THE MASTER PLAN

1987 - 2002

WASHINGTON PARK ZOO

METROPOLITAN SERVICE DISTRICT

PORTLAND, OREGON

THE MASTER PLAN

1987 - 2002

PREPARED FOR:

WASHINGTON PARK ZOO
METROPOLITAN SERVICE DISTRICT

PREPARED BY:

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APRIL 1987

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We are pleased to present the Washington Park Zoo Master Plan for the planning period of 1987-2002. In October of 1986 the Master Plan Team led by Guthrie / Slusarenko / Associates was retained by the Metropolitan Service District as planning consultants for the purpose of preparing an update of the 1983 comprehensive master plan for Metro's Washington Park Zoo.

Through the course of the planning process, the Washington Park Zoo Management Team and the Staff worked closely with our Master Plan Team in providing technical information, creative thought, and constructive criticism for preparation of this Master Plan.

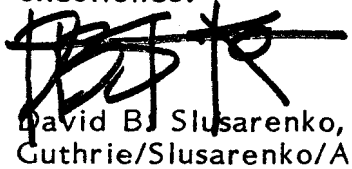
Our Master Plan Team was directed to address future Zoo operation and capital improvements, and to provide planning recommendations and solutions for the implementation of these improvements. The results of our planning efforts are documented in this Master Plan.

The Washington Park Zoo Master Plan Progress Report, a separate interim report of Phase I in the planning process, represented a review of the 1983 Master Plan, an inventory and an analysis of the current physical and operations context of the Zoo, and planning criteria and recommendations for Phase II, The Master Plan.

The Master Plan for Washington Park Zoo presents conceptual design solutions and operations strategies based upon current information and conditions at the Zoo. The sequence and frequency of future capital improvements have been developed in the Implementation Schedule for a fifteen year period. It is our recommendation that the Master Plan and Implementation Schedule be periodically reviewed and revised as priorities and circumstances at the Zoo change.

Our appreciation is extended to the WPZ Management Team, the WPZ Staff, the WPZ Master Plan Update Joint Task Force, the Friends of the Washington Park Zoo, the Education Volunteers, the Metro Council and Executive Officer, and to the many interested citizens for their contribution in the preparation of this plan.

The Master Plan will provide guidance and direction for Washington Park Zoo as it continues a program dedicated to excellence.



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DISTRICT 3

'88 Jim Gardner

DISTRICT 4

'88 Corky Kirkpatrick

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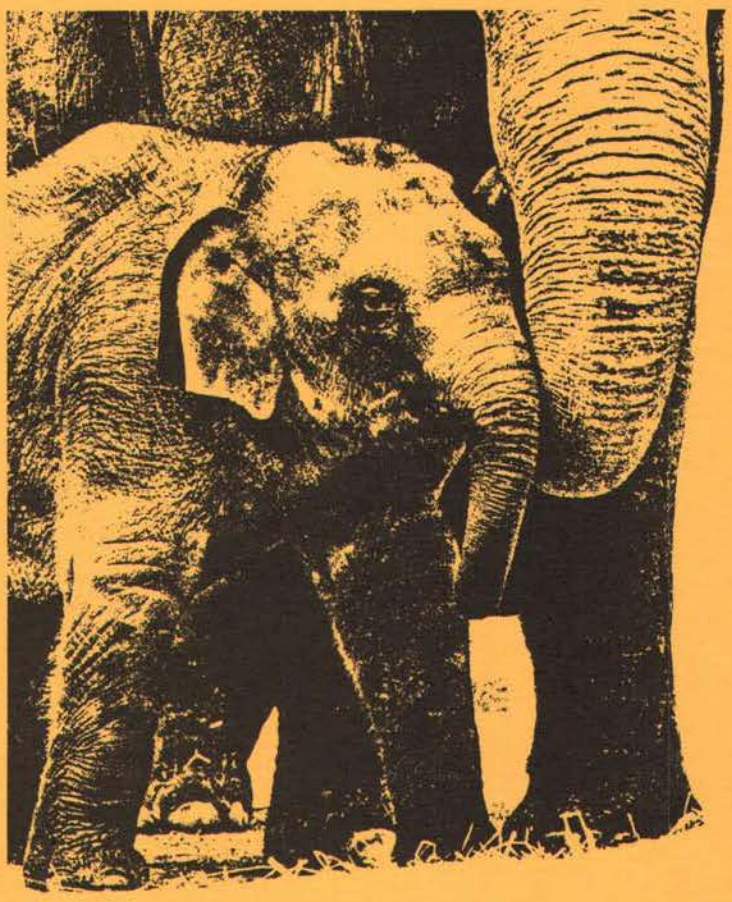


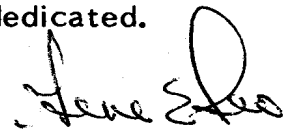
I. INTRODUCTION

THE WASHINGTON PARK ZOO
DEDICATED TO EXCELLENCE

In the past ten years, the Washington Park Zoo, which is operated by Metro on a regional basis, has undergone a modern Cinderella transformation. There are many reasons for this transformation: dedicated responsive staff members, support activities conducted by the Friends of Washington Park Zoo, and a regional community support base are but a few. Foremost in this transformation, however, has been the magic relationship between the community and those responsible for providing the dynamic programming and activities at your Zoo.

In recent years, the combination of this programming and the upgrading of sterile, concrete exhibitry into true depictions of nature have created an excitement in guest experiences which has engendered this community support. The Zoo has also taken a leadership role in endangered species propagation and conservation. Attendance has grown substantially, membership in the FWPZ has more than doubled, and through this process the WPZ has become the largest paid attraction in the State of Oregon.

But resting on these successes does not do justice to the faith that the community has placed in their Zoo. With that faith comes the responsibility to provide excellence in programming, exhibitry and every other facet of the value and service provided to the community in return for this faith. It is to this excellence that this Master Plan of the WPZ is dedicated.



Gene E. Leo, Director
Washington Park Zoo
April 1987

The driving philosophy behind the Zoo Master Plan is to provide the public an opportunity to experience wildlife in a natural setting. This plan meets that objective.

The community has demonstrated continued support for Metro's Washington Park Zoo. With increased attendance and continued financial support, the implementation of the Master Plan is possible.

Metro's Washington Park Zoo will continue to strive for excellence in meeting the expectations of our metropolitan area.

With the combination of the Zoo Master Plan, community support, and the Metropolitan Service District's commitment, the Zoo will continue to be a significant asset to this region.

Rena Cusma
Executive Officer

Richard C. Waker
Presiding Officer

MASTER PLAN DIRECTIVE

The directive issued to the Master Plan Consultant Team by the Metropolitan Service District (Metro) was to develop an updated Master Plan for the Washington Park Zoo (WPZ). The updated Master Plan will provide Metro and its Washington Park Zoo guidance for long-range operational and capital improvements for the period 1987 to 2002.

Building upon the detailed information of the previous WPZ Concept Program and WPZ Master Plan of December, 1983, the planning mandate directed the Planning Team to address the following considerations:

1) ATTENDANCE: Develop projections for attendance and review strategies for increasing attendance and marketing services.

2) REVENUE GENERATION: Review admissions fees, food service operations, gift sales, and special programs and events as enterprise revenue sources.

3) TRAFFIC AND PARKING: Analyze current conditions and develop recommendations for vehicle access, circulation, and parking.

4) WPZ CONTEXT: Study existing Zoo grounds with emphasis on enhancing the natural setting and providing an enriching "Zoo experience".

5) PUBLIC SPACES: Review the existing network of public circulation spaces and develop recommendations for an enhanced physical environment.

6) EXHIBIT FACILITIES AND ARCHITECTURE: Develop programs, site designs, and conceptual designs for major and minor animal exhibits and visitor facilities.

7) PROGRAMMING AND EVENTS: Review the range of current program needs and develop scenarios for accommodating WPZ programs and special events.

8) INFRASTRUCTURE: Review existing landscape systems, utilities systems, and service facilities and provide recommendations to guide future capital improvements.

9) IMPLEMENTATION: Develop evaluation criteria for capital improvement priorities and schedule the sequence in which capital improvements will occur.

MASTER PLAN PROCESS

In response to the planning directive from Metro's Washington Park Zoo, the interdisciplinary Master Plan Consultant Team developed a two phased work plan. Phase I constituted the production of a Master Plan Progress Report and Phase II, the Master Plan, a physical design plan and implementation program.

The WPZ Master Plan Progress Report documented the review and investigation of the existing Zoo context, analyses of this context, and identification of planning issues, recommendations, and criteria for the development or design of future programs, events and facilities.

Phase I began with Master Plan Team review of developments since completion of the December, 1983 WPZ Concept Program and Master Plan, as well as developments for the adjacent institutions, the World Forestry Center and Oregon Museum of Science and Industry. Recent interviews were conducted with John Blackwell, Executive Director of the World Forestry Center and Marilynne Eichinger, Director of the Oregon Museum of Science and Industry, to identify planning issues of mutual interest. In addition, interviews were conducted with staff members from the six WPZ divisions: Administration, Animal Management, Buildings and Grounds, Educational Services, Marketing, and Visitor Services. Special planning consideration was directed toward the investigation of parking and traffic at the existing site and its constraint upon long-range development of the Zoo.

A range of planning issues was identified for investigation and clarification. Joint planning sessions were held with the WPZ Management Team and the Master Plan Team to discuss the relevant planning issues, considerations, and criteria for use in Phase II of the updated Master Plan.

Phase II of the Master Plan entailed a series of design meetings with the WPZ Management Team and the Master Plan Team. Various elements and areas of the site were discussed and evaluated. Diagrammatic interpretations of the planning issues identified in Phase I were refined graphically during this process to develop conceptual design solutions. These concepts were refined to produce an overall site plan and specific programs for each plan element. The WPZ Master Plan Update Joint Task Force met periodically throughout the process to review the issues and proposals being studied and to develop and make recommendations to the Planning Team. Those planning considerations and recommendations are incorporated within this updated WPZ Master Plan Document.

WASHINGTON PARK ZOO - CONCEPT STATEMENT

Knowledge of animals and our relationship to them will benefit and enhance the quality of life for people and animals. To this end, the Washington Park Zoo shall be developed and operated so as to serve all of the citizens of the Metropolitan Service District in the highest professional manner as a cultural institution which safely and humanely keeps and exhibits living land and aquatic animals for the purposes of:

1. Providing the public with a recreational opportunity to view a variety of live exotic, native and domestic animals exhibited in conditions that enable them to display their natural traits.

2. Encouraging the public to acquire accurate information about animals and to come to a true understanding of the complex relationships animals have with their environments, with each other, and with humans.

3. Encouraging the conservation, protection and propagation of rare and endangered animal species in an increasingly industrial and urban world.

4. Providing an attraction for tourists and visitors.

5. Engaging in a limited amount of humane research when the primary purpose is of benefit to animals, especially those in the Washington Park Zoo.

WASHINGTON PARK ZOO
GOALS, POLICIES AND OBJECTIVES

GOALS:

1. Provide a unique educational and recreational opportunity through which the public can see and experience wildlife in a naturalistic setting.

2. Contribute to the conservation of animals in the wild and in the Zoo by:

   a. Cooperating as a participating institution in appropriate AAZPA Species Survival Plans and other organized conservation efforts.

   b. Continuing to research and improve husbandry techniques, exhibit environments, animal management concepts, and captive propagation.

   c. Educating the public regarding conservation.

3. Serve as a cultural institution to meet the needs of the public and to enhance the quality of life in the metropolitan community.

4. Assist in economic development as a destination tourist attraction and as a valuable community asset.

5. Maintain a close relationship and coordinate activities with other organizations involved with wildlife.

POLICIES:

1. Exhibit a representative collection of animals and plants.

2. Place emphasis upon renovating and upgrading animal exhibits in order to display animals within naturalistic habitats.

3. Continue to emphasize programs and facilities for the Asian elephant, Humboldt penguin, and chimpanzee as priority species.

4. Encourage visitor interest in the zoo by increasing the educational and recreational offerings of the Zoo as funding permits.

5. Place emphasis upon encouraging repeat visitation and increasing length of stay.

6. Continue to generate at least 50% of revenue necessary to operate the Zoo from non-tax sources.

7. Review admission fees every year.

8. Continue to offer special free admission times at the zoo.

9. Expend capital improvement funds in a proportion that will maintain an equitable balance among animal exhibits, educational facilities, visitor services facilities, and operational/maintenance facilities. Enterprise facilities should demonstrate an ability to contribute to the funding of other zoo activities.

10. Utilize additional facilities or sites when consistent with overall Zoo goals and objectives.

11. Serve as the coordinator for the development of all major facilities for the exhibition of exotic animals within the metropolitan area.

GENERAL PLANNING OBJECTIVES:

1. Provide safe, pleasant and efficient vehicular access to the WPZ-OMSI-WFC complex from the metropolitan region.

2. Improve the existing parking lot capacity.

3. Coordinate the siting and design of animal exhibit areas, visitor services areas, public open space, circulation and support facilities to maintain a cohesive visitor experience within the Zoo.

4. Maximize the efficient operation of the Zoo through timely and appropriate development of the site.

5. Complement the adjacent institutional complexes and surrounding park land (public open space) during future development at the Zoo.

6. Develop safe, convenient and pleasant pedestrian circulation from the parking area directly to the WPZ entrance, to the neighboring institutions, and within the Zoo itself.

7. Enhance the appearance and the amenities of public circulation spaces through the main Zoo grounds.

8. Provide convenient, safe and appropriate access and circulation for service vehicles throughout the Zoo.

9. Provide adequate utility systems throughout the Zoo to support all facilities, programs, and operations.

10. Implement use of energy saving methods or installation of more efficient equipment wherever possible.

11. Include opportunities for both the visual, decorative arts and the performing arts within the park setting of the Zoo.

12. Provide guests with a Zoo that is distinctively representative of the Pacific Northwest by capitalizing on, or reflecting on, our forested surroundings in landscaping, building materials, and general ambiance.

13. Actively and constructively participate in determining the use of the present OMSI space consistent with overall Zoo goals and objectives.

ZOOLOGICAL OBJECTIVES:

1. Provide overall animal exhibit organization and distribution that complement and enhance the qualities of the Zoo setting, and enrich the visitor's experience.

2. Display animals in settings which simulate their native habitats, provide features that encourage and demonstrate unique natural behavior, and maximize viewing opportunities.

3. Develop exhibit enclosures that provide for ease of maintenance, longevity of materials, and up-to-date facilities for animal handling and health care.

4. Provide exhibit facilities that complement and enhance the Zoo goals for conservation research and education in cooperation with other institutions.

5. Develop exhibits in both the zoogeographic concept (displaying several animal classes from a particular region together) and in the taxonomic concept (displaying several different species from a single class or order).

6. Incorporate birds, reptiles, mammals, fish and invertebrates, into zoogeographic concept displays where appropriate, to achieve a balanced animal collection.

INTERPRETIVE OBJECTIVES:

1. Increase the public's appreciation and general knowledge of the animal world and conservation issues.

2. Enrich the experience of the live exhibits for the visitor.

3. Provide the visitor with clearer insights into animal characteristics and habitats.

4. Develop a hierarchy of interpretive materials that impart a broader understanding of the world of animals to all visitors regardless of their age and level of knowledge.

5. Utilize the latest technologies (e.g. computer graphics) and methodologies when they appear to be the best means by which to communicate to visitors.

6. Develop natural history museum-type interpretive displays in conjunction with live animal exhibits where appropriate.

VISITOR SERVICES OBJECTIVES:

1. Maintain a system of support services so the visitor can experience the zoo with comfort and convenience.

2. Contribute to making the visitor's total recreational experience one of quality and enjoyment, thereby increasing the average visitor length of stay and frequency of return visits.

3. Provide efficient, courteous and friendly service to visitors throughout their stay at the Zoo.

4. Provide the means to staff and operate the admissions, retail sales, rentals, security, first aid, food and catering service, and railway functions efficiently.

ARCHITECTURAL OBJECTIVES:

1. Integrate new structures into the overall setting of the Zoo.

2. Subordinate animal exhibit structures to individual animal habitat contexts through the use of appropriate forms, materials, textures, and colors.

3. Conceal or subordinate exhibit support facilities from public view where possible.

4. Develop design harmony and continuity for visitor services facilities and amenities.

5. Design facilities that are accessible to handicapped visitors, young children, the elderly, and other visitors with special needs.

6. Design facilities that are operationally efficient.

7. Design exhibits which are behaviorally interesting to animals and conducive to animal propagation.

8. Design facilities that will encourage use of the Zoo in all seasons.

LANDSCAPE OBJECTIVES:

1. Provide appropriate vegetation as a substantial design element in replicated natural habitats of exhibits and in doing so, expand the potential interpretive message about animal-environment relationships.

2. Soften the contrast between exhibits and non-exhibit public spaces through

transition plantings of appropriate character.

3. Enhance the character of non-exhibit/public spaces throughout the Zoo by significant use of landscape materials and continuity of pedestrian furnishings.

   a. Provide seasonal color through annuals and perennials at high visibility areas such as the Main Entrance, rest areas, and food service.

   b. Provide botanical information where appropriate as indicated in the Landscape Plan.

PROGRAMMING OBJECTIVES:

1. Use on-grounds programming to complement and enhance the Zoo's exhibits through personal interaction, large and small audience programming, and printed materials.

2. Use off-grounds programs to provide information about the Washington Park Zoo and its animals to persons who cannot attend, to promote zoo visitation, and to enhance the Zoo's educational value for schools.

3. Develop the potential of the Zoo as an educational resource to its fullest potential and promote this aspect of the Zoo to the academic and general communities.

4. Develop the Railway to its maximum potential as a recreation-education activity.

ECONOMIC OBJECTIVES:

1. Maximize the appeal of the Zoo to both resident and tourist markets.

2. Establish and maintain for ten years design-day physical planning parameters.

3. Establish and maintain a range of attendance figures for a ten year period.

4. Establish and project five year operating and capital improvement plans for implementing the Master Plan.

5. Develop the variety, quality, and convenience of visitor services and concessions to enhance visitors' enjoyment of the zoo and maximize their in-park expenditures.

6. Implement the Master Plan with the maximum operational efficiency.

7. Provide through non-tax revenues at least fifty percent of the operating costs of the Zoo.

8. Provide a means for monitoring, evaluating, and forecasting relevant aspects of Zoo operations.

9. Provide through tax and non-tax sources the funds to implement the capital improvements in the Master Plan.

FUNDRAISING OBJECTIVES:

1. Coordinate all fundraising efforts on behalf of the Zoo through the Development Office.

2. Focus fundraising efforts on special projects rather than on annual giving campaigns, except efforts in support of Friends of the Zoo campaigns.

3. Utilize development efforts to supplement other Zoo revenue sources in providing enhanced programming and

physical facilities.

4. Accept gifts when they are consistent with the needs, goals, and objectives of the Zoo.

5. Acknowledge gifts in accordance with Council policy and the Zoo graphics plan. Keep accurate accounting records to ensure compliance with donor stipulations.

6. Have flexible implementation schedules for the Master Plan improvements that lend themselves to fundraising efforts.

HISTORICAL BACKGROUND

The Washington Park Zoo, in its centennial year, is the oldest Zoo west of the Mississippi. Its roots formed in the mid-1880's when Portland was a busy frontier city. "Portland's First Zoo" was started at 4th and Morrison in downtown Portland by a seaman turned druggist who loved animals and collected them from his seafaring friends. By 1887 the collection had outgrown its quarters on a vacant lot next to his store; Richard Knight donated the collection to the City of Portland and it was moved to City Park. (The present water reservoir site in Washington Park.)

The first Park Keeper (who also had charge of the Zoo) was Charles Meyers, who for 16 years gave the animals his special attention. He constructed what is believed to be the first sunken, barless cage anywhere in the world - a bear grotto which housed the grizzly and Alaskan bears which were part of the new Zoo. The present bear grottos are adaptations of the original ones, which were praised at the time as a "model for all zoos for the humane confinement of wild animals." There was a rapid growth of animal exhibits, and by 1894 there were 300 specimens, mostly North American species, plus a few monkeys, foreign birds and a kangaroo. Alligators, the Zoo's first reptiles, were acquired in 1895. In 1904 the City paid $1,000 for a leopard, an African lion and a polar bear which had been exhibited at the Lewis & Clark Exposition in Portland.

The Zoo began a period of decline in 1905 which was intensified by a move to a higher and more remote part of the park in 1925. Within that period, there was a new Mayor who was opposed to zoos, a new Park Keeper, who was a gardener by trade, and World War I was in progress. The Zoo received a small boost when the first fulltime Zoo Director was hired in 1938. During the following years, some improvements and additions were made to the Zoo's collection, but by the end of World War II, the Zoo had deteriorated seriously.

When Jack Marks took over as Zoo Director in 1947, expansion was impossible at the inadequate site, cages and enclosures were in poor repair, and there were numerous escapes. There were also many premature animal deaths until three veterinarians began spending more time with the animals and gained experience in recognizing symptoms before a disease took hold. They spent a great deal of their own money on the care of Zoo specimens, signaling the beginning of renewed interest in the Zoo. One of these vets, Dr. Theodore Reed, subsequently became the Director of the National Zoo in Washington, D.C., strengthening the good relationship between the two institutions.

A major turning point came in 1951 when the Portland City Club adopted a study committee report recommending that a new Zoo be constructed on a new site, that an advisory group be established to further the Zoo's interests, and that a commission be formed to aid the City Council on Zoo matters. The Zoo Commission was promptly appointed by the City Council, and in 1952 the Council accepted the Commission's recommendation to place a $3,850,000 bond issue on the November ballot to finance a new Zoo on the 60-acre site of the West Hills Golf Course in Washington Park.

The Portland Zoological Society was chartered in 1952. Publicity was generated by the arrival in September, 1952, of Rosy, Portland's first Asian elephant. She was donated by Portlanders stationed in Thailand and she caught the fancy of the City. One of the first tasks of the Society was to run the promotional campaign for the ballot measure. The measure failed by less than 12,000 votes, so the Commission and the Society immediately decided to try again. The next election in May 1954, was successful.

The new zoo, renamed the Portland Zoological Gardens, opened July 3, 1959, in conjunction with Portland's centennial year festivities. Unfortunately, increased construction costs, compounded by delays due to bad weather, forced postponement of many of the proposed facilities. Only 60

percent of the first "Master Plan" was completed, forming the nucleus of the present Zoo. Construction of the Children's Zoo was made possible by funds from the Society and a private donor, Andy Hrestu, in 1961. Donations to the Society also made possible the construction of the hospital/research facility in 1966.

Partial funding for a railway was included in the original tax levy. Jack Jones, an ex-railroad man, and Ed Miller, former managing editor of The Oregonian, were instrumental in obtaining donations of time, money, and materials in order to make the Zooliner the finest amusement train ride of any zoo in the country. The original perimeter route was later extended into other areas of the Washington Park complex, making a four-mile round trip excursion. The railroad is the last remaining official mail carrier having its own cancellation stamp.

Acquisition of animals continued during this period. Mr. Marks led penguin expeditions to Antarctica in 1957, 1958, and 1962; the first birds were kept in the Peninsula Park swimming pool until their new quarters were completed. Asian elephants belonging to Morgan Berry had been spending winters at the Zoo for several years. On April 14, 1962, the Zoo was the scene of the first elephant birth in this country in 44 years. A fund-raising drive made possible the purchase of the baby "Packy" and his mother "Belle" from Mr. Berry, whereupon he donated his remaining two elephants including the sire Thonglaw. Rosy gave birth in October, 1962, and by 1967 there had been six elephant births at the Portland Zoo. Thonglaw died in 1974. Packy and new males, Tunga and Hugo, are now sires of new calves.

In 1971 the Portland Zoological Society assumed full management of the Zoo, although the City continued to provide funds. Eventually, the burden of subsidizing the Zoo became too great for either agency and they turned to the State for help. A law was passed to allow the Zoo to come under the jurisdiction of the Metropolitan Service District (MSD), a special district regional government whose Board of Directors was composed of locally elected city and county officials in the tri-county area. In May, 1976 the residents of the District approved a five-year $10 million levy for the operation of the Zoo. The Zoo functioned as an operating department of the MSD which exercised budgetary and general supervisory control. Day-to-day Zoo operations were the responsibility of the former Zoo Director, Warren Iliff.

The Society served in an advisory capacity to the MSD Board, and continued to promote private donations and volunteer support. Following the 1975 election, a new name was sought for the Zoo. After reviewing almost 500 entries, MSD chose an old "new" name submitted by 6th grader Susan Sachitano. On October 1, 1976, the Portland Zoological Gardens became the Washington Park Zoo. The Zoo's baby giraffe was named "Sach" in honor of the contest winner.

In 1979 the Society was restructured to reflect its advisory role better, and its name was changed to "Friends of the Washington Park Zoo". MSD also changed, in that it merged with the Columbia Region Association of Governments (CRAG), and is now "Metro", governed by an elected Executive Officer and 12 elected Councilors. On May 20, 1980, voters of Metro passed a levy which provided funding for the Zoo's operations and capital improvements.

Using the funds available from the tax levy for the 1976-81 time period, the Zoo finished a number of major projects. Among these were: the Entry Plaza, Primates House, Elephant House Yard, Quarantine Building, and Children's Zoo Nursery. Smaller projects included: installation of a number of small gardens including the Lewis and Clark, Bird, Rose, and Lily Gardens, decoration of the "Zoo/OMSI/Forestry Center" bus, and renovation of the steam engine and the Washington Park Zoo Train Station. In

addition, several exhibits at the Children's Zoo, Night Country and Felines Exhibit improvements were completed.

The Cascades Stream and Pond Exhibit was funded by a bequest from the late William Schamoni and was completed in 1982. The main features of the Stream and Pond Exhibit are a 1/4-mile long nature trail, otter, trout, and beaver pools, a walk-through marsh, and two banks of aquaria for small stream and pond organisms. Exhibits for owls and eagles also have been built along the nature trail.

In the Maintenance Yard, four new buildings were constructed and existing ones renovated to improve maintenance capabilities in 1982-83. Also constructed in 1982 was the stage for special events such as jazz and bluegrass concerts.

Ground breaking for the renovation of the Penguinarium took place in 1982. Main features of the exhibit are enclosed viewing areas with extensive graphics, better lighting, water filtration and breeding facilities, and a substantial amount of artificial rockwork. Construction was completed in 1983. Adjacent to the renovated Penguinarium is the Swigert Memorial Fountain funded by Christine Swigert, featuring a sculpture by Rich Beyer. This project was completed in June of 1983.

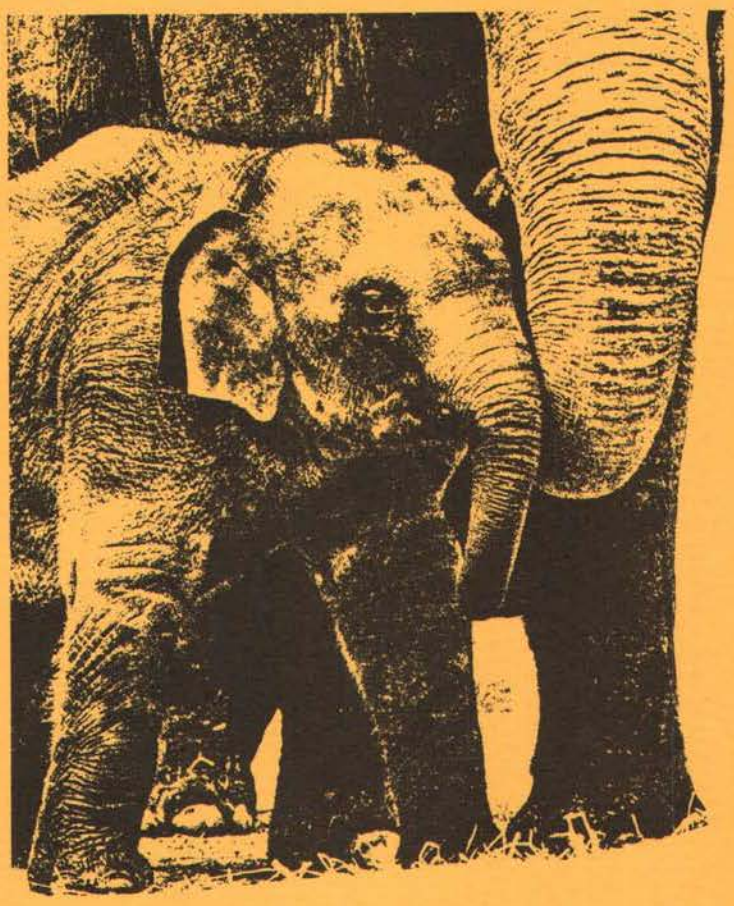
The Alaska Tundra Exhibit construction began in the Spring of 1983 and the exhibit opened in Spring 1985. In naturalistic habitat settings, it displays wolves, musk oxen, and grizzly bears along with smaller animals such as lemmings, snowy owls, and marsh birds. A major interpretive building introduces a number of interpretive and education concepts concerning the tundra as a habitat by means of innovative exhibits and graphics.

The Washington Park Zoo is currently experiencing a period of exciting revitalization and improvement. In 1985, Gene Leo became Director of the Zoo. Since his arrival, the Priority I projects in the 1983 Master Plan have been designed or completed under his direction. Programs and operations continue to be improved by cooperation among the Zoo Staff, Metro and the Friends of the Zoo.

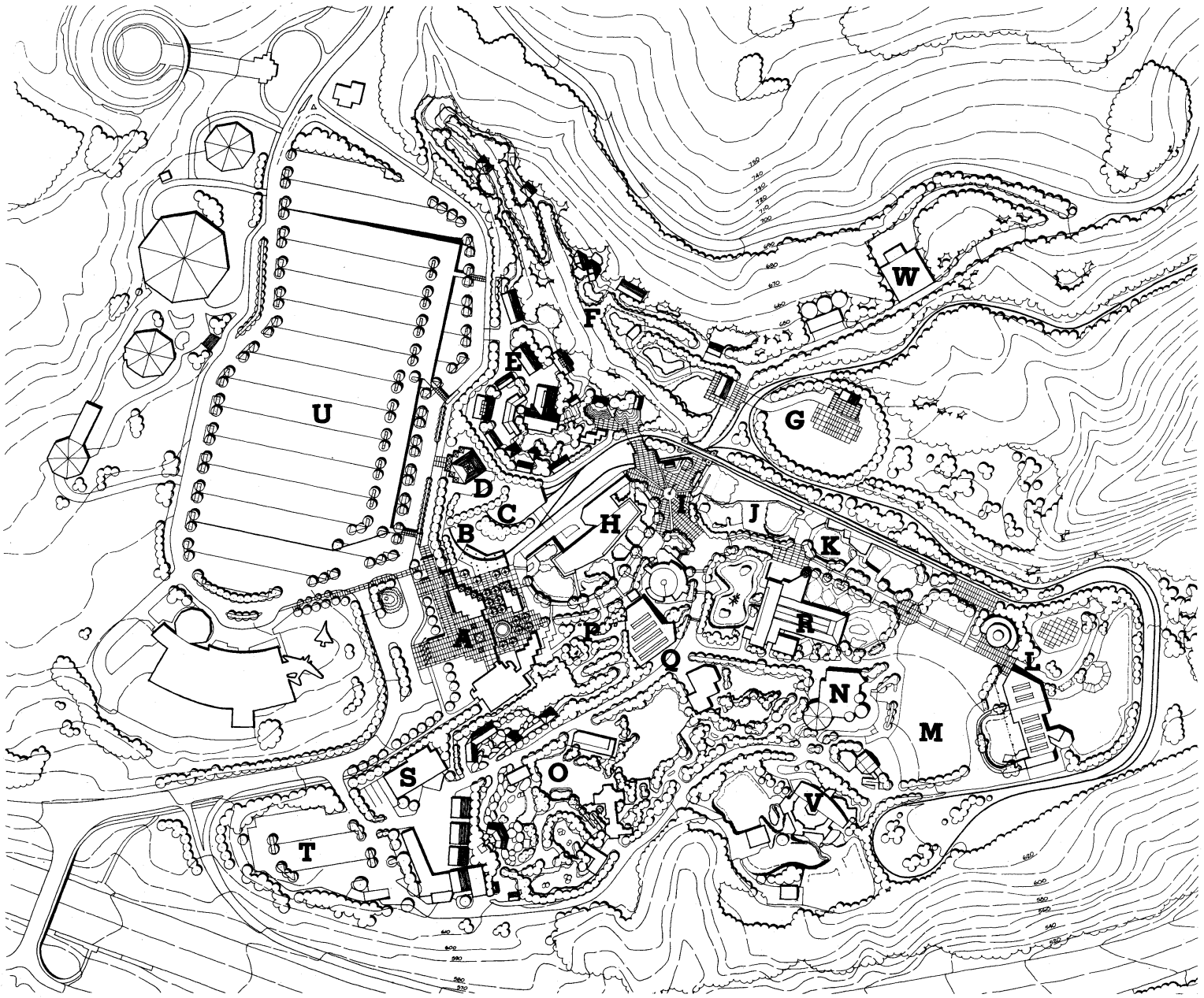
Renovation of the Bears (West) and BearWalk Cafe constitutes a major improvement to former conditions. Dedicated during 1986, this facility interprets and exhibits polar bears and Malayan sun bears. BearWalk Cafe, sited along Zoo Street, is a key element in the over-all WPZ food service for Zoo visitors.

The Lilah Callen Holden Elephant Museum, built with private founds with principle donors being the Glen Holden Foundation, the Fred Meyer Charitable Trust, the M.J. Murdock Charitable Trust, and the Friends of the Washington Park Zoo, was completed in 1986. It houses a variety of exhibits that depict the rich history of Man and Elephant, from early man and mastodonts to modern day elephants. The Elephant Museum will become part of the WPZ Elephant Center and will celebrate the elephant, educate Zoo guests, and play an educational and cultural role in the elephant conservation program at the Zoo.

The Africa Exhibit - Phases I & II, when completed in 1989, will encompass that portion of the existing hoofed stock paddocks directly south of the Primates. The total project of three phases will eventually take in all of the hoofed stock area up to and including the Bird Garden. Key elements in the project, in addition to dynamic animal exhibits, will be the AfriCafe, a central all - season food service facility, plus improvements to the Bandshell and Concert lawn area.



II. PHYSICAL PLANNING CONSIDERATIONS



THE *MASTER PLAN*

WASHINGTON PARK ZOO
METROPOLITAN SERVICE DISTRICT
PORTLAND, OREGON

A	MAIN ENTRANCE COMPLEX
B	RAILWAY STATION
C	RAILWAY MAINTENANCE
D	AUDITORIUM
E	ANIMALS AROUND US
F	CASCADES EXHIBIT
G	CASCADES MEADOW
H	FELINES
I	CENTRAL PLAZA
J	BEARS (WEST)
K	BEARS (EAST)
L	ELEPHANT CENTER
M	CONCERT LAWN
N	AFRICAFE
O	AFRICA
P	GARDENS
Q	SOUTH AMERICAN TROPICS
R	PRIMATES
S	COMMISSARY
T	STAFF PARKING
U	MAIN PUBLIC PARKING LOT
V	ALASKA TUNDRA
W	RESEARCH CENTER/HOSPITAL

N

0 100 200 400
FT

METROPOLITAN CONTEXT

Washington Park Zoo, a regional education-recreation and cultural public institution, is located immediately west of Downtown Portland. In its present context, WPZ is an urban zoological park that is owned and operated by the Metropolitan Service District for the benefit of the District residents in and visitors to Clackamas, Multnomah, and Washington counties. The Zoo occupies a hillside site at the south entrance to Washington Park, a major public recreation open space within Portland's West Hills. Washington Park is surrounded by established West Hills residential areas.

In the regional context of the metropolitan area, WPZ is highly accessible by private automobile and public transit in all directions. North-south regional access is possible via I-5 with exits to I-405 and to Sunset Highway U.S. 26. Areas to the east are served by I-84 and to the west by Sunset Highway. In the immediate vicinity, visitors can reach WPZ through the local street system. The 40-mile Loop, a hiking and biking trail connecting parks within the metropolitan region, passes within 100 yards of the Zoo Main Entrance. Completion of the Loop offers an additional mode and route for reaching the Zoo.

The close proximity and accessibility of the Washington Park Zoo to Downtown Portland offers excellent opportunity for many on-site special events and off-site programs or operations. It is a valuable cultural resource for the enjoyment and enlightenment of metropolitan residents and school children, out-of-state visitors, and convention delegates. Currently the Washington Park Zoo is the largest paid attraction in Oregon. Implementation of the proposed west side light rail system would encourage even greater visitation of the Zoo by both metropolitan residents and tourists.

GENERAL PLANNING ISSUES

EXTERNAL SITE USES:

Washington Park Zoo is sited within Washington Park, a major inner-city public open space that contains over 500 acres within its boundaries. The Zoo grounds are surrounded on the north and east by the Hoyt Arboretum and on the west by an extensive parking area which is jointly leased from the City of Portland by WPZ and the World Forestry Center, a non-profit conservation-education organization, and the Oregon Museum of Science and Industry, a private non-profit educational museum and science center. All three institutions lie within the boundaries of Washington Park. To the south and east of WPZ is a zone of undeveloped, unbuildable public land which slopes down to Sunset Highway (U.S. 26), a six-lane freeway which is owned and controlled by the State of Oregon.

The Washington Park Zoo (WPZ), Oregon Museum of Science and Industry (OMSI), and World Forestry Center (WFC) are important educational / recreational resources for residents of the metropolitan region. All three institutions share the goals of creating a more unified institutional complex that efficiently meets the public's needs, and of establishing a significant physical setting that acts as the South Entrance to Washington Park. OMSI has publicly expressed intentions of moving to another site within the City. Washington Park Zoo should explore possible Zoo uses of the OMSI building as it becomes vacated.

Coordination of all future expansion of WPZ-OMSI-WFC facilities to enhance the Northwest park setting of the complex further is an essential site development objective. Future facilities developed at WPZ are intended to be integrated visually within the existing park context in form and materials, but at the same time achieve a positive, dynamic image that is representative of the Zoo's uniqueness.

The World Forestry Center is contemplating a building program for future expansion of their facilities . WFC is projecting construction of an office complex north of the Center within the immediate future.

North of WFC, construction has begun on the Vietnam Veterans Memorial with development of a small parking lot across Knight's Boulevard.

Within the Washington Park Zoo, much of the original native character of landforms and vegetation has been substantially altered because of the earlier use of the site as a golf course, as well as the Zoo's original site design. Visual continuity of the Zoo grounds with surrounding forested lands is minimal, but will become strengthened as existing trees reach maturity.

The Washington Park Zoo Master Plan will provide assistance to guide all of the involved institutions in their relationships to each other. Parking is perhaps the most critical common problem that is discussed elsewhere in the Master Plan. The solution should be jointly financed.

ALL WEATHER ZOO:

The Zoo is operated year-round, during a variety of weather conditions. Reasonable provision for visitor comfort to encourage increased off-season use includes covered or enclosed areas being available for periodic relief from heat, cold or rain. Covering the entire Zoo would not only be cost prohibitive and impractical, but it would conflict with the objective of creating a natural setting. A balance of open and covered areas is more practical and desirable.

The need for temporary canopies should be reduced where feasible by providing more permanent covered spaces for shade and weather protection in non-exhibit areas for program uses. Permanent coverings or structures should be integrated into the overall context of the plan for design continuity. Areas where this would be most appropriate are near food service outlets such as at the Main Entrance Complex, BearWalk Cafe and AfriCafe.

A multi-use covered pavilion for 300-400 people is planned for group functions in the Cascade Meadow picnic area complex which will be large enough to accommodate 1000 to 1200 people during good weather. When use of temporary canopies is appropriate, they should be placed on hard surfaces to accommodate food service and program activities while preserving lawn areas. These sites should be equipped with solid surfaces, water, sewer, gas, lighting and power.

Generally, where temporary facilities are used, they should be made to appear as substantial and permanent as possible. Awnings or building roof overhangs are recommended where practical to provide weather protection for visitors, especially in areas used for queuing. Covered eating and rest areas are essential; they are considered as primary elements related to pacing and extending the average length of visitor stay.

Graphic displays or other items subject to exposure and deterioration should be designed and constructed to minimize maintenance. Covered areas are planned to minimize the appearance of hard surfaces and visual clutter.

ACCESSIBLE ZOO:

The Washington Park Zoo facilities should be designed for use by the broadest possible spectrum of the metropolitan community and visitors to the vicinity.

The Washington Park Zoo is committed to meeting the special needs of disabled, elderly, and young guests; making public spaces accessible to all visitors.

VEHICULAR ACCESS AND PARKING

A large majority of visitors travel to the WPZ-OMSI-WFC complex by private automobile. Sunset Highway (U.S. 26) provides the most direct access by automobile from east and west. To alleviate the hazardous condition which exists with the merger of U.S. 26 west-bound exit traffic and Knight's Boulevard east-bound traffic, a redesigned U.S. 26 exit road is strongly endorsed. This will provide for an improved arrival condition and direct neighborhood residential traffic and Zoo visitor overflow traffic to the west. This traffic presently travels east to turn around at the existing Main Entrance area, thereby increasing traffic volume and congestion at this location.

Vehicular circulation through the complex will be improved with the implementation of a comprehensive directional signage system that begins as visitors exit U.S. 26 and guides them to their destination effectively with minimal confusion and frustration. Vehicular circulation will be clarified and enhanced further with a new vehicular drop-off zone in front of the improved Main Entrance, and by directing arriving traffic to the main parking lot.

The appearance of the parking area will be enhanced with inclusion of additional landscape materials to meet the objective of reinforcing the park setting of the complex.

Insufficient on-site parking capacity to accommodate design day attendance has been identified as a major constraint on Zoo attendance, long range development and potential revenue generation. Solution of this issue was considered as a major element of the Master Plan.

DESIGN DAY:

An examination of past attendance records without evening events indicates that a **design day** volume of 7000 people would accommodate all but the highest eight to ten days of the year. There would be several days in the spring and probably three weekends during the summer when the design capacity would be exceeded.

An analysis of daily attendance records between July 1, 1984 and September 18, 1986 was used to determine a representative current design day attendance. The design day attendance level will be used to estimate daytime parking and traffic requirements. Evening events are treated separately.

The design day attendance level should be high enough to accommodate nearly all the days of the year.

Since the **annual attendance** is expected to increase to between 990,000 and 1,120,000 visitors per year in 1996, the **design day attendance** for 1996 is estimated to range between 8400 and 9500 people.

The evening activities at the Zoo, consisting primarily of concerts, range in attendance between 2000 and 6000 people with a comfortable maximum of 5500 people. Therefore, the design attendance for evening events is estimated to be 5000 people.

The current design day attendance for OMSI is estimated at approximately 5500 people. This volume is not expected to increase in the future since OMSI has indicated that the existing building capacity has peaked.

The design day attendance for the World Forestry Center (WFC) is currently estimated at 1150 people and by 1996 at 1300 people.

Table 1 (in the Appendix) summarizes the design attendance levels for the Zoo, OMSI, and WFC for 1986 and 1996.

Staff parking should be removed from the existing main parking lot into the redesigned staff parking area at the southwestern corner near the Zoo Maintenance Complex. This lot contains potentially a total of 96 spaces - 50% standard and 50% compact spaces. An additional 40 - 50 staff parking spaces could be gained in a new staff lot along the northeast service drive entrance near the Research Center.

In the event light rail transit (LRT) or a high capacity bus system is

developed in the Sunset Corridor serving the site, more visitors would come by transit. Therefore, the parking requirements would be less than shown on Table 2 (in the Appendix). Since the development of LRT is not assured at this time and the timing of construction is unknown, it is impossible to determine the effect of LRT on parking requirements. Design of additional parking should consider possible LRT development and its impact upon parking requirements.

PARKING:

The **parking demand** is a measure of the maximum number of vehicles parked during a given time period. The peak parking demand at the Zoo generally occurs between 1:00 and 3:00 p.m. on weekends. It is estimated from the 1979 surveys (see Table 1, Appendix) that the peak period parking demand is approximately 0.13 parking spaces per daytime visitor. The parking demand differs from the parking requirement because **the requirement is the number of spaces needed to accommodate the demand.** The parking requirement includes a cushion or extra spaces beyond the actual demand to allow for the inefficiencies of parking maneuvers. Evening functions such as concerts would have a different parking requirement because the average vehicle occupancy would be less than during the daytime, and there would be greater reliance on private automobiles in the evening. Table 2 indicates the estimate of the Zoo, OMSI, and WFC parking demand for the tenth highest day of the year.

Since OMSI is planning to move to the Station L site within the next several years, a range of parking requirements was assigned to the building for 1996. The low range of 200 spaces allows a moderate use of the building and the high of 500 spaces allows a level of usage consistent with the current operations of OMSI or if OMSI remains on this site without expanding the building.

The design evening parking requirement for the Zoo is estimated to be 1,670 spaces.

It is recommended that the design day parking requirements be satisfied on site and that remote parking at the Sylvan Interchange area be utilized when attendance levels exceed the design day estimates, or for approximately nine days of the year.

Therefore, a range of **between 1,400 and 1,900 spaces** is required to meet the projected demand for parking on site.

The additional parking above the existing 1,075 spaces on site would be provided in a parking structure. **A single level parking structure** which connects with the perimeter circulation road at grade is recommended as the most cost effective and aesthetically pleasing solution to providing of the required amount of parking on site. The orientation of the parking / driving aisles would be realigned to make maximum utilization for the site configuration. Attractive **aisle identification signage** would help minimize confusion and provide visual enhancement to the parking area. In the meantime, the remote parking at the Sylvan Interchange should be continued and directional signing improved.

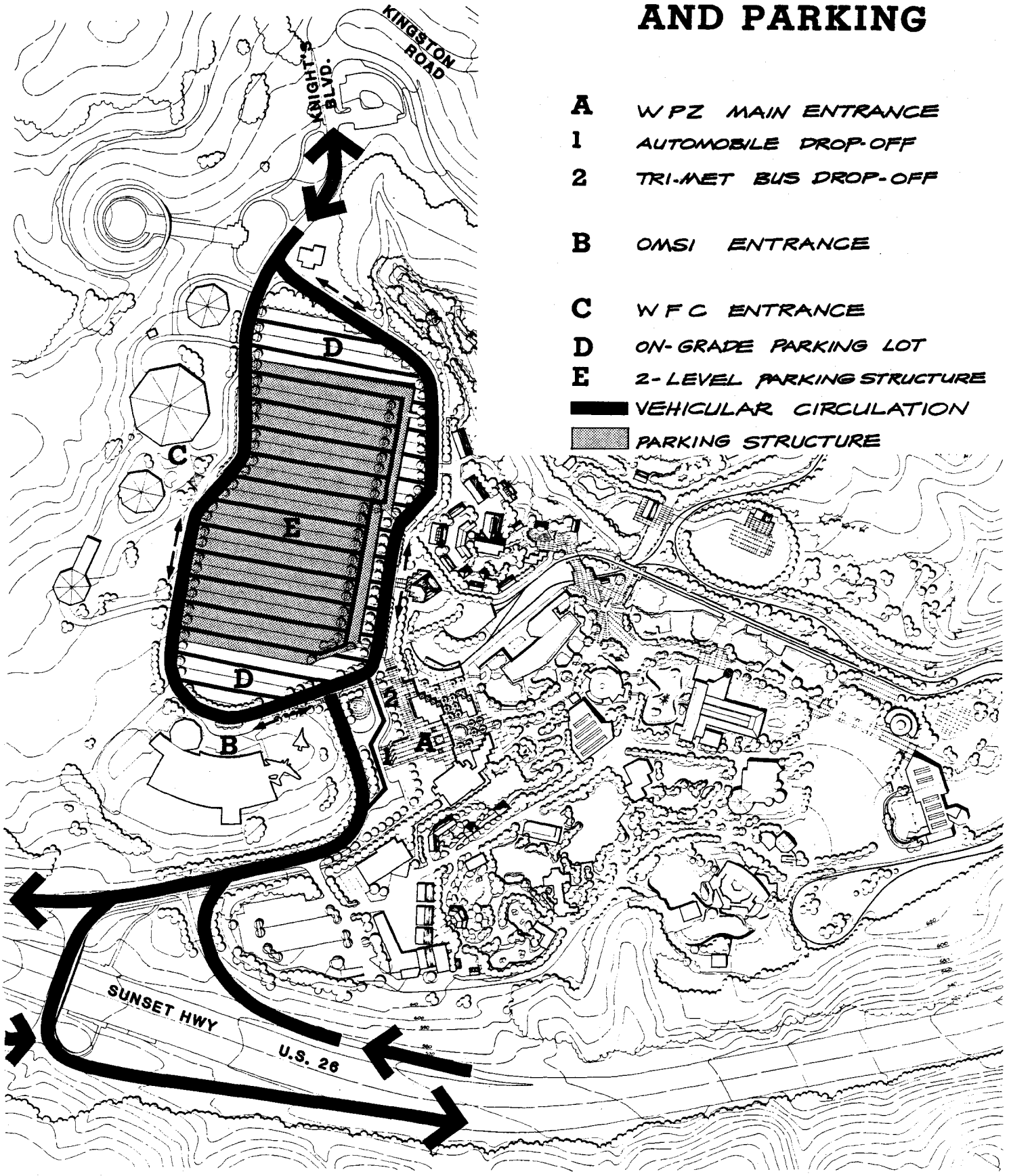
TRAFFIC CIRCULATION:

Generated Traffic

It is estimated that one vehicle is attracted to the Zoo for every four visitors on the design day. Approximately five percent of the visitors arrive by public transit, tour bus, walking, bicycling, or other means on the design day. However, during weekdays of the school year, there is a substantial use of school buses by groups visiting the Zoo. This school bus usage does not affect the design day requirements, but needs to be considered in the physical design of the facilities.

It is therefore estimated that the Zoo attracts approximately 1,750 vehicles

VEHICULAR ACCESS AND PARKING



during the design day for a total two-way volume of 3,500 vehicles per day. Table 3 summarizes the design day vehicle trip generation for 1986 and 1996.

Through Traffic

Currently, approximately 3,500 vehicles are attracted to the Zoo, OMSI, WFC parking lot on the design day. In addition approximately 825 vehicles are estimated to pass through the lot in each direction on Knights Boulevard between Fairview Boulevard / Kingston Drive and Canyon Court / U.S. 26. Therefore, approximately 20 percent of the traffic on Knight's Boulevard or within the parking lot is estimated to be through traffic and not oriented to the Zoo, OMSI, or WFC.

Total Traffic

The total 1996 design day traffic entering and leaving the Zoo, OMSI, and WFC parking facility is shown on Figure 1 (in the Appendix). As indicated, approximately 3,700 vehicles are estimated to enter the lot from the south and 2,500 vehicles from the north on the design day. Approximately 4,850 vehicles are estimated to leave via the south and 1,400 via the north. These volumes include the 825 through vehicles in each direction during the design day.

The 1996 peak hour traffic estimated to enter and leave the parking lot during the design day is shown on Figure 2. Three peak hours are shown: the highest hour of entering traffic (11-12 noon); the highest hour of total traffic (1-2 p.m.); and the highest hour of leaving traffic (5-6 p.m.).

In the event LRT or a high capacity bus system is developed in the Sunset Corridor and serves the site, more visitors will come by transit. However, a reduction in the 1996 vehicle trip generation will not change the traffic circulation needs of the site or the recommendations which follow.

It is recommended that the **interchange improvement** as proposed by the Oregon Department of Transportation (ODOT) to serve Canyon Court / Knight's Boulevard be constructed as soon as possible. The westbound off-ramp to Canyon Court / Knight's Boulevard should contain a left turn lane at least 200 feet long and a right turn lane extending back to the freeway. Stop sign control on the ramp and at the intersection of the overpass and Canyon Court would provide sufficient traffic control for the design day peak hour volumes.

Canyon Court should remain as a continuous two-way roadway between Knight's Boulevard and Skyline Drive. Canyon Court serves the adjacent land and serves the shuttle bus operation between the remote parking areas at the Sylvan Interchange area and the Zoo, OMSI, and WFC.

Traffic circulation on Knight's Boulevard in the parking facility should be changed in conjunction with the construction of the proposed single level parking deck. It would consist of a two-way circumferential roadway surrounding the parking facility. This roadway would be 30 feet wide with stop sign control at the south end on the northbound approach of Knight's Boulevard to the circumferential roadway.

Stop sign control at the north end of the parking area would occur on the approach of the east leg of the circumferential road intersecting with the north leg.

Pedestrian crossings between the parking facility and the three institutions are to be consolidated and well marked. Special design treatment of the pavement at pedestrian crossings such as pavers or colored and textured concrete should be considered. Pedestrian walks will be provided on each side of the circumferential roadway with a minimum width of eight feet.

One or more **pedestrian bridges** over the east leg of the circumferential roadway connecting the upper parking deck to the walkway serving the Zoo is recommended to

minimize vehicle / pedestrian conflicts. Design of the pedestrian bridges should consider provision of at least one ramp to permit handicap access.

PUBLIC TRANSPORTATION:

Detailed engineering studies may begin to finalize the location of **light rail transit** (LRT) in the Sunset Corridor. A station is recommended to be located conveniently to the Zoo, OMSI, and WFC. If LRT is constructed and serves the site, more visitors to these institutions will come by public transportation and thus reduce the traffic impact and parking requirements. It is too early to estimate this impact, but every effort should be made to encourage the development of LRT to serve the site.

PROJECT: **MAIN PARKING LOT**
W/1-LEVEL STRUCT. DECK
(1900 PARKING SPACES)

DIVISION / ITEM	**AMOUNT**
LABOR AND MATERIAL* CONSTRUCTION COSTS	$7,173,587.
CONTRACTOR OVERHEAD AND PROFIT (10%)	717,358.
SUBTOTAL	$7,890,945.
DESIGN / ESTIMATE CONTINGENCY (10%)	789,095.
SUBTOTAL	$8,680,040.
PROFESSIONAL FEES (10%)	$868,004.
SUBTOTAL	$9,548,044.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	954,804.
TOTAL	$10,502,848.

* 1987 Dollars

PEDESTRIAN CIRCULATION AND PUBLIC SPACES

OBJECTIVES:

Principal pedestrian circulation objectives are: 1) provide safe, pleasant, and convenient movement from the parking area directly to the Zoo Main Entrance, and within the Zoo grounds; 2) reinforce the clockwise pattern of primary pedestrian routes through the Zoo; 3) maintain accessibility for handicapped and elderly visitors.

CIRCULATION:

Visitors and employees arrive and depart by bus on both sides of U.S. 26. Movement to and from the bus stops will be improved by means of the proposed new exit ramp alignment, adequate sidewalks, and crosswalks and mechanical means where appropriate in conjunction with development of light rail transit.

Several **pedestrian crossings** from the parking area to the perimeter pedestrian loop are designated by pavement markings and material changes. These are to be further reinforced by provision of signage. Pedestrian bridge crossings will be provided from the upper level of the proposed parking structure.

Various **visitor amenities** will be provided along the perimeter pedestrian loop to enhance their arrival and departure. Nodes occur at several locations which have seating, weather protection, informational signage and drinking fountains. Messages to arriving visitors will include reminders about pets left in cars, locking car doors, pre-ticket information, etc. Departing visitors will be given information about future events or attractions and other facilities in addition to being encouraged to return again soon.

The **Main Entrance Complex** is the beginning and the end to the primary internal pedestrian circulation system. These spaces also offer diversity in character and potential experience. From the Main Entrance Complex, visitors enter internal Zoo areas along a landscaped, tree-canopied pedestrian promenade known as **"Zoo Street"** that connects with the Central Plaza, the primary circulation node. The Central Plaza assumes major importance since all paths in the Zoo intersect at that location. Pedestrians proceed east from the Central Plaza along "Zoo Street" to the Elephant Center / Concert Lawn area.

The **Central Plaza** also serves as a reference point for visitor orientation and as a place to relax and re-group. It is also the setting for a number of scheduled special events. The significance of the Central Plaza is reinforced by its relationship as the gateway to several major exhibits around the perimeter.

The other principal circulation loop, through the *Animals Around Us* Exhibit and the nature trail in the Cascades Exhibit, begins at the north side of the Central Plaza.

PUBLIC SPACES:

Special interest **gardens** like the Rose Garden and Lewis and Clark Garden, mini-parks like Swigert Fountain and Sculpture Garden, and **food / rest areas** like Bear Walk Cafe, and Elephant Plaza all enrich the Zoo experience. The clarity and physical definition of circulation and public spaces should continue to be improved.

Focal points, gathering places and rest areas are designed as **visitor pacing elements.** Food service, retail, and restroom facilities will be strategically located as part of the overall plan to enhance the visitor experience. Periodic weather protection for use during hot, cold or wet weather should be provided to improve the comfort of visitors, particularly small children and older people.

Street furniture, such as waste receptacles, benches, fountains, signage, needs, banners, light fixtures, benches, and drinking fountains should be consistent elements which reinforce the "Northwest Zoo" theme.

Special features such as art objects or unique visual elements should be incorporated into the pedestrian system at periodic intervals to heighten interest and reinforce the concept of visitor pacing. Alternate paving materials and colors should be maximized for paths intended exclusively for pedestrian use and at plazas for transition areas.

Physical barriers for restraining animals from escaping or visitors from intruding should not be visually imposing or distracting. Visual barriers used to screen utilitarian buildings and service elements should be integrated with the landscape design at public spaces so as to maintain a sense of continuity.

The Washington Park Zoo should develop a comprehensive set of **standards for street and public spaces** to promote design unity and to provide for visitor comfort and convenience. Variations from the system will occur within zoo geographic exhibits.

SIGNAGE AND GRAPHICS:

A comprehensive **signage system** is to be integrated into the streetscape. The system should begin at the Main Parking Lot and the Main Entrance Complex and continue throughout the Zoo. This system should accommodate both electronic and static two dimensional applications. The sign system provides vital orientation about visitor services, animal exhibits, and special events spaces. The purpose of **direction and identification signs** within the Zoo grounds is to provide a system which visitors can use to self-guide their visit with ease and clarity. Graphic **orientation maps** should be provided at transitional plazas or hubs to reinforce the visitor's sense of direction and location.

PEDESTRIAN CIRCULATION

A MAIN ENTRANCE COMPLEX
B ZOO STREET
C CENTRAL PLAZA
D CONCERT LAWN
E ELEPHANT PLAZA

PEDESTRIAN FLOW AND COMPARATIVE VOLUME

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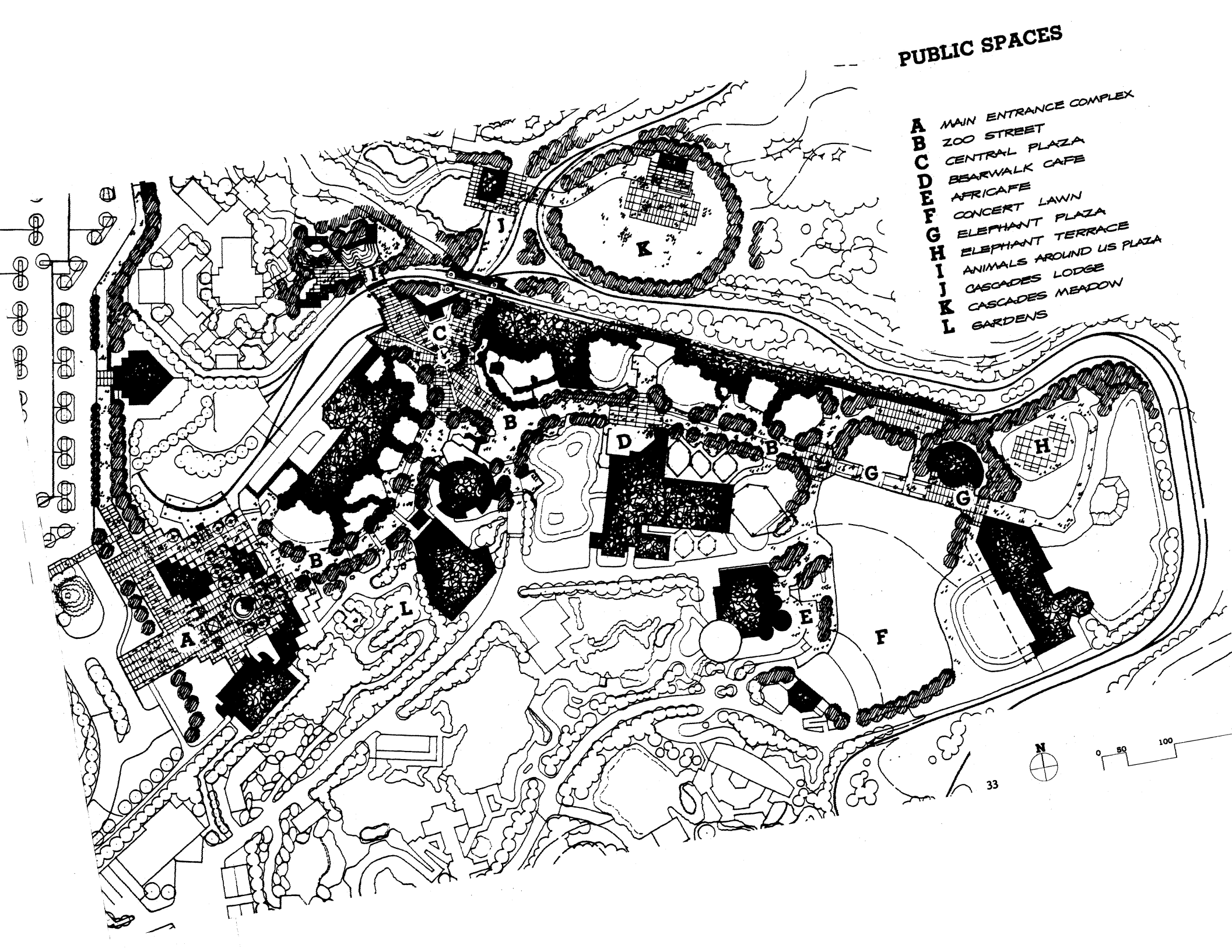
PUBLIC SPACES
A MAIN ENTRANCE COMPLEX
B ZOO STREET
C CENTRAL PLAZA
D BEARWALK CAFE
E AFRICAFE
F CONCERT LAWN
G ELEPHANT PLAZA
H ELEPHANT TERRACE
I ANIMALS AROUND US PLAZA
J CASCADES LODGE
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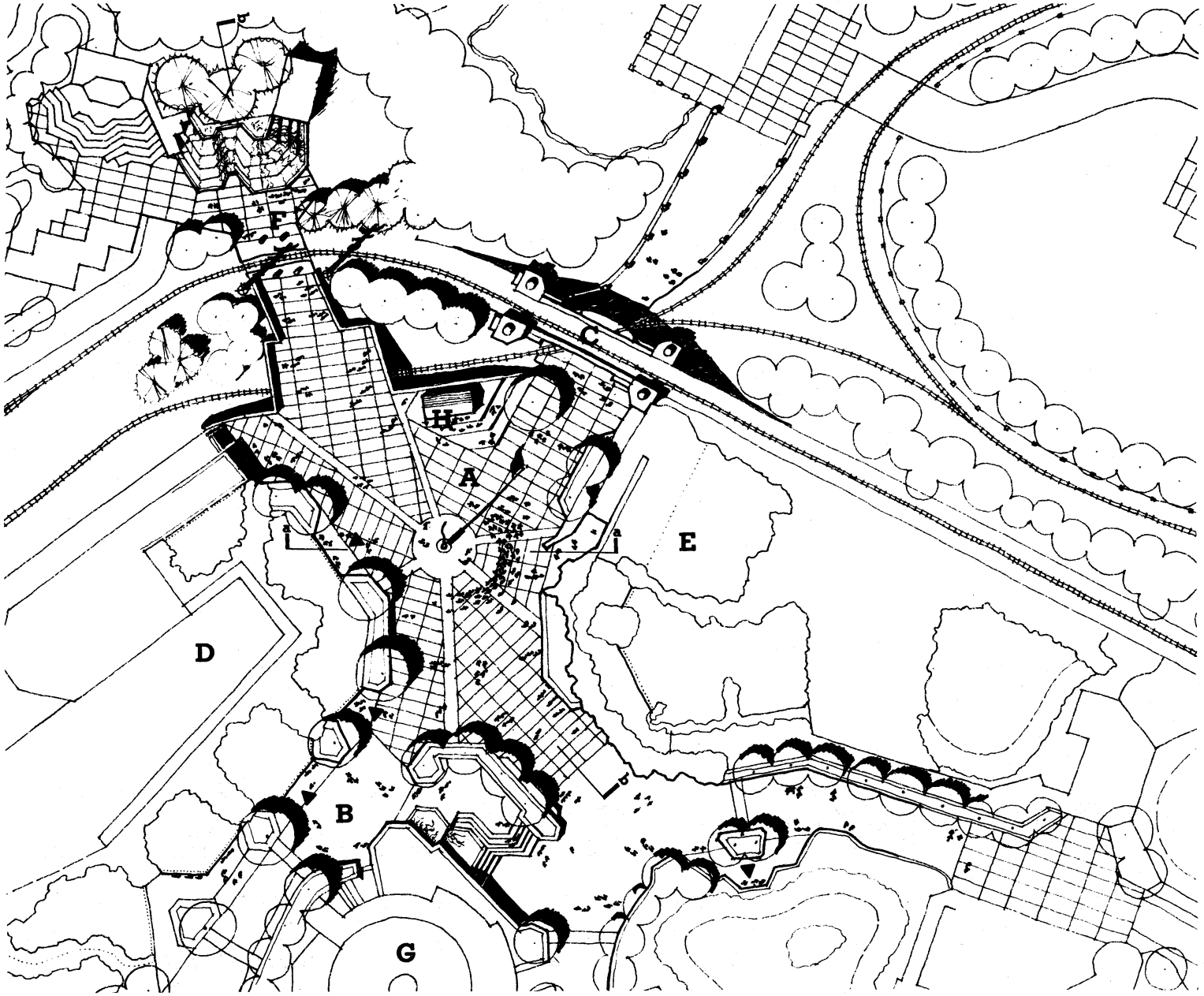
CENTRAL PLAZA



A CENTRAL PLAZA
B ZOO STREET
C RAILWAY TRESTLE
D FELINES
E BEARS (WEST)
F ANIMALS AROUND US
G PENGUINARIUM
H FOOD SERVICE

◀ VIEW POINT
L SITE SECTION

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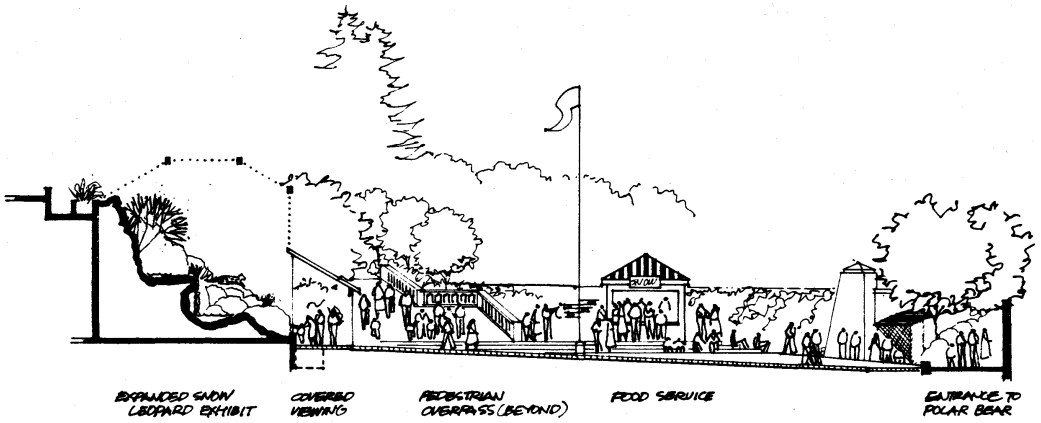
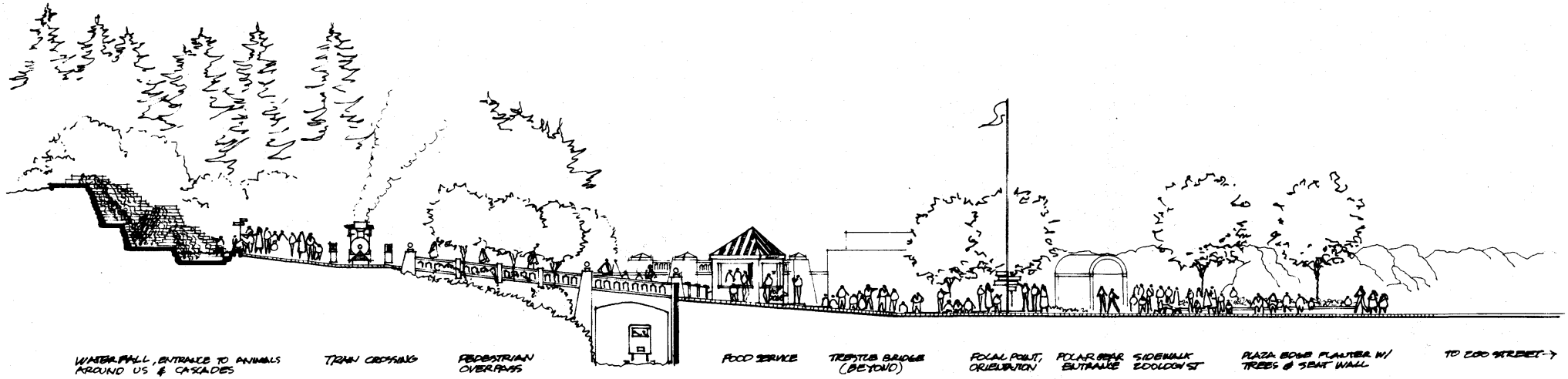


SECTION a-a SCALE 1"=20'



SECTION b-b SCALE 1"=20'

PROJECT: **CENTRAL PLAZA**

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$405,974.
CONTRACTOR OVERHEAD AND PROFIT (10%)	40,597.
SUBTOTAL	$446,571.
DESIGN / ESTIMATE CONTINGENCY (10%)	44,657.
SUBTOTAL	$491,228.
PROFESSIONAL FEES (12%)	58,949.
SUBTOTAL	$550,175.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	55,018.
TOTAL	$605,193.

PROGRAMMING AND VISITOR SERVICES

OBJECTIVES:

Washington Park Zoo is committed to maintaining a complete system of support services which allows visitors to experience the park setting and the animal exhibits with comfort and convenience. These services and facilities play a significant role in establishing the atmosphere of a high quality experience for Zoo visitors.

This should contribute to an increase in the average visitor length of stay and an increase in the number and frequency of return visits thereby increasing per capita spending and overall revenues.

VISITOR SERVICES:

The continued improvement in visitor services and in revenue generation is addressed throughout this Master Plan, flexibility being a primary criterion. The ability to expand and contract services efficiently and quickly on a seasonal, daily and hourly basis is of foremost concern for the successful management of the Zoo. The goal is to address the needs of both peak-attendance and low off-season crowds with a consistent level of quality of service.

An expanded offering of indoor and outdoor spaces for rental and catering is included within the facilities recommended in this Master Plan. These services and facilities constitute an extended service to the community that is also an increasing source of revenue for the Zoo. These include **AfriCafe - Lower Level** banquet facilities, the Visitor and Staff Service Building, the WPZ Gift Shop, a thematic Railway Station, Auditorium, the Cascades Meadow picnic area, and Elephant Plaza Picnic Area. In conjunction with the AfriCafe and Concert Lawn facilities being built with Africa, Phases I & II, WPZ will offer a wide range of valuable visitor services and expanded opportunity for enterprise revenue.

PROGRAMMING FACILITIES:

The **Auditorium,** programmed as a multi-use facility for a diverse program of activities, is accessible directly from outside or inside the Zoo. The building is designed with a flat floor, high ceiling, flexible seating, movable dividing walls, and a small serving kitchen. Large spans of glass will frame unique vistas into the Zoo and the West Hills beyond. Landscaped, outdoor terraces expand the flexibility and enhance the image of this facility. The potential uses for this space include Zoo orientation presentations and other educational programming, group rentals for social gatherings, receptions for convention delegates, conferences, local civic organizations, lectures, etc. In addition to serving the needs of general visitors and large groups, the Zoo will continue to provide educational programming. A variety of programs will continue to be offered including: Bird of Prey, Reptile and other live animal shows; summer day camps; classes for adults, children and families; presentations designed for school children, and so forth. To accommodate this variety of offerings, a number of spaces which can be used for programming have been integrated into the overall Zoo plan; these spaces include rooms in the Africa Exhibit and Animals Around Us exhibits, the Auditorium, Concert Lawn and Cascades Meadow.

In order to allow the **Concert Lawn** area to be more flexible for use in inclement weather or for special programs that need to be partitioned off from the rest of the Zoo, Elephant Plaza is designed for easily installed canvas canopies. These canopy sections measure 20 feet by 20 feet. Each terrace will provide recessed sleeves into which the canopy poles are inserted.

The **Cascades Meadow,** located north of the railway and east of the Cascades Lodge, will offer facilities for group

picnics, special events and programs. This permanent covered pavilion will have food service facilities, restrooms, and storage for catered events. It will accommodate 150-200 people in a banquet seating arrangement. The paved terrace to the south of the pavilion will accommodate modular canopy sections (20 feet by 20 feet) using the recessed sleeve system for quick canopy erection.

The balance of the Cascades Meadow is a relatively level grass lawn surrounded by trees to provide a sense of seclusion. A rustic fence system around the area and an automatic railway gate system will provide security and visitor protection.

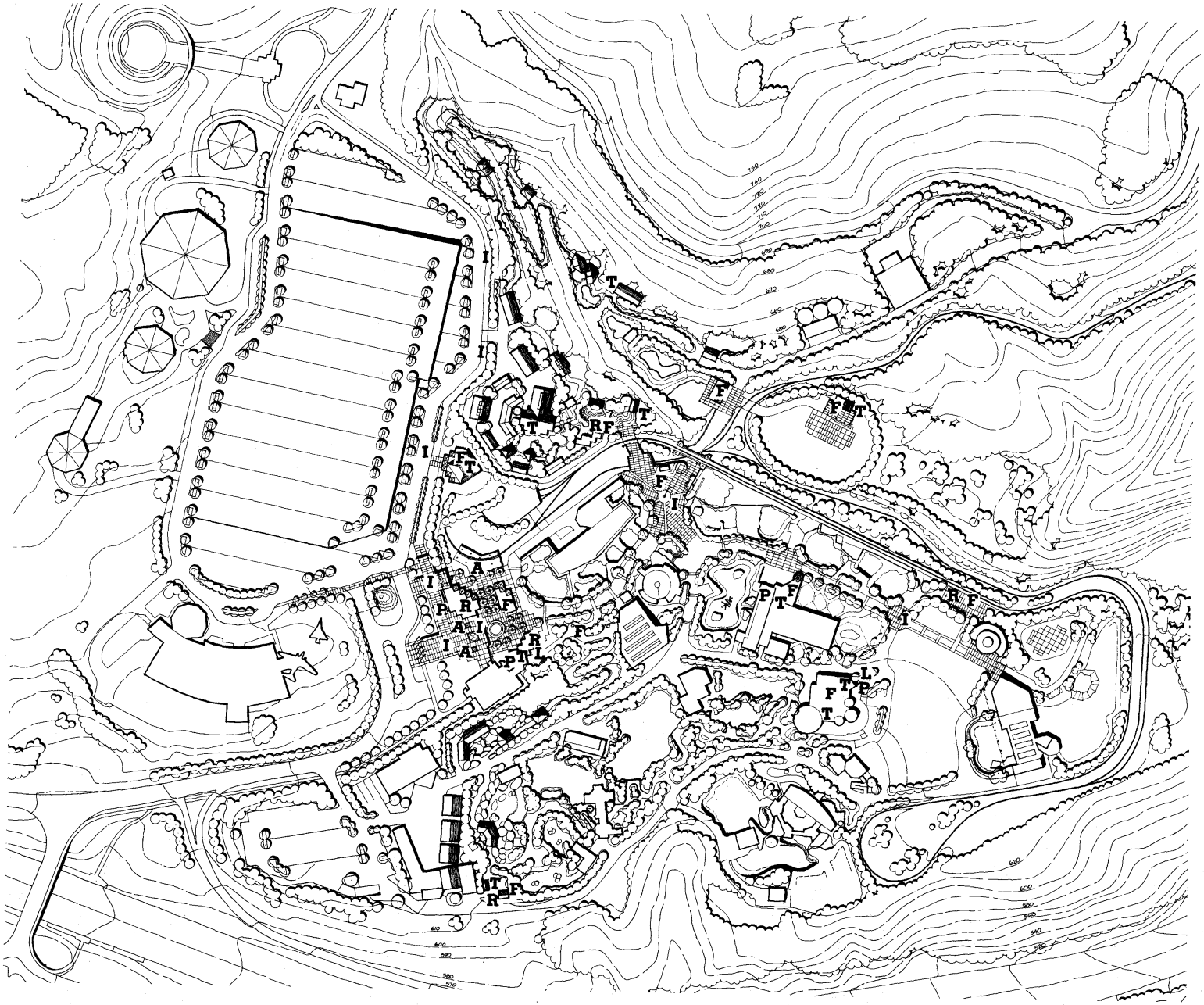
PROJECT: AFRICAFE BASEMENT

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$222,250.
CONTRACTOR OVERHEAD AND PROFIT (10%)	22,225.
SUBTOTAL	$244,475.
DESIGN / ESTIMATE CONTINGENCY (10%)	24,448.
SUBTOTAL	$268,923.
PROFESSIONAL FEES (13%)	34,960.
SUBTOTAL	$303,883.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	30,388.
TOTAL	$334,271.

PROJECT: AUDITORIUM

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$831,425.
CONTRACTOR OVERHEAD AND PROFIT (10%)	83,143.
SUBTOTAL	$914,578.
DESIGN / ESTIMATE CONTINGENCY (10%)	91,458.
SUBTOTAL	$1,006,036.
PROFESSIONAL FEES (14%)	140,845.
SUBTOTAL	$1,146,881.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	114,688.
TOTAL	$1,261,569.

VISITOR SERVICES



A ADMISSIONS / TICKETING
F FOOD SERVICE
T TOILETS / DRINKING FOUNT.
R RETAIL / GIFTS / RENTALS
I INFORMATION / SIGNAGE
P PHONES
L LOCKER / VENDING

N

0 100 200 400 FT

LANDSCAPE FRAMEWORK

The Zoo grounds are surrounded by forestlands of Washington Park which provide a backdrop and context for the northwest setting of the Zoo.

The main area of the Zoo had been initially cleared of native vegetation to accommodate the West Hills Golf Course. Over the ensuing years, the existing grounds were replanted with ornamental planting in small, sparse areas. The resulting condition lacked organization and continuity, and contributed to a generally barren appearance for much of the older parts of the Zoo. Significant exhibit development in the past ten years has made a dramatic improvement in exhibit areas, but the general landscape in public, non-exhibit paths and spaces should continue to be improved.

With current and future development at Washington Park Zoo, the landscape framework falls into four major categories:

1. Native Northwest Landscape - the natural, perimeter buffer around the Zoo site. This should be protected and incorporated into any Zoo development as a unique resource.

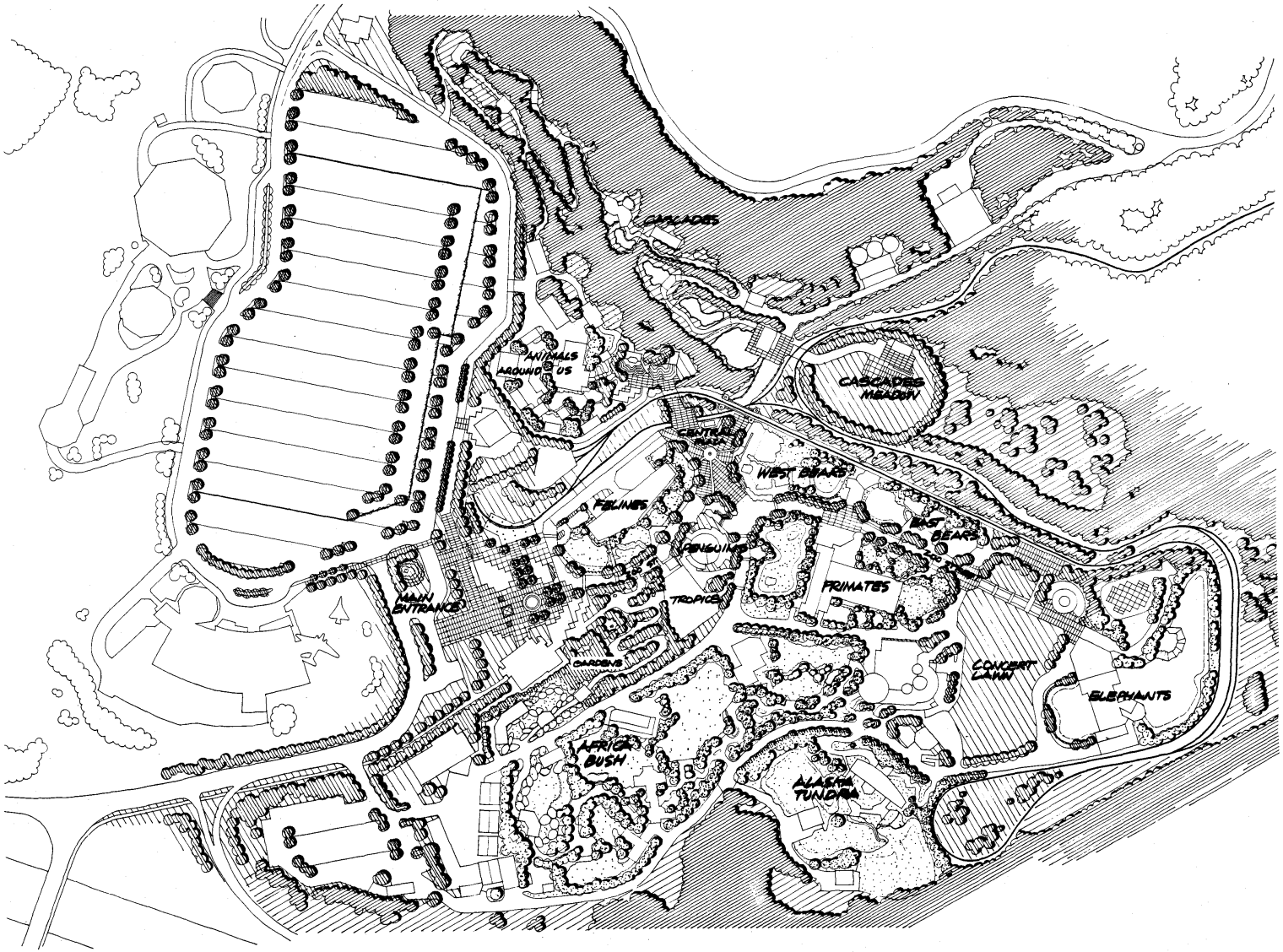
2. Exhibit Habitat Landscape - the specialized, replicated habitat plantings throughout the larger zoogeographic exhibits and to a lesser degree, the taxonomic exhibits. These are a primary part of any exhibit project design.

3. Public/Non-exhibit Landscape - the existing landscape areas outside specific exhibit zones and the older parts of the Zoo which are lacking in content and impact. These areas have the potential to enrich the non-exhibit time that visitors spend at the Zoo: eating, resting, enjoying other people, watching demonstrations, and special events. If developed to their potential, these areas can simultaneously provide diversity of experience and continuity of quality to the Zoo visit. The plant material for this type of landscape can be varied but should be commonly used in the region. There should be variety of size, form, foliage, evergreen and deciduous and seasonal color. However, certain primary landscape elements in these paths and spaces can also achieve continuity through selective repetition. These landscape areas may be developed in conjunction with adjacent exhibit projects, but may be more appropriately developed as distinct projects.

4. Transition Landscape - the spaces between habitat exhibits or between a distinctive habitat and public, non-exhibit space that require a transition of landscape appearance. What is required at these locations is a diligent and sensitive mixing of the two landscape types and/or other non-specific plant materials that will essentially blend the edges. This non-botanical type of landscape should be developed in conjunction with either adjacent exhibit or non-exhibit, public space projects.

Refer to the Exhibit Landscape Recommended Plant Materials List in the Appendix for details of specific landscape areas.

LANDSCAPE FRAMEWORK



NATIVE NORTHWEST LANDSCAPE

EXHIBIT HABITAT LANDSCAPE

PUBLIC/NON-EXHIBIT LANDSCAPE

TRANSITION LANDSCAPE

N

0 100 200 400 FT

INFRASTRUCTURE

UTILITIES:

During the Master Plan programming phase, existing WPZ utility records and field study reports were reviewed. Interviews with Zoo personnel were also conducted to identify general areas of concern related to the utility systems. Those concerns along with recommended actions are summarized below.

The utility systems have various deficiencies that can be identified and it is assumed that there may be further problems not yet identified. The record utilities drawings are out of date and need to be updated. A comprehensive summary of current and projected utilities capacities should be developed and included in the record drawings. A comprehensive set of **Utility Record Drawings** should be developed. Field investigations should be conducted to complete the record of the existing system. Procedures should be developed to ensure that accurate record drawings are prepared for each new project and that each utility master drawing is updated from the project record drawings. The update procedure for the master utility drawings should minimize the need for reference to the project record drawings when subsequent revisions or extensions are designed. Standardized guidelines for design, operation, maintenance procedures, and training programs should be established.

Leakage is believed to be the most significant problem with the water system. This may add unnecessary costs in water and sewage billings and could contribute to ground instability. The **water distribution system** is not looped in some areas to permit service from two directions, which makes continuous service difficult when repairs are required. Water quality would be improved in some of the dead-end lines if the system were looped.

Sewer lines in some areas may be reaching capacity where new water-intensive exhibits have been added. Evaluation of **the sewer system** as a whole would identify areas where capacity should be increased. Many of the suspected problem areas will be replaced by the Africa Exhibit construction. Therefore, evaluation of the water and sewer systems should be conducted upon completion of that exhibit.

While the **electrical power system** has various problems, most are attributable to the age of the system. Most of those problems will be addressed as part of the renovation of the older areas of the Zoo, in the Africa Exhibit and the Animals Around Us. The lower substation is currently at capacity, but will be upgraded during construction of the Africa Exhibit.

The demand on the **gas system** is currently near capacity. The installations most distant from the source may experience inadequate gas supply during cold weather. Extensive rerouting of gas lines will be required for the Africa Exhibit, which will remedy some system deficiencies.

The Zoo's **communication system** is nearing capacity because of the increasing number of telephones and new equipment such as computer interlinks and closed circuit TV, which use communication lines. The older telephone conduits are in need of repair, and some lines have excessive background noise. A complete evaluation of the system should be conducted to determine the extent of needed improvements.

Location and quantification utility failures or inadequacies should be recorded on the Master Utility record drawings as they are identified. This may require periodic field research to accomplish, such as TV inspection of the sewer system, or leak testing of the water system. Having the defective conditions defined would permit remedial work to be integrated into on-going Zoo development plans and avoid unexpected failures.

The future demands on the utilities systems should be evaluated taking into consideration not only the requirements of the proposed individual exhibits, but also the general effects of attendance growth consistent with the Capital Improvements

Implementation schedule. Future development to the utility systems should evaluate the need for and incorporate conservation, safety, or environmental improvements.

Guidelines for utility development should be established prior to further system development to ensure that the ongoing utilities improvements conform to and support the Zoo goals, policies, and objectives.

A comprehensive operation and maintenance program should be developed and implemented for each utility system. This should include the development of a training program for the Zoo staff involved in utilities maintenance so that their work will be safer and more efficient.

SUPPORT & STORAGE FACILITIES:

The Zoo storage facilities are intended to provide facilities for control and management of supplies and materials. They need to include locations for ordering, receiving, and dispersal of supplies that are used on a regular basis. Facilities for storage of supplies are required for the following categories: animal food and supplies; food services; gift shop supplies; office supplies. Storage facilities need to be designed for clean, efficient, cost effective, safe and secure operations. A comprehensive detailed space utilization plan should be developed to determine the optimum use of each building or portion of building dedicated for support and storage functions.

Commissary:

The interior of the Commissary building should be upgraded to provide more efficient, safe, and cost effective use of the building. The building is presently used for many incompatible purposes which do not make most effective use of the available space.

The area used by **Graphics** should be designed and remodeled to handle the variety of flammable, volatile and hazardous compounds used. The area needs to be expanded or relocated to improve working conditions and effectiveness of the operation.

The **general storage** operations should be reorganized in conjunction with provision of modern supply-handling equipment. Benefits will include more efficient use of the available space, better rotation of stock, and reduced damage and losses. The Keeper lockers and facilities are to be relocated to the Staff Locker room in the Visitor and Staff Service building which will increase space available for items appropriate to the Commissary function.

The Commissary Building should be reroofed with a modern roof system to prevent leakage and minimize maintenance. The **exterior envelope** of the building needs to be upgraded to provide adequate moisture protection, energy weatherization and security. Structural evaluation is strongly encouraged and remedial work implemented as needed.

The **loading dock** should be redesigned for efficient and safe operation. By reorienting the dock at a 45 degree angle and incorporating dock leveler equipment, traffic conflicts in the maintenance yard will be minimized, while substantially improving operations.

The cooler and freezer should be evaluated and modified if necessary to provide adequate space and to maintain compliance with current health regulations.

General Storage:

A new hay storage barn is programmed for the Africa Exhibit - Phase III. When it is completed, the buildings at the west side of the Maintenance Yard should be converted to general storage or shop functions. Redesign of this area should be done in conjunction with an overall Zoo space utilization study to ensure its most effective use. Storage facilities exist or are planned at various locations throughout the Zoo. These facilities serve a wide

range of function and types of equipment or supplies. A comprehensive space utilization plan should be developed to ensure optimum and effective use of all facilities. New facility designs should provide for needed storage. If that study determines that additional maintenance / storage space is required, such expansion should occur at the south of the auto shop adjacent to the new service road.

ANIMAL MANAGEMENT OFFICE HOSPITAL & QUARANTINE FACILITIES:

As noted in the 1983 Master Plan, the building exterior needs to be completely refinished, especially all wood surfaces, as soon as possible in order to check and prevent further deterioration. Provide storm windows or insulated glass at all windows to reduce energy consumption. Consider replacing some fixed units with operable sections for optional ventilation. Also consider providing shading devices for the offices on the south side of the building to reduce solar gain in summer. Weatherize the entire building including weatherstripping and caulking at doors, wall and floor openings and panel joints. Upgrade floor drainage and waterproofing in Quarantine Rooms, providing a waterproof base at the perimeter. Repair water damage at walls, floors and bases as needed. Replace soiled acoustic ceiling tiles at mechanical supply registers. Clean or replace dusty or stained light fixture diffusers. Additionally, storage is a chronic problem in the building. The balcony at the basement level is under utilized and could be used in a more supportive way, such as an off-exhibit small animal breeding area.

The office on the south and west of the building were built for laboratory purposes and are not an efficient use of space in today's office environment. Gradually these should be evaluated and modified so that they will become more practical and useful.

Presently the hospital/quarantine facilities in this building consist of a postmortem room, kitchen, three small animal rooms, a combined treatment/x-ray room, an autoclave room, a surgery room, a laboratory room, a store room, and an office.

In the future, caging will have to be upgraded to care for new species and to replace worn-out equipment. Additional rooms for isolating animals and birds may be required to avoid overlap of sick and newly-acquired animals in an expanding collection. Indoor/outdoor areas for small animals and birds would improve recovery rate and acclimatization in some species which now can only be hospitalized indoors.

New specimens will require new equipment; such as new gas anesthesia specifically for birds and specialized caging for reptiles.

Ideally, the hospital should be isolated from casual traffic by non-essential staff to maintain isolation and quarantine by a re-configuration of the existing space in the building.

The postmortem room is in need of improvement in water supply and space for dissection of large mammals. Frozen storage of specimens is minimal and detracts from specialized testing and saving specimens for later educational use.

There are three indoor rooms, three outside yards and two kitchens at what is known as "large animal quarantine" in a separate building west of the Office Building. This area could be improved by providing facilities for large animal surgery and by providing access for large trucks.

TRAIN STORAGE:

The Snow Storage / Train Storage building is in poor physical condition. It is also in a remote location that makes access to it other than by train difficult. The functions of this facility should be relocated to the proposed Railway Maintenance facility and the structure demolished as soon as practical.

INTERNAL SERVICE CIRCULATION:

Operational efficiency continues to remain a high priority for the Zoo. This objective can be realized by continuing to provide direct access and circulation for service vehicles throughout the Zoo.

The **Main Service Entrance** is located at the southwest corner of the Zoo with access from Knights Boulevard. The Maintenance Complex for the Facilities Management Division and the Commissary are located in the same area. A majority of off-site service traffic passes through this complex. The other primary service access is located at the northeast corner of the site, near the Research Building.

Service vehicles currently share all public pathways and roads with Zoo pedestrians and have exclusive service access into a number of exhibits. These vehicles include small "Cushman" 3-wheelers, pick-up trucks, street sweepers, occasional heavy boom-crane trucks and tractor-trailers for hay deliveries to the Elephant Center. Adequate space must be provided for temporary trailer parking during hay deliveries. Most of the existing primary circulation system within the Zoo is more than adequate in width and radius for all service vehicles.

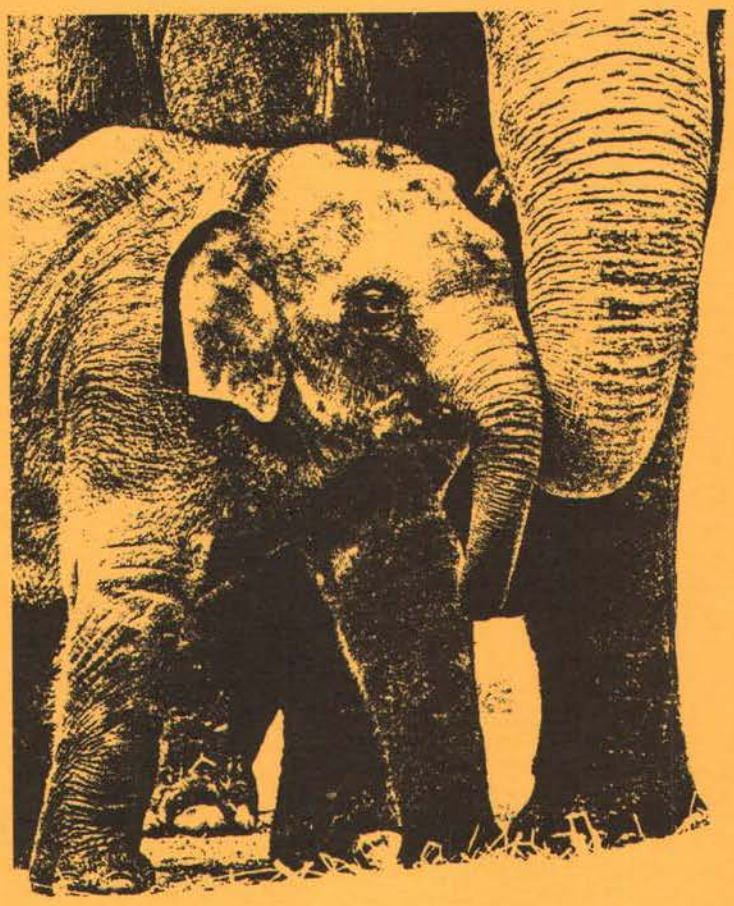
Some existing combined service road / public pathways are recommended to be vacated and dedicated exclusively to service use because of their orientation to existing service access points and the absence of visitor attractions along their route. An exclusive **service corridor road** has been developed that directly connects the Maintenance / Commissary Area with the central areas of the Zoo. This road will provide additional flexibility in service activity throughout the day including that required for maintenance, animal support, and food service. A secondary service road is planned for the vacated portion of an existing pathway / road in the southwest corner below the Africa Bush Exhibit.

Service access for the Animals Around Us Exhibit and its Zoomobiles occurs north of the proposed Auditorium from the main parking lot. The Gift Shop at the Main Entrance is also accessible from the public parking lot.

Exclusive service use of roads will minimize potential conflict between pedestrians and service vehicles. Exhibit service access is developed along new and existing pedestrian pathways that are appropriate to the specific circumstances and requirements for each exhibit. All pedestrian pathways should maintain adequate widths for use by service vehicles where possible.

PROJECT: COMMISSARY RENOVATION & GENERAL STORAGE FACILITIES

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$473,550.
CONTRACTOR OVERHEAD AND PROFIT (10%)	47,355.
SUBTOTAL	$520,905.
DESIGN / ESTIMATE CONTINGENCY (10%)	52,091.
SUBTOTAL	$572,996.
PROFESSIONAL FEES (10%)	57,300.
SUBTOTAL	$630,296.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	63,030.
TOTAL	$693,326.



III. ECONOMIC PLANNING CONSIDERATIONS

ECONOMICS

HISTORICAL ATTENDANCE CHARACTERISTICS:

Since opening to the public in 1959, Washington Park Zoo attendance has reflected the impacts of special events, investments in facilities and exhibits and programming innovations. Negative impact has also been felt during periods of little new development activity. A chronology of some of these major events and improvements are shown in Figure 4, overlaid on historical attendance statistics.

The highest attendance occurred in 1962 and 1963 with the birth of Packy, the first Asian elephant born in the Western Hemisphere in 44 years and coinciding with the Seattle World Fair. After these record setting years and a period of stable attendance in the late 1960's, attendance fell to a low of 451,000 visitors in 1974-75. The period of steady **attendance decline** between 1971 and 1976 corresponded to an era when promotion and **enhancement of the facility were minimal.**

During the 10 years since 1976, attendance has shown a steady upward trend. The **new and rehabilitated exhibits** which opened during this recent phase in the Zoo's history have **contributed to the attendance increases** in that they effectively "renew" the Washington Park Zoo as a place to visit and enjoy. Since the Zoo has been under the management of the Metropolitan Service District, serial levies and proceeds from operations and private contributions have financed projects totaling $21.8 million.

Recent historical attendance figures are shown in Table 4. They show an overall annual increase of 3.62 percent in the 10 years between 1976 and 1986. During this same time frame, metropolitan area population has grown at 1.31 percent per year. The higher growth rate for Zoo attendance indicates success in attracting **an increasing penetration of the Zoo's market.**

OPERATIONAL OVERVIEW:

Attendance patterns at the Zoo are seasonal for the most part, being closely associated with school schedules and the weather. Most visitors come to the Zoo during times when schools are not in session, i.e. holidays, weekends, and summer vacations. Because the Zoo visit is primarily an outdoor experience, local **weather conditions** have a significant impact on total attendance and the major portion of attendance occurs during summer months when schools are not in session and the weather is predictably warm and sunny. Late spring weekends when the weather is fair also produce peak attendance days.

Although counteracting such an important attendance factor as the weather is clearly a very challenging task, there may be opportunities to increase attendance in the fall and winter months. Some animals are more active in the winter and indoor food service at the planned AfriCafe could be used to lure fair weather visitors. During the peak attendance months visitors could be persuaded to attend earlier in the day as many animals are more active in the cool hours before mid to late afternoon. In any event, improving year around attendance to match year around upkeep and operation is an important attendance goal.

The continued construction of high quality exhibits and improvement of quality visitor services outlined in the Master Plan are expected to not only **increase attendance,** but to also increase the **frequency of return visits** and the length of time spent on the grounds. The **length of stay at the Zoo** has actually increased within the past few years from approximately 2.5 hours to 3.0 hours.

Compared with other forms of recreation / entertainment, especially the privately-operated theme parks, Zoo admission fees are very reasonable. Once inside the entrance gate, people generally spend money in an amount that is proportional to their length of visit. The longer they remain on grounds, the more services they will require. If the

services are of adequate quality, visitors are generally inclined to spend money. Per capita visitor spending in the past has increased in constant dollars, due to new animal and interpretive exhibits, higher quality visitor services, and an increased length of stay.

A continued increase in revenues from admissions, food, beverages, merchandise sales, and railway rides is projected over the next few years and will partially offset increases in staff, materials, and utility services required by the capital construction program and increased visitation. Renovated exhibits generally have less financial impact on personnel and services costs than do completely new exhibits since a portion of those costs are already incurred.

MARKET PROFILE:

Since 1985, the Washington Park Zoo has been conducting gate surveys three times yearly: May, June/July, and October. These surveys are an important source of information for demographic profiles and visitor attitudes and perceptions about the Zoo. Survey results also provide data of place of residence and a means to define the market area for the WPZ.

Approximately 60 percent of the WPZ visitors reside in the **Portland metropolitan area** (Multnomah, Washington, Clackamas and Clark Counties). This geographic area represents the **PRIMARY MARKET** as it accounts for the majority of Zoo visitors and provides immediate access to the facility. According to the Center for Population Research and Census, 1985 population within the primary market was 1,281,400. Population forecasts for the year 2005 anticipate total population to reach 1,740,000.

Beyond the metro area lie two components of the **SECONDARY MARKET:** 1) households outside the metropolitan area but **within 100 miles** of it and 2) **tourists.** One hundred miles is considered a reasonable outside limit for a day-long excursion. Beyond that an overnight stay is likely, which is a functional definition of tourism.

Again, based on the gate surveys, approximately 20 percent of the WPZ visitors are non-residents within 100 miles. The population within this concentric ring totaled 1,230,750 in 1985. This total is in addition to the primary market. Thus, the total primary and secondary resident market was 2,512,150 in 1985.

The remaining 20 percent are tourists from communities in Oregon outside the non-resident secondary market to out-of-state and international visitors. Information on the total tourism market visiting Portland is not available. However, significant boosts in tourism potential can be anticipated with the inauguration of non-stop flights to Tokyo, Japan, the general expansion of airline service, and the development of the convention center. Market studies for the convention center estimate an incremental 150,000 convention delegates would visit Portland as a result of the proposed development.

Beyond total attendance figures, another important indicator is estimated capture rate of local residents. Again, the gate surveys provide useful information to estimate what percentage of metro area residents visit the Zoo.

Based on an attendance level of 800,000 per year and the following distribution of multiple visits, a total of 354,400 different individuals from the metro area visited the Zoo. This represents approximately 28 percent of the four-county population.

Market profiles also show that children are a very important component of attendance. Between 50 and 79 percent of the parties include children, with the higher percentages occurring on weekends. Mean numbers of children per party range between 0.88 and 2.00.

Some other attendance characteristics or planning considerations for WPZ follow:

TABLE 4

HISTORICAL ATTENDANCE
AT WASHINGTON PARK ZOO
1967-77 TO 1985-86

Fiscal Year	Attendance Paid	Attendance Non-Paid 1/	Total	Paid as % of Total Attendance
1975-76	418,213	138,462	556,675	75%
1976-77	464,547	176,766	641,313	72%
1977-78	433,365	129,280	562,645	77%
1978-79	456,522	129,280	555,970	82%
1979-80	556,938	118,949	675,887	82%
1980-81	585,287	127,479	712,766	82%
1981-82	569,747	125,246	694,933	82%
1982-83	566,166	149,591	715,707	79%
1983-84	592,720	145,724	738,444	80%
1984-85	652,839	161,709	814,548	80%
1985-86	650,756	143,822	794,578	82%
			AVERAGE:	80%

1/ Children under 3 years of age, special day promotions to specific groups, Friends of the Zoo and Tuesday attendance after 3:00 p.m.

Source: Washington Park Zoo.

TABLE 5

Total Attendance x local factor = local attendance

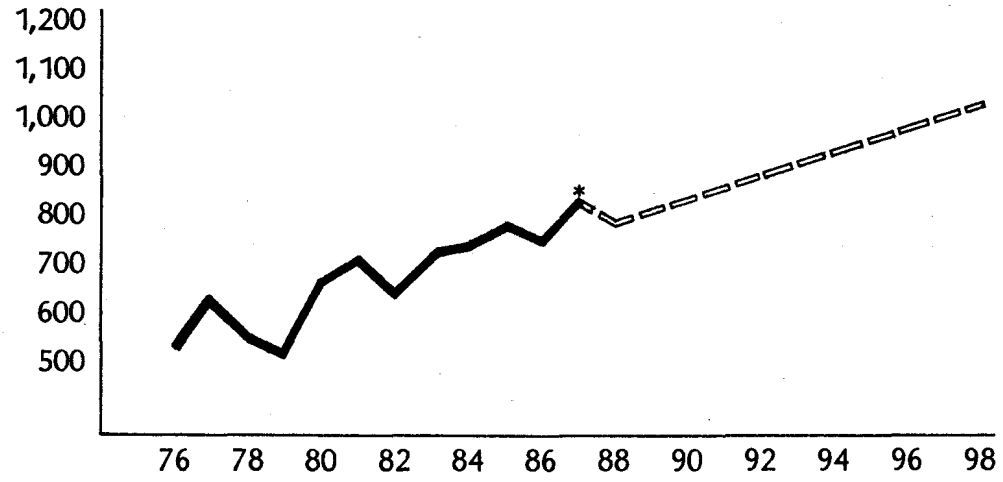
800,000 x 60% = 480,000

Visits

3/year	25% x 480,000 =	120,000/3 =	40,000
2/year	19% x 480,000 =	91,200/2 =	45,600
1/year	26% x 480,000 =	124,800/1 =	124,000
Once every 2-5 years	30% x 480,000 =	144,000/1 =	144,000
TOTAL	100%		354,400

FIGURE 3

ATTENDANCE FORECAST
WASHINGTON PARK ZOO

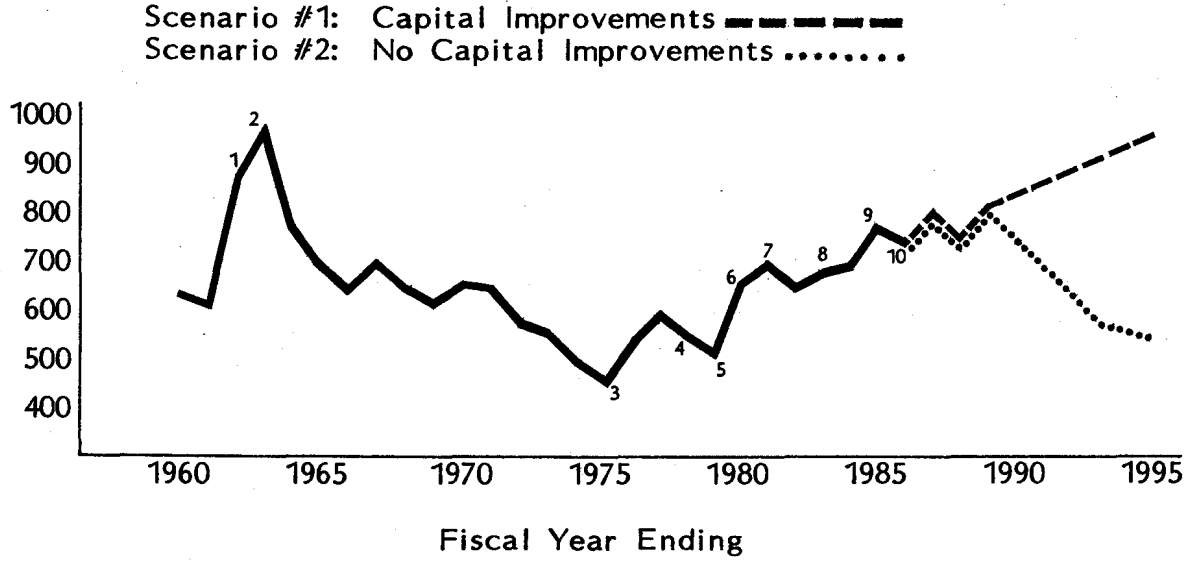


* Based on actual July-October record attendance

Source: Hobson & Associates, (1987).

FIGURE 4

ALTERNATIVE ATTENDANCE FORECASTS
1987-1996



1. Birth of Packy
2. Seattle World's Fair
3. Metro management begins
4. Feline exhibit improvement
5. Jazz concerts begin
   Entry Plaza remodeled
6. Elephant House and yard remodeled
7. Primate House improvement
   Cascade Stream and Pond opens
   Lemur Island
8. Penguinarium opens
   Swigert Fountain opens
   Zoograss concerts begin
9. Alaska Tundra opens
   Gift shop remodeled
   Dinosaur Park
10. West Bear Grotto remodeled
    Elephant Museum opens
    Golden monkeys exhibit
    Birds of Prey program
    Expo '86

1. Of the annual attendance, **paid visitors** comprise approximately 80 percent of the attendance (with school groups amounting to about 5 percent) and **free guests** (those under 3 years of age, anyone after 3 p.m. on Tuesday, handicapped persons plus escorts on Handicaps Day, senior citizens on their day, youths on a day during Christmas holiday period, and discounts to school groups) comprise 19 percent of the attendance; Friends of the Zoo members account for less than 1 percent.

2. Jazz and ZooGrass **concerts** are successful in attracting visitors, as do other **special days** such as Girl Scout Day, Scoutcapades, and Packy's Birthday. Jazz concerts during the summer of 1986 averaged nearly 5,000 attendees each, while ZooGrass drew about 1,700 on the average.

3. The WPZ admits visitors from 9:30 a.m. to 4:00 p.m. in the winter, to 5:30 p.m. in the spring and fall, and to 7:00 p.m. in the summer; visitors may stay up to an hour more beyond gate closing.

4. During a busy week (good weather week in which there was no concert) 20-25 percent of the week's attendance would occur on each of Saturday and Sunday. On busy weeks offering a jazz concert, given on Wednesdays, 20 percent of the week's attendance could be expected then.

5. The adult: child ratio is estimated to remain 2:1.

6. Based on traffic counts, the peak in-grounds attendance occurs between noon and 1:00 p.m. on weekends. There is an additional surge between 3:00 and 4:00 p.m. on Tuesday to take advantage of free admission.

7. Apart from the good weather and holidays, special programs such as summer concerts figure prominently in high attendance days. This observation points to the influence of **programming and marketing**, both controllable variables, in boosting Zoo attendance.

VISITATION PATTERNS

Some aspects of behavior such as in-grounds spending and length of stay are very important indicators of visitor satisfaction levels. Other patterns provide useful clues for promotion and marketing programs. The following gate survey results and operations statistics provide a more detailed picture of how **people enjoy the Zoo.**

1. In recent years, between 50-54 percent of summer visitors have spent at least **three hours per visit.** Guests from out-of-town and week day visitors are likely to spend more time than local or weekend visitors.

2. Per capita expenditures for refreshments, train rides, gifts, and rentals totalled $1.81 in 1985-86. Visitor spending has been rising steadily at an average annual constant dollar rate of 2.8 percent since 1977. Planned improved and expanded food service facilities will provide further services and **higher per capita spending** in the future.

3. As part of a larger Washington Park environment, WPZ visitors have an opportunity to combine visits to OMSI, the Forestry Center, Hoyt Arboretum, and the Japanese Gardens. In recent surveys, 21 to 45 percent of the Zoo visitors have visited these other sites, before or after their trip to the Zoo. OMSI is the most popular of these other destinations.

4. A majority of visitors have been to the Zoo before. An average of 70 percent of all patrons report that they go to the Zoo at least once a year. Between 13 and 25 percent of surveyed guests were first-time visitors.

5. Recent **improvement** programs and

new exhibits result in the perception by approximately 75 percent of the patrons that the Zoo is "better" or "much better" than it was on their last visit.

ATTENDANCE FORECASTS

Attendance at WPZ has been growing steadily over the past 10 years, supported by a combination of improvements and additions to the facilities, expanded services, promotional attractions (jazz and zoograss concerts, for example), population growth, increased birth rate, and other factors. Despite the overall trend of 3.62 percent annual growth since 1976, attendance in any given year can fall short of the previous year because of adverse weather conditions, especially during prime visitation periods, closure of a special attraction, or other factors. In the last 10 years, four years have registered declines in attendance.

In the long term, improvement programs underway at the WPZ, moderate population growth in the metro area and continuation of the echo boom ("child bearing by the baby boom generation") all contribute to the expectation of continued increases in Zoo attendance presented in Table 5. Figure 3 shows historic and project attendance;

These **forecasts** are based on the following **assumptions:**

1. Metro area population will expand at a rate of between 1.0 - 1.5 percent per year through 1995.

2. WPZ will continue its program of improvements in exhibits, program and visitor services and will continue to market at least as effectively as in the past.

3. Programs for free days and afternoons will be maintained.

4. Admission prices will be increased every two years in small increments.

5. No competitive leisure-time facility such as a theme park or aquarium will be developed in the PMA in the next 10 years. If such a facility were developed, WPZ could experience lower attendance: however, it is also possible the attendance could benefit from the competition if it results in additional tourism to the Portland Metro Area.

6. Any parking limitations will be resolved through construction of a parking garage, additional shuttle service, reduction in the competition for spaces if OMSI relocates, or other means.

7. Forecasts do not reflect any extraordinary exhibits such as giant pandas or other exotic species which can generate greater than normal attendance.

Aside from parking, there are other potential constraints to exceeding 1,000,000 annual attendance. At the present time, there are usually only 6 - 8 days per year when daily attendance exceeds 8,000, a level at which parking, queuing for tickets and exhibit visibility may present problems. As the Zoo physically expands, in-grounds capacity will also grow, alleviating some of the potential overcrowding.

Another solution to future crowds on prime visiting days lies in people's willingness to save money. As exhibited by the popularity of free admission on Tuesdays after 3:00 p.m., price incentives could be offered to alleviate the typical early afternoon prime-time crowding. For example, summer weekends admission could be reduced prior to 10:30 a.m. Such incentives would provide a non-capital solution to the future need for expanded facilities. Because a visit to the Zoo is a highly discretionary type of activity, **programming solutions** have a high potential for success.

As this discussion of assumptions and constraints suggests, there are many

intertwining variables which impact attendance. Some of them are qualitative in nature, such as continual attention by management to promote and enhance the Zoo's **visibility and image.** In the long term, such management efforts can have a strong influence on the Zoo's popularity.

Other factors such as capital improvements have both direct and indirect impacts. The direct impact is obvious; a major new exhibit provides a new feature that attracts interest and increased attendance. The indirect impact is that new facilities promote future opportunities for new programs and special exhibits. A good example is the 1981 Primate Exhibit improvement. This project enhanced the Washington Park Zoo's own primate collection. It also provided WPZ management with the opportunity to house the golden monkeys exhibition during the summer of 1986, an exhibit which generated very high interest and attendance. Without the Primate Exhibit improvement, the special exhibition would not have been possible.

Based on these correlations between improvement and attendance, **a forecast** can be made about the impact **of no future major improvement or expansion of the Zoo** beyond those projects already funded. A strong precedent for the scenario occurred in the early 1970s (see Figure 4) in which **attendance fell during a period when there were no outstanding special exhibits and no funds available for capital projects.**

Under the scenario of no further improvement, a decline in attendance shown in Figure 4 is possible, a decline which corresponds to the situation in the early 1970s. As shown, attendance does not deviate from projected attendance assuming continued improvements (Scenario #1) until 1991 because of the improvement projects already funded or in the "pipeline". However, in the second half of the 10 year projection period, **attendance could fall sharply.** By 1996, **without further improvements,** attendance drop to 580,000 rather than increase to 990,000 with the proposed improvement program.

Mitigating measures could be taken to avert this impact, such as renewing the public's interest in the Zoo through new programs, special exhibits and increased publicity to enhance its market penetration. So from this standpoint, Scenario #2 represents a "worse case" scenario.

However, the more lasting impact of terminating the capital improvement program may reach beyond this forecasting period and may not be ameliorated by shorter-term programming remedies. This long run negative impact relates to the previously described relationship between capital improvements and the Zoo's ability to use their facilities for exciting programs and special exhibits. **Without an ongoing program plan to renovate older facilities and create new ones within the Zoo's physical parameters, public interest and enthusiasm in the Zoo will decline and potentially undermine its base of support.** This financial impact is explored following discussions of visitors spending and operating costs.

VISITOR SPENDING:

In fiscal year 1986, per capita visitor spending at the Washington Park Zoo was $3.48, from major visitor spending sources (Table 7). Most zoos generate about $1.00 - $1.50 per hour per visitor. The Washington Park Zoo is no exception. A recent survey at the Zoo estimated the average length of stay of a visitor to be just under three hours. This translates into a spending rate equivalent to $1.15 per hour per visitor.

Over the past 10 years, per capita spending (excluding admission fees) has increased steadily at a rate of about 2.8 percent per year, in constant dollars. The two most important components from a master planning and revenue generating standpoint are food / beverage and gifts. Both of these categories have shown the largest gains, as food service has improved and the gift shop was expanded.

A legitimate strategy for boosting **enterprise revenues** to cover higher operating costs without substantial increases in gate fees would call for **stronger merchandising of food and gifts.** This strategy is already at work and will take even further advantage of the strong consumer interest in specialty foods and novelty items. This will not entail converting the Zoo into a festival shopping center, but rather that visitors have ample opportunities to relax and enjoy their excursion with enticing services and products. With more exhibits being developed, the length of stay can be expected to increase and a higher level of visitor spending will follow if opportunities are provided.

There are other opportunities for revenue generating activities. For example, if a need is demonstrated for a parking structure, a parking fee should be charged to retire the debt. While this would not generate additional revenue except to off-set some of the capital costs, it would contribute to increased attendance and potentially higher levels of visitor spending through longer stays.

Interpretive tours are another example of revenue generating opportunities. Many zoos have such services, which could enhance both the learning experience and provide additional enterprise fund revenue.

With the construction of the **AfriCafe** adjacent to the **Concert Lawn, expanded opportunities for special entertainment,** private parties, **and other events** will be available.

The WPZ admissions represent 48 percent of enterprise revenues, a higher ratio than some other zoos. This does not necessarily suggest that WPZ admission fees are too high, but that other revenue sources may lag behind comparable zoos.

Because of political and social factors, zoo admission pricing is nearly always substantially below that which would be set by a purely commercial enterprise. Yet there is a school of thought which advocates the setting of admission pricing commensurate with the entertainment / recreation experience offered and the increased gate revenues can be utilized to further improve the zoo and the zoo experience. While there is opportunity for increased admission prices at the WPZ, any increase should be fairly modest until the entertainment / recreation content (and thus, length of stay) increases. In the recent past, WPZ admission fees have been increased every two to three years, with incremental charges of $.50 for adults and $.25 for children and seniors.

Ride revenues, per capita, are comparable among zoos. Interpretative rides such as the narrated tours can greatly enhance visitor spending in this category. This is an area of opportunity for the WPZ, if the Zoo desires and such ride systems can be physically accommodated.

Spending on food and beverage can be increased at the WPZ, in comparison to other zoos. Areas of improvement may include pricing of the food items and more food capacity provided by remote or mobile stations; improvement will also come as length of stay increases. Historically, insufficient capacity has been remedied by the new BearWalk Cafe, the Elephant Terrace, and the AfriCafe. But as attendance increases, opportunities and demand for new locations should be monitored closely.

Merchandise spending is the area where most improvement can be made, in terms of percentage. Even though the existing Gift Shop has been expanded, the merchandise revenues fall significantly short of several other zoos. Plans to remodel the entrance should include additional selling space. Mobile carts are employed during peak attendance days and their use needs to be continuously evaluated. Also, pricing should be reviewed continually to maintain profit margins and contributions to zoo revenue.

An appropriate mid-term strategy would be for the WPZ to add sufficient programming / entertainment capacity and

TABLE 6
ATTENDANCE FORECASTS
(1987-1996)

1987	850,000	1992	905,000
1988	820,000	1993	930,000
1989	845,000	1994	950,000
1990	865,000	1995	965,000
1991	880,000	1996	990,000

Average annual rate of growth: 2.22% (low)
(Historical rate from 1978-1986: 3.62%)

TABLE 7
VISITOR SPENDING AT THE WASHINGTON PARK ZOO
FISCAL YEAR '85-'86

Spending Category	Total Spending	Per Capita Spending 1/
Parking	0	0
Admission	$1,325,206	$1.67
Rentals	17,831	.02
Railroad Rides	249,483	.31
Food/Beverage	903,178	1.14
Merchandise	273,017	.34
Total Spending:	$2,768,715	$3.48

1/Annual attendance: 794,578
Source: Washington Park Zoo and Hobson & Associates (1987).

TABLE 8
ENTERPRISE FUND REVENUES
1987-1996

	Attendance	Per Capita Revenues	Total Revenues
1986-87	850,000	$3.58	$3,045,940
1987-88	820,000	3.48	3,151,820
1988-89	845,000	4.06	3,434,080
1989-90	865,000	4.29	3,708,840
1990-91	880,000	4.51	3,967,040
1991-92	905,000	4.74	4,291,220
1992-93	930,000	4.97	4,623,960
1993-94	950,000	5.21	4,945,400
1994-95	965,000	5.43	5,236,090
1995-96	990,000	5.67	5,612,980

Source: Hobson & Associates (1987).

content to generate a 3.5 hour length of stay and to derive between $1.20 and $1.40 per hour per capita spending. It should be noted that to achieve the projected increases in the merchandise category, capital improvements will be required either in further expansion of the existing Gift Shop or construction of a new Gift Shop.

For the purposes of the master planning process, it is projected that, by 1996, per capita visitor spending (in 1986 prices) will increase to approximately $5.67, divided among revenue sources as indicated below:

Visitor Spending Category	1986	1996
Admission Fees	$1.67	$3.18
Food/Beverage	1.14	1.59
Merchandise	.34	.50
Rides, other	.33	.40
	$3.48	$5.67

OPERATION COST CONSIDERATIONS:

Comparison of operating costs among zoos can be very misleading. Public subsidies, concessionaires, volunteer labor, and other operational factors are present in one form or another in most zoos, making a true cost comparison among facilities extremely difficult. So rather than compare the WPZ costs to other zoos, an historical breakdown of WPZ operating expenditures on a per visitor cost, is presented in Table 9. This analysis shows an average annual increase of 5.17 percent in constant dollars per capita in the 6 years between 1980 and 1986.

Much of the cost increase is attributable to an expansion of the zoo exhibits and facilities which require additional personnel, maintenance and supplies. The major new features include: Cascade Stream and Pond, Alaska Tundra, Penguinarium remodel, Primates remodel, and the Bear (West) remodel. Also, between 1985 and 1986 there was a 328 percent increase in the premium cost of liability insurance.

During this period, per capita revenue (including admission fees) has grown at an average annual rate of 3.5 percent (also in constant dollars). This indicates that non-tax revenues (enterprise plus miscellaneous revenues) increases are not quite keeping up with extraordinary increases in operational costs. In 1979-80, per capita revenues were 51.9 percent of operating costs; in 1985-86, revenues slipped to 48.3 percent of costs largely because of insurance cost increases which are allocated to the Zoo. It is not expected that this represents a trend; alternative insurance strategies and other measures will be used to maintain the 50 percent target.

Many of WPZ's operating costs are fixed; the animals must be fed and cared for even if no one comes through the gate. Administrative costs, certain utility fees and many costs are also fixed or do not vary with attendance. Other expenses, such as costs of goods sold and visitor service employment vary directly with the level of attendance.

A forecast of operating costs through 1996 is shown in Table 10. These forecasts assume an average annual increase of 4.75 percent, in keeping with historical trends and assuming there is a continued capital

improvement program.

It is likely that the best approach to maintaining the non-tax revenue to operating cost ratio at 1:2 or above is increating visitor spending and maintaining sufficient profit margins on food and beverage products and merchandise. Costs of goods sold for food / beverage should range between 25 and 35 percent; for merchandise the CGS factor is about 45 to 55 percent.

NON-TAX REVENUES VS. OPERATION COSTS:

Maintaining cost controls and sufficient enterprise revenues to support at least 50 percent of total operating costs is Metro policy for the Zoo. Earlier in the economic report were presented alternative attendance scenarios, with the variable assumption being continued capital improvements to support increased attendance versus no capital improvements after those already funded.

Under each scenario is the question of the Zoo's ability to meet its 50 percent target of operating cost support. An analysis was made using the attendance, enterprise revenue, and operating cost assumptions summarized earlier in this document. Results show that under the assumptions presented, attendance forecasts based on continued capital investment (Scenario #1) generate revenue which can assume an increasing share of operating expenses. For Scenario #2, declining attendance results in an erosion of the Zoo's enterprise income and the ability to meet the 50 percent goal.

These comparative projections are intended to focus attention on the direction of potential outcome rather than to predict precise operating costs and revenues. For example, under Scenarios #1, the rising revenue picture provides the opportunity for any one or a combination of the following strategies: lower admission fees, directing enterprise revenues toward further capital improvements, developing innovative programs, or offsetting parking structure costs.

POTENTIAL
OPERATING COST COVERAGE:
Non-Tax Revenues As A Percent of Operating Costs

	Scenario No. 1 Capital Improvement Program	Scenario No. 2: No Capital Improvements
1991	56%	55%
1996	63%	43%

Under Scenario #2, these projections suggest another set of circumstances: need for additional cost cutting, potential service reductions, higher admissions fees, greater emphasis on programming to build attendance, and other strategies to boost operating cost coverage.

What this comparison does indicate is that **continued efforts to enhance the Zoo through updating and expansion have important financial and strategic planning implications.** To maintain its recent history of strong attendance growth and to enhance its revenue generating potential, the Zoo must continually improve its facilities and services.

MARKETING PROGRAM:

Since the adoption of the 1984-1997 Master Plan, many of the marketing recommendations contained in that document have been successfully implemented or expanded:

TABLE 9

OPERATING EXPENDITURES
1979-80 to 1985-86

1979-80	675,887	$3,100,891	$5.65
1980-81	712,766	3,574,659	5.69
1981-82	694,933	4,099,588	6.47
1982-83	715,707	4,546,392	6.89
1983-84	738,444	4,800,669	6.79
1984-85	814,548	5,412,169	6.75
1985-86	794,578	6,081,436	7.65
		Average Annual Increase	5.17%

1/ Includes Personal Services, Materials and Services, Capital Outlay, Transfer to General Fund.
2/ In constant 1986 dollars.

Source: WPZ; Hobson & Associates (1987).

TABLE 10

FORECAST OF OPERATING EXPENDITURES
1987-1996

	Operating Cost Forecast 1/
1986-87	$6,370,300
1987-88	6,672,900
1988-89	6,989,900
1989-90	7,321,900
1990-91	7,669,700
1991-92	8,034,000
1992-93	8,415,600
1993-94	8,815,300
1994-95	9,230,100
1995-96	9,672,700

1/In constant 1986 dollars.

Source: Hobson & Associates (1987).

1. Exit surveys are conducted in the spring, summer and fall. Questions are designed to track attendance and market trends accurately. This program has been very successful in addressing the lack of detailed information that had been previously available on the Zoo's market.

2. The Zoo management has been active in working with the Greater Portland Convention and Visitors Association to market the Zoo to tourist and convention groups. The Zoo was also responsible for spearheading a joint marketing campaign with other Portland attractions.

3. The Educational Services division continues to develop many programs for preschool, school age, senior and other groups to provide educational programs and activities both at the Zoo and outside of the Zoo.

4. Special events have been scheduled during the fall and winter months to encourage "off-season" attendance.

5. The summer jazz and bluegrass concerts continue to be an excellent attraction and probably appeal especially to markets that might otherwise not visit the Zoo as frequently, for example, couples and singles without small children and teenagers.

6. Promotional campaigns with local merchants have been used by which the sponsoring company reimburses the Zoo for coupons used. The Zoo also benefits through the advertising campaigns used to promote the program.

In addition, the Zoo has been very successful in promoting company picnics and other private functions on Saturday and Sunday evenings in the summer. These group marketing efforts have been somewhat hampered by the lack of a central, dedicated facility for these activities. These group facility improvements, including a covered shelter and food service facilities, could be used for school groups on a year round basis. A survey is currently underway to assess what types of features are important for private groups and their activities. This information could become part of a feasibility analysis for a permanent facility for group activities.

A review of current marketing programs confirms that the Zoo is doing a thorough job of advertising its new exhibits and special events including animal births. The exit surveys also solicit visitor responses to exhibit design, special activities, food service and other aspects of the Zoo. The Zoo is also effective in conducting programs during the summer months to boost attendance during the evenings and weekends when the Zoo is not fully utilized through normal attendance patterns. The marketing department has also taken the steps to postpone advertisement of new exhibits until warmer months so that the promotional expense can have its greatest impact.

Additional recommended programs include:

1. When the AfriCafe is opened, special coupons or discounts on foods and / or admissions could be arranged through local merchants in joint advertising campaigns. This type of campaign would publicize the new food service and provide a measurable (number of coupons) marketing tool.

2. Another approach to marketing would be to allow a merchant to offer a discount or special promotion to customers upon presentation of a Zoo admission receipt. This arrangement could be made for a fee or for the value of the advertising used to promote the discount.

On a general level, the marketing efforts should continue to be directed toward:

1. Providing information to the public on

what the Zoo has to offer; and

2. Providing inducements for attendance during off-peak times and for traditional non-visitors.

Expanding facilities for private parties is an excellent example of a strategy to address the second goal. Other strategies for off-peak attendance may involve amending the Metropolitan Service District ordinance for entrance fees. The existing ordinance allows for six free days during the year plus a schedule for group discounts, but does not address fee discounts. One possible approach would be a multi-level fee structure in which peak hours and days have a higher fee than currently charged, but less crowded times (winter months, summer weekdays) have lower fees. A much more detailed feasibility analysis is recommended to address these questions. However, flexibility in altering the fee structure could be an important tool for both the marketing and management functions of the Zoo. The entrance fee structure provides the potential to both maximize revenues and smooth out some of the peak hour crowding.

MANAGEMENT PROGRAM:

Zoo management maintains a five year planning and budgeting cycle which enables it to budget for growth and keep a close watch on cost and revenues. Within this five year horizon, it is recommended that operating cost estimates for new exhibits be studied carefully during the preliminary design phase to ensure that they can be contained within the overall budget. This check is necessary because the operating cost forecast presented earlier is based on historical trends. A careful operating cost analysis of each major new project will allow Zoo management to avoid overreaching these budgets and thus maintaining the 50 percent operating cost coverage from non-tax revenues.

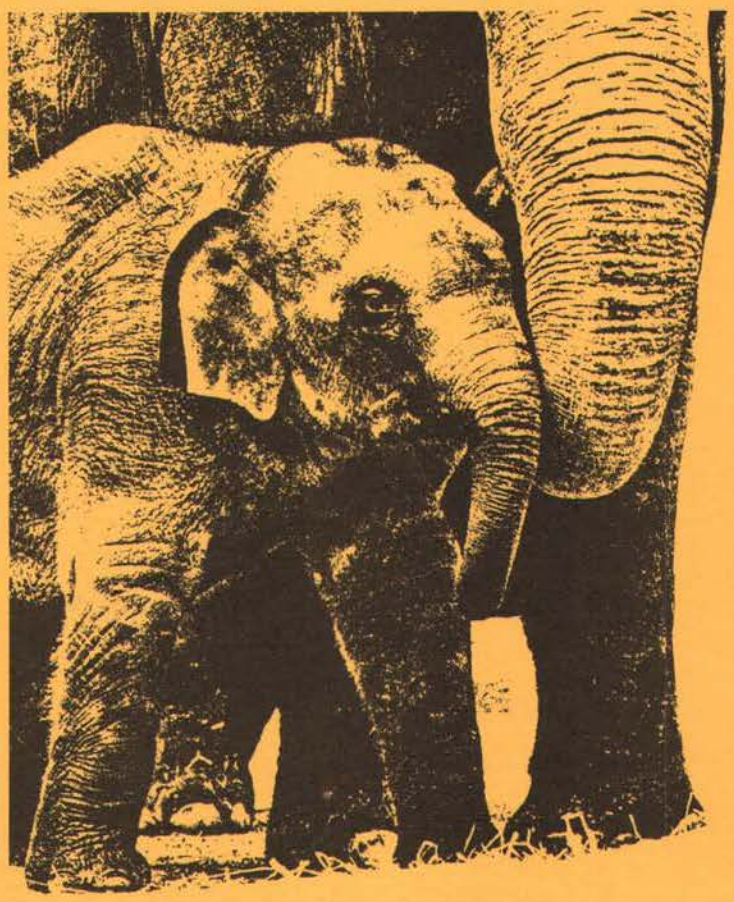
Another tool for cost and revenue control is cost center accounting for the enterprise operations which is currently being refined. Maintenance of profit margins is a continual need for any retail operation. As the Zoo expands its services to include potentially more aggressive marketing of private group functions, cost center accounting will provide for accurate pricing of services and cost control.

It is also assumed and recommended that the Zoo continue to operate the concessions. In-house operation provides product and image control, program flexibility, and the ability to introduce new products and services.

As in the past, Zoo management should continue its successful program of special exhibits such as the golden monkeys and reptile shows. These programs provide additional revenue to support additional costs.

Management's attention should also be directed toward long-term and / or on-going cost savings which accrue through a conscientious long range maintenance and equipment replacement program. As the Zoo becomes larger and more complex, safety and security services will also require additional resources.

Energy conservation remains an important goal. Although energy conservation receives less public attention than it did a few years ago, management's watchful eye on energy consumption will control future cost escalations.



IV. EXHIBIT FACILITES, ARCHITECTURE

ANIMAL EXHIBITS OVERVIEW

A major Zoo responsibility is to provide the public with an opportunity to view live animals exhibited in humane conditions that will encourage natural behavior. A fundamental exhibition planning objective is to design enclosures that replicate animal habitats. These habitats should provide an appropriate environment for each species that complements individual physical and behavioral characteristics. The Washington Park Zoo is continuing its program of designing new zoogeographic exhibits as space allows and of renovating and enhancing existing taxonomic and special exhibits.

The Zoo's new and renovated exhibit categories are: TAXONOMIC: existing exhibits that are planned for closely related groups that are exhibited for comparison (Bears, Felines, Primates, or single species groups that require large areas such as Elephants); ZOOGEOGRAPHIC: exhibits that show animals in related groups from a particular region, often in mixed-species settings and/or single species and mixed species separated by concealed barriers (South American Tropics, Africa, Alaska Tundra, Cascades Exhibit); SPECIAL ZOOS: discovery and contact with a diverse range of animals (Animals Around Us, Insect Zoo).

Having a range of exhibit types introduces an element of diversity and richness of experience. Zoogeographic exhibits place different demands on animal care, but are to be a continuing trend in exhibit architecture due to greater potential for interpretation of animal-environment relationships.

When Washington Park Zoo was opened in 1959, it represented the state of the art in zoo architecture with emphasis on taxonomic exhibits that by today's standards could be termed visually sterile. Exhibit design criteria were sanitation, maintenance, safety of animal barriers, and accommodation of large numbers of people at viewing rails. As the public awareness of critical environmental issues has increased, reputable zoos have responded to these environmental concerns through interpretive environmental education and natural-appearing habitat exhibits, that contain more appropriately sized social groups or mixed-species exhibits.

In continuing this trend, WPZ has within the last few years opened a number of award winning exhibits with simulated natural habitats. The WPZ Master Plan envisions modifying existing enclosures or designing new geographic exhibits to allow animals to be seen in replicated native settings with characteristic landforms, water features and plant materials.

Physical barriers between animals and the public consist primarily of moats, either dry or water, and safety glass since these devices offer the least interrupted views. Moats are designed to be integral with their habitat context. Other types of barriers or enclosures such as high-tension wire or wire mesh at Felines are also integrated into the exhibit and seem to disappear into the landscape. Physical barriers between adjacent exhibit areas such as for prey / predator are concealed to create the illusion of co-existing species within a particular habitat. Support facilities for keeping animals are also concealed from public view. In addition, most exhibits are designed to assure that viewing of animals occurs from positions with the sunlight at visitors' backs.

Along with naturalistic animal exhibits, another strong trend in zoological display has been increasing the breadth and depth of the associated interpretive messages. Several principles guide development of interpretive displays at the Washington Park Zoo. 1) Whenever possible, the message should direct the visitors' attention back to the animal and/or exhibit; interactive exhibitry is used where ever it communicates better than a passive display; "layered" text is employed to provide varying levels of information; displays work for a wide range of age groups (ideally, some will cause children and adults to interact cooperatively); the information provided

will answer the most comomonly asked questions and will complement what can be learned through simple observation of the exhibit and animals. In summary, the animal exhibit and interpretive displays will work together well to fulfill visitor interest.

AFRICA - PHASE III

When completed, Africa will be the Washington Park Zoo's most comprehensive and largest zoogeographic exhibit. The design of Phases I and II have followed the general design intent of the 1983 Master Plan in visitor circulation, service circulation, exhibit sequence and interpretive concept.

Africa Phase III in its proposed location completes the remaining animal exhibits as well as the relocation of the southern service access road. Lions and leopards are included in Phase III as key predator species in the overall interpretive story-line. The design of Phase III also reconciles the expansion of the Administration / Education Building. The latest soils and geotechnical information available for this area is integrated into the design of Phase III.

In Africa - Phase III, the safari pathway that begins at the Africafe leaves the Treetops Interpretive Center and continues into a landscape that appears dry and barren. Clusters of kopjes "kop-ees" (granite boulders) are scattered throughout the area. An open viewpoint introduces the lion, Africa's most famous carnivore. The setting for the Zoo's small pride of lions is a gently rolling grassland with several large rock outcroppings. A small water body in the foreground acts as a moat exhibit barrier. A short distance down the path, another viewpoint provides a perspective of both the spotted hyena and warthog exhibits.

The path ascends next to a viewing shelter with large glass barriers that offer another close view of lions, in addition to smaller exhibits of such animals as spring hare, agama lizards, and honey badger. Explanation is provided of the unusual environment and the intricate plant and animal relationships that exist within the kopjes.

The final group of exhibits along the safari walk are klipspringer, rock hyrax, and spotted leopard. These animals are exhibited and interpreted in naturalistic settings of kopje formations.

The ascending path leaves the Africa exhibit through an interpretive shelter and passes above the central service road and continues to the South American Tropics Exhibit. This pathway passes among roses and rhododendrons with animal sculptures and benches strategically sited for use by visitors.

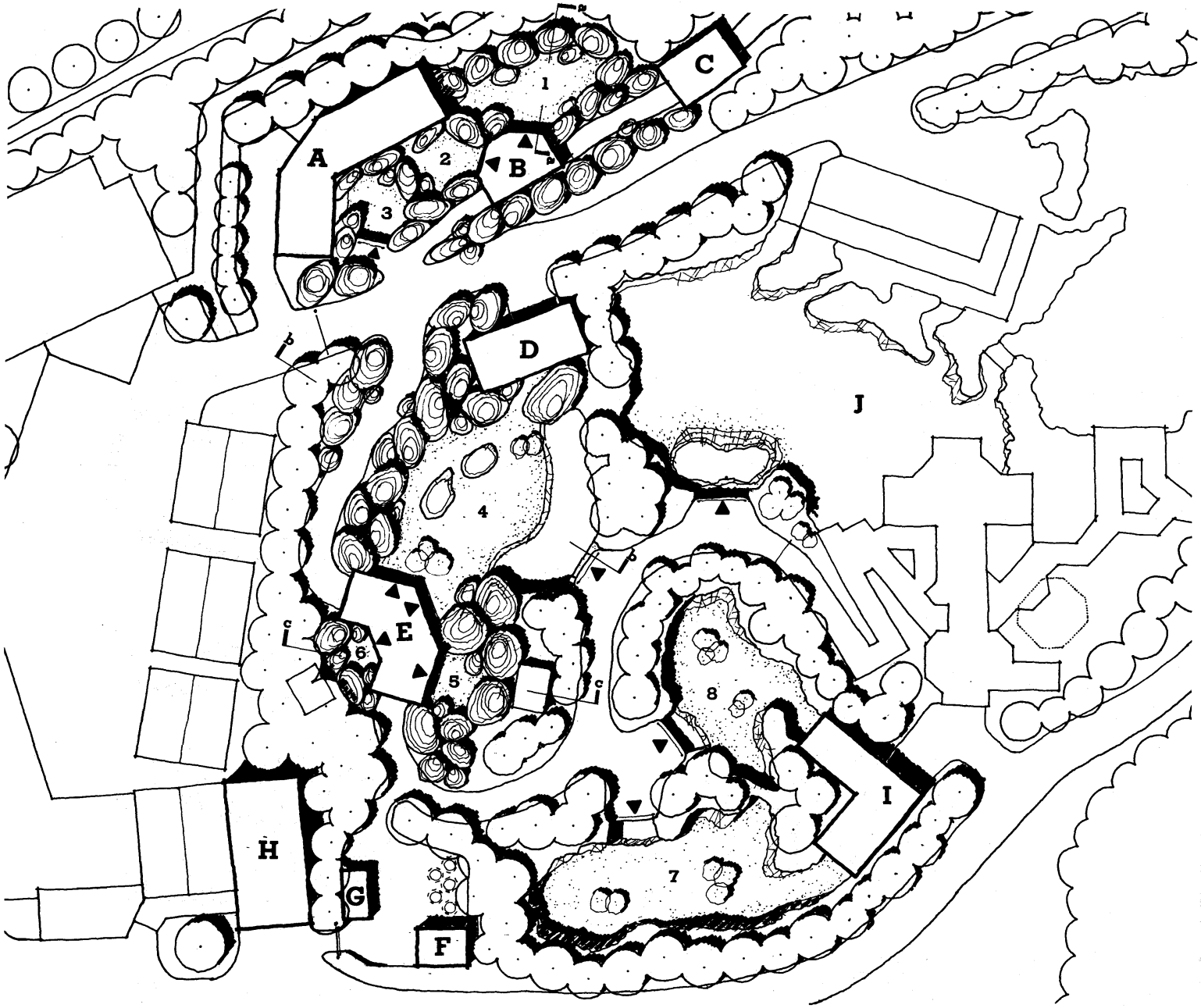
A pole barn structure for hay storage will be located east of the Maintenance buildings and adjacent to the new south service road. The facility will be designed for efficient hay handling and storage with adequate ventilation to prevent spoilage.

Capacity of the lower electrical substation will be upgraded and an emergency generator will be included as part of site utility portion of the Africa Phase III project.

PROJECT: AFRICA - PHASE 3

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$2,802,438.
CONTRACTOR OVERHEAD AND PROFIT (10%)	280,243.
SUBTOTAL	$3,082,681.
DESIGN / ESTIMATE CONTINGENCY (10%)	308,268.
SUBTOTAL	$3,390,949.
PROFESSIONAL FEES (15%)	508,643.
SUBTOTAL	$3,899,592.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	389,959.
TOTAL	$4,289,550.

AFRICA PHASE III



A LEOPARD / ROCK HYRAX / KLIPSPRINGER HOLDING

B VIEWING SHELTER

C INTERPRETIVE/PROGRAM BUILDING

D LION HOLDING

E LION / SPRING HARE AGAMA LIZARD OBSERVATION

F CONCESSIONS / FOOD

G TOILETS

H HAY BARN

I HYENA / WARTHOG HOLDING

J AFRICA — PHASE II

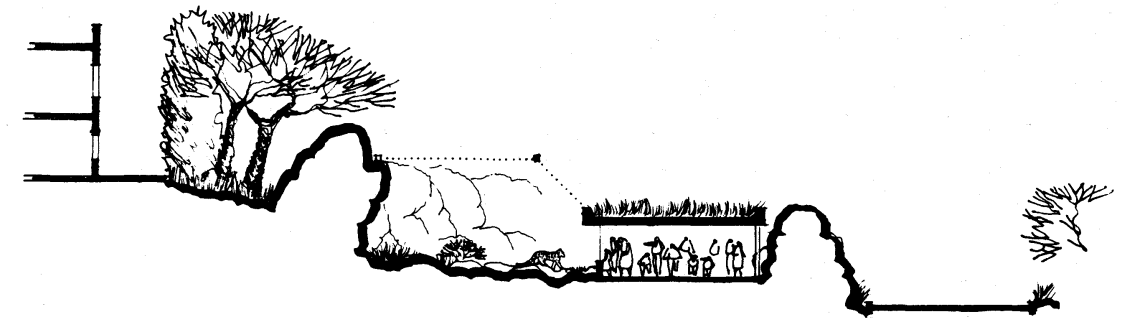
◀ VIEW POINT

L SITE SECTION

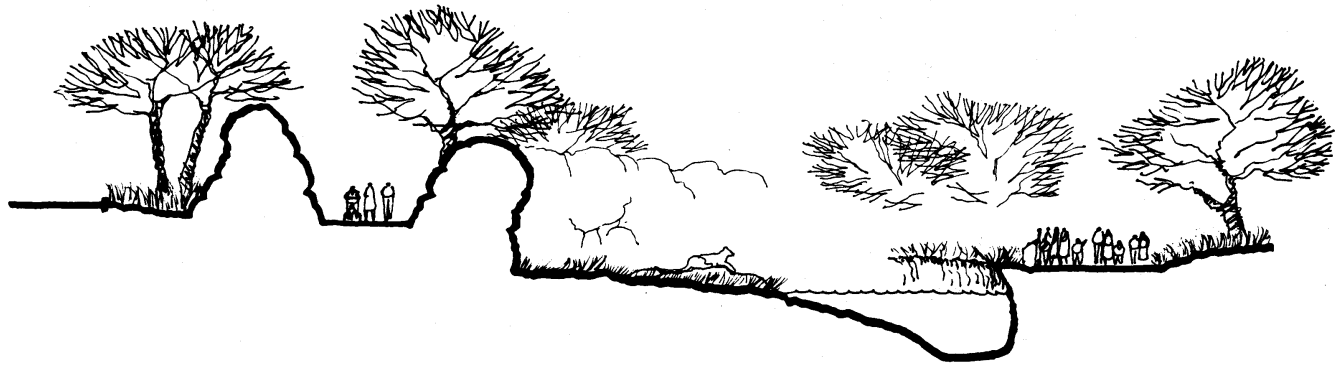
1 LEOPARD
2 ROCK HYRAX
3 KLIPSPRINGER
4 LION
5 SPRING HARE
6 AGAMA LIZARD
7 WARTHOG
8 SPOTTED HYENA

N

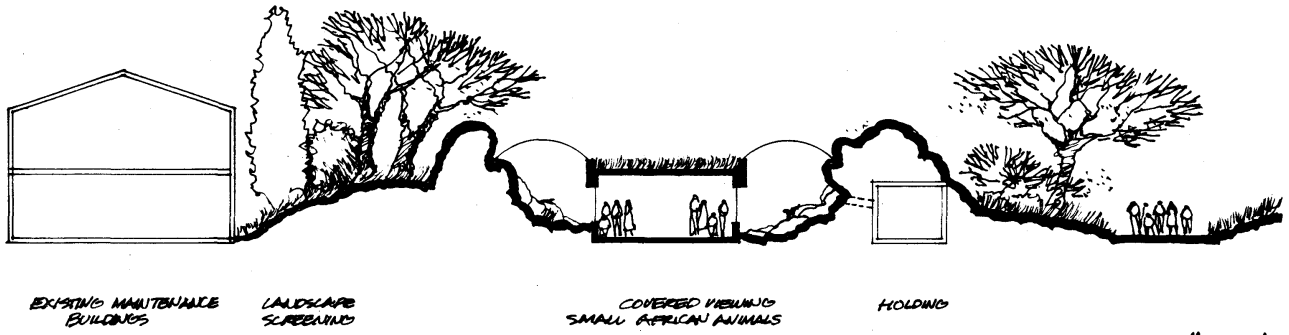
0 20 40 80 FT



SECTION a-a SCALE 1"=20'



SECTION b-b SCALE 1"=20'



SECTION c-c SCALE 1"=20'

BEARS (EAST)

The original design concept in the 1983 Master Plan to display one or two additional tropical bears such as spectacled and sloth bears to complement Malayan sun bears (Bears West) and siamangs, gibbons and mandrills (Primates immediately south) remains valid. Consideration should also be given for possible inclusion of non-bear tropical species with small space requirements (e.g. kinkajou, coatimundi). Zoo Street, the major non-exhibit public space, for circulation, rest, exhibit viewing passes along the Bears (East) as it connects the Main Entrance Complex and the Elephant Center.

In addition to bear species which will be exhibited in an expanded, renovated enclosure, consideration should be given for possible inclusion of interesting Asian species with small space requirements (e.g. langurs, civets).

Although the original exhibit design concept was a two phase renovation of the existing west and east grottos, the inclusion of non-bear species will offer unique interpretive opportunities of the Asian forest habitat. In 1986, renovation of polar bear and Malayan sun bear habitats were completed.

In the experience the behavioral and social characteristics of the specific animals are interpreted through graphic displays with emphasis on those characteristics that are readily observable. General species information will relate to range, food sources, and status in the wild.

The behavioral and social characteristics of the specific bears are interpreted through graphic displays with emphasis on those characteristics that are readily observable. General species information relates to range, food sources, and status in the wild, while additional interpretives will cover general areas not addressed by the Bears (West) renovation. Such topics include anatomical aspects ("What Makes a Bear a Bear?") and bears as Carnivores (taxonomic relations). In addition, display of tropical bears like the sloth and spectacled will permit some attention to the destruction of the rain forest.

Asian bears such as sloth bears are exhibited in an expanded, renovated enclosure. The habitat setting for Asian bears is a tropical forest with the inclusion of several fallen and upright dead trees for these bears to climb and termite mounds.

The Red Panda is exhibited in a recreated dense forest typical of China. Bamboo, a natural plant food for these mammals, is planted extensively throughout the exhibit. To provide visitors with a close-up view of the small animals, the existing moat is filled and high tension enclosure wire is installed.

As a possible substitution for spectacled bears, consideration could be given to Malayan tapirs. They are forest dwellers where they roam in forest clearings along river banks to feed. The exhibit water system should begin and end like a fast moving stream, incorporating a large swimming / feeding area at midstream that integrates both animal areas and guest viewing areas thus creating an illusion of a barrier free exhibit.

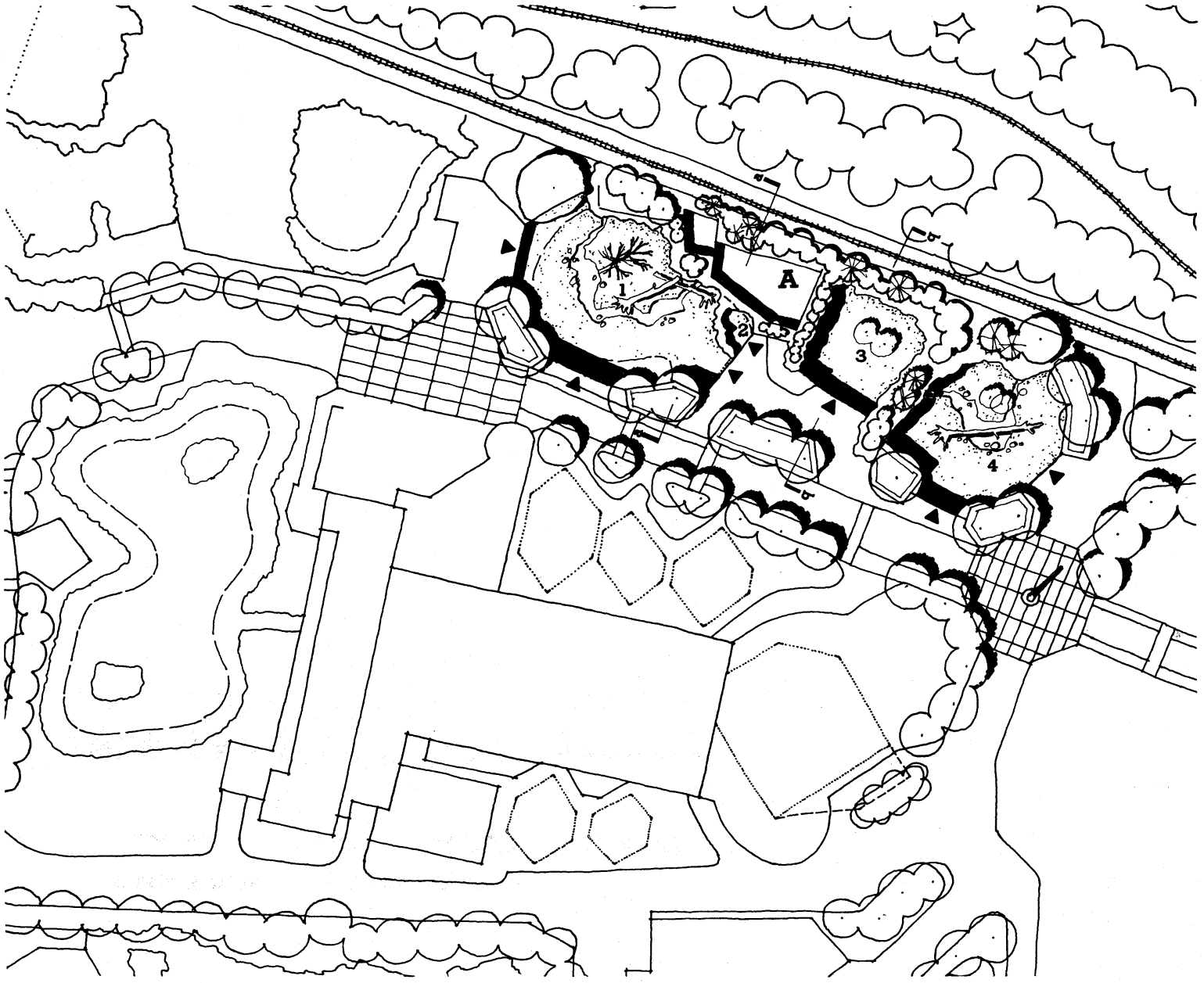
During periods of animal inactivity, close-up viewing of these mammals is aided with the construction of small, rain protected animal enclosures or overhangs with radiant heat elements in the ground slab. In addition, outdoor off-view holding spaces are provided to introduce flexibility in keeping animals off-exhibit during parturition, illness, introductions and separating males from females with young.

Consideration should be given for the exhibition of appropriate bird specimens as a means of diversifying the animal collection for this exhibit.

PROJECT: BEARS (EAST)

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$849,378.
CONTRACTOR OVERHEAD AND PROFIT (10%)	84,938.
SUBTOTAL	$934,316.
DESIGN / ESTIMATE CONTINGENCY (10%)	93,431.
SUBTOTAL	$1,027,747.
PROFESSIONAL FEES (15%)	154,162.
SUBTOTAL	$1,181,909.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	118,191.
TOTAL	$1,300,100.

BEARS [EAST]



A ANIMAL MANAGEMENT

◀ VIEW POINT

L SITE SECTION

1 ASIAN BEAR (SLOTH)

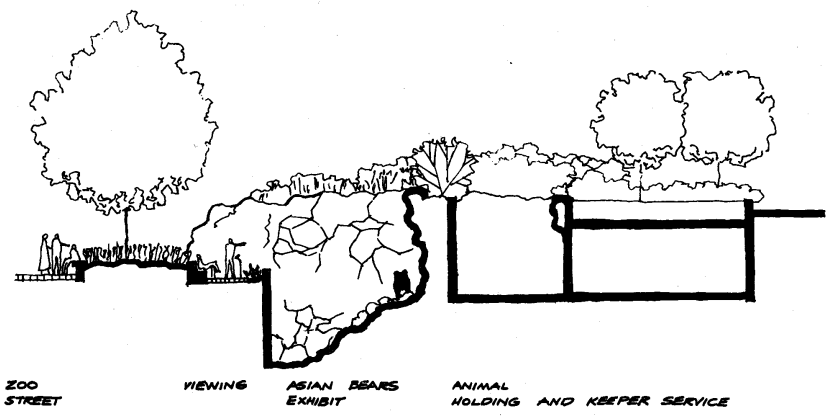
2 KINKAJOU OR COATIMUNDI

3 RED PANDA

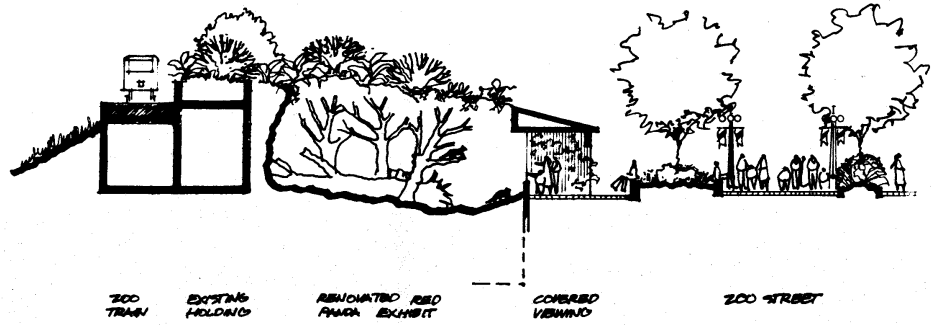
4 ASIAN BEAR (SPECTACLED)

N

0 20 40 80 FT



SECTION a-a SCALE 1"=20'



SECTION b-b SCALE 1"=20'

"ANIMALS AROUND US" EXHIBIT (CHILDREN'S ZOO)

The Animals Around Us exhibit is a new concept that transcends the traditional Childrens's Zoo.

Its goals are to: 1) teach appreciation for all animals, even the common, "insignificant" ones; 2) emphasize that we humans co-exist on a daily basis with many other species. Our "territories" overlap with the territories of many other animals; 3) encourage appreciation of that co-existence and give people ideas for making their territory more attractive to other species; 4) make people realize how the thoughtlessness of people can take food and shelter from other species, often to the point of endangerment.

The exhibit will start by introducing animals in and around the home. These can include tiny exhibits of "pests" such as cockroaches, mice and slugs as well as more "attractive" species such as songbirds, butterflies, wild rabbits and raccoons. Whenever possible, live, pettable animals will be used to draw visitors into a set of interpretives which treat a particular concept.

There may be a node that focuses on animals that thrive in urban settings such as starlings, English sparrows, Norway Rats and pigeons that explains why our lifestyle has allowed them to replace many more "desireable" species.

A "model backyard" will show how bird feeders, selected plants, and water sources can encourage animals to choose a person's backyard for their home. Visitors will be given a "Backyard Safari" worksheet which they can use to take an inventory of species when they get home. It will also have ideas for "improving" their backyard to attract more species.

In a "homo sapiens" exhibit, children could walk in and briefly be "on exhibit". Interpretives would talk about humans as animals, but would also point out how out of proportion the resources utilized in a year by a human being are to the resources "used" by animals.

From the backyard, the exhibit transports visitors to some nearby farm environments, where the conscientious farmer can use his or her land to support domestic animals as well as hosts of wilder creatures. Animals in this section can include domestic animals such as chickens, goats, sheep, ducks and bunnies that make good "pettable" animals as well as wild non-pettable animals such as foxes, owls, herons, opossums, wild ducks, etc. The exhibit will emphasize what farmers can do to make their environs more suitable for wildlife.

From the farm, the exhibit will move on the forests and other wilderness environments in our state. A graphic will point visitors to nearby places where they can go to see wild birds and animals. The message here will be our responsibility for conservation and preservation of species and their habitats. These would include Oaks Bottoms, Sauvie Island, Tryon Creek, etc. This will provide an excellent transition into the Cascades exhibit.

The exhibit is intended to appeal to all age levels while offering "kids only" experiences in some locations. There will be opportunities throughout the exhibit to have direct contact with animals. Corrals or semi-enclosed rooms will be monitored by Zoo staff or volunteers to provide supervision of petting and handling as well as to introduce the interpretive concepts associated with the animals.

Most animal holding areas will permit some viewing of animals when they are out of the contact areas. Animal husbandry and demonstrations may be conducted in either contact or holding areas to reinforce educational and interpretive principles. A variety of interactive, graphic and non-pettable live animal exhibits are integrated within each zone to reinforce specific educational concepts, such as "Animal Senses" or "Humaneness", as associated with the live animals in the contact areas. Close encounters with non-pettable animals will also reinforce the general interpretive themes.

A range of pettable animals such as llamas, calves, pigs, rabbits, goats or

sheep are associated with specific concepts. The supporting interpretive exhibits at the perimeter of each module are interactive.

The central feature of the Animals Around Us Exhibit is the pond and stream water element. This area, which is partially covered by a netted aviary, will serve several functions including orientation, animal exhibition and pacing of visitors. With its naturalistic landscape appearance, the pond area will provide an appropriate ambiance to the exhibit. It will act as a transition between the surrounding zones slowing the visitor pace and enhancing the overall experience.

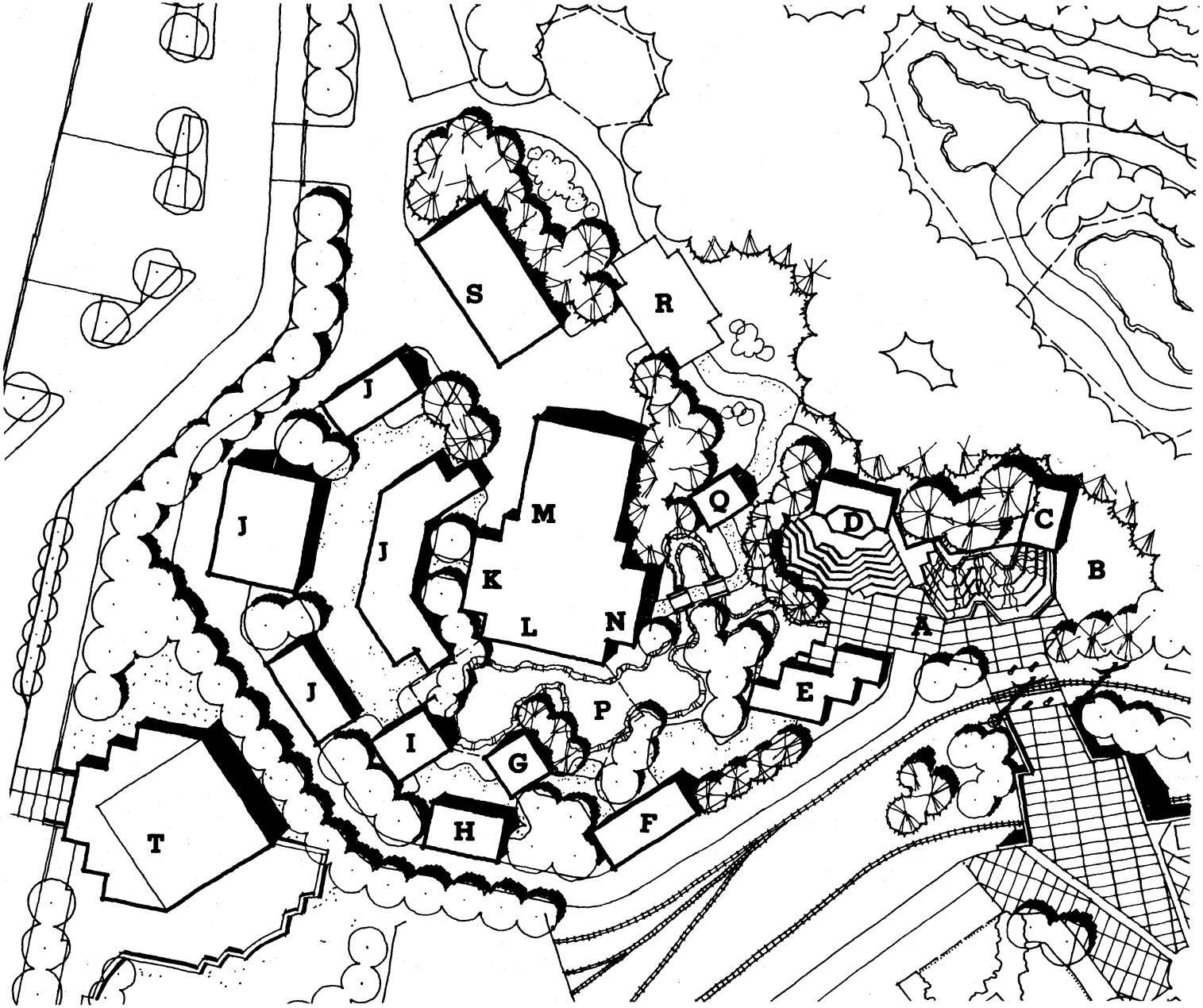
The demonstration amphitheatre, located at the entrance to the exhibit will seat approximately 150-200 people. It will be used for scheduled animal demonstrations and informal talks by Zoo staff and volunteers. The amphitheatre is joined to a mini-plaza with a "waterfall type" fountain / seating area and gathering space. Adjacent to the mini-plaza is the area for structured activity where children can enjoy exploring simulated animal environments, specialized animal sculptures or equipment such as comparative animal / human weight scales or simulated animal shells or bodies. Restroom facilities and water fountains are also located in this area for visitor convenience.

The animal food preparation / demonstration kitchen, the Birds of Prey facilities and the Animal Care Center will be located within the Animals Around Us to further enrich the visitor experience. Diets, feeding procedures, health care and treatment as applied to all types of animals will serve to reinforce various messages articulated by the Zoo to the public. This area will also provide a unique opportunity for visitors to interact with keepers and other Zoo staff. An interpretive center, located adjacent to these facilities, will synthesize and reinforce the various interpretive themes and educational concepts from each of the exhibit zones. Most of the interpretive displays and equipment requiring weather and climate control will be in this location. This area can be used as a "Discovery Room" and demonstration space when it is staffed.

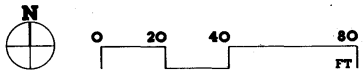
The structures are sky-lighted from the roof to provide a maximum degree of natural daylighting and sense of openness. Floors in petting-areas are of loose natural materials, but in the interpretive areas floors are hard surfaces such as pavers. Holding facilities for animals are arranged between contact areas to keep animals in close proximity to petting areas. These facilities are directly accessible by keepers from a service road at the rear.

The kitchen and Birds of Prey facilities are accessible to the keeper service area to allow for daily loading of animals into the Zoomobiles as well as for convenient service access.

ANIMALS AROUND US



A PLAZA/WATERFALL FOUNTAIN
B STRUCTURED ACTIVITY
C TOILETS
D AMPHITHEATER/PROGRAMMING
E DOMESTIC ANIMALS ORIENTATION
F DOMESTIC ANIMALS EXHIBIT AND HOLDING
G URBAN ANIMALS ORIENTATION
H URBAN ANIMALS EXHIBIT AND HOLDING
I RURAL ANIMALS ORIENTATION
J RURAL ANIMALS EXHIBIT AND HOLDING
K ANIMAL CARE CENTER
L DEMONSTRATION KITCHEN
M BIRDS OF PREY HOLDING
N INTERPRETIVE/ DISCOVERY CENTER
P POND / AVIARY
Q WILD ANIMALS ORIENTATION
R WILD ANIMALS EXHIBIT/ HOLDING/CASCADES ORIENTATION
S KEEPER FACILITIES
T AUDITORIUM



RURAL ANIMAL CONTACT AREA

PROJECT: ANIMALS AROUND US

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$2,258,855.
CONTRACTOR OVERHEAD AND PROFIT (10%)	225,885.
SUBTOTAL	$2,484,740.
DESIGN / ESTIMATE CONTINGENCY (10%)	248,474.
SUBTOTAL	$2,733,214.
PROFESSIONAL FEES (16%)	437,314.
SUBTOTAL	$3,170,528.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (12%)	380,463.
TOTAL	$3,550,991.

THE INSECT ZOO

The new Insect Zoo, because of its small size, is sited along Zoo Street, (one of the main pedestrian routes) in order to ensure maximum public exposure and accessibility. It is also sited next to the public exit of the South American Tropics Exhibit and the ramped walkway from Africa Bush for the additional exposure of insects to people leaving those exhibits. This modest exhibit building is designed to be open and inviting as an encouragement to "drop-in" traffic.

A variety of fascinating live insect exhibits and interactive-interpretive exhibits are highly accessible and informative. The intimate scale and personal character of the interior space provides an appropriate setting in which visitors can explore the diversity of the insect world.

The Insect Zoo functions as both an exhibit and an educational program that currently operates from late-May through mid-September. The new building is conceived as climate-controlled for year round keeping of specimens, even though it is not open to the public during winter season.

The Insect Zoo is a very successful and popular program. It is based on the "Discovery Room" concept and is staffed by paid personnel and volunteers. The person-to-person contact between the staff and visitors adds a valuable component to the visitor's overall experience. The Insect Zoo is one of the few places except for the Animals Around Us Exhibit where visitors can touch and handle live specimens.

A small Insect Garden is developed next to the building to provide an added dimension to the program. A wide selection of flowers and shrubs that are attractive to crawling and flying insect specimens are found in this garden. Interpretive graphics identify the specific insects that frequent the garden, and the annual and perennial plantings that attract them. The Insect Garden proves to be not only educational and informative, but visually delightful as well.

PROJECT: **INSECT ZOO**

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$250,000.
CONTRACTOR OVERHEAD AND PROFIT (10%)	25,000.
SUBTOTAL	$275,000.
DESIGN / ESTIMATE CONTINGENCY (10%)	27,500.
SUBTOTAL	$302,500.
PROFESSIONAL FEES (12%)	36,300.
SUBTOTAL	$338,800.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	33,880.
TOTAL	$372,680.

ELEPHANT CENTER

This renovated and enhanced exhibit complex is an important showcase of Washington Park Zoo's famous Asian elephant herd. The programmatic scope of the exhibit complex consists of the Lilah Callen Holden Elephant Museum, the Great Hall for indoor public viewing of elephants, an enlarged indoor viewing area for the elephants, improved holding capability, and enhanced exterior exhibit areas and architectural image. The Elephant Center is the signature animal program at the Zoo and is a major attraction for Zoo visitors. The Center is sited as an "anchor" facility at the end of "Zoo Street" in the Zoo's circulation system.

The complex is designed to be experienced in a sequential manner. Visitors arrive at the Elephant Plaza, the forecourt for the Elephant Museum, that announces the entrance of the exhibit complex. At the Elephant Plaza people have the option of by-passing the Museum if they wish and proceeding directly to the "elephantine" Great Hall with its 20 foot high ceiling for indoor viewing of the Zoo's famous elephant herd.

The Elephant Museum opened in 1986 as a premier facility at Washington Park Zoo. It contains one of the most comprehensive educational presentations on a single group of animals. A major interpretive theme, Man and the Elephant, explains the long history of man and elephant from a humanistic point of view. The story of this relationship emphasizes how the man/elephant relationship can serve as a model for larger questions of the interaction of civilization and the natural environment. Other themes highlight the species' natural history. The Museum provides a significantly expanded educational context for the live animal exhibits.

The Great Hall of the Elephant Center is designed to be the culmination of the museum experience, having close-up viewing of live elephants. Massive structural columns, large artifacts, and interpretive graphics animate the space. The interpretive exhibits cover such aspects as natural history, elephant conservation, and the history and role of the Washington Park Zoo as the "Elephant Capital of the World". Consideration should be given to a small amphitheatre for seated viewing of the elephants for extended periods as well as demonstrations or keeper talks.

The west side outdoor exhibit area facing the main amphitheatre will be improved along with the exterior appearance of the existing building.

Visitors can also exit the Great Hall to the east to view elephants in the east yard.

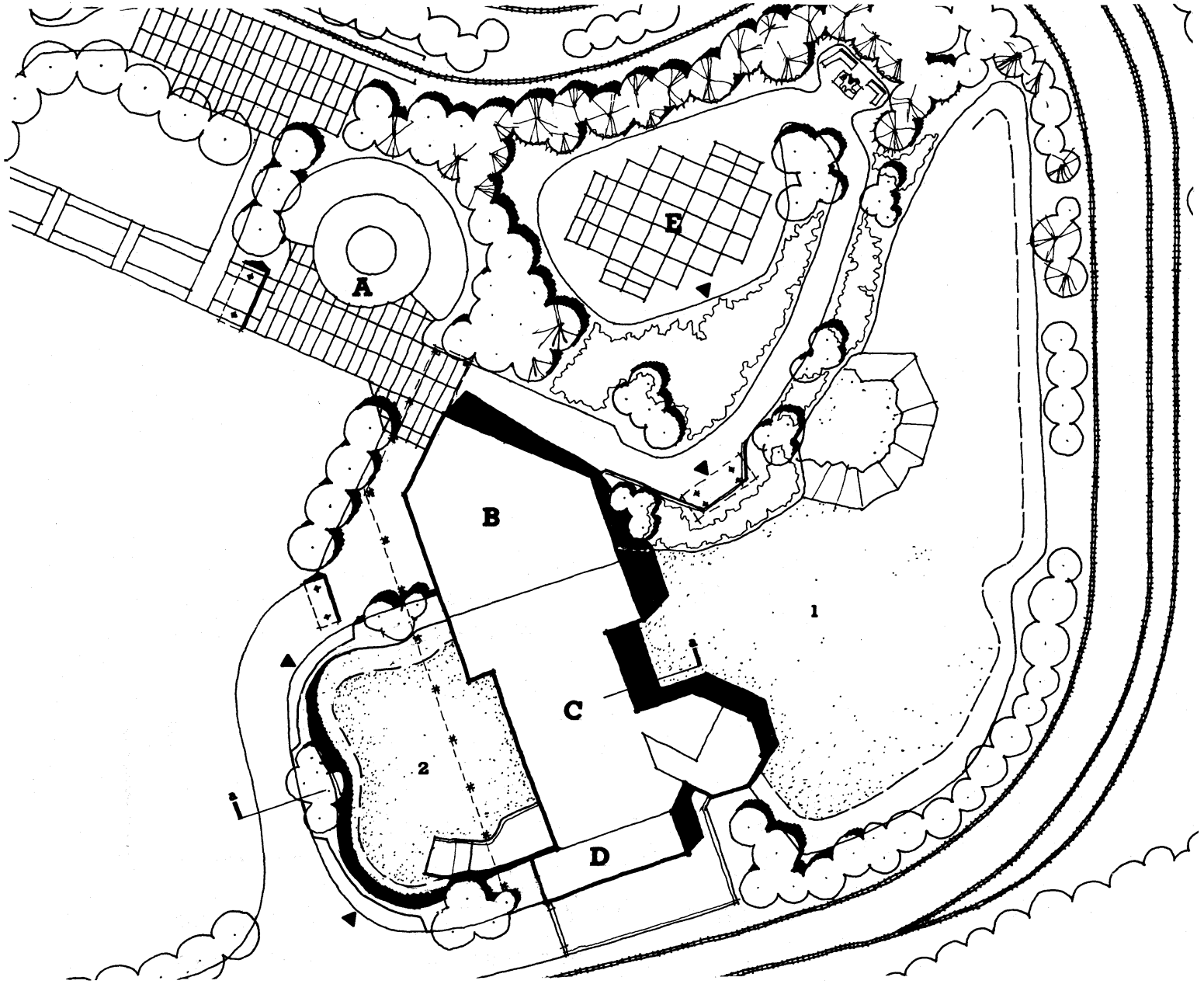
Other building improvements will include expansion and upgrading of the off-exhibit elephant rooms and the animal management areas. Hay storage will be expanded and improved. Various means of accomplishing this, including an upper level addition or an expansion to the south, should be evaluated during project design. Ventilation and lighting will be improved throughout the facility.

The Elephant Terrace overlook is sited at the top of the hill with views into the east yard. Sleeved pavement will permit easy installation of a canopy system similar to that used at Elephant Plaza and Cascade Meadow. This will facilitate use of Elephant Terrace for programming and special events on a year round basis. The landscape area around the Terrace could include an Asian Botanical garden with Asian species appropriately labeled. This could be developed to further reinforce the excellent view from the site.

PROJECT: **ELEPHANT CENTER**

DIVISION / ITEM	**AMOUNT**
LABOR AND MATERIAL CONSTRUCTION COSTS	$1,380,500.
CONTRACTOR OVERHEAD AND PROFIT (10%)	138,050.
SUBTOTAL	$1,518,550.
DESIGN / ESTIMATE CONTINGENCY (10%)	151,855.
SUBTOTAL	$1,670,405.
PROFESSIONAL FEES (15%)	250,560.
SUBTOTAL	$1,920,965.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (9%)	172,886.
TOTAL	$2,093,851.

ELEPHANT CENTER



A ELEPHANT MUSEUM (EXISTING)

B THE GREAT HALL
INDOOR VIEWING AND INTERPRETIVE CENTER

C ANIMAL HOLDING AND SERVICE

D HAY STORAGE

E ELEPHANT TERRACE OVERLOOK - PROGRAMMING

◀ VIEW POINT

└ SITE SECTION

1 ASIAN ELEPHANTS (EAST)

2 ASIAN ELEPHANTS (WEST)

N

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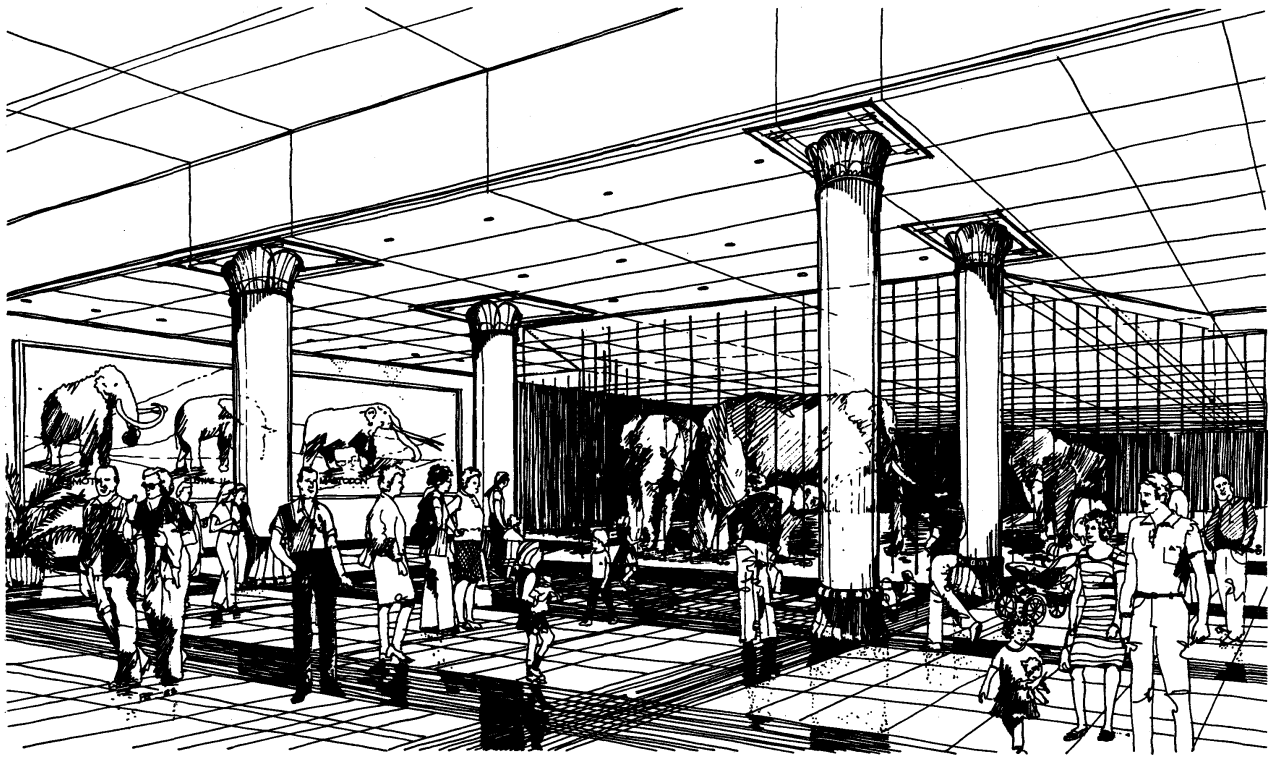
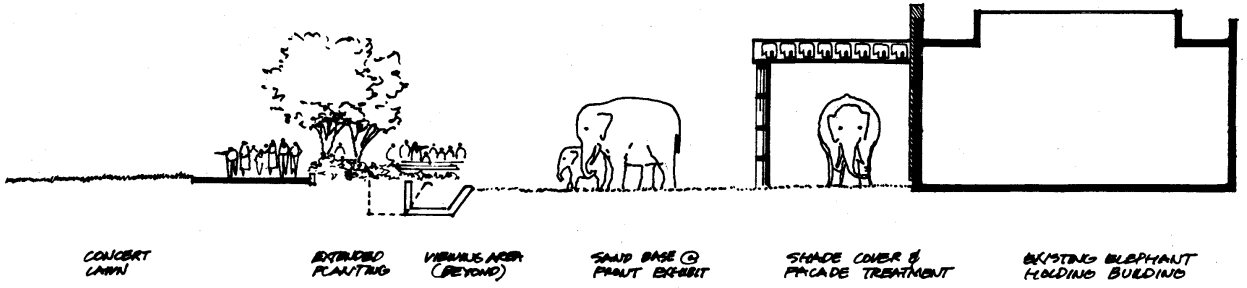


THE GREAT HALL – ELEPHANT VIEWING



SECTION a-a SCALE 1"=20'

THE MAIN ENTRANCE COMPLEX

A renovated Main Entrance is essential for the zoo for the following reasons:

1. By the 1990s the Zoo's ability to accommodate arriving visitors efficiently will be inadequate with present facilities.

2. The Gift Shop is presently only 25% of its needed size, consequently restricting revenue generating potential.

3. The existing entrance compound lacks a sense of arrival, a sense of being at a Zoo, and is reached only after passing numerous service gates and exits along the western zoo boundary.

4. It will give immediate access to the Entrance Plaza / Zoo Street.

5. Large covered spaces will be provided for use by guests as well as providing potential rental revenues.

The new Entrance consolidates in one central location a number of Zoo operations which are presently scattered throughout the grounds. This centralization will allow for improved operational efficiency for day to day activities as well as more effective accommodation of visitors needs.

The Main Entrance Complex is made up of the following components: Entrance Pavilion, Souvenir/Gift Shop, Visitor Services and Rentals, Administrative Offices, Multi-Purpose Meeting Space, and Visitor Service Staff and Keeper Staff Locker Rooms.

The Main Entrance Pavilion with its colorful banners is sited and designed to be highly visible from the freeway exit approach and from all areas of the parking lot. The Entrance Pavilion provides visitor services for the arrival and orientation of the current volume of Zoo visitors. It will also accommodate the projected increase of visitors in the future as attendance grows. During the winter season, the Pavilion also performs as a rain shelter with provision for filtered or diffused natural daylighting for the high number of gray, overcast days.

A principal role of the new Main Entrance is to establish a sense of arrival at the Zoo, and to create a festive ambiance that is a prelude to an enjoyable and memorable experience. The entire entrance sequence is designed to prepare Zoo visitors for a positive recreational / educational experience, to take care of their specific needs for the day, and to encourage them to return frequently.

The Main Entrance provides for visitor admissions and orientation functions that are efficient, informative, friendly, and easy to understand. These entry functions are staged so visitors receive information in an orderly progression and assimilate the information necessary for organizing their trip through the Zoo. The number of ticket booths open to visitors varies according to season, day of week, and time of day. Overall, the Entrance operation presents an inviting welcome to people all year on both busy, peak days in summer and on slower, low attendance days in winter.

As part of the visitor experience and entrance sequence, visitors arrive at a central orientation space beneath the protective covering of the Entrance Pavilion roof. The interior ambiance is one of shelter, daylight, and spaciousness with an abundance of potted plants, flower beds, and seating. The focal point of the orientation space is the Information Kiosk. An overhead electronic sign ("reader board") visually announces special events, with their time and location on the Zoo grounds. At the Information Kiosk, visitors receive such information as tourist information, ticket packages and price structures, verbal explanations of daily activities, available tours, locations of visitor services, Zoo train schedule, recent births, and a clear overall orientation to the lay of the grounds. An automatic teller machine will be available in this vicinity for visitor

convenience. During peak times, the Information Kiosk is staffed accordingly, but during low attendance days, information is dispensed either electronically or graphically. The Kiosk will be accessible from both inside and outside the Zoo for visitor convenience.

After visitors have given adequate thought to their Zoo trip for the day, they pass through a control point. This control point is monitored by electronic turnstiles during slow periods or staff ticket-takers in busy periods.

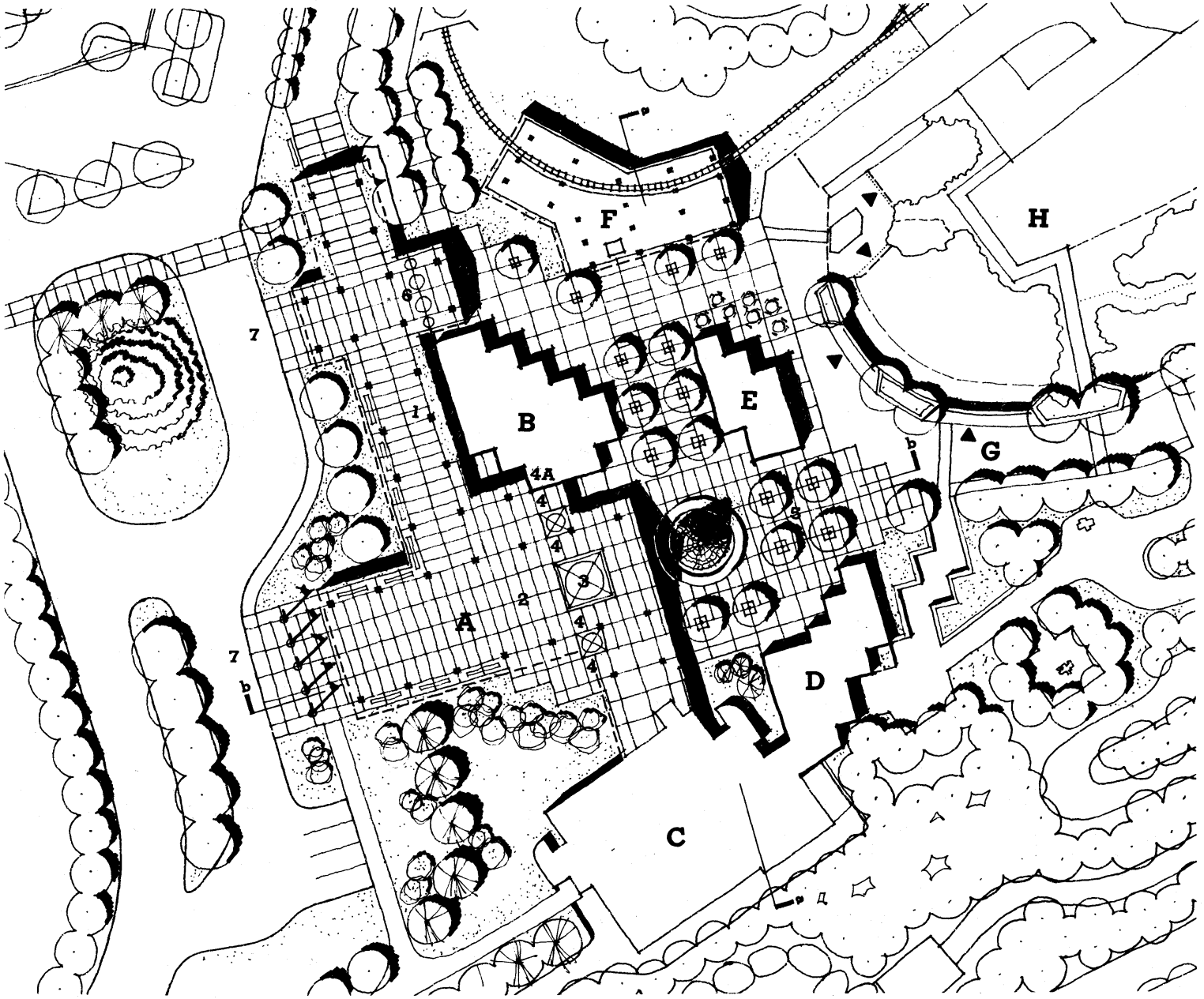
At the perimeter of the orientation space, admission / ticket booths will be designed for flexible use according to season, day of week and time of day to accommodate efficient admission of visitors. Beyond the ticket booths and gates, at the perimeter of the Village Courtyard, a number of services for visitors are located: toilet rooms, rental booth, security / first-aid station, and food services. Special events and programs are also planned to work in conjunction with this outdoor space. This arrangement of services allows visitors to become prepared and organized before moving into the Zoo via Zoo Street. The orientation space and Village Courtyard are designed to disperse crowds and reduce time waiting in line for specific needs.

At the exit, visitors also pass a snack food kiosk with seating, the rental return booth, the Railway Station, and the Souvenir/Gift Shop. The Gift Shop, an important source of revenue for the Zoo, is conveniently accessible at the main exit or from outside the Zoo. The Auditorium, north of the Entrance Complex, is accessible from the Entrance Plaza for Zoo orientation presentations, social gatherings, or receptions.

The soon to be renovated Administrative-Education Building will house a majority of the administration, management, and education staff operations at the Zoo. This building is also accessible from outside the Zoo, and is in close proximity to the Entrance Pavilion and Visitor / Staff Service Building.

PROJECT: MAIN ENTRANCE COMPLEX

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$1,356,335.
CONTRACTOR OVERHEAD AND PROFIT (10%)	135,633.
SUBTOTAL	$1,491,968.
DESIGN / ESTIMATE CONTINGENCY (10%)	149,197.
SUBTOTAL	$1,641,165.
PROFESSIONAL FEES (12%)	196,940.
SUBTOTAL	$1,838,105.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	183,811.
TOTAL	$2,021,916.



MAIN ENTRANCE COMPLEX

A ENTRANCE PAVILION
1 COVERED WALK
2 ORIENTATION PLAZA
3 INFORMATION KIOSK
4 TICKET BOOTH
4A TICKET WINDOW (WINTER)
5 VILLAGE COURTYARD
6 EXIT TURNSTILES
7 DROP-OFF ZONE

B GIFT SHOP

C ADMINISTRATION–EDUCATION BUILDING (EXISTING)

D VISITOR/STAFF SERVICES
- RENTALS AND PUBLIC LOCKERS
- CONCESSIONS AND FILM
- TOILETS
- MEETING ROOMS
- STAFF LOCKERS, SHOWERS AND CHECK-IN (LOWER LEVEL)

E FOOD SERVICE
F RAILWAY STATION
G ZOO STREET
H FELINES

◀ VIEW POINT
L SITE SECTION

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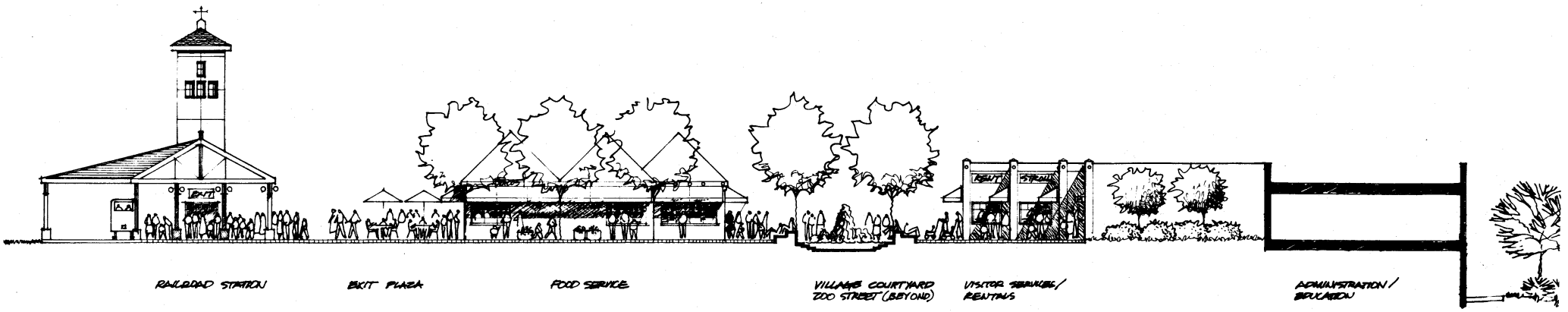
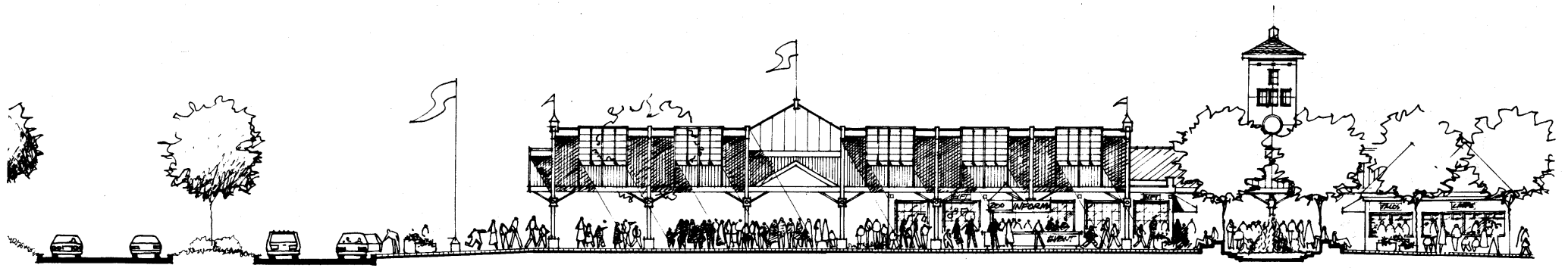


RAILROAD STATION | EXIT PLAZA | FOOD SERVICE | VILLAGE COURTYARD / ZOO STREET (BEYOND) | VISITOR SERVICES / RENTALS | ADMINISTRATION / EDUCATION

SECTION a-a **SCALE 1"=20'**



KNIGHTS BLVD. | DROP OFF ACCESS | DROP OFF/WAITING ZONE | COVERED QUEING AND PRE-TICKETING ORIENTATION | TICKETING, INFORMATION & SECURITY | GIFTS (BEYOND) | VILLAGE SQUARE RAILROAD STATION (BEYOND) | POST SERVICE (BEYOND)

SECTION b-b **SCALE 1"=20'**

WPZ RAILWAY

The existing railway station canopy structure is deteriorating and will need to be replaced within a few years. The Washington Park Station was recently renovated, but improvements in the access and grounds are warranted.

Construction of the new Zoo Railway Station in conjunction with the new Main Entrance Complex responds to three important visitor services objectives. First, the highly visible location is important to maintain and strengthen the identity of the train as a popular "institution" whose experience is an integral part of the overall Zoo experience for many visitors. Second, the new Railway Station is planned to be used in close proximity to the plaza food service facility. This close relationship between food service and the Railway Station is important to maintain as the receipts from food sales and train ridership are both mutually benefited and reinforced by this physical proximity. Finally, since many visitors prefer to ride the train upon arrival for orientation or just prior to departure as a climax event, location of the station near the entrance and exit is critical. The Railway is promoted at the Zoo Main Entrance by means of easily understood ticketing packages that include a train ride along with general admission to the Zoo. Single ride tickets will also be available for purchase at the Station.

The new Station is designed to provide improved service to the large numbers of riders, both now and in the future. It will present a Northwest themed presence that is reminiscent and evocative of the less hurried days when passenger transport by rail was a pleasurable and privileged experience. The Station has a large arrival and departure platform that protects the waiting passengers from the weather. Provisions for the queuing of large crowds are provided with accompanying directional signage that is easily understood. Interpretive graphics are provided in a bold manner that is informative and entertaining to visitors while they wait for train departures. Potential subjects for these interpretive materials are the history of railways in Oregon, the history of Washington Park, circus trains, and the world of animals. An additional interpretive opportunity is to showcase the steam engine within a glass-walled shelter on a track spur near the Station during the winter season when the train runs on a very limited schedule. Means of enhancing the experience while on the train, especially within the Zoo grounds should be explored.

An improved Maintenance Building and Storage Facility is to be located in the existing railroad maintenance area. The renovation of this existing compound provides for enlarged and enclosed work space as necessary for effective service and repair operations.

The building will be a semi subterrainian structure extending from and expanding the existing underground tunnel facilities. The north and west sides will be completely underground or buried with earth berms to obscure the facility from public view. Concrete or masonry will form the exterior structural envelope for the building, providing the required earth retainage, fire resistive construction and minimum maintenance requirements. Crane, lift and hoist equipment in conjunction with depressed floor pits will provide necessary facilities for safe and efficient train equipment maintenance. Track sidings will provide access to the maintenance shop and to the train storage areas where there will be ample room for interior storage of all train cars. In addition, interior storage will be provided for railroad, equipment and parts within the facility to minimize deterioration and losses. Office and toilets for railroad personnel will be integrated.

The grounds and pedestrian circulation of the Washington Park Station should be investigated for future improvements. Improved access from the Station to the Japanese Gardens could be achieved by means of a foot bridge across Kingston Drive. A larger waiting area should be studied that

could possibly include a viewing area of a miniature, scaled-model railway of the Washington Park and Zoo Railway with a model train running in concert with the actual Zoo train. Improvements to the grounds could be incorporated in a hillside "maze" for children north of the Station. Below the "maze" a summertime Zoo food service could offer an interesting menu for people riding the train or visiting the Rose Test Gardens or Japanese Gardens.

PROJECT: RAILWAY STATION

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	
CONTRACTOR OVERHEAD AND PROFIT (10%)	28,000.
SUBTOTAL	$308,000.
DESIGN / ESTIMATE CONTINGENCY (10%)	30,800.
SUBTOTAL	$338,800.
PROFESSIONAL FEES (13%)	44,044.
SUBTOTAL	$382,844.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (9%)	34,456.
TOTAL	$417,300.

PROJECT: RAILWAY MAINTENANCE COMPLEX

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$800,000.
CONTRACTOR OVERHEAD AND PROFIT (10%)	80,000.
SUBTOTAL	$880,000.
DESIGN / ESTIMATE CONTINGENCY (10%)	88,000.
SUBTOTAL	$968,000.
PROFESSIONAL FEES (12%)	116,160.
SUBTOTAL	$1,084,160.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (8%)	86,733.
TOTAL	$1,170,893.

SOUTH AMERICAN TROPICS EXHIBIT

In this facility, Zoo visitors have an opportunity to observe fascinating reptiles, fish, amphibians, mammals and birds exhibited in the environmental setting of the tropics. The global geographic ranges of the tropic zone are interpreted through an introduction to the animal and plant exhibits.

Due to unique environmental criteria for these animals, the exhibit design concept provides for total indoor viewing of exhibits.

At the building's entrance, visitors enter an interpretive area that introduces the world water cycle as the main determinant of the character and location of this large and significant habitat type.

Following this introduction, visitors move through a transition space with small animal exhibits for reptiles, amphibians, arthropods, and fish within contexts that are suggestive of their respective habitats.

Next is the Amazon tropical forest exhibit. This exhibit is conceptually a large lushly planted tropical greenhouse. The exhibit environment that visitors experience is one of high humidity, dense vegetation, and natural diffused lighting. A pedestrian ramp descends through the layers or habitat zones within a tropical forest. The dramatically different forest zones and the complex cooperation between animals and plants that exist in the forest are explained in relation to live exhibits along the ramp. A variety of reptiles, amphibians, selected tropical mammals and colorful birds are exhibited and interpreted.

Next a "Herp" lab contains artifacts, specimens, and additional materials in a "Discovery Room" atmosphere to encourage further investigation and study. This lab area also contains a small assembly area that can be used for animal talks and demonstrations by the Education Division and keeper staff.

In addition to the Tropics concept, a number of alternative exhibit design concepts should be investigated, such as integrating the existing Penguinarium with its South American penguins, terns and cormorants as a component of the South American Tropics Exhibit. Other species that would be appropriate for inclusion in this exhibit would be caiman, crocodile, harpy eagle, spectacled bears, South American parrots or tucanets.

PROJECT: SOUTH AMERICAN TROPIC EXHIBIT

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$1,822,300.
CONTRACTOR OVERHEAD AND PROFIT (10%)	182,230.
SUBTOTAL	$2,004,530.
DESIGN / ESTIMATE CONTINGENCY (10%)	200,453.
SUBTOTAL	$2,204,983.
PROFESSIONAL FEES (16%)	352,797.
SUBTOTAL	$2,557,780.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	255,778.
TOTAL	$2,813,558.

SOUTH AMERICAN TROPICS

A INTRODUCTION AREA
B KITCHEN
C ANIMAL SERVICE
D JANITOR
E STORAGE
F PROGRAM AREA
G "HERP" LABORATORY
H AMAZON TROPICS HABITAT
I INSECT ZOO

L BUILDING SECTION
← DIRECTION OF TRAVEL

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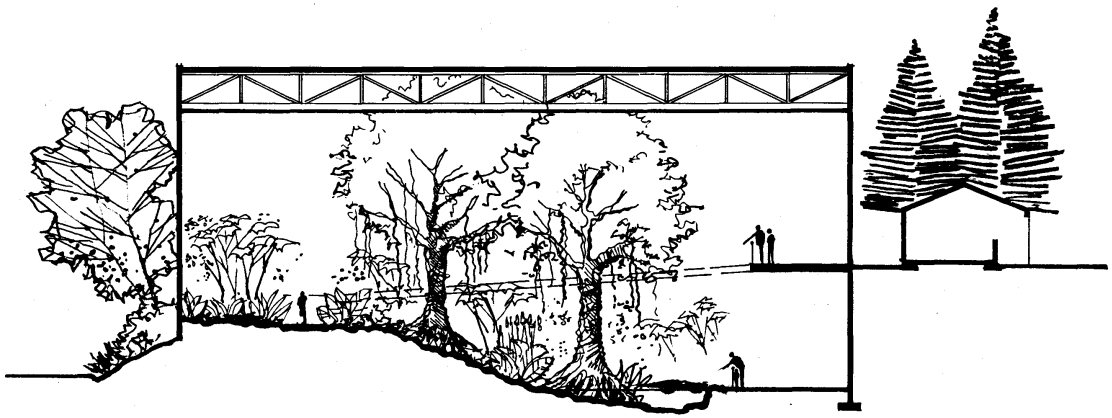
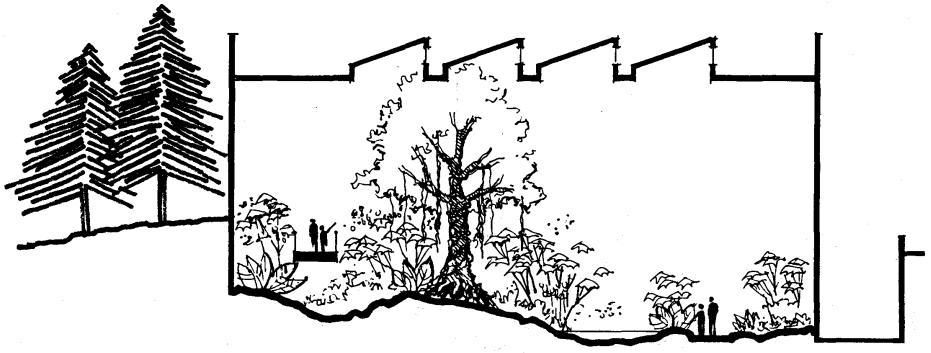


SECTION a-a SCALE 1"=20'



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FELINES

The Felines exhibit is the first animal exhibit most visitors encounter. It is at the transition between the Main Entrance and Zoo Street, the main pedestrian spine in the Zoo's circulation system.

The Felines exhibits are conceived as limited taxonomic or comparative exhibits of selected species within recreated native habitats. Interpretive media provide general species information for visitors. Observable characteristics of each feline are addressed and comparisons drawn between adjacent exhibits. Prey-predator relationships and conservation issues are also presented.

The Siberian tigers will occupy an enlarged, moated enclosure that serves as a premier, introductory animal exhibit for Zoo visitation. This new, enlarged tiger enclosure is bisected with a covered viewing alcove that has glass barriers for close-up viewing of these large felines. The existing leopard exhibit will be renovated to accommodate the female tiger. The existing exhibit architecture will be concealed with simulated rock formations, plantings, and water elements that suggest a forested environment such as the Amur River basin of China. Selective use of shrubs and grasses are used to reinforce the dense forest image. The new viewing alcove contains interpretive exhibits that describe the Siberian tiger and explain aspects of the Species Survival Program for this animal that the Zoo is pursuing in cooperation with other zoos.

The Snow Leopard Exhibit is planned as another major feline exhibit, adjacent to the Central Plaza. A Central Asian mountain habitat is created for snow leopards from the existing exhibits. This steep mountainous setting features two cascading streams of water descending from higher elevations over rough boulders into pools near visitors. Crevices within the rock formations provide planting pockets for representative trees and shrubs. Rock ledges at various locations become resting spots for the leopards during periods of inactivity. Because of the snow leopard's agility, an inconspicuous overhead mesh and high tension wire enclosure is required. General species information such as range, diet, and behavioral traits are interpreted for the public.

Pallas cats are exhibited on the north side of the Felines Exhibit with a viewing window adjacent to the entrance to the interior viewing area.

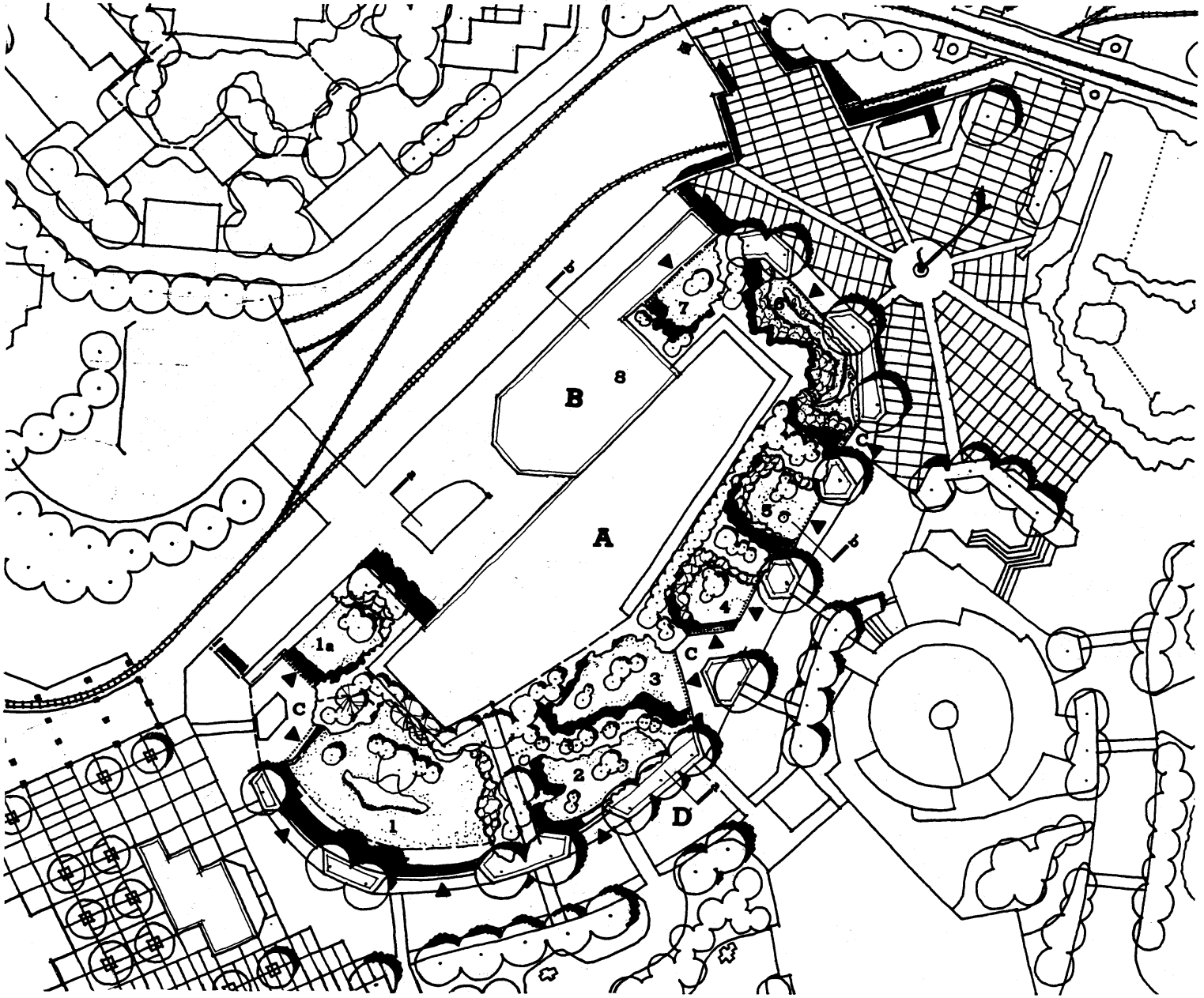
Renovation work along Zoo Street includes the three remaining smaller enclosures with complete habitat simulation. The renovated exhibits replicate an environment for capybara, South American parrots, and tucanets as a foreground to perhaps jagarundi or Geoffrey's cats. Jaguars are interpreted and exhibited in an adjacent exhibit space. The Siberian lynx is exhibited in a recreated Siberian forest.

The existing Night Country Exhibit, modified as an interior exhibit area with focus on a twilight environment, will provide for transition from outside to inside, control of light levels, appropriate ambiance, and improved visitor circulation. Entrance is clarified and made more obvious by providing an entrance extension toward the Central Plaza. This extension functions as a transition space and light level control for visitors. Possible specimens for exhibition are Asian bats, Asian rodents, flat-headed cats, golden cats, fishing cats, along with indoor viewing of Pallas cats.

Service spaces for animal management spaces will be upgraded in order to meet keeping needs adequately for this extensive range of animals within the Felines exhibit.

PROJECT: FELINES EXHIBIT

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$1,376,373.
CONTRACTOR OVERHEAD AND PROFIT (10%)	137,637.
SUBTOTAL	$1,514,010.
DESIGN / ESTIMATE CONTINGENCY (10%)	151,401.
SUBTOTAL	$1,665,411.
PROFESSIONAL FEES (15%)	249,812.
SUBTOTAL	$1,915,223.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	191,522.
TOTAL	$2,106,745.

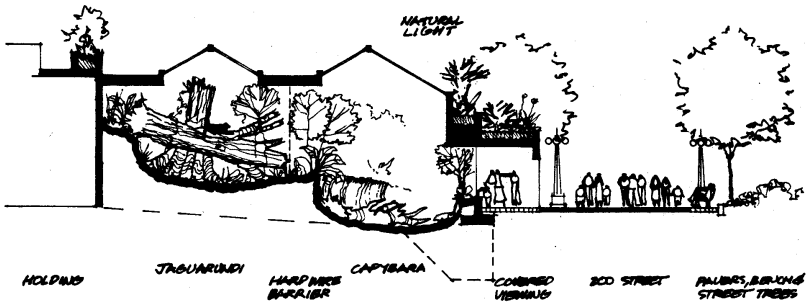


FELINES EXHIBIT

A ANIMAL HOLDING
B NOCTURNAL ANIMALS
C COVERED VIEWING
D ZOO STREET

◀ VIEW POINT
L SITE SECTION

1 SIBERIAN TIGERS
1a SIBERIAN TIGERS
2 CAPYBARA
3 JAGARUNDI AND MARGAY
4 JAGUAR
5 SYBERIAN LYNX
6 SNOW LEOPARD
7 PALLAS CATS
8 SMALL ASIAN ANIMALS
- FISHING CAT
- GOLDEN CAT
- FLAT-HEADED CATS
- ASIAN BATS
- ASIAN RODENTS



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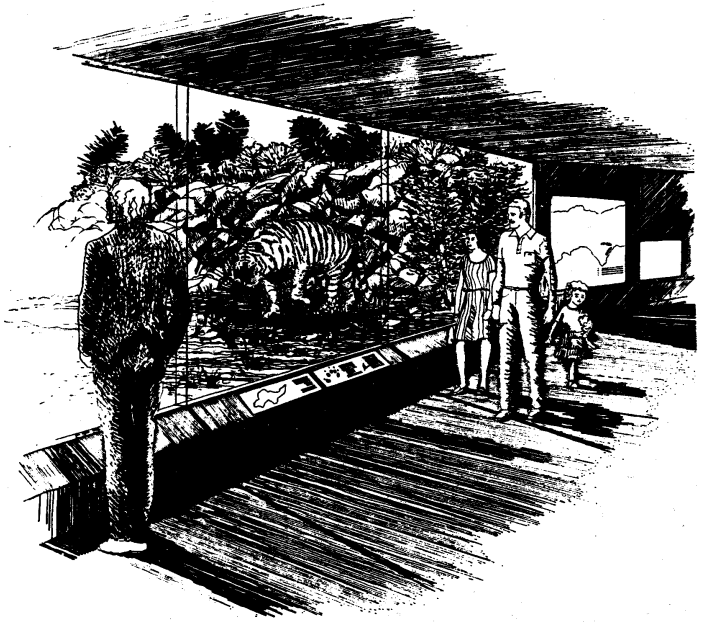
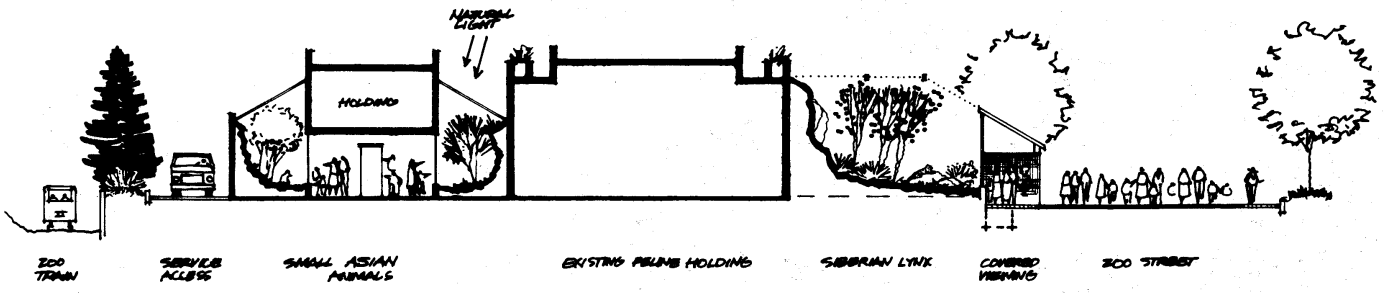


SIBERIAN TIGER VIEWING

SNOW LEOPARDS



SECTION b-b SCALE 1"=20'

PRIMATES

The Primates exhibit is a taxonomic, comparative exhibit that is extremely popular with the public. This structure is among an increasing number of locations at the Zoo which provide weather protection for visitors with covered and enclosed viewing areas.

This facility houses the entire collection of primates at the Zoo and was renovated in 1980. Additional work is minor in scope and is intended to improve visitor circulation by means of a well defined exhibit entrance, improvements to the northside interior animal exhibits, a renovated chimpanzee interpretive space, and addition of two outdoor primate enclosures along the south side of the building with passages connected to the indoor spaces.

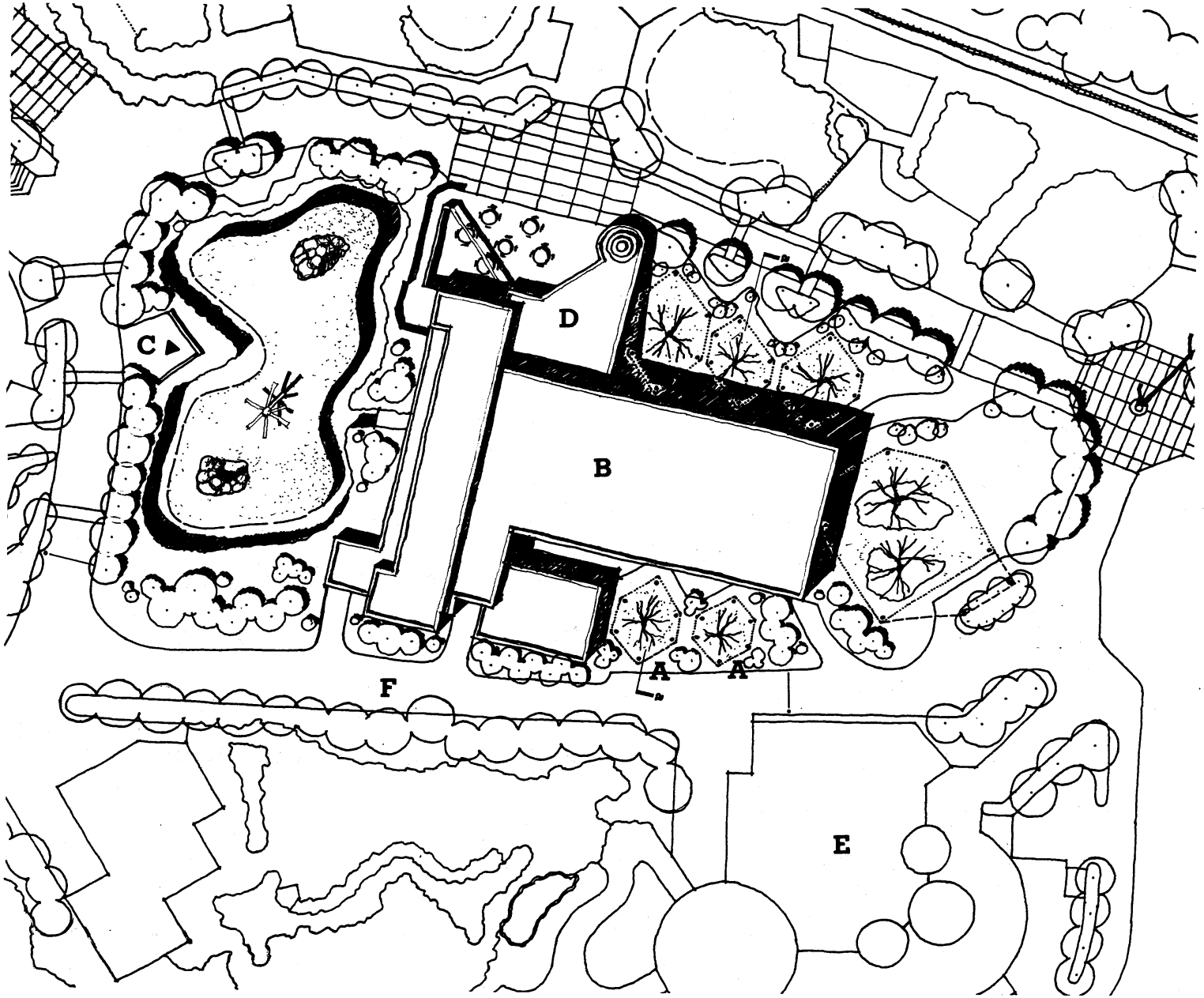
The Primates Exhibit consists of a number of animal exhibits enclosed behind glass with several excellent outdoor exhibits for lemurs, chimpanzees, mandrills, gibbons, and siamangs. The exterior exhibits are simulated habitats that allow visitors to witness natural animal behavior. The interpretive program for the Primates Exhibit focuses on social behavior and adaptation. New southside exhibits are to be connected to the main building similar to existing northside exhibits.

The existing outdoor island for chimpanzees is benefited with another viewpoint along the westside of the exhibit. Indoor chimp viewing is upgraded to replace the worn viewing / interpretive railing. Bent glass barriers are upgraded to be less visually obstructive.

The orang-utan exhibit requires a solution to the deterioration of grass inside the enclosure. Northside interior exhibits can be enhanced with the introduction of plantings or habitat simulation.

PROJECT: PRIMATES EXHIBIT

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$500,750.
CONTRACTOR OVERHEAD AND PROFIT (10%)	50,075.
SUBTOTAL	$550,825.
DESIGN / ESTIMATE CONTINGENCY (10%)	55,083.
SUBTOTAL	$605,908.
PROFESSIONAL FEES (12%)	72,709.
SUBTOTAL	$678,617.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (12%)	81,434.
TOTAL	$760,051.



PRIMATES

A NEW OUTDOOR ANIMAL ENCLOSURES

B UPGRADED INDOOR EXHIBITS & INTERPRETIVE

C NEW VIEWING AREA

D BEARWALK CAFE

E AFRICAFE

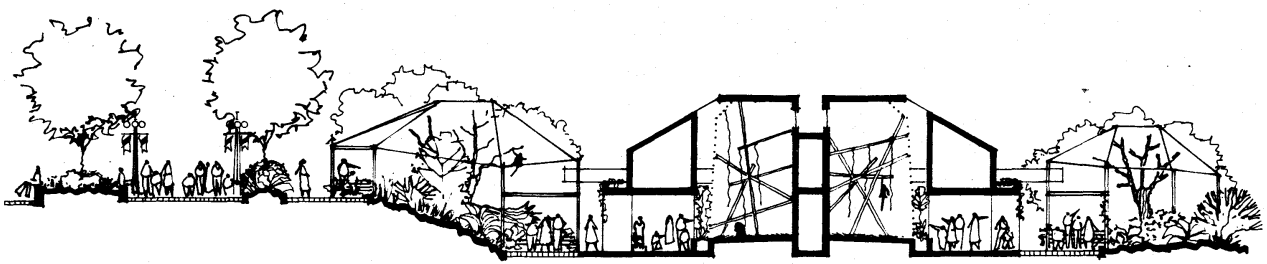
F SERVICE ROAD

◀ VIEW POINT

L SITE SECTION

N

0 20 40 80 FT



SECTION a-a SCALE 1"=20'

CASCADES EXHIBIT

The Cascades Exhibit is one of the Washington Park Zoo's largest and most extensive geographical exhibit, showcasing the Cascade Mountains of Northern California, Oregon, Washington, and Southern British Columbia. The exhibit interprets and displays the native plants and animals of this region on the western side of the Cascades. The exhibit occupies approximately 4.5 acres of an existing mixed forest segment of evergreen and deciduous trees and shrubs that extend north into Washington Park. The following three Cascades habitat zones form the basis of the exhibit interpretive theme: Forest, Stream and Pond.

The site boundaries and area have been revised and reduced from the 1983 Master Plan concept and now extend from the existing path at the east edge of the duck pond uphill to the top of the ravine at the north Zoo boundary fence. Due to the unstable nature of soils in the area, site development will be concentrated on the west side of the ravine where site conditions are most favorable.

The design concept takes advantage of the shape, topography, and native vegetation of the site to create a sequential experience along a Nature Trail that becomes an extension of the Animals Around Us. The trail meanders through each replicated habitat, either as a pebble pathway or small sections of board walk / bridge. The Nature Trail begins at an orientation building, traverses the slope of the Forest, a habitat of sword ferns, rhododendrons, and towering Douglas firs, and travels through a stream and pond environment. The Trail concludes at the Cascades Lodge shelter that overlooks a replicated high-mountain lake or pond. The Cascade Lodge, a rustic shelter of rough-hewn timbers and stone, is reminiscent of "cascadian architecture" in form and materials. At the Lodge visitors can receive information or brochures on actual trails and destinations within the Cascades. From the Lodge shelter, visitors follow the pathway back to the main Zoo grounds passing beneath the redesigned railway trestle.

Live animal species, characteristic of each habitat, are exhibited and interpreted along the Trail in habitats that utilize indigenous plants to enhance the setting and to augment the interpretive program.

Terrestrial animal enclosures are intended to be unobtrusive and inconspicuous. Natural vegetation and existing topography are incorporated to enhance the exhibit character. The aquatic exhibits display animals in natural settings that provide visitors with opportunities to observe underwater behavior.

Entrance to the Cascades Exhibit begins at the Orientation Building with the trail crossing a cascading stream. Visitors are given a comprehensive, mixed-media presentation of the Cascades and the representative habitats.

Exhibit architecture, integrated within the overall exhibit, is small in scale, constructed of appropriate materials. Each habitat is introduced at an interpretive building in which several small live animal exhibits are featured, along with graphic displays.

The Forest Habitat is explained to the public through live specimens and interpretive exhibits, specifically the complexity of relationships that exist among the plant and animal communities of the forest. Exhibit enclosures are designed to be integrated into the existing topography and vegetation. Representative animals include owls, fisher, red fox, porcupine with blue grouse, and raccoon.

The Nature Trail traverses the slope through Douglas firs, spruce, hemlock, alders, and maples. The Forest Habitat Center is a small structure set into the hillside and contains a number of small animal exhibits and interpretive displays. The significance and life history of the Cascades forest, as well as comparisons with other major forests and forest types, is presented to visitors. The small animals, both nocturnal and diurnal forest species, are exhibited in specialized,

naturalistic settings for close inspection. Representative animals could include deer mouse, tree vole, and wood rat.

Along the Trail there are areas of native vegetation where examples of plant competition and succession are interpreted. The botanical exhibit program incorporates an understory of smaller trees and shrubs such as Pacific dogwood, vine maple and rhododendrons. Visitors also are able to appreciate such smaller shrubs and herbs as Western azalea, salal, deer fern, and white trillium.

In the Stream Habitat zone of the Cascades Exhibit, emphasis is placed upon the role of streams in the Cascades through the use of live aquatic animal exhibits along with interpretive displays. The existing Schamoni Stream and Pond Building which opened in 1982 has to this date provided visitors with their first exposure to the Stream Habitat.

In keeping with an aquatic theme, a replicated, fast-moving mountain stream courses its way beside the descending Nature Trail, culminating at the Schamoni Stream and Pond Building. The mountain stream could contain live displays of steelhead and salmon. Streamside vegetation is discussed through interpretative botanical displays along the pedestrain pathway.

Within the shaded environment created by the overhead canopy of firs and big-leaf maples, patches of tall Oregon grape, huckleberry and ocean spray provide an effective backdrop for smaller colorful plants, such as varied-leaved collomia, Hooker's fairybells or Oregon iris growing along the habitat streamside.

Arriving at the existing Schamoni Stream and Pond Building, the concept of the food chain has been introduced through a number of interpretive and live animal displays that include small aquatic life, trout, water ouzels and river otters exhibited for close underwater viewing behind glass. This existing facility provides a transition into the Pond Habitat and its unusual close-up view of the beaver pond.

The physical and interpretive transition between the stream and pond zones of the Cascades Exhibit happens within the Schamoni Stream and Pond Building. Within this building a number of small aquatic exhibits display the animal and plant life of both habitats. Larger aquatic exhibits for otter and beaver allow visitors to observe at close range the intriguing behavior of these mammals. This exhibit is further animated with pan fish and several species of ducks.

Near the exit of the existing building four small dioramas dramatically illustrate the seasonal life cycle of a small pond micro-habitat. In addition, a brief, self-activated audio-visual program protrays the beauty and grandeur of the Cascades region for visitors as they leave the building and enter a marsh aviary that contains native birds. Planted among the taller stands of Western red cedar and red alder are groupings of willow, spirea and salmonberry. A wide range of low-growing herbs such as skunk cabbage, deer fern, water parsley are also established at pondside. Against the existing concrete retaining wall, special settings for marmot and cougar are replicated and interpreted.

The Pond Habitat is introduced by means of a pond aviary. Through thick clumps of cattails and other aquatic plants, visitors can enjoy being in with and watching birds such as cranes, herons, egrets, and ducks. Within this zone, a small-scale display could perhaps elaborate on the delicate relationship of the plant and animal communities of the pond environment.

The Nature Trail continues along the southern edge of the pond aviary to arrive at the Cascades Lodge shelter that overlooks a pond that accommodates migratory waterfowl.

The Cascades Exhibit is subdivided into three phases for further development; Phase I is the Pond habitat, Phase II is the Stream habitat, and Phase III is the Forest habitat.

PROJECT: CASCADES EXHIBIT - I (POND HABITAT)

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$1,175,750.
CONTRACTOR OVERHEAD AND PROFIT (10%)	117,575.
SUBTOTAL	$1,293,325.
DESIGN / ESTIMATE CONTINGENCY (10%)	129,333.
SUBTOTAL	$1,422,658.
PROFESSIONAL FEES (15%)	213,399.
SUBTOTAL	$1,636,057.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	163,606.
TOTAL	$1,799,663.

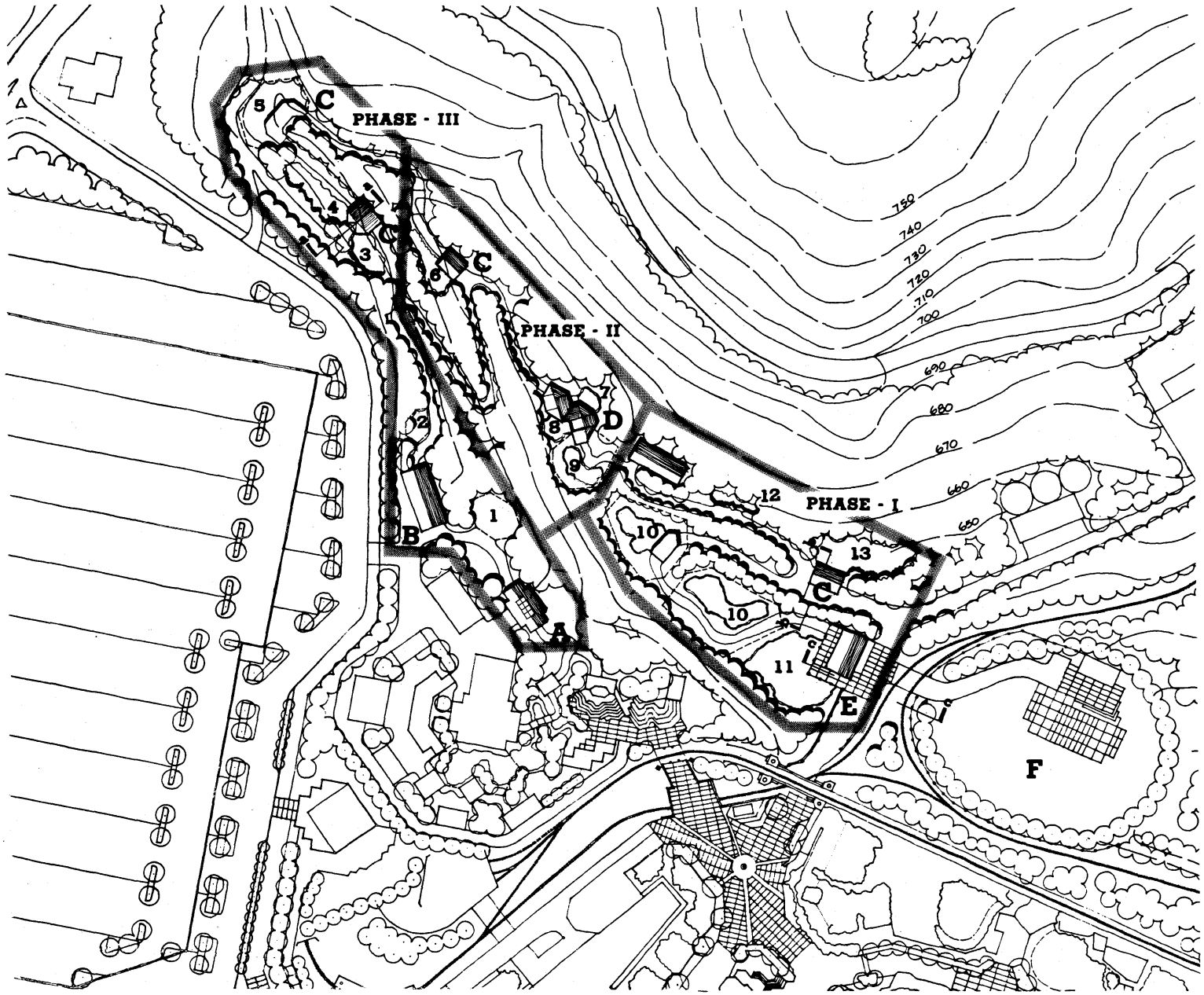
PROJECT: **CASCADES EXHIBIT - II (STREAM HABITAT)**

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$215,000.
CONTRACTOR OVERHEAD AND PROFIT (10%)	21,500.
SUBTOTAL	$236,500.
DESIGN / ESTIMATE CONTINGENCY (10%)	23,650.
SUBTOTAL	$260,150.
PROFESSIONAL FEES (15%)	39,023.
SUBTOTAL	$299,173.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (9%)	26,926.
TOTAL	$326,099.

PROJECT: CASCADES EXHIBIT III - (FOREST HABITAT)

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$1,505,000.
CONTRACTOR OVERHEAD AND PROFIT (10%)	150,500.
SUBTOTAL	$1,655,500.
DESIGN / ESTIMATE CONTINGENCY (10%)	165,550.
SUBTOTAL	$1,821,050.
PROFESSIONAL FEES (15%)	273,158.
SUBTOTAL	$2,094,201.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	209,421.
TOTAL	$2,303,629.

CASCADES EXHIBIT



A CASCADES ORIENTATION BUILDING
B FOREST HABITAT CENTER
C VIEWING SHELTER
D SCHAMONI STREAM & POND HABITAT BUILDING (EXISTING)
E CASCADES LODGE
F CASCADES MEADOW

L SITE SECTION

1 GREAT HORNED OWL
2 SPOTTED OWL
3 FISHER
4 RED FOX
5 BLUE GROUSE & PORCUPINE
6 RACCOON
7 RIVER OTTER
8 BEAVER
9 WATERFOWL AVIARY
10 POND AVIARY
11 MIGRATORY BIRD POND
12 MARMOT
13 COUGAR

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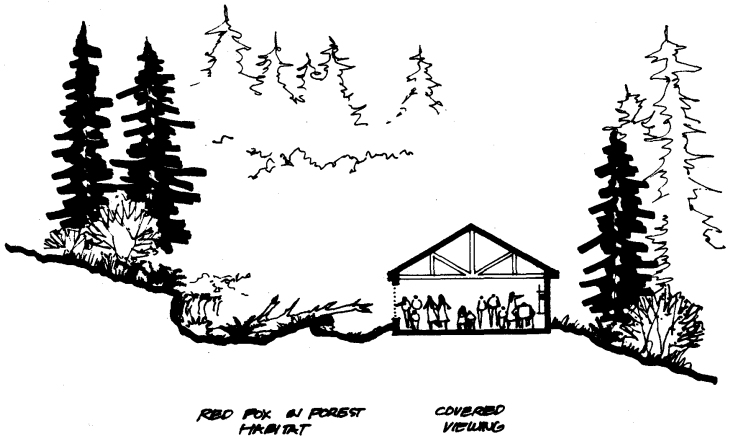

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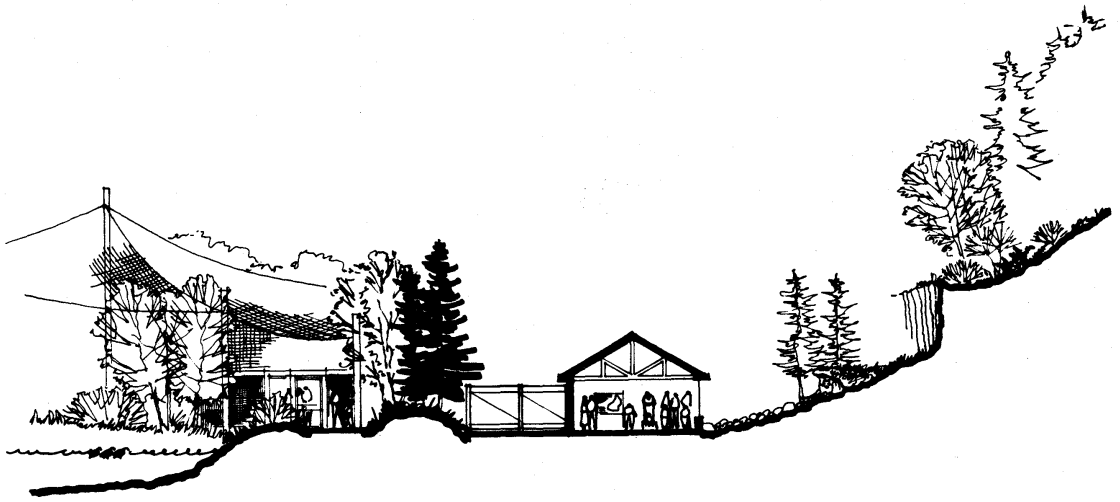

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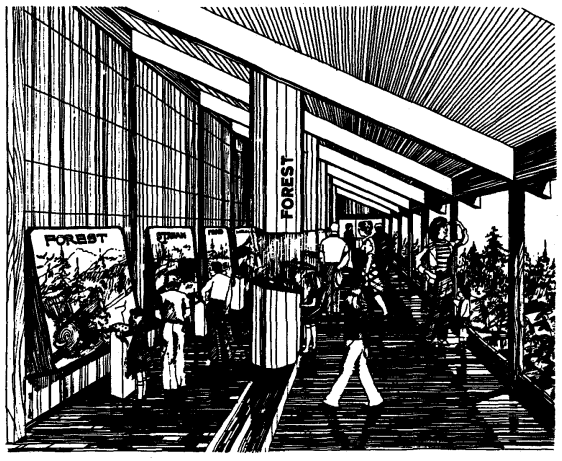
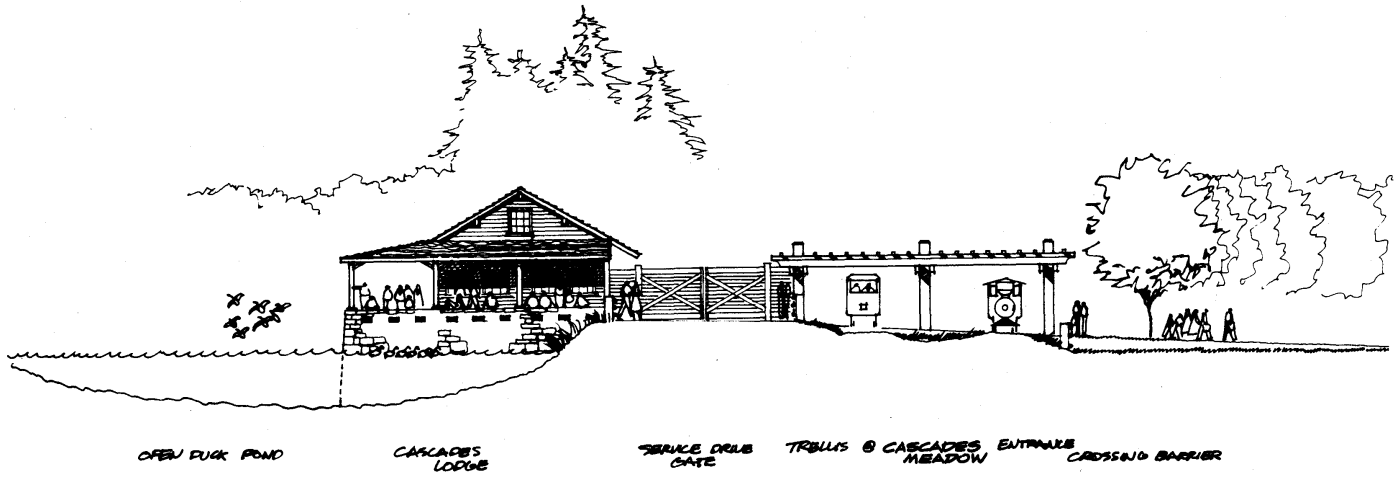


ORIENTATION BUILDING



SECTION c-c SCALE 1"=20'

CASCADES MEADOW

The Cascades Meadow is programmed to accommodate group picnics, special events, and programs. When completed, the Meadow will provide the Zoo with increased rental revenues. Public interest in this type of facility has already been demonstrated. The Zoo has successfully marketed and hosted numerous group activities, but is compromised in accommodating this need because of competing space demands from other Zoo operations and events. The Zoo is presently marketing this service to businesses, corporations, agencies and professional groups. Therefore, completion of Cascades Meadow will allow the Zoo to expand its program offering while generating additional revenues.

Sited in one acre of undeveloped Zoo property north of the railway and east of the proposed Cascades Lodge, the Cascades Meadow consists of weather protected food service pavilion, restrooms, service and storage area, and recreation and open space.

The pavilion is programmed to accommodate groups as large as 150 - 200 people in a banquet seating arrangement. The paved terrace at the southern front of the pavilion will accommodate modular canopy sections (20 feet by 20 feet) using a recessed sleeve for rapid erection of canopy frames. This modular system will eliminate the current practice of labor - intensive tent setup, dismantling and storage. The modular system allows the Zoo to vary the canopy coverage in response to the size of the group. The recreation open space is a large level grass area surrounded by a ring of deciduous trees to provide a measure of seclusion and isolation from the main portion of the Zoo. A rustic fence system around the open space will provide security and visitor protection.

The Meadow's pavilion design concept follows the "cascadian" architectural theme established for the Cascades Exhibit, i.e. rough hewn heavy timber and stone. The pavilion is sited for a southern exposure to take advantage of passive solar benefits.

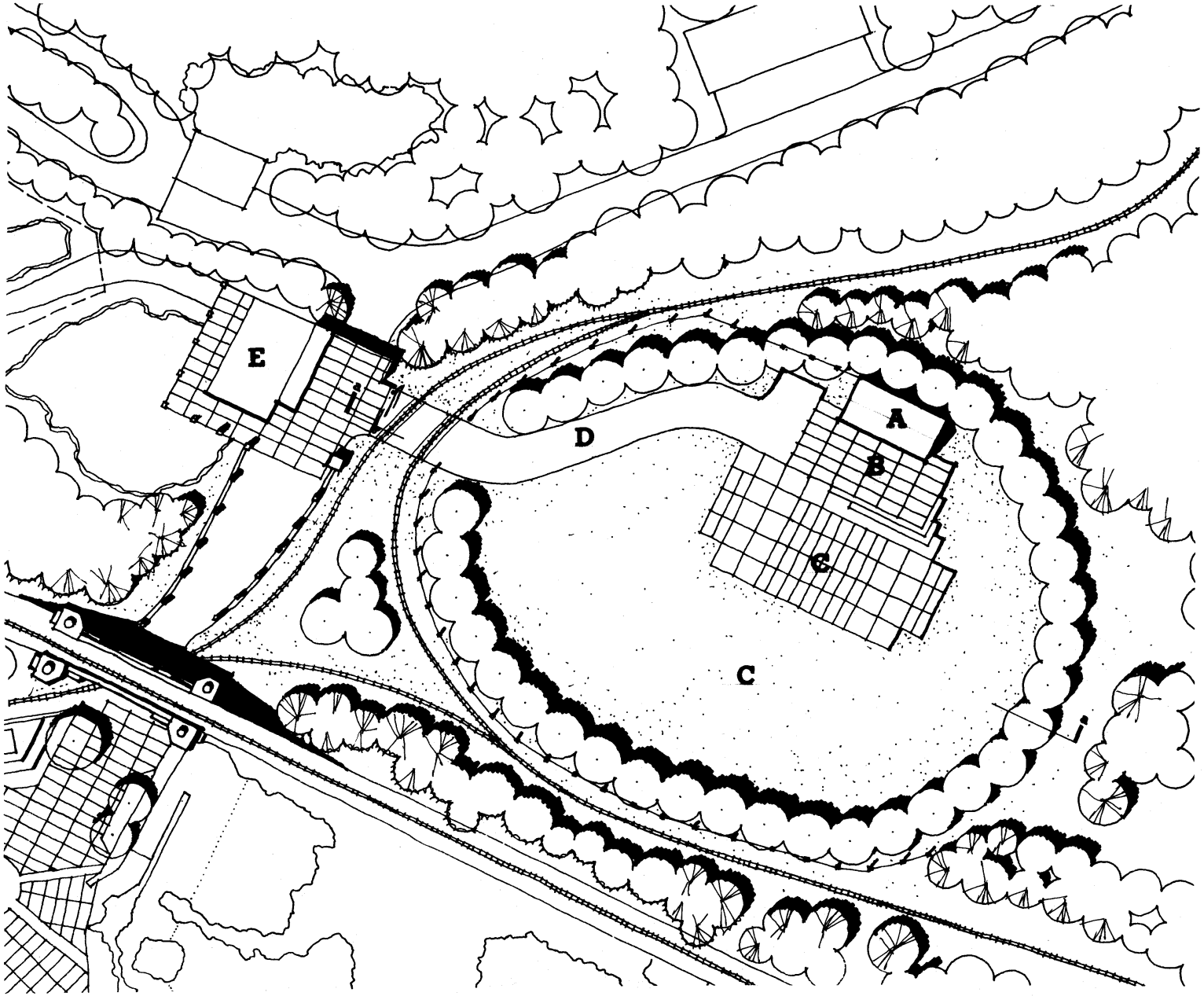
The designed open space has potential for future expansion to the east if it is determined that additional grass area is needed for a second "meadow".

The range of group uses identified for the Cascades Meadow include company picnics, Friends of the Zoo events, educational programs, private parties, exhibit openings, associations and professional groups, school and church groups, conference activities, etc.

PROJECT: CASCADES MEADOW

DIVISION / ITEM	AMOUNT
LABOR AND MATERIAL CONSTRUCTION COSTS	$415,041.
CONTRACTOR OVERHEAD AND PROFIT (10%)	41,504.
SUBTOTAL	$456,545.
DESIGN / ESTIMATE CONTINGENCY (10%)	45,655.
SUBTOTAL	$502,200.
PROFESSIONAL FEES (10%)	50,220.
SUBTOTAL	$552,420.
PERMITS, WPZ OVERHEAD, AND DIRECT COSTS (10%)	55,242.
TOTAL	$607,662.

CASCADES MEADOW



A CASCADES MEADOW BUILDING
- FOOD SERVICE
- TOILETS
- STORAGE
- PICNIC PAVILION

B CANOPY PICNIC AREA
C LAWN PICNIC AREA
D ACCESS/SERVICE ROAD
E CASCADES LODGE

L SITE SECTION

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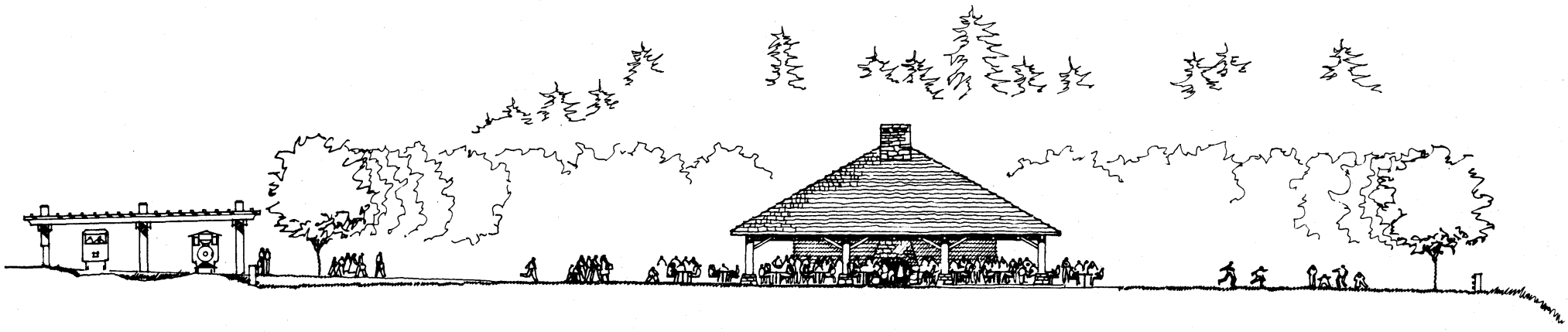


SECTION a-a SCALE 1"=20'

AQUARIUM

For approximately eight years there has been considerable discussion in the Portland metropolitan area about the establishment of an aquarium / aquatic life facility. Currently a major aquatic exhibit facility does not exist in the state, and with the nearest facilities to the north in Seattle and Tacoma, and to the south in the San Francisco Bay Area, the 1983 Zoo Master Plan called for the development of an off-site major aquarium facility to fill the vacuum of zoological education and recreation concerning marine life in the Portland metropolitan area. As a adjunct to this Master Plan review process, the Washington Park Zoo, working in concert with the Portland Development Commissioner of Parks, Mike Lindberg, is undertaking a full feasibility site analysis and design study to provide information necessary to proceed with aquatic facility planning.

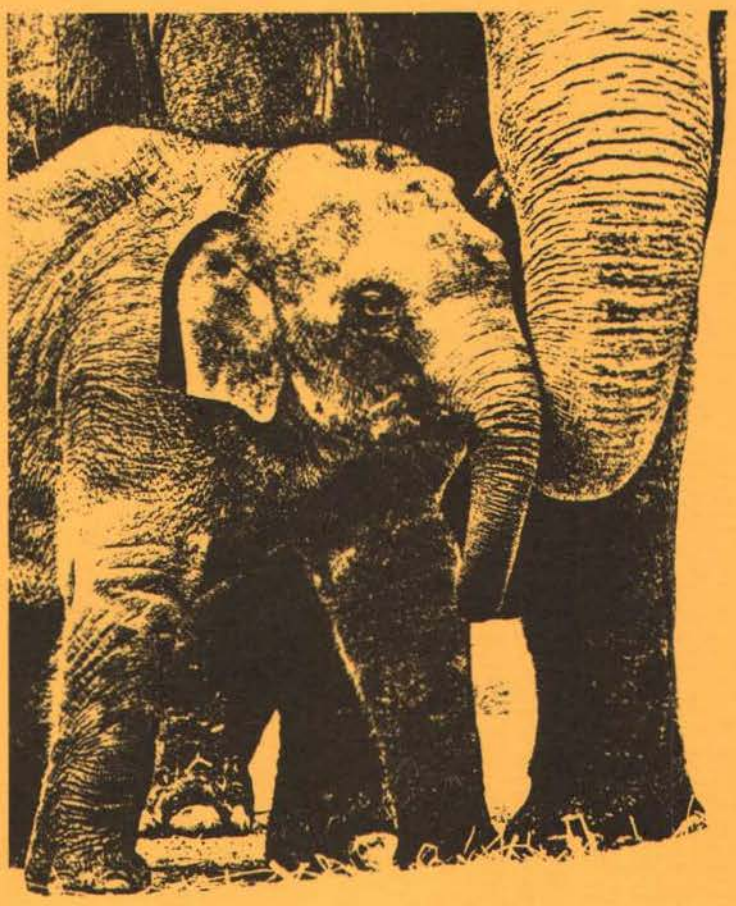
The popularity of an aquatic life facility in the Portland metropolitan area is without question. Market research conducted on the Zoo grounds shows that 49% of all surveyed Zoo visitors would like to see marine exhibits in the Portland Metropolitan area. This improvement is more frequently mentioned than any other improvement related to the Zoo. The feasibility process will determine whether an off-site, stand-alone facility provides the best alternative, or conversely, whether on-site marine exhibits provide the best alternative to fulfilling this need. For detailed information regarding this facility, see the Aquarium Feasibility Study.

OFF-SITE BREEDING FARM / INTERPRETIVE CENTER

The Washington Park Zoo, being constrained by perimeter site features and uses, has limited potential for expansion of exhibits and non-exhibit programs in the future.

If property or funds were to become available, feasibility studies of need and cost effectiveness related to operations, management and benefit to Zoo programs should be conducted. If facilities outside of the Metro region were made available, the Zoo should consider management if funding were available.

Feasibility of an off-site breeding facility would depend largely upon the appropriateness of donated property and the benefit of breeding particular species of animals. Depending upon the natural features of the site, it might be possible to incorporate opportunities for remote public observation areas, hiking trails, and an interpretive center. Other possibilities might be considered appropriate if they would support the overall Zoo goals and policies.



V. IMPLEMENTATION PROGRAM

IMPLEMENTATION PROGRAM

1983 PRIORITY I PROJECTS - COMPLETION:

The 1983 WPZ Master Plan established several exhibits as priority I projects which were to be completed by 1987. Those exhibits included renovation of the West Bear Grotto, Phases I & II of Africa Bush, and the Elephant Museum. The West Bears exhibit, completed in the Fall of 1986, provided new homes for the polar bears and sun bears, in simulated natural habitats. The Elephant Museum was completed in December 1986. It houses artifacts and interpretive elements that enhance the public awareness and appreciation of elephants and their role in history. The first two phases of Africa Bush are under construction and scheduled to be completed in the Spring of 1989. Completion of these projects will underscore the continuing commitment of Metro to upgrade the WPZ as a first class facility for district residents and a significant tourist destination attraction.

CRITERIA FOR PROJECT PRIORITIES:

Various criteria should be considered prior to establishment of priorities of future capital improvements at the WPZ. The criteria are non-weighted since many projects have competing interests for available funds, space, and energy. The following is a list of criteria that should be considered in evaluation and establishment of priorities:

1. Conformance with established WPZ Goals, Objectives and Policies.
2. Adequacy of utility systems in the subject area.
3. Physical condition of surrounding existing roads, landscape and facilities.
4. Estimated Construction Costs and the impact on the WPZ operating budget.
5. Projected impact on average visitor attendance and length of stay.
6. Projected impact on parking/circulation.
7. Projected impact on revenue generation.
8. Projected utility loads and estimate of change in costs.
9. Effect on public awareness and image of the Zoo.
10. Physical condition of existing facilities being replaced.
11. Benefits to operations, management, maintenance, animal management, education, programming and the public.
12. Impact of postponement or cancellation of the proposed project.

CONSTRUCTION SEQUENCE

The Washington Park Zoo is committed to completion of the Africa Bush Exhibit and Bears (East) over the next three to four years. It is essential to establish a new set of priority projects for capital improvement during the following several years to continue upgrading facilities and operations and to maintain the public interest and support. Many existing structures are in need of renovation due to their poor physical condition or functional characteristics. In some cases, energy consumption and maintenance costs can be reduced by renovation or replacement of existing facilities. Operational efficiencies could improve by provision of modern equipment and systems. Completion or upgrading of portions of the utility systems infrastructure will be mandatory prior to construction of some proposed facilities due to existing limitations. Implementation of a number of programming activities is not possible or is restricted until related capital improvements are completed. The stated goals and objectives for education and animal management will continue to be compromised in the older exhibits until they are improved or replaced.

If unlimited funds were available, most of the capital improvement projects currently proposed could be considered high priority. However, since this is not the situation, all projects need to be evaluated not only with respect to their individual merits, but in relation to the other Zoo projects and programs as a whole. Given the fact that a total improvement program cannot and probably should not be done at once, a logical sequence of construction priorities was established for the overall benefit of the WPZ and the citizens of Metro. Projects having the most urgent need due to physical and programming limitations were identified as Priority I projects. These are scheduled to be implemented between 1990 and 1995. The balance of the capital improvement projects have been grouped in Priority II and listed in a suggested sequence based on the Priority Criteria. Whenever possible, design work for the projects should be timed to permit construction to begin during the late spring or early summer to minimize the impact of weather on site work.

The proposed structured parking deck is segregated from the balance of capital improvement projects and is not identified on the implementation schedule due to its unique nature. While the parking lot is not within the Zoo boundary, development as proposed would eliminate a primary constraint upon attendance growth. Cost of the proposed improvements would substantially exceed normal operating levies and this project should not compete with other planned facilities or programs. It is recommended that alternate methods of funding the parking lot improvements be sought in conjunction with the surrounding institutions and the appropriate government agencies. The estimated costs for this project are based on construction in a single phase. If it is determined that phasing the work is necessary, due to the overall costs or other factors, the total costs of the multiple phases would be significantly higher.

FUNDING

CAPITAL FUNDING ALLOCATION AND SEQUENCING:

It is recommended that capital improvement funds be allocated in a proportion that will maintain an equitable balance among: animal exhibits, educational facilities, visitor services facilities, and operational / maintenance facilities. Enterprise facilities should be expected to demonstrate their ability to contribute to the funding of other Zoo activities.

Capital improvement projects should be developed in a sequence that will create the least disruption to ongoing Zoo operations. This should be balanced with making the maximum contribution to the Zoo's ability to carry out its stated mission.

A major short-range goal should be to secure stable tax base funding for Zoo operations thereby removing the uncertainties and financial burdens that accompany conducting three-year serial tax levy elections. Metro should attempt to secure this tax base for the Zoo in the next general election. Currently three-year operating and capital levies provide a major uncertainty in the operation of the Zoo, in addition to costing approximately $200,000 per levy period in election expense and community donations to conduct levy campaigns. When this tax base effort is successful, further capital improvement funding to implement the Master Plan should be made through ten-year capital improvement levies, revenue bonds for parking improvements, or general obligation bonding sources supplemented by Development Office funding strategies. In the event that this strategy does not prove acceptable, continued three-year operating and capital levies provide the most appropriate alternative to funding the Zoo.

FUNDRAISING:

The Washington Park Zoo Development Office should coordinate and assist in developing priorities for proposed fundraising campaigns and provide support assistance to all Zoo related fundraising activities. Both program and capital fundraising projects should be prioritized through this process. Projects should be submitted with sufficient descriptive information to facilitate development of priorities. Before the Zoo commits to a fundraising special project, feasibility to define success levels should be determined.

The Development Office should maintain a current inventory of fundraising project priorities for implementation. Accurate records of donated monies, goods, services, and in-kind contributions should be maintained by the Development Office and a complete quarterly management report of donations should be provided by the Development Office.

Gifts and bequests should only be accepted by the Zoo when they are consistent with the needs and goals adopted by the Zoo. Development efforts of the Zoo should be primarily in the areas of discrete special projects, rather than in general annual campaigns, except to assist the Friends of the Washington Park Zoo in developing annual membership drives.

Acknowledgement of donations to the Zoo should be consistent with Metro Council resolution #85-604 and be employed to express appreciation to donors for improving the Zoo as well as to encourage future donor activity.

CAPITAL DEVELOPMENT CONSIDERATIONS:

Development fundraising activities should be designed to provide appealing capital project opportunities to potential donors which are achievable as determined by feasibility study. A recommended strategy in the Cascades Exhibit, for example, would be to fund large anchor interpretive and/or exhibit buildings through public sources, and specify other appealing and achievable exhibit areas to be funded through development efforts. This same strategy could be applied to the Animals Around Us and other areas of the

Zoo. To facilitate this, a menu of exhibits in the $50,000 to $300,000 range should be developed. This menu should remain flexible to respond to changing needs and implementation schedules of major anchor Zoo projects. Additionally, flexibility should be provided to allow donor participation as donors with specific interest are identified.

After adoption of the Master Plan Metro should develop a strategy for funding implementation of the plan. As noted above options to be considered could include a continuation of serial levies, general obligation bonds, and in the case of the parking structure, revenue bonds.

CAPITAL IMPROVEMENTS IMPLEMENTATION

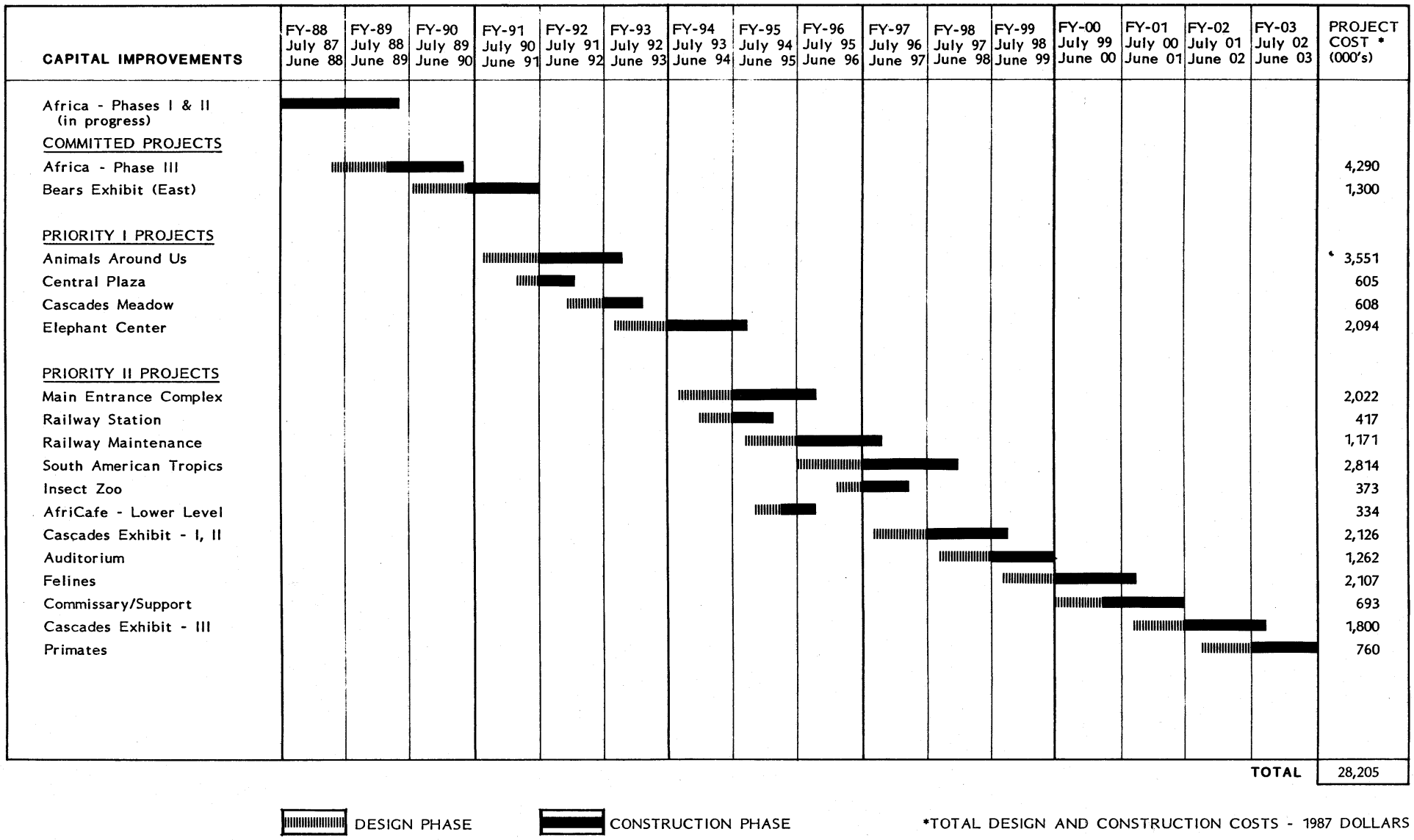
COMMITTED PROJECTS	SCOPE OF PROJECT
Africa - Phase III ($4,289,550)	Animal Exhibits/Holding (hyena, lion, leopard, etc.), Visitor Services Facilities, Utility System Upgrade.
Bears (East) ($1,300,100)	Animal Exhibits/Holding (Asian bears, red panda, etc.), Pedestrian Spaces.
COMMITTED PROJECTS, TOTAL COST	$5,589,650

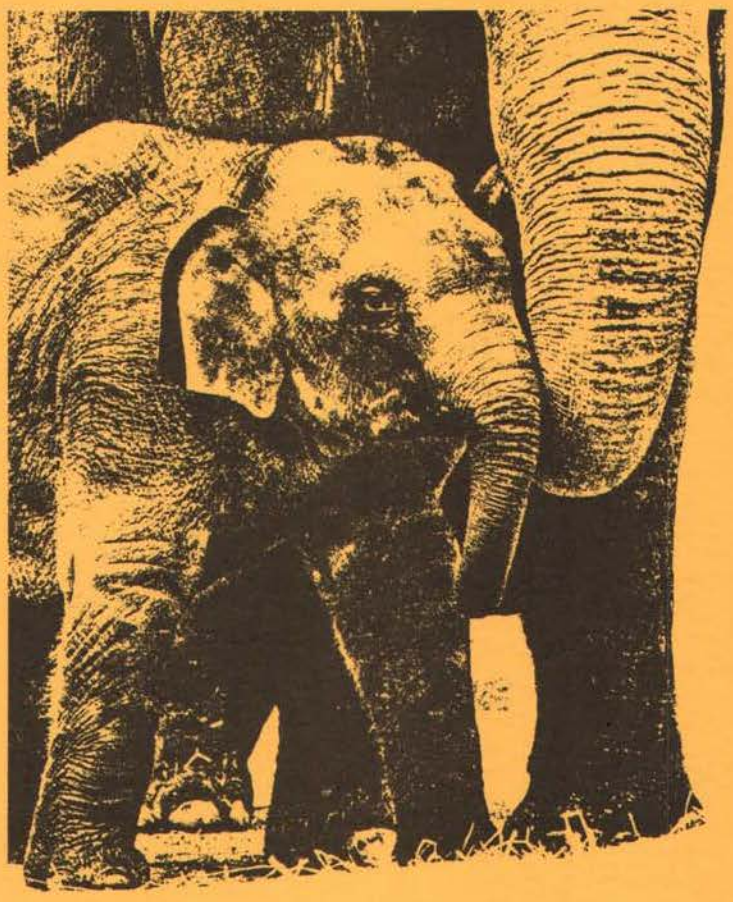
PRIORITY I PROJECTS	SCOPE OF PROJECT
Animals Around Us ($3,550,991)	Animal Exhibit/Holding (goat, sheep, opposum, etc.), Visitor Service Facilities, Pond Aviary.
Central Plaza ($605,193)	Visitor Services Facilities, Pedestrian and Programming Spaces.
Cascades Meadow ($607,662)	Visitor Services Facilities, Programming Spaces and Shelter.
Elephant Center ($1,959,524)	Viewing Hall and Exterior Outdoor Viewing Upgrade, Animal Holding Improvements, Hay Storage.
PRIORITY I PROJECT, TOTAL COST	$6,723,370

PRIORITY II PROJECTS	SCOPE OF PROJECT
Main Entrance Complex ($2,021,916)	Visitor Orientation Facility, Gift Shop and Concessions, Food Services, Pedestrian Spaces.
Railway Station ($417,300)	Visitor Services Facilities, Track Improvements.
Railway Maintenance ($1,255,593)	Maintenance Shops and Equipment Storage Facilities, Track Improvements.
South American Tropics ($2,813,558)	Animal Exhibits/Holding (Crocodile, Sloth, Tortoise, Birds, etc.), Public Spaces.
Insect Zoo ($372,680)	Animal Exhibits/Holding, Public Spaces.
AfriCafe - Lower Level ($334,271)	Food Services/Banquet Facilities.
Cascades Exhibit, Ph. I, II ($2,125,762)	Animal Exhibits/Holding (Pond and Stream Habitats), Visitor Services, Pedestrian Spaces.
Auditorium ($1,261,569)	Meeting and Programming Spaces, Visitor Services and Education.
Felines Exhibit ($2,106,745)	Animal Exhibits/Holding (Siberian Tigers, Siberian Lynx, Snow Leopard, etc.), Pedestrian Spaces.
Commissary/Support ($693,326)	Storage and Support Facilities for Education, Animal Management and Visitor Services.
Cascades Exhibit, Phase III ($1,799,663)	Animal Exhibits/Holding (Forest Habitat), Pedestrian Spaces.
Primates ($760,051)	Animal Exhibits, Public and Pedestrian Spaces.
PRIORITY II PROJECTS, TOTAL COST	$15,962,434

OTHER PROJECTS	SCOPE OF PROJECT
Main Parking Lot ($10,502,848)	Single Level Parking Structure, Vehicular and Pedestrian Circulation, Signage, and Public Spaces.
Aquarium (See Aquarium Feasibility Study)	(See Aquarium Feasibility Study)
Off-Site Breeding Facilities (Costs not determined)	Not determined.

CAPITAL IMPROVEMENTS IMPLEMENTATION





VI. APPENDIX

RECENT CAPITAL IMPROVEMENTS PROJECTS

QUARANTINE FACILITIES (1979)

ELEPHANT YARD AND CRUSH (1980)

PRIMATES (1981, 1983)

CASCADES STREAM & POND (1982)

LEMUR ISLAND (1982)

MAINTENANCE COMPLEX (1982)

CONCERT LAWN BANDSHELL (1982)

SWIGERT FOUNTAIN (1983)

PENGUINARIUM (1983)

ALASKA TUNDRA (1985)

GIFT SHOP RENOVATION (1986)

BEARS WEST (1986)

BEARWALK CAFE (1986)

ELEPHANT MUSEUM (1986)

ADMINISTRATION-EDUCATION BUILDING-IMPROVEMENTS (Projected 1988)

AFRICA - PHASES I, II, AFRICAFE, AMPHITHEATRE (Projected 1989)

REFERENCE DOCUMENTS

"Operating Analysis, Washington Park Zoo Visitor Services Division", John Cornyn Associates, Marketing, Management and Operations Consultants, April, 1986.

"Washington Park Zoo Master Plan: A Program for Excellence, 1984-1997", Guthrie/Slusarenko/Leeb, Architecture, Urban Design and Planning, December, 1983.

"Washington Park Zoo, Long Range Development Program", Warner, Walker & Macy, P.C., Landscape Architects and Planners, December, 1978.

"Washington Park Zoo Landscape Improvement Program", John Warner Associates Landscape Architects and Planners, June, 1980.

"Development Opportunities for the Washington Park Zoo", Leonard Guss Associates, Inc., Tacoma, Washington, 1979.

"Geotechnical Exploration Alaska Tundra Exhibit, Rittenhouse-Zeman and Associates, Inc., September, 1982.

"Zoo - Metropolitan Service District Funding Proposal", City Club of Portland Bulletin, Vol. 56, No. 55, May 14, 1976.

"Washington Park Master Plan Study", Jones and Jones, Landscape Architecture, Environmental Planning, June, 1981.

"Transportation Washington Park", Carl H. Buttke, Consulting Transportation Engineer, March, 1980.

"OMSI Building Program Report", SRG Partnership, P.C., July, 1978.

"Westside Corridor Project - Preferred Alternative Report, Executive Summary", Metropolitan Service District, January, 1983.

"Washington Park Utilities Study", STRAAM Engineers, December, 1980.

TABLE 1

DESIGN DAY ATTENDANCE

	1986	1996
Zoo	7,000	8,400 - 9,500
OMSI	5,500	5,500
WFC	1,150	1,300

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[1]Carl H. Buttke, Inc. Report on Transportation, Washington Park. Portland, Oregon, March 1980.

TABLE 2

DESIGN DAY PARKING REQUIREMENTS

	1986	1996
ZOO	925	1,050 - 1,250
OMSI Building	500	200 - 500
WFC	140	160
Total	1,565	1,410 - 1,910

TABLE 3

DESIGN DAY VEHICLE TRIP GENERATION

	1986	1996
Zoo	3,500	4,200 - 4,800
OMSI Building	2,750	1,100 - 2,750
WFC	750	850
Total	7,000	6,150 - 8,400

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[2]Visitor interviews in 1979, 1985, and 1986.

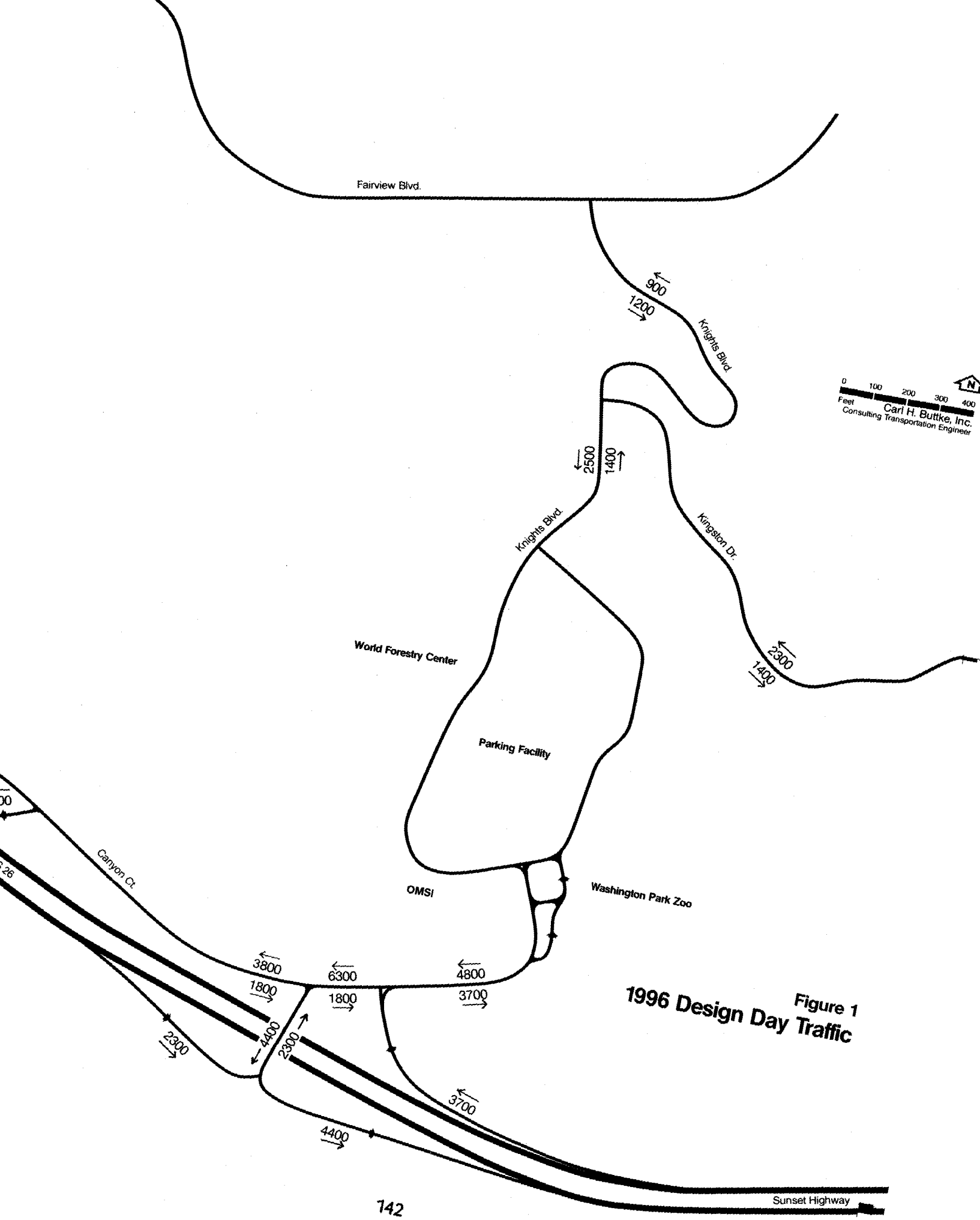


Figure 1
1996 Design Day Traffic

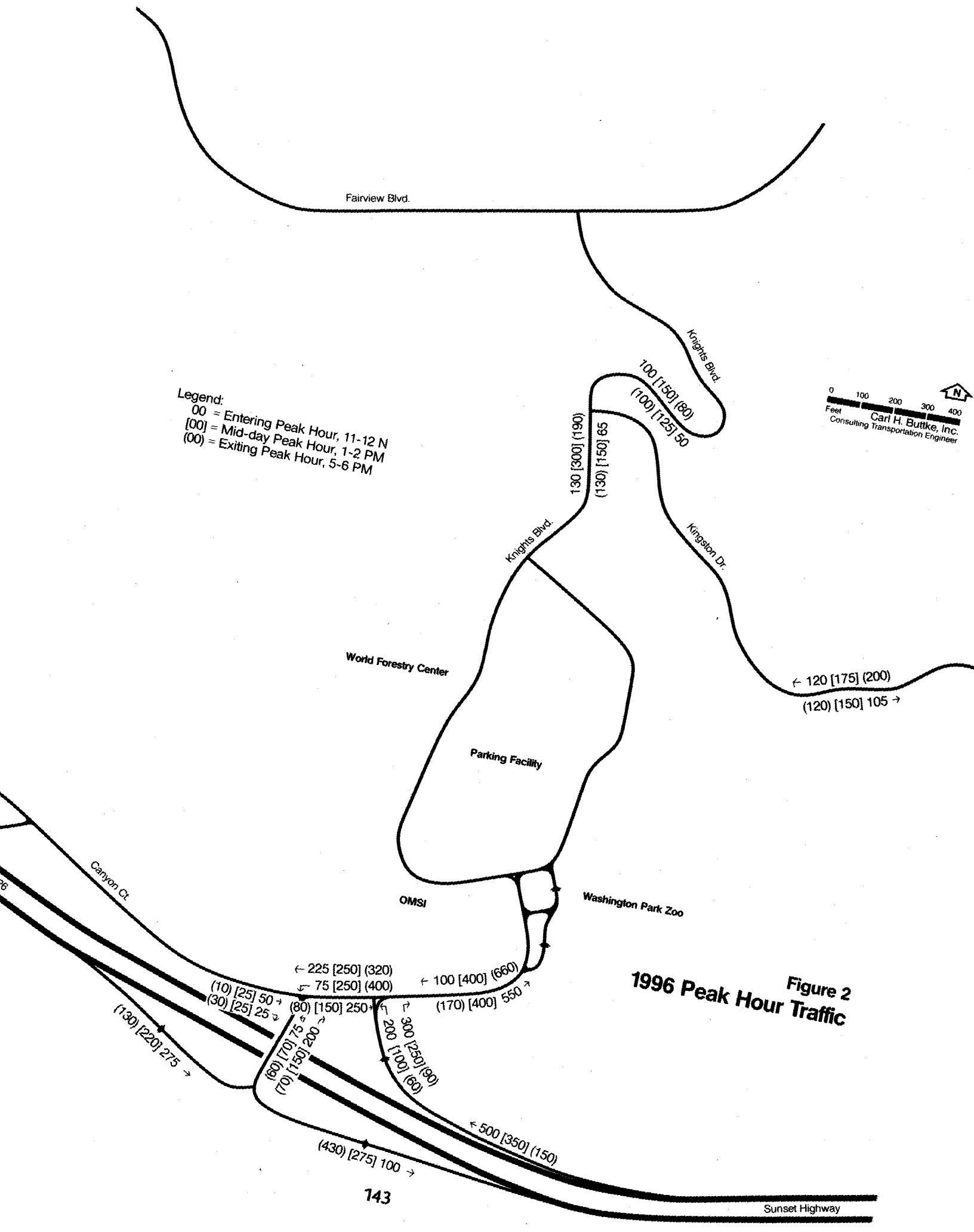


Figure 2
1996 Peak Hour Traffic

EXHIBIT LANDSCAPE
RECOMMENDED PLANT MATERIALS LIST

AFRICA - PHASE III

Trees

Gleditsia triacanthos	Thorn Honeylocust
Zelkova serrata	Japanese Zelkova
Eleagnus angustifolia	Russian Olive
Crataegus crusgalli	Cockspur
Crateagus lavallei	Lavalle Hawthorn
Fraxinus ornus 'Golden Desert'	Desert Ash
Albizzia julibrissin	Silktree

Shrubs

Berberis shenaulti	Shenault Barberry
Berberis verruculosa	Black Barberry
Berberis thunbergi	Green Japanese Barberry
Thus typhina	Staghorn Sumac
Aralia spinosa	Devils Walking Stick
Potentilla fruticosa	Bush Cinquefoil
Rosa multiflora	Japanese Rose
	False Bamboo
Miscanthus sinesis	Chinese Silvergrass

Grasses

Arrhenatherum elatius	Tall Oatgrass
Pennisetum alopecuroides	Fountain Grass
Festuc ssp.	Sheep Fescue
Lolium perenne	Manhattan Ryegrass
Carex spp.	Sedge

BEARS (EAST)

TROPICAL FOREST

Trees

Albizzia julibrissin	Silktree
Ficus carica	Common Fig
Gleditsia triacanthos 'Inermis'	Inermis Honeylocust
Magnolia grandiflora	Evergreen Magnolia
Magnolia macrophylla	Bigleaf Magnolia
Magnolia tripetalla	Umbrella Magnolia
Sophora japonica	Japanese Pagoda Tree
Araucaria araucana	Monkey Puzzle

Shrubs

Aralia spinosa	Devils Walking Stick
Fatsia japonica	Japan Fatisa
Ligustrum texanum	Waxleaf Privet
Photinia glabra	Chinese Photinia
Eriobotrya deflexa	Photinia deflexa
Phyllostachys aurea	Golden Bamboo
Phyllostachys bambusoides	Japanese Timber Bamboo
Pittosporum tobira	Pittosporum
Prunus lusitanica	Portuguese Laurel
Sarcococca humilis	Fragrant Sarcococca
Myrica californica	Pacific Wax Myrtle

Groundcover and Vines

Acanthus mollis	Soft Acanthus
Hemerocallis 'Hyperion'	Hyperion Daylily
Hosta japonica	Japanese Plantainlily
Actinidia chinensis	Kiwi Vine

Grasses

Phalaris arundinacea	Red Canary Grass
Arrhenatherum elatius	Tall Oat Grass
Festuca rubra comutata	Chewing Red Fescue
Lolium perenne	Manhattan Ryegrass

CHILDREN'S ZOO: ANIMALS AROUND US

Use an appropriate combination of General Plant Materials for public, non-exhibit areas and Habitat Plant Materials for special animal exhibits.

INSECT ZOO GARDEN

Shrubs & Vines

Buddleia alternifloria	Foutain Buddleia
Buddleia davidii	Orange Eye
Caryopteris clandonensis	Caryopteris
Syringa vulgaris	Common Lilac
Lindera benzoin	Spicebush
Wisteria floribunda	Japanese Wisteria

Perennials

Aster novai-angliae	New England Aster
Monarda Fistulosa	Wild Bergamot
Asclepias tuberosa	Butterfly Weed
Allium schoenoprasum	Chives
Trifolium repens	White Clover
Echinacea purpurea	Purple Cornflower
Coreopsis grandiflora	Tickweek
Hemerocallis	Day Lily
Baptisia autralis	False Indigo
Dictamnus albus	Gas Plant
Alcea rosea	Hollyhock
Lythrum salicaria	Loosestrife

Annuals & Tender Perennials

Logularia maritima	Sweet Alyssum
Borago officinalis	Borage
Heliotropium arborescens	Common Heliotrope
Lantana camara	Common Lantana
Tagetes erecta	Marigold
Tropaeolum majus	Nasturtium
Petroselinum hortense	Parsley
Mathiola incana	Common Stock

MAIN ENTRANCE COMPLEX

Use plant materials for public, non-exhibit areas.

CASCADES EXHIBIT

FOREST HABITAT

Trees

Acer macrophylla	Bigleaf Maple
Pseudotsuga menziesii	Douglas Fir
Thuja plicata	Western Red Cedar
Tsuga heterophylla	Western Hemlock
Alnus rubra	Red Alder
Fraxinus latifolia	Oregon Ash
Cornus nuttallii	Pacific Dogwood

Shrubs

Acer circinatum	Vine Maple
Mahonia aquifolium	Tall Oregon Grape
Vaccinium parvifolium	Huckleberry
Rhododendron macrophylla	Pacific Rhododendron
Rhododendron occidentale	Western Azalea
Mahonia nervosa	Oregon Grape
Symphoricarpos albus	Snowberry
Caultheria shallon	Salal
Holodiscus discolor	Ocean Spray
Castanopsis chrysophylla	Golden Chinkapin

Herbs

Polystichum munitum	Western Swordfern
Oxalis oregona	Oregon Oxalis
Blechnum spicant	Deerfern
Iris tenax	Oregon Iris
Viola sempervirens	Evergreen Violet
Xerophyllum tenax	Common Beargrass
Collomia heterophylla	Varied-leaved Collomia
Festuca occidentalis	Western Fescue
Disporum hookeri	Hooker's Fairybells
Galium triflorum	Sweetscented Bedstraw
Trillium ovatum	White Trillium

et al

STREAM HABITAT

Use the plant list from Forest Habitat.

POND HABITAT

Trees

Alnus rubra	Red Alder
Thuja plicata	Western Red Cedar

Shrubs

Spiraea douglasii	Douglas Spirea
Saliz hookeriana	Coast Willow
Rubus spectabilis	Salmonberry

Herbs

Carex obnupta	Slough Sedge
Lysichitum americanum	Skunkcabbage

Blechnum Spicant	Deerfern
Athyrium filix-femina	Ladyfern
Oenanthe sarmentose	Water Parsley
Stachys mexicana	Great Hedge Hettle
Mitella spp.	Mitrewort
Tolmiea menziesii	Youth-on-Age

SOUTH AMERICAN TROPICS EXHIBIT

Use Tropical Forest list under Bears.

FELINES

SNOW LEOPARD

Trees

Pinus densiflora 'Tanyosho'	Tanyosho Japanese Red Pine
Acer ginnala	Amur Maple

Shrubs

Berberis thunbergi 'Atropurpurea'	Red Japanese Barberry
Potentilla fruticosa	Bush Cinquefoil
Symphoricarpos albus	Snowberry
Rhus typhina 'Dissecta'	Cutleaf Staghorn Sumac

Grasses

Festuca ssp.	Cover Sheep Fescue
Festuc ovina 'Glauca'	Blue Fescue

SIBERIAN TIGER

Trees

Juniperus chinensis	Chinese Juniper
Phellodendron amurense	Amur Cork Tree
Acer ginnala	Amur Maple
Rhus typhina	Staghorn Sumac
Pinus desiflora 'Tanyosho'	Tanyosho Japanese Red Pine

Shrubs

Berberis thunbergi 'Atropurpurea'	Red-leaf Japanese Barberry
Potentilla fruticosa	Bush Cinquefoil

Rhus typhina 'Dissecta'	Cutleaf Staghorn Sumac
Cornus stolonifera 'Flaviramea'	Yellowtwig Dogwood

Grasses

Pennisetum alopecuroides	Fountaingrass
Festica ovina 'Glauca'	Blue Fescue

PRIMATES

Use Tropical Forest list under Bears.

Interior Plants.

General Plant Materials for Public, Non-Exhibit Areas *

Deciduous Trees

Acer platanoides	Norway Maple
Acer pseudoplatanus	Sycamore Maple
Acer rubrum sp.	Various Red Maple Cultivars
Betula jacquemontii	Jacquermontir Birch
Carpinus betulus	European Hornbeam
Fraxinus oranus	Flame Ash
Fraxinus oxycarpa "Flame"	Green Ash
Fraxinus pennsylvanica	Flowering Ash
Gleditsia triacanthos	Thornless Honeylocust
Liquidambar styraciflua	Sweet Gum
Liriodendron tulipifera	Tulip Tree
Tilia cordata	Littleleaf Linden
Tilia euchlora	Crimean Linden
Zelkova serrata	Japanese Zelkova

Evergreen Trees

Cedrus atlantica	Atlantic Cedar
Cedrus deadoca	Deodar Cedar
Chamaecyparis Lawsoniana	Lawson's False Cypress
Libocedrus decurrens	California Incense-cedar
Magnolia grandiflora	Southern Magnolia
Pinus contorta	Shore Pine
Pinus monticola	Western White Pine
Pinus nigra	Austrian Pine

* This plant list is intended to give a framework to the public, non-exhibit areas of the Zoo. It does not include plants for specialized theme gardens. These areas can be more accurately defined at project concept phase. This general list is intended to be supplemented by the Zoo's landscape and grounds staff.

Pinus ponderosa	Ponderosa Pine
Pinus sylvestris	Scotch Pine
Pinus thunbergi	Japanese Black Pine
Prunus lusitanica	Portuguese Laurel
Pseudotsuga menziesii	Douglas Fir
Thuja plicata	Western Red Cedar
Tsuga heterophylla	Western Hemlock

Shrubs

Acer circinatum	Vine Maple
Acer ginnala	Glossy Abellia
Abellia grandiflora	Red-leaf Japances Barberry
Berberis thunbergi "Ateopurpurea"	Various camellia
Camellia sp.	Siberian Dogwood
Cornus stolonifexa	Redtwig Dogwood
Euonymus alata	Winged Euonymus
Euonymus japonicus	Evergreen Euonymus
Forsythia sp.	Various Forsythia
Ilex cornuta "Burtordi"	Burford Chinese Holly
Ilex crenata "Convexa"	Convexleaf Japanese Holly
Mahonia aquifolium	Oregon Grape
Myrica californica	Pacific Wax Myrtle
Photinia froseri	Fraser Photimia
Photini serrulata	Chinese Photinia
Rhus typhina "lanciniator"	Cutleaf Staghorn Sumac
Rhododendron sp.	Various Rhododendron and Azaleas
Viburnum davidii	David Viburnum
Viburnum tinus	Laurestinus Viburnum
Viburnum tomen fosum	Doublefile Viburnum

Special Feature Trees

Albizzia julibrissin	Silktree
Betula jacquemontii	Jacquemonti Birch
Cercidiphyllum japonicum	Katsuratree
Cercis canadensis	Eastern Redbud
Cornus florida	Flowering Dogwood
Cornus kousa	Kousa Dogwood
Ginkge biloba	Ginkgo
Koelreuteria paniculata	Goldenrain Tree
Laburnum anagyroides	Goldenrain Tree
Magnolia soulangiana	Saucer Magnolia
Magnolia stellata	Star Magnolia
Malus baccata "Columnaris"	Columnar Siberian Crabapple
Prunus blireiana	B. Flowering Plum
Prunus cerasifera "Newport"	Newport Flowering Plum
Prunus serrulata "Amanogawa"	Amanogawa Flowering Cheery
Prunus serrulata "Kwanzan"	Kwanzan Flowering Cherry
Prunus serrulata "Shirofugen	Shirofugen Flowering Cherry

Prunus yedoensis	Yoshino Flowering Cherry
Sophora japonica	Japanese Pagoda Tree
Sorbus aucuparia	European Mountain Ash
Styrax japonicus	Japanese Snowbell

Groundcovers

Arctostaphyllos uva-ursi	Kinnikinnick
Ceanothus gloriosus	Ceanothus
Cotaneaster dammeri	Lowfast Cotoneaster
Hypericum calycinum	Aaronsbeard St. Johnswart
Vinca minor	Periwinkle

Annuals/Perennials

For use around food service, rest areas and special theme gardens.

CONDITIONAL USE PERMIT

A public hearing held on June 30, 1987 to review the application for a conditional use permit for Washington Park Zoo. Approval was granted (effective July 17, 1987) based on the WPZ Master Plan through 1993, subject to the following conditions which are hereby incorporated:

A. The final version of the master plan should contain a map showing existing development and proposed projects. Proposed projects should be classified as "new construction" or "renovation" to give the reader a clear indication of what type of project is being planned.

B. The master plan should incorporate transportation policies and objectives dealing specifically with on-site parking, mass-transit, pedestrian circulation, and overflow parking. All such policies and objectives shall be coordinated with OMSI and the Western Forestry Center. The plan shall also include an overflow parking plan indicating the location of peripheral parking lots, shuttle service, and promotion of public transit such as providing bus shelter, bus stops, schedules, and advertising. Final approval of the location of the overflow-parking area and related issues must be obtained from the Office of Transportation.

C. The parking structure plans are subject to Bureau of Planning review and approval prior to the issuance of a Building Permit. Plans shall include:

    1. The location of crosswalks, pedestrian bridges, and internal pedestrian circulation routes for all uses surrounding the parking area.

    2. A pedestrian sidewalk with a minimum width generally of 12 feet located along the perimeter of the parking lot.

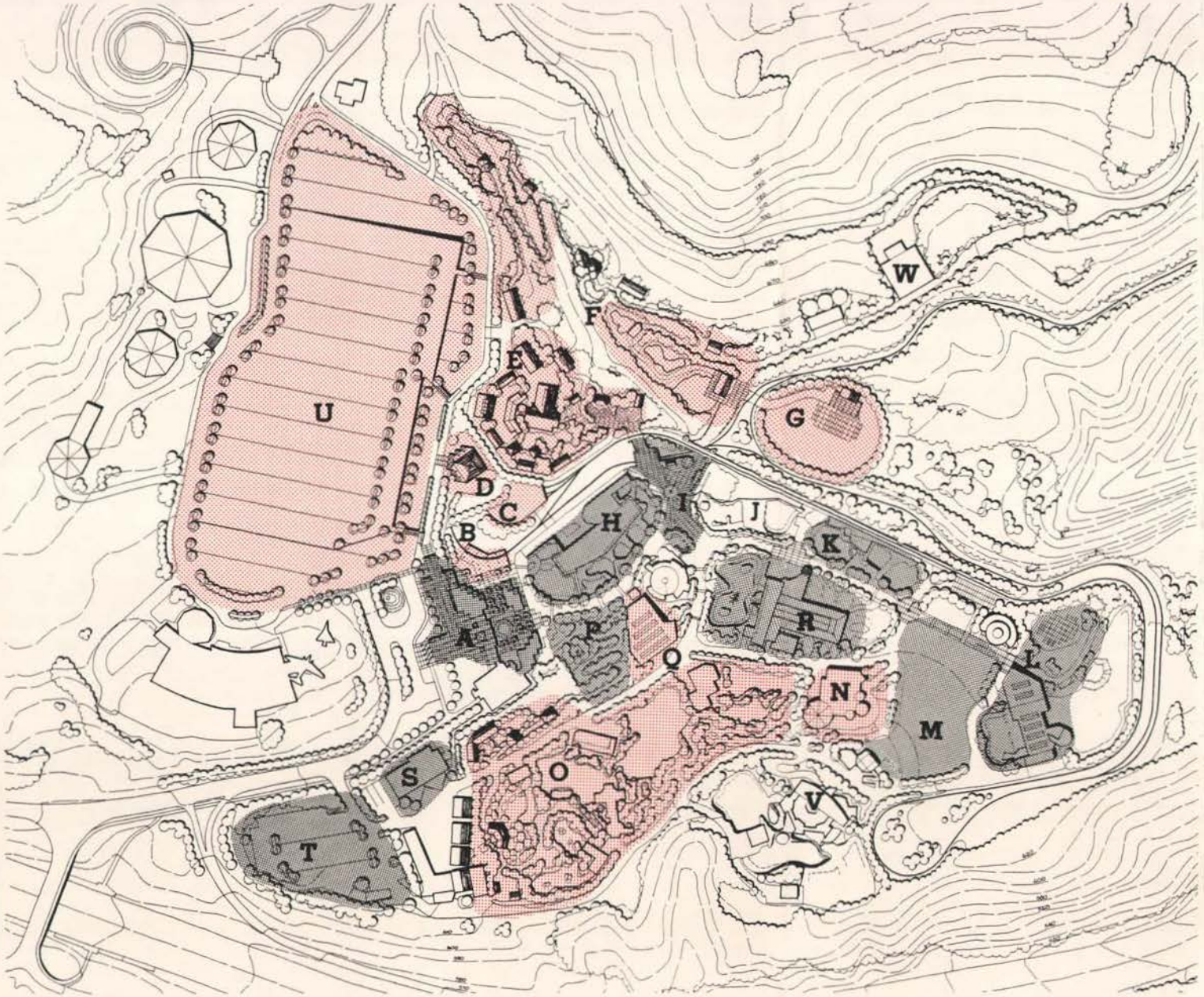
    3. Bicycle parking for a minimum of 12 bicycles shall be provided.

D. As an interim measure, landscaping shall be provided and maintained in the existing parking area.

E. Building codes, permits and inspection requirements shall be met including all the applicable provisions of Chapter 70 of the Uniform Building Code.

F. The applicant shall submit five copies of the final master plan, which addresses the considerations raised above, within three months of the date of the Decision rendered by the Hearings Officer.

A site plan map illustrating project implementation with projects identified as "new construction" or "renovation" follows on Page 155. A summary of current transportation policies that have been developed and coordinated with the adjacent institutions is on Page 157. A vicinity map that identifies the remote parking facilities currently available and used is shown on Page 158.



THE *MASTER PLAN*

IMPLEMENTATION PLAN

A MAIN ENTRANCE COMPLEX
RENOVATION

B RAILWAY STATION
NEW CONSTRUCTION

C RAILWAY MAINTENANCE
NEW CONSTRUCTION

D AUDITORIUM
NEW CONSTRUCTION

E ANIMALS AROUND US
NEW CONSTRUCTION

F CASCADES EXHIBIT
NEW CONSTRUCTION

G CASCADES MEADOW
NEW CONSTRUCTION

H FELINES
RENOVATION

I CENTRAL PLAZA
RENOVATION

J BEARS (WEST)

K BEARS (EAST)
RENOVATION

L ELEPHANT CENTER
RENOVATION

M CONCERT LAWN
RENOVATION

N AFRICAFE
NEW CONSTRUCTION

O AFRICA
NEW CONSTRUCTION

P GARDENS
RENOVATION

Q SOUTH AMERICAN TROPICS
NEW CONSTRUCTION

R PRIMATES
RENOVATION

S COMMISSARY
RENOVATION

T STAFF PARKING
RENOVATION

U MAIN PUBLIC PARKING LOT
NEW CONSTRUCTION

V ALASKA TUNDRA

W RESEARCH CENTER/HOSPITAL

KEY RENOVATION
NEW CONSTRUCTION

N

0 100 200 400
FT

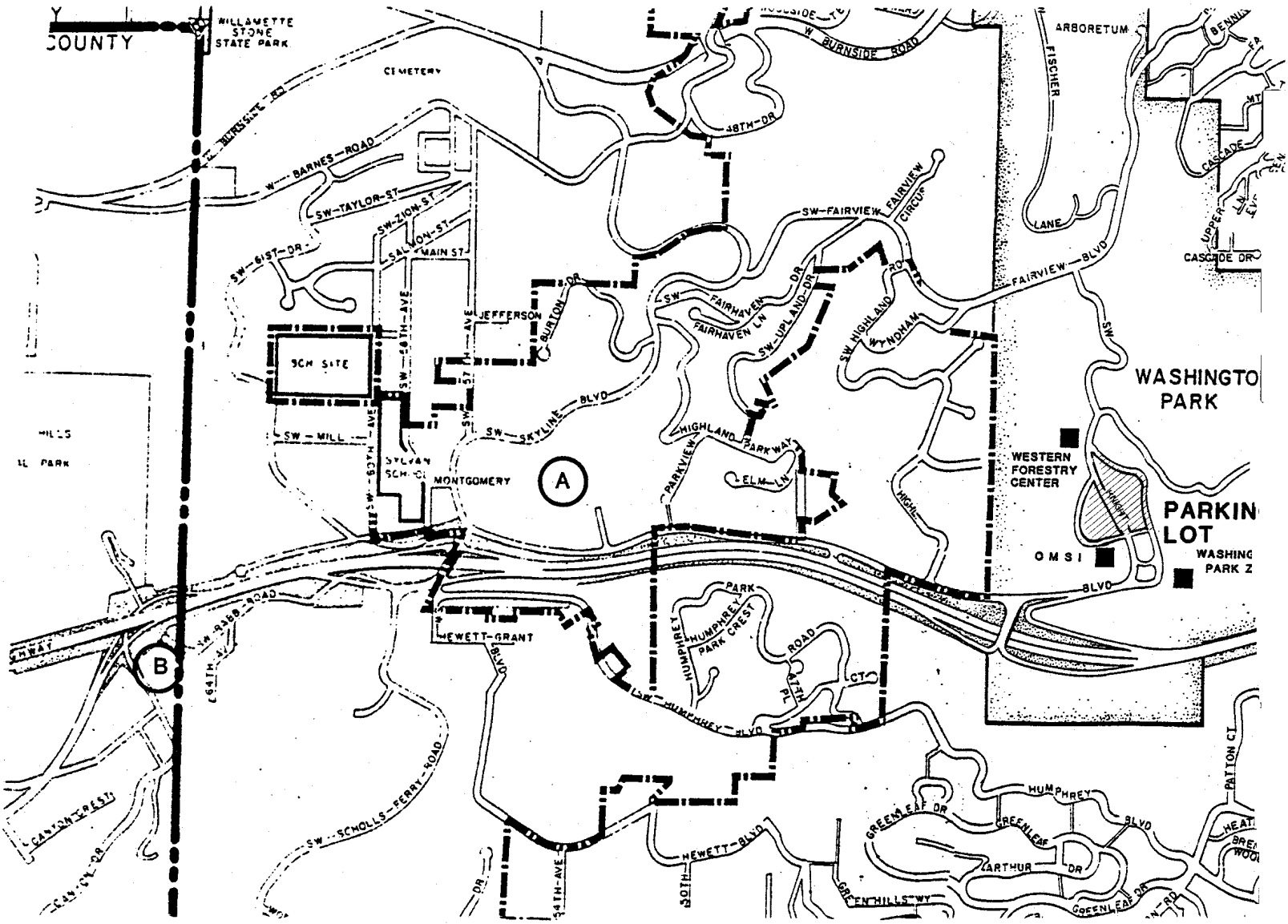
TRANSPORTATION POLICIES

Parking procedures for the Zoo, OMSI and the World Forestry Center are established by a parking lot committee comprised of the directors of the three institutions. The present parking lot provides 1,113 parking spaces including those at the Veteran's Memorial. When the lot gets almost full shuttle services begin. Shuttle services are provided jointly by the Zoo and OMSI and coordinated by the Zoo security staff. Off-site parking is located at the First Church of the Nazarene, 6100 S.W. Raab Road, at Sylvan during summer weekdays. On weekends and concert evenings, off-site parking is provided at the Sylvan/Westgate Commercial Business Park. Freeway signage has been coordinated with and posted by the Oregon State Department of Transportation. The proposed parking lot structure is expected to meet the majority of the parking requirements on-site. However, if overflow parking problems persist after increased on-site parking becomes available shuttle service will be continued.

The Zoo is regularly served by Tri-Met bus line #63, which runs on a daily basis. Tri-Met often puts extra buses as needed on that line for special events, including concerts. In addition, line #63, which normally makes its last trip to the Zoo at 7:20, extends its hours on concert night to take patrons home after the end of the concert (8:30). These extended hours are publicized in concert press releases, flyers, and on the posters. In addition to the #63 bus, five Tri-Met lines stop at the bus stop on the freeway; 57, 59, 60, 88 and 89. This means that buses stop there every few minutes.

The WPZ is actively encouraging provision of a lightrail stop or station at the Zoo, OMSI, World Forestry Center Complex. They are also participating in the plans by the Department of Transportation to improve the freeway ramp system serving the complex.

REMOTE PARKING MAP



LEGEND/KEY

(A) – SYLVAN/WESTGATE BUSINESS COMPLEX (600 spaces available)

- WEDNESDAY AND THURSDAY NIGHTS (June - August)
- WEEKENDS AS NEEDED

(B) – FIRST CHURCH OF THE NAZARENE (400 - 600 spaces available)

- WEEKDAYS AS NEEDED

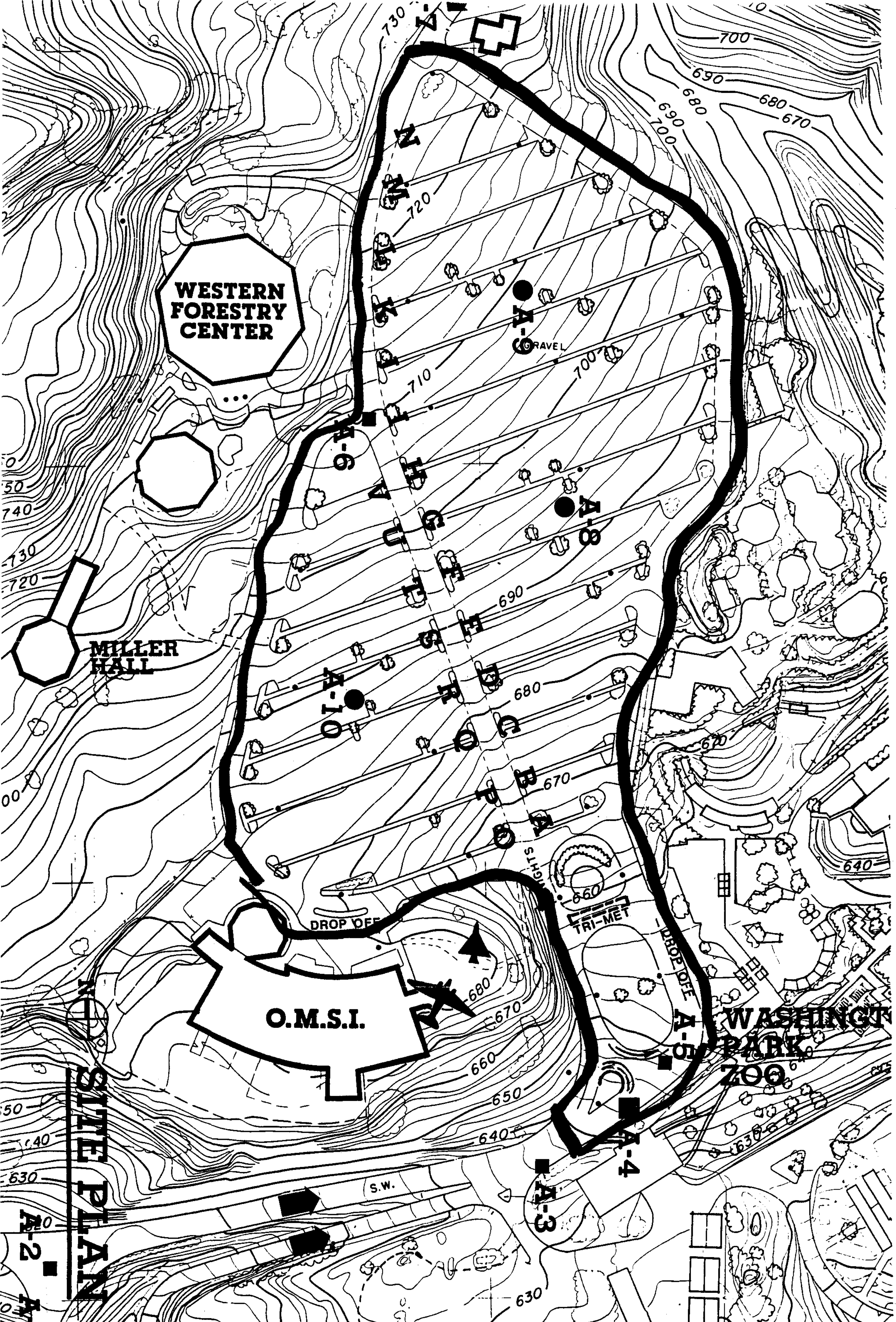
SHUTTLE BUS SERVICE
1987 JAZZ & ZOO GRASS CONCERTS

DAY	DATE	# OF BUSES	# OF PASS.	COST
WEDS.	(06-17-87)	(02)	(691)	(184.00)
THURS.	(06-18-87)	(01)	(000)	(076.00)
WEDS.	(06-24-87)	(02)	(1,101)	(214.00)
THURS.	(06-25-87)	(01)	(000)	(050.00)
WEDS.	(07-01-87)	(02)	(UNK)	(196.00)
THURS.	(07-02-87)	(01)	(000)	(040.00)
WEDS.	(07-08-87)	(02)	(961)	(212.00)
THURS.	(07-07-87)	(01)	(000)	(040.00)
WEDS.	(07-15-87)	(02)	(853)	(200.00)
THURS.	(07-16-87)	(01)	(000)	(040.00)
WEDS.	(07-22-87)	(04)	(016)	(174.00)
THURS.	(07-23-87)	(01)	(000)	(040.00)
WEDS.	(07-29-87)	(04)	(1075)	(352.00)
THURS.	(07-30-87)	(02)	(000)	(080.00)
WEDS.	(08-05-87)	(04)	(414)	(288.00)
THURS.	(08-06-87)	(02)	(000)	(080.00)
WEDS.	(08-12-87)	(04)	(257)	(260.00)
THURS.	(08-13-87)	(01)	(000)	(040.00)

FY 87-88

WED.	(06-15-88)	(03)	(382)	(CARROWS)
THURS.	(06-16-88)	(02)	(004)	(CARROWS)
WED.	(06-22-88)	(02)	(284)	(CARROWS)
THURS.	(06-23-88)	(02)	(010)	(CARROWS)
WED.	(07-06-88)	(02)	(139)	(CARROWS)
THURS.	(07-07-88)	(01)	(040)	(CARROWS)

FY 88-89



SITE PLAN
WESTERN FORESTRY CENTER
MILLER HALL
O.M.S.I.
WASHINGT
PARK
ZOO
DROP OFF
DROP OFF
TRI-MET
GRAVEL
S.W.
A-2
A-3
A-4
A-6
A-7
A-8
A-9
A-10

WASHINGTON PARK ZOO ATTENDANCE

FISCAL YEAR	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APRIL	MAY	JUNE	TOTAL
59-60	90626	127856	34117	40782	35728	14402	10372	32158	39935	56651	83605	99543	665775
60-61	138412	137144	52684	35148	22407	10186	9491	14197	28888	41052	101733	71500	662842
61-62	140358	135175	45412	31310	11460	9391	21630	17571	38860	115237	132297	217210	915911
62-63	217783	219152	103982	61146	41623	24679	24267	33909	51957	43880	93673	94913	1010964
63-64	138096	162059	97175	52430	32308	11049	17915	27953	50345	58349	84948	104695	837322
64-65	146384	125590	65687	44208	10528	5897	13603	22688	72020	67166	78273	94904	746948
65-66	135797	120554	67540	40102	14619	12635	12993	17129	30771	80566	84283	95040	712029
66-67	138088	133074	70975	31520	17662	8890*	12595*	25047*	47415*	68160*	88163*	99276*	740865
67-68	132644*	126156*	67043*	41091*	17301*	8651*	12255*	23789*	45416*	65601*	85065*	95880*	720892
68-69	121285*	115353*	61302*	37572*	15820*	7910*	11206*	21752*	41527*	59983*	77781*	87667*	659158
69-70	133035*	125644*	65778*	39074*	14782*	6652*	6265	27562	55578	36957	104661	123094	739082
70-71	116499	125925	76666	34167	18514	12614	7932	31259	39314	61439	84787	112742	721858
71-72	113246	102903	48549	33770	10507	4057	9968	16125	35266	52582	82003	85204	594180
72-73	115682	100945	41104	36441	14667	4974	10214	24516	39444	56746	75104	65068	584905
73-74	93964	84863	43030	17525	6771	5381	4007	9954	39334	35681	65766	69627	475903
74-75	85023	77154	42766	26478	13194	5140	5915	8212	25623	32783	66035	63112	451435
75-76	78343	83169	51571	17898	9319	6218	15939	26715	48227	54055	80012	85209	556675
76-77	105053	99287	55258	32822	26339	12722	18818	23324	52237✓	61367	64521	89565	641313
77-78	101035	74587	38249	33112	8718	8128	9148	24044	70148	42510	78031	74935	562645
78-79	88441	71898	32120	39284	11938	8740	4952	8272	73066	49577	85315	82367	555970
79-80	104544	99326	56781	42193	21123	18140	16706	26986	70583	63259	84149	72087	675877
80-81	118661	125405	47852	35480	15439	16173	30565	32027	69157	49994	90137	81876	712766
81-82	127350	105740	51947	33087	22312	7677	9164	14727	71042	54073	113356	84519	694994
82-83	126082	112156	48679	41998	16451	14227	14207	22240	56862✓	85154	95452	82199	715707
83-84	123847	126729	61558	36799	12250	3986	24154	30880	68489	50002	95073	104677	738444
84-85	142992	133710	64359	21210	9970	7116	18853	28522	71300	82021	115391	119104	814548
85-86	141530	122590	53052	29542	8859	11726	18248	20697	94789	62903	110623	120019	794578
86-87	164914	158167	53464	53800	20817	18748	19003	35750	95437	75133	126063	156663	977959
87-88	162472	142902	71483	63431	23031	10655	20757	47552	63847	66,361	98069	121,054	~~913283~~ 891,614

* Estimated attendance, based on monthly averages from fiscal years 1963-64 to 1965-66, and 1970-71 to 72-73. Year end figures are actuals.

SHUTTLE BUS RECORD F.Y. 87-88

DAY	DATE	# OF BUSES	# OF PASS.	COST
SAT.	(07-11-87)	(02)	(378)	(178.00)
Sun.	(07-12-87)	(01)	(368)	(126.00)
SUN.	(07-19-87)	(01)	(734)	(092.00)
SAT.	(07-25-87)	(01)	(696)	(126.00)
SUN.	(07-26-87)	(01)	(818)	(114.00)
	JULY TOTAL:	(06)	(2,994)	($636.00)

DAY	DATE	# OF BUSES	# OF PASS.	COST
SAT.	(08-01-87)	(02)	(449)	(248.00)
SUN.	(08-02-87)	(02)	(845)	(182.00)
SAT.	(08-08-87)	(02)	(000)	(108.00)
SUN.	(08-09-87)	(02)	(038)	(130.00)
SAT.	(08-15-87)	(02)	(220)	(122.00)
SUN.	(08-16-87)	(01)	(455)	(116.00)
MON.	(08-17-87)	(02)	(374)	(182.00)
SAT.	(08-22-87)	(02)	(791)	(242.00)
SUN.	(08-23-87)	(01)	(665)	(166.00)
SAT.	(08-29-87)	(01)	(000)	(040.00)
SUN.	(08-30-87)	(01)	(004)	(040.00)
	AUG. TOTAL:	(17)	(3,841)	($1,586.00

DAY	DATE	# OF BUSES	# OF PASS	COST
SAT.	(09-05-87)	(02)	(000)	(102.00)
SUN.	(09-06-87)	(02)	(000)	(046.00)
MON.	(09-07-87)	(02)	(396)	(184.00)
SUN.	(09-13-87	(02)	(000)	(080.00)
SAT.	(09-19-87)	(02)	(000)	(080.00)
SUN.	(09-20-87)	(01)	(000)	(40.00)
	SEPT. TOTAL:	(06)	(396)	($452.00)
	F.Y. 87-88 TOTAL:			