The March of Triceratops

Traveling exhibition documentation

Naturalis Biodiversity Center

December 2024

Index

Note

Some information in this document was also supplied with the contract. If there are any differences in its content, the contract's content will prevail over the content in this document.

General information

The March of Triceratops

Triceratops! Everyone recognises this iconic creature. With their huge horns and their eye-catching frill, and measuring some 8 meters in length, these giant plant-eating dinosaurs are unmistakable. At the end of the Dinosaur Age, they were the most characteristic inhabitants of the plains of North America.

Dinosaur exhibitions have welcomed millions of visitors to museums around the world. They are a major attraction, especially for families. Triceratops, in particular, has always been a visitor magnet.

The March of Triceratops is not just another dinosaur exhibition. It is a richly filled, friendly, and memorable exhibition. It is an atmospheric experience where you get closer to a herd of Triceratops than ever before. You view the impressive herd of five skeletons, but you also meet lifelike models, a baby triceratops animatronic, animations, and play with the many interactives.

We are proud to offer you the opportunity to display this unique dinosaur family exhibition.

Marjolein van Breemen
Museum director Naturalis

The March of Triceratops

- Offers the best of an experience, museum and science center
- For a family audience: have fun, play together, learn together
- A friendly atmosphere, playful, varied
- Encounter living triceratops
- Highly interactive: learning by doing

Facts and figures

- Size of gallery 650 - 1200 m2 / >6m high
- Five complete fossil skeletons
- 16 high-end interactives
- One life-size triceratops model
- One animatronic triceratops baby
- Three large video-mapped animations
- Estimated average of 30’ holding power

1.
Description of the exhibition and included services

What is in the exhibition?

Intro zone - Meet Triceratops

- A life-size model of a sleeping adult triceratops
- An animatronic of a baby triceratops

Collection zone - The herd

- The herd: 5 fossil Triceratops skeletons
- 2 interactives:
  Tricerascope
  Bone puzzle

Interactive zone - Hands on!

- 3 large animations showing the daily life of triceratops
- 12 interactives:

Food theme
- What did Triceratops eat?
- Shedding teeth
- Eating and farting

Seduction theme
- Wildly attractive
- Growth
- Age
- Nest
- Green, yellow, purple or red?

Safety theme
- Horn
- Strength through unity
- Ouch!
- World of Triceratops

What is in the exhibition?

Other

- All internal lights,
  such as showcase spots and uplights
  in the Triceratops podium
- Decorative cretaceous vegetation
- Integrated show-control to start up
  and shut down the exhibition
- Fully accessible for visitors using
  a wheelchair

Texts

- All texts internally lit by lightsheet
- Graphics & software content allows up
  to a maximum of three languages

Included services by Naturalis

Advice

- Site visit of your venue by Naturalis
- Floorplan/layout advice for your venue

Service

- Logistics
- Turnkey installation at your venue
- Communication package
- Helpdesk, monitoring and maintenance during operation

Excluded

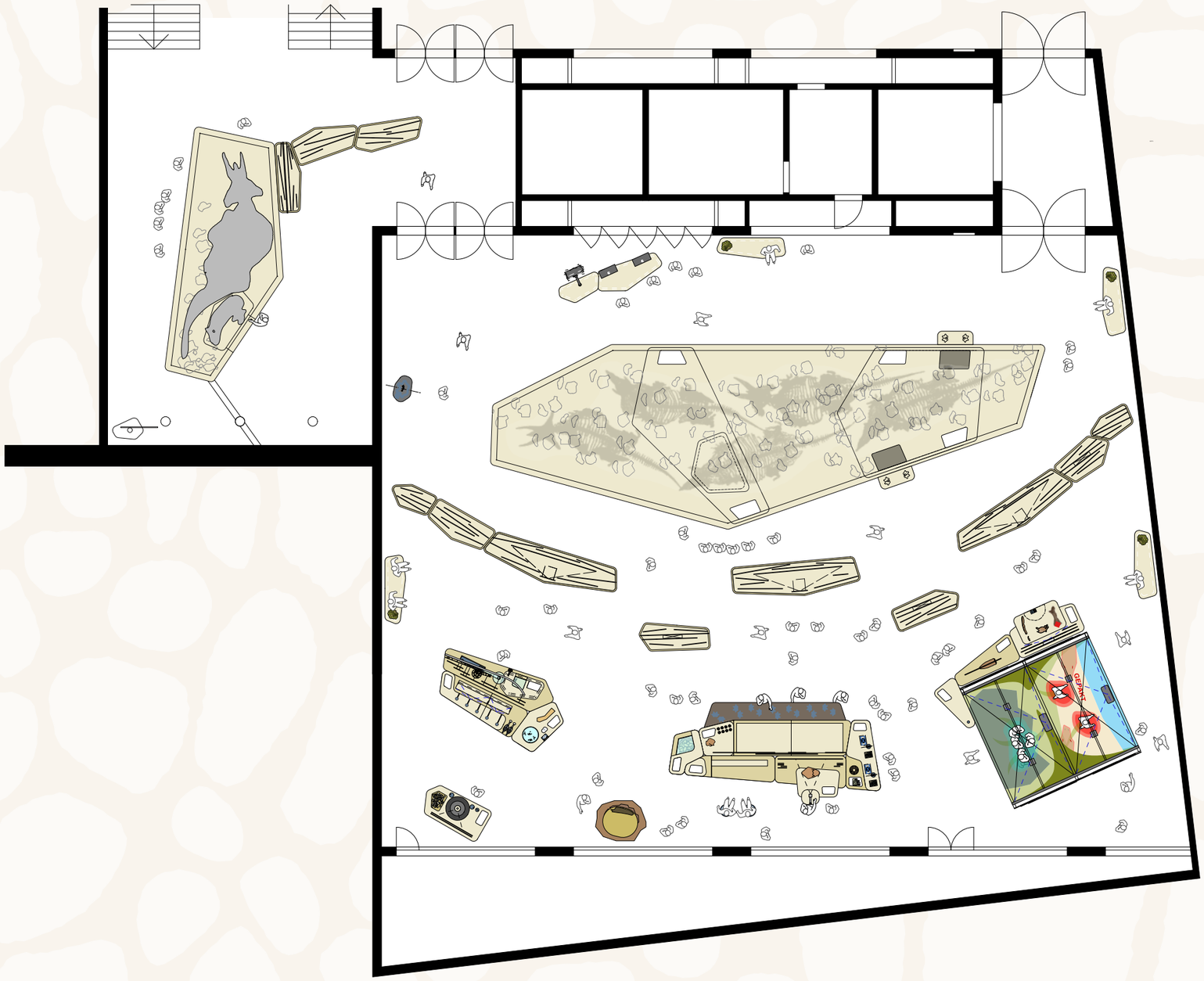
Excluded in the exhibition are:

- Translation of texts
  (Naturalis does deliver all prints with your translation)
- Any other than internal (integrated into exhibits) exhibition lighting
- Cable management between exhibits and your venue's electrical and data infrastructure
- Costs for transportation and transport insurance
- Insurance costs during the exhibition period

2. Exhibits and Floorplan

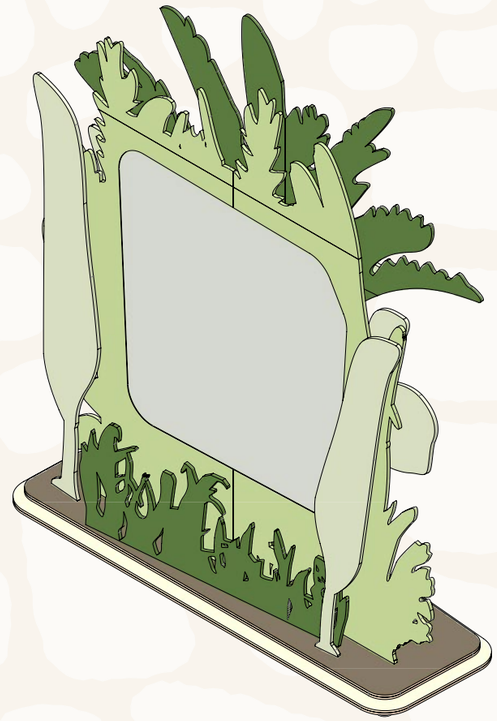
Floor plan

General arrangement



Introduction zone
Meet Triceratops

Introduction



Description

A large backlit graphic panel to introduce the exhibition.

Virtual museum link

naturalis.nl/virtueelmuseum

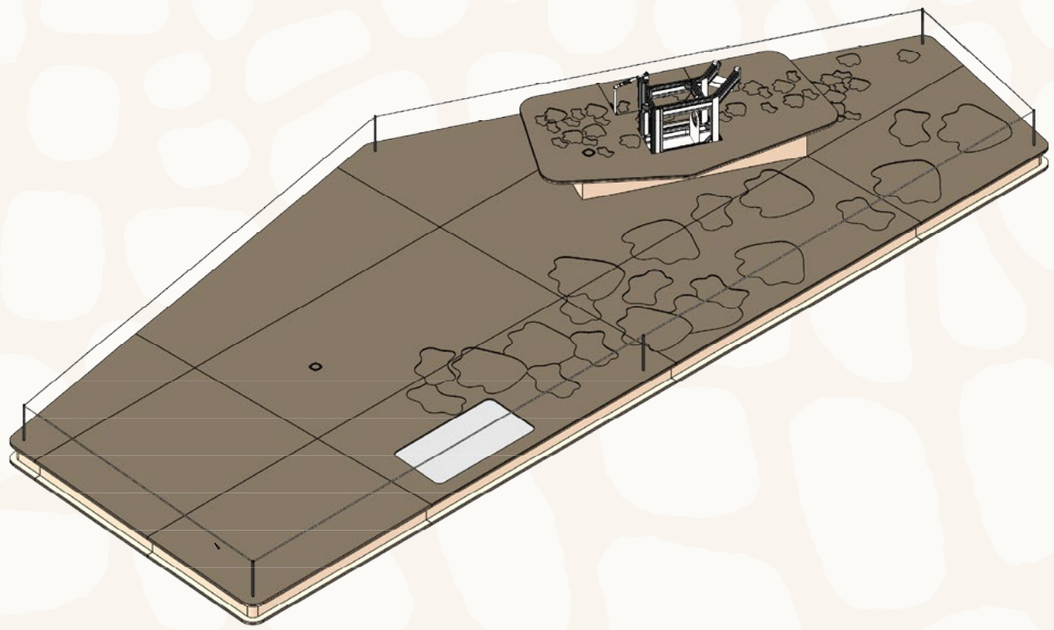
Graphic content

Triceratops: the herd
Meet Triceratops! This dinosaur lived around 67 million years ago. Naturalis discovered five skeletons of this dinosaur in North America. Find out all about how they lived.

Technical drawing

For technical drawing, see attachment on page 56.

A life size model of a sleeping adult triceratops



Description

Upon entering the exhibition, you encounter a life-size model of a Triceratops. This is what the triceratops looked like. The adult triceratops is dozing in front of a backdrop of trees and shrubs. The sleeping position - lying down, chin up - is disarming and friendly, while the enormous size of the animal is also visible. The animal does not move, but you hear the animal snoring.

Virtual museum link

naturalis.nl/virtueelmuseum

Graphic content

Sleeping triceratops
This is what Triceratops looked like. Huge horns, a massive frill, knobbly skin and a beak-like snout... Thanks to the excavated bones, we are discovering more and more.

Technical drawing

For technical drawing, see attachment on page 61.

Animatronic of a baby triceratops

Description

Behind the adult triceratops lies a baby triceratops. She's sleeping. Her eyelids flutter, and her mouth moves up and down with her breathing. You hear her snoring. Now and then, she wakes up, looks at the visitors with big eyes, and makes cute sounds.

Graphic content

None.

Technical drawing

For technical drawing, see attachment on page 61.

Collection zone
The herd

The herd: 5 fossil Triceratops skeletons on a podium, including 44 uplights

Description

The only cretaceous herd in the world. Five fossil triceratops skeletons on a podium. Forty-four uplights are included. Four integrated graphic panels tell various stories about these unique fossils. The interactive ‘Bone puzzle’ is included two times on the podium.

Virtual museum link

naturalis.nl/virtualmuseum

Graphic content

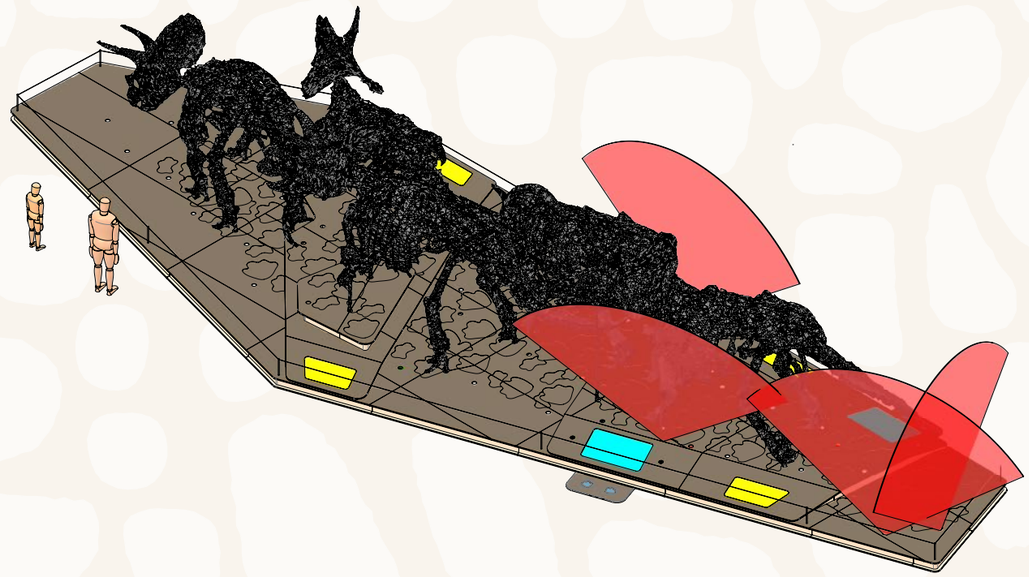
Remarkable find
Individual bones and skulls of *Triceratops* are found quite commonly, but complete skeletons are rare. In Wyoming, USA, Naturalis excavated no less than five skeletons. The largest triceratops discovery ever.

Plant eater
Triceratops means ‘three-horned face’. The full name of the species is *Triceratops horridus*. ‘Horridus’ means ‘frightful’. At eight metres long and weighing 6000 kg, it may appear dangerous, but *Triceratops* was in fact a friendly plant eater.

Herd
The five skeletons are not all of the same size. Some of the triceratops had not yet reached maturity; others were adults. Could they have lived together in a group? Their bones were found close together, so it seems likely.

Real and imitation
Not all the bones were discovered. And yet the skeletons are complete. How can that be? Thanks to the 3D printer! The bone of a left leg can be scanned and printed in mirror image. And the result is the bone of a right leg...

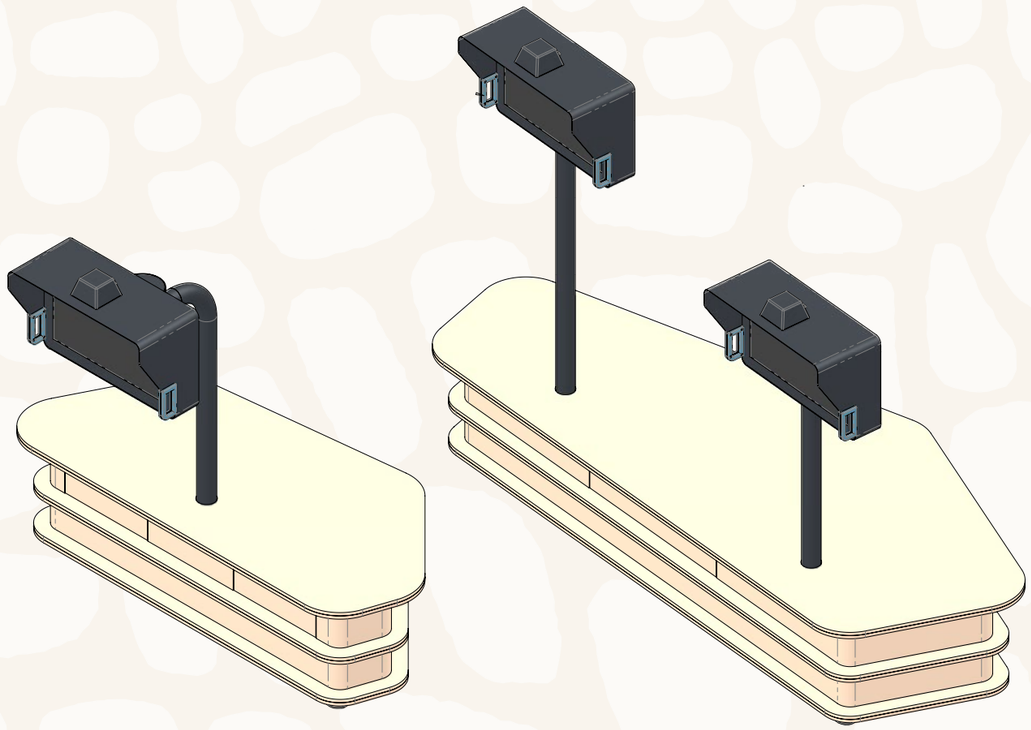
Look at the skeleton and compare it with this drawing.
The dark blue bones are real; the pale blue bones are printed.
Can you tell them apart?



Technical drawing

For technical drawing, see attachment on page 62.

Tricerascope



Description

Touch one of the three Tricerascopes and see how the skeletons come to life. The herd steps off the podium and leaves the gallery.

Remarks

Because the video content matches the fossil skeletons, the location of these Tricerascopes is fixed.

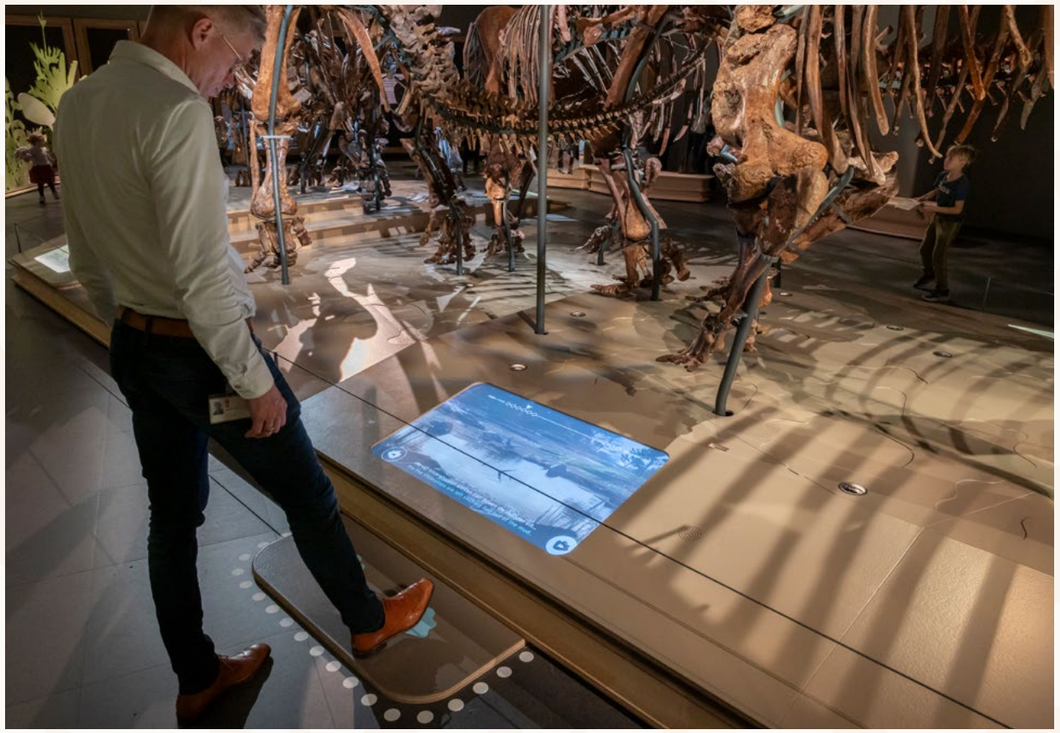
Graphic content

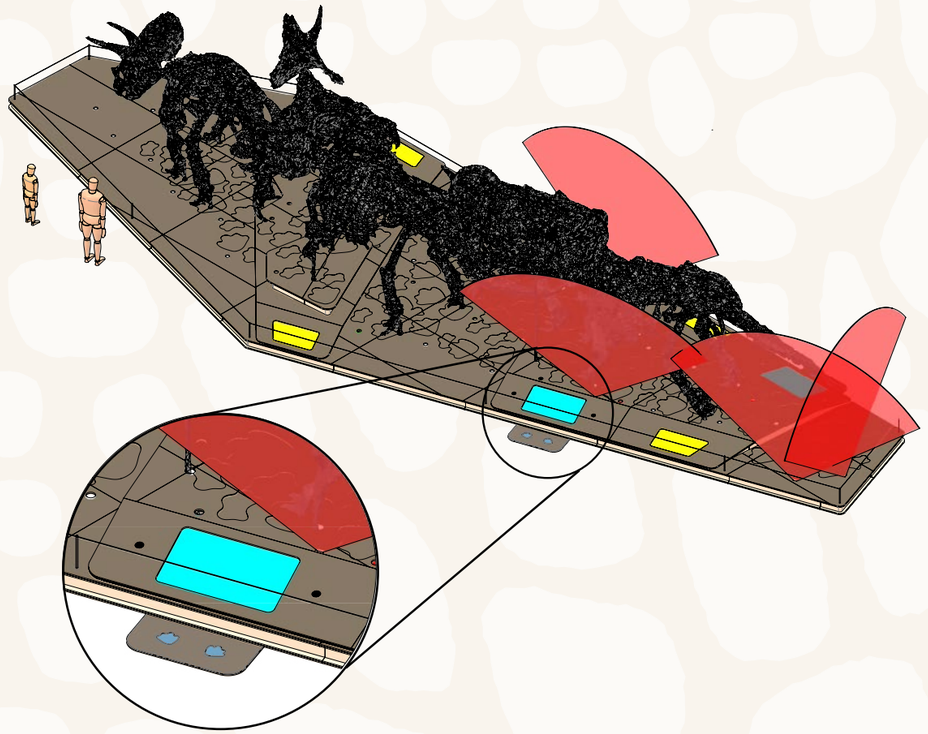
None.

Technical drawing

For technical drawings, see attachment on page 64 & 65.

Bone puzzle





Description

Discover the fatal final events leading up to the deaths of these 5 Triceratopses. Tap with your feet to scroll forward or backward in time and view a set of short animations.

Graphic content

None.

Technical drawing

For technical drawing, see attachment on page 62.

Interactive zone
Hands on!

3 large animations showing the daily life of Triceratops

Description

The Hands-on area is divided into three themes: Food, Seduction, and Safety. Each theme is introduced with a real-to-life 5’ animation. In each animation, five triceratops and the baby triceratops appear.

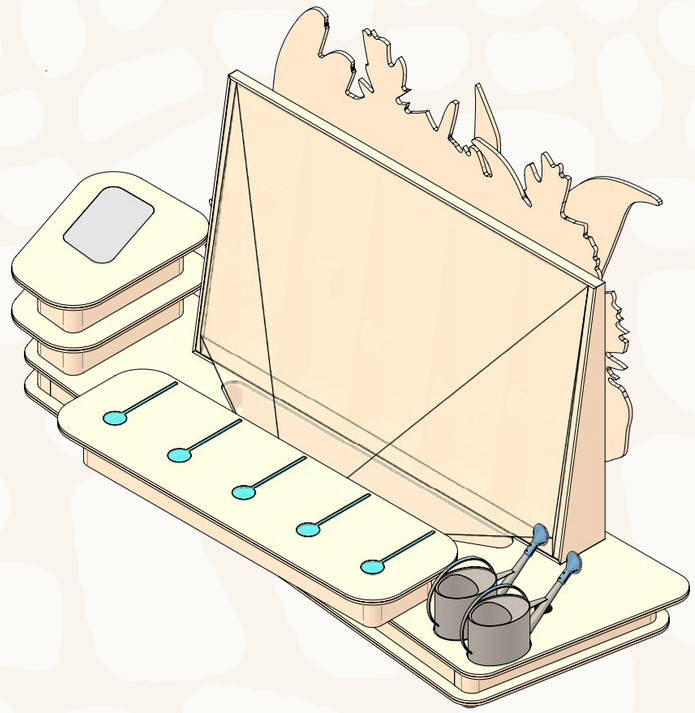
Graphic content

None.

Technical drawing

For technical drawings, see attachment on page 66, 67, 68 & 69.

Food theme: What did Triceratops eat?



Description

Five fossil plants are placed in a showcase. Use a watering can to spray water on the fossil to see it grow into cretaceous plants. When your plant is fully grown, Triceratops comes to eat your plant.

Graphic content

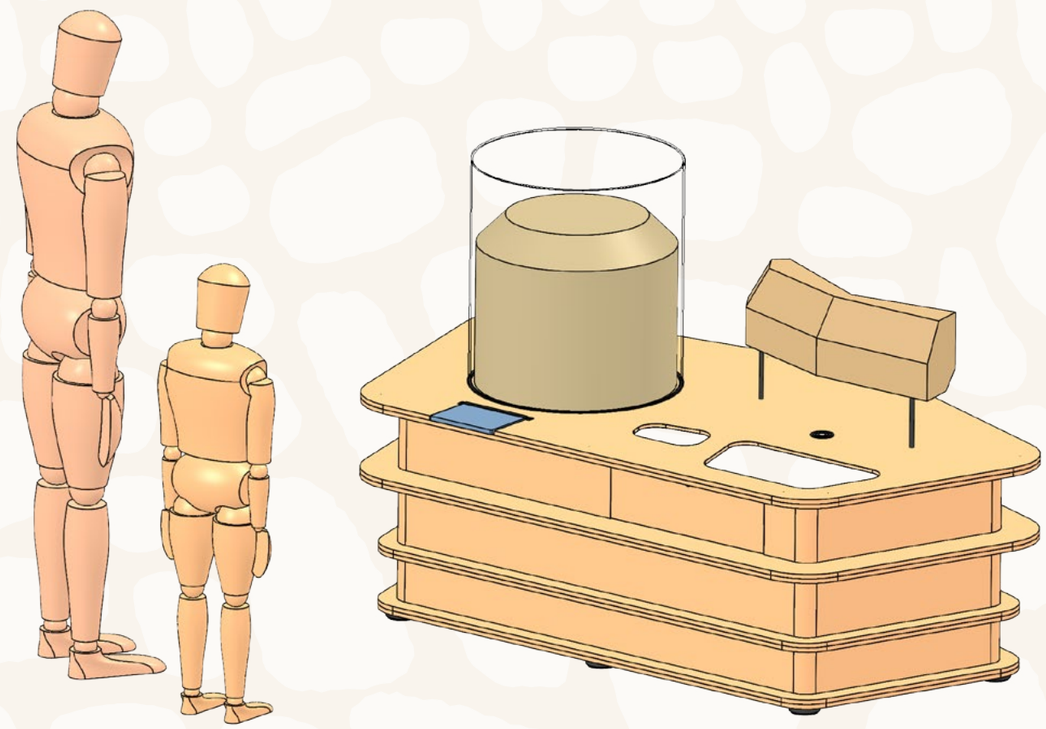
What did Triceratops eat?
The plants that lived at the time of *Triceratops* were quite similar to those of today. The first flowering plants emerged halfway through the dinosaur age. Grass had not yet evolved. With its pointy snout, *Triceratops* was able to choose precisely what to eat. Leaves, seeds, fruit, young twigs: they were all on its menu. Normally, only individual leaves or seeds are discovered; no complete plants.

Give these fossils water and discover what the plants looked like!

Technical drawing

For technical drawing, see attachment on page 70.

Food theme: Shedding teeth



Description

Triceratops: A cast of a lower triceratops jaw can be touched. A big pile of teeth is shown in a jar. You can guess how many teeth Triceratops shed in his life.

Graphic content

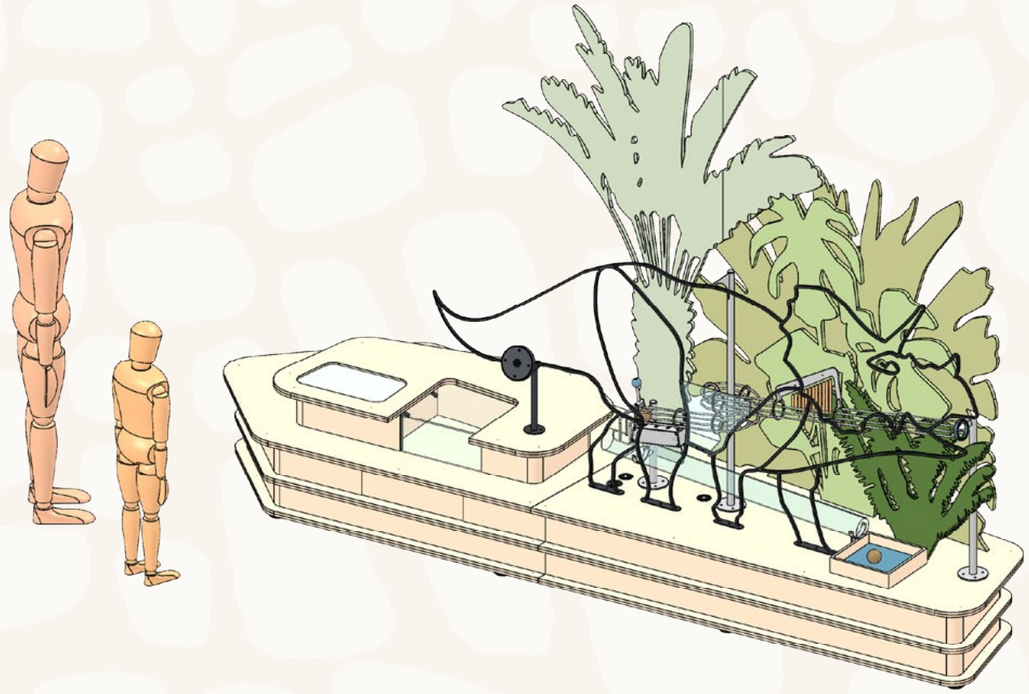
Shedding teeth
With its strong jaws, *Triceratops* was able to chop its food finely. Powerfully muscled jaws were attached to the large protrusion behind the row of teeth. And every three months, a new row of teeth was ready for use. That was useful, because the teeth were rapidly worn down by their hard diet.

Guess how many teeth *Triceratops* shed in its lifetime.
Look behind the blue flap to find the answer.

Technical drawing

For technical drawing, see attachment on page 71.

Food theme: Eating and farting



Description

You can feed Triceratops. When you open the handle on the other side, you hear the dino fart.

Graphic content

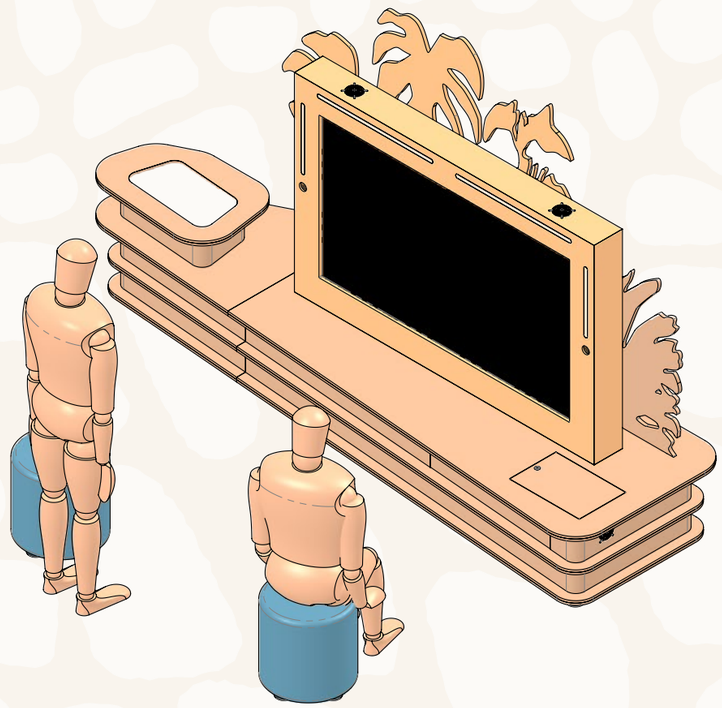
Eating and farting
Triceratops was able to eat around 200 kg of food, every day. With its slicing teeth it tore its food into fine shreds. These plant shreds were digested by bacteria. A process that delivered energy, nutrients and... enormous farts.

Put some food balls in the mouth of triceratops.
Pull the lever near its backside and see what happens!

Technical drawing

For technical drawing, see attachment on page 72.

Seduction theme: Wildly attractive



Description

The frill of triceratops was not used for protection but for seduction. Try to seduce your fellow player with your colorful frill. A QR code at the end allows you to download your photo.

Graphic content

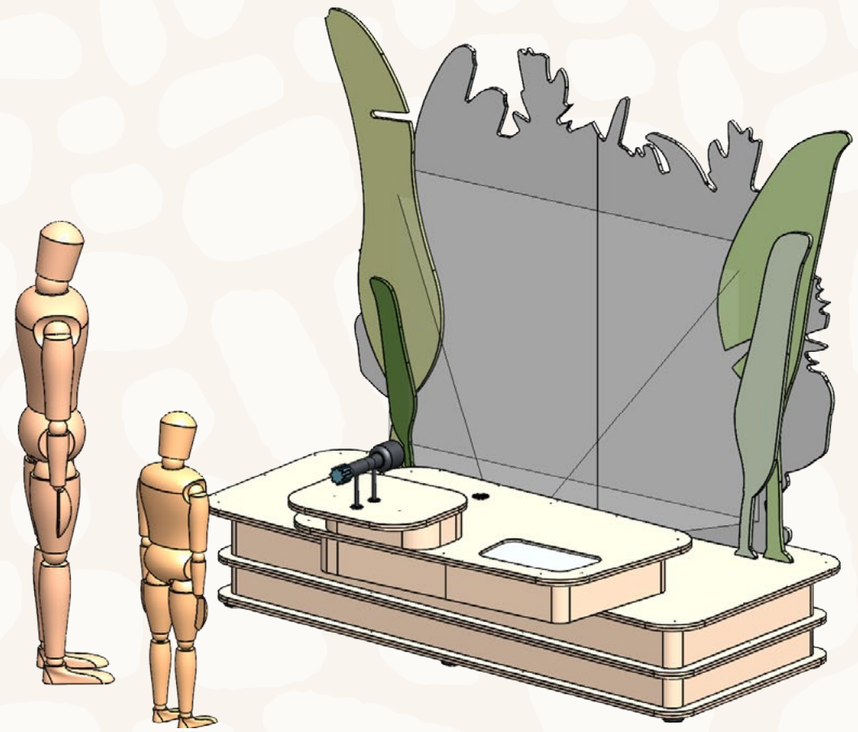
Wildly attractive
That huge frill was not only there for defence, but also to attract attention. It may have featured bright colours. Many birds - which are descendants of the dinosaur - even perform eye-catching dances to seduce a partner. Do you think *Triceratops* did the same?

- Put on a triceratops frill
  Seduce your fellow player

Technical drawing

For technical drawing, see attachment on page 73.

Seduction theme: Growth



Description

A flashlight shines on a young triceratops skull. When you turn the knob, you can see how the magic shadow evolves into an adult triceratops.

Graphic content

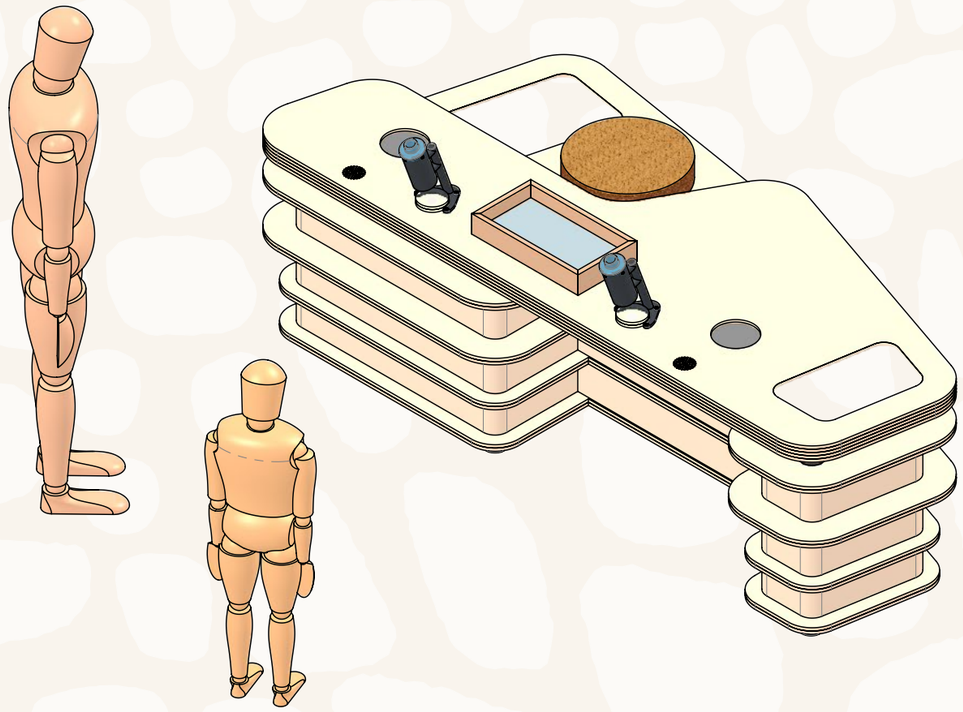
Growth
As you grow, not only do you increase in size but you undergo change. In *Triceratops*, the horns first curved upwards; as they grew older, they started to curve back down. The pointy protrusions on the edge of the frill became increasingly smooth with age.

Turn the knob on the flashlight and make triceratops younger or older!

Technical drawing

For technical drawing, see attachment on page 74.

Seduction theme: Age



Description

Dino-bones contain growth rings that allow you to count how old they can get. Place a sample under the microscope and count the number of growth rings.

Graphic content

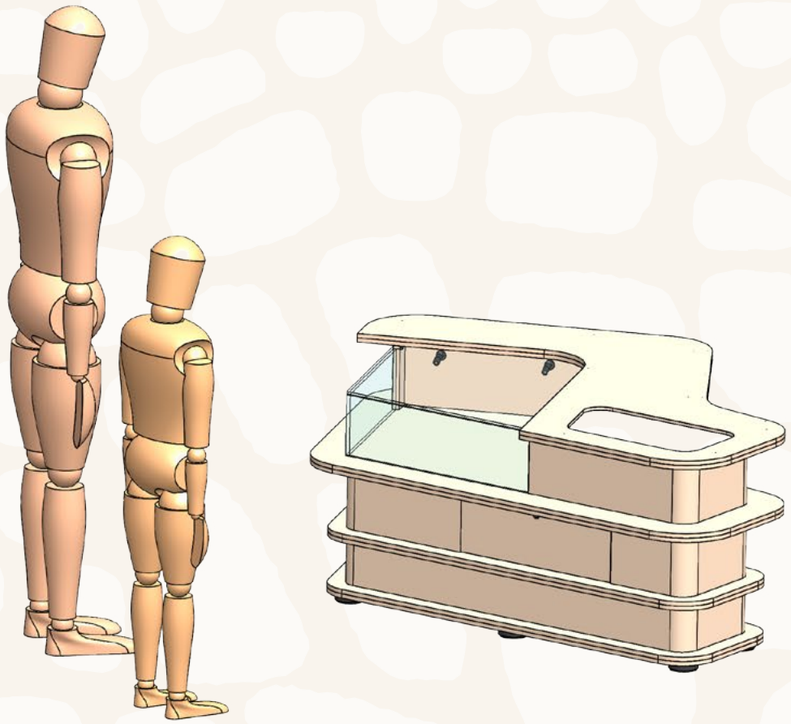
Age
How old were the five triceratops? Just like in trees, some bones contain growth rings. Researchers cut very small sections of bone into thin discs, to look for growth rings under the microscope.

- Place a thin section of triceratops bone under the microscope. Count the growth rings. How many are there?

Technical drawing

For technical drawing, see attachment on page 75.

Seduction theme: Nest

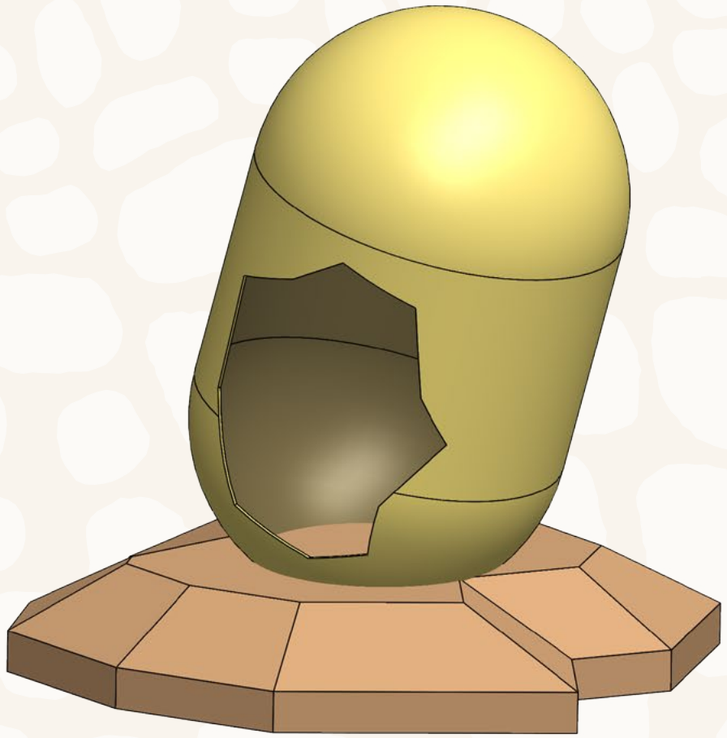


Description

A photo opportunity.

Graphic content

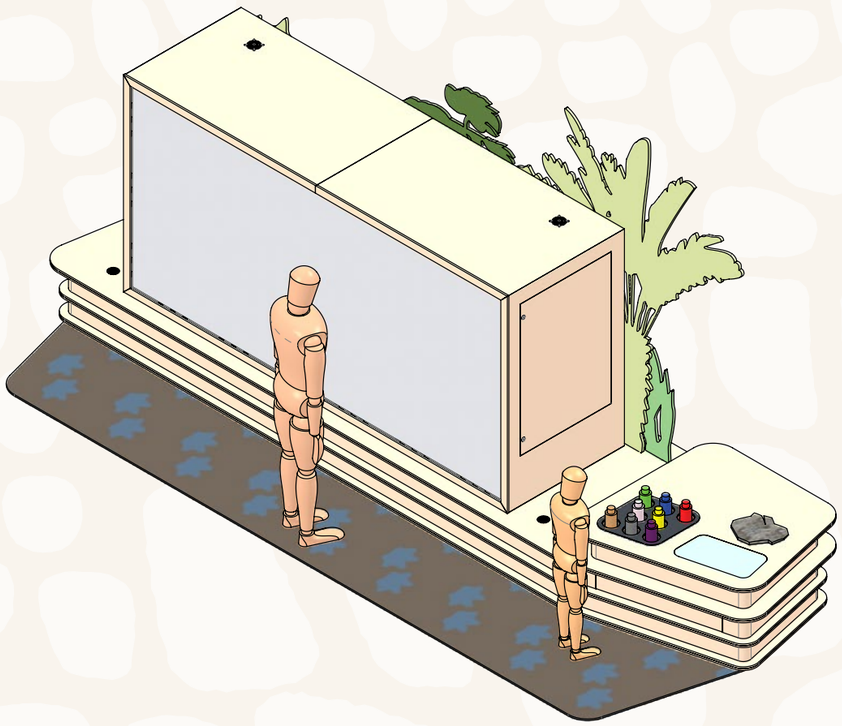
Nest
We do know that other dinosaurs laid eggs. But no *Triceratops* eggs have yet been discovered. This is what a triceratops nest probably looked like: the eggs close together and covered with leaves.



Technical drawing

For technical drawing, see attachment on page 76.

Seduction theme: Green, yellow, purple or red?



Description

Scientists do not have a clue what color Triceratops might have had. Go ahead and paint Triceratops as you consider best.

Graphic content

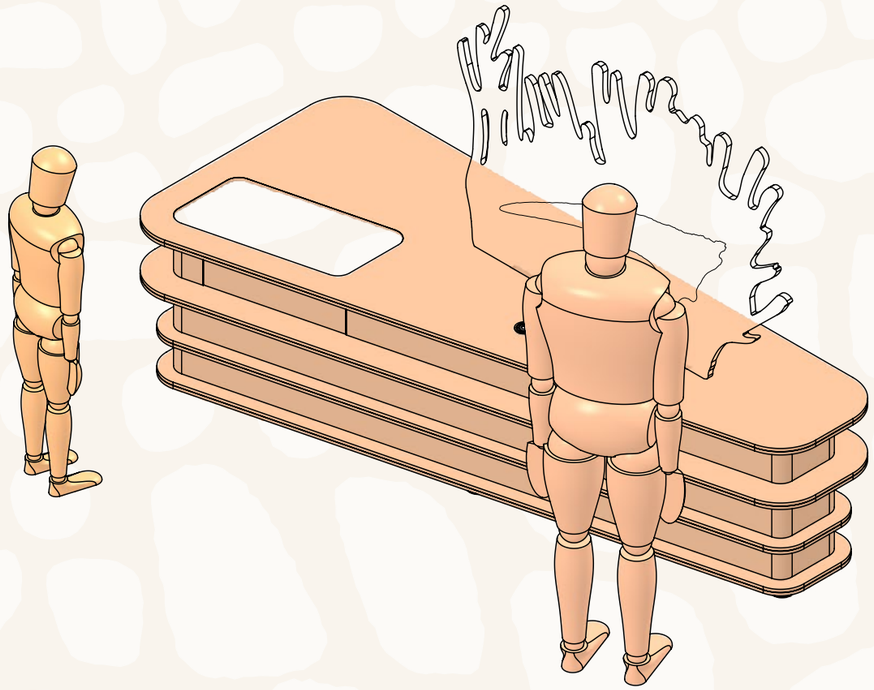
Green, yellow, purple or red?
We do not know what colour *Triceratops* must have been. For a plant eater, a camouflage colour is obviously useful. But is it still necessary when you are really big? In that case an eye-catching colour scheme may be more important! What do you think?

Pick up a spray can and colour the triceratops!

Technical drawing

For technical drawing, see attachment on page 77.

Safety theme: Horn



Description

Touch this horn of Triceratops.

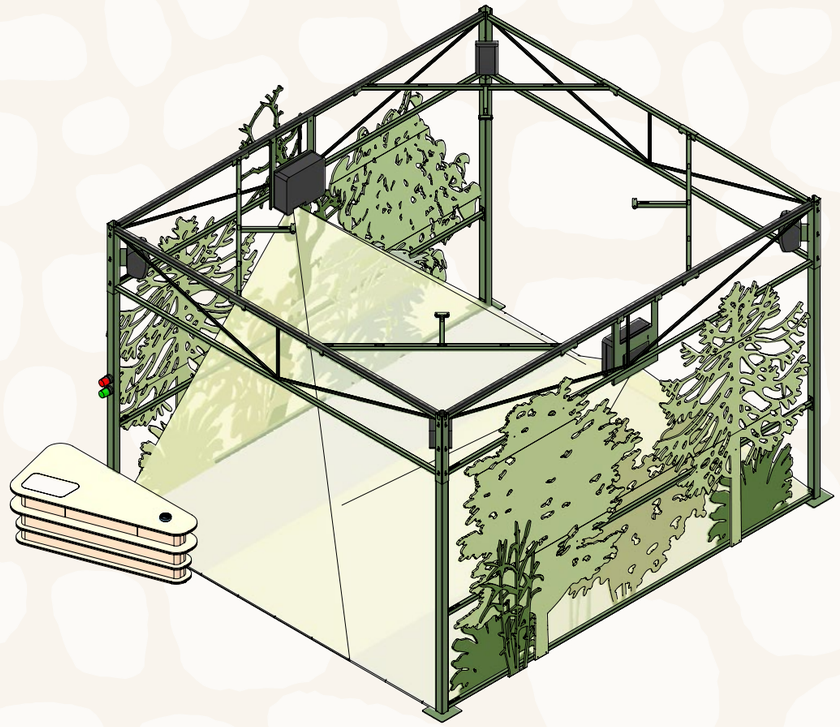
Graphic content

Horn
The two horns above the eyes say: beware! The fossils of the horns in fact consist only of the inner bone. On the living Triceratops, they were covered with another layer of horn. Made of keratin, the material that makes up your fingernails. Their actual horns would have been even longer!

Technical drawing

For technical drawing, see attachment on page 78.

Safety theme: Strength through unity



Description

An interactive game is projected on the floor. Try to reach the other side without being eaten by T. rex. Together, we stand strong!

Graphic content

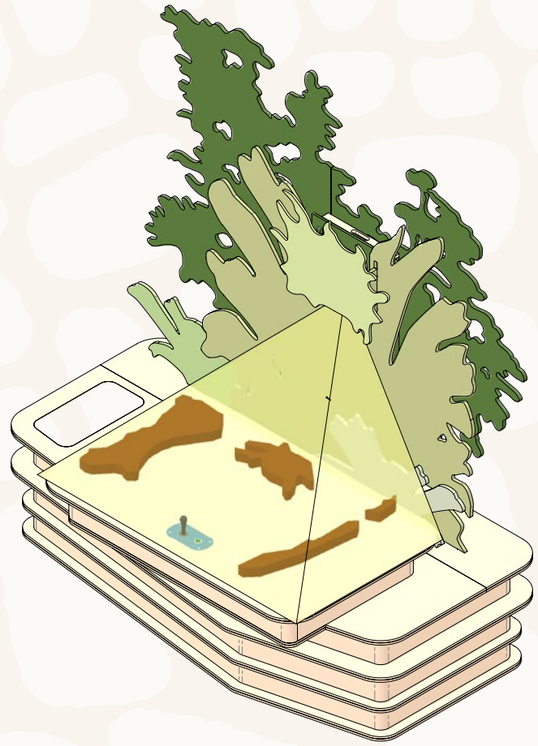
Strength through unity
With its horns, Triceratops could keep attackers at a distance. And even better: by working together with other Triceratops. In the same way that giraffes can scare lions away, by working together.

- Immerse yourself into the world of the triceratops
  Stay together... and watch out for T. rex!

Technical drawing

For technical drawing, see attachment on page 79.

Safety theme: Ouch!



Description

Move the spotlight with the joystick and locate the injuries on these triceratops bones.

Graphic content

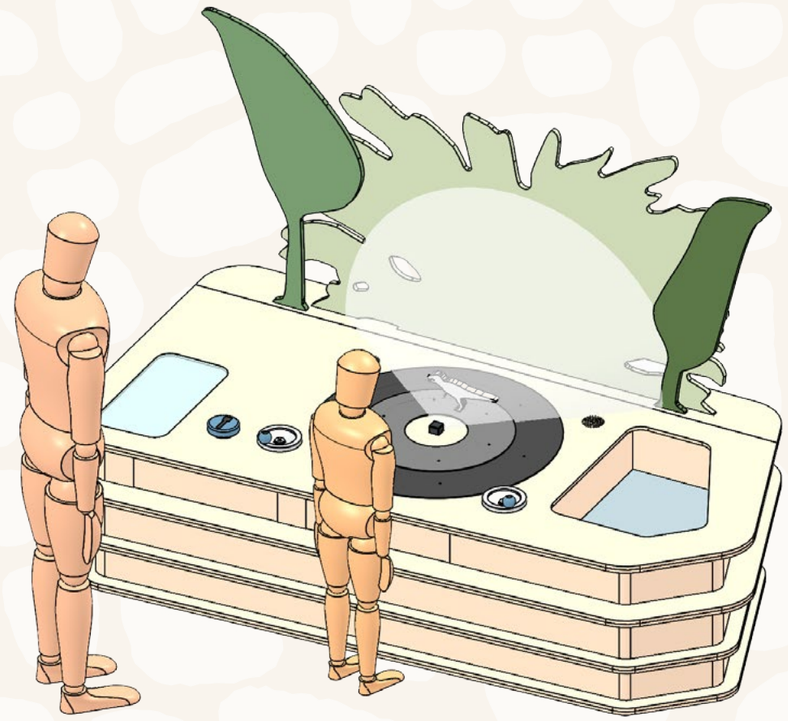
Ouch!
A fight with another triceratops? A T. rex attack? Or perhaps it simply tripped and fell? Triceratops sometimes suffered broken bones. Pretend to be a researcher and examine the triceratops bones.

Use the joystick and look for injuries

Technical drawing

For technical drawing, see attachment on page 80.

Safety theme: World of Triceratops



Description

Place a dinosaur on the turntable, switch on the light, and spin the wheel. You can see the world of triceratops come to life.

Graphic content

World of Triceratops
This is the world Triceratops lived in. For a plant eater like Triceratops there was plenty to eat. But there were also other dinosaurs on the prowl – not only plant eaters but meat eaters too!

Can you bring Triceratops' world back to life?
What dinosaurs can Triceratops expect to meet today?

- Place a dinosaur on the turntable, switch on the light and spin the wheel.

Technical drawing

For technical drawing, see attachment on page 81.

8 Sets of vegetation setwork

Description

These setworks are part of a vegetation backdrop behind the herd.

Graphic content

None.

Technical drawing

For technical drawings, see attachment on page 82, 83, 84, 85, 86, 87 & 89.

Graphic content

Description

Each graphic is backlit with a lightsheet. This way your texts are well readable in all circumstances. Lay-out allows either two or three languages.

Object name (A)
Object name (B)
Scientific name
RGM.445731

Title language A

Discription of the exhibit. Max 30 words. Lorem ipsum. Elente vid es sust, omnist, te militate solupti con cor moluptasped quist, optation ne volenit et expliquaspe et quas non consedi tissequiatur susaect otaectem ideles quatetur, et oditistio.

Instruction text

Title language B

Discription of the exhibit. Max 30 words. Lorem ipsum. Elente vid es sust, omnist, te militate solupti con cor moluptasped quist, optation ne volenit et expliquaspe et quas non consedi tissequiatur susaect otaectem ideles quatetur, et oditistio.

Instruction text

Object name (A)
Object name (B)
Object name (C)
Scientific name
RGM.445731

Title language A

Discription of the exhibit. Max 30 words. Lorem ipsum. Elente vid es sust, omnist, te militate solupti con cor moluptasped quist, optation ne volenit et expliquaspe et quas non consedi tissequiatur susaect otaectem ideles quatetur, et oditistio.

Instruction text

Title language B

Discription of the exhibit. Max 30 words. Lorem ipsum. Elente vid es sust, omnist, te militate solupti con cor moluptasped quist, optation ne volenit et expliquaspe et quas non consedi tissequiatur susaect otaectem ideles quatetur, et oditistio.

Instruction text

Title language C

Discription of the exhibit. Max 30 words. Lorem ipsum. Elente vid es sust, omnist, te militate solupti con cor moluptasped quist, optation ne volenit et expliquaspe et quas non consedi tissequiatur susaect otaectem ideles quatetur, et oditistio.

Instruction text

3. Venue requirements

Facility requirements

Dimensions of the museum hall

Square meters
Minimal required floor space in square meters amounts from 650 m^2 to 1200 m^2:
Roughly divided as follows:

- Introduction zone with life-size model and animatronic: minimum 100m^2
- collection zone with Triceratops podium, including interactives Bone Puzzle and Tricerascope: minimum 25x12 meters = 300m^2
- Interactive zone with 12 interactives: minimum 250 m^2

Height
Minimal height of gallery: 6 meters high
Minimal width of all doors/entrances leading to the exhibition area: 200 cm

Daylight

Avoid direct daylight at interactives. Daylight influences the functionality of some interactives and seriously diminishes the quality of the projected video.

Power requirements

Power requirements (for exhibition units only, excluding your lights and any other power needs)

- Total Wattage: 36kW

Data requirements

- To allow online assistance in case of any software updates/ issues, Naturalis must have internet access to all exhibits.

Collection safety requirements

To check a venue's suitability, Naturalis will supply a ‘venue a facilities report’ that must be filled out by the Client or the Client's venue.

Climate at venue

- Humidity range between 40% - 60%
- Temperature maintained between 18 and 22 degrees Centigrade
- Changes in humidity and temperature of more than 10% must be avoided
- On request, the Client must hand over a climate log report of the galley where the exhibition is placed

Building and supervision

The building in which the collection is displayed must meet several safety requirements:

- locked and guarded during closing hours, equipped with an adequately monitored alarm system.
- During opening hours, there is continuous supervision by museum staff, with a minimum of two people at any time.

Food and drink

No food or drinks are permitted in the area where the Triceratops exhibition is displayed. Exceptions can be made, i.e., for special (sponsor) events arranged in agreement with Naturalis.
Specific requirements for such an event are available at Naturalis upon request.

Light

Artificial light: Naturalis will supply floor lighting for the Triceratops herd as part of the exhibition. The Client is not permitted to change this lighting.

If the client adds general lighting to the exhibition, light sources with UV radiation must be avoided.

Cleaning

It is not allowed to clean the fossil triceratops skeletons without specific and written permission. Only specially trained Naturalis staff are permitted to do this.

Checks and reports

- To check the suitability of a venue, the client must produce a facilities report.
- Upon delivery of the Exhibition and at the end of the exhibition period, Naturalis will draw up a condition report. All costs for repairing damage caused at the venue during the exhibition period will be charged to the client.

In case of damage

The client will notify Naturalis of any damage, performance failure, or malfunction of the triceratops exhibition items as soon as possible and at least within 24 hours of their occurrence. The client will only do what is needed to avoid additional damage.
Naturalis will send a crew to repair the damage or malfunction.

4.
General planning exhibition

Site visit

At least **26 weeks** before the Opening Date: site visit of venue by Naturalis.

Promotional Materials

Naturalis will supply promotional material at least **26 weeks** before the Opening Date.

Graphics development

At least:

- **14 weeks** before the Opening Date: Naturalis supplies plain texts for graphics, software, and subtitles;
- **12 weeks** before Opening Date: venue supplies translation;
- **10 weeks** before Opening Date: Naturalis supplies proof readings of graphics and translated texts for all interactives/games;
- **9 weeks** before Opening Date: venue supplies feedback on proof readings.;
- **7 weeks** before Opening Date: Naturalis delivered updated layout;
- **6 weeks** before Opening Date: Venue delivers final OK;
- At the installation of the exhibition, Naturalis supplies and installs all graphics and translated software.

Floor plan development

At least:

- **16 weeks** before the Opening Date: the venue supplies the floor plan of the exhibition area to Naturalis (including electric and data infra facilities);
- **12 weeks** before Opening Date: Naturalis supplies floor plan advice;
- **10 weeks** before Opening Date: Naturalis receives feedback from the venue;
- **6 weeks** before the Opening Date: Naturalis supplies the final floor plan.

Transportation

To be determined later.

Installation

At least:

- **4 weeks** before the Opening Date, the Naturalis team starts the installation of the exhibition;
- Mounting and delivery of triceratops skeletons - approx. **11 days**
- Installation and delivery of all exhibits - approx. **8 days**

Delivery date

At least **1 week** before the Opening Date.

Dismantling

- In approx. **14 days**, the Naturalis team will de-install the exhibition, starting within a week after the last day of the exhibition;
- Dismantling the triceratops skeletons - approx. **10 days**
- De-installation and packing of all exhibits - approx. **4 days**

5.
Installation and dismantling process

Exhibitions installation

Naturalis supplies

- Three specialists will take care of mounting the Triceratops skeletons.
- Four technicians will install and deliver the exhibition, one of which supplies a brief maintenance training to the client's staff.

The client supplies

The client/venue must supply (at their own expense):

1. Staff

- Three (English-speaking) technicians will be available during the installation to support the unloading, internal transport, and the Naturalis team and to connect the exhibition to the museum's infrastructure.
- One collection specialist will assist with mounting the skeleton.
- One project manager/floor manager will be present during the installation.

2. Services

- Unloading all exhibition materials from the trucks.
- Internal transport of all exhibition materials.
- The client's staff will place the unopened chests containing the Triceratops collection in the exhibition gallery according to the floor plan that Naturalis will supply.
- The Naturalis collection specialists need 200 m2 of free floor space in the exhibition gallery for unpacking and sorting.
- The Client will provide storage for all Exhibition Elements not on display, including crates, packing materials, spares, etc.

3. Materials

- Various specific materials such as scaffolding, ladders, and gantry lifts (TBD).

Exhibitions dismantling

Naturalis supplies

- Three technicians to dismantle the exhibition.
- Two specialists to dismantle fossil triceratops skeletons.

The Client supplies

The Client/venue must supply (at their own expense):

1. Staff

- Three (English-speaking) technicians will be available during the dismantling to provide support, and disconnect the exhibition from the museums' infrastructure, the Naturalis team, internal transport, and the loading of exhibition materials.
- One collection specialist who assists in the mounting of the triceratops skeletons.
- A project manager/floor manager during the entire installation of the exhbition.

2. Services

- Loading all exhibition materials in trucks.
- Internal transport of all exhibition materials.
- The client/venue places the Triceratops collection chests in the exhibition gallery according to the supplied floorplan.
- The collection specialists need 200 m2 of free floor space in the exhibition gallery for packing and sorting.

3. Materials

- Various specific scaffolding, ladders, and gantry lifts (TBD)

6. Technical information

Instructions for cleaning the exhibition

Triceratops fossils

Do not clean. Cleaning of the fossil is only done by Naturalis staff.

Triceratops platform

- Please train a dedicated cleaner in your team to clean the Triceratops platform.
- Remove dust from the platform daily with a soft brush.
- Any other stains are cleaned daily with a damp cleaning cloth. Do not use any cleaning solution.

The general cleaning staff may clean the first 100 cm from the edge. Only collection specialists can clean the rest of the platform.

Triceratops model and animatronic

Use a soft brush or feather duster only to remove dust.

Exhibits

- Hard surfaces like wood, steel, glass, monitors, fossil casts, and plastics should be cleaned daily with a damp cloth. Do not use any cleaning solution.
- Remove dust at the top of units with a soft brush.
- Flexible projection screens and textile surfaces: Gently clean with a damp cloth. Do not use any cleaning solution.
- AVHardware devices: clean with feather duster only.

Network requirements

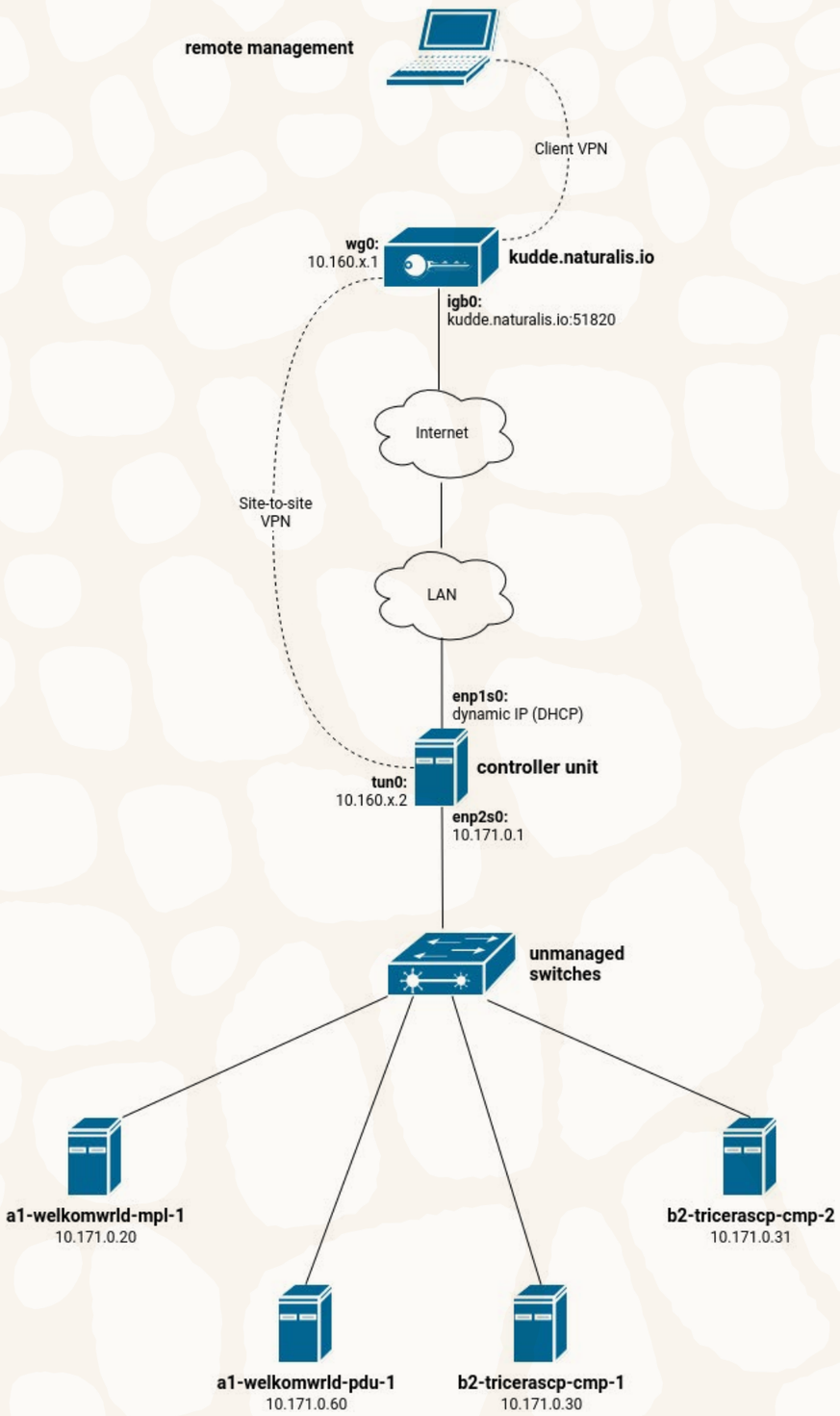
The Kudde exhibition consists of multiple exhibits with computers, projectors, mediaplayers + one controller unit. The controller unit is used to:

- To power on and off the exhibits either by using the touch screen interface or an API call.
- To offer a gateway to the network / internet for all exhibits.
- To allow remote management of the exhibits by Naturalis and it's suppliers.

As outlined in the network design (on the right) only the controller unit needs will be directly connected to the LAN.

The requirements for the network access are:

- A DHCP server that gives out an (reserved) IP address to the controller unit. The MAC address of the uplink interface on the controller interface is `2c:94:64:07:c9:4c`.
- Access from the controller unit to the internet:
  - As an absolute minimum access to the Naturalis VPN server kudde.naturalis.io port `51820/udp`.
  - Allow outbound traffic to `5938/tcp` and `5938/udp` (Teamviewer).
  - In order for the computers to run updates outgoing traffic over HTTP (port `80/tcp`) and HTTPS (port `443/tcp`) should be allowed.
- Access from the local network to the controller:
  - If you want to use the web interface from another computer in your local network you have to allow access to port `80/tcp` on the controller unit.
  - If you want to use the API for integration and automatically powering off and on the exhibition from another computer in your local network you have to allow access to port `5000/tcp` on the controller unit.



Power

As explained in detail below the controller unit can power on and off the exhibits. This is necessary for the exhibit computers, projectors and other devices to shutdown gracefully in order to prevent system errors.

In order to perform this task it is important that the controller unit is not powered off itself. If that can't be avoided, make sure it is powered on before powering on all exhibits.

Powering the exhibition on and off

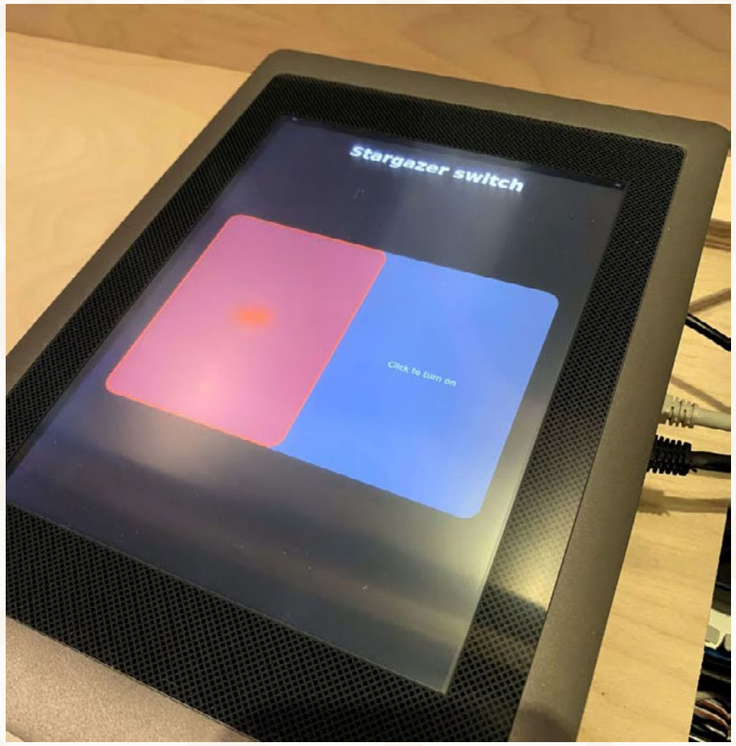
In this manual the alternative procedures for powering on and off the Kudde exhibition are explained. In order to prevent hardware failure, it is important to follow these instructions.
There are multiple methods to power on and off the (devices in) the exhibition, all of which are explained in detail below. All methods except one make use of the central on/off controller unit.

Touch screen interface

There's a touch screen interface provided behind the top panel at the back of the "C2.2 Wildly attractive" exhibit. You can open the panel with a hex key, size xx.

Powering on

1. Make sure the power is turned on. The controller unit is configured to automatically start after AC is restored. Approximately two minutes after power is restored the touch interface will appear.
2. Tap on the right side of the button to power on the exhibition:

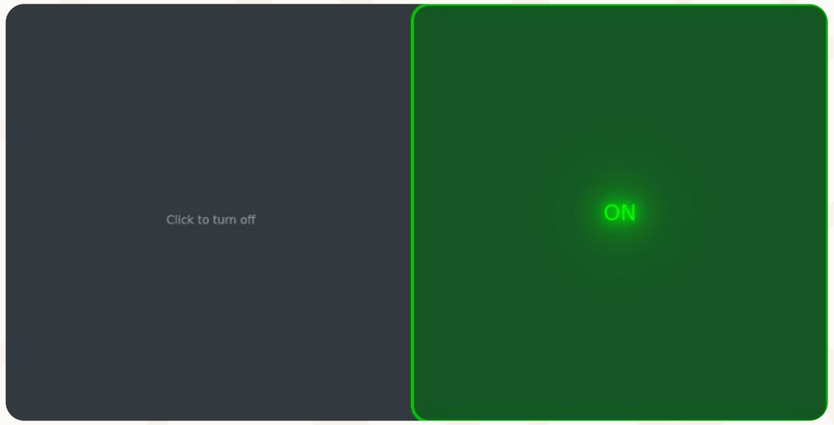


3. After you've tapped the interface will pulsate and won't respond to input. After finishing powering on the exhibition, the background will turn white.

N.B. The exhibit computers and projectors are configured to automatically start when the power is restored.

Powering off

1. Tap on the left side of the button to power off the exhibition:



2. After you've tapped the interface will pulsate and won't respond to input. After finishing powering on the exhibition, the background will turn white.

Remote web interface

The touch screen can be used from a remote computer on the LAN as well. This option depends on the local network configuration. Ask your IT department / technical support for the IP address of the control unit and the required network access.

1. Open a web browser.
2. Go to: `http://<ip.address.controller.unit>`.
3. Bookmark the page for convenience: `Ctrl` + `D`.
4. Follow the instructions as explained in the section about the touch screen interface.

Show controller

Apart from the user interface the exhibition can be powered on and off by another machine (i.e. a show controller) as well. The controller has a simple REST API.

Get the current status of the exhibition

1. Send a HTTP GET request to the control unit, for example with `curl`:

```
 curl
http://<ip.address.controller.unit>:5000/
api/collections/kudde/status
```

2. You'll receive a reply in JSON format:

```
{
  "detail": {
    "collection": "kudde",
    "collectionstatus": "POWEREDON"
  },
  "status": 200,
  "title": "Collection status."
}
```

Get the current status of the exhibition

1. Send a HTTP GET request to the control unit, for example with `curl`:

```
 curl
http://<ip.address.controller.unit>:5000/
api/devices/b2-tricerascp-cmp-1/status
```

2. Again, you'll receive a reply in JSON format:

```
{
  "detail": {
    "collection": "kudde",
    "collectionstatus": "POWEREDON"
  },
  "status": 200,
  "title": "Collection status."
}
```

Powering on

1. Make sure the power in the exhibition space is turned on. The panel PC is configured to automatically start after AC is restored. Approximately two minutes after AC is restored the touch interface will appear.
2. Send a HTTP POST request to the control unit, for example with `curl`, to power on the exhibition:

```
curl -H "Content-Type: application/json" -d
'{"powerOn":{}}' \

http://<ip.address.controller.unit>:5000/api/
collections/kudde/action
```

3. After about two minutes the exhibition is powered on.

Powering off

1. Send a HTTP POST request to the control unit, for example with `curl`, to power off the exhibition:

```
curl -H "Content-Type: application/json" -d
'{"powerOff":{}}' \

http://<ip.address.controller.unit>:5000/api/
collections/kudde/action
```

2. After about five minutes the exhibition is powered off. After confirming this with a status call it is safe to power off the entire exhibition space.

Manually

In case there is an issue with the controller unit it is possible to power on and off all exhibits manually by just pushing the power button of each computer and projector.

N.B. The status of the exhibition that is reported by the controller unit might be incorrect after manually powering on and off individual exhibits. In case the controller unit reports that the exhibition is powered off, while the / some exhibits are powered on, you get the controller back in sync by sending a power on command and after that a power off command and vice versa.

In case of damage, defect, or malfunction

Fossils

For any issues with the fossil skeletons of Triceratops, see ‘Collection safety requirements’.

Hardware

- First, restart your hardware.
- If the problem still occurs, replace any malfunctioning components or cables. Use the spares in the maintenance and spare kit.
- If the problem still occurs, contact the Naturalis helpdesk.

Software

- First, restart your hardware.
- If the problem still occurs, contact the Naturalis helpdesk.

Helpdesk procedure

Hours of operation of the helpdesk:
every day (except on December 25th and April 27th),
including Saturday and Sunday from 08:00 until 17.00 CEST.

The helpdesk can be reached by phone through the number **+31 71 751 9333** or via email address **support@naturalis.nl**.
In urgent matters, it is advised to contact the Support desk immediately via phone.

A confirmation email containing the unique ticket number will be sent to the registered email account of the person reporting the incident; this person is considered the ticket's owner. The ticket will contain information about the estimated time to process the incident. Please use this ticket number in any correspondence about the reported incident.

Naturalis helpdesk

Phone	**+31 71 751 9333**
Email	**support@naturalis.nl**

Content list maintenance and spare kit

To be determined

Annexes

A. Ladders, lifts and other

2x Scaffolding of 3 x 1,40 x 4 meter

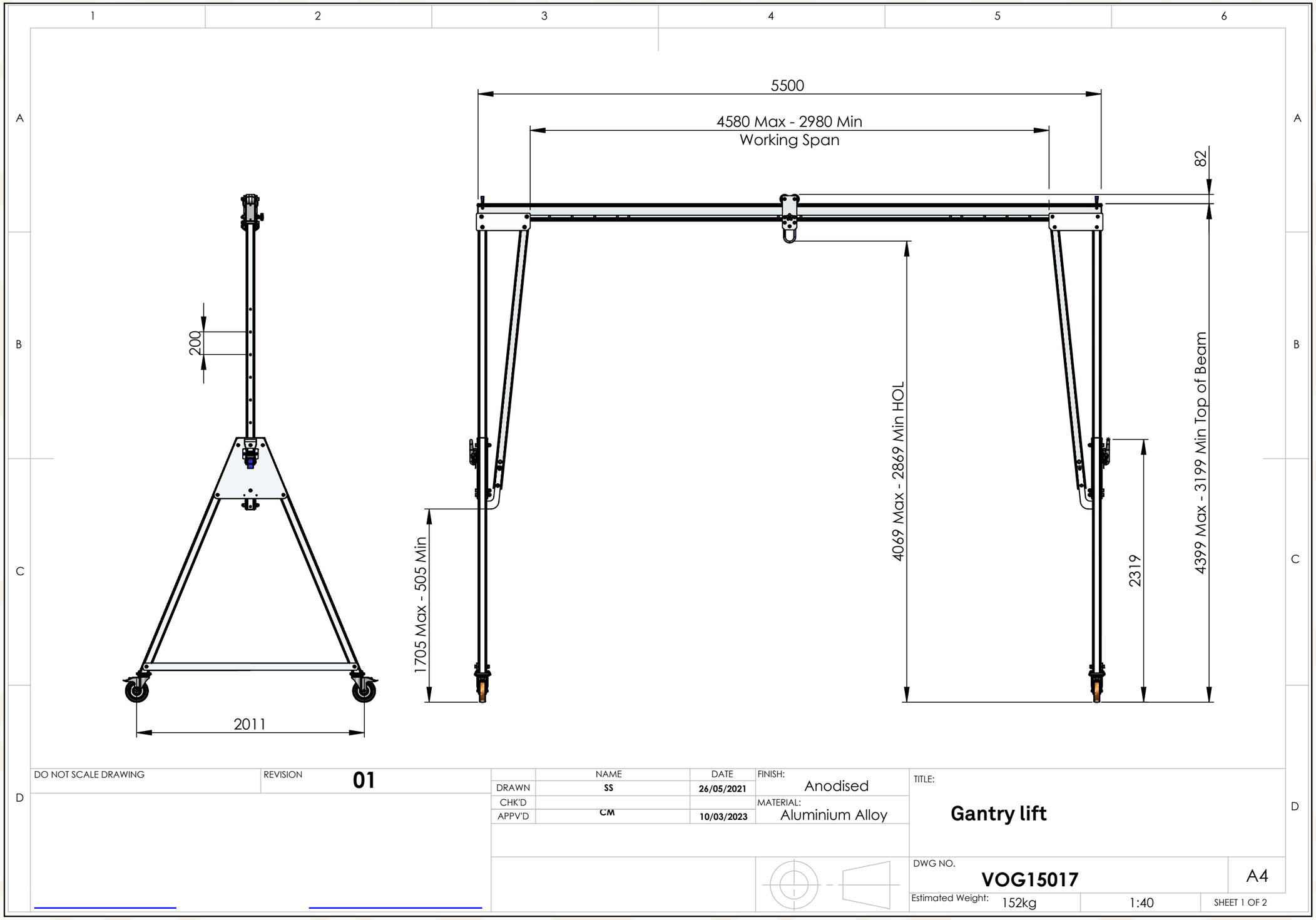
2x Double sided aluminum ladder,
3 meters high

1x Double sided aluminum ladder,
3 steps

1x Gantry lift
See specs on next page

1x Chain hoist ≧ 1000 kg

1x Hand pallet truck ≧ 2,40 meter long



DO NOT SCALE DRAWING	REVISION 01		
	NAME	DATE	FINISH: Anodised
DRAWN	SS	26/05/2021	
CHK'D			MATERIAL: Aluminium Alloy
APPV'D	CM	10/03/2023	

TITLE: **Gantry lift**

DWG NO. **VOG15017** | A4

Estimated Weight: 152kg | 1:40 | SHEET 1 OF 2

General Specification

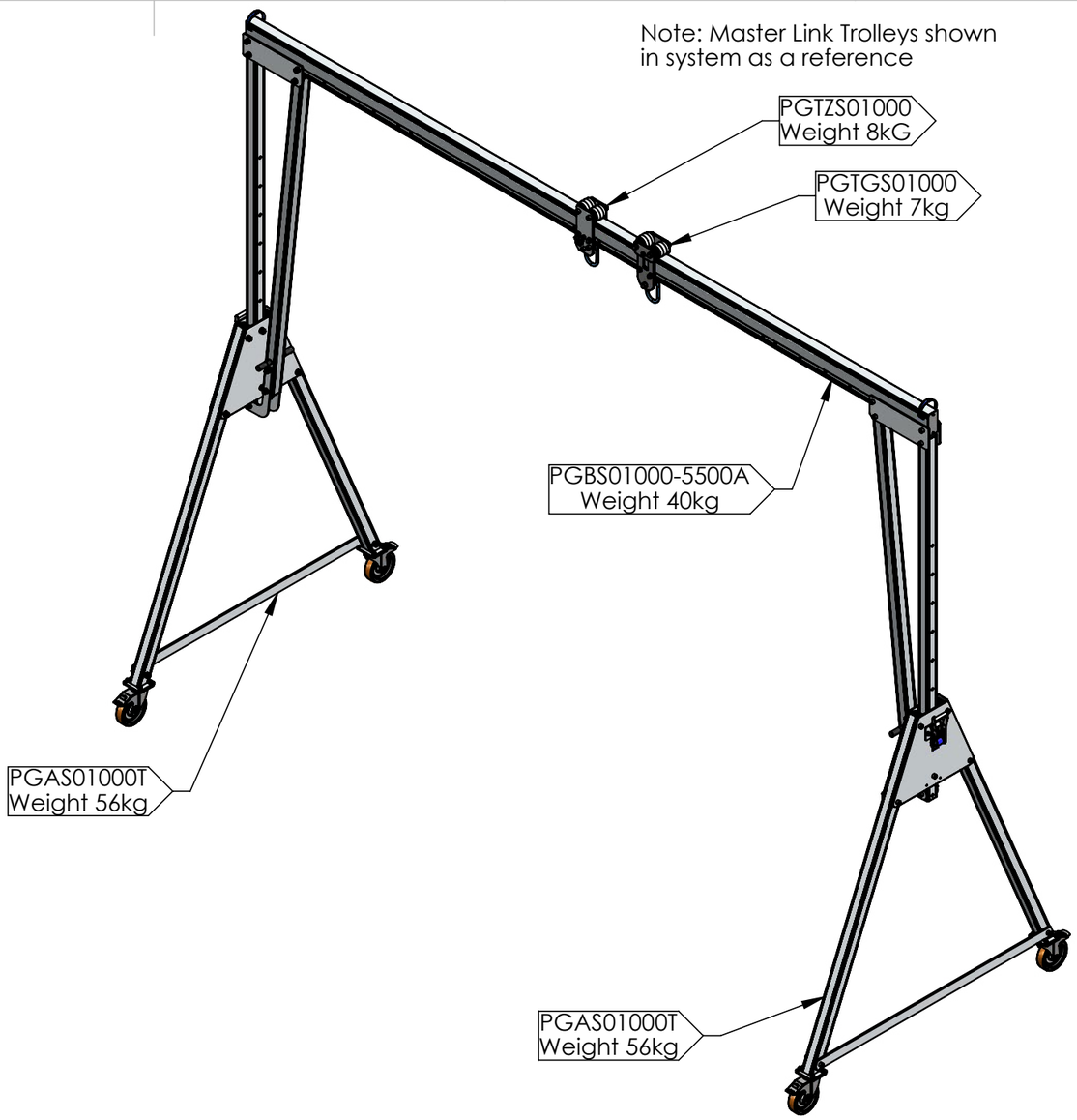
- Maximum rated capacity for goods lifting - 1000kg
- Maximum rated capacity for personnel lifting - 500kg
- Beam deflection at maximum rated capacity of 1000kg - between 42 - 52mm at centre of span
- Maximum castor surface pressure at full load - 23.8 Mpa
- Assembled gantry weight (excluding trollies) - 152kg
- All welding to BS EN ISO 15614-2: 2005 by certified welders.
- For further details and assembly information refer to Operations and Maintenance Manual for Porta Gantry Product

Fall Protection Standards

- Certified to EN795:2012 Type B & supplied under PPE Regulation 2016/425
- Notified Body Witness tested to the requirements of PD CEN/ TS16415:2013 for 3 persons
- Exceeds the requirements of IRATA ICOP & BS7985 (15kN MBL)

Materials & Finishes

- Frame and beam - 6082 T6 Aluminium alloy. Anodized.
- Castors - Steel. Bright Zinc Plated.
- Castor Wheels & Rollers - Nylon & Polyurethane
- Fixings - Steel. Grade 12:9. Bright Zinc Plated.



DO NOT SCALE DRAWING	REVISION 01		
		NAME	DATE
	DRAWN	SS	26/05/2021
	CHK'D		
	APPV'D	CM	10/03/2023

TITLE: **Gantry lift**

DWG NO. **VOG15017** A4

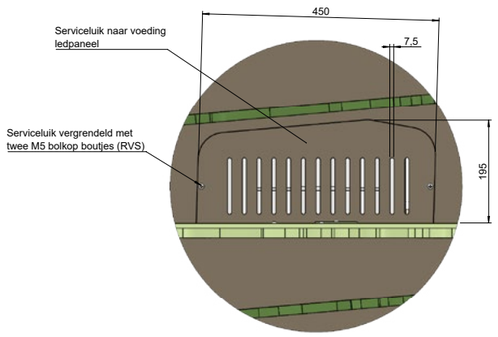
Estimated Weight: 152kg | 1:45 | SHEET 2 OF 2

B. Floorplan variations

Pieter

C. Technical drawings

24151.A.3.01A-02 Intro



DETAIL C
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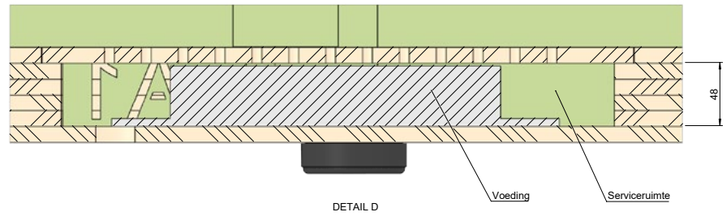

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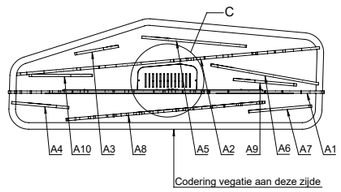

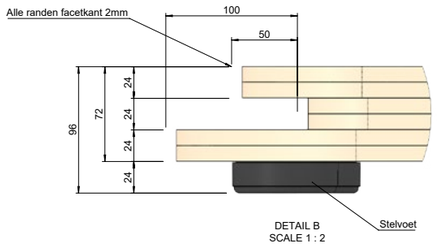

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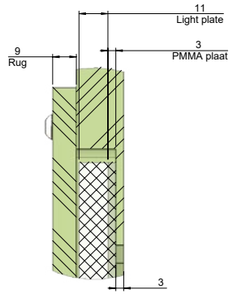

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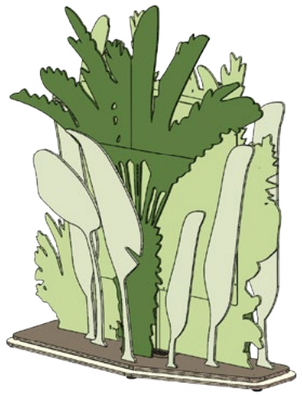
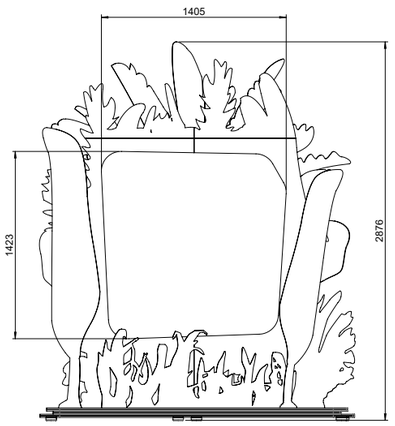
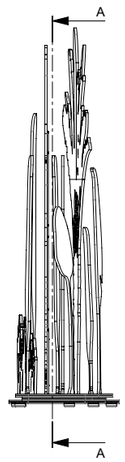
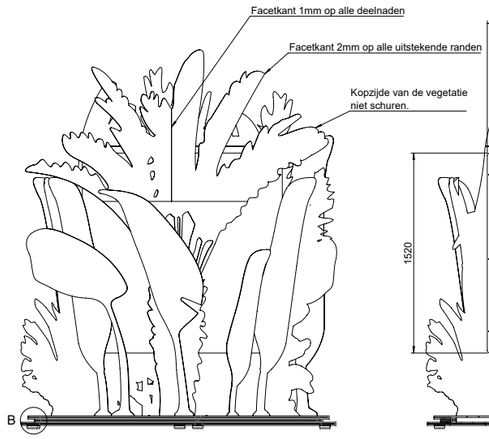
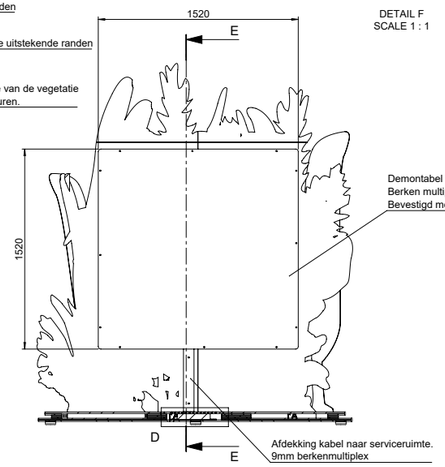


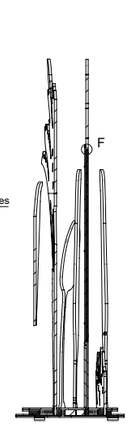








SECTION A-A



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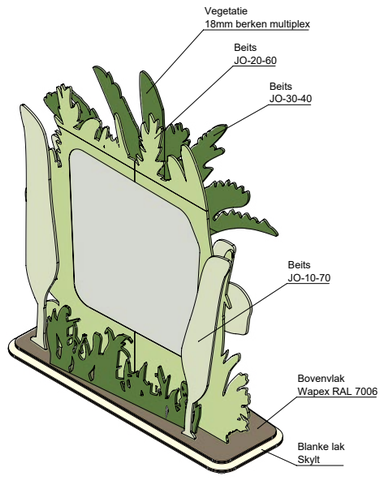

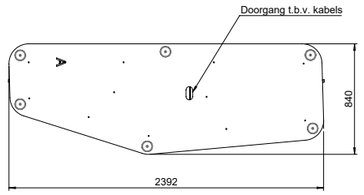

Rev.	Eng.	Date	Description
01		29-08-2024	
02	DLUI	03-09-2024	

Description	Eiland A			Drawing no.	24151.A.3.01A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:20 Amount	Color	
NEN-ISO 2768-1	m	Format	A1	Weight	344.6 kg
NEN-ISO 2768-2	K	Units: mm	3e angle	Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. Ringeling Date 08-08-2024

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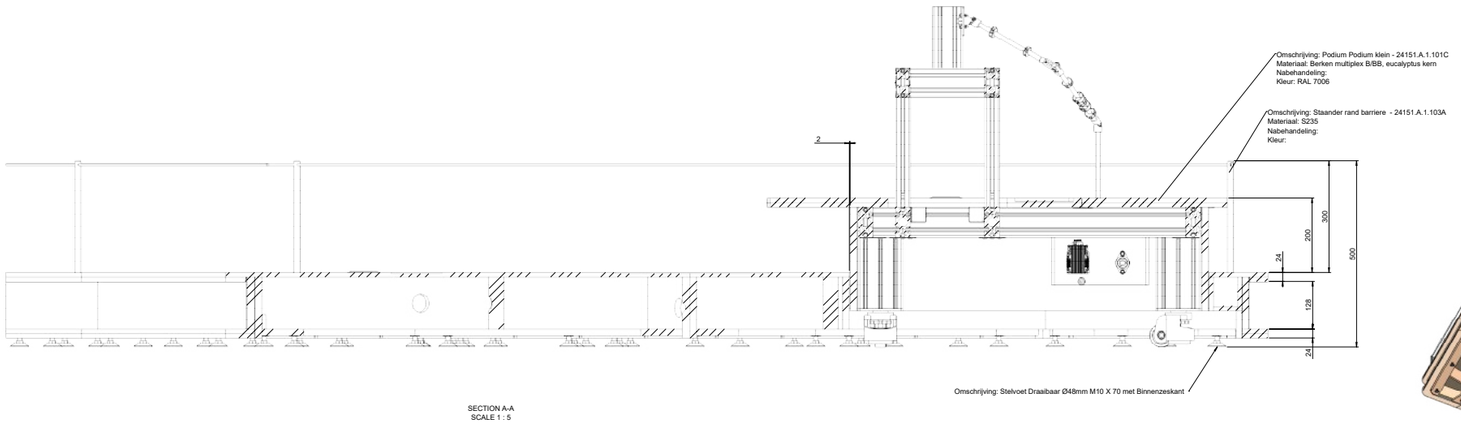
E info@bruns.nl
I www.bruns.nl

24151.A.1.01A-01 Introduction podium



SECTION A-A
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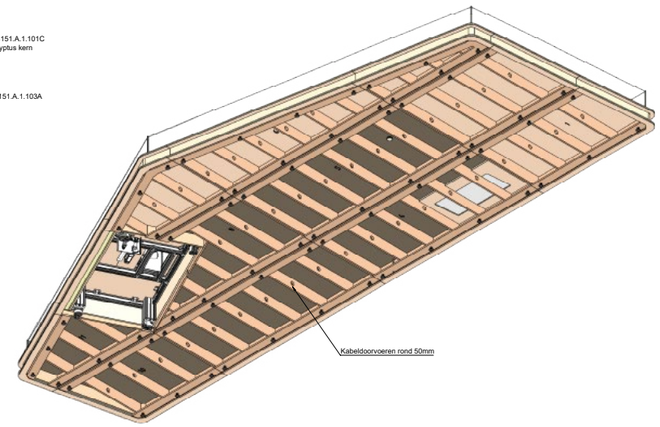

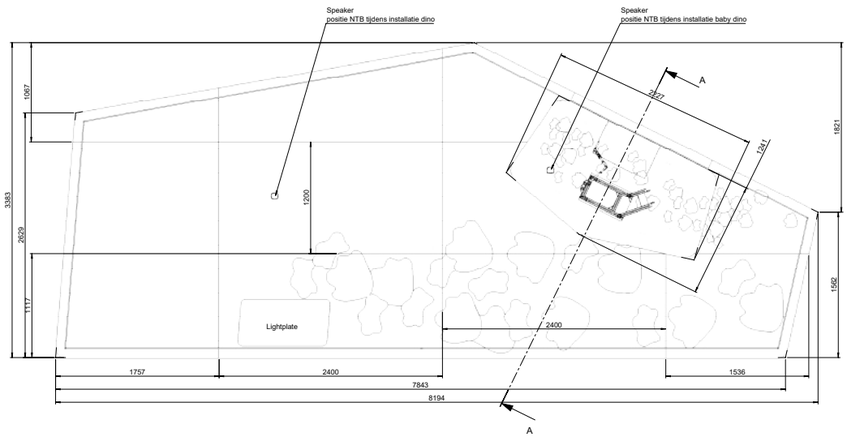

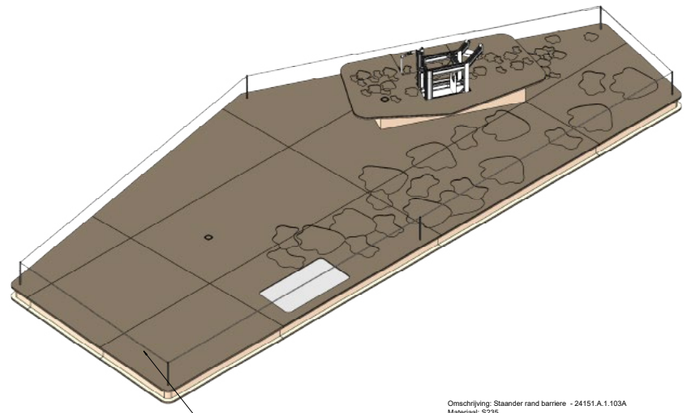

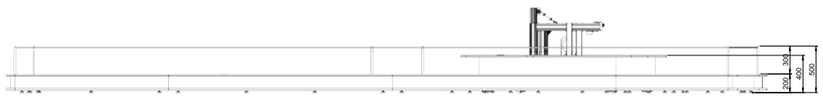

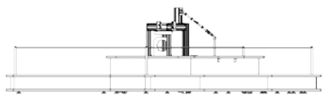

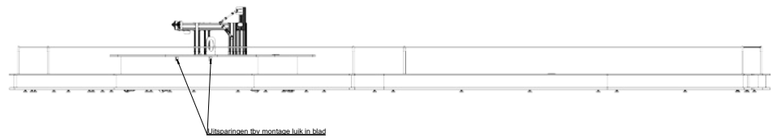

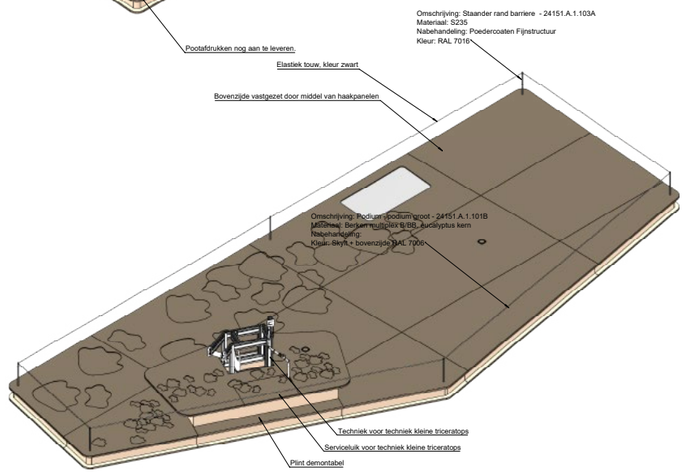

Klein podium besproken met Berkelaar/MRT

Rev.	Eng.	Date	Description
01	JPOE	11-07-2024	

Description	Introductie podium	Drawing no.	24151.A.1.01A
Exhibit name	Introductie	Material	See drawing
Exhibit number	24151.A.1	Finish 1	
Client project	Naturalis - Triceratops tentoonstelling	Finish 2	
Tolerance class	Scale 1:20 Amount	Color	
NEN-ISO 2768-1	m Format A0	Weight	562.1 kg
NEN-ISO 2768-2	K Units mm 3_angle	Remarks	
ISO 9001 - VCA certified	Copyright 2024	Drawn by	J. van der Poel Date 01-07-2024

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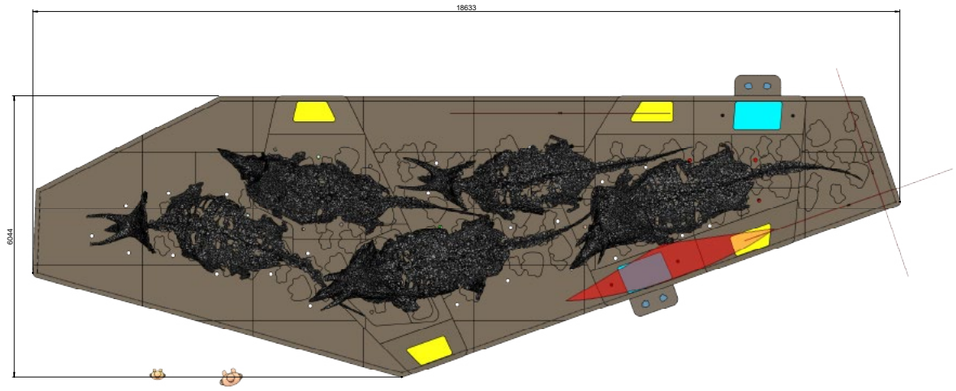
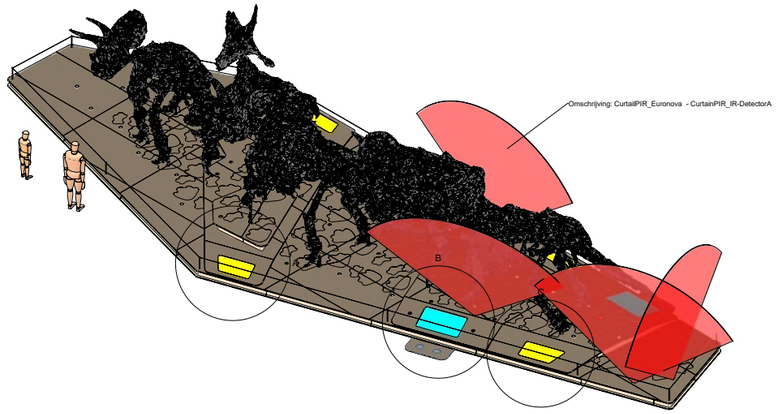
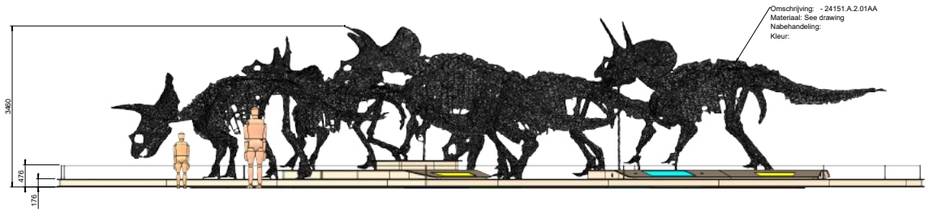
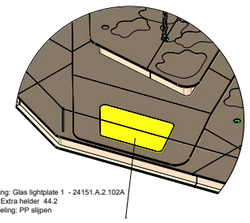
24151.A.2.01A-01 Bone puzzle

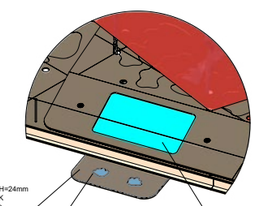




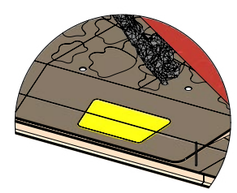




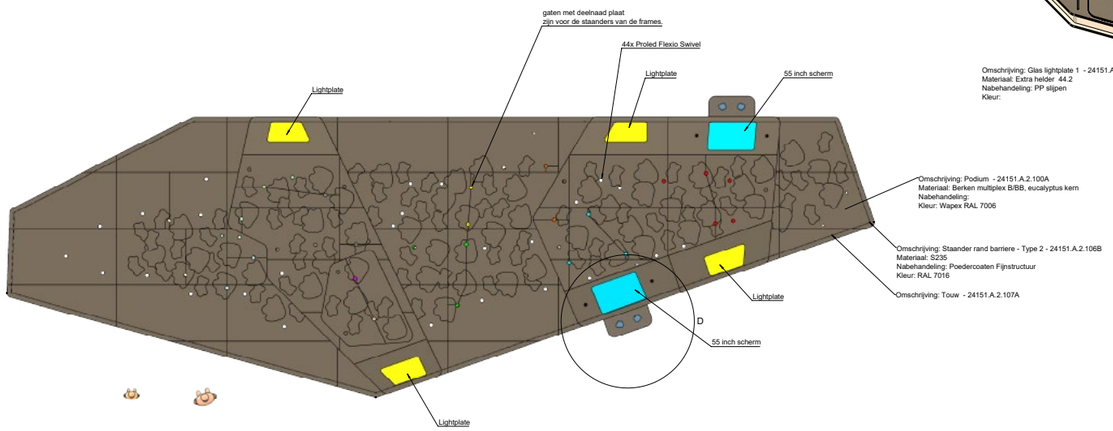
DETAIL A
SCALE 1 : 20

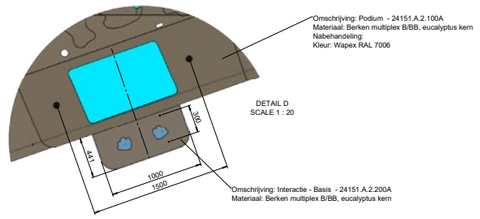


DETAIL B
SCALE 1 : 20



DETAIL C
SCALE 1 : 20





DETAIL D
SCALE 1 : 20

Rev.	Eng.	Date	Description
01	JPOE	30-08-2024	

Description				Drawing no	24151.A.2.01A
Exhibit name	Podium			Material	See drawing
Exhibit number	24151.A.2			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:40	Amount	Color
NEN-ISO 2768-1	m	Format	A0		Weight 4539.0 kg
NEN-ISO 2768-2	K	Units: mm	3_angle		Remarks
ISO 9001 - VCA certified		Copyright 2024			Drawn by D. Luijten Date 16-08-2024

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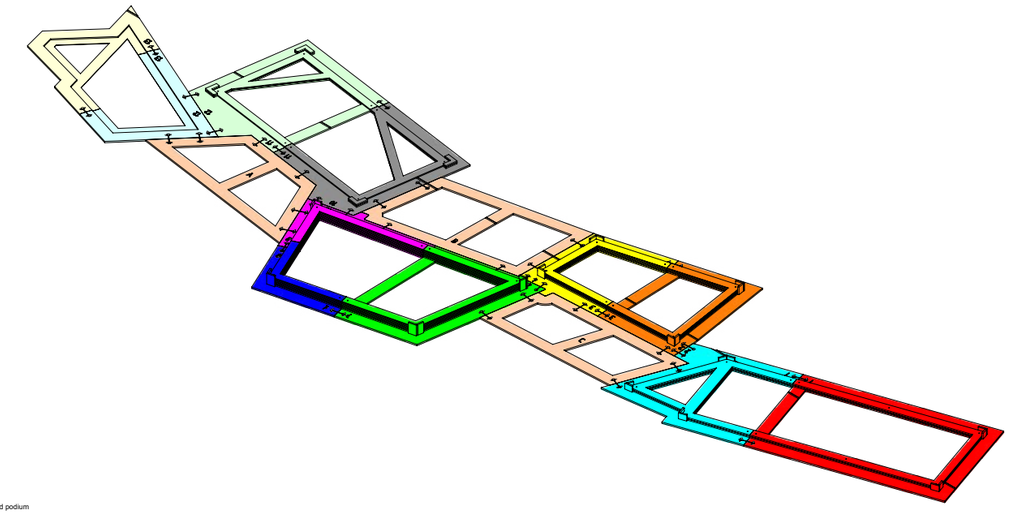
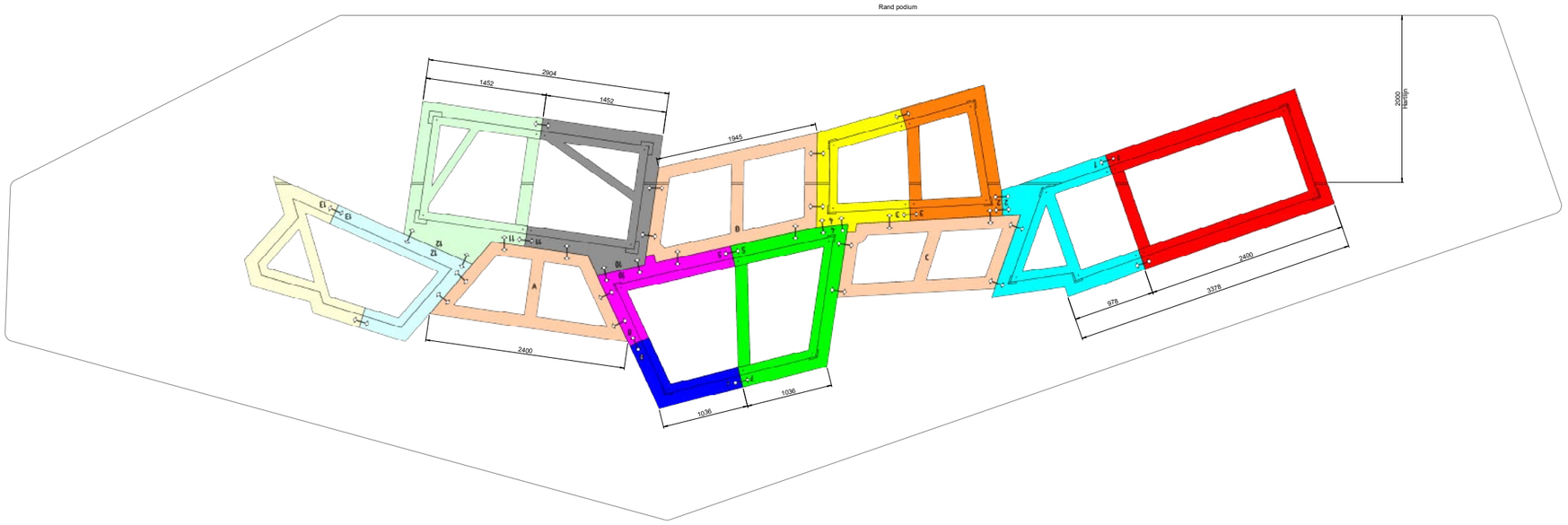
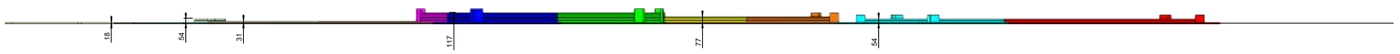
24151.A.2.108A-00 Bonepuzzle







Rev.	Eng.	Date	Description

Description	Vloermal			Drawing no.	24151.A.2.108A
Exhibit name	Podium			Material	Fins vuren multiplex
Exhibit number	24151.A.2			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:20 Amount	Color	
NEN-ISO 2768-1	m	Format	A0	Weight	212.7 kg
NEN-ISO 2768-2	K	Units mm	∠ angle	Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	J. van der Poel Date 22-08-2024

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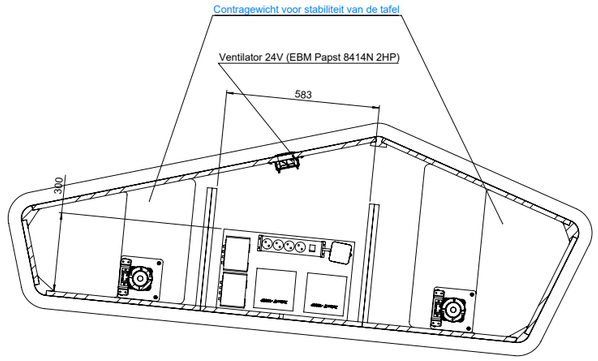
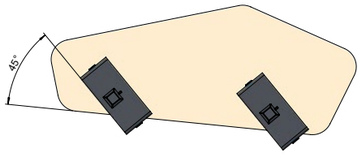
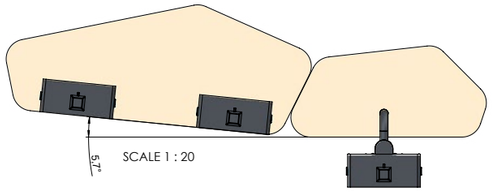
24151.B.2.01A-00 Tricerascope



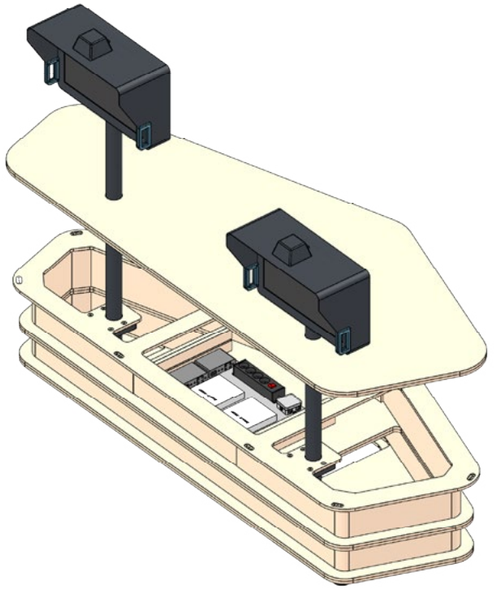
SECTION A-A

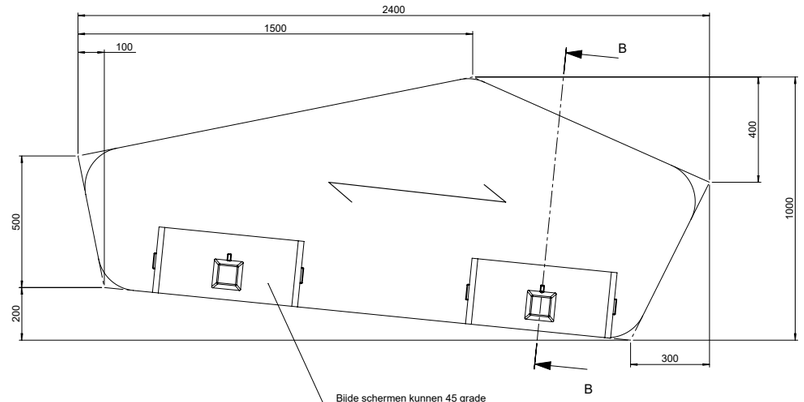


SCALE 1 : 20

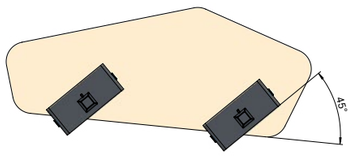


SCALE 1 : 20





Bijde schermen kunnen 45 grade
naar links en naar rechts draaien.
Totaal 90 graden.

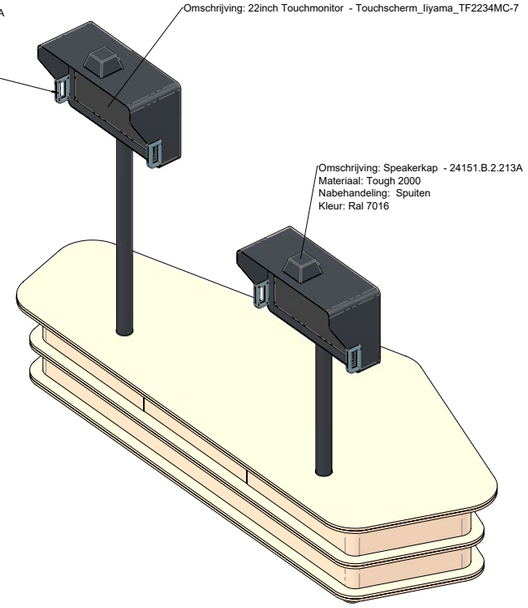


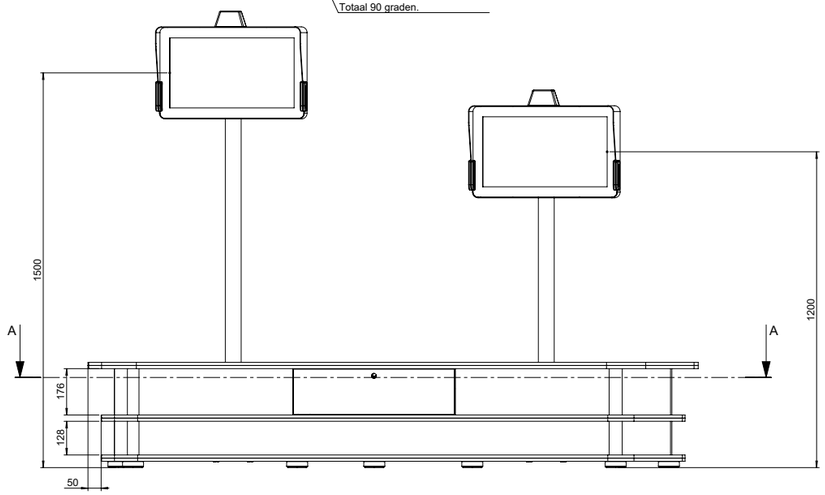
SCALE 1 : 20

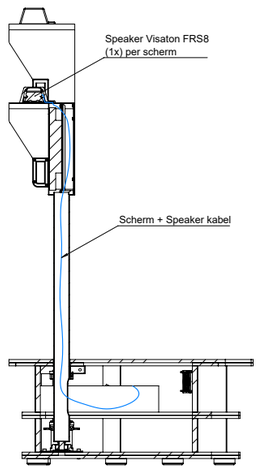
Omschrijving: Handvat - 24151.B.2.209A
Materiaal: PLA
Nabehandeling:
Kleur: Ral 5024

Omschrijving: 22inch Touchmonitor - Touchscherm_Iiyama_TF2234MC-7

Omschrijving: Speakerkap - 24151.B.2.213A
Materiaal: Tough 2000
Nabehandeling: Spuiten
Kleur: Ral 7016







SECTION B-B

Rev.	Eng.	Date	Description

Description	Tricera-scope 1			Drawing no.	24151.B.2.01A
Exhibit name	Tricerascope			Material	See drawing
Exhibit number	24151.B.2			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:10	Amount	Color	
NEN-ISO 2768-1	m	Format A1		Weight	102.8 kg
NEN-ISO 2768-2	K	Units: mm 3rd angle		Remarks	
ISO 9001 - VCA certified		Copyright 2022		Drawn by	R. Scheifes Date 10-6-2024

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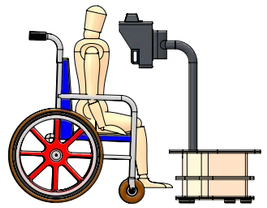
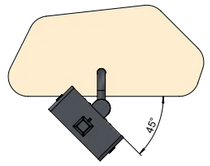
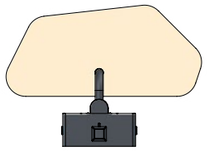
24151.B.2.02A-00 Tricerascope



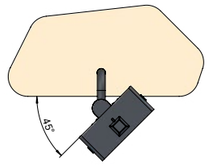
SCALE 1 : 20



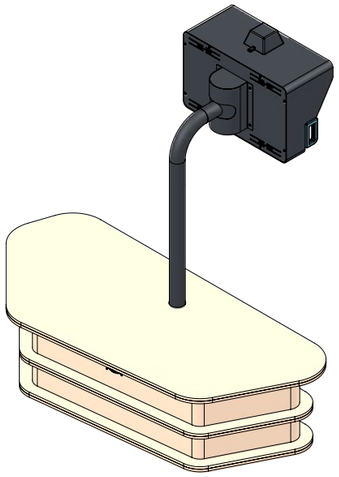
SCALE 1 : 20

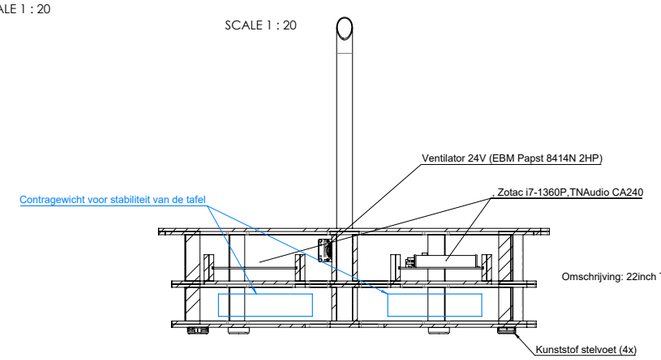


SCALE 1 : 20

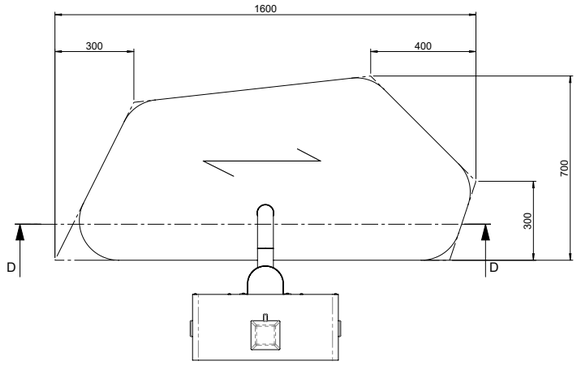


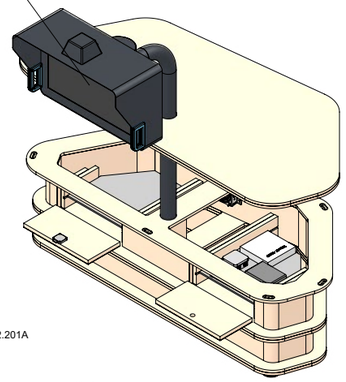
SCALE 1 : 20



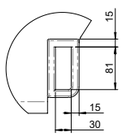


SECTION D-D

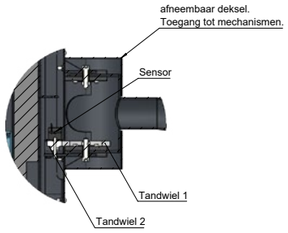




Omschrijving: 22inch Touchmonitor - Touchscherm_Iiyama_TF2234MC-7

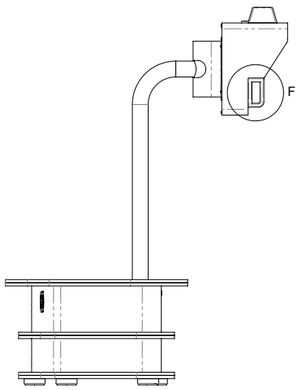


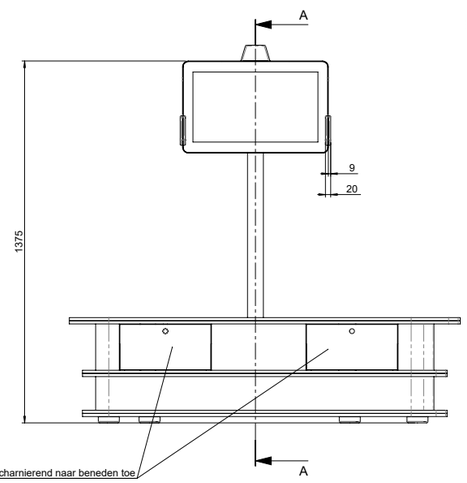
DETAIL F
SCALE 1 : 5

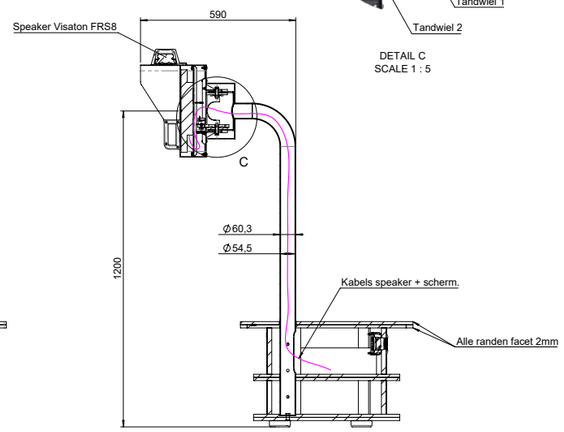


DETAIL C
SCALE 1 : 5

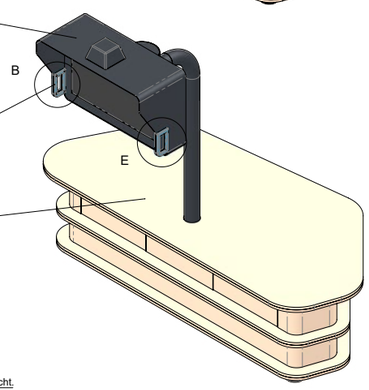
Omschrijving: Scherm behuizing 1 - 24151.B.2.201A
Materiaal: S235
Nabehandeling: Fijnstructuur Poedercoaten
Kleur: RAL 7016







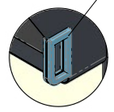
SECTION A-A



Omschrijving: Handvat - 24151.B.2.209A
Materiaal: PLA
Kleur: Ral 5024

Meubel
Berken multiplex
Afwerking blanke lak mat (Skylt)

DETAIL B
SCALE 1 : 5



DETAIL E
SCALE 1 : 5

Rev.	Eng.	Date	Description
Description	Tricera-scope 2	Drawing no.	24151.B.2.02A
Exhibit name	Tricerascope	Material	See drawing
Exhibit number	24151.B.2	Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling	Finish 2	
Tolerance class	Scale 1:10 Amount	Color	
NEN-ISO 2768-1 m	Format A1	Weight	54.1 kg
NEN-ISO 2768-2 K	Units: mm 3rd angle	Remarks	
ISO 9001 - VCA certified	Copyright 2022	Drawn by	R. Scheifes Date 7-6-2024

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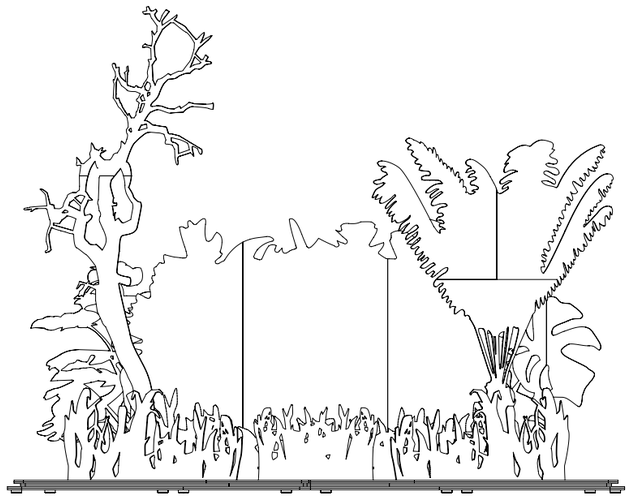
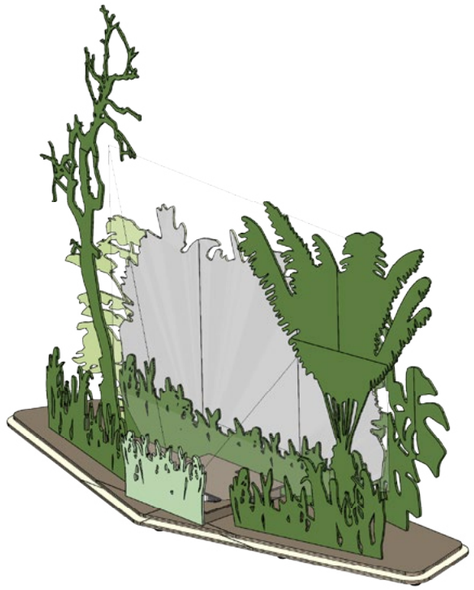
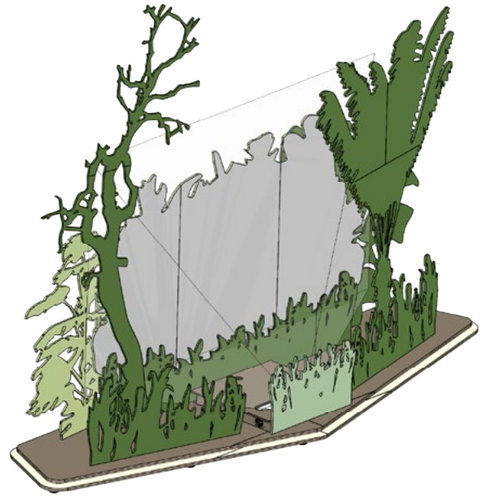
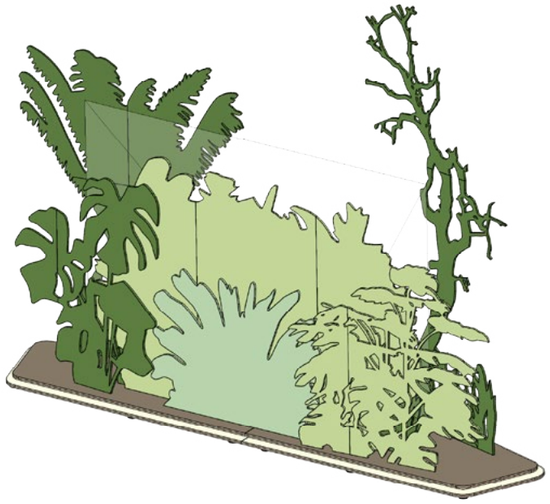
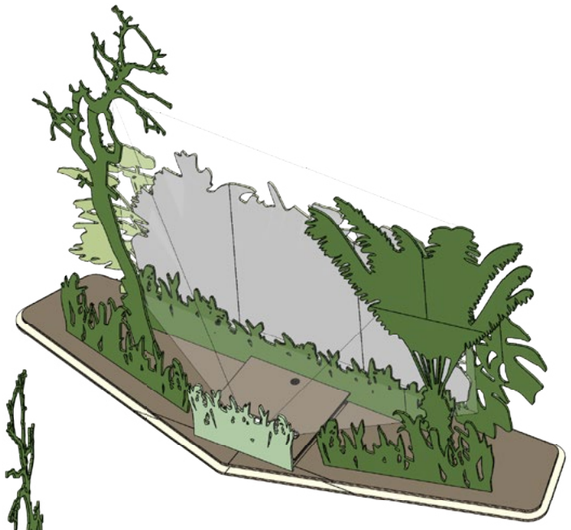
24151.A.3.06B-01 Animations_scene_F

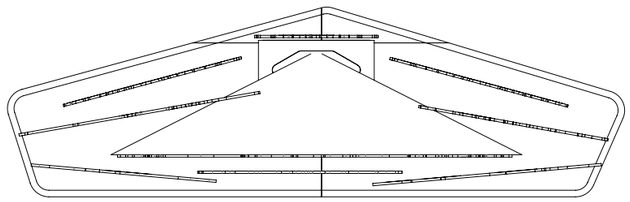


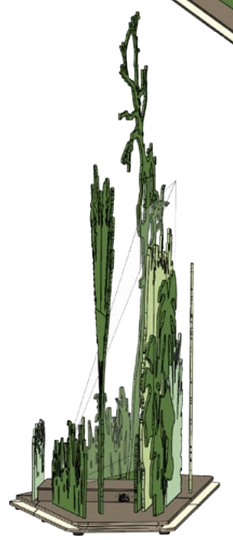












Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland F			Drawing no.	24151.A.3.06B
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:20 Amount	Color	
NEN-ISO 2768-1	m	Format	A1	Weight	525.5 kg
NEN-ISO 2768-2	K	Units: mm	3e angle	Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. Ringeling Date 27-08-2024

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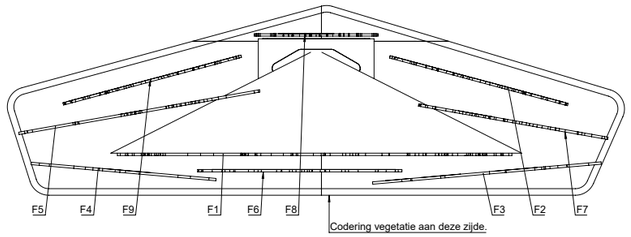
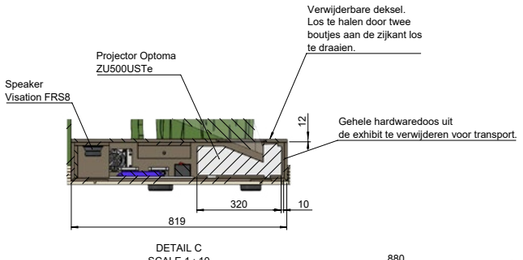
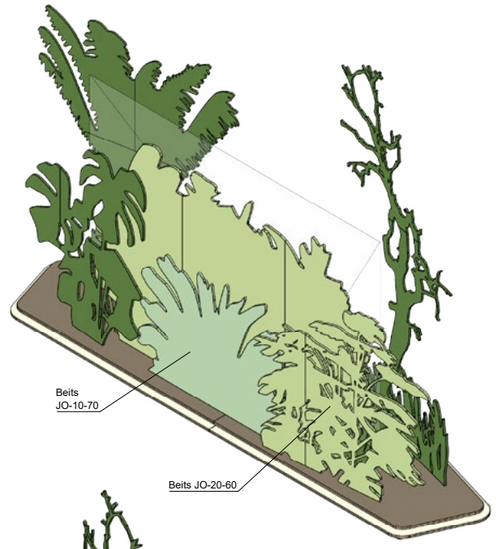
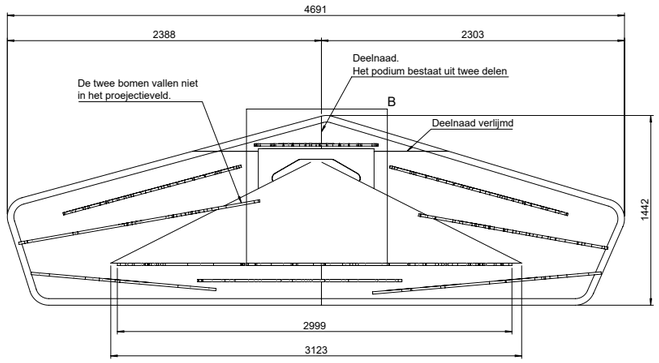
24151.A.3.06A-02 Animations_scene_F

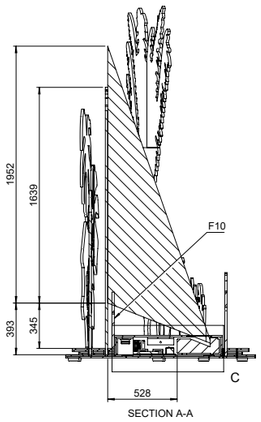




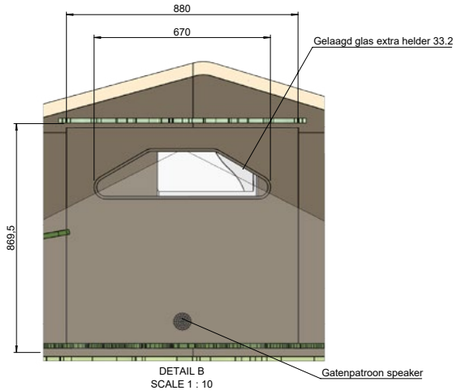
DETAIL C
SCALE 1 : 10



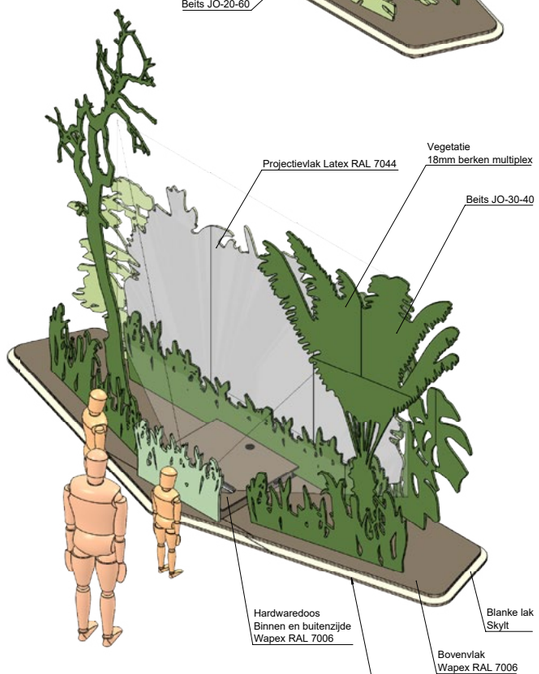


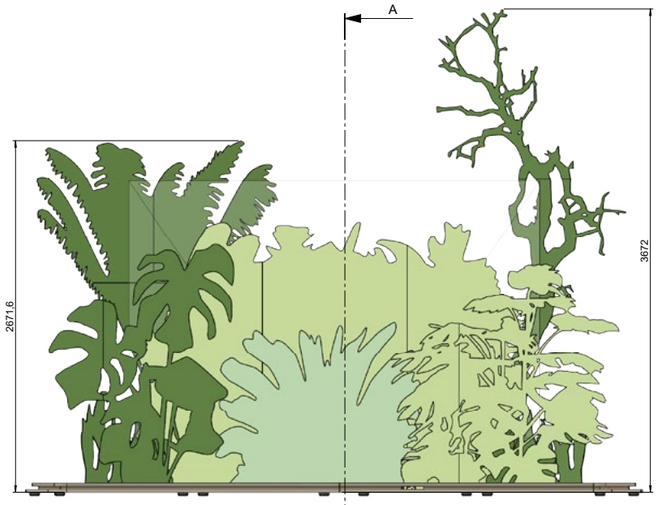


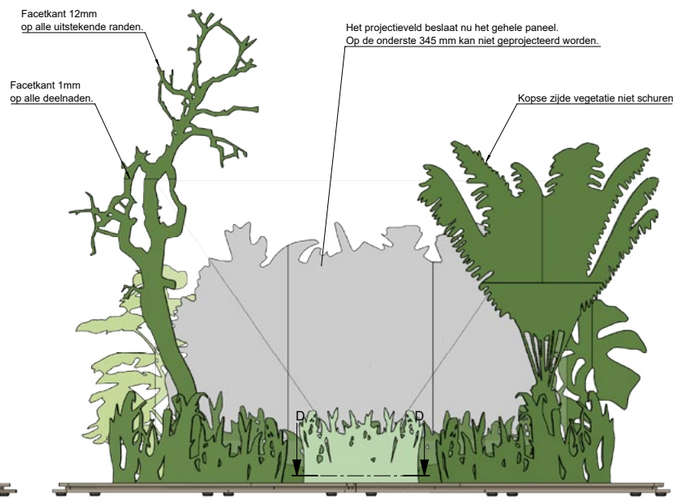
SECTION A-A

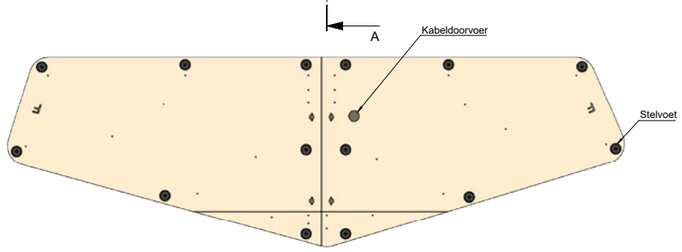


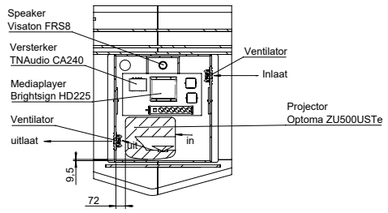
DETAIL B
SCALE 1 : 10











SECTION D-D

Rev.	Eng.	Date	Description
01		22-08-2024	
02	DLUI	03-09-2024	

Description	Eiland F	Drawing no.	24151.A.3.06A
Exhibit name	Vegetatie	Material	See drawing
Exhibit number	24151.A.3	Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling	Finish 2	
Tolerance class	Scale 1:20 Amount	Color	
NEN-ISO 2768-1 m	Format A1	Weight	525.5 kg
NEN-ISO 2768-2 K	Units: mm 3rd angle	Remarks	
ISO 9001 - VCA certified	Copyright 2024	Drawn by	G. Ringeling Date 15-08-2024

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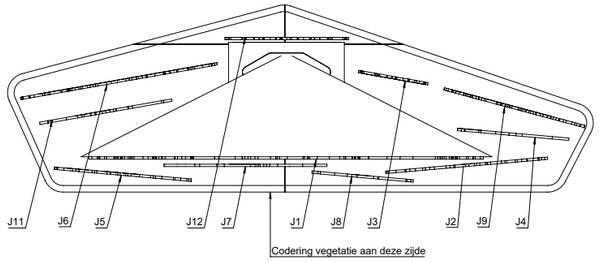
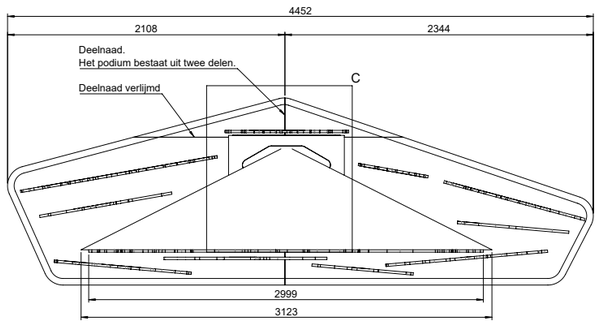
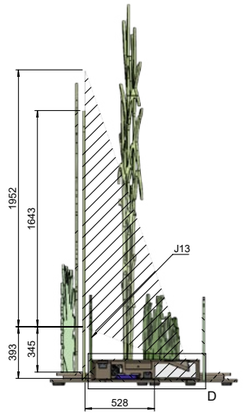
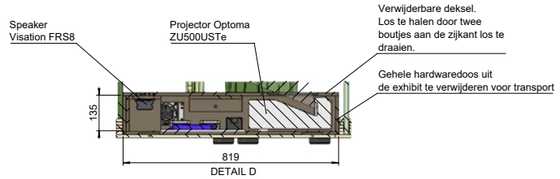
24151.A.3.08A-01 Animations_scene_H



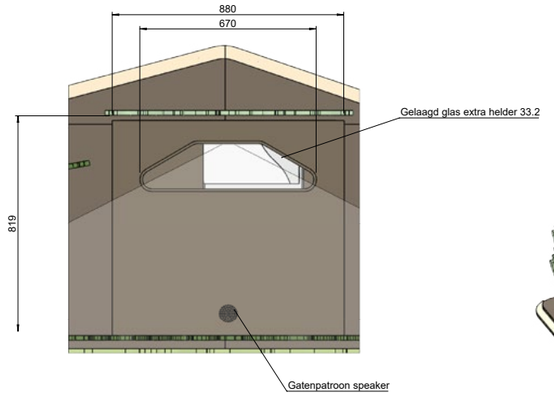




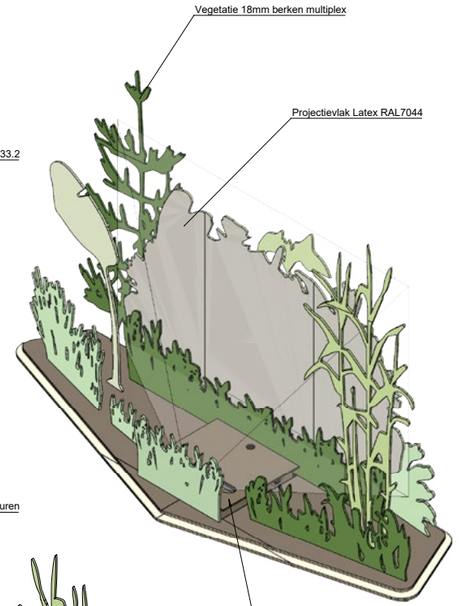
SECTION A-A

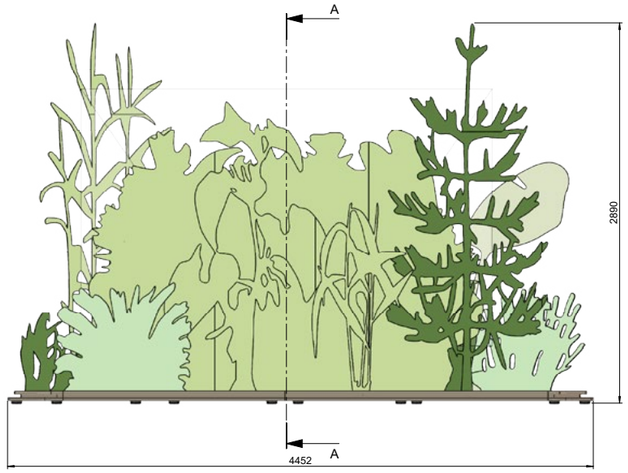


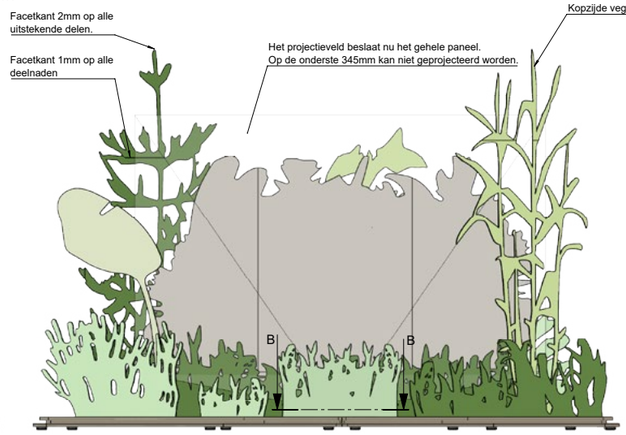
DETAIL D
SCALE 1 : 10

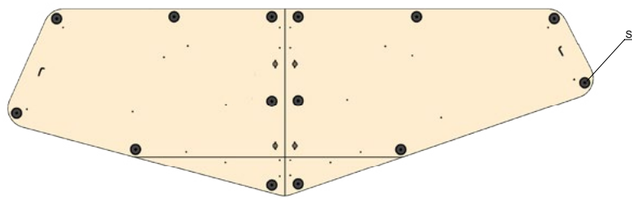


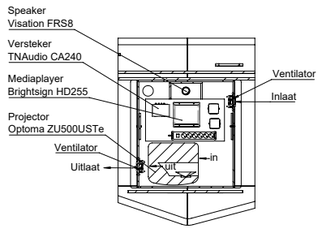
DETAIL C
SCALE 1 : 10



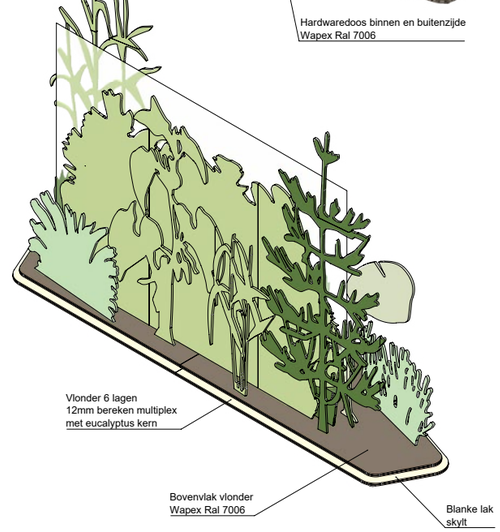








SECTION B-B



Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland J			Drawing no.	24151.A.3.10A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:20	Color	
NEN-ISO 2768-1	m	Format	A1	Weight	388.0 kg
NEN-ISO 2768-2	K	Units: mm	3rd angle	Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. Ringeling Date: 29-08-2024

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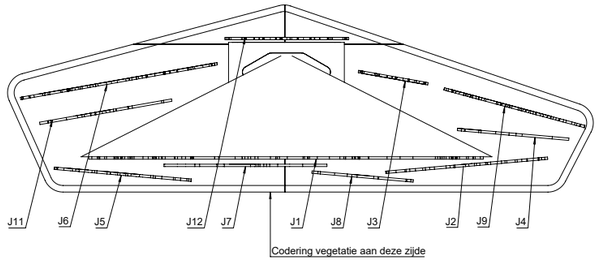
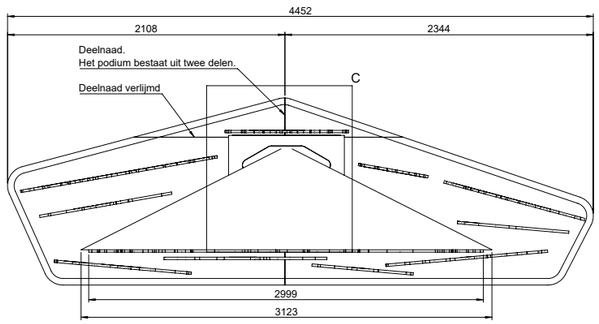
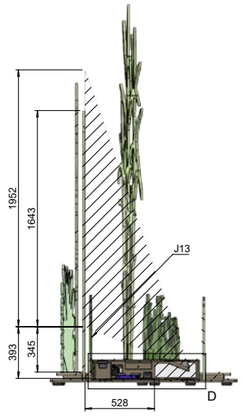
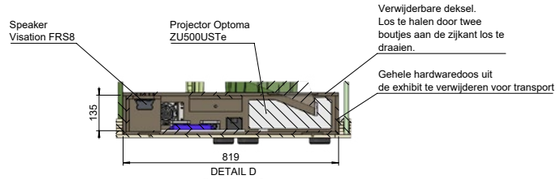
24151.A.3.10A-01 Animation_scene_J



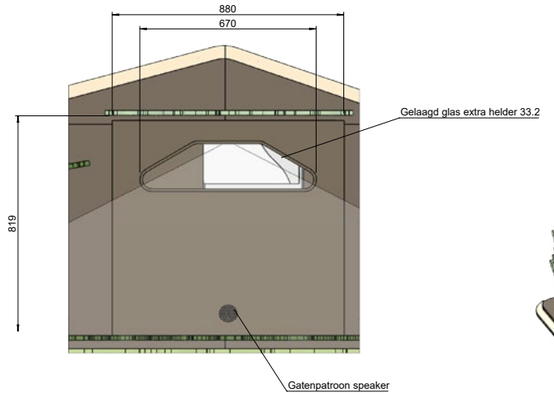




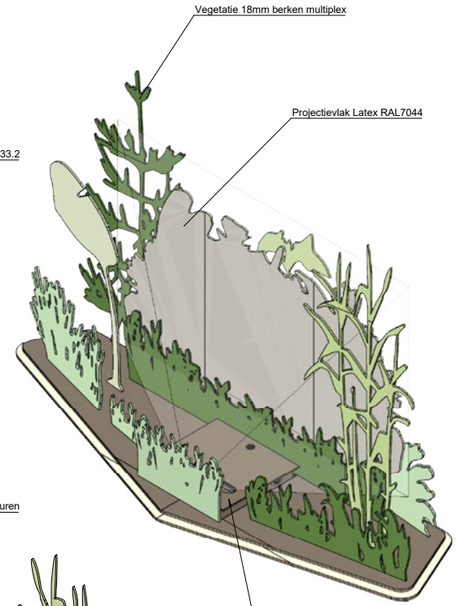
SECTION A-A

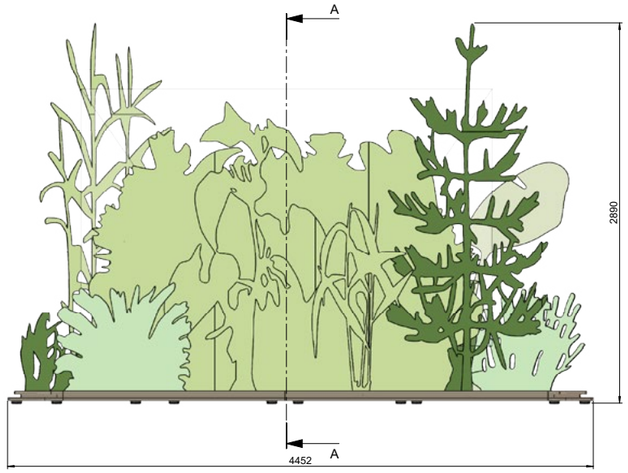


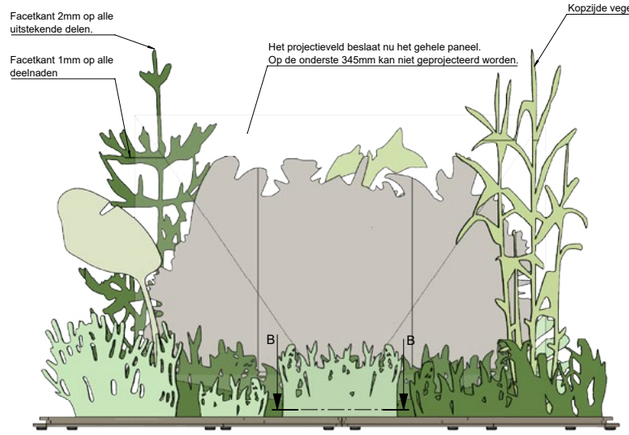
DETAIL D
SCALE 1 : 10

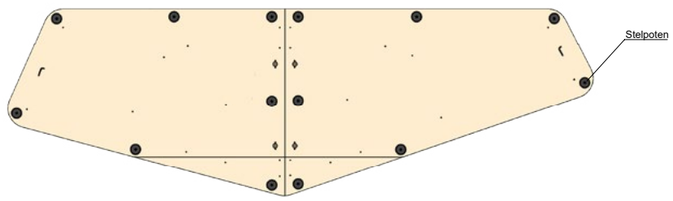


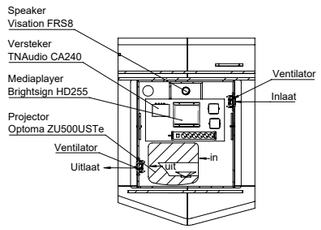
DETAIL C
SCALE 1 : 10



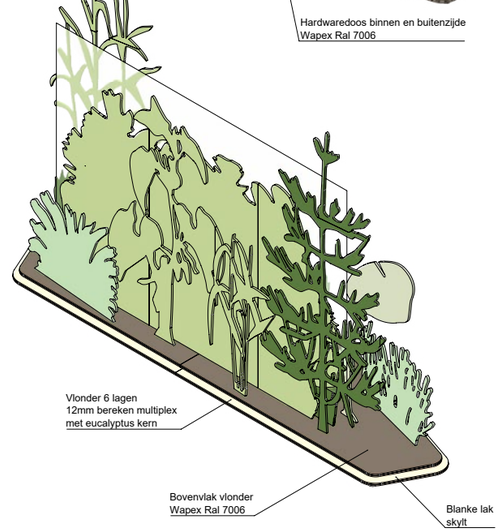








SECTION B-B



Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland J			Drawing no.	24151.A.3.10A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:20	Amount	Color	
NEN-ISO 2768-1	m	Format	A1		Weight	388.0 kg
NEN-ISO 2768-2	K	Units: mm	3rd angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024			Drawn by	G. Ringeling	Date 29-08-2024

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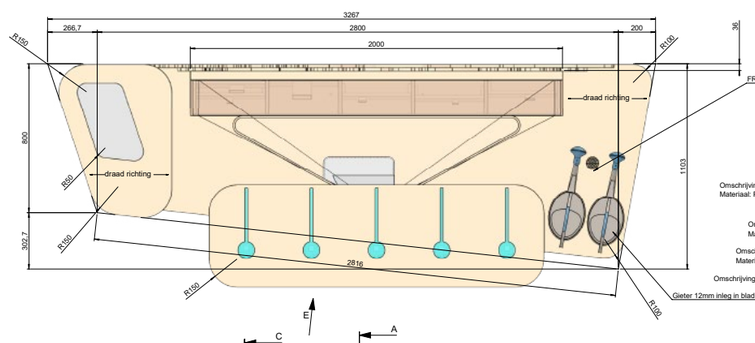
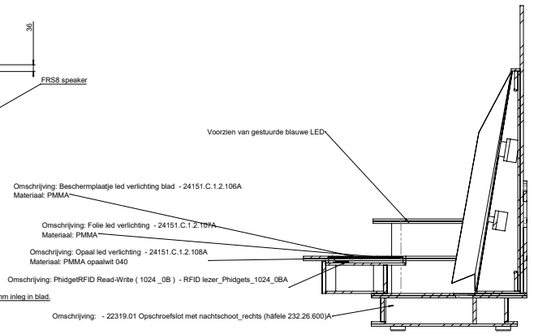
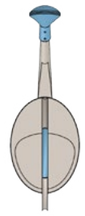
I www.bruns.nl

24151.C.1.2.01A-02 What did Triceratops eat?

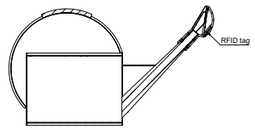




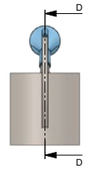
SECTION C-C



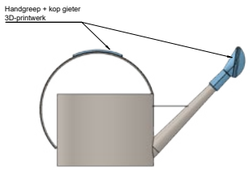
SCALE 1 : 5



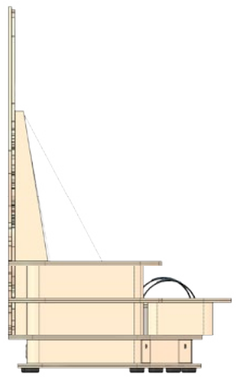
SECTION D-D
SCALE 1 : 5

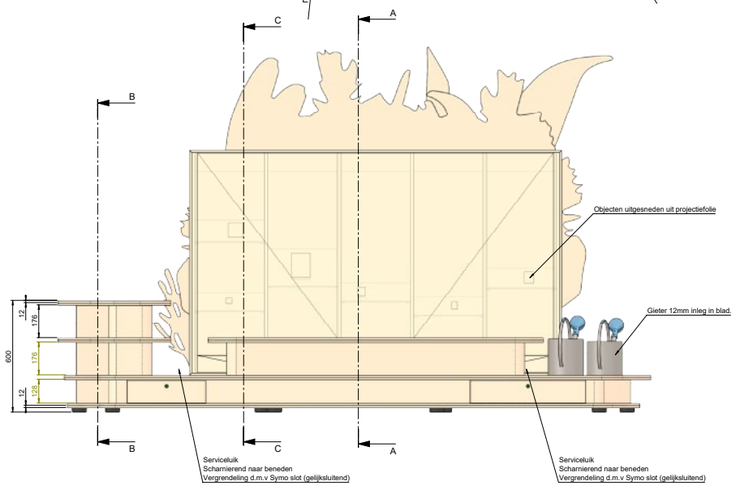


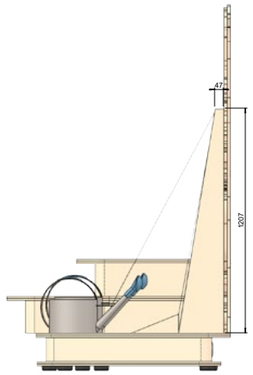
SCALE 1 : 5

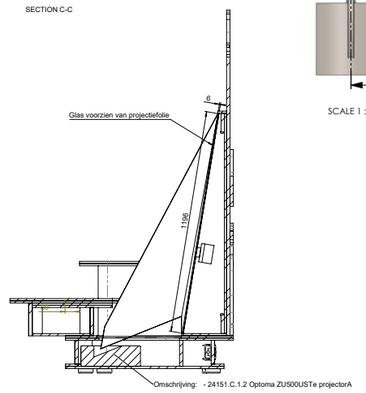


SCALE 1 : 5

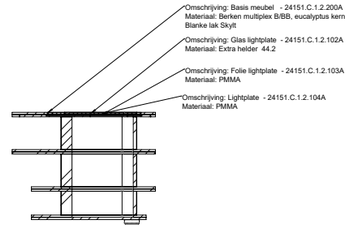




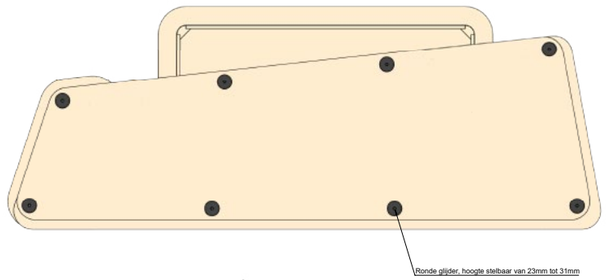


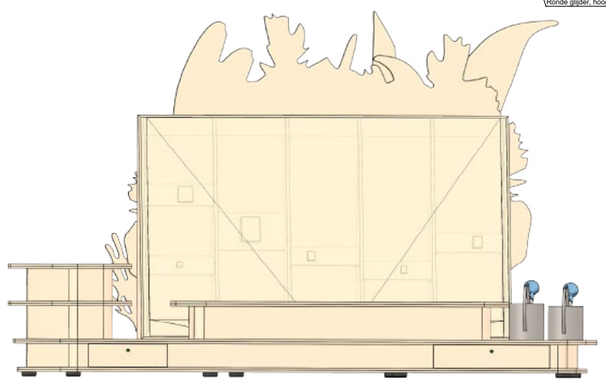


SECTION A-A

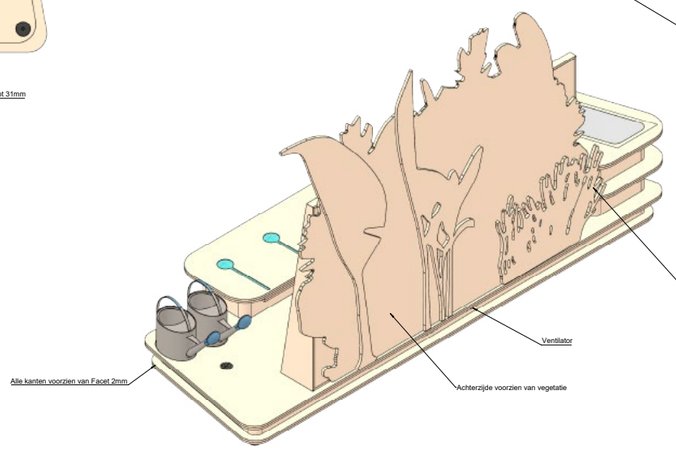


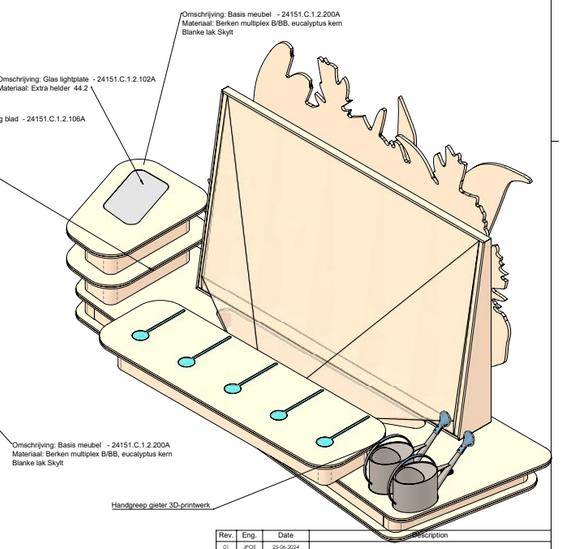
SECTION B-B





VIEW E
↷6,0°





Rev.	Eng.	Date	Description
01	JFOE	25-06-2024	
02	JFOE	04-07-2024	

Description	Samenstelling tuinieren	Drawing no.	24151.C.1.2.01A
Exhibit name	Tuinieren	Material	See drawing
Exhibit number	24151.C.1.2	Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling	Finish 2	
Tolerance class	Scale 1:10 Amount	Color	
NEN-ISO 2768-1	m	Format A0	Weight 327.5 kg
NEN-ISO 2768-2	K	Units: mm ∠ angle	Remarks
ISO 9001 - VCA certified		Copyright 2024	Drawn by D. Luijten Date 18-06-2024

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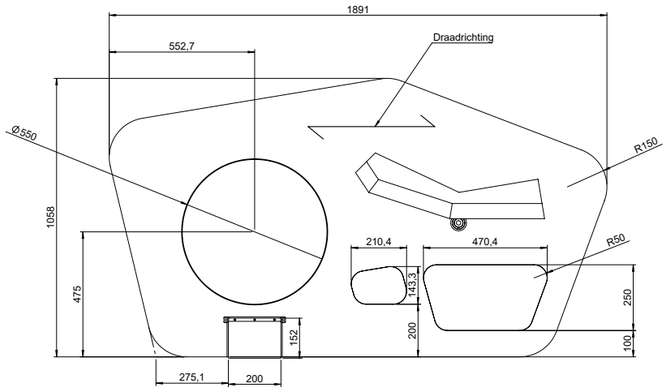
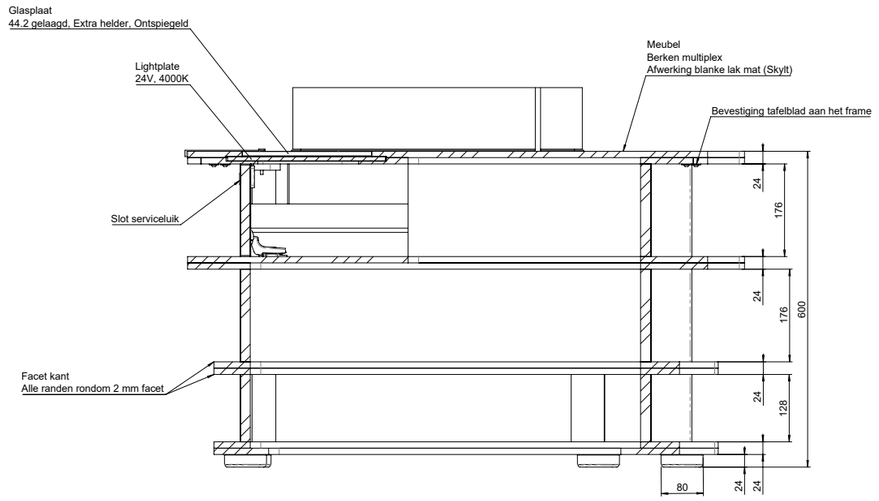
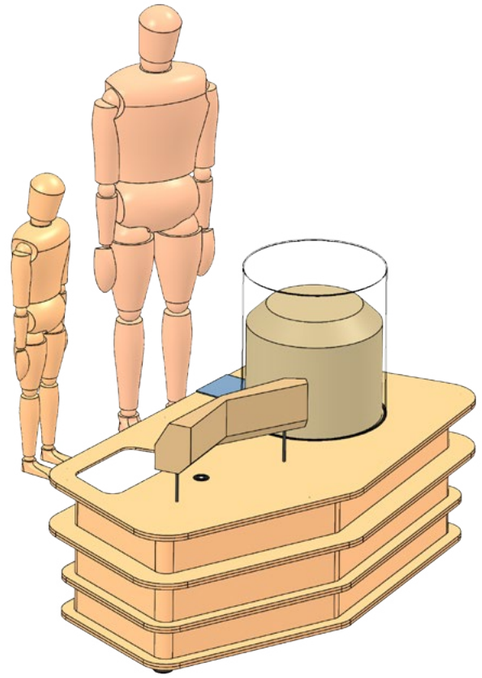
I www.bruns.nl

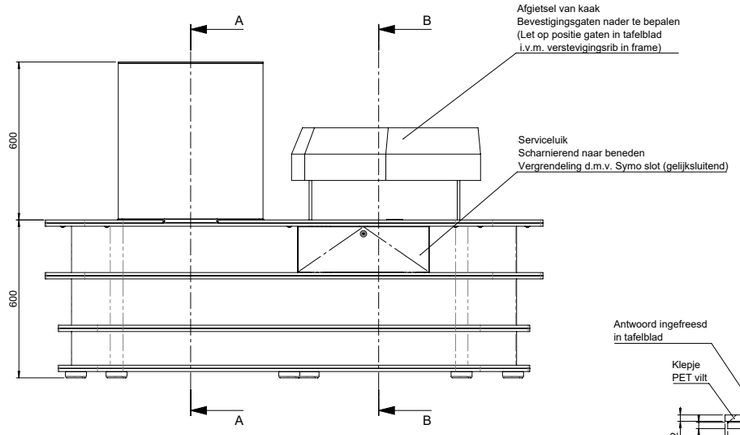
24151.C.1.3.01A-00 Shedding teeth

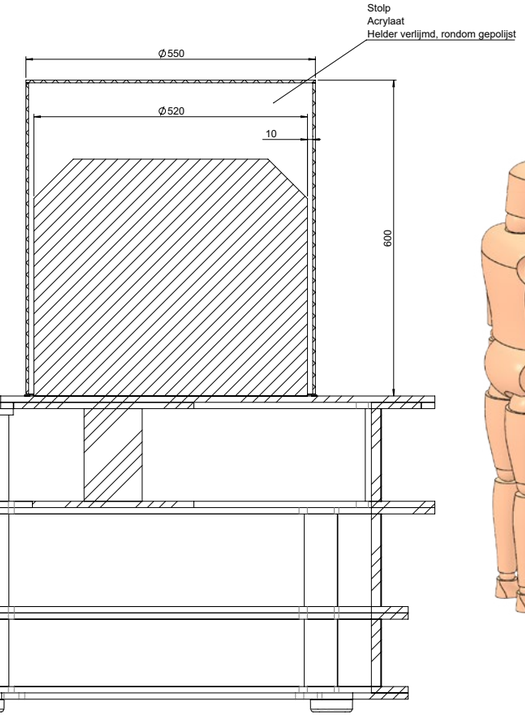




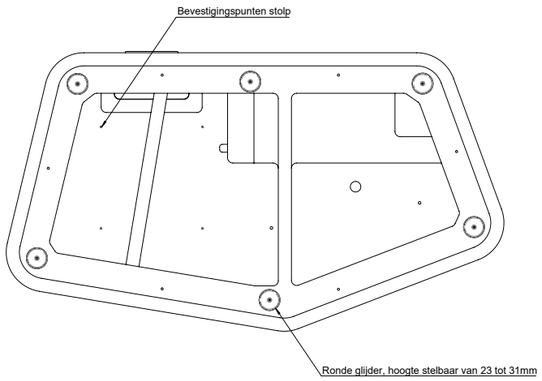
SECTION B-B
SCALE 1 : 5

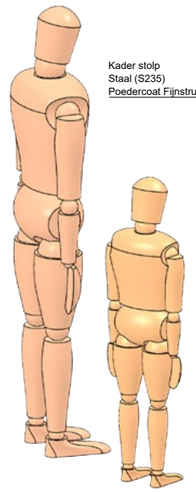


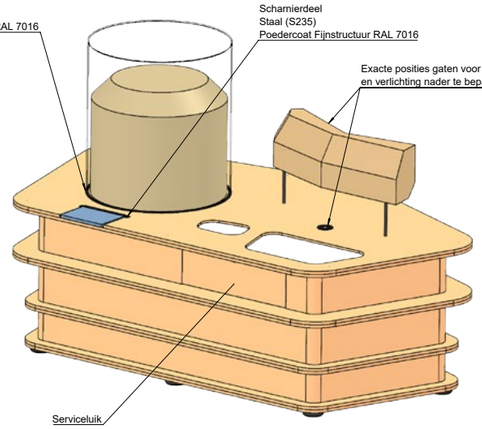




SECTION A-A
SCALE 1 : 5







Rev.	Eng.	Date	Description
Description	Samenstelling Tanden wisselen	Drawing no.	24151.C.1.3.01A
Exhibit name	Tanden wisselen	Material	See drawing
Exhibit number	24151.C.1.3	Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling	Finish 2	
Tolerance class	Scale 1:10 Amount	Color	
NEN-ISO 2768-1 m	Format A1	Weight	108.7 kg
NEN-ISO 2768-2 K	Units: mm 3rd angle	Remarks	
ISO 9001 - VCA certified	Copyright 2022	Drawn by	J. van Hout Date 4-6-2024

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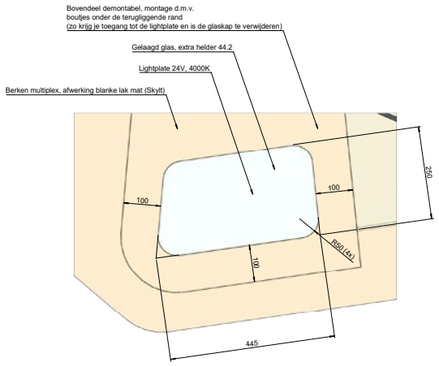
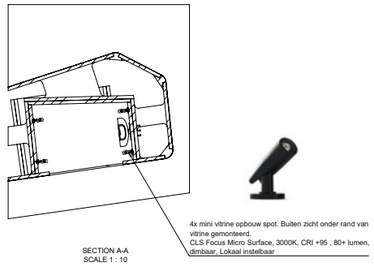
I www.bruns.nl

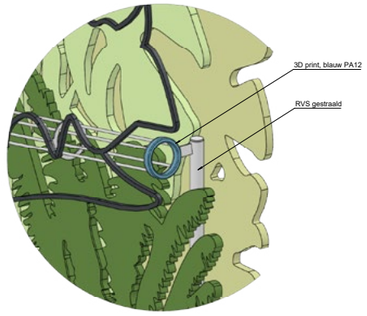
24151.C.1.5.01A-01 Eating and farting

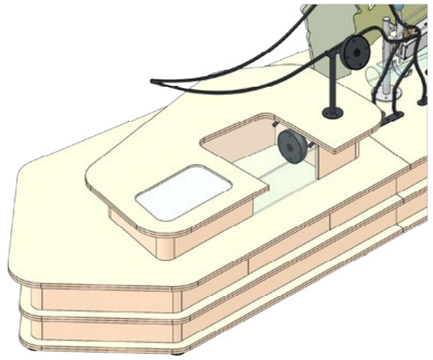


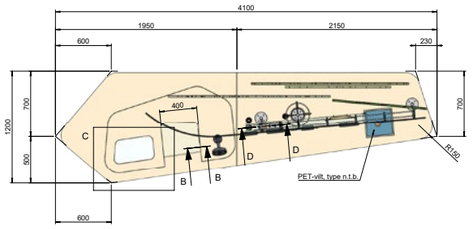
DETAIL C
SCALE 1 : 5

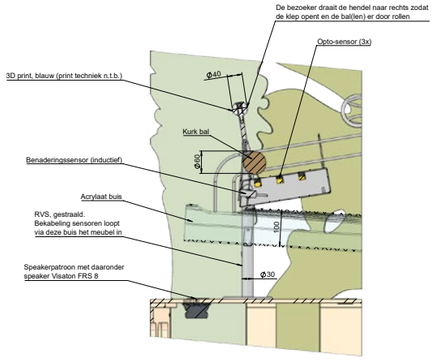


SECTION A-A
SCALE 1 : 10

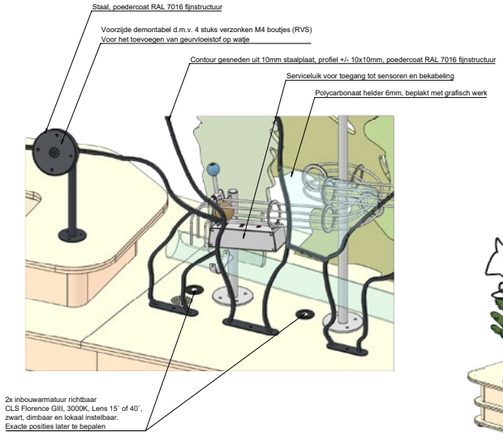


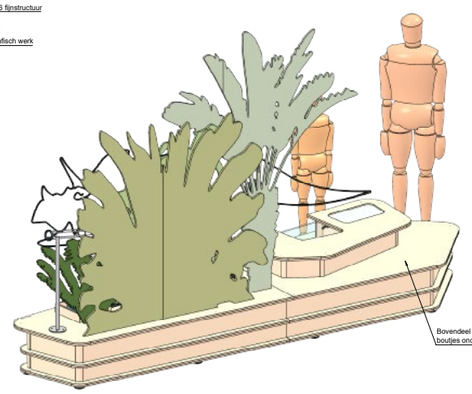


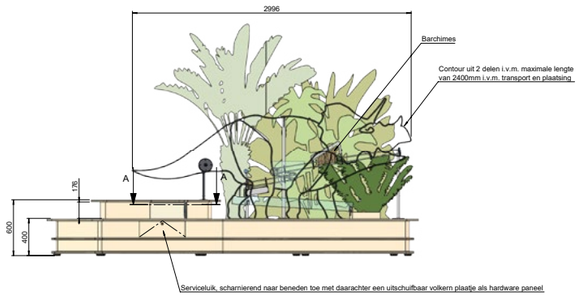


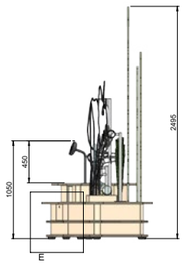


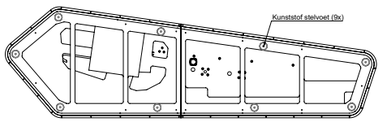
SECTION D-D
SCALE 1 : 5

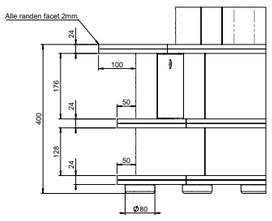




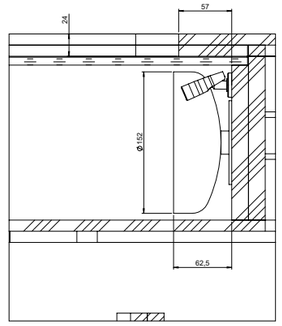




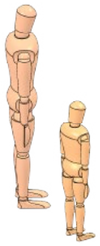


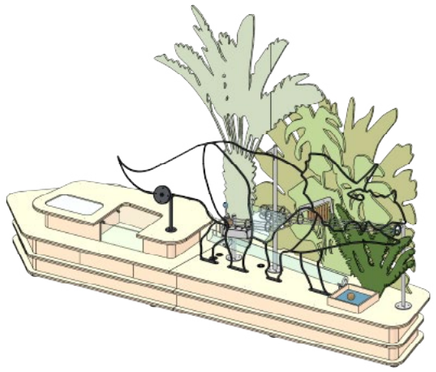


DETAIL E
SCALE 1 : 5



SECTION B-B
SCALE 1 : 2





Rev.	Eng.	Date	Description
01	DLUI	12-07-2024	

Description	Samenstelling eten & scheten			Drawing no.	24151.C.1.5.01A
Exhibit name	Eten & Scheten			Material	See drawing
Exhibit number	24151.C.1.5			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:20	Amount	Color
NEN-ISO 2768-1	m	Format	A0	Weight	289.3 kg
NEN-ISO 2768-2	K	Units: mm , L_angle		Remarks	
ISO 9001 - VCA certified		Copyright 2022		Drawn by	D. Luiten Date 10-06-2024

BRUNS

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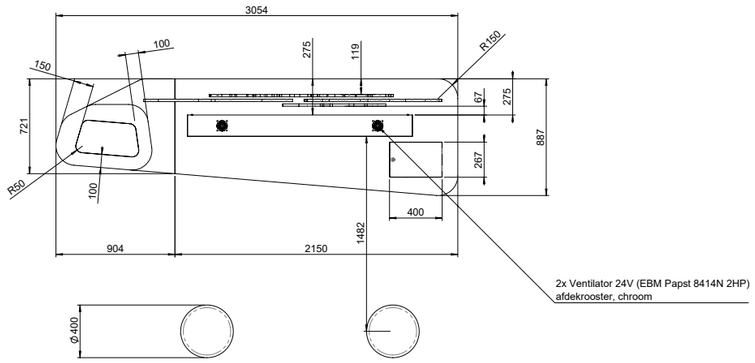
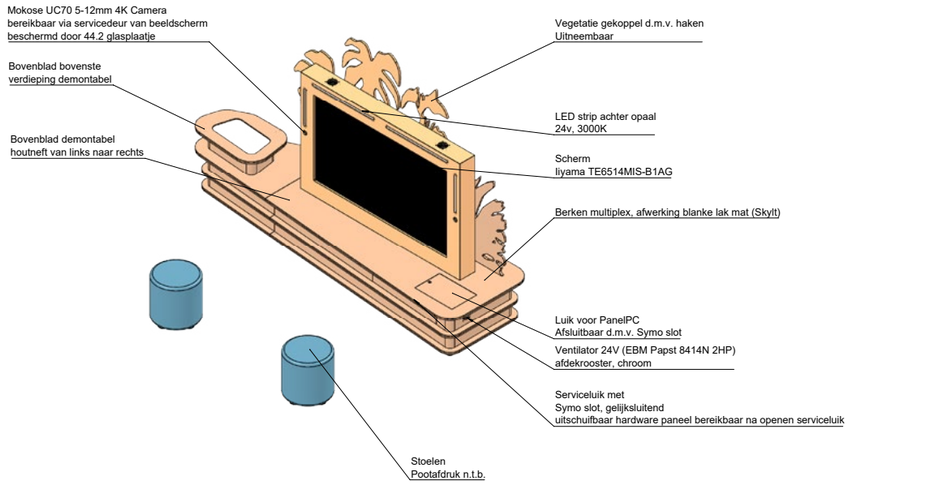
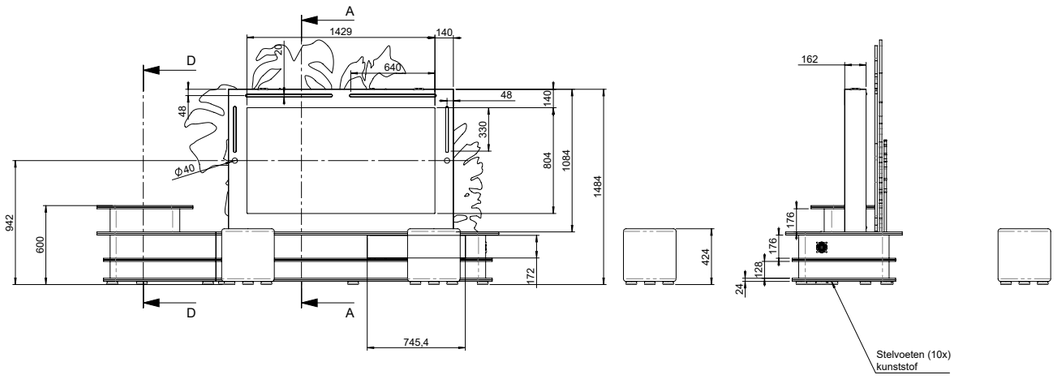
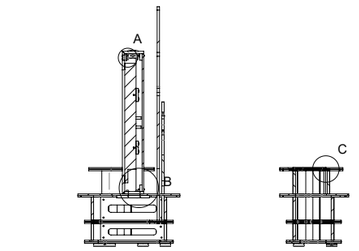
I www.bruns.nl

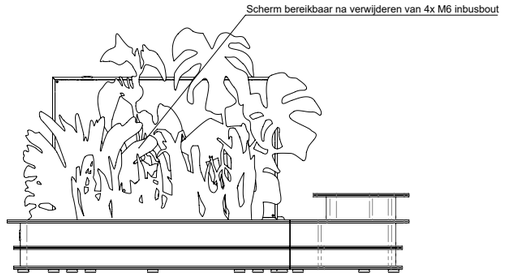
24151.C.2.2.01A-01 Wildly attractive

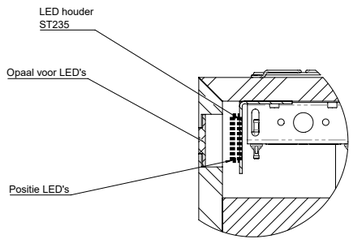




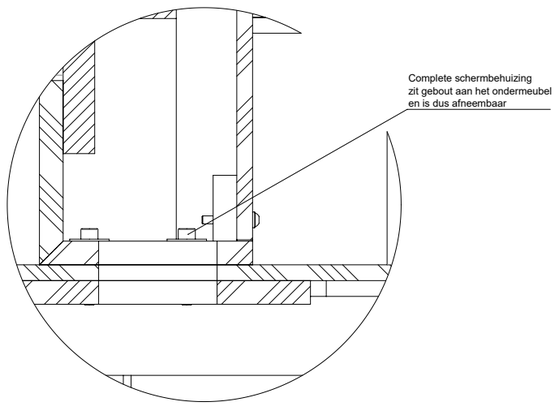




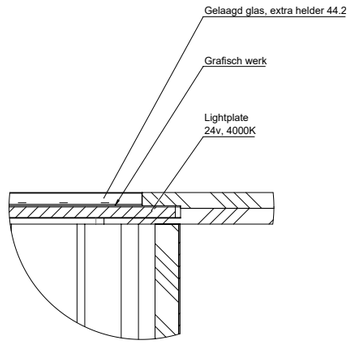




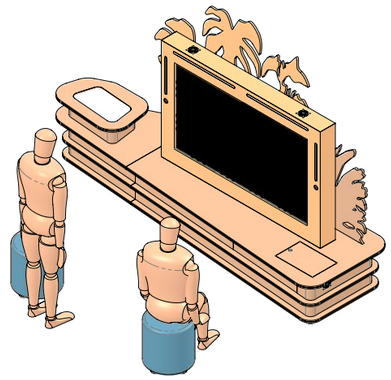
DETAIL A
SCALE 1 : 2



DETAIL B
SCALE 1 : 2



DETAIL C
SCALE 1 : 2



Rev.	Eng.	Date	Description
01	GHAM	15-07-2024	

Description	Samenstelling wild aantrekkelijk			Drawing no.	24151.C.2.2.01A
Exhibit name	Wild aantrekkelijk			Material	See drawing
Exhibit number	24151.C.2.2			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A1		Weight	192.8 kg
NEN-ISO 2768-2	K	Units: mm 3rd angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. van Ham — Date 18-06-2024

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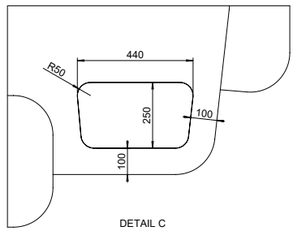
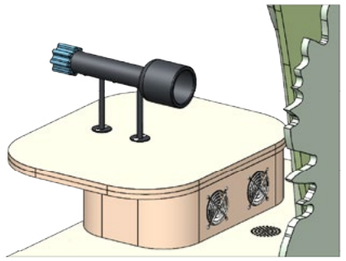
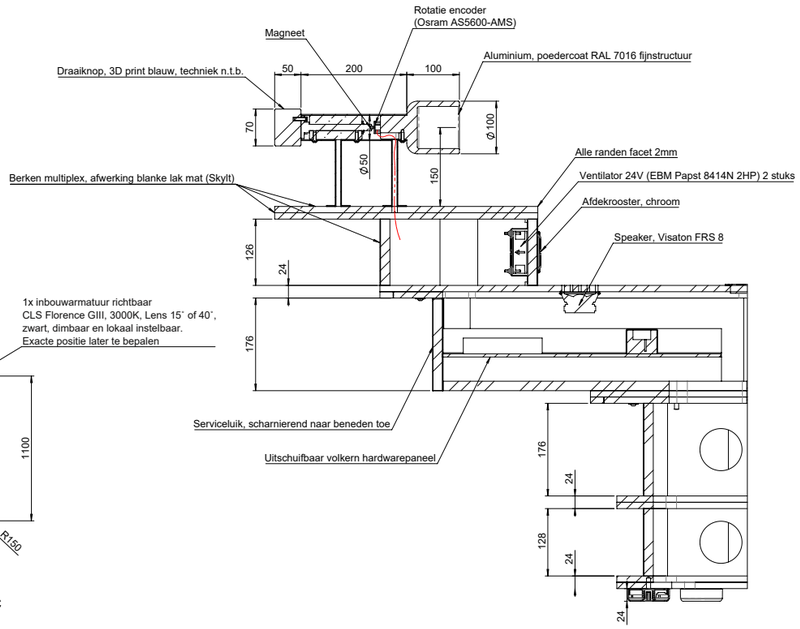
24151.C.2.3.01A-01 Growth



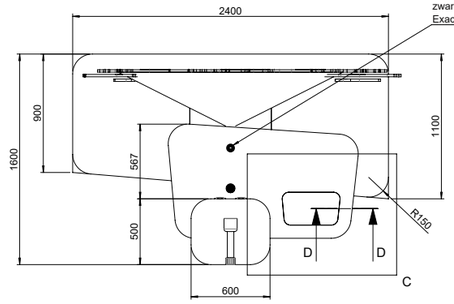
DETAIL C
SCALE 1 : 10

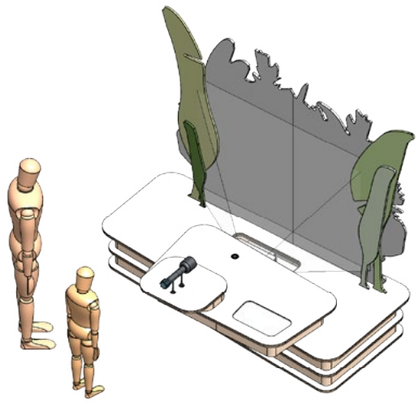


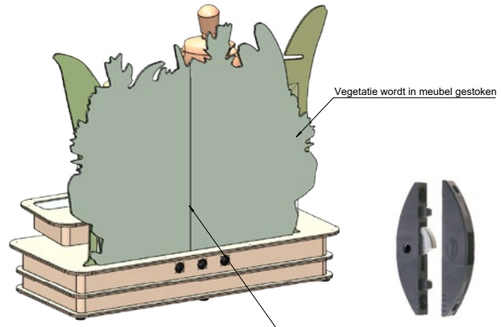


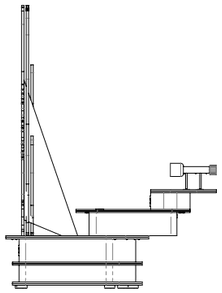
DETAIL B
SCALE 1 : 5

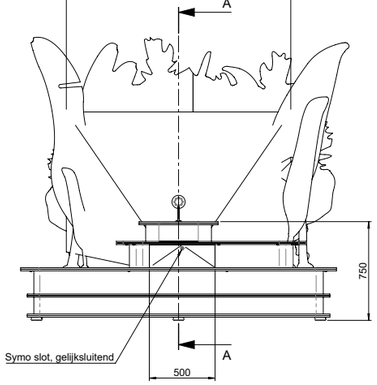
Collectie

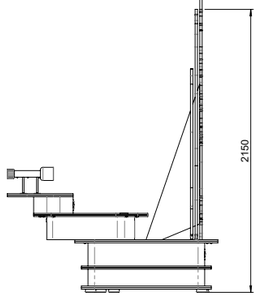


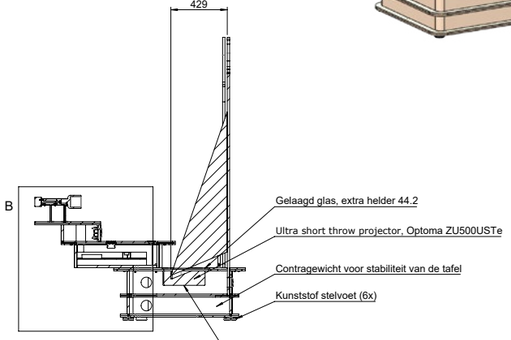




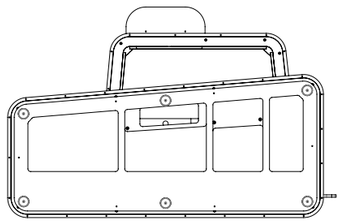


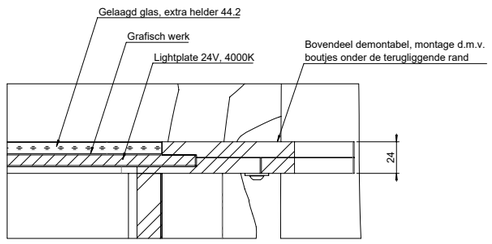




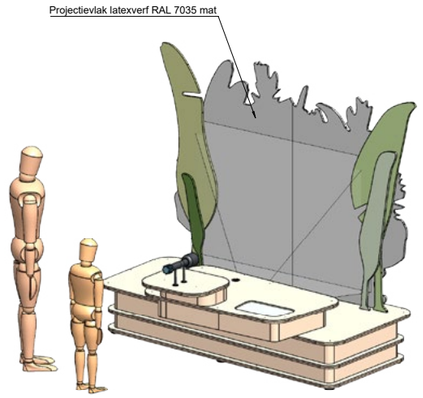


SECTION A-A





SECTION D-D
SCALE 1 : 2



Rev.	Eng.	Date	Description
01	DLUI	02-07-2024	

Description	Samenstelling groei			Drawing no.	24151.C.2.3.01A
Exhibit name	Groei			Material	See drawing
Exhibit number	24151.C.2.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:20 Amount	Color	
NEN-ISO 2768-1	m	Format	A1	Weight	235.9 kg
NEN-ISO 2768-2	K	Units: mm	∃₁-angle	Remarks	
ISO 9001 - VCA certified		Copyright 2022		Drawn by	D. Luijten Date 28-5-2024

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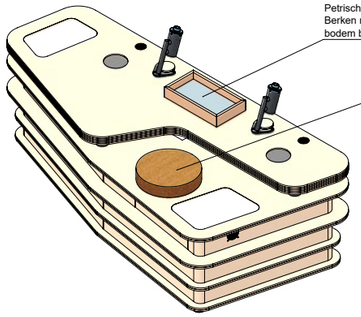
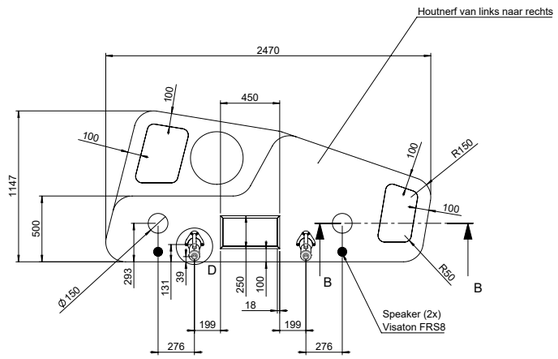
I www.bruns.nl

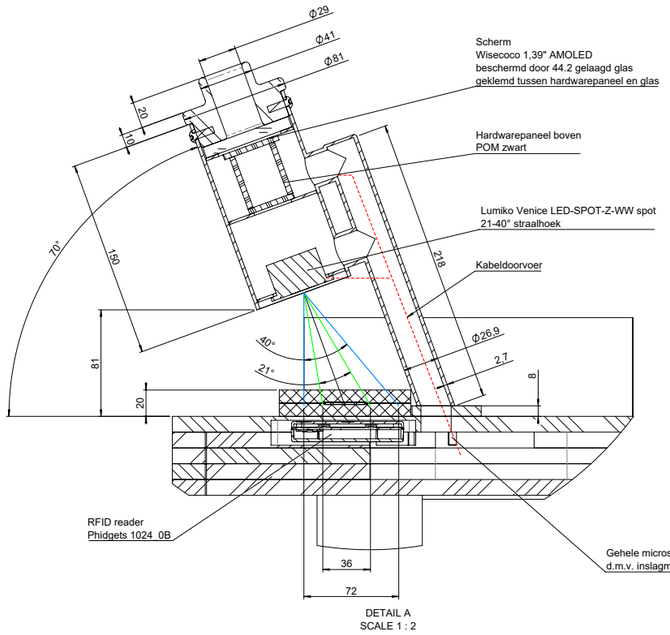
24151.C.2.4.01A-01 Age



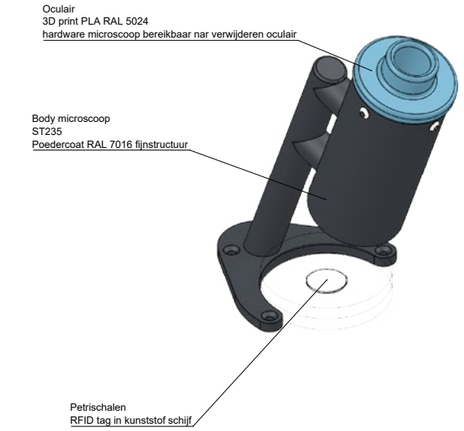
Petrischaal houder
Berken multiplex, afwerking blanke lak mat (Skylt)
bodem bedekt met PET-vilt (kleur: Deep Sea 918)

Boomstronk met jaarringen
aangeleverd door klant





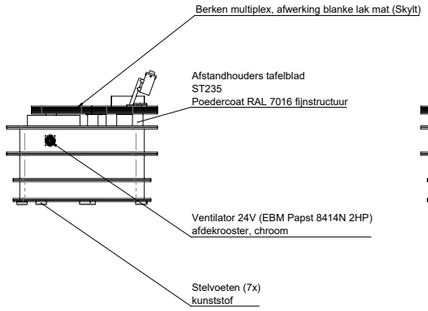
DETAIL A
SCALE 1 : 2



Oculair
3D print PLA RAL 5024
hardware microscoop bereikbaar nar verwijderen oculair

Body microscoop
ST235
Poedercoat RAL 7016 fijnstructuur

Petrischalen
RFID tag in kunststof schijf

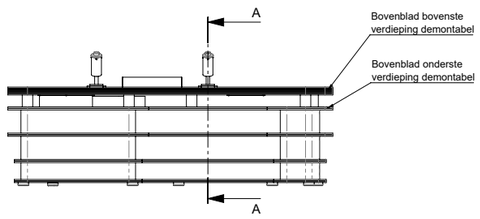


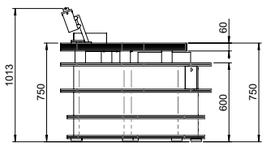
Berken multiplex, afwerking blanke lak mat (Skylt)

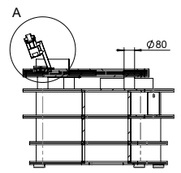
Afstandhouders tafelblad
ST235
Poedercoat RAL 7016 fijnstructuur

Ventilator 24V (EBM Papst 8414N 2HP)
afdekrooster, chroom

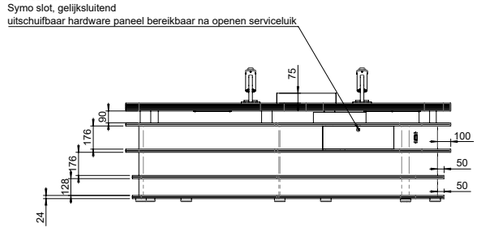
Stelvoeten (7x)
kunststof

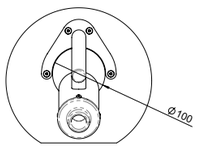




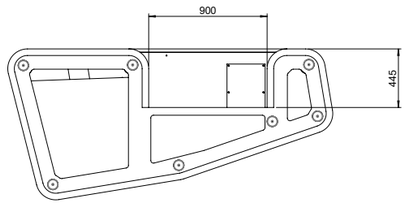


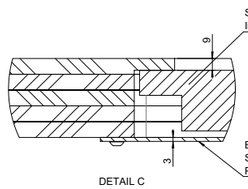
SECTION A-A



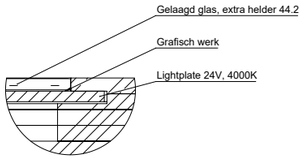


DETAIL D
SCALE 1 : 5

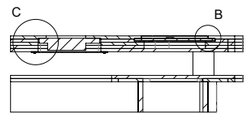




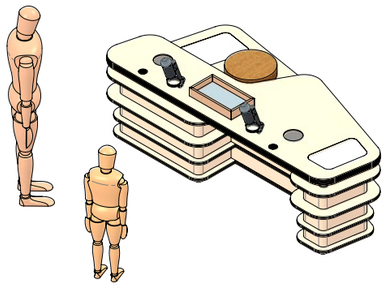
DETAIL C
SCALE 1 : 2



DETAIL B
SCALE 1 : 2



SECTION B-B
SCALE 1 : 10



Rev.	Eng.	Date	Description
01	GHAM	27-06-2024	

Description	Samenstelling hoe oud			Drawing no.	24151.C.2.4.01A
Exhibit name	Hoe oud			Material	See drawing
Exhibit number	24151.C.2.4			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A1		Weight	217.4 kg
NEN-ISO 2768-2	K	Units: mm 3rd angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. van Ham Date 13-06-2024

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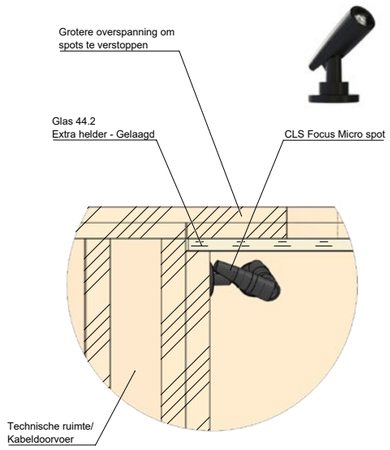
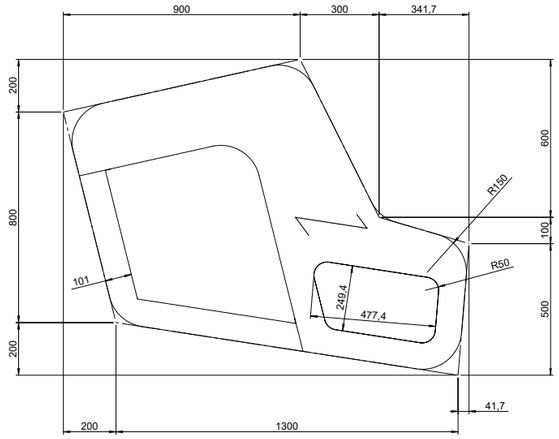
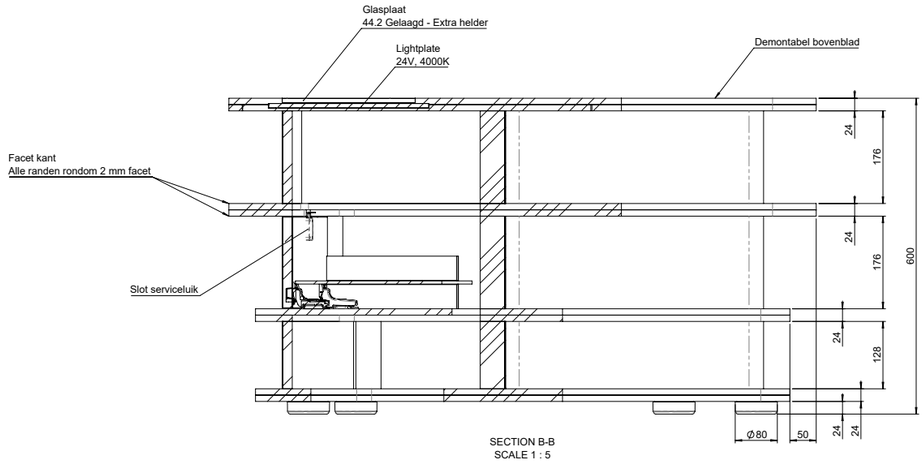
24151.C.2.5.01A-01 Nest

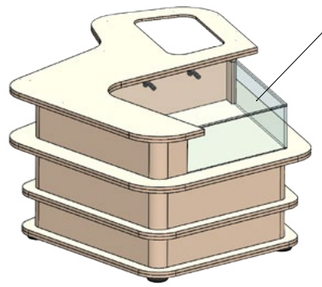


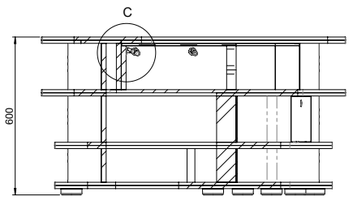
DETAIL C
SCALE 1 : 2



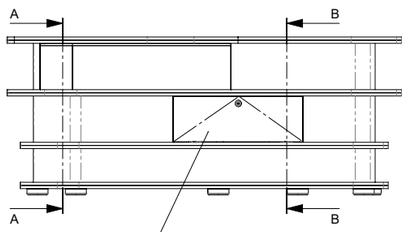


SECTION B-B
SCALE 1 : 5

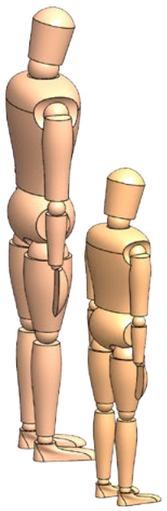


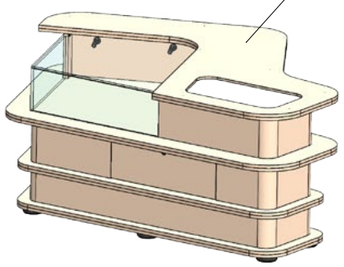


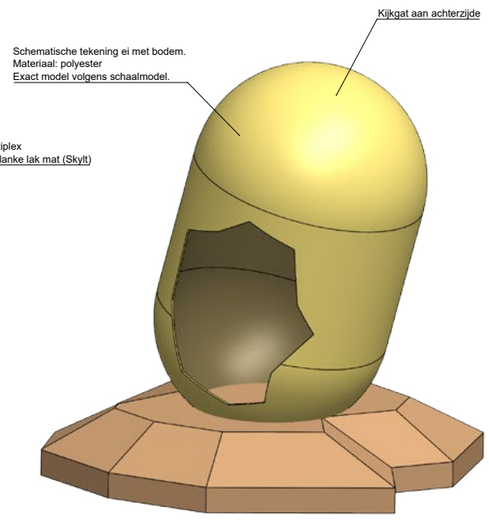
SECTION A-A

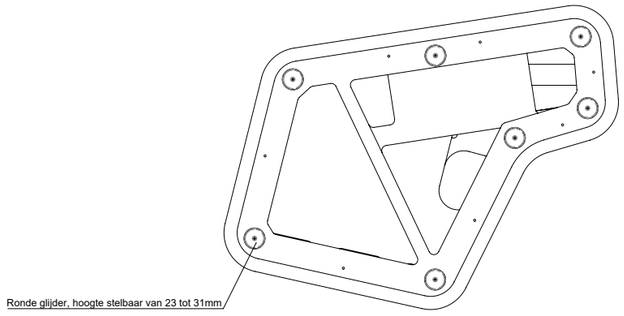


Serviceluik
Scharnierend naar beneden
Vergrendeling d.m.v. Symo slot (gelijksluitend)









Rev.	Eng.	Date	Description
01	JHOU	25-06-2024	

Description	Samenstelling Een ei hoort erbij			Drawing no.	24151.C.2.5.01A
Exhibit name	Een ei hoort erbij			Material	See drawing
Exhibit number	24151.C.2.5			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:10	Amount	Color	
NEN-ISO 2768-1	m	Format A1		Weight	102.8 kg
NEN-ISO 2768-2	K	Units: mm 3rd angle		Remarks	
ISO 9001 - VCA certified		Copyright 2022		Drawn by	J. van Hout Date 12-6-2024

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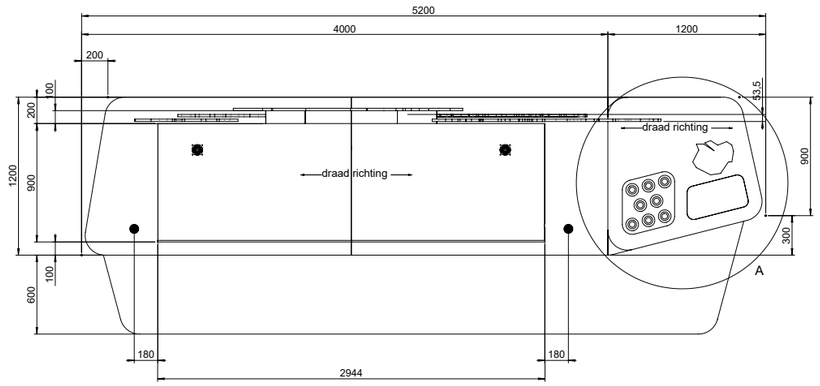
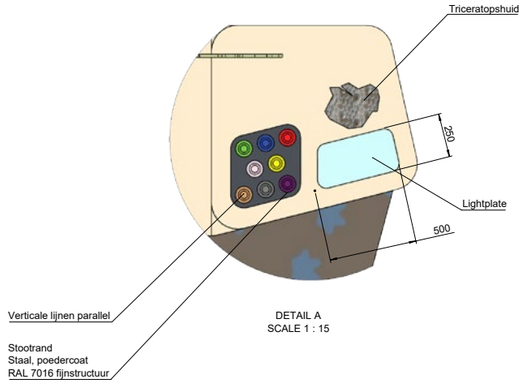
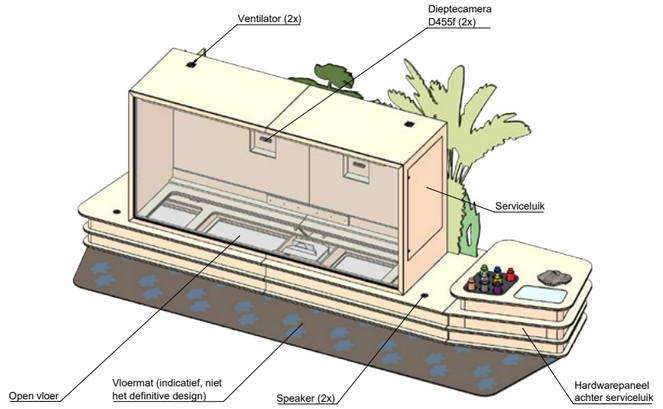
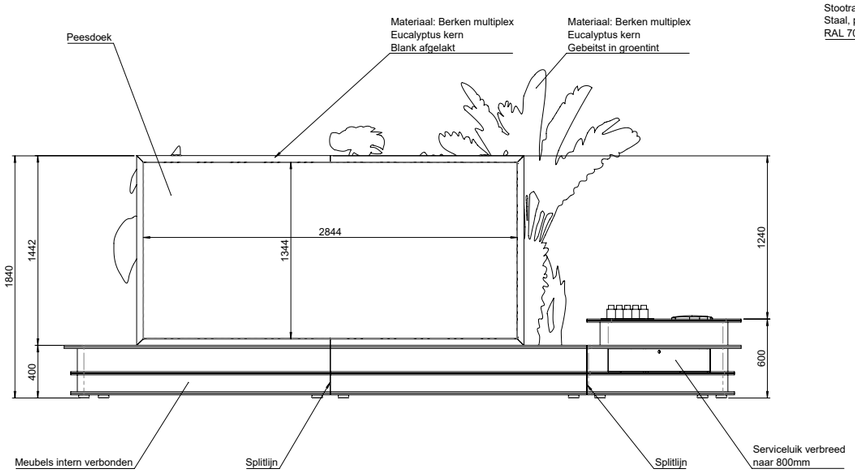
24151.C.2.6.01A-03 Green, yellow, purple or red?

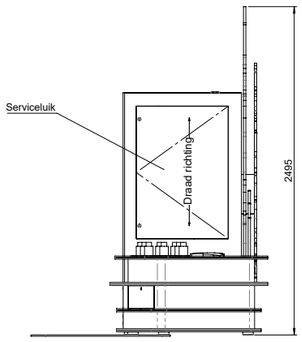


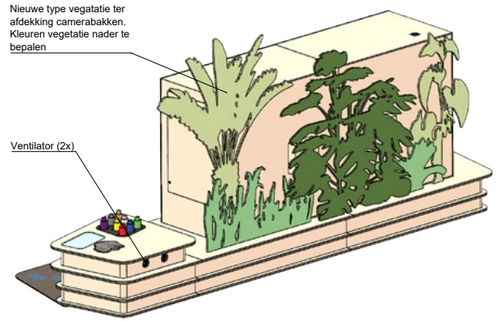


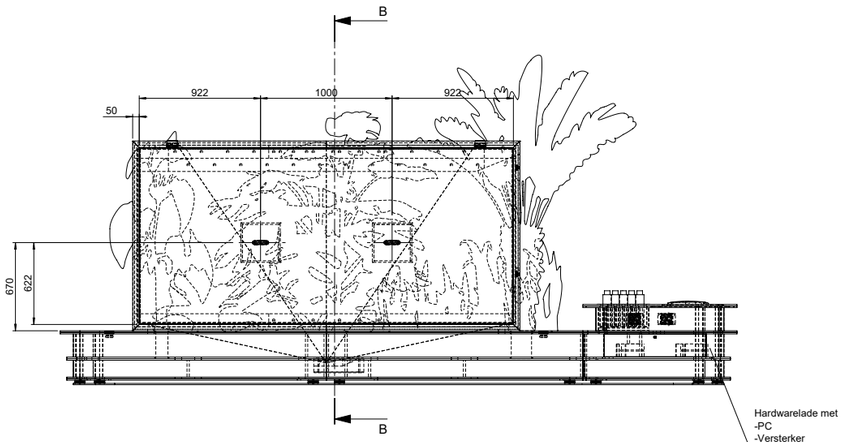
DETAIL A
SCALE 1 : 15

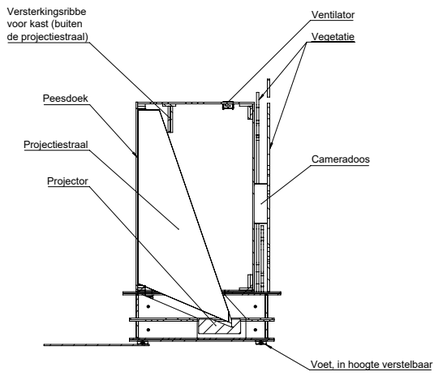




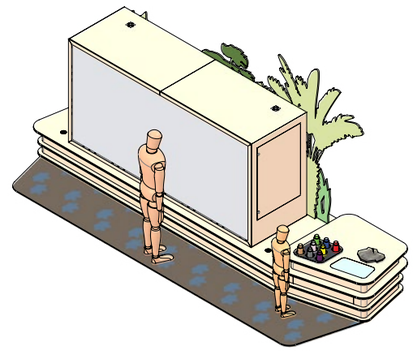








SECTION B-B



Rev.	Eng.	Date	Description
01	PLIE	19-07-2024	
02	PLIE	05-08-2024	Nieuwe vegetatie, nieuwe verdeling spuitbussen, ventilator,serviceluik vergroot
03	PLIE	06-08-2024	

Description	Samenstelling Grafitti			Drawing no.	24151.C.2.6.01A
Exhibit name	Graffiti			Material	See drawing
Exhibit number	24151.C.2.6			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A1		Weight	500.3 kg
NEN-ISO 2768-2	K	Units: mm 3rd angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	P. van Lieshout Date 26-06-2024

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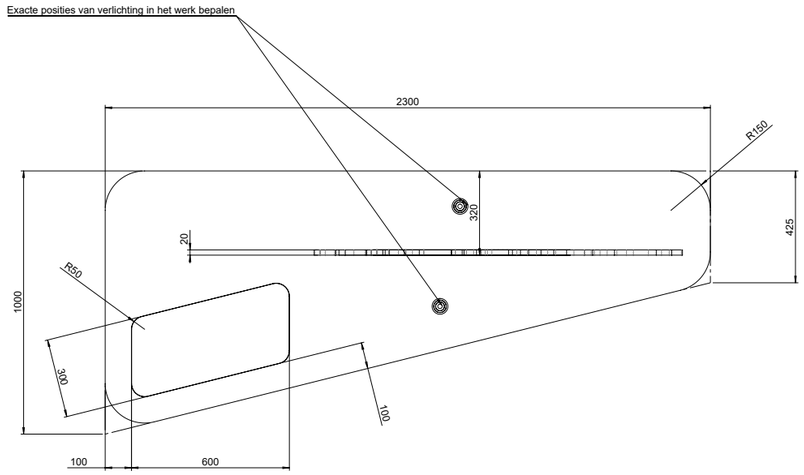
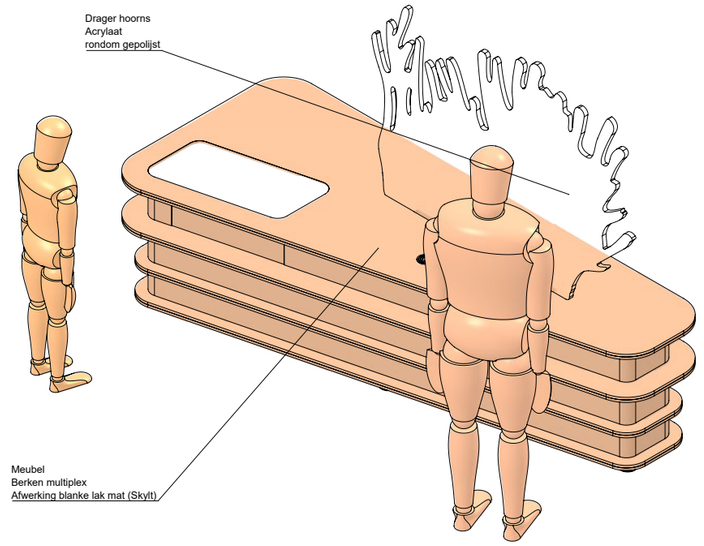
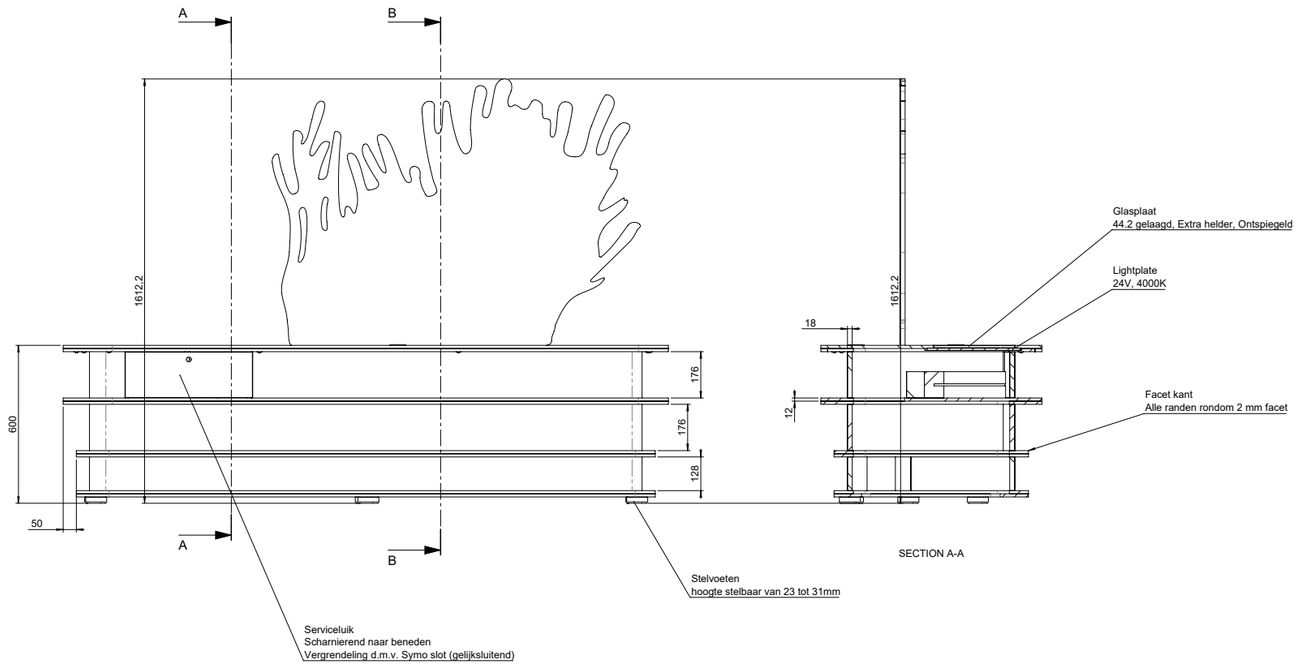
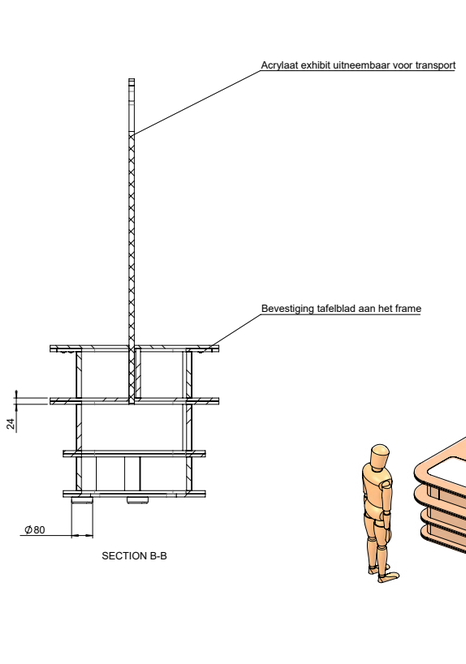
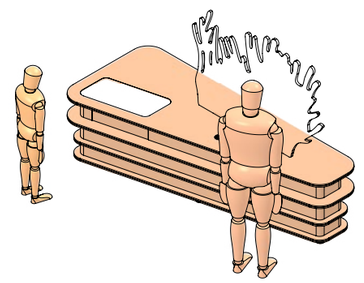
24151.C.3.2.01A-02 Horn











Rev.	Eng.	Date	Description
01	GHAM	01-07-2024	Aangepast na goedkeuring klant
02	GHAM	04-07-2024	Vegetatie omgedraaid

Description	Samenstelling hoorns			Drawing no.	24151.C.3.2.01A
Exhibit name	Hoorns			Material	See drawing
Exhibit number	24151.C.3.2			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:10	Amount	Color	
NEN-ISO 2768-1	m	Format	A1		Weight	120.3 kg
NEN-ISO 2768-2	K	Units: mm	3rd angle		Remarks	
ISO 9001 - VCA certified		Copyright 2022			Drawn by	G. van Ham	Date 5-6-2024

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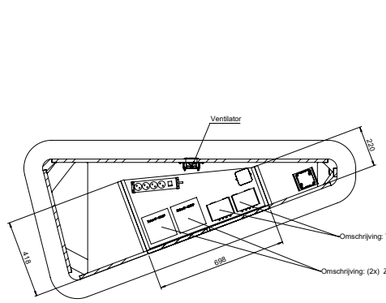
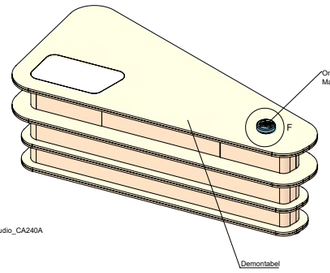
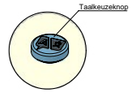
24151.C.3.3.01A-01 Strength through unity

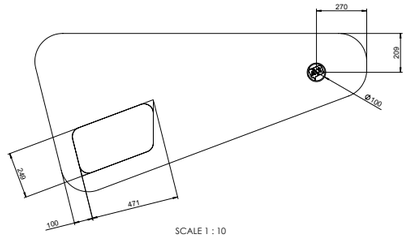


SECTION A-A
SCALE 1 : 10



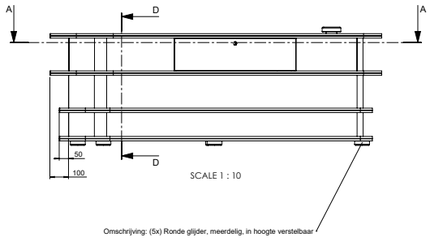


DETAIL F
SCALE 1 : 5

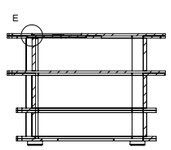


SCALE 1 : 10

DETAIL E
SCALE 1 : 5

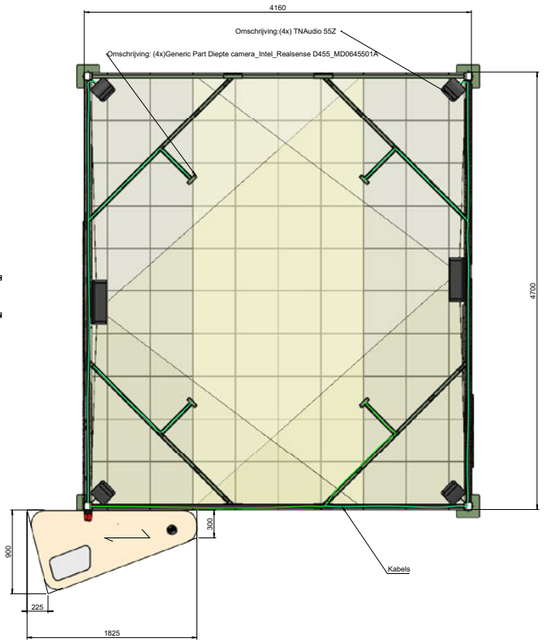


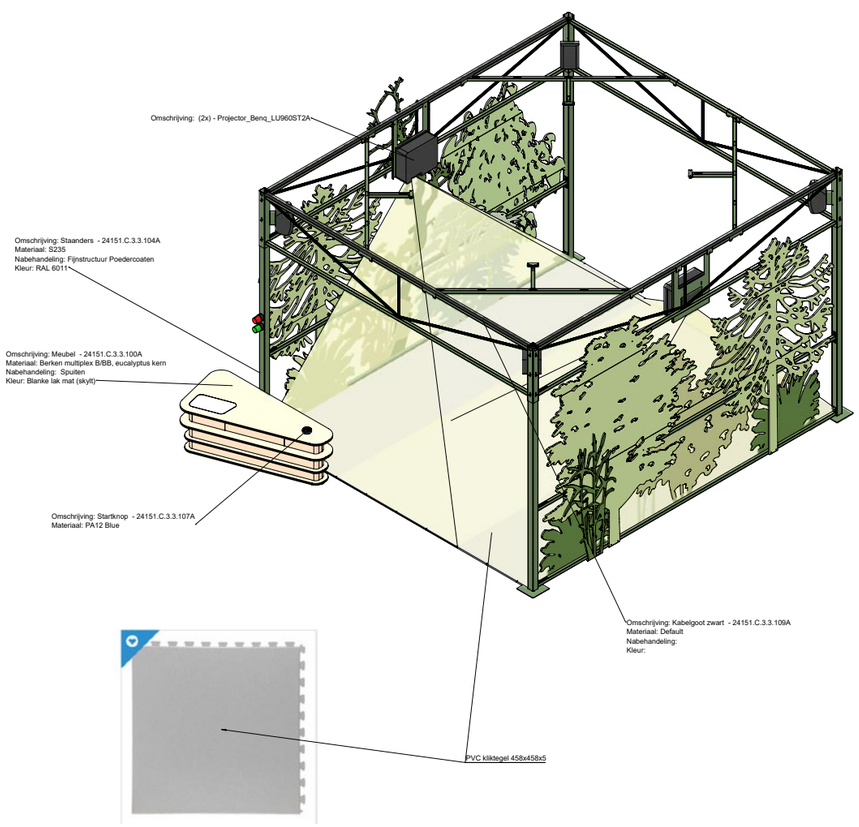
SCALE 1 : 10

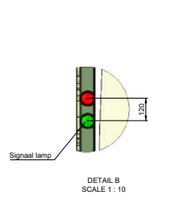


SECTION D-D
SCALE 1 : 10

Omschrijving: (5x) Ronde glijder, meerdelig, in hoogte verstelbaar

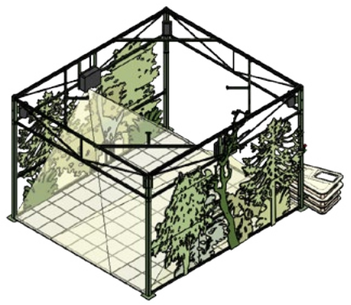


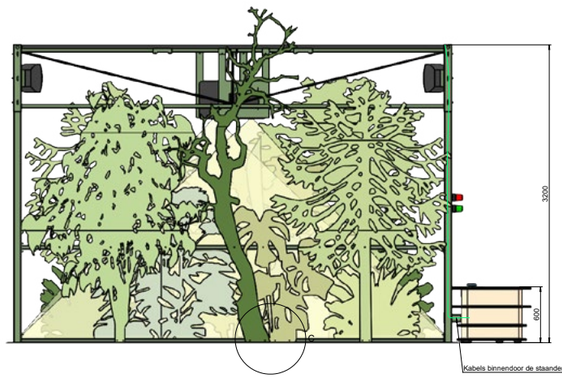


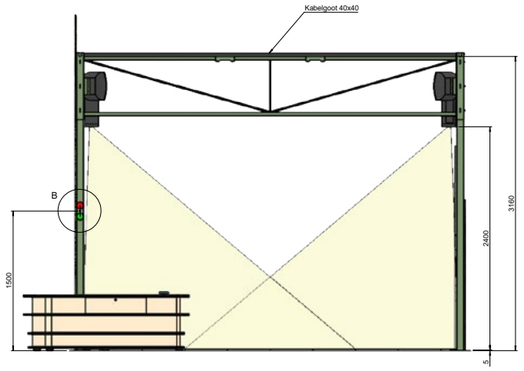


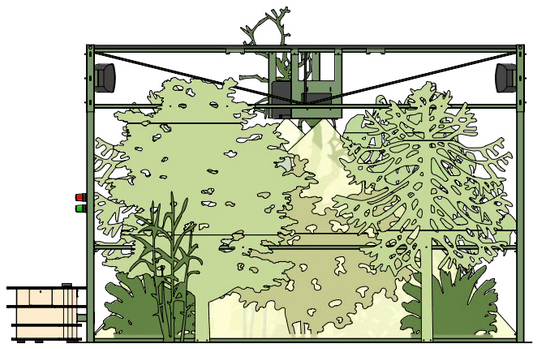
DETAIL B
SCALE 1 : 10

DETAIL C
SCALE 1 : 10









Rev.	Eng.	Date	Description
Description		Samen sta je sterk	Drawing no. 24151.C.3.3.01A
Exhibit name		Samen sta je sterk	Material See drawing
Exhibit number		24151.C.3.3	Finish 1
Client/ project		Naturalis - Triceratops tentoonstelling	Finish 2
Tolerance class		Scale 1:10 Amount	Color
NEN-ISO 2768-1	m	Format A0	Weight 673.2 kg
NEN-ISO 2768-2	K	Units: mm 3_angle	Remarks
ISO 9001 - VCA certified		Copyright 2024	Drawn by R. Scheifes Date 08-07-2024

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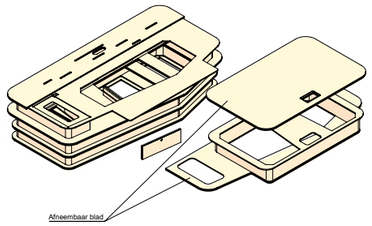
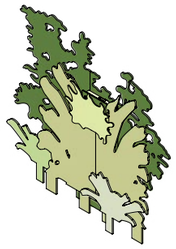
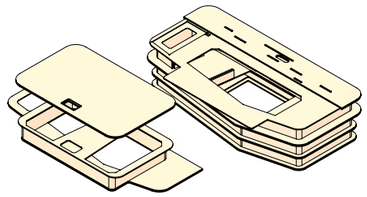
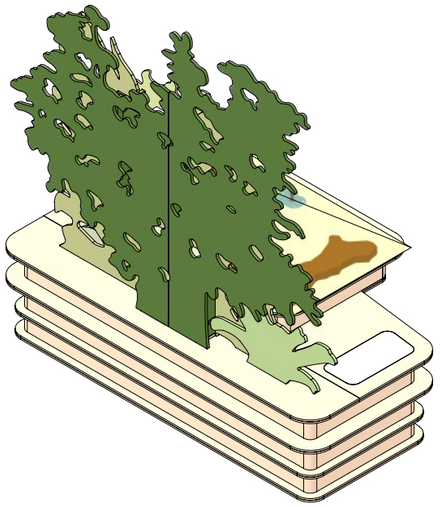
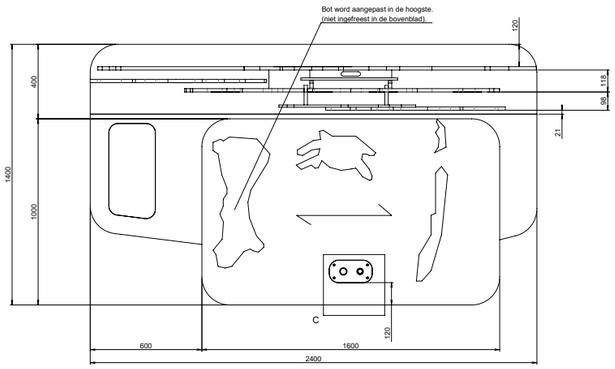
24151.C.3.4.01A-02 Ouch!

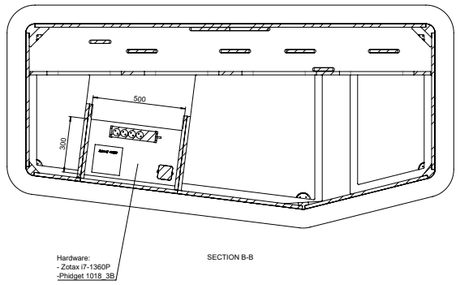




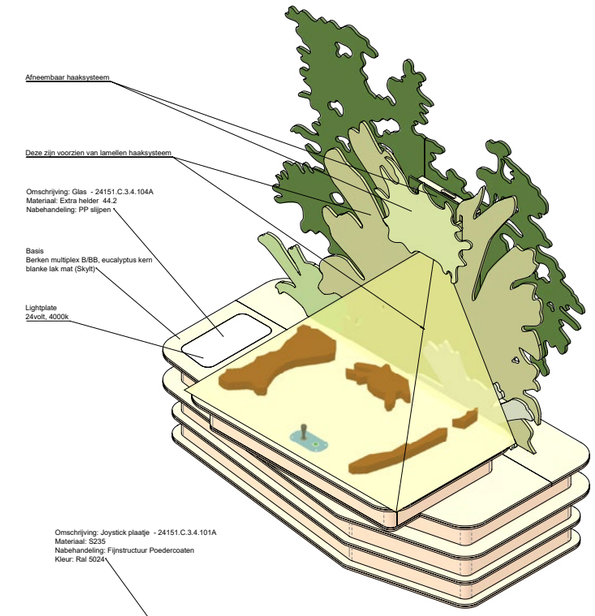


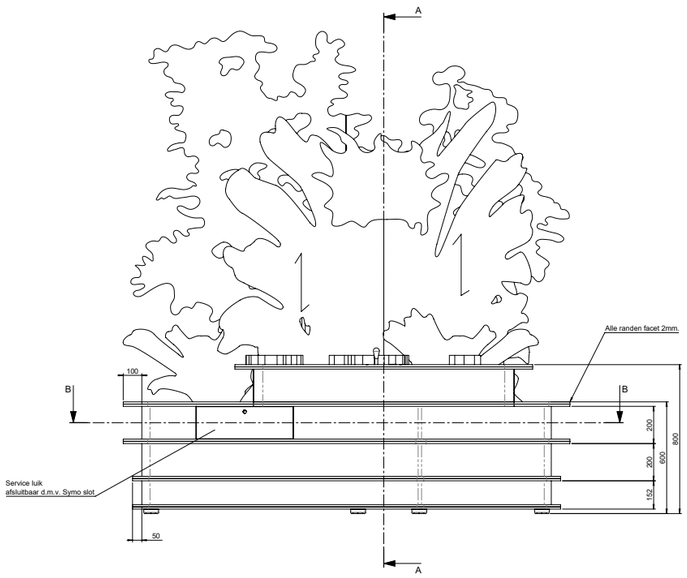


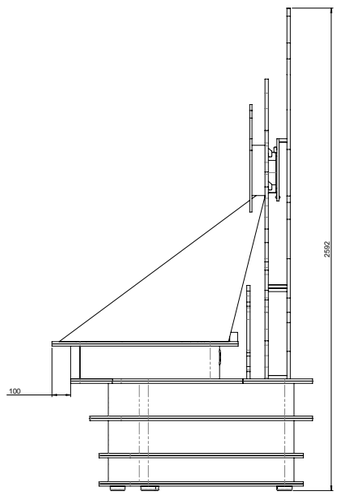


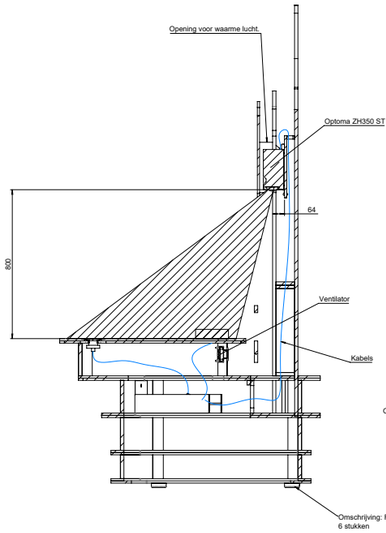


SECTION B-B

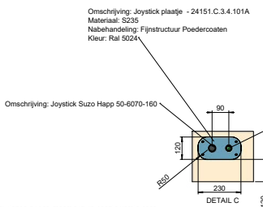








SECTION A-A



DETAIL C

Rev.	Eng.	Date	Description
01	RSCH	27-06-2024	
02	GHAH	14-07-2024	

Description	AU!			Drawing no.	24151.C.3.4.01A
Exhibit name	Au!			Material	See drawing
Exhibit number	24151.C.3.4			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class	Scale 1:10	Amount		Color	
NEN-ISO 2768-1	m	Format A0		Weight	285.7 kg
NEN-ISO 2768-2	K	Units: mm 3_angle		Remarks	
ISO 9001 - VCA certified	Copyright 2024			Drawn by	R. Scheifes Date 25-06-2024

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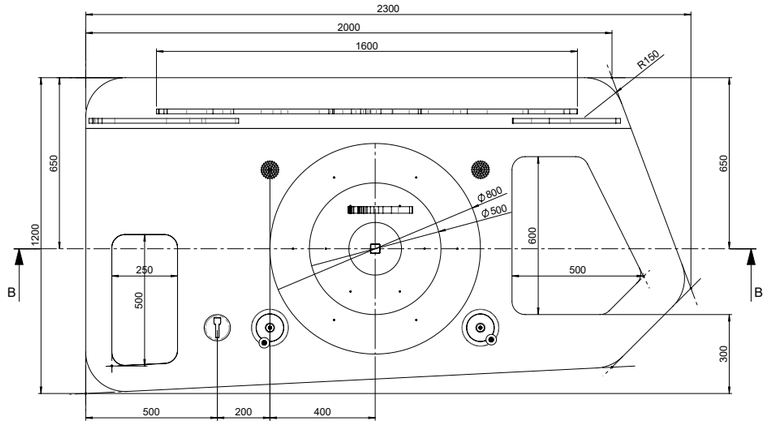
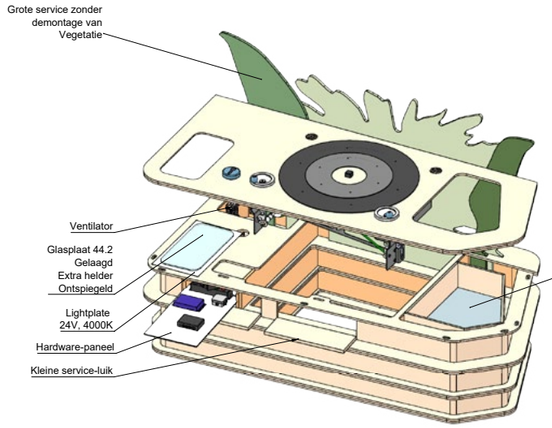
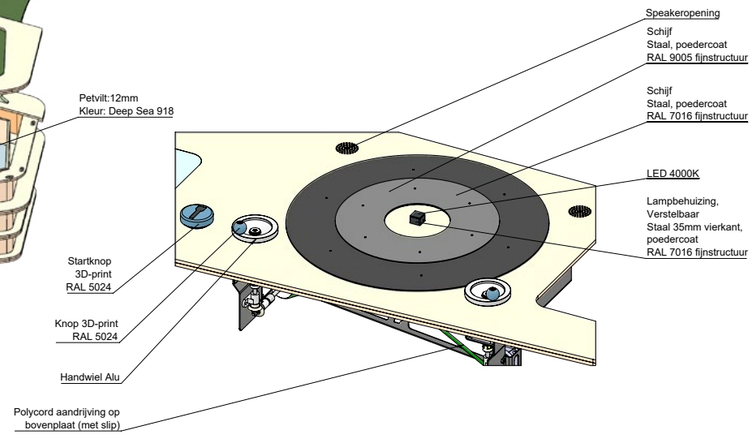
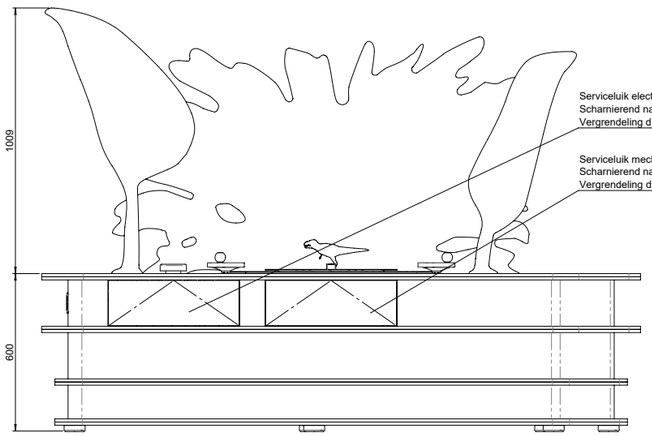
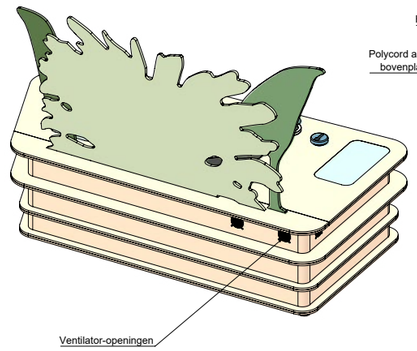
24151.C.4.1.01A-01 World of Triceratops

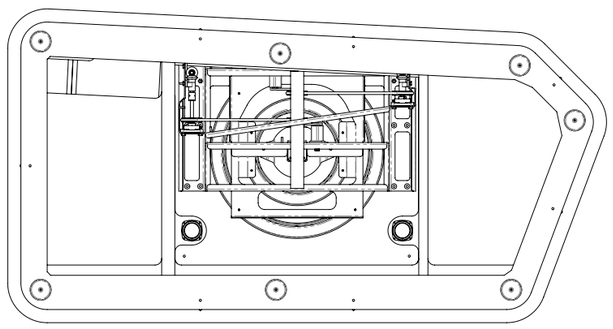


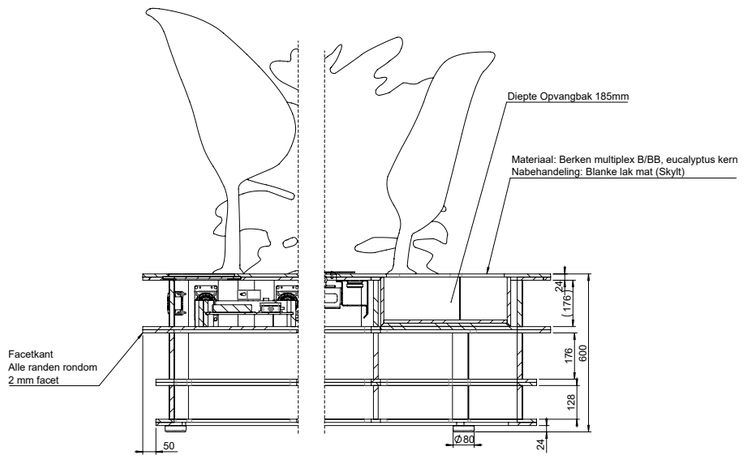




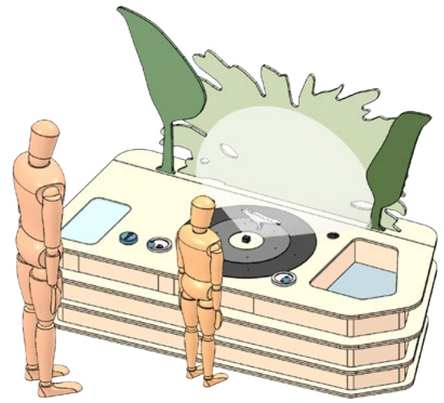








SECTION B-B



Rev.	Eng.	Date	Description
01	PLiE	15-07-2024	

Description	Samenstelling Schaduwtheater			Drawing no.	24151.C.4.1.01A
Exhibit name				Material	
Exhibit number				Finish 1	
Client/ project				Finish 2	
Tolerance class		Scale	1:10	Color	
NEN-ISO 2768-1	m	Format	A1	Weight	248.9 kg
NEN-ISO 2768-2	K	Units: mm	3rd angle	Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	P. van Lieshout
				Date	11-06-2024

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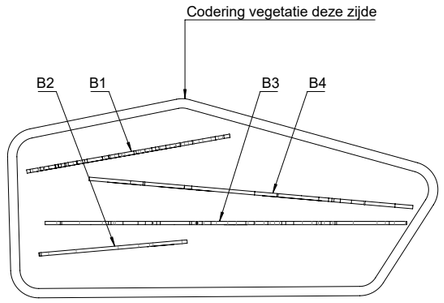
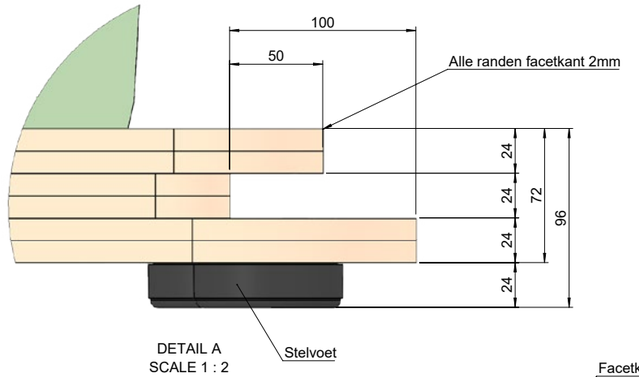
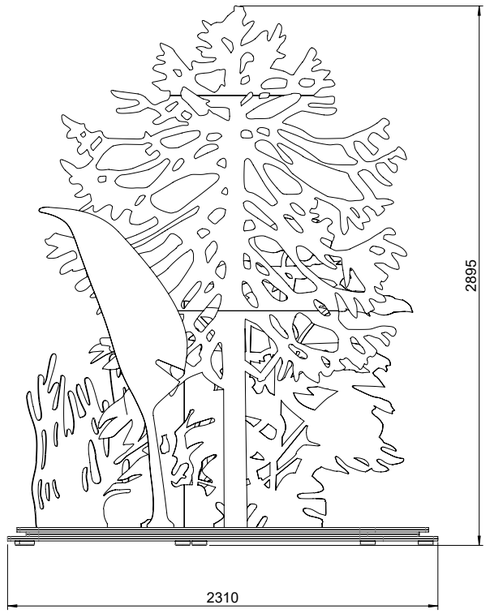
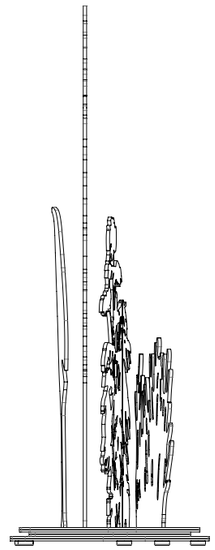
24151.A.3.02A-01 vegetation_B

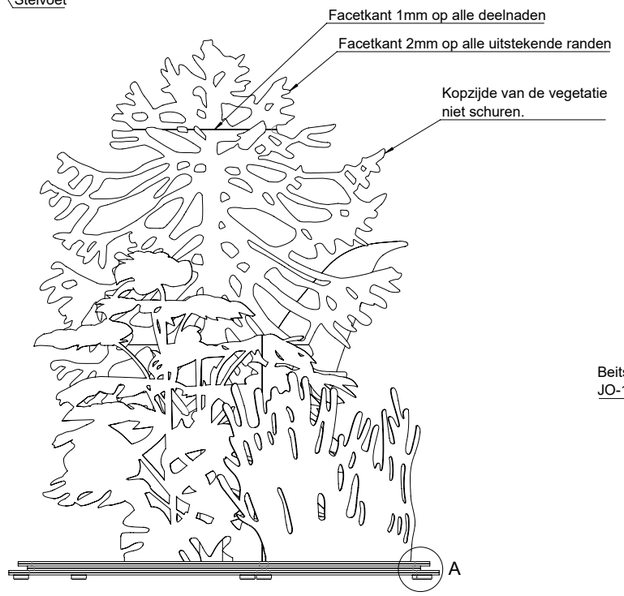


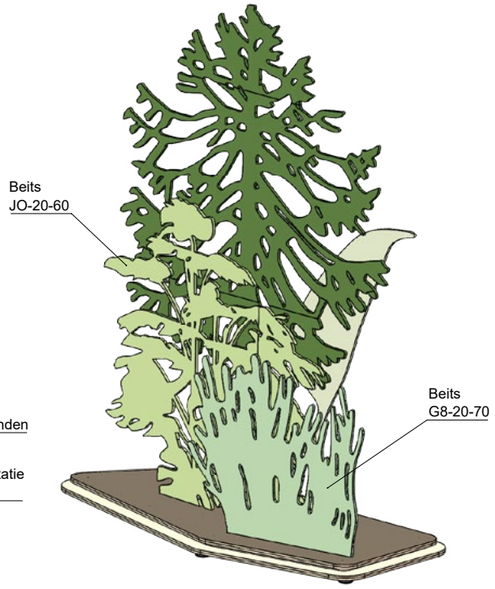


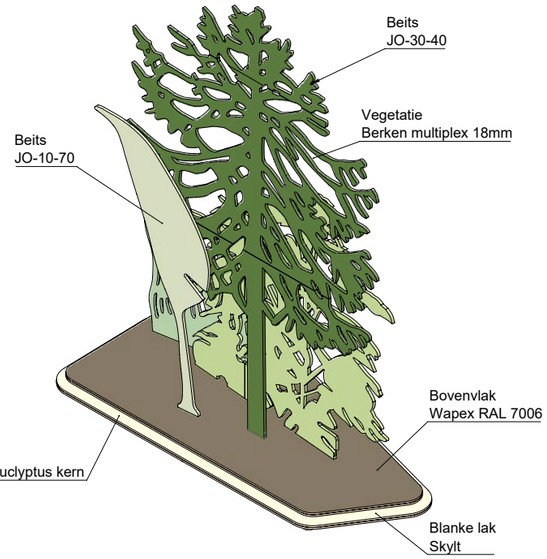
DETAIL A
SCALE 1 : 2

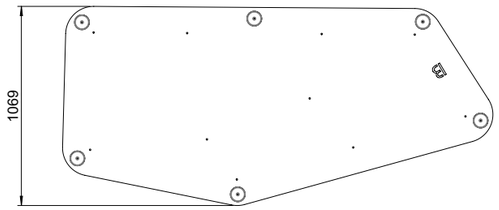












Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland B			Drawing no.	24151.A.3.02A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale	1:20	Color	
NEN-ISO 2768-1	m	Format	A2	Weight	179.8 kg
NEN-ISO 2768-2	K	Units: mm	3rd angle	Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. Ringeling Date 08-08-2024

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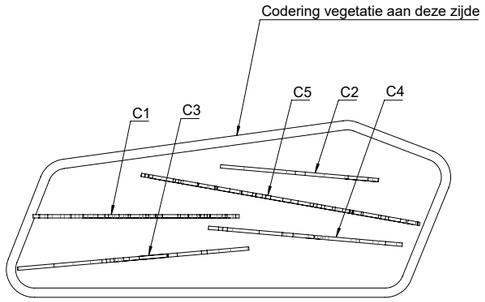
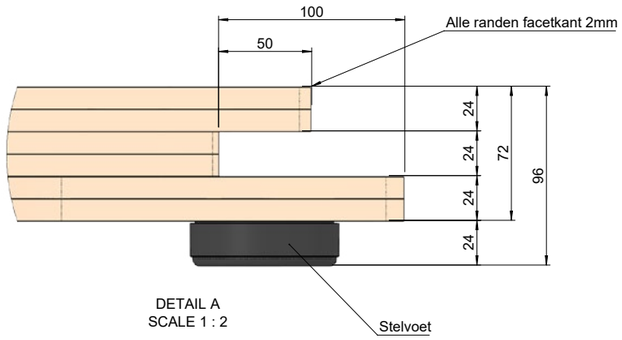
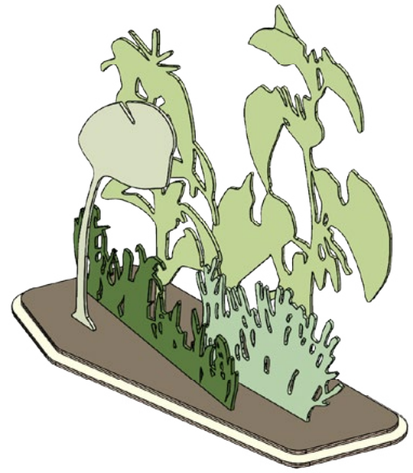
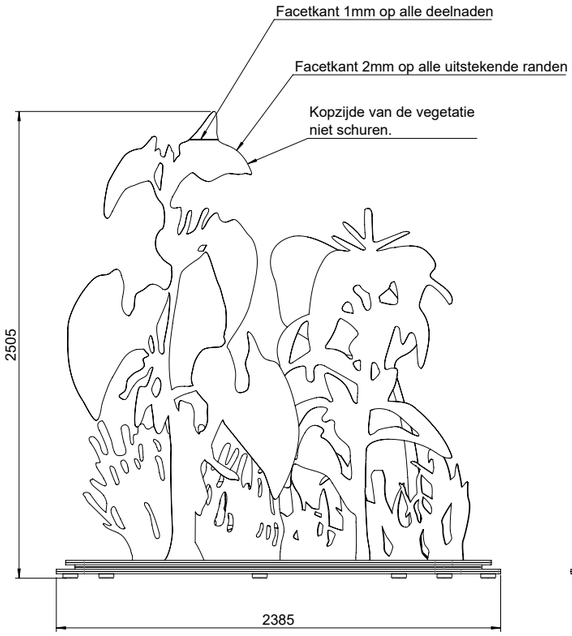
24151.A.3.03A-01 vegetation_C

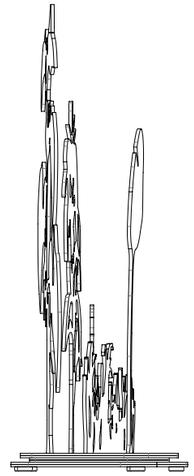


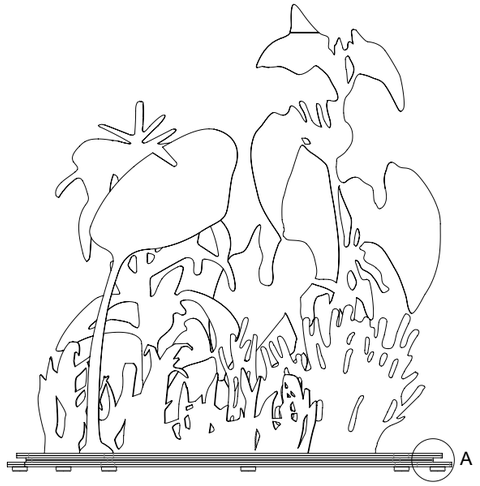


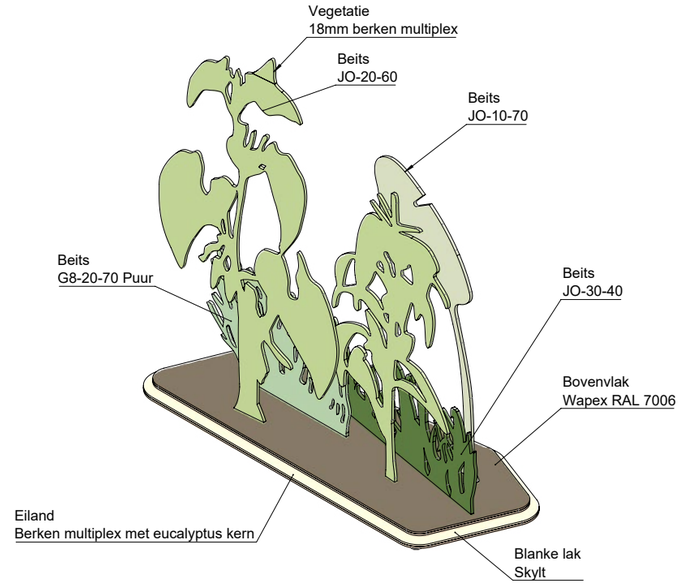
DETAIL A
SCALE 1 : 2

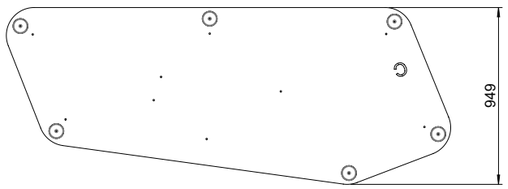












Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland C			Drawing no.	24151.A.3.03A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A2		Weight	153.5 kg
NEN-ISO 2768-2	K	Units: mm 3e angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. Ringeling — Date 12-08-2024

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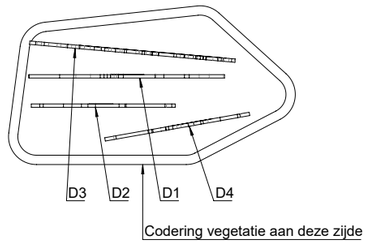
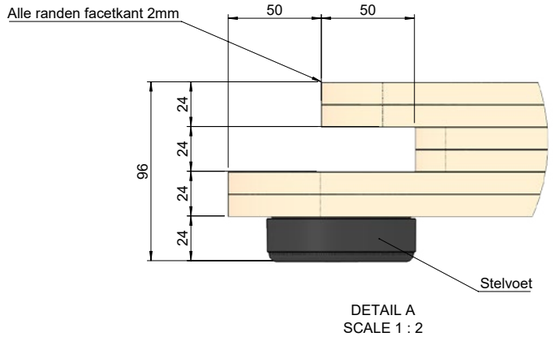
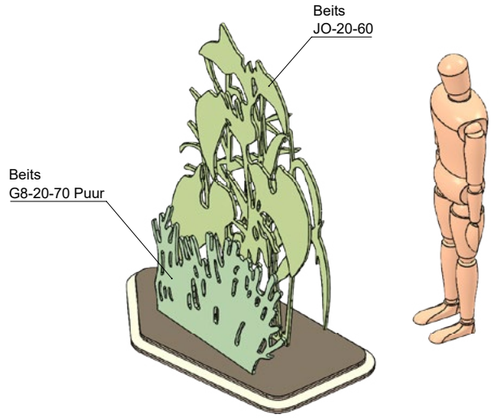
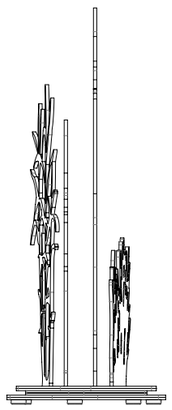
24151.A.3.04A-01 vegetation_D

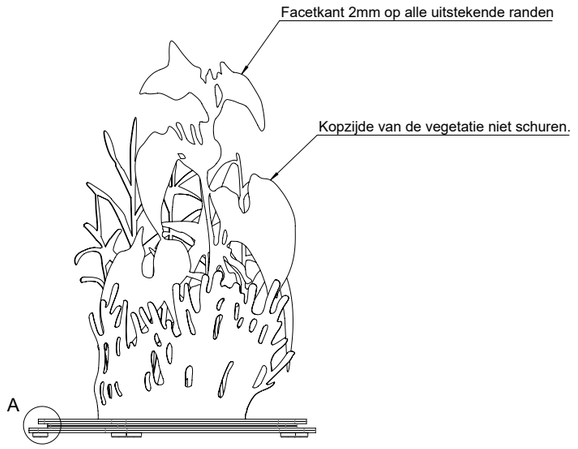


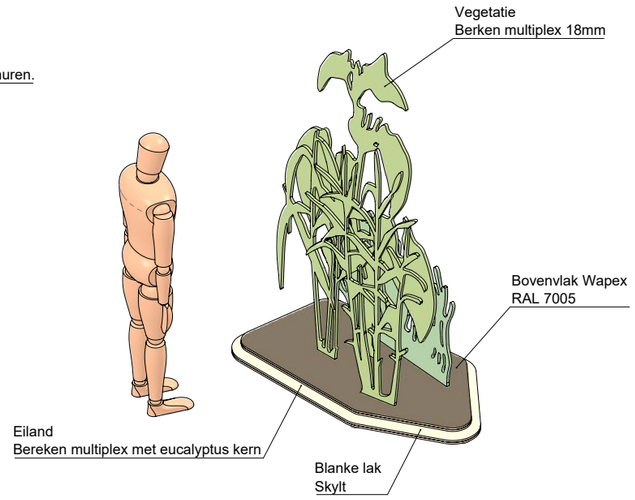


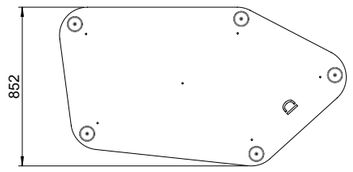
DETAIL A
SCALE 1 : 2











Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland D			Drawing no.	24151.A.3.04A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A2		Weight	85.3 kg
NEN-ISO 2768-2	K	Units: mm 3rd angle		Remarks	
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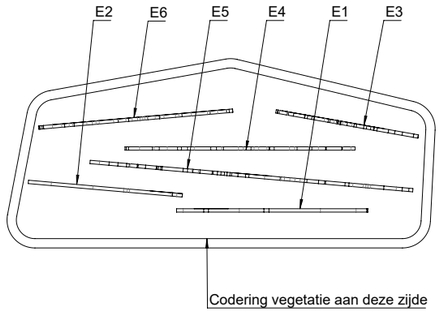
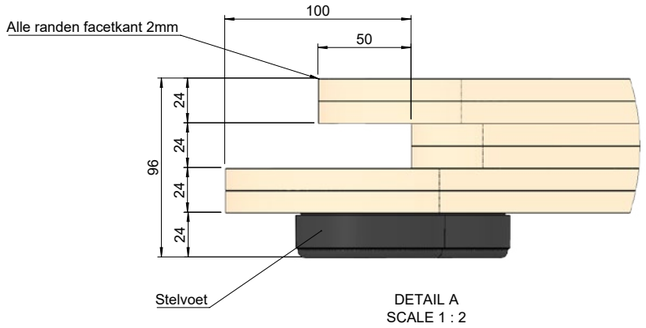
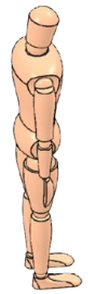
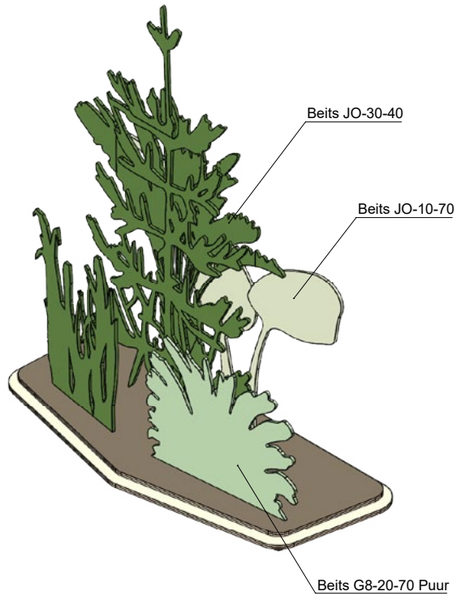
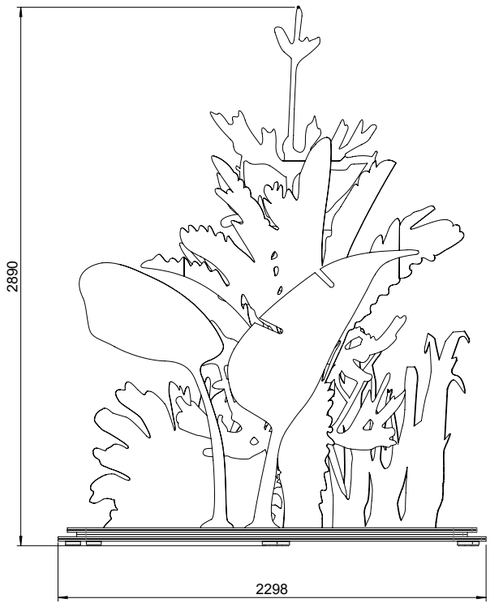
24151.A.3.05A-01 vegetation_E

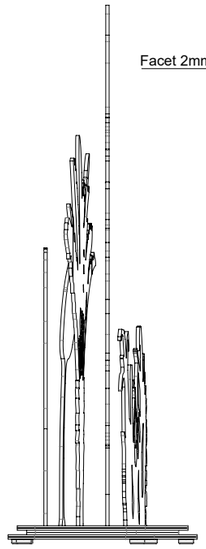


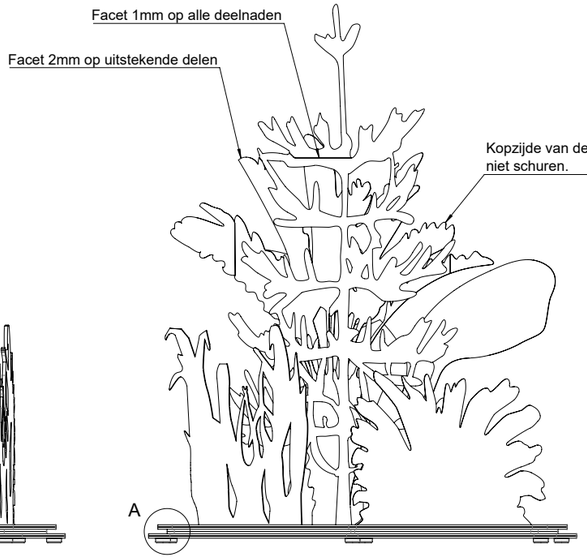


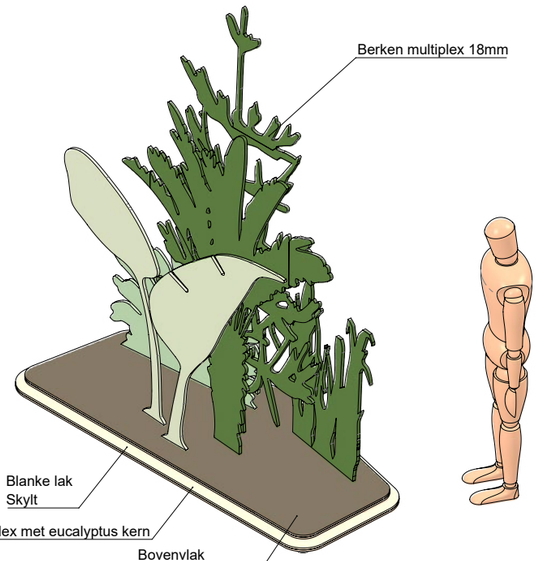


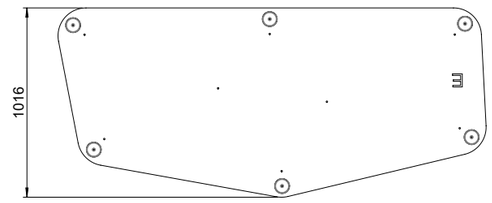












Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland E			Drawing no.	24151.A.3.05A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A2		Weight	195.3 kg
NEN-ISO 2768-2	K	Units: mm 3dp angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. Ringeling Date 13-08-2024

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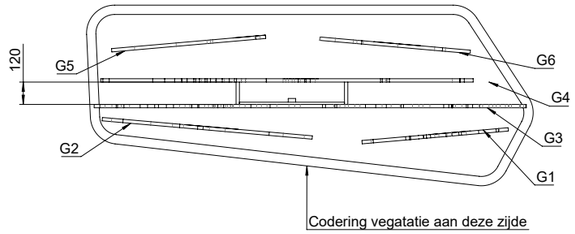
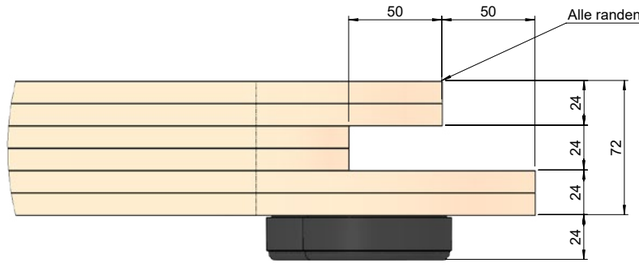
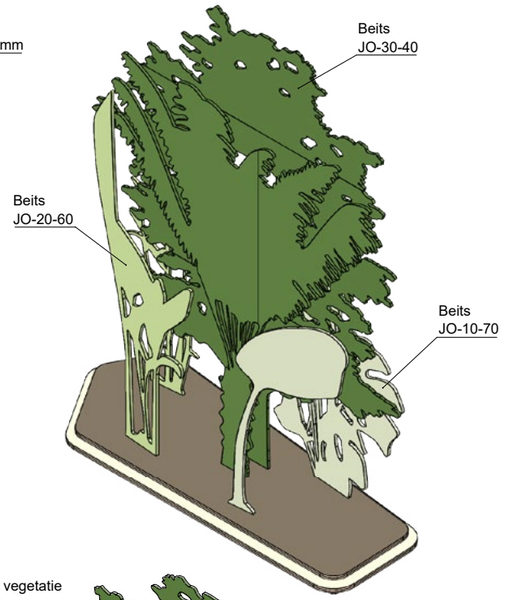
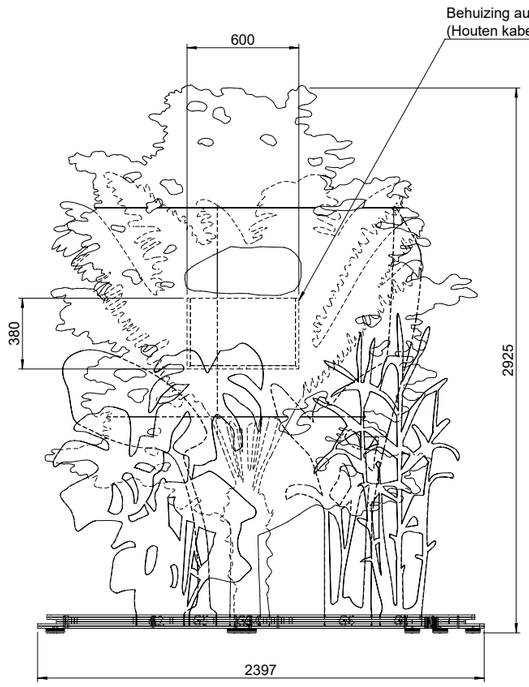
24151.A.3.07A-01 vegetation_G

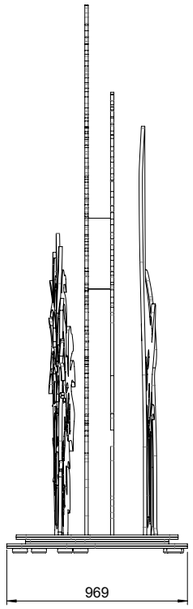


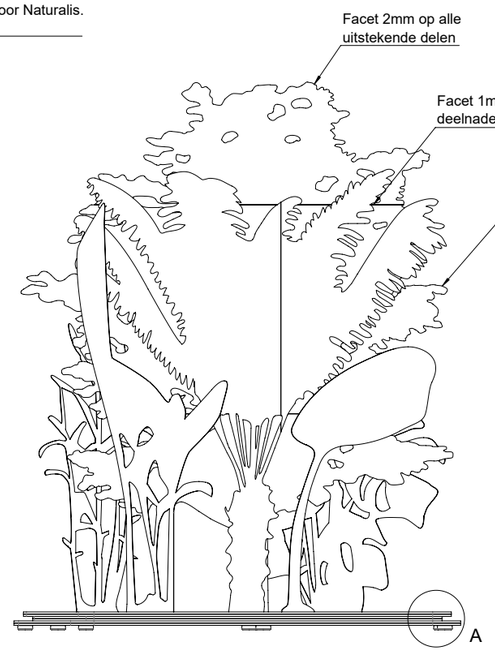


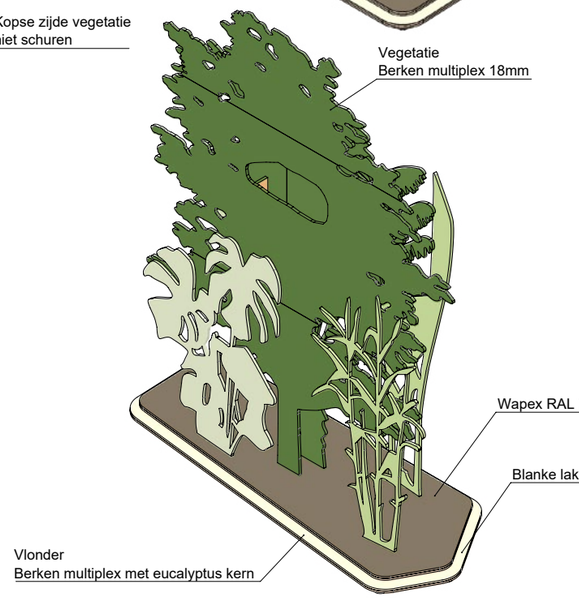
DETAIL A
SCALE 1 : 2

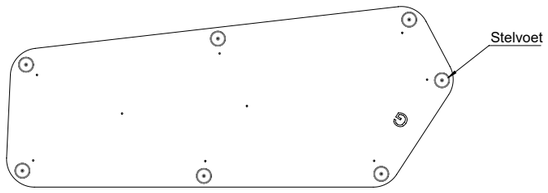












Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland G			Drawing no.	24151.A.3.07A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A2		Weight	259.8 kg
NEN-ISO 2768-2	K	Units: mm 3dp angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. Ringeling Date 22-08-2024

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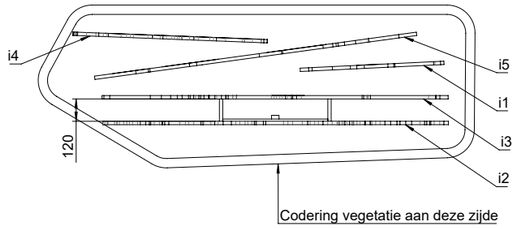
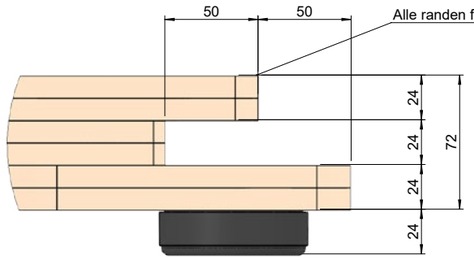
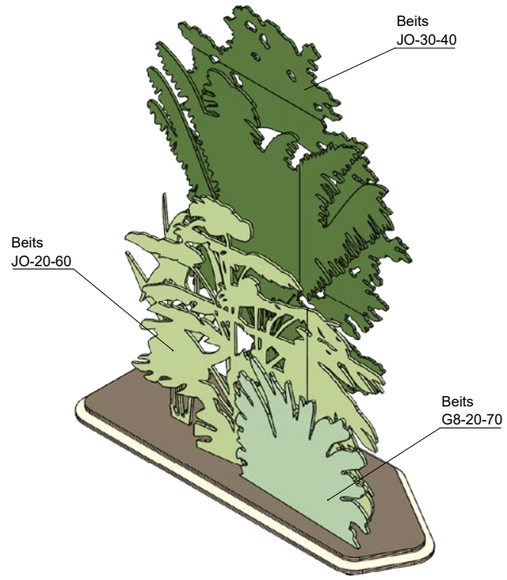
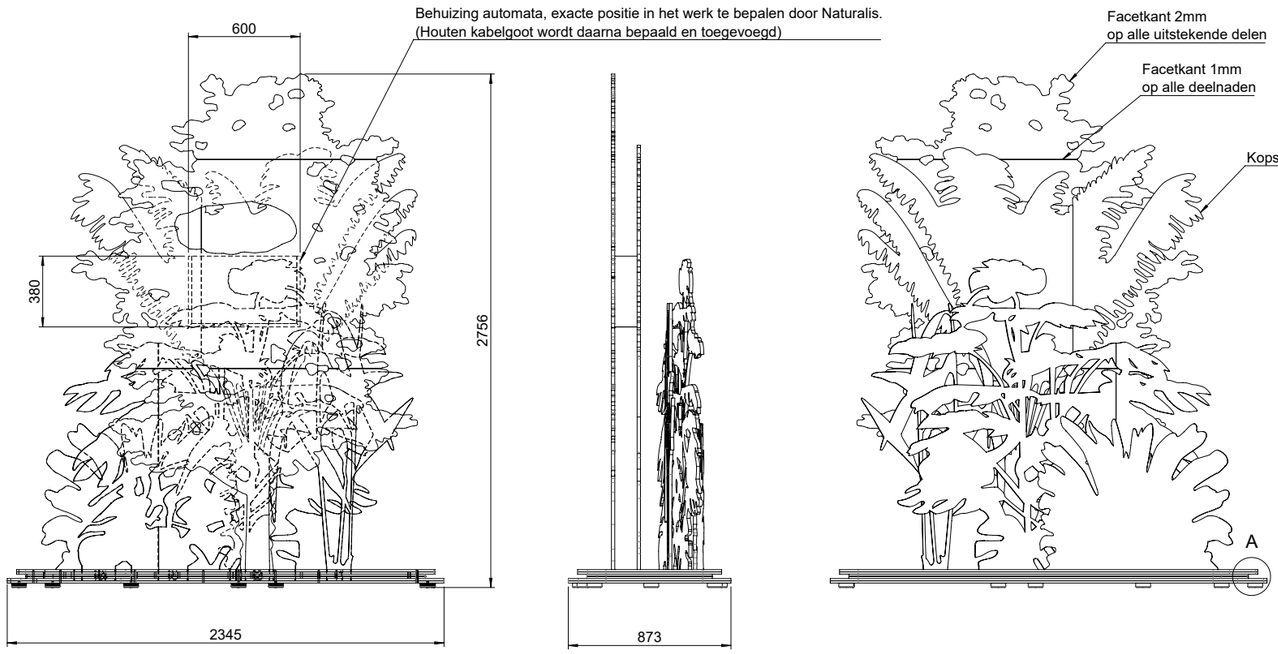
24151.A.3.09A-01 vegetation_I

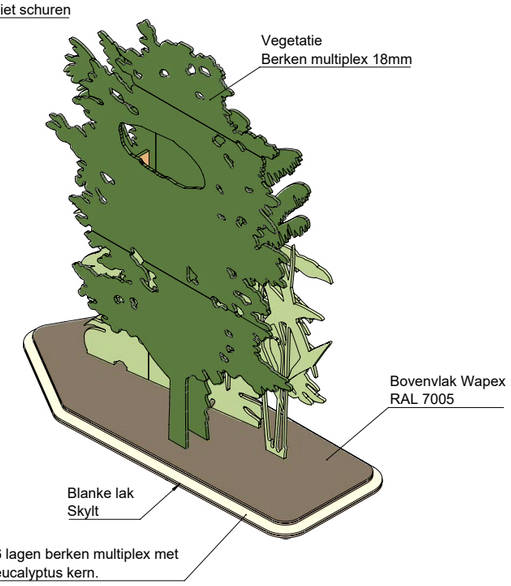


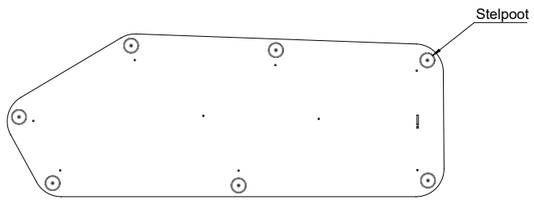


DETAIL A
SCALE 1 : 2









Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland i			Drawing no.	24151.A.3.09A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A2		Weight	265.9 kg
NEN-ISO 2768-2	K	Units: mm ∛∞ angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	G. Ringeling — Date 22-08-2024

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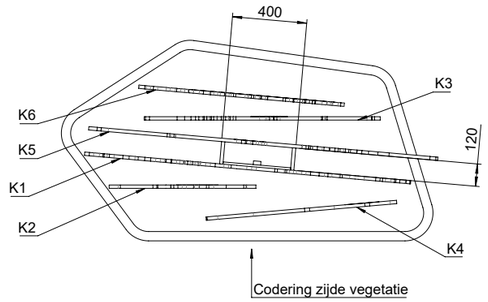
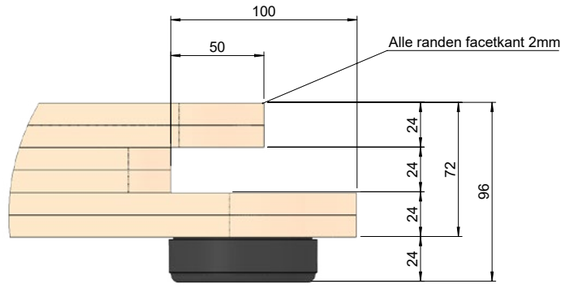
24151.A.3.11A-01 vegetation_K





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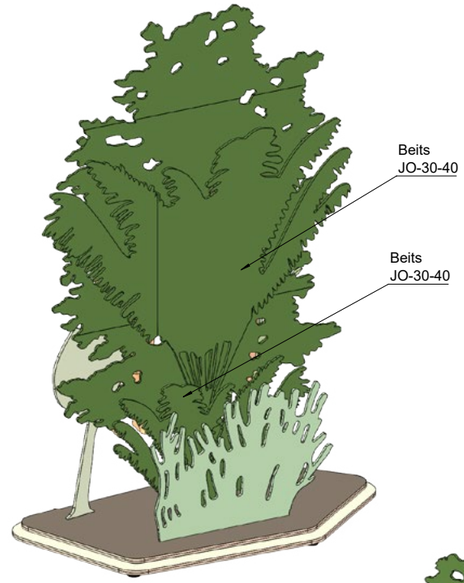

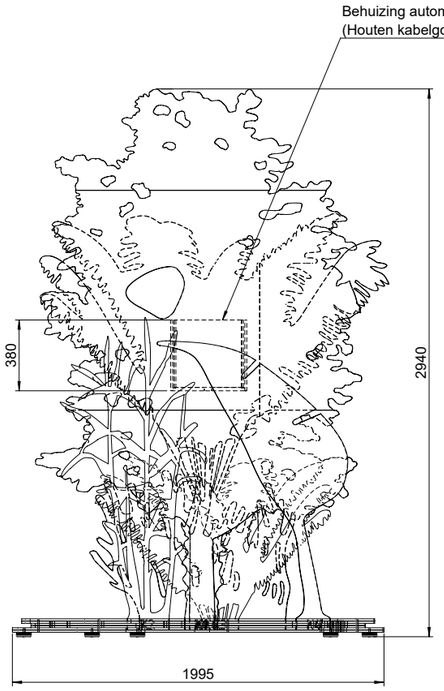

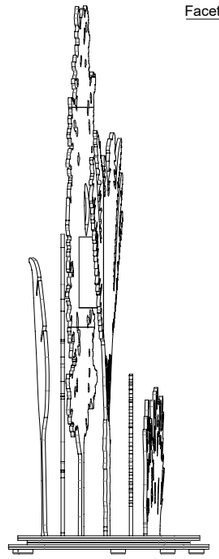

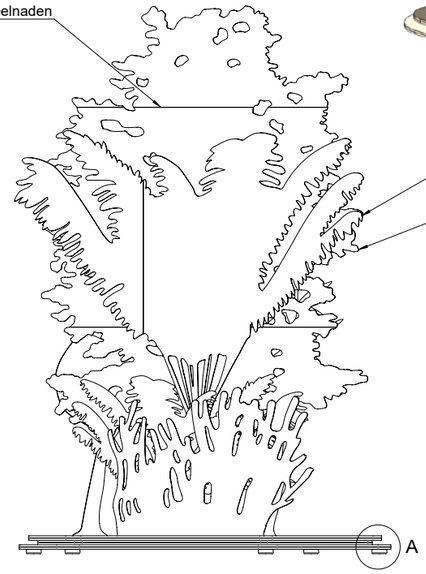

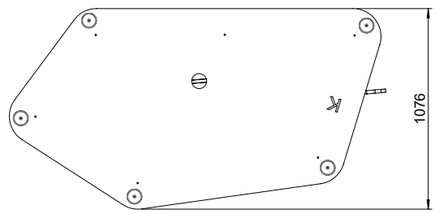

Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland K			Drawing no.	24151.A.3.11A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A2		Weight	166.3 kg
NEN-ISO 2768-2	K	Units: mm 3∞ angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	D. Luijten — Date 16-08-2024

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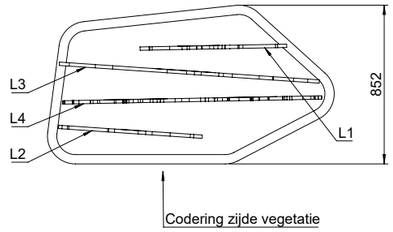
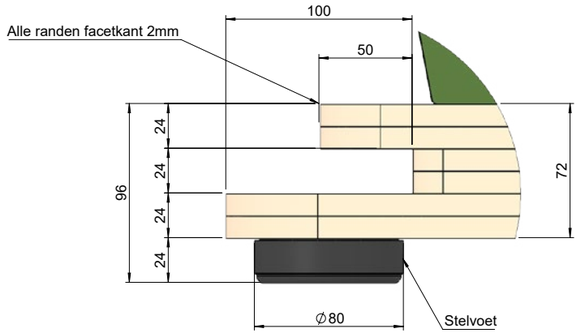
24151.A.3.12A-01 vegetation_L





DETAIL A
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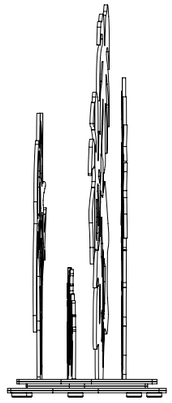

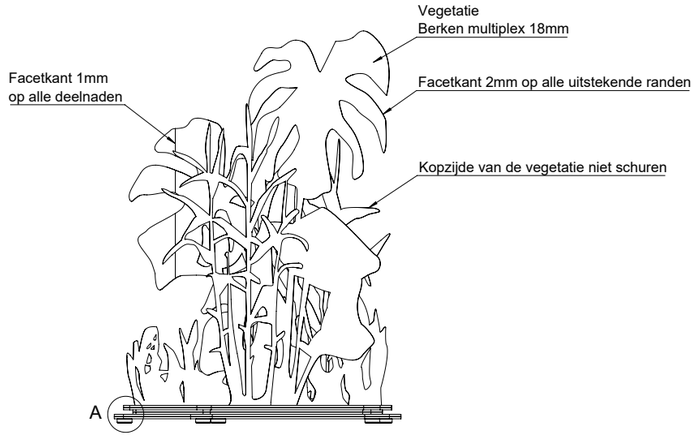

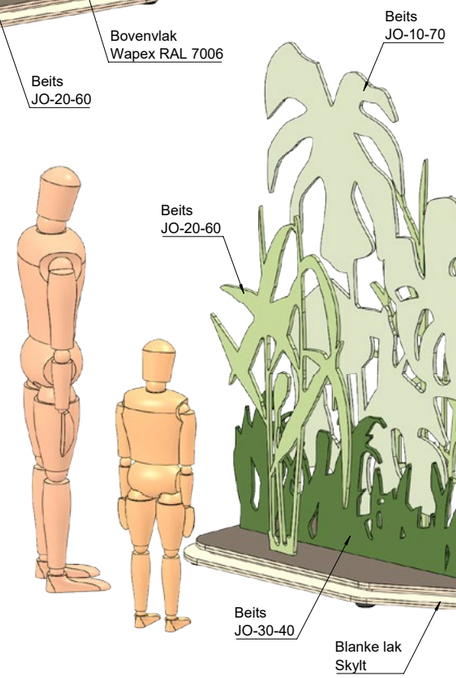

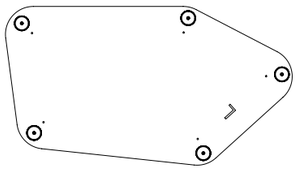

Rev.	Eng.	Date	Description
01	DLUI	03-09-2024	

Description	Eiland L			Drawing no.	24151.A.3.12A
Exhibit name	Vegetatie			Material	See drawing
Exhibit number	24151.A.3			Finish 1	
Client/ project	Naturalis - Triceratops tentoonstelling			Finish 2	
Tolerance class		Scale 1:20	Amount	Color	
NEN-ISO 2768-1	m	Format A2		Weight	85.2 kg
NEN-ISO 2768-2	K	Units: mm 3e angle		Remarks	
ISO 9001 - VCA certified		Copyright 2024		Drawn by	D. Luijten — Date 16-08-2024

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D. Packing list exhibition

To be determined

E. Exhibition texts

Code	Production code	Exhibit name	Location / medium in exhibit	English	Your 1st or 2nd language here	Your 3rd language here
A. Introduction zone						
A.1	INT.GR.01A	Intro text	print on transparant lightsheet foil	Triceratops: the herd Meet *Triceratops*! This dinosaur lived around 67 million years ago. Naturalis discovered five skeletons of this dinosaur in North America. Find out all about how they lived.		
A.2	INT.GR.02A	Model adult triceratops and animatronics baby	print on transparant lightsheet foil	Sleeping triceratops This is what *Triceratops* looked like. Huge horns, a massive frill, knobbly skin and a beak-like snout... Thanks to the excavated bones, we are discovering more and more.		
B. Collection zone						
B.1.a	POD.GR.04A	Triceratops herd	print on transparant lightsheet foil	Remarkable find Individual bones and skulls of *Triceratops* are found quite commonly, but complete skeletons are rare. In Wyoming, USA, Naturalis excavated no less than five skeletons. The largest triceratops discovery ever.		
B.1.b	POD.GR.03A		print on transparant lightsheet foil	Plant eater *Triceratops* means ‘three-horned face’. The full name of the species is *Triceratops horridus*. ‘Horridus’ means ‘frightful’. At eight metres long and weighing 6000 kg, it may appear dangerous, but *Triceratops* was in fact a friendly plant eater.		
B.1.c	POD.GR.02A		print on transparant lightsheet foil	Herd The five skeletons are not all of the same size. Some of the triceratops had not yet reached maturity; others were adults. Could they have lived together in a group? Their bones were found close together, so it seems likely.		
B.1.d	POD.GR.01A		print on transparant lightsheet foil	Real and imitation Not all the bones were discovered. And yet the skeletons are complete. How can that be? Thanks to the 3D printer! The bone of a left leg can be scanned and printed in mirror image. And the result is the bone of a right leg...		
			print on transparant lightsheet foil	Look at the skeleton and compare it with this drawing. The dark blue bones are real; the pale blue bones are printed. Can you tell them apart?		

Code	Production code	Exhibit name	Location / medium in exhibit	English	Your 1st or 2nd language here	Your 3rd language here
B.2	n/a	Tricerascope	monitor	Rotate		
B.3	n/a	Bone Puzzle	monitor	Bone puzzle The bones of the triceratops were all jumbled up. How can that be? And why were so many preserved? Use your feet to travel through time Then Now # million years ago		
				1) It's raining hard and long. The water has nowhere to go, and neither does the herd. 2) This group of triceratops is in difficulty, some animals become stuck in the mud 3) If the water continues to rise, it is too late for five of these animals 4) As the water level falls, the skeletons of the five triceratops are left sticking half out of the mud.. 5) ...but the river once again overflows its banks, washing away the bones 6) The bones are now all jumbled together further downstream 7) Millions of years later, researchers of Naturalis discover these skeletons in the petrified river mud. 8) The bone map clearly shows that the bones are jumbled up they are no longer complete skeletons. 9) The individual bones are grouped together and assembled into skeletons. Here they are now!		
C. Interactive zone						
C.1 Food						
C.1.2	C.1.2.GR.02	What did Triceratops eat?	print on transparant lightsheet foil	What did Triceratops eat? The plants that lived at the time of *Triceratops* were quite similar to those of today. The first flowering plants emerged halfway through the dinosaur age. Grass had not yet evolved. With its pointy snout, *Triceratops* was able to choose precisely what to eat. Leaves, seeds, fruit, young twigs: they were all on its menu. Normally, only individual leaves or seeds are discovered; no complete plants.		

Code	Production code	Exhibit name	Location / medium in exhibit	English	Your 1st or 2nd language here	Your 3rd language here
				Give these fossils water and discover what the plants looked like!		
C.1.2.a	C.1.2.GR.03		print on transparant lightsheet foil	Plane tree (leaf) Platanites marginata RGM.1333537		
C.1.2.b	C.1.2.GR.03		print on transparant lightsheet foil	Pine cones Sequoia sp. RGM.15147.1		
C.1.2.c	C.1.2.GR.03		print on transparant lightsheet foil	Ivy (leaf) Hedera ovalis RGM.232083		
C.1.2.d	C.1.2.GR.03		print on transparant lightsheet foil	Birch (leaf) Betulites vertii RGM.232077		
C.1.2.e	C.1.2.GR.03		print on transparant lightsheet foil	Cycad (seed) Cycas RGM.1333550		
C.1.3	C.1.3.GR.01A	Shedding teeth	print on transparant lightsheet foil	Shedding teeth With its strong jaws, *Triceratops* was able to chop its food finely. Powerfully muscled jaws were attached to the large protrusion behind the row of teeth. And every three months, a new row of teeth was ready for use. That was useful, because the teeth were rapidly worn down by their hard diet.		
				Lower jaw Triceratops horridus cast		
C.1.3.a	C.1.3.GR.01B		print on transparant lightsheet foil	Guess how many teeth *Triceratops* shed in its lifetime. Look behind the blue flap to find the answer.		
C.1.4	C.1.5.GR.02	Eating and farting	print on transparant lightsheet foil	Eating and farting *Triceratops* was able to eat around 200 kg of food, every day. With its slicing teeth it tore its food into fine shreds. These plant shreds were digested by bacteria. A process that delivered energy, nutrients and... enormous farts.		
				Put some food balls in the mouth of triceratops. Pull the lever near its backside and see what happens!		
			print on transparant lightsheet foil	Coprolite (droppings) Triceratops horridus RGM.445731		

Code	Production code	Exhibit name	Location / medium in exhibit	English	Your 1st or 2nd language here	Your 3rd language here
C.1.4.a	C.1.5.GR.03		transparant foil on acrylic sheet	Greenhouse gas Large amounts of methane gas are released during the digestion of plant-based food.		
C.2 Seduction						
C.2.2	C.2.2.GR.02	Wildly attractive	print on transparant lightsheet foil	Wildly attractive That huge frill was not only there for defence, but also to attract attention. It may have featured bright colours. Many birds - which are descendants of the dinosaur - even perform eye-catching dances to seduce a partner. Do you think *Triceratops* did the same?		
				Put on a triceratops frill Seduce your fellow player		
	n/a		monitor	Wildly attractive How seductive are you as a triceratops? Play together! Seduce your playmate, are you a match? Who wants to sit here? What a lovely couple Show your dance moves and seduce your partner Ready? move you head It's a match! Ready to take a picture? Scan for your photo		
C.2.3	C.2.3.GR.02	Growth	print on transparant lightsheet foil	Growth As you grow, not only do you increase in size but you undergo change. In *Triceratops*, the horns first curved upwards; as they grew older, they started to curve back down. The pointy protrusions on the edge of the frill became increasingly smooth with age.		
				Turn the knob on the flashlight and make triceratops younger or older!		
C.2.4a	C.2.4.GR.01A	Age	print on transparant lightsheet foil	Age How old were the five triceratops? Just like in trees, some bones contain growth rings. Researchers cut very small sections of bone into thin discs, to look for growth rings under the microscope.		

Code	Production code	Exhibit name	Location / medium in exhibit	English	Your 1st or 2nd language here	Your 3rd language here
			print on transparant lightsheet foil	Place a thin section of triceratops bone under the microscope. Count the growth rings. How many are there?		
C.2.4.b	C.2.4.GR.02A		print on transparant lightsheet foil	GROWTH LINES The fossil bone is actually brown, but magnified and viewed through the special microscope with polarised light, the cells in the bone take on a distinctive colour. This helps make the growth lines more visible. This is a thin section, a sawn cross-section of triceratops bone that has been ground so thin you can almost see through it. In this section of bone you can see four orange-pink lines, which means this piece of bone grew in four years. The blue lines show slow growth – in the winter, when there is less food. The orange-pink lines show faster growth – when there is plenty to eat, in the summer.		
	n/a		monitor	Place the sample under the microscope and look closely Can you see the growth lines? How many? Change language How many growth lines can you see? I can see... Back Check! Scientists saw #. Put sample back		
C.2.5	C.2.5.GR.02	Nest	print on transparant lightsheet foil	Nest We do know that other dinosaurs laid eggs. But no *Triceratops* eggs have yet been discovered. This is what a triceratops nest probably looked like: the eggs close together and covered with leaves.		
C.2.6	C.2.6.GR.02	Graffiti	print on transparant lightsheet foil	Green, yellow, purple or red? We do not know what colour *Triceratops* must have been. For a plant eater, a camouflage colour is obviously useful. But is it still necessary when you are really big? In that case an eye-catching colour scheme may be more important! What do you think?		
				Pick up a spray can and colour the triceratops!		

Code	Production code	Exhibit name	Location / medium in exhibit	English	Your 1st or 2nd language here	Your 3rd language here
C.2.6.a	C.2.6.GR.03		sticker on spray can	CLASSICAL for the traditional touch a bit boring		
C.2.6.b	C.2.6.GR.03		sticker on spray can	ERASER undo all and try again encore!		
C.2.6.c	C.2.6.GR.03		sticker on spray can	LABYRINTH how do you find your way back? timeless		
C.2.6.d	C.2.6.GR.03		sticker on spray can	PSYCHEDELIC let's go crazy mind blowing		
C.2.6.e	C.2.6.GR.03		sticker on spray can	RED BLUSH you're blushing, are you in love? so charming!		
C.2.6.f	C.2.6.GR.03		sticker on spray can	FRISIAN COW the cow of the dinosaur age let it be!		
C.2.6.g	C.2.6.GR.03		sticker on spray can	PINEAPPLE you look like juicy fruit seductive!		
C.2.6.h	C.2.6.GR.03		sticker on spray can	CHAMELEON find your true colors there you are!		
C.3 Safety						
C.3.2	C.3.2.GR.02	Horn	print on transparant lightsheet foil	Horn The two horns above the eyes say: beware! The fossils of the horns in fact consist only of the inner bone. On the living *Triceratops*, they were covered with another layer of horn. Made of keratin, the material that makes up your fingernails. Their actual horns would have been even longer!		
C.3.3	C.3.3.GR.02	Strenght through unity	print on transparant lightsheet foil	Strength through unity With its horns, *Triceratops* could keep attackers at a distance. And even better: by working together with other Triceratops. In the same way that giraffes can scare lions away, by working together.		
				Immerse yourself into the world of the triceratops Stay together... and watch out for T. rex!		

Code	Production code	Exhibit name	Location / medium in exhibit	English	Your 1st or 2nd language here	Your 3rd language here
	n/a		floor projection	Together we stand strong Triceratops stick together to keep safe from predators stand behind the line to start Is everyone ready? There's room for 5 people Stand on the circles Form a herd Stand together Make sure the bubble does not break Are you ready? Find the water Stick with the herd Wait a moment! Oh no!! The T. rex has caught someone from your herd. Stick closer from now on! You did it!! You've stuck together as a herd. You are all safe from predators Move over for the next herd		
C.3.4	C.3.4.GR.02	Ouch!	print on transparant lightsheet foil	Ouch! A fight with another triceratops? A T. rex attack? Or perhaps it simply tripped and fell? Triceratops sometimes suffered broken bones. Pretend to be a researcher and examine the triceratops bones.		
				Use the joystick and look for injuries.		
C.3.4.a	n/a		projection	Move the magnifying glass Change language Ouch! Find out where triceratops has hurt itself No... there's no injury here Are you still here? Move the magnifying glass to continue playing		
				This upper arm bone of triceratops has bite marks of a T. rex.		
				This rib is broken, but from the bump you can see that the fracture has regrown well		
				These tail vertebrae have grown together. The tip of the tail has become crooked. Did another triceratops step on the tail?		

Code	Production code	Exhibit name	Location / medium in exhibit	English	Your 1st or 2nd language here	Your 3rd language here
C.3.5	C.4.1.GR.01A	World of Triceratops	print on transparant lightsheet foil	World of Triceratops This is the world Triceratops lived in. For a plant eater like Triceratops there was plenty to eat. But there were also other dinosaurs on the prowl – not only plant eaters but meat eaters too! Can you bring Triceratops' world back to life? What dinosaurs can Triceratops expect to meet today?		
				Place a dinosaur on the turntable, switch on the light and spin the wheel.		

F. Template Condition report Triceratops fossils

Condition report

Reason condition check:
- ❑ loan (loan number, name institute, name exhibition):
- ❑ preparation
- ❑ restauration
- ❑ other: …….

Registration number:
Name:
Type of object (fossil, mounted skin, book etc.):
Dimensions (l*b*h cm.):
Number of pieces:
Value:

Object condition: excellent / good / poor
Condition details:
- ❑ Missing parts:
- ❑ Loose parts:
- ❑ Dirty:
- ❑ Pest damage:
- ❑ Foxing:
- ❑ Other:

Health & safety information:
- ❑ Contains arsenic
- ❑ Liquid chemicals:
- ❑ Heavy and/or difficult to handle
- ❑ Radioactivity
- ❑ Asbestos
- ❑ Other: ……..

Handling guidelines:

Naturalis Biodiversity Center

Condition report

- ❑ Wear gloves
- ❑ Wear protective clothing
- ❑ Wear facemask
- ❑ Wear safety glasses
- ❑ Avoid vibrations
- ❑ Keep in upright position
- ❑ Special packaging instructions:.....
- ❑ Other: …

Environmental guidelines:
- ❑ Temperature:.....
- ❑ Humidity:.....
- ❑ Light:.....
- ❑ Other:.....

Remarks:

Agreed upon treatment:
- ❑ action:.....
- ❑ materials/techniques used:.....
- ❑ by whom:.....
- ❑ date:.....
- ❑ remarks:.....

Photos:

Naturalis Biodiversity Center

Condition report

Date condition check:

Naturalis Biodiversity Center

Condition report

Name and function condition checker:

Signature condition checker:

Comments on condition before exhibition and after transport:

Date condition check:
Name(s) and function(s) condition checker(s):

Signature condition checker(s):

Comments on condition after exhibition and before transport:

Naturalis Biodiversity Center

Condition report

Date condition check:
Name(s) and function(s) condition checker(s):

Signature condition checker(s):

Comments on condition after exhibition and after transport:

Date condition check:
Name and function condition checker:

Signature condition checker:

Naturalis
Biodiversity
Center

G. Template Venue facilities report

UK Registrars Group
Standard Facilities Report

Confidential

This Facilities Report was devised by the United Kingdom Registrars' Group (UKRG) in consultation with the Museums, Libraries and Archives Council.

The form will enable lenders to assess the practicalities involved in making loans. It is intended to help both borrowers and lenders identify potential problems and reach agreement on how these can be resolved.

It should therefore be completed and returned as quickly as possible.

The form is intended for use in all kinds of museums and galleries, irrespective of type of collection or size. For this reason not all questions will be relevant to every borrower. However as a standard form it can be filled in once and updated for use with any future loan requests. Please complete the form therefore as fully and accurately as possible, adding any other information which you feel may be relevant. You should retain a copy for future use.

Lending Institution **Address** **Contact** **Position** **Telephone** **Fax** **Email** **Lending Institution's Reference Code**	
Loan Venue **Address** **Contact** **Position** **Telephone** **Fax** **Email** **Purpose of Loan/Title of Exhibition** **Dates at this Venue** **Date Form Completed**	

[A] Building

This section aims to create a picture of the type of building in which loans would be housed, as well as covering potential dangers such as building work and infestation by pests. It would be helpful if a photograph or postcard could be included.

Please note parts of this section are replicated in the UKGR Standard Facilities Report Security Supplement.

1.1 Are your premises purpose-built galleries / museums / other?	
1.2 If "**OTHER**" please supply details	
2. When were your premises completed?	
3.1 What type of building materials are used in the construction of the building?	

	Brick	**Concrete**	**Glass**	**Safety Glass**	**Steel**	**Stone**	**Wood**	**Other ***
Exterior Walls								
Interior Walls								
Ceilings								
Structural Supports								

*If ***other*** please provide details

4.1 Do you have any construction or refurbishment work in progress or planned within the next 3 years?	

4.2 If **YES,** please supply details (nature of work, dates)	
5.1 Have your premises ever been assessed by the UK Museums Security Adviser based at MLA? 5.2 If **YES,** please supply details	
6. Does your institution have a procedure in place to deal with emergencies? (e.g. a disaster plan) If **YES** please supply a copy	
7. In the event of an emergency who would be authorised to remove items from danger?	
8.1 Is smoking permitted anywhere in the building? 8.2 If **YES,** please state where and how this is controlled	
9.1 Do you make routine inspections for rodent, insect and micro-organism problems? 9.2 If **YES,** please supply details	

[B] Exhibition area

The information requested in this section will help lenders and borrowers decide which is the safest way of displaying a loan, as well as consider the practicalities of lending/borrowing physically problematic objects.

Please attach floor plans of the exhibition areas to be used, clearly indicating each separate space and showing the position of routinely opened doors and windows, and, as far as possible, unshaded glazing, sources of heat, draughts etc.

[B] Exhibition area (cont.)

1. When was the exhibition area to be used opened or last refurbished?	
2. What methods are used to secure loans to walls, partitions, plinths etc.? Please describe your usual method **Please refer to the attached display case questionnaire**	
3. How do you regulate the number of visitors in exhibition areas?	
4. Is the consumption of food or drink ever permitted, or are events (concerts, receptions, dance etc.) ever permitted in exhibition areas?	
5.1 Do you use barriers or other methods of physical protection for material on display? 5.2 If **YES,** please supply details	
6. Please supply details of how the exhibition area is routinely managed during an exhibition with regard to:- lamp replacement • cleaning of floors & display cases • cleaning of items on open displays etc. checking of equipment	

[C] Access

The information requested in this section allows borrowers and lenders to think in terms of the problems that may be encountered (stairs, awkward corners etc.) when moving large or heavy objects and plan necessary precautions.

1.1 Are there any restrictions to vehicle access to your premises (low archways, tight corners, size/weight restrictions etc.)?	
1.2 If **YES,** please supply details	
2.1 Do you have a covered loading bay?	
2.2 If **NO**, where do you take a delivery of loans?	
3.1 Do you have a goods lift?	
3.2 If **YES**, what are its interior dimensions/load capacity?	
3.3 If **NO**, how do you move loans between differing floor levels?	
4. What is the maximum size of object/packing case that can be brought into the exhibition space by the normal route?	

[D] Handling

The information requested here allows borrowers and lenders to agree on the most appropriate handling method/procedures for particular loans.

1.1 Who carries out the packing/handling of loans?	
1.2. What training etc. have they received?	
2. Where do you unpack/repack loans prior to and after display?	
3. Where are cases, packing materials etc. stored?	
4. Who is responsible for completing incoming /outgoing condition reports?	
5.1 Are regular checks made for dust and damage? 5.2 If **YES**, by whom and how often?	
6. Who dusts etc. loans on open display?	

[E] Environmental conditions

This section is intended to assess the prevailing environmental conditions at a loan venue and identify any potential problems so that workable solutions can be agreed.

Please note that this section covers both the exhibition area as a whole and the possible use of display cases.

Please attach copies of readings for temperature and relative humidity for the areas in which you propose to display loans. The readings should be continuous and cover the period of the previous year equivalent to that of the loan period. They should clearly show the rate of change on the most regular basis available.

If these are not available please provide as much information as you are able.

(a) Temperature and Humidity

1. Do you monitor temperature and relative humidity on a regular basis: 1.1. In the exhibition area? 1.2. In display cases?	
1.3 If **YES,** please supply details (method or equipment used, frequency of calibration or service)	
2. What ranges of temperature and relative humidity are maintained over the year?	
3. How is temperature and relative humidity controlled: 3.1 In the exhibition area? 3.2 In display cases?	

4. Are these control methods in operation 24 hours per day: 4.1 In the exhibition area? 4.2 In display cases?	
5.1 Do you maintain the same environmental conditions in your storage, unpacking or packing areas as are maintained in exhibition areas?	
5.2 If **NO**, please supply details of conditions and controls	
6.1 Do you have the means of controlling atmospheric pollutants (e.g. dust filters)? 6.2 If **YES,** please supply details of method used	

(b) Lighting

1. How are exhibition areas lit overall?	
2. What type of light is used to illuminate individual loans: 2.1 in exhibition areas?	

2.2. inside display cases?	
3. Do you monitor light on a regular basis throughout exhibition periods?	
4. Do you monitor light on a regular basis when installing and dismantling exhibitions?	
5. What range of visible and UV light can be maintained in exhibition areas?	
6. Are you able to limit the levels of visible and UV light falling on sensitive objects?	
7. How many hours per week will the items be exposed to light? (include hours when closed to the public)	
8. How do you control daylight?	
9. Please supply construction details of display cases to be used (construction materials, display materials, types of seal etc.) ***Please note. You may be asked to supply more detail of the display cases you propose to use by completing a UKRG Standard Facilities Report Display Case supplement.***	

Signed: **Name**:

Position: **Date**:

When returning this facilities form please include:-
(Tick as appropriate)

- □ Floor plans of each of the exhibition spaces to be used clearly indicating the position of the relevant display case(s).
- □ Case manufacturer's information or specifications
- □ Lock manufacturer's information or specification
- □ Any other information which you feel might be helpful

UK Registrars Group
Standard Facilities Report
Security Supplement

Confidential

This Facilities Report supplement has been devised by the United Kingdom Registrars' Group (UKRG) in consultation with the UK Museums Security Adviser at Museums, Libraries and Archives Council for use with the United Kingdom Standard Facilities Report.

The form will enable lenders and, if requested the UK Museums Security Adviser to assess the practicalities involved in making loans with particular regard to emergency and security planning. It is intended to help both borrowers and lenders identify potential problems and reach agreement on how these can be resolved.

It should therefore be completed and returned as quickly as possible.

The form is intended for use in all kinds of museums and galleries, irrespective of type of collection or size. For this reason not all questions will be relevant to every borrower. However as a standard form it can be filled in once and updated for use with any future loan requests. Please complete the form therefore as fully and accurately as possible, adding any other information which you feel may be relevant. You should retain a copy for future use.

It is important that you do NOT include the name or address of the venue that the questionnaire describes. Identification should be by the reference code found below.

Lending Institution's reference code (to be completed by Lending Institution only)	

[A] Building Construction

1. Are your premises purpose-built galleries / museums / other?	
2. If "OTHER" please supply details	

3. When were your premises completed?	
4. What type of building materials are used in the construction of the building?	

	Brick	Concrete	Glass	Safety Glass	Steel	Stone	Wood	Other*	
Exterior Walls									
Interior Walls									
Ceilings									

*If OTHER please provide details

5. If YES, please supply details (nature of work, dates)	

[B] Security Alarms

1.1 Do you have electronic intruder detection systems in operation throughout the building? Please supply details	
1.2 If NO to 1.1 please specify which areas are not protected?	

2. Do you have a computer based management system providing graphics and contingency response?	
3. What type of detection equipment is in operation? ▪ Magnetic Contact ▪ Motion ▪ Photo-electric ray ▪ Infrared ▪ Ultrasonic ▪ Weight/press ▪ Sound ▪ CCTV ▪ Other Please supply details	
4. Who does your intruder detection system alert? ▪ In house central security control ▪ Local Police ▪ Guarding Company ▪ Alarm Receiving Centre ▪ Other Please supply details	
5. What is the response time to an alarm?	
6. How often are your security systems tested?	

7. Who undertakes these tests?	
8. Are records kept of all alarm signals received including time, date, location, action taken, cause of alarm? Please supply details	
9. UK Only Is the alarm transmitted over a monitored line? (e.g. *BT Redcare*) Please supply details	

[C] CCTV

1. Is there a CCTV system in the building? ▪ Colour ▪ Black & White	
2. What areas does it cover? ▪ Main Entrance ▪ All galleries ▪ Temporary Exhibition Galleries Only ▪ External parts of the building ▪ Other	

3. Who monitors the system and where? ▪ Security staff in security control room ▪ Receptionist at entrance desk ▪ Curator in office ▪ Other	
4. Is there a recording system? ▪ Simple ▪ Multiplexer	
5. Are recordings time & date generated?	
6. How long are recordings kept? ▪ A week ▪ Month ▪ Other Please specify	

[D] Fire Protection

1. Is the entire building protected by a fire detection/alarm system?	
2. If NO please indicate areas NOT covered	
3. If YES please specify type of system ▪ Manual ▪ Automatic Please supply details	
4. How is the fire detection system activated?	Temporary Exhibition Areas / Storage Areas Self-activated heat detection Self-activated smoke detection Manual activation (e.g.break glass)
5. Who does the fire alarm system alert? ▪ In-house control station panel ▪ In-house audible alarms ▪ Local fire station direct ▪ Central fire station ▪ Other Please supply details	
6. Are all emergency exit doors equipped with alarms to detect unauthorised use?	

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7. How often are the systems checked and by whom?	
8. Is there a fire suppression system in operation? ▪ Wet pipe in non-art areas ▪ Dry pipe in non-art areas ▪ Cross-zoned to the smoke/fire detection systems in the galleries ▪ Halon or other gas systems	
Please specify location, manufacturer, year installed ▪ Fire hoses ▪ Portable fire extinguishers ▪ Pressurised water ▪ Carbon dioxide ▪ Dry chemical foam ▪ Halon ▪ Acid	
9. How frequently are staff trained in the use of portable extinguishers?	
10. Is smoking permitted in any part of the building? Please supply details	
11. Is the local fire station staffed on a 24-hour 7 day basis?	
12. How long does it take the fire service to arrive at the building in response to an alarm?	

[E] Guarding & Invigilation

1. Do you have 24-hour continuous human guard security on the premises (as opposed to periods of electronic-only surveillance)?	
2. If NO would your institution be prepared to hire additional guards if required ▪ Routinely ▪ On specific occasions Please supply details	
3. What type of security personnel does your institution use?	
▪ Regular security staff of you institution ▪ Other staff of your institution ▪ Contract security staff from an outside security company ▪ Student ▪ Volunteers ▪ Other Please supply details	
4. Is there a trained security supervisor in charge at all times?	
5. What training do your security guards receive?	

6. How are your security guards equipped? ▪ Armed ▪ Radio ▪ Pager ▪ Phone ▪ Other Please supply details	

7. Please indicate the number of security guards normally on duty		Throughout the building		Temporary Exhibition Galleries	
		Stationary	Patrolling	Stationary	Patrolling
	Public Hours (Day / Evening)				
	Closed to public but open to staff				
	Closed hours				

8. How many galleries are assigned to each security guard?	
9.1 Is a security guard assigned during installation & de-installation periods?	
9.2 If NO to 9.1 can security guards be assigned if required?	
10. How often are temporary exhibition galleries checked when closed and by whom?	
11.1 Are security guards stationed at all entrances and exits to the building during open hours?	

11.2. If NO to 11.1 please supply details	
12. Are the contents of bags, briefcases etc. checked on entry & exit?	
13.1 Are exterior perimeter checks of the building carried out?	
13.2 By whom?	
13.3 How often?	
14.1 Does your institution have an emergency disaster procedure?	
14.2 If YES how frequently are staff trained regarding this procedure?	
15. What emergency procedures are in place to deal with theft and vandalism?	
16. Are the exhibition areas: ▪ One large room ▪ A series of small rooms ▪ Other Please supply details	

[F] Exhibition Spaces

1. Are the exhibition areas: ▪ One large room ▪ A series of small rooms ▪ Other Please supply details	
2. Are any spaces used for temporary exhibitions located in public activity areas? ▪ Lobbies ▪ Hallways ▪ Libraries ▪ Cafés ▪ Classrooms Please supply details	
3.1 Is the consumption of food or drink ever permitted, or are events (concerts, receptions, dance etc.) ever permitted in exhibition areas?	
3.2 If YES how are these controlled?	
4.1 Do exterior doors open directly into the exhibition areas?	

4.2 If YES to 4.1 please supply details including methods of securing e.g. ▪ Locks ▪ Gates ▪ Roller shutters ▪ Metal cladding ▪ Bars ▪ Escape mechanisms ▪ Alarms	
5.1 Are there windows and/or roof lights in the exhibition areas?	
5.2 If YES to 5.1 please supply details including methods of securing e.g. ▪ Locks ▪ Gates ▪ Roller shutters ▪ Bars ▪ Escape mechanisms ▪ Alarms ▪ Metal cladding	
6.1 Is there a modular wall partition/panel system?	
6.2 If YES to 6.1 please indicate: ▪ Method of support: supported at floor & ceiling ▪ or supported at floor only ▪ Construction materials	

[G] Display

1.1 Are glass or Plexiglas cases available to protect fragile, small or high value loan ▪ Free standing ▪ Wall mounted ▪ Laminated glass ▪ Polycarbonate ▪ Other ▪ Wood framed ▪ Metal Framed ▪ Bonded glass ▪ Secured with screws ▪ Sealed seams ▪ Other locked Please provide details	
1.2 If required can cases be provided? *If a UKRG Standard Facilities Report Display Case Supplement has been completed please refer to the relevant section of that questionnaire*	
2. What methods are used to secure loans to walls, partitions, plinths etc.? Please describe your usual method	
3. Can framed wall-mounted loans be individually alarmed? Please provide details	
4. Do you use barriers or other methods of physical protection for material on display? Please describe your usual method including the distance from the loan.	

[H] Incidents

8.1 Have there been any incidents of theft or damage to your collections or loans to your building over the last three years	
8.2 If YES to 8.1 please provide details & indicate precautions taken to prevent further incidents	

Signed: **Name**:

Position: **Date**:

Please Note
Any important changes to the security arrangements outlined above should be made know to the lending institution immediately.

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