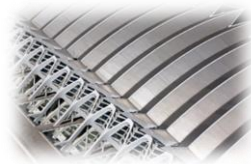


# ANÁLISIS GEOMÉTRICO, CONSTRUCTIVO Y ESTRUCTURAL



## CUBIERTA

### MUSEO DE LAS CIENCIAS PRÍNCIPE FELIPE



FERNANDO CENTELLA ARIAS

GRADO EN INGENIERÍA DE EDIFICACIÓN · PFG CIENTÍFICO - TÉCNICO · JUNIO 2012

Rafael Juan Ligorit Tomás · Francisco Javier Sanchis Sampedro



Fachada sur



Fachada norte





Exterior cubierta



Interior cubierta



CUBIERTA PLANA

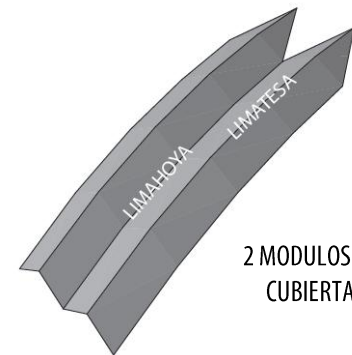
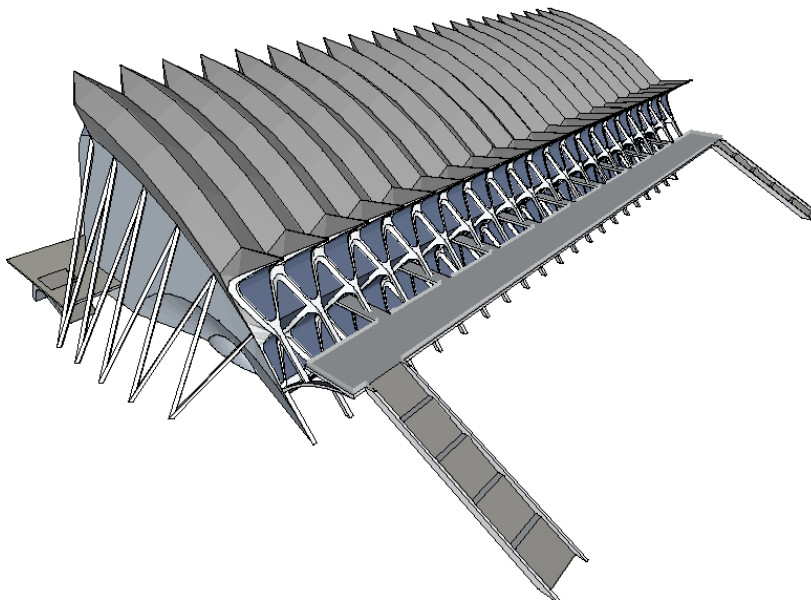
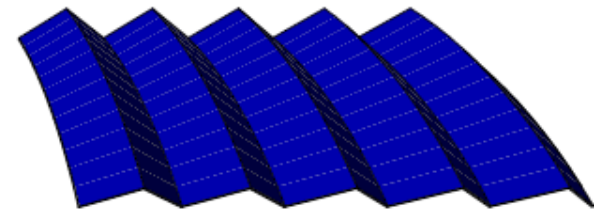
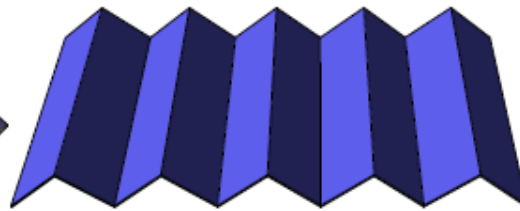
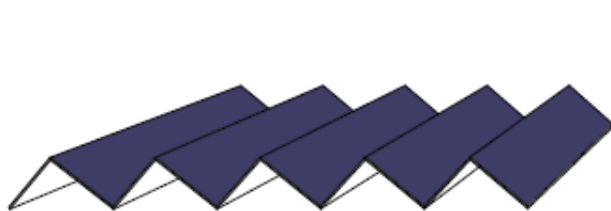


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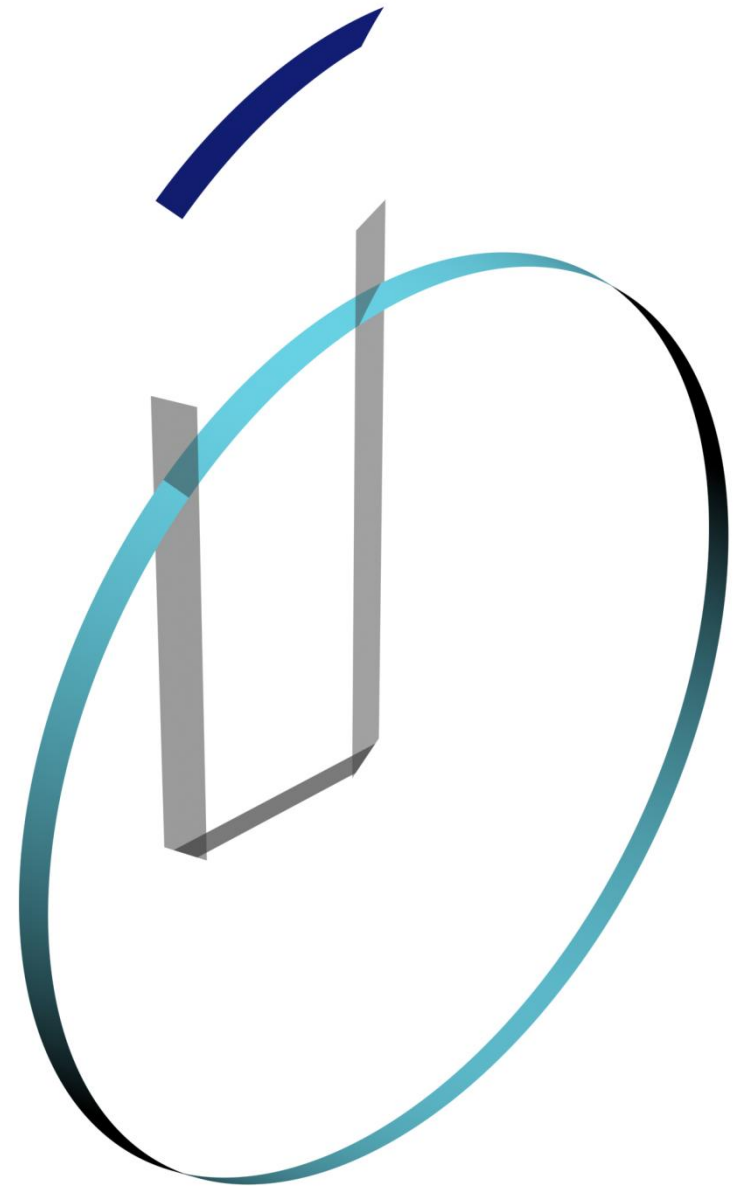
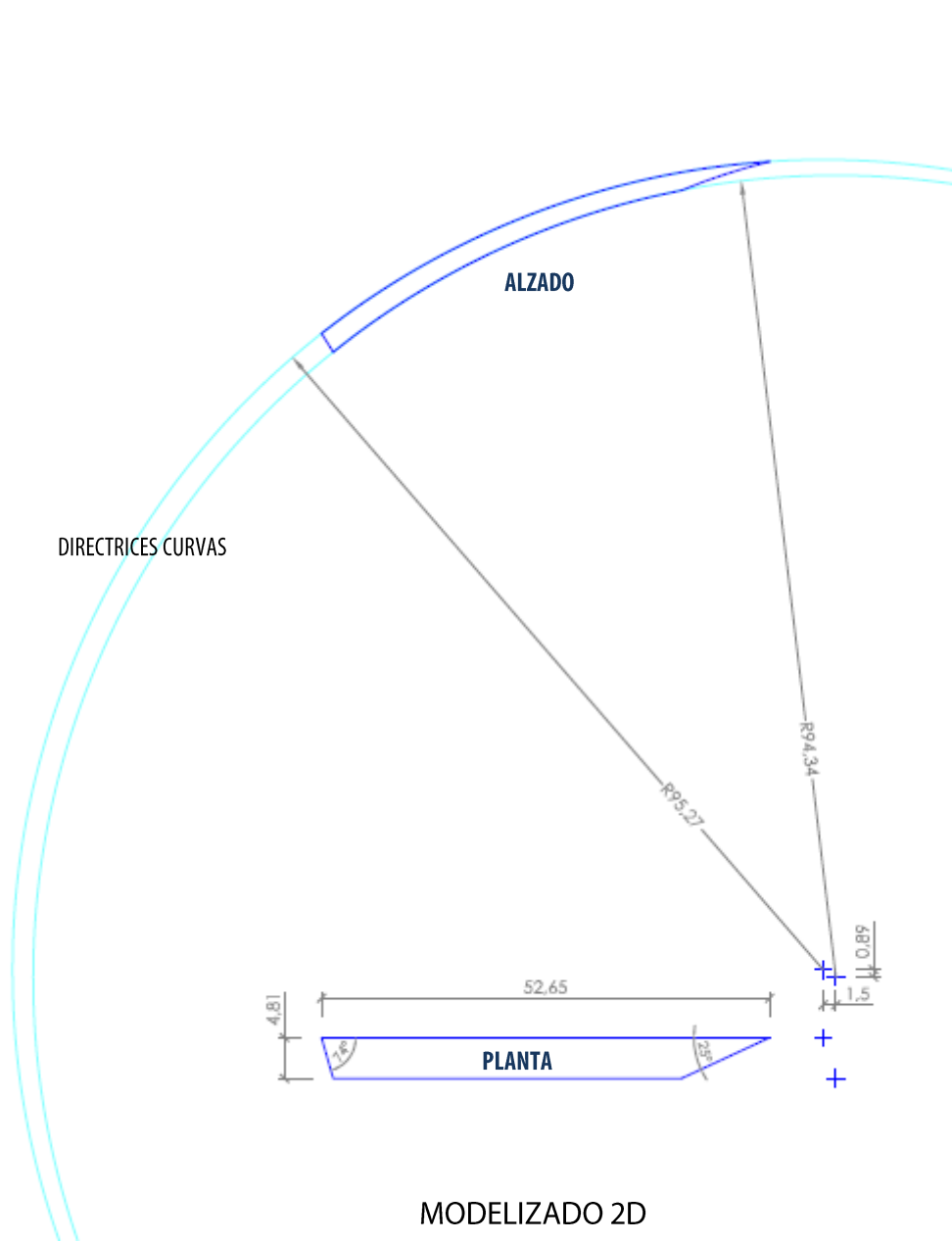


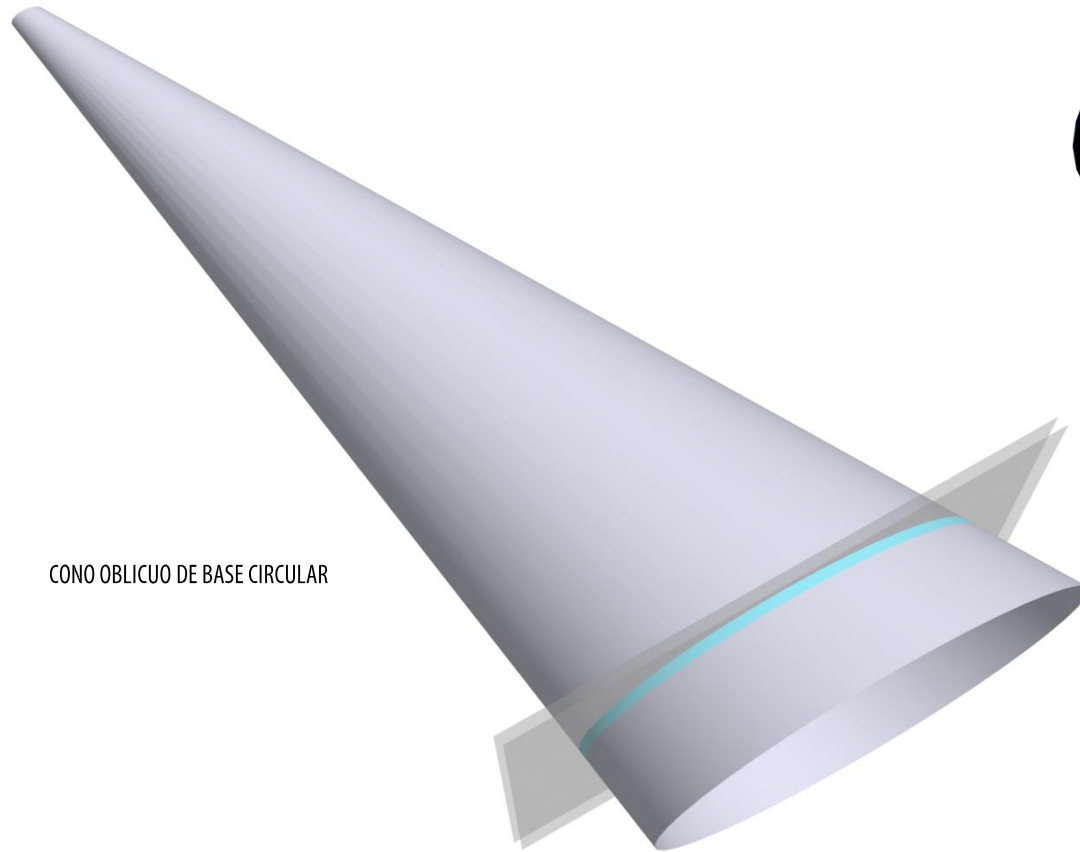
CURVA

CUBIERTA A UN AGUA

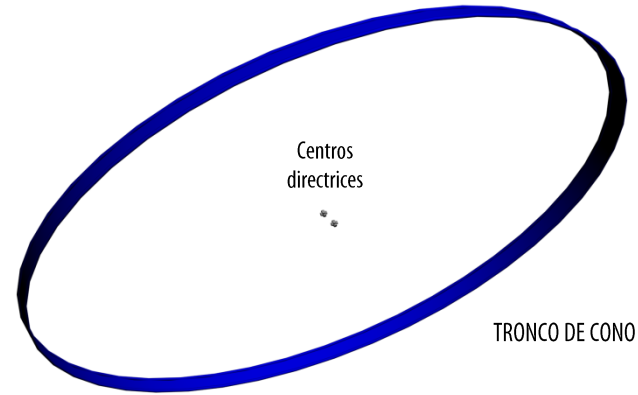
2 MODULOS DE  
CUBIERTA

CUBIERTA A DOS AGUAS

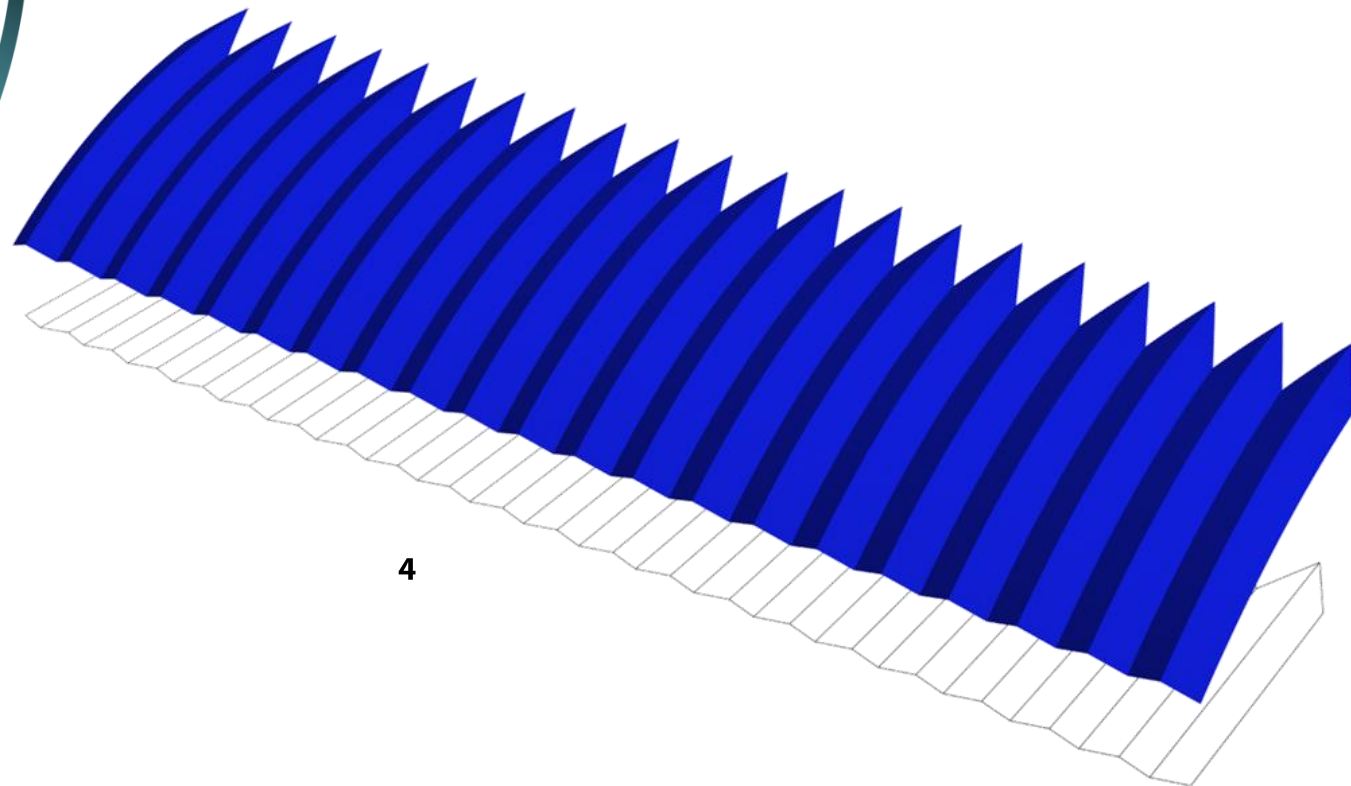
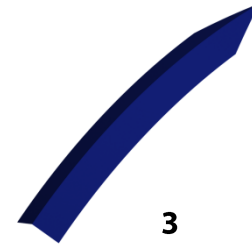
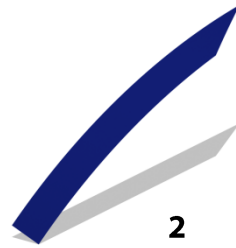
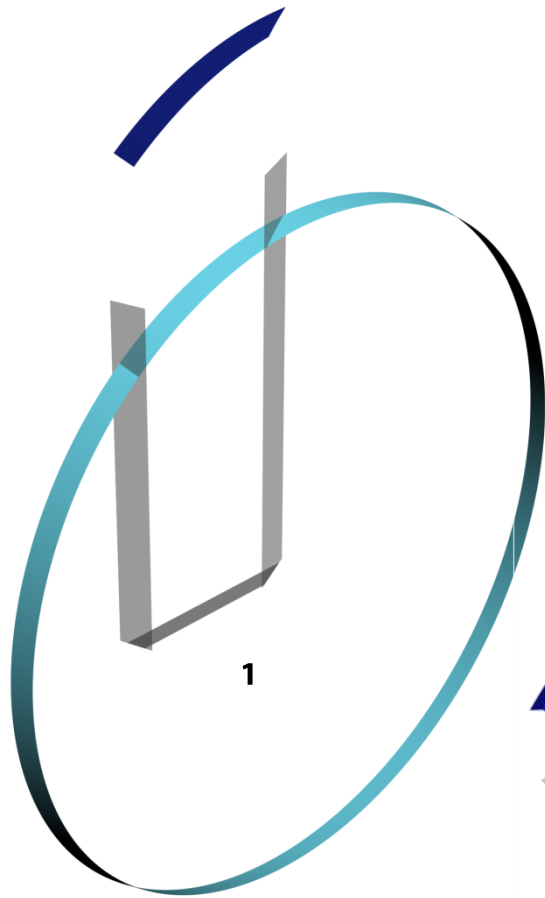




CONO OBLICUO DE BASE CIRCULAR

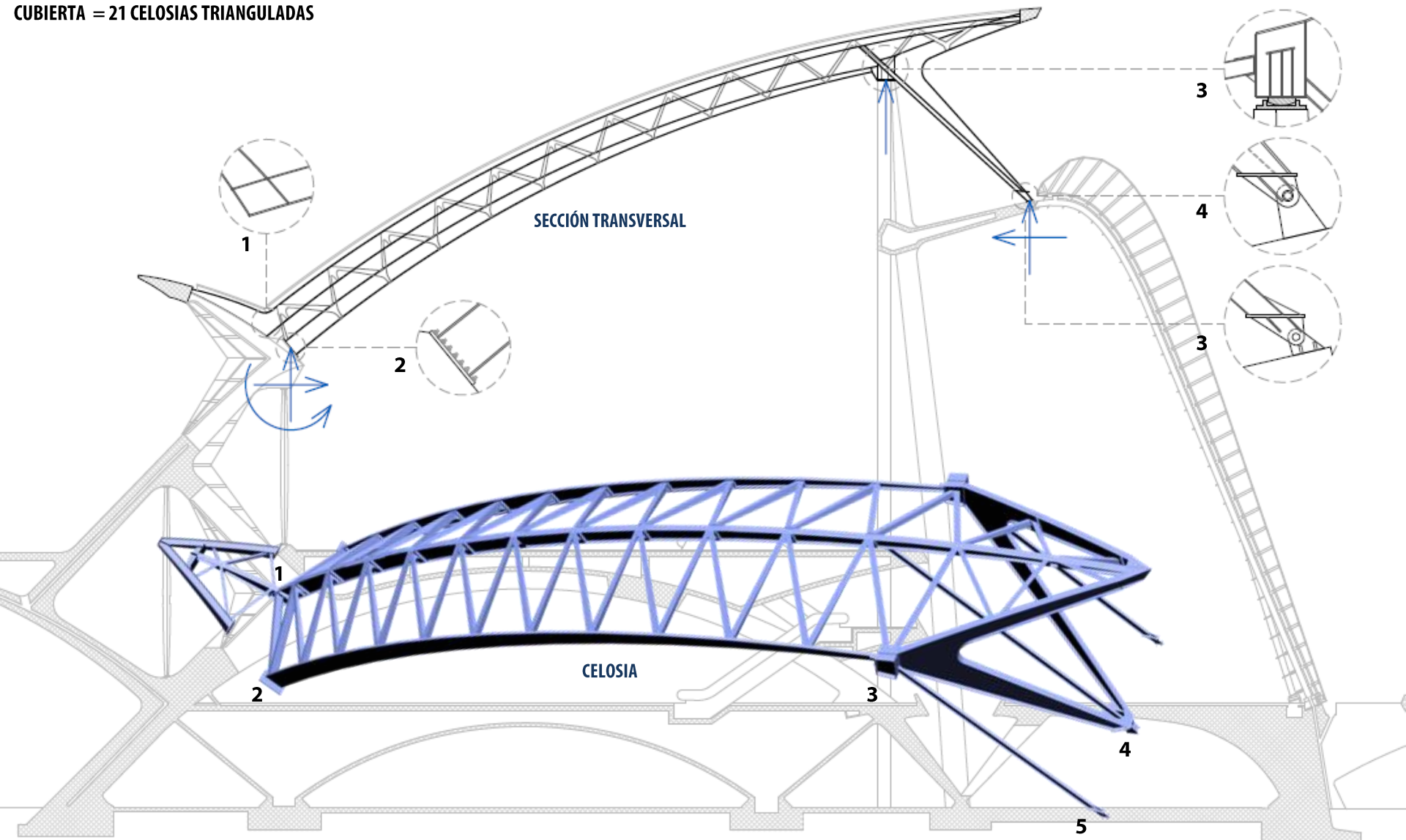


TRONCO DE CONO OBLICUO



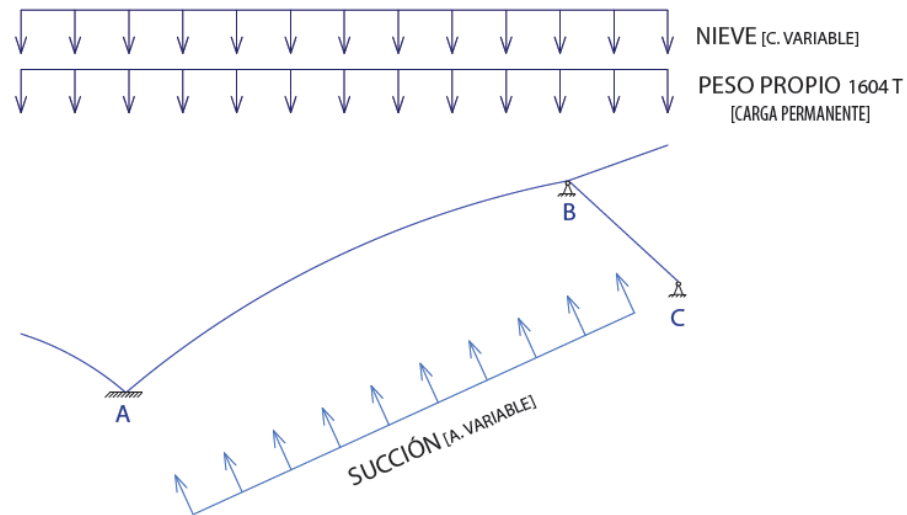
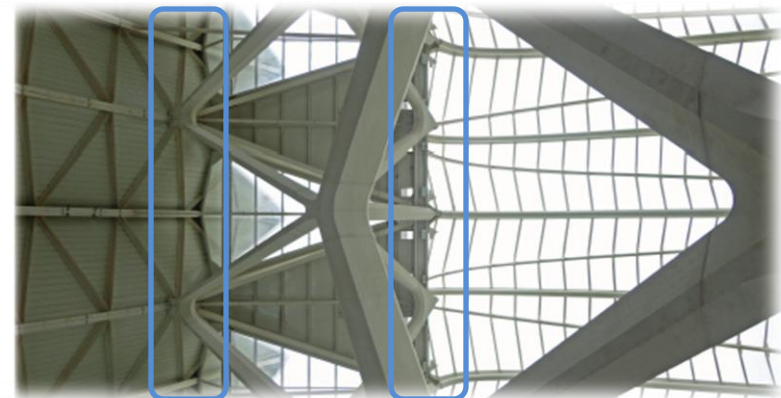
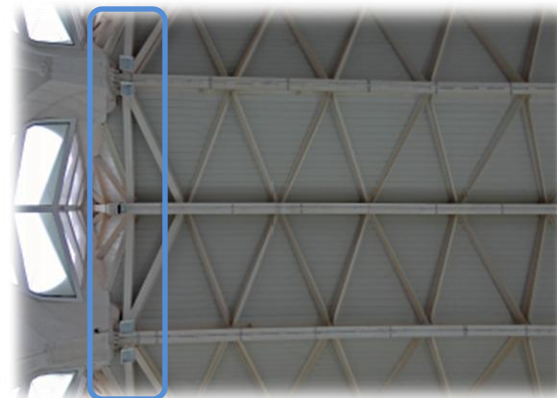


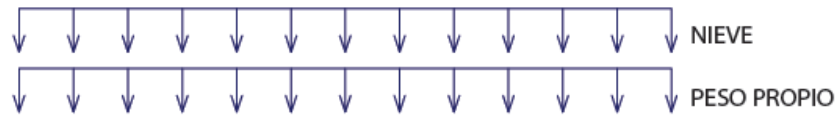
CUBIERTA = 21 CELOSIAS TRIANGULADAS



## HIPÓTESIS DE CÁLCULO

1. PESO PROPIO + NIEVE
2. PESO PROPIO + VIENTO [SUCCIÓN]
3. PESO PROPIO + VIENTO [SUCCIÓN] + NIEVE

**A****B****C**

**HIPÓTESIS 1 [PESO PROPIO + NIEVE]**

REACCIONES

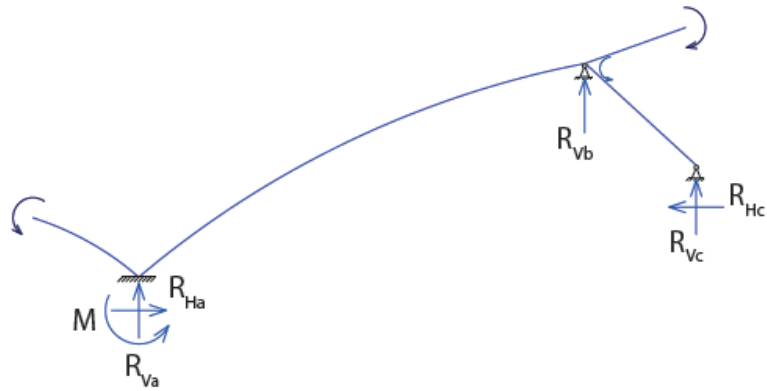
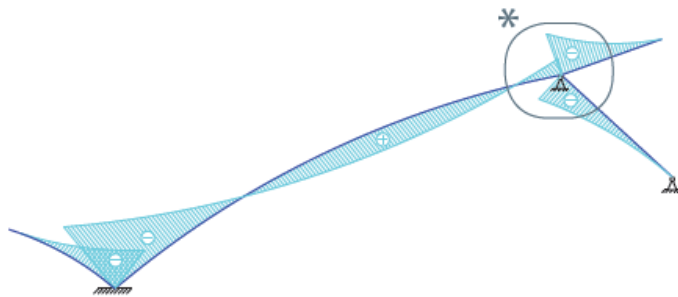
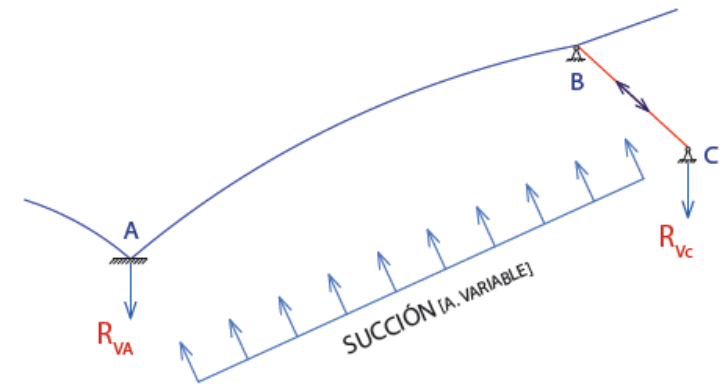
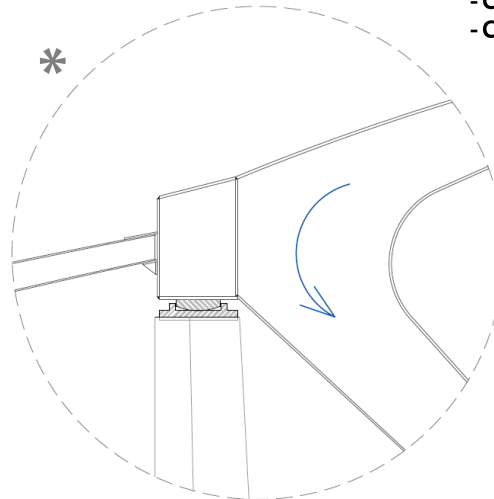


DIAGRAMA MOMENTOS FLECTORES

**HIPÓTESIS 2 [PESO PROPIO + SUCCIÓN]**

- CASO 1 [PESO PROPIO < SUCCIÓN]
- CASO 2 [PESO PROPIO > SUCCIÓN] = HIPOTESIS 1



## 01. ESTRUCTURA METÁLICA CUBIERTA

*Fabricación y montaje:* METALURGIA DEL GUADALQUIVIR, S.L. – **MEGUSA**

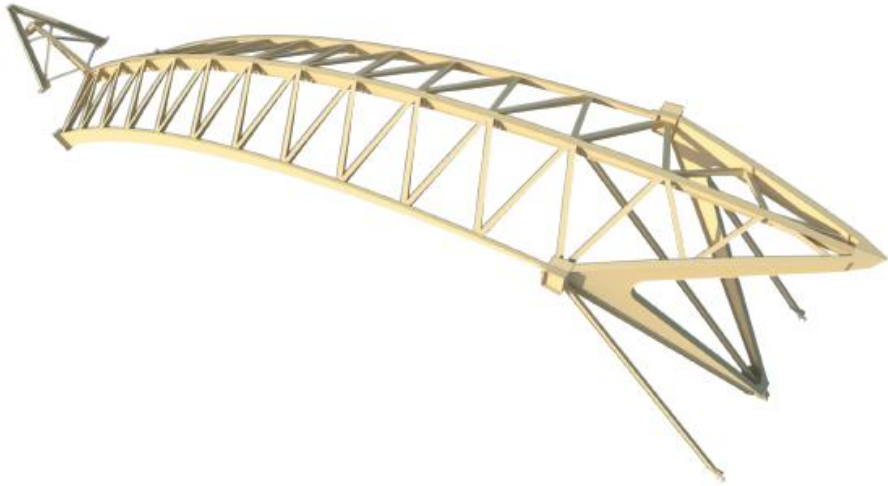
*Peso:* **1604 T**

*Longitud:* **210 m**

*Acero:* **S355J2G3 (ST-52.3)**

*Altura:* **50 m**

*Ancho:* **54,5 m**



## 02. CERRAMIENTO KALZIP

*Instalación:* **IBER-AIS, S.L.**

*Tipo de perfil:* **Kalzip 65/333**

*Tipo de superficie:* **Estucado**

*Color:* **Aluminio**

*Superficie cubierta:* **11500 m²**





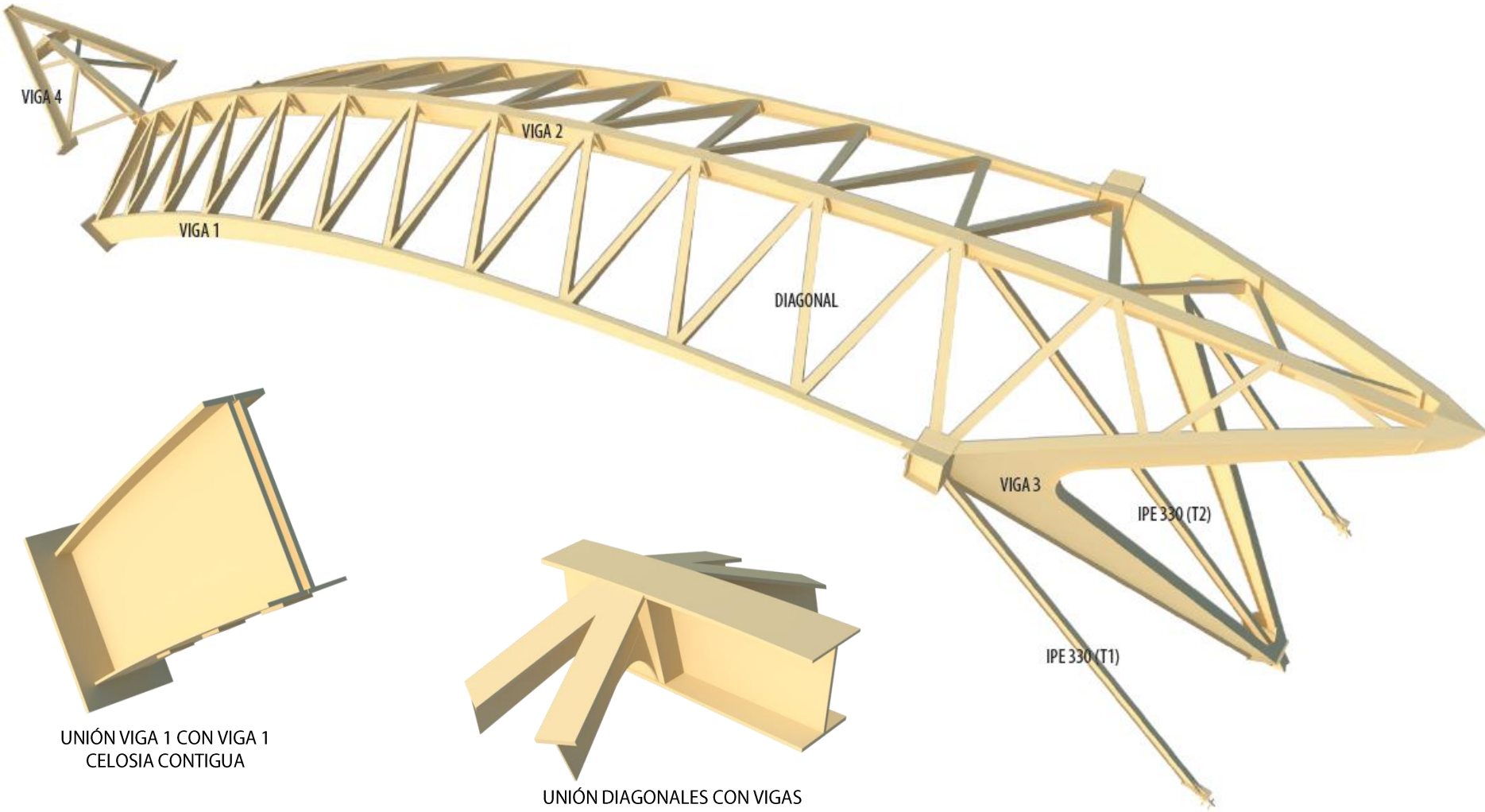
## 01. ESTRUCTURA METÁLICA

PICO PATO

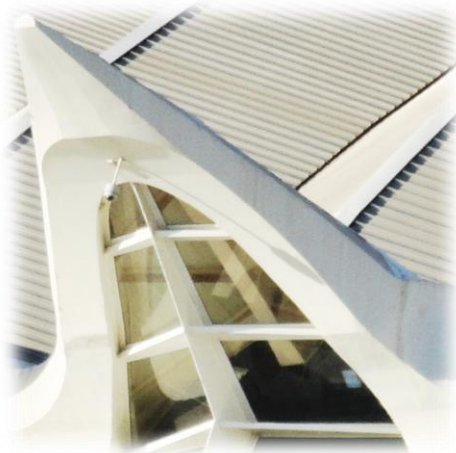
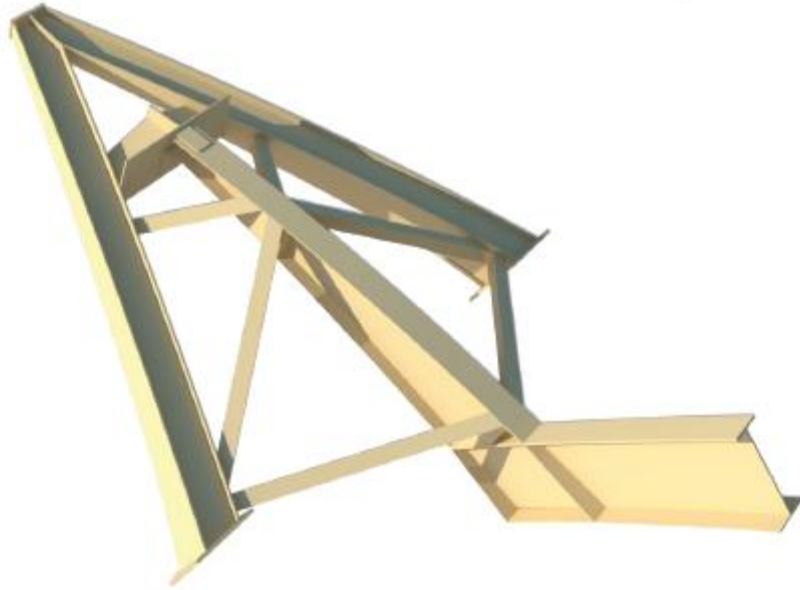
TRAMO SUR

TRAMO CENTRAL

TRAMO NORTE

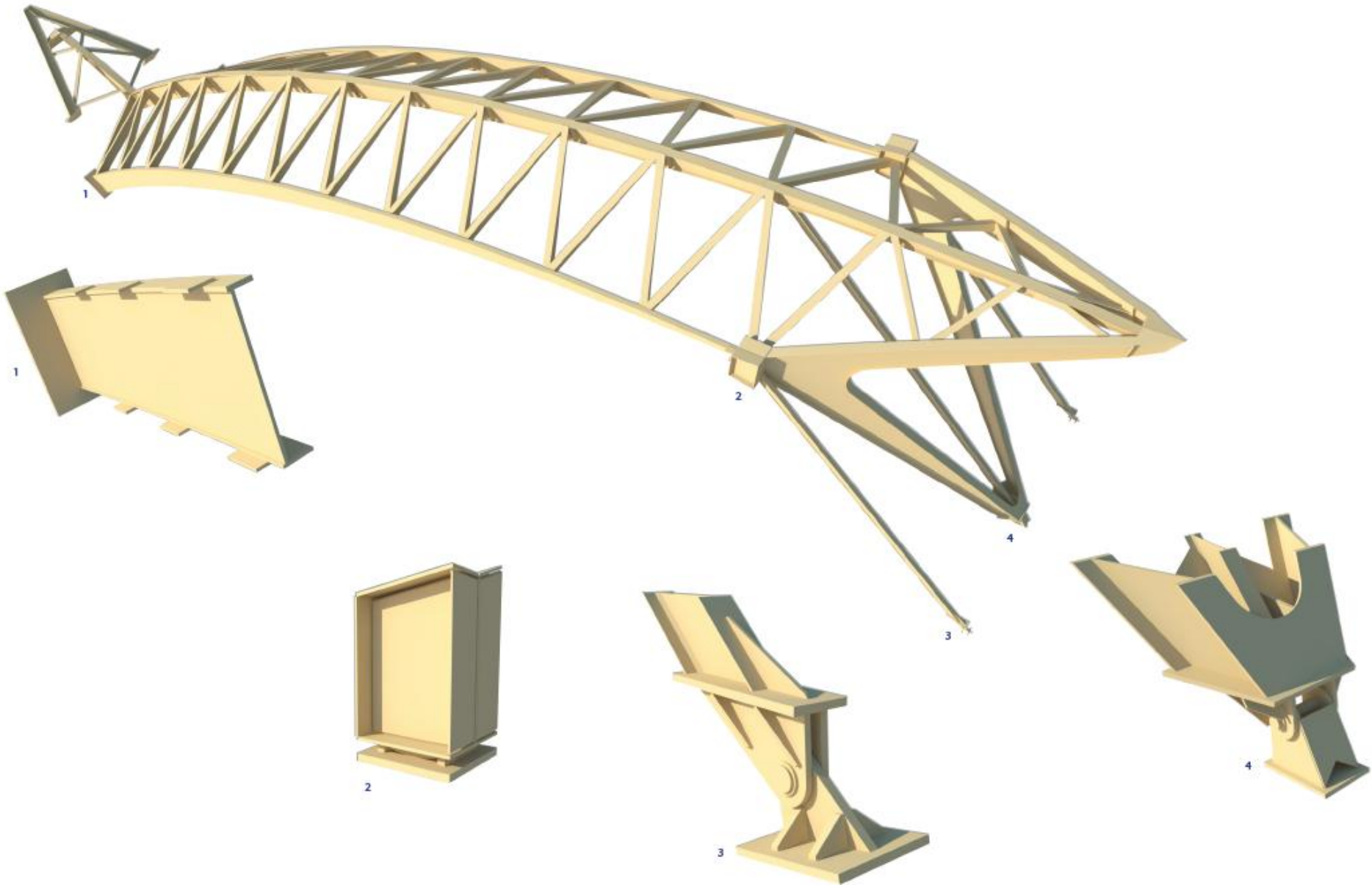


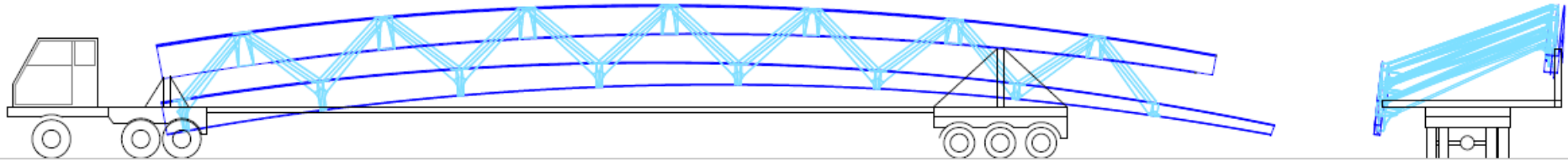
PICO PATO



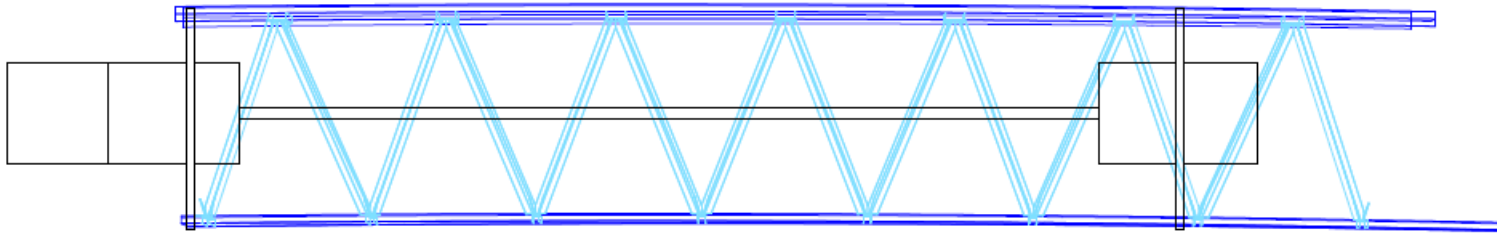
TRAMO NORTE





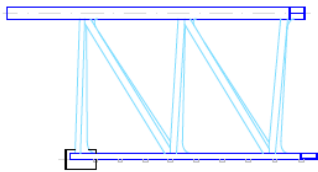
**TRANSPORTE**

PESO APROXIMADO 40 T

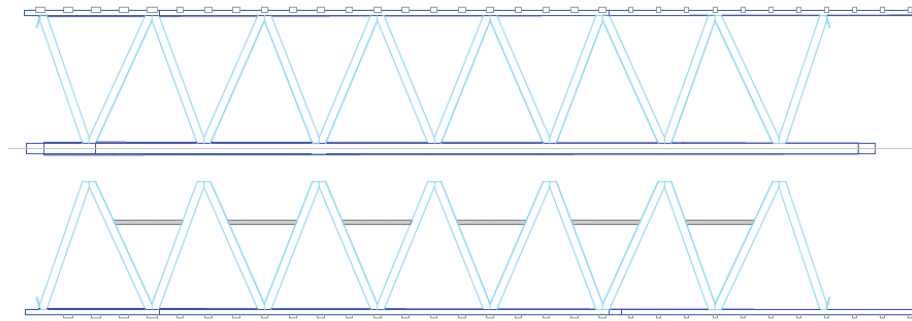




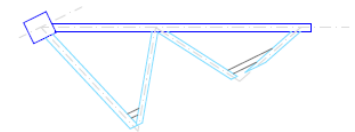
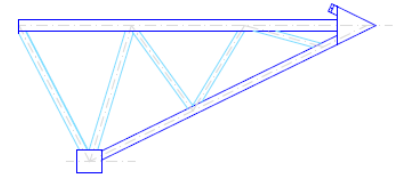
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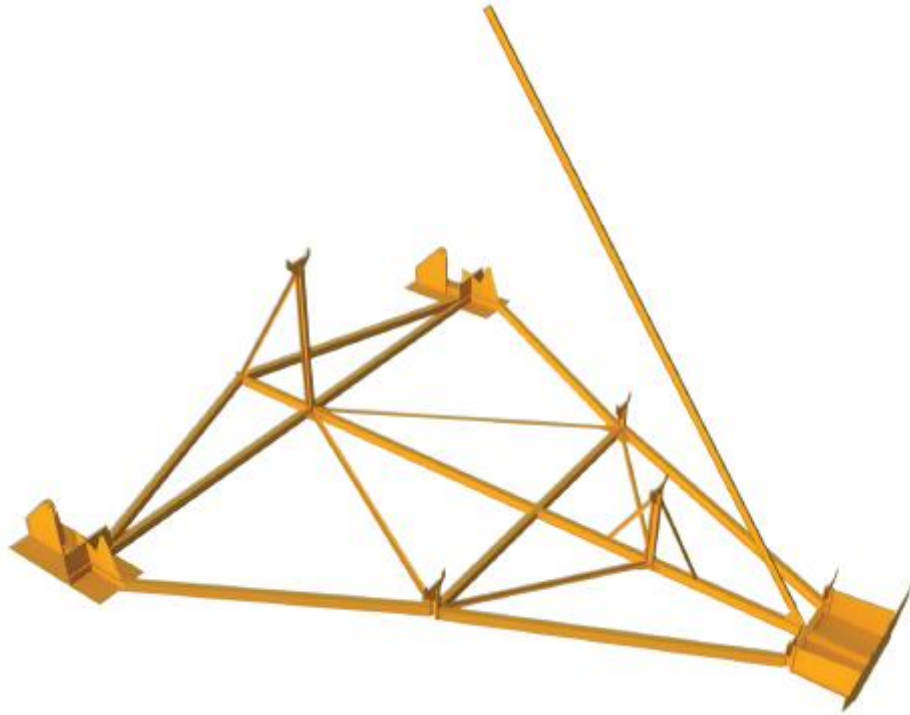


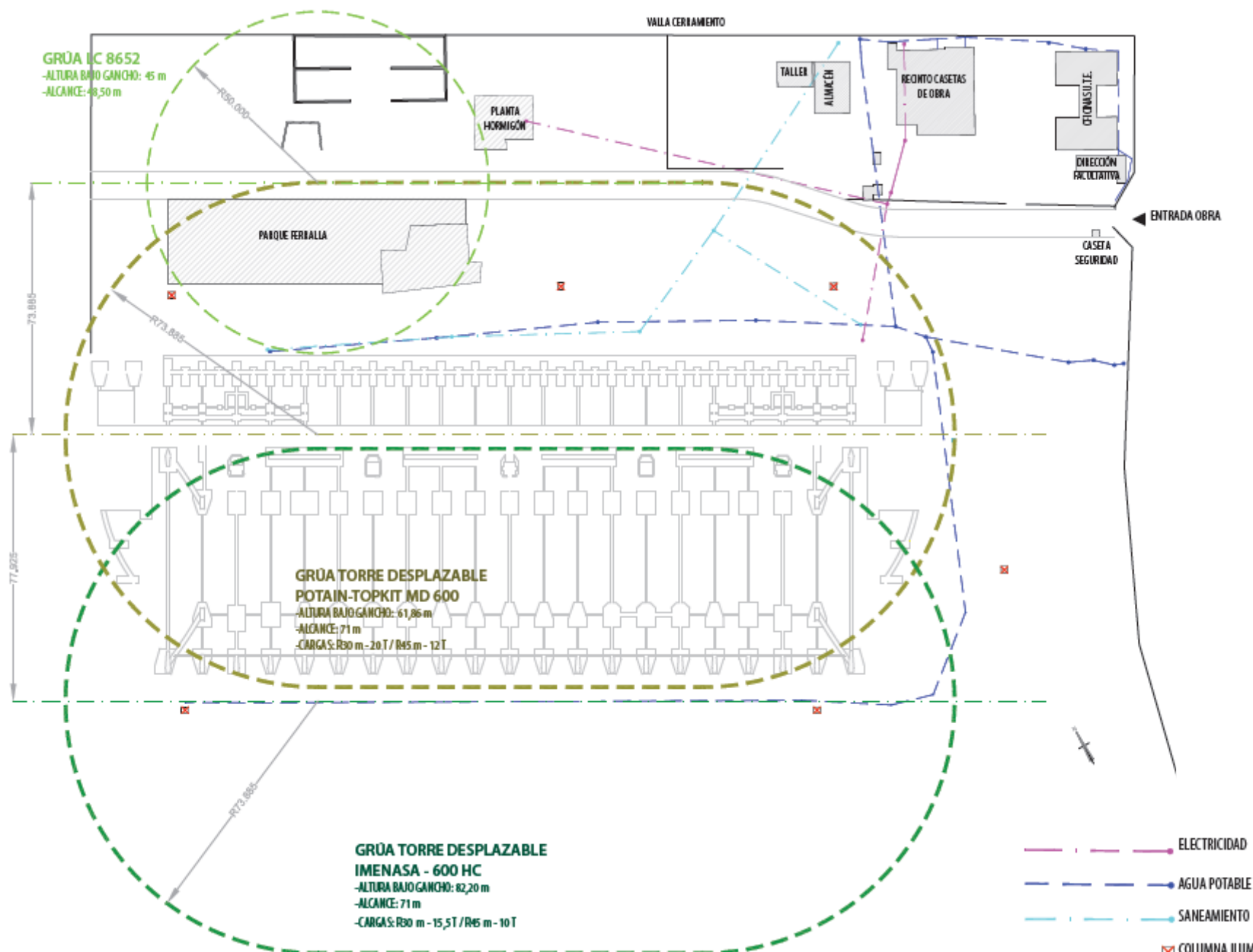
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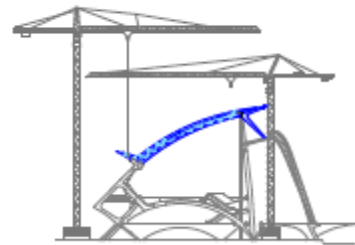
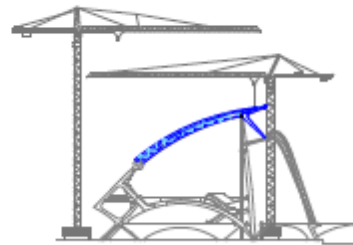
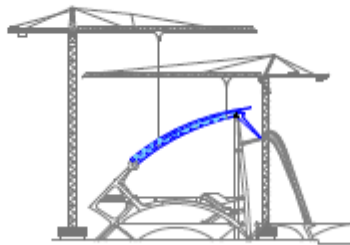
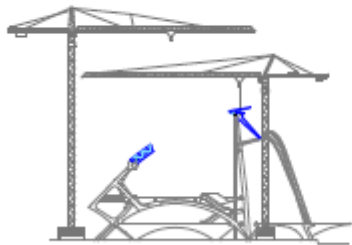
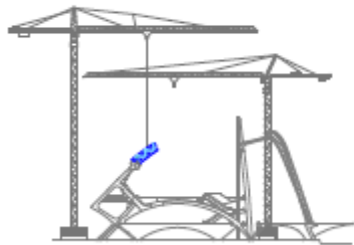
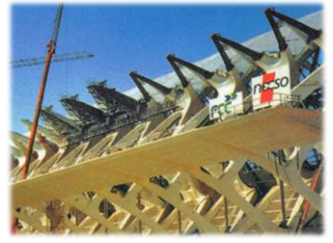


TRAMO NORTE



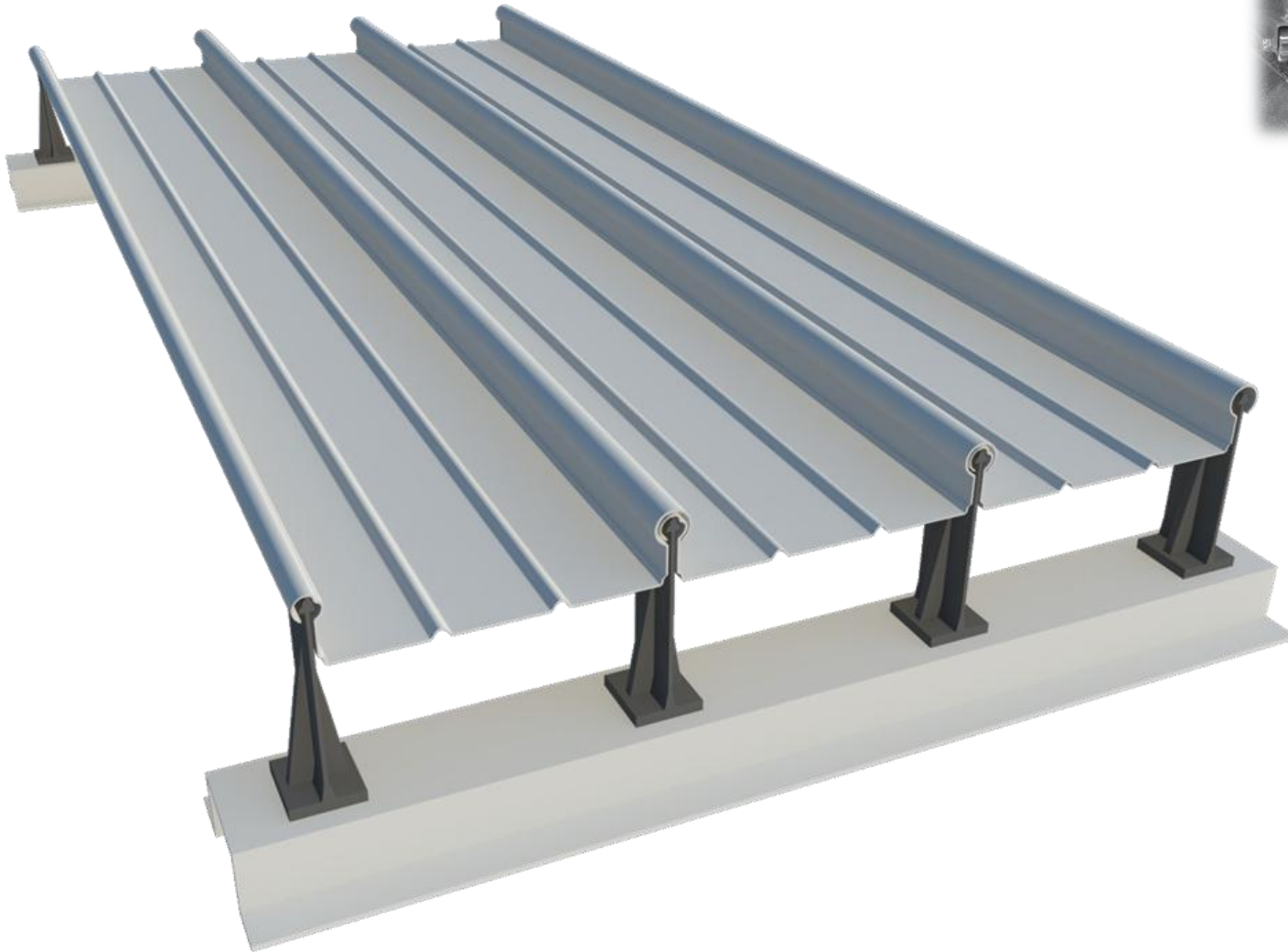
**CAMA MONTAJE OBRA**



**FASES MONTAJE**



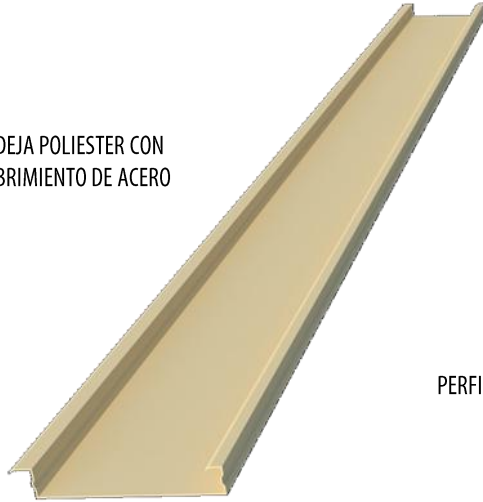
## 02. CERRAMIENTO KALZIP



Máquina rebordeadora kalzip

**FASES MONTAJE**

BANDEJA POLIESTER CON  
RECUBRIMIENTO DE ACERO



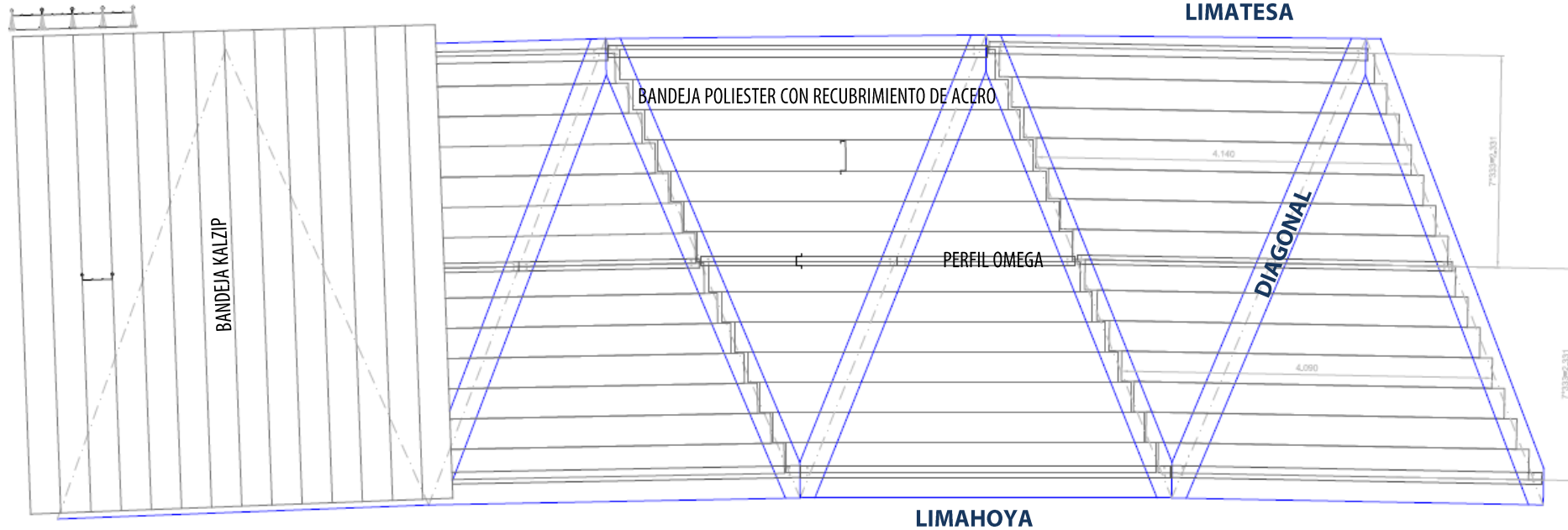
PERFIL OMEGA

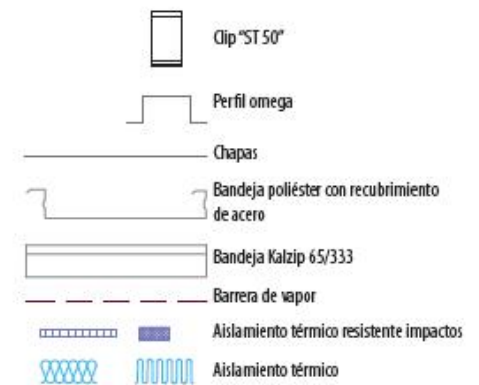
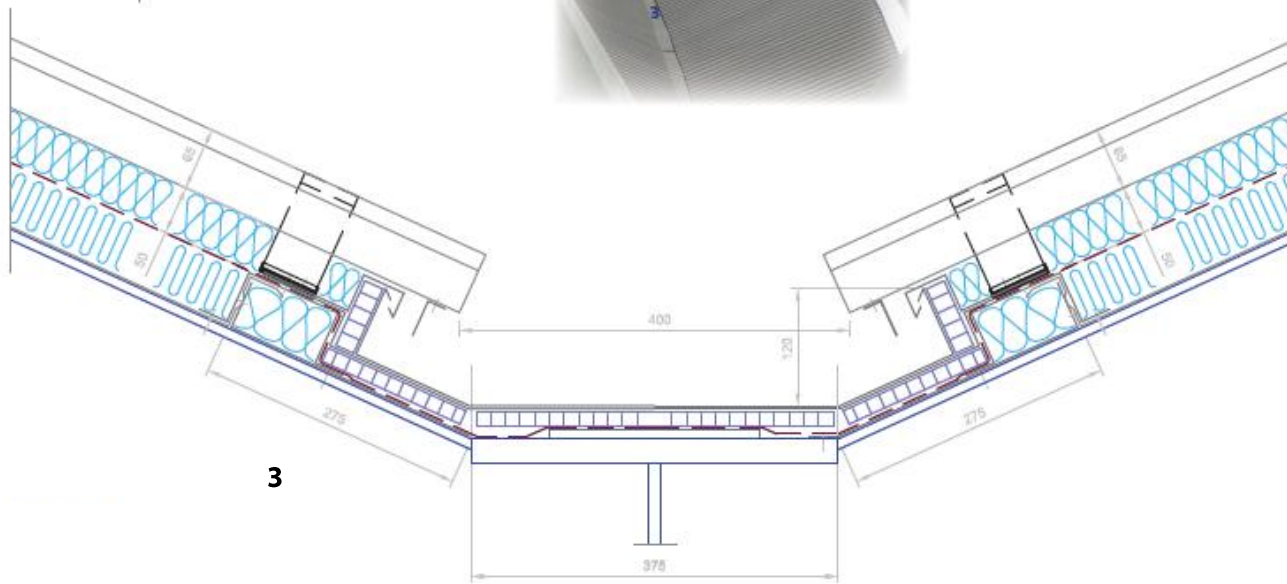
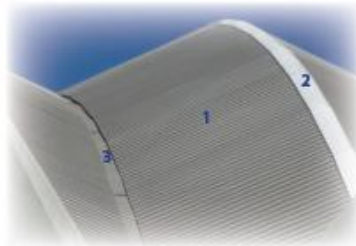
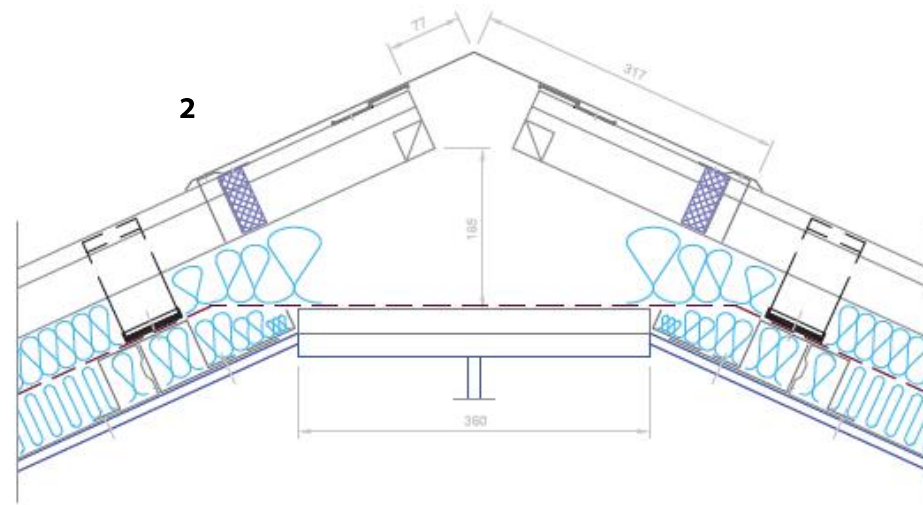
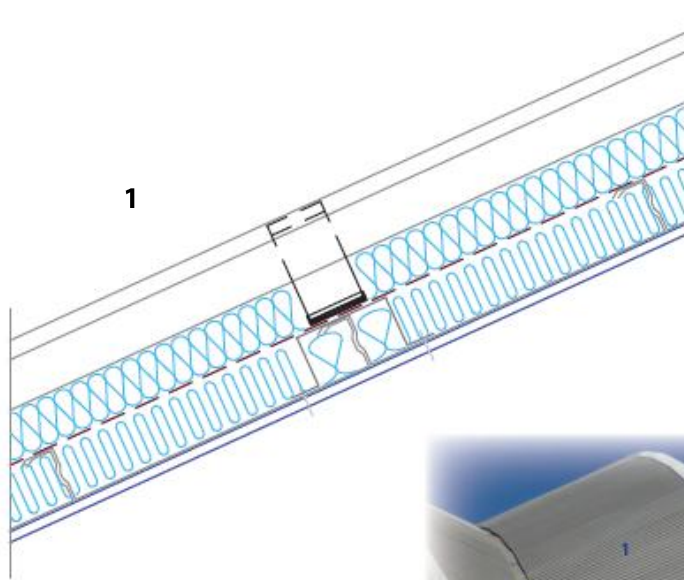


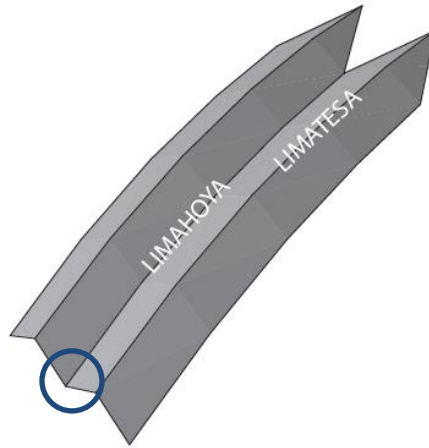
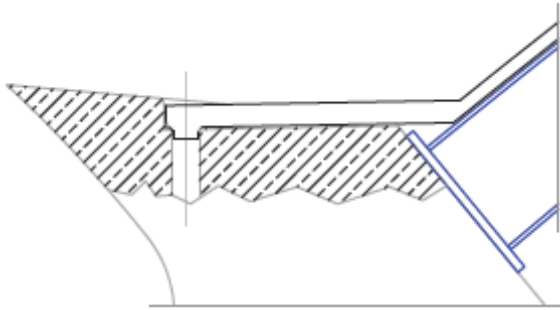
BANDEJA KALZIP



CLIP  
KALZIP







Bajante embebida en sección de hormigón fachada sur

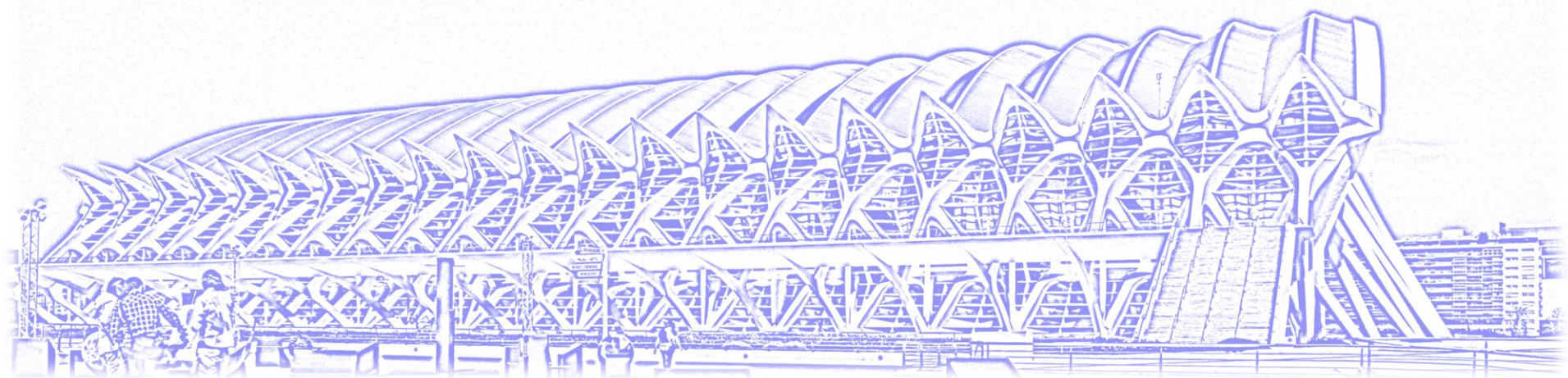


Filtraciones, zona desagüe fachada sur









PROYECTO FINAL DE GRADO - TALLER 14

SUPERFICIES ARQUITECTÓNICAS SINGULARES DE LA CIUDAD DE LAS ARTES Y LAS CIENCIAS