

Hot Dip Galvanizing Association SA



Nelson Mandela Museum – Qunu



MAY 2009

Nelson Mandela Museum - Qunu

HHO AFRICA INFRASTRUCTURE ENGINEERS

HISTORY OF THE PROJECT

This was an exciting project to work on. It is unique in that it was built on land in the village of Qunu in the former Transkei where Nelson Mandela started his schooling and spent time playing with his friends.

To honour South Africa's first fully democratically elected President, the Department of Public Works was tasked to build a museum complex in the former Transkei which would be a living reminder of our history. The building complex at Qunu together with the buildings at Mveso and Mthatha, form the Nelson Mandela Museum.



Location of museum

Each museum site showcases different periods in the life of Nelson Mandela.

- *Mveso*: This is situated in the Mbashe River valley and commemorates his birthplace.
- *Qunu* : This is the major building complex and the subject of this presentation. The little village of Qunu is located off the N2 approximately 30km south of Mthatha. As it was the place where Nelson Mandela started his schooling, it has an education theme.
- *Bungu Building*: This building is in Mthatha and houses the exhibition items depicting his adult life.

DESCRIPTION OF THE PROJECT



View from the North

This historical site, on the edge of the village of Qunu near Mandela's present house, is on the crest of the hills overlooking the remainder of the village.

The project brief was to design a "living monument" which impacts on the lives of locals as well as tourists.

To find the complex, turn off the N2 at the Information Centre and travel along a newly surfaced road to the main gate, where one is greeted at the reception area under a very large and high canopy structure. There the tourist will find a first class restaurant and exhibition hall, both with splendid views overlooking the rolling hills below. To the right,

one finds dormitory accommodation for school children, a sports hall and a dining room. Education is close to Mandela's heart and these facilities allow children to come and experience the beauty of the surrounding countryside and learn some of our country's history.

To the left is the community hall and two buildings for the local manufacturing of items for sale to tourists. This will bring income into the village.



Front view of dormitory



Front façade of restaurant

INNOVATION AND THE PROMOTION OF BENEFITS

The architectural theme for the buildings is to express the structural steel members outside the building and build the stone clad brick masonry walls within the structural shell.



Combination of stone masonry walls & structural steelwork

With the steelwork exposed a long life durable corrosion coating was absolutely essential.

During the design process painting was at first considered, but was soon discarded as chipping of the paint surfaces at walkway level, where children would be playing and running around, would require continual touch up maintenance which was not desirable.

Hot dip Galvanising was considered next but the speckled finish was not what the Architect wanted, so zinc spray with a sealing coat was finally specified in the tender. However when the contract was awarded the main contractor motivated a change from zinc spraying to HDG as he was having difficulty with the availability of zinc spray in the Eastern Cape.

The advantage of the hot dip galvanised system was that it could all be done off site and transported to site and because of its hard coating it would not be damaged during handling.

IMPROVED TECHNOLOGY

The use of a modern material like steel with a centuries old material like stone masonry has shown just how well new and old can be combined.



Lathe screens provide shade to building

The stone work provided an income to local people who were able to use their skills, handed down to them by their forefathers. The use of these skills would not have been possible without the design and erection of a steel structure which required the use of modern equipment such as computers for the drawing, electricity for welding and hydraulic cranes for erection.

PROMOTE PROFESSIONALISM

The change from the specified zinc spray coating to a hot dip coating was researched by the professional design team and on review, the specification was changed. The finished product, after a short time of weathering, has a uniform colour which is very satisfying from an aesthetic perspective and the very durable coating is satisfying to the client in that he can rest assured that his asset is protected from corrosion for many decades.

PROVIDE SERVICE

This museum complex is not just a place to come and view the history of our country through the life of a great leader, but is also a great conference centre where a group of people can get away from the hustle and bustle of city life and experience learning in a quiet rural atmosphere. This complex captures the spirit learning on the site where Nelson Mandela started his education as a child.

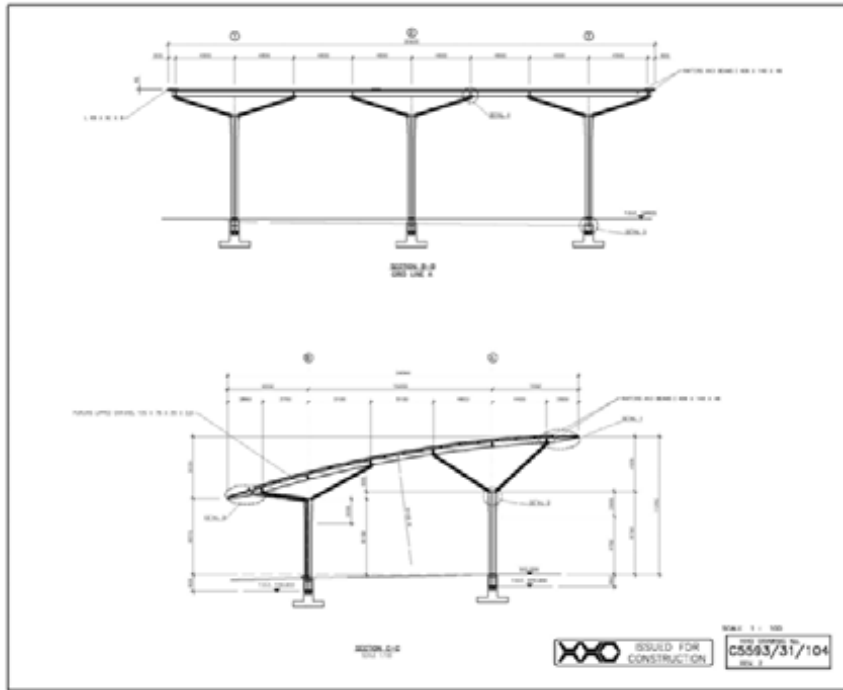
CELEBRATION OF SUPERIORITY



Slender supports to main canopy

This museum is really a celebration of the life of Nelson Mandela and the great role he played in guiding our country through transition and on to a road ahead.

As one enters the complex, the main canopy structure, shaped like a giant wing (40 m x 28 m), gives one a sense of openness, yet integration, with the exhibition hall on one side and resource centre and restaurant on the other.



REFERENCE DRAWING:
 STRUCTURE - CANOPY DETAIL

PROJECT:
 NELSON MANDELA MUSEUM - QUNU

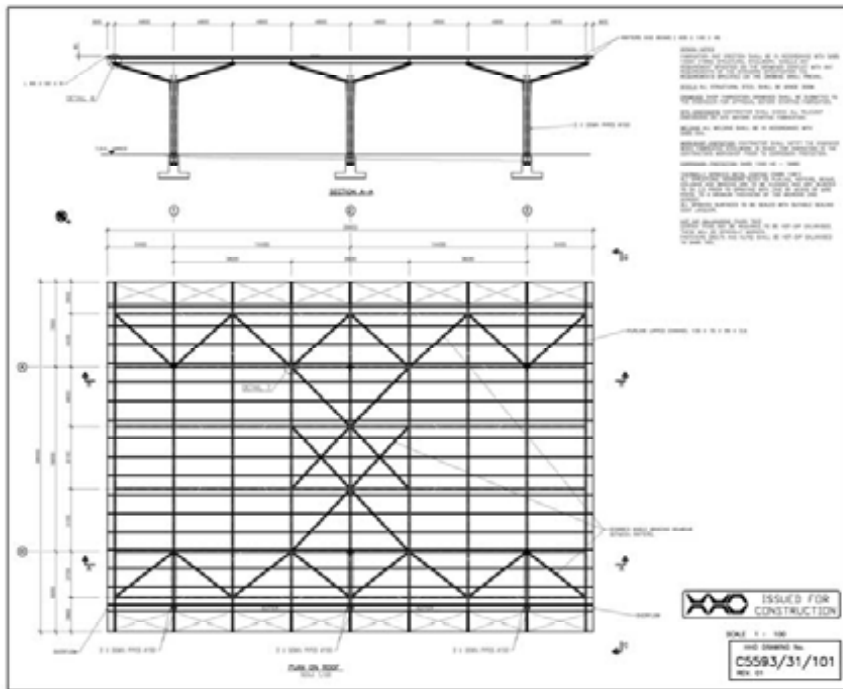
ARCHITECTURE: SAN
 OPENING WORKS
 DEPARTMENT OF
 PUBLIC WORKS

ENGINEER:
 XXXO
 XXXO
 XXXO

DESIGNED BY:
 PRESIDENT
 NELSON MANDELA
 MUSEUM
 - QUNU COMPONENT

ISSUED FOR
 CONSTRUCTION

SCALE: 1:100
 DRAWING NO: C5593/31/104
 REV: 01



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DISSEMINATION OF KNOWLEDGE

This project in a rural area created opportunity for local people to use their skills and receive payment for it. For example the lamp shades are hand crafted from galvanised steel sheet as well as the cupboard doors in the dormitories.



Hand crafted lamp shades



Hand woven galvanized doors

The diversity of skills was not limited to steelwork only. The six steel columns supporting the main canopy are formed by 20mm steel plate welded in a crucifix form. The four quadrants so formed are filled in with timber which has been decorated with fascinating pictures carved into the wood by artists from the Eastern Cape.



Hand crafted timber
combines with steelwork

MARKET GROWTH

The very attractive architecture, making use of exposed structural steel, shows just how versatile structural steel is as a building material. Being a tourist complex many people are expected to see these structures and will notice how attractive the hot dip galvanised finish is.

SUSTAINABLE RESOURCES

Nelson Mandela has a love for children and gardening, so in addition to dormitories for children to come to the complex and spend time learning academic subjects, there is also a garden area where children can learn and experience horticulture

To provide potable water to the museum, a borehole was been sunk near the complex and water pumped to an elevated hot dip galvanised steel panelled reservoir . From here water flows to the various buildings. Thereafter the waste water flows down hill to a treatment plant hidden in a hollow area which cleans the water to DWAF standards for release back into streams. However this water is not wasted but recycled by pumping it back up to a small reservoir behind the dormitories from where it is used to irrigate the gardens. Storm water collected from the roofs is collected and piped to a small dam.

EXCEPTIONAL MERIT

This is an exceptional museum in that it not only commemorates the life of a great South African leader but also looks to the future in providing educational facilities for young people.

The theme of combining a modern hi-tech building material like steel with an age old material like stone masonry in a rural setting has really made this building complex a destination to be visited.

Recycling a precious resource like water also shows how modern technology can be applied in a rural setting to great effect.

CONSTRUCTION PHASES

This was a difficult contract to administer as the first Contractor who started in 2002, experienced cash-flow problems and the contract had unfortunately to be terminated. In 2004 the contract was re-advertised with an expanded scope of works and successfully completed in August 2006 and handed over to the Department of Arts and Culture, who will run the museum.

PROJECT TEAM

Developer / Owner : Department of Public Works

Architect : Architects in Association

Specifier: HHO Africa Infrastructure Engineers

Project Manager : Architects in Association

Main Contractor : Transtruct Construction
Steel Fabricator : ISG Engineering

Hot Dip Galvanizer : Galvanising Technique, Port Elizabeth
Morhot Galvanizing, Fort Jackson

TONNES OF STEEL : 157 tons

PROJECT INCEPTION DATE : November 2001

PROJECT COMPLETION DATE : September 2006

PROJECT VALUE : R22 million