Falls Center have organized a specially trained rescue team. However, they lack adequate space in which to administer first aid to seriously ill or injured people. This problem is also shared by the Alpine and Cape Cod-Province Lands centers.

Other real and potential safety problems noted include: the possibility of rattlesnake bites around the center at Scotts Bluff and bee stings at Great Falls, the danger of tripping on steps in general and the specific problem of the unexpected single riser at the entrance door to Fort Raleigh—a problem that is compounded when the visitor's sight is temporarily impaired upon leaving a more dimly illuminated interior space for bright sunlight outdoors, and a problem of a protruding mantelpiece over the fireplace in the Rocky Mountain-Headquarters auditorium—a design feature which can lead, and has led, to lacerated foreheads in the dimly lit auditorium.

Most of the safety problems reported are potential rather than actual: that is, they are recognized as danger spots and, as such, management and maintenance programs are designed to avert or at least minimize accidents. For example, the location of planters and furniture around the fireplace at Rocky Mountain-Headquarters directs traffic away from the protruding mantle and efforts to keep terrazzo floors mopped and relatively dry during periods of inclement weather minimizes the slipperiness of the surface. Most of the concerns, however, are also the product of design decisions, the choice of materials or the giving of three-dimensional form and as such are useful guidelines in considering safety attributes of future designs.

There is a growing concern with security problems. Fifty percent of the centers are either installing, considering installation or recognize the need for alarm systems. Break-ins were reported at Wright Brothers, Gettysburg-Cyclorama and Cape Cod-Province Lands, where two occurred during the last two and one-half years. Exhibit objects have been stolen at Bandelier and Petersburg. A sophisticated alarm system has been installed in the museum wing at Bandelier to protect objects on loan and belonging to the Park Service. The system is activated when an object is removed from a pressure-sensitive pad. A contact alarm system has also been installed for all exhibit panels at Great Falls. The most common security problem deals with theft from sales areas. One center, Rocky Mountain-Headquarters, estimated a loss of as much as 5 percent of their materials through theft.

It is apparent that visitor centers are not immune from the increases in crime reported nationally. This becomes particularly significant in light of the general profile of visitors: middle- or upper-class and well-educated adults with good jobs. It is obvious that the issue of security merits greater attention in the design and redesign of centers in the future than was necessary in the past.
SUMMARY

This review and analysis of certain salient attributes and characteristics of the 12 visitor centers suggests quite conclusively that, with very few notable exceptions, they are functional, safe and relatively easy to maintain. Overall we have found very few physical problems that would appear to significantly reduce their effectiveness in meeting and satisfying the needs of the users. The following statements summarize these findings. Some of these statements are interpretations of the conventional wisdom of visitor center operation and maintenance which we acquired in interviews and discussions with staff. Some also relate to the design activity and the design of new or renovated visitor centers.

1. Each center must be considered in terms of space requirements for standard functional areas such as reception, auditorium, exhibits and toilets and in terms of the requirements of the specific environment and probable unique visitor activities both inside and outside the building.

2. Both flow diagrams and sequence analysis diagrams should be used in the development of plans to aid in identifying probable circulation conflict areas and patterns of visitor distribution.

3. The flow of visitors through a center is influenced by administrative actions, by intervention of the staff and by the physical design.

4. In ten sites of use which were observed and perceptions of crowdedness do not appear to diminish visitors perceptions of other qualitative characteristics of the visitor centers.

5. The data suggest that 16 to 20 net square feet per person (circulation space) may approximate a general intensity of use at which a sense of crowdedness is perceived. Additional study is warranted specifically on the issue of perceived crowding and its relationship to the quality of experience, to the spatial distribution of both people and objects and to other mediating variables such as social milieu.

6. The frequency with which alterations have been made to accommodate the increased space requirements of information and sales activities is a strong indication of the need to consider these activities more thoroughly in the development Task Directives.

7. Building and site maintenance in general is of a consistently high quality. However, some recurring problems might be mitigated in the future if proposed designs were subjected to a
maintenance review prior to final acceptance. Bookkeeping and accounting procedures which provide for the identification of individual building maintenance and operations costs would also provide very valuable information for design evaluation.

8. Continued attention is required to make all visitor centers barrier-free. Progress is being made but it is not consistent across all centers. The design quality of barrier-free modifications (e.g. ramps) at many sites is also considerably below that of the buildings and grounds. They tend to convey the image of hasty and temporary projects rather than an image of concern for quality in all aspects of the environment.

9. Considerably greater attention must be paid to problems of security in visitor centers, particularly those housing valuable artifacts. Remoteness of location, it would appear, no longer provides protection from forceful entry, malicious destruction and theft.
CHAPTER III: THE CONTEXT

CONTEXTUAL ISSUES

Context is defined in Chapter I as the broader physical, perceptual, and administrative or institutional environment within which the visitor center exists. This chapter addresses four contextual issues which are identified as particularly relevant to this study: 1) the park theme, 2) extreme environmental conditions, 3) spatial characteristics, and 4) regionally oriented aesthetic perceptions of users. Primary data sources for the analysis of these contextual issues include content analysis of park planning and design documents, interviews with park administrators and the visitor and staff questionnaires.

PARK THEME

The twelve visitor centers included in this study were primarily representative of the natural and historical themes. Only one, Cape Cod-Province Lands, is classified as recreational. The interpretive program content at Province Lands, however, emphasized the natural environment of the outermost end of Cape Cod.

Table III-1 indicates the theme of each park and the perceptions of the users as to the suitability of various components of each center: the exterior and the interior of the building, the exhibit material and the audio-visual program, if one existed. Obviously, the notion of suitability is open to a number of interpretations depending upon the dispositions of the individuals doing the rating. Both the instructions for the questionnaire and its substantive content, however, were intended to provide a psychological set oriented to the evaluation of the visitor center within the context of the park.

An important consideration in the discussion of the data in Table III-1 is that all the components in all the centers were perceived as suitable (i.e., mean ratings of less than 3.0 on a five-point scale). The variability in perceived suitability of building exteriors and interiors is minimal. The greatest variability is found in reference to exhibits. However, it is of interest to note, that, with the exception of Gettysburg, exteriors and interiors of historic theme park centers are generally perceived as more suitable than exteriors.
and interiors of natural and recreational theme park centers. This relationship with historic theme park centers, with the exception of Fort Raleigh and Bandelier is also evident in reference to the exhibit and audio-visual components. At Bandelier, however, the exhibit area had recently been renovated and planned supplementary informational materials for the visitors were not available at the time of the field work. These data suggest that in general a slightly better job has apparently been done in relating building and exhibit design to historic themes than to natural themes. As noted in Chapter IV this perception of visitor centers in historic theme parks as slightly more suitable parallels the visitors' perceptions of the informative, interesting and stimulating qualities of exhibits and audio-visual components and the qualities of attractiveness, comfort, invitingness, and organization of interior and exterior components.

**EXTREME ENVIRONMENTAL CONDITIONS**

A unique characteristic of many visitor centers is the extreme environmental conditions that prevail where they are located. This is not surprising, but it is a factor that could be easily overlooked. One third of the centers in this study are located in areas where the environmental conditions can be suitably classified as extreme: Hoh in the Olympic rain forest with annual precipitation in excess of 200 inches; Rocky Mountain-Alpine in an area of extreme snow loads, tundra, winds and permafrost; and Cape Cod-Provence Lands and Wright Brothers in sand dune areas of frequent, high intensity, salt-laden winds.

These environments are extreme in two ways relating to the design of visitor centers. First, special consideration must be given to the design of structures and the selection of materials which can withstand the effects of extreme environmental factors over time. Second, site design must provide access and accommodate visitors without causing irreversible damage to natural environments that are frequently fragile and unstable such as sand dunes and tundra.

A useful indicator of the quality of a design in coping with such environmental conditions is the record of maintenance and repairs. As indicated in Chapter II, there have been some problems which can be attributed to extreme conditions such as the moss build-up on the roof at the Hoh Center. Overall however, the maintenance and repair data suggest that the building designs were appropriate to these extreme conditions.

A future concern is the capability of fragile natural environments to accommodate ever-increasing numbers of people, particularly if the pattern of visitation becomes one in which more and more visitors arrive in groups (e.g., tour busses). Neither the sites nor the buildings were originally designed to accommodate such
TABLE III-1
PARK THEMES AND PERCEIVED
SUITABILITY OF VISITOR CENTERS

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>THEME</th>
<th>PERCEIVED SUITABILITY*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Natural</td>
<td>Historical</td>
</tr>
<tr>
<td>Bandelier NM **</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Range on a 5 point scale: .26 .34 .85 .53

* Renovation of exhibit area was still partially incomplete at time of data gathering and informational materials (supplemental) were not available to the visitor.
* 1=most suitable to 5=least suitable

visitation patterns. While administrative adjustments can be and have been made in scheduling lecture programs and similar activities so as to move people through the buildings faster, the impact on the site is frequently manifest as larger areas becoming increasingly subjected to the stresses induces by large numbers of visitors (as
evidenced by the need to fence the walkways through the tundra at Rocky Mountain-Alpine. If these visitation patterns continue, and particularly if they become even more pronounced, serious consideration must be given to the careful redesign of vehicular and pedestrian circulation systems to accommodate large multi-passenger vehicles and surges of pedestrian activity.

SPATIAL AND LOCATIONAL CHARACTERISTICS

Cabot (1958) identifies three placements for visitor centers: at or near the park entrance, en route between entrance and possible destination, and at a terminus. Cabot described the entrance center as one which should "set the mood for the park" and which "should introduce and orient the public." He described the "en route" center as one where "interpretation was more difficult, because it must provide both an introduction and a synopsis of the park values already passed, as well as the encouragement to get those values of importance that lie ahead." The terminal center was described as one which must also provide a synopsis of park values as well as "the introduction to and interpretation of the nearby park features" which are probably the reason for the location of the center.

Table III-2 indicates the locational characteristics of each visitor center according to the Cabot typology. It also indicates whether the center exists as a freestanding single purpose building, as a freestanding multiple-purpose building (e.g., visitor center and park administration) or in a cluster with other park buildings (e.g., administration, staff residence, concession, maintenance). Our data do not indicate that either locational or spatial characteristics are related to the quality of the visitor center as perceived by visitors or staff or as indicated by maintenance and repair histories or physical inspection check lists.

When queried in interviews as to optimal locations for visitor centers and optimal relationships of centers with other park facilities (e.g., administration, concessions,) park administrators tended to: 1) reiterate the intuitive logic of Cabot's typology; 2) reflect their own experience and tend to favor the kind of spatial and locational arrangements they had experienced in their own careers; or 3) to treat each case as an independent and unique situation not amenable to generalization. The collective and considerable experience of these individuals encompassing a great number of visitor centers and parks does not conflict with the previous conclusions.

Table III-2 also indicates the presence of extra-park influences at three of the centers. Undoubtedly, every visitor center is influenced by developments and activities outside the park in which
### TABLE III-2

**SPATIAL AND LOCATIONAL CHARACTERISTICS AND EXTRA-PARK INFLUENCES**

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>LOCATIONAL CHARACTERISTIC</th>
<th>SPATIAL CHARACTERISTIC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ENTRANCE</td>
<td>EN ROUTE</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petersburg NB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

it is located. These three are singled out because of the magnitude, in our judgment, of the impact of the development or activity. At each of these centers, at Gettysburg-Cyclorama, Olympic-Hoh and Rocky Mountain-Headquarters, the extra-park influence relates to the environments traversed by the visitor immediately prior to arrival at the...
visitor center. The approach for many visitors to the Cyclorama is through a considerable area of strip-commercial development and conspicuous advertising for wax museums, fast food restaurants, motels and similar establishments—an environment of sharp contrast to that of a National Military Park and the Cyclorama. The impact of the surrounding environment on the park is further reinforced by the omnipresent viewing tower, located just outside the Park, which looks down upon the visitor center site and surrounding Cemetery Ridge.

The approach to Olympic-Hoh is through a section of the Olympic National Forest. Portions of the forest, on either side of the entry road, are currently being subjected to clear-cutting. The logging operation employed balloon transport during the summer of 1975, probably adding an element of the unexpected for the visitor less knowledgeable about the ways of logging in the Northwest. The logging also stands out in sharp contrast to the preservation oriented resource management policies of the National Park adjacent to the visitor center.

The Headquarters Center at Rocky Mountain is intended to serve as an entrance center for information and orientation on the eastern side of the park. There are, however, two entrances to the park through the town of Estes Park, but the visitor is not presented with directional clues as to which is the main one. One road leads to the Alpine Center and the other to Headquarters first and subsequently to the Alpine Center.

Each of these cases is an example of the need to consider the broader environmental context in the planning and development of park facilities. Gettysburg presents the most difficult problem in that respect because of the considerable economic investment in the commercial development. A more sympathetic environment is possible, however, if appropriate sign control measures are adopted and subscribed to by the involved businessmen and by a street tree planting program implemented to provide an image of the developed landscape that is more compatible with the Park image.

The environmental contrast along the approach road to Hoh is an ephemeral one. At some time the logging will probably be terminated, allowing for regrowth and another cycle of logging sometime in the future. While the logging is going on, however, a unique opportunity is presented for enriching the interpretive program at the visitor center: explaining the differences in management mandates between the Park Service and the Forest Service, and informing the visitor of the scientific and logistical rationale for the logging practices being used. It presents an opportunity to turn what could be perceived as an unfortunate intrusion on the Park into a useful public information and education opportunity.
The entrance problem on the eastern side of Rocky Mountain National Park, like the problem at Gettysburg, cannot be resolved by park personnel without the initiative, cooperation, and support of the adjacent community. This problem is probably more easily resolved in that it primarily required informational signs at critical intersections along the roads leading to the park.

A final locational characteristic is exemplified by the ease or difficulty encountered by the visitor in finding the center. Table III-3 indicates the percentages of visitors who reported that they were either specifically looking for the center or found it accidently and the percentage who reported the center easy to find. There is no apparent relationship between the visitors' motivation in terms of intentional seeking or accidental finding, and the reported ease of finding. Several figures in the table merit closer attention, however. At both Cape Cod and Great Falls, 30 percent or more of the visitors reported accidently finding the center. In spite of the designation of Great Falls as a natural theme park, it appears to be used primarily as a regional recreational facility, a use pattern that is probably reinforced by the absence of more developed interpretive facilities comparable to those in other natural theme parks. The recreational emphasis of both these parks combined with their proximity to major population centers probably accounts in large part for this motivational difference.

One center, Yosemite-Valley, stands out conspicuously in visitor's responses as most difficult to find. Finding this center is hindered by its physical location within the park and the lack of direct and clear access. The implementation of a one-way road system in the valley has left the visitor center in a position nearly inaccessible to the visitor traveling by private auto. The free public transit system does provide access to the general visitor center area. However, passengers are discharged at an undifferentiated, large paved area (formerly a parking lot) without clear indications or clues as to the specific location of the center. Plans are in process to convert this area into an attractive and functional pedestrian mall. Until some kind of change is instituted however, a considerable percentage of the visitors can be expected to have difficulty finding the center, an experience which could influence their expectations for and levels of satisfaction with the center.

Aesthetic Values

Visitors were asked to indicate which construction materials they thought most appropriate for a new building if the one they were in were destroyed. Table III-4 indicates the dominant materials
of the existing buildings and the percentage of choices for an array of possible replacement materials. Several somewhat related trends are apparent. First is the tendency to select replacement materials that are identical or quite similar to the material of the existing building (i.e., Bandelier--abode, Cape Cod-Provence Lands--wood, Fort Raleigh--wood, Olympic-Hoh--wood, Petersburg--brick, Rocky Mountain-Alpine--stone and Yosemite-Valley--stone). Second is the tendency to select coarser textured materials over fine-textured materials, i.e., rough wood over smooth wood and stone over brick or concrete).
## Table 111-4

### Replacement Materials

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Dominant Existing Building Material</th>
<th>Replacement (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONCRETE</td>
<td>GLASS &amp; STEEL</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>ADOBE</td>
<td>2</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>SMOOTH WOOD</td>
<td>4.7</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>SMOOTH WOOD</td>
<td>4.5</td>
</tr>
<tr>
<td>Gettysburg NMP Cyclorama</td>
<td>CONCRETE</td>
<td>13.1</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>SHINGLES &amp; CONC. BLOCK</td>
<td>6.0</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>WOOD</td>
<td>.5</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>BRICK</td>
<td>9.0</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>STONE</td>
<td>2.4</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>STEEL &amp; STONE</td>
<td>3.8</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>PAINTED BRICK</td>
<td>3.9</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>AGGREGATE CONC. &amp; GLASS STONE</td>
<td>13.2</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>STONE</td>
<td>4.0</td>
</tr>
</tbody>
</table>
Visitors were also asked to identify which of nine possible architectural styles as represented by photographs of other visitor centers were most appropriate in specific regions of the United States (i.e., New England, Midwest, Southwest, Rocky Mountains and the Pacific Coast). Table III-5 depicts in sketch form the nine visitor center buildings (see Appendix B for photographs), indicates their actual locations and which ones were perceived as most appropriate for each of the regions. It should be noted, however, that for unknown reasons approximately one-third of the respondents did not complete this section of the questionnaire. The numerical index was obtained by assigning a value of three to the majority choice at each center, a value of two to the second most frequently selected building and a value of one to the third and summing across all twelve centers. For example, the majority choice for New England at each study site, from Bandelier to Yosemite was photograph number five, hence it received an index of 36 (i.e., 12 x 3). These data suggest that a goodly number of National Park visitors agree on the fit of certain building styles with specific regions as exemplified by photographs number 1, 2, 3, 5 and 9. It is interesting to note that the perceived fit of the building with various regions is not always consonant with the region in which the building actually exists. The most notable examples in this respect are the Gettysburg-Cyclorama Center in Pennsylvania, seen as appropriate for the southwest, albeit at the third choice level, and the Florida Everglades center, seen as appropriate for the Pacific Coast. The latter example, however, is not unreasonable in terms of the climatic conditions suggested by the vegetation in the photograph.

It should also be noted that the Gettysburg photograph was selected before that center was incorporated into the study. When the questionnaires were distributed to visitors at Gettysburg-Cyclorama, that photograph was covered and not included in the question. Photographs 4, 6, 7 and 8 were all perceived as being somewhat appropriate for several regions with number 8 apparently having the most ubiquitous qualities.

SUMMARY

Among the several considerations discussed in this chapter under each of the contextual issues of park theme, extreme environmental conditions, spatial characteristics and regional aesthetic values, a number have been identified as being of existing or potential importance to the quality of visitor centers. Of particular interest is the relationship of several of these considerations to salient steps in the design process discussed in Chapter V, in-
<table>
<thead>
<tr>
<th>PHOTO NO.</th>
<th>LOCATION</th>
<th>NEW ENGLAND</th>
<th>MID-WEST</th>
<th>SOUTH-WEST</th>
<th>ROCKY MTNS.</th>
<th>PACIFIC COAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Saratoga NHP New York</td>
<td>THIRD 14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fredericksburg and Spotsylvania NMP, Va.</td>
<td>FIRST 30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Gettysburg NMP Pennsylvania</td>
<td>THIRD 18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Point Reyes NS California</td>
<td>SECOND 24</td>
<td>SECOND 20</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Great Smoky Mtns. NP, Tennessee</td>
<td>FIRST 36</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Glacier NP, Montana</td>
<td>FIRST 31</td>
<td>FIRST 31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Dinosaur NM, Colorado-Utah</td>
<td>SECOND 28</td>
<td>SECOND 18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Sitka NM, Alaska</td>
<td>SECOND 15</td>
<td>THIRD 10</td>
<td>THIRD 15</td>
<td>THIRD 8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Everglades NP Florida</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FIRST 27</td>
</tr>
</tbody>
</table>
cluding the development of both master plans and interpretive prospectuses and the importance of exhibit design. The more important contextual considerations include:

1. There is a slight but nevertheless persistent tendency of centers in historic theme parks to be perceived by visitors as more suitable and satisfying.

2. The extreme environmental conditions within which some visitor centers exist present particularly challenging site design problems in accommodating increasing numbers of visitors while protecting fragile and unstable environments, problems which will be exacerbated as visitation patterns shift from a more nearly continuous flow associated with automobile passengers to surges associated with tour busses and group travel.

3. The approach to several visitor centers through nonpark lands is evidence of the need for the influence of park design and planning to extend beyond park boundaries and to include local citizens and interest groups in the planning process. The effects of these contrasting environments and/or potential stress-inducing experiences on the visitors' levels of expectation and satisfaction with the park and the visitor center is an important topic for further study.

4. Visitors to recreational theme parks or recreationally oriented parks may be less purposefully motivated to seek out visitor centers but appear to avail themselves of center opportunities when they encounter them. These are probably placed where the visitors' need for interpretive services is also considerably lessened regardless of the opportunities for interpretation.

5. The data on regional buildings suggest that there may be stereotypical building characteristics or images that are perceived as particularly appropriate in different regions. The data are too limited to provide for more detailed analysis. They do suggest, however, that further study along these lines could yield useful and important insights into the notion of regional design, an issue of importance in park development.
CHAPTER IV: THE USERS

INTRODUCTION

The ultimate test of the success of a designed environment is its ability to satisfy and support the needs and values of its users (Zube, 1974). In the discussion that follows, the users of the visitor centers are divided into two groups, visitors and staff. The discussion draws primarily upon data from the visitor and staff questionnaires and the systematic observation.

VISITORS

The visitors who completed the questionnaires can be described generally as young, well-educated, frequent visitors to National Parks and as having traveled a considerable distance to visit the parks (Table IV-1). Comparison of the sex and age data in Tables IV-1 and IV-2 indicate that the questionnaire respondents did not include a representative proportion of the youngest age group. This is attributable in part, however, to many of the children being too young to fill out the questionnaires and, in some instances, parents pre-empting the task from their children. Nevertheless, the mean age for all questionnaire respondents is a relatively young 31.9 years.

The respondents are also well educated, with 63.4 percent having at least some college education, ranging from a high of 73.1 percent at Olympic-Hoh to a low of 44.9 percent at Scotts Bluff. A comparison of the mean education levels (Table IV-1) from this study with those of the respondents to a questionnaire reported in the Outdoor Recreation Resources Review Committee Report (Department of Resource Development) in 1962 (Table IV-3) indicates a generally similar pattern.

An overwhelming number of respondents are either not in the labor force, 41.6 percent, or are in managerial or professional roles, 36.3 percent (Table IV-1). The former category includes retired persons, students, homemakers and armed forces personnel. Interviews with park administrators suggest that this occupation pattern may be even more pronounced during the off-season, when
<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>SEX</th>
<th>AGE</th>
<th>EDUCATION</th>
<th>N.P.S. VISITATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MALE</td>
<td>FEMALE</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>CHILD</td>
<td>YOUTH</td>
<td>ADULT</td>
<td>8th</td>
</tr>
<tr>
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<td>48.7</td>
<td>51.3</td>
<td>3.9</td>
<td>19.6</td>
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<tr>
<td>Cape Cod NS-Province Lands</td>
<td>48.4</td>
<td>51.6</td>
<td>3.9</td>
<td>11.9</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>51.1</td>
<td>48.9</td>
<td>8.6</td>
<td>10.0</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
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<td>43.2</td>
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<tr>
<td>Great Falls Park</td>
<td>46.2</td>
<td>53.8</td>
<td>8.1</td>
<td>21.0</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>50.2</td>
<td>49.8</td>
<td>4.1</td>
<td>10.6</td>
</tr>
<tr>
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<td>Rocky Mountain NP-Alpine</td>
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<td>41.0</td>
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<td>51.0</td>
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<td>14.0</td>
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<tr>
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<td>55.8</td>
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<tr>
<td>Wright Brothers NM</td>
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<td>51.2</td>
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<tr>
<td>Yosemite NP-Valley</td>
<td>51.9</td>
<td>48.1</td>
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</tr>
<tr>
<td>Mean (X)</td>
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<td>5.4</td>
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<td>Visitor Center</td>
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<td>Occupation 5</td>
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</tr>
<tr>
<td>-------------------------------------</td>
<td>-----------------------------------------------------------</td>
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<td>UNDER 100</td>
<td>100-300</td>
<td>300-500</td>
<td>500-1000</td>
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<td>8.8</td>
<td>7.5</td>
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</tr>
<tr>
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<td>49.9</td>
<td>23.7</td>
<td>8.1</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
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<td>29.8</td>
<td>29.1</td>
<td>26.5</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>21.3</td>
<td>36.1</td>
<td>20.1</td>
<td>11.2</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>70.2</td>
<td>6.1</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>2.4</td>
<td>19.4</td>
<td>4.3</td>
<td>7.9</td>
</tr>
<tr>
<td>Petersburg NB</td>
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<td>15.1</td>
<td>25.0</td>
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<tr>
<td>Rocky Mountain NP-Alpine</td>
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<td>3.4</td>
<td>2.3</td>
<td>26.9</td>
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<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>16.7</td>
<td>3.9</td>
<td>.8</td>
<td>31.8</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>16.0</td>
<td>2.7</td>
<td>20.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>6.5</td>
<td>28.4</td>
<td>29.7</td>
<td>23.8</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>2.3</td>
<td>34.1</td>
<td>21.5</td>
<td>7.4</td>
</tr>
<tr>
<td>Mean (X)</td>
<td>14.5</td>
<td>22.4</td>
<td>15.6</td>
<td>17.9</td>
</tr>
</tbody>
</table>
**TABLE IV-1 (CONTINUED)**

1. **Age:**
   - child = 12 and under
   - youth = 13 to 18
   - adult = over 18

2. **Education:**
   - 8th = through 8th grade or less
   - H.S. = 9th grade through high school diploma
   - COL. = some college and/or a Bachelors degree
   - M.S. = 2 years of post-graduate study and/or a Masters degree
   - MORE = more than 2 years graduate study or a Masters degree

3. **N.P.S. Visitation:** the number of other N.P.S. facilities visited in the past three years

4. **Distance from home in miles**

5. **Occupation:**
   - Not in = not in labor force including armed forces, home-makers, retired people and students
   - CRA & FO = skiller craftsmen and non-farm foremen
   - CONST = construction workers and non-farm laborers
   - OPER = equipment and mining operators
   - FARM = laborers, foremen, managers and owners of farms, ranches, forests and related activities
   - MAN & PROF = professionals, technical workers, managers, proprietors and administrators
   - SALES & CLER = retail and wholesale sales people, clerical and secretarial workers
   - SERV & OTHER = personal and household occupations and others.

6. **N =** total number of respondents; however not all respondents answered all questions.
considerably greater numbers of retired people are noted in the centers. Comparison of the data from pre-season and peak season at Cape Cod-Province Land and from early and mid-season at Wright Brothers, however, indicated no differences over those relatively short time intervals.

The majority of the respondents are also frequent visitors to National Park Service areas. Over 83 percent have been to at least two areas in the past three years and over 55 percent have been to four or more areas during that time (Table IV-1). These visitors are obviously experienced users of park facilities.

Over 63 percent of the visitors have also traveled more than 300 miles from their homes to the park and nearly 30 percent traveled over 1,000 miles (Table IV-1). These figures vary considerably for individual parks, however, ranging from 70.2 percent of the visitors

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>MALE</th>
<th>FEMALE</th>
<th>CHILD</th>
<th>YOUTH</th>
<th>ADULT</th>
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</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td>48</td>
<td>52</td>
<td>23</td>
<td>18</td>
<td>59</td>
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<td>Cape Cod NS-Province Lands</td>
<td>50</td>
<td>50</td>
<td>17</td>
<td>17</td>
<td>66</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>47</td>
<td>53</td>
<td>20</td>
<td>9</td>
<td>65</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>49</td>
<td>51</td>
<td>18</td>
<td>11</td>
<td>71</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>52</td>
<td>48</td>
<td>40</td>
<td>15</td>
<td>45</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>54</td>
<td>46</td>
<td>18</td>
<td>18</td>
<td>64</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>54</td>
<td>46</td>
<td>30</td>
<td>9</td>
<td>61</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>58</td>
<td>42</td>
<td>20</td>
<td>14</td>
<td>66</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>57</td>
<td>43</td>
<td>18</td>
<td>18</td>
<td>64</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>51</td>
<td>49</td>
<td>26</td>
<td>15</td>
<td>59</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>50</td>
<td>50</td>
<td>24</td>
<td>14</td>
<td>62</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>50</td>
<td>50</td>
<td>23</td>
<td>21</td>
<td>56</td>
</tr>
<tr>
<td>Mean (X)</td>
<td>52</td>
<td>48</td>
<td>23</td>
<td>15</td>
<td>62</td>
</tr>
</tbody>
</table>
TABLE IV-3

COMPARISON OF ORRRC AND EVALUATION STUDY
RESPONDENTS' EDUCATION LEVELS
(IN PERCENTAGES)

<table>
<thead>
<tr>
<th></th>
<th>8th grade or less</th>
<th>9th through 12th grade</th>
<th>13th through 16th grade</th>
<th>graduate study</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORRRC EVALUATION STUDY</td>
<td>4.5</td>
<td>34.3</td>
<td>30.6</td>
<td>30.6</td>
</tr>
<tr>
<td>VISITOR CENTER DESIGN EVALUATION STUDY</td>
<td>9.5</td>
<td>27.1</td>
<td>38.9</td>
<td>24.5</td>
</tr>
</tbody>
</table>

The majority of the visitors arrived at the visitor centers either by car or by walking from somewhere within or near the park. Car arrivals ranged from lows of 40.1 percent at Yosemite-Valley and 63.8 percent at Fort Raleigh to a high of about 95 percent at both Rocky Mountain centers. The mean for all parks is 70.2 percent. Yosemite-Valley had by far the largest percentage of bus arrivals with 35.8 percent, the next highest being Bandelier with 2.5 percent. Bicycle arrivals at Cape Cod-Province Lands and Scotts Bluff were 6.1 and 6.3 percent respectively, with the next highest being 2.4 percent at Yosemite.

Table IV-4 indicates the main reasons respondents gave for going to the visitor centers. The myth that most people go to visitor centers primarily to use the toilets is certainly not supported by these data. It is, however, an important reason at Rocky Mountain-Alpine, where the long approach drive, coupled with
changes in temperature and elevation produces a not unpredictable result. Primarily, people go to visitor centers for information, to view exhibits or just out of curiosity to look around. In general, the historic theme centers seem to attract more people on the basis of exhibits than do centers in natural or recreation theme parks. Most notable in this respect are Gettysburg-Cyclorama, Petersburg, Scotts Bluff and Wright Brothers. The centers in natural and recreation theme parks, on the other hand, appear to attract more general "look-around" visitors with the natural theme centers also being important as information centers.

Several additional points are highlighted by these self reports as to why visitors went to the various centers. For example, Rocky Mountain-Headquarters is overwhelmingly used as an information source, yet it has one of the smallest information-sales counter areas. Most centers also seem to have one or at the most two primary attractions accounting for 30 percent or more of the reasons for visiting. With the exception of Gettysburg, Petersburg and Rocky Mountain-Headquarters, audio-visual programs are apparently not a strong attraction. At Gettysburg-Cyclorama and Petersburg this is understandable, as the programs are distinctive if not unique in format and substance. At Rocky Mountain-Headquarters, however, it is probably because the movie is the primary interpretive feature in the center with exhibit materials being minimal at best.

A comparison of these expressed reasons for going to the visitor center with the self-reports as to actual destinations upon arrival as given in Tables II-3 and II-4 suggest that the behavior of the visitors in the centers tends to parallel their reasons for going.

The majority of the visitors spend between 15 and 30 minutes in the visitor center, as indicated in Table IV-5. Notably exceptions to this length of stay are found at Gettysburg-Cyclorama where the majority stay longer than 30 minutes and at Great Falls where 49 percent spend less than 15 minutes in the building.

VISITOR ATTITUDES TOWARDS SERVICES

Visitors were asked to rank the usefulness of a number of services which might be included in a visitor center (Table IV-10). Overall, there is considerable agreement among visitors and centers on the identification of which services would be most useful. Heading the list is the provision of information, probably the single most important service as indicated by patterns of use (Tables II-3 and II-4). Next in order of ranking are literature sales, postal services and library services, with the latter indicated as possibly more useful at historic areas. Attitudes towards the sale of sundries
TABLE IV-4
MAIN REASON FOR GOING TO VISITOR CENTER

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Obtain Information</th>
<th>Look Around</th>
<th>View Exhibits</th>
<th>Use Rest Rooms</th>
<th>See Audio/Visual Program</th>
<th>With Someone</th>
<th>Sit and Rest</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td>34.3</td>
<td>32.1</td>
<td>18.7</td>
<td>.7</td>
<td>3.7</td>
<td>3.7</td>
<td>-</td>
<td>6.0</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>30.5</td>
<td>47.0</td>
<td>4.6</td>
<td>6.3</td>
<td>3.0</td>
<td>2.3</td>
<td>3.6</td>
<td>2.3</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>21.6</td>
<td>43.2</td>
<td>16.0</td>
<td>7.2</td>
<td>4.0</td>
<td>3.2</td>
<td>.8</td>
<td>4.0</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>10.9</td>
<td>31.8</td>
<td>32.8</td>
<td>1.5</td>
<td>16.9</td>
<td>1.5</td>
<td>-</td>
<td>4.5</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>19.4</td>
<td>46.7</td>
<td>8.5</td>
<td>4.8</td>
<td>5.5</td>
<td>2.4</td>
<td>3.6</td>
<td>9.1</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>40.5</td>
<td>32.4</td>
<td>14.3</td>
<td>5.7</td>
<td>1.0*</td>
<td>2.4</td>
<td>-</td>
<td>3.8</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>18.4</td>
<td>31.2</td>
<td>36.0</td>
<td>1.6</td>
<td>11.2</td>
<td>-</td>
<td>-</td>
<td>1.6</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>9.5</td>
<td>52.7</td>
<td>17.1</td>
<td>11.3</td>
<td>.7*</td>
<td>.7</td>
<td>1.8</td>
<td>6.2</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>52.2</td>
<td>14.3</td>
<td>4.4</td>
<td>6.4</td>
<td>12.3</td>
<td>1.5</td>
<td>.5</td>
<td>8.4</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>11.0</td>
<td>40.2</td>
<td>33.9</td>
<td>1.6</td>
<td>2.4*</td>
<td>.8</td>
<td>4.7</td>
<td>6.5</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>8.5</td>
<td>34.2</td>
<td>47.3</td>
<td>.9</td>
<td>2.5</td>
<td>4.1</td>
<td>-</td>
<td>2.5</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>34.8</td>
<td>28.1</td>
<td>24.8</td>
<td>1.7</td>
<td>1.0</td>
<td>1.7</td>
<td>.3</td>
<td>7.6</td>
</tr>
</tbody>
</table>

Mean (\(\bar{X}\))

<table>
<thead>
<tr>
<th>Obtain Information</th>
<th>Look Around</th>
<th>View Exhibits</th>
<th>Use Rest Rooms</th>
<th>See Audio/Visual Program</th>
<th>With Someone</th>
<th>Sit and Rest</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.3</td>
<td>36.4</td>
<td>21.7</td>
<td>4.3</td>
<td>4.8</td>
<td>2.1</td>
<td>1.2</td>
<td>5.1</td>
</tr>
</tbody>
</table>

*There are no full audio/visual programs at these parks. However, Alpine does have an audio tape and Scotts Bluff a living history program.

(e.g., candy, photographic supplies) are mixed but approximately neutral. With one exception, Petersburg, attitudes towards the sale of souvenirs are negative; this is even true at Fort Raleigh, where souvenirs are presently sold in the visitor center. These data are generally impressive. However, the possibility should be considered that, at least in part, visitors are expressing more favorable
attitudes towards services that are already available and less favorable attitudes towards those that are not available. The previously cited example of Fort Raleigh does not support this hypothesis but also represents only one case.

VISITOR PERCEPTIONS

Visitors perceive the arrival areas, buildings, exhibits and audio-visual programs in a positive manner. The data in Tables IV-6 and IV-7 suggest, however, that the buildings tend to elicit slightly stronger responses in general than do either the exhibits or the audio-visual programs. The higher values for each center are most often related to attributes of building exteriors and interiors.

There are several other important attributes of the data in these Tables that merit attention. First, it will be noted that on several items, the range among centers is quite minimal (i.e., .34 and .38) when considered in reference to the five-point scales employed for recording visitor perceptions. Therefore, while there is probably a perceived qualitative difference between the centers represented by highest and lowest values, the small-scale differences among many of the other centers should not be interpreted as necessarily meaningful differences. The range of scale values within the individual centers provides an indication of the variability of perceived consistency of quality among components and attributes. For example, the minimal variability in scale values for arrival area, building exterior and interior, exhibits and audio-visual at Petersburg and Gettysburg-Cyclorama (.45 and .51 respectively) suggest a uniform design and maintenance quality. The range of scale values within the individual centers also indicates the visitors' ability to discriminate qualitatively among the several components of the center. The values for Great Falls, for example, indicate a perceived difference between the quality of the building exterior and the exhibits. At the Rocky Mountain-Alpine center there is a difference indicated between the building interior and the exhibits and at Fort Raleigh between the building interior and the audio-visual program.

Visitors were also asked to identify which of nine buildings depicted in the questionnaire would be most suitable, which would be second most suitable and which least suitable as a replacement for the visitor center they were in at that time. The photographs were trimmed, to the extent possible, to minimize the landscape context and focus attention on the building (Appendix B). Printing of the questionnaires also tended to blur a considerable amount of building detail. The Glacier and Dinosaur Visitor Centers (Photos 6 and 7) consistently were identified by the largest percentage of
TABLE IV-5
TIME SPENT IN THE CENTERS

PERCENT OF VISITORS

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>LESS THAN 15 MIN.</th>
<th>15 MIN. TO 30 MIN.</th>
<th>30 MIN. TO 60 MIN.</th>
<th>OVER 60 MIN.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td>22</td>
<td>61</td>
<td>17</td>
<td>-</td>
<td>144</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>13</td>
<td>54</td>
<td>28</td>
<td>5</td>
<td>386</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>9</td>
<td>53</td>
<td>34</td>
<td>4</td>
<td>148</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>4</td>
<td>20</td>
<td>44</td>
<td>32</td>
<td>247</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>49</td>
<td>34</td>
<td>10</td>
<td>7</td>
<td>183</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>32</td>
<td>57</td>
<td>10</td>
<td>1</td>
<td>249</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>5</td>
<td>56</td>
<td>38</td>
<td>1</td>
<td>151</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>17</td>
<td>63</td>
<td>18</td>
<td>2</td>
<td>338</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>22</td>
<td>46</td>
<td>30</td>
<td>2</td>
<td>253</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>7</td>
<td>62</td>
<td>28</td>
<td>3</td>
<td>146</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>8</td>
<td>48</td>
<td>34</td>
<td>10</td>
<td>360</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>19</td>
<td>53</td>
<td>23</td>
<td>5</td>
<td>345</td>
</tr>
<tr>
<td>MEAN (\bar{X})</td>
<td>17</td>
<td>51</td>
<td>28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

of visitors (from 23 percent at Olympic-Hoh to 57 percent at Gettysburg-Cyclorama) as the most suitable replacement buildings. They were also identified as the second most suitable replacement by 21 percent or more of the visitors at all centers except Wright Brothers, Fort Raleigh and Olympic-Hoh. Gettysburg-Cyclorama (photo 3) was identified by the largest percentage (22) as the
### TABLE IV-6

VISITOR ATTITUDES TOWARDS SERVICES

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Souvenir Sales</th>
<th>Literature Sales</th>
<th>Sundries (candy, etc.)</th>
<th>Postal Stamps</th>
<th>Library Service</th>
<th>Travelers Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td>3.62</td>
<td>1.97</td>
<td>2.71</td>
<td>2.63</td>
<td>2.45</td>
<td>1.37</td>
</tr>
<tr>
<td>Cape Cod NP-Province Lands</td>
<td>3.43</td>
<td>2.23</td>
<td>3.22</td>
<td>2.67</td>
<td>2.54</td>
<td>1.36</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>3.09</td>
<td>2.25</td>
<td>3.00</td>
<td>2.28</td>
<td>2.43</td>
<td>1.66</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>3.43</td>
<td>2.21</td>
<td>3.36</td>
<td>2.80</td>
<td>2.48</td>
<td>1.50</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>3.68</td>
<td>2.36</td>
<td>2.89</td>
<td>2.87</td>
<td>2.71</td>
<td>1.64</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>4.07</td>
<td>2.31</td>
<td>3.17</td>
<td>2.54</td>
<td>2.75</td>
<td>1.44</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>2.90</td>
<td>2.17</td>
<td>3.11</td>
<td>2.57</td>
<td>2.22</td>
<td>1.59</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>3.74</td>
<td>2.29</td>
<td>2.97</td>
<td>2.58</td>
<td>2.77</td>
<td>1.40</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>3.92</td>
<td>2.22</td>
<td>3.04</td>
<td>2.40</td>
<td>2.62</td>
<td>1.26</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>3.24</td>
<td>2.25</td>
<td>2.88</td>
<td>2.46</td>
<td>2.70</td>
<td>1.59</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>3.24</td>
<td>2.33</td>
<td>3.24</td>
<td>2.45</td>
<td>2.50</td>
<td>1.73</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>3.50</td>
<td>2.26</td>
<td>2.65</td>
<td>2.17</td>
<td>2.62</td>
<td>1.37</td>
</tr>
<tr>
<td>RANGE ON A 5 POINT SCALE</td>
<td>1.17</td>
<td>.36</td>
<td>.71</td>
<td>.70</td>
<td>.55</td>
<td>.47</td>
</tr>
</tbody>
</table>

second most suitable for Wright Brothers, and Sitka (photo 8) was identified as the second most suitable for Fort Raleigh and Olympic-Hoh. Everglades (photo 9) was identified by the largest percentages (31 to 38) as the least suitable replacement for seven of the centers. The Great Smoky Mountain Visitor Center was identified by the largest percentage of visitors as the least suitable for Scotts Bluff (26
<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>ARRIVAL AREA</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONVENIENT</td>
<td>SAFE</td>
<td>ATTRACTIVE</td>
<td>INVITING</td>
<td>COMFORT</td>
<td>ATTRACTIVE</td>
<td>ORGANIZED</td>
<td>LIGHT</td>
<td>INVITING</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>1.41</td>
<td>1.51</td>
<td>1.41</td>
<td>1.31</td>
<td>1.49</td>
<td>1.50</td>
<td>1.51</td>
<td>1.48</td>
<td>2.04</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>1.28</td>
<td>1.28</td>
<td>1.26</td>
<td>1.25</td>
<td>1.30</td>
<td>1.51</td>
<td>1.28</td>
<td>1.36</td>
<td>1.32</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>1.27</td>
<td>1.19</td>
<td>1.15</td>
<td>1.23</td>
<td>1.33</td>
<td>1.20</td>
<td>1.26</td>
<td>1.33</td>
<td>1.42</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>1.29</td>
<td>1.25</td>
<td>1.29</td>
<td>1.50</td>
<td>1.59</td>
<td>1.42</td>
<td>1.42</td>
<td>1.36</td>
<td>1.50</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>1.48</td>
<td>1.41</td>
<td>1.73</td>
<td>1.33</td>
<td>1.41</td>
<td>1.71</td>
<td>1.51</td>
<td>1.61</td>
<td>1.89</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>1.48</td>
<td>1.54</td>
<td>1.51</td>
<td>1.65</td>
<td>1.63</td>
<td>1.50</td>
<td>1.62</td>
<td>1.52</td>
<td>1.80</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>1.20</td>
<td>1.18</td>
<td>1.20</td>
<td>1.19</td>
<td>1.32</td>
<td>1.20</td>
<td>1.25</td>
<td>1.27</td>
<td>1.33</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>1.56</td>
<td>1.69</td>
<td>1.63</td>
<td>1.47</td>
<td>1.58</td>
<td>1.89</td>
<td>1.78</td>
<td>1.65</td>
<td>1.87</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>1.33</td>
<td>1.40</td>
<td>1.42</td>
<td>1.40</td>
<td>1.50</td>
<td>1.45</td>
<td>1.48</td>
<td>1.52</td>
<td>1.68</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>1.29</td>
<td>1.26</td>
<td>1.44</td>
<td>1.43</td>
<td>1.51</td>
<td>1.37</td>
<td>1.48</td>
<td>1.34</td>
<td>1.51</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>1.29</td>
<td>1.33</td>
<td>1.41</td>
<td>1.29</td>
<td>1.39</td>
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<td>1.42</td>
<td>1.30</td>
<td>1.40</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>1.86</td>
<td>1.54</td>
<td>1.61</td>
<td>1.53</td>
<td>1.50</td>
<td>1.78</td>
<td>1.62</td>
<td>1.54</td>
<td>1.99</td>
</tr>
<tr>
<td>RANGE (HIGH-LOW)</td>
<td>.66</td>
<td>.59</td>
<td>.58</td>
<td>.46</td>
<td>.34</td>
<td>.69</td>
<td>.53</td>
<td>.38</td>
<td>.72</td>
</tr>
</tbody>
</table>

**TABLE IV-7**

**PERCEIVED QUALITY OF ARRIVAL AREA AND BUILDING**
TABLE IV-8
PERCEIVED QUALITY OF EXHIBITS AND AUDIO-VISUAL PROGRAMS

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>EXHIBITS</th>
<th></th>
<th></th>
<th></th>
<th>AUDIO VISUAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INFORMATIVE</td>
<td>COLORFUL</td>
<td>INTERESTING</td>
<td>STIMULATING</td>
<td>INFORMATIVE</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>1.91</td>
<td>1.54</td>
<td>1.46</td>
<td>1.37</td>
<td>2.02</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>1.54</td>
<td>1.85</td>
<td>1.49</td>
<td>1.69</td>
<td>1.96</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>1.54</td>
<td>1.78</td>
<td>1.50</td>
<td>1.50</td>
<td>1.96</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>1.34</td>
<td>1.47</td>
<td>1.32</td>
<td>1.47</td>
<td>1.72</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>2.36</td>
<td>2.41</td>
<td>2.15</td>
<td>2.12</td>
<td>2.82</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>1.39</td>
<td>1.70</td>
<td>1.43</td>
<td>1.58</td>
<td>1.89</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>1.22</td>
<td>1.59</td>
<td>1.17</td>
<td>1.39</td>
<td>1.55</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>1.38</td>
<td>1.60</td>
<td>1.44</td>
<td>1.55</td>
<td>1.88</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>1.62</td>
<td>1.83</td>
<td>1.68</td>
<td>1.81</td>
<td>2.25</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>1.33</td>
<td>1.65</td>
<td>1.36</td>
<td>1.53</td>
<td>1.72</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>1.25</td>
<td>1.91</td>
<td>1.33</td>
<td>1.57</td>
<td>1.88</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>1.44</td>
<td>1.81</td>
<td>1.55</td>
<td>1.68</td>
<td>2.03</td>
</tr>
<tr>
<td>RANGE (HIGH-LOW) ON A 5 PT. SCALE</td>
<td>1.12</td>
<td>.94</td>
<td>.98</td>
<td>.75</td>
<td>1.27</td>
</tr>
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</table>
percent) and Wright Brothers (45 percent) and Gettysburg-Cyclorama at least suitable for Olympic-Hoh (38 percent) and Rocky Mountain-Headquarters (29 percent). Fort Raleigh visitors were equally divided (23 percent each) in identifying both Great Smoky Mountain and Gettysburg-Cyclorama as least suitable replacements.

These data indicate, in most instances, modest pluralities in suitable replacement buildings. There is, however, an impressive response to the Dinosaur Visitor Center as the single most attractive building depicted. Responses ranged from a low of 42 percent of the visitors at Olympic-Hoh selecting it as the most attractive to a high of 56 percent at Wright Brothers. The Everglades Visitor Center was identified by the largest percentages at ten of the centers as least attractive. Only Scotts Bluff and Fort Raleigh visitors identified another building, and that was Gettysburg. Pluralities on identifying the least attractive building ranged from 24 to 39 percent of the respondents. Apparently in this case there is considerable more agreement on the attractive than on the unattractive.

These data also tend to support visitor attitudes towards appropriate building materials reported in Chapter III with a preference for the coarser textured "natural" materials as represented by the stonework in both the Dinosaur and Glacier Buildings. They do not support, however, the perceptions of regionally appropriate buildings, that were also discussed in Chapter III. It is possible that visitors have some notion of regional stereotypes or architectural styles as previously indicated but also have personal preferences that ignore regional orientations. It is also of interest to note that the more traditional building forms as depicted in photographs 2 and 5 were not identified by pluralities at any center as either suitable replacements or the most attractive. Only visitors at Bandelier, Cape Cod-Province Lands, Fort Raleigh and Gettysburg-Cyclorama identified those buildings as more attractive than all of the buildings depicted (Table IV-8). At all other centers, a majority of the visitors ranked the attractiveness of the building as less than the most attractive in the pictures and more than the least attractive.

It should also be noted that the Gettysburg-Cyclorama photo was selected and the questionnaire printed before that center was incorporated into the study as a replacement for the then incomplete Minute Man Center. The questionnaires that were distributed at Gettysburg had the photo of the center masked so as to exclude it from the questions on replacement and attractiveness.

STAFF PERCEPTIONS

Staff perceptions of the quality of the arrival areas, building exteriors and interiors and the exhibits are generally positive but less so than the visitors'. A comparison of the staff perception data in Table IV-9 with the visitor data in Table IV-6 and IV-7
### TABLE IV-9

**COMPARISON OF THE ATTRACTIVENESS OF STUDY VISITOR CENTERS AND DEPICTED VISITOR CENTERS**

<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>Better</th>
<th>In Between</th>
<th>Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandelier NM</td>
<td>61</td>
<td>37</td>
<td>2</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>53</td>
<td>46</td>
<td>1</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>50</td>
<td>46</td>
<td>4</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>52</td>
<td>46</td>
<td>2</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>49</td>
<td>49</td>
<td>2</td>
</tr>
<tr>
<td>Olympic NP-Hoh</td>
<td>29</td>
<td>70</td>
<td>1</td>
</tr>
<tr>
<td>Petersburg NB</td>
<td>35</td>
<td>61</td>
<td>4</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>39</td>
<td>60</td>
<td>1</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>44</td>
<td>54</td>
<td>2</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>32</td>
<td>66</td>
<td>2</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>39</td>
<td>59</td>
<td>2</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>46</td>
<td>51</td>
<td>3</td>
</tr>
</tbody>
</table>

is revealing. For example, at six of the centers the staff indicate lower ratings on at least 15 of the 16 scales which were used by both staff and visitors. The lowest differences are at Bandelier and Fort Raleigh where staff responses are lower on only 9 of the 16 or 54 percent. Staff are consistently more critical in their evaluations of arrival areas than visitors where 92 percent of the staff scale values are lower than visitors'. Only 67 percent of the staff scale values of the building exteriors are lower than visitors'. Approximately 80 percent of the staff scale values
<table>
<thead>
<tr>
<th>Visitor Center</th>
<th>ARRIVAL AREA</th>
<th>BUILDING EXTERIOR</th>
<th>BUILDING INTERIOR</th>
<th>EXHIBITS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CONVENIENT</td>
<td>SAFE</td>
<td>ATTRACTIVE</td>
<td>INVITING</td>
</tr>
<tr>
<td>Bandelier NM</td>
<td>2.08</td>
<td>2.15</td>
<td>1.83</td>
<td>1.15</td>
</tr>
<tr>
<td>Cape Cod NS-Province Lands</td>
<td>1.35</td>
<td>2.71</td>
<td>1.69</td>
<td>1.50</td>
</tr>
<tr>
<td>Fort Raleigh NHS</td>
<td>1.33</td>
<td>1.67</td>
<td>1.17</td>
<td>1.33</td>
</tr>
<tr>
<td>Gettysburg NMP-Cyclorama</td>
<td>2.75</td>
<td>2.75</td>
<td>1.25</td>
<td>1.63</td>
</tr>
<tr>
<td>Great Falls Park</td>
<td>1.46</td>
<td>2.33</td>
<td>2.55</td>
<td>1.33</td>
</tr>
<tr>
<td>Olympic HP-Hoh</td>
<td>1.60</td>
<td>1.47</td>
<td>1.67</td>
<td>1.67</td>
</tr>
<tr>
<td>Petersburg NB</td>
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<td>1.50</td>
<td>1.44</td>
<td>1.56</td>
</tr>
<tr>
<td>Rocky Mountain NP-Alpine</td>
<td>2.00</td>
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<td>2.10</td>
<td>1.40</td>
</tr>
<tr>
<td>Rocky Mountain NP-Headquarters</td>
<td>2.00</td>
<td>2.08</td>
<td>2.58</td>
<td>1.92</td>
</tr>
<tr>
<td>Scotts Bluff NM</td>
<td>1.33</td>
<td>1.67</td>
<td>2.11</td>
<td>1.44</td>
</tr>
<tr>
<td>Wright Brothers NM</td>
<td>1.31</td>
<td>1.69</td>
<td>1.54</td>
<td>1.69</td>
</tr>
<tr>
<td>Yosemite NP-Valley</td>
<td>3.68</td>
<td>2.14</td>
<td>3.00</td>
<td>2.52</td>
</tr>
<tr>
<td>RANGE ON A 5 POINT SCALE</td>
<td>2.43</td>
<td>1.28</td>
<td>1.83</td>
<td>1.37</td>
</tr>
</tbody>
</table>
for both the building interiors and exteriors are lower than visitors. As indicated by the range of Table IV-9, the staff also indicate greater variability among the visitor centers than do the visitors. Of particular interest are the staff responses to the Yosemite Valley Center, the only instance where the overall staff evaluation, excluding that of the building's exterior, appears to be negative. This is certainly in sharp contrast to the visitors' perceptions.

There are several possible explanations for these apparent differences between staff and visitor perceptions of quality. One is that visitors to National Park areas arrive with a psychological set conditioned by expectations of qualitative experiences. Thus there may be a tendency to either equate all National Park facilities with quality or to over-value certain park features or characteristics so as to make their experiences more consonant with their expectations. Visitors' perceptions of a visitor center are also probably influenced by the social experience which they encounter, an experience which may involve other visitors (i.e., crowding or making new acquaintances) or Park Service staff. A case in point is the charismatic personality of Mr. Warren Perry, ranger at the Cape Cod-Provence Lands Center which has one of the more meagre exhibits. When he discusses these exhibits however, he puts them into a local context and relates them to his personal experiences, they take on added meaning and interest for visitors. There are time when Mr. Perry appears as the Pied Piper of Province Lands with a totally engrossed troup of followers. Persons such as he undoubtedly influence visitor's perceptions of buildings and exhibits.

Staff are also more knowledgeable about the visitor centers. They have the advantage of longer experience with the facilities and the accumulated knowledge of problems and inadequacies that comes with time. Thus the more critical responses can also be a reflection of greater knowledge, frustrations and familiarity. For example, a frequent comment in interviews with interpretive staff was their dissatisfaction with totally fixed exhibits and the failure to have a small exhibit area specifically set aside for changing exhibits. 56.6 percent of the staff respondents have worked in their respective parks or regional offices for more than three years and slightly less than 24 percent have only been in their present position less than one year. Approximately 80 percent are park staff and 20 percent regional office staff. Over 60 percent of the staff have visited the visitor center more than 10 times in the past year and only 7.5 percent have not visited it during the same period. On the average these people have had considerable experience over time with the visitor centers.
SUMMARY

This chapter has presented a review of user perceptions based primarily on questionnaire data. The users, both visitors and park staff, perceive the centers as high-quality environments. As one indication of the quality of visitor center design, and the most important indication, the user responses to these visitor centers provide a ringing endorsement of and encouragement for the continuation of the National Park Service efforts to secure the best possible planning and design for park areas and facilities. Among the findings discussed in this chapter, the following stand out as particularly pertinent to the design and management of visitor centers:

1. The visitors who participated in this study are relatively young, well-educated and experienced visitors of National Park areas.

2. Visitors apparently have some knowledge of the particular features or services of various visitor centers and tend to express those features or services as primary reasons for going to the center. For example, centers in historic theme parks attract more people on the basis of exhibits than do centers in natural or recreation theme parks, where information-seeking is somewhat more dominant a reason.

3. The service ranked by visitors as most useful to be provided in centers is travel information. Literature sales and postal and library services are ranked below information but still considered useful. Attitudes towards the sale of sundries are mixed but overall fairly neutral, while there is a decided negative response to the sale of souvenirs in visitor centers.

4. Visitor perceptions of the quality of arrival areas, building exteriors and interiors, exhibits and audio-visual programs are consistently positive and generally reflect higher perceived values than those of the park staff.

5. Of all staff and visitor responses to all visitor centers, only the staff evaluation of the Yosemite-Valley Center indicates a generally negative or below-average quality particularly in reference to the building interior and exhibits.

6. Both visitors and park staff discriminate among the components of the visitor center qualitatively (i.e., arrival, exterior, interior, exhibits and audio-visual) and identify those components or related attributes which are below the level of others—the informative nature of exhibits, for example, or the stimulation value of audio-visual programs.
7. The differences between visitor and staff perceptions of quality may be attributable to greater knowledge on the part of staff, a self-fulfilling expectation of a quality experience by visitors or the mediating influence of social experiences in the centers. This is an issue which merits further study.

8. Visitors tend to spend 15 to 30 minutes in most centers, notable exceptions to this pattern are at Great Falls, where the majority stay for a shorter time and at Gettysburg-Cyclorama, when the majority stay longer.

9. Visitors tend to perceive the building they are in as attractive, but not the most attractive, when asked to rank it among other possible designs. Among the nine possible selections of contemporary and traditional designs, the Dinosaur Visitor Center received an impressive endorsement as the most attractive. The Everglades Visitor Center was designated as the least attractive. There was no strong indication of visitor preference for one architectural style over another.
CHAPTER V:
THE DESIGN ACTIVITY

PLANNING AND DESIGN PROCESS

Design and planning are recognized within the National Park Service as interrelated and part of the same process as indicated in Figure V-1 (Denver Service Center, 1973). They are also recognized, however, as two basic and distinct functions. Planning is defined as being conceptual, broad in scope, dealing "with entire regions or parks or portions thereof," and guiding "the orderly management, public use and development of the park" (ibid, p. 2). Design is defined as being more precise, relating to all physical developments planned for a park and encompassing the preparation of task directives, preliminary designs, and construction drawings and specifications. The preparation of the two latter documents is considered the final steps in the planning and design process (ibid, p. 9).

The products of both the planning and the design functions are also subjected to a review procedure prior to final approval or acceptance.

This study has focused primarily on the design function. A review of several components of the planning function is essential, however, to gain a fuller understanding of the way in which visitor centers are designed. A park master plan, now called a General Management Plan, "provides accurate information concerning the purpose of the park area, its resource value, its relationship to regional environs, the population it will serve and how, the objectives of management, land classification, concepts of visitor use and interpretation, and an overall plan for its management and development" (ibid, p. 6). Obviously, this sets the framework within which visitor centers are to exist and function. Related to the General Management Plan are a series of action plans (Figure V-1) which describe in detail how various concepts in the General Management Plan are to be realized. Of particular importance in any consideration of visitor centers are Development Concept Plans and Interpretive Plans.
Development Concept Plans are intended to provide schematic representations of developed areas "showing circulation, allocation of space, and utilities networks" (ibid, p. 7). In other words, they begin to refine physical development concepts in terms of general locations of facilities and important functional and spatial relationships between facilities. Interpretive Plans describe the methods and techniques to be followed in accomplishing the General Management Plan proposals for interpretation and visitor orientation.

The General Management Plan defines, in broad terms, why there is to be a visitor center; the Development Concept Plan defines in somewhat more precise terms where the visitor center is to be located; the Interpretive Plan specifies how the visitor center is to relate to park users; and finally, the design function specifies in very precise terms what the physical entity is to be.

The NPS planning and design process is also intended to operate within the requirements of the National Environmental Policy Act (i.e., preparing Environmental Impact Statements as required) and, when dealing with historic properties, to meet the requirements of the Historic Preservation Act of 1966. Furthermore, the process is intended to be multidisciplinary with teams responding to "sociological, ecological and environmental principles" and involving park managers and concessionaires (ibid, p. 1).

This planning and design process is both flexible and incremental: it responds to important public policies representative of certain societal values; it is multidisciplinary in execution, and it is also a product of a long period of evolution. The process as diagrammed in Figure V-1 is the most recent synthesis of half a century of NPS experience in park planning and development. It is important to note that the twelve visitor centers included in this study were all completed before this statement of process was drafted. Various components or steps in this process have, however, been followed in NPS planning and design for a good many years (Cabot, 1958). The purpose of this chapter is to review and analyze, to the extent possible, those visitor centers in reference to selected salient components or steps in the process and to try to discern relationships of variability in the component with variability in the quality of the resulting visitor centers. The components we have selected are closely correlated with the design steps identified in an undated report on "Visitor Facility Building Requirements" (Benson, revised 1974) which included: master plan (building location), interpretive prospectus, programming, exhibit and audiovisual plans and visitor facility design, utilizing a design-team approach.
FIGURE V-1
PLANNING AND DESIGN PROCESS

Problem Identification

Reconnaissance Study
or Problem Analysis

Task Directive
(Planning)

Special Study

General Management Plan

Action Plans:
- Resource Mgt. Plan
- Wilderness Plan
- Interpretive Plan
- Concession Mgt. Plan
- Development Concept

Comprehensive Plan

Significance Study

Design and Construction Programs

Task Directive
(Design)

Legislative Programs

Comprehensive Design

Public Use Programs

Construction Drawings and Specifications

Management Programs

Facility Construction

Evaluation

NOTE: Adapted from Denver Service Center (1973)
Dashed lines and evaluation activity added by the authors and are not presently a part of the NPS process.
DESIGN PROCESS ISSUES

Three broad process issues have been selected as particularly significant in this study: site selection, facility design and exhibit design (Table V-1). Site selection for visitor centers is an important issue relative to environmental impact, relationships to historic and natural features and to the functional efficacy of the facility (as indicated by the Yosemite-Valley visitor center). Of concern in this analysis is the way in which, or the context within which, the site decision was made: 1) as a product of the park-wide planning-design process, as a part of the master plan or as a recommendation of the planning team; or 2) as an ad-hoc decision by the building architects.

Data for these analyses were obtained from interviews with staff at both the Denver and Harpers Ferry Service Centers, interviews with park superintendents, historians and chiefs of interpretation, and from questionnaires submitted to the building architects. The designer of Bandelier is unknown; Richard Neutra, the designer of Gettysburg, has since died, and the designer for the Rocky Mountain Headquarters Center (from the Taliesien Fellowship) was on an extended assignment out of the country and did not return any of the several questionnaires forwarded to him.

SITE SELECTION

Data supplied by the center designers indicate that six of the visitor centers were located as a result of some kind of broader planning activity with four being located generally in accordance with master plan recommendations (see Table V-1). The Yosemite Center, however, was located on the basis of recommendations of a planning committee but without benefit of a master plan which might have addressed the question of location within a broader context of visitor circulation patterns and relationships to other facilities and activities. As a result, changes in traffic flow brought about by a one-way road system and the introduction of public transit have generally isolated the center and tend to preclude its effective use as a general information and orientation facility. By the time most visitors find the building (and as reported earlier, with some difficulty) they have already traversed a major portion of the valley.

Sites for three of the visitor centers were reportedly selected by the building designers, usually in consultation with NPS professionals. They represent an interesting array of solutions. Wright Brothers represents a thoughtful solution to problems of access, circulation and relationship to historic values of the monument. The total land area within the monument is limited. The building was sited by the design consultants and the NPS architect in collaboration so
### TABLE V-1

**DESIGN PROCESS ISSUES**

<table>
<thead>
<tr>
<th></th>
<th>Bandelier</th>
<th>Cape Cod</th>
<th>Fort Raleigh</th>
<th>Gettysburg</th>
<th>Olympic-Hoh</th>
<th>Petersburg</th>
<th>Rocky Mtn.-Alpine</th>
<th>Rocky Mtn.-Hq.</th>
<th>Scotts Bluff</th>
<th>Wright Brothers</th>
<th>Yosemite-Valley</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Site Selection By:</strong></td>
<td>DNA</td>
<td>DNA</td>
<td>DNA</td>
<td>DNA</td>
<td>DNA</td>
<td>DNA</td>
<td>DNA</td>
<td>DNA</td>
<td>DNA</td>
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<td>1. Master plan or planning team</td>
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<td>x</td>
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<td>x</td>
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<td>2. Building architects</td>
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<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
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<tr>
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<td>DNA</td>
<td>DNA</td>
<td>DNA</td>
<td>DNA</td>
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</tr>
<tr>
<td>1. Design direction or program</td>
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<td>x</td>
<td>x</td>
<td>x</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
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<td>x</td>
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<tr>
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<td>DNA</td>
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<td>x</td>
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<td>x</td>
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<td></td>
</tr>
<tr>
<td>2. Architect/exhibit designer collaboration</td>
<td>-</td>
<td>-</td>
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**DNA = data not available**

1. Architects were given choice of two possible sites.
2. Specific site selection was by the field representative of the Office of Design and Construction, who also had responsibility for program development, architectural theme and construction, priority subject to approval of the Chief of the Office and NPS Director.
3. Site selection by a planning committee prior to master plan development.
4. Architects considered the initial program inadequate and prepared an expanded checklist.
5. Teams were composed of all NPS professionals.
6. Team consisted of design consultants and NPS professionals.
7. An old museum prospectus was available.
as to exploit the interpretive potential of the site and visitor opportunities for learning to the fullest (see Figure V-3).

The Great Falls site was reportedly selected primarily by the design consultant. It is located at a point generally between the parking lot, the major picnic area and the Falls of the Potomac, with the strongest visual and spatial relationship to the parking lot. The visitor center plays an ambiguous role, however, in that it lacks a clearly stated function in terms of information, orientation and/or interpretation relative to either the entire park or specific resources of the park such as the canal or the falls. The ambiguity of the center is further compounded by inadequate site development which does not lead, guide and/or inform the visitor in a manner that could be supportive of a visitor center information, orientation and interpretation program.

The site on which the Gettysburg center housing the Cyclorama painting is located is reportedly one which was selected by the architect and the Director of the NPS in contravention to the recommendation of the master planning team. The building occupies a compelling site, Cemetery Hill. Unfortunately, the site is also the most historically significant parcel of ground in reference to the fourth day of battle. While the building certainly has a pleasant prospect and affords excellent views over the battlefield in many directions, it also totally dominates an historic site and profoundly alters the physical environment from conditions that prevailed at the time of the battle. Given the requirements of the National Environmental Policy Act and heightened public concern with historic, aesthetic and related amenity values, it is highly unlikely that the building could be constructed on that site today.

While data are not available on Bandelier, the tangible, on-the-ground evidence suggests that the site for the visitor center was determined within a broader planning-design context of circulation and developed areas and with a strong and intentional relationship to the historic values of the monument (see Figure V-2). These are characteristics which can be identified at each of the four centers when site identification was a product of the planning function. This is not to suggest that these are perfect examples in every way, but it is to suggest that in each case, attention was directed, in a purposeful manner, to the relationship of the center to circulation and parking to park resources, and where appropriate to other developments within the park. It is also to suggest that this process tends to minimize the potential for inappropriate location and for structures dominating park values and resources.
FACILITY DESIGN

Nine of the ten designers who responded to our questionnaire indicated that they had been provided with some form of design directive, program or checklist. These programs appear, however, to have been primarily descriptive rather than prescriptive. Primary emphasis was on the functions to be accommodated and the related square footage requirements. The responses do not indicate that prescriptive performance criteria relating to issues such as security, illumination levels, sound transmission, energy conservation or maintenance were included as part of the programs. The designer of the Great Falls Center reported that he considered the
program which was provided as minimal and therefore prepared a much expanded checklist. Many of the items contained in his checklist but not in the original program were addressed, however, in the Interpretive Prospectus which had been prepared for the park in February, 1965.

Only five centers were reported to have been the product of design team efforts: Cape Cod-Providence Lands, Fort Raleigh, Petersburg, Wright Brothers, and Gettysburg-Cyclorama. The design teams for three of these facilities were composed totally of NPS professionals and consisted of: an architect, a landscape architect and an interior designer. The Petersburg team also included an exhibit designer. The design team for the Wright Brothers Center consisted of a private architectural firm combined with NPS professionals in landscape architecture, interior design and exhibit design. The team for Gettysburg-Cyclorama consisted solely of the consultant architect and NPS landscape architect.

Several characteristics of these centers merit mention and attest to the qualitative impact of the multidisciplinary design team approach. First is the carefully delineated relationship of building to site, and of the way in which the arrival-parking-building entrance sequence is designed so as to facilitate physical movement of both vehicles and pedestrians, while at the same time enhancing the sense of arrival by providing a series of visual orientation clues for the individual indicating his or her relationship with the building entrance. A second characteristic shared by these facilities is the equal and obvious attention directed to the visual quality of the building and the surrounding environs. Typical of these facilities is the use of curvilinear forms in the design of the parking lots, forms which minimize the effects of linear perspective found in rectangularly shaped lots—effects which tend to reinforce and emphasize the visual impact of cars and parking lots on the landscape. A third characteristic is a greater attention to a full range of design problems from the building and parking area to signage and interior and exterior furnishings. These are characteristics which are also noted by visitors, as indicated by unsolicited comments received while in the field. For example, while leaving the Province Lands visitor center at Cape Cod, one man, after have walked some distance towards his car, returned to tell us that he thought that it was important "that someone took the time to design an attractive trash container."

The importance of attention to design details is particularly apparent in reference to just such items as signage and trash cans. The juxtaposition of a galvanized steel G.I. can with a plastic linear hanging over the sides against the carefully crafted
Figure V-3
Site Plan of Bandelier
stonework of Yosemite visitor center is a case in point. While it undoubtedly is extremely functional, it does not, in our opinion, satisfy the image of quality held by most visitors to the parks. Similarly, the failure to provide adequate space and a design system for announcements and communications of a transitory nature results in badly lettered notes randomly taped and tacked to windows and walls.

Some of these same characteristics are also shared by other visitor centers such as Rocky Mountain-Headquarters. However, data are not available which indicate whether or not design teams were employed. Olympic-Hoh, which also shared some of these characteristics, represents a different case, as the building was sited and designed in reference to an existing, well-designed, curvilinear parking lot.

EXHIBIT DESIGN

Of crucial importance to visitor centers, particularly those that are to serve more than limited information/distribution purposes, is the quality of the exhibit materials and their design, and the way in which they are organized so as to facilitate and enhance learning and communication. As indicated previously, discerning visitors appear to perceive qualitative differences among the various components of a visitor center, such as the exterior of the building and the site, the interior and the exhibits.

The visitor evaluation data, while by no means conclusive, do lend support to the notion that a better product emerges when the exhibit designer is a part of the design team from the beginning. One architect who was responsible for the design of two visitor centers in the study suggested that successful and truly imaginative visitor centers will be produced only when "exhibit design and architectural design are programmed to be accomplished at the same time." He suggested further that "if this is not possible, the next best solution is to program the conceptual portion of the exhibit design in advance of the architectural design." Certainly the two examples where architects reported close and continuing collaboration between building designers and exhibit designers, Petersburg and Wright Brothers, present convincing evidence in support of his thesis. Similarly, in many of those instances where architects reported that they designed the space and someone else placed the exhibits at a later date, the thesis is supported by virtue of comparatively less successful and attractive exhibits as perceived by the visitors. The architects for Scotts Bluff and Olympic-Hoh reported no direct contact with the exhibit designers, and the architects for Yosemite, Great Falls and Rocky Mountain-Alpine reported either very little contact or simply responded to square footage requirements for exhibit space.
In part, this lack of coordination may be attributable to the absence of an interpretive plan or prospectus for the park. In three cases, however, Cape Cod-Province Lands, Fort Raleigh, and Great Falls Park, interpretive prospectuses were available. Thus there existed during the period of design, guidance on substantive content and proposed formats for exhibit material. In spite of this, Great Falls ranks, in our judgment, as the least successful of the twelve centers in terms of exhibits. The absence of interpretive prospectuses in other instances may, however, help in explaining the lack of coordination. In other words, space was probably being programmed and designed in some centers for exhibits before decisions had been made as to what exhibit content and format was to be.

**DESIGN REVIEW**

The NPS Planning and Design Process also includes a review procedure for all planning and design products produced by design consultants, the Harpers Ferry Service Center and the Denver Service Center. For a period of about four years, review was conducted by a Planning and Design Coordinating Committee headed by the Manager of the Denver Service Center and including the Manager of Harpers Ferry Service Center and Regional Directors as appropriate for the products under consideration.

Presently, review is handled in a less formal manner. During the development of the product, workshops are often held by the team involving regional, park, as well as varied Denver Service Center, Harpers Ferry, or other personnel. In addition, senior professionals from the Quality Control and Compliance and the Professionals Support Divisions participate in an on-going review process and in the final office-wide review. The Regional Director is generally responsible for the final approval.

A request voiced in our interviews with several park superintendents and chiefs of maintenance relative to the review procedure, was for the inclusion of a maintenance specialist in the workshop, particularly for the review of design function products. This request merits consideration. The findings of this study indicate that there tend to be general classes or categories of maintenance problems which arise regardless of regional location and which are probably identifiable by an individual skilled in plan analysis for maintainability.
SUMMARY

In this chapter we review the study of visitor centers with reference to the stated NPS Design and Planning Process, recognizing that all the centers were constructed prior to the formal adoption of the total process as depicted in Figure V-1. Various components of that process such as General Management or Master Plans, Interpretive Plans and Task Directives have, however, been a part of NPS practice for a number of years.

The findings of this study provide, we believe, considerable evidence of the soundness of the process and of its importance to the creation and maintenance of quality park environments. Some obvious and some less obvious conclusions which reinforce the process include:

1. The siting of structural facilities should always be accomplished within the context of a park-wide General Management Plan.

2. Interpretive facilities should only be designed after the preparation of an interpretive plan or prospectus.

3. The team design approach, including architect, landscape architect, interior designer and exhibit designer, should always be employed for the design of visitor centers.

4. Visitor centers should be planned and programmed so that architectural and interpretive design proceed simultaneously.

5. Task Directives should be prescriptive as well as descriptive; they should specify objective performance criteria for physical aspects including those relating to maintenance and operation and to alternative patterns of use, and, to the extent possible, subjective performance criteria for social and psychological aspects.

6. Task Directives should encompass the full range of visitor center design issues, from the site, to the building, to exhibits and to details such as furnishing and signage.

7. The review procedure should include specific consideration of facility maintainability.

8. The planning and design process should be expanded to include design evaluation as an explicit component, as suggested in Figure V-1.
As noted in the first chapter of this report, this study represents one of a very few attempts to systematically evaluate designed environments so as to be able to more intelligently design future environments of similar purpose and intent. Design evaluation attempts to provide a feedback loop in the planning and design process and a way for the designer to systematically learn from past successes and failures. It is an activity which can be carried out by either NPS staff or consultants. If NPS staff are used, however, it would seem prudent that they be individuals who were not involved in the projects being evaluated so as to protect against inevitable bias. Evaluation studies should be conducted by persons knowledgeable in both design (broadly defined) and behavioral sciences.

Important issues in institutionalizing design evaluation as suggested previously include deciding what is to be evaluated and how often. Precise answers to these questions are not possible. A few guidelines can be suggested, however. For certain facilities, those that are recognized as significantly different in function or innovative in purpose, construction, use of materials, or other characteristic, a longitudinal series of evaluations at regular intervals might be considered so as to monitor performance over time and identify the extent to which such innovations measure up to anticipate performance levels and the extent to which they are generalizable to other problems and situations. For other facilities, the identification and selection procedures followed in this study can serve as a useful model. The kinds of facilities and specific examples can be identified via a nomination process which draws upon Regional Office and individual park experiences and knowledge of operational issues and problems and the knowledge of design issues and problems of the staffs of the two Service Centers and their field colleagues. Emphasis should be placed on comparative studies, on studies which include a sample of recreation or housing areas from different parks, for example, so as to provide a better basis for generalizing for new designs in other situations. Those responsible for evaluation studies must be sensitive to changes in patterns of park use and management so as to identify critical times for follow-up studies to assess the efficacy of existing facilities to accommodate such charges.
APPENDIX A

Maintenance and Repairs, Safety and Security Problems, Functional Concerns, Alterations and Additions: as reported in NPS staff interviews and questionnaires for each visitor center for this study.
MAINTENANCE AND REPAIRS

1. The existence of three floor covering materials (tile, carpet, flagstone) complicates the maintenance problem.

2. The flat roof requires snow to be removed by shoveling in the wintertime to prevent leaks from forming around the drain spouts.

3. Wood construction presents a continuous problem with carpenter ants and termites.

4. The pipeline which supplies water down the face of the cliff to fill the supply tank has to be operated manually during the winter to prevent its freezing.

SAFETY AND SECURITY PROBLEMS

1. Ice forms during the winter on the walk in front of the Visitor Center.

2. One object has been stolen thus far from the new museum.

3. A new security system, including ultrasonic sensing of museum objects, intrusion detection and fire detection, was being installed during the summer of 1975.

FUNCTIONAL CONCERNS

1. The lobby becomes a pedestrian conflict point at times when the Visitor Center is being intensively used. The conflict is in the nature of pedestrian flows intersecting upon entering the building, going to and from the museum and to and from the audio-visual program.

2. Parking lot capacity is limited and there are no specific accommodations provided for buses.

ALTERATIONS AND ADDITIONS

1. Renovation and enlargement of the museum was completed in 1975.
CAPE COD NATIONAL SEASHORE-PROVINCE LANDS

MAINTENANCE AND REPAIRS

1. Differential settling of the foundation on the northeast and east has caused cracks in windows in the upper level deck and related ceiling problems on the first floor.

2. The acoustic plaster ceiling is easily marked and difficult if not impossible to repair.

3. There is considerable heat loss through the large areas of the single-pane glass windows.

SAFETY AND SECURITY PROBLEMS

1. The horizontal alignment of the entry road at its point of intersection with the pedestrian entry to the building (coupled with vegetation adjacent to the road) limits visibility for drivers and constitutes a potentially hazardous intersection.

2. The building does not have a full first aid capability; however, the need to provide first aid services is fairly frequent.

3. There have been three break-ins within the past year or so, two resulting in theft of money and one in destruction of exhibit artifacts.

4. A study is planned to identify security needs.

FUNCTIONAL CONCERNS

1. Restrooms are too small for the demands placed upon them.

2. Light from the morning sun spills down the hallway and is reflected into a small auditorium, detracting from the film presentation.

3. Sound from the film in the small auditorium carried noticeably into the main portion of the Visitor Center.

ALTERATIONS AND ADDITIONS

1. A stairway was built to the basement so as to provide access for storage without going through the auditorium.
SAFETY AND SECURITY PROBLEMS

1. The single step at the entry poses a potential hazard for people leaving the building and going from more subdued interior lighting into the bright sun.

2. Fire suppression and intrusion alarms are being considered for installation at this facility.

FUNCTIONAL CONCERNS

1. The visitor center building gets confused with the headquarters building.

2. There is no obvious pedestrian flow pattern.
MAINTENANCE AND REPAIRS

1. Flat roofs which were intended to hold water as insulation have been replaced twice and one portion of the roof three times.

2. Window spandrels on the second floor lobby have buckled and been repaired twice (six years ago and again three years ago) from either upward or downward pressure.

3. The soft acoustical plaster ceiling is easily scarred and marked and is difficult if not impossible to either clean or repair.

4. The all-concrete building has developed many cracks from expansion and contraction.

5. The sliding doors which were intended to open a part of the Visitor Center to an outdoor amphitheater have never been operable, probably due to differential foundation settling.

6. There has been a recurrent problem of water in air ducts under the floors, the cause of which has been impossible to trace.

7. Three air conditioner compressors have been installed since the building opened, each one requiring an overhaul on the average of once a year.

8. The heating system is inadequate for uniform heating throughout the building (also there is no insulating glass).

SAFETY AND SECURITY PROBLEMS

1. The terrazzo entrance floors become slick and slippery when wet.

2. There are neither fire detection nor intrusion alarms.

3. The surface of the flagstone walk is uneven.

4. There is no fire exit from the Cyclorama viewing platform.

5. There is no trail lighting from the parking lot to the building.
FUNCTIONAL CONCERNS

1. There is no service entrance, hence all deliveries (and delivery vehicles) come to the front entrance of the visitor center. The main entry walk cuts through the amphitheater in a prominent place.

2. Concrete pedestrian islands in the parking lot impede snow removal.

3. Stairways hinder wheelchair access.

4. There is wasted space in the drum area.

5. The restrooms are too small.

6. The offices are arranged in a long row.

ALTERATIONS AND ADDITIONS

1. The information desk was separated from the sales and information area.

2. The jagged-edged flagstone entry walk was changed to smooth edge to partially facilitate edging and maintenance.
GREAT FALLS PARK

MAINTENANCE AND REPAIRS

1. The biggest problem is the maintenance of air conditioners.

2. The use of nonstandard units (furnace, flourescent lights, and flushers in the bathroom) dictates special orders for replacement and repair parts. New flushers were installed in all units within the past year.

3. Puddles form on the flat roof because of leaves clogging drains with resultant leaks into the building.

4. Littering occurs, primarily attributed to the use of the snackbar.

SAFETY AND SECURITY PROBLEMS

1. Cedar shakes are infested with carpenter bees, which frequently sting visitors.

2. Stealing from the exhibit area has been minor (two photos stolen in the last year).

3. Acts of vandalism in the form of name-carving on wood walls have been minor.

4. An attempt has been made to break into the coke machine.

FUNCTIONAL CONCERNS

1. Doors on either side of the stage and screen in the small auditorium provide for distracting light spill if opened during film presentation.

2. There is inadequate space for storage or for work on projects.

3. There is a need for a separate first aid space.

4. The sites lacks adequate development--paths, signs, etc.

5. Visitors wander into park offices.

6. Visitors have difficulty finding restrooms.
ALTERATIONS AND ADDITIONS

1. Shelving was provided for artifacts (no storage was provided in the building initially).

2. A limited first aid facility has been installed.
MAINTENANCE AND REPAIRS

1. The relatively flat roof encourages the growth of moss.

2. The occasional failure of the sump pump interrupts the pumping of sewage uphill to a standard septic system.

3. Rapid growth of vegetation leads to the obscuring of signs.

SAFETY AND SECURITY PROBLEMS

1. The major problem is vandalism of signs along the trails in the rain forests.

FUNCTIONAL CONCERNS

1. There is a problem of conflict between the giving of information and the selling of materials during peak periods.

2. The visitor center is not visible from the parking lot.

ALTERATIONS AND ADDITIONS

1. Carpeting was installed about three years ago over the original tile and concrete floor.
PETERSBURG NATIONAL BATTLEFIELD

MAINTENANCE AND REPAIRS

1. The sprayed acoustic plaster ceiling is very soft, susceptible to marking and difficult if not impossible to repair.

2. During periods of high groundwater in the spring, moisture at the base of the steps leaks into the lower lobby.

3. Ivy ground cover around the building presents maintenance problems by climbing up the building walls as well as along the ground.

4. Electric outlets are inadequate for convenient maintenance.

5. Heat is lost through entry doors.

SAFETY AND SECURITY PROBLEMS

1. Small artifacts were stolen from the moat when the facility first opened.

2. There is a need for some kind of alarm system.

3. At least twice in recent years artifacts were stolen from the exhibits.

FUNCTIONAL CONCERNS

1. There is inadequate storage space.

2. There is no provision for overflow parking during peak periods.

3. Increased use of bicycles has created problems on the overpass and there is inadequate parking for bicycles.

4. Access to audio-visual equipment in the war room is not possible while the program is in progress.

5. Visitors have difficulty finding restrooms.

6. Visitors wander into park offices.
ALTERATIONS AND ADDITIONS

1. Partitions have been built for storage in the basement area.

2. Ramps were provided for wheelchair access.

3. Entry area surface has been changed from carpet to tile.

4. More shelves have been installed for the sales area.
MAINTENANCE AND REPAIRS

1. Sewage is trucked to Estes Park for disposal (problem should be mitigated when all toilets are converted to an oil flush system, and sewage load is reduced by about 95 percent).

2. Tundra needs protection from trampling.

3. Plexiglas windows are scratched and always appear dirty.

SAFETY AND SECURITY PROBLEMS

1. Terrazzo floors are slippery when wet.

FUNCTIONAL CONCERNS

1. Arrival at the Visitor Center via Fall River Road takes visitors through the concessionaire service area and employee parking before arrival at the main parking lot.

2. The main entrance to the parking lot is confusing because of its juxtaposition with a turnaround.

3. Spaces in the lot at Alpine are too narrow at eight feet, and should probably be increased to ten feet.

4. Parking for travel trailers and similar vehicles is needed.

5. Acoustics are poor.

6. There are no storage facilities for maintenance supplies and equipment (e.g., a daily consumption of approximately 120 rolls of toilet paper).

7. Visitor use area size inadequate for the number of visitors received.

ALTERATIONS AND ADDITIONS

1. Another counter was built to provide more space for information.

2. Log rail fences were built along pedestrian ways to keep people off the tundra.
MAINTENANCE AND REPAIRS

1. Two floor surfaces require two cleaning techniques.

2. Two floor covering surfaces also tend to show wear at the joining of the two materials.

3. Nonstandard plastic light defusers cannot be replaced.

4. The Cor-Ten steel used on the exterior of the building creates stains on window sills and on the concrete coping on walls and adjacent walks.

SAFETY AND SECURITY PROBLEMS

1. Left turns from roadway to parking lot present potential conflict with oncoming traffic.

2. Terrazzo floors are slippery when wet.

3. Protruberance above fireplace in auditorium results in head lacerations.

4. Stealing of publications is probably about 5 percent of total orders.

FUNCTIONAL CONCERNS

1. No vent is provided for the ozalid room.

2. Parking facilities are inadequate in so far as buses and recreation vehicles are concerned.

3. Most rooms lack individual light switches.

4. Better directional signs in Estes Park are needed.

5. No place is provided for trailers in the parking lot.

6. Sales and information counters should be separated.

7. The balcony does not function as either circulation space or an extension of interpretive program.
ALTERATIONS AND ADDITIONS

1. A new heating and air conditioning system was installed.

2. The entry floor was replaced.

3. The projection booth in the auditorium, formerly in the line of pedestrian movement, was moved to the balcony.

4. A secure radio dispatch room was constructed in the office wing.

5. A sales counter was built to extend the small existing information counter.
SCOTTS BLUFF NATIONAL MONUMENT

MAINTENANCE AND REPAIRS

1. Extensive areas of lawn around the building and parking lot have to be mowed.

2. Front of building (facing south) gets painted about once every year.

FUNCTIONAL CONCERNS

1. There is congestion and potential conflict of movement and activity at entrance, sales area and information desk.

2. The building is difficult to find from the main highway.

3. There is no logical starting point for viewing the displays.

ALTERATIONS AND ADDITIONS

1. The paleontology wing, the Jackson wing and the restrooms have been added since the building was first constructed.
MAINTENANCE AND REPAIRS

1. The metal window frames have presented continuous maintenance problems but are now being replaced (windows originally designed to last seven years have been there for fourteen).

2. The air conditioning capacity originally planned was inadequate for the amount of glass and the numbers of visitors and was subsequently increased.

SAFETY AND SECURITY PROBLEMS

1. The installation of fire detection and intrusion alarm systems is under consideration.

2. There has been one major break-in at this facility.

3. There is stealing of publications from the sales area.

FUNCTIONAL CONCERNS

1. There is a circulation problem during times of heavy use when people leaving the glider room confront those entering.

2. Adequate space for parking of travel trailers and similar vehicles and buses is needed.

3. Restrooms should have both interior and exterior entrances.

ALTERATIONS AND ADDITIONS

1. The information and sales counters were separated.

2. Mechanical systems (heat and air conditioning) were changed and enlarged.

3. Office space was reduced and storage space increased in size.

4. Metal window frames are being changed.

5. Wood wall panels are to be insulated and covered with shadow-form aluminum.
Yosemite National Park-Valley

Maintenance and Repairs

1. The concrete floors invite littering in the form of discarded cigarettes and matches.

2. There is no adequate storage for janitor supplies, chairs for auditoria, etc.

3. The external form of the building, with its many irregularities, creates problems in landscape maintenance.

Safety and Security Problems

1. Icy conditions tend to occur during the winter at the main entrance and at the entrance to the auditoria.

Functional Concerns

1. The facility is difficult to find for the uninitiated visitor, there being insufficient directional signs.

2. The exhibits are limited in scope.

3. Acoustics in the auditoria are poor.

4. The location of the information desk and the traffic it attracts causes congestion.

5. Lettering on the outside wall is difficult to read.

Alterations and Additions

1. Acoustic tile was added to the auditoria.

2. A projection booth was constructed in the west auditorium.

3. The information desk was moved from the central location to the side, and the central location given over to sales.

4. A walk was provided between the Visitor Center and the restrooms to provide access to the auditoria at night when the Visitor Center is locked.

5. A ramp was added for barrier-free access.

6. A stand-by generator for the central radio was installed adjacent to the restrooms.
APPENDIX B

RESEARCH INSTRUMENTS:

VISITOR QUESTIONNAIRE
STAFF QUESTIONNAIRE
ARCHITECT QUESTIONNAIRE
ADMINISTRATOR INTERVIEW SCHEDULE
OBSERVATION CODE AND SCHEDULE
PHYSICAL FACILITIES CHECKLIST
BARRIER-FREE CHECKLIST
NATIONAL PARK VISITOR CENTER STUDY

The National Park Service is conducting a study of the use of visitor/service centers and of people's perceptions of and attitudes about the buildings and their immediate surroundings. The purpose of the study is to provide the Park Service with information necessary to provide better facilities and to better serve the needs of park visitors. Your cooperation in completing this questionnaire will assist the Park Service in providing the most suitable facilities to support the kind of experience that you seek in visits to National Parks, Recreation Areas and Historical Sites. All questionnaires, of course, are strictly confidential and will be used for statistical analysis only.

Please complete the questionnaire as you leave the building and simply leave it in the place provided.

Thank you for your cooperation.
Please begin by filling in today's date: ____________________________

1. How far is your home from this park?

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<td>Less than 100 miles</td>
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2. After arriving at the park, how did you travel to the visitor center?

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<td>Car</td>
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(Specify: ____________________________)

3. How many other national parks, national historic sites, or national recreation areas have you visited in the last three years?

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<td>None</td>
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<td>Two-Three</td>
<td>Four-Seven</td>
<td>Eight or more</td>
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4. Where are you staying while visiting this park? (If you stayed in more than one place, check the box for the place you stayed the longest.)

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<td>Campground in the Park</td>
<td>Campground outside the Park</td>
<td>Hotel or Motel in the Park</td>
<td>Hotel or Motel outside the Park</td>
<td>With Friends or Relatives</td>
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6 Other (Specify: ____________________________)

5. Were you looking for this building (the visitor center) or did you just happen to come upon it?

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<tr>
<td>Looking for it</td>
<td>Accidentally</td>
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6. If you were looking for the building, how would you rate the ease or difficulty of finding it? (Check the box which best describes the degree of ease or difficulty.)

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<td>5</td>
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<tr>
<td>Very Easy</td>
<td>Very Difficult</td>
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</table>
7. How would you rate the arrival area? (Check the boxes which best describe the overall convenience, safety and attractiveness of the driveway, parking lot, pathways and surrounding areas.)

- Conven ient
- Safe
- Attract ive

Inconvenient /16
Unsafe /17
Unattractive /18

8. How would you rate the exterior of this building?

- Attract ive
- Invit ing
- Suitable

Unattractive /19
Uninviting /20
Unsuitable /21

9. What was your main reason for coming to this building? (Check only one)

- To obtain information (maps, brochures, etc.)
- To look around generally
- To view the exhibits
- To use the rest rooms /22
- To see auditorium program (audio/visual)
- To satisfy another member of my group
- To sit and rest
- Other (Specify: ___________________________)

10. Where was the first place you went upon entering this building?

- To the information desk
- To the exhibit area
- To the rest rooms /23
- To the auditorium (for an audio/visual program)
- To the rest area (chairs or lounge area)
- Other (Specify: ___________________________)
11. Where was the second place you went after entering this building?

<table>
<thead>
<tr>
<th></th>
<th>To the information desk</th>
<th>To the exhibit area</th>
<th>To the rest rooms</th>
<th>To the auditorium (for an audio/visual program)</th>
<th>To the rest area (chairs or lounge area)</th>
<th>Other (Specify: __________________________)</th>
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12. How would you rate the ease or difficulty of finding your way around in this building?

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<th></th>
<th>Very Easy</th>
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<th>4</th>
<th>5</th>
<th>Very Difficult</th>
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</tbody>
</table>

13. How would you rate the exhibits you viewed in this building? (Skip this question if you did not stop to look at the exhibits.)

<table>
<thead>
<tr>
<th>Informative</th>
<th>Uninformative</th>
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<tbody>
<tr>
<td>Colorful</td>
<td>Colorless</td>
</tr>
<tr>
<td>Interesting</td>
<td>Uninteresting</td>
</tr>
<tr>
<td>Attractive</td>
<td>Unattractive</td>
</tr>
<tr>
<td>Suitable</td>
<td>Unsuitable</td>
</tr>
<tr>
<td>Stimulating</td>
<td>Boring</td>
</tr>
<tr>
<td>Organized</td>
<td>Disorganized</td>
</tr>
</tbody>
</table>

14. How would you describe the interior of this building?

<table>
<thead>
<tr>
<th>Comfortable</th>
<th>Uncomfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractive</td>
<td>Unattractive</td>
</tr>
<tr>
<td>Organized</td>
<td>Disorganized</td>
</tr>
<tr>
<td>Light</td>
<td>Dark</td>
</tr>
<tr>
<td>Suitable</td>
<td>Unsuitable</td>
</tr>
<tr>
<td>Inviting</td>
<td>Uninviting</td>
</tr>
<tr>
<td>Uncrowded</td>
<td>Crowded</td>
</tr>
<tr>
<td>Quiet</td>
<td>Noisy</td>
</tr>
</tbody>
</table>
15. How would you rate the audio-visual program you viewed in this building? (Skip this question if you did not stop to attend an audio-visual program.)

<table>
<thead>
<tr>
<th>Informative</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Uninformative</td>
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<table>
<thead>
<tr>
<th>Colorful</th>
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<th>2</th>
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<tbody>
<tr>
<td>Colorless</td>
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<table>
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<th>Interesting</th>
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<tr>
<td>Uninteresting</td>
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<table>
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<tr>
<th>Attractive</th>
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<th>2</th>
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<tbody>
<tr>
<td>Unattractive</td>
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<th>Suitable</th>
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<tr>
<td>Unsuitable</td>
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<tr>
<th>Stimulating</th>
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<tr>
<td>Boring</td>
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</table>

<table>
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<tr>
<th>Organized</th>
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<th>2</th>
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<tr>
<td>Disorganized</td>
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</table>

16. How much time did you spend in this building? (Other than the time you will spend on this questionnaire.)

1 | Less than 15 minutes
2 | 15 to 30 minutes
3 | 30 to 60 minutes
4 | Over 60 minutes

17. If this building were to burn down or for some other reason be destroyed, what material would you suggest as most appropriate for the construction of the new building? (Check the one you most prefer.)

1 | Concrete
2 | Glass and Steel
3 | Adobe
4 | Brick
5 | Wood -- smooth finished appearance
6 | Wood -- rough sawn lumber or log
7 | Stone
8 | Other (Specify: ____________________________ )
18. Of the 9 buildings pictured in the adjacent photographs, which one would be most appropriate as a replacement for the one you are in if it were destroyed? (Circle the appropriate no.):

No. 1 2 3 4 5 6 7 8 9

19. Which building would you select for your second choice as a replacement for this one?

No. 1 2 3 4 5 6 7 8 9

20. Which building do you think is least appropriate as a replacement for this one?

No. 1 2 3 4 5 6 7 8 9

21. Which one of the buildings do you think is most attractive?

No. 1 2 3 4 5 6 7 8 9

22. Which one of the buildings do you think is least attractive?

No. 1 2 3 4 5 6 7 8 9

23. How would you rate the building you are in with the pictures you have rated above?

1 Better than the most attractive building I rated above (Q-20)

2 Worse than the least attractive building I rated above (Q-21)

3 Between the most and least attractive buildings.

24. Thinking about different places in the country, which of the buildings shown would you match to the places named below according to your feeling of the 'atmosphere' of the area and the kind of building that belongs in such a place? (Write the picture number in the blank.)

____ New England

____ Midwest

____ Southwest

____ Rocky Mountains

____ Pacific Coast
25. Different people require different kinds of services. Rank the following services according to how useful you think the service would be to you.

<table>
<thead>
<tr>
<th>Service</th>
<th>Rating</th>
<th>Not Useful</th>
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<tbody>
<tr>
<td>Souvenir Sales</td>
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<tr>
<td>Literature Sales</td>
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<td></td>
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<tr>
<td>Sundries (candy, photographic, etc.)</td>
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<tr>
<td>Postal (including stamps)</td>
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<tr>
<td>Library Service</td>
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<tr>
<td>Travelers Information</td>
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</table>

IN ORDER TO HELP US DEVELOP THE BEST POSSIBLE FACILITIES FOR THE MANY DIFFERENT PEOPLE WHO VISIT THE NATIONAL PARK SYSTEM, WE NEED TO KNOW SOME GENERAL KINDS OF THINGS ABOUT THEM AS PEOPLE. YOU CAN HELP US BY COMPLETING THESE LAST FEW ITEMS--

26. How old were you on your last birthday? _________

27. What is your sex?  
1  Male  2  Female

28. Which of the following occupations best represents the work you do?  

1  Armed Forces (Active)  10  Farm (and related, ranch, forest): Labor, Foreman
2  Home-maker  11  Farm (and related, ranch, forest): Manager, Owner
3  Retired (Full Time)  12  Manager, Proprietor, Official (Non-farm)
4  Student (Full Time)  13  Sales (Retail or Wholesale)
5  Craftsman, Skilled  14  Professional
6  Construction  15  Technical
7  Operative (Equipment/Machine Operator)  16  Clerical or Secretarial
8  Laborer (Except Farm)  17  Service (Including Personal and Household)
9  Foreman (Non-farm)  18  Other (Specify ____________________)

29. How many years of formal schooling have you had?  Years _________
NATIONAL PARK VISITOR CENTER STUDY

We are conducting an evaluation study of the functional and aesthetic design of visitor centers for the Denver Service Center. As one part of this study, we are requesting the assistance of personnel in the parks and the regions who are responsible for and knowledgeable about the specific visitor centers included in the study. Your assistance in completing this questionnaire will be greatly appreciated. Please use the last page of this questionnaire for any additional comments you wish to make.

Ervin H. Zube, Director
Institute for Man and Environment
University of Massachusetts, Amherst

PARK AND VISITOR CENTER:

DATE: ____________________________

1. Please check the title below that best describes your position:

1 □ Park Superintendent
2 □ Park Chief of Maintenance
3 □ Park Chief of Interpretation (e.g., Historian, Naturalist, etc.)
4 □ Park Staff (specify)
5 □ Regional Director
6 □ Regional Chief of Maintenance
7 □ Regional Chief of Interpretation (e.g., Historian, Naturalist, etc.)
8 □ Regional Office Staff (specify)

2. How long have you worked in this park or regional office?

1 □ Less than one year
2 □ 1-2 yrs.
3 □ 3-5 yrs.
4 □ 6-10 yrs.
5 □ Over 10 yrs.

3. How many times have you personally visited the v.c. during the past year?

1 □ None
2 □ 1-3
3 □ 4-10
4 □ 10-25
5 □ Over 25
4. a) How would you rate the ease or difficulty for a visitor to the park to find the visitor center (v.c.)?

Very Easy | 1 | 2 | 3 | 4 | 5 | Very Difficult /13

b) If you rated ease of finding more difficult than easy, what do you think the specific problems are?

5. a) How would you rate the arrival area? (Driveway, parking lot, pathways)

Convenient | 1 | 2 | 3 | 4 | 5 | Inconvenient /14
Safe | 1 | 2 | 3 | 4 | 5 | Unsafe /15
Attractive | 1 | 2 | 3 | 4 | 5 | Unattractive /16
Easy to Maintain | 1 | 2 | 3 | 4 | 5 | Difficult to Maintain /17

b) If you rated the arrival area more inconvenient, unsafe, unattractive or difficult to maintain, what do you think the specific problems are?

6. a) How would you rate the exterior of the building?

Attractive | 1 | 2 | 3 | 4 | 5 | Unattractive /18
Inviting | 1 | 2 | 3 | 4 | 5 | Uninviting /19
Suitable | 1 | 2 | 3 | 4 | 5 | Unsuitable /20
Easy to Maintain | 1 | 2 | 3 | 4 | 5 | Difficult to Maintain /21

b) What specific problems do you think are related to the exterior of the building?

7. a) How would you rate the ease or difficulty of a visitor finding her or his way around in the building?

Very Easy | 1 | 2 | 3 | 4 | 5 | Very Difficult /22
b) If you rated ease of finding more difficult than easy, what do you think the problems are?

8. a) How would you rate the exhibits in the building?

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b) If you think the exhibits are deficient or inadequate in some respect, what are the major problems?

9. a) How would you describe the interior of the building?

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<td>Comfortable</td>
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<td>Inviting</td>
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<tr>
<td>Easy to Maintain</td>
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</tbody>
</table>

b) If you think the interior of the building is deficient or inadequate in some respect, what are the major problems?
10. Of the 9 buildings pictured in the adjacent photographs, which one would be most appropriate as a replacement for the one you are evaluating if it were destroyed? (Circle the appropriate no.):

No. 1 2 3 4 5 6 7 8 9 /37

11. Which building would you select for your second choice as a replacement?

No. 1 2 3 4 5 6 7 8 9 /38

12. Which building do you think is least appropriate as a replacement?

No. 1 2 3 4 5 6 7 8 9 /39

13. Which one of the buildings do you think is most attractive?

No. 1 2 3 4 5 6 7 8 9 /40

14. Which one of the buildings do you think is least attractive?

No. 1 2 3 4 5 6 7 8 9 /41

15. How would you rate the building you are evaluating with the pictures you have rated above? Better than the most attractive building 
1 ☐ /42
Worse than the least attractive building 
2 ☐ /43
Between the most and least attractive buildings. 
3 ☐

16. Thinking about different places in the country, which of the buildings shown would you match to the places named below according to your feeling of the "atmosphere" of the area and the kind of building that belongs in such a place? (Write the picture number in the blank.)

☐ New England /43
☐ Midwest /44
☐ Southwest /45
☐ Rocky Mountains /46
☐ Pacific Coast /47
NPS VISITOR CENTER STUDY
ARCHITECT QUESTIONNAIRE

NAME: __________________________

V.C.: __________________________

DATE: __________________________

A. PROGRAM

1. What were the design criteria for the project (e.g., space requirements, functional relationships, environmental controls, etc.)? If a design program was formalized for this project, please attach a copy to this questionnaire.

2. Who established the criteria?

3. Were there any special considerations or constraints imposed which were particularly important to the final design (e.g., budget, location, operational/maintenance requirements, etc.)?

B. CONCEPT

1. What was the intended relationship of your design to the general park theme (e.g., historical, natural, recreational) and/or specific park resources?

2. What was the intended relationship of your design to the design of other buildings (if any existed) in the park?

3. What was the intended relationship of the building design to the interpretive program?

4. Would you please explain how you expected people to use the various parts of the building, and, if included in your area of responsibility, the site? Please feel free to amplify your answer with sketches and diagrams.

C. EXECUTION

1. Who selected the site for the visitor center?

2. What problems, if any, were encountered in the development of the site plan (e.g., access, availability of utilities, protection of natural or man-made features, space for circulation, parking or service, drainage, etc.)?
3. Who prepared the site plan?

4. What factors determined or influenced the selection of building materials and mechanical systems?

5. Who was responsible for exhibit design and what was his or her relationship to you?

6. Who was responsible for the selection of furnishings, the design of informational and directional signs, waste receptacles and related detail design decisions?

D. POST-CONSTRUCTION

1. Have you visited the facility recently, and if so, do you think people (NPS staff and visitors) are using it the way you intended?

2. Which characteristics or parts of the facility do you think are most successful?

3. Given the opportunity, would you change any part of the design? Why?

4. Are you aware of any major problems - maintenance or functional - that have arisen since the facility was opened for use? If so, what do you see as the major cause of these problems?

E. GENERAL COMMENTS

Please add any additional comments that you feel are important to our understanding of the design process as it relates specifically to this facility.
NPS VISITOR CENTER STUDY
ADMINISTRATOR INTERVIEW SCHEDULE

Abbreviations: S = superintendent
              M = chief of maintenance
              I = chief of interpretation or equivalent

A. Explanation of Study

1. A comparative study of selected N.P.S. visitor centers. Interested in assessing: management satisfaction and/or problems including maintenance and interpretive programs, patterns of visitors' use, visitor satisfaction and perceptions of aesthetic qualities.

2. Study being conducted by IME, contracted for by Denver Service Center, Ervin H. Zube doing interviews, Joe Crystal and Jim Palmer doing observation and visitor questionnaires.

3. Study to be completed by May, 1976.

4. Any questions the interviewee has about purpose or conduct of study?

B. General Issues in Reference to the V.C.

1. Is the v.c. located in the best place? If not, where should it be? Why (functional considerations, relationship to park features, access, etc.)?

2. What are the major purposes that this v.c. serves (interpretive, orientation, rest, sales, social, other)?

3. How many people work there?
   a. interpretive?
   b. maintenance?
   c. security?
   d. other

4. What parts of the v.c. or characteristics of it do you think are most preferred by the users? Least preferred? What do you think visitors would rate as most important: information, restrooms, exhibits, A-V.?
5. Do you get complaints about the v.c. from the users? If so, about what?

6. How would you describe the normal visitor pattern of use? Where do they go first? Second?

C. Maintenance and Security

1. In general, how would you describe the ease or difficulty of maintaining this v.c.? Compared to other facilities?

2. Are there some areas of the v.c. that pose more maintenance problems than others?
   a. where are they?
   b. outside? inside?

3. What causes these problems?
   a. over-use
   b. bad design (choice of materials, form, etc.)
   c. vandalism
   d. normal wear and tear
   e. other

4. Is littering a maintenance problem?
   a. where?
   b. does it vary with intensity of use?

5. What is park policy on control of littering?

D. General Visitor Center Issues (e.g., "ideal visitor center")

1. What facilities should a good visitor center include?

2. What is the ideal physical relationship of a visitor center to administrative facilities?

3. Is there usually a best place for a v.c. in most parks?
   a. at the entrance
   b. in the middle
   c. in support of specific feature in the park
E. Function

1. Are there specific functional problems relative to:
   a. circulation - pedestrian and vehicular
   b. peak capacity
   c. adequacy of interpretive programs
      - diversity of media
      - program content
   d. variations in use patterns from season to season or at different times during the day

2. Would our study come out differently if we did it at a different time of year?

3. How is crowding handled (e.g., queueing, no control, etc.)?

F. Safety

1. What kinds of accidents occur in or around the V.C.?
   a. vehicular
   b. falls, tripping, etc.
   c. others

2. Where do accidents occur most often?

3. Are accident records maintained?

4. What do you think are the primary causes of accidents?
   a. people failure
   b. bad design
   c. maintenance problems
   d. other
G. Security

1. Are there security problems? Are exhibit materials, etc. stolen?
   a. is security a major problem? frequency?
   b. could anything be done to the building to alleviate this problem - e.g., control access or egress points?

2. What kinds of security measures are in force at the v.c.?

H. Exterior of V.C.

1. Is the arrival and parking area appropriately designed? Adequate in area?

2. Are the sidewalks in the right places and of appropriate sizes?

3. Would you suggest any changes in the circulation and parking design?

4. Do you think that the arrival area and exterior of the v.c. are attractive? Do you think that the users agree with you?

I. Alterations

1. Has the building been altered in any way that you know of (additions, walls, doors, etc.)? If so, why was it altered?
   a. how was this done - by service center, by local staff (maintenance, interpretive)?
   b. reallocation of space (e.g., admin. to exhibit)?
   c. by visitors' actions (e.g., wear a new path through vegetation, over-ride parking lot)?

2. Should the building be altered? If you could change it, what would you do?
J. Service Center Support

1. Do the Service Centers (Denver and Harpers Ferry) provide you with the kind and quality of planning and design services you want?

2. What should they do that they don't do now?

K. Personal Involvement

1. Do the operations, problems, etc. related to the v.c. place unusual demands on your time (e.g., in reference to other responsibilities)

2. How often do you personally get to the v.c.?
NPS VISITOR CENTER STUDY - OBSERVATION CODE

Observation Zones (examples)

1. Parking areas
2. Exterior arrival areas
3. Entry
4. Information area
5. Sales area
6. Exhibit area(s) -- zone a,b,c, ... when necessary
7. Audio-visual area
8. Administrative area
9. Toilets
10. Drinking fountain zone
11. Outdoor exhibit area(s) -- zone a,b,c, ... when necessary

Note: all observation zones are to be keyed to site and building plans on which locations of all users are to be noted, together with actions and/or interactions.

Mobile and Stationary Activities

1. Running
2. Walking
3. Biking
4. Other
5. idle
6. Person/Person: Discussion between two persons
7. Person/Object: An individual listening to, manipulating, reading or watching an object
8. Group/Person: An individual addressing more than two persons at the same time (e.g., an interpretive lecture)
9. Group/Object: More than two persons listening to, watching or manipulating the same object.
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NPS Observation Schedule: ____________________________
Observation Number: ____________________________
Site Number: ____________________________
Observer: ____________________________
Date & Day: ____________________________
Atmospheric Conditions: ____________________________
Temperature: ____________  Time: ________
PHYSICAL FACILITIES EVALUATION CHECKLIST

I. Setting

A. Location Within the Park

1. Physical location (at entry, central, etc.)
2. Accessibility (direct, indirect, easy, difficult)
3. Relationship to other facilities (e.g., free-standing, building complex, etc.)

B. Physical Context

1. Surrounding topography
2. Vegetation (type, density)
3. Orientation (sun, wind, view)

II. Arrival

A. Access road or drive

1. Safety of turning movement from main road to access
2. Directional signs: legibility, location, condition
3. Pavement surface condition
4. Pavement edge condition
5. Legibility of arrival design intent

B. Parking

1. Legibility of parking design: 90°, 60°, one-way, etc.
2. Pavement surface condition
3. Pavement edge condition
4. Drainage
5. Plant materials in and around parking area - condition
6. Pedestrian movement through parking area - clearly delineated or unspecified
7. Capacity of parking lot: adequacy
8. Is it used at night, if so is it lighted?
9. Signs of litter and debris
C. Walks and Grounds

1. Information signs: legibility, condition, location
2. Pavement surface condition
3. Pavement edge condition
4. Drainage: relationship to pedestrian movement and v.c.
5. Legibility of layout and capacity of walkways
6. Ground cover, type and condition
7. Pavement surface quality when wet, icy, etc. (safety)
8. Areas of excessive wear and/or erosion
9. Signs of litter and debris
10. Trash receptacles
11. Condition of trees and shrubs
12. Handrails, etc. where necessary

III. Services

A. Service Area

1. Pavement surface condition
2. Pavement edge condition
3. Adequacy of space provisions
4. Space for truck delivery, trash collection, others
5. Facilities for trash: screened, capacity
6. Visibility of service area from arrival area, from visitor center

B. Utilities

1. Surface or underground utility connections
2. Adequacy of water supply, source
3. Adequacy of sewage treatment facilities; does it meet pollution control requirements (if any)? - Capacity?
4. Relationship of leach field (if one if used) to existing drainage ways

IV. Building

A. Site Relationships

1. Relationship of entry to parking area and arrival
2. Barrier-free access:
   a. Ramps
   b. Door width
   c. Handrails, etc.

B. Interior Services and Systems

1. Barrier-free movement:
   a. Changes in grade (ramps)
   b. Toilet facilities (e.g., wheelchair access)
   c. Width of doorways
2. Visitor Services

a. Drinking fountain - convenient location
b. Ease of finding facilities in bldg. (e.g., bldg. legibility, signs, etc.)

1.) Information
2.) Toilets

c. Adequacy of visitor services:

1.) Size of information area
2.) Size of Toilet facilities
3.) No. of Toilets, No. of Urinals
4.) Size of entry way

3. Mechanical and Environmental Systems

a. Temperature
b. Lighting, glare
c. Other

C. Entry Area

1. Floors

a. Surface texture (slippery, etc.)
b. Signs of uneven wear
c. Stains or scarred surface

2. Walls

a. Condition of surfaces
b. Signs of graffiti or vandalism
c. Windows: cleanliness, glare, location

3. Furnishings and exhibits

a. Condition of furniture
b. Relationship of furniture to bldg. (design, location of doors, windows, etc.)
D. Exhibit Area

1. Floors
   a. Surface texture (slippery, etc.)
   b. Signs of uneven wear
   c. Stains or scarred surface

2. Walls
   a. Condition of surfaces
   b. Signs of graffiti or vandalism
   c. Windows: cleanliness, glare, location

3. Furnishings and Exhibits
   a. Condition of furniture
   b. Relationship of furniture to bldg. (design, location of doors, windows, etc.)
   c. Condition of exhibits
   d. Relationship of exhibits to bldg. (size, location, in reference to lighting, movement pattern, etc.)

E. Audio-Visual Area

1. Floors
   a. Surface texture (slippery, etc.)
   b. Signs of uneven wear
   c. Stains or scarred surface

2. Walls
   a. Condition of surfaces
   b. Signs of graffiti or vandalism
   c. Windows: cleanliness, glare, location

3. Furnishings and exhibits
   a. Condition of furniture
   b. Relationship of furniture to bldg. (design, location of doors, windows, etc.)
F. Other Areas (specify)

1. Floors
   a. Surface texture (slippery, etc.)
   b. Signs of uneven wear
   c. Stains or scarred surface

2. Walls
   a. Condition of surfaces
   b. Signs of graffiti or vandalism
   c. Windows: cleanliness, glare, location

3. Furnishings and exhibits
   a. Condition of furniture
   b. Relationship of furniture to bldg. (design, location of doors, windows, etc.)
NPS VISITOR CENTER STUDY
BARRIER FREE CHECK LIST

Circulation

Parking spaces

Width: 12 feet wide to permit room at side of car for wheel­chair access to or from spaces
Path of Movement: should avoid need to pass behind parked cars

Walks

Width: minimum 48 inches
Grade: maximum 5 percent

Ramps

Width: minimum 48 inches
Grade: maximum slope of 1 in 12 or 8.3 percent
Length: maximum of 30 feet of continuous slope between level platforms
Surface: non-slip
Handrails: minimum 1 side, preferably on both sides, height of 32 inches, provide additional rails at lower heights where children will use the facility, extend rails 1 foot beyond top and bottom of ramp on the side of the continuing wall or guard rail.

Entrances

Service either on grade or by ramp (see above)

Doors

Width: minimum of 32 inches when door is open
Operation: single action

Stairs

Risers: maximum height of 7 inches
Nosing: avoid projecting nosings
Handrails: minimum one side, height of 32 inches, extend rail 18 inches beyond top and bottom risers
Other Facilities

Toilet stall

Width: 3 feet
Depth: minimum 56 inches, preferably 60 inches
Door: 32 inches wide when door is open
Handrails: on each side, 33 inches high, parallel with floor, strong and well supported

Water closet

Seat height: 20 inches
Type: wall hung most desirable, if floor supported, understructure should not interfere with close approach of wheelchair

Urinal

Wall hung, opening 19 inches above floor, floor mounted at same level as floor

Mirrors

Height: not greater than 40 inches above the floor

Towel racks, dispensers or shelves

Height: not greater than 40 inches above the floor

Water fountains

Height and type: hand operated or hand and foot operated, floor mounted side fountain-30 inches, wall hung basin - 36 inches, recessed mounting not recommended, alcoves should be wider than wheelchair

Laboratory (sink)

Clearance: 27 inches beneath the sink

Public phones

Dial and handset should be within reach of person in wheelchair, coin slot should be at a height of 51 to 56 inches
Identification for the blind

Raised letters or numbers for room identification, placed 54 to 66 inches high to the side of the door.
SELECTED BIBLIOGRAPHY


BECKET, WELTON AND ASSOCIATES (1959) "Visitors' Center for National Park Vacationers," Architectural Record, July: 210-211.


CABOT, J.B. (1958) Supplementary Visitor Center Information, reissue 1974, Denver Service Center, National Park Service.


ERRATA

Page 11 line 25 for 'July' read 'August'
Page 34 line 15 for 'accoustical' read 'acoustical'
Page 40 line 2 for 'accidents' read 'accidents'
Page 49 line 13 for 'balloon' read 'balloon'
Page 50 line 28 for 'the visitor center is a position' read 'the visitor center in a position'
Page 51 line 5 for 'abode' read 'adobe'
Page 53 line 15 for 'site' read 'site'
Page 62 line 33 for 'rank' read 'rate'
Page 62 line 34 for 'table IV-10' read 'table IV-6'
Page 64 line 6 for 'audio-visual' read 'audio-visual'
Page 69 line 32 for 'table IV-8' read 'table IV-5'
Page 69 line 45 for 'table IV-9' read 'table IV-10'
Page 69 line 45 for 'table IV-6 and IV-7' read 'table IV-7 and IV-8'
Page 72 line 2 for 'table IV-9' read 'table IV-10'
Page 72 line 23 for 'time' read 'times'
Page 72 line 25 for 'perceptions' read 'perceptions'
Page 82 line 4 for 'linear' read 'liner'
Page 83 (title page Appendix A) line 2 for 'concerns' read 'concerns'
Page 94 line 16 for 'coke' read 'Coke'

Question and Questionnaire Sources for Information
Displayed in Tables

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* see Appendix A For Questionnaires