



Milwaukee County

ATTACHMENT A.1
Adventure Africa Phase III
ZOO ADVENTURE AFRICA – RHINOS EXHIBIT

A. GENERAL PROJECT DESCRIPTION

The Zoo's Pachyderm Complex was built in the early 1960's. It is home to hippopotamus and rhinoceros and contains the former elephant exhibit. These are some of the oldest exhibits on the Zoo grounds and most in need of renovation. The Zoo's 2013 master plan, developed in cooperation with the Zoological Society, addressed the need to comply with the new accreditation standards in an exhibit complex called Adventure Africa. Adventure Africa – Phase I featured a new elephant exhibit and opened in May 2019. Phase II featuring hippopotamus with underwater viewing opening in June 2020. Milwaukee County and the Zoological Society now wish to develop a new rhinoceros exhibit.

B. OVERALL PROJECT GOALS

The Overall Goals of this project are to facilitate, articulate and further the primary missions and visions of the Zoo established in the 2013 Master Plan, which are:

- Become the fun, family, educational, regional attraction and destination of choice in the Midwest.
- Enhance and continue to be recognized for wildlife and conservation efforts.
- Continued excellence in animal care and to meet and exceed AZA animal care standards.

C. MAJOR COMPONENTS of the COMPOUND

The Adventure Africa Phase III will consist of several outdoor and indoor components. Each component, and the basis and criteria for its design are further discussed in additional sections to follow. The major components are:

- Renovate African Red River Hog Exhibit and Holding Barn.
- Convert and up-date former outdoor elephant exhibit into an outdoor exhibit for the rhinos, matching their natural habitat as close as possible.
- Convert former interior elephant holding area within the existing pachyderm building (east wing) into an up-to-date holding area for the rhinos. This rhino holding area shall meet and exceed International Rhino Foundation animal care and husbandry manual standards.
- Eliminate the former tapir exhibit.
- Eliminate the former Asian Black Bear exhibit.
- Eliminate the former indoor tapir pool and tapir holding to convert to indoor mammal holding space.
- Update the existing rhino holding area within the pachyderm building (west wing), to meet and exceed AZA animal care standards.
- Convert the outdoor mall area between the east and west wings of the pachyderm building to provide an indoor exhibit space for the rhinoceros, hippopotamus, and other yet-to-be-determined species. This indoor exhibit shall have an indoor viewing area for Zoo patrons, as well as an educational area.
- Main Pedestrian Trail #1 Component - Create a new walkway north of the new Hippopotamus Exhibit through the Feline Mall and out the southwestern corner of the Feline Mall joining the sidewalk on the western side of the exhibit complex.
- Main Pedestrian Trail #2 Component – Create a new walkway north of the old Asian bear exhibit traveling to the north and south main pedestrian path.
- Existing outdoor rhino exhibit (west of pachyderm building) to be updated matching their natural habitat as close as possible.

D. Design Basis

This renovation shall support the following exhibit animals, visitors, zoo staff, animal keepers, and their required activities to maintain the exhibit and to care for the exhibit animals:

- Species and population of primary exhibit animal. 1.2.1 Black rhinoceros.
- Appropriately sized pools and wallows, matching their natural habitat.
- Indoor exhibit space for the current hippo exhibit.
- Other animals to be exhibited. These may include smaller African mammals, birds, red river hogs, etc...
- On-site staff – three (3) or more keepers.
- Support staff and grounds keepers. Number to be determined.
- Number of visitors vary, depending on the season. Peak season (spring / summer) visitors to be in the hundreds, with continuous traffic at the outdoor exhibits.
- During peak season (spring / summer) visitors' groups usually consist of children. Large school groups are not uncommon.
- Motorized, manual operated or assisted adult wheelchairs or scooters need to be accommodated. Potentially in large numbers.
- Zoo operated multi-cart touring trailer traveling around the outdoor exhibits.
- Service vehicles serving the yard, buildings and transiting through the exhibit's perimeter. Service vehicles to accommodate are full size loaders, vacuum trucks, sewer cleaning trucks, semi-trailer for animal transport, delivery trucks, service vans, small loaders, forklifts and golf carts.
- Visitor experience space.
- Rhinoceros restraint devices.
- Daily feed deliveries. Automated hay dispensers throughout the exhibitory.
- Hay shredder enclosure.
- Electrically operated overhead winch.
- Daily manure volume to be handled, approximately 1,500 lbs.
- Non-architectural artifacts, objects and/or fixtures such as graphics, displays, and retail carts etc... may require spatial accommodations at unspecified locations.

E. PRINCIPAL DESIGN CONCEPTS

Additionally, several ideas reflecting Owner's expectations pertaining to physical characteristics, functions and performance for the facility are to serve as the principal design concepts. They are:

1. Exhibits-Driven-Design: The natural history, biological and welfare needs of the animals define the characteristics of the facilities that support them.
2. Habitat-exhibit Integration: Where the animals live and where they will be viewed are one and the same. Considerations must be made to ensure welfare and security while maximizing visibility.
3. Whole Life Exhibit: All the activities of the animal are presented to the public.
4. Protected Contact: Shared space and physical contact between keepers and animals will be minimal. Any points of contact must design to insure the health and safety of both people and animals.
5. Narrative Exhibit: The presentation of the animals in an environment and or structured manner that suggests messages about the animals' natural history, adaptations, behaviors, habits, etc.to form a "Narrative".
6. Designated Viewing: Public viewing spaces will be designed harmoniously with habitat design both to encourage animal visibility in designated locations and to highlight those locations for public viewing.
7. Cohesive Multi-Activity Settings: The fusion of settings for exhibit viewing, structured visitor programs, social gatherings and interpretive materials displays.
8. Structured Operations and Support Systems: Analytically visualized and prescribed efficiency-focus systems and procedures.
9. Invisible Statement Architecture: An architecture that expresses the exhibit functions of the facility, distinguished from common place animal exhibit motifs, yet presented as a faint background, allowing the animals to take center stage.
10. "High Impact" Approach to Sustainability: Selective in pursuing sustainability objectives, focusing on high impact applications.
11. Bird Collision Abatement: Where practicable, materials should be utilized that reduce the potential of fatal collision of migratory birds against windows, doorways, and other transparent exhibit barriers.
12. USDA Regulations for Animal Husbandry: Care of animals at the facility is regulated by USDA. The design shall be conducive to exceeding USDA standards.
13. International Rhino Foundation: Rhino Husbandry Manual includes facilities standards that exceed the minimum standards established by USDA and are outlined in the manual.

14. Applicable Building and Site Development Codes: The project is located within the City of Milwaukee in the State of Wisconsin. Building and site development regulations of both governments apply.

F. SITE INFORMATION and SITE DESIGN CRITERIA

The exhibit will be constructed on a site with several existing exhibits that will be demolished to make way for the project. It is surrounded by other major exhibits, large wooded areas and public plazas that will remain. Specific site data and site design criteria are as follows:

1. Site footprint: Pachyderm Buildings and surrounding exhibits
2. Existing Skyride tower may remain.
3. Existing utilities: See additional information to follow.
4. Cohesive transition and integration among the components and with the surroundings in terrain and visual composition.
5. Efficient animal transfers and keeper movements among components.
6. Articulated pedestrian trail(s).
7. Supports small outdoor group gatherings.
8. Efficient vehicular traffic route(s) among the components and around the surroundings.
9. Supports access to existing utility banks for services and repairs.

G. MAIN OUTDOOR YARD EXHIBIT ELEMENTS and DESIGN CRITERIA

The outdoor exhibit yard is the primary facility where the rhinos will be kept and exhibited during the day in the summer, for the exhibit of the animals in the yard and viewing by the public, it shall have the following minimum provisions:

1. Approximate yard size
2. Design Concepts: The "Welfare Driven design", the "Habitat-Exhibit Integration", the "Whole Life Exhibit" concept, the "Actions Exhibit" concept, the "Designated Viewing" and the "Protected Non-contact Animal Management" concept set forth in the Principal Design Concept section above shall be applied to the design.
3. Free animal movements: A large yard in which the animals are allowed free movements and can carry out a full range of natural behaviors in full public view.
4. Zoned layout: Incorporated stationary landscape elements and or changeable setups that can physically and visually create multiple zones, areas, and settings to allow the animals to be exhibited in changing sceneries. The zones, areas and settings shall be structured with access and visual transitions to form a cohesive composition.
5. Group and individual animal movements: Incorporated provisions in the zones, areas and or settings that allow the animals to freely congregate or to be solitary.
6. "Exhibit Narrative": Selective incorporation of "Exhibit Narratives" described in the Principal Design Concepts section.
7. Action motivating features: Incorporated features in certain zones, areas and settings that encourage natural behaviors to enhance the presentation of the animals, without necessarily creating "Exhibit Narratives".
8. Enhanced distance viewing: Incorporated features that can "highlight" the animals even when viewed in a distance.
9. Animal and visitor separation barriers: Barriers that comply with safety regulations, but minimize obstruction of views, and vary in design in response to site terrain and aesthetic considerations.
10. Minimum interaction between animals and keepers except at training areas.
11. Viewing and other visitor activities nodes around the perimeter: A portion of the pedestrian trail will surround the Main Yard. The merging of the two spheres shall be treated as a feature of the total design. See additional information in other sections to follow.
12. Shades with Misters: Shades on structures out of reach of animals or incorporated in the hardscape elements.
13. Quarantine and other separation features: Provisions for an animal to be quarantined with both visual and physical separation from other animals.
14. Heating source for outdoor exhibit. Radiant or ground heating.
15. Drinking potable water for Animals.

16. Structured yard maintenance program and provisions: See additional information in other sections to follow.
17. Efficient access to the Barn from outside exhibits.
18. Efficient access by service vehicle.
19. Efficient access for servicing of utility banks – see additional information in other sections to follow.

H. THE BARN – INDOOR EXHIBIT AND ANIMAL CARE SUPPORT ELEMENTS

The Barn is the main indoor facility that serves as the animal habitat, the indoor exhibit and a keepers' quarter. It shall have the following minimum animal habitat and exhibit provisions:

1. Design concepts: The "Welfare Driven design", the "Habitat-Exhibit Integration", the "Whole Life Exhibit" concept, the "Actions Exhibit" concept, the "Designated Viewing" and the "Protected Non-contact Animal Management" concept section above shall be applied to the design.
2. The rhino indoor exhibit will consist of converting the outdoor mall of existing "pachyderm building" into and indoor exhibit area for the rhinos and hippos. This indoor exhibit area shall replicate the rhino's and hippo's natural habitat with indoor public viewing / educational areas located near prime viewing areas.
3. Source for drinking water and an optional and wallow for rhinos.
4. Group and individual animal movements: Arrangement of stalls shall allow the animals to freely congregate or to be alone. Create flexibility for managing the animals.
5. Animals-Keepers Interaction: Even though this exhibit operates with a non-contact animal management program, there will be interactions between keepers and the animals, and they will mostly occur indoors. The design shall be therefore incorporate feature that can enhance presentation of some of these interactions where appropriate.
6. Quarantine and other separation provisions: Provisions for an animal to be quarantined with both visually and physical separation from other animals shall be included.
7. Comfortable flooring for the animals: The floor shall provide for the comfort of the animals and shall be of sand, baseball diamond substrate or other easy to clean, man-made flooring with resilient and elastic properties.
8. Efficient access to and from the Main Outdoor Yard.
9. Service vehicle roadway, operations and building systems provisions as stated in other sections.

I. THE BARN - ANIMAL EXHIBIT VIEWING and OTHER VISITOR ACTIVITIES SUPPORT ELEMENTS

In winter, the rhinos and hippos will only live indoor. The Barn, therefore, is the sole exhibit facility in winter. To serve its functions, it shall include the following minimum provisions supporting exhibit viewing and other visitor activities:

1. An entrance lobby or pathway that can be used for group functions.
2. A viewing gallery or pathway designed to move visitors in a linear movement in one direction. Size to be determined but shall at a minimum be able to accommodate the visitor population indicated in the Design Basis section above.
3. Animal and visitor separation barriers: Barriers that comply with safety regulations but minimize obstruction of views.
4. Provisions to block viewing from the gallery or pathway into animal areas when necessary.
5. As a possible venue for indoor or outdoor tours (see additional statements to follow).
6. Operations and building systems provisions as stated in other sections.

J. THE BARN – OPERATIONS SUPPORT and STAFF WORK AREA ELEMENTS

1. The staff are expected to carry out duties pertaining to animal feeding, cleaning, training, transporting, transferring, caring, health examination, administering medicine; food preparation, feed management, manure handling, facilities cleaning; as well as administrative and other functions.
2. Easy access to and from the Main Outdoor Yard.
3. Easy access by service vehicle.
4. A transport route that can allow a semi-trailer to reach a large service entrance to the building.

5. A large loading zone that allows an animal to be off loaded in a crate with a crane or forklift from the semi-trailer.
6. A large sliding or vertical rolling service door that allows the off-loaded crate to be connected to the building interiors.
7. A keeper friendly and efficient buffer zone between keepers and the animals at anywhere keeper-animal interactions might occur.
8. An animal food preparation area, size to be determined
9. A hay storage area in a size sufficient to hold a hay volume of 12'x12'x12' plus handling space that can accommodate a skid loader in action.
10. A large indoor work area accessible by service vehicles, able to support animal care and housekeeping preparation, as well as storage of equipment, tool, and training, demonstration and animal enrichment kits. Size to be determined.
11. A large outdoor storage unit accessible by service vehicles, and can support animal care and housekeeping preparation, as well as storage of equipment, tool, and training, demonstration and animal enrichment kits. Size to be determined.
12. A manure pit with a capacity for a daily dumping volume of 1,500 lbs with easy access to service vehicles.
13. Easy to navigate physical elements along the route where manure will be removed from the floor, placed on a transport cart, moved to the pit on the cart and transferred into the pit.
14. An office area for administrative tasks, sized to accommodate a staff of 3.
15. A break area integrated with or adjacent to the office area, with a toilet room, a shower, lockers and a sitting area.
16. Operations and building systems provisions as stated in other sections.

K. PEDESTRIAN TRAIL – EXHIBIT VIEWING SUPPORT and ENHANCEMENT ELEMENTS

A trail encompassing a major portion of the exhibit compound will be the main venue for viewing the animals. The following minimum provisions shall be provided:

1. The trail shall have the capacity to service the visitor demographics and populations described in the Design Basis section above.
2. The trail shall be designed to reflect the “Designated Viewing” concept and the “Cohesive Multi-Activity Settings” concept stated in the Principal Design Concepts section above.
3. The trail shall support different pedestrian travel paces, pausing and lingering.
4. Viewing, pausing and lingering shall be articulated with nodes at special locations such as the demonstration yard, the pool (watering hole) and other selected locations.
5. The nodes may also support small gatherings and interpretation objects display (see additional criteria below)
6. Viewing shelters if found desirable and feasible.
7. Coordinated placement of viewing nodes with placement of articulated special animal activities areas to enhance opportunities for viewing animals in actions.
8. Leads to other exhibits and areas of the Zoo.
9. Accessible by service vehicles.
10. Protected from animals with barriers - see Main Exhibit Yard section.

L. PEDESTRIAN TRAIL COMPONENT – AUXILIARY EDUCATION PAVILION / VISITOR SUPPORT

It is anticipated that functions such as group presentation of education materials, private gathering etc may be conducted outdoor or indoor, at the exhibit facilities or at an Auxiliary Education Pavilion not used for animal exhibits. The following elements reflect the wide range of elements to be considered but may not necessarily all be included in the final scope:

1. Activities Nodes described in the preceding section.
2. An area that can accommodate a large anti-poaching interpretative display object. The area can be integrated into one of the nodes along the pedestrian trail.

3. An area to accommodate 1-2 mobile artifact carts. The pad can be integrated into one of the nodes along the pedestrian trail.
4. A small outdoor gathering place/node by the entrance to the barn
5. A small indoor gathering place/node at the entrance of the barn, or in a section of the gallery.
6. Merchandising outlets.
7. All areas shall be accessible by service vehicles.

M. GENERAL BUILDING - ARCHITECTURAL DESIGN CRITERIA and CONSIDERATIONS

In addition to being an edifice of structural integrity and functional efficiency for supporting anticipated activities and uses, design of the building and the exhibit landscape shall at a minimum address the following:

1. The design shall reflect the "Invisible Statement Architecture" concept stated in the Principle Design Concepts section above.
2. It shall reference the surrounding vista as a background to provide visual and architectural design context.
3. Natural materials shall be the predominant façade makeup.
4. Vernacular elements in reference of the African regions that is the natural habitat of the rhinos may be included in the architectural composition. But they shall be selected and applied in a manner that is compatible with the predominant appearance of the building and the landscape elements; presented in an educating and inspiring spirit and incorporated in unique ways not commonly found at other zoos.
5. Building interiors shall portray a clean and inviting environment, a healthy and caring rhinoceros' habitat, an inviting and comfortable public space and gathering place, with suitable decors that can enhance these qualities.

N. SITE ENGINEERING ELEMENTS and ISSUES

Site engineering shall address special elements present in the site and relate conditions as shown on applicable drawings attached to the RFP; they include but are not necessarily limited to the following:

1. Major storm sewer lines passing through the site that need to be protected and accessible for future maintenances and repairs.
2. Major sanitary sewer lines passing through the site that need to be protected and accessible for future maintenances and repairs.
3. Major water service lines passing through the site that need to be protected and accessible for future maintenances and repairs.
4. Major gas lines passing through the site that need to be protected and accessible for future maintenances and repairs.
5. Major power distribution lines passing through the site that need to be protected and accessible for future maintenances and repairs.
6. A sewer lift-station that needs to be moved or modified.
7. New power service feed from the private substation a good distance away south of the site.
8. New data transmission connection at the Dairy Barn a good distance away southeast of the site.

O. BUILDING SERVICE SYSTEMS

The design is to include all elements that comprise the service systems and components of the building and the exhibit yards to support operations that are typical of facilities of this nature as well as those peculiar to Milwaukee County Zoo and those that may be identified through the design process. Systems shall include but are not necessarily limited to the following:

1. Animal tracking system: A system to remotely track an animal's movement for management, safety and security purposes. Monitor calving, rearing areas, and exhibits from the keeper break area and remotely via internet.
2. Yard drainage systems.
3. Building plumbing system serving rhino habitat areas.
4. Building plumbing system serving indoor operations, visitor and staff areas.

5. HVAC system supporting rhino habitat area with heating and exhaust, maintaining room temperatures at 70F constant in winter. The system shall be connected to an internet-based monitoring only service.
6. HVAC systems providing heating and cooling for visitor and staff at typically acceptable indoor temperature ranges. The system shall be connected to an internet-based monitoring only service.
7. Electrical systems, including an emergency power generating system.
8. Data transmission systems.
9. Public announcement systems.
10. Other general security and emergency management systems.
11. Waste management systems, including manure pits with a capacity for handling 1,500 lb. of manure per day.

P. SUSTAINABILITY DESIGN CONSIDERATIONS

While a highly sustainable product is a desirable goal, it is an expressed expectation that the pursuit of such a result does not incur substantial cost increase in design effort and or construction. The pursuit shall therefore be selective and focus on “high impact” applications. The following systems or practices may be considered in total or in part, and may also be supplemented with additional options:

1. Enhanced Storm water management systems such as subsurface infiltration system, etc.
2. Water conservation systems and or practices
3. Energy conservation systems and equipment such as heat recovery system, etc.
4. Renewable Energy systems for heating and cooling such as geothermal system, etc.
5. Renewable Energy Systems for Electrical power supply such as photovoltaic system and power storage equipment, etc.
6. Natural Ventilation.
7. Natural Lighting.