

Mapungubwe National Park Interpretive Centre

[Project title]

HAo8_QFITR

[Office ID]

Project information

Project data

City
Mapungubwe National Park

Country
South Africa

Type
Architecture (culture)

Status of planning
Under construction

Status of formal permission
Approved

Estimated start of construction
Okt '07

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We work on three continents

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Prize money distribution statement

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Project description

The story that needs to be told is complex and diverse. At its core are two sets of relationships: that between people and the environment and that of people with one another. The Mapungubwe National Park Interpretive Centre tells the story of its World Heritage Cultural Landscape while achieving economy of means, social improvement and low environmental impact.

The project has embraced environmental and developmental sustainability from the beginning. The dual ambition requires natural materials and architecture that can put people to work with the project's Poverty Relief Program.

Mapungubwe uses the Mediterranean tradition of tile vaulting, a 600-year-old construction system that uses thin bricks to create lightweight and durable buildings. In particular, the load-bearing masonry is used to construct roof vaults achieving high structural strength with minimal material. We replaced fired-clay bricks with less energy-intensive stabilized earth tiles, which have a well-established tradition in sustainable practice. At Mapungubwe they are used to create sophisticated engineered forms by adapting a hand-press to locally manufacture tiles of sufficient strength.

An established structural system and a well-known material are brought together for an innovative solution.

High thermal mass passively cools the space during the day and radiates accumulated heat at night. Materials reveal their natural properties: sandstone floors; earth block walling; exposed tiles on the soffit of the vaults, stone on the exterior; and natural timber for the minor components. Routine maintenance is minimized, with positive environmental consequences throughout the life of the complex.

In addition to being structurally sound, elegantly simple and environmentally sustainable, tile vaults have advantages for construction in developing areas. Learning the technique is straightforward; good results come quickly.

The design of the Centre draws from indigenous forms and ordering principles that are adapted to meet contemporary physical needs and aspirations. The diaphanous vaults establish a rhythm that speaks of the geological formations and of the earliest regional dwellings. These are contrasted with the cairn-like forms that contain the multiple vaults of the exhibition space. Within the

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Measuring up to the target issues for sustainable construction

Quantum change and transferability

[Self assessment]



The Centre represents a significant step forward in structure and material for sustainable construction in southern Africa. The improvements offer material and financial savings, waste reduction, and local employment with transferable outputs and skills for future projects. We introduce the structural masonry of tile vaults to South Africa, and for the first time we combine tile vaulting with locally made stabilized earth tiles that have low embodied energy.

We design and share programs to determine the optimal vault geometry, ensuring thin, safe, unreinforced shells using low-strength tiles. No steel reinforcing simplifies construction, lowers cost and reduces embodied energy. The vaults are built with minimal support, saving time, money and resources on formwork.

Ethical standards and social equity

[Self assessment]



Local communities supply the construction workforce. The site is an area of high unemployment with depleted skills, a legacy of the apartheid government. The introduction of stabilized earth manufacture using a manual press is suitable for establishing entrepreneurs with start-up costs in the micro-credit bracket. Moreover, constructing the vaults will aid in entrenching good building practice.

Ecological quality and energy conservation

[Self assessment]



Primary building components come from local quarries that will be reclaimed. Transport is minimized. Construction is planned without fuel-powered machinery, relying entirely on labor-intensive methods. Materials used in construction are integrated in the final building. Embodied energy is low and high thermal mass, natural light and natural ventilation ensure that operating energy will be minimal.

Economic performance and compatibility

[Self assessment]



The tile vaults are 30% cheaper than reinforced concrete. If we include their socio-economic benefits (standard practice in employment creation), the economic performance is even better. A high ratio of project cost is retained locally, an important factor in a country with a dual economy. The reliance on local labor improves livelihoods and provides a skilled base for future projects.

Contextual and aesthetic impact

[Self assessment]



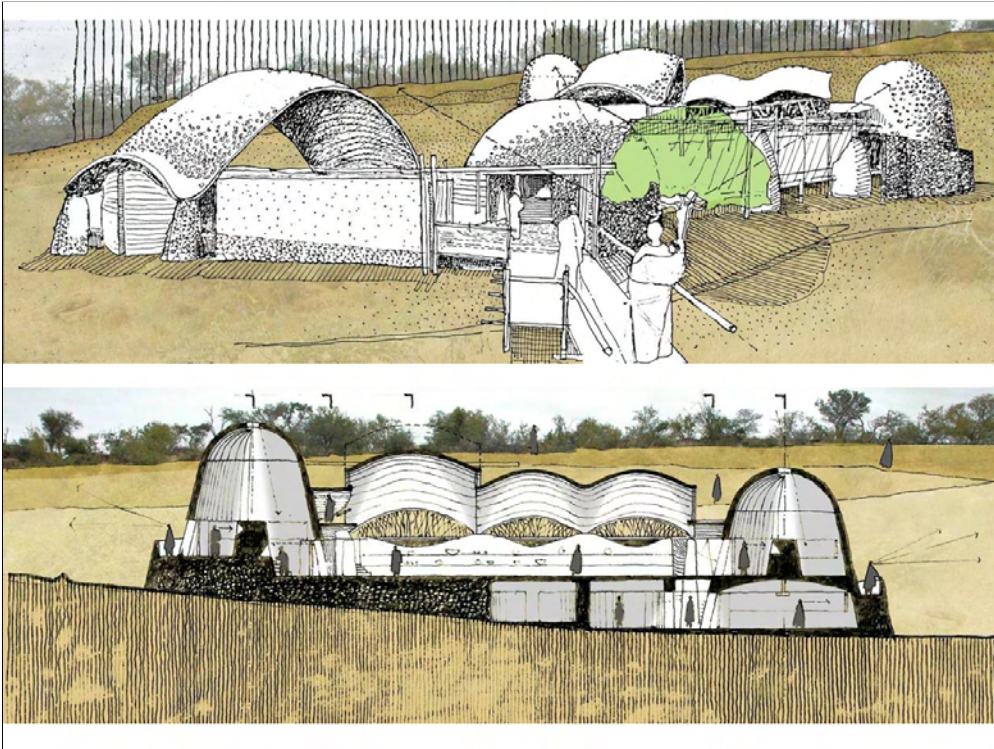
The design grows out of a profound appreciation of its natural and social context. The volumes respond to the terrain and resonate with the rolling hills. We look to earth construction for inspiration while delivering a public building with stringent demands.

Two majestic trees frame the buildings. The entrance walkway traverses a seasonal stream. The interiors of the massive cairns, reminiscent of ancient sacred spaces, provide the beginning and end of the spatial experience. Emerging from the building at its highest point, the visitor is led to a vantage point that overlooks the valley toward formations that housed ancient civilizations.

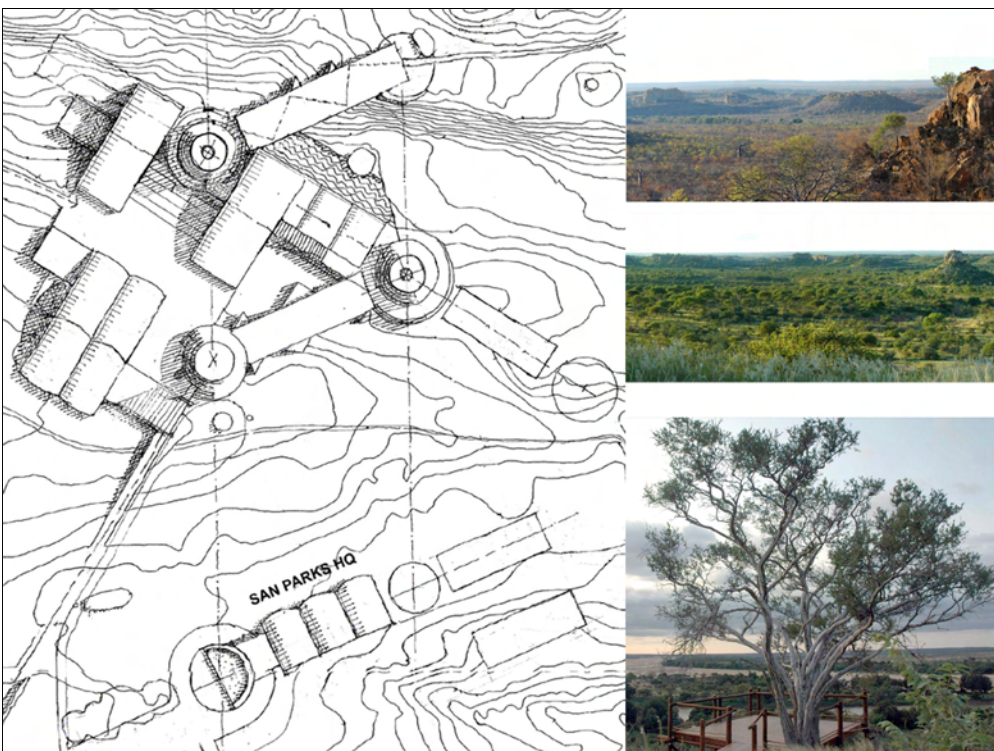
At once the visitor is made aware of the rigorous geometry, the rhythms of the vaulted forms and the intimate relationship to the landscape.

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Project visualization



Mapungubwe Interpretive Center reflects the natural landscape in its materials and the cultural landscape in its form

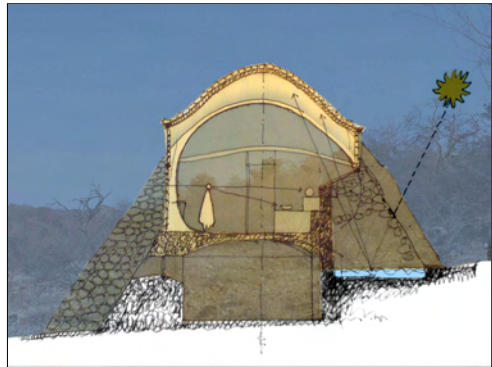


Mapungubwe draws visitors along a path that moves through the museum and into the landscape to better explain a culture and its context

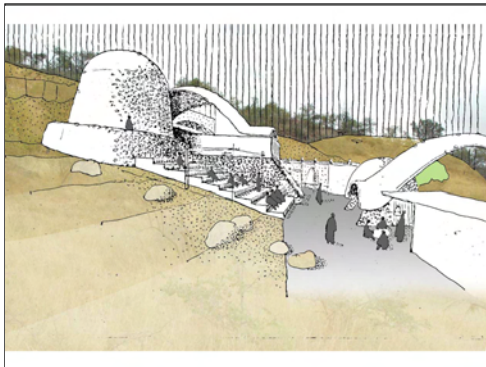
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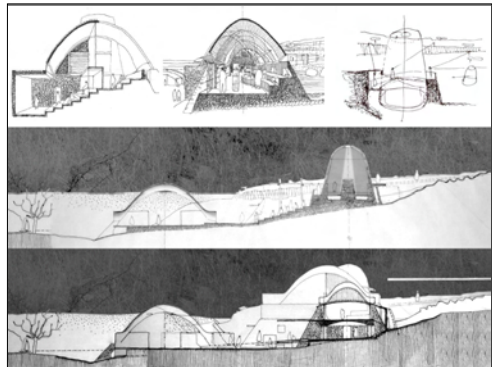
Visitors enter through trees



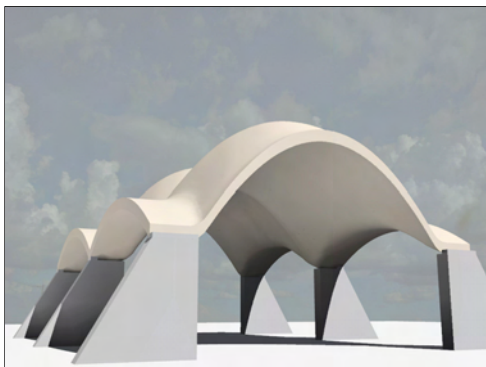
Pools reflect sun and cool air



People gather in the theater



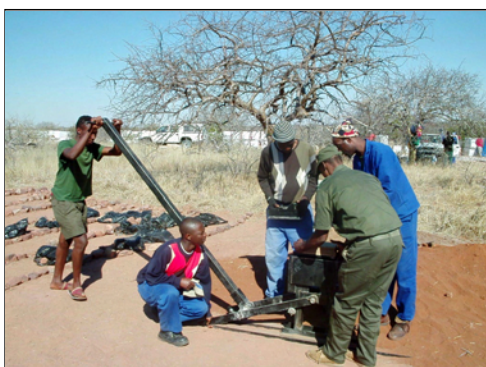
Masonry vaults temper heat



The park HQ is striking



Materials draw from the land



Workmen make earthen tiles



Tile vault has little formwork

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Project description continued

buildings the cavernous spaces are reminiscent of archaeological sites in southern Africa. Natural light reflects off cooling pools to create dappled patterns on the earthen ceilings. Exterior undulations contain ponds for cooling the air that naturally ventilates the space.

The Mapungubwe Interpretive Centre achieves the ambition of sustainable construction and provides a unique insight into the African experience through robust imagery and sublime spatial sequences.