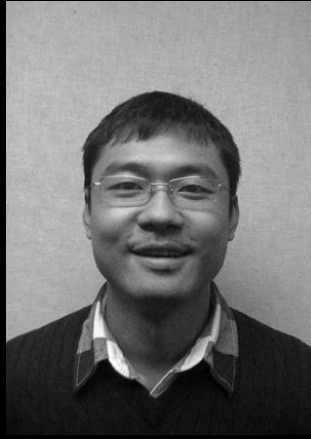


TORRE
ACBAR

+ **Names:** Cheng Jin
Steven Michael Saenz
Kyung Bong Han
Woonhee Ko
Blake Smith



Young Architects



BARCELONA

+ **Name:** Jean Nouvel
+ **Nationality:** French
+ **Birth date:** August 12, 1945 (age: 64)
+ **Birth place:** Fumel, Lot-et-Garonne, France
+ **Alma mater:** [École nationale supérieure des Beaux-Arts](#)
+ **Awards:** Pritzker Prize Recipient
+ **Program:** 142 m (465.88 ft.) high-rise for the registered office of the company



Jean Nouvel

- + **Status:** Built
- + **Location:** Barcelona, Spain
- + **Dates:** 1999(study work) - 2001(build work)
- + **Completion:** July 2005
- + **Gross Floor Area:** 47.500 m² (17.500 in infrastructure, 30.000 in superstructure)
- + **Program:** 142 m (465.88 ft.) high-rise for the registered office of the company Aguas de Barcelona (AGBAR) + auditorium of 350 places
- + **Client:** Layetana Inmuebles S.L.

50,500 m² built area
25,000 m³ concrete
250,000 kg steel
59,619 glass sheets

total concrete weight = 132,427,500 lbs

total steel weight = 550,000 lbs

total glass skin weight = 1,407,000 lbs

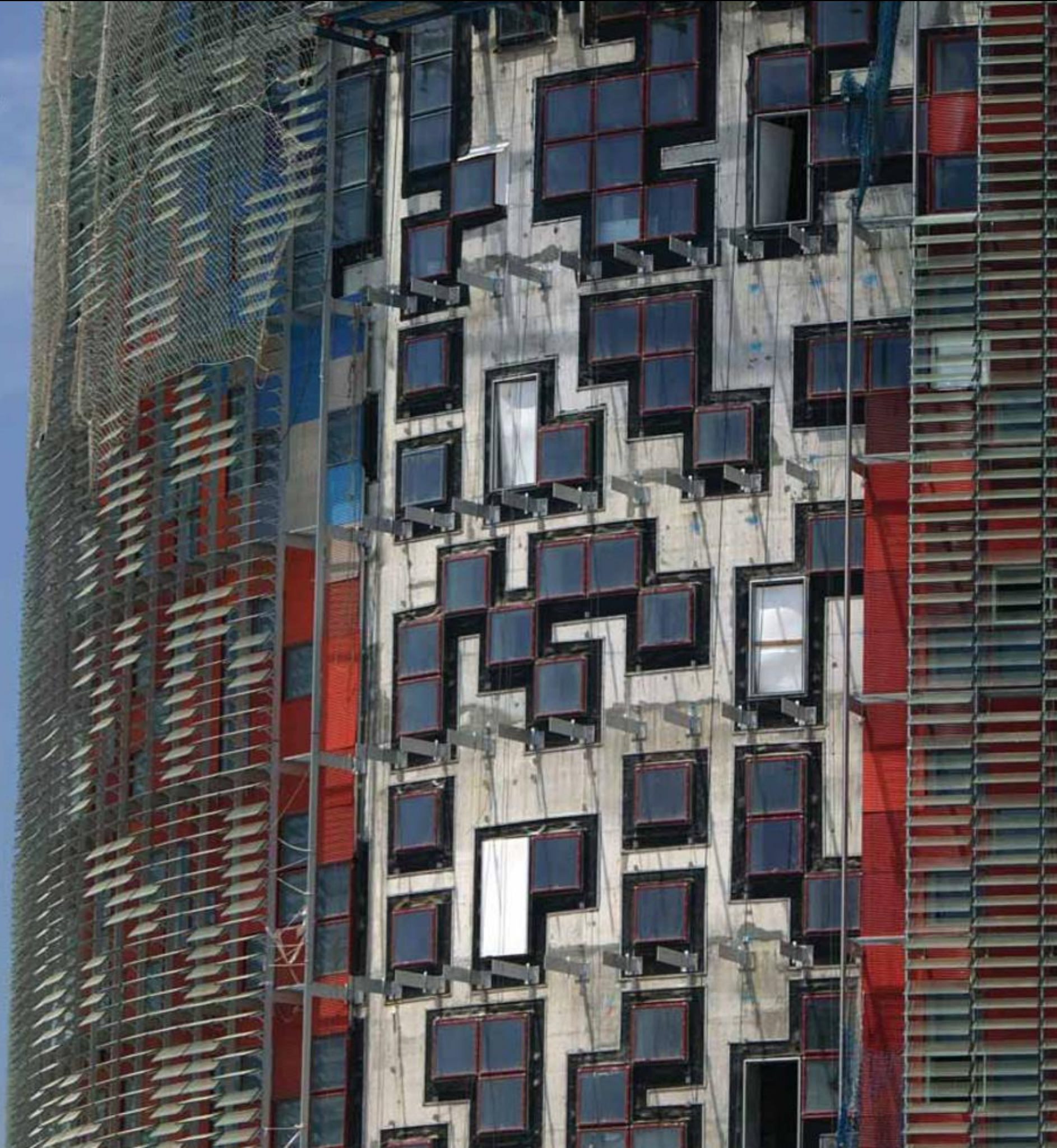
total live load = 29,590,000



**Compositional
Assemblage**

- +Skin Facade
- +Concrete Shell
- +Steel Girder supported floor slabs
- +Concrete Core

© Rafael Vargas



Skin Facade





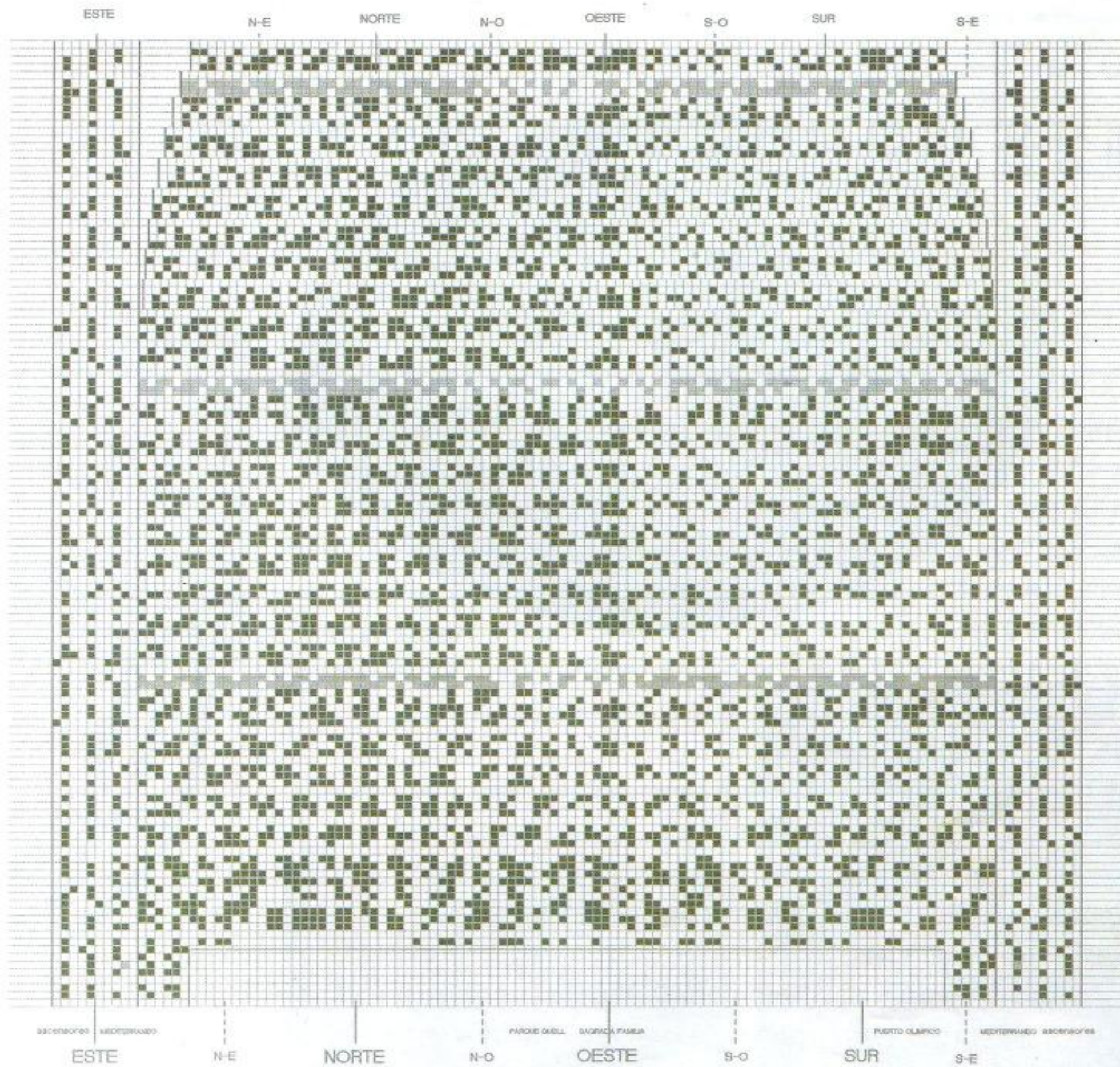


Concrete Shell

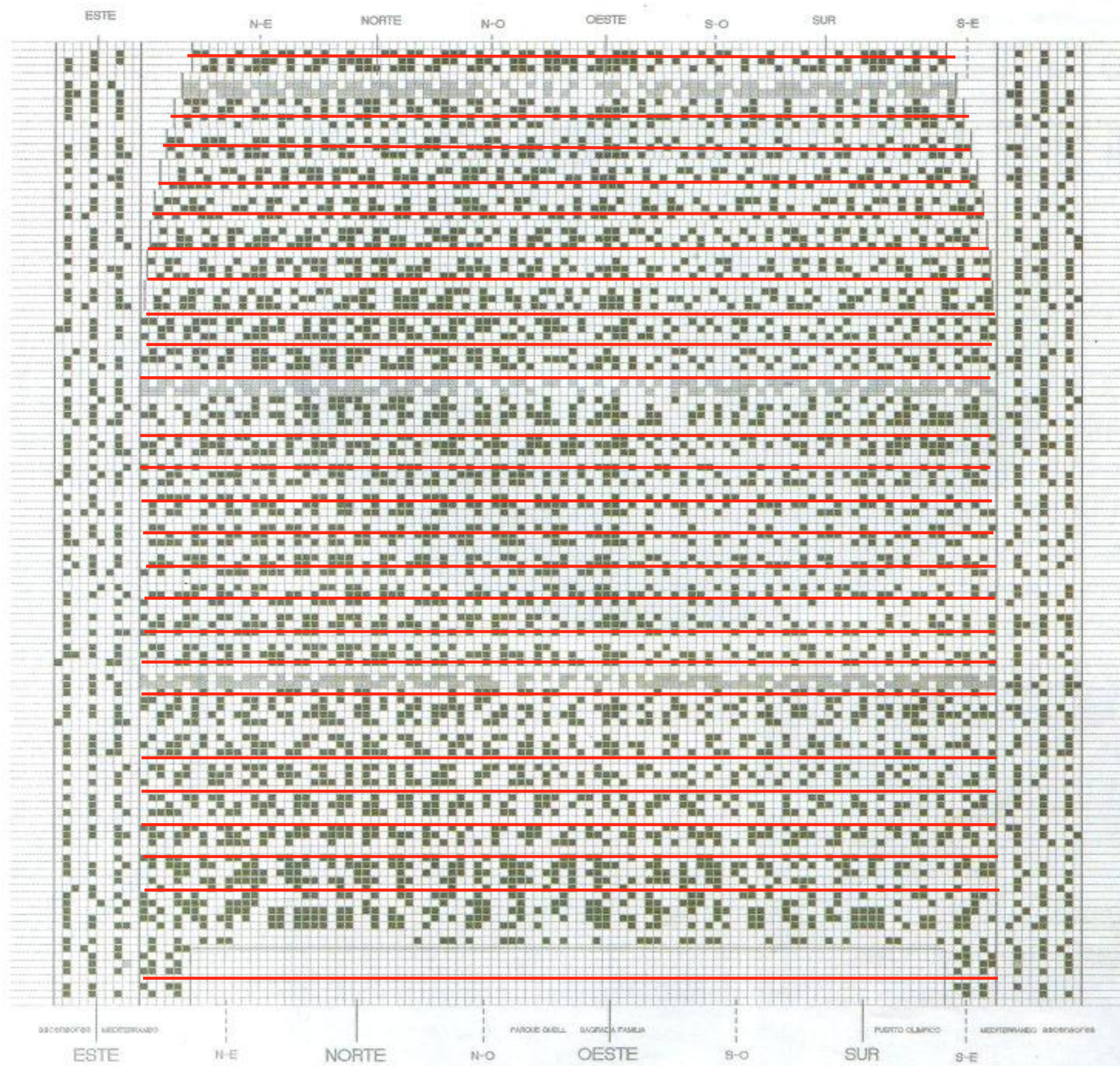




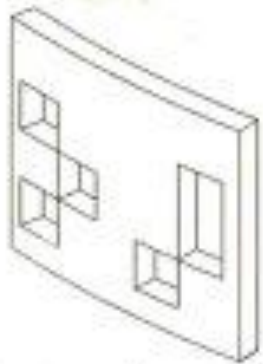
TORRE
AGBAR
A TORRE AGBAR BUILDING
A TORRE AGBAR BUILDING



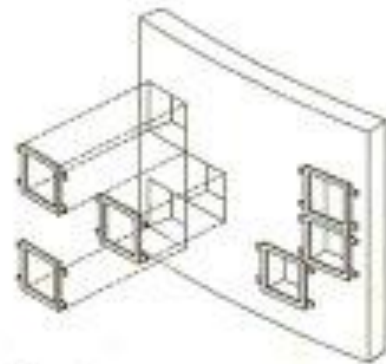
Facade Development - Inside Skin



Facade Development - Inside Skin



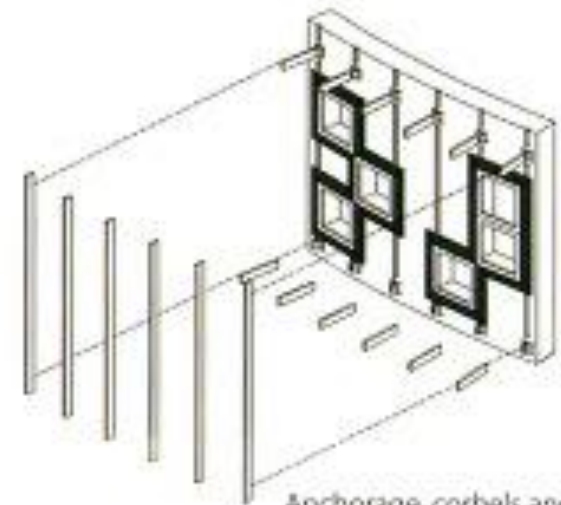
Concrete wall



Windows



Watertight edges



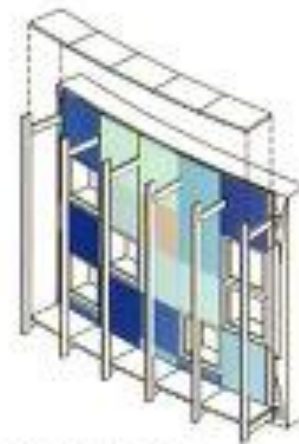
Anchorage, corbels and transoms



Insulation



Corrugated sheet metal



Maintenance plates

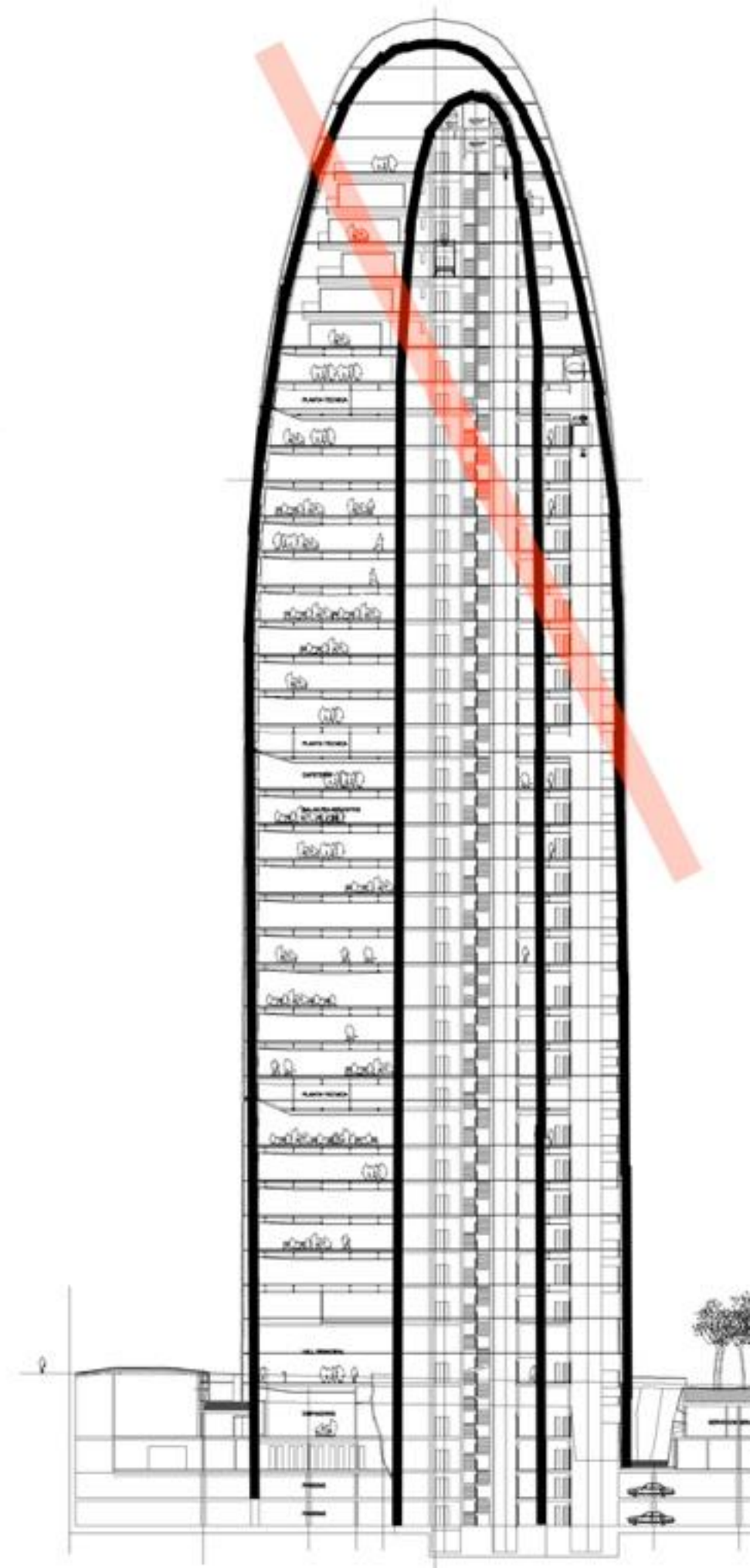
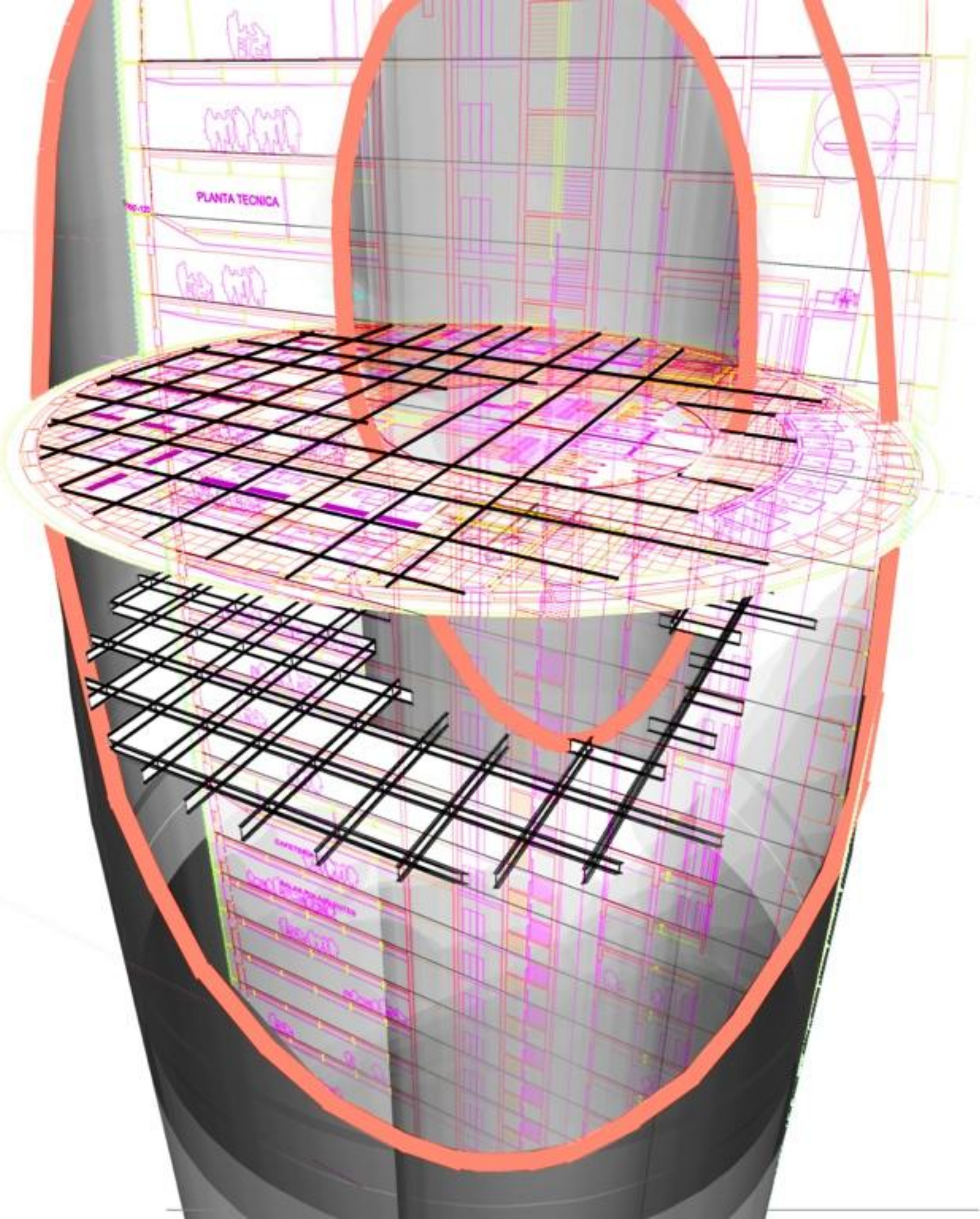


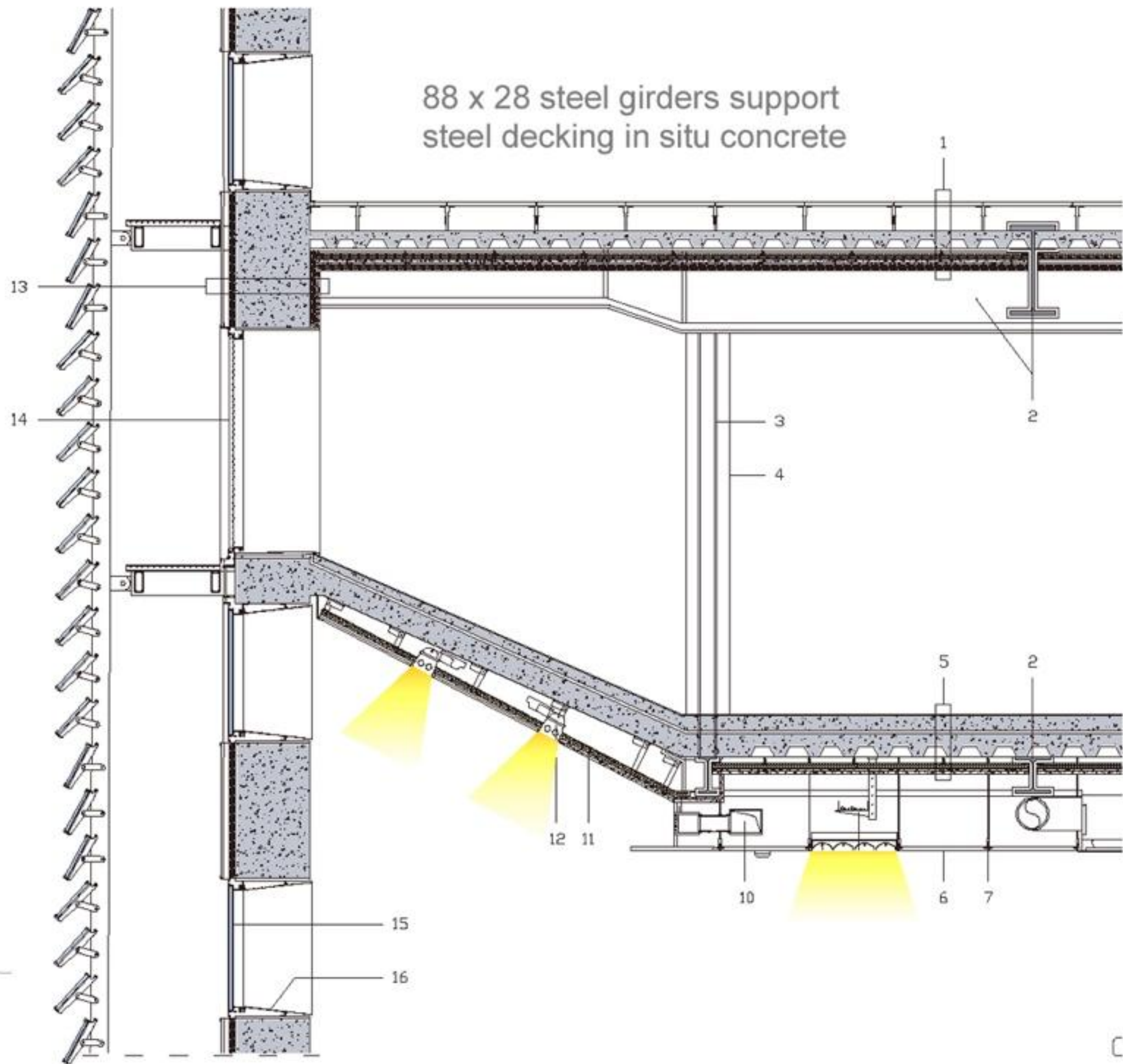
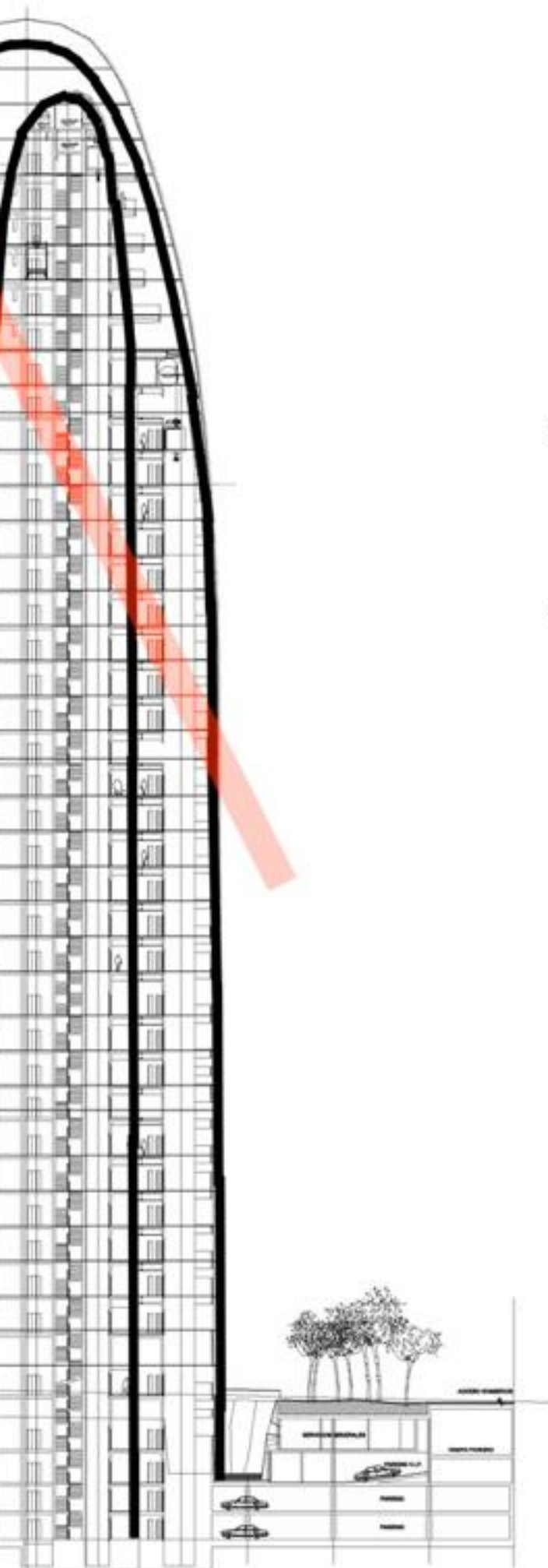
Silk screened glass strips

Construction of the façade

Steel Girders

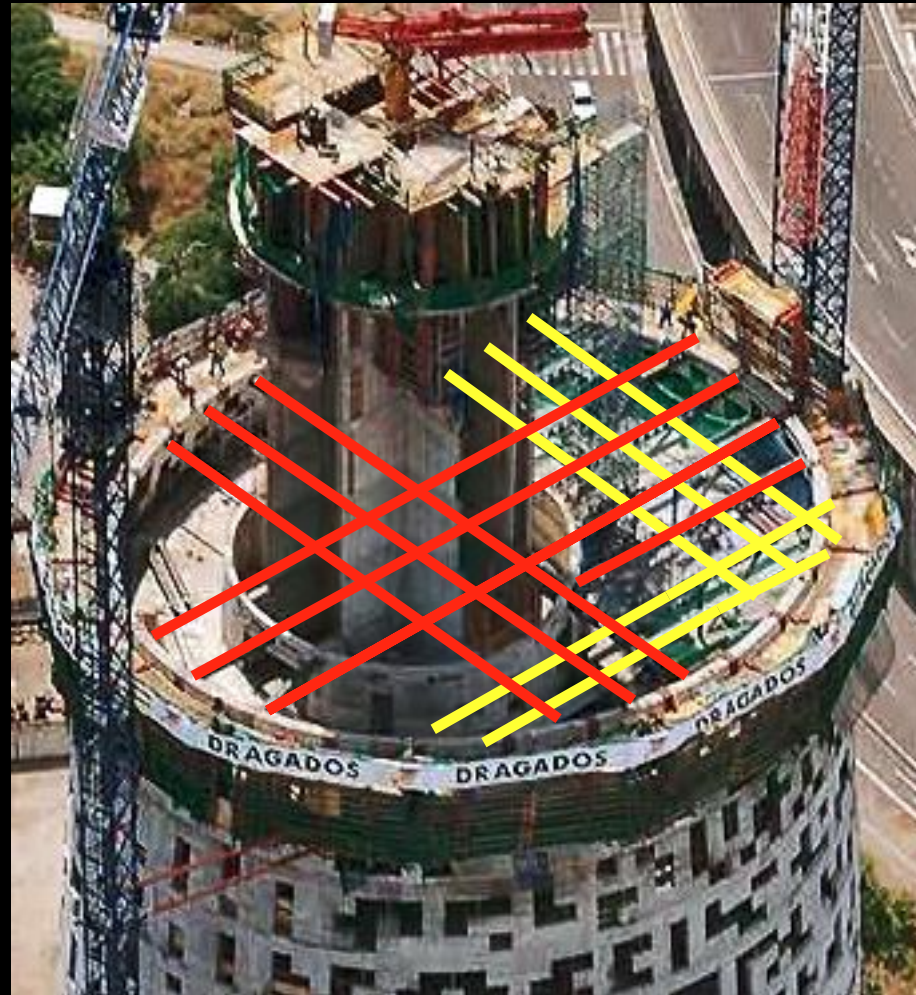












50,500 m² built area
25,000 m³ concrete
250,000 kg steel
59,619 glass sheets

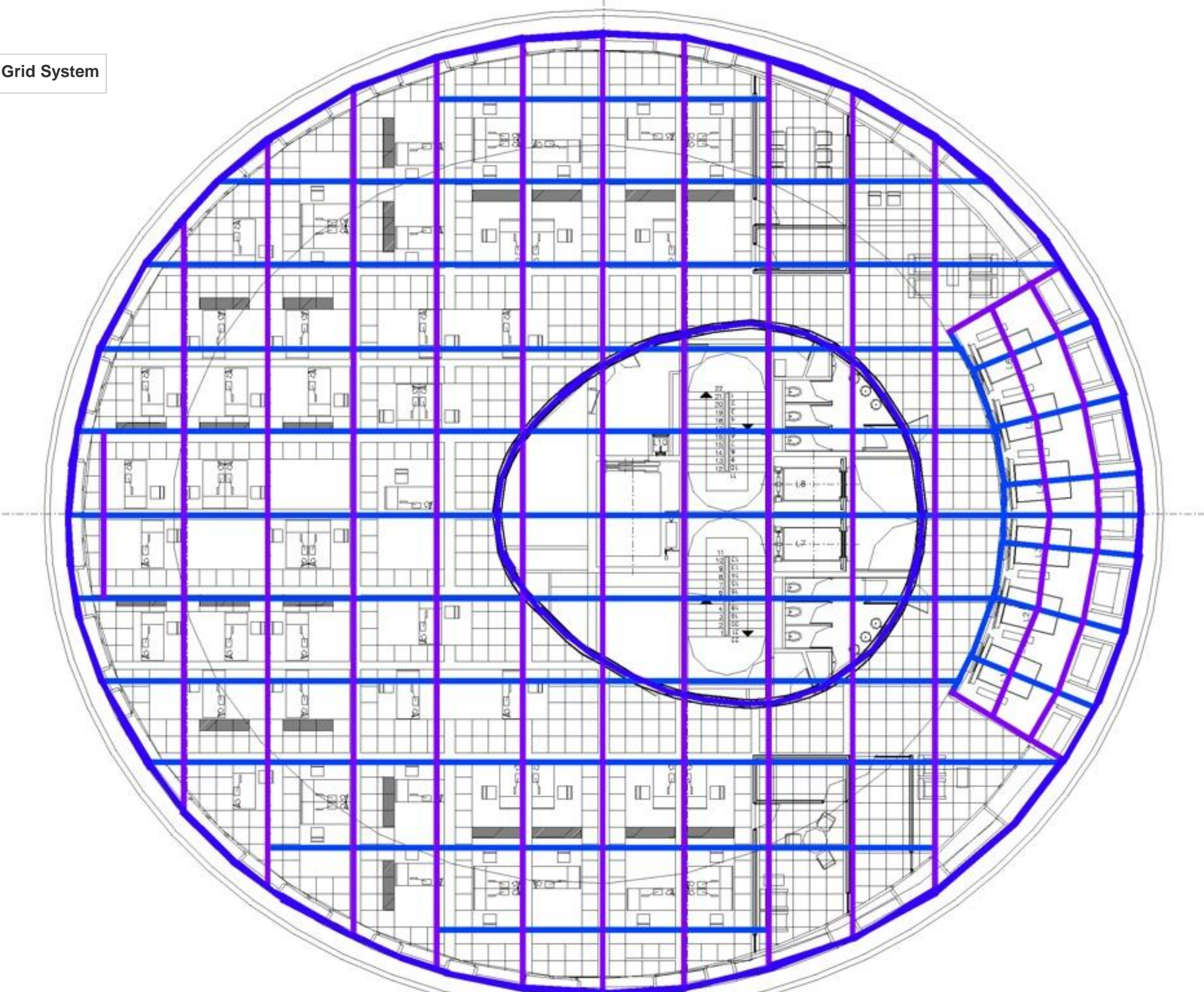
total concrete weight = 132,427,500 lbs

total steel weight = 550,000 lbs

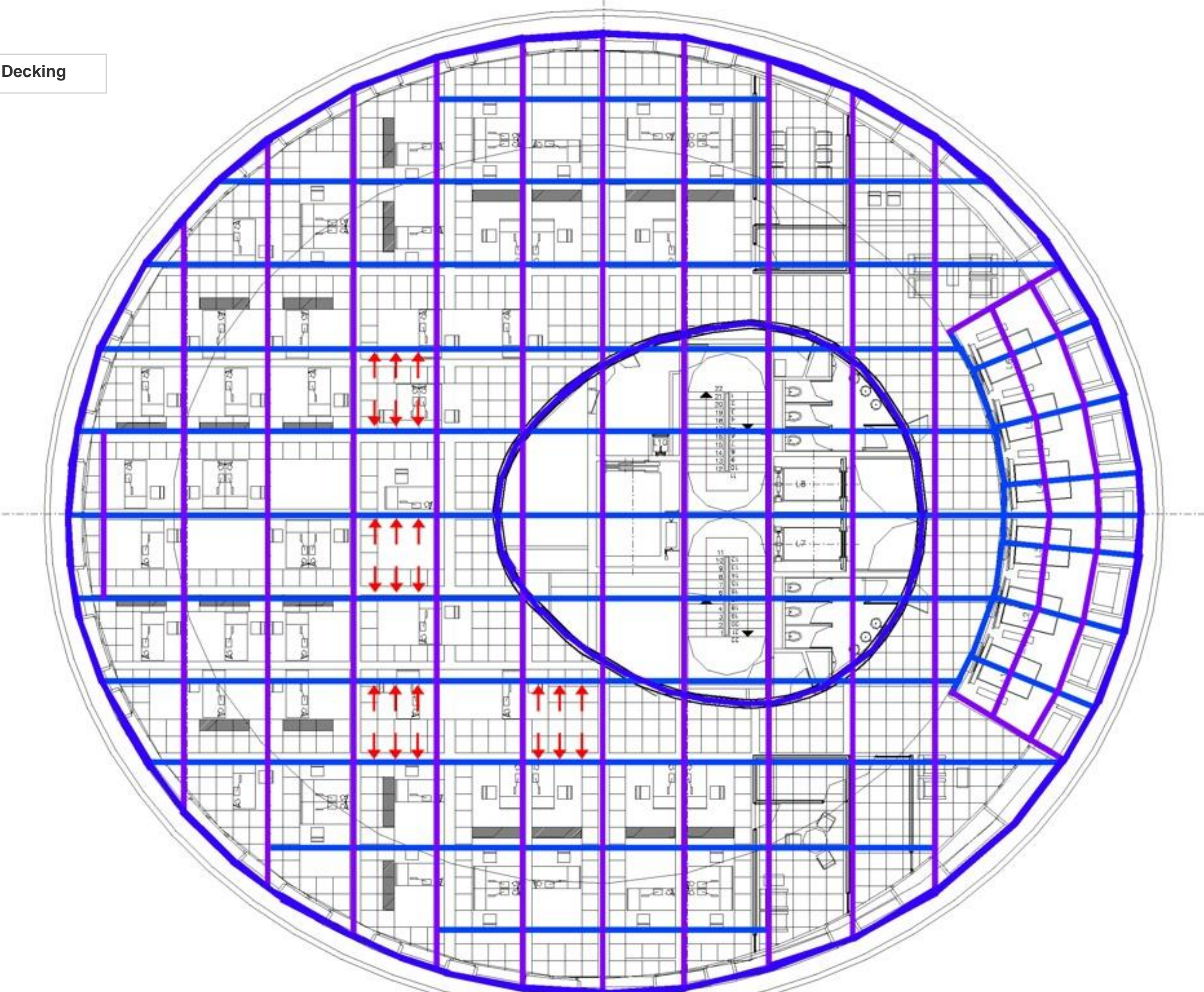
total glass skin weight = 1,407,000 lbs

total live load = 29,590,000

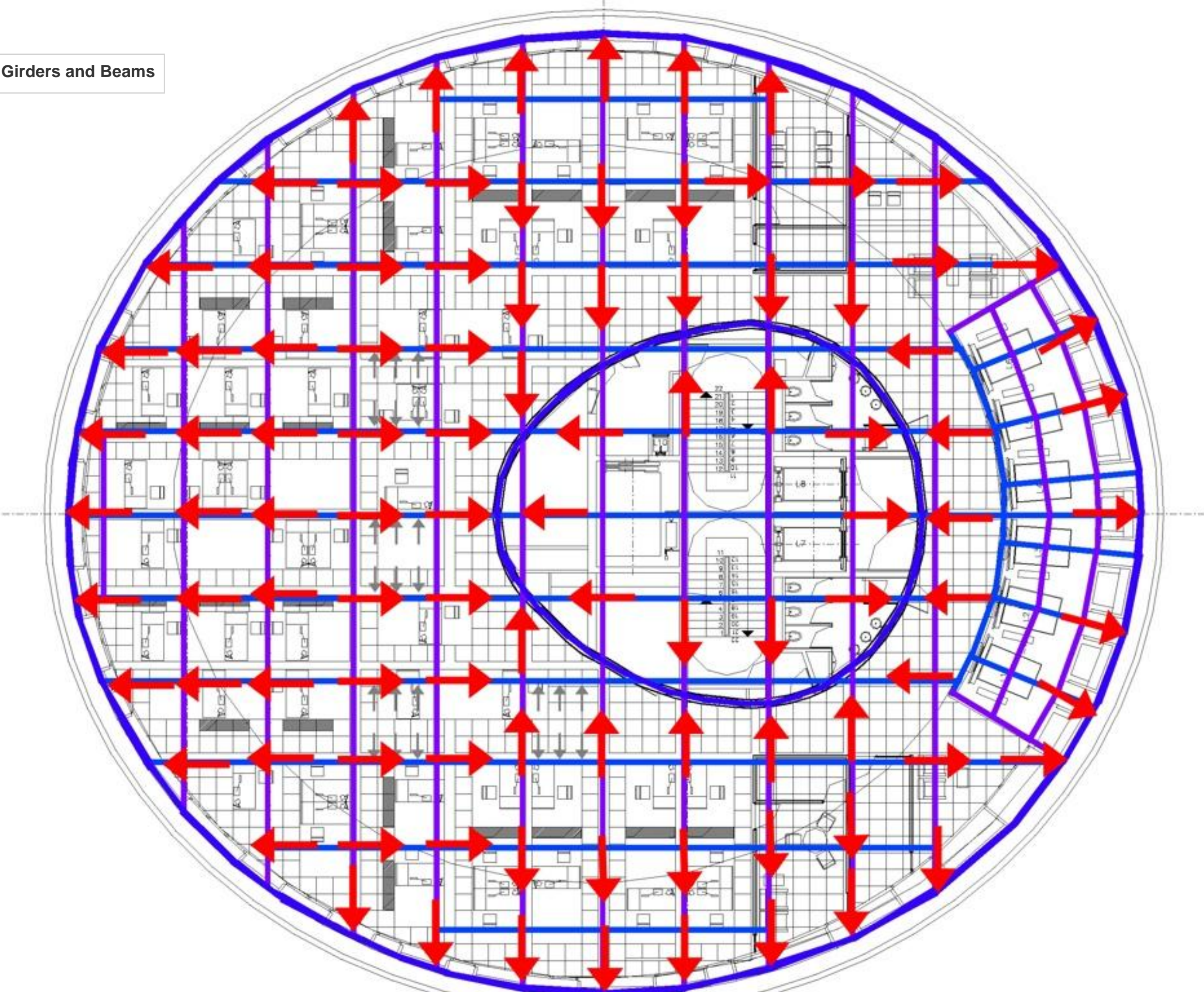
Steel Grid System

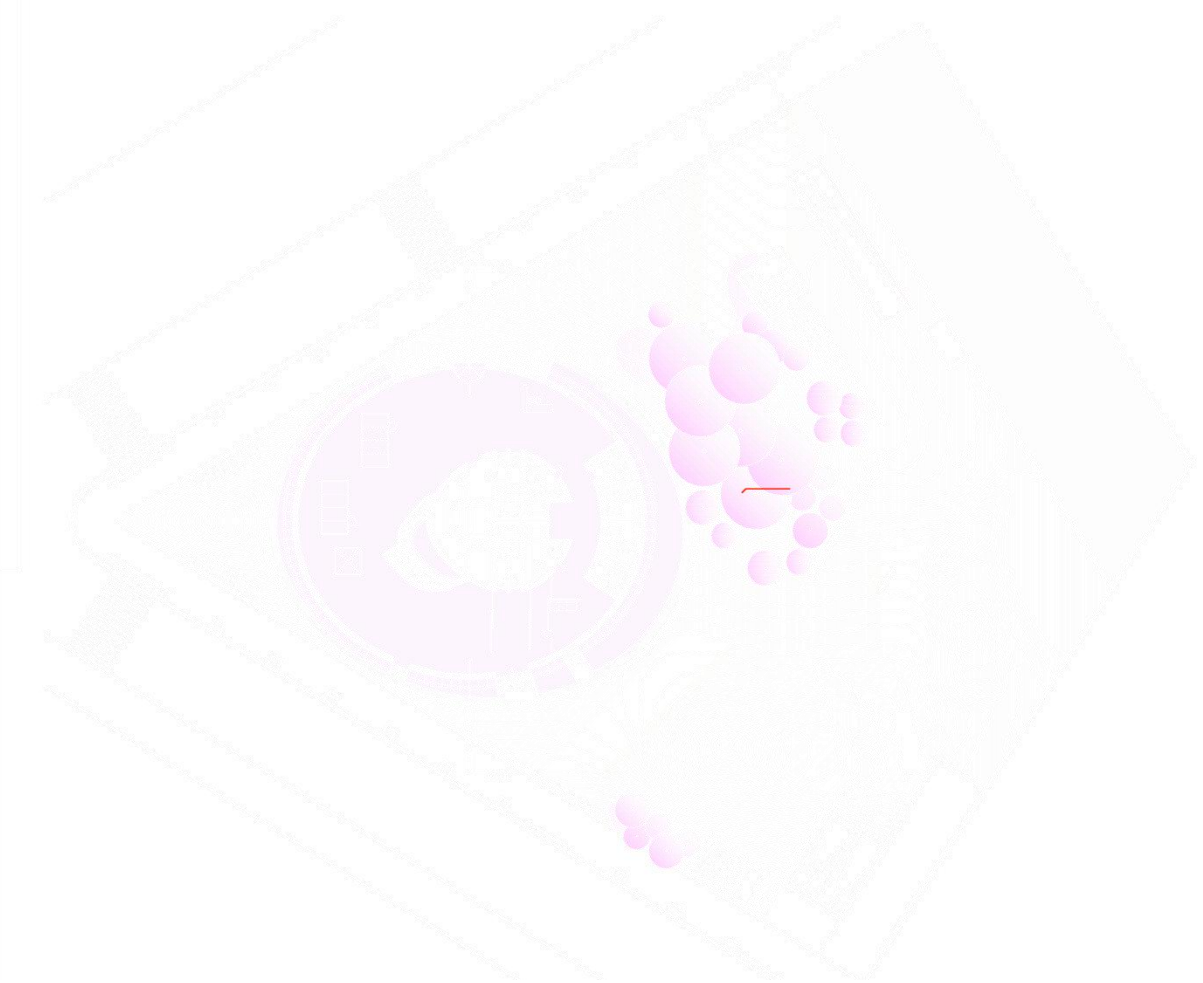


Steel Decking

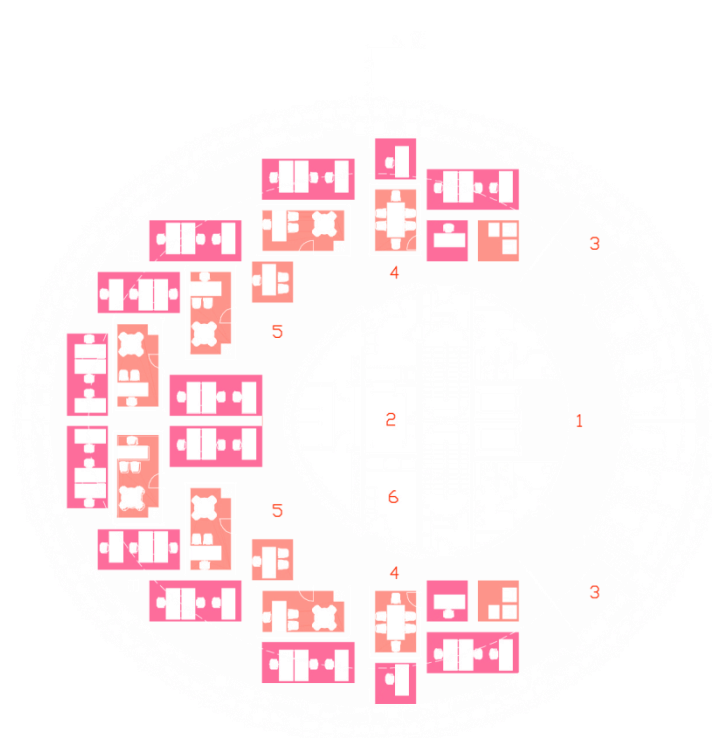


Steel Girders and Beams





+Ground Floor Plan



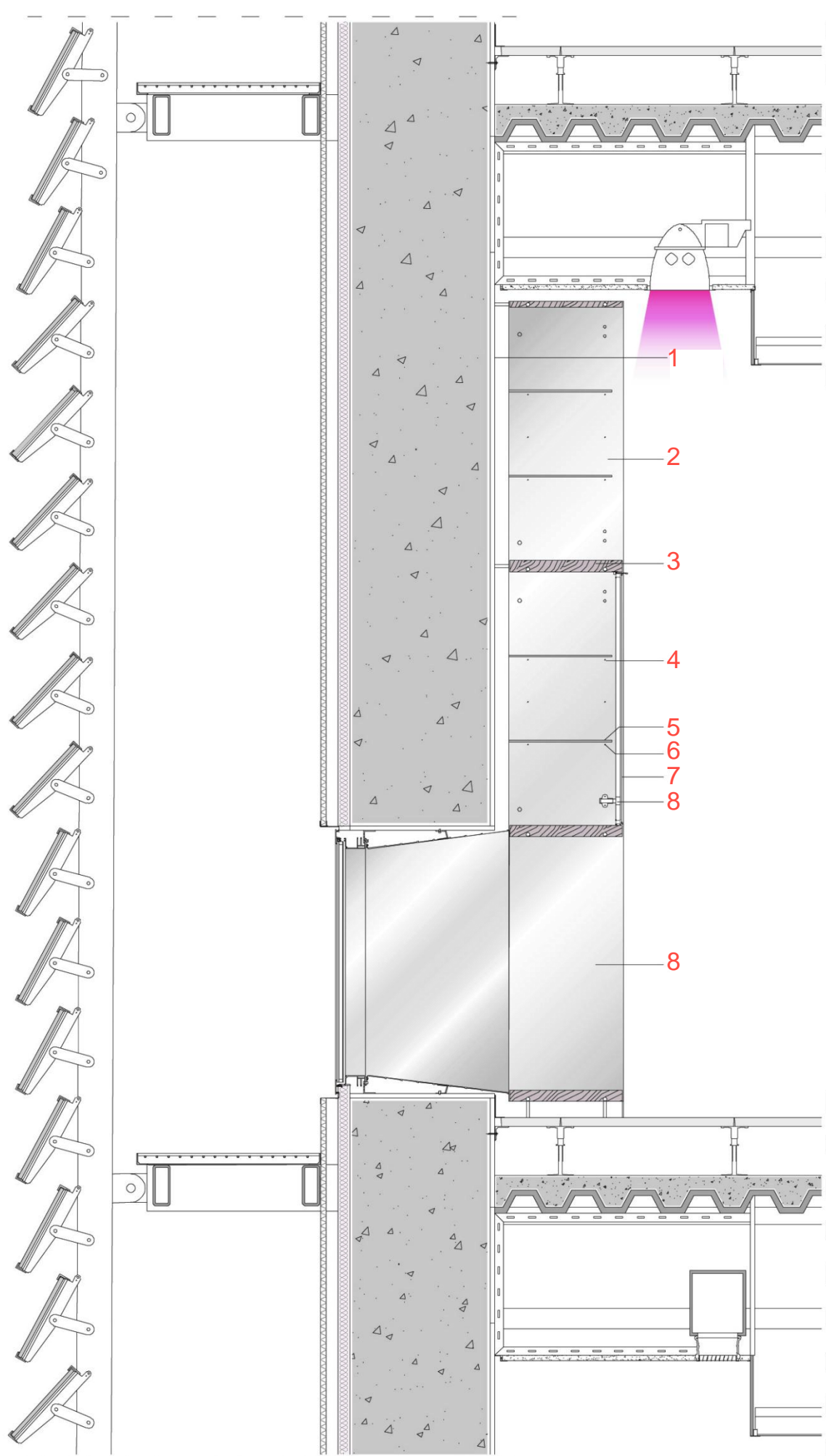
+Typical floor plan

- 1 Lifts
- 2 Service elevator
- 3 Waiting room
- 4 Meeting room
- 5 Offices
- 6 Copy machine room
- 7 Cafeteria



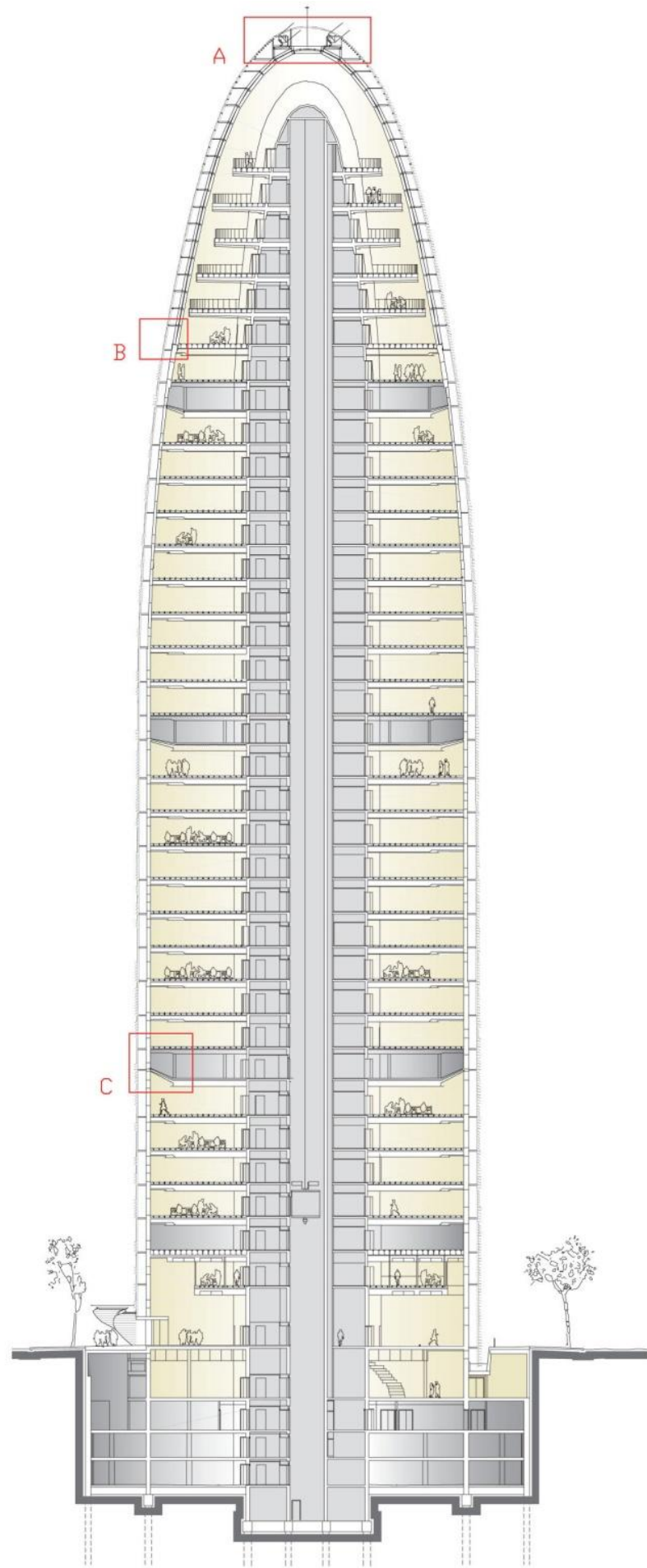
+Cafeteria floor plan

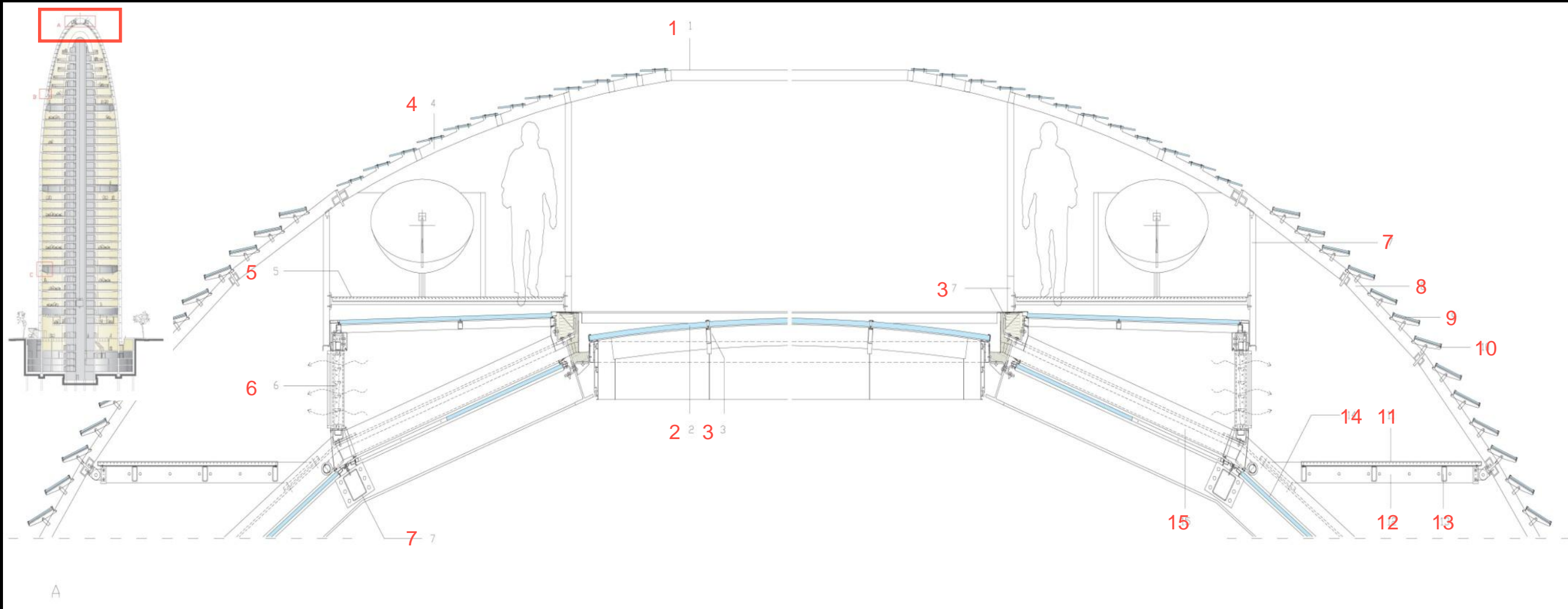




TYPICAL DETAIL OF FAÇADE : MODULAR
DECORATIVE ELEMENTS, TECNO S.P.A.
VERTICAL SECTION
HORIZONTAL SECTION

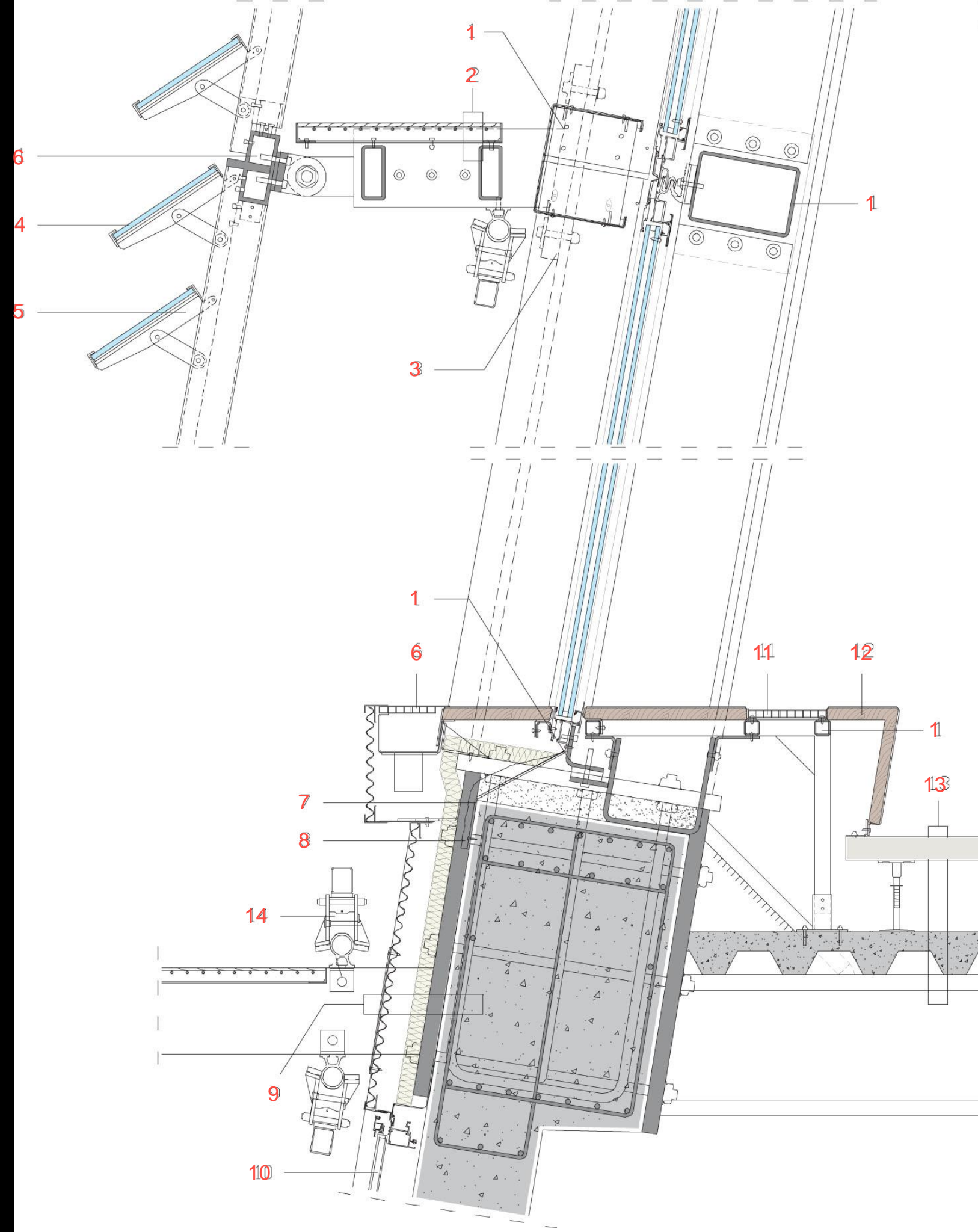
- 1 INTERIOR OF FAÇADE FINISHING : ELASTACRYL DE TOLLENS PAINT WITH COLOUR VARIATIONS ARRANGED ACCORDING TO A FRACTAL SEQUENCE
- 2 SELF-SUPPORTING UPRIGHTS WITH VARYING GEOMETRIES, FORMED BY TWO $1/32+3/64"$ (0.8+1.2MM) THICK FOLDED STEEL SHEETS WITH A METALLIC POWDER FINISH, WITH A $1\ 9/16"$ (40MM) FACE
- 3 $1\ 9/16"$ (40MM) THICK HORIZONTAL WOODEN COMPONENTS CONNECTING TO BACKS, PAINTED WITH LIQUID METAL PAINT, WITH LOCKS FITTED INTO THE FLAT BASE TO CLOSE A PAIR OF DOORS SIMULTANEOUSLY
- 4 HIDDEN SLOTS FOR FIXING UPRIGHTS TO WALL BY HOOKS
- 5 TRIPLE INTERNAL HOLE FOR INSERTING IN EACH SPACE EITHER TWO HORIZONTAL SHELVES OR ONE CENTRAL SHELF
- 6 $5/16"$ (8MM) TRANSPARENT TOUGHENED GLASS INTERNAL SHELVES
- 7 SUPPORT FOR HORIZONTAL SHELVES : SUPPORTS WITH ANTI-SLIP SUCTION XUPS MADE OF NEUTRAL COLOURED PLASTIC FIXED TO THE BACKS BY THREADED CHROME-PLATED STEEL PINS
- 8 DOORS FORMED BY $5/32"$ (4MM) GLASS AND MATTE POLYCARBONATE FRAME PREFABRICATED TO ALIGN WITH HINGES AND ROTATING BOLT OF THE LOCK
- 9 HINGES : FIXED WITH 90° OPENING





- 1 CIRCULAR EXTERNAL OPENING
- 2 INTERNAL CIRCULAR WINDOW
- 3 SUPPORTING STRUCTURE
- 4 EXTERNAL SKIN STRUCTURE
- 5 PLATFORM MADE OF GALVANIZED STEEL CRILLES
- 6 MOTOR-OPERATED LOUVERS
- 7 HOT-DIP GALVANIZED STEEL
- 8 TUBULAR MALE-FEMALE INTERLOCKING MOUNTS
- 9 4+8 LAMINATED GLASS LOUVERS
- 10 LOUVER SUPPORT
- 11 DOME FACADE MAINTENANCE WALKWAY
- 12 PLATFORM SUPPORTING STRUCTURE
- 13 GALVANIZED STEEL TUBULAR PROFILES
- 14 INTERNAL DOME GLAZING MADE OF ANODIZED ALUMINIUM
- 15 ANODIZED ALUMINIUM PROFILE

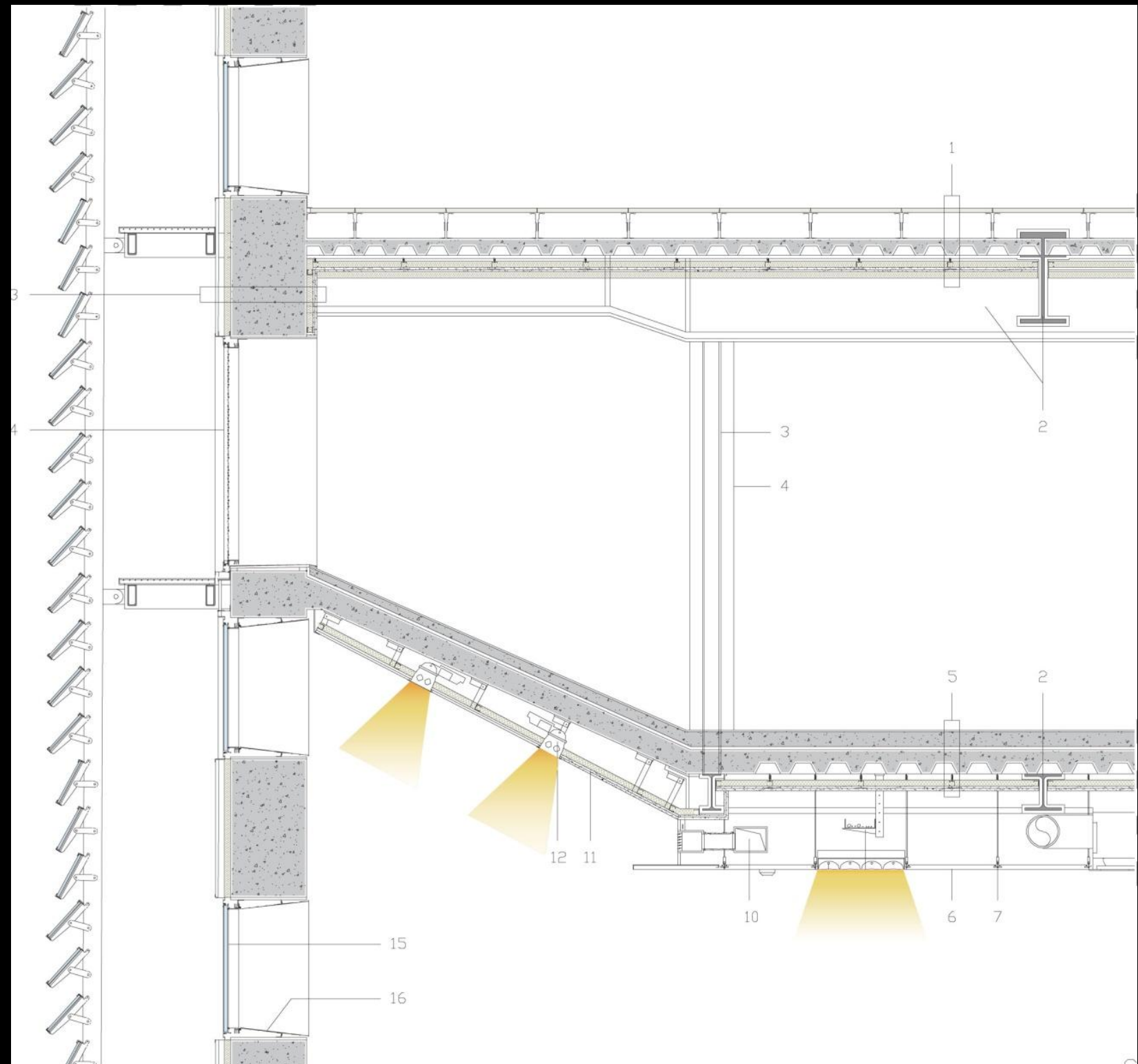




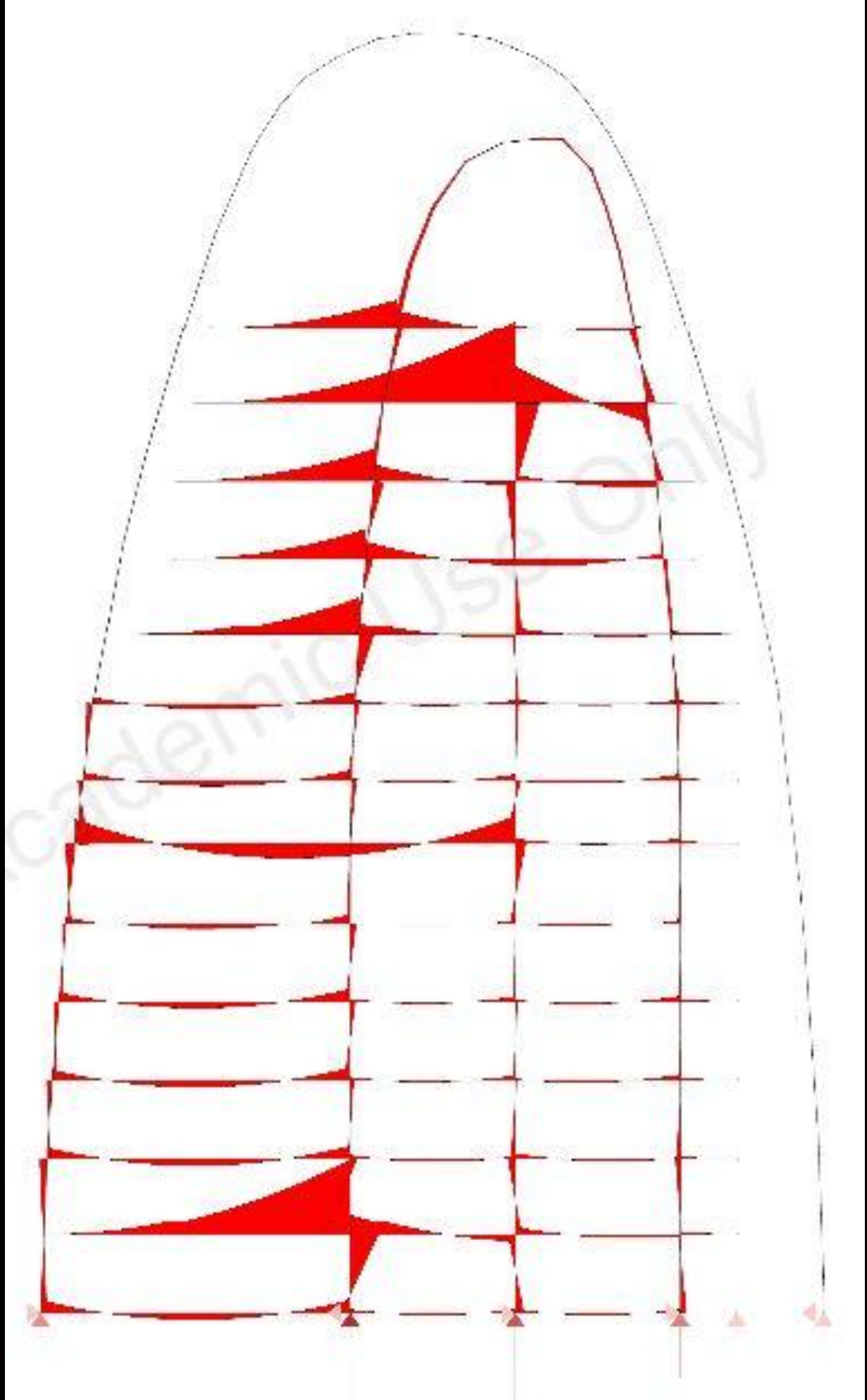
- 1 HOT-DIP GALVANIZED STEEL PROFILE
- 2 FACADE MAINTENANCE WALKWAY
- 3 GALVANIZED STEEL TUBULAR SPACERS
- 4 4+8 LAMINATED GLASS LOUVERS
- 5 LOUVER SUPPORT
- 6 GUTTER GRILLE
- 7 ANODIZED ALUMINIUM SHEET
- 8 SIKA SEALTITE WATERPROOFING
- 9 SATIN-FINISHED NATURAL ANODIZED ALUMINIUM STEEL
- 10 MODULAR WINDOW
- 11 AIR CONDITIONING SYSTEM OUTLET
- 12 ANODIZED ALUMINIUM SHEET
- 13 ACCESS FLOOR WITH THASSOS MARBLE FINISH
- 14 GUIDE AND ROLLER SHOE OF PERIMETER STAIRS FOR CLEANING THE GLASS LOUVERS AND DOME FACADE



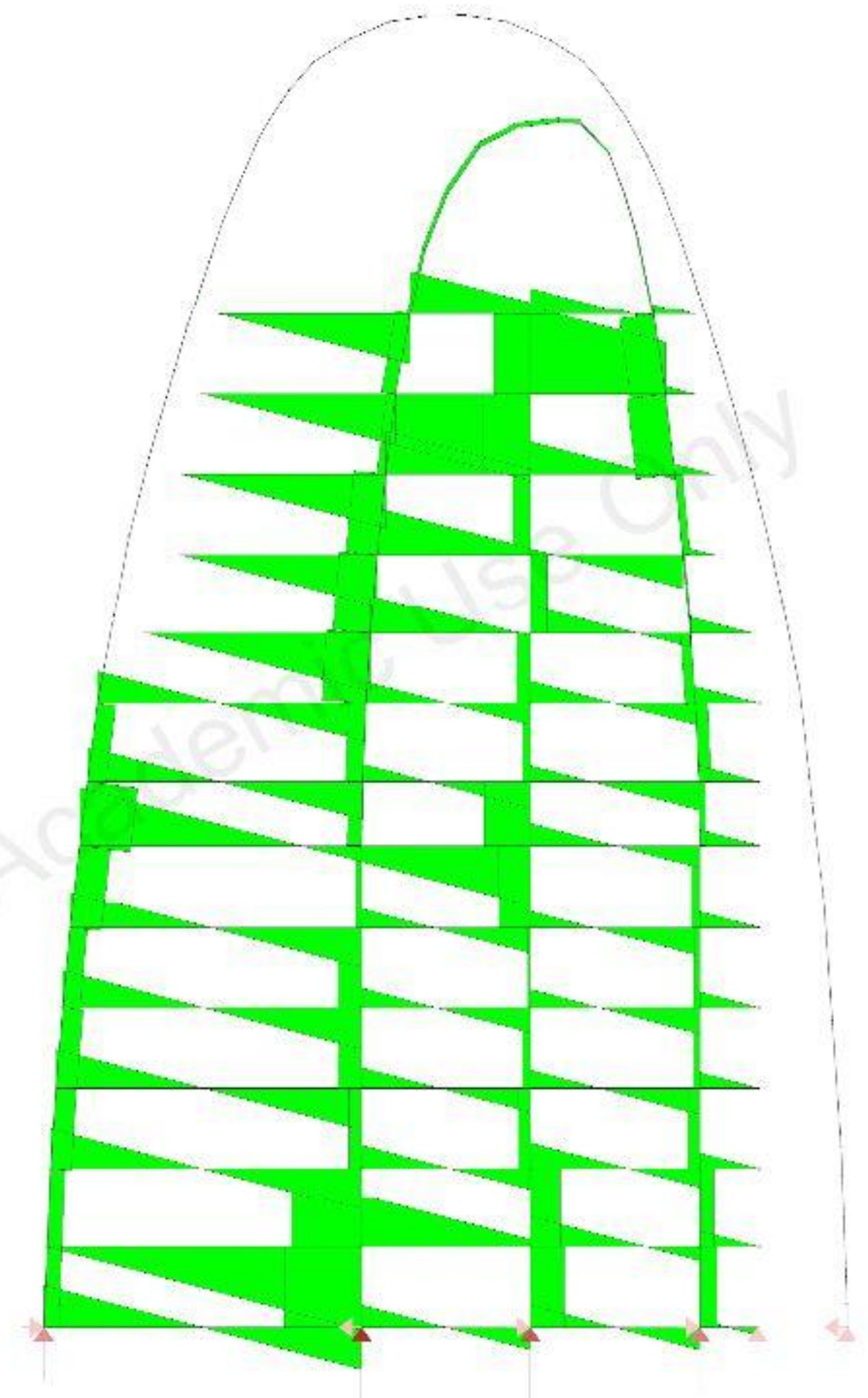
- 1 ACCESS FLOOR WITH THASSOS MARBLE FINISH, COMPOSITE FLOOR MADE OF GALVANIZED STEEL SHEET AND REINFORCED CONCRETE, 25/32" (20MM) FIREPROOF LAYER OF MORTAR MIX OF CEMENT AND VERMICULITE, 1 9/16" (40MM) ROCKWOOL INSULATION, DOUBLE LAYER OF 19/32" (15MM) THICK GYPSUM BOARD, 1 9/16" (40MM) ROCKWOOL INSULATION
- 2 ROLLED STEEL BEAM FIREPROOFED WITH MORTAR MIX OF PERLITE AND VERMICULITE
- 3 METAL TIE RODS
- 4 SILICATE FIBRE SLAB CLADDING
- 5 FLOORING MADE OF 5/64" (2MM) LAYER POLYURETHANE PAINT, CONCRETE SLAB, PVC PROTECTIVE FILM, 25/32" (20MM) POLYURETHANE AGGREGATE, COMPOSITE FLOOR MADE OF GALVANIZED STEEL SHEET AND REINFORCED CONCRETE, 1 9/16" (40MM) ROCKWOOL INSULATION, DOUBLE LAYER OF 19/32" (15MM) THICK GYPSUM BOARD
- 6 23 5/8 x 23 5/8" (600x600MM) GALVANIZED STEEL SLAB WITH INTERNAL HEAT-SEALED FILM



Moment Diagram



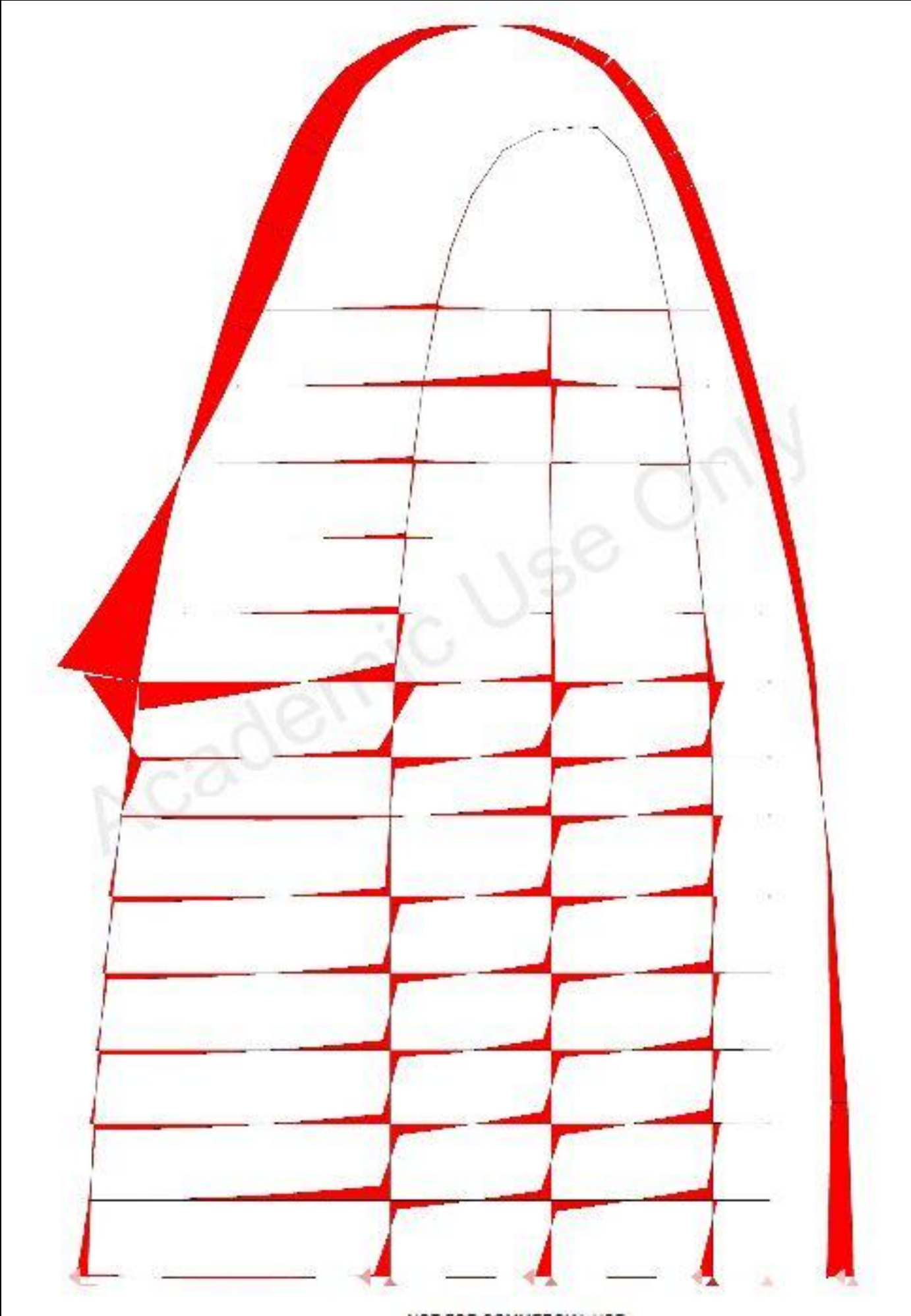
Shear Diagram



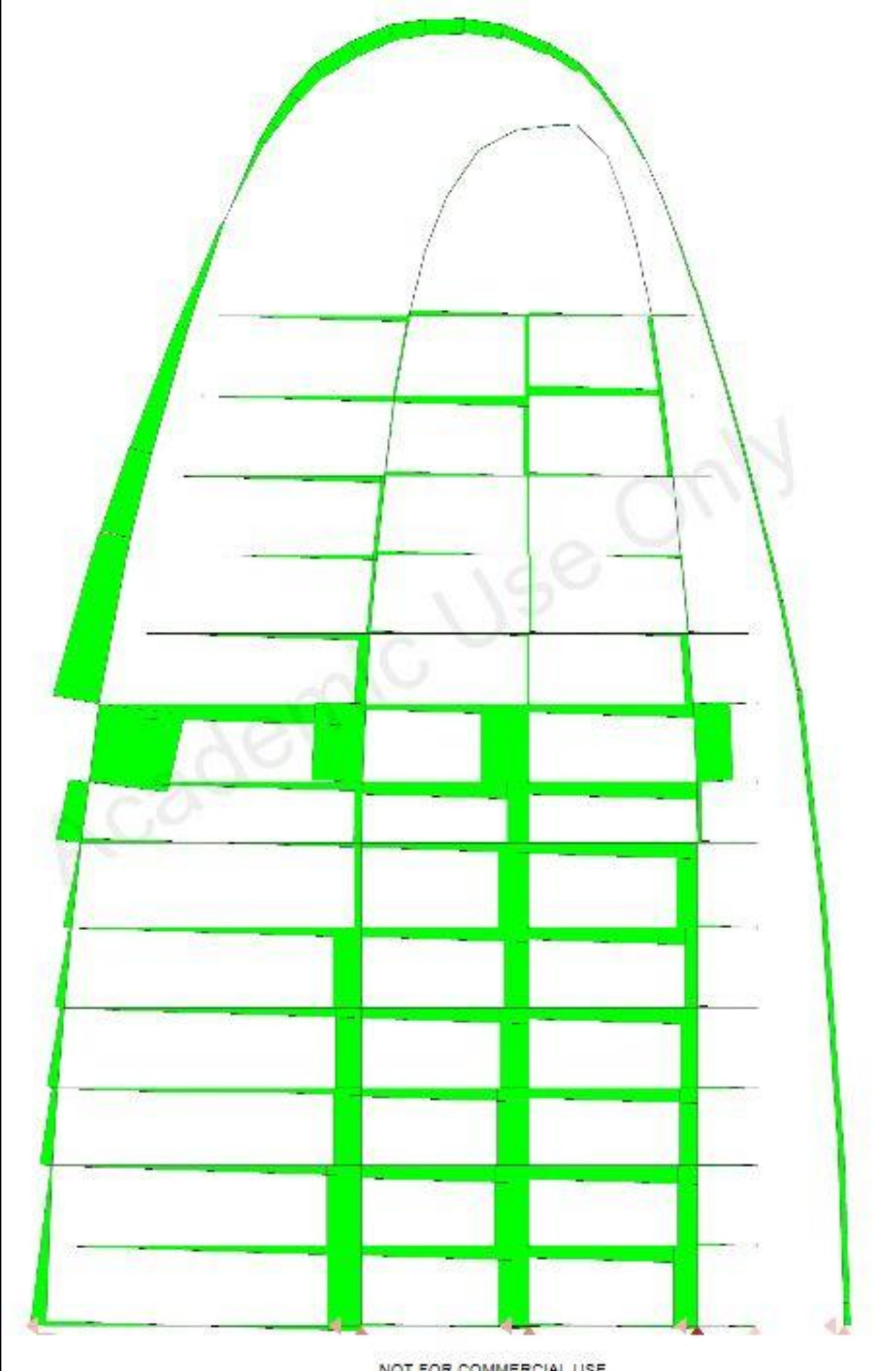
Axial Force Diagram



Moment Diagram: Lateral



Shear Diagram: Lateral



Axial Force Diagram: Lateral

