



REGIONE PUGLIA
PROVINCIA DI BRINDISI
COMUNE DI BRINDISI



Progetto di un impianto Agrivoltaico da 19,99 Mw integrato da un sistema di accumulo da 15 Mw e potenza di immissione pari a 18,714 Mw, ubicato in agro di Brindisi, connesso alla Stazione Elettrica denominata "Brindisi Sud" tramite Stazione di elevazione utente.

TITOLO:

Tavola particolari costruttivi: inverter, trasformatori

CODICE ELABORATO:

Elab.30

SCALA:

DATA	MOTIVO REVISIONE	REDATTO	APPROVATO
28/05/2024	--	ING. CIRACI'	N/A

SOCIETÀ DI
INGEGNERIA:

LUCON Srl

Sede Legale: Via Don Lorenzo Milani 27
San Vito dei Normanni (BR) - 72019
C.F./P.IVA 01885000768

LUCON s.r.l.
L' Amministratore Unico
Converino Luca Roberto

PROGETTISTA:

ING. FRANCESCO CIRACI'

Studio di Ingegneria di Ciraci Francesco,
Sede legale: San Lorenzo n. 2
Ceglie Messapica (Br), 72013



COMMITTENTE:

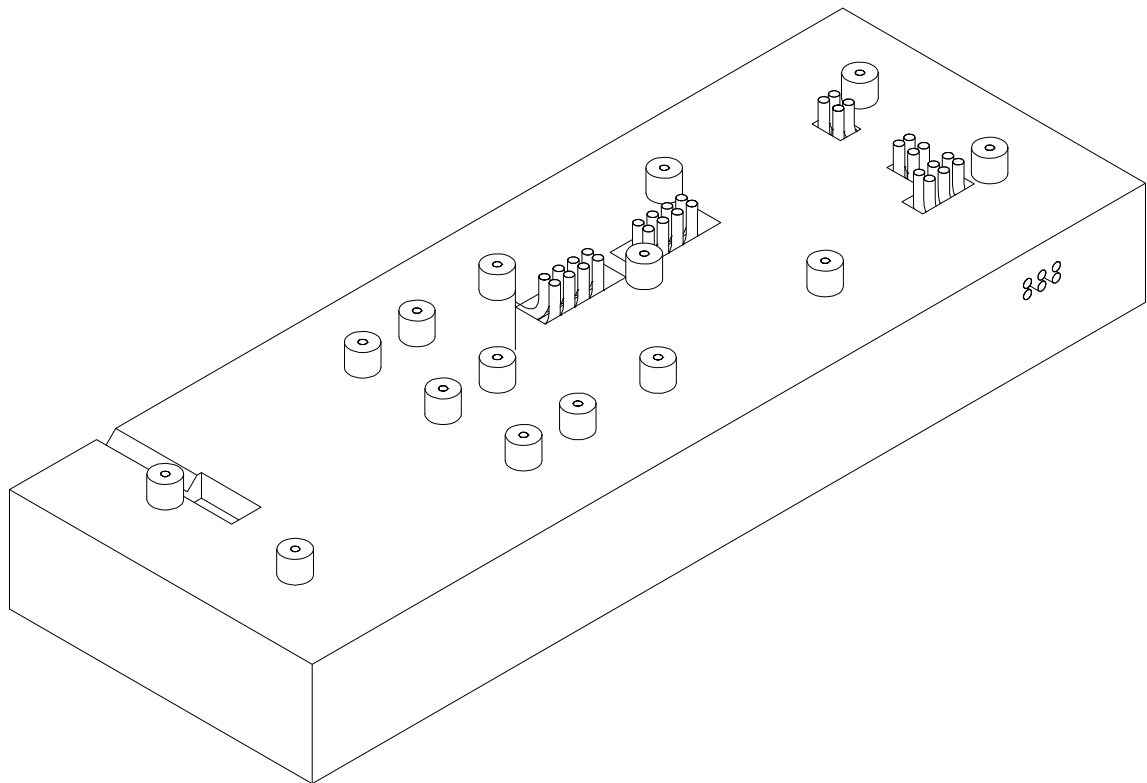
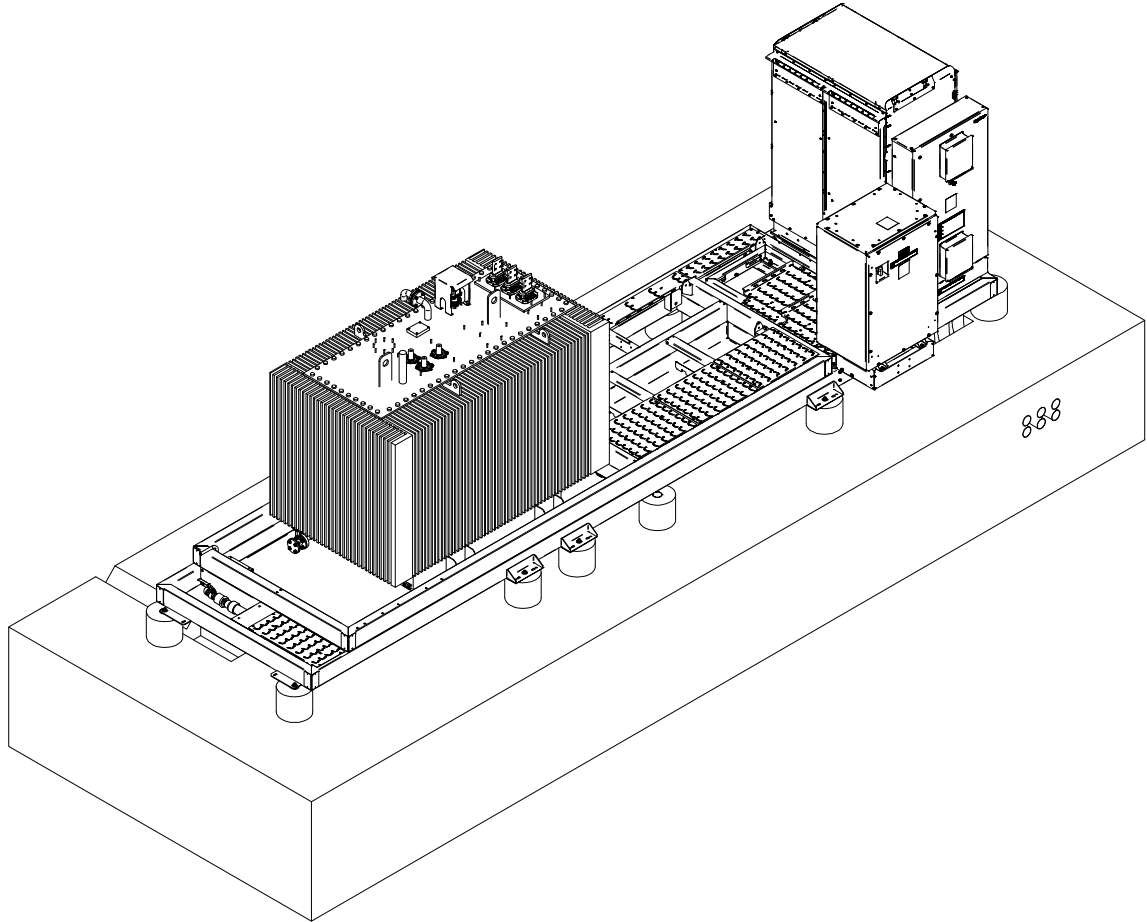
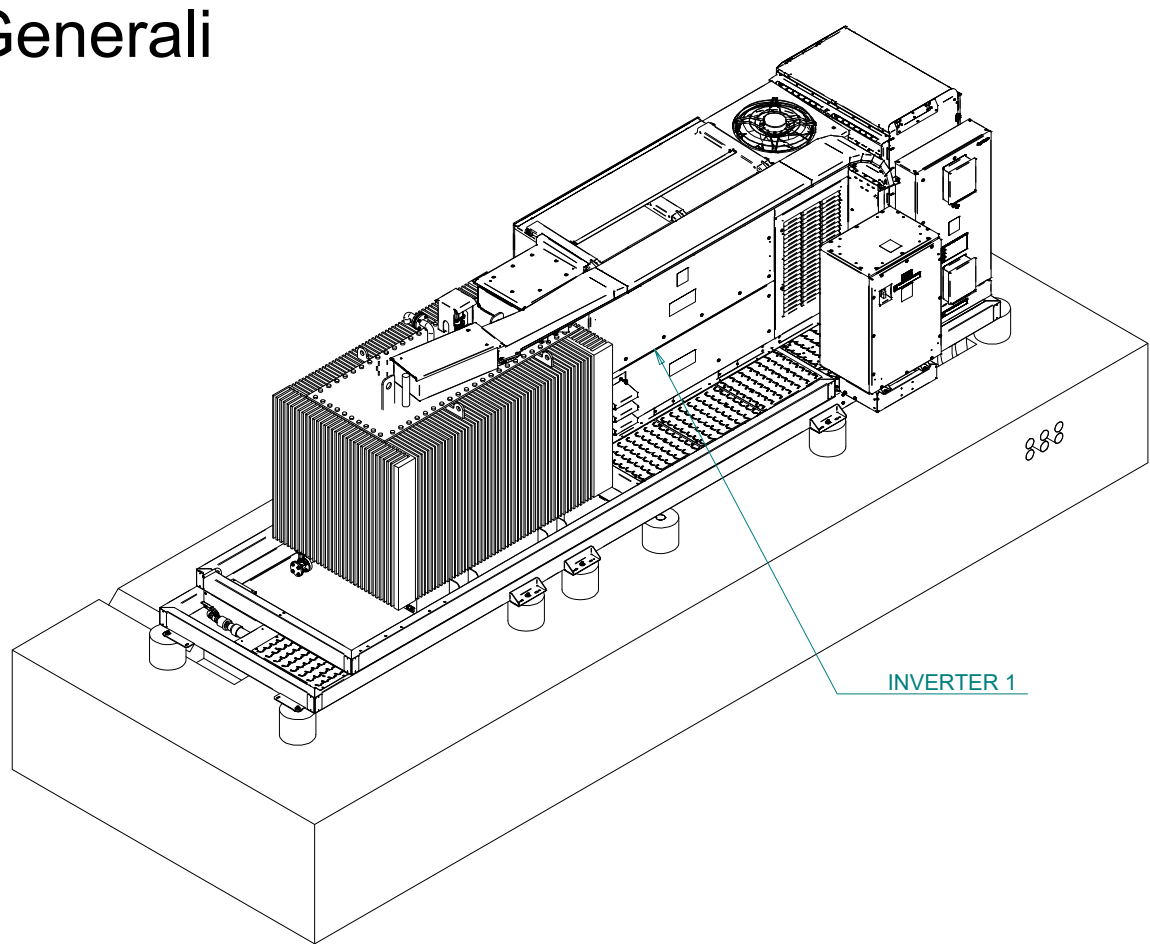
TUTURANO SOLAR PARK s.r.l.

C.F./P.IVA 02729370748
Città San Vito dei Normanni CAP 72019
Via Antonio Francavilla, n. 6
e-mail: tuturanosolarpark@pec.it



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cell: +39 345 363 6594
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Viste Generali

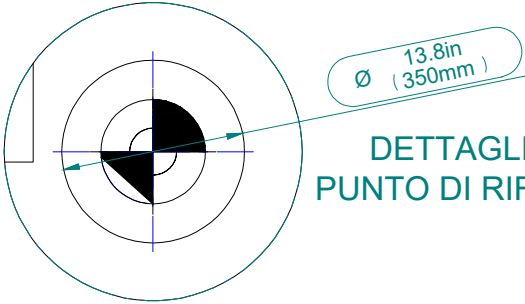
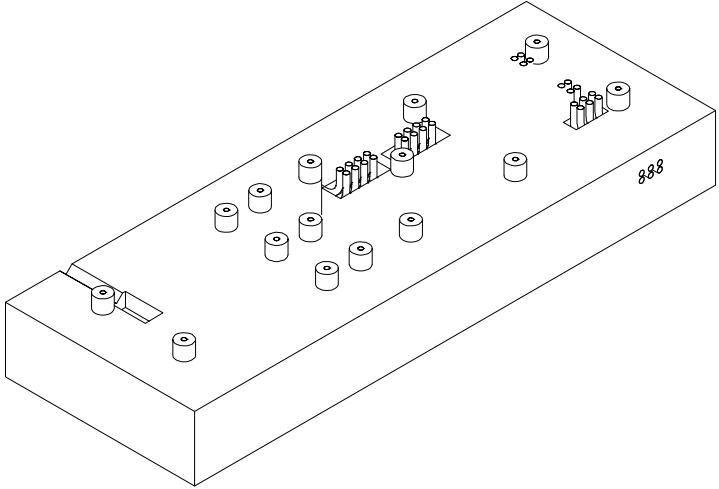
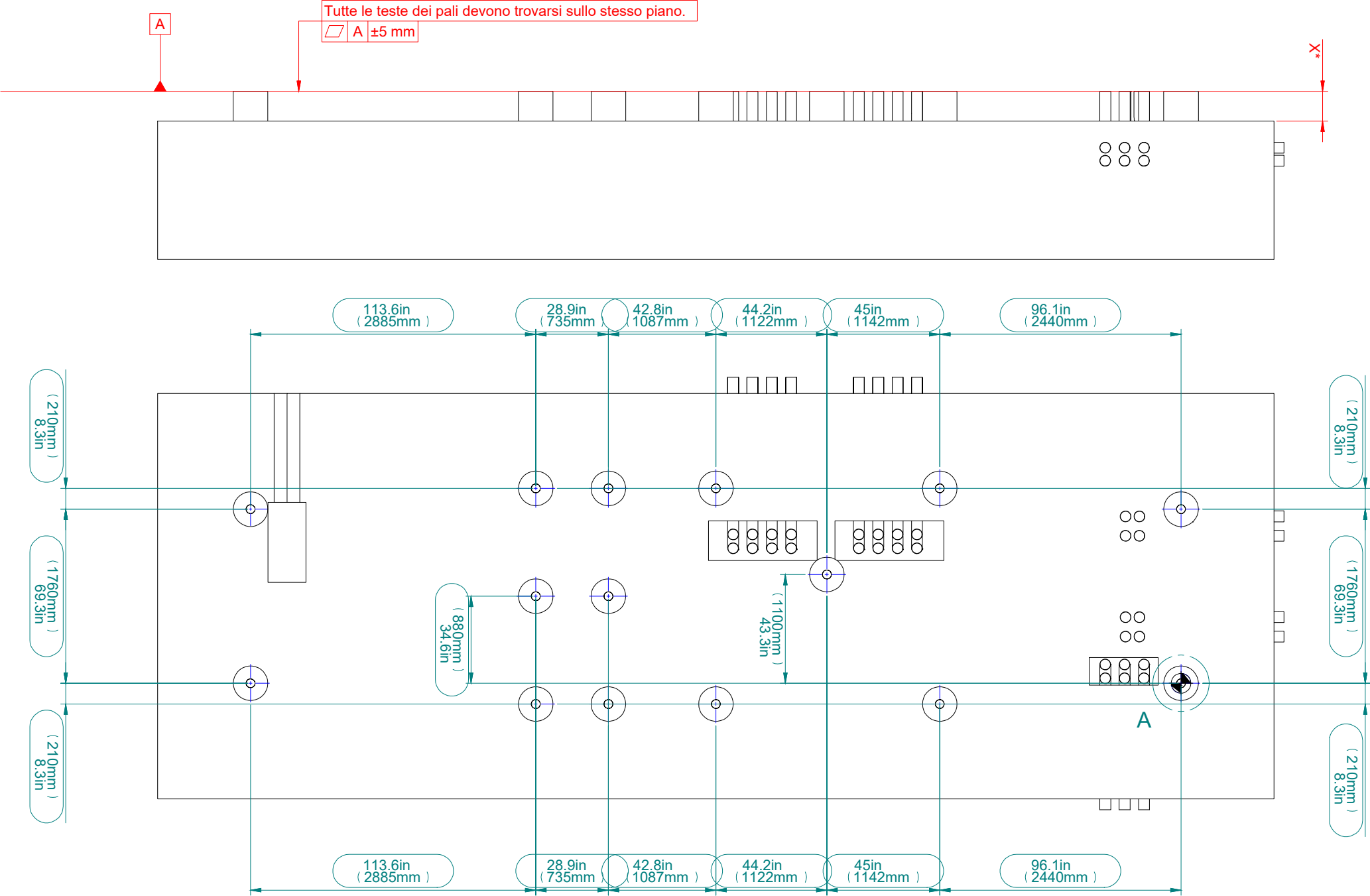


La scelta e la costruzione della base di fondazione, dei condotti sotterranei, la scelta dei cavi appropriati e la loro connessione e isolamento sono responsabilità esclusiva del cliente.

Piedi non inclusi nella fornitura standard.

DISPOSIZIONE DELLE PALIFICATE IN CALCESTRUZZO

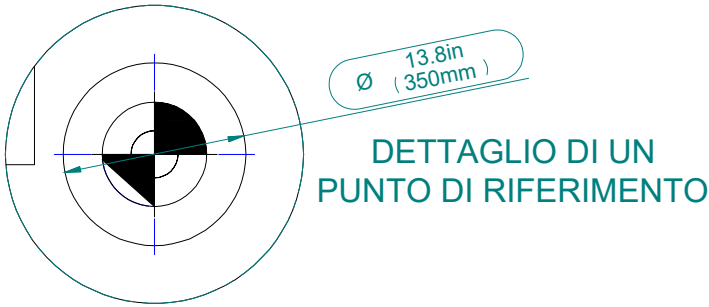
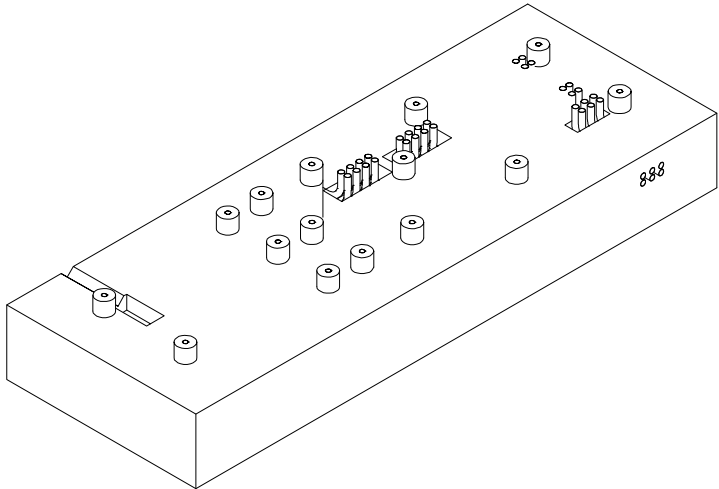
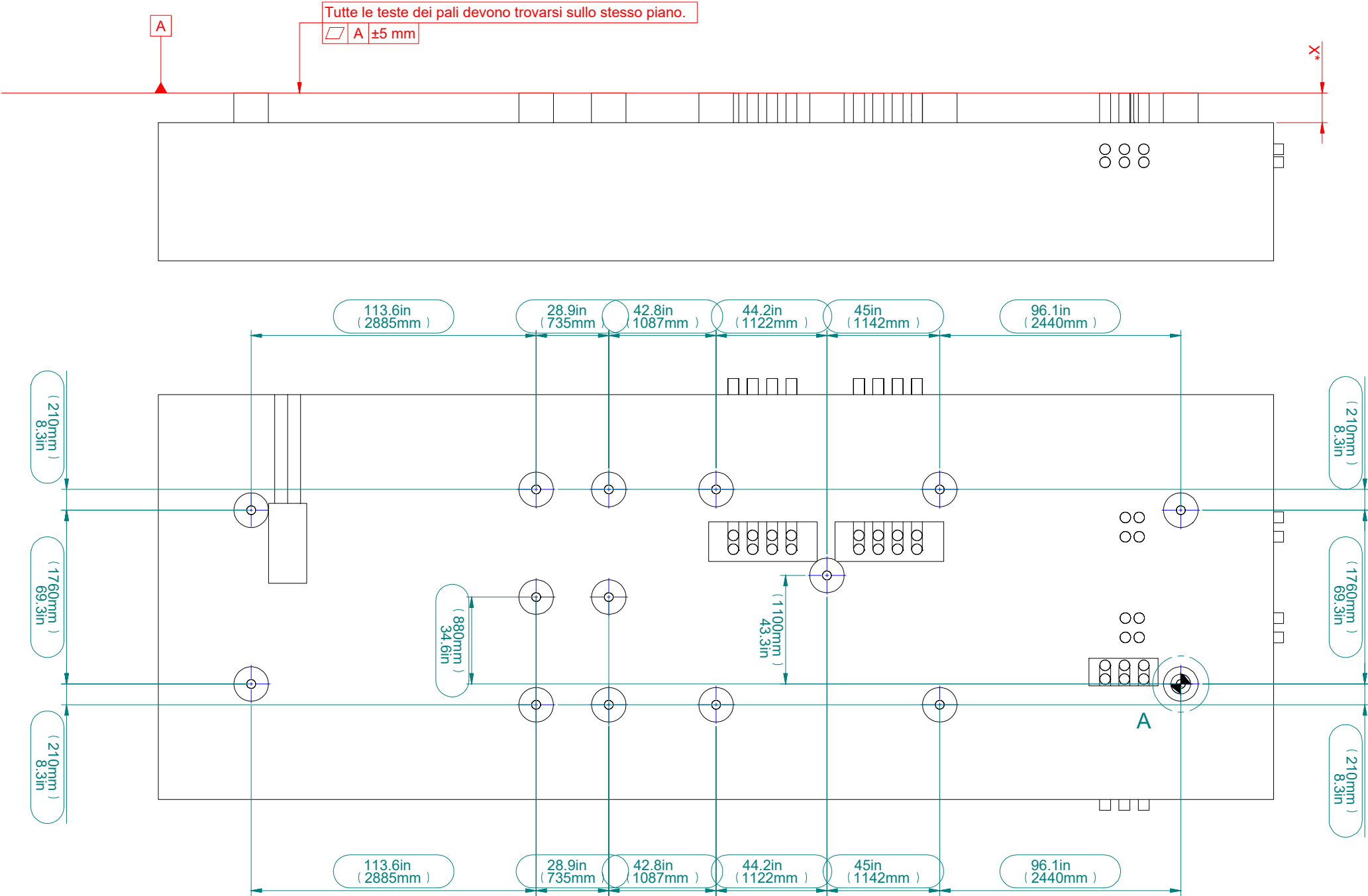
* Altezza dal piano dei pali al livello del suolo
(Da definire da parte del cliente)



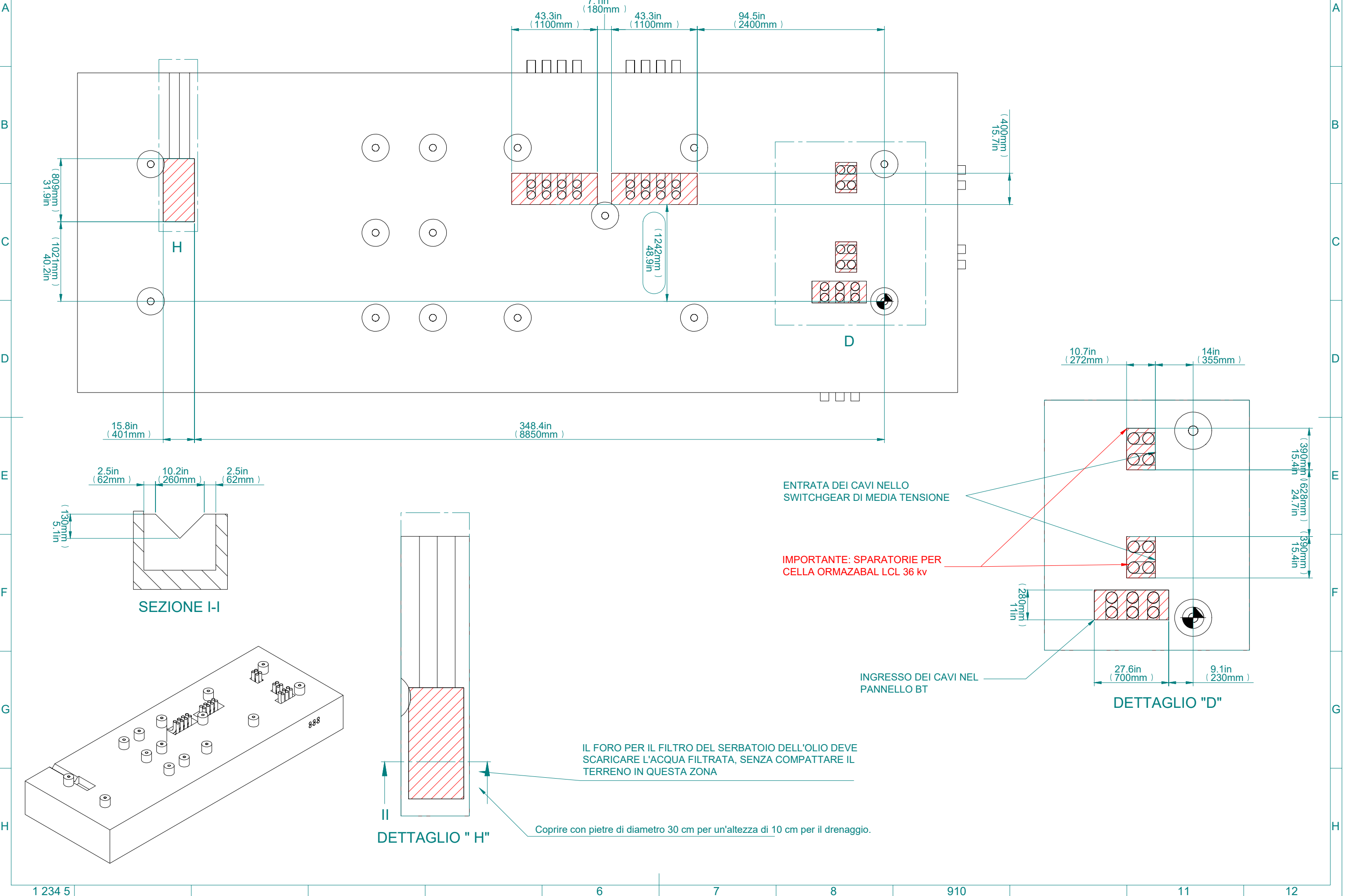
DETTAGLIO DI UN PUNTO DI RIFERIMENTO

DISPOSIZIONE DELLE PALIFICATE IN CALCESTRUZZO

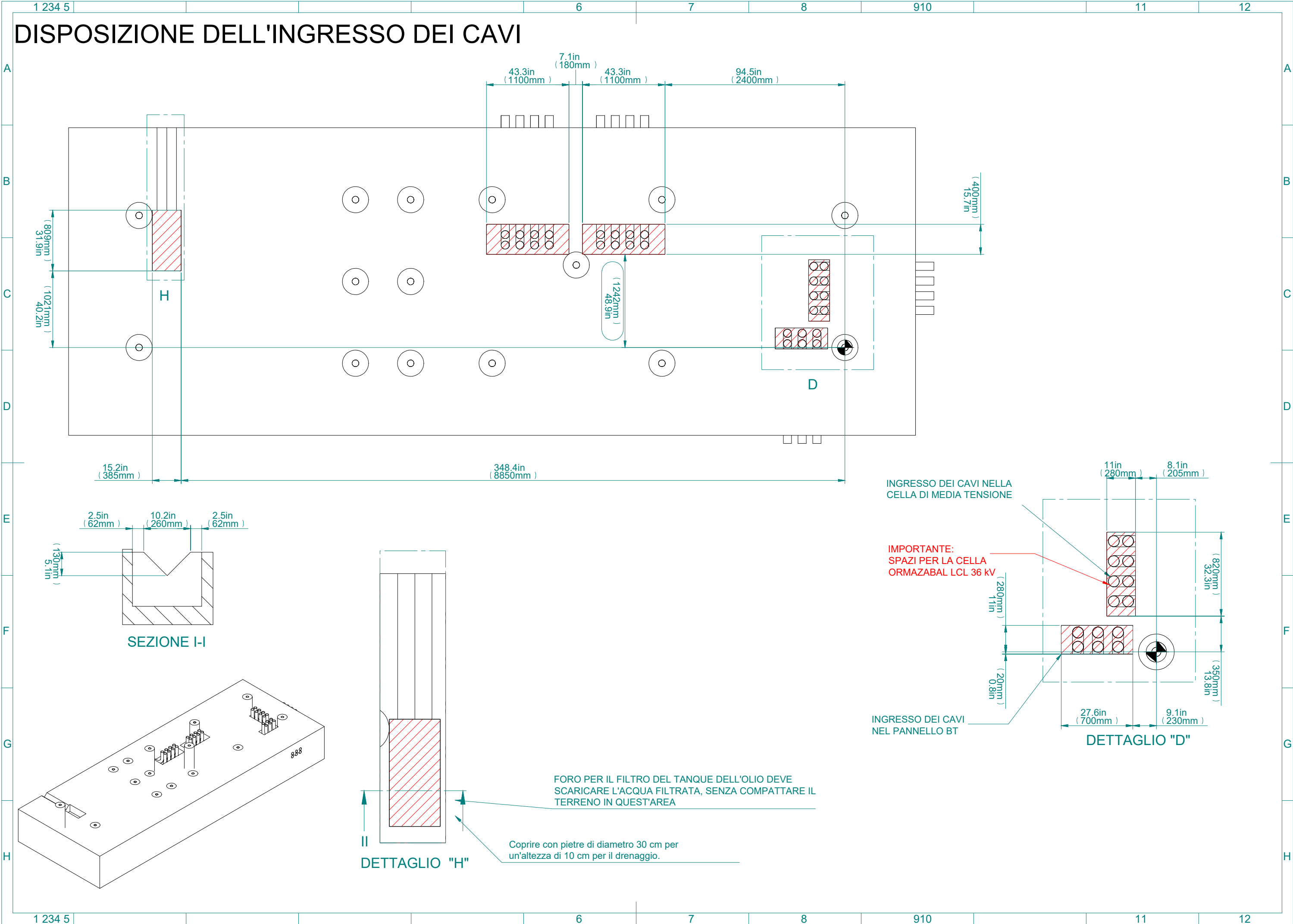
* Altezza dal piano dei pali al livello del suolo
(Da definire da parte del cliente)



DISPOSIZIONE DELL'INGRESSO DEI CAVI

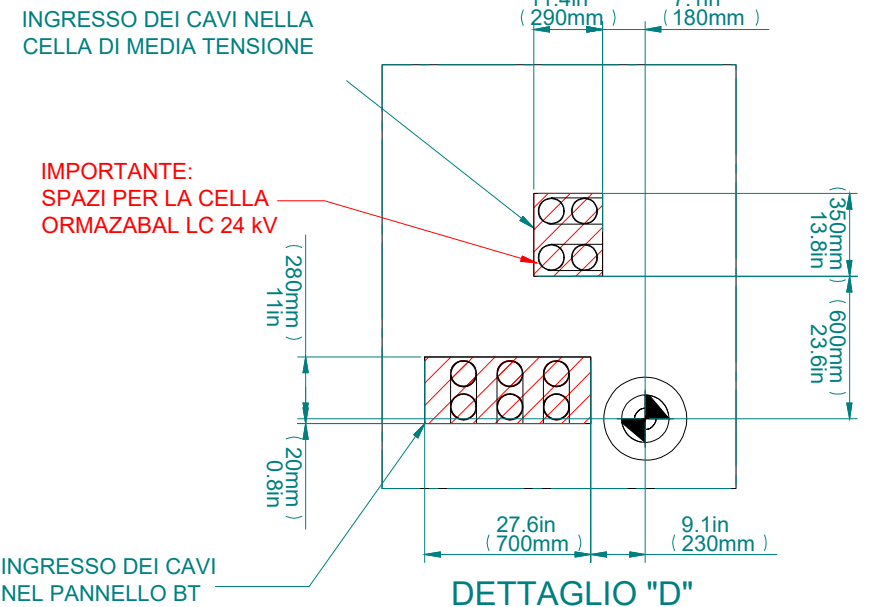
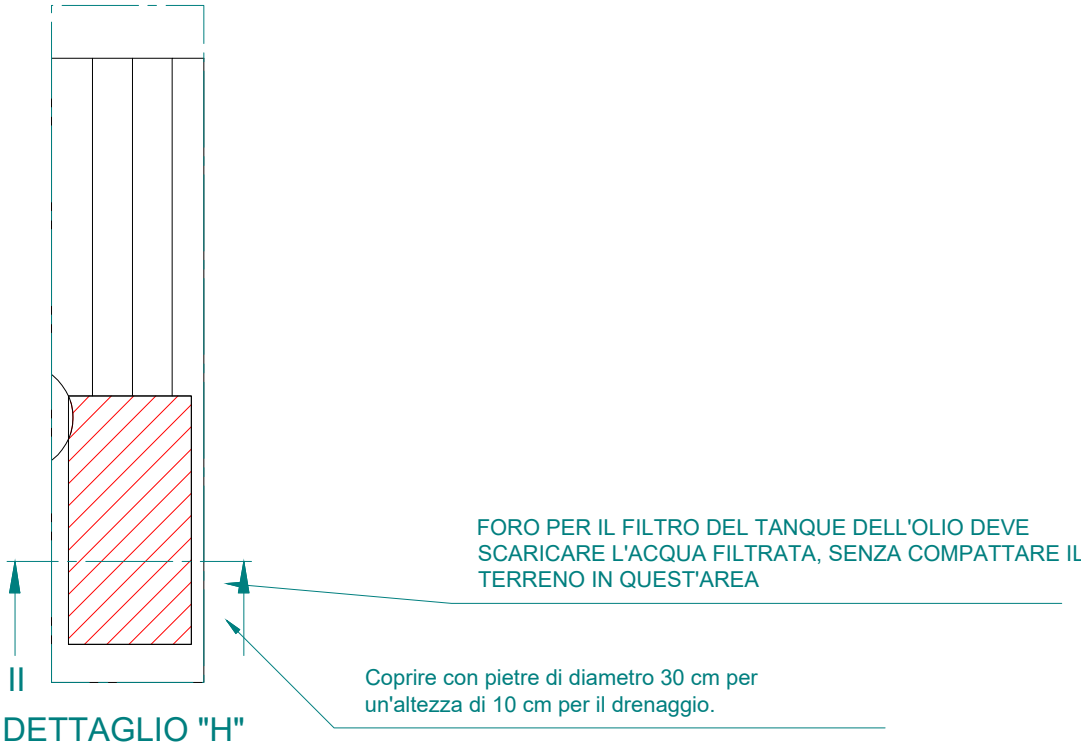
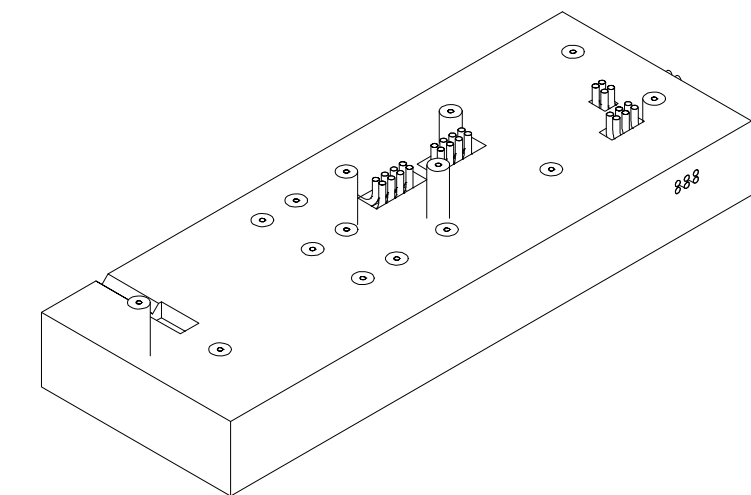
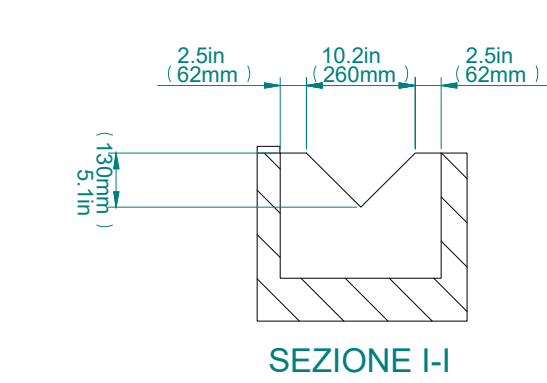
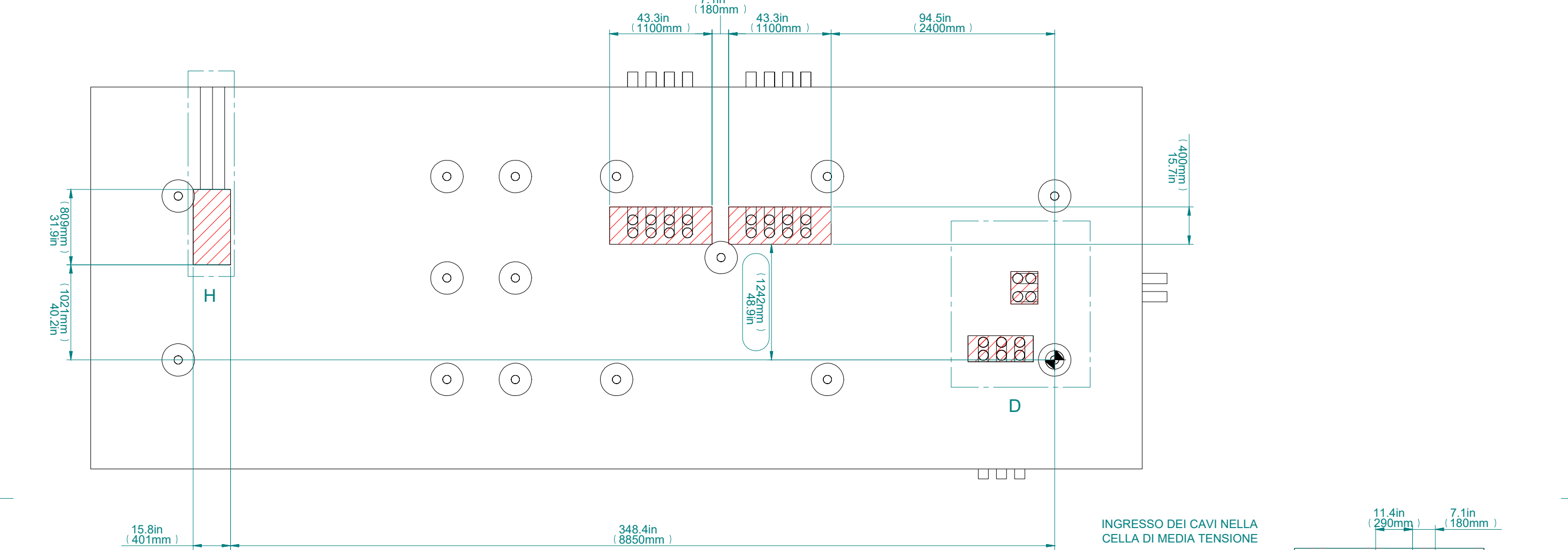


DISPOSIZIONE DELL'INGRESSO DEI CAVI



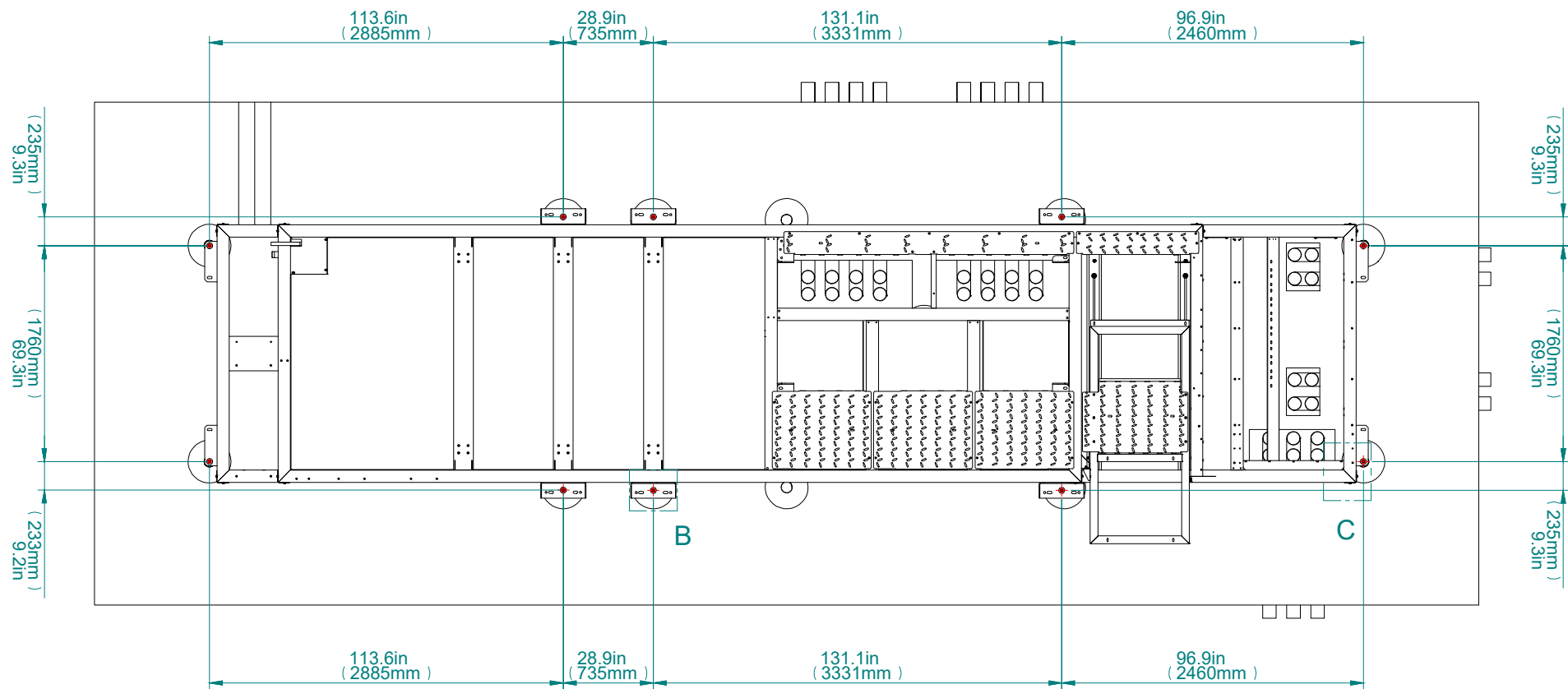
1 2 3 4 5 6 7 8 9 10 11 12

DISPOSIZIONE DELL'INGRESSO DEI CAVI



1 2 3 4 5 6 7 8 9 10 11 12

DISPOSIZIONE DEI PUNTI DI ANCORAGGIO



RIFERIMENTO DEL PUNTO DI FISSAGGIO DEL FULLSKID

SI RACCOMANDA L'UTILIZZO DI UNA PUNTA DI TRAPANO CON UNA LUNGHEZZA MINIMA DI 600 mm (23,62 pollici). ALTEZZA DEL FULLSKID: 400 mm (15,75 pollici).

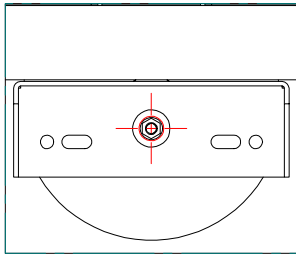
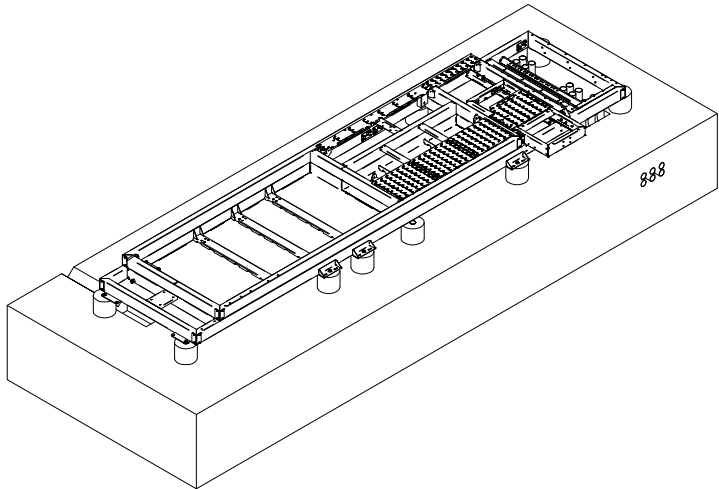
Dovuto all'altezza del fullskid, si consiglia di utilizzare una punta da trapano con una lunghezza minima di 600 mm (23,62 pollici). Altezza del fullskid: 400 mm (15,75 pollici).

Le seguenti indicazioni devono essere seguite per scegliere il luogo in cui ancorare il perno:

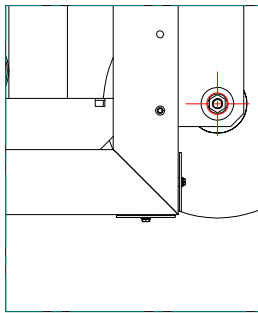
- Distanza minima dal centro del foro al bordo della soletta di cemento: 128mm;
- Diametro del foro nella soletta: 16mm;
- Profondità minima del foro: 105mm;
- Spessore minimo della soletta di cemento: 170mm.

(*) La fondazione di cemento di classe C20/25 (come minimo).

Fissaggio standard dello SKID tramite bullone a cuneo M16 (ad esempio, APA416145).



DETTAGLIO "B"



DETTAGLIO "C"

Tutti i pali devono avere un diametro minimo di 350 mm.

Par di serraggio per vite di ancoraggio: 120 Nm.

COLLEGAMENTO A TERRA

A

B

C

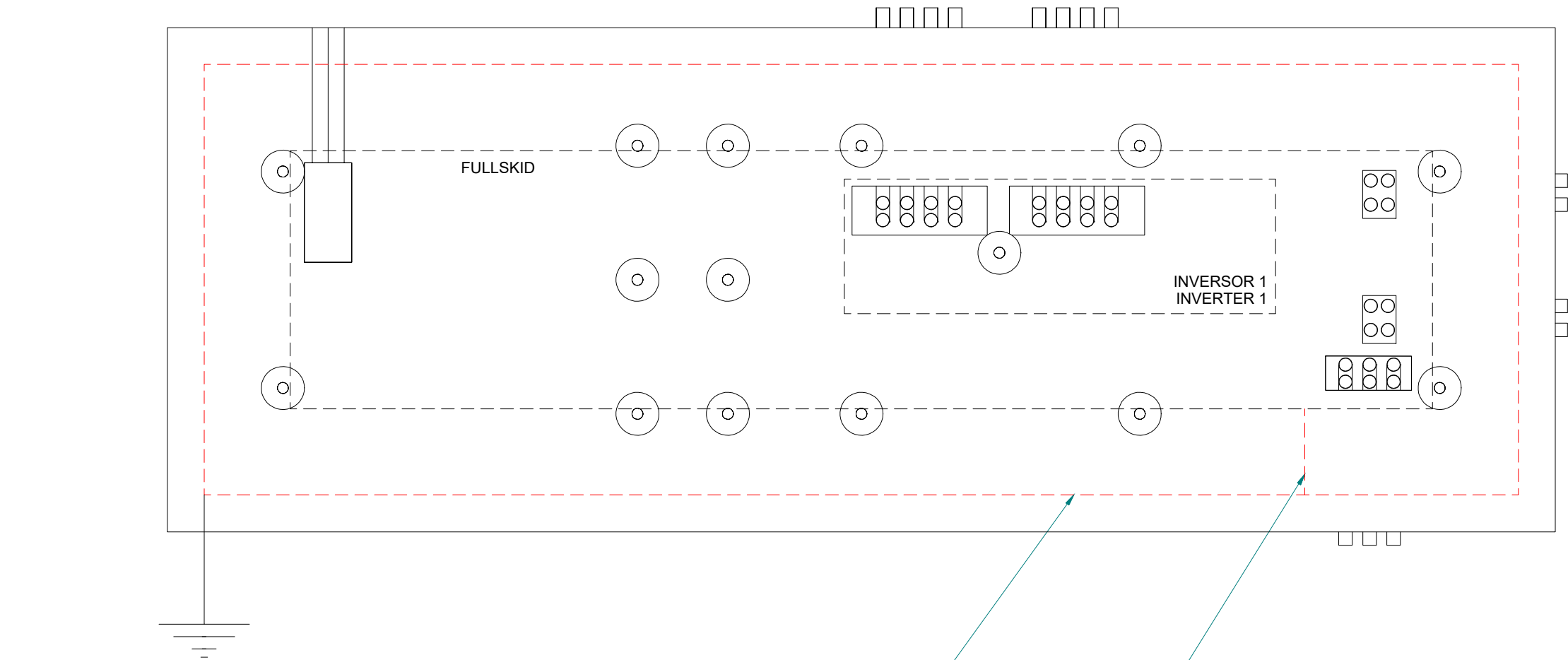
D

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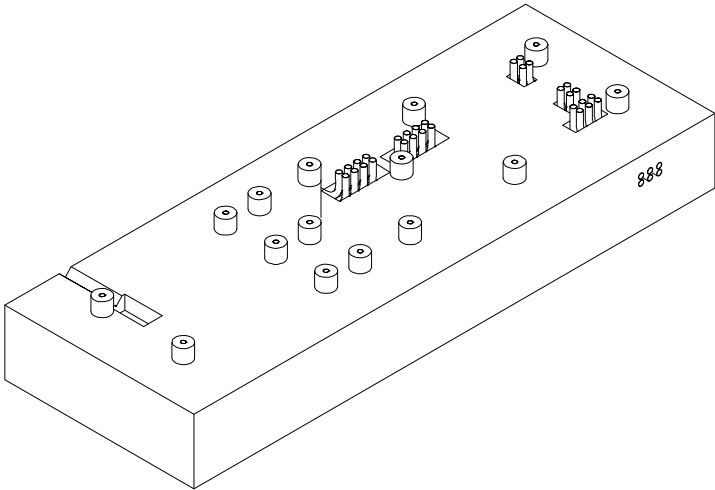
G

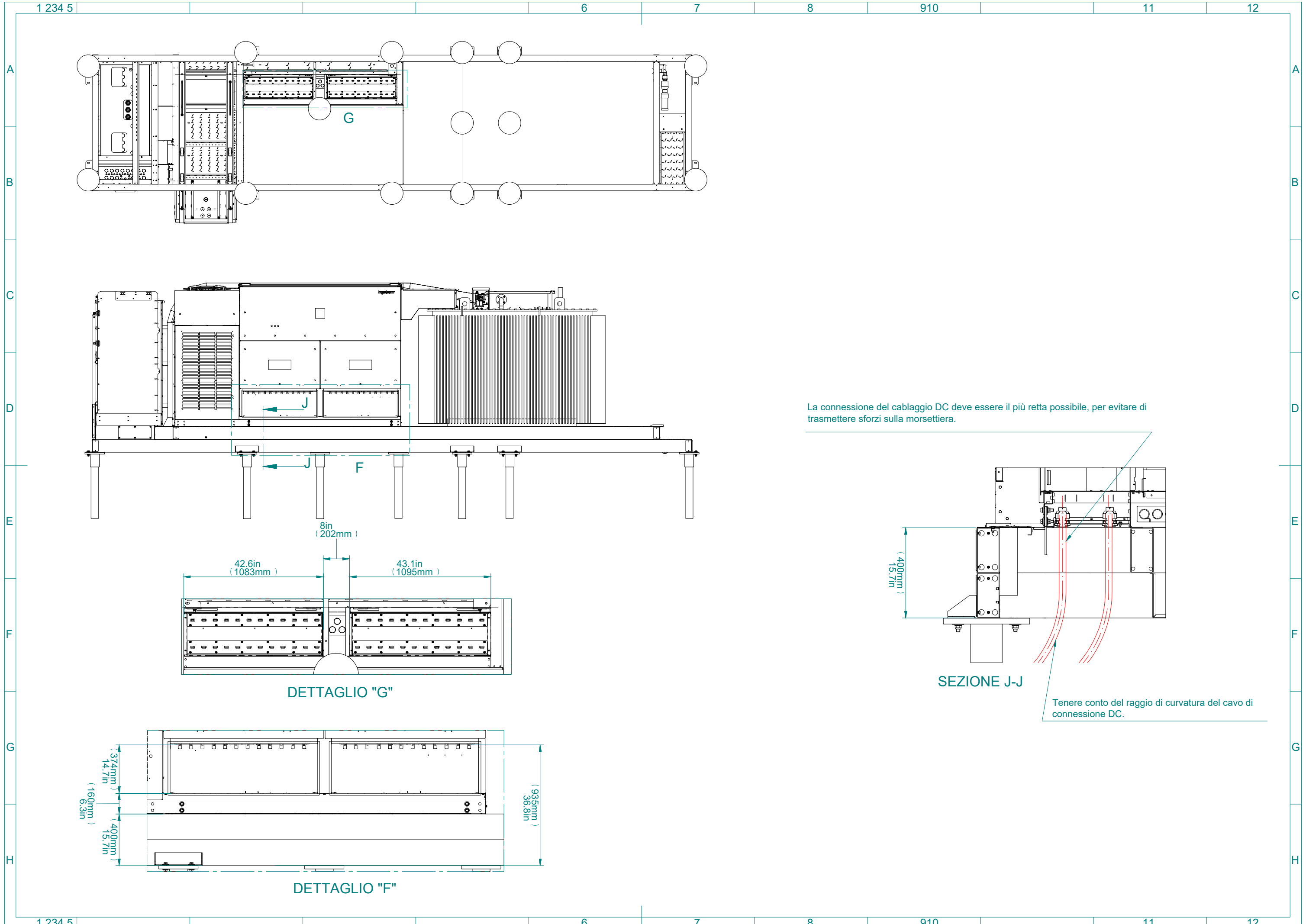
H



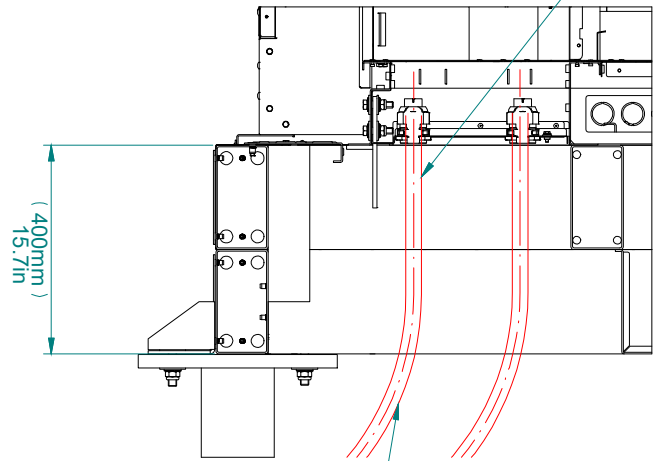
ANELLO DI TERRA

CONNESSIONE TRA ANELLO DI TERRA E PIASTRA DI TERRA





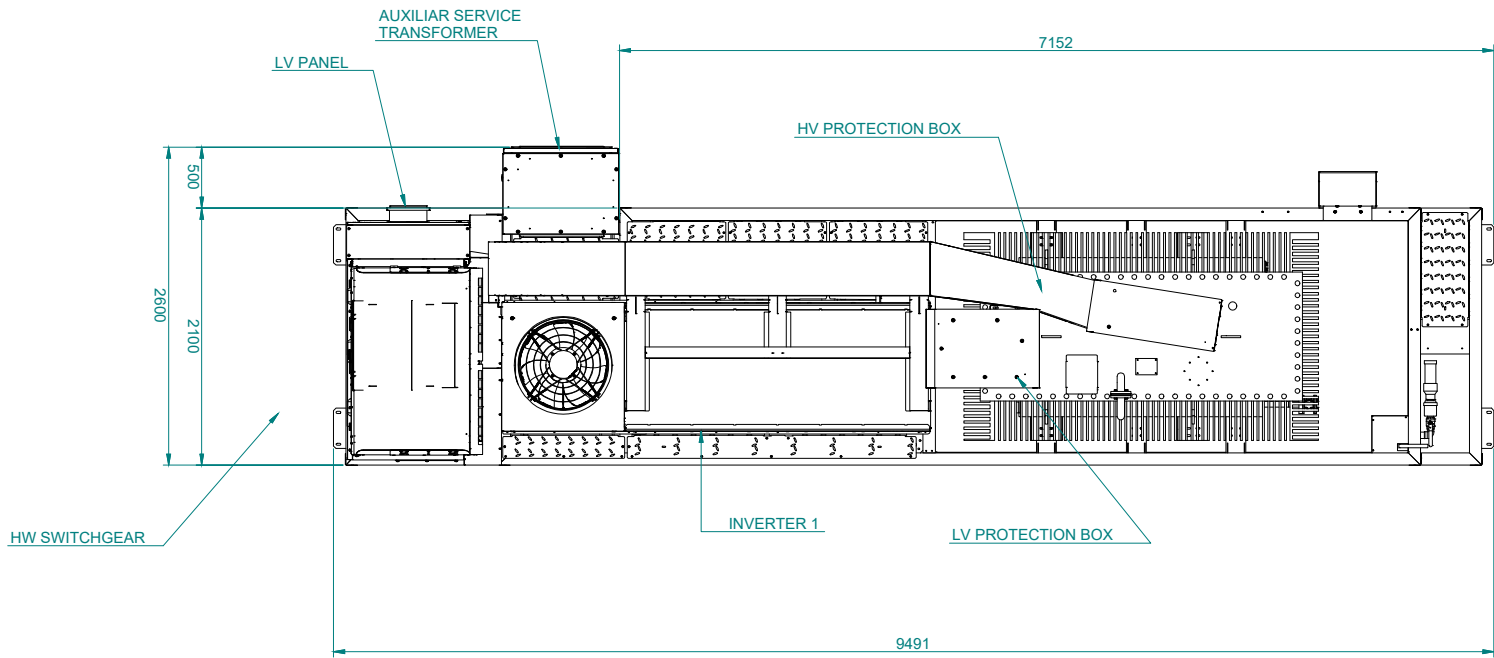
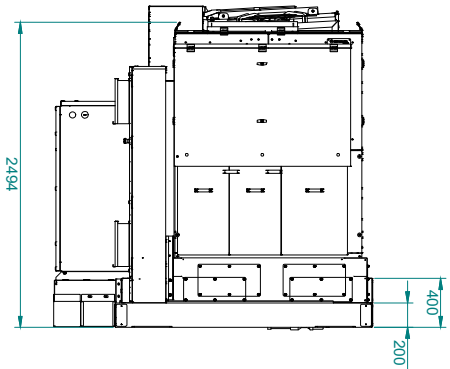
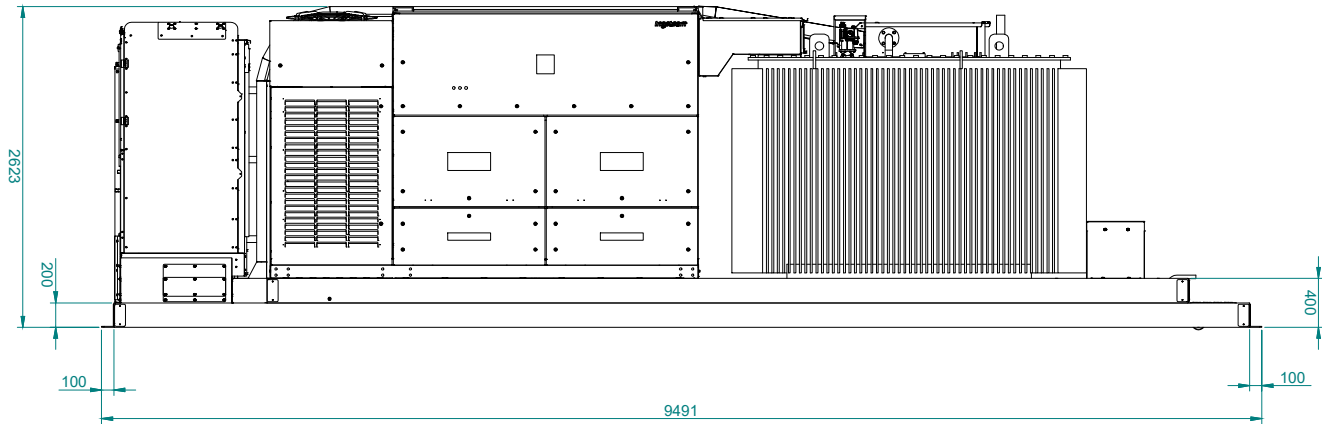
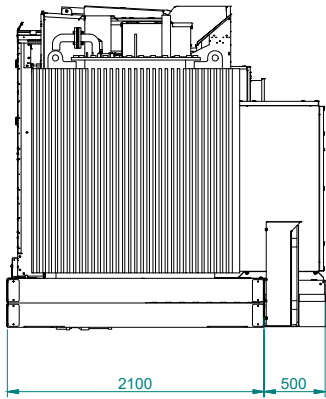
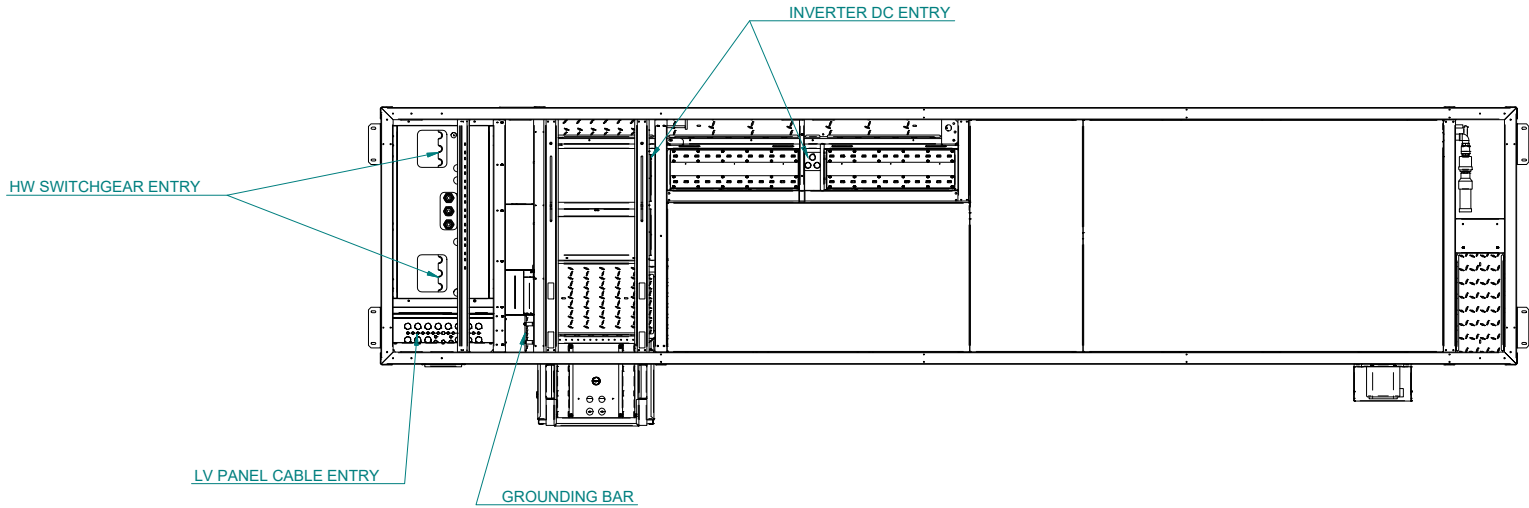
La connessione del cablaggio DC deve essere il più retta possibile, per evitare di trasmettere sforzi sulla morsettiera.



SEZIONE J-J

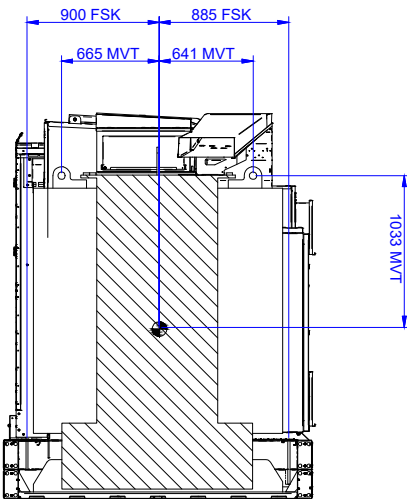
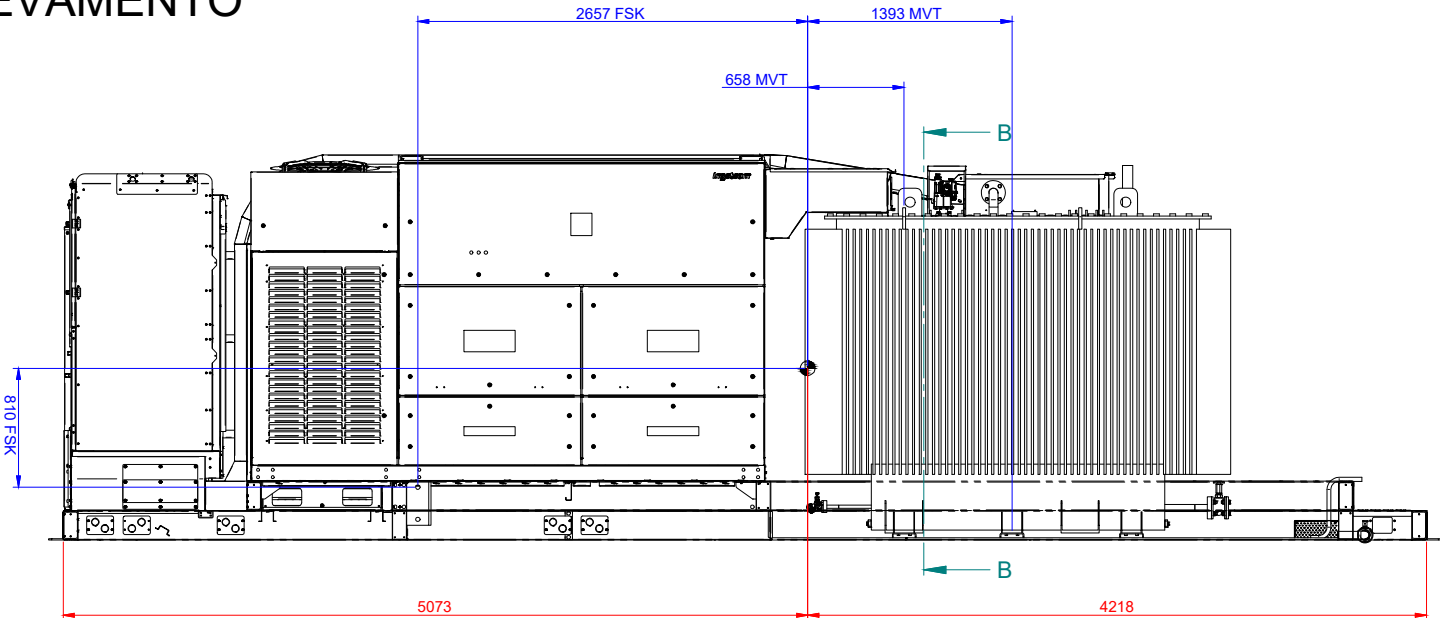
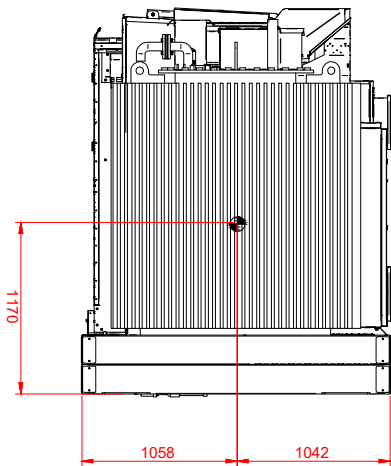
Tenere conto del raggio di curvatura del cavo di connessione DC.

VISTE GENERALI SUL CAMPO

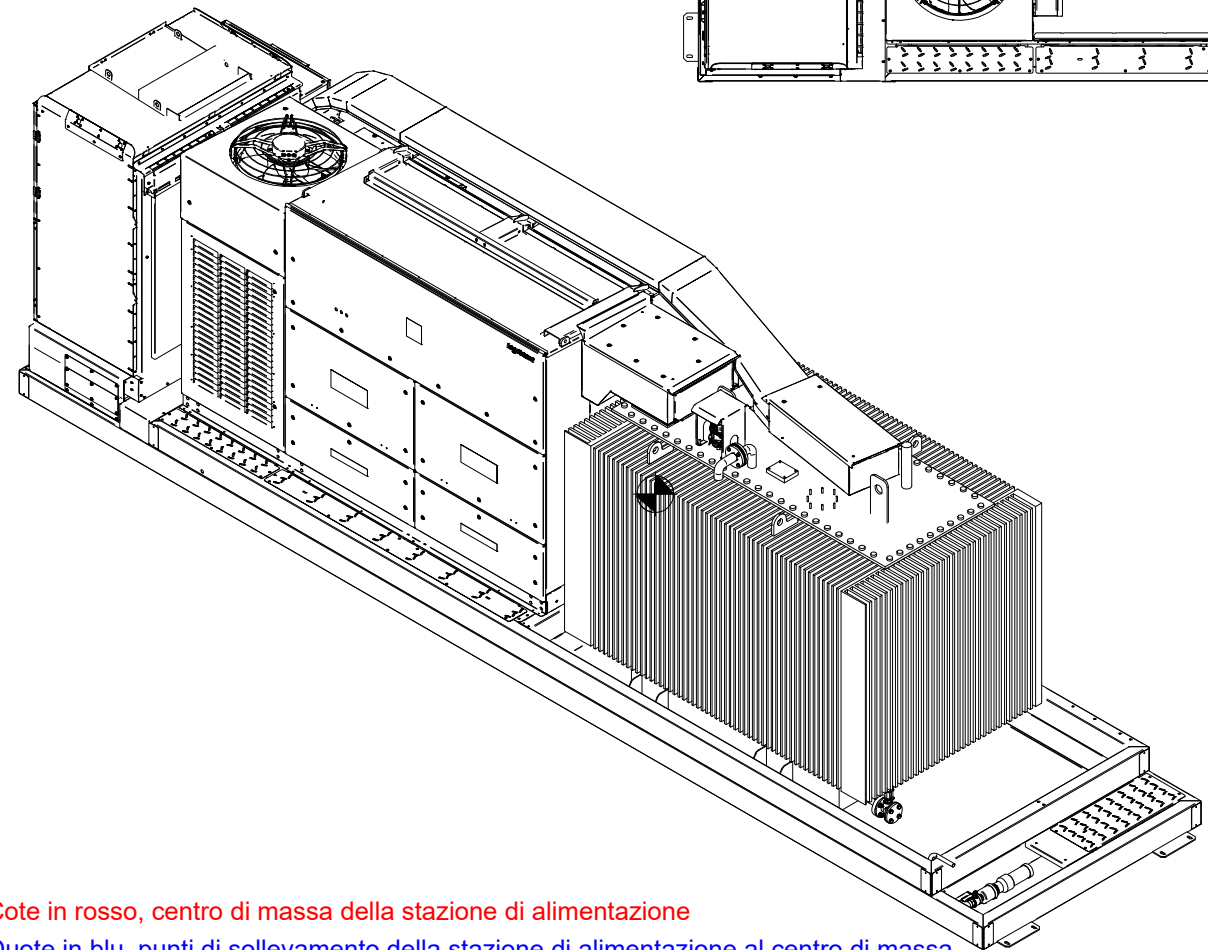
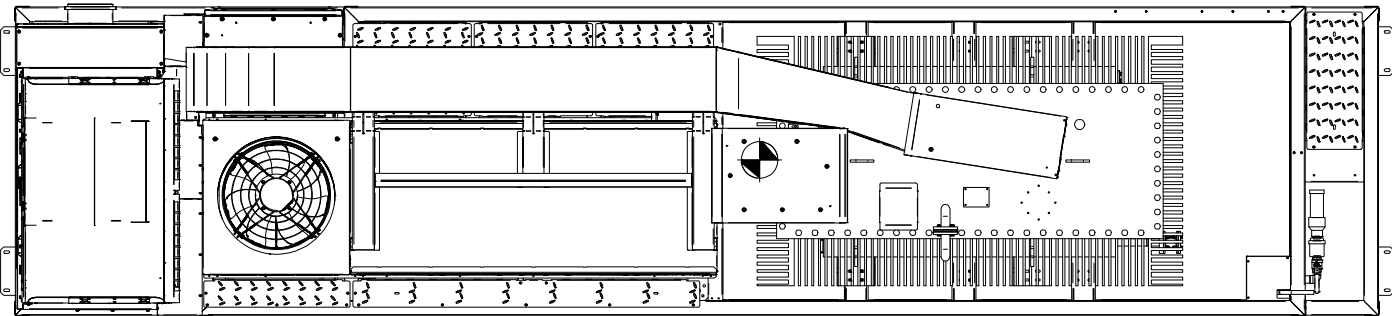


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

VISTE GENERALI DEL SOLLEVAMENTO



SEZIONE B-B



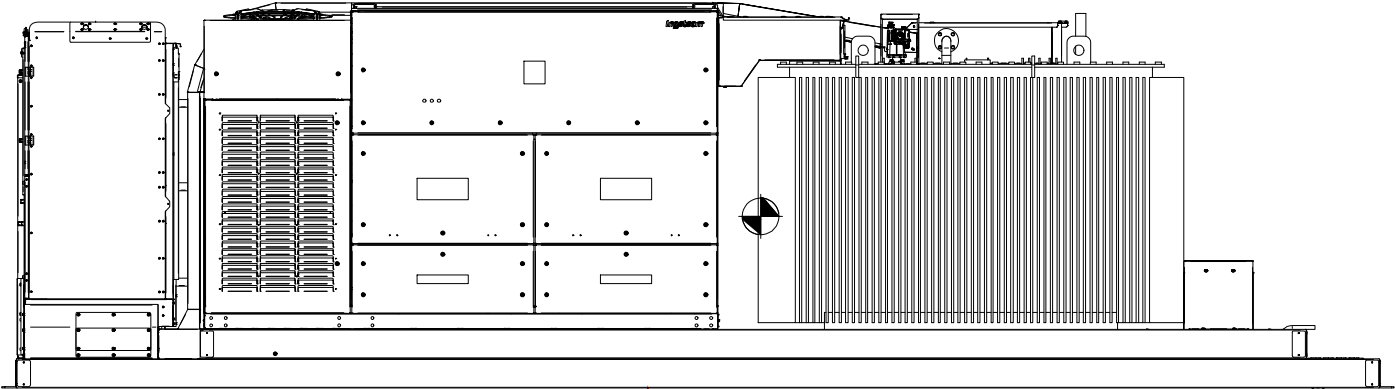
Cote in rosso, centro di massa della stazione di alimentazione
Quote in blu, punti di sollevamento della stazione di alimentazione al centro di massa.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

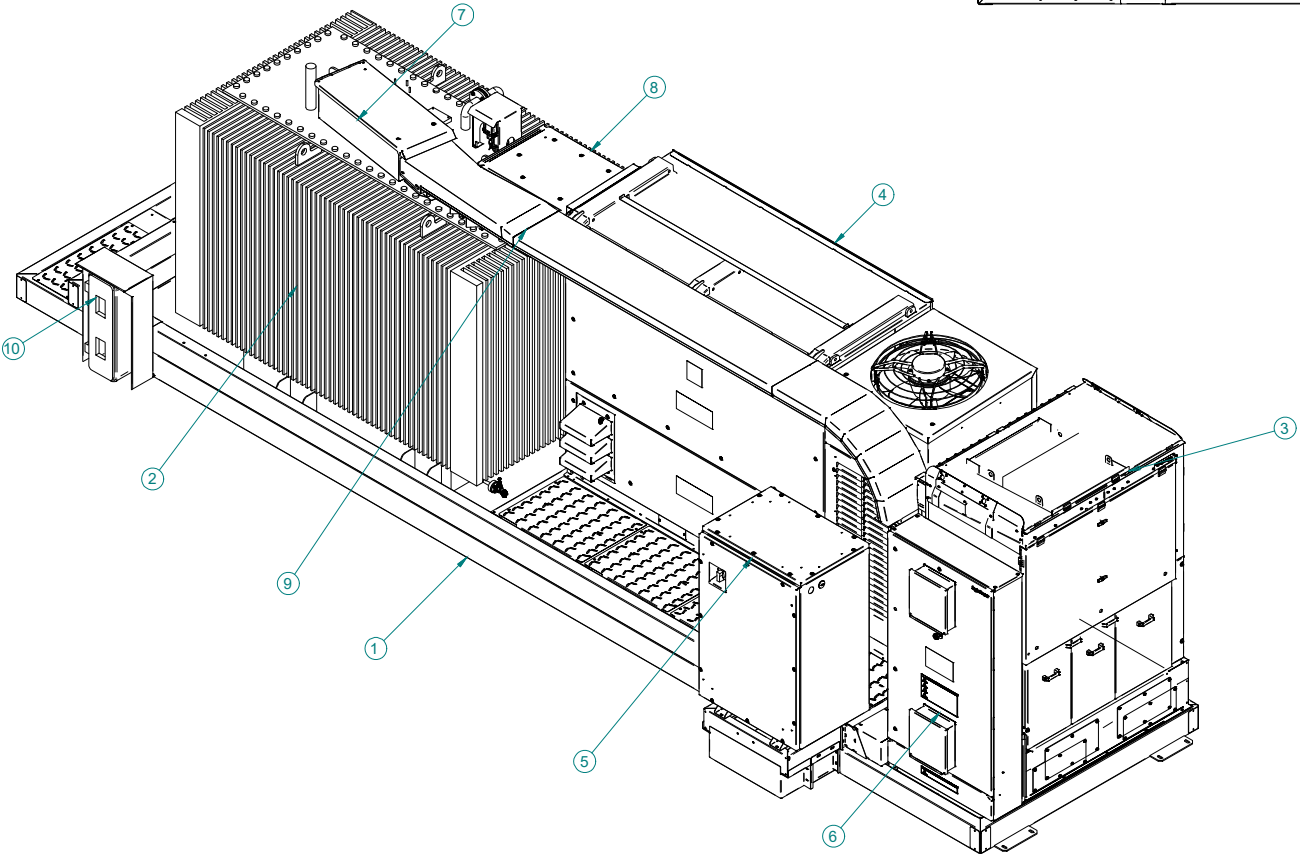
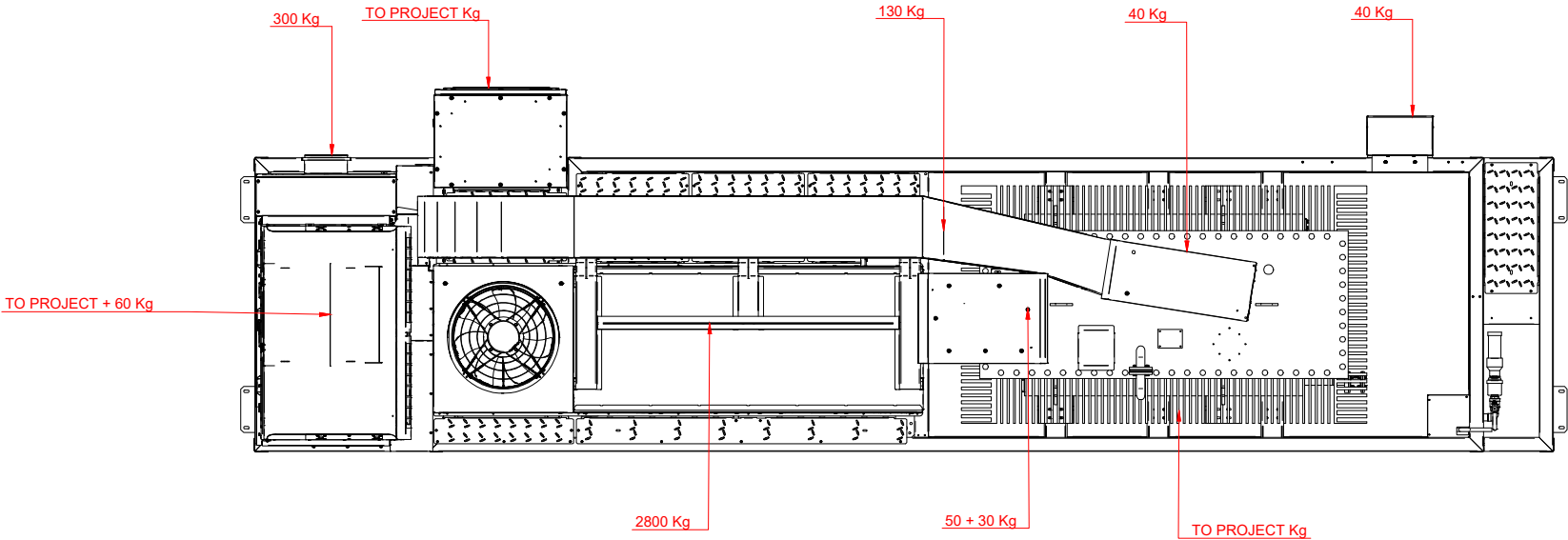
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A
B
C
D
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J
K
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M

PESI



1270 Kg



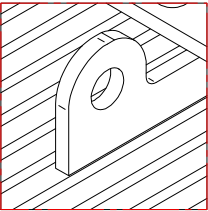
ITEM NUMBER	MAIN COMPONENTES	KG
1	FULLSKID	1270
2	TRANSFORMER	TO PROJECT
3	SWITCHGEAR + SUPPORT	TO PROJECT
4	INVERTER 1	2800
5	AUX. TRANSFORMER	TO PROJECT
6	LV PANEL	300
7	HV PROTECTION BOX	40
8	LV BARS + PROTEC. BOX L	50 + 30
9	MV WIRES SUPPORT	130
10	EXTINGUISER KIT	30
	OTHER COMPONENTS	#i VALOR!
	TOTAL	~15362,5

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

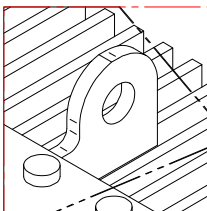
IDENTIFICACIONE DEI PUNTI DI SOLLEVAMENTO

NOTA / NOTE:
EL PESO QUE SOPORTA CADA PUNTO DE IZADO ESTÁ CALCULADO TIRANDO EN VERTICAL.
THE WEIGHT SUPPORTED BY EACH LIFTING POINT IS CALCULATED BY PULLING VERTICALLY.

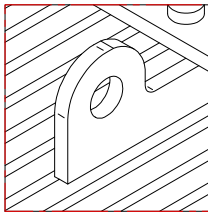
WEIGHT SUPPORTED BY LIFTING POINTS 3,4,5 AND 6 TOGETHER		
ITEM NUMBER	MAIN COMPONENTS	KG
2	TRANSFORMER	TO PROJECT
7	HV PROTECTION BOX	40
8	LV BARS + PROTEC. BOX L	80
10	FIRE EXTINGUISHER KIT	30
1	4/6 WEIGHT OF FSK	847
	4/6 OTHER COMPONENTS	
	TOTAL PESO A REPARTIR ENTRE LOS 4 PUNTOS	997
	TOTAL	249,25



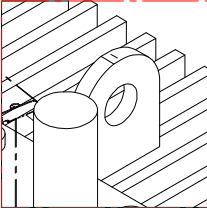
DETAIL 3 LIFTING POINT



DETAIL 4 LIFTING POINT



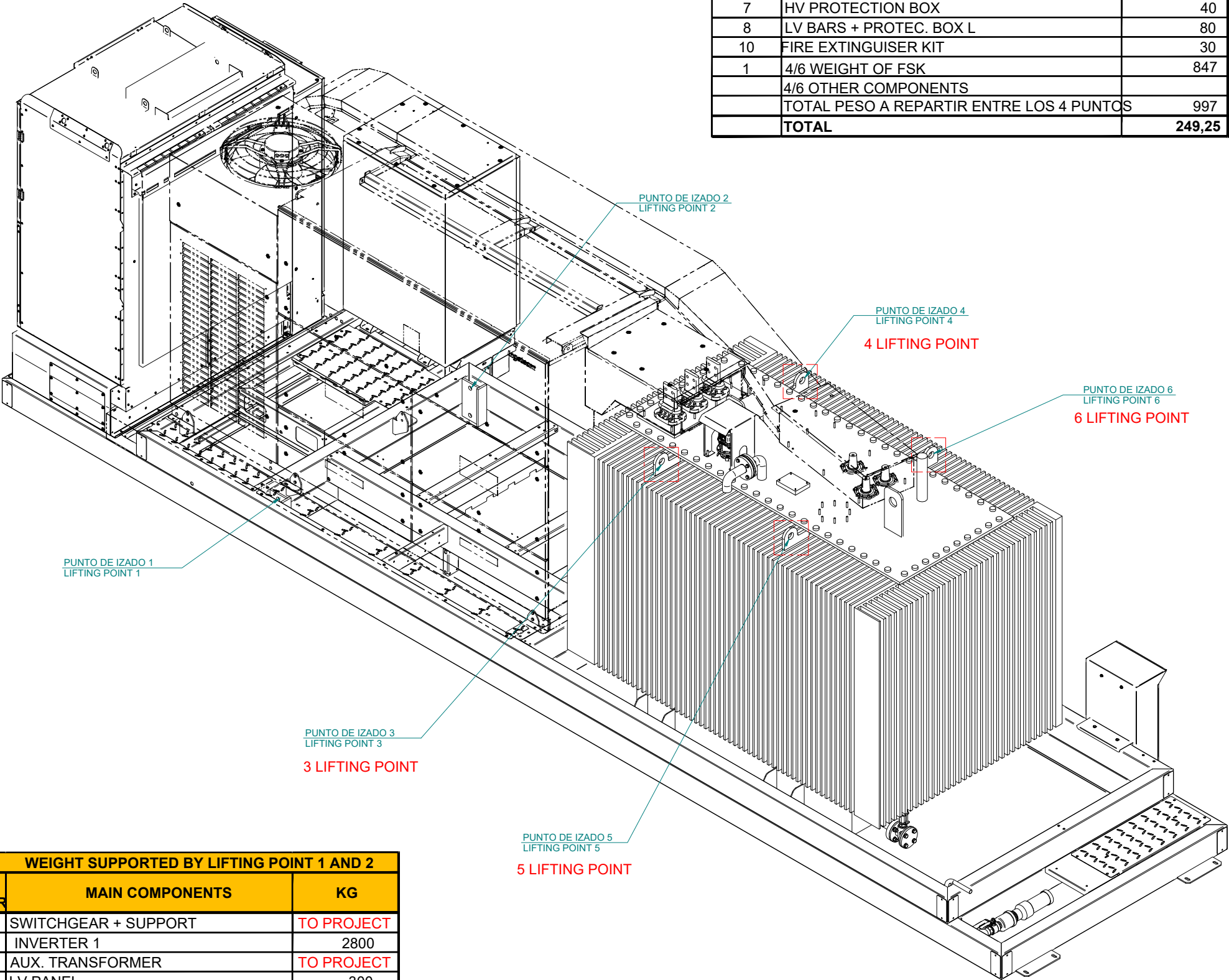
DETAIL 5 LIFTING POINT



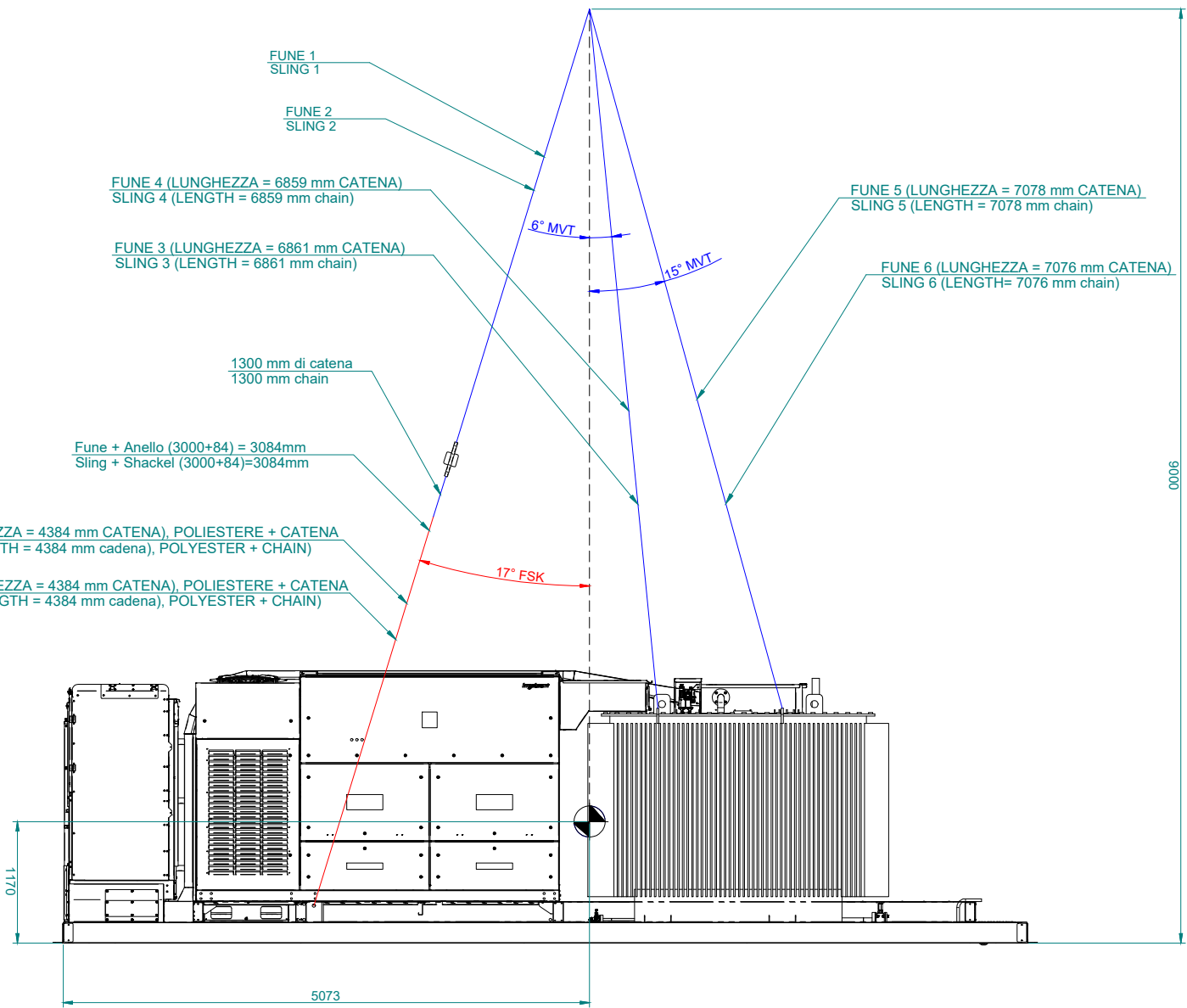
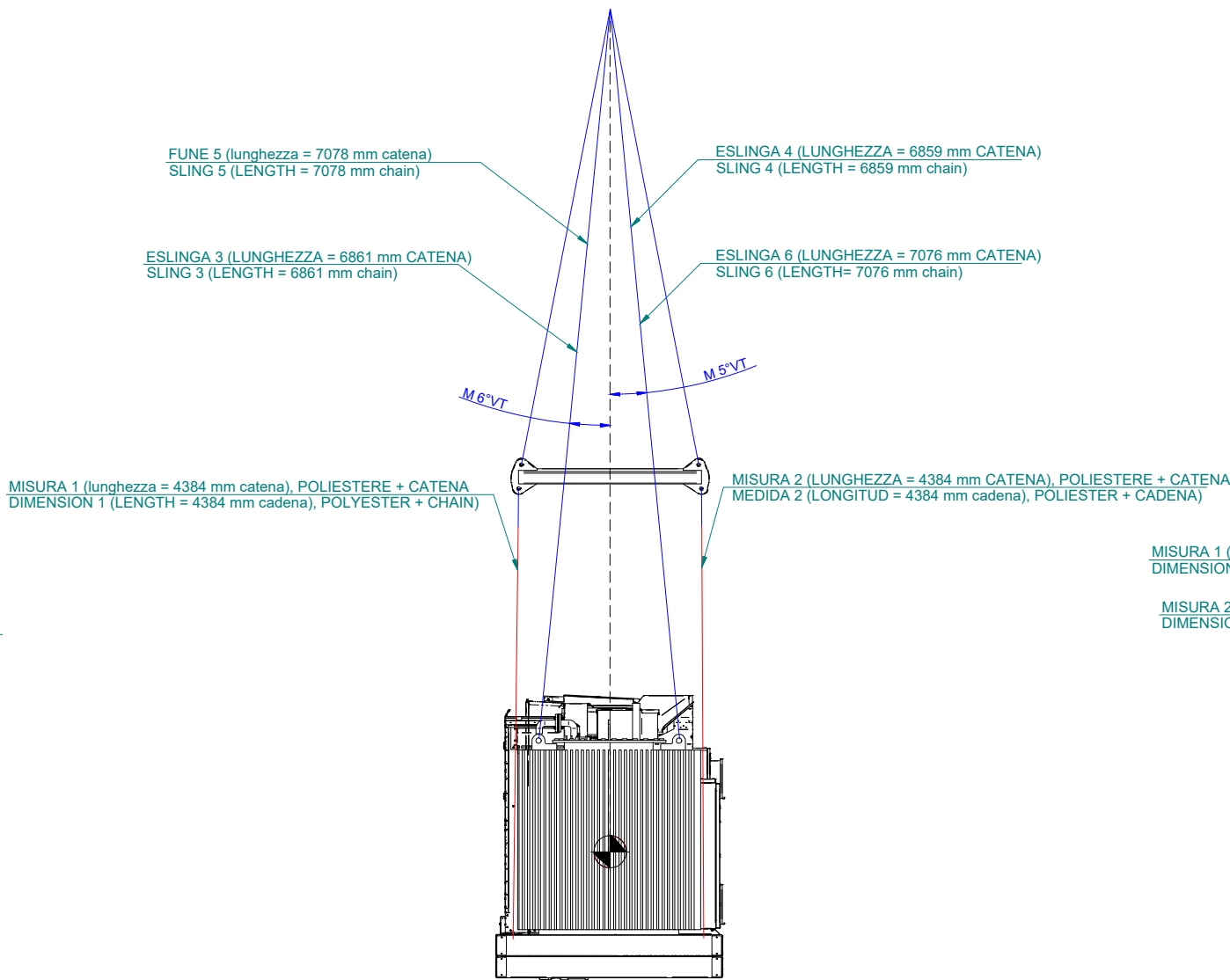
DETAIL 6 LIFTING POINT

ITEM NUMBER	MAIN COMPONENTES	KG
1	FULLSKID	1270
2	TRANSFORMER	TO PROJECT
3	SWITCHGEAR + SUPPORT	TO PROJECT
4	INVERTER 1	2800
5	AUX. TRANSFORMER	TO PROJECT
6	LV PANEL	300
7	HV PROTECTION BOX	40
8	LV BARS + PROTEC. BOX L	50 + 30
9	MV WIRES SUPPORT	130
10	EXTINGUISHER KIT	30
	OTHER COMPONENTS	#¡VALOR!
	TOTAL	~15362,5

WEIGHT SUPPORTED BY LIFTING POINT 1 AND 2		
ITEM NUMBER	MAIN COMPONENTS	KG
3	SWITCHGEAR + SUPPORT	TO PROJECT
4	INVERTER 1	2800
5	AUX. TRANSFORMER	TO PROJECT
6	LV PANEL	300
9	MV WIRES SUPPORT	130
1	2/6 WEIGHT OF FSK	423
	2/6 OTHER COMPONENTS	
	TOTAL PESO A REPARTIR ENTRE LOS 2 PUNTOS	3653
	TOTAL	1826,5



SISTEMA DI SOLLEVAMENTO E POSIZIONE DEL CENTRO DI GRAVITÀ



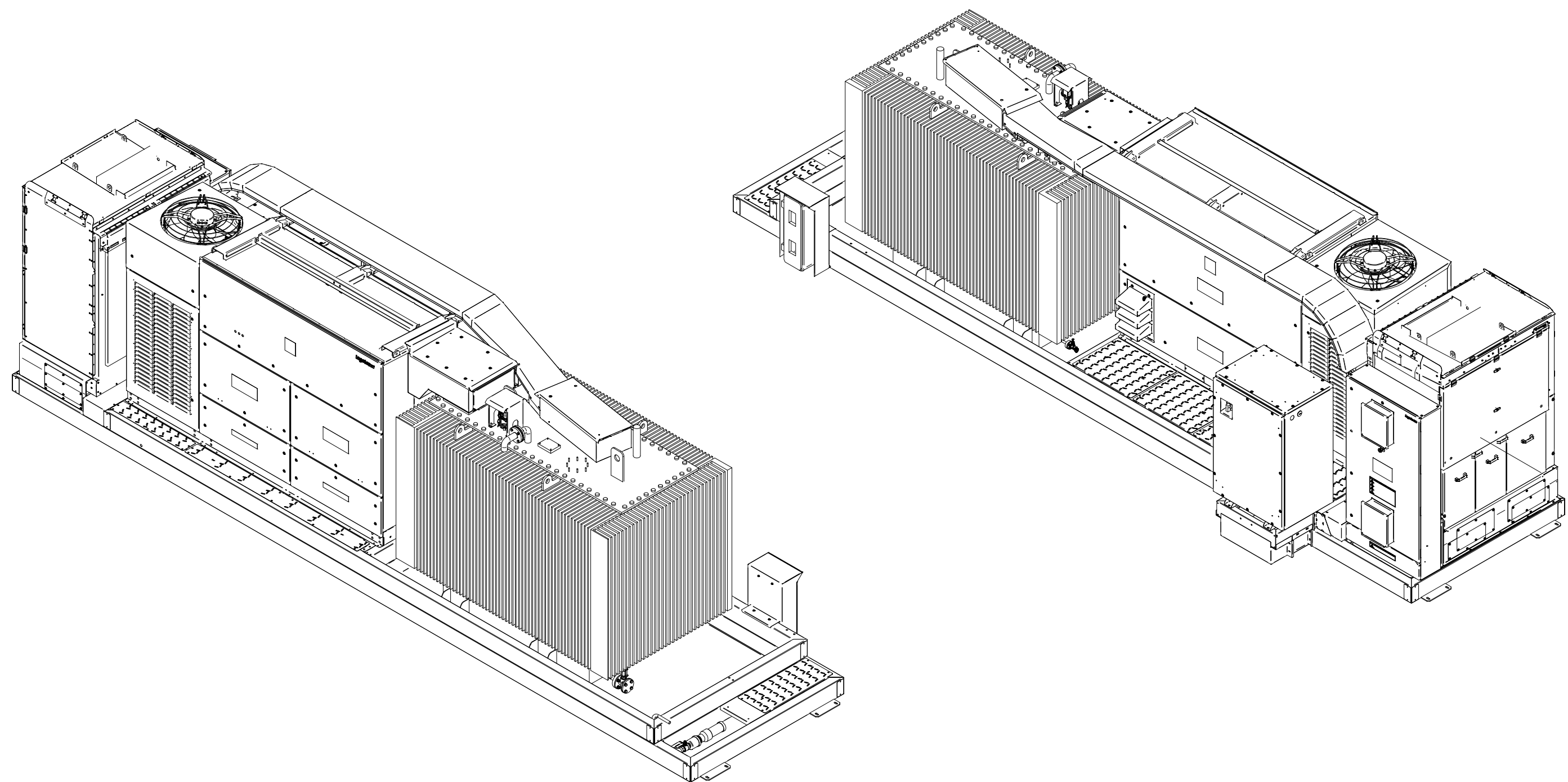
N° FUNE N. OF SLING	LUNGHEZZA LENGHT	TOLLERANZA TOLERANCE
DIMENSIONE 1 DIMENSION 1	4384 mm	u 30 mm
DIMENSIONE 2 DIMENSION 2	4384 mm	u 30 mm
DIMENSIONE 3 SLING 3	6861 mm	u 30 mm
DIMENSIONE 4 SLING 4	6859 mm	u 30 mm
DIMENSIONE 5 SLING 5	7078 mm	u 30 mm
DIMENSIONE 6 SLING 6	7076 mm	u 30 mm

Le linee rosse rappresentano le funi di poliestere.
Red lines represent polyester slings

Le linee blu rappresentano le funi di catena.
Blue lines represent chains slings

Color	Il numero di inverter nella stazione di alimentazione
Red	1
White	2

VISTE GENERALI



VISTA GENERALE

GENERAL VIEWS

A

B

C

D

E

F

G

H

A

B

C

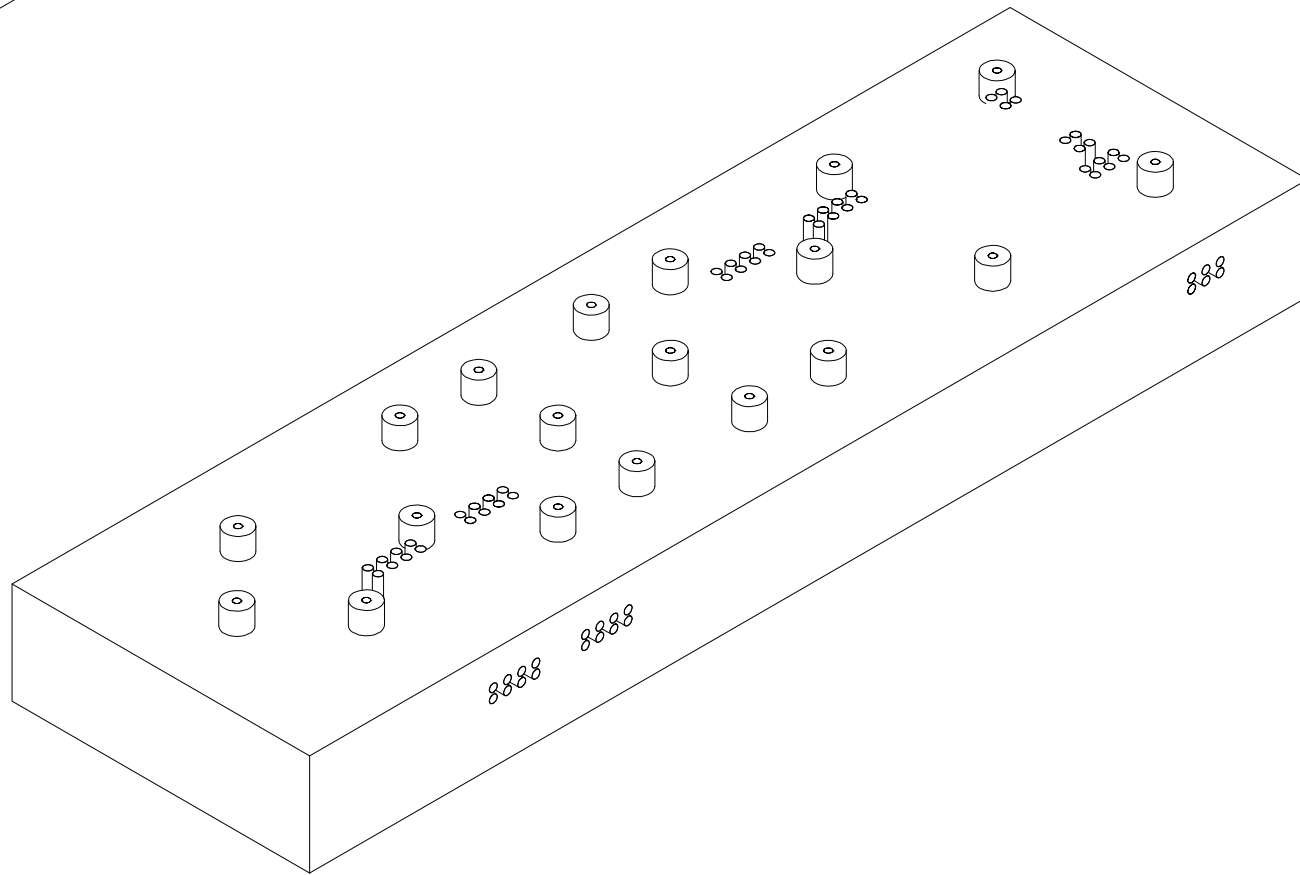
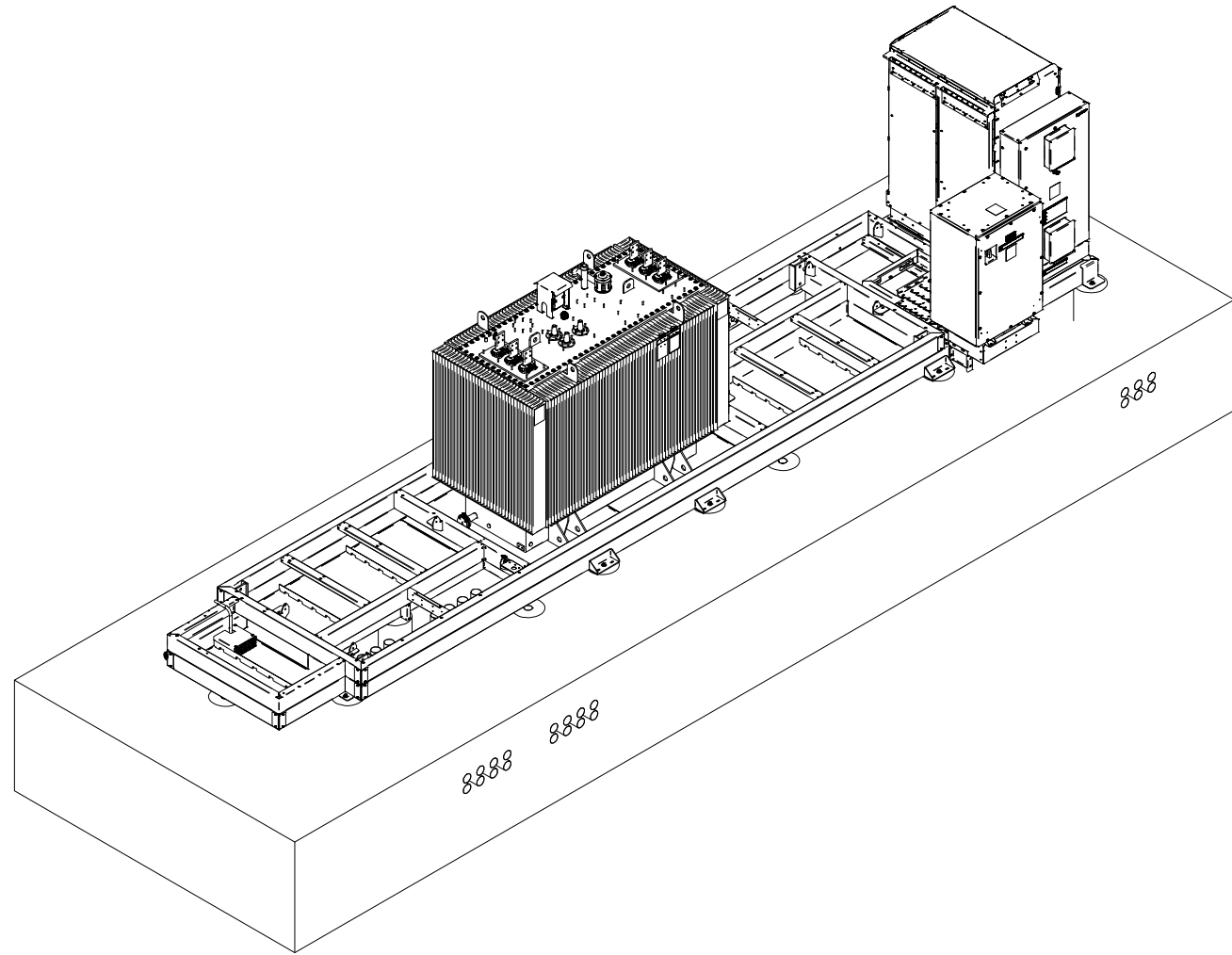
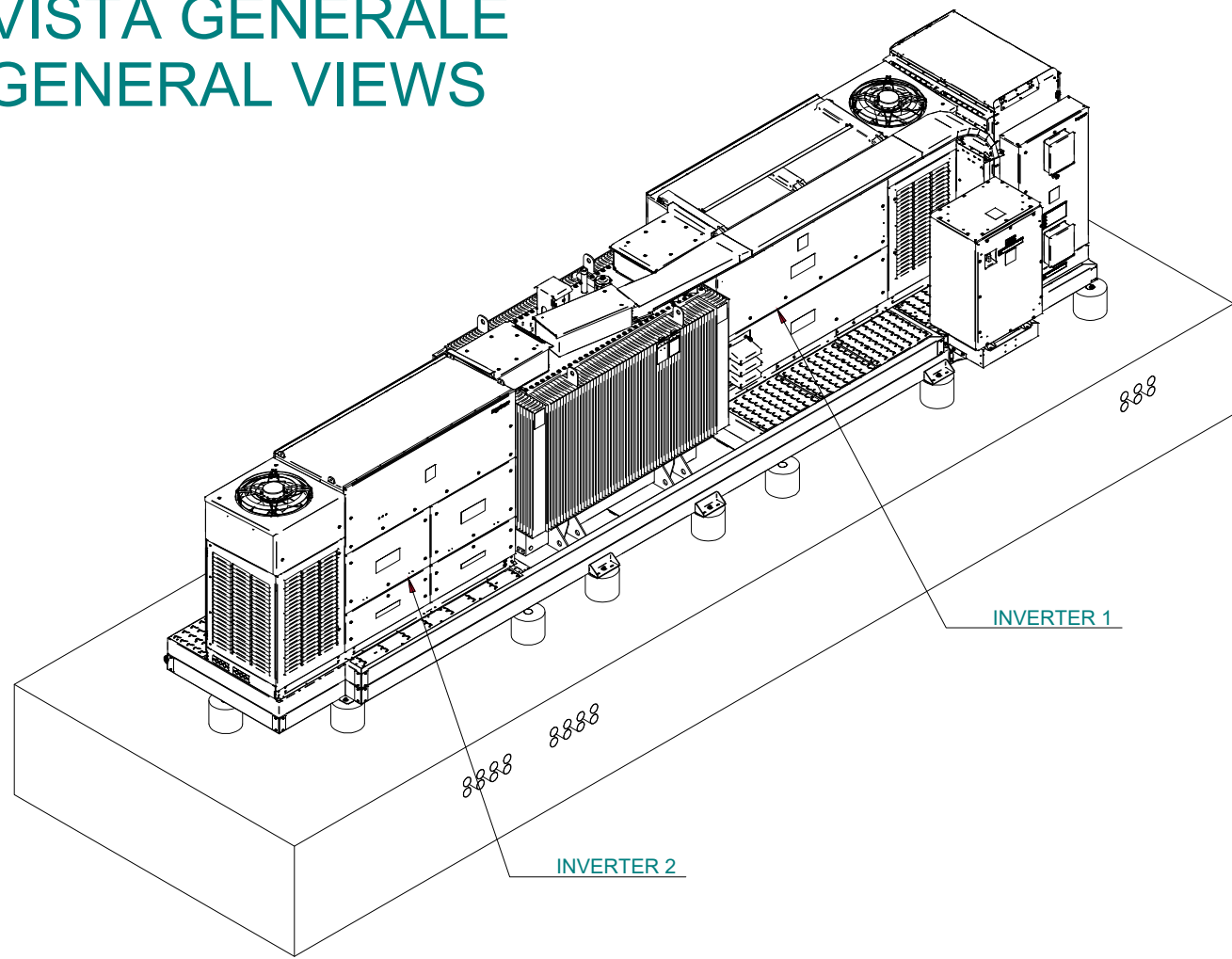
D

E

F

G

H



La scelta e la costruzione della base di fondazione, dei condotti sotterranei, la selezione dei cavi appropriati e la loro connessione e isolamento sono responsabilità esclusiva del cliente.
The choice and construction of the foundation base, of the underground conduits, the choice of the appropriate wires and their connection and insulation are responsibility of the client only.

Non inclusi nella fornitura standard.
Footing not included in standard supply

DISPOSIZIONE DI PALI DI CEMENTO CONCRETE PILE LAYOUT

* ALTEZZA DAL PIANO DEI PALI AL LIVELLO DEL SUOLO.
(A DEFINIR POR EL CLIENTE)
* HEIGHT FROM PILES PLANE TO GROUND LEVEL
(TO BE DEFINED BY CUSTOMER)

All piles head should be in the same plane / Tutte le teste dei pali devono trovarsi sullo stesso piano.

A ±2 mm

The diagram shows a rectangular layout of concrete piles. The horizontal dimensions (from left to right) are: 53.5in (1360mm), 42.4in (1076mm), 42.8in (1087mm), 61in (1550mm), 42.8in (1087mm), 44.2in (1122mm), 45in (1142mm), and 88.2in (2240mm). The vertical dimensions (from top to bottom) are: 88.4mm (34.8in), 870mm (34.3in), 884mm (34.8in), 206mm (8.1in), 1090mm (42.9in), 1090mm (42.9in), 1310mm (51.6in), and 2180mm (85.8in). A central point is marked with a red dot and labeled 'A'. A detail view 'A' is shown at the bottom right, indicating a diameter of 1350mm.

A 3D perspective view of the concrete pile layout, showing the rectangular arrangement of piles and the overall dimensions of the layout.

DETTAGLIO "A"
PUNTI DI RIFERIMENTO

Ø 1350mm

This detail view shows a circular cross-section of the pile layout, divided into four quadrants. The reference points are marked with red dots, and the diameter is indicated as 1350mm.

DISPOSIZIONE DI PALI DI CEMENTO CONCRETE PILE LAYOUT

* ALTEZZA DAL PIANO DEI PALI AL LIVELLO DEL SUOLO.
(A DEFINIR POR EL CLIENTE)
* HEIGHT FROM PILES PLANE TO GROUND LEVEL
(TO BE DEFINED BY CUSTOMER)

All piles head should be in the same plane / Tutte le teste dei pali devono trovarsi sullo stesso piano.

A ±2 mm

The diagram shows a rectangular layout of concrete piles. The horizontal dimensions (from left to right) are: 53.5in (1360mm), 42.4in (1076mm), 42.8in (1087mm), 61in (1550mm), 42.8in (1087mm), 44.2in (1122mm), 45in (1142mm), and 88.2in (2240mm). The vertical dimensions (from top to bottom) are: 88.4mm (34.8in), 870mm (34.3in), 884mm (34.8in), 206mm (8.1in), 1090mm (42.9in), 1090mm (42.9in), 1310mm (51.6in), and 2180mm (85.8in). A reference point 'A' is marked at the bottom right corner. A detail 'A' is shown at the bottom right corner, indicating a radius of 1350mm.

A 3D perspective view of the concrete pile layout, showing the arrangement of piles in a rectangular grid. The piles are represented as small cylinders, and the layout is shown within a rectangular frame.

DETTAGLIO "A"
PUNTI DI RIFERIMENTO

Ø 1350mm

This detail shows a circular cross-section of the pile layout. It features a central point and four reference points (indicated by red dots) arranged in a square pattern. The diameter of the circle is labeled as Ø 1350mm.

DISPOSIZIONE DI PALI DI CEMENTO CONCRETE PILE LAYOUT

* ALTEZZA DAL PIANO DEI PALI AL LIVELLO DEL SUOLO.
(A DEFINIR POR EL CLIENTE)
* HEIGHT FROM PILES PLANE TO GROUND LEVEL
(TO BE DEFINED BY CUSTOMER)

All piles head should be in the same plane / Tutte le teste dei pali devono trovarsi sullo stesso piano.

A ±2 mm

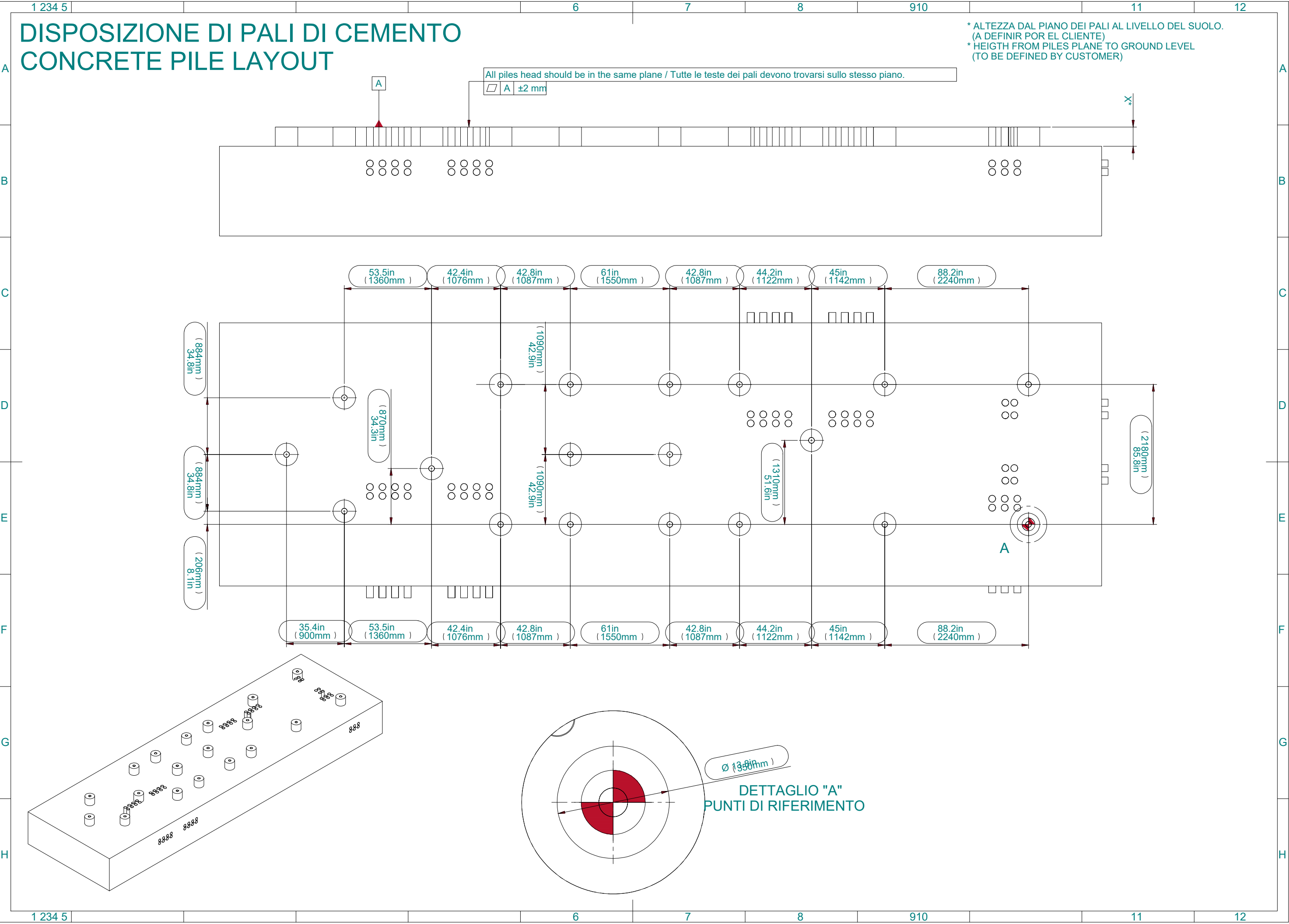
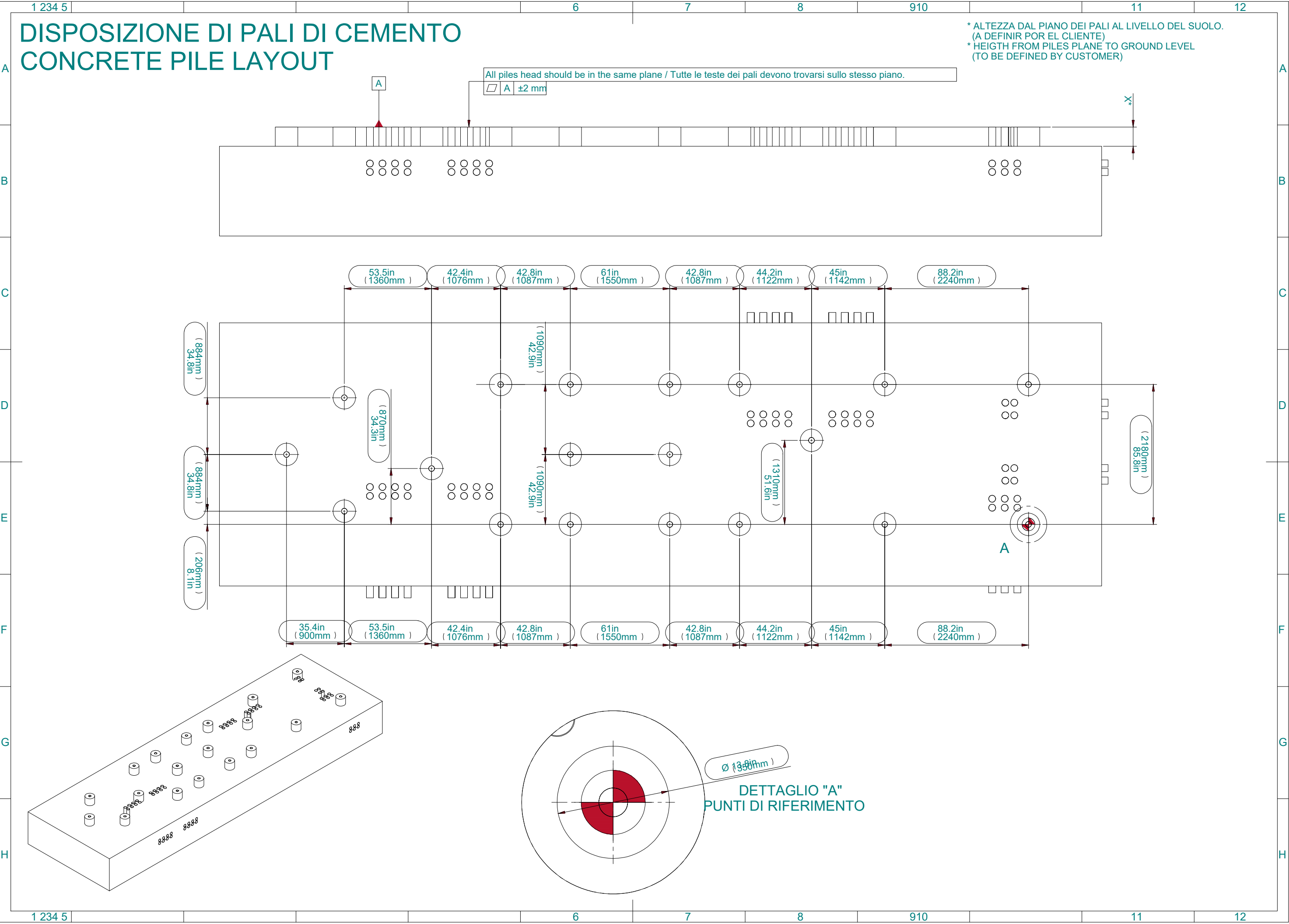
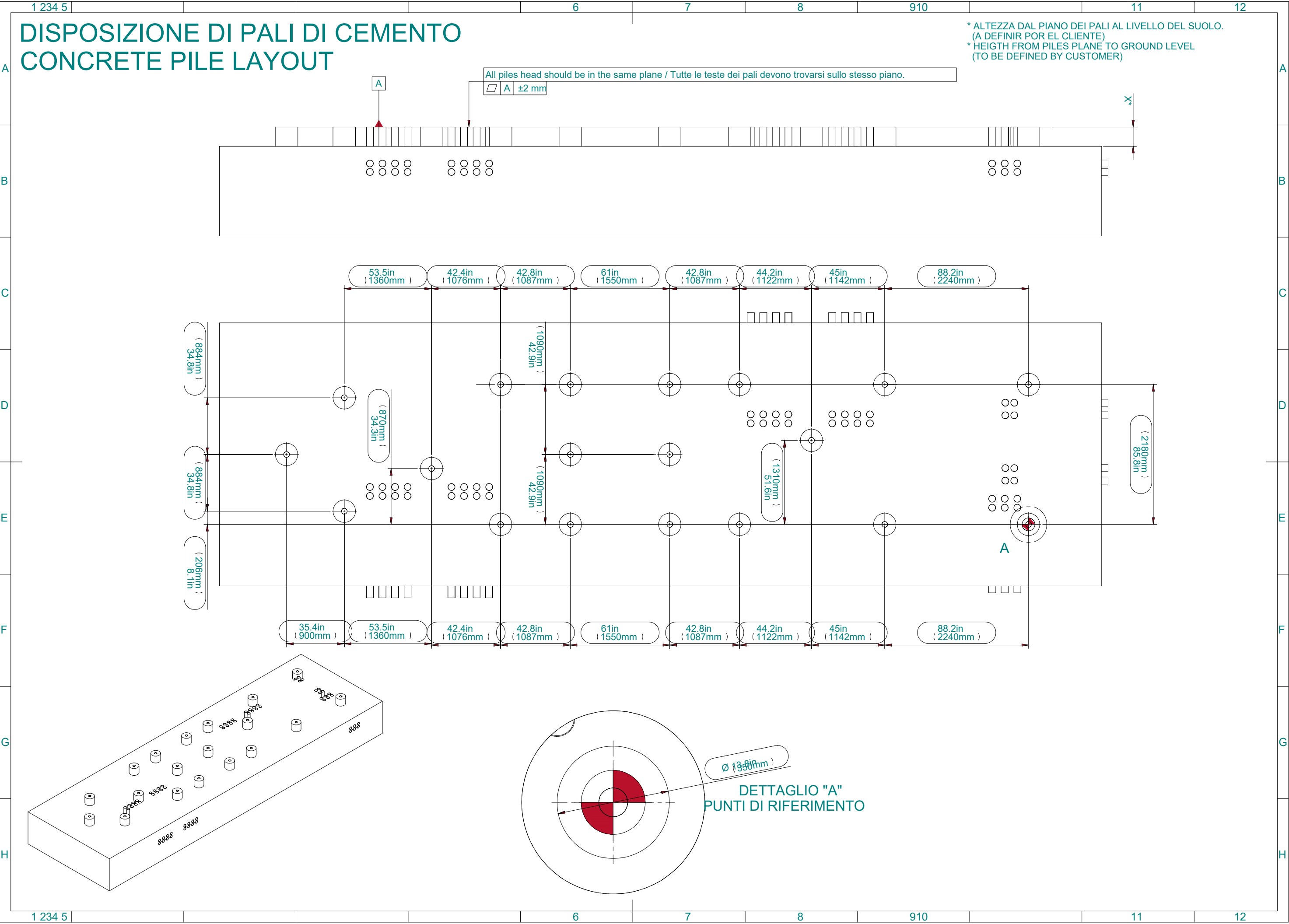
The diagram shows a rectangular layout of concrete piles. The horizontal dimensions (from left to right) are: 53.5in (1360mm), 42.4in (1076mm), 42.8in (1087mm), 61in (1550mm), 42.8in (1087mm), 44.2in (1122mm), 45in (1142mm), and 88.2in (2240mm). The vertical dimensions (from top to bottom) are: 88.4mm (34.8in), 870mm (34.3in), 884mm (34.8in), 206mm (8.1in), 1090mm (42.9in), 1090mm (42.9in), 1310mm (51.6in), and 2180mm (85.8in). A reference point 'A' is marked at the bottom right corner. A detail 'A' is shown at the bottom right corner, indicating a radius of 1350mm.

A 3D perspective view of the concrete pile layout, showing the arrangement of piles in a rectangular grid. The piles are represented as small cylinders, and the layout is shown within a rectangular frame.

DETTAGLIO "A"
PUNTI DI RIFERIMENTO

Ø 1350mm

This detail shows a circular cross-section of the pile layout. It features a central point and four reference points (indicated by red dots) arranged in a square pattern. The diameter of the circle is labeled as Ø 1350mm.



1 234 5 6 7 8 910 11 12

A

B

C

D

E

F

G

H

DISPOSIZIONE DEI PALI DI CALCESTRUZZO CONCRETE PILE LAYOUT

139.9in
(3553mm)

61in
(1550mm)

131.9in
(3351mm)

88.1in
(2239mm)

(229mm)
9in

(1768mm)
69.6in

(227mm)
8.9in

(2225mm)
87.6in

(0mm)
0in

B

C

PUNTO DI RIFERIMENTO PER IL FISSAGGIO DEL FULLSKID
REFERENCE FIXING POINT OF FULLSKID

Coppia di serraggio per viti di ancoraggio 120 nm
Tightening torque for anchor screw 120 Nm.

FISSAGGIO STANDARD DELLO SKID CON VITE M16 (AD ESEMPIO, APA416145)
Devi seguire le seguenti indicazioni per scegliere il luogo dove fissare il perno:

- distanza minima dal centro del foro fino al bordo della trave di cemento: 128 mm.
- diametro del foro nella trave: 16 mm.
- profondità minima del foro: 105 mm.
- spessore minimo della trave di cemento: 170 mm.

(*) STRUTTURA DI SOSTEGNO IN CALCESTRUZZO DI CLASSE C20/25 (COME MINIMO)

Standard fixation of SKID by wedgebolt M16 (e.g. APA416145)

You must follow the following stipulations when choosing the place where the anchoring bolt is to be bolted in:

- Minimum distance from the center of the bore to the edge of the concrete pad: 128 mm
- Diameter of the hole drilled in the concrete pad: 16 mm
- Minimum depth of the hole drilled in the concrete pad: 105 mm
- Minimum thickness of the concrete pad: 170 mm

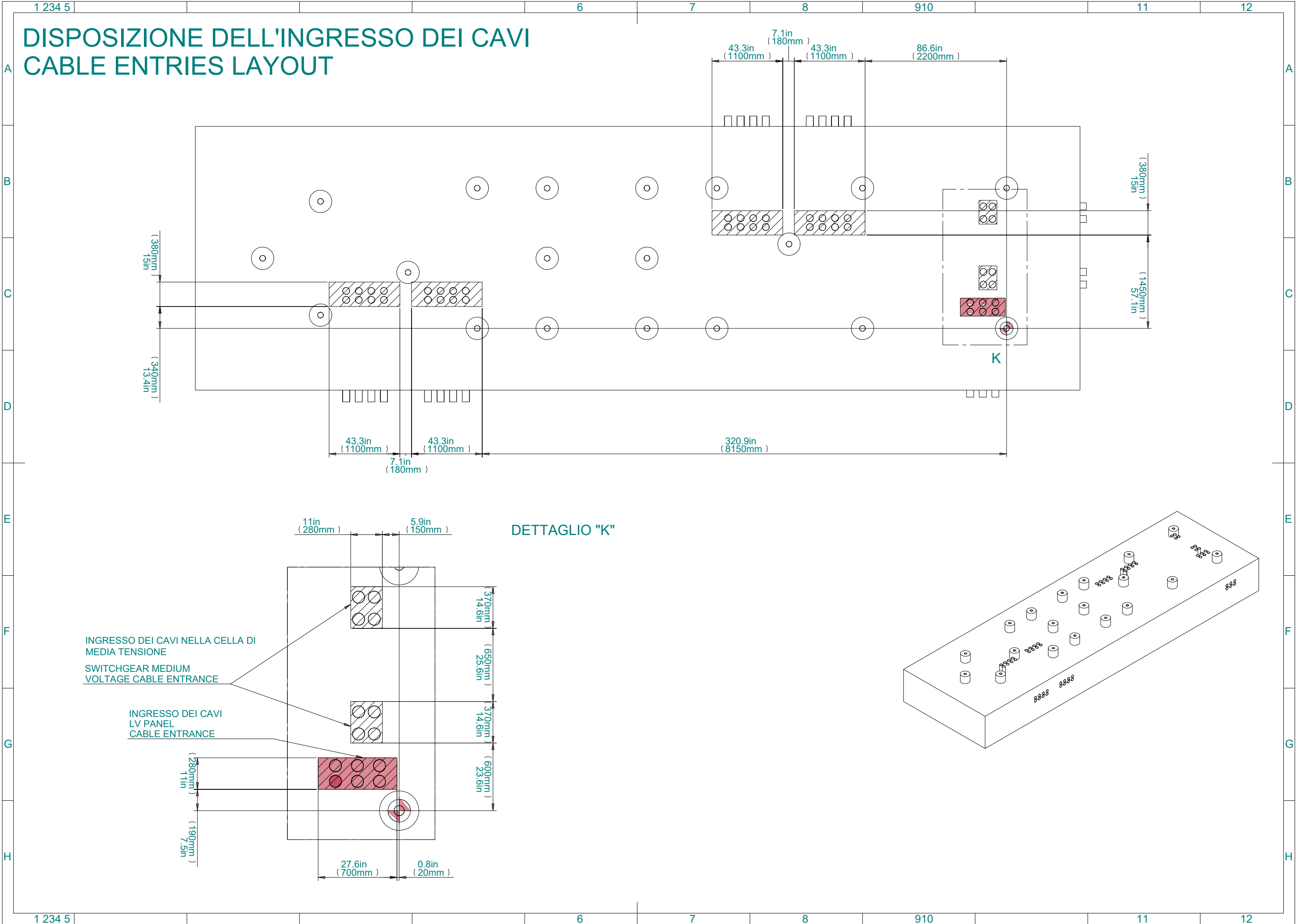
(*) Concrete strength grade C20/25 (as minimum required)

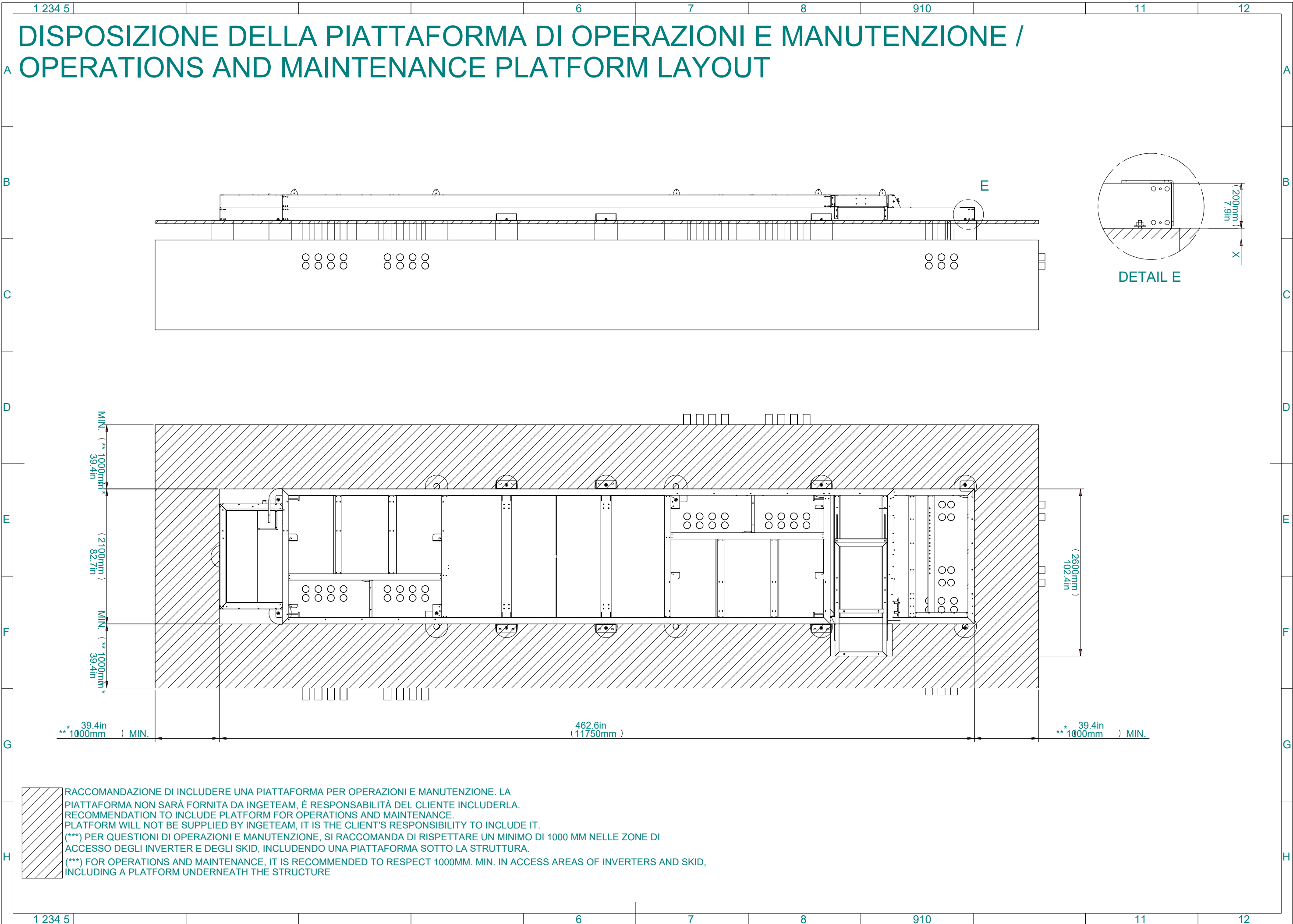
DETTAGLIO "B"

DETTAGLIO "C"

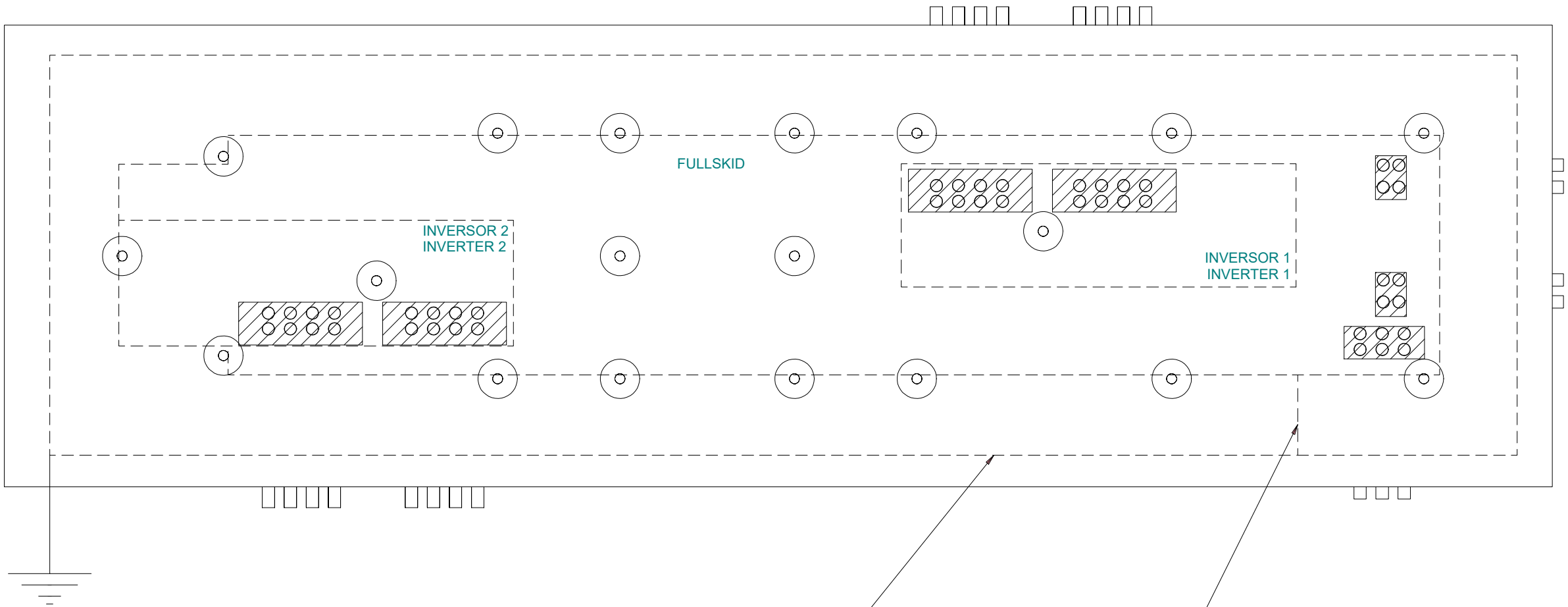
Tutti i pali devono avere un diametro minimo di 350 mm /
All piles must have a minimum diameter of 350mm

1 234 5 6 7 8 910 11 12



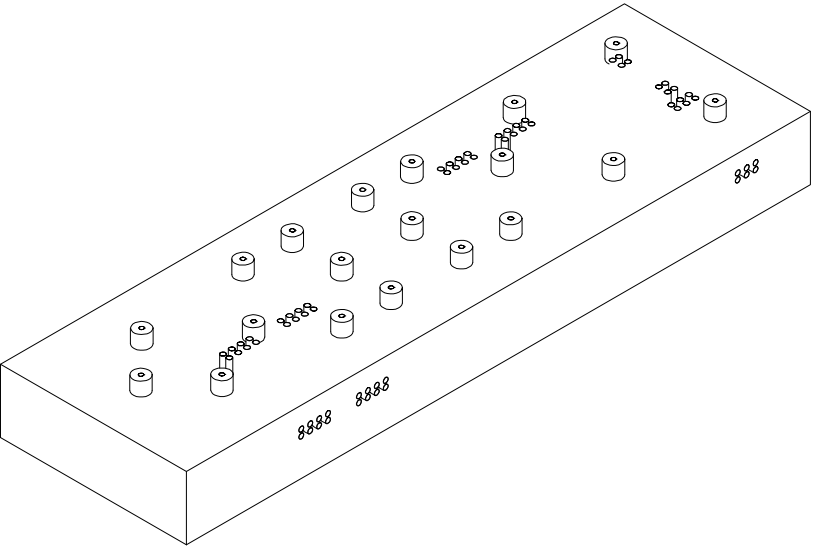


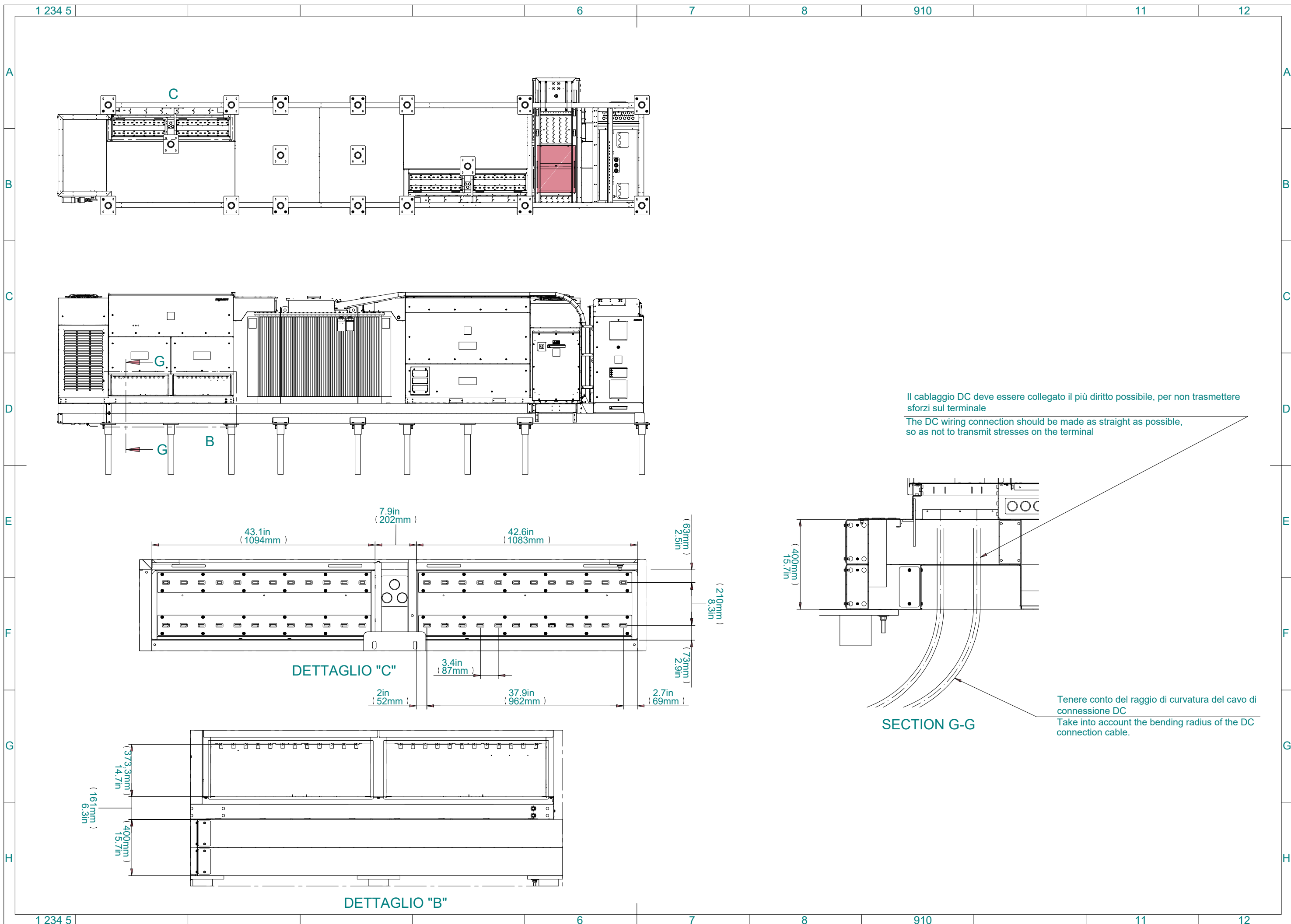
COLLEGAMENTO A TERRA /
GROUNDING



ANELLO DI TERRA
GROUNDING RING IS NOT INGETEAM'S SCOPE

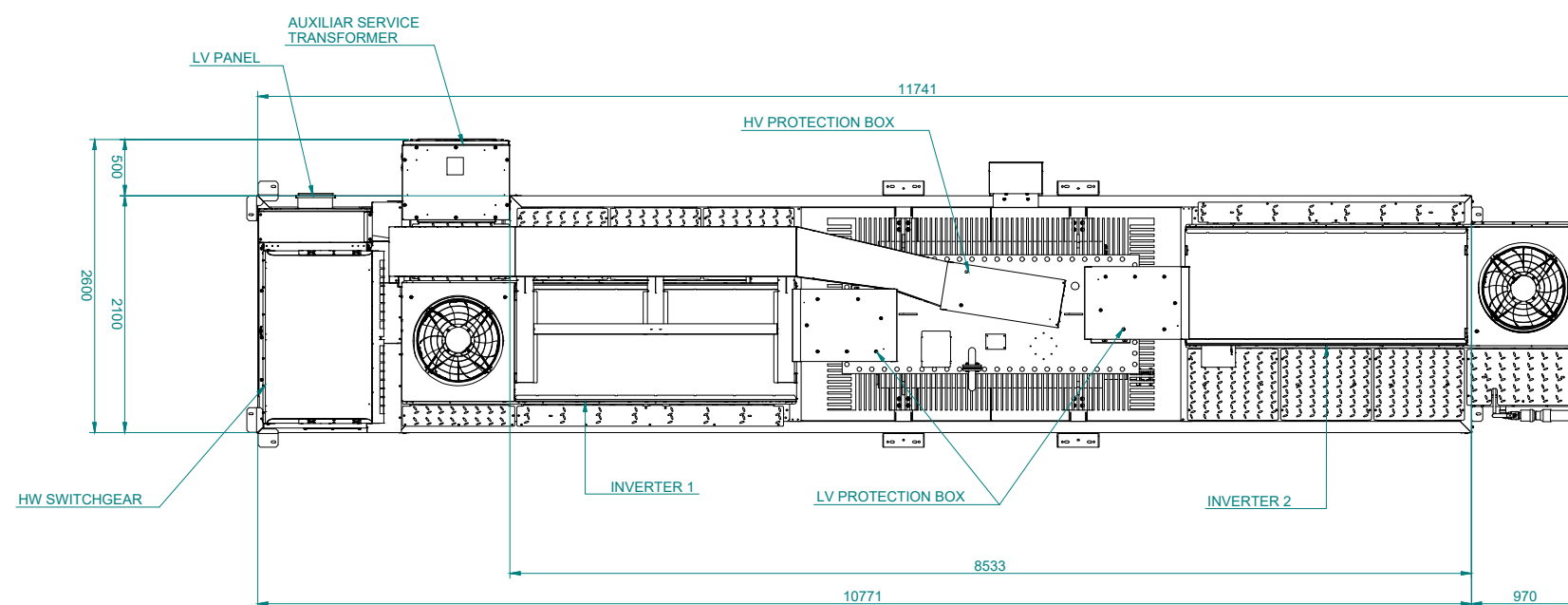
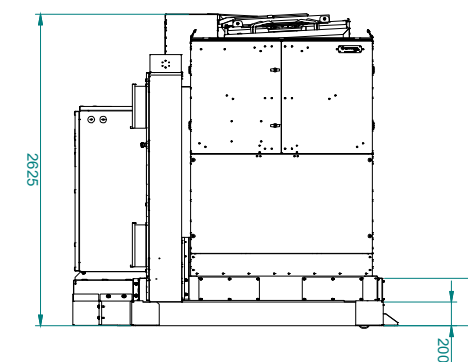
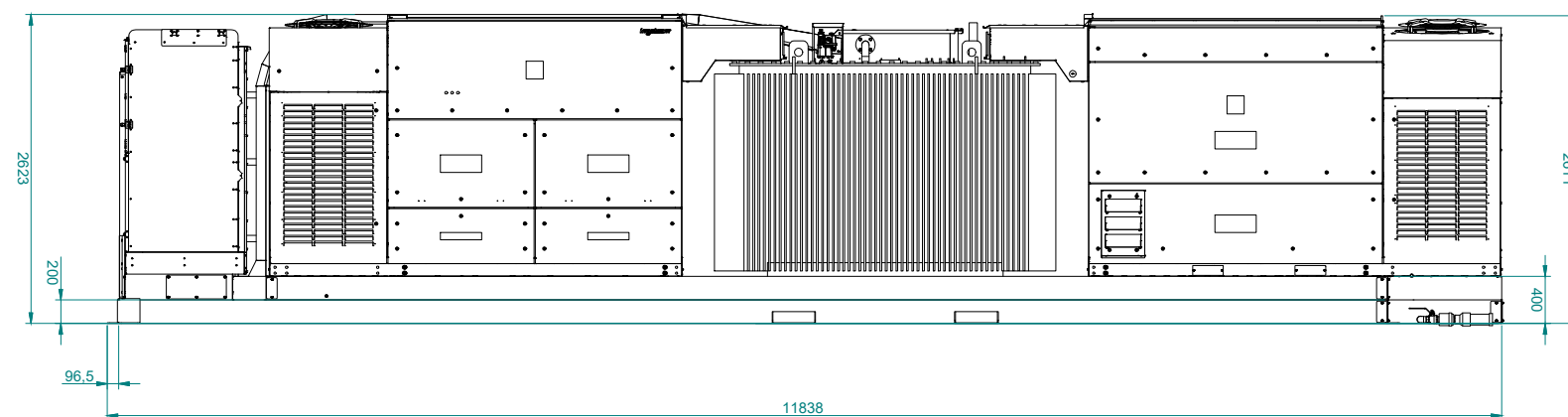
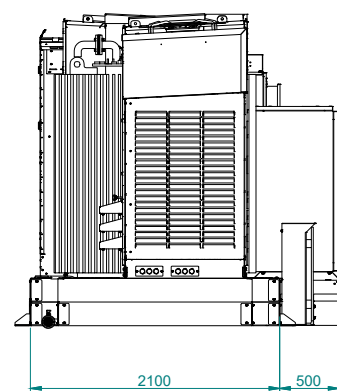
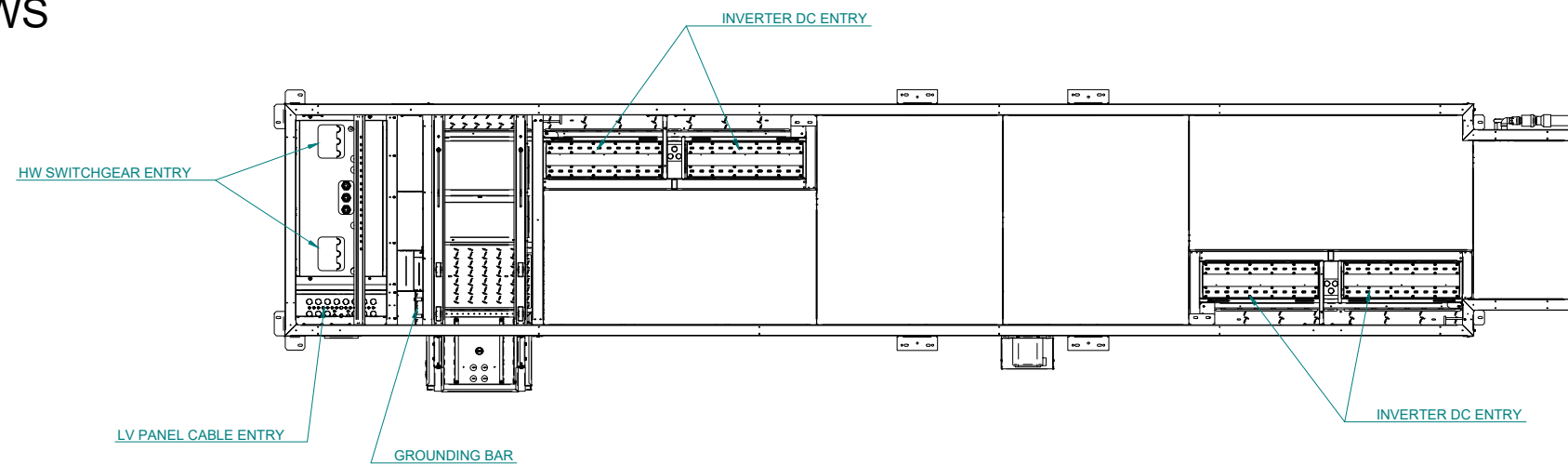
COLLEGAMENTO TRA ANELLO DI TERRA E PIATINA DI TERRA
CONNECTION BETWEEN GROUNDING RING AND GROUNDING BAR IS NOT INGETEAM'S SCOPE



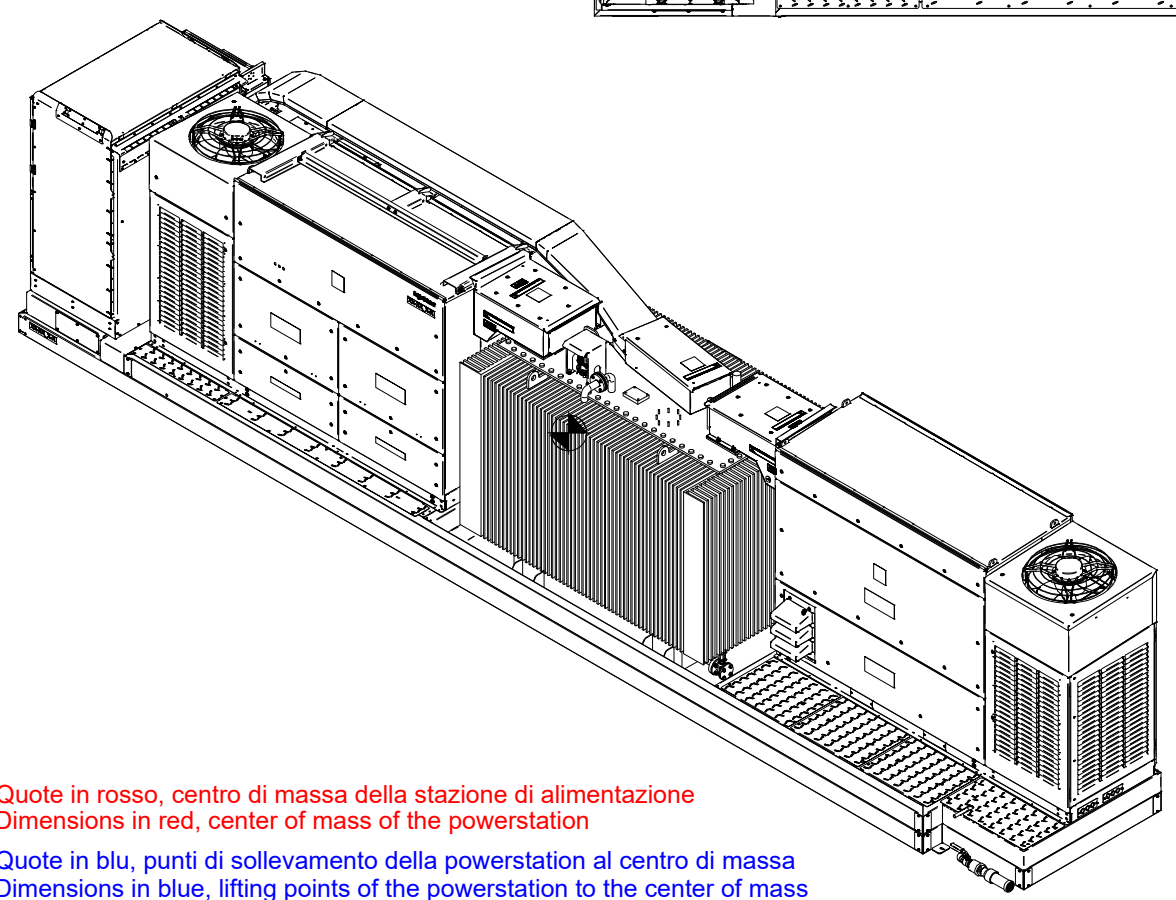
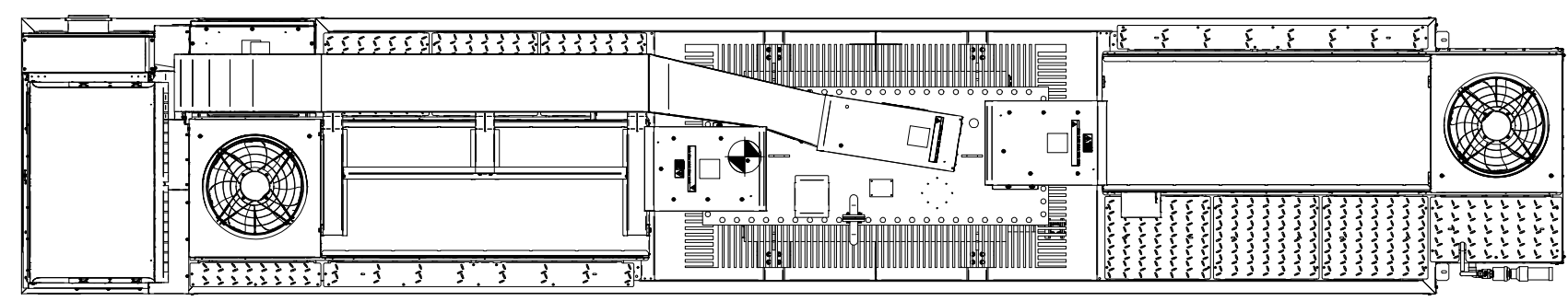
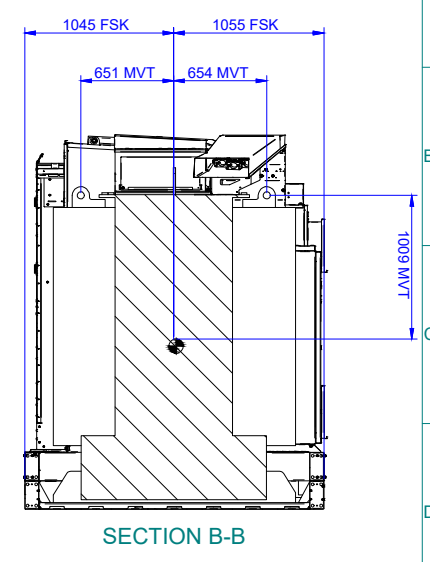
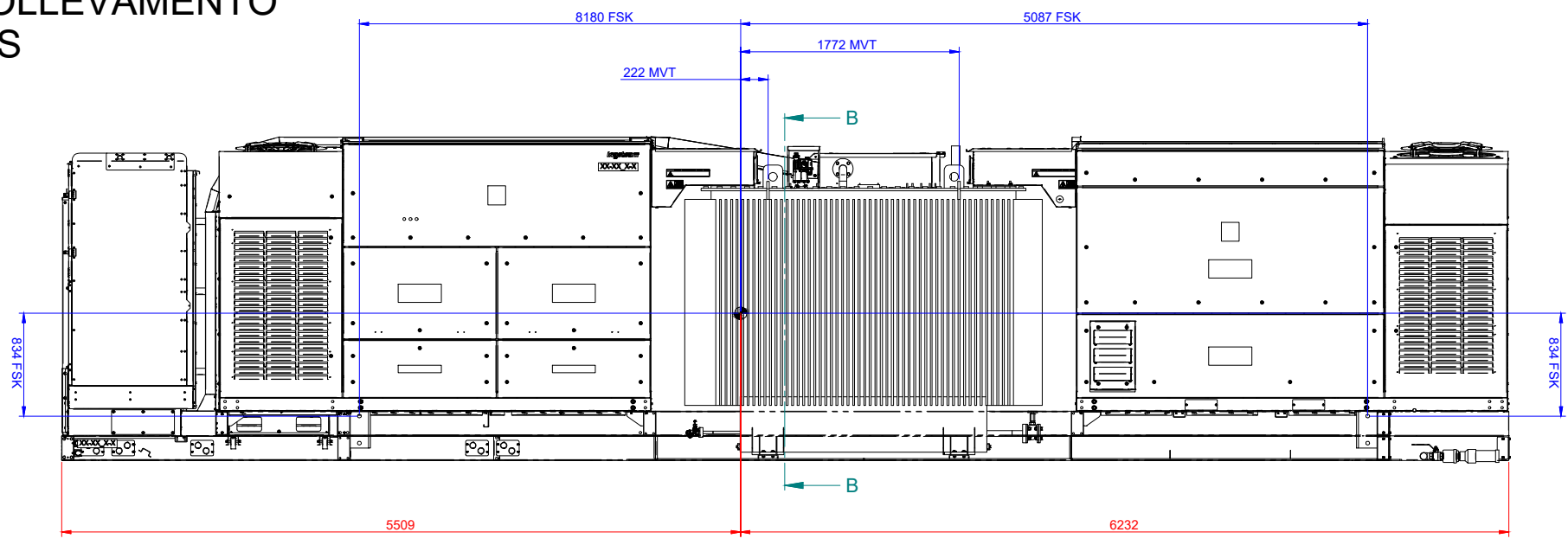
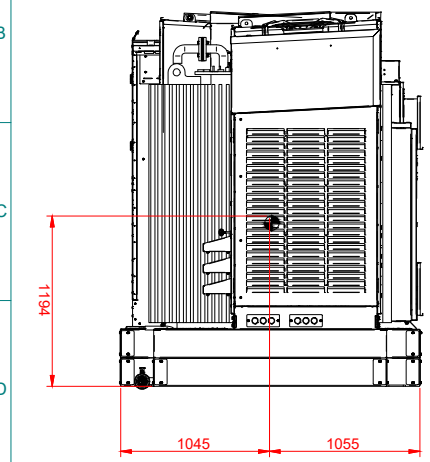


VISTE GENERALI IN CAMPO

FIELD GENERAL VIEWS



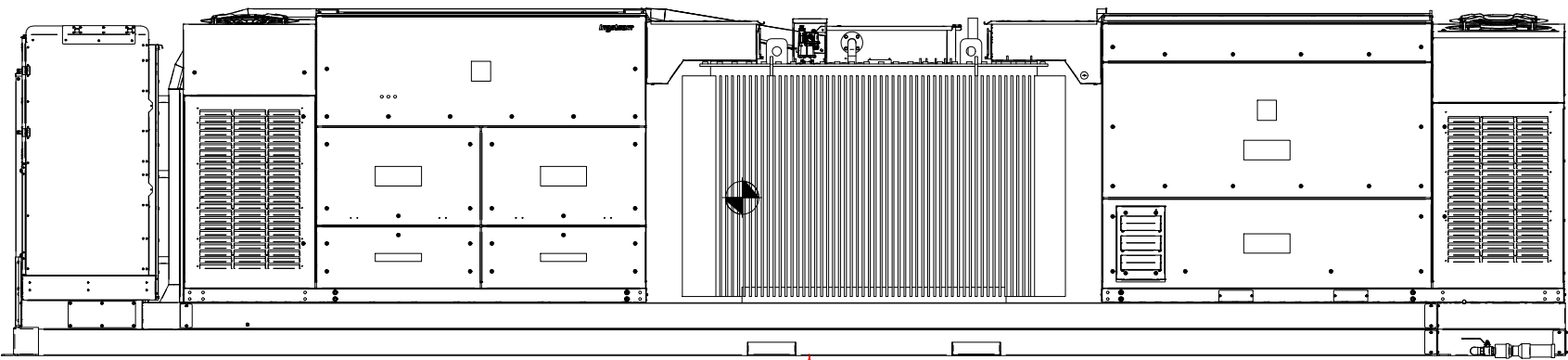
VISTE GENERALI DEL SOLLEVAMENTO
LIFTING GENERAL VIEWS



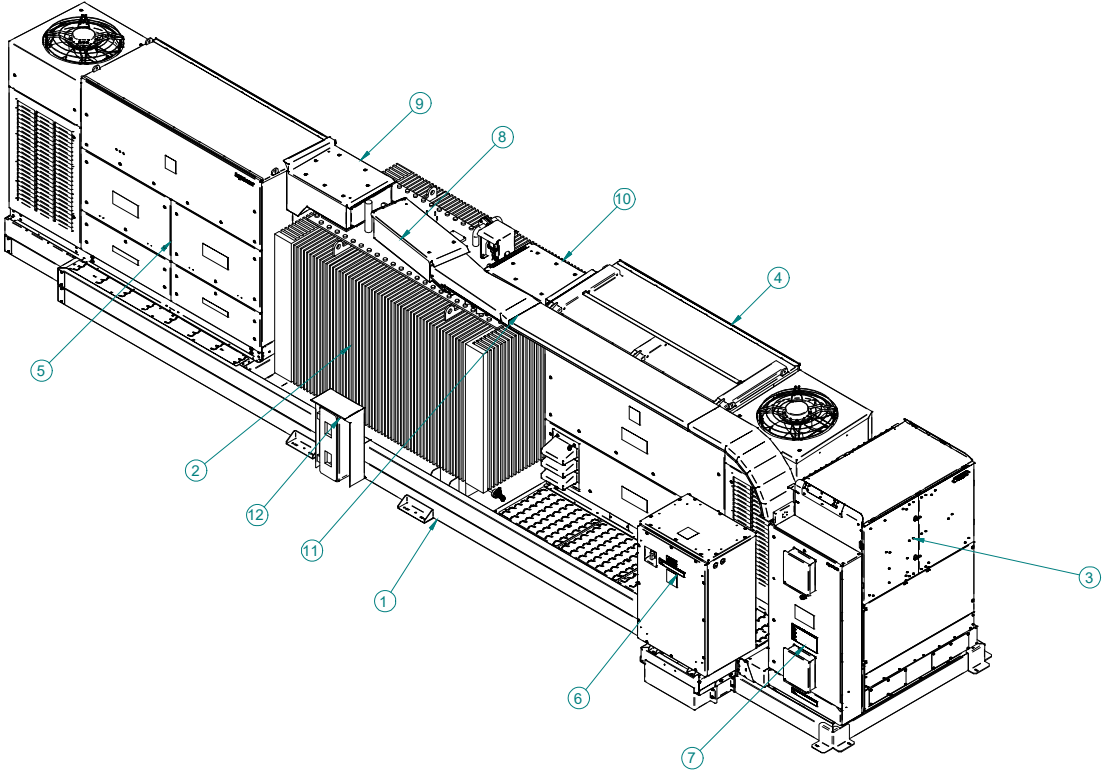
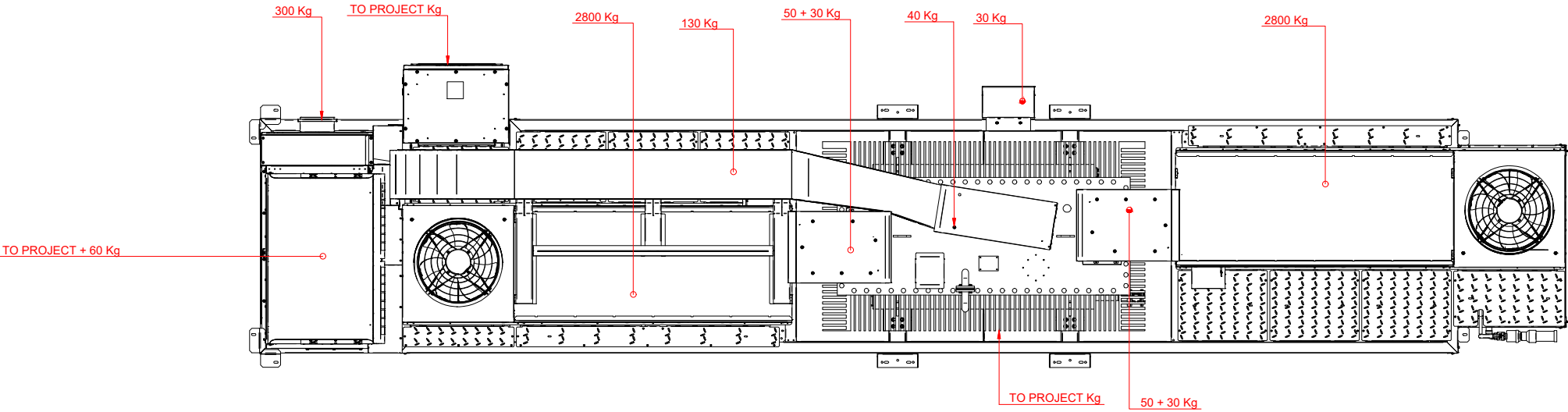
Quote in rosso, centro di massa della stazione di alimentazione
Dimensions in red, center of mass of the powerstation

Quote in blu, punti di sollevamento della powerstation al centro di massa
Dimensions in blue, lifting points of the powerstation to the center of mass

PESO
WEIGHTS



1640 Kg

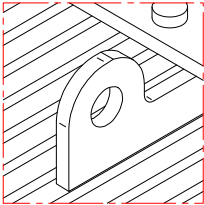


ITEM NUMBER	MAIN COMPONENTES	KG
1	FULLSKID	1640
2	TRANSFORMER	TO PROJECT
3	SWITCHGEAR + SUPPORT	TO PROJECT
4	INVERTER 1	2800
5	INVERTER 2	2800
6	AUX. TRANSFORMER	TO PROJECT
7	LV PANEL	300
8	HV PROTECTION BOX	40
9	LV BARS + PROTEC. BOX L	50 + 30
10	LV BARS + PROTEC. BOX R	50 + 30
11	MV WIRES SUPPORT	130
12	FIRE EXTINGUISER KIT	30
	OTHER COMPONENTS	#iVALOR!
	TOTAL	~22855

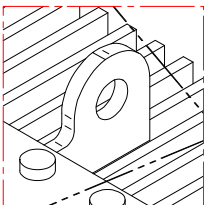
IDENTIFICAZIONE DEI PUNTI DI SOLLEVAMENTO
IDENTIFICATION OF LIFTING POINTS

NOTA / NOTE:
IL PESO CHE SOPPORTA OGNI PUNTO DI SOLLEVAMENTO È CALCOLATO TIRANDO IN VERTICALE
THE WEIGHT SUPPORTED BY EACH LIFTING POINT IS CALCULATED BY PULLING VERTICALLY.

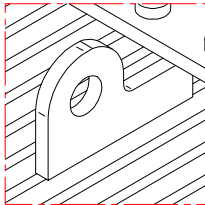
WEIGHT SUPPORTED BY LIFTING POINTS 3,4,5 AND 6 TOGETHER		
ITEM NUMBER	MAIN COMPONENTS	KG
2	TRANSFORMER	TO PROJECT
8	HV PROTECTION BOX	40
9	LV BARS + PROTEC. BOX L	80
10	LV BARS + PROTEC. BOX L	80
12	FIRE EXTINGUISHER KIT	30
1	4/8 WEIGHT OF FSK	820
	4/8 OTHER COMPONENTS	
	TOTAL PESO A REPARTIR ENTRE LOS 4 PUNTOS	1050
	TOTAL	262,5



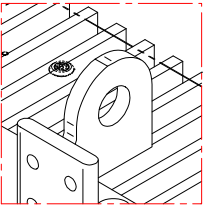
DETAIL 3 LIFTING POINT



DETAIL 4 LIFTING POINT

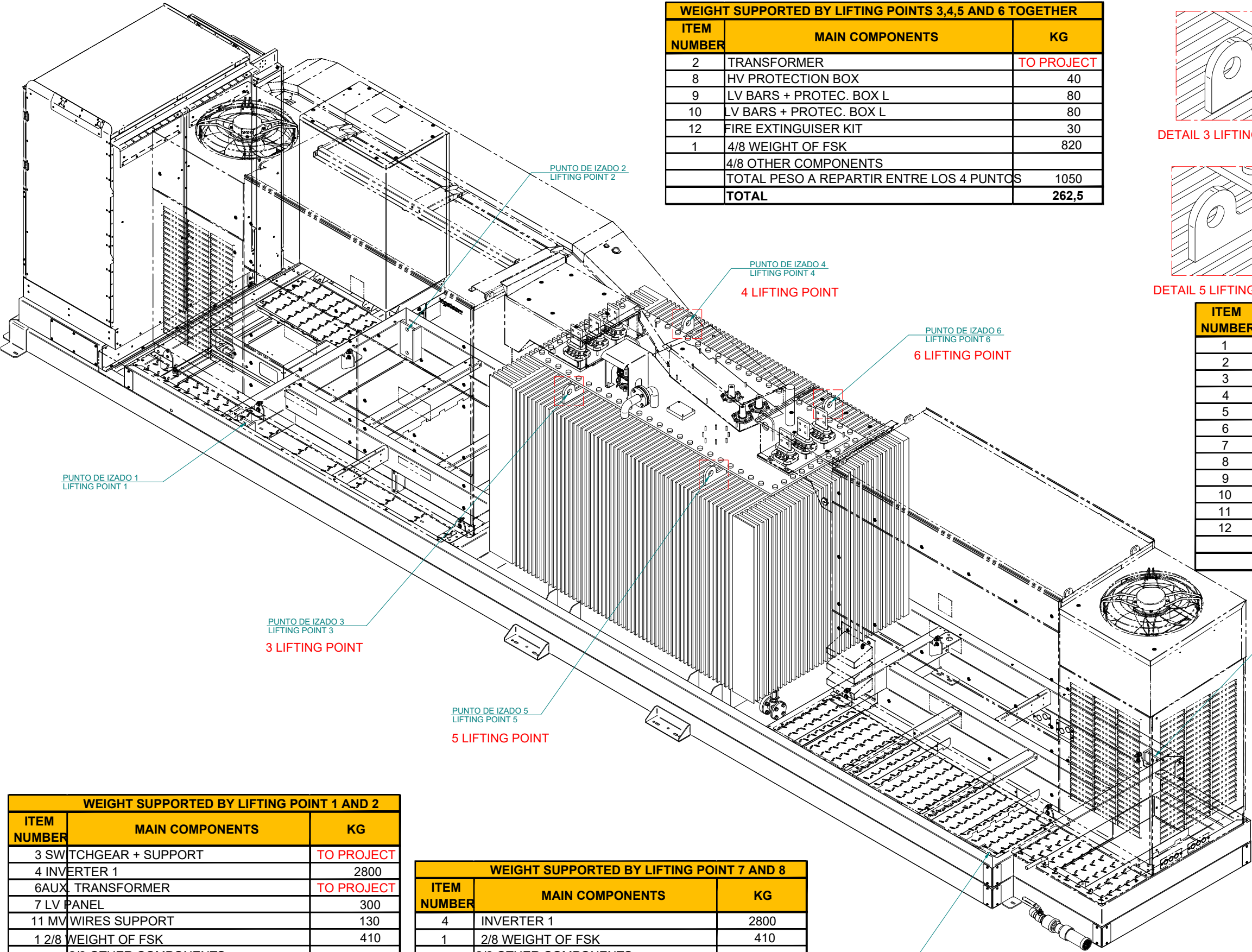


DETAIL 5 LIFTING POINT



DETAIL 6 LIFTING POINT

ITEM NUMBER	MAIN COMPONENTES	KG
1	FULLSKID	1640
2	TRANSFORMER	TO PROJECT
3	SWITCHGEAR + SUPPORT	TO PROJECT
4	INVERTER 1	2800
5	INVERTER 2	2800
6	AUX. TRANSFORMER	TO PROJECT
7	LV PANEL	300
8	HV PROTECTION BOX	40
9	LV BARS + PROTEC. BOX L	50 + 30
10	LV BARS + PROTEC. BOX R	50 + 30
11	MV WIRES SUPPORT	130
12	FIRE EXTINGUISHER KIT	30
	OTHER COMPONENTS	#iVALOR!
	TOTAL	~22855

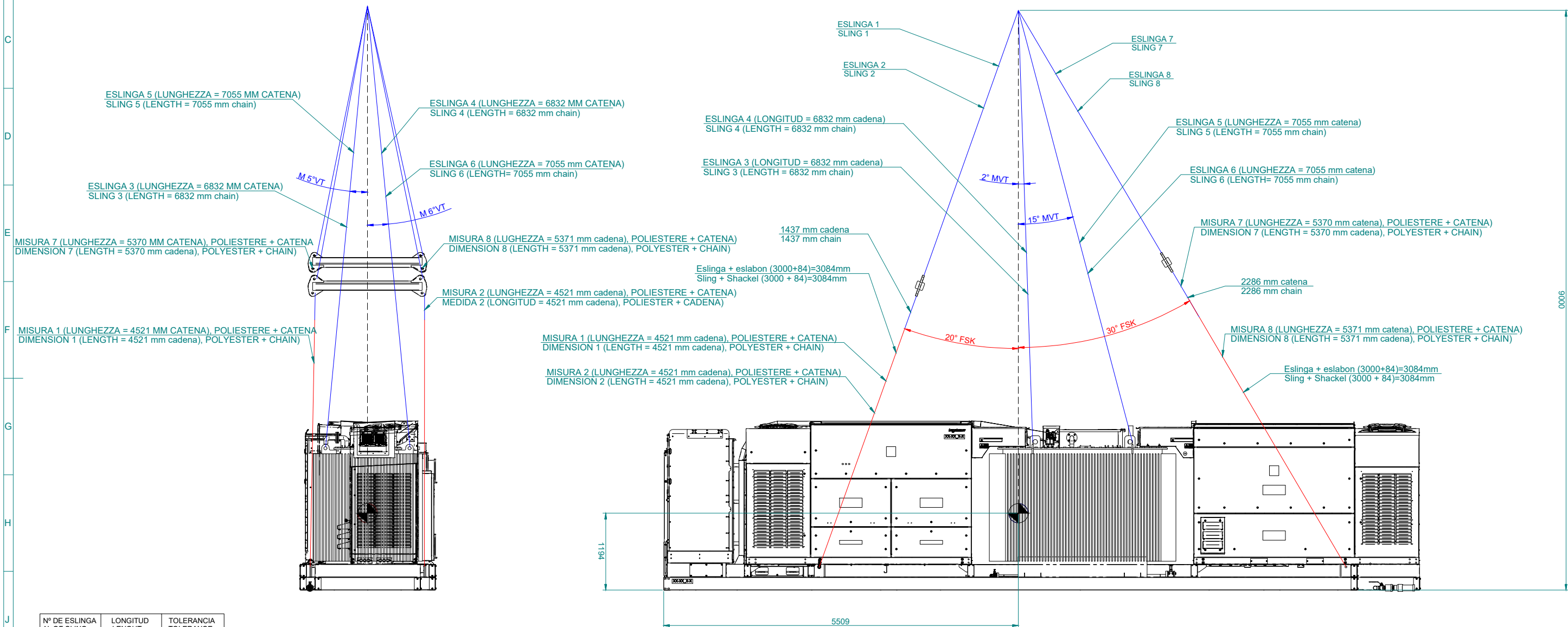


WEIGHT SUPPORTED BY LIFTING POINT 1 AND 2		
ITEM NUMBER	MAIN COMPONENTS	KG
3	SWITCHGEAR + SUPPORT	TO PROJECT
4	INVERTER 1	2800
6	AUX. TRANSFORMER	TO PROJECT
7	LV PANEL	300
11	MV WIRES SUPPORT	130
1	2/8 WEIGHT OF FSK	410
	2/8 OTHER COMPONENTS	
	TOTAL PESO A REPARTIR ENTRE LOS 2 PUNTOS	3640
	TOTAL	1820

WEIGHT SUPPORTED BY LIFTING POINT 7 AND 8		
ITEM NUMBER	MAIN COMPONENTS	KG
4	INVERTER 1	2800
1	2/8 WEIGHT OF FSK	410
	2/8 OTHER COMPONENTS	
	TOTAL PESO A REPARTIR ENTRE LOS 2 PUNTOS	3210
	TOTAL	1605

SISTEMA DI SOLLEVAMENTO E POSIZIONE DEL CENTRO DI GRAVITÀ

LIFTING SYSTEM AND CENTER OF GRAVITY POSITION



N° DE ESLINGA N. OF SLING	LONGITUD LENGHT	TOLERANCIA TOLERANCE
MEDIDA 1 DIMENSION 1	4521 mm	u 30 mm
MEDIDA 2 DIMENSION 2	4521 mm	u 30 mm
ESLINGA 3 SLING 3	6832 mm	u 30 mm
ESLINGA 4 SLING 4	6832 mm	u 30 mm
ESLINGA 5 SLING 5	7055 mm	u 30 mm
ESLINGA 6 SLING 6	7055 mm	u 30 mm
MEDIDA 7 DIMENSION 7	5370 mm	u 30 mm
MEDIDA 8 DIMENSION 8	5371 mm	u 30 mm

Líneas en rojo representan las eslingas de poliester
Red lines represent polyester slings

Líneas en azul representan las eslingas de cadenas
Blue lines represent chains slings

Color	Number of inverters in the Power Station
Red	1
White	2

