

INFINITY



PLAN 1:20 000

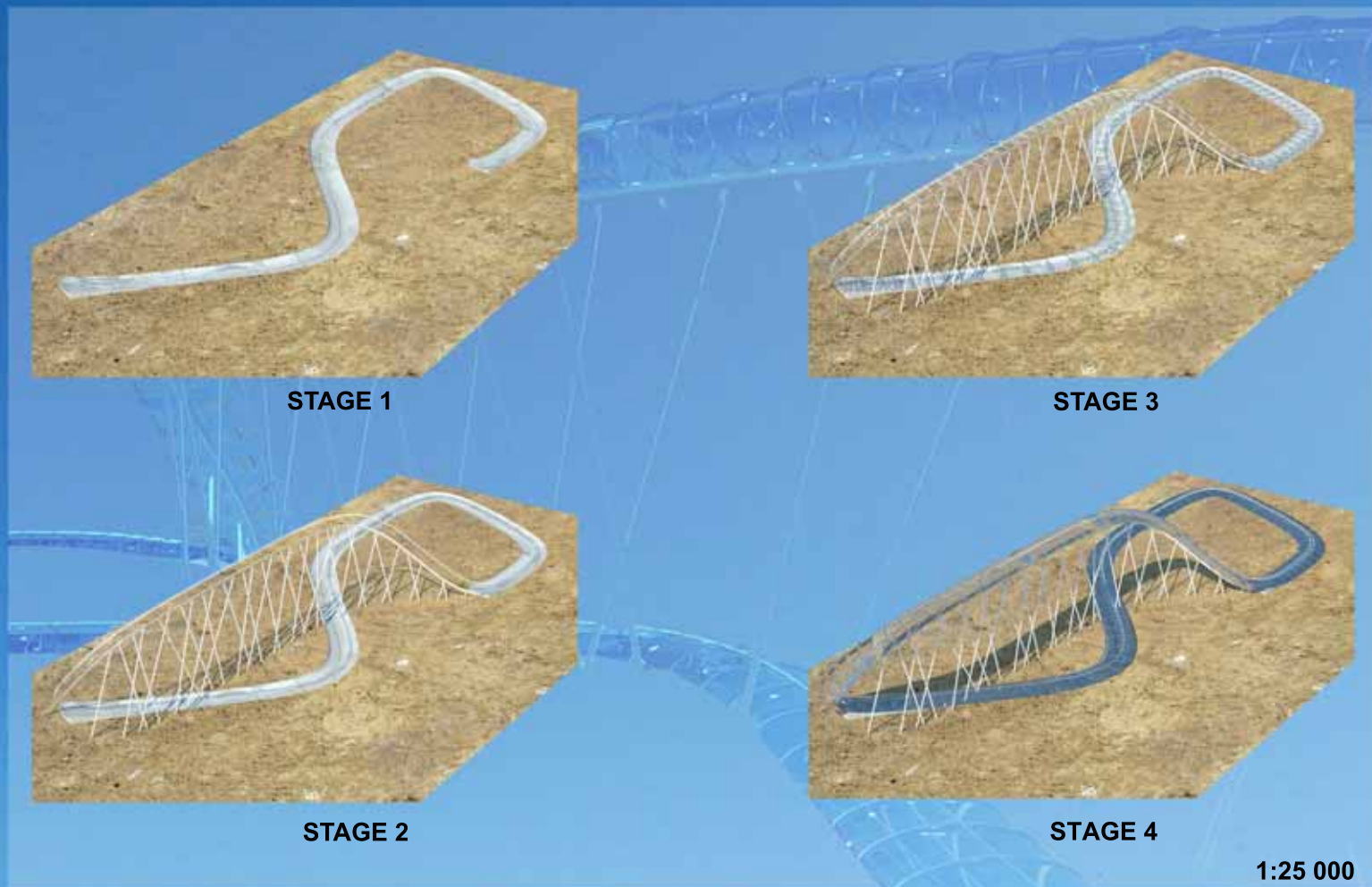


Infinity relies on the movement of water through a system of turbine rotors to generate electricity. The form is created from an array of curved hollow structural steel members in the shape of an ellipse, inscribed in which is the frame for the turbine rotors. The steel members are arrayed along a path that travels along the site in three dimensions. Half the structure is sunk into a concrete foundation deep in the ground. The installation is primarily clad in glass and a series of lenses that focus light in specific places within the structure.

The intent of Infinity is to question ideas about perception, the presence of light and its reflection off various surfaces that comprise the installation, water, steel members, is therefore integral to the aesthetic. The idea of transparency is another important feature of the project. Infinity attempts to challenge this concept through its sheer size and expansive footprint. The site is almost completely inhabited by the structure, yet the motif of transparency remains through the installation's materiality.

In another sense, the design attempts to be an alien object for in some way it is disconnected from its surroundings by its form. The installation essentially recreates its environment through its highly reflective skin, yet the world within the chamber created by the cladding is entirely different.

ZK334F



STAGE 1

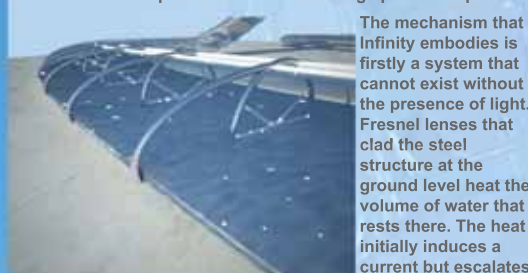
STAGE 3

STAGE 2

STAGE 4

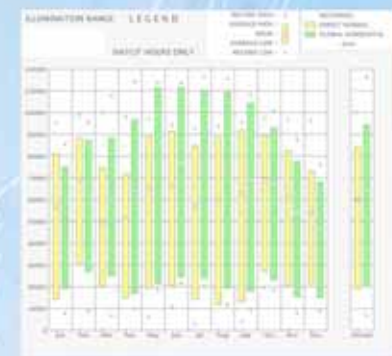
1:25 000

The axonometric projections attempt to describe the layers of construction that the installation involves. The first stage is essentially a concrete foundation which provides the preliminary support for the structure. The next stage involves erecting the steel members that will support the elliptical members that generate the form of the installation. The support structure comprises of a series of steel members meet in various locations. This can be achieved with standard hollow structural sections welded to large cast steel joints and specialized intersecting members. The diagonal members achieve a level of stability through cross bracing. This is further reinforced with horizontal members that outline the path of the general form, and act as the spine of the installation. The horizontal bracing also serves the purpose of a channel for electrical equipment to pass through. The horizontal members reach around the entire installation thus allowing each turbine to be connected through the horizontal members to meet at a central hub which can be accessed easily. The third stage involves connecting the elliptical steel members to the horizontal supports and the concrete foundation. The members that are connected to the concrete foundation directly are half ellipse shaped members that are connected with anchor bolts. The remaining elliptical members are welded to the horizontal supports. The turbines are welded to the circular members that are inscribed in the elliptical steel members. The final stage involves attaching the glass and lens cladding between each elliptical steel member using spider clamps.



The mechanism that Infinity embodies is firstly a system that cannot exist without the presence of light. Fresnel lenses that clad the steel structure at the ground level heat the volume of water that rests there. The heat initially induces a current but escalates

to boil the water. The steam becomes the predominant phase within the system. The steam is forced to rise and travel in a specific direction. Fog catchers act as barriers for steam moving in the opposing direction. The steam travels upwards for the duration of the sunlit hours, condenses at the height of the structure, and travels downwards to begin the cycle again. This process can in some conditions, continue after sunlit hours for the concrete at the base of the structure, having absorbed heat throughout the day, can act in some way as a thermal mass and redistribute heat to the water. A current is induced and the cycle begins again the next day.



SPIDER CLAMP
STEEL MEMBER TO GLASS CONNECTION



TURBINE ROTOR
CONNECTION TO METAL PLATE



SECTIONAL PERSPECTIVE 1:1000

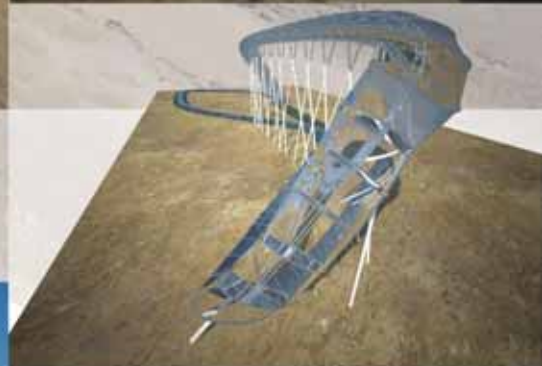
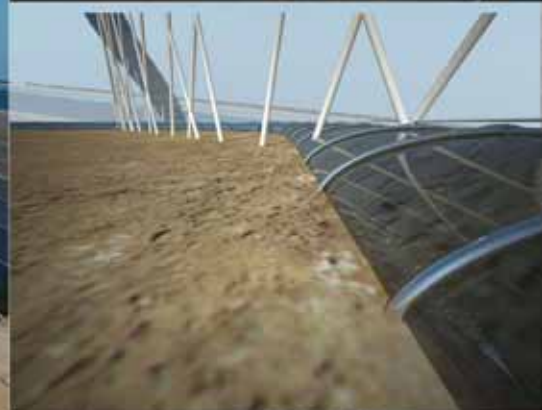


The section attempts to illustrate the primary details that comprise the structure which is a repetition of an elliptical steel member with members inscribed in it. The elliptical steel member and circular member inscribed in it represent on cast steel member. This cast steel member acts as a support for the sectional glass members that are held up by spider clamps that are arrayed around the ellipse at 5 m intervals. In addition, the steel members, being of a highly reflective polish, act as mirror that redirect light that has reflected off the water. The wind turbine is held in place by a metal plate that is welded to the circular steel section inscribed in the elliptical steel section.

SECTIONAL PERSPECTIVE 1:50



The rendering directly to the left illustrates the path of energy throughout the system. The installation promotes a convectional motion through it, the fresnel lenses, signified by the dark red color heat the water at ground level to a point where the water becomes a vapour and travels upward, turning several turbines in the process. The projected energy production for the installation is upwards from 2.2 MWh yearly. The diagram also indicates which direction the steam travels about the system. The passage of vapour through the chamber occurs several times per day if a barrier is used at the height of installation. A fog catcher serves the purpose of preventing vapour from passing through without condensing first. As the vapour collects and condenses the water moves to the bottom of the structure and the cycle begins again.



The rendering attempt to illustrate viewing the installation from different angles and their effect shown through reflections on the glass. The vignettes predict the illusions that would appear if one were to walk around the structure.

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