



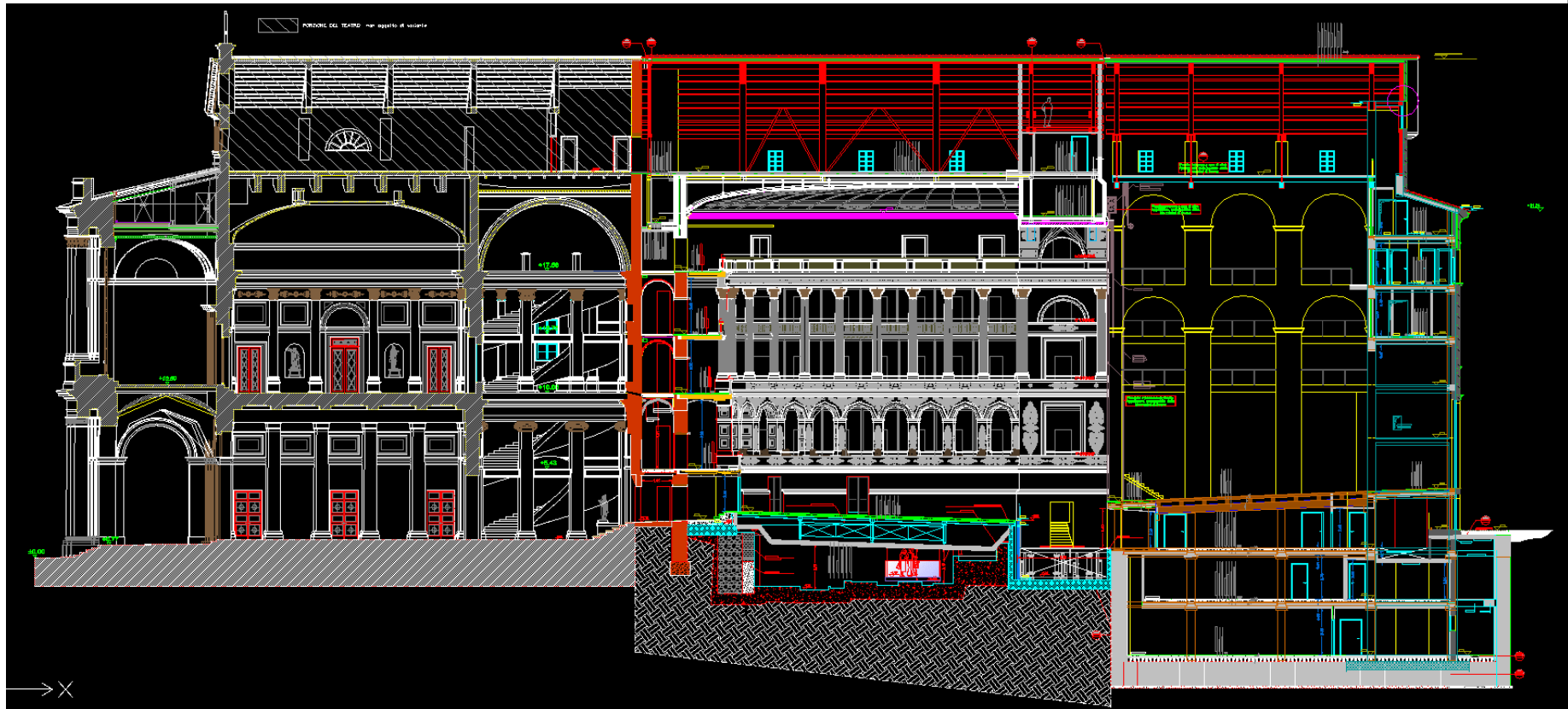
Comune di Rimini

The reconstruction of the Teatro Galli in Rimini: the structural design.

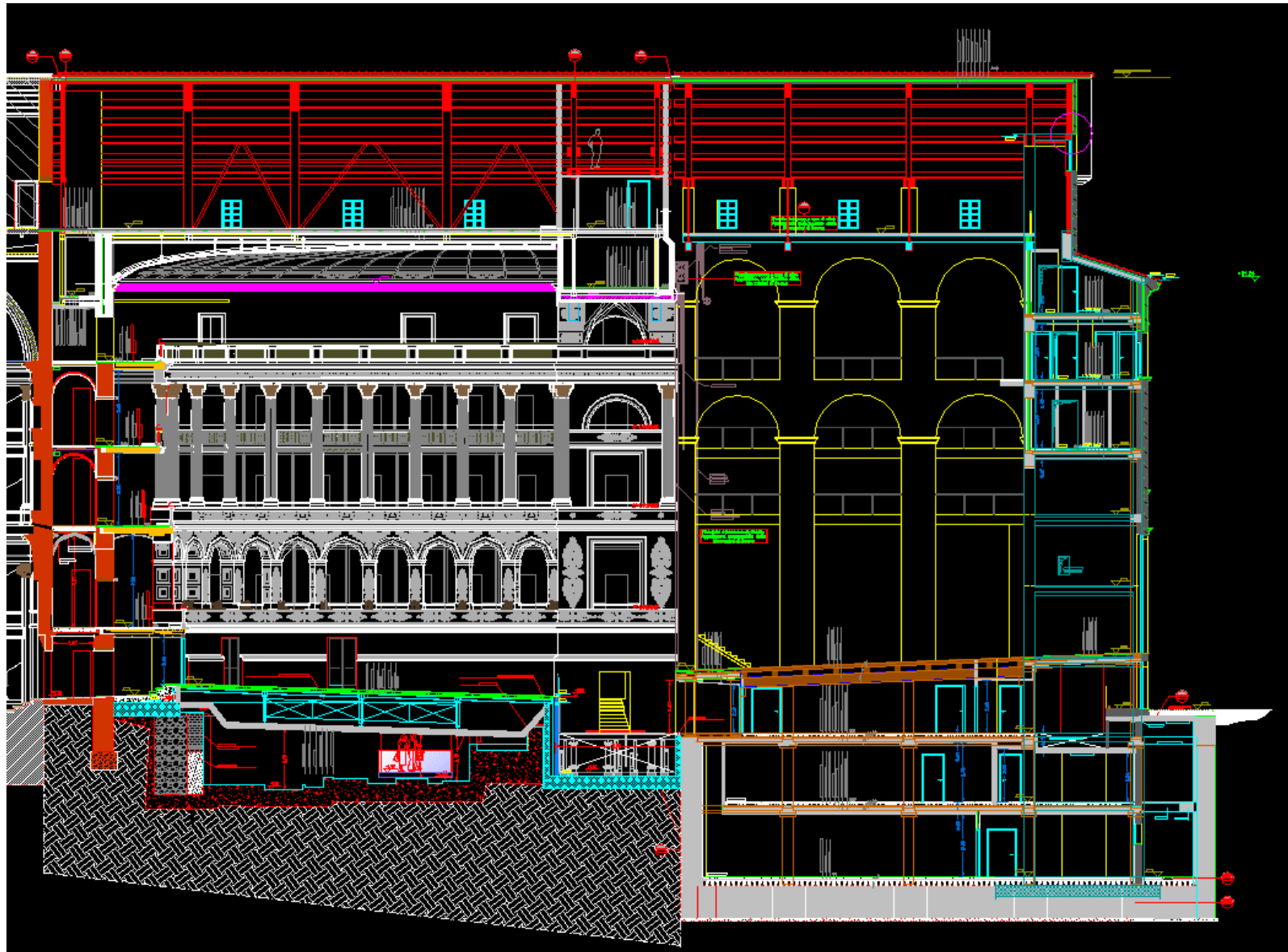
Parma - 17 october 2016



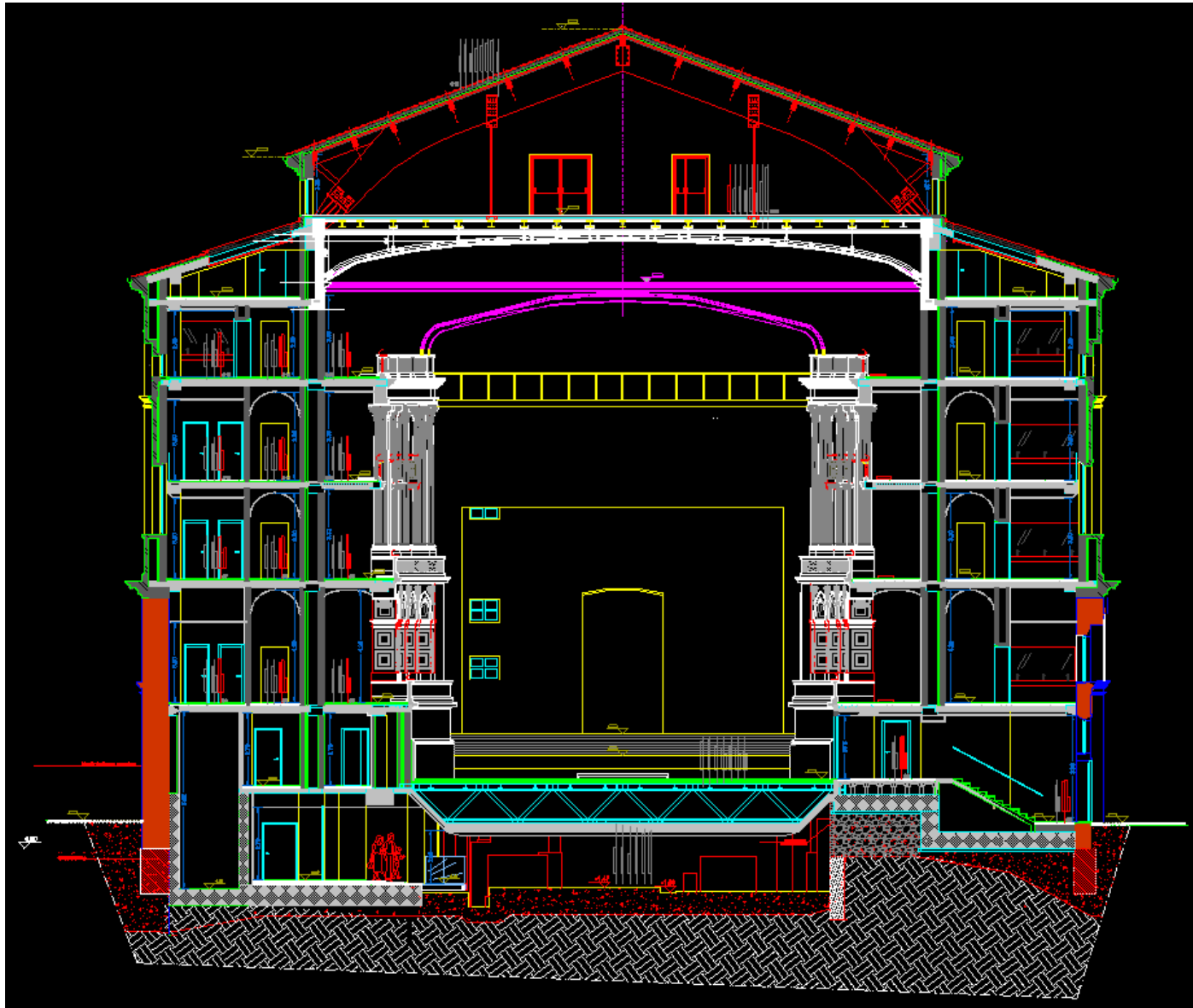
THE ARCHITECTURAL DESIGN



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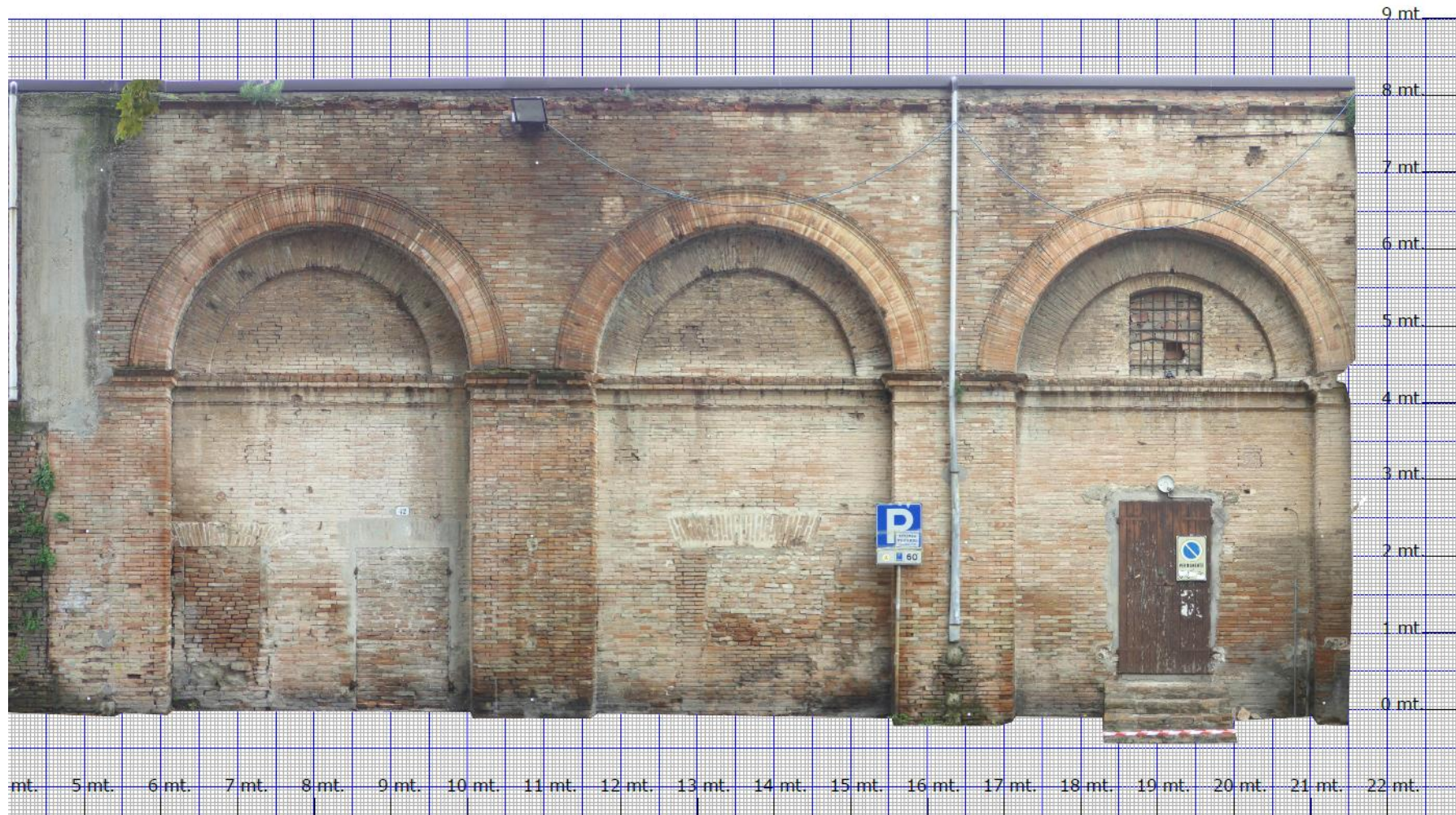


THE POLETTI'S WALLS



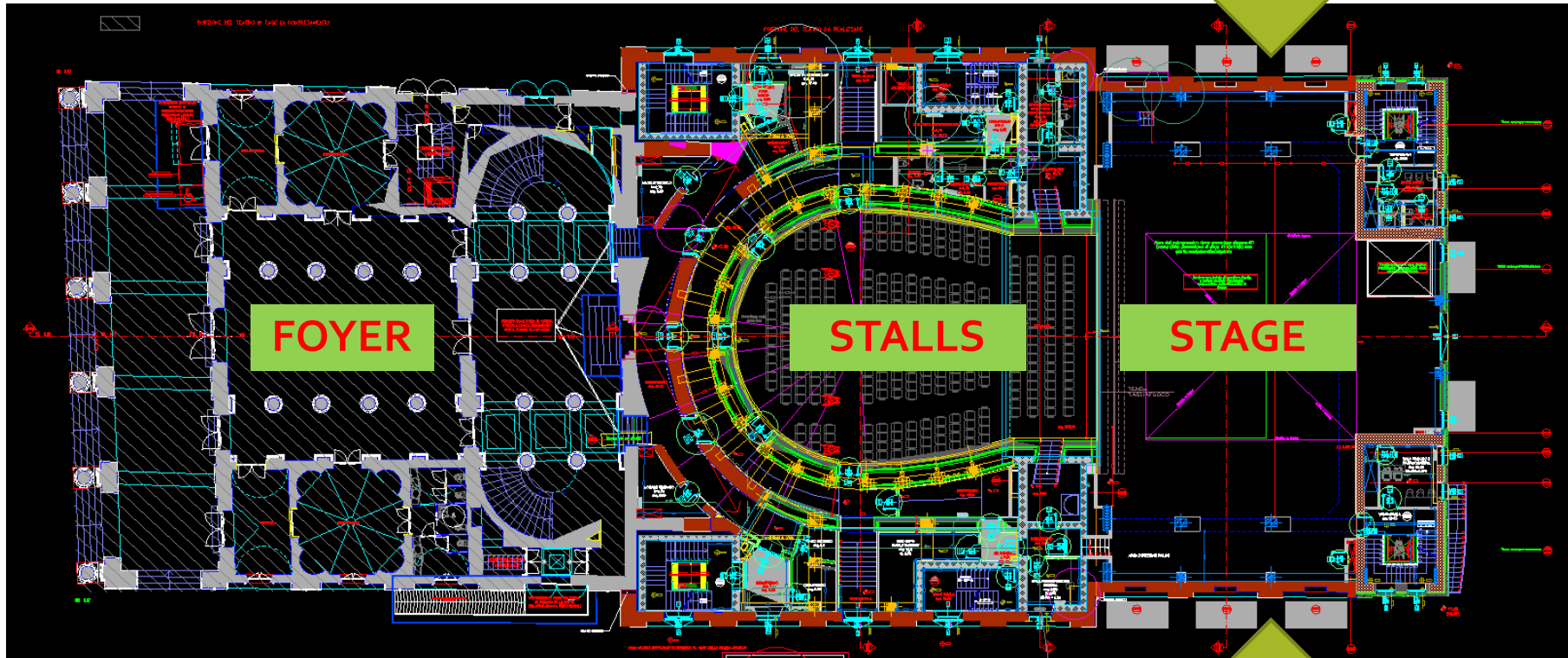
Translating wall via Poletti side

THE POLETTI'S WALLS

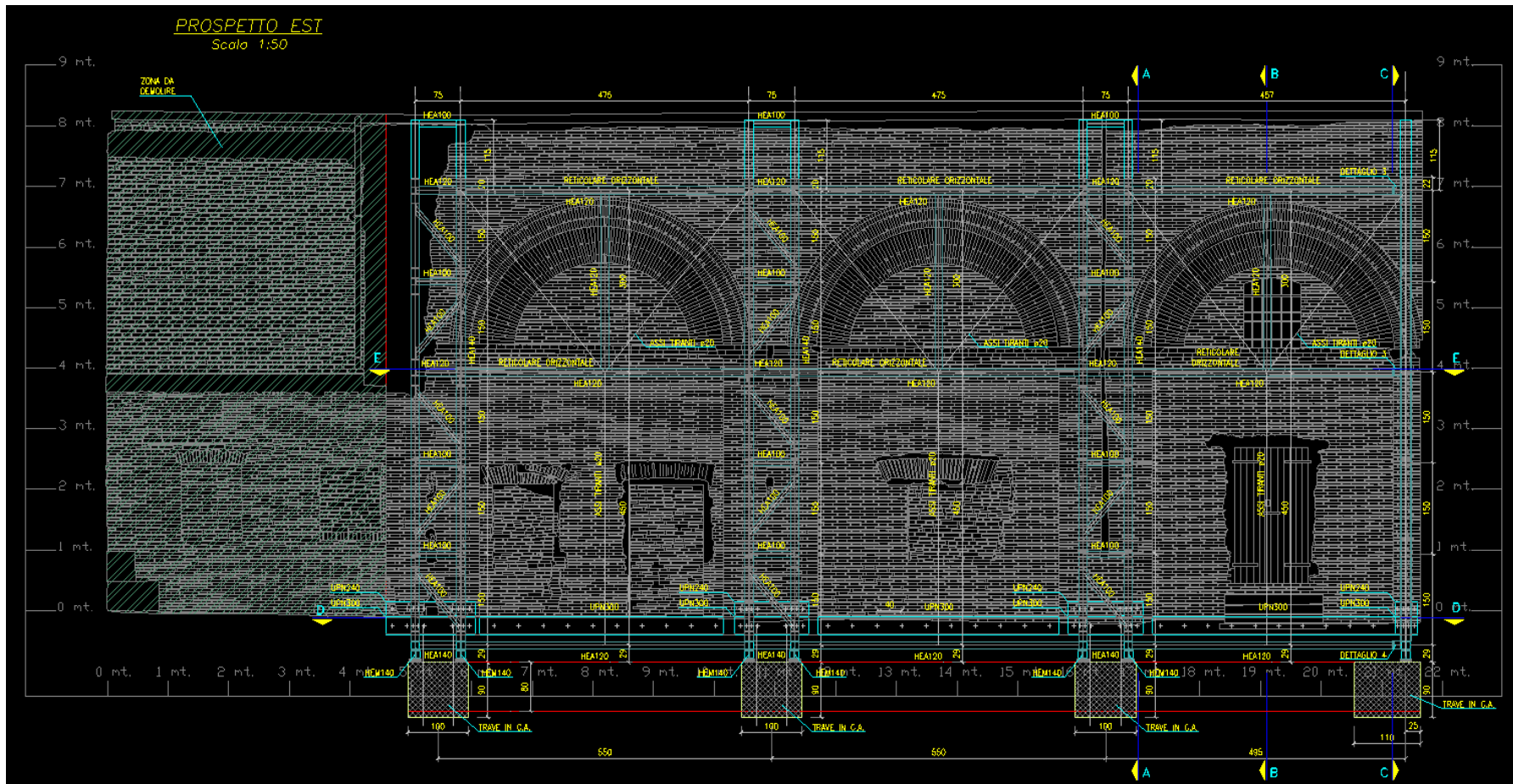


Traslating wall, via Poletti view

THE POLETTI'S WALLS

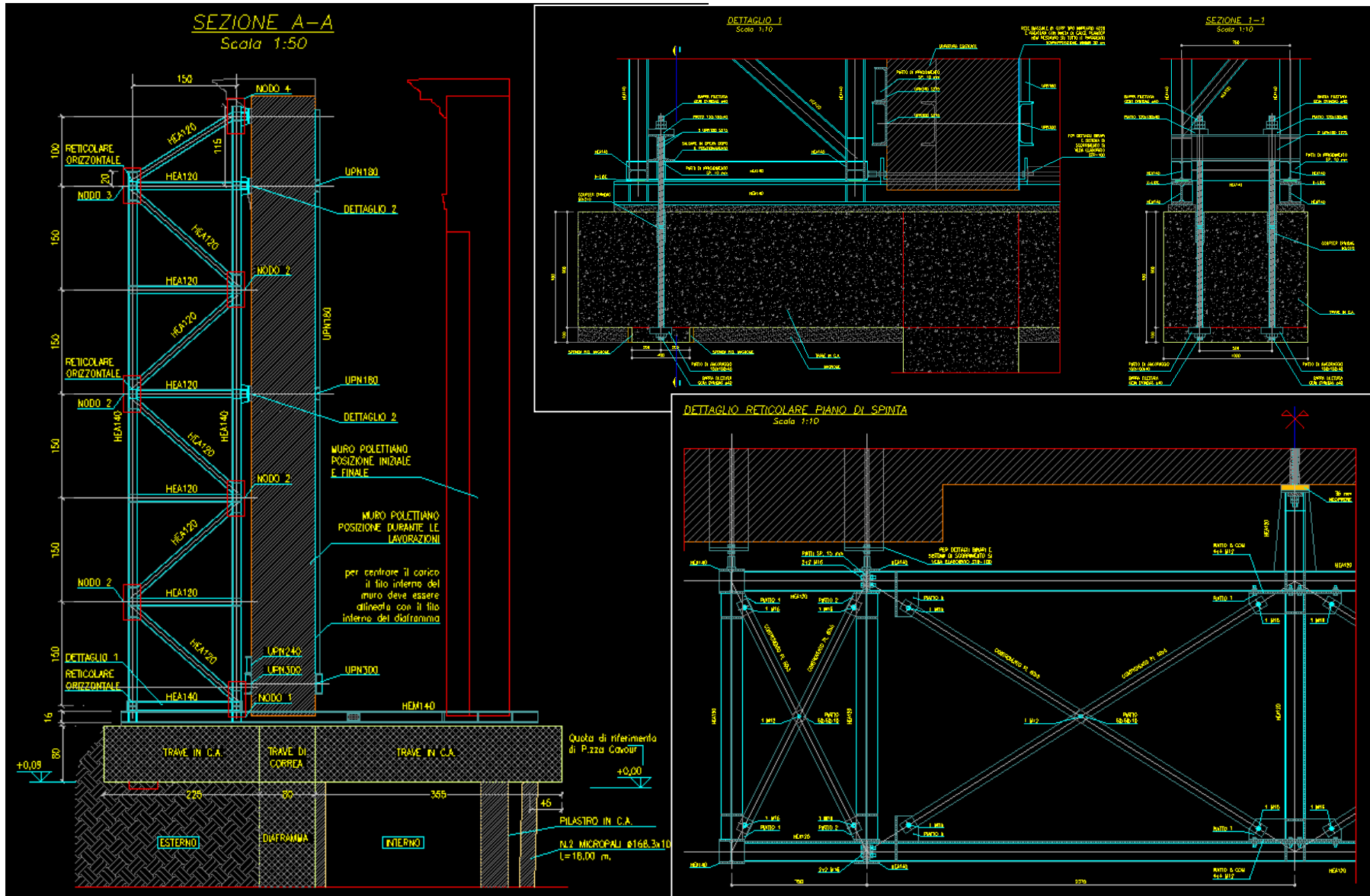


POLETTI'S WALLS TRASLATION



Wall dimensions 17.5 m x 8.5 m (height) x 1 m (thick)
Weight was about 19 tons per arch

POLETTI'S WALLS TRANSLATION



WALLS DURING TRANSLATION



Leonardo



TRANSLATION ADVICES



TRANSLATION

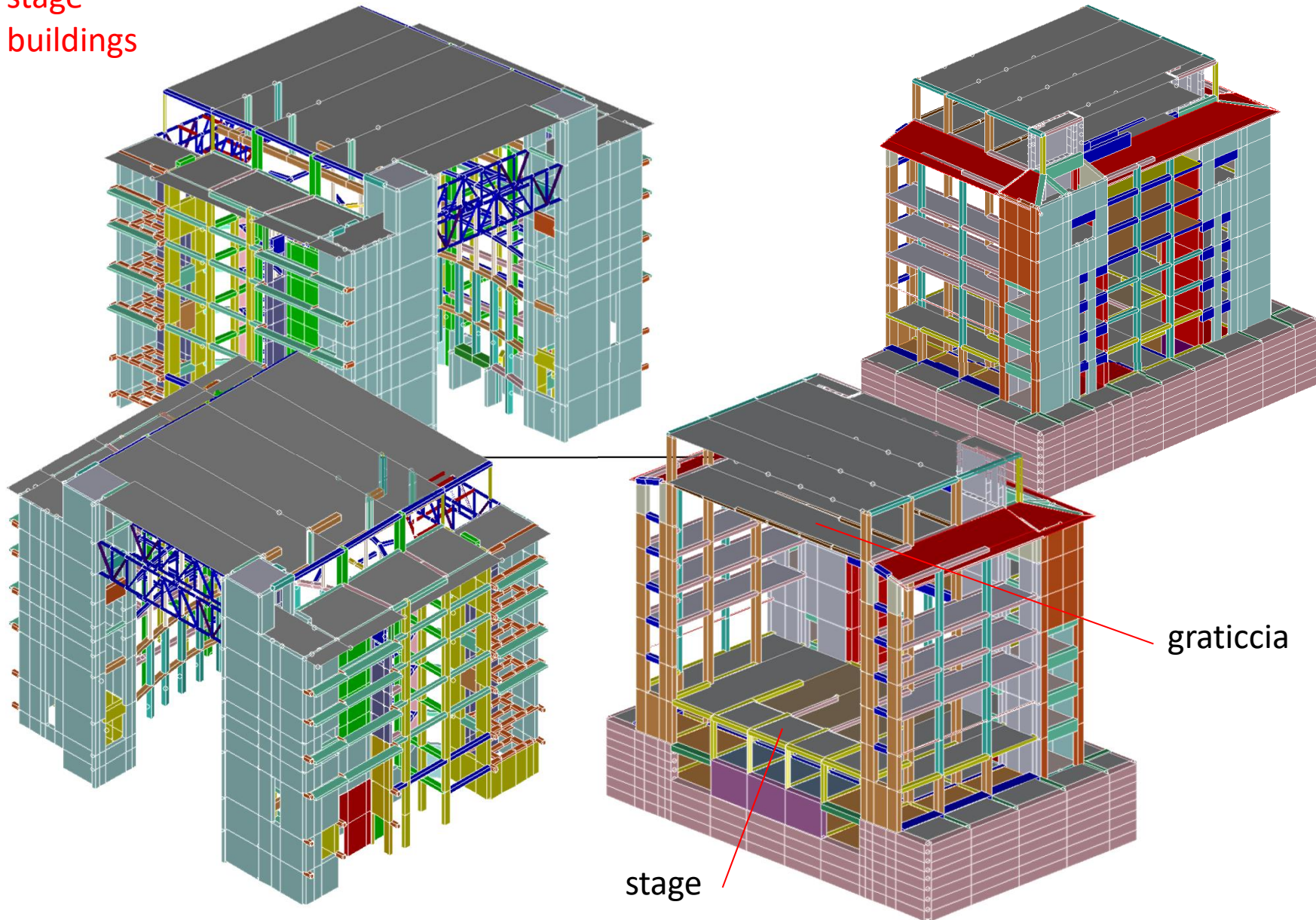


POLETTI'S WALLS TRANSLATED

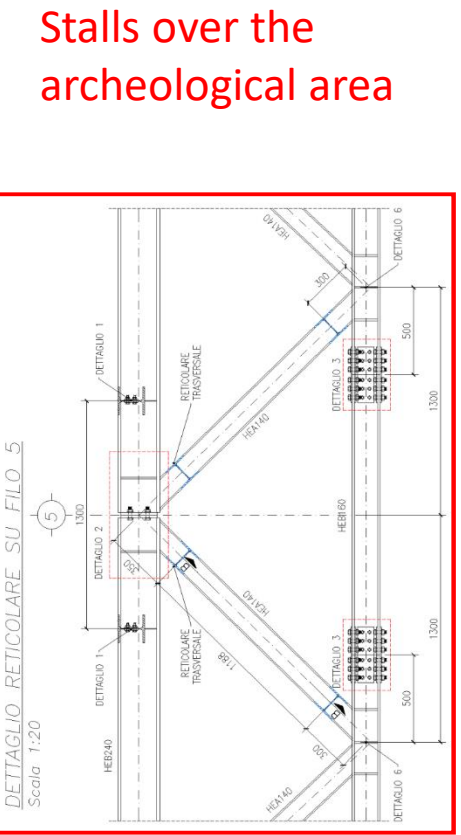
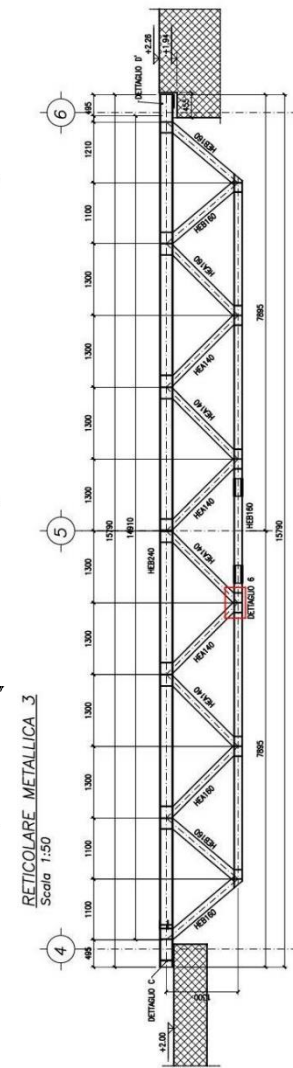
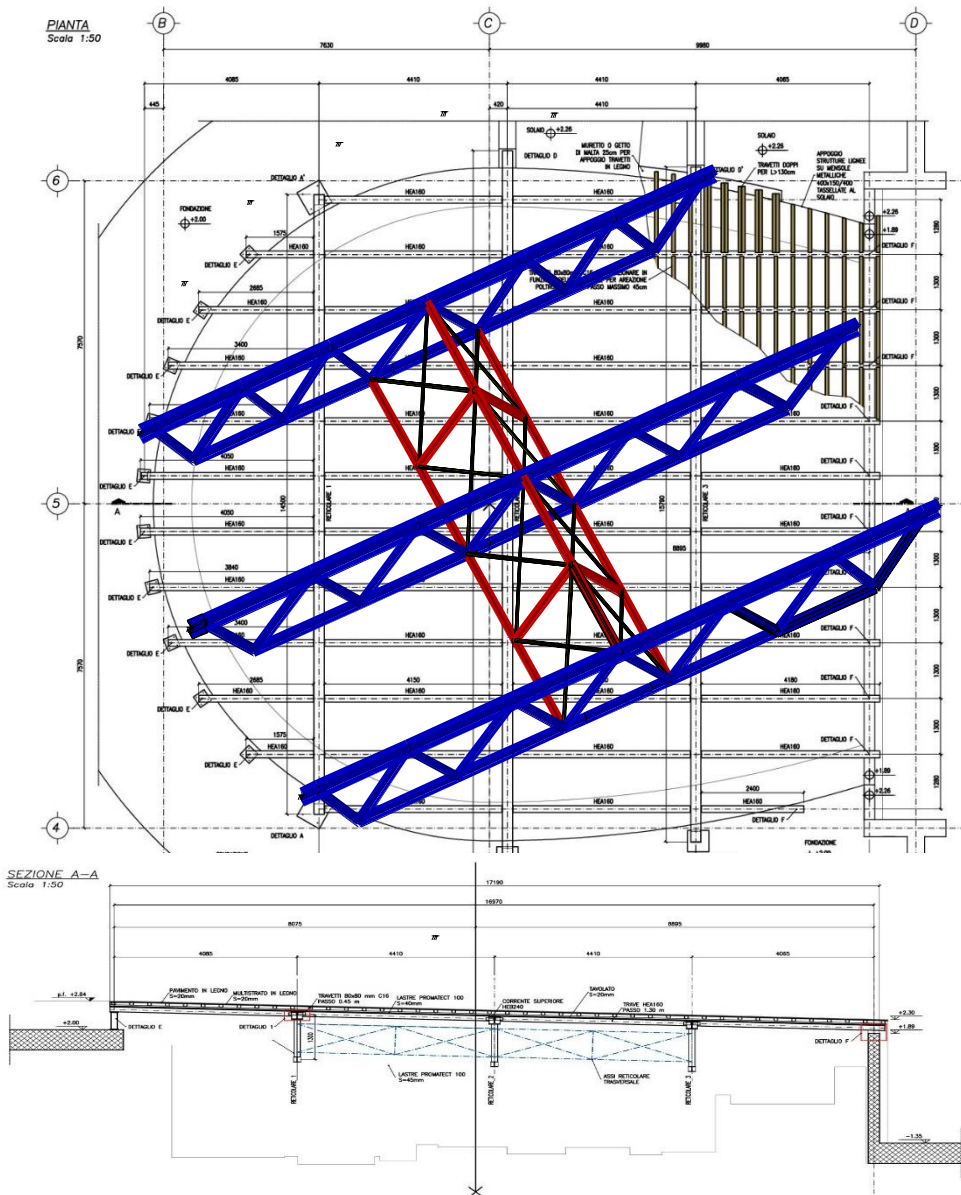


Stalls and
stage
buildings

WHOLE FINITE ELEMENT MODEL

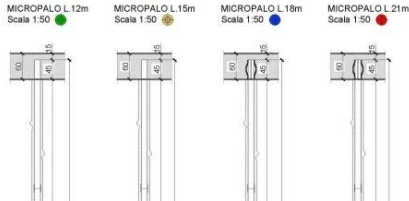


FEM MODEL OF LATTICE GIRDERS



Stalls over the archeological area

FOUNDATIONS



four types of micropiles

PARTICOLARE TESTA
MICROPALI L=18/21m
Scala 1:25



Esecuzione Micropali in ottemperanza alle disposizioni contenute nella Norma UNI EN 14199. Molla centralina conforme ai requisiti di cui alle Norme IEN 445, UNI EN 446, UNI EN 447.

- Micropali Ø139.710 L=12m
Q_{max} = 250mm
- Micropali Ø139.710 L=15m
Q_{max} = 250mm
- Micropali Ø139.710 L=18m
Q_{max} = 250mm
- Micropali Ø139.710 L=21m
Q_{max} = 250mm
- Micropali inclinati di 10°

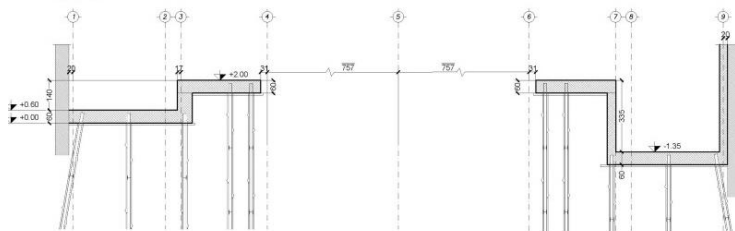
Tabella attacchi in fondazione

Tipi	X	Y	angolo
PA	4.100	7.100	29.5°
PA	3.511	8.900	43.51°
PA	6.720	4.300	35.82°
PA	7.441	2.200	86.41°
PA	7.883	1.845	75.52°
PA	8.290	3.800	85.41°
PA	8.290	0.850	84.52°
PA	7.842	1.800	33.46°
PA	7.441	1.250	113.52°
PA	6.720	4.300	34.46°
PA	3.431	8.800	138.52°
PA	4.100	7.100	150.52°
PA	8.430	0.250	80°
PA	4.681	7.470	59.52°

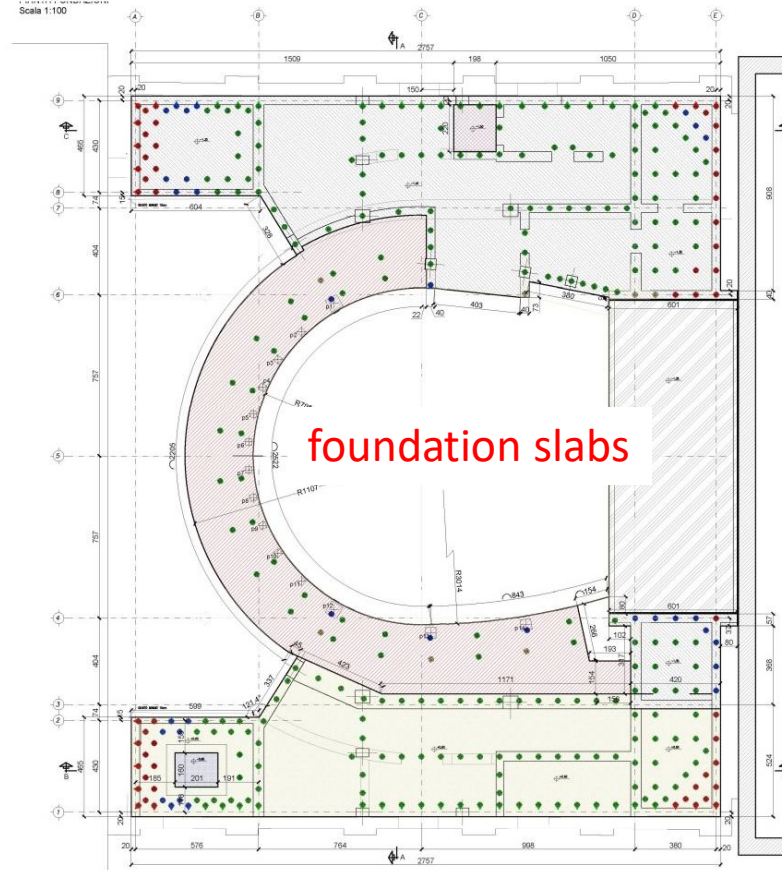
NOTA BENE:
Per i dettagli attacchi in fondazione vedi elaborato "C-S 19A" e "C-S 19B".

- ▨ Platea sp. 60cm
q ta estradossato -1.35
- ▨ Platea sp. 60cm
q ta estradossato +2.00
- ▨ Platea sp. 40cm
q ta estradossato -1.50
- ▨ Platea sp. 60cm
q ta estradossato +0.60
- ▨ Platea sp. 60cm
q ta estradossato -1.35
- ▨ Platea sp. 40cm
q ta estradossato 0.60

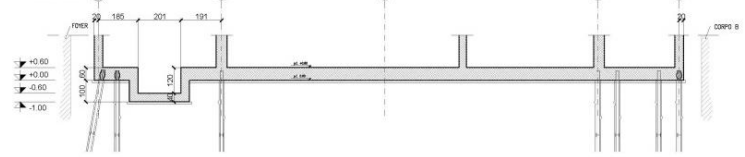
SEZIONE A-A
Scala 1:100



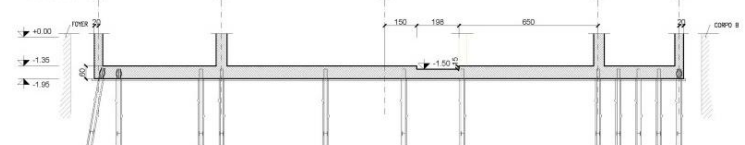
Scala 1:100



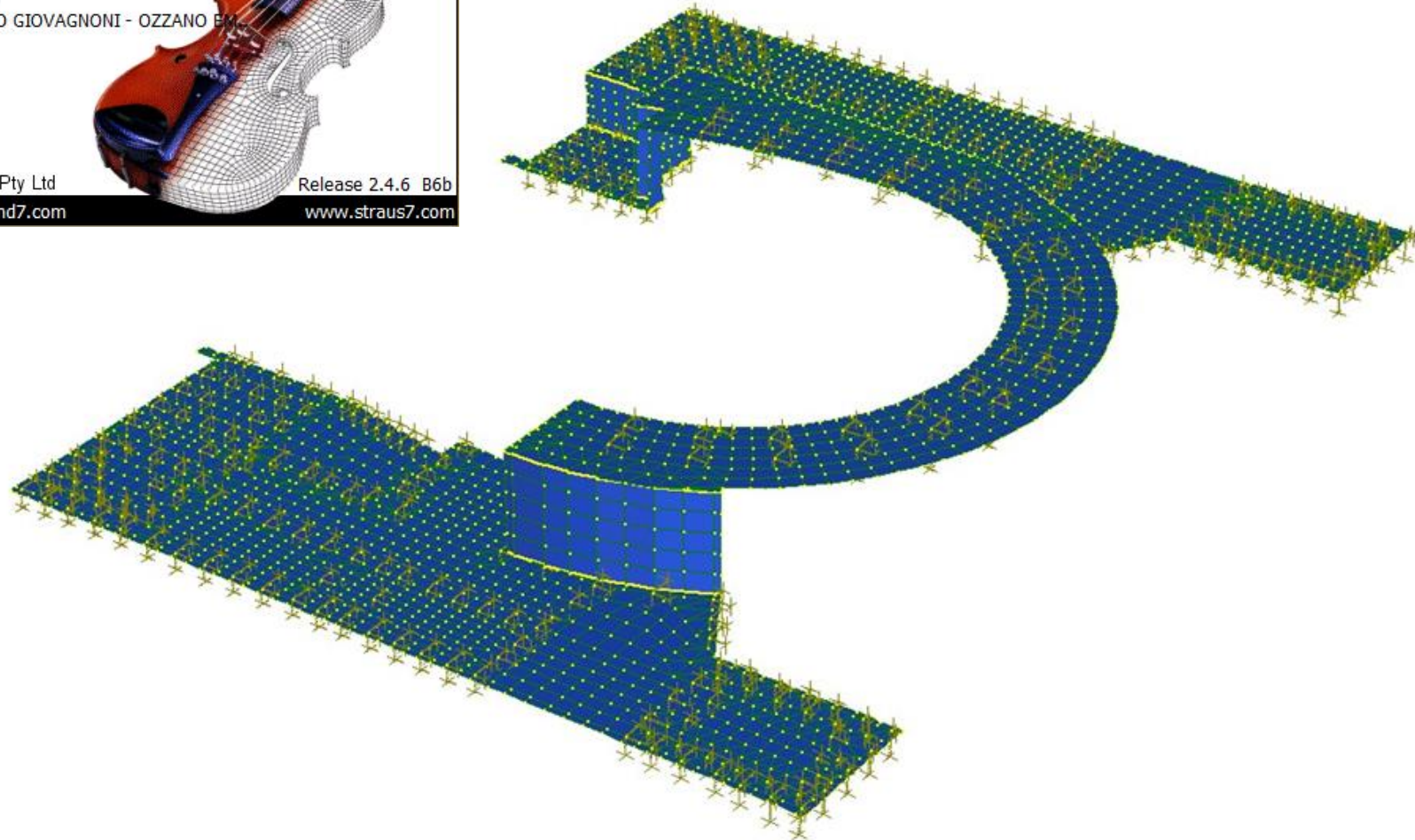
SEZIONE B-B
Scala 1:100



SEZIONE C-C
Scala 1:100

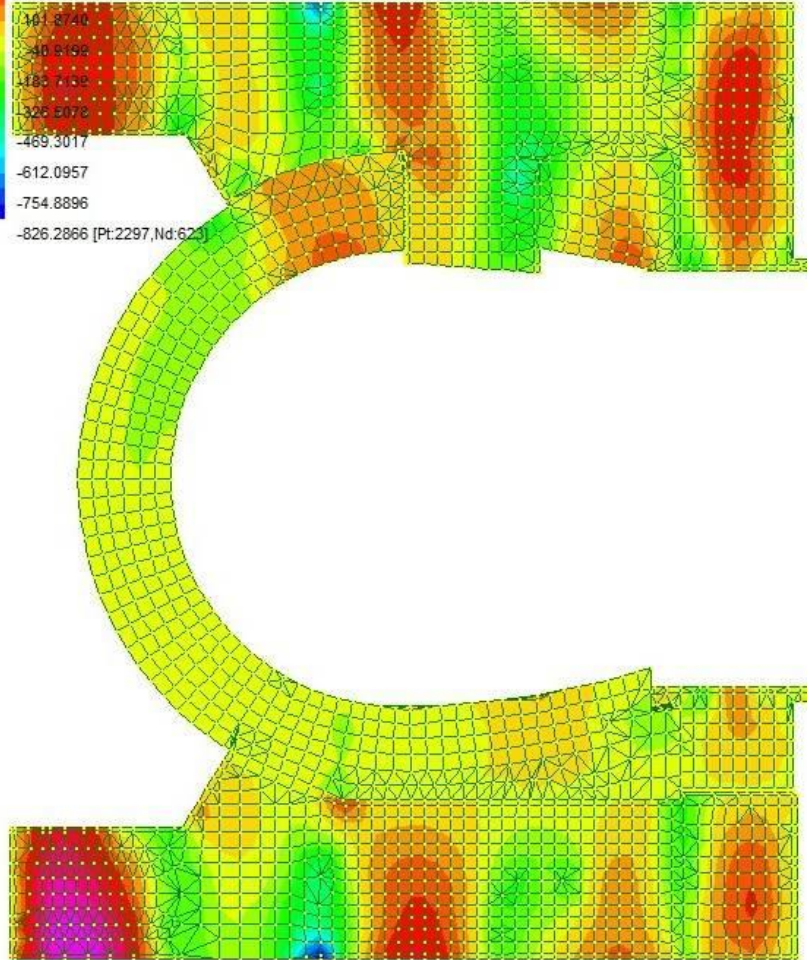
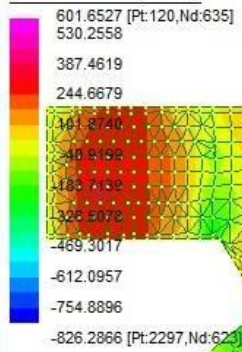


FOUNDATIONS



FOUNDATIONS

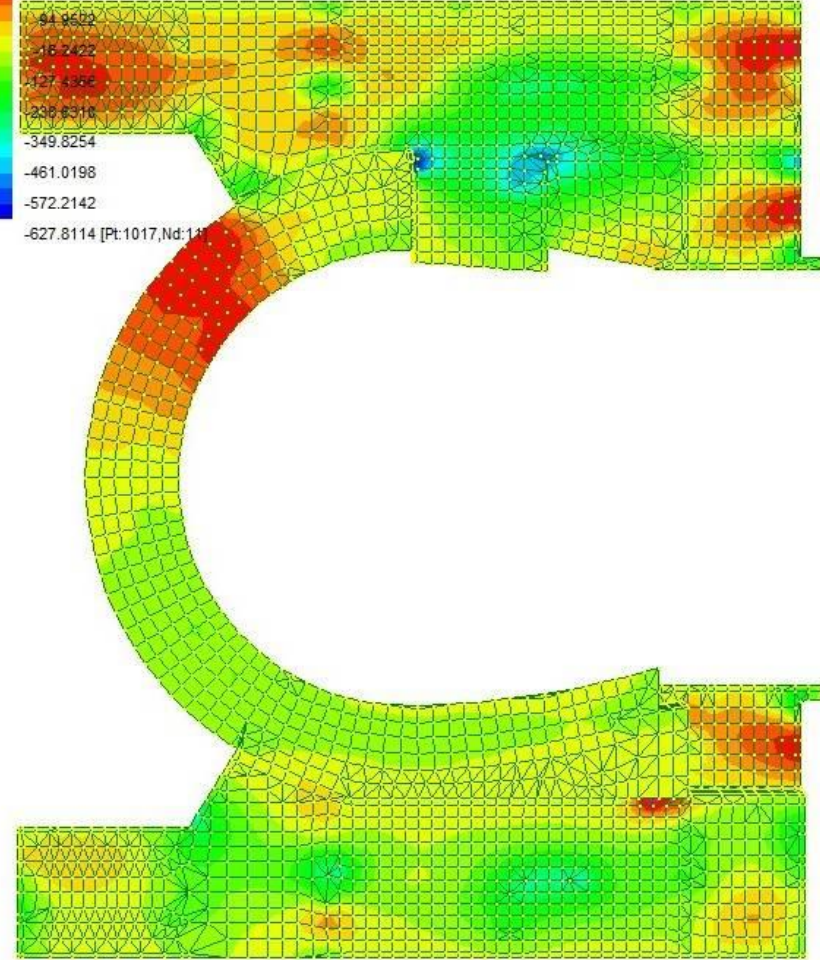
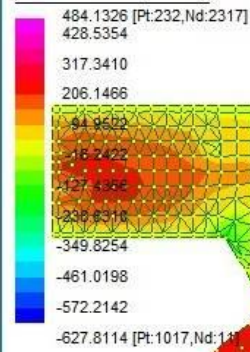
Plate Moment:XX (kN.m/m)



1: SLU (0,0,0) DS:0%



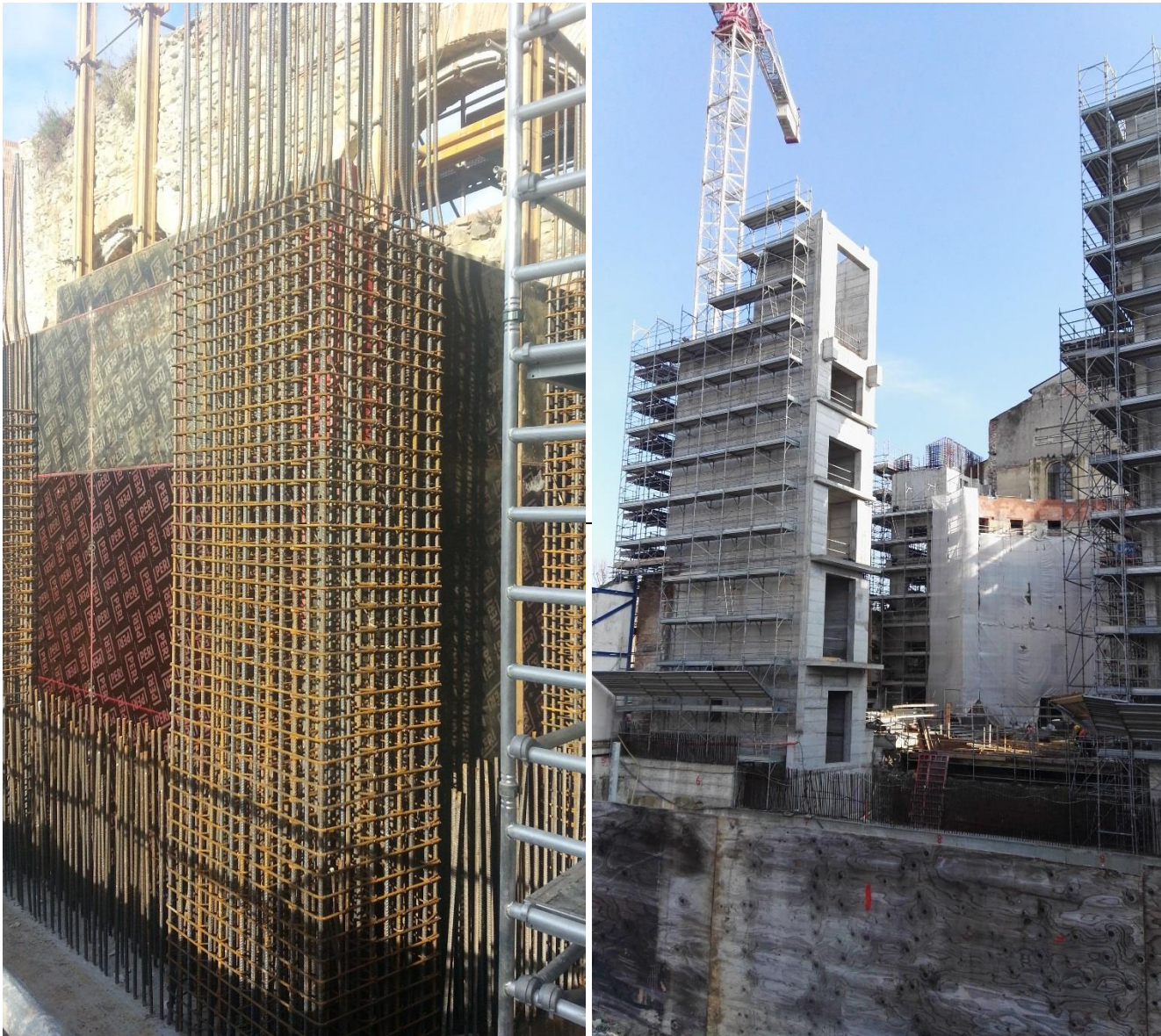
Plate Moment:YY (kN.m/m)



1: SLU (0,0,0) DS:0%



REINFORCED CONCRETE CORES

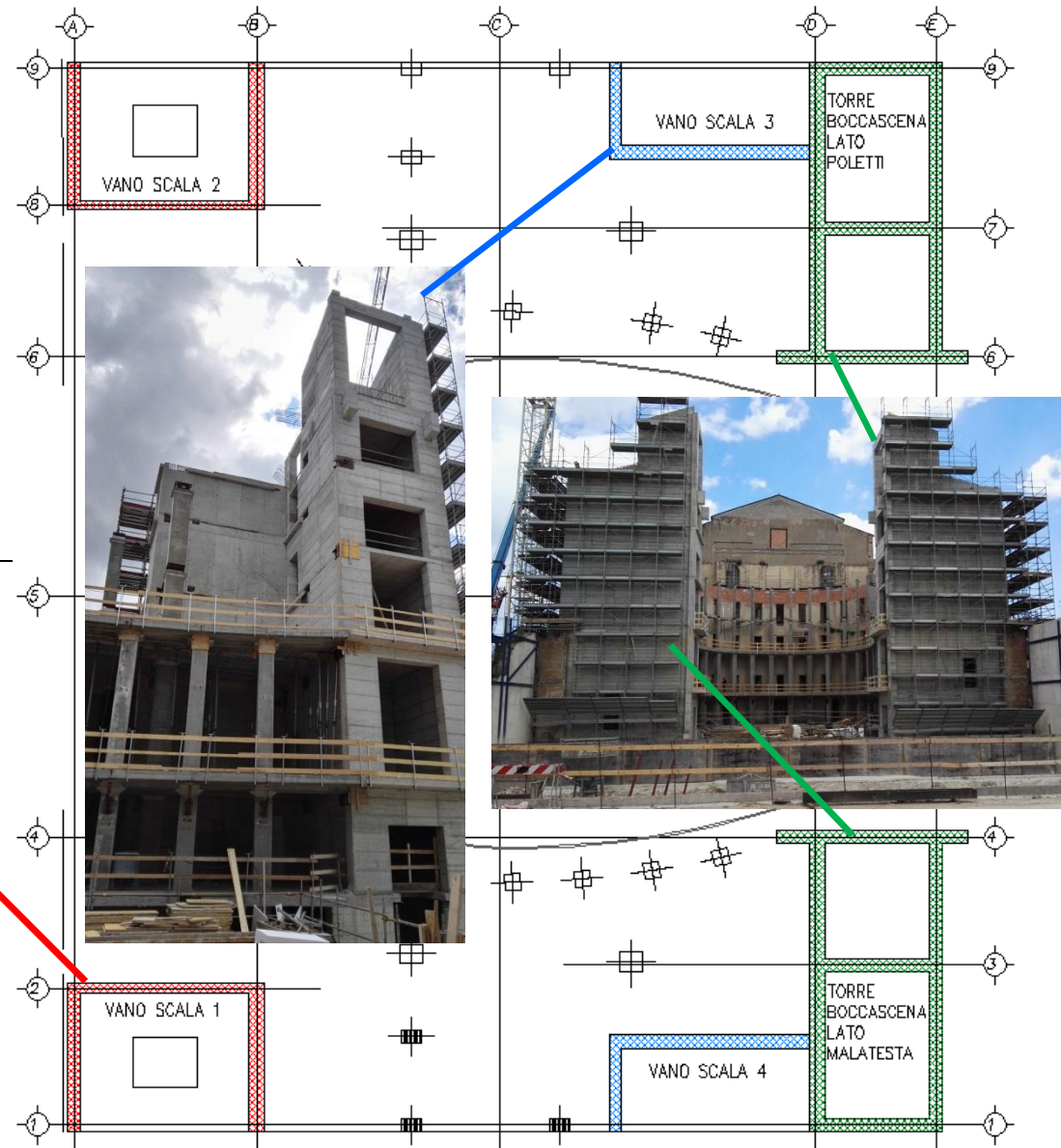


The bracing system of the two buildings is made by:

- Precast reinforced concrete frames with cast in place nodes (APE system);
- Cast in place reinforced concrete cores.

REINFORCED CONCRETE CORES

Reinforced concrete cores of the stalls building.



ANTISEISMIC HYPERSTATIC PREFABRICATION SYSTEMS



CERCA NEL SITO: CERCA

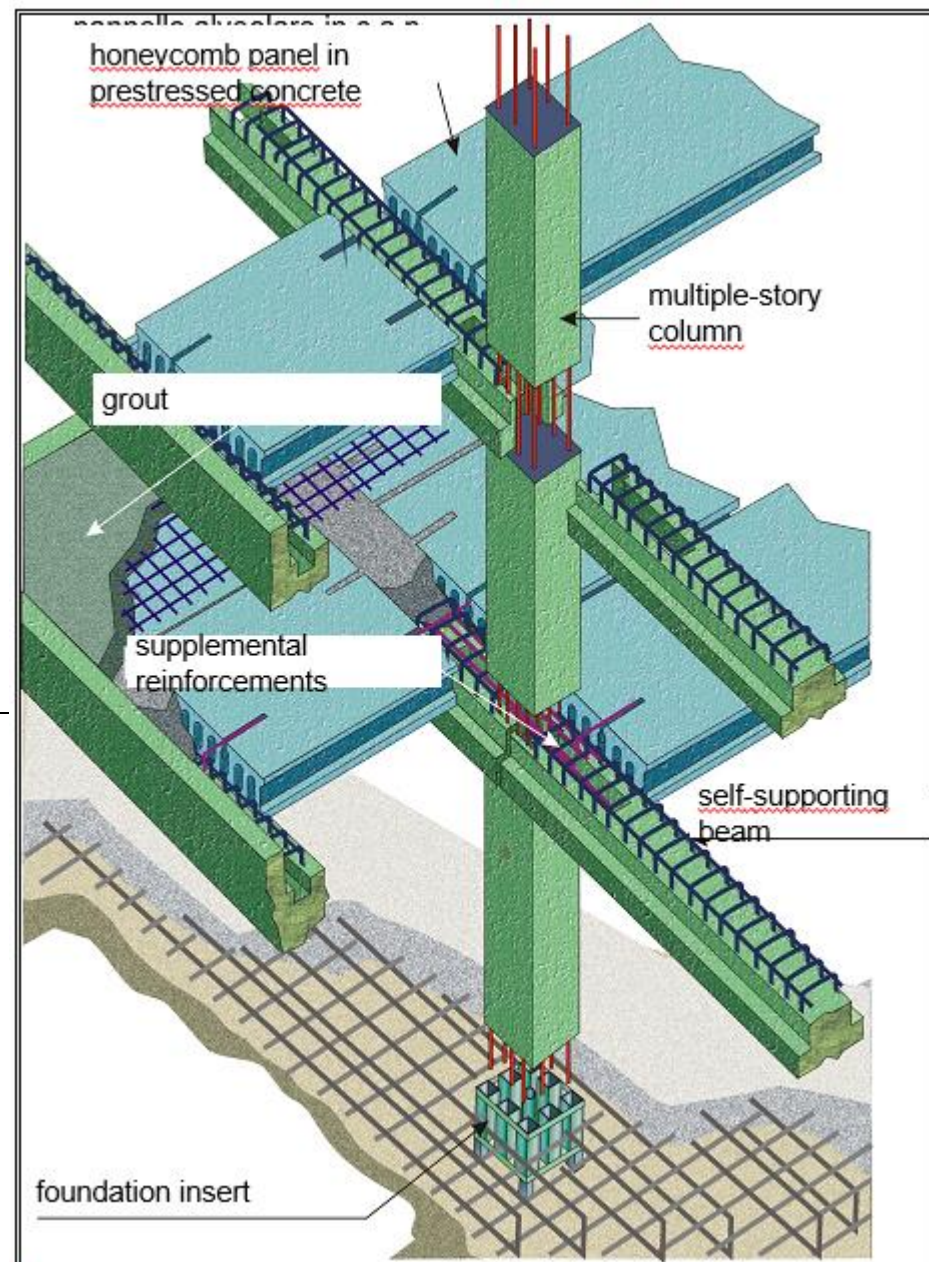
STORIA QUALITÀ e COMPONENTI MONTAGGIO SERVIZI DOVE SIAMO CONTATTI
SPERIMENTAZIONE DEL SISTEMA NEWS/AREA STAMPA



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www.ape.it

COMPONENTS AND DETAILS OF THE SYSTEM



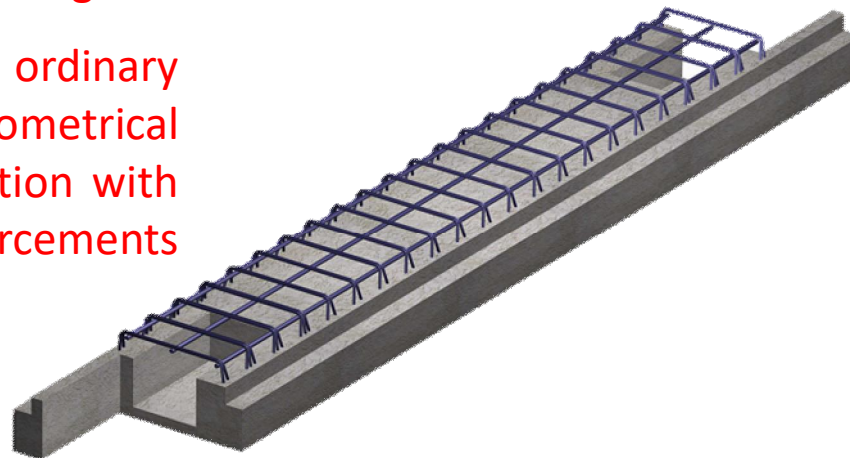
APE – FOUNDATION, COLUMN, BEAM DETAILS



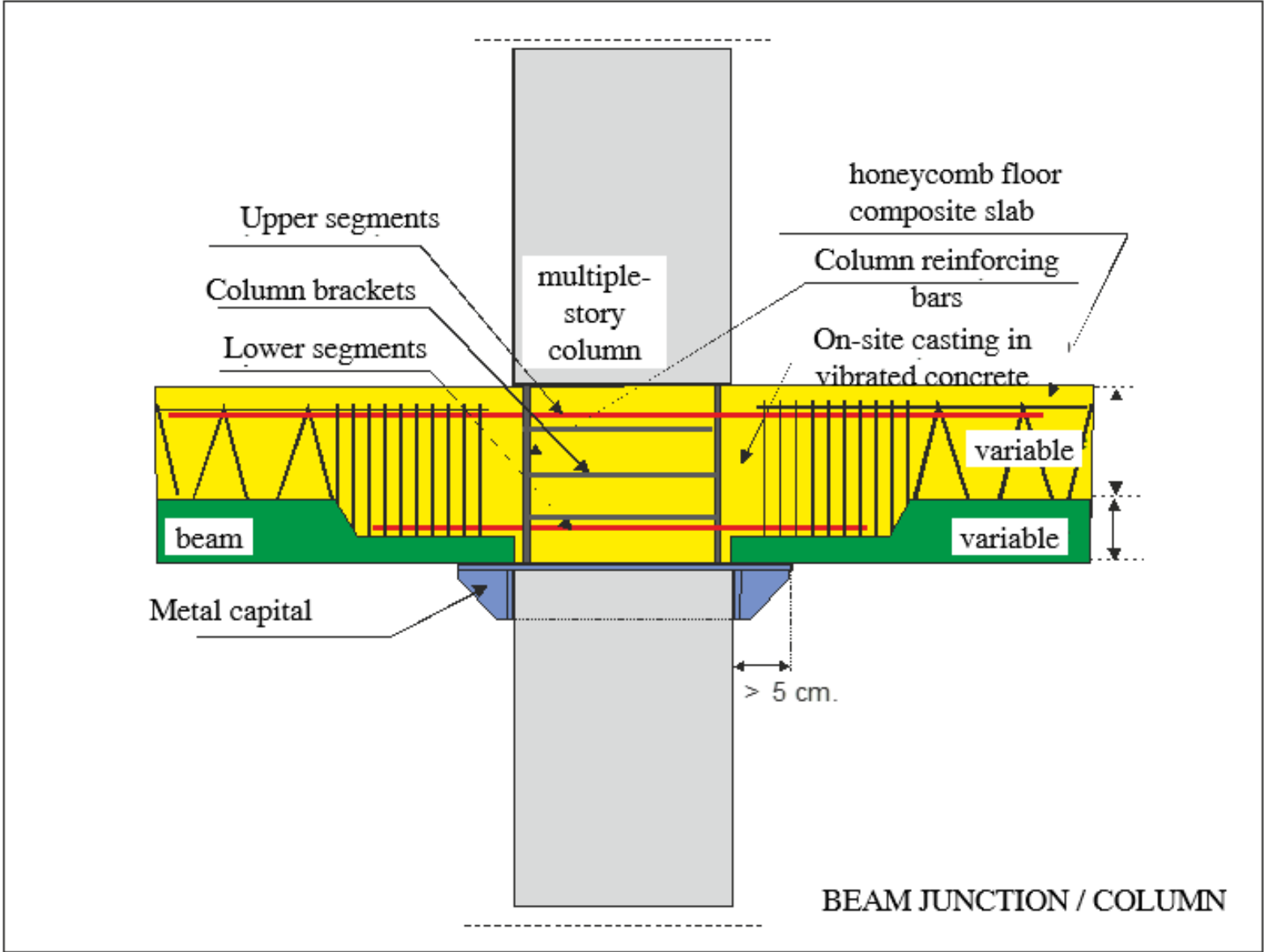
The multiple-story column must have a break in the casting at the connection to the support for the floor beam, in order to create - with the aid of reinforcements and supplemental castings – effective structural continuity.

The foundation connection is a metal device that is embedded in the foundation casting

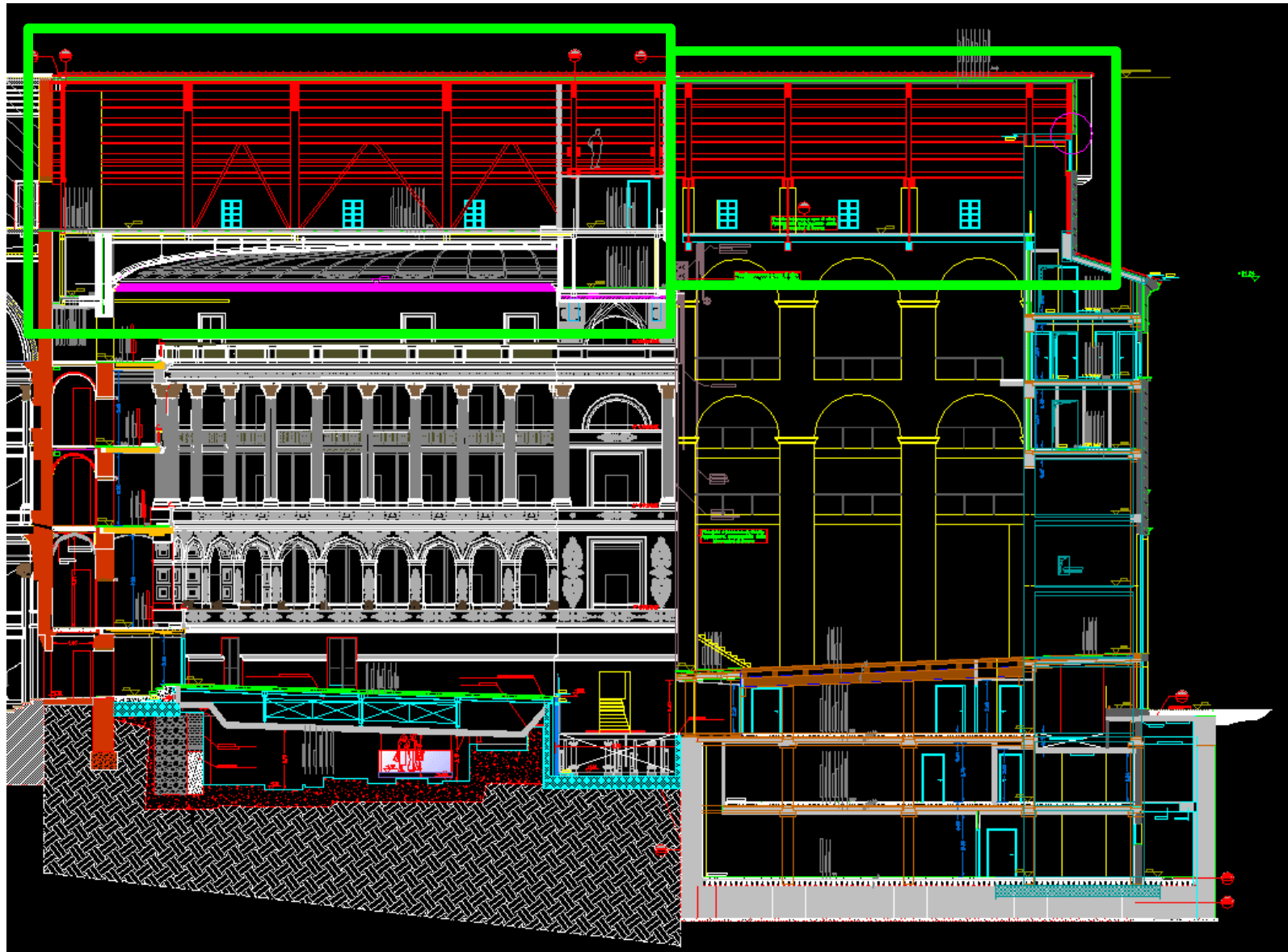
A precast beam with ordinary reinforcement, whose geometrical design allows effective connection with columns and floors using reinforcements and supplemental castings.



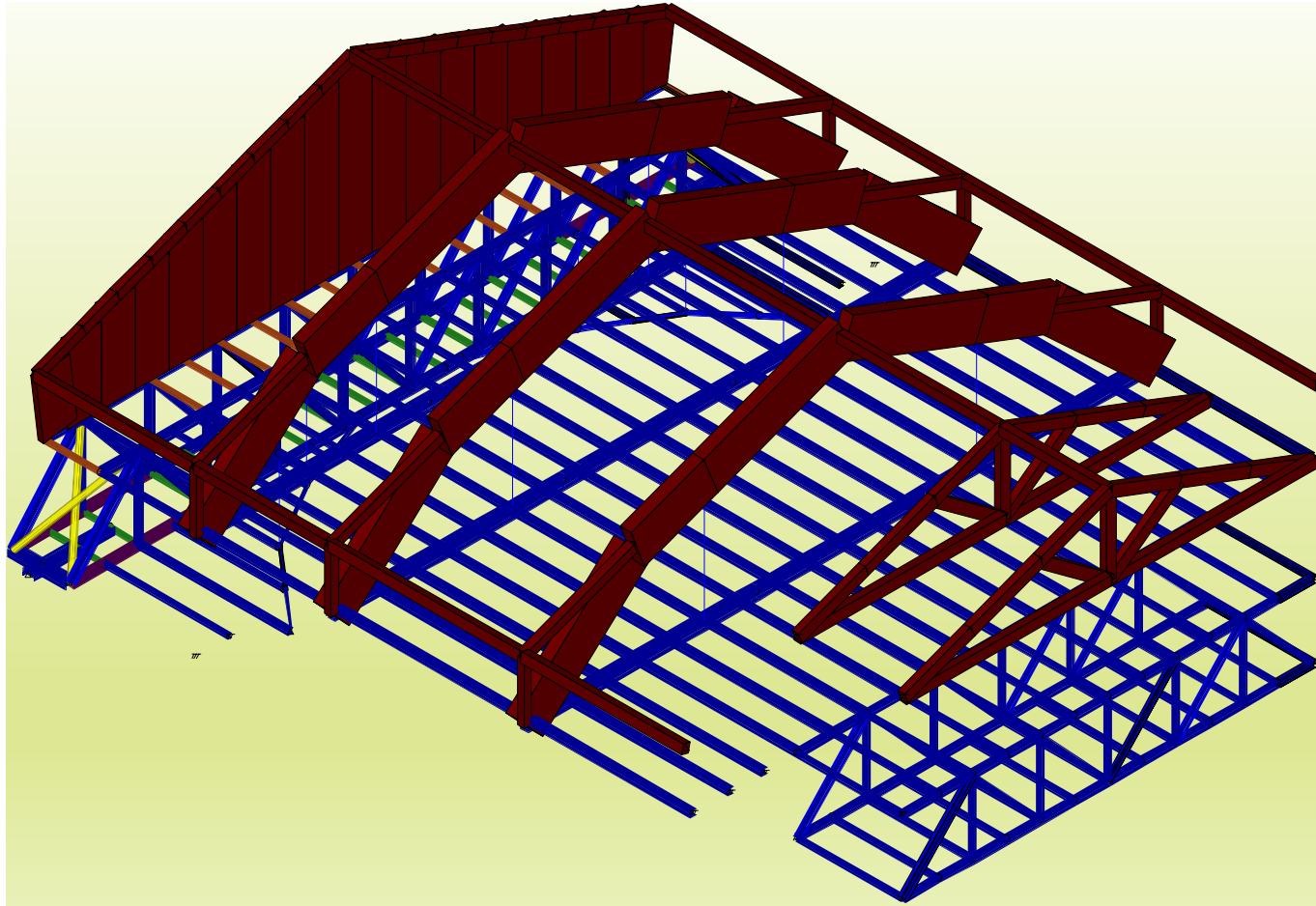
APE - DETAILS OF BEAM TO COLUMN JOINTS



STEEL AND TIMBER STRUCTURES



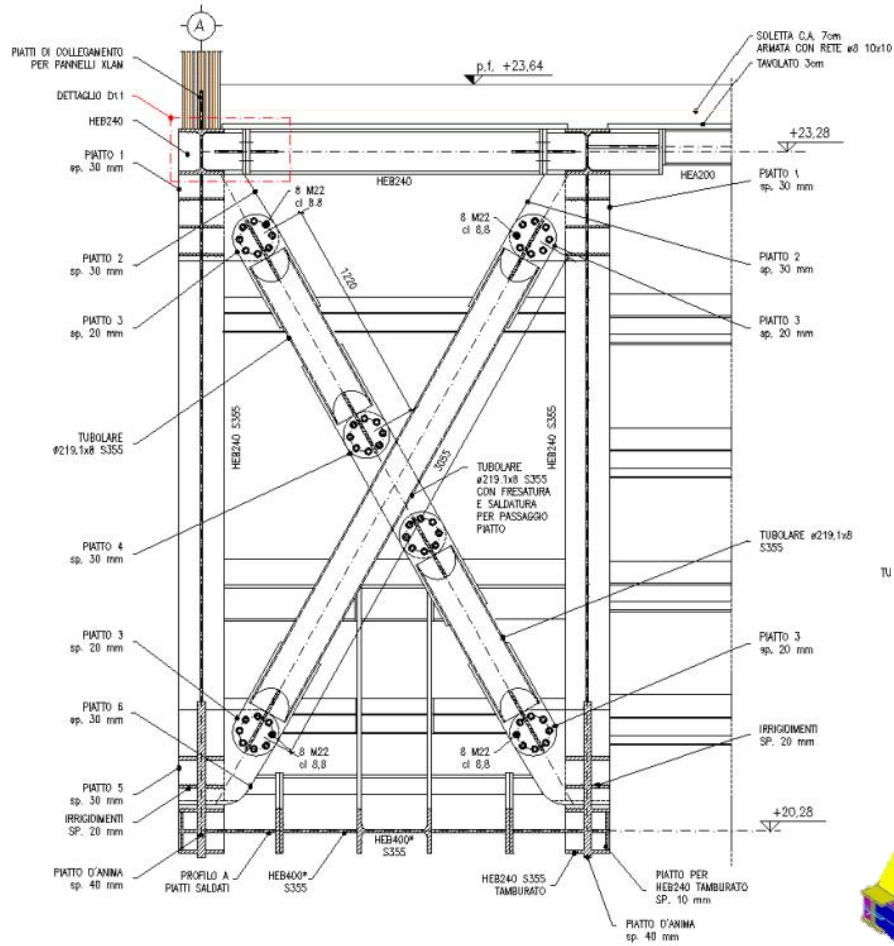
STEEL AND TIMBER STRUCTURES



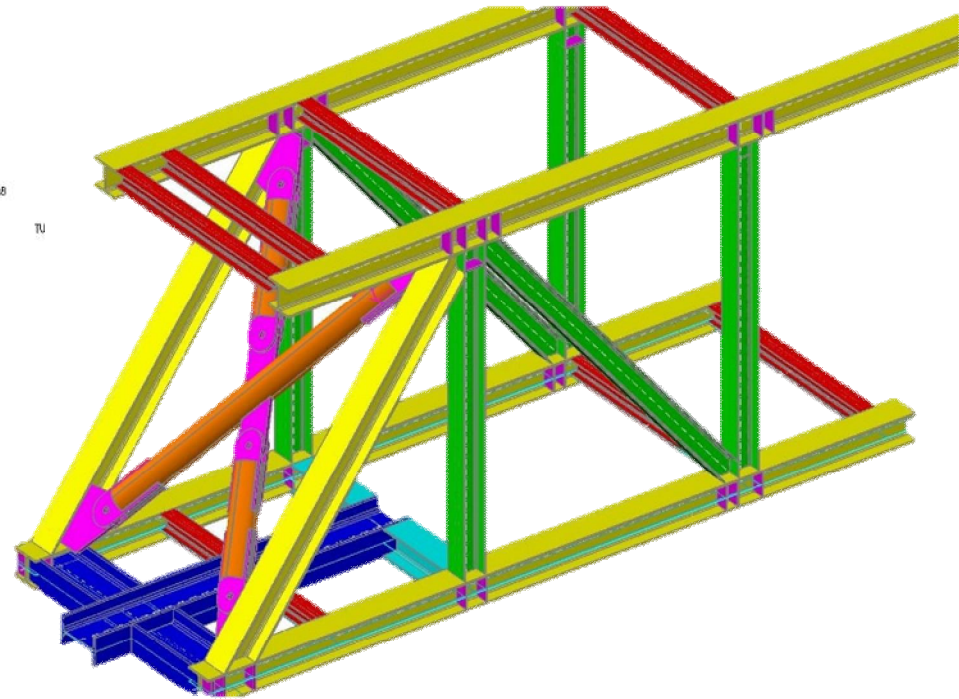
PARTIAL MODEL OF THE MUSIC ROOM AND ROOF TIMBER STRUCTURES

STEEL AND TIMBER STRUCTURES

RETICOLARE METALLICA FOYER
 SEZIONE 7-7
 Scala 1:20



Bracing system of
 music room



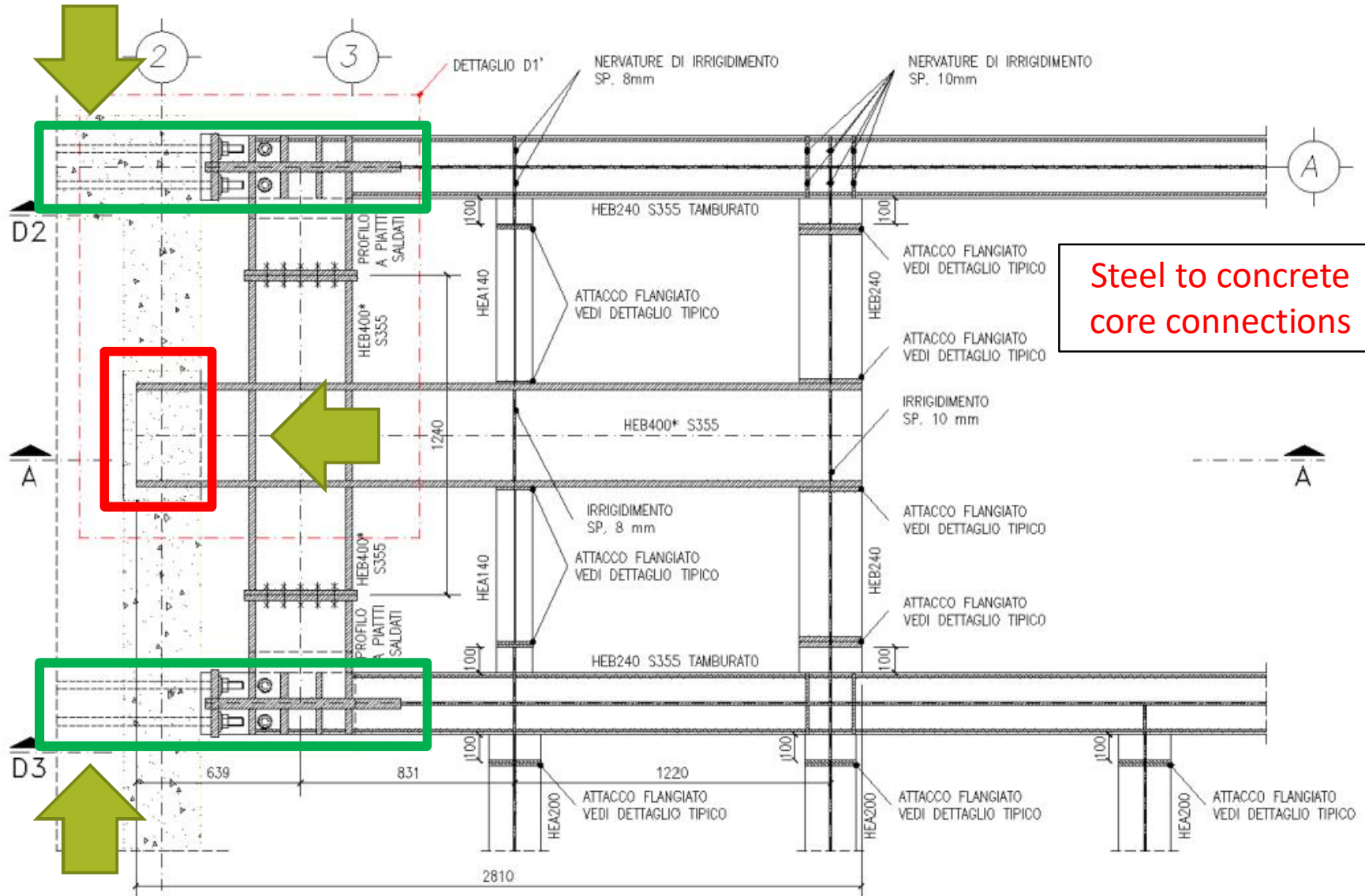
STEEL AND TIMBER STRUCTURES



STEEL AND TIMBER STRUCTURES

DETTAGLIO D1

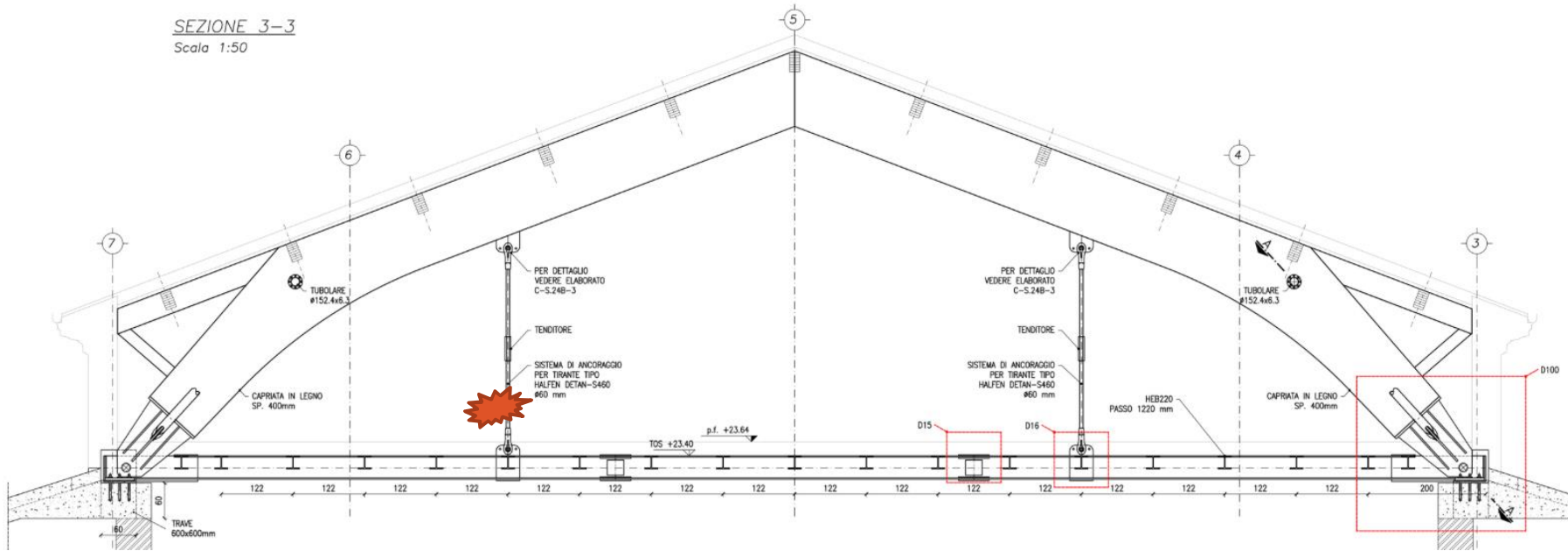
Scala 1:20



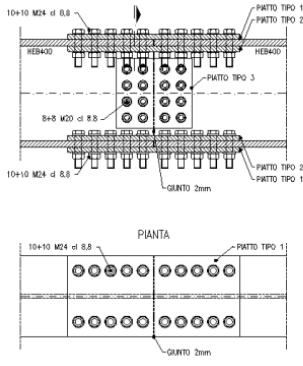
Steel to concrete core connections

STEEL AND TIMBER STRUCTURES

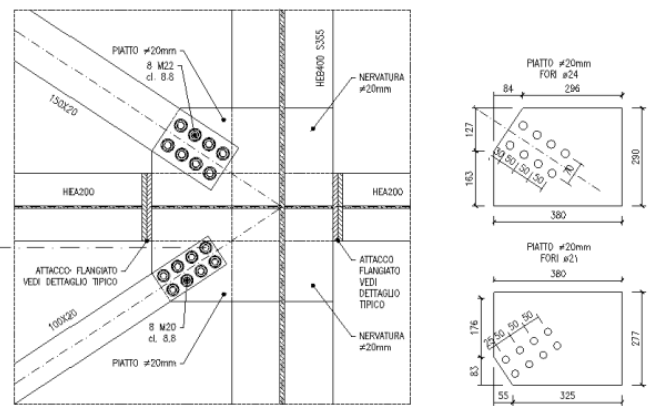
SEZIONE 3-3
Scala 1:50



DETTAGLIO D15
GIUNTO TRAVI SOLAIO HEB400
Scala 1:10

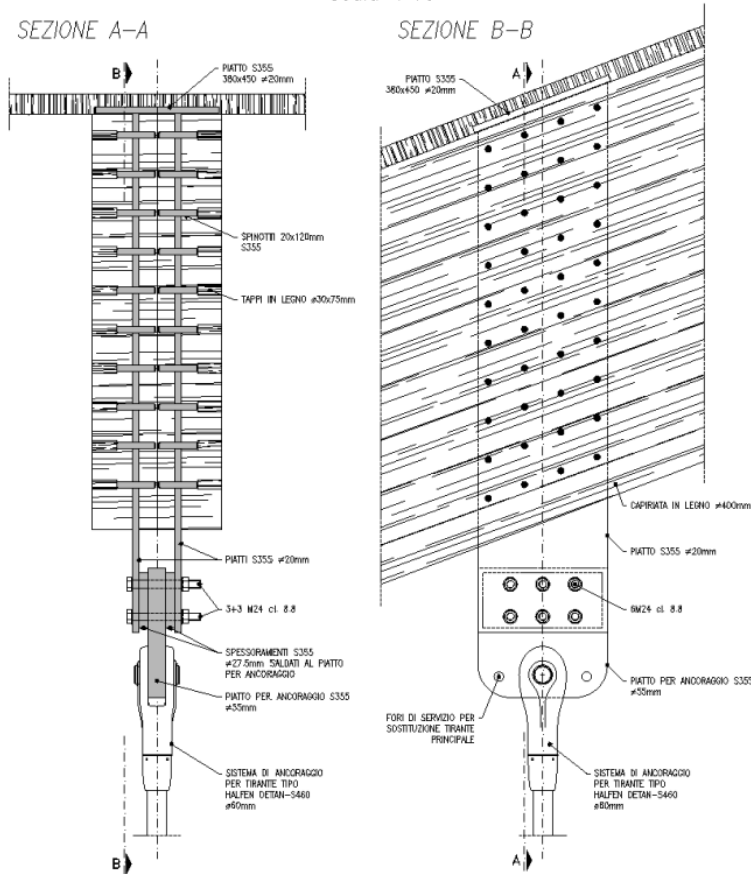


DETTAGLIO D18

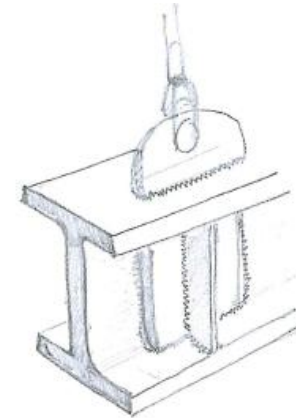


STEEL AND TIMBER STRUCTURES

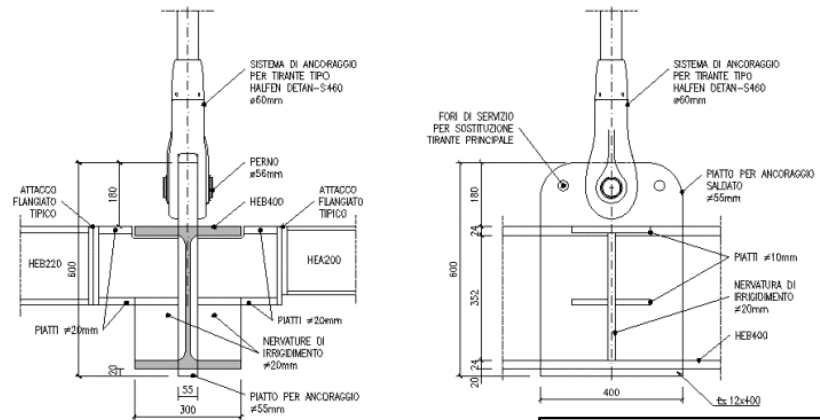
DETTAGLIO D105
ATTACCO IN COPERTURA DEL TIRANTE Ø60 HALFEN DETAN S460
scala 1:10



Roof timber arch



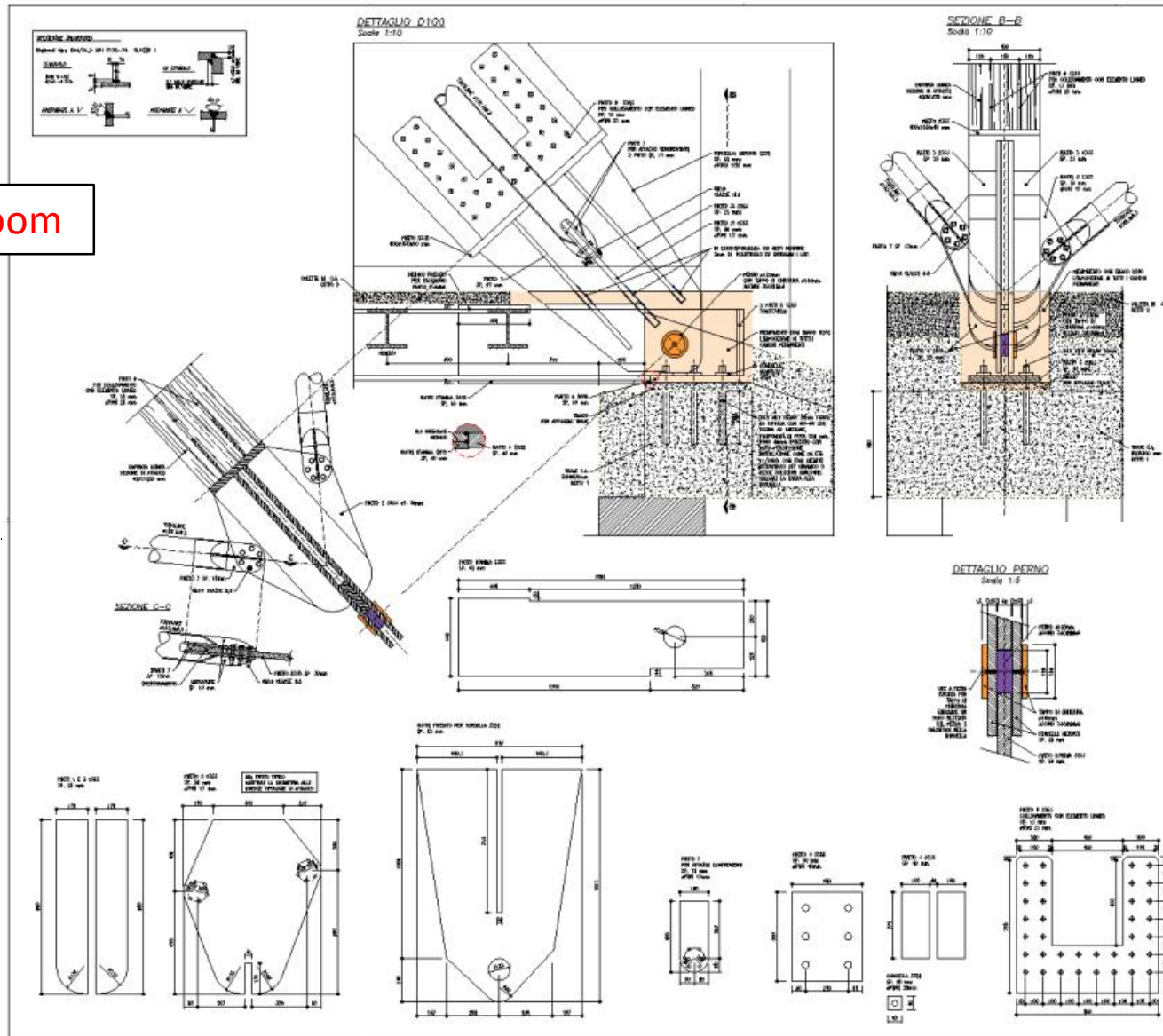
DETTAGLIO D16
APPENSIONE CON TIRANTE Ø60 HALFEN DETAN S460
scala 1:10



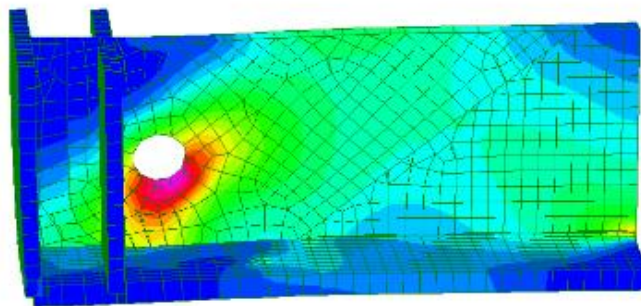
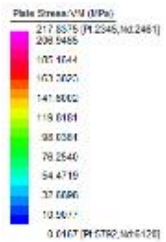
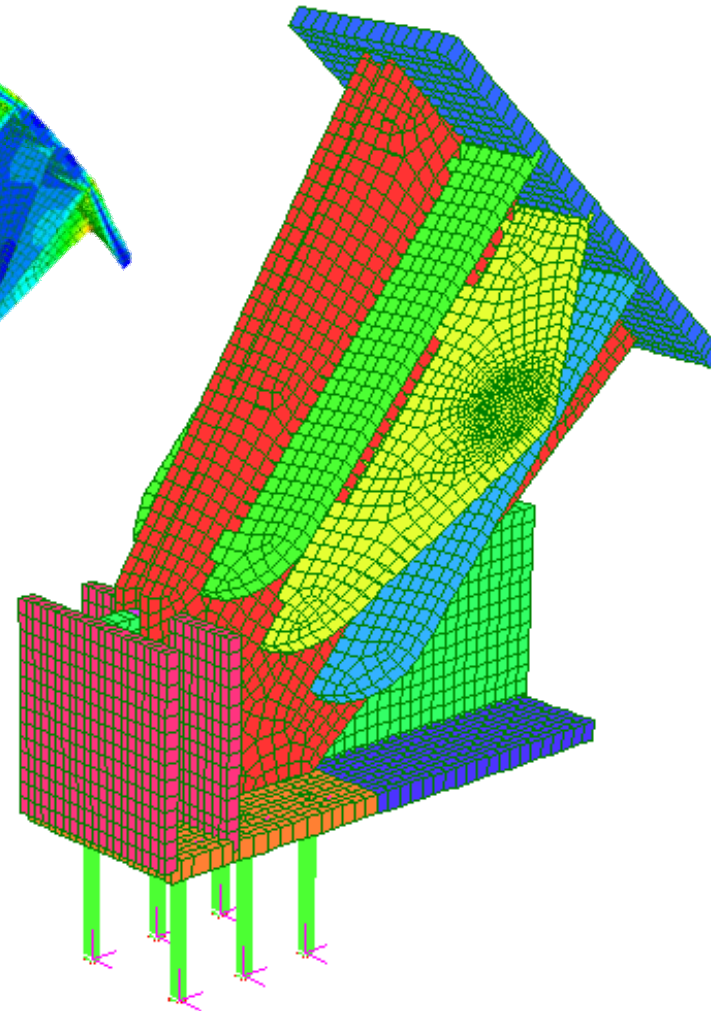
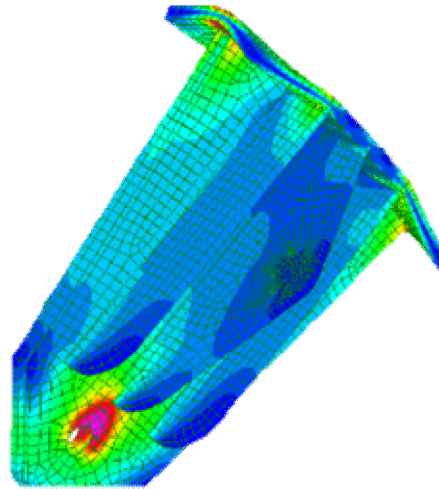
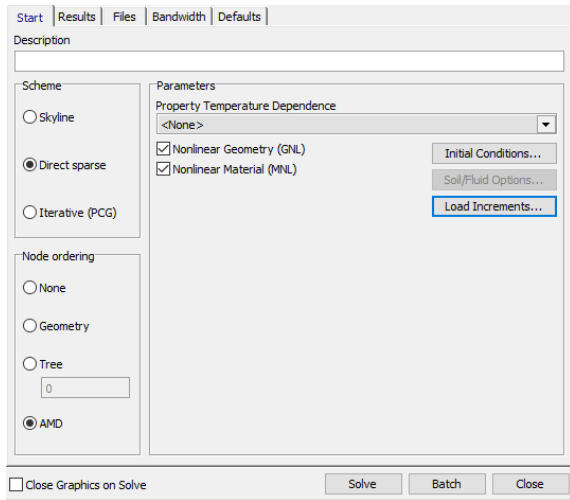
Steel primary beam of the music room

STEEL AND TIMBER STRUCTURES

Music room



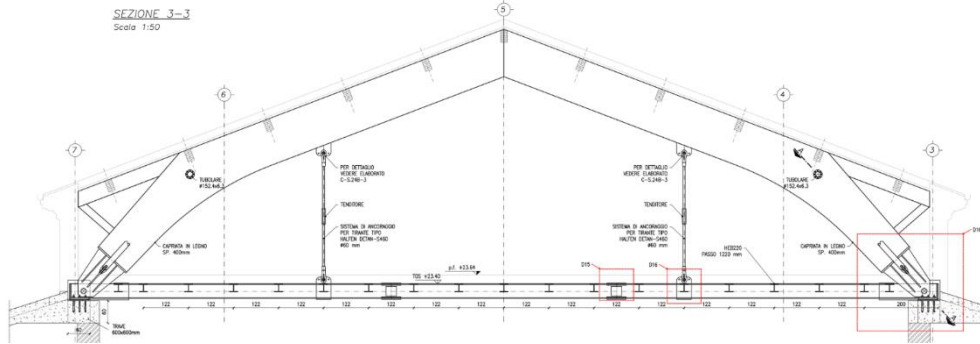
STEEL AND TIMBER STRUCTURES



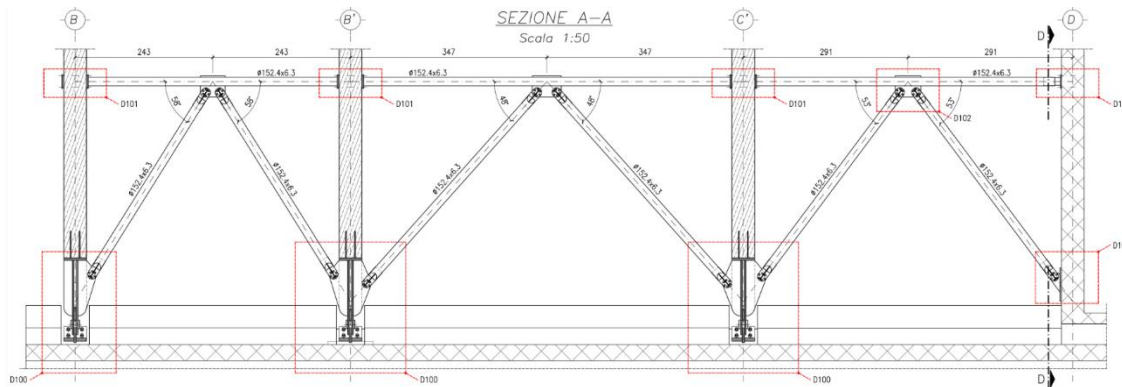
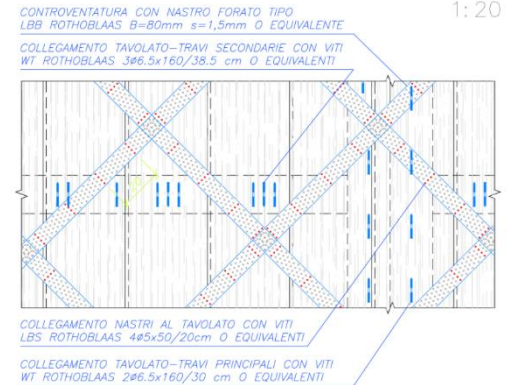
STEEL AND TIMBER STRUCTURES



STEEL AND TIMBER STRUCTURES

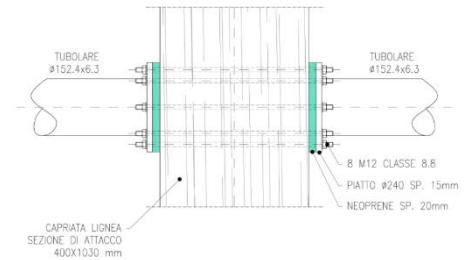


NASTRO FORATO E COLLEGAMENTI TRA GLI ELEMENTI



DETTAGLIO D101

Scala 1:10



Roof seismic bracing

STEEL AND TIMBER STRUCTURES



STEEL AND TIMBER STRUCTURES

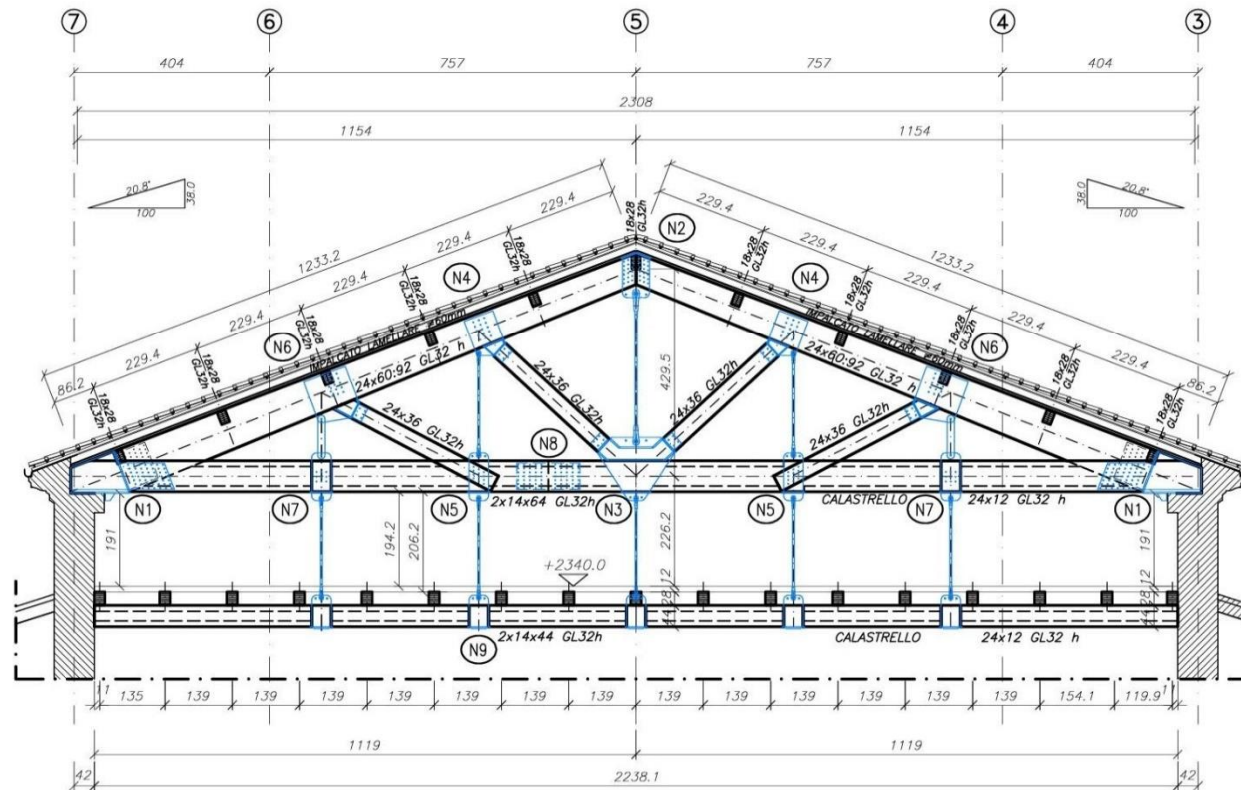


STEEL AND TIMBER STRUCTURES



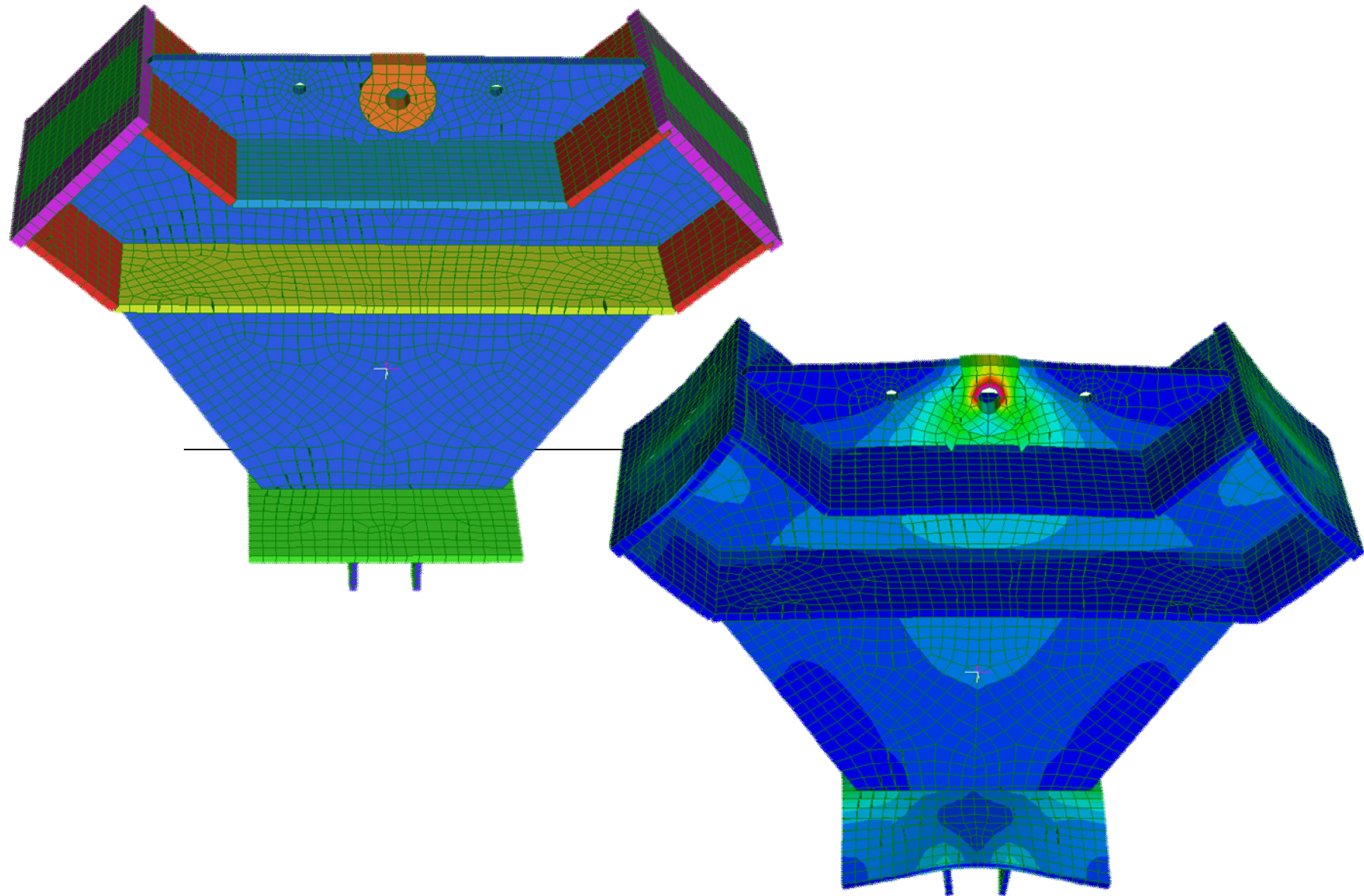
STEEL AND TIMBER STRUCTURES

SEZIONE D-D
1:100

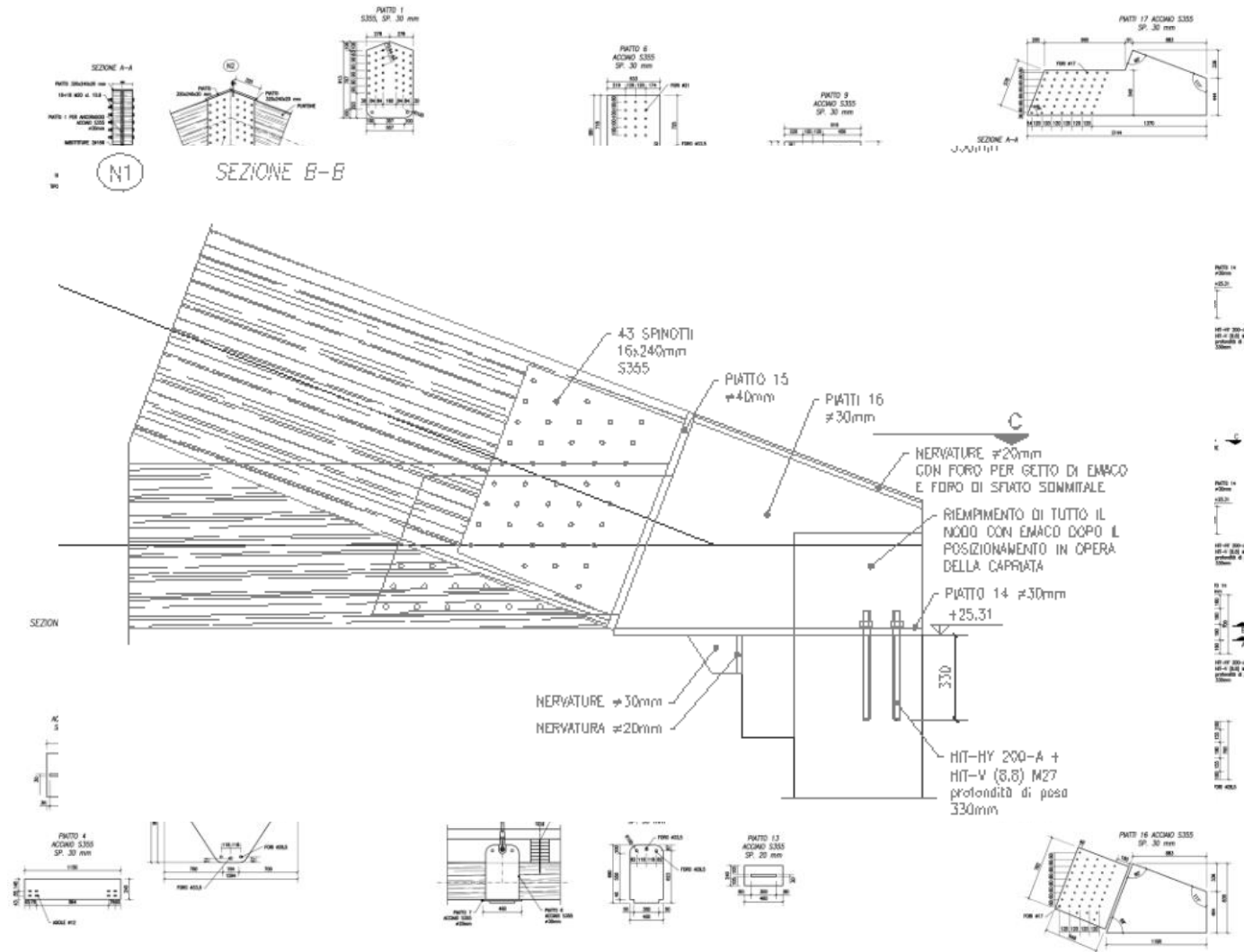


Grid and roof timber structures

STEEL AND TIMBER STRUCTURES

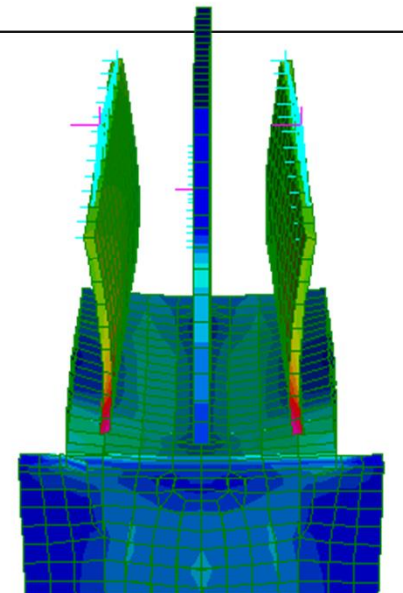
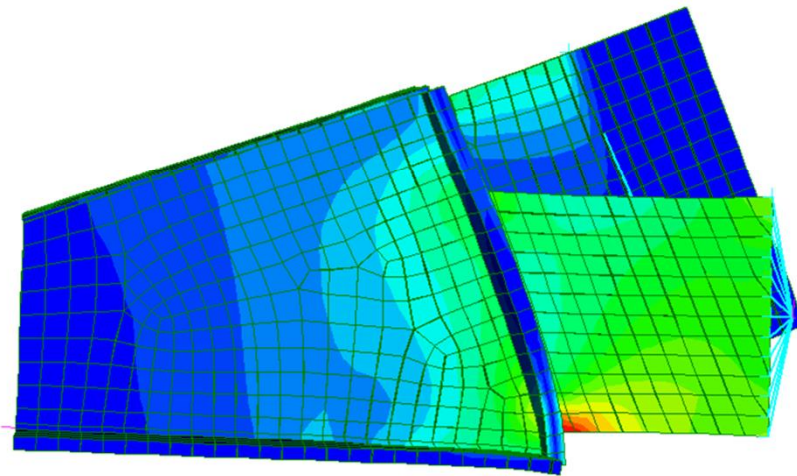
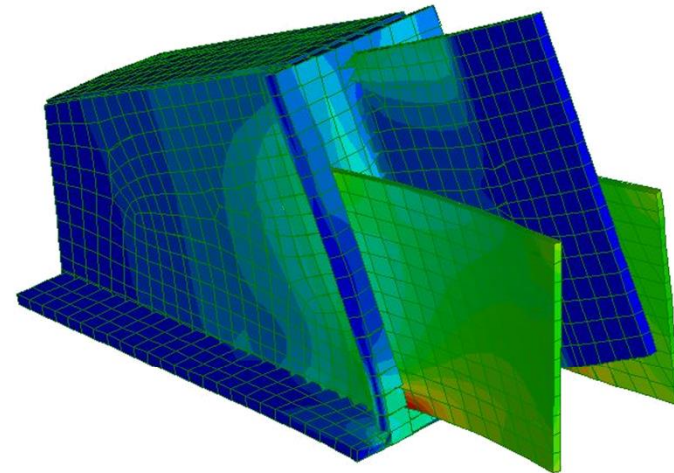
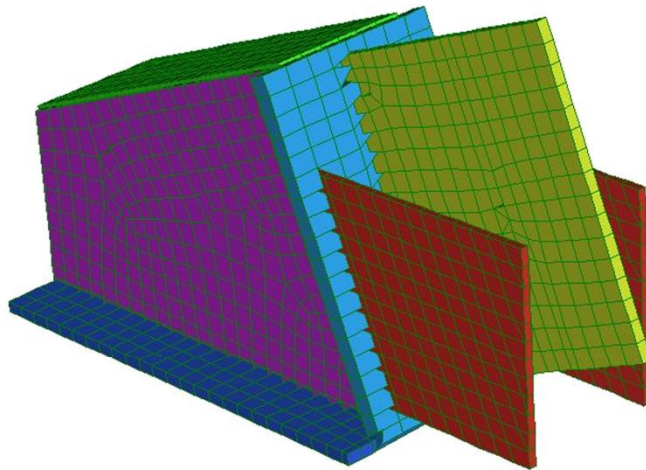


STEEL AND TIMBER STRUCTURES



Roof timber structures

STEEL AND TIMBER STRUCTURES



THANK YOU!



For any questions please send an email to:

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marcello.giovagnoni@architetturastrutturale.it