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# Easy Home

- **Summary Presentation and Preliminary Feasibility Study**
- June 2018

# The Economic Scenario

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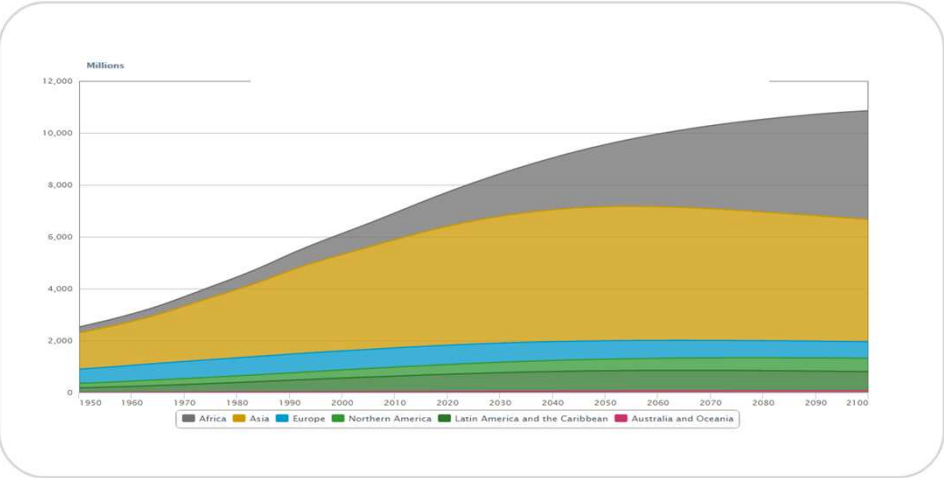
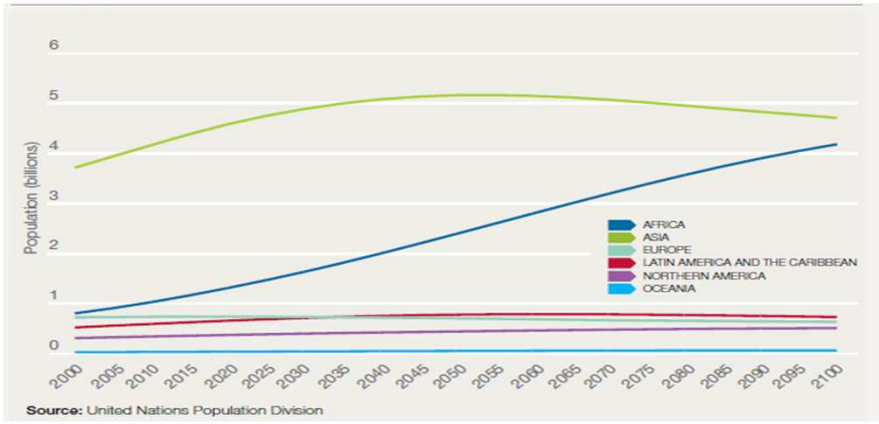
**World population by continents 1950 – 2100**




**Global population forecast**




- *It is estimated that by **2100** the world population will reach about **12 billion** people.*
- *The demographic boom of the expansion will be led by the African continent whose population is expected to quadruple by 2100.*
- ***In fact it is estimated that in 2100 the 40% of the world population will live in Cities in Africa.***
- *It is therefore expected a significant increase in demand for residential real estate, commercial and of any kind.*
- *The **time factor** is the true element of scarcity for this continent that is experiencing the most important demographic trend in human history.*

# The Economic Scenario

***… there is a problem in Africa …***

***in Ivory Cost, Libya, Tunisia, Nigeria, etc.***

***… we must help them solve it ...***


GIVE A MAN A FISH AND
YOU FEED HIM FOR A DAY.
TEACH A MAN TO FISH AND
YOU FEED HIM FOR A LIFETIME.

# The Solution



***Provide the tools to solve the problem***

*Let us put them in the condition of being able to build houses their own by providing:*

- ✓ *the most advanced and innovative technology and know-how in the manufacture of prefabricated houses and*
- ✓ *the factory where they can build these houses*

## *Italian Sponsorship*

*The Italian State*

*sponsors financially*

*the realization of a production plant*

*with a yearly capacity of 150,000 sq. m.*

*of precast residential buildings*

# Why do it
# Three Mainly Valences

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## SOCIAL

*A home for everyone*

- ✓ New qualified job for 400 local people
- ✓ High production capacity
- ✓ Durable goods
- ✓ Perceived as traditional method
- ✓ Safety at work
- ✓ Intense multiannual training program
- ✓ Clean construction site, waste reduction

## CULTURAL

*Design motivation*

- ✓ The importance to live in a lovely homes
- ✓ High quality
- ✓ Repeatability of structures
- ✓ Modular buildings
- ✓ Flexible in the time
- ✓ Constant technological innovation

## ECONOMICAL

*Cost reduction*

- ✓ Execution speed
- ✓ Improve and develop concrete industry
- ✓ Lighter buildings with less components per square meter of surface
- ✓ Saving in the construction costs
- ✓ Low energy consumption
- ✓ Low management and maintenance costs

# Why do it
# An in-depth analysis of Added Values

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- ✓ Contributing to the growth of the country by providing new jobs, new technologies and housing for all.
- ✓ Specialized staff training with a specific and dedicated Multiannual Training Program.
- ✓ The 80% of the work takes place inside the factory, only 20% in the dockyard.
- ✓ A clean and comfortable working environment with great attention to worker safety.
- ✓ Operation that no longer depends on climatic factors with the opportunity then to work in Countries with difficult climatic conditions without having to stop production.

# Why do it
# An in-depth analysis of Added Values

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- ✓ Fully functional buildings in a very short time with quality and maximum product functionality .
- ✓ Maximum simplification of the construction phases.
- ✓ Construction of a factory equipped with cutting-edge installations, equipment and patents for the production of prefabricated elements together with design, technological development, innovation and transfer of know-how.

# Why do it
# An in-depth analysis of Added Values



- ✓ It is possible to give a concrete answer, in the short term, to the demand for housing by poorest population with a prompt redemption in terms of political and social visibility.
- ✓ By working on the differentiation of finishes, both inside and outside, there is the possibility of building Medium Level Apartments to sell to medium categories (state employees, army employees, etc.) also using different financial instruments such as: Rent to sale, 5th salary pay out, Institutional Bonds, Wold Bank structural funds, etc.

# Why do it
# Technology Transfer

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- The most innovative technologies in the industry, allowing us to answer to any building needs
- Exclusive patents of production systems like **REP SYSTEM®** for the construction of high performance and versatile beams, columns and slabs with SISTEMA rep
- **PRECAST AND PRESTRESSED SYSTEM:** is a totally precast building technology covering all kinds of concrete elements starting from isolated foundation elements towards columns, beams and different types of slabs
- **EASY HOME:** the **EASY-HOME system** allows the use and integration of the different elements of the PRECAST and REP® systems for creating buildings, even of considerable height, totally laid in dry way and completed, where needed, with mechanical structural joints, wet and mixed, along with casting finishing of composite floor slabs according to the performance required by the structures
- New products, technology and processes have all evolved together into the systems and this is the result of a continuous investment program in R&D carried on with great success for 50 years

***Reduction of energy consumption*** → ***Pollution reduction*** → ***Recycling/Sustainable recovery of the materials***

# Why do it
# Technology Transfer

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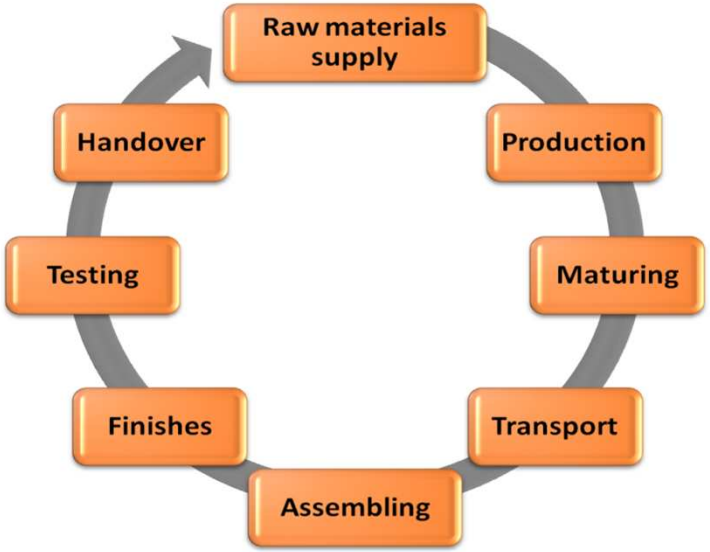
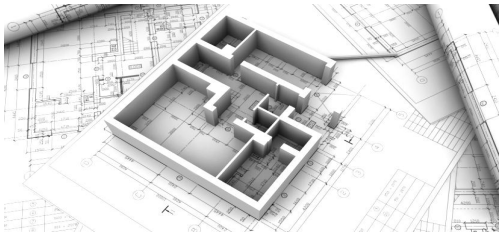
**«A floor per day»**

- **A "Just-in-Time" production process**: reduction stock between one phase and the next, optimizing logistics and considerably increasing productivity levels that allowing us to build a floor per day




**Numbers**

- **Residential:** 2,000 apartments/year = 150,000 sqm/year



# A REAL EXAMPLE

# Methodological Introduction



*The Feasibility Plan presented in the following pages has been prepared with the purpose of providing:*

- synthetic information about the economic and financial potentiality of the Business Model and
- the order of magnitude of the main economic and financial drivers.

*Precisely because it has been realized for indicative purposes, simplifications have been introduced:*

- inflation rates have not been considered,
- VAT, direct and indirect taxes have not been considered,
- entire year's production is made and sold in the same year without inventories, trade payables and receivables,

The Feasibility Plan has been drawn up in EURO.

# The Factory

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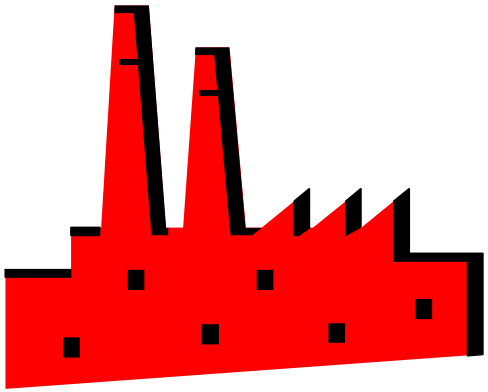

With a total yearly production capacity of

***EASY HOME*** ***150,000 sq. m.***

# The Factory

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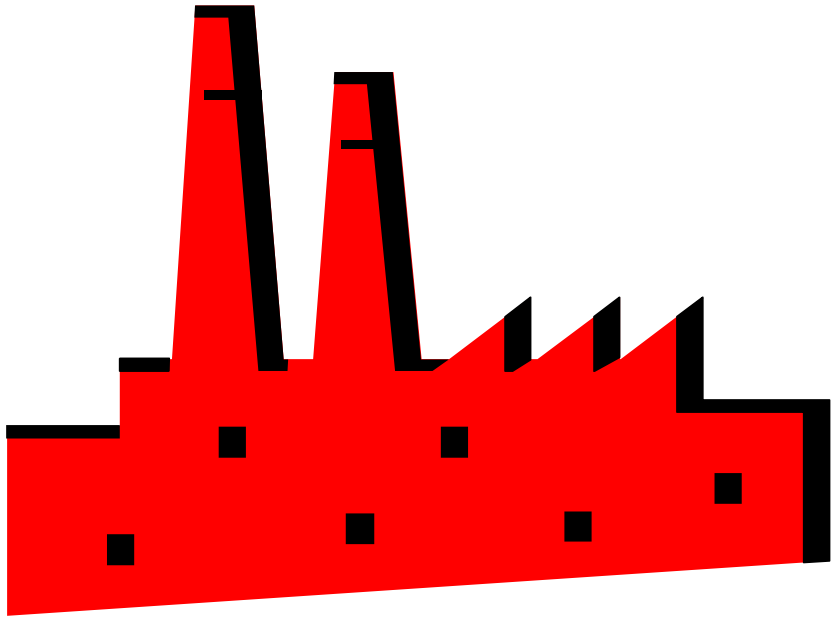

***Overall Land Necessity***

**> 40,000 sq. m.**

***Factory Surface***

**20,000 sq. m.**

***Storages & Logistic***

**20,000 sq. m.**

# The Investment



| Total Investment - Euro 000 | Total |
|---|---|
| Land & Infrastructures | 0 |
| Premises | 4.000 |
| Plant, Know How & Start Up Training (18 m.) | 20.000 |
| | **24.000** |
| Start-up Costs | 1.000 |
| **TOTAL INVESTMENT** | **25.000** |

# The Key Element of the Income Statement

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| EURO sqm | Easy Home |
|---|---|
| Raw Materials | 134,17 |
| Cost of Work | 29,41 |
| Cost of Services | 11,83 |
| Contingencies | 13,42 |
| **Production Costs** | **188,83** |

| EURO sqm | Easy Home |
|---|---|
| | |
| Production Costs | 188,83 |
| ***Finishing*** | ***100,00*** |
| | |
| **Total Production Costs** | **288,83** |
| | |
| ***FINAL COST - EURO SQM*** | ***345,00*** |

- ✓ Our constructive model, such as automotive platforms, works with a shell & core structure.
- ✓ The differences, for the same dimensioning of the spaces, are carried out in the levels of internal and external finishes.
- ✓ The finishes for an entry level social housing can be around 70 Euros sqm, lowering the Final Cost to 315 Euros sqm.
- ✓ The level of 100 Euros per sqm allows you to offer an average level product for a Social Housing.

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# The Key Element of the Income Statement

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Given these assumptions relate both to items of revenues that to the direct costs of production, it was determined the following Industrial Margin or Gross Margin

| Euro 000 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| REVENUES FROM SHELL AND CORE | 0 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 |
| PRODUCTION COSTS | 0 | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) |
| **TOTAL GROSS MARGIN** | **0** | **8.425** | **8.425** | **8.425** | **8.425** | **8.425** | **8.425** | **8.425** | **8.425** | **8.425** | **8.425** |
| | | ***16,28%*** | ***16,28%*** | ***16,28%*** | ***16,28%*** | ***16,28%*** | ***16,28%*** | ***16,28%*** | ***16,28%*** | ***16,28%*** | ***16,28%*** |

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# The Key Element of the Income Statement

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Taking advantage from technical and commercial synergies, we have tried to limit the Overheads Cost.

| Euro 000 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Overhead Costs | (1.000) | (518) | (518) | (518) | (518) | (518) | (518) | (518) | (518) | (518) | (518) |
| *On Total Revenues* | | *1,00%* | *1,00%* | *1,00%* | *1,00%* | *1,00%* | *1,00%* | *1,00%* | *1,00%* | *1,00%* | *1,00%* |
| G & A + Staff | | (725) | (725) | (725) | (725) | (725) | (725) | (725) | (725) | (725) | (725) |
| *On Total Revenues* | | *1,4%* | *1,4%* | *1,4%* | *1,4%* | *1,4%* | *1,4%* | *1,4%* | *1,4%* | *1,4%* | *1,4%* |
| *Global Service Management - GSM* | | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) |
| *On Shell & Core Revenues* | | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* |
| *Royalties* | | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) |
| *On Shell & Core Revenues* | | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* | *6,0%* |
| | **(1.000)** | **(7.452)** | **(7.452)** | **(7.452)** | **(7.452)** | **(7.452)** | **(7.452)** | **(7.452)** | **(7.452)** | **(7.452)** | **(7.452)** |

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# The Key Element of the Income Statement

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Summarizing what has been said, in the following the composition table of EBITDA.

| Euro 000 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Revenues from Shell & Core | 0 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 |
| | ***0*** | ***51.750*** | ***51.750*** | ***51.750*** | ***51.750*** | ***51.750*** | ***51.750*** | ***51.750*** | ***51.750*** | ***51.750*** | ***51.750*** |
| Production Costs | 0 | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) |
| Overhead Costs | (1.000) | (518) | (518) | (518) | (518) | (518) | (518) | (518) | (518) | (518) | (518) |
| G & A + Staff | 0 | (725) | (725) | (725) | (725) | (725) | (725) | (725) | (725) | (725) | (725) |
| Global Service Management - GSM | 0 | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) |
| Royalties | 0 | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) |
| | ***(1.000)*** | ***(50.777)*** | ***(50.777)*** | ***(50.777)*** | ***(50.777)*** | ***(50.777)*** | ***(50.777)*** | ***(50.777)*** | ***(50.777)*** | ***(50.777)*** | ***(50.777)*** |
| **EBITDA** | **(1.000)** | **973** | **973** | **973** | **973** | **973** | **973** | **973** | **973** | **973** | **973** |
| | | ***1,88%*** | ***1,88%*** | ***1,88%*** | ***1,88%*** | ***1,88%*** | ***1,88%*** | ***1,88%*** | ***1,88%*** | ***1,88%*** | ***1,88%*** |

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# The Key Element of the Income Statement

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The Amortization Plan of the Investment.

| Amm.on Years | Amm.on % | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Land | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *25* | *4,0%* | *Depreciation Rate* | | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| | | *Depreciation Fund* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| | | | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| | | Premises | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 | 4.000 |
| *25* | *4,0%* | *Depreciation Rate* | | *(160)* | *(160)* | *(160)* | *(160)* | *(160)* | *(160)* | *(160)* | *(160)* | *(160)* | *(160)* |
| | | *Depreciation Fund* | *0* | *(160)* | *(320)* | *(480)* | *(640)* | *(800)* | *(960)* | *(1.120)* | *(1.280)* | *(1.440)* | *(1.600)* |
| | | | *4.000* | *3.840* | *3.680* | *3.520* | *3.360* | *3.200* | *3.040* | *2.880* | *2.720* | *2.560* | *2.400* |
| | | Molds, Install. & Equip. | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 | 20.000 |
| *25* | *4,0%* | *Depreciation Rate* | | *(800)* | *(800)* | *(800)* | *(800)* | *(800)* | *(800)* | *(800)* | *(800)* | *(800)* | *(800)* |
| | | *Depreciation Fund* | *0* | *(800)* | *(1.600)* | *(2.400)* | *(3.200)* | *(4.000)* | *(4.800)* | *(5.600)* | *(6.400)* | *(7.200)* | *(8.000)* |
| | | | *20.000* | *19.200* | *18.400* | *17.600* | *16.800* | *16.000* | *15.200* | *14.400* | *13.600* | *12.800* | *12.000* |
| | | Depreciation Rate | 0 | (960) | (960) | (960) | (960) | (960) | (960) | (960) | (960) | (960) | (960) |
| | | | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 |
| | | | *0* | *(960)* | *(1.920)* | *(2.880)* | *(3.840)* | *(4.800)* | *(5.760)* | *(6.720)* | *(7.680)* | *(8.640)* | *(9.600)* |
| | | | **24.000** | **23.040** | **22.080** | **21.120** | **20.160** | **19.200** | **18.240** | **17.280** | **16.320** | **15.360** | **14.400** |

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# The Income Statement

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| Euro 000 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Revenues from Shell & Core | 0 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 | 51.750 |
| | *0* | *51.750* | *51.750* | *51.750* | *51.750* | *51.750* | *51.750* | *51.750* | *51.750* | *51.750* | *51.750* |
| Production Costs | 0 | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) | (43.325) |
| Overhead Costs | (1.000) | (518) | (518) | (518) | (518) | (518) | (518) | (518) | (518) | (518) | (518) |
| G & A + Staff | 0 | (725) | (725) | (725) | (725) | (725) | (725) | (725) | (725) | (725) | (725) |
| Global Service Management - GSM | 0 | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) |
| Royalties | 0 | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) | (3.105) |
| | *(1.000)* | *(50.777)* | *(50.777)* | *(50.777)* | *(50.777)* | *(50.777)* | *(50.777)* | *(50.777)* | *(50.777)* | *(50.777)* | *(50.777)* |
| **GOP - EBITDA** | **(1.000)** | **973** | **973** | **973** | **973** | **973** | **973** | **973** | **973** | **973** | **973** |
| | | *1,88%* | *1,88%* | *1,88%* | *1,88%* | *1,88%* | *1,88%* | *1,88%* | *1,88%* | *1,88%* | *1,88%* |
| Depretiation & Amortization | 0 | (960) | (960) | (960) | (960) | (960) | (960) | (960) | (960) | (960) | (960) |
| **NOP - EBIT** | **(1.000)** | **13** | **13** | **13** | **13** | **13** | **13** | **13** | **13** | **13** | **13** |
| | | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* |
| Financial Charges | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **PROFIT BEFORE TAXIS** | **(1.000)** | **13** | **13** | **13** | **13** | **13** | **13** | **13** | **13** | **13** | **13** |
| | | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* | *0,03%* |

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# The Balance Sheet

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| Euro 000 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **NET WORKING CAPITAL** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Plant | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 | 24.000 |
| Depretiation Fund | 0 | (960) | (1.920) | (2.880) | (3.840) | (4.800) | (5.760) | (6.720) | (7.680) | (8.640) | (9.600) |
| Pension Fund | 0 | (309) | (618) | (927) | (1.235) | (1.544) | (1.853) | (2.162) | (2.471) | (2.780) | (3.088) |
| Other Debt | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **NET INVESTED CAPITAL** | **24.000** | **22.731** | **21.462** | **20.193** | **18.925** | **17.656** | **16.387** | **15.118** | **13.849** | **12.580** | **11.312** |
| ***FINANCED BY*** | | | | | | | | | | | |
| **Equity** | **25.000** | **25.000** | **25.000** | **25.000** | **25.000** | **25.000** | **25.000** | **25.000** | **25.000** | **25.000** | **25.000** |
| Legal Reserve | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reatained Earnings | 0 | (1.000) | (987) | (974) | (960) | (947) | (934) | (921) | (908) | (894) | (881) |
| Net Income | (1.000) | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| **NET EQUITY** | **24.000** | **24.013** | **24.026** | **24.040** | **24.053** | **24.066** | **24.079** | **24.092** | **24.106** | **24.119** | **24.132** |
| Net Financial Debt / (Cash) | 0 | (1.282) | (2.564) | (3.846) | (5.128) | (6.410) | (7.692) | (8.974) | (10.256) | (11.538) | (12.820) |
| Net Financial Debt / (Cash) - Short Term Loan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Net Financial Debt / (Cash) - M / L Term Loan | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **NET FINANCIAL DEBT / (CASH)** | **0** | **(1.282)** | **(2.564)** | **(3.846)** | **(5.128)** | **(6.410)** | **(7.692)** | **(8.974)** | **(10.256)** | **(11.538)** | **(12.820)** |
| **TOTAL FINANCING FUNDS** | **24.000** | **22.731** | **21.462** | **20.193** | **18.925** | **17.656** | **16.387** | **15.118** | **13.849** | **12.580** | **11.312** |

# TECNOFIN TECHNOLOGY


SYSTEMS
FOR
CUSTOMIZED
BUILDINGS

# Tecnofin Technology



- ✓ In Italy there is a great tradition in precast technology development.
- ✓ Precast buildings satisfy most of the construction needs faster and better than traditional building technology.
- ✓ High quality materials, engineering of all the production process, and concrete versatility can achieve the best results in every building realization.
- ✓ The great flexibility of concrete permits to build every architectural project in an industrial, faster and simple way than traditional construction systems.
- ✓ Many kind of buildings couldn’t be build without the precast techniques development.
- ✓ We follow the European Technical Standards (EUROCODES) for structural design.

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**Tecnofin Technology**

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# EASY-HOME

# Easy Home

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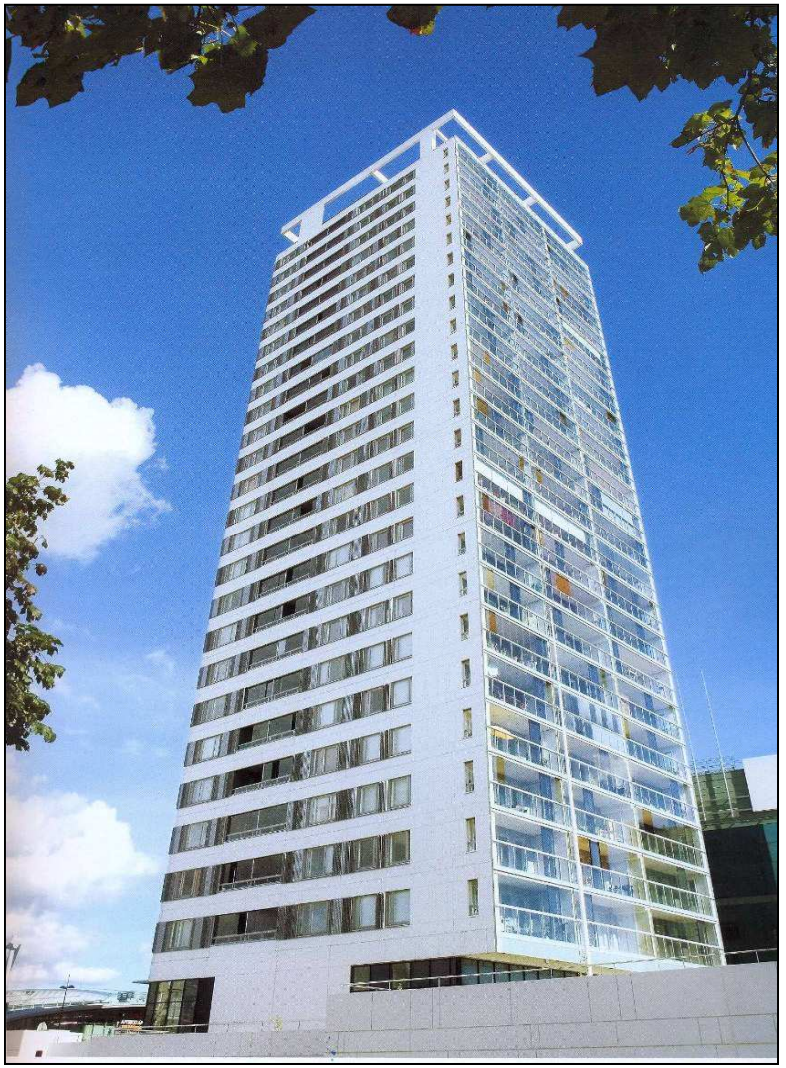
- ✓ By merging the technology of loadbearing panels and all the integrated technologies of Tecnofin comes a unique and versatile system for civil and residential construction

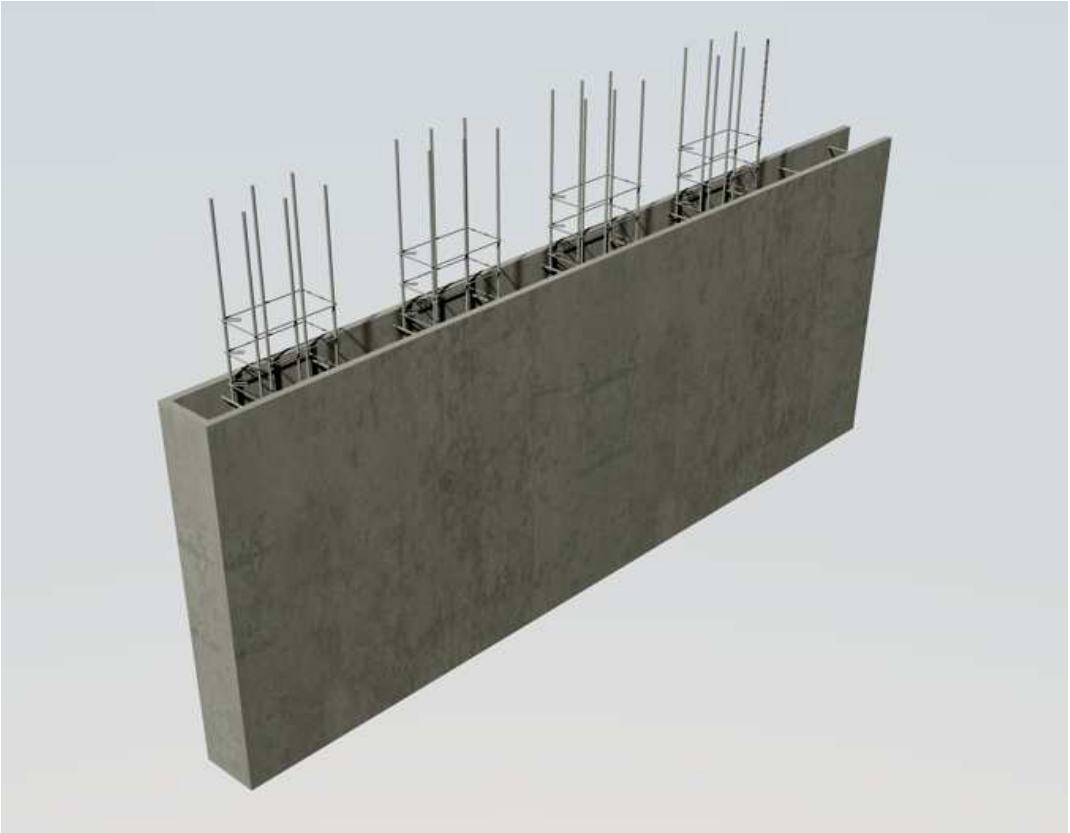
- ✓ The EASY-HOME system allows the use and integration of the different elements of the PRECAST and REP® SYSTEM for creating buildings, even of considerable height, totally laid in dry way and completed, where needed, with mechanical structural joints, wet and mixed, along with casting finishing of composite floor slabs according to the performance required by the structures

- ✓ Additional typical features of the EASY-HOME system are loadbearing panels, non-loadbearing panels, precast stairs and insulating balconies



## COMPOSITE PANELS

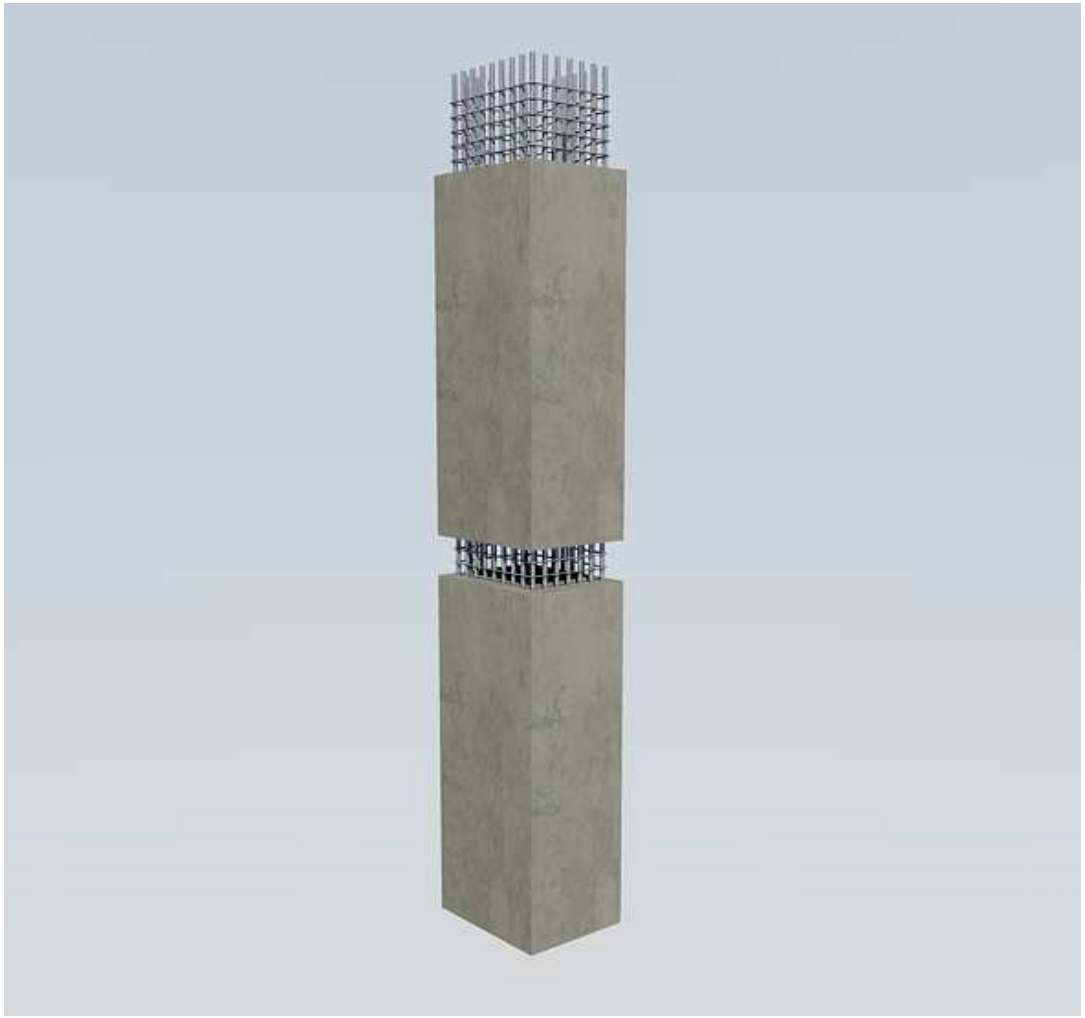
- ✓ Finished surface in concrete
- ✓ Great flexibility for the realization of supporting partitions
- ✓ Dry mounting with appropriate reinforcements and supplementary casting



## WET JOINT CONCRETE COLUMNS

- ✓ Precast multi-storey columns with openings, at the level of the planes, for the insertion of the reinforcement connection of prefabricated beams and any support brackets.

- ✓ Possibility to produce multi-storey columns, up to 4 floors for each single column.



## REP® BEAMS
## WITH CONCRETE CASE BACK

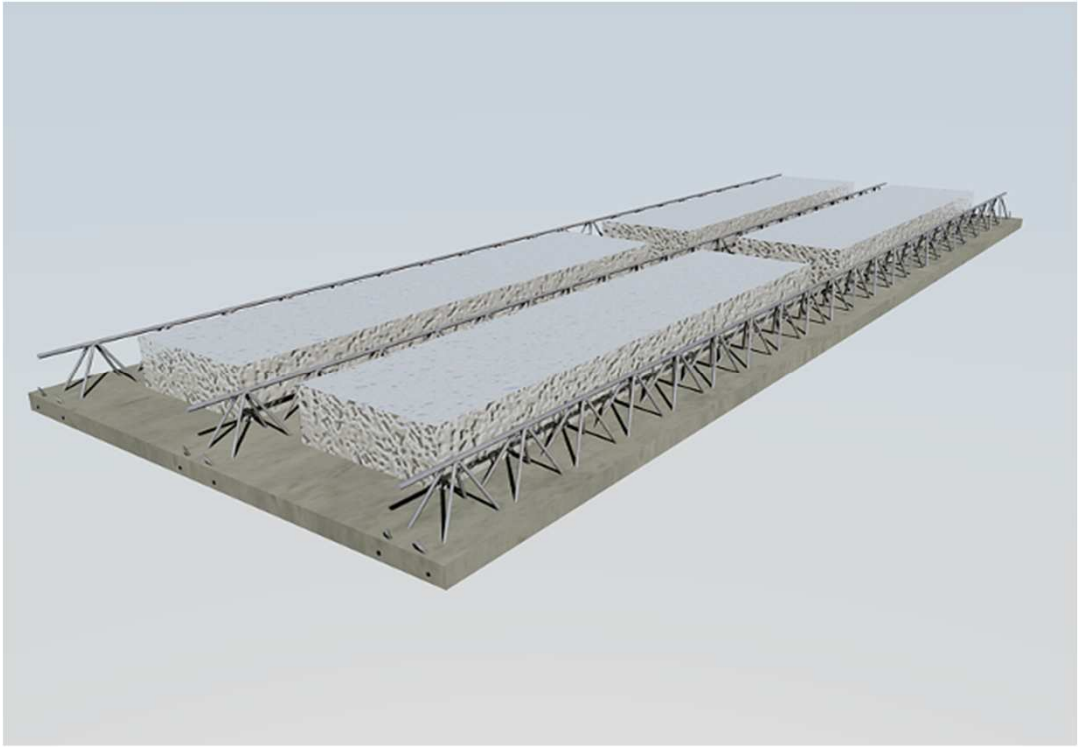
- ✓ Self-supporting welded steel section
- ✓ Concrete lower case back around steel reinforcement used as support for slabs, frameworks and lower fire protection
- ✓ Steel rebars for structural continuity
- ✓ Possible camber made during welding operations
- ✓ Eventual preset side banks made of steel or concrete

## REP® BEAMS
## WITH STEEL PLATE CASE BACK

- ✓ Self-supporting welded steel section
- ✓ Lower steel plate case back used as support for slabs, frameworks and lower strained reinforcement
- ✓ Lower steel paintable for fire protection
- ✓ Steel rebars for structural continuity
- ✓ Possible camber construction
- ✓ Eventual preset side banks made of steel

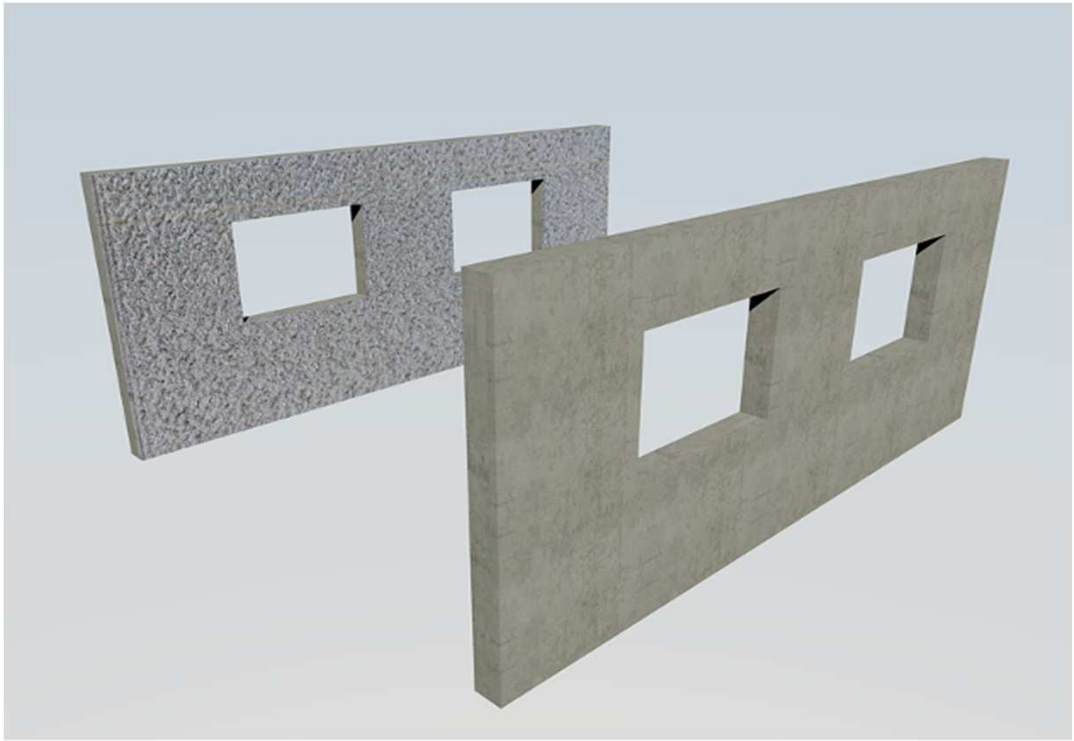
## FLOOR PLATE
## WITH LATTICE GIRDERS

- ✓ Floor slabs with lattice girders elements and EPS blocks used to reduce slab structural weight
- ✓ Completed in situ with steel bars and meshes reinforcement for structural continuity and cast in situ



## PRECAST CONCRETE PANELS

- ✓ Solid reinforced concrete panels
- ✓ External finished surface in concrete (smooth grey / white or other colours, or in marble / granite washed finishing)
- ✓ Great flexibility for openings and integration of insulating windows



## LOADBEARING PANELS

- ✓ Panels with solid concrete structure from 16 up to 24 cm of thickness
- ✓ Layer of EPS or rock-wool insulation connected to the structural layer used for continuous insulation of coat facades or as an intermediate layer for panels with external concrete finishing
- ✓ Eventual outer concrete layer 5-6 cm thickness
- ✓ Possible finishes with concrete facings , marble / granite washed or matrix
- ✓ Integration with factory fixtures and any place for plants
- ✓ Vertical connections with wet joint armed with steel loops overlapped
- ✓ Horizontal connections with wet joints, wall shoes and metal sheaths

The loadbearing panels in their various configurations are used for stairwells and elevator cases, as well as for structural building walls.

At the same time they can fulfill the function of vertical support in substitution of columns and insulated facade for the outer perimeter of the building.

The solution with external coat is recommended for buildings up to 8-12 floors since it must then be completed in situ.

Above this height it is advisable to use insulating panels and external concrete coating.

## NON – LOADBEARING PANELS

- ✓ Self-supporting panels with solid concrete structure from 8 up to 12 cm of thickness
- ✓ Layer of EPS or rock-wool insulation connected to the structural layer used as bases for continuous insulation of coat facades or as an intermediate layer for panels with external concrete finishing
- ✓ Eventual outer concrete layer 5-6 cm thickness
- ✓ Possible finishing with concrete facings, marble / granite washed or matrix
- ✓ Integration with factory fixtures and any place for plants
- ✓ Suspending mechanical connections to columns and structural elements

Non-loadbearing panels in their various configurations are used for internal partitions placed on continuous slabs, as well as external facing of facades in punctual structures through mechanical support connections.

## CONSTRUCTIVE PHASES

Realization in situ of the foundation structures with the bars of recovery arranged for the vertical bearing elements.
This phase is similar to what happens for the above ground subsequent scaffolding.

Placement of the precast elements for the construction of vertical structures.

Placement of the steel reinforcement, concrete cast in situ for vertical structures.

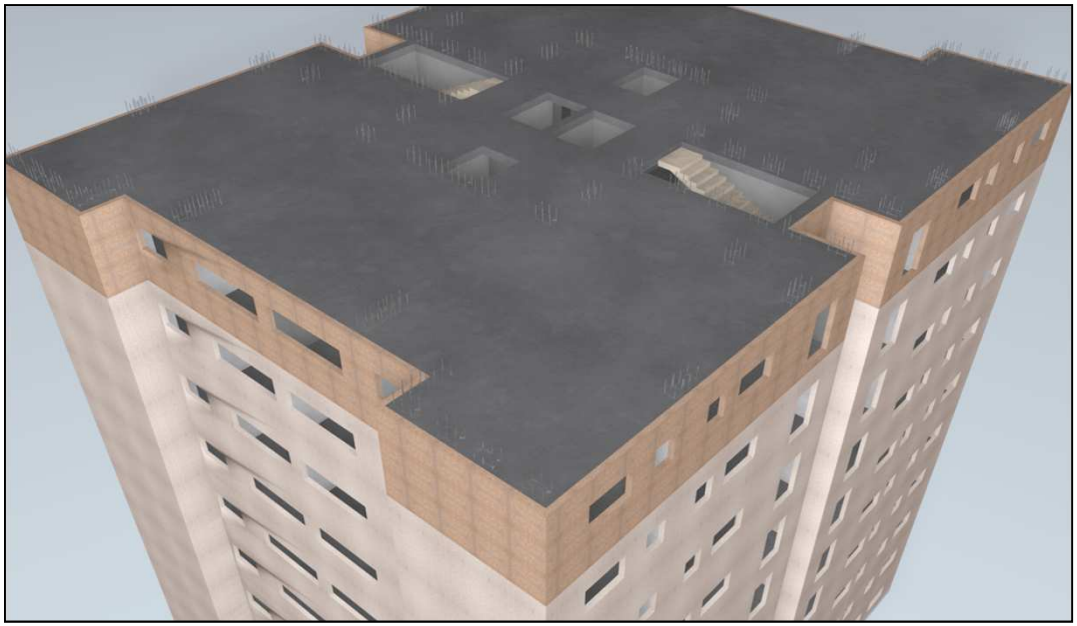
Installation of lattice girders beams.

Installation of perimeter panels and casting of any layer of flooring finish.

Installation of lattice girders plates of slab.

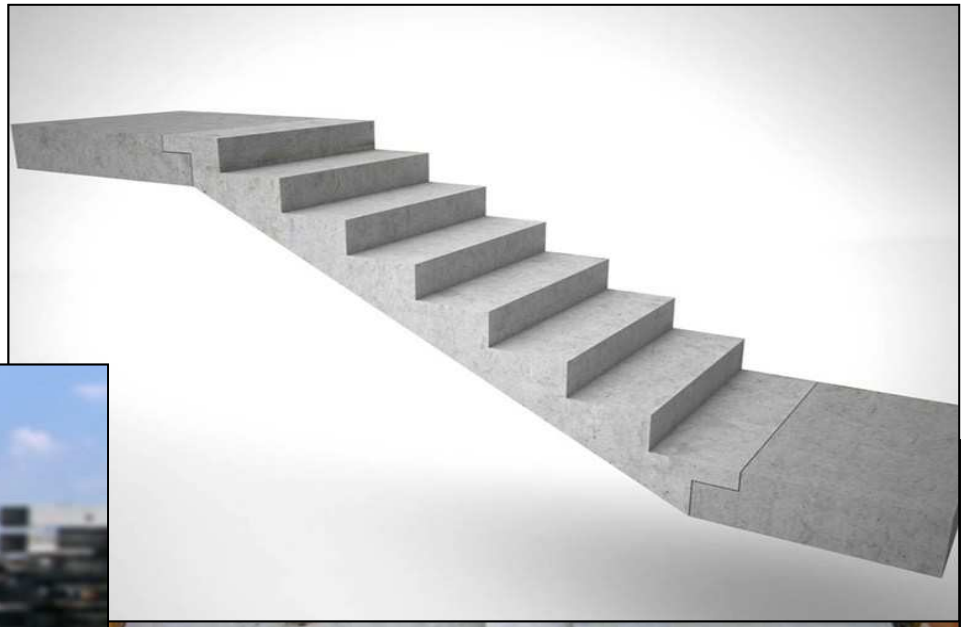
Steel reinforcement and casting of the scaffolding horizontal structures.

Assembling of precast stairs.



## STAIRCASES

- ✓ Single or with slab stairs
- ✓ Finishing in concrete coating or completed in factory with marble, granite and tile
- ✓ Total variability of riser and tread
- ✓ Immediate use in the construction phase to reach the floors in elevation



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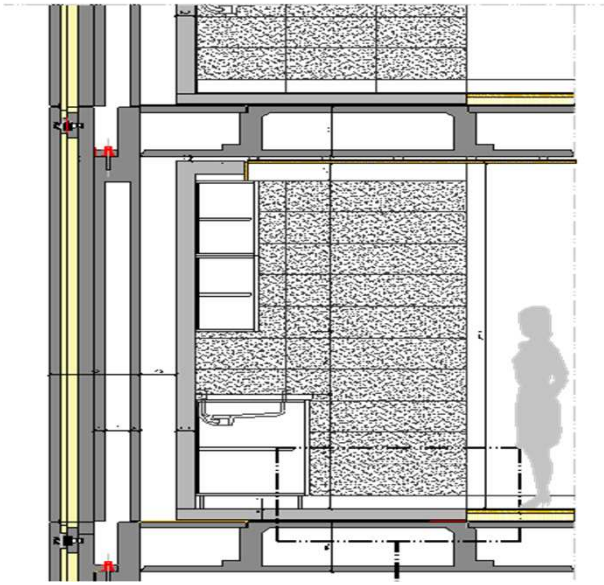
## PRECAST KITCHEN BLOCKS



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**PRECAST**

**BATHROOM**

**BLOCKS**

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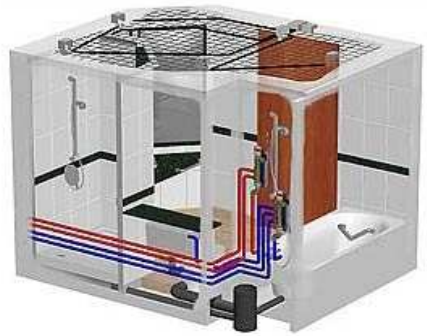
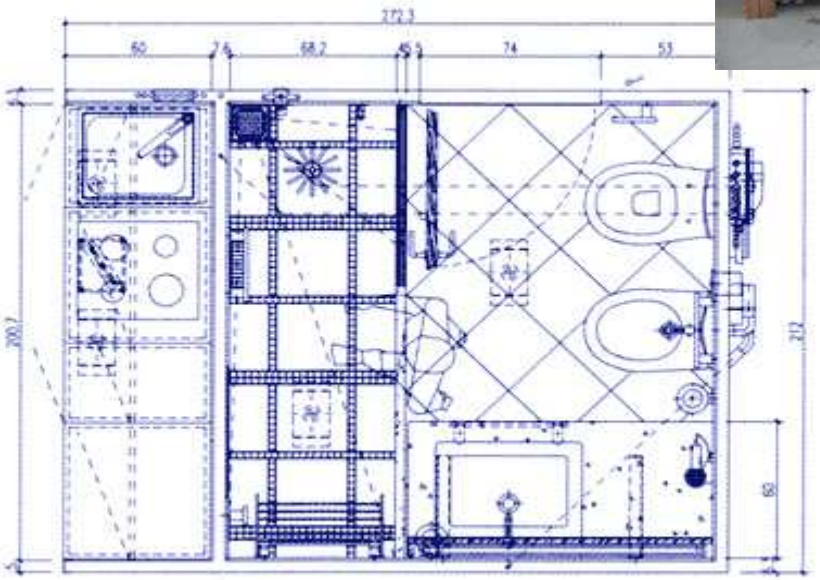


## PRECAST BLOCKS

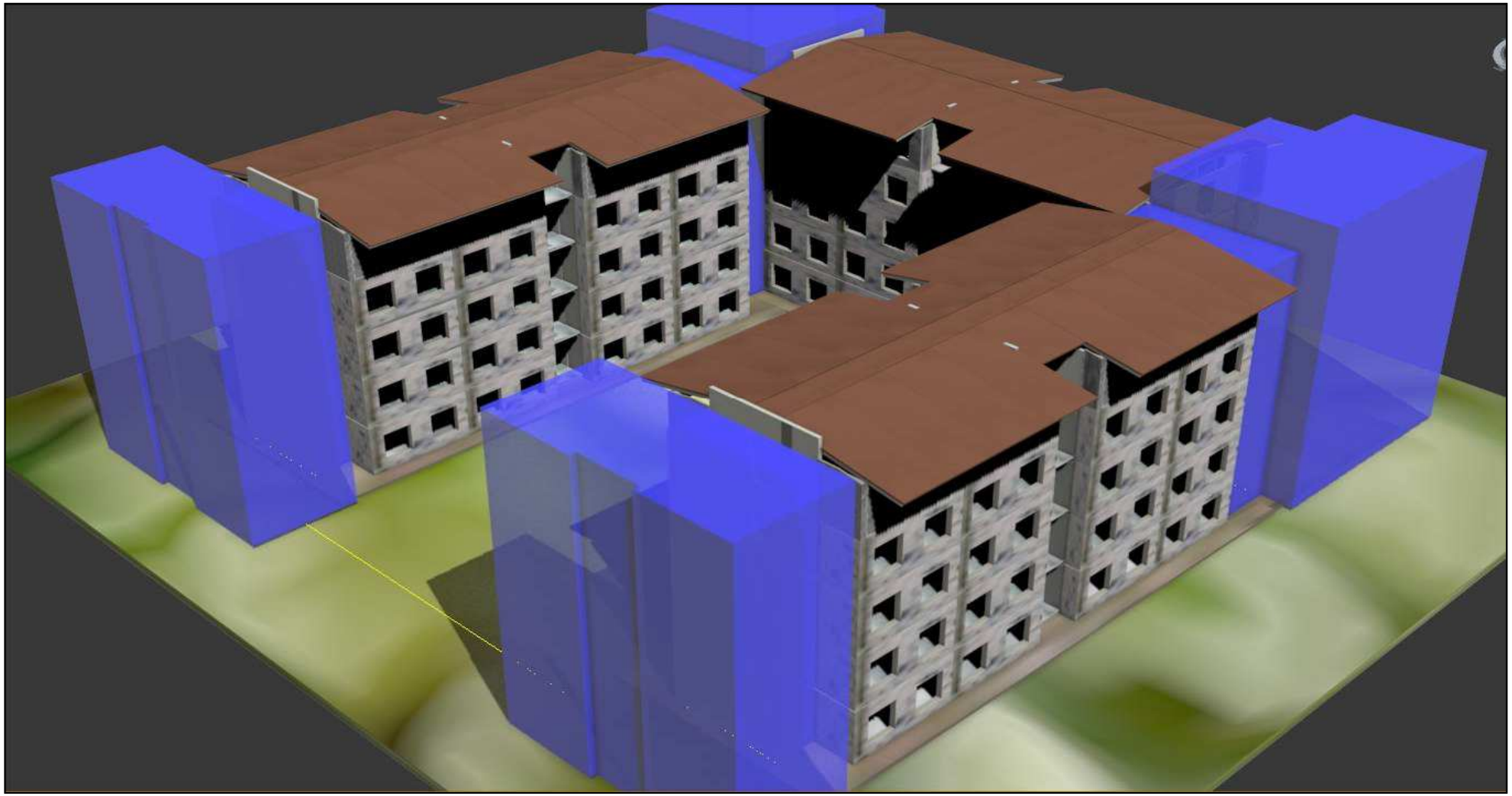


## BALCONIES

- ✓ Solid or lightened cast concrete elements with thickness from 12 to 20 cm equipped with patented thermal break systems for connection to the floor slabs and integrated downspout
- ✓ They can be used as a balcony or as a loggia, with cantilever or with steel or concrete pillars for perimeter support

## RESIDENTIAL COMPLEX FOR UNIVERSITY STUDENTS

Example of a 5 floors building used as a residence for university students with structure loadbearing panels and floors slabs



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## RESIDENTIAL COMPLEX FOR UNIVERSITY STUDENTS

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**RESIDENTIAL TOWER**

**25 FLOORS**

**960 sq.m. per FLOOR**

Example of a 25 floors building at the design stage with a structural framework consists of walls and columns with wet joint, REP® beams for borders and anti seismic stiffening hidden in the slabs, floors slabs and hanged non-loadbearing panels thermally insulated with rock-wool stratigraphy 10 + 14 + 6 cm

**RESIDENTIAL TOWER – 25 FLOORS – 960 sq.m. per FLOOR**

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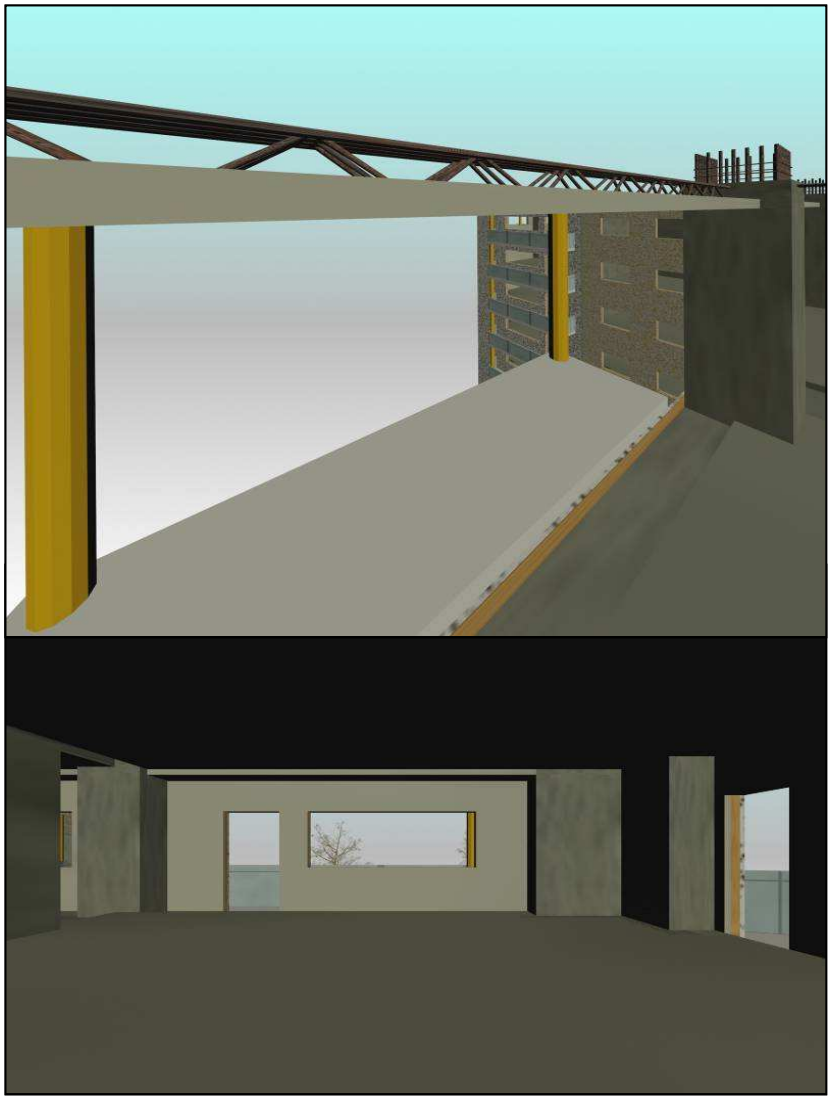
**RESIDENTIAL TOWER – 25 FLOORS – 960 sq.m. per FLOOR**



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**RESIDENTIAL TOWER**

**25 FLOORS**

**960 sq.m. per FLOOR**

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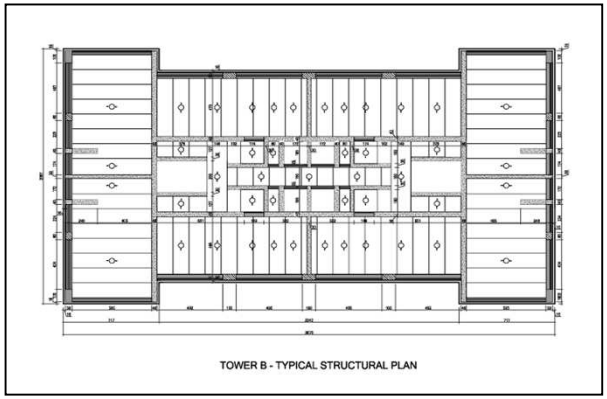
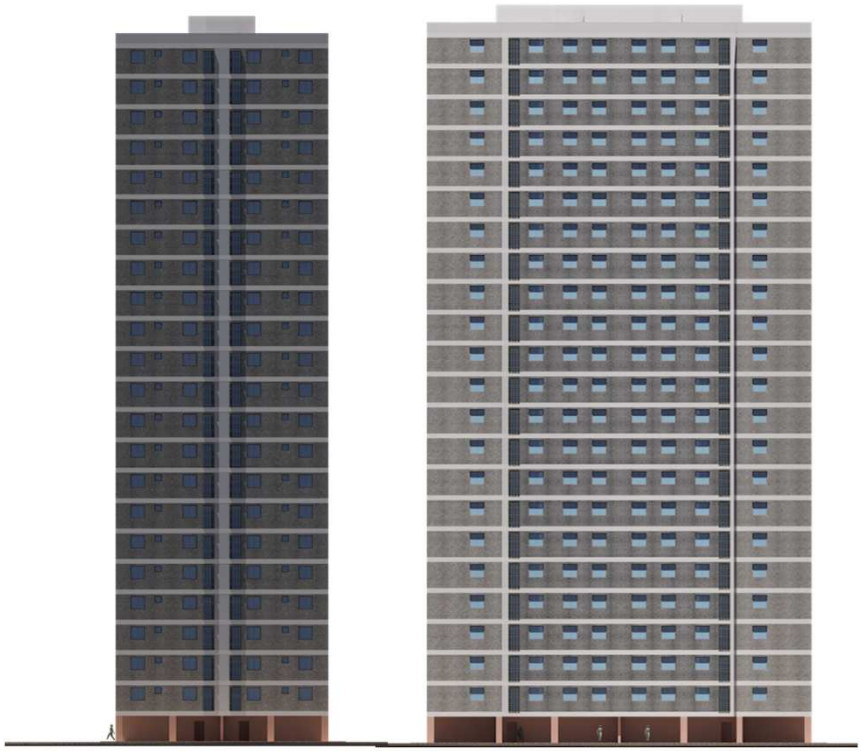

TOWER B - TYPICAL STRUCTURAL PLAN

**RESIDENTIAL TOWER**
**24 FLOORS**
**680 sq.m. per FLOOR**



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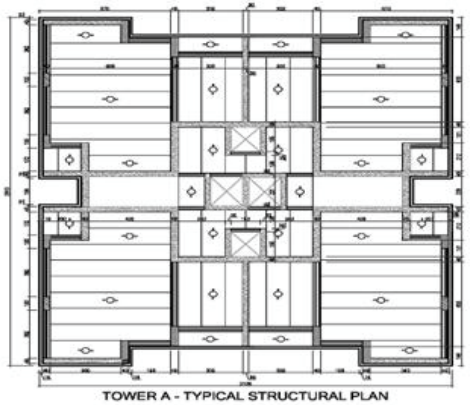
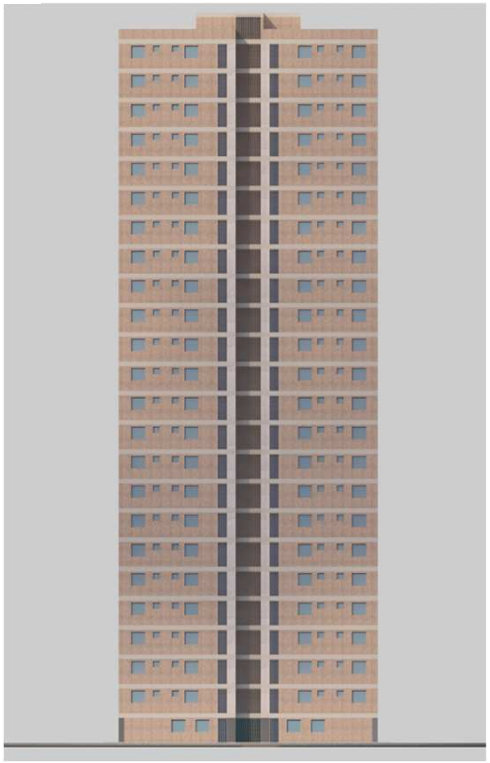
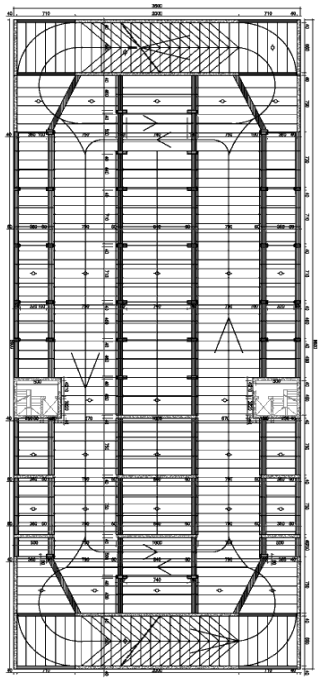
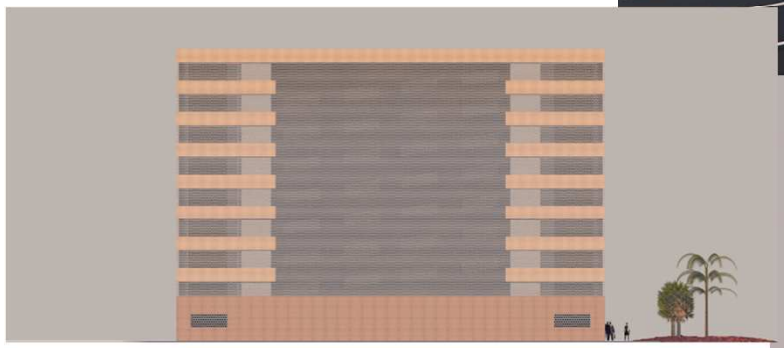

TOWER A - TYPICAL STRUCTURAL PLAN

**RESIDENTIAL TOWER**
**24 FLOORS**
**520 sq.m. per FLOOR**

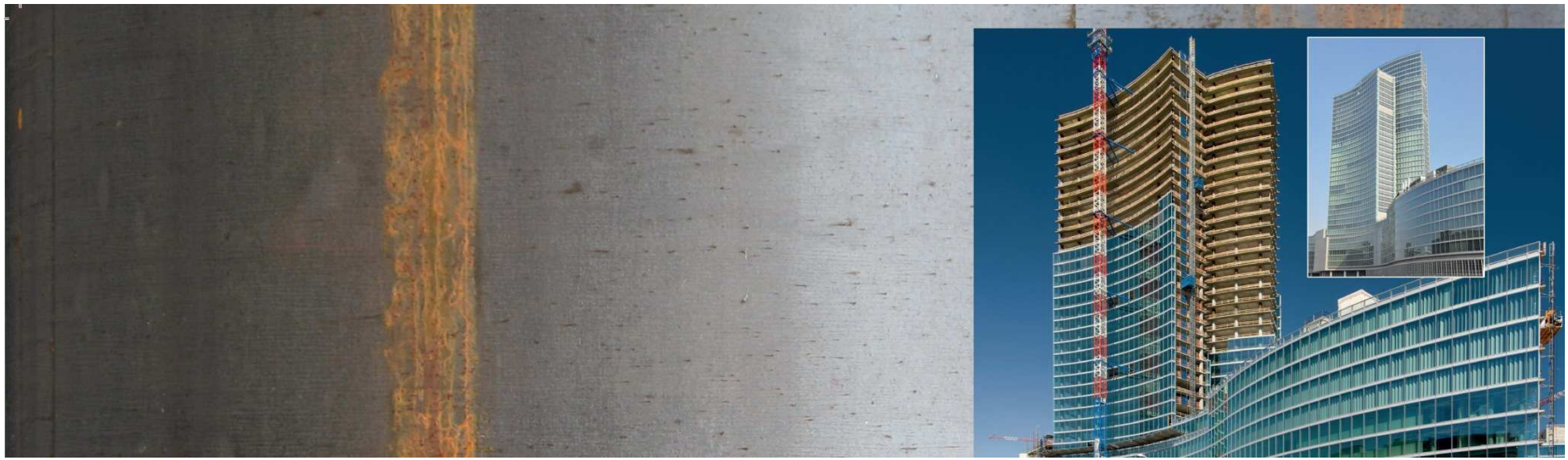


**MULTISTOREY PARKING – 3,030 sq.m. per FLOOR**





# REP®
# SYSTEM



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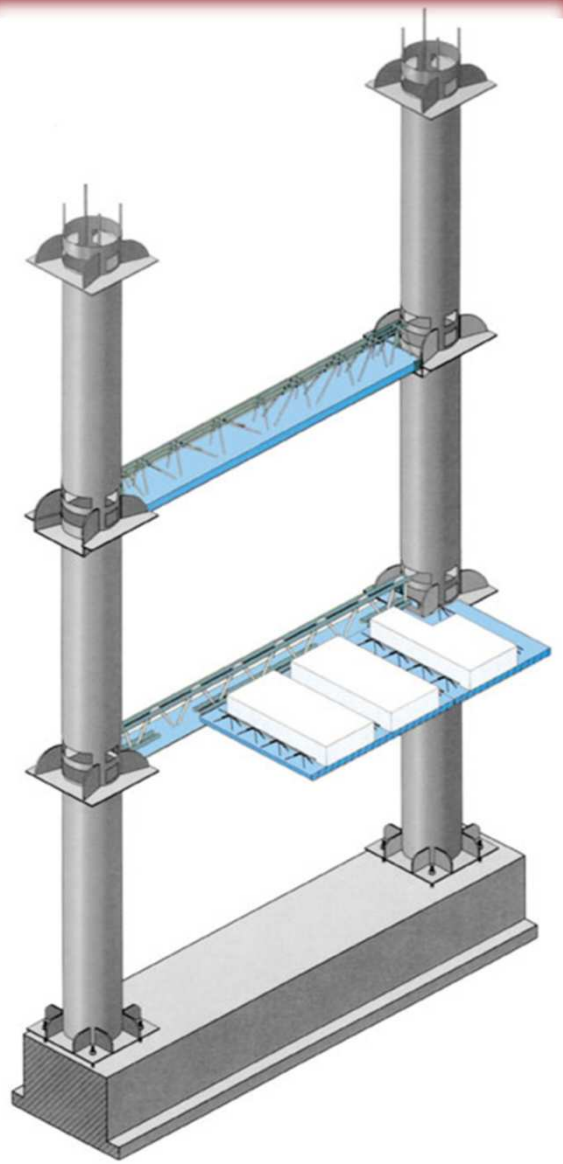
**REP® SYSTEM** matches the typical fast assembly of steels structures to the strength and affordability of concrete to reach the effectiveness of monolithic structures

Typical elements of **REP® SYSTEM** are first of all the **REP® BEAMS**, then the **REP® COLUMNS** in steel or concrete and **REP® SLABS**.

The peculiar features of this system are the self-supporting properties during the construction phase and the monolithic final structure resulting after the cast in situ operations

Main features:

- ✓ Flexibility and adaptability to many applications
- ✓ Monolithic final structure
- ✓ Light elements
- ✓ Beams and columns made by a steel welded element completed with cast in situ concrete



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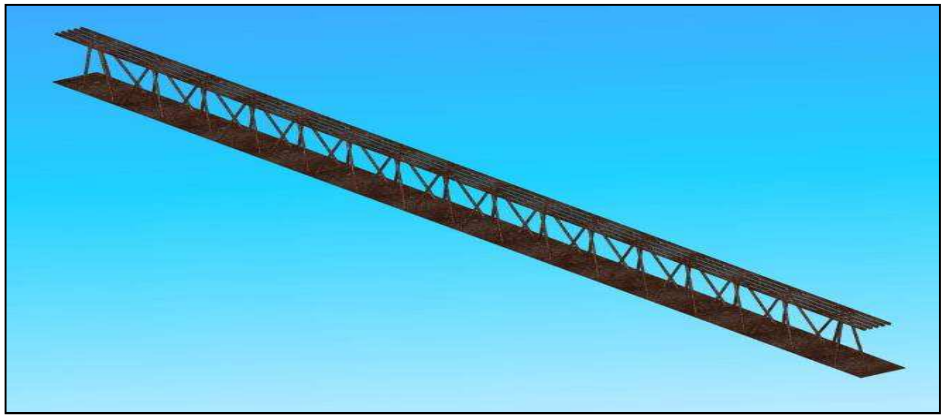
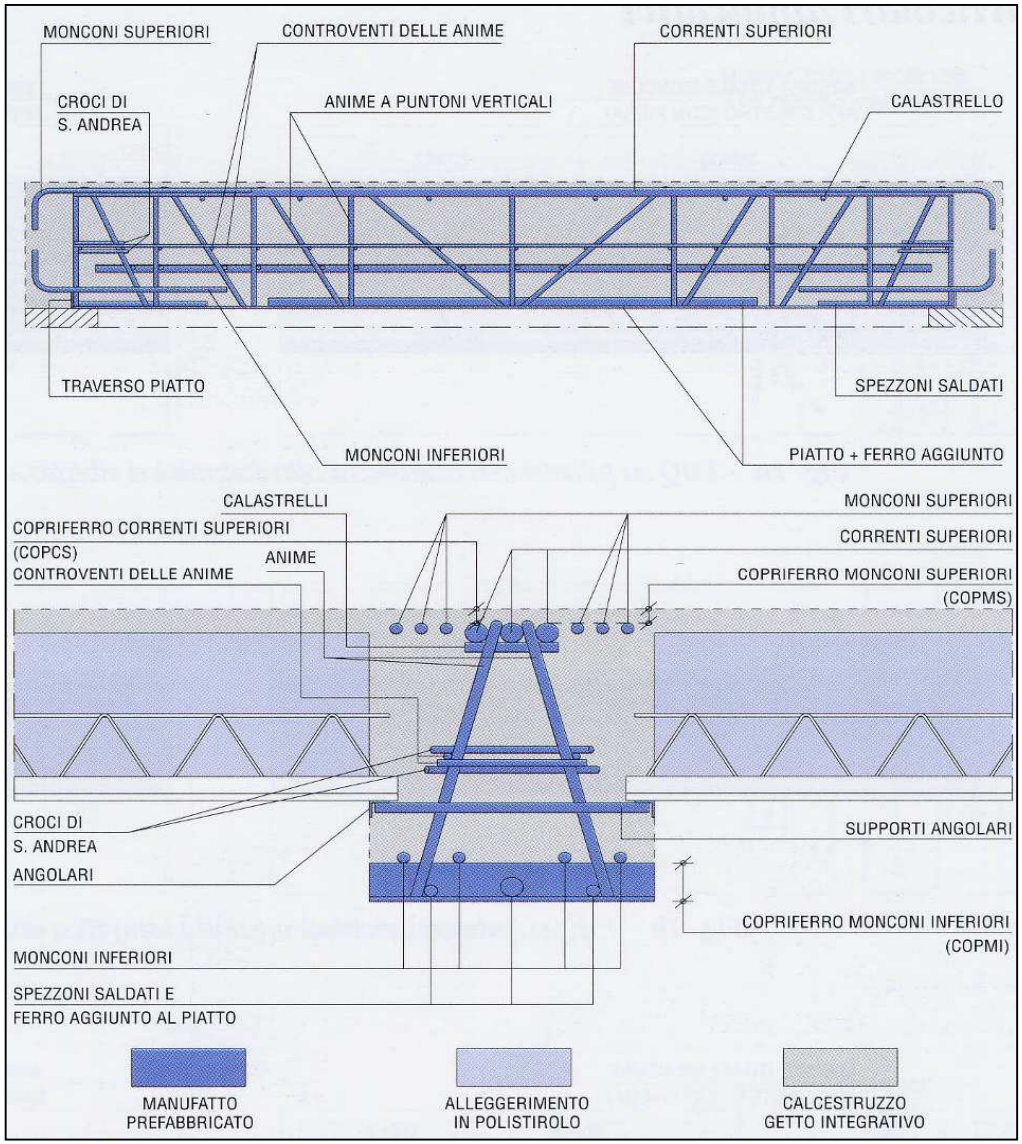
## REP® BEAM WITH STEEL PLATE

- ✓ Composite beams calculated in structural continuity
- ✓ Self-supporting welded steel section
- ✓ Lower steel plate case back used as support for slabs, frameworks and lower strained reinforcement
- ✓ Lower steel paintable for fire protection
- ✓ Angular steel support linked to steel webs for supporting slabs and temporary banks for casting
- ✓ Steel rebars for structural continuity
- ✓ Possible adjustable camber made during welding operations
- ✓ Preset side banks made of steel





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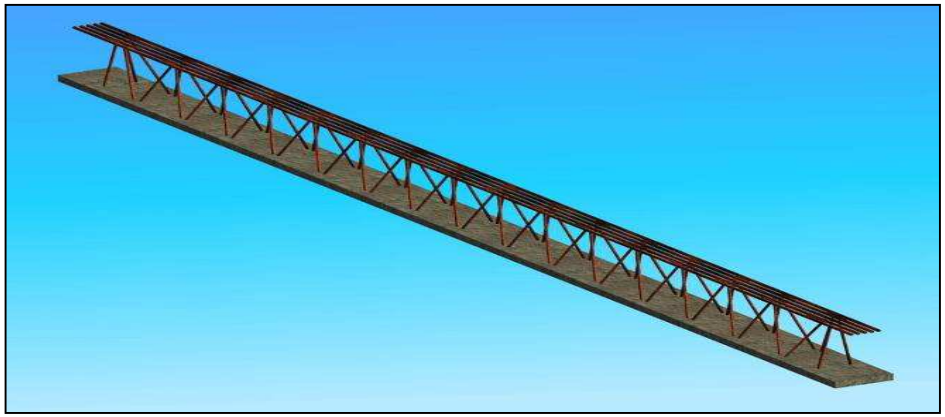
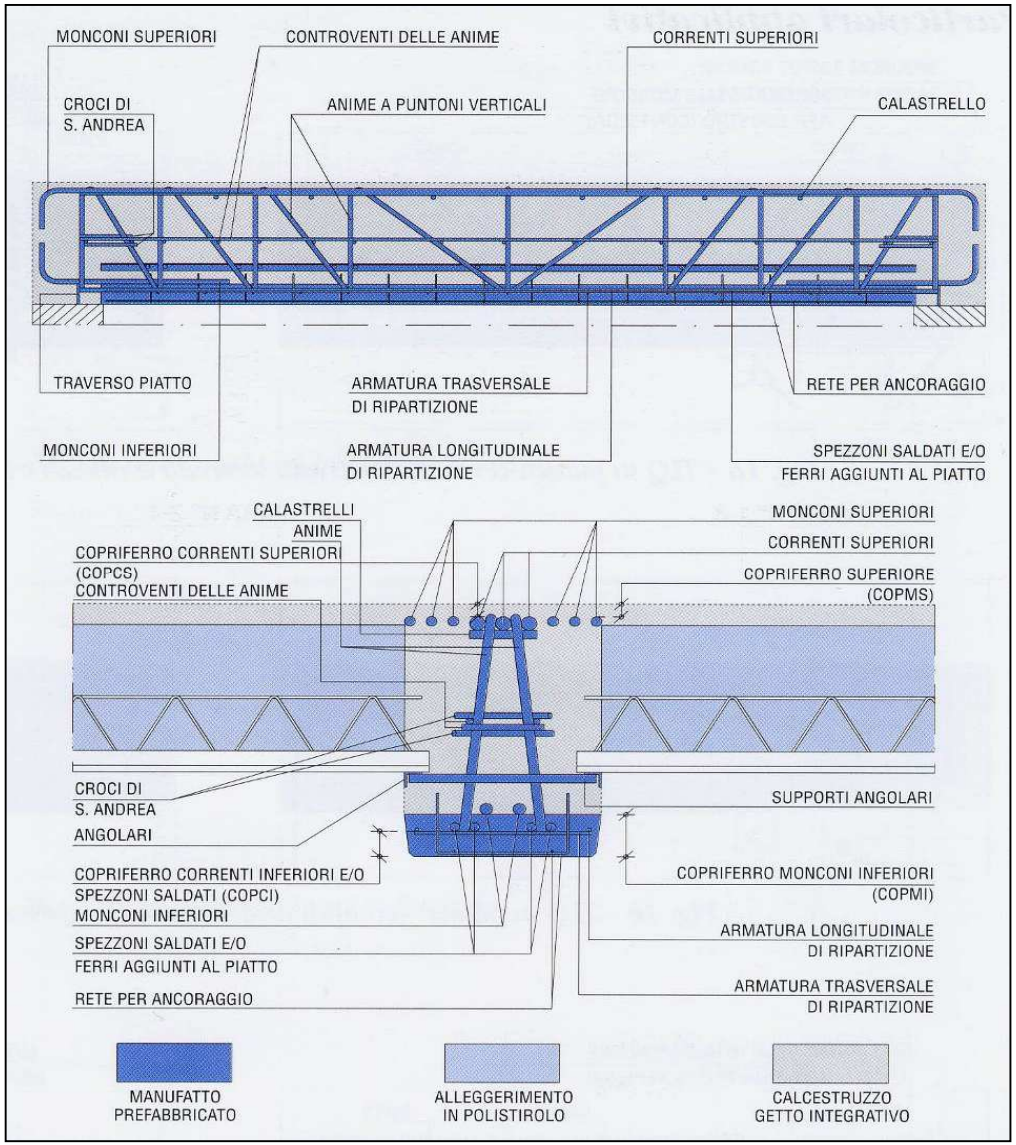
## REP® BEAM WITH CONCRETE CASE BACK

- ✓ Composite beams calculated in structural continuity
- ✓ Self-supporting welded steel section
- ✓ Concrete lower case back around steel reinforcement used as support for slabs, frameworks and lower fire protection
- ✓ Angular steel support linked to steel webs for supporting slabs and temporary banks for casting
- ✓ Steel rebars for structural continuity
- ✓ Possible camber made during welding operations
- ✓ Cast on plane or curved frameworks
- ✓ Preset side banks made of steel or concrete





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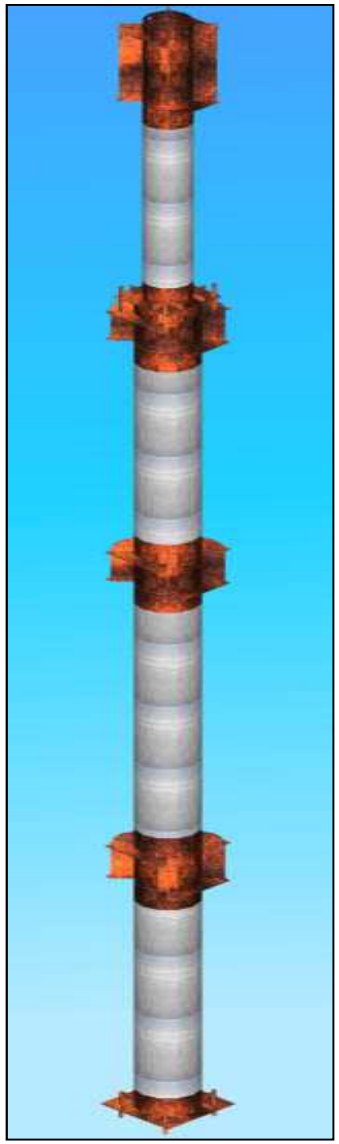
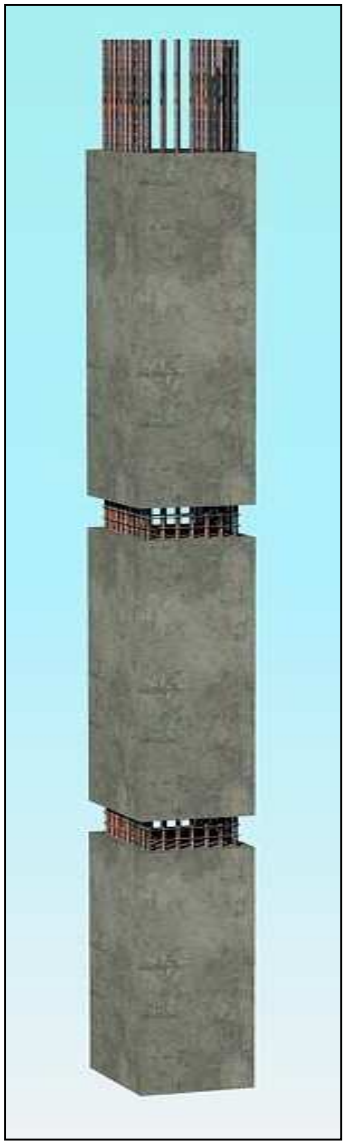
## REP® COLUMN IN STEEL OR CONCRETE WITH WET JOINT

- ✓ Steel welded tube of circular or rectangular section used for beams supporting during the construction phase and as framework for casting concrete
- ✓ Free total height
- ✓ Single multi-storey element stackable ensuring structural continuity
- ✓ Concealing or understating inter-storey shelves
- ✓ Cut-outs for rebars and fulfilling concrete
- ✓ Steel reinforcement welded inside directly during the production process and properly distanced
- ✓ Integrated downspout
- ✓ Precast multi-storey column, with or without concrete or steel support shelves, used for monolithic connection
- ✓ Rectangular, circular or polygonal section
- ✓ Base or floor connection with corrugated metal sheaths or wall shoes
- ✓ Possibility to produce multi-storey columns, up to 4 floors for each single column.





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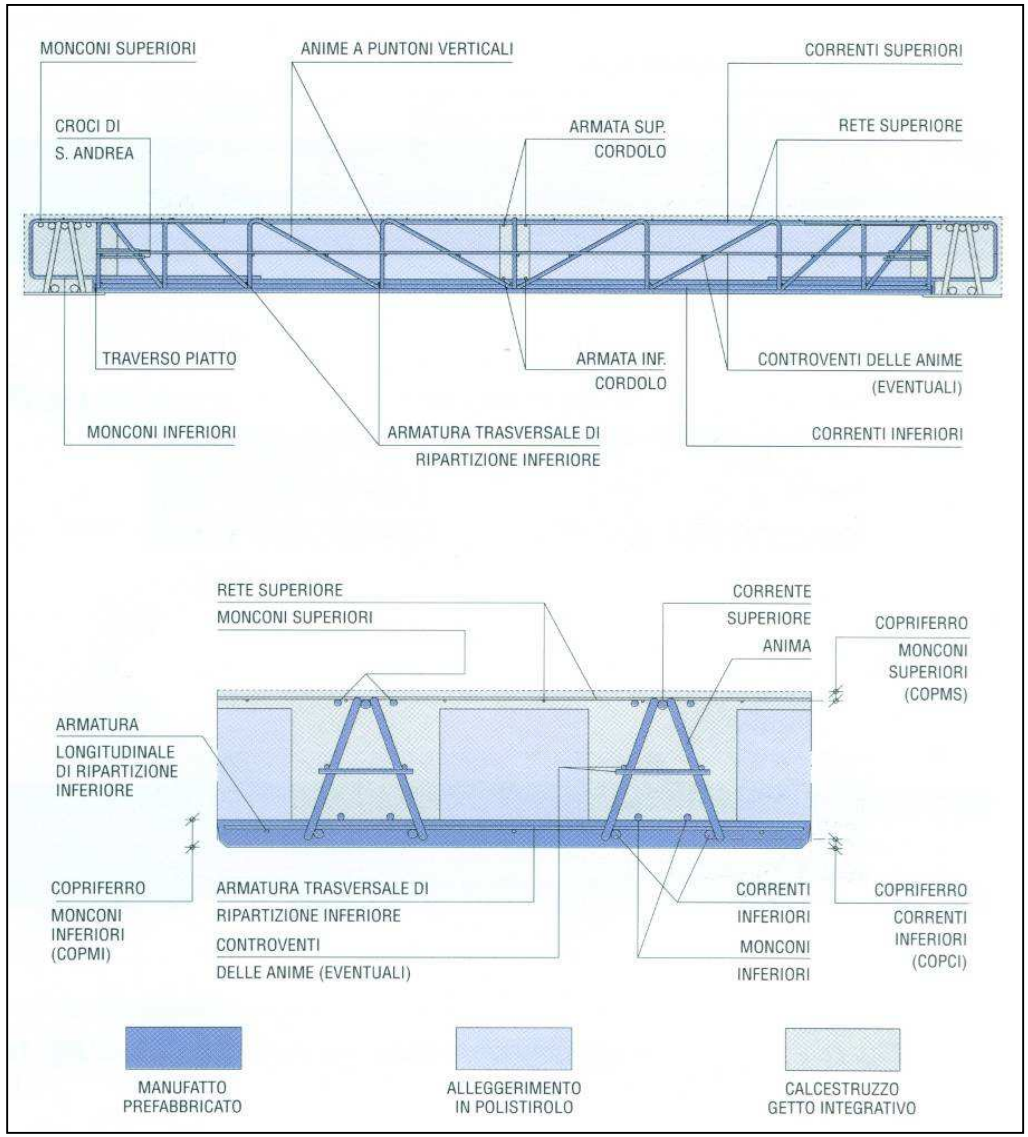
## REP® SLAB

- ✓ Composite slab calculated in structural continuity
- ✓ Self-supporting welded steel section
- ✓ Concrete lower case back around steel reinforcement used as frameworks and lower fire protection
- ✓ Steel rebars for structural continuity
- ✓ Standard width of 120 cm and maximum width up to 250 cm
- ✓ EPS blocks used to reduce structural weight
- ✓ Completed in situ with steel bars and meshes reinforcement for structural continuity
- ✓ Concrete casting for monolithic slab



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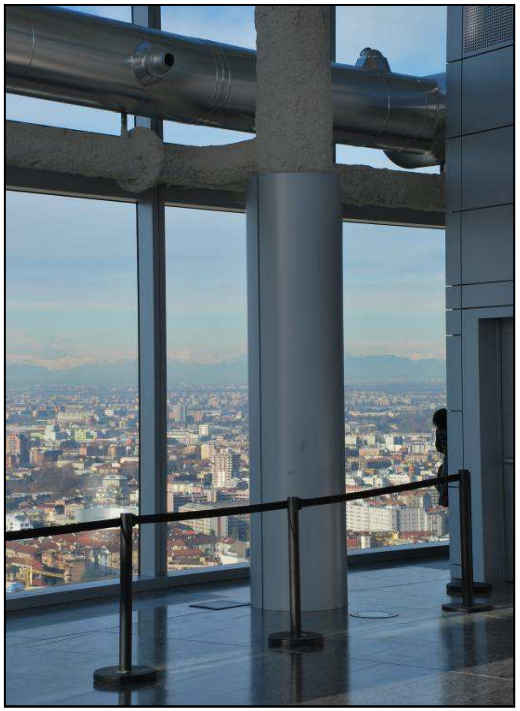

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- **Summary Presentation and Preliminary Feasibility Study**
- June 2018