Location
Serra Da Canastra National Park
Minas Gerais, Brasil

Author
Jack Hollingsworth

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Thesis Professor
Robert Fisher
The Serra da Canastra National Park Complex is a pioneer project for Brazil's new national park system. Never before have new buildings been designed for a specific theme or to fit the natural surrounds of the area. In the past standard or adaptive reuse buildings have been employed.

This park complex is proposed to be located near the main entrance (on the city of Sao Roque side) to the Serra da Canastra National Park, Minas Gerais, Brazil, South America. The siting for the complex is on a hill overlooking the location for maintenance buildings to the east and the source of the Sao Francisco River to the west. This site is one of the highest points in the park and is located on a ridge which divides the main portion of the park from the entrance area. The purpose for selecting this site was one to allow the main park road to be moved out of the river basin. A second reason is that parking can be kept out of view of the major portion of the park; a third, and most important, reason is that at this location the park complex can act as an introduction or entrance to the park. The majority of the park property cannot be seen until one has reached the entrance to the complex. From the complex one has an uninterrupted view of several kilometers, both into and out of the park.

The park complex consists of three major sections: visitor facilities, administrative offices, and special guest apartments. The visitor facilities include: lobby, exhibition spaces, a book and park emblems sales area, a museum area for park programs, and dining facilities. The administrative section contains offices for park personnel together with research space for special guests of the National Parks Department. The guest apartments, located in the land form bridge, are for these guests and other official guests to the park.

The building's geometry or theme was conceived from natural rock forms unique to this area of Brazil.

The construction of the complex was conceived so that local labor and materials could be used.

It is anticipated that the design of this complex will enhance the natural beauty of the area and illustrate that a unique structure can be developed for each park situation, one that does not overburden the site.
The author would like to express his appreciation and thanks to the following persons for the assistance and direction in helping with the design of this thesis project:

- Professor Robert Fisher,
  Design studio professor

- Professor Dr. James M. Dietz,
  Researcher,
  Serra da Canastra National Park

- Dr. Ivens Pinto Franqueira,
  Regional head,
  National Park and Forestry Department

- Oliveira de Almeida Soares,
  Director,
  Serra da Canastra National Park
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NATIONAL PARK COMPLEX
1 Introduction
The reason for choosing this particular project was based on the desire to deal with a non-urban project outside the United States. Through visits and other work in Brazil, this project developed a new complex to house the facilities for a new national park in the South American nation of Brazil. The National Park Service there is relatively new and as of yet there has been no building designed to fit a specific theme or the natural surrounds of a Brazilian national park. In the past, parks have been established for the buildings located there, which in turn became park facilities or structures that do not deal with local structures or the parks' natural surrounds. Having unique structures for each park is a new concept for Brazil.

This project represents a way that a unique complex can be designed to fit the theme and natural surrounds of a specific park in Brazil. In this case the idea of rock forms found only in this area are developed into a complex that works with the landscape, creating an introduction or entrance to a very beautiful and unique park.

The site chosen was of particular importance in achieving this idea. The ridge that it is located on is a barrier or divider between the areas outside the park and a major portion of the park itself. This location allowed parking not to be in any views of the visitors. Being located on the back side or east side of this ridge, upon arriving at the entrance one can see through the building into the park. The complex overlooks one of the major points of interest in the park -- that being the source of the Sao Francisco River. From this point visitors can see several kilometers in any one direction. It also provides a vantage point for daily operation of the park.
2 Background
This project is a visitor facility, park administrative headquarters, and several guest apartments -- all in one complex. There were many issues discussed that brought about this project idea. Some of the main preliminary considerations included:

- The project should work with its natural surrounds. It should illustrate how a complex of this type can enhance the natural beauty of the area. Therefore, it was decided to use geometry eluding to the rock formation found there.

- This complex should symbolize the entrance or gateway to the park. Therefore, it was decided that one should be able to view the park through the building.
3 Program
SUMMARY

This facility's program outlines the users' activities and required space for the Serra da Canastra National Park, Minas Gerais, Brazil.

A systematic format has been utilized to obtain this user information, starting with the establishment of the user, the goals of the programmer, and the procedure.

A brief look at organizational format and users and user activities has familiarized the problem and has developed a process whereby approximate square footage and needs of users can be established.

Building type analyses of similar projects were done to relate these problems with current projects and observe the strong and weak points when designers met similar problems.

Correlation diagrams of area allotments were studied and further specific requirements were established for the interior, exterior, and site.

After going through this process, this park facility has now been viewed as needing to be a multipurpose facility with flexible interior spaces. Client's desires to utilize natural materials as much as possible were also brought out.

This program has been developed on the basis of the best information available at the present time and is to be used as a guideline by designers to achieve the goals and needs set forth.


1. INTRODUCTION

Background

I.B.D.P. (Instituto Brasilierno de Desenvolvimento Florestal), the Brazilian Forestry and Park Service, is a relatively new department. The National Parks System in Brazil is now coming of age; at present there are a few parks, both public and private, along the Atlantic Coast of Brazil with adequate visitor facilities.

The National Park Service is now in the process of acquiring land in the interior for use as national parks. The anticipated development of the interior of the country along with the movement of the national government to Brasilia has led to the need for national park facilities in these interior parks.

The Serra da Canastra National Park, located in the interior state of Minas Gerais, is one of the parks. The Serra da Canastra is the source of two rivers very important to this region: the Rio Sao Francisco and the Rio Parana. It was estimated that during the imperial period the Sao Francisco had a flow of 2,800 M 3/sec; in 1910 it emptied about 1,200 M 3/sec; 1933 it emptied 800 M 3/sec; in 1971 about 500 M 3/sec. In 1971 a crisis developed because the Sao Francisco could not be navigated. A similar situation had happened to the Parana.

So the Serra da Canastra was developed to preserve the head waters and source basins of these two rivers so their levels could be maintained. In November 1971 the Brazilian legislature approved the necessity of the creation of the park. This is the only park on these rivers that protects water reserves. In 1972 studies were started to decide the location of the park and on April 3, 1972 the park location was chosen and the park was actually created. In August 1974, disappropriaition was started. The actual park has an area of 71,535 hectares (HA is equal to 10,000 square meters or 2,471 acres).

Scope of Program

It shall be the scope of this facilities program to outline, define, analyze, and evaluate the users' activities and required spaces for the Serra da Canastra National Park. The program will also look at correlational relationships of the facilities spaces as well as investigating and analyzing similar projects of this building.

Participants and Approach

Participants and methods of gaining materials and information for this program are as follows:

Correspondence/Interview

- Professor Jame M. Dietz, researcher, Serra da Canastra National Park

- Professor James Griffith, park planner
  Depto de Florestas
  Universidade Federal de Viçosas
  36570 Viçosa MG Brasil
Indiana Department of Parks and Recreation
Mr. Griffith, parks and facilities planner

Dr. Ivens Pinto Fr nquera
Delegado Estadual
Institue Brasileiro de ensenvolvimento Florestal
Avenida do Contorno, 8.121
30.000 Belo Horizontal MG Brazil

Dr. Kenton Miller
Dept. of Parks, University of Michigan
Ann Arbor, Michigan

National Parks and Recreation Department
Washington, D.C.
Dave Wright, park planner

National Park Service
Denver Service Center
Donald F. Benson AIA, chief professional Support Division

A.E. Falmer, professor of architecture
Ball State University

Dr. Gary Wetterberg, international parks consultant
8805 Cromwell Dr.
Springfield, VA

Books


Albert H. Good, Park and Recreation Structures, U.S. Dept. of the Interior,

National Park Service, 1938


Guide for Space Planning & Layout, General Service Administration, Public Buildings Service

Manual of Standards for Animal Hospitals, American Animal Hospital Association


Oscar Niemeyer, New York, 1971


Willy Staubli, Brasilia, Universe Books, Inc., Publishers
2 Goals

The major goal of this project is to create an organized and practical design for the Serra da Canastra National Park staff and visitor facilities.

This program wished to respect proposed constraints of the facilities location and to set an additional goal to develop the structures in accordance with the natural surroundings of the site, utilizing and developing natural materials whenever possible.

Another important goal in the design of this project will be to stress the value and importance of a well-planned facility of this type in this area. Also, this facility should be established as a prototype or model for future similar facilities.

This building shall be designed with Brazilian nationalistic styles reflected. It shall try to promote both the use of this type facility as well as a draw or attraction for Brazilians to experience some of their natural beauty.

These goals for the Serra da Canastra Park facilities have been obtained by primarily two methods: 1) Brazil’s Forestry and Parks Department’s policies and anticipations; 2) personal desires, observations, and objectives.

The particular strategy for accomplishing the aforementioned goals will correspond to the basic design sequences of the project. In other words, there shall be developed an organized and practical plan for the develop-
3 ORGANIZATION DATA

Existing Organizational Format

National Park Service Brasilia

Dr. Ivens
Regional National Parks Department Director
Minas Gerais Brazil

Director
Dr. Oliveira
Serra da Canastra National Park

Park Staff

Director of Guards

Guards

Visitors

Director of Administration

Officer Staff

Researchers

Director of Maintenance

Maintenance Staff
A BUILDING TYPE ANALYSIS

Visitor Center And Administration Offices
Serra Da Canastra National Park  MG Brasil

Concept
Geometric

Correlation Diagram
Circulation
There are two separate circulation patterns: focal point with activity nodes, and a line pattern through building with secondary lineal patterns.

Structure
Reinforced concrete columns with roof slab independent of enclosed space.

Siting
Low grass lands, unable to be seen from road. Placed in conflict with natural setting.
Unique Features

Actual building independent from roof system.

Two separate buildings under one roof.

Unable to go from one building to the other.

Vehicular traffic through building.

Grand stairways to second floor lounges/offices.
Visitor Interpretive Facility, Fort Necessity National Battlefield, Penna.

Concept
Geometric

Correlation Diagram
Circulation
Focal point with projected activity nodes.

Structure
Foundation: concrete footings
Structure: reinforced concrete fram and rool
slab allow clear span areas so that the wooc

Siting
This visitor interpretive facility serves a
transition from parking to natural foot
trails to fort site.
Unique Features

Designed in shape of the old fort.

Used mostly as a media center to illustrate how the old fort used to look.

Unique sales arrangement of curved wooden shelves and racks which are completely flexible as to height and location.
Visitor Center & Headquarters  Stones River National Park

Concept
Intersecting Geometric

Correlation Diagram
Circulation
Central focal point with activity node off shoots.

Structure
Foundation: reinforced concrete
Walls: brick masonry and wood
Roof: laminated wood bents and beams
Standard wood trusses; wood delking; wood shingles

Siting
Natural sitting overlooking battlefield; used as a transitional area
Unique Features

A central hexagonal-shaped lobby with entire separate wings for the three functions.

Natural interior.

Three glass sides of lobby serve as entrance.

View in direction of historic event and exit to a future terrace and North-South memorial.

Entrance vestibule to the audiovisual room has no doors. It is a combination light and sound trap.

Full telephone and audiovisual monitoring circuits plug into floor.
Visitor Center & Administrative Headquarters
Cape Hattera, Fort Raleigh, Wright Brothers

Concept
This facility has several concepts. A court surrounded by fragmented and geometric concept types.

Correlation Diagram
Circulation
Lineal through court to fort site.
Lineal through court connecting offices with visitor center.
Each area has activity nodes off this major axis.

Structure
Wood frame construction.

Siting
Located in natural siting. Utilized as transition from parking to park and foot trails.
Unique Features

Forms and materials reminiscent of period village.

Visitor center has authentic Elizabethan room used for additional exhibits.
Visitor Center, Fort McHenry National Park

Concept

Geometric in nature, resulting from form following function.

Correlation Diagram
Circulation

Service circulation is separate from that of the public.

There is a major long circulation through the lobby serving as both transitional zone and entrance to the park. Off this major circulation path are two secondary patterns: a peripheral pattern and several activity nodes.

Structure

Foundations: reinforced concrete

Floor: quarry tile on concrete

Walls: exterior - masonry bearing walls
       interior - exposed masonry: wood, plaster

Roof: long span steel joists; 2" wood delkin rigid insulation; built-up roof

Ceiling: acoustical plaster and tile
Siting
Visitor center serves as entrance to fort from parking. Located so there is a clear view of fort.

Unique Features
Very large flag to be displayed in center (42'x30').

Exhibit room in form of pentagon representing the star fort.

At the end of the audiovisual program a wall folds back so visitors have view of fort.
Park Hotel, Parque Sao Clemente
Friburgo, Rio de Janeiro

Concept

Wall or slab - This Park Hotel near Rio de Janeiro has a linear concept, two bays deep, two stories tall.

Correlation Diagram
Circulation

Service circulation is separate from that of guests. This alleviates service equipment in public areas on the main level, but the kitchen becomes a major circulation artery for service. This could be a definite problem in the efficient operation of the kitchen.

Transition from exterior to interior is developed through use of a veranda as major access to the guest rooms, lounge, and dining. There is a quality of space relationships that is developed through public circulation. Major spaces are also used for circulation which, for example, develops an excellent flow from lounge to dining.

Structure

The structure emphasizes the wall concept through a linear structural system two bays deep and two stories tall. The structure consists of a simple column to beam system in front with reinforced concrete and stone load-bearing walls in the rear.
Unique Features

Circulation for public and guests is through the major spaces, keeping service circulation separate.

Indoor/outdoor relationships are brought together through the connection of the veranda to interior spaces.

The veranda and lounge are the main focal points of the Park Hotel and serve as the main focus for guest and public circulation.

Bathrooms are lighted by a clerestory over the second floor corridor.

The use of local materials and rustic construction enhances the effect of the natural surrounds.
Country House, Farrnda da Inglesa

Concept
Court - This country house has several interior courts bounded by a variety of spaces.

Correlation Diagram
Circulation
Circulation emphasizes the court concept. The major circulation is around these courtyards. Some of the patterns become complicated. Other patterns do not follow this system (i.e. bedroom access from main house).

Structure
This has a rational residential structural system that emphasizes or reflects its concept. The system is made up of load-bearing concrete and stone walls and post and beam, which is framed around the courtyards.
Unique Features

Building materials of local origin were used whenever possible.

All rooms, except guest bedrooms, are planned in close connection with the exterior. They either open onto garden courts or planted patios.

The major entry to the house, a covered gallery the length of the main facade, connects a covered entrance terrace with the living room.

Certain spaces become major circulation areas (i.e., kitchen and dining) which would affect efficient operation of these spaces.

Natural light is received from the exterior as well as the interior courts.
5 USERS and USER ACTIVITIES

- **One Park Director**
  Controls all activities within park.
  Acts as wildlife and forestry manager.
  Degree in forestry engineering.

- **Three Assistant Directors**
  Director of Administration: Control of all office work pertaining to park.
  Oversees educational programs, visitors to park, and all programs within facilities.

  Director of Park Guards: Controls park guards. Oversees the maintaining of park policy and is responsible for visitors and researchers.

  Director of Maintenance: Controls all park maintenance.

- **Administration Staff**
  Two Forestry or Agricultural engineers
  Two park rangers, technical people, naturalists, etc.
  Four administrative secretaries
  Two typists
  Two technologists (i.e., water, wildlife)

- **Guards Staff**
  Six guards, one for each section of park
  Six gate guards
  Six patrol guards
  One secretary

- **Maintenance Staff**
  One driver/mechanic
  Two drivers
  Ten to 22 laborers

- **Professionals**
  Two to four foreign researchers
  Two to four Brazilian researchers.
  Implement government programs; research; university programs

- **Accommodation**
  Four to eight important visitors
  Three to eight visitors or attending staff to visitor
  Two to eight researchers
  Four to five maids
  One porter

- **Kitchen/Restaurant/Food Store**
  Three to six cooks
  Six to 12 waiters/waitress/food stuff clerks

- **Housing**
  Staff families: housing for staff families

- **Visitors**
  Visitors to park and facility
  Number of visitors per month for 1979:

<table>
<thead>
<tr>
<th>No.</th>
<th>Visitors</th>
<th>Day</th>
<th>No.</th>
</tr>
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<tbody>
<tr>
<td>Jan.</td>
<td>476</td>
<td>16</td>
<td>40</td>
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<tr>
<td>Feb.</td>
<td>166</td>
<td>24</td>
<td>20</td>
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<td>Mar.</td>
<td>178</td>
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<tr>
<td>Apr.</td>
<td>1142</td>
<td>13</td>
<td>205</td>
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<tr>
<td>May</td>
<td>116</td>
<td>11</td>
<td>37</td>
</tr>
<tr>
<td>June</td>
<td>157</td>
<td>25</td>
<td>56</td>
</tr>
<tr>
<td>July</td>
<td>18</td>
<td>25</td>
<td>45</td>
</tr>
</tbody>
</table>

31
Visitor,
We would like to request that you answer the following questions so that we may better meet the needs and expectations of Park visitors.

Thank you.

1. How frequently do you visit the Park?
   - First visit: 74
   - Weekly: 2
   - Monthly: 23

2. How did you learn about the Park?
   - Friends: 92
   - Magazines: 7
   - Newspaper: 7
   - Posters: 5
   - Television: 2
   - Post Cards
   - Travel Agency
   - Other: 1
   - What: slides

3. Did you arrive at the Park by:
   - Own car: 90
   - Bus: 
   - Taxi: 5
   - Other: 5
   - What: hitchhiking

4. Did you come:
   - By yourself: 1
   - Family: 23
   - With friends: 74
   - Tour: 3

5. Ages and number of people that accompanied you. If you are alone, indicate your age.
   - 10 and under: 6
   - 10-20 years: 12 2 12 1
   - 20-50 years: 18 10 13 39
   - Over 50: 2 1

6. How long do you intend to remain in the area?
   - Only for a day: 24
   - Overnight: 2
   - More than two days: 72

7. Have you visited other Brazilian National Parks?
   - Yes: 31
   - No: 63
   - Which ones:
     - Caparaó - 5
     - Hatiaia - 8
     - Serrados Orgaos - 2
     - Iguazu - 2
     - Monte Pascoal - 1

8. What are your reasons for visiting the Park?
   - Learn something about the park's environment: 20
   - Enjoy its scenic beauty: 80
   - Picnicking: 8
   - Rest: 46
   - Other: 3
9. In what state do you reside?
   MG - 87

10. If you are a resident of another country, what country?
    Chile - 1

11. What is your educational level? Indicate according to the educational system of your country.
    University  63
    High school  23

12. What is your income? Indicate in the currency of your country.
    Median per month: CR $15,426,00
User/Activity: Entrance, information, and reception

Space Performance: Able to accommodate 300 people at once without feeling crowded. This is an introduction to the park, a transitional area. Other parts of the facility should easily be found from this point. Should be flexible to open up into other spaces to accommodate spillover or when other spaces need to be larger.

Activity Performance: Information and orientation. Additional space for other areas.

Space Standard: 3.7 Sq. M. per person recommended.

Furniture and Equipment: Receptionist's desk and chair; seating for 10+; information stands.

Environmental Requirements: This should be an open space, relating the site to the interior. It should be naturally ventilated and heated; it should use natural light to its best advantage.

Total Sq. Meters: 370 to 1110
User/Activity - Sales

Space Performance - Adequate space for circulation around display cases; enhancement of items for sale; adjacent to entrance lobby and exhibition space.

Activity Performance - Sales of written material about park and wildlife, etc. Sales of park pins, T-shirts, etc.

Space Standard - 1.5 M for circulation around cases. Total square meters = 10.

Furniture and Equipment - Counter; display cases; bookshelves; chair.

Environmental Requirements - Good indirect natural light; light on sales items; same as entrance lobby.

Total Sq. Meters - 10
User/Activity - Receptionist (1 to 2)

Space Performance - Key position to make contact between staff and visitors. Housing of radio to contact regional office and radio for park vehicles; transition zone. Located between administration and guards.

Activity Performance - Secretary for director; office work; running radios; greeting visitors; information.

Space Standard -

Furniture and Equipment - Receptionist's desk; counter and chair; typewriter; two radios.

Environmental Requirements - Soundproof area for radios; good track lighting; pleasant transition zone.

Total Sq. Meters - 15
User/Activity - Waiting

Space Performance - Ability to accommodate 5 to 10 persons without being crowded and violating each person’s personal space. Easy circulation through seating area to staff offices.

Activity Performance - Short term waiting to see director or assistant directors except for some waiting for director of guards.

Space Standards -

Furniture and Equipment - Lounge seating; tables.

Environmental Requirements - Lighting for reading; natural light; ventilation; heating and cooling.

Total Sq. Meters - 15
User/Activity - Office, Park Director

Space Performance - Able to accommodate one plus visitors/staff. This space needs adequate access to park staff offices. This space should be flexible enough to meet the needs of the Director (i.e., park staff conferences, entertaining officials, etc.). Needs central location for operation of the park. This space needs to be luxurious; close to entrance space.

Activity Performance - Office work; paper work; maps; books; meetings; conferences.

Space Standards - 1.5 M. from front of desk to any obstruction; .8 M. for chair clearance behind desk; .6 M. for circulation around furniture. Total square meters = 30.

Furniture and Equipment - Desk and chair; 2 seating chairs; 3-6 chairs and conference or work table; storage room; lockable storage cabinets, file cabinets, map storage.

Environmental Requirements - Good views; low noise; support space (receptionist, secretary).

Total Sq. Meters - 30
User/Activity - Office, Director of Administration

Space Performance - Able to accommodate Director of Administration comfortably. This space should be flexible enough to meet the needs of this director. This space needs adequate access to Director and the administrative staff. Adequate circulation around furniture; space for meetings with two to four people.

Activity Performance - Office work; paper work; maps; books; conferences.

Space Standards - 1.5 M. from front of desk to any obstruction; .8 M. for chair clearance behind desk; .6 M. for circulation around desk. Total square meters = 24.

Furniture and Equipment - Desk and chair; 2 seating chairs; 5 chairs and conference or work table; storage; typewriter table.

Environmental Requirements - Efficient task lighting and natural ventilation/heating; support spaces needed; good access to office staff.

Total Sq. Meters - 24
User/Activity - Three to five administrative secretaries; two typists

Space Performance - Able to accommodate three secretaries plus space for one additional as needed. This will be the main center where park operations take place. Adequate circulation around furniture. Ability to increase in size as work load increases. Space for waiting to see director near. This would be a pool-type situation for other administrative offices. Kitchenette close by.

Activity Performance - Office work; paper work; book work; record-keeping.

Space Standards - 1.5 M. from front of desk to any obstruction; .8 M. for chair clearance behind desk; .6 M. for circulation around desks; 1.5 M. for file cabinet.
Total square meters = 30. Unit 5

Environmental Requirements - Efficient task lighting; natural ventilation/heating; view not necessary.

Furniture and Equipment -

Total Sq. Meters - 30
User/Activity - Four offices; forestry or agriculture engineers; water, wildlife technologists; naturalists; resource manager

Space Performance - These offices could be all in one or separate. Able to accommodate four park staff members with enough space to add additional desks as needs change. Adequate circulation around furniture. Easy access to visitors and other offices/secretarial pool.

Activity Performance - Maps; paper work; projects and displays; book work; public information and entertainment and educational programs.

Space Standards - Same as previous office standards. Total square meters = 56. Unit 4.

Furniture and Equipment - (For each office space): one desk and chairs; 1 map table; storage; work table; tack board; seating for waiting or visitor (could be provided in waiting room).

Environmental Requirements - Efficient task lighting and natural ventilation/heating; good views of immediate area of park.

Total Square Meters - 56
User/Activity - Four offices: Researchers

Space Performance - Able to accommodate two to eight researchers; enough space for adequate job performance. Space for additional desks. Adjacent to support space research labs. Could be part of these. Also needs secretarial support space.

Activity Performance - Paper work; drafting and chart reading; production work; conference; ability to spread out map, data, large drawings.

Space Standards - Same as previous offices. Total square meters = 56. Units: 4.

Furniture and Equipment - Six desks and chairs; files/storage; work tables; large table, chairs.

Environmental Requirements - Efficient task lighting; natural ventilation; some view.

Total Sq. Meters - 56
User/Activity - First Aid Station used by employees and visitors. Run by trained personnel.

Space Performance - Room for one to four people; enough circulation space around patient table for first aid personnel and waiting family or friends; easy to find by public; close to visitor facilities.

Activity Performance - First aid treatment and emergency service for patients.

Space Standards - Not less than 6.5 square meters be allocated for such a facility. Total square meters = 25. Unit: m².

Furniture and Equipment - Examination table; equipment storage and drugs; wash up sink; easy to clean surfaces; counter space; waiting chairs; oxygen.

Environmental Requirements - Good lighting and sterility is essential; good ventilation.

Total Sq. Meters - 25
User/Activity - Research Space

Space Performance - Room for one to eight researchers; enough circulation space for easy movement around counters; convenient to staff offices; outside researchers should be able to come in and use this space.

Activity Performance - Testing and analysis; research; pathological studies; dissection; experiments.

Space Standards - There should be 3 M. from back of counter to back of counter. Total square meters = 30. Unit

Furniture and Equipment - Counter tops; ten stools; storage; convenient electrical outlets; gas outlets; sinks; exhaust hood centrifuge; refrigerator; incubator; scales; book and record storage; easy to clean surfaces and tops.

Environmental Requirements - This space needs to be well-ventilated; light is important at all levels; needs excellent environmental controls; access to service.

Total Sq. Meters - 30
**User/Activity** - Office for Director of Guards

**Space Performance** - Able to accommodate director plus all guards for conferences. Adequate access to other park staff offices and access to garages. Needs waiting area, holding area for 5-10 park offenders. This space should be flexible enough to meet the needs of this director.

**Activity Performance** - Office work; conferences with guards; coordinating guard patrols; dealing with park offenders.

**Space Standards** - 1.5 M. from front of desk to any obstruction; .8 M. for chair clearance behind desk; .6 M. for circulation around desks; 1.5 M. for file cabinets. Total square meters = 30. Units

**Furniture and Equipment** - One desk and chair; storage; conference table for 15; chairs; waiting chairs; map storage.

**Environmental Requirements** - Natural light; heating/cooling; ventilation; possible views.

**Total Sq. Meters** - 30
User/Activity - Office, Lounge, Sleeping Area for Park Guards

Space Performance - Sleeping space for two guards for complex. Able to accommodate guards working on reports; relaxing and personal storage for each guard's equipment. Close to Director of Guard and secretarial pool. Waiting or holding area for five to 10 park offenders.

Activity Performance - Office work; changing of clothes and storing of personal materials; sleeping while off duty.

Space Standard - 1.5 M. from front of desk to any obstruction; .6 M. for chair clearance behind desk; .6 M. for circulation around desk; 1.5 M. for file cabinets. Separate sleeping area. Total square meters = 20.
Units: 2

Furniture and Equipment - Three desks and chairs; several file cabinets; large lounge table; 15 lounge chairs; storage lockers; kitchenette; two beds.

Environmental Requirements - Task lighting; natural light; heating/cooling; ventilation.

Total Sq. Meters - 50
User/Activity - Director of Maintenance Office

Space Performance - Able to adequately accommodate Director of Maintenance. Adequate access to other park staff offices. Needs good access to garages. Small conferences with maintenance staff; close to director of guards.

Activity Performance - Office work; conferences; work interdependent with Director of Guards; maintains small library; coordinating maintenance of park and garage; map reading; controls warehouse operations.

Space Standards - 1.5 M. from front of desk to any obstruction; .6 M. for chair clearance behind desk; .6 M. for circulation around furniture; 1.5 M. for file cabinets. Total square meters = 25.

Furniture and Equipment - Desk and chair; small conference table with chairs for about ten; book storage; map table; lockable storage; typewriter table; lounge chairs.

Environmental Requirements - Task lighting; natural light; heating/cooling; ventilation; access to outside; possible view.

Total Sq. Meters - 25
User/Activity - Kitchenette

Space Performance - Small space located in several locations.

Activity Performance - Preparation of coffee and small snacks by staff and visitors.

Space Standards - .6 M. minimum circulation around counter. Total square meters = 6. Units: 4

Furniture and Equipment - Counter; hot plate; small refrigerator; sink.

Environmental Requirements - Task lighting; good ventilation.

Total Sq. Meters - 1.5 per unit  
6 M. total
User/Activity - Exhibit Area

Space Performance - Able to accommodate approximately 50 people; open from entrance. This space should be able to accommodate other activities when needed. Ease of circulation around displays should be provided. Also, ability to open up into other spaces as needed. Ability to increase in size as park programs increase.

Activity Performance - Exhibit viewing of all kinds from the park and park service and wildlife organizations.

Space Standards - 2 square meters per person recommended.

Furniture and Equipment - Display cases; information boards and stands; free-standing displays; moveable partitions.

Environmental Requirements - Adequate lighting and natural ventilation and heating for multiple uses.

Total Sq. Meters - 200
User/Activity - Library

Space Performance - Small library for educational purposes; ability to increase in size; located near exhibits.

Activity Performance - Look at and read books in park complex; resource material about park.

Space Standards - .6 M. minimum circulation around shelves. Total square meters = 20.

Furniture and Equipment - Bookshelves; reading table and chairs.

Environment Requirements - Good light levels for reading; good ventilation.

Total Sq. Meters - 20
User/Activity - Convention/Meeting/Audio-visual/Educational Space

Space Performance - Adequate space to handle 300 people. Adequate circulation for auditorium seating, banquets, etc. Educational facility; could be incorporated with other spaces using partitions.

Activity Performance - Multi-purpose; educational; audio-visual; meeting; banquets.

Space Standards - Allow .8 square meters per seat, including aisles and cross-overs for auditorium seating. Total square meters = 160

Furniture and Equipment - Seating; folding tables; audio-visual equipment.

Environmental Requirements - Multi-use lighting; good acoustics and natural ventilation; cooling/heating.

Total Sq. Meters - 250
**User/Activity** - Museum

**Space Performance** - Display of permanent items. Able to accommodate people, view displays and artifacts.

**Activity Performance** - Viewing of artifacts and interesting items on permanent exhibit; educational programs.

**Space Standards** - Standard modules of 5 M. x 7 M. for a small archaeology and education museum. Total square meters = 105.

**Furniture and Equipment** - Display cases; seating; information boards.

**Environmental Requirements** - Good quality natural light, but not direct; flexible light; good acoustics; natural heating and ventilation; cooling.

**Total Sq. Meters** - 105
User/Activity - Entrance, Lobby to Guest Rooms

Space Performance - Able to accommodate up to 24 guests without feeling crowded; possible two with researchers room separate.

Activity Performance - Lobby for private meetings, lectures, transition; lounge.

Space Standards - 3.5 square meters per room for lobby; lounge 2 square meters per room served. Total square meters = 66. Units: 2

Furniture and Equipment - Seating; front desk; receptionist.

Environmental Requirements - This should be an open space relating the site to the interior and should be naturally lighted and ventilated.

Total Sq. Meters - 66
User/Activity - Maids Area, Laundry, Storage, Cleaning, Lounge

Space Performance - Room for four or five maids; convenient access to staff and visitor facilities; convenient circulation around equipment; entry shall be large enough to accommodate service carts; dirty and clean area for laundry; storage of supplies; separate service circulation.

Activity Performance - Laundry; lounge for maids; cleaning supplies; storage.

Space Standards - 1 to 2 square meters per room recommended. Total square meters = 30.

Furniture and Equipment - Utility sink; washer and dryer; hot water facilities; table; folding table.

Environmental Requirements - Well ventilated; lighted by natural light.

Total Sq. Meters - 30
User/Activity - Restaurant/Eating Area for visitors, guests, researchers, employees

Space Performance - Dining for all park employees; separate dining for important guests close to their rooms; separate dining for researchers close to their rooms. Bar/sandwich dining for park visitors; used mostly during day.

Activity Performance - All dining area used for lounge and eating areas.

Space Standards - .8 M. for chair clearance; .6 M. for circulation around tables.

Furniture and Equipment - China and silver storage; waiters' and waitresses' stand; tables; seating; linen storage.

Environmental Requirements - Lighting levels should be able to be varied; full natural ventilation.

Total Sq. Meters - 150
User/Activity - Kitchen, Cooks, Busboys, Dishwashers

Space Performance - Room enough for six cooks, dishwashers, and busboys to move around required equipment; ability to feed guests, visitors and staff; one main kitchen for all dining areas; bulk storage of food stuffs.

Activity Performance - Receiving, storage; preparation, and service of food and beverages to four dining areas.

Space Standards - The kitchen should be \( \frac{1}{4} \) of size of dining; baking should be .6 M. per guest room; bar should be 2.25 square meters; receiving, square meters; garage, square meters per room. Total square meters = 60.

Furniture and Equipment - Kitchen appliances; sinks; storage; garbage; storage; tables; counters with easy to clean surfaces.

Environmental Requirements - Natural lighting; good ventilation.

Total Sq. Meters - 60
User/Activity - Guest Apartments

Space Performance - Able to accommodate two, comfortably; spacious; with bath.

Activity Performance - Sleeping and rest; dressing.

Space Standards - 76 to 106 gross square meters recommended per unit. Total square meters = 960. Units: 8.

Furniture and Equipment - Two single regular beds; combination dresser/desk; dresser and luggage rack; two chairs, table; night table.

Environmental Requirements - Lighting needs to be variable; adequate heating and ventilation, natural; low noise levels. Four rooms separate from others.

Total Sq. Meters - 75 per room

960 square meters total
**User/Activity** - Guest Rooms

**Space Performance** - Able to accommodate two, comfortably; economical; bath for four rooms.

**Activity Performance** - Sleeping and rest; dressing.

**Space Standards** - 76 to 106 gross square meters recommended. Total square meters = 360. Units: 4.

**Furniture and Equipment** - Two single regular beds; combination dresser/desk; two chairs; table; night table.

**Environmental Requirements** - Lighting needs to be variable; adequate natural heating and ventilation needs to be provided; low noise levels.

Total Sq. Meters - 50 per room
360 square meters total
User/Activity - Optional Tram Terminal

Space Performance - Terminal for tram to let out passengers from lower town housing of mechanical equipment.

Activity Performance - Arrival and departure of visitors and staff to park.

Space Standards -
User/Activity - Gate House

Space Performance - Office for head guard of each section; sleeping area; personal storage; taking of payment for entrance into park; closed area for car paying; adequate room for the performance of these jobs.

Activity Performance - Office work; sleeping; resting for guards of each section; taking of park entrance fees.

Space Standards -
User/Activity - Maintenance Area, Pool, Club House

Space Performance - Recreational area for park staff; maintenance and storage of equipment for park; warehouse for bulk storage.

Activity Performance - Maintenance of park property and coordinating of park maintenance. Staff families participating in recreational activity.

Space Standards -
**User/Activity** - Housing Director, three assistant directors, park staff

**Space Performance** - Everyday living activities for directors and park staff.

**Activity Performance** - Everyday living activities; entertainment by directors.

**Space Standards** -
### 6. SPACE RELATIONSHIPS

#### Relationships Matrix
- **Direct Access - High Priority**
- **Direct Access - Low Priority**
- **Reasonable Proximity - High Priority**
- **Reasonable Proximity - Low Priority**

| ENTRANCE, RECEIPTION, INFORMATION |  |
| EXHIBIT AREA |   |  |
| DIRECTOR |   |  |
| ADMINISTRATIVE DIRECTOR |   |  |
| SECRETARIAL |   |  |
| NATURALISTS, WILDLIFE/FORESTRY MGRS. |   |  |
| FIRST AID |   |  |
| MUSEUM |   |  |
| LABS, RESEARCH |   |  |
| PARK GUARDS |   |  |
| MAINTENANCE DIRECTOR |   |  |
| MAIDS AREA |   |  |
| ENTRANCE LOBBY FOR HOTEL |   |  |
| MEETING, AUDITORIUM |   |  |
| GUEST ROOMS |   |  |
| KITCHEN |   |  |
| RESTAURANT |   |  |
Correlation Bubble Diagram

- Entrance/Reception
- Administration Offices
- Research: Offices Lab
- Dining/Kitchen
- Visitor Apts.
- Lobby
- Museum
- Audio Visual/Multi Purpose
- Service
7 BUILDING CRITERIA

The Serra da Canastra National Park Facilities is to be a multi-purpose complex. Functionally it should meet the needs of the park service, visitors, and guests. These needs have been stated in previous sections.

Interior flexibility is of utmost importance in this project, for the Brazilian Park Service is still in its infancy. Thus, the needs of this type facility will probably be constantly changing over the next few years. Certain spaces, for example the exhibit and auditorium areas, should be able to be combined or divided for greater flexibility. This building should incorporate expansion capabilities as the use of this type facility increases.

Interior circulation should be considered carefully. Circulation of service, staff, and guests should be developed, eliminating conflicts and allowing the possibility to close off certain portions of the building.

Service of building should be from a central location, not interfering with daily operation.

Economic efficiency is important in a facility of this type, but in this case, this does not mean mechanical, labor saving devices and systems. In Brazil mechanical items are extremely expensive as compared to hand labor. In the design process this should be taken into account.

Brazil does not have any special code requirements for a building of this type, but barrier-free design should be taken into account in anticipation of future developments.

Security in the parks in the past has been a problem. This will probably continue and carry over to park buildings.

Adequate security measures should be developed to insure the success of this facility.
EXTERIOR CRITERIA

Because of the remoteness of Serra da Canas-bra, mass transit facilities will have to be provided along with automobile parking. Buses, being the main mode of transportation, should be allocated space for convenient access to the park facilities. In addition to this, airplane landing facilities need to be developed for easy access from larger cities.

There should be parking for approximately 100 visitor automobiles, with additional space planned if the need arises.

Sizing of parking spaces will provide for 70 percent compact, 20 percent mid-size and 10 percent standard size cars. Space for unloading and loading of visitors’ cars needs to be provided near entrances to guest accommodations. Driveways should be 20 to 25 feet wide with 30-foot radius minimum. The parking areas should be nearly level with enough space for easy circulation around cars. Central driveway may be crowned with a one percent slope to the edges so that persons on foot will find it relatively free from water after a rain. Two parking spaces need to be allocated for delivery trucks. Parking for the majority of the employees will be located at respective living facilities.

Access service and utilities will be provided through the design of the facility.

Exterior lighting should be provided for the immediate grounds. Building illumination should be provided for security and general aesthetics.

The natural state of exterior landscaping will play an important role in the design of the facility. The concept stresses indoor to outdoor relationships. Strategically located pools, gardens, courtyards, and terraces are included in the design.
.9 Site Data/Criteria

Location for construction of facilities and specific site information should be obtained from the park management. A master program has been put together by professor James Griffith of the Federal University of Vicosa.

The impact of the facility on the site environmentally, should be kept at a minimum. The site should provide scenic views for visitors at the facilities. Access should be practical to obtain. It should be free from flood conditions.
CONSTRUCTION CRITERIA

Materials used in this facility should be in accord with materials available and be as natural as possible. This facility should demonstrate how local materials can enhance the natural beauty of the area.

Construction techniques need to be such that they can be done efficiently by hand labor.

The principal structural material of the area is reinforced concrete with brick infill panels or reinforced concrete with brick infill panels.

Ventilation and heat gain should be solved naturally.
11 PLANNING

A functional and practical master plan for the facilities of the whole park shall be developed upon the outset of the design of the staff, visitor, and guest accommodations. This plan should locate such facilities as: the power plant, waste treatment plant, water treatment, staff housing, maintenance buildings, and future expansion, etc. It should set up criteria for the design of these facilities to fit a theme or image developed by the park. The plan should define and illustrate the need for an over-all master plan for an area to achieve its needs successfully.
# Space Summary

<table>
<thead>
<tr>
<th>Space</th>
<th>Net Assignable Area in Sq. M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptionist</td>
<td>15</td>
</tr>
<tr>
<td>Waiting</td>
<td>15</td>
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<tr>
<td>Park Director's Office</td>
<td>30</td>
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<tr>
<td>Director of Guards' Office</td>
<td>30</td>
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<tr>
<td>Guards' Room</td>
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<tr>
<td>First Aid</td>
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<tr>
<td>Administration Director's Office</td>
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</tr>
<tr>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Director of Maintenance Office</td>
<td>25</td>
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<td>Library</td>
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<td>Staff Offices</td>
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<tr>
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<tr>
<td>Kitchenettes</td>
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<td>Research Offices</td>
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<tr>
<td>Entrance/Lobby</td>
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<td>Sales</td>
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<td>Museum</td>
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<td>Exhibit Area</td>
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<td>Audio Visual/Multi-Purpose</td>
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<td>Dining</td>
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<td>Kitchen</td>
<td>60</td>
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<td>Entrance Lobby to Guest Rooms</td>
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<tr>
<td>Guest Apartments</td>
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<tr>
<td>Small Guest Rooms</td>
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</tbody>
</table>

**TOTAL NET** 2,973

**RATIO 60/40 +**

**TOTAL GROSS** 4,162
SUPPLEMENT TO ORIGINAL PROGRAM

The reason for the change in size of the original program was due in part to the structural module chosen and the ability of greater flexibility within the complex.
Administrative Facilities:

These spaces were organized in the same way as the visitor facilities. Their placement allows the receptionist control over the whole complex.

Special Guest Rooms:

These used to bridge the land form, creating an outdoor lobby underneath. Upon entering this outdoor space one can no longer see out of the park, but there is a large panoramic view of a major portion of the park. The complex frames the park and allows one to look through the building.

The bridge is created by using a concrete truss that is used as an access corridor for the private apartments placed on top of it.

Service:

All services are placed in a central area connecting all three sections to the service dock. The greenhouses provide natural passive solar heat for each individual space.
<table>
<thead>
<tr>
<th>Space</th>
<th>Net Assignable Area in Sq. M.</th>
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<tr>
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<td>First Aid</td>
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<td>Director of Maintenance Office</td>
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<td>Kitchenette</td>
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<td>Research Space</td>
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<td>Researchers' Offices</td>
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<tr>
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<td>Sales</td>
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<td>Museum</td>
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<td>Project Room</td>
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<tr>
<td>Educational/Multi-Purpose</td>
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<tr>
<td>Dining</td>
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<tr>
<td>Kitchen</td>
<td>50</td>
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<tr>
<td>Service</td>
<td>75</td>
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<td>Service Dock/Storage</td>
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<tr>
<td>Lobby/Private Dining for Guest Apartments</td>
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<tr>
<td>Large Guest Apartments</td>
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<tr>
<td>Small Guest Apartments</td>
<td>75</td>
</tr>
<tr>
<td><strong>TOTAL NET</strong></td>
<td><strong>2,834.75</strong></td>
</tr>
</tbody>
</table>

**RATIO 60/40+**

3,970.00
4 Site Analysis
Macro-Contextual
The Site Region

Soil
Red-yellow latosol of high clay content found in flat to slightly hilly areas; generally deep and well-drained.

Distrophic cambisols characterized by quartite and granite; generally shallow to moderately deep; from well- to moderately-drained; found in moderately to very hilly areas; very susceptible to erosion.

Distrophic rocky soils; shallow to very shallow; well- to moderately well-drained; found in very hilly to mountainous relief.

90% of park lands are not useful for annual farming; 45% could be used for grazing and forestry; 15% not for any growth.

Environment
Physical:
There are quite a few differences between the upper park and the lower inhabited area. Lower areas are less harsh and warmer by about 10%. The park covers an upper plateau defined by high rising cliffs all around its perimeter. Here waterfalls are abundant. The upper park is very windy and harsh for Brazil. Some freezing temperatures during winter season. Erosion due to fires.
Social: Brazilian people like to live as close to town as possible. They go shopping several times a day as food is needed.

Emotional: Very beautiful, solemn environment that should not be disturbed; quiet. No one there but you (power lines) and occasional cars. Abundant, easily visible wild life. One can see for miles. Source of Sao Francisco emotional for Brazilians because it is life line to dry parts of Brazil.

Accessibility: Automotive circulation corridors at present. The road does not come very close to site, but a proposed road move will bring it through site, bypassing the Rio Sao Francisco Basin. There is one main road running east and west through the park which is dirt and gravel. They want the park complex located near the Sao Roque (entrance for access to that city at present by a gravel and dirt road). This end of the park is the only area for camping and visitors. The other areas will be kept as wildlife refuges and recreation. After an asphalt road is completed at the west, more traffic will be coming from that end. Buses will be another major transportation means. Cars will be parked and people will have to get out and walk. Planned road improvement will only extend to the site. At present old road through site; other road will not be improved to prevent more traffic. No additional roads will be added except for parking. Park vehicles, mostly 4-wheel drive, will travel all roads in the park.

Pedestrian corridors: At present the pedestrian traffic is along roads and cow paths. These are mostly local cowboys. In future most people visiting park will be hitchhiking around natural areas. No walking between buildings for workers.

Horse: At present horse travel is the mode of travel for people who work farms, cattle operations in the area. People probably will not be arriving at site by horse (maybe a few), but horse travel through the region will exist.

Major Regional Activity Nodes: Southeast region of park is where the complex is located. Economically more developed because of Rio & Sao Paulo. Consequently more tourists are coming from this area. More people located in this area than anywhere else in the country. Sao Paulo is about the same distance from the park as Belo. 55% of total population of entire country. Nucleus of national economic growth. 55% earn 63% of national income; 73% of total urban population of country.

State Minas: 19.7 residents per square kilometer; lowest population growth rate of region (1970: Minas, 11,600,000 population for area).

City: The major city of the area is Belo Horizonte.

Town: The closest fairly large town to the site is Filii. At the other end of the park is Sacramento Sao Roque. This is where
Accessibility

Automotive

Automotive circulation corridors are on paved roads from Belo to Piui. Then from Piui to Sao Roque, all roads in the region are unpaved, but there are plans to pave a road at the west end of the park between Araxa and Pocos de Caldas.
most activity of the park will be centered.

Climate:
Moderately humid, subtropical climate.

Average temperature: 18°C - 20°C.
Average of hottest month: 19°C - 21°C.
Frost occurs rarely.

Precipitation
Average annual precipitation varies
1,400mm - 1,600mm.

Distribution is periodic, predominately
in hottest months (Dec., Jan., Feb.).

Winter has 3-4 dry months. Winter
deficit of 10mm to 60mm in dryest win-
ter.

Temperature hottest: 34°C to 36°C one day.

Closest is 0°C 1 to 2.

Most rain: Dec., Jan., Feb. -- 50% of
annual precipitation.

Seasonal changes typical of tropical
region; very little variation seasonal.

Windy almost every day, at least 5mph.

Rainy season: average 60-90%.
Dry season: average 40-60%.

Never steamy, but mild hot.

Foggy during rainy season, so foggy you
<table>
<thead>
<tr>
<th>Month</th>
<th>No Sun Days</th>
<th>Wind Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan.</td>
<td>25</td>
<td>Mostly 2</td>
</tr>
<tr>
<td>Feb.</td>
<td>10</td>
<td>Mostly 1, 2</td>
</tr>
<tr>
<td>March</td>
<td>11</td>
<td>Mostly 1, 2, 4, 5</td>
</tr>
<tr>
<td>April</td>
<td>10</td>
<td>Mostly 2, 4, 5</td>
</tr>
<tr>
<td>May</td>
<td>5</td>
<td>Mostly 5</td>
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<tr>
<td>June</td>
<td>2</td>
<td>Mostly 5</td>
</tr>
<tr>
<td>July</td>
<td>4</td>
<td>Mostly 5</td>
</tr>
<tr>
<td>August</td>
<td>2</td>
<td>Mostly 3, 4, 5</td>
</tr>
<tr>
<td>Sept.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Oct.</td>
<td>11</td>
<td>Mostly 2, 5</td>
</tr>
</tbody>
</table>

1979 Sun Days/Wind Direction

Wind Direction
Micro-Contextual

The Site

Topography:
Very dramatic variation in elevation; estimate actual site elevation at 1420 meters.

Existing vegetation: savannah, rock, shrub
Trees
  Height: Maximum, 10'; average 5.5'
  Spread: Maximum 10'; average 5.5'
Species, scrub trees
  deciduous
  cavinna
  jacaranda sp.
  Dragon tree type plants (canela de ema, vollosia sp.)
  small bushes and low trees
  names not known
Pine tree like
  arnica
  carnica montana
Short prairie grass (no rock)
  widely spaced clumps of grass among rocks
  colorful seasonal wild flowers and straw flowers

Drainage characteristics
Major site 50/50 to east and west top of ridge. South basins run east.

Major site water is funneled to road erosion west to Rio Sao Francisco Basin. East water is funneled to eroded creek beds on
eastern hill side to Creek Valley Basin north of future garage area.

Erosion - Deep narrow crevices following old road and eastern creek beds. Small little eroded areas around grass clumps all over site. Intensive wind and water erosion problem stepped up by recent annual burning for cattle grazing and causes erosion.

Low points eroded areas.

Water features:
No water actually on site; would be a problem. Need to locate well or bring water up to site somehow.

Both view directions overlook river basins west and creek basin east.

Utilities:
Water problem - well, or investigate bringing up water some other way.

No gas, telephone or power at present. Power plan to extend to future garage area. Power will come up from a sub-station at this point. No gas except bottle, to supply to site in future. No telephone; will be supplied in future. Communication will be provided by a major radio system.

Location of other utilities will be provided by plan for total facilities (i.e., sewage).

Special features:
A lot of knolls of rock outcroppings throughout all site locations; some outcroppings should be located within facilities.

Total upper site is crest of ridge; south basins are steppe.

Ridge slopes gentle down to river basin; steep eastward.

Views:
Into site
Poor for upper site, but this is the purpose. It should not be real noticeable from visitor approaching site; the whole complex will use this idea. It will not be noticeable from approach road. Only able to see complex on side of mountain.

Up.

Open.

No views from road except at a distance; no other building except garage area, maybe.

From site/existing
Excellent views from major site to the west and east. Site selected because views of power lines are obscured except in a great distance. South basins and lower site have excellent views to Sao Roque.

Edge conditions:
Edge of site end abruptly where large outcroppings occur. Edge of construction
should blend in to edges of site. To the south site can be extended as needed. Other directions are defined by rocks, or are self-defined. Somewhat enclosed and sensitive, extend into view. Will not be able to tell where building and surrounds stop and begin.

**Ingress/egress:**
Vehicular access will be adjacent to site by proposed road change. Access to lower site by proposed planned road.

Pedestrian by walking paths to site and road.

Horse traffic by guests and guards by same paths.

**Orientation:**
Sun: upper area, sun all day; lower area, no late afternoon sun (and south basin).

Prevailing winds: north-south.

**Other site sensory features:**
Very quiet; tranquil, birds, etc.

Wind makes secluded feeling; you can see, hear and feel it.

Spectacular views.

**Site scale:**
Upper site about same size as football field.

Size of site can be extended south to fence to accommodate space needed by pro-
Site Section Sketches