

# **Zoo Project Executed on SDS2 Software**

Our project that featured in "Modern Steel Construction 2022" Magazine



## **Description:**

**Pan Gulf Technologies** was entrusted to detail the new Habitats 12, 13, 14, 21, 22, 23 & 24 as an addition for this Zoological Society project. The project was executed in SDS2 Detailing software. The detailing proved challenging considering the structural geometry and slopes, existing site conditions, coordination, software limitations and Covid19 WFH working pattern. Still the project was detailed efficiently and delivered on time by our team. This also proved to be a great learning & teamwork experience for the team.

After erection, the project looked stunning. It also gained a lot of visitors attention. The project was also published "Modern Steel Construction in the Magazine May 2022" under the title "STRUCTURALLY SOUND", this was a remarkable achievement for all the detailing team involved in the execution of this project.







## **About The Project**

The primate canopy trails weave weathering steel with nature in an interactive outdoor. The 35,000 sq.ft exhibit includes multiple steel elements in eight different primate habitats.

Steel hollow structures were intertwined with live trees, and a winding boardwalk made of curved steel allow visitors a treetop view over the exhibit. Using a combination of painted and weathering steel offered two benefits:-

- 1) It offered a solution for addressing external conditions in an outdoor environment.
- 2) It gave a natural forest look, that the architect and design team desired.

#### **Our Challenges & Solutions**

#### **Challenges:**

- The project had to be detailed in SDS model, that had foundational piers set at coordinates as per the existing conditions. We had to match/coordinate those with the design drawings for the location and elevations.
- Dimension and elevation of the columns, and rings could not be obtained in the model for the three largest habitats.



## Solutions:

- We brainstormed as a team and came up with the best assumptions that could be made. Later, the prepared assumptions led us to easy approval of the drawings by the client.
- We took a different approach here, the ring being the most critical part of the habitat was finalized first using the design drawing elevation. A top down approach was followed in the habitat detailing. Where the topmost steel was finalized first, followed by the connection points, the degree and orientation of bent HSS columns, then by a split base plate.
- We also took a trial and error approach here, it was done to get a best geometrical fit for the habitats. A lot of adjustments in the dimensions, degree of bends, slopes and elevations were made to obtain a best fit, and these were approved by the design team in the submittals.



- Connecting the ring to column ball bearing connection detail. This was the most crucial connection. The connection could not be made unless the geometry is perfect for the rotation and orientation. Also a software limitation to add the solid steel sphere/ball in SDS, without which the connection could not be visualized.
- Considering all the challenges, several testing had to be done before we conclude. We took an out-of-the box approach and tested to model a sphere. A square steel cube was cut in a circle at several rotations to get a nearly perfect sphere (Image below).







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