Status of infrastructures at LSC

Authors:

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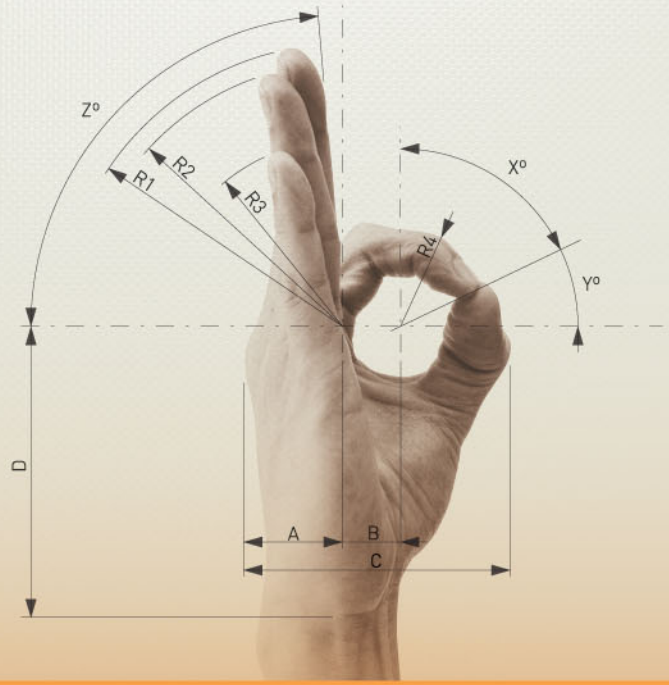
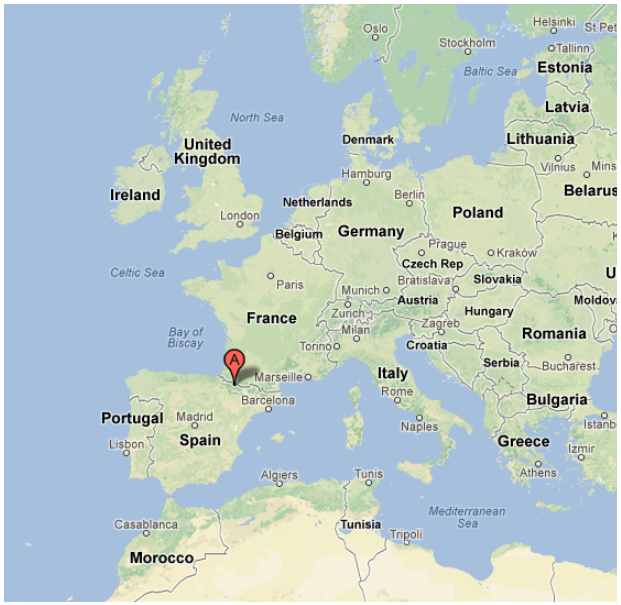
December / 06 / 2012

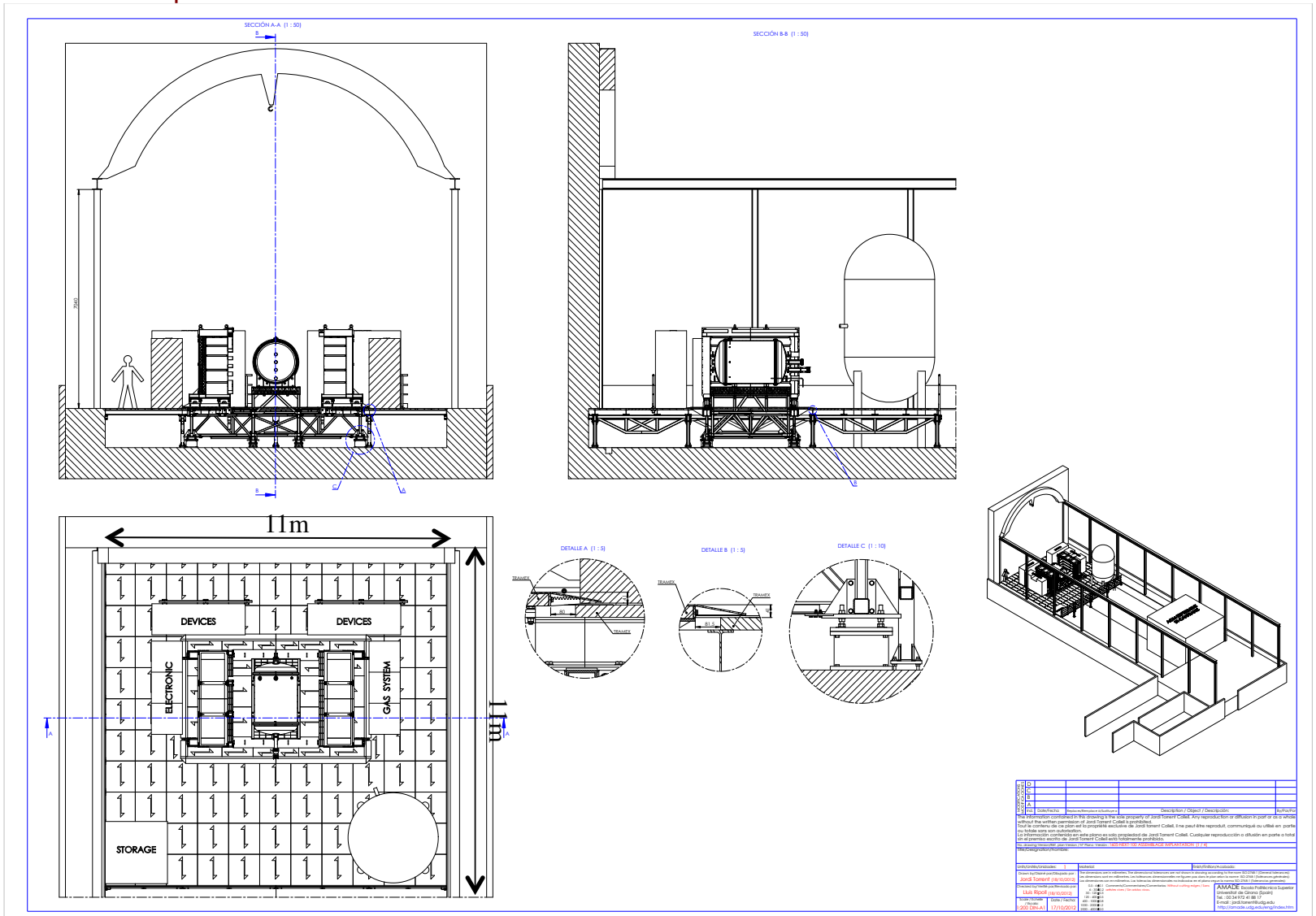


Infrastructures at Canfranc Laboratory.



Depth (max.) 2,450 meters of water equivalent (m.w.e.)
Composition of the rock limestone, mainly calcium carbonate
Average density 2.7 g cm^{-3}
Muon flux 2×10^{-7} cm^{-2} s^{-1}
Radon concentration 20 to 70 Bq m^{-3}
Neutron flux a few£10¡6 cm¡2¢s¡1 (depending on energy)
3+ Ultra-low bkg HpGe detectors for radiopurity measurements

The work platform. Status: 100% completed.



Current view of main laboratory hall with completed work platform.

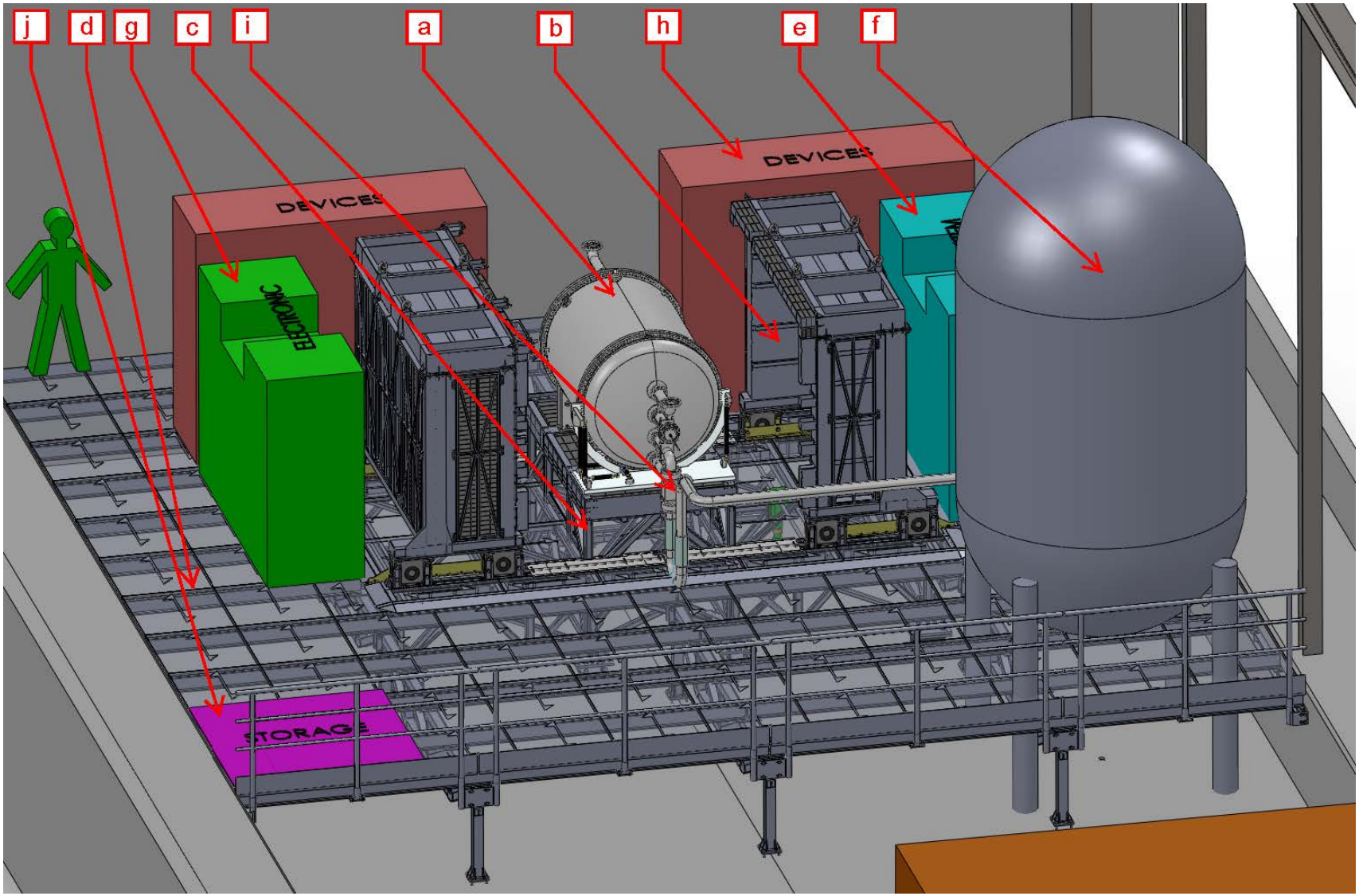
The work platform. Status: 100% completed.

View of main laboratory hall, the hall is empty.

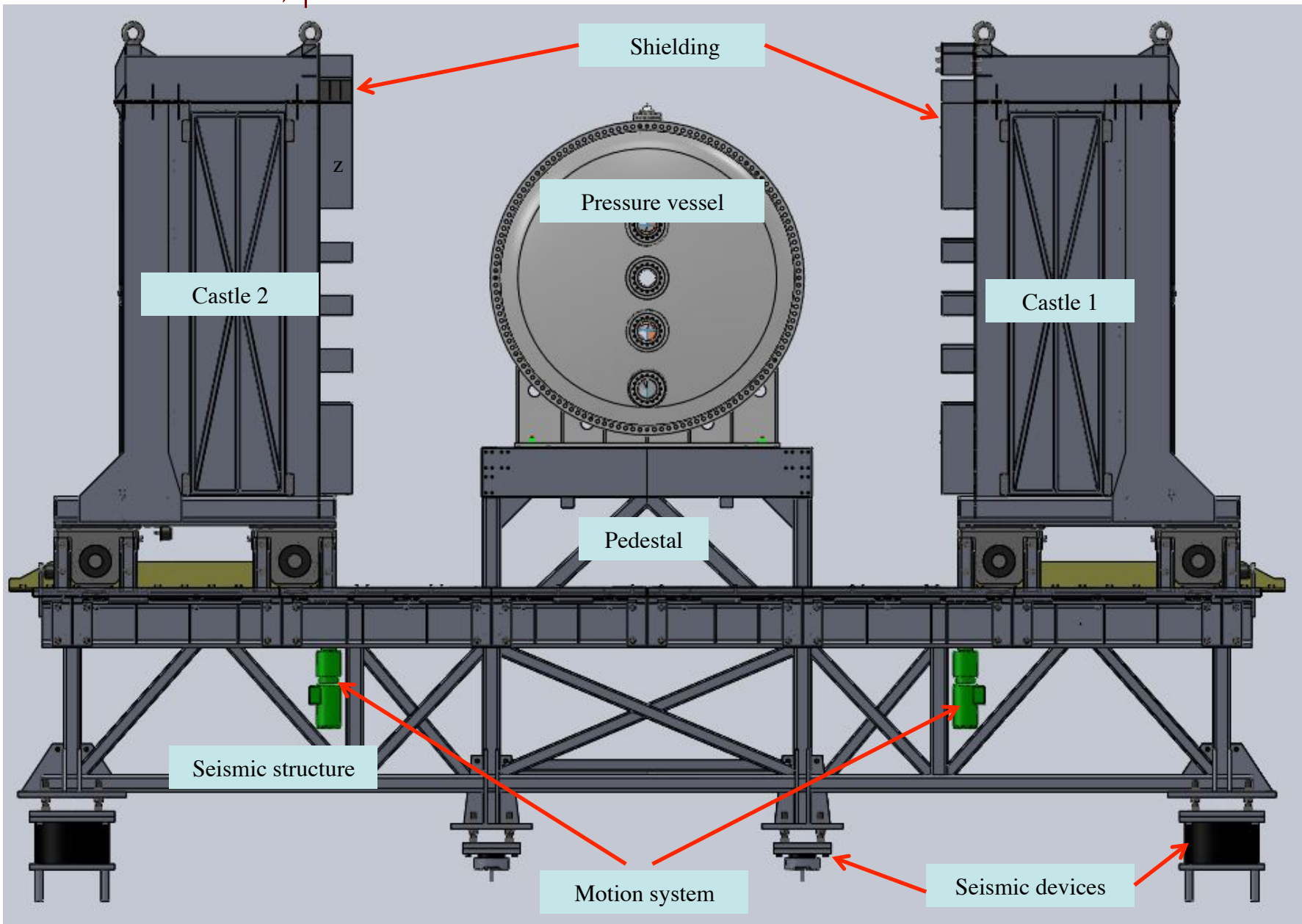
View of main laboratory hall during the platform installation.

Current view of main laboratory hall with completed work platform.

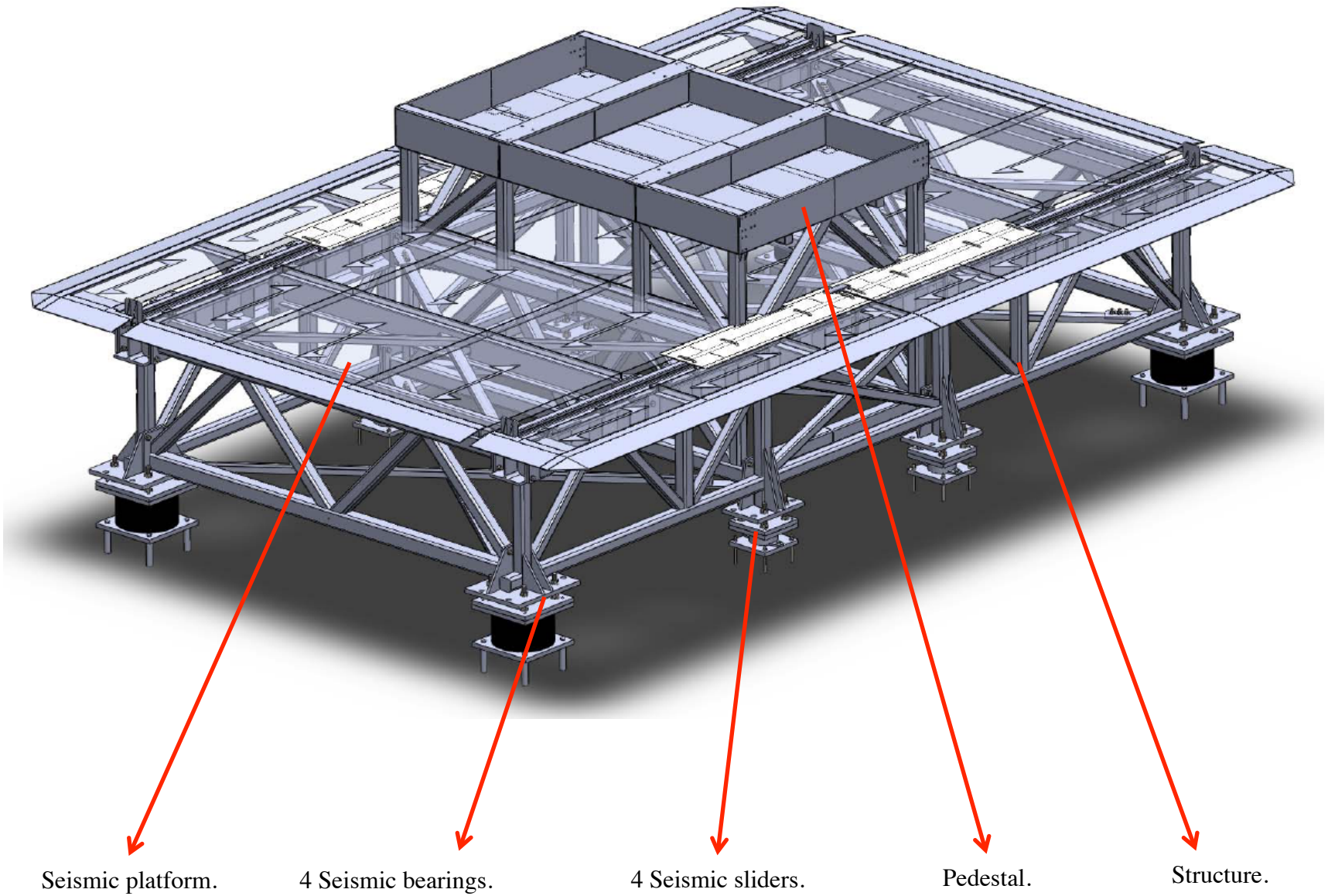
Infrastructures at Canfranc Laboratory.



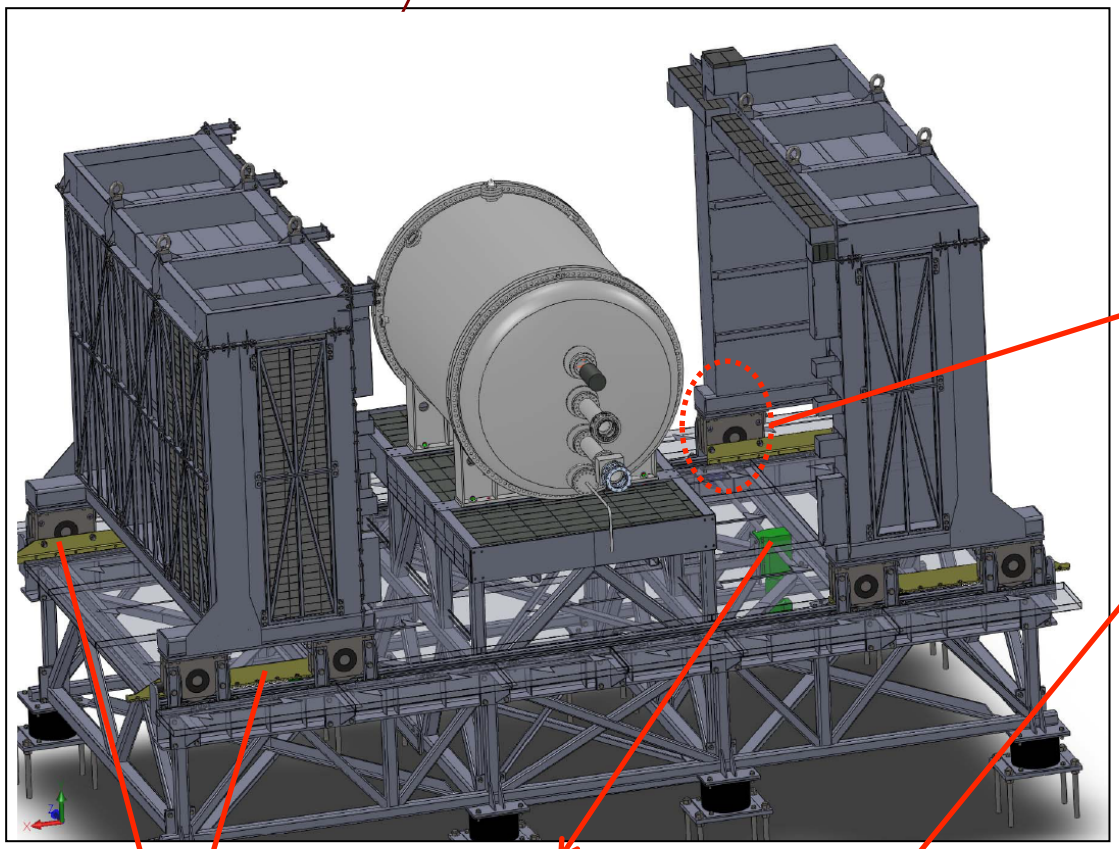
Seismic structure, pedestal and castle.

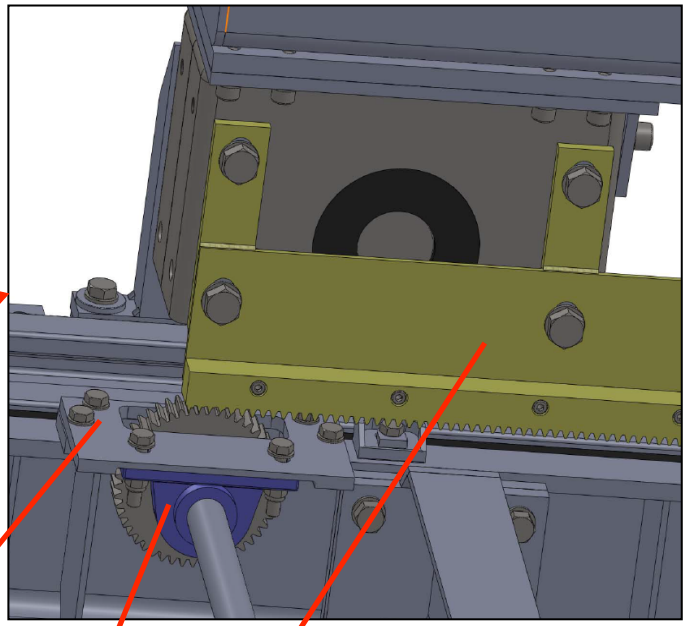


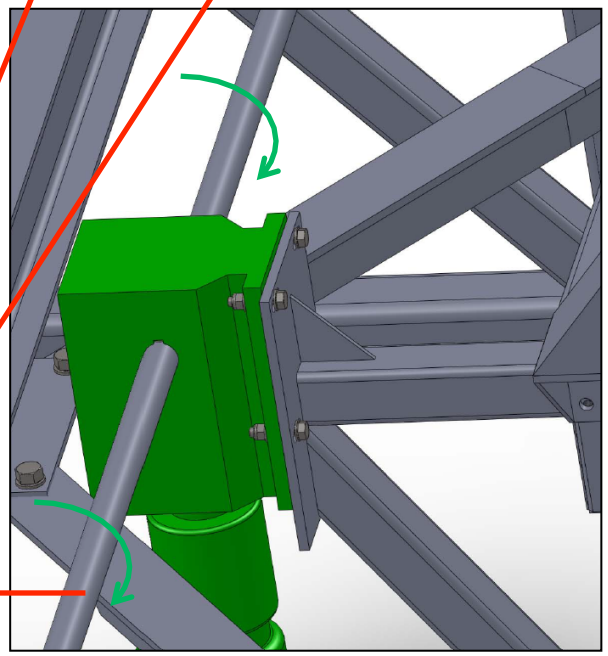
The seismic structure. Status: 95% completed.



The motion system on castle.







Gear rack screwed to castle

Electrical motor is under the platform.

Support screwed to seismic structure

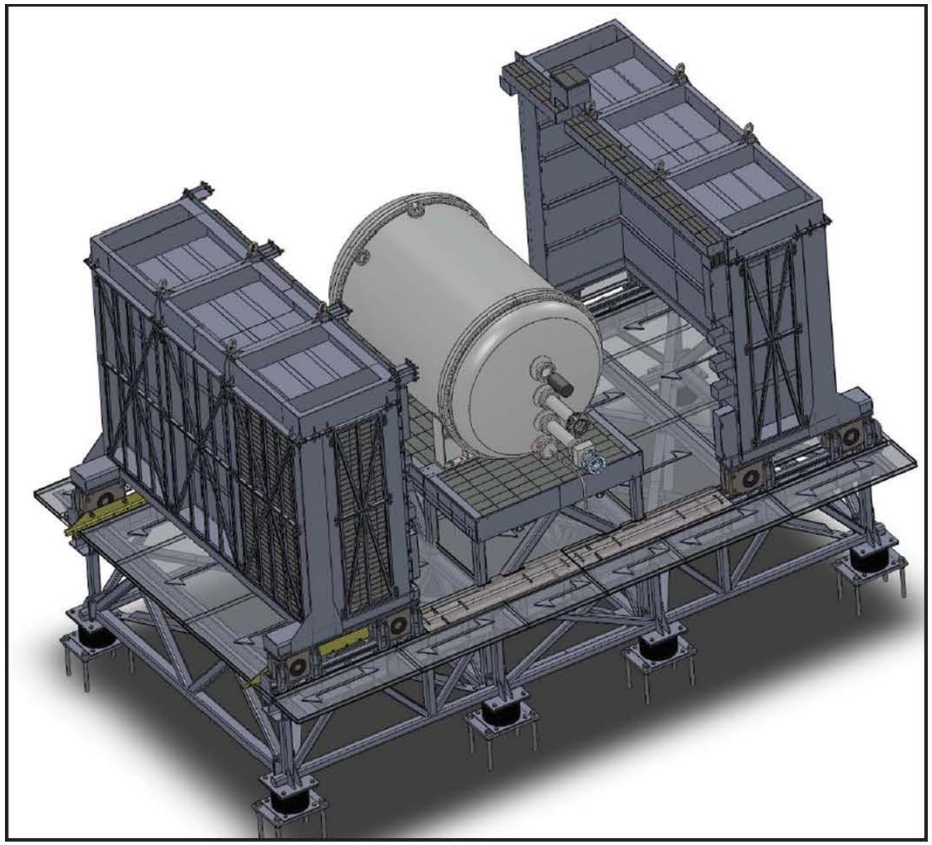
Bearing block

Gear rack screwed to castle

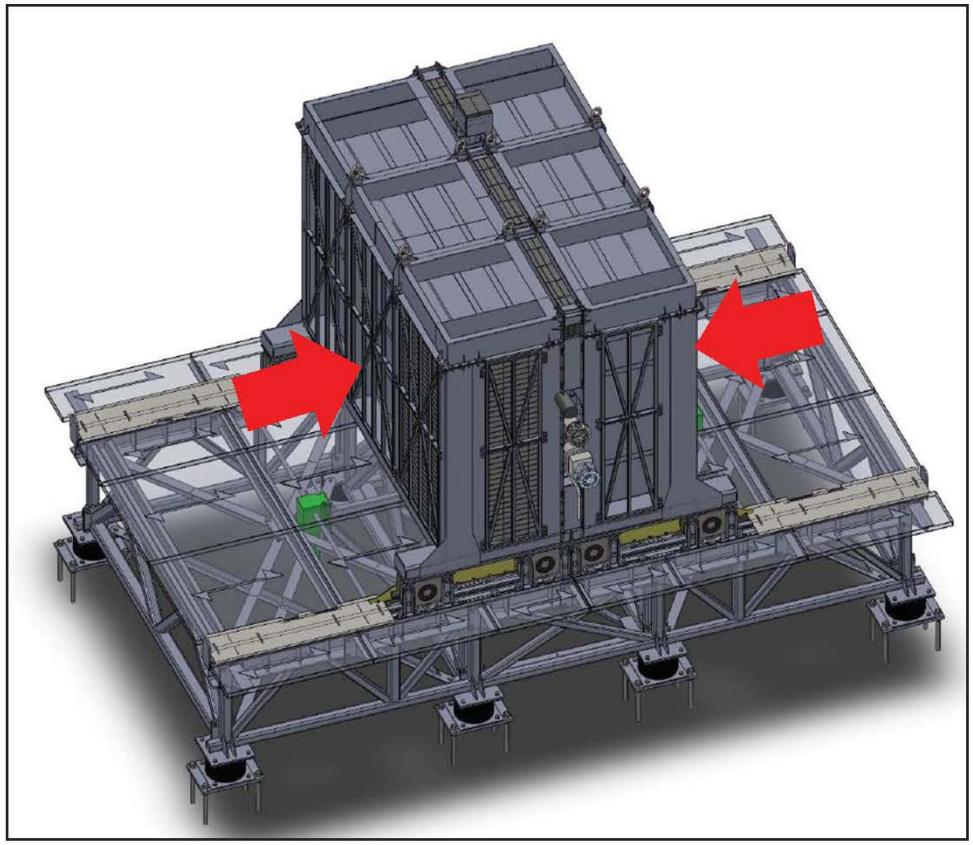
Shaft is under the platform.

Lead castle, shielding. Status 70% completed.

View, castles are opened

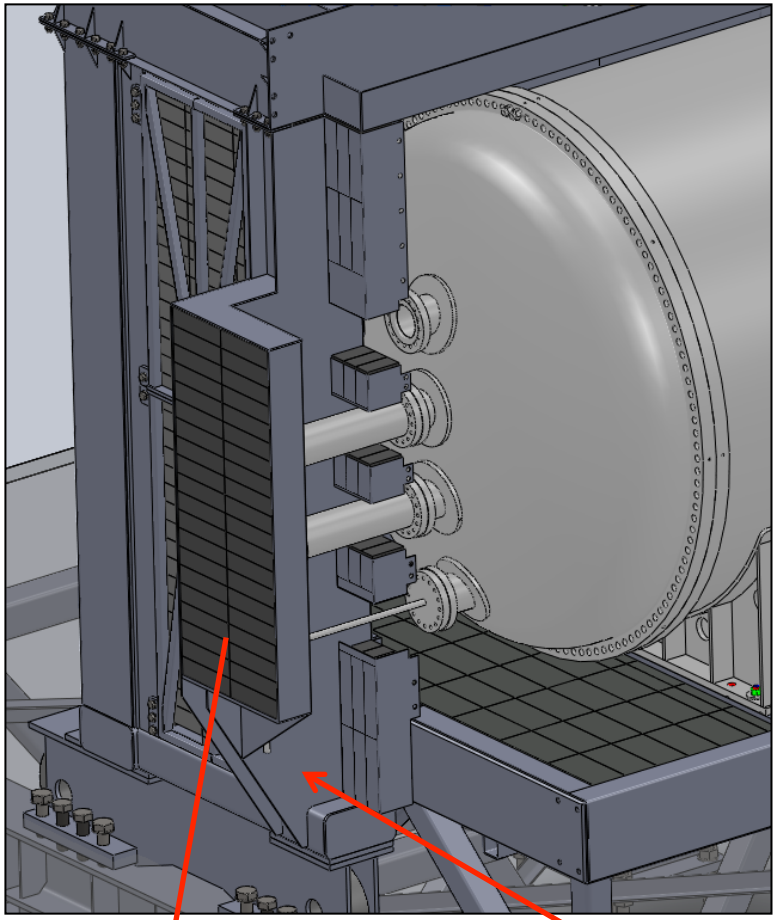


View, castles are closed

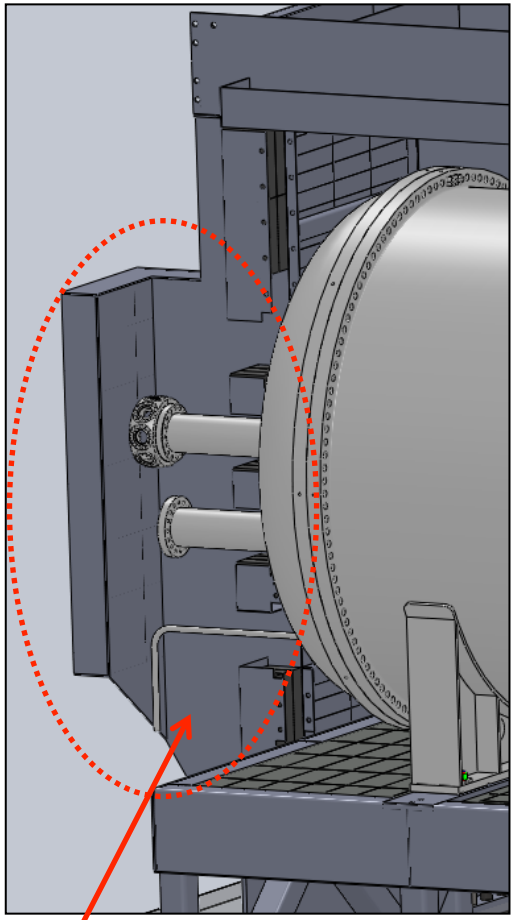


Shielding of the pipes and new pipes. Status 10% completed.

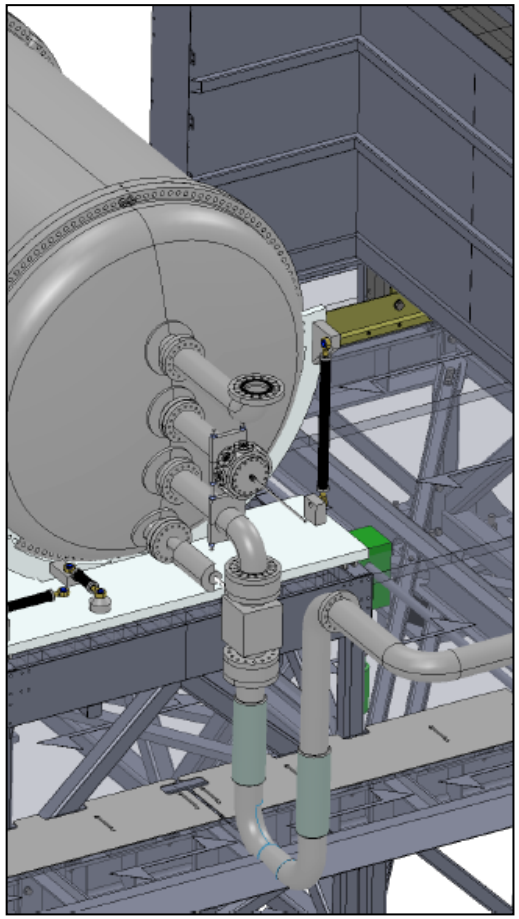
Front view



Back view



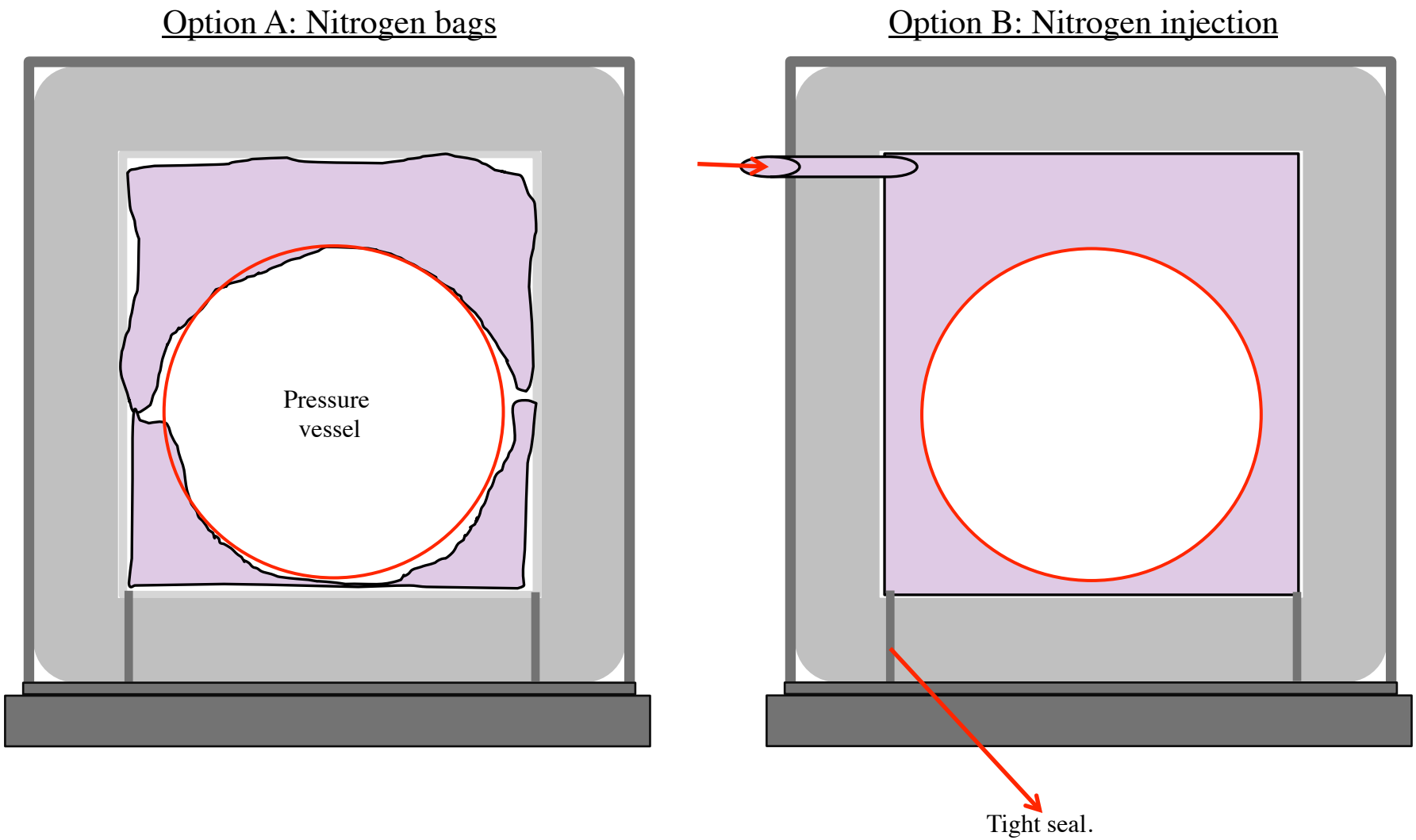
New pipes



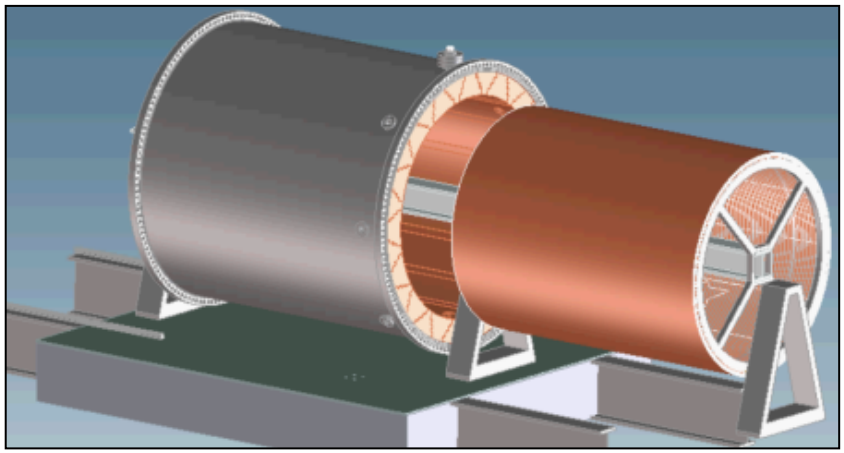
Shielding
of pipes

Support
Shielding of pipes put on castle

a1) Nitrogen injection system.

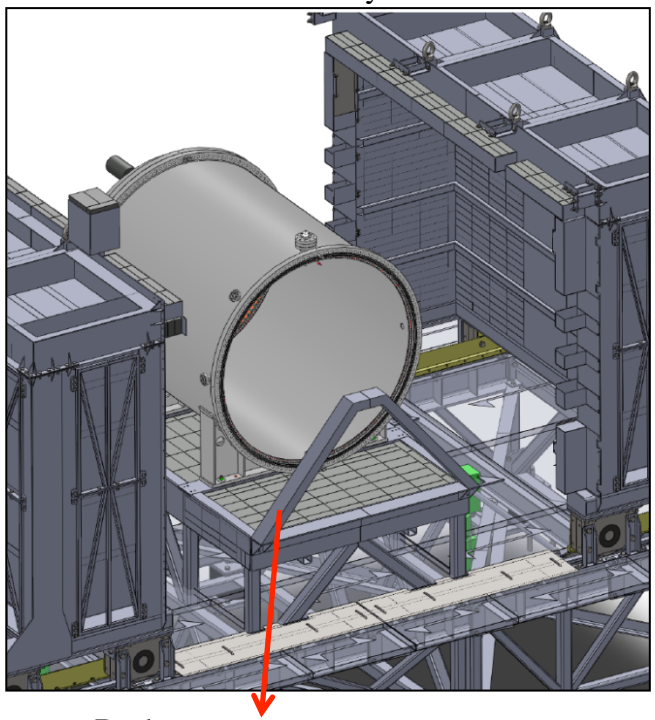


b) Temporary supports for field cage installation. Status 5% completed.



View of back temporary support.

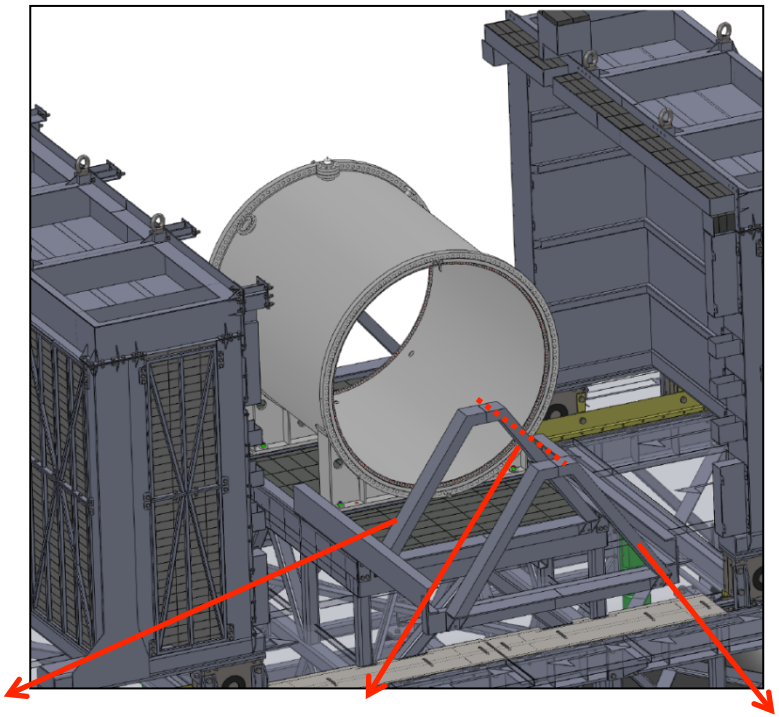
Preliminary idea.



Back temporary support.

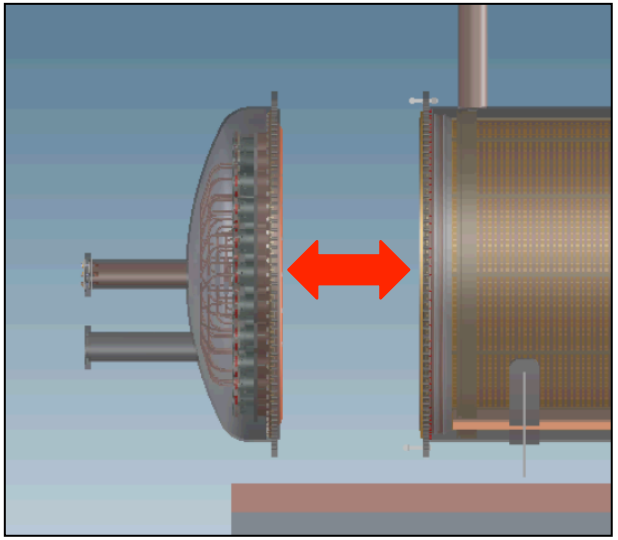
View of front temporary supports.

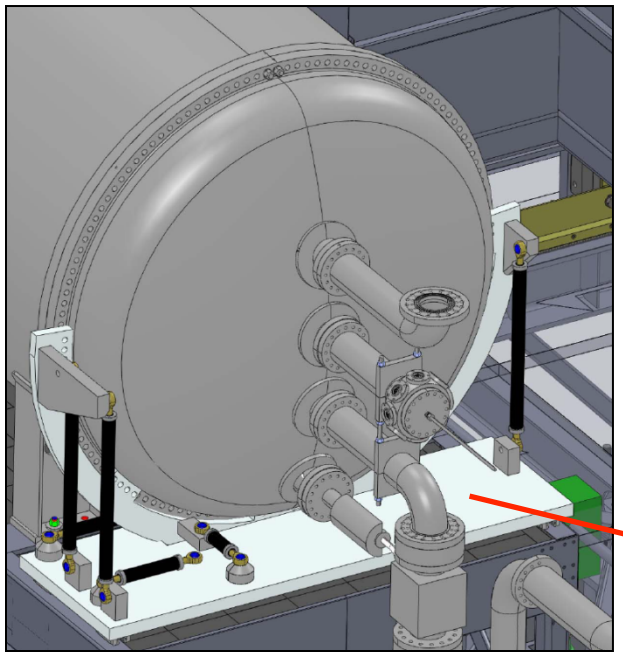
Preliminary idea.

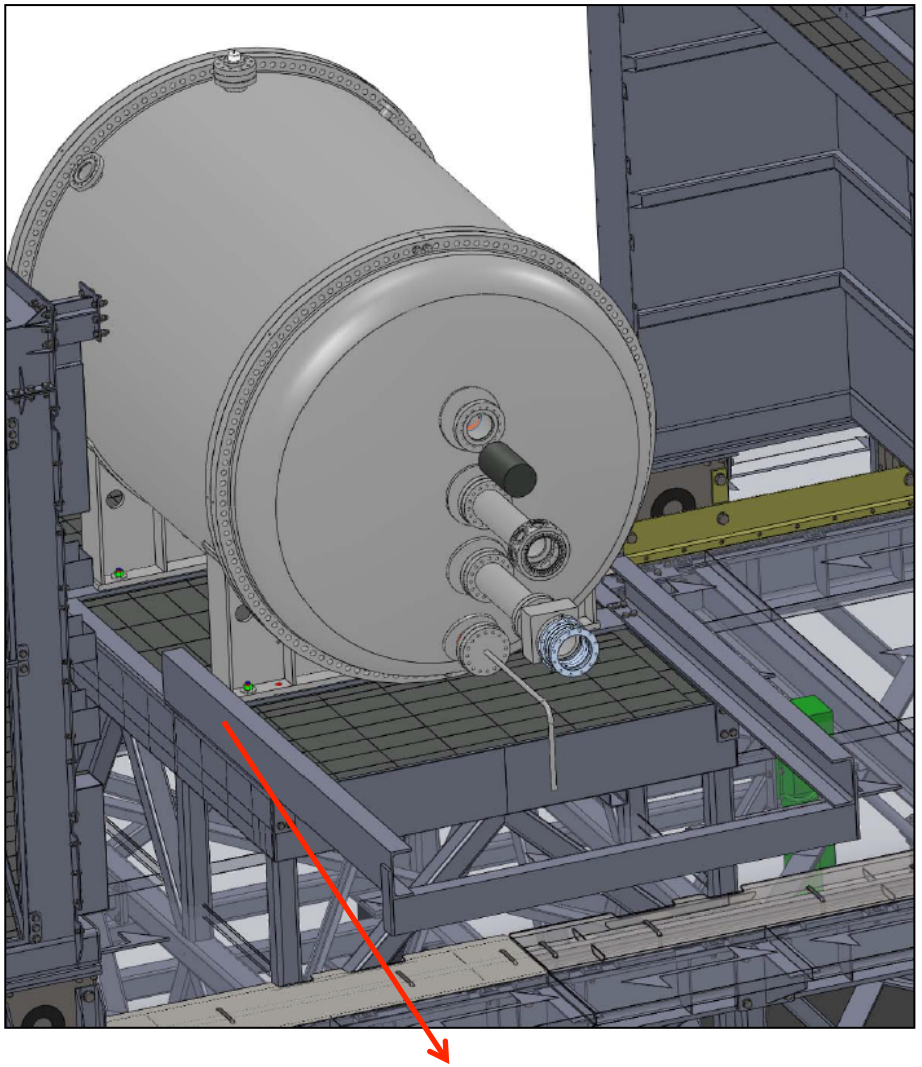


Central temporary support. Place of the field cage. Frontal temporary support.

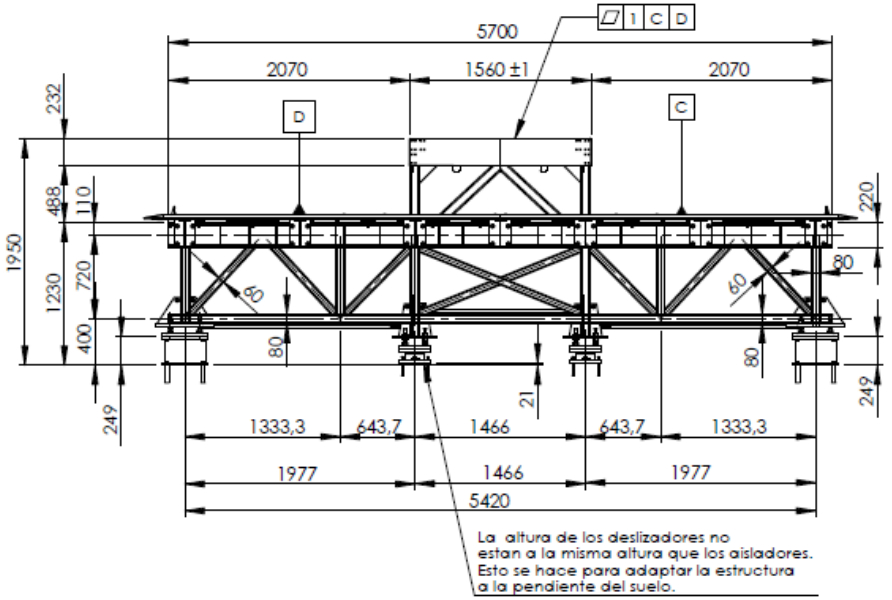
b), d) Rail system for CAPs installation. Status 5% completed.

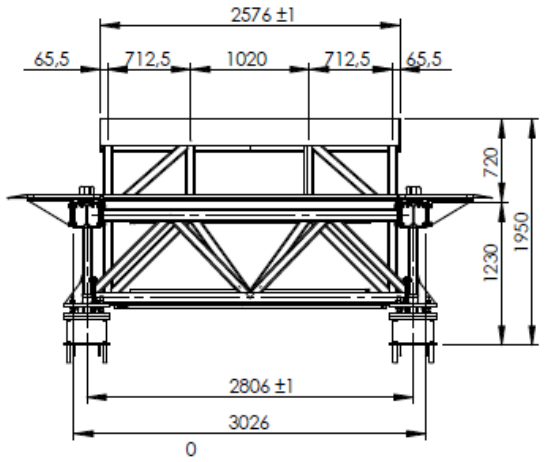


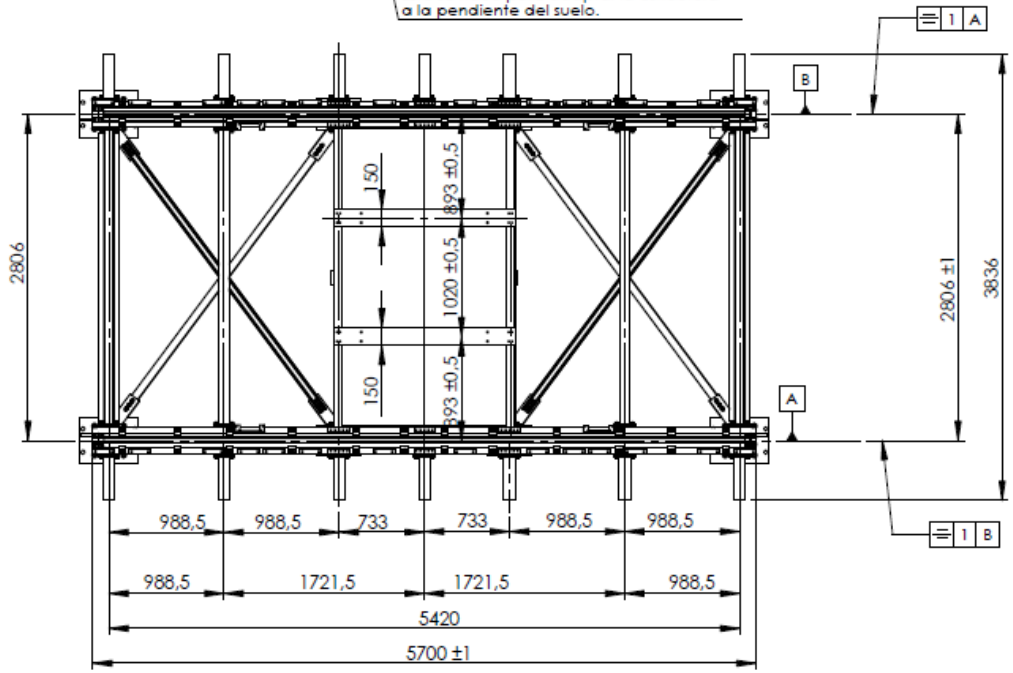


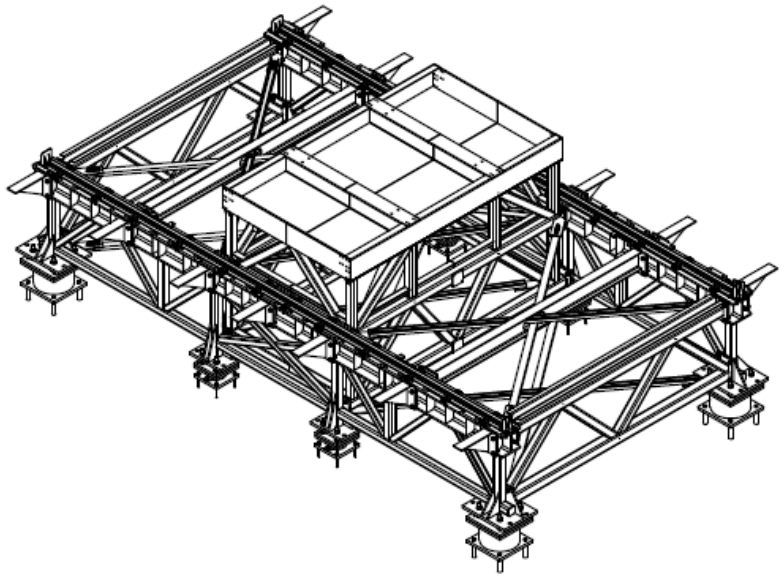


Seismic structure drawings.

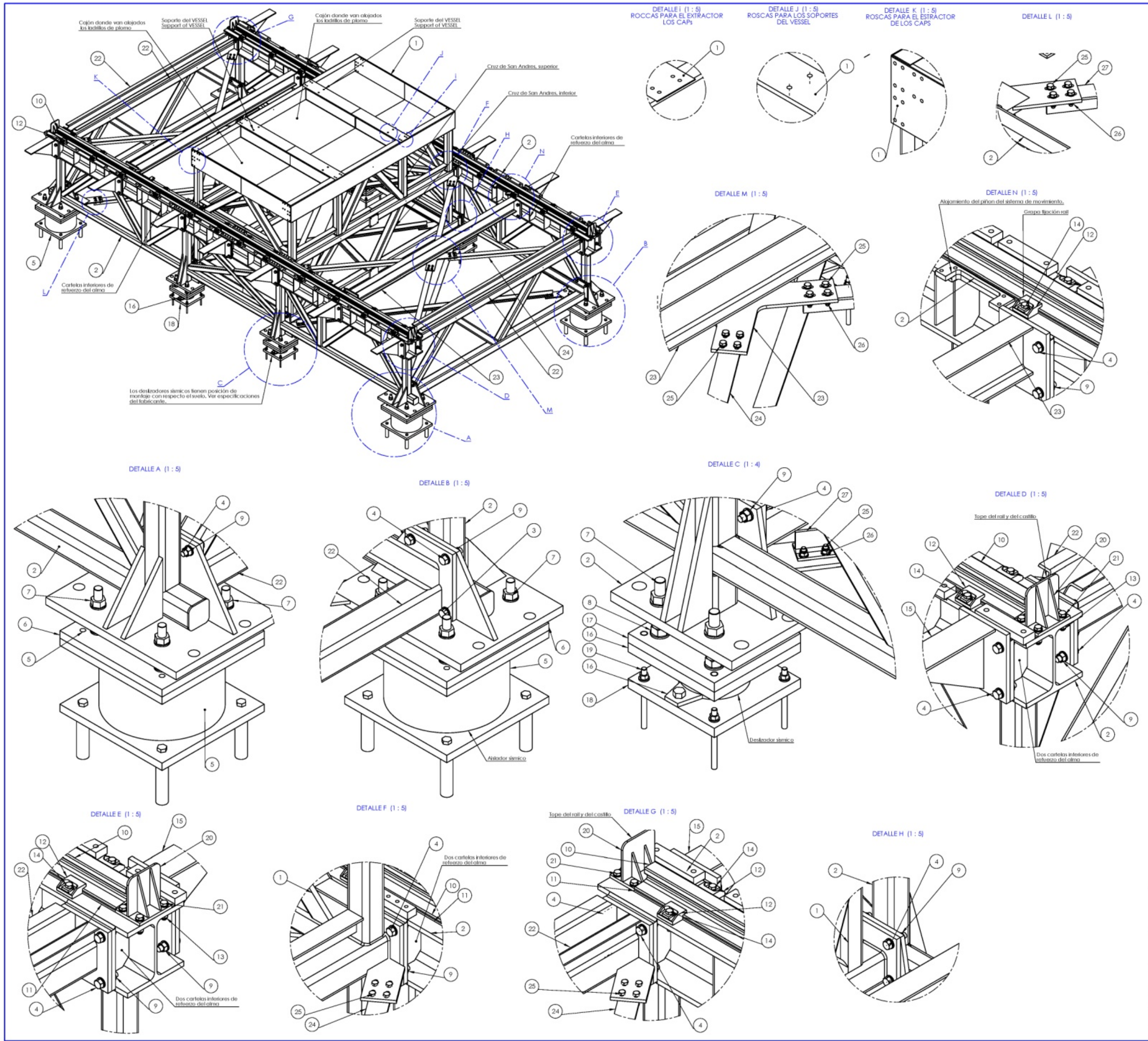








Seismic structure drawings.



ITEM N.º	QUANTITY CANTIDAD	Description / Descripción del componente	Drawing number / Número del plano	Material
1	1	Pedestal of the seismic structure / Pedestal de la estructura sísmica	0312-CENTRAL FRAME STRUCTURE	S-275 Steel and AISI-316Ti / S-275 Acero y AISI-316-Ti
2	2	HEB-220 beam of rail / Viga del rail HEB-220	0310-HEB LONG BEAM	S-275 Steel / Acero
3	16	Heavy hex bolt + washer / Tornillo exagonal de alta resistencia DIN-9614 M-16x30 Calidad: 10.9 + Arandela DIN-6916	M-16x30 DIN-6914-18 and DIN-6916	Galvanized steel/Acero galvanizado
4	120	Heavy hex bolt + washer / Tornillo exagonal de alta resistencia DIN-9614 M-16x60 Calidad: 10.9 + Arandela DIN-6916	M-16x60 DIN-6914-18 and DIN-6916	Galvanized steel/Acero galvanizado
5	4	Seismic bearing / Aislador sísmico 400x400x240, ø350 (Se suministra con las 4 varillas ø35x150 y 4 tornillos M-16x50) . Marca: FIP INDUSTRIALE, referencia : SI-S 350/115. Proveedor: SINDUCOR, Telf: +34 91 675 60 62, Fax: +34 91 677 76 15, Email: jmenendez@sinducor.es, www.sinducor.es	SEISMIC BEARING	
6	4	Seismic square plate / Pletina cuadrada sísmica	0321-SQUARE PLATE	S-275 Steel/Acero
7	32	Threaded rod + 2 nuts and 2 washers/ Varilla roscada DIN-975 M-24x170, calidad: 10.9 + 2 tuercas M-24 DIN-6915, calidad: 10.9 y 2 arandelas ø24 DIN-6916	M-24x170 DIN-975	Galvanized steel/Acero galvanizado
8	32	Heavy hexagonal nut/Tuerca estructural hexagonal M-24 DIN-6915 Quality/Calidad 10.9 + Flat washer/Arandela plana ø24 DIN-6916	M-24 DIN-6915 and DIN-6916	Galvanized steel/Acero galvanizado
9	120	Hexagonal heavy nut + washer/Tuerca de alta resistencia M-16 DIN-6915 Calidad 10.9 + Arandela DIN-6916	M-16 DIN-6915 and DIN-6916	Galvanized steel/Acero galvanizado
10	2	Crane rail KORO "Burbach" A-45, acoording to DIN-536/ Rail KORO de puente grua "Burbach" A-45, según DIN-536/1991 (tensión mínima 690N/mm). Marca: KARL GEORG, Proveedor: Electromecanica e Ing. Industrial General S.L., Telf: +34 916 291 600, Fax: +34 916 282 578, Email: eburkhardt@emigsl.es, www.karl-georg.de	0314-A-45 CRANE RAIL	Steel/Acero
11	2	(Falta referencia) Crane rail underlayer / Goma de apoyo del rail Marca: KARL GEORG, Proveedor: Electromecanica e Ing. Industrial General S.L., Telf: +34 916 291 600, Fax: +34 916 282 578, Email: eburkhardt@emigsl.es, www.karl-georg.de	0315-CRANE RAIL UNDERLAYER	Goma
12	48	(Falta referencia) Rail clamp / Fijación del rail, Marca: KARL GEORG, Proveedor: Electromecanica e Ing. Industrial General S.L., Telf: +34 916 291 600, Fax: +34 916 282 578, Email: eburkhardt@emigsl.es, www.karl-georg.de	16 NO 17951 RAIL CLAMP	Steel/Acero S-235JRG2
13	64	Nut + washer/Tuerca autoblocante M-12 DIN-985 Calidad 8.8 + Arandela DIN-125	M-12 DIN-985 and DIN-125	Galvanized steel/Acero galvanizado
14	48	Heavy hex bolt / Tornillo cabeza exagonal DIN-933 M-12X60Calidad: 8.8	M-12x60 DIN-933	Steel/Acero galvanizado
15	14	Lateral support of the Tramex / Soporte lateral del Tramex	0319-LATERAL SUPPORT	S-275 Steel/Acero
16	4	Seismic slider / Deslizador sísmico 270x270x98 ø160. Nota: Ojo que tiene sentido de montaje. (Se suministra con 2 tornilos con 6 tornillos M-16x50) . Marca: FIP INDUSTRIALE, referencia : VM 50/100/100. Proveedor: SINDUCOR, Telf: +34 91 675 60 62, Fax: +34 91 677 76 15, Email: jmenendez@sinducor.es, www.sinducor.es	SLIDER BEARING	
17	4	Superior square plate of slider / Pletina cuadrada superior del deslizador .	0322-SQUARE PLATE	S-275 Steel/Acero
18	4	Inferior square plate of slider / Pletina cuadrada inferior del deslizador , espesor 25mm	0325-PLATE OF SLIDER BEARING	S-275 Steel/Acero
19	16	Chemical anchor + 1 nut and washers/ Anclage químico + 1 tuerca M12 y 1 arandela. Ref.: HILTI HVU HAS-(E)F M12x110/28	M-12x160 CHEMICAL ANCHOR	Galvanized steel/Acero galvanizado
20	4	Top of Rail support and wheels / Tope del rail y de la ruedas	0331-RAIL SUPPORT	S-275 Steel/Acero
21	16	Heavy hex bolt + washer / Tornillo cabeza exagonal DIN-933 M-12x50 Calidad: 8.8 + Arandela DIN-125	M-12x50 DIN-933 and DIN-125	Galvanized steel/Acero galvanizado
22	2	Lateral frame / Celosia lateral	0311-LATERAL FRAME	S-275 Steel/Acero
23	2	Central support of the Tramex / Soporte central del tramex	0320-CENTRAL SUPPORT	S-275 Steel/Acero
24	8	St. Andrew's Cross 2, T simple profile / Cruz de San Andres Nº2, Perfil simple T 60x60x7	0318-St_ANDREW_S_ CROSS	S-275 Steel/Acero
25	4	St. Andrew's Cross 1, T simple profile / Cruz de San Andres Nº1, Perfil simple T 60x60x7	0316-St_ANDREW_S_ CROSS	S-275 Steel / Acero
26	96	Heavy hex bolt + washer / Tornillo exagonal de alta resistencia DIN-9614 M-10x40 Calidad: 10.9 + Arandela DIN-6916	M-10x40 DIN-6914-18 and DIN-6916	Galvanized steel/Acero galvanizado
27	96	Heavy hexagonal nut/Tuerca estructural hexagonal M-10 DIN-6915 Quality/Calidad 10.9 + Flat washer/Arandela plana ø10 DIN-6916	M-10 DIN-6915 and DIN-6916	Galvanized steel / Acero galvanizado

MODIFICATIONS / MODIFICACIONES				
D				
C				
B				
A				
Ind.	Date/Fecha	Replaces/Remplace a/Sustituye a	Description / Object / Descripción:	By/Par/Por

No. drawing-version/Réf. plan-version / Nº Plano -versión :0301-SEISMIC STRUCTURE (1 / 4)

Title/Designation/Nombre:

Units/Unités/Unidades: 1 | Material: | Finish/Finition/Acabado:

Drawn by/Dessiné par/Dibujado por : Jordi Torrent (18/10/2012)

Checked by/Vérifié par/Revisado por: Lluís Ripoll (18/10/2012)

Scale / Echelle / Escala: 1:50 DIN-A1 | Date / Fecha: 17/10/2012

The dimensions are in millimetres. The dimensional tolerances are not shown in drawing according to the norm ISO-2768-1 (General tolerances): Les dimensions sont en millimetres. Les tolérances dimensionnelles ne figurent pas dans le plan selon la norme ISO-2768-1(Tolérances générales): Las dimensiones son en milímetros. Las tolerancias dimensionales no indicadas en el plano según la norma ISO-2768-1 (Tolerancias generales):

0,5 - 6 ±0.1
6 - 30 ±0.2
30 - 120 ±0.3
120 - 400 ±0.5
400 - 1000 ±0.8
1000 - 2000 ±1.2
2000 - 4000 ±2.0

Comments/Commentaires/Comentarios: Without cutting edges / Sans arêtes vives / Sin aristas vivas.

AMADE Escola Politècnica Superior
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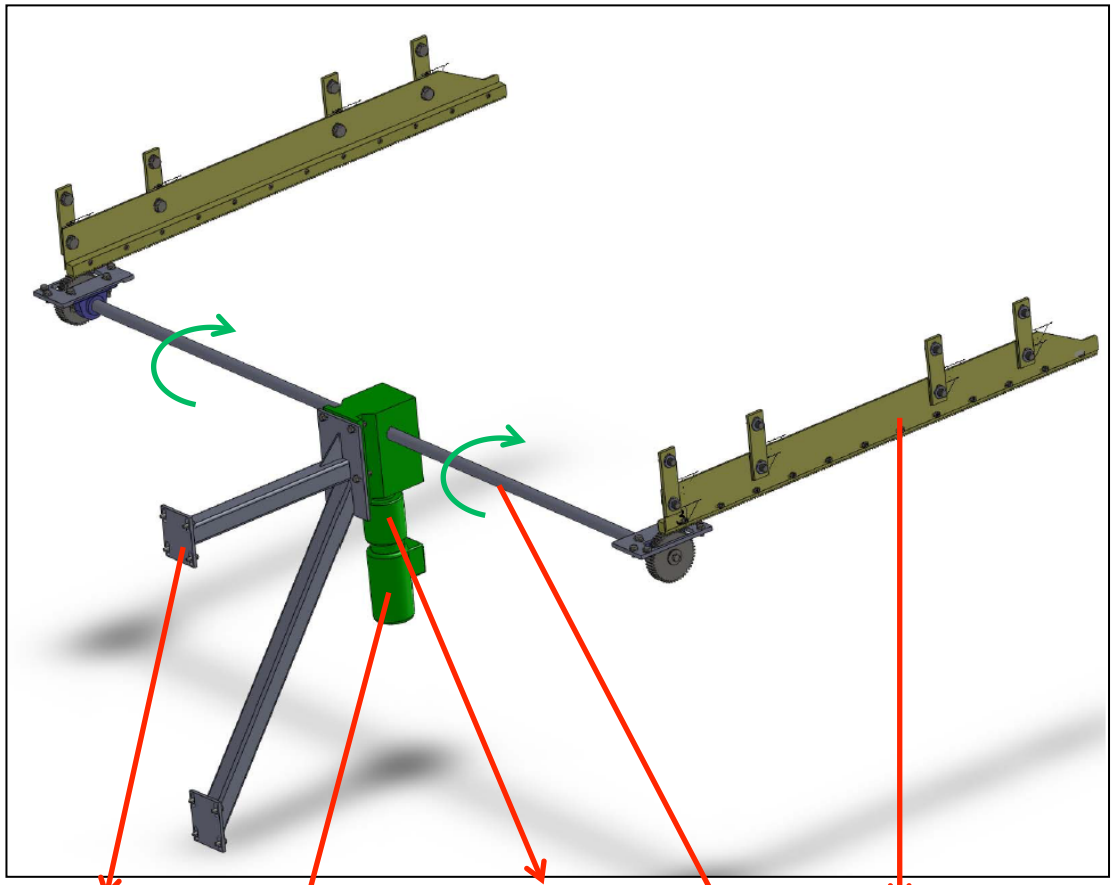
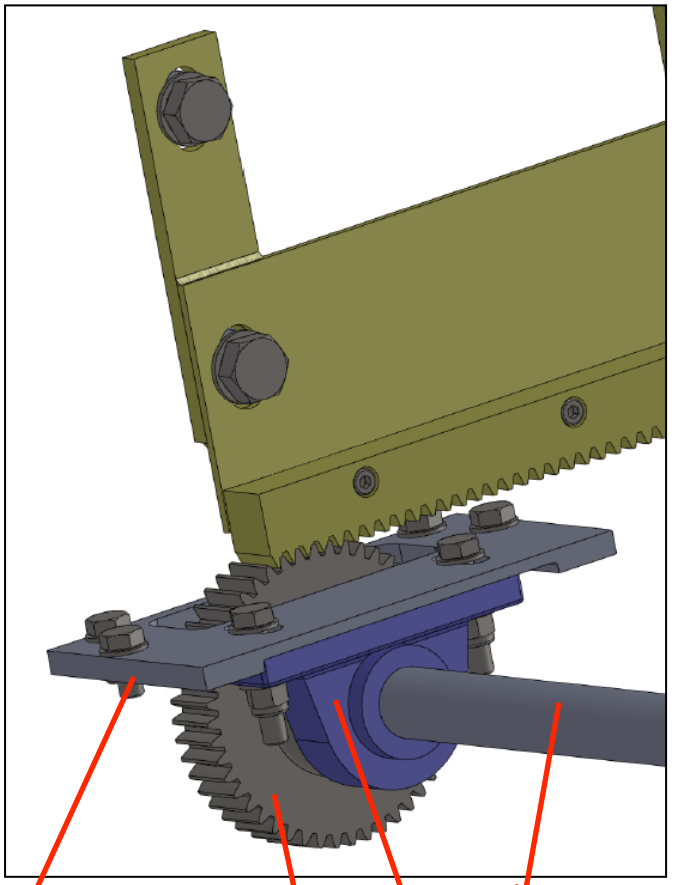
http://amade.udg.edu/eng/index.htm

The motion system. Status: 100% completed.

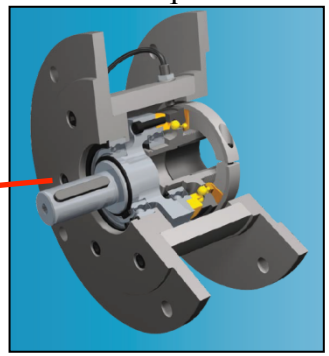




Motor support.

Electrical motor

Housed torque limiter.



Gear rack screwed to castle

Rigid shaft

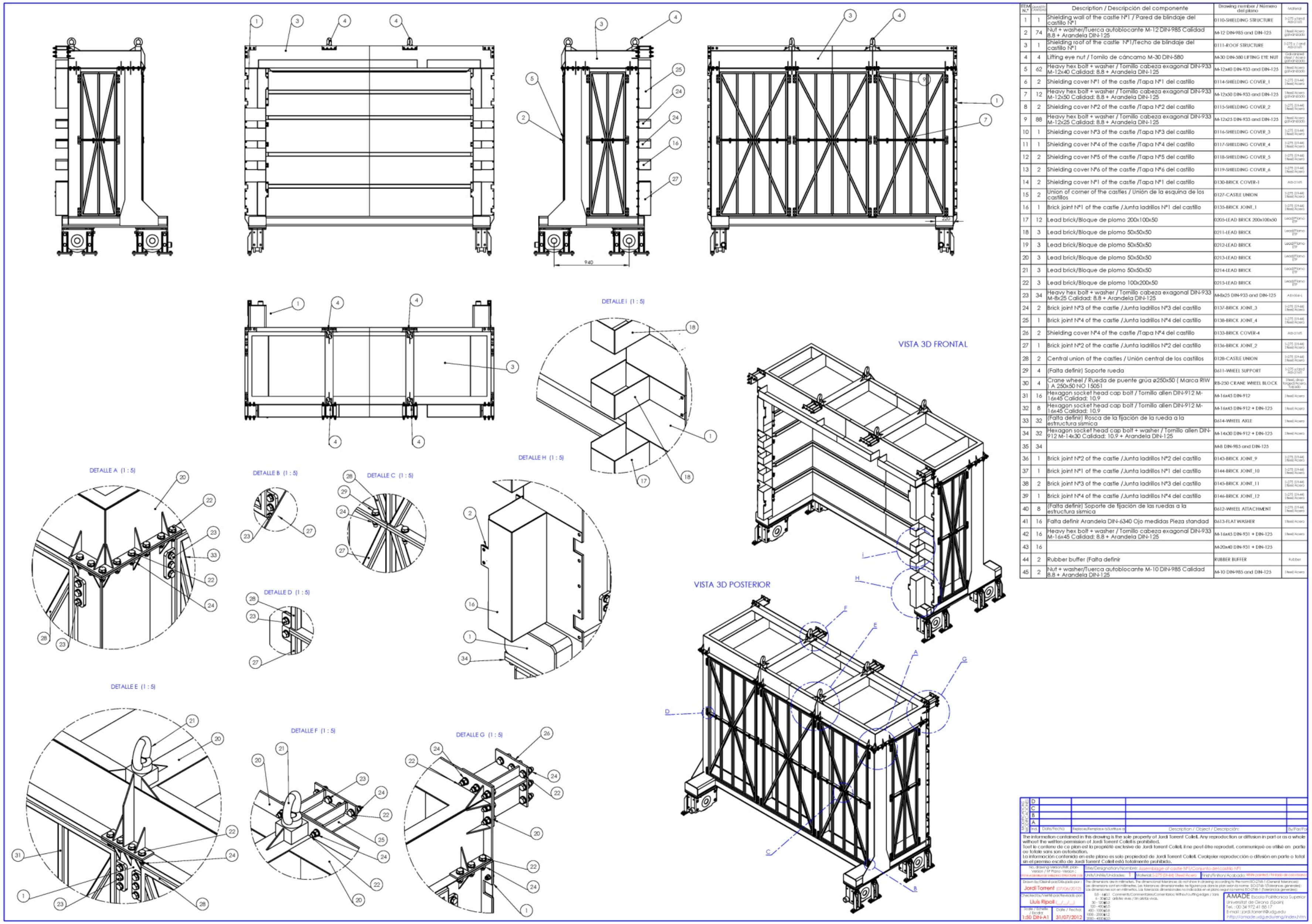
Support screwed to seismic structure

Gear

Rigid shaft

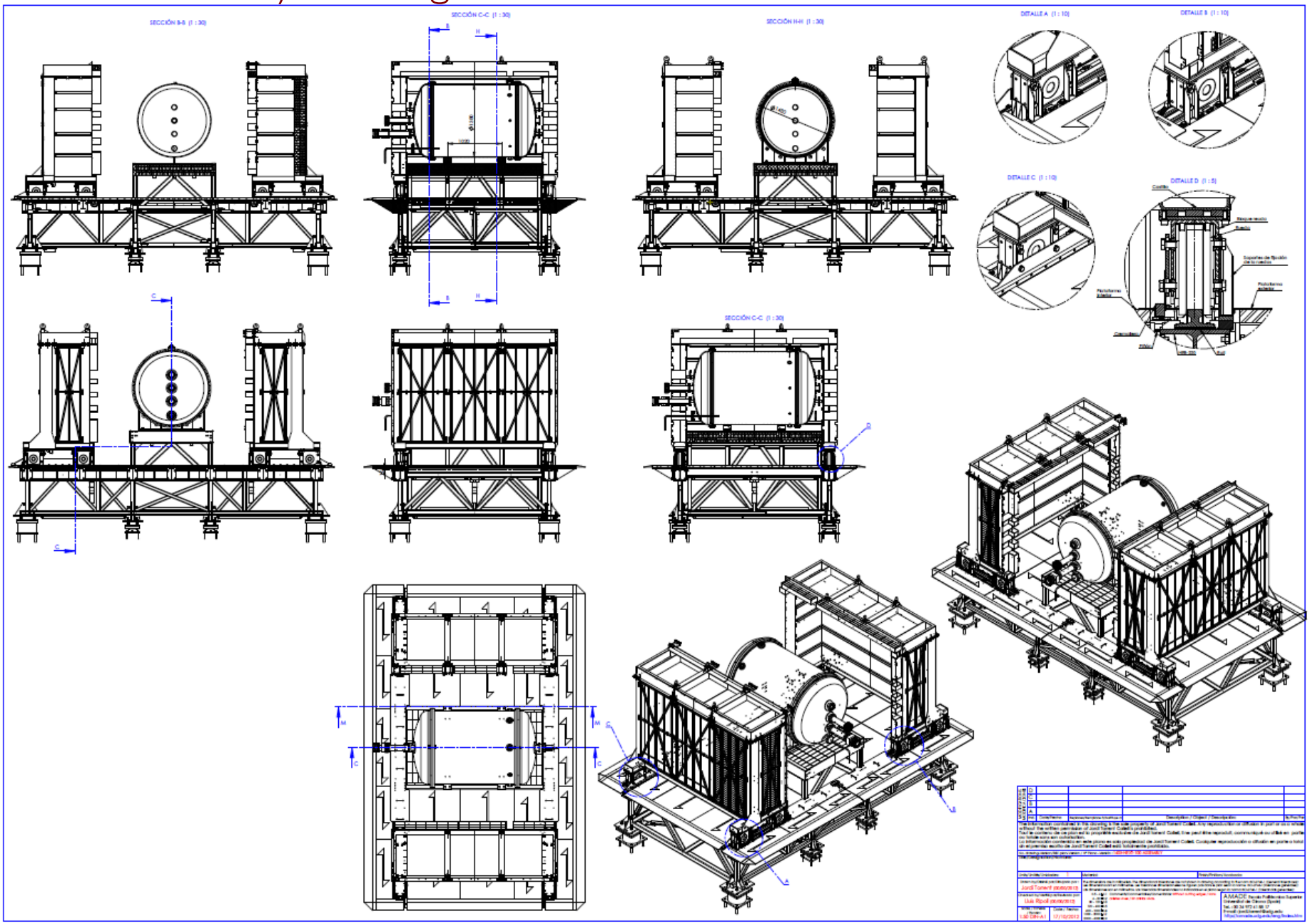
Bearing block

Castle drawings.



ITEM N.º	QUANTITY CANTIDAD	Description / Descripción del componente	Drawing number / Número del plano	Material
1	1	Shielding wall of the castle Nº1 / Pared de blindaje del castillo Nº1	0110-SHIELDING STRUCTURE	S-275 y/and AISI-316Ti
2	74	Nut + washer/Tuerca autoblocante M-12 DIN-985 Calidad 8.8 + Arandela DIN-125	M-12 DIN-985 and DIN-125	Steel/Acero galvanizado
3	1	Shielding roof of the castle Nº1/Techo de blindaje del castillo Nº1	0111-ROOF STRUCTURE	S-275 y / and AISI-316Ti
4	4	Lifting eye nut / Tornilo de cáncamo M-30 DIN-580	M-30 DIN-580 LIFTING EYE NUT	Galvanized steel / Acero galvanizado
5	62	Heavy hex bolt + washer / Tornillo cabeza exagonal DIN-933 M-12x40 Calidad: 8.8 + Arandela DIN-125	M-12x40 DIN-933 and DIN-125	Steel/Acero galvanizado
6	2	Shielding cover Nº1 of the castle /Tapa Nº1 del castillo	0114-SHIELDING COVER_1	S-275 (St-44) Steel/Acero
7	12	Heavy hex bolt + washer / Tornillo cabeza exagonal DIN-933 M-12x50 Calidad: 8.8 + Arandela DIN-125	M-12x50 DIN-933 and DIN-125	Steel/Acero galvanizado
8	2	Shielding cover Nº2 of the castle /Tapa Nº2 del castillo	0115-SHIELDING COVER_2	S-275 (St-44) Steel/Acero
9	88	Heavy hex bolt + washer / Tornillo cabeza exagonal DIN-933 M-12x25 Calidad: 8.8 + Arandela DIN-125	M-12x25 DIN-933 and DIN-125	Steel/Acero galvanizado
10	1	Shielding cover Nº3 of the castle /Tapa Nº3 del castillo	0116-SHIELDING COVER_3	S-275 (St-44) Steel/Acero
11	1	Shielding cover Nº4 of the castle /Tapa Nº4 del castillo	0117-SHIELDING COVER_4	S-275 (St-44) Steel/Acero
12	2	Shielding cover Nº5 of the castle /Tapa Nº5 del castillo	0118-SHIELDING COVER_5	S-275 (St-44) Steel/Acero
13	2	Shielding cover Nº6 of the castle /Tapa Nº6 del castillo	0119-SHIELDING COVER_6	S-275 (St-44) Steel/Acero
14	2	Shielding cover Nº1 of the castle /Tapa Nº1 del castillo	0130-BRICK COVER-1	AISI-316Ti
15	2	Union of corner of the castles / Unión de la esquina de los castillos	0127-CASTLE UNION	S-275 (St-44) Steel/Acero
16	1	Brick joint Nº1 of the castle /Junta ladrillos Nº1 del castillo	0135-BRICK JOINT_1	S-275 (St-44) Steel/Acero
17	12	Lead brick/Bloque de plomo 200x100x50	0205-LEAD BRICK 200x100x50	Lead/Plomo ETP
18	3	Lead brick/Bloque de plomo 50x50x50	0211-LEAD BRICK	Lead/Plomo ETP
19	3	Lead brick/Bloque de plomo 50x50x50	0212-LEAD BRICK	Lead/Plomo ETP
20	3	Lead brick/Bloque de plomo 50x50x50	0213-LEAD BRICK	Lead/Plomo ETP
21	3	Lead brick/Bloque de plomo 50x50x50	0214-LEAD BRICK	Lead/Plomo ETP
22	3	Lead brick/Bloque de plomo 100x200x50	0215-LEAD BRICK	Lead/Plomo ETP
23	34	Heavy hex bolt + washer / Tornillo cabeza exagonal DIN-933 M-8x25 Calidad: 8.8 + Arandela DIN-125	M-8x25 DIN-933 and DIN-125	AISI-304-L
24	2	Brick joint Nº3 of the castle /Junta ladrillos Nº3 del castillo	0137-BRICK JOINT_3	S-275 (St-44) Steel/Acero
25	1	Brick joint Nº4 of the castle /Junta ladrillos Nº4 del castillo	0138-BRICK JOINT_4	S-275 (St-44) Steel/Acero
26	2	Shielding cover Nº4 of the castle /Tapa Nº4 del castillo	0133-BRICK COVER-4	AISI-316Ti
27	1	Brick joint Nº2 of the castle /Junta ladrillos Nº2 del castillo	0136-BRICK JOINT_2	S-275 (St-44) Steel/Acero
28	2	Central union of the castles / Unión central de los castillos	0128-CASTLE UNION	S-275 (St-44) Steel/Acero
29	4	(Falta definir) Soporte rueda	0611-WHEEL SUPPORT	S-275 y/and AISI-316Ti
30	4	Crane wheel / Rueda de puente grúa ø250x50 (Marca RIW) A 250x50 NO 15051	RB-250 CRANE WHEEL BLOCK	Steel, drop forged/Acero, forjado
31	16	Hexagon socket head cap bolt / Tornillo allen DIN-912 M-16x45 Calidad: 10.9	M-16x45 DIN-912	Steel/Acero
32	8	Hexagon socket head cap bolt / Tornillo allen DIN-912 M-16x45 Calidad: 10.9	M-16x45 DIN-912 + DIN-125	Steel/Acero
33	32	(Falta definir) Rosca de la fijación de la rueda a la estrructura sísmica	0614-WHEEL AXLE	Steel/Acero
34	32	Hexagon socket head cap bolt + washer / Tornillo allen DIN-912 M-14x30 Calidad: 10.9 + Arandela DIN-125	M-14x30 DIN-912 + DIN-125	Steel/Acero
35	34		M-8 DIN-985 and DIN-125	
36	1	Brick joint Nº2 of the castle /Junta ladrillos Nº2 del castillo	0143-BRICK JOINT_9	S-275 (St-44) Steel/Acero
37	1	Brick joint Nº1 of the castle /Junta ladrillos Nº1 del castillo	0144-BRICK JOINT_10	S-275 (St-44) Steel/Acero
38	2	Brick joint Nº3 of the castle /Junta ladrillos Nº3 del castillo	0145-BRICK JOINT_11	S-275 (St-44) Steel/Acero
39	1	Brick joint Nº4 of the castle /Junta ladrillos Nº4 del castillo	0146-BRICK JOINT_12	S-275 (St-44) Steel/Acero
40	8	(Falta definir) Soporte de fijación de las ruedas a la estructura sismica	0612-WHEEL ATTACHMENT	S-275 (St-44) Steel/Acero
41	16	Falta definir Arandela DIN-6340 Ojo medidas Pieza standad	0613-FLAT WASHER	Steel/Acero
42	16	Heavy hex bolt + washer / Tornillo cabeza exagonal DIN-933 M-16x45 Calidad: 8.8 + Arandela DIN-125	M-16x45 DIN-931 + DIN-125	Steel/Acero
43	16		M-20x40 DIN-931 + DIN-125	
44	2	Rubber buffer (Falta definir	RUBBER BUFFER	Rubber
45	2	Nut + washer/Tuerca autoblocante M-10 DIN-985 Calidad 8.8 + Arandela DIN-125	M-10 DIN-985 and DIN-125	Steel/Acero

Castle assembly drawings.



Pending issues.

a) Manufacturing, installation of seismic structure and shielding castle.
   - a1) N2 injection system.
   - a2) Definition extra shielding for in/out PV.
   - a3) Closing of the castle: tightness, interaction with in/out PV.
   - a4) Lead bricks layout, assemblage.

b) Manufacturing, installation of field cage and CAPs supports.

c) Manufacturing, installation of Xe expansion tank. Other gas system installation.

d) Manufacturing of 2 “table” support for CAPs storage.

e) Manufacturing, installation of racks for electrical installation.

f) Report of system integration.

g) Installation of “clean tent”.

h) Assembly of the lead bricks on castle & pedestal.

i) Other infrastructures...